QUYNH NGUYEN

Fluid Dynamics Researcher
New York, NY | quynh.nguyen@nyu.edu | 714-902-7149 | Google Scholar

EDUCATION

PhD, Physics. *New York University, New York City, NY* 1/2021
Thesis: "Emergent Flows, Irreversibility and Unsteady Effects in Asymmetric and Looped Geometries", 3/2021.
BS, Physics. *University of Minnesota, Minneapolis, MN* 2015

RESEARCH EXPERIENCE

Graduate Research Assistant in Experimental Fluid Dynamics 2017—12/2020
Applied Math Lab, Courant Institute of Mathematical Sciences, New York University
- Designed table-top experiments to study physics of flows in asymmetric and looped geometries
- Built customized equipment using CAD design, 3D printing, laser-cutting, and machining
- Performed experiments, flow visualization, data analysis and mathematical modeling
- Discovered a mechanism of flow rectification in biological fluid dynamics
- Discovered early transition to turbulence in channel flows at $\mathrm{Re} \approx 200$
- Published in high-impact journals as first author
- Mentoring undergraduate and high school interns

Physics lab instructor 1/2016—9/2020
Department of Physics, New York University
- Led undergraduate physics labs in mechanics, electricity and magnetism, optics, electronics
- Average student review: 4.5/5

Undergraduate Research Assistant 2014—2015
Physics Department, University of Minnesota
- Developed data acquisition algorithms, tested electronics, built equipment for NOvA and CMS particle physics experiments

Summer Intern in Simulation 2014
Fermi National Accelerator Laboratory, Batavia, IL
- Wrote Monte Carlo simulations in C++ for LBNE particle physics experiments.

PUBLICATIONS & CONFERENCE TALKS

- Quynh Nguyen et al., "Early turbulence and pulsatile flows enhance diodicity of Tesla's macrofluidic valve," *Nature Communications*, 2021, in press. (preprint)
- Quynh Nguyen et al., "Flow rectification in loopy network models of bird lungs," *Physical Review Letters*, 2021. (article, press release, media feature)
- Quynh Nguyen et al., "Tesla's fluidic diode and the electronic-hydraulic analogy," *American Journal of Physics*, 2021. (article)
- Quynh Nguyen et al., "Emergent circulation in the loopy network of bird lungs," American Physical Society's Division of Fluid Dynamics Meeting, Chicago, 2020.
- Quynh Nguyen et al.,"Testing Nikola Tesla's fluidic diode," American Physical Society's Division of Fluid Dynamics Meeting, Atlanta, 2018.

TECHNICAL SKILLS

Computing: MATLAB, Python, C++, SQL, shell scripting, labVIEW, Linux, Git, high performance computing
Electrical: Digital Signal Processing, FPGA, microcontroller, Verilog, circuit analysis, soldering
Mechanical & other: PIV, scientific cameras, machining, 3D printing, laser cutting, laser, optics, CAD, SolidWorks

HONORS AND AWARDS

MacCracken Fellowship: for fully-funded doctoral studies 2015—2020
New York University
Hagstrum Award: for overall excellence and future promise in a graduating senior 2015
University of Minnesota

REFERENCES

Leif Ristroph. Prof. of Mathematics, Courant Insitute of Mathematical Sciences, New York University.
PhD Advisor. E-mail: lr1090@nyu.edu
Jun Zhang. Prof. of Physics and Mathematics, New York University and New York University Shanghai.
PhD Advisor. E-mail: jun@cims.nyu.edu
Stephen Childress. Emeritus Prof. of Mathematics, Courant Insitute of Mathematical Sciences, New York University.
Mentor & co-author. E-mail: childres@cims.nyu.edu