EPFL

PHYS-807 **Nonequilibrium Statistical Physics of Nanoscale Systems (2019)**

Jarzynski Christopher

Cursus	**Sem.**	**Type**
Physics		Obl.

Language of teaching	English
Credits	1
Session	
Exam	Oral presentation
Workload	30h
Hours	**16**
Courses	16
Number of positions	**30**

Frequency

Only this year

Summary

This course provides a brief introduction to the theoretical tools of nonequilibrium statistical phys-ics. Topics include the nanoscale description of the first and second laws of thermodynamics; far-from-equilibrium fluctuation theorems; the thermodynamics of information processing.

Content

The course will be organized around various approaches to modeling nonequilibrium dynamics at the microscopic level. The emergence of thermodynamic behavior will be explored within these approaches. A brief synopsis of the content is given here:

- Statistical thermodynamics of macroscopic systems - brief review
- Nonequilibrium dynamics: Hamiltonian, diffusive and discrete state models
- Emergence of first and second laws from microscopic dynamics
- Far-from-equilibrium fluctuation theorems and work relations
- Thermodynamics of information processing
- Quantifying the thermodynamic arrow of time

Note

Tuesday 4th June: 14:00 – 18:00
Wednesday 5th June: 14:00 – 18:00
Thursday 6th June: 14:00 – 18:00
Friday 7th June: 14:00 – 18:00
BSP 231 (Cubotron I)