Reduced Order Modelling, Simulation and Optimization of Coupled systems

**ESR Recruitment Final Summary Report**

**Deliverable number: D7.5**

**Version 1.1**

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Abstract
In this deliverable we report on the recruitment process and the recruitment results within the ROMSOC project. We also comment on the application timeline, strategies for advertisements and on the selection process. In summary, after approximately one year all ESR positions could be filled with very promising candidates. The deviation of the original work plan due to delays in the recruitment of up to 6 or 7 months will not impede with the further course of the project, since the periods of secondments are flexible and training activities are adapted to the delays.
History of Changes

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<th>Comments, Change</th>
<th>Authors, Contributors</th>
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<td>L. Scholz</td>
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<td>V. Mehrmann, L. Scholz</td>
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### List of Beneficiaries:

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<thead>
<tr>
<th>No.</th>
<th>Institution Name</th>
<th>Abbreviation</th>
<th>Country</th>
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<td>1</td>
<td>Technische Universität Berlin</td>
<td>TUB</td>
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<td>MathConsult GmbH</td>
<td>MathConsult</td>
<td>Austria</td>
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<td>3</td>
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<td>JKU</td>
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</tr>
<tr>
<td>4</td>
<td>Microgate Srl</td>
<td>Microgate</td>
<td>Italy</td>
</tr>
<tr>
<td>5</td>
<td>Consorcio Instituto Tecnológico de Matemática Industrial</td>
<td>ITMATI</td>
<td>Spain</td>
</tr>
<tr>
<td>6</td>
<td>Institut national de recherche en informatique et automatique</td>
<td>INRIA</td>
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</tr>
<tr>
<td>7</td>
<td>Universität Bremen</td>
<td>U-HB</td>
<td>Germany</td>
</tr>
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<td>8</td>
<td>Bergische Universität Wuppertal</td>
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</tr>
<tr>
<td>9</td>
<td>ST Microelectronics Srl</td>
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<td>10</td>
<td>Friedrich-Alexander-Universität Erlangen-Nürnberg</td>
<td>FAU</td>
<td>Germany</td>
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<tr>
<td>11</td>
<td>MOX Politecnico di Milano</td>
<td>MOX-PoliMi</td>
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<td>12</td>
<td>Scuola Internazionale Superiore di Studi Avanzati di Trieste</td>
<td>SISSA</td>
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<td>13</td>
<td>Weierstraß Institut für Angewandte Analysis und Stochastik</td>
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<td>Germany</td>
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### List of Partner Organizations:

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<th>Abbreviation</th>
<th>Country</th>
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<td>Universidade da Coruña</td>
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<tr>
<td>15</td>
<td>Microflown Technologies B.V.</td>
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<td>Netherlands</td>
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<tr>
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<td>Université Paris Dauphine</td>
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<td>France</td>
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<tr>
<td>17</td>
<td>Philips Lighting BV</td>
<td>Philips</td>
<td>Netherlands</td>
</tr>
<tr>
<td>18</td>
<td>Sagiv Tech Ltd.</td>
<td>Sagiv-Tech</td>
<td>Israel</td>
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<td>20</td>
<td>Universidade de Santiago de Compostela</td>
<td>USC</td>
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<td>21</td>
<td>Danieli Officine Meccaniche SPA</td>
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<td>22</td>
<td>CorWave</td>
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<td>ArcelorMittal</td>
<td>AMIII</td>
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<td>Humboldt Universität zu Berlin</td>
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<td>Math.Tec GmbH</td>
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<td>26</td>
<td>European Service Network of Mathematics for Industry and Innovation</td>
<td>EU-MATHS-IN</td>
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</table>
1. Introduction

The ROMSOC network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early-Stage Researchers (ESRs). The research is focused on coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas. Within the ROMSOC project a common framework for different industrial applications will be derived and the next generation of researchers will be trained in highly interdisciplinary fields concerning modelling, simulation and optimization (MSO) techniques as well as model order reduction (MOR) techniques.

The ROMSOC project aims to recruit the best possible ESRs, since the ability to attract and recruit the right skills is crucial for the success of the ROMSOC project. In the recruitment process we have looked for excellent open-minded and team-spirited PhD candidates that show the capacity and enthusiasm to undertake the unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills that is offered in the ROMSOC project. In order to achieve a successful recruitment we have based the recruitment principles main characteristics on a broad advertisement, nationally and internationally, through various channels available to the members of the consortium to get as many qualified applicants as possible.

In summary, eight (out of eleven) ESRs were recruited by August 31, 2018 and three more were selected but could not yet be recruited. The remaining candidates will be recruited in September or latest October 2018, depending on the status of visas to be issued and other delays (cf. Section 3.4). In total four of the selected fellows needed visas to be recruited. One of the recruited candidates withdrew from the ROMSOC project after six weeks of employment, but a new candidate for the position could be found that will also start in September 2018. The delays in the recruitment of up to 6 or 7 months are not significant and will not impede with the future course of the project. The periods for secondment of the ESRs are flexible and can be adapted according to each recruited fellow’s career development plan. Also the training activities, that have purposely been kept flexible, could partly be adapted to the delays in the recruitment. Late recruited fellows have the opportunity to catch up with the course work. Also, ESRs that have been selected but could not yet be recruited (due to various reasons, see Section 3.4) were present at the Kickoff meeting and mandatory network-wide training activities, which has enhanced their integration in the project and strongly supports the coherence of the cohort.

2. Recruitment Process

The recruitment process has followed the rules for the scheme of European Industrial Doctorates within the Marie Skłodowska-Curie Actions (MSCA) of the funding programme H2020. In the following, we detail the organization of the recruitment and the selection process as well as the strategies for advertisement and present some statistics on the received applications including gender assessment.

2.1. Organization of the Recruitment Process

The recruitment process was decentralized in order to leave as much freedom to operate as possible to the project partners, when recruiting their ESRs. Therefore, beneficiaries selected their ESRs independently following the rules for MSCA fellows and the rules according to their respective institutions and national/regional requirements. The recruitment process was nevertheless coordinated insofar as a common course of the recruiting process was agreed on by the consortium with a joint timeline and a template for the uniform appearance of job advertisements has been circulated by the Coordinator. In this template the eligibility criteria (Art. 6, GA) were emphasized and the recruitment and working conditions obligations (Art. 32, GA) were closely monitored by the Coordinator.

The following course of the recruiting process has been followed:

1. **Review of Applications**: The applications were send to the recruiting institutions (primary supervisor) were a first screening of applications took place. Applications to more than one position were possible (and suggested in the advertisements) and should contain an indication for the order of preference (1st, 2nd or 3rd choice). After the deadline a list of all applicants for a position was send to the Coordinator in order to handle applications to multiple positions.
2. **Check of Eligibility**: Initially, all applications have been screened according to the Marie-Curie eligibility criteria by the recruiting institutions. In particular, suitable candidates have to be eligible according to the *ESR status* and the *Mobility Rule* (as detailed in the Guide for Applicants, see also Section 3.3).

3. **Selection Phase at each Institution**: Following the standard procedures at each recruiting institution, potential candidates were shortlisted and invited to job interviews at the host institutions. According to individual agreements between the involved partners potential candidate have been interviewed by a Selection Committee including the academic as well as the industrial supervisor(s).

4. **Final decision**: The final candidate for each individual research project were selected by the recruiting host institution(s). The decision with an explanatory statement were send to the Coordinator. Afterwards all candidates received a confirmation of the outcome of the recruitment process.

All applications were required to contain a detailed Curriculum Vitae (CV), a letter of motivation, meaningful certificates, a list of MSc courses and grades, a copy of the master thesis, as well as a reference letter, and any other relevant documents or information. As general requirements (in common for all projects) the following criteria have been set up by the consortium. The candidates should

- be in possession of a Master degree (or equivalent) in Mathematics, Mathematical Engineering, Mathematical Economics, Scientific Computing or other related disciplines;
- have a strong interest in interdisciplinary scientific work and a strong motivation to pursue a PhD degree;
- be able to work independently and as part of a team;
- have excellent command of English, together with good academic writing and presentation skills.

Moreover, the preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering applications, and personal ambition.

### 2.2 Applications Timeline

The intended goal was to advertise the vacancies as widely as possible at least 4 months before the anticipated start date for the ESRs (Month 7, i.e., 1st of March 2018) to attract a significant number of the most able international candidates. The joint call for all eleven ESR positions was published on the EURAXESS webpage on November 7, 2017 (Month 3). The deadline for the reception of applications, indicated in the call, was November 30, 2017. Due to a low number of applications of eligible candidates for some of the ESR positions, there was a unanimous decision between the consortium partners to extend the deadline for submission of applications until December 15, 2017.

Three of the eleven ESR positions (ESR4, ESR7 and ESR8) could not be filled after the first call. The reasons were manifold: drop-out of candidates, candidates on waiting list found other position, etc (for details see Section 3.4). Also the attempt to transfer candidates which had applied to other positions to the vacancies failed (partly also because of the *Mobility Rule*). Thus, a second call for the three vacant positions was opened:

- the second call for the position of ESR4 was published on March 29, 2018 (deadline: April 18, 2018);
- the second call for the position of ESR7 was published on April 4, 2018 (deadline April 30, 2018);
- the second call for the position of ESR8 was published on February 19, 2018 (deadline March 18, 2018).

### 2.3 Advertisements

The vacancies were advertised and published nationally as well as internationally focusing on (a) electronic advertising (e-job markets, mailing lists etc) and websites and (b) word of mouth. The joint call “11 Early

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2. The first anticipated deadline for application November 15, 2017 was moved to November 30, 2017 as a result of a decision made at the 1st Supervisory Board Meeting on October 23-24, 2017.
5. [https://euraxess.ec.europa.eu/jobs/281678](https://euraxess.ec.europa.eu/jobs/281678)
Stage Research Positions available in MSCA-ITN-EID project ROMSOC” was published on the EURAXESS webpage. In addition the vacancies were advertised on other relevant job portals as jobvector or MathHire and on the European Service Network of Mathematics for industry and innovation (EU-MATHS-IN). The joint call was also published on the News section at the webpage from the European Model Reduction Network (EU-MORNET) as well as in the AiD Newsletter of KoWi (the European Liaison Office of the German Research Organisations) and in the News feed of the Committee for Mathematical Modeling, Simulation and Optimization (KoMSO). In addition, the advertisement was send to the NA Digest mailing list (Nov 28, 2017 Volume 17:Issue 31).

Besides the joint call, each beneficiary published its vacancy on the institutional website and via channels appropriate for the respective position and on specialist, national-specific or broader job search websites and topic specific mailing lists. Details on the individual advertisements can be found in Table 1 and 2.

<table>
<thead>
<tr>
<th>ESR</th>
<th>Beneficiary(ies)</th>
<th>Additional individual advertisements</th>
</tr>
</thead>
</table>
| ESR1 | JKU, Microgate | • jobboard of the Industrial Mathematics Institute at JKU  
| | | • jobboard of Johann Radon Institute for Computational and Applied Mathematics (RICAM) at JKU  
| | | • website of the European Consortium for Mathematics in Industry (ECMI)  
| | | • e-mail to all mathematical institutes at JKU |
| ESR2 | ITMATI | • e-mails to more than 500 internal contacts (incl. 45 faculties from different countries)  
| | | • ITMATI website and ITMATI Linkedin  
| | | • website and Twitter account of Europe Direct A Coruña,  
| | | • website of EURES (the European Job Mobility Portal)  
| | | • website of European Mathematical Society (EMS),  
| | | • website of Math-in |
| ESR3 | INRIA | • Personal mailing list  
| | | • jobportal mathjobs |
| ESR4 | U-HB | • University of Bremen’s website for open positions  
| | | • announcement within consortium and to the working group Numerical Mathematics at TU Berlin  
| | | • announcement to Industrial Mathematics working group at U-HB  
| | | • announcement to Center for Industrial Mathematics at U-HB for the distribution of the offer to interesting students  
| | | • announcement to personal mathematical community of Peter Maass |
| ESR5 | BUW/STM | • website for open positions at BUW  
| | | • website of working group Applied Mathematics/Numerical Analysis at BUW |
| ESR6 | TUB, MathConsult | • website for open positions at TUB |
| ESR7 | FAU | • distribution to relevant mailing lists (dmanet, OPT-Net, diverse European national OR mailing lists)  
| | | • personal contacts to university chairs throughout Europe |

Table 1: Individual job advertisements for the ESR positions
2.4. Applications received and Gender Assessment

The consortium received applications from 121 applicants in total for the 11 ESR positions from which 30 were female (i.e. 25%). In total, beneficiaries shortlisted and invited 39 candidates for interviews. We have received applications from 38 different countries, the distribution of the home countries of the candidates can be found in Figure 1. The majority of applications came from Iran (21%), India (14%), Pakistan (9%), Germany (7%) and Egypt (5%) (from each of these home countries we received more than five applicants), see also Figure 2.

Table 2: Individual job advertisements for the ESR positions (continued)

<table>
<thead>
<tr>
<th>ESR</th>
<th>Institution</th>
<th>Advertisement Details</th>
</tr>
</thead>
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<tr>
<td>ESR8</td>
<td>ITMATI</td>
<td>Same advertisements as for ESR2. The 2nd call has additionally be published on:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- jobportal at website Madri+d</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- website for open positions at Universidade de Vigo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- jobboard at A Coruña Faculty Of Computer Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- jobboard at Sociedad Española de Matemática Aplicada</td>
</tr>
<tr>
<td>ESR9</td>
<td>MOX-PoliMi</td>
<td>• Politecnico di Milano website for funded grants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Mailing list of SIMAI (Società Italiana di Matematica Applicata e Industriale)</td>
</tr>
<tr>
<td>ESR10</td>
<td>SISSA</td>
<td>• SISSA’s official webpage on recruitment section for Phd Student</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• announcements on social media like Twitter and Facebook</td>
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<td></td>
<td></td>
<td>• newsletters: SIAM CSE (international), NA-net (international), SIMAI (national),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INDAM GNCS (national)</td>
</tr>
<tr>
<td>ESR11</td>
<td>WIAS</td>
<td>• jobportals at mathjobs, allacad and researchgate</td>
</tr>
</tbody>
</table>

Copies of the advertisements and links to the sources on the web can be found in the Appendix.
2.5. Selection Process

Figure 2: Worldwide distribution of applicants

Not all of the applicants have been suitable for the ESR positions, mainly due to the lack of a sound mathematical background, and not all applicants have been eligible according to the Eligibility Rules (see Section 3.3). The statistics for each ESR position can be found in Table 3. Note again, that applications to multiple positions were possible.

All involved institutions value diversity and are committed to equality of opportunity so that gender equality was promoted in all advertisements. The percentage of women applying was 25% of all applicants. In a field (i.e. applied mathematics and scientific computing) that is highly dominated by men, this amount is actually very good.

2.5. Selection Process

The selection process was decentralized and organized independently by the recruiting beneficiaries. The Coordinator proposed January 12, 2018 as deadline for the final decision for the selected candidates in order to be able to keep the proposed starting date of the ESR projects on 1st of March 2018. However, due to Christmas holidays and turn of the year this deadline could not be met by most of the partners (in particular because of the scheduling for the personal interviews). For more details on delays we refer to Section 3.4.

At all recruiting organizations, personal interviews were held with pre-selected candidates in order to assess their existing skills, their knowledge and relevant research/industrial experience, their capacity and enthusiasm to undertake training, as well as the expected impact on their future career in academia or industry. After the selection process all applicants were informed about the outcome of the recruitment process.

