

Bibliography

Abbreviations

ACM TOG	ACM Transactions on Graphics
AMS	American Mathematical Society
CAD	Computer Aided Design
CAGD	Computer Aided Geometric Design
CG&A	IEEE Computer Graphics & Applications
SIGGRAPH	Proceedings of yearly SIGGRAPH conference which is the July or August issue of Computer Graphics

Abstract Algebra

- [Dean66] Dean, Richard A., *Elements of Abstract Algebra*, John Wiley & Sons, Inc., 1966.
- [Fral67] Fraleigh, John B., *A First Course in Abstract Algebra*, Addison-Wesley Publ. Co., 1967.
- [Jaco66] Jacobson, Nathan, *Lectures in Abstract Algebra*, Volume I – Basic Concepts, D. Van Nostrand Co., Inc., 1966.
- [Jaco64] Jacobson, Nathan, *Lectures in Abstract Algebra*, Volume III – Theory of Fields and Galois Theory, D. Van Nostrand Co., Inc., 1964.
- [Mill58] Miller, Kenneth S., *Elements of Modern Abstract Algebra*, Harper & Brothers, Publishers, 1958.
- [Waer50] Van der Waerden, B.L., *Modern Algebra*, Volume I, Frederick Ungar Publ. Co., 1950.

Advanced Calculus

- [Buck78] Buck, R.C., *Advanced Calculus*, 3rd Edition, McGraw-Hill Book Co., 1978.
- [CodL55] Coddington, Earl A., and Levinson, Norman, *Theory of Ordinary Differential Equations*, McGraw-Hill Book Co., Inc., 1955.
- [Flan63] Flanders, Harley, *Differential Forms with Applications to the Physical Sciences*, Academic Press, 1963.
- [Spiv65] Spivak, M., *Calculus on Manifolds*, W.A. Benjamin, Inc., 1965.
- [TayM72] Taylor, A.E., and Mann, W.R., *Advanced Calculus*, 2nd Edition, John Wiley & Sons, Inc., 1972.

Algebraic Curves and Surfaces

- [Baja92a] Bajaj, Chanderjit, "Algebraic Surface Design and Finite Element Meshes," Technical Report CSD-TR-92-011, Comp. Science Dept., Purdue Univ., West Lafayette, Indiana, 47907-1398, USA, February 1992.
- [Baja92b] Bajaj, Chanderjit, "The Emergence of Algebraic Curves and Surfaces in Geometric Design," Technical Report CSD-TR-92-052, Comp. Science Dept., Purdue Univ., West Lafayette, Indiana, 47907-1398, USA, September 1992.

- [Hobb91] Hobby, John D., "Numerically Stable Implication of Cubic Curves," *ACM TOG*, **10**(3), July 1991, 255–296.
- [Hoff93] Hoffmann, Christoph M., "Implicit Curves and Surfaces in CAGD," *CG&A*, **13**(1), January 1993, 79–88.
- [ManC92b] Manocha, Dinesh, and Canny, John F., "Algorithm for Implicitizing Rational Parametric Surfaces," *CAGD*, **9**(1), May, 1992, 25–50.

