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***K* isomers in ^{248}Cf and the $Z=100$ deformed shell gap**

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The nuclear structure of neutron-rich actinide ^{248}Cf was investigated at the Tokai Tandem Accelerator Laboratory of the Japan Atomic Energy Agency. This isotopes lies two neutrons and two protons below the generally accepted $Z=100$ and $N=152$ deformed shell gaps, but recently the location of these gaps has been heavily debated and $Z=98$ has also been suggested. ^{248}Cf was produced using the $^{249}\text{Cf}(^{18}\text{O},^{19}\text{O})^{248}\text{Cf}$ neutron-removal reaction. The γ rays emitted by ^{248}Cf were detected using a composite array of Ge detectors and LaBr_3 scintillators. Two isomeric states with half-lives in the nanosecond range were found among low-lying excited states. The first, with $t_{1/2} \sim 5$ ns, is the previously known band-head of the $K^\pi=2^-$ octuple vibrational band at 592 keV. The second, with $t_{1/2} \sim 11$ ns, is a new state which decays via a low-energy $E1$ transition to a much longer-lived state lying below 1 MeV of excitation. It will be shown how the observation of these low-lying isomeric states favors $Z=100$ over $Z=98$ for the location of the deformed proton shell gap also in ^{248}Cf .

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