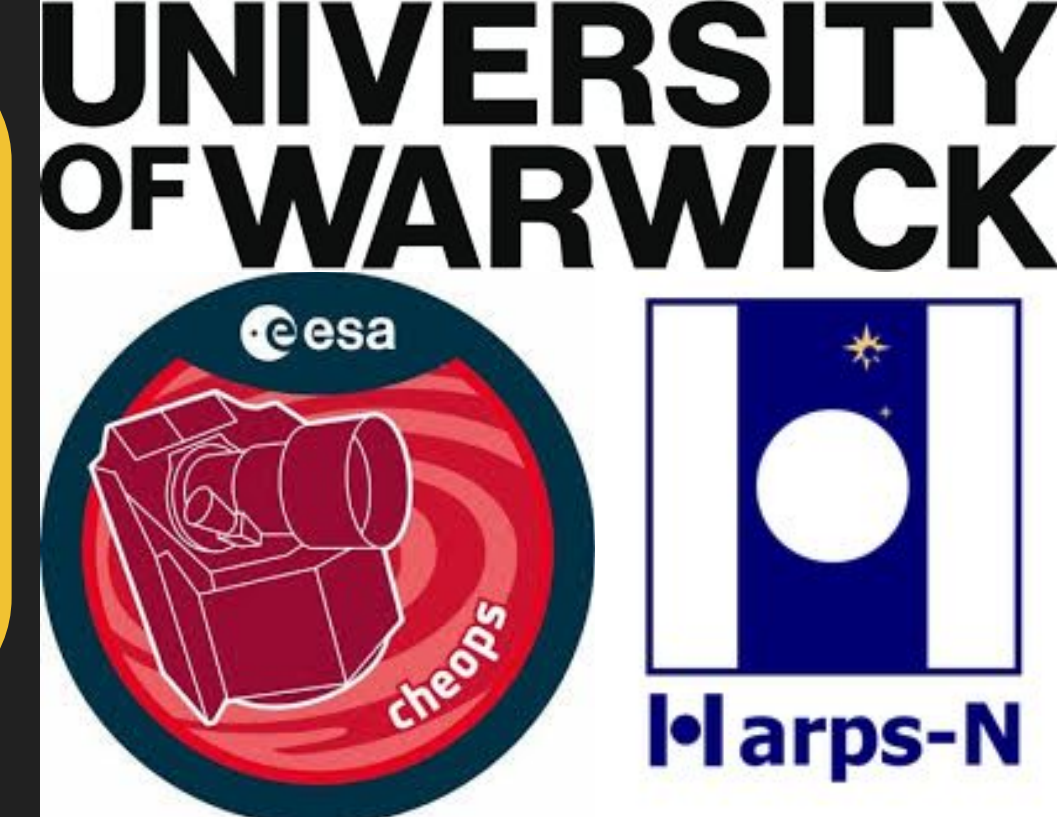




Gas-depleted planet formation occurred in the four-planet system around the red dwarf LHS 1903

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Paper here!



The 4 planet M-dwarf system, LHS 1903, has a inside-out mix of radii and densities

