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Exchange Gas Vibration Isolation for a “Dry” Research Cryostat

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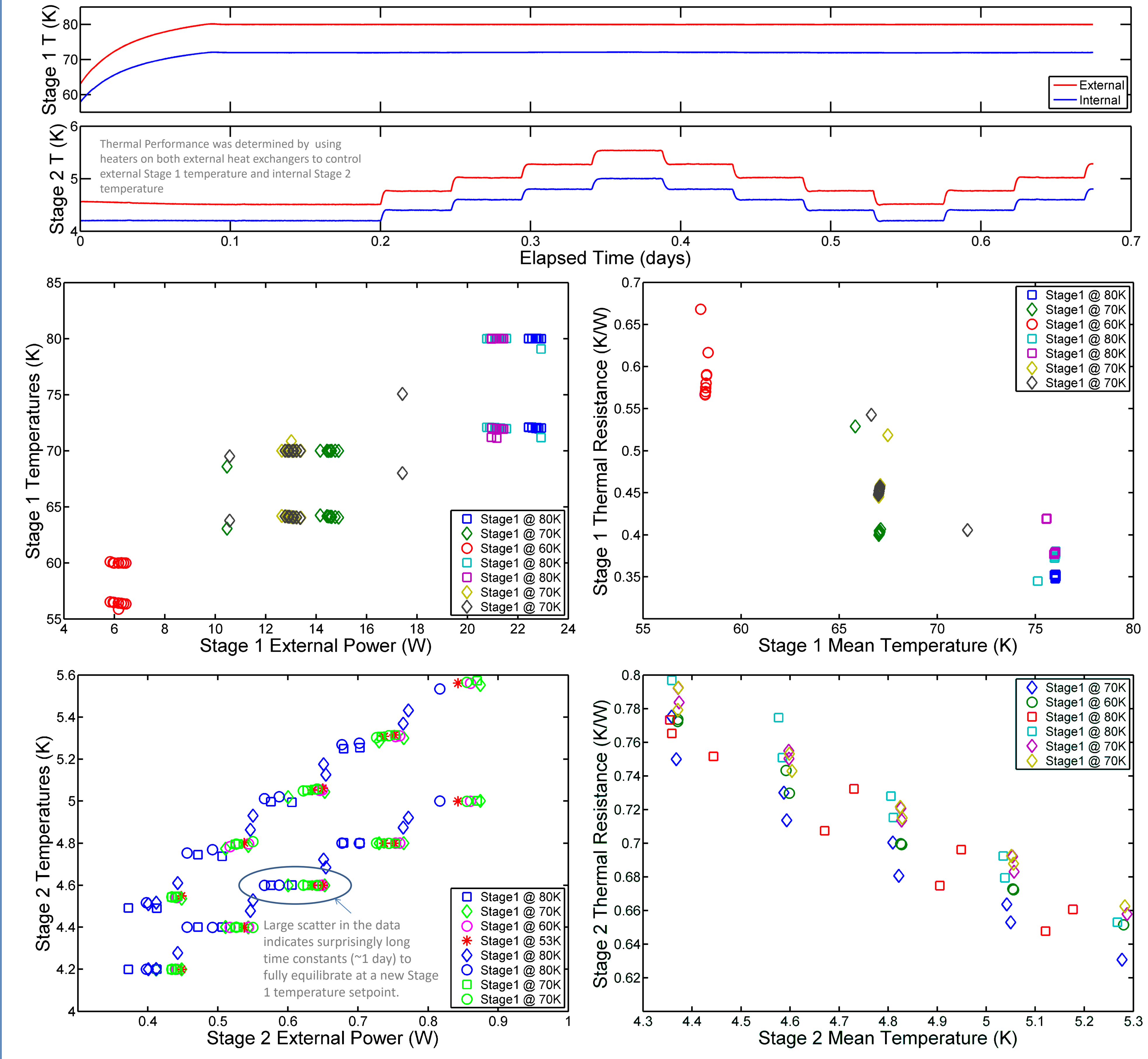
Exchange-Gas Vibration Isolation for a “Dry” Research Cryostat

