Curriculum Vitae

Andrej Zlatoš

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Employment

2016 – present	Professor, University of California San Diego
2014 – 2016	Professor, University of Wisconsin–Madison
2011 – 2014	Associate Professor, University of Wisconsin–Madison
2010 – 2011	Assistant Professor, University of Wisconsin–Madison
2006 – 2010	Assistant Professor, University of Chicago
2003 – 2006	Van Vleck Visiting Assistant Professor, University of Wisconsin–Madison

Education

1999 – 2003	California Institute of Technology, Ph.D. in Mathematics
1994 – 1999	Comenius University Bratislava, M.S. in Mathematics

Awards

2021	Simons Fellowship
2013 and 2015	University Housing Honored Instructor, UW–Madison
2008	Alfred P. Sloan Research Fellowship
2003	Johnson Graduate Dissertation Prize, Caltech
2002	Johnson Prize for Excellence in Graduate Research and Teaching, Caltech
1999	Grand Prix, Top graduate of Comenius University
1996 and 1998	Academic Prize of the Rector of Comenius University

Grants

2024 – 2027	NSF grant DMS-2407615
2019 – 2024	NSF grant DMS-1900943
2016 – 2020	NSF grant DMS-1652284
2012 – 2016	NSF RTG grant DMS-1147523 (co-PI)
2012 – 2015	NSF FRG grant DMS-1159133 (co-PI)
2011 – 2018	NSF CAREER grant DMS-1056327
2009 – 2014	NSF grant DMS-0901363
2006 – 2009	NSF grant DMS-0632442

Research Interests

Fluid dynamics, active scalars, reaction-diffusion equations, homogenization, chemotaxis, mixing, drift-diffusion equations

Selected Service Activities

- Editor of Nonlinearity (2022–present)
- Editor of Differential and Integral Equations (2020–present)
- Editor of the SIAM Journal on Mathematical Analysis (2015–present)
- Editor of a special volume of the Journal of Approximation Theory (2004–2006)
- Panelist for the US National Science Foundation (multiple times) and Simons Foundation
- Referee for many mathematics journals
- Organizer of several Analysis and PDE conferences, workshops, and seminars
- Organizer of and instructor in four REU Programs
- Co-creator of Masters Degree program "Foundations of Advanced Studies" at UW–Madison, attended annually by approx. 50 full-tuition-paying students

Junior Researchers Mentored

Postdoctoral Fellows

Yuming Paul Zhang	2019–2022, then Assist. Prof. at Auburn University
Jessica Lin	2014–2017, then Assist. Prof. at McGill University
Yao Yao	2012–2015 (joint with A. Kiselev), then Assist. Prof. at Georgia Tech

Graduate Students

Junekey Jeon	Ph.D. 2025, then postdoc at Duke University
Zonglin Han	Ph.D. 2023, then quantitative analyst at SWIB
Tau Shean Lim	Ph.D. 2017, then postdoc at Duke University
Xiaoqian Xu	Ph.D. 2016 (joint with A. Kiselev), then postdoc at Carnegie Mellon

Undergraduate Research Mentees

Fred Rajasekaran	B.S. 2023, then Ph.D. student at Stanford University
Kin Yau James Wong	B.S. 2022, then Ph.D. student at University of North Carolina
Amir Alwan	B.S. 2017, then Ph.D. student at University of Chicago
Zonglin Han	B.S. 2017, then Ph.D. student at UC San Diego
Zijian Tao	B.S. 2016, then Ph.D. student at Caltech
Cole Graham	B.S. 2015, then Ph.D. student at Stanford University
Andrew Ma	B.S. 2015, then Ph.D. student at University of Texas
David Weber	B.S. 2014, then Ph.D. student at UC Davis
Tianyu Tao	B.S. 2014, then Ph.D. student at University of Minnesota
Beite Zhu	B.S. 2014, then Ph.D. student at Stanford University
Benjamin Seeger	B.S. 2013, then Ph.D. student at University of Chicago
John Brauer	B.S. 2013, then Ph.D. student at UW–Madison
Jeffrey Allen	B.S. 2012, then M.S. student at UW–Milwaukee
Debby Unger	B.S. 2012, then IT professional at Epic Corporation

Publications and Preprints (available from www.math.ucsd.edu/~zlatos)

67. J. Jeon and A. Zlatoš, *Well-posedness for low regularity solutions to the g-SQG equation with regular level sets*, preprint.

