Contact Information

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Employment

School of Mathematics, **The University of Manchester**, Manchester UK
Lecturer in Applied Mathematics *July 2015 to present*

Department of Mathematics, **Imperial College London**, London UK
Chapman Fellow in Mathematics *October 2012 to June 2015*

Department of Mathematics, **Simon Fraser University**, Burnaby, BC Canada
Postdoctoral Fellow *September 2010 to September 2012*

Education

University of California, Los Angeles, Los Angeles, CA USA
Ph.D in Applied and Computational Mathematics, August 2010
- Dissertation Title: *Self-Similar Blowup Solutions of the Aggregation Equation*
- Advisor: Professor Andrea Bertozzi

University of California, Los Angeles, Los Angeles, CA USA
M.A in Mathematics, June 2006

Hong Kong Baptist University, Hong Kong, China
Bachelor of Science in Mathematics, June 2004
- Honour Thesis: *Spectral Methods for Molecular Beam Epitaxy*
- Advisor: Professor Tao Tang

Research

Peer reviewed publications

1. F. Feo, Y. Huang and B. Volzone. Long-time asymptotics for a 1D nonlocal porous medium equation with absorption or convection. Communications in Contemporary Mathematics, in press.
2. X. Wang, W. Shang, X. Li, J. Duan and Y. Huang. Fokker-Planck equation driven by asymmetric Levy motion. *Adv. Comput. Math.*, 45(2): 787–811, 2019
3. J.A. Carrillo, Y. Huang and M. Schmidtchen. Zoology of a non-local cross-diffusion model for two species, *SIAM J. Appl. Math.*, 78(2): 1078–1104, 2018
4. Y. Huang and X. Wang. Finite Difference Methods for the generator of 1D asymmetric alpha-stable Levy motions. *Comput. Methods Appl. Math.*, 18(1): 63–76, 2018
5. J.A. Carrillo, Y. Huang, F. S. Patacchini and G. Wolansky. Numerical Study of a Particle Method for Gradient Flows. *Kinetic and Related Models*, 10(3): 613–641, 2017.
6. J.A. Carrillo, Y. Huang. Explicit Equilibrium Solutions For the Aggregation Equation with Power-Law Potentials. *Kinetic and Related Models*, 10(1): 171–192, 2017.
7. J.A. Carrillo, A. Chertock and Y. Huang. A Finite-Volume Method for Nonlinear Nonlocal Equations with a Gradient Flow Structure. *Commun. Comput. Phys.*, 17 (1): 233–258, 2015.

8. J.A. Carrillo, Y. Huang, M. C. Santos, J. L. Vazquez. Exponential Convergence Towards Stationary States for the 1D Porous Medium Equation with Fractional Pressure. *J. Differential. Equations.*, 258(3):736 – 763, 2015
9. Y. Huang and A. Oberman. Numerical Methods for the Fractional Laplacian: a Finite Difference-quadrature Approach. *SIAM J. Numer. Anal.*, 52(6), 3056-3084., 2014.
10. J.A. Carrillo, M. Chipot and Y. Huang. On global minimizers of repulsive-attractive power-law interaction energies. *Phil. Trans. R. Soc. A*, 372:20130399, 2014.
11. J.A. Carrillo, Y. Huang and S. Martin. Explicit Flock Solutions for Quasi-Morse potentials. *European J. Appl. Math.*, 25(5): 553–578, 2014.
12. Y. Huang. Explicit Barenblatt Profiles for Fractional Porous Medium Equations. *Bull. London Math. Soc.*, 46(4):857–869, 2014.
13. M. Burger, R. Fetecau and Y. Huang. Stationary States and Asymptotic Behaviour of Aggregation Models with Nonlinear Local Repulsion. *SIAM J. Appl. Dyn. Syst.*, 13(1):397–424, 2014.
14. J.A. Carrillo, Y. Huang and S. Martin. Nonlinear stability of flock solutions in second-order swarming models. *Nonlinear Analysis: Real World Applications*, 17(0):332–343, 2014.
15. T. Kolokolnikov, Y. Huang and M. Pavlovski. Singular patterns for an aggregation model with a confining potential. *Physica D*, 260:65–76, 2013.
16. R. Fetecau and Y. Huang. Equilibria of biological aggregations with nonlocal repulsive-attractive interactions. *Physica D*, 260:49–64, 2013.
17. Y. Huang, T.P Witelski and A.L. Bertozzi. Anomalous exponents of self-similar solutions to an aggregation equation in odd dimensions. *Appl. Math. Lett.*, 25(12):2317–2321, 2012.
18. Y. Huang and A.L. Bertozzi. Asymptotics of Blowup Solutions for the Aggregation Equation. *Discrete Contin. Dyn. Syst. Ser. B*, 17(4):1309–1331, 2012.
19. R. C Fetecau, Y. Huang, and T. Kolokolnikov. Swarm dynamics and equilibria for a nonlocal aggregation model. *Nonlinearity*, 24:2681, 2011.
20. Y. Huang and A. L. Bertozzi. Self-similar blowup solutions to an aggregation equation in $\mathbb{R}^n$. *SIAM J. Appl. Math.*, 70(7):2582–2603, 2010.
21. A. M. Dimits, CM Wang, R. Caflisch, B. I. Cohen, and Y. Huang. Understanding the accuracy of Nanbus numerical coulomb collision operator. *J. Comput. Phys.*, 228(13):4881–4892, 2009.
22. Z. Tan and Y. Huang. An alternating Crank-Nicolson method for the numerical solution of the phase-field equations using adaptive moving meshes. *Internat. J. Numer. Methods Fluids*, 56(9):1673–1693, 2008.

