

Abstract Submitted
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Photo-induced Metallic States in a Mott Insulator TAKASHI OKA,
University of Tokyo, Department of Tokyo — In the presence of strong AC electric fields, carriers are continuously produced in an insulator and the system may turn metallic. Such photo-induced insulator-to-metal transition was observed in one-dimensional Mott insulators (Iwai et al. *P.R.L.* (2003)). We have studied the one-dimensional Hubbard model with strong AC electric fields using the time-dependent density matrix renormalization group method. We have changed the strength of the field as well as the frequency. We have observed that metallic states are produced not only when the photon energy, i.e., the frequency of the AC field, is larger than the gap, but also when it is smaller. However, the field must be stronger than a threshold in the latter case. We have also studied the detailed properties of the photo-induced states by calculating the optical and magnetic correlation function.

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