

# KIC 005796186

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005796186-01	OBS	0651.01	42.559235	161.570826	3640.8	3.025	135.5	111.6	0.92	6032	10.30	18.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005796186-01	OBS	FP	0.00	0	1	1	1	DEEP_V_SHAPED—CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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 005796186-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005796186-01	5796186	3369.01	5796185	1:1	8.5	2	1	15.83	13.91	65.94	Direct-PRF	0	0.01	0.01

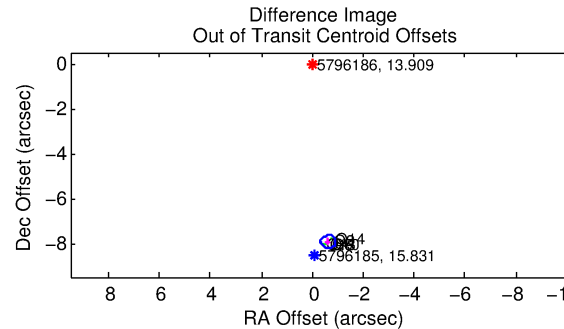
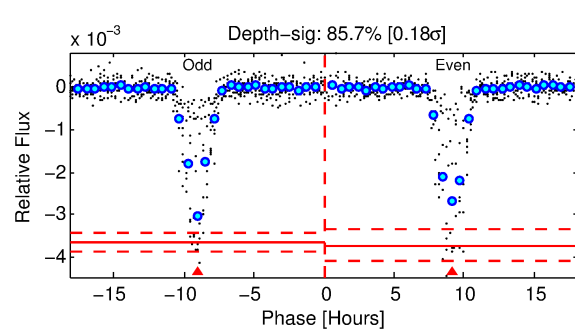
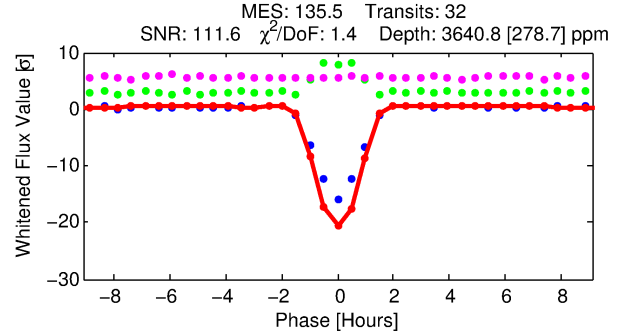
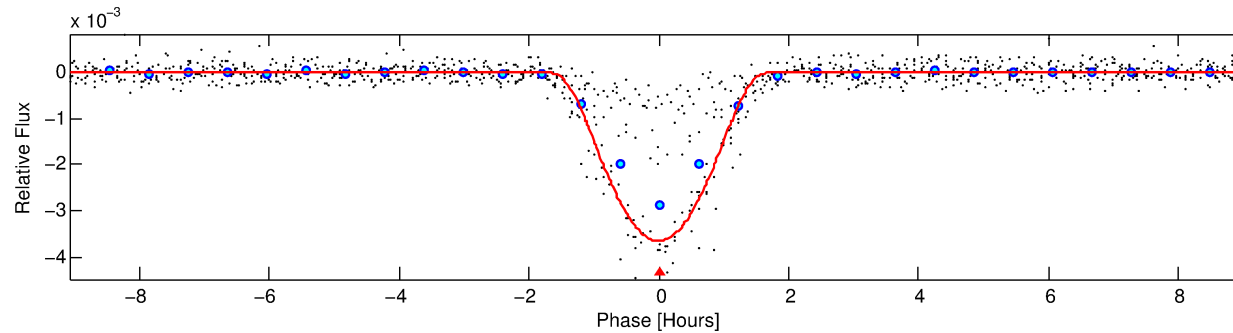
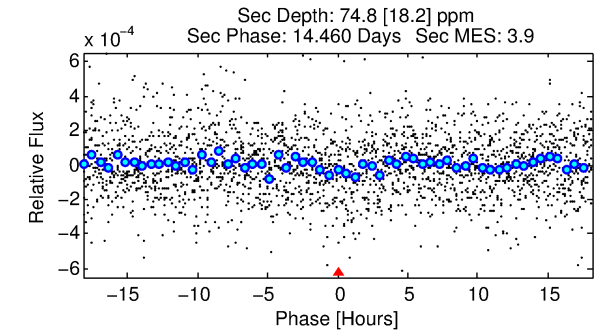
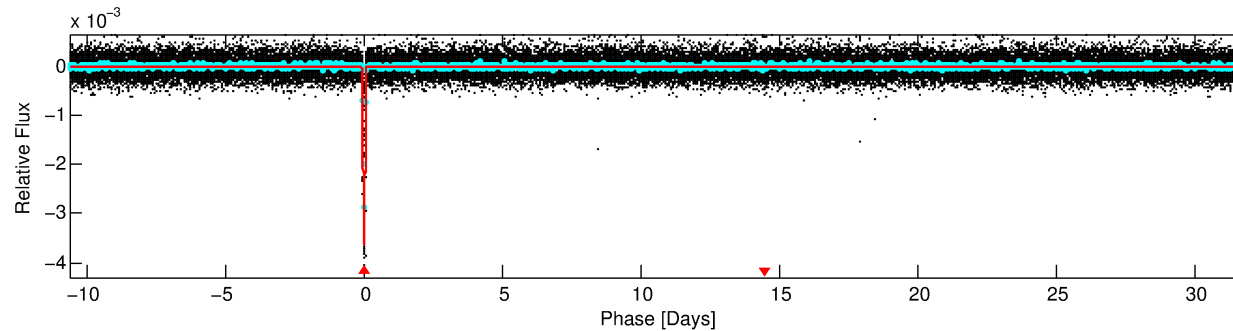
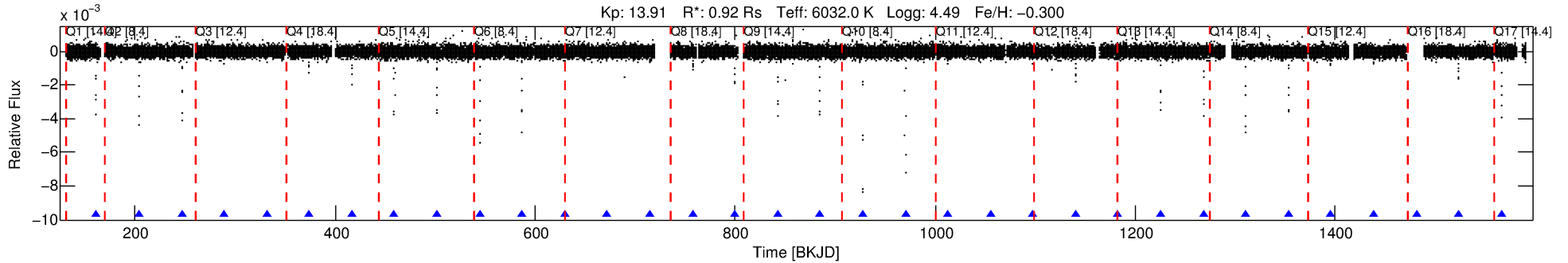
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 5796186 Candidate: 1 of 1 Period: 42.559 d

KOI: K00651.01 Corr: 0.981

Kp: 13.91 R\*: 0.92 Rs Teff: 6032.0 K Logg: 4.49 Fe/H: -0.300



## DV Fit Results:

Period = 42.55924 [0.00003] d  
Epoch = 161.5708 [0.0006] BKJD  
Rp/R\* = 0.1022 [0.0460]  
a/R\* = 49.83 [4.46]  
b = 1.00 [0.06]  
Seff = 18.28 [3.94]  
Teq = 527 [28] K  
Rp = 10.30 [4.88] Re  
a = 0.2354 [0.0314] AU  
Ag = 21.48 [20.54] [1.00σ]  
Teffp = 1755 [410] K [2.99σ]

