

Abstract Submitted  
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**The XENONnT Dark Matter Search Experiment** ELENA APRILE, FEI GAO, KNUT MORÅ, Columbia Univ, XENON COLLABORATION — To date, dark matter has only been observed through its gravitational interaction. A new detector in the XENON family, XENONnT, is being constructed at the INFN Gran Sasso National Laboratory in Italy, featuring a 6 tonnes of liquid xenon target contained in a larger time projection chamber. The large target mass and approximately 10 times lower background than its predecessor XENON1T, will increase its sensitivity to WIMPs by one order of magnitude with a WIMPs-nucleon cross section down to  $2 \times 10^{-48} \text{cm}^2$ . Although inheriting major infrastructure of XENON1T, new subsystems are needed to ensure the performance of the XENONnT experiment: The cryogenic purification system which enables to purify the xenon through liquid circulation, the cryogenic distillation column to remove radon, as well as the Gd-loaded water Cherenkov neutron veto system. In this talk, the design, construction and physics reach of this sensitive WIMP detector will be presented.

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