

## Helicity-changing decays of relic neutrinos and detections in PTOLEMY-like experiments

*Thursday 28 August 2025 15:20 (20 minutes)*

We calculate the decay rate of a massive neutrino to a lighter one and a massless Nambu-Goldstone boson  $\nu_i \rightarrow \nu_j + \phi$  in the general case, where the individual helicities of parent and daughter neutrinos are specified. Such invisible decays of cosmological relic neutrinos are studied and the impact on the capture rates in the PTOLEMY-like experiments is analyzed. We find that the helicity-changing decays of Dirac neutrinos play a crucial role, while those of Majorana neutrinos have no distinct effects.

**Authors:** HUANG, Jihong (IHEP); ZHOU, Shun (IHEP, Beijing)

**Presenter:** HUANG, Jihong (IHEP)

**Session Classification:** Neutrino Physics and Astrophysics

**Track Classification:** Neutrino Physics and Astrophysics