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Simulating the LIGO Detector DO-
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DODDA, KRISTEN ROGILLIO, Southeastern Louisiana University — The LIGO
(Laser Interferometer Gravitational-wave Observatory) detector is a Michelson In-
terferometer designed to detect strains of space- time on the order of 10^{-19}. Due to
the low magnitude of the expected signal, the sensitivity of the instrument must be
extremely high, and any disturbance to the interferometer optics must be eliminated.
We are interested in simulating the effect of ground motion on the performance of
the interferometer. We constructed a computer code to simulate the Input Optics,
an optical subsystem between the laser source and the interferometer arm, using
the E2e (end-to-end) model, a simulation package developed by LIGO project, and
combined it with the existing code developed by other LIGO groups to simulate the
rest of the interferometer. Our recent results indicate that the motion of the Input
Optics's has noticeable effect on the optical field at the signal port. More detailed
analysis is under way. .

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