

Research Result Report

ICRR Inter-University Research Program 2024

Research Subject: Research and Development for XENONnT and future Dark Matter Searches	
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Summary of Research Result : Almost all of FY2024 XENONnT took physics data, and analysis is ongoing. Based on XENON1T data we published limits on inelastic Dark Matter (DM) and a method to tag and remove background from radon decays for use in XENONnT analyses. Next our XENONnT detector paper was published, followed by two high impact (Physical Review Letters “Editor’s suggestion”) physics results: The first one measured solar neutrinos scattering on xenon nuclei in our detector, and the other reported limits on light dark matter. Our last FY2024 paper described how we reconstruct signals, calibrate detector responses, and select events for XENONnT analyses. At the end of FY2024 XENONnT’s first calibration with a neutron generator finished Science Run 2 data taking, and preparations for repairing electrodes in XENONnT’s time projection chamber have started with the aim to take data with the target drift field of 200 V/cm after this repair.	
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