

Curriculum Vitae

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Education

- 1994 Ph.D in Mathematics, University of Illinois at Urbana-Champaign.
- 1990 B.S. Mathematics and Computer Science, California State University, Chico.

Employment since Ph.D.

- 2009–10 Member, Institute For Advanced Study, Princeton, NJ.
- 2001– University of Illinois at Urbana-Champaign
- 1998–2001 University of South Carolina at Columbia.
- 1995–1998 R.H. Bing Instructor, University of Texas at Austin.
- 1994–1995 Member, Institute For Advanced Study, Princeton, NJ.

Selected Professional Activities

- 2006–2015 Co-organizer for Illinois Number Theory conferences in 2007, 2009, 2014, 2015, held at the University of Illinois; and a special session at the regional AMS meeting, 2009.
- 2010 NSF grant panel.
- 2009– Board of Directors, Number Theory Foundation.
- 2006 Wrote page commentaries for the *Selecta* of Andrzej Schinzel (EMS publishers, 2007).
- 2000–2005 Collaborating editor, Problem section of the American Mathematical Monthly.

Graduate Students Supervised (year of graduation)

- George Shakan, current graduate student.
- Kyle Pratt, current graduate student.
- Xianchang Meng, current graduate student.
- 2013 Joseph Vandehey, Ph.D. (co-advised with Florin Boca)
- 2010 Jason Sneed, Ph.D.
- 2010 Dimitrios Koukoulopoulos, Ph.D.
- 2010 Sun Kim, Ph.D. (co-advised with Bruce Berndt)
- 2007 Yong Hu, Ph.D.
- 1999 John Riggott, M.S. in Mathematics

Postdocs mentored/co-mentored

- Emre Alkan (2003–06)
- Paul Pollack (2008–11),
- Youness Lamzouri (2010–12)
- Xiannan Li (2011–13)

Grants

- 2000–18 Supported by individual National Science Foundation Grants; most recent DMS-1501982; \$360,000.
- 2007,14. Conference grants. 2007 (NSA, NSF. Co-PIs B. Berndt, H. Diamond, M. Filaseta), 2014 (NSF, Co-PI B. Berndt).

