

References

- [1] Ablowitz, M.J., and Clarkson, P.A., *Solitons, Nonlinear Evolution Equations and the Inverse Scattering Transform*, L.M.S. Lecture Notes in Math., vol. 149, Cambridge University Press, Cambridge, 1991.
- [2] Abraham, R., Marsden, J.E., and Ratiu, T., *Manifolds, Tensor Analysis, and Applications*, Springer-Verlag, New York, 1988.
- [3] Abramowitz, M., and Stegun, I., *Handbook of Mathematical Functions*, National Bureau of Standards Appl. Math. Series, #55, U.S. Govt. Printing Office, Washington, D.C., 1970.
- [4] Ahlfors, L., *Complex Analysis*, McGraw-Hill, New York, 1966.
- [5] Airy, G.B., On the intensity of light in the neighborhood of a caustic, *Trans. Cambridge Phil. Soc.* **6** (1838), 379–402.
- [6] Aki, K., and Richards, P.G., *Quantitative Seismology*, W.H. Freeman, San Francisco, 1980.
- [7] Antman, S.S., *Nonlinear Problems of Elasticity*, Appl. Math. Sci., vol. 107, Springer-Verlag, New York, 1995.
- [8] Apostol, T.M., *Calculus*, Blaisdell Publishing Co., Waltham, Mass., 1967–69.
- [9] Apostol, T.M., *Introduction to Analytic Number Theory*, Springer-Verlag, New York, 1976.
- [10] Ball, J.M., and Mizel, V.J., One-dimensional variational problem whose minimizers do not satisfy the Euler-Lagrange equation, *Arch. Rat. Mech. Anal.* **90** (1985), 325–388.
- [11] Batchelor, G.K., *An Introduction to Fluid Dynamics*, Cambridge University Press, Cambridge, 1967.
- [12] Bateman, H., Some recent researches on the motion of fluids, *Monthly Weather Rev.* **43** (1915), 63–170.
- [13] Berest, Y., and Winternitz, P., Huygens' principle and separation of variables, *Rev. Math. Phys.* **12** (2000), 159–180.
- [14] Birkhoff, G., *Hydrodynamics — A Study in Logic, Fact and Similitude*, 2nd ed., Princeton University Press, Princeton, 1960.
- [15] Birkhoff, G., and Rota, G.-C., *Ordinary Differential Equations*, Blaisdell Publ. Co., Waltham, Mass., 1962.
- [16] Black, F., and Scholes, M., The pricing of options and corporate liabilities, *J. Political Economy* **81** (1973), 637–654.
- [17] Blanchard, P., Devaney, R.L., and Hall, G.R., *Differential Equations*, Brooks-Cole Publ. Co., Pacific Grove, Calif., 1998.
- [18] Born, M., and Wolf, E., *Principles of Optics*, Fourth Edition, Pergamon Press, New York, 1970.
- [19] Boothby, W.M., *An Introduction to Differentiable Manifolds and Riemannian Geometry*, Academic Press, New York, 1975.
- [20] Bott, R., and Tu, L.W., *Differential Forms in Algebraic Topology*, Springer-Verlag, New York, 1982.

- [21] Boussinesq, J., Théorie des ondes et des remous qui se propagent le long d'un canal rectangulaire horizontal, en communiquant au liquide contenu dans ce canal des vitesses sensiblement pareilles de la surface au fond, *J. Math. Pures Appl.* **17** (2) (1872), 55–108.
- [22] Boussinesq, J., Essai sur la théorie des eaux courants, *Mém. Acad. Sci. Inst. Nat. France* **23** (1) (1877), 1–680.
- [23] Boyce, W.E., and DiPrima, R.C., *Elementary Differential Equations and Boundary Value Problems*, 7th ed., John Wiley & Sons, Inc., New York, 2001.
- [24] Bradie, B., *A Friendly Introduction to Numerical Analysis*, Prentice–Hall, Inc., Upper Saddle River, N.J., 2006.
- [25] Bronstein, M., *Symbolic integration I: Transcendental Functions*, Springer–Verlag, New York, 1997.
- [26] Brown, J.W., and Churchill, R.V., *Fourier Series and Boundary Value Problems*, McGraw–Hill, New York, 1993.
