PHT Data Validation Report
TIC 9760687

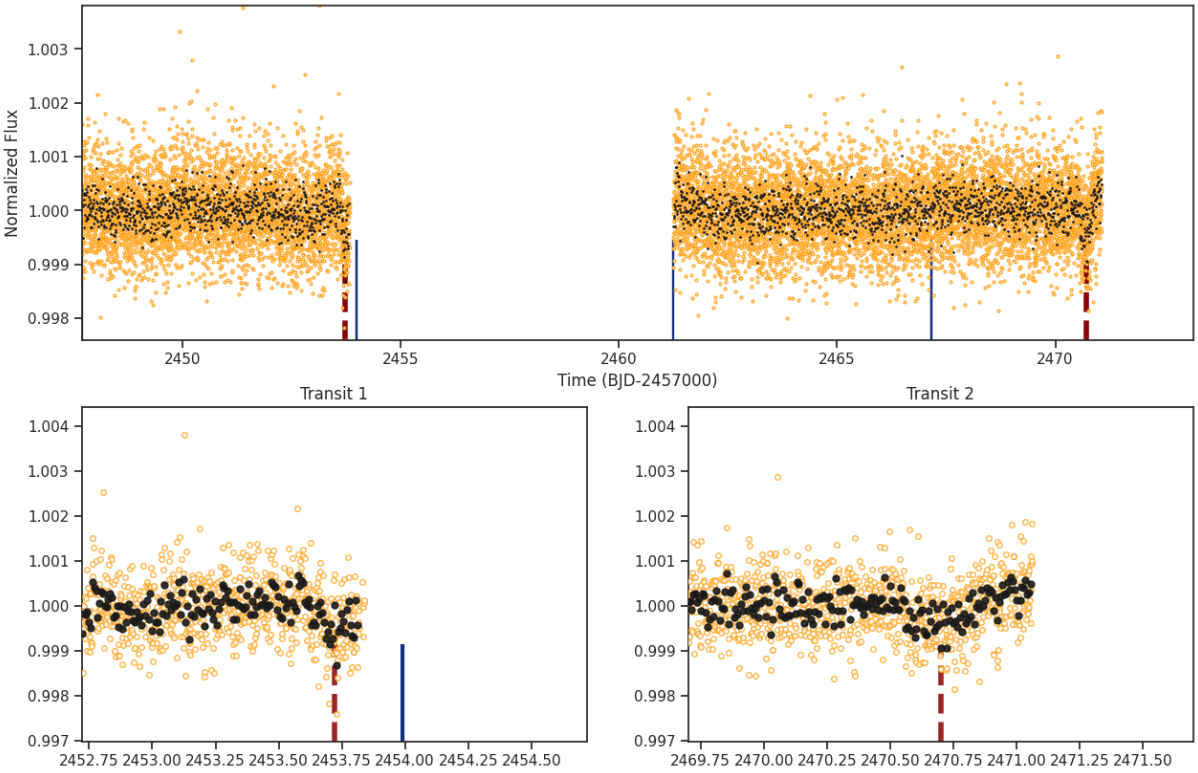

Fig 1. Full lightcurve for target TIC 9760687. The solid blue lines at the bottom of the figure indicated the times of the reaction wheel momentum dumps and the dashed black line(s) show the time(s) of the marked transit event(s). Momentum dumps occur around every 2 to 2.5 days and typically last around half an hour.

Parameter	Value	Unit
TIC ID	9760687	
Other name	TYC 5834-00910-1	
RA/Dec	359.0003 -11.2274	degrees
Radius	1.8	Solar Radii
Mass	0.98	Solar Mass
Teff	5581.0	Kelvin
Parallax	7.14	
T mag	8.86958027	Mag
V mag	9.47	Mag
Sectors (nominal)	2 *	
Sectors (extended)	29, 42 *	
TCE	-	
TOI	-	

Table 1. Stellar properties of the TIC 9760687. * List of the sectors in which the target will be, or has been, observed.

