

Dr. Francesco Intravaia, D. Reiche

## Fluctuation-induced Phenomena: Information

1. The lectures will take place on Tuesday from 13:00 to 15:00 in the seminar room NEW 14 1'13. Participation to the lectures is highly encouraged. The class will be held in english.
2. The lectures do not follow a specific textbook. Instead, a script will be provided that summarizes with detail the material presented during the lecture. The full script is available online on the page

Fluctuation-induced phenomena/Fluktuations-induzierte Phänomene ↷.

[<https://top.physik.hu-berlin.de/teaching/summer-semester-2018/fluctuation-induced-phenomena>]

The file of the script is password protected (the password is communicated via email later). The script might be updated during the lecture with minor corrections. Major updates are notified during the lecture.

Specific aspects that are covered in the lectures are excellently presented in various books. Some of these books are:

- Nico G. van Kampen, *Stochastic processes in Physics and Chemistry*, Elsevier, 1992
- Ulrich Weiss, *Quantum Dissipative Systems*, World Scientific Publishing Company, Singapore, 2008.
- Leonard Mandel and Emil Wolf, *Optical Coherence and Quantum Optics*, Cambridge University Press, 1995
- Crispin Gardiner and Peter Zoller, *Quantum Noise*, Springer, 1991
- Heinz-Peter Breuer and Francesco Petruccione, *The Theory of Open Quantum Systems*, Oxford University Press, 2002
- Claude Cohen-Tannoudji, Jacques Dupont-Roc, and Gilbert Grynberg, *Atoms and Photons*, John Wiley and Sons Inc., 1998
- John David Jackson, *Classical Electrodynamics*, John Wiley and Sons Inc., New York, 1975.
- Peter Milonni, *The Quantum Vacuum*, Academic Press, 1994
- Diego Dalvit et al. (Eds.), *Casimir Physics*, Springer Lecture Notes on Physics Vol. 834, 2011
- Kimball A. Milton, *The Casimir Effect: Physical Manifestations of Zero-Point Energy*, World Scientific Publishing, 2001

3. The lectures are accompanied by weekly tutorials where the solutions of the problem sheets and questions about the lectures are discussed. The problem sheets can be downloaded from

Fluctuation-induced phenomena/Fluktuations-induzierte Phänomene ↷.

[<https://top.physik.hu-berlin.de/teaching/fluctuations-induced-phenomena>]

Usually, the tutorials take place on Monday from 13:00 to 15:00 in the seminar room NEW 14 1'10 (a most convenient time can be exceptionally arranged if needed). Depending on the number of participants, further tutorials will be arranged.

The problems shall be solved independently and the written solutions can be handed and presented during the tutorial. **Please, take care of the presentation.** A poor or chaotic presentation can hinder the understanding of the solution.

4. During the tutorial the students will be asked to present on the board the solution of the full exercise or part of it. Successful participation in the tutorials can allow to obtain the ECTS-points associated with this class. To obtain these ECTS-points at least 50% of problem sheets have to be handed and at least 50% the attainable points from the mandatory problems have to be obtained - voluntary problems (marked with \*) provide further opportunities to apply the material presented in the lecture and to collect extra points towards 50% rule.
5. The ECTS-points can be also obtained on a day after the end of the lecture during a session where the students will have to answer questions on the topics discussed during the lecture.
6. For those who want to have a mark there will be an exam on a day after the end of the lecture. The exam usually consists of a short talk (15-20 mins maximum) on a scientific paper, followed by 20-30 mins questions on the talk and/or on the topics of the lecture.