

Study of the η meson production in the $\vec{d} + d \rightarrow {}^4\text{He} + \eta$ reaction using the polarised beam

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There is a great interest in η -physics in the recent years [1]. Most of the experiments investigate η production in an electromagnetic reaction or in p+d collisions [2,3]. The existing data for the $\vec{d} + d \rightarrow {}^4\text{He} + \eta$ reaction are so far limited to the total and differential cross section at small excess energies ($Q < 7.7$ MeV) [4-6]. There are many theoretical models describing the η production in $p + d \rightarrow {}^3\text{He} + \eta$ reaction. The two step model proposed by Kilian and Nann [7] was extended by Fäldt and Wilkin [8] to describe the $\vec{d} + d \rightarrow {}^4\text{He} + \eta$ reaction. However, due to the lack of the data the question about underlying reaction mechanism can not be answered yet. The measurement of the $\vec{d} + d \rightarrow {}^4\text{He} + \eta$ reaction at the excess energy of 16.5 MeV was performed with Big Karl magnetic spectrograph at COSY accelerator in Jülich. The unpolarised and vector and tensor polarised deuteron beam was used. The results obtained so far will be presented.

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