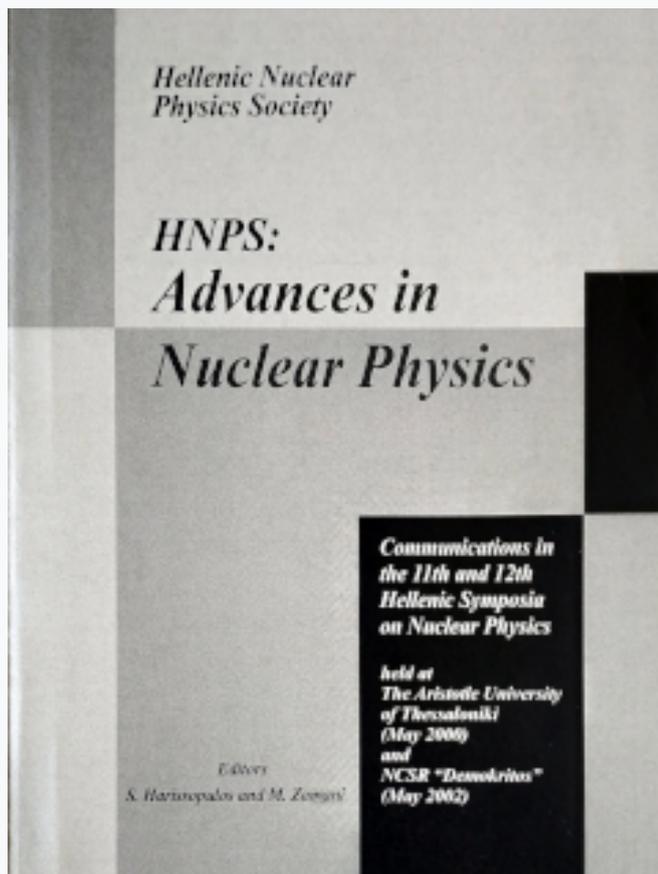


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MULTIPOLE RESPONSE OF O AND Ca ISOTOPES IN A SELF-CONSISTENT CONTINUUM RPA CALCULATION

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The physics of nuclei far from stability, under study in present and future radioactive ion beam facilities, presents interesting novel features. In the last few years, the theoretical and experimental study of the multipole response of various such nuclei (light and medium-heavy ones) has started, aiming to illuminate some of the effects on the response of the excess proton or neutron number (see for example the contributions in [1,2]).

In this work, a self-consistent continuum HF-RPA [3] calculation is carried out for the isoscalar monopole and quadrupole, as well as the isovector dipole response of even O and Ca isotopes, using suitable Skyrme force parametrizations, in order to study the effect of gradually varying the neutron number. One of our aims is to subsequently perform second-order RPA calculations [4]. The corresponding method, including the continuum, is at present under development.

References

1. Proceedings of the Topical Conference on Giant Resonances, Varenna, May 11-16 1998, *Nucl. Phys.* **A649** (1999).
2. Proceedings of the Topical Conference on Giant Resonances, Osaka, June 12-15 2000, *Nucl. Phys.* **A687** (2001).
3. G.F.Bertsch and S.F.Tsai, *Phys. Rep.* **18** (1975) 125; G.Bertsch in "Computational Nuclear Physics I - Nuclear Structure", eds. K.Langanke, J.A.Maruhn and S.E.Koonin (Springer, Berlin, 1991) p.28.
4. S.Drozd, S.Nishizaki, J.Speth and J.Wambach, *Phys. Rep.* **197** (1990) 1.