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Neutrino oscillations and spontaneous breaking of the Lorentz symmetry.

Nowadays the neutrino oscillations is one of the main problems in particle physics. The problem of the mass, which is an essential condition to describe the oscillation of flavors is not clear. Experimental evidence suggests the possibility of a new physics beyond standard model where the neutrino oscillations can be understood. On the other hand, the spontaneous breaking of Lorentz symmetry, originally introduced in string theories, provides the possibility of establish a connection between the flavor dynamics and the time space structure. In this work, Lorentz-violating tensor is introduced in the Dirac lagrangian. We study the structure of a non dynamical tensor and calculate the fermionic propagator associated to flavor oscillations. We study the relation between the space-time structure and the flavor dynamics by using the dispersion relation calculated. These results are applied to the neutrino oscillations model.

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