Karlsruher Institut für Technologie

Fakultät für Physik

Physikalisches Kolloquium

Jose Bernabeu,

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»Time Reversal Violation For Entangled Neutral Mesons«

Einführung: U. Nierste

The symmetry under Time Reversal in the fundamental Laws of Physics is one of the most subtle and difficult to study directly, especially for unstable particles. The international experiment BABAR, originally designed to study the Violation of the Symmetry that transforms matter into antimatter, has recently observed Time Reversal Violation in the time evolution of the neutral B mesons.
There is a unique opportunity for a search of Time Reversal Violation with unstable particles thanks to the spectacular quantum effect of the Einstein-Podolsky-Rosen Entanglement between a system of two neutral B mesons as produced at the Facilities called B-Factories. The transfer of information from the first decaying B to its still living partner leads to a quantum mechanical Tag of the prepared state for studying its time evolution.
By comparing the time dependent transition between two states of the B meson with its reverse, one observes an Asymmetry with a high statistical significance, as much as obtaining the same face of a dice after rolling it 55 successive times.

Freitag, 31.05.2013, 17 Uhr c.t.,

KIT, Campus Süd,
Otto-Lehmann-Hörsaal, Physik-Flachbau (Geb. 30.22).
Anschließend Nachsitzung im Gastdozentenhaus „Heinrich Hertz.

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