RESEARCH

Research papers

1. K. Ford, *Some infinite series identities*, Proc. Amer. Math. Soc. **119** no. 3 (1993), 1019–1020.
2. K. Ford, *The representation of numbers as sums of unlike powers*, J. London Math. Soc. (2) **51** (1995), 14–26.
3. K. Ford, *The representation of numbers as sums of unlike powers, II*, J. Amer. Math. Soc. **9** (1996), 919–940. *Addendum and Corrigendum*, J. Amer. Math. Soc. **12** (1999), 1213.
4. K. Ford, *New estimates for mean values of Weyl sums*, Intern. Math. Res. Notices **1995**, 155–171.
5. K. Ford, *Sums and products from a finite set of real numbers*, Ramanujan J. **2**, no. 1–2 (1998), 59–66.
6. K. Ford, *The distribution of totients*, Paul Erdős (1913–1996), Ramanujan J. **2**, no. 1–2 (1998), 67–151.
7. K. Ford and S. Konyagin, *On two conjectures of Sierpiński concerning the arithmetic functions σ and ϕ* , Number Theory in Progress, Vol. 2 (Zakopane, Poland, July 1997), Walter de Gruyter, Berlin, 1999, 795–803.
8. K. Ford, S. Konyagin and C. Pomerance, *Residue classes free of values of Euler’s function*, Number Theory in Progress, Vol. 2 (Zakopane, Poland, July 1997), Walter de Gruyter, Berlin, 1999, 805–812.
9. K. Ford, *The normal behavior of the Smarandache function*, Smarandache Notions J. **10**, no. 1–2–3 (1999), 81–86.
10. K. Ford, *The number of solutions of $\phi(x) = m$* , Annals of Math. **150** (1999), 283–311.
11. K. Ford and H. Halberstam, *The Brun-Hooley sieve*, J. Number Theory **81** (2000), 335–350.
12. K. Ford, *Waring’s problem with polynomial summands*, J. London Math. Soc. (2) **61** (2000), 671–680.
13. M. Filaseta, K. Ford and S. Konyagin, *On an irreducibility theorem of A. Schinzel associated with coverings of the integers*, Illinois J. of Math. **44** (2000), 633–643.
14. C. Bays, K. Ford, R. H. Hudson and M. Rubinstein, *Zeros of Dirichlet L-functions near the real axis and Chebyshev’s bias*, J. Number Theory **87** (2001), 54–76.
15. K. Ford, *An explicit sieve bound and small values of $\sigma(\phi(m))$* , Periodica Mathematica Hungarica **43** (1–2), (2001), 15–29.
16. K. Ford and R. H. Hudson, *Sign changes in $\pi_{q,a}(x) - \pi_{q,b}(x)$* , Acta Arith. **100** (2001), 297–314.
17. K. Ford, S. Konyagin, *The prime number race and zeros of L-functions off the critical line*, Duke Math. J. **113** (2002), 313–330.
18. K. Ford, *Vinogradov’s integral and bounds for the Riemann zeta function*, Proc. London Math. Soc. (3) **85** (2002), 565–633.
19. K. Ford, *Zero-free regions for the Riemann zeta function*, Number Theory for the Millennium (M. A. Bennett, et al, eds.), vol II, A. K. Peters, 2002, 25–56.
20. K. Ford, *Maximal collections of intersecting arithmetic progressions*, Combinatorica **23** (2) (2003), 263–281.
21. C. Cobeli, K. Ford and A. Zaharescu, *The jumping champions of the Farey series*, Acta Arith. **110** (2003), 259–274.
22. K. Ford, S. Konyagin, *The prime number race and zeros of Dirichlet L-functions off the critical line, II*, Proceedings of the session in analytic number theory and Diophantine equations (Bonn, 2002), (D. R. Heath-Brown, B. Z. Moroz, editors), Bonner Mathematische Schriften, Nr. 360, 2003, 40 pages.
23. K. Ford, *On a strong form of a problem of R. L. Graham*, Canadian Math. Bull. **47** (3), (2004), 358–368.
24. K. Ford, *On Bombieri’s asymptotic sieve*, Trans. Amer. Math. Soc. **357** (2005), 1663–1674.
25. K. Ford, A. Zaharescu, *On the distribution of imaginary parts of the zeros of the Riemann zeta function*, J. reine angew. Math. **579** (2005), 145–158.
26. K. Ford and S. Konyagin, *Cycling via common divisors; Solution of Problem 11019(b)*, Amer. Math. Monthly **112** (2005), 277–278.
27. K. Ford, M. R. Khan, I. E. Shparlinski and C. L. Yankov, *On the maximal difference between an element and its inverse in residue rings*, Proc. Amer. Math. Soc. **133** (2005), 3463–3468.

