

Search for axions and axion-like particles with XENON1T

Friday, June 26, 2020 6:00 PM (1 hour)

Zoom meeting: <https://cern.zoom.us/j/7930190483> (password: see email)

Speaker: Michelle Galloway on behalf of the XENON1T Collaboration

Abstract: We present the latest results from a search for QCD axions from the Sun as well as axion-like particles of solar and dark matter origins. With an unprecedented low background of 76 ± 2 stat events/(tonne \times year \times keV) between 1–30 keV, XENON1T is uniquely poised to explore new parameter space for these electronic-recoil channels via the axio-electric effect. Our search revealed an excess of events in the (1 - 7) keV region, favoring these channels over background with significances of 3.5 sigma for solar axions/ALPs and 3.0 sigma global (4.0 local) for ALP dark matter with a peak at 2.3 ± 0.2 keV (68% C.L.). We review the detection principles, cross checks of our results, discrepancy with stellar constraints, and present a hypothesis of a new background from a previously undetected tritium component.

Presenter: GALLOWAY, Michelle (University of Zurich)

Session Classification: Seminar