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Equilibration of a One-Dimensional Wigner Crystal K.A. MATVEEV, Argonne National Laboratory, A.V. ANDREEV, University of Washington, M. PUSTILNIK, Georgia Institute of Technology — Equilibration of a one-dimensional system of interacting electrons requires processes that change the numbers of left- and right-moving particles. At low temperatures such processes are strongly suppressed, resulting in slow relaxation towards equilibrium. We study this phenomenon in the case of spinless electrons with strong long-range repulsion, when the electrons form a one-dimensional Wigner crystal. We find the relaxation rate by accounting for the umklapp scattering of phonons in the crystal. For the integrable model of particles with inverse-square repulsion, the relaxation rate vanishes. We apply our results to calculation of the correction to the conductance of a long quantum wire due to the equilibration processes.

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