

Search for the C -violating meson decay $\eta \rightarrow \pi^0 e^+ e^-$ with WASA-at-COSY

Monday, 6 June 2016 16:55 (0:20)

Collaboration

WASA-at-COSY

Abstract content

The C -symmetry as well as the invariance of the electromagnetic and the strong interaction under a charge conjugation transformation are basic concepts of the standard model. The electromagnetic decay $\eta \rightarrow \pi^0 e^+ e^-$ via a virtual photon violates the C -parity and alternative C -conserving processes are strongly suppressed. Hence, the η -meson is a perfect probe to test the conservation of the C -parity within the standard model and gives rise to search for physics beyond the standard model, e.g., dark bosons. Since this decay has not yet been observed, only an upper limit of the branching ratio of 4×10^{-5} is quoted by the PDG. A huge data set of $\approx 5 \times 10^8$ η mesons dedicated for studies on rare and forbidden η -decays has been recorded with the WASA-at-COSY setup, which allows for a determination of the relative branching ratio more sensitively than the recent upper limit. % The current status of the analysis will be presented.

Primary author(s) : DEMMICH, Kay (Westfälische Wilhelms-Universität Münster)

Presenter(s) : DEMMICH, Kay (Westfälische Wilhelms-Universität Münster)

Session Classification : Parallel Session A6