

Abstract Submitted
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A precise investigation of the ^{76}Br decay for PET imaging¹ K. MORAN, C.J. LISTER, P. CHOWDHURY, Dept. of Physics, University of Massachusetts, E.A. MCCUTCHAN, A. SONZOGNI, B. BRODER, National Nuclear Data Center, Brookhaven National Laboratory, R.J. NICKLES, P. ELLISON, Dept. of Medical Physics, University of Wisconsin, S. ZHU, J.P. GREENE, Physics Division, Argonne National Laboratory — Radioisotopes are used in over 14 million medical imaging and therapy procedures each year. New isotopes are constantly introduced to optimize targeting or decay radiation. The dose of internal radiation is calculated from data which in some cases have not been updated for several decades. A thorough investigation of these isotopes using modern technologies and improved analysis techniques is vital to ensure accurate quantification of dose to patients. In this work, we explore the decay of ^{76}Br , a β^+ emitter for PET (positron emission tomography), which is used with ^{77}Br for therapy. A sample containing several isotopes of interest, including $^{76,77}\text{Br}$, was produced at the University of Wisconsin Medical School, shipped to Argonne National Lab, and assayed for 7 days using the Gammasphere detector array, running both analog and digital data acquisition systems simultaneously. More than 6 terabytes of data were collected from the $\sim 1\text{MBq}$ source. Analysis of this data set shows new strength to high-lying levels, and allows a reappraisal of the received dose as well as an investigation of count-rate advantages of digital Gammasphere.

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