

# KIC 006045250

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006045250-01	OBS	3948.01	0.909302	131.730755	11381.2	3.048	1413.6	935.3	1.11	6370	14.22	4879.16
006045250-02	OBS	No	0.909309	132.179944	18983.8	2.000	1782.4	-1.0	1.11	6370	15.34	4879.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045250-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH
006045250-02	OBS	FP	0.00	1	0	0	1	SAME_NTL_PERIOD—CENT_NOFITS—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.

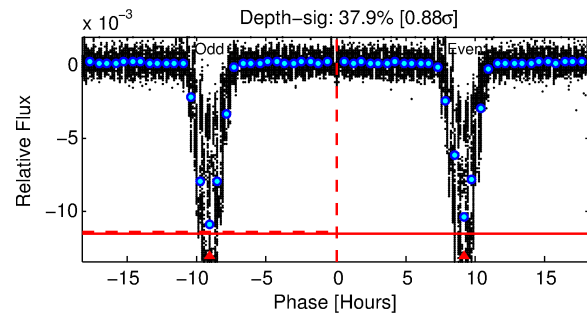
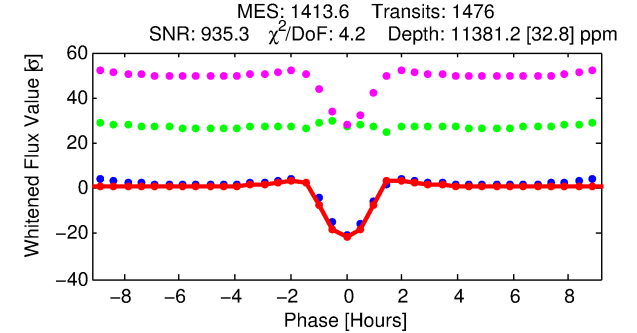
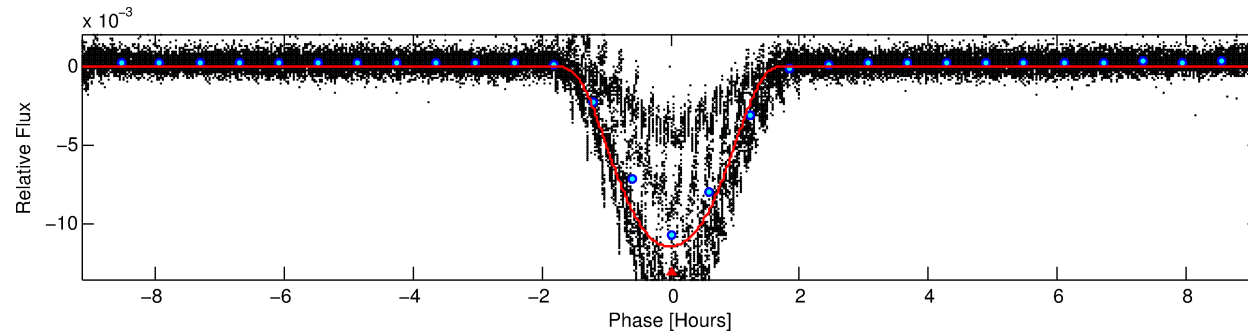
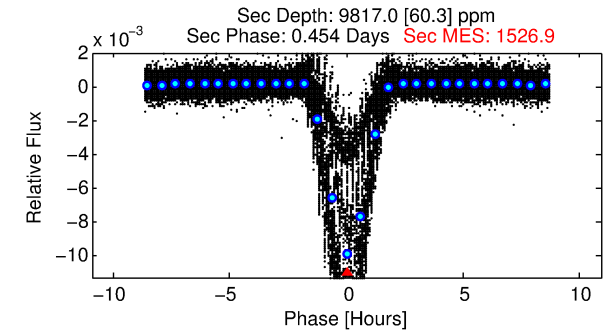
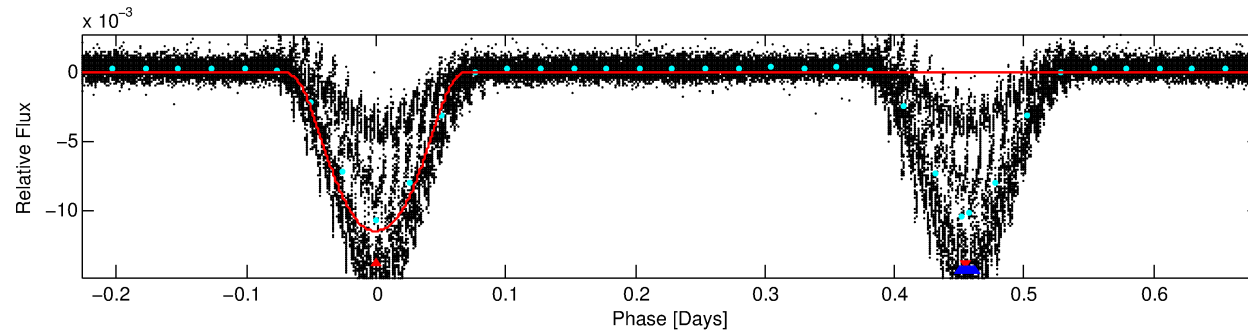
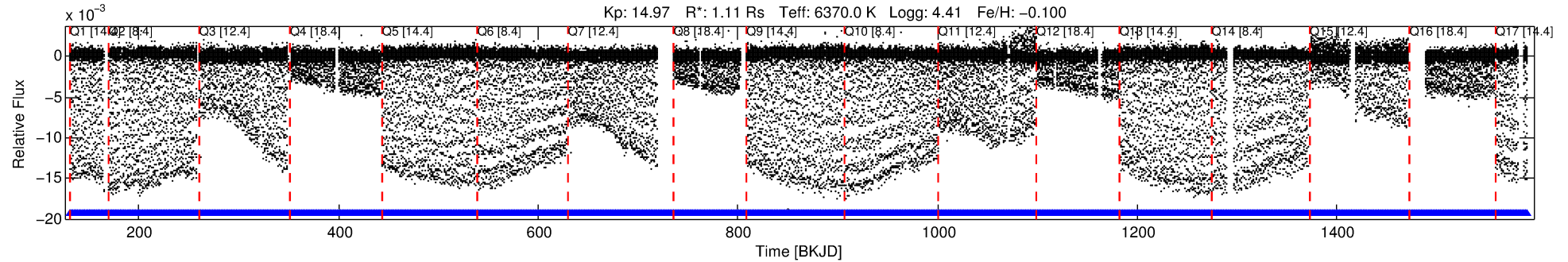
## Ephemeris Match Information For 006045250-01

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	$\sigma_P$	$\sigma_T$
006045250-01	6045250	006045264-pri	6045264	1:1	9.0	2	0	13.44	14.97	31.64	Direct-PRF	0	0.92	0.45

**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: 6045250 Candidate: 1 of 2 Period: 0.909 d  
KOI: K03948.01 Corr: 0.942



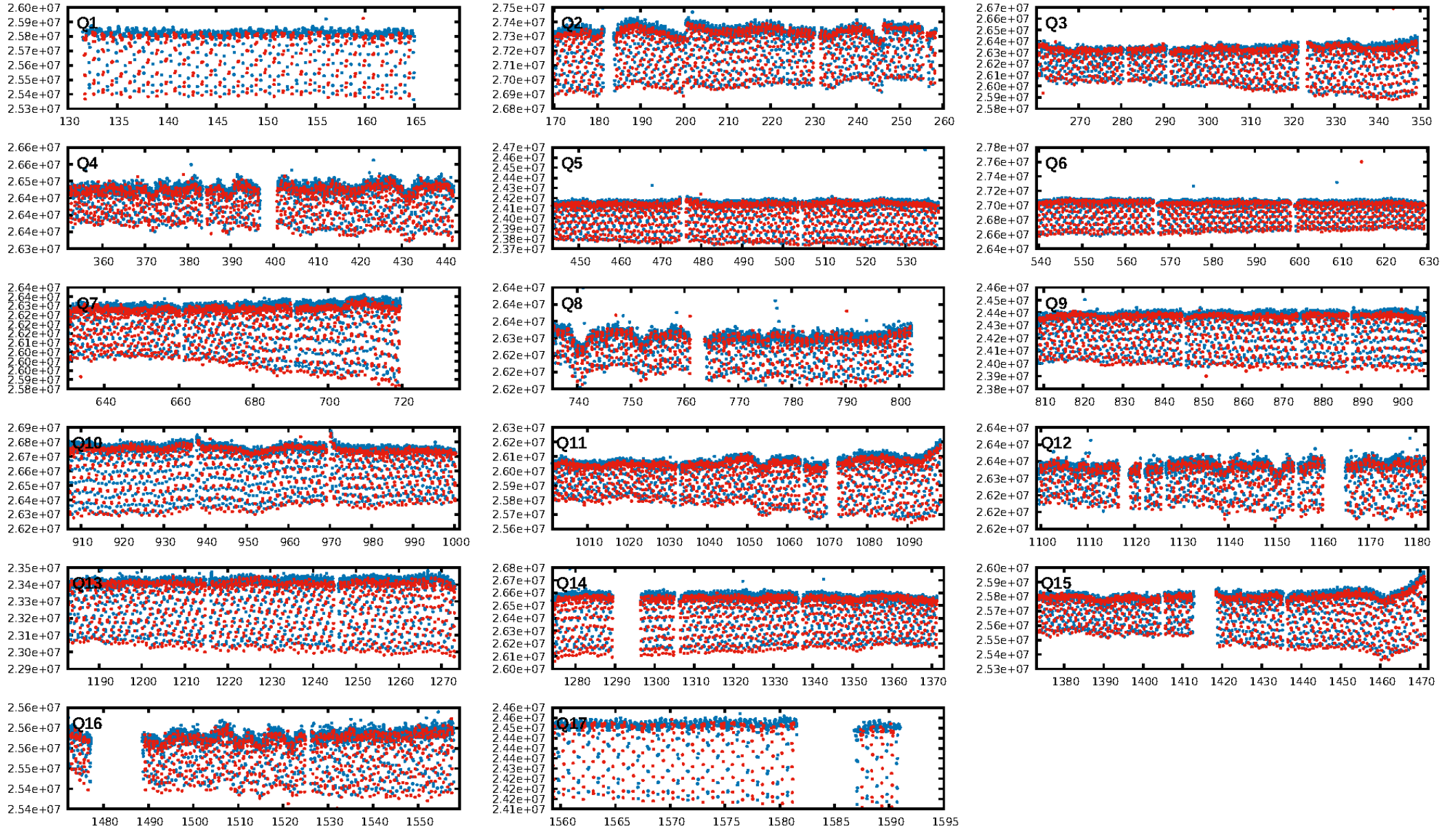
## DV Fit Results:

Period = 0.90930 [0.00000] d  
Epoch = 131.7308 [0.0001] BKJD  
Rp/R\* = 0.1178 [0.0007]  
a/R\* = 1.81 [0.00]  
b = 0.90 [0.00]  
Seff = 4879.16 [1803.73]  
Teq = 2131 [197] K  
Rp = 14.22 [4.04] Re  
a = 0.0192 [0.0046] AU  
Ag = 9.87 [3.41] [2.60 $\sigma$ ]  
**Teffp = 5841 [194] K [13.40 $\sigma$ ]**

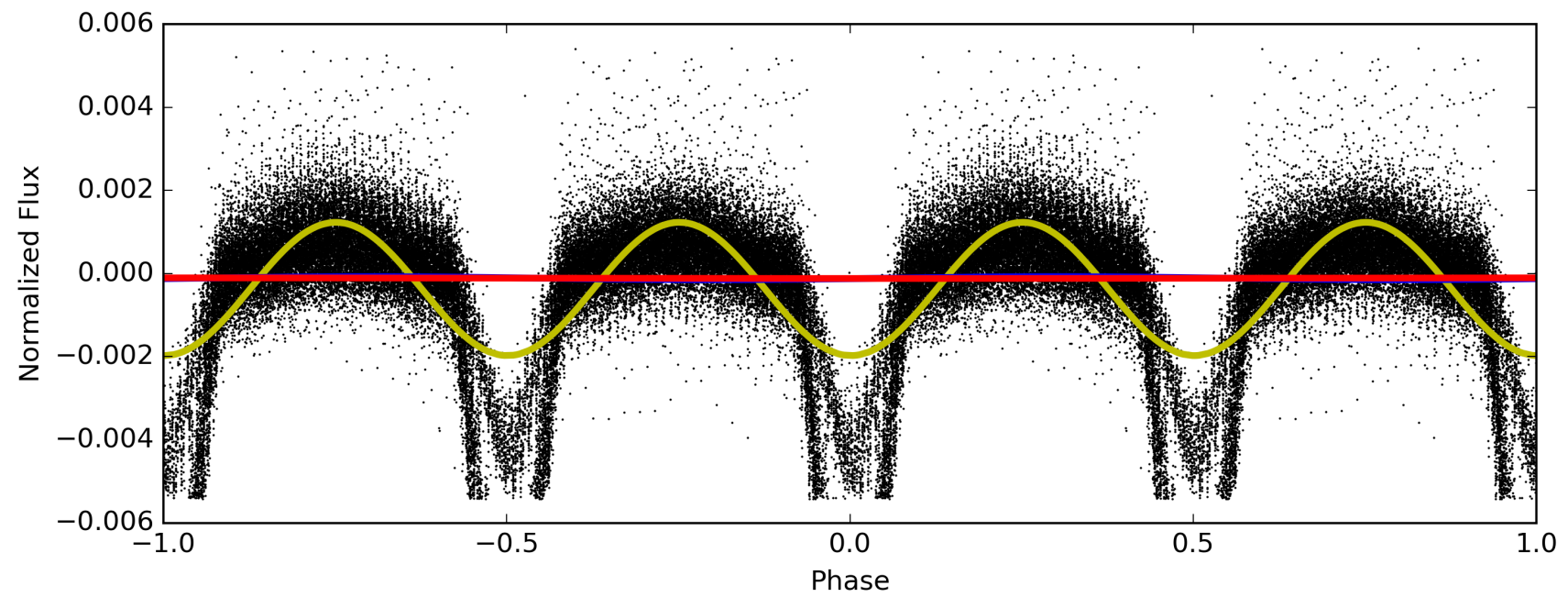
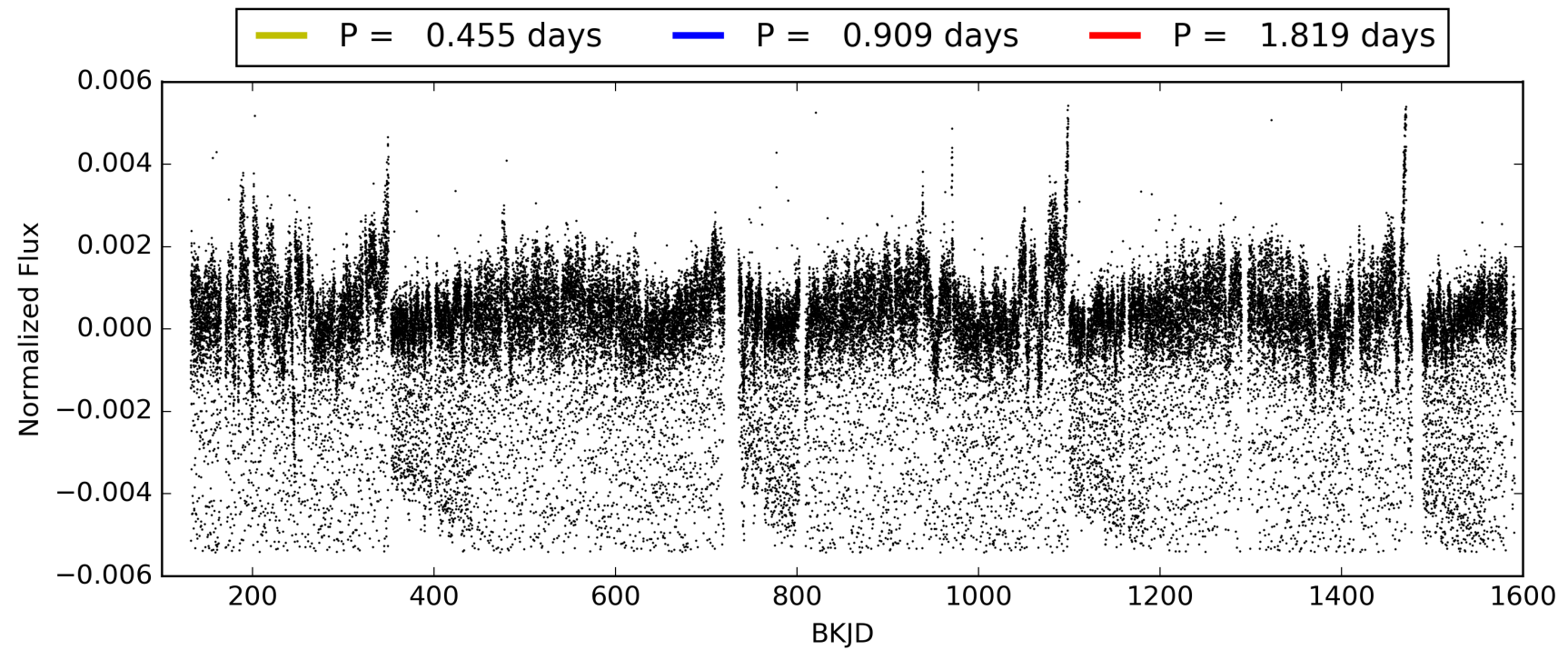
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
**LongPeriod-sig: 0.0% [0.00 $\sigma$ ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1410/1410]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006045250-01, PDC Light Curves