In the following, we explain how the selection process has been arranged by the different partners.

**ESR1 (at JKU/Microgate):** The Selection Committee consisted of Prof. Ronny Ramlau (JKU) as representative of the academic sector and Roberto Biasi (Microgate) as representative of the industrial sector. First, a pre-selection of candidates was done according to the application documents (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis). Afterwards, auspicious candidates were interviewed by Prof. Ronny Ramlau. A Skype interview with Roberto Biasi was then arranged to finally agree on a candidate that fits for the academic as well as for the industrial partner.
## 2.5. Selection Process

<table>
<thead>
<tr>
<th>ESR No.</th>
<th>Recruiting Beneficiary</th>
<th>Number of applicants</th>
<th>Number of female applicants (in %)</th>
<th>Candidates interviewed</th>
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<tbody>
<tr>
<td>ESR1</td>
<td>Microgate, JKU</td>
<td>12</td>
<td>1 (8%)</td>
<td>1</td>
</tr>
<tr>
<td>ESR2</td>
<td>ITMATI</td>
<td>13</td>
<td>2 (15%)</td>
<td>4</td>
</tr>
<tr>
<td>ESR3</td>
<td>INRIA</td>
<td>4</td>
<td>1 (25%)</td>
<td>2</td>
</tr>
<tr>
<td>ESR4 (1st call)</td>
<td>U-HB</td>
<td>15</td>
<td>3 (20%)</td>
<td>2</td>
</tr>
<tr>
<td>ESR4 (2nd call)</td>
<td>U-HB</td>
<td>9</td>
<td>3 (33%)</td>
<td>2</td>
</tr>
<tr>
<td>ESR5</td>
<td>BUW, STM</td>
<td>4</td>
<td>0 (0%)</td>
<td>1</td>
</tr>
<tr>
<td>ESR6 (1st call)</td>
<td>TUB, MathConsult</td>
<td>14</td>
<td>3 (21%)</td>
<td>4</td>
</tr>
<tr>
<td>ESR6 (2nd call)</td>
<td>TUB, MathConsult</td>
<td>3</td>
<td>0 (0%)</td>
<td>1</td>
</tr>
<tr>
<td>ESR7 (1st call)</td>
<td>FAU</td>
<td>27</td>
<td>9 (33%)</td>
<td>3</td>
</tr>
<tr>
<td>ESR7 (2nd call)</td>
<td>FAU</td>
<td>13</td>
<td>3 (23%)</td>
<td>1</td>
</tr>
<tr>
<td>ESR8 (1st call)</td>
<td>ITMATI</td>
<td>10</td>
<td>1 (10%)</td>
<td>5</td>
</tr>
<tr>
<td>ESR8 (2nd call)</td>
<td>ITMATI</td>
<td>14</td>
<td>3 (21%)</td>
<td>5</td>
</tr>
<tr>
<td>ESR9</td>
<td>MOX-Polimi</td>
<td>4</td>
<td>1 (25%)</td>
<td>2</td>
</tr>
<tr>
<td>ESR10</td>
<td>SISSA</td>
<td>7</td>
<td>2 (29%)</td>
<td>3</td>
</tr>
<tr>
<td>ESR11</td>
<td>WIAS</td>
<td>29</td>
<td>5 (17%)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Table 3: Applications received for the ESR positions**

**ESR2 & ESR8 (at ITMATI):** At ITMATI the selection process has been designed in 2 stages, a pre-evaluation process (based on the documents received from the candidates) and a personal interview phase (based on Skype interviews). Evaluation Committees for the two positions were appointed on December 20th, 2017. For the ESR2 position the Evaluation Committee was composed of Andrés Prieto Aneiros (ITMATI/UDC), Daniel Fernández Comesaña (Microflow), and Raluca Silvana Tomoni (ITMATI). For the ESR8 position the Evaluation Committee was composed of Peregrina Quintela Estévez (ITMATI/USC), Patricia Barral Roldán (ITMATI/USC), Gianfranco Marcon (Danieli), Gianluigi Rozza (SISSA), and Raluca Silvana Tomoni (ITMATI). The candidates dossiers and a compilation document, with all the applications for the respective position, have been made available to all members of the Evaluation Committee. In order to homogenize and facilitate the pre-evaluation process and in an effort to assure a fair selection process, two different criteria of merits and requirements to be assessed have been established:

- training according requirements (up to 40 points);
- knowledge and specific experience according requirements (up to 35 points).

Individual assessments of the applications were conducted, carried out by each member of the Evaluation Committee. Once the pre-evaluation process has been completed, the Evaluation Committees decided on the candidates to be proposed for the personal interview phase. In order to facilitate the personal interview phase and in an effort to assure a fair selection process, different criteria of merits and requirements to be assessed have also been established in this phase:

- brief description of the CV: research and previous experience related with the project (up to 5 points);
- reasons and motivation to apply for this position (up to 5 points);
- research experience (up to 5 points);
- work experience with industry (up to 10 points for ESR2, up to 5 points for ESR8);
- only for ESR8: recommendation letters (up to 5 points).
2.5. Selection Process

Again, based on the criteria established for the personal interview phase, each member of the Evaluation Committee conducted an individual assessment of the candidates. For more details regarding the selection process see the related documents in the Appendix. After conducting the interviews and based on the criteria established by the call, the Evaluation Committee decided which candidate to propose for the PhD position. Additionally, the Evaluation Committee also decided which candidates are to be placed on the “waiting list”. The waiting list will remain in force during the full project lifetime. If it deems it appropriate, the Evaluation Committee of this call may make use of the waiting list provided that any researcher leaves the project voluntarily. Since in the first selection process for the position of ESR8, the job position was declared void, a second selection process has been organized in March 2018. For details we refer to Section 3.4.

ESR3 (at INRIA): The Selection Committee for the position of ESR3 was composed of Prof. Jean-David Benamou (INRIA) as the academic supervisor and Wilbert IJzerman (Philips Lighting) as the industrial supervisor. Based on the received documents (CV, certificates, Master thesis, etc) and after request of letter of recommendation the most promising candidates were invited for interviews.

ESR4 (at U-HB): The Selection Committee for the position of ESR4 was composed of Prof. Peter Maass, the responsible PI at the beneficiary University of Bremen, Dr. Chen Sagiv, PI from the industry partner SagivTech in Israel, and Dr. Lena Hauberg-Lotte, responsible for the administrative management of ROMSOC at University of Bremen. All applications were discussed between the members of the Selection Committee. Moreover, experts from the working group Industrial Mathematics in Deep Learning were asked for their advice. At a first phase, the applicants were screened for their eligibility for the MSCA. Six candidates (all from first round) were discovered as not being eligible and the eligibility of four candidates (three from the first round, one from the second round) were doubtful. As important evaluation criteria for the ESR4 project ‘Data driven model adaptations of coil sensitivities in MR systems’ the Selection Committee rated are a strong background in mathematics, advanced programming skills, excellent grades, experience in numerical simulation of complex systems as well as personal ambition. Only five of the eligible candidates held a degree in mathematics, and another five eligible candidates had studied computer science/physics but anyhow had attended courses in (applied) mathematics during their studies and therefore fit well to the position. As almost all applicants came from abroad Skype/Hangouts interviews were arranged with four respective candidates. One of the candidates was not able to accept the interview invitation, even after offering several days and time slots. One candidate who resided in Germany was invited to Bremen for half a day for the interview.

ESR5 (at BUW/STM): The Selection Committee was composed of Prof. Matthias Ehrhardt, Prof. Michael Günther, Dr. Andreas Bartel and Dr. Jan ter Maten of the Bergische Universität Wuppertal (as academic supervisors). As evaluation criteria a strong background in (applied) mathematics as well as excellent grades in the Bachelor and Master studies were expected. The interviews were arranged as face-to-face meeting with the applicant in Wuppertal, followed by a talk given by the applicant with subsequent discussion, as well as 2-3 interviews with members of the Selection Committee. Only one candidate was set on the shortlist due to the low number of applications.

ESR6 (at TUB/MathConsult): The Selection Committee was composed of Prof. Volker Mehrmann, the academic supervisor at TUB/Matheon, Dr. Andreas Binder as industrial supervisor (MathConsult) and Dr. Lena Scholz (Project Manager of ROMSOC at TUB). After a first evaluation of the candidates based on the received documents and a check of eligibility, four candidates were invited to interviews. After the personal interviews the Selection Committee unanimously decided on a shortlist for the vacant position. Another candidate was put on a reserve list, since the project of ESR6 was only picked as second priority. This candidate was later selected (and recruited) for its first priority position ESR11 at WIAS.

ESR7 (at FAU): The Selection Committee at FAU Erlangen-Nürnberg consisted of Prof. Dr. Alexander Martin as the principal supervisor and Dr. Andreas Bärmann as the secondary supervisor. All applications have been examined according to suitability of the candidate for the project as judged from their scientific
2.5. Selection Process

background, Master’s thesis topic and professional background, as well as their eligibility. The most promising candidates were interviewed via telephone conference. If a candidate showed to be a possible fit, the candidate was invited to give a presentation of his past research work in Erlangen with a subsequent personal discussion.

ESR9 (at MOX-PoliMi): A Selection Committee composed of three members, Prof. Christian Vergara as principal supervisor and president of the Selection Committee, as well as Dr. Luca Dedé and Dr. Ilario Mazzieri as expert members, designated by the Head of the Department offering the position, have been appointed by a Director General’s Decree. The Selection Committee has examined the documentation provided by the applicants in terms of their scientific background, master thesis topic and research activity. Then, the Selection Committee selected the applicants by assigning up to 100 points, through the assessment of the applicants’ academic qualifications and curriculum vitae and through an interview, held with the procedure established by the Committee. The interview aimed at assessing the applicant’s aptitude for research, according to the criteria listed below:

- possession of additional qualifications (other than the ones required for the participation in the selection) regarding topics relevant to the research programme, 10 points;
- tight relevance of the Master degree with the research programme of the fellowship, 30 points;
- no more than 5 publications/scientific products regarding topics relevant to the research programme, 5 points;
- participation in research activities that are relevant to the research programme, 5 points;
- interview aimed at assessing the applicant’s aptitude for research, 50 points.

During the interviews the Committee also valued the general requirements set up in common for all research projects (see p. 3). The interview was passed with a minimum score of 35 points (corresponding to 7/10 of the interview score) and was held on January 19th, 2018 in the Department of Mathematics of the Politecnico di Milano. Applicants could also be interviewed using long-distance audio and video systems. After the selection procedure and selection interview two candidates were shortlisted for the position of ESR9.

ESR10 (at SISSA): The Evaluation Committee for the ESR10 position was composed of Prof. Gianluigi Rozza (SISSA) as principal supervisor and president of the Committee, Prof. Peregrina Quintela Estévez (ITMATI) as additional supervisor, Eng. Alejandro Lengomin (Arcelor Mittal) as academic supervisor and Dr. Giovanni Noselli (SISSA) as secretary of the Committee.

The pre-evaluation process began on December 20, 2017, the day after the Committee has been nominated by SISSA director (see nomination act in Appendix). An e-mail has been sent making available to all members of the Evaluation Committee the link with the candidates dossiers for the position of ESR10. In addition, a compilation document, with all the applications, has been made available to the members of the Committee. In order to homogenize and facilitate the pre-evaluation process and in an effort to assure a fair selection process, the following documents have been prepared:

- an evaluation criteria document with the merits and requirements to be assessed. This document also contains the scores for each item (see Appendix);
- an electronic sheet helping with the evaluation process (scores, topics, etc.).

The next step was to conduct an individual assessment of the applications, carried out by each member of the Evaluation Committee. The evaluation was done by titles, then assessment, and finally letters of recommendation in the last phase. Candidates with average below 70/100 were not shortlisted. After the evaluation of the individual assessment three candidates were shortlisted for the position of ESR10.

ESR11 (at WIAS): The Selection Committee was composed of Prof. Michael Hintermüller (WIAS) as academic supervisor and Karl Knall (MathTec) as industrial supervisor. After evaluation of the application and personal interviews three candidates were put on a shortlist.
3. Recruitment Results

3.1. Selected Candidates

Eleven very promising candidates could be selected for the ESR positions in the ROMSOC project. For an overview of the selected candidates and their start in the project, see Table 4. Eight of the eleven ESRs were recruited by August 31, 2018. ESR4 (from Cuba) will start as soon as the visa is issued and the start of ESR5 is planned for September 1, 2018. ESR7 will most likely start on September 15, 2018. Five of the selected ESRs come from non-EU countries (3 from India, one from Georgia and one from Cuba) and four of them needed visa before they could start their work in the project. For more details on delays due to visa issues we refer to Section 3.4. Note also that one of the recruited fellows, Robert Malte Polzin, resigned from his contract due to personal reasons with effective date June 20, 2018 after six weeks of employment. The call for the position of ESR6 was reopened and a new candidate could be selected in August 2018. The start for the new ESR6 is planned for September 17, 2018. For more details on delays in the recruitment we refer to Section 3.4.

3.2. Gender

From the eleven selected ESRs, two are female and nine are male, this means that currently 18% of the ESRs are female. Each partner applied gender and equal opportunity policies at their local organizations for evaluating, selecting and interviewing the candidates. To ensure the equality of opportunities we have strongly encouraged women with the appropriate qualifications to apply. Besides, we also tried to transfer highly qualified females that applied to one beneficiary, but were not listed as the number one candidate, to other beneficiaries.

3.3. Eligibility

To ensure the eligibility of the selected researchers, the evaluation criteria during the recruitment process have been based on the Mobility Rule and the ESR status established in the Guide for Applicants in Marie Skłodowska-Curie Actions - Innovative Training Networks (ITN).

**Mobility Rule:** Researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

**ESR status:** Early-Stage Researchers (ESRs) must, at the date of recruitment by the beneficiary, be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree.

The eligibility of the recruited candidates was verified by the recruiting organization and the project manager at TUB. All the recruited candidates, at the time of the recruitment, were in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree, hence qualifying as Early-Stage Researchers. Also, they all undertake transnational mobility, and have carried out their main activities outside the country of the recruiting organization for more than 24 months in the three years immediately prior to their recruitment. The eligibility criteria were verified by the detailed CVs and certificates provided by the selected candidates (enrollment certificates, certificates of Master degree or equivalent, etc).
<table>
<thead>
<tr>
<th>ESR</th>
<th>Last Name</th>
<th>First Name</th>
<th>Gender</th>
<th>Nationality</th>
<th>Last Countries of Residence</th>
<th>Recruiting Beneficiary</th>
<th>Recruitment Start Date</th>
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<td>Studler</td>
<td>Bernadett</td>
<td>f</td>
<td>AT</td>
<td>AT</td>
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<td>Nayak</td>
<td>Ashwin Sadanand</td>
<td>m</td>
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<td>June 25, 2018</td>
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<td>Rukhaia</td>
<td>Giorgi</td>
<td>m</td>
<td>GE</td>
<td>GE, DE</td>
<td>INRIA (FR)</td>
<td>May 1, 2018</td>
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<td>Gutiérrez Pérez</td>
<td>José Carlos</td>
<td>m</td>
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<td>Bannenberg</td>
<td>Marcus</td>
<td>m</td>
<td>NL</td>
<td>NL</td>
<td>BUW (GER)</td>
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</tr>
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<td>Polzin*</td>
<td>Robert Malte</td>
<td>m</td>
<td>DE</td>
<td>DE</td>
<td>MathConsult (AT)</td>
<td>May 7, 2018</td>
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<tr>
<td></td>
<td>Jadhav</td>
<td>Onkar Sandip</td>
<td>m</td>
<td>IN</td>
<td>DE, IN</td>
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<td></td>
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<td>Staszek</td>
<td>Jonasz Marek</td>
<td>m</td>
<td>PO</td>
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<td>Morelli</td>
<td>Umberto Emil</td>
<td>m</td>
<td>IT</td>
<td>IT, UK, PT</td>
<td>ITMATI (ESP)</td>
<td>June 18, 2018</td>
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<td>Martinolli</td>
<td>Marco</td>
<td>m</td>
<td>IT</td>
<td>CH</td>
<td>MOX-Polimi (IT)</td>
<td>March 1, 2018</td>
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<tr>
<td>ESR10</td>
<td>Shah</td>
<td>Nirav Vasant</td>
<td>m</td>
<td>IN</td>
<td>IT, DE, IN</td>
<td>SISSA (IT)</td>
<td>April 16, 2018</td>
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<td>Auer</td>
<td>Naomi</td>
<td>f</td>
<td>AT</td>
<td>AT</td>
<td>WIAS(GER)</td>
<td>April 16, 2018</td>
</tr>
</tbody>
</table>

Table 4: Selected ESRs for the eleven PhD positions in the ROMSOC project.

