

Abstract Submitted  
for the APR12 Meeting of  
The American Physical Society

**The XENON1T Demonstrator**<sup>1</sup> RAN BUDNIK, ELENA APRILE, BIN CHOI, HUGO CONTRERAS, LUKE GOETZKE, KYUNGEUN LIM, RAFAEL LANG, ANTONIO MELGAREJO, Columbia University, RINO PERSIANI, University of Bologna, GUILLAUME PLANTE, ALFIO RIZZO, Columbia University, PETER SHAGIN, Rice University — We present the results from a facility called the XENON1T Demonstrator at Columbia University, that has been designed and built as a prototype for the XENON1T cryogenic system and TPC. Its primary goal is to demonstrate that the high LXe purity ( $< 1$  part per billion  $O_2$  equivalent) required for electrons to drift freely over a distance of 1 meter, as in the XENON1T TPC, can be achieved and on a time scale of weeks. The approach adopted in all XENON detectors thus far is that of gas purification with continuous circulation with a diaphragm pump through a heated getter. We show results for high speed recirculation, above 100 slpm, the development of a high voltage feedthrough which is radio pure and the design and application of a prototype TPC to test the purity.

<sup>1</sup>NSF

Ran Budnik  
Columbia University

Date submitted: 10 Jan 2012

Electronic form version 1.4