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QUEST: QUantitative estimation of Earth's sources and STructure: A European Initial Training Network

H. Igel and the QUEST Team

University of Munich, Earth an Environmental Sciences, Munich, Germany (igel@geophysik.uni-muenchen.de)

This Marie-Curie Initial Training Network joins lead scientists in the fields of exploration seismics, seismology, applied mathematics and high-performance computing, volcanic and seismic hazard, earthquake physics, physical inverse problems, geodynamics, from Departments of Mathematics, Physics, Earth and Computational Sciences, Oceanography and Exploration Geophysics. The main goal of QUEST is research and training in the development of strategies for automated seismic imaging using the increasing power of 3-D simulation technology. Existing methodologies are currently subject to a revolutionary change: While so far the observed information was severely reduced and approximate methods (e.g., ray theory) were used to determine Earth's structure, the massive increase in available computational resources allows us now to make use of the complete information contained in the observations. The QUEST objective is to integrate the various elements (wave propagation, high-performance computing, inverse problems) exploiting the synergies of the network expertise and develop the next generation of imaging tools for use on all spatial scales. The consortium is complemented by the formal partnership of the leading supplier of geophysical technology to the oil and gas industry (Schlumberger Research) and an expanding new company (Spectraseis AG, Zurich) exploiting passive imaging – the latest development in seismological imaging - for industrial problems. This is the first EU-wide project of its kind focusing on the scientific and technical challenges of the seismic imaging problem in the PetaFlop age employing 3-D high-performance computing methodologies. The project commencing in 2009 offers funding for a substantial number of PhD and postdoc positons. More info at www.quest-itn.org.