Davd R. Needell

PhD Student

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About me

I love to learn and teach. Whether this love manifests itself in understanding the thermodynamical limits for solar photovoltaic devices, developing my fluency of supersymmetry in Quantum Mechanics, lecturing to a class on improper integrals, tutoring a student one-on-one in complex analysis, or even learning a new method for centering clay on a pottery wheel, my greatest attribute lies in my curiosity and passion for acquiring and spreading knowledge.

Skills

- Teaching
- Mathematics
- Physics
- Computer Science
- Coding Languages
- Analytical Writing

Education

2017 – Present *California Institute of Technology* Ph.D.
Materials Science and Applied Physics

2015 – 2017 *California Institute of Technology* M.S.
Materials Science and Applied Physics

2011 – 2015 *Bowdoin College* B.A.
Majors: Theoretical Physics and Applied Mathematics
Minor: Computer Science

Relevant Experience

2012 – 2015 *Introductory Physics Teaching Assistant* Bowdoin College
Conducted bi-weekly study sessions for Physics I students at the undergraduate level

2014 – 2015 *Real Analysis Teaching Assistant* Bowdoin College
Tutored and supervised over 30 students in advanced Real Analysis at the undergraduate level

2012 – 2015 *Residential Life Assistant and Team Leader* Bowdoin College
Led a residential life staff team and ran a first-year undergraduate dormitory of over 70 students

2011 – 2014 *Introduction to Wheel Thrown Pottery Instructor* Bowdoin College
Taught over six terms of beginner and intermediate wheel thrown pottery

2009 – 2011 *SSAT/SAT/ACT Mathematics Tutor* Highschool
Tutored several highschool students on mathematics sections of standardized tests such as the SSAT, SAT, and ACT

Awards and Honors

2017 California Institute of Technology Research Spotlight Recipient
2015 – 2016 Charles and Cynthia Zeller Resnick Institute Fellow
2012 – 2015 Sarah and James Bowdoin Scholar
2012 – 2015 Member of the Mathematics Assosciation of America
2012 – 2015 Member of the Society for Industrial and Applied Mathematics
2014 National Science Foundation Research for Undergraduates Fellow

Other information

Relevant Coursework

Mathematics — Advanced Integral Calculus, Multivariable Calculus, Advanced Linear Algebra, Mathematical Logic and Reasoning, Real Analysis, Complex Analysis, Ordinary and Partial Differential Equations, Advanced Perturbation Theory

Physics — Introductory Classical Mechanics, Introductory Electromagentism, Advanced Circuitry, Introductory Quantum Mechanics, Special and General Relativity, Advanced Methods of Theoretical Physics, Advanced Methods of Experimental Physics, Solid State Physics, Thermodynamics, Statistical Mechanics, Modern Electronics, Advanced Quantum Mechanics and Quantum Field Theory, Advanced Lagrangian Mechanics, Nanophotonics, Diffraction in Materials

C.S. — Introductory Computer Science, Algorithms, Data Structures, Graph Theory, Nature Inspired Computation