

## PHYS 8102: Quantum Theory II

- Instructor: Dr. M. Bachmann  
Office: room 309  
Email: [bachmann@smsyslab.org](mailto:bachmann@smsyslab.org)  
Course website: [www.smsyslab.org/teaching.html](http://www.smsyslab.org/teaching.html)
- Topics: The second part of the course is dedicated to the quantization of angular momenta and the development of basic concepts of canonical field quantization in the context of relativistic quantum field theories. As an example, field operators and propagators for electrons, positrons, and photons in quantum electrodynamics will be studied in greater detail. The idea of visualizing possible scattering patterns using Feynman diagrams is also introduced.
- References: There is a large number of textbooks covering course-relevant material, e.g., W. Greiner and J. Reinhardt, *Field Quantization* (Springer, 1996); *Quantum Electrodynamics*, 4th edition (Springer, 2009); M. Kaku, *Quantum Field Theory: A Modern Introduction* (Oxford, 1993); M.E. Peskin and D.V. Schroeder, *An Introduction to Quantum Field Theory* (Westview, 1995).
- Class: Tuesday and Thursday, 11:10am–12:25pm, room 254.
- Office Hours: You can contact me at any time.
- Exams: Midterm and Final (take-home). The midterm exam will be in March; the final exam in May. In both exams, only lecture notes and homework solutions are admitted. An exam that was missed without documented reason is assigned the grade F. If the instructor decides that missing an exam was excusable, an oral make-up exam will be set up. If you should be unable to take an exam for medical reasons, you must inform me before the exam starts and send me a copy of the original medical visit verification provided by your doctor by end of the exam day.
- Homework: There will be graded assignments on a regular basis (typically bi-weekly) with strict deadlines. Late homework will not be accepted. Do not submit homework via email (unless directed otherwise).
- Grade:  $\text{Total Grade} = (\text{Homework} + \text{Midterm} + \text{Final})/3$
- Grading: [100,85]: A; (85,82.5]: A<sup>-</sup>; (82.5,80]: B<sup>+</sup>; (80,70]: B; (70,67.5]: B<sup>-</sup>; (67.5,65]: C<sup>+</sup>; (65,55]: C; (55,52.5]: C<sup>-</sup>; (52.5,40]: D; (40,0]: F
- Academic Honesty: All members of the academic community are committed to honesty. The academic honesty policy statement of UGA can be viewed online at [www.uga.edu/honesty](http://www.uga.edu/honesty).