

# Planetary transit observation with the AIU Jena telescope in Großschwabhausen

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We have started high precision photometric monitoring observations at the AIU Jena observatory in Großschwabhausen near Jena in fall 2006. Therefore we used the 25.4 cm Cassegrain telescope equipped with an optical CCD-camera mounted picky-pack on a 90 cm telescope. To test the obtainable photometric precision, we observed stars with known transiting planets. We could recover all planetary transits observed by us.

The mean photometric accuracy of the observed stars ( $I = 10 - 11$  mag) with known planetary transits is 0.007 mag and the accuracy in the determination of the transit times is approximately 0.0017 d. This allows to register transit time variations of 150s.

In the night from 11/12 March 2007 we took 161 I band 60s exposures of XO-1 while transit of its planet between 10.44 PM and 2.47 AM (UT). We determined that the orbital period is lower than previously expected. The calculation of new ephemeris showed:

$$T_{tr} = (2453887.74679 + E \cdot 3.941497) d$$

The light curve of the transiting planet TrES 1 from 15 March 2007 includes 88 R band 60s exposures between 1.22 AM and 3.32 AM (UT). With this observation we could confirm the ephemeris given by Alonso et al. (2004).

We observed the parent star of the transiting planet TrES-2 over a longer period in Großschwabhausen. Between March and November 2007 seven different transit and almost a complete orbital period was analyzed. Overall, in 31 nights of observation 3423 exposures (in total 57.05 h of observation) of the TrES-2 parent star were taken. In Fig. 1 you can see the resulting light curves.

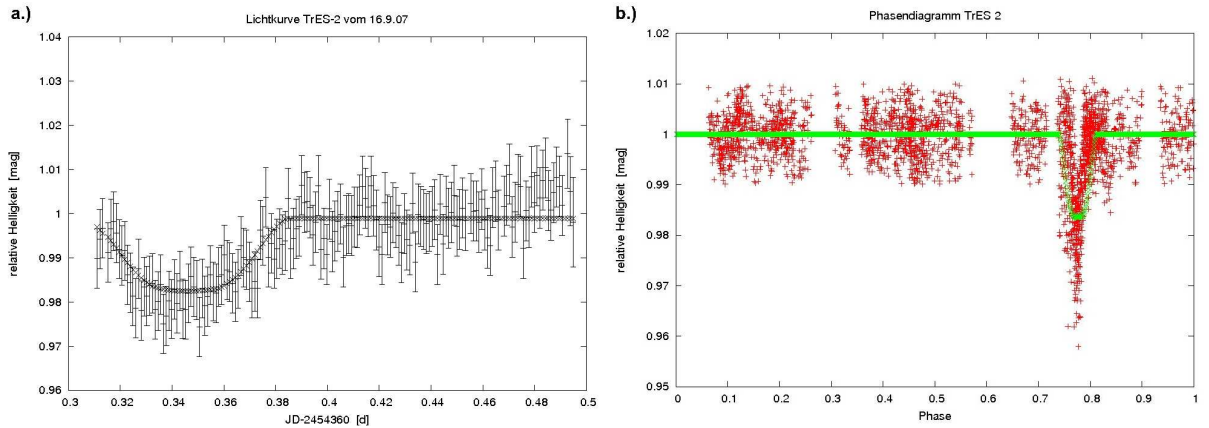


Figure 1: **a.)** A light curve of the transiting exoplanet TrES-2 from 16 September 2007 **b.)** More than 3000 individual observations of TrES 2 from March 2007 to October 2007 calculated in one phase according to the ephemeris of O'Donovan et al. (2006)