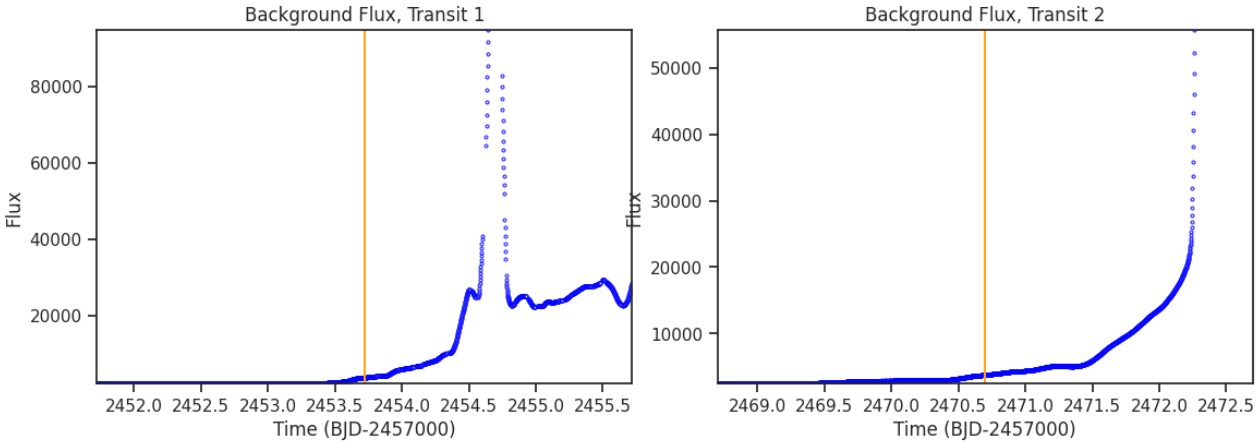

Fig 2. Background flux vs. time around the time of each transit-like event. The vertical orange line indicates the time of the transit-like event.