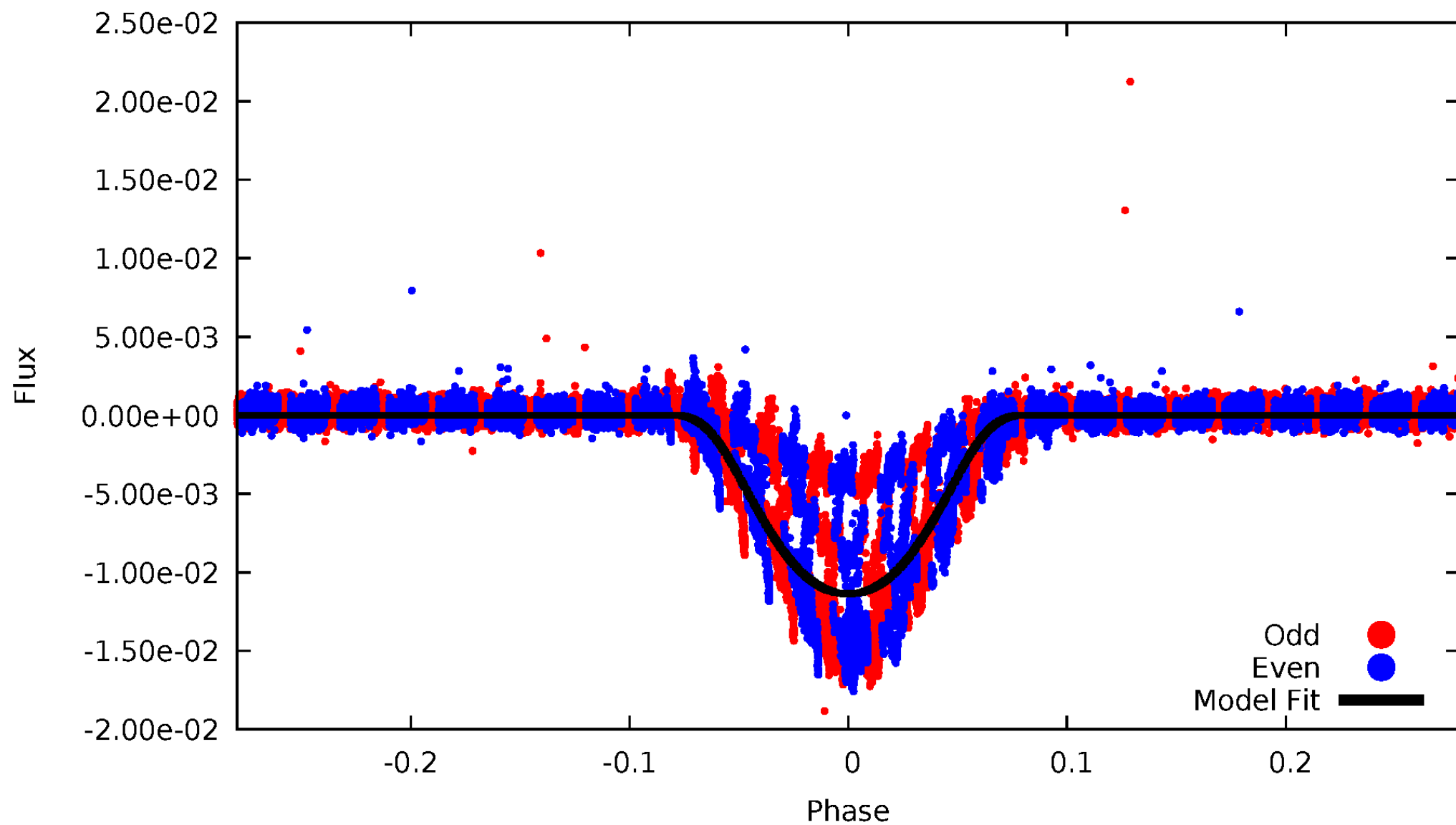
TCE 006045250-01





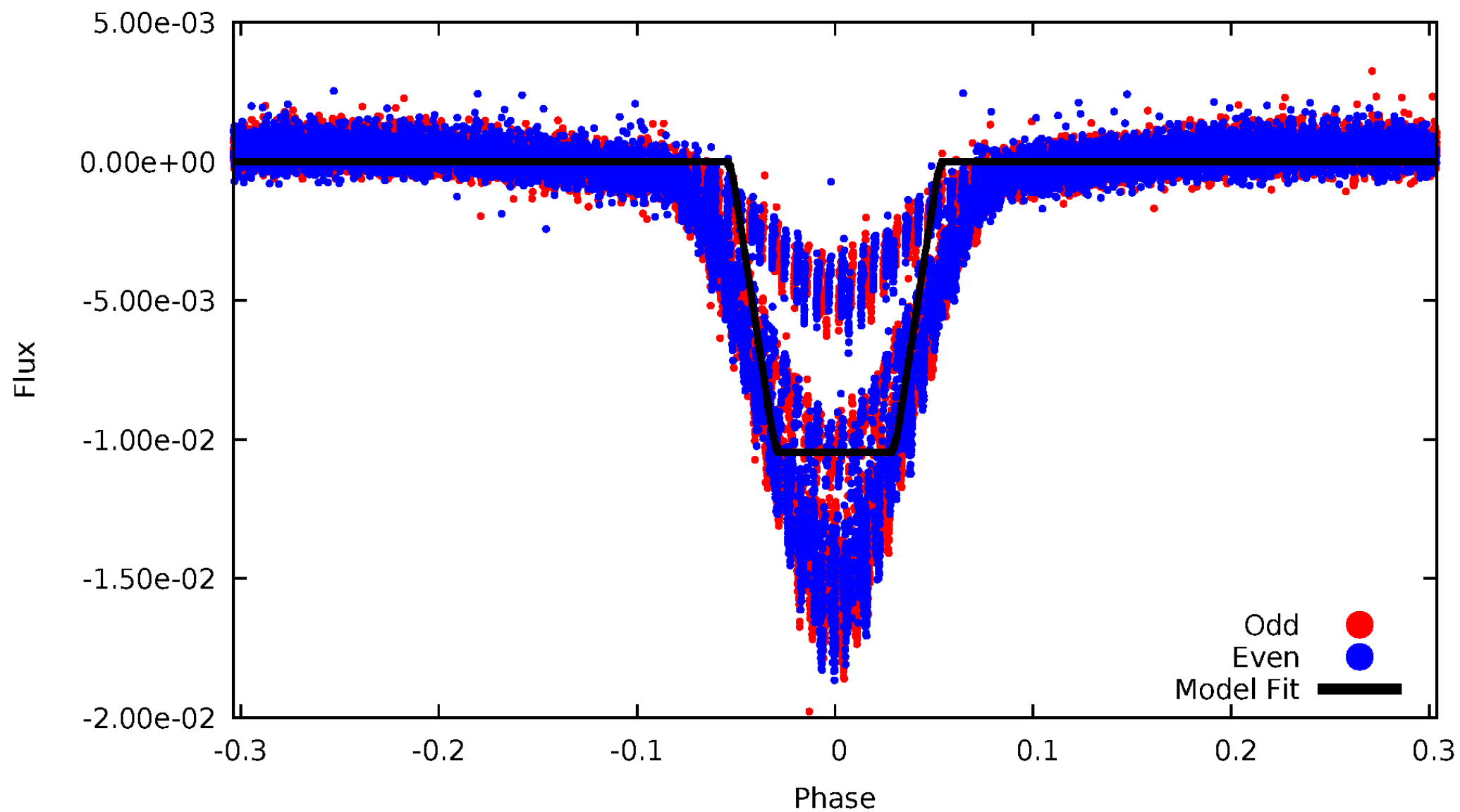
# DV Odd/Even

TCE 006045250-01



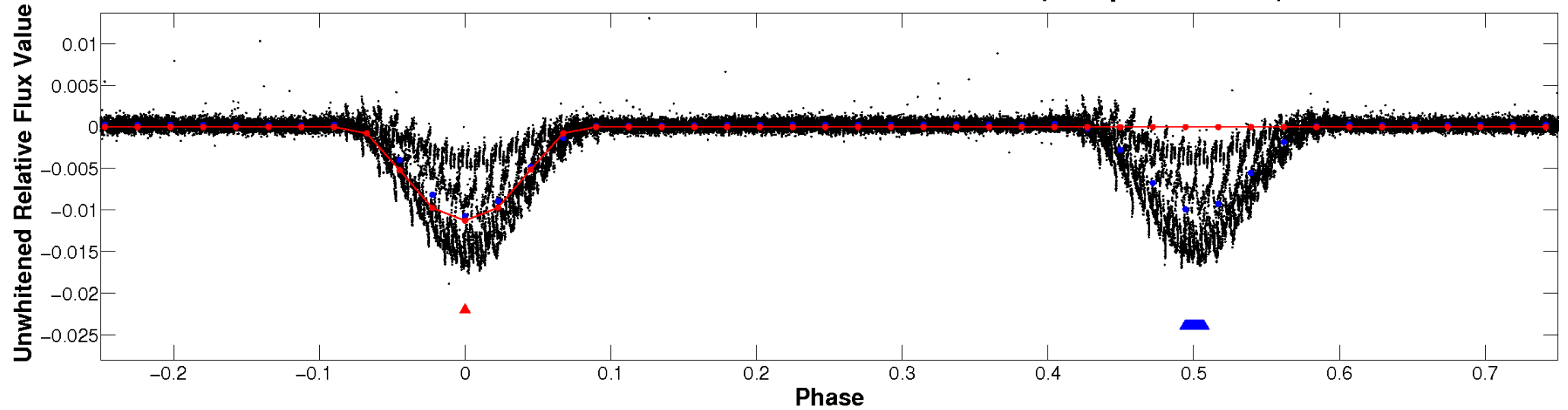
# ALT Odd/Even

TCE 006045250-01

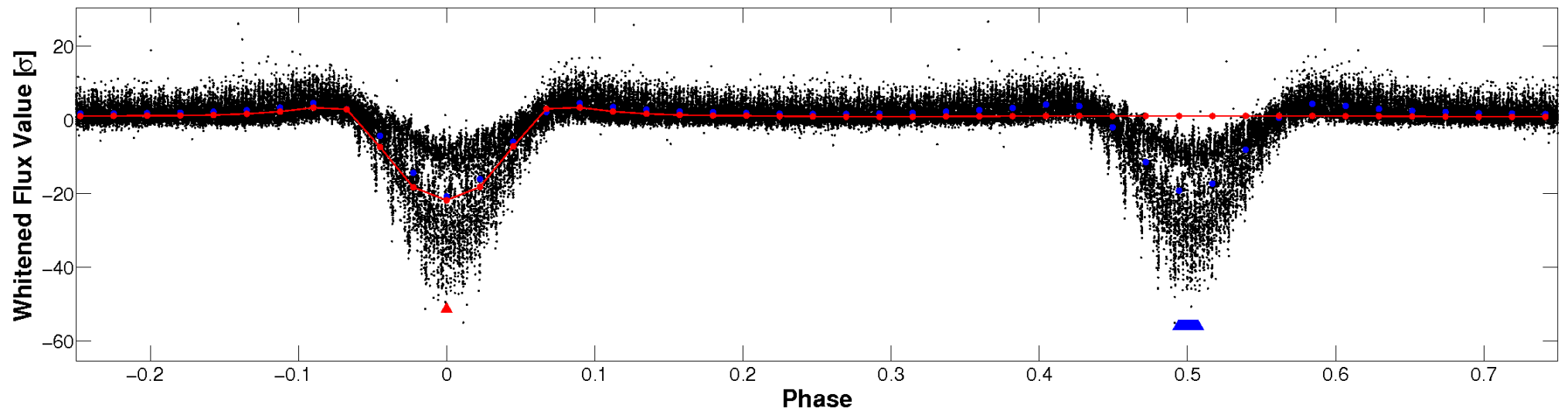


# Non-Whitened Vs. Whitened Light Curve

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

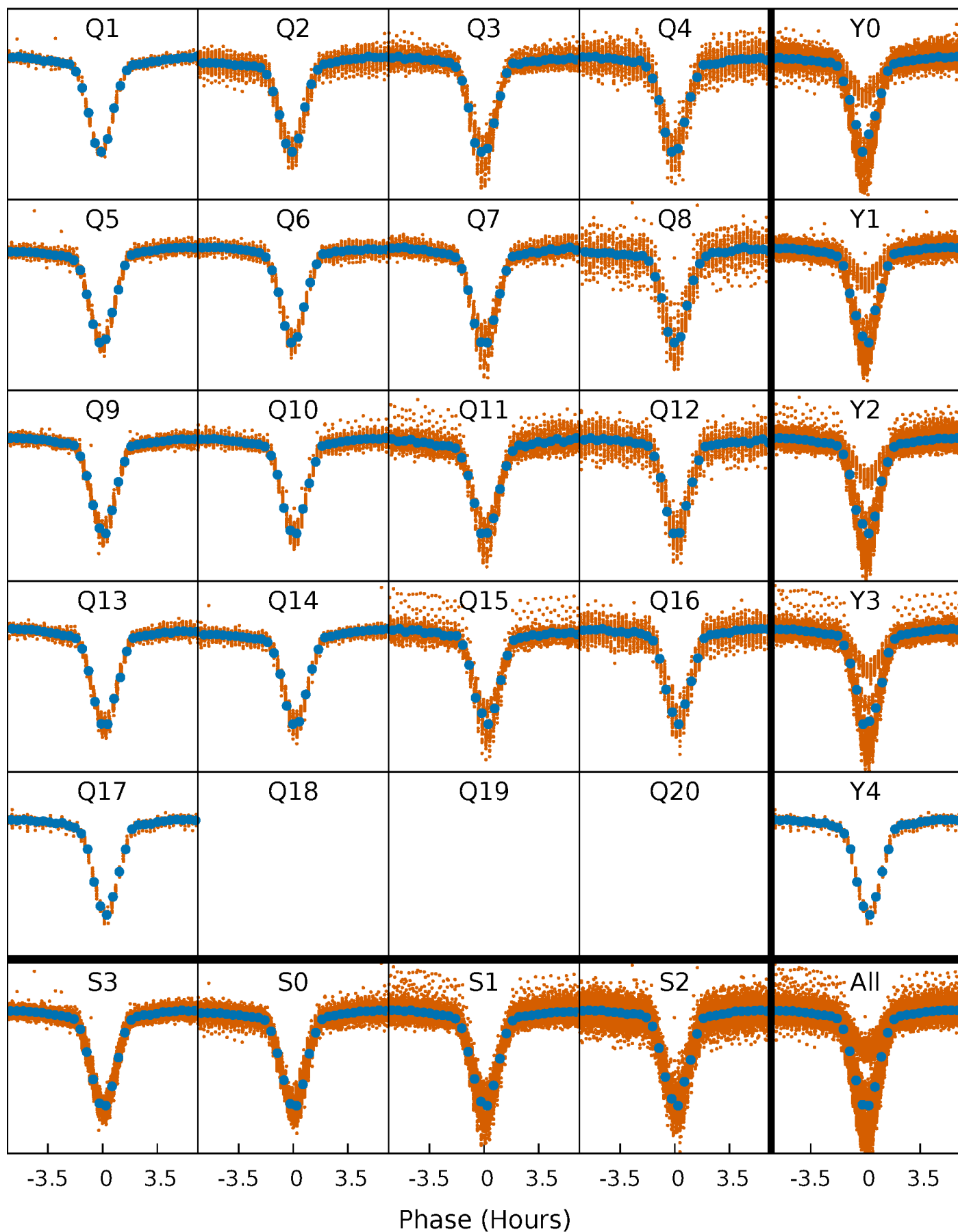


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

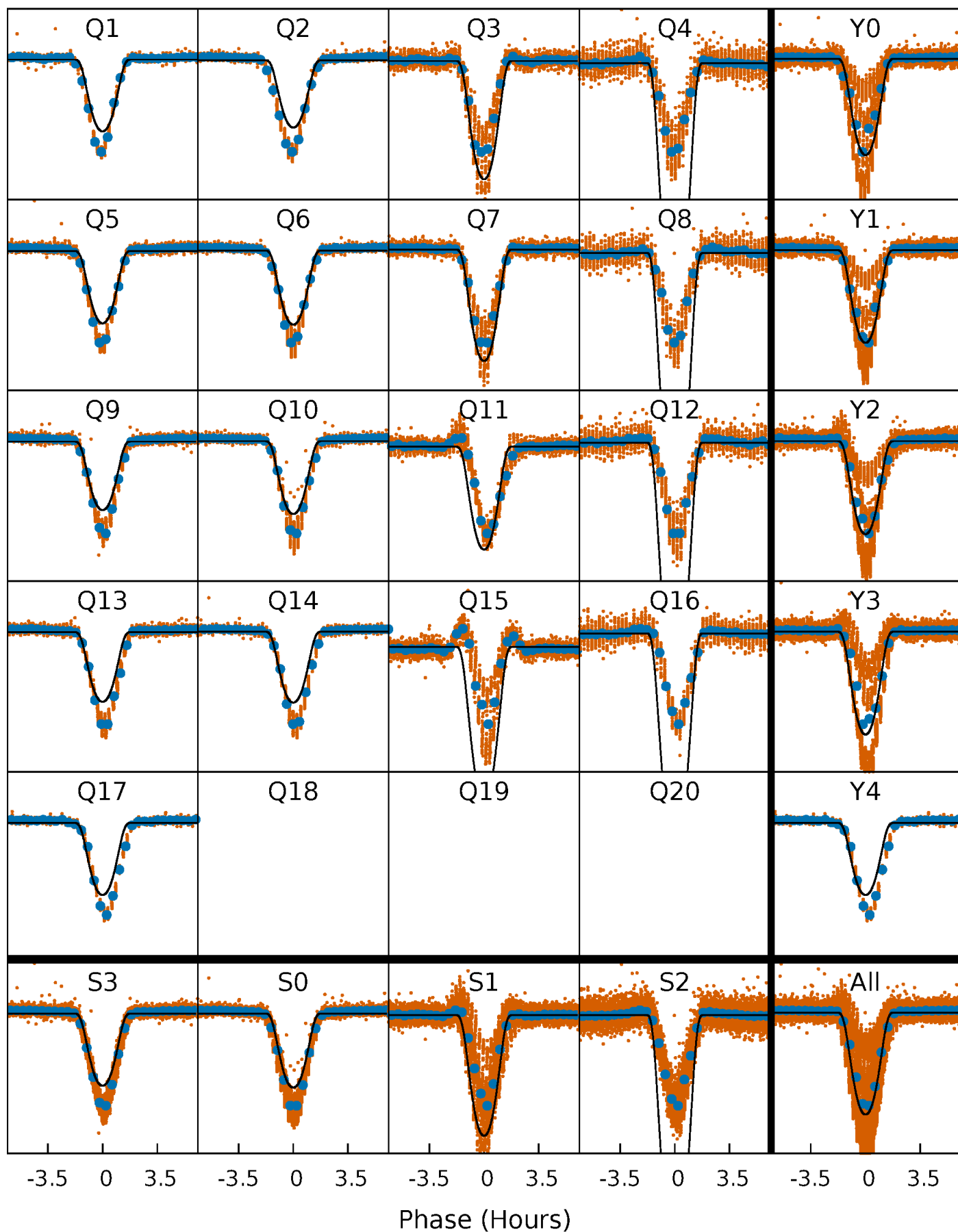
TCE 006045250-01 P= 0.909302 Days  $T_0=131.730755$  (BKJD)





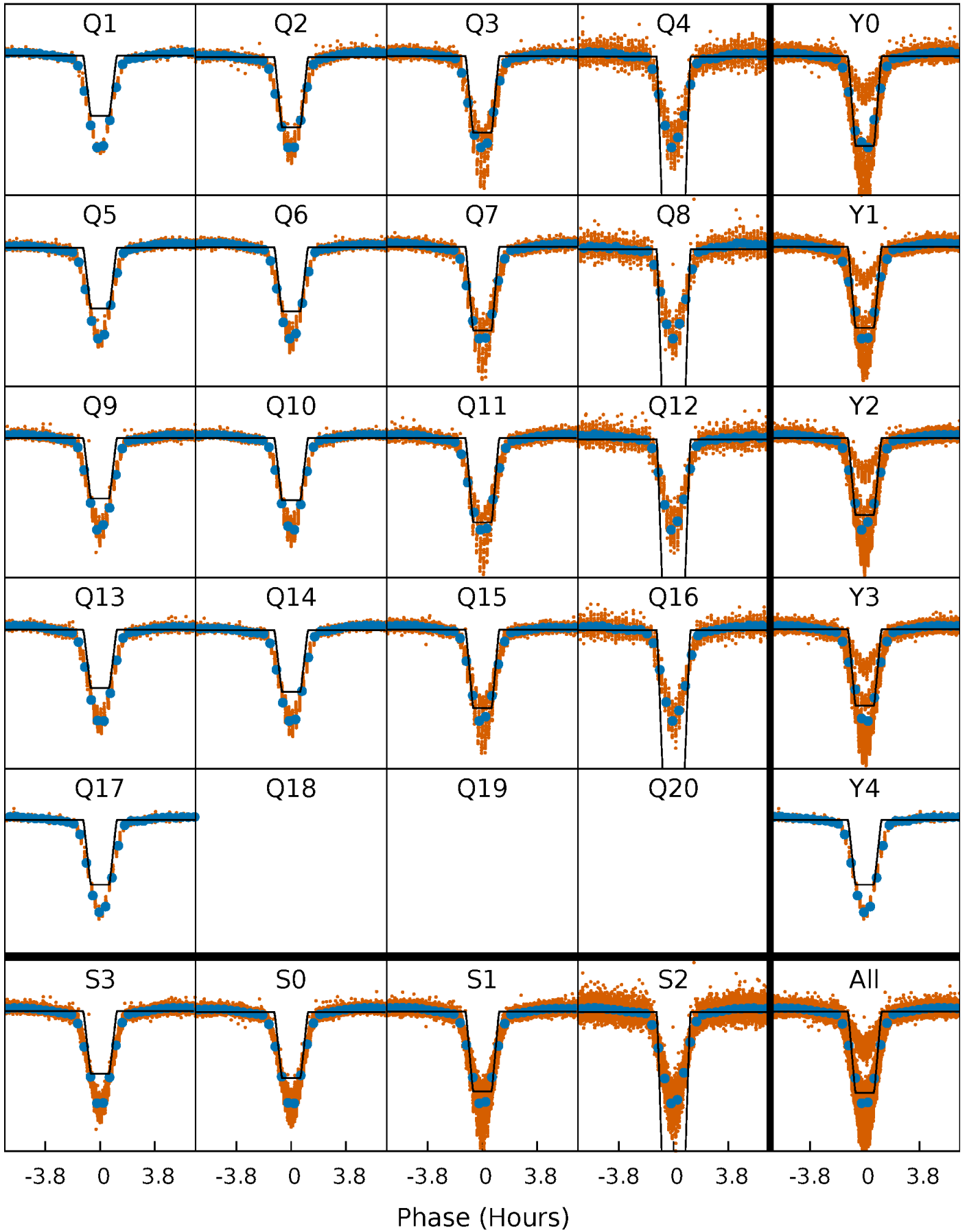
# DV Quarter-Phased Transit Curves

TCE 006045250-01 P= 0.909302 Days  $T_0=131.730755$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

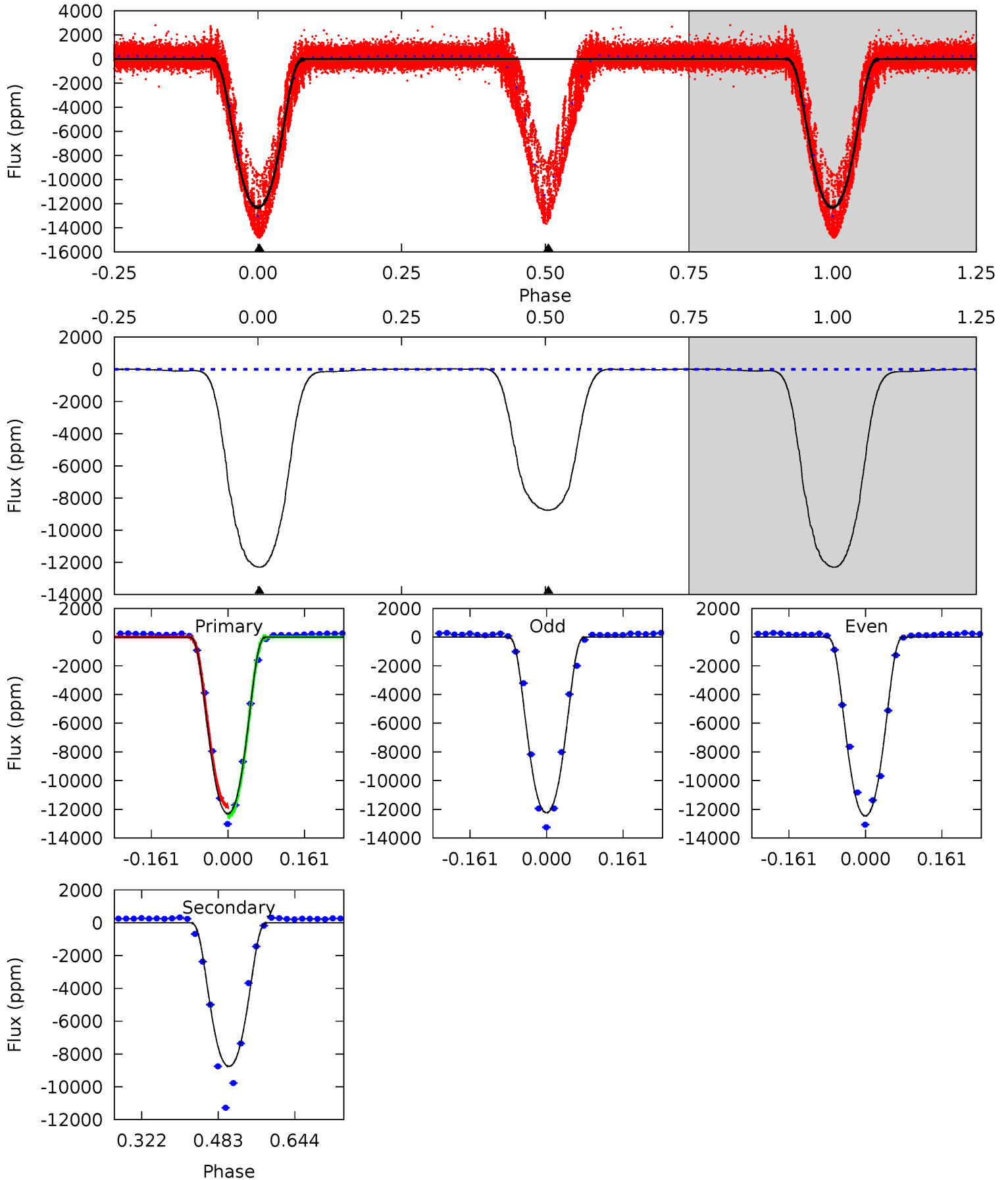
TCE 006045250-01 P= 0.909309 Days  $T_0=131.726716$  (BKJD)



