## Transport Study of the Lightly Doped Cuprates

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In the lightly-doped regime of the high-$T_c$ cuprates, there is an intriguing dichotomy regarding the coupling between charge carriers and the background spins: On one hand, the Néel order is quickly suppressed upon hole doping, indicating that the doped holes are strongly coupled to the spin subsystem; on the other hand, a Fermi-liquid-like metallic transport with a mobility comparable to that at optimum doping is established with only 1% of hole doping and this metallic transport is completely insensitive to the onset of the Néel ordering [1,2], indicating that the doped holes and the spin subsystem are rather decoupled. More intriguingly, various kinds of transport anomalies, such as a self-organized one-dimensionality or a giant magnetoresistance, have been found in this regime [3-6]. Most likely, these features stem from an electronic heterogeneity in these materials. This work was done in collaboration with A. N. Lavrov, S. Komiya, K. Segawa, X. F. Sun, S. Ono, and Y. Kurita.

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