

# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

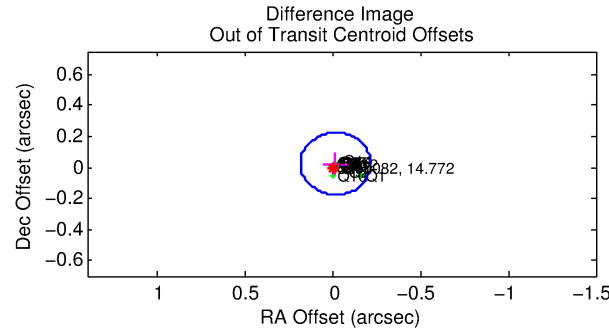
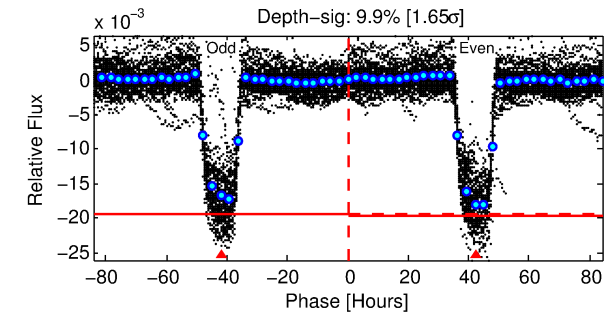
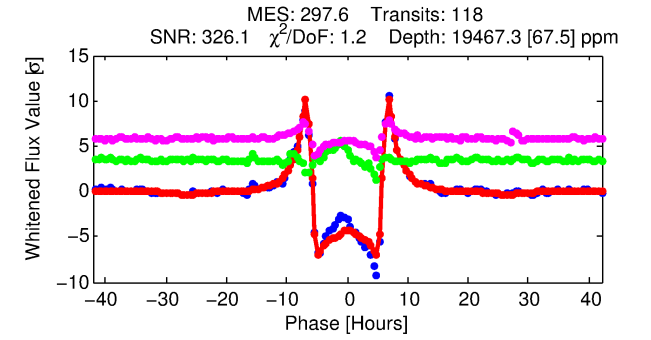
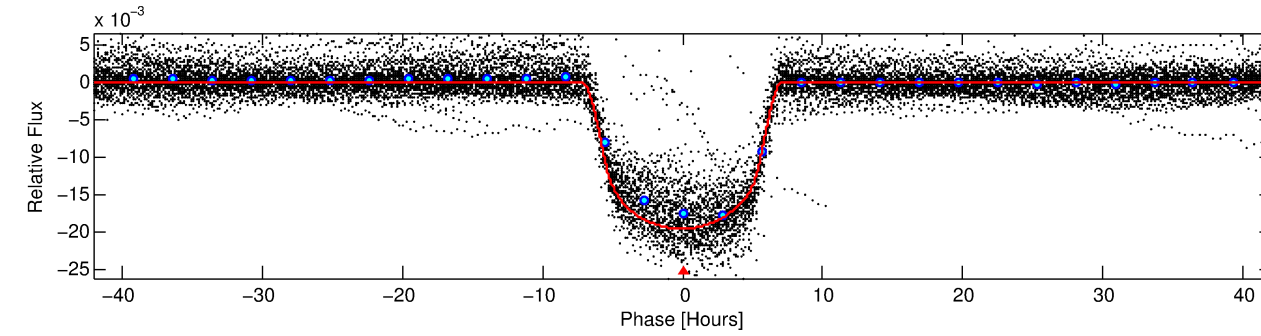
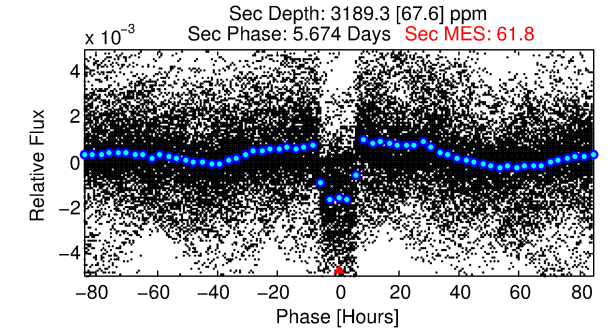
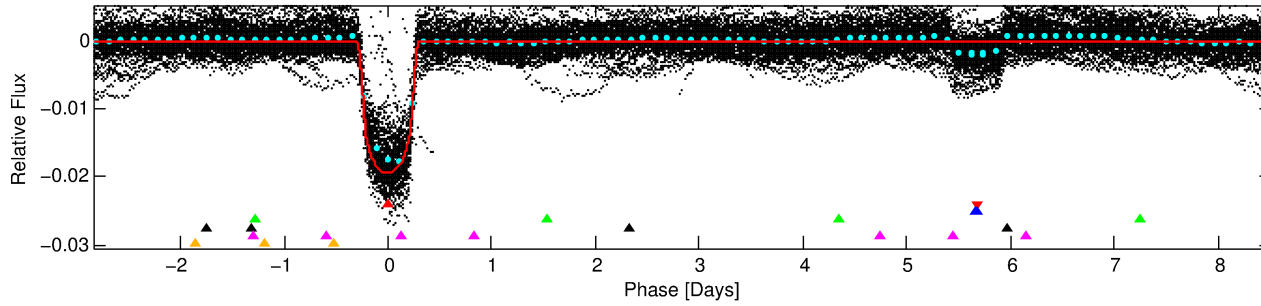
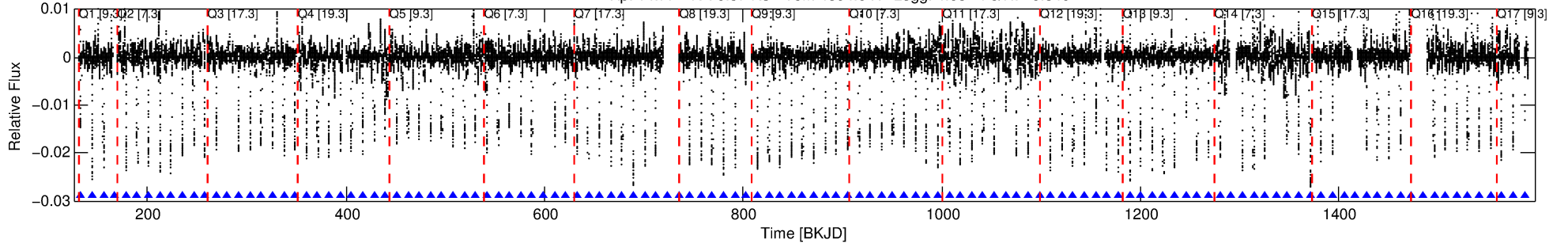
Ephemeris Match Information For 005360082-01

No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 1 of 6 Period: 11.355 d  
KOI: K03768.01 Corr: 0.995

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



## DV Fit Results:

Period = 11.35501 [0.00000] d  
Epoch = 133.1998 [0.0003] BKJD  
Rp/R\* = 0.1268 [0.0003]  
a/R\* = 6.56 [0.02]  
b = 0.39 [0.01]  
Seff = 19.31 [3.20]  
Teq = 535 [22] K  
Rp = 7.84 [0.62] Re  
a = 0.0815 [0.0056] AU  
Ag = 189.49 [19.56] [9.63σ]  
Teffp = 3066 [102] K [24.22σ]

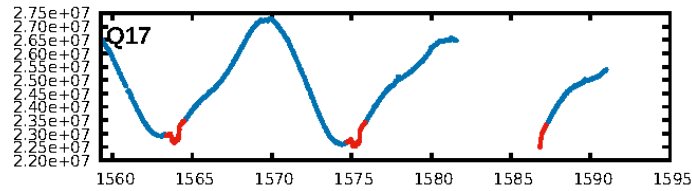
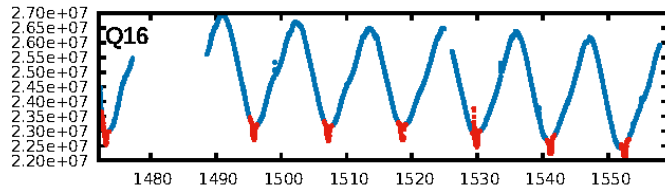
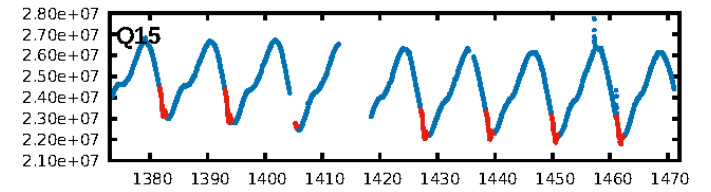
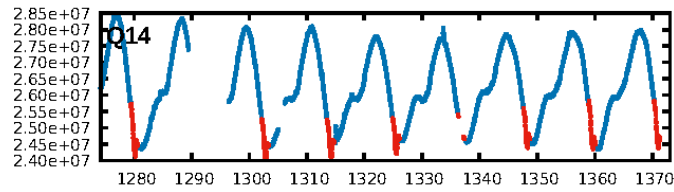
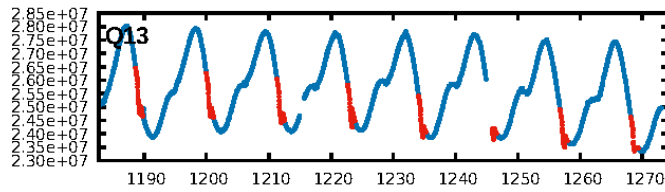
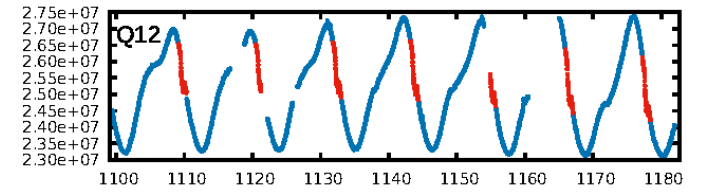
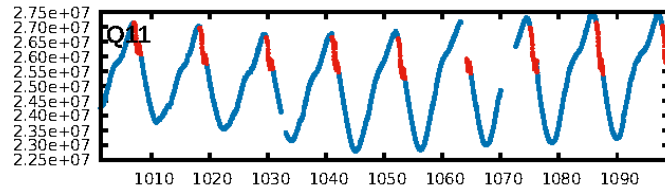
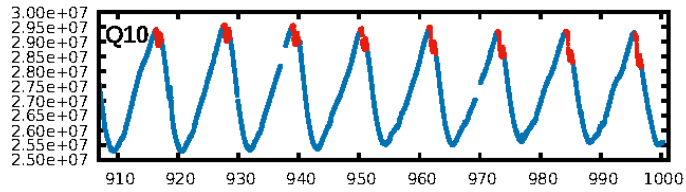
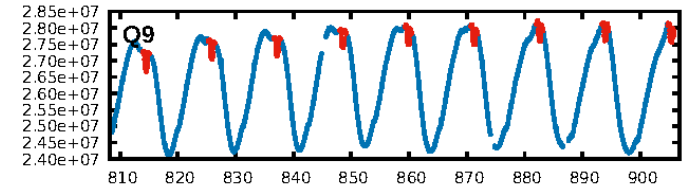
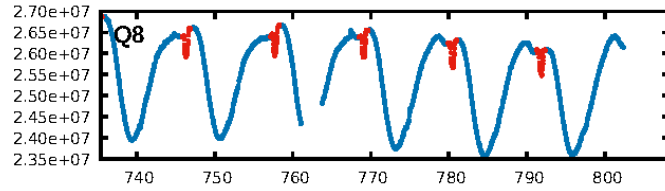
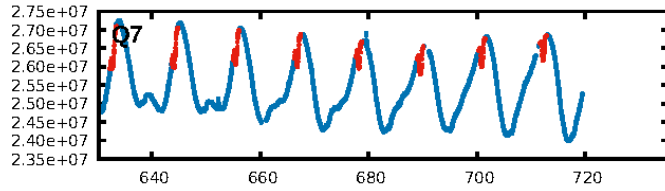
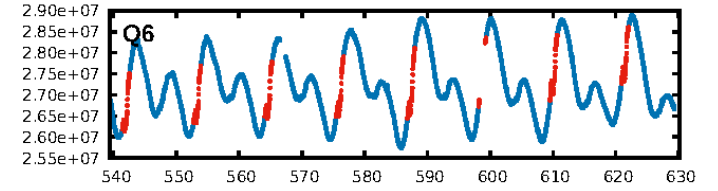
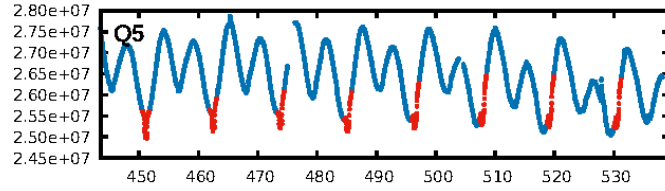
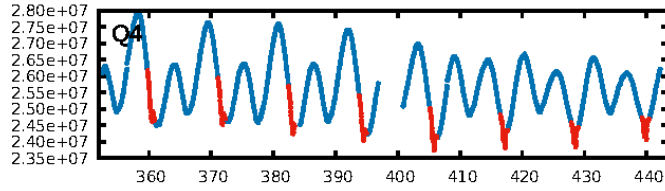
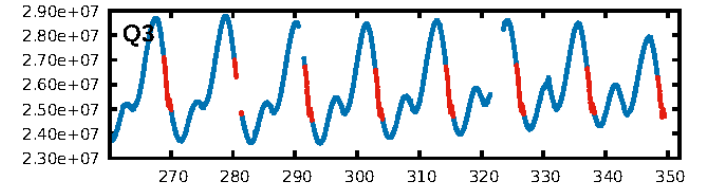
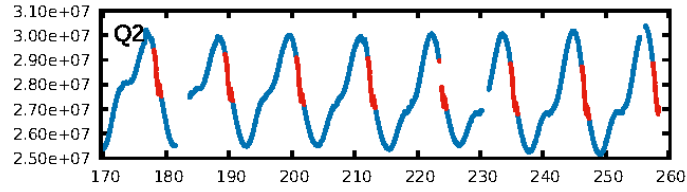
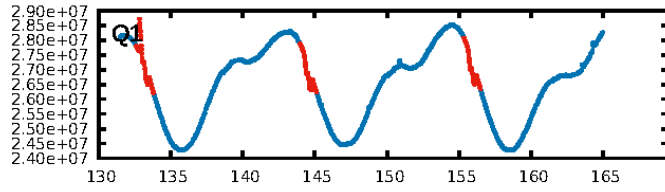
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [286.81σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [112/112]  
GhostDiagnostic-chr: 1.289  
Centroid-sig: 0.0%  
Centroid-so: 0.088 arcsec [8.35σ]  
OotOffset-rm: 0.030 arcsec [0.44σ]  
KicOffset-rm: 0.083 arcsec [1.22σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

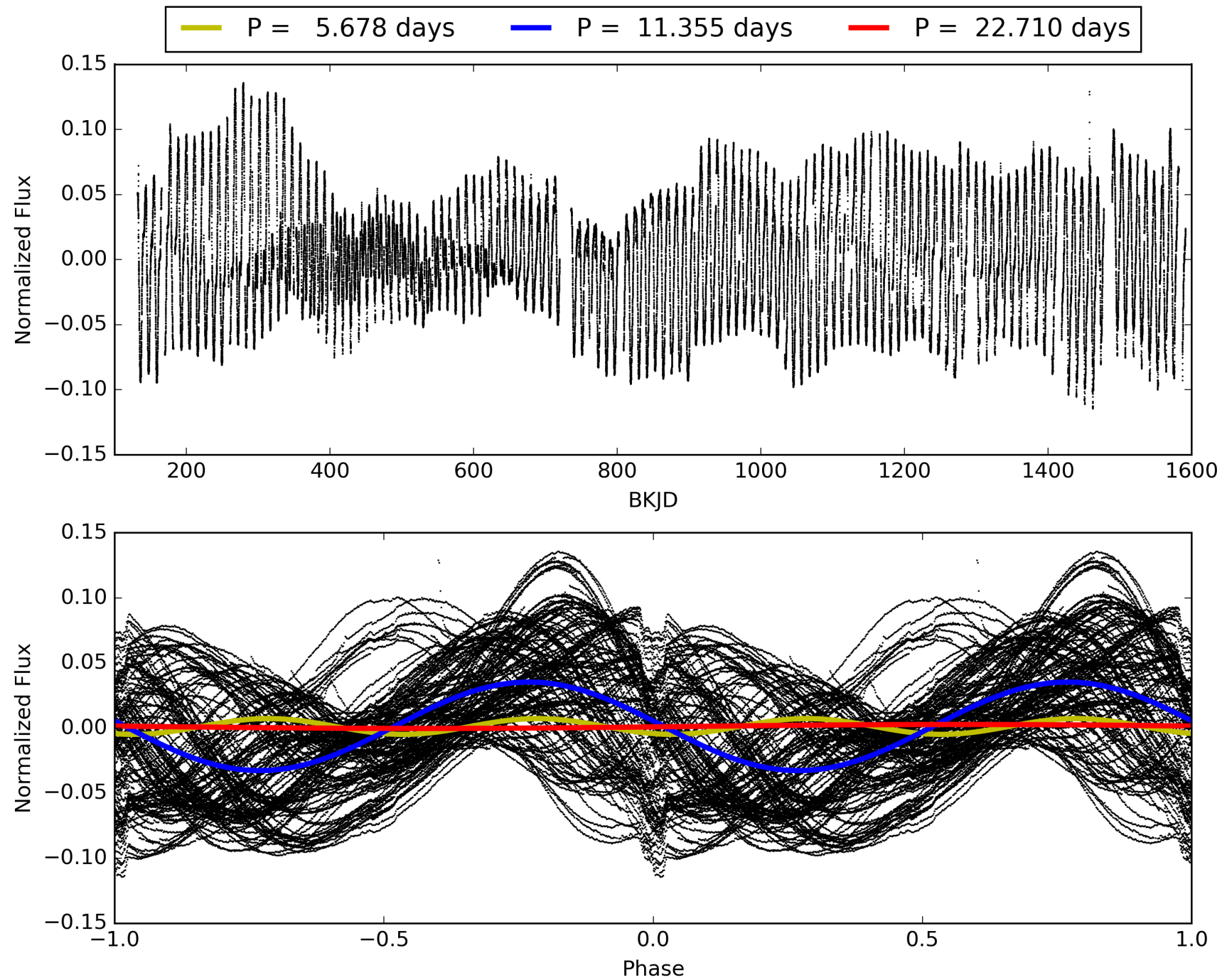
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:17 Z

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

# TCE 005360082-01, PDC Light Curves



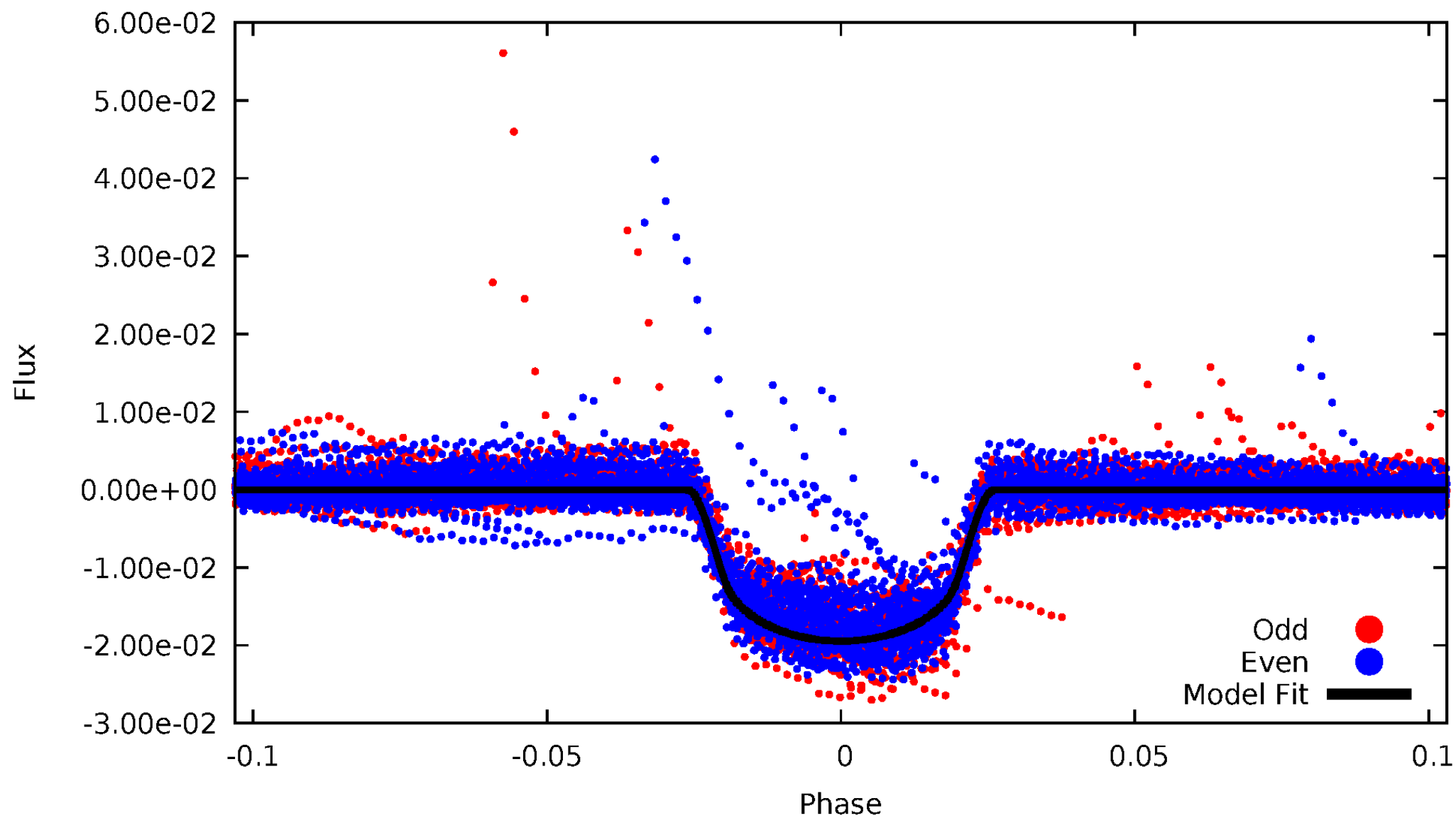
TCE 005360082-01





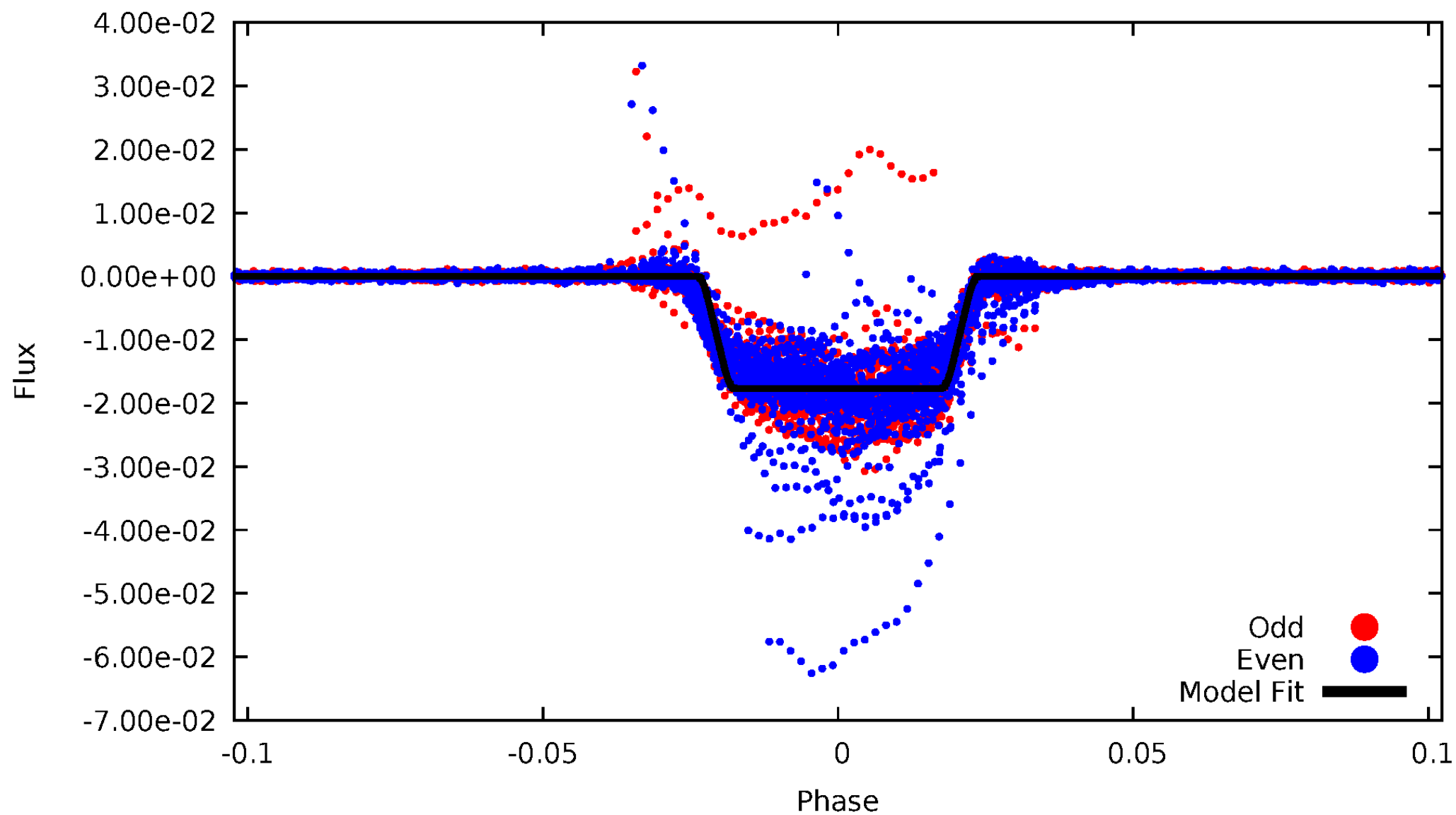
# DV Odd/Even

TCE 005360082-01



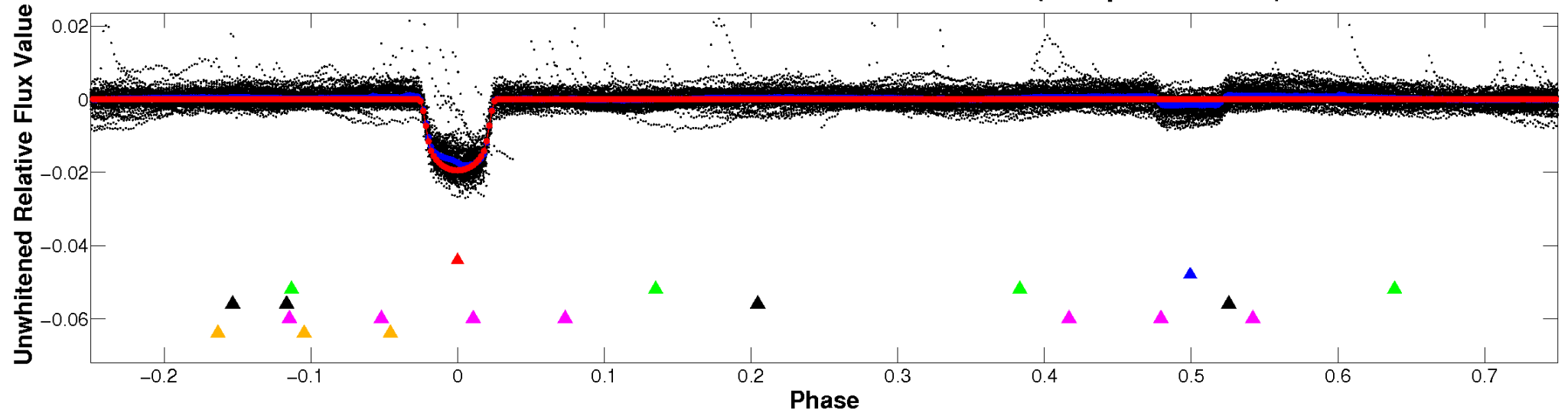
# ALT Odd/Even

TCE 005360082-01

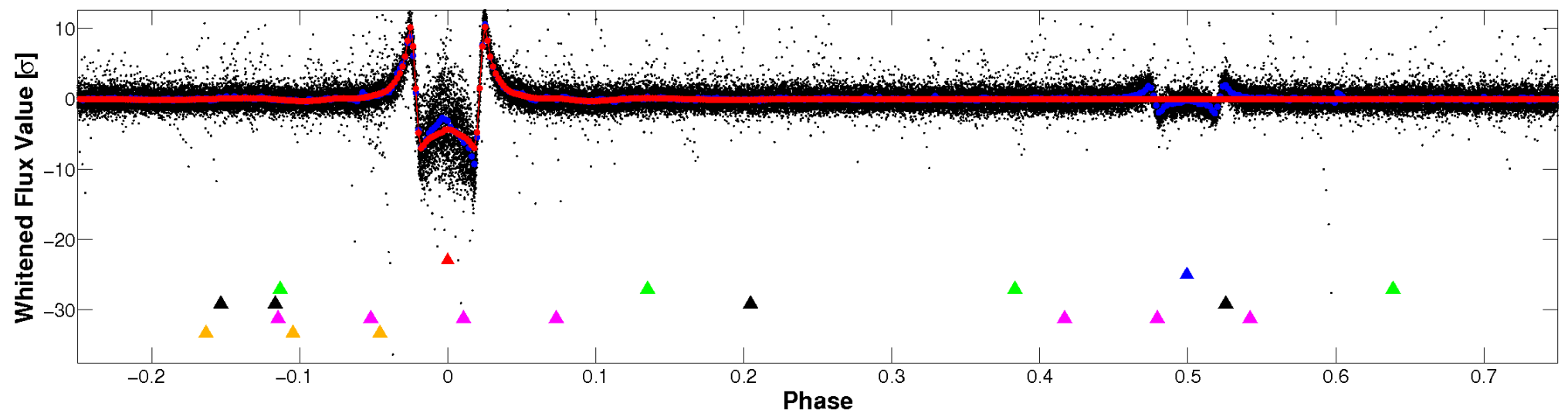


# Non-Whitened Vs. Whitened Light Curve

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

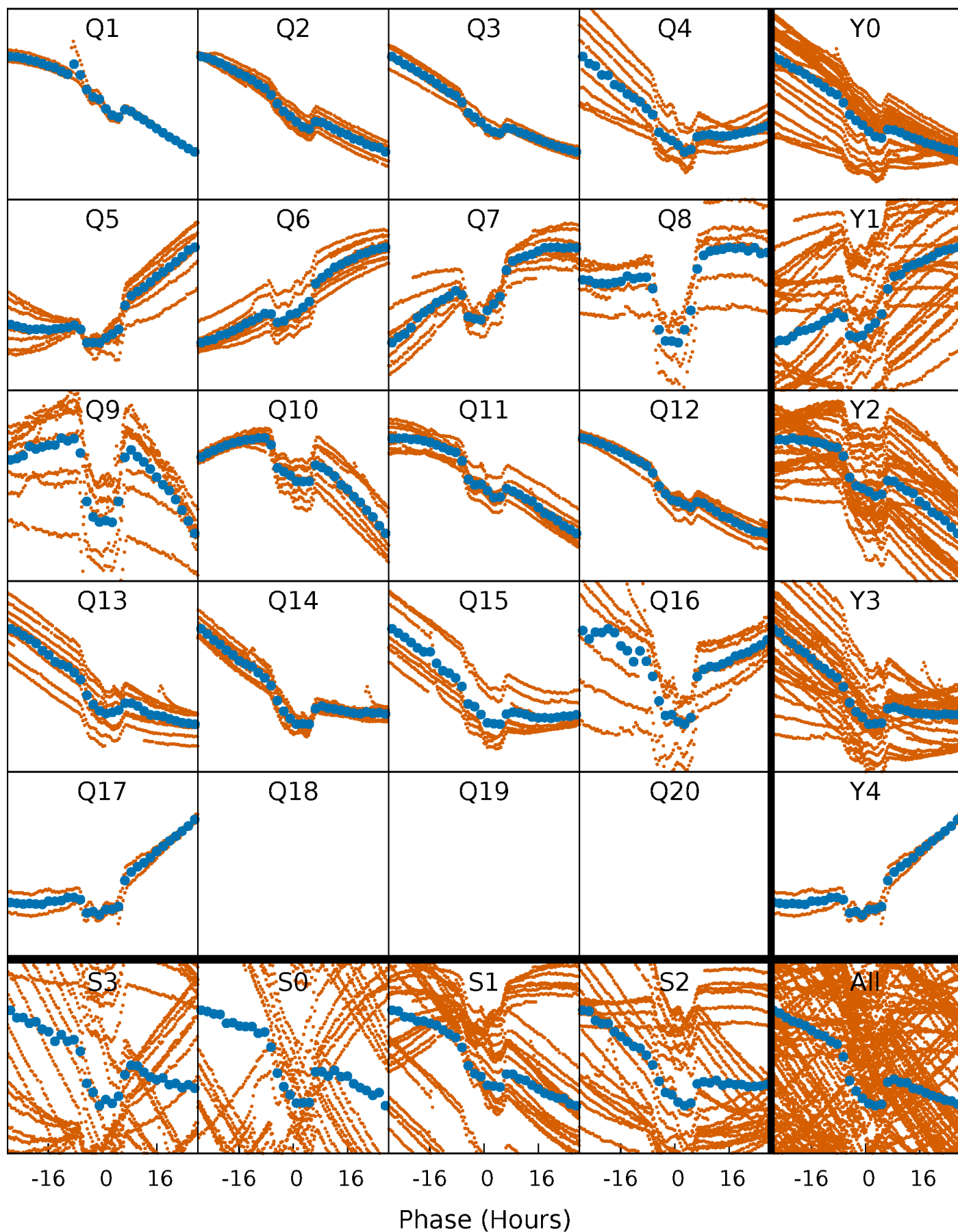


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

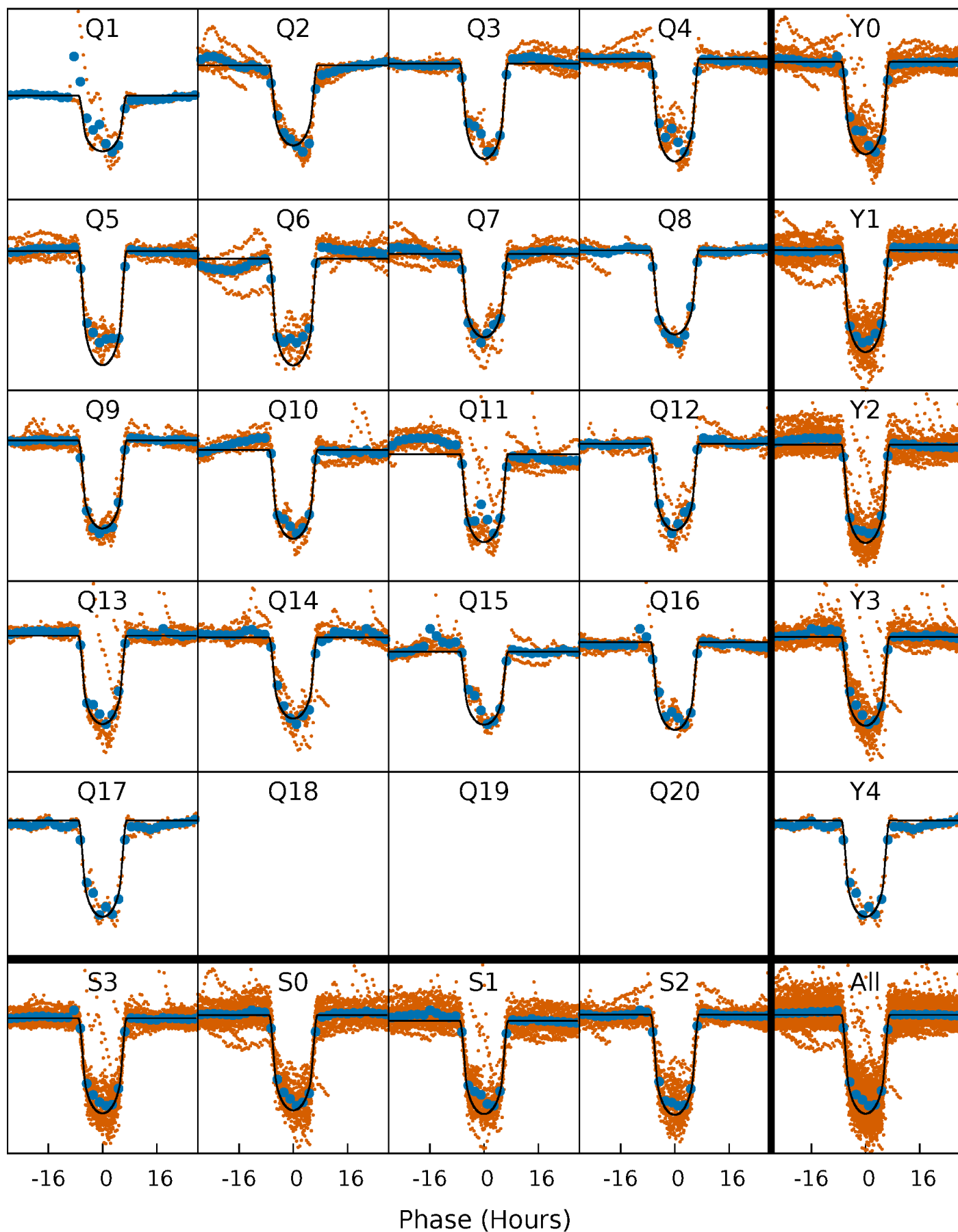
TCE 005360082-01 P= 11.355005 Days  $T_0=133.199833$  (BKJD)





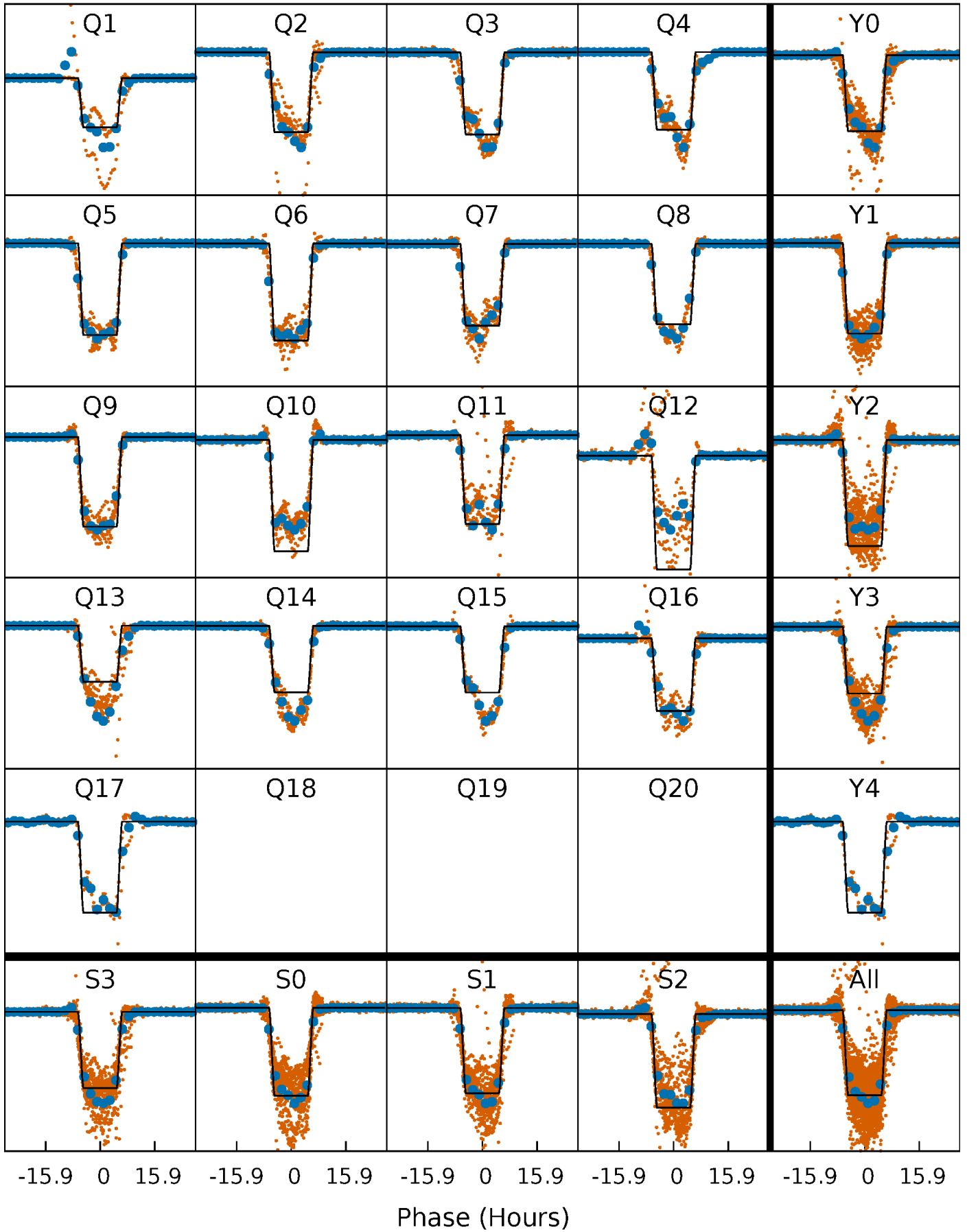
# DV Quarter-Phased Transit Curves

TCE 005360082-01 P= 11.355005 Days  $T_0=133.199833$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

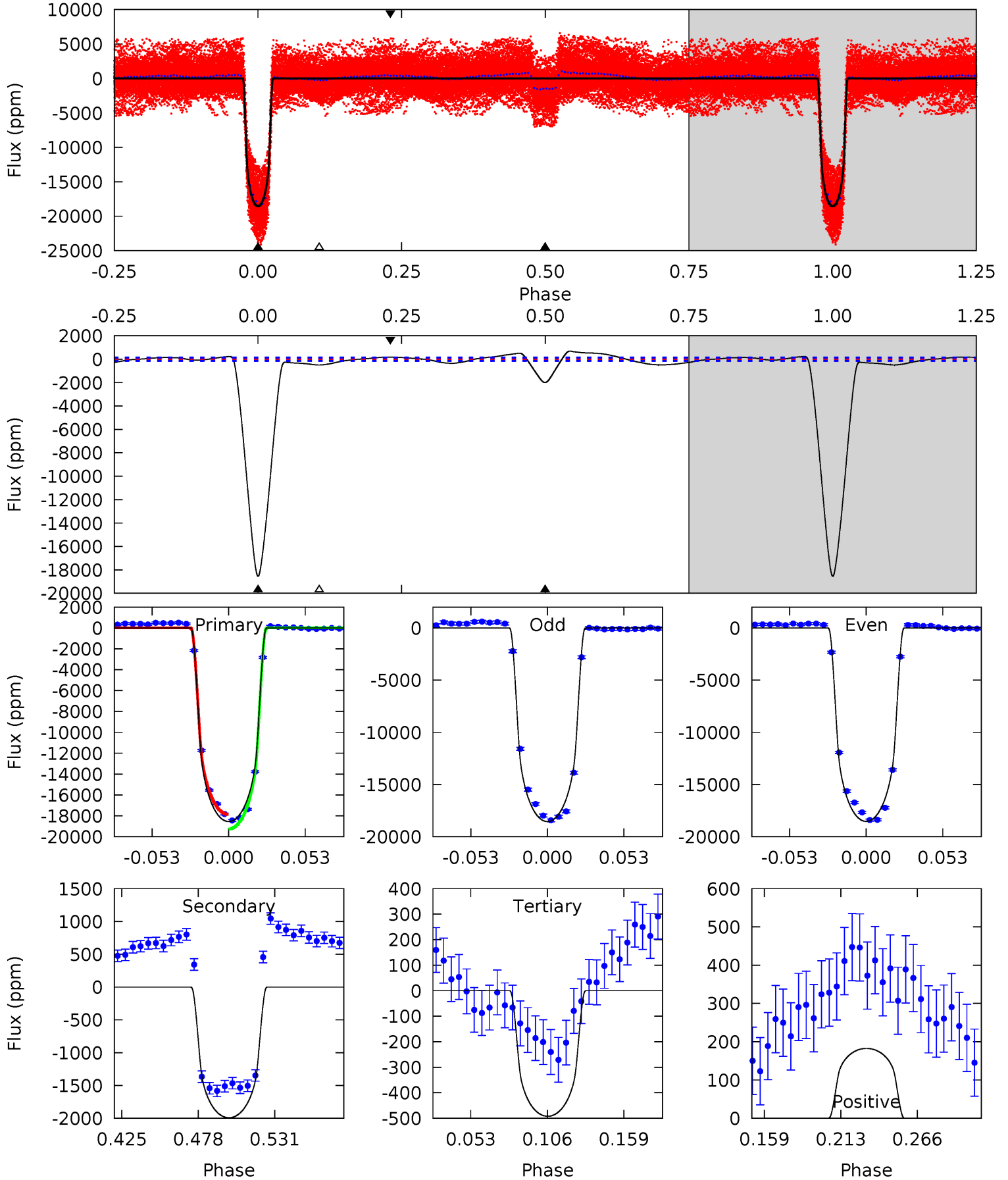
TCE 005360082-01 P= 11.354834 Days  $T_0=133.217474$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-01, P = 11.355005 Days, E = 121.844828 Days

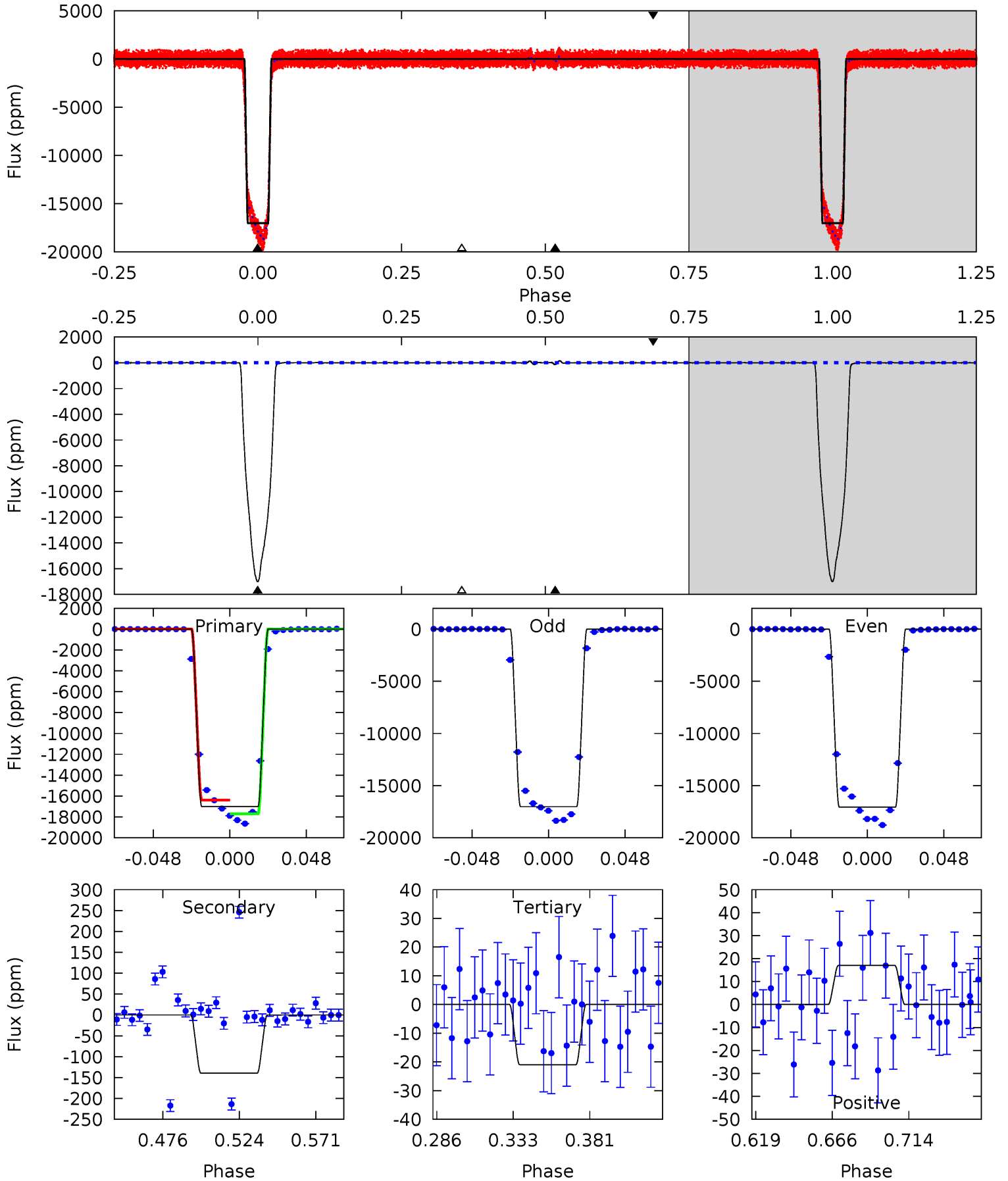
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
646.7	69.4	17.2	6.36	4.70	1.93	9.54	629.5	640.3	52.3	63.1	0.23	0.98	0.04	0



# Alt Model-Shift Uniqueness Test

005360082-01, P = 11.354834 Days, E = 121.862640 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
1769	14.5	2.18	1.77	4.72	1.98	0.72	1767	1767	12.3	12.7	2.50	1.02	0.01	67.8





### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-01 / KOI 3768.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1991 \pm 29$	$7.81^{+0.32}_{-0.32}$	$741^{+25}_{-25}$	$3209^{+72}_{-71}$	$121^{+9}_{-7}$
Alt.	$-139 \pm 10$	$8.17^{+0.37}_{-0.35}$	$739^{+26}_{-25}$	$2241^{+46}_{-42}$	$7.690^{+0.834}_{-0.735}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

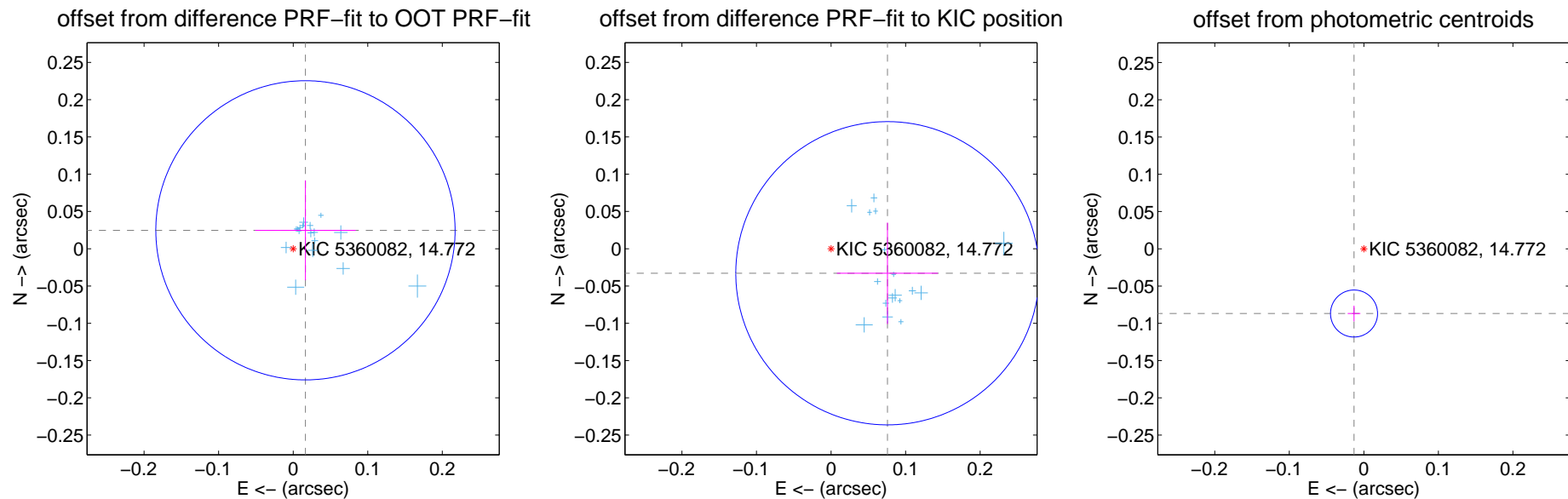
## DV Centroid Data

Supplemental centroid analysis for 005360082-01. Kepler magnitude: 14.77. Transit SNR 326.13

There are 17 quarters with good PRF difference image offsets

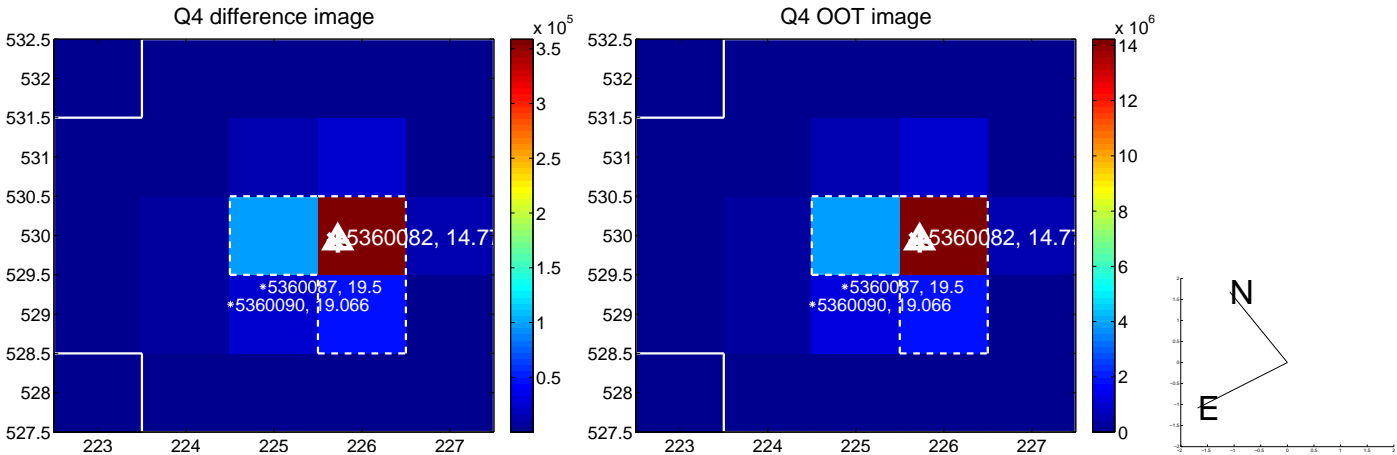
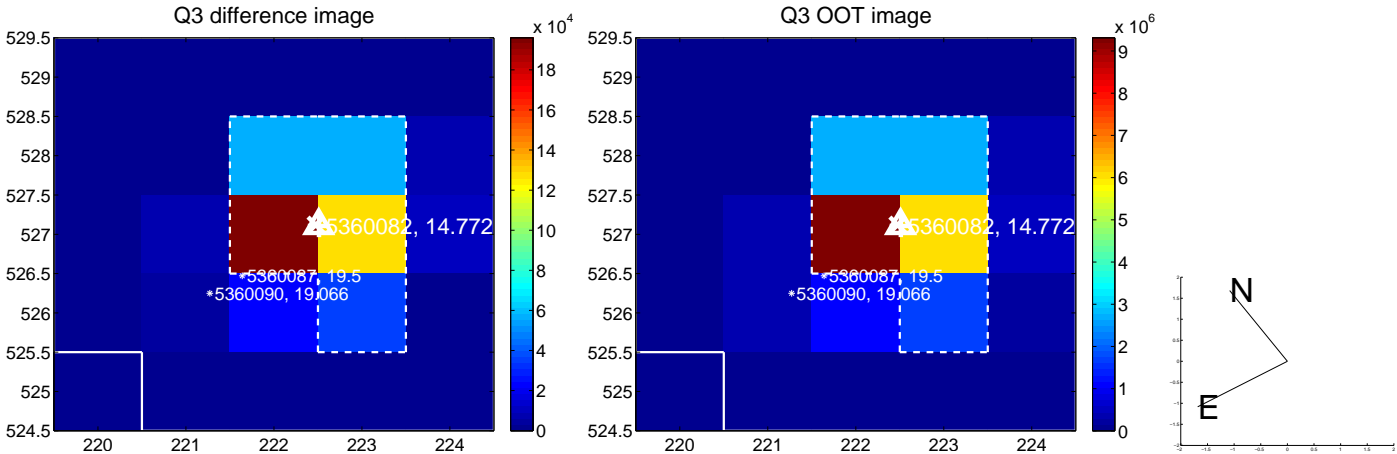
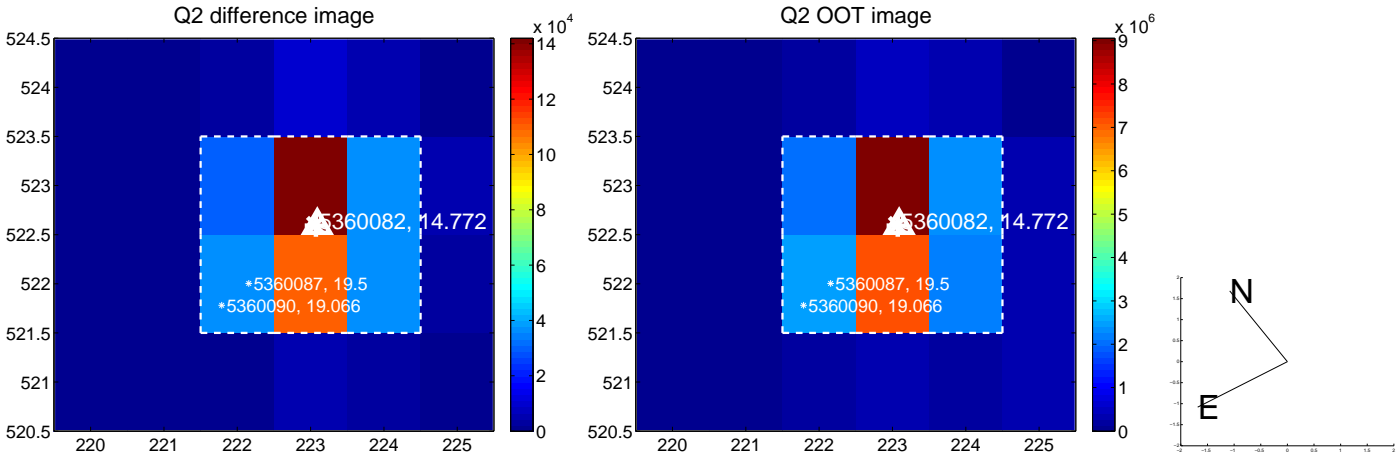
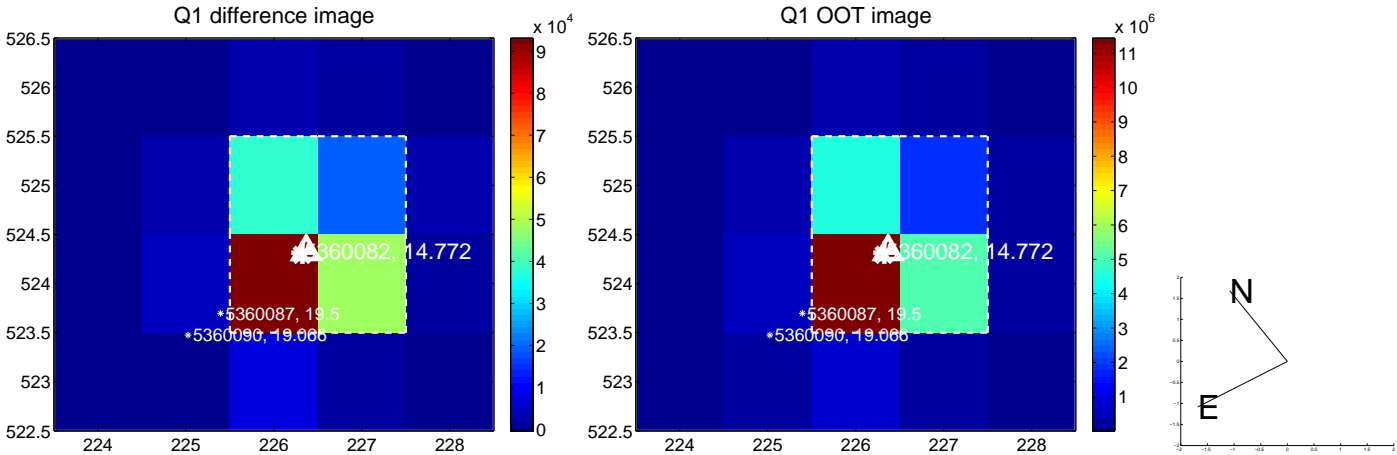
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.030 \pm 0.067$	0.44	$-0.016 \pm 0.067$	$0.025 \pm 0.067$
PRF-fit source offset from KIC position	$0.083 \pm 0.068$	1.22	$-0.076 \pm 0.068$	$-0.033 \pm 0.068$
photometric centroid source offset	$0.09 \pm 0.01$	8.35	$0.01 \pm 0.01$	$-0.09 \pm 0.01$

