Cong Gu

Curriculum Vitæ

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Education

Texas A&M University — **College Station, Texas**
Ph.D. in Mathematics — *Sep. 2011–Dec. 2015*
Adviser: Goong Chen.
Dissertation: Computational Mechanics for Aircraft Water Entry and Wind Energy

Shanghai Jiao Tong University — **Shanghai, China**
B.S. in Mathematics and Applied Mathematics — *Sep. 2006–Jun. 2010*
Honor Class

Professional Experience

Texas A&M University — **College Station, Texas**
Visiting Assistant Professor — *Sep. 2016–*

Texas A&M University — **College Station, Texas**
Postdoc Research Associate — *Feb. 2016–*

Shanghai Union Exhibition Co., Ltd. — **Shanghai, China**
Project Software Developer — *Oct. 2010–Aug. 2011*

Teaching Experience

Texas A&M University — **College Station, Texas**
Instructor of Record — *Sep. 2016–*
- Engineering Mathematics I (undergraduate level calculus I). Fall 2016.

Texas A&M University — **College Station, Texas**
Graduate Teaching Assistant — *Sep. 2011–May. 2015*
- Methods of Applied Mathematics I (graduate level). Fall 2011.
- Engineering Mathematics I (undergraduate level calculus I). Spring, Summer, Fall 2012.
- Engineering Mathematics II (undergraduate level calculus II). Spring 2013, Spring 2015.

Publications

Journal

[1] Goong Chen, Yi-Ching Wang, Alain Perronnet, Cong Gu, et al. "The advanced role of computational mechanics and visualization in science and technology: analysis of the Germanwings Flight 9525 crash". In: *Physica Scripta* 92.3 (2017), p. 033002.

[2] Goong Chen, Cong Gu, Philip J Morris, Eric G Paterson, et al. "Malaysia Airlines Flight MH370: Water Entry of an Airliner". In: *Notices of the American Mathematical Society* 62.4 (2015), pp. 330–334.

Submitted

[1] Cong Gu, Chun-Ming Yang, Tai-Chia Lin, Jean Yeh, et al. "Positive Solutions for the Kirchhoff-Type Problem Involving General Critical Growth — Part II: 3D Numerical Solutions".

[2] Huixing Zhang, Cong Gu, Chun-Ming Yang, Jean Yeh, et al. "Positive Solutions for the Kirchhoff-Type Problem Involving General Critical Growth — Part I: Existence Theorem Involving General Critical Growth".

Dissertation

[1] Cong Gu. "Computational Mechanics for Aircraft Water Entry and Wind Energy". Texas A&M University, 2015.

Preprint / in Preparation

[1] Goong Chen, Cong Gu, Hichem Hajaiej, Philip J Morris, et al. "OpenFOAM computation of interacting wind turbine flows and control". URL: `https://www.dropbox.com/s/9iiu9yh1jpvpmz5/7.pdf?dl=1`.

[2] Cong Gu. "Structural failure of aircraft during water entry". URL: `https://www.dropbox.com/s/wo97hglux6bdu2o/22.pdf?dl=1`.

[3] Cong Gu and Goong Chen. "Numerical Solution for Nonlinear Schrödinger Equations using OpenFOAM".

[4] Cong Gu and Goong Chen. "Aerodynamics and Performance of Blended-Wing-Body Aircrafts".

Talks, Conferences and Workshops

Talks Given

- Thirty minute talk. Texas Differential Equations Conference 2017, San Marcos, Texas. Mar. 4–5, 2017.
- Thirty minute talk. Texas Differential Equations Conference 2016, San Marcos, Texas. April. 9, 2016.
- Thirty minute talk at booth. The International Conference for High Performance Computing, Networking, Storage and Analysis 2015 (SC15), Austin, Texas. Nov. 15–20, 2015.
- Thirty minute talk. Texas Partial Differential Equations Conference 2015, Houston, Texas. Mar. 28–29, 2015.
- Thirty minute talk. AMS Special Session on Recent Advances in the Analysis and Applications of Modern Splitting Methods, Joint Mathematics meeting 2015 (JMM15), San Antonio, Texas. Jan. 10–13, 2015.
- One hour talk. NYU-ECNU Institute of Mathematical Sciences, NYU Shanghai, Shanghai, China. Dec. 12, 2014.

Attended

- Summer Graduate School — Incompressible Fluid Flows at High Reynolds Number. Mathematical Sciences Research Institute (MSRI), Berkeley, California. Jul. 27–Aug. 7 2015.

Research Visits

- Science Program, Texas A&M University at Qatar, Qatar. Jan. 11 – May. 5, 2013
- NYU-ECNU Institute of Mathematical Sciences, NYU Shanghai, Shanghai, China. Dec. 11–31, 2014

Skills and Expertise

OpenFOAM Technology: very familiar with OpenFOAM code structures, with experiences in writing solvers, extension libraries and computation cases for OpenFOAM.

Theoretical and Numerical Analysis of PDEs: trained in a math Ph.D. program for theoretical and numerical analysis of PDEs, especially Navier-Stokes equations.

Computer Programming: Proficient in C/C++, lisp/scheme, MATLAB/octave, bash. Hand-on experience with Python, Mathematica, R, etc, and many scientific libraries.

HPC/Linux: seasoned Linux user, developer and system maintainer and all recent CFD projects are executed on HPCs.

Languages

English: Proficient

Mandarin Chinese: Native

References

Goong Chen: Professor, Texas A&M University, Email: gchen@math.tamu.edu

Peter Stiller: Professor, Texas A&M University, Email: stiller@math.tamu.edu

Siu A. Chin: Professor, Texas A&M University, Email: chin@physics.tamu.edu

Hichem Hajaiej: Visiting Associate Professor, New York University – Shanghai, Email: hichem.hajaiej@gmail.com