Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Precise Measurement of Branching-Ratios in the β decay of ^{38}Ca
H.I. PARK, J.C. HARDY, V.E. IACOB, M. BENCOMO, L. CHEN, V. HORVAT, N. NICA, E. SIMMONS, B.T. ROEDER, R.E. TRIBBLE, Texas A&M University
— Precise measurements of ft values for superallowed Fermi beta decays currently provide the most demanding test of the conserved vector current hypothesis and lead to the most precise value of V_{ud}, the up-down quark-mixing element of the Cabibbo-Kobayashi-Maskawa matrix. One of the key elements in obtaining V_{ud} is an accurate calculation of small nuclear-structure-dependent corrections that must be applied to each experimental ft value leading to a value for the vector coupling constant, G_V. Uncertainties in these calculations contribute significantly to the uncertainty in V_{ud} at the present level of experimental precision. However, these theoretical uncertainties can be reduced if the corrections are experimentally validated by measurements of previously uncharacterized transitions with large predicted correction terms such as from ^{38}Ca. We report here the first measurement of the superallowed branching ratio from ^{38}Ca with a precision of 0.1%. This completes the data required for a precise ft-value result for this new contributor to the determination of V_{ud}.

Hyo-In Park
Texas A&M University

Date submitted: 10 Jan 2013 Electronic form version 1.4