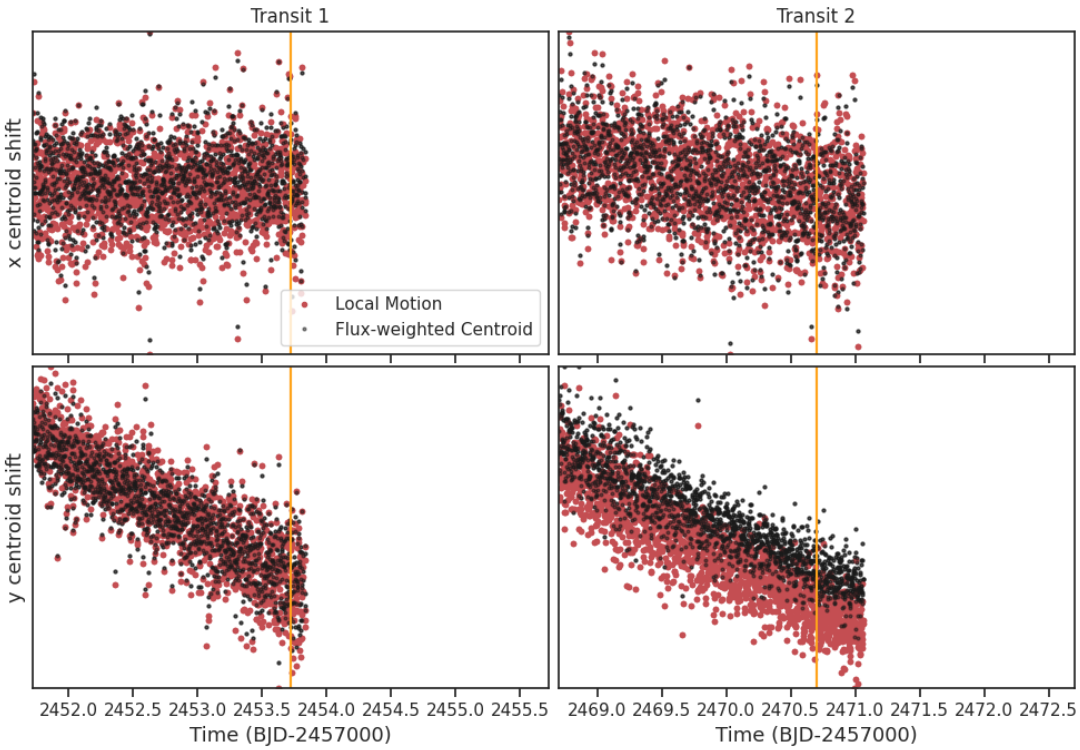

Fig 3. The x and y centroid positions around the time of each transit-like event. The black points shows the CCD column and row position of the target's flux-weighted centroid. The red shows the CCD column and row local motion differential velocity aberration (DVA), pointing drift, and thermal effects. The vertical orange line indicates the time of the transit-like event

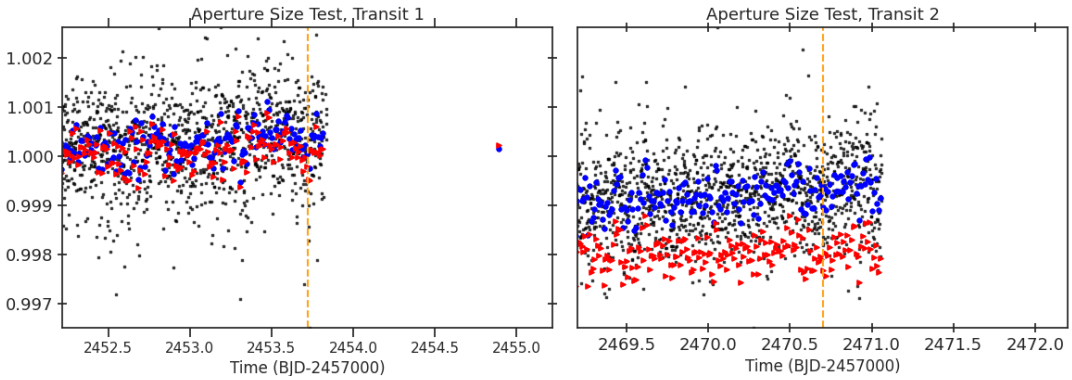

Fig 4. The lightcurve around the time of each transit-like event extracted with the SPOC pipeline defined aperture (binned:blue, unbinned:grey) and the with an aperture that is 40 per cent smaller (red). The flux is extracted from the target pixel files (TPFs) and has not been detrended or corrected for systematics. The vertical orange line indicates the time of the transit-like event.

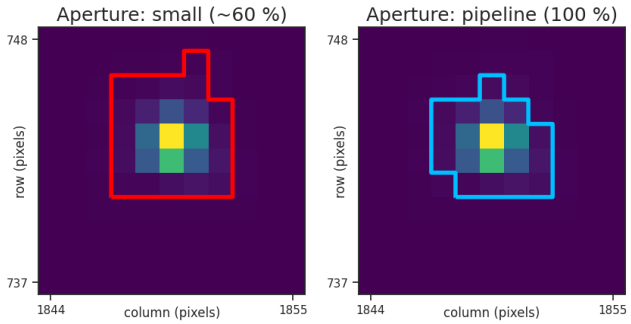

Fig 5. The apertures used to extract the lightcurves. The blue aperture on the right shows the optimum aperture determined by the SPOC pipeline, which is used for the extraction of 2-minute cadence light curves shown in Figure 1. The red outline on the left shows an aperture that is around 40 per cent smaller than the SPOC pipeline aperture which was used to extract the red lightcurve shown in Figure 4.

