

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Antiferromagnetic Order in Pauli-Limited Unconventional Superconductors** YASUYUKI KATO, CRISTIAN BATISTA, Theoretical Division, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA, ILYA VEKHTER, Department of Physics and Astronomy, Louisiana State University, Baton Rouge, Louisiana, 70803, USA — We develop a theory of the coexistence of superconductivity (SC) and antiferromagnetism (AFM) in CeCoIn<sub>5</sub>. We show that in Pauli-limited nodal superconductors the nesting of the quasiparticle pockets induced by Zeeman pair breaking leads to incommensurate AFM with the magnetic moment normal to the field. We compute the phase diagram and find a first order transition to the normal state at low temperatures, the absence of normal state AFM, and the coexistence of SC and AFM at high fields, in agreement with experiments. We also predict the existence of a new double-Q magnetic phase.

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Date submitted: 07 Nov 2011

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