

Abstract Submitted
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Comparison of strong-coupling free-energy functionals for superfluid ^3He BENJAMIN STEIN-LUBRANO, JOSEPH SERENE, Georgetown University — Strong-coupling corrections to weak-coupling BCS theory have long been known to determine the equilibrium phase diagram of bulk superfluid ^3He . Recently Wiman and Sauls demonstrated the importance of strong-coupling corrections for phase diagrams of superfluid ^3He in confined geometries, and introduced a computationally tractable extension of the strong-coupling Ginzburg-Landau free-energy as an alternative to the exact (through order $(T_c/T_F)^3$) strong-coupling free-energy functional.¹ We will discuss the accuracy and range of applicability of the Wiman-Sauls functional using comparisons to calculations with the full strong-coupling theory.²

¹J.J. Wiman and J.A. Sauls, Phys. Rev. B **92**, 144515 (2015)

²J.W. Serene and D. Rainer, Phys. Rep. **101**, 221 (1983)

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