

LOCAL DYNAMICS NEAR UNSTABLE BRANCHES OF NLS
SOLITONS

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Let ϕ_ω , $\omega \in I$, be a branch of unstable solitary waves (solitons) of a nonlinear Schrödinger equation (NLS) whose linearized operators have one pair of simple real eigenvalues $\pm e_+(\omega)$ in addition to 0 eigenvalue. With localized perturbation to the initial data, the solution will locally either converge to the branch, or exit a neighborhood of the branch. This has implication to the blowup behavior of NLS with supercritical nonlinearity.

Keywords: Nonlinear Schrödinger equation, unstable solitary waves, blowup of supercritical NLS