Thermal Stabilization in a High Vacuum Cryogenic Optical System\textsuperscript{1} ROSA WALLACE, Univ of Colorado - Denver, JONATHAN CRIPE, THOMAS CORBITT, Louisiana State University — The existing technology for gravitational wave detection is limited in part by quantum noise. In our tabletop experiments, we are attempting to lower the noise floor to the quantum limit through the use of a seismically isolated cryogenic high vacuum environment, with the intention of exploring different methods to reduce quantum noise. In the development phase of this environment, we have implemented a customized strategy of ultraviolet irradiation combined with cryogenically cooled radiation shielding to reduce the impact of water vapor and blackbody radiation on the thermal stability of the cryogenic micro-components.

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