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Geoneutrinos: messengers from the inaccessible Earth

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The 99% of the Earth's radiogenic heat is generated by K, Th, and U that through beta minus decay release antineutrinos and heat proportionally. The U and Th geoneutrino flux measured by underground liquid scintillator detectors aids in testing Earth's compositional models with the energy spectrum analysis limiting U and Th quantity and distribution in the whole planet. Accurate predictions of lithospheric geoneutrino signals, derived by constructing geophysical and geochemical models, permit to improve the understanding of direct geoneutrino measurements revealing mantle's radiogenic power and composition.
Future years will see the geoneutrino data expand beyond the Borexino and KamLAND experiments. The imminent release of data from the Canadian SNO+ experiment, along with the nearly complete Jiangmen Underground Neutrino Observatory (JUNO), points out a new age of multi-site geoneutrino detection, enhancing our comprehension of geoneutrino signals originating from the Earth.
The talk will review the impacts of the recent results from KamLAND and Borexino, the expected outcomes from SNO+ and JUNO and the future perspectives and challenges for geoneutrino science.

Abstract title

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