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Subcritical Perturbations of Energy Critical NLS

The 3D energy critical focusing nonlinear Schrödinger equation (NLS) admits the so called Aubin-Talenti standing wave solutions. These functions were crucial in Kenig and Merle's 2006 scattering result. We will consider the above equation but whose nonlinearity is perturbed by a small subcritical term. We construct solitary wave solutions as perturbations of the Aubin-Talenti function by means of Lyapunov-Schmidt reduction and resolvent expansion. We further demonstrate these solutions to be ground states and use them to achieve a scattering result in the spirit of Kenig and Merle.