Double-pulse deexcitations in a one-dimensional strongly correlated system TAKAMI TOHYAMA, Yukawa Institute for Theoretical Physics, Kyoto University, Japan, HANTAO LU, Center for Interdisciplinary Studies & Key Laboratory for Magnetism and Magnetic Materials of the MoE, Lanzhou University, China, JANEZ BONCA, J. Stefan Institute, Slovenia — We investigate the ultrafast optical response of the one-dimensional half-filled extended Hubbard model exposed to two successive laser pulses [1]. By using the time-dependent Lanczos method, we find that following the first pulse, the excitation and deexcitation process between the ground state and excitonic states can be precisely controlled by the relative temporaldisplacement of the pulses. The underlying physics can be understood in terms of a modified Rabi model. Our simulations clearly demonstrate the controllability of ultrafast transition between excited and deexcited phases in strongly correlated electron systems.

[1] H. Lu, J. Bonca, and T. Tohyama, EPL **103**, 57005 (2013).

Takami Tohyama
Yukawa Institute for Theoretical Physics, Kyoto University