External grant awarded

- London Mathematical Society Scheme 1: Celebrating New Appointments (£570), June 2017
- EPSRC grant number EP/K008404/1: Nonlinear Nonlocal Aggregation-Diffusion Partial Differential Equations and Applications (£411,398), Research co-investigator (PI: Prof. Jóse Carrillo), April 2013 - March 2016

Supervision of research students

- **Markus Schmidtchen**, Ph.D. Student (co-supervised with Prof. Jóse Carrillo) on *steady states and pattern formation of two-species non-local models*, October 2015-present
- **Francesco Patacchini**, Ph.D. student (co-supervised with Prof. Jóse Carrillo) on *particle approximation of gradient flow and two species models with nonlocal interactions*, October 2013-June 2017

Teaching and learning

Current and previous teaching

The University of Manchester, Manchester UK
Instructor for

- MATH 36032 Problem Solving by Computer, Spring 2016, Spring 2017, Spring 2018, Spring 2019
- MATH 44041/64041 Applied Dynamical Systems, Fall 2016, Fall 2017, Fall 2018

Imperial College London, London UK
Instructor for

- AERO 3-410 Aeronautics 3rd year mathematics, Spring 2013, 2014, 2015

Simon Fraser University, Burnaby, BC Canada
Instructor for

- MATH 309 Continuous optimization, Spring 2012

Leardership and/or management roles

Management role

- Sectretary of the Math School Board, starting from July 2018.

Knowledge and technology transfer

Application of scholarly activity

- Supervision of a MSc dissertation (by Mr Philip Ndikum) in the summer of 2017 on Recommender Systems, sponsed by the online retailer The Hut Group.

Outreach and public engagement

Public engagement

- Science Spectacular fair (with Elizabeth Buckingham-Jeffery, Stefan Güttel and Thomas Kempton) on Saturday, 20 October 2018 in the Whitworth Building and Manchester Museum. An interactive demonstration of machine learning was presented, using the hexapawn game invented by Martin Gardner.

Honours & Awards

- Chapman Fellow in Mathematics (Imperial College London): 2012-2015
- CNSI Graduate Student Fellowship(UCLA): 2004-2005
- Presidents Honour Roll(HKBU): 2001-2004
- UGC Hong Kong Jockey Club Scholarship Scheme for Outstanding Mainland Students(HKBU): 2001-2004
- Mr Li Men Jan Prize in Mathematics(HKBU): 2001-2003
- Madam K.S. Fung Wu Memorial Scholarships(HKBU): 2001-2003