28. W. D. Banks, K. Ford, F. Luca, F. Pappalardi and I. E. Shparlinski, *Values of the Euler function in various sequences*, Monatshefte Math. **146** (2005), 1–19.
29. M. Filaseta, K. Ford, S. Konyagin, C. Pomerance and G. Yu, *Sieving by large integers and covering systems of congruences*, J. Amer. Math. Soc. **20** (2007), 495–517.
30. K. Ford, *Generalized Smirnov statistics and the distribution of prime factors*, Funct. Approx. Comm. Math. **37** (2007), 119–129.
31. K. Ford and G. Tenenbaum, *The distribution of integers with at least two divisors in a short interval*, Quart. J. Math. Oxford **58** (2007), 187–201.
32. K. Ford and G. Tenenbaum, *Localized large sums of random variables*, Stat. Prob. Letters **78** (2008), 84–89.
33. K. Ford, *Sharp Probability estimates for generalized Smirnov statistics*, Monats. Math. **153** (2008), 205–216. Special volume in honor of the memory of Walter Philipp.
34. K. Ford, *The distribution of integers with a divisor in a given interval*, Annals of Math. (2) **168** (2008), 367–433.
35. K. Ford and I. E. Shparlinski, *On curves over finite fields with Jacobians of small exponent*, Int. J. Number Theory **4** (2008), 819–826.
36. K. Ford, *Integers with a divisor in $(y, 2y]$* , Anatomy of Integers (Jean-Marie De Koninck, Andrew Granville, and Florian Luca, eds), CRM Proceedings and Lecture Notes **46**, American Mathematical Society, Providence, RI, 2008, 65–80.
37. H. G. Diamond and K. Ford, *Generalized Euler constants*, Math. Proc. Cambridge Phil. Soc. **145** (2008), 27–41.
38. K. Ford and Y. Hu, *Divisors of the Euler and Carmichael functions*, Acta Arith. **133** (2008), 199–208.
39. E. Alkan, K. Ford and A. Zaharescu, *Diophantine approximation with arithmetic functions*, Trans. Amer. Math. Soc. **361** (2009), 2263–2275.
40. K. Ford, K. Soundararajan and A. Zaharescu, *On the distribution of imaginary parts of zeros of the Riemann zeta function, II*, Math. Annalen **343** (2009), 487–505.
41. K. Ford, *Sharp Probability estimates for random walks with barriers*, Prob. Th. Rel. Fields **145** (2009), 269–283.
42. K. Ford, F. Luca and I. E. Shparlinski, *On the largest prime factor of the Mersenne numbers*, Bull. Austr. Math. Soc. **79** (2009), 455–463.
43. E. Alkan, K. Ford and A. Zaharescu, *Diophantine approximation with arithmetic functions, II*, Bull. London Math. Soc. **41** (2009), 676–682.
44. J. Bourgain, K. Ford, S. V. Konyagin and I. E. Shparlinski, *On the divisibility of Fermat quotients*, Michigan Math. J. **59** (2010), 313–328.
45. K. Ford, S. V. Konyagin and F. Luca, *Prime chains and Pratt trees*, Geom. Funct. Anal. **20** (2010), 1231–1258.
46. K. Ford, F. Luca and C. Pomerance, *Common values of the arithmetic functions ϕ and σ* , Bull. London Math. Soc. **42** (2010), 478–488.
47. K. Ford, M. Khan and I. E. Shparlinski, *Geometric Properties of Points on Modular Hyperbolas*, Proc. Amer. Math. Soc. **138** (2010), 4177–4185.
48. K. Ford and J. P. Sneed, *Chebyshev’s bias for products of two primes*, Experim. Math. **19** (2010), 385–398.
49. K. Ford and F. Luca, *The number of solutions of $\lambda(x) = n$* , INTEGERS (Proc. conference honoring Mel Nathanson and Carl Pomerance), **11A** (2011), Article 9, 8 pages.
50. J. Bourgain, S. J. Dilworth, K. Ford, S. Konyagin and D. Kutzarova, *Explicit construction of RIP matrices and related problems*, Duke Math. J. **159** (2011), 145–185.
51. J. Bourgain, S. J. Dilworth, K. Ford, S. Konyagin and D. Kutzarova, *Breaking the k^2 barrier for explicit RIP matrices*, STOC (ACM Symposium on the Theory Of Computing) (2011), 637–644.
52. K. Ford and P. Pollack, *On common values of $\phi(n)$ and $\sigma(m)$, I.*, Acta Math. Hungarica **133** (2011), 251–271.
53. K. Ford and P. Pollack, *On common values of $\phi(n)$ and $\sigma(m)$, II.*, Algebra and Number Theory **6** (2012), no. 8, 1669–1696.

