

Abstract Submitted  
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**Anomalous behaviour of the  $2^+$  mixed-symmetry state in  $^{94}\text{Zr}$** <sup>1</sup>  
NICO ORCE, ESMAT ELHAMI, SHARMISTHA MUKHOPADHYAY, SADIA  
CHOUdry, MARCUS SCHECK, MARCUS MCELLISTREM, STEVE YATES,  
University of Kentucky — The low-spin structure of  $^{94}\text{Zr}$  has been studied with the  
(n,n' $\gamma$ ) reaction, and branching ratios, lifetimes, multipolarities and spin assignments  
were determined. The  $2_2^+$  state at 1671.4 keV has been identified as the lowest mixed-  
symmetry state in  $^{94}\text{Zr}$ . The 752.5 keV transition from this state to the  $2_1^+$  level  
has a large B(M1) value of 0.33 (5)  $\mu_N^2$ , and the B(E2) of the transition to the  
ground state has an unusually large value of 8(1) W.u. The M1 transition strength  
is in agreement with IBM-2 predictions in the U(5) vibrational limit, whereas the  
large B(E2; $2_{1,MS}^+ \rightarrow 0_1^+$ ) value significantly exceeds the E2 strength predicted by the  
IBM-2. For the first time, the  $2_{1,MS}^+ \rightarrow 0_1^+$  E2 transition is observed to have a larger  
E2 transition strength than the  $2_1^+ \rightarrow 0_1^+$  decay.

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Nico Orce  
University of Kentucky

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