Academic Services

- Co-organiser (with Alex Watson) of the one-day workshop: *Lévy Processes and Anomalous Diffusion* on June 26, 2017
- Local organizer of Collective Behaviour: Macroscopic versus Kinetic Descriptions, May 19 - 23, 2014
- Co-organizer (with Jóse Carrillo and Pierre Degond) of Applied PDEs seminar in Imperial College London, January 2013-June 2015
- Co-organizer minisymposiums:
  - ICIAM (three sessions on *Nonlocal nonlinear equations* with F. Feo and B. Volzone), Valencia, 14 - 19July , 2019
  - ICIAM (three sessions on *Nonlinear aggregation-diffusion equations* with Prof. J. A. Carrillo and Dr. Y. Yao), Beijing, August 10-14, 2015
  - 26th Biennial Numerical Analysis Conference (three sessions on *Numerical methods for fractional differential equations* with Dr. Bangti Jin), June 23-26, 2015, Glasgow Scotland
  - SIAM Conference on Analysis of PDEs (three sessions on *Nonlocal Interaction Models* with Prof. T. Kolnokonikov) Orlando, December 7-10, 2013

- Referee for: *Physica D, SIAM Journal on Applied Mathematics, SIAM Journal on Numerical Analysis, SIAM Journal on Numerical Analysis on Multiscale Modeling and Simulation, Applied Mathematics and Computation, Journal of the Royal Society Interface* $\cdots$

Invited Seminar Talks

- Joint FMS/DSPDE Seminar, Department of Mathematics, University of Surrey, 26 October 2016
- Numerical analysis and scientific computing Seminar, University of Manchester, October 2, 2015
- Applied Mathematics and MCND seminars, University of Manchester, October 14, 2015
- Applied PDEs Seminar, Department of Mathematics, Imperial College London, 2013
- Department of Mathematics, Bath University, 2012
- IAM Seminar Series and MathBio Seminar, University of British Columbia, 2011
- CSC Weekly Seminar, Simon Fraser University, 2011
- Department of Mathematics, Hong Kong Baptist University, 2011
- CSC Weekly Seminar, Simon Fraser University, 2010

Invited Conference and workshop Talks

- British Applied Mathematics Colloquium, 24-26 April 2019, Bath
- Recent Developments in the Study of Growth Processes, 17-19 September 2018, Warwick
- Workshop on PDEs: Modelling, Analysis and Numerical Simulation, June 19-23, 2017, Granada, Spain
- Workshop on Emerging PDE models in Socio-Economic Sciences, 15-19 May 2017, Warwick, UK
- Equadiff 2015, July 6-10, 2015, Lyon, France
- ICMS Workshop: Gradient flows: from theory to application, April 20-24, 2015, Edinburgh UK
- Workshop on PDEs: Modelling, Analysis and Numerical Simulation, September 15-19, 2014, Granada, Spain
- Workshop on Nonlinear Nonlocal Partial Differential Equations and Applications, September 14-18, 2015, Anacapri, Italy
- 2014 SIAM Annual Meeting, July 7- July 11, 2014, Chicago, USA
- BIRS workshop on Entropy Methods, PDEs, Functional Inequalities, and Applications, June 29 - July 4, 2014, Banff, Alberta, Canada
- Les Journees d'Analyse Nonlineaires de Besancon, June 19 - June 20, 2014, Besancon, France
- 8th European Conference on Elliptic and Parabolic Problems, May 26 – May 30, 2014, Gaeta, Italy
- Collective Behaviour: Macroscopic versus Kinetic Descriptions, May 19 – May 23, 2014, Imperial College London
- University of Bath, Microscopic descriptions and mean-field equations in physics and social sciences (Spring School), May 12-May 16, 2014, Bath
- British Applied Mathematics Colloquium, April 28 – April 30, 2014, Cardiff
- SIAM Conference on Analysis of Partial Differential Equations, December 6 – December 10, 2013, Lake Buena Vista, Orlando, USA

- Canadian Mathematics Society Summer Meeting, June 4 – June 7, 2013, Halifax, Nova Scotia, Canada
- BIRS workshop on Partial differential equations in the social and life science: emergent challenges in modelling, analysis, and computations, March 31–April 4, 2013, Banff, Alberta, Canada
- Canadian Applied and Industrial Mathematics Annual Meeting, June 24 – June 28, 2012, Toronto, Ontario, Canada
- BIRS workshop on Emergent behaviour in multi-particle systems with non-local interactions, January 22 – January 27, 2012, Banff, Alberta, Canada
- SAMSI workshop on Stochastic Dynamics: Self-Organization and Multi-Scale Mathematical Modeling of Active Biological Systems, October 26 – October 28, 2009, Research Triangle Park, North Carolina, USA