Curriculum vitae

Name: **Jin-Han Xie**
Date of birth: 27 September 1989
Citizenship: China
Affiliation: Department of Mechanics, College of Engineering, Peking University
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EDUCATION

PhD, Applied and Computational Mathematics (advisor: Prof. Jacques Vanneste)
Thesis: Wave-mean flow interactions, from micrometre to megametre scales.
School of mathematics, University of Edinburgh, Edinburgh, UK Jul. 2015

B.Sc., Theoretical and Applied Mechanics (advisor: Prof. Zhen-Su She)
Dissertation: A SED-based study of k-ω model for turbulent channel flow.
College of Engineering, Peking University, Beijing, China Jul. 2011

PROFESSIONAL APPOINTMENT

Assistant Professor, Department of Mechanics, College of Engineering, Peking University, China Sep. 2019 –

Courant Instructor/Assistant Professor, Courant Institute, New York university, NY, USA Sep. 2017 – Aug. 2017

Postdoc, Department of Physics, University of California, Berkeley, USA Jun. 2015–Jun. 2017
(advisor: Prof. Edgar Knobloch)

PUBLICATIONS

Refereed papers

1. Xie J.-H. & Bühler O. 2019 Third-order structure functions for isotropic turbulence with bidirectional energy transfer, *J. Fluid Mech.*, **877**, R3.
2. Xie J.-H. & Bühler O. 2019 Two-dimensional isotropic inertia–gravity wave turbulence, *J. Fluid Mech.*, **872**, 752–783.
3. Xie J.-H., Julien K. & Knobloch E. 2019 Jet formation in salt-finger convection: a modified Rayleigh-Bénard problem, *J. Fluid Mech.*, **858**, 228–263.
4. Xie J.-H. & Bühler O. 2018 Exact third-order structure functions for two-dimensional turbulence, *J. Fluid Mech.*, **851**, 672–686.
5. Miquel B., Xie J.-H., Featherstone N., Julien K. & Knobloch E. 2018 Equatorially Trapped Convection in a Rapidly Rotating Shallow Shell, *Phys. Rev. Fluids*, **3**, 053801.
6. Xie J.-H., Julien K. & Knobloch E. 2018 Subcritical saturation of the magnetorotational instability through mean magnetic field generation, *Mon. Notices Royal Astron. Soc.* **474 (3)**, 3451-3465.

7. Xie J.-H. & Vanneste J. 2017 Interaction between mountain waves and shear flow in an inertial layer, *J. Fluid Mech.* **816**, 352–380.
8. Xie J.-H., Knobloch E., Miquel B. & Julien K. 2017 A reduced model for salt fingering convection in the small diffusivity ratio limit, *Fluids* **2(1)**, 6.
9. Xie J.-H. & Vanneste J. 2015 A generalised-Lagrangian-mean model of the interactions between near-inertial waves and mean flow, *J. Fluid Mech.* **774**, 143–169.
10. Xie J.-H. & Vanneste J. 2014 Dynamics of a spherical particle in an acoustic field: a multiscale approach, *Phys. Fluids*, **26**, 102001.
11. Xie J.-H. & Vanneste J. 2014 Boundary streaming with Navier boundary condition, *Phys. Rev. E*, **89**, 063010.

Conference papers

1. Xie J.-H., Miquel B., Knobloch E. & Julien K. 2016 Salt-fingering convection in the small diffusivity ratio limit. *International Symposium on Stratified Flows* **1(1)**.

Unrefereed publications

1. Xie J.-H. Wave-mean flow interactions: from nanometre to megametre scales, PhD thesis, the University of Edinburgh.
2. Xie J.-H. A SED-based study of k-ω model for turbulent channel flow, dissertation, Peking University, 66pp (in Chinese).
3. Xie J.-H. A new plasma model for ball lightning, Report to National Innovation Plan for undergraduate, 22pp (in Chinese).

HONORS and SCHOLARSHIPS

Joseph B. Keller Postdoctoral Fellowship (Courant Institute)
Edinburgh Global Research Scholarship (The University of Edinburgh)
Centre for Numerical Algorithms and Intelligent Software Scholarship (The University of Edinburgh)
Peking University 1987 Alumni Scholarship (Peking University)
Academic Excellence Award, Peking University (Peking University)

ACADEMIC ACTIVITY

Talks

- *22nd Conference on Atmospheric and Oceanic Fluid Dynamics, Portland, Maine, USA,* 2019,
  Spectral Energy Transfer and Third-Order Structure Functions in Atmosphere Ocean Turbulence.
- *CAOS colloquium, Courant institute, New York University, NY, USA,* 2019,
  Spectral energy transfer and structure functions in two-dimensional turbulence.
- *School of Energy Science and Engineering, Harbin Institute of Technology, China,* 2019,
  Spectral energy transfer and structure function in two-dimensional turbulence.
- *Department of Mathematics, SUSTech, China,* 2019,
  Spectral energy transfer and structure function in two-dimensional turbulence.
- *Department of Mechanical and Energy Engineering, SUSTech, China,* 2019,
  Models and exact theories for understanding energy transfers in the atmospheric and oceanic flows.

