



Contribution ID: 345

Type: Oral Presentation

Comparative Study of Neutron and Proton Halo Breakup Cross Sections

We use the Continuum Discretized Coupled Channels (CDCC) method to study in detail the similarities and differences between neutron and proton halo breakup cross sections including total, nuclear, and Coulomb contributions in the breakup reactions of $8\text{B} \rightarrow 7\text{Be} + \text{p}$ and $8\text{Be} \rightarrow 7\text{Be} + \text{n}$ on various target nuclei (^{28}Si , ^{120}Sn and ^{236}U). Our preliminary results reveal that the neutron halo breakup cross sections are generally larger than those of the proton halo. Additionally, we find that continuum-continuum couplings are stronger in the neutron halo breakup than in the proton halo breakup.

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Session Classification: Theoretical and Computational Physics

Track Classification: Track G - Theoretical and Computational Physics