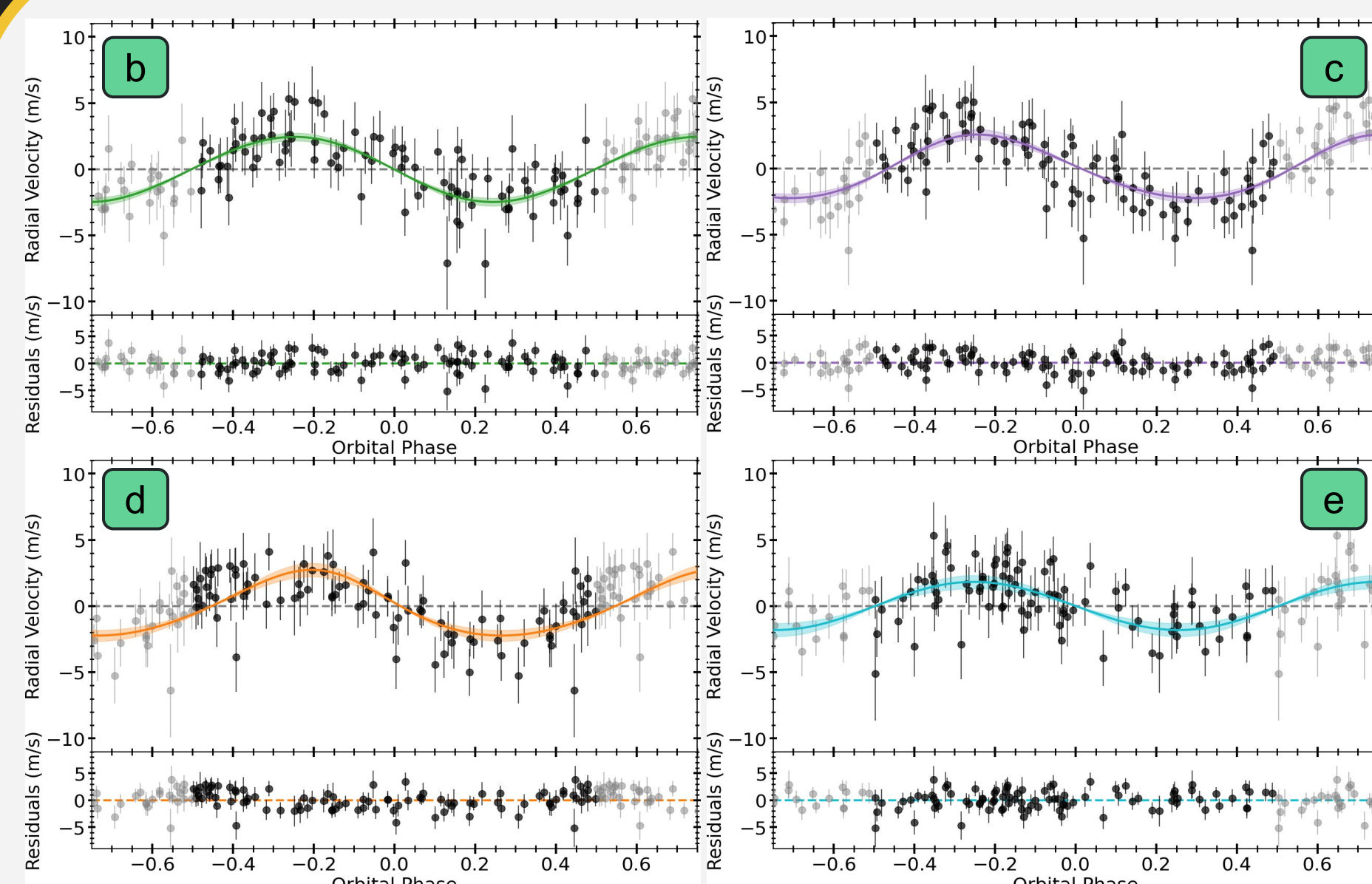


Fig. 1: HARPS-N RVs (above), *TESS*, and *CHEOPS* (right) photometry of the 4 planets.

- We discovered 4 planets orbiting the thick disk M-dwarf, LHS 1903, using *TESS*[1], *CHEOPS*[2], and HARPS-N[3]. Rocky planet e is in tension with radius valley models as it should be gas-rich, Figs. 1 & 2.
- The interior structures[4,5,6] of planets b, c, and d show a sharp increase in radii and atmospheric masses that is broken with the long-period e, see Figs. 2 & 3.
- These broken trends and the M-dwarf radius valley tension[7,8,9] can be explained by a delayed planet e formation, via the inside-out process[10], in a gas-depleted environment, see Fig. 4.

