

UNIFIED APPROACH TO SHELL MODEL, REACTIONS AND GIANT RESONANCES

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An old method introducing an effective non-Hermitian and energy-dependent Hamiltonian is further developed [1,2] to unify the description of discrete and continuum states with calculation of reaction cross sections. The approach includes the conventional shell model for bound states as one of the basic parts. The specific features are the energy-dependent resonance widths, correct determination of reaction thresholds and consistent consideration of isotopic chains linked by the decay processes. Currently the channels with one and two particles in the continuum are included (sequential and correlated decay). The interplay [3,4] of intrinsic collectivization (formation of giant resonances) with the collectivization of decay widths (similar to optical super-radiance) defines the properties of giant resonances and leads to the pronounced pigmy-branch. Specific applications to light exotic nuclei are discussed.

REFERENCES

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