# On the kinetic description of the long-time behavior of NLS

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## Abstract

Wave turbulence theory claims that at very long timescales, and in appropriate limiting regimes, the effective behavior of a nonlinear dispersive PDE on a large domain can be described by a kinetic equation called the "wave kinetic equation". This is the wave-analog of Boltzmann's equation for particle collisions. We shall consider the nonlinear Schrödinger equation on a large box with periodic boundary conditions, and explore some of its effective long-time behaviors at time scales that are shorter than the conjectured kinetic time scale, but still long enough to exhibit the onset of the kinetic behavior. (This is joint work with Tristan Buckmaster, Pierre Germain, and Jalal Shatah).