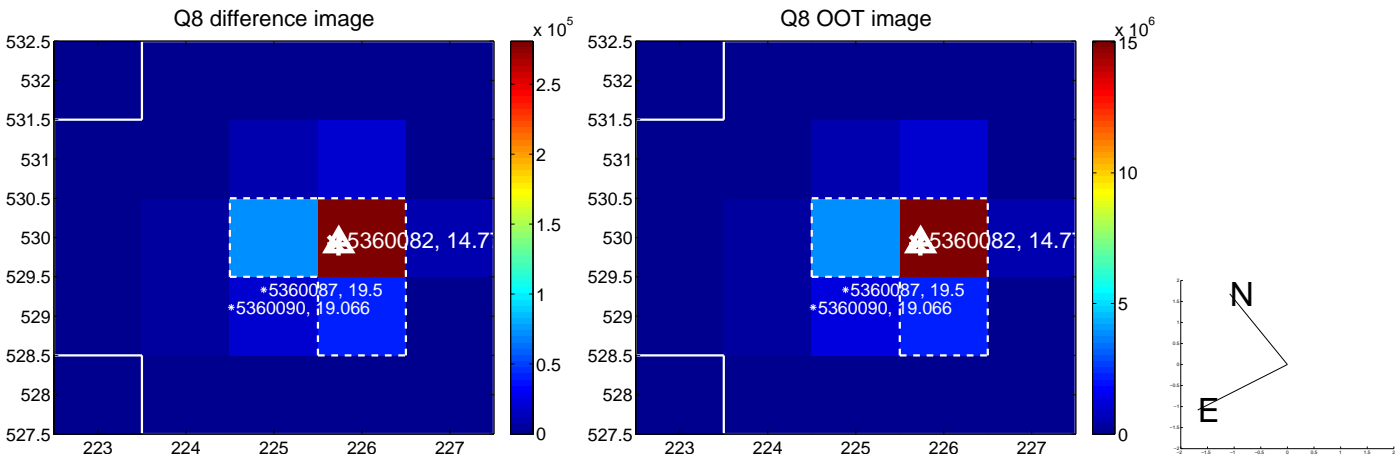
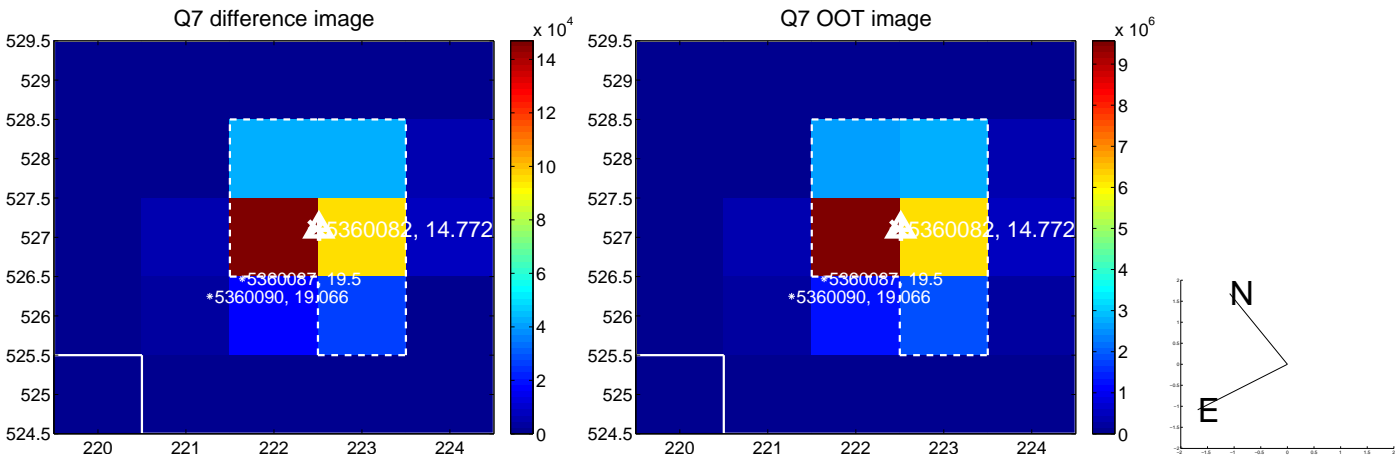
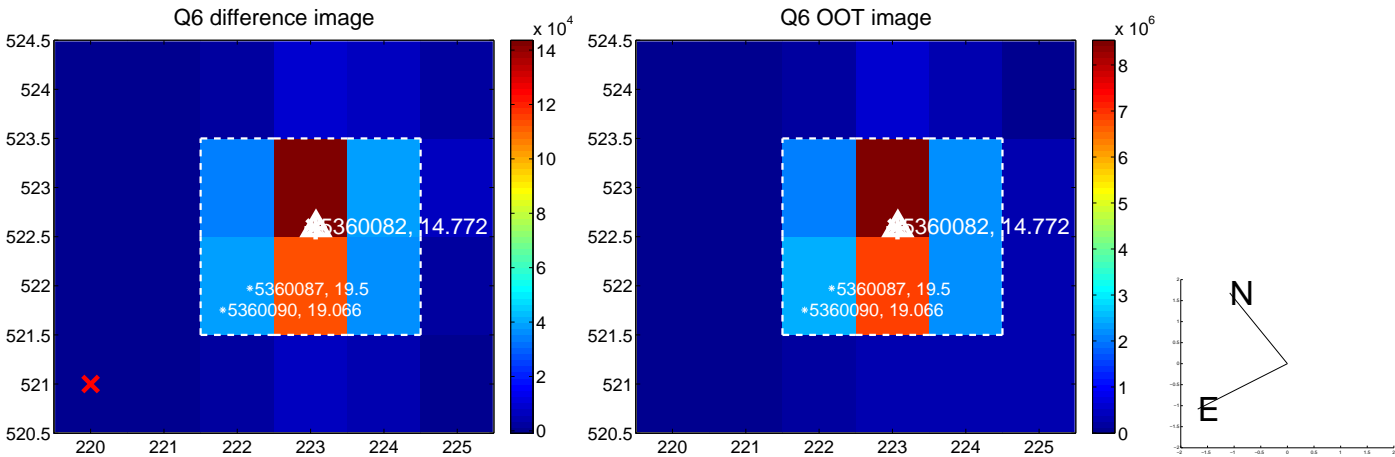
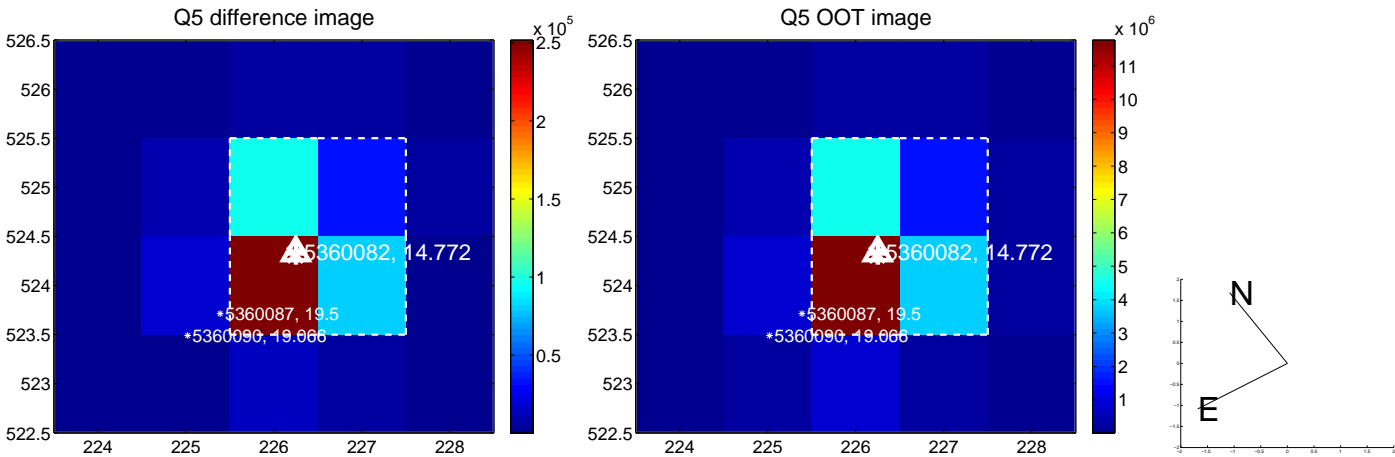


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

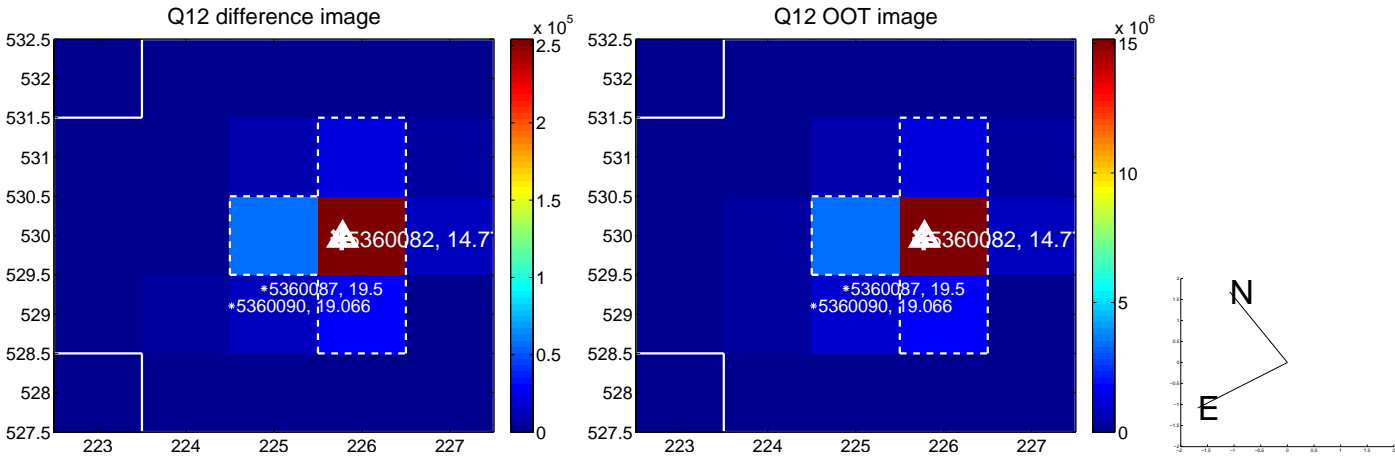
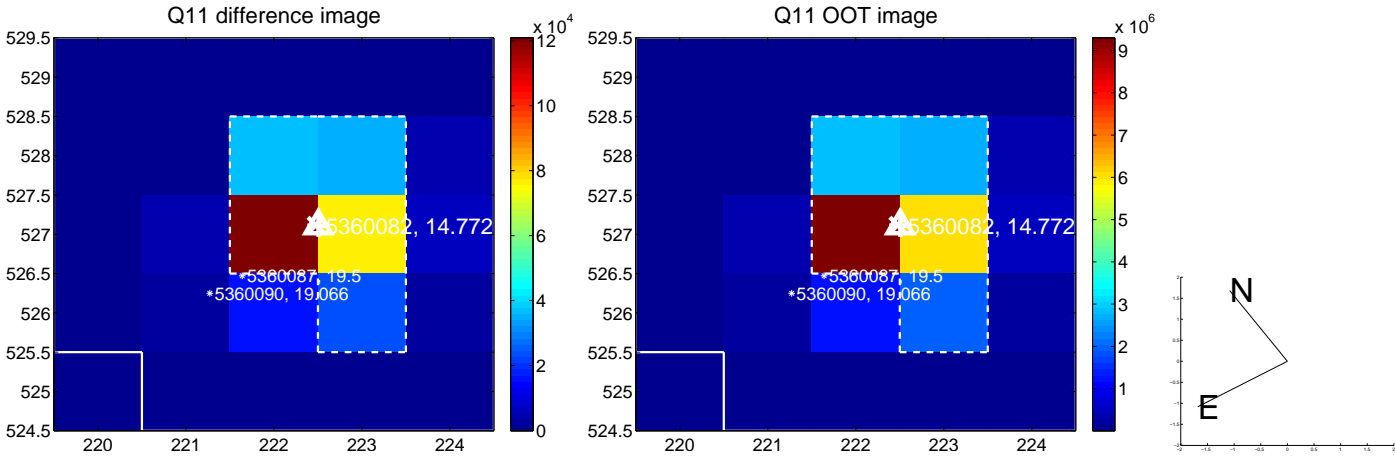
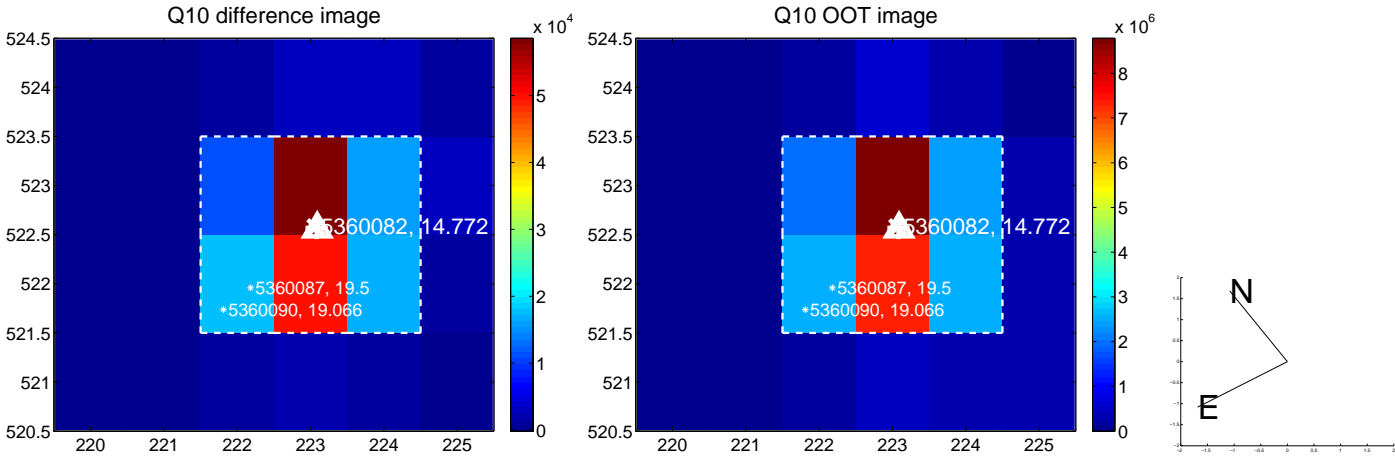
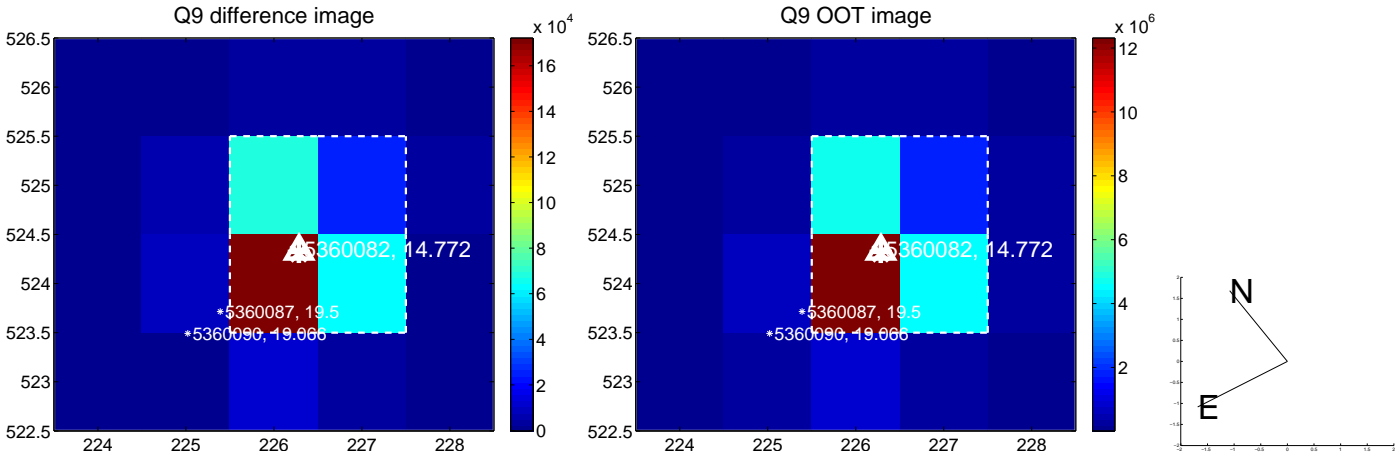


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

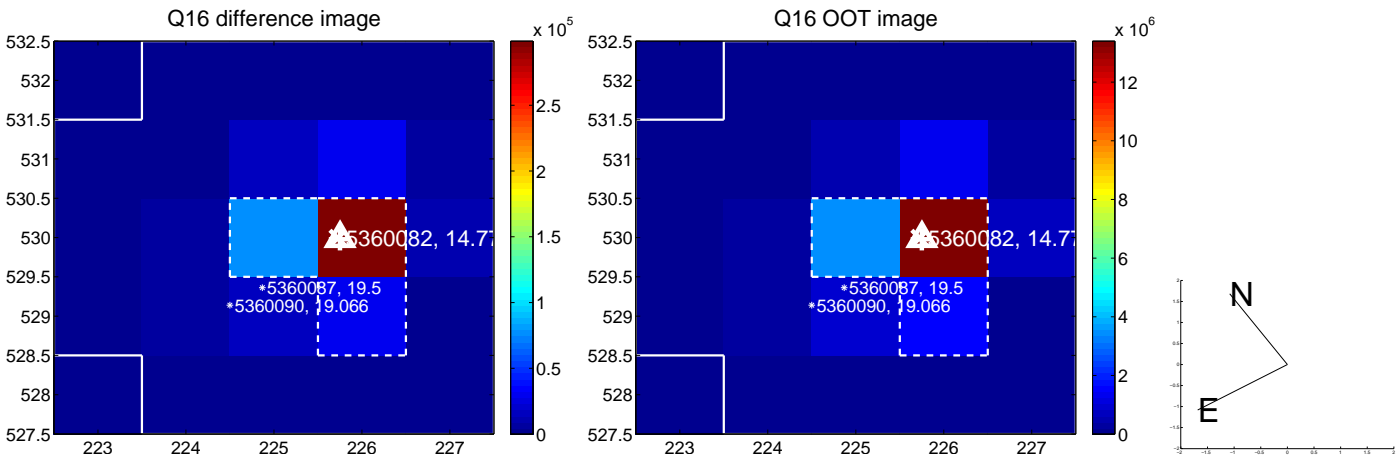
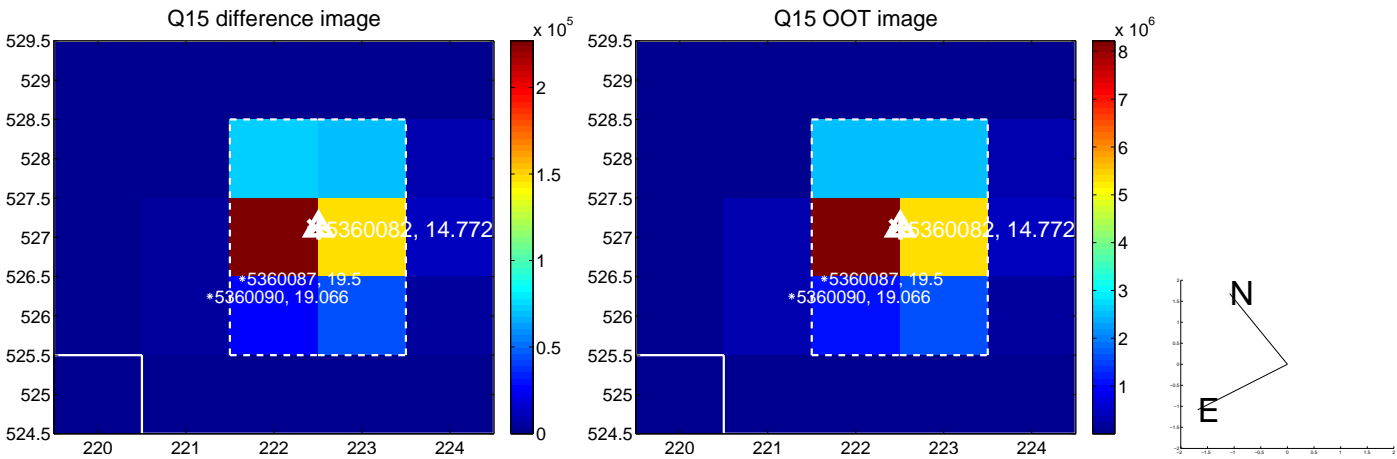
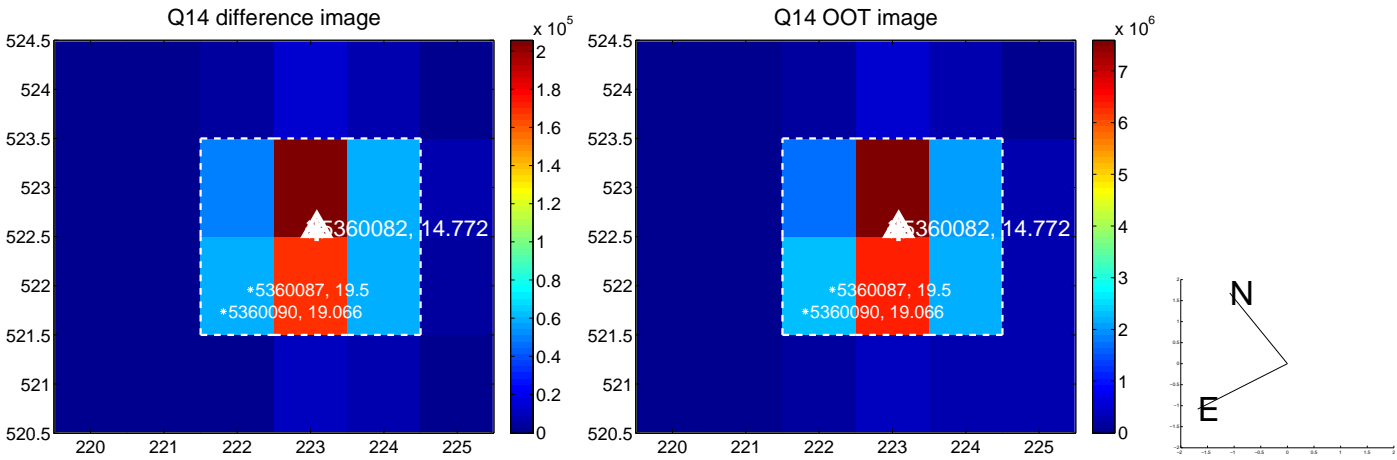
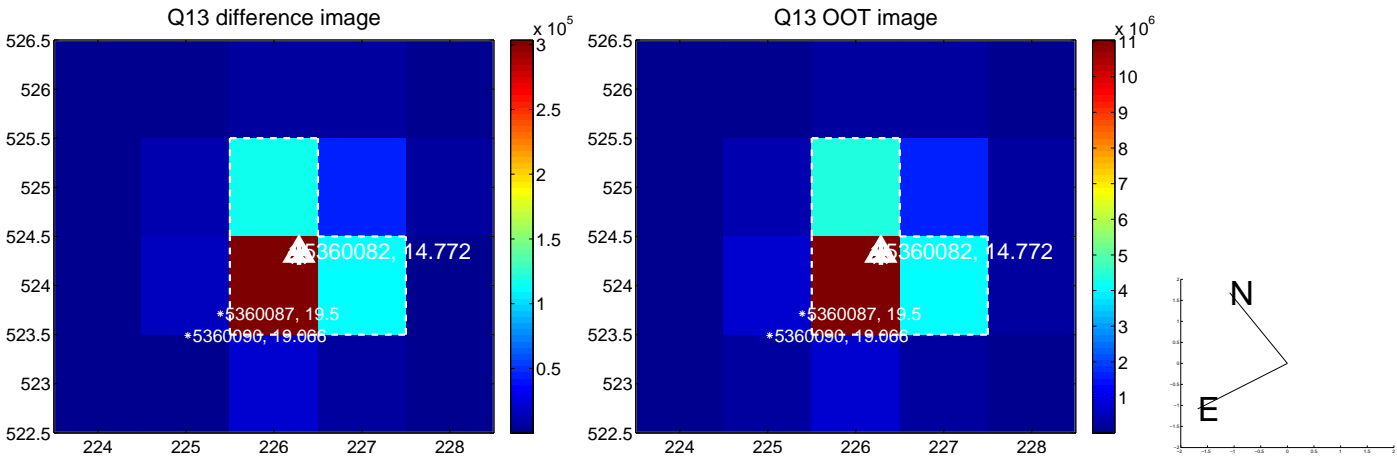




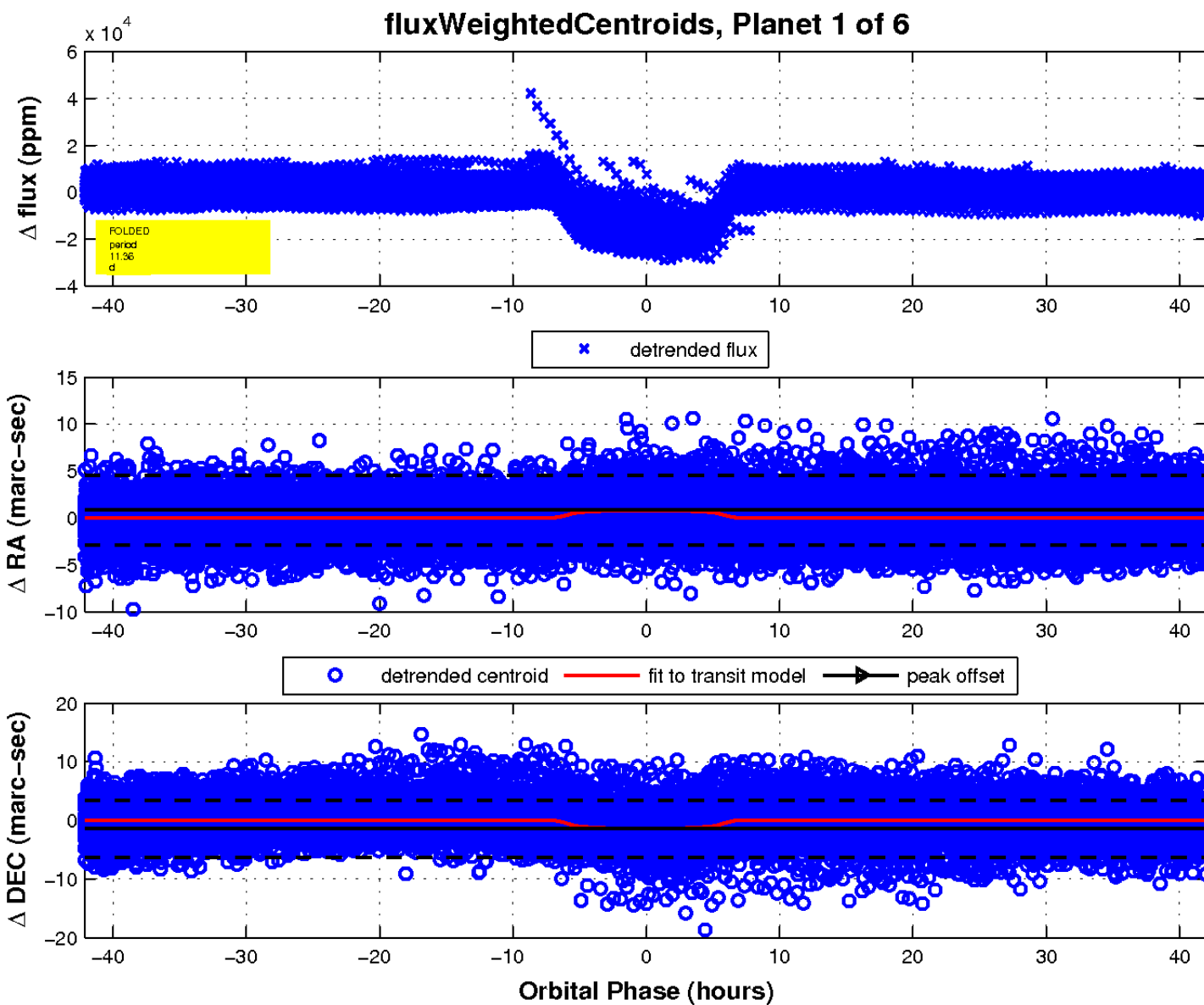
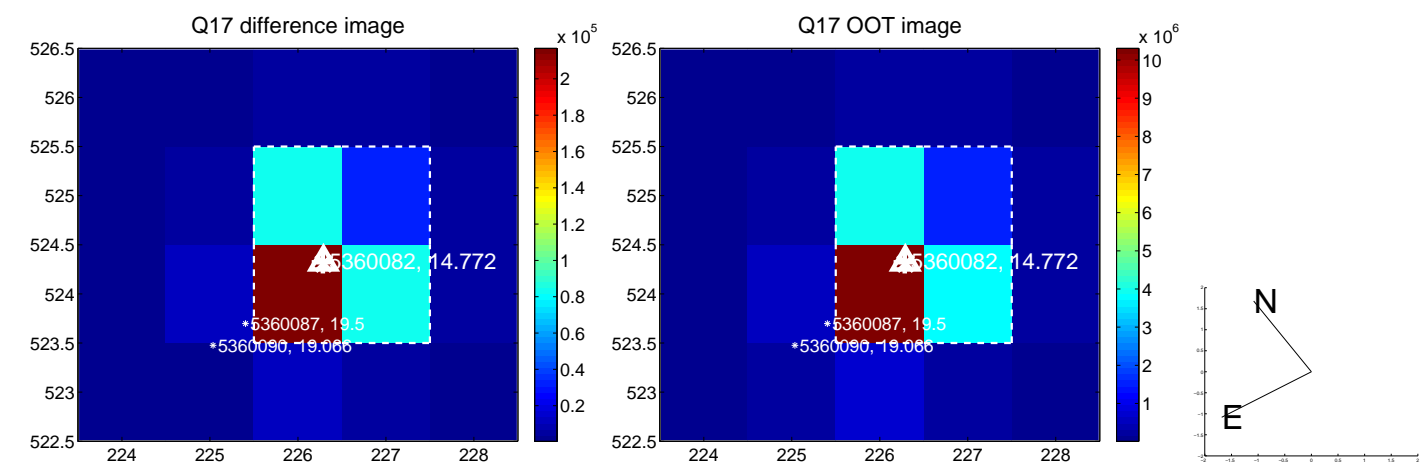
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

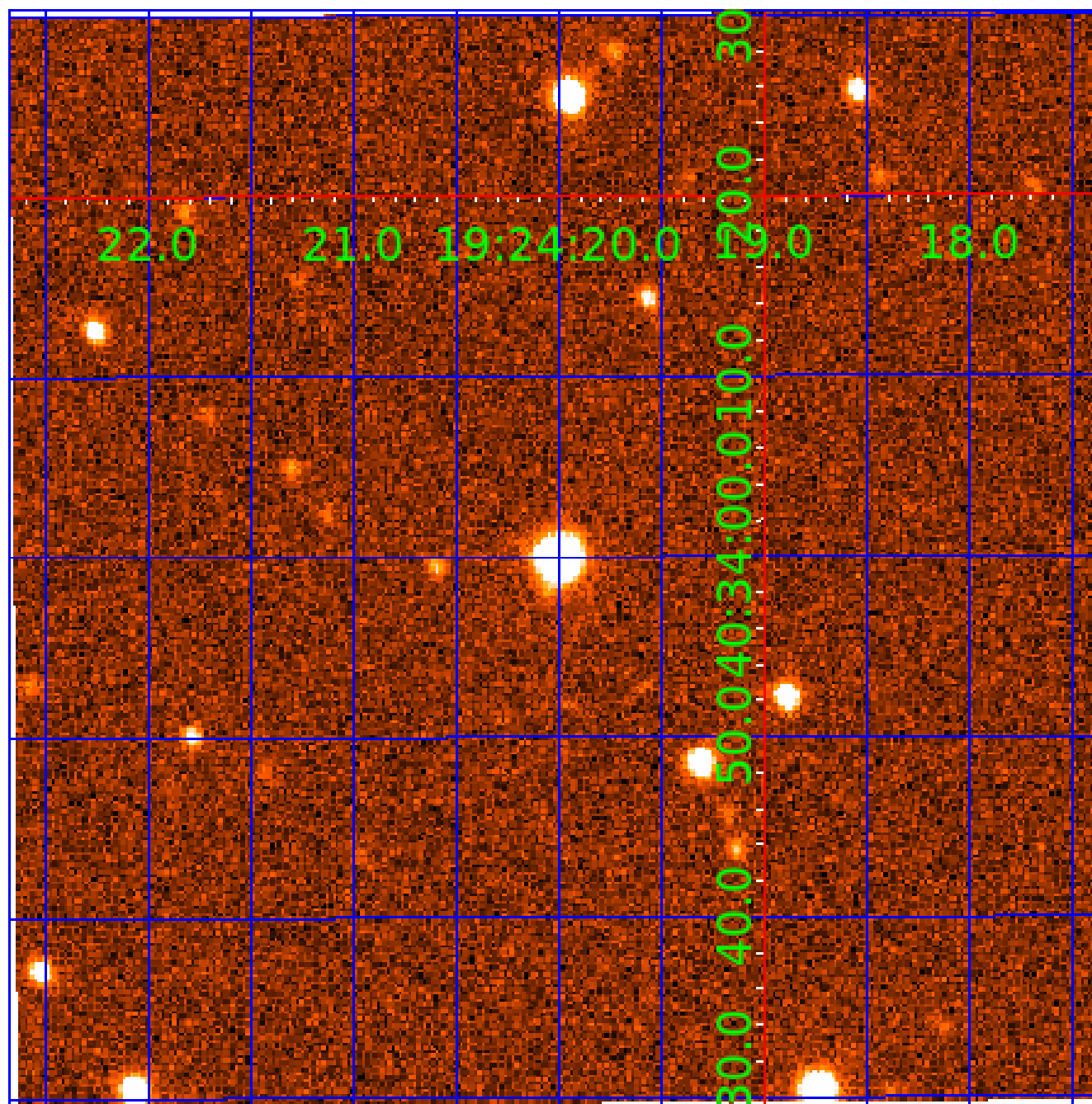


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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 005360082-02

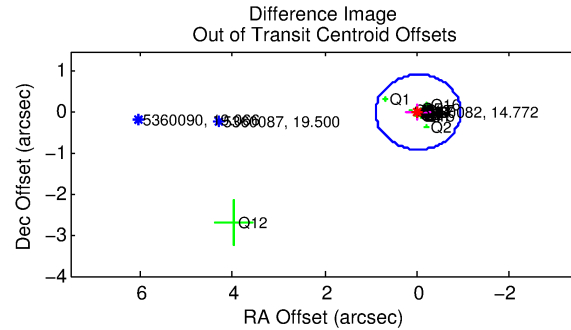
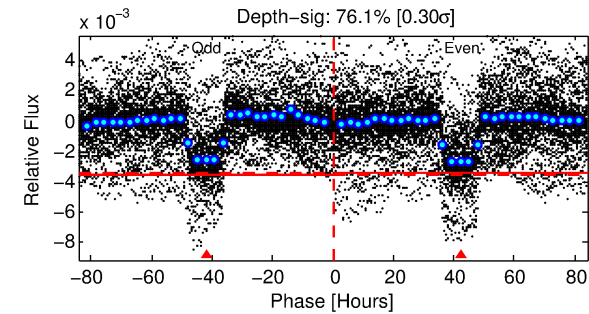
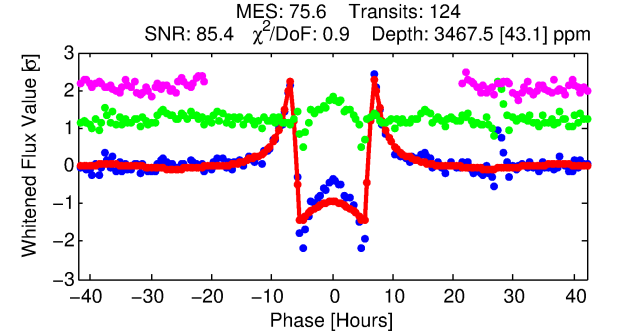
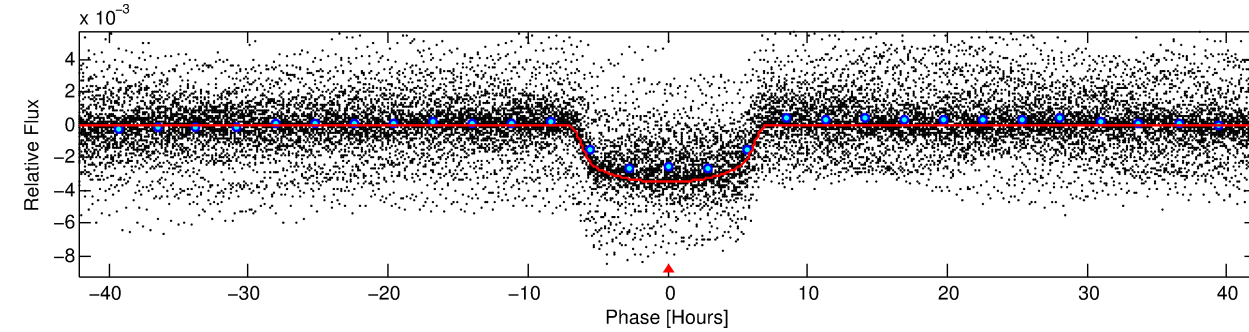
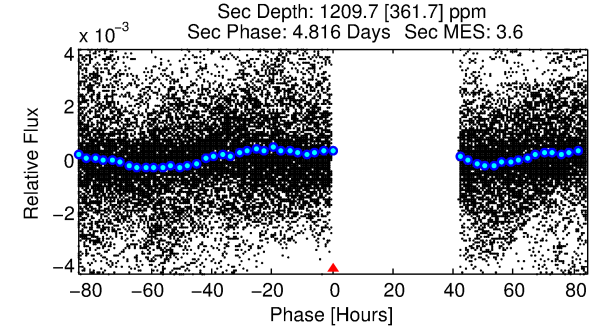
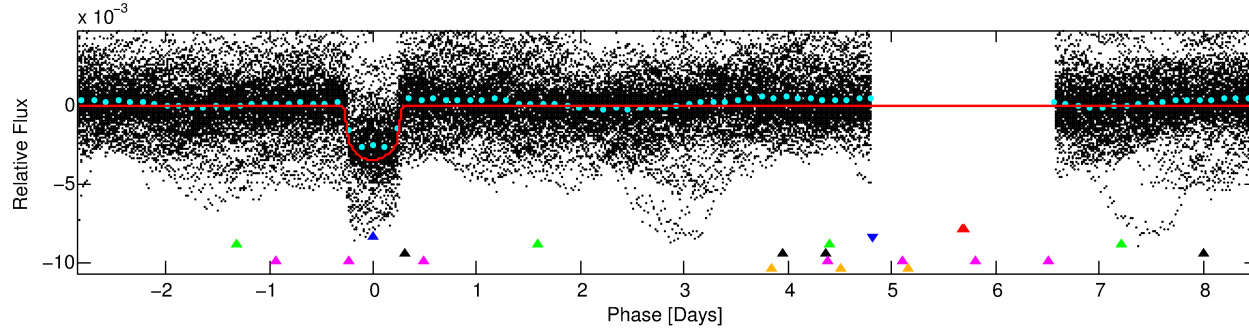
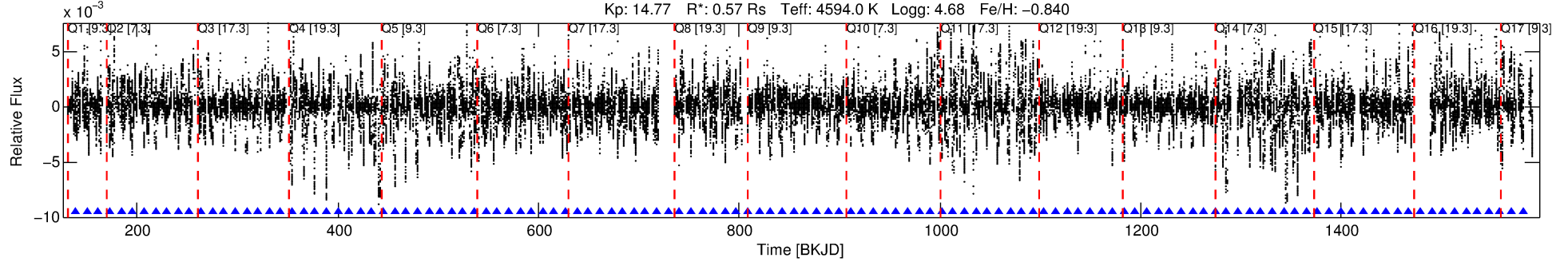
No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 2 of 6 Period: 11.355 d

KOI: K03768 Corr: No Ephemeris Match

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



## DV Fit Results:

Period = 11.35496 [0.00002] d  
Epoch = 138.8728 [0.0011] BKJD  
Rp/R\* = 0.0579 [0.0005]  
a/R\* = 4.88 [0.08]  
b = 0.72 [0.01]  
Seff = 19.31 [3.20]  
Teff = 535 [22] K  
Rp = 3.58 [0.29] Re  
a = 0.0815 [0.0056] AU  
Ag = 344.67 [108.93] [3.16σ]  
Teffp = 3561 [291] K [10.36σ]

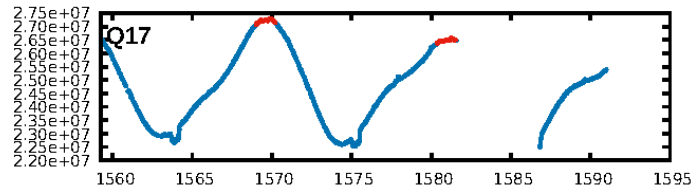
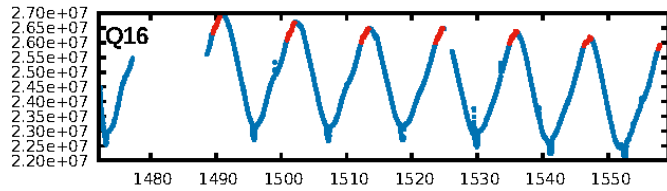
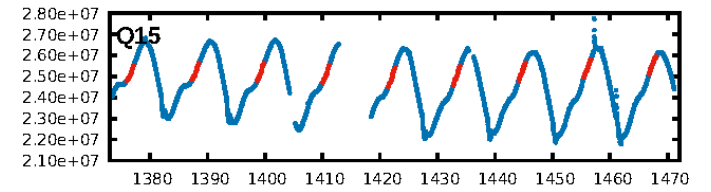
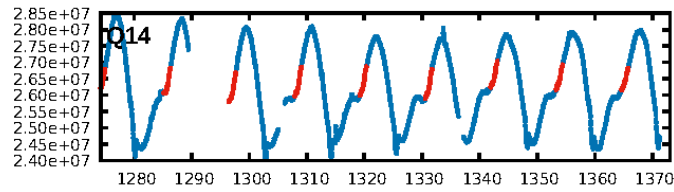
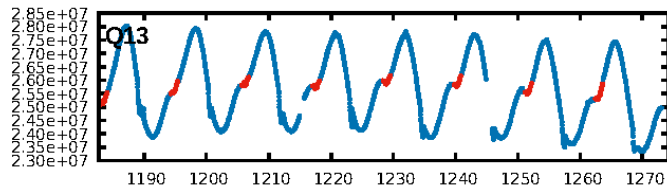
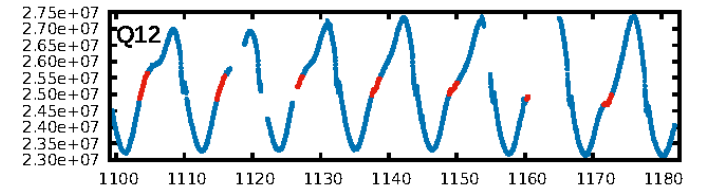
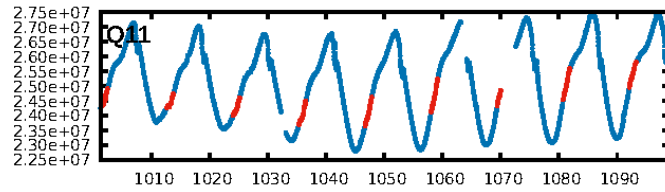
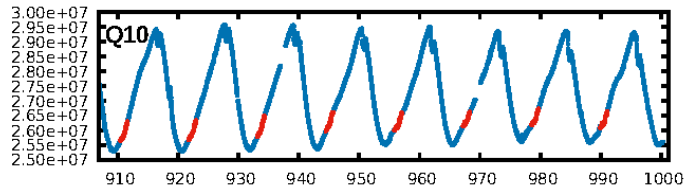
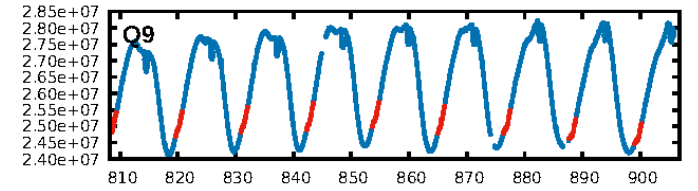
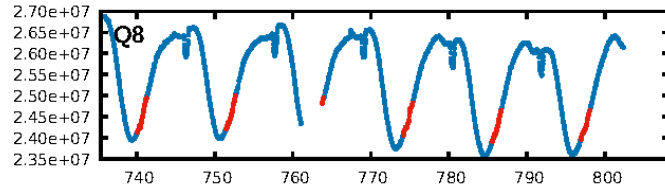
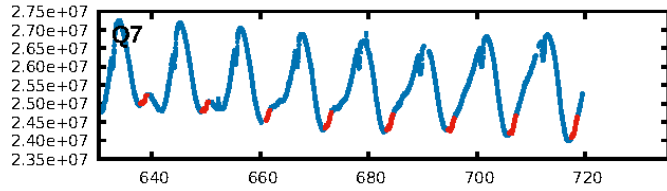
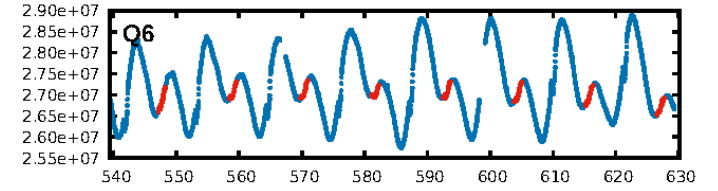
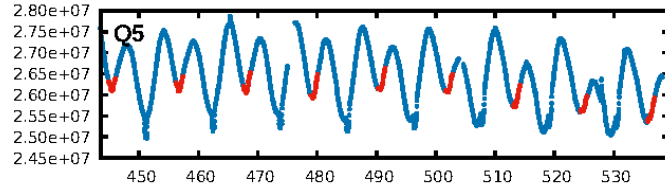
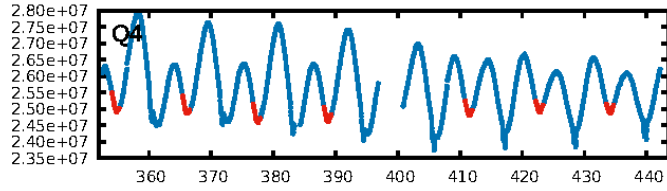
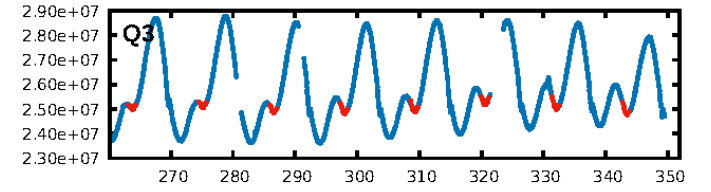
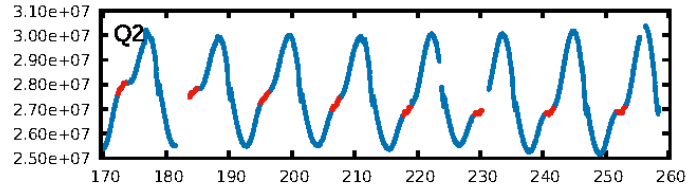
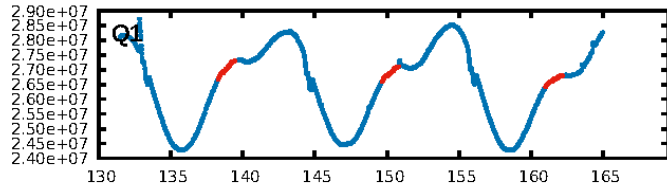
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 4.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [119/119]  
GhostDiagnostic-chr: 1.916  
Centroid-sig: 73.7%  
Centroid-so: 0.192 arcsec [3.41σ]  
OotOffset-rm: 0.024 arcsec [0.08σ]  
KicOffset-rm: 0.111 arcsec [0.86σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.76 [13/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:25 Z

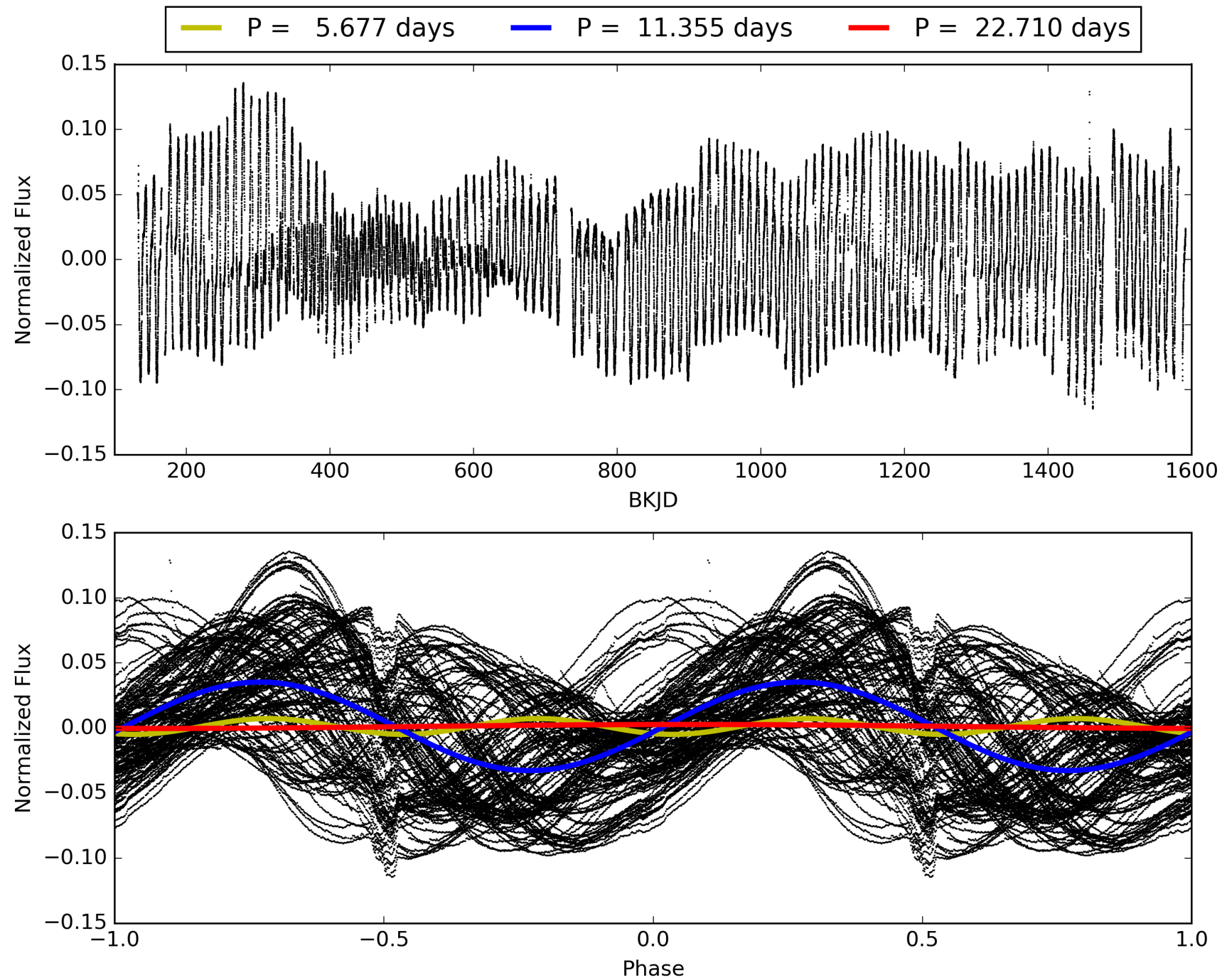
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005360082-02, PDC Light Curves





