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 mathods 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.

- 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 (18 months at each hosting institution)
Host institutions:	Johannes Kepler University, Linz, Austria
	Microgate, Bolzano, Italy
Salary:	The Marie Sklodowska-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. Ronny Ramlau (Primary Supervisor)
	Email: ronny.ramlau@jku.at
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 ronny.ramlau@jku.at
	Applicants that apply for more than one individual research project should indicate the order of preference (e.g. 1st, 2nd and 3rd choice).
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 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.*