CURRICULUM VITAE

Yue Liu

Personal

E-mail: yliu@uta.edu

Education

Ph.D. -Mathematics, Brown University, May 1994
Advisor: Walter Strauss

Positions

–Permanent:

Professor, University of Texas at Arlington, 2010 -

Associate Professor, University of Texas at Arlington, 2003 - 2009

Assistant Professor, University of Texas at Arlington, 1997 - 2003

R. H. Bing Instructor, University of Texas at Austin, 1994 - 1997

– Visiting:

Visiting Member, Isaac Newton Institute for Mathematical Sciences (INI), Cambridge, UK, August, 2017

Visiting Member, Institute for Computational and Experimental Research in Mathematics (ICERM), January - May,2017

Visiting Member, Erwin Schröinger International Institute for Mathematical Physics (ESI), Vienna, Austria, May-June, 2011.

Visiting Member, Research Institute for Mathematical Sciences, Kyoto University, Japan, January-February, 2011.

Visiting Member, Center of Academy of Sciences, and University of Providence, Taiwan, January, 2011.

Visiting Member, Research Institute for Mathematical Sciences, Kyoto University, Japan, January, 2009.

Visiting Member, Institute for Applied Mathematics, University of Hanover, Germany, May, 2006

Visiting Member, Mittag-Leffler Institute of Mathematics, Royal Swedish Academy of Science, Sweden, November - December, 2005

Visiting Professor in Mathematics, Brown University, August, 2003 - June, 2004

Visiting Member, Department of Mathematics, University of Illinois at Chicago, May, 2002

Visiting Member, Department of Mathematics, University of Science and Technology, Hong Kong, December, 2001

Visiting Member, Institute of Mathematical Sciences, Chinese University of Hong Kong, December 2000 - January, 2001

Field of Specialization

Partial Differential Equations, Applied Analysis and Fluid Mechanics.
Primary Research Area: 35, 76, 34, 43, 65 (Mathematical Subject Classification)

Research Interests

Stability theory of nonlinear wave equations, formation of singularities, water waves, modeling and analysis of simplified phenomenological models, and integrable systems

Publications

1. On a shallow-water approximation to the Green-Naghdi equations with the Coriolis effect (with Ming Chen and Guilong Gui), *Adv. Math.*, **340** (2018), 106-137.
2. Existence and uniqueness of the global conservative weak solutions to the rotation-Camassa-Holm equation (with C. Mu and X. Tu), *J. Differential Equations*, (2018), in press.
3. Asymptotic analysis on the modelling of the shallow-water waves with the Coriolis effect (with Gui, G. and Luo, T.), *J. Nonlinear Sci.*, (2018), in press.
4. The Cauchy problem for a generalized CamassaHolm equation (with Guo, B., T. Lu, and Mi, Y.), *J. Differential Equations*, (2018), in press.
5. On the global well-posedness of conservative weak solutions for the integrable Novikov equation, (with Chen, G. and Chen, M.) *Indiana Univ. Math. J.,* (2017), in press.
6. Breaking waves and solitary waves to the rotation-two-component Camassa-Holm system, (with Chen, M., Fang, L., and Gao, H.) *SIAM, J. Math. Anal.,* **49**(2017), 3573-3602.
7. Wave-breaking phenomena for the nonlocal Whitham-type equations, (with Ma, F., and Qu, C.) *J. Differential Equations,* **261**(2016), 6029-6054.
8. On the rotation-two-component Camassa-Holm system modelling the equatorial water waves, (with Fan, L., and Gao, H.) *Adv. Math.,* **291** (2016), 59-89.
9. Analysis on the blow-up of solutions to a class of integrable peakon equations, (with Chen, M., Guo, F., and Qu, C.) *J. Funct. Anal.,* **270** (2016), 2343-2374.
10. Stability of the Camassa-Holm peakons in the dynamics of a shallow-water-type system, (with Chen, M., Liu, X., and Qu, C.) *Calc. Var. Partial Differential Equations*, **34** (2016), 1-22.
11. Global well-posedness and blow-up of solutions for the Camassa-Holm equations with fractional dissipation, (with Gui, G.) *Math. Z.,* **281** (2015), 993-1020.
12. Oscillation-induced blow-up to the modified Camassa-Holm equation with linear dispersion, (with Chen, M., Qu, C. and Zhang, S.) *Adv. Math.,* **272** (2015), 225-251.
13. Orbital stability of peakons for a generalization of the modified Camassa-Holm equation, (with Liu, C., Olver, P. and Qu, C) *Nonlinearity,* **27** (2014), 22972319.
14. On the blow-up of solutions to the integrable modified Camassa-Holm equation, (with Olver, P., Qu, C. and Zhang, S.) *Anal. Appl. (Singap.)*, **12** (2014), 355368.
15. Orbital Stability of the train of peakons for an integrable modified Camassa-Holm equation, (with Liu, X. and Qu, C.) *Adv. Math.,* **255** (2014), 1-37.

