



Contribution ID: 50

Type: **Contribution Talk**

Progress Towards HeRALD: The Helium Roton Apparatus for Light Dark Matter

Wednesday, 30 November 2022 15:15 (20 minutes)

The HeRALD experiment uses the unique properties of superfluid ^4He to study dark matter-nucleon scattering in the sub-GeV mass range. In particular, HeRALD uses quantum evaporation from vibrational quasiparticles as well as singlet and triplet electronic excitations to determine the energy and nature of particle interaction in the detector. In this talk I will present progress towards the observation of the quantum evaporation signal using an athermal phonon detector. I will also discuss the broader R&D program, with an emphasis on the helium and materials physics we will study to refine the detector and push the nuclear recoil detection threshold as low as possible.

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Session Classification: WG4: Quantum and Superconducting Detectors

Track Classification: WG4: Quantum and Superconducting Detectors