YAN GUO

1. POSITION: Professor and Chair (17-20), Div. of Applied Math., Brown.

2. HOME ADDRESS: 55 Sheep Farm Drive, East Greenwich, RI 02818.

3. EDUCATION: B.S., Peking University, 1987;
Ph.D in Mathematics (Advisor: W. Strauss), Brown, 1993;
Thesis: *Boundary value problems of the Vlasov-Maxwell system*

4. APPOINTMENTS: Brown, Professor, July 2004-present,
Brown University, Associate Professor, July, 1999 - July, 2004,
Visiting Professor, ENS de Cachan, August, 1998.
Brown University, Assistant Professor, 1995 - 1998
Princeton University, Assistant Professor, 1996 - 1997,
Visiting Professor, Ecole Polyetechnique, June, 1996,
Instructor (Mentor: C. S. Morewetz), Courant Institute, 1993 - 1995.

5. COMPLETED PUBLICATIONS

5a. 1. Editor of 'Nonlinear Wave Equations,' Volume 263, Contemporary Mathematics. 2000, AMS.

2. Editor of 'Nonlinear Wave Equations,' Quart. Appl. Math., Volume 68, 1 (2010).

3. Caffarelli, Luis A.; Golse, François; Guo, Yan; Kenig, Carlos E.; Vasseur, Alexis: *Nonlinear partial differential equations.* Advanced Courses in Mathematics. CRM Barcelona. Birkhäuser/Springer Basel AG, Basel, 2012.

5c. REFEREED JOURNAL ARTICLES

1. *Global weak solutions of the Vlasov-Maxwell system with boundary conditions*, Commun. Math. Phys. 174, 245-263, (1993).

2. *Regularity of the Vlasov equations in a half space,* Indiana U. Math. J. 43, 255-320, (1994).

3. *Singular solutions of the 1-D Vlasov-Maxwell system with boundary conditions*, Arch. Rat. Mech. Anal. 3, 171, 241-304 (1995).

4. *Global finite energy solutions of the Maxwell-Shrodinger system* (with K. Nakamitsu and W. Strauss), Commun. Math. Phys. 1, 170, 181-196 (1995).

5. *Nonlinear instability of double-humped equilibria* (with W. Strauss), Ann. I. H. P., Analysis Nonlineare. 3, 12, 339-352 (1995).

6. *Instabilities of periodic BGK equilibria* (with W. Strauss), Comm. Pure Appl. Math. Vol XLVIII, 861-894 (1995)

7. *Instability of symmetric vortices with large charge and coupling constant*, Comm. Pure Appl. Math, Vol. XLIX, 1051-1080 (1996).

8. *Steady states in collisionless plasmas* (with C. Ragazzo), Comm. Pure Appl. Math, Vol. XLIX, 1145-1174 (1996).

9. *Stable magnetic equilibria in collisionless plasmas*, Comm. Pure Appl. Math., Vol. L, 821-863 (1997).

10. *A remark on instability of the symmetric vortices with large coupling constant* (with L. Almeida and F. Bethuel), Comm. Pure Appl. Math., Vol L., 1295 - 1300 (1997).

11. *Smooth irrotational flows in the large to the Euler-Poisson system*, Commun. Math. Phys., 195, 249-265 (1998).

12. *Unstable BGK solitary waves and collisionless shocks* (with W. Strauss), Commun. Math. Phys., 195, 267-293 (1998).

13. *Relativistic unstable periodic BGK waves* (with W. Strauss), Comp. Appl. Math., 18, no.1, 87-122 (1999).

14. *Stable magnetic equilibria in a symmetric collisionless plasmas*, Commun. Math. Phys, 200, 211-247, (1999).

15. *Unstable oscillatory-tail solutions* (with W. Strauss), SIAM. J. Math. Anal., 30, no.5, 1076-1114, (1999).

16. *Variational method for stable polytropic galaxies*, Arch. Rational Mech. Anal., 150, 209-224, (1999).

17. *Stable steady states in stellar dynamics* (with G. Rein), Arch. Rational Mech. Anal., 147, no. 3, 225-243, (1999).

18. *Existence and stability of Camm type steady states in galactic dynamics* (with G. Rein), Indiana U. Math. J., 48, 4, 1237-1256 (1999).

19. *Formation of singularities in relativistic fluid dynamics and in spherically symmetric plasma dynamics* (with A. Shadi Tahvildar-Zadeh), Contem. Math., 238, 151-161 (1999).

20. *Dynamical instability of symmetric vortices* (with Almeida, Luís) Rev. Mat. Iberoamericana 17 (2001), no. 2, 409–419.

21. *Two-stream instabilities in plasmas* (with Cordier, S.; Grenier, E.) Cathleen Morawetz: a great mathematician. Methods Appl. Anal. 7 (2000), no. 2, 391–405.

22. *On the generalized Antonov stability criterion.* Nonlinear wave equations (Providence, RI, 1998), 85–107, Contemp. Math., 263, Amer. Math. Soc., Providence, RI, 2000.

23. *Magnetically created instability in a collisionless plasma* (with W. Strauss) J. Math. Pures Appl. 79, 10, 975-1009 (2000).

24. *Numerical study of Landau damping* (with C.W. Shu and T. Zhu), Physica D. 157 (2001) 323-333.

25. *Isotropic steady states in galactic dynamics* (with Rein, Gerhard) Comm. Math. Phys. 219 (2001), no. 3, 607–629.

26. *The Vlasov-Poisson-Boltzmann system near vacuum.* Comm. Math. Phys. 218 (2001), no. 2, 293–313.

27. *The Vlasov-Poisson-Boltzmann system near Maxwellians.* Comm. Pure Appl. Math. LV, 1104-1135 (2002).

28. *The Landau equation in a periodic box.* Comm. Math. Phys., 231, 391-434 (2002).