*The candidate resigned from the project with effective date June 20, 2018.
3.4. Deviations from Work Plan

According to the work plan, the ESRs should start their positions and their research projects on March 1, 2018. However, only one position could be filled as planned starting March 1, 2018 (ESR9 at MOX-PoliMi). The other ESRs have a later starting date due to different reasons. The first general deviations from the original work plan was that the deadline for the reception of applications was extended from November 30, 2017 (indicated in the first call) to December 15, 2017 by an unanimous decision in the consortium due to the low number of applications from eligible candidates for some of the ESR positions.

Besides some minor delays in the recruitment due to preparation of working contracts, visa issues and other obligations of the fellows there have been more severe delays in some other cases. The deviations that occurred in the various projects are described in the following.

ESR1 (1 month delay): The start of the project was one month delayed, due to contract preparation according to the MSCA requirements.

ESR2 (3 months delay): The resolution of the ESR2 position was made public on ITMATI’s website on January 17, 2018 and on January 31, 2018 the selected candidate (from India) accepted the offer for the ESR2 position by e-mail. After dealing with all the necessary documents (employment contract, document translations, etc), the proceedings to apply for the residence and work permit have been started on March 27, 2018. However, due to the long length of the proceeding for visa the selected researcher could only be recruited by June 25, 2018.

ESR3 (2 months delay): The selected candidate, Giorgi Rukhaia from Georgia, required a visa which was issued in May so that he could be recruited on May 1, 2018.

ESR4 (6-7 months delay): In the first selection phase two candidates were interviewed and shortlisted. Unfortunately, both candidates declined the job offer because they accepted other international positions. The call for the position of ESR4 had to be renewed in spring 2018 (deadline for application April 18, 2018) and in the second selection phase two more candidates were interviewed and listed. The candidate José Carlos Gutiérrez Pérez (male, Cuban) was selected and accepted the job offer on May 4, 2018. From that day the candidate as well as the administration at University of Bremen started the employment process, this included the certification and translation of Cuban documents as well as the contract preparations and the approval of international certificates at the University Bremen. The ESR will start as soon as the visa has been issued (probably September/October 2018).

ESR5 (6 months delay): The selected candidate will finish his Master studies in Summer 2018. The recruitment is planned for September 1, 2018. Due to the late recruitment there will be a delay of 6 months, however, the selected candidate Marcus Bannenberg took part at the network-wide training activities already before the date of recruitment.

ESR6 (6 months delay): The first selected candidate from the shortlist withdraw from the job proposal on March 6, 2018 (after having accepted the offer on January 14, 2018). The second candidate on the waiting list was contacted on March 6, 2018 and accepted the offer on March 9, 2018. Due to obligation in his former job and relocation he could only start his position at MathConsult in Linz, Austria on May 7, 2018. Due to personal reasons the recruited fellow resigned from his working contract with effective date June 20, 2018. Afterwards, a new call for the position of ESR6 was opened on July 13, 2018 (with deadline for application on July 27, 2018). One candidate was selected for Skype interviews with the academic and industrial supervisors and was offered the position afterwards. He accepted the offer and the recruitment start date is planned to be September 17, 2018.

ESR7 (6 months delay): The three most promising candidates that responded to the first call for applications were interviewed via telephone conference. Of these, only one showed to be a possible fit. He was invited to give a presentation of his past research work in Erlangen and a subsequent personal discussion. Unfortunately, the candidate was found not to be suitable for working in the project. Thus, a second call for applications was set up, in which exactly one candidate showed the necessary background to participate in the project. After an initial telephone interview and a subsequent call to clarify remaining questions, the candidate was offered the
position and accepted it. The selected candidate can most likely be employed from 15 September 2018 on.

**ESR8 (3 months delay):** To fill the ESR8 position, two selection processes had to be organized. In the first selection process, the Evaluation Committee unanimously decided to propose Shah Nirav Vasant for the PhD position. The first resolution of the ESR8 position was made public on ITMATI’s website on January 22, 2018. In an e-mail, dated January 22, 2018, one candidate on the shortlist resigns from the selection process. On February 1, 2018, the first candidate on the shortlist, Shah Nirav Vasant, declined the job offer, since he took the offer for the position of ESR10 at SISSA. The ESR8 position was offered to the remaining candidate on the waiting list but, for personal reasons, he also declined the job offer. The Evaluation Committee decided to reopen the evaluation process, inviting to personal interviews the two candidates which have not been shortlisted in the first selection process, by rigorous order according with their evaluation in the part 1 and 2 of the call. Based on the criteria established by the call, and once the interview phase has been held, the Evaluation Committee unanimously decided to declare the job position void given that none of the candidates meet the requirements and the profile established in the call. The second resolution of the ESR8 position was made public on ITMATI’s website on February 16, 2018. Afterwards, a second selection process has been organized in March 2018 and the selected candidate, Umberto Emil Morelli from Italy, could be recruited by June 18, 2018.

**ESR10 (1 month delay):** Only minor delay due to visa issued and contract preparation.

**ESR11 (1 month delay):** Only minor delay since the selected fellow first finished the studies for a second degree.

The delays in the recruitment will not impede with the future course of the project. The periods for secondment of the ESRs are flexible and can be adapted according to each recruited fellow’s career development plan. The training activities, that have purposely been kept flexible, could partly be adapted to the delays in the recruitment. Also, ESRs that have been selected but could not yet be recruited (due to various reasons) were present at the Kickoff meeting and mandatory network-wide training activities, which has enhanced their integration in the project. In particular, the ESRs Stadler (ESR1), Rukhaia (ESR3), Bannenberg (ESR5), Polzin (ESR6), Martinolli (ESR9), Shah (ESR10) and Auer (ESR11) were present at the Kickoff Meeting taking place on April 9-10, 2018 at the Politecnico di Milano (Italy). At that time, Ashwin Nayak had not obtained his visa, and Umberto Morelli as well as José Carlos Gutiérrez Pérez and Jonasz Staszek had not been selected yet. Moreover, the ESRs Auer (ESR11), Bannenberg (ESR5), Martinolli (ESR9), Morelli (ESR8), Nayak (ESR2), Rukhaia (ESR3), Shah (ESR10) and Stadler (ESR1) attended the first network-wide training event “MTC-1: Multiphysics Modelling” in Santiago de Compostela, Spain taking place from June 25 to July 6, 2018, and the training activity, “TSTC-2: European Study Group with Industry (ESGI 139)”, taking place from July 9-13, 2018 in Santiago de Compostela, Spain, was attended by the ESRs Auer (ESR11), Martinolli (ESR9), Morelli (ESR8), Nayak (ESR2), Shah (ESR10) and Stadler (ESR1). The course material for the mandatory training course MTC-1 will be made available online in order to give late recruited ESRs access to the course material so that they will be able to compensate for their late recruitment. Late recruited ESR that were not able to take part in the training activity “TSTC-2 Study Group with Industry (ESGI 139)” can attend the second part of “TSTC-2: Study Group with Industry (ESGI 147)” that will be held in April 2019.

The training event “TSTC-3: Ethical aspects of the research”, taking place on July 23-24, 2018 in Nuremberg, Germany, was attended by all selected ESRs except for ESR4 (no visa issued) and ESR7 (no candidate selected). Also one Master student that was invited to join the ROMSOC project for the position of ESR6 (but declined the offer in the end) took part in the course TSTC-3.

In general, it can be said that it was quite difficult to recruit eligible as well as suited candidates for some of the ESR positions, since several applicants lacked the mathematical background needed for the doctorate positions and could therefore not be selected. Also starting a PhD outside the usual time frame proved to be quite complicated in some countries.
A. Appendix

The links to the sources on the web for the job advertisements can be found in the following table.

<table>
<thead>
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<td><a href="http://www.allacad.com">www.allacad.com</a></td>
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11 Early Stage Research Positions available in MSCA-ITN-EID project ROMSOC

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry.

The following positions are available:

- RTC implementation of high-performance algorithms for adaptive optics control
  Reference number: ROMSOC-ESR01
  Johannes-Kepler Universität, Linz, Austria

- Mathematical modelling and numerical simulation of coupled thermo-acoustic multi-layer systems for enabling particle velocity measurements in the presence of airflow.
  Reference number: ITMATI-OT-18/2017/ROMSOC-ESR02
  ITMATI, Santiago de Compostela, Spain

- FreeForm Optics applications of Optimal Transport Solvers
  Reference number: ROMSOC-ESR03
  INRIA, Paris, France

- Data driven model adaptations of coil sensitivities in MR systems.
  Reference number: A266/17 / ROMSOC-ESR04
  University of Bremen, Bremen, Germany

- Coupling of Model Order Reduction and Multirate Techniques for coupled heterogeneous time-dependent systems in an industrial optimization flow.
  Reference number: ROMSOC-ESR05
  Bergische Universität Wuppertal, Wuppertal, Germany

- Model order reduction for parametric high dimensional models in the analysis of financial risk.

Reference number: II-622/17 - ROMSOC-ESR06
Technische Universität Berlin, Berlin, Germany and MathConsult GmbH, Linz, Austria

Integrated Optimization of International Transportation Networks.
Reference number: ROMSOC-ESR07
Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany

Efficient computational strategies for complex coupled flow, thermal and structural phenomena in parametrized settings.
Reference number: ITMATI-OT-19/2017/ROMSOC-ESR08
ITMATI, Santiago de Compostela, Spain

Numerical simulations and reduced models of the fluid-structure interaction arising in blood pumps based on wave membranes.
Reference number: ROMSOC-ESR09 (CALL)
Dipartimento di Matematica, Politecnico di Milano, Milan, Italy

Coupled parameterized reduced order modelling of thermo-hydro-mechanical phenomena arising in blast furnaces.
Reference number: ROMSOC-ESR10 – Project R_H2020_MC_ITN_MATE_Rozza (0409)
Scuola Internazionale Superiore di Studi Avanzati di Trieste (SISSA), Trieste, Italy

Optimal Shape Design of Air Ducts in Combustion Engines.
Reference number: ROMSOC-ESR11
Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany

Additional Information

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska-Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.
Eligibility criteria
The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the country of the host institution for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.

Requirements

Offer Requirements

**Required Education Level**
- Mathematics: Master Degree or equivalent
- Computer science: Master Degree or equivalent
- Engineering: Master Degree or equivalent
- Technology: Master Degree or equivalent

**Required Languages**
- ENGLISH: Excellent

Skills/Qualifications
See the project specific requirements in the specific job announcements. In general, the required qualifications are:
- a Master degree (or equivalent) in Mathematics, Mathematical Engineering, Scientific Computing or other related disciplines.
- Experience in numerical solution of differential equations and, possibly, model order reduction.
- Programming skills in object oriented languages as well as Python/Matlab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering applications, and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

Specific Requirements

**Application:** Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to the contact indicated in the specific job announcement. Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice). To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.

**Work Location(s)**

1 position(s) available at
- Johann-Wolfgang-Goethe-Universität Frankfurt am Main
- Universität Würzburg
- Friedrich-Alexander-Universität Erlangen-Nürnberg
- Technische Universität Braunschweig
- Universität Bremen
- Bergische Universität Wuppertal
- Friedrich-Alexander-Universität Erlangen-Nürnberg
- Weierstrass Institute for Applied Analysis and Stochastics

2 position(s) available at
- Consorcio Instituto Tecnológico de Matemática Industrial (ITMATI)
- University of Santiago de Compostela

1 position(s) available at
- INRIA
- France
- Paris

EURAXESS offer ID: 257318
Open Early Stage Researcher/PhD Position at Johannes Kepler University, Austria, and Microgate, Italy, as part of European Innovative Training Network

Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at Johannes Kepler University and Microgate:

RTC implementation of high-performance algorithms for adaptive optics control

Reference number: ROMSOC-ESR01

The new generation of planned earthbound Extremely Large Telescopes (ELT) rely on Adaptive Optics (AO) systems. The task of such systems is the correction of optical distortions caused by atmospheric turbulences. The reconstruction of cumulated distortions from wave-front sensor data and the subsequent solution of an atmospheric tomography problem is essential for controlling deformable mirrors in order to compensate the distortion-caused loss of image quality. The underlying ill-posed problems and have to be solved in real-time, as the turbulences in the atmosphere change within milliseconds.

The PhD candidate shall get familiar with software tools for simulation of AO systems and collaborate in the development and adaption of reconstruction algorithms toward a real world setup, their comparison to established methods and the development of atmospheric layer model reduction methods. A resulting choice of best performing solutions shall be efficiency-optimized and implemented in RTC and DM hardware of Microgate, based on FPGAs for HPC. The PhD candidate will spend secondments for technical and scientific training at Microgate (Italy). The PhD degree will be awarded by Johannes Kepler University, Austria.

Requirements:
- Master degree (or equivalent) in Mathematics, Mathematical Engineering, Scientific Computing or other related disciplines.
- Experience in numerical solution of ill-posed problems, ideally image processing and tomography.
- Programming skills in object oriented languages as well as Matlab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering applications, and personal ambition.

Starting Date: 1st of March 2018
Contract: Full-time contract for 36 month (18 month at each hosting institution)
Host institutions: Johannes Kepler University, Linz, Austria
Microgate, Bolzano, Italy
Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country-specific deductions as well as individual factors and will be confirmed upon appointment.
Information/Contact: [Name of Contact] (Primary Supervisor)
Email: name@institution.co
Application: Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to name@institution.co.

DEADLINE 15.12.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.

Eligibility: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfil the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.
CALL FOR ITMATI RESEARCHER RECRUITMENT
OPEN EARLY STAGE RESEARCHER/PHD POSITION

PROJECT: European Innovative Training Network Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC).

TYPE OF PROJECT: The ROMSOC project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie-Sklodowska-Curie grant agreement No 765374.

OBJECTIVES OF PROJECT: ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska-Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

JOB OFFER REFERENCE: ITMATI-OT-18/2017/ROMSOC-ESR02.

CALL: Open Early Stage Researcher/PhD Position at Consorcio Instituto Tecnolóxico de Matemática Industrial (ITMATI), Santiago de Compostela, Spain.

DESCRIPTION OF JOB POSITION: 1 full-time contract for 36 months as PhD position for the ROMSOC project, ESR-02. The PhD degree will be awarded by University of A Coruña, Spain.

