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# Investigation of low-lying dipole responses in the 'island of inversion'

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Abstract: The enhancement of the low-lying E1 (electric dipole) strength above the one-nucleon emission threshold is known to be a unique feature of halo nuclei and is often studied via Coulomb breakup reactions. The low-lying E1 strengths has been studied very well both theoretically and experimentally for the lighter nuclei such as 6He, 11Li, 11Be, 15C, and 19C [1]. Due to advancements in the Radioactive-ion beam (RIB) facilities, these studies have been recently extended to the medium-mass nuclei lying in the island of inversion. In view of these recent developments, we have studied the E1 responses for 31Ne, 34Na, and 37Mg using a simple analytic model and finite-range distorted-wave Born approximation theory of the Coulomb dissociation [2]. We will report our recent results for the E1 response of these weakly-bound systems and their scaling phenomenon with parameters such as the binding energy and deformation [2]. Along with this, we will also briefly discuss our new results for speculated moderate halo 29Ne [3].

References:
1. T. Aumann, Eur. Phys. J. A 55 (2019) 234.
2. Manju, Jagjit Singh, Shubhchintak, and R. Chatterjee, Eur. Phys. J. A 55 (2019) 5.
3. Manju, M. Dan, G. Singh, Jagjit Singh, Shubhchintak, and R. Chatterjee, under review.

## Field of your work

Theoretical nuclear physics

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