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Justin Holmer* (holmer@math.brown.edu) and **Quanhui Lin.** *Phase-driven interaction of widely separated nonlinear Schrödinger solitons.*

We show that, for the 1d cubic NLS equation, widely separated equal amplitude in-phase solitons attract and opposite-phase solitons repel. Our result gives an exact description of the evolution of the two solitons valid until the solitons have moved a distance comparable to the logarithm of the initial separation. Our method does not use the inverse scattering theory and should be applicable to nonintegrable equations with local nonlinearities that support solitons with exponentially decaying tails. The result is presented as a special case of a general framework which also addresses, for example, the dynamics of single solitons subject to external forces. (Received September 20, 2011)