

Abstract Submitted  
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**Fermi surface pockets in the underdoped cuprate  $\text{YBa}_2\text{Cu}_4\text{O}_8$ , - are they present in low magnetic fields?** J. R. COOPER, M. MATUSIAK, J. W. LORAM, Department of Physics, University of Cambridge, E. A. YELLAND, School of Physics and Astronomy, University of St. Andrews, B. DABROWSKI, Department of Physics, Northern Illinois University — The observations of quantum oscillations in the underdoped cuprate superconductors, ortho-II  $\text{YBa}_2\text{Cu}_3\text{O}_{6.5}$  [1] and  $\text{YBa}_2\text{Cu}_4\text{O}_8$  (Y124) [2] at very high magnetic fields and low temperatures could lead to improved understanding of cuprate superconductivity. This will be especially true if the small Fermi surface (FS) pockets are still present at higher temperatures and lower magnetic fields. As pointed out in ref. [2] the pockets appear to have low Fermi energies  $\sim 300$  K, and could therefore give rise to T-dependent magnetic anisotropy in the normal state associated with Landau-Peierls diamagnetism. We report susceptibility anisotropy data for Y124 crystals up to 300 K, and discuss whether these data and zero field heat capacity data, are consistent with the properties of the FS pockets obtained from high field measurements. [1] N. Doiron-Leyraud, et al., Nature 447,565 (2007) [2] E.A. Yelland et al. arXiv:cond-mat/07070057.

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