

## THE TIME REVERSAL INVARIANCE EXPERIMENT AT COSY (TRIC)

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One problem of the Big Bang model is the dominance of matter over antimatter in the Universe. The Standard Model prediction for the ratio of baryons over antibaryons deviates from the Astrophysical observations by eight orders of magnitude. To explain this discrepancy a strong CP or T-violation must be found. A possible discovery of a T-symmetry violation in the system of baryons would be a strong indication for the existence of physics beyond the Standard Model.

At the Cooler-Synchrotron COSY-Jülich, using a polarized proton beam and a tensor polarized deuterium target, we can measure an unique true (T-odd, P-even) null observable  $A_{y,xz}$ . This will serve as a new test of the T-symmetry violation in a baryonic system. In order to measure the forward scattering amplitude, the TRIC experiment is conceived as an internal transmission experiment in the storage ring with a storage-cell, fed by a tensor polarized deuteron beam of the PAX atomic beam source. By flipping the spin of beam or target a possible T-symmetry violation reveals itself by different total cross sections and therefore by a different decrease of the intensity of the circulating beam in the ring. Thus, for the TRIC experiment COSY will serve as an accelerator, storage ring, detector, and ideal zero degree spectrometer.

In this talk steps towards the realization of the TRIC experiment as well as first results of the beam time in summer 2016 will be presented.