

Revealing the Earth's interior with geoneutrinos

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K, Th, and U, with their relative high abundances and half-lives comparable to or greater than the age of the Earth, contribute to approximately the 99% of the radiogenic heat production of our planet. During a beta minus decay, geoneutrinos and radiogenic heat are released in a well-established proportion: measuring the detectable U and Th geoneutrino flux at surface hence translates in providing valuable insights on many open questions about the Earth's interior. By analyzing the energy spectra, one can limit the overall quantity and distribution of U and Th and test different compositional models of the Earth. Additionally, by accurately predicting the geoneutrino signal from the accessible lithosphere, the unknown parameter of the mantle component can be determined, extracting unique information about the radiogenic power and composition of the Earth. The impacts of the recent results from KamLAND and Borexino as well as the expected outcomes from SNO+ and JUNO will be presented.

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Classification de Session: Mantle-crust connection, geoneutrinos and Earth's heat budget