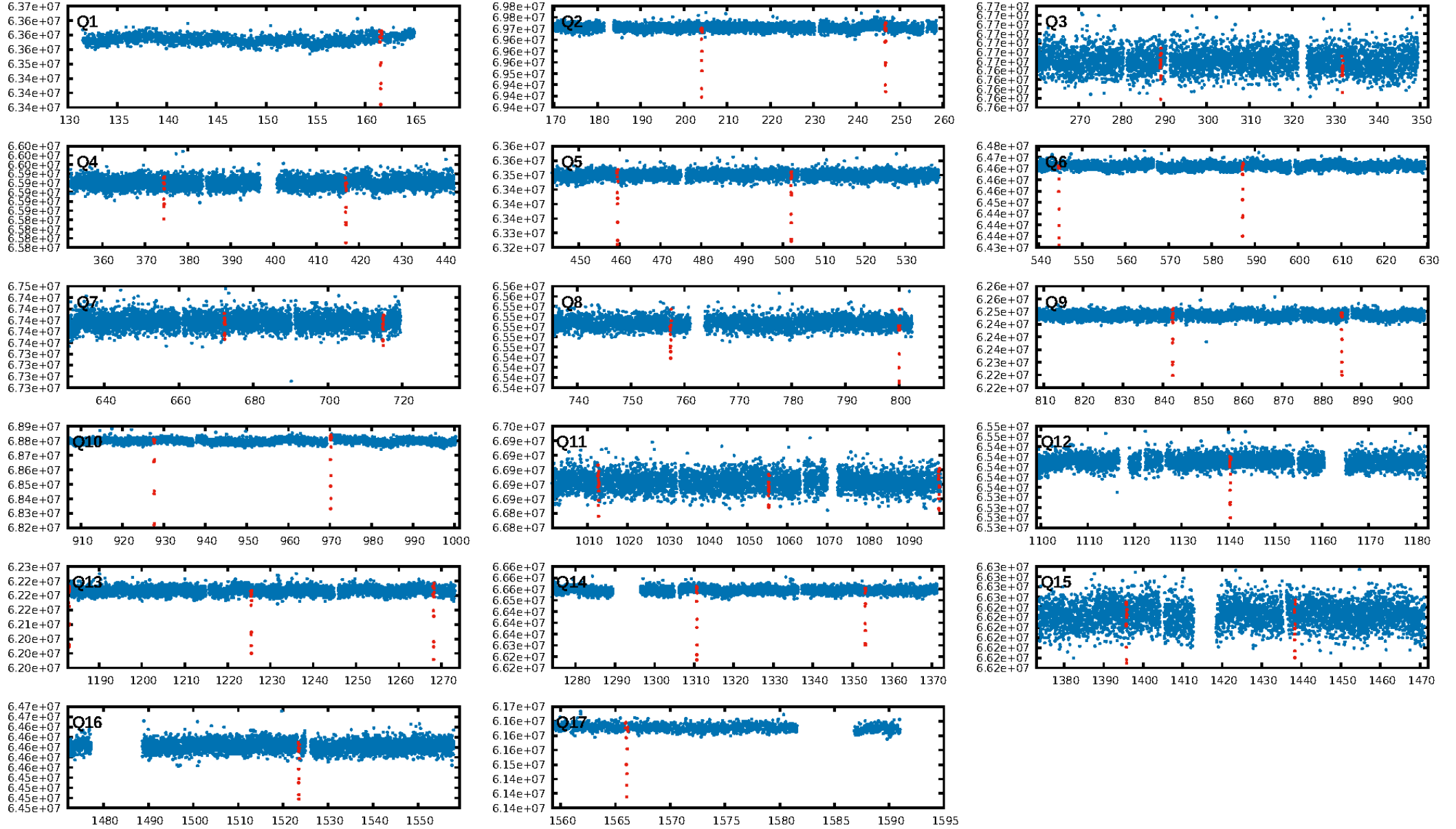
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 74.4%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [30/30]  
GhostDiagnostic-chr: -0.3788  
Centroid-sig: 0.0%  
Centroid-so: 41.386 arcsec [512.45σ]  
OotOffset-rm: 7.952 arcsec [84.37σ]  
KicOffset-rm: 7.787 arcsec [100.45σ]  
OotOffset-st: 4/0/0/1 [5]  
KicOffset-st: 4/0/0/1 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [17/17]

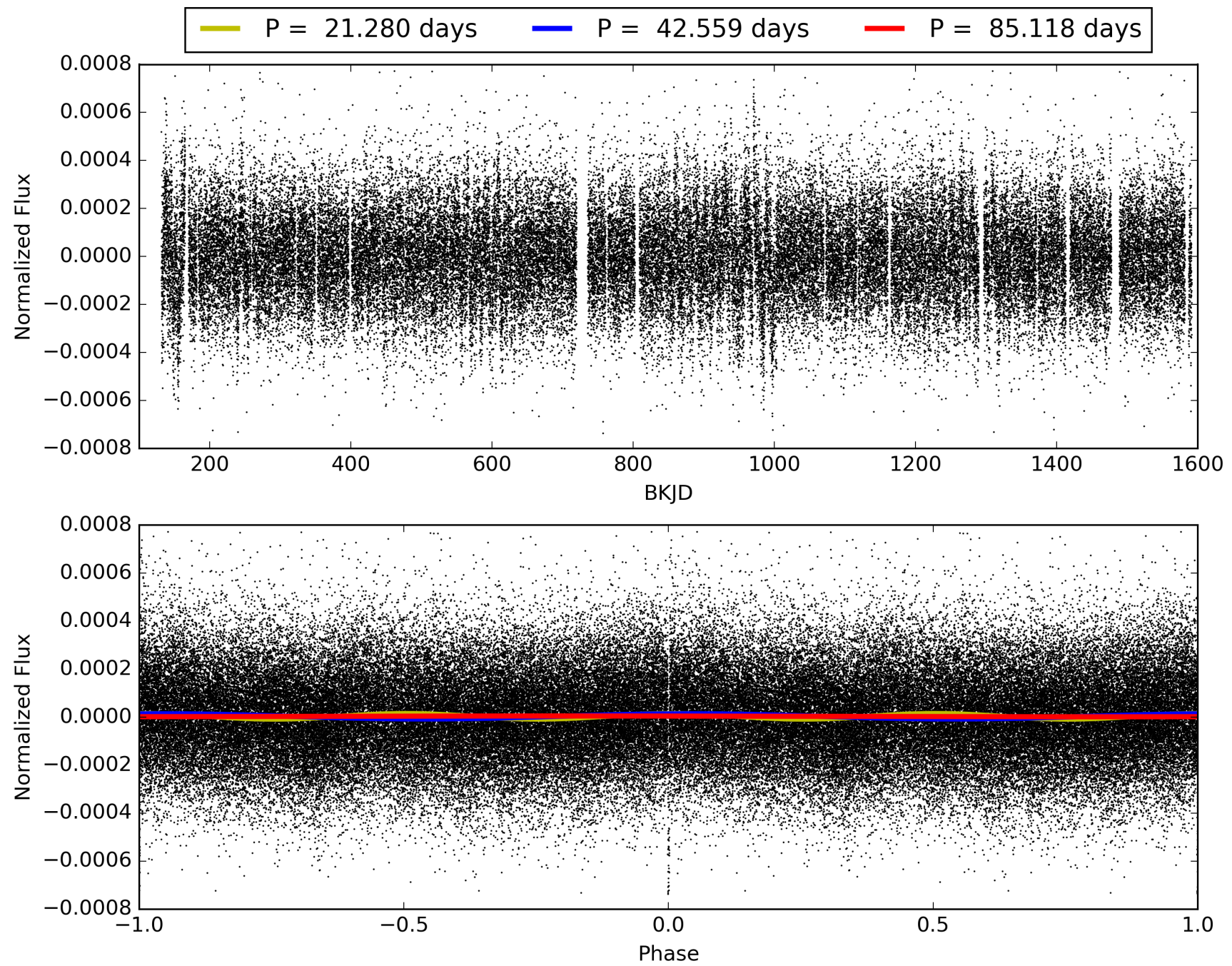
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:33:36 Z

