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# Vinh Tran

GitHub: vinh-c-tran

## Education

**Master of Science in Computational Physics**
○ *California State University - Long Beach - GPA: 4.0/4.0* August 2020 - Current

**Bachelor of Arts in Physics**
○ *Harvard University, Cambridge, MA - GPA: 3.5/4.0* August 2015 - May 2019

## Skills

| | |
|---|---|
| **Density Functional Theory** | Exposure to DFT calculations: ground state electronic structure, structural and surface relaxation, and phonon/perturbative calculations with Quantum Espresso with workflow automation using Python and structure building/visualization using Atomic Simulation Environment (ASE) |
| **Coding** | Comfortability with Python 3 as applied to scientific computing and data science as used in course work and research especially with standard libraries: Numpy, Scipy, Pandas, Matplotlib, Jupyter notebook. Experience with miscellaneous languages through prior coursework: LaTeX, Mathematica, Matlab, Fortran 90 |
| **Numerical** | Multivariable Root Finding and Optimization, Mathematical Modeling, Curve Fitting, Data Analysis |
| **Hands On** | Exposure to working in a laboratory environment via laboratory courses including working with equipment such as oscilloscopes, multimeters, and PPMS as well as automation of data collection |
| **Communication** | Effective and succinct scientific writing documenting current progress/results |

## Experience

**Graduate Research Assistant in Astrophysics** **December 2020 — Present**
*CSULB* *Long Beach, CA*

- Collaborated on a research project with Dr. Prashanth Jaikumar that investigated g-mode stellar oscillations as a possible probe of the problem of neutron star core composition applied to the specific case of Hyperonic matter.
- Used computational physics methods in Python including: non-linear system of equations solvers, numerical differentiation, finite element methods, data analysis and visualization, and symbolic mathematical manipulation using SymPy.
- Wrote and consolidated results in presentable form for progress and communication via Jupyter notebooks and LaTeX.
- Extensively used standard python packages: NumPy, Scipy, Pandas, Matplotlib, and SymPy

**Graduate Teaching Assistant** **December 2020 - Present**
*CSULB* *Long Beach, CA*

- Graduate teaching assistant in physics courses including: Graduate Quantum Mechanics I (Fall 2021), Graduate Quantum Mechanics II and Graduate Electrodynamics (Spring 2022).
- Lab teaching assistant for undergraduate physics courses: Physics 100B: General Physics II (Spring 2021).
- Responsible for educating graduate and undergraduate students in resuscitation and office hours, provided graded feedback for homework and exams, and solved and wrote complete solutions to problem sets in LaTeX.

**Nanoscale Electronics Laboratory** **August 2021 - December 2021**
*CSULB* *Long Beach, CA*

- Developed hands on skills in laboratory methods including automating laboratory measurements via Python/LabView.
- Fabricated a graphene field effect transistor via mechanical exfoliation of graphite onto doped Silicon substrate and subsequent photolithography, gold deposition, and lift off. Measured resistivity as a function of back gate voltage and collected and analyzed data in Python using least-squared regression and wrote up results in Jupyter notebook and LaTeX.
- Wired a gold-silicon wafer to form a Schottky diode and performed measurements current as a function of temperature and applied voltage in a PPMS automated via LabView code which interfaced with laboratory equipment including power sources, multimeters, and PPMS. Analyzed resulting data in Python using curve fitting and 3D plotting for visualization.

## Activities/Awards

Graduate Student Research Presentation at American Physical Society (APS) Far West annual meeting November 2021
○ Awarded Kennedy Reed Award for Best Theoretical Research by a Graduate Student

CSULB CNSM - Google Summer Assistantship May 2021 - August 2021
○ Awarded a sizeable summer research grant for proposed project investigating neutron star oscillations