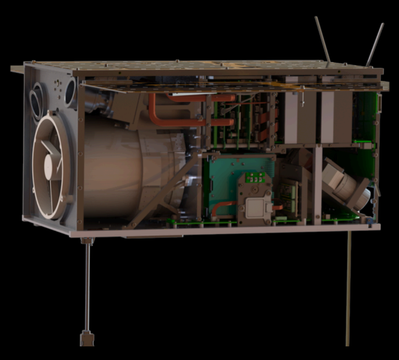
Mauve: a UV-visible spectrophotometry satellite dedicated to monitoring stellar activity and variability

About Mauve

Mauve is a UV-visible spectrophotometry satellite designed to study stars in our galaxy, providing a greater understanding of their magnetic activity, powerful flares and the impact on the habitability of neighbouring exoplanets. The satellite delivers ultraviolet (UV) and visible spectrophotometry of stars across a wide wavelength range. Mauve was launched on 28 November 2025 aboard SpaceX's Transporter-15 into a low Earth Sun-synchronous orbit with a mean altitude of 510 km. Mauve achieved 'first light' on 9 February 2026. Data from the satellite is made available through multi-year science programmes.

Mauve was developed by Blue Skies Space, a company pioneering a new model to deliver high-quality space science data in accelerated timescales to the global scientific community. Through a fleet of low-Earth orbit satellites, the company aims to serve the global demand for high-quality science data across many research areas.

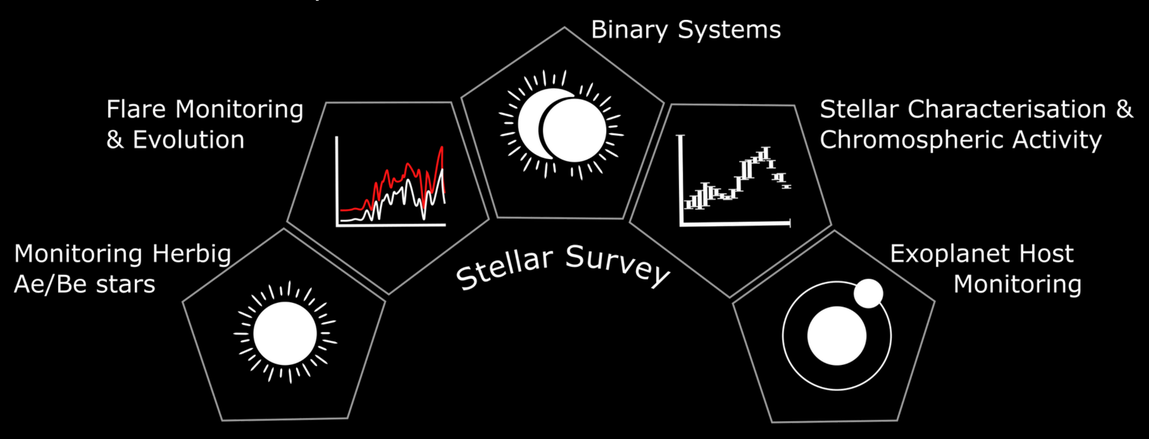


Mass	18.6 kg
Wavelength range	200 - 700 nm (UV + Visible)
Telescope	13 cm Cassegrain
Grating	600 lines/mm
Resolution	10.5 nm (R=65 max)
Fibre width	500 µm
Orbit	~510 km Sun-synchronous LEO

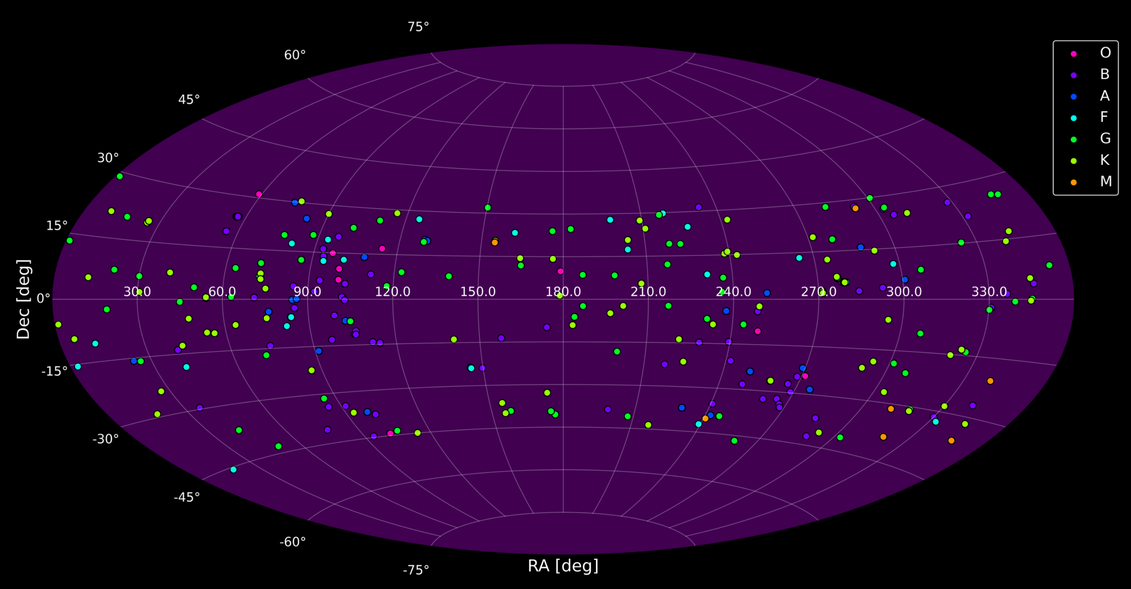
A Unique Science Opportunity

Mauve offers a unique, wide wavelength range for exploring various science themes and has thousands of hours available per year for time-domain astronomy. Researchers who join Mauve's science programme will decide the scientific objectives and observational strategy. Mauve's wide field of regard covers the entire ecliptic plane and parts of the galactic plane, including the centre, and enables extended observation campaigns to support in-depth studies of stellar variability.