WORKING TITLE: Mathematical modelling and numerical simulation of coupled thermo-acoustic multi-layer systems for enabling particle velocity measurements in the presence of airflow.

WORKING OBJECTIVES: Microwaved USP probes, which are able to measure particle velocity and acoustic pressure fields simultaneously, are sensitive to the effect of wind, since they are based on thermal transducers and hence highly dependent on the variations of thermal flow velocity.

Instituto Tecnolóxico de Matemática Industrial.

www.itmati.com
Eif. Instituto Investigaciones Tecnológicas, planta-1
Rúa de Constantino Cardenal s/n
15782 Campus Vigo / Santiago de Compostela
itmati@itmati.com | Tel.: +34 881 813 317

Mathematical modelling and numerical simulation of thermo-acoustic coupled systems (involving USP probes, the compressible fluid in the presence of flow, and the multilayer windscreen) will play a key role in the design of novel windscreens to mitigate the flow effects on the measures of acoustic probes.

The PhD candidate shall develop mathematical models and numerical simulation of different strategies to design effective windcreens, efficient numerical strategies to solve coupled problems involving wave propagation phenomena, and validate the developed simulation environment performing a thorough experimental investigation.

PRINCIPAL INVESTIGATOR: Dr. Andrés Prieto (Primary Supervisor), Professor of Applied Mathematics of the University of A Coruña and affiliated researcher of ITMATI.

CANDIDATES PROFILE: Master degree (or equivalent) in Industrial Mathematics, Mathematical Engineering, Applied Mathematics, Computational Acoustics, Scientific Computing or other related disciplines. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry.

ELIGIBILITY: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfil the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative. More details can be found in the Guide for Applicants to the H2020 Programme: Marie Skłodowska-Curie Actions - Innovative Training Networks (ITN).

REQUIREMENTS:

- Experience in numerical solution of differential equations, and acoustics.
- Programming skills in object oriented languages as well as Python.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.

Instituto Tecnolóxico de Matemática Industrial.

www.itmati.com
Eif. Instituto Investigaciones Tecnológicas, planta-1
Rúa de Constantino Cardenal s/n
15782 Campus Vigo / Santiago de Compostela
itmati@itmati.com | Tel.: +34 881 813 317
Co-funded by the Horizon 2020 programme of the European Union

Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modelling and simulation in engineering applications, and personal ambition.

Excellent command of English, together with good academic writing and presentation skills.

MERITS AND REQUIREMENTS TO BE ASSESSED:

Training according candidates profile and requirements: 40 points, all contributions must be documented.

Knowledge and specific experience according requirements: 35 points, all contributions must be documented.

Personal interview: 25 points. Candidates achieving the best assessments according to the above criteria will be called to a personal interview in which letters of recommendation to their application will be considered. At least the three most highly valued candidates will be interviewed.

CONDITIONS: A contract will be carried out for the specific project or service.

The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country specific deductions as well as individual factors and will be confirmed upon appointment.

Gross monthly salary: the gross monthly salary result from deducting all compulsory employer social security contributions will be €2,241.20 € in 12 payments, in accordance with current Spanish legislation. This amount will be increased with the corresponding mobility allowance, and the family allowance depending of the family status of the researcher recruited.

Starting date: 1st of March 2018, subject to the granting of funds to carry out the project.

End date: February 28th, 2021, whenever the project availability allows.

Full-time position.

WORKPLACE: Technological Institute for Industrial Mathematics (ITMATI), Campus Vida of the Universidad de Santiago de Compostela, Santiago de Compostela (Spain). The PhD candidate will spend secondments for technical and scientific training at Microutown (Netherlands).

SUBMISSION OF APPLICATIONS:

People interested in this contract must send their applications by November 30, 2017. Application should include a motivation letter, a cover letter summarizing the applicant's career (general training and experience to be assessed, as well as additional merits referred to in the call), a detailed CV (with mobile phone and email), certificates, list of MSc courses and grades, copy of the master thesis, letters of recommendation to their application, etc. Applicants, that apply for more than one individual research project of the European Innovative Training Network ROMSOC, should indicate the order of preference (e.g., 1st, 2nd and 3rd choice).

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. Any qualified, handicapped applicants will be preferred.

All documentation must be sent to the following email address: itmati@itmati.com, indicating the job offer reference ITMATI-OT-18/2017-ROMSOC-ESR02 in the "subject" of the email. The receipt of requests will be confirmed by email.

EVALUATION COMMITTEE: Submitted applications will be evaluated by an Evaluation Committee appointed for the purpose of this call. The Evaluation Committee will be published at the end of the evaluation period jointly with the call resolution.

DEADLINES AND RESOLUTION:

Reception of applications: until November 30, 2017.

Evaluation of applications and personal interviews: from 1st to 22nd December 2017.

Resolution of the call: December 2017.

WAITING LIST:

After the resolution of this call, candidates who have not been selected but meet the requirements laid down therein will automatically become part of a "waiting list" for this call in order of merit, according to the requirements established in the call. This "waiting list" will be published the same day as the resolution of the call, and will remain in force during the full project lifetime. If it deems it appropriate, the Evaluation Committee of this call may make use of the "waiting list" provided that any researcher leaves the project voluntarily, and for the entire project duration.

All information on this call, as well as its resolution, will be published on the ITMATI website:

http://www.itmati.com/

Peregrina Quintela Estève
Director of ITMATI
Appointment of the Evaluation Committee for the ITMATI-OT-18/2017 / ROMSOC-ESR02 Position

As endorsed by the Executive Committee of ITMATI, which met in Ordinary Session on November 17, 2017, we shall proceed to the appointment of the Evaluation Committee for the ITMATI-OT-18/2017 / ROMSOC-ESR02 position. The Evaluation Committee will be constituted by the following members:

President of the Committee:

- **Mr. Andrés Prieto Aneiros**, Profesor of Applied Mathematics of the University of A Coruña and affiliated researcher of ITMATI.

Member of the Committee:

- **Mr. Daniel Fernández Comesaña**, R&D Manager in Microflown Technologies

Secretary:

- **Mrs. Raluca Tomoni**, as a member of ITMATI Transfer Management Unit.


Sgd.: Peregrina Quintela Estévez
Director of ITMATI
Open Early Stage Researcher/PhD Position at INRIA, France, as part of

European Innovative Training Network

Reduced Order Modelling, Simulation and Optimization of Coupled systems

(ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at INRIA:

FreeForm Optics applications of Optimal Transport Solvers

Reference number: ROMSOC-ESR03

Supervision


Localisation and status

The ESR will be half time based between the MOKAPLAN group at INRIA-Paris and Philips Lighting-Eindhoven. He will be employed by INRIA, Paris and registered as a PhD student in applied Math. in the doctoral school of Université Paris Dauphine.

Scientific context

FreeForm Optics (FFO) is the branch of Optics concerned with the design of non-conventional asymmetric refractive and reflective optical elements (OE) or systems of such elements. This research is important to improve the energy efficiency of lighting devices and reduce light pollution (for example of street lighting). A classic application of FFO (amongst many) is the irradiance tailoring problem: design an optical system transferring a given light source emittance (e.g. a car headlight bulb) to a prescribed irregular target irradiance (e.g. the angular far field distribution of projected light). The FFO design at the industrial level has remained so far largely heuristic. On the academic side, two classes (collimated or point source illuminance) of idealised tailoring irradiance problems can be exactly modelled and solved using Optimal Transport (OT) theory. OT defines a unique map or a coupling between prescribed distributions representing given illuminance and irradiance. This map can then be used to construct the OE shape. Recent advances in OT numerical solvers allow to tackle systems described by millions of degrees of freedom. This offers a sound mathematical and numerical background to FFO.

Challenges

1) OT modeling cannot be directly used for systems of OE involving multiple reflectors/lenses, 2) The collimated or point source illuminance hypothesis is not compatible with the use of LED light source technology and the current miniaturization trend. The size of the light source is too large compared to be considered as a far field point source for the reflector part of the OE. The OT theory and solvers again cannot directly be used.

Proposed research program

In the first challenge we propose to use the very efficient Sinkhorn algorithm for OT problems (including Multi-Marginal OT). This method doesn’t give the optical map, but only an approximation. We need to devise a robust method to construct the OE from it. Sinkhorn algorithm solves an optimality systems for the OT variational problem. It can be formally modified to treat the extended source problem. As a first step a semi-extended source could be used. The mathematical and numerical analysis of this new system is fully open. For the second challenge we propose to start with a simple lens system. In case a single lens surface is free-form the OT modeling can be used directly. However, if both lens surfaces are free-form the current OT modeling is not directly applicable. We envision two approach. In the first there is an intermediate light distribution described between the two surfaces. In this case the OT modeling can be applied to both surfaces independently, although for the second surface a more generalized approach needs to be developed. In this more general approach the virtual source for the second surface is a semi-extended source from the first challenge. In the second approach we will introduce multi-marginal OT formulation where unknown intermediate illuminance/irradiance distributions between single elements of the system are also unknown.

Depending on the profile of the ESR, the research may involve all or part of the following fields: mathematical analysis - numerical analysis - coding/testing algorithm - numerical simulation and testing of OE

A few relevant papers


Requirements:

- Master degree (or equivalent) in Applied Mathematics or Optical Engineering
- Excellent Programming skills.
- Optional : Familiarity with convex analysis, calculus of variation and non linear optimization techniques.
- Strong interest in interdisciplinary scientific work.

Supervision


Localisation and status

The ESR will be half time based between the MOKAPLAN group at INRIA-Paris and Philips Lighting-Eindhoven. He will be employed by INRIA, Paris and registered as a PhD student in applied Math. in the doctoral school of Université Paris Dauphine.

Scientific context

FreeForm Optics (FFO) is the branch of Optics concerned with the design of non-conventional asymmetric refractive and reflective optical elements (OE) or systems of such elements. This research is important to improve the energy efficiency of lighting devices and reduce light pollution (for example of street lighting). A classic application of FFO (amongst many) is the irradiance tailoring problem: design an optical system transferring a given light source emittance (e.g. a car headlight bulb) to a prescribed irregular target irradiance (e.g. the angular far field distribution of projected light). The FFO design at the industrial level has remained so far largely heuristic. On the academic side, two classes (collimated or point source illuminance) of idealised tailoring irradiance problems can be exactly modelled and solved using Optimal Transport (OT) theory. OT defines a unique map or a coupling between prescribed distributions representing given illuminance and irradiance. This map can then be used to construct the OE shape. Recent advances in OT numerical solvers allow to tackle systems described by millions of degrees of freedom. This offers a sound mathematical and numerical background to FFO.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Excellent command of English, together with good academic writing and presentation skills.

Starting Date: 1st of March 2018
Contract: Full-time contract for 36 months
Host institution: INRIA, Paris, France
Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country-specific deductions as well as individual factors and will be confirmed upon appointment.

Information/Contact:
Dr. Jean-David Benamou (Primary Supervisor)
Prof. dr. ir. Wilbert IJzerman (Secondary Supervisor)
Email: Jean-David.Benamou@inria.fr, Wilbert.Ijzerman@philips.com

Application:
Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be sent to Jean-David.Benamou@inria.fr, Wilbert.Ijzerman@philips.com
Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

DEADLINE 30.11.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.

Eligibility: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in France for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.
ITN ROMSOC Open ESR Position (ESR04) 2017/11/06

Open Early Stage Researcher/PhD Position at University of Bremen, Department of Mathematics & Computer Sciences, Germany, as part of European Innovative Training Network

*Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)*

1 full ESR/PhD Position, TV-L 13, reference number A266/17 / ROMSOC-ESR04
- under the condition of job release-

The employment is fixed-term and governed by the Act of Academic Fixed-Term Contract (Wissenschaftszeitvertragsgesetz - WissZeitVG). Therefore, candidates may only be considered for appointment if they still have the respective qualification periods available in accordance with §2 (1) WissZeitVG.

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at University of Bremen, Department of Mathematics & Computer Sciences:

Data driven model adaptations of coil sensitivities in MR systems.
Reference number: ROMSOC-ESR04

We are looking for a mathematician interested in machine learning for the following application: Magnetic particle imaging (MPI) is an evolving MR (magnetic resonance) technology aiming at non-radiative, non-invasive imaging of functional parameters such as blood flow or targeted metabolic processes. In particular, reconstruction quality is limited due to the restricted approximation quality of PDE-based models. Data-driven approaches, based on neural networks and deep learning, would allow to incorporate expert information obtained from experimental measurements and to improve diagnostic potential of MPI technology. The PhD candidate shall analyze limitations of PDE-based models (Maxwell and derived models) for coil sensitivities. The work comprises development of concepts for data-driven operator adaptations under efficiency constraints as well as the implementation of deep-learning methods for model adaptation. The PhD candidate will spend secondments for technical and scientific training at SagivTech Ltd. (Israel). The PhD degree will be awarded by University of Bremen, Germany.

Requirements:
- Master degree (or equivalent) in Mathematics, Industrial Mathematics, Scientific Computing or other related disciplines.
- Experience in numerical simulation of complex systems.
- General programming skills.

The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract.

Starting Date: 1st of March 2018
Contract: Full-time contract for 36 months (18 months at each hosting institution)
Host institution: University of Bremen, Department of Mathematics & Computer Sciences, Bremen, Germany
Salary: The position is funded by the European Commission with a salary 100% TV-L 13 linked to the German system.
Information/Contact: Prof. Dr. Peter Maass (Primary Supervisor)
Email: pmaass@uni-bremen.de
Application: Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to pmaass@uni-bremen.de

Eligibility: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract.

DEADLINE 30.11.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred. Applicants with a migration background are welcome.
Open Early Stage Researcher/PhD Position at Bergische Universität Wuppertal, Germany, and ST Microelectronics, Italy, as part of

European Innovative Training Network
Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska-Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at Bergische Universität Wuppertal and ST Microelectronics:

### Coupling of Model Order Reduction and Multirate Techniques for coupled heterogeneous time-dependent systems in an industrial optimization flow
Reference number: ROMSOC-ESR05

In industrial circuit and device simulation, e.g. for estimating failure probabilities due to aging, simulation problems have to be run many times in the loop of an optimization flow. This can only be done by drastically reducing simulation costs via model order reduction (MOR). This is particularly challenging in the case of coupled systems when using various simulation packages for the different subcomponents and physical domains. For efficiency, MOR and multirate error estimates have to be linked to define overall error estimates, balanced to the accuracy requirements of the iteration level of the optimization flow. Consequently, the PhD candidate has to combine advanced concepts of MOR, multirate techniques on hierarchies of submodels and manifold mapping techniques such that the overall properties of the system (such as passivity, energy conservation etc.) and stability of the dynamic iteration process are preserved:

- Generation and analysis of test sets of coupled heterogeneous systems used in the optimization flow of ST Microelectronics
- New MOR techniques for hierarchies of subcomponent systems preserving stability of dynamic iteration schemes.
- Error estimates based on MOR and multirate error estimates allowing for adaptivity of the optimization flow.
- Implementation and validation of software of new techniques for test sets of industrial partners.

The PhD candidate will spend secondments for technical and scientific training at ST Microelectronics (Italy). The PhD degree will be awarded by Bergische Universität Wuppertal, Germany.

### Requirements:
- Master degree (or equivalent) in Mathematics, Mathematical Engineering, Scientific Computing or other related disciplines.
- Experience in numerical analysis of time-dependent differential equations, model order reduction and/or multirate schemes, coupled heterogeneous modeling.
- Programming skills in object oriented languages as well as Python/Matlab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.

Eligibility:
- Master degree. No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.

