

## **CP violation due to a Majorana phase in two flavor neutrino oscillations with decays**

We study the conditions under which the Majorana phase of the two flavor neutrino mixing matrix appears in the oscillation probabilities and causes  $CP$  violation. We find that the Majorana phase remains in the neutrino evolution equation if the neutrino decay eigenstates are not aligned with the mass eigenstates. We show that, in general, two kinds of  $CP$  violation are possible: one due to the Majorana phase and the other due to the phase of the off-diagonal element of the neutrino decay matrix. We find that the  $CP$  violating terms in the oscillation probabilities are also sensitive to neutrino mass ordering.

**Primary author:** PRADHAN, Akhila Kumar (Indian Institute of Technology Bombay)

**Co-authors:** Dr DIXIT, Khushboo (University of Johannesburg); Prof. SANKAR, S. Uma (Indian Institute of Technology Bombay)

**Presenter:** PRADHAN, Akhila Kumar (Indian Institute of Technology Bombay)