

*To grow personally, professionally, and culturally*

## **Matthew Gorfien**

**College: Arts and Sciences**

**Program: Physics**

**Degree: PhD**

### **Importance of Research**

Physics is the science of everything, from the most fundamental particles that make up matter to the vastness of the large and complex systems that make up the cosmos. I always have had a passion for finding out why anything and everything works in the manner it does, resulting in patterns and eventually principles of nature that can simply and elegantly describe our perception of the universe. Pursuing a doctorate in physics has given me the opportunity to learn and to work toward chipping away at a larger understanding of nature and to fulfill my curiosity about well...everything. Obtaining a [doctorate in physics](#) allows me to be trained to approach literally any problem and independently work toward a solution. This degree gives me a wide variety of career options in academia, government laboratories, and industry. I hope to further my learning after graduation with a postdoctoral position at a national laboratory, continuing to work with ultrafast lasers to study nanoscale materials.

### **Accomplishments During Graduate Career**

During the course of my studies at FSU, I was awarded the [National Science Foundation East Asia and Pacific Summer Institute Fellowship](#) to perform research in China for eight weeks. I began my research at the Chinese Academy of Sciences, Institute of Physics in Beijing, but ended up spending most of my time at [Jiao Tong University](#) in Shanghai to perform my experiment. My research focused on determining the mechanisms of how heat is transported through nanoscale semiconductors. As today's electronics seek to achieve faster speeds with smaller and smaller circuits, controlling heat dissipation becomes vital to improve technological applications. The findings obtained from this research will foster new insight into the transportation of heat in semiconductors and aid in the development of future nanoscale electronics. My time in China provided an excellent opportunity to acquire a great deal of knowledge working through the technical struggles of implementing such a cutting-edge experiment. The preliminary results were presented during the defense of my prospectus of dissertation research.

The international collaboration formed during this program has continued to develop even beyond the scope of the project, and the mutual sharing of culture and experiences has helped shape future scientific work conducted between research groups. Through maintaining this collaboration, I had the opportunity to spend another month in China one year after my initial trip, where I am continuing to take data that will be used during my doctoral dissertation research. I am the first student in the history of our research team to successfully set up and carry out our specific type of experimental technique that only a handful of groups worldwide can currently accomplish. This fellowship has greatly impacted my graduate degree, as there are currently plans to keep going to China in the future to further our initial successful experiments.

Overall, this was truly an exciting opportunity to both further my own research and engage in a new culture. I would recommend this fellowship to all graduate students who want to step out of their comfort zone and experience a once-in-a-lifetime journey. I believe students should take full advantage of their time performing the motivating research, but also take some time to meet and get to know the people they work alongside to engage in new cultures. This will create long-lasting research collaborations, friendships, and possible career connections.

