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Title: **Search for magnetic rotation in the A ≈140 region.**

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In the early 1990's, a new type of rotation, represented by the rotation of a large magnetic dipole around the nuclear spin, has been discovered in Pb nuclei with A≈200. To date, such bands have been found in different nuclei in several mass regions [1]. Magnetic rotation (MR) is expected in weakly deformed nuclei close to magic numbers, if high-j particle orbitals and high-j hole orbitals are active [2]. In this work we will present recent data for several nuclei from the Z≈64 and N≤82 region obtained with γ-ray arrays EUROBALL and GASP at the Legnaro National Laboratory. Dipole magnetic bands, with strong M1 and weak or unobserved E2 crossover transitions, have been identified in ^{142,143,144}Gd and ^{141}Eu nuclei. In general, a reasonable agreement between the experimental data and the predictions of the tilted axis cranking (TAC) model has been obtained supporting the interpretation of the dipole bands in this region as MR bands. Information about the strength of the effective interaction between constituent nucleons has been deduced using a semiclassical scheme of the coupling of two angular momentum vectors. A transition from regular to irregular MR bands has been found in Gd nuclei with N approaching 82. This can be explained as a decrease of quadrupole polarizability close to the magic shell, where short range residual interactions between valence particles dominate, which do not favour the formation of stable "shears blades".

References

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Invited talk.