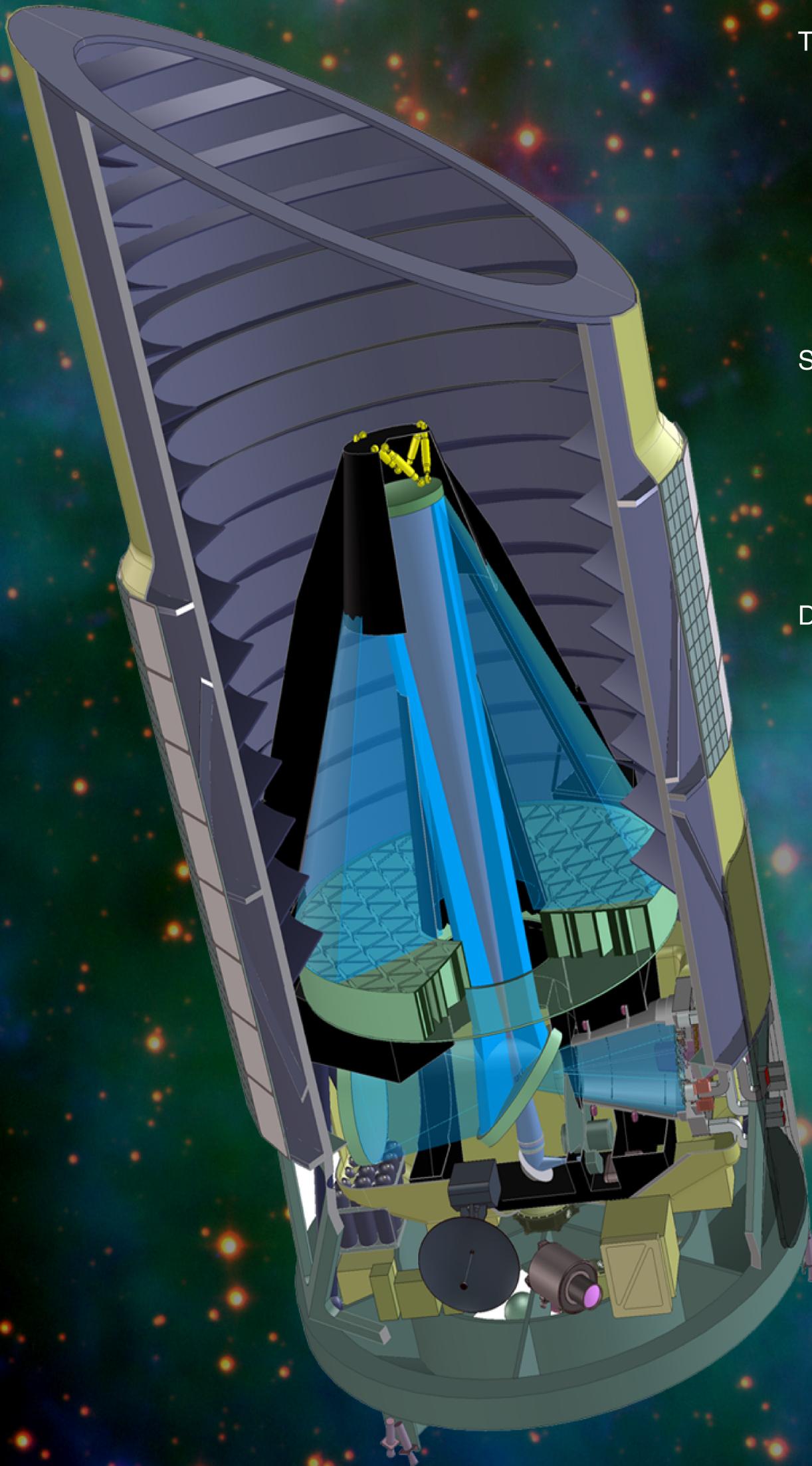


# The SNAP Telescope

Michael Lampton and the SNAP Collaboration



## Three-mirror Anastigmats:

- Annular field maximizes sky coverage
- Wide flat field available
- All-reflector design, no refractors
- Folded for compactness
- Telephoto ratio  $\gg 1$
- Convenient focal surface location
- 9 dof - 6 constraints = 3 free parameters
- Highly elastic design!

## SNAP Requirements:

- Aperture approx 2.0 meters
- Field of view  $> 1$  degree
- Diffraction limited longward of  $1.0 \mu\text{m}$
- Span wavelengths  $0.35$  to  $>1.7 \mu\text{m}$
- Flat focal surface with  $> 100 \mu\text{m}/\text{arcsec}$
- Stray light  $\ll$  Zodiacal

## Design Features:

- Lightweight mirrors of ULE or Zerodur
- Structure of CFRP with low CTE
- Tripod secondary support structure
- Rigid aft structure for folding mirror, tertiary, and detector support
- Mirrors & structure run at 290K

## Performance:

- 2.0 meter aperture
- f/11 final focal ratio
- 1.37 sqdeg annular field
- geometric blur =  $3 \mu\text{m}$  rms
- =  $7 \mu\text{m}$  FWHM
- =  $0.06$  arcsec FWHM
- Airy disk ( $1 \mu\text{m}$ ) =  $13 \mu\text{m}$  FWHM
- =  $0.12$  arcsec FWHM
- compare SiCCD pix =  $10.5 \mu\text{m}$
- compare HgCdTe pix =  $18 \mu\text{m}$
- Strehl  $> 90\%$  at  $1 \mu\text{m}$
- 20% obstruction, sec+spider

Reference: M.Lampton et al,  
Proc. SPIE v.4849 #29 2002