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

# TCE 005796186-01, PDC Light Curves

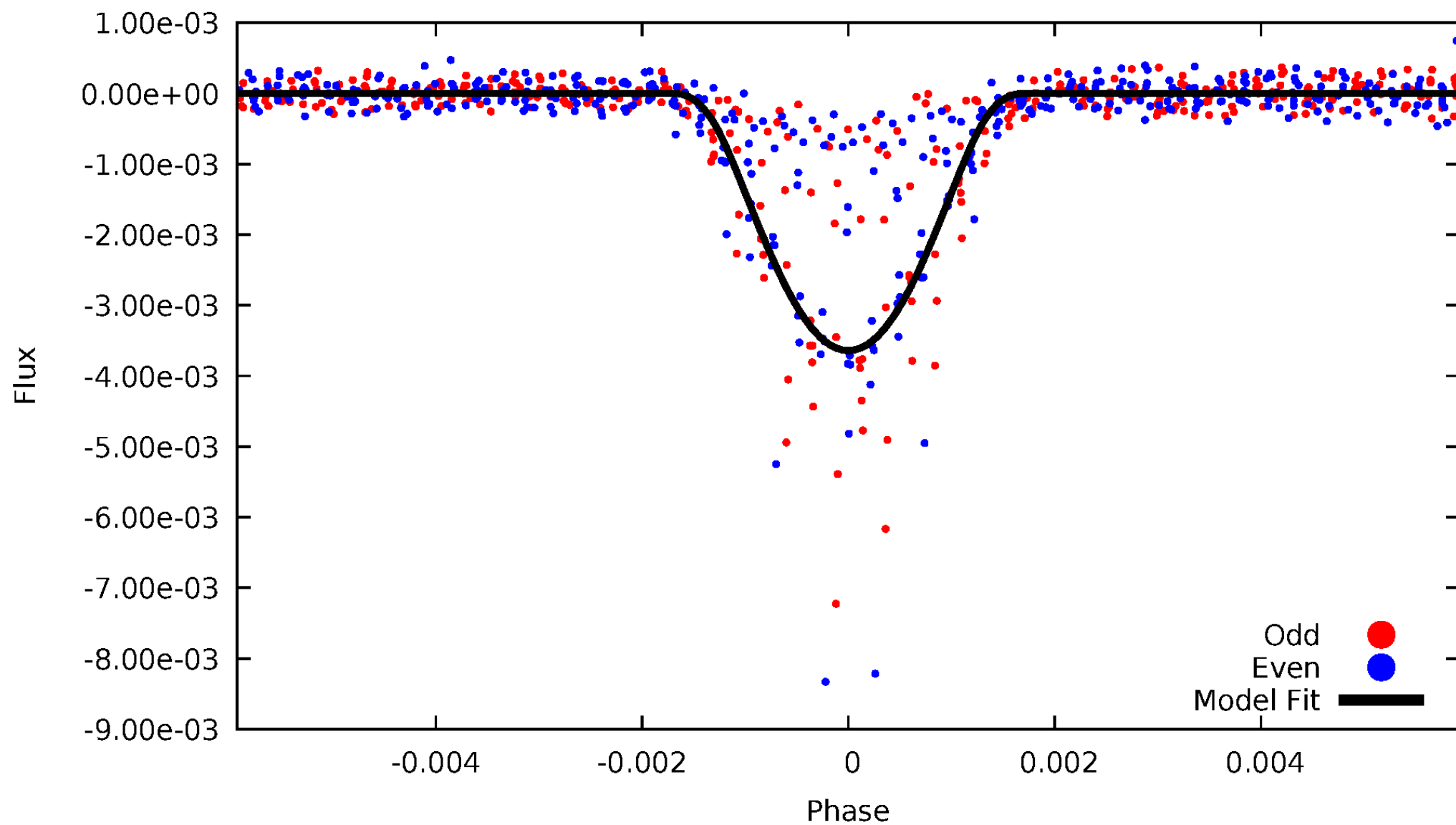


# TCE 005796186-01



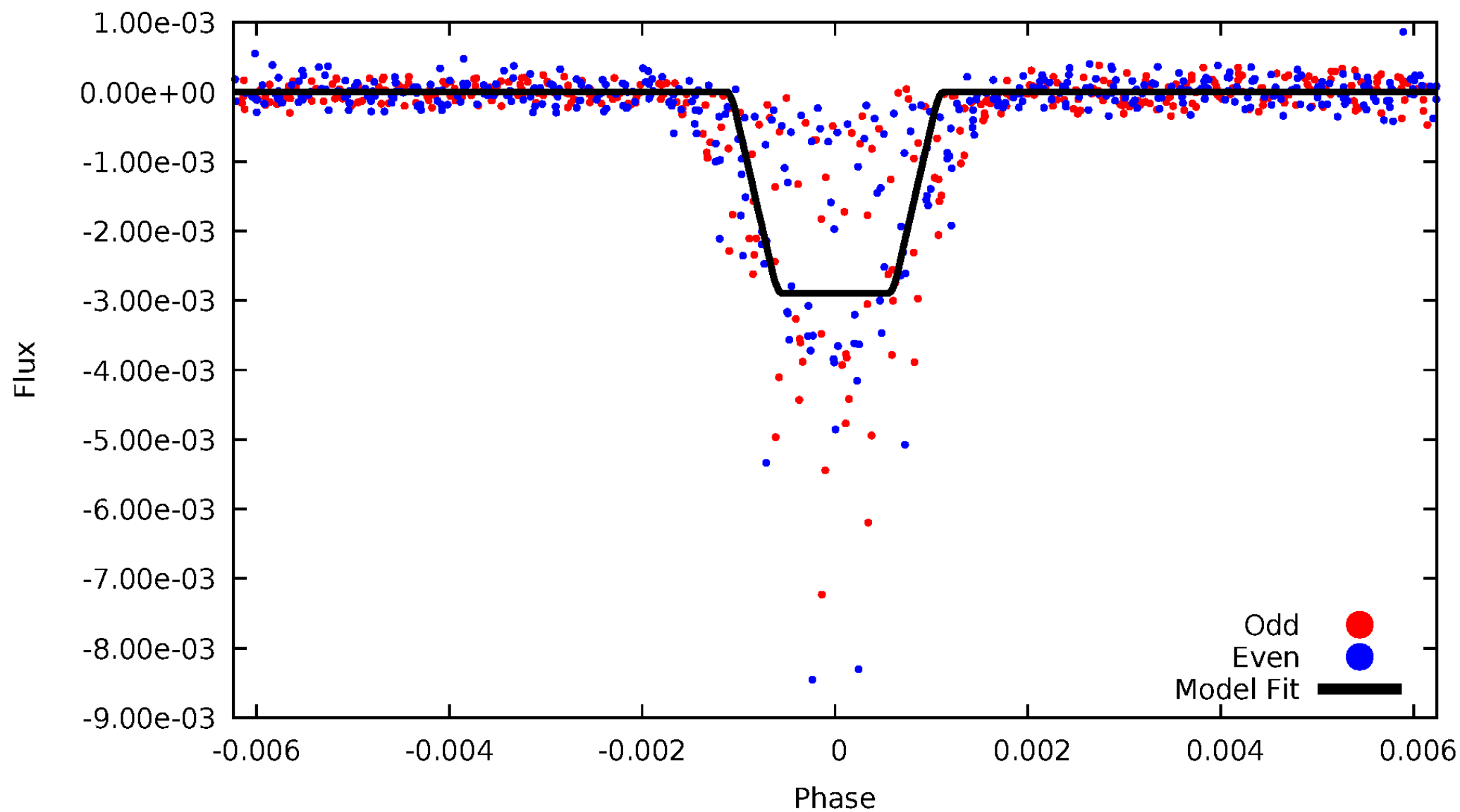
DV Odd/Even

TCE 005796186-01



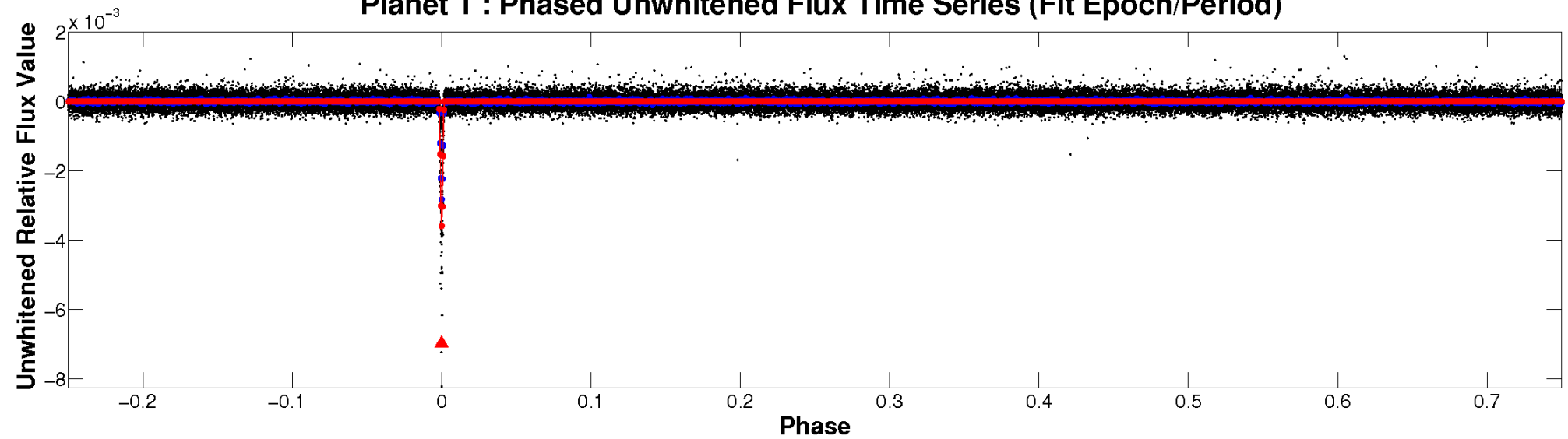
# ALT Odd/Even

TCE 005796186-01

