EDWARD L. GINZTON LABORATORY
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Oct. 31, 2023

To Dr. Paul Earle

Dear Paul,
I wanted to say thanks again to you and your colleagues at the NEIC for your help over the years getting LIGO set up with USGS data, alerts, and tools so that we can establish early warning at the LIGO detectors for pending teleseismic disturbances. Earthquakes are a major problem for us, since earthquakes are the leading cause of known observatory down time [1], taking us off the air several times each week. I'd like to say a special thanks for your recent help setting up our connections to the NEIC networks serving low-latency seismic data. With the low-latency data, we now get from 25 to 120 seconds of warning for surface waves which are particularly problematic for the LIGO instruments [2]. We display the ground motion monitors for the operators as an "earthquake picket fence", and the warning gives the LIGO observatories the opportunity to utilize sophisticated control schemes to improve their robustness against earthquakes. The automation of these schemes is underway, and we expect it to start impacting the scientific output of the detectors very soon.

Sincerely,

Brian Lantz, Ph.D.
Senior Research Scientist, Stanford University
Scientific Lead for the Advanced LIGO Seismic Isolation subsystem.

[1] https://dcc.ligo.org/LIGO-G1901122/public
[2] E Schwartz et al 2020 Class. Quantum Grav. 37 235007, DOI: 10.1088/1361-6382/abbc8c