Nematicons: self-confined light beams in nematic liquid crystals, from nonlinear optics to photonics

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The basic features of optical spatial solitons governed by a reorientational and nonlocal response in undoped nematic liquid crystals -nematicons- are reviewed.[1-2] On the basis of their guiding properties and stability in this birefringent soft matter, a few intriguing effects of nematicons will be illustrated in conjunction with material properties, including long-range attraction,[3] controlled refraction and reflection at a dielectric interface,[4] spontaneous symmetry breaking,[5] negative refraction,[6] cavity-less bistability,[7] waveguide realization in a polymerizable guest-host.[8] Finally, recent results on soliton-enhanced random lasing with directional properties will be presented.[9]

References

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