

# PROBING FUNDAMENTAL PHYSICS WITH PRECISION SUPERALLOWED BETA-DECAY EXPERIMENTS

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High-precision measurements of superallowed beta transitions provided demanding and fundamental tests of the standard electroweak model. Those transitions can be used collectively to test the conservation of the vector weak current, the unitarity of CKM quark-mixing matrix and set tight limits on the physics beyond the Standard Model. All the tests demand very high-precision experimental determination of superallowed transition  $ft$  values. At Cyclotron Institute of Texas A&M University we have developed a setup for high-precision superallowed beta-decay  $ft$  values measurements. Several high-precision experiments were already performed to measure the superallowed half-lives and branching ratios. Recently a new digital system for high-precision beta decay half-life measurements was developed and was tested with on-line measurement of  $^{26m}\text{Al}$  half-life. Our precision method of superallowed beta decay measurements and recent developments/results will be presented in my talk.