Star-Planet Activity Research Cubesat

OVERVIEW

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

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

Education SPARCS trains the next generation of scientists and engineers in mission development, operations, and data analysis.

KEY SPECIFICATIONS

Spacecraft: 6U CubeSat, 9 cm telescope

Orbit: Sun synchronous terminator for continuous power, cooling, and uninterrupted observations

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

FOV: 0.7°

Targets: Low-mass stars

Pointing: Stable to <6″

Cadence: 0.1 - 60 min observations
5 - 45 days per low-mass star

DELIVERABLE SCIENCE

SPARCS determines the high-energy radiation environment around the most common types of exo-planet hosts. By measuring month-long light curves in two UV bands, SPARCS maps 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 atmospheres.