

The Dark Matter Experiment XENONnT and First WIMP Results



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RECEPTION FOLLOWING THE TALK

Evidence for about 6 times more matter in the universe than normal matter is coming from cosmological observations and analyses on all scales. What this exotic dark matter is remains a secret.

The direct search experiment for dark matter XENONnT located at the Italian underground laboratory LNGS is looking for weakly interacting massive particles (WIMPs) and other rare event physics. As an upgrade of the previous experiment XENON1T it uses a dual-phase time projection chamber with a total mass of 8.5t of liquid xenon. The recent electron recoil data from a 1.16 t*yr exposure of XENONnT allowed to set stringent limits on solar axions, an enhanced neutrino magnetic moment and bosonic dark matter. XENONnT's unprecedented low background originates from very careful material selecting and screening as well as from active removal of Kr-85 and Rn-222 by cryogenic distillation. This low background rate allows for a rich physics search program with XENONnT with WIMPs being the main objective.

In this talk the status of the XENONnT experiment and its first WIMP search results from a blind analysis in an energy range between 3.1 keV and 60.0 keV and an exposure of approximately 1.1 tonne-year is presented.