

Abstract Submitted
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Noise and counting statistics in one-dimensional insulators

AUSTEN LAMACRAFT, All Souls College, Oxford — We discuss the correlation properties of current carrying states of one-dimensional insulators, which could be realized by applying an impulse to atoms loaded onto an optical lattice. While the equilibrium noise has a gapped spectrum, the quantum uncertainty encoded in the amplitudes for the Zener process gives a zero frequency contribution out of equilibrium. We derive a general expression for the generating function of the full counting statistics and find that the particle transport obeys binomial statistics. Finally, we discuss the extent to which the technique employed in a recent experiment (Phys. Rev. Lett. 95, 090404 (2005)) can be considered an ideal measurement of counting statistics.

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