Magnetoresistance of $Ce_2Rh_3Ge_5$

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Introduction

$Ce_2Rh_3Ge_5$ is a member of the family of correlated *f*-electron systems, which are especially interesting for their variety of ground states as well as their possible relation to the more strongly interacting electrons of the cuprates. Previous work by Baumbach *et al* show evidence of an antiferromagnetic quantum critical point near 22 T as well as a hint of quantum oscillations near 35 T. Work at the LANL pulsed field facility has extended the field range of these measurements.

Experimental

The samples were wired for 4-point resistivity measurement using an AC-locking technique and run at ^{3}He temperatures. Samples were connected directly to a bare cernox chip thermometer to ensure no thermal gradients would develop in the thermometry.

Results and Discussion

Resistance measurements reveal a changeover from negative to positive magnetoresistance in the higher field regions above the suppression of antiferromagnetic order.

Conclusions

The magnetoresistivity data indicates a significant change in the in the fermiology between the magnetically ordered and spin polarized phases, which warrants further investigation.

Acknowledgements

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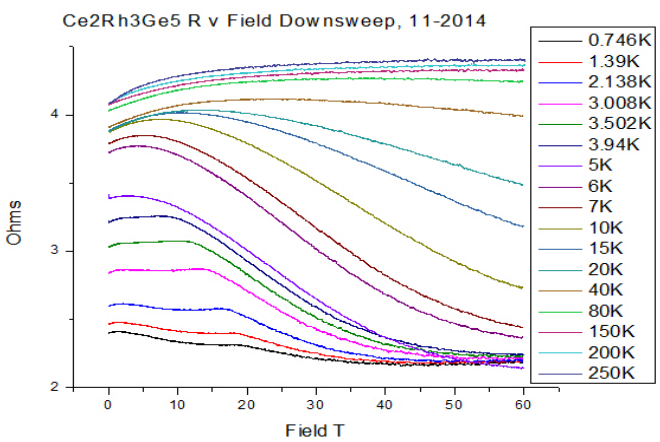

Fig.1 resistance vs. magnetic field at various temperatures. This plot shows the magnetic transition near 20T at low temperatures and the crossover from negative to positive magnetoresistance.

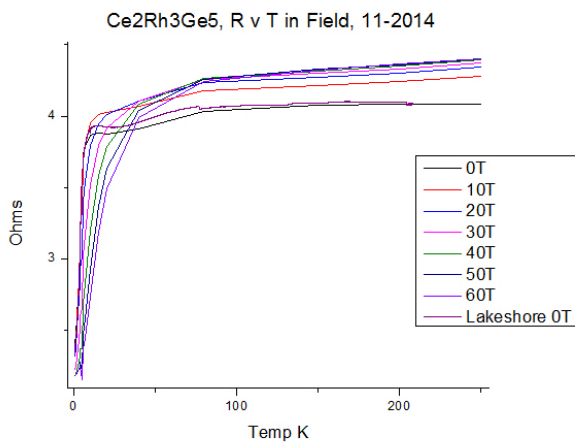

Fig. 2 Resistance vs. temperature for various magnetic field strengths (taken from pulse field data).