



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 4222

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

Ab initio studies on muon capture in light nuclei

Tuesday, May 28, 2024 2:15 PM (30 minutes)

Muon capture is a nuclear-weak process in which a negatively charged muon, initially in an atomic bound state, is captured by the atomic nucleus, resulting in atomic number reduction by one and emission of a muon neutrino. Thanks to the high momentum transfer involved in the process, it is one of the most promising probes for the yet unobserved neutrinoless double-beta decay. To help the planned muon-capture experiments, reliable theory predictions are of paramount importance.

To this end, I will discuss recent progress in ab initio studies on muon capture in light nuclei, focusing in particular on the ab initio no-core shell model. These systematically improvable calculations are based on nuclear interactions derived from chiral effective field theory. The computed rates are found to be in good agreement with available experimental counterparts, motivating future experimental and theoretical explorations in light nuclei.

Keyword-1

Ab initio nuclear theory

Keyword-2

Muon capture

Keyword-3

Author: JOKINIEMI, Lotta

Co-authors: Dr KOTILA, Jenni (University of Jyväskylä); Dr KRAVVARIS, Kostas (Lawrence Livermore national Laboratory); NAVRATIL, Petr

Presenter: JOKINIEMI, Lotta

Session Classification: (DNP) T2-4 Nuclear Structure II | Structure nucléaire II (DPN)

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