# Title: Investigation of active faults in Southern Apennines by means of seismic reflection surveys.

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**Co-tutor(s): Prof. David Iacopini**

**Proposal:** *The aim of the research project is the identification and characterization of active faults within the Southern Apennines, through an approach based on the application of different methodologies for the acquisition and processing of seismic reflection profiles. In particular, it is proposed a study focused on the geophysical survey methodology of 2D seismic reflection at high and very high resolution in both P and S waves, for the analysis of relatively superficial tectonic lineaments. The identification of the active fault geometries at depth will make use of multiple field acquisition techniques with variable lengths and energization by means of a Minivib-type vibrating source. The data will be elaborated by means of multiple processing approaches, also contemplating the possibility of using more specific softwares. The acquired data will be combined to reconstruct geological-structural models at depth of the buried active faults. These will allow us to increase knowledge on the evolution of faults through time and to provide valuable information for seismic hazard mitigation.*

# Research Program

# *The research requires initially of the definition of the multi-methodological approach for the acquisition and processing of seismic reflection profiles. This includes the detailed planning and acquisition of seismic profiles which will be of variable length and performed using different field arrays, chosen based on the targets sought and the logistics of the sites to be investigated. Subsequently, the research will include all the basic QC steps, treatment and analysis of the acquired seismic data, from the arrangement of the raw data with the assignment of the right array geometries to the final migrated section and depth setting. All the steps included in this second phase will be performed through the combined use of multiple software. The final step consists of the interpretation of the obtained profiles and the creation of high resolution geological-structural models at depth of the identified faults. This approach will be applied in key sites along some of the main active faults in the Southern Apennines. The candidate must have a good knowledge of seismic reflection acquisition methodologies.*

# *The project can also be financed by funds external to the University of Naples.*