Mathematics > Dynamical Systems

Asymptotic stability of ground states in some Hamiltonian PDEs with symmetry

Dario Bambusi

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We consider a ground state (soliton) of a Hamiltonian PDE. We prove that if the soliton is orbitally stable, then it is also asymptotically stable. The main assumptions are transversal nondegeneracy of the manifold of the ground states, linear dispersion (in the form of Strichartz estimates) and nonlinear Fermi Golden Rule. We allow the linearization of the equation at the soliton to have an arbitrary number of eigenvalues. The theory is tailor made for the application to the translational invariant NLS in space dimension 3. The proof is based on the extension of some tools of the theory of Hamiltonian systems (reduction theory, Darboux theorem, normal form) to the case of systems invariant under a symmetry group with unbounded generators.

Comments:	Several points have been simplified, the section on adapted coordinates has been completely changed, many misprints have been fixed
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