

# Nicholas M. Rapidis

## Curriculum Vitae

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Email: rapidis@berkeley.edu

Phone: +1 (510) 847-1414

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

Relevant courses: *Quantum Field Theory I & II* (Graduate Level – 232A & 232B), *Standard Model and Beyond I* (Graduate Level – 233A), *General Relativity* (Graduate Level – 231), *Quantum Mechanics I & II* (137A-B), *Analytic Mechanics* (105), *Electromagnetism & Optics* (110A), *Instrumentation Laboratory* (111A), *Honors Introductory Physics Series* (H7A-C)

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

Will attend *Undergraduate School on Experimental Quantum Information Processing (USEQIP)*.

Two week summer program introducing 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

2017-present **Undergraduate Researcher**

Theoretical physics work under supervision of Prof. Surjeet Rajendran.

Honors Thesis planned. Work on the study of a novel solution to the hierarchy problem in the context of a non-singular oscillatory cosmology.

2016-present **Undergraduate Researcher**

Member of Berkeley HAYSTAC group (formerly known as ADMX-HF) led by Prof. Karl van Bibber in search of the QCD Axion.

- Use of bead perturbation technique to study characteristics of annular cavities.
- Use of measurements to determine frequency scan range for future runs
- Initial measurements on Photonic Band Gap Cavities.
- 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 65 weekly problem sets for Quantum Mechanics (Physics 137A) taught by Dr. Charles Wohl

## 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
- 2017 **Application of the Bead Perturbation Technique to a Study of a Tuneable 5 GHz Annular Cavity**  
Nicholas M Rapidis, arXiv:1708.04276 [physics.ins-det]. Submitted to 2nd Workshop on Microwave Cavities and Detectors for Axion Research.
- 2017 **Design and Operational Experience of a Microwave Cavity Axion Detector for the 20-100  $\mu\text{eV}$  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  $\mu\text{eV}$**   
B.M. Brubaker, *et al*, Phys. Rev. Lett. **118**, 061302 (2017), doi.org/10.1103/PhysRevLett.118.061302

### Talks

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

### Honors & awards

- 2018-2019 *Haas Scholar* – \$13,800 grant awarded to twenty UC Berkeley undergraduates across all disciplines to conduct research in senior year.
- 2018 Awarded *Summer Undergraduate Research Fellow* – \$4,500 grant provided by UC Berkeley Office of Undergraduate Research to conduct research in Summer 2018. Declined to accept *Haas Scholarship*
- 2017-2018 *2 $\times$  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 $\times$ \$500* award.

- 2016-2017    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 2017
- 2014        Member of the Greek National Linguistics Team: Attended 12th International Linguistics Olympiad in Beijing, China.

## Skills

### Programming

Advanced: *CST Microwave Studio*, *LaTeX*

Intermediate: *Mathematica*, *LabVIEW*

Basic: *Matlab*

### Others

Machine Shop Training