Abstract Submitted
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Nature of Collective Dipole and Octupole Transitions in Neutron-Rich Barium Isotopes[1] B. BUCHER, Lawrence Livermore Natl Lab, S. ZHU, Argonne Natl Lab, ANL, LBNL, LLNL, ROCHESTER, FSU, LIVERPOOL, MARYLAND, NOTRE DAME, OHIO, W. SCOTLAND COLLABORATION — Recently, a direct measurement of octupole strength in ^{144}Ba was carried out via Coulomb excitation with a radioactive beam from Argonne's CARIBU facility using GRETINA and CHICO2 [1]. The results verify the presence of enhanced octupole collectivity in this isotope, as predicted by theory [2]. In the neighboring isotope ^{146}Ba, however, the importance of octupole correlations is more uncertain. Specifically, the electric dipole strength, expected to be closely correlated with the octupole one, displays what is perhaps the most significant drop in strength between neighboring isotopes of any medium- to heavy-mass nuclei. To address this puzzling question, a Coulomb excitation experiment was also performed on ^{146}Ba under the same conditions. The new measurement yields an enhanced octupole strength of the same magnitude as that observed in ^{144}Ba. This supports the notion that the strong-weak dipole behavior in this region results from the unique single-particle structure characteristic of $Z \sim 56$ and $N \sim 90$ in the presence of a pear-shaped mean-field potential [2]. [1] Bucher *et al.*, *Phys. Rev. Lett.* **116**, 112503 (2016) [2] Butler and Nazarewicz, *Rev. Mod. Phys.* **68**, 349 (1996)

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