

Incoherent interaction of nematicons in bias-free liquid-crystal cells

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We study experimentally the propagation dynamics and interaction of a pair of mutually incoherent nematicons: spatial optical solitons in nematic liquid crystals. In contrast to earlier studies, we consider a bias-free liquid-crystal cell and compare the soliton interaction in copropagating and counterpropagating geometries. We analyze the dependence of nematicon interaction on input power and observe a direct manifestation of a long-range nonlocal nonlinearity. Attraction of counterpropagating solitons requires higher powers and longer relaxation times than that of copropagating nematicons due to losses-induced power asymmetry of counterpropagating nematicons.

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