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Exact Photo-Carrier Creation Rate in the One Dimensional Mott Insulator

Monday 4 April 2011 16:30 (2h 30m)

We calculate the photo-carrier creation rate in the half-filled Hubbard model in strong AC electric fields. This is done by combining the imaginary time method with the Bethe ansatz wave function, which was developed in ref. [1] in order to study the many-body Schwinger-Landau-Zener mechanism in DC electric fields. The present result is a many-body generalization of the creation rate obtained by Popov[2]. We discuss the nature of the crossover from the weak field multi-photon processes to the strong field tunneling regime.

[1] T. Oka and H. Aoki, Phys. Rev. B 81, 033103 (2010)
[2] V. Popov, JETP, 34, 709 (1972).

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