# DV Model-Shift Uniqueness Test

006045250-01, P = 0.909302 Days, E = 130.821453 Days

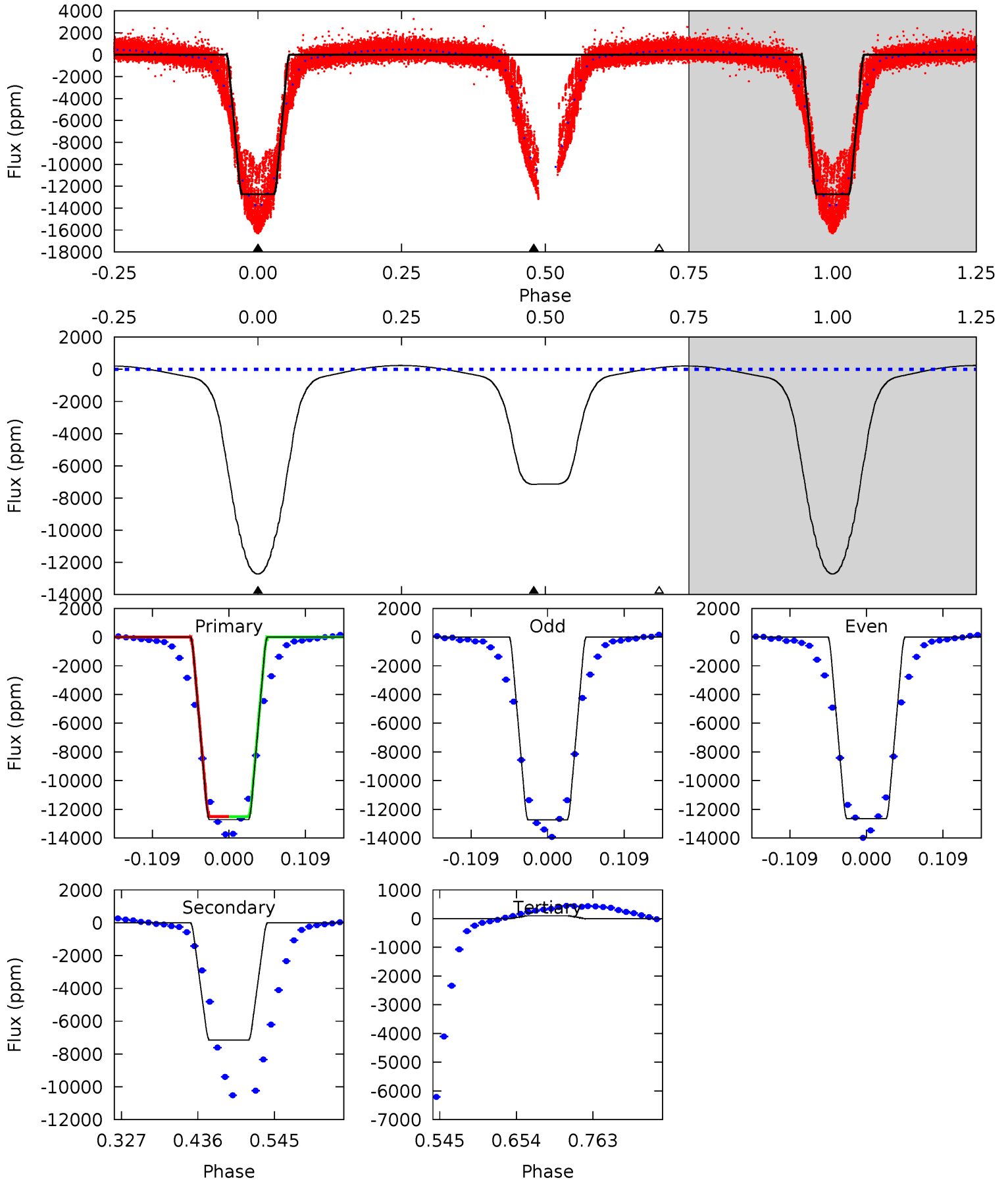
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2038	1451	0	0	4.46	1.40	3.63	2038	2038	1451	1451	18.0	0.83	0.00	59.4



# Alt Model-Shift Uniqueness Test

006045250-01, P = 0.909309 Days, E = 130.817407 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
1783	1002	-14.0	0	4.55	1.60	33.6	1797	1783	1016	1002	4.73	0.87	0.02	0



### Stellar Parameters For KIC 006045250

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6370^{+153}_{-211}$	$4.410^{+0.062}_{-0.188}$	$-0.100^{+0.250}_{-0.300}$	$1.106^{+0.314}_{-0.134}$	$1.148^{+0.146}_{-0.162}$	$1.194^{+0.395}_{-0.583}$
	+2%/-3%	+1%/-4%	+250%/-300%	+28%/-12%	+13%/-14%	+33%/-49%
Source	PHO1	KIC0	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 006045250-01 / KOI 3948.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-8759 \pm 6$	$14.54^{+2.12}_{-1.13}$	$3025^{+191}_{-145}$	$5656^{+121}_{-172}$	$8.372^{+1.275}_{-1.764}$
Alt.	$-7152 \pm 7$	$12.64^{+2.02}_{-1.04}$	$3029^{+193}_{-157}$	$5756^{+136}_{-190}$	$9.027^{+1.489}_{-2.044}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

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

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

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

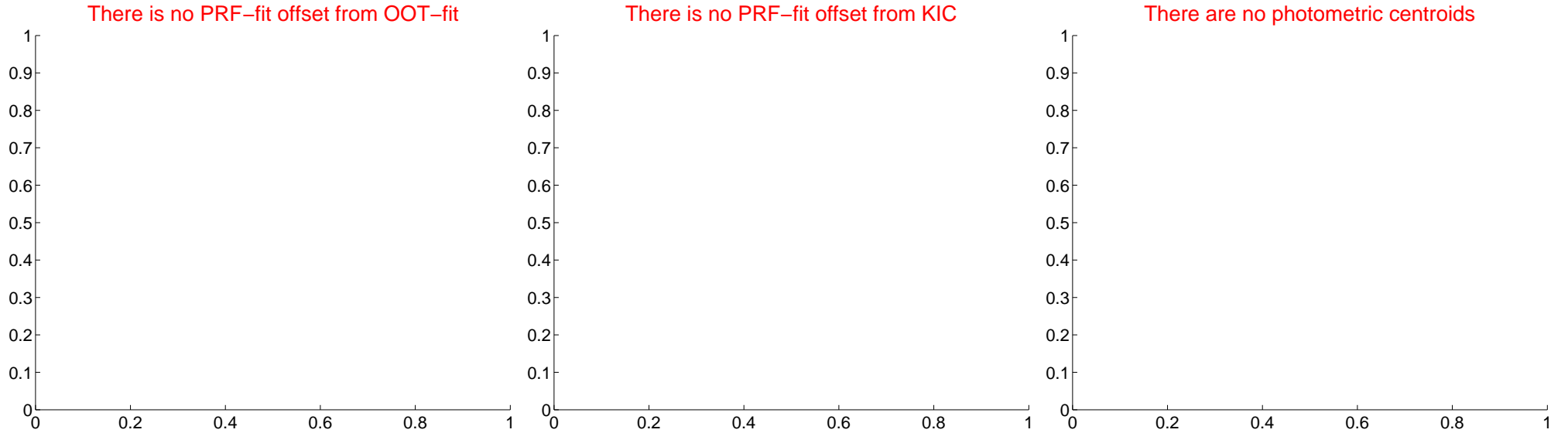
## DV Centroid Data

Supplemental centroid analysis for 006045250-01. Kepler magnitude: 14.97. Transit SNR 935.30

There are 0 quarters with good PRF difference image offsets

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

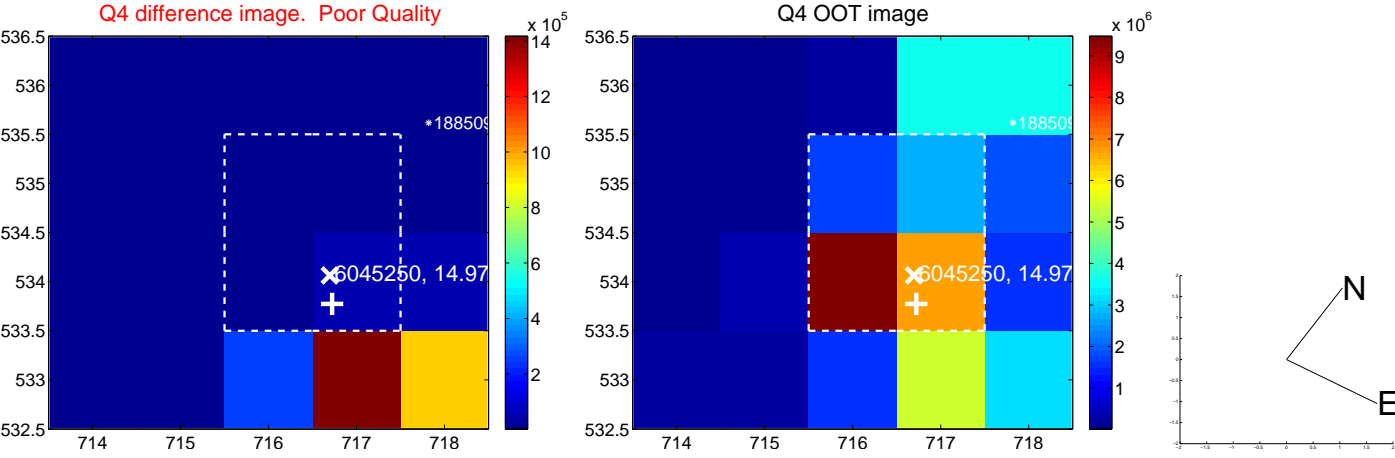
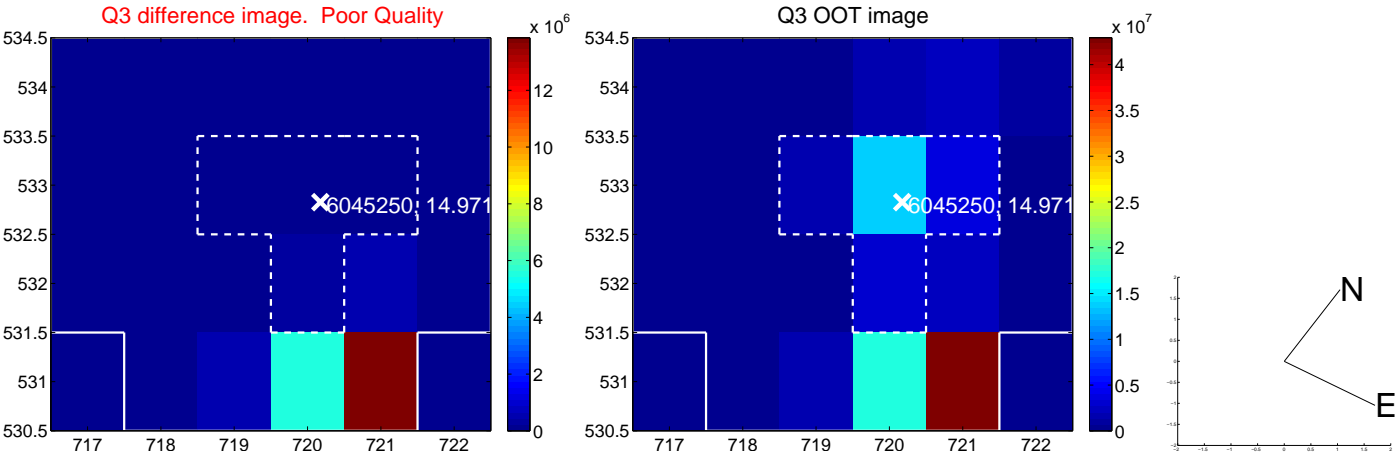
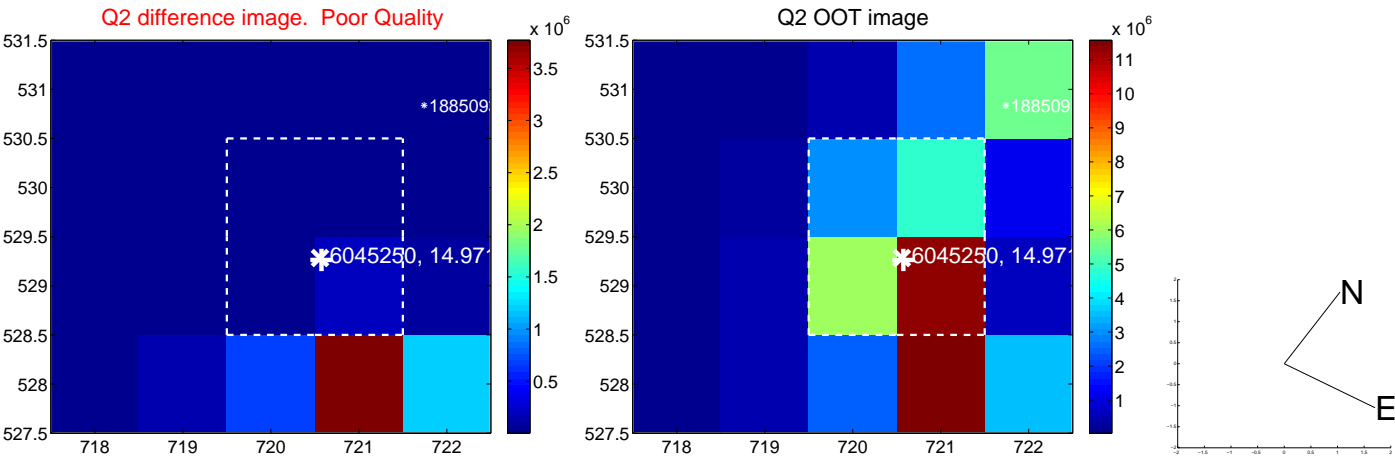
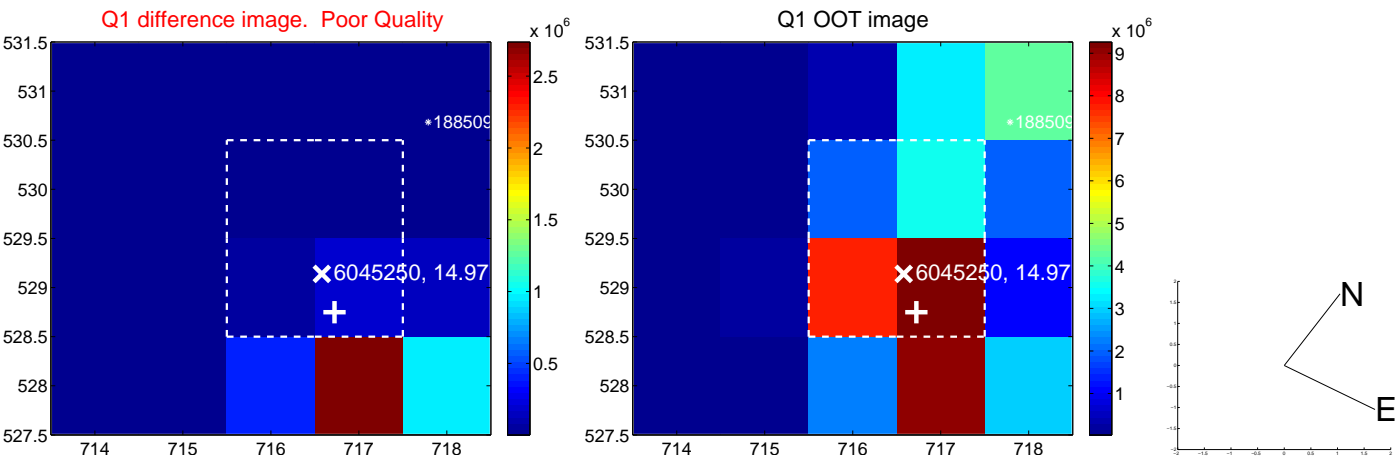
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



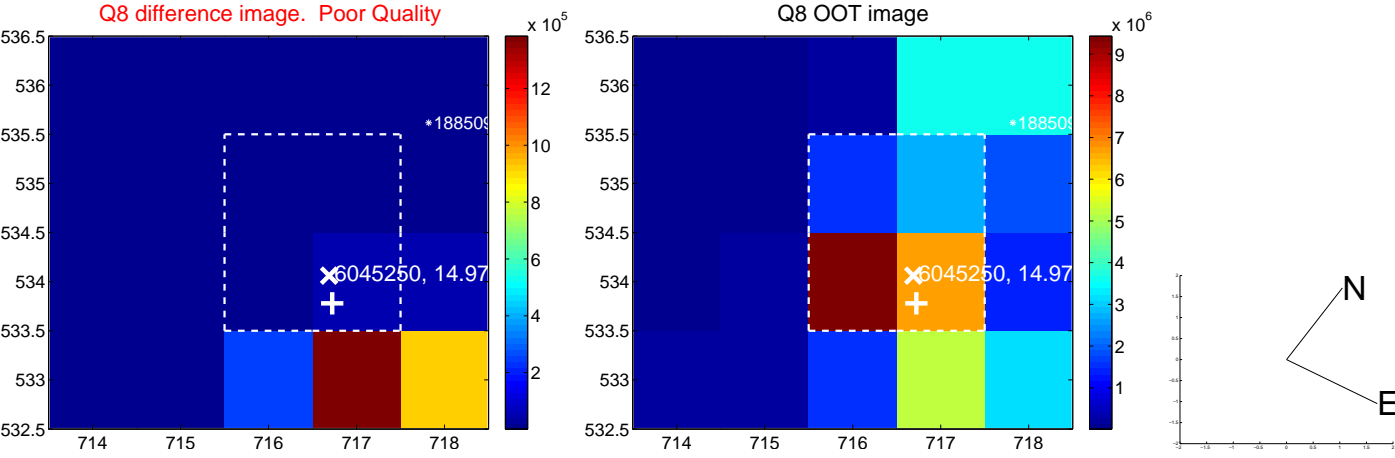
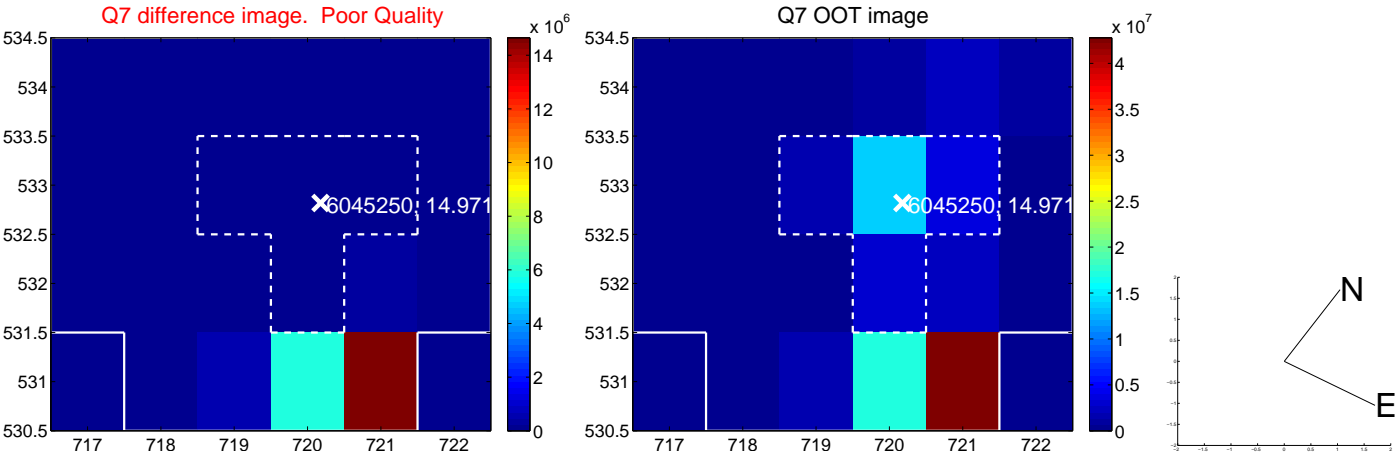
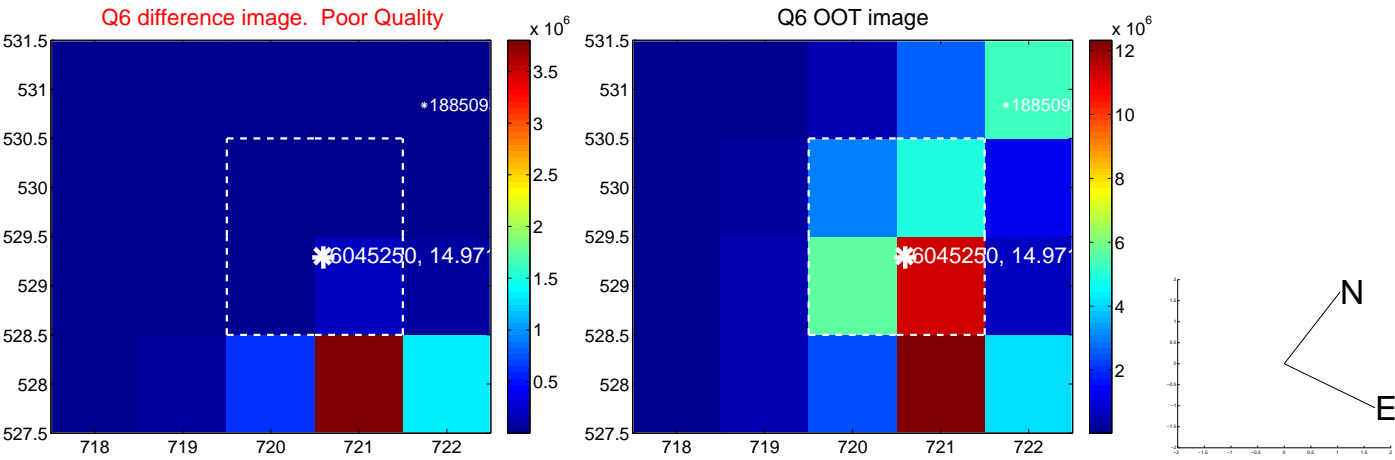
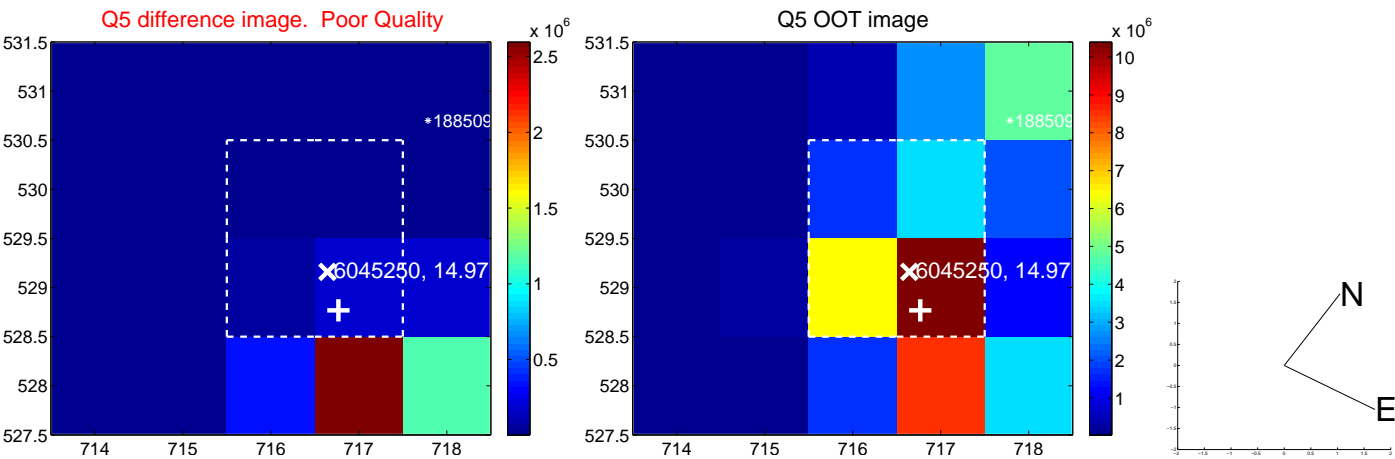
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



