

26989-01: Lecture with Exercises

Mathematical Methods of Particle Physics (2+2 CP)

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Suggested Literature

Introductory Textbooks

- Roman U. Sexl, Helmuth K. Urbantke,
Relativity, Groups, Particles, Springer, Vienna (2000);
Relativität, Gruppen, Teilchen, Springer, Berlin, Heidelberg (1992).
- Otto Nachtmann,
Elementarteilchenphysik: Phänomene und Konzepte, Vieweg & Teubner (2014).
- Walter Greiner, Berndt Müller,
Theoretische Physik, Volume 5: *Quantenmechanik, Teil 2: Symmetrien*, Harri Deutsch, Frankfurt (2005).
- Walter Greiner, Joachim Reinhardt,
Theoretische Physik, Volume 7A: *Feldquantisierung*, Harri Deutsch, Frankfurt, Thun (1993).
- Walter Greiner,
Theoretische Physik, Volume 6 (out of print): *Relativistische Quantenmechanik: Wellengleichungen*, Harri Deutsch, Thun (1987);
Relativistic Quantum Mechanics: Wave Equations, Springer, Berlin, Heidelberg, New York (2000).
- Lewis H. Ryder,
Quantum Field Theory, Cambridge University Press (1996).
- Michael E. Peskin, Dan V. Schroeder,
An Introduction to Quantum Field Theory, Addison Wesley, Reading (1995).
- Franz Mandl, Graham Shaw,
Quantum Field Theory, John Wiley & Sons, Chichester (2010).

More Advanced Reading

- Günter Scharf,
Finite Quantum Electrodynamics: The Causal Approach, Dover, Mineola N.Y. (2014).
- Claude Itzykson, Jean-Bernard Zuber,
Quantum Field Theory, McGraw-Hill, New York (1980), Dover, Mineola N.Y. (2005).
- Rudolf Haag,
Local Quantum Physics: Fields, Particles, Algebras, Springer, Berlin, Heidelberg (1996).
- Franco Strocchi,
An Introduction to Non-Perturbative Foundations of Quantum Field Theory, Oxford University Press, Oxford (2013).
- Steven Weinberg,
The Quantum Theory of Fields I-III, Cambridge University Press, Cambridge (1995).