SALT RSS-NIR
MID-TERM REVIEW
MAY 20 & 21, 2009

DEWAR DESIGN

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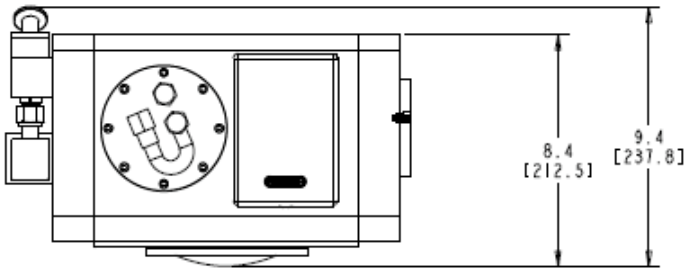
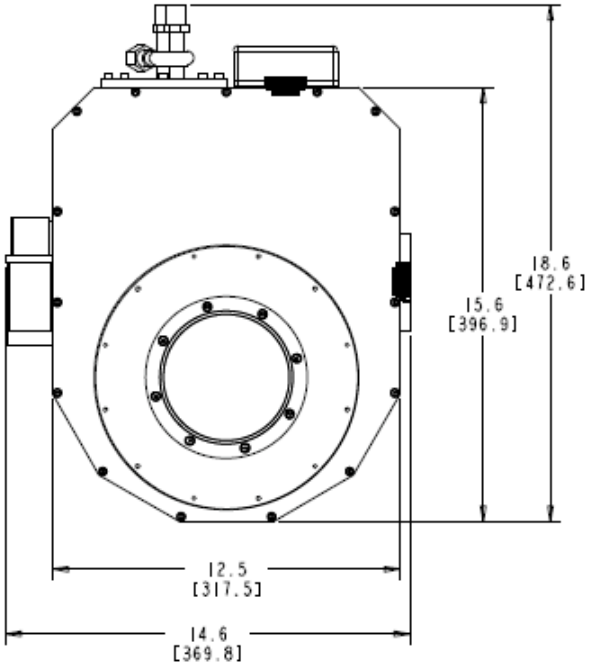
Requirements and Considerations

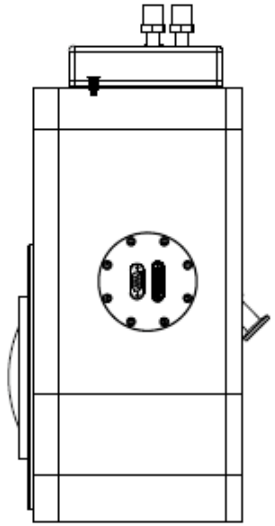
- Highlights
  - Detector, five-position filter wheel and field flattener operate at cryogenic temperature
  - Tight lens decentre and tilt tolerances, ~ 50 μm/0.05°
  - Detector rotation adjustment to align pixels to spectra
  - Reproducible assembly
  - Camera articulation
  - Heat load
  - Vacuum ~ 10^{-5} Torr or better
  - Size constrained along the optical axis by pre-dewar design
  - Integration and test

