

Steady states and long range correlations in driven systems, Cours 2, Part. 2

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In these three lectures steady states and dynamical properties of nonequilibrium systems will be discussed. Systems driven out of thermal equilibrium often reach a steady state which under generic conditions exhibits long-range correlations. This is very different from systems in thermal equilibrium where long-range correlations develop only at phase transition points. In some cases these correlations even lead to long-range order in $d=1$ dimension, of the type occurring in traffic jams. Simple examples of such correlations induced in the steady state of driven systems will be presented and discussed. Close correspondence of these nonequilibrium steady states to electrostatic potentials induced by charge distribution will be pointed out. Another class which will be discussed is that of systems with boundary drive, such as in heat conduction problems, where anomalous heat conduction takes place in low dimensions. In addition some similarities between driven systems and equilibrium systems with long-range interactions will be elucidated.

References:

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