

Machine Learning with SuperCDMS Data

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The SuperCDMS collaboration is building the next generation dark matter direct detection experiment in SNOLAB, Canada's world-leading astroparticle physics facility located 2 km below the surface in the Vale Creighton Mine near Sudbury. A set of data taken with the CUTE facility in 2024 provided the first test of the SuperCDMS sensors comprised of a tower of six silicon and germanium detectors. The Toronto group has been using these data as well as simulated events to develop machine learning algorithms to interpret the data.

This summer project will focus on producing simulations of the SuperCDMS data and training and characterizing the performance of machine learning algorithms that have been developed by the group. These results would then be compared against those produced by the same algorithm on the CUTE data.

Requirement: Willingness to learn new skills is required. Familiarity with coding (python or similar) is preferred.