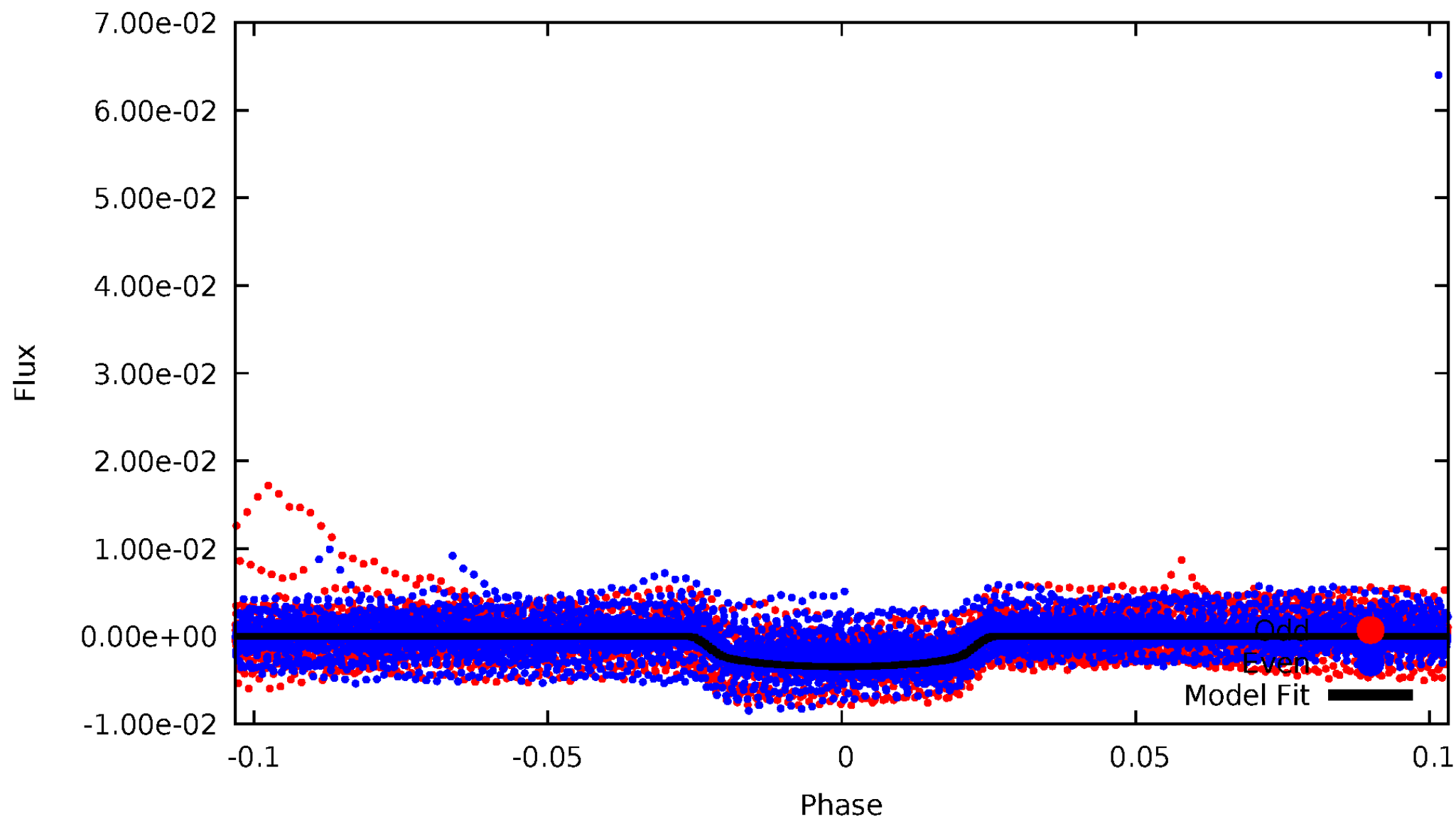
TCE 005360082-02





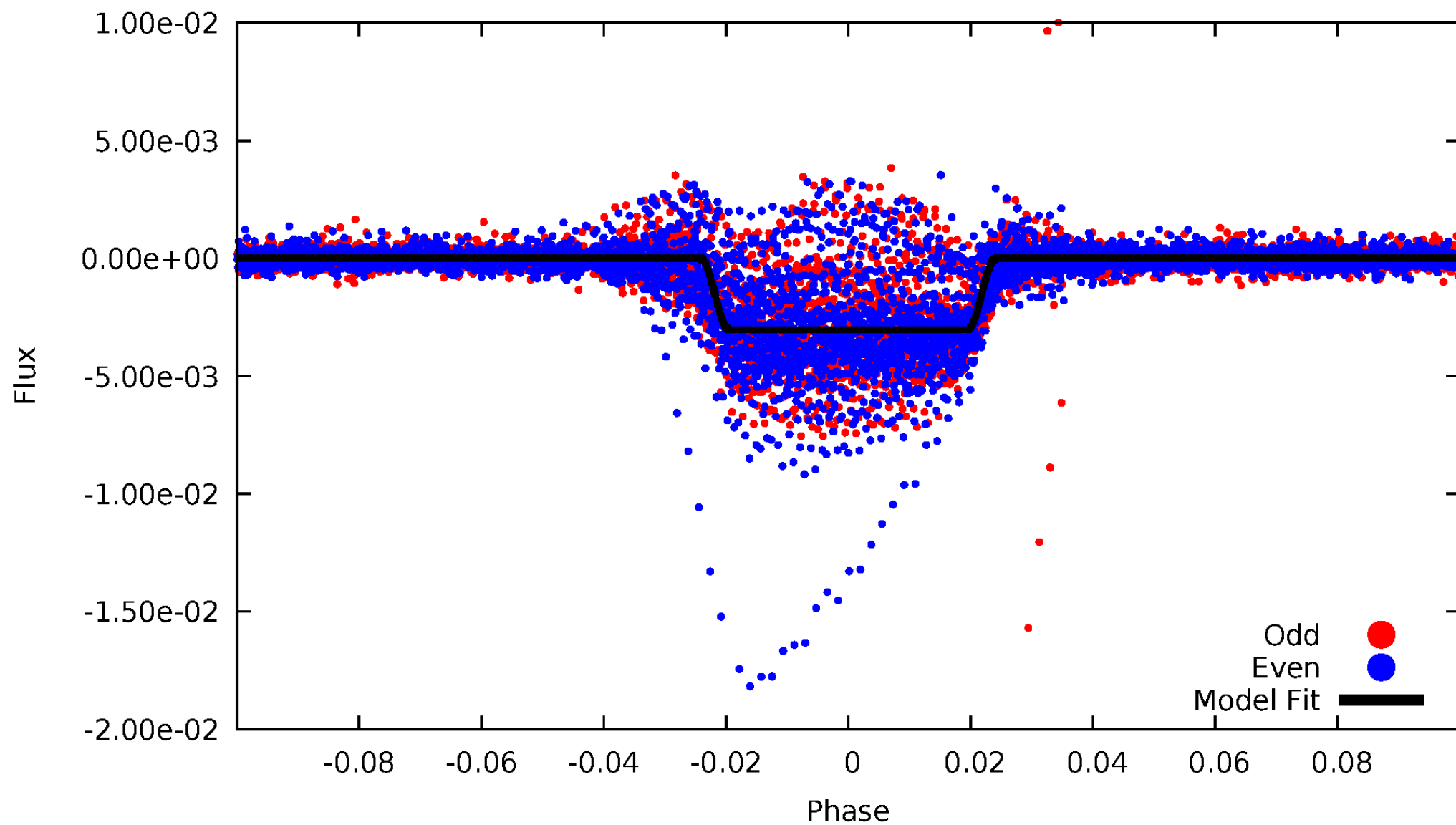
# DV Odd/Even

TCE 005360082-02



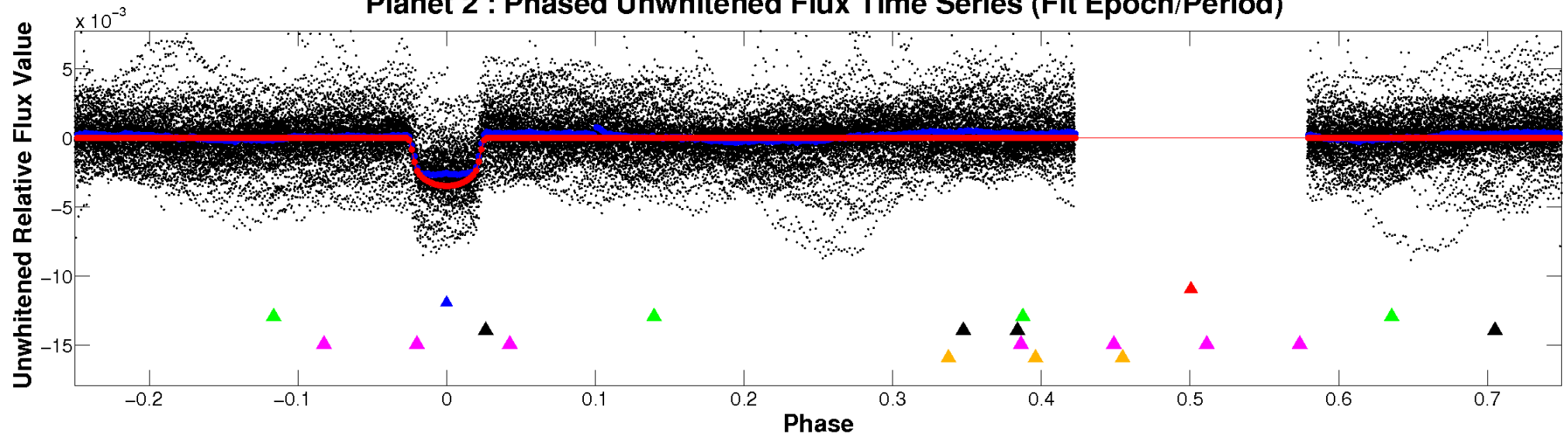
# ALT Odd/Even

TCE 005360082-02

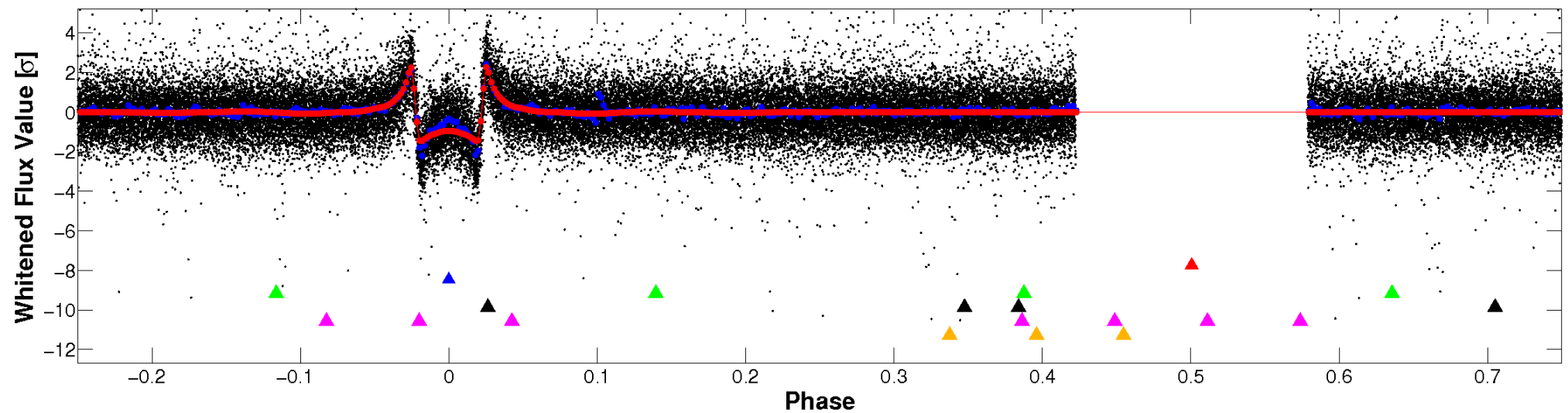


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

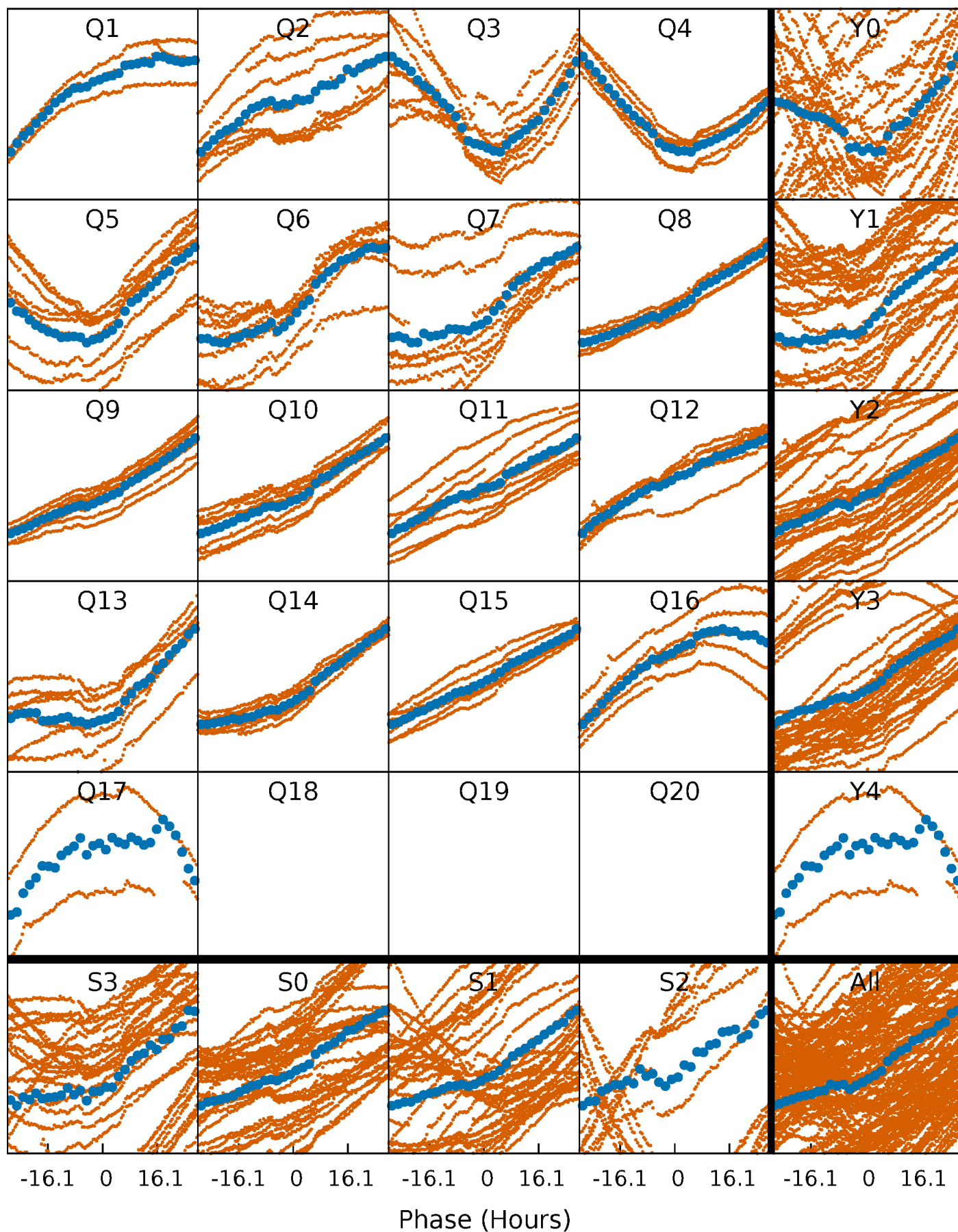


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



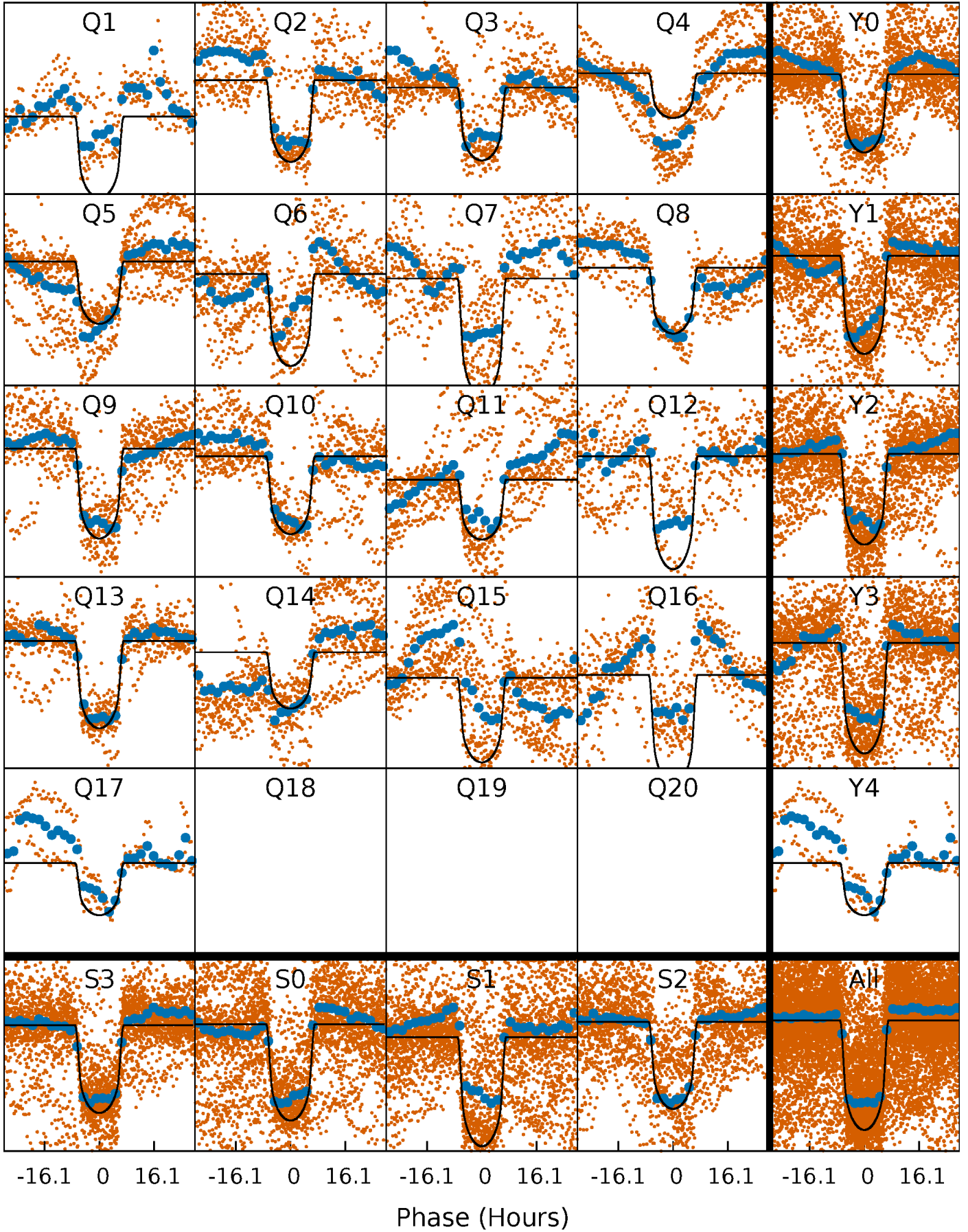
# PDC Quarter-Phased Transit Curves

TCE 005360082-02 P= 11.354960 Days  $T_0=138.872796$  (BKJD)



# DV Quarter-Phased Transit Curves

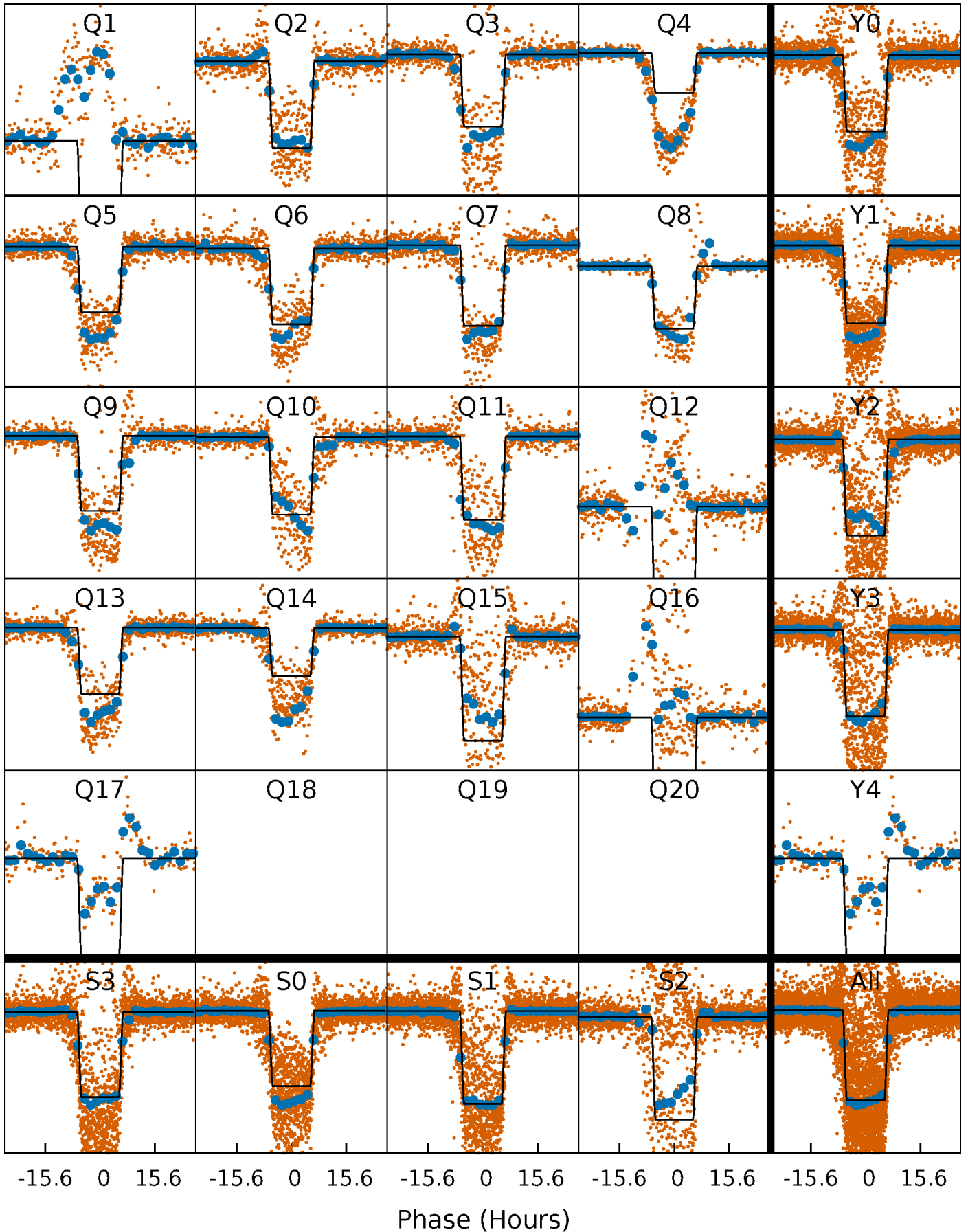
TCE 005360082-02   P= 11.354960 Days    $T_0=138.872796$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

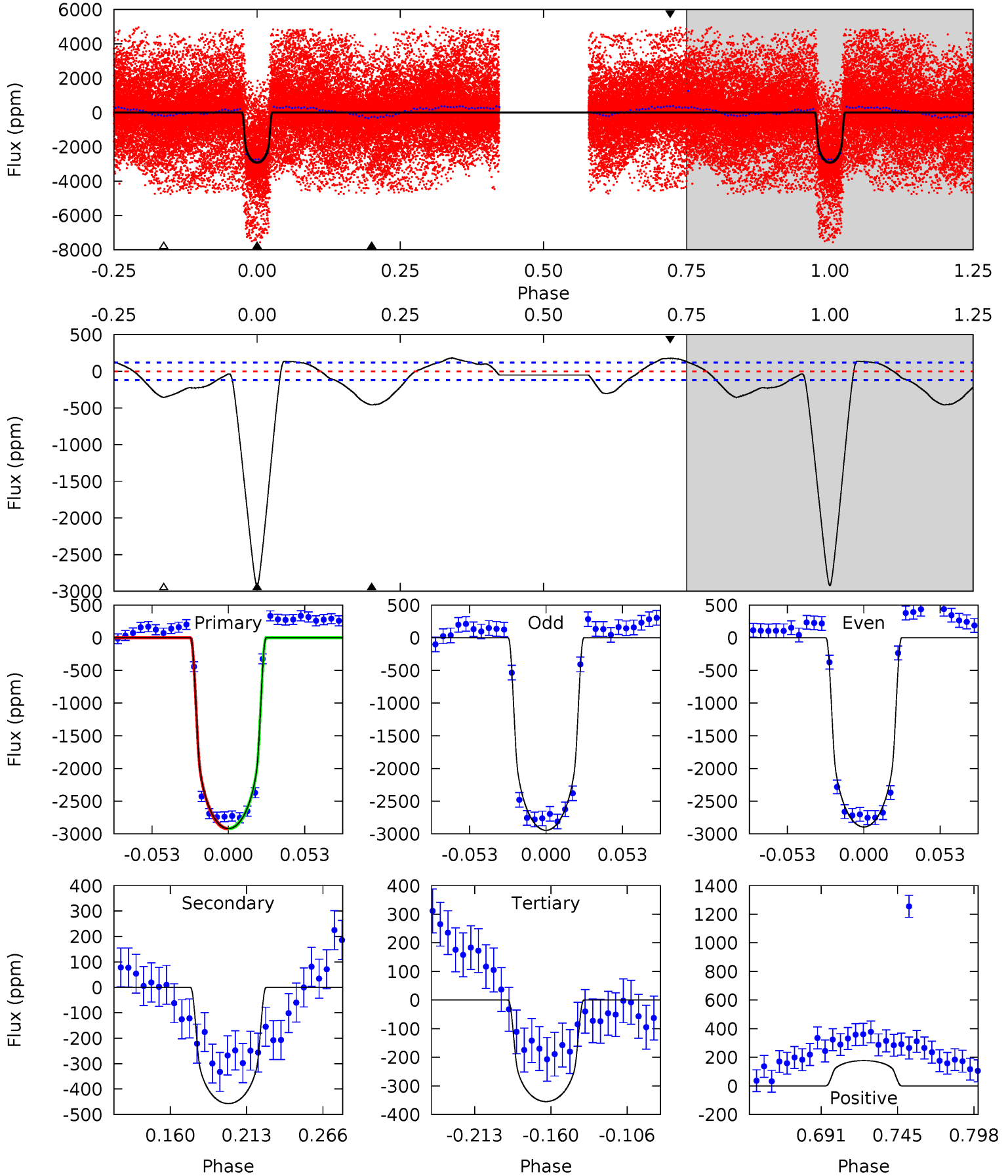
TCE 005360082-02   P= 11.354834 Days    $T_0=138.879743$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-02, P = 11.354960 Days, E = 127.517836 Days

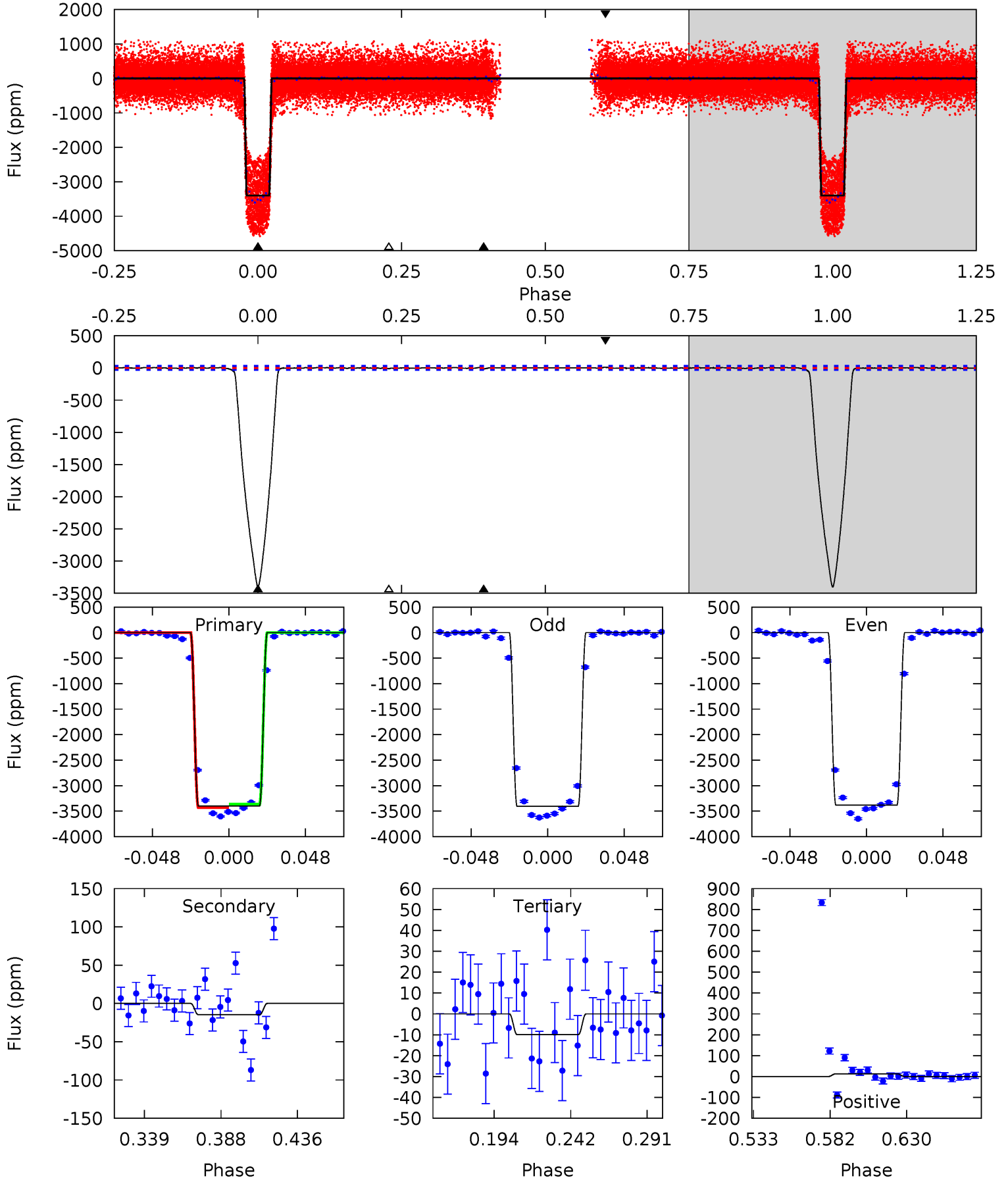
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
114.9	18.0	14.0	6.97	4.70	1.93	6.38	100.9	107.9	4.03	11.0	1.01	0.91	0.06	0.04



# Alt Model-Shift Uniqueness Test

005360082-02, P = 11.354834 Days, E = 127.524909 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
517.1	2.24	1.51	2.00	4.71	1.97	0.54	515.6	515.1	0.73	0.24	1.92	0.95	0.00	5.12





### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-457 \pm 25$	$3.56^{+0.17}_{-0.15}$	$743^{+26}_{-29}$	$3262^{+78}_{-85}$	$133^{+13}_{-11}$
Alt.	$-15 \pm 7$	$3.39^{+0.16}_{-0.14}$	$744^{+24}_{-28}$	$2119^{+108}_{-128}$	$4.669^{+2.182}_{-2.033}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

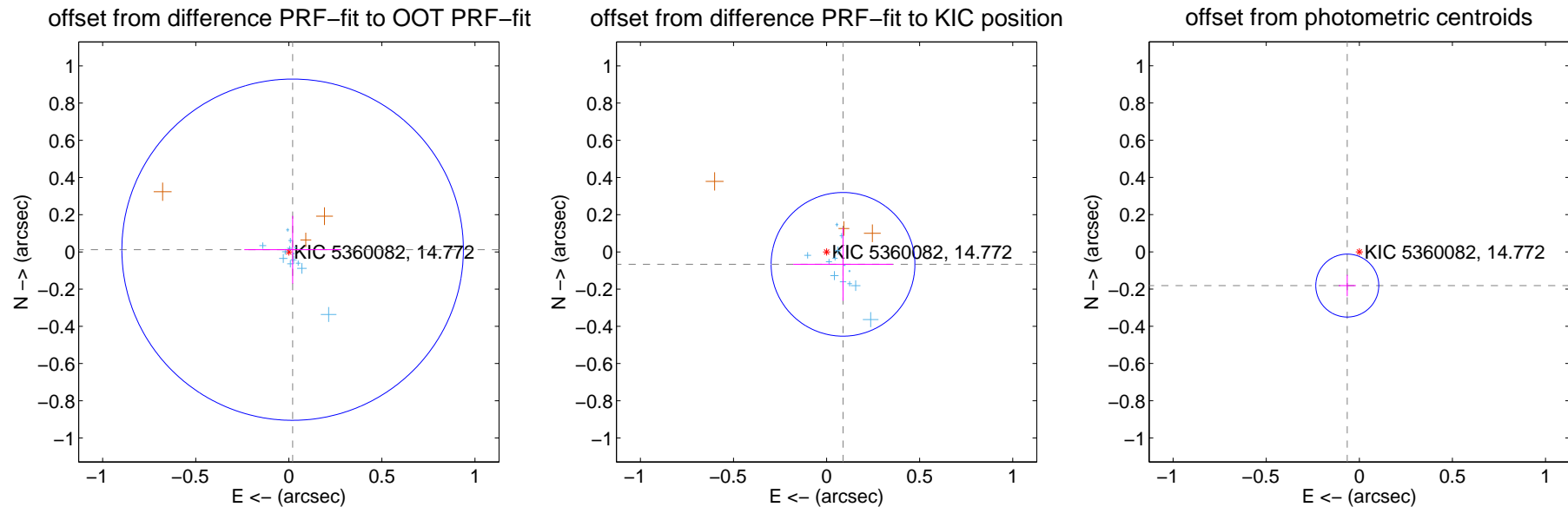
## DV Centroid Data

Supplemental centroid analysis for 005360082-02. Kepler magnitude: 14.77. Transit SNR 85.45

There are 13 quarters with good PRF difference image offsets

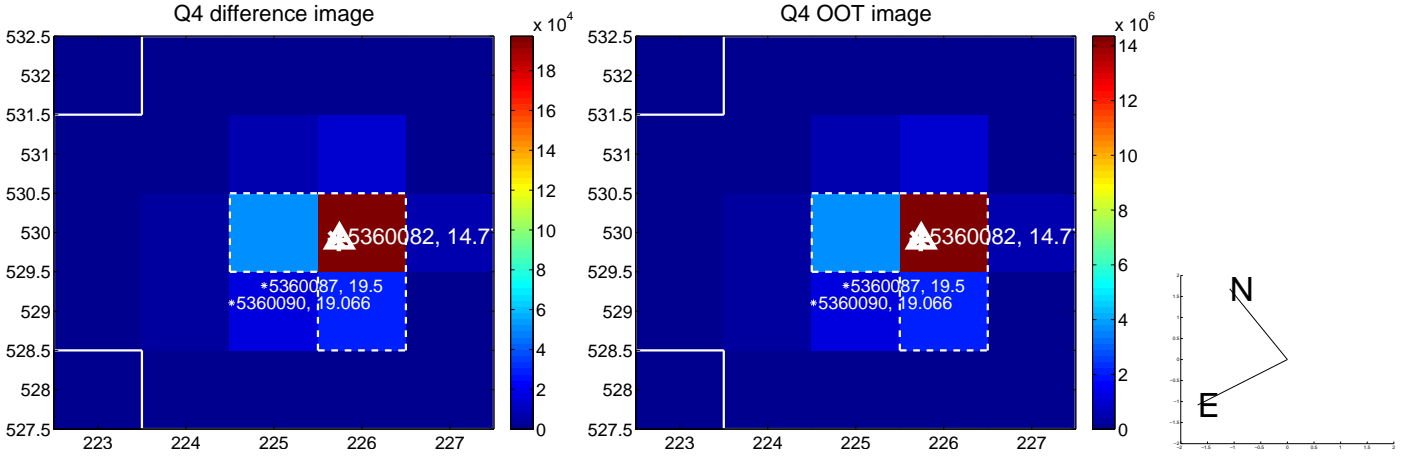
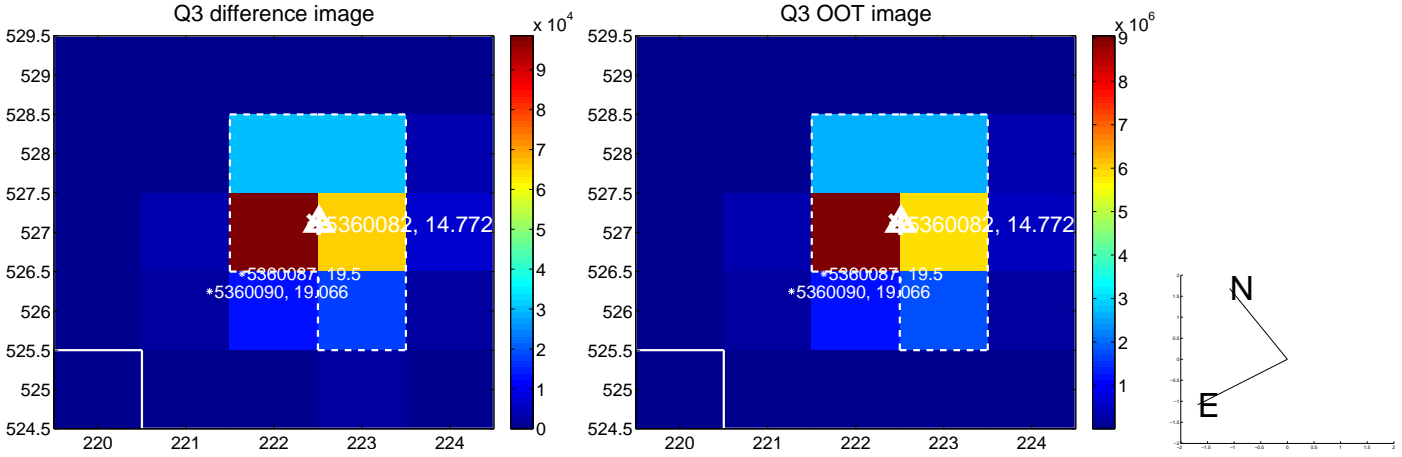
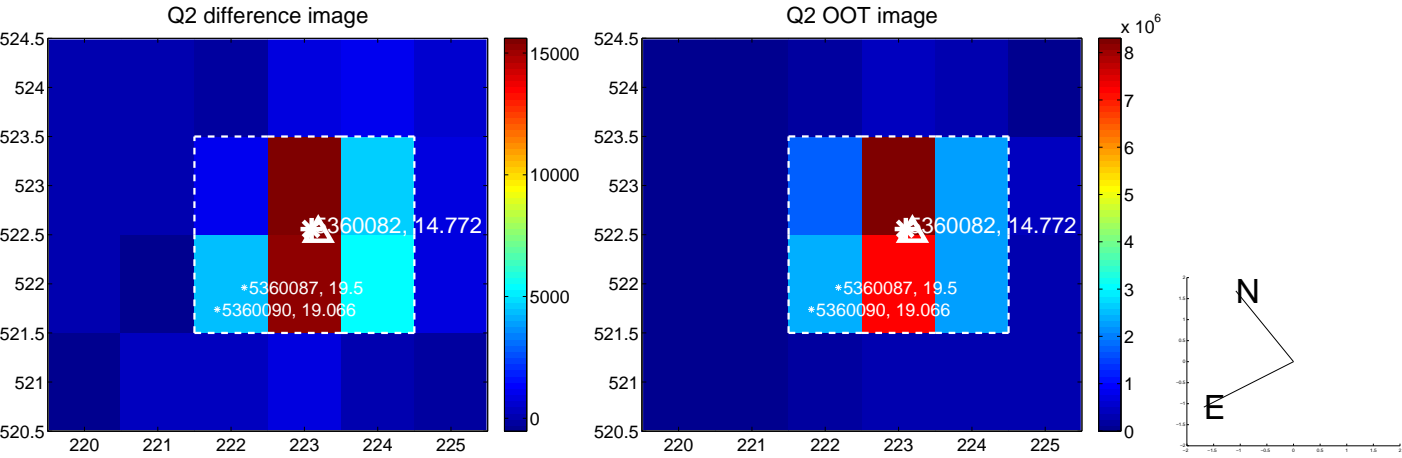
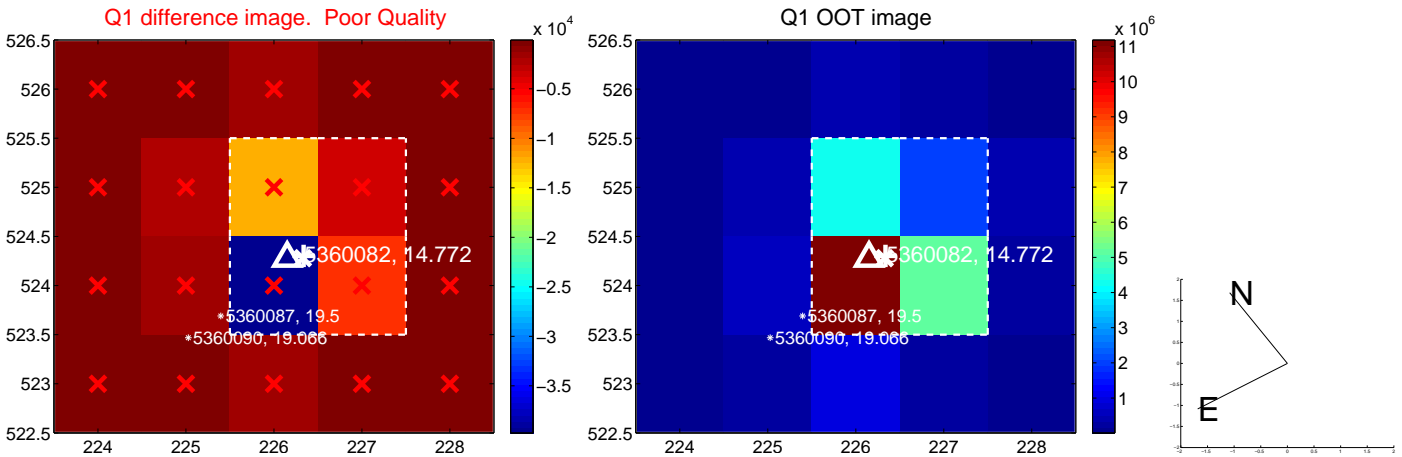
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.024 \pm 0.306$	0.08	$-0.020 \pm 0.259$	$0.012 \pm 0.182$
PRF-fit source offset from KIC position	$0.111 \pm 0.129$	0.86	$-0.088 \pm 0.268$	$-0.067 \pm 0.196$
photometric centroid source offset	$0.19 \pm 0.06$	3.41	$0.06 \pm 0.05$	$-0.18 \pm 0.06$

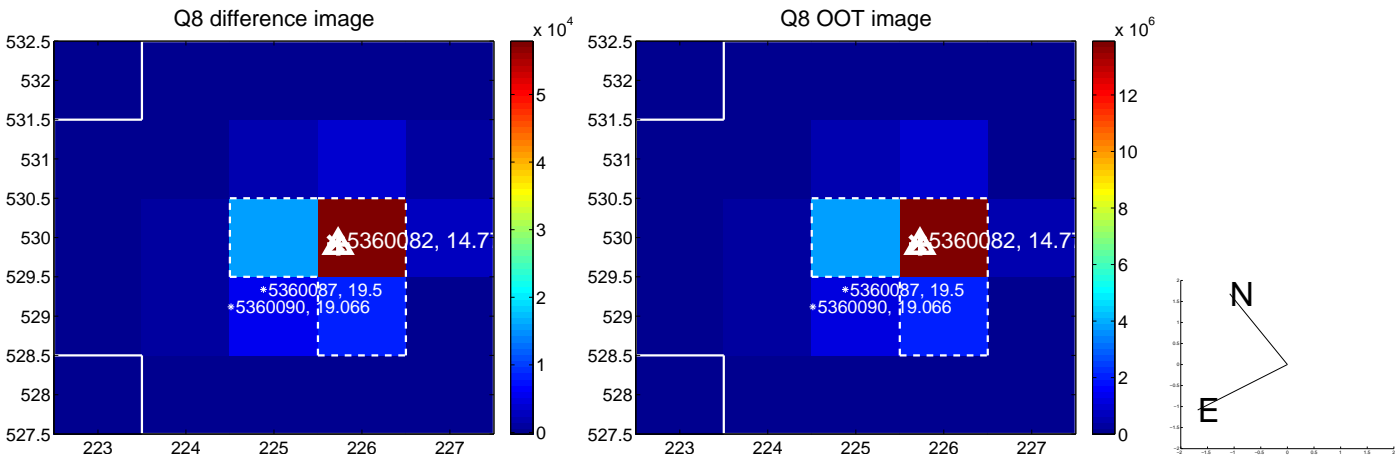
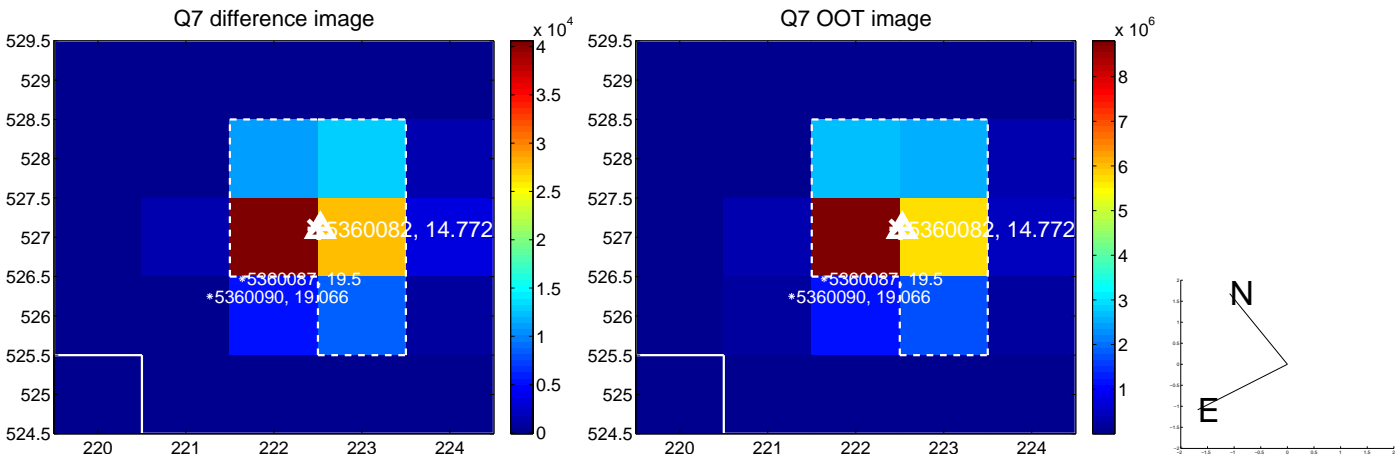
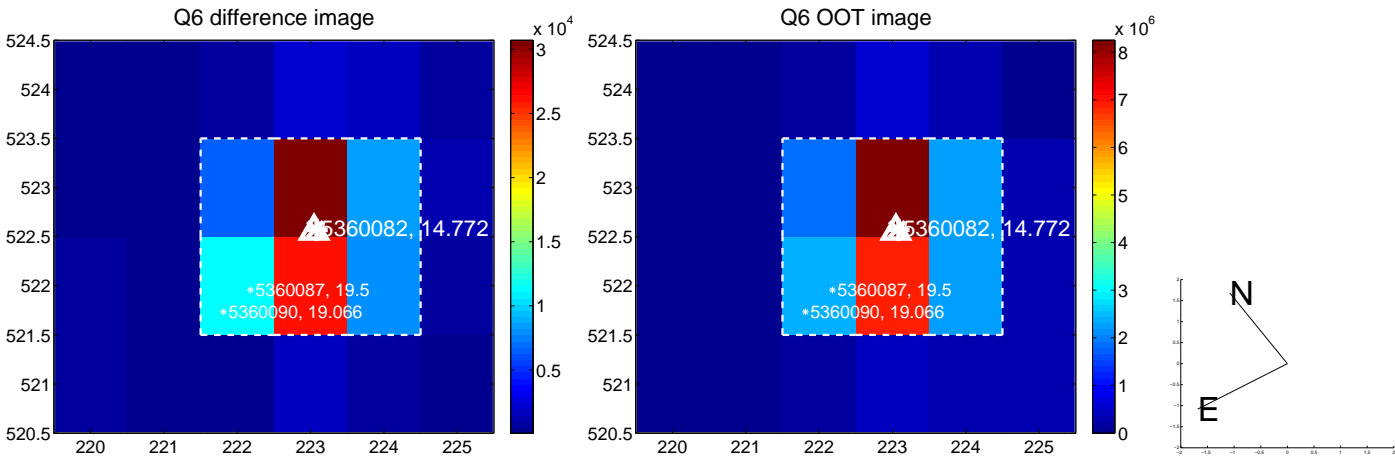
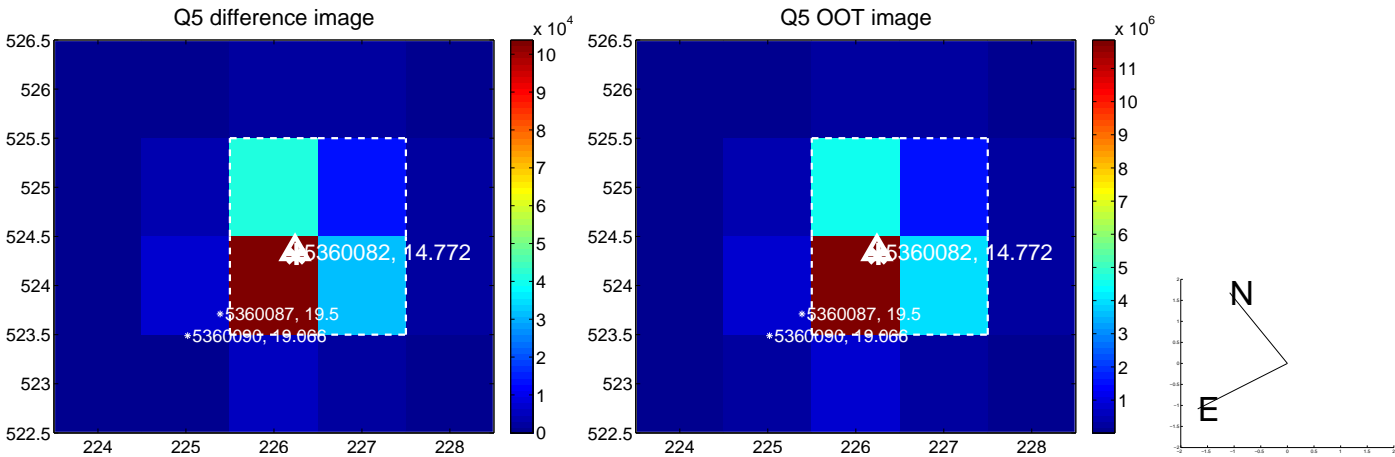


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

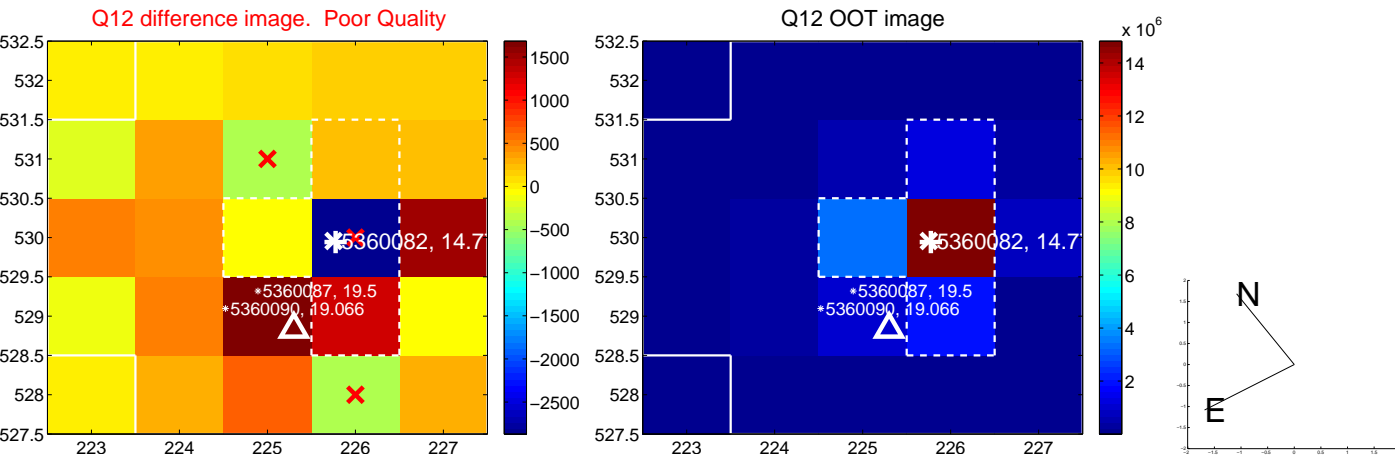
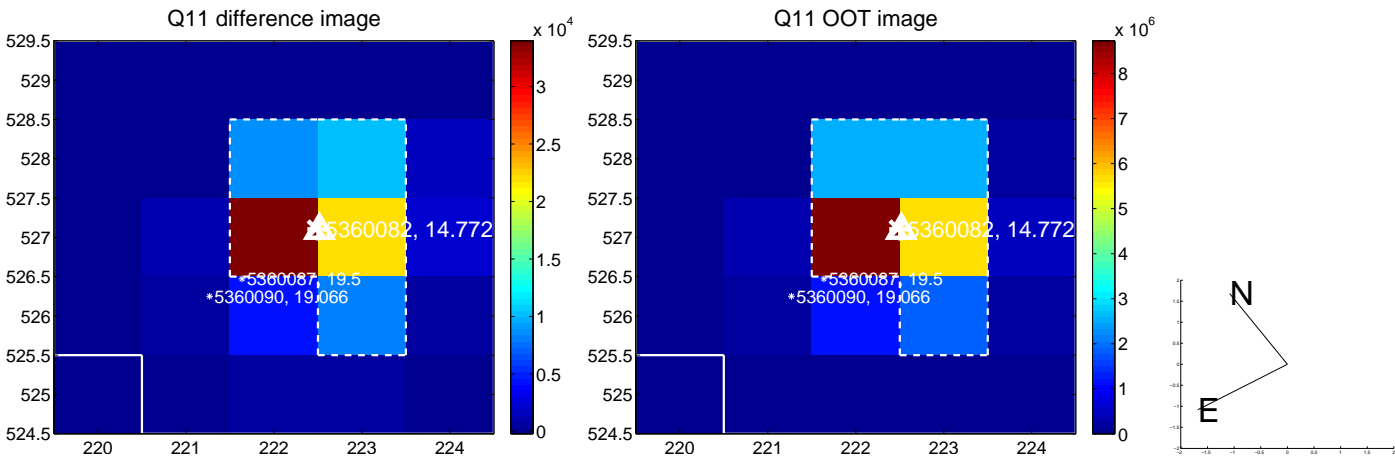
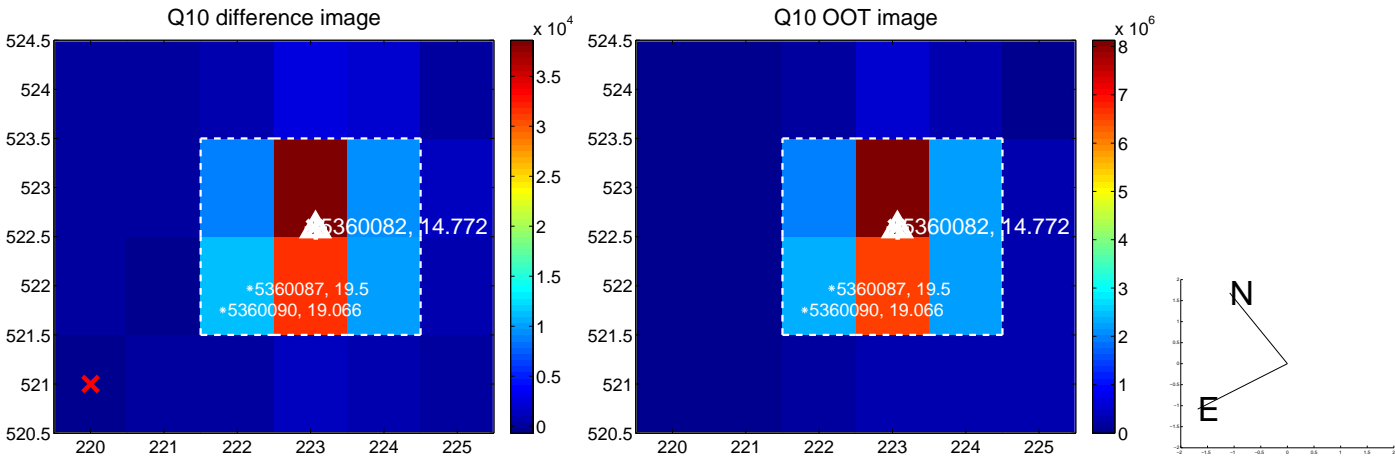
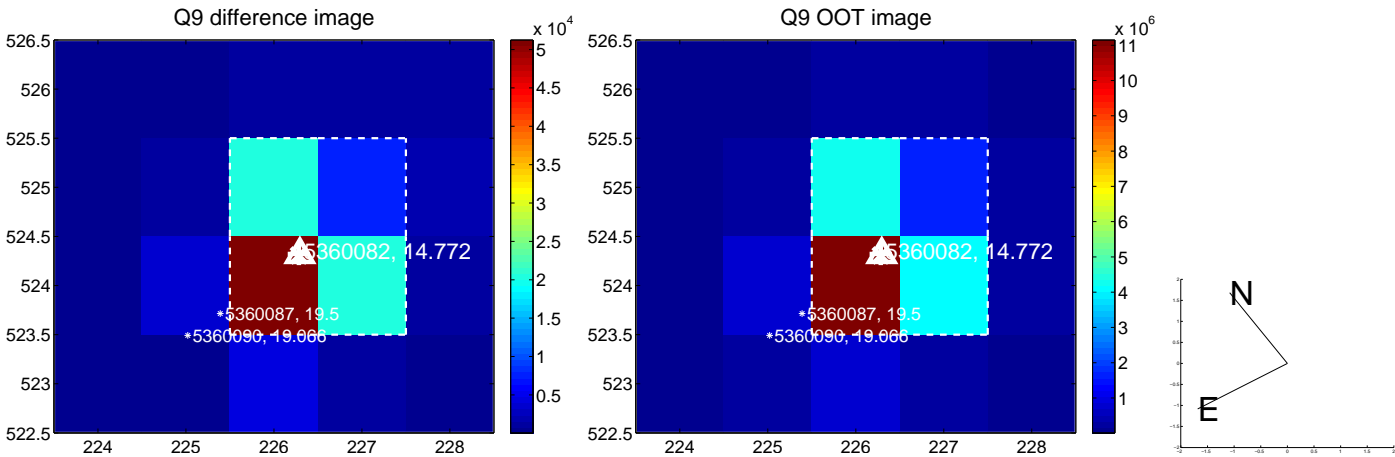
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



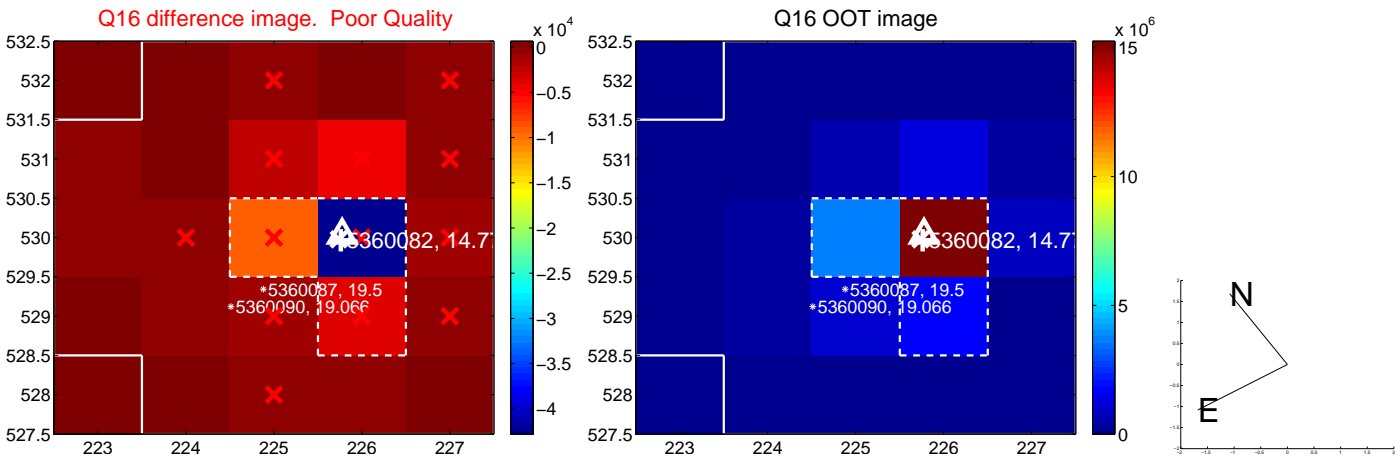
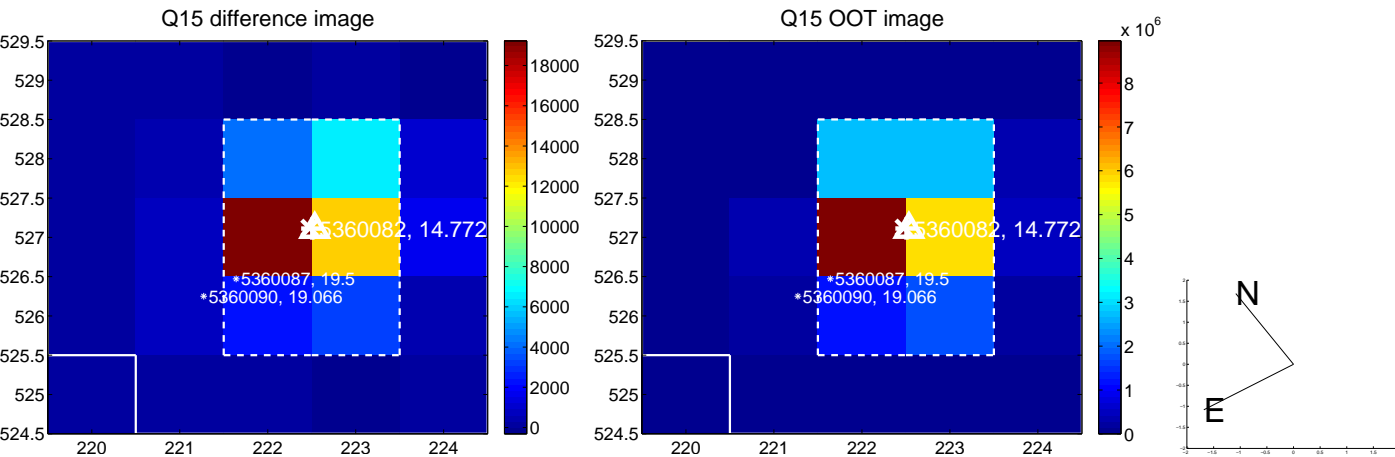
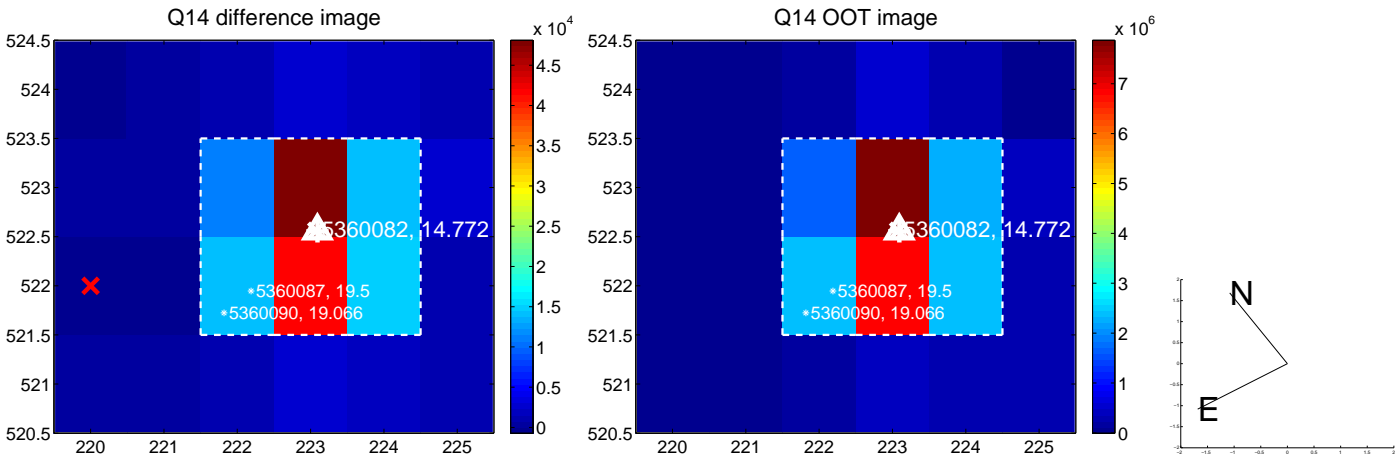
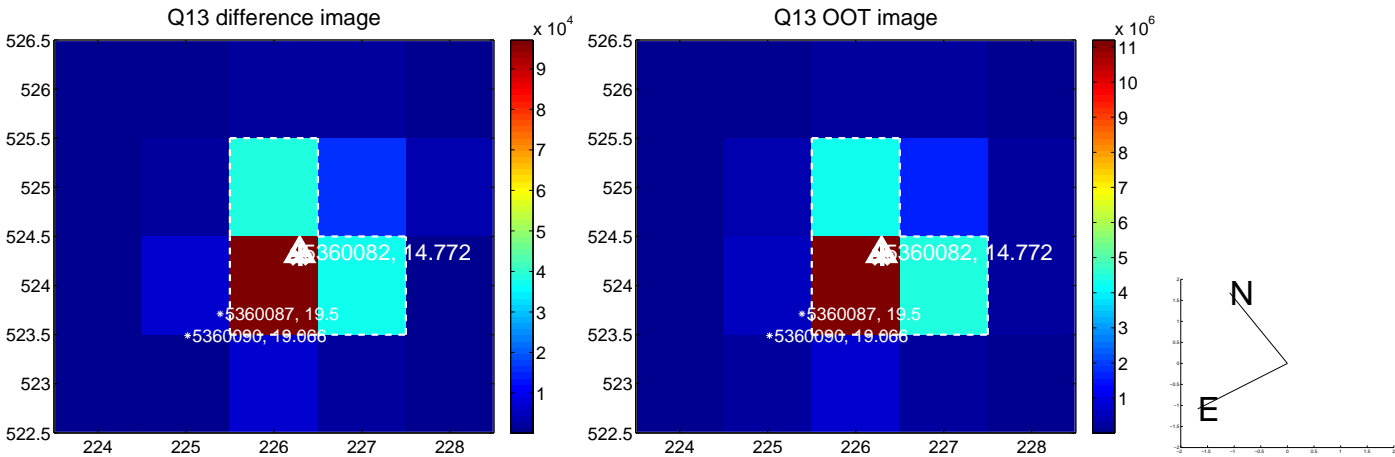
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



