Nonlinear Gamow vectors in nonlocal optical propagation.
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We review our recent theoretical and numerical results on the generation and observation of states with exponentially decaying dynamics during the propagation in a nonlocal nonlinear medium. These states, denoted as nonlinear Gamow vectors, allow to explain the origin of irreversibility of dispersive shock waves in nonlinear optics, and are characterized by discrete decay rates that we observe for the first time.