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Leggett-Garg inequalities and neutrino oscillations

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The oscillation of neutrinos was predicted in the mid of the last century. Since then they were intensively studied both theoretically and experimentally since a couple of phenomena like e.g CP violation (charge-conjugation-parity) are conjectured. Also, it is not known which neutrino is the heaviest, formulated as the mass hierarchy problem. I will focus on how tools from foundations of quantum mechanics can give answers to these riddles in neutrino physics. In particular, a type of the Leggett-Garg inequalities, kind of time-like versions of Bell inequalities, will be investigated for neutrinos propagating through matter.

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