Dewar Layout

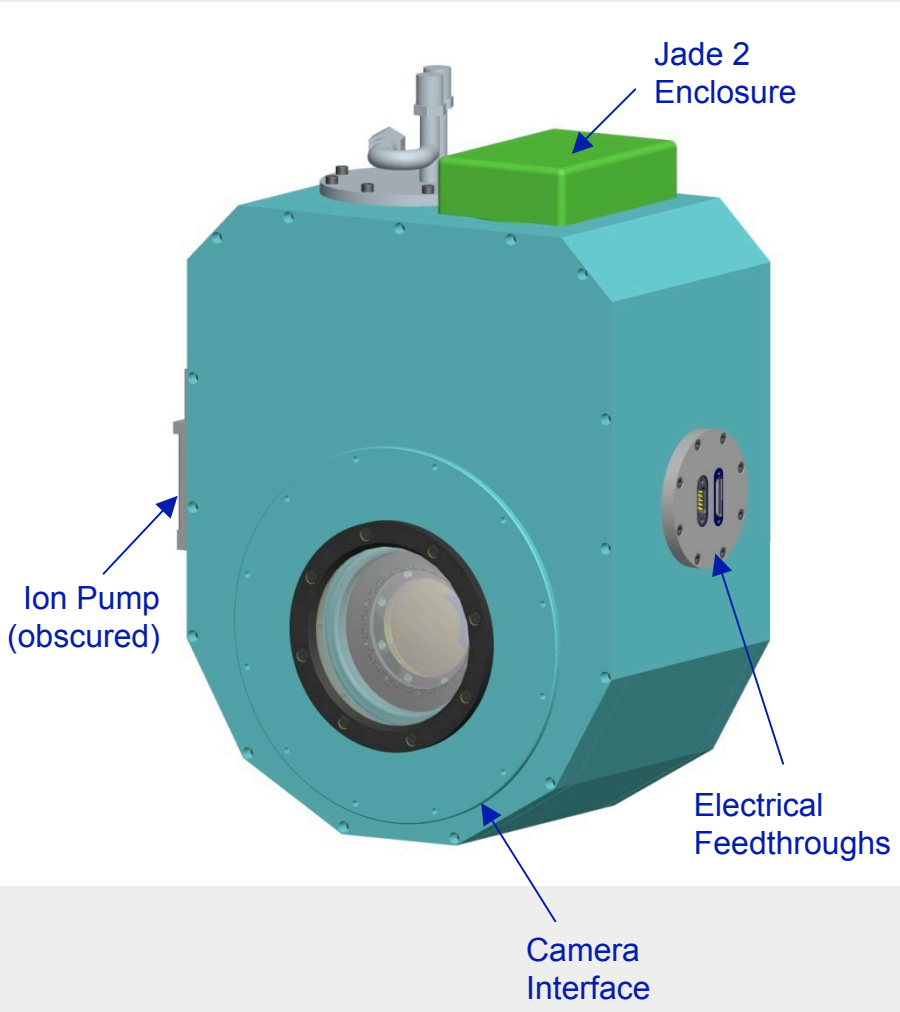


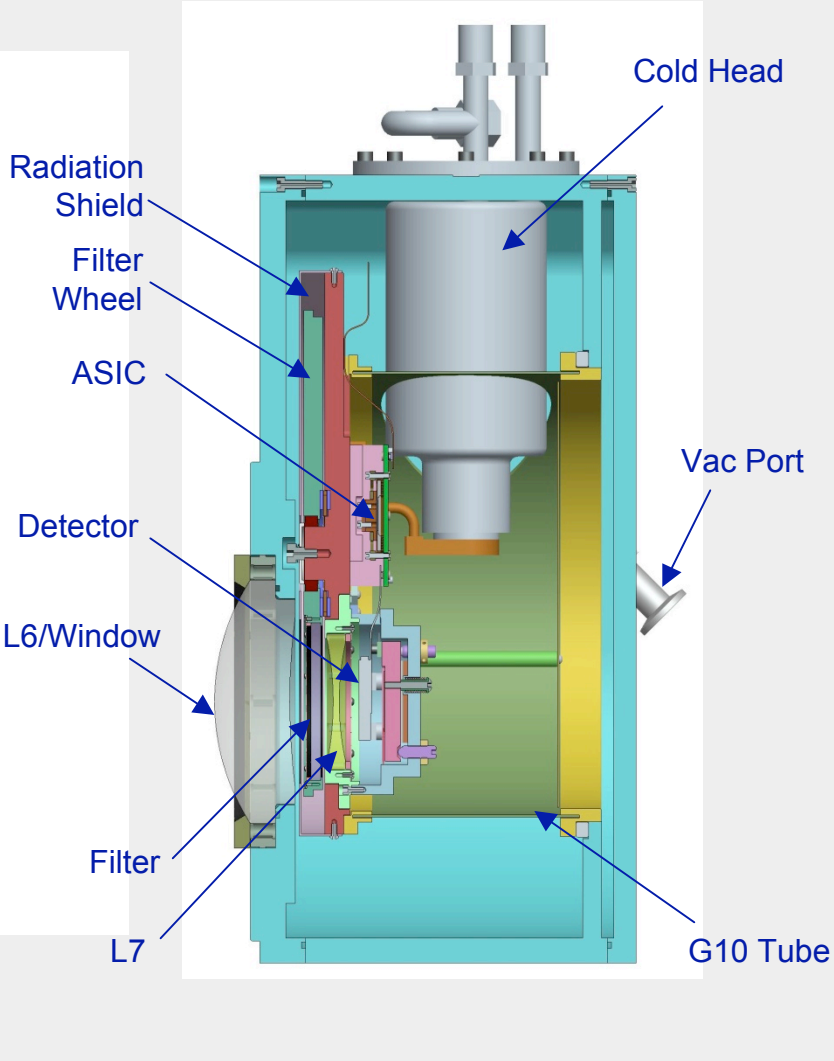
Mass: 60 lb
[27kg]