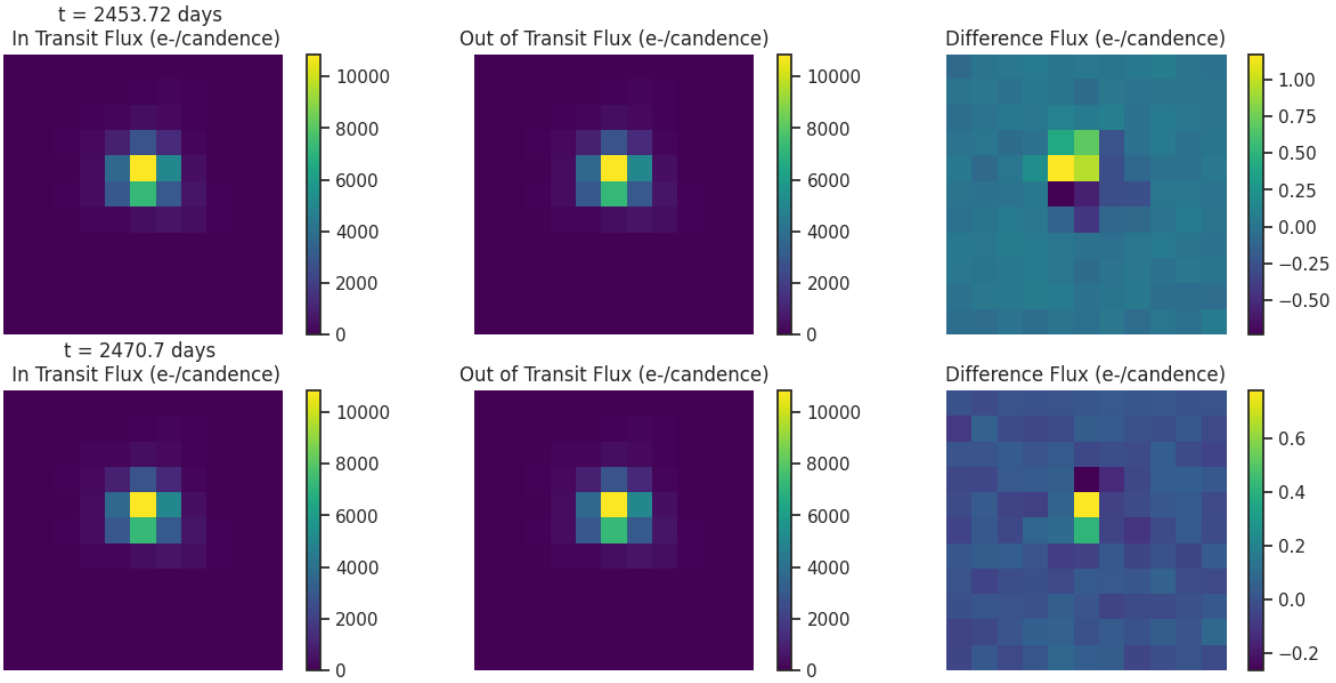

Fig 6. Difference images for target TIC 9760687 for each transit like event. Left: mean in-transit flux(left). Middle: mean out-of-transit flux. Right: difference between the mean out-of-transit and mean in-transit flux. Ensure that the change in brightness occurs on target.

