SPARCS: Star-Planet Activity Research CubeSat

OVERVIEW

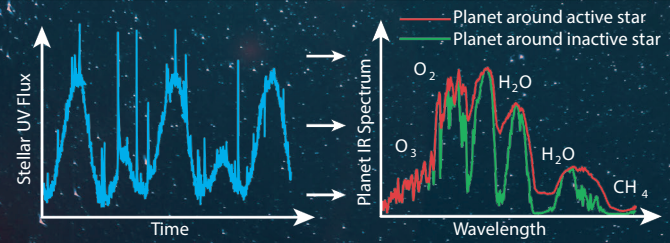
Mission: SPARCS will be the first ever mission dedicated to monitoring the high-energy radiation environments of exoplanets throughout their lifetimes by continuously measuring the FUV and NUV emission of low-mass stars from young to old.

Technology: SPARCS will advance UV detector technology by flying state of the art 'delta-doped' detectors and metal dielectric filters.

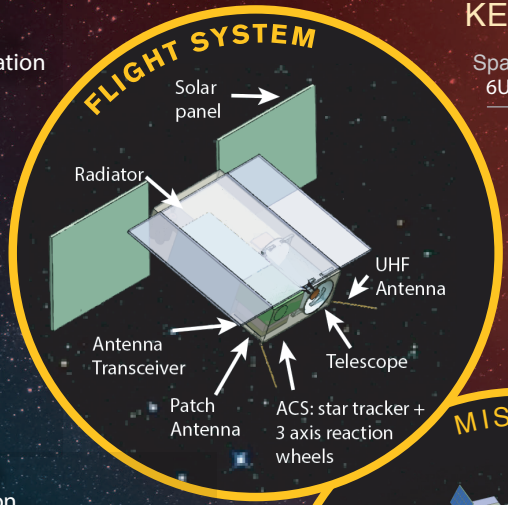
Education: SPARCS will train the next generation of young scientists and engineers in mission operations and data analysis.

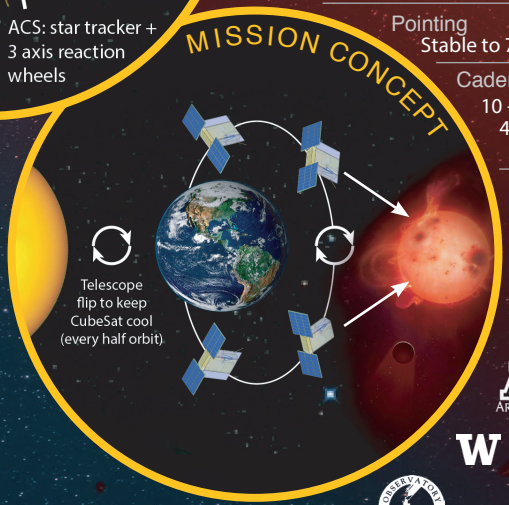
STAR-PLANET CONNECTION

SPARCS will determine the high-energy radiation environment around the most common types of exoplanet hosts. By measuring month-long light curves in two UV bands, SPARCS will map stellar activity due to flares and stellar rotation. These data are crucial to understand the evolution and habitability of planets and for interpreting their spectra and their atmospheres.



Rugheimer et al. (2015)





KEY SPECS

Spacecraft
6U CubeSat, 9 cm telescope

Orbit
Sun synchronous terminator for maximum power, cooling, and near-continuous observations

FOV
1° diameter

Bands
FUV [153 - 171 nm] and NUV [258 - 308 nm]

Photometric Requirements
1% to 10% per observation

Pointing
Stable to 7″

Cadence
10 - 60 min observations
4 - 45 days per target
25 M-dwarf stars in 2 years

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