

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Dynamical density matrix renormalization group study of non-linear optical response of one-dimensional strongly correlated electron system SHIGETOSHI SOTA, RIKEN AICS, SELJI YUNOKI, RIKEN AICS, RIKEN ASI, CREST, TAKAMI TOHYAMA, YITP, Kyoto University — We studied the third-order non-linear optical response of one-dimensional Mott insulators by using the dynamical density matrix renormalization group method. We employed an one-dimensional extended Hubbard model which corresponds to the one-dimensional Mott insulators. Also, we introduced a Holstein-type electron-phonon interaction which is important for understanding the optical response in the one-dimensional Mott insulators. We calculated the non-linear optical response using the parameters corresponding to Sr_2CuO_3 which is known as a kind of the one-dimensional Mott insulators. Our calculated results show a relatively large effect of the electron-phonon interaction on the calculated third-order non-linear optical response.

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Date submitted: 27 Nov 2012

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