

Abstract Submitted
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Intrinsic Electric Quadrupole Moment of the $K^\pi = 8^-$ Isomeric State in ^{178}Hf ¹ SHAOFEI ZHU, Brookhaven National Laboratory — The lifetime of the 9^- state in the rotational band based on the 4.0 s, $K^\pi = 8^-$, isomeric state ($^{178}\text{Hf}^{m_1}$) from the decay of the 31-yr isomer ($^{178}\text{Hf}^{m_2}$) was determined to be 99(2) ps by means of the fast-timing technique using two $\text{LaBr}_3(\text{Ce})$ scintillators. The $\delta(E2/M1)$ mixing ratios of the $\Delta I = 1$ γ rays depopulating levels in this band were deduced from γ - γ angular correlations by using a $^{178}\text{Hf}^{m_2}$ radioactive source located at the center of the Gammasphere HPGe detector array. The new results, together with previous spectroscopic information, provide a different way to extract the intrinsic quadrupole moment of $Q_0 = 6.45(14)$ *eb* for the $^{178}\text{Hf}^{m_1}$ band. A possible explanation for the reduction of the $^{178}\text{Hf}^{m_1}$ nuclear charge radius is presented.

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