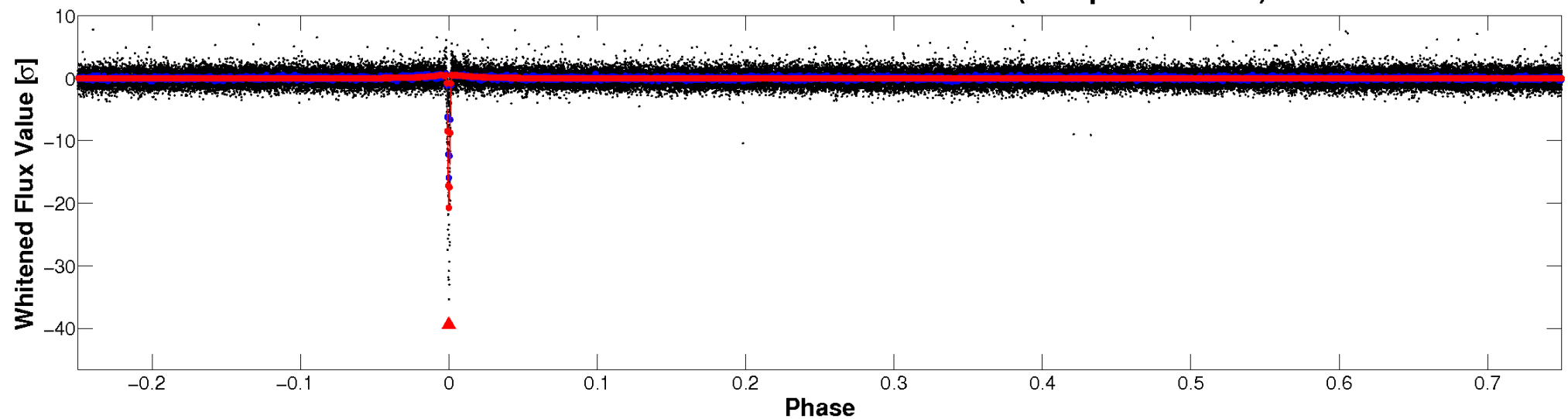


# Non-Whitened Vs. Whitened Light Curve

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



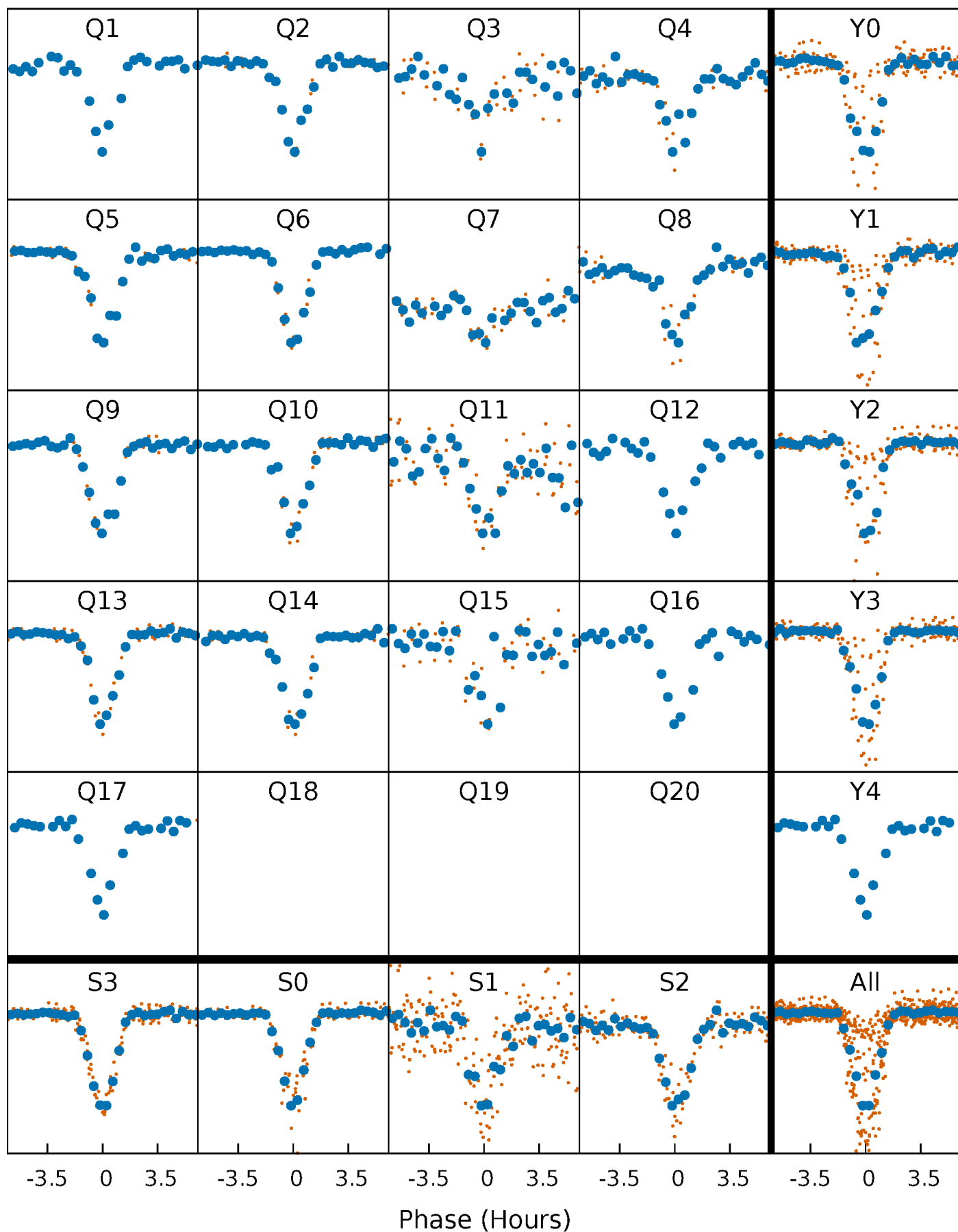
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

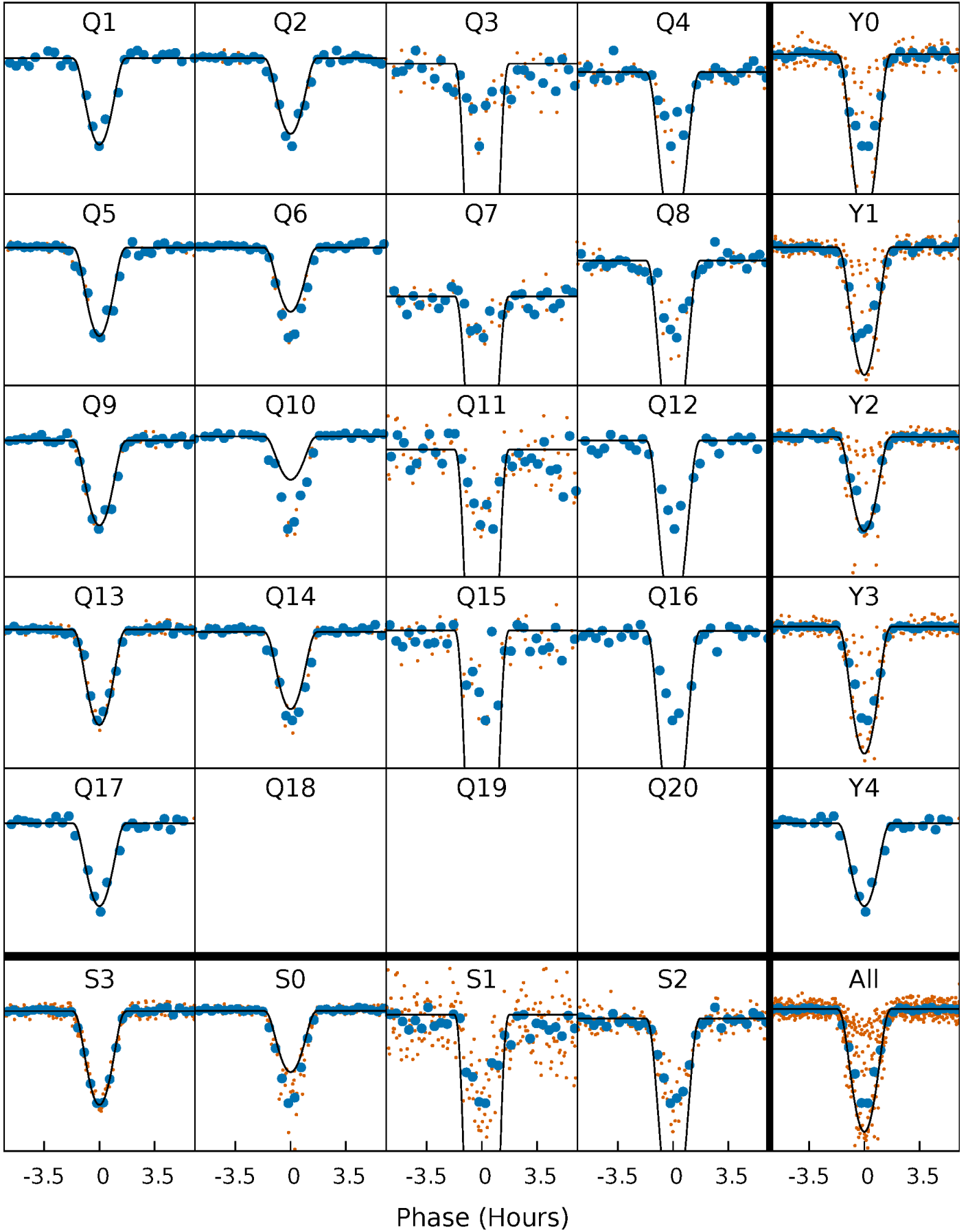
TCE 005796186-01 P= 42.559235 Days  $T_0=161.570826$  (BKJD)





