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Effective dynamics of soliton

It is a common understanding in physics that dynamics at a given scale originate from dynamics on a finer scale. In this talk I will demonstrate how this works for the case of low energy solutions of the nonlinear Schrödinger and Hartree equations with external potentials. I show how the description of such solutions can be reduced to dynamics of rigidly moving well localized structures—solitons (ground states). I will review some recent results on and state open problems in this subject.