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Generalized Quantum Kinetic Equation

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Our work is devoted to the rigorous derivation of quantum kinetic equations from many-particle dynamics.

The main idea is that if initial data is completely defined only by the trace class a oneparticle density operator, the Cauchy problem of the BBGKY hierarchy is equal to the corresponding initial value problem of certain generalized quantum kinetic equation and an infinite sequence of explicitly defined functionals depending on a solution of the generalized kinetic equation. As a consequence of this result we derive the nonlinear Schrodinger equation for the Bose gas in the mean field limit.