

Abstract Submitted
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Parity Measurements in ^{80}Sr ¹ C.S. MYERS, R.A. KAYE, Ohio Wesleyan University, S.L. TABOR, T.D. BALDWIN, D.B. CAMPBELL, C. CHANDLER, M.W. COOPER, C.R. HOFFMAN, J. PAVAN, M. WIEDEKING, Florida State University, J. DÖRING, GSI, S.M. GERBICK, Purdue University Calumet, L.A. RILEY, Ursinus College — Until recently, ^{80}Sr was thought to possess only positive-parity states, in contrast to many other neighboring nuclei which are known to have negative-parity states. Now there is indirect experimental evidence for negative-parity states, but the parities have not been measured directly. The goal of this study was to finally resolve this long-standing mystery by measuring conclusively the parities of as many excited states in ^{80}Sr as possible. ^{80}Sr nuclei were produced at Florida State University following the $^{54}\text{Fe}(^{28}\text{Si}, 2p)$ and the $^{54}\text{Fe}(^{28}\text{Si}, \alpha 2p)$ reactions at 90 and 110 MeV, respectively. Following the reactions, high-spin states in ^{80}Sr were populated and data were collected on the resulting cascades of emitted γ rays using an array of 10 Ge detectors. The linear polarizations of 31 γ rays were measured and many times allowed for the determination of the parity of the parent state that released the γ ray. The results have conclusively verified negative parity for one sequence of states, and positive parity for the yrast states.

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