

Abstract Submitted
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Magnetic structure of an imbalanced two component Fermi gas on a square lattice BERNHARD WUNSCH, EUGENE DEMLER, Harvard University, EFSTRATIOS MANOUSAKIS, Florida State University — We study a two component Fermi gas on a two dimensional square lattice subject to a parabolic external confinement. Identifying the two components with a spin like degree of freedom we analyze the magnetic structure of this system as a function of the repulsive interaction strength, external confinement, spin imbalance and system size by means of an unrestricted Hartree Fock calculation. Recent work suggested that for imbalanced systems the system might phase separate in regions of ferromagnetic and antiferromagnetic spin order. However, while there are various competing solutions with collinear magnetization including the phase separated one, we find that for a broad parameter regime the energetically favored solution has a canted antiferromagnetic spin structure with two nonvanishing spin components, a ferromagnetic and an antiferromagnetic one.

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