Abstract Submitted
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Vibration and Rotation in N=150,152 Cf Nuclei[1] P. CHOWDHURY, Y. QIU, S.S. HOTA, C.J. LISTER, UMass Lowell, T.L. KHOO, R.V.F. JANSSENS, I. AHMAD, M.P. CARPENTER, J.P. GREENE, F.G. KONDEV, T. LAURITSEN, D. SEWERYNIAK, S. ZHU, Argonne Nat. Lab. — Collective rotational bands with spins $> 20\hbar$ have been populated in experiments on Z$\approx$100 nuclei via inelastic and transfer reactions with heavy beams. In this mass region, the coupling of rotations and vibrations is still waiting to be adequately explored. Nuclei here are expected to be especially fertile in non-quadrupole shape degrees of freedom. In addition to reflection-asymmetric octupole shapes, non-axial β_{32} deformations have been predicted for N=150 nuclei in both mean-field and density functional theories, with ^{248}Cf as a front-runner for the observation of such effects. Rotation-vibration couplings for higher order multipole shapes for these nuclei may provide a window to symmetries in superheavy nuclei. High-spin states in ^{248,250}Cf nuclei were populated via inelastic and transfer reactions using a ^{208}Pb beam incident on radioactive ^{249}Cf and mixed ^{249,250,251}Cf targets, with prompt γ rays detected by the Gammasphere array. Octupole vibrations were identified in ^{248,250}Cf, and extended to high spins. The results will be presented and discussed in the context of the emerging systematics of this region.

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