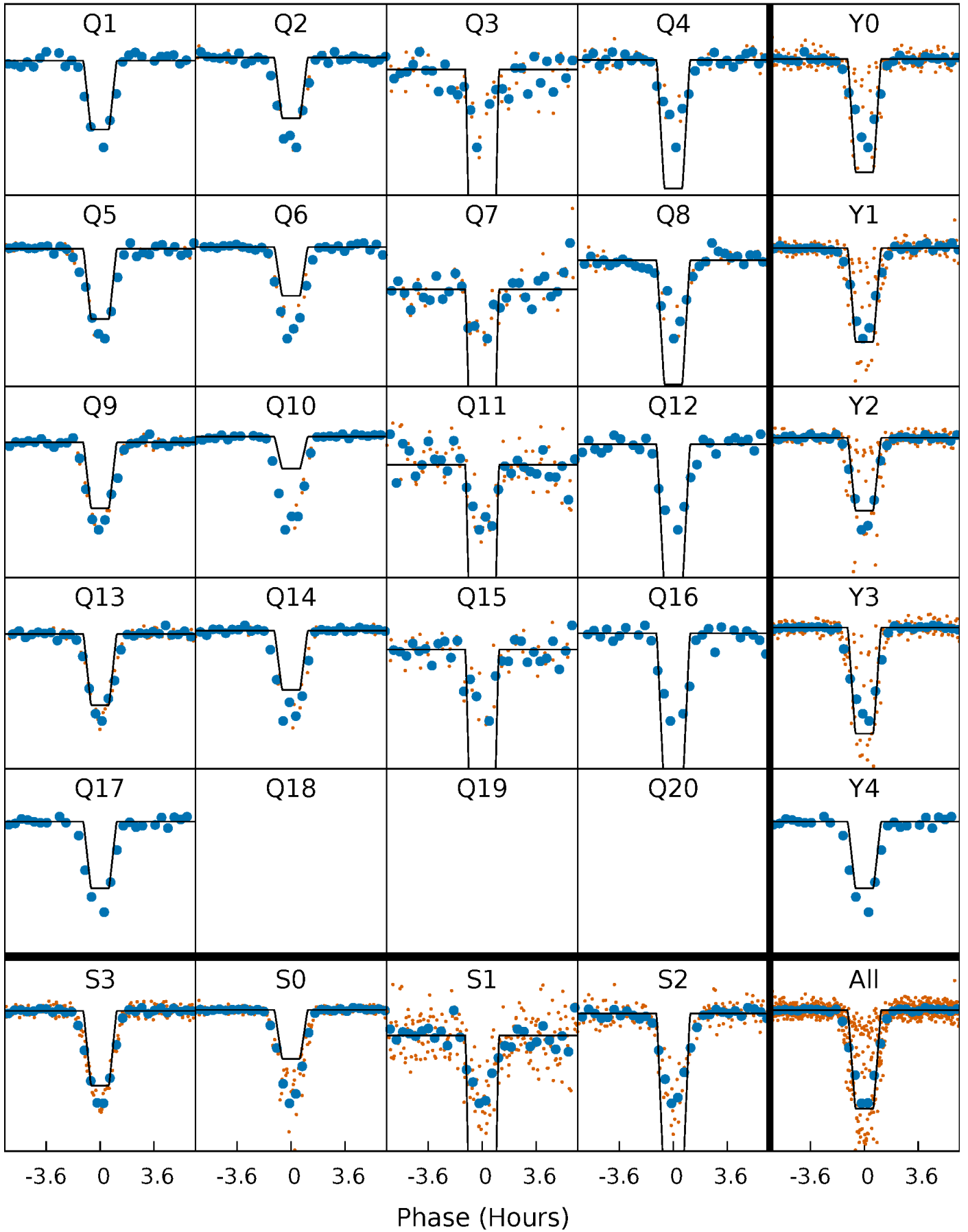
# DV Quarter-Phased Transit Curves

TCE 005796186-01 P= 42.559235 Days  $T_0=161.570826$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

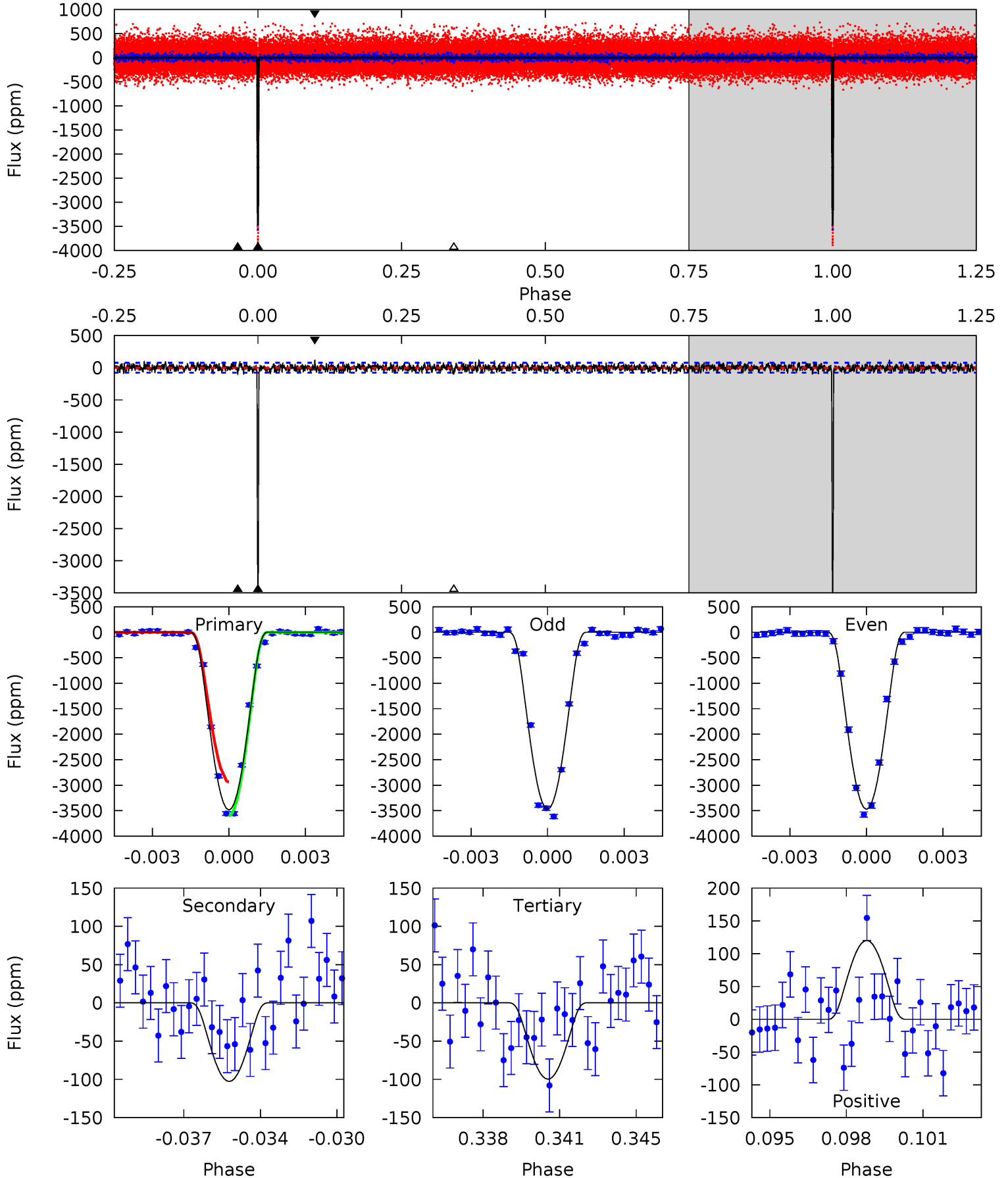
TCE 005796186-01 P= 42.559309 Days  $T_0=161.570131$  (BKJD)



# DV Model-Shift Uniqueness Test

005796186-01, P = 42.559235 Days, E = 119.011591 Days

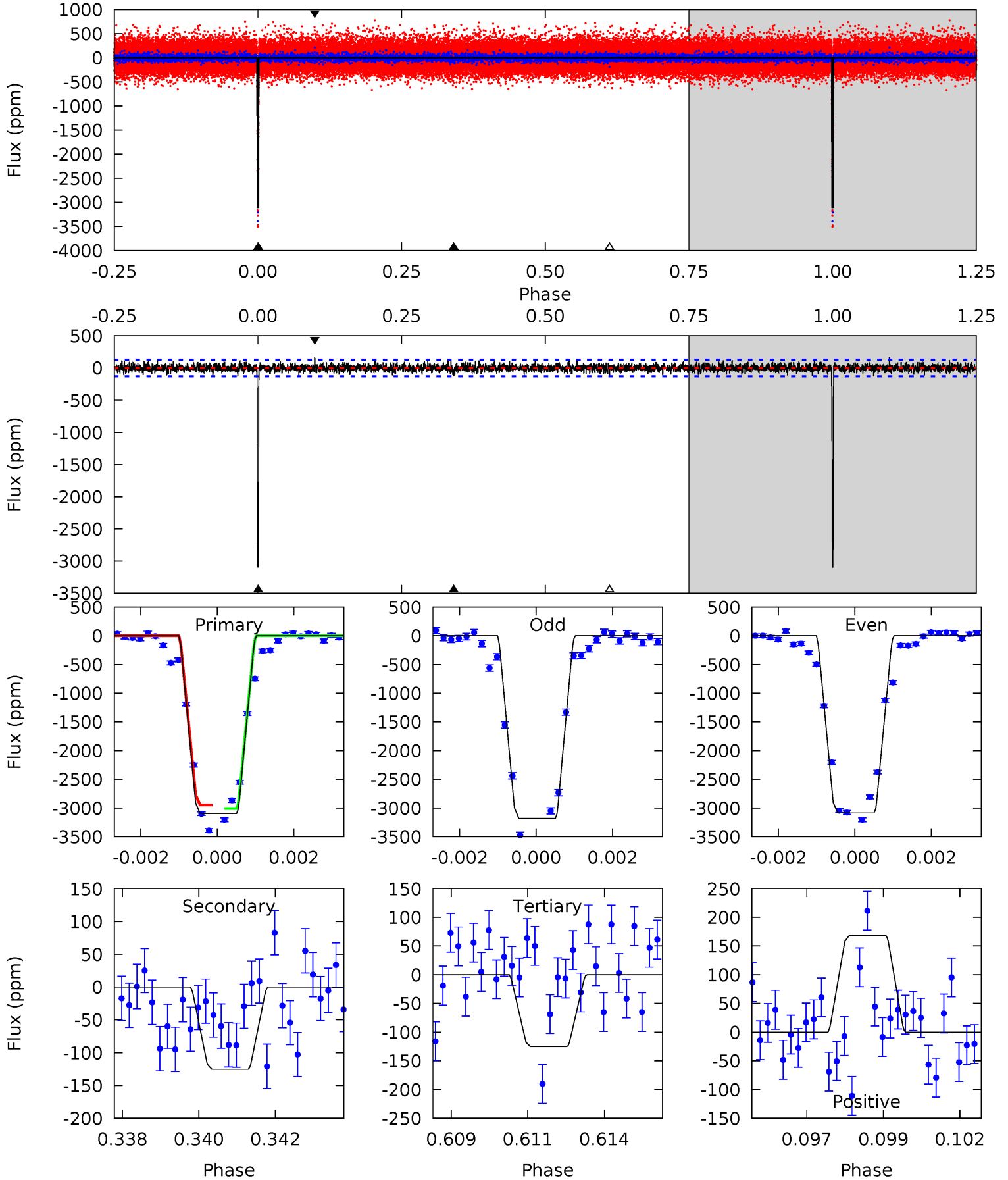
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
236.3	6.97	6.76	8.15	5.23	2.93	2.14	229.6	228.2	0.20	-1.18	0.09	0.83	0.03	0



