

Quantum Information

Lecture schedule, Spring 2019

Week 13

Tue. 26/3 10.15, H322, Physics Dept.

Wed. 27/3, 13.15-15.00, **H322**

Thu 28/3, 13.15-15.00, **H322**

Introduction (SK, AW, PS)

Chap. 1.1 – 1.3, Introduction and overview I (SK)

Chap. 1.4 – 1.6, Introduction and overview II (SK)

Week 14

Tue 2/4, 10.15-12.00, **H322**

Thu. 4/4, 13.15-15.00, **H322**

Chap. 2.1 – 2.2, Intro to quantum mechanics (PS)

Chap. 2.2 – 2.3, Quantum measurements (PS)

Week 15

Tue. 9/4, 10.15-12.00 **H322**

Thu. 11/4, 13.15-15.00, **H322**

Chap. 7, Physical realizations I (AW)

Chap. 7, Physical realizations II (AW)

Week 16

Mon. 15/4, 13.15-15.00, **H322**

Wed. 17/4, 08.15-10.00, **H322**

Wed. 17/4, 13.15-15.00, **H322**

Chap. 4.1 – 4.4, Quantum circuits I (SK)

Chap. 4.5 – 4.7, Quantum circuits II (SK)

Chap. 2.4 – 2.6, Ensembles and density operators (PS)

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Chap. 3.1 – 3.3, Introduction to computer science (PS)

Wed. 17/4 Deadline hand-in 1

Last date to select projects

Week 19

Mon. 6/5, 13.15-15.00, **H322**

Mon. 6/5, 15.15-17.00, **H322**

Tue. 7/5, 08.15-10.00, **H322**

Tue. 7/5, 10.15-12.00, **H322**

Fri. 10/5 Deadline hand-in 2

Chap. 5.1 – 5.3, Quantum Fourier transform (GJ)

Chap. 5.3 – 5.4, Quant. Four. transf., applications (GJ)

Chap. 6.1 – 6.3, Quantum search algorithms I (GJ)

Chap. 6.4 – 6.7, Quantum search algorithms II (GJ)

Week 20

Tue. 14/5, 10.15-12.00, **H322**

Wed. 15/5, 13.15-15.00, **H322**

Thu. 16/5, 13.15-15.00, **H322**

Chap. 8.1 – 8.2, Quantum Operations (PP)

Chap. 8.3 – 8.5, Quantum Noise (PP)

Chap. 10.1 – 10.6, Error correction [parts] (AW)

Week 21

Tue. 21/5, 10.15-12.00, **H322**

Chaps 9, 12 Distance measures and quantum information [parts] (PS)

Fri. 24/5 Deadline hand-in 3

Lecturers:

Andreas Walther (AW), Göran Johansson (GJ), Patrick Potts (PP), Peter Samuelsson (PS), Stefan Kröll (SK)

Homepage:

<http://www.atomic.physics.lu.se/education/elective-courses/fyst30-fafn40-quantum-information/>