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Dark matter search and calibration of detectors at Université de Montréal

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The detection and study of dark matter is a major challenge in modern physics. Minimizing background noise and improving detector technologies is currently an international race among astro particle physicists. SuperCDMS's (Super Cryogenic Dark Matter Search) strategy is to detect very low energy deposits using germanium and silicon detectors. To efficiently calibrate the detectors, Université de Montréal is hosting the IMPACT experiment (Ionization Measurement with Phonons At Cryogenic Temperatures), which will tell us about nuclear recoils at energy ranges lower than what was ever tested. During the summer, using measurements and simulations, I evaluated the impact of a germanium target on neutron scattering using a He3 neutron detector and a 4.8 keV neutron beam. This measurement is critical for the proper conduct of the experiment and the calibration of the germanium HVeV detectors to verify their sensitivity to dark matter.

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