Physics AT QUEENS COLLEGE

Colloquium Notice

Yisa Rumala

University of Michigan

Young Researcher Seminar - A new etalon geometry: the spiral phase plate etalon

A common way of imprinting orbital angular momentum on light is by using an ideal spiral phase plate. This is a device consisting of a piece of transparent material with an azimuthally varying thickness. When light goes through the device, it acquires an azimuthally varying phase containing orbital angular momentum. In this talk, I will describe a spiral phase plate which has non-zero reflectivity on both surfaces, such that the rays of light makes multiple reflections with the azimuthally varying surface before exiting the device. In this case, the exiting beam will contain a coherent superposition of orbital angular momentum modes with the appearance of an optical intensity pattern that varies as a function of angle on the output plane of the device. When the laser frequency is changed, the optical intensity pattern is observed to rotate. This is the first time that this effect has been quantified. The work extends the conventional Fabry-Perot etalon to a new geometry, namely the spiral phase plate etalon; and it is expected to have broad applications in optical frequency metrology, quantum optics, and atom optics.

Tuesday
September 4, 2012
Starts at 12:15 PM
Coffee at 12:00 PM
B211