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Non-Equilibrium Study of Superconductivity in Extended Hubbard Model WEI-CHIH CHEN, Department of Physics, University of Alabama at Birmingham, YAO WANG, Department of Physics, Harvard University, CHENG-CHIEN CHEN, Department of Physics, University of Alabama at Birmingham — Photo-induced phase transitions have been demonstrated in pump-probe experiments on several strongly correlated systems. Here, we study various order parameters including charge ordering, spin ordering, and superconducting pairings in the extended Hubbard model by large-scale exact diagonalization. The equilibrium phase diagrams with different carrier fillings will be shown and compared with previous studies based on mean-field and functional renormalization group methods. Using the equilibrium ground state as the initial state, we then study the non-equilibrium dynamics of the aforementioned order parameters in the presence of an oscillatory Gaussian light pulse. We fully investigate the effects of light polarization, frequency, amplitude, and width on different order parameters. It is shown that light-polarization control can be a promising new approach to enhance or suppress superconductivity of desired pairing symmetry.

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