

Abstract Submitted
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Numerical studies of exotic paired states in optical lattices¹ SIMONE CHIESA, College William & Mary, SHIWEI ZHANG, College of William & Mary, GEORGE BATROUNI, Institut Non-Lineaire de Nice — Ultracold atoms are a unique tool that allows the exploration of phases of matter not easily accessible in condensed matter systems. Two interesting possibilities are spin-imbalanced systems and spin dependent optical lattices with Fermi surfaces that differ for the two hyperfine species. We use mean-field theory and quantum Monte Carlo simulations of Hubbard-like models with an attractive contact interaction to study the FFLO state and, by rotating the two Fermi surfaces by 90 degrees with respect to each other, a recently proposed exotic paired state [Feiguin and Fisher, 2009].

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