TOI 1727

An active solar-like star with a sub-Neptune on a 3.66 day orbit

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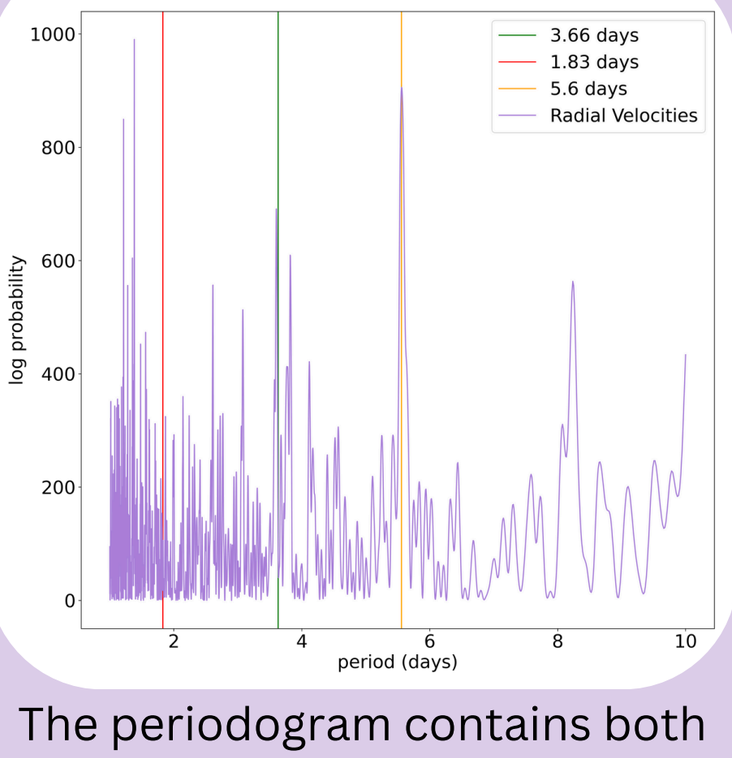
The characterisation process:

Determine stellar properties using spectroscopy and astrometry.

Identify and remove stellar activity signals from the data.

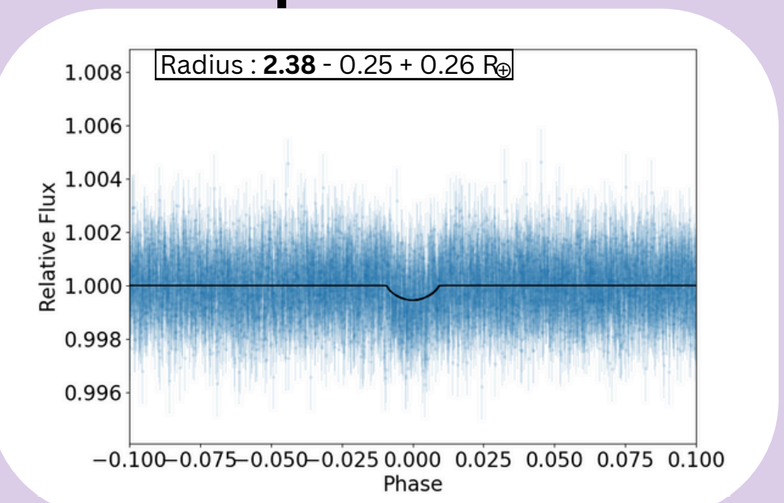
Jointly fit transit and radial velocity data to determine the planetary parameters.

Determining the orbital period:

