Internship details

This internship is mainly aimed at **Phd/master** students in **Mathematics** or **Civil Engineering** and at **master** students in **Computer Sciences.**

For Mathematics and Civil Engineer PhD/master students, the knowledge of Matlab and Finite Element Method (FEM) is required.

For Computer Sciences master students, the knowledge of GPU programming is required.

The purpose of this internship is to help in the wider project of efficient coupling strategies for the numerical solution of differential problems defined in the union of adjacent domains featured by different material properties. The primary application is soil-structure interaction (SSI) problems, describing structures solicited by ground vibrations. We consider the resolution of elastodynamics equations of motion by Boundary Element Method (BEM) and/or Finite Element Method (FEM) as the reference mathematical framework. The design of good predictive mathematical models, together with efficient and stable numerical solvers can potentially pose strong basis for a coupling methodology apt to the numerical resolution of fluid-structure interaction (FSI) problems.
The global aim is pursuing advanced applications in Civil Engineering such as energy geostructures modelling of the behaviour of foundation.

During the internship, the student will learn the foundations of BEM, will achieve expertise in reading scientific papers and/or in efficient programming. He/she will then write the outcomes of his research work in a scientifically rigorous manner in an article and/or final thesis, depending on the skills and the degree level of the student and on the duration of the internship.

The internship will be developed at the Department of Mathematics, with the availability of a room provided with a desktop computer.
There are no further funds available other than those made available by EU-Green network.