# Alt Model-Shift Uniqueness Test

005796186-01, P = 42.559309 Days, E = 119.010822 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
127.4	5.15	5.15	6.92	5.31	3.06	1.45	122.2	120.5	0.01	-1.77	2.01	0.84	0.05	0



### Stellar Parameters For KIC 005796186

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6032^{+72}_{-84}$	$4.489^{+0.040}_{-0.120}$	$-0.300^{+0.150}_{-0.150}$	$0.924^{+0.134}_{-0.054}$	$0.960^{+0.047}_{-0.064}$	$1.714^{+0.291}_{-0.555}$
	+1%/-1%	+1%/-3%	+50%/-50%	+15%/-6%	+5%/-7%	+17%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005796186-01 / KOI 0651.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-103 \pm 15$	$10.55^{+4.56}_{-4.76}$	$743^{+27}_{-19}$	$2670^{+521}_{-224}$	$27^{+71}_{-14}$
Alt.	$-125 \pm 24$	$6.15^{+4.56}_{-3.63}$	$742^{+28}_{-17}$	$3204^{+1134}_{-483}$	$100^{+487}_{-69}$

$T_{max}$  = 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

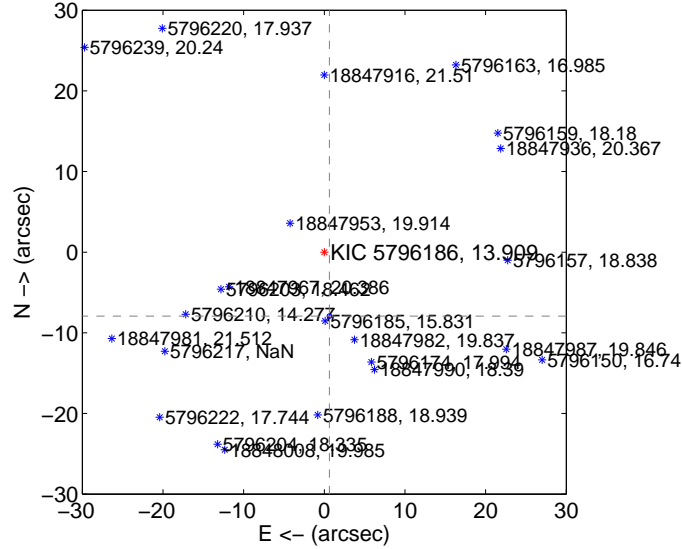
Supplemental centroid analysis for 005796186-01. Kepler magnitude: 13.91. Transit SNR 111.62

There are 5 quarters with good PRF difference image offsets

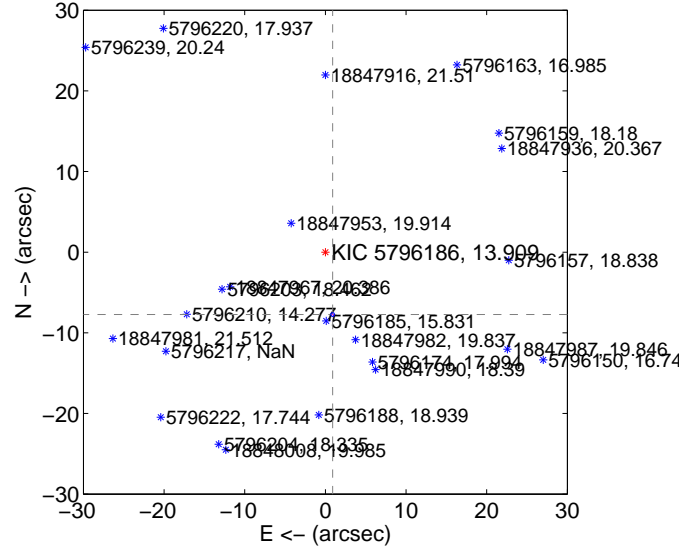
The direct PRF centroid is offset from the target star catalog position by about 0.51 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>7.952 <math>\pm</math> 0.094</b>	<b>84.37</b>	-0.633 $\pm$ 0.082	-7.927 $\pm$ 0.094
PRF-fit source offset from KIC position	<b>7.787 <math>\pm</math> 0.078</b>	<b>100.45</b>	-0.895 $\pm$ 0.079	-7.736 $\pm$ 0.079
photometric centroid source offset	<b>41.39 <math>\pm</math> 0.08</b>	<b>512.45</b>	-5.21 $\pm$ 0.07	-41.06 $\pm$ 0.08

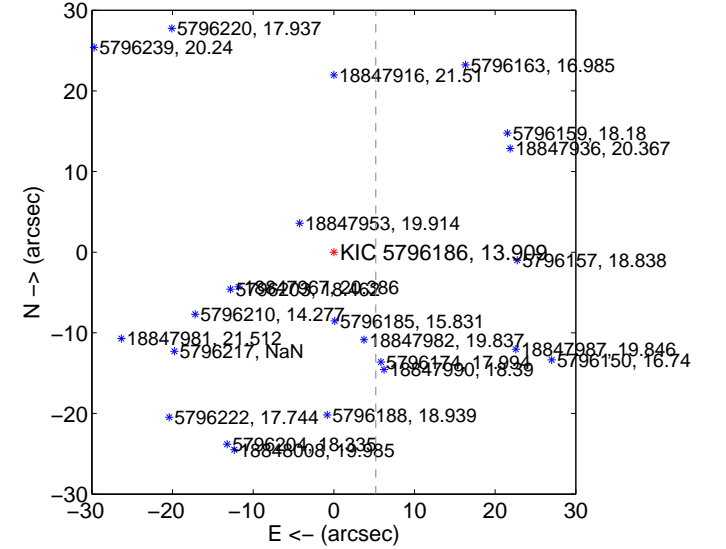
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

