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FFLO state of two-dimensional imbalanced Fermi gases[1] DANIEL SHEEHY, Department of Physics and Astronomy, Louisiana State University — Trapped fermionic atomic gases exhibit superfluid states, akin to superconductivity in a metal, due to the pairing of two species of atomic fermion. In recent years, there has been much experimental and theoretical interest in studying the behavior of fermionic superfluids under an imposed population imbalance that disrupts such pair formation and superfluidity and can lead to new phases, including phase separation, imbalanced normal (Fermi liquid), and the elusive Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) state predicted to exhibit a spatially-modulated superfluid state to accommodate the population imbalance. I will present recent theoretical results on fermionic atomic gases confined to a quasi two-dimensional (2D) geometry, showing that the FFLO phase in may more stable in 2D than in the bulk (3D) case (similar to the case of quasi-1D imbalanced gases), providing another possible setting for observing the FFLO state.

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