

CU Physics Department Particle Seminar

Wednesday, October 5, 2011 705 Pupin Hall 1:00 PM

Recent Results from the XENON100 Dark Matter Search

The XENON100 experiment, currently in operation at the Laboratori Nazionali del Gran Sasso in Italy, aims at detecting dark matter weakly interacting massive particles (WIMPs) scattering off nuclei within its 62 kg liquid xenon (LXe) target by simultaneously measuring the scintillation and ionization signals produced by nuclear recoils. These two signals allow the three-dimensional localization of events with millimeter precision and the ability to fiducialize the target volume, yielding an inner core with a very low background. As the energy scale is based on the scintillation signal of low-energy nuclear recoils, the precise knowledge of their scintillation efficiency is of prime importance. I will describe the apparatus and method used in our recent measurement of the relative scintillation efficiency of nuclear recoils in LXe, Leff, performed with a new single phase detector, designed and built specifically for this purpose. Finally, I will present the recent XENON100 results obtained from 100 live days of data acquired in 2010 and discuss the current status of the experiment and its evolution into XENON1T.



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