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Precision intensities and angular correlation measurements in ^{152}Sm E.A. MCCUTCHAN, C.J. LISTER, S. ZHU, M.P. CARPENTER, R.V.F. JANSSENS, T.L. KHOO, T. LAURITSEN, D. SEWERYNIAK, Argonne National Laboratory — The samarium isotopic chain shows great structural change dripline-to-dripline; evolving from deformed at the proton dripline, through spherical near stability before undergoing another transformation near N=90 when large prolate deformation re-emerges. Lying at the midpoint of this latter transition is ^{152}Sm. Numerous models have been developed to explain ^{152}Sm in terms of either being at the critical point of a phase transition, or in terms of coexisting shapes. To test the validity of these different models, a beta-decay experiment was performed at the ATLAS facility at Argonne. The decay of ^{152}Eu to ^{152}Sm was studied through gamma-ray spectroscopy using Gammasphere. An extremely large data set was collected, consisting of $>$ 7x10^9 gamma-gamma or higher fold events. This made possible a high precision measurement of energies and intensities and very definite angular correlation determinations. The new results resolve some previous experimental ambiguities and help to differentiate between theoretical models. Work supported by the DOE Office of Nuclear Physics under contract DE-AC02-06CH11357.

E.A. McCutchan
Argonne National Laboratory

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