

1073-41-102

Boaz Ilan* (bilan@ucmerced.edu), 5200 N. Lake Rd., Merced, CA 95343, and **Mark A Hofer** (hofer.mark@gmail.com), Department of Mathematics, Box 8205, NC State University, Raleigh, NC 27695-8205. *Transverse instabilities of dark solitons and dispersive shocks.*

Transverse instabilities of dark solitons and dispersive shock waves for the (2+1)-dimensional defocusing nonlinear Schrödinger / Gross-Pitaevskii equation is considered. Asymptotics and computation of the eigenvalues of the linearized equation yield the maximum growth rate of unstable perturbations. The separatrix between convective and absolute instabilities is found and used for studying the transition between convective and absolute instabilities of stationary and non-stationary oblique dispersive shock waves in the shallow and hypersonic regimes. These results have application to controlling nonlinear waves in dispersive media, such as dispersive shocks in Bose-Einstein condensates and other physical systems. (Received July 28, 2011)