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Tri-Partite entanglement in Neutrino Oscillations

We investigate and quantify various measures of bipartite and tripartite entanglement in the context of two and three flavor neutrino oscillations. The bipartite entanglement is analogous to the entanglement swapping resulting from a beam splitter in quantum optics. For the three neutrino systems various measures of tripartite entanglement are explored. The significant result is that a monogamy inequality in terms of negativity leads to a residual entanglement called as three-pi, implying true tripartite entanglement in the three neutrino systems. This leads us to an analogy of the three neutrino state with a generalized class of W-state in quantum optics.

Mini-abstract

Three flavor neutrino oscillations exhibits the property of the class of W-state in quantum optics.

Experiment/Collaboration

My Guide has collaboration with Fermilab

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