

KEK Theory Meeting on Particle Physics Phenomenology (KEK-PH2018 winter) and 3rd KIAS-NCTS-KEK workshop on Particle Physics Phenomenology

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Tomography by neutrino pair beam

Thursday, 6 December 2018 17:00 (15 minutes)

We consider the neutrino tomography. The idea of neutrino tomography is the imaging of the Earth's interior structure by using the neutrino. We assume the neutrino pair beam which has recently been proposed as neutrino source. The beam produces a large amount of neutrino and antineutrino pairs from the circulating partially stripped ions and provides the possibility to measure precisely the energy spectrum of neutrino oscillation probability together with a sufficiently large detector. It is shown that the pair beam gives a better sensitivity to probe the Earth's crust compared with the neutrino sources at present. In addition we present a method to reconstruct a matter density profile by means of the analytic formula of the oscillation probability in which the matter effect is included perturbatively to the second order.

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Session Classification: Parallel Session 2