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Complete Bose-Einstein Condensation in the Gross-Pitaevskii Regime

We consider a gas of N bosons in a box interacting through a potential with scattering length of order N^{-1} (Gross-Pitaevskii limit). Assuming the interaction potential to be sufficiently small, we show that all low-energy states exhibit complete Bose-Einstein condensation. The main novelty of our result is a uniform bound on the number of excited particles, i.e. the condensate depletion.

Joint work with Christian Brennecke, Serena Cenatiempo and Benjamin Schlein.