Experiments on optical spatial shocks in random media

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Abstract:

Dispersive shock waves (DSWs), or undular bores, are observed in nonlinear optics in systems described by universal models, such as the nonlinear Schrodinger equation, when the hydrodynamical approximation holds true. We will report on the experimental investigation of the effect of disorder on the formation and propagation of optical spatial DSWs. We measure the relevant scaling laws relating the shock position with the input power and strength of disorder [1], and the wavevector spectrum generated by the shock and its relation to the underlying physics of the nonlocal nonlinearity [2]

References:

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2. S.Gentilini, N.Ghofraniha, E.DelRe, and C.Conti, Opt.Exp., 20, 27370 (2012).