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Magnetic dipole excitations of the ^{163}Dy nucleus[1] ZEMINE ZENGINERLER, Department of Physics and Astronomy, University of North Carolina, Chapel Hill, NC 27599-3255, USA, EMRE TABAR, HAKAN YAKUT, Physics Department, Faculty of Arts and Sciences, Sakarya University, 54187, Sakarya, Turkey, ALI AKBAR KULIEV, The National Aviation Academy of Azerbaijan, Baku, Azerbaijan, EKBER GULIYEV, State Agency on Nuclear and Radiological Activity Regulation, Ministry of Emergency Situations, N.Rafiyev 26, Baku, Azerbaijan — In this study some properties of the magnetic dipole excitations of the deformed odd mass ^{163}Dy nucleus were studied by using Quasiparticle-phonon nuclear model (QPNM). The several of the ground-state and low-lying magnetic dipole (M1) mode characteristics were calculated for deformed odd-mass nuclei using a separable Hamiltonian within the QPNM. The M1 excited states, reduced transition probabilities B(M1), the ground-state magnetic properties such as magnetic moment (μ), intrinsic magnetic moment (g_K), effective spin factor ($g_s^{\text{eff.}}$) are the fundamental characteristics of the odd-mass nucleus and provide key information to understand nuclear structure. The theoretical results were compared with the available experimental data and other theoretical approaches. Calculations show that the spin-spin interaction in this isotopes leads to polarization effect influencing the magnetic moments. Furthermore we found a strong fragmentation of the M1 strength in ^{163}Dy nucleus which was in qualitative agreement with the experimental data.

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