29. *Stable and unstable ideal plane flows* (with C. Bardos and W. Strauss) Chinese Ann. Math., dedicated to J. L. Lions, 23 B: 2 (2002) 149-164.

30. *On the dynamical Rayleigh-Taylor instability* (with H-J. Hwang) Archive. Rational Mech. Anal., 167, (2003) 235-253.

31. *The Vlasov-Boltzmann-Maxwell system near Maxwellians.* Invent. Math., 153, 593-630 (2003).

32. *Stable models of elliptical galaxies* (with G. Rein) Mon. Not. R. Astron. Soc. 344, 1296-1306 (2003).

33. *Classical solutions to the Boltzmann equation for molecules with an angular cutoff.* Arch. Rational. Mech. Anal., 169, 305-353 (2003).

34. *Reactive dissolution instability driven by chemical diffusion with applications to harzburgite reactive dissolution* (with Y. Liang) Geophysical Research Letters, Vol 30, No. 13, 55-1. (2003)

35. *The dynamics of a plane diode* (with C-W. Shu and T. Zhou) SIAM J. Math. Anal., 35, no. 6, 1617-1635 (2004).

36. *The dynamics near an unstable Kirchhoff ellipse* (with C. Hallstrom and D. Spirn) Comm. Math. Phys., 245 (2004), no. 2, 297-354.

37. *Compactness via symmetrization* (with A. Burchard) J. Funct. Anal., 214 (2004), no. 1, 40-73.

38. *The Boltzmann equation in the whole space.* Indiana Univ. Math. J., 53 (2004), no. 4, 1081-1094.

39. *Stability of relativistic Maxwellians in a collisional plasma* (with R. Strain) Commun. Math. Phys, 251 (2004), no. 2, 263-320.

40. *Analysis of the reduced Vlasov-Maxwell model with boundary conditions* (with F. Filbet and C.-W. Shu), Quart. Appl. Math, LXIII, 4 (2005), 691-714.

41. *Stability of semiconductor states with insulating and contact boundary conditions* (with W. Strauss), Arch. Rational Mech. Anal., 179 (2006) 1-30.

42. *Almost exponential decay near Maxwellians* (with R. Strain), Comm. PDE, 31, 3 (2006) 417-429.

43. *Boltzmann diffusive limit beyond the Navier-Stokes approximation*, Comm. Pure Appl. Math., 59, 5 (2006) 626-687.

44. *A non-variational approach to nonlinear stability in stellar dynamics applied to the King model* (with G. Rein), Commun. Math. Phys., 271 (2007) 489-509.

45. *Dynamics near unstable, interfacial fluids* (with C. Hallstrom and D. Spirn), Commun. Math. Phys., 270 (2007), 635-689.

46. *Pattern formation (II): The Turing instability* (with H. Hwang), Proc. AMS, 135 (2007), 2855-2866.

47. *Decay for soft potentials near Maxwellian* (with R. Strain), Arch. Rational Mech. Anal., 187 (2008).

48. *Pattern formation (I): The Keller-Segel model* (with H. Hwang), JDE, 249 (2010), no. 7, 1519–1530.

49. *Unstable and stable galaxy models* (with Z. Lin) Commun. Math. Phys. 279 (2008), no. 3, 789–813.

50. *Stability of the front under Vlasov-Fokker-Planck dynamics* (with R. Esposito, R. Marra), Arch. Rational Mech. Anal., 195 (2010), no. 1, 75–116,

51. *Bounded solutions to the Boltzmann equation*, Quart. Appl. Math. 68 (2010), no. 1, 143–148.

52. *Critical Rayleigh number in the Bernard problem* (with Y. Han), Quart. Appl. Math. 68 (2010), no. 1, 149–160.

53. *Local Hilbert expansion for the Boltzmann equation* (with J. Jang and N. Jiang) Kinetic Relat. Models 2 (2009), no. 1, 205–214.

54. *Phase Transition in a Vlasov-Boltzmann Binary Mixture* (with R. Esposito and R. Marra), Commun. Math. Phys., 296 (2010), no. 1, 1–33.

55. *Acoustic limit for the Boltzmann equation in optimal scaling* (with J. Jang and N. Jiang) Comm. Pure Appl. Math. 63 (2010), no. 3, 337–361.

56. *Stability of Stefan problem with surface tension (I)* (with M. Hadzic), Comm. PDE, 1532-4133, Volume 35, Issue 2, (2010), 201 – 244.

57. *Decay and continuity of Boltzmann equation in bounded domains*, Arch. Rational Mech. Anal. 197 (2010), no. 3, 713–809.

58. *Rayleigh-Taylor instability for compressible viscous fluids* (with I. Tice) SIAM J. Math. Anal. 42 (2010), no. 4, 1688–1720,

59. *Global Hilbert Expansion for the Vlasov-Poisson-Boltzmann System* (with J. Jang), Commun. Math. Phys, (2010), Volume 299, 2, 469-501.

60. *Rayleigh-Taylor instability for compressible inviscid fluids* (with I. Tice), Indiana Univ. Math. J. 60 (2011), no. 2, 677–711.

61. *Validity of the Boltzmann equation with an external field* (with R. Esposito and R. Marra), Kinet. Related Models 4 (2011), no. 2, 499–515.

62. *Global smooth ion dynamics in the Euler-Poisson system* (with B. Pausader) Commun. Math. Phys. 303 (2011), no. 1, 89–125.

63. *A note on Prandtl layer problem* (with T. Nguyen), Comm. Pure Appl. Math., 64, (2011), no. 10, 1416-1438.

64. *Momentum regularity and stability of the relativistic Vlasov-Maxwell-Boltzmann system* (with R. Strain), Comm. Math. Phys. 310 (2012), no.3, 649-673.