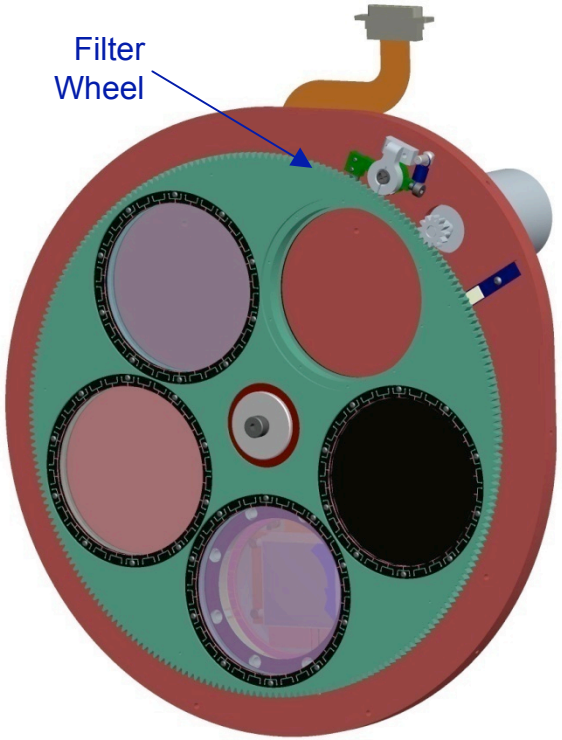


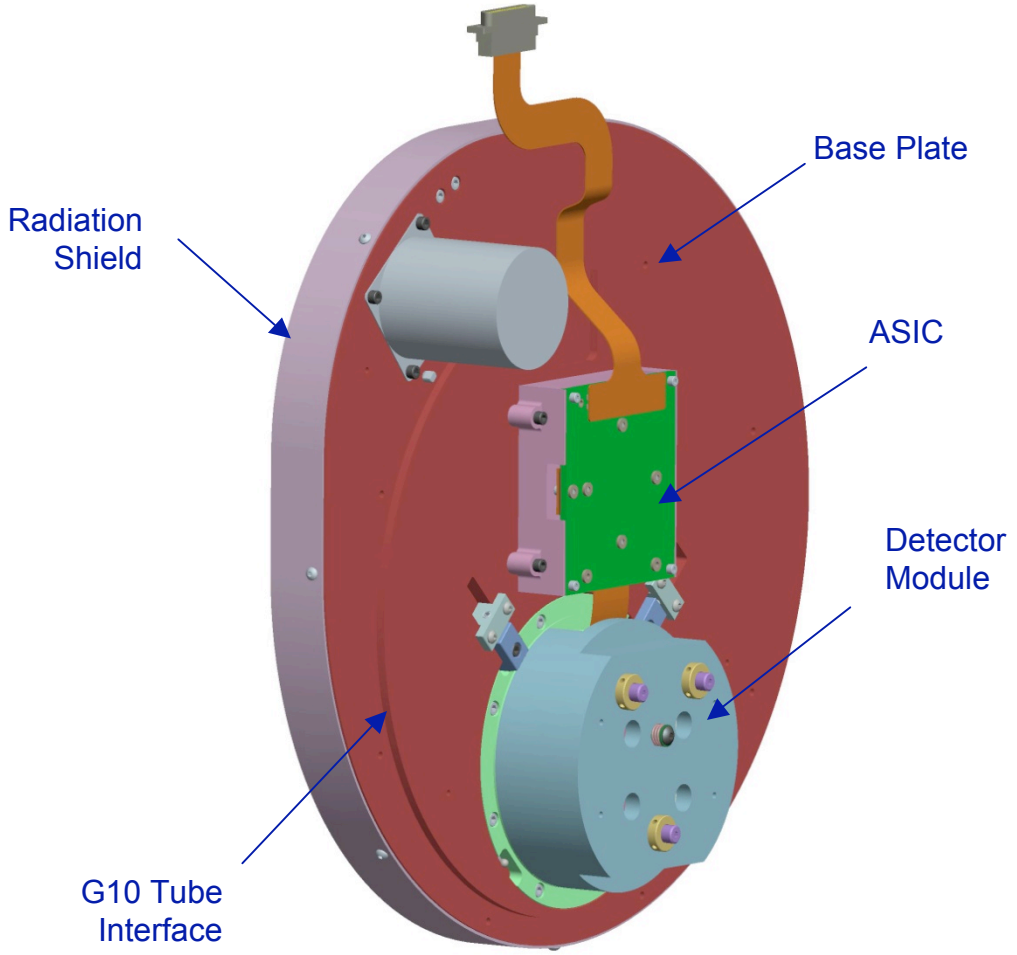
Design Overview



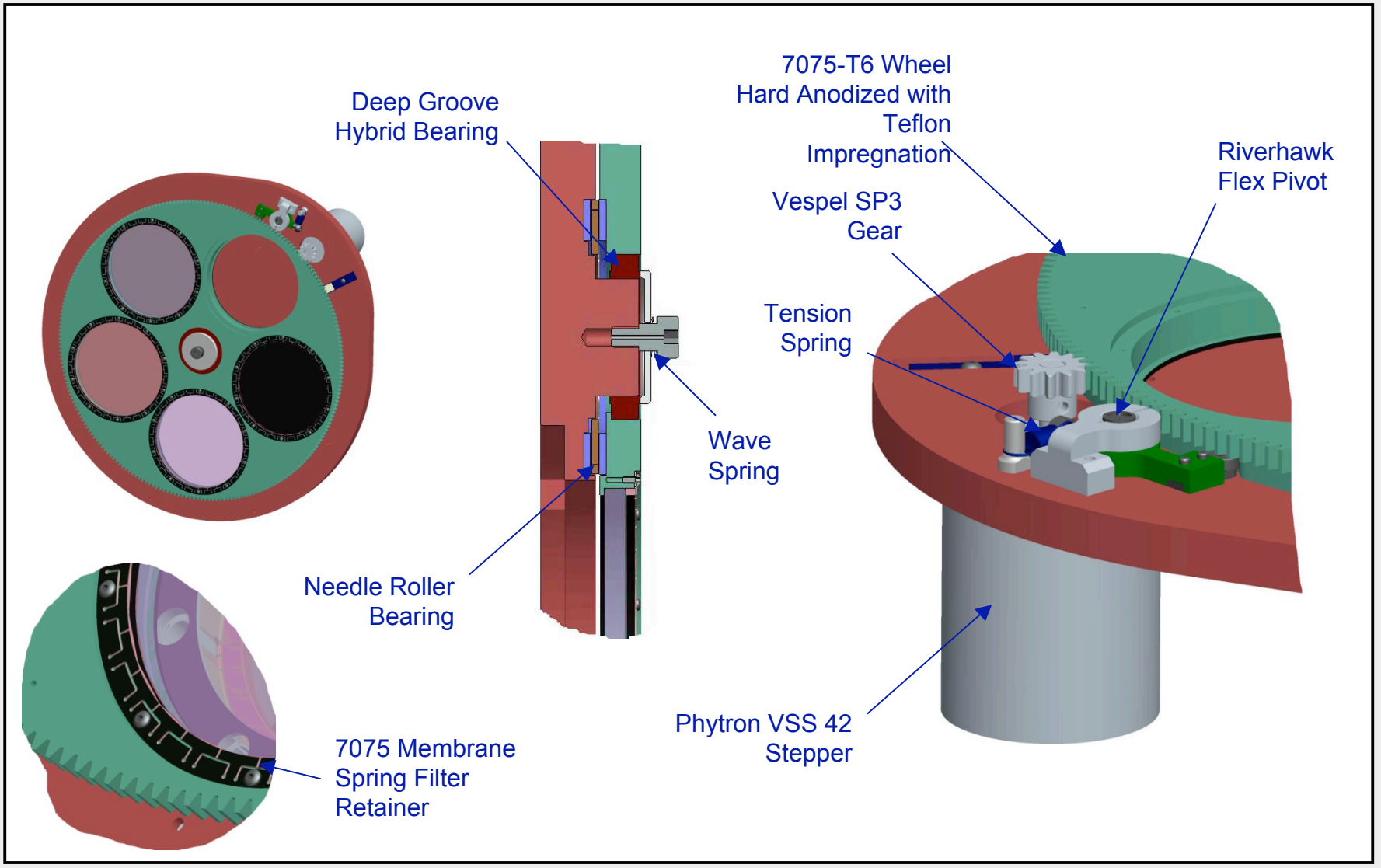


