Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Electronic properties in a superlattice of strongly correlated electron systems SUGURU UEDA, NORIO KAWAKAMI, Department of Physics, Kyoto University, Kyoto 606-8502, Japan — We theoretically investigate the superlattice consisting of a Mott insulator and a metal by using the dynamical mean-field theory. At low temperature, the quasi-particle state appears in the density of states of the Mott insulator layers. We address how the structure of the superlattice affects the stability of this Fermi liquid state. It is elucidated that the quasi-particle weight shows the characteristic even-odd oscillation depending on the thickness of the metal domain. We confirm this even-odd dependence in the electrical resistivity, and find that the Fermi liquid state is further stabilized by the superlattice with a certain periodicity. We also discuss the importance of our findings comparing with the recent experiments.

Suguru Ueda
Department of Physics, Kyoto University, Kyoto 606-8502, Japan

Date submitted: 13 Nov 2014   Electronic form version 1.4