



Small UV telescopes



Noah Brosch¹, Vladimir Balabanov², and
Ehud Behar²

¹Tel Aviv University, ²Technion

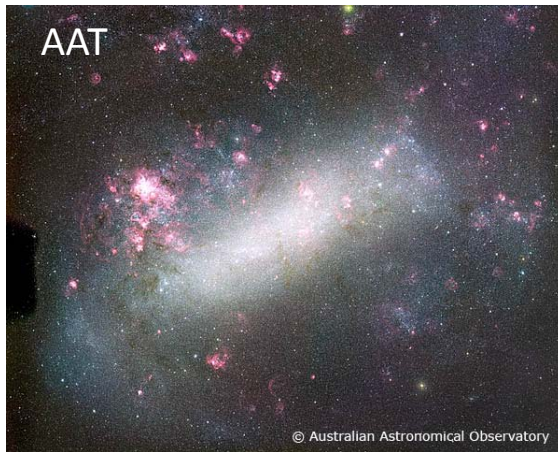
UV missions

- HST: 2.4-m UV-optical-NIR telescope approaching its end-of-mission
- GALEX: 0.5-m UV telescope whose mission was terminated by NASA
- WSO/UV: 1.7m UV space telescope set to fly in 2016
- EUVO: 4-8m UV space telescope proposed to ESA
- Is there a niche for a small UV space telescope?
- Yes! Call this sUVo ("small UV observatory")
- The why and the how of it

What did GALEX miss?



- Sky regions near bright stars



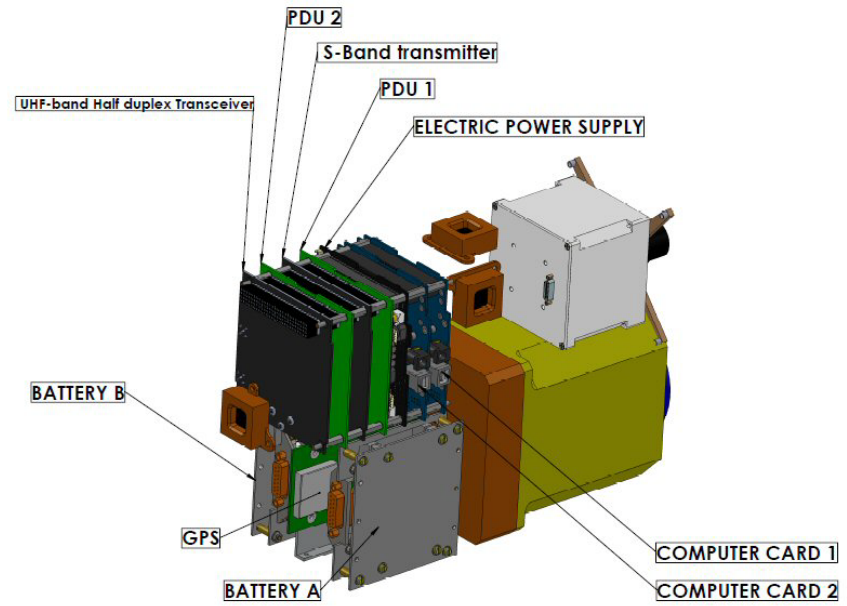
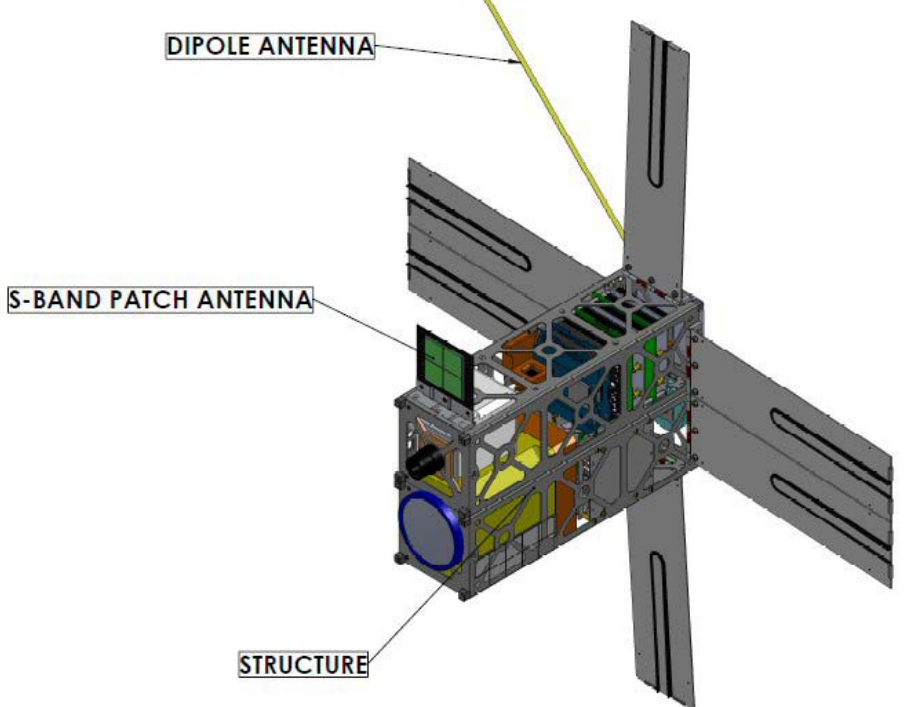
(But see Luciana's talk yesterday)