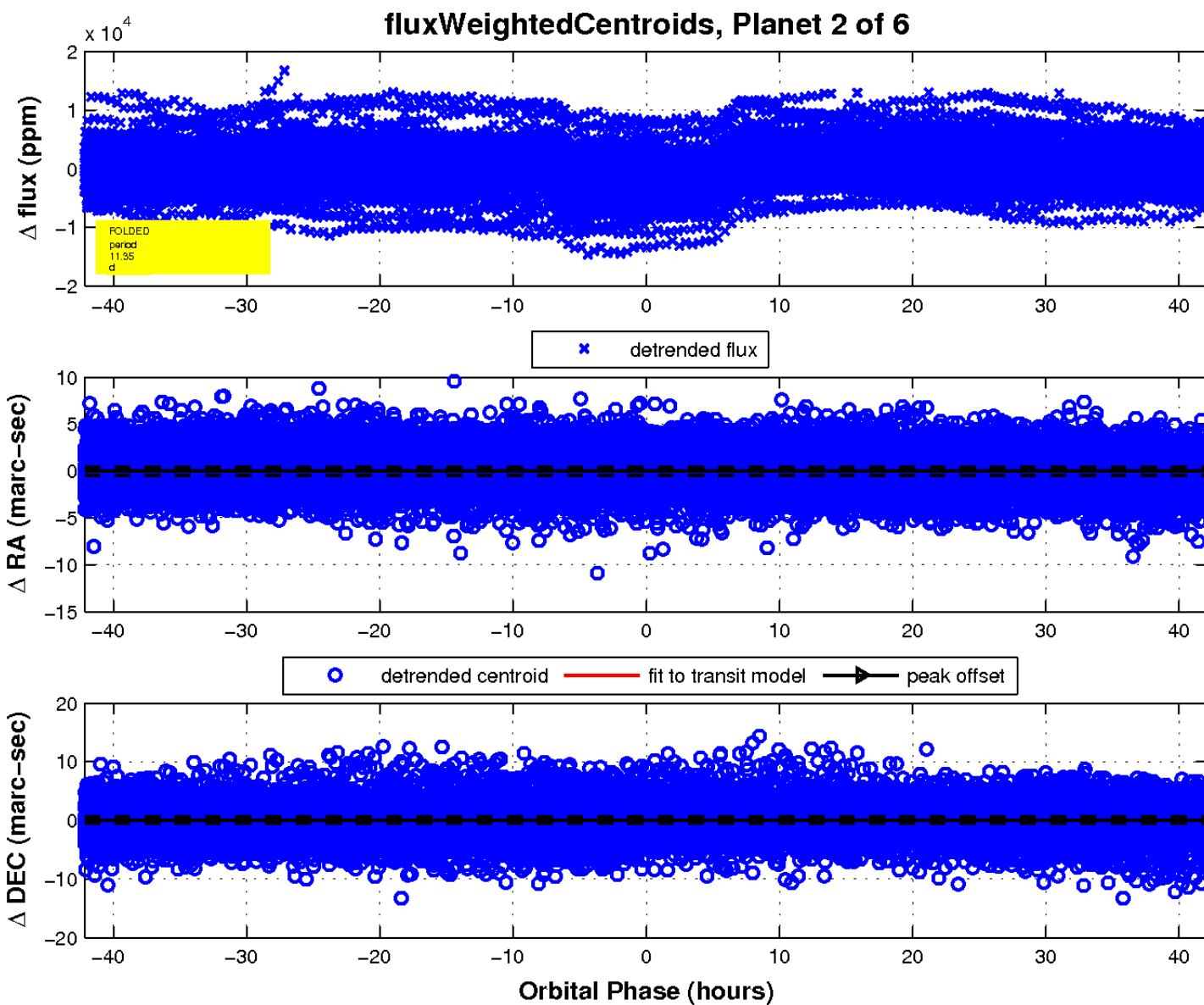
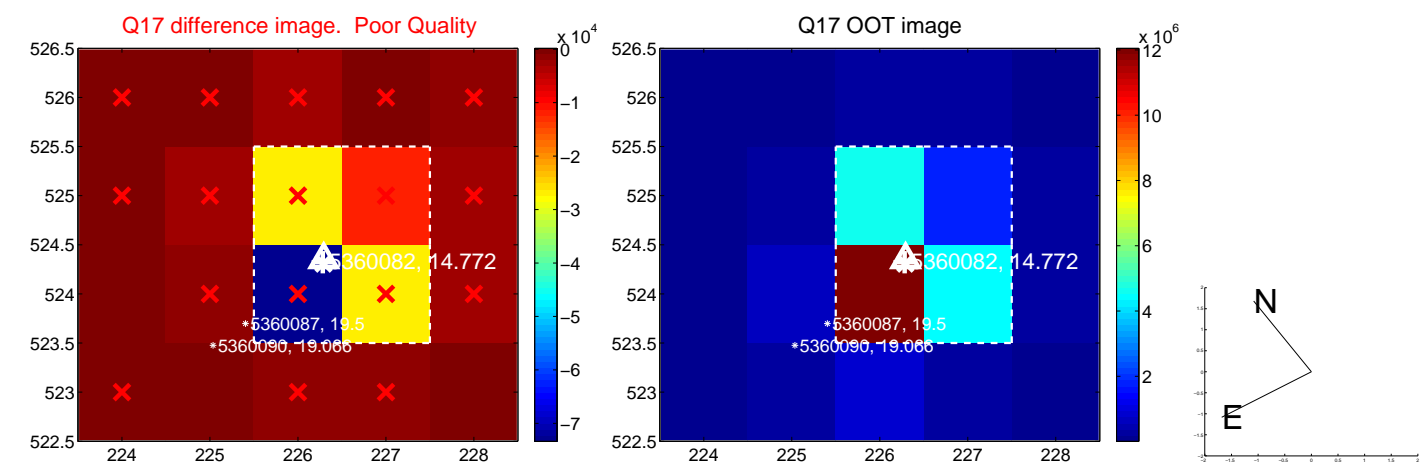
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

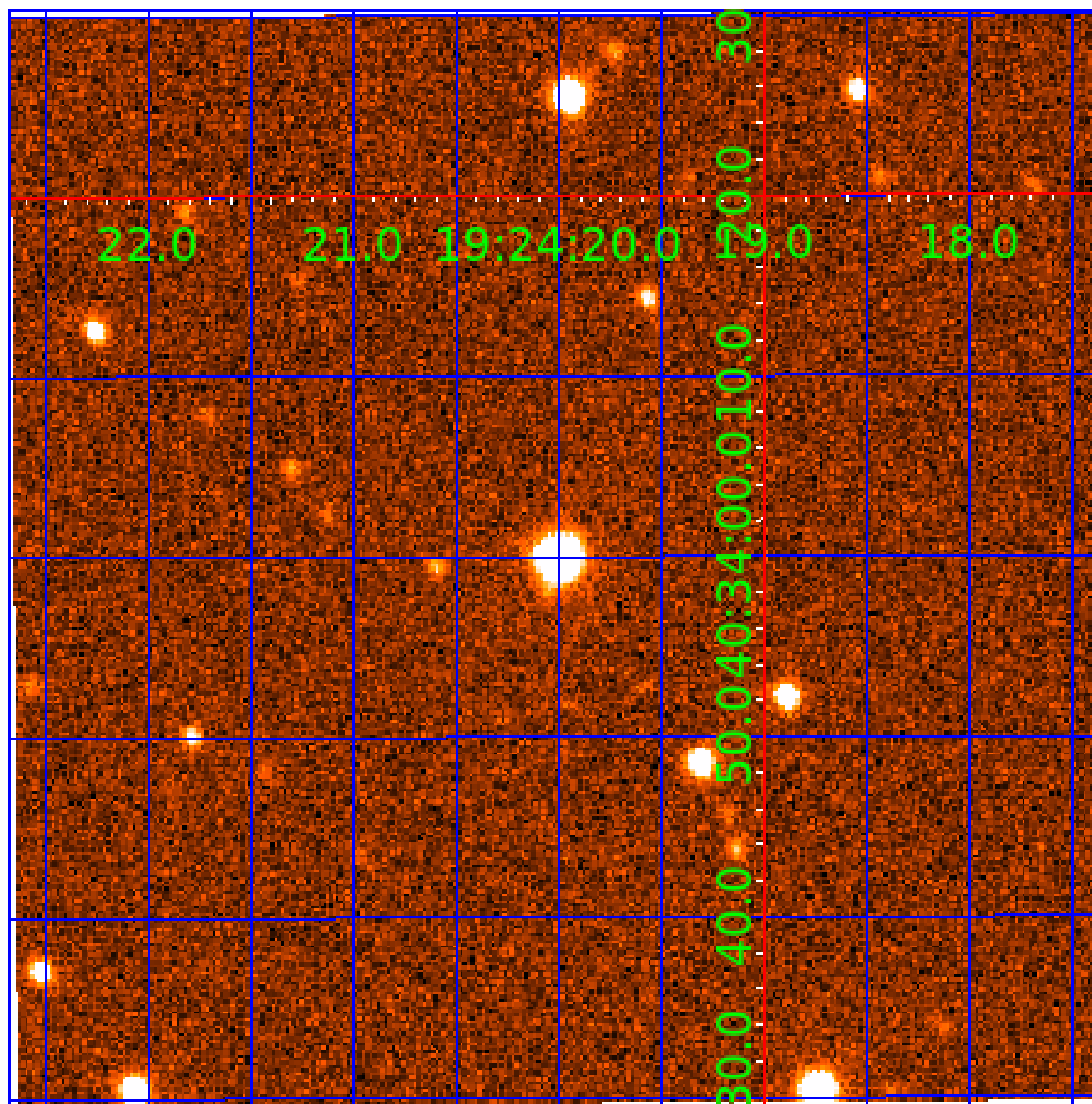


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

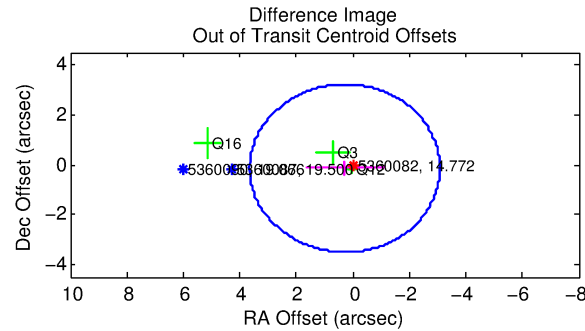
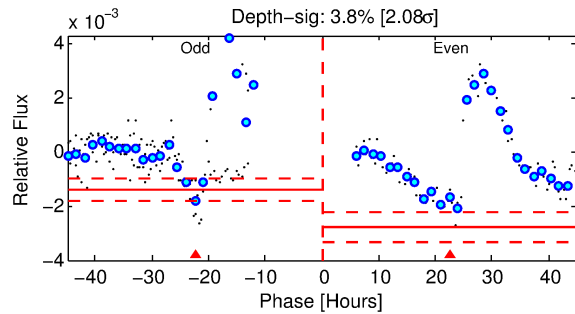
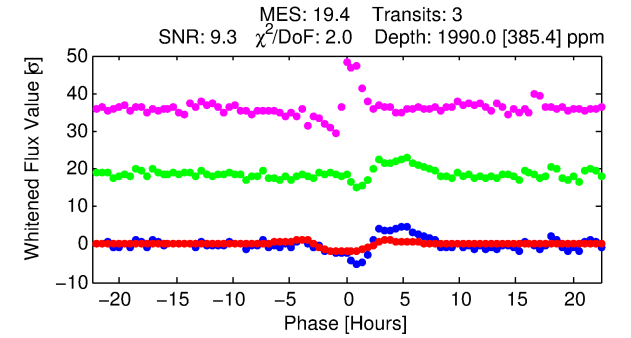
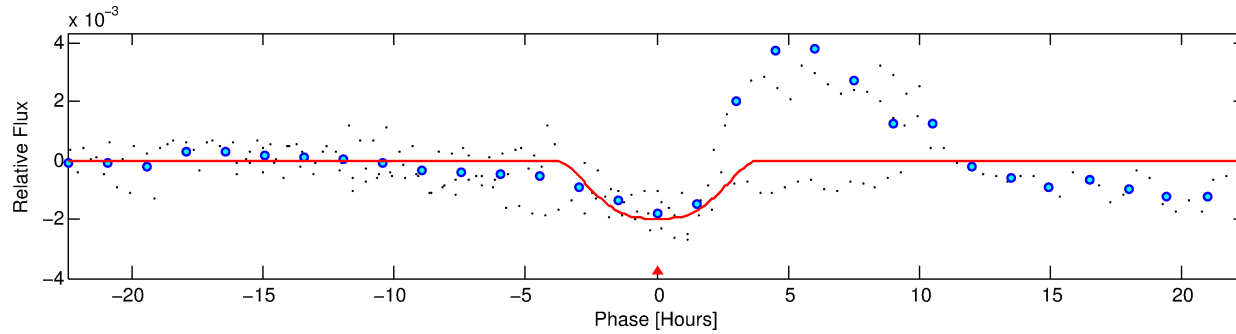
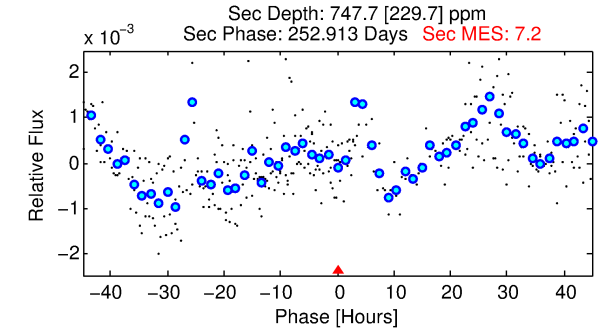
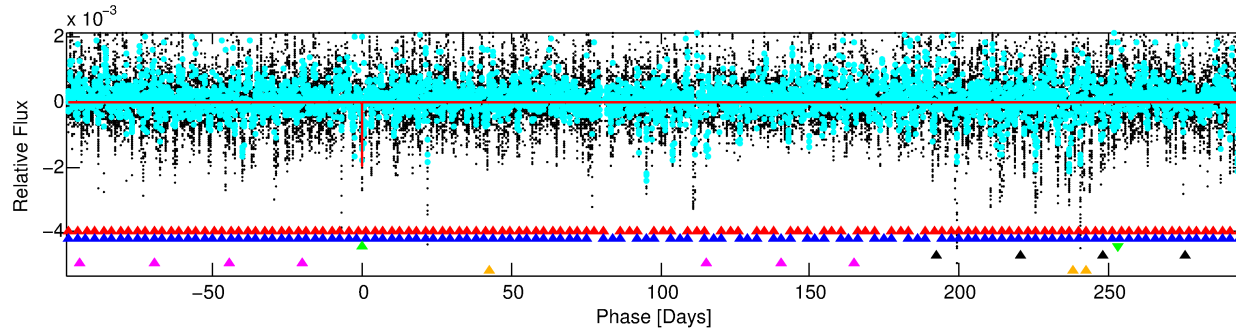
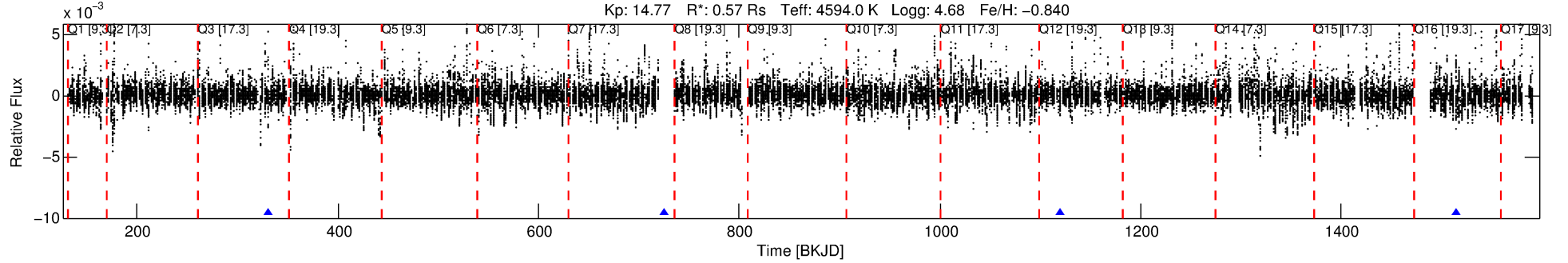
Ephemeris Match Information For 005360082-03

No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 3 of 6 Period: 394.607 d  
KOI: K03768 Corr: No Ephemeris Match

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



## DV Fit Results:

Period = 394.60695 [0.00815] d  
Epoch = 330.5864 [0.0174] BKJD  
Rp/R\* = 0.0532 [0.0068]  
a/R\* = 191.98 [34.33]  
b = 0.94 [0.03]  
Seff = 0.17 [0.03]  
Teq = 164 [7] K  
Rp = 3.29 [0.50] Re  
a = 0.8680 [0.0592] AU  
Ag = 28604.97 [11804.14] [2.42sigma]  
Teffp = 3294 [347] K [9.02sigma]

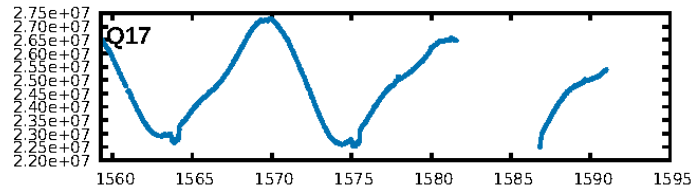
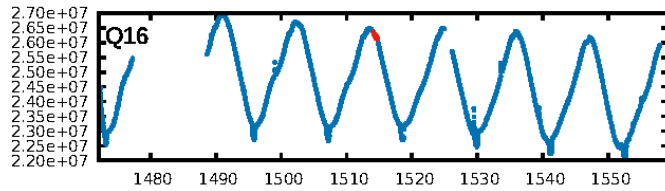
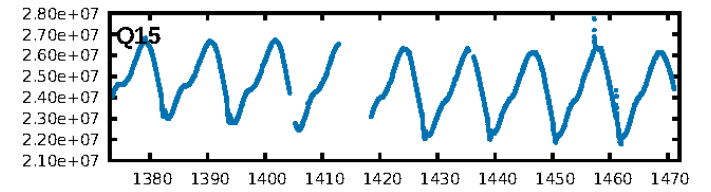
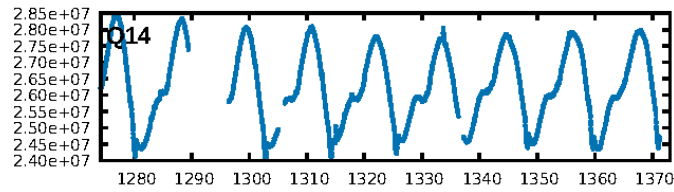
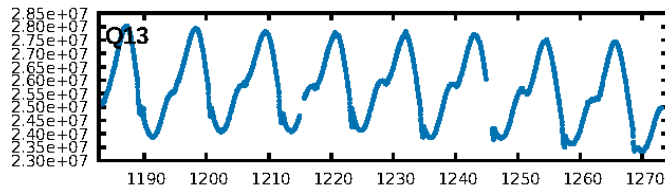
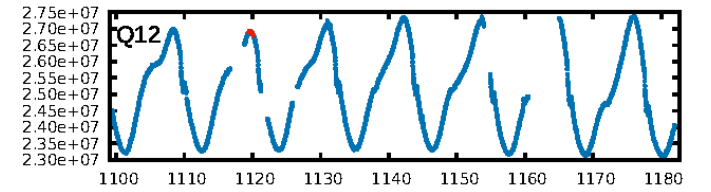
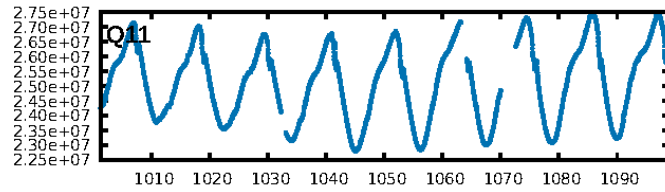
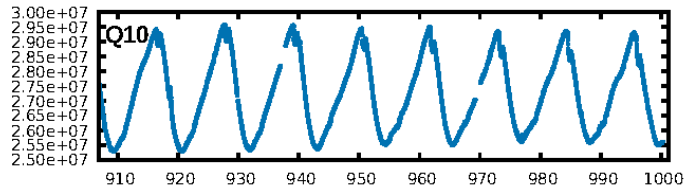
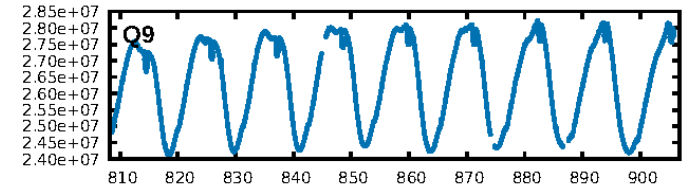
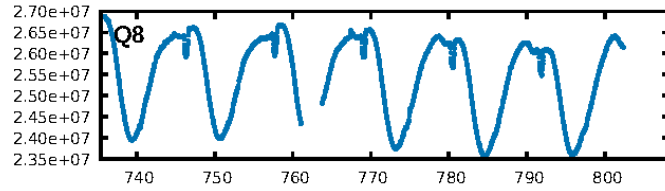
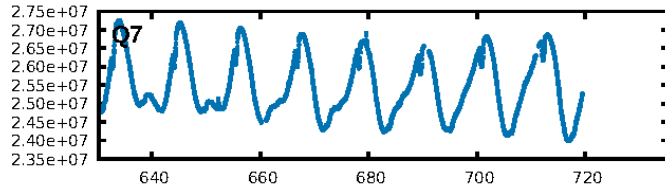
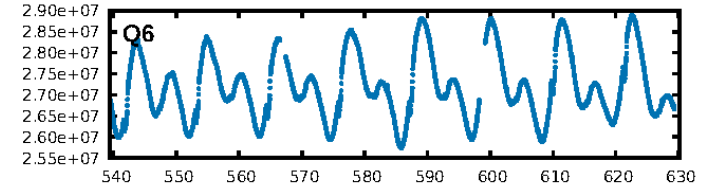
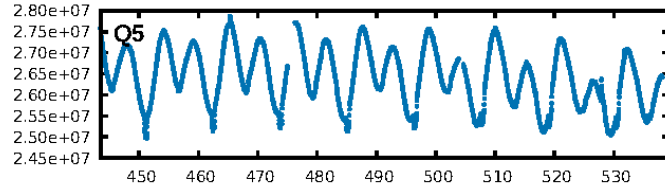
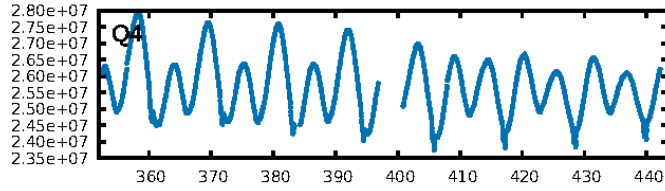
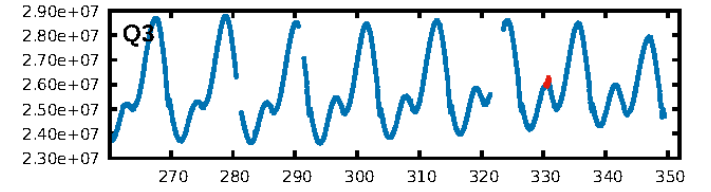
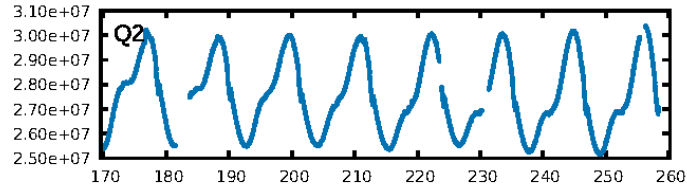
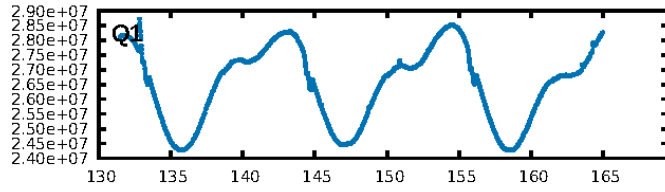
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.42sigma]  
LongPeriod-sig: 100.0% [620.66sigma]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 3.2%  
Bootstrap-pfa: 7.83e-16  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -6.439  
Centroid-sig: 87.5%  
Centroid-so: 0.283 arcsec [0.41sigma]  
OotOffset-rm: 0.319 arcsec [0.28sigma]  
OotOffset-st: 0/1/2/0 [3]  
KicOffset-rm: 0.327 arcsec [0.43sigma]  
KicOffset-st: 0/1/2/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

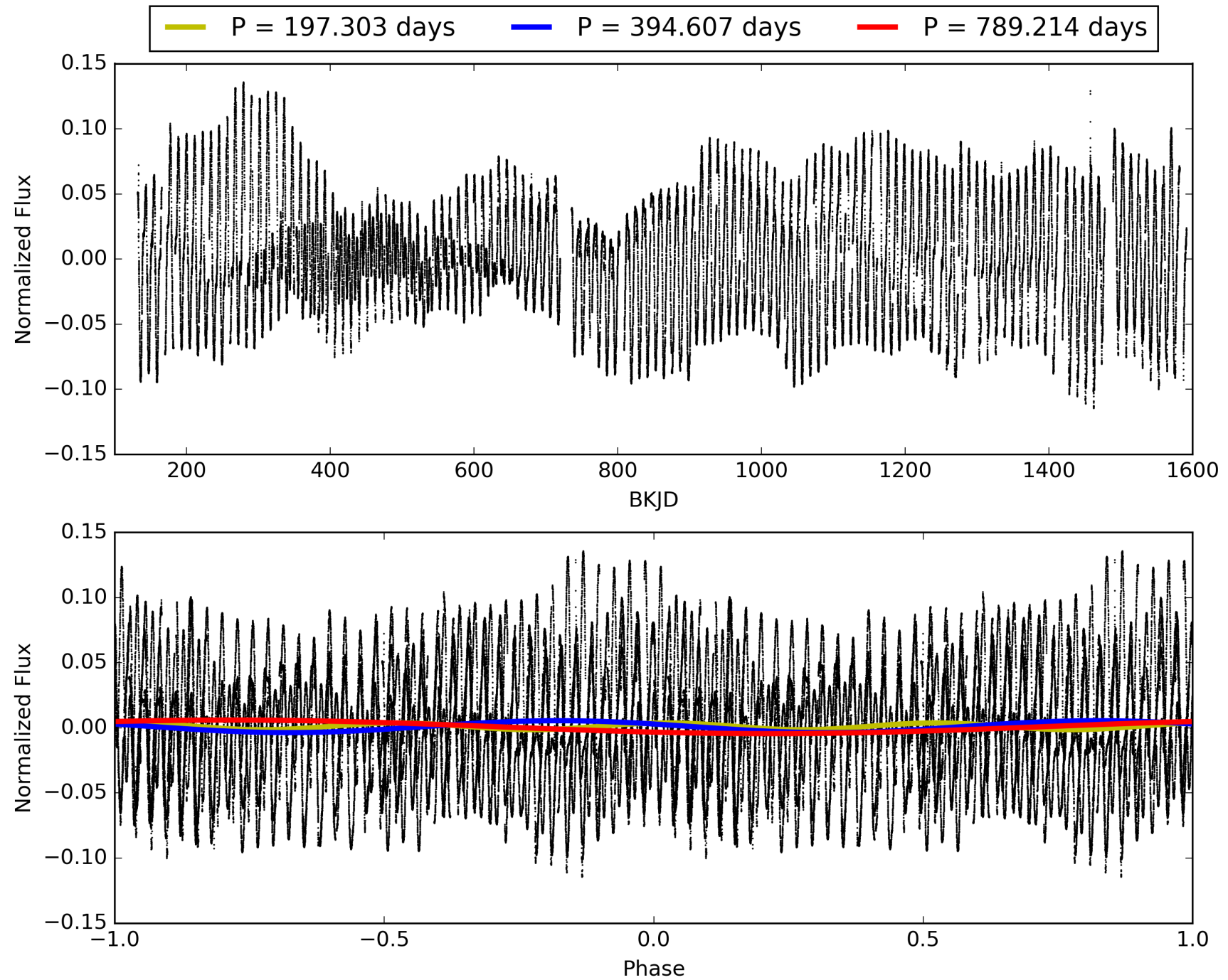
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:36 Z

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

# TCE 005360082-03, PDC Light Curves

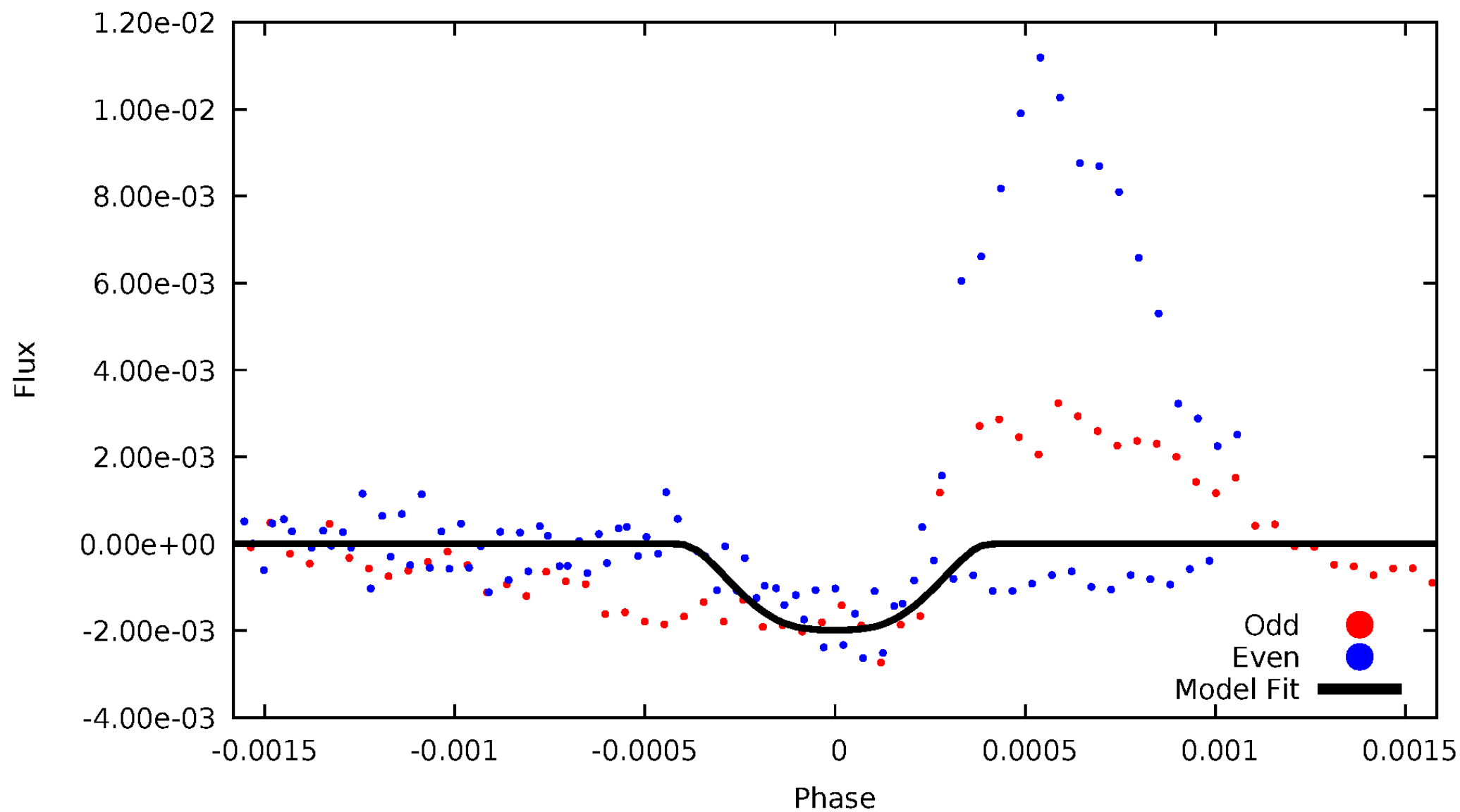


# TCE 005360082-03



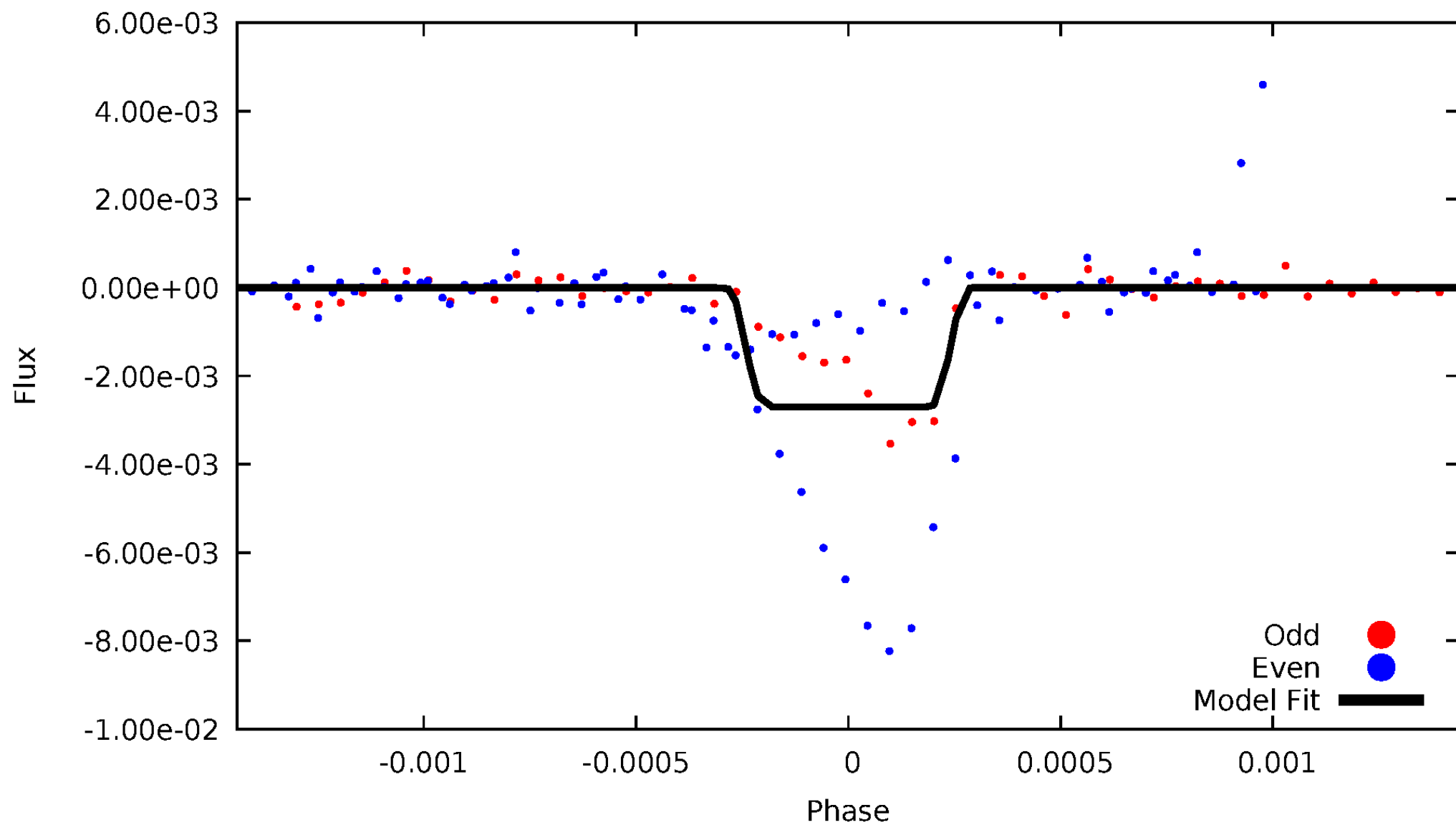
# DV Odd/Even

TCE 005360082-03



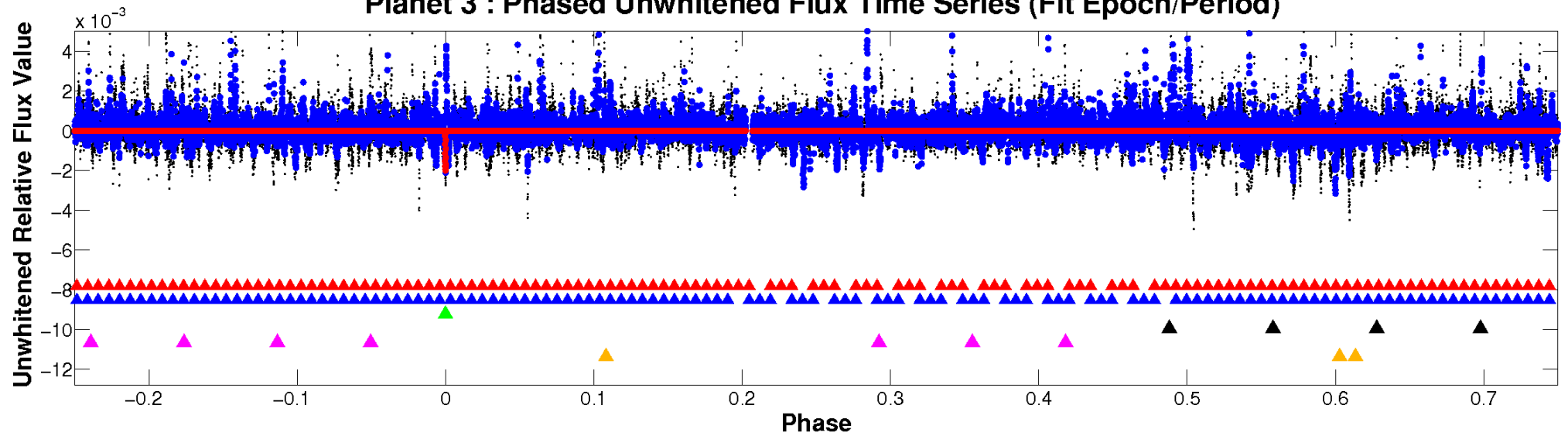
# ALT Odd/Even

TCE 005360082-03

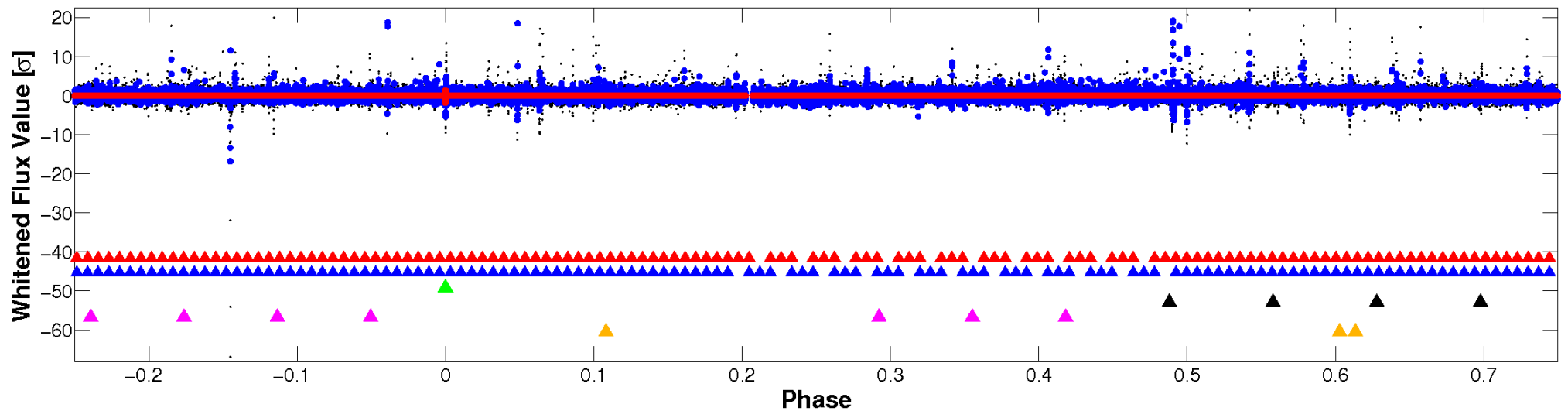


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

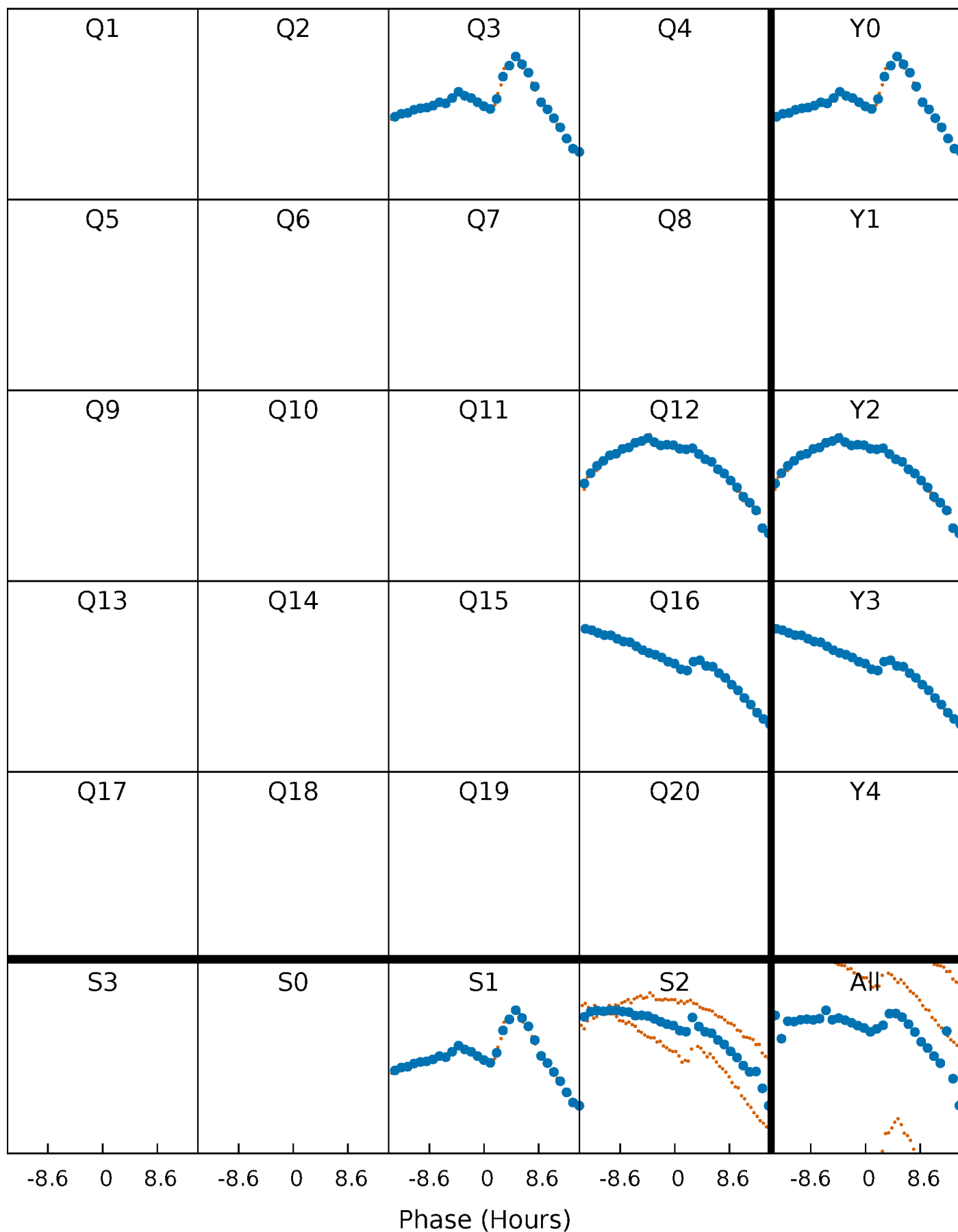


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

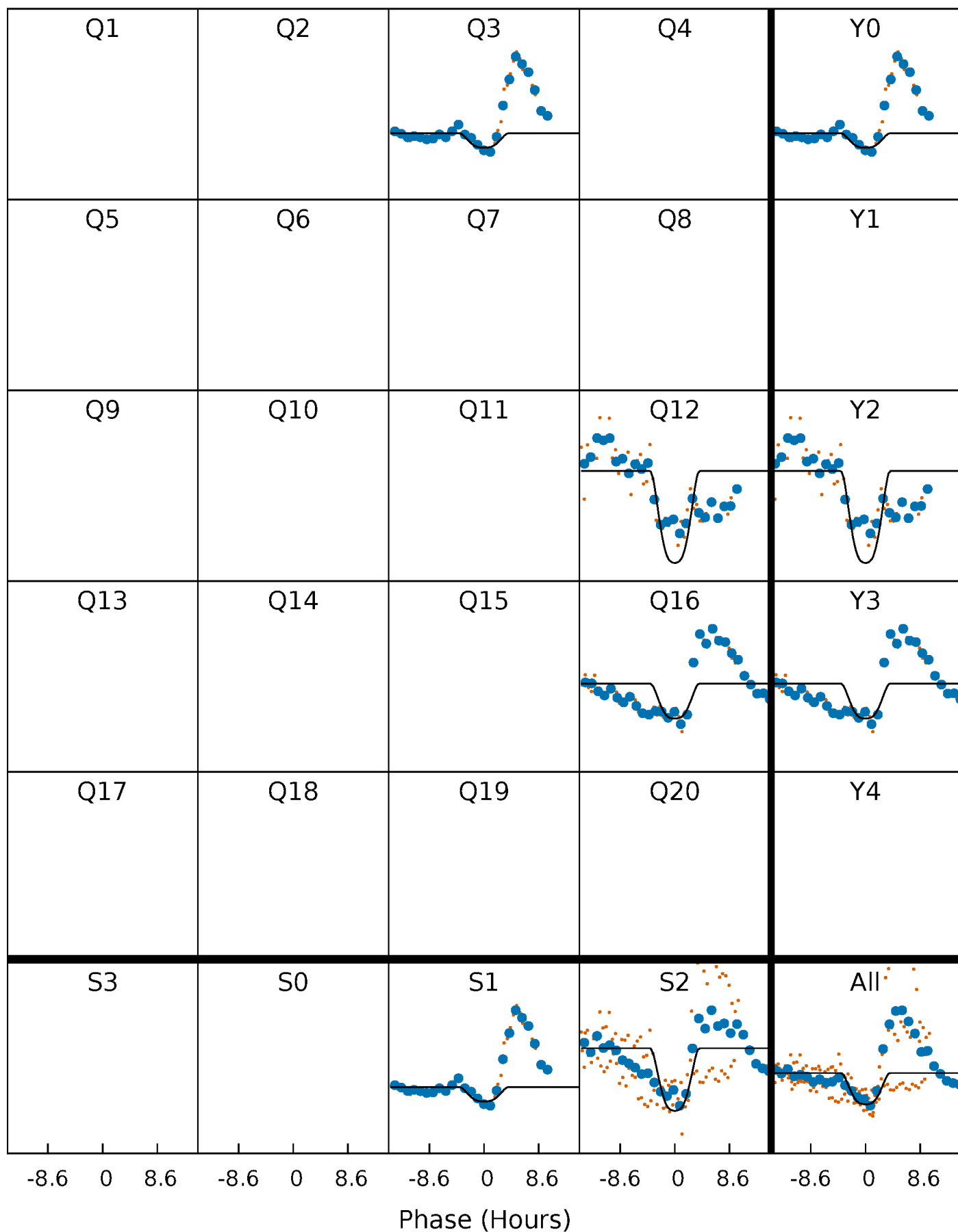
TCE 005360082-03 P=394.606947 Days  $T_0=330.586444$  (BKJD)





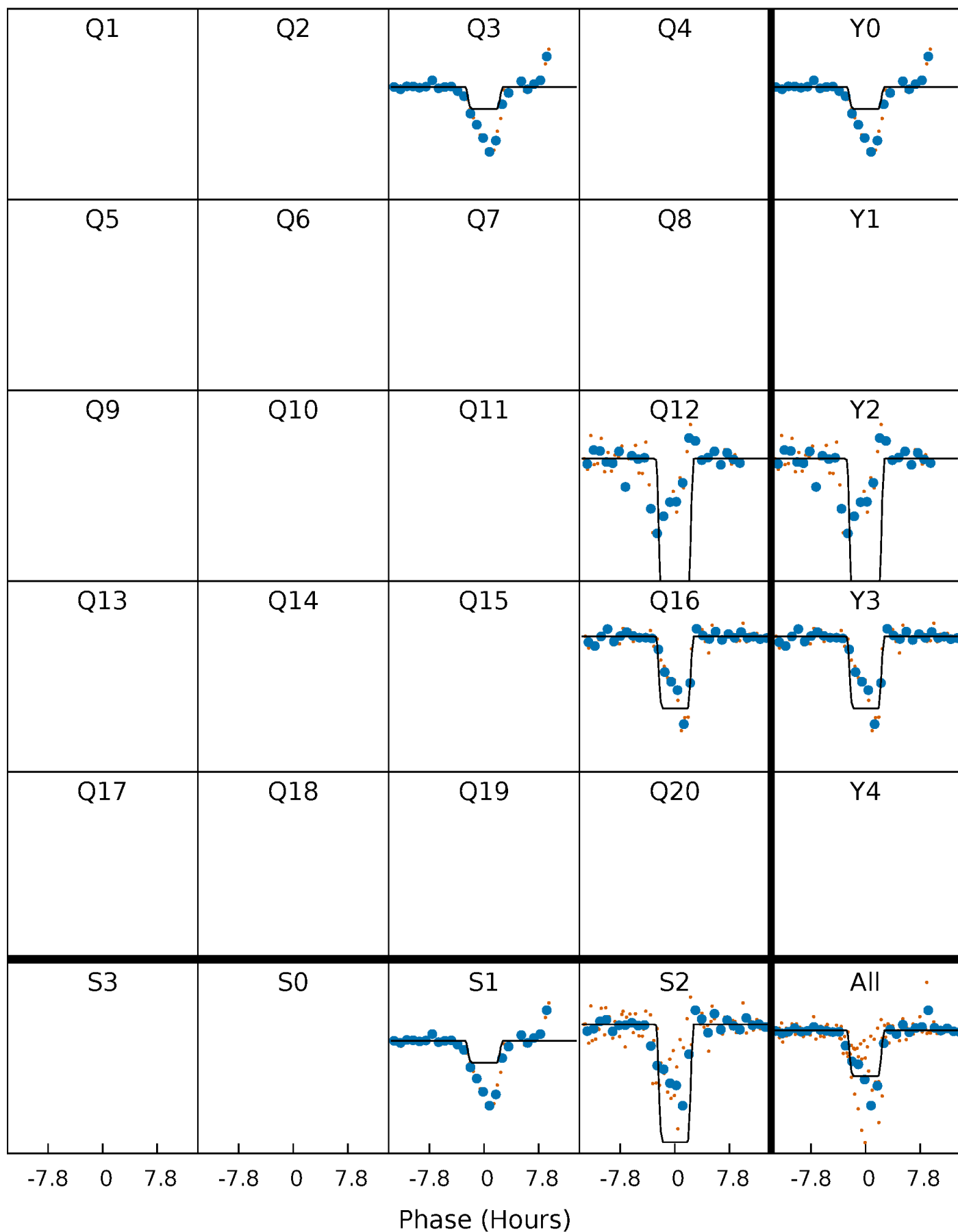
# DV Quarter-Phased Transit Curves

TCE 005360082-03     $P=394.606947$  Days     $T_0=330.586444$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

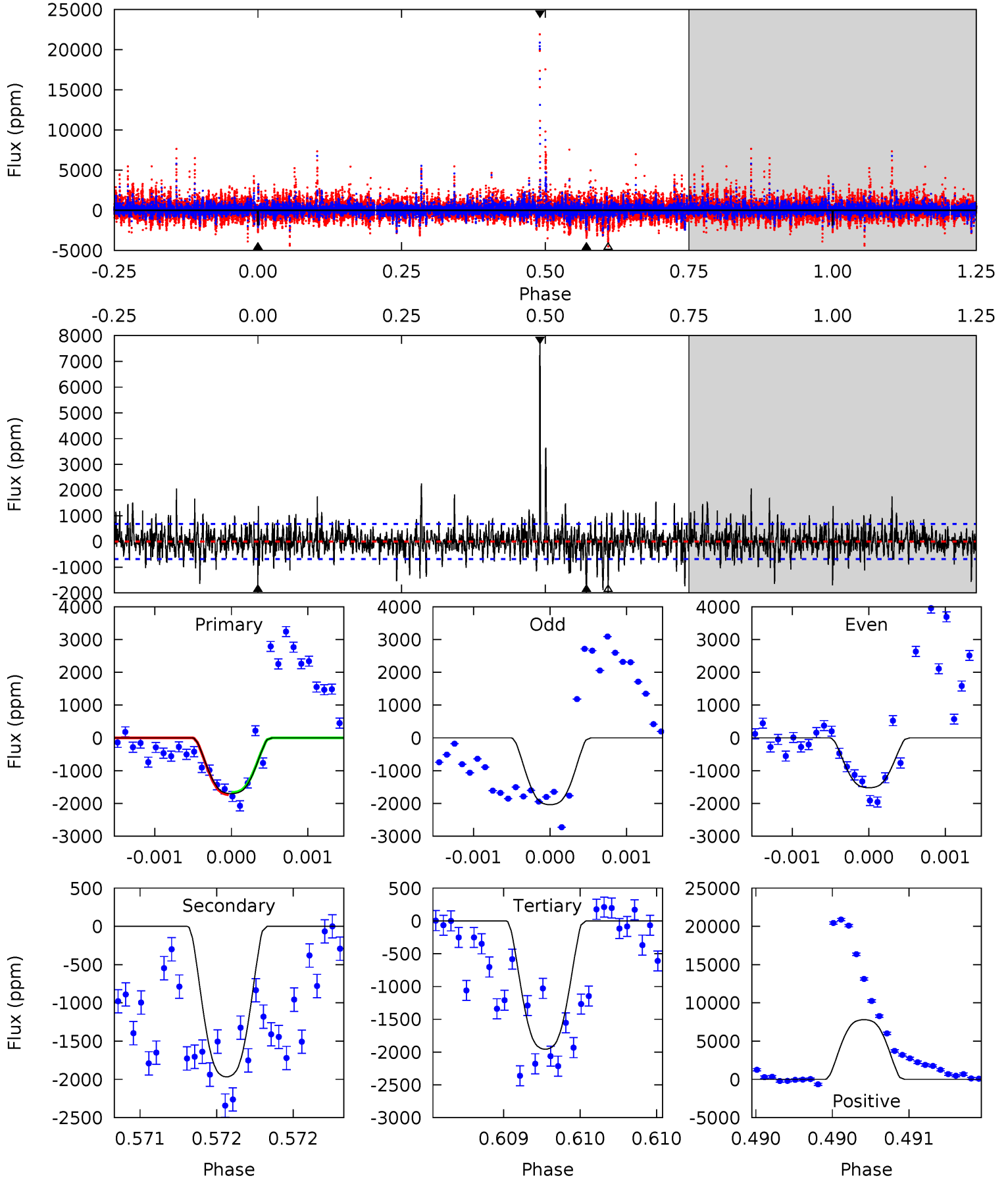
TCE 005360082-03 P=394.606100 Days  $T_0=330.597772$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-03, P = 394.606947 Days, E = 330.586444 Days

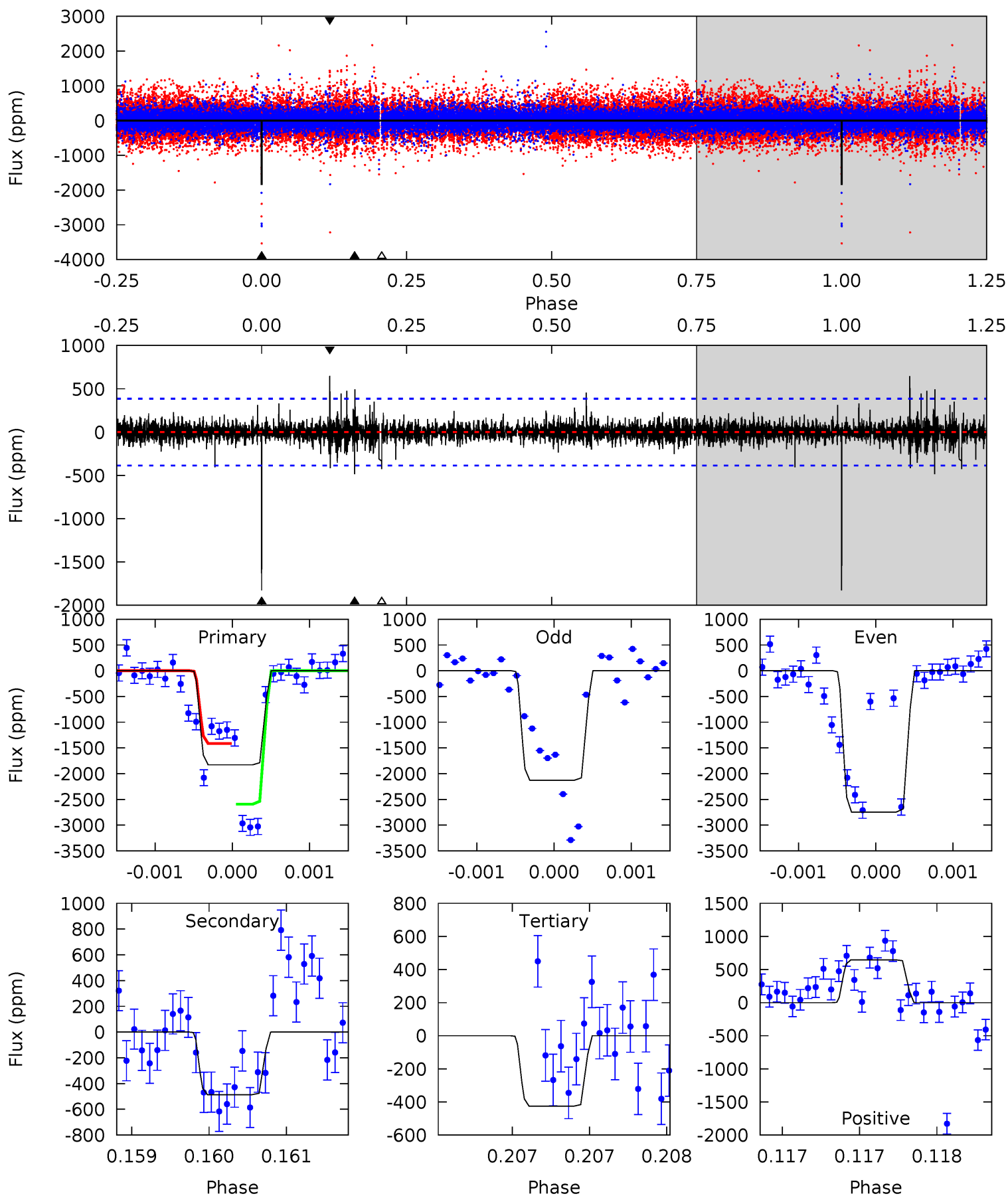
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	15.8	15.7	62.8	5.49	3.35	3.68	-2.05	-49.1	0.08	-47.0	1.72	1.06	0.80	0.27



# Alt Model-Shift Uniqueness Test

005360082-03, P = 394.606100 Days, E = 330.597772 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
26.2	6.98	6.11	9.30	5.55	3.45	0.89	20.1	16.9	0.87	-2.32	4.61	1.38	0.26	8.03



### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1968 \pm 124$	$3.30^{+0.40}_{-0.46}$	$227^{+8}_{-8}$	$4281^{+257}_{-216}$	$76138^{+26361}_{-16264}$
Alt.	$-486 \pm 70$	$3.20^{+0.42}_{-0.41}$	$227^{+8}_{-9}$	$3399^{+183}_{-164}$	$19919^{+6929}_{-4969}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

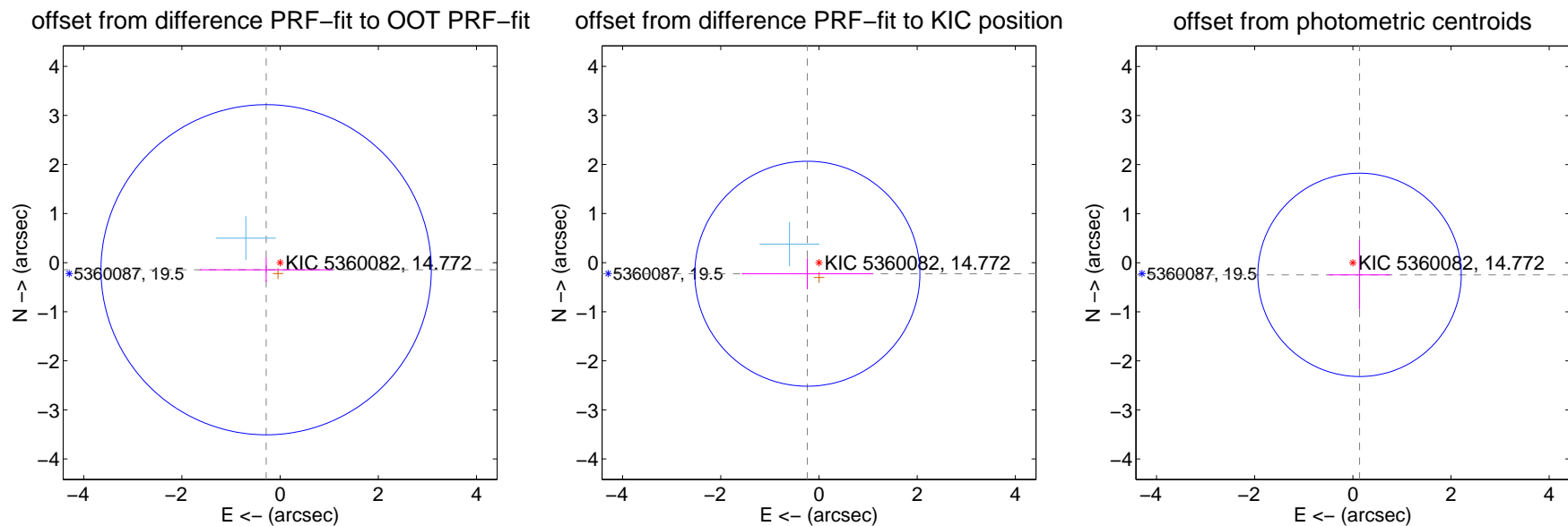
## DV Centroid Data

Supplemental centroid analysis for 005360082-03. Kepler magnitude: 14.77. Transit SNR 9.25

There are 1 quarters with good PRF difference image offsets

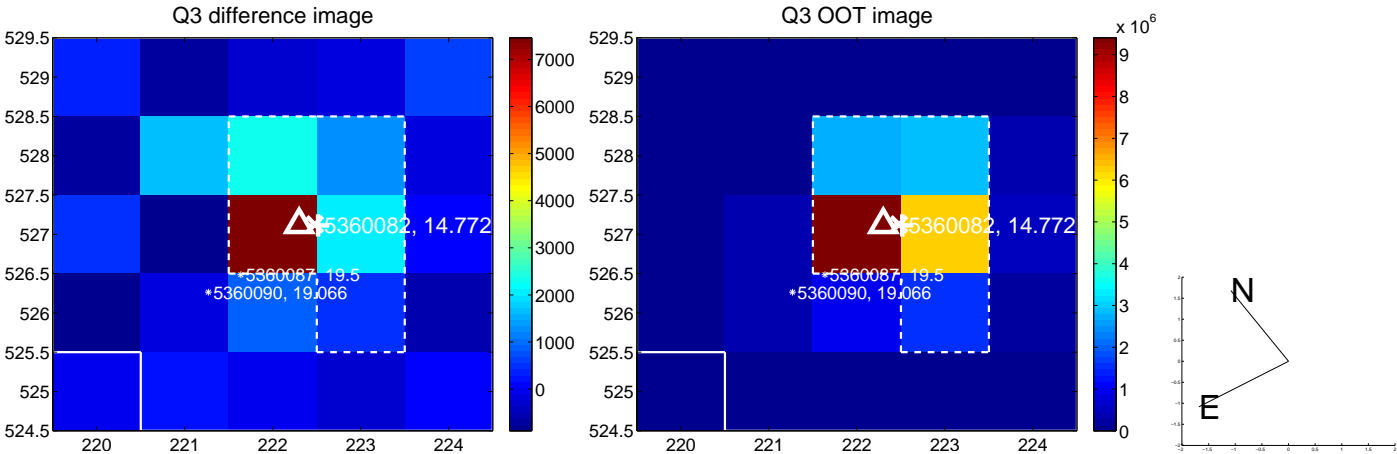
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.319 \pm 1.121$	0.28	$0.284 \pm 1.355$	$-0.145 \pm 0.247$
PRF-fit source offset from KIC position	$0.327 \pm 0.764$	0.43	$0.237 \pm 1.336$	$-0.226 \pm 0.316$
photometric centroid source offset	$0.28 \pm 0.69$	0.41	$-0.14 \pm 0.63$	$-0.25 \pm 0.71$



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.

