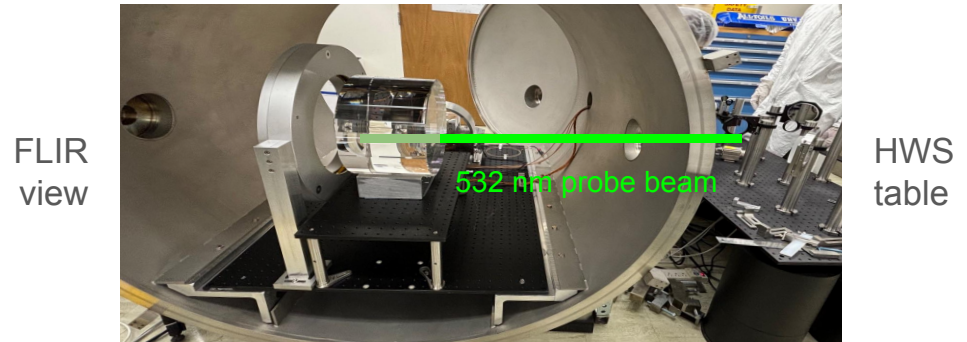
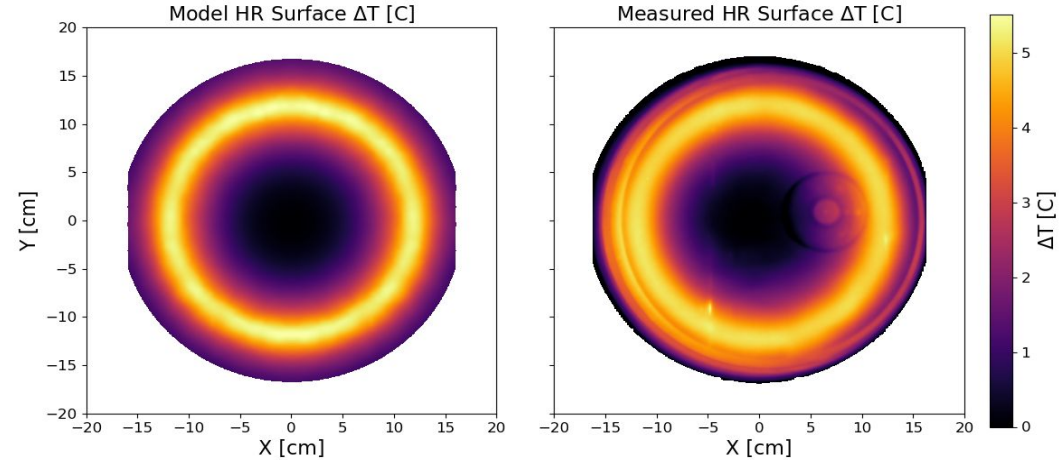


FROSTI Analysis Updates

10/02/2024

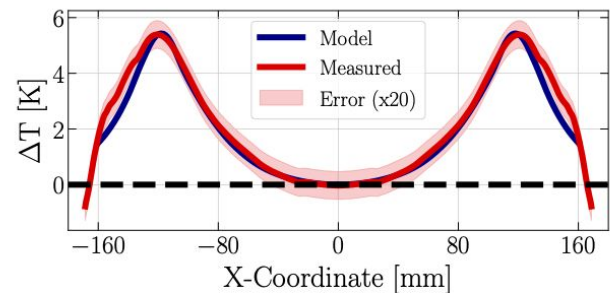
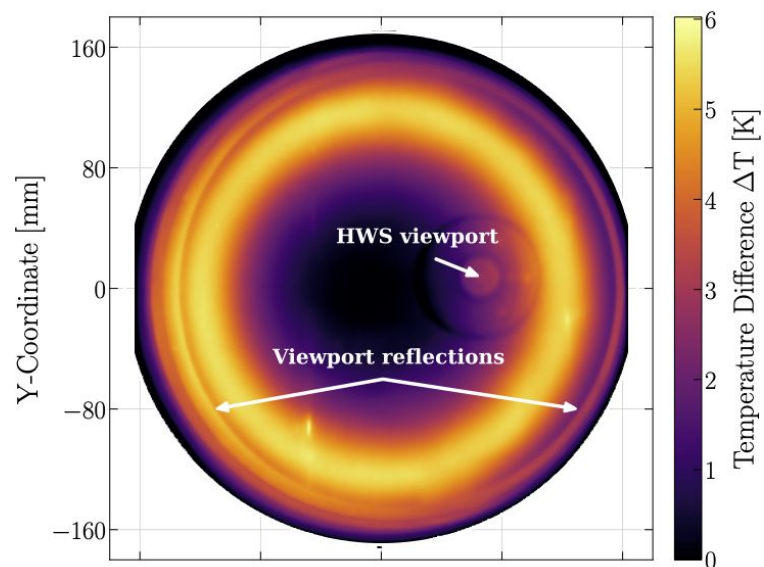
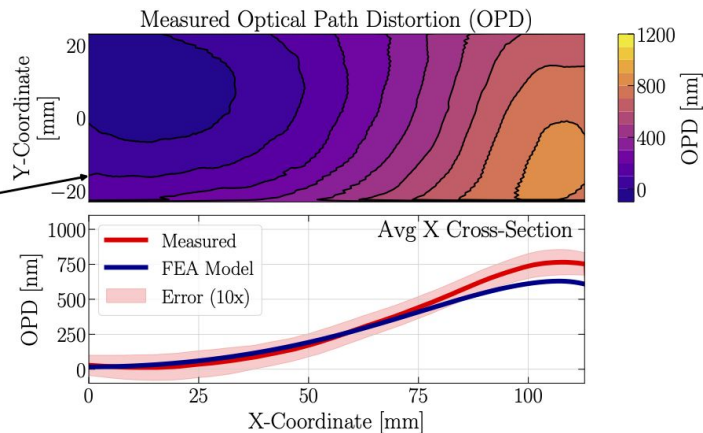
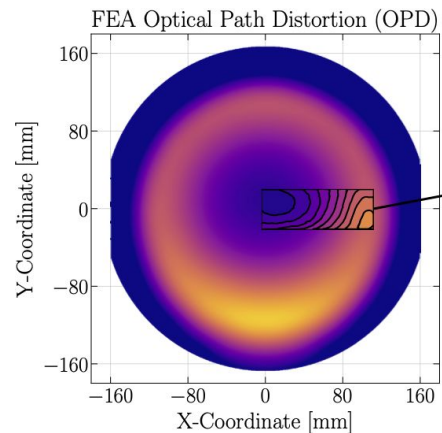
Test Mass Reflectivity: Motivation