Algebraic Geometry

- [Abhy90] Abhyankar, Shreeram S., *Algebraic Geometry for Scientists and Engineers*, AMS, 1990.
- [AdaL94] Adams, William W., and Loustaunau, Philippe, *An Introduction to Gröbner Bases*, AMS, 1994.
- [Arno83] Arnon, D.S., "Topologically Reliable Displays of Algebraic Curves," *SIGGRAPH 83*, **17**(3), July 1983, 219–227.
- [BriK81] Brieskorn, E., and Knörrer, H., *Ebene Algebraische Kurven*, Birkhäuser, 1981.
- [CoLO97] Cox, David, Little, John, and O'Shea, Donal, *Ideals, Varieties, and Algorithms: An Introduction to Computational Algebraic Geometry and Commutative Algebra*, 2nd Edition, Springer-Verlag, 1997.
- [CoLO98] Cox, David, Little, John, and O'Shea, Donal, *Using Algebraic Geometry*, Springer-Verlag, 1998.
- [Fult69] Fulton, William, *Algebraic Curves*, W.A. Benjamin, Inc., 1969.
- [Harr92] Harris, Joe, *Algebraic Geometry: A First Course*, Springer-Verlag, 1992.
- [Kend77] Kendig, Keith, *Elementary Algebraic Geometry*, Springer-Verlag, 1977.
- [KleL72] Kleinman, S.L., and Laksov, Dan, "Schubert Calculus," *Amer. Math. Monthly*, **79**(10), December 1972, 1061–1082.
- [Mish93] Mishra, Bhubaneswar, *Algorithmic Algebra*, Springer-Verlag, 1993.
- [Sede87] Sederberg, Thomas W., "Algebraic Geometry for Surface and Solid Modeling," in [Fari87], 29–42.
- [Seid68] Seidenberg, A., *Elements of the Theory of Algebraic Curves*, Addison-Wesley Publ. Co., 1968.
- [Shaf94] Shafarevich, Igor R., *Basic Algebraic Geometry I*, 2nd Edition, Springer-Verlag, 1994.
- [Walk50] Walker, Robert J., *Algebraic Curves*, Princeton University Press, 1950.
- [ZarS60] Zariski, Oscar, and Samuel, Pierre, *Commutative Algebra: Volume I and II*, D. Van Nostrand Co., Inc., 1960.

Algebraic Topology

(See also Topology)

- [AgoM76] Agoston, Max K., *Algebraic Topology: A First Course*, Marcel Dekker, New York, 1976.
- [Arms83] Armstrong, M. A., *Basic Topology*, Springer-Verlag, 1983.
- [Cair68] Cairns, Stewart S., *Introductory Topology*, The Ronald Press Co., New York, 1968.
- [CooF67] Cooke, George E., and Finney, Ross L., *Homology of Cell Complexes*, Princeton Univ. Press, 1966.
- [CroF65] Crowell, Richard H., and Fox, Ralph H., *Introduction to Knot Theory*, Blaisdell Publ. Co., 1965.
- [Dieu89] Dieudonné, Jean, *A History of Algebraic and Differential Topology 1900–1960*, Birkhäuser, 1989.
- [FreF67] Frechet, Maurice, and Fan, Ky, *Initiation to Combinatorial Topology*, Prindle, Weber & Schmidt, 1967.
- [Gott96] Gottlieb, Daniel Henry, "All the Way with Gauss-Bonnet and the Sociology of Mathematics," *Amer. Math. Monthly*, **103**(6), June–July 1996, 457–469.
- [GrüS94] Grünbaum, B., and Shephard, G.C., "A New Look at Euler's Theorem for Polyhedra," *Amer. Math. Monthly*, **2**(101), February 1994, 109–128.
- [HilP94] Hilton, P.J., and Pederson, J., "Euler's Theorem for Polyhedra: A Topologist and a Geometer Respond," *Amer. Math. Monthly*, **101**(10), December 1994, 959–962.
- [HilP96] Hilton, P.J., and Pederson, J., "The Euler Characteristic and Pólya's Dream," *Amer. Math. Monthly*, **103**(2), February 1996, 121–151.
- [HilW60] Hilton, P.J., and Wylie, S., *Homology Theory: An Introduction to Algebraic Topology*, Cambridge Univ. Press, 1960.
- [Huse66] Husemoller, Dale, *Fibre Bundles*, McGraw-Hill Book Co., 1966.
- [Livi93] Livingston, Charles, *Knot Theory*, Math. Association of America, 1993.
- [Mark58] Markov, A.A., "Unsolvability of the Problem of Homeomorphy" (Russian), *Proceedings of International Congress of Mathematicians*, 1958, 300–306.

