

# KIC 011521813

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011521813-01	OBS	No	510.478992	198.721342	75.0	17.535	7.5	7.3	1.31	6157	1.25	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011521813-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

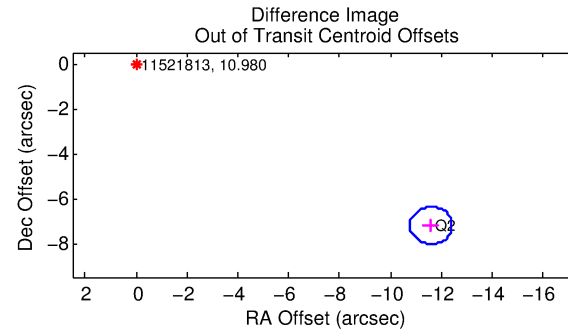
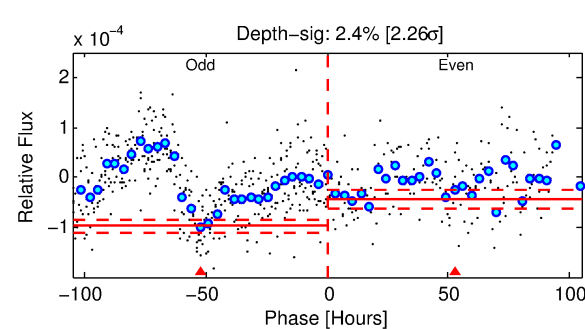
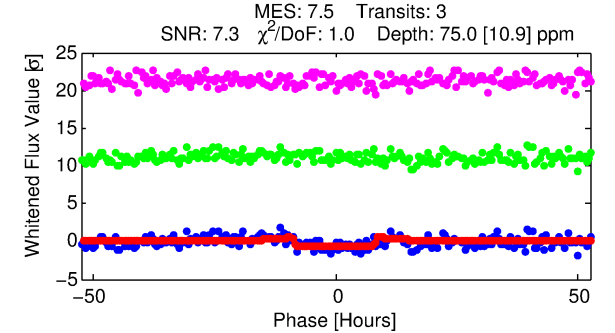
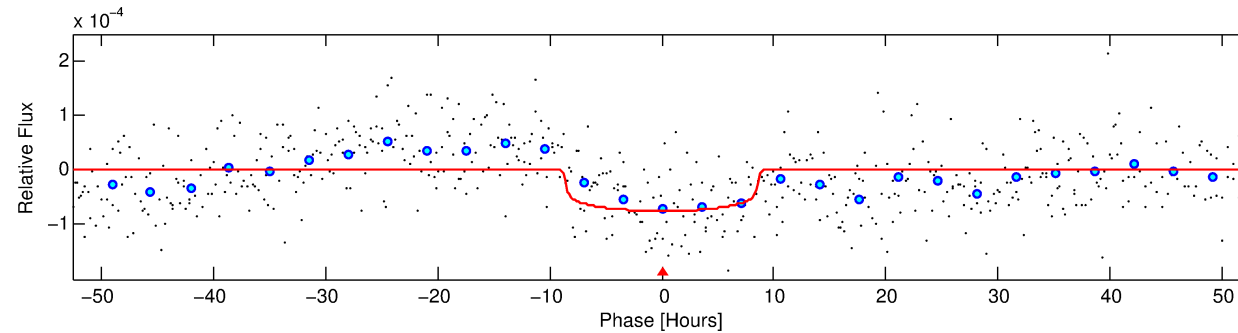
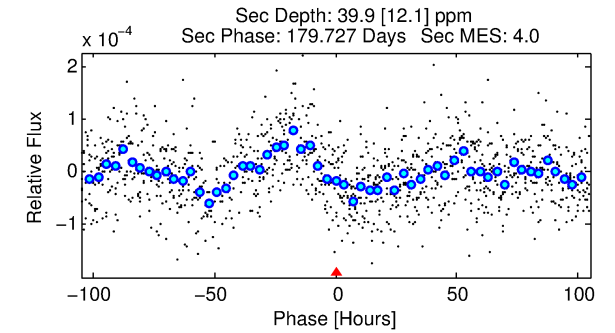
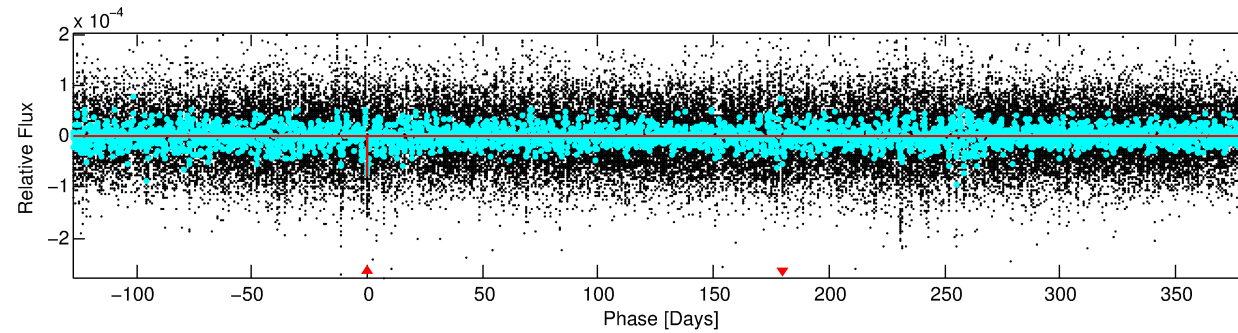
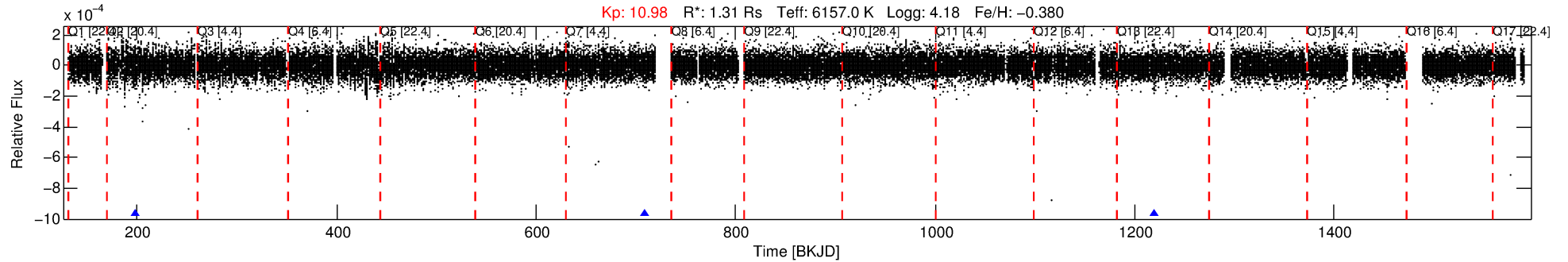
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011521813-01

No Significant Match Found

# DV One-Page Summary

KIC: 11521813 Candidate: 1 of 1 Period: 510.479 d



## DV Fit Results:

Period = 510.47899 [0.01449] d  
Epoch = 198.7213 [0.0198] BKJD  
Rp/R\* = 0.0087 [0.0019]  
a/R\* = 139.98 [153.24]  
b = 0.79 [0.52]  
Seff = 1.46 [0.54]  
Teq = 280 [26] K  
Rp = 1.25 [0.39] Re  
a = 1.2340 [0.2699] AU  
Ag = 21419.00 [13728.23] [1.56σ]  
Teff = 5239 [714] K [6.94σ]