16. Blow-up solutions and peakons to a generalized μ-Camassa-Holm integrable equation, (with Fu, Y. and Qu, C.) *Comm. Math. Phys.,* **331** (2014), 375-416.

17. Well-posedness, wave breaking and peakons for a modified μ-Camassa-Holm equation, (with Fu, Y., and Qu, C.) *J. Funct. Anal.,* **266**(2) (2014), 433-477.

18. Orbital stability of periodic peakons for a generalized μ-Camassa-Holm equation, (with Liu, X., Qu, C. and Zhang, Y.) *Arch. Rational Mech. Anal.,* **211** (2014), 593-617.

19. On the Cauchy problem for the integrable modified Camassa-Holm equation with cubic nonlinearity, (with Fu, Y. and Qu, C.) *J. Differential Equations,* **255** (2013), 1905-1938.

20. Stability of peakons for the Novikov equation, (with Liu, X. and Qu, C.) *J. Math. Pures Appl.(9),* **101**(2) (2014), 172-186.

21. Stability of peakons for an integrable modified Camassa-Holm equation with cubic nonlinearity, (with Liu, X. and Qu, C.) *Comm. Math. Phys.,* **322** (2013), 967-997.

122. Stability of periodic peakons for the modified μ-Camassa-Holm equation, (with Zheng, Y. and Qu, C.) *Physica D,* **250** (2013), 66-74.

23. Stability of the $\mu-$Camassa-Holm peakons, (with Chen, R. M. and Lenells, J.) *J. Nonlinear Sci.,* **23** (2013), 97-112.

24. Wave-breaking and peakons for a modified Camassa-Holm equation, (with Gui, G., Olver, P., and Qu, C.) *Comm. Math. Phys.,* **319** (2013), 731-759.

25. On the Cauchy problem for the two-component Dullin-Gottwald-Holm system, (with Chen, Y. and Gao, H.) *Discrete Contin. Dynam. Systems,* **33** (2013), 3407-3441.

26. On the model of the compressible hyperelastic rods and Euler equations on the circle, (with Qu, C. and Zhu, M.) *J. Differential Equations,* **254** (2013), 648-659.

27. The Hölder continuity of the solution map to the Camassa-Holm equation in weak topology, (with Chen, R. M. and Zhang, P.) *Math. Ann.,* **357** (2013), 1245-1289.

28. On the global weak solution to a generalized two-component Camassa-Holm system, (with Tan, W. and Yin, Z.) *Quart. of Appl. Math.,* **71** (2013), 661-677.

29. Blow-up of solutions and traveling waves to the two component μ-Camassa-Holm system, (with Zhang, Y. and Qu, C.) *Int. Math. Res. Not., IMRN,* **2013** (2013), 3386-3419.

30. On the ill-posedness of a weakly dispersive one-dimensional Boussinesq system, (with Chen, R. M.) *Journal d'Analyse Math.,* **121**(1) (2013), 299-316.

31. On the wave-breaking phenomena for the two-component Dullin-Gottwald-Holm system, (with Guo, F. and Gao, H.) *J. London Math. Soc.,* **86**(3) (2012), 810-834.

32. Local regularity and decay estimates of solitary waves for the rotation-modified Kadomtsev-Petviashvili equation, (with Chen, M. and Zhang, P.) *Trans.Amer.Math.Soc.,* **364** (2012), 3395-3425.

33. On the blow-up structure for the generalized periodic Camassa-Holm and Degasperis-Procesi equations, (with Fu, Ying and Qu, C.) *J. Funct. Anal.,* **262** (2012), 3125-3158.

34. Wave breaking and global existence for the generalized periodic two-component Hunter

-Saxton system, (with Moon, B.) *J. Differential Equations,* **253** (2012), 319-355.

35. On the wave-breaking phenomena and global existence for the generalized periodic Camassa-Holm equation, (with Gui, G and M. Zhu) *Int. Math. Res. Not., IMRN,* **21** (2012), 4858-4903.

36. On the well-posedness for the Degasperis-Procesi equation, (with Gui, G.) *Quart. Appl. Math.,* **69** (2011), 445-464.

37. Stability of solitary waves of a generalized two-component Camassa-Holm system, (with Chen, Ming Robin and Qiao, Zhijun) *Comm. Partial Differential Equations,* **36** (2011), 2162-2188.

38. Wave breaking to the periodic Degasperis-Procesi equation with linear dispersion, (with Guo, F. and Gao, H.) *J. Reine Angew. Math.,* **657** (2011), 199-223.

39. Wave-breaking and global existence for a generalized two component Camassa-Holm system, (with Chen, Ming Robin) *Int. Math. Res. Not., IMRN,* **6** (2011), 1381-1416.

