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Neutrino Absorption Tomography

Thursday 7 January 2016 11:00 (30 minutes)

For more than 30 years, the idea of probing the interior of the Earth with neutrinos has been discussed. Of all the matter that exists on Earth, only neutrinos can penetrate the maximum thickness of the Earth. Some neutrinos interact with atoms deep inside the Earth where we cannot sample the material. They provide information about the matter density or the electron density of materials along the neutrino's trajectory.

In the first half of my talk I introduce the principle of neutrino absorption tomography and will discuss about the requirements to perform each proposed techniques. The second topic will be the report about ongoing analysis: measuring the density profile of the Earth with IceCube neutrino observatory using high-energy atmospheric neutrino. Updated analysis method and the median sensitivity to separate an Earth model and the PREM Earth model will be presented. We also discuss about the sensitivity for future upgrade of IceCube, Gen-2 detector.

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