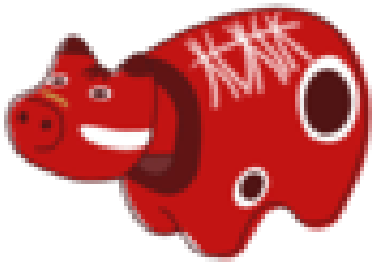

Contribution ID: **8** Type: **not specified**

Microscopic study of M1 resonances in Sn isotopes

Wednesday, 5 March 2025 15:07 (1 minute)

The magnetic dipole (M1) resonances of even-even 112–120,124Sn isotopes are investigated in the framework of the self-consistent Skyrme Hartree-Fock + Bardeen-Cooper-Schrieffer (HF+BCS) and quasiparticle random phase approximation (QRPA). The Skyrme energy density functionals SLy5 and T11 with and without tensor terms are adopted in our calculations. The mixed type pairing interaction is used to take care of the pairing effect for open-shell nuclei both in the ground and excited states calculations. The calculated magnetic dipole strengths are compared with available experimental data. The QRPA results calculated by SLy5 and T11 with tensor force show a better agreement with the experimental data than those without the tensor force. By analyzing the HF and QRPA strength distributions of 112Sn and 124Sn, we discuss the effect of tensor force on the M1 resonances in detail. It is found that the M1 resonance is sensitive to the tensor interaction, and favors especially a negative triplet-odd tensor one. Depending on the nucleus, a quenching factor of the M1 operator of about 0.71–0.95 is needed to reproduce the total observed transition strength. In our calculations, we also find some low-lying, pygmy-type magnetic dipole states distributed below 6.0 MeV, and they are formed mainly from the neutron configuration $\nu 2d_{5/2} \rightarrow \nu 2d_{3/2}$.

Type of contribution

Are you a student or postdoc?

no

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