Vacant Postdoc position
at Laboratory of Mechanics and Acoustics (LMA, Marseille, France)

Numerical modeling of seismo-acoustic wave propagation in a marine coastal environment as a tool to assess seismic and acoustic risks induced by anthropogenic activities

Supported by

HORIZON-JU-RIA grant ChEESE-2P   &   **PEPR NumPex**

« Center of Excellence for Exascale in Solid Earth - Second Phase » (2023-26)   « Numérique pour l'Exascale »

Profile: Candidate with a PhD (preferably in seismology, acoustics, applied mathematics, or computational engineering), with a strong background in numerical modeling (PDE). Experience in GPU computing could be beneficial, but not mandatory. The candidate should have a broad interest and learn quickly. The candidate should also possess very good writing and verbal communication skills in English.

Duration of contract: 32 months (possibility of 5 additional months)

Starting date: Preferably, between September and November, 2023

Salary scale: € 2455 to € 3300 net per month (incl. insurance health), depending on the professional experience

Application deadline
May 15, 2023

Context

The position is supported by the PEPR NumPex grant and the HORIZON-JU-RIA grant ChEESE-2P (2023-26) with 16 (academic and industrial) partners throughout Europe. Some of the general objectives of ChEESE-2P are to

i. enhance 11 open-source Solid Earth community flagship codes in terms of performance, scalability, deployment, and portability across current pre-exascale systems and emerging hardware architectures;

ii. farm a new generation of 9 pilot demonstrators and run 15 derived simulation cases addressing the exascale computational challenges (capability/capacity/UC) and enabling services on socially-relevant aspects of geohazards like urgent computing for disaster response, early warning, and hazard assessment.

CNRS, and more particularly LMA, is largely involved in this EU project, since it coordinates one of the 5 workpackages (Farming pilot demonstrators) and is involved in 22 tasks. The **SPECFEM3D code**, based on a spectral-element method and partly developed at LMA (https://specfem.org), is fully integrated in the two above-mentioned objectives.

Tasks

4 of the 15 simulation cases mentioned above will be considered as full-scale Scientific Grand Challenges (SGC). In close collaboration with experts in HPC modeling and seismo-acoustics in marine environments, the candidate will implement one of them. This SGC will focus on **3D full-wave simulations of seismo-acoustic wave propagation** (up to the frequency 100 Hz) induced by anthropogenic activities in a coastal environment in the Mediterranean Sea (France). The main objective of the simulations, conducted with SPECFEM3D, will be to subsequently assess seismic risks at the shoreline and underwater noise pollution.

The candidate will attend ChEESE-2P meetings and participate in the writing of the mandatory deliverables of the project. The candidate will also disseminate the scientific results (publications in high-ranked scientific journals, presentations in international conferences).

For more information, please contact Vadim Monteiller (vadim.monteiller@cnrs.fr), and/or Nathalie Favretto-Cristini (nathalie.favretto-cristini@cnrs.fr), and/or Paul Cristini (paul.cristini@cnrs.fr)

To apply, please e-mail (to these three e-mail addresses) a detailed CV, a motivation letter, a list of publications, and the names of at least two references.