

# Understanding the Earth's deep interior with geo-neutrino measurements

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Anti-neutrinos emitted from radioactive isotopes inside the Earth, geo-neutrinos, bring unique and direct information on the Earth's composition, which relate to the fundamental mysteries of its heat balance and thermal evolution. KamLAND has been stably observing geo-neutrinos with highest sensitivity since it made the world's first observation in 2005. Understanding of the Earth using geo-neutrinos is a research field that is originally started and has been led by Japan. To date, we have set limits on the global flux of geo-neutrino that has in turned constrained the range of acceptable models for the Earth's composition, but distinguishing the mantle flux by current detectors, which are all locate on the crust is a challenge, as the crust signal is about 70 % of the total flux plus uncertainties. Given that the oceanic crust is thin and simple, geo-neutrino detector in the ocean makes it sensitive to geo-neutrinos originating from Earth's mantle. Ocean bottom geoneutrino detector represents a breakthrough, which goes beyond the impossibilities of the modern land-based detector, providing transformative insights into the deep Earth. In this presentation, current situation and future prospects of experimental studies will be dicssussed.

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