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**Floquet thermodynamics—nature of ensembles and order under periodic driving**

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We study the long-time behaviour of many-body Floquet systems—closed quantum systems under temporally periodic driving, arguably the simplest deviation from equilibrium. We begin by showing that generically such interacting systems heat up and discuss the microscopic mechanism by which this happens. We then discuss two ways to prevent this: integrability and disorder. In the integrable case, a "periodic Gibbs ensemble" may be derived by maximising the entropy and shown to exactly describe the long-time steady state, while in the interacting disordered (many-body localised, or MBL) case, we identify the regime under which driving does not delocalise the system. We conclude by discussing the nontrivial steady-states achieved in interacting Floquet systems.