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Electric dipole response of sd-shell nuclei within the Large-Scale Shell Model approach

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Photo-nuclear reaction rates provide key inputs to various applications of nuclear physics and consist fundamental probes of nuclear structure, from single particle to collective excitations, revealing nature of complicated nucleonic correlations. Among the excitations of nuclei
due to the external field, the E1 dipole response is of particular interest. In this talk, I will discuss recent systematic calculations of E1 dipole response of long-lived sd-shell nuclei within the large-scale shell model framework that are of special interest for the PANDORA collaboration. It will be shown that our theoretical framework permits to reproduce to a good accuracy the position of the GDR peak and the shape of the E1 distributions in the experimentally known cases. If time allows, the enhancement of the TRK sum rule and its connection to various terms of the nuclear Hamiltonian as well as the analysis of the pygmy-dipole modes in this region will be presented.

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