

CP symmetry test at J-PET

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The Jagiellonian Positron Emission Tomograph (J-PET) is a detector for tests of discrete symmetries as well as for medical imaging. The novelty of the system is based on usage of plastic scintillators for active detection material and trigger-less data acquisition system. The apparatus consists of 192 plastic scintillators read out from both ends with vacuum tube photomultipliers. Positronium being an eigenstate of both the C and P operators is an unique probe to test the CP symmetry. This test is based on determination of polarization of photons from positronium annihilation. This allows exploration of a new class of discrete symmetry odd operators that were not investigated before. The novelty of the experimental setup is based on usage of plastic scintillators as active detection material and trigger-less data acquisition system. In the talk we describe a preliminary result of CP symmetry test at the precision level of 10^{-4} in a whole available phase-space and experimental techniques developed by the J-PET collaboration.

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