



Canadian Association
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Contribution ID: 3260 Type: **Poster Competition (Graduate Student)** / **Compétition affiches (Étudiant(e) 2e ou 3e cycle)**

(G*) (POS-20) High-precision experimental nuclear physics with the upgraded TITAN Penning trap

Tuesday 7 June 2022 17:30 (2 minutes)

Nuclear-physics experiments probe nuclear structure, nucleosynthesis and fundamental interactions, for which high precision and accurate mass measurements are critical inputs. TRIUMF's Ion Trap for Atomic and Nuclear science (TITAN) facility employs the Measurement Penning Trap (MPET) to measure masses of exotic nuclei to high precision and accuracy up to $\sim 1e-10$. To improve the resolving power and reduce statistical uncertainty in the mass measurement, a higher charge state of the ions can be used. This and other benefits of charge breeding radionuclides like improved beam purification can only be realized at TITAN as it alone in world combines radioactive ions, charge breeding, and a Penning trap. To fully leverage these advantages, MPET is undergoing an upgrade to a new cryogenic vacuum system compatible with ions in charge states over 20+. The status of the new cryogenic upgrade will be presented.

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