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DYNAMICS OF BOSE-EINSTEIN CONDENSATE

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Abstract: Consider a system of N bosons interacting via a repulsive short range pair potential. Let $\psi_{N,t}$ be the solution to the Schrodinger equation of the N -particle dynamics. We prove that the one-particle density matrix of $\psi_{N,t}$ solves the time-dependent Gross-Pitaevskii equation, a cubic non-linear Schrodinger equation. We shall also review general problems related to quantum dynamics of N particle systems.