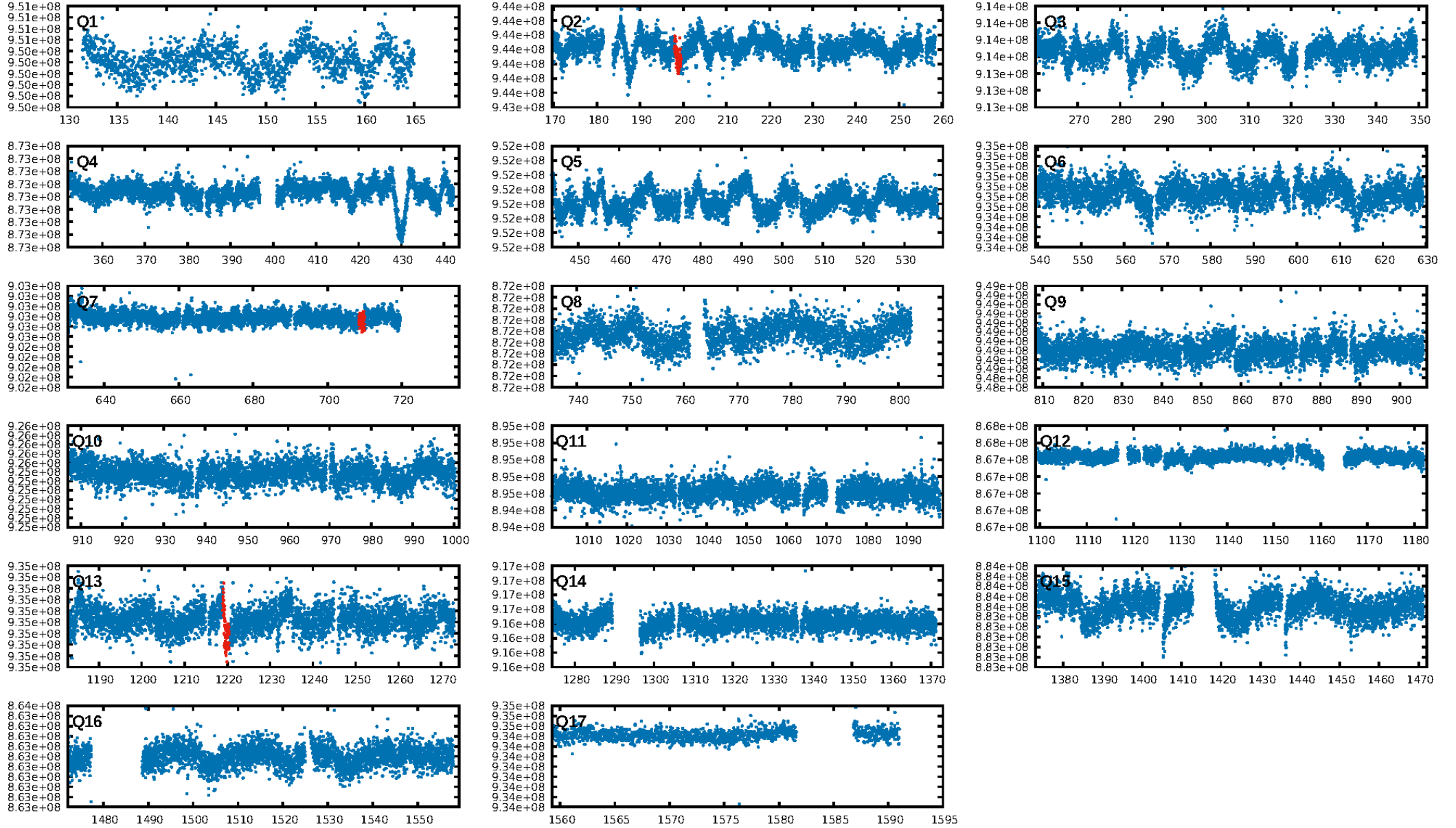
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 8.0%  
ModelChiSquareGof-sig: 99.1%  
**Bootstrap-pfa: 3.67e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.061  
Centroid-sig: 11.9%  
Centroid-so: 4.762 arcsec [1.75σ]  
**OotOffset-rm: 13.655 arcsec [49.66σ]**  
**KicOffset-rm: 13.283 arcsec [48.31σ]**  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

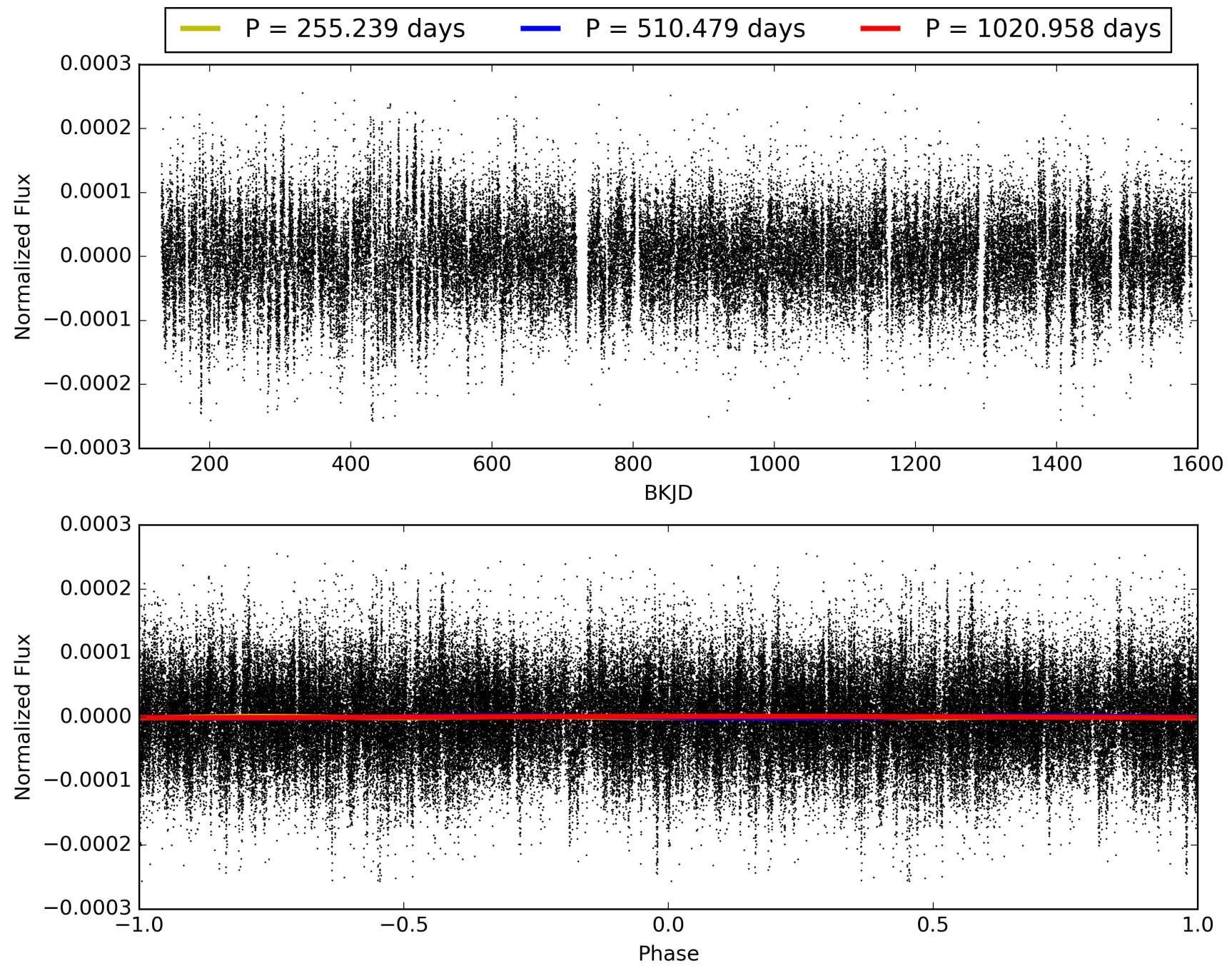
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:20:57 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011521813-01, PDC Light Curves

