

Abstract Submitted
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Nature of 3D Bose gases near Feshbach Resonance MOHAMMAD S. MASHAYEKHI, DMITRY BORZOV, University of British Columbia, SHIZHONG ZHANG, Ohio State University, JUN LIANG SONG, Institute for Quantum Optics and Quantum Information of the Austrian Academy of Sciences, FEI ZHOU, University of British Columbia — we explore the nature of 3D Bose gases at large positive scattering lengths via resummation of dominating processes involving a minimum number of virtual atoms. We focus on the energetics of Bose gases beyond the usual dilute limit. We also find that an onset instability sets in at a critical scattering length beyond which the near-resonance Bose gases become strongly coupled to molecules and lose the metastability. Near the point of instability, the chemical potential reaches a maximum and the effect of the three-body forces can be estimated to be within a few percent.

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