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Enhancement of low-energy magnetic dipole radiation arising from the scissors motion

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The low-energy-enhancement in the γ strength function is investigated in an angular-momentum-projected approach with the neutrons and protons projected respectively to account for the scissors motion. The rare earth nucleus 144Nd is studied as an example for which the enhancement is reproduced to a quantitative level. It is suggested that the low-energy-enhancement arises from near-degenerate sequences connected by strong M1 transitions, as a result of the approximately free scissors motion in weakly deformed nuclei.

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