- Lots of sky in FUV
- Info from more than two bands in the space-UV
- Long monitoring runs to search for transients and variability

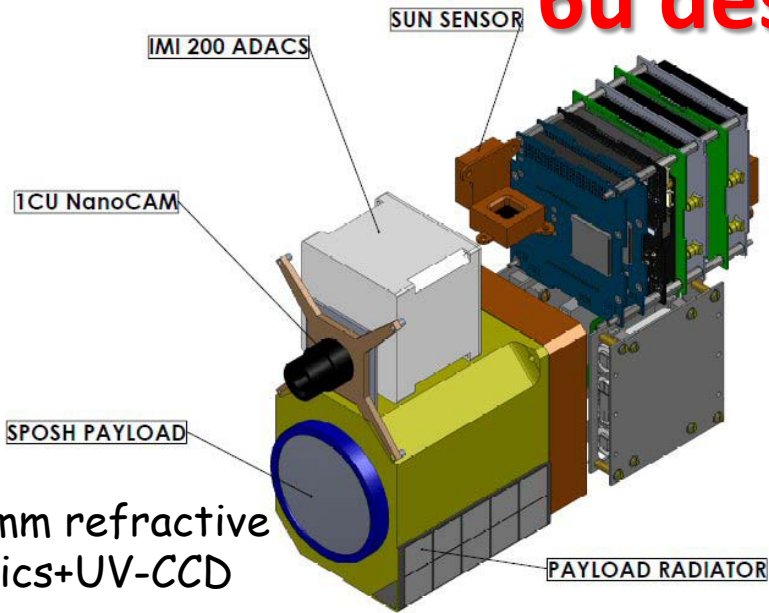


A cubesat-based design?