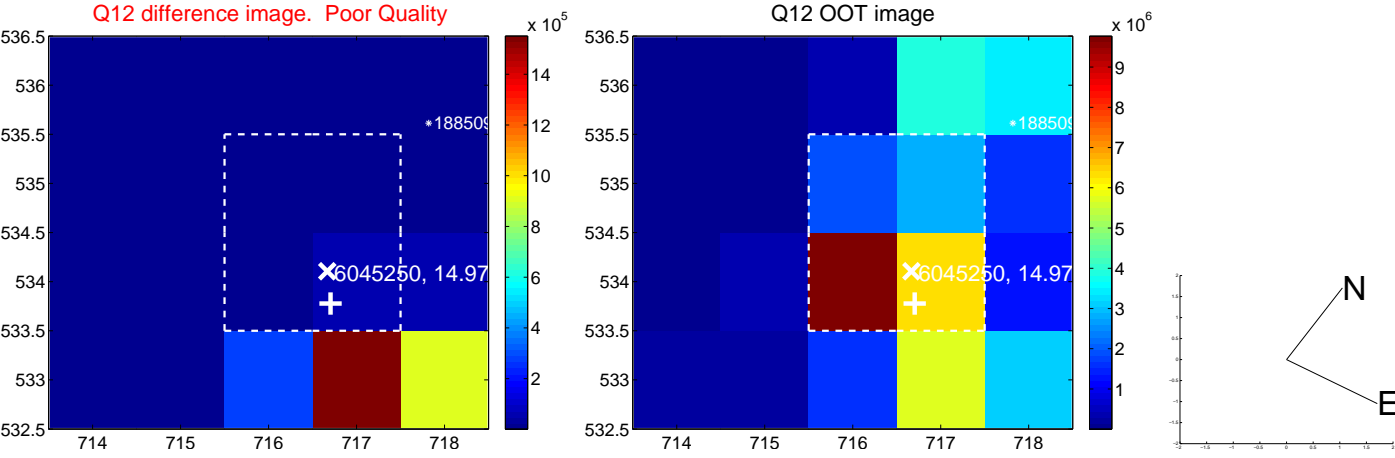
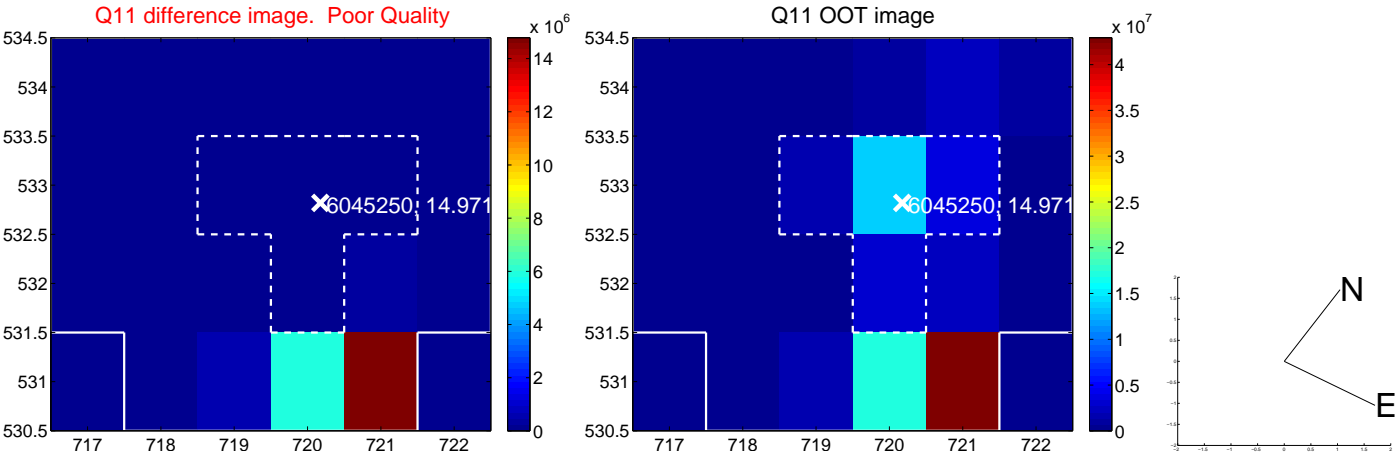
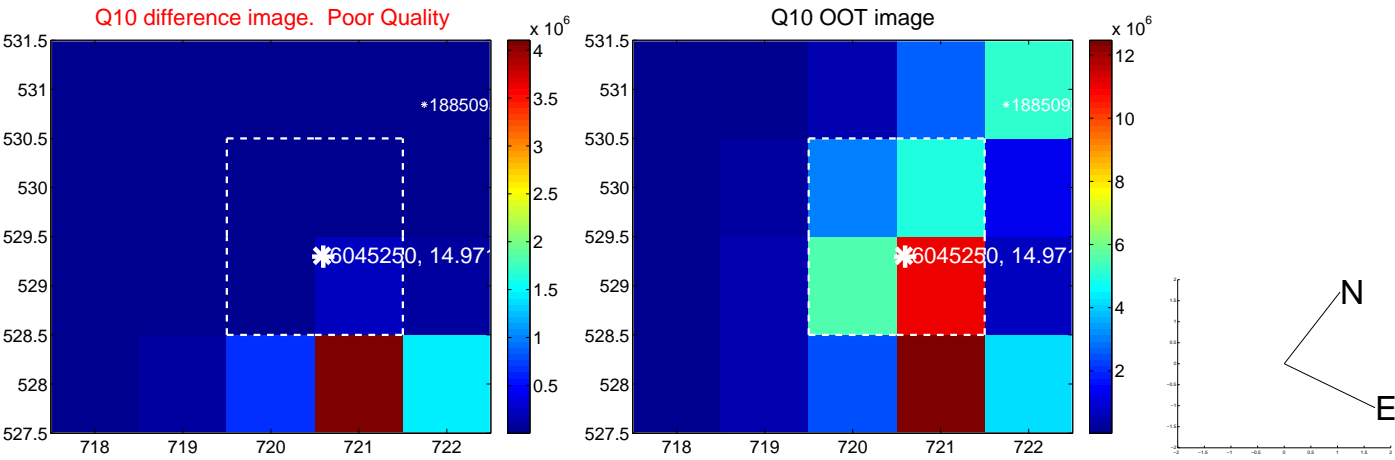
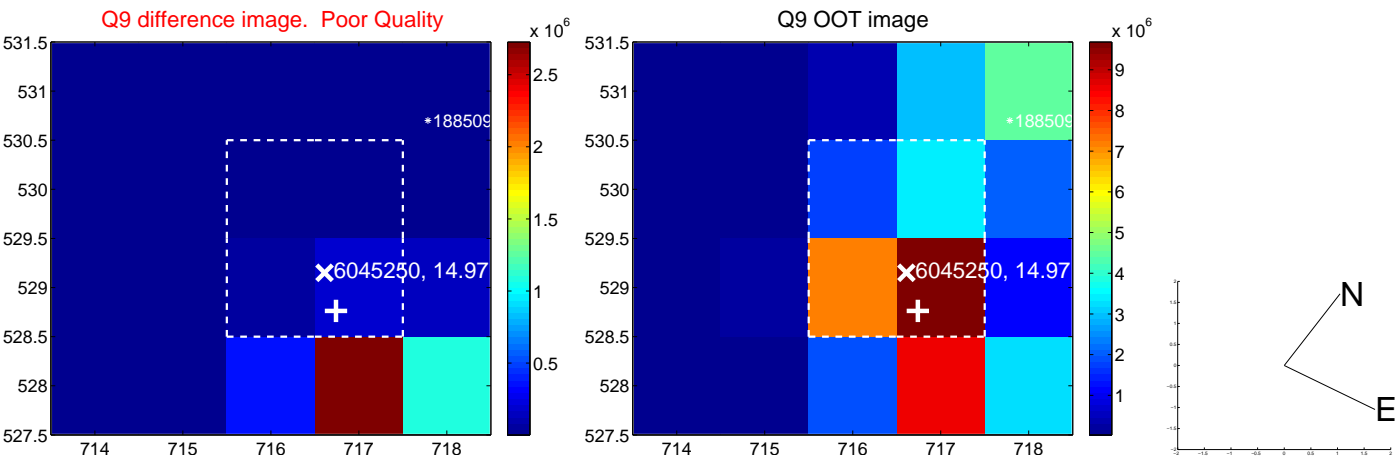
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



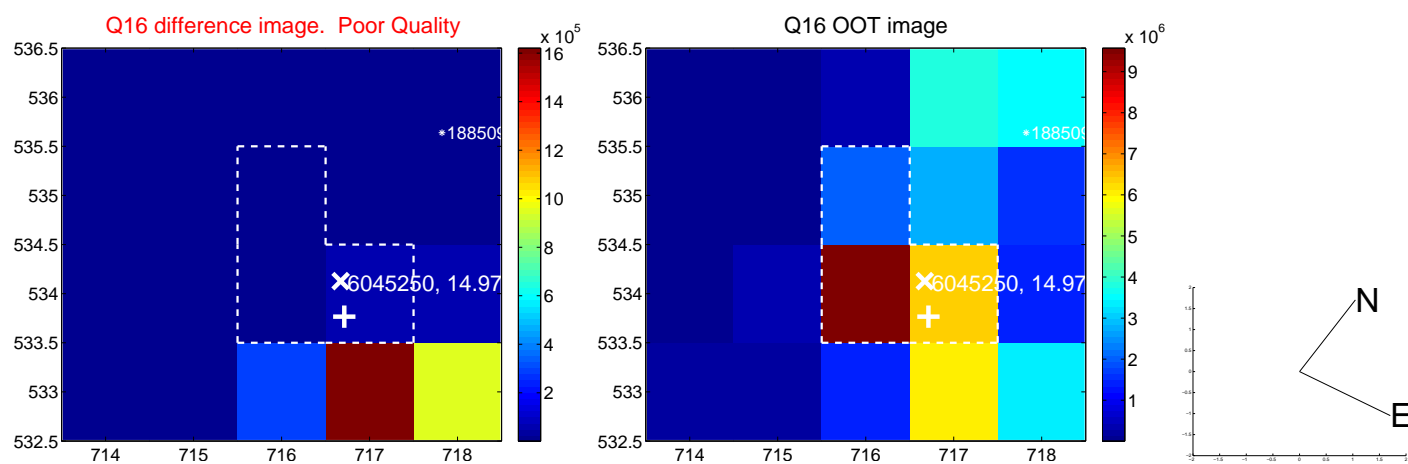
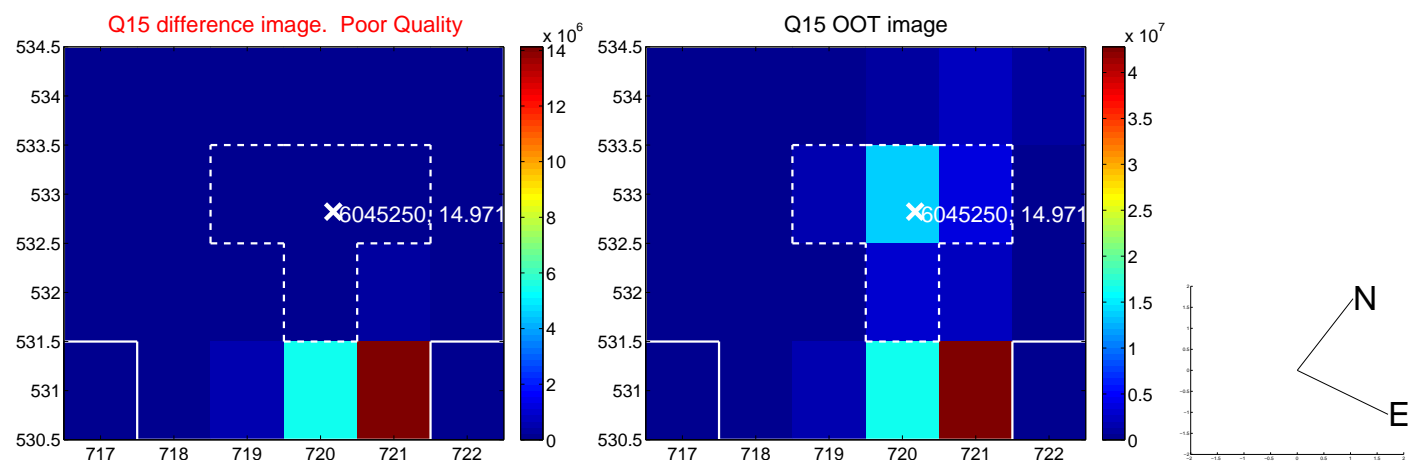
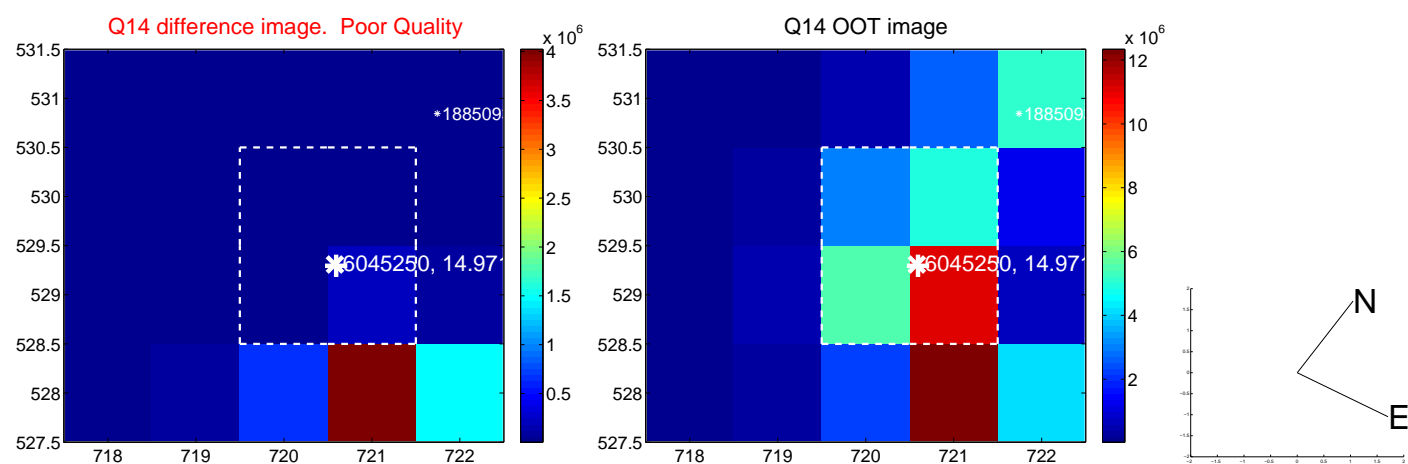
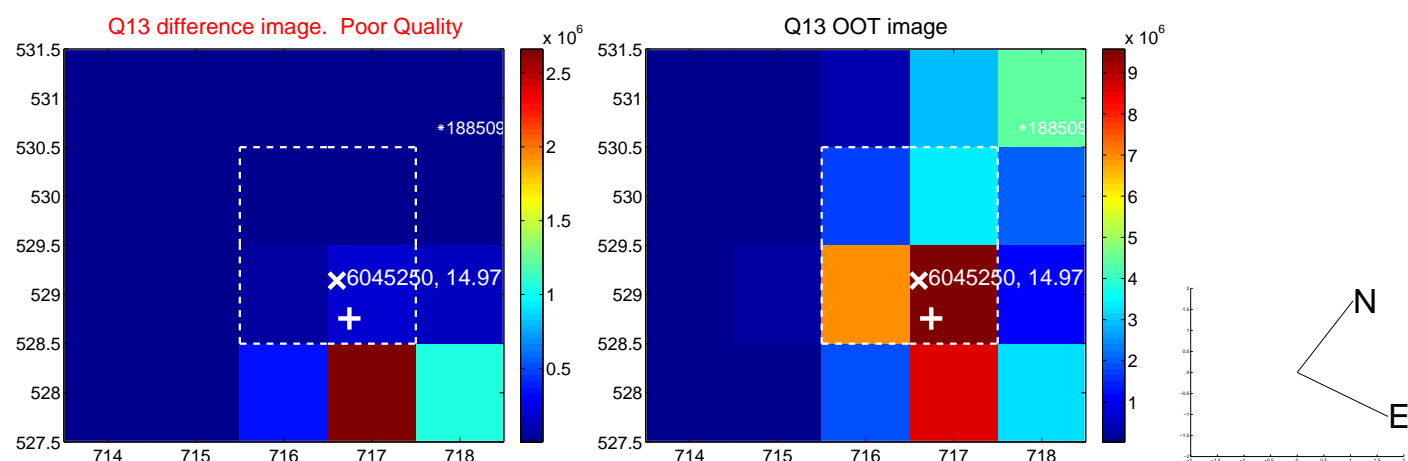
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



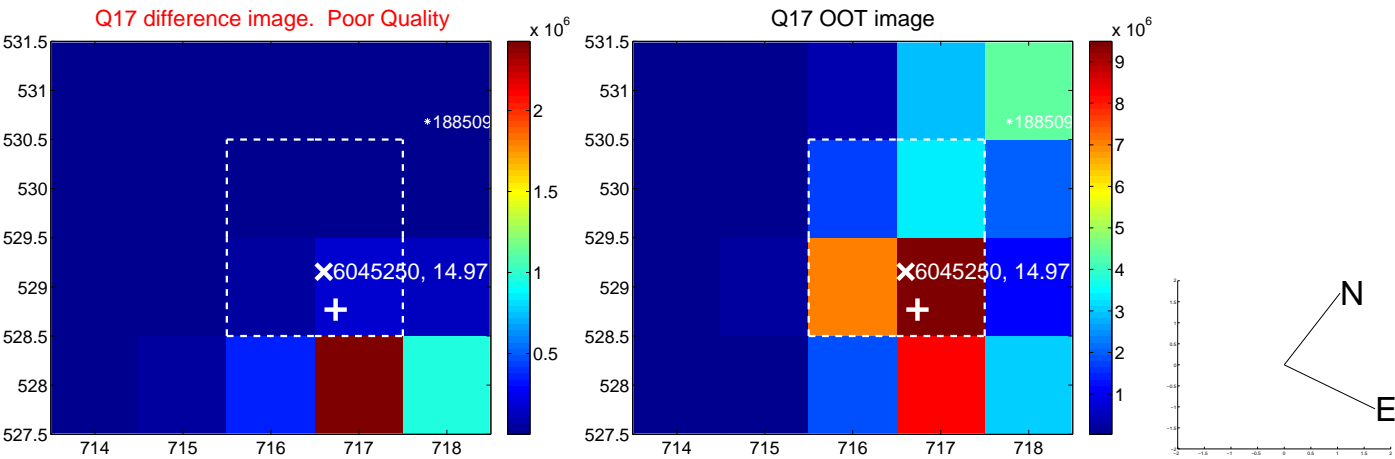
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



