

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Superfluid excitations of dipolar fermi gases**<sup>1</sup> PIOTR DEUAR, LPTMS, Universite Paris-sud/CNRS, Orsay, France, MIKHAIL BARANOV, Institut für Theoretische Physik, Universität Innsbruck, Austria, GEORGY SHLYAPNIKOV, LPTMS, Universite Paris-sud/CNRS, Orsay, France; WZI, Universiteit van Amsterdam, The Netherlands — The collective and single-particle excitations of a gas of fermionic dipoles have been determined for the case of a uniform, single-species, fully polarised gas below superfluid (BCS) critical temperature. Its behaviour, especially damping, differs strongly from the s-wave BCS gas due to a node line in its quasiparticle excitation spectrum that resembles that in the hypothetical polar phase of He-3 and exotic superconductors. One finds: (1) Anisotropic damping of collective modes even at  $T=0$ . (2) An “aligned superfluid” regime with no analogue in the s-wave-interacting gas, for excitations with energy well below  $kT$ . Here good quality superfluidity occurs only in directions concentrated broadly around the polarisation, whereas other directions are strongly damped. (3) Current response to external forcing of the gap is anisotropic and at an angle to the applied probe.

<sup>1</sup>Support: European Community (contract MEIF-CT-2006-041390), Dutch Foundation FOM, IFRAF Insitute, ANR (grants 05-BLAN-0205 and 06-NANO-014-01), QUDEDIS program of ESF, Austrian Science Foundation FWF, Russian Foundation for Fundamental Research.

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Date submitted: 19 Nov 2008

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