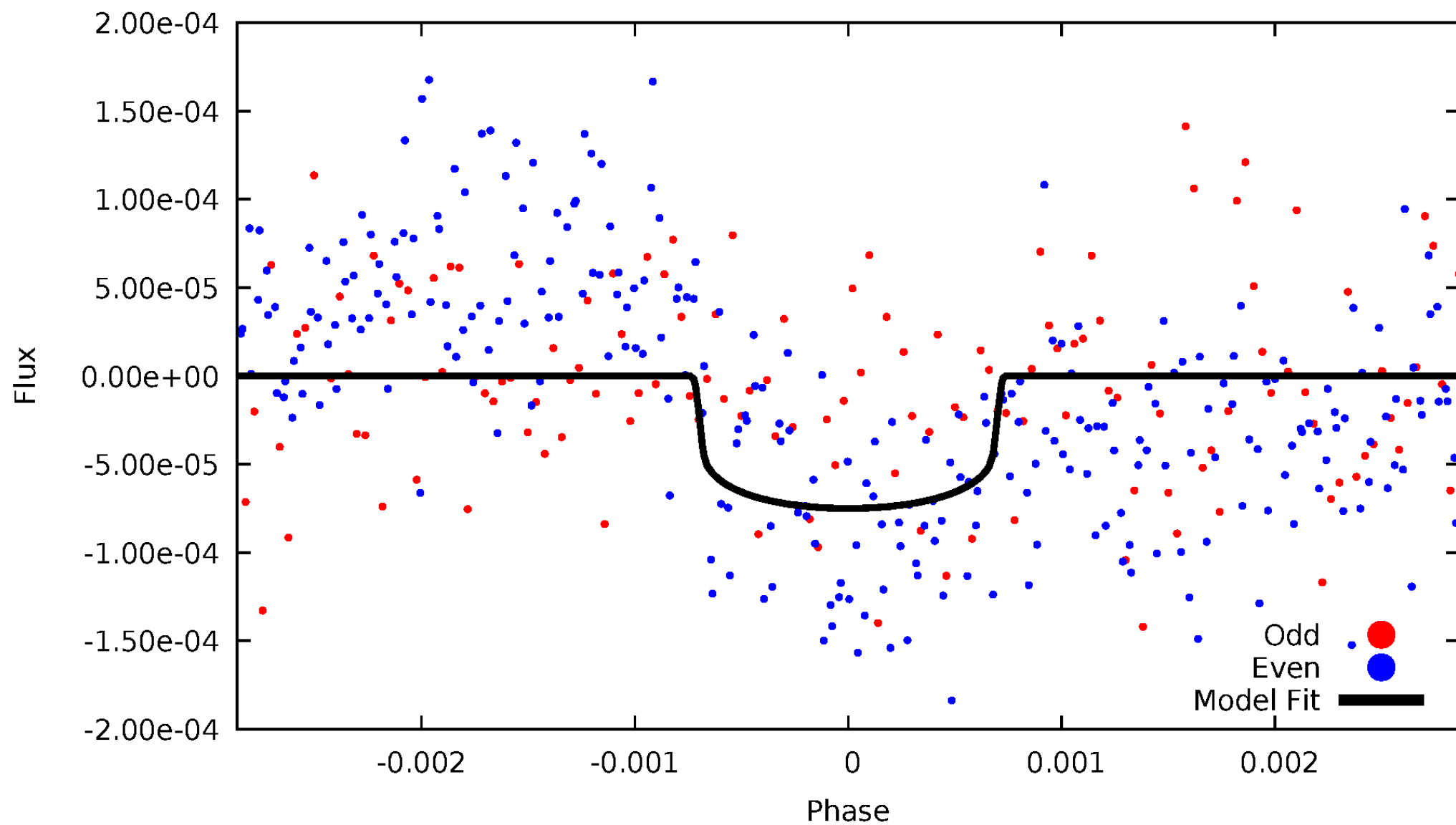


# TCE 011521813-01



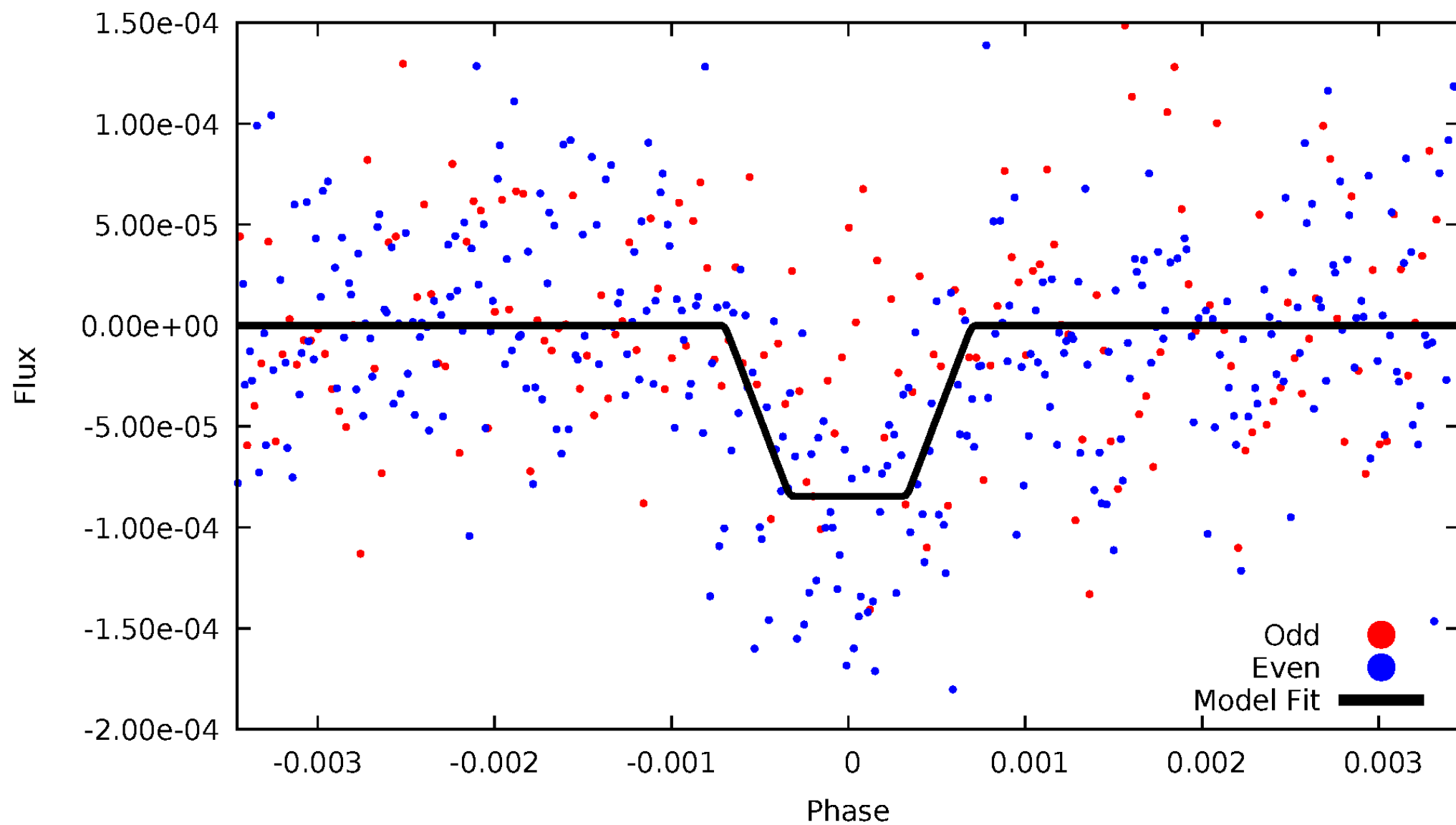
# DV Odd/Even

TCE 011521813-01



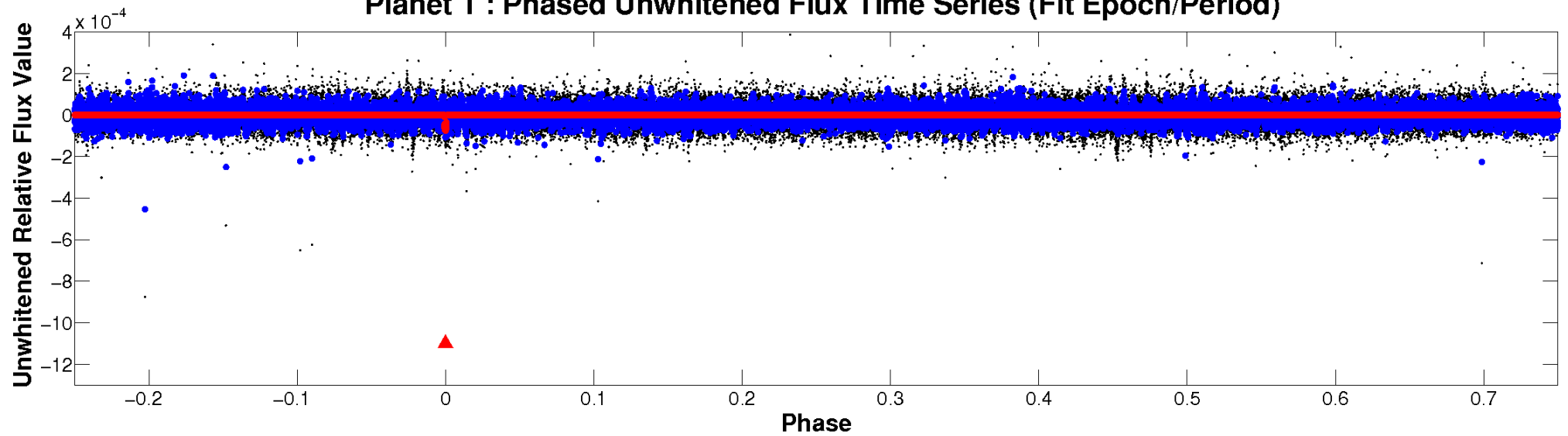
# ALT Odd/Even

TCE 011521813-01

