

Spin and Spin-isospin responses in $N=Z$ nuclei and Isoscalar pairing correlations

Tuesday, 20 June 2017 15:45 (15 minutes)

The spin magnetic dipole transitions and the neutron-proton spin-spin correlations in sd -shell even-even nuclei with $N = Z$ are investigated using shell model wave functions. The isoscalar (IS) spin-triplet pairing correlation provides a substantial quenching effect on the spin magnetic dipole transitions, especially on the isovector (IV) ones. Consequently, an enhanced isoscalar spin-triplet pairing interaction influences the proton-neutron spin-spin correlation deduced from the difference between the IS and the IV sum rule strengths. The effects of the higher configuration mixings, exchange currents and $\Delta(\Delta(33)$ resonance)-hole coupling are also examined in the spin transitions and the spin-spin correlations of the ground states.

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