

## Conclusion

In concluding a book that is at least as long as originally intended, we are painfully aware of all that we have left out, even though we have tried to include as much extra material in the Problem sets as we reasonably could. The reader is therefore referred to other texts for more advanced material, including the excellent book of Rivlin (1990), who includes fascinating material on various topics, such as the density of the locations of the zeros of Chebyshev polynomials of all degrees. We were also inspired by the book of Fox & Parker (1968), not only because it made the most up-to-date statement of its time but also, and even more, because it was extremely well written and stimulated major research. We hope that we are following in this tradition, and that there are numerous places in this book that future researchers might take as a starting point.

## Bibliography

- Abramowitz, M. & Stegun, I. A., Eds. (1964), *Handbook of Mathematical Functions*, number 55 in Applied Mathematics Series, National Bureau of Standards, Washington.
- Achieser, N. I. (1956), *Theory of Approximation*, Ungar, New York. (Translated from the Russian).
- Adam, G. (1987), Alternative formulation of the extended Clenshaw–Curtis quadrature rules for oscillating integrals, *Rev. Roumaine de Physique* **32**, 813–826.
- Adam, G. & Nobile, A. (1991), Product integration rules at Clenshaw–Curtis and related points — a robust implementation, *IMA J. Numer. Analysis* **11**, 271–296.
- Anderson, I. J., Cox, M. G. & Mason, J. C. (1995), Tensor-product spline interpolation to data near a family of lines, *Numerical Algorithms* **5**, 193–204.
- Atkinson, K. E. (1989), *An Introduction to Numerical Analysis*, 2nd ed., John Wiley, New York.
- Baltensprenger, R. & Berrut, J.-P. (1999), The errors in calculating the pseudospectral differentiation matrices for Chebyshev–Gauss–Lobatto points, *Comput. Math. Appl.* **37**, 41–48.
- Bayliss, A., Class, A. & Matkowsky, B. J. (1994), Roundoff error in computing derivatives using the Chebyshev differentiation matrix, *J. Comput. Phys.* **116**, 380–383.
- Bennell, R. P. (1996), Continuous Approximation Methods for Data Smoothing and Fredholm Integral Equations of the First Kind when the Data are Noisy, Ph.D. thesis, Cranfield University (RMCS).
- Bennell, R. P. & Mason, J. C. (1989), Continuous approximation methods for the regularisation and smoothing of integral transforms, *Rocky Mountain J. Math.* **19**, 51–66.
- Bennell, R. P. & Mason, J. C. (1991), Bivariate orthogonal polynomial approximation to curves of data, in C. Brezinski et al., Eds., *Orthogonal Polynomials and their Applications*, IMACS, Baltzer, Bussum, Netherlands, pp. 177–183.
- Bernardi, C. & Maday, Y. (1992), *Approximations spectrales de problèmes aux limites elliptiques*, Springer-Verlag, Berlin.

- Berzins, M. & Dew, P. M. (1987), A note on  $C_0$  Chebyshev methods for parabolic PDEs, *IMA J. Numer. Anal.* **7**, 15–37.
- Borel, E. (1905), *Leçons sur les Fonctions de Variables Réelles*, Gautier–Villars, Paris.
- Boyd, J. P. (2000), *Chebyshev and Fourier Spectral Methods*, 2nd ed., Dover, New York.
- Brebbia, C. A., Telles, J. C. F. & Wrobel, L. C. (1984), *Boundary Element Techniques*, Springer-Verlag, Berlin.
- Brutman, L. (1978), On the Lebesgue function for polynomial interpolation, *SIAM J. Numer. Anal.* **15**, 694–704.
- Brutman, L. (1988), Alternating polynomials associated with the Chebyshev extrema nodes, *J. Approx. Theory* **53**, 33–40.
- Brutman, L. (1993), An application of the generalised alternating polynomials to the numerical solution of Fredholm integral equations, *Numerical Algorithms* **5**, 437–442.
- Brutman, L. (1997), Lebesgue functions for polynomial interpolation—a survey, *Ann. Numer. Math.* **4**, 111–127.
- Burrus, C. S. & Eschenbacher, P. W. (1981), An in-place, in-order prime factor FFT algorithm, *IEEE Trans. on ASSP* **29**, 806–817.
- Butzer, P. L. & Jongmans, F. (1999), P. L. Chebyshev [1821–1894], a guide to his life and work, *J. Approx. Theory* **96**, 111–138.
- Canuto, C., Hussaini, M. Y., Quarteroni, A. & Zang, T. A. (1988), *Spectral Methods in Fluid Dynamics*, Springer-Verlag, Berlin.
- Chalmers, B. L. & Mason, J. C. (1984), Minimal  $\mathcal{L}_p$  projections by Fourier, Taylor and Laurent series, *J. Approx. Theory* **40**, 293–297.
- Chawla, M. M. (1968), Error estimates for the Clenshaw–Curtis quadrature, *Math. Comp.* **22**, 651–656.
- Chebyshev, P. L. (1854), Théorie des mécanismes connus sous le nom de parallélogrammes, *Mémoires présentés à l'Académie Impériale des Sciences de St-Petersbourg* **VII**, 539–568. [Reprinted in Chebyshev (1899, Vol.I), pages 111–143].
- Chebyshev, P. L. (1859), Sur les questions de minima qui se rattachent à la représentation approximative des fonctions, *Mémoires présentés à l'Académie Impériale des Sciences de St-Petersbourg* **VII**, 199–291. [Reprinted in Chebyshev (1899, Vol.I), pages 273–378].

