



Contribution ID: 8

Type: **not specified**

## Probing the nature of neutrinos through decoherence and geometric phases

*Thursday, October 17, 2019 3:00 PM (30 minutes)*

We analyze the non-cyclic geometric phase and the phenomenon of decoherence for neutrinos propagating in long baseline experiments.

We find that the geometric phase and the total phase associated to the mixing phenomenon provide a theoretical tool to distinguish between Dirac and Majorana neutrinos.

Moreover, we show that, in presence of an off-diagonal term in the dissipative matrix, the Majorana neutrino can violate the CPT symmetry, which, on the contrary, is preserved for Dirac neutrinos.

We show that the oscillation formulae for Majorana neutrinos depend on the choice of the mixing matrix.

Indeed, different choices of this matrix lead to different oscillation formulae.

**Presenter:** QUARANTA, Aniello