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Probation of flavor transition mechanism with cosmogenic neutrinos

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The determination of neutrino flavor transition mechanism by neutrino telescopes is presented. With a model-independent parametrization, we are able to classify flavor transitions (such as standard three-flavor oscillations, neutrino decays or others) of astrophysical neutrinos propagating from their sources to the Earth. We demonstrate how one can constrain parameters of the above parametrization by performing flavor identifications in neutrino telescopes. Given the anticipated flavor discrimination capability in the future radio-wave based neutrino telescope and the expected cosmogenic neutrino events, we work out the corresponding allowed ranges for flavor transition parameters. The possibility of distinguishing neutrino decay models from the standard three-flavor oscillations in the future neutrino telescope as mentioned is discussed.

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