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Calculation of quadrupole transition rates in cross *sd*-*pf* shell isotopes (Si, S and Ar)

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Quadrupole transition rates and effective charges are calculated for even-even Si, S and Ar isotopes with $N > 20$. Shell model calculations are performed with *sd*-shell model space for protons and *sdpf* shell-model space for neutrons. Excitation out of major shell space are taken into account through a microscopic theory which allows particle-hole excitation from the core and model space orbits to all higher orbits with $2\hbar\omega$ excitation. Effective charges are obtained for each isotope with $N < 20$ and average effective charges are extracted and used for each nucleus. The results show a systematic increase in the $B(E2)$ values. Shell model calculation predicts the erosion of the $N=28$ magicity in the neutron rich ^{42}Si . No clear indications about the erosion of the shell gap closure in ^{44}S and ^{46}Ar isotopes.

Biography

R A Radhi is a retired Professor of Physics, Department of Physics, College of Science, University of Baghdad, and Baghdad Iraq. He did his PhD from Michigan State University 1983, MSc from University of Baghdad 1974, BSc from University of Basrah 1972 field of interests: nuclear structure, electron scattering, electromagnetic transitions and moments, exotic and halo nuclei, computational physics, hydrodynamics supervision: 18 MSc and 24 PhD students.

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