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EE 656: ELECTRONIC TRANSPORT IN SEMICONDUCTORS

Supplementary References

Ziman should be in every device researchers' library. See in particular, Chapter 6 on electron dynamics and Chapter 7 on transport.

[1] J.M. Ziman, *Theory of Solids*, 2nd ed., Cambridge Univ. Press, New York, 1964.

Ashcroft and Merman is another classic. In particular, see Chapters 1 and 2 on conduction in metals, Chapter 12 on semiclassical transport, and Chapter 13 on transport.

[2] N.W. Ashcroft and N.D. Mermin, *Solid State Physics*, Saunders College, Philadelphia, 1976.

And a classic treatment of near-equilibrium transport is:

[3] Arthur C. Smith, James F. Janak, and Richard B. Adler, *Electronic Conduction in Solids,* McGraw-Hill, New York, 1967

For a thorough treatment of the Landauer approach to transport, see

[4] S. Datta, *Electronic Conduction in Mesoscopic Systems*, Cambridge Univ. Press, Cambridge, U.K., 1995

And for an introduction to quantum transport, see

[5] S. Datta, *Quantum Transport: Atom to Transistor*, Cambridge Univ. Press, Cambridge, U.K., 2005.

Ridley gives an excellent treatment of electron-phonon and phonon scattering in Chapters 3, 4, and 10 of

[6] B.K. Ridley, *Quantum Processes in Semiconductors*, 4th Ed., Oxford Science Publications, Clarendon Press, Oxford, U.K. 1999

Heinzel gives a clear treatment of magneto-transport, see Chapters 2.6.3 and 6 in

[8] T. Heinzel, *Mesoscopic Electronics in Solid State Nanostructures*, 2nd Ed., Wiley-VCH, Weinheim, Germany, 2007.

A nice treatment of the physics of low-dimensional nanostructures is given by Davies. Chapter 8 is a good introduction to scattering in semiconductors, and Sec. 8.8 is a gentle introduction to Feynman diagrams.

[9] J.H. Davies, *The Physics of Low-Dimensional Semiconductors*, Cambridge Univ. Press, Cambridge, U.K., 1998.

For a treatment of electron and phonon transport and an introduction to thermoelectric devices, see Chen:

[10] G. Chen, *Nanoscale Energy Transport and Conversion*, Oxford University Press, 2005.

For a refresher on basic semiconductor physics and devices, see Pierret:

[11] R.F. Pierret, *Advanced Semiconductor Fundamentals,2nd Ed.,* Prentice-Hall, Upper Saddle River, N.J., 2003.

[12] R.F.Pierret, *Semiconductor Device Fundamentals*, Addison-Wesley, Reading, MA, 1996.