Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Spectroscopic Signatures of Nonequilibrium Pairing in Atomic Fermi Gases[1] MAXIM DZERO, Columbia University, EMIL YUZBASHYAN, Rutgers University, B.L. ALTSHULER, Columbia University, PIERS COLEMAN, Rutgers University — We present the results of a theoretical description of the radio-frequency (RF) spectra for non-stationary states of a fermionic condensate. These states can be produced by a rapid switch of the scattering length. We show that the RF spectrum of the nonequilibrium state with constant BCS order parameter has two features in contrast to equilibrium where there is a single peak. The additional feature reflects the presence of excited pairs in the steady state. In the state characterized by periodically oscillating order parameter RF-absorption spectrum contains two sequences of peaks spaced by the frequency of oscillations. Satellite peaks appear due to a process where an RF photon in addition to breaking a pair emits/absorbs oscillation quanta.

[1]The work of M. D. and P. C. was supported by the DOE Grant No. DOE-FE02-00ER45790. E.Y. was supported by the Alfred P. Sloan Foundation and NSF Grant No. NSF-DMR-0547769.

Maxim Dzero
Columbia University

Date submitted: 30 Nov 2007 Electronic form version 1.4