



Temperature Sensors

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Project Objectives

Clarify name + location conventions

Improve Python3
competency

Generate
color-indicated
animations

Temperature Sensor Types

Thermistor

Resistance varies by temperature

Thermocouple

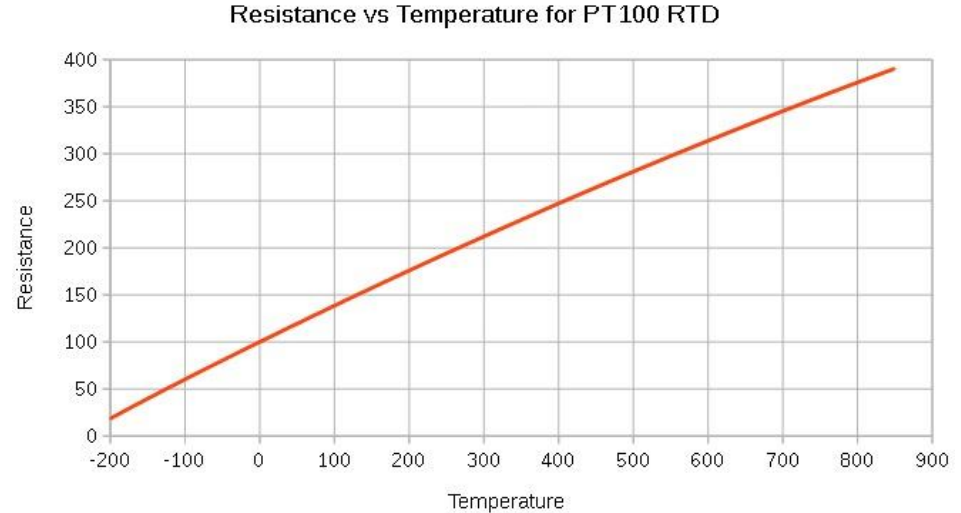
Uses the proportionality between temperature and voltage variations

Semiconductor-Based

Two identical diodes (effectively) with temperature-sensitive voltage vs. current characteristics

Resistance Temperature Detector (RTD)

- Correlates RTD resistance with temperature
- Film/wire wrapped around a ceramic or glass core
- PT-100
 - Range: 0.6499K - 1235K
 - 100 Ω at 0°C



Sensor Names

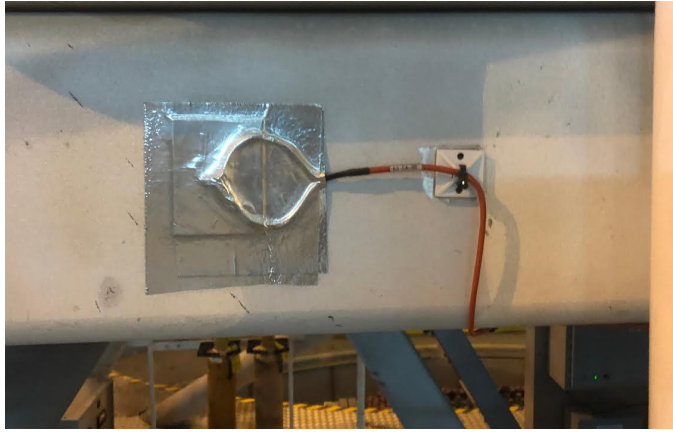
- Given by structure that the sensor is located on
 - Backing-Structure-(# of sector)
 - Cabin-Beams
 - Cone-Bars
 - Cone-Heads
 - Spine-Bars
 - Plus a few more...



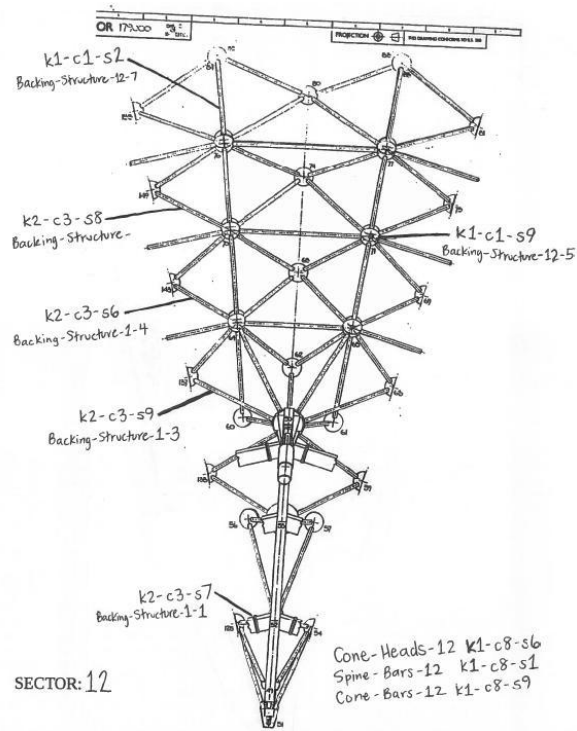
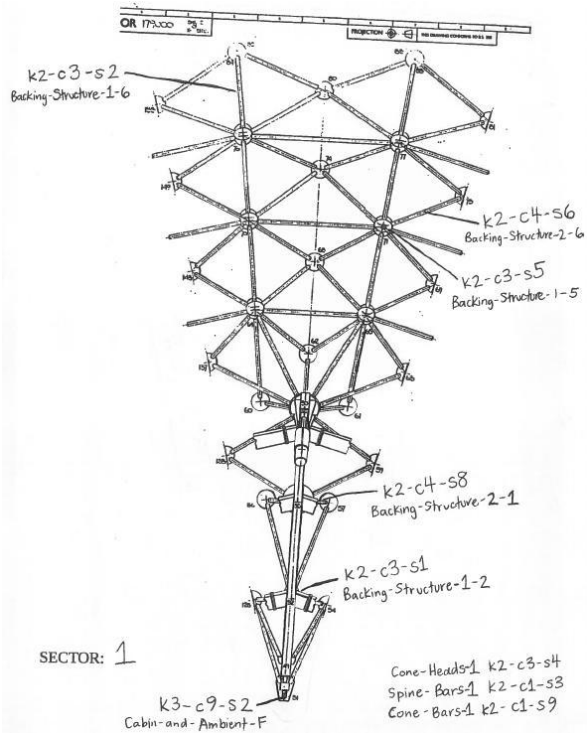
Sensor Locations at JCMT

