ID de Contribution: **150** Type: **Contribution orale**

Making correlations between photonic orbital angular momenta by interaction of optical vortices with a vapor

vendredi 7 juillet 2023 09:30 (20 minutes)

Optical vortices, like Laguerre-Gauss beams, have the particularity of propagating with a helical wavefront. In addition to the polarization and the wave vector, they carry a so-called Orbital Angular Momentum (OAM). This quantity is quantized and represents a challenge for quantum technologies.

In our approach, we are interested in the conversion of the OAM during a four-wave mixing realized in a rubidium vapor. By choosing the right atomic transitions, we can convert two input waves carrying OAMs into two new wave pair between which the total OAM is distributed.

In particular, we study two configurations, asymmetric and symmetric diamant schemes, where the distribution of OAMs and the correlation between the output OAMs will be different.

This work opens a way to the study of OAM-entanglement and to OAM use in quantum applications.

Affiliation de l'auteur principal

LCPMR, CNRS & Sorbonne-Université

Auteurs principaux: PRUVOST, Laurence (LCPMR); M. ABOBAKER, Myrann (LCPMR)

Orateur: M. ABOBAKER, Myrann (LCPMR)

Classification de Session: Mini-colloques: MC16 Fluides classiques et quantiques hors équilibre

Classification de thématique: MC16 Fluides classiques et quantiques hors équilibre