Max-Planck-Institut für Struktur und Dynamik der Materie



Max Planck Institute for the Structure and Dynamics of Matter

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Theoretical Studies of Photoinduced Dynamics in Correlated Electron Systems with Multi Degrees of Freedom

Ultrafast photo-induced electron dynamics in strongly correlated electron systems have significantly attracted much attention, since a number of time-resolved experimental techniques and theoretical calculation methods for non-equilibrium states are rapidly developed in the last decade. In particular, a number of exotic phenomena have been observed in correlated electron systems with multi-degrees of freedom, e.g. spin, charge, orbital, lattice and so on. In this talk, I introduce recent our theoretical studies in the photo-induced transient electron dynamics in correlated electron systems with multi degrees of freedom. I have a plan to talk about the following topics: 1) Photo-excited charge dynamics of interacting charge-frustrated systems [1], 2) transient hole dynamics injected into a Mott insulator with antiferromagnetic long range order [2], and 3) the photo-excited real time dynamics in the two-leg ladder Hubbard model [3,4].

[1] H. Hashimoto, H. Matsueda, H. Seo, and S. Ishihara, arXiv:1409.7562. (to be published in J. Phys. Soc. Jpn.)

[2] E. Iyoda and S. Ishihara, Phys. Rev. B. 89, 125126 (2014).

[3] H. Hashimoto and S. Ishihara (in preparation).

[4] R. Fukaya, Y. Okimoto, M. Kunitomo, K. Onda, T. Ishikawa, S. Koshihara, H. Hashimoto, S. Ishihara, A. Isayama, and T. Sasagawa (in preparation).

