Contribution ID : **3** Type : **In person**

Searching for Solar and Reactor Axions with XENONnT and RELICS

Monday, 28 July 2025 10:30 (30)

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Axions can be produced in the Sun through processes such as inverse Compton scattering, the Primakoff effect, and the Fe57 deexcitation, and detected in noble liquid experiments via the inverse Primakoff effect and the axio-electric effect. Liquid xenon experiments, with their large exposure, low background, and low-energy thresholds, offer competitive sensitivities to axions. XENONnT, a dark matter liquid xenon experiment designed primarily for dark matter searches, has set competitive limits on axion-electron and axion-photon couplings. Additionally, axions can be produced in nuclear reactors via similar mechanisms. The RELICS experiment, currently under construction, will also employ liquid xenon to search for reactor-produced axions. In this talk, I will discuss the complementary approaches of solar and reactor axion searches, highlighting the synergies between XENONnT and RELICS in the quest for axions.

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Session Classification : Morning Session