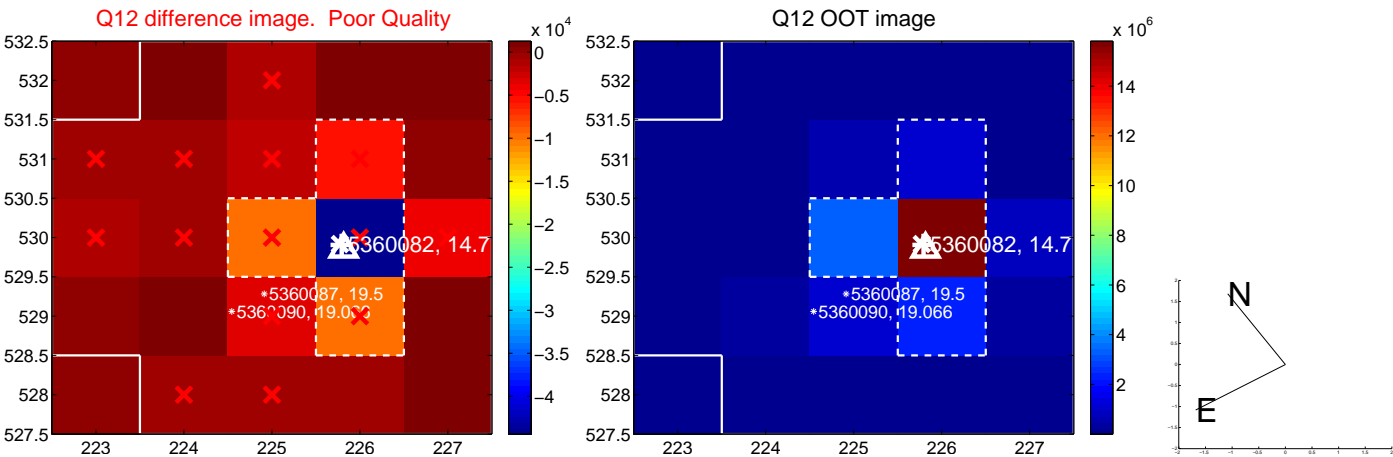


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

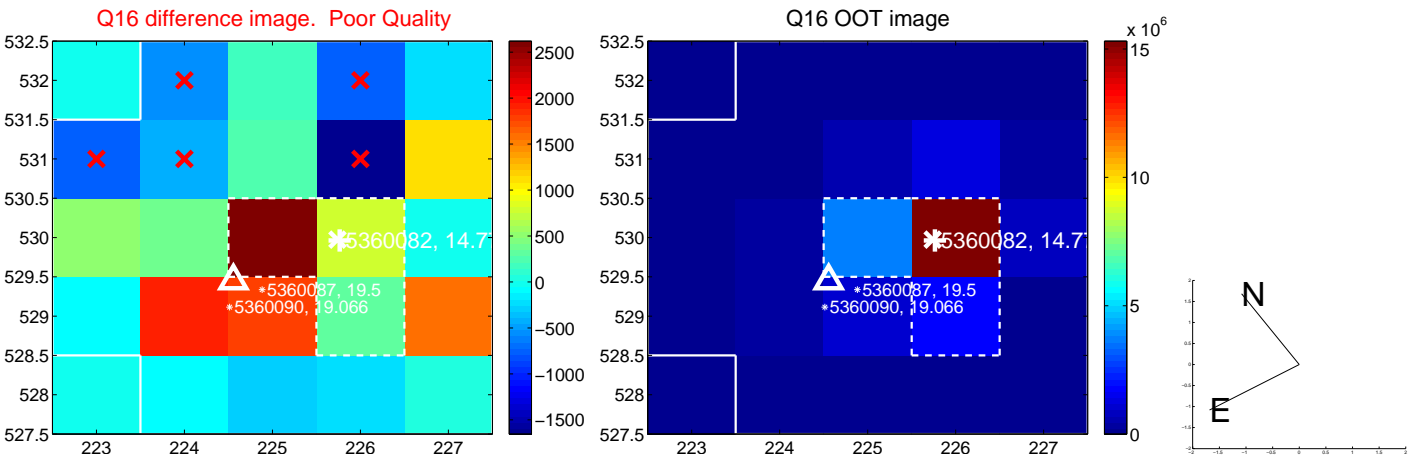




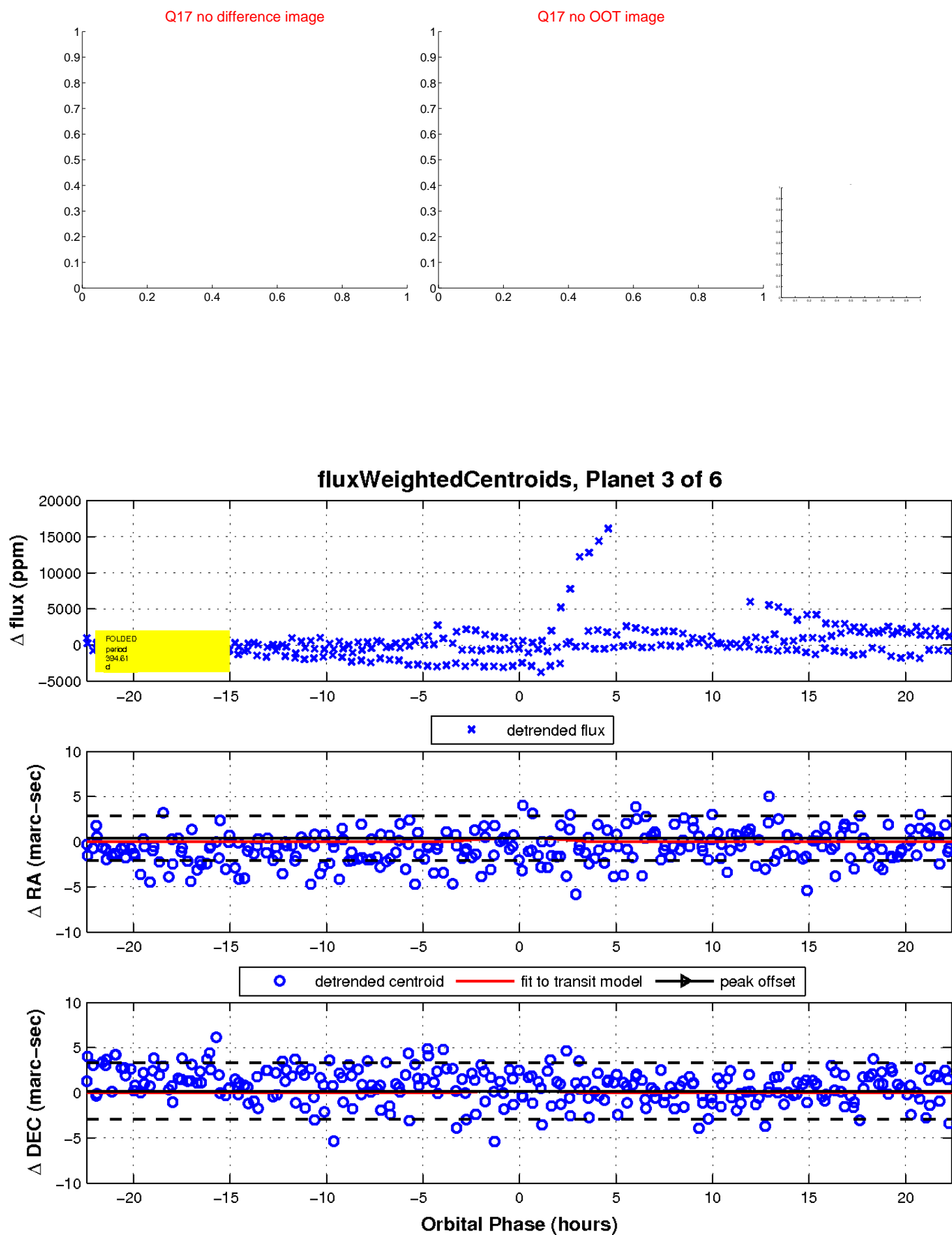
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

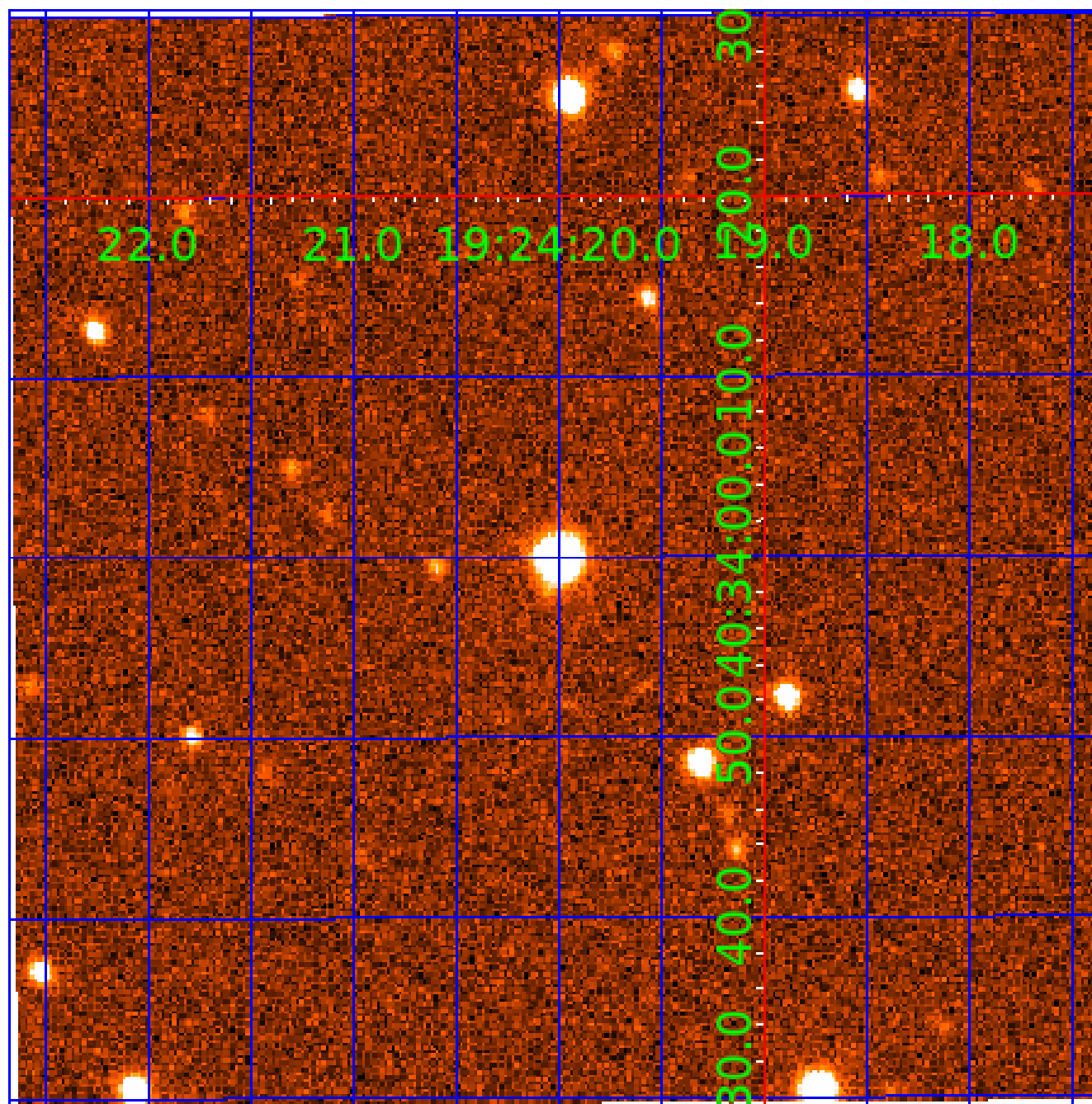


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

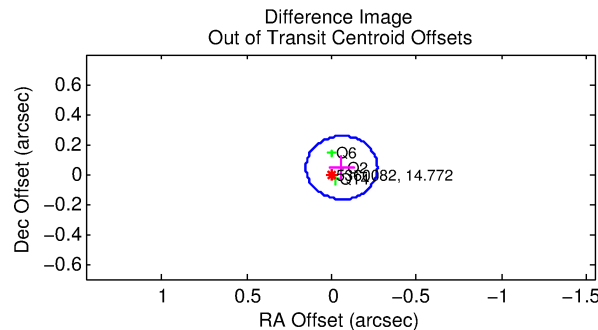
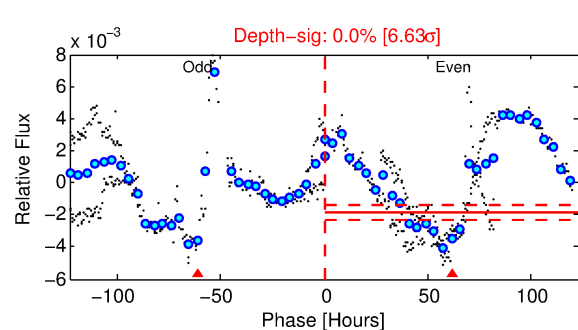
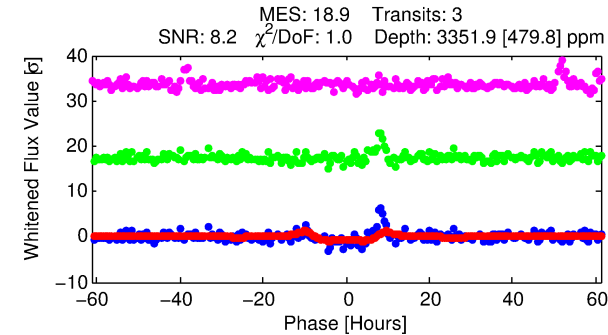
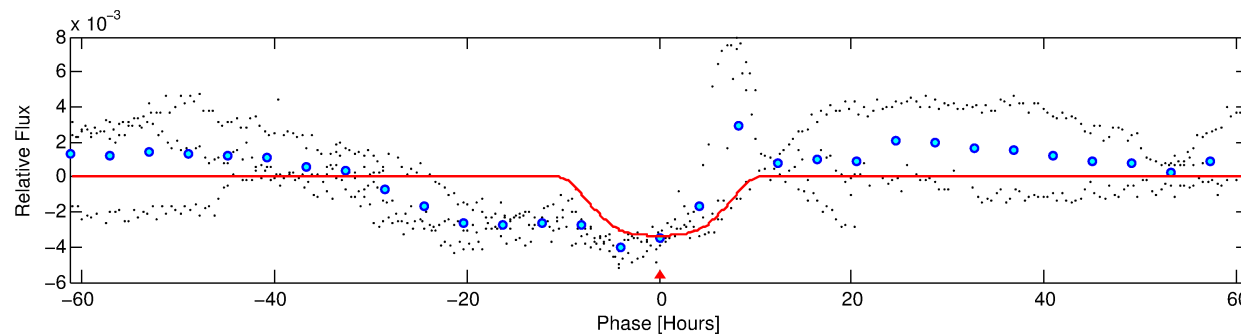
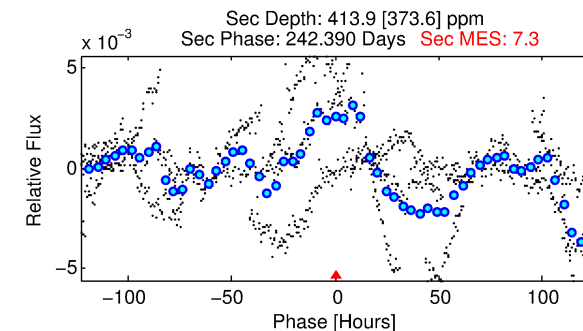
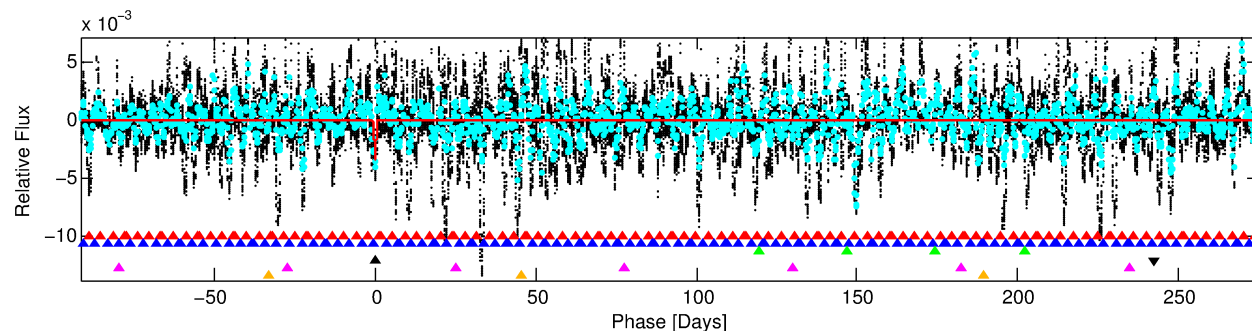
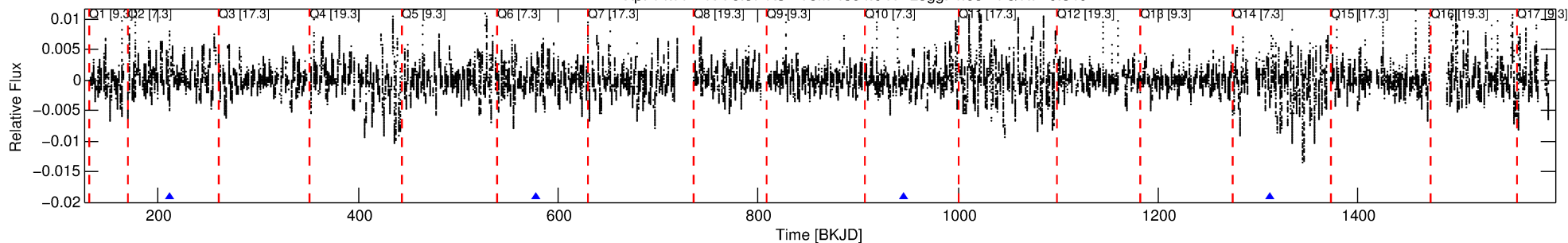
## Ephemeris Match Information For 005360082-04

No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 4 of 6 Period: 367.006 d  
KOI: K03768 Corr: No Ephemeris Match

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



## DV Fit Results:

Period = 367.00601 [0.01097] d  
Epoch = 211.3622 [0.0178] BKJD  
Rp/R\* = 0.0660 [0.0050]  
a/R\* = 75.90 [4.81]  
b = 0.91 [0.01]  
Seff = 0.19 [0.03]  
Teq = 168 [7] K  
Rp = 4.08 [0.45] Re  
a = 0.8271 [0.0564] AU  
Ag = 9349.72 [8613.04] [1.09σ]  
**Teffp = 2551 [590] K [4.04σ]**

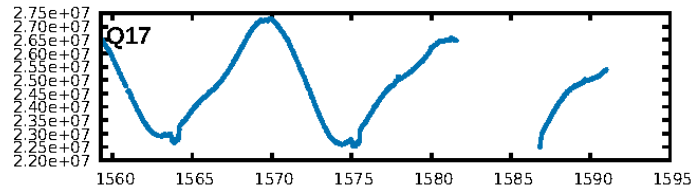
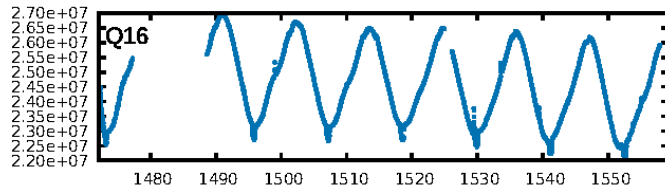
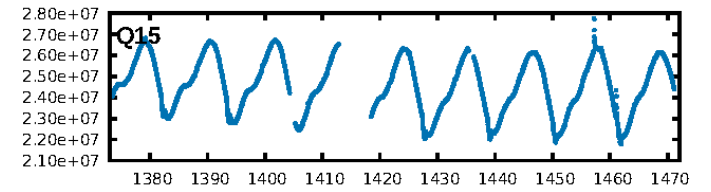
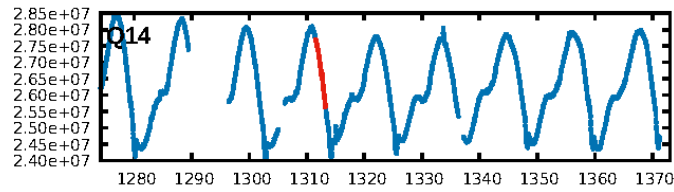
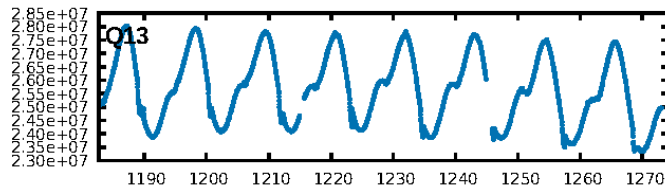
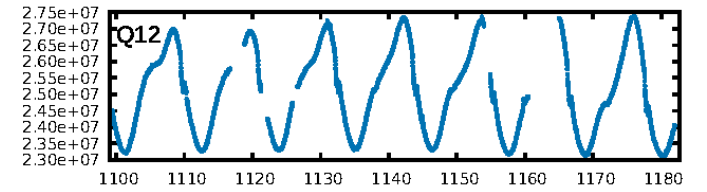
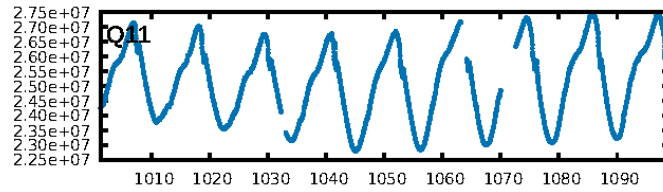
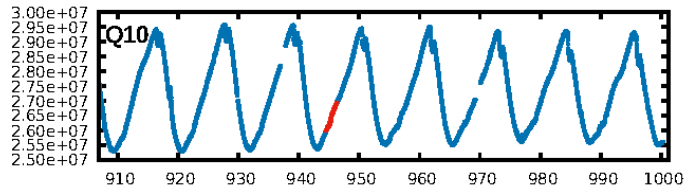
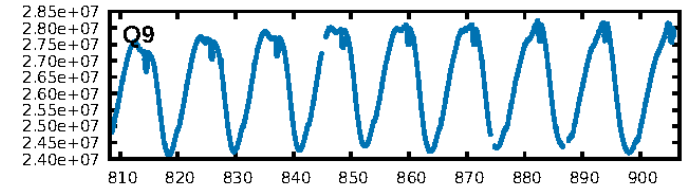
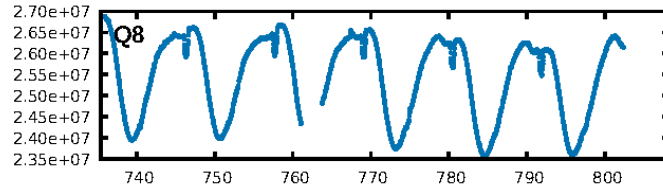
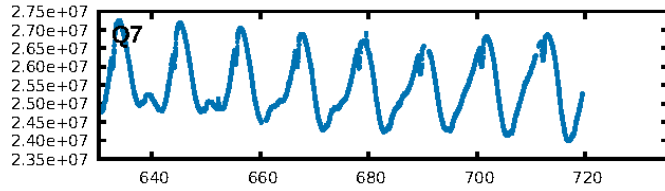
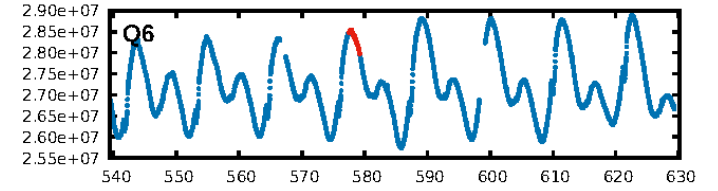
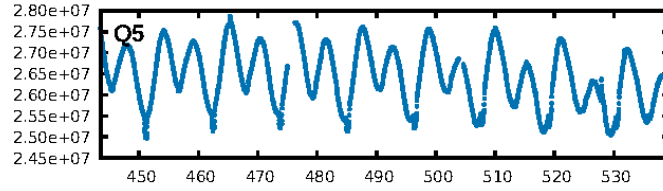
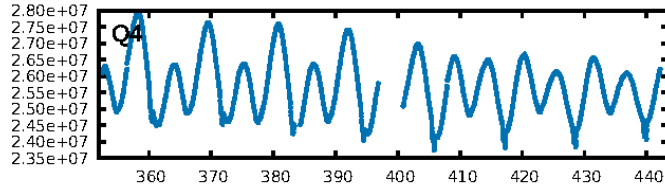
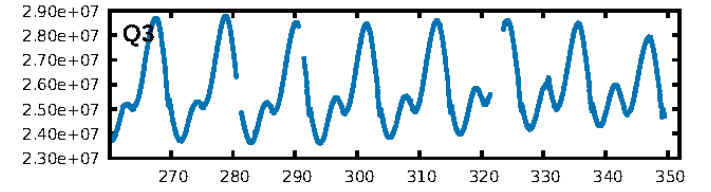
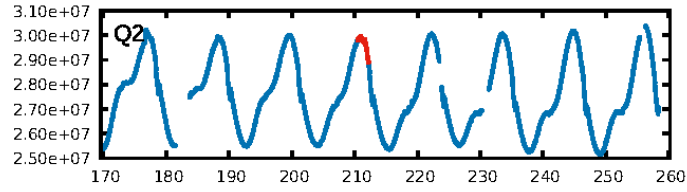
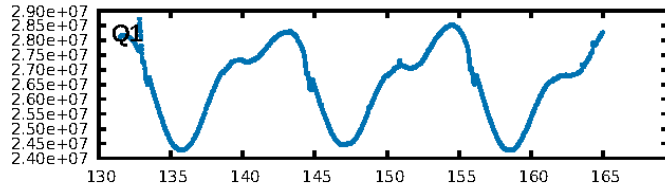
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [169.42σ]  
LongPeriod-sig: 100.0% [30.42σ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 99.3%  
Bootstrap-pfa: 1.52e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.364  
Centroid-sig: 17.8%  
Centroid-so: 0.350 arcsec [0.63σ]  
OotOffset-rm: 0.073 arcsec [1.04σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-rm: 0.084 arcsec [1.22σ]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.50 [2/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:20:43 Z

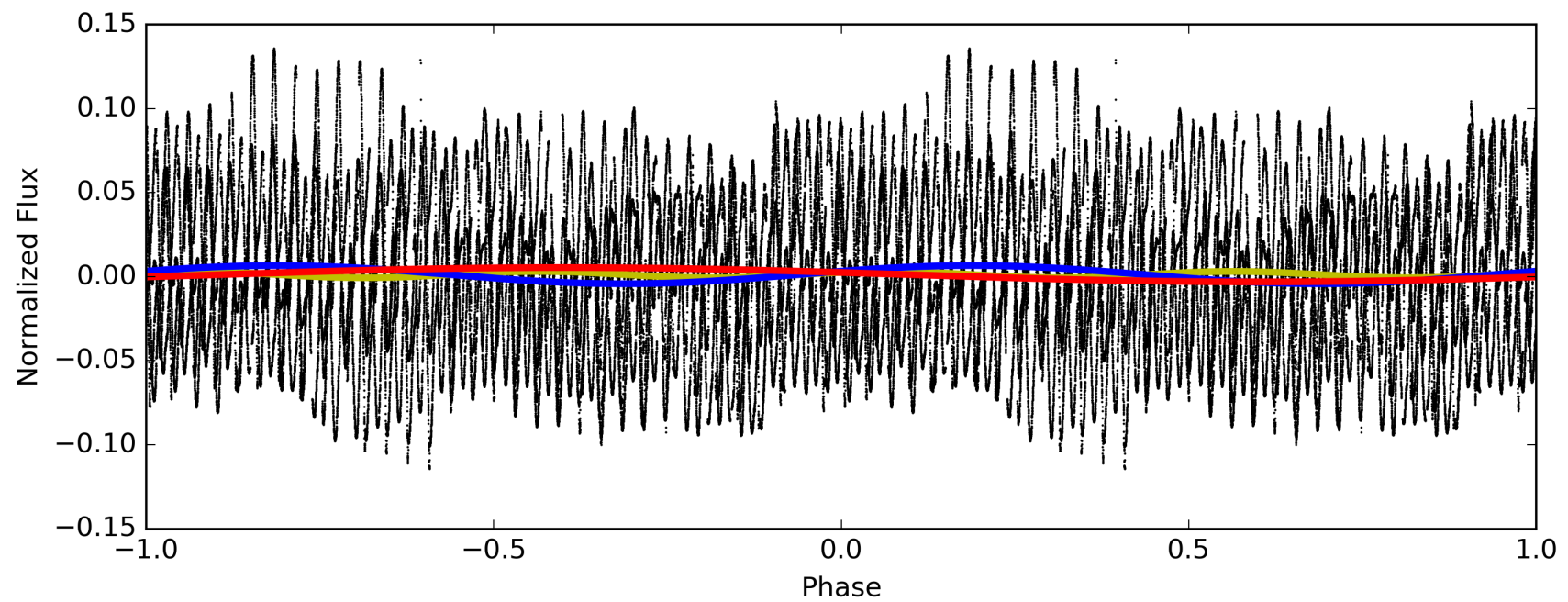
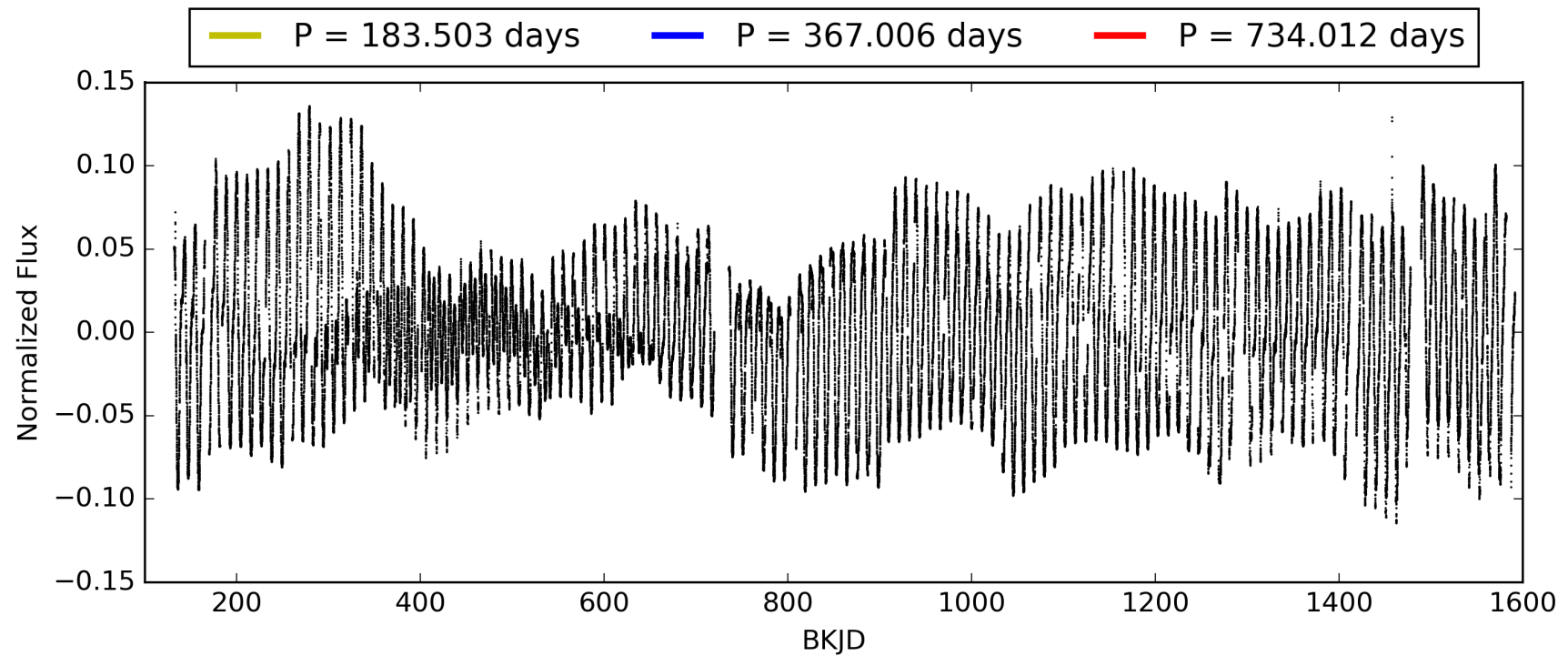
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005360082-04, PDC Light Curves





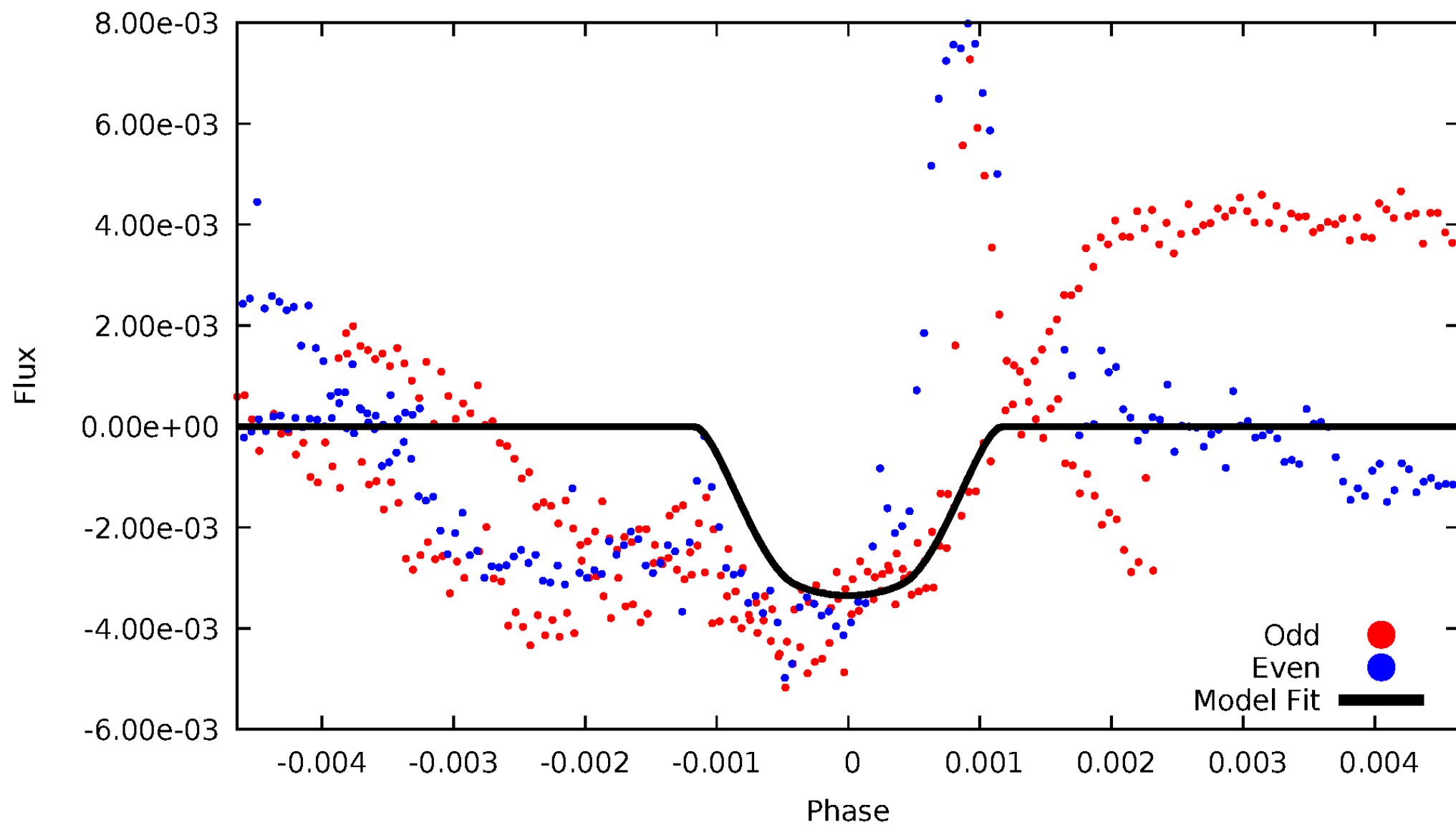
TCE 005360082-04





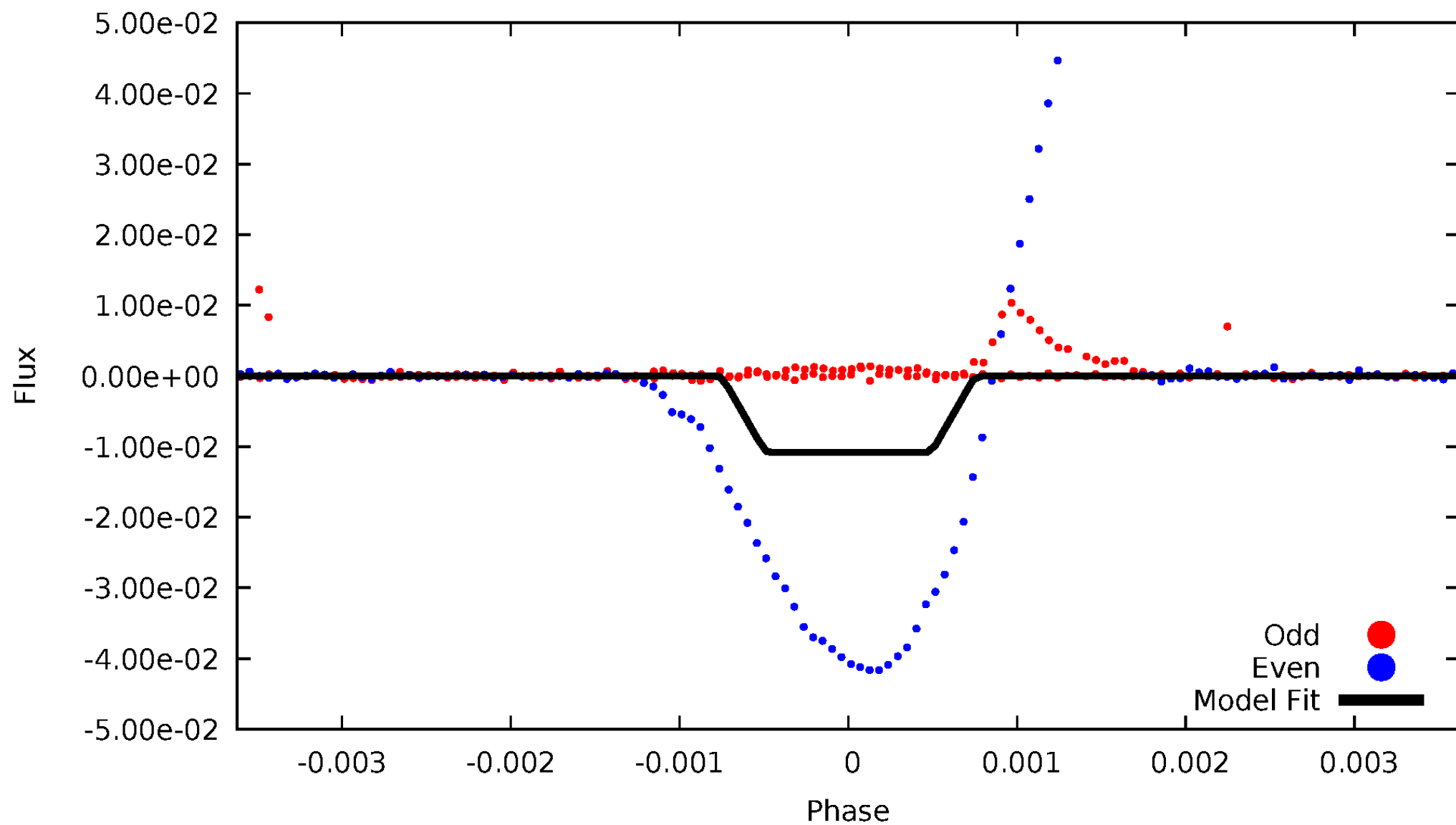
# DV Odd/Even

TCE 005360082-04



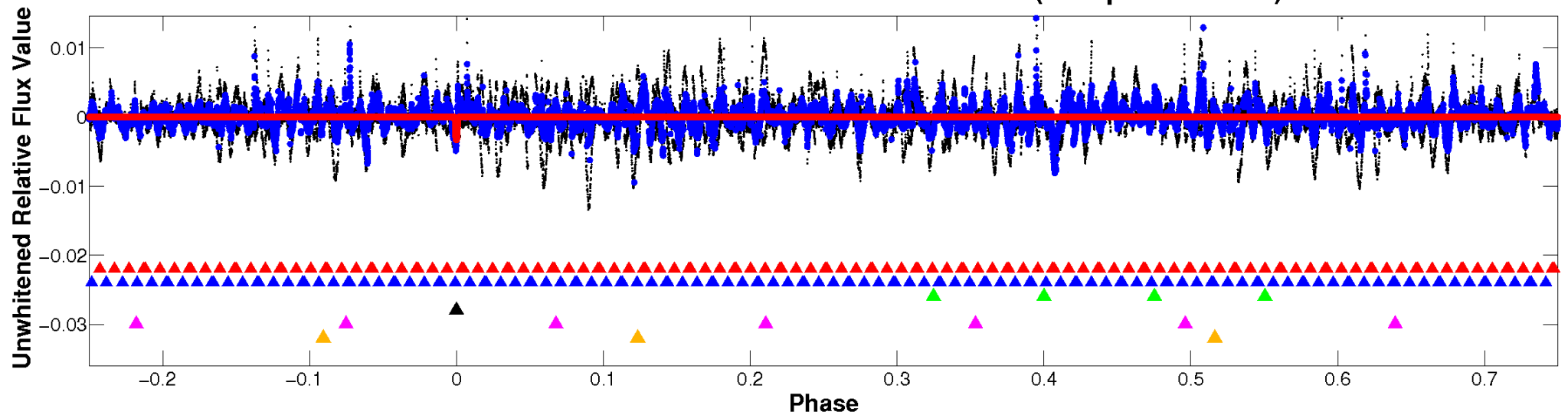
# ALT Odd/Even

TCE 005360082-04

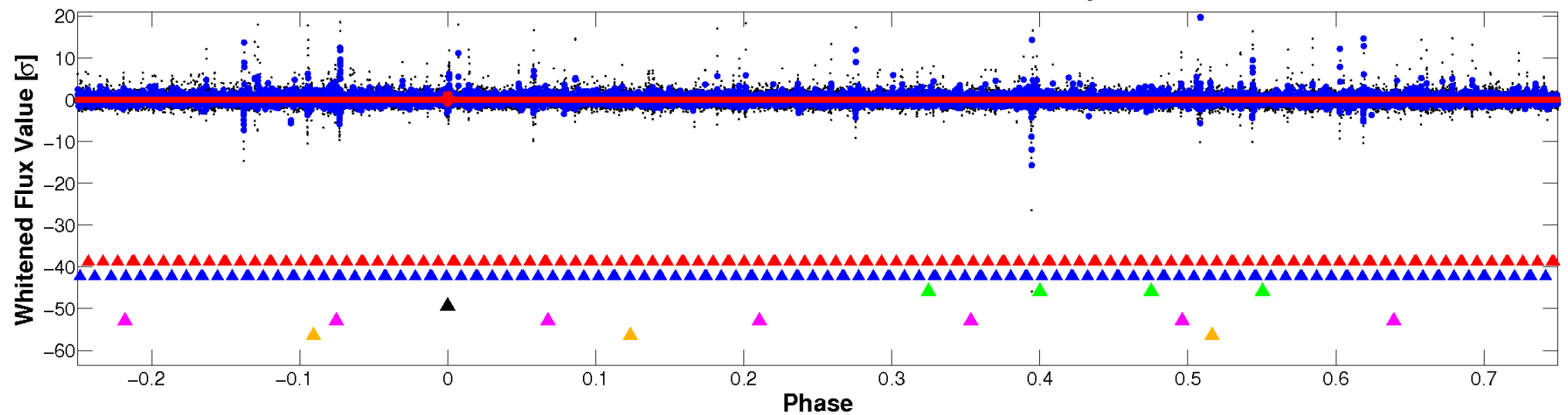


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

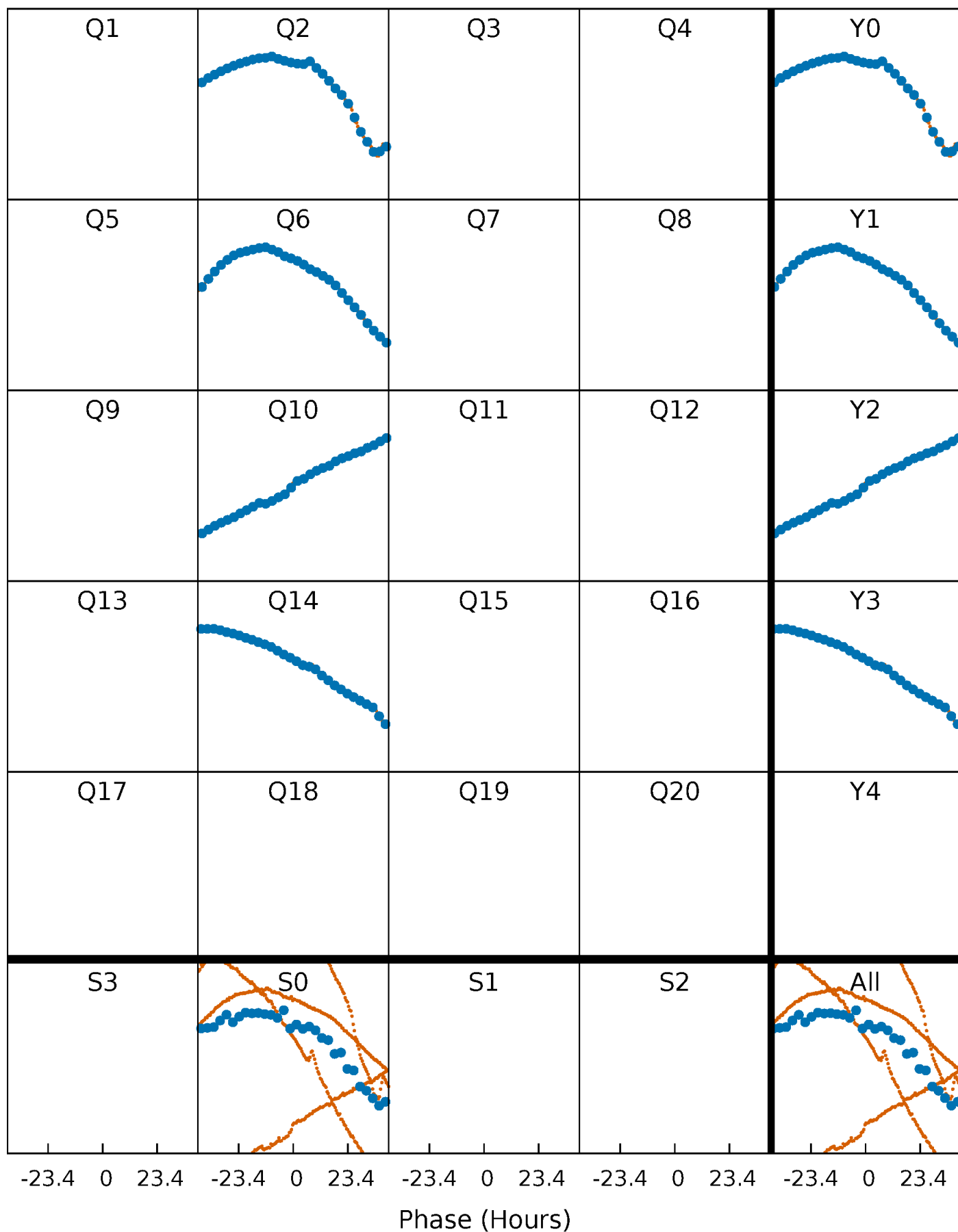


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



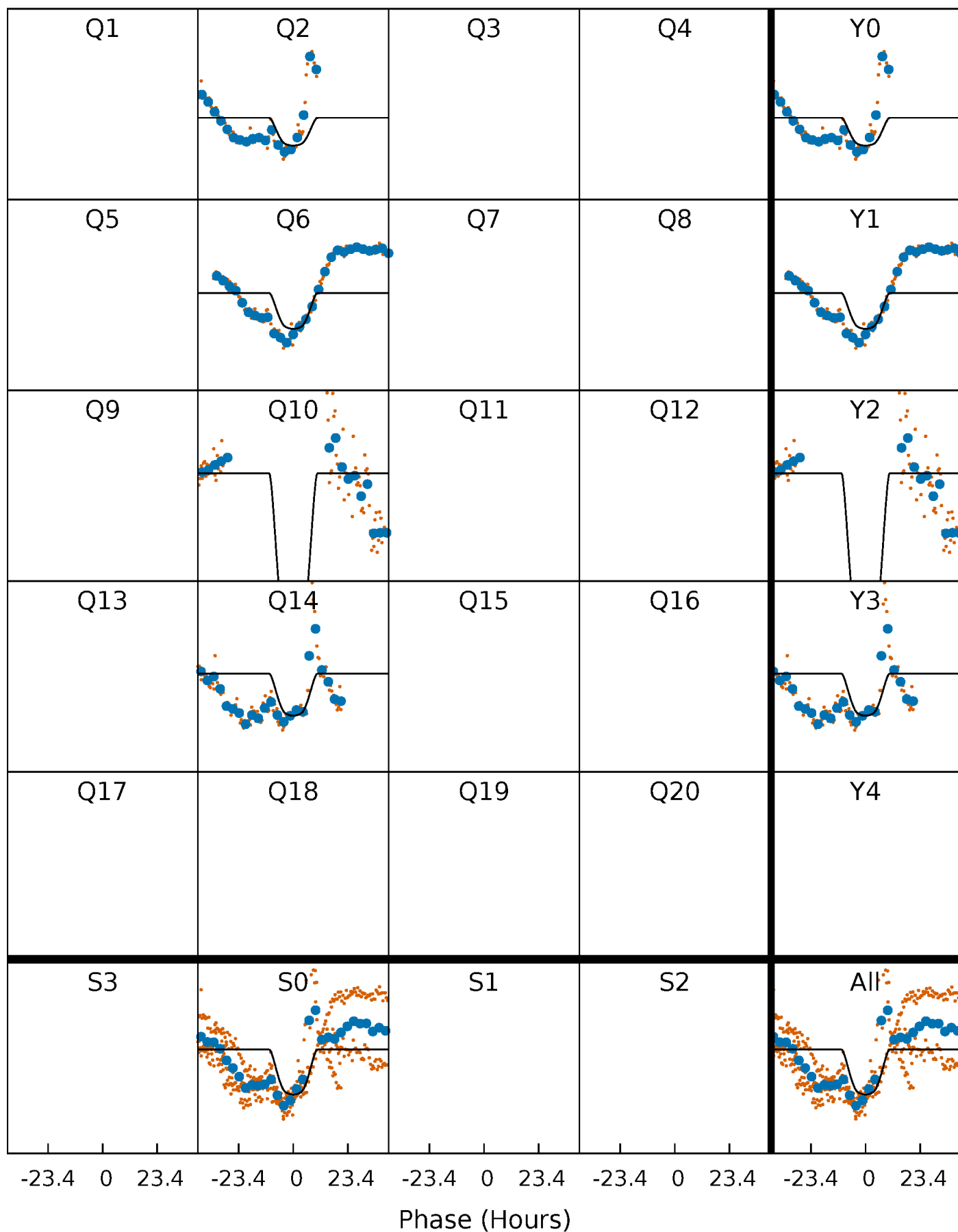
# PDC Quarter-Phased Transit Curves

TCE 005360082-04     $P=367.006008$  Days     $T_0=211.362180$  (BKJD)



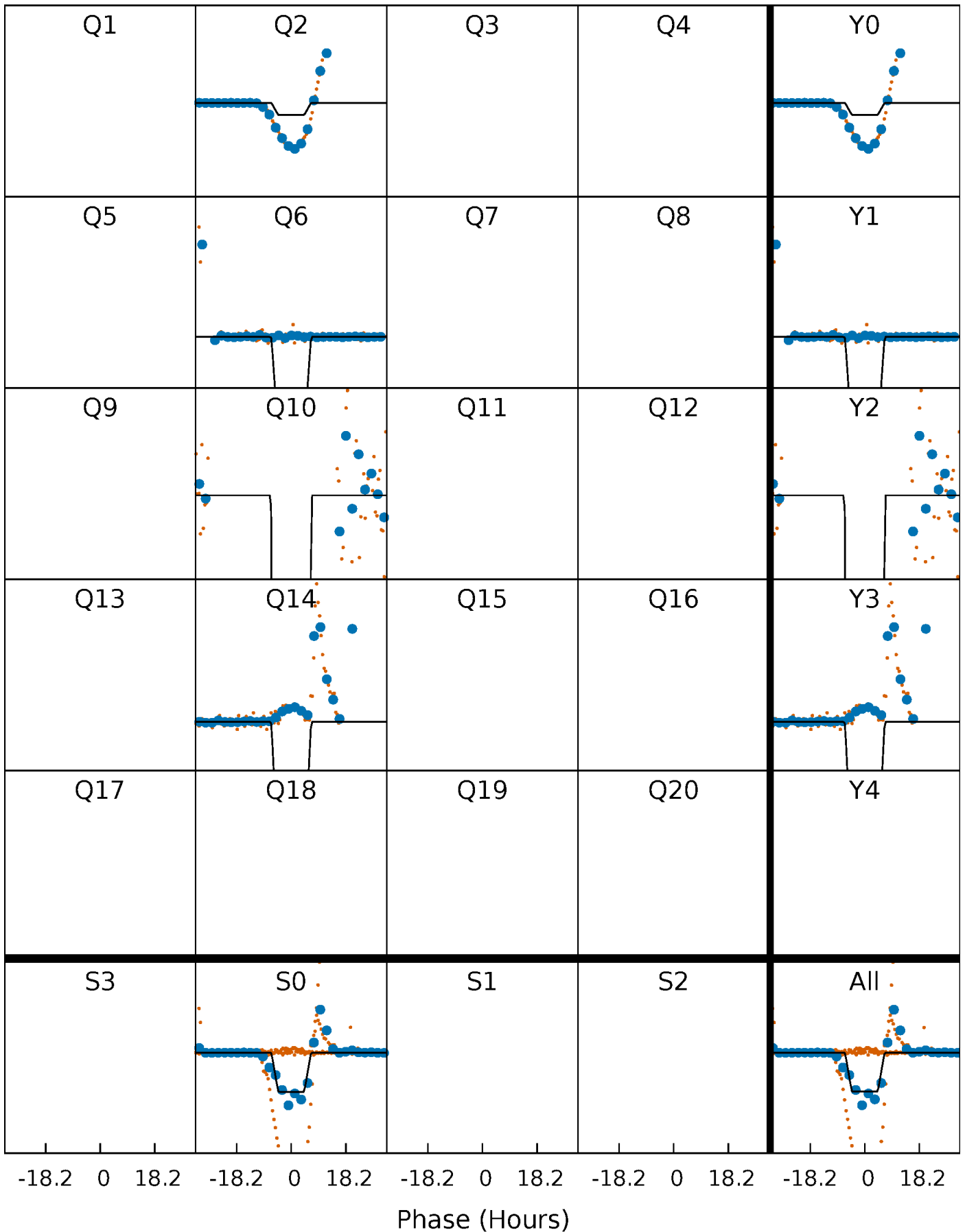
# DV Quarter-Phased Transit Curves

TCE 005360082-04 P=367.006008 Days  $T_0=211.362180$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

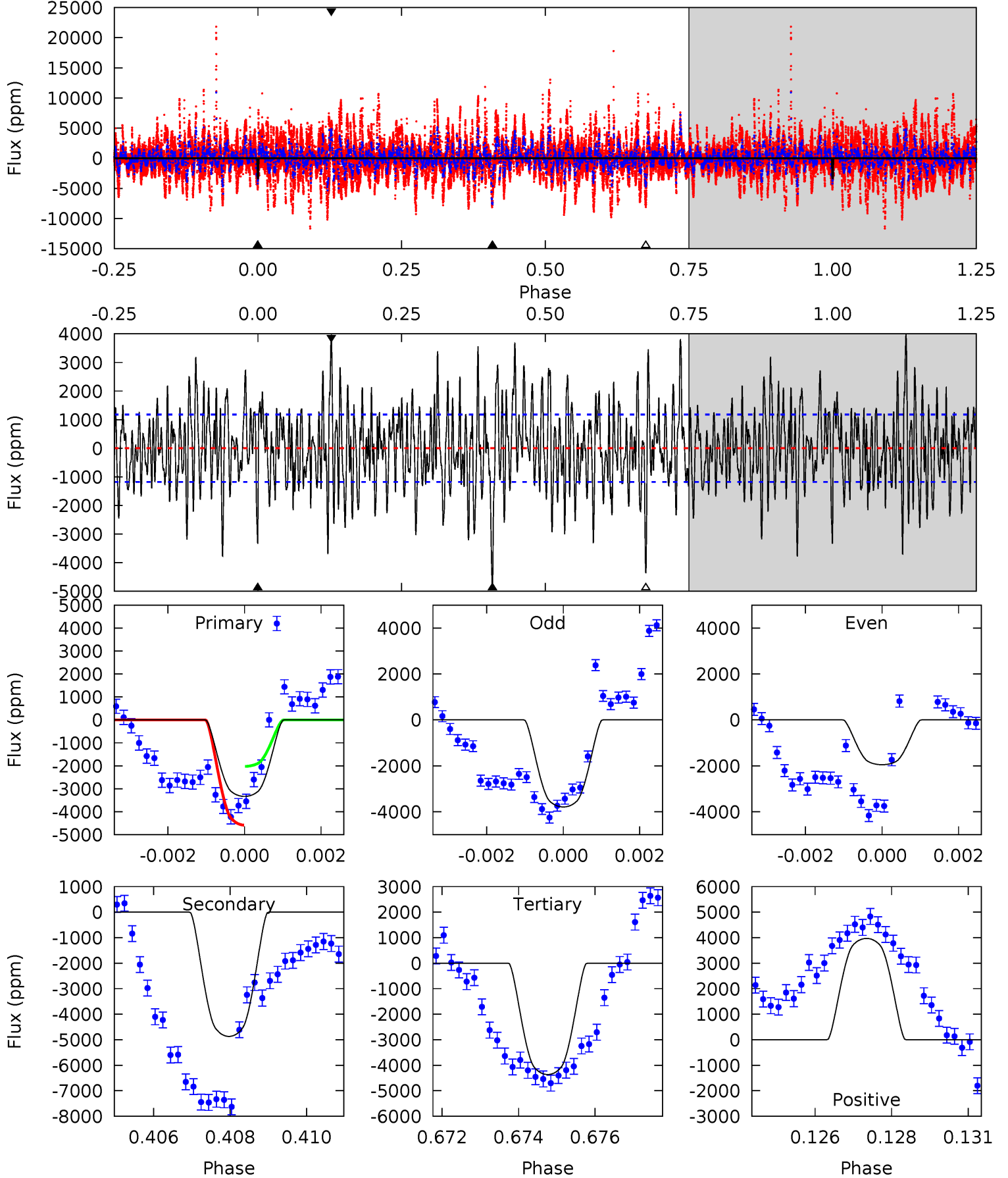
TCE 005360082-04 P=367.027605 Days  $T_0=211.282109$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-04, P = 367.006008 Days, E = 211.362180 Days