- Chebyshev, P. L. (1874), Sur les fonctions qui diffèrent le moins possible de zéro, *J. Math. Pures et Appl.* **19**, 189–215. [Reprinted in Chebyshev (1899, Vol.II), pages 189–215].
- Chebyshev, P. L. (1899), *Oeuvres de P. L. Tchebychef*, St Petersburg.
- Cheney, E. W. (1966), *Introduction to Approximation Theory*, McGraw–Hill, New York. (2nd ed. Chelsea, New York, 1982).
- Cheney, E. W. & Price, K. H. (1970), Minimal projections, in A. Talbot, Ed., *Approximation Theory (Lancaster, 1969)*, Academic Press, New York, pp. 261–289.
- Chisholm, J. S. R. & Common, A. K. (1980), Generalisations of Padé approximation for Chebyshev and Fourier series, in *Proc. 1979 International Christoffel Symposium*, pp. 212–231.
- Clenshaw, C. W. (1955), A note on the summation of Chebyshev series, *Math. Tab. Wash.* **9**, 118–120.
- Clenshaw, C. W. (1957), The numerical solution of linear differential equations in Chebyshev series, *Proc. Camb. Phil. Soc.* **53**, 134–149.
- Clenshaw, C. W. (1959/1960), Curve fitting with a digital computer, *Comput. J.* **2**, 170–173.
- Clenshaw, C. W. (1962), *Chebyshev Series for Mathematical Functions*, Vol. 5 of *NPL Math. Tables*, HMSO, London.
- Clenshaw, C. W. & Curtis, A. R. (1960), A method for numerical integration on an automatic computer, *Numer. Math.* **2**, 197–205.
- Clenshaw, C. W. & Hayes, J. G. (1965), Curve and surface fitting, *J. IMA* **1**, 164–183.
- Clenshaw, C. W. & Lord, K. (1974), Rational approximations from Chebyshev series, in B. K. P. Skaife, Ed., *Studies in Numerical Analysis*, Academic Press, New York, pp. 95–113.
- Clenshaw, C. W. & Norton, H. J. (1963), The solution of nonlinear ordinary differential equations in Chebyshev series, *Computer J.* **6**, 88–92.
- Cooley, J. W. & Tukey, J. W. (1965), An algorithm for the machine calculation of complex Fourier series, *Math. Comput.* **19**, 297–301.
- Davis, P. J. (1961), *Interpolation and Approximation*, Blaisdell, New York. (Reprinted Dover, New York, 1975).
- Delves, L. M. & Walsh, J., Eds. (1974), *Numerical Solution of Integral Equations*, Clarendon Press, Oxford.