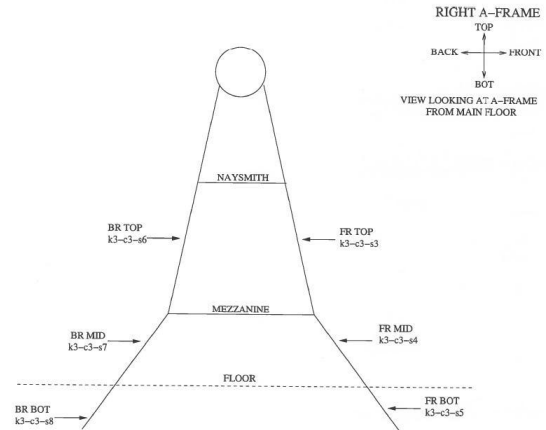
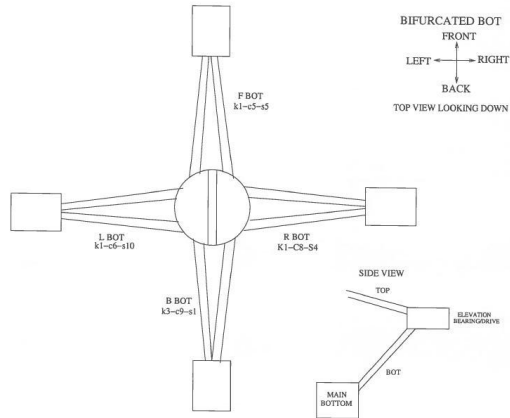
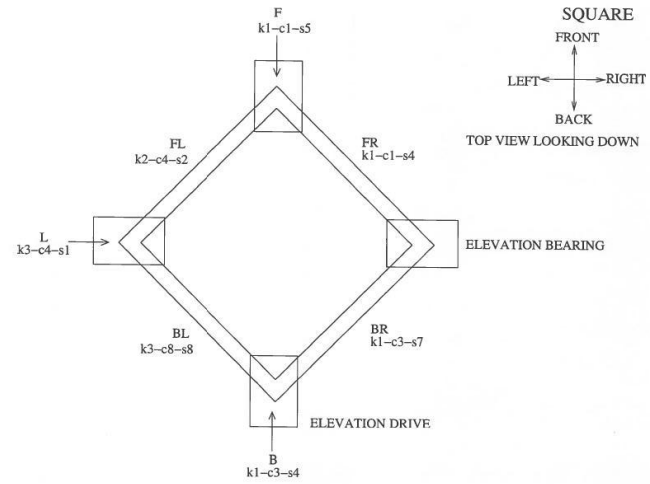
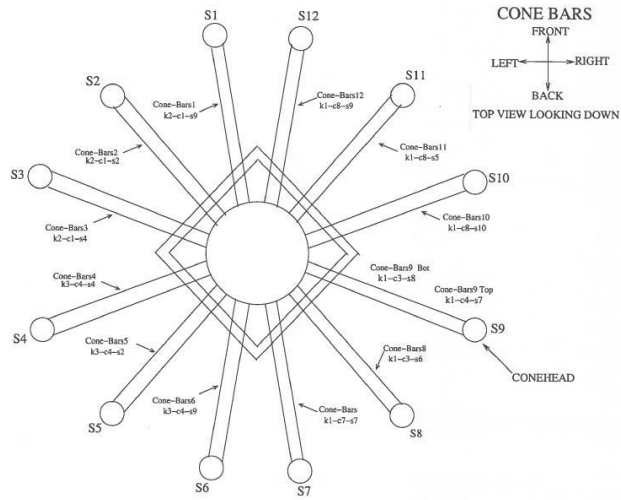


Sensor Locations at JCMT



Sensor Locations Diagrams







Coding Methodology

Matching

Sensor locations, temperature values

Formatting

Converting strings and arrays to compatible forms

Debugging

Disregarding faulty sensors

Plotting

Parametrization, plotting functions, etc.

Result



Room for Improvement

- Hardware improvements
 - Fixing faulty sensors
- Code improvements
 - More autonomy
- Plot improvements
 - File size uniformity



Conclusion and Progression 🍑

- Dish deformation to be considered in observations
- May suggest ventilation improvements
- Subsequent ideas
 - Adding quantitative analytical processes: averages, deviation, long-term trends, etc.





Mahalo ❤️