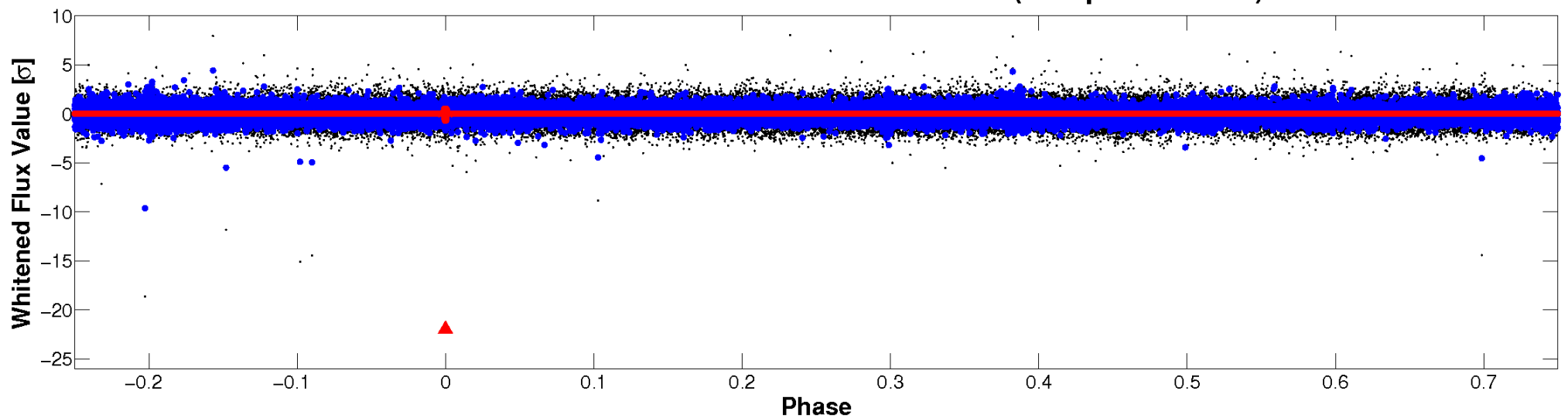


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**



**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

TCE 011521813-01 P=510.478992 Days  $T_0=198.721342$  (BKJD)





