

2-year Postdoctoral position: Modelling of the static/flowing transition in granular flows: application to erosion/deposition processes in natural landslides

Institut de Physique du Globe de Paris (IPGP)

The Seismology Group at Institut de Physique du Globe de Paris is pleased to invite applications for the position of a postdoctoral researcher for a period of 2 years in numerical modeling of the static/flowing transition in granular flows for application to erosion/deposition processes in natural landslides. The successful applicant will develop a personal research profile in the field of numerical modeling of geophysical flows and mechanical behavior of granular material, with implication in natural hazard. The objective is to develop accurate mathematical and numerical models describing the transition between flow and no-flow within granular materials, that can be applied to simulate real flows over complex topography. She/he will develop and implement the static/flowing transition into thin-layer models and compare the results with 3D visco-plastic models and laboratory experiments. The post-doctoral work, mainly focussing on numerical modeling, will imply collaboration in the field of experimental granular flows and natural landslide observation in volcanic context.

This work is part of a large ERC project SLIDEQUAKES funded by the European Research Council Research (2014-2019). The general objective of this project is to take a major step in improving the detection, understanding and prediction of gravitational flows and their modelling at the field scale through numerical and experimental modelling as well as measurements of landslides and generated seismic waves at the natural scale.

The work will be at the interface between physics, geophysics and mathematics thanks to the close collaboration with François Bouchut, LAMA, Ioan Ionescu, LSPM, Enrique Fernandez-Nieto and Gladys Narbonna-Reina, University of Seville and with specialists in granular physics in France. The post-doctoral fellow will participate in the research activities of the environmental seismology working group. These activities range from numerical and experimental modeling of granular flows and natural landslides to seismic monitoring of environmental sources (landslides, volcanoes, glaciers, ocean waves, cavities, ...). See <http://www.ipgp.fr/~mangeny/Research.html> for more details.

Institut de Physique du Globe de Paris is a leading research institute in geophysics with specialists in fluid mechanics, seismology (<http://sismo.ipgp.fr/>), volcanology and computational sciences. This highly dynamic setting enables students and researchers to work with up-to-date methods in the different fields in close connection with surrounding laboratories in mechanics and applied mathematics.

Required knowledge and skills: Requirements for the position are a doctoral degree with experience in numerical modeling of complex fluids (e. g. granular materials, two-phase flows, visco-plastic fluids, etc.). Skills in advanced computing and programming would be appreciated.

Salary and term: Salary is in accordance with French public service rate (about 2600 euros/month). The position is scheduled starting from May 2014.

Application procedure: Applications including curriculum vitae, list of publications, research statement, names and e-mail addresses of two referees should be sent to Professor Anne Mangeny by e-mail mangeny@ipgp.fr. Review of applications will begin in March 2014 and will continue until the position is filled.