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POLAREX : Study of polarized nuclei - first measurement

POLAREX (POLARization of EXotic nuclei) is a new experiment for the study of the nuclear magnetic moments and spins of exotic nuclei [1]. The On-Line Nuclear Orientation (OLNO) method will be used to observe the decay of a spin-oriented ensemble of nuclei. The OLNO method associates on-line implantation of a radioactive beam of interest with the "Low Temperature Nuclear Orientation"(LTNO) technique [2]. The low temperature orientation is obtained with an OXFORD 400 3He -4He dilution refrigerator which represents the main technical part of the system and that we inherited from TRIUMF. The exotic nuclei are implanted into a ferromagnetic host foil held at a temperature of order 10 mK attached to the cold finger of the refrigerator. The nuclear spins are oriented through the internal hyperfine field (10-100 T) and the ferromagnet fully magnetized by an external magnetic field (about 0.5 T). The aim of this experimental setup is to study neutron-rich nuclides produced at the ALTO facility (Linear Accelerator at Orsay Tandem) by fission induced by electrons from the linear electron accelerator (10-50 MeV, 10 microA) [3]. At the conference it will be presented the first "off-line" measurement achieved with this setup : anisotropy of Cobalt 60 on single crystal of cobalt. The aim of a such measurement was to calibrate the apparatus. Then it will be also discussed the planning of the next studies and the evolution of this infrastructure. [1] http://csnwww.in2p3.fr/polarex/ [2] Low Temperature Nuclear Orientation, eds. N.J. Stone and H. Postma (North-Holland, Amsterdam) 1986 [3] http://ipnweb.in2p3.fr/tandem-alto/alto/

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oral contribution

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