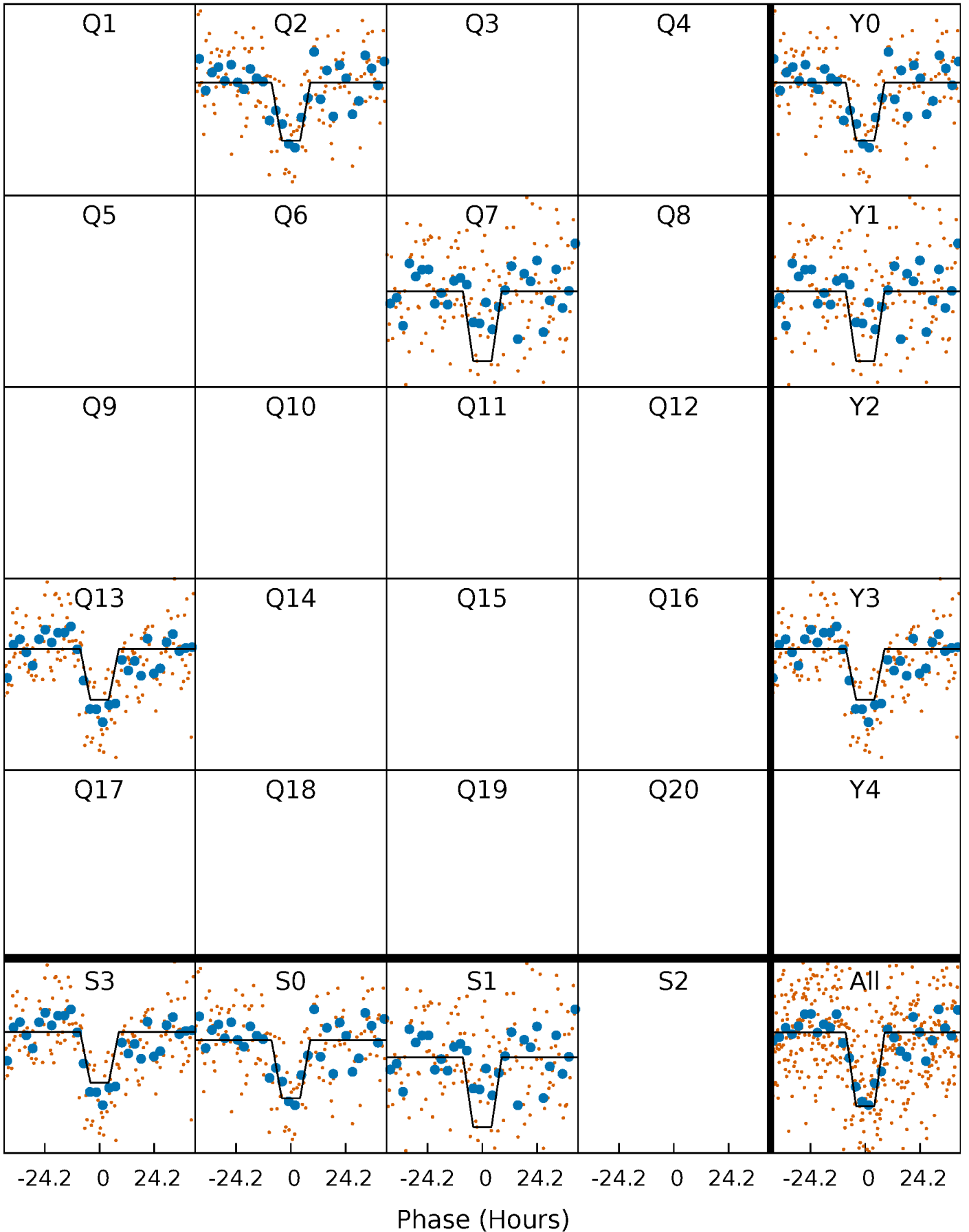
# DV Quarter-Phased Transit Curves

TCE 011521813-01 P=510.478992 Days  $T_0=198.721342$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

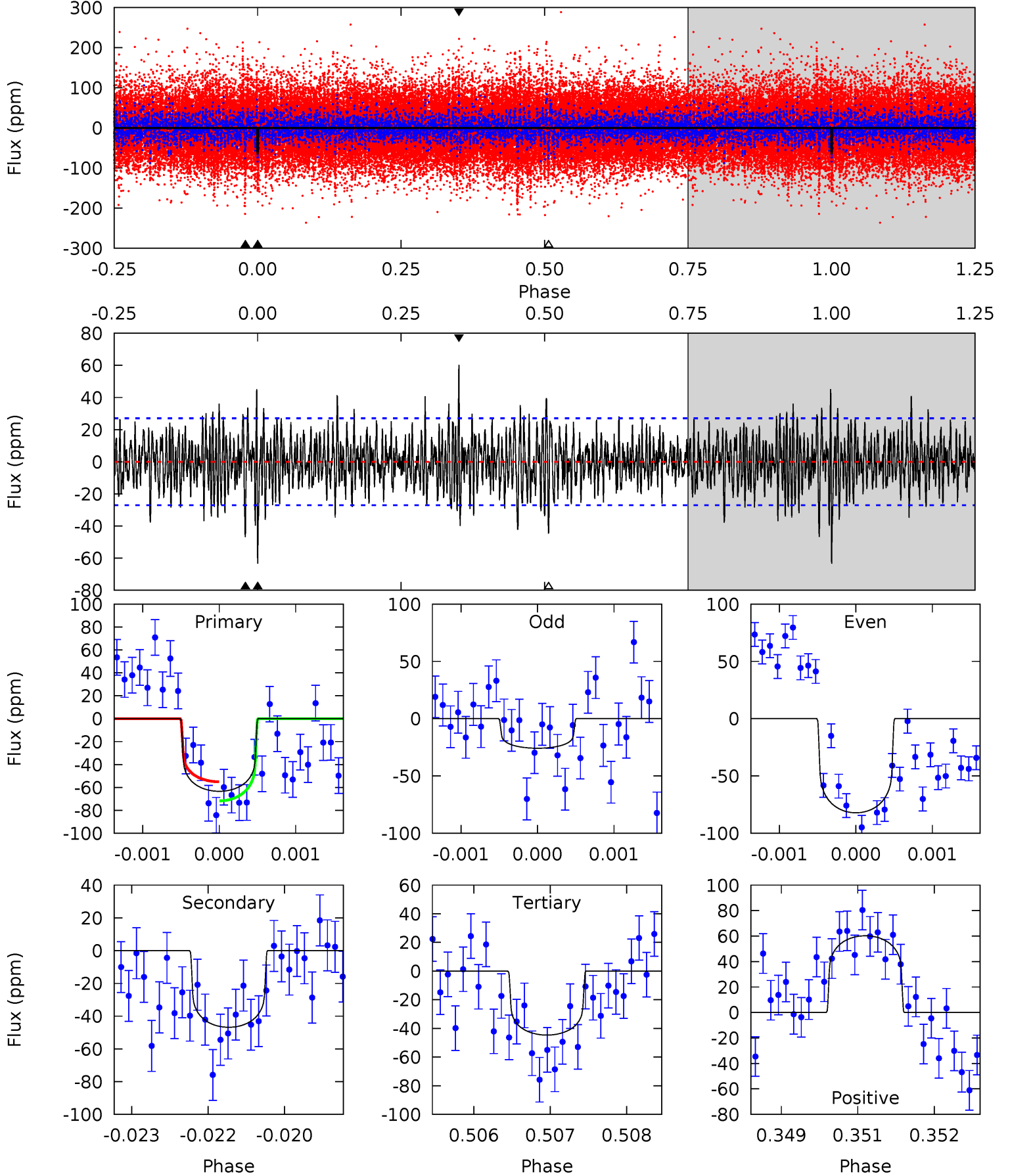
TCE 011521813-01 P=510.416706 Days  $T_0=198.791663$  (BKJD)