40. Wave breaking in the Ostrovsky–Hunter equation, (with Pelinovsky, D. and Sakovich, A.) *SIAM J. Math. Anal.,* **42** (2010), 1967-1985.

41. Symmetry and uniqueness of solitary-wave solution for the Ostrovsky equation, (with Zhang, P.) *Arch. Rational Mech. Anal.,* **196** (2010), 811-837.

42. On the global existence and wave-breaking criteria for the two-component Camassa-Holm system, (with Gui, G.) *J. Funct. Anal.,* **258** (2010), 4251-4278.

43 Well-posedness and blow-up solution for a modified two-component periodic Camassa-Holm system with peakons, (with Fu, Y. and Qu, C.) *Math. Ann.,* **348** (2010), 415-448.

44. On the Cauchy problem for the two-component Camassa-Holm system, (with Gui, G.) *Math. Z.,* **268** (2010), 45-66.

45. On the solutions of the rotation-modified Kadomtsev-Petviashvili equation, (with Chen, J.) *Advanced Nonlinear Studies,* **10** (2010), 413-432.

46. Stability of solitary waves and wave-breaking phenomena for the two-component Camassa-Holm system, (with P. Zhang) *Int. Math. Res. Not., IMRN,* **11** (2010), 1981-2021.

47. An operator splitting method for the Degasperis-Procesi equation, (with Feng, B.) *J. Computational Physics,* **228** (2009), 7805-7820.

48. Stability of peakons for the Degasperis-Procesi equation, (with Lin, Z.) *Comm. Pure Appl. Math.,* **62** (2009), 125-146.

49. On the initial-value problem to the Degasperis-Procesi equation with linear dispersion, (with Feng, B., Guo, F. and Gao, H.) *Discrete Contin. Dynam. Systems,* **26** (2009), 1-22.

50. Wave breaking in the short-pulse equation, (with Pelinovsky, D.and Sakovich, A.) *Dynam. PDE,* **26** (2009), 291-310.

51. Boundary control of viscosity Degasperis-Procesi equation, (with Shi, Q. and Tian, L.) *Nonlinear Analysis,* **71** (2009), 382-390.

52. Wave breaking phenomena and stability of peakons for the Degasperis-Procesi equation, Trends in partial differential equations, *Advanced Lectures in Mathematics,* **10** (2009), 265- 293.

53. On the uniform bound of solutions for the KP-type equations, (with Chen, J., Feng, Bao-feng) *Nonlinear Analysis,* **71** (2009), 2062-2069.

54. Instability of standing waves to the inhomogeneous nonlinear Schrödinger equation with harmonic potential, (with Chen, J.) *Illinois J. Math.,* **52** (2008), 1259-1276.

55. Solitary waves for the Rotation-modified Kadomtsev-Petviashvili equation, (with Chen, M. and Hur, V.) *Nonlinearity,* **21** (2008), 2949-2979.

56. On the Cauchy problem for the generalized shallow water wave equation, (with Tian, L. and Gui, G.) *J. Differential Equations,* **245** (2008), 1838-1852.

57. Stable solitary waves of the Ostrvosky equation with weak rotation, (with Ohta, M.) *Proc. Amer. Math. Soc.,* **136** (2008), 511-517.

58. Existence of unstable standing waves for the inhomogeneous nonlinear Schrödinger equation, *Comm. Pure Applied Anal.,* **7** (2008), 193-209.

59. Global existence and blow-up phenomena for the peakon b-family of equations, (with Gui, G. and Tian, L.) *Indiana Univ. Math. J.,* **57**(2008), 1209-1234.

60. Wave breaking of the Degasperis-Projesi equation, (with Yin, Z.) *Int. Math. Res. Not.,* **117** (2007), 22 pages.

61. On the Cauchy problem for the Ostrovsky equation with positive dispersion, (with Gui, G.) *Comm. Partial Differential Equations,* **32** (2007), 1-22.

62. Shock waves and blow-up phenomena for the periodic Degasperis-Procesi equation, (with Escher, J. and Yin, Z.) *Indiana Univ. Math. J.,* **56** (2007), 87-117.

63. Stability and weak rotation limit of solitary waves of the Ostrovsky equation, (with Levandosky, S.) *Discrete Contin. Dynam. Systems-Series B,* **7** (2007), 793-806.

64. On the stability of solitary waves for the Ostrovsky equation, *Quart. Appl. Math.,* **65** (2007), 571-589.

65. Strong instability of solitary waves for a generalized Boussinesq equation, (with Ohta, M. and Todorova, G.) *Ann. Inst. H. Poincaré Anal. Non Linéaire,* **24** (2007), 539-548.

66. Integrals of motion, nonintegrability and local bifurcations for the Ostrovsky Equation, (with Choudhury, R. and Ivanov, R. I.) *Chaos, Solitons and Fractals,* **34** (2007), 544-550.

