

Progress and Results from the TESSERACT Dark Matter Experiment

Wednesday 26 March 2025 16:30 (15 minutes)

The TESSERACT collaboration will search for dark matter particles below the proton mass through interactions with two types of novel, ultra-sensitive detectors. These detectors, SPICE and HeRALD, aim to provide leading sensitivities to low-mass dark matter candidates. In this talk I will present on the recent progress made toward reaching this goal. First, I will discuss the recent deployment of the HeRALD v0.2 detector at LBNL, as well as analysis highlights from the multi-channel upgrade of the HeRALD v0.1 detector at UMass. Then, I will showcase the achievements SPICE has made towards making world-leading energy resolution TESs. I will detail new insights on the “low energy excess” background and parasitic power relevant to cryogenic detectors. I will finish by highlighting results of TESSERACT’s first above-ground dark matter search, which yielded world-leading sensitivity to dark matter below $100 \text{ MeV}/c^2$.

Author: WILLIAMS, Michael (Lawrence Berkeley National Laboratory)

Presenter: WILLIAMS, Michael (Lawrence Berkeley National Laboratory)

Session Classification: SESSION 13: Direct detection: Technical Development-1