

## Dipole electric and magnetic strengths in $^{156}\text{Gd}$

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In connection with recent NRF experiment for dipole spectra in  $^{156}\text{Gd}$  [1], various E1 and M1 excitations in this nucleus are investigated in the framework of the fully self-consistent quasiparticle random phase approximation (QRPA) with Skyrme forces [2]. The low-energy pygmy dipole resonance (PDR), isovector E1 giant dipole resonance (GDR), isovector M1 lowenergy orbital scissors resonance (OSR), M1 spin-flip giant resonance (SFGR) are covered.

Besides, we consider a toroidal E1 resonance and low-energy M1 spin-flip states. The deformation splitting and dipole-octupole coupling of electric excitations are analyzed. Our calculations show a good agreement with E1 NRF data but disagree with M1 data at 4-6 MeV, where, in contradiction with our calculations and previous (p, p') data, almost no M1 strength was observed.

### References

1. M. Tamkas, E. Aciksoz, J. Issak, T. Beck, N. Benouaret, M. Bhike I.Boztosun, A. Durusoy, U. Gayer, Krishichayan, B.Loher, N. Pietralla, D. Savran, W.Tornow, V. Werner, A.Zilges, M. Zweidinger, Nucl. Phys. A987, 79 (2019).
2. V.O. Nesterenko, P.I. Vishnevskiy, P.-G. Reinhard, A. Repko and J. Kvasil, Eur. Phys. J. 60, 28 (2024).

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