

## HeRALD: Dark Matter Direct Detection with Superfluid 4He

*Monday, 12 July 2021 15:30 (15 minutes)*

**ABSTRACT:**

HeRALD, the Helium Roton Apparatus for Light Dark Matter, will use a superfluid 4He target to probe the sub-GeV dark matter parameter space. The HeRALD design is sensitive to all signal channels produced by nuclear recoils in superfluid helium: singlet and triplet excimers, as well as phonon-like excitations of the superfluid medium. Excimers are detected via calorimetry with Transition-Edge-Sensor readout in and around the superfluid helium. Phonon-like vibrational excitations eject helium atoms from the superfluid-vacuum interface which are detected by adsorption onto calorimetry suspended above the interface. I will discuss the design, sensitivity projections, and ongoing R&D for the HeRALD experiment. In particular, I will present an initial light yield measurement of superfluid helium down to order 50 keV.

### **Are you are a member of the APS Division of Particles and Fields?**

No

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