65. *The Vlasov-Poisson-Landau system in a periodic box*, Journal of AMS (2011). 25(2012) no.3, 759-812.

66. *Decay of dissipative equations and negative Sobolev spaces* (with Yanjin Wang) Comm. PDE. 37, 12, (2012) 2165-2208

67. *Almost exponential decay of periodic viscous surface waves without surface tension* (with Ian Tice) Arch. Ration. Mech. Anal. 207 (2013), no. 2, 459–531.

68. *Local well-posedness of the viscous surface wave problem without surface tension* (with Ian Tice) Anal. PDE 6 (2013), no. 2, 287–369.

69. *Decay of viscous surface waves without surface tension in horizontally infinite domain* (with Ian Tice) Anal. PDE 6 (2013), no. 6, 1429–1533.

70. *Non-isothermal boundary in the Boltzmann theory and Fourier law* (with R. Esposito; C. Kim; R. Marra) Comm. Math. Phys. 323 (2013), no. 1, 177–239.

71. *Unstable galaxy models* (with Z. Lin; Z. Wang; P. Zhang), Kinetic. Rel. Models. 6 (2013), no. 4, 701-714

72. *Stability of a Vlasov-Boltzmann binary mixture at the phase transition on an interval* (with R. Esposito; R. Marra) Kinetic. Rel. Models. 6 (2013) no. 4, 761-787.

73. *KdV limit of Euler-Poisson system* (with X. Pu) Arch. Rational. Mech. Anal. 211 (2014), no. 2, 673-710.

74. *Global solutions of certain plasma two-fluid models in three-dimension* (with A. Ionescu and B. Pausader) J. Math. Phys. 55, 123102 (2014).

75. *Geometric correction for diffusive expansion of steady transport equation* (with L. Wu) Commun. Math. Phys., 336 (2015), no. 3, 1473–1553.

76. *Steady viscous compressible channel flows* (with Jiang, S. and Zhou, C.) SIAM J. Math. Anal. 47-5 (2015), pp. 3648-3670.

77. *On the weak coupling limit of quantum many-body dynamics and the quantum Boltzmann equation* (with Chen, X.) Kinet. and Relat. Models. 8, (2015) no. 3, 443-465.

78. *Ekmann boundary layer expansions of Navier-Stokes equations with rotation* (with Gong, S.; Wang, Y.) Bull. Inst. Math. Acad. Sin., in honor of T.P. Liu, 10 (2015), no. 3, 375–392.

79. *Spectral instability of general symmetric shear flows in a two-dimensional channel* (with Grenier, E. and Nguyen, T.) Adv. Math. 292 (2016), 52–110.

80. *BV-regularity of the Boltzmann equation in non-convex domains* (with Kim, C.; Tonon, D.; Trescases, A.) Arch. Rational Mech. Anal., 220 (2016), no. 3, 1045–1093.

81. *Global solutions of the Euler-Maxwell two-fluid system in 3D* (with Ionescu, A.; Pausader, B.) Annals of Math. (2), 183 (2016), no. 2, 377–498.

82. *Boundary layer problems for the two-dimensional compressible Navier–Stokes equations* (with Gong, S.; Wang, Y.) Analysis and Applications, 14 (2016), no. 1, 1–37.

83. *Spectral instability of characteristic boundary layer flows* (with Grenier, Emmanuel, Nguyen, Toan T.) Duke Math. J. 165 (2016), no. 16, 3085–3146.

84. *L^6 bound for Boltzmann diffusive limit.* Ann. Appl. Math. 32 (2016), no. 3, 249–265.

85. *Asymptotic analysis of transport equation in annulus* (with Wu, Lei and Yang, Xiongfeng) J. Stat. Phys. 165 (2016), no. 3, 585–644.

86. *Asymptotic stability of the Boltzmann equation with Maxwell boundary conditions* (with Briant, Marc) J. Differential Equations 261 (2016), no. 12, 7000–7079.

87. *Existence and BV-regularity for neutron transport equation in nonconvex domain* (with Yang, Xiongfeng). SIAM J. Math. Anal. 48 (2016), no. 5, 3467–3495.

88. *Regularity of the Boltzmann equation in convex domains* (with Kim, Chanwoo; Tonon, Daniela; Trescases, Ariane). Invent. Math. 207 (2017), no. 1, 115–290.

89. *Global solutions of the Euler-Maxwell two-fluid system in 3D.* Proceedings of the Sixth International Congress of Chinese Mathematicians. Vol. I, 79–93, Adv. Lect. Math. (ALM), 36, Int. Press, Somerville, MA, 2017.

90. *The existence of stable BGK waves* (with Lin, Zhiwu) Comm. Math. Phys. 352 (2017), no. 3, 1121–1152.

91. *Regularity of Milne problem with geometric correction in 3D* (with Wu, Lei) Math. Models Methods Appl. Sci. 27 (2017), no. 3, 453–524.

92. *The Boltzmann equation with weakly inhomogeneous data in bounded domain* (with Liu, Shuangqian). J. Funct. Anal. 272 (2017), no. 5, 2038–2057.

93. *Absence of shocks for one dimensional Euler-Poisson system* (with Han, Lijia; Zhang, Jingjun) Arch. Ration. Mech. Anal. 223 (2017), no. 3, 1057–1121.

94. *Incompressible hydrodynamic approximation with viscous heating to the Boltzmann equation* (with Liu, Shuangqian) Math. Models Methods Appl. Sci. 27 (2017), no. 12, 2261–2296.

95. *Geometric correction in diffusive limit of neutron transport equation in 2D convex domains* (with Wu, Lei). Arch. Ration. Mech. Anal. 226 (2017), no. 1, 321–403.

96. *Prandtl boundary layer expansions of steady Navier-Stokes flows over a moving plate* (with Nguyen, Toan T.). Ann. PDE 3 (2017), no. 1, Art. 10, 58 pp.

