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*Derivation of the Gross-Pitaevskii equation for the dynamics of the Bose-Einstein condensate*  
(joint work with B. Schlein and H.T. Yau)

**Abstract:** The time dependent Gross-Pitaevskii equation, a cubic nonlinear Schrödinger equation with a specific coupling constant, describes the dynamics of an initially trapped Bose-Einstein condensate. We present a rigorous proof of this fact starting from a many-body bosonic Schrödinger equation with a short scale repulsive interaction in the dilute limit. Our proof shows the emergence and the persistence of an explicit short scale correlation structure in the condensate.