- Deville, M. (1984), Recent developments of spectral and pseudospectral methods in fluid dynamics, Lecture notes on computational fluid dynamics, Université Catholique de Louvain, 2 Rue du Levant, B-1348 Louvain-la-neuve, Belgium.
- Driscoll, T. A. (1997), Eigenmodes of isospectral drums, *SIAM Rev.* **39**, 1–17.
- El-Daou, M. K. & Khajah, H. G. (1997), Iterated solutions of linear operator equations with the tau method, *Math. Comp.* **217**, 207–213.
- Elliott, D. (1961), A method for numerical integration of the one-dimensional heat equation using Chebyshev series, *Proc. Camb. Phil. Soc.* **43**, 823–832.
- Elliott, D. (1963), A Chebyshev series method for the numerical solution of Fredholm integral equations, *Comp. J.* **6**, 102–111.
- Elliott, D. (1965), Truncation errors in two Chebyshev series approximations, *Math. Comp.* **19**, 234–248.
- Elliott, D. (1979), The approximate solution of singular integral equations, in M. A. Goldberg, Ed., *Solution Methods for Integral Equations*, Plenum, New York, pp. 83–107.
- Elliott, D. (1989), A comprehensive approach to the approximate solution of singular integral equations over the arc  $(-1, 1)$ , *J. Integral Eq. and Appl.* **2**, 59–94.
- Erdélyi, A., Magnus, W., Oberhettinger, F. & Tricomi, F. G. (1953), *Higher Transcendental Functions*, McGraw–Hill, New York.
- Erdélyi, A., Magnus, W., Oberhettinger, F. & Tricomi, F. G. (1954), *Tables of Integral Transforms*, McGraw–Hill, New York.
- Erdős, P. & Feldheim, E. (1936), Sur le mode de convergence pour l'interpolation de Lagrange, *Comptes Rendus* **203**, 913–915.
- Erdős, P. & Turán, P. (1937), On interpolation, *Annals of Math.* **38**, 142–155.
- Evans, G. A., Hyslop, J. & Morgan, A. P. G. (1981), Iterative solution of Volterra integral equations using Clenshaw–Curtis quadrature, *J. Comp. Phys.* **40**, 64–76.
- Fairweather, D. & Karageorghis, A. (1998), The method of fundamental solutions for elliptic boundary value problems, *Adv. Comp. Math.* **9**, 69–95.
- Favati, P., Lotti, G. & Romani, F. (1993), Bounds on the error of Fejér and Clenshaw–Curtis type quadrature for analytic functions, *Appl. Math. Letters* **6**, 3–8.

- Fejér, L. (1904), Untersuchungen über Fouriersche Reihen, *Math. Annalen* **58**, 51–69.
- Filippi, S. (1964), Angenäherte Tschebyscheff-Approximation einer Stammfunktion — eine Modifikation des Verfahrens von Clenshaw und Curtis, *Numer. Math.* **6**, 320–328.
- Finlayson, B. A. & Scriven, L. E. (1966), The method of weighted residuals — a review, *Appl. Mech. Rev.* **19**, 735–748.
- Fornberg, B. (1996), *A Practical Guide to Pseudospectral Methods*, CUP, Cambridge.
- Fornberg, B. & Sloan, D. M. (1994), A review of pseudospectral methods for solving partial differential equations, in A. Iserles, Ed., *Acta Numerica 1994*, Cambridge, pp. 203–267.
- Forsythe, G. E. (1957), Generation and use of orthogonal polynomials for data-fitting with a digital computer, *J. SIAM* **5**, 74–88.
- Fox, L. (1962), Chebyshev methods for ordinary differential equations, *Comp. J.* **4**, 318–331.
- Fox, L. (1966a), Chebyshev least-squares approximation, in D. C. Handscomb, Ed., *Methods of Numerical Approximation*, Pergamon, Oxford, pp. 39–46.
- Fox, L. (1966b), Determination and properties of Chebyshev expansions, in D. C. Handscomb, Ed., *Methods of Numerical Approximation*, Pergamon, Oxford, pp. 47–60.
- Fox, L., Henrici, P. & Moler, C. (1967), Approximations and bounds for eigenvalues of elliptic operators, *SIAM J. Numer. Anal.* **4**, 89–102.
- Fox, L. & Parker, J. B. (1968), *Chebyshev Polynomials in Numerical Analysis*, OUP, Oxford. [Revised 2nd edition, 1972].
- Fraser, W. & Wilson, M. W. (1966), Remarks on the Clenshaw–Curtis quadrature scheme, *SIAM Review* **8**, 322–327.
- Freilich, J. H. & Mason, J. C. (1971), Best and near-best  $\mathcal{L}_1$  approximations by Fourier series and Chebyshev series, *J. Approx. Theory* **4**, 183–193.
- Freilich, J. H. & Ortiz, E. L. (1982), Numerical solution of systems of ordinary differential equations with the tau method: An error analysis, *Math. Comp.* **39**, 467–479.
- Fromme, J. A. & Golberg, M. A. (1979), Numerical solution of a class of integral equations arising in two-dimensional aerodynamics, in M. A. Golberg, Ed., *Solution Methods for Integral Equations*, Plenum, New York, pp. 109–146.

