

# PLAnetary Transits and Oscillation of stars - PLATO

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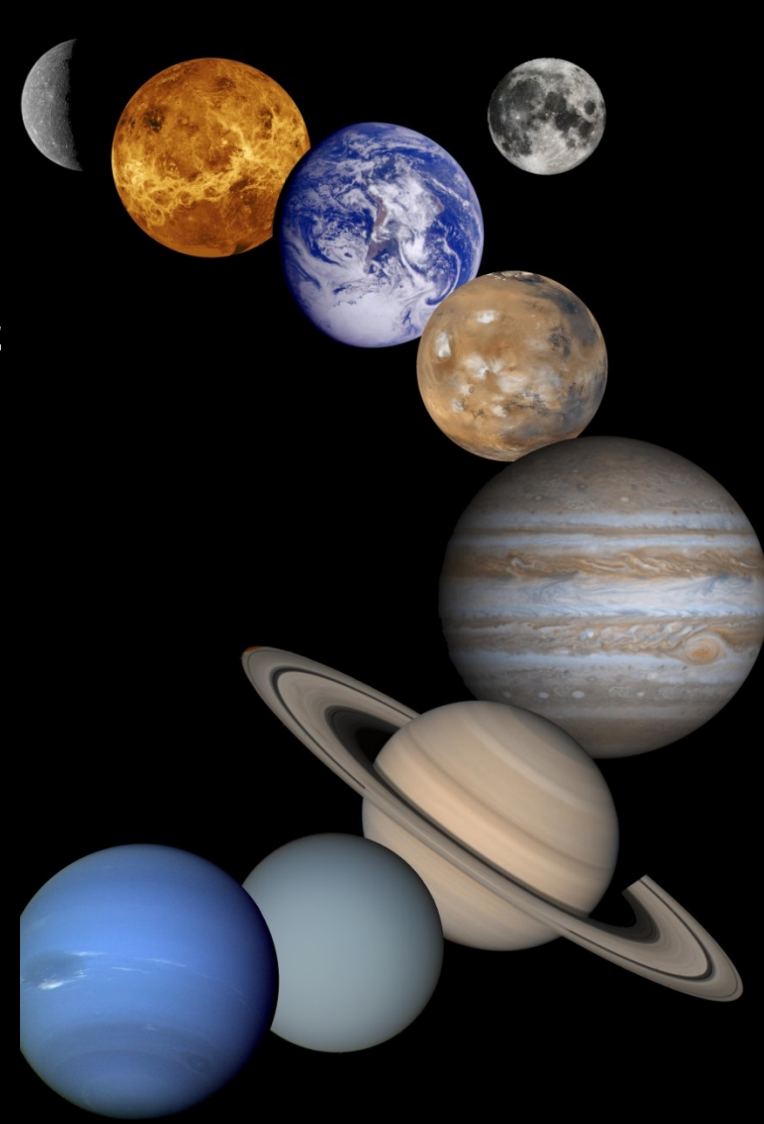
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## Introduction

Up to now, more than 3500 extrasolar planets are detected in 2742 planetary systems. 614 out of them are multiple planet systems. But no terrestrial planets were detected whose radius and mass are well known and whose orbit lies in the habitable zone of a solar-like central star (see more: [exoplanet.eu](http://exoplanet.eu)).

Still there is no answer to the question: Are there similar systems like our solar system and are there planets which could inhabit life?

