



CERN Joint EP/PP Seminars

SPEAKER: Prof. Laura Baudis (Zurich University)
TITLE: **Cold Dark Matter Searches with XENON**
DATE: Mon 27/10/2008 16:30
PLACE: Main Auditorium**

ABSTRACT

The XENON experiment aims to detect weakly interacting massive particles (WIMPs) via their collisions with xenon nuclei, using a low background, two-phase time projection chamber. With 1-ton of ultra pure liquid xenon as target, an energy threshold below 10 keV and a background rejection power above 99.5%, XENON could reach a sensitivity close to 10^{46} cm² for spin-independent WIMP-nucleon cross sections. To verify the XENON approach to direct dark matter detection, a first prototype (XENON10) was developed and operated for a period of several months at the Gran Sasso Underground Laboratory (LNGS) in Italy. XENON10 data have resulted in a 90% C.L. upper limit of 8.8×10^{44} cm² for a 100 GeV WIMP. XENON100, a new detector with 170 kg total liquid Xe mass, is currently under commissioning at LNGS; the goal is to start the science run in at the end of 2008. The status and WIMP sensitivity expectations for the new experiment will be presented and compared to the reach of colliders and indirect detection, as well as to theoretical predictions from physics beyond the Standard Model.