

Abstract Submitted  
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**Spin-Imbalance in a 1-Dimensional Trapped Fermi-Gas**<sup>1</sup> TOBIAS PAPROTTA, GUTHRIE B. PARTRIDGE, YEAN-AN LIAO, WENHUI LI, RANDALL G. HULET, Department of Physics and Astronomy and Rice Quantum Institute, Rice University, Houston, TX 77005 — Spin-polarized trapped Fermi gases have been observed to phase separate into normal and superfluid phases<sup>2</sup>. The elusive Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) phase, predicted more than 40 years ago has, however, not yet been found in the 3-dimensional gas. Theory predicts that the FFLO phase occupies only a small part of the phase diagram in 3D<sup>3</sup>, whereas in a 1D gas it is expected to be more prominent and is further expected to exhibit an interesting dimensional crossover<sup>4</sup>. We have implemented a 2D optical lattice to create an array of 1D tubes in order to explore the phase diagram of the 1D polarized Fermi gas. Our progress will be reported.

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<sup>2</sup>G. B. Partridge et al., Science 311, 503-505 (2006); C.H. Schunck et al., Science 316, 867-870 (2007)

<sup>3</sup>D.E. Sheehy, L. Radzihovsky, Ann. Phys. 332(8), 1790 (2006)

<sup>4</sup>G. Orso, Phys. Rev. Lett. 98, 070402 (2007); H. Hu et. al, Phys. Rev. Lett. 98, 070403 (2007)

Tobias Paprotta  
Department of Physics and Astronomy and Rice Quantum Institute,  
Rice University, Houston, TX 77005

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