Wilson et al. 2026, *Science*, 392, 2348

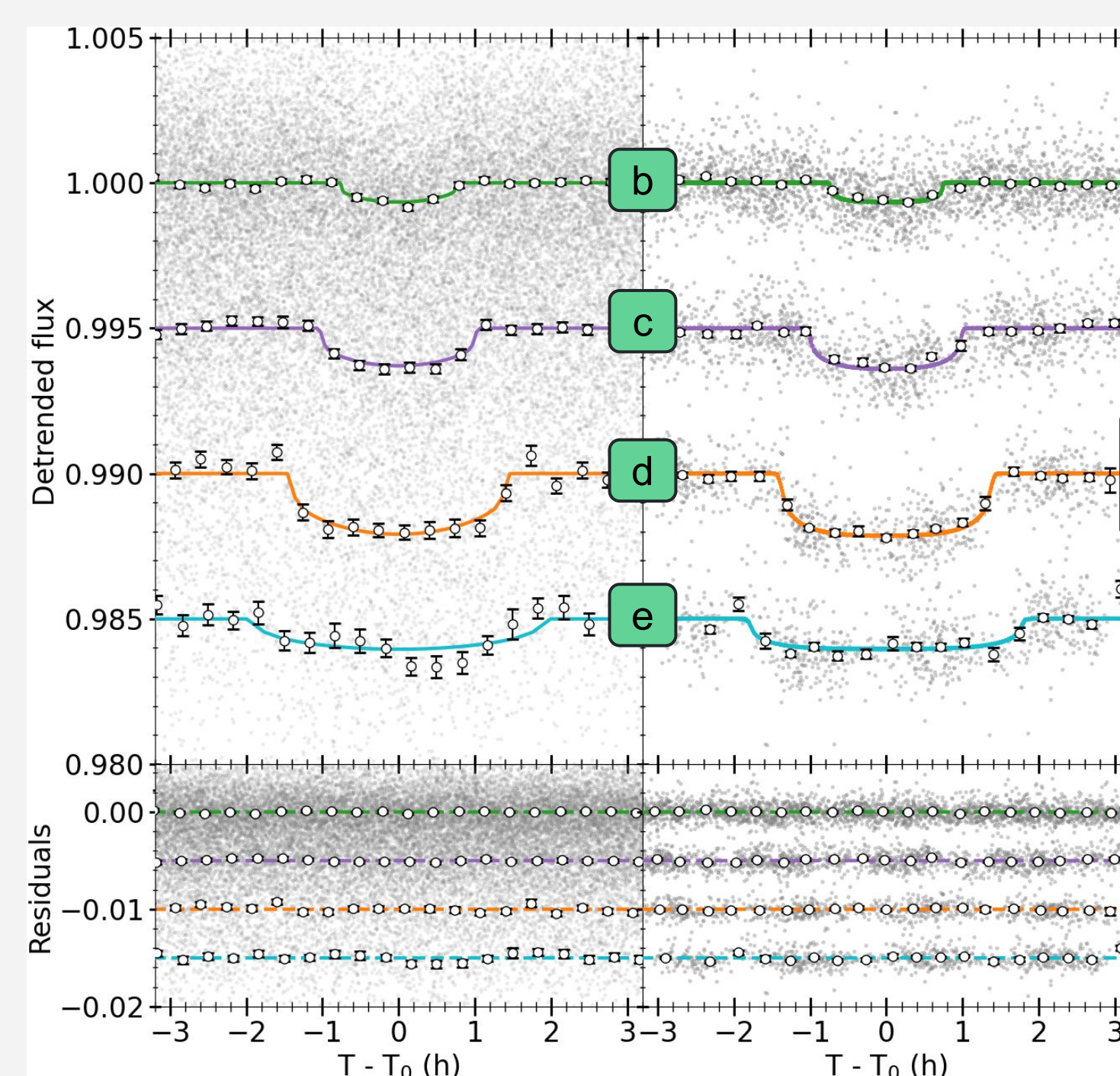


Fig. 2: Periods and radii of well-characterised M-dwarf planets with radius valley predictions.



Fig. 3: The interior structures of the 4 new planets showing planet e being comparatively small and rocky.

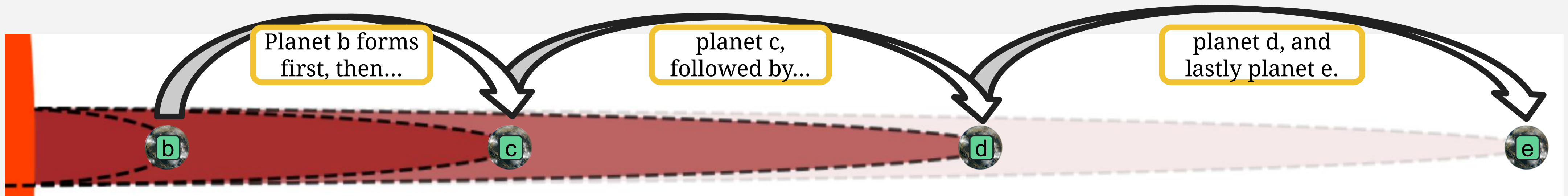


Fig. 4: The inside-out formation mechanism proposes that inner planets form first and outer bodies last.

