

## Fabio Mantovani



Center of GeoTechnologies  
Siena University (Italy)

**Title of the talk:** "Geo-neutrinos: a new probe of Earth's interior"

### **Curriculum**

Fabio Mantovani obtained his laurea degree in Physics from Ferrara University. As a graduate student of the Center of GeoTechnologies (Siena University) he developed a research program about the geo-neutrinos: his PhD thesis "*Geo-neutrinos: a new probe of Earth's interior*" collects the most important results about this topic and it was pointed out by the scientific commission as the best thesis in Earth Science of Siena University of the 2006.

He spent his post doctoral fellowship at the Center of GeoTechnologies as a leader of the geophysics laboratory, managing national and international projects and supervising 5 master theses.

His research interests are in the area of nuclear geophysics. In particular he published several papers about geo-neutrinos. In "*Neutrinos and energetics of the Earth*" [Physical Review Letter B557 – 2003] the first estimates of the anti-neutrinos flux from the Earth are shown according to different models of Earth composition.

In "*Antineutrinos from Earth: A reference model and its uncertainties*" [Physical Review D69 – 2003] was presented a reference model for the calculation of the geo-neutrinos flux based on a detailed description of Earth's crust and mantle and using the best available information on the abundances of uranium, thorium, and potassium inside Earth's layers.

In 2004 and 2005 he focused his attentions on the prediction for the geo-neutrino signal at KamLAND experiment (Japan) as a function of the Uranium mass in the Earth: the predictions based on global mass balance, supplemented by a detailed geochemical and geophysical study of the region near the detector, was presented in "*How much Uranium is in the Earth? Predictions for geo-neutrinos at KamLAND*" [Physical Review D72 – 2005], while an analysis of the first KamLAND results was performed in "*KamLAND results and the radiogenic terrestrial heat*" [Physical Review Letter B629 – 2005].

An exhaustive review about geo-neutrinos was published on Physics Reports in 2007 with the title of "*Geo-neutrinos and earth's interior*".

### **Recent research**

Recently he is developing a project supported by European funds for the monitoring of natural radioactivity of the Tuscany Region by using gamma-ray spectrometry conducted in the air and on the ground. Thanks to international collaboration Fabio is involved also in geophysics researches applied to environmental monitoring and terrestrial heat flux by using geoelectrical, seismic and gamma ray methods.