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### Title

TEMPERATURE-DEPENDENCE OF CHARGE TRANSPORT IN SINGLE-CRYSTAL EUB6

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BM 10 Temperature Dependence of Charge Transport in Single Crystal  $\text{EuB}_6$ . S. VON MOLNAR, C. N. GUY<sup>+</sup>, J. ETOURNEAU<sup>++</sup>, IBM T. J. Watson Res. Cntr., Yorktown Heights, NY 10598 and Z. FISK, U.C. San Diego, La Jolla, CA 92093--We present Hall and resistivity data which demonstrate that  $\text{EuB}_6$  is a degenerate semiconductor transforming into a metal or semimetal below the ferromagnetic ordering temperature ( $T_c=13.7\text{K}$ ). We find that there is a factor 5 decrease in the normal Hall coefficient as temperature is decreased to 4.2K. A simple one band model leads to the following:  $n_{\text{eff}}(150\text{K})=3.5 \times 10^{19} \text{cm}^{-3}$  and  $n_{\text{eff}}(4.2\text{K})=1.7 \times 10^{20} \text{cm}^{-3}$ ;  $\mu_{\text{eff}}(150\text{K}) \approx 300 \text{cm}^2/\text{vsec.}$ , whereas  $\mu_{\text{eff}}(4.2\text{K})=2560 \text{cm}^2/\text{vsec.}$  We interpret these data as arising from a magnetically driven electronic phase transition in which the strong coupling between conduction electrons and localized 4f spins determine the conduction band position.

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