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First Spectroscopy of the R-process Nucleus 110Zr

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The structural evolution on the far neutron-rich side of stability is critical for defining the features of the elemental abundance distribution created during the rapid-neutron capture process (r-process). A potentially large shell-gap was historically predicted at N=70 in ^{110}Zr, which could significantly modify the r-process abundances before the A=130 peak. Recent lifetime measurements in the region suggest however that ^{110}Zr is well deformed. We present the first direct data on the structure of this nucleus, spectroscopy of the low-lying 2+ and 4+ states, and will discuss the agreement with the available theoretical predictions.

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