Cold Optical Assembly

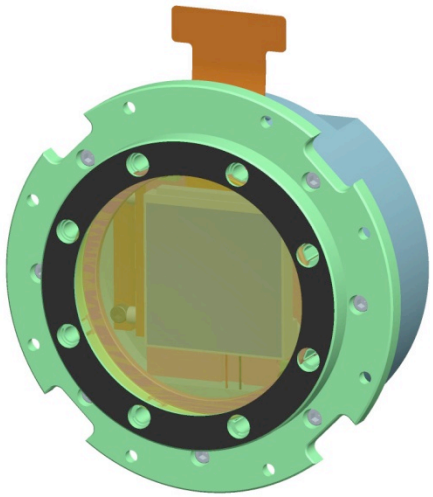


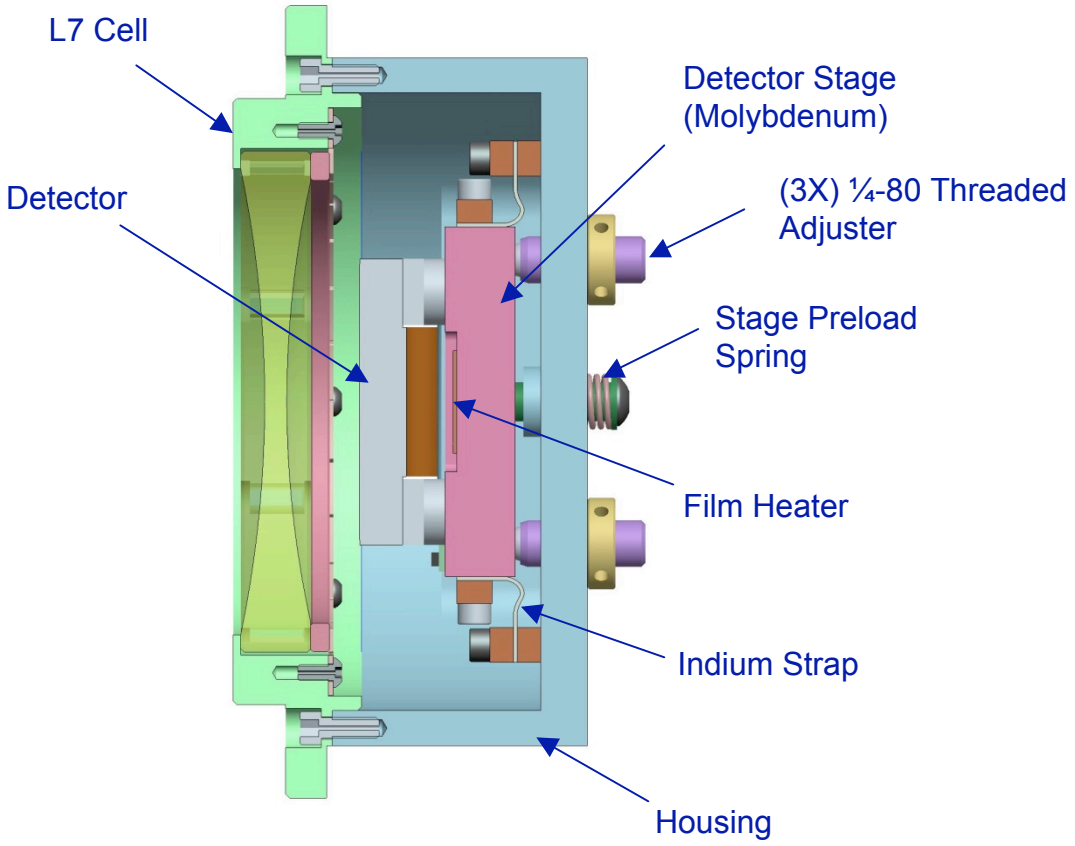


Filter Wheel

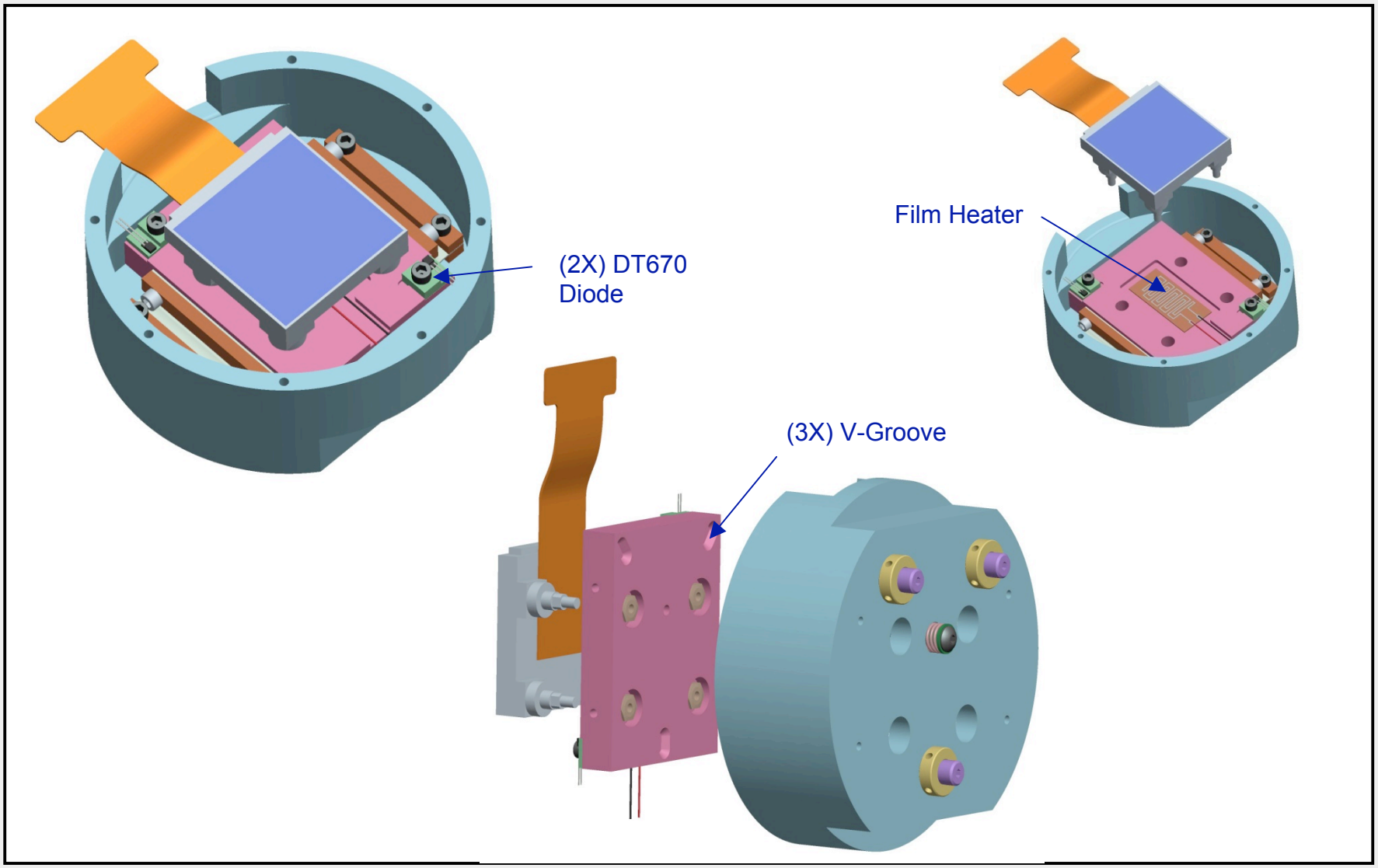


