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Environmental trends and scattered light in Advanced LIGO's 3rd Observing Run[1] KATIE RINK, University of Massachusetts Dartmouth, LIGO SCIENTIFIC COLLABORATION COLLABORATION — Advanced LIGO detector data contains numerous types of terrestrial noise that can mimic or mask gravitational wave events. Light scattering is a source of persistent noise transients, or glitches, that were present in LIGO-Virgo's third observing run (O3). Understanding these noise sources and their evolution is essential for mitigating future noise and maximizing the amount of observing time where we can make confident astrophysical detections. To combat scattering glitches, a major source of noise in both LIGO detectors, I investigated the correlation between scattering glitches and environmental trends at both LIGO sites throughout O3. My findings confirmed that the rate of scattering glitches was correlated to elevated ground motion as expected, however the measured environmental trends were not the dominant factor in the observed increases in glitch rate. In this talk I will discuss my methods, findings, and implications for mitigating potential new sources of scattering glitches in future observing runs.

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Katie Rink
University of Massachusetts Dartmouth

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