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## Hidden sector searches with low-energy neutrino scattering detectors

*Thursday, 23 March 2023 14:25 (5 minutes)*

The Spallation Neutron Source (SNS) at Oak Ridge National Laboratory (ORNL) produces an world-leading intense flux of neutrinos below 53 MeV capable of accumulating an enormous number of protons on target, over  $10^{23}$  per year. Beam dump experiments at the SNS are sensitive to hidden sector particles, such as dark matter, produced in the target. Upgrades to the accelerator and construction of a second target station in the coming decade will allow for beam dump experiments at the multi-ton scale.

The COHERENT experiment currently operates a suite of detectors to measure the neutrinos produced at these energy via coherent neutrino-nucleus scattering. Such detectors are well-suited for identifying light dark matter and have made the first search for coherent dark matter-nucleus scattering at a detector. Though this first search involved only 14 kg of active material, the result placed the most stringent limit on 25 MeV dark matter. COHERENT at the SNS will explore the predicted couplings for thermal relic dark matter for scalar and fermion dark matter with a new generation of detectors with nearly 1000x the mass and improvements from the SNS accelerator.

### Please select if remarks will be in person or on zoom

On zoom

### Do you describe your self as early career?

yes

### Please add details of experiment/project that this abstract corresponds to?

COHERENT

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