- Fromme, J. A. & Golberg, M. A. (1981), Convergence and stability of a collocation method for the generalized airfoil equation, *Appl. Math. Comput.* **8**, 281–292.
- Gautschi, W. (1984), Questions of numerical condition related to polynomials, in *Studies in Numerical Analysis*, number 24 in MAA Stud. Math., Math. Assoc. America, pp. 140–177.
- Gautschi, W. (1992), On mean convergence of extended Lagrange interpolation, *J. Comp. Appl. Math.* **43**, 19–35.
- Geddes, K. O. (1978), Near-minimax polynomial approximation in an elliptical region, *SIAM J. Numer. Anal.* **15**, 1228–1233.
- Gentleman, W. M. (1972), Implementing Clenshaw–Curtis quadrature, *Comm. ACM* **15**, 337–346.
- Gentleman, W. M. & Sande, G. (1966), Fast Fourier transforms for fun and profit, in *Proceedings of the AFIPS 1966 Fall Joint Computer Conference*, pp. 563–578.
- Gerasoulis, A. (1986), The singular value decomposition of the Gauss–Lobatto and Lobatto–Chebyshev methods for Cauchy singular integral equations, *Computers and Maths with Applications* **12A**, 895–907.
- Gerritsma, M. I. & Phillips, T. N. (1998), Discontinuous spectral element approximations for the velocity–pressure–stress formulation of the Stokes problem, *J. Numer. Methods Engrg.* **43**, 1401–1419.
- Gerritsma, M. I. & Phillips, T. N. (1999), Compatible spectral approximations for the velocity–pressure–stress formulation of the Stokes problem, *SIAM J. Sci. Comp.* **20**, 1530–1550.
- Gladwell, G. M. L. & England, A. H. (1977), Orthogonal polynomial solutions to some mixed boundary-value problems in elasticity theory, *Quart. J. Mech. Appl. Math.* **30**, 175–185.
- Golberg, M. A., Ed. (1990), *Numerical Solution of Integral Equations*, Plenum, New York.
- Golub, G. H. & van Loan, C. F. (1983), *Matrix Computations*, Johns Hopkins Univ. Press, Baltimore.
- Gottlieb, D. & Lustman, L. (1983), The spectrum of the Chebyshev collocation operator for the heat equation, *SIAM J. Numer. Anal.* **20**, 909–921.
- Gottlieb, D. & Orszag, S. A. (1977), *Numerical Analysis of Spectral Methods: Theory and Applications*, SIAM, Philadelphia.

- Gragg, W. B. (1977), Laurent, Fourier and Chebyshev–Padé tables, in E. B. Saff & R. S. Varga, Eds., *Padé and Rational Approximation*, Academic Press, New York, pp. 61–72.
- Gragg, W. B. & Johnson, G. D. (1974), The Laurent–Padé table, in *Information Processing 1974*, North–Holland, Amsterdam, pp. 632–637.
- Groetsch, C. W. (1984), *The Theory of Tikhonov Regularisation for Fredholm Integral Equations of the First Kind*, Vol. 105 of *Research Notes in Mathematics*, Pitman, London.
- Grunwald, G. (1941), On a convergence theorem for the Lagrange interpolation polynomials, *Bull. Amer. Math. Soc.* pp. 271–275.
- Guo Ben-yu (1998), *Spectral Methods and their Applications*, World Scientific, Singapore.
- Guo Ben-yu (1999), Error estimation for Hermite spectral method for nonlinear partial differential equations, *Math. Comp.* **68**, 1067–1078.
- Guo Ben-yu & He Li-ping (1998), The fully discrete Legendre spectral approximation of two-dimensional unsteady incompressible fluid flow in stream function form, *SIAM J. Numer. Anal.* **35**, 146–176.
- Guo Ben-yu & Jie Shen (2000), Laguerre–Galerkin method for nonlinear partial differential equations on a semi-infinite interval, *Numer. Math.* **86**, 635–654.
- Gutknecht, M. H. & Trefethen, L. N. (1982), Real polynomial Chebyshev approximation by the Carathéodory–Fejér method, *SIAM J. Numer. Anal.* **19**, 358–371.
- Haidvogel, D. B. & Zang, T. (1979), The accurate solution of Poisson’s equation by expansion in Chebyshev polynomials, *J. Comp. Phys.* **30**, 167–180.
- Handscomb, D. C. (1966), Functions of many variables, in D. C. Handscomb, Ed., *Methods of Numerical Approximation*, Pergamon, Oxford, chapter 23, pp. 191–194.
- Handscomb, D. C. (1973), The relative sizes of the terms in Chebyshev and other ultraspherical expansions, *J. Inst. Maths Applics* **11**, 241–246.
- Hardy, G. H., Littlewood, J. E. & Pólya, G. (1952), *Inequalities*, second ed., CUP, Cambridge.
- Hasegawa, T. & Torii, T. (1991), An automatic quadrature for Cauchy principal value integrals, *Math. Comp.* **56**, 741–754.



