

NEWSROOM

[Home](#) / [News](#) / [2021](#) / [July](#) / Summer Scholar Explores Gravitational Waves

SUMMER SCHOLAR EXPLORES GRAVITATIONAL WAVES

KAEMON WATADA '22 IS HELPING ANALYZE DATA FROM AN INTERNATIONAL RESEARCH COLLABORATION.

by [Jane Heeter](#) | July 13, 2021

Above: Kaemon Watada (right) with Dr. Ryan Fisher in the CNU LIGO lab.

Read time: about 2 min

In 1916, Albert Einstein first predicted the existence of gravitational waves, “ripples” in space-time that were then undetectable by humans.

Just over a century later, Kaemon Watada '22 is part of a team of CNU students and scientists working to help the world understand more about this area of physics.

As a Summer Scholar, the [physics](#) and [mathematics](#) double major is working with Dr. Ryan Fisher, assistant professor of physics, and a team of several other students analyzing gravitational wave data.

She is one of 60 Summer Scholars, students who collaborate on a research project with a professor, conduct experiments in the field, and gather and analyze data.

The eight-week program provides students with a stipend for their work, on-campus housing and a range of opportunities to learn more about undergraduate research.

In Watada's case, the work means adding to what Einstein first posited 105 years ago.

“Basically we’re trying to prove theory,” she said. “The more we know about physics and the more we’re able to prove theoretical physics, the more we’re able to advance society technologically.”

Fisher works as part of an international team of scientists, the LIGO-Virgo Scientific Collaboration, that is attempting to better understand neutron stars and black holes and the composition of the universe through the detection of gravitational waves. This work more often than not involves students; seven Captains are part of Watada’s team this summer.

The waves are distortions in space caused by objects with huge masses moving at nearly the speed of light, and carrying the amount of energy several times the total energy of the sun. These waves can travel for billions of years before they reach the Earth, where their effect is extremely tiny, requiring sensitive detectors to measure them.

Two LIGO detectors gather data about the waves, and Watada is tasked with helping increase the efficiency of the recovery of the information. She’s already run two full analyses, Fisher said, and is learning throughout the process.

“This is a project that I would give to graduate students,” he said. “She’s doing great, picking up and taking off with it. A lot of my job is to design the work, coordinate the work and then let the students teach me the results. So they’re doing the real, hard science and the real, hard work, just like a PhD student would be.”

This is not Watada’s first time as a Summer Scholar. Last year, she remotely worked with Dr. Jessica Kelly in the Department of Mathematics on a mathematical astrophysics project. While that experience was great, the ability to be on campus and work one-on-one with Fisher and the team this year has highlighted the hands-on nature of the program.

After graduation next year, she plans to pursue a PhD in physics and eventually teach and continue to conduct research.

“I don’t know a lot of other people who get opportunities at their university where they get paid to do research,” Watada said. “I definitely think it’s nice that CNU puts a lot of emphasis on wanting their undergraduates to do research. It shows you’re interested and want to pursue all your chances to know more about whatever field you’re looking to go into.”
