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Neutrino-antineutrino oscillation

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It had been a long time ago the neutrino-antineutrino considered to happen. In order for this process to take place, the neutrino must be massive Majorana particle. A massiveness neutrino has been revealed and established by the oscillation experiments. If the most promising experiment, neutrinoless double beta decay, can give a positive signal in the near future experiments then the sufficient and necessary condition for the neutrino-antineutrino oscillation to take place will be met. Up to now, the most well-known scheme for this process is regarded as a helicity-flipping process. A neutrino with certain helicity state at production point will propagate and this helicity state will oscillate such that at detection point it is detected with different helicity states from the initial state. This is the widely accepted scheme. From our point of view, this is not so. The non-vanishing neutrino mass opens up a new channel which is suppressed by the neutrino mass. Using this fact, we want to show that the famous suppression factor can come from either at production point or detection point. There is no such helicity-flipping process during propagation. Positive helicity will remain so from production and detection point and so does the negative helicity state.

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