

Lab project / internship M1 PPN-QuanTEEM (1.5 months: 15/05-30/06)

2022-2023

Title of the project: Producing and observing laser beams carrying orbital angular momentum

Supervisor(s): Faucher O.

Laboratory / Department / Team: ICB / Photonics Department / Femtosecond Laser group

Room: D208A

Phone: 0380395984

e-mail: Olivier.faucher@u-bourgogne.fr

Collaborations:

Summary:

The project is related to laser beams carrying an orbital angular momentum (OAM). Laguerre-Gaussian modes, described in my lecture on Gaussian optics, are good examples of these particular types of paraxial wave equation's solutions. The precession of the Poynting vector of an OAM beam during propagation results in a helical phase-front with zero intensity on axis (also known as vortex beam). After describing the method for producing and observing such laser mode, an experiment will be proposed and setup by the student in order to observe the angular momentum of an OAM beam. Results will be compared to numerical simulations.

Type of project (theory / experiment): Both

Required skills: Knowledge in Laser, general Optics, Gaussian Optics, and programming.