97. *Hydrodynamic limit of a kinetic gas flow past an obstacle* (with Esposito, R. and Marra, R.) Comm. Math. Phys. 364 (2018), no 2., 765-823.

98. *Stationary solutions to the Boltzmann equation in the hydrodynamic limit* (with Esposito, R., Kim, C. and Marra, R.) Ann. PDE. (2018), Art. 1, 119pp.

99. *Stability of contact lines in fluids: (2D Stokes flow)* (with Tice, I.) Arch. Rational. Mech. Anal. (2018), 227, no. 2, 767-854.

100. *On the Euler-Poisson system.* Proceedings of 2018 International Conference on Hyperbolic Problems, accepted for publication. AIMS (2019).

101. *A L^2 to L^∞ Framework for the Landau Equation* (with J. Kim and H.-J. Hwang) Peking Math. J., accepted for publication (2019).

102. *Derivation of the ion equation.* (with Grenier, E.; Pausader, B.; Suzuki, M). Quart. Appl. Math. 78 (2020), no. 2, 305–332.

103. *The Landau equation with the specular reflection boundary condition* (with Hwang, H.-J.; Jang,J.-W. ; Ouyang, Z). Arch. Ration. Mech. Anal. 236 (2020), no. 3, 1389–1454.

104. *Linear instability of Z-pinch in plasma: viscous case* (with Bian, D.; Tice, I.) Models Methods Appl. Sci. 30 (2020), no. 14, 2827–2908.

105. *Larson-Penston self-similar gravitational collapse* (with Hadžić, M.; Jang, J.) Comm. Math. Phys. 386 (2021), no. 3, 1551–1601.

106. *Hilbert expansion of the Boltzmann equation with specular boundary condition in half-space* (with Huang, F.; Wang, Y.) Arch. Ration. Mech. Anal. 241 (2021), no. 1, 231–309.

107. *Global Hilbert expansion for the relativistic Vlasov-Maxwell-Boltzmann system* (with Xiao, Q.) Comm. Math. Phys. 384 (2021), no. 1, 341–401.

108. *Regularity and expansion for steady Prandtl equations* (with Iyer, S.) Comm. Math. Phys. 382 (2021), no. 3, 1403–1447.

109. *Correction to: The Landau equation with the specular reflection boundary condition* (with Hwang, H.-J.; Jang, J.-W.; Ouyang, Z.) Arch. Ration. Mech. Anal. 240 (2021), no. 1, 605–626.

110. *Linear instability of Z-pinch in plasma: inviscid case* (with Bian, D., Tice, I.) Math. Models Methods Appl. Sci. 31 (2021), no. 2, 409–472.

111. *Continued gravitational collapse for Newtonian stars* (with Hadžić, M.; Jang, J.) Arch. Ration. Mech. Anal. 239 (2021), no. 1, 431–552.

112. *Stability of contact lines in fluids: 2D Navier-Stokes flow* (with Tice, I.) J. EMS., accepted, 2021.

113. *On the stabilizing effect of rotation in the 3d Euler equations* (with Huang, C.; Pausader, B.; Widmayer, K.) Comm. Pure Appl. Math., accepted, 2021.

114. *Kinetic Fokker-Planck and Landau equations with specular reflection boundary condition* (with Dong, H.; Yastrzhembskiy, T.) Kinet. Relat. Models 15 (2022), no. 3, 467–516.

115. *Gravitational collapse for polytropic gaseous stars: self-similar solutions* (with Hadžić, M.; Jang, J.; Schrecker, M.) Arch. Ration. Mech. Anal. 246 (2022), no. 2-3, 957–1066.

116. *The Vlasov-Poisson-Landau system with the specular-reflection boundary condition* (with Dong, H.; Ouyang, Z.) Arch. Ration. Mech. Anal. 246 (2022), no. 2-3, 333–396.

117. *Validity of Steady Prandtl Layer Expansions* (with Iyer, S.) Comm. Pure and Appl. Math., accepted 2022.

118. *Global axisymmetric Euler flows with rotation* (with Pausader, B.; Widmayer, K.) Invent. Math. 231 (2023), no. 1, 169–262.

5g. INVITED LECTURES

1. Beijing-Saint Petersburg Mathematics Colloquium, December, 2022.

2. 32nd International Symposium on Rarefied Gas Dynamics, Seoul, Keynote Speaker, July, 2022.

3. Analysis and PDE seminar, UC Berkely, March, 2022.
4. Workshop in Kinetic Theory, Cambridge, January, 2022.
5. ICERM Workshop, Dec. 2021.
6. PDE Conference, Shanghai Jiaotung University, Oct., 2021.
7. BIRS Workshop, July, 2021.
8. Math. Colloquium, Shanghai Jiaotung University, June, 2021.
9. PDE Workshop, Univ. of Pittsburgh, May, 2021.
10. Applied Math Colloquium, Stanford, Jan, 2021.
11. Math. Colloquium, U. of Maryland, Oct., 2019.
12. PDE seminars, South China Normal University, July, 2019.
13. PDE seminar, Northwest U., China, July, 2018.
14. PDE seminar, Academic Sinica, July, 2019.
15. Applied Math. Colloquium, USC, April, 2019.
16. PDE seminar, Georgia Tech., April, 2019.
17. PDE seminar, Rutgers, Dec., 2018,
18. Fluids seminar, Princeton, Dec., 2018.
19. PDE seminars, South China Normal University, August, 2018.
20. PDE seminar, Sunya'xian University, China, July, 2018.
21. PDE seminar, Academic Sinica, July, 2018.
22. Invited lecturer, Summer School in Kinetic Theory, Harbin, China, July, 2018.
23. Plenary speaker, Hyperbolic PDE conference, Penn. State, June, 2018.
24. Invited speaker, PDE for incompressible fluids, Servile, June, 2018.
25. PDE seminar, Georgia Tech., May, 2018.
26. Plenary speaker, SIAM PDE conference, Philadelphia, Dec., 2017.
27. PDE conference in fluids, U. of Pittsburgh, Nov., 2017.
28. PDE conference in honor of Gamba, U. of Texas at Austin, Sept., 2017.
29. PDE workshop, IAPCM, China, Aug., 2017.
30. PDE workshop, Renmin University, China, Aug., 2017.
31. PDE workshop, Yining College, China, Aug., 2017.

