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High-Statistics β^+/EC-Decay Study of ^{122}Xe

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The Xe isotopes are centrally located in the $Z > 50$, $N < 82$ region that displays an extraordinarily smooth evolution of simple collective signatures. However, the collectivity of excited states in this region is very poorly characterized because of a general lack of spectroscopic data for low-spin states that provide measures of collective properties such as relative and absolute $B(E2)$ decay strengths and the occurrence of $E0$ decays. There are spectroscopic hints to unusual structures in this region. The 0_3^+ states in $^{124-132}$Xe are very strongly populated in $(^3He, n)$ reactions, suggesting a pairing vibrational structure influenced by proton subshell gaps, perhaps leading to shape-coexistence that could give rise to strong $E0$ transitions. Recent work on ^{124}Xe [1] has established nearly identical quadrupole collectivity for the pairing vibrational 0_3^+ band and the ground state band. However, in ^{122}Xe, the 0_3^+ state has not been firmly identified. A high-statistics ^{122}Cs β^+/EC decay experiment to obtain detailed spectroscopic data for low-spin states was performed at the TRIUMF-ISAC facility using the 8π γ-ray spectrometer and its auxiliary detectors including PACES, an array of five Si(Li) detectors, for conversion electrons spectroscopy. The status of the data analysis and preliminary results will be presented.

[1] A.J. Radich *et al.*, Phys. Rev. C **91**, 044320 (2015).

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