# DV Model-Shift Uniqueness Test

011521813-01, P = 510.478992 Days, E = 198.721342 Days

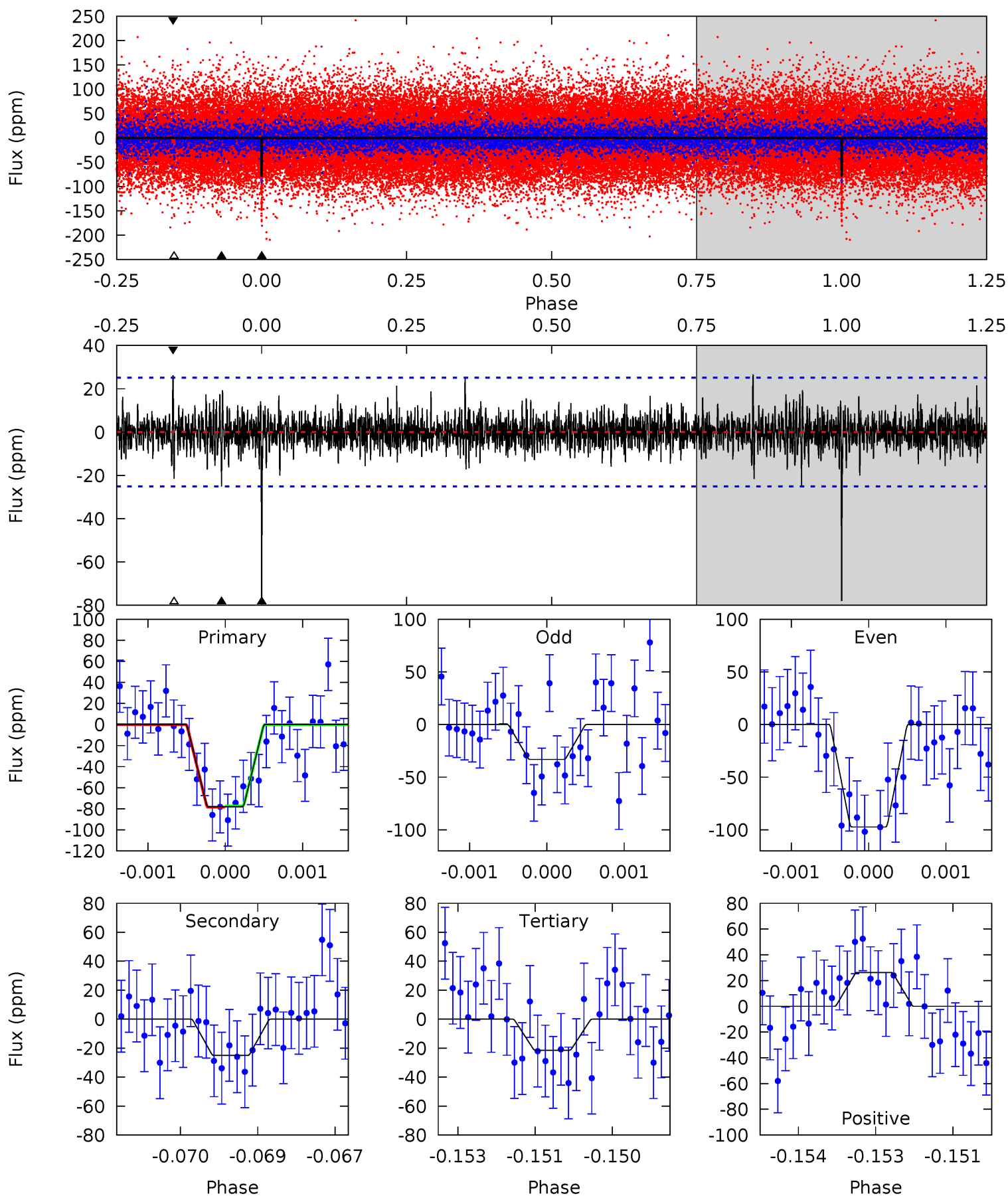
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	9.33	8.90	12.0	5.39	3.18	2.61	3.74	0.63	0.43	-2.68	5.39	0.86	0.49	1.66



# Alt Model-Shift Uniqueness Test

011521813-01, P = 510.416706 Days, E = 198.791663 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	5.37	4.59	5.64	5.39	3.19	1.21	12.1	11.1	0.77	-0.27	6.56	0.95	0.25	0.12



### Stellar Parameters For KIC 011521813

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6157^{+169}_{-169}$	$4.185^{+0.210}_{-0.140}$	$-0.380^{+0.300}_{-0.300}$	$1.312^{+0.291}_{-0.291}$	$0.962^{+0.160}_{-0.107}$	$0.599^{+0.654}_{-0.231}$
	+3%/-3%	+5%/-3%	+79%/-79%	+22%/-22%	+17%/-11%	+109%/-39%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011521813-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-47 \pm 5$	$1.22^{+0.34}_{-0.32}$	$390^{+24}_{-26}$	$5507^{+752}_{-479}$	$26347^{+21930}_{-9760}$
Alt.	$-25 \pm 5$	$1.29^{+0.34}_{-0.31}$	$390^{+25}_{-27}$	$4692^{+547}_{-393}$	$12402^{+9883}_{-4660}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

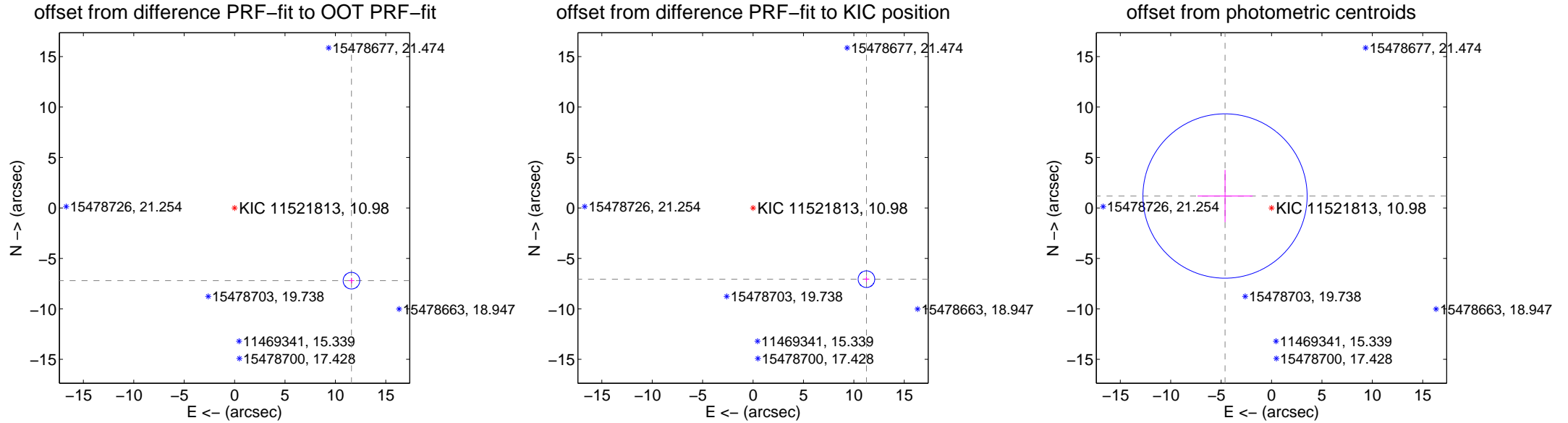
## DV Centroid Data

Supplemental centroid analysis for 011521813-01. **Kepler magnitude: 10.98.** Transit SNR 7.30

