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Pair condensation in a spin-imbalanced two-dimensional Fermi gas PETER BROWN, DEBAYAN MITRA, PETER SCHAUSS, STANIMIR KONDOV, WASEEM BAKR, Princeton University — We study the phase diagram of the strongly-interacting spin-imbalanced Fermi gas in two dimensions, where the low dimensionality enhances correlations and phase fluctuations. Our interest is motivated by the connection of this system with superconductivity in the presence of a large Zeeman field. We observe pair condensation for a range of spin imbalance and interaction strengths. The measurement of the phase diagram opens the door for a detailed investigation of exotic phases such as the Sarma/broken pair phase and the elusive FFLO phase.

Peter Brown
Princeton University

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