32. PDE seminars, South China Normal University, July, 2017.
33. PDE seminar, Sunya'xian University, China, July, 2016.
34. PDE seminar, South China University of Technology, July, 2017.
35. PDE workshop, Sichuan University, China, July, 2017.
36. PDE conference in honor of Bobylev, U. of Texas at Austin, May, 2017.
37. PDE seminar, College de France, March, 2017.
38. PDE seminar, University of Cambridge, March, 2017.
39. PDE seminar, Kings' College, March, 2017.
40. PDE conference in honor of Friedlander, ICERM, Jan., 2017.
41. PDE seminar, Sunya'xian University, China, March, 2016.
42. PDE seminar, South China University of Technology, China, March, 2016.
43. PDE seminar, Peking University, China, March, 2016.
44. PDE seminar, South China Normal University, March, 2016.
45. PDE seminar, ICPAM, China, March, 2016.
46. Workshop in honor of C. Bardos, U. Texas at Austin, Feb., 2016.
47. PDE seminar, Harvard, November, 2015.
48. Invited Speaker, Workshop in Kinetic Theory, Imperial College, September, 2015.
49. PDE seminar, USTC, China, August, 2015.
50. Invited Speaker (two sections). SIAM Beijing Conference, August, 2015.
51. PDE seminar, ICPAM, China, August, 2015.
52. Invited Speaker, PDE workshop, Beijing Industrial University, August, 2015.
53. Summer Course in Kinetic Theory, Academic Sinica, August, 2015.
54. Applied Math Colloquium, Harvard, March 2015.
55. Invited speaker, Fields Medal Symposium, Fields Institute, Nov., 2014.
56. PDE seminar, Duke Univ., Nov., 2014.
57. PDE workshop, Beijing, August, 2014.
58. PDE seminar, Academic Sinica, August, 2014.
59. PDE seminar, Beijing Industrial University, August, 2014.
60. PDE seminar, Kyoto University, Kyoto, August, 2014.

61. PDE seminar, South China Normal University, June, 2014.
62. PDE seminar, Sunya'xian University, June, 2014.
63. PDE workshop, Harbin, China, August, 2013.
64. PDE workshop, Beijing, August, 2013.
65. PDE seminar, IAPCM, China, March, 2014.
66. PDE seminar, IAPCM, Beijing, August, 2013.
67. Plenary Speaker, International Congress of Chinese Mathematicians, Taipei, July, 2013.
68. PDE seminar, Beijing Capital Normal University, China, PDE seminar, July, 2013.
69. Analysis Seminar, Princeton, April, 2013.
70. PDE Seminar, IMPA, March, 2013.
71. Applied Math Seminar, Stanford, Februray, 2013.
72. PDE workshop, Mianyang, China, August, 2012.
73. PDE seminar, Beijing Capital Normal University, China, August, 2012.
74. Analysis Seminar, April, 2012, MIT.
75. Plenary Speaker, Frontier of Applied Math., Beijing International Mathematical Research Center, Oct., 2011.
76. Workshop in PDE, Kuming, China, Aug., 2011.
77. PDE seminar, IAPCM, July 2011.
78. PDE seminar, Academic Sinica, July 2011.
79. Colloquium, Univ. Iowa, April, 2011.
80. Many Particle Systems, Oberwolfach, Germany, Dec. 5 -10, 2010.
81. Invited Address, AMS meeting at Syracuse, Oct. 2010.
82. PDE seminar, Academic Sinica, July, 2010.
83. Colloquium, Georgia Tech., May, 2010.
84. Colloquium, U. Pittsburgh, Oct. 2009;
85. Lecturer, Summer school, Peking Univ., July, 2009;
86. PDE seminar, Academic Sinica, Beijing, July 2009;
87. PDE seminar, Beijing Capital Normal Univ., July, 2009;
88. Principal Lecturer, Summer School, University of Victoria, June, 2009;
89. Workshop in kinetic theory, Banff, June, 2009;

90. PDE seminar, Paris XI, April, 2009;
91. Analysis seminar, Princeton University, April, 2009;
92. Conference in honor of Catheleen Morawetz, Toronto, Sept., 2008;
93. Workshop in kinetic theory, University of Maryland, Sept. 2008;
94. PDE seminars, Peking University, July, 2008;
95. PDE seminar, Beijing Capital Normal University, July, 2008;
96. PDE seminar, Tsinghua University, July, 2008;
97. School of PDE, Granada, Spain., March, 2008;
98. PDE seminars, Beijing Normal University, July, 2007;
99. PDE seminars, Beijing Capital Normal University, July, 2007;
100. PDE seminar, University of Rome II, April, 2007;
101. PDE seminar, University of L'Aquila, April, 2007;
102. Many particle system, Oberwolfach, Dec., 2006.
103. PDE seminars, Institute of Appl. Phys. & Com. Math., July 2006;
104. PDE seminar, Beijing Normal University, July, 2006;
105. Colloquium, Academic Sinica, July, 2006;
106. Plenary speaker, International conference on hyperbolic PDE, Lyon, July, 2006;
107. PDE seminar, Georgia Tech., May, 2006;
108. Colloquium, University of Michigan, Dec., 2005;
109. PDE seminar, University of Minnesota, Oct., 2005;
110. PDE seminars, Institute of Appl. Phys. & Com. Math., July 2005;
111. PDE seminars, Tsinghua University, July, 2005;
112. PDE seminar, Beijing Capital Normal University, July, 2005;
113. PDE seminar, Beijing Normal University, July, 2005;
114. PDE seminar, Academia Sinica, July, 2005;
115. Analysis seminar, Courant Institute, April, 2005;
116. PDE seminar, Univ. of Chicago, April, 2005;
117. PDE seminar, Univ. of Michigan, April 2005;
118. PDE seminar, Univ. Nice, March, 2005;

