Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Pairing of Strongly Interacting Fermions without Superfluidity[1]
CHRISTIAN SCHUNCK, YONG-IL SHIN, ANDRE SCHIROTZEK, MARTIN ZWIERLEIN, WOLFGANG KETTERLE, MIT — We use radio-frequency spectroscopy to study pairing in the normal and superfluid phases of a strongly interacting Fermi gas with imbalanced spin populations. At high spin imbalances the system cannot become superfluid even at zero temperature. In this normal phase full pairing of the minority atoms is observed. This demonstrates that mismatched Fermi surfaces do not prevent pairing but quench the superfluid state, thus realizing a system of fermion pairs that do not condense even at the lowest temperature.

[1]This work was supported by NSF and ONR.

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Date submitted: 02 Feb 2007 Electronic form version 1.4