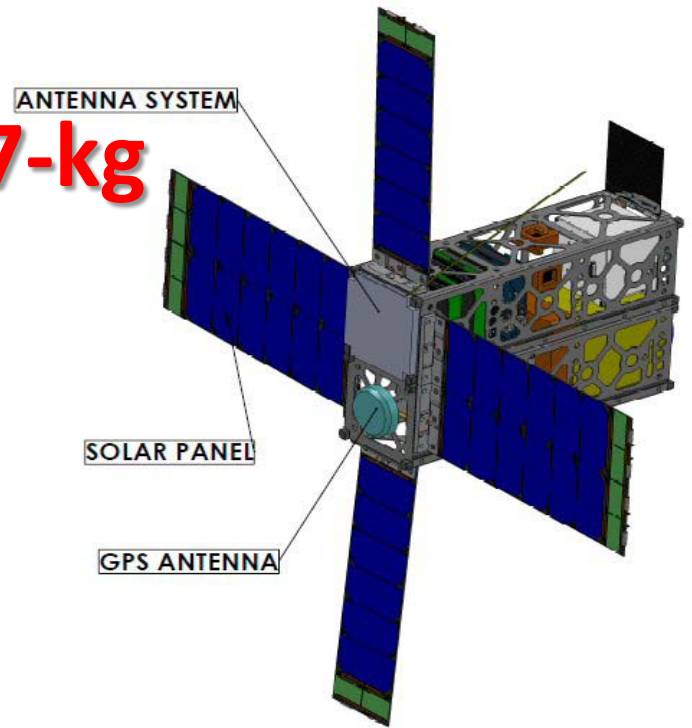




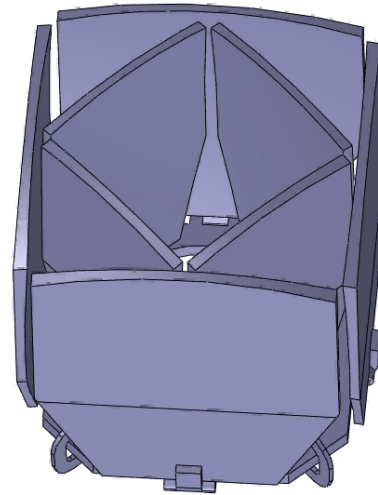
6u design; ~7-kg



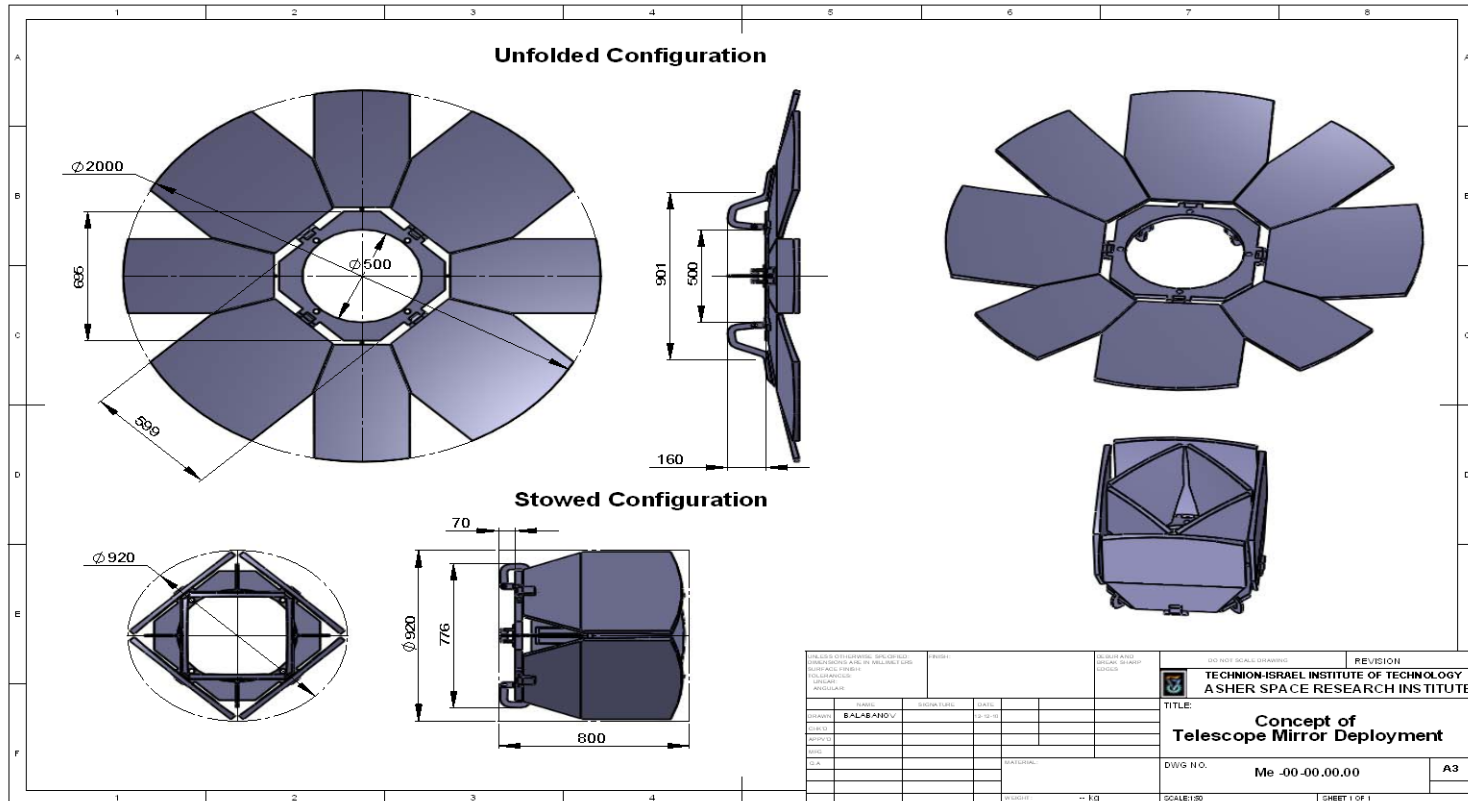