- [Mass67] Massey, W.S., *Algebraic Topology: An Introduction*, Harcourt, Brace, Jovanovich, 1967.
- [Matv03] Matveev, S., *Algorithmic Topology and Classification of 3-Manifolds*, Springer-Verlag, 2003.
- [McCl85] McCleary, John, *User's Guide to Spectral Sequences*, Publish or Perish, Inc., 1985.
- [MilS74] Milnor, John, and Stasheff, James D., *Characteristic Classes*, Princeton Univ. Press and University of Tokyo Press, 1974.
- [Mois77] Moise, Edwin E., *Geometric Topology in Dimensions 2 and 3*, Springer-Verlag, 1977.
- [Reid35] Reidemeister, K., "Homotopieringe und Linsenräume," *Abh. Math. Semin. Univ. Hamburg*, **11**, 1935, 102–109.
- [Rolf76] Rolfsen, Dale, *Knots and Links*, Publish or Perish, Inc., 1976.
- [SeiT80] Seifert, H., and Threlfall, W., *Seifert and Threlfall: A Textbook of Topology*, translated by Michael A. Goldman, Academic Press, 1980.
- [Span66] Spanier, Edwin H., *Algebraic Topology*, McGraw-Hill Book Co., 1966.
- [Stee51] Steenrod, Norman, *The Topology of Fiber Bundles*, Princeton Univ. Press, 1951.
- [Tiet08] Tietze, H., "Über die Topologischen Varianten Mehrdimensionaler Mannigfaltigkeiten," *Monatsh. für Math. u. Phys.*, **19**, 1908, 1–118.
- [Whit41] Whitehead, J.H.C., "On Incidence Matrices, Nuclei and Homotopy Types," *Ann. of Math.*, **42**, 1941, 1197–1239.

Analytic Geometry

- [Full73] Fuller, Gordon, *Analytic Geometry*, 4th Edition, Addison-Wesley Publ. Co., 1973.

Complex Analysis

- [Abik81] Abikoff, William, "The Uniformization Theorem," *Amer. Math. Monthly*, **88**(8), October 1981, 574–592.
- [Ahlf66] Ahlfors, Lars V., *Complex Analysis*, 2nd Edition, McGraw-Hill Book Co., 1966.
- [BehS62] Behnke, H.C. Heinrich, and Sommer, Friedrich, *Theorie der Analytischen Funktionen einer Komplexen Veränderlichen*, 2nd Edition, Springer-Verlag, 1962.
- [Need98] Needham, Tristan, *Visual Complex Analysis*, Oxford University Press, 1998.
- [SakZ71] Saks, Stanislaw, and Zygmund, Antoni, *Analytic Functions*, 3rd Edition, Elsevier Publ. Co., 1971.
- [Weyl55] Weyl, Hermann, *The Concept of a Riemann Surface*, Addison-Wesley Publ. Co., 1955.

Conics

- [Eise39] Eisenhart, Luther P., *Coordinate Geometry*, Ginn and Company, 1939.

Cyclides

- [Boeh89] Boehm, Wolfgang, "Some Remarks on Cyclides in Solid Modeling," in [Strasser, Wolfgang, and Seidel Hans-Peter, editors, *Theory and Practice of Geometric Modeling*, Springer-Verlag, 1989], 247–252.
- [Boeh90] Boehm, Wolfgang, "On Cyclides in Geometric Modeling," *CAGD*, **7**(1–4), June 1990, 243–255.
- [ChDH89] Chandru, V., Dutta, D., and Hoffmann, C.M., "On the Geometry of Dupin Cyclides," *The Visual Computer*, **5**(5), October 1989, 277–290.
- [Dupi22] Dupin, C.P., *Applications de Géométrie et de Mécanique*, Bachelier, Paris, 1822.
- [MaPS86] Martin, R.R., de Pont, J., and Sharrock, T.J., "Cyclide Surfaces in Computer Aided Design," in [Greg86], 253–267.
- [Mart82] Martin, R.R., "Principal Patches for Computational Geometry," PhD thesis, Engineering Department, Cambridge University, U.K., 1982.
- [Maxw68] Maxwell, J.C., "On the Cyclide," *Quart. J. Pure Appl. Math.*, **9**, 1868, 111–126.
- [PalB98] Paluszny, Marco, and Boehm, Wolfgang, "General Cyclides," *CAGD*, **15**(7), July 1998, 699–710.

- [Prat90] Pratt, M.J., "Cyclides in Computer Aided Geometric Design," *CAGD*, 7(1-4), June 1990, 221-242.

