



Kirone Mallick from the Institut de Physique Théorique (IPhT) CEA Saclay is giving a set of lectures describing recent advances in systems far from equilibrium. After a review of equilibrium thermodynamics, the lectures will introduce the fascinating identities of Jarzynski and Crooks which quantify the transient violations of the second principle. This will be followed by the fluctuation theorem of Gallavotti-Cohen. Here is the exciting programme

1. Review of statistical physics: Equilibrium versus Non-equilibrium. Dynamics, Detailed Balance and Time-reversal.
2. Out of Equilibrium: Large Deviations, Generalized Detailed Balance and the Gallavotti-Cohen theorem.
3. Work Identities: the Jarzynski and Crooks identities.
4. The Asymmetric Exclusion Process: Exact Results
5. A unifying framework: the Macroscopic Fluctuation Theory.