119. Analysis seminar, Stanford, Jan., 2005;

120. PDE seminar, Univ. of Conn., Nov., 2004;

121. Workshop on stability, Bayreuth, Germnay, Sept., 2004;

122. PDE seminar, Peking University, Aug., 2004;

123. Mini course on stability, Institute of Appl. Phys. & Com. Math., Aug. 2004;

124. Mini course on kinetic theory, Morningside Institute, Aug. 2004;

125. Workshop on incompressible flows, Univ. of Maryland, May 2004;

126. Many particle system, Oberwolfach, Nov., 2003;

127. Applied Math. Seminar, U. Mass at Amherst, Nov., 2003;

128. Analysis Seminar, Courant Institute, Sep., 2003;

129. PDE seminars, Acad. Sinica, Beijing, Aug. 2003;

130. PDE seminars, Peking University, Aug. 2003;

131. PDE seminar, Inst. Applied Phys. Com. Math., Aug. 2003;

132. PDE seminar, Tsinghua Univ., Aug., 2003;

133. Colloquium, University of Virginia, May, 2003;

134. PDE seminar, Carnegie Mellon University, April, 2003;

135. Invited Speaker, Northwestern PDE conference, April, 2003;

136. Colloquium, SUNY at Buffalo, March, 2002;

137. PDE seminars, Tokuho University, Japan, Jan, 2002,;

138. Analysis Seminar, Courant Institute, Oct., 2001;

139. Midwest PDE seminar, Madison, Oct., 2001;

140. PDE seminar, June, University of Nice;

141. Colloquium, WPI, Jan., 2001;

142. AMS Meeting at New York, Nov. 2000;

143. Nonlinear Analysis 2000, Courant Institute, organizer, June, 2000.

144. Many Particle System, Oberwolfach, Germany, Dec., 1999;

145. AMS Meeting at Austin, Texas, Oct., 1999;

146. International Workshop in Kinetic Theory, Technion, Israel, May, 1999;

147. 16th International Conference on Transport Theory, Atlanta, March, 1999;

148. Analysis Seminar, Princeton University, Dec., 1998;
149. Applied Math Seminar, Duke University, Oct., 1998;
150. PDE seminar, ENS de Cachan, August, 1998;
151. AMS conference, Mount Holyoke College, July, 1998;
152. 5th International workshop on mathematical aspects of fluid and plasmas, Maui, July, 1998;
153. PDE seminar, April, 1998, Indiana Univ.;
154. Analysis seminar, March, 1998, Univ. of Penn.;
155. Analysis seminar, March, 1998, Princeton Univ.;
156. Analysis seminar, Feb., 1998, Courant Institute;
157. PDE seminar, December, 1997, ENS, Paris;
158. Invited Speaker, 'Recent Progress in Vlasov-Maxwell System', December, 97, Paris;
159. PDE seminar, November, 1997, U. Mass. at Amherst;
160. PDE seminar, October, 1997, U. Connecticut, October;
161. PDE seminar, June, 1997, Peking University;
162. PDE seminar, July, 1997, Academia Sinica;
163. PDE seminar, July, 1997, Institute of Appl. Phys. Comput. Math.;
164. AMS meeting, April, 1997, College Park, MD;
165. PDE and Applied Math. seminars, Jan., 1997, UCLA;
166. PDE seminar, Jan., 1997, UC Santa Barbara;
167. Invited Speaker, Mini conference in Kinetic theory, Dec., 1996, ENS, Cachan;
168. Applied Math. seminar, Dec., 1996, CMAP, Ecole Polytechnique;
169. PDE seminar, Dec., 1996, Universitat Munchen;
170. Conf. on Many Particle Systems, Dec., 1996, Oberwolfach;
171. PDE seminar, Nov., 1996, University of Maryland;
172. Principal Speaker, Mini course on stability in kinetic theory, June, 1996, Ecole Polytechnique;
173. Lecture at International Conf. on Charged Particle Systems, June 22-27, 1996, Paris;
174. PDE seminar, Feb., 1995, Indiana University;
175. PDE seminar, Feb., 1995, UC Davis;
176. PDE seminar, Feb., 1995, Michigan State University;

177. PDE seminar, Jan., Carnegie Mellon University;

178. PDE seminar, Feb., 1994, UC Santa Cruz;

179. Conf. on Many Particle Systems, Dec., 1993, Oberwolfach.

5j. WORK IN PROGRESS

1. *Naked Singularity in the Euler-Einstein System* (with Hadzic, M. and Jang, J.)

2. *Ghost Effect from Boltzmann Theory* (with Esposito, R.; Marra, R. and Wu, L.)

6. RESEARCH GRANTS

6a. CURRENT GRANTS:

1. NSF grant: 'PDE methods in kinetic theory and their applications.' PI, 7/1/2021-7/31/2024.

6b. COMPLETED GRANTS:

1. NSF grant: 'Conference on nonlinear wave equations', Co-PI, 2017-2018.

2. NSF grant: 'PDE methods in kinetic theory and their applications.' PI, 8/1/2018-7/31/2021.

3. NSF grant: 'PDE methods in kinetic theory and their applications.' PI, 8/1/2016-7/31/2018.

4. Simon Fellowship. PI, 2016.

5. 'PDE methods in kinetic theory and their applications.' PI, 8/1/2012-7/31/2015.

