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Doublon production rate by optical lattice modulation for strongly correlated Fermionic atoms AKIYUKI TOKUNO, DPMC-MaNEP, University of Geneva, EUGENE DEMLER, Harvard University, THIERRY GIAMARCHI, DPMC-MaNEP, University of Geneva — Currently lattice modulation spectroscopy technique is applied to experiments. [1] In this spectroscopy, the number of doubly occupying atom (doublon) produced by amplitude modulation of an optical lattice potential is probed. Theoretically, it allows us to access a kinetic energy correlation function. [2] We discuss doublon excitations of strongly correlated fermionic atoms in a high-temperature regime relevant to current experiments of fermionic atoms in an optical lattice. [3] We employ a slave particle representation, and the self-energy is estimated by using non-crossing approximation based on a spin-incoherent assumption. Furthermore, this formalism is applied to calculation of the doublon production rate as a function of the lattice modulation frequency, chemical potential and temperature. Using parameters given in the experiment [1], a fit to the experimental data is implemented, and quantitatively good agreement is obtained.

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