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Probing Flavor Transition Mechanisms with High Energy Astrophysical Neutrinos

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The determination of neutrino flavor transition mechanisms by neutrino telescopes is discussed. We parametrize these mechanisms in a basis which is very convenient for classifying flavor transition models. At very high energies ($>10\text{PeV}$), it is investigated that the electron neutrino fraction can be extracted without identifying muon and tau neutrinos by the neutrino telescope, such as ARA. We demonstrate how this observation, the electron neutrino fraction at very high energies, can probe the flavor transition mechanism.

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