6. NSF research grant: 'PDE methods in kinetic theory and their applications.' PI, 7/1/2009-6/30/2012.

7. 'Conference on Hyperbolic Conservation Laws and Continuum Mechanics', 11/01/2010-11/01/2011, Co-PI.

8. NSF grant: 'Conference on Nonlinear Waves', PI.

9. NSF research grant: 'PDE methods in kinetic theory and their applications.' PI, 7/1/2006-6/30/2009.

10. FRG in 'Kinetic description of multi-scale phenomena: modeling, theory and computation', Co-PI. 7/1/2008-6/30/2011.

11. CMG research: Developing a multi-scale method for melting and melt migration in the mantle, co-PI, 9/15/05-8/31/08.

12. NSF research grant, 'Stability problems in kinetic theory, classical field theory and stellar dynamics.' PI, 7/1/1999 - 6/30/2002.

13. NSF research grant, 'Stability problems in plasmas,' 7/1/1996 - 6/30/1999.

14. NSF International Grant, 'Numerical and Mathematical Analysis of Models for Semiconductors', co-PI, 5/1/1999-4/30/2004.

15. Salamon award, Brown, 2003-2004.

16. NSF research grant, 'PDE methods in kinetic theory and their applications.' PI, 7/1/2003-6/30/2006.

7. SERVICE

7a. UNIVERSITY SERVICE:

1. Chair of Promotion Committee (2021-22)
2. Search Committee (2022)
3. Freshman and Sophomore Advisor (2021-22)
4. Chair, Nomination Committee (2021-22)
5. Graduate Committee (2021-22).
6. Freshman and Sophomore Advisor (2018-2019)
7. Chair, 2017-2020
8. Chair of Promotion Committee (Hongjie Dong), 2016.
9. Freshman Advisor, Spring, 2015.
10. Freshman Advisor, 2014.
11. Graduate Committee, 2014.
12. Prager Search Committee, 2014.
13. Director of LCDS, 2011-2013.
14. Co-organizer, PDE seminar, 2013-
15. Co-organizer, Brown PDE workshop, Brown, May, 2013.
16. Co-organizer, Poincare Symposium, Brown, December, 2012.
17. Chair of Promotion Committee of Govind Menon. 2012.
18. Member of Tenure Committee for H. Dong. 2011
19. Freshman and sophomore advisor, 2009-,
20. Graduate Committee Chair, 05-08.
21. Affirmative action officer, 08.
22. Search Committee for Prager Visiting Professor, 08.
23. Search Committee 08.
24. Member of Tenure Committee for G. Menon.
25. Chair of Tenure Committee for H. Wang.
26. Chair of mid-term review of G. Menon.

27. Affirmative action officer,05-06.

28. Co-organizer of the PDE seminar at Brown for 01/02-06/02, the organizer for the PDE seminar for years 95-96 and 97-2000.

29. Graduate Committee, Div. Applied Math. at Brown, 01/02-present.

30. Sheridan Center Faculty Liaison, 01/02-06/02.

7b. PROFESSIONAL SERVICE:

1. Associate Editor, *Peking Mathematical Journal.* (2019-)

2. Associate Editor, *Pure and Applied Analysis* (2019-)

3. External Review Committee: Department of Computational and Applied Mathematics, Rice University, Oct., 2018.

4. Co-organizer, PDE Conference in honor of Walter Strauss, May, 2018.

5. Co-organizer, Semester Program in Fluids at ICERM, Jan. to May 2017.

6. ICM PDE Panelist, 2016.

7. Managing Editor, *Journal of Partial Differential Equations.* 2009-

8. Associate Editor, *SIAM Journal of Mathematical Analysis.* 2009-

9. Associate Editor, *Comm. Math. Sci.* 2009-

10. Associate Editor, *Acta Applicandae Mathematicae.* 2009-

11. Associate Editor, *Kinetic and Related Models.* 2008-

12. Associate Editor, *Discrete and Continuous Dynamics (B).* 2008-

13. Co-organizer, mini-symposium on fluid stability, SIAM Beijing Meeting, August 2015.

14. Co-organizer of '*Kinetic Theory and Computation*' ICERM, fall 2011.

15. Co-organizer of the international conference '*Continuum Mechanics And Hyperbolic Conservation Laws*', May 2011, Brown University.

16. Organizer of FRG meeting, May, 2010, Brown.

17. Co-organizer of '*Kinetic and fluids,*' International Conference, Peking University, July, 2010.

18. Organizer of '*Nonlinear Wave Equations*' Brown, May 9-13, 2008.

19. Co-organizer of the international conference on '*Mathematical Fluid Dynamics'*, Brown, April, 2006.

20. Co-organizer of the international PDE conference '*Continuum Mechanics And Hyperbolic Conservation Laws*', May 2001, Brown University.

21. Associate Editor, *Annale de la Faculte des Sciences de Toulouse.* 2002-2006

22. Assistant Managing Editor, *SIAM Journal of Mathematical Analysis*, 01/02-06/02.

23. Co-organizers for the international conference '*Nonlinear analysis 2000*', in May, 2000, Courant Institute.

24. Editor of Contem. Math., volume 235. 1999.

25. Organizer of the conf. on '*Nonlinear Wave Equations*', May 2 - 3, Brown University, 1998.

26. Reviewer for *Mathematical Reviews*.

27. Referee for various professional journals including Annals of Math. (3), Acta. Math. (2), Invent. Math. (13), J. AMS (8), J. EMS (2), Comm. Pure Appl. Math. (7), Commun. Math. Phys. (21), and Arch. Rational Mech. Anal. (14), Comm. PDE (5).

