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Study of the 2H(p,γ)3He cross section at E_p = 400-800 keV

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The amount of deuterium produced in Big Bang Nucleosynthesis depends sensitively on cosmological parameters such as the baryon energy density and the effective number of neutrino species. The recently improved precision of astronomical measurements of the primordial deuterium abundance [1] calls also for more precise nuclear
data. Currently, the precision of the Big Bang abundance prediction of ²H is limited to the uncertainty of ²H destruction in the ²H(p,γ)³He reaction. The same nuclear reaction also affects Big Bang production of ⁷Li and plays a role in solar physics. The present contribution reports on an experimental study of the ²H(p,γ)³He cross section at energies of E_p = 400-800 keV, recently performed at the HZDR 3 MV Tandetron accelerator in Dresden, Germany.

[1] R. J. Cooke, M. Pettini, R. A. Jorgenson, M. T. Murphy, and C. C. Steidel, Astrophys. J.
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