Detector Module

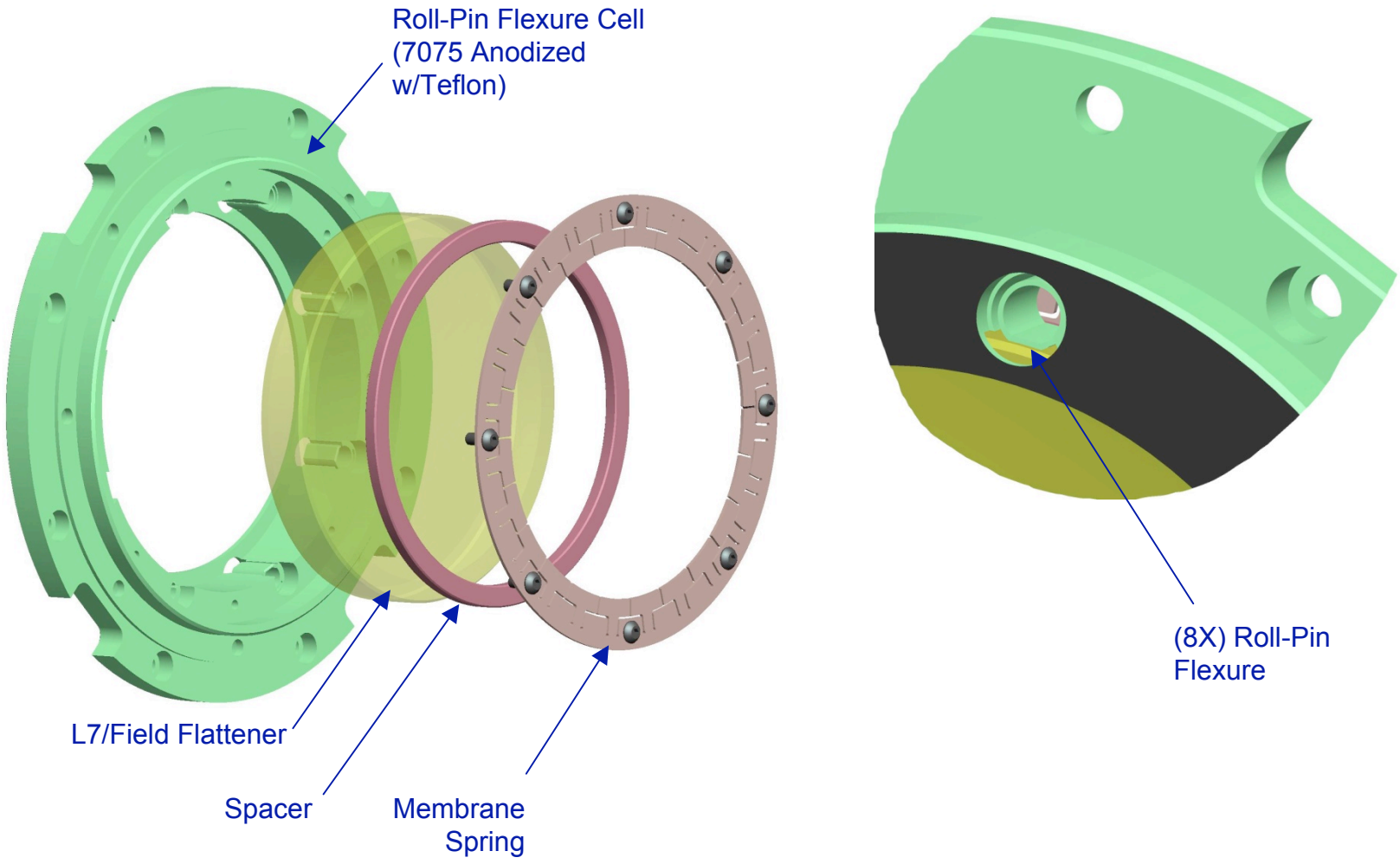




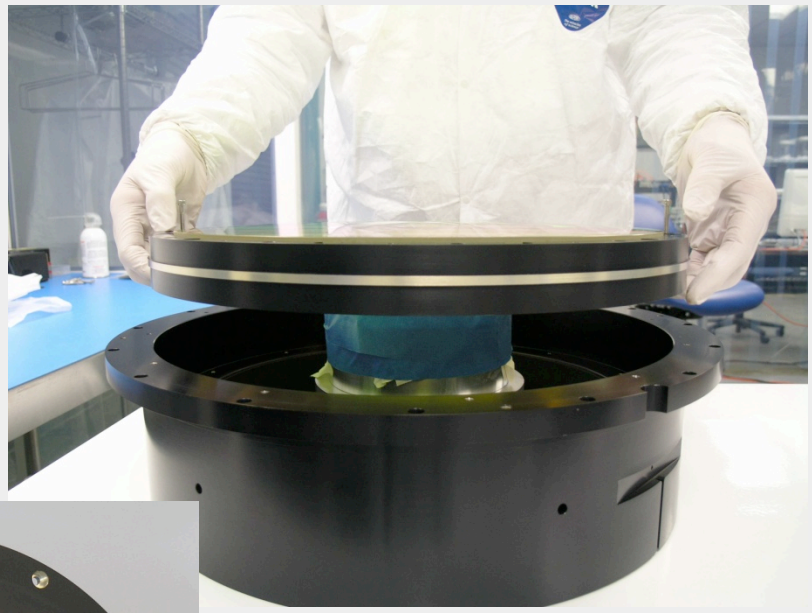
Detector Mount Detail



L7 Cell