- [27] Buhmann, M.D., Radial basis functions, *Acta Numer.* **9** (2000), 1–38.
- [28] Burden, R.L., and Faires, J.D., *Numerical Analysis*, Seventh Edition, Brooks/Cole, Pacific Grove, CA, 2001.
- [29] Burgers, J.M., A mathematical model illustrating the theory of turbulence, *Adv. Appl. Mech.* **1** (1948), 171–199.
- [30] Cantwell, B.J., *Introduction to Symmetry Analysis*, Cambridge University Press, Cambridge, 2003.
- [31] Carmichael, R., *The Theory of Numbers*, Dover Publ., New York, 1959.
- [32] Coddington, E.A., and Levinson, N., *Theory of Ordinary Differential Equations*, McGraw–Hill, New York, 1955.
- [33] Cole, J.D., On a quasilinear parabolic equation occurring in aerodynamics, *Q. Appl. Math.* **9** (1951), 225–236.
- [34] Copson, E.T., *Partial Differential Equations*, Cambridge University Press, Cambridge, 1975.
- [35] Courant, R., and Hilbert, D., *Methods of Mathematical Physics*, vol. I, Interscience Publ., New York, 1953.
- [36] Courant, R., and Hilbert, D., *Methods of Mathematical Physics*, vol. II, Interscience Publ., New York, 1953.
- [37] Dacorogna, B., *Introduction to the Calculus of Variations*, Imperial College Press, London, 2004.
- [38] Davidson, K.R., and Donsig, A.P., *Real Analysis with Real Applications*, Prentice–Hall, Inc., Upper Saddle River, N.J., 2002.
- [39] Dewdney, A.K., *The Planiverse. Computer Contact with a Two-dimensional World*, Copernicus, New York, 2001.
- [40] Diacu, F., *An Introduction to Differential Equations*, W.H. Freeman and Co., New York, 2000.
- [41] Dirac, P.A.M., *The Principles of Quantum Mechanics*, Third Edition, Clarendon Press, Oxford, 1947.
- [42] do Carmo, M.P., *Differential Geometry of Curves and Surfaces*, Prentice–Hall, Englewood Cliffs, N.J., 1976.
- [43] Drazin, P.G., and Johnson, R.S., *Solitons: An Introduction*, Cambridge University Press, Cambridge, 1989.

- [44] Dym, H., and McKean, H.P., *Fourier Series and Integrals*, Academic Press, New York, 1972.
- [45] Evans, L.C., *Partial Differential Equations*, Grad. Studies Math. vol. 19, Amer. Math. Soc., Providence, R.I., 1998.
- [46] Feller, W., *An Introduction to Probability Theory and its Applications*, Third Edition., J. Wiley & Sons, New York, 1968.
- [47] Fermi, E., Pasta, J., and Ulam, S., Studies of nonlinear problems. I., preprint, Los Alamos Report LA 1940, 1955; in: *Nonlinear Wave Motion*, A.C. Newell, ed., Lectures in Applied Math., vol. 15, American Math. Soc., Providence, R.I., 1974, pp. 143–156.
- [48] Fletcher, N.H., and Rossing, T.D., *The Physics of Musical Instruments*, Second Edition, Springer–Verlag, New York, 1998.
- [49] Fleming, W.H., *Functions of Several Variables*, 2d ed., Springer–Verlag, New York, 1977.
- [50] Forsyth, A.R., *The Theory of Differential Equations*, Cambridge University Press, Cambridge, 1890, 1900, 1902, 1906.
- [51] Fourier, J., *The Analytical Theory of Heat*, Dover Publ., New York, 1955.
- [52] Garabedian, P., *Partial Differential Equations*, 2nd ed., Chelsea Publ. Co., New York, 1986.
- [53] Gardner, C.S., Greene, J.M., Kruskal, M.D., and Miura, R.M., Method for solving the Korteweg–deVries equation, *Phys. Rev. Lett.* **19** (1967), 1095–1097.
- [54] Gardner, C.S., Greene, J.M., Kruskal, M.D., and Miura, R.M., Korteweg–deVries equation and generalizations. VI. Methods for exact solution, *Commun. Pure Appl. Math.* **27** (1974), 97–133.
