

Collective Structures at Ultrahigh Spin in the Rare Earth Region: A New Chapter in the Story of Rapid Nuclear Rotation and A New Challenge for Understanding Triaxiality in Nuclei

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In the rare earth nucleus ^{158}Er , many fascinating phenomena that occur with increasing excitation energy and angular momentum have been observed. The latest one is a spectacular return to collectivity in the form of three rotational bands at spins beyond band termination [1, 2]. These three bands have been suggested to possess a triaxial strongly deformed shape based on a comparison of transition quadrupole moments (Q_t) between experiment and theory [3, 2]. Some questions arising in the above comparison, which represent a challenge for understanding triaxiality in nuclei, will be discussed. The recent discoveries in ^{158}Er open a new chapter in the story of rapid nuclear rotation and have also triggered a comprehensive project to explore such phenomena in the light rare earth nuclei, for example, ^{157}Ho [2]. New results on ^{157}Ho (and, possibly, those from the to-be-performed ^{160}Yb DSAM experiment) will also be presented.

References

[1] E. S. Paul, *et al.*, Phys. Rev. Lett., **98**, (2007), 012501.

[2] X. Wang, *et al.*, J. Phys. Conf. Ser., in press.

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