28. Reviewer for NSF grant proposals. NSF panelist: Applied PDE (3) and Fluids (1), Applied Analysis (2).

8. HONORS

1. Herbert Ballou University Professor (2022-)

2. AMS Fellow, 2017.

3. Simons Fellow, 2015-2016.

4. A. P. Sloan Research Fellow, 1998-2003;

5. NSF Postdoctoral Fellowship, 1995-1998;

6. Honorable Mention in SIAM Student Paper Competition for [1], 1992.

7. A. P. Sloan Dissertation Fellowship, 1992;

9. TEACHING

1. APMA 0360, Fall 2022 (72 students)

2. APMA 2822E Spring 2022 (10 students)

3. APMA 0200, Fall 2021 (24 students)

4. APMA 2822, Spring 2021 (4 students).

5. APMA 0350, Fall 2019 (50 students)

6. AM 34, Fall 2017 (22 students)

7. AM 34, Fall 2016 (26 students)

8. AM 36, Fall 2016 (38 students)

9. AM 35, Spring 2015 (23 students)

10. AM 34, Fall 2014 (40 students)

11. AM 223, Fall 2013 (16 students)
12. AM 291, Fall 2013 (3 students)
13. AM 35 Fall 2012 (70 students)
14. AM 193 Fall 2012 (3 students)
15. AM 33 Spring 2012 (59 students)
16. AM 224 Spring 2012 (5 students)
17. AM 35 Fall 2010 (118 students)
18. AM 211 Fall 2010 (30 students)
19. AM 289, Topic Course in Kinetic Theory, (10 students/faculty)
20. AM 33 Fall 2009 (52 students)
21. AM 33, Fall 2008 (63 students)
22. AM 33, Spring 2008 (70 students)
23. AM 212, Spring 2007 (18 students)
24. AM 211, Fall 2006 (31 students)
25. AM 282, Spring 2006 (9 students)
26. AM 107, Fall 2005 (7 students)
27. AM 107, Fall 2004 (9 students)
28. AM 33, Fall 2004 (31 students)
29. Topic Course, AM 283, Fall 2003 (five graduate students.)
30. AM 34, Spring 2003 (about 25 students).
31. AM 34, Fall 2001 (about 25 students).
32. AM 223, Fall 2001 (about 10 students).
33. AM 36, Spring 2001 (about 20 students).
34. Topic Course, AM 281, Fall 2000 (about seven students).
35. AM 224, Spring 2000,
36. AM 223, Fall 1999,
37. AM 35, Fall 1998,
38. AM 211, fall 1998,
39. AM 35, fall, 97,

40. AM 223, fall 97.

41. AM 35 - 36, 1995-96.

ADVISING

Undergraduate Student

Andrew Grover, Honor thesis, entitled '*Mathematical Models of Galactic Steady States.*' May, 2002.

Graduate Students

Hyung-Ju Hwang, PhD., May, 2002.
Robert Strain, PhD., April, 2005.
Juhi Jang, PhD, May, 2007.
Mahir Hadzic, PhD, May 2010.
Chanwoo Kim, PhD, May 2011.
Yanjin Wang, PhD, May 2011 (co-advised with Z. Tan).
Lei Wu, PhD, May 2015 (co-advised with C. Shu).
Yunrei Zheng, PhD, 2017 (co-advised with Z. Zhang)
Sameer Iyer, PhD, 2018 (NSF Postdoc, Princeton)
Zhimeng Ouyang PhD 2021 (IPAM Postdoc and U. of Chicago)
Junhwa Jung, current PhD student.

Visitors

Ariane Trescases, visiting PhD student, 2011-12.
Chris Hallstrom, Postdoc, 2000-2003.
Daniel Spirn, Postdoc, 2001-2004.
Ricardo Alonso, Postdoc, Fall, 2008.
Ian Tice, NSF Postdoc and Prager Assistant Professor, 2008-2011
Benoit Pausader, Tarmarkim Assistant Professor, 2008-2011
Toan Nguyen, Prager Assistant Professor, 2008-12.
Seok-Bae Yun, Postdoc on Korean Fellowship, 2010-11.
Daniela Tonon, ICERM postdoc, 2010-2011.
Xueke Pu, Visiting Scholar, 2011-12.
Chunhui Zhou, Visiting Scholar, 2013-2014.
Lijia Han, Visiting Scholar, 2013-2014.
Xuwen Chen, Tamarkin Assistant Professor, 2012-2015.
Daiwen Huang, Visiting Scholar, 2014-2015.
Fucai Li, Visiting Scholar, 2014-2015.
Jingjun Zhang, Visiting Scholar, 2014-2015.
Fujun Zhou, Visiting Scholar, 2015-2016.
Shuangqian Liu, Visiting Scholar, 2015-2016.
Xiongfeng Yang, Visiting Scholar, 2015-2016.
Shengbo Gong, Visiting Student, 2014-2016.
Fan Wang, Visiting Student, 2014-2016.

Yunrui Zheng, Visiting Student, 2015-2016.
Chunyan Huang, Visiting Scholar, 2016-17.
Xueke Pu, Visiting Scholar, 2016-17.
Seok-Hyun Hong, (ICERM Postdoc) 2016-17.
Quanrong Li, Visiting Student, 2016-17.
Klaus Widmayer, Tamarkin Assistant Professor, 2016-17.
Feng Xie, Visiting Scholar, 2017-18.
Dongfen Bian, Visiting Scholar, 2017-19.
Mingying Zhong, Visiting Scholar, 2017-18.
Yaobin Ou, Visiting Scholar, 2018-2019
Yanjin Wang, Visiting Scholar, 2019-2020.
Qinghua Qiao, Visiting Scholar, 2019-2020.
Chunhui Zhou, Visiting Scholar, 2019.
Sona Akopian, Prager Assistant Professor, 2018-2020.
Timur Yastrzhembskiy, Prager Assistant Professor, 2021-.
Xiangyu Ma, visiting student, 2022-