Abstract Submitted
for the NWS12 Meeting of
The American Physical Society

2D Bose gases near resonance DMITRY BORZOV, MOHAMMAD MASHAYEKHI, JEAN-SEBASTIEN BERNIER, University of British Columbia, JUN-LIANG SONG, Institute for Quantum Optics and Quantum Information of the Austrian Academy of Sciences, FEI ZHOU, University of British Columbia —
We explore 2D Bose gases at large scattering lengths near resonance by analyzing contributions of 3-body scattering events that are universal in 2D unlike the 3D case of Efimov physics dependable upon ultraviolet limit energy scale. Within our approach, we study competition between 2-body and 3-body forces for varying scattering length parameter beyond the dilute limit, and find that, as the role of 3-body processes becomes significant, chemical potential saturates and reaches maximum at the first critical value beyond which we get region of negative compressibility. For even larger scattering lengths the 3-body forces become dominant and eventually lead to the onset of instability at the second critical value.

Dmitry Borzov
University of British Columbia

Date submitted: 19 Sep 2012 Electronic form version 1.4