

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Survey of Pauli Limiting and FFLO behavior in organic superconductors¹ WILLIAM A. CONIGLIO, LAUREL E. WINTER, C. C. AGOSTA, Clark University — Superconducting effects near the Pauli paramagnetic limit have drawn increased attention recently, with several suggestions of inhomogeneous superconductivity (Fulde-Ferrell-Larkin-Ovchinnikov) at high magnetic fields and low temperatures. Many of these studies have been done on layered superconductors when the magnetic field is oriented exactly parallel to the conducting layers to suppress orbital limiting. We compare the normalized phase diagrams found by RF penetration depth measurements on κ -(ET)₂Cu(NCS)₂, CeCoIn₅, α -(ET)₂NH₄Hg(SCN)₄, β'' -(ET)₂SF₅CH₂CF₂SO₃, and λ -(BETS)₂GaCl₄. In most of these materials, we have found possible inhomogeneous phases below reduced temperatures (T/T_c) in the range 0.1 to 0.3. We also inspect some measurable sample characteristics for clues to the formation or absence of the inhomogeneous state. We will recommend κ -(ET)₂Cu[N(CN)₂]Br, which seems not to have an inhomogeneous state, for further phase diagram study.

¹We acknowledge support from the DOE DE-FGER46214.

William Coniglio
Clark University

Date submitted: 20 Nov 2009

Electronic form version 1.4