Contribution ID: **113** Type: **not specified**

HeRALD - light dark matter search with superfluid Helium-4

Friday, 19 March 2021 14:25 (25 minutes)

HeRALD - Helium Roton Apparatus for Light Dark Matter uses bolometers with TES readout to detect signals in superfluid Helium-4 from light dark matter. The low energy threshold enabled by cryogenic bolometers, with signal amplified by quantum evaporation of helium atoms from phonons/rotons in superfluid Helium-4 and the low atomic mass of Helium-4 with better kinematic matching for light dark matter, make HeRALD promising to search for light dark matter. I will present preliminary results of light yield measurements of superfluid Helium-4 from electronic recoils from 36 keVee to 185 keVee and nuclear recoils from 53 keVnr to 1 MeVnr. I will also present some recent development on helium testing cells in Helium-3/Helium-4 dilution refrigerators, constructed to demonstrate several key technologies, including helium film burners, Cs film stoppers, and knife-edge film thinners.

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Session Classification: Noble Elements

Track Classification: Noble Elements