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## **(I) Status of the Ultracold Neutron Source and nEDM Experiment at TRIUMF**

*Wednesday 9 June 2021 16:45 (25 minutes)*

Ultracold neutrons are neutrons that exhibit the peculiar behavior of being able to be stored in material bottles for periods ranging up to their beta-decay lifetime ( $\sim 15$  min). They present an attractive avenue for performing fundamental neutron experiments such as: searching for a non-zero neutron electric dipole moment (nEDM), precise measurement of the neutron lifetime, and precision measurements of neutron-beta-decay correlation coefficients to name a few. These measurements have important consequences for extensions to the standard model of particle physics which could help explain the baryon asymmetry of our universe.

The TUCAN (TRIUMF Ultra-Cold Advanced Neutron) collaboration, with researchers from Japan and Canada, aims to measure the nEDM with a sensitivity of  $1E-27$  ecm, which is a factor of 10 more precise than the best nEDM measurement to date. Key to this realization is the installation of a high-intensity UCN source, currently being fabricated, and a new-room temperature Ramsey-resonance-based measurement device. This talk will introduce UCN fundamentals and present the status of the TUCAN source and nEDM experiment.

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