- [55] Gel’fand, I.M., and Fomin, S.V., *Calculus of Variations*, Prentice–Hall, Inc., Englewood Cliffs, N.J., 1963.
- [56] Gonzalez, R.C., and Woods, R.E., *Digital Image Processing*, 2nd ed., Prentice–Hall, Inc., Upper Saddle River, N.J., 2002.
- [57] Gordon, C., Webb, D.L., and Wolpert, S., One cannot hear the shape of a drum, *Bull. Amer. Math. Soc.* **27** (1992), 134–138.
- [58] Gradshteyn, I.S., and Ryzhik, I.W., *Table of Integrals, Series and Products*, Academic Press, New York, 1965.
- [59] Guillemin, V., and Pollack, A., *Differential Topology*, Prentice–Hall, Inc., Englewood Cliffs, N.J., 1974.
- [60] Gurtin, M.E., *An Introduction to Continuum Mechanics*, Academic Press, New York, 1981.
- [61] Haberman, R., *Elementary Applied Partial Differential Equations*, Third Edition, Prentice Hall, Upper Saddle River, NJ, 1998.
- [62] Hale, J.K., *Ordinary Differential Equations*, Second Edition, R.E. Krieger Pub. Co., Huntington, N.Y., 1980.
- [63] Hall, R.W., and Josić, K., The mathematics of musical instruments, *Amer. Math. Monthly* **108** (2001), 347–357.
- [64] Henrici, P., *Applied and Computational Complex Analysis*, vol. 1, J. Wiley & Sons, New York, 1974.
- [65] Hille, E., *Ordinary Differential Equations in the Complex Domain*, John Wiley & Sons, New York, 1976.
- [66] Hobson, E.W., *The Theory of Spherical and Ellipsoidal Harmonics*, Chelsea Publ. Co., New York, 1965.
- [67] Hopf, E., The partial differential equation $u_t + uu_x = \mu u$, *Commun. Pure Appl. Math.* **3** (1950), 201–230.

- [68] Howison, S., *Practical Applied Mathematics*, Cambridge University Press, Cambridge, 2005.
- [69] Hydon, P.E., *Symmetry Methods for Differential Equations*, Cambridge Texts in Appl. Math., Cambridge University Press, Cambridge, 2000.
- [70] Ince, E.L., *Ordinary Differential Equations*, Dover Publ., New York, 1956.
- [71] Iserles, A., *A First Course in the Numerical Analysis of Differential Equations*, Cambridge University Press, Cambridge, 1996.
- [72] Ivanov, V.I., and Trubetskov, M.K., *Handbook of Conformal Mapping with Computer-Aided Visualization*, CRC Press, Boca Raton, FL, 1995.
- [73] Jost, J., *Partial Differential Equations*, Graduate Texts in Mathematics, vol. 214, Springer-Verlag, New York, 2007.
- [74] Kamke, E., *Differentialgleichungen Lösungsmethoden und Lösungen*, vol. 1, Chelsea, New York, 1971.
- [75] Kammler, D.W., *A First Course in Fourier Analysis*, Prentice Hall, Upper Saddle River, NJ, 2000.
- [76] Kauffman, L.H., *Knots and Physics*, 2nd ed., World Scientific, Singapore, 1993.
- [77] Keener, J.P., *Principles of Applied Mathematics. Transformation and Approximation*, Addison-Wesley Publ. Co., New York, 1988.
- [78] Keller, H.B., *Numerical Methods for Two-Point Boundary-Value Problems*, Blaisdell, Waltham, MA, 1968.
- [79] Kevorkian, J., *Partial Differential Equations*, Second Edition, Texts in Applied Mathematics, vol. 35, Springer-Verlag, New York, 2000.
- [80] Knobel, R., *An Introduction to the Mathematical Theory of Waves*, American Mathematical Society, Providence, RI, 2000.
- [81] Korteweg, D.J., and de Vries, G., On the change of form of long waves advancing in a rectangular channel, and on a new type of long stationary waves, *Phil. Mag.* (5) **39** (1895), 422–443.
- [82] Kreysig, E., *Advanced Engineering Mathematics*, Eighth Edition, J. Wiley & Sons, New York, 1998.
