



CALL FOR AWARDING RESEARCH FELLOWSHIPS WITHIN PROJECT GRANTS AND R&D INSTITUTIONS

One Post-doctoral fellowship grant in Seismology

One Post-doctoral Fellowship is opened at the **Fundação da Faculdade de Ciências da Universidade de Lisboa**, in the the project NERA “Network of European Research Infrastructures for Earthquake Risk Assessment and Mitigation”, Grant Agreement number 262330, co-financed by the European Commission under the Seventh Framework Program, under the following conditions:

1. **Scientific Area:** Seismology
2. **Requirements for admission:** Academic degree: PhD in seismology/geophysics. Other required skills: Solid background in computation, physics and mathematics; Experience in Seismic handler; Seismic Receiver Functions and SKS anisotropy.
3. **Work plan:** NERA NA2 aims foster the integration of the permanent and temporary networks recording broad-band seismic data in the larger Euro-Mediterranean region, and expand the collection, storage and access to data for the whole region. One of NA2 objectives is to optimize technical interoperability of distributed mobile BB instrumentation and permanent networks, by standardizing data collection, format and archive procedures, and quality control standards. One of the most interesting research areas where the inter-operability of data and metadata is of great importance is the investigation of seismic anisotropy.

Seismic anisotropy is a result of ordered orientation of cracks or other heterogeneities (in the crust) or anisotropic crystals of olivine (in the upper mantle). The standard method of measurement of anisotropy in the lithosphere is based on the analysis of splitting of shear waves in the seismic phase SKS (Vinnik et al., 1984). In this analysis, anisotropy is described by two parameters: azimuth of axis of fast velocity (fast direction) and the difference between the fast and slow velocity (coefficient of anisotropy).

SKS technique provides high (about several tens kilometres) lateral resolution, but has no vertical resolution. If the real Earth medium contains two or more layers with various fast directions, the effective parameters of one layer determined by SKS technique can be meaningless. To overcome this problem, the method of a joint inversion of wave forms of SKS and of P receiver functions is developed (Vinnik et al., 2002). Joint inversions of SKS waveforms and P receiver functions have already been applied to the Iberian Peninsula with quite promising results (Morais, 2012). The results obtained also shown that for the success of this application it is crucial to have a dense network, which will behave like a cluster. Later, in 2012 Vinnik et al., using a dense array, successfully address this same question in southern Africa.

Recently, in the framework of the WILAS (PTDC/CTE-GIX/097946/2008) and TOPOIBERIA (Consolider-Ingenio 2010 CSD2006-00041) we finally approach this requirement, with an unprecedented densification of the seismic stations densification throughout the Peninsula. Therefore, we are in a unique opportunity to perform the above referred joint inversion of SKS and PRFs. To accomplish this task, high qualified and full time dedicated man power is required. This work will be developed in close cooperation between IDL (Luis Matias and Graça Silveira) and our collaborators Lev Vinnik and Sergey Kiselev, from the Institute of the Earth of Moscow, collaborators at the IDL and the authors of the method.

As a result of this fellowship we will obtain a set of standards and recommendations referring to data collection, data preparation, metadata publication and results distribution referring particularly to seismic anisotropy investigation studies. The Euro-Mediterranean area will be presented as a case study.





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4. **Legislation framework:** Legislation framework: A fellowship contract will be celebrated according to the Law 40/2004, of 18 August, as amended and republished by Decree-Law No. 202/2012 of 27 August, and as amended by Decree-Law No. 233/2012 of 29 October and by Law No. 12 / 2013, of January 29.
5. **Place of work:** The work will be developed at Instituto Dom Luiz/Associated Laboratory, University of Lisbon, Portugal, under the scientific supervision of Professor Graça Silveira and Professor Luis Matias.
6. **Fellowship duration:** This position is opened for 13 months and will begin on 1 July 2013 without renewal possibility.
7. **Monthly allowance:** The fellowship amounts to € 1495.
The grant holder will have a personal accident insurance and, if not covered by any social protection scheme can ensure the right to social security through adherence to the voluntary social insurance scheme, pursuant to Código dos Regimes Contributivos do Sistema Previdencial de Segurança Social.
The fellowship will be paid monthly by bank transfer.
8. **Selection method:** Candidates will be assessed by the quality of their CV =49%, especially scientific merit, publications and research experience, and the motivation letter =21%. An interview may also be required upon selection committee decision =30%. If none of the candidates fulfils the above criteria, the grant will not be opened.
9. **Selection Committee:** Prof. Graça Silveira (Chairman), Prof. Luís Matias (member), Prof. Mourad Bezeghoud (member). Supplementary member: Prof. Nuno Dias.
10. **Publication/notification of results:** The final results of the evaluation will become public, through ordered place list which will be posted at the entrance hall of the Fundação da Faculdade de Ciências da Universidade de Lisboa, located at the Faculdade de Ciências da Universidade de Lisboa, C1 bldg – 3rd floor, Campo Grande, 1749-016 Lisboa, and the selected candidate will be notified by e-mail.
11. **Deadlines:** This call for applications is open from 14 June 2013 to 21 June 2013.
12. **Application:** Applications may be sent via e-mail to Graça Silveira (mdsilveira@fc.ul.pt), by attaching the following documents: Curriculum vitae, with reference to ISI publications and indication of email; copies of degrees certificates and a Cover Letter indicating the candidate's motivation for this position. All documents must be in pdf format. Applications may also be sent by mail to Graça Silveira, IDL-Instituto Dom Luiz, Campo Grande, Ed. C8, 3rd floor, 1749-M016 Lisbon, Portugal.

