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Magnetic anisotropy of some cuprate superconductors. JOHN COOPER, University of Cambridge, MARCIN MATUSIAK, IVAN KOKANOVIC, DANIEL HILLS, MICHAEL SUTHERLAND, TIMOTHY BENSEMAN, JOHN LORAM — We report magnetic anisotropy data obtained using cantilever torque or Squid magnetometry, for single crystals of $YBa_2Cu_4O_8$, $YBa_2Cu_3O_{6+x}$, $La_{2-x}Sr_xCuO_4$ and $Bi_2Sr_2CaCu_2O_{8-x}$, grown by several different groups. At present the main results are: (1) The anisotropy far above T_c is dominated by anisotropy in the spin susceptibility. By comparing data for $YBa_2Cu_4O_8$and $YBa_2Cu_3O_7$we show that the T-dependence is caused by the pseudogap. (2) At lower T, analysis in terms of weak, quasi-2D, Gaussian superconducting fluctuations gives values of the in-plane superconducting coherence length, and hence independent estimates of the Nernst coefficient above T_c. (3) Data for the field dependence of the fluctuations nearer T_c are used to look for deviations from the above Gaussian picture. (4) There is some evidence from the magnetic susceptibility, Knight shift, susceptibility anisotropy and heat capacity, that the small pockets of carriers detected in high field quantum oscillation experiments on $YBa_2Cu_4O_8$and$YBa_2Cu_3O_{6+x}$ are still present at low fields.

John Cooper
University of Cambridge

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