**There are 0 quarters with good PRF difference image offsets**

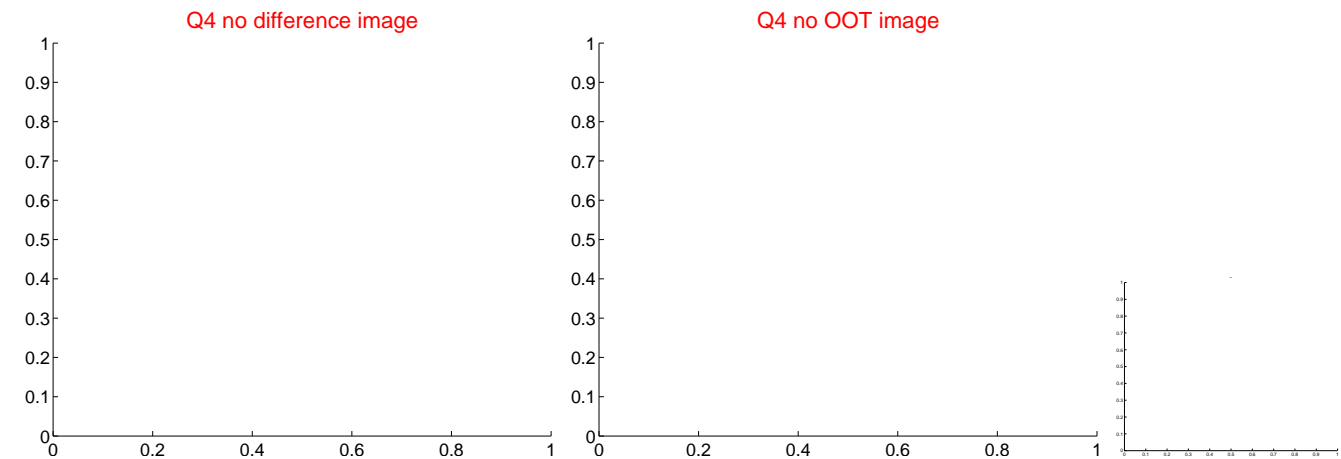
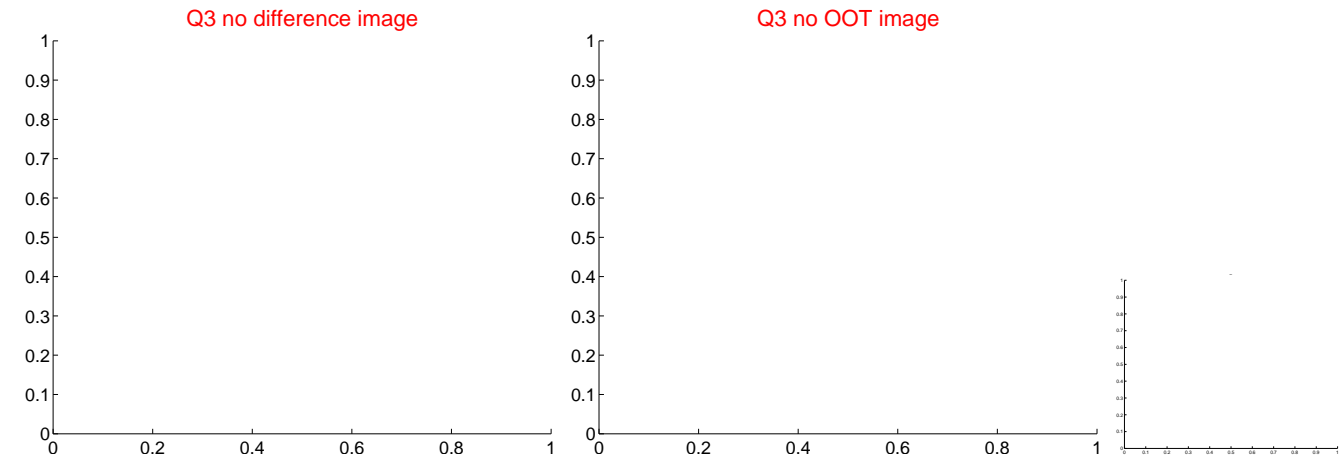
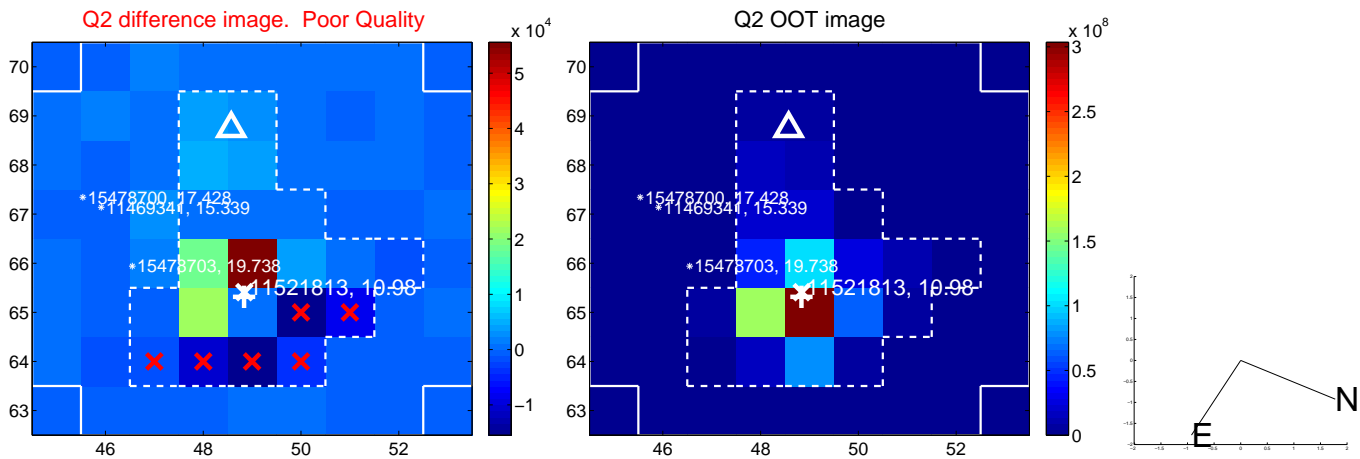
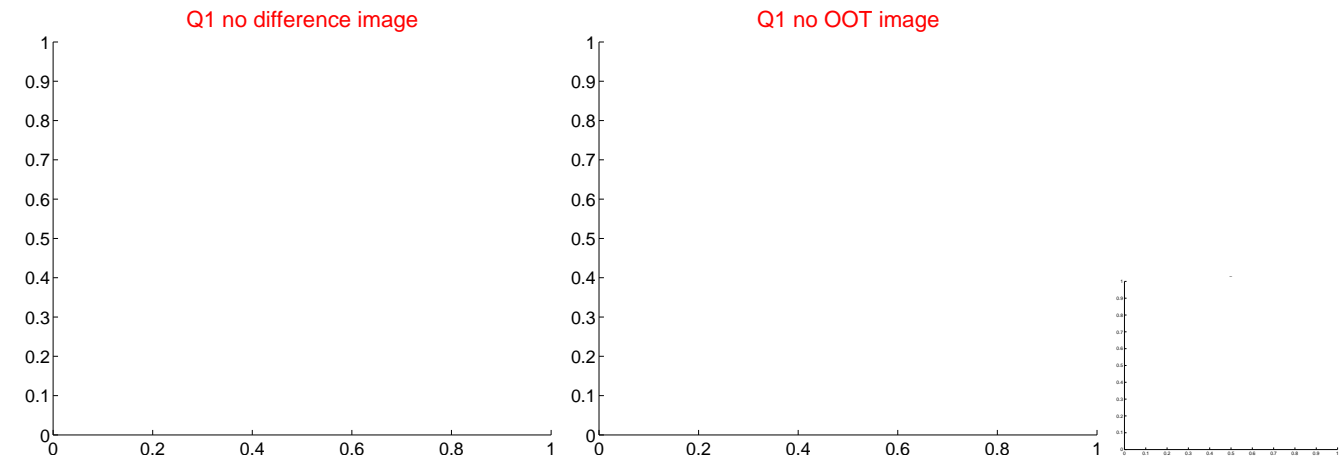
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>13.655 \pm 0.275</math></b>	<b>49.66</b>	$-11.596 \pm 0.276$	$-7.209 \pm 0.272$
PRF-fit source offset from KIC position	<b><math>13.283 \pm 0.275</math></b>	<b>48.31</b>	$-11.251 \pm 0.276$	$-7.060 \pm 0.272$
photometric centroid source offset	$4.76 \pm 2.72$	1.75	$4.61 \pm 2.72$	$1.18 \pm 2.59$



