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Precision measurement of the positron asymmetry of laser-cooled, spin-polarized ^{37}K[1] DAN MELCONIAN, B. FENKER, Cyclotron Institute, Texas A&M Univ., J.A. BEHR, TRIUMF, M. ANHOLM, Univ. of Manitoba, D. ASHERY, Tel Aviv Univ., R.S. BEHLING, Cyclotron Institute, Texas A&M Univ., I. COHEN, Tel Aviv Univ., I. CRAICIU, A. GORELOV, TRIUMF, G. GWINNER, Univ. of Manitoba, J. MCNEIL, TRIUMF, M. MEHLMAN, Cyclotron Institute, Texas A&M Univ., S. SMALE, C.L. WARNER, TRIUMF — Precision low-energy measurements in nuclear β decay can be used to provide constraints on possible physics beyond the standard model, complementing searches at high-energy colliders. The short-lived isotope ^{37}K was produced at ISAC-TRIUMF and confined in an alternating magneto-optical trap before being spin-polarized to 99.13(9)% via optical pumping. Our system allows for an exceptionally open geometry with the decay products escaping with their momenta unperturbed by the shallow trapping potential. The emitted positrons are detected in a pair of symmetric detectors placed along the polarization axis to measure the β asymmetry. The analysis was performed blind and considers β-scattering as well as other systematic effects. The results place limits on the mass of a hypothetical W boson coupling to right-handed neutrinos as well as contribute to an independent determination of the V_{ud} element of the CKM matrix. The β asymmetry result as well as improvements and future plans will be described.

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