

# LONG-TIME DYNAMICS OF 1D CUBIC NONLINEAR SCHRÖDINGER EQUATIONS WITH A TRAPPING POTENTIAL

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We will consider the long-time dynamics of small solutions to the 1d cubic nonlinear Schrödinger equation (NLS) with a trapping potential. I will illustrate that every small solution will decompose into a small solitary wave and a radiation term which exhibits the modified scattering. The analysis also establishes the long-time behavior of solutions to a perturbation of the integrable cubic NLS with the appearance of solitons.