67. Stability of solitary waves of a generalized Ostrovsky equation, (with Levandosky, S.) *SIAM, J. Math. Anal.,* **38** (2006), 985-1011.

68. Global existence and blow-up phenomena for the Degasperis-Procesi equation, (with Yin, Z.) *Comm. Math. Phys.,* **267** (2006), 801-820.

69. Global weak solutions and blow-up structure for the Degasperis-Procesi equation, (with Escher, J. and Yin, Z.) *J. Funct. Anal.,* **241** (2006), 457-486.

70. Global existence and blow-up solutions for a nonlinear shallow water equation, *Math. Ann.,* **335** (2006), 717-735.

71. Instability of standing waves of the Schrödinger equation with inhomogeneous nonlinearity, (with Wang, X. P.) *Trans. Amer. Math. Soc.,* **358** (2006), 2105-2122.

72. On the well-posedness problem and scattering problem for the Dullin-Gottwald-Holm equation, (with Tian, L. and Gui, G.) *Comm. Math. Phys.,* **257** (2005), 667-701.

73. Solitary waves and fundamental solution for Ostrovsky eqaution, (with Varlamov, V.) *Math. Comput. Simulation,* **69** (2005), 567-579.

74. Stability of solitary waves and weak rotation limit for the Ostrovsky equation, (with Varlamov, V.) *J. Differential Equations,* **203** (2004), 159-183.

75. Stability of solitary waves in higher-order Sobolev spaces, (with Bona, J. and Nguyen, N.) *Comm. Math. Sci.,* 1 **2** (2004), 35-52.

76. Cauchy problem for the Ostrovsky equation, (with Varlamov, V.) *Discrete Contin. Dynam. Systems,* **10** (2004), 731-751.

77. Blow up and instability of a regularized RLW-KP equation, (with Tom, M.) *Differential and Integral Equations,* 9, **16** (2003), 1131-1152.

78. Blow up and strong instability of solitary waves of Kadomtsev-Petviashvili equations in three dimensions, *J. Differential Equations,* **180** (2002), 153-170.

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80. The Cauchy problem and stability of solitary-wave solutions for RLW-KP-type equations, (with Bona, J. and Tom, M.) *J. Differential Equations,* **185** (2002), 437-482.

81. Blow up and strong instability of solitary waves of Kadomtsev-Petviashvili equations, *Trans. Amer. Math. Soc.,* **353** (2001), 191-208.

82. Strong instability of solitary-wave solutions of a generalized Boussinesq equation, *J. Differential Equations.,* **164** (2000), 223-239.

83. Blow up and instability of solitary-wave solutions to a generalized Kadomtsev-Petviashvili equation, *Math and numerical aspects of wave propagation (Golden, CO, 1998),* 214–219, SIAM, Philadelphia, PA, 1998.

84. Dispersion of small solutions of a generalized Boussinesq equation, *J. Funct. Anal.,* **147** (1997), 51-68.

85. Nonlinear stability of solitary waves of a generalized Kadomtsev-Petviashvili equation, (with Wang, X. P.) *Comm. Math. Phys.,* **183** (1997), 253-266.

86. Existence and blow up of a nonlinear Pochhammer-Chree equation, *Indiana Univ. Math. J.,* **45** (1996), 797-816.

87. Instability and blow-up of solutions to a generalized Boussinesq equation, *SIAM J. Math. Anal.* **26** (1995), 1527-1546.

88. Instability of solitary waves for generalized Boussinesq equations, *J. Dynamics and Differential Equations,* **5** (1993), 537-558.

89. On the asymptotic behavior of solutions for a nonlinear Schödinger equation, *Chinese Annals of Math.,* **12A** (1991), 19-25.

90. The Cauchy problem for a class of nonlinear Schrödinger equations, *J. Applied Math.*, **4** (1989), 102-107.

Grants/Awards

- Simons Foundation grant 499875, 2017-2022
- Travel award in Institute for Computational and Experimental Research in Mathematics (ICERM), program "Singularities and Waves in Incompressible Fluids", January 30 - May 5,2017
- NSF grant, DMS-Applied Math-1207840, (sole PI), 2012-2016
- NSF grant, DMS-Applied Math-0906099, (sole PI), 2009-2013
- Texas-ARPATP grant, the NHARP grant-003599-0001-2009, Co-PI, 2010-2013
- UT-Arlington Research Excellence Award, 2010
- American Math. Society (AMS) Fan China Exchange Program grant, 2010
- Anteon Corporation and Air force, Contract F33615-98-D-3210, Co-PI, 2002 - 2003
- UTA Research Enhancement Program Grant, 1999 - 2000
- R. H. Bing Fellowship, University of Texas at Austin, 1994 - 1997