GWADW2023 - Gravitational-Wave Advanced Detector Workshop



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Mechanical and Optical Design of TCS Test Facility

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It has become critical to understand and develop effective Thermal Compensation System (TCS) schemes in order to achieve design sensitivity in current and next generation gravitational wave detectors. A fullscale TCS test facility has been proposed and funded for construction at the University of Adelaide. This facility will allow thermal compensation systems to be tested at full scale before they are implemented on the kilometer scale gravitational wave detectors. Design work for this test facility to-date has focused on both the structural and optical design of the facility. Optical design work has focused on selecting large-scale optics for the projecting telescope and evaluating aberrations within the optical system. Structural design has focused on the vacuum chamber and the required feed-throughs to support the optics. Analysis of these features, and the overall design of the facility will be presented.

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