

Abstract Submitted
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Three-body loss rate of unitary Bose gas¹ WEIRAN LI, JOHANNES HOFMANN, STEFAN NATU, Univ of Maryland-College Park — Quantum gases at unitarity can exhibit interesting features, for instance their universal thermodynamics. In the past, unitary Fermi gases in degenerate limit have been studied extensively. As recent experiments [1, 2] show unitary Bose gases can be stabilized at relatively high temperatures, we would like to ask an important question whether a Bose gas can persist in a well defined thermodynamic state at lower temperatures, even to the degenerate limit [3] where the medium affects the three-body loss rate crucially. By calculating the three-body recombination rate while taking into account the scattering with the medium, we have an estimate of the temperature (scale) above which thermodynamic quantities of a metastable branch can be studied in a unitary Bose gas.

[1] Rem, B. S., et al. “Lifetime of the Bose Gas with Resonant Interactions.” Physical review letters 110.16 (2013): 163202.

[2] Fletcher, Richard J., et al. “Stability of a unitary Bose gas.” Physical review letters 111.12 (2013): 125303.

[3] Makotyn, Philip, et al. “Universal dynamics of a degenerate unitary Bose gas.” arXiv preprint arXiv:1308.3696 (2013).

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