

## Are the Lower Critical Fields of High- $T_c$ Superconductors Known?

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The lower critical fields  $H_{C1}$  of high-temperature superconductors have been measured extensively during the last three years by many experimental groups. The values of  $H_{C1}$ , however, are still controversial. For example, for YBaCuO at 4.2 K estimations of  $H_{C1}$  for fields perpendicular to the Cu-O planes range from 400 Oe to 4 kOe. Similarly, for fields in the planes, values of  $H_{C1}$  range from 70 Oe to 500 Oe. The temperature dependence is also controversial and, in particular, several groups report on anomalous behaviour at low temperature. In this talk we review the experimental techniques and results, and discuss possible drawbacks in the experiments which may explain the ongoing controversy.