

WITCH, a Penning Trap Experiment for Weak Interaction Studies

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One of the goals of precision measurements in nuclear beta decay is the search for deviations from the Standard Model that would point to new physics. Within the Standard Model, beta decay is described by the V-A theory but exotic contributions are experimentally not excluded with high precision. The primary aim of the WITCH experiment [1] at the ISOLDE/CERN facility is the precise determination of the beta-neutrino angular correlation coefficient, a , which is in the case of ^{35}Ar sensitive to a possible scalar contribution. For that purpose, a

scattering-free source consisting of two Penning traps is combined with a MAC-E retardation spectrometer to probe the energy of recoiling daughter nuclei. The first daughter recoil energy spectrum was obtained in June 2011 in the decay of ^{35}Ar , allowing for a first albeit still crude determination of a [2]. After significant upgrades of the system, an online run in November 2012 resulted in data of much higher quality. Presently, this dataset is being analyzed. This contribution will focus on recent results and outlook of the WITCH experiment.

Primary author: POROBIC, Tomica (Katholieke Universiteit Leuven (BE))

Co-authors: KNECHT, Andreas (Paul Scherrer Institut); COURATIN, Claire (LPC-Caen, ENSICAEN, Université de Caen, CNRS/IN2P3, Caen, France); ZAKOUCKY, Dalibor (Acad. of Sciences of the Czech Rep. (CZ)); LIENARD, Etienne (U); GLÜCK, Ferenc (K); BAN, Gilles (LPC-Caen, ENSICAEN, Université de Caen, CNRS/IN2P3, Caen, France); BECK, Marcus (WWU Muenster); BREITENFELDT, Martin (Katholieke Universiteit Leuven (BE)); TANDECKI, Michael (TRIUMF (CA)); SEVERIJNS, Nathal (Katholieke Universiteit Leuven (BE)); FINLAY, Paul (Katholieke Universiteit Leuven (BE)); VAN GORP, Simon (Inst. of Physical and Chemical Research (JP)); GERGELY, Soti (Katholieke Universiteit Leuven (BE)); KOZLOV, Valentin (KIT - Karlsruhe Institute of Technology (DE)); FABIAN, Xavier (LPC-Caen, ENSICAEN, Université de Caen, CNRS/IN2P3, Caen, France); FLECHARD, Xavier (LPC-Caen, ENSICAEN, Université de Caen, CNRS/IN2P3, Caen, France)

Presenter: POROBIC, Tomica (Katholieke Universiteit Leuven (BE))

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