Xiong Ding

(+1) 678-882-9228 | dingxiong203@gmail.com | www.cns.gatech.edu/~xiong/ | https://github.com/dingxiong | www.linkedin.com/in/xiong-ding

Software Developer Experience

Software Engineer @ Airbnb San Francisco, CA, USA *May. 2017 – Present*

Home Infra team

- **Achievement:** Build and maintain Ebert (the review service) for *airbnb.com*
- **Framework:** Dropwizard
  - **main Features:** • Mcrouter cache enabled • Horizontal scalable • Accompanied by mutation publisher

Skills

Programming :	**Proficient :** C/C++, Java, Matlab; **Familiar :** Python
Domain knowledge :	Numerical PDE, Matrix analysis, Nonlinear dynamics
Web :	Django with Python

Education

Ph.D. in Physics *Georgia Institute of Technology* Atlanta, GA, USA *Aug. 2012 – May. 2017*

- adviser: Prof. Predrag Cvitanović
- Research area : nonlinear dynamics, cycle expansion theory, complex Ginzburg-Landau equation

M.S. in Computer Science & Engineering *GPA: 3.86/4.0* Georgia Institute of Technology *Atlanta, GA, USA* Jan. 2016 – Jun. 2016

B.S. in Physics *Wuhan University* Wuhan, China *Sep. 2008 - Jun. 2012*

Research Experience

Center for Nonlinear Science, School of Physics, Georgia Institute of Technology Atlanta, GA, USA *Jun. 2013 – May. 2017*

- Research topic: *Computation of Floquet vectors in Kuramoto-Sivashinsky system*
  - **main Result:** Find the smallest eigenvalue of Floquet matrix to be order of 10^{-3000} with relative accuracy 10^{-14}.
  - **tools/skills used:** C++, Matrix decomposition, Eigen
- Research topic: *Investigation of the local dimension of inertial manifolds in chaotic systems*
  - **main Result:** We show strong evidence that the inertial manifold of 1-d Kuramoto-Sivashinsky system has dimension 8.
  - **tools/skills used:** C++, Matlab, Exponential integrators
- Research topic: *Symbolic dynamics in symmetry reduced 1-d Kuramoto-Sivashinsky system*
  - **main Result:** In the symmetry reduced state space, we propose to obtain the symbolic dynamics of 1-d KS equation by constructing appropriate Poincaré sections.
  - **tools/skills used:** C++, Matlab, Cycle expansion theory

School of Mathematics, Georgia Institute of Technology Atlanta, GA, USA *Jan. 2016 – Jun. 2016*

- Research topic: *Time-step adaptive exponential integrator for soliton explosions in 1d and 2d cubic quintic Ginzburg-Landau systems*
  - **main Result:** Formulize a new time-step adaptive exponential integrator for complex GL equation.
  - **tools/skills used:** Numerical PDE, C++, Numpy

Conferences & Talks

SIAM Conference on Application of Dynamical Systems Snowbird, Utah, USA *May 2015*
Talk: Periodic Eigendecomposition and Its Application in Nonlinear Dynamics Coauthor: Prof. P. Cvitanović

Dynamics Days US Atlanta, GA, USA *Jan. 2014*
Poster: Lyapunov exponents, Floquet exponents and covariant vectors in Kuramoto-Sivashinsky equation Coauthor: Prof. P. Cvitanović

Publications

[1] **X.Ding**, H. Chaté, P. Cvitanović, E. Siminos, and K. A. Takeuchi , *Estimating the dimension of an inertial manifold from unstable periodic orbits* , Phys. Rev. Lett. 117, 024101 (2016)

[2] **X. Ding** and P. Cvitanović , *Periodic Eigendecomposition and its application in Kuramoto-Sivashinsky system* , SIAM J. Appl. Dyn. Syst. 15, 1434–1454 (2016)

[3] **X. Ding** and S. H. Kang , *Adaptive time-stepping exponential integrators for cubic-quintic complex Ginzburg-Landau equations* , arXiv:1703.09622 (2017)

[4] **X. Ding** and P. Cvitanović , *Exploding relative periodic orbits in cubic-quintic complex Ginzburg-Landau equation* , In preparation (2018)