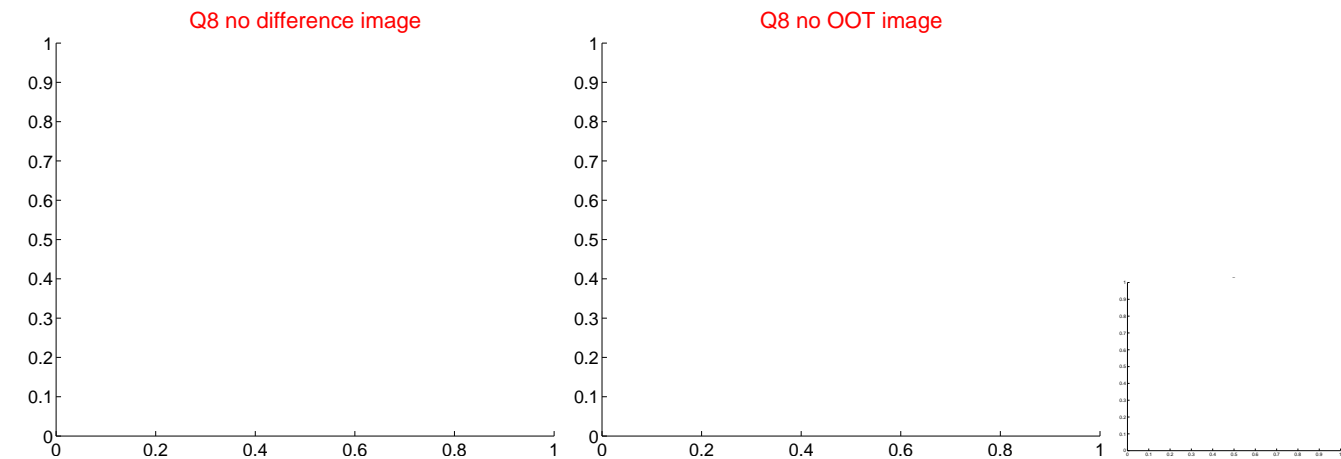
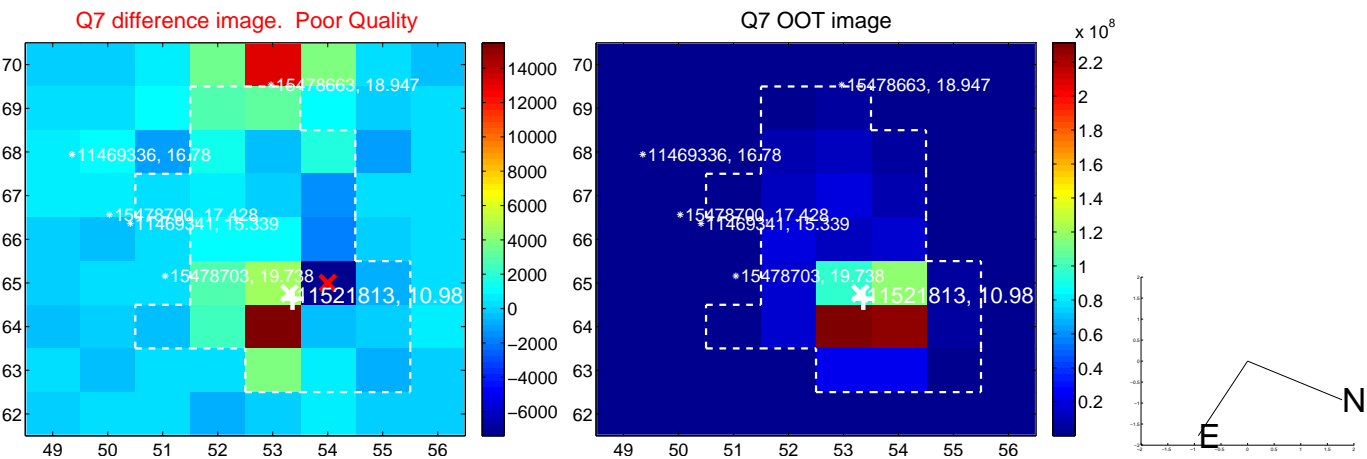
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



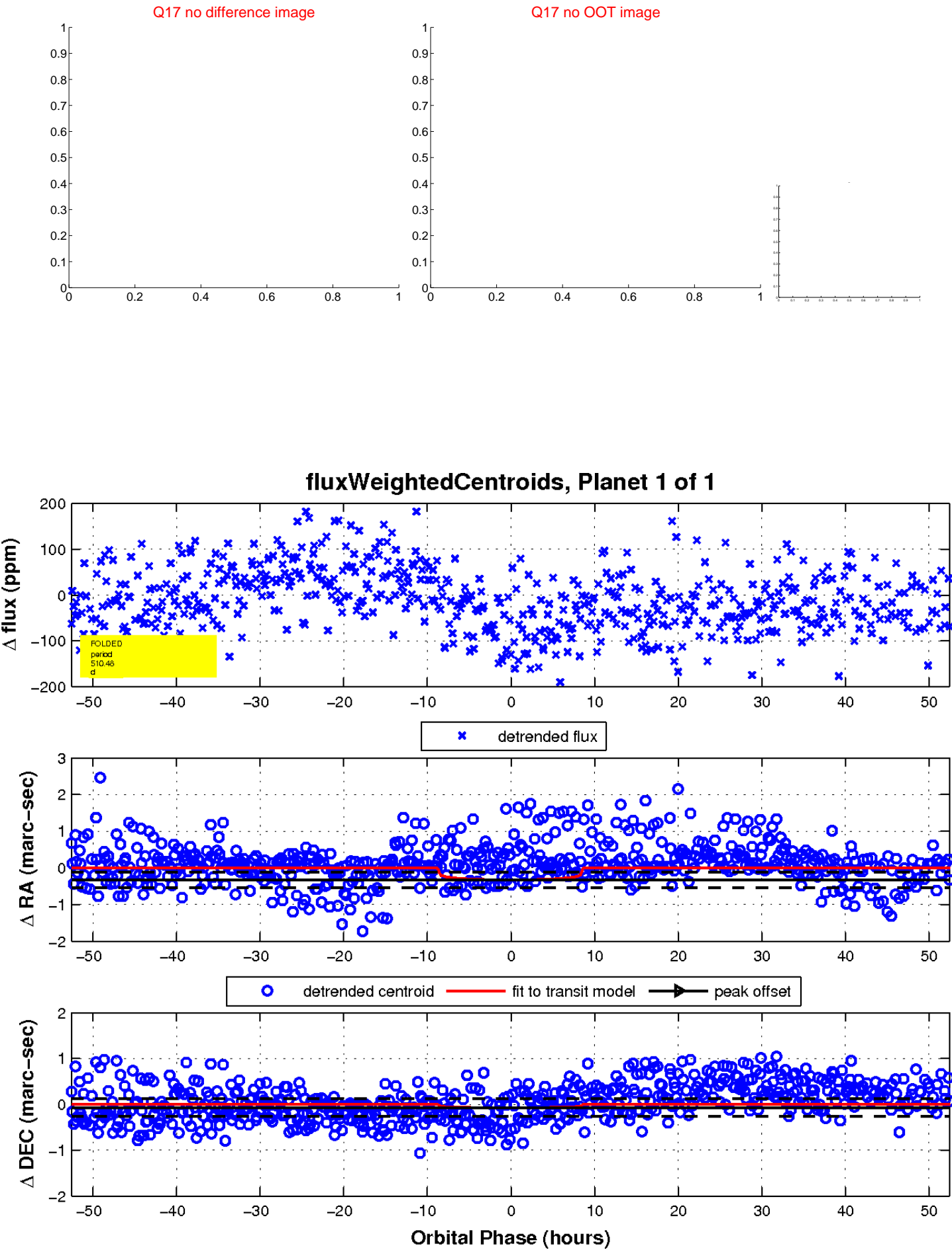
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