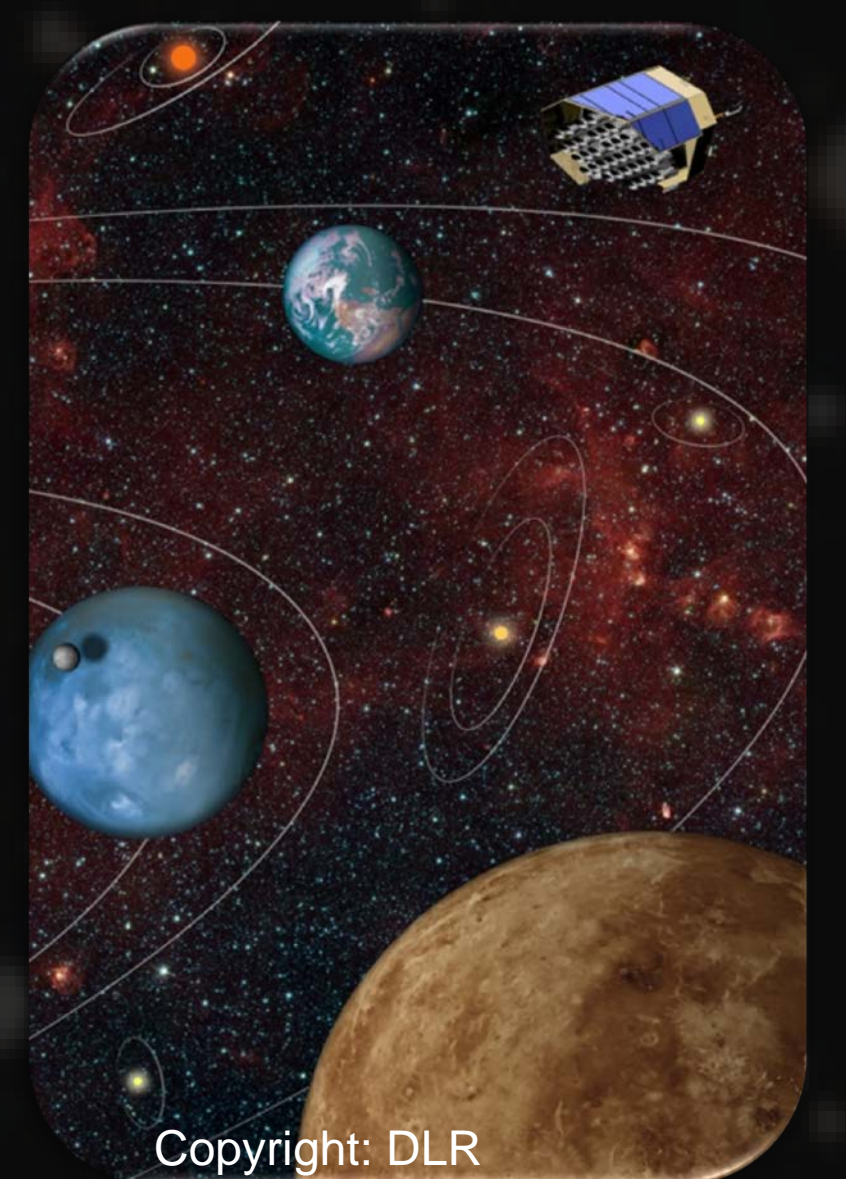


## Observation Strategy

PLATO is a wide-field survey and will search for planets around up to a million stars spread over half of the sky.

PLATO has a flexible observing approach:

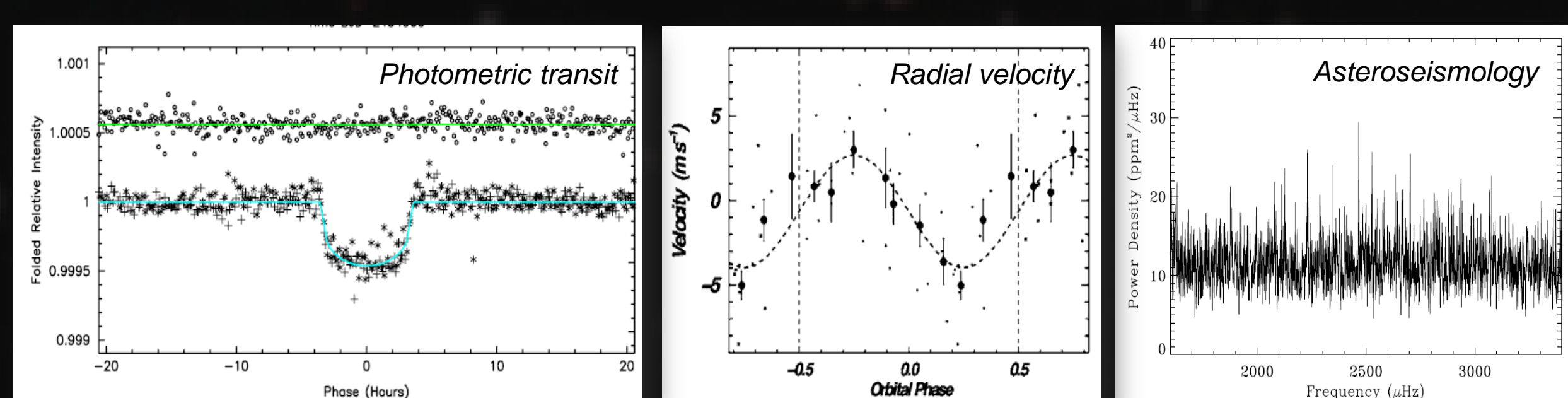
- long duration observations of two fields for 2 to 3 years
- short-period observations of different fields between 2 and 5 months (step and stare phase)



## Goals

PLATO will detect and characterize planets down to Earth-size by high precision photometric transits around bright stars. Planetary masses will be determined by ground-based radial velocity measurements. Stellar parameters like age and mass will be obtained by asteroseismology.

PLATO will provide a census of up to 1.000.000 stars and the first large-scale catalogue of planet parameters with accuracies not achieved until now. An Earth around a sun will be determined with an accuracy of up to 3% in radius, 10% in mass and 10% in age.

