



Canadian Association  
of Physicists

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Contribution ID: 3451

Type: **Invited Speaker** / **Conférencier(ère) invité(e)**

## **(I) The Nab experiment: A precise measurement of the neutron beta decay parameters “little a” and “little b” at Oak Ridge National Lab.**

*Monday 6 June 2022 16:00 (30 minutes)*

The Nab collaboration aims to make the world's most precise, by about a factor of 10, measurement of the electron-neutrino angular correlation parameter “a” and the Fierz interference term “b” in cold neutron beta decay. Along with the neutron lifetime, this will allow the testing of various extensions to the standard model and will help home in on a correct theory describing what makes up our world. Nab is 4m tall asymmetric time of flight spectrometer with custom 100 mm<sup>2</sup>, 127 pixel Si detectors on either end. Nab is currently in its commissioning phase at the Spallation Neutron Source at Oak Ridge National Lab in the USA and will collect physics data from 2022-2025. The Canadian Nab group is responsible for testing the novel large area Si detectors used in the experiment where we have built a steerable 30 keV proton accelerator at the University of Manitoba for this purpose. This talk will motivate and provide an overall status of the Nab experiment and present the 30 keV proton source at UofM with recent detector testing results.

**Authors:** NAB COLLABORATION; MAMMEI, Russell

**Presenter:** MAMMEI, Russell

**Session Classification:** M3-7 Fundamental Symmetries and New Physics at Low Energy I (DNP) | Symétries fondamentales et nouvelle physique à basse énergie (DPN)

**Track Classification:** Technical Sessions / Sessions techniques: Nuclear Physics / Physique nucléaire (DNP-DPN)