



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 4426

Type: Oral (Non-Student) / Orale (non-étudiant(e))

Proposal for measuring the optical version of the He-McKellar-Wilkens phase using an atom interferometer

Tuesday 28 May 2024 10:30 (15 minutes)

An electric dipole moving in a magnetic field acquires a geometric phase known as the He-McKellar-Wilkens (HMW) phase, which is the electromagnetic dual of the Aharonov-Casher phase. The HMW phase was first measured in 2012 using an atom interferometer [1]. In that experiment the electric and magnetic fields were static. We propose a modification where these fields are generated by laser beams.

[1] Lepoutre et al, PRL 109, 120404 (2012)

Keyword-1

Atom interferometry

Keyword-2

Geometric phase

Keyword-3

Author: O'DELL, Duncan

Co-author: Mr HAINGE, Josh (McMaster University)

Presenter: O'DELL, Duncan

Session Classification: (DAMOPC) T1-8 Fundamental Physics with Atomic Systems | Physique fondamentale avec les systèmes atomiques (DPAMPC)

Track Classification: Technical Sessions / Sessions techniques: Atomic, Molecular and Optical Physics, Canada / Physique atomique, moléculaire et photonique, Canada (DAMOPC-DPAMPC)