UNIVERSITÀ DI PARMA

Dipartimento di Scienze Matematiche, Fisiche ed Informatiche - DSMFI

SEMINARIO DI DIPARTIMENTO

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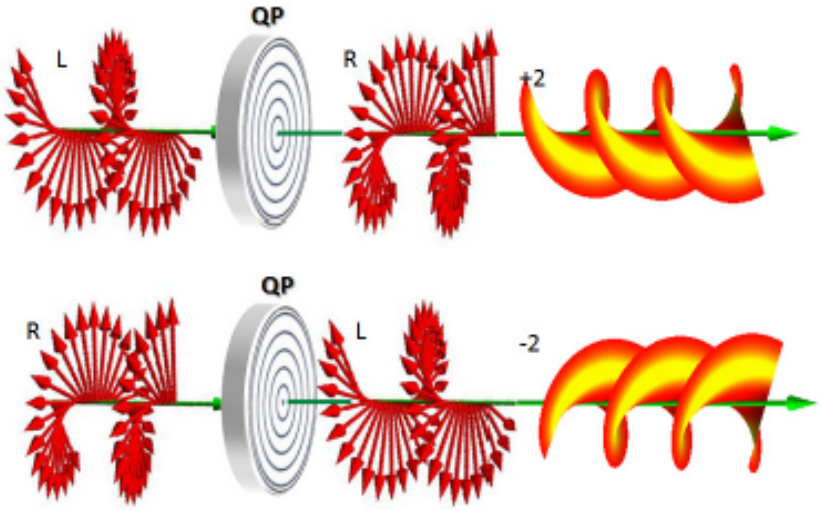
Spin-orbit optical phenomena

Abstract: The angular momentum of a light beam in the paraxial limit can be split into spin and orbital components (SAM and OAM). Only recently, several optical processes involving a conversion of angular momentum from one form to another or other kinds of spin-orbit couplings were conceived and experimentally demonstrated. I will focus on the case of SAM-OAM coupling occurring in optical devices named q-plates, which have proved to be extremely convenient tools for controlling the OAM of light beams in the visible and near-infrared domains. A q-plate is based on a space-variant birefringent medium, typically a liquid crystal, whose optic axis is azimuthally patterned in the transverse plane with a topological singularity of integer or semi-integer charge q at the center. A number of applications of these devices have been demonstrated in classical photonics and in quantum optics during the last years. In this presentation, I will review a selection of the recent applications of the q-plate and of related devices.



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