Differential Geometry

- [BaGM82] Banchoff, T., Gaffney, T., and McCrory, C., *Cusps of Gauss Mappings*, Pittman Publ. Inc., 1982.
- [Berg03] Berger, Marcel, *A Panoramic View of Riemannian Geometry*, Springer-Verlag, 2003.
- [Brec92] Brechner, Eric L., "General Offset Curves and Surfaces," in [Barnhill, Robert E., editor, *Geometry Processing for Design and Manufacturing*, SIAM, 1992], 101-121.
- [Call86] Calladine, C.R., "Gaussian Curvature and Shell Structures," in [Greg86], 179-196.
- [DoCa76] do Carmo, Manfredo P., *Differential Geometry of Curves and Surfaces*, Prentice-Hall, Inc., 1976.
- [Gluc71] Gluck, H., "The Converse to the Four Vertex Theorem," *L'Enseignement Mathématique* T.XVII, fasc. 3-4(1971), 295-309.
- [Gray98] Gray, Alfred, *Modern Differential Geometry of Curves and Surfaces with MATHEMATICA*, 2nd Edition, CRC Press, 1998.
- [Hick65] Hicks, Noel J., *Notes on Differential Geometry*, D. Van Nostrand Co., Inc., 1965.
- [KobN63] Kobayashi, Shoshichi, and Nomizu, Katsumi, *Foundations of Differential Geometry*, Volume 1, Interscience Publishers (a division of John Wiley & Sons), 1963.
- [Laug65] Laugwitz, D., *Differential and Riemannian Geometry*, Academic Press, 1965.
- [Lips69] Lipschutz, M.M., *Differential Geometry*, Schaum's Outline Series, McGraw-Hill, 1969.
- [McCl97] McCleary, John, *Geometry from a Differentiable Viewpoint*, Cambridge Univ. Press, 1997.
- [MilP77] Millman, Richard S., and Parker, George D., *Elements of Differential Geometry*, Prentice-Hall, 1977.
- [ONei66] O'Neill, B., *Elementary Differential Geometry*, Academic Press, 1966.
- [Osse69] Osserman, Robert, *A Survey of Minimal Surfaces*, Van Nostrand Reinhold Co., 1969.
- [Spiv70a] Spivak, M., *A Comprehensive Introduction to Differential Geometry*, Volume I, Publish or Perish, Inc., 1970.
- [Spiv70b] Spivak, M., *A Comprehensive Introduction to Differential Geometry*, Volume II, Publish or Perish, Inc., 1970.
- [Spiv75] Spivak, M., *A Comprehensive Introduction to Differential Geometry*, Volume III, Publish or Perish, Inc., 1975.
- [Stok69] Stoker, J.J., *Differential Geometry*, Wiley-Interscience, 1969.
- [Taba00] Tabachnikov, Serge, "A Four Vertex Theorem for Polygons," *Amer. Math. Monthly*, 107(9), November 2000, 830-833.
- [Thor79] Thorpe, J.A., *Elementary Topics in Differential Geometry*, Springer-Verlag, 1979.
- [Wein00] Weiner, Joel L., "How Helical Can a Closed, Twisted Space Curve Be?," *Amer. Math. Monthly*, 107(4), April 2000, 327-333.
- [Will59] Willmore, T.J., *An Introduction to Differential Geometry*, Oxford Univ. Press, 1959.

Differential Topology

- [AgoM76b] Agoston, Max K., "Twenty Years of Differential Topology: Some Highlights," *Math. Chronicle*, 4, 1976, 77-89.
- [AusM63] Auslander, Louis, and MacKenzie, Robert E., *Introduction to Differentiable Manifolds*, McGraw-Hill Book Co., Inc., 1963.
- [BisC64] Bishop, Richard L., and Crittenden, Richard J., *Geometry of Manifolds*, Academic Press, 1964.
- [FreL89] Freedman, Michael H., and Luo, Feng, *Selected Applications of Geometry to Low-Dimensional Topology*, AMS, 1989.
- [GuiP74] Guillemin, Victor, and Pollack, Alan, *Differential Topology*, Prentice-Hall, Inc., 1974.
- [Hirs76] Hirsch, Morris W., *Differential Topology*, Springer-Verlag, 1976.
- [Miln58] Milnor, John, "Differential Topology," Notes, Princeton Univ., 1958.
- [Miln63] Milnor, John, *Morse Theory*, Princeton Univ. Press, 1963.
- [Miln65a] Milnor, John, *Lectures on the h-Cobordism Theorem*, Princeton Univ. Press, 1965.
- [Miln65b] Milnor, John, *Topology from the Differentiable Viewpoint*, The University Press of Virginia, 1965.
- [Miln03] Milnor, John, "Towards the Poincaré Conjecture and the Classification of 3-Manifolds," *Notices of the AMS*, 50(10), November 2003, 1226-1233.
- [Munk61] Munkres, James R., *Elementary Differential Topology*, Princeton Univ. Press, 1961.

