Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Role of exchange energy in a trapped dipolar Fermi gas TAKAHIKO MIYAKAWA, Tokyo University of Science, TAKAAKI SOGO, Kyoto University, HAN PU, Rice University — We consider a system of quantum degenerate spin polarized fermions in a harmonic oscillator trap at zero temperature that mutually interact via dipole-dipole forces. We examine the ground state properties by use of a variational Wigner function to describe the deformation and compression of the Fermi gas in phase space. The exchange energy of dipolar interaction is shown to cause the deformation of Fermi surface. We also show that the exchange energy plays a crucial role in the stability of the system.

Takahiko Miyakawa
Tokyo University of Science

Date submitted: 01 Feb 2008 Electronic form version 1.4