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Direct Dark Matter searches with the XENONnT experiment

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The XENONnT experiment is aiming for the direct detection of dark matter in the form of weakly interacting massive particles (WIMPs) by investigating potential interactions with ordinary matter using a liquid xenon (LXe) time projection chamber. The detector, operating at Laboratori Nazionali del Gran Sasso (LNGS) in Italy, contains a total xenon mass of 8.6 tonnes, of which 5.9 tonnes are actively instrumented LXe. Given the elusive nature of possible dark matter interactions, a detection threshold of a few keV nuclear recoil energy as well as establishing an exceptionally low background level are crucial. This enables the pursuit of further rare event searches, as demonstrated by the recent measurement of solar B-8 neutrinos via the nuclear recoil channel (CEvNS) for which the nuclear recoil energy threshold was lowered to 0.5 keV.

XENONnT has completed its first two science runs with a total exposure of approximately 3.5 tonne-years and continues to collect science data. This talk will present the current status and the latest results of the XENONnT experiment.

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