

Bibliography

- [1] L. V. Ahlfors. *Complex Analysis*. McGraw-Hill, New York, 3rd edition, 1979.
- [2] L. V. Ahlfors. *Conformal Invariants: Topics in Geometric Function Theory*. American Mathematical Society, 2010.
- [3] M. Aigner and G. Ziegler. *Proofs from THE BOOK*, 6th Ed. Springer, 2018.
- [4] R. Alperin. $PSL_2(\mathbb{Z}) = \mathbb{Z}_2 * \mathbb{Z}_3$. *Am. Math. Mon.*, 100:385–386, 1993.
- [5] T. M. Apostol. *Modular Functions and Dirichlet Series in Number Theory*. Springer, New York, 2nd edition, 1990.
- [6] D. Beliaev. *Conformal Maps and Geometry*. World Scientific, 2018.
- [7] B. C. Berndt. *Ramanujan's Notebooks, Part III*. Springer-Verlag, 1991.
- [8] B. C. Berndt. *Ramanujan's Notebooks, Part V*. Springer-Verlag, 1998.
- [9] S. S. Cairns. An elementary proof of the Jordan–Schoenflies theorem. *Proc. Am. Math. Soc.*, 2, 1951.
- [10] J. Cardy. Critical percolation in finite geometries. *J. Phys. A*, 25:L201–L206, 1992.
- [11] G. L. Cohen and G. H. Smith. A simple verification of Ilieff's conjecture for polynomials with three zeros. *Am. Math. Mon.*, 95:734–737, 1988.
- [12] H. Cohn. A conceptual breakthrough in sphere packing. *Not. Am. Math. Soc.*, 64:102–115, 2017.
- [13] H. Cohn. The work of Maryna Viazovska. In *Proc. Int. Cong. Math.*, volume 1, 2022.
- [14] H. Cohn and N. Elkies. New upper bounds on sphere packings. I. *Ann. Math.*, 157:689–714, 2003.
- [15] H. Cohn and A. Kumar. The densest lattice in twenty-four dimensions. *Electron. Res. Announc. Am. Math. Soc.*, 10:58–67, 2004.
- [16] H. Cohn, A. Kumar, S. D. Miller, D. Radchenko, and M. Viazovska. The sphere packing problem in dimension 24. *Ann. Math.*, 185:1017–1033, 2017.
- [17] H. Cohn, A. Kumar, S. D. Miller, D. Radchenko, and M. Viazovska. Universal optimality of the E_8 and Leech lattices and interpolation formulas. *Ann. Math.*, 196:983–1082, 2022.
- [18] J. H. Conway and N. J. A. Sloane. *Sphere Packings, Lattices and Groups*. Springer, 3rd edition, 1999.
- [19] D. A. Cox. The arithmetic-geometric mean of Gauss. *Enseign. Math.*, 30:275–330, 1984.
- [20] D. de Laat and F. Vallentin. A breakthrough in sphere packing: the search for magic functions. *Nieuw Arch. Wiskd.*, 5/17:184–192, 2016.
- [21] B. de Smit, D. Dunham, H. W. Lenstra Jr., and R. Sarhangi. Artful mathematics: the heritage of M. C. Escher. *Not. Am. Math. Soc.*, 50:446–457, 2003.
- [22] M. Dewar and M. Ram Murty. An asymptotic formula for the coefficients of $j(z)$. *Int. J. Number Theory*, 9:641–652, 2013.
- [23] S. Donaldson. *Riemann Surfaces*. Oxford University Press, 2011.
- [24] W. Duke and O. Imamoglu. The zeros of the Weierstrass \wp -function and hypergeometric series. *Math. Ann.*, 340:897–905, 2008.
- [25] H. M. Edwards. *Riemann's Zeta Function*. Dover Publications, 2001.
- [26] M. Eichler and D. Zagier. On the zeros of the Weierstrass \wp -function. *Math. Ann.*, 258:399–407, 1981.
- [27] S. R. Finch. *Mathematical Constants*. Cambridge University Press, 2003.
- [28] P. Flajolet and R. Sedgewick. *Analytic Combinatorics*. Cambridge University Press, 2009.
- [29] T. Gannon. *Moonshine Beyond the Monster: The Bridge Connecting Algebra, Modular Forms and Physics*. Cambridge University Press, 2010.
- [30] L. J. Goldstein. A history of the prime number theorem. *Am. Math. Mon.*, 80:599–615, 1973.
- [31] L. Grafakos. *Classical Fourier Analysis*, 2nd Ed. Springer, 2006.
- [32] L. Grafakos and G. Teschl. On Fourier transforms of radial functions and distributions. *J. Fourier Anal. Appl.*, 19:167–179, 2013.
- [33] J. Gray. On the history of the Riemann mapping theorem. *Rend. Circ. Mat. Palermo*, 34:47–94, 1994.
- [34] G. Grimmett. *Probability on Graphs: Random Processes on Graphs and Lattices*, 2nd Ed. Cambridge University Press, 2018.
- [35] H. Groemer. Existenzsätze für Lagerungen im Euklidischen Raum. *Math. Z.*, 81:260–278, 1963.