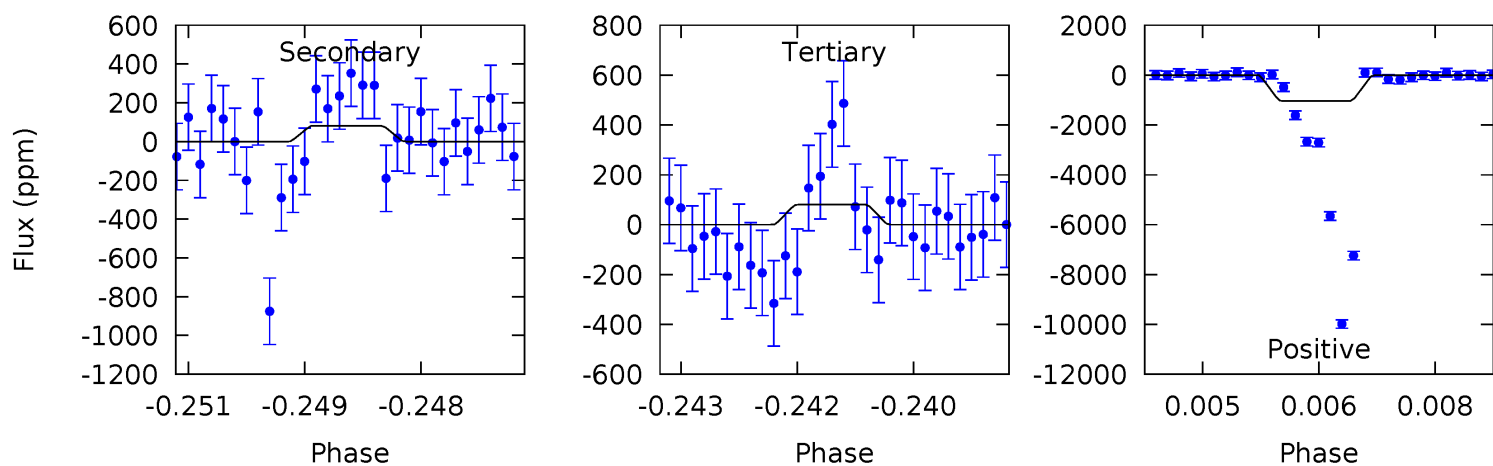
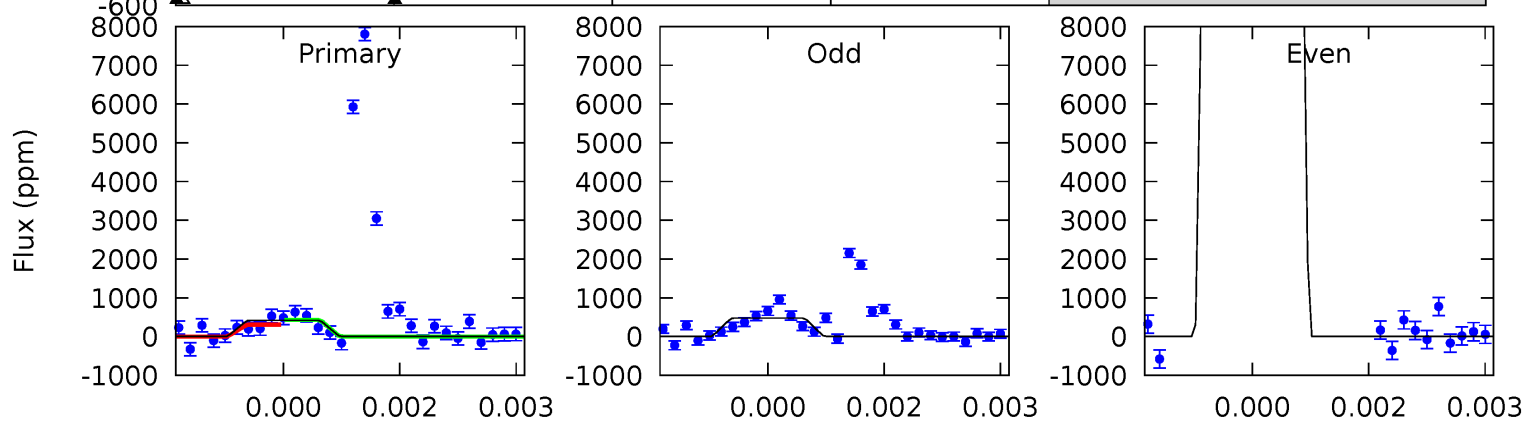
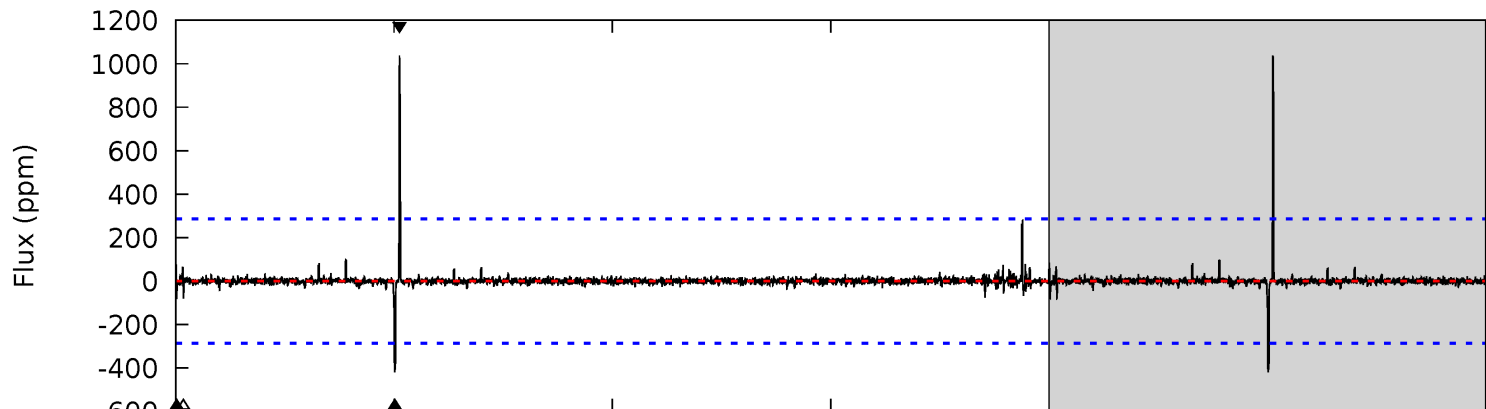
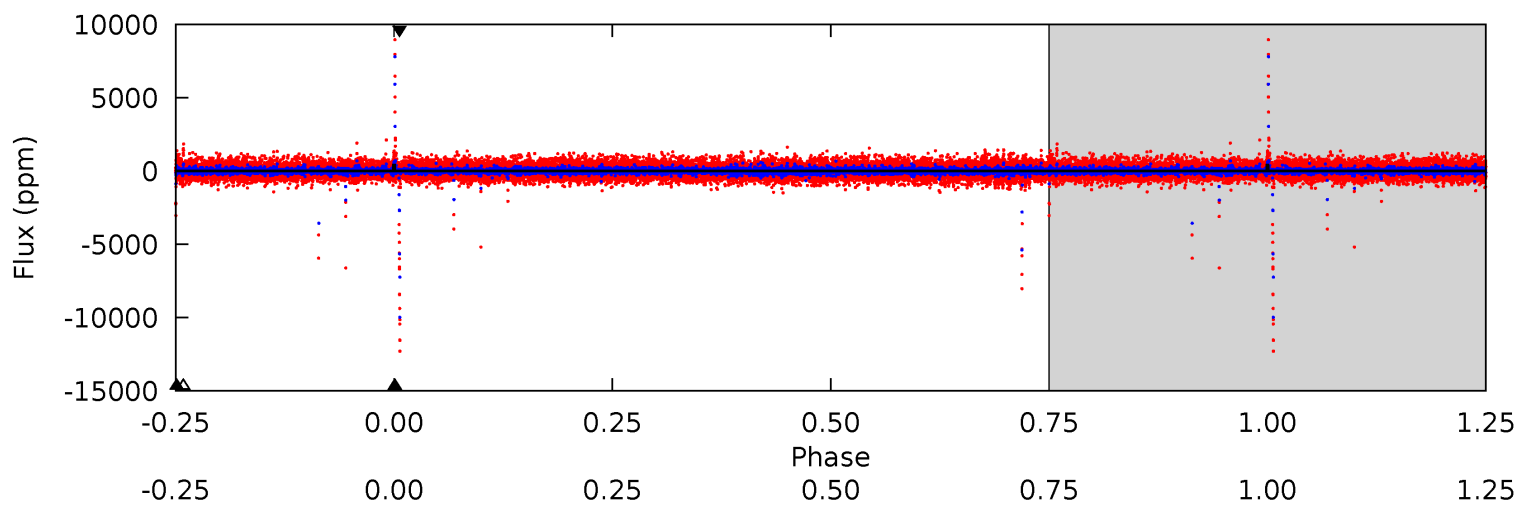
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	21.9	19.6	17.9	5.30	3.05	5.60	-4.64	-2.86	2.28	4.05	3.69	0.96	0.45	5.80



# Alt Model-Shift Uniqueness Test

005360082-04, P = 367.027605 Days, E = 211.282109 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
7.84	1.52	1.51	19.4	5.37	3.16	0.55	6.34	-11.6	0.01	-17.9	334.8	-213.9	0.71	1.09





### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4870 \pm 222$	$4.05^{+0.36}_{-0.35}$	$233^{+8}_{-8}$	$4698^{+222}_{-198}$	$113475^{+21791}_{-17010}$
Alt.	$-81 \pm 53$	$6.40^{+0.44}_{-0.41}$	$233^{+9}_{-9}$	$2232^{+153}_{-238}$	$742^{+509}_{-481}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

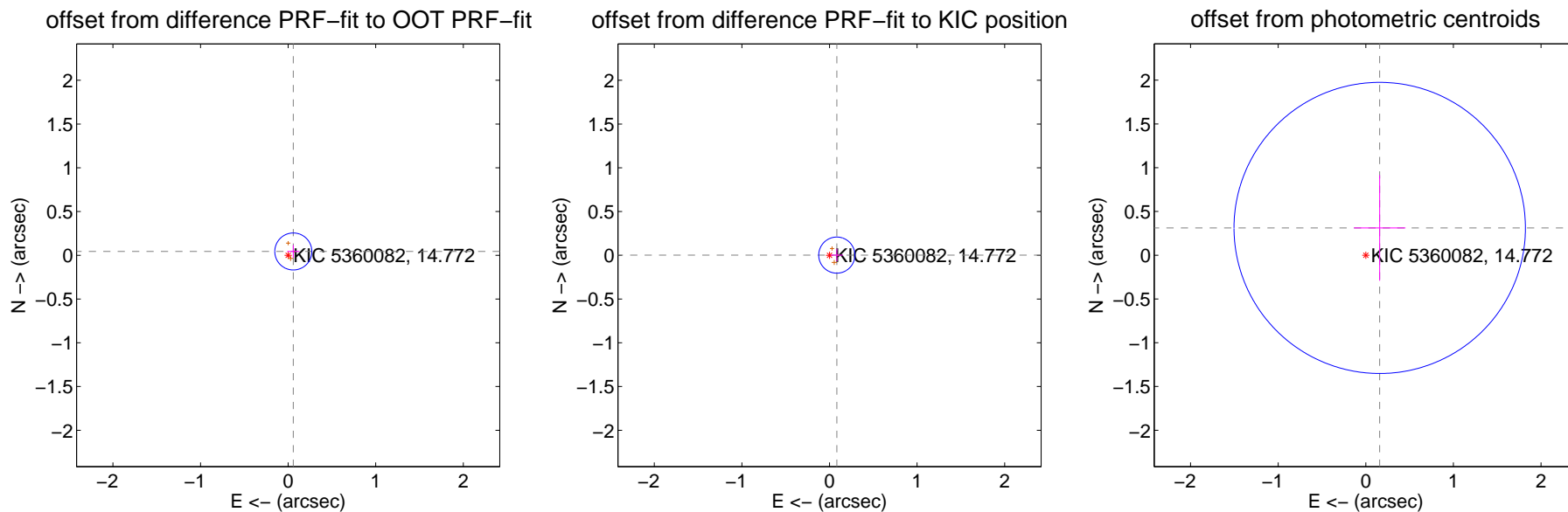
## DV Centroid Data

Supplemental centroid analysis for 005360082-04. Kepler magnitude: 14.77. Transit SNR 8.17

There are 0 quarters with good PRF difference image offsets

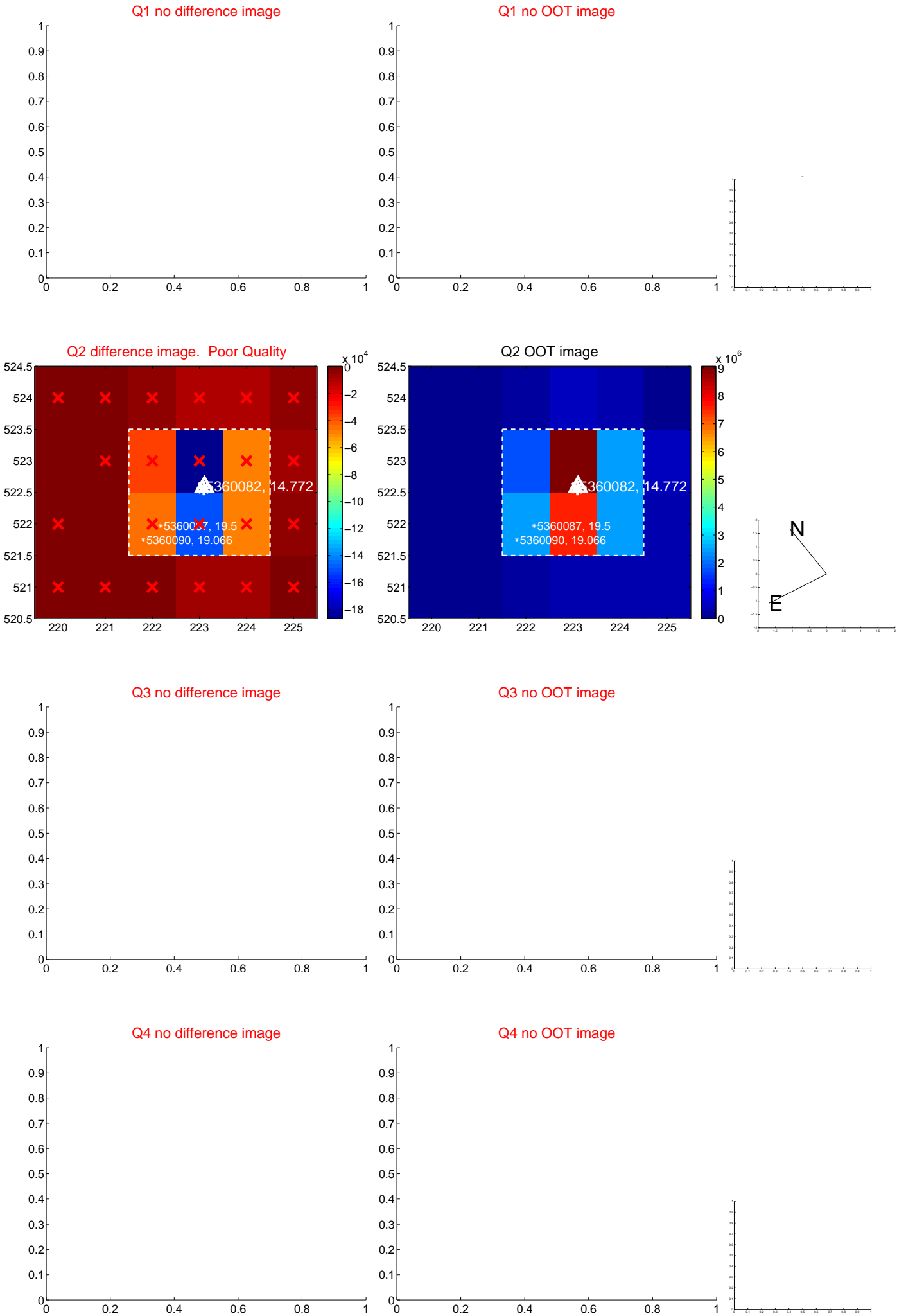
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.073 \pm 0.070$	1.04	$-0.059 \pm 0.069$	$0.043 \pm 0.073$
PRF-fit source offset from KIC position	$0.084 \pm 0.069$	1.22	$-0.084 \pm 0.069$	$0.002 \pm 0.071$
photometric centroid source offset	$0.35 \pm 0.55$	0.63	$-0.16 \pm 0.29$	$0.31 \pm 0.60$

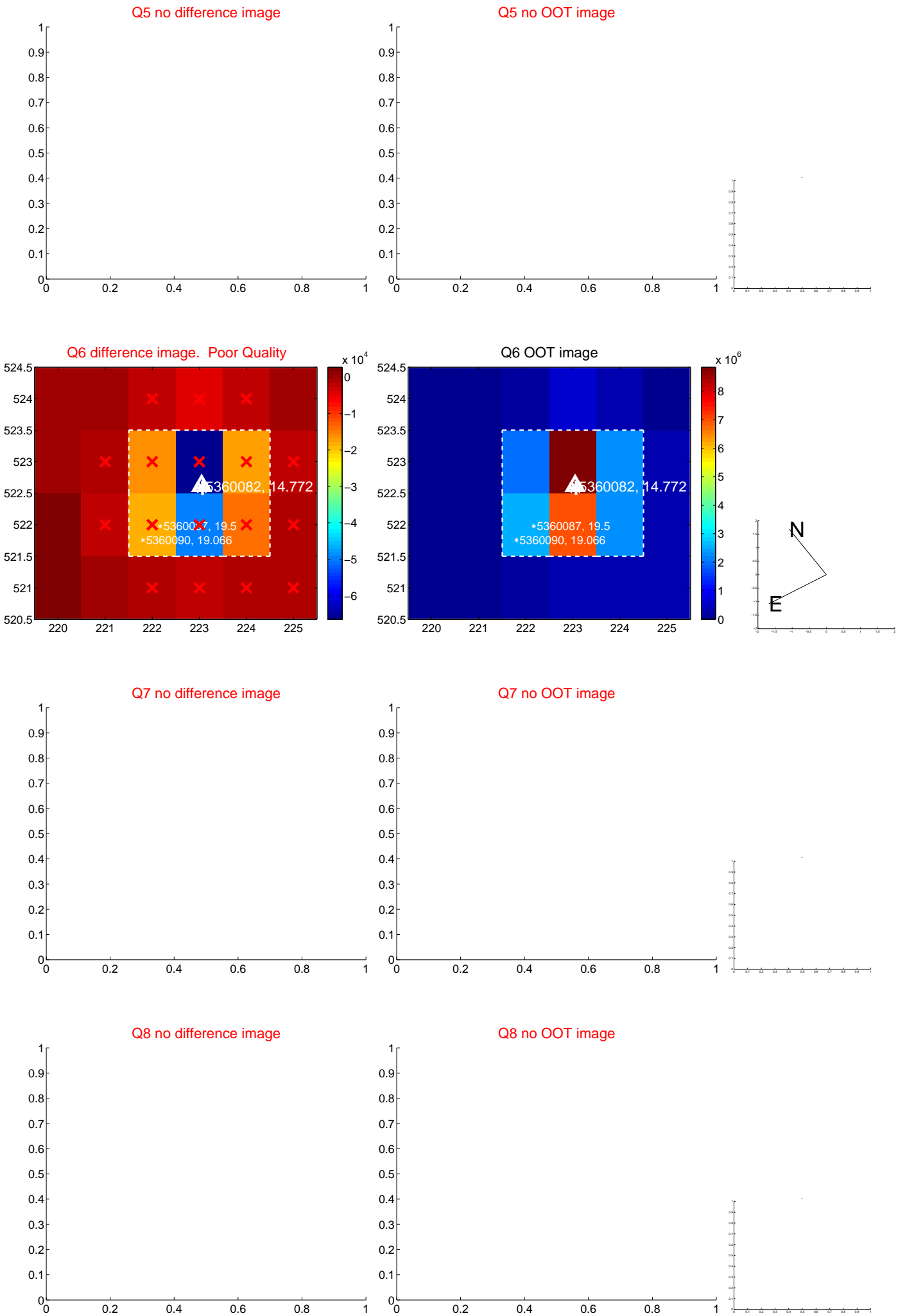


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

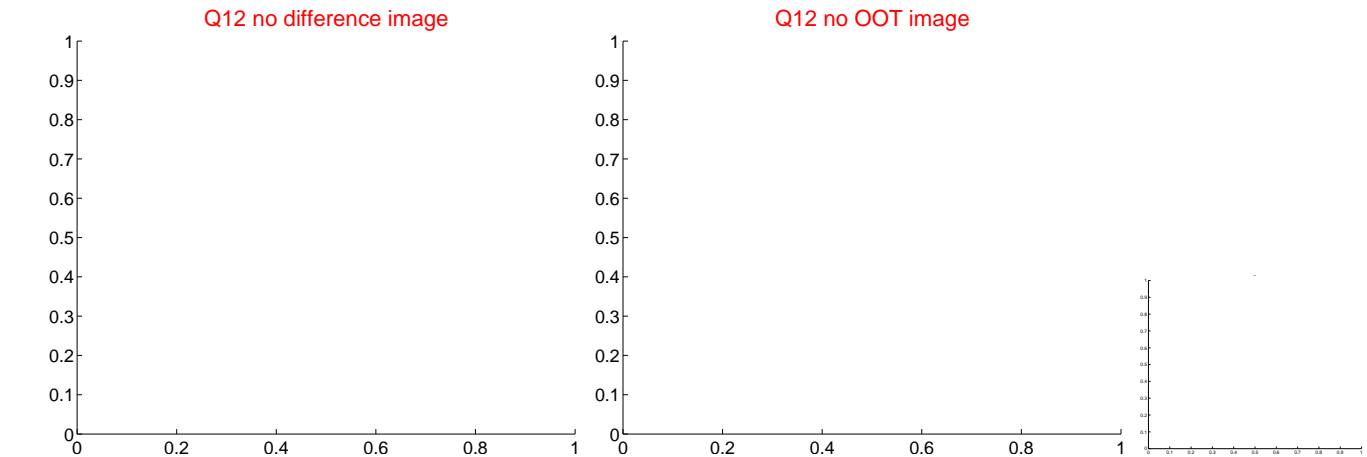
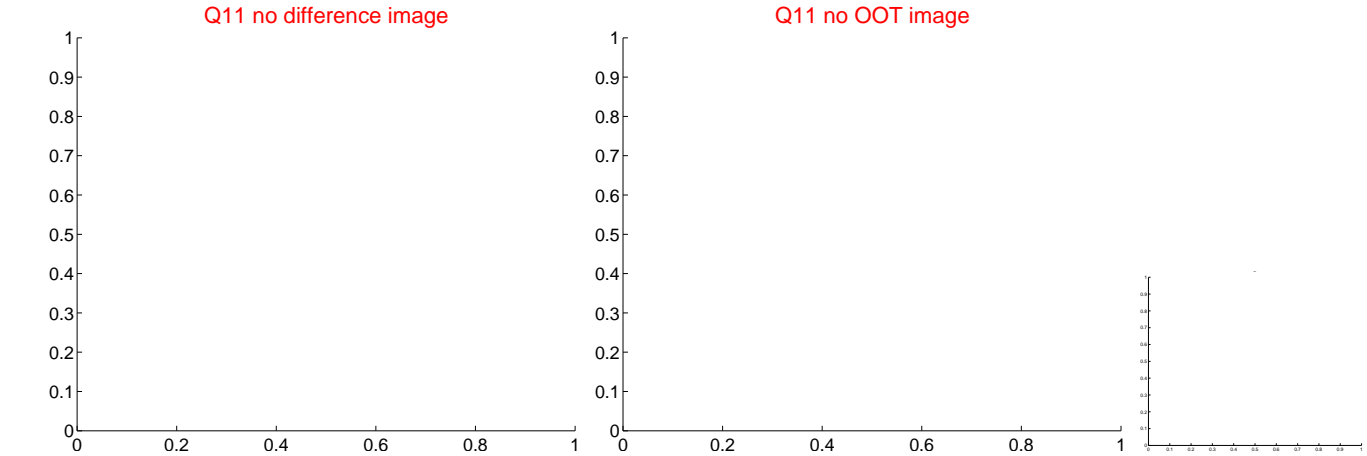
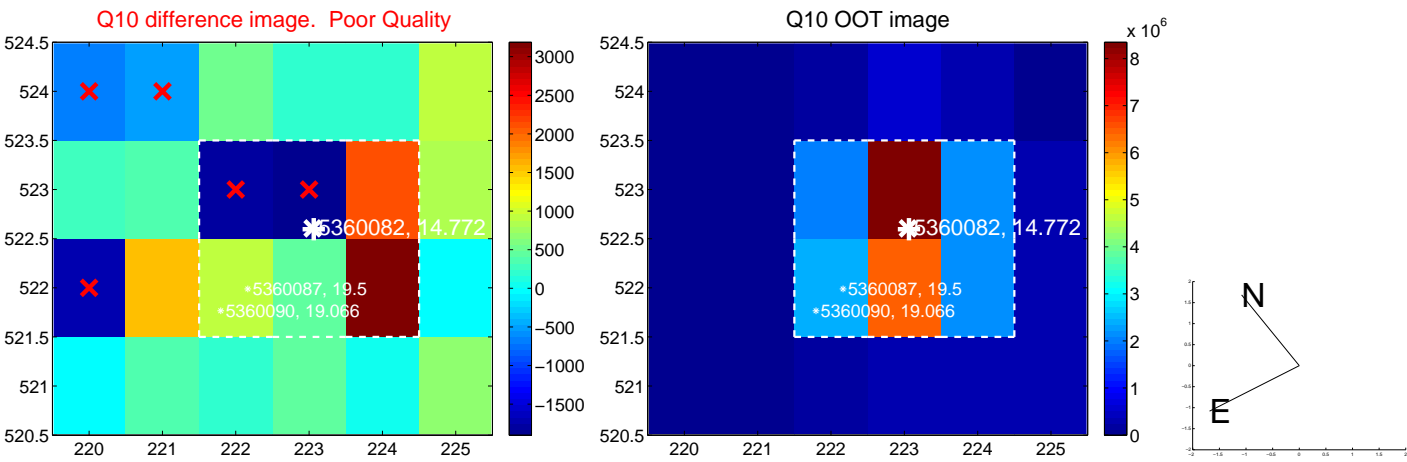
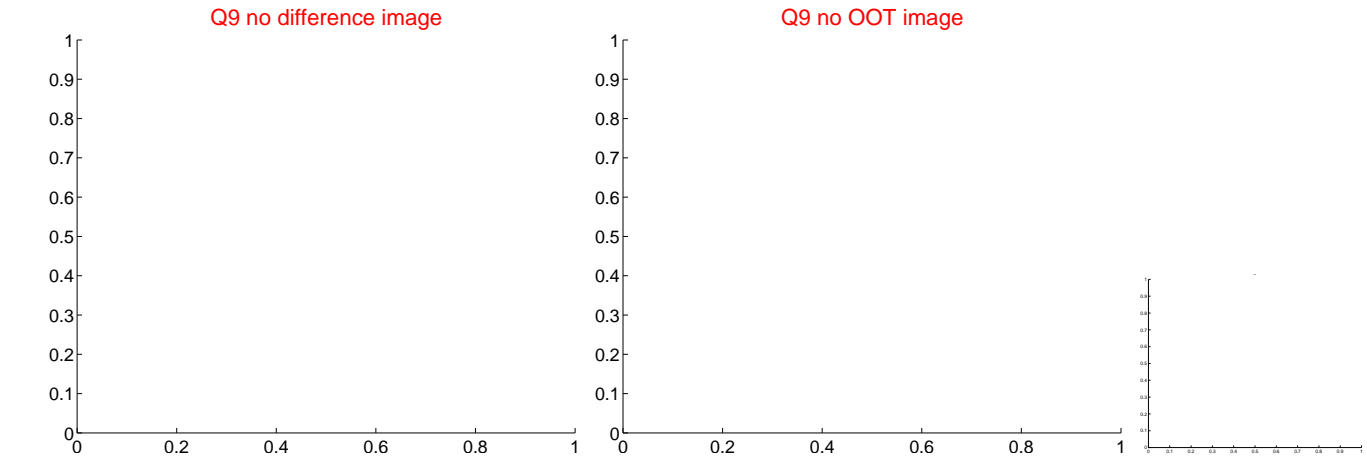
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



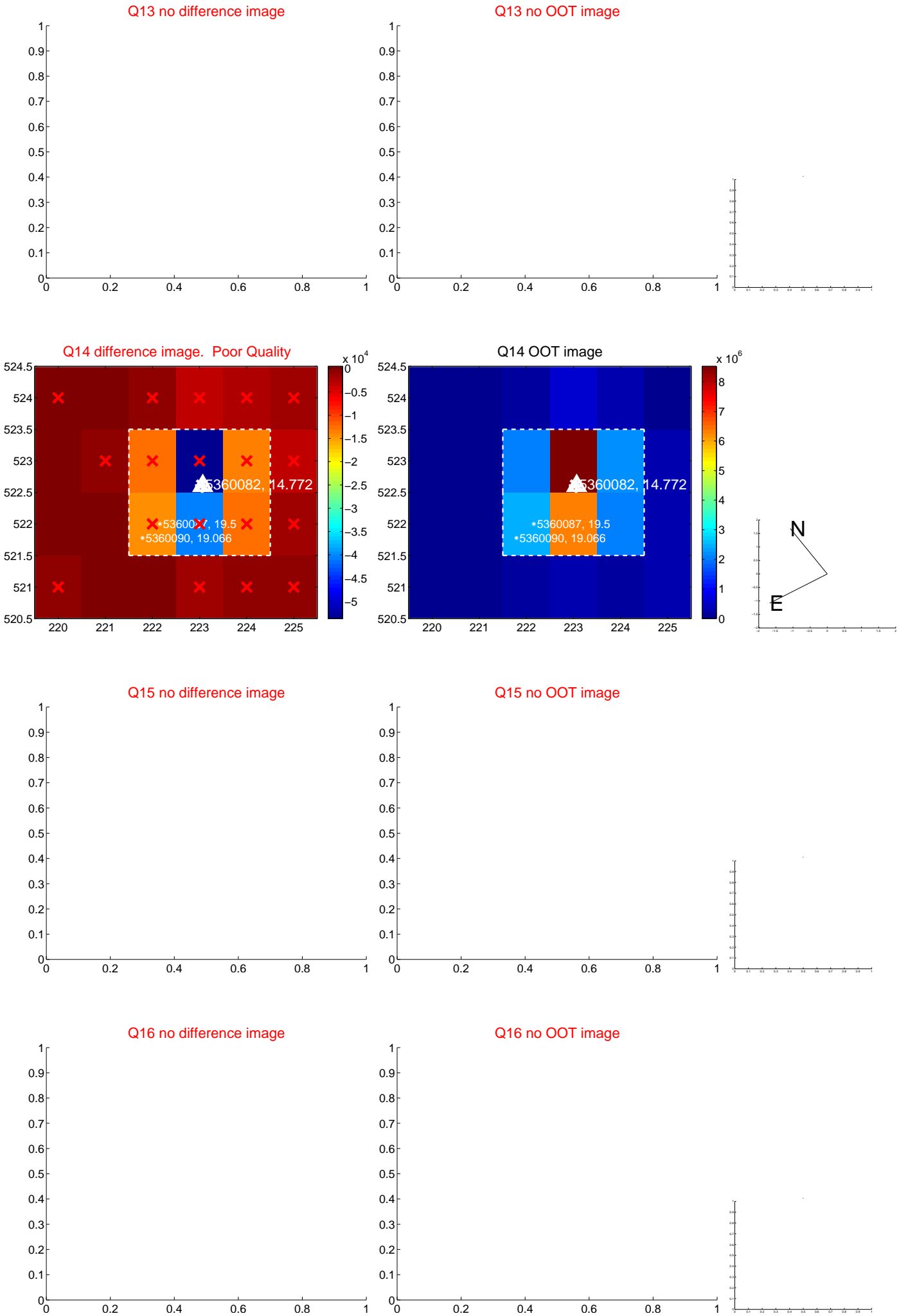
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



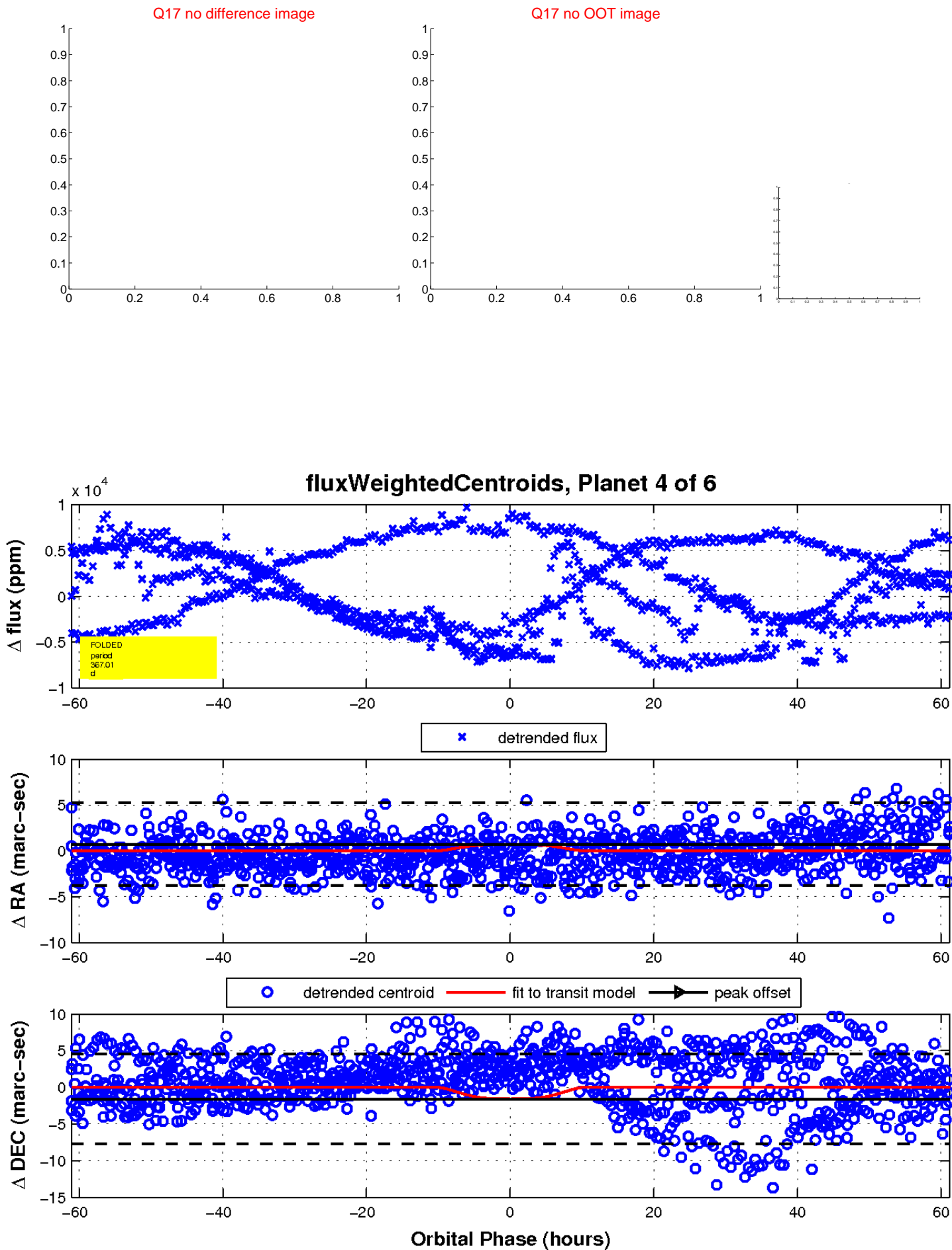
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

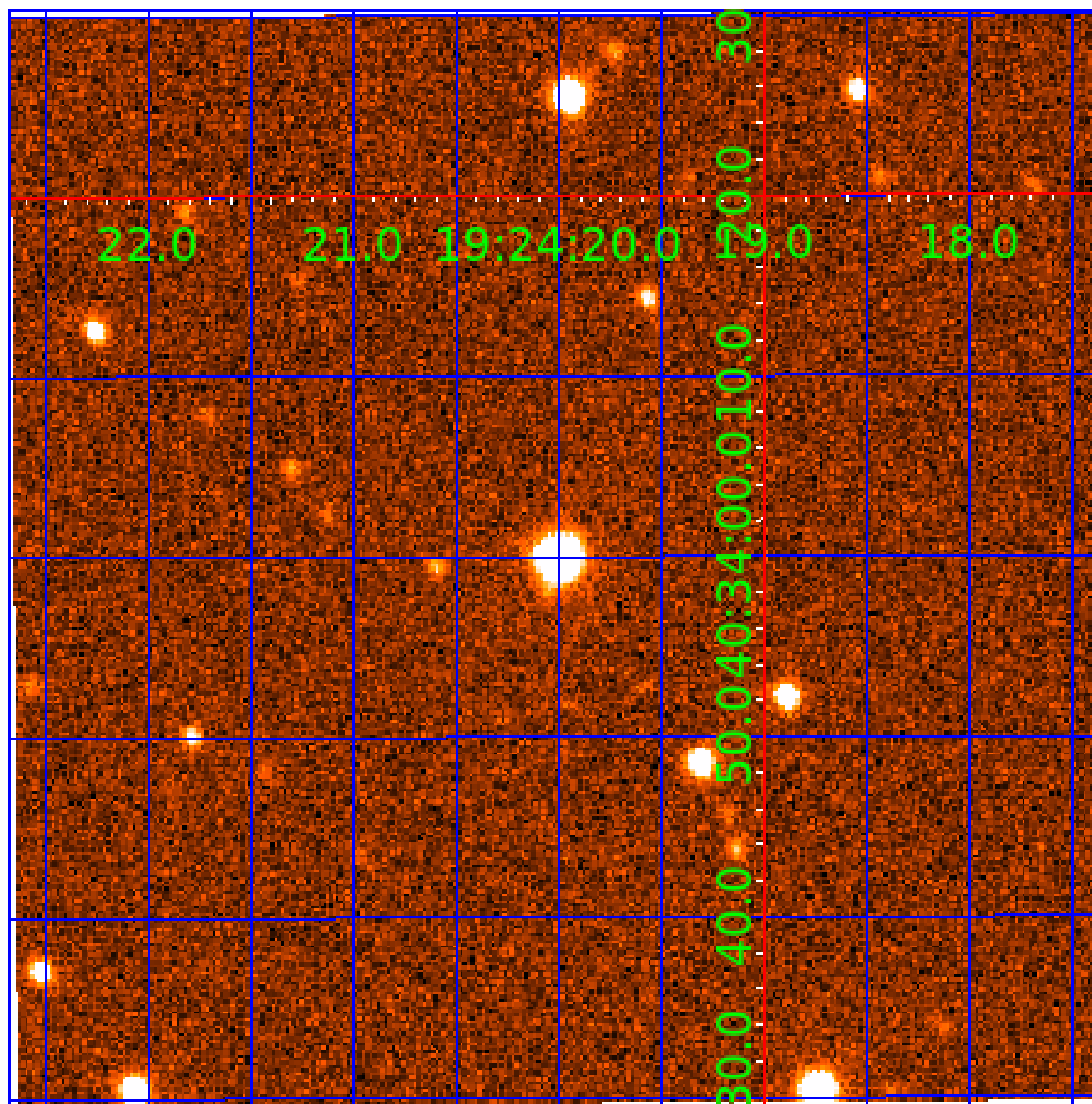


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

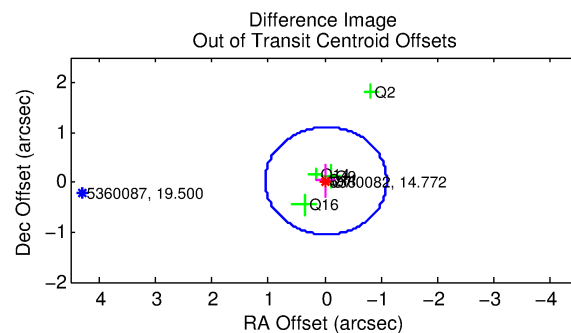
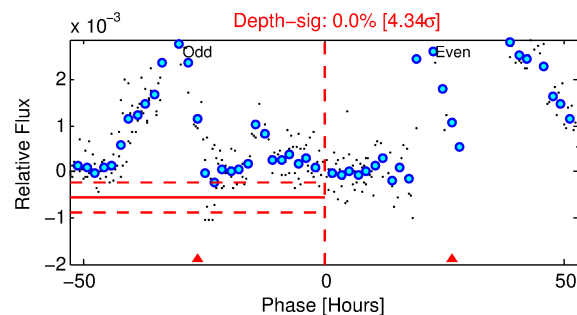
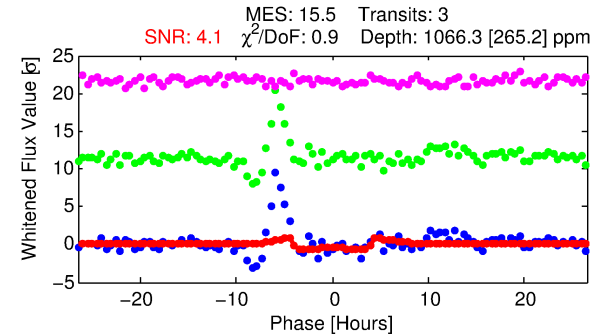
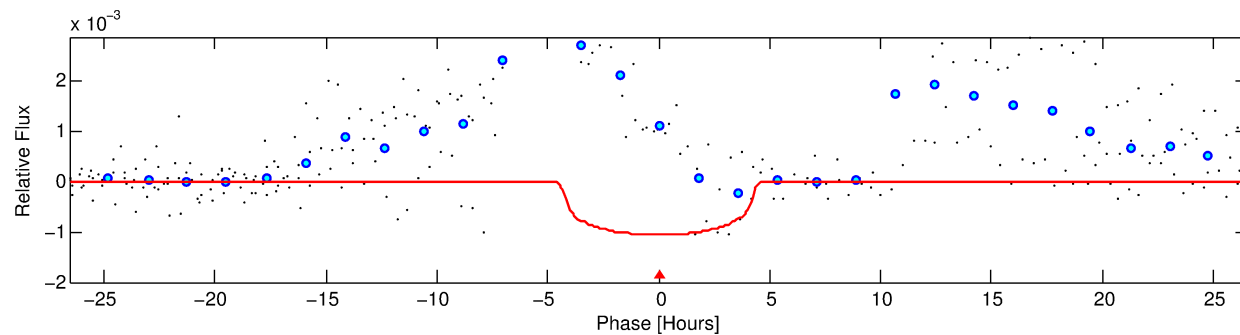
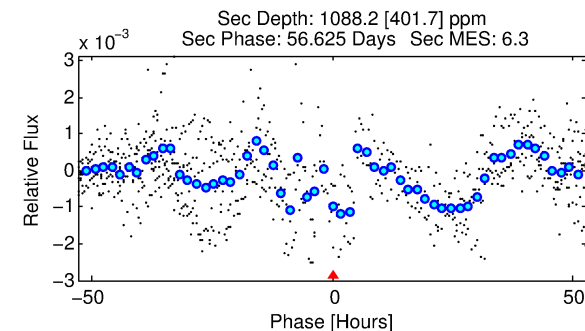
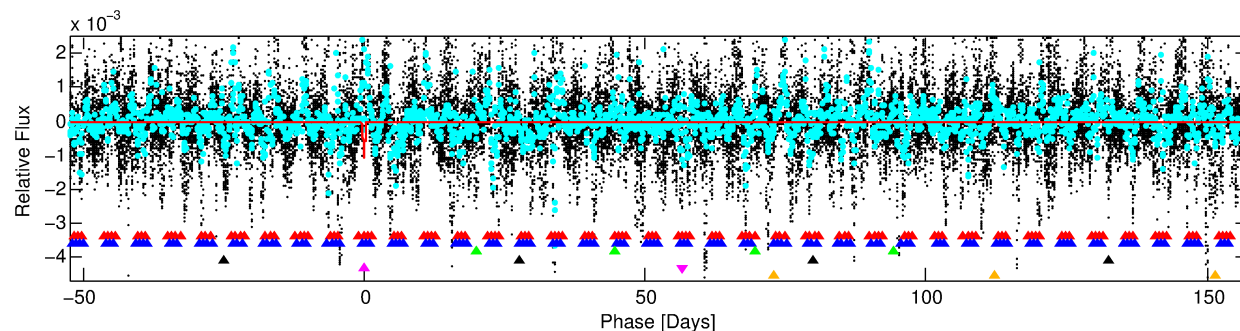
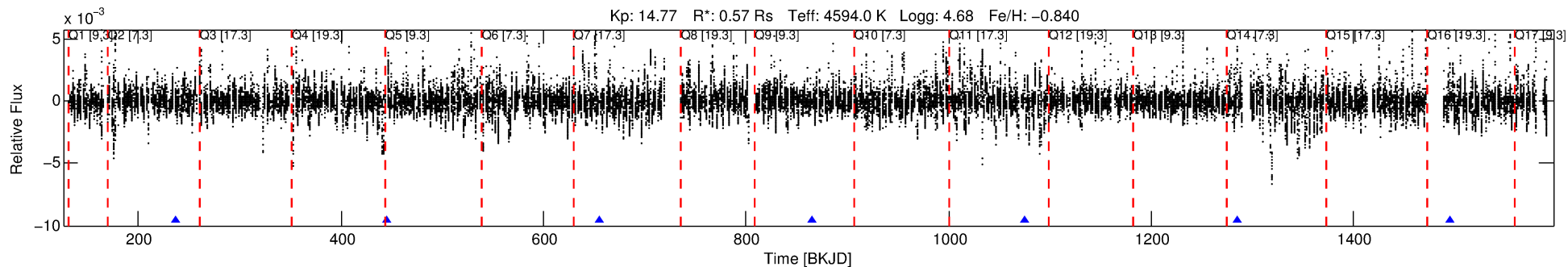
## Ephemeris Match Information For 005360082-05

No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 5 of 6 Period: 209.712 d  
KOI: K03768 Corr: No Ephemeris Match

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



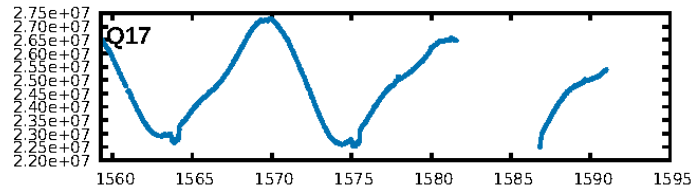
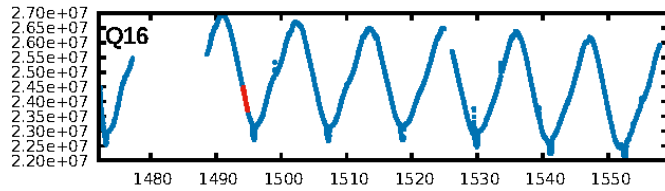
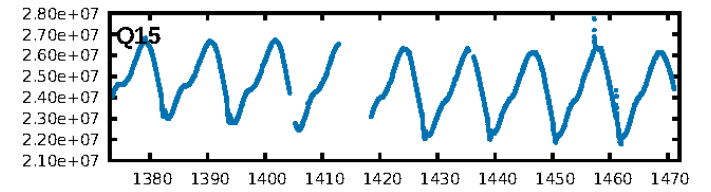
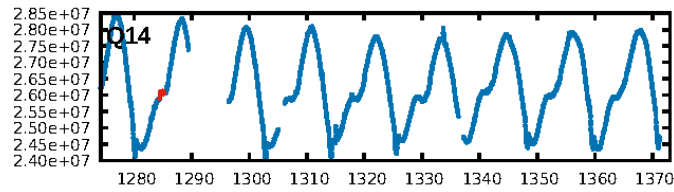
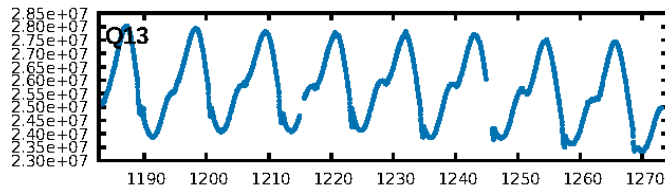
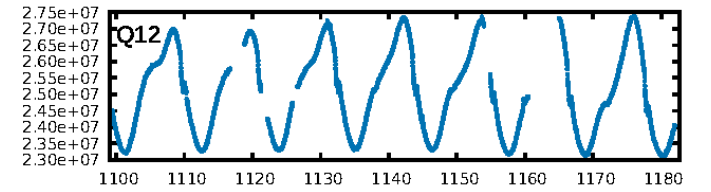
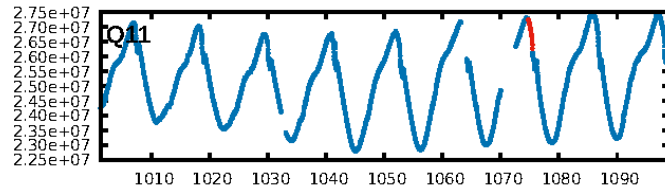
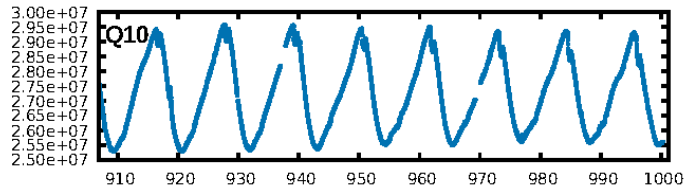
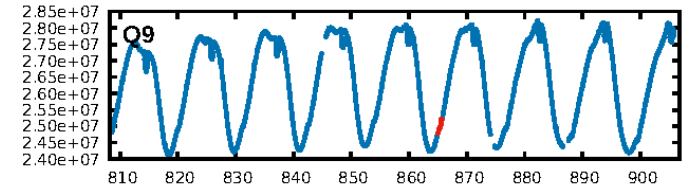
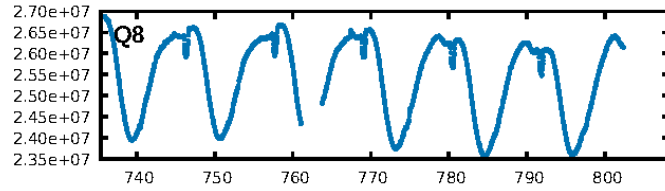
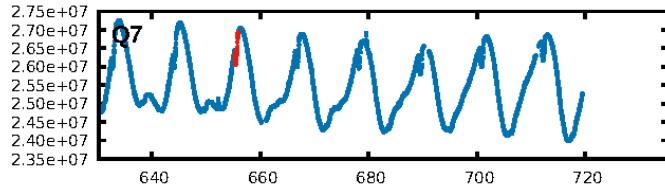
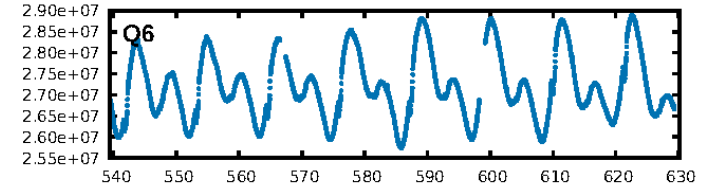
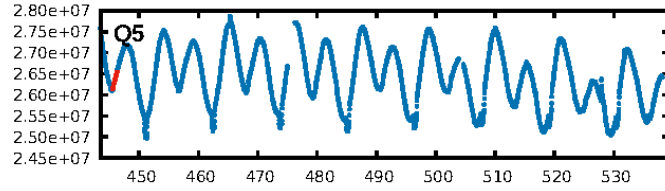
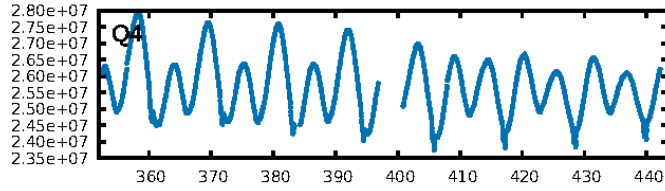
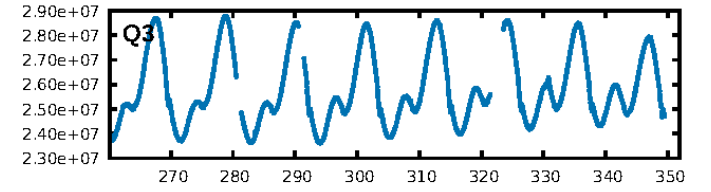
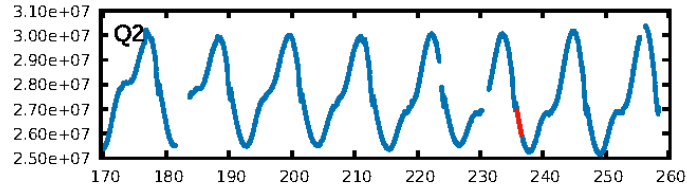
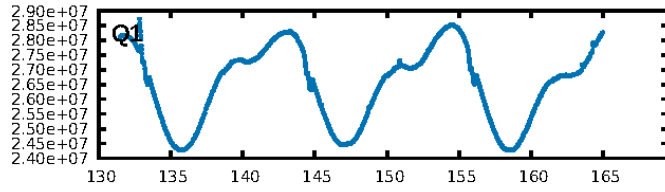
## DV Fit Results:

Period = 209.71197 [0.00343] d  
Epoch = 236.2277 [0.0161] BKJD  
Rp/R\* = 0.0300 [0.0367]  
a/R\* = 165.57 [680.69]  
b = 0.47 [6.82]  
Seff = 0.40 [0.07]  
Teq = 202 [8] K  
Rp = 1.86 [2.27] Re  
a = 0.5695 [0.0388] AU  
Ag = 56359.49 [139423.22] [0.40σ]  
Teffp = 4817 [2981] K [1.55σ]

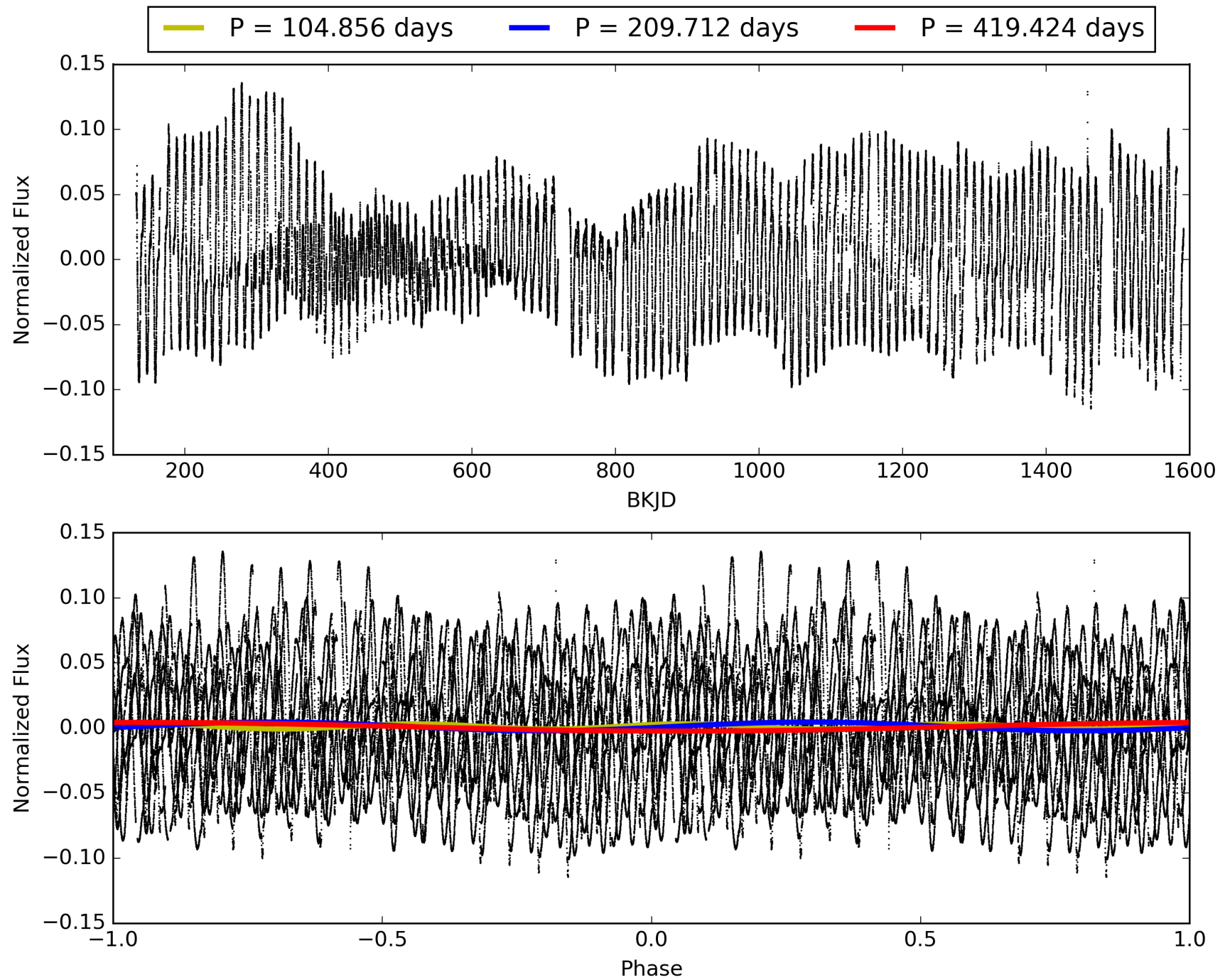
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [286.81σ]  
LongPeriod-sig: 100.0% [169.42σ]  
ModelChiSquare2-sig: 91.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.88e-15  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.5882  
Centroid-sig: 37.7%  
Centroid-so: 0.754 arcsec [1.07σ]  
OotOffset-rm: 0.033 arcsec [0.09σ]  
OotOffset-st: 2/2/1/1 [6]  
KicOffset-rm: 0.123 arcsec [1.15σ]  
KicOffset-st: 2/2/1/1 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 0.14 [1/7]