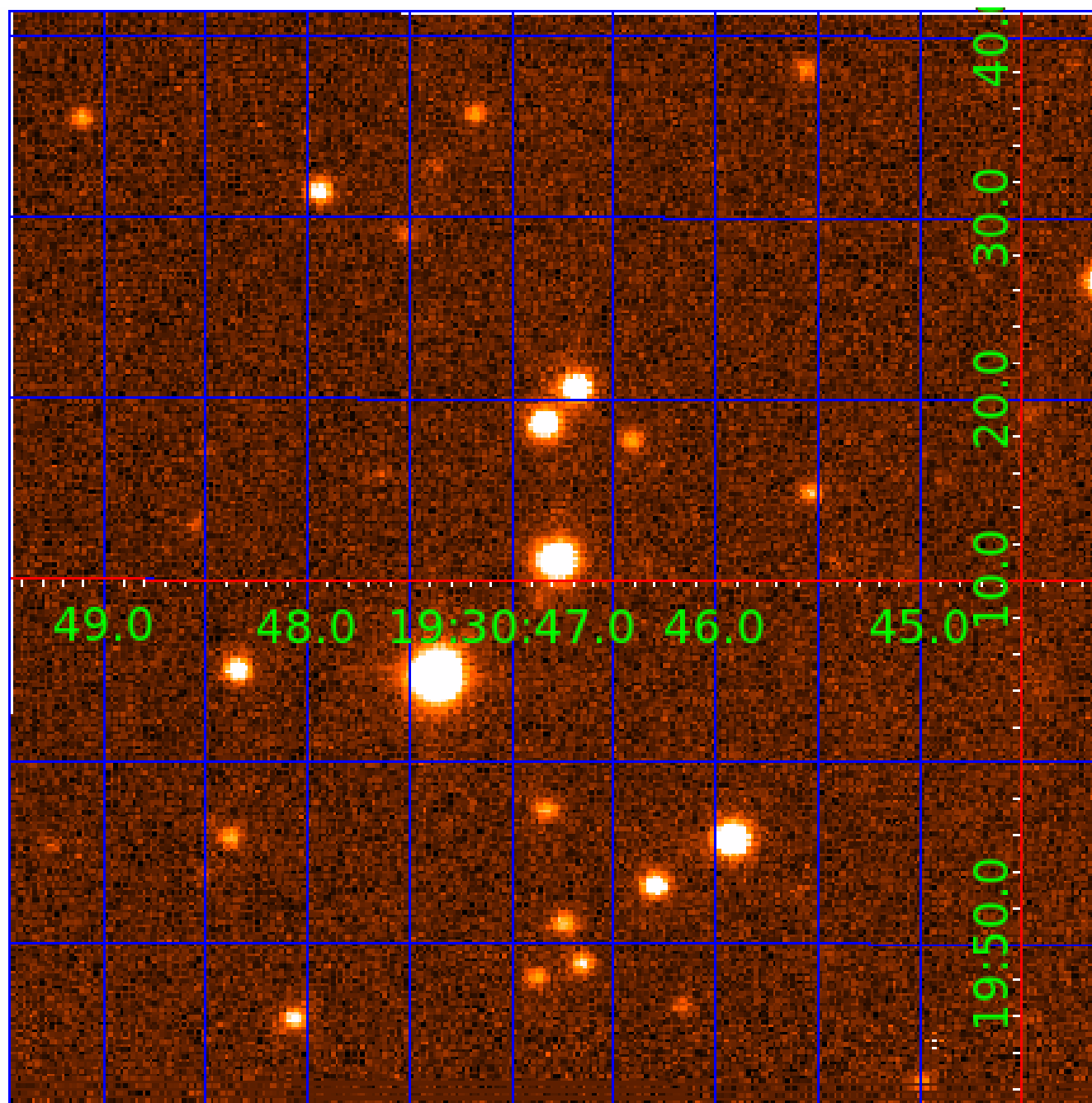
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 006045250

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006045250-01	OBS	3948.01	0.909302	131.730755	11381.2	3.048	1413.6	935.3	1.11	6370	14.22	4879.16
006045250-02	OBS	No	0.909309	132.179944	18983.8	2.000	1782.4	-1.0	1.11	6370	15.34	4879.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006045250-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—EPHEM_MATCH
006045250-02	OBS	FP	0.00	1	0	0	1	SAME_NTL_PERIOD—CENT_NOFITS—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 006045250-02

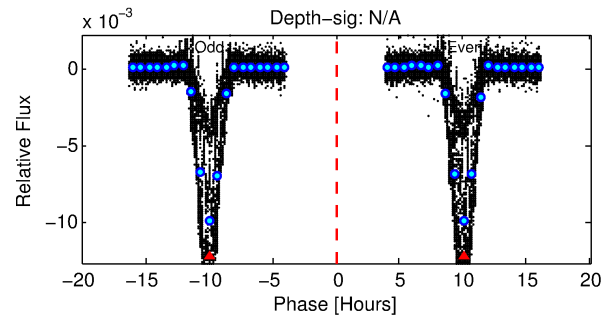
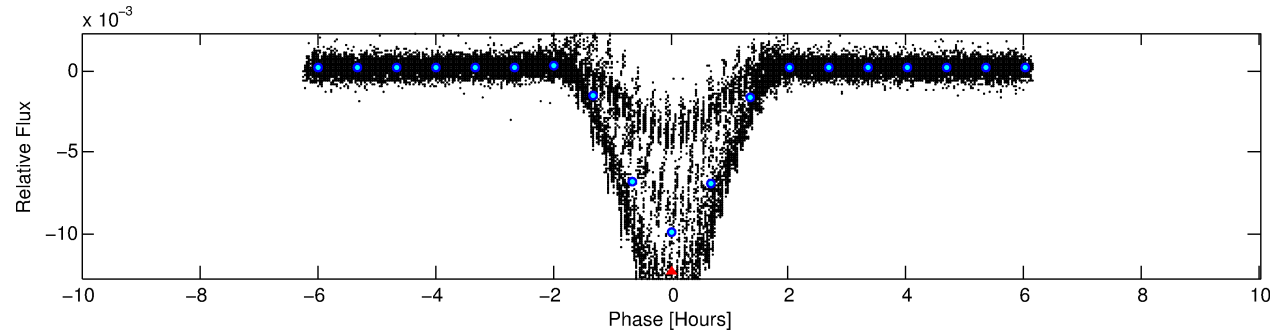
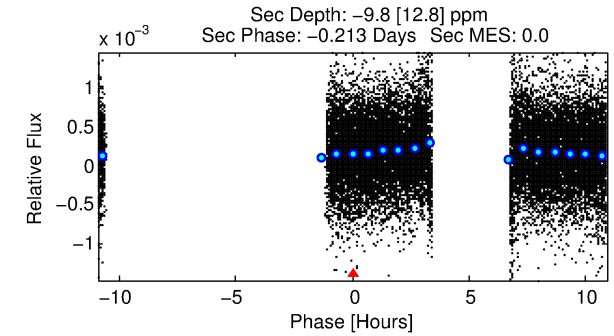
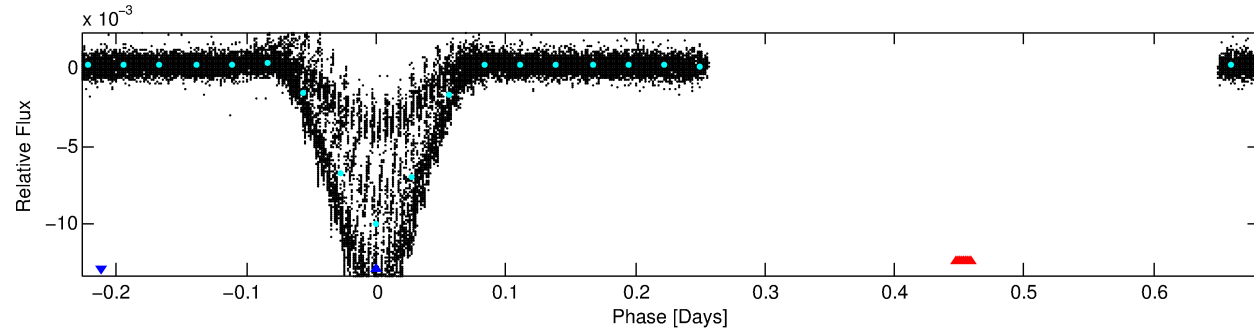
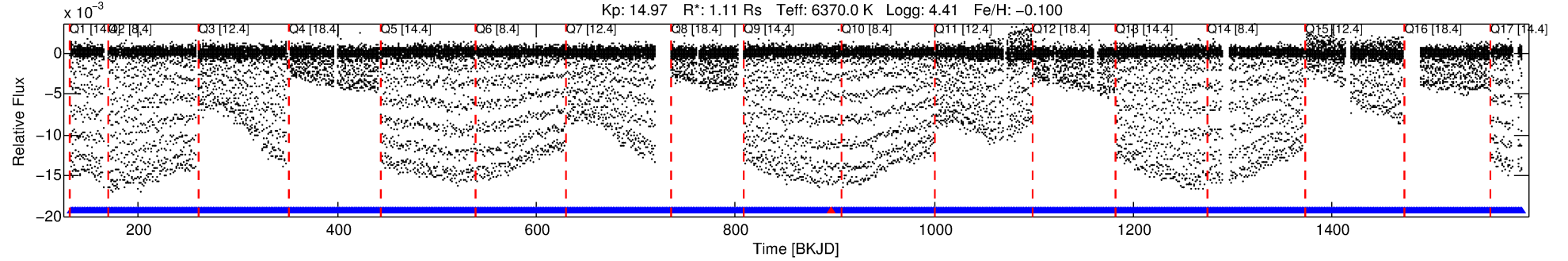
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
006045250-02	6045250	006045264-sec	6045264	1:1	9.0	2	0	13.44	14.97	18.53	Direct-PRF	0	0.14	0.04

**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: 6045250 Candidate: 2 of 2 Period: 0.909 d  
KOI: K03948 Corr: No Ephemeris Match

Kp: 14.97 R\*: 1.11 Rs Teff: 6370.0 K Logg: 4.41 Fe/H: -0.100



## TPS TCE Results:

Period = 0.90931 d  
Epoch = 132.1799 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

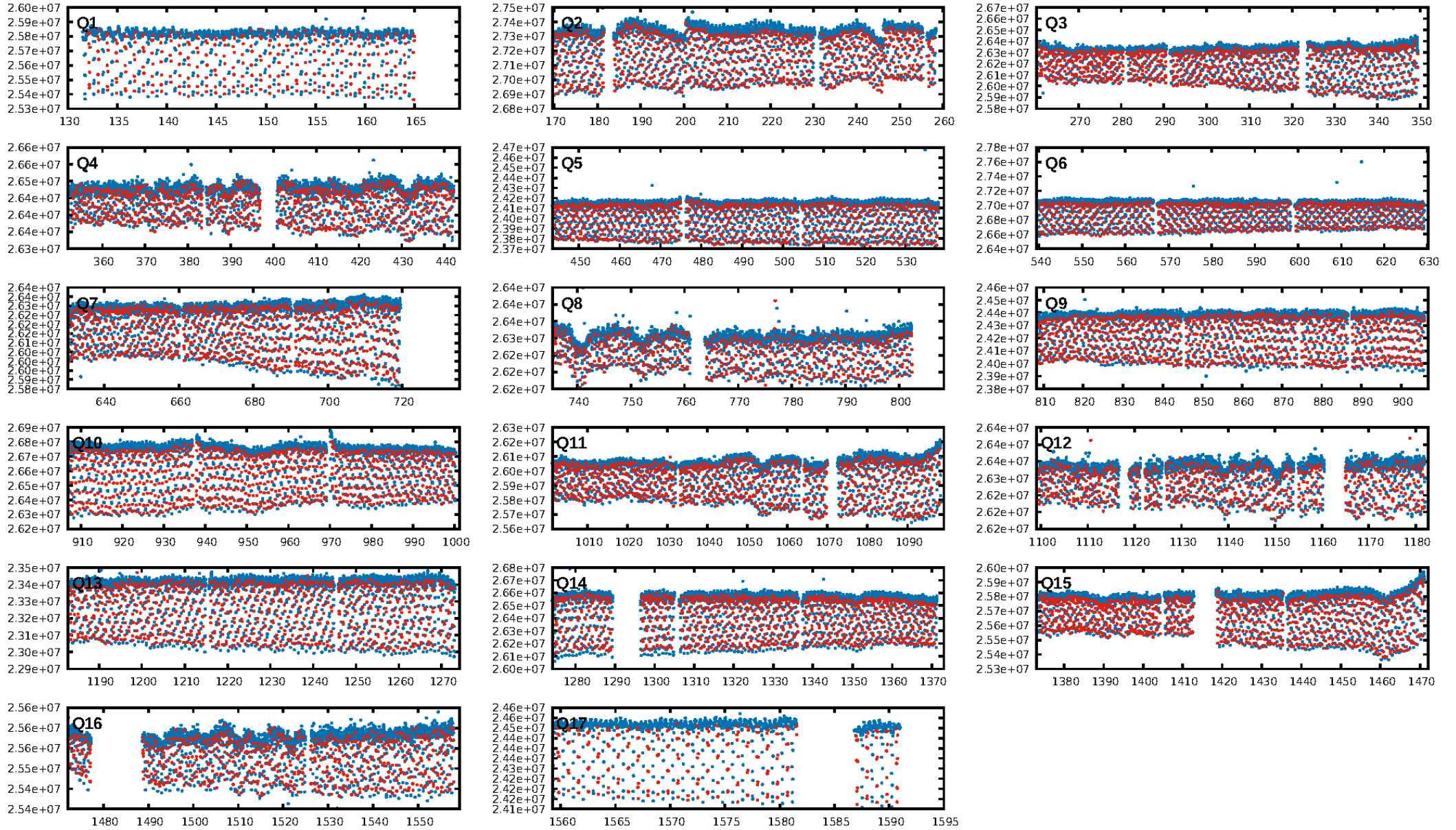
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1405/1406]  
GhostDiagnostic-chr: N/A

Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

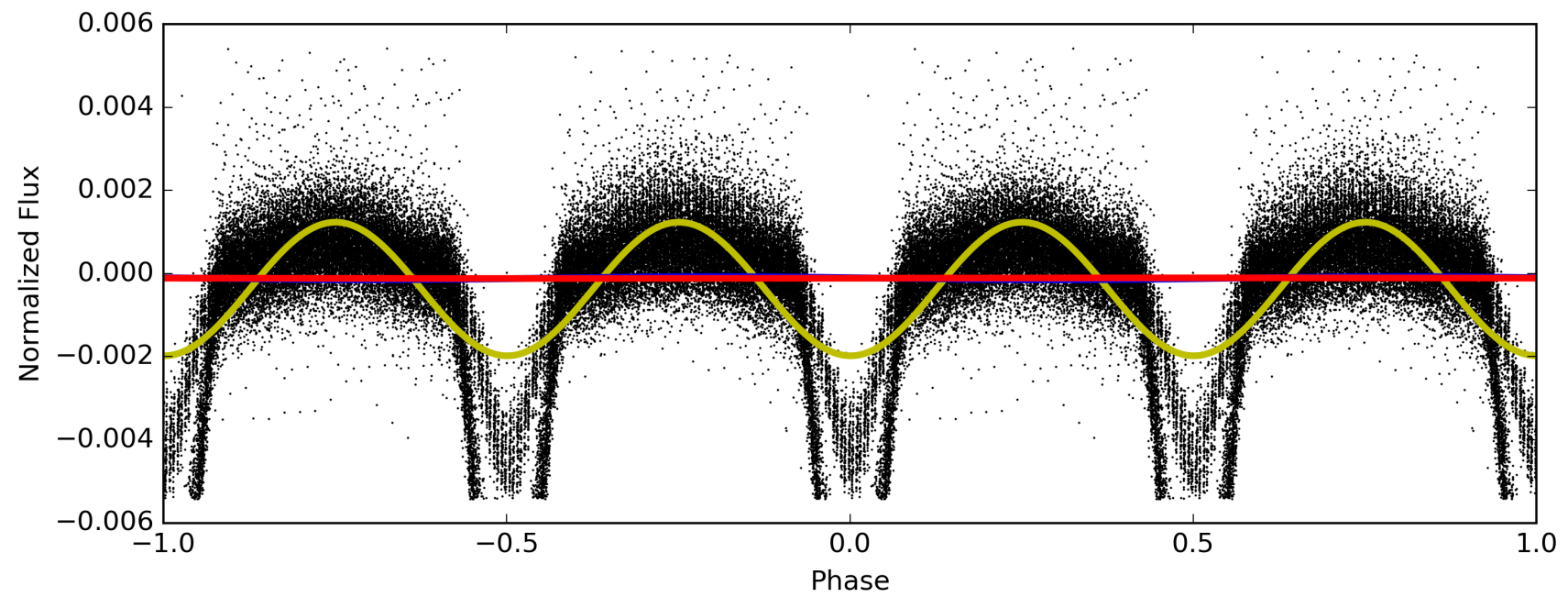
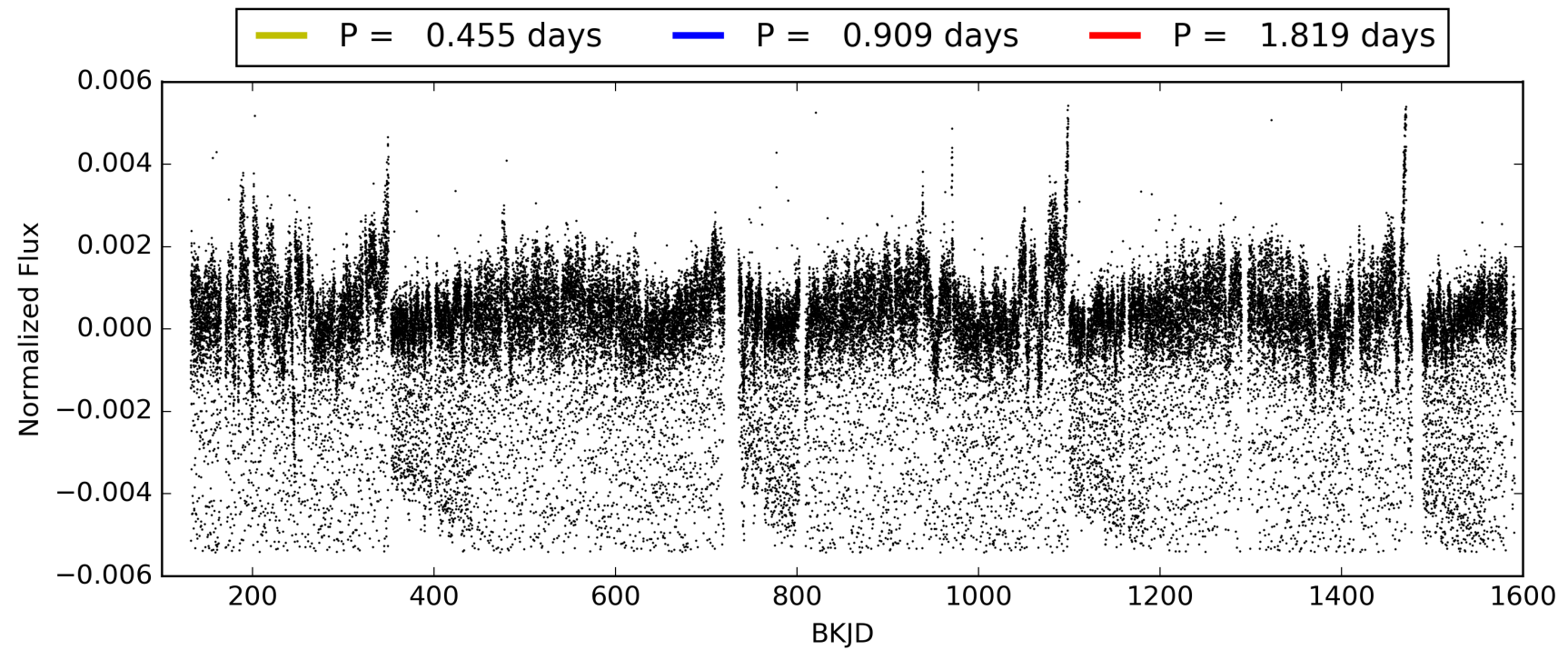
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 11:51:21 Z

