

Abstract Submitted  
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**Spin and Charge Dynamics in Atomic Fermions Loaded on Optical Lattice** MASAHIKO OKUMURA<sup>1</sup>, CCSE, Japan Atomic Energy Agency, HIROAKI ONISHI, Advanced Science Research Center, Japan Atomic Energy Agency, SUSUMU YAMADA<sup>2</sup>, MASAHIKO MACHIDA<sup>3</sup>, CCSE, Japan Atomic Energy Agency — We study spin and charge dynamics of trapped two-component fermions loaded on an optical lattice by using the time dependent density matrix renormalization group (TDDMRG) method. The present target issue is dynamics of spin and charge in Mott state recently realized experimentally by [1]. Firstly, we simply shake a trapped potential superposed onto an optical lattice and observe the charge dynamics on the Mott state by using TDDMRG. Secondly, we do the same thing on a trapped potential which works only on a pseudo-spin species and observe the spin density dynamics. These results are compared with non-trapped case with an open boundary condition. Also, we compare one-dimensional chain like cases with those of n-legs square and triangular ladder systems. References [1] U. Schneider, L. Hackermuller, S. Will, Th. Best, I. Bloch, T. A. Costi, R. W. Helmes, D. Rasch, A. Rosch, arXiv:0809.1464.

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