Position for researcher at IFSTTAR (France - Nantes site)

Soil-structure interactions under seismic and vibratory loads

Seismic responses of geotechnical structures

The **Institute of Science and Technology for Transport, Development and Networks** (IFSTTAR) was founded on January 1st, 2011 from a merger of the INRETS Institute and the LCPC Laboratory. This newly-launched entity has the status of a National Public Science and Technology Institute and is jointly overseen by France's Ministry of Ecology, Sustainable Development, Transport and Housing on the one hand and the Ministry of Higher Education and Research on the other.

(For further information: http://www.ifsttar.fr/en/presentation/)

The position will be in the **earthquakes and vibrations group** that forms a part of the geotechnical, water and risk department.

Seismic risk and vibration pollution is one of the priorities of IFSTTAR. Recently the IFSTTAR grouped the relatives activities together within a research group located on three sites: one team in Paris devoted to numerical modelling, one team in Grenoble specialized in seismology and vulnerability assessment and a third team, located in Nantes, devoted to physical modelling under seismic loads. The combination of these three components within one research group aims at improving the synergy between these three components.

The proposed position concerns the team located at Nantes. Today the team consists in 2 researchers who work with 5 technicians. The first researcher was trained in geotechnic and soil mechanic and is more specialized in soil mechanic and the other was skilled in civil engineering and structure dynamics. The activity is developed around the centrifuge and is in close relation to soil mechanic and centrifuge group that is responsible the centrifuge and the technical team. A shaker is operational at the Nantes IFSTTAR center since 2006. Consequently in parallel with the designing, the caring out and the analysis of the seismic tests, the activity includes the design of new experimental devices or their improvement.

The new researcher should contribute to the development of the seismic activity around the centrifuge by introducing numerical modelling competences and by taking an active part in the various experimental tasks in collaboration with the researchers and the technicians.

Missions of the researcher

Researches will focus on dynamic soil-structure interactions, on wave propagations in soil and on seismic behaviour of geotechnical structures. In this framework the new researcher will be in charge of series of centrifuge tests, from the definition of an experimental program up to dissemination of the results including the designing, the performing and the analysis. This activity can induce additional work aiming at the development of new experimental devices.

In this framework, to contribute to the synergy of the team, in addition to the use of his/her numerical knowledge he/she should improve or develop his/her experimental know-how by working together with the other researchers and technicians.

His/her researches will be connected with that of the earthquakes and vibrations team. However his/hers researches can also be connected with previous collaborations developed by the applicant.

The applicant should integrate the French and International relationships developed by the group. He/her should also develop His/her own relationships through, for instance, the supervision of PhD students or/and master students.

In addition, he/her will participate to the development of research programs in partnership with other research institutes or private companies.

Knowledge requested and quality

The physical modelling in earthquake geotechnical engineering relies on a wide range of field competences: geotechnics, structure and soil dynamic, numerical modelling, vibration mechanic, signal processing.

For the team enrichment, a good knowledge of numerical tool is requested. Taking into account the team competences, priority shall be given to an applicant that will have knowledge in dynamic of structures and that is ready to become engaged in geotechnical problems that can be analysed with physical modelling.

The applicant should have the willingness to become engaged in experimental work. In addition, a applicant who enjoy working in a team is an essential point for this vacancy.

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