Nicholas Labranche

Curriculum Vitae

npl04261@gmail.com
www.nicholaslabranche.com

Education

09/2019– **B.A Physics, B.A Mathematics**, New York University

Honors & Awards

- 3x NYU DURF Grant Recipient

Research Experiences

05/22–09/22 **Undergraduate Researcher**, New York University, under supervision of Professor Simon Becker

- **Studied the underlying mathematics of twisted bilayer graphene**

08/22–Present **Undergraduate Researcher**, New York University, under supervision of Professor Gaston Giribet

- **Studied the two-point string amplitudes, and currently researching the mass spectrum of strings in AdS/CFT**

06/23–Present **Undergraduate Researcher**, New York University, Shabani Lab, under supervision of Professor Javad Shabani

- **Built and designed RF devices for quantum computing. This includes bias tees and sample holders. Currently developing 3D microwave cavities for quantum memory and semiconductor-superconducting qubits.**

06/23–Present **Undergraduate Researcher**, Simons Foundation, Center for Computational Quantum Physics, under supervision of Edwin Stoudenmire

- **Currently studying complex time evolution in tensor networks**

06/23–06/24 **Undergraduate Researcher**, New York University, under supervision of Professor Aditi Mitra

- **Studied lattice gauge theories and topological phenomena(exotic superconducting, floquet systems)**

Course Projects

- **Physics of Neural Systems**
  Quantum Field Theory approach to Neural Population Dynamics
- **Biophysics**
  A Physical Approach to Quantitative Virology

Publications

- G.Giribet, N.Labranche, J.La Madrid, "Remarks on the two-point string amplitudes," in *Physical Review D*, vol. 107, no. 10, May, 2023.

Coursework

- Graduate Statistical Mechanics
- Graduate Electromagnetism
- Graduate Classical and Quantum Mechanics 1
- Graduate Introduction to Condensed Matter Physics
- Graduate General Relativity
- Graduate Theory of Condensed Matter(audited)
- Special Topics: Physics of Neural Systems(audited)
- Phase Transitions and Critical Phenomena(audited)
- Graduate Biophysics
- Graduate Introduction to Mathematical Analysis
- Graduate Algebra 1

Outreach

05/22–05/23 **NYU Society of Physics Students: Webmaster**

- I built the NYU SPS website from scratch and maintained it and the social media for the club. Was also involved in decisions/committees related to the undergraduate physics community at NYU

09/23–05/24 **NYU Physics Diversity, Equity, Inclusion Committee: Undergraduate Representative**

- Involved in developing measures to foster more diversity, equity, and inclusion in the positions at the NYU Physics Department

09/23–05/24 **DURF Research Ambassador**

Skills

- **Programming**
  Python: numpy, scipy, pandas
  Julia: iTensor
- **Ansys**
  HFSS
- **RF Engineering**: Circuit Design
- **Soldering**