66. J. Jeon and A. Zlatoš, *Well-posedness and finite time singularity for touching g-SQG patches on the plane*, preprint.

65. A. Zlatoš, *The 2D Muskat problem II: Stable regime small data singularity on the half-plane*, preprint.

64. A. Zlatoš, *The 2D Muskat problem I: Local regularity on the half-plane, plane, and strips*, Ann. PDE, to appear.

63. A. Zlatoš, *Maximal double-exponential growth for the Euler equation on the half-plane*, Invent. Math., to appear.

62. A. Zlatoš, *Local regularity and finite time singularity for the generalized SQG equation on the half-plane*, Duke Math. J., to appear.

61. A. Zlatoš, *Virtual linearity for KPP reaction-diffusion equations*, Adv. Math. **458** (2024), Article 109948, 17pp.

60. Y.P. Zhang and A. Zlatoš, *Quantitative homogenization for combustion in random media*, Ann. Inst. H. Poincaré Anal. Non Linéaire **41** (2024), 853–876.

59. J. Jeon and A. Zlatoš, *An improved regularity criterion and absence of splash-like singularities for g-SQG patches*, Anal. PDE **17** (2024), 1005–1018.

58. Z. Han and A. Zlatoš, *Uniqueness of positive vorticity solutions to the 2D Euler equations on singular domains*, Arch. Ration. Mech. Anal. **247** (2023), Article 84, 22pp.

57. Y.P. Zhang and A. Zlatoš, *Homogenization for space-time-dependent KPP reaction-diffusion equations and G-equations*, Calc. Var. Partial Differential Equations **62** (2023), Article 248, 22pp.

56. Y.P. Zhang and A. Zlatoš, *Optimal estimates on the propagation of reactions with fractional diffusion*, Arch. Ration. Mech. Anal. **247** (2023), Article 93, 33pp.

55. Y.P. Zhang and A. Zlatoš, *Subadditive theorems in time-dependent environments*, Electron. J. Probab. **28** (2023), 1–23.

54. A. Zlatoš, *Homogenization for time-periodic KPP reactions*, Nonlinearity **36** (2023), 1918–1927.

53. L.-T. Cheng, F. Rajasekaran, K.Y.J. Wong, and A. Zlatoš, *Numerical evidence of exponential mixing by alternating shear flows*, Comm. Math. Sci. **21** (2023), 529–541.

52. S. He, E. Tadmor, and A. Zlatoš, *On the fast spreading scenario*, Comm. Amer. Math. Soc. **2** (2022), 149–171.

51. Y.P. Zhang and A. Zlatoš, *Long time dynamics for combustion in random media*, Arch. Ration. Mech. Anal. **243** (2022), 33–94.

50. Z. Han and A. Zlatoš, *Euler equations on general planar domains*, Ann. PDE **7** (2021), Article 20, 31pp.

49. G. Iyer, X. Xu, and A. Zlatoš, *Convection-induced singularity suppression in the Keller-Segel and other non-linear PDEs*, Trans. Amer. Math. Soc. **374** (2021), 6039–6058.

48. T. Elgindi and A. Zlatoš, *Universal mixers in all dimensions*, Adv. Math. **356** (2019), 106807, 33pp.

47. C. Lacave and A. Zlatoš, *The Euler equations in planar domains with corners*, Arch. Ration. Mech. Anal. **234** (2019), 57–79.

46. J. Lin and A. Zlatoš, *Stochastic homogenization for reaction-diffusion equations*, Arch. Ration. Mech. Anal. **232** (2019), 813–871.