### Starting Date:
1st of March 2018

### Application:
Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to guenther@uni-wuppertal.de

Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

**DEADLINE 30.11.2017**

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.
Technische Universität Berlin offers an open position:

**Research Assistant - salary grade E13 TV-L Berliner Hochschulen**

part-time employment may be possible

**ROMSOC (Reduced Order Modelling, Simulation and Optimization of Coupled Systems)** is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Sklodowska Curie actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven early stage researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at Technische Universität Berlin and MathConsult GmbH.

- **Model order reduction for parametric high dimensional models in the analysis of financial risk. Reference number: ROMSOC-ESR06**

In Computational Finance potential developments of assets and/or liabilities are usually modeled via Monte Carlo simulation of the underlying risk factors. For the valuation of financial instruments, however, techniques based on discretized convection-diffusion-reaction PDEs are often superior. The solution of these high-dimensional problems requires sparse representations in tensor formats and an adaptation of the iterative solvers to this format.

**Faculty II - Institute of Mathematics / Numerical Mathematics, Differential Equations**

Reference number: II-622/17 (starting at 01/03/18 / until 31 August 2019 / closing date for applications 01/12/17)

**Working field:** The PhD candidate shall develop hierarchical tensor representations MC and PDE methods arising in the valuation of financial risk. The work comprises development of model order reduction methods for high-dimensional systems in tensor format, the development of error estimates in model hierarchy and the implementation of efficient algorithms. The PhD candidate will spend secondments for technical and scientific training at MathConsults (Austria). PhD thesis preparation is possible.

**Requirements:**

- Successfully completed university degree (Master, Diplom or equivalent) in Mathematics, Mathematical Engineering, Mathematical Economics, Scientific Computing or other related disciplines
- Experience in numerical solution of differential equations, tensor analysis, and model order reduction
- Programming skills in object oriented languages as well as Python/Matlab
- Strong interest in interdisciplinary scientific work
- Ability to work independently and as part of a team
- Strong motivation to pursue a PhD degree
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering applications, and personal ambition
- Excellent command of English, together with good academic writing and presentation skills

The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. Master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.

Please send your written application with the reference number and the usual documents (in particular motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter) to Technische Universität Berlin - Der Präsident - Fakultät II, Institut für Mathematik, AG Modellierung, Numerik, Differentialgleichungen, Prof. Dr. Volker Mehrmann, Sekr. MA 4-5, Straße des 17. Juni 136, 10623 Berlin or by e-mail to mehrmann@math.tu-berlin.de.

To ensure equal opportunities between women and men, applications by women with the required qualifications are explicitly desired.

Qualified individuals with disabilities will be favored.

Please send copies only. Original documents will not be returned.

The vacancy is also available on the internet at http://www.personalabteilung.tu-berlin.de/menue/jobs/
Open Early Stage Researcher/PhD Position at FAU Erlangen-Nürnberg, Germany, as part of European Innovative Training Network Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at FAU Erlangen-Nürnberg:

Integrated Optimization of International Transportation Networks.

Reference number: ROMSOC-ESR07

Transportation networks have an increasing share of border-crossing services. The conditions to implement such services are often different in neighbouring countries. For resource planning, this may make it necessary to change between resources at the border. In the case of railway networks, for example, this might apply to different electricity systems which require a change of locomotive, different track gauges which require suitable wagons, or labour agreements as well as different technical skills which might require staff changes. The challenge is to provide decision makers with suggestions on how to find optimal resource allocations to deal with these differing regulations in the best possible way. Ideally, it is also possible to make suggestions for additional investments into more flexible resources, such as locomotives that are suited for different electricity systems or training of employees.

The PhD candidate shall develop mixed-integer optimization models for the above problem setting of an optimal resource allocation and investment for border-crossing transport services, focussing on a suitably chosen subset of resources to plan. The optimization models should form a hierarchy in the sense that they represent the given problem in different levels of detail, for example with respect to the planning horizon (strategic, tactical or operational view), or with respect to time and space resolution. This enables the development of solution algorithms based on adaptive refinement or suitable decomposition approaches based on Benders decomposition, for example. The mathematical work on these models will then focus on structural analysis, for example identifying combinatorial subproblems or drawing upon graph theory and polyhedral analysis. Data uncertainties, for example in demand forecasts or in the form of delays, might require robust or stochastic model extensions. The PhD candidate will spend secondments for technical and scientific training at DB Cargo Polska in Zabrze, Poland. The PhD degree will be awarded by FAU Erlangen-Nürnberg, Germany.

Requirements:
- Master degree (or equivalent) in Mathematics, Mathematical Engineering, Mathematical Economics or Computer Science.
- Experience in modelling, model analysis and algorithm development in mixed-integer optimization, combinatorial optimization and (optionally) optimization under uncertainties.
- Experience with state-of-the-art mixed-integer programming solvers, such as Gurobi and CPLEX.
- Programming skills Python and (optionally) in Java or C++.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), a background in the modelling of transportation systems and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

Starting Date: 1st of March 2018
Contract: Full-time contract for 36 month
Host institution: FAU Erlangen-Nürnberg, Erlangen, Germany
Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country-specific deductions as well as individual factors and will be confirmed upon appointment.
Information/Contact: Prof. Dr. Alexander Martin (Primary Supervisor)
Email: Alexander.Martin@fau.de
Application: Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc.) with indication of the position reference number should be send to Alexander.Martin@fau.de
Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

DEADLINE 30.11.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred. Upon request of the applicant, the equal rights representative can be included in the interview without any disadvantages for the applicant.

Eligibility: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.
WORKING OBJECTIVES: Present and future efforts in simulation-based sciences are dedicated to hierarchies of complex multi-physics problems, as well as parameterized systems characterized by multiple spatial and temporal scales. New ROM methodologies are required for coupled and parameterized problems in industrial and medical sciences. This concerns in particular fluid-structure interactions and thermo-fluid-dynamics and the use of these reduced models for fluid-thermal phenomena.

Objectives:
(i) The numerical simulation of the evolution of the fluid will be carried out using a turbulence and multi-phase model. A transport passive scalar phenomenon will also be modelled in the problem.
(ii) Modelling and simulation of 3D thermal-fluid-structure phenomena.
(iii) Numerical simulation will be performed on free or commercial software packages of proven quality.
(iv) Reduced order modelling (computational, geometrical and parametric) for hierarchies of coupled multi-physics problems.
(v) Construction of test cases and carrying out numerical experiments.

Expected Results:
(ii) Error estimators for such coupled systems.
(iii) Computational model reduction software.

PRINCIPAL INVESTIGATOR: Dr Peregrina Quintela Estèvez (Primary Supervisor), Professor of Applied Mathematics of the University of Santiago de Compostela and affiliate researcher of ITMATI.

CANDIDATES PROFILE: Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry.

ELIGIBILITY: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining
refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative. More details can be found in the Guide for Applicants to the H2020 Programme Marie Skłodowska-Curie Actions - Innovative Training Networks (ITN).

**REQUIREMENTS:**

- Experience in numerical solution of differential equations, tensor analysis, and model order reduction.
- Programming skills in object-oriented languages as well as Python/Maplab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modelling and simulation in engineering applications, and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

**MERITS AND REQUIREMENTS TO BE ASSESSED:**

- Training according candidates profile and requirements: 40 points, all contributions must be documented.
- Knowledge and specific experience according requirements: 35 points, all contributions must be documented.
- Personal interview: 25 points. Candidates achieving the best assessments according to the above criteria will be called to a personal interview in which letters of recommendation to their application will be considered. At least the three most highly valued candidates will be interviewed.

**CONDITIONS:** A contract will be carried out for the specific project or service.

- The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country specific deductions as well as individual factors and will be confirmed upon appointment.

**Gross monthly salary:** the gross monthly salary result from deducting all compulsory employer social security contributions will be 2,241.20 € in 12 payments, in accordance with current Spanish legislation. This amount will be increased with the corresponding mobility allowance, and the family allowance depending of the family status of the researcher recruited.

**Starting date:** 1st of March 2018, subject to the granting of funds to carry out the project.

**End date:** February 28th, 2021, whenever the project availability allows.

**Full time position.**

**WORKPLACE:** Technological Institute for Industrial Mathematics (ITMATH), Campus Vida of the Universidad de Santiago de Compostela, Santiago de Compostela (Spain). The PhD candidate will spend secondments for technical and scientific training at Daniele Officine Meccaniche SPA (Italy) and SISSA, International School for Advanced Studies, Trieste (Italy).

**SUBMISSION OF APPLICATIONS:**

People interested in this contract must send their applications by November 30, 2017. Application should include a motivation letter, a cover letter summarizing the applicant’s career (general training and experience to be assessed, as well as additional merits referred to in the call), a detailed CV (with mobile phone and email), certificates, list of MSc courses and grades, copy of the master thesis, letters of recommendation to their application, etc. Applicants that apply for more than one individual research project of the European Innovative Training Network ROMSOC, should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred. All documentation must be sent to the following email address itmati@itmati.com, indicating the job offer reference ITMATI-OI-19/2017/ROMSOC-ESR08 in the “subject” of the email. The receipt of requests will be confirmed by email.

**EVALUATION COMMITTEE:** Submitted applications will be evaluated by an Evaluation Committee appointed for the purpose of this call. The Evaluation Committee will be published at the end of the evaluation period jointly with the call resolution.

**DEADLINES AND RESOLUTION:**

**Reception of applications:** until November 30, 2017.

**Evaluation of applications and personal interviews:** from 1st to 22nd December 2017.

**Resolution of the call:** December 2017.
WAITING LIST:
After the resolution of this call, candidates who have not been selected but meet the requirements laid down therein will automatically become part of a "waiting list" for this call in order of merit, according to the requirements established in the call. This "waiting list" will be published the same day as the resolution of the call, and will remain in force during the full project lifetime. If it deems it appropriate, the Evaluation Committee of this call may make use of the "waiting list" provided that any researcher leaves the project voluntarily, and for the entire project duration.

All information on this call, as well as its resolution, will be published on the ITMATI website:
http://www.itmati.com/

Peregrina Quintela Estévez
Director of ITMATI

Instituto Tecnológico
de Matemática Industrial

www.itmati.com
EDT. Instituto de Investigaciones Tecnológicas, planta-1
Rúa de Constantino Cardenal Ximénez
15782 Campus Vigo / Santiago de Compostela
itmati@itmati.com / Tel.: +34 881 933 537

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Appointment of the Evaluation Committee for the ITMATI-OT-19/2017 / ROMSOC-ESR08 Position

As endorsed by the Executive Committee of ITMATI, which met in Ordinary Session on November 17, 2017, we shall proceed to the appointment of the Evaluation Committee for the ITMATI-OT-19/2017 / ROMSOC-ESR08 position. The Evaluation Committee will be constituted by the following members:

President of the Committee:

Mrs. Peregrina Quintela Estévez, Profesor of Applied Mathematics of the University of Santiago de Compostela and Director of ITMATI.

Member of the Committee:

Mrs. Patricia Barral Rodiño, Associate Professor of Applied Mathematics in the Universidade de Santiago de Compostela and Affiliated Researcher of ITMATI

Mr. Gianfranco Marconi, Director of Danieli Research Center

Mr. Gianluigi Rozza, Associate Professor with Tenure in Numerical Analysis and Scientific Computing at SISSA mathLab

Secretary:

Mrs. Raluca Tomoni, as a member of ITMATI Transfer Management Unit.

Santiago de Compostela, on December 20, 2017.

Sgd.: Peregrina Quintela Estévez
Director of ITMATI
MERITS AND REQUIREMENTS TO BE ASSESSED:

- Training according candidates profile and requirements: *40 points, all contributions must be documented.*

Taking into account the Candidates Profile in the Job Offer:

**CANDIDATES PROFILE:** Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry.

The proposed distribution of the 40 points is as follows:

- Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines: Up to 10 points are evaluated. If the Master degree is not one of the indicated, and neither its program of Bachelor nor the Master do not include advanced applied Mathematics training and has no training in solid or fluid mechanics, it is scored the half (5 points).
- The GPA of the student’s Bachelor up to 10 points according the percentage with respect the maximum grade in its university.
- The GPA of the student’s MSc up to 10 points according the percentage with respect the maximum grade in its university.
- Training in partial differential equations (PDEs), numerical methods to solve PDEs, mathematical modelling of thermomechanical problems, reduced order methods, Solid Mechanics and Fluid Mechanics (2 point each one, up to 10 points).

- Knowledge and specific experience according requirements: *35 points, all contributions must be documented.*

According the specification of the Job Offer:

- Experience in numerical solution of differential equations, tensor analysis, and model order reduction: up to 10 points.
- Programming skills in object oriented languages as well as Python/Matlab: up to 5 points.
- Strong interest in interdisciplinary scientific work: up to 2 points.
- Ability to work independently and as part of a team: up to 2 points.
- Strong motivation to pursue a PhD degree: up to 2 points.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modelling and simulation in engineering applications, and personal ambition: up to 5 points.
- Excellent command of English, together with good academic writing and presentation skills: up to 9 points.

- Personal interview: *25 points.* Candidates achieving the best assessments according to the above criteria will be called to a personal interview in which letters of recommendation to their application will be considered. At least the three most highly valued candidates will be interviewed.
CALL FOR ITMATI RESEARCHER RECRUITMENT

OPEN EARLY STAGE RESEARCHER/PHD POSITION

PROJECT: European Innovative Training Network Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC).

TYPE OF PROJECT: The ROMSOC project has received funding from the European Union’s Horizon 2020 research and innovation programme under the Marie-Skłodowska-Curie grant agreement No 765374.

OBJECTIVES OF PROJECT: ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme.

The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

JOB OFFER REFERENCE: ITMATI-OT-04/2018/ROMSOC-ESR08.

CALL: Open Early Stage Researcher/PhD Position at Consorcio Instituto Tecnolóxico de Matemática Industrial (ITMATI), Santiago de Compostela, Spain.

DESCRIPTION OF JOB POSITION: 1 full-time contract for 36 months as PhD position for the ROMSOC project, ESR-08. The PhD degree will be awarded by University of Santiago de Compostela, Spain.

WORKING TITLE: Efficient Computational strategies for complex coupled flow, thermal and structural phenomena in parametrized settings.

WORKING OBJECTIVES: Present and future efforts in simulation-based sciences are dedicated to hierarchies of complex multi-physics problems, as well as parameterized systems characterized by multiple spatial and temporal scales. New ROM methodologies are required for coupled and parameterized problems in industrial and medical sciences. This concerns in particular fluid-structure interactions and thermo-fluid-dynamics and the use of these reduced models for Fluid-thermal phenomena.

Objectives:
(i) The numerical simulation of the evolution of the fluid will be carried out using a turbulence and multi-phase model. A transport passive scalar phenomenon will also be modelled in the problem.
(iii) Numerical simulation will be performed on free or commercial software packages of proven quality.
(iv) Reduced order modelling (computational, geometrical and parametric) for hierarchies of coupled multi-physics problems.
(v) Construction of test cases and carrying out numerical experiments.

Expected Results:
(ii) Error estimators for such coupled systems.
(iii) Computational model reduction software.

PRINCIPAL INVESTIGATOR: Dr Peregrina Quintela Estévez (Primary Supervisor), Professor of Applied Mathematics of the University of Santiago de Compostela and affiliated researcher of ITMATI.

CANDIDATES PROFILE: Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectorial training in scientific and transferable skills by distinguished leaders from academia and industry.

ELIGIBILITY: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in the host country for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory
national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfil the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract.