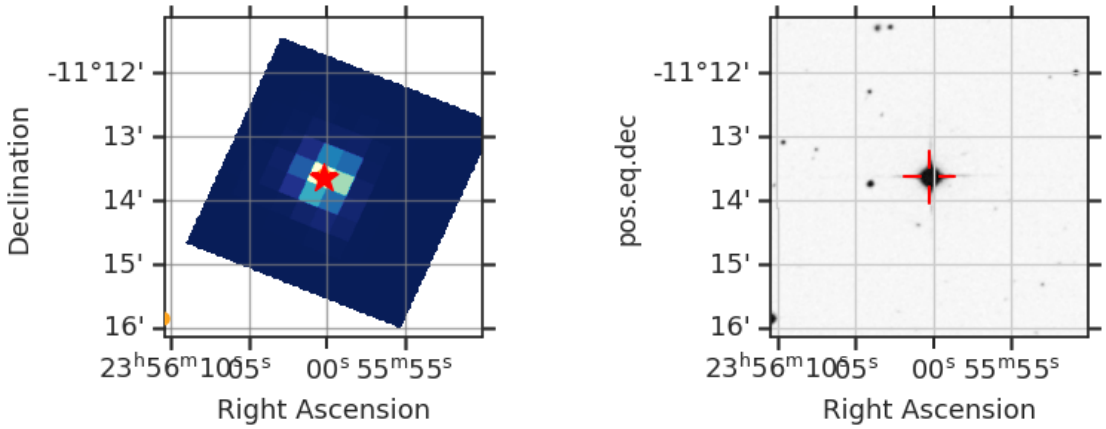

Fig 7. The locations of nearby GAIA DR2 stars with a magnitude difference less than 5 (orange circle) within the Tess Cut Out around TIC 9760687 (red star). Only shown for one sector. Right: SDSS image of the surrounding field.

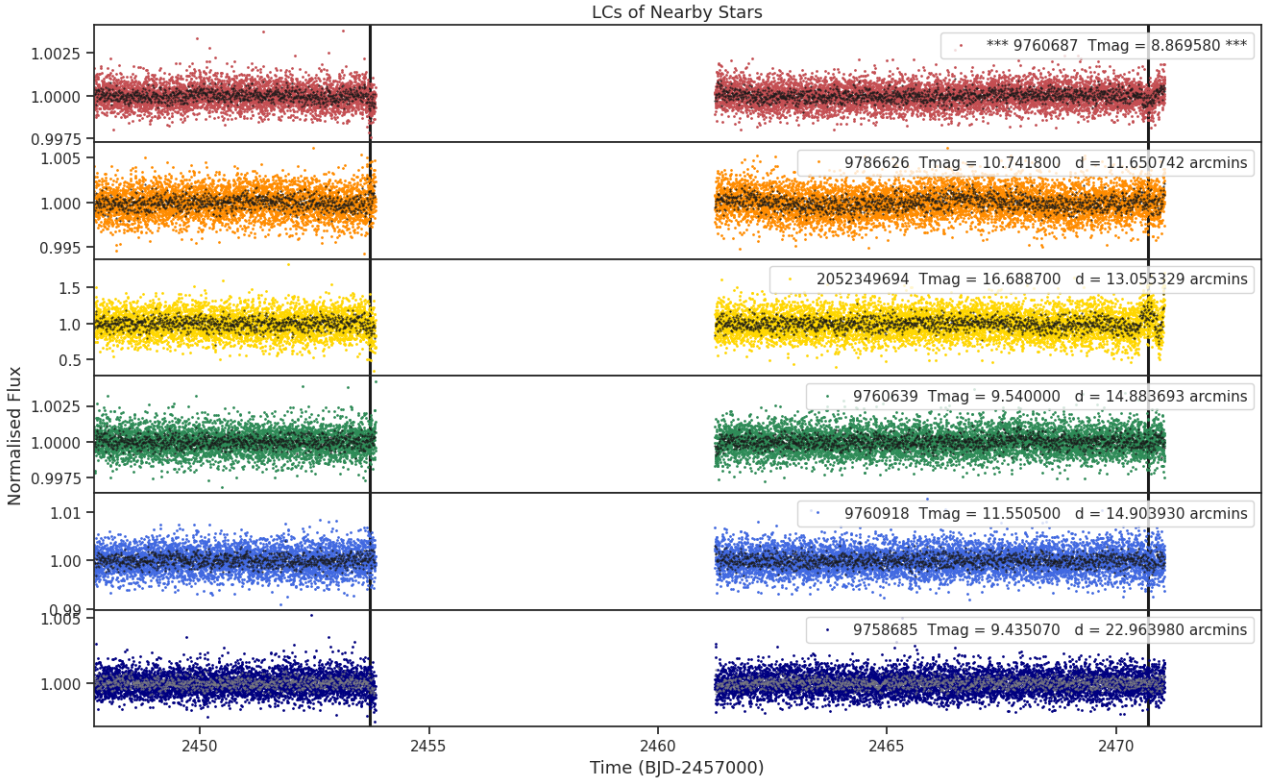

Fig 8. Lightcurves of the five closest stars to target 9760687 (top pannel). The distances to the target star and the TESS magnitudes are shown for each star. Only ever shown for one sector.

