September 2018

Nicholas M. Rapidis

Curriculum Vitae

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
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 & 233B[1]), *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

[1] Currently 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* – $13,800 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 **Characterization of the HAYSTAC axion dark matter search cavity using microwave measurement and simulation techniques**
N.M. Rapidis, *et al.*, Submitted to Review of Scientific Instruments. arXiv:1809.02246 [physics.ins-det]

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 *14^{th} 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, Berkeley, CA

Skills

Programming

Advanced: *CST Microwave Studio, LaTeX*
Intermediate: *Mathematica, LabVIEW*
Basic: *Matlab, HTML*

Others

Machine Shop Training