Octupole Collectivity: The Odd Case of Neutron-Rich 143Ba

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The neutron-rich barium nuclei have enjoyed enduring attention due to the expectation that they exhibit strong octupole correlations. The observation of enhanced octupole collectivity in 144,146Ba [1,2], consistent with octupole deformation, has further piqued the interest in this region of the nuclear chart. However, the nearby odd-mass systems have received relatively little study compared to their even-even counterparts, despite the fact that the interplay between the odd particle and the core can provide valuable information regarding the octupole collectivity in this region. In this seminar, I will discuss a recent Coulomb excitation study of 143Ba conducted to investigate the octupole collectivity of this odd-mass system. Our results indicate that 143Ba exhibits significantly lower octupole collectivity than 144,146Ba, suggesting that the possible octupole deformation inferred for these even-even nuclei has disappeared in 143Ba.

[1] B. Bucher et al., PRL 116, 112503 (2016).

[2] B. Bucher et al., PRL 118, 152504 (2017).