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Cold quantum gases and Bose–Einstein condensation

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We present an overview of mathematical results on the low temperature properties of dilute quantum gases, which have been obtained in the past few years. The presentation includes results on the free energy in the thermodynamic limit, and on Bose–Einstein condensation, Superfluidity and quantized vortices in trapped gases. All these properties are intensely being studied in current experiments on cold atomic gases. We shall give a description of the mathematics involved in understanding these phenomena, starting from the underlying many-body Schroedinger equation.

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