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Magnetoresistance in i-R-Cd icosahedral quasicrystals (R=Y, Gd)[1] GARIMA SARASWAT, DRAGANA POPOVIĆ, Natl. High Magnetic Field Lab., Florida State Univ., TAI KONG, SERGEY L. BUD'KO, PAUL C. CANFIELD, Ames Laboratory / Iowa State Univ. — We use magnetoresistance (MR) to probe the electronic properties of the recently discovered binary quasicrystals (QCs) i-Gd-Cd and i-Y-Cd, with and without local magnetic moments, respectively. DC magnetization has revealed spin-glass freezing in i-Gd-Cd at a temperature $T_f = 4.6$ K. MR was measured at $1.6 \leq T(\mathrm{K}) \leq 300$ and in magnetic fields H up to 12 T. The most interesting behavior is observed in i-Gd-Cd, in which the MR exhibits thermo-magnetic history dependence at low T. In particular, there is a clear difference between the ZFC and FC values of the low-field positive MR. In contrast, the i-Y-Cd MR does not depend on magnetic history. The onset of the history dependent MR at $T \sim 20$ K $> T_f$, when the QC with local magnetic moments is cooled in a high field of 12 T, may be related to the formation of magnetic clusters above T_f, as inferred from the magnetization and specific heat studies. Possible mechanisms responsible for the striking coupling between charge transport and local magnetic environment observed in the MR will be discussed.

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Garima Saraswat
Natl. High Magnetic Field Lab., Florida State Univ.

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