

# SAG7: Internal Coronagraph Concepts & Technology

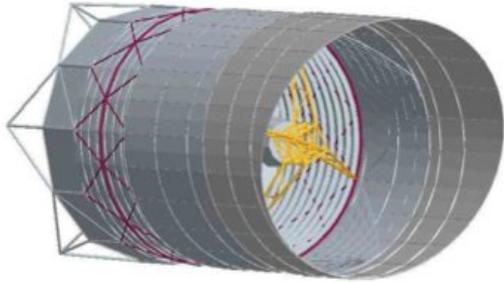


Figure 2.10: ATLAST-8m (with an on-axis SM) shown with the scarfed sunshield in its extended (on-orbit) configuration.

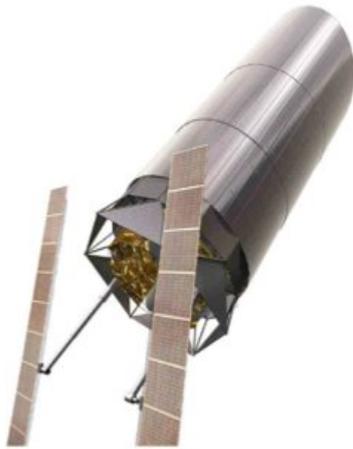
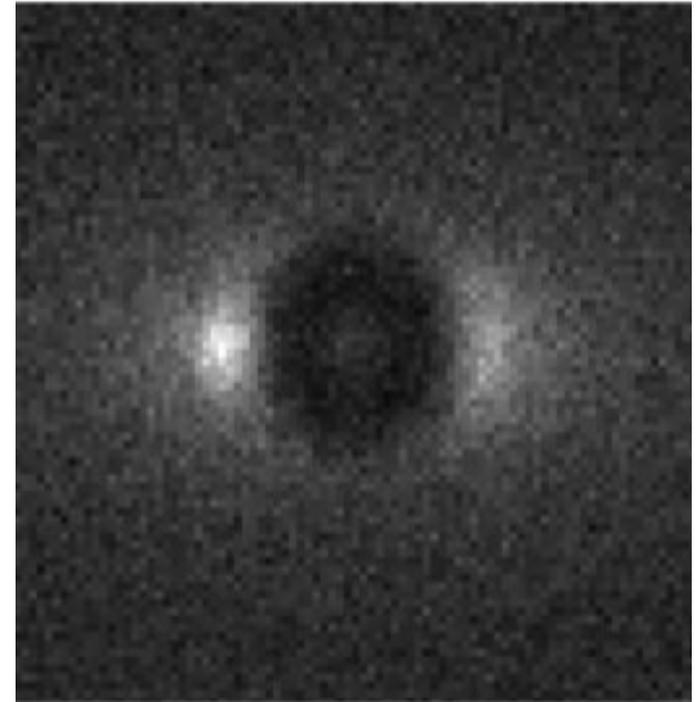


Figure 2.11: ATLAST-8m exterior view showing twin gimbaled solar arrays.

1st Meeting  
ExoPAG  
Jan 8, 2011  
Seattle, WA



Nearby Earth in 1 zodi  
disk near  $2\lambda/D$   
(Guyon et al. 2009)

ATLAST 8-m Concept  
(Postman et al. 2009)

[www.stsci.edu/institute/atlast/.../ATLAST\\_Postman\\_Astro2010\\_RF12.pdf](http://www.stsci.edu/institute/atlast/.../ATLAST_Postman_Astro2010_RF12.pdf)

# SAG 7 Charter

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## 1. Outline the science goals for the mission

- › Earths or bust, or are other planets OK?
- › What measurements needed: albedos? Atmospheric studies? Can TPF-C goals be met?

## 2. Describe the instrumentation

- › Contrast, wavelengths, sensitivity, spectral resolution, inner & outer working angles, spatial resolution --> Aperture, stability

## 3. Identify and characterize technology, engineering and verification challenges for the mission

- › What are tall poles? How much study & investment? When needed?

## 4. Create a Design Reference Mission (DRM)

- › What can be done over the mission life, what limitations?
- › Compare to TPF-C and more recent studies

# SAG7: Schedule

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- Formulate study groups, assign individual tasks by summer 2011 ExoPAG meeting
- Write initial report on Tasks 1 and 2 by summer 2012 meeting
- Write detailed report on Task 3 by summer 2013 meeting
  - May need to move this one forward (hopefully)
- Present detailed DRM for the mission (Task 4) by Winter 2014 meeting

# SAG 7: Membership is now open!

- Please join and nominate others:
  - Recent mission concept study PIs & team members
  - Exoplanet & disk observers and theorists
  - Technologists (scientists & engineers)
    - TDEM / SAT PIs and co-Is
  - Modelers – scientific, missions, technical
  - Industry – help us keep it real!

# SAG7: Some Issues for Discussion

- Do we want something affordable sooner (< \$2B, launch before ~2025) that does large planets / few Earths only, or are we willing to wait for numerous Earths?
- When do we get real re. technology investments?
  - The \$200M recommended in NWNH Decadal Survey is puny even if we focused on a single technology today
  - Can the community reach consensus re. which technologies are worth funding?
- Are missions more or as complex as JWST realistic?

# SAG 7: More Issues

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- Can an exoplanet imaging mission also do UV / visible general astrophysics well?
  - The NWNH Decadal Survey thought that this was very important
- Can we agree on these issues and the direction for a flagship exoplanet mission?
  - Lack of agreement in the US exoplanet community and encroachment of cost / technical reality has thwarted previous missions
  - While I'm wishing, it would also be nice if we were clear on the choice between an internal coronagraph & external occulter mission