- Henrici, P. (1974–1986), *Applied and Computational Complex Analysis*, Vol. 1–3, John Wiley, New York.
- Hobson, E. W. (1926), *The Theory of Functions of a Real Variable and the Theory of Fourier Series*, Vol. 2, 2nd ed., CUP, Cambridge.
- Huang, W.-Z. & Sloan, D. M. (1994), The pseudospectral method for solving differential eigenvalue equations, *J. Comput. Phys.* **111**, 399–409.
- Jaswon, M. A. & Symm, G. (1977), *Integral Equation Methods in Potential Theory and Elastostatics*, Academic Press, New York.
- Jorgens, K. (1970), *Lineare Integraloperatoren*, Teubner, Stuttgart.
- Jovanovski, V. (1999), Three-dimensional Imaging and Analysis of the Morphology of Oral Structures from Co-ordinate Data, Ph.D. thesis, Royal London School of Dentistry, Queen Mary & Westfield College, London.
- Khajah, H. G. (1997), Tau method approximation of the Gauss hypergeometric function, *Comp. Rend. de l'Acad. Bulgare des Sci.* **50**, 13–16.
- Khajah, H. G. & Ortiz, E. L. (1991), Upper and lower error estimation for the tau method and related polynomial techniques, *Comput. Math. Appl.* **3**, 81–87.
- Knibb, D. & Scraton, R. E. (1979), A note on the numerical solution of nonlinear parabolic equations in Chebyshev series, *Int. J. Comput. Maths* **7**, 217–225.
- Kolba, D. P. & Parks, T. W. (1977), A prime factor FFT algorithm using high speed convolution, *IEEE Trans. on ASSP* **25**, 281–294.
- Kreiss, H.-O. & Oliger, J. (1972), Comparison of accurate methods for the integration of hyperbolic systems, *Tellus* **24**, 199–215.
- Lakin, W. D. (1986), Differentiation matrices for arbitrarily spaced grid points, *J. Numer. Methods Engrg.* **23**, 209–218.
- Lanczos, C. (1938), Trigonometric interpolation of empirical and analytical functions, *J. Math. Phys.* **17**, 123–199.
- Lanczos, C. (1952), Introduction, in (NBS 1952).
- Lanczos, C. (1957), *Applied Analysis*, Prentice–Hall, Englewood Cliffs, NJ.
- Light, W. A. (1978), A comparison between Chebyshev and ultraspherical expansions, *J. Inst. Maths Applies* **21**, 455–460.
- Light, W. A. (1979), Some optimality conditions for Chebyshev expansions, *J. Approx. Theory* **27**, 113–126.

- Light, W. A. (1980), Nonlinear families of projections on  $\mathcal{C}[-1, 1]$ , *J. Approx. Theory* **30**, 197–202.
- Linz, P. (1977), An analysis of a method for solving singular integral equations, *BIT* **17**, 329–337.
- Locher, F. (1969), Fehlerabschätzung für das Quadraturverfahren von Clenshaw und Curtis, *Computing* **4**, 304–315.
- Luttman, F. W. & Rivlin, T. J. (1965), Some numerical experiments in the theory of polynomial interpolation, *IBM J. Develop.* **9**, 187–191.
- Maehly, H. J. (1960), Rational approximations for transcendental functions, in *Information Processing*, Butterworth, London, pp. 57–62.
- Martin, P. A. (1991), End point behaviour of solutions to hypersingular integral equations, *Proc. Roy. Soc. (London)* **432**, 301–320.
- Martin, P. A. (1992), Exact solution of a simple hypersingular integral equation, *J. Int. Eqns and Applics* **4**, 197–204.
- Mason, J. C. (1965), Some new Approximations for the Solution of Differential Equations, D.phil. thesis, Oxford University.
- Mason, J. C. (1967), Chebyshev polynomial approximations for the L-membrane eigenvalue problem, *SIAM J. Appl. Math.* **15**, 171–186.
- Mason, J. C. (1969), Chebyshev methods for separable partial differential equations, in *Information Processing 68*, Vol. 1, North-Holland, Amsterdam, pp. 164–169.
- Mason, J. C. (1970), Orthogonal polynomial approximation methods in numerical analysis, in A. Talbot, Ed., *Approximation Theory (Lancaster, 1969)*, Academic Press, New York, pp. 17–33.
- Mason, J. C. (1978), Near-best  $\mathcal{L}_\infty$  and  $\mathcal{L}_1$  approximations to analytic functions on two-dimensional regions, in D. C. Handscomb, Ed., *Multivariate Approximation*, Academic Press, New York, pp. 115–135.
- Mason, J. C. (1980), Near-best multivariate approximation by Fourier series, Chebyshev series and Chebyshev interpolation, *J. Approx. Theory* **28**, 349–358.
- Mason, J. C. (1982), Minimal projections and near-best approximations by multivariate polynomial expansion and interpolation, in W. Schempp & K. Zeller, Eds., *Multivariate Approximation 2*, number 17 in ISNM, Birkhäuser, Basel, pp. 241–254.
- Mason, J. C. (1983a), Minimal  $\mathcal{L}_p$  projections and near-best  $\mathcal{L}_p$  approximations, in C. K. Chui, L. L. Schumaker & J. D. Ward, Eds., *Approximation Theory 4*, Academic Press, New York, pp. 605–610.