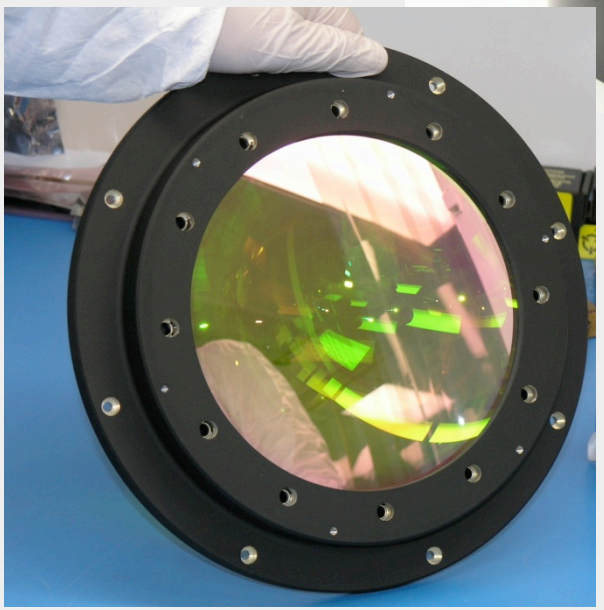

Roll-Pin Flexure Cell
(7075 Anodized
w/Teflon)
L7/Field Flattener
Spacer
Membrane
Spring
(8X) Roll-Pin
Flexure

