Light-Structure Heritage through a Four-Wave Mixing Process in Atomic Rubidium

Sahagun Daniel, Presenter

INSTITUTO DE FISICA, UNAM

We present preliminary results of our investigations on phase and spatial structure inherited from the pump beams to the parametric light generated by four wave mixing induced hot atomic rubidium. In our work one of the pump beams is prepared with a Mathieu-like structure; the depicted studies focus on the transmission of orbital angular momentum over the non-linear process. Mathieu beams promise to be a clever choice for minimum uncertainty measurements [1]. Parametric light of this kind has been successfully used for quantum imaging [2] and generation strong quantum correlations on light resonant to the atomic transitions [3]. Thus our work promises to be useful for studies on quantum information and metrology.

References:

[1] Z. Hradil et al., PRL 97, 243601 (2006)
[2] V. Boyer et al., Science 231, 544 (2008)
[3] Z. Qin et. al., PRL 113, 023602 (2014)