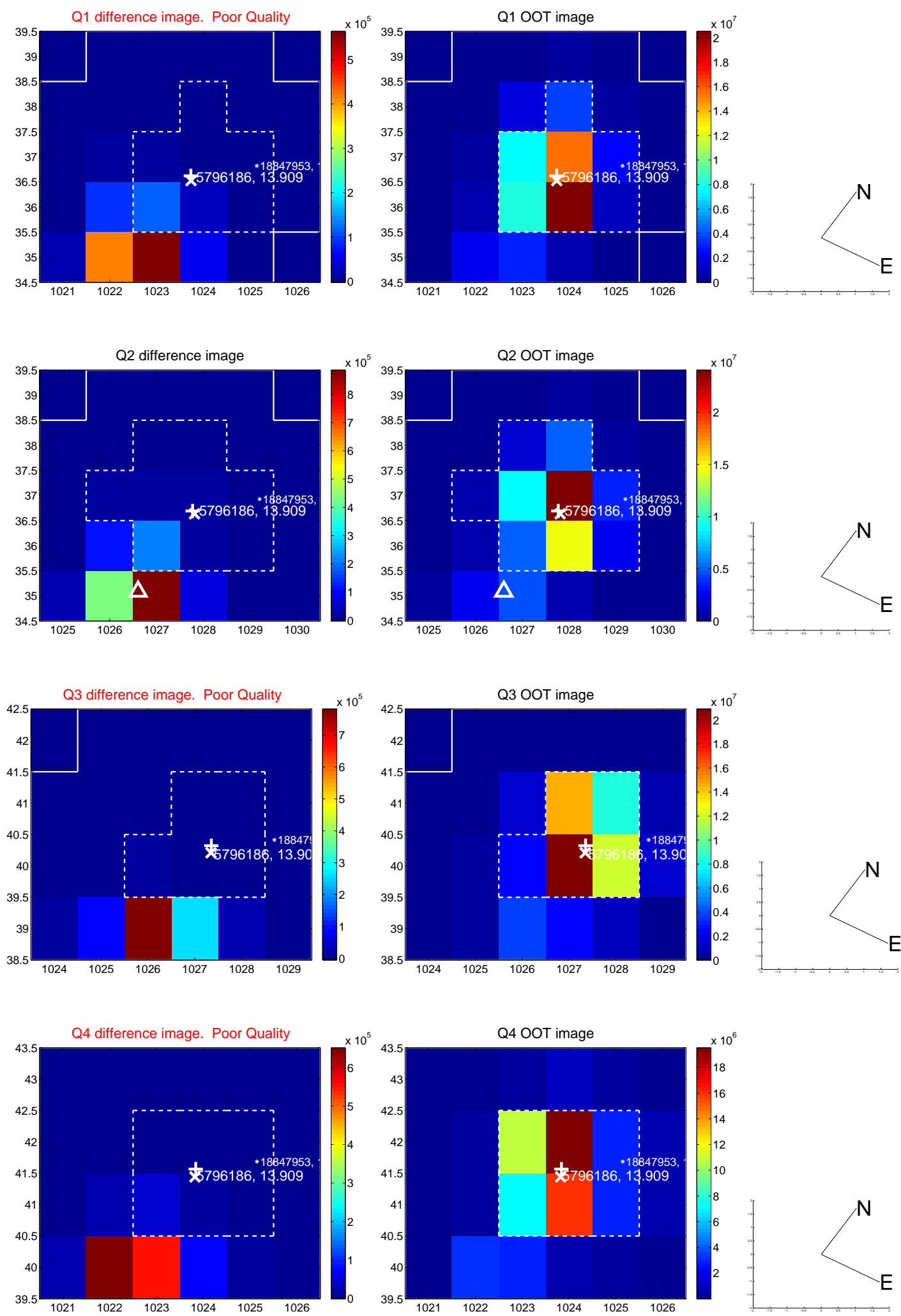


offset from photometric centroids



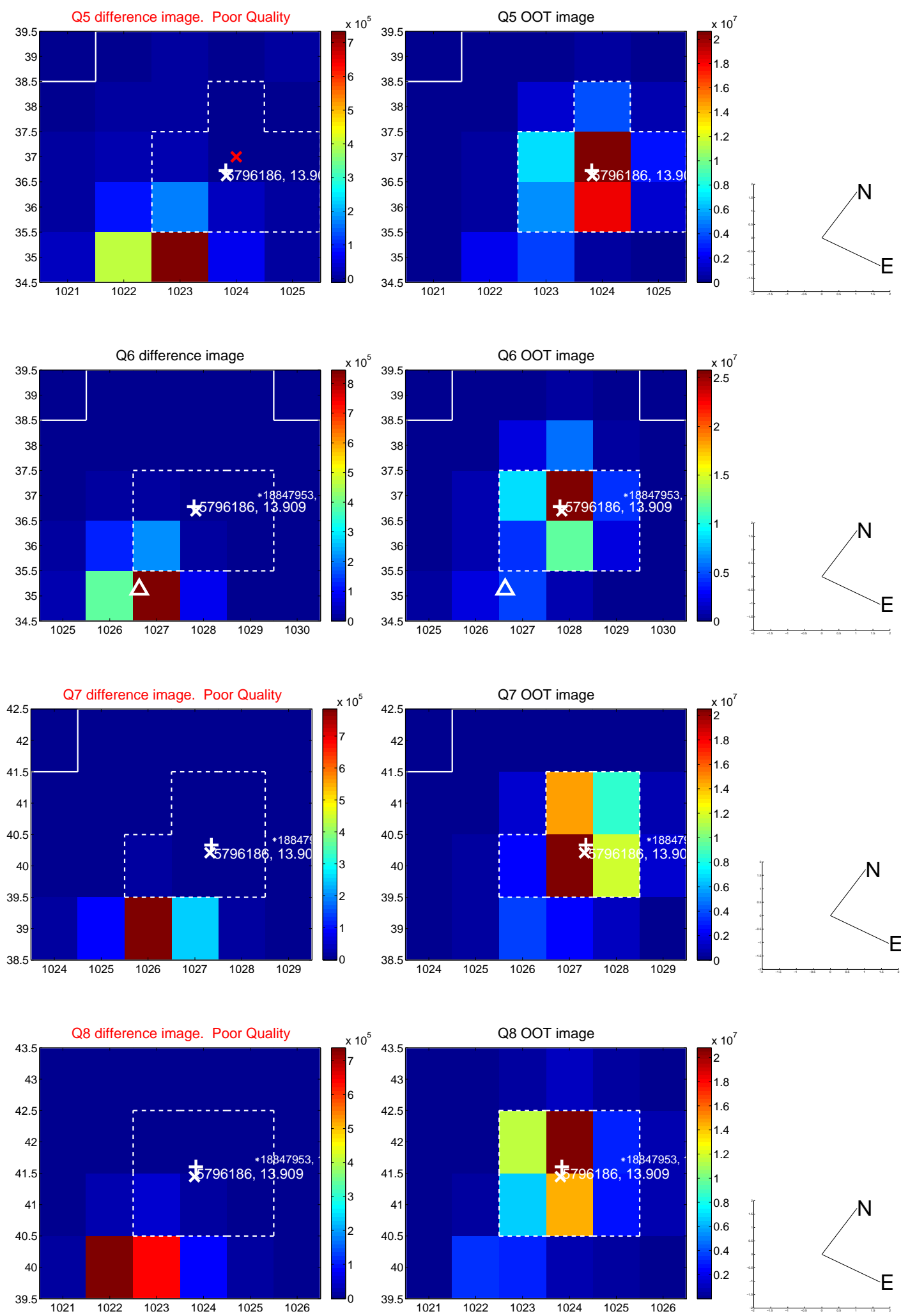
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