45. A. Alwan, Z. Han, J. Lin, Z. Tao, and A. Zlatoš, *Multidimensional transition fronts for Fisher-KPP reactions*, Nonlinearity **32** (2019), 927–941.

44. A. Zlatoš, *On the rate of merging of vorticity level sets for the 2D Euler equations*, J. Nonlinear Sci. **28** (2018), 2329–2341.

43. D. Córdoba, J. Gómez-Serrano, and A. Zlatoš, *A note on stability shifting for the Muskat problem II: From stable to unstable and back to stable*, Anal. PDE **10** (2017), 367–378.

42. A. Kiselev, Y. Yao, and A. Zlatoš, *Local regularity for the modified SQG patch equation*, Comm. Pure Appl. Math. **70** (2017), 1253–1315.

41. Y. Yao and A. Zlatoš, *Mixing and un-mixing by incompressible flows*, J. Eur. Math. Soc. **19** (2017), 1911–1948.

40. A. Zlatoš, *Propagation of reaction in inhomogeneous media*, Comm. Pure Appl. Math. **70** (2017), 884–949.

39. A. Zlatoš, *Existence and non-existence of transition fronts for bistable and ignition reactions*, Ann. Inst. H. Poincaré Anal. Non Linéaire **34** (2017), 1687–1705.

38. A. Kiselev, L. Ryzhik, Y. Yao, and A. Zlatoš, *Finite time singularity for the modified SQG patch equation*, Ann. of Math. (2) **184** (2016), 909–948.

37. J. Xin, Y. Yu, and A. Zlatoš, *Periodic orbits of the ABC flow with $A = B = C = 1$*, SIAM J. Math. Anal. **48** (2016), 4087–4093.

36. T. McMillen, J. Xin, Y. Yu, and A. Zlatoš, *Ballistic orbits and front speed enhancement for ABC flows*, SIAM J. Appl. Dyn. Syst. **15** (2016), 1753–1782.

35. T.S. Lim and A. Zlatoš, *Transition fronts for inhomogeneous Fisher-KPP reactions and non-local diffusion*, Trans. Amer. Math. Soc. **368** (2016), 8615–8631.

34. A. Kiselev and A. Zlatoš, *Blow up for the 2D Euler equation on some bounded domains*, J. Differential Equations **259** (2015), 3490–3494.

33. A. Zlatoš, *Exponential growth of the vorticity gradient for the Euler equation on the torus*, Adv. Math **268** (2015), 396–403.

32. D. Córdoba, J. Gómez-Serrano, and A. Zlatoš, *A note on stability shifting for the Muskat problem*, Philos. Trans. A **373** (2015), 20140278.

31. T. Tao, B. Zhu, and A. Zlatoš, *Transition fronts for inhomogeneous monostable reaction-diffusion equations via linearization at zero*, Nonlinearity **27** (2014), 2409–2416.

30. L. Silvestre, V. Vicol, and A. Zlatoš, *On the loss of continuity for super-critical drift-diffusion equations*, Arch. Ration. Mech. Anal. **207** (2013), 845–877.

29. F. Hamel and A. Zlatoš, *The Harnack inequality for a class of degenerate elliptic operators*, Int. Math. Res. Notices **2013**, 3732–3743.

28. F. Hamel and A. Zlatoš, *Speed-up of combustion fronts in shear flows*, Math. Ann. **356** (2013), 845–867.

27. A. Zlatoš, *Generalized traveling waves in disordered media: Existence, uniqueness, and stability*, Arch. Ration. Mech. Anal. **208** (2013), 447–480.

26. A. Zlatoš, *Transition fronts in inhomogeneous Fisher-KPP reaction-diffusion equations*, J. Math. Pures Appl. **98** (2012), 89–102.

25. J. Nolen, J.-M. Roquejoffre, L. Ryzhik, and A. Zlatoš, *Existence and non-existence of Fisher-KPP transition fronts*, Arch. Ration. Mech. Anal. **203** (2012), 217–246.