- [Smal61] Smale, S., "Generalized Poincaré's Conjecture in Dimensions Greater Than Four," *Ann. of Math.*, **75**(2), 1961, 391–406.
- [Smal62] Smale, S., "On the Structure of Manifolds," *Amer. J. Math.*, **84**, 1962, 387–399.
- [Thom98] Thompson, Abigail, "Algorithmic Recognition of 3-Manifolds," *Bull. AMS*, **35**(1), 1998, 57–66.
- [Wall68] Wallace, Andrew H., *Differential Topology: First Steps*, W. A. Benjamin, Inc., 1968.

Geodesics

- [Lysu64] Lyusternik, L.A., *Shortest Paths: Variational Problems*, The MacMillan Co., New York, 1964.

Geometric Modeling

- [AgoM05] Agoston, Max K., *Computer Graphics and Geometric Modeling: Implementation and Algorithms*, Springer, 2005.

Linear Algebra

- [BanW83] Banchoff, Thomas, and Wermer, John, *Linear Algebra Through Geometry*, Springer-Verlag, 1983.
- [Brad75] Bradley, Gerald L., *A Primer of Linear Algebra*, Prentice-Hall, 1975.
- [Divi75] Divinsky, Nathan, *Linear Algebra*, Page Ficklin Publ. Co., 1975.
- [Fink72] Finkbeiner, Daniel T., II, *Elements of Linear Algebra*, W.H. Freeman and Co., 1972.
- [HofK71] Hoffman, Kenneth, and Kunze, Ray, *Linear Algebra*, 2nd Edition, Prentice-Hall, Inc., 1971.
- [IpsM95] Ipsen, Ilse C.F., and Meyer, Carl D., "The Angle Between Complementary Subspaces," *Amer. Math. Monthly*, **102**(10), December 1995, 904–911.
- [John67] Johnson, Richard E., *Linear Algebra*, Prindle, Weber & Schmidt, Inc., 1967.
- [Lips68] Lipschutz, Seymour, *Linear Algebra*, McGraw-Hill Book Co., 1968.
- [NobD77] Noble, Ben, and Daniel, James W., *Applied Linear Algebra*, 2nd Edition, Prentice-Hall, Inc., 1977.
- [Penr55] Penrose, R., "A Generalized Inverse for Matrices," *Proc. Cambridge Phil. Soc.*, **51**, 1955, 406–413.
- [RaoM71] Rao, C.R., and Mitra, S.K., *Generalized Inverse of Matrices and Its Applications*, John Wiley & Sons, 1971.

Miscellaneous

- [AppH77] Appel, K., and Haken, W., "The Solution of the Four-Color Map Problem," *Sci. Amer.*, **237**, 1977, 108–121.
- [BoeP94] Boehm, Wolfgang, and Prautzsch, Hartmut, *Geometric Concepts for Geometric Design*, A K Peters, Ltd., 1994.
- [Fari87] Farin, Gerald, editor, *Geometric Modeling: Algorithms and New Trends*, SIAM, 1987.
- [Greg86] Gregory, J.A., editor, *The Mathematics of Surfaces*, Clarendon Press, Oxford, 1986.
- [HilC99] Hilbert, D., and Cohn-Vossen, S., *Geometry and the Imagination*, 2nd Edition, AMS Chelsea Publ., 1999.
- [Hoff89] Hoffmann, Christoph M., *Geometric and Solid Modeling: An Introduction*, Morgan Kaufmann Publ. Inc., 1989.
- [RogA90] Rogers, D.F., and Adams, J.A., *Mathematical Elements for Computer Graphics*, 2nd Edition, McGraw-Hill, 1990.