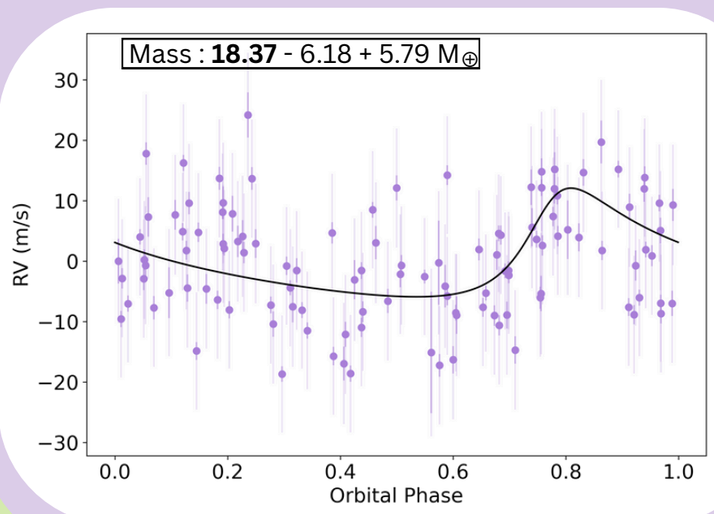


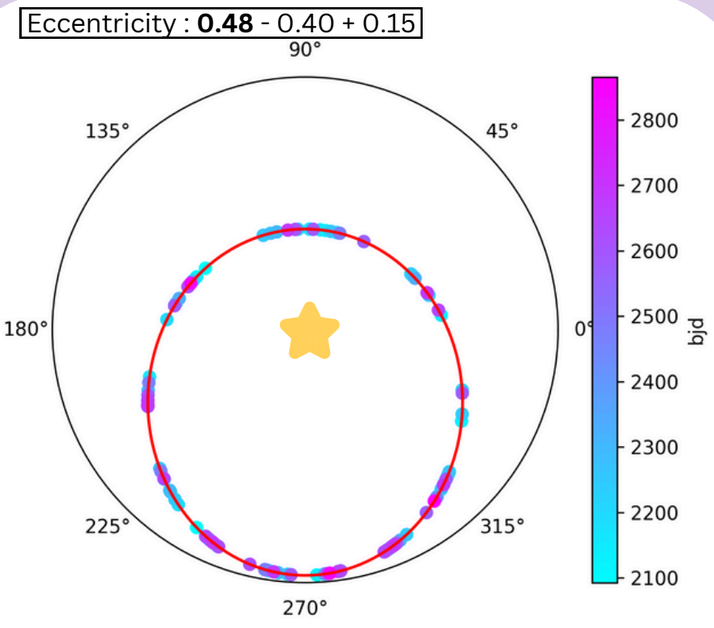
The periodogram contains both stellar and planetary signals. These were detangled by fitting a multi-dimensional gp to the radial velocity data using pyaneti. The original assumed period of 1.83 days is not present, whereas a strong 3.66 day signal persists. The 5.6 day signal corresponds to the star's rotational period.

Characterising the planet:

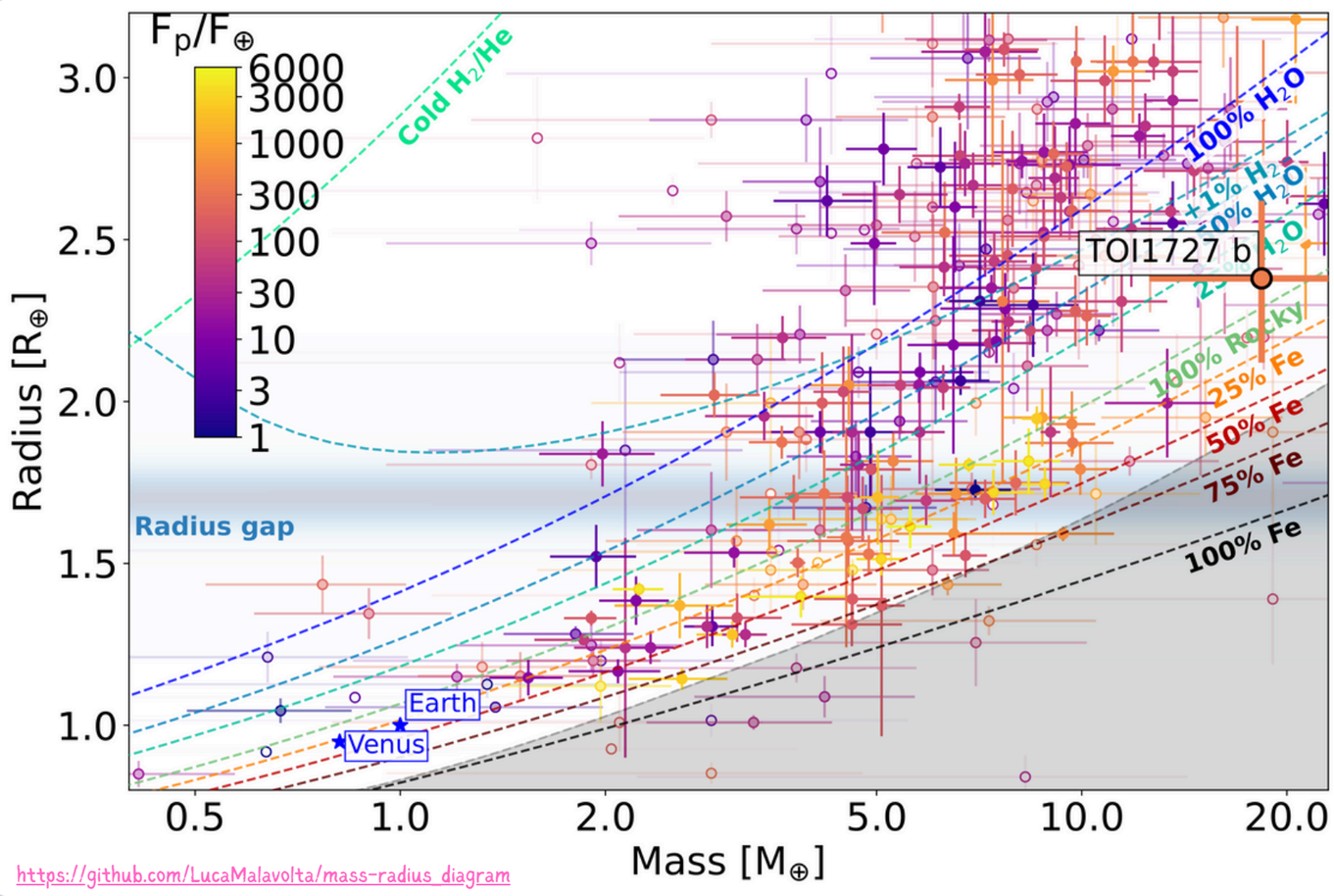


Joint detrending of the 3 TESS sectors and HARPS-N radial velocity data for TOI 1727 with *pyaneti** was used with stellar parameters from *PAWS*** to determine the planetary parameters.





Orbital diagram of the system, with RV points marked by colour.



https://github.com/LucaMalavolta/mass-radius_diagram

* - https://github.com/oscaribv/pyaneti
** - https://github.com/alixviolet/PAWS

IOP Institute of Physics
Harps-N
pyaneti
UKRI Science and Technology Facilities Council
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