

Challenges of the world-wide experimental search for the electric dipole moment of the neutron



Contribution ID: 48

Type: Oral

Development of an optical co-magnetometer for a neutron EDM experiment at TRIUMF

Wednesday, 5 November 2014 16:45 (20 minutes)

on behalf of the TRIUMF UCN collaboration

One of the experiments for the TRIUMF UCN new facility is the measurement of the neutron electric dipole moment (nEDM). In order to improve the present world's best experimental result, it is desired to develop a new co-magnetometer. For this purpose, our group is proposing to use a dual-species comagnetometer with Hg-199 and Xe-129. In this method, polarized Hg-199 and Xe-129 atoms will be introduced into the nEDM cell at the same time as the neutrons, and the spin-precession frequencies of both species are measured simultaneously. The Xe and Hg atoms are probed continuously by observing the modulation of transmitted probe light, at 253.7 nm, for Hg, and emission in the near infrared (823 nm and 895 nm) for Xe by exciting a two-photon transition at 252.4 nm. This talk will present our progress on the development of the dual-species comagnetometer.

Primary author: Prof. MOMOSE, Takamasa (University of British Columbia)

Presenter: Prof. MOMOSE, Takamasa (University of British Columbia)

Session Classification: Magnetic environment