Eric Oelker

Graduate Institution: Massachusetts Institute of Technology

Location: Cambridge, MA

Graduate Discipline: Astrophysics and Quantum Optics

Hometown: San Luis Obispo, CA

Research Interests:

My research and academic interests include Cosmology, High Energy Physics, and General Relativity. I enjoy studying the underlying forces of nature as well as the composition and evolution of the early universe. I was attracted to Gravitational Wave Astronomy because it has the potential to give us a way of studying non-Newtonian Gravity in the strong field limit. This may help to shed light on the least understood of the four fundamental forces. In addition, Gravitational Wave Astronomy may one day allow us to peer back to the earliest moments of the Universe, something that is not possible with traditional Astronomy techniques.

About me:

I am a first year graduate student in the Physics Department at MIT. I did my undergraduate study at U.C. Berkeley where I double majored in Math and Physics.

I am currently a member of the Laser Interferometer Gravitational wave Observatory (LIGO) collaboration. I work at the MIT LIGO Laboratory. Our lab focuses primarily on developing and testing hardware for the Advanced LIGO upgrade as well as researching advanced optical techniques for reducing the quantum noise floor for our measurements. More specifically, I work with Professor Nergis Mavalvala in the MIT Quantum Measurement Group. We study quantum radiation pressure effects in opto-mechanical systems as well as techniques for injecting squeezed light into the LIGO interferometer to reduce the quantum limit for phase noise in the interferometer readout.

I enjoy working with my hands, so I prefer research that is more hardware oriented. One of the reasons I joined LIGO was because the experiment provides plenty of opportunities to design electronic, optical, and mechanical systems.

In my spare time, I also enjoy wood working and playing basketball.