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TITLE: First results on WIMP-nucleon interactions from the XENON10
Experiment at the Gran Sasso Underground Laboratory.

ABSTRACT:

The first results from a search for Weakly Interacting Massive Particles (WIMPs) with the XENON10 experiment operating at the Gran Sasso Underground Laboratory are reported. XENON10 is a dual phase (liquid/gas) xenon time projection chamber (XeTPC) with 3D-position sensitivity. The active mass of 15 kg of liquid xenon is viewed by two arrays of compact photomultipliers, measuring simultaneously the scintillation and the ionization, via proportional scintillation in the gas, in order to distinguish nuclear from electron-recoil interactions. In-situ gamma and neutron calibrations have been carried out to define event selection and energy threshold for nuclear recoil candidates. A blind analysis of ~60 live-days of Dark Matter Search science data has been performed and new parameter space for WIMP-nucleon interactions is tested. Results for axial-vector and scalar WIMP-nucleon couplings will be presented, along with plans to improve the experiment sensitivity within 2007. The next phase of the XENON program with a 100kg scale TPC will also be addressed