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Gong Chen* (gc@math.toronto.edu), 40 St. George St., Bahen Centre, Toronto, Ontario M3V 3Z1, Canada. *Long-time dynamics of small solutions to 1d cubic nonlinear Schrödinger equations with a trapping potential.*

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. In particular, this result implies the asymptotic stability of small solitary waves. The analysis also establishes the long-time behavior of solutions to a perturbation of the integrable cubic NLS with the appearance of solitons. (Received September 20, 2021)