

Subatomic – books

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1 Books & web resources

A good **overview** is provided by

“Nuclear and Particle Physics: An Introduction”, by **B.R. Martin**.

Other books that are particularly good in particular sections are as follows.

1.1 Quantum Mechanics

- C Cohen-Tannoudji, B Diu, F Laloe *“Quantum Mechanics”* The most comprehensive introduction available.
- **Binney and Skinner**, *“The Physics of Quantum Mechanics”*. Second year text including fundamentals, Dirac notation, long-lived states, scattering through the S -matrix, and partial waves methods.
- J.J.Sakurai, *“Modern Quantum Mechanics”*. Lippmann-Schwinger formalism, and non-relativistic scattering theory, and a nice discussion on symmetries.

1.2 Nuclear Physics

- W.S.C. Williams *“Nuclear and Particle Physics”*
- **W.N. Cottingham and D.A. Greenwood** *“Introduction to Nuclear Physics”* All the basics one needs for the course are in here.
- K.S. Krane *“Introductory Nuclear Physics”*
- P.E. Hodgson, E. Gadioli and E. Gadioli Erba *“Introductory Nuclear Physics”*
- M.G. Bowler *“Nuclear Physics”* Readable and interesting.
- Nuclear structure data, decay rates, branching ratios, decay tables etc can be found at the BNL electronic table of the nuclides. <http://www.nndc.bnl.gov/nudat2/>

1.3 Stars

- D. Prialnik *“Theory of Stellar Structure and Evolution”* Introduction-level text.

- D.D. Clayton *"Principles of Stellar Evolution and Nucleosynthesis"* Classic detailed text.

1.4 Reactors

Most of the nuclear texts include brief descriptions of reactors.

- E. Fermi (S Esposito and O Pisanti Eds.) *"Neutron Physics for Nuclear Reactors"* tells you how to build one from scratch.

1.5 Particle physics

- **D. Griffiths**, *"Introduction to Elementary Particles"*. A general introduction to particle physics at about the right level. If you buy it get the second edition, which is updated to include e.g. neutrino mixing.
- B.R. Martin & G. Shaw, *"Particle Physics"*. The detector information is a bit dated, but it's a very readable introduction.
- M.G. Bowler, *"Femtophysics"*. Gets into the nitty-gritty of concepts such as the Breit-Wigner which tend to be glossed over in other books.
- The Particle Data Group has lots of useful information including particle properties, plots and articles. <http://pdg.lbl.gov>.