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Non-equilibrium steady state of field-driven strongly correlated electrons[1] WOO-RAM LEE, School of Physics, Korea Institute for Advanced Study, Seoul 130-722, Korea, JONG EUN HAN, Department of Physics, State University of New York at Buffalo, Buffalo, New York 14260, USA, KWON PARK, School of Physics, Korea Institute for Advanced Study, Seoul 130-722, Korea — We theoretically study the nature of non-equilibrium steady state of strongly correlated electrons on lattices under the influence of a static electric field. We describe the dynamics of steady state by the Floquet theory, and the electron correlation by the dynamical mean-field theory, respectively. We find that the steady-state current in a closed system is characterized by the Bloch oscillation in the metallic regime, while it vanishes in the Mott-insulating regime. Importantly, the coherent contribution to the current can be captured by measuring the quasiparticle weight in the local spectral density as in equilibrium. Based on these criteria, we draw the non-equilibrium phase diagram as a function of the strength of electric field and the on-site interaction at zero temperature. *References: [1] A. V. Joura, J. K. Freericks, and Th. Pruschke, Phys. Rev. Lett. 101, 196401 (2008); [2] N. Tsuji, T. Oka, and H. Aoki, Phys. Rev. B 78, 235124 (2008).

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