The starting date for each position is tentative. More details can be found in the Guide for Applicants to the H2020 Programme Marie Skłodowska-Curie Actions - Innovative Training Networks (ITN).

REQUIREMENTS:

- Experience in numerical solution of differential equations, tensor analysis, and model order reduction.
- Programming skills in object oriented languages as well as Python/Matlab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modelling and simulation in engineering applications, and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

MERITS AND REQUIREMENTS TO BE ASSESSED:

- Training according candidates profile and requirements: 40 points, all contributions must be documented.
- Knowledge and specific experience according requirements: 35 points, all contributions must be documented.
- Personal interview: 25 points. Candidates achieving the best assessments according to the above criteria will be called to a personal interview in which letters of recommendation to their application will be considered. At least the three most highly valued candidates will be interviewed.

CONDITIONS: A contract will be carried out for the specific project or service.

- The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country specific deductions as well as individual factors and will be confirmed upon appointment.
- Gross monthly salary: the gross monthly salary result from deducting all compulsory employer social security contributions will be 2,241.20 € in 12 payments, in accordance with current Spanish legislation. This amount will be increased with the corresponding mobility allowance, and the family allowance depending of the family status of the researcher recruited.
- Starting date: 1st of April 2018, subject to the granting of funds to carry out the project.
- End date: March 31st, 2021, whenever the project availability allows.
- Full time position.

WORKPLACE: Technological Institute for Industrial Mathematics (ITMTI), Campus Vida of the Universidade de Santiago de Compostela, Santiago de Compostela (Spain). The PhD candidate will spend secondments for technical and scientific training at Danieli Officine Meccaniche SPA (Italy) and SISSA, International School for Advanced Studies, Trieste (Italy).

SUBMISSION OF APPLICATIONS:

People interested in this contract must send their applications by March 18, 2018. Application should include a motivation letter, a cover letter summarizing the applicant’s career (general training and experience to be assessed, as well as additional merits referred to in the call), a detailed CV (with mobile phone and email), certificates, list of MSc courses and grades, copy of the master thesis, letters of recommendation to their application, etc. Applicants, that apply for more than one individual research project of the European Innovative Training Network ROMSOC, should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.

All documentation must be sent to the following email address itmati@itmati.com, indicating the job offer reference ITMATI-OT-04/2018/ROMSOC-ESR08 in the “subject” of the email. The receipt of requests will be confirmed by email.

EVALUATION COMMITTEE: Submitted applications will be evaluated by an Evaluation Committee appointed for the purpose of this call. The Evaluation Committee will be published at the end of the evaluation period jointly with the call resolution.
DEADLINES AND RESOLUTION:
Reception of applications: until March 18, 2018.
Evaluation of applications and personal interviews: from 19th to 28th March 2018.
Resolution of the call: March 2018.

WAITING LIST:
After the resolution of this call, candidates who have not been selected but meet the requirements laid down therein will automatically become part of a "waiting list" for this call in order of merit, according to the requirements established in the call. This "waiting list" will be published the same day as the resolution of the call, and will remain in force during the full project lifetime. If it deems it appropriate, the Evaluation Committee of this call may make use of the "waiting list" provided that any researcher leaves the project voluntarily, and for the entire project duration.

All information on this call, as well as its resolution, will be published on the ITMATI website:
http://www.itmati.com/
Appointment of the Evaluation Committee for the ITMATI-OT-04/2018 / ROMSOC-ESR08 Position

As endorsed by the Executive Committee of ITMATI, which met in Ordinary Session on November 17, 2017, we shall proceed to the appointment of the Evaluation Committee for the ITMATI-OT-04/2018 / ROMSOC-ESR08 position. The Evaluation Committee will be constituted by the following members:

**President of the Committee:**

- Mrs. Peregrina Quintela Estévez, Profesor of Applied Mathematics of the University of Santiago de Compostela and Director of ITMATI.

**Member of the Committee:**

- Mrs. Patricia Barral Rodiño, Associate Professor of Applied Mathematics in the Universidade de Santiago de Compostela and Affiliated Researcher of ITMATI
- Mr. Gianfranco Marconi, Director of Danieli Research Center
- Mr. Gianluigi Rozza, Associate Professor with Tenure in Numerical Analysis and Scientific Computing at SISSA mathLab

**Secretary:**

- Mrs. Raluca Tomoni, as a member of ITMATI Transfer Management Unit.

Santiago de Compostela, on February 16, 2018.

Sgd.: Peregrina Quintela Estévez
Director of ITMATI
CALL FOR APPLICATIONS FOR THE AWARD OF TEMPORARY RESEARCH FELLOWSHIPS FOR RESEARCH ACTIVITY UOR DMAT

**Article 1**

**Subject:**
A public call for applications is issued for the award of 1 (one) temporary research fellowships for research activities pursuant to the “Regulations for the award of temporary research fellowships for research activities in independently funded research programmes”, issued with Rectoral Decree no. 667/AG (28 February 2011), as modified with R.D. no. 3398/AG - 29 July 2016, for 36 (thirty six) months in the Department of Mathematics as part of the research programme called:

“Numerical simulations and reduced models of the fluid-structure interaction arising in blood pumps based on wave membranes”

(This project has received funding from the European Union’s Horizon 2020 Research and Innovation Program under the Marie Sklodowska-Curie Grant Agreement No 765374 European Innovative Training Network - Reduced Order Modelling, Simulation and Optimization of Coupled systems - ROMSOC)

The above mentioned research programme will be carried out as described in the annexes to this call for applications.

**Article 2**

**Scientific Supervisor**

The proposing professor, Scientific Supervisor of the research program, is Prof. Christian Vergara.

**Article 3**

**Participation requirements**

A) To be included in the selection process, applicants are required to have a "Laurea Magistrale" (corresponding to a Master of Science) in LM-44 – Mathematical modelling for engineering; or LM-20 – Aerospace and aeronautic engineering; or LM-21 – Biomedical engineering; or LM-40 Mathematics or equivalent degrees ex lege or other possible academic qualifications that have been considered equipollent ex lege to the corresponding degrees of the old Italian university system.

Interministerial Decree 9.7.2009 regarding the equivalence of degrees awarded in the old Italian university system, “lauree specialistiche” and “lauree magistrali” (corresponding to a Master of Science) is available at the link below:

http://attiministeriali.miur.it/UserFiles/3160.pdf

The Interministerial Decree that establish the equipollence of Italian academic titles applied to participation in public calls for applications are available at the link below:

http://hubmiur.pubblica.istruzione.it/web/universita/equipollenze-ittoli

If the academic qualification(s) listed above have been awarded abroad (in countries other than Italy), said qualification(s) must be included in that country’s university system and must have been awarded by an institute that is officially included in the country’s university system. For purposes solely related to the selection, said qualification(s) must be equivalent by nature, level and correspondence of study subjects to the Italian academic qualification(s) listed above. With reference to the “Laurea Magistrale” indicated in the previous paragraph (corresponding to a Master of Science), when it has been obtained abroad, it shall allow the enrolment in a PhD course in Italy.

The Head of the Department, where the research will be carried out, will establish the correspondence of study subjects.

Applicants must have obtained the required academic qualifications no later than the deadline for applications listed in article 5 or they will be excluded.

**B) According to the Guide for Applicants - Marie Sklodowska-Curie Actions - Innovative Training Networks (ITN) Call Identifier: H2020-MSCA-ITN-2016:**

- Shall, at the time of recruitment/starting date of the activities by the host organisation, be in the first four years (full-time equivalent research experience) of their research careers and not yet have been awarded a doctoral degree. Full-Time Equivalent Research Experience is measured from the date when a researcher obtained the MSc (or equivalent qualification) which would formally entitle him/her to embark on a doctorate in Italy.
- At the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the recruitment date/starting date of the activities. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.
- Applicants must work exclusively for the project during the employment contract.
- Applicants must fulfil the conditions to be admitted in the PhD programmeindicated in the job vacancy. These conditions must be fulfilled at the
starting date of the contract. The starting date for each position is tentative.

- Any nationality and gender is allowed to participate in the selection and transnational mobility availability is required for up to 50% of the duration of the contract even with non-academic partners.

**Article 4**  
**Application for participation**

For selection purposes, applicants must:
1) **complete every field in the application form**, according to the example available on the Politecnico di Milano’s web site together with the call: [http://www.polimi.it/en/work-with-us/research-collaborations/research-grants/?aa=2012](http://www.polimi.it/en/work-with-us/research-collaborations/research-grants/?aa=2012)  
   - date and sign the application.  
   - The Italian academic qualifications required for admission to this selection (as listed in art. 3 above) are declared directly in the application form, which is also a self-certification (declaration in lieu of certification and notarial deed pursuant to articles 46 and 47 of the D.P.R. no. 445/2000);  

2) **attach to the application:**
   - a professional, scientific CV, dated and signed, where applicants highlight
     - Experience in numerical solution of differential equations and, possibly, in fluid-structure interaction, model order reduction.
     - Experience in modeling biological systems.
     - Programming skills in object oriented languages as well as Python/Matlab;
   - the photocopy of a valid identification document;
   - the substitutive notary deed declaration stating that the applicant, at the time of the expected start of the activity indicated in the attachment to this call, is in the first four years of his research career, he/she has not been awarded a PhD and that he/she has not resided or carried out his/her main work or study activities in Italy for more than 12 months in the 3 years prior to the time of the expected start of the activity as indicated in the attachment to this call (Annex A);
   - a copy of the participation fee payment receipt (see below, article 6);
   - the self-certification concerning the additional qualifications that applicant deems useful for demonstrating his/her suitability for performing the research activities (Annex B - forms);
   - the original¹ or a copy authenticated by an Italian authority, of the academic qualification(s) obtained abroad (required at art. 3 above):
     - legalized² and accompanied by a certified (or sworn) translation into Italian or English;
     - with attached the diploma supplement, or the declaration of value ("dichiarazione di valore"), or the academic transcripts of the Master of Science required to participate in the selection³.

   In order to guarantee the largest participation in the procedure, candidates who, on submitting their application, cannot provide the academic qualification(s) obtained abroad as specified above, have to attach to their application a photocopy of the academic qualification(s) together with a translation in Italian or English; then, in case they will result winners of the selection procedure, they must deliver the academic qualification(s) as described above and as indicated at art. 12 below.

   - the originals or the photocopies of the other qualifications obtained abroad that the applicants consider useful for selection process;
   - the Master degree (originals, or true copies certified via declaration in lieu of notarial deed - Annex C – forms);

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¹ Please note that, according to art. 16 of this call, the documentation submitted by the candidates, will remain in the records of the Administration and will not be returned.

² Please note that in the countries that signed The Hague Convention on 5th October 1961 regarding the abolition of the legalization of public documents obtained abroad, the need to legalize documents issued by foreign institutes is replaced by another formality: the application of the “apostille” by a Competent Authority generally designated by the State on whose territory the public document has been executed.

   On the other hand, it is not mandatory to legalize qualifications or put the Hague Apostille if the qualification has been issued by one of the countries that ratified the Brussels Convention on 25th May 1987, or if the qualification has been issued by a German institution (Italian-German convention on the exemption of public documents from legalization).

   For information regarding how to get the requested documents, it’s recommended to contact Italian embassies/consulates in the country of the university which issued the qualification.

   Useful links: Ministero degli Affari Esteri e della Cooperazione Internazionale’s website [http://www.esteri.it/MAE/IT/Italiani_nel_Mondo/ServiziConsolari/TraduzioneLegalizzazioneDocumenti.htm?LANG=IT](http://www.esteri.it/MAE/IT/Italiani_nel_Mondo/ServiziConsolari/TraduzioneLegalizzazioneDocumenti.htm?LANG=IT); CIMEA’s website [http://www.cimea.it](http://www.cimea.it);  


³ The diploma supplement, the declaration of value ("dichiarazione di valore") and the academic transcripts are not required for the PhD.
i) no more than 5 scientific publications and/or certified scientific products (originals, or true copies certified via declaration in lieu of notarial deed - Annex C - forms);

l) a detailed list of all the documents annexed to the application (2 copies);

m) only for non-EU applicants who already have it: a copy of the permit to stay in Italy (or a copy of the request for such permit);

With regard to paragraphs 1) and 2) sections c), g) and h) above:

- non-EU applicants who at the time of request submission have a permit to stay in Italy (or have a receipt for the request for the permit), can use the above mentioned declarations in lieu of certification and/or notarial deed only for the statuses, personal qualities and facts that can be certified or stated by Italian state bodies, with the exception of special provisions contained in the laws and regulations governing immigration and the status of foreigner.

- non-EU applicants who at the time of request submission do not have a permit to stay in Italy, cannot use the above mentioned declarations in lieu of certification and/or notarial deed. They must supply:
  - the originals or copies authenticated by an Italian authority of the academic qualification(s) obtained in Italy and required for participating in the selection (article 3 above);
  - In order to guarantee the largest participation in the procedure, candidates who, on submitting their application, cannot provide the academic qualification(s) obtained in Italy as specified above, have to attach to their application a photocopy of the academic qualification(s); then, in case they will result winners of the selection procedure, they must deliver the academic qualification(s) as described above.

The delivery of the academic qualification(s) in original or copy authenticated by Italian authority is a necessary requirement for the start of the activity.

- the originals or the photocopies of all the other qualifications obtained in Italy.
- instead of referring to Annex A as in paragraph g) above, such candidates must declare that, at the time they applied, they are in the first four years (full-time equivalent research experience) of their research career, that they have not yet been awarded a doctoral degree and that they have net resided or carried out their main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the date of their application using Annex D to the application form and must therefore attach appropriate documentation (rental agreements, enrolment in study courses, etc.) to support the declarations.

The Administration reserves the right to perform random controls on the statements related to the qualifications (obtained in Italy or abroad) and on the submitted publications/scientific products.

**Article 5**

**Application submission terms and deadlines**

The application to the selection must be signed, dated and completed as shown in the sample form available on the web site of the Politecnico di Milano. It must be addressed to the Director General of Politecnico di Milano, P.zza L. da Vinci, 32 – 20133 Milano, and submitted no later than December, 5th 2017, under penalty of exclusion. Should that date be an Italian public holiday, the deadline will be the first working day after it.

Applications will be considered submitted on time if they are submitted in one of the ways described below:

- **by hand**, no later than the deadline listed above, to the “SPPA- Servizio Posta, Protocollo e Archivio” (Post Office, Electronic Recording and Archive Service) of Politecnico di Milano - Piazza Leonardo da Vinci, 32 - Milano - Mondays to Fridays, from 9.30 to 12.30 and from 13.30 to 16.00.

The application shall be delivered in a close envelope/package. On the envelope/package applicants must include the details of the call as listed below: “Admission Application – Temporary Research Fellowships – Procedure Code 2017/ASSEGNI_DMAT05-deadline 05/12/2017”

- **via registered letter with advice of receipt/courier**, no later than the deadline. The envelope must be addressed to Director General of Politecnico di Milano, P.zza L. da Vinci, 32 – 20133 Milano (for this purpose, the date of the postmark will be considered as proof).

On the envelope applicants must write the details of the call as listed below: “Admission Application – Temporary Research Fellowships – Procedure Code 2017/ASSEGNI_DMAT05-deadline 05/12/2017”

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4 Publications or texts accepted for publication can be considered for the assessment. The abstracts of scientific publications can be considered as well.

5 Online scientific publications are considered originals if the applicant provides the relevant web site address. In any case publications must be attached for assessment purposes.

