

Alexandru Zaharescu

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PRESENT POSITION

Senior Researcher, Simion Stoilow Institute of Mathematics of the Romanian Academy,
and
Professor, Department of Mathematics, University of Illinois at Urbana-Champaign.

EDUCATION

PhD: Princeton University, 1995.
PhD: University of Bucharest, 1991.
BS: University of Bucharest, 1986.

POSITIONS HELD

2007 - present, *Professor*, University of Illinois at Urbana-Champaign.
2003 - 2007, *Associate Professor*, University of Illinois at Urbana-Champaign.
2000 - 2003, *Assistant Professor*, University of Illinois at Urbana-Champaign.
1999 - 2000, *Member*, School of Mathematics, Institute for Advanced Study, Princeton.
1998 - 1999, *Postdoctoral Fellow*, McGill University, Montreal.
1995 - 1998, *C.L.E. Moore Instructor*, Massachusetts Institute of Technology.
1988 - present, *Researcher*, Institute of Mathematics of the Romanian Academy.

RESEARCH INTERESTS

Number Theory

HONORS AND AWARDS

A.P. Sloan Foundation Doctoral Dissertation Fellowship, 1994 - 1995.
Stoilow Award of the Romanian Academy, 1997.
Elected to the 2017 Class of Fellows of the American Mathematical Society.

SOME PUBLICATIONS

- [1] A. Zaharescu, *Small values of $n^2\alpha \pmod{1}$* , Invent. Math. **121** (1995), no. 2, 379–388. MR1346212
- [2] A. Ioviță, A. Zaharescu, *Galois theory of B_{dR}^+* , Compositio Math. **117** (1999), no. 1, 1–31. MR1692991
- [3] F. P. Boca, A. Zaharescu, *Factors of type III and the distribution of prime numbers*, Proc. London Math. Soc. (3) **80** (2000), no. 1, 145–178. MR1719164
- [4] F. P. Boca, C. Cobeli, A. Zaharescu, *Distribution of lattice points visible from the origin*, Comm. Math. Phys. **213** (2000), no. 2, 433–470. MR1785463

- [5] F. P. Boca, A. Zaharescu, *Pair correlation of values of rational functions (mod p)*, Duke Math. J. **105** (2000), no. 2, 267–307. MR1793613
- [6] F. P. Boca, C. Cobeli, A. Zaharescu, *A conjecture of R. R. Hall on Farey points*, J. Reine Angew. Math. **535** (2001), 207–236. MR1837099
- [7] Z. Rudnick, P. Sarnak, A. Zaharescu, *The distribution of spacings between the fractional parts of $n^2\alpha$* , Invent. Math. **145** (2001), no. 1, 37–57. MR1839285
- [8] F. P. Boca, M. Vâjăitu, A. Zaharescu, *Integer points close to algebraic curves*, J. London Math. Soc. (2) **65** (2002), no. 1, 10–26. MR1875132
- [9] P. Sarnak, A. Zaharescu, *Some remarks on Landau-Siegel zeros*, Duke Math. J. **111** (2002), no. 3, 495–507. MR1885829
- [10] S. Ahlgren, B. C. Berndt, A. J. Yee, A. Zaharescu, *Integrals of Eisenstein series and derivatives of L -functions*, Int. Math. Res. Not. 2002, no. 32, 1723–1738. MR1916839
- [11] B. C. Berndt, A. Zaharescu, *An integral of Dedekind eta-functions in Ramanujan’s lost notebook*, J. Reine Angew. Math. **551** (2002), 33–39. MR1932172
- [12] G. E. Andrews, B. C. Berndt, J. Sohn, A. J. Yee, A. Zaharescu, *On Ramanujan’s continued fraction for $(q^2; q^3)_\infty / (q; q^3)_\infty$* , Trans. Amer. Math. Soc. **355** (2003), no. 6, 2397–2411. MR1973995
- [13] F. P. Boca, R. N. Gologan, A. Zaharescu, *The statistics of the trajectory of a certain billiard in a flat two-torus*, Comm. Math. Phys. **240** (2003), no. 1-2, 53–73. MR2004979
- [14] B. C. Berndt, A. J. Yee, A. Zaharescu, *New theorems on the parity of partition functions*, J. Reine Angew. Math. **566** (2004), 91–109. MR2039324
- [15] B. C. Berndt, A. Zaharescu, *Finite trigonometric sums and class numbers*, Math. Ann. **330** (2004), no. 3, 551–575. MR2099193
- [16] K. Ford, A. Zaharescu, *On the distribution of imaginary parts of zeros of the Riemann zeta function*, J. Reine Angew. Math. **579** (2005), 145–158. MR2124021
- [17] G. E. Andrews, B. C. Berndt, J. Sohn, A. J. Yee, A. Zaharescu, *Continued fractions with three limit points*, Adv. Math. **192** (2005), no. 2, 231–258. MR2128700
- [18] F. P. Boca, A. Zaharescu, *The correlations of Farey fractions*, J. London Math. Soc. (2) **72** (2005), no. 1, 25–39. MR2145726
- [19] F. P. Boca, A. Zaharescu, *On the correlations of directions in the Euclidean plane*, Trans. Amer. Math. Soc. **358** (2006), 1797–1825. MR2186997
- [20] B. C. Berndt, A. Zaharescu, *Weighted divisor sums and Bessel function series*, Math. Ann. **335** (2006), no. 2, 249–283. MR2221114
- [21] F. P. Boca, A. Zaharescu, *The distribution of the free path lengths in the periodic two-dimensional Lorentz gas in the small-scatterer limit*, Comm. Math. Phys. **269** (2007), no. 2, 425–471. MR2274553
- [22] E. Alkan, M. Xiong, A. Zaharescu, *Quotients of values of the Dedekind eta function*, Math. Ann. **342** (2008), no. 1, 157–176. MR2415320
- [23] M. Xiong, A. Zaharescu, *Distribution of Selmer groups of quadratic twists of a family of elliptic curves*, Adv. Math. **219** (2008), no. 2, 523–553. MR2435648
- [24] E. Alkan, M. Xiong, A. Zaharescu, *A bias phenomenon on the behavior of Dedekind sums*, Math. Res. Lett. **15** (2008), no. 5, 1039–1052. MR2444000
- [25] M. Xiong, A. Zaharescu, *Selmer groups and Tate-Shafarevich groups for the congruent number problem*, Comment. Math. Helv. **84** (2009), no. 1, 21–56. MR2466074
- [26] E. Alkan, K. Ford, A. Zaharescu, *Diophantine approximation with arithmetic functions, I*, Trans. Amer. Math. Soc. **361** (2009), no. 5, 2263–2275. MR2471917
- [27] K. Ford, K. Soundararajan, A. Zaharescu, *On the distribution of imaginary parts of zeros of the Riemann zeta function, II*, Math. Ann. **343** (2009), no. 3, 487–505. MR2480701