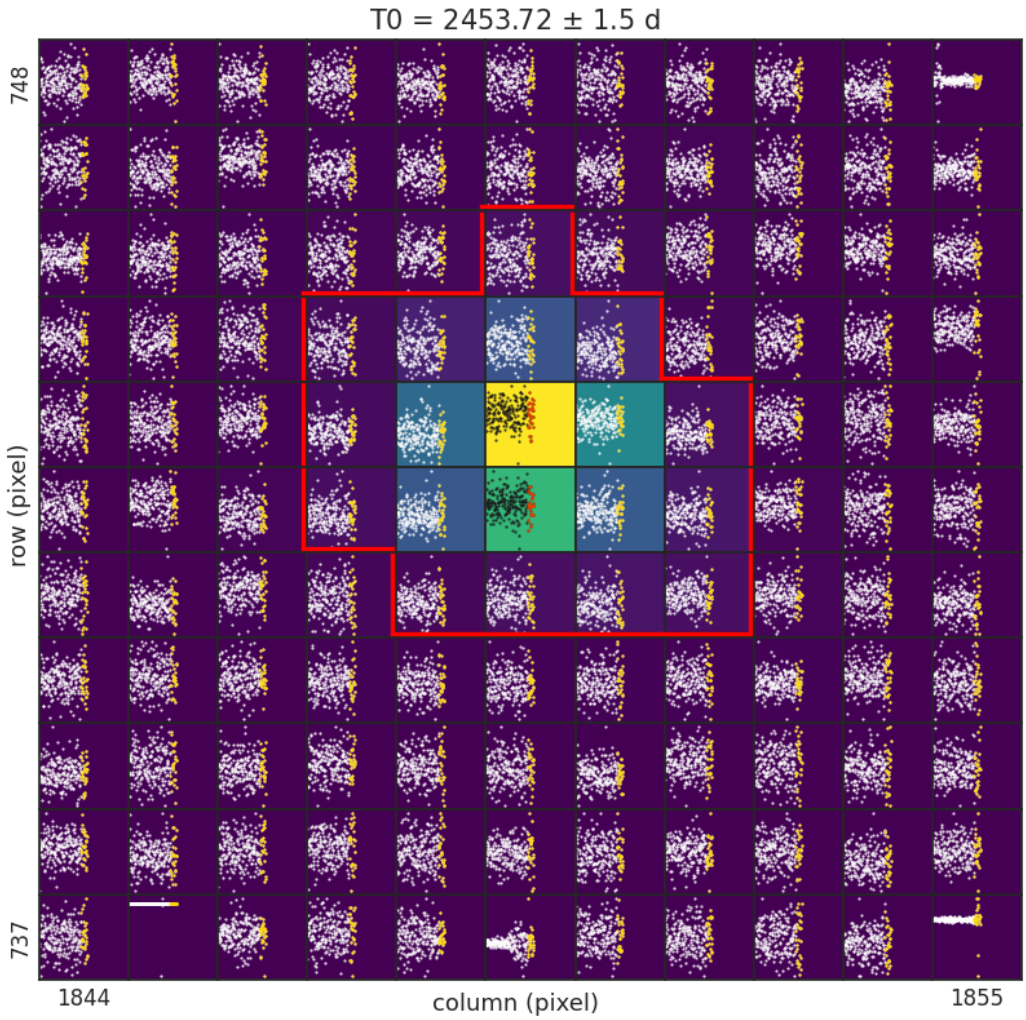

Fig 9. Normalised flux extracted for each pixel, using the SPOC pipeline mask, around the time of the transit-like event. The orange/red data points show the in-transit data. The solid red lines show the SPOC pipeline mask. Only shown for one sector.