STP Boyd and A Pregoner-Wenzler



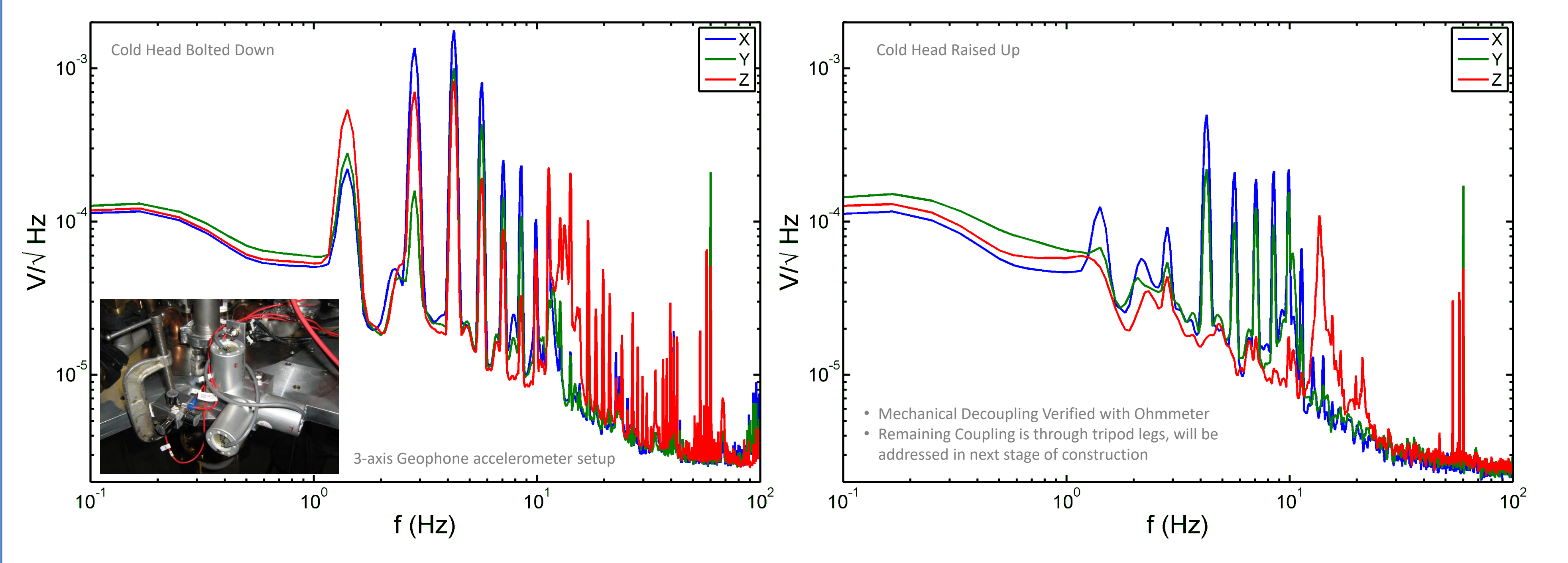
Abstract. Thermal contact to a mechanical refrigerator via 1-atm helium exchange gas provides the best known vibration floor for dry cryostats. We describe initial performance measurements of a new cryostat designed to implement this approach.

Thermal Performance with 1-Atm ⁴He Exchange Gas



- Heat exchangers are performing well at 1 atmosphere
- Data in agreement with heat-transfer calculations
- No indication of degradation of pulse-tube refrigerator performance when surrounded by 1 atm ⁴He
 - No Taconis oscillations or convection rolls!
 - No impact from ⁴He heat capacity in contact with “pulse tube”!

Preliminary Vibration Measurements



Cross-Section of Old Cryostat Showing Heat Exchanger Detail

