

References

- [1] Abram, R. A., and Edwards, S. F. The nature of the electronic states of a disordered system: I. Localized state. *J. Phys. C: Solid State Phys.* 5 (1972): 1183-1195.
- [2] Abram, R. A., and Edwards, S. F. The nature of the electronic states of a disordered system: II. Extended states. *J. Phys. C: Solid State Phys.* 5 (1972): 1196-1206.
- [3] Boer, K. W. *Survey of Semiconductor Physics Electrons and Other Particles in Bulk Semiconductors*. New York: Van Nostrand Reinhold, 1990.
- [4] Dunstan, D. J. Evidence for a common origin of the Urbach tail in amorphous and crystalline semiconductor. *J. Phys. C: Solid State Phys.* 30 (1982): 419-424.
- [5] Edwards, S. F. The localization of electrons in disordered systems. *J. Non-Crystalline Solids*. 4 (1970): 417-425.
- [6] Edwards, S. F., and Gulyev, Y. B. The density of states of a highly impure semiconductor. *Proc. Phys. Soc.* 83 (1964): 495-496.
- [7] Feynman, R. P. Slow electrons in a polar crystal. *Phys. Rev.* 97 (1955): 660-665.
- [8] Feynman, R. P., and Hibbs, A. R. *Quantum Mechanics and Path Integrals*.

- New York: McGraw-Hill, 1965.
- [9] Galpern, Yu. S., and Efros, A. L. Electronic properties of compensated semiconductors with correlated impurity distributions. *Soviet Physics-Semiconductors*. 6 (1972): 941-946.
- [10] Glyde, H. R., Hansen, J. P., and Klein, M. L. Anharmonic lattice dynamics of solid potassium. *Phys. Rev. B* 16 (1977): 3476-3483.
- [11] Goodman, M. W. Path integral solution to the infinite square well. *Am. J. Phys.* 49 (1981): 843-847.
- [12] Halperin, B. I., and Lax, M. Impurity band tails in the high density limit. I. Minimum counting methods. *Phys. Rev.* 148 (1966): 722-740.
- [13] Ihm, J., and Phillips, J. C. Scaling description of the origin of the Urbach tail. *Phys. Rev. B* 27 (1983): 7803-7806.
- [14] John, S. Localization and the density of states for an electron in a quantized elastic continuum. *Phys. Rev. B* 35 (1987): 9291-9294.
- [15] Jones, R. One particle Green functions for a completely disordered system. *J. Phys. C: Solid State Phys.* 2 (1969): 1187-1195.
- [16] Jones, R., and Lukes, T. A path integral approach to disordered systems. *Proc. Roy. Soc. A* 309 (1969): 457-472.
- [17] Kane, E. O. Thomas Fermi approach to impure semiconductor band structure. *Phys. Rev.* 131 (1963): 79-88.

- [18] Keldysh, L. V., and Proshko, G. P. Infrared absorption in highly doped germanium. *Soviet Physics-Solid State.* 5 (1964): 2481-2488.
- [19] Kittel, C. *Introduction to Solid State Physics.* Singapore: John Wiley and Sons, 1991.
- [20] Koinov, Z. G., and Yanchev, I Y. Density of states tail in heavily doped closely compensated semiconductors. *J. Phys. C: Solid State Phys.* 11 (1978): 253-256.
- [21] Kubo, R. Generalized cumulant expansion method. *J. Phys. Soc. Japan.* 17 (1962):1100-1120.
- [22] Lloyd, P. and Best, P. R. A variational approach to disordered systems. *J. Phys. C* 8 (1975): 3752-3766.
- [23] Nithisoontorn, M., Lassnig, R., and Gornik, E. New path-integral solution for the density of states of two-dimensional electron in high magnetic fields. *Phys. Rev. B* 36 (1987): 6225-6227.
- [24] Sakurai, J. J. *Modern Quantum Mechanics.* Massachusetts: Addison-Wesley, 1994.
- [25] Samathiyakanit, V. Path-integral theory of a model disordered system. *J. Phys. C: Solid State Phys.* 7(1974): 2849-2876.
- [26] Sa-yakanit, V. Electron density of states in a Gaussian random potential: Path integral approach. *Phys. Rev. B* 19 (1979): 2266-2275.

- [27] Sa-yakanit, V. The density of states of a Gaussian random potential with Gaussian autocorrelation function. *Journal of the Singapore National Academy of Science.* 7 (1978): 59-63.
- [28] Sa-yakanit, V. The Feynman effective mas of the polaron. *Phys. Rev. B* 19 (1979): 2377-2380.
- [29] Sa-yakanit, V. Urbach tails and disorder. *Solid State Communication.* (1986): 1-18.
- [30] Sa-yakanit, V., and Glyde, H. R. Impurity band density of states in heavily doped semiconductors: A variational calculation. *Phys. Rev. B* 22 (1980): 6222-6232.
- [31] Sa-yakanit, V., Roussignol, Ph., and Slavcheva, G. Effect of random well width fluctuations on the exciton optical absorption spectrum in single quantum wells. *Phys. Rev. B* 62 (2000): 5079-5091.
- [32] Sa-yakanit, V., and Slavcheva, G. Path-integral approach to the electron density of states at the interface of a single modulation-doped heterojunction. *Phys. Rev. B* 58 (1998): 13735-13754.
- [33] Sa-yakanit, V., Sritrakool, W., and Glyde, H. R. Impurity band density of states in heavily doped semiconductors: Numerical results. *Phys. Rev.B* 25(1982): 2776-2780.
- [34] Shklovskii, B. I., and Efros, A. L. Density of states tails in heavily doped

- semiconductors. *Soviet Physics-Semiconductors.* 4 (1970): 249-257.
- [35] Skettrup, T. Urbach's rule derived from thermal fluctuations in the band gap energy. *Phys. Rev. B* 18 (1977): 2622-2631.
- [36] Sritakool, W., Sa-yakanit, V., and Glyde, H. R. Band tails in disordered systems. *Phys. Rev. B* 33 (1986): 1199-1202.
- [37] Sritakool, W., Sa-yakanit, V., and Glyde, H. R. Absorption near band edges in heavily doped GaAs. *Phys. Rev. B* 32 (1985): 1090-1100.
- [38] Sumi, H., and Toyozawa, Y. Urbach Martienssen rule and exciton trapped momentarily by lattice vibrations. *Journal of the Physical Society of Japan.* 31 (1971): 342-358.
- [39] Sze, S. M. *Semiconductor Devices Physics and Technology.* New Jersey: Murray Hill, 1985.
- [40] Yanchev, I. Y., Koinov, Z. G., and Petkova, A. M. Density of states in heavily doped strongly compensated semiconductors with correlated impurity distribution. *Philosophical Magazine. B* 44 (1981): 307-316.
- [41] Zittartz, J., and Langer, J. S. Theory of bound states in a random potential. *Phys. Rev.* 148 (1966): 741-747.

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