Contribution ID: **660**   Type: **Parallel session talk**

Novel Aspects of Neutrino oscillations

Saturday 20 July 2024 09:00 (15 minutes)

A new Quantum Field Theory (QFT) formalism for neutrino oscillations in a vacuum is proposed. The neutrino emission and detection are identified with the charged-current vertices of a single second-order Feynman diagram for the underlying process, enclosing neutrino propagation between these two points. The L-dependent master formula for the charged lepton production rate is derived, which provides the QFT basis for analyzing neutrino oscillations. Further, techniques are developed for constructing amplitudes of neutrino-related processes in terms of the neutrino mass matrix, with no reference to the neutrino mixing matrix. The proposed approach extensively uses Frobenius covariants within the framework of Sylvester's theorem on matrix functions. It is maintained that fitting experimental data in terms of the neutrino mass matrix can provide better statistical accuracy in determining the neutrino mass matrix compared to methods using the neutrino mixing matrix at intermediate stages.

Alternate track

1. Astro-particle Physics and Cosmology

I read the instructions above

Yes

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Session Classification: Neutrino Physics

Track Classification: 02. Neutrino Physics