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Status and results from the XENONnT Dark Matter experiment

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The XENONnT experiment is designed for the direct detection of WIMP Dark Matter through its scattering off atomic nuclei in a liquid xenon (LXe) time projection chamber (TPC). The detector, located at the Laboratori Nazionali del Gran Sasso (LNGS) in Italy, holds a total of 8.6 tonnes of xenon, of which 5.9 tonnes actively instrumented within the TPC. Searching for extremely rare interactions, XENONnT features a record low Electron-Recoil background, and reaches a nuclear recoil energy threshold of a few keV. These capabilities also facilitate searches of other rare processes, lately manifested in the observation of solar 8B neutrinos via coherent elastic neutrino-nucleus scattering (CEvNS), where the nuclear recoil energy threshold was reduced to 0.5 keV.

We will present the current status and results of the XENONnT experiment, on Dark Matter, other BSM searches and rare SM interactions. We will conclude with the plans for this experiment and the next generation.

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