- ETM optical properties well understood for 1064 nm laser light
- Not the case for FROSTI IR emission range (3-14 micron)
- Purpose: Estimate how much power is delivered to CIT ETM during FROSTI testing
 - Adjust how much power is absorbed by ETM in COMSOL



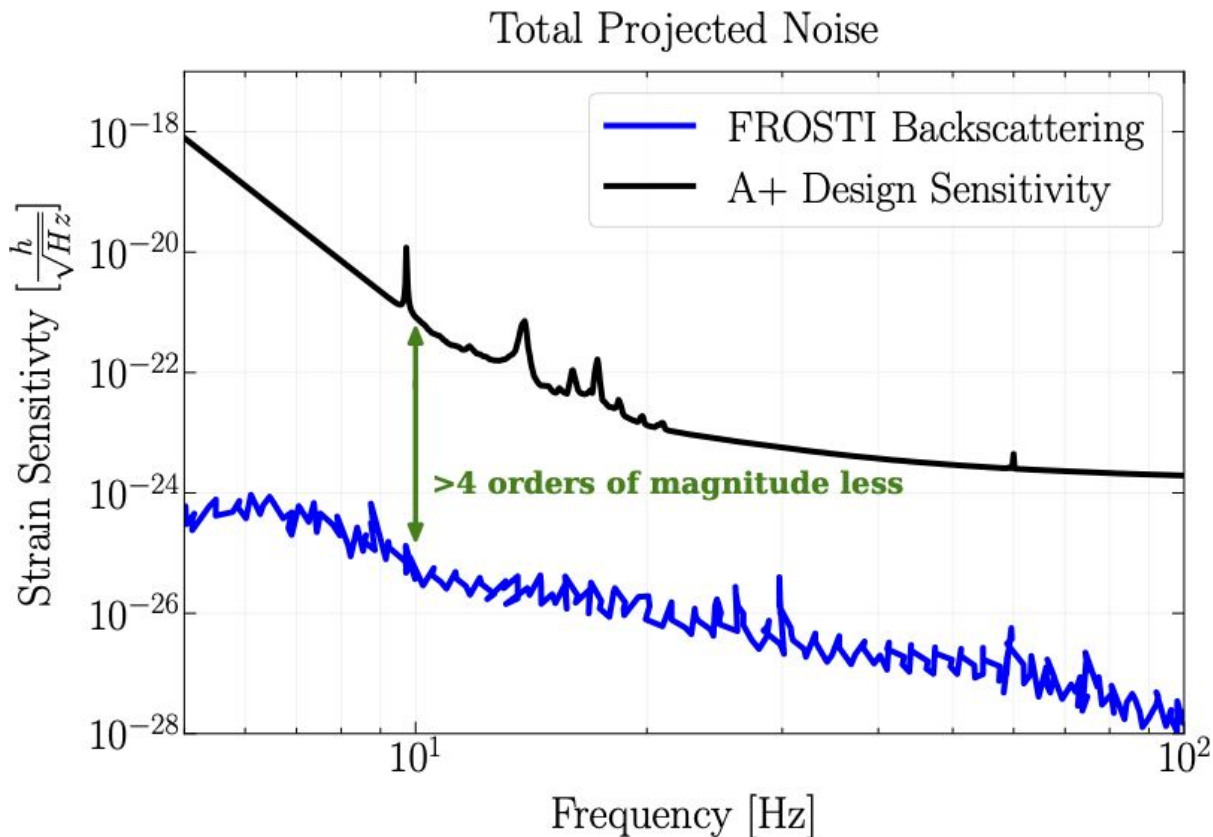
Test Mass Reflectivity

- Initial Results:
 - Delivered Power: 11.7 W
- Updated Results:
 - Best match: 17.5% reflected power
 - Delivered Power: 13.9 W
 - Absorbed: 11.5 W
 - Reflected: 2.4 W



Backscattering Analysis

- Motivation: Determine noise addition from light scattered off FROSTI
- Initially completed in 2022, needed to be updated
 - Original computed noise was too low by a factor of 10
- Corrected noise computed using FINESSE and ISI seismic data



In progress: RIN

Current RIN result is too large in comparison to simulation

- Measured DC:
 - PD1: 0.303 V
 - FROSTI OFF: 0.00570 V
 - PD2: 0.304 V
 - FROSTI OFF: 0.00528 V
- Potential non-constant response at low-frequencies?

