

Emma Edwina Wollman

Graduate Institution: California Institute of Technology

Graduate Discipline: Physics

Hometown: Andover, MA

Relevant SC Research: Basic Energy Sciences



Research Interest:

Currently, I'm interested in ultra-sensitive measurement of microwave radiation. My group at Caltech studies the boundary between the quantum and classical worlds using nanomechanical resonators – mechanical objects that are large enough to be described by their bulk properties, yet small enough to exhibit quantum effects at low temperatures. As we measure and control these devices with microwaves, precise detection of microwaves is essential for this research. Microwave detectors and amplifiers, however, are currently lacking when compared to their optical counterparts. I am working on making a quantum-limited, broadband parametric amplifier using the kinetic inductance of a superconducting transmission line. I am also studying the thermal properties of graphene at low temperatures with the goal of designing an ultra-sensitive graphene bolometer.

My past research includes work with astrophysical masers done at the Maria Mitchell Observatory and with x-rays from stellar winds done at Swarthmore College.

About Me:

I just finished my third year as a graduate student in the Physics

Department at Caltech. I received my BA from Swarthmore College, where I studied physics, mathematics, and ancient Greek. At Swarthmore, I won the Lang Award for academic achievement, and the Elmore Prize in Physics. At the moment, I do not have a particular career path in mind, since I can see myself in any of a variety of research positions: either at an academic institution, a private company, or a national lab. I enjoy explaining physics to others, so any future profession would include teaching or public outreach. When I'm not doing physics, I like to hike, sew, and contra dance.



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