

The mathematics of dilute Bose gases

The rigorous mathematical analysis of quantum many-particle systems has a long history, dating back to the early days of quantum mechanics. In case of (dilute) Bose gases, there has been a period of renewed interest since the first experimental observation of Bose–Einstein condensation in trapped alkali gases in 1995. In the first part of the talk I will discuss interesting mathematical questions related to the physics of dilute Bose gases and mention a few mathematical techniques that are relevant for their study. The second part of the talk is devoted to one of my recent results: The critical temperature shift of a trapped Bose gas in a semiclassical mean-field limit.