Chapter 0

Reference Materials

No one book contains all the relevant material. Here I list several resources, arranged by topic. My personal favorites are marked with a diamond (⋄).

0.1 General Texts

⋄ B. Simon, *Representations of Finite and Compact Groups* (AMS, 1995)

⋄ A. Zee, *Group Theory in a Nutshell for Physicists* (Princeton, 2016)

⋄ W.-K. Tung, *Group Theory in Physics* (World Scientific, 1985)

⋄ M. Hamermesh, *Group Theory and its Application to Physical Problems* (Dover, 1962)

⋄ J. P. Elliott and P. G. Dawber, *Symmetry in Physics*, 2 vols. (Oxford, 1985)

- M. Tinkham, *Group Theory and Quantum Mechanics* (Dover, 2003)

- V. Heine, *Group Theory in Quantum Mechanics* (Dover, 2007)

- Z.-Q. Ma, *Group Theory for Physicists* (World Scientific, 2007)

- Z.-Q. Ma and X.-Y. Gu, *Problems & Solutions in Group Theory for Physicists* (World Scientific, 2007)

- R. Mirman, *Group Theory: An Intuitive Approach* (World Scientific, 1997)

- M. Stone and P. Goldbart, *Mathematical Physics* (Cambridge, 2009)

0.2 Specific Applications

- W. Ledermann, *Introduction to Group Characters* (Cambridge, 1987)

- B. E. Sagan, *The Symmetric Group: Representations, Combinatorial Algorithms, and Symmetric Functions* (Springer, 2001)

- W. Fulton, *Young Tableaux: With Applications to Representation Theory and Geometry* (Cambridge, 1996)

0.3 Group Theory for Solid State Physics

◇ M. Lax, *Symmetry Principles in Solid State and Molecular Physics* (Dover, 2012)

◇ B. S. Tsukerblat, *Group Theory in Chemistry and Spectroscopy* (Dover, 2006)

◇ T. Wolfram and Ş. Elliatioğlu, *Applications of Group Theory to Atoms, Molecules, and Solids* (Cambridge, 2014)

◇ R. C. Powell, *Symmetry, Group Theory, and the Physical Properties of Crystals* (Springer, 2010)

- R. A. Evarestov and V. P. Smirnov, *Site Symmetry in Crystals* (Springer, 1997)

- M. S. Dresselhaus, G. Dresselhaus, and A. Jorio, *Group Theory : Application to the Physics of Condensed Matter* (Springer, 2008)

- S. H. Kim, *Group Theoretical Methods and Applications to Molecules and Crystals* (Cambridge, 2005)

- U. Müller, *Symmetry Relations between Crystal Structures* (Oxford, 2013)
- G. F. Koster, J. O Dimmock, R. C. Wheeler, and H. Statz, *Properties of the Thirty-Two Point Groups* (MIT Press, 1963)
- M. El-Batanouny and F. Wooten, *Symmetry and Condensed Matter Physics* (Cambridge, 2008)
- T. Inui, Y. Tanabe, and Y. Onodera, *Group Theory and its Applications in Physics* (Springer, 1996)
- R. Mirman, *Point Groups, Space Groups, Crystals, and Molecules* (World Scientific, 1999)
- J. L. Birman, *Theory of Crystal Space Groups and Lattice Dynamics* (Springer, 1984)
- A. V. Shubnikov and N. V. Belov, *Colored Symmetry* (Pergamon, 1964)
- S. J. Joshua, *Symmetry Principles and Magnetic Symmetry in Solid State Physics* (Adam Hilger, 1991)

0.4 Lie Groups and Lie Algebras

◇ A. Das and S. Okubo, *Lie Groups and Lie Algebras for Physicists*, 2nd. ed. (World Scientific, 2014)

◇ B. C. Hall, *Lie Groups, Lie Algebras, and Representations*, 2nd. ed. (Springer, 2015)

◇ J. Fuchs and C. Schweigert, *Symmetries, Lie Algebras, and Representations* (Cambridge, 1997)

◇ W. Fulton and J. Harris, *Representation Theory: A First Course* (Springer, 2004)

◇ T. Kemp, *Introduction to Smooth Manifolds & Lie Groups* (unpublished)

- H. Georgi, *Lie Algebras in Particle Physics*, 2nd ed. (Westview Press, 1999)
- R. Gilmore, *Lie Groups, Physics, and Geometry* (Cambridge, 2008)

- R. Gilmore, *Lie Groups, Lie Algebras, and Some of their Applications* (Dover, 2006)
- R. Campoamor-Stursberg and M. R. de Traubenberg, *Group Theory in Physics* (World Scientific, 2019)
- A. O. Barut, and R. Rączka, *Theory of Group Representations and Applications*, (World Scientific, 1986)
- C. Procesi, *Lie Groups : An Approach through Invariants and Representations*, (Springer, 2007)
- P. Ramond, *Group Theory : A Physicist's Survey* (Cambridge, 2010)
- H. J. Lipkin, *Lie Groups for Pedestrians* (Dover, 2002)
- J. G. F. Belinfante and B. Kolman, *A Survey of Lie Groups and Lie Algebras with Applications and Computational Methods* (SIAM, 1987)
- M. Varadarajan, *Lie Groups, Lie Algebras, and their Representations* (Springer, 1984)
- F. W. Warner, *Foundations of Differentiable Manifolds and Lie Groups* (Springer, 1983)

0.5 Other

◇ J. H. Conway, H. Burgiel, and C. Goodman-Strauss, *The Symmetries of Things* (A. K. Peters, 2008)

◇ T. Weller, *Science Made Stupid* (Mariner, 1985)

◇ T. Weller, *Culture Made Stupid* (Houghton Mifflin, 1987)

◇ H. Beard, *Latin for All Occasions* (Villard, 1990)