Nonequilibrium dynamics of many-body systems, driven by a constant electric field

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I will present a fundamental study of a Holstein polaron in one dimension and a single hole in the two dimensional t-J-Holstein model driven by a constant electric field. Taking fully into account quantum effects we follow the time-evolution of systems from their ground state as the electric field is switched on at $t = 0$, until they reach a steady state. In the Holstein polaron we observe: adiabatic regime with Bloch oscillations and zero net current and a dissipative regime with a finite current that is further divided on a linear $I - V$ region and a region with a negative differential resistance [1,2].
In the case you found this abstract tiresome, the scene on Fig.1 might convince you of joining the conference.

Figure 1: The idyllic scene of Krvavec and hotel "Raj". Disclaimer: This figure might not reflect the actuall scene at the time of the conference.

References

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[2] M. Mierzejewski, L. Vidmar, J. Bonča, and P. Prelovšek, *Phys. Rev. Lett.* **106** 196401, (2011).

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