Quantum Field Theory I
Physics 6047, Spring 2022

Lam Hui

My coordinates. Pupin 902. Phone: 854-7241. Email: lhui@astro.columbia.edu. URL: `http://www.astro.columbia.edu/∼lhui`.

Teaching assistant. . Yuhan Guo. Email: yg2695@columbia.edu.

Office hour. Monday 5:15 - 6:15 pm, or by appointment.

Class Meeting Time/Place. Monday 3:15 - 5:15 pm, Wednesday 3 - 4:15 pm, in Pupin 424.

Prerequisites. Quantum mechanics, mechanics, electrodynamics and special relativity at the graduate/advanced undergraduate level. **If you are an undergraduate student, you must obtain explicit permission from me.**

Requirements. Problem sets. The last problem set will serve as a take-home final.

Topics covered. Scalar and spinor quantum field theory. Perturbation theory. Renormalization. Spontaneous symmetry breaking. QED if time permits.

Texts. The main texts are

- Quantum Field Theory, Mark Srednicki, Cambridge University Press
- Quantum Field Theory in a Nutshell, Anthony Zee, Princeton Universy Press

Both are available at Book Culture on W. 112th Street. Their website is `http://www.bookculture.com`. Other recommended references include:

- Quantum Theory of Fields Vols. 1 and 2 , S. Weinberg, Cambridge University Press.
- An Introduction to Quantum Field Theory, M. E. Peskin and D. V. Schroeder, Westview Press.
- Modern Quantum Field Theory, T. Banks, Cambridge University Press.
- Aspects of Symmetry, S. Coleman, Cambridge University Press.
- Quantum Field Theory, L. Brown, Cambridge University Press.
- Field Theory, a Modern Primer, P. Ramond, Addison-Wesley.
- Quantum Field Theory and the Standard Model, Matthew Schwartz, Cambridge University Press.
- Advanced Topics in Quantum Field Theory, Mikhail Shifman, Cambridge University Press.
- Quantum Field Theory—from Basics to Modern Topics, Francois Gelis, Cambridge University Press.
- An Introduction to Quantum Field Theory, George Sterman, Cambridge University Press.