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

# TCE 006045250-02, PDC Light Curves

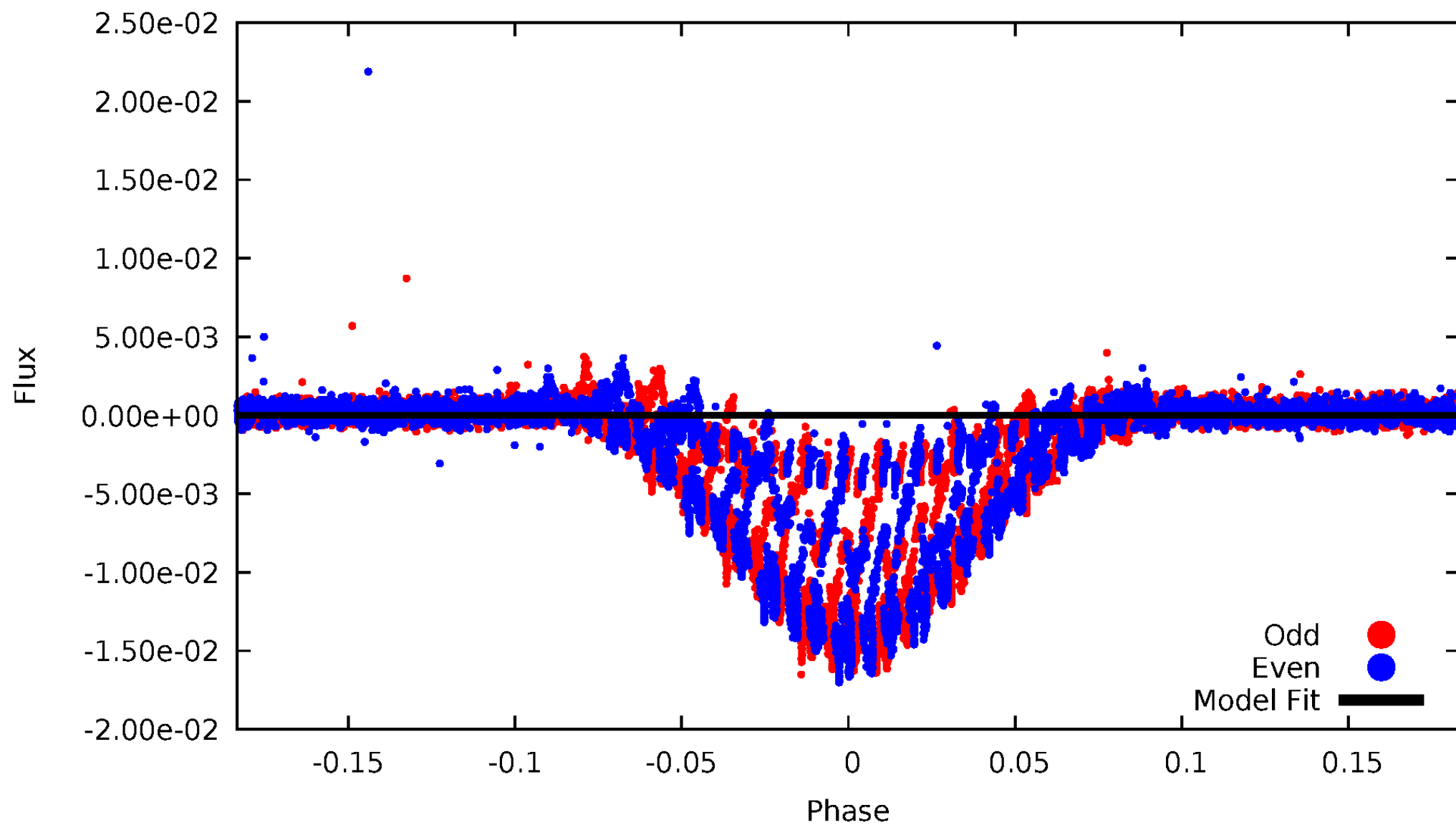


TCE 006045250-02



# DV Odd/Even

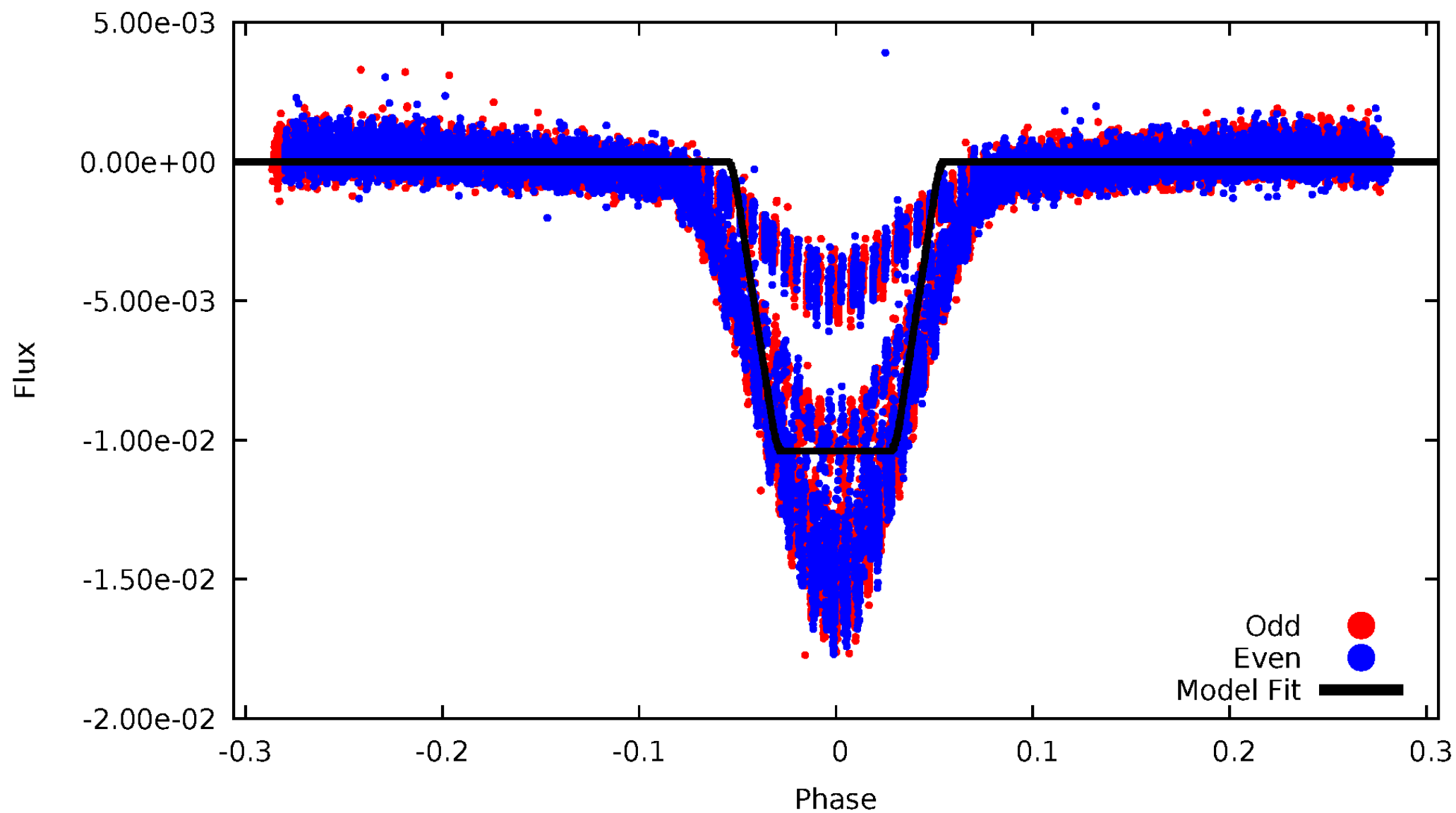
TCE 006045250-02





# ALT Odd/Even

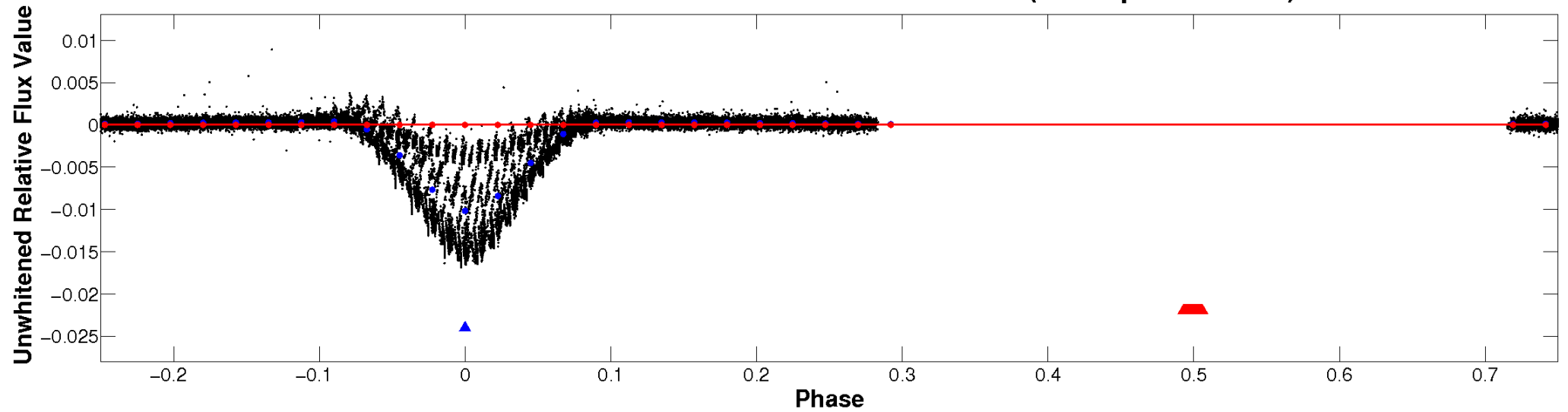
TCE 006045250-02



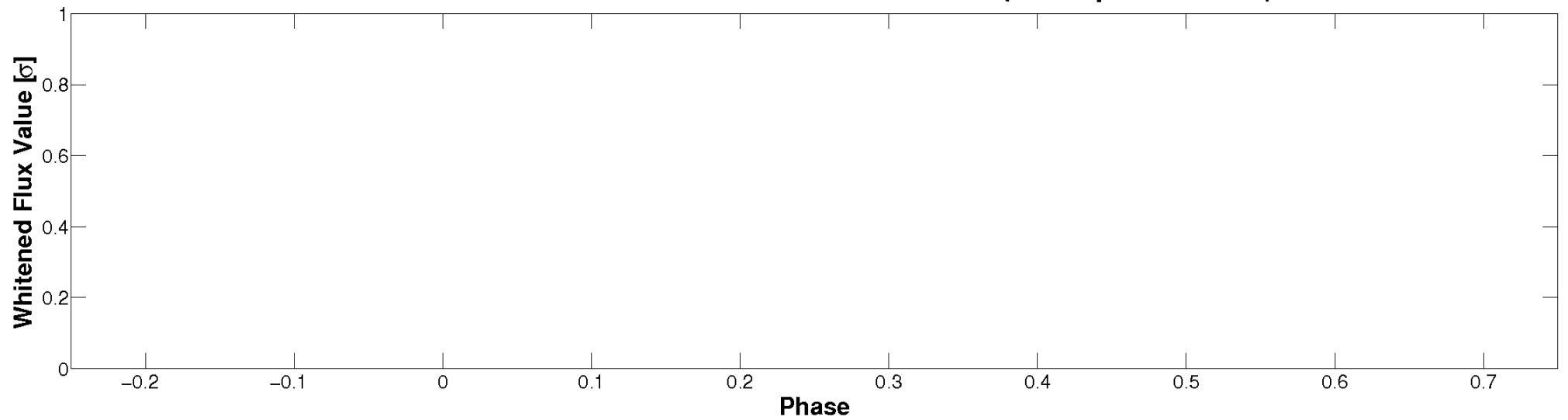


# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

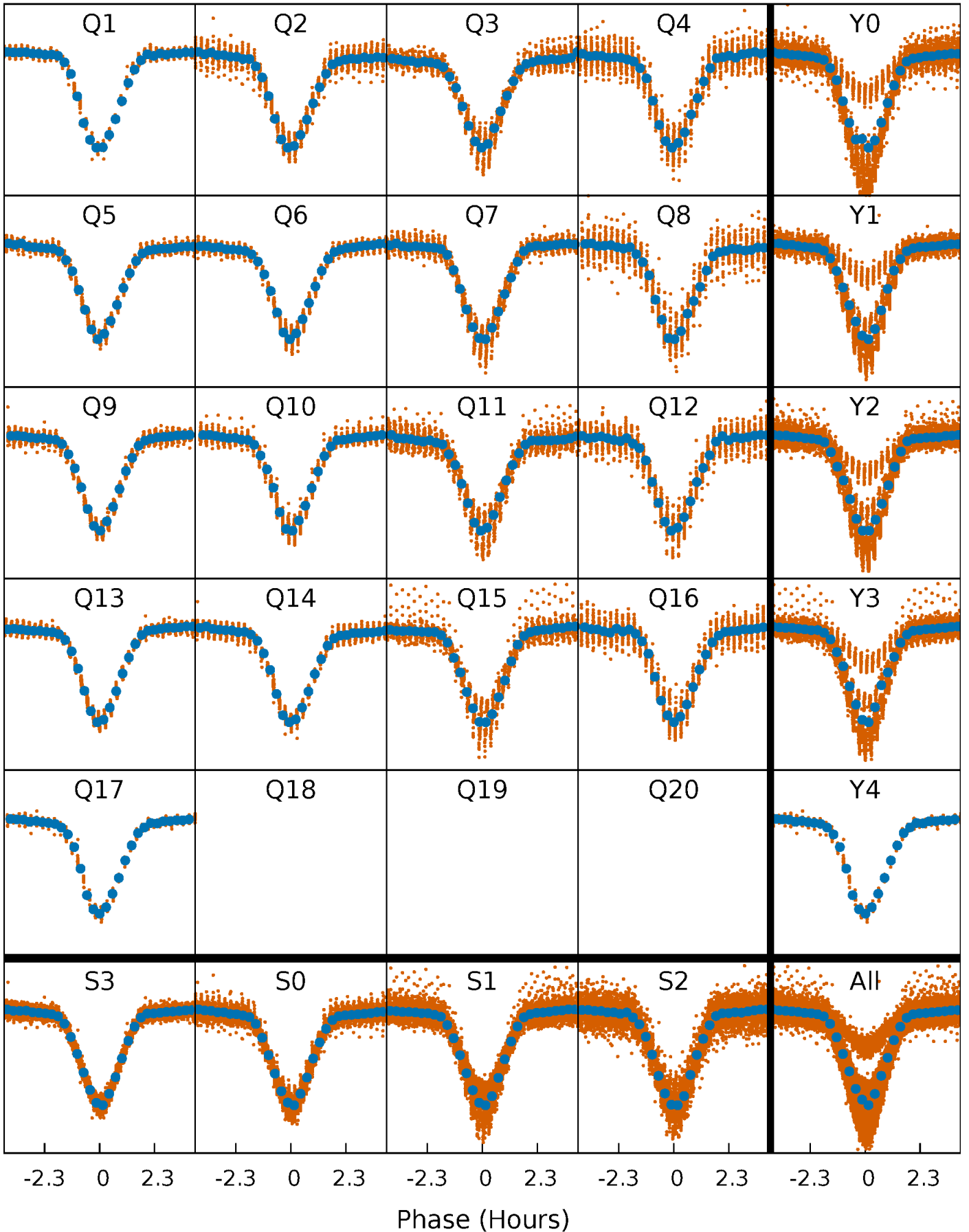


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



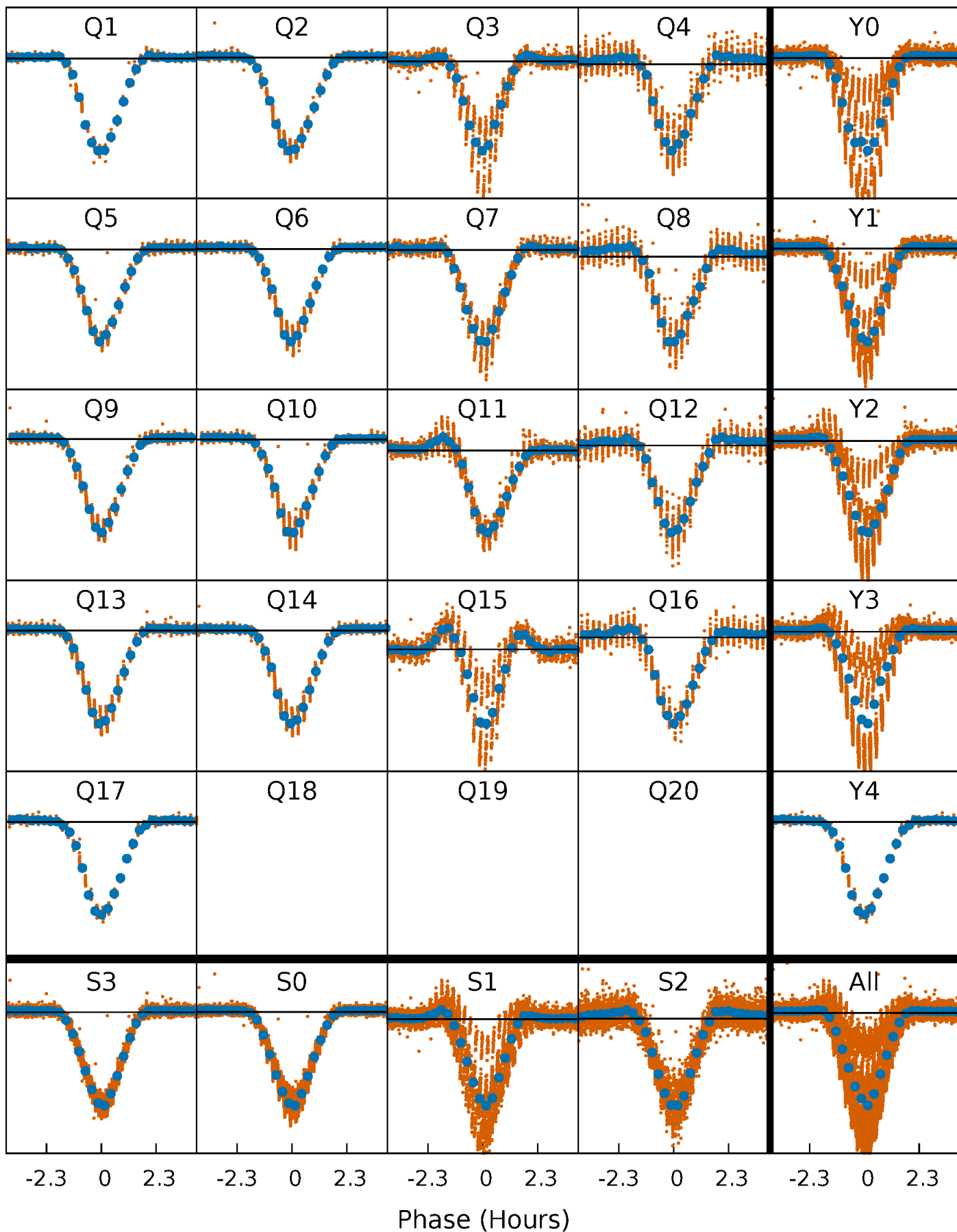
# PDC Quarter-Phased Transit Curves

TCE 006045250-02 P= 0.909309 Days  $T_0=132.179944$  (BKJD)



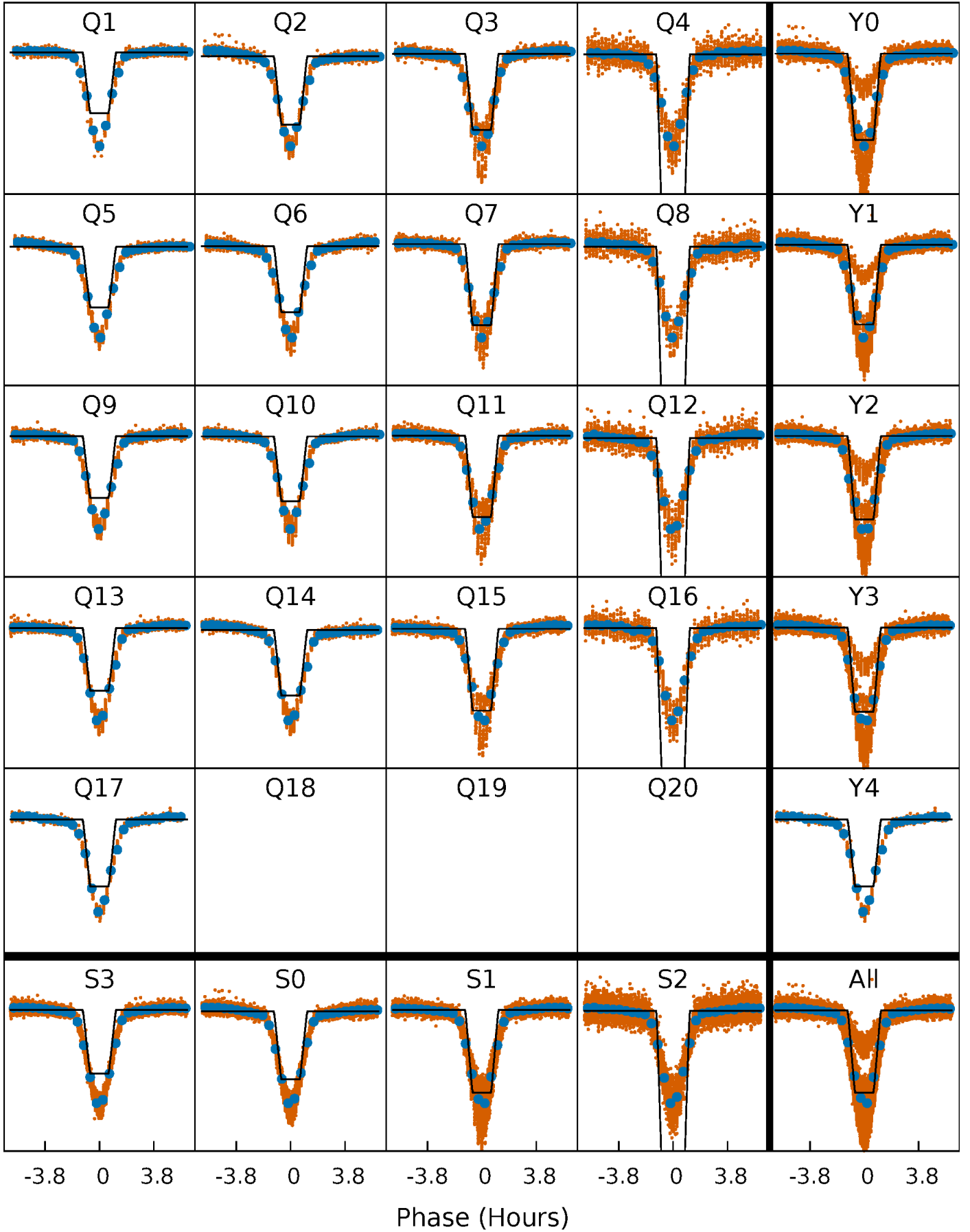
# DV Quarter-Phased Transit Curves

TCE 006045250-02 P= 0.909309 Days  $T_0=132.179944$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