90mm refractive optics+UV-CCD



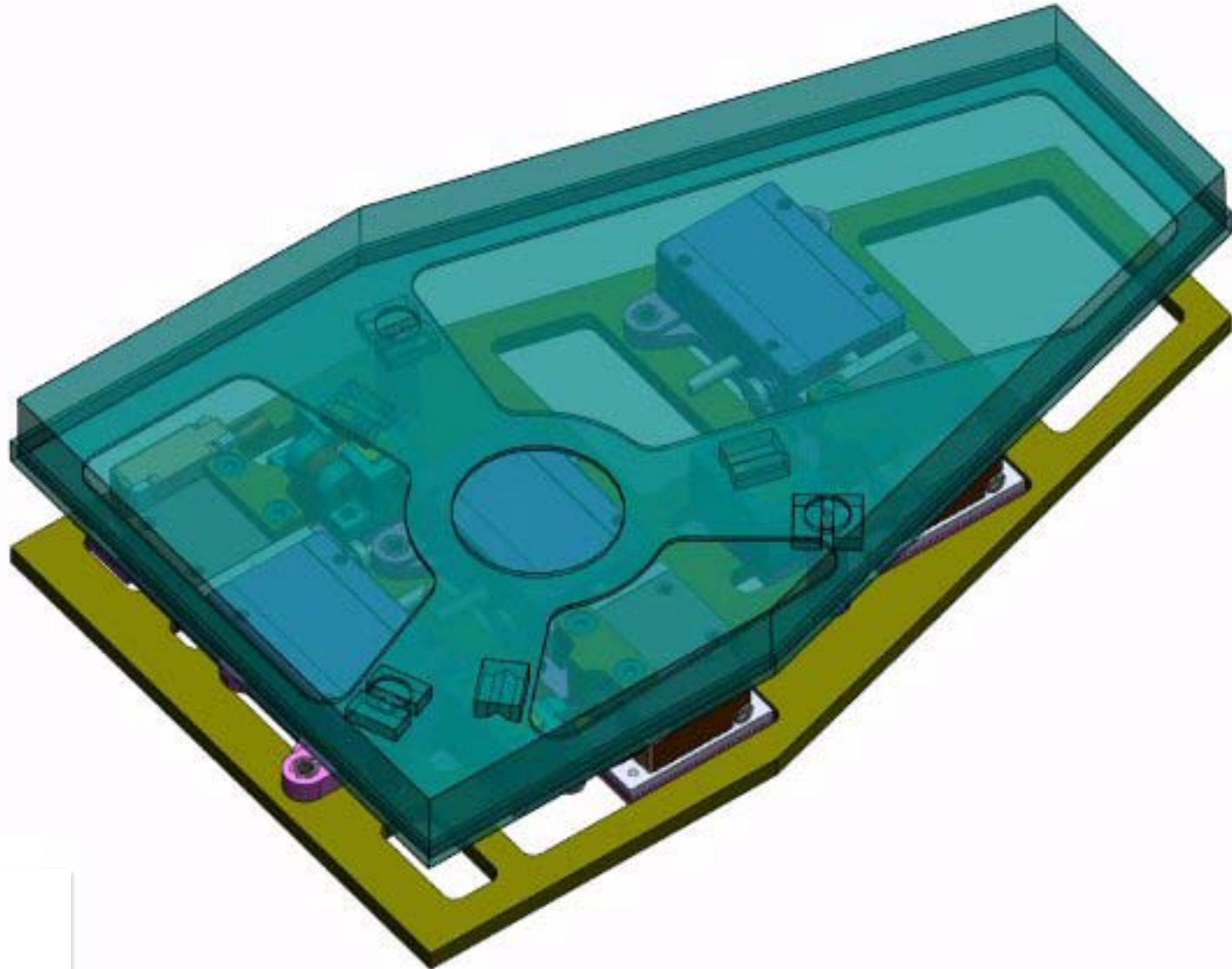
Larger Segmented Optics & Telescope Deployment Concept



