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Photoinduced phase transition in one dimensional extended Hubbard model HANTAO LU, SHIGETOSHI SOTA, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, 606-8502, Japan, HIROAKI MATSUEDA, Sendai National College of Technology, Sendai, 989-3128, Japan, TAKAMI TOHYAMA, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, 606-8502, Japan
— We illustrate one interesting example of the photoinduced phase transitions due to a nonequilibrium process. The impact of laser pump on one dimensional half-filled extended Hubbard model in the spin-density-wave (SDW) phase is investigated by using time-dependent density-matrix renormalization group. With proper laser frequencies and strengths, we find that charge-density wave (CDW) can be observed during the pulse. Further, in some situations, for instance, near the boundary between SDW and CDW in the ground state, the CDW signature can be sustained even after the pulse turned off. The underlying physics and possible experimental realization are discussed.

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