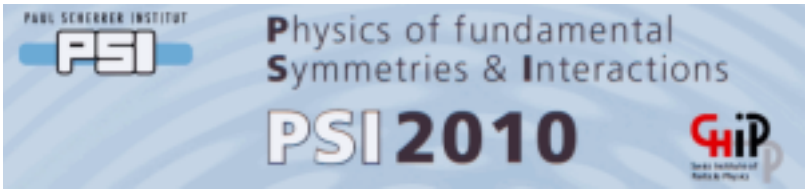


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# WITCH: a Precision Experiment for Weak Interaction Studies

*Wednesday, 13 October 2010 17:40 (20 minutes)*

The WITCH set-up (Weak Interaction Trap for CHarged particles) that was installed at ISOLDE/CERN combines a double Penning trap system to store radioactive ions and a retardation spectrometer to probe the energy of the daughter recoil ions. The primary aim is to search for scalar and/or tensor interactions in nuclear beta decay by precisely determining the beta-neutrino angular correlation coefficient, a. This can be extracted from the measured energy spectrum of the recoiling nuclei after beta decay. The set-up is now operational and the first recoil ion spectrum was measured in the decay of 124In. Although statistics were not sufficient and systematic effects have not yet been addressed in sufficient detail to extract weak interaction information, the charge state distribution of the recoiling 124Sn daughter ions could be derived from this. The set-up was upgraded (better vacuum, buffer gas purification, electropolished electrodes) and further optimized to allow for measurements with the mirror nucleus 35Ar. A first such measurement was already performed and allowed the investigation of systematic and unwanted effects in the system. At present the system is being optimized to allow for a longer measurement on 35Ar where useful physics information can be obtained.

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