Exoplanet Transit Observations: First Study in Turkey

Ankara University Observatory

Using a 40 cm Schmidt-Cassegrain telescope and an Apogee ALTA U47 CCD Camera, we observed a known transiting exoplanet TrES-3b.

All CCD images were rreduced by standard IRAF procedures.

Light curve has been analysed using the Phoebe 0.29d (Prsa &Zwitter,2005) based on the Wilson-Devinney code (1971).

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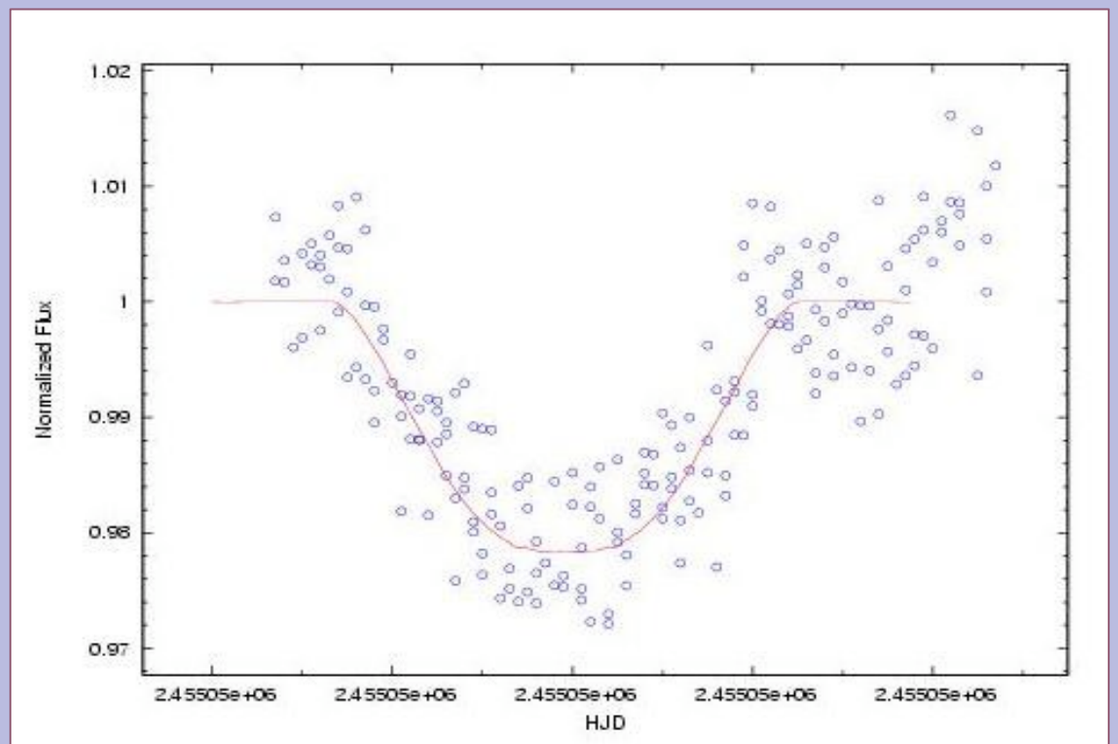
Light Curve Analysis with Phoebe 0.29d

Phoebe parameters:

Black-body model and
primary and secondary albedo =0.5 (Rucinski, 1969)
the gravity darkening coefficient=0.32 (Lucy, 1968)

+

a= 0.02283 AU
P= 1.306 day
T_s=5650 K (Southworth, 2010)



➢ The fitting process was started with **mass ratio (q) 0.1 and inclination (i) 88°**.

➢ Finally, **mass ratio as 0.00197 and inclination as 82°.63** gave the best solution for our light curves.

	This study	Sozzetti et al. (2009)	Southworth (2010)
Star Size ($R_\odot$)	0.760	$0.829^{+0.015}_{-0.022}$	$0.818^{+0.011}_{-0.013}$
Planet Size (R_J)	1.168	$1.336^{+0.031}_{-0.036}$	$1.305^{+0.027}_{-0.025}$
Inclination	82°.63	$81°.85 \pm 0.16$	$82°.07 \pm 0.17$
Star Mass ($M_\odot$)	0.926	$0.928^{+0.028}_{-0.048}$	$0.929^{+0.014}_{-0.013}$
Planet Mass (M_J)	2.095	$1.910^{+0.075}_{-0.080}$	$1.910^{+0.060}_{-0.070}$