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Beyond the thermodynamic limit of number fluctuations¹

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The number fluctuations of quantum gases at finite temperature are discussed, pointing out the deviations with respect to the thermodynamic limit in both weakly and highly compressible fluids. A dramatic enhancement of the fluctuations is predicted in 2D dipolar Bose gases when the size of the sample cell is of the order of the wavelength of the rotonic excitation induced by the long range of the interaction.

¹In collaboration with Michael Klawunn, Alessio Recati, and Lev Pitaevskii, University of Trento.