Roma Tre

DIPARTIMENTO DI MATEMATICA E FISICA

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The free energy of interacting Bose gases

Speaker: Chiara Boccato - University of Pisa

Time: Tuesday November 10, 16:00-17:00

Location: Room B308, Largo S. Murialdo 1 (Roma)

Below a critical temperature, interacting Bose gases are expected to exhibit a phase transition to a Bose-Einstein condensate, where collective behavior emerges from the underlying many-body theory.

At zero temperature, we have precise information on the ground-state energy and the low-lying excitation spectrum in certain scaling limits. Much less is known at temperatures comparable to the critical temperature of the ideal gas. In this talk I will discuss the zero-temperature results as background, then focus on variational constructions of correlated trial states in the Gross–Pitaevskii and thermodynamic limits. I will explain how the condensate, thermal excitations, and short-range correlations enter these constructions and lead to upper bounds on the free energy.

This talk is based on joint work with Giulia Basti, Serena Cenatiempo, Andreas Deuchert.