Xiaojia J. Xu • Curriculum Vitae

2301 Vanderbilt Pl
PMB 357668
Nashville, TN 37235-0002

Phone: +1(615)668-8368
Email: xiaojia.j.xu@vanderbilt.edu
Website: xj-xu.github.io

Research interests

Biophysics & condensed matter
I am particularly interested in studying active matter systems that exhibit emergent phenonma, such as collective behavior, nonlinear dynamics and self-organization.

Education

2015 - 2019 **B.A. in Physics** with Honors, Vanderbilt University (Expected)
- Thesis: "Web-based application of Cellular Force Inference Toolkit (CellFIT)"
- Thesis advisor: Professor M. Shane Hutson
- Physics GPA: 3.888/4.000
- Minors: Mathematics; Scientific Computing; Earth and Environmental Science.

2011 - 2015 **GCE A-Levels**, Shenzhen College of International Education
- A-Levels in Physics, Mathematics, Biology and Geography

Research experience

July 2018 - now Undergraduate researcher for Professor Shane Hutson.
• Department of Physics and Astronomy, Vanderbilt University.
• Cell mechanics

Aug - Dec 2017 Undergraduate researcher for Professor Norman Tolk.
• Center for Molecular and Atomic Studies at Surfaces, Vanderbilt University.
• I studied ultrafast dynamics in condensed matter systems using pump probe spectroscopy. I assisted with carrying out experiments and doing data analysis.

Apr - Aug 2017 Undergraduate researcher for Professor Kalman Varga.
• Department of Physics and Astronomy, Vanderbilt University.
• Time-dependent density functional theory simulations of nanoscale systems.

Jan 2016 – Apr 2017 Undergraduate researcher for Professor Ralf Bennartz.
• Department of Earth and Environmental Science, Vanderbilt University.
• I learned to develop software for processing data from a Multi-Angle Snowflake Camera and helped to set up a sun photometer as part of the NASA Aerosol Robotic Network.

Other academic experiences

June 2018 Summer School at the Center for the Physics of Biological Functions, Princeton University
- Physics of Life Summer School

June - Aug 2013 Summer College, Stanford University
• Introductory physics sequence: PHYSICS 21S, 23S, 25S with lab

Publications & talks

Journal articles

2018 Daniel Kidd, **Xiaojia Xu**, Cody Covington, Kazuyuki Watanabe, Kalman Varga, "Simulation of laser-induced rectification in a nanoscale vacuum-tube diode", *Journal of Applied Physics* 123, 054501. DOI: 10.1063/1.5019259

Talks

2018 American Physical Society March Meeting, Los Angeles, *Contributed talk*. Link
2017 Vanderbilt Undergraduate Research Fair, *Poster presentation*
2017 Vanderbilt Summer Science Academy 15th Annual Research Symposium, *Poster presentation*
2017 Vanderbilt Physics & Astronomy Summer Symposium, *Oral presentation*

Teaching & tutoring

Aug 2017 - now Vanderbilt Tutoring Services
• Physics and mathematics tutor
• Classes tutored: Physics for life sciences (PHYS 1501, 1502); General physics (PHYS 1601, 1602); Single-variable calculus (MATH 1300, 1301); Multivariable calculus (MATH 2300); Linear algebra (MATH 2410); Ordinary differential equations (MATH 2420).

Aug 2017 - Aug 2018 Department of Physics and Astronomy, Vanderbilt University
• Grader and help desk tutor for introductory physics

May - Aug 2018 Varsity Tutors
• Calculus and programming tutor

Jan - Apr 2016 Vanderbilt Student Volunteers for Science
• Geology teacher at a local grade 7 classroom

Employment

June 2016 – now Vanderbilt Outdoor Recreation Center
• Climbing wall staff • Equipment specialist • Trip coordinator

Honours, awards & funding

2018 Vanderbilt Undergraduate Conference Travel Award ($1000)
2017 Summer undergraduate research funding received ($5000) from Professor Kalman Varga's NSF grants OISE 1261117 and PHY 1314463
2015-18 Dean's List, College of Arts and Science, Vanderbilt University
2016-17 Undergraduate research funding received ($2900) from Professor Ralf Bennartz
2012 Bronze Award, United Kingdom Senior Mathematical Challenge
2012 Highest score, Cambridge IGCSE Geography
2010 1^{st} Place, University of Waterloo Gauss Mathematics Contest

Organizations & Societies

- American Physical Society, undergraduate member
- Sigma Pi Sigma Physics Honor Society, Vanderbilt Chapter, member
- Vanderbilt University Rock Climbing Club, founder and president
- Zeta Beta Tau Fraternity, Vanderbilt Alpha Gamma Chapter, member

Skills

- Proficiency in Python, Fortran (f90), Bash. Familiarity with C, Java, HTML, MATLAB, IDL.
- Familiarity with parallel computing APIs: OpenMP, MPI, CUDA.
- Experience with computer clusters (e.g. ACCRE, UNIX cluster environment).

Standardized tests

- GRE Verbal: 162 (91st percentile); GRE Quantitative: 166 (91st); GRE Writing: 5.0 (93rd)
- SAT Reading: 750 (98th percentile); SAT Math: 800 (99th); SAT Physics: 800 (89th)

Community Service

2016-2017 Alpha Phi Omega National Service Fraternity, Vanderbilt Chapter member Vanderbilt Alternative Spring Break (ASB) service trip participant

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http://xj-xu.github.io