Roll-Pin Flexure Cells In Use

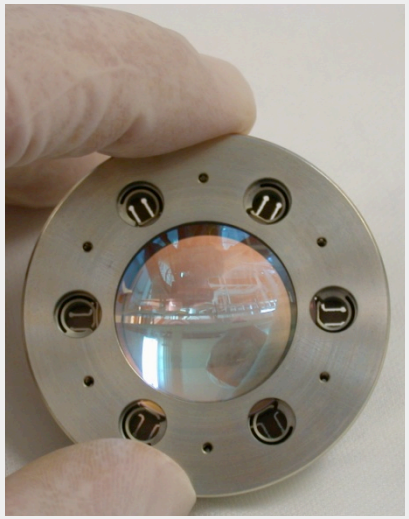


380 mm FS Mount
290K operation

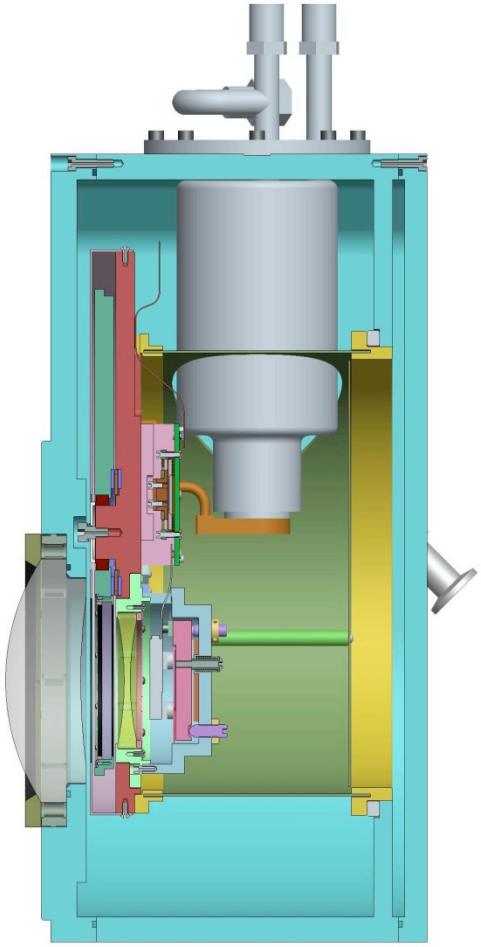
200 mm CaF2
200K operation

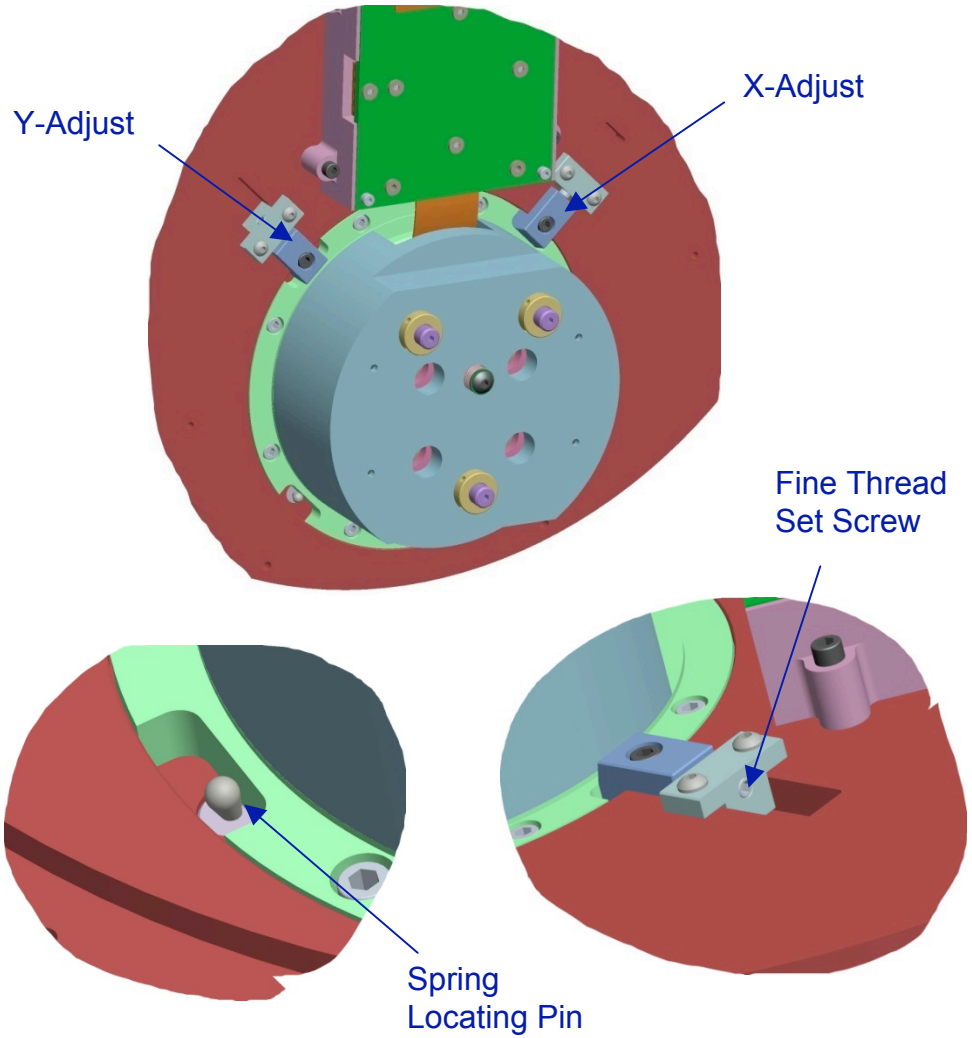


30 mm BaF2
77K operation

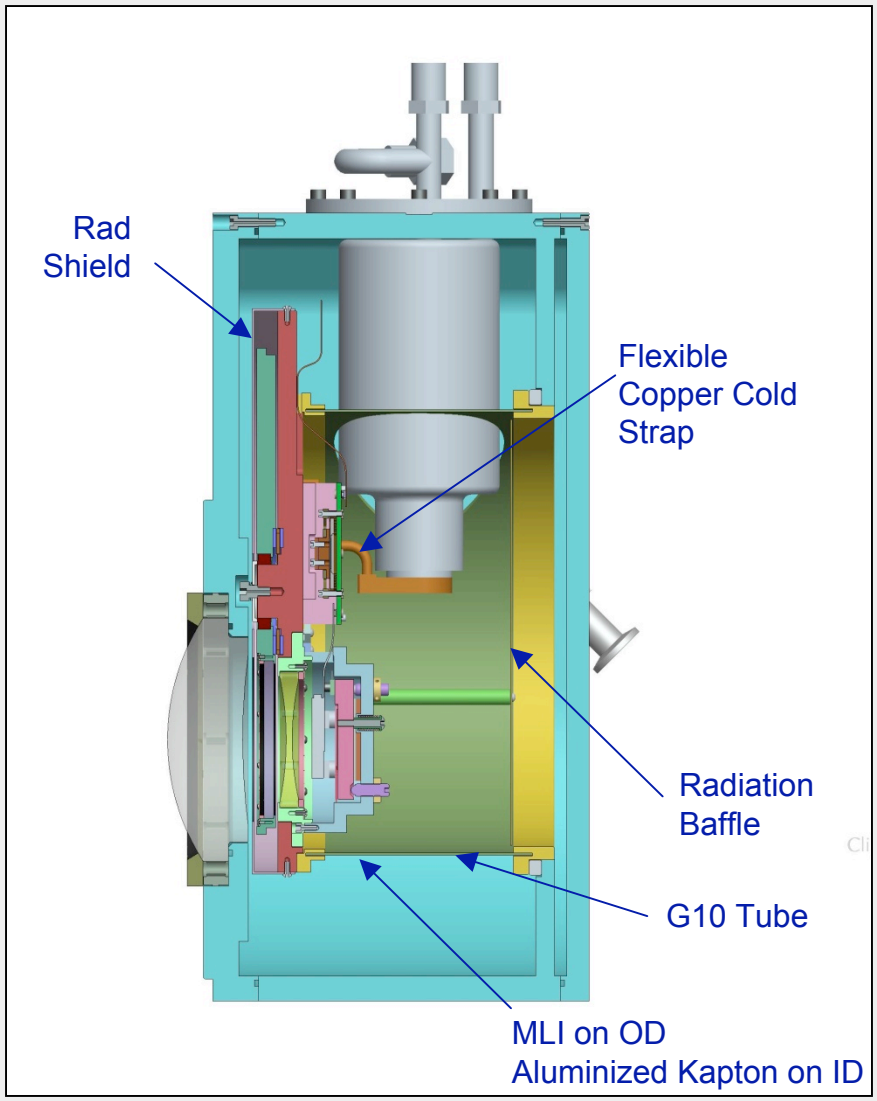


Alignment





Thermal Details



- MLI on G10 Tube OD
- Aluminized Kapton on vessel walls and G10 tube ID
- Radiation baffle to shield back of COA
- Radiation shield w/aluminized Kapton or gold plate on COA
- Cold head coupled to COA via flexible copper strap
- Estimated heat load ~5 W