- *Department of Mathematics, NYU Shanghai, China*, 2019,
  Spectral energy transfer and structure function in two-dimensional turbulence.
- *Department of Mechanics, College of Engineering, Peking University, China*, 2019,
  Turbulence theory based on third-order correlation functions and its applications to atmospheric and oceanic flows.
- *Department of Mathematics, Fudan University, China*, 2018,
  Turbulence theory based on third-order correlation functions and its applications to atmospheric and oceanic flows.
- *71th Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, Georgia, USA*, 2018,
  Rotating salt-fingering convection in the limit of small diffusivity ratio and large density ratio.
- *International Conference on Rayleigh-Beńard Turbulence, University of Twente, Netherlands*, 2018,
  Jet formation in modified Rayleigh-Beńard Convection.
- *Perspectives in Nonlinear Science, Institut d'Études Scientifiques de Cargèse, France*, 2018,
  Jet formation in modified Rayleigh-Beńard Convection.
- *CAOS colloquium, Courant institute, NYU, NY, USA*, 2017,
  Interactions between near-inertial waves and mesoscale mean flow in the ocean.
- *Berkeley fluid seminar, University of California, Berkeley, USA*, 2017,
  A reduced model for salt-fingering convection in the limit of small diffusivity.
- *69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, USA*, 2016,
  A reduced model for salt-fingering convection in the limit of small diffusivity.
- *Geophysical And Astrophysical Fluid Dynamics Seminar, University of California, Santa Cruz, USA*, 2016,
  A reduced model for salt fingering convection in the small diffusivity ratio limit.
- *VIIIth International Symposium on Stratified Flows, San Diego, USA*, 2016,
  A reduced model for salt fingering convection with small diffusivity ratio.
- *Berkeley fluid seminar, University of California, Berkeley, USA*, 2016,
  Interactions between near-inertial waves and mesoscale mean flow in the ocean.
- *Maxwell Institute Graduate School on Evolution Equations, Edinburgh, UK*, 2014,
  A coupled model of the interactions between near-inertial waves and mesoscale mean flow in the ocean.
- *International centre for mathematical science, Edinburgh, UK*, 2014,
  Dynamics of a sphere in an acoustic fluid.
- *Applied and computational mathematics group seminar, School of Mathematics, University of Edinburgh, Edinburgh, UK*, 2014,
  Modelling the interactions between near-inertial oscillations and mean flows.

Posters

- *71th Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, Georgia, USA*, 2018,
  Exact third-order structure functions for two-dimensional rotating stratified turbulence.
- *Multiscale Interactions in Geophysical Fluids, Oberwolfach, Germany*, 2016,
  A reduced model for salt fingering convection with small diffusivity ratio.
- *20th Conference on Atmospheric and Oceanic Fluid Dynamics, Minneapolis, USA*, 2015,
  Interactions between near-inertial waves and mesoscale mean flow in the ocean.
- *Eddy — Mean-Flow Interactions in Fluids, KITP, USA*, 2014,
  Topographic wave-mean flow interactions in an inertial layer.

- *Fundamentals of climate, atmosphere and ocean dynamics, University of Hamburg, Hamburg, Germany,* 2014,
  Modelling the interactions of inertial waves and ocean turbulence.

TEACHING EXPERIENCES

Lecturer, *New York University, NY, USA*
Linear Algebra (Fall 2017, Spring 2018, Fall 2018)
Calculus II (Spring 2019)

Tutor, *University of Edinburgh, UK*
Mathematics for science and engineering 1a (2011/2012, 2012/2013, 2013/2014, 2014/2015)
Mathematics for science and engineering 1b (2012, 2013, 2014)
Mathematics for science and engineering 2a (2011/2012, 2012/2013, 2013/2014)
Mathematics for science and engineering 2b (2012, 2013, 2014)
Several Variable Calculus & Differential Equations (2014/2015)

COMMUNITY INVOLVEMENT

Reviewer: Journal of fluid mechanics, Physics of fluids, Journal of Physical Oceanography, International Journal of Nonlinear Sciences and Numerical Simulation.

SKILLS

Language: Chinese (Mandarin), English
Computer skills: Matlab, Maple, Mathematica

MEMBERSHIPS

Member of American Physical Society
Member of American Meteorological Society
Member of Society for Industrial and Applied Mathematics