Abstract Submitted
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Paramagnetic
Intrinsic Meissner Effect in Layered Superconductors[1] ANDREI LEBED, Dept. of Physics, University of Arizona — Free energy of a quasi-two-dimensional superconductor with a coherence length perpendicular to the conducting layers being less than an inter-layer distance is calculated. The free energy is shown to differ from that in the textbook Lawerence-Doniach model at high fields, where the Meissner currents are found to create an unexpected positive magnetic moment due to shrinking of the Cooper pairs "sizes" by a magnetic field. This unique phenomenon - paramagnetic intrinsic Meissner effect (PIME) in a bulk [1] - is suggested to detect by measuring in-plane magnetization and torque in layered organic and high-Tc superconductors as well as in superconducting superlattices.

[1] A.G. Lebed, Physical Review Letters, submitted.

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