APR18-2018-000247

Abstract for an Invited Paper
for the APR18 Meeting of
the American Physical Society

New Results from the XENON1T Dark Matter Experiment

ELENA APRILE, Columbia Univ

Astrophysical observations at all scales provide indisputable evidence for the existence of an invisible and dominant mass component in the observable universe. The nature of this dark matter remains one of the greatest challenges of modern physics. The leading hypothesis is that dark matter comprises new elementary particles, spanning a vast range of masses and interaction cross-sections with normal matter. A well-motivated class of candidates are weakly interacting massive particles (WIMPs). One way to search for WIMPs is through their scattering off atomic nuclei in low background detectors placed deep underground. XENON1T is the current experiment of the XENON dark matter search program based on dual-phase (liquid-gas) xenon time projection chambers (TPCs). The XENON1T detector, based in the Gran Sasso Laboratory in Italy, is the first multi-tonne scale TPC containing a total of 3.2 tonne of liquid xenon of which 2 tonne are active. This talk will describe the data analysis and report the latest result approaching a tonne-year exposure with an unprecedented low background.