- [83] Landau, L.D., and Lifshitz, E.M., *Quantum Mechanics (Non-relativistic Theory)*, Course of Theoretical Physics, vol. 3, Pergamon Press, New York, 1977.
- [84] Levine, I.N., *Quantum Chemistry*, 5th ed., Prentice-Hall, Inc., Upper Saddle River, N.J., 2000.
- [85] Lighthill, M.J., *Waves in Fluids*, Cambridge University Press, Cambridge, 1978.
- [86] Marsden, J.E., and Tromba, A.J., *Vector Calculus*, 4th ed., W.H. Freeman, New York, 1996.
- [87] McOwen, R.C., *Partial Differential Equations: Methods and Applications*, Prentice-Hall, Inc., Upper Saddle River, N.J., 2002.
- [88] Merton, R.C., Theory of rational option pricing, *Bell J. Econ. Management Sci.* **4** (1973), 141–183.
- [89] Messiah, A., *Quantum Mechanics*, John Wiley & Sons, New York, 1976.
- [90] Miller, W., Jr., *Symmetry and Separation of Variables*, Encyclopedia of Mathematics and Its Applications, vol. 4, Addison-Wesley Publ. Co., Reading, Mass., 1977.
- [91] Misner, C.W., Thorne, K.S., and Wheeler, J.A., *Gravitation*, W.H. Freeman, San Francisco, 1973.
- [92] Moon, F.C., *Chaotic Vibrations*, John Wiley & Sons, New York, 1987.
- [93] Moon, P., and Spencer, D.E., *Field Theory Handbook*, Springer-Verlag, New York, 1971.

- [94] Morgan, F., *Geometric Measure Theory: a Beginner's Guide*, Academic Press, New York, 2000.
- [95] Morse, P.M., and Feshbach, H., *Methods of Theoretical Physics*, McGraw–Hill, New York, 1953.
- [96] Morton, K.W., and Mayers, D.F., *Numerical Solution of Partial Differential Equations*, 2nd ed., Cambridge University Press, Cambridge, 2005.
- [97] Murray, J.D., *Mathematical Biology*, 3rd ed., Springer-Verlag, New York, 2002–2003.
- [98] Nitsche, J.C.C., *Lectures on Minimal Surfaces*, Cambridge University Press, Cambridge, 1988.
- [99] Noether, E., Invariante Variationsprobleme, *Nachr. Konig. Gesell. Wissen. Gottingen, Math.–Phys. Kl.* (1918), 235–257. (See *Transport Theory and Stat. Phys.* **1** (1971), 186–207 for an English translation.)
- [100] Oberhettinger, F., *Tables of Fourier Transforms and Fourier Transforms of Distributions*, Springer-Verlag, New York, 1990.
- [101] Okubo, A., *Diffusion and Ecological Problems: Mathematical Models*, Springer-Verlag, New York, 1980.
- [102] Olver, F.W.J., *Asymptotics and Special Functions*, Academic Press, New York, 1974.
- [103] Olver, P.J., *Applications of Lie Groups to Differential Equations*, 2nd ed., Graduate Texts in Mathematics, vol. 107, Springer–Verlag, New York, 1993.
- [104] Olver, P.J., and Shakiban, C., *Applied Linear Algebra*, Prentice–Hall, Inc., Upper Saddle River, N.J., 2005.
- [105] O’Neil, P.V., *Advanced Engineering Mathematics*, Fourth Edition, Wadsworth Publ. Co., Belmont, Ca., 1995.
- [106] Pinchover, Y., and Rubinstein, J., *An Introduction to Partial Differential Equations*, Cambridge University Press, Cambridge, 2005.
- [107] Press, W.H., Teukolsky, S.A., Vetterling, W.T., and Flannery, B.P., *Numerical Recipes in C: The Art of Scientific Computing*, 2nd ed., Cambridge University Press, Cambridge, 1995.
- [108] Reed, M., and Simon, B., *Methods of Modern Mathematical Physics*, Academic Press, New York, 1972.
- [109] Renardy, M., and Rogers, R.C., *An Introduction to Partial Differential Equations*, Academic Press, New York, 1993.
- [110] Richards, I., and Youn, H., *Theory of Distributions: a Non-Technical Introduction*, Cambridge University Press, Cambridge, 1990.