- Mason, J. C. (1983*b*), Near-best  $\mathcal{L}_p$  approximation by real and complex Chebyshev series, *IMA J. Numer. Analysis* **3**, 493–504.
- Mason, J. C. (1984), Some properties and applications of Chebyshev polynomial and rational approximations, in P. R. Graves-Morris, E. B. Saff & R. S. Varga, Eds., *Rational Approximation and Interpolation*, number 1105 in Lecture Notes in Mathematics, Springer-Verlag, Berlin, pp. 27–48.
- Mason, J. C. (1988), The  $\mathcal{L}_p$  minimality and near-minimality of orthogonal polynomial approximation and integration methods, in M. Alfaro et al., Eds., *Orthogonal Polynomials and their Applications*, number 1329 in Lecture notes in Mathematics, Springer-Verlag, Berlin, pp. 291–299.
- Mason, J. C. (1993), Chebyshev polynomials of the second, third and fourth kinds in approximation, indefinite integration and integral transforms, *J. Comp. and Appl. Maths* **49**, 169–178.
- Mason, J. C. (1995), Minimality properties and applications of four kinds of Chebyshev polynomials, in W. M. Müller, M. Felten & D. H. Mache, Eds., *Approximation Theory*, Akademik Verlag, Berlin, pp. 231–250.
- Mason, J. C. & Chalmers, B. L. (1984), Near-best  $\mathcal{L}_p$  approximation by Fourier, Taylor and Laurent series, *IMA J. Numer. Analysis* **4**, 1–8.
- Mason, J. C. & Crampton, A. (2002), Applications of orthogonalisation procedures for Gaussian radial basis functions and Chebyshev polynomials, in J. Levesley, I. J. Anderson & J. C. Mason, Eds., *Algorithms for Approximation 4*, University of Huddersfield, Huddersfield, UK. (To appear).
- Mason, J. C. & Elliott, G. H. (1993), Near-minimax complex approximation by four kinds of Chebyshev polynomial expansion, *J. Comp. and Appl. Maths* **46**, 291–300.
- Mason, J. C. & Elliott, G. H. (1995), Constrained near-minimax approximations by weighted expansion and interpolation using Chebyshev polynomials of the second, third and fourth kinds, *Numerical Algorithms* **9**, 39–54.
- Mason, J. C. & Upton, N. K. (1989), Linear algorithms for transformed linear forms, in C. K. Chui, L. L. Schumaker & J. D. Ward, Eds., *Approximation Theory 6*, Vol. 2, Academic Press, New York, pp. 417–420.
- Mason, J. C. & Venturino, E. (1996), Integration methods of Clenshaw–Curtis type, based on four kinds of Chebyshev polynomials, in G. Nürnberger, J. W. Schmidt & G. Walz, Eds., *Multivariate Approximation and Splines*, Birkhäuser, Basel, pp. 153–165.

- Mason, J. C. & Venturino, E. (1997), Numerical analysis of a boundary hypersingular integral equation, in L. Elliott, D. B. Ingham & D. Lesnic, Eds., *First UK Conference on Boundary Integral Methods*, Leeds Univ. Press, Leeds, pp. 224–235.
- Mason, J. C. & Venturino, E. (2002), A fully-discrete Chebyshev–Galerkin method for Hadamard finite-part integral equations, *J. Integral Equations* . (To appear).
- Mason, J. C. & Weber, R. O. (1992), Particular solution methods for free and moving boundary problems, *Proc. Centre for Maths and its Appl., Australian National University* **30**, 87–107.
- Mayers, D. F. (1966), Convergence of polynomial interpolation, in D. C. Handscomb, Ed., *Methods of Numerical Approximation*, Pergamon, Oxford, chapter 3, pp. 15–26.
- Mercier, B. (1989), *An Introduction to the Numerical Analysis of Spectral Methods*, number 318 in Lecture Notes in Physics, Springer-Verlag, Berlin.
- Mhaskar, H. N. & Pai, D. V. (2000), *Fundamentals of Approximation Theory*, Narosa Publishing Co., Delhi. (Available from Alpha Beta Publishing Co. in Europe and from CRC Press in the U.S.A.).
- NBS (1952), *Tables of Chebyshev Polynomials  $S_n(x)$  and  $C_n(x)$* , number 9 in Applied Mathematics Series, National Bureau of Standards, Washington.
- Novak, E. & Ritter, K. (1996), High-dimensional integration of smooth functions over cubes, *Num. Math.* **75**, 79–97.
- NPL (1961), *Modern Computing Methods*, number 16 in National Physical Laboratory: Notes on Applied Science, HMSO, London.
- O'Hara, H. & Smith, F. S. (1968), Error estimation in the Clenshaw–Curtis quadrature formula, *Computer J.* **11**, 213–219.
- Ortiz, E. L. (1969), The tau method, *SIAM J. Numer. Anal.* **6**, 480–492.
- Ortiz, E. L. (1980), Polynomial and rational approximation of boundary layer problems with the tau method, in J. J. H. Miller, Ed., *Boundary and Interior Layers — Computational and Asymptotic Methods*, Boole Press, Dun Laoghaire, pp. 387–391.
- Ortiz, E. L. (1987), Singularity treatment in the bidimensional tau method with an application to problems defined on L-shaped domains, in J. Ballmann, Ed., *Effiziente numerische Verfahren für partielle Differentialgleichungen*, Teubner, Stuttgart.

