

Abstract Submitted
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Non-Relativistic Holographic Quantum Liquids¹ JUVEN WANG, ALLAN ADAMS, Massachusetts Institute of Technology — We explore the phase structure of a holographic toy model of superfluid states in non-relativistic conformal field theories. At low background mass density, we find a familiar second-order transition to a superfluid phase at finite temperature. Increasing the chemical potential for the probe charge density drives this transition strongly first order as the low-temperature superfluid phase merges with a thermodynamically disfavored high-temperature condensed phase. At high background mass density, the system reenters the normal phase as the temperature is lowered further, hinting at a zero-temperature quantum phase transition as the background density is varied. Given the unusual thermodynamics of the background black hole, however, it seems likely that the true ground state is another configuration altogether.

¹The work based on: <http://arxiv.org/abs/1103.3472> and works to appear on arXiv.org.

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