

Nicholas Labranche

Curriculum Vitae

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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**, New York University, Martiniani Lab, under supervision of Professor Stefano Martiniani

- Currently studying hyper uniform systems in 3D computationally

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

- Currently studying 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

05/23–
Present **NYU Society of Physics Students: Co-President**

- Currently lead the NYU chapter of SPS. I'm involved in running the club and coordinating outreach events, among being a part of other committees, I act as a liaison from the undergraduates to the department. With SPS I have mentored 5 lowerclassmen students.

09/23–
Present **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–
Present **DURF Research Ambassador**

Skills

- **Programming**
Python, numpy, scipy, pandas
- **Ansys**
HFSS
- **RF Engineering**
- **Soldering**