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Ocean Bottom Detector : toward direct measurement of mantle geoneutrinos

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Geoneutrinos bring unique and direct information on the Earth's composition, which relate to the fundamental mysteries of its heat balance and thermal evolution. 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 2019, Tohoku University and JAMSTEC started to collaborate to promote the idea of Ocean Bottom Detector. Recent situation of our study will be presented.

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