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First Dark Matter Search Results from the XENON1T Experiment

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XENON1T is the current experiment of the XENON dark matter search program based on dual-phase (liquid-gas) xenon time projection chambers (TPCs) of increasing target mass and decreasing background. The experiment was constructed and assembled over the past 3 years at the INFN Laboratori Nazionali del Gran Sasso (LNGS). The XENON1T detector is the first multi-ton scale liquid xenon (LXe) TPC containing a total of 3200 kg of ultra-pure LXe of which 2000 kg are active. Commissioning of the LXe TPC and the surrounding muon veto water Cherenkov detector, as well as associated cryogenics and purification plants was completed during the fall of 2016. A blind analysis of 1042 kg fiducial mass and 34.2 live days of data acquired between November 2016 and January 2017 was performed. XENON1T continues to take data following a short break caused by the January 18, 2017 earthquake. The results from this first dark matter search and outlook for the science program with XENON1T will be presented.

Primary authors: TUNNELL, Chris (University of Oxford); Dr DE PERIO, Patrick (Columbia University)

Presenter: TUNNELL, Chris (University of Oxford)

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