- [28] F. Stan, A. Zaharescu, *Siegel's trace problem and character values of finite groups*, J. Reine Angew. Math. **637** (2009), 217–234. MR2599088
- [29] E. Alkan, M. Xiong, A. Zaharescu, *Pair correlation of sums of rationals with bounded height*, J. Reine Angew. Math. **641** (2010), 21–67. MR2643924
- [30] K. H. Mak, A. Zaharescu, *The distribution of values of short hybrid exponential sums on curves over finite fields*, Math. Res. Lett. **18** (2011), no. 1, 155–174. MR2756007
- [31] B. C. Berndt, S. Kim, A. Zaharescu, *Weighted divisor sums and Bessel function series, II*, Adv. Math. **229** (2012), no. 3, 2055–2097. MR2871168
- [32] M. Xiong, A. Zaharescu, *Statistics of the Jacobians of hyperelliptic curves over finite fields*, Math. Res. Lett. **19** (2012), no. 2, 255–272. MR2955760
- [33] B. C. Berndt, S. Kim, A. Zaharescu, *Circle and divisor problems, and double series of Bessel functions*, Adv. Math. **236** (2013), 24–59. MR3019715
- [34] B. C. Berndt, S. Kim, A. Zaharescu, *Diophantine approximation of the exponential function and Sondow's Conjecture*, Adv. Math. **248** (2013), 1298–1331. MR3107541
- [35] B. C. Berndt, S. Kim, A. Zaharescu, *Dirichlet L -Functions, elliptic curves, hypergeometric functions, and rational approximation with partial sums of power series*, Math. Res. Lett. **20** (2013), no. 3, 429–448. MR3162837
- [36] B. C. Berndt, S. Kim, A. Zaharescu, *Weighted divisor sums and Bessel function series, III*, J. Reine Angew. Math. **683** (2013), 67–96. MR3181548
- [37] F. P. Boca, V. Pasol, A. A. Popa, A. Zaharescu, *Pair correlation of angles between reciprocal geodesics on the modular surface*, Algebra Number Theory **8** (2014), no. 4, 999–1035. MR3248992
- [38] K. Ford, A. Zaharescu, *Unnormalized differences between zeros of L -functions*, Compos. Math. **151** (2015), no. 2, 230–252. MR3314825
- [39] F. Stan, A. Zaharescu, *Weil numbers in finite extensions of $\mathbb{Q}^{ab}$: the Loxton-Kedlaya phenomenon*. With an appendix by Kiran S. Kedlaya. Trans. Amer. Math. Soc. **367** (2015), no. 6, 4359–4376. MR3324931
- [40] J. S. Athreya, C. Cobeli, A. Zaharescu, *Radial Density in Apollonian Packings*, Int. Math. Res. Not. IMRN. **2015**, no. 20, 9991–10011. MR3455855
- [41] B. C. Berndt, A. Dixit, A. Roy, A. Zaharescu, *New Pathways and Connections in Analysis and Analytic Number Theory Motivated by Two Incorrect Claims of Ramanujan*, Adv. Math. **304** (2017), 809–929.