

Nicholas M. Rapidis

Curriculum Vitae

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Languages: English (native), Greek (native), German (Advanced proficiency)

Nationalities: USA & Greece

Education

2015–Present **University of California, Berkeley**

B.A. in Physics with Honors (Expected Graduation Date: Spring 2019)

GPA-to-date: 3.89/4.0

Upper Division & Graduate Level Physics GPA: 3.97

Relevant courses: *Quantum Field Theory I & II* (Graduate Level – 232A & 232B), *Standard Model and Beyond I & II* (Graduate Level – 233A & 233B¹), *General Relativity* (Graduate Level – 231), *Quantum Mechanics I & II* (137A-B), *Analytic Mechanics* (105), *Electromagnetism & Optics* (110A), *Instrumentation Laboratory* (111A), *Abstract Algebra* (Math 113)¹

2018 **Institute for Quantum Computing – University of Waterloo**

Attended *Undergraduate School on Experimental Quantum Information Processing (USEQIP)*. Selective two week fully funded summer program introducing the fundamentals of Quantum Information.

2011–2015 **Psychiko College High School, Athens, Greece**

Completed International Baccalaureate Diploma Program in May 2015

2014 **Stanford Pre-Collegiate Studies, Stanford University**

Course on *The Theory of Relativity*

Experience

2018–present **Undergraduate Researcher**

Computational-phenomenological physics work in collaboration with Professors Karl van Bibber, Peter Graham (Stanford University), and Kent Irwin (Stanford University).

Honors Thesis planned.

2016–present **Undergraduate Researcher**

Member of Berkeley HAYSTAC group led by Prof. Karl van Bibber in search of the QCD Axion.

- Use of the bead perturbation technique to study characteristics of annular cavities
- Determination of frequency scan range for future runs
- Initial measurements on Photonic Band Gap Cavities

¹Currently enrolled in as of Fall 2018

- Simulations using CST Microwave Studio for different types of cavities
- Machining of parts to be used on test cavities

Summer 2017 **Reader** Quantum Mechanics

Graded weekly problem sets for 65 students in Quantum Mechanics (Physics 137A) taught by Dr. Charles Wohl

Honors & awards

- 2018-2019 *Haas Scholar* – \$13,600 grant awarded to twenty UC Berkeley undergraduates across all disciplines to conduct research in their senior year.
- 2017-2018 *2×Berkeley Physics Undergraduate Research Scholar* – Fall 2017 paper on *Study of Effects of Rod Misalignments in a 3-6 GHz Annular Cavity for HAYSTAC* – 2×\$500 award.
- 2016-2018 *4×UC Berkeley Dean’s List* – *Dean’s List* awarded to top 4% of students in *College of Letters and Science. Honors to Date* as of Fall 2016.
- 2014 Member of the Greek National Linguistics Team: Attended 12th International Linguistics Olympiad in Beijing, China.

Publications, Talks, & Conferences

Publications

- 2018 **Results from Phase 1 of the HAYSTAC microwave cavity axion Experiment**
L. Zhong, *et al.*, Phys. Rev. D **97**, 092001, (2018). doi.org/10.1103/PhysRevD.97.092001
- 2018 **Application of the Bead Perturbation Technique to a Study of a Tuneable 5 GHz Annular Cavity**
N.M. Rapidis (2018), In: Carosi G., Rybka G., van Bibber K. (eds) Microwave Cavities and Detectors for Axion Research. Springer Proceedings in Physics, vol 211. Springer, Cham doi.org/10.1007/978-3-319-92726-8_5.
- 2017 **Design and Operational Experience of a Microwave Cavity Axion Detector for the 20-100 μeV Range**
S. Al Kenany, *et al.*, Nuclear Instruments and Methods in Physics Research A **854** (2017) 11–24. doi.org/10.1016/j.nima.2017.02.012
- 2017 **First Results from a Microwave Cavity Axion Search at 24 μeV**
B.M. Brubaker, *et al.*, Phys. Rev. Lett. **118**, 061302 (2017). doi.org/10.1103/PhysRevLett.118.061302

Talks

- 2018 **Completion of Phase I and Preparation for Phase II of the HAYSTAC Experiment**
14th Patras Workshop on Axions, WIMPs, and WISPs, June 18-22, 2018, DESY, Hamburg, Germany
- 2017 **Application of the Bead Perturbation Technique to a Study of a Tunable 5 GHz Annular Cavity**
2nd Workshop on Microwave Cavities and Detectors for Axion Research, January 10-13, 2017, LLNL, Livermore, CA

Conferences Attended

2018	<i>14th Patras Workshop on Axions, WIMPs and WISPs</i> , June 18-22, 2018, DESY, Hamburg, Germany
2017	<i>2nd Workshop on Microwave Cavities and Detectors for Axion Research</i> , January 10-13, 2017, LLNL, Livermore, CA
2016	<i>New Pathways for Physics Beyond the Standard Model</i> , June 13-17, 2016, UC Berkeley

Skills

Programming

Advanced: *CST Microwave Studio*, *L^AT_EX*

Intermediate: *Mathematica*, *LabVIEW*

Basic: *Matlab*, *HTML*

Others

Machine Shop Training