

Search for the CP symmetry violation in the OPSVIO project

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One of three Sakharov conditions needed to explain the matter-antimatter asymmetry problem is the existence of CP symmetry breaking. This was indeed observed in the quark sector but with the magnitude which is not large enough to solve the matter-antimatter asymmetry problem. Since the CP violation is allowed by some leptogenesis models, the search for additional CP symmetry breaking was extended to leptonic sector. A recent experiment involving neutrino oscillations reported the indication of CP violation but with no decisive conclusion.

A complementary approach to search for the CP violation in leptonic sector is to use the tensor polarization of ortho-positronium (o-Ps) induced by an external magnetic field and measure the angular distribution of produced gamma rays. More than one-decade old result showed that there is no CP violation in o-Ps decay at precision level of 10^{-3} . In this presentation we will present the experimental set-up of the OPSVIO project with which we plan to improve the precision level for one order of magnitude compared to the state-of-art result.

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