Numerical Methods

- [AbdY96] Abdel-Malek, Karim, and Yeh, Harn-Jou, "Determining Intersection Curves Between Surfaces of Two Solids," *CAD*, **28**(6/7), June/July 1996, 539–549.
- [Alex96] Alexander, Dan, "Newton's Method – Or Is It?," *FOCUS*, Math. Association of America, October 1996, 32–33.
- [ConD72] Conte, S.D., and de Boor, C., *Elementary Numerical Analysis: An Algorithmic Approach*, McGraw-Hill Book Co., 1972.
- [DahB74] Dahlquist, G., and Bjorck, A., *Numerical Methods*, Prentice-Hall, Inc., 1974.

- [ForM67] Forsythe, George E., and Moler, Cleve B., *Computer Solution of Linear Algebraic Systems*, Prentice-Hall, Inc., 1967.
- [Hild87] Hildebrand, F.B., *Introduction to Numerical Analysis*, 2nd Edition, Dover Publications, Inc., 1987.

Offset Curves and Surfaces

- [FarN90a] Farouki, R.T., and Neff, C.A., "Analytic Properties of Plane Offset Curves," *CAGD*, **7**, 1990, 83–99.

Projective Geometry and Transformations

(motions, affine maps, projectivities)

- [Ayre67] Ayres, Frank Jr., *Projective Geometry*, Schaum's Outline Series, McGraw-Hill Book Co., 1967.
- [Blin98] Blinn, James F., "The Cross Ratio," *CG&A*, **18**(6), November/December 1998, 78–80.
- [Fari95] Farin, Gerald, *NURB Curves and Surfaces: From Projective Geometry to Practical Use*, A.K. Peters, 1995.
- [Gans69] Gans, D., *Transformations and Geometries*, Appleton-Century-Crofts, 1969.
- [PenP86] Penna, M.A., and Patterson, R.R., *Projective Geometry and its Applications to Computer Graphics*, Prentice-Hall, 1986.

Quadrics

- [PetR98] Peters, Jörg, and Reif, Ulrich, "The 42 Equivalence Classes of Quadratic Surfaces in Affine n -Space," *CAGD*, **15**(5), May, 1998, 459–473.

Real Analysis

- [Berb66] Berberian, Sterling K., *Measure and Integration*, The Macmillan Co., 1966.
- [Nata61] Natanson, I.P., *Theory of Functions of a Real Variable*, translated from the Russian by Leo F. Boron, Frederick Ungar Publ. Co., 1961.
- [Spie69] Spiegel, Murray R., *Theory and Problems of Real Variables*, Schaum's Outline Series, McGraw-Hill, Co., 1969.

Topology

(See also Algebraic and Differential Topology)

- [Barr72] Barr, Stephen, *Experiments in Topology*, Thomas Y. Crowell Co., Apollo Edition, 1972.
- [BurM71] Burgesser, H., and Mani, P., "Shellable Decompositions of Cells and Spheres," *Math. Scand.*, **29**, 1971, 197–205.
- [ChiS66] Chinn, W. G., and Steenrod, N. E., *First Concepts of Topology*, Random House, 1966.
- [Crom97] Cromwell, Peter R., *Polyhedra*, Cambridge Univ. Press, 1997.
- [Eise74] Eisenberg, Murray, *Topology*, Holt, Rinehart and Winston, 1974.
- [Free82] Freedman, M., "The Topology of Four-Dimensional Manifolds," *J. Differential Geom.*, **17**, 1982, 357–453.
- [Jäni84] Jänich, Klaus, *Topology*, Springer-Verlag, 1984.
- [KirS69] Kirby, R.C., and Siebenmann, L.C., "On the Triangulation of Manifolds and the Hauptvermutung," *Bull. AMS*, **75**, 1969, 742–749.
- [Lips65] Lipschutz, Seymour, *General Topology*, Schaum's Outline Series, McGraw-Hill, 1965.
- [LunW69] Lundell, Albert T., and Weingram, Stephen, *The Topology of CW Complexes*, Van Nostrand Reinhold Co., 1969.
- [Mois52] Moise, E.E., "Affine Structures in 3-Manifolds: V," *Ann. Math.*, **56**(2), 1952, 96–114.
- [Radó25] Radó, T., "Über des Begriff der Riemannschen Fläche," *Acta. Sci. Math. Szeged.* **2**, 1925, 101–121.
- [Schu68] Schubert, Horst, *Topology*, Allyn and Bacon, Inc., 1968.