Abstract Submitted for the DNP12 Meeting of The American Physical Society

First β -decay study with CARIBU and Gammasphere: ^{142,144}Cs to ^{142,144}Ba¹ S. ZHU, M. ALCORTA, P.F. BERTONE, M.P. CARPENTER, C.R. HOFFMAN, R.V.F. JANSSENS, F.G. KONDEV, T. LAURITSEN, C.J. LISTER, R. PARDO, A.M. ROGERS, G. SAVARD, D. SEWERYNIAK, R. VONDRASEK, Argonne National Laboratory — As part of the commissioning of the CARIBU facility at ATLAS, beams of ¹⁴²Cs and ¹⁴⁴Cs ions from CARIBU was charge bred and, subsequently, accelerated to ~ 6 MeV/A by ATLAS before being transported to the target location of Gammasphere. The ¹⁴²Cs beam was implanted in a Pb foil with the rate of 10³ ions/s for 16 hours and γ radiation following β decay (T_{1/2} = 1.68s) was detected by the 101 Compton-suppressed germanium detectors of the Gammasphere array. The power of the CARIBU-Gammasphere combination for β -decay investigations was demonstrated. The ¹⁴²Ba level scheme was considerably expanded: 215 γ transitions have been identified and placed into an expanded level scheme with 71 states. Furthermore, a large number of spin-parity assignments were made based on the measured angular correlations. High-precision log ft values were determined as well. The data provide important new information about the nature of low-spin excitations in this nucleus. In particular, new information is obtained about the strength of octupole correlations and the nature of other low-lying excitations.

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