Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **2523** Type: **Invited Speaker / Conférencier(ère) invité(e)**

Topological Structures and Dynamics of Spatially Structured Optical Beams

Thursday, June 6, 2019 1:15 PM (30 minutes)

Electromagnetic waves, solutions to Maxwell's equations, are "transverse" in vacuum. Namely, the waves' oscillatory electric and magnetic fields are confined within a plane transverse to the waves' propagation direction. Thus, the polarisation of these fields can be described by an arbitrary vectorial superposition of two vectors lying in the transverse plane. Though spatially uniform polarised beams are widely used in optics, spatially structured polarised beams have received much attention in the last decades. Such beams may possess well-defined polarisation topological structures in the transverse plane, which is isolated and preserved upon free-space propagation. Under tight-focusing conditions, the polarisation of these beams can exhibit three-dimensional structures, and may result in beams possessing longitudinal electric or magnetic field. Such structures can exhibit features such as transverse spin angular momentum; and non-trivial topologies such as Möbius or Ribbon strips.
In my talk, I will present the recent progress, challenges, and developments in structuring the polarisation of optical beams. The stability and the dynamics of two- and three-dimensional polarisation topologies, e.g. Möbius and Ribbon strips, as well as knots, will also be the subject of my presentation.

Author: Prof. KARIMI, Ebrahim (University of Ottawa)

Presenter: Prof. KARIMI, Ebrahim (University of Ottawa)

Session Classification: R2-3 Quantum Optics and Ion traps (DAMOPC) | Optique quantique et pièges d'ions (DPAMPC)

Track Classification: Division of Atomic, Molecular and Optical Physics, Canada / Division de la physique atomique, moléculaire et photonique, Canada (DAMOPC-DPAMPC)