



Large deviations in Statistical Physics

Information

Lecturer: Prof. Hugo Touchette

Email: htouchette@sun.ac.za

Lectures: Friday 14:00-16:00 in the NITheP seminar room

Course webpage: <http://www.maths.qmul.ac.uk/~ht/ldcourse/>

Content

- **Week 1:** The large deviation principle; Varadhan's Theorem and the Gärtner-Ellis Theorem
 - **Week 2:** Sums of independent and identically distributed random variables; Sanov's Theorem
 - **Week 3:** Large deviations of Markov chains
 - **Week 4:** Large deviations for stochastic differential equations; symmetrization
 - **Week 5:** Simulations of large deviations.
-

References

- H. Touchette. A basic introduction to large deviations: Theory, applications, simulations. In R. Leidl and A. K. Hartmann, editors, *Modern Computational Science 11: Lecture Notes from the 3rd International Oldenburg Summer School*. BIS-Verlag der Carl von Ossietzky Universität Oldenburg, 2011. Available from <http://arxiv.org/abs/1106.4146>
- H. Touchette. The large deviation approach to statistical mechanics. *Phys. Rep.*, 478(1-3):1–69, 2009. Available from: <http://dx.doi.org/10.1016/j.physrep.2009.05.002>
- A. Dembo and O. Zeitouni. *Large Deviations Techniques and Applications*. Springer, New York, 2nd edition, 1998. Available from: <http://www.springer.com/us/book/9783642033100>. Copy in my office.