

## NEWSROOM

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DETECTORS TO OBSERVE GRAVITATIONAL WAVESNEW NSF FUNDING EXPANDS CNU'S ROLE IN GROUNDBREAKING ASTROPHYSICS  
RESEARCH.by [Brian McGuire](#) | July 22, 2020*Above: Marissa Walker**Read time: about 1 min*

The National Science Foundation has awarded Dr. Marissa Walker, a professor in the [Department of Physics, Computer Science and Engineering](#), nearly \$150,000 to study gravitational waves that emanate from distant colliding black holes and neutron stars and pass through the Earth. Walker is one of the foremost experts on gravitational waves and is a 2016 recipient of the Special Breakthrough Prize in Fundamental Physics.

Christopher Newport students will join Walker's team and work alongside her on this cutting-edge astrophysics research, while also gaining experience with computer programming, data analysis and machine learning.

The project is part of a larger global project involving detectors at Laser Interferometer Gravitational-Wave Observatory (LIGO) facilities in Washington state and Louisiana. Using the detectors, scientists can directly observe the waves, which Walker says originate from some of the most mysterious and dramatic events in the universe. Observing them requires incredible precision, including measurements of less than a thousandth of the diameter of a proton.

"Capturing the physics of colliding black holes and neutron stars requires accurate theoretical models for what the waves should 'look like' in the data," said Walker. "My research will address challenges in gravitational-wave astronomy through characterizing LIGO instruments to better understand the origins of problematic noise in the detectors, and by improving models used to interpret the astrophysics of the signals."

Walker says the CNU research team will play a crucial role in improving the quality of the LIGO detector data and the accuracy of the information that is shared with the astronomical community and the public.

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