- [111] Royden, H.L., *Real Analysis*, Macmillan Co., New York, 1988.
- [112] Rudin, W., *Real and Complex Analysis*, 3rd ed., McGraw–Hill, New York, 1987.
- [113] Saff, E.B., and Snider, A.D., *Fundamentals of Complex Analysis*, Third Ed., Prentice–Hall, Inc., Upper Saddle River, N.J., 2003.
- [114] Salomon, D., *Computer Graphics and Geometric Modeling*, Springer–Verlag, New York, 1999.
- [115] Sapiro, G., *Geometric Partial Differential Equations and Image Analysis*, Cambridge University Press, Cambridge, 2001.
- [116] Schrödinger, E., *Collected Papers on Wave Mechanics*, Chelsea Publ. Co., New York, 1982.
- [117] Schwartz, L., *Théorie des distributions*, Hermann, Paris, 1957.
- [118] Scott Russell, J., On waves, in: *Report of the 14th Meeting*, British Assoc. Adv. Sci., 1845, pp. 311–390.

- [119] Seshadri, R., and Na, T.Y., *Group Invariance in Engineering Boundary Value Problems*, Springer–Verlag, New York, 1985.
- [120] Sethares, W.A., *Tuning, Timbre, Spectrum, Scale*, Springer–Verlag, New York, 1999.
- [121] Siegel, C.L., Über einige Anwendungen diophantischer Approximationen, in: *Gesammelte Abhandlungen*, vol. 1, Springer–Verlag, New York, 1966, pp. 209–266.
- [122] Smoller, J., *Shock Waves and Reaction–Diffusion Equations*, 2nd ed., Springer-Verlag, New York, 1994.
- [123] Stewart, J., *Calculus: Early Transcendentals*, 5th ed., Thomson Brooks Cole, Belmont, CA, 2003.
- [124] Strang, G., *Introduction to Applied Mathematics*, Wellesley Cambridge Press, Wellesley, Mass., 1986.
- [125] Strang, G., and Fix, G.J., *An Analysis of the Finite Element Method*, Prentice–Hall, Inc., Englewood Cliffs, N.J., 1973.
- [126] Strauss, W.A., *Partial Differential Equations: an Introduction*, John Wiley & Sons, New York, 1992.
- [127] Titchmarsh, E. C., *Theory of Functions*, Oxford University Press, London, 1968.
- [128] Tychonov, A.N., and Samarski, A.A., *Partial Differential Equations of Mathematical Physics*, Holden–Day, San Francisco, 1964.
- [129] Ugural, A.C., and Fenster, S.K., *Advanced Strength and Applied Elasticity*, 3rd ed., Prentice–Hall, Inc., Englewood Cliffs, N.J., 1995.
- [130] Watson, G.N., *A Treatise on the Theory of Bessel Functions*, Cambridge University Press, Cambridge, 1952.
- [131] Weinberger, H.F., *A First Course in Partial Differential Equations*, Ginn and Co., Waltham, Mass., 1965.
- [132] Whitham, G.B., *Linear and Nonlinear Waves*, John Wiley & Sons, New York, 1974.
- [133] Whittaker, E.T., and Watson, G.N., *A Course of Modern Analysis*, Cambridge University Press, Cambridge, 1990.
- [134] Widder, D.V., *The Heat Equation*, Academic Press, New York, 1975.
- [135] Wilmott, P., Howison, S., and Dewynne, J., *The Mathematics of Financial Derivatives*, Cambridge University Press, Cambridge, 1995.
- [136] Zabusky, N.J., and Kruskal, M.D., Interaction of “solitons” in a collisionless plasma and the recurrence of initial states, *Phys. Rev. Lett.* **15** (1965), 240–243.
- [137] Zaitsev, V.F., and Polyanin, A.D., *Handbook of Exact Solutions for Ordinary Differential Equations*, CRC Press, Boca Raton, Fl., 1995.
- [138] Zienkiewicz, O.C., and Taylor, R.L., *The Finite Element Method*, 4th ed., McGraw–Hill, New York, 1989.
- [139] Zwillinger, D., *Handbook of Differential Equations*, Academic Press, Boston, 1992.
- [140] Zygmund, A., *Trigonometric Series*, Cambridge University Press, Cambridge, 1968.