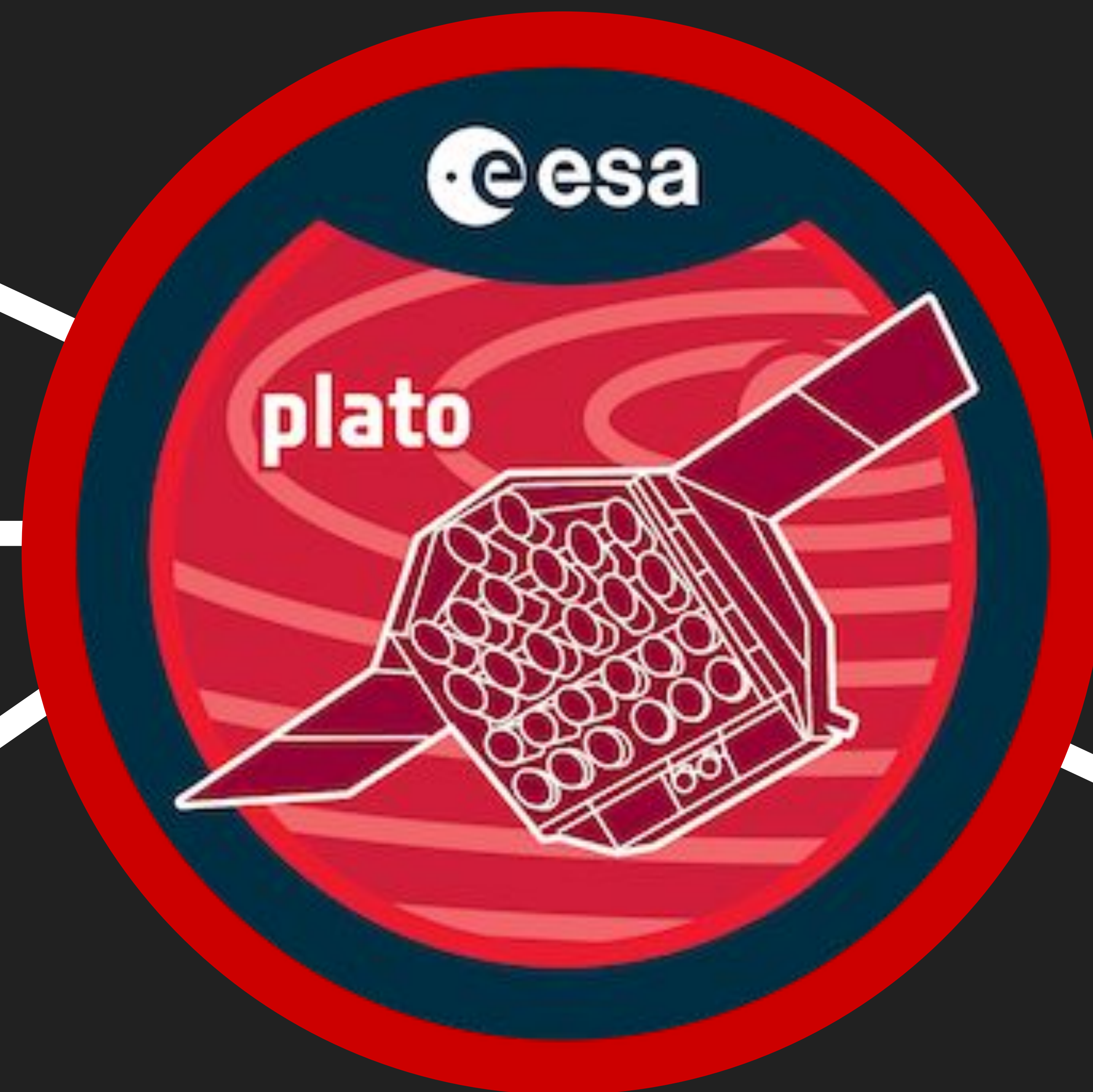
PLATO and its Ground-based Observation Program will study outer regions of exoplanet systems

Rauer et al. 2025, *ExA*, 59, 26,
 Cabrera et al. 2026, sub.

PLATO will observe 265,000+ bright FGKM-dwarfs for 4 years to reach its science goals.

From this, PLATO will discover 10s of $R < 1.5 R_{\text{Earth}}$ planets orbiting in the habitable zones of $V < 11\text{mag}$ stars.

PLATO's Ground-based Observation Program will focus on validating and characterising a subset of these new Earth-like exoplanets.



To confirm our results and probe other Earth formation and evolution effects, we need to discover more...

This effort is open to the community. So if you have the interest and expertise, we'd be excited to hear from you!

Key Take Away 1

The PLATO Consortium will observe 265,000+ bright FGKM-dwarfs for 4 years with public data releases 3 months after downlink. There is an active Guest Observers program.

Key Take Away 2

PLATO's Ground-based Observation Program will target Prime sample objects with radial velocity, photometric, and imaging facilities to confirm and characterise discovered planets.

Key Take Away 3

PLATO data for these targets will be released to the public 1 year after processing, i.e. a similar proprietary period to ESO, NEID, and other ground-based facilities.

Key Take Away 4

PLATO is open to all! So if you are interested in joining the PLATO effort to find an Earth-twin email:
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