Search for tensor type charged weak currents in precision beta-asymmetry measurements of oriented nuclei

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A precise measurement of the beta-asymmetry parameter A of a Gamow-Teller beta decay provides a sensitive probe for a tensor component in the weak interaction Hamiltonian. Here the asymmetry measurement of 67Cu will be presented. The technique of low-temperature nuclear orientation is used to polarize the nuclei. A 3He/4He dilution refrigerator was used to cool the nuclei to milliKelvin temperatures, while an external magnetic in combination with an internal magnetic hyperfine field provided the polarizing field. The electrons were observed with high-purity Ge detectors mounted on the inside of the 4 K radiation shield, looking directly at the source. A GEANT4-based Monte-Carlo program was used to account for the scattering of electrons and for the effect of magnetic fields, as well as for controlling the systematic effects.