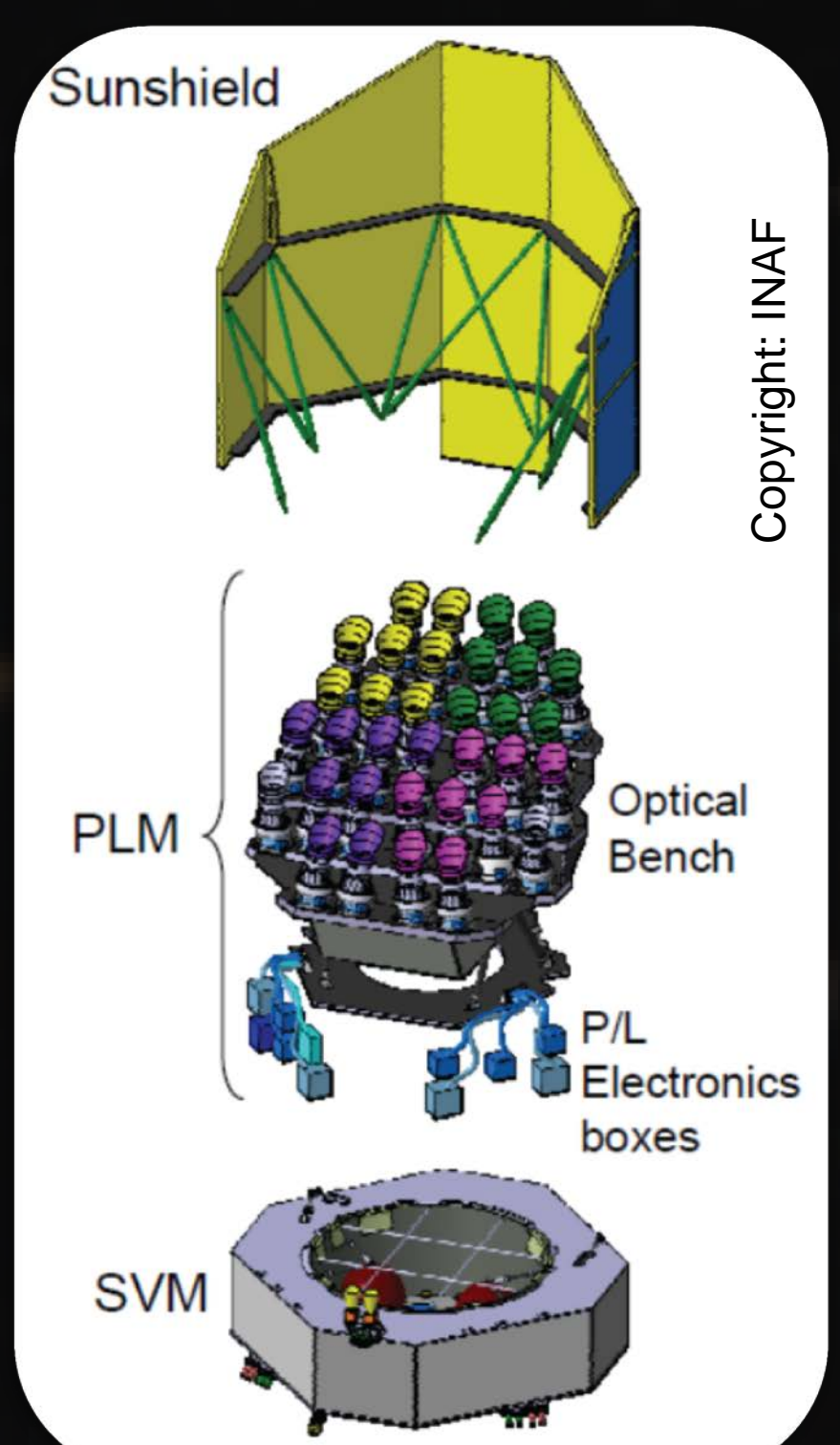


Kepler 10b (Bahalha, ApJ, 729, 2011)

## Instrument Design



PLATO will carry a multi-telescope instrument, a novel concept for a space telescope. It consists of 26 small aperture telescopes (entrance pupil: 12 cm). This provides a wide field of view (2232 deg<sup>2</sup>) and a large photometric magnitude range (4-16 mag). Based on a fully dioptric design each telescope has six lenses, one of them is aspherical and is equipped with a focal array of four CCDs.



## Mission Profile

Mission Type	ESA Cosmic Vision (M3)
Scientific goal	discover and characterize planets around bright stars (accuracy: 10% mass, 3% radius, 10% age)
Observation type	Photometry in white light (500 - 950 nm)
Launch	2026 with a Sojuz-Fregat-rocket from Kourou, French Guiana
Orbit	large amplitude libration orbit around Sun-Earth Lagrangian point, L2
Mission duration	4 years, consumerables for 8 years

## PLATO Mission Consortium

