**Coulomb Nuclear Interference effect in breakup reaction of** 26**P Halo nuclei**

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In contrast to stable nuclei, halo nuclei have some unique characteristics, such as a relatively low separation energy and a large RMS radius. We must examine the breakup reaction of these unique nuclei in order to examine their structure and reaction dynamics. Broadly speaking, breakup reactions can be divided into two categories: Coulomb breakup reactions and nuclear breakup reactions. However, the interference effect between these two phenomena is crucial to understand because, if we study Coulomb breakups, it is possible that breakup could also occur as a result of nuclear interaction.

We have investigated the Coulomb nuclear interference effects in breakup reaction of 26P halo nuclei with three different target ( i.e., 12C, 58Ni, 208Pb) at 40-100 MeV/n beam energies. Here we investigated two types of interference; one is between the total Coulomb (which included both Recoil and Direct term) and Diffraction, and another one is between the Recoil and Direct, which is used to calculate the total Coulomb breakup cross-section. Coulomb breakup is calculated using the semi-classical method to all order perturbation theory and nuclear breakup using Eikonal approximation in the Glouber model as given in ref.[1, 2, 3, 4].

We have deduced from the results that the percentage interference effect is dependent on the projectile’s beam energy and target size but it is small for heavy and small mass target, larger for medium mass target. As a result, interference effects become more predominate as we move towards medium mass target and higher-energy reactions, which can be advantageous to understand the structure and their significance in the astrophysical reaction of halo nuclei in the future.

**References**

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