

Abstract Submitted
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Quantum Phases of Atom-Molecule Mixtures of Fermionic Atoms

NICOLAS LOPEZ, SHAN-WEN TSAI, University of California Riverside — Cold atom experiments have observed atom-molecule mixtures by tuning the interactions between particles.¹ We study many particle interactions by examining a simple model that describes the destruction of fermionic atom pairs to form single bosonic molecules and vice versa. A set of functional Renormalization Group equations^{2,3} describing these processes are set up and solved numerically. The Self Energy of the fermions are attained as a function of frequency and we search for frequency dependent instabilities that could denote a transition from a disordered liquid to a BCS phase. (Financial support from NSF DMR-084781 and UC-Lab Fees Research Program.)

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