RECRUITMENT OF A TENURE TRACK RESEARCH ASSISTANT IN
Dynamic Interface Modelling and Simulation in Material Forming

Institution   **MINES ParisTech (Ecole Nationale Supérieure des Mines de Paris)**

Research Center   **Center for Material Forming (CEMEF)**
                         UMR CNRS/Ecole des Mines 7635
                         06904 Sophia-Antipolis

As part of the development of its research and teaching activities, MINES ParisTech recruits a Research Assistant in *Dynamic Interface Modelling and Simulation in Material Forming* at the CEMEF, one of the principal research centers of MINES ParisTech located in Sophia-Antipolis (South East of France). It is an associated laboratory of CNRS (French National Center for Science) since 1979 (unité mixte MINES ParisTech - CNRS, UMR 7635). Up to 160 people are working on essential topics for understanding of forming processing of various materials (metals, polymers, composites, glass, etc.). Research works are conducted in tight collaboration with industrial partners. The CEMEF invests regularly in computing resources and High Performance Computing and gathers today an 1800-cores cluster.

Open as a fixed-term 3 years contract, this position is for a young researcher (M/F) who appreciates a multidisciplinary work environment combining fundamental research and industrial applications. The selected candidate will have the opportunity to work closely with industrial partners and contribute to industrial and economic innovation. The position is to evolve into a permanent lecturer and researcher position within 3 years in the framework of a Tenure Track procedure. A description of the process is available (in French) on MINES ParisTech website: **http://www.mines-paristech.fr/Ecole/Recrutement/Travailler-a-MINES-ParisTech/**

Job description

The main research topic of this position is computational mechanics with a particular interest to the modeling and the simulation of the interfaces dynamics. The candidate will join a research team and will participate to several PhDs, engineer, master, and post master students supervision while developing his/her own research topics. He or she will be in charge of courses dealing with computational mechanics and numerical simulation of physical phenomena. The candidate will be encouraged to organize new courses to improve the educational offer of the research center. The selected candidate is expected to participate to and to develop creative national and European research programs and contracts with industry.

Research

The successful candidate will develop at the CEMEF a research program on advanced numerical methods to deal with mechanical and thermal phenomena in the context of fluid-structure interaction. This subject is particularly important in the first stages of transformation of metallic alloys when the phases (liquid, solid, gas, ...) coexist. It is noted that these aspects are critical to both the macroscopic and microscopic scales simulations of the process.

It is therefore expected to develop an original research thematic that deals with evolving interfaces between several domains. This will require skills in both computational mechanics and physical modelling of phenomena related to the dynamics of interfaces. This activity will take place in the field of mechanical and digital material framework, such as the simulation of microstructural evolution and the welding and solidification of alloys.

The candidate is expected to have an excellent experience in numerical methods and analysis for solving partial differential equations. He or she will build upon existing methods, develop specific analyzes and propose new numerical schemes to treat evolving interfaces. Then, he or she will ensure their effective integration into industrial and application codes in collaboration with two scientific software editors: TRANSVALOR and S&CC.

The successful candidate should not only provide an outstanding research profile but also industrial experience, and a demonstrated capability to complement and collaborate with existing interdisciplinary research programs and interact with other faculty member.

Candidates must have a strong record of research productivity, including relevant conference and journal publications, exhibit a strong potential for supervising and supporting graduate students pursuing advanced degrees and finally initiate and carry new research program with a solid funding base through both national and international, academic and industrial, collaborations.

Teaching

The candidate will contribute to the various undergraduate and graduate courses and teaching sessions where the **CEMEF** is involved (Mines ParisTech and/or Université de Nice). He or she will be in charge of courses dealing with advanced computing, computational mechanics, applied mathematics and finite element modeling within the framework of the teaching and training activities of the PhD students and post master MaPMod students.

Candidate profile

Candidates wishing to apply should have a doctoral degree in Applied Mathematics or Computational Mechanics, with a strong academic background in modeling and numerical simulation, and a confirmed expertise in programming C++/Python. A postdoctoral period in a laboratory different than the one of the PhD and if possible abroad would be strongly appreciated.

The applicant will have to demonstrate a capacity to conduct research projects in a multidisciplinary context in concert with an aptitude for teamwork. The position offers opportunities for strong collaborations with other industrial and academic R&D groups at European and international levels.

How to apply

The application shall include:
- a detailed curriculum vitae ;
- a list of recent research works and publications;
- a cover letter presenting the candidate's research project and its relation with CEMEF research activities;
- the review PhD reports
- preferably three reference letters to be submitted by the reference writers. If not possible, the file shall include at least the names and contact details of three scientific leading figures who could be contacted to give their opinion about the candidate's profile and abilities.

The file should be sent no later than October 31st 2014 at the following address:
C/O Elisabeth MASSONI,
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