6 Please note that, according to art. 16 of this call, the documentation submitted by the candidates, will remain in the records of the Administration and will not be returned.
via Certified E-mail Address (PEC) no later than the deadline, sent to the pecateneo@cert.polimi.it PEC address. Applicants must use their own certified e-mail address (PEC).

Submission is only permitted by other certified e-mail addresses (PEC); submissions made from an uncertified e-mail address will be disregarded.

The subject line of the certified e-mail must contain information on the call for applications as listed below: “Application – Temporary Research Fellowships – Procedure Code 2017/ASSEGNI_DMAT05-deadline 05/12/2017” The application and accompanying documentation must be submitted in a non-editable, portable, static format (preferably .pdf). They should not contain macros or executable code, and should not exceed 35 MB in size.

Applicants whose applications are submitted after the deadline will be automatically excluded from the selection process.

Article 6
Participation fee
Applicants must pay, within the deadline of the call, the participation fee of € 25,82 or they will be excluded from the selection process. The fee is non-refundable, regardless of the reason applicants are unable to participate. Payment must be remitted to “Agenzia 21” of Banca Popolare di Sondrio, Via Bonardi 4 - 20133 Milano, bank details:

IBAN IT34T056901620000001600X69
SWIFT POSOIT22


Article 7
Exclusion and loss of rights
Applicants are admitted to the selection process on condition. The Head of the Procedure can, at any time, exclude applicants from the selection and inform them of the fact via fax, registered letter with advice of receipt, telegram or P.E.C., for the reasons listed below:

- submission of the application after the deadline indicated in article 5 above;
- the application form was not submitted and signed;
- no scientific and professional curriculum vitae was supplied;
- no copy of a valid identification document was supplied;

The certified e-mail address system (PEC from the Italian acronym of Posta Elettronica Certificata) is an Italian e-mail system that ensures the sender of the actual delivery and receipt. Politecnico di Milano has a certified e-mail address (PEC) which can be contacted only by users in possession of a an Italian certified mail box (PEC).

An application submitted via the applicant’s personal Certified E-mail Address, is considered undersigned by the applicant at the time of submission.

- the participation fee was not paid;
- lack of the requirements set forth in Article 3 above;
- failure to submit at least a photocopy, together with a translation in Italian or English, of the academic qualification(s) obtained abroad and required at Article 3 above;
- for non-EU applicants who at the time of request submission do not have a permit to stay in Italy, failure to submit at least a photocopy of the academic qualification(s) obtained in Italy and required at Article 3 above;
- in the case the applicant cannot carry out research activity for the entire period stated in article 1 above, because the temporal limits set forth in art. 22, third paragraph or ninth paragraph of Italian law 240/2010, as completed by art. 6, paragraph 2bis of Italian Legislative Decree 192/2014, are exceeded;
- in the case of marriage, kinship or affinity, up to the fourth degree, or same-sex registered partnership (as per art. 1 of Law No. 76 of 20.05.2016), or cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with a Full professor and Associate professor belonging to the Department/Campus that issued this call for applications or with the Rector, or with the Director General or with a member of the Politecnico’s Board of Governors;
- any other violation of the provisions included in this call for applications.

Should the reasons for exclusion be determined after the selection process, the Head of the Procedure prescribes the loss of all rights resulting from participation in the selection. Similar loss of rights will be applied to applicants whose declarations, in the application form or in the declarations provided pursuant to Presidential Decree 445/2000, are false.

Article 8
Selection Committee
Applicants are selected by a Selection Committee. The Committee members, designated by the Head of the Department offering the position, are appointed by a Director General’s Decree, pursuant to article 4, paragraph 6 of the Regulations issued with R.D. no. 667/AG on 28 February 2011 as modified by R.D. no. 3398/AG issued on 29 July 2016.

Art. 22, third paragraph, of law 240/2010 establishes that “the total duration of the relationship established pursuant to this article, including renewals, cannot [...] be more than four years, with the exclusion of the period in which the fellowship overlapped with a PhD course, with the legal duration of that course as the upper limit”.

Art. 6, paragraph 2bis of D.L. 192/2014 establishes that “the total duration of the relationship established pursuant to art. 22 third paragraph, of law 240/2010 is extended for two years”. Art. 22, ninth paragraph, of law 240/2010 establishes that “the total duration of the relationship established pursuant to this article and the contracts listed in art. 24, which applies also to those established with other universities (state, private or long-distance universities) and the bodies listed in paragraph 1 of this article, with the same subject, cannot, in any case, last more than 12 years in all, regardless of whether they were continuous or not. For purposes related to the duration of the above mentioned relationship, periods of maternity and sick leave pursuant to the laws in force do not count.”
The Selection Committee normally includes the Scientific Supervisor and two other members who are either professors or researchers with experience in the research fields of this call. The Committee may also include Italian and foreign experts.

**Article 9**

**Selection procedure**

The Selection Committee selects the applicants by assigning up to 100 points, through the assessment of the applicants' academic qualifications and curriculum vitae and through an interview, held with the procedure established by the Committee, aimed at assessing the applicant's aptitude for research, according to the criteria listed below:

- possession of additional qualifications (other than the ones required for the participation in the selection) regarding topics relevant to the research programme, 10 points;
- tight relevance of the Master degree with the research programme of the fellowship, 30 points;
- no more than 5 publications/scientific products regarding topics relevant to the research programme, 5 points;
- participation in research activities that are relevant to the research programme, 5 points;
- interview aimed at assessing the applicant's aptitude for research, 50 points.

During the interview the Committee will also value:

- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Excellent command of English, together with good academic writing and presentation skills.
- The interview is passed with a minimum score of 35 points (corresponding to 7/10 of the interview score).

In the case of equal scores, the younger applicant will prevail.

**Article 10**

**Selection interview**

The interview, aiming at assessing the applicant's aptitude for research, will be held on 20/12/2017 at 10.00 a.m. in the Department of Mathematics of the Politecnico di Milano, Via E. Bonardi, 9 – Ed. 14 – 20133 Milano

To be admitted to the interview, applicants must have a valid identification document, i.e. an identity card, passport or driving licence.

Failure to attend the interview at the established time and venue or arrive late (regardless of the cause and even in case of force majeure) will be considered as a withdrawal from the participation in the selection.

This call for applications is notice of convocation for applicants.

Applicants who live or are resident outside Italy or who live or are resident more than 600 km from the selection venue, will be interviewed on 20/12/2017 at 10.00 using long-distance audio and video systems, on condition that their identity can be checked, and afterwards confirmed at the time the contract is entered. Applicants who wish to be interviewed that way must state so when submitting their application.

Failure to connect for the long-distance interview at the established time or in case of late connection (regardless of the reason and even in case of force majeure) will be considered as a withdrawal from the participation in the selection.

This call for applications is notice of convocation for applicants.

**Article 11**

**Approval of the procedure and ranking list of winners and eligible candidates**

The decree of procedure approval and the ranking list of winners and eligible candidates, will be published on the Official Noticeboard of Politecnico di Milano and on the Politecnico's internet web site.

**Article 12**

**Conditions for entering the contract and beginning activities**

Applicants who successfully complete the selection and who obtained abroad the academic qualification(s) listed in article 3, should those qualification(s) have not been already declared equivalent pursuant to the laws in force, must provide the Competitions Management Service with the documents listed below, before entering the contract or they will lose the right to it (non-EU applicants who do not yet have a permit of stay in Italy, before starting of the activities):

- the original or authenticated copy of the academic qualification, legalised and accompanied by a certified or sworn translation into Italian or English 10;

10 Please, note that in the countries that signed The Hague Convention on 5th October 1961 regarding the abolition of the legalization of public documents obtained abroad, the need to legalize documents issued by foreign institutes is replaced by another formality: the application of the “apostille” by a Competent Authority generally designated by the State on whose territory the public document has been executed.
• the diploma supplement, or the declaration of value ("dichiarazione di valore"), or the academic transcripts of the Master of Science.

Before the stipulation of the contract or before the starting date of the activities, the Administration will verify that the winners of the selection:

• have not been awarded a doctoral degree and that they are in the first four years (full-time equivalent research experience) of their research career. Full-Time Equivalent Research Experience is measured from the date when a researcher obtained the MSc (or equivalent qualification) which would formally entitle him/her to embark on a doctorate in Italy;

• have not resided or carried out their main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the time of the recruitment.

Non-EU applicants, who at the time they submit the application do not yet have a permit to stay in Italy, and who obtained in Italy the qualification(s) listed in article 3, if they are declared winners of the selection, must provide the Competitions Management Service with such qualification(s) in original or authenticated by an Italian authority, before the activity can begin.

Non-EU applicants who, at the time they submit the application have a permit of stay in Italy (or the receipt of the request for the permit), if they are declared winners of the selection, must show the Visiting Professor Welcome Office, no later than the deadline for entering the contract, the original copy of the permit of stay (or the receipt of the request for the permit). Failure to provide the document means applicants loose the right to enter the contract.

Non-EU applicants who, at the time they submit the application do not yet have a permit to stay in Italy, if they are declared winners of the selection, must wait for the authorisation of the Prefecture, which is necessary to apply for a visa. Activities can only start after the above mentioned visa has been supplied to the Visiting Professor Welcome Office. Failure to provide the document means activities cannot begin.

On the other hand, it is not mandatory to legalize qualifications or put the Hague Apostille if the qualification has been issued by one of the countries that ratified the Brussels Convention on 25th May 1987, or if the qualification has been issued by a German institution (Italian-German convention on the exemption of public documents from legalization).

For information regarding how to get the requested documents, it’s recommended to contact Italian embassies/consulates in the country of the university which issued the qualification.

Useful links: Ministero degli Affari Esteri e della Cooperazione Internazionale’s website http://www.esteri.it/MAE/IT/Italiani_nel_Mondo/ServiziConsulari/TraduzioniLegalizzazioneDocumenti.htm?LANG=IT;
CIMEA’s website http://www.cimea.it/;

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**Art. 13 Contract**

The temporary research fellowship is governed by a specific individual contract.

The contract governs the collaboration according to these criteria: flexibility in relation with the needs of the activity, continuity, time allocation (not sporadic), coordination with the overall activities of the University, close connection with the realization of a research program, autonomous collaboration activity within the scope of the program, absence of pre-determined working hours.

In particular, the research fellow will be subject to the following conditions:
- Carry out the research activity full-time, with no pre-established working hours, unless the Research Executive Agency (REA) provides authorization for personal or family reasons;
- Perform his/her research activity exclusively for the research program of this call;
- For activities carried out in the frame of the action, he/she cannot receive other incomes than those indicated in this call;
- He/she will engage in signing arrangements related to the intellectual property rights;
- He/she has the obligation to maintain confidentiality according to the regulation of the European Project.

On signing the contract, research fellows commit to taking the online safety course (available on the "online services" at "safety course") as required by the university and to provide the certificate of successful course completion to the Department/Campus in which they will carry out the research activity, no later than 30 days after the start of such activity.

The research fellowship awarded as a result of this call for applications is included in the category of short-term contracts.

With regard to taxation, the provisions that apply are those set forth in article 4 of Italian Law no. 476 issued on 13 August 1984. With regard to welfare purposes, the applicable provisions are those in article 2, paragraphs 26 and on, of Italian Law no. 335 issued on 8 August 1995, and subsequent amendments. With regard to mandatory maternity leave, the applicable provisions are those in the decree of the Minister for work and social welfare issued on 12 July 2007, published in the Official Gazette issue no. 247 of 23 October 2007. In the case of sick leave, the applicable law is Law no. 296, article 1, paragraph 788, issued on 27 December 2006, and subsequent amendments if compatible. During the period of compulsory maternity leave, the amount paid by INPS (Istituto Nazionale Previdenza Sociale) under article 5 of the aforementioned Decree of 12 July 2007 is integrated by Politecnico di Milano up to the full amount of the research grant.
EU citizens who will not be able to produce the S1 Health Form in their country, shall ask directly the National Health Service offices (ASL) for instructions regarding the subscription upon payment to the National Health Service.

**Article 14**

**Value awarded for the research fellowship**

The value of the research fellowship, referred to the entire duration of the contract (please read article 1 of this call for applications), which will be paid in arrears in monthly instalments, is **Euro 114,855,00**, including **Euro 97,264,30** for “living allowance” and **Euro 17,590,70** for “mobility allowance”, gross of fees charged to the contractor.

Moreover, should the candidate have family, a “family allowance” might be paid to applicants who have a family at the time of the recruitment.

With reference to the above subject, “family” is defined as persons linked to the applicant by (i) marriage, or (ii) a relationship with equivalent status to a marriage recognised by the Italian legislation or of the nationality of the candidate; or (iii) dependent children who are actually being maintained by the applicant.

The family status of the applicant will be determined at the time of the recruitment in the project and will not evolve during the project lifetime. In case this contribution is provided, it will be subject to deductions.

**Article 15**

**Incompatibility**

Employees from public and private companies, including those with short-term or part-time contracts, cannot be the recipients of a temporary research fellowship.

This temporary research fellowship cannot be awarded to people enrolled in a laurea (equivalent of Bachelor of Science), laurea specialistica or magistrale (equivalent to Master of Science), PhD students with a scholarship, or students enrolled in medical specialisation courses, in Italy or abroad.

The award of the research grant requires placement on unpaid leave for employees in service in public administrations other than those mentioned in paragraph 5 of this article.

Exclusion from participation in the selection applies in the case of marriage, kinship or affinity up to and including the fourth degree, or same-sex registered partnership (as per art. 1 of Law No. 76 of 20.05.2016), or cohabiting couple (as per art. 1, paragraphs 37 et seq. of Law No. 76 of 20.05.2016) with:

- a Full professor or Associate professor in the Department/Campus\(^\text{11}\) that issued this call for applications;
- the Rector;

Graduates who have already been awarded temporary research fellowships pursuant to art. 22 of Law 240/2010, for 6 years (not including the period in which the fellowship overlapped enrolment in a PhD course without scholarship, for no longer than the legal duration of the course), cannot take part in the selection. Graduates who cannot carry out the research activity for the entire period stated in article 1 of the call for applications because the temporal limits set forth in art. 22, third paragraph or ninth paragraph of Italian law 240/2010, as completed by art. 6, paragraph 2bis of Italian Legislative Decree 192/2014, are exceeded, cannot take part in the selection.

Temporary research fellowships cannot be awarded to university long-term employees, employees of public bodies and institutes for research and experimentation, of the Italian National Agency for New technologies, energy and sustainable economic development (ENEA), of the Italian Space Agency (ASI) and of the institutes whose scientific specialisation diploma has been considered equivalent to a PhD pursuant to art.74, fourth paragraph of Italian D.P.R. no. 382, issued on 11 July 1980.

Research fellows can perform professional activities and enter contracts that can be included in the self-employment category, on condition that these activities do not interfere with the successful execution of the research activities subject of this contract.

The written authorisation of the Head of the Department/Campus (who must consult the Scientific Supervisor) is required. These activities are incompatible with a temporary research fellowship if the above mentioned authorisation is not given.

A temporary research fellow cannot carry out activities that can lead to a conflict of interest with the activities of the Politecnico di Milano.

The temporary research fellowship is not compatible with other research fellowships and with other scholarships, except for those awarded by national or foreign institutions for the purpose of integrating the research activities with stays abroad.

Research fellows can attend doctoral programmes, including courses as extra and without doctoral grant, on condition that the admission exam is passed.

**Art. 16**

**Submission of qualifications and publications/scientific products**

The documentation submitted by the candidates, will remain in the records of the Administration and will not be returned.