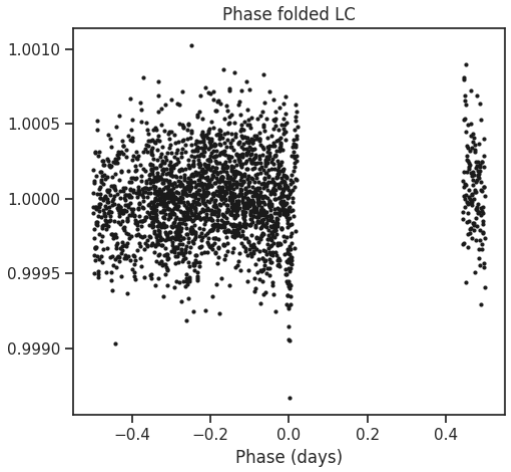

Fig 10. Phase folded lightcurve where the odd and the even transits are shown in different colours. Ensure that the odd and even transits have comparabel shapes and depths.

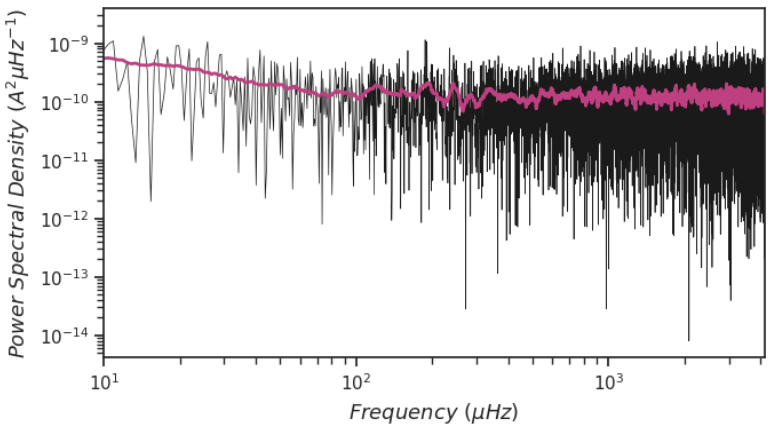

Fig 11. Lomb scargle power spectrum of the TESS lightcurve (black line) and a boxcar-smoothed periogram (pink line) computed with a window length of 20 micro Hz.

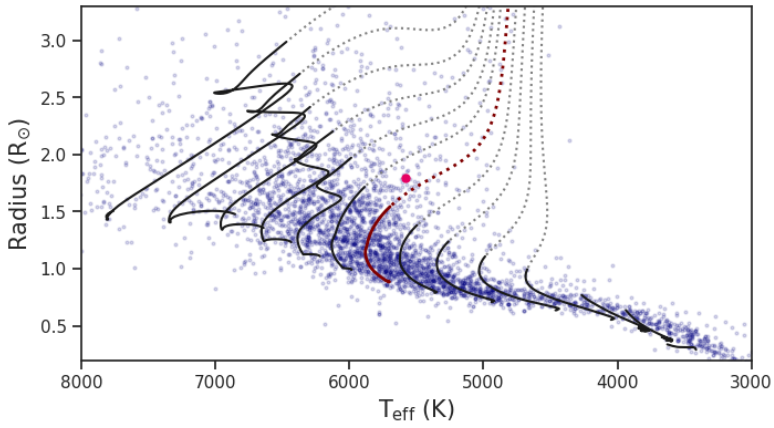

Fig 12. The equivalent evolutionary phase (eep) tracks for main sequence evolution (solid lines) and post main-sequence evolution (dashed lines) for masses ranging from 0.3 to 1.6 solar masses (from right to left). The 1 Solar Mass track is shown in maroon. The blue points show the TOIs and the magenta point TIC 9760687.