- Ortiz, E. L. & Pun, K.-S. (1986), A bi-dimensional tau-elements method for the numerical solution of nonlinear partial differential equations with an application to Burgers' equation, *Computers and Maths with Applications* **12**, 1225–1240.
- Padé, H. (1892), Sur la représentation approchée d'une fonction par des fonctions rationnelles, *Ann. Ec. Norm. Sup.* **9**, 1–93.
- Peherstorfer, F. (1997), Minimal polynomials on several intervals with respect to the maximum norm—a survey, in *Complex methods in approximation theory*, number 2 in Monogr. Cienc. Tecnol., Univ. Almería, pp. 137–159.
- Peyret, R. (1986), *Introduction to Spectral Methods*, Von Karman Institute, Rhode-St-Genèse, Belgium.
- Phillips, T. N. & Owens, R. G. (1997), A mass-conserving multi-domain spectral collocation method for the Stokes problem, *Computers and Fluids* **26**, 825–840.
- Phillips, T. N., Zang, T. A. & Hussaini, M. Y. (1986), Preconditioners for the spectral multigrid method, *IMA J. Numer. Anal.* **6**, 273–292.
- Piessens, R. & Branders, M. (1983), Modified Clenshaw–Curtis method for the computation of Bessel-function integrals, *BIT* **23**, 370–381.
- Piessens, R. & Branders, M. (1992), On the computation of Fourier transforms of singular functions, *J. Comp. Appl. Math.* **43**, 159–169.
- Powell, M. J. D. (1967), On the maximum errors of polynomial approximations defined by interpolation and by least squares criteria, *Comput. J.* **9**, 404–407.
- Reid, J. K. & Walsh, J. E. (1965), An elliptic eigenvalue problem for a re-entrant region, *SIAM J. Appl. Math.* **13**, 837–850.
- Rice, J. R. (1964), *The Approximation of Functions I — Linear Theory*, Addison–Wesley, Reading, MA.
- Rivlin, T. J. (1974), *The Chebyshev Polynomials*, John Wiley, New York.
- Rivlin, T. J. (1990), *Chebyshev Polynomials: From Approximation Theory to Algebra and Number Theory*, John Wiley, New York. (2nd ed. of Rivlin (1974)).
- Rodriguez, G. & Seatzu, S. (1990), Numerical solutions of the finite moment problem in a reproducing kernel Hilbert space, *J. Comp. Appl. Math.* **33**, 233–244.
- Sansone, G. (1959), *Orthogonal Functions*, Interscience, New York.

