CHEOPS and PLATO at a glance

PLATO and CHEOPS are two upcoming European Space Agency missions aimed at characterising exoplanets.

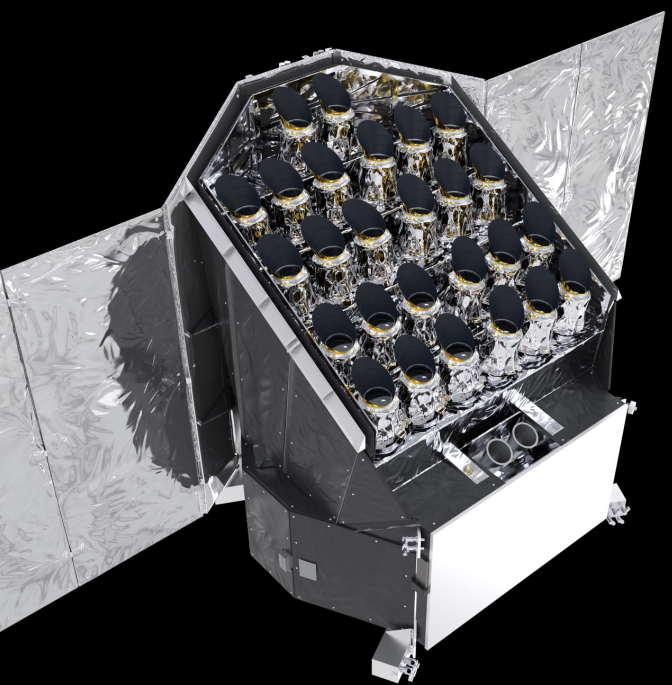
CHEOPS is a S-class mission (small mission in ESA's science program) which aims to characterise exoplanets already known to be orbiting around nearby bright stars. CHEOPS will target Earth- to Neptune-sized planets.

PLATO is a M-class mission (medium size mission) aimed at finding and characterising terrestrial planets in orbits up to the habitable zone (HZ) of solar-type stars (up to orbits of one year), and characterise their bulk properties to determine their habitability. PLATO focuses on the discovery of new planetary systems.

CHEOPS will target exoplanets which already have a mass estimate from ground based observations. PLATO on the other hand, will first find new planets, then facilitate ground based follow-up observations so that the masses of the newly discovered planets can be measured. For both missions, ground based observations are vital as they will in combination with space based observations, allow for accurate measurements of the bulk density of the planets. This will provide information about the approximate composition of the planet, such as whether it is rocky or gaseous.

For PLATO to be efficient at finding new planetary systems it has to simultaneously observe a large number of stars. This is done by having a wide field of view which is made possible by the 26 PLATO telescopes. Since CHEOPS will instead specifically observe one pre-defined target at a time, there is no need for a wide field of view making a single larger telescope suitable.

CHEOPS is expected to observe ~500 targets. For each target CHEOPS will provide an accurate estimate for the planetary radius of validated planets with known masses. These observations will provide valuable data for constraining the mass-radius relation of exoplanets. 20% of the time will be open time available for the community to develop new science programmes.



PLATO is expected to provide accurate parameters for planets on orbits similar to the terrestrial planets in the Solar System which will allow for comparative exoplanetology up to about 1 AU orbital distance. PLATO will also provide the ages for a large number of planetary systems (~10% accuracy for bright solar-like stars).

This will aid in not only helping us understand how planets form, but also help us understand the galactic structure. PLATO offers a Guest Observer program with 8% of the data rate being offered to the community. This is roughly equivalent to 40,000 targets per pointing.

	PLATO	CHEOPS
Telescope aperture	12 cm (diameter of a CD)	32 cm
Number ot telescopes	24 regular + 2 fast read out	1
On sky pixel size	15 arc seconds	1 arc second
Wavelength range	500 - 1000 nm	400 - 1100 nm
Main targets	Bright, Sun-like stars	Known exoplanet host stars with a magnitude ≤ 12 anywhere in the sky
Main objective	Detect Earth sized planets in the habitable zone	Characterise transiting exoplants orbiting bright host stars
Mission duration	4 years	3.5 years
Orbit	L2 (1.5 Million km from Earth)	Sun-synchronous, 650 - 800 km altitude
Noise	≤ 50 ppm in 1 hr (for main sample, up to V ~ 11 Sun-like star)	≤ 100 ppm in 1 hr (up to a V ~ 11 Sun-like star)
Type	M-class mission	S-class mission