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Search for Axion-like Particles, Dark Photons and Solar Axions with XENON1T JINGQIANG YE, University of California, San Diego, XENON COLLABORATION — Axions, axion-like particles (ALPs) and dark photons are all expected to interact with ordinary matter in an analogous manner to the photoelectric effect. ALPs and dark photons are both well-motivated cold dark matter candidates, and would give rise to a mono-energetic electronic recoil (ER) signal centered on their mass. Low enough mass axions produced in the sun, on the other hand, would yield a fixed spectrum determined by solar physics. The XENON1T detector has achieved an ultralow ER background rate of ~ 80 events/tonne/year/keVee, and therefore can constrain ERs arising from ALP and dark photon dark matter as well as solar axions. This talk will present a search for dark matter ALPs and dark photons with a mass range from 1 to 200 keV, and a sub-keV solar axion, using 227 days data collected between February 2017 and February 2018 from XENON1T.

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