The initial science cases identified by the members of the science programme include observations of flaring stars, Herbig Ae/Be stars, exoplanet hosts, contact binary variables (RS CVn variables, symbiotic stars, Algol-type stars), and different types of hot stars (pulsating, disk-bearing Be stars, variable blue/yellow/red stragglers). Besides these initial science themes, Mauve's data can be utilised to support and complement existing and upcoming facilities as a pathfinder or conduct simultaneous/follow-up observations.

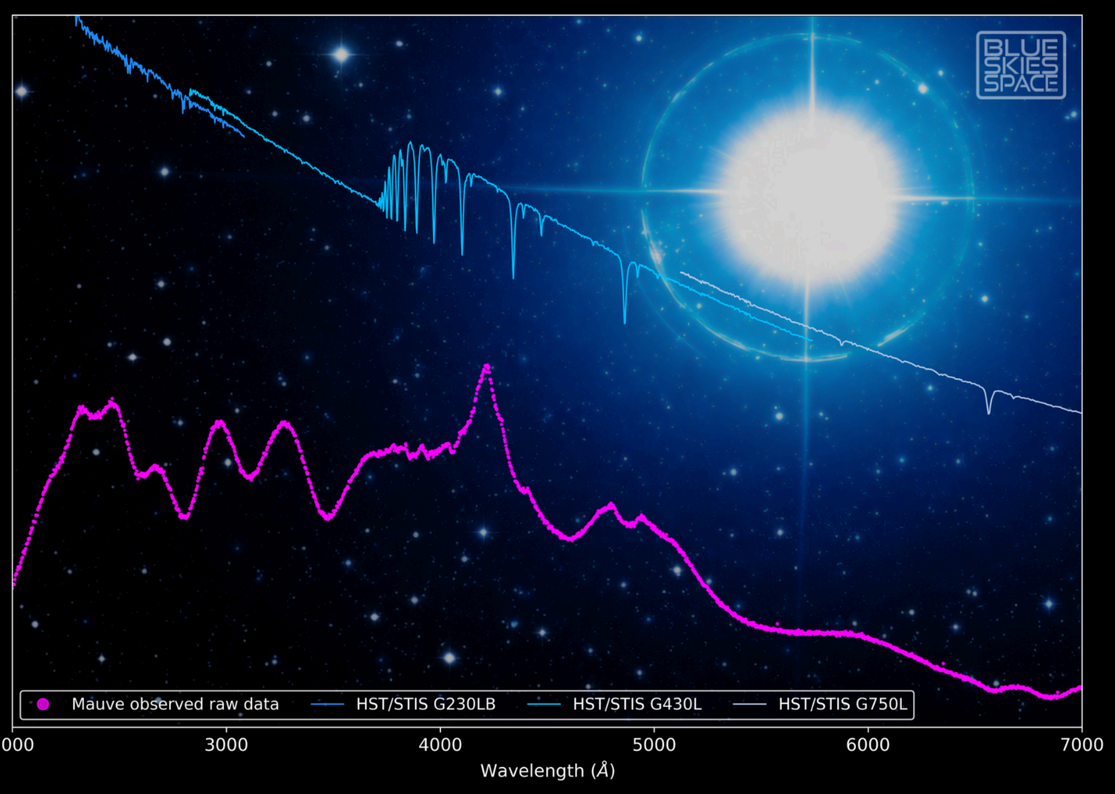


Mauve's broad science cases proposed by member scientists.



Candidate target list coloured by spectral type for Mauve's first year of operations

Commissioning & First Light



Following launch, contact with the satellite was established, and commissioning activities were initiated. All spacecraft subsystems and the payload instruments have been powered on and are operational. As part of early commissioning, Mauve was pointed at its first calibration target, eta Ursae Majoris (eta UMa), a bright star in the constellation Ursa Major, for a 5-second observation. Eta UMa is a hot, blue-white star, much hotter than our Sun. Eta UMa shines brightly in ultraviolet light, making it an ideal calibration target for a UV observatory like Mauve.

The plot on the left shows in pink the spectrum of eta UMa acquired in a single capture by Mauve on 9 February 2026 with a 5s integration time, while in blue the Hubble Space Telescope STIS spectra of the same star recorded by three separate grisms at different epochs. The Hubble spectra show calibrated data at high spectral resolution, while the Mauve spectrum shows raw data in count units.

The spectral features of the Mauve spectrum are different from the Hubble spectra because the data delivered by Mauve is the result of the matrix product between the true stellar spectrum and the instrument response function. We can also confirm that the Mauve observation of eta UMa is in very good agreement with the expected signal levels obtained from pre-flight simulations.

Scan the QR to learn more about Mauve, view publications and request access to the instrument simulator.

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