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\(^{11}\) Are considered as professors of the Campus, the Full professors or the Associate professors who are members of the Campus’ Board.
**Art. 17**
Processing of personal data
Pursuant to Italian Lgs.D. no. 196/2003 and subsequent modifications, the personal data supplied by the applicants are processed only for purposes related to this call for applications. The data are collected by the Human Resources and Organisation Area of the Politecnico di Milano - Piazza Leonardo Da Vinci, 32 - Milano. Data controller is the Politecnico di Milano, Directorate General - Piazza Leonardo Da Vinci, 32 – Milano. Data processor is the Manager of Human Resources and Organization Area – Competitions Management Service.

The same personal data provided by the candidate may be communicated only to public administrations directly interested in the economic/legal position of winner candidates. The communication of such data by the candidates is compulsory in order to evaluate participation requirements; failure to do so they will be excluded from the selection procedure.

Applicants can exercise their rights under art. 7 of the above mentioned law, including the right to access data that regard them and additional rights such as the right to obtain updating, correction, completion or deletion of data that are incorrect, incomplete or collected in violation of the law.

**Art. 18**
Head of the procedure
Pursuant to the provisions set forth in art. 5 of Law no. 241 issued on 7 August 1990 and subsequent amendments, the Head of the Procedure for this research fellowship is Mr Enrico Eftimiadi, Human Resources and Organisation - Teaching Staff Service, phone no. + 39 0223992272 – + 39 0223992240 – + 39 0223992582 – + 39 0223992259 no. + 39 0223992156 fax + 39 0223992287 - E-Mail: assegniricerca@polimi.it.

**Art. 19**
Final provisions
Everything that is not expressly governed by this call for applications is governed by the provisions in the “Regulations for the award of temporary research fellowships for research activities in independently funded research programmes” issued with Rectoral Decree no. 667/AG (28 February 2011), as modified with R.D. no. 3398/AG issued on 29 July 2016, available on this link: http://www.polimi.it/en/university/statute-and-regulations/, and the laws in force governing the matter.

**Art. 20**
Publication
This call for applications is published on the Official Noticeboard of the Politecnico, on the Politecnico’s website and on the Ministry for Education, University and Research website of the EU website.

Signature of the Head of the Department
Prof. Giulio Magli
Signed Giulio Magli
Digital signature pursuant to Italian Law – Legislative Decree 7.3.2005, No. 82, article 21, paragraph 1.2, as amended (subsequent modifications and integrations)
ANNEX TO THE CALL FOR APPLICATIONS FOR THE AWARD OF TEMPORARY RESEARCH FELLOWSHIPS FOR RESEARCH ACTIVITIES Department of Mathematics Procedure Code 2017/ASSEGNI_DMAT05-deadline 05/12/2017 (issued pursuant to the “Regulations for the award of temporary research fellowships for research activities in independently funded research programmes” issued with Rectoral Decree no. 667/AG (28 February 2011), as modified with R.D. no. 3398/AG 29 July 2016.

TITLE OF THE RESEARCH Numerical simulations and reduced models of the fluid-structure interaction arising in blood pumps based on wave membranes.

SCIENTIFIC SUPERVISOR(S) OF THE RESEARCH PROGRAMME Prof. Christian Vergara

PRESUMED DATE FOR STARTING ACTIVITIES 01/03/2018

STARTING PROCESS AND EXECUTION OF THE RESEARCH PROGRAMME
In the first period (months I-VI) the research fellow will study the existing literature concerning blood pumps in order to choose the best numerical method to address the problem at hand; moreover, he will learn how to use the Finite Element library LIFEV. During the second period (months VII-XII) the fellow will move to the industrial partner Corwave in order to investigate in detail the pump functioning and to start the implementation of the code in view of the numerical simulations. During the third period (months XIII-XVIII), she/he will come back at Politecnico di Milano to complete the implementation of the code including the modeling contact. Then (months XIX-XXX), the research fellow will return in Corwave in order to apply and optimize the developed code. Finally, in the last period (months XXXI-XXXVI), possible reduced models will be studied and the thesis will be written.

ACTIVITIES THE TEMPORARY RESEARCH FELLOW WILL PERFORM, POSSIBLE OBLIGATIONS AND TERMS
Months 1-6: Study of the literature and introduction to LIFEV
Months 7-12: At Corwave to study the pump functioning
Months 13-18: Implementation of the selected methods in the code
Months 19-30: At Corwave to apply and optimize the code in view of clinical purposes
Months 31-36: Study of reduced models and writing the thesis

At least 30 days before the end of the contract, the research fellow must present a written report on the research activities carried out and on the results achieved within the scope of the project.

COUNTRIES AND UNITS IN WHICH THE RESEARCH ACTIVITY MAY BE CARRIED OUT
Italy and France at CorWave SA - Clichy

Signature of the Head of the Department of Mathematics of the Politecnico di Milano.

Prof. Giulio Magli
Signed Giulio Magli

Digitally signed pursuant to Italian Law – Legislative Decree 7.3.2005, No. 82, article 21, paragraph 1.2, as amended (subsequent modifications and integrations)
Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at Scuola Internazionale Superiore di Studi Avanzati di Trieste (SISSA):

Coupled parameterized reduced order modelling of thermo-hydro-mechanical phenomena arising in blast furnaces.

Reference number: ROMSOC-ESR10 - Project (R_H2020_MC_ITN_MATE_Rozza_0409)

A blast furnace is a large furnace for smelting ores with the aim of producing industrial metals which can reach up to 1500°C. In the blast furnace process knowing the thermo-mechanical behaviour of the furnace crucible or the thermo-hydro-mechanical of the fluid-channel ensemble can enormously improve process efficiency. The parameterization of developed models with respect to the geometry design of several blast furnaces and their material types is essential in order to quickly transfer the results to the design of new blast furnaces. The project focuses on mathematical modeling of some thermo-hydro-mechanical phenomena arising in the blast furnaces during the casting process. When fine associated nonlinear coupled models are available, reduced order models will be needed for their simulation in a short computation time. These models have to be constructed with efficient methods that preserve the coupling and the parameter structure.

The PhD candidate shall develop coupled multi-physics models arising of the casting processes of blast furnaces. The work comprises their parametrization with respect to geometrical design and the development order reduction methods to improve the computation time.

The PhD candidate will spend secondments for technical and scientific training at AcelorMittal (Spain) and at the Consorcio Instituto Tecnològico de Matemàtica Industrial (ITMATI). The PhD degree will be awarded by Scuola Internazionale Superiore di Studi Avanzati di Trieste (SISSA)

Requirements:

- Master degree (or equivalent) in Mathematics, Mathematical Engineering, Industrial Mathematics, Scientific Computing, or other related disciplines.
- Experience in mathematical models in the field of solid mechanics and fluids.
- Experience in numerical solution of partial differential equations, and model order reduction.
- Experience in using software packages related with numerical simulation of multi-physics problems.
- Programming skills in object oriented languages as well as Python/Matlab.
- Strong interest in interdisciplinary scientific work.
- Ability to work independently and as part of a team.
- Strong motivation to pursue a PhD degree.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling and simulation in engineering applications, and personal ambition.

- Excellent command of English, together with good academic writing and presentation skills.
- Starting Date: 1st of March 2018
- Contract: Full-time contract for 36 months
- Host Institution: Scuola Internazionale Superiore di Studi Avanzati di Trieste (SISSA), Trieste, Italy
- Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country specific deductions as well as individual factors and will be confirmed upon appointment.
- Information/Contact: Prof. Dr. Gianluigi Rozza (Primary Supervisor) Email: gianluigi.rozza@siissa.it
- Application: Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to protocollo@siissa.it

Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice). DEADLINE 30.11.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.

Eligibility: The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Italy for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.
Oggetto: Costituzione della Commissione selezionatrice per l’ammissione allo European Industrial Doctorate (EID) “Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)” nell’ambito del Programma Innovative Training Networks (ITN), parte delle “Marie Skłodowska Curie Actions” del programma Horizon 2020.

Il Direttore

VISTO il D.M. 45 del 08.02.2013 “Regolamento recante modalità di accreditamento delle sedi e dei corsi di dottorato e criteri per l’istituzione dei corsi di dottorato da parte degli enti accreditati”; ed in particolare l’art. 8, comma 5;


VISTO il D.D. 699 del 29.11.2017 “Regolamento Didattico dei Corsi di Philosophiae Doctor della SISSA”;

VISTA la comunicazione del MIUR di data 10.07.2017 con la quale viene data conferma dell’accreditamento dei corsi di PhD della Scuola per l’anno accademico 2017/18; il dd. 639 del 06.11.2017 con cui è stata indetta per l’anno accademico 2017/18, una selezione per titoli e colloquio per l’ammissione allo European Industrial Doctorate (EID) “Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)” nell’ambito del Programma Innovative Training Networks (ITN), parte delle “Marie Skłodowska Curie Actions” del programma Horizon 2020;

VISTO il dd. 705 del 01.12.2017 con cui sono stati prolungati i termini di scadenza della predetta selezione al 15.12.2017;

ACQUISITA dal Prof. Gianluigi Rozza, referente scientifico del programma, la composizione della Commissione giudicatrice preposta alla selezione per l’ammissione allo European Industrial Doctorate di cui sopra;

DECRETA

Art. 1 - La Commissione giudicatrice della selezione pubblica di cui alle premesse è così composta:

- Prof. Gianluigi Rozza – Prof. Associato in Analisi Numerica - Presidente
- Prof.ssa Peregrina Quintela Estévez - Direttrice del Technological Institute of Industrial Mathematics (ITMATI) di Santiago de Compostela - Spagna
- Ing. Alejandro Lengomin Pieiga - Arcelor Mittal Company
- Dott. Giovanni Noselli – Ricercatore t.d. in Scienza delle costruzioni - Segretario

Trieste, 19 DIC. 2017

Il Direttore
(Prof. S. Ruffo)
**MERITS AND REQUIREMENTS TO BE ASSESSED:**

Training according candidates profile and requirements: *40 points, all contributions must be documented.*

Taking into account the Candidates Profile in the Job Offer:

**CANDIDATES PROFILE:** Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines. We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry.

The proposed distribution of the 40 points is as follows:

- Master degree (or equivalent) in Mathematics, Mathematical, Aeronautical, Mechanical, Civil, Nuclear Engineering, Scientific Computing or other related disciplines: Up to 10 points are evaluated. If the Master degree is not one of the indicated, and neither its program of Bachelor nor the Master do not include advanced applied Mathematics training and has no training in solid or fluid mechanics, it is scored the half (5 points).
- The GPA of the student’s Bachelor up to 10 points according the percentage with respect the maximum grade in its university.
- The GPA of the student’s MSc up to 10 points according the percentage with respect the maximum grade in its university.
- Training in partial differential equations (PDEs), numerical methods to solve PDEs, mathematical modelling of thermomechanical problems, reduced order methods, Solid Mechanics and Fluid Mechanics (2 point each one, up to 10 points).

Knowledge and specific experience according requirements: *35 points, all contributions must be documented.*

According the specification of the Job Offer:

- Experience in numerical solution of differential equations, tensor analysis, and model order reduction: up to 10 points.
- Programming skills in object oriented languages as well as Python/Matlab: up to 5 points.
- Strong interest in interdisciplinary scientific work: up to 2 points.
- Ability to work independently and as part of a team: up to 2 points.
- Strong motivation to pursue a PhD degree: up to 2 points.
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modelling and simulation in engineering applications, and personal ambition: up to 5 points.
- Excellent command of English, together with good academic writing and presentation skills: up to 9 points.

Reference Letters: *25 points.* For candidates achieving the best assessments according to the above letters of recommendation to their application will be considered.

Candidate with a final mark 70 or more will be shortlisted.
Open Early Stage Researcher/PhD Position at Weierstrass Institute for Applied Analysis and Stochastics, Germany, as part of

European Innovative Training Network
Reduced Order Modelling, Simulation and Optimization of Coupled systems (ROMSOC)

ROMSOC is a European Industrial Doctorate (EID) project in the programme Innovative Training Networks (ITN) and part of Marie Skłodowska Curie Actions within the Horizon 2020 programme. The ROMSOC EID Network brings together 15 international academic institutions and 11 industry partners and supports the recruitment of eleven Early Stage Researchers (ESRs). Each ESR will be working on an individual research project in the host institution with secondments related to their research in other academic and industrial partners of the network. The research is focused on three major topics: coupling methods, model reduction methods, and optimization methods, for industrial applications in well selected areas, such as optical and electronic systems, economic processes, and materials. The ROMSOC EID Network offers a unique research environment, where leading academics and innovative industries will integrate ESRs into their research teams for the training period, providing an excellent structured training programme in modelling, simulation and optimization of whole products and processes.

We seek excellent open-minded and team-spirited PhD candidates who will get unique international, interdisciplinary and inter-sectoral training in scientific and transferable skills by distinguished leaders from academia and industry. Within the ROMSOC network we offer the following PhD position at Weierstrass Institute for Applied Analysis and Stochastics:

Optimal Shape Design of Air Ducts in Combustion Engines.
Reference number: ROMSOC-ESR11

For performance optimization of combustion engines, in particular in the automobile industry, the optimal shape design of several components of the engine, such as airducts, is crucial. In this context, for computer based rapid prototyping constrained free form shape optimization techniques are typically superior to parameterization based techniques due to their geometric flexibility. The associated numerical solution requires an efficient computation and yet accurate approximation of an adjoint-based shape gradient and also elements of higher order in a shape-gradient-related descent method for high Reynolds number flows. Moreover, geometric constraints need to be taken care of.

The PhD candidate shall develop a software tool for the numerical solution of this constrained shape optimization task. The work includes the implementation and analysis of a finite volume or finite element based optimization tool which involves a flow model, that is equipped with a proper turbulence model, and an associated adjoint scheme. The newly developed solver has to be tested for industry relevant use cases in a parallel computing environment. The PhD candidate will spend secondments for technical and scientific training at Math.Tec (Austria). The PhD degree will be awarded by Humboldt-Universität zu Berlin, Germany. The candidate recruited in the ROMSOC project must be in the first four years from the date when the candidate obtained the degree entitling him or her to embark on a doctorate (e.g. master degree). No doctoral degree has been awarded during these four years. The candidate must not have resided or carried out her/his main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to the recruitment date. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account. The candidate must work exclusively for the project during the employment contract. The PhD candidate must fulfill the conditions to be admitted in the PhD programme indicated in the job vacancy. Tuition fees will be covered by the fellowship. These conditions must be fulfilled at the starting date of the contract. The starting date for each position is tentative.

Eligibility:
- Preferred qualifications include excellent grades, research talent (as proven by the master thesis), affinity with mathematical modeling, simulation and optimization in engineering applications, and personal ambition.
- Excellent command of English, together with good academic writing and presentation skills.

Starting Date: 1st of March 2018
Contract: Full-time contract for 36 month
Host institution: Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany
Salary: The Marie Skłodowska-Curie programme offers highly competitive and attractive salaries. Gross and net amounts are subject to country-specific deductions as well as individual factors and will be confirmed upon appointment.

Information/Contact:
- Prof. Dr. Michael Hintermüller (Primary Supervisor)
- Email: hintermueller@wias-berlin.de

Application:
- Applications (motivation letter, detailed CV, certificates, list of MSc courses and grades, copy of the master thesis, reference letter etc) with indication of the position reference number should be send to jobs@wias-berlin.de
- Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).

Deadline: 30.11.2017

To ensure the equality of opportunities we strongly encourage women with the appropriate qualifications to apply. If equally qualified, handicapped applicants will be preferred.