

Search for Solar Axions and ALP Dark Matter with XENONnT

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The XENONnT experiment, located at Laboratori Nazionali del Gran Sasso (LNGS), is a dark matter direct detection experiment using a dual-phase time projection chamber with 8.5 tonnes of xenon. In its first science run (SR0), XENONnT achieved an electronic recoil background of 15.8 events/(tonne-year-keV) below 30 keVee, establishing a new benchmark as the lowest background recorded in a dark matter detector. This achievement was made possible by reducing the amounts of radioactive Kr-85 and Rn-222 to an unprecedented low level. With the SR0 data, XENONnT has excluded new physics interpretations of the XENON1T excess and provided stringent constraints on solar axions and axion-like particle (ALP) dark matter. After SR0, the amount of Rn-222 was further reduced by a factor of ~ 2 . In this talk, I will present the results of solar axions and ALP dark matter from XENONnT and its outlook.

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