Abstract Submitted
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Improved β Decay Branching Ratios V.E. IACOB, J.C. HARDY, V. GOLOVKO, Cyclotron Institute, Texas A&M University — The work we report here aims at increasing the precision possible in the measurement of branching ratios for superallowed β^+decays. Such highly accurate values are essential in generating precise ft-values for $0^+ \rightarrow 0^+$decays, which can then be used to test the Standard Model *via* the unitarity of the Cabibbo-Kobayashi-Maskawa matrix [1]. The required precision is $\sim$0.1% or better. While this limit was already achieved in the case of ^{34}Ar [2], it would have been very difficult, if not impossible, to achieve it for other β^+-decays without an upgrade to our acquisition and data-reduction systems. We have thus improved the controls over all the key elements in our experimental set-up: we now have direct control over the dead-time for the singles and coincidence channels and <0.1 mm control over the source-detector distance. In addition, we have extensively studied the efficiency of the β-detector with source-measurements tested against various Monte Carlo programs [3]. We have tested our new acquisition set-up on ^{60}Co and ^{22}Na (β^- and β^+ emitters respectively) to validate our new methods. Preliminary results on the two sources are statistically consistent with the expected values. An ^{34}Ar decay experiment using the new experimental configuration has already been performed and is currently analyzed. [1] J.C. Hardy and I.S. Towner, PRC **71**, 055501 (2005) [2] V. Iacob *et al.*, BAPS **52**(3)B16; BAPS **52**(9)HF3 [3] V. Golovko *et al.*, BAPS **52**(9)DH4; this BAPS

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