Abstract Submitted for the DNP07 Meeting of The American Physical Society

Parity Measurements in ⁸⁰Sr¹ C.S. MYERS, R.A. KAYE, Ohio Wesleyan University, S.L. TABOR, T.D. BALDWIN, D.B. CAMPBELL, C. CHAN-DLER, M.W. COOPER, C.R. HOFFMAN, J. PAVAN, M. WIEDEKING, Florida State University, J. DORING, GSI, S.M. GERBICK, Purdue University Calumet, L.A. RILEY, Ursinus College — Until recently, ⁸⁰Sr 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 Fe(28 Si, 2p) and the 54 Fe(28 Si, $\alpha 2p$) reactions at 90 and 110 MeV, respectively. Following the reactions, high-spin states in ⁸⁰Sr 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.

¹Supported by the National Science Foundation and the OWU Summer Science Research Program.

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Date submitted: 27 Jul 2007

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