

PRECISION BRANCHING RATIO MEASUREMENT FOR THE SUPERALLOWED β^+ EMITTER ^{62}Ga *

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A high-precision branching ratio measurement for the superallowed β^+ emitter ^{62}Ga has been made using the 8π γ -ray spectrometer in conjunction with the SCintillating Electron-Positron Tagging ARray (SCEPTAR) as part of an ongoing experimental program in superallowed Fermi beta decay studies at the Isotope Separator and Accelerator (ISAC) facility at TRIUMF in Vancouver, Canada, which delivered a high-purity beam of $\sim 10^4$ ^{62}Ga /s in December 2005. The present work represents the highest statistics measurement of the ^{62}Ga superallowed branching ratio to date. 27 γ rays emitted following non-superallowed decay branches of ^{62}Ga have been identified and their intensities determined. These data yield a superallowed branching ratio with 10^{-4} precision, and our observed branch to the first nonanalogue 0^+ state sets a new upper limit on the isospin-mixing correction δ_{C1}^1 . By comparing our ft value with the world average \overline{ft} , we make stringent tests of the different calculations for the isospin-symmetry-breaking correction δ_C , which is predicted to be large for ^{62}Ga .

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