

## The PLATO space mission and the quest for habitable worlds

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### Invited talk

The PLATO mission has recently been confirmed as the M3 (Medium-class) mission in ESA's Cosmic Vision programme. PLATO will detect and characterise a large number of extrasolar planetary systems around bright stars, including hundreds of terrestrial exoplanets orbiting in distances up to the habitable zone of solar like stars. PLATO will provide accurate determinations of the planets radii and ages, the stellar irradiation, and the planetary system architecture. Thanks to the brightness of its targets, PLATO will enable us to measure accurate planetary masses and mean densities through the combination of satellite data and ground-based observations. As a result, it will be possible to distinguish between mini-gas planets and terrestrial planets, and therefore to identify worlds where life could exist as targets for spectroscopic atmosphere observations with other facilities. A deep knowledge of the planet host star, essential in the assessment of habitability, will be achieved with the asteroseismic analysis of the PLATO data. The planets detected by PLATO will show a great diversity of compositions and will orbit different types of stars, from solar-type and M-stars to Red Giants and binary systems. PLATO will also have the capability to discover exomoons. This rich variety of planets and environments will be a unique resource to enhance our understanding of habitability under a large range of conditions.

In this contribution, we will give an overview of the mission concept, science objectives, and present the mission design resultant from the recently completed Definition study.

### Short Summary

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