

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Fermi surface distortions in a neutral Fermi fluid with dipolar interactions BENJAMIN M. FREGOSO, UIUC, KAI SUN, EDUARDO FRADKIN, BENJAMIN LEV — We show that the Fermi surface of a neutral fluid of fermions with aligned dipole moments by an external field is elongated along the direction of the aligning field. The distortion of the Fermi surface can be expressed as a linear combination of Legendre polynomials $P_l(\hat{k})$ with $l = \text{even}$, with $l = 2$ being the leading term. The possible existence of a phase transition to a spontaneous biaxial phase is discussed. The zero- sound collective modes of the system are found to be strongly anisotropic. We discuss the possible use of light scattering experiments to detect spatial anisotropies in dipolar gases.

Benjamin M Fregoso
UIUC

Date submitted: 01 Dec 2008

Electronic form version 1.4