54. K. Ford, S. Konyagin and F. Luca, *On groups with perfect order subsets*, Moscow J. Comb. Number Th. **2** (2012), no. 4, 297–312.
55. Y. Buttkevicz, C. Elsholtz, K. Ford and J.-C. Schlage-Puchta, *A problem of Ramanujan, Erdős and Katai on the iterated divisor function*, International Mathematical Research Notices **2012** (2012), 4051–4061.
56. L. Addario-Berry and K. Ford, *Poisson-Dirichlet branching random walks*, Ann. Appl. Prob. **23**, (1) (2013), 283–307.
57. R. de la Bretèche, K. Ford, and J. Vandehey, *On non-intersecting arithmetic progressions*, Acta Arith. **157** (2013), 381–392.
58. K. Ford, S. Konyagin and Y. Lamzouri, *The prime number races and zeros of Dirichlet L-functions off the critical line. III.*, Quart. J. Math. Oxford **64** (2013), 1091–1098.
59. K. Broughan, K. Ford and Florian Luca, *On square values of the product of the Euler totient and sum of divisors functions*, Colloq. Math. **130** (2013), 127–137.
60. K. Ford, Florian Luca and Pieter Moree, *Values of the Euler ϕ -function not divisible by a given odd prime, and the distribution of Euler-Kronecker constants for cyclotomic fields*, Math. Comp. **83** (2014), no. 287, 1447–1476.
61. K. Ford, *Sieving very thin sets of primes, and Pratt trees with missing primes*, International Mathematical Research Notices **2014** (2014), 2955–2971.
62. K. Ford and T. D. Wooley, *On Vinogradov’s mean value theorem: strongly diagonal behaviour via efficient congruencing*, Acta Mathematica **213** (2014), 199–236.
63. K. Ford, F. Luca and C. Pomerance, *The image of Carmichael’s λ -function*, Algebra and Number Theory **8** (2014), 2009–2025.
64. K. Ford and A. Zaharescu, *Unnormalized differences between zeros of L-functions*, Compositio Math. **151** (2015), 230–252.
65. K. Ford, B. Green, S. Konyagin and T. Tao, *Large gaps between consecutive prime numbers*, Annals of Math., to appear in 2016, 32 pages.
66. K. Ford, D. R. Heath–Brown and S. Konyagin, *Large gaps between consecutive prime numbers containing perfect powers*, in the book Analytic Number Theory, in honor of Helmut Maier’s 60th birthday, C. Pomerance and M.Th. Rassias (eds.), 2015, Springer-Verlag. 83–92.
67. K. Ford, F. Luca, C. Pomerance and J. Shallit, *On the parity of the number of small divisors of n* , in the book Analytic Number Theory, in honor of Helmut Maier’s 60th birthday, C. Pomerance and M.Th. Rassias (eds.), 2015, Springer-Verlag, 93–100.
68. K. Ford, B. Green, S. Konyagin, J. Maynard and T. Tao, *Long gaps between consecutive prime numbers*, preprint, 39 pages. arXiv: 1412.5029.
69. S. Eberhard, K. Ford, and B. Green, *Permutations fixing a k -set*, IMRN, to appear. 16 pages.
70. S. Eberhard, K. Ford and B. Green, *Invariable generation of the symmetric group*, preprint. 13 pages.
71. K. Ford, J. Maynard and T. Tao, *Chains of large gaps between primes*, preprint. 16 pages.
72. K. Ford, X. Meng and A. Zaharescu, *Simultaneous distributions of fractional parts of Riemann zeta zeros*, preprint, 15 pages.
73. K. Ford, M. Z. Garaev and S. V. Konyagin, *On the smallest simultaneous power nonresidue modulo a prime*, preprint, 15 pages.
74. K. Ford, *Integers divisible by a large shifted prime*, preprint, 14 pages.

Honors: Papers # 6, 10 and 18 above were honored with Featured Reviews in Mathematical Reviews: MR1642874 (99m:11106), MR1715326 (2001e:11099), MR1936814 (2003j:11089).

Expository/Survey/Announcement papers

1. K. Ford, *The distribution of totients*, Elec. Res. Ann. Amer. Math. Soc., **4** (1998), 27–34.
2. K. Ford, S. Konyagin, *Chebyshev’s conjecture and the prime number race*, in “Modern Problems of Number Theory and its Applications; Topical Problems Part II” (Tula, Russia, 2001) (2002), 67–91.
3. K. Ford, *Recent progress on the estimation of Weyl sums*, in “Modern Problems of Number Theory and its Applications; Topical Problems Part II” (Tula, Russia, 2001). (2002), 48–66.

4. K. Ford, *From Kolmogorov's theorem on empirical distribution to number theory*, appeared in the book "Kolmogorov's legacy in mathematics", eds. E. Charpentier et al., Editions Belin (Paris), 2004, 111-120. The printed version is in French. An English edition, published in 2007 by Springer, includes an updated version of the paper.

Other scholarly work

1. Wrote page commentaries for one section of the *Selecta* of Andrzej Schinzel, European Mathematical Society, 2007.