

Abstract Submitted  
for the DAMOP09 Meeting of  
The American Physical Society

**Probing the FFLO phase of a spin imbalanced 1D Fermi gas**<sup>1</sup>  
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LI, RANDALL G. HULET, Rice University — The search for the Fulde-Ferrell-  
Larkin-Ovchinnikov (FFLO) phase, a polarized superfluid with a spatially varying  
order parameter, has generated large interest in both condensed matter and cold  
atoms communities. To date, there has been only indirect experimental evidence of  
FFLO in the heavy fermion superconductor CeCoIn<sub>5</sub>. In a 1D polarized Fermi gas,  
the FFLO phase is predicted to occupy a large region of the phase diagram<sup>2</sup>. We  
have implemented a 2D optical lattice in order to explore experimental signatures  
of FFLO, for example in-situ density distributions or time of flight imaging. In this  
talk, we will present the experimental progress on both methods.

<sup>1</sup>Supported by DARPA, NSF, ONR, the Keck and Welch Foundations

<sup>2</sup>G. Orso, Phys. Rev. Lett. 98, 070402 (2007), Hu et al., Phys. Rev. Lett. 98,  
070403 (2007).

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Date submitted: 23 Jan 2009

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