24. G. Seregin, V. Šverák, L. Silvestre, and A. Zlatoš, *On divergence-free drifts*, J. Differential Equations **252** (2012), 505–540.

23. A. Zlatoš, *Reaction-diffusion front speed enhancement by flows*, Ann. Inst. H. Poincaré Anal. Non Linéaire **28** (2011), 711–726.

22. G. Iyer, A. Novikov, L. Ryzhik, and A. Zlatoš, *Exit times of diffusions with incompressible drifts*, SIAM J. Math. Anal. **42** (2010), 2484–2498.

21. P. Constantin and A. Zlatoš, *On the high intensity limit of interacting corpora*, Comm. Math. Sci. **8** (2010), 173–186.

20. A. Zlatoš, *Diffusion in fluid flow: Dissipation enhancement by flows in 2D*, Comm. Partial Differential Equations **35** (2010), 496–534.

19. A. Zlatoš, *Sharp asymptotics for KPP pulsating front speed-up and diffusion enhancement by flows*, Arch. Ration. Mech. Anal. **195** (2010), 441–453.

18. A. Kiselev, R. Shterenberg, and A. Zlatoš, *Relaxation enhancement by time-periodic flows*, Indiana Univ. Math. J. **57** (2008), 2137–2152.

17. P. Constantin, A. Kiselev, L. Ryzhik, and A. Zlatoš, *Diffusion and mixing in fluid flow*, Ann. of Math. (2) **168** (2008), 643–674.

16. A. Zlatoš, *Pulsating front speed-up and quenching of reaction by fast advection*, Nonlinearity **20** (2007), 2907–2921.

15. L. Ryzhik and A. Zlatoš, *KPP pulsating front speed-up by flows*, Comm. Math. Sci. **5** (2007), 575–593.

14. L. Golinskii and A. Zlatoš, *Coefficients of orthogonal polynomials on the unit circle and higher order Szegő theorems*, Constr. Approx. **26** (2007), 361–382.

13. A. Zlatoš, *Sharp transition between extinction and propagation of reaction*, J. Amer. Math. Soc. **19** (2006), 251–263.

12. A. Kiselev and A. Zlatoš, *Quenching of combustion by shear flows*, Duke Math. J. **132** (2006), 49–72.

11. A. Kiselev and A. Zlatoš, *On discrete models of the Euler equation*, Int. Math. Res. Notices **2005**, 2315–2339.

10. A. Zlatoš, *Quenching and propagation of combustion without ignition temperature cutoff*, Nonlinearity **18** (2005), 1463–1475.

9. A. Zlatoš, *Sum rules for Jacobi matrices and divergent Lieb-Thirring sums*, J. Funct. Anal. **225** (2005), 371–382.

8. B. Simon and A. Zlatoš, *Higher order Szegő theorems with two singular points*, J. Approx. Theory. **134** (2005), 114–129.

7. A. Zlatoš, *Sparse potentials with fractional Hausdorff dimension*, J. Funct. Anal. **207** (2004), 216–252.

6. B. Simon and A. Zlatoš, *Sum rules and the Szegö condition for orthogonal polynomials on the real line*, Comm. Math. Phys. **242** (2003), 393–423.

5. A. Zlatoš, *The Szegö condition for Coulomb Jacobi matrices*, J. Approx. Theory **121** (2003), 119–142.

4. R. Nedela, M. Škoviera, and A. Zlatoš, *Note on regular embeddings of complete bipartite graphs*, Discrete Math. **258** (2002), 379–381.

3. R. Nedela, M. Škoviera, and A. Zlatoš, *Bipartite maps, Petrie duality and exponent groups*, Atti Sem. Mat. Fis. Univ. Modena **49** (2001), 109–133.

2. A. Zlatoš, *The diameter of lifted digraphs*, Australas. J. Combin. **19** (1999), 73–82.

1. A. Zlatoš, *Construction of regular maps with multiple edges*, International Scientific Conference on Mathematics Proceedings, 155–160, Univ. Žilina, Žilina, 1998.