



Executive Summary of Exo-S Dedicated Mission Concept Update



ExoPlanet Exploration Program

Exo-S Dedicated Mission Concept Summary Slide

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- Exo-S dedicated mission concept = commercial 1.1-m telescope + starshade, Earth-leading, Earth-drift away orbit
- Recent discoveries are showing richer landscape and improved modeling among smaller planets – especially “sub-Neptunes” & “super-Earths” not represented in our solar system. Exo-S can characterize temperate & cold examples of both new types among nearby stars.
- Yields updated using EXOSIMS w/new SAG13 occurrence rates:
 - ~50% increase in # of detected exoplanets, and detections of rocky planets in habitable zones increases from ~1 to 3+-2
- Smaller starshade adopted (26m vs. 30m originally)
 - Smaller starshade leverages current “S5” tech program work; identical S5 TRL5 truss
 - Mass reduction in starshade put into added fuel for more retargets & science
 - Inconclusive difference in impact on yields and fuel use for 2-yr mission
 - However, EXOSIMS modeling shows that after 2 yrs 30-m starshade has 1/2 fuel, but 26-m starshade has 2/3rd fuel remaining for follow-up observations & possible extended mission
- Tech advances since 2015 allow small cost savings compared to original study
- Current cost estimate **\$1.1B (FY18\$)***
- Current schedule estimate: 7^{3/4} years from KDP-A (start FY23) to launch in late 2030

* The cost information contained in this document is of a budgetary and planning nature and is intended for informational purposes only. It does not constitute a commitment on the part of JPL and/or Caltech.

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