# TCE 005360082-05, PDC Light Curves

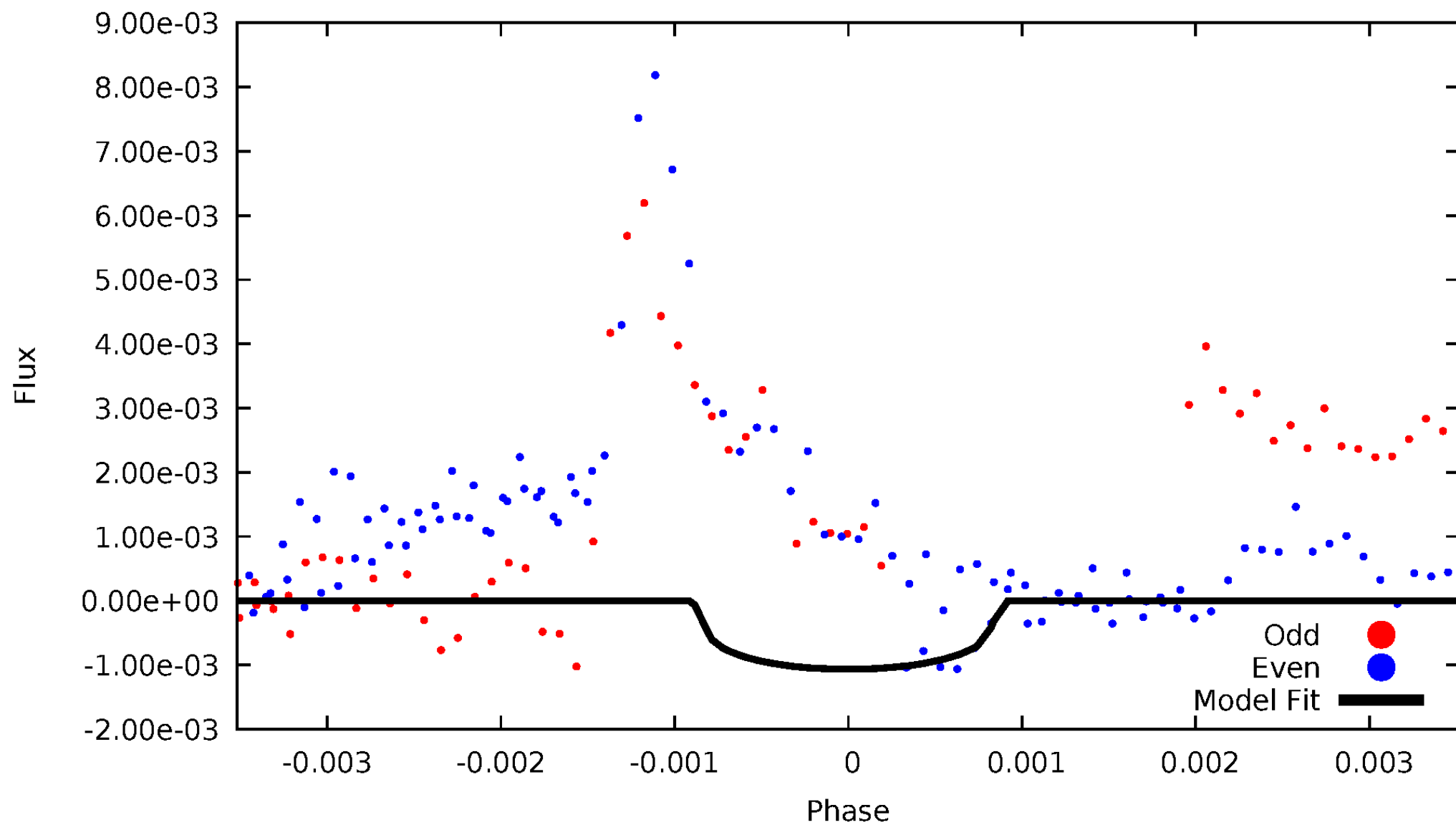


TCE 005360082-05



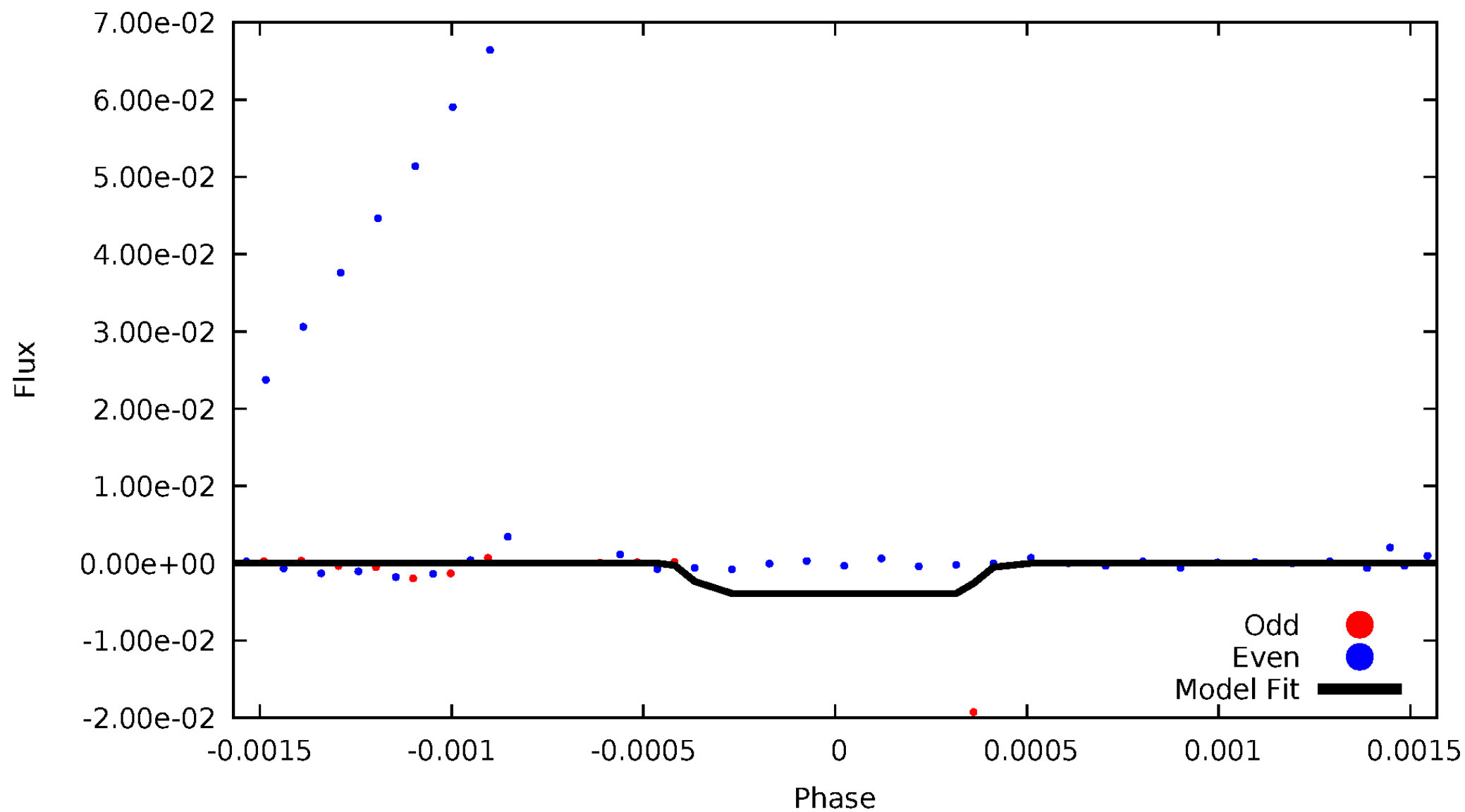
# DV Odd/Even

TCE 005360082-05



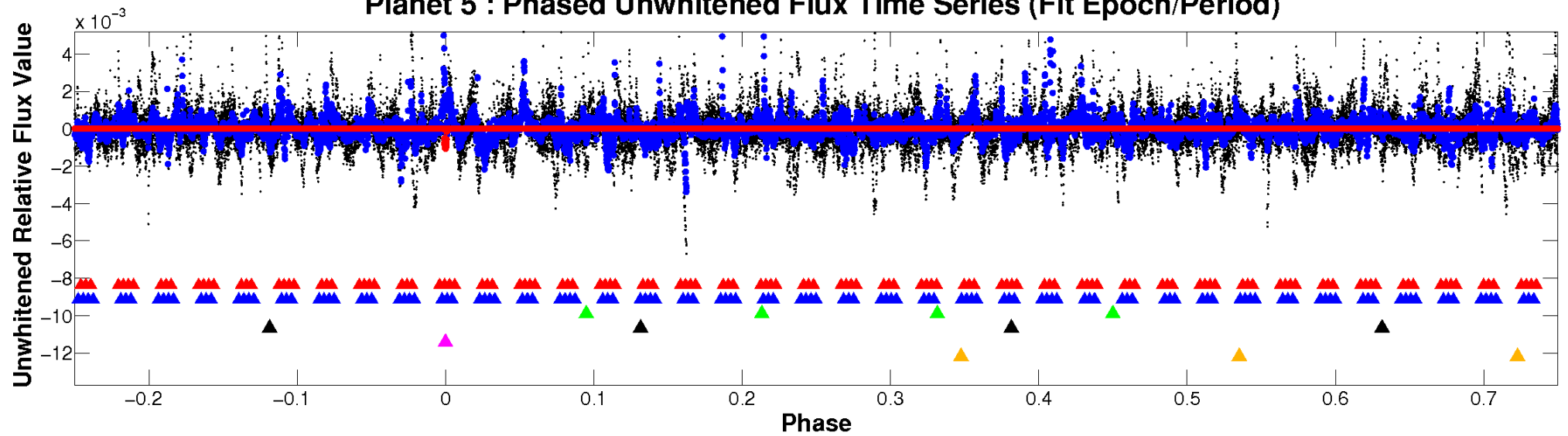
# ALT Odd/Even

TCE 005360082-05

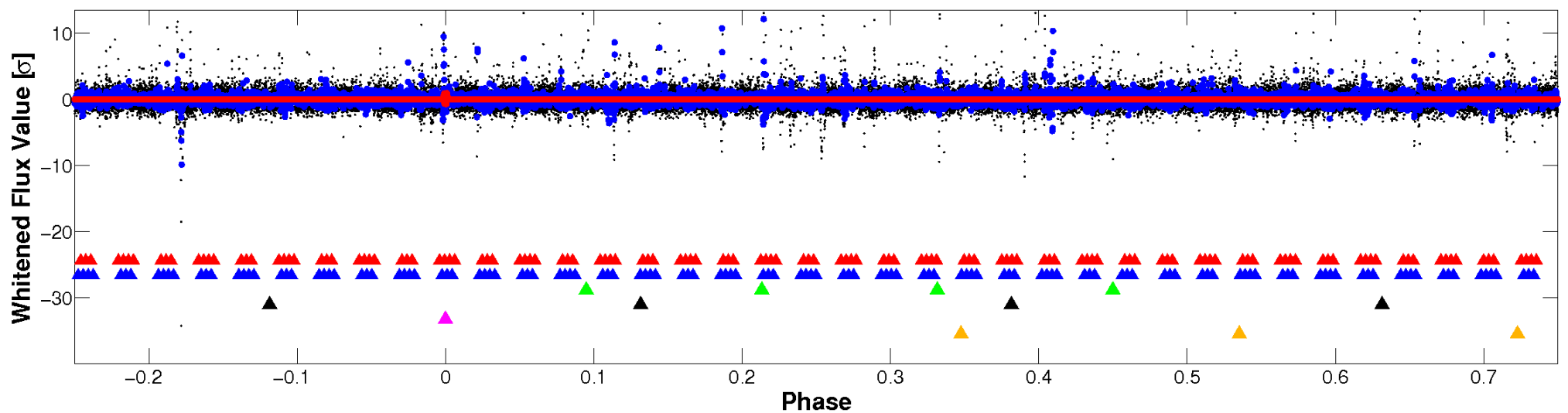


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



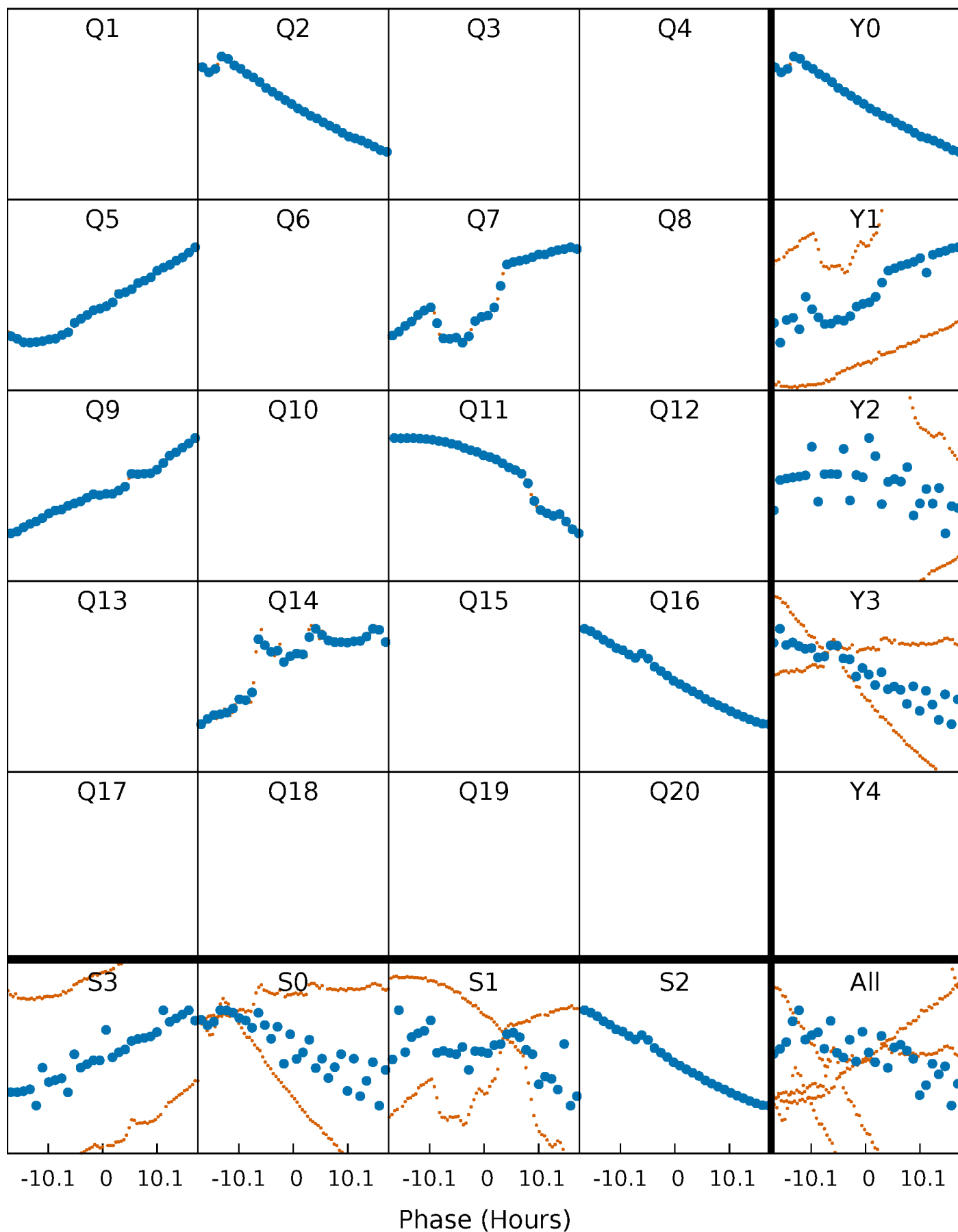
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

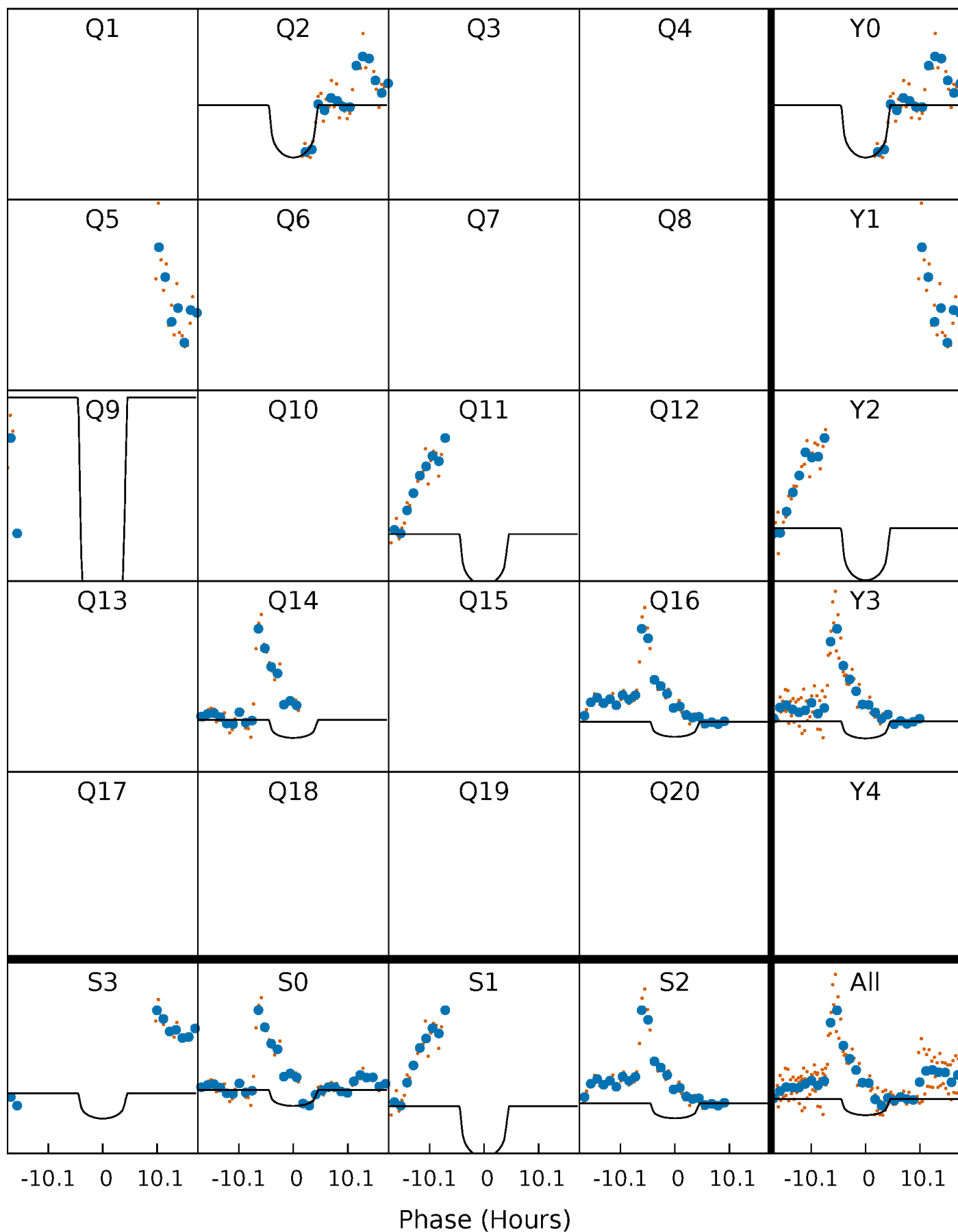
TCE 005360082-05     $P=209.711973$  Days     $T_0=236.227732$  (BKJD)





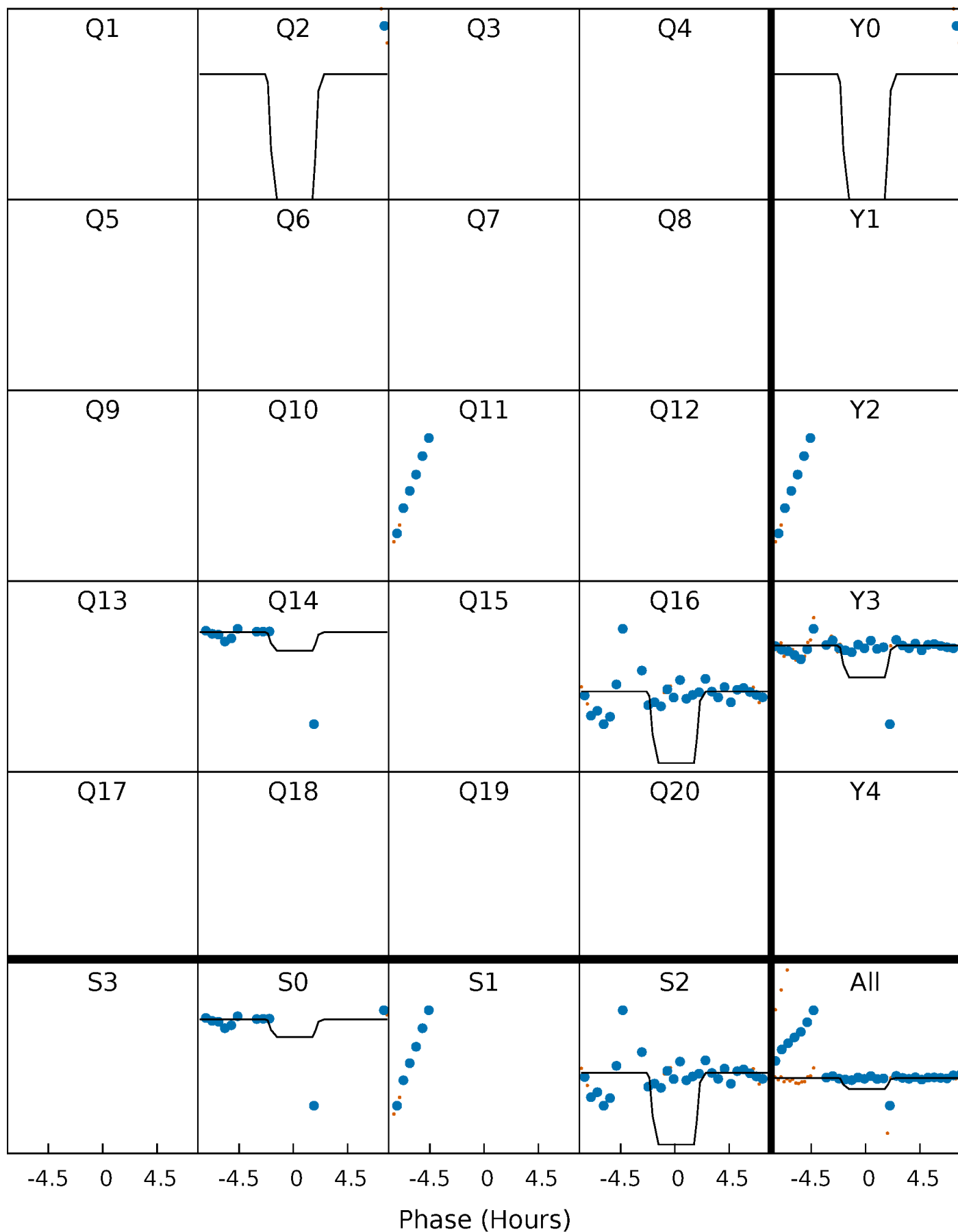
# DV Quarter-Phased Transit Curves

TCE 005360082-05     $P=209.711973$  Days     $T_0=236.227732$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

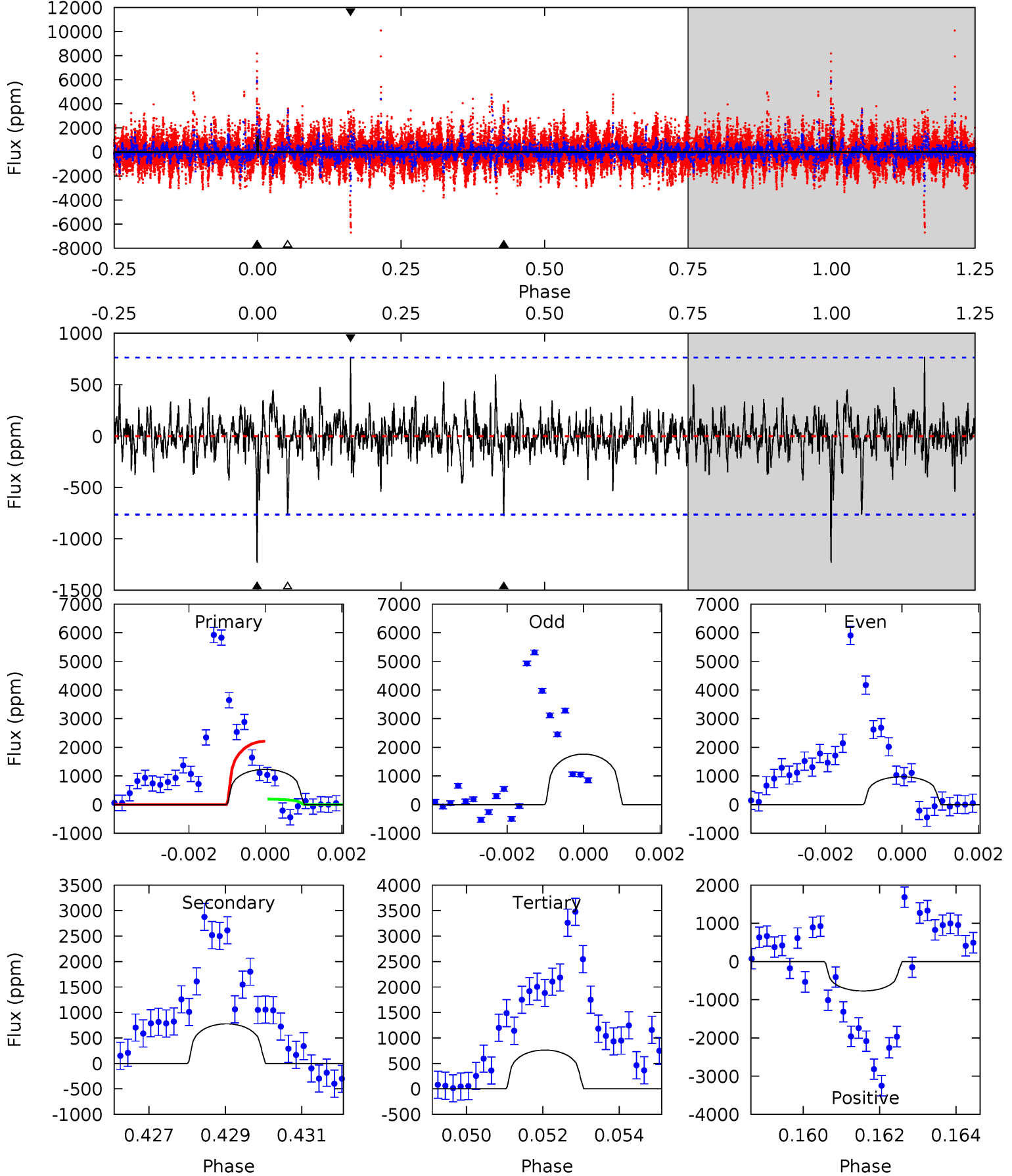
TCE 005360082-05 P=209.735074 Days  $T_0=236.014716$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-05, P = 209.711973 Days, E = 26.515759 Days

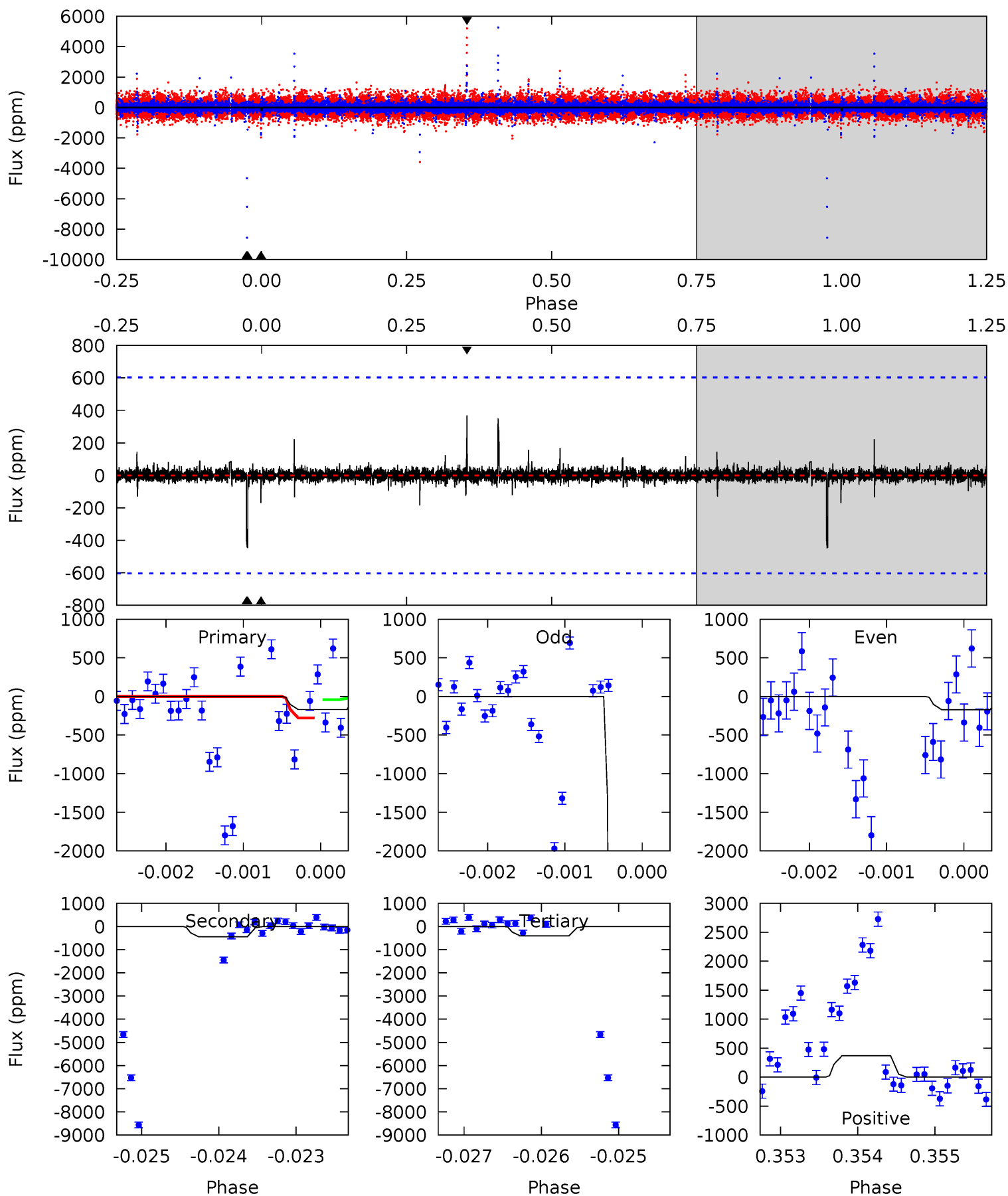
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.61	5.44	5.34	5.39	5.35	3.12	0.93	3.27	3.22	0.10	0.05	2.41	0.48	0.39	7.16



# Alt Model-Shift Uniqueness Test

005360082-05, P = 209.735074 Days, E = 26.279642 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
1.54	4.04	3.66	3.33	5.46	3.31	0.18	-2.12	-1.79	0.38	0.71	54.9	1.00	0.45	1.03



### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-778 \pm 143$	$2.49^{+2.16}_{-1.63}$	$281^{+9}_{-11}$	$4026^{+2322}_{-761}$	$22636^{+160556}_{-16111}$
Alt.	$-446 \pm 110$	$3.89^{+2.09}_{-1.92}$	$281^{+9}_{-11}$	$3158^{+807}_{-374}$	$5212^{+15834}_{-3050}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

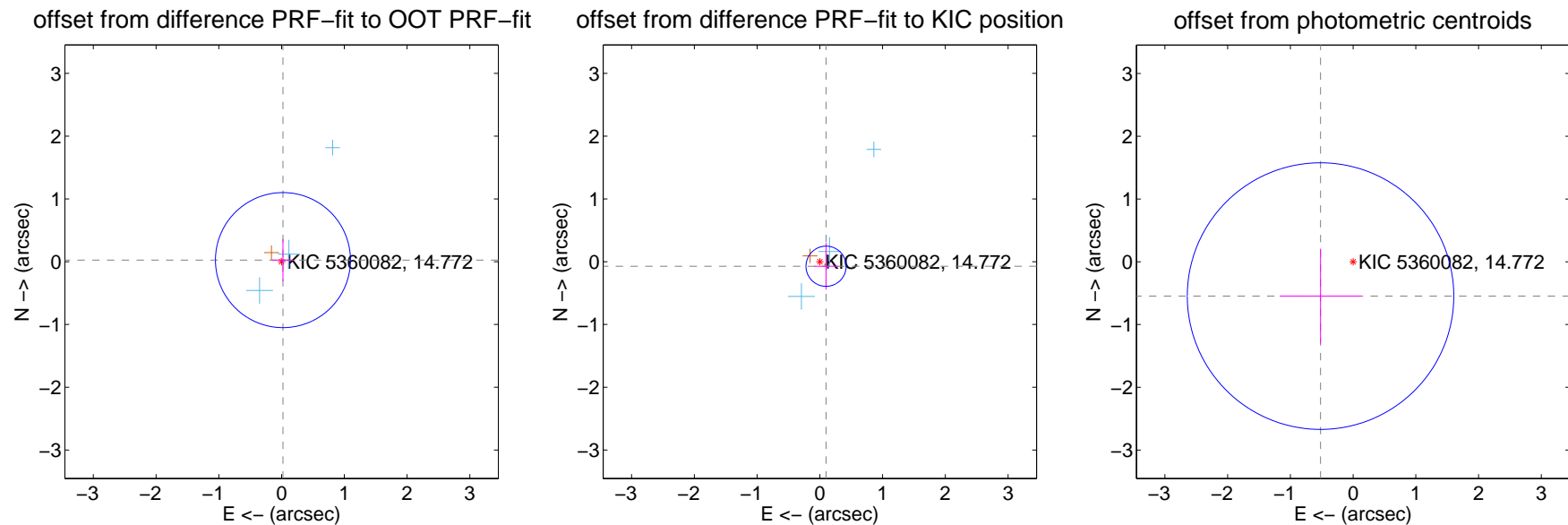
## DV Centroid Data

Supplemental centroid analysis for 005360082-05. Kepler magnitude: 14.77. Transit SNR 4.12

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.033 \pm 0.358$	0.09	$-0.022 \pm 0.175$	$0.025 \pm 0.336$
PRF-fit source offset from KIC position	$0.123 \pm 0.107$	1.15	$-0.099 \pm 0.192$	$-0.072 \pm 0.371$
photometric centroid source offset	$0.75 \pm 0.71$	1.07	$0.52 \pm 0.65$	$-0.55 \pm 0.76$



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.

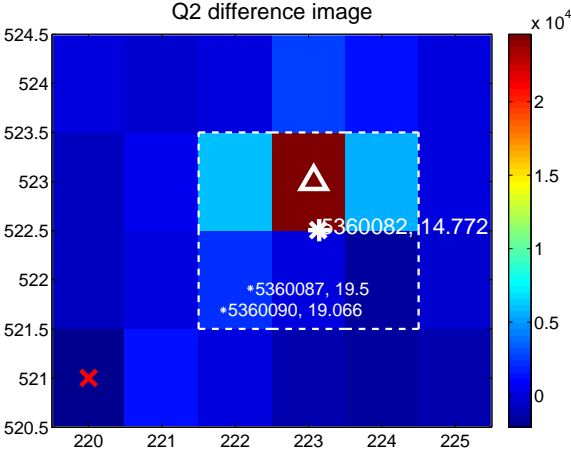
Q1 no difference image



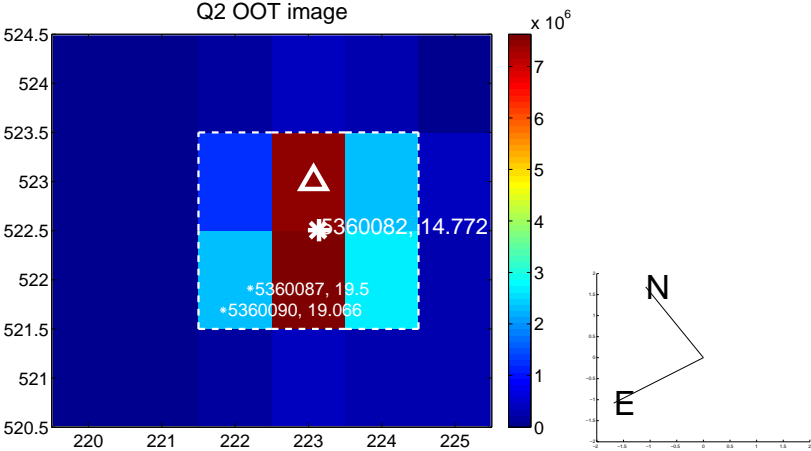
Q1 no OOT image



Q2 difference image



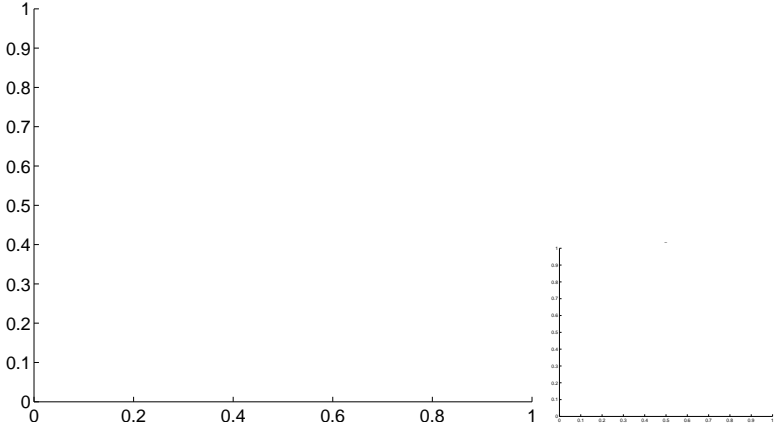
Q2 OOT image



Q3 no difference image



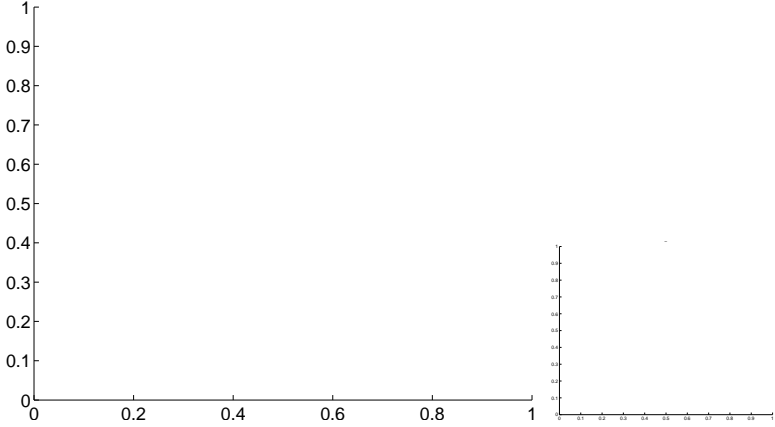
Q3 no OOT image



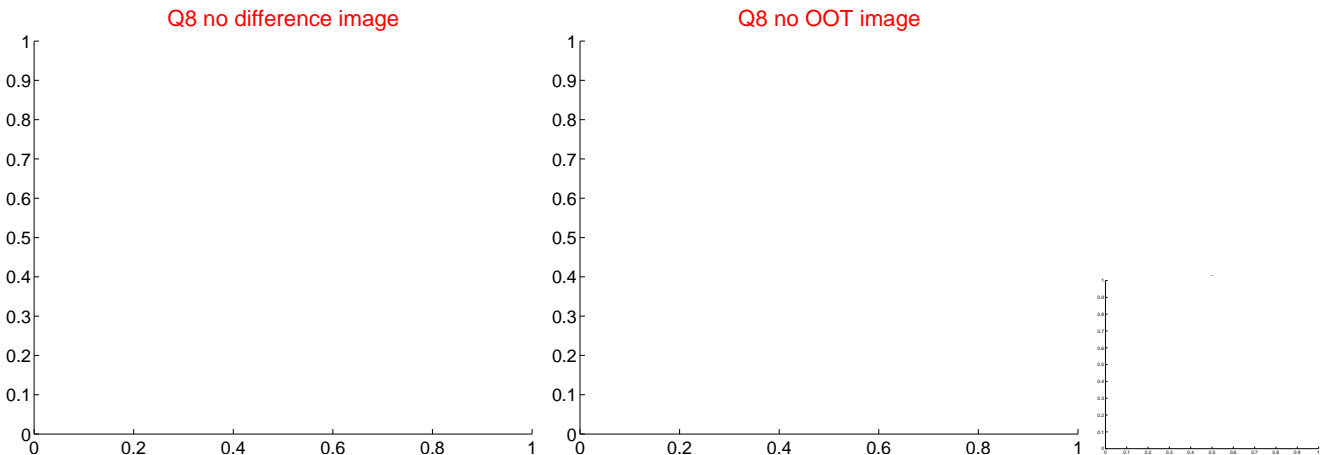
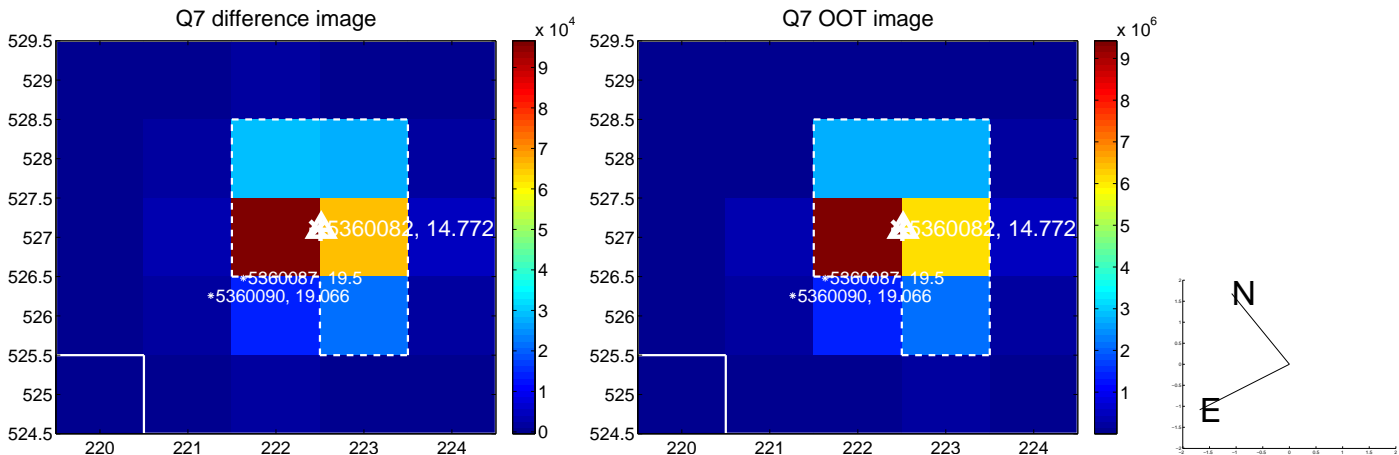
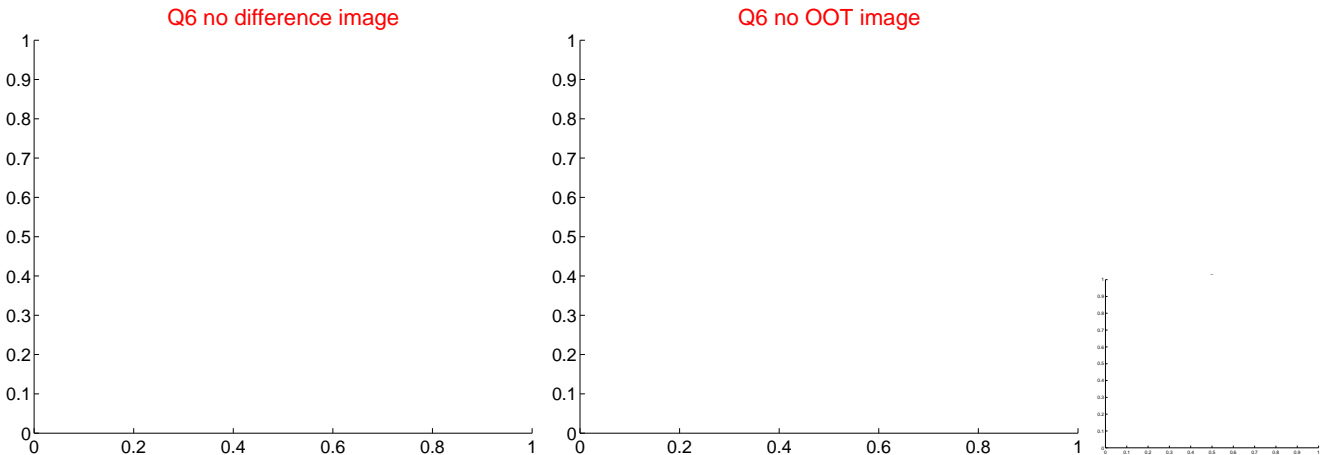
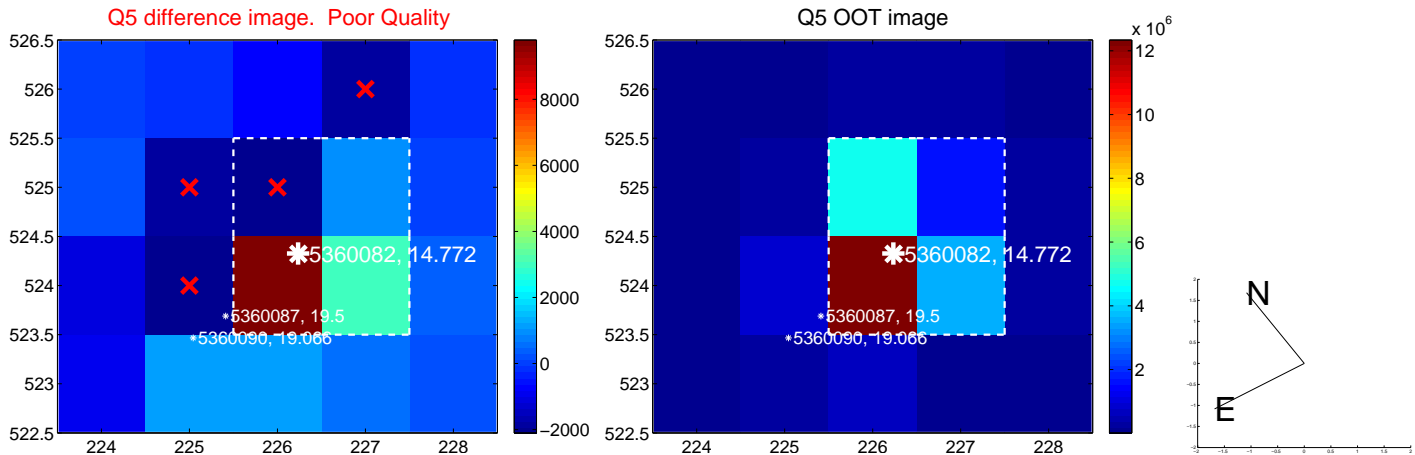
Q4 no difference image



Q4 no OOT image

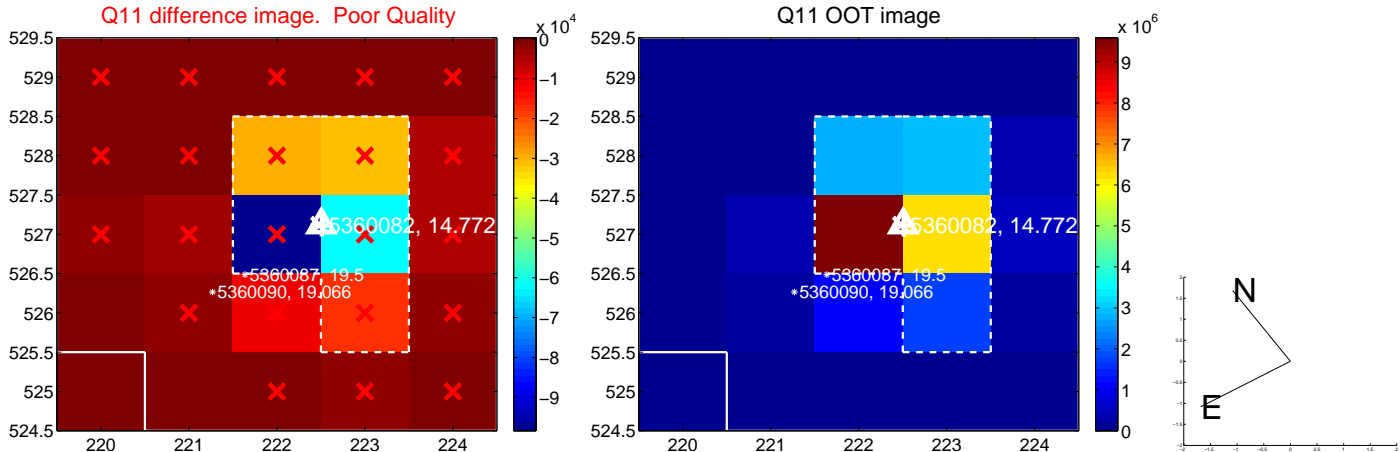
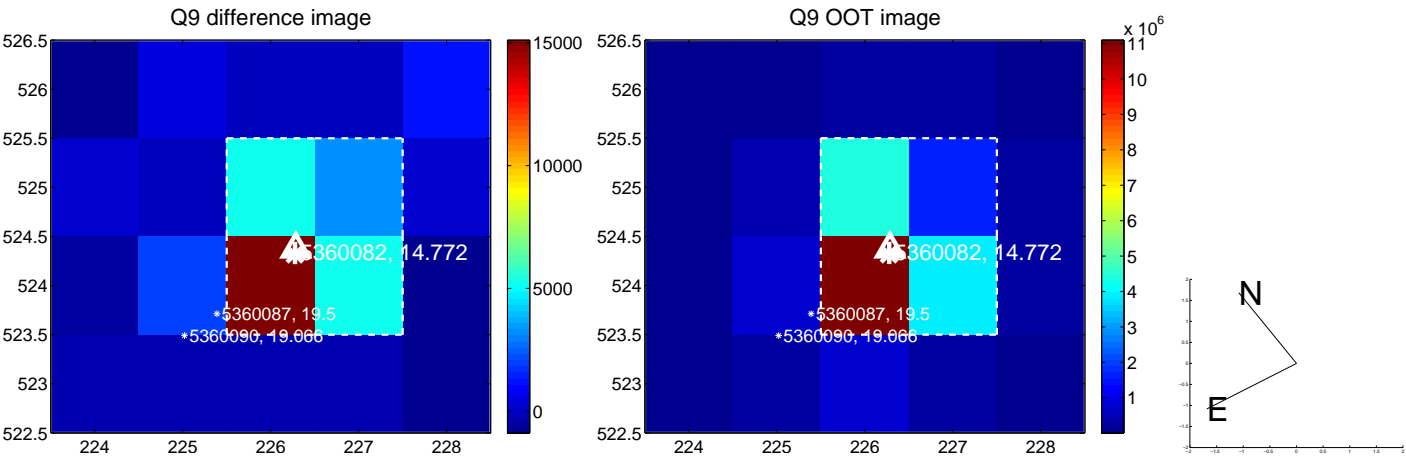


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

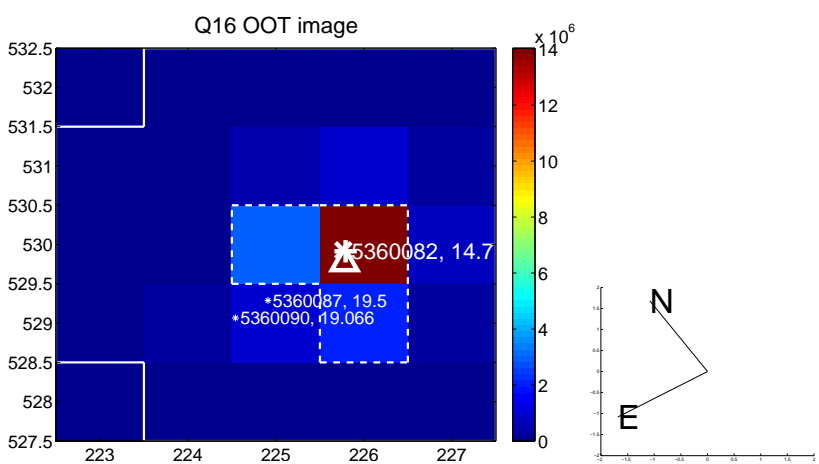
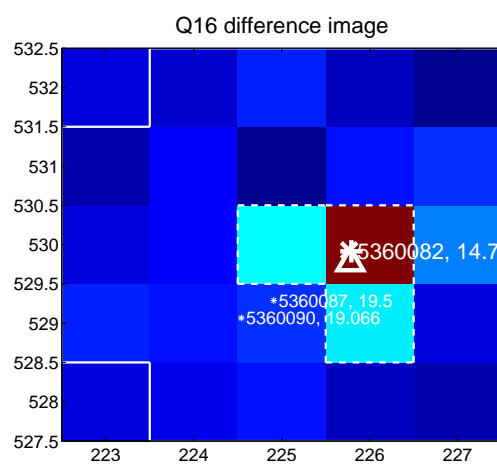
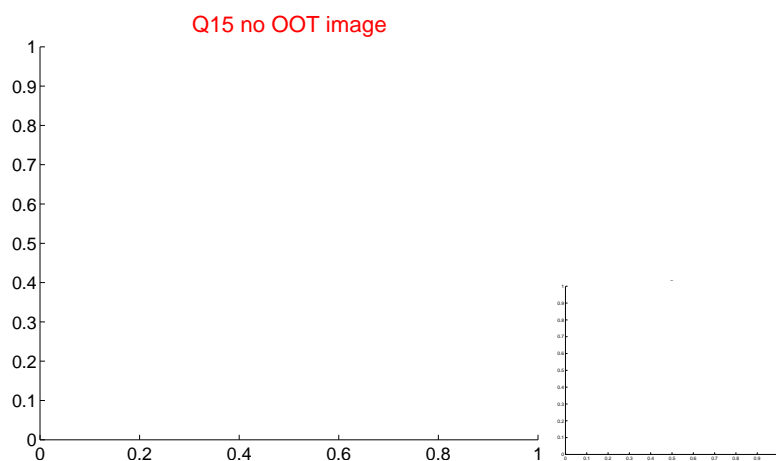
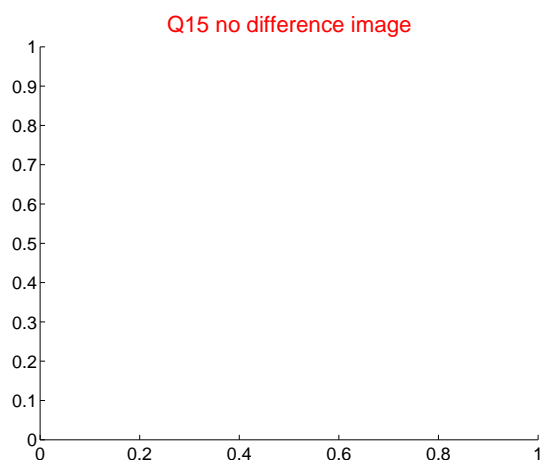
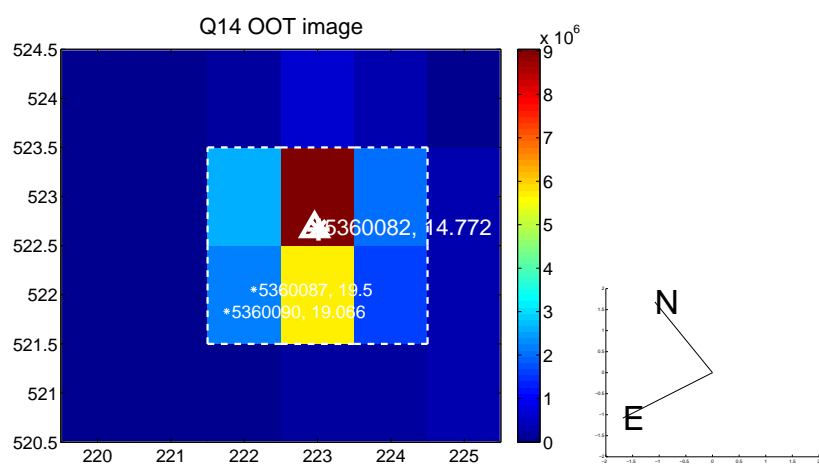
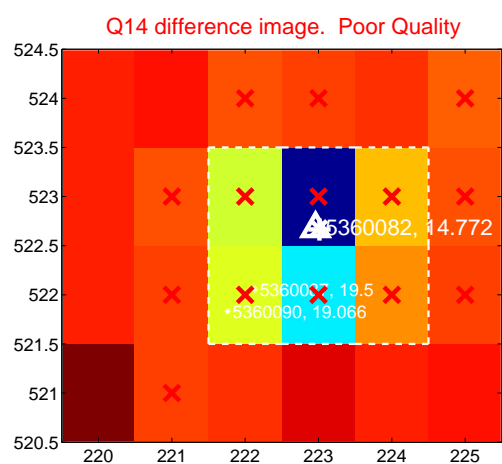
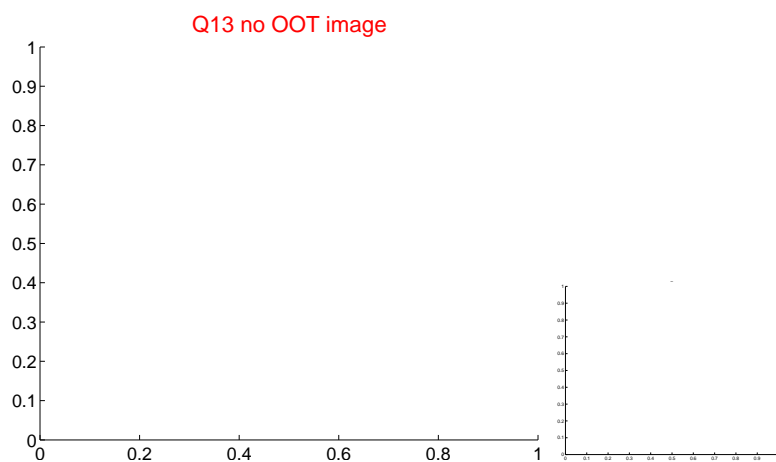
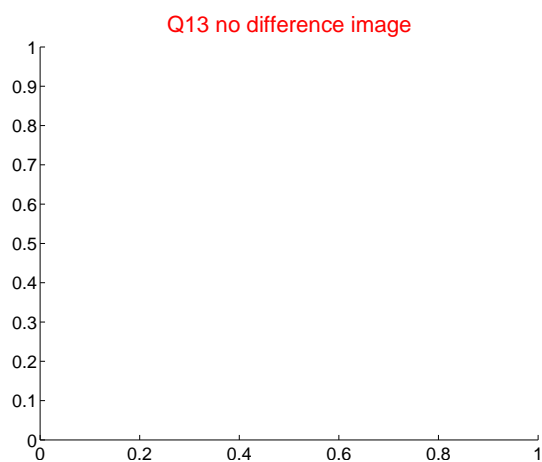




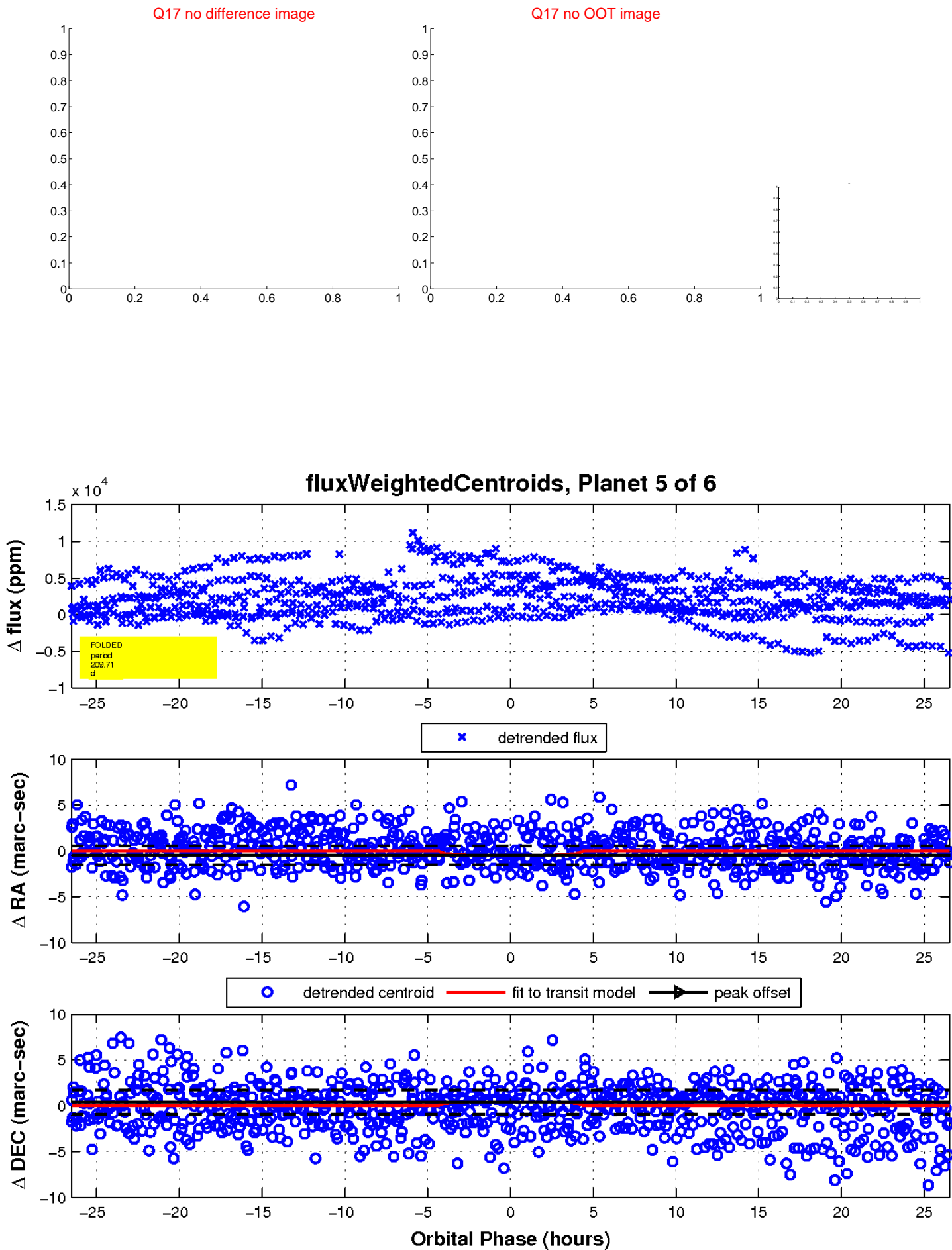
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