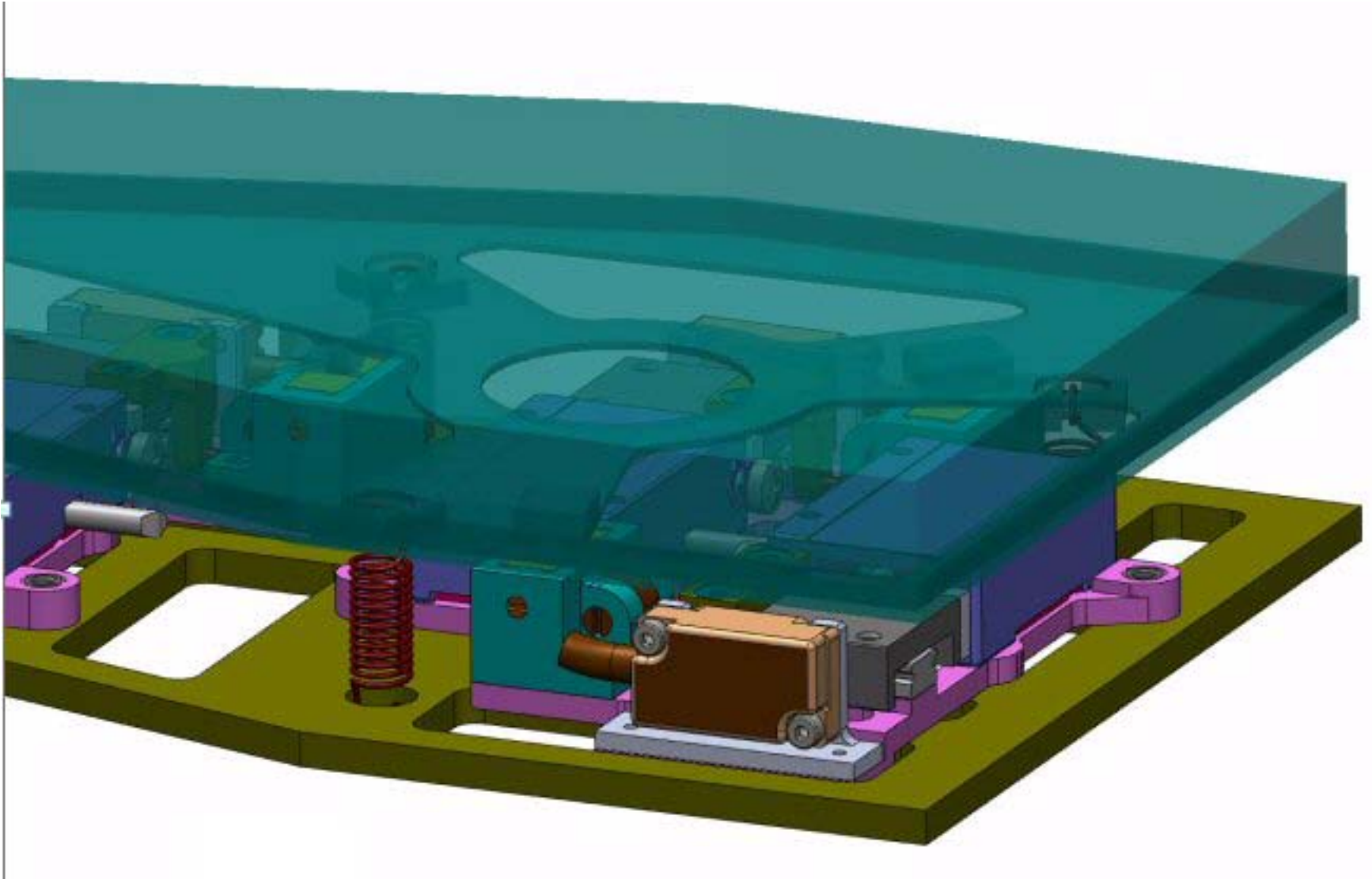
Primary Mirror



Single Mirror Segment

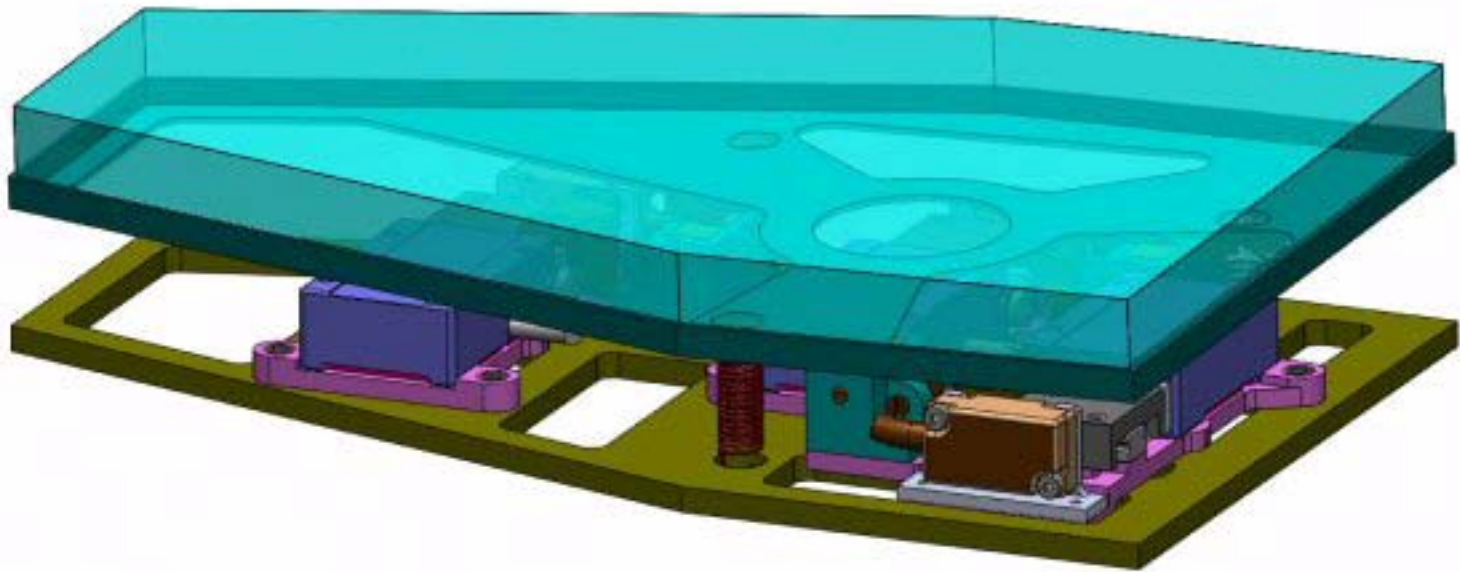


Single Mirror Segment



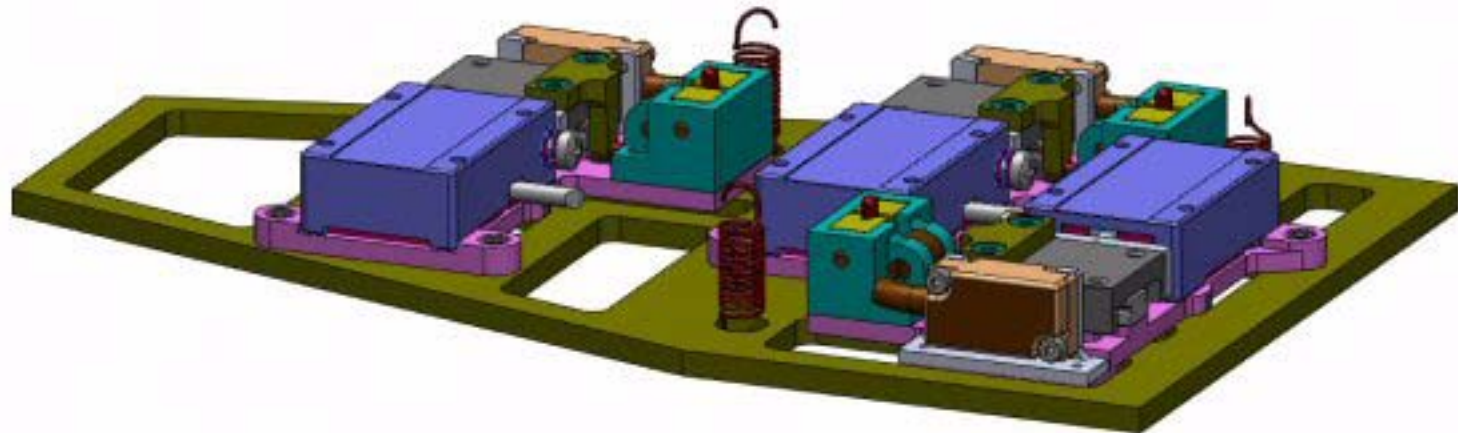
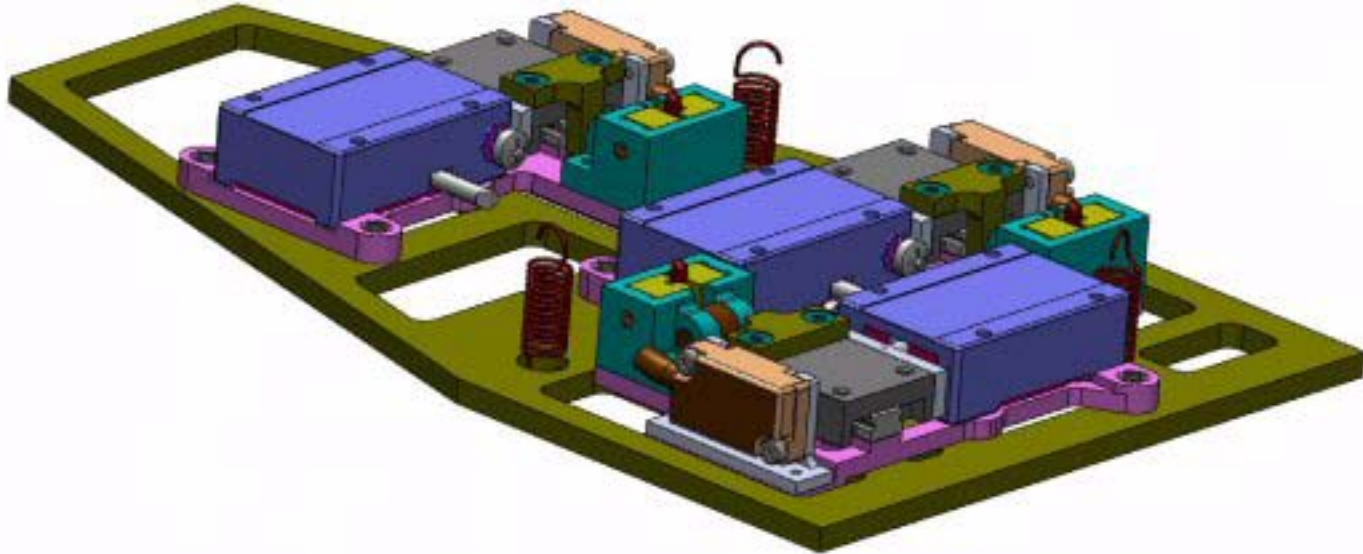
Single Mirror Segment

Degrees of freedom of each petal: tip, tilt, piston
For each individual segment; primary adjusted by segments



Relaxed optical requirements, if only one-arcsec images needed!

Petal base mechanisms



Conclusions

- There is need for small missions in the UV, @10-100 Meuro
- Cheap, single-purpose spacecraft based on cubesats, COTS and refractive optics can be done for less than 10 Meuro
- Medium-sized missions can be based on deployable optics to reduce costs, but these require further development

Primary Mirror Deployment