- [36] P. M. Gruber and C. G. Lekkerkerker. *Geometry of Numbers*, 2nd Ed. North Holland, 1987.
- [37] X. Gu, Y. Wang, T. F. Chan, P. M. Thompson, and S.-T. Yau. Genus zero surface conformal mapping and its application to brain surface imaging. *IEEE Trans. Med. Imaging*, 23:949–958, 2004.
- [38] T. Hales and S. Ferguson. *The Kepler Conjecture: The Hales–Ferguson Proof*. Springer, 2011. Ed. J. C. Lagarias.
- [39] T. C. Hales. A proof of the Kepler conjecture. *Ann. Math.*, 162:1065–1185, 2005.
- [40] B. C. Hall. *Lie Groups, Lie Algebras, and Representations: An Elementary Introduction*, Second Ed. Springer, 2015.
- [41] J. K. Hunter and B. Nachtergael. *Applied Analysis*. World Scientific, 2001.
- [42] R. Karam. Why are complex numbers needed in quantum mechanics? Some answers for the introductory level. *Am. J. Phys.*, 88:39–45, 2020.
- [43] P. Kleban and D. Zagier. Crossing probabilities and modular forms. *J. Stat. Phys.*, 113:431–454, 2003.
- [44] J. Korevaar. The Wiener–Ikehara theorem by complex analysis. *Proc. Am. Math. Soc.*, 134:1107–1116, 2005.
- [45] N. N. Lebedev. *Special Functions & Their Applications*. Prentice-Hall, 1965.
- [46] B. Mazur and W. Stein. *Prime Numbers and the Riemann Hypothesis*. Cambridge University Press, 2016.
- [47] H. L. Montgomery and R. C. Vaughan. *Multiplicative Number Theory: I. Classical Theory*. Cambridge University Press, 2006.
- [48] T. Needham. *Visual Complex Analysis*. Clarendon Press, 1999.
- [49] D. J. Newman. Simple analytic proof of the prime number theorem. *Am. Math. Mon.*, 87:693–696, 1980.
- [50] D. Niebur. A formula for Ramanujan’s τ -function. *Ill. J. Math.*, 19:448–449, 1975.
- [51] B. Nienhuis. Exact critical point and critical exponents of $o(n)$ models in two dimensions. *Phys. Rev. Lett.*, 49:1062–1065, 1982.
- [52] A. Okounkov. The magic of 8 and 24. In *Proc. Int. Cong. Math.*, volume 1, 2022.
- [53] W. M. Oliva. *Geometric Mechanics*. Springer, 2002.
- [54] I. Pak. Partition bijections, a survey. *Ramanujan J.*, 12:5–75, 2006.
- [55] R. Penrose and W. Rindler. *Spinors and Space-Time, Volume 1: Two-Spinor Calculus and Relativistic Fields*. Cambridge University Press, 1987.
- [56] D. Romik. Roots of the derivative of a polynomial. *Am. Math. Mon.*, 112:66–68, 2005.
- [57] D. Romik. On the number of n -dimensional representations of $SU(3)$, the Bernoulli numbers, and the Witten zeta function. *Acta Arith.*, 180:111–159, 2017.
- [58] D. Romik. On Viazovska’s modular form inequalities. 2023. Preprint, <https://arxiv.org/abs/2303.13427>.
- [59] D. Schattschneider. The mathematical side of M. C. Escher. *Not. Am. Math. Soc.*, 57:706–718, 2010.
- [60] W. Schlag. *A Course in Complex Analysis and Riemann Surfaces*. American Mathematical Society, 2014.
- [61] J. H. Silverman. *The Arithmetic of Elliptic Curves*. Springer, 2nd edition, 2009.
- [62] J. H. Silverman and J. T. Tate. *Rational Points on Elliptic Curves*. Springer, 2nd edition, 2015.
- [63] N. Skoruppa. A quick combinatorial proof of Eisenstein series identities. *J. Number Theory*, 43:68–73, 1993.
- [64] S. Smirnov. Critical percolation in the plane: conformal invariance, Cardy’s formula, scaling limits. *C. R. Acad. Sci. Paris Sér. I Math.*, 333:239–244, 2001.
- [65] S. Smirnov and H. Duminil-Copin. The connective constant of the honeycomb lattice equals $\sqrt{2 + \sqrt{2}}$. *Ann. Math.*, 175:1653–1665, 2012.
- [66] E. M. Stein and R. Shakarchi. *Complex Analysis*. Princeton University Press, 2003.
- [67] E. M. Stein and R. Shakarchi. *Fourier Analysis: An Introduction*. Princeton University Press, 2003.
- [68] P. D. Thomas. *Conformal Projections in Geodesy and Cartography*. U.S. Government Printing Office, 1952.
- [69] H. Tverberg. A proof of the Jordan curve theorem. *Bull. Lond. Math. Soc.*, 12:34–38, 1980.
- [70] A. Vatwani. A simple proof of the Wiener–Ikehara Tauberian theorem. *Math. Stud.*, 84:127–134, 2015.
- [71] M. Viazovska. The sphere packing problem in dimension 8. *Ann. Math.*, 185:991–1015, 2017.
- [72] J. L. Walsh. History of the Riemann mapping theorem. *Am. Math. Mon.*, 80:270–276, 1973.
- [73] W. Werner. Lectures on two-dimensional critical percolation. 2007. <https://arxiv.org/abs/0710.0856>.
- [74] D. Zagier. *Values of Zeta Functions and Their Applications*, pages 497–512. Birkhäuser Basel, Basel, 1994.
- [75] G. Zukav. *The Dancing Wu Li Masters: An Overview of the New Physics*. Bantam Books, 1980.