

BOSE GASES, BOSE-EINSTEIN CONDENSATION, AND THE
BOGOLIUBOV APPROXIMATION

Robert Seiringer

McGill University

We present an overview of rigorous results on the low temperature properties of dilute Bose gases, which have been obtained in the past few years. The presentation includes results on the ground state energy in the thermodynamic limit, and on Bose-Einstein condensation and the excitation spectrum in trapped gases. In particular, the validity of the Bogoliubov approximation will be investigated. We shall give a description of the mathematics involved in understanding the various phenomena, starting from the underlying many-body Schrödinger equation.

Keywords: Bose-Einstein condensation, Bogoliubov approximation