Contribution ID: **207** Type: **Poster**

Resonances in 11C above 10B+p threshold using thick target in inverse kinematics

Thursday, 23 September 2021 15:30 (2 hours)

The resonance structure in 11C is important to understand 7Be(α,γ)11C reaction in the pp-chain of Sun and for the 10B(p,α)7Be reaction as the contamination of the candidate of aneutronic fusion reaction 11B(p,2α) 4 He. Above the proton threshold, there are discrepancies in the excitation energies and lack of spin-assignment for the resonances in 11C nucleus. For this, an elastic scattering experiment of 10B+p was conducted and the R-matrix calculations are performed for the inverse kinematics data using the code Azure2 [1]. The resonant parameters such as the energy, spin-parity Jπ , and the proton-decay partial width are extracted and a comparison is performed with the results obtained from direct kinematic data [2]. Prior to this, similar calculations were performed for the reaction 12C+p [3,4] where the resonance structure is well established.
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Session Classification: Poster Session 2

Track Classification: Nuclear Astrophysics