Measurement of dd $\rightarrow^3$He p π^- with WASA-at-COSY*

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One part of the physics programme with WASA-at-COSY is studying the Charge Symmetry Breaking (CSB) dd $\rightarrow 4He\pi^0$ reaction.

Charge symmetry is a special case of isospin symmetry defined as an invariance under the rotation of 180^o around the second axis in isospin space. Isospin Symmetry is broken on the QCD level due to the up and down quark mass difference and electromagnetic interactions. In contrast to isospin violation CSB is not dominated by electro-magnetic interactions and, thus, well suited to study the QCD quark mass term.

Based on the precision measurements of CSB in np $\rightarrow d\pi^0$ at TRIUMF and dd $\rightarrow 4He\pi^0$ at IUCF a theoretical analysis in the framework of Chiral Pertubation Theory has been started.

Studies of the Charge Symmetry conserving reaction dd $\rightarrow^3$He p π^- will be used to provide further input for these calculations like data on dd initial state interaction.

This presentation will give an overview on the analysis status on data on dd $\rightarrow^3$He p π^- taken with WASA-at-COSY in November 2007. The status and preliminary results are presented.

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