- Shabat, G. B. & Voevodskii, V. A. (1990), Drawing curves over number fields, in *The Grothendieck Festschrift, Volume III*, number 88 in Progr. Math., Birkhäuser, Basel, pp. 199–227.
- Shabat, G. B. & Zvonkin, A. (1994), Plane trees and algebraic numbers, in *Jerusalem Combinatorics '93*, number 178 in Contemp. Math., Amer. Math. Soc., Providence, RI, pp. 233–275.
- Sloan, I. H. & Smith, W. E. (1978), Product integration with the Clenshaw–Curtis and related points: Convergence properties, *Numer. Math.* **30**, 415–428.
- Sloan, I. H. & Smith, W. E. (1980), Product integration with the Clenshaw–Curtis points: Implementation and error estimates, *Numer. Math.* **34**, 387–401.
- Sloan, I. H. & Smith, W. E. (1982), Properties of interpolatory integration rules, *SIAM J. Numer. Anal.* **19**, 427–442.
- Sloan, I. H. & Stephan, E. P. (1992), Collocation with Chebyshev polynomials for Symm's integral equation on an interval, *J. Austral. Math. Soc. Ser. B* **34**, 199–211.
- Smith, H. V. (1982), Global error bounds for the Clenshaw–Curtis quadrature formula, *BIT* **22**, 395–398.
- Smith, W. E. & Paget, D. (1992), Optimal nodes for interpolatory product integration, *SIAM J. Numer. Anal.* **29**, 586–600.
- Smolyak, S. A. (1963), Quadrature and interpolation formulas for tensor products of certain classes of functions, *Soviet Math. Dokl.* **4**, 240–243.
- Snyder, M. A. (1966), *Chebyshev Methods in Numerical Approximation*, Prentice–Hall, Englewood Cliffs, NJ.
- Srivastav, R. P. (1983), Numerical solution of singular integral equations using Gauss-type formulae — I. Quadrature and collocation on Chebyshev nodes, *IMA J. Numer. Analysis* **3**, 305–318.
- Srivastav, R. P. & Jen, E. (1983), Numerical solution of singular integral equations using Gauss-type formulae — II. Lobatto–Chebyshev quadrature and collocation on Chebyshev nodes, *IMA J. Numer. Analysis* **3**, 319–325.
- Symm, G. (1966), An integral equation method in conformal mapping, *Num. Math.* pp. 250–258.
- Tikhonov, A. N. (1963*a*), Regularisation of incorrectly posed problems, *Soviet Math. Dokl.* **4**, 1624–1627.

- Tikhonov, A. N. (1963*b*), Solution of incorrectly formulated problems and the regularisation method, *Soviet Math. Dokl.* **4**, 1035–1038.
- Timan, A. F. (1963), *Theory of Approximation of Functions of a Real Variable*, Pergamon, Oxford. (Translated from Russian original of 1960).
- Trefethen, L. N. (2000), *Spectral Methods in MATLAB*, SIAM, Philadelphia.
- Trefethen, L. N. & Gutknecht, M. H. (1987), Padé, stable Padé and Chebyshev–Padé approximation, in J. C. Mason & M. G. Cox, Eds., *Algorithms for Approximation*, OUP, Oxford, pp. 227–264.
- Trefethen, L. N. & Trummer, M. R. (1987), An instability phenomenon in spectral methods, *SIAM J. Numer. Anal.* **24**, 1008–1023.
- Trefethen, L. N. & Weideman, J. A. C. (1991), Two results on polynomial interpolation in equally spaced points, *J. Approx. Theory* **65**, 247–260.
- Tricomi, F. G. (1957), *Integral Equations*, Interscience.
- Turetskii, A. H. (1940), The bounding of polynomials prescribed at equally distributed points, *Proc. Pedag. Inst. Vitebsk* **3**, 117–127. (Russian).
- Urabe, M. (1966), Galerkin’s procedure for nonlinear periodic systems and its extension to multipoint boundary-value problems for general nonlinear systems, in D. Greenspan, Ed., *Numerical Solution of Nonlinear Differential Equations*, John Wiley, New York, pp. 297–327.
- van Loan, C. (1992), *Computational Frameworks for the Fast Fourier Transform*, SIAM, Philadelphia.
- Vandeven, H. (1990), On the eigenvalues of second-order spectral differentiation operators, *Comput. Methods Appl. Mech. Engrg.* **80**, 313–318.
- Varga, R. S. (1962), *Matrix Iterative Analysis*, Prentice–Hall, Englewood Cliffs, NJ.
- Vekua, I. N. (1967), *New Methods for Solving Elliptic Equations*, North-Holland, Amsterdam.
- Venturino, E. (1986), Recent developments in the numerical solution of singular integral equations, *J. Math. Anal. & Appl.* **115**, 239–277.
- Venturino, E. (1992), Unconventional solution of simple integral equations, *J. Integral Eq. and Appl.* **4**, 443–463.
- Venturino, E. (1993), Simple quadrature for singular integrals, *J. Integral Eq. and Appl.* **5**, 257–276.
- Voigt, R. G., Gottlieb, D. & Hussaini, M. Y., Eds. (1984), *Spectral Methods for Partial Differential Equations*, SIAM, Philadelphia.

- Wahba, G. (1977), Practical approximate solutions to linear operator equations when the data are noisy, *SIAM J. Numer. Anal.* **14**, 652–667.
- Weideman, J. A. C. & Trefethen, L. N. (1988), The eigenvalues of second-order spectral differentiation matrices, *SIAM J. Numer. Anal.* **25**, 1279–1298.
- Youschkevitch, A. P. (1981), ‘Chebyshev’, in *Dictionary of Scientific Biography*, Vol. 3, Scribner, New York, pp. 222–232.
- Zygmund, A. (1959), *Trigonometric Series*, 2nd ed., CUP, Cambridge.