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

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The resonance structure in ^{11}C is important to understand ^{7}Be(α,γ)^{11}C reaction in the pp-chain of Sun and for the ^{10}B(p,α)^{7}Be reaction as the contamination of the candidate of aneutronic fusion reaction ^{11}B(p,2α)^{4}He. Above the proton threshold, there are discrepancies in the excitation energies and lack of spin-assignment for the resonances in ^{11}C nucleus. For this, an elastic scattering experiment of ^{10}B+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 J^{π}, 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 ^{12}C+p [3,4] where the resonance structure is well established.

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