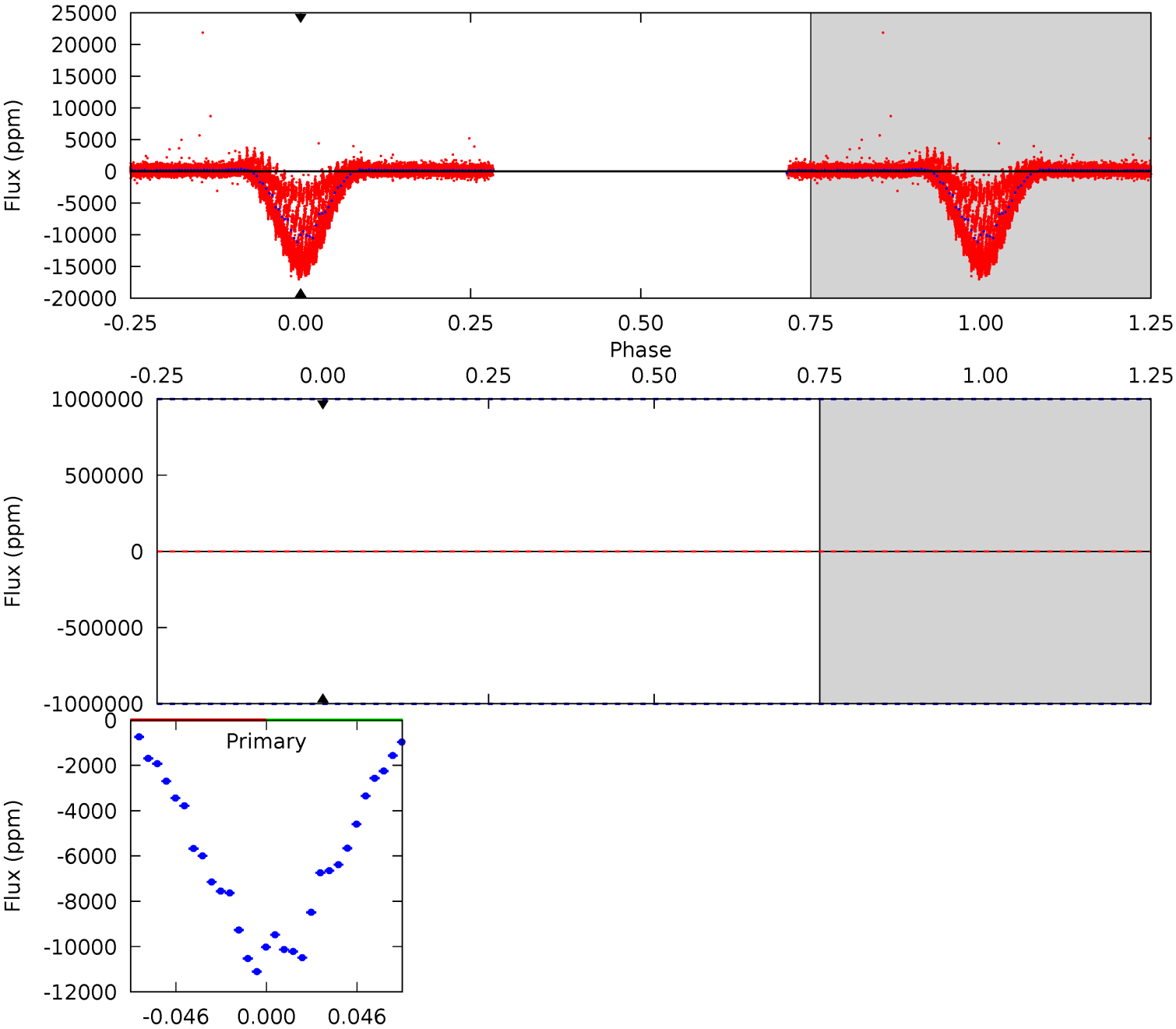
TCE 006045250-02     $P = 0.909309$  Days     $T_0 = 132.181359$  (BKJD)



# DV Model-Shift Uniqueness Test

006045250-02, P = 0.909309 Days, E = 131.270635 Days

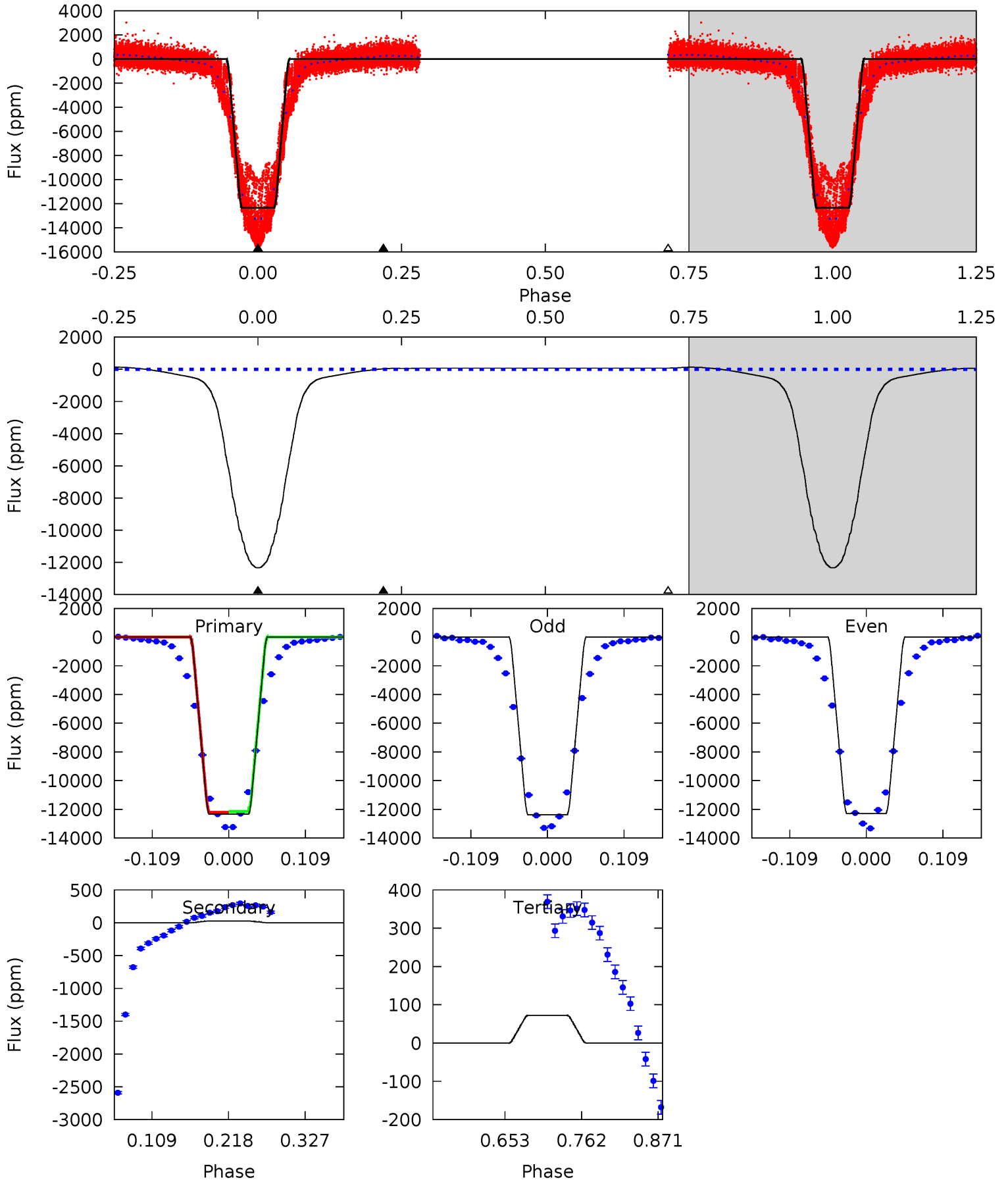
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

006045250-02, P = 0.909309 Days, E = 131.272050 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
1701	-3.53	-9.97	0	4.55	1.60	29.0	1711	1701	6.44	-3.53	5.78	0.87	0.01	0





### Stellar Parameters For KIC 006045250

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6370^{+153}_{-211}$	$4.410^{+0.062}_{-0.188}$	$-0.100^{+0.250}_{-0.300}$	$1.106^{+0.314}_{-0.134}$	$1.148^{+0.146}_{-0.162}$	$1.194^{+0.395}_{-0.583}$
	+2%/-3%	+1%/-4%	+250%/-300%	+28%/-12%	+13%/-14%	+33%/-49%
Source	PHO1	KIC0	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 006045250-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$17.33^{+12.08}_{-9.63}$	$3003^{+235}_{-132}$	$-5036^{+18110}_{-7025}$	$-4.663^{+103.303}_{-86.500}$
Alt.	$26 \pm 7$	$14.50^{+12.99}_{-8.64}$	$3028^{+196}_{-142}$	$-3180^{+115}_{-227}$	$-0.024^{+0.017}_{-0.124}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

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

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

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

## DV Centroid Data

Supplemental centroid analysis for 006045250-02. Kepler magnitude: 14.97. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

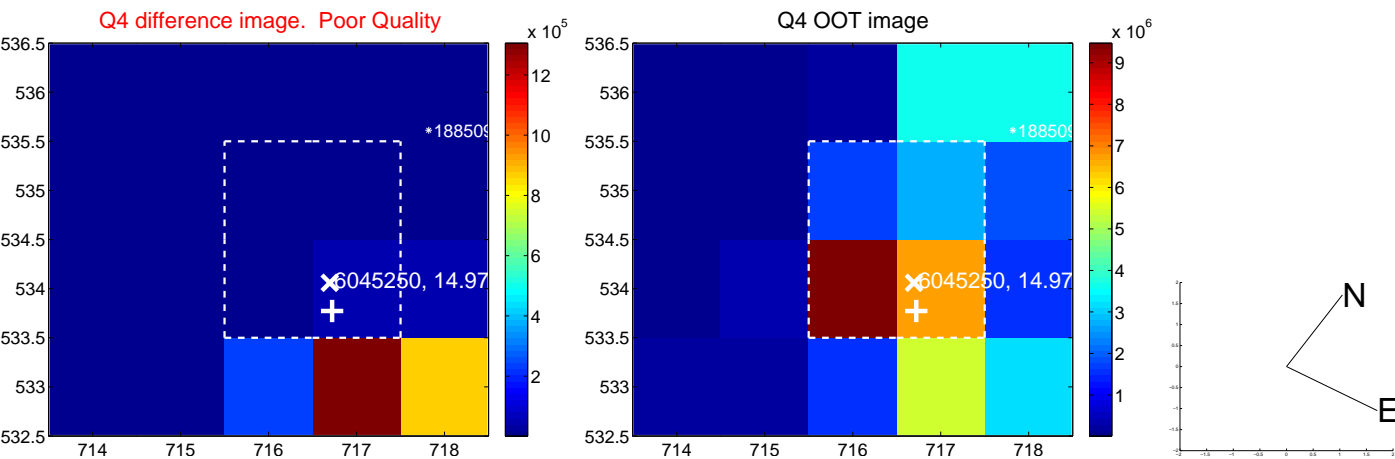
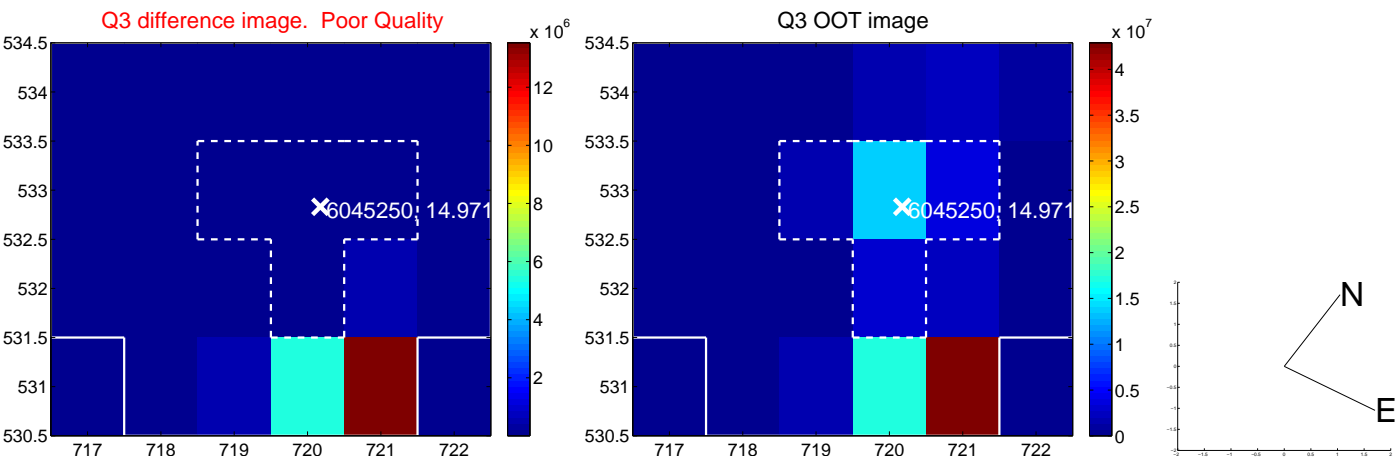
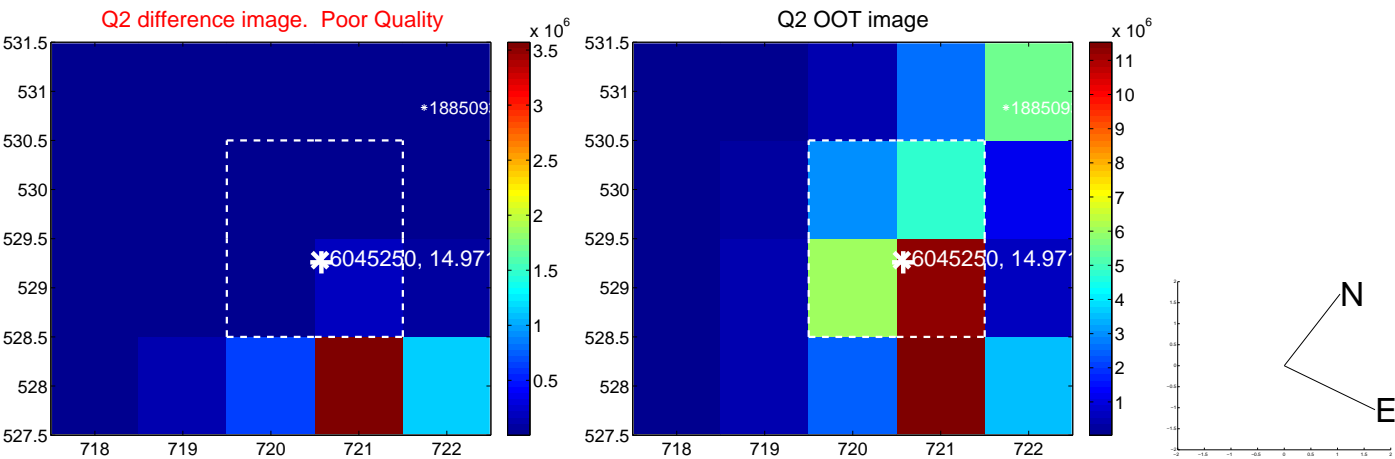
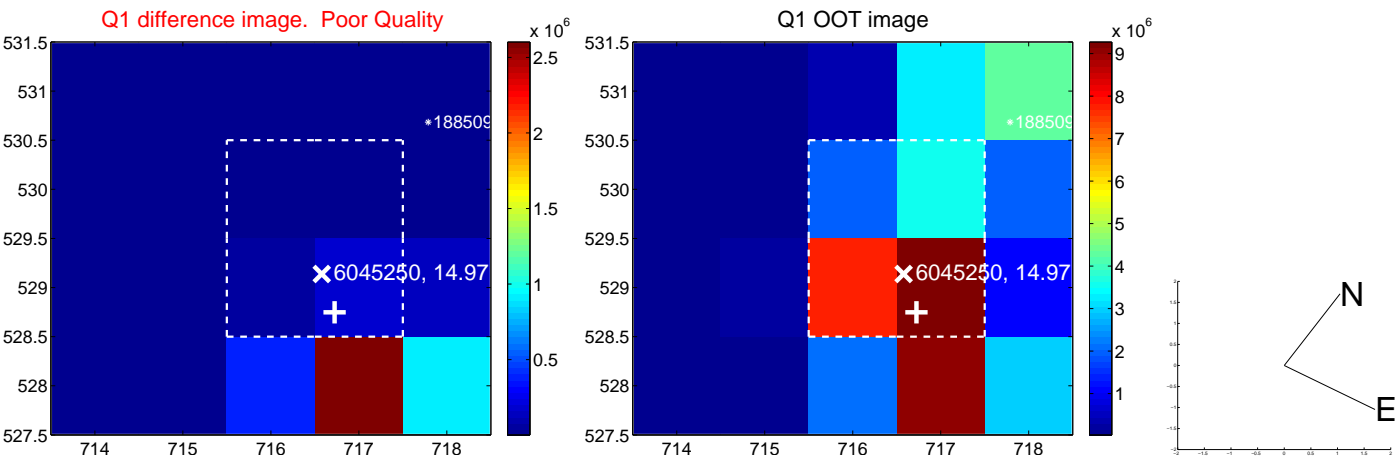
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—

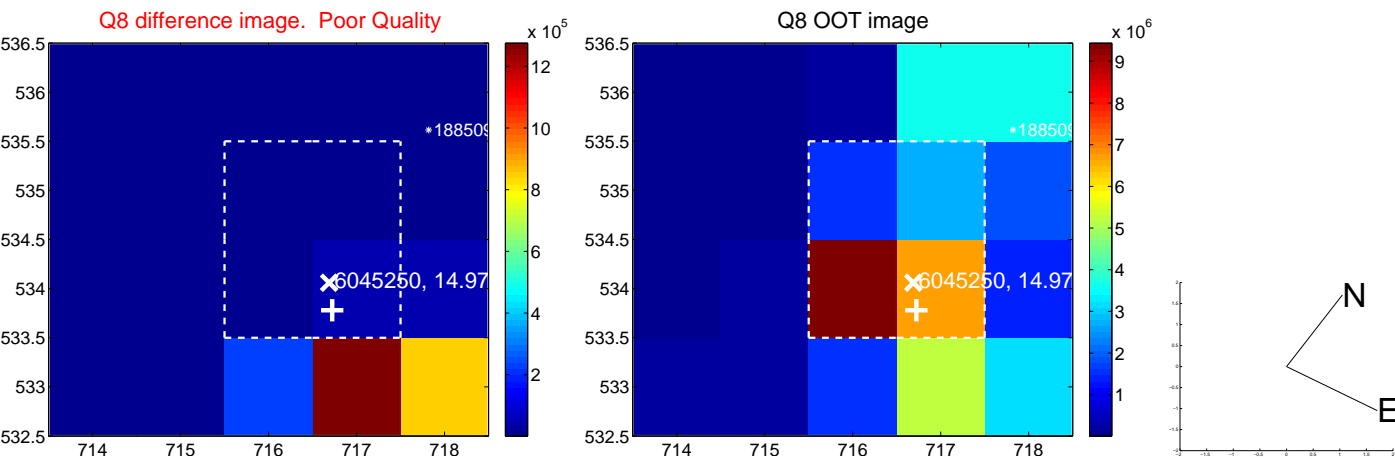
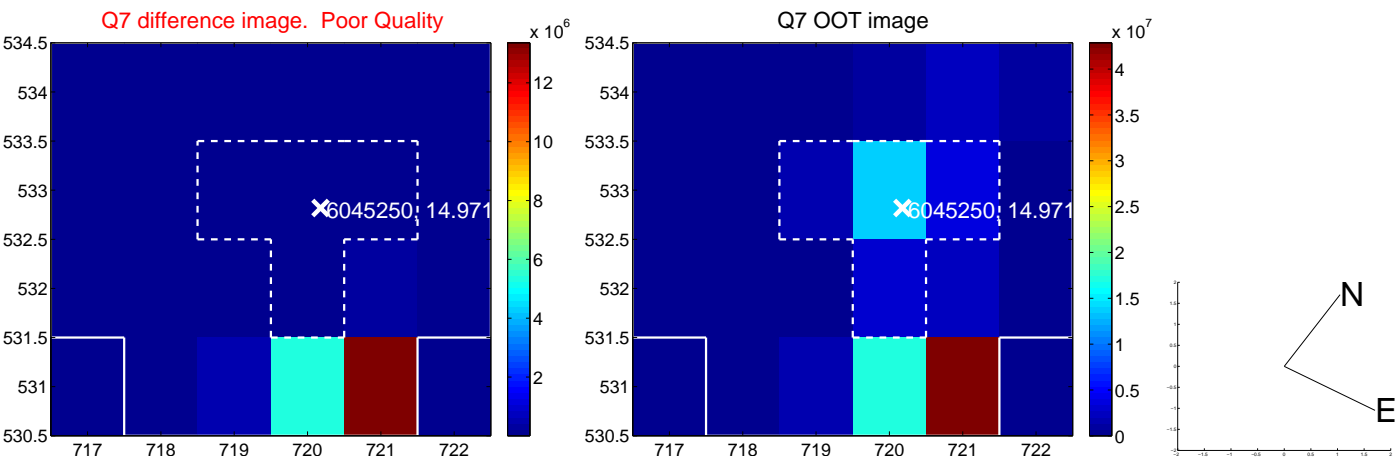
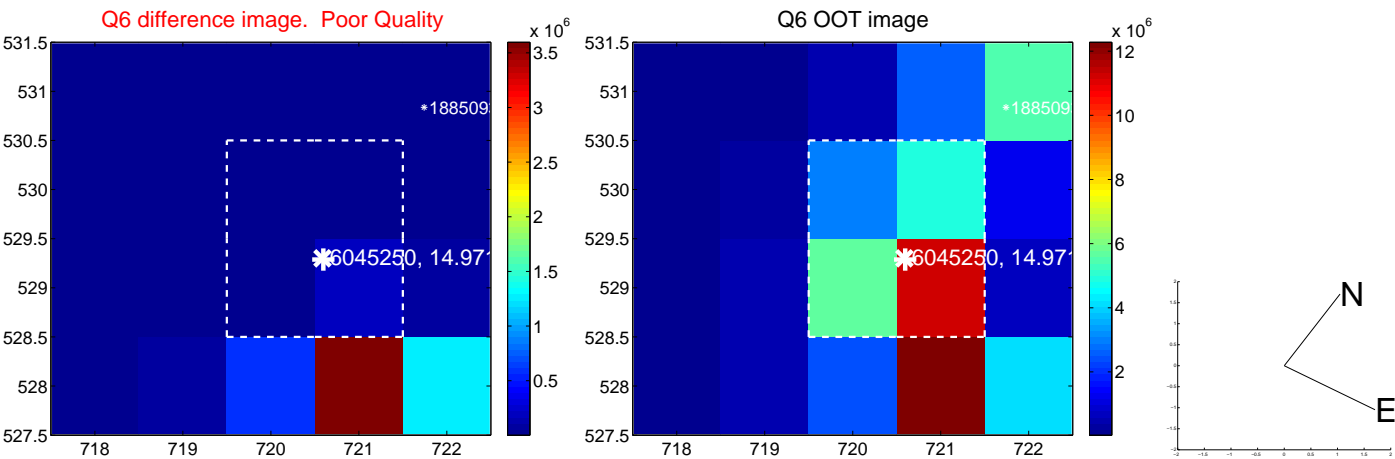
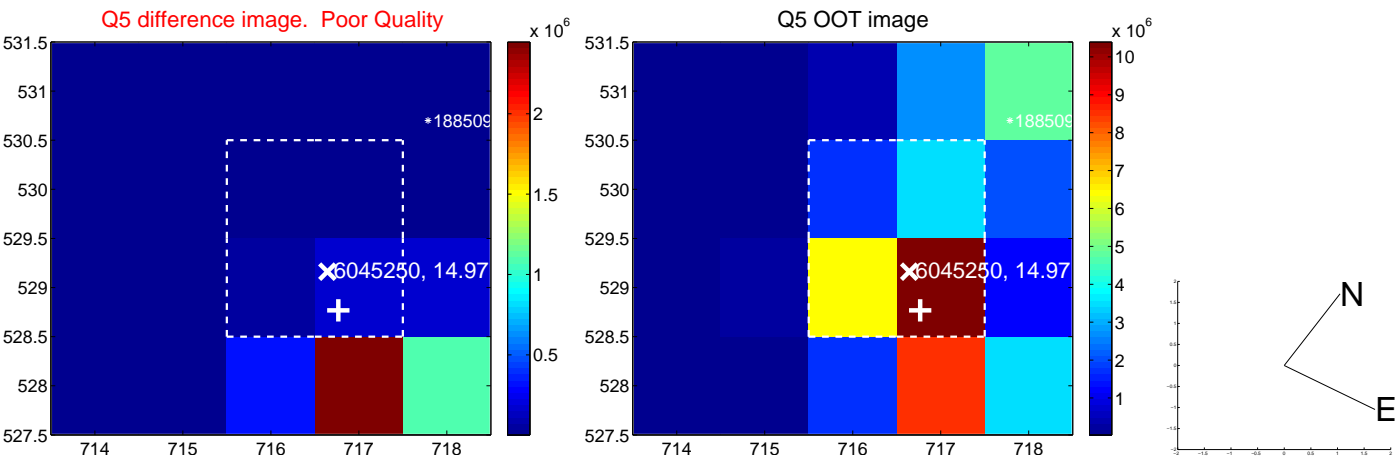


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

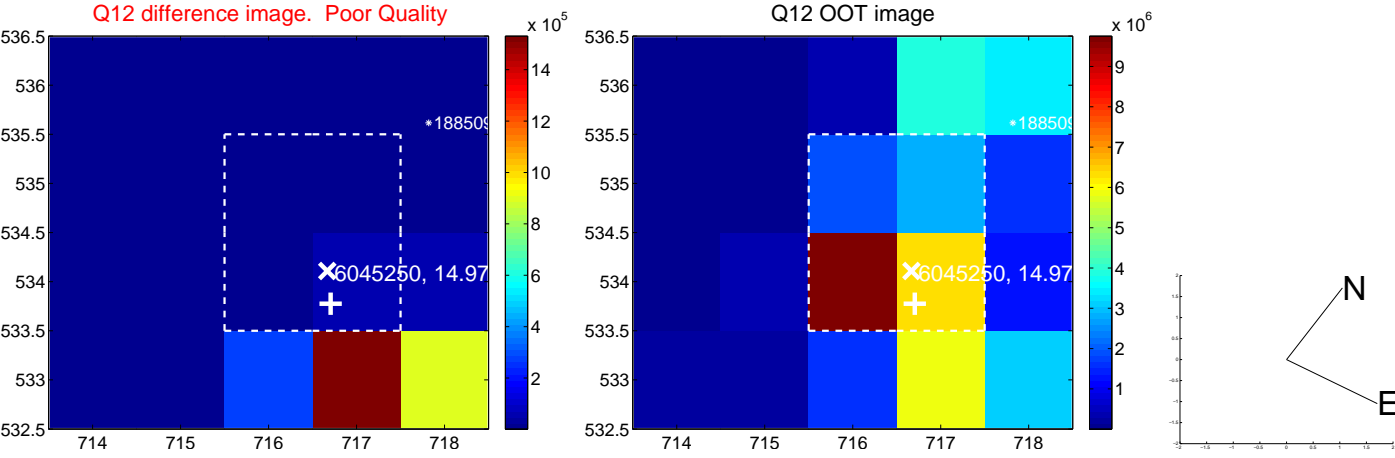
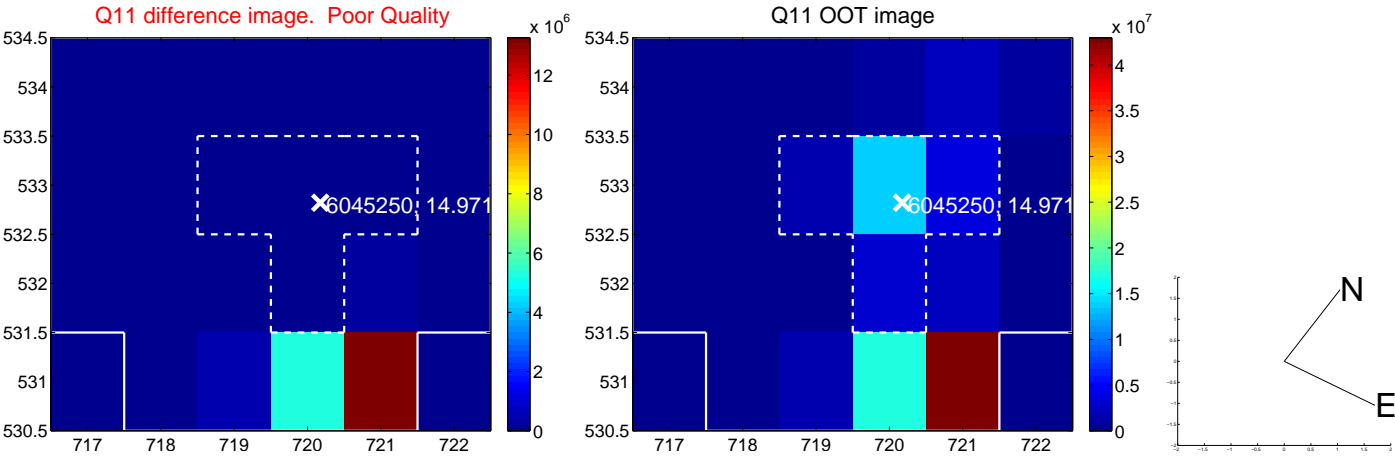
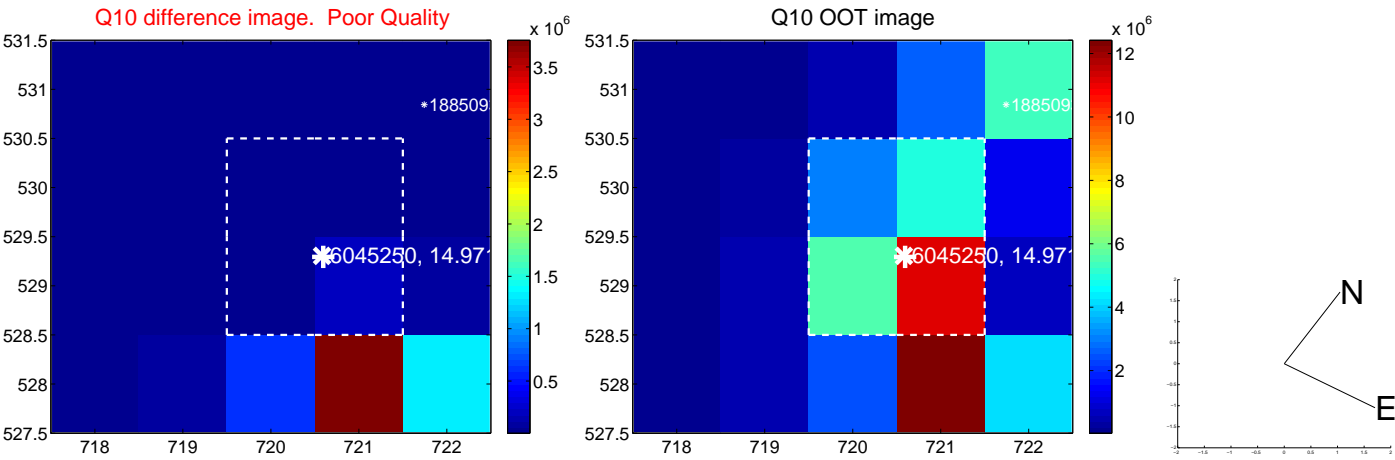
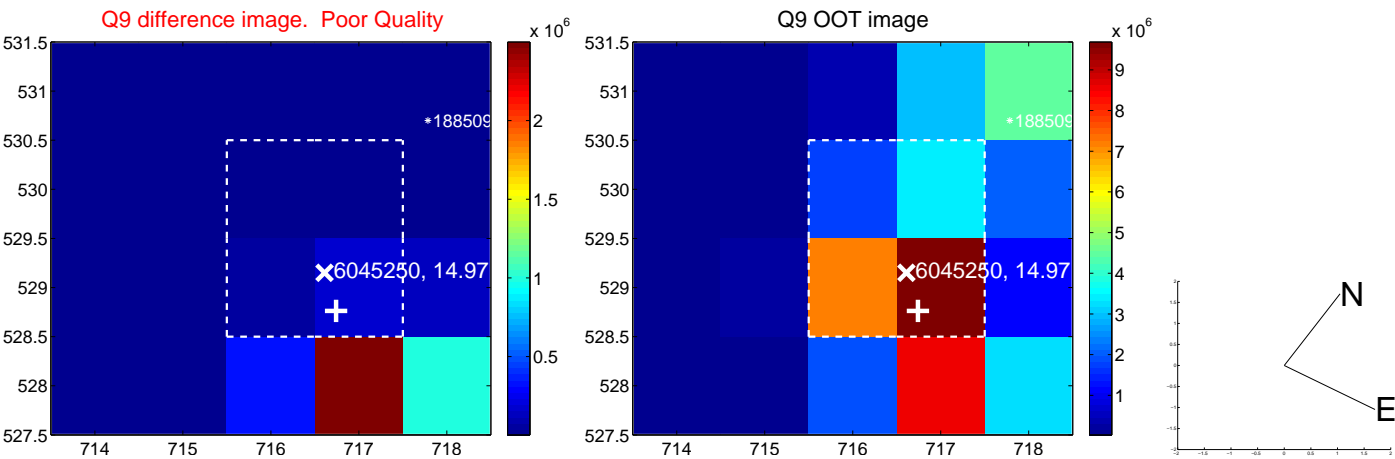
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



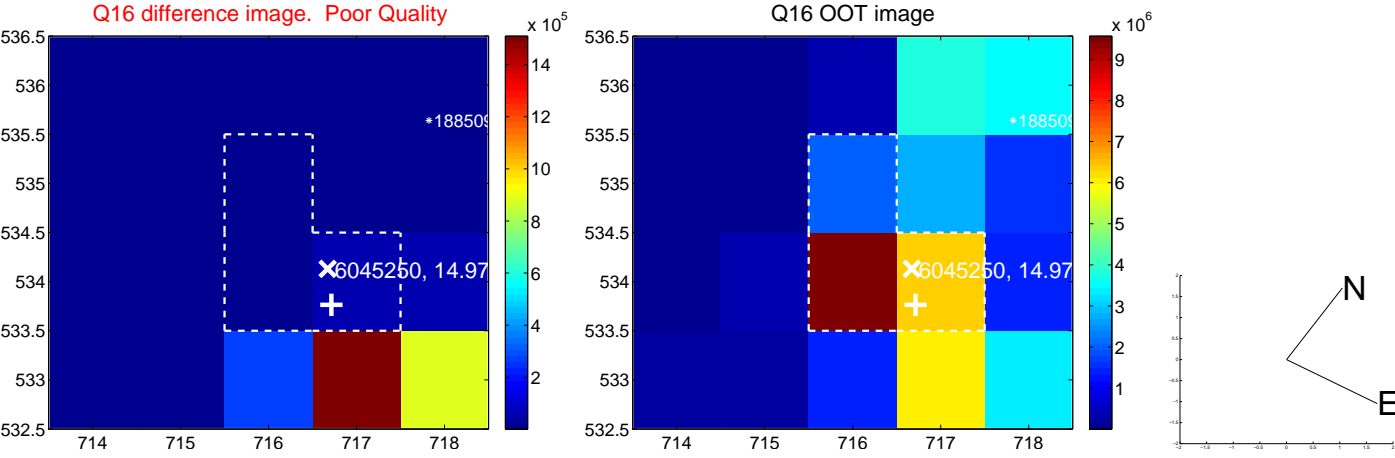
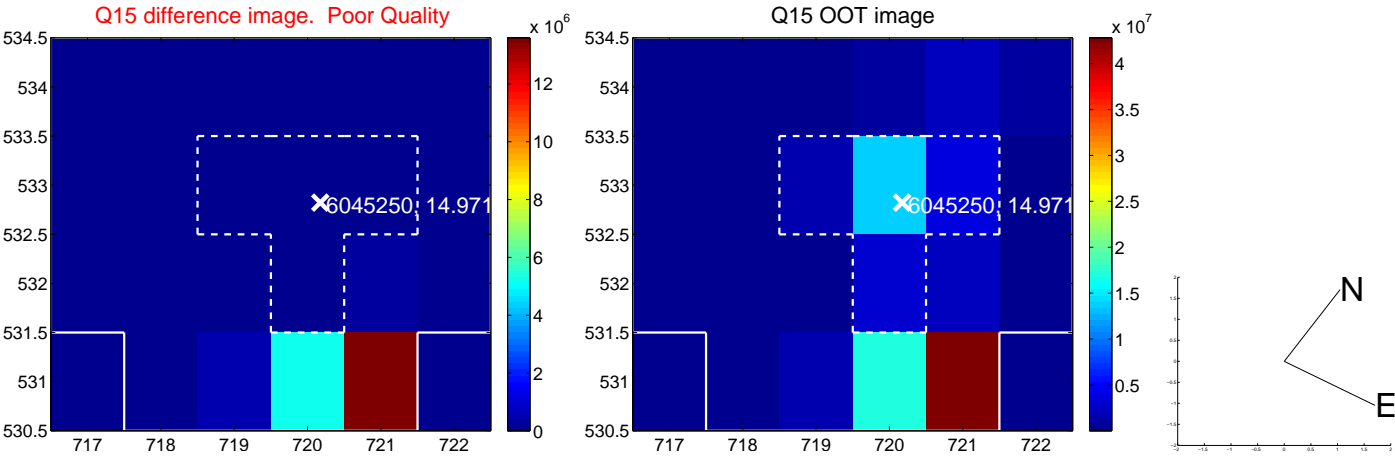
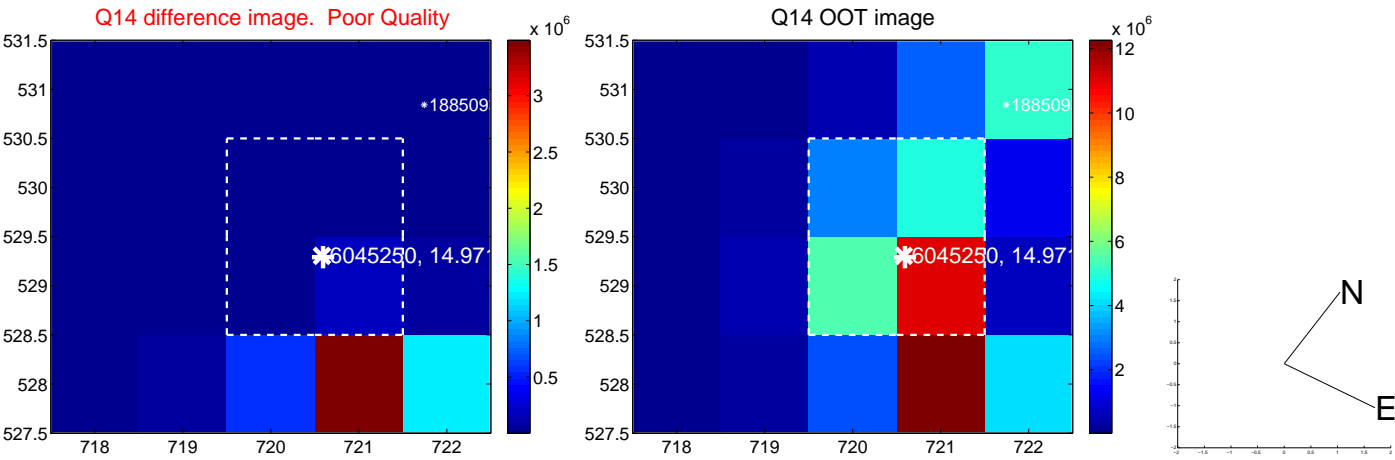
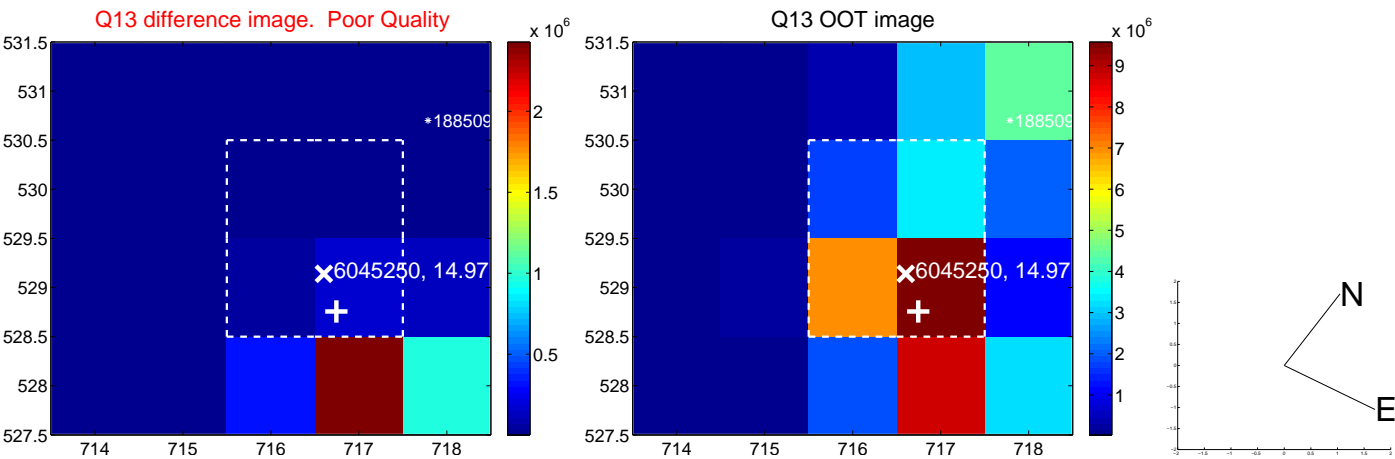
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



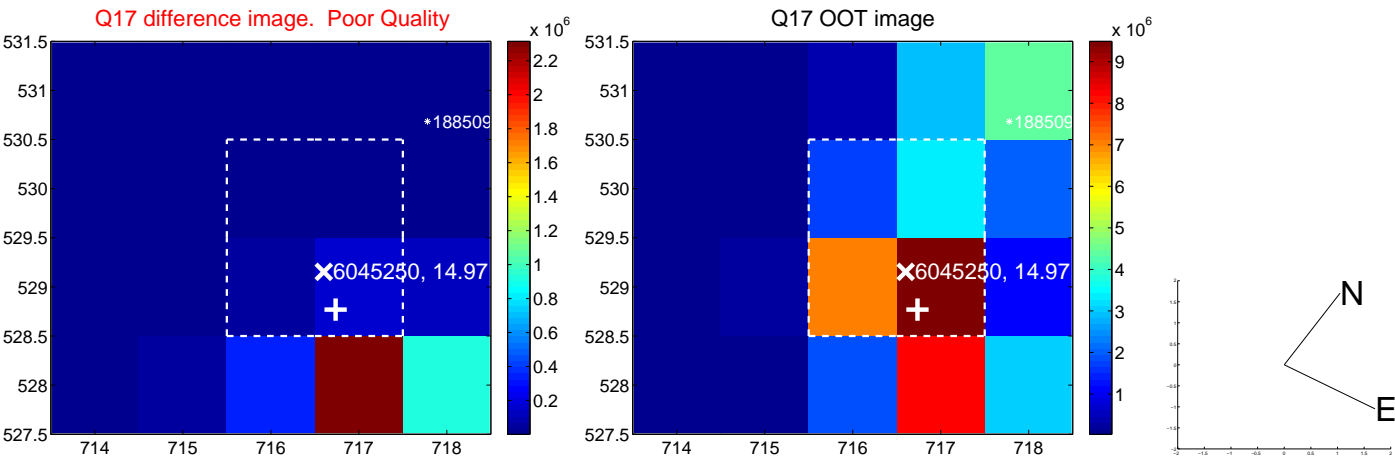
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

Declination