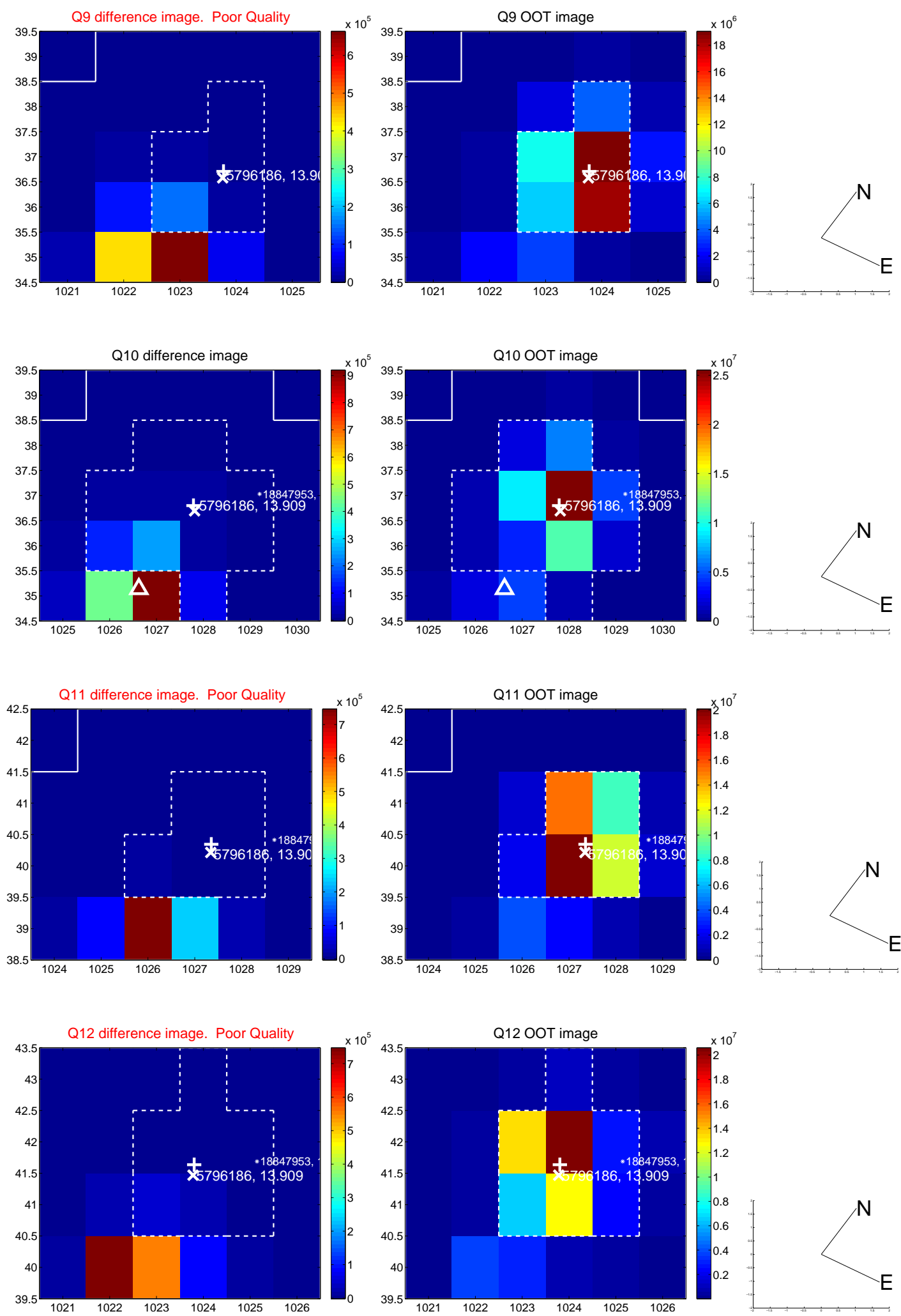




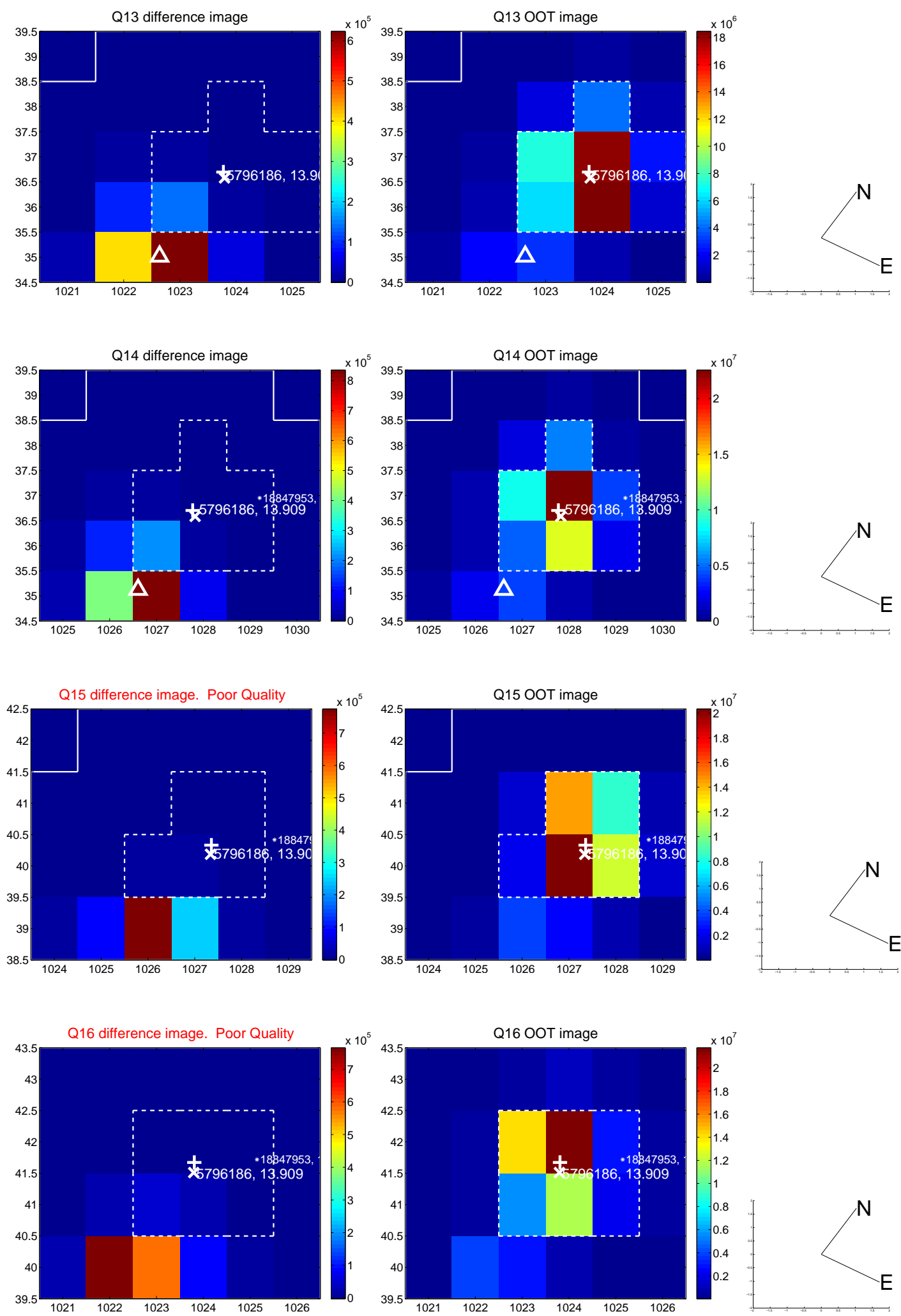
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



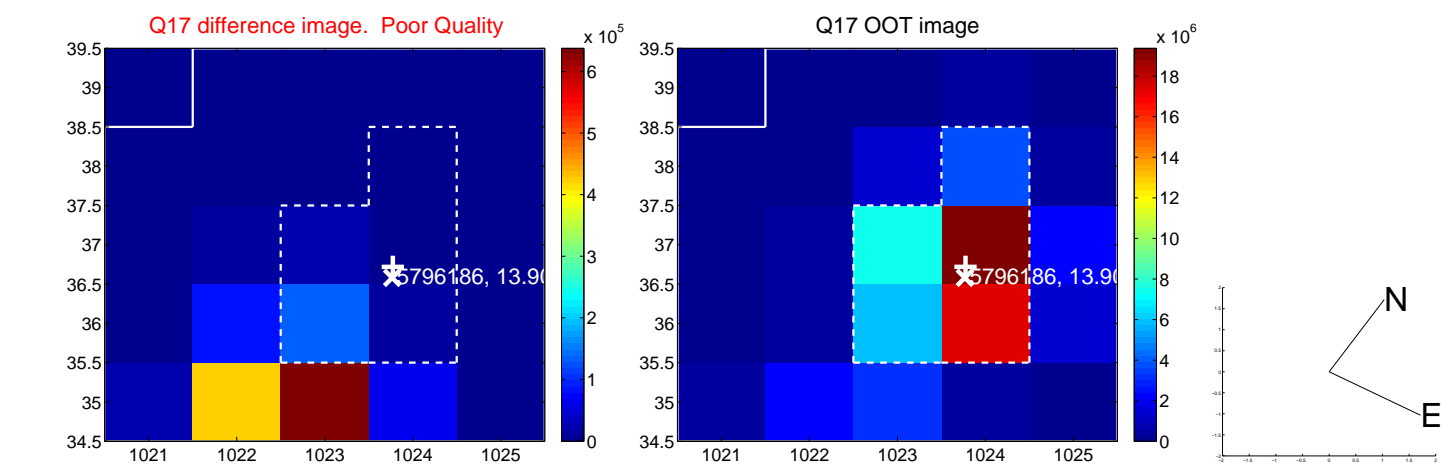
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



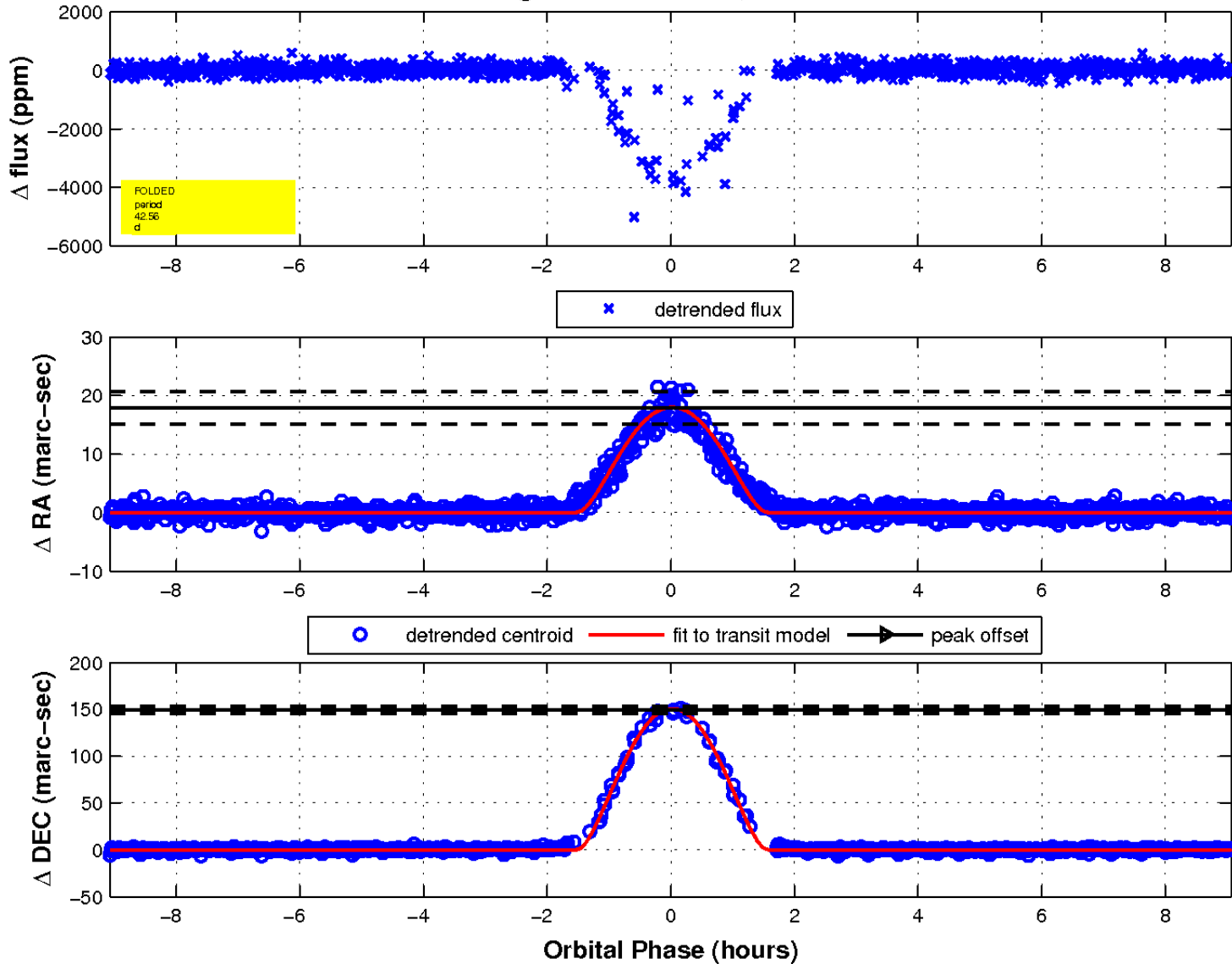
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