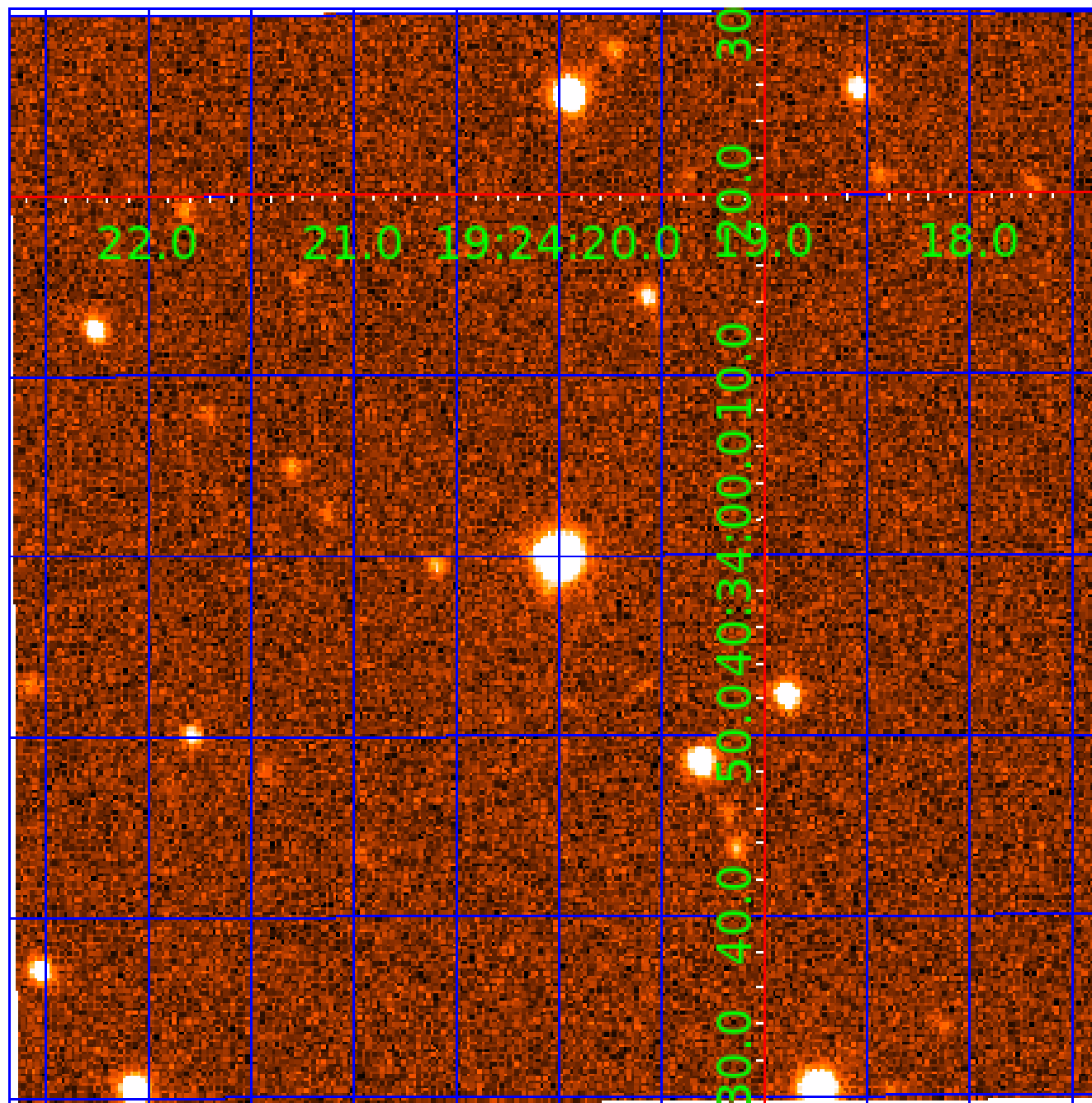


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005360082

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005360082-01	OBS	3768.01	11.355005	133.199833	19467.3	14.042	297.6	326.1	0.57	4594	7.84	19.31
005360082-02	OBS	No	11.354960	138.872796	3467.5	14.055	75.6	85.4	0.57	4594	3.58	19.31
005360082-03	OBS	No	394.606947	330.586444	1990.0	7.488	19.4	9.3	0.57	4594	3.29	0.17
005360082-04	OBS	No	367.006008	211.362180	3351.9	20.449	18.9	8.2	0.57	4594	4.08	0.19
005360082-05	OBS	No	209.711973	236.227732	1066.3	8.851	15.5	4.1	0.57	4594	1.86	0.40
005360082-06	OBS	No	589.792869	178.100467	504.2	0.944	14.4	1.9	0.57	4594	1.37	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005360082-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005360082-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005360082-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005360082-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
005360082-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

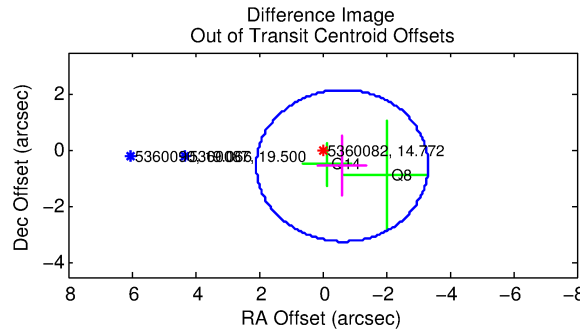
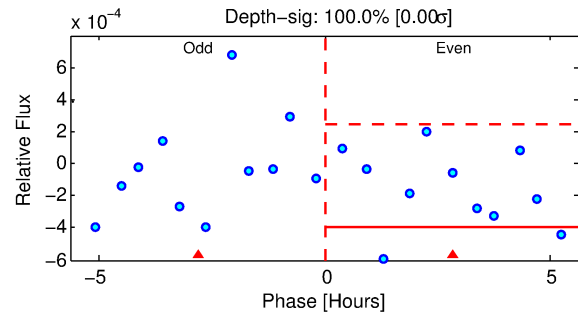
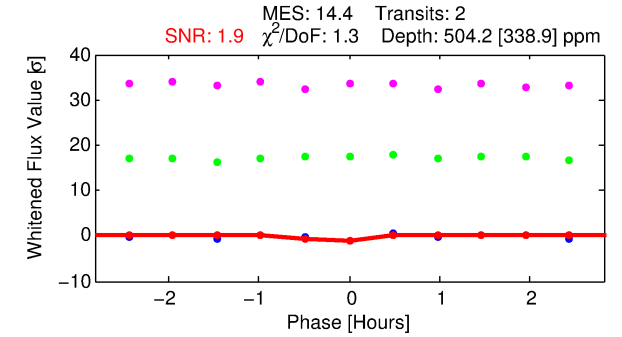
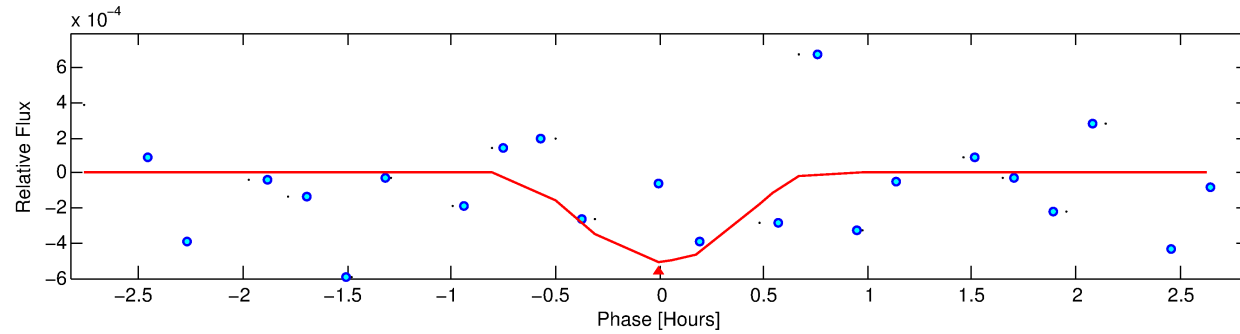
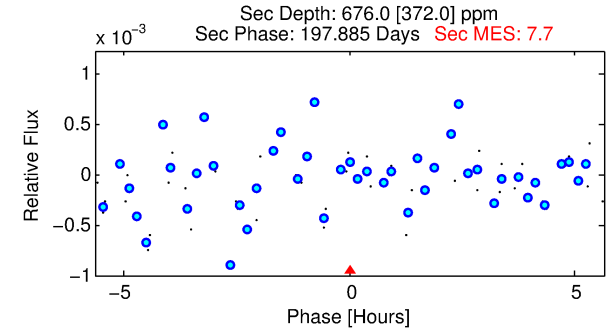
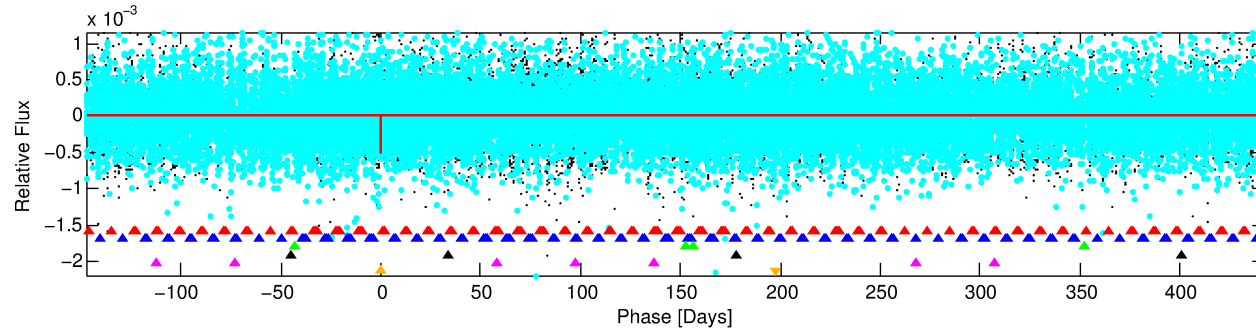
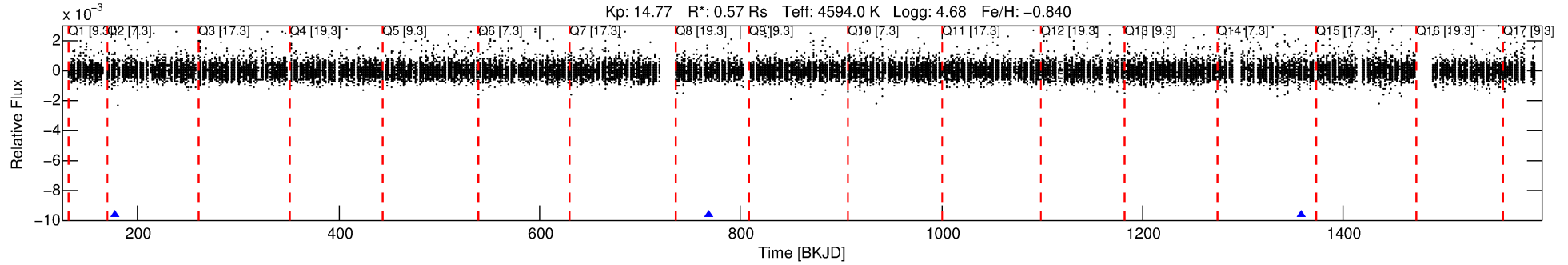
Ephemeris Match Information For 005360082-06

No Significant Match Found

# DV One-Page Summary

KIC: 5360082 Candidate: 6 of 6 Period: 589.793 d  
KOI: K03768 Corr: No Ephemeris Match

Kp: 14.77 R\*: 0.57 Rs Teff: 4594.0 K Logg: 4.68 Fe/H: -0.840



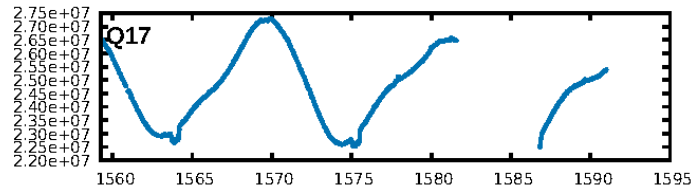
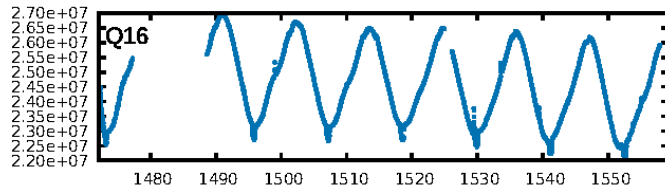
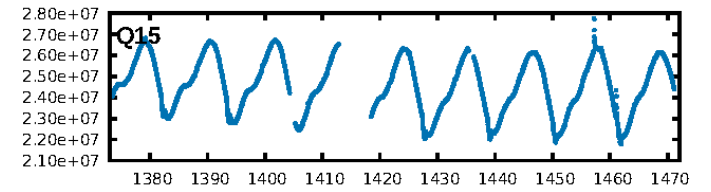
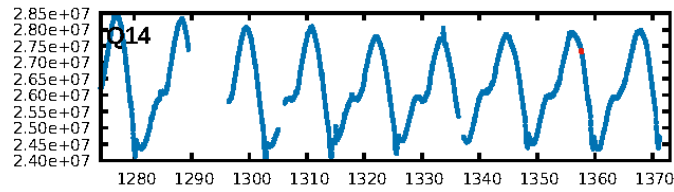
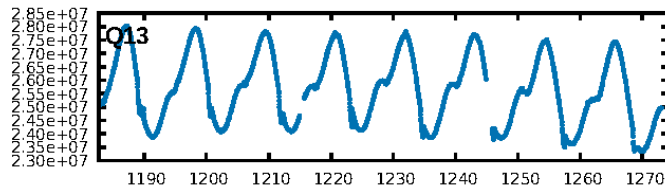
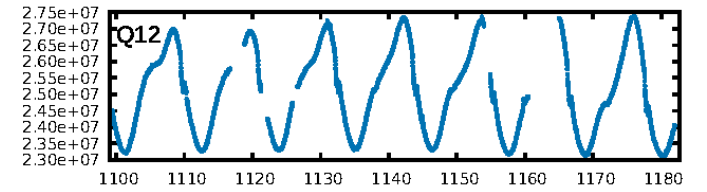
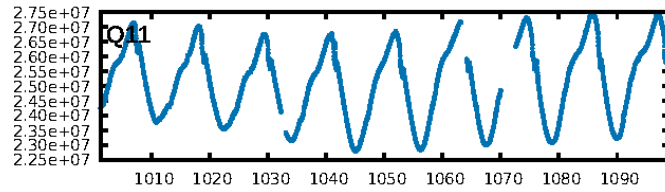
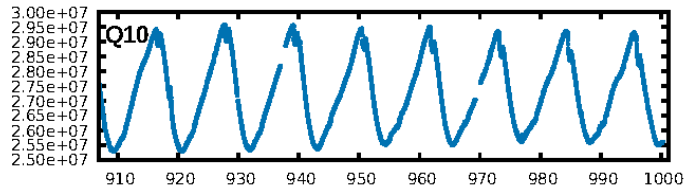
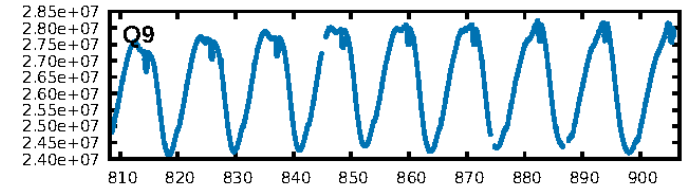
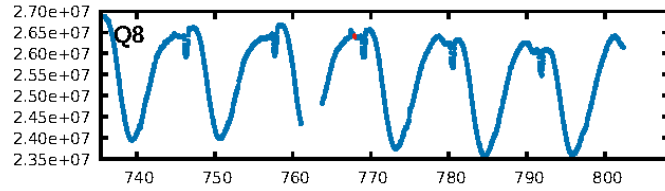
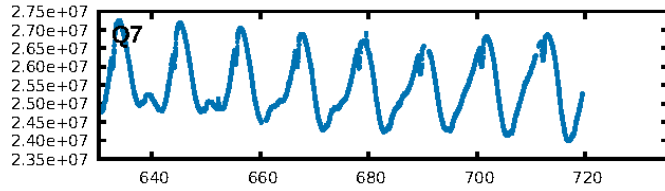
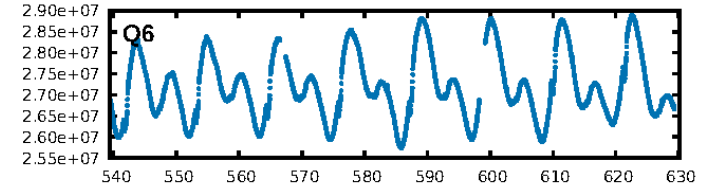
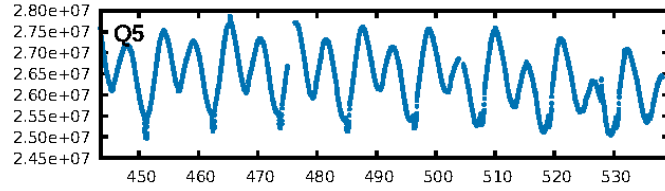
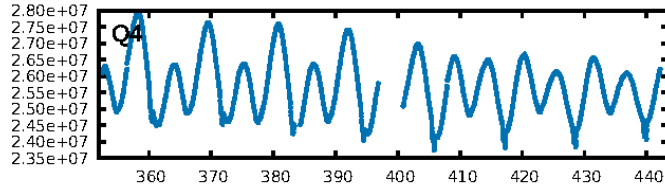
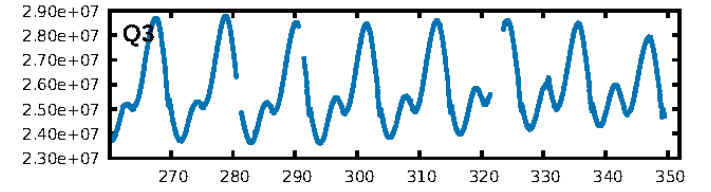
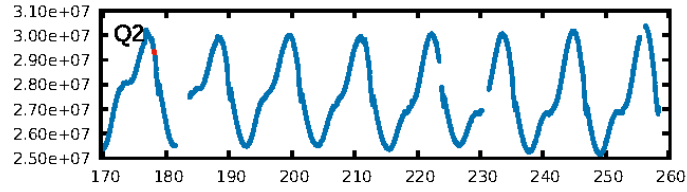
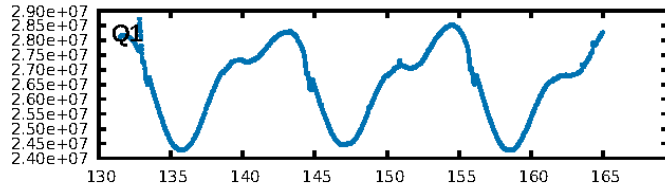
## DV Fit Results:

Period = 589.79287 [0.02389] d  
Epoch = 178.1005 [0.0525] BKJD  
Rp/R\* = 0.0221 [0.3200]  
a/R\* = 3617.12 [182599.22]  
b = 0.69 [39.29]  
Seff = 0.10 [0.02]  
Teq = 143 [6] K  
Rp = 1.37 [19.80] Re  
a = 1.1347 [0.0774] AU  
Ag = 255449.51 [7390072.07] [0.03σ]  
Teff = 4980 [36016] K [0.13σ]

## DV Diagnostic Results:

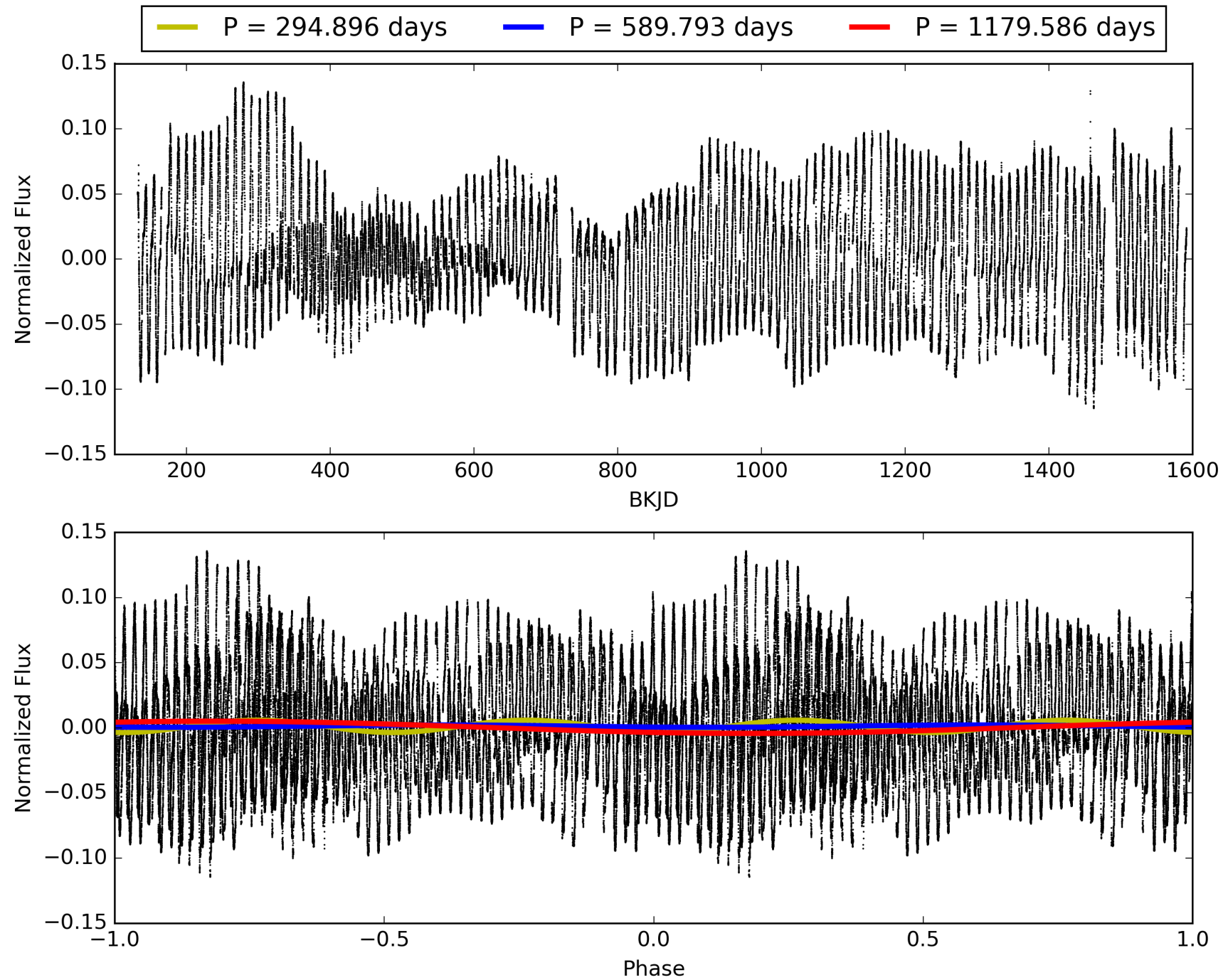
ShortPeriod-sig: 100.0% [620.66σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 13.7%  
ModelChiSquareGof-sig: 51.7%  
**Bootstrap-pfa: 3.64e-09**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -0.7636  
Centroid-sig: 59.4%  
Centroid-so: 2.427 arcsec [0.48σ]  
OotOffset-rm: 0.824 arcsec [0.91σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 0.916 arcsec [1.02σ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005360082-06, PDC Light Curves





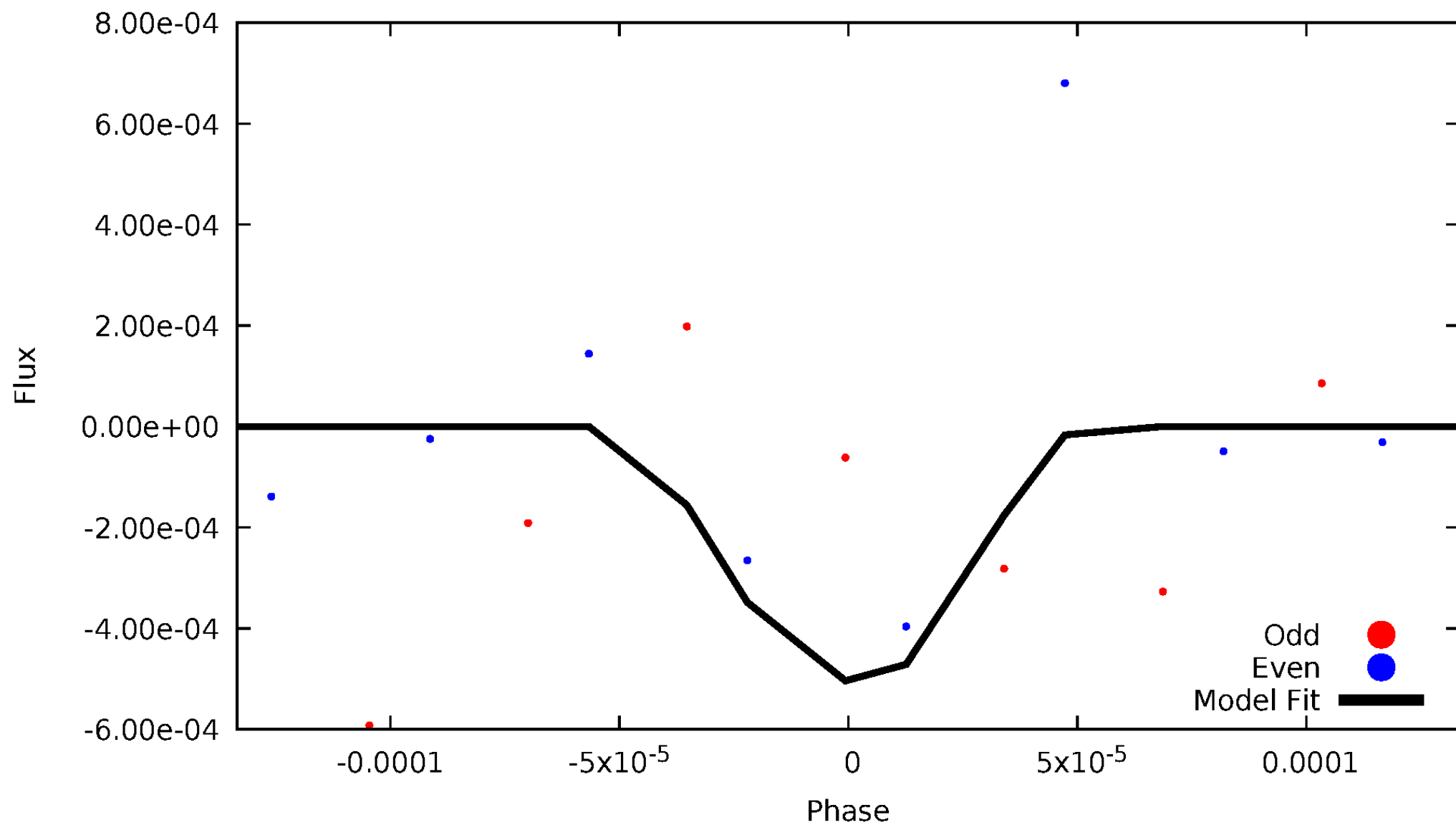
TCE 005360082-06





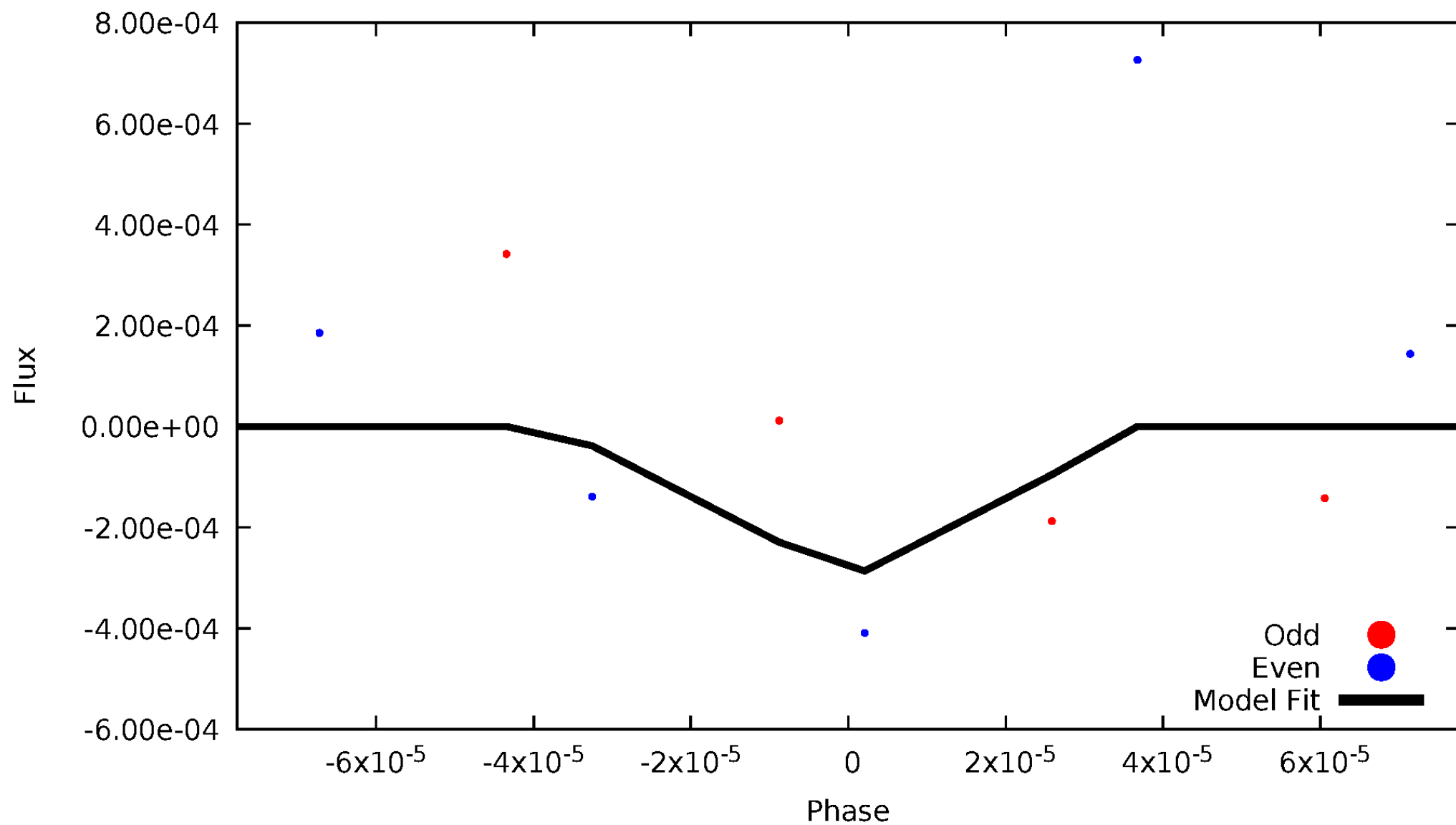
# DV Odd/Even

TCE 005360082-06



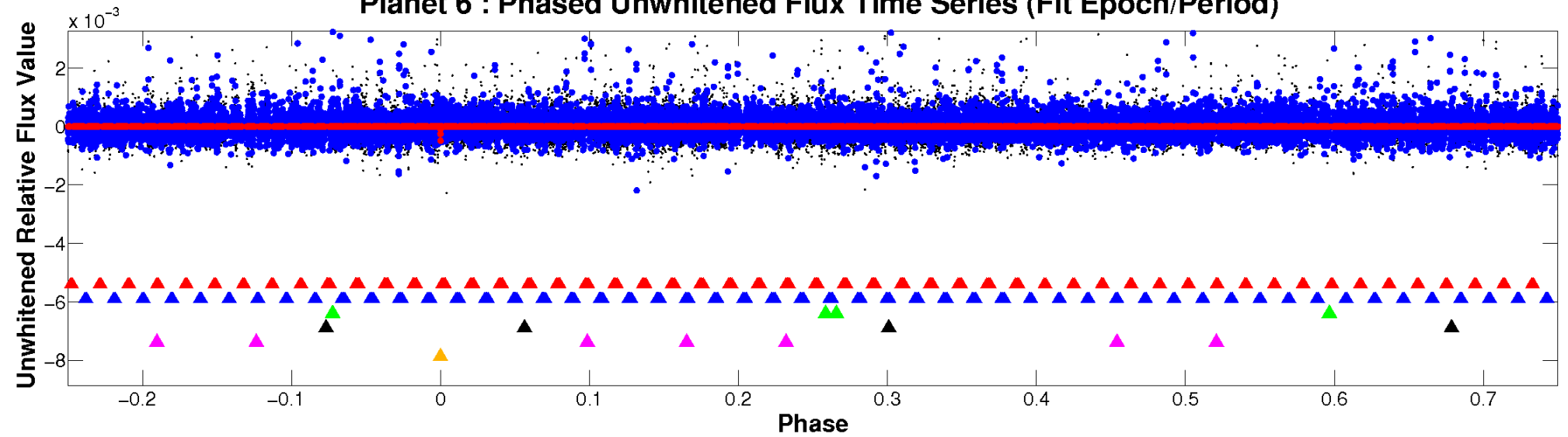
# ALT Odd/Even

TCE 005360082-06

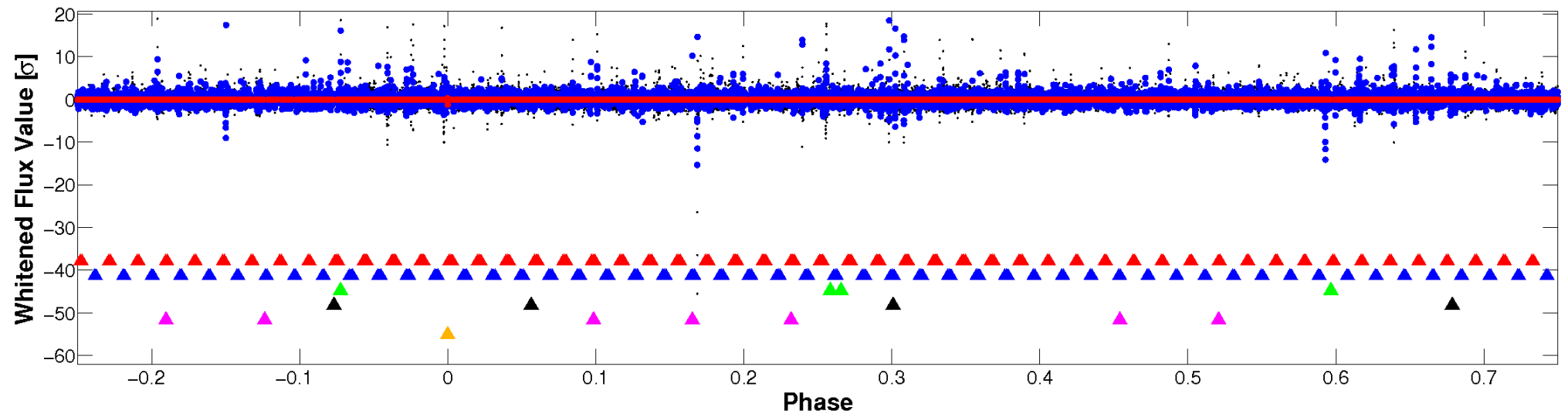


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

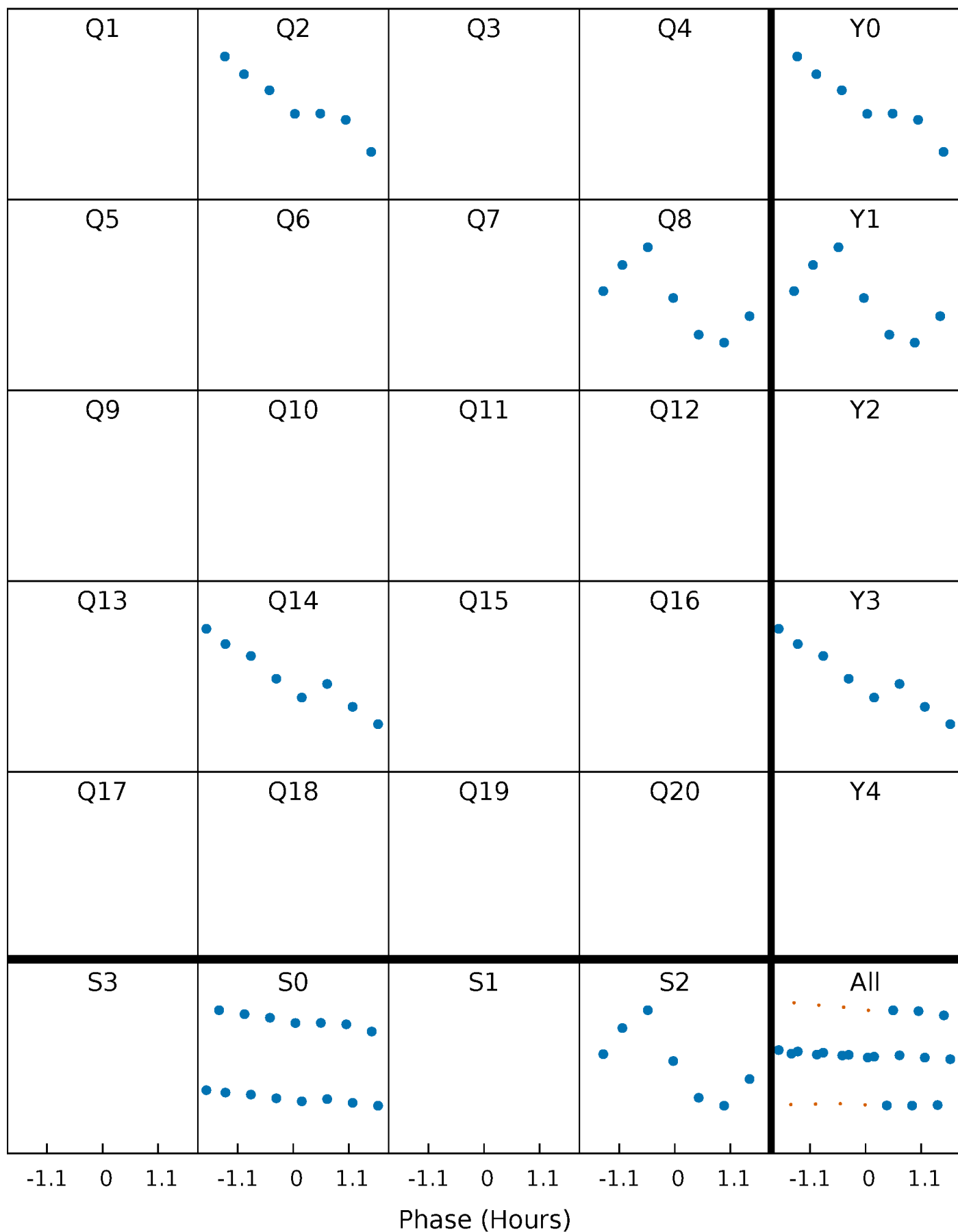


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



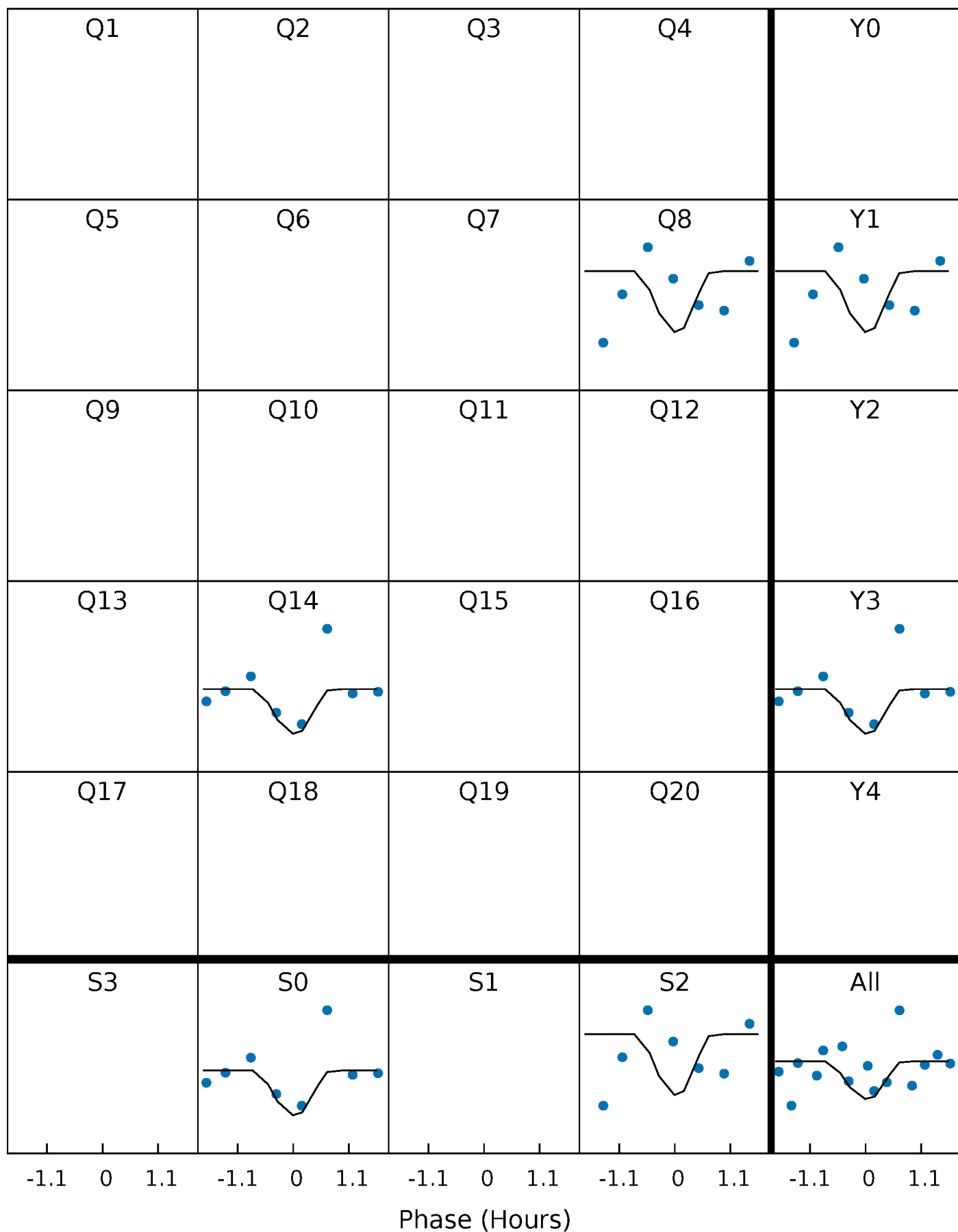
# PDC Quarter-Phased Transit Curves

TCE 005360082-06 P=589.792869 Days  $T_0=178.100467$  (BKJD)



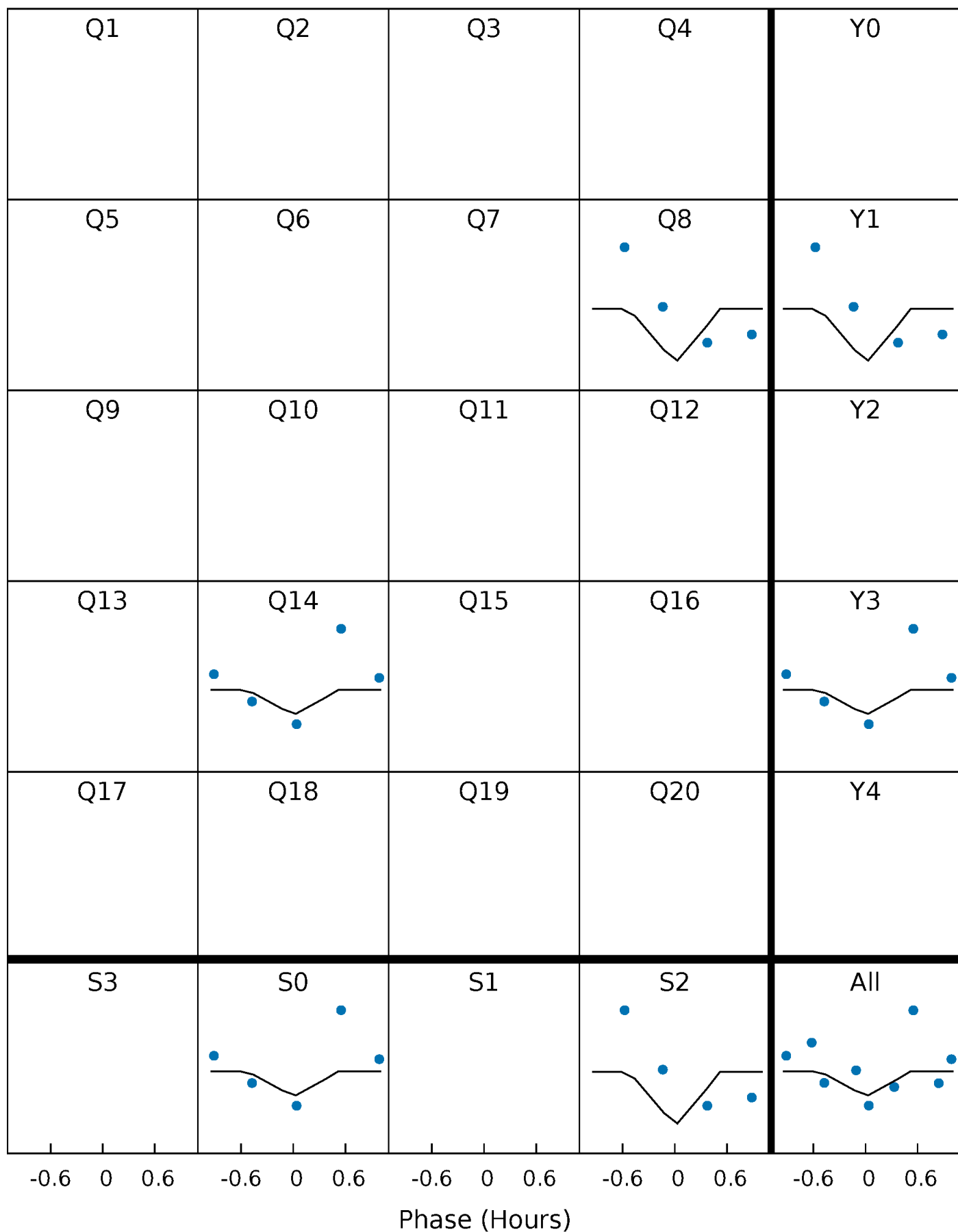
# DV Quarter-Phased Transit Curves

TCE 005360082-06 P=589.792869 Days  $T_0=178.100467$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

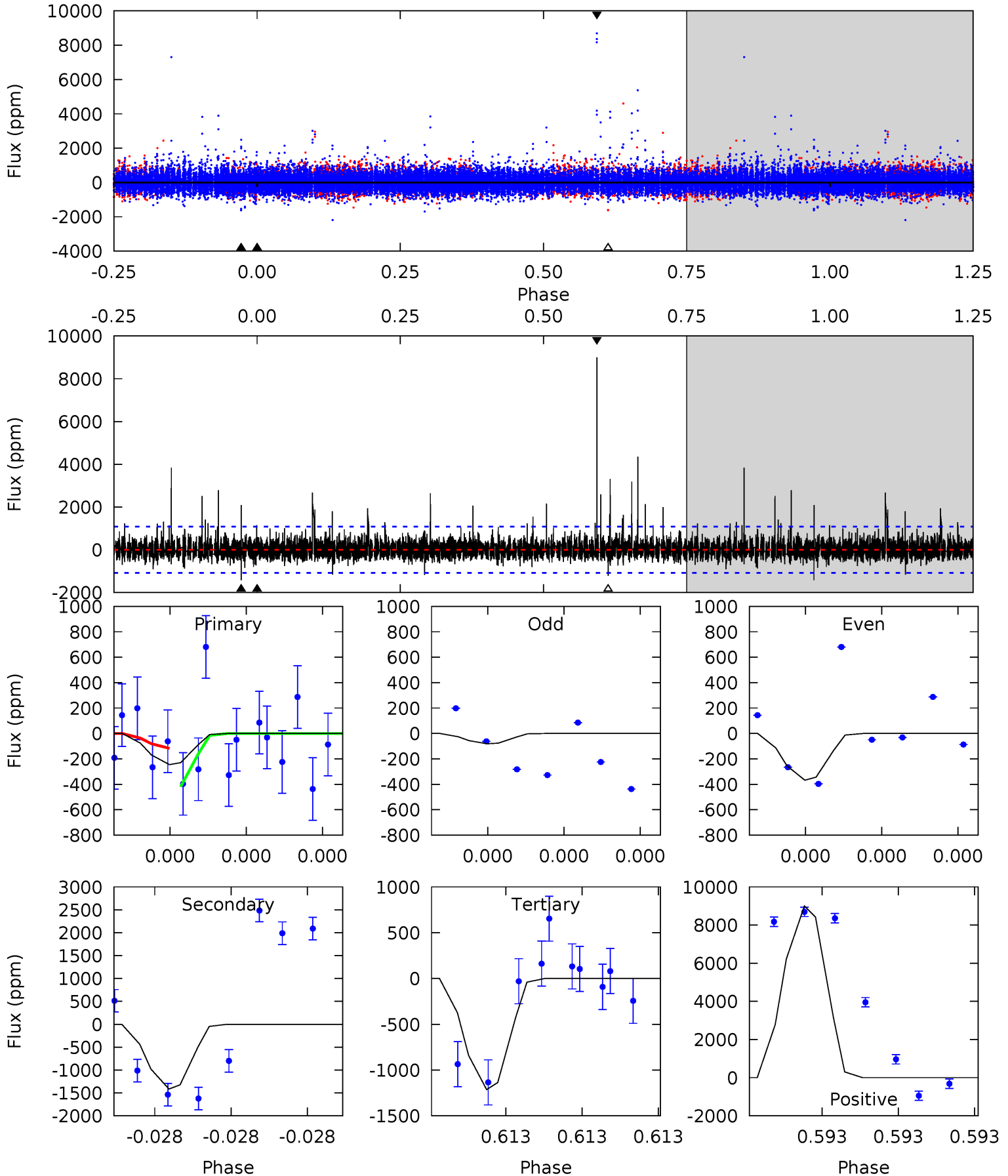
TCE 005360082-06 P=589.794276 Days  $T_0=178.103867$  (BKJD)



# DV Model-Shift Uniqueness Test

005360082-06, P = 589.792869 Days, E = 178.100467 Days

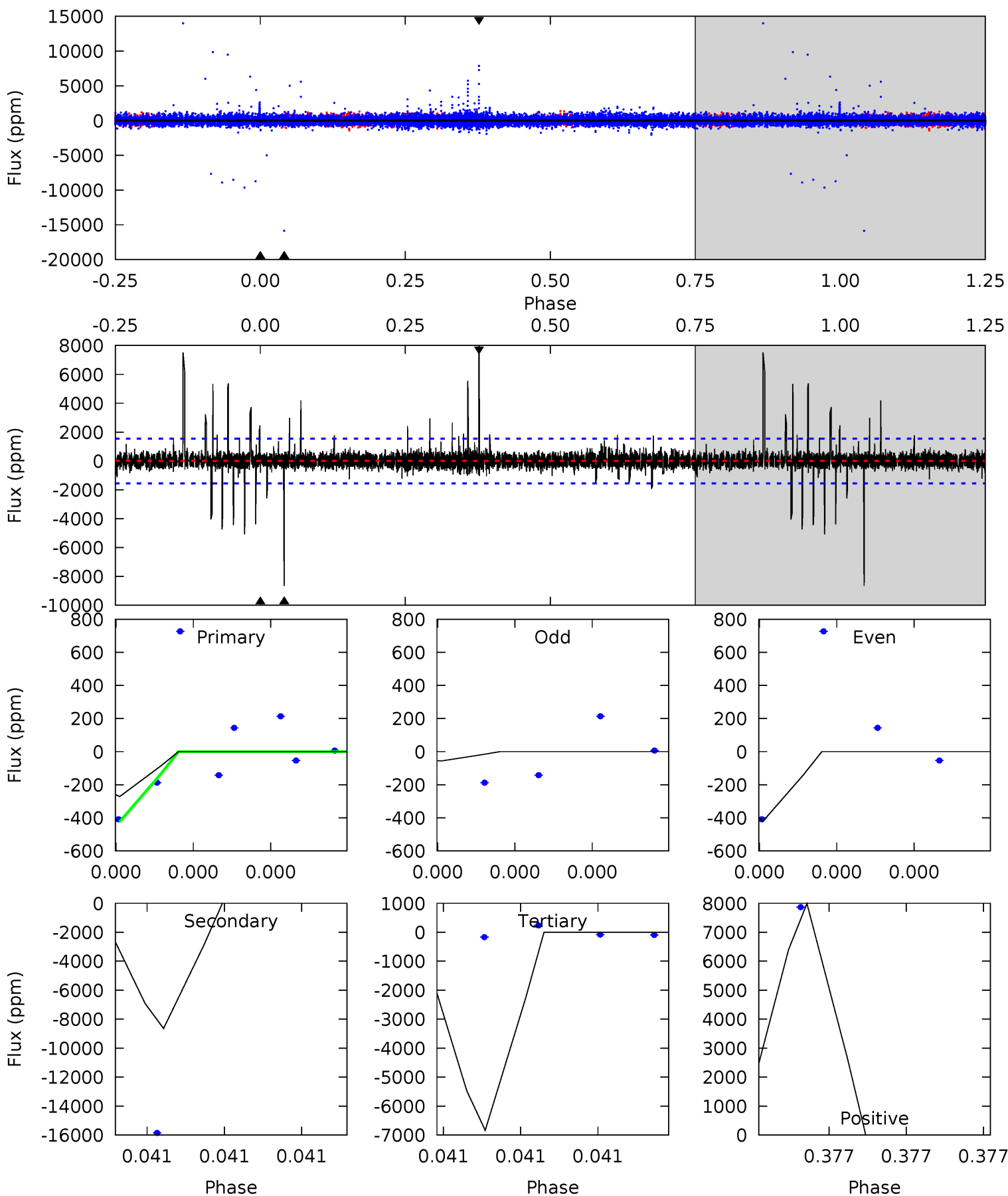
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.33	7.67	6.58	48.8	5.86	3.91	1.33	-5.25	-47.5	1.08	-41.1	0.73	1.00	0.86	0.69



# Alt Model-Shift Uniqueness Test

005360082-06, P = 589.794276 Days, E = 178.103867 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
1.05	33.3	26.3	30.8	5.98	4.08	1.02	-25.3	-29.7	6.98	2.53	0.62	1.00	0.48	0.00





### Stellar Parameters For KIC 005360082

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4594^{+137}_{-151}$	$4.679^{+0.056}_{-0.028}$	$-0.840^{+0.300}_{-0.300}$	$0.567^{+0.045}_{-0.045}$	$0.560^{+0.050}_{-0.027}$	$4.322^{+0.990}_{-0.555}$
	+3%/-3%	+1%/-1%	+36%/-36%	+8%/-8%	+9%/-5%	+23%/-13%
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 005360082-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1414 \pm 184$	$13.29^{+14.99}_{-8.95}$	$198^{+7}_{-7}$	$2641^{+972}_{-418}$	$5880^{+46660}_{-4529}$
Alt.	$-8647 \pm 259$	$13.64^{+13.86}_{-9.81}$	$199^{+6}_{-7}$	$3412^{+2119}_{-644}$	$34537^{+408969}_{-26216}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

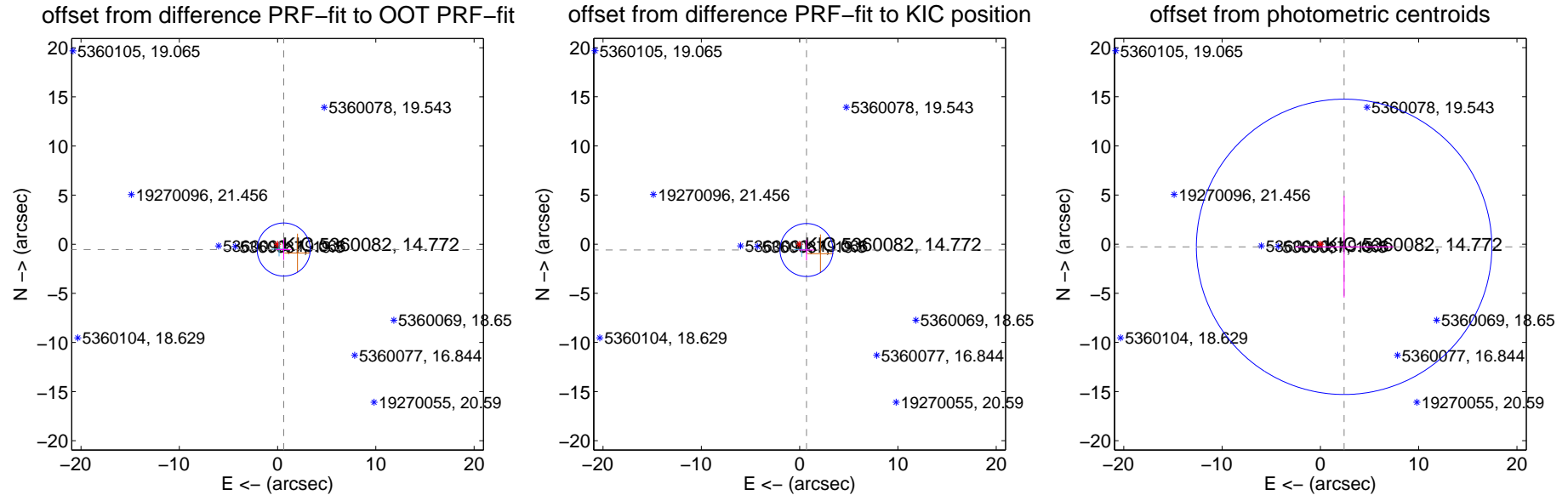
## DV Centroid Data

Supplemental centroid analysis for 005360082-06. Kepler magnitude: 14.77. Transit SNR 1.89

There are 1 quarters with good PRF difference image offsets

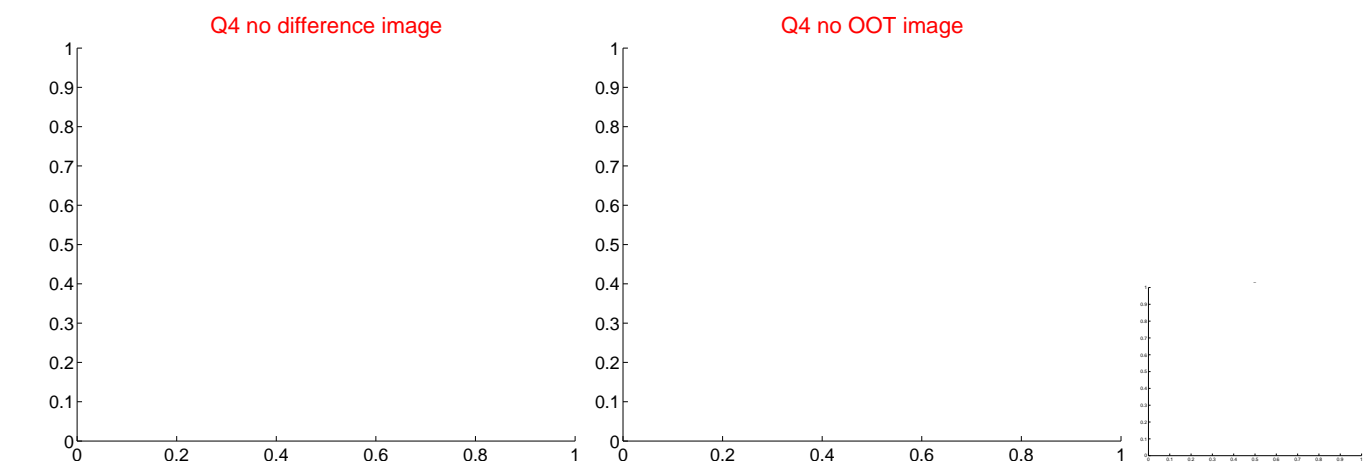
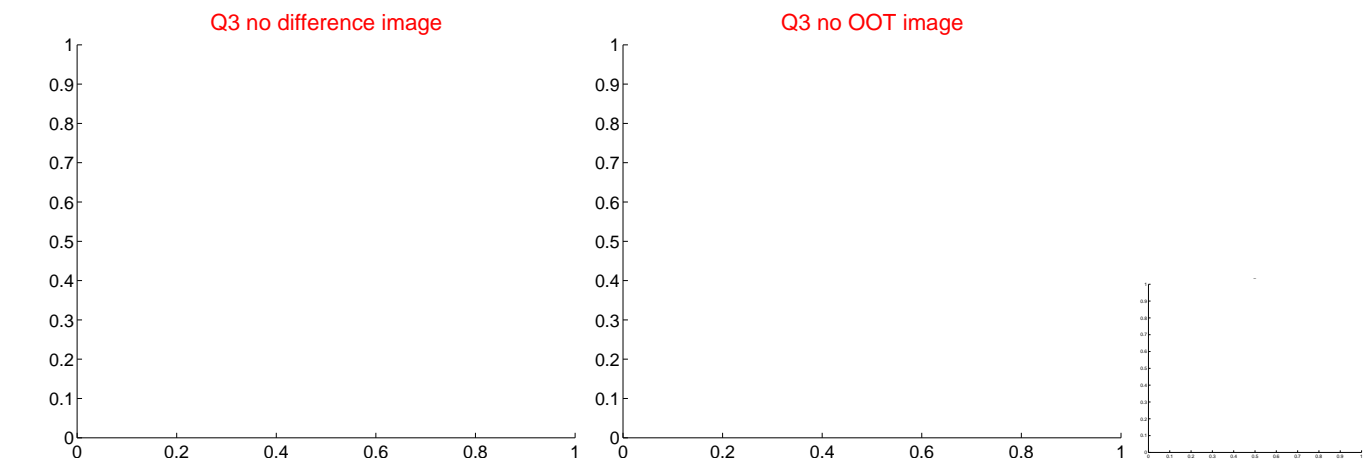
