Fermi-surface reconstruction in the cuprate superconductor
YBCO via the thermal Hall effect GAEL GRISSONNANCHE, SOPHIE
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NHMFL Tallahassee, STEFFEN KRAMER, LNCMI Grenoble — We recently
showed that the thermal conductivity $\kappa_{xx}$ can be used to directly measure the upper
critical field $H_{c2}$ in cuprate superconductors [1]. Here we show that the thermal Hall
conductivity $\kappa_{xy}$ can be used to probe the nature of the carriers in these materials.
We present a study of $\kappa_{xy}$ in YBCO at a doping $p = 0.11$, as a function of magnetic
field up to 35 T down to low temperature. The fact that $\kappa_{xy}$ is negative above
$H_{c2} = 24$ T confirms the presence of an electron-like pocket in the normal-state
Fermi surface [2], the result of a reconstruction caused by the emergence of charge
order at low temperature [3]. We show how the Fermi-surface reconstruction evolves
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