Weak soliton resolution for nonradial nonlinear Schrödinger equations

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Given a nonlinear dispersive equation, the soliton resolution conjecturestates that solutions to the equation decompose generically into a number of nonlinear bound states called solitons and a decaying radiation term. Although numerical and physical evidence strongly suggests that the conjecture holds for a broad class of equations, the set of equations where the conjecture has actually been proven mathematically is currently rather narrow.

In this talk, I will discuss the weak soliton resolution conjecture, which was proposed by Tao in 2008 as a more tractable simplification of the problem for intercritical nonlinear Schrödinger equations in high dimensions. I will focus on the case where the nonlinearity is defocusing with an additional attractive linear potential. Here, the conjecture amounts to the statement that all solutions converge to a compact attractor once radiation is removed.

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