Phase Diagram of the Bosonic 2D Coulomb System

BRYAN CLARK, Princeton Center for Theoretical Science, MICHELE CASULA, Centre de Physique Theorique, Ecole Polytechnique, DAVID CEPERLEY, Dept. of Physics, UIUC; NCSA — The system of particles in two-dimensions which interact with the long range Coulomb potential is an important model for condensed matter. This system potentially supports a rich phase diagram including hexatic and mesoscopic phases (stripes, bubbles, etc). In this talk we will extend our recent work on the distinguishable particles to a system with Bosons. We explore how the superfluid phase intersects the hexatic and Wigner crystal region and how the introduction of statistics affects conclusions about the presence of mesoscopic phases.

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