

Systematic studies of $B(E2)$ values in the exotic neutron-rich even-even nuclei *

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Over the last few years a large number of lifetimes of the first excited states in the exotic even-even nuclei has been obtained from Advanced Time-Delayed measurements at the OSIRIS, IGISOL and ISOLDE mass separators. The half-lives in these measurements range from about 10 ps to 1 ns, and the nuclei of interest span the Chart of Nuclei from as low as ^{32}Mg to the neutron-rich Radium and Thorium isotopes. In this presentation we will focus on the new results in three mass regions: at $A\sim 120$ ($^{104,106}\text{Mo}$, $^{106,108,110,112}\text{Ru}$, $^{108,110,112,114}\text{Pd}$), mass $A\sim 150$ (^{136}Te , ^{148}Ba , ^{148}Ce), and a few cases at $A\sim 222$.

At each one of these regions serious discrepancies with previous measurements are noted. The new results, characterized by high precision and selectivity, lead to consistent and smooth systematics and largely remove any need for exotic effects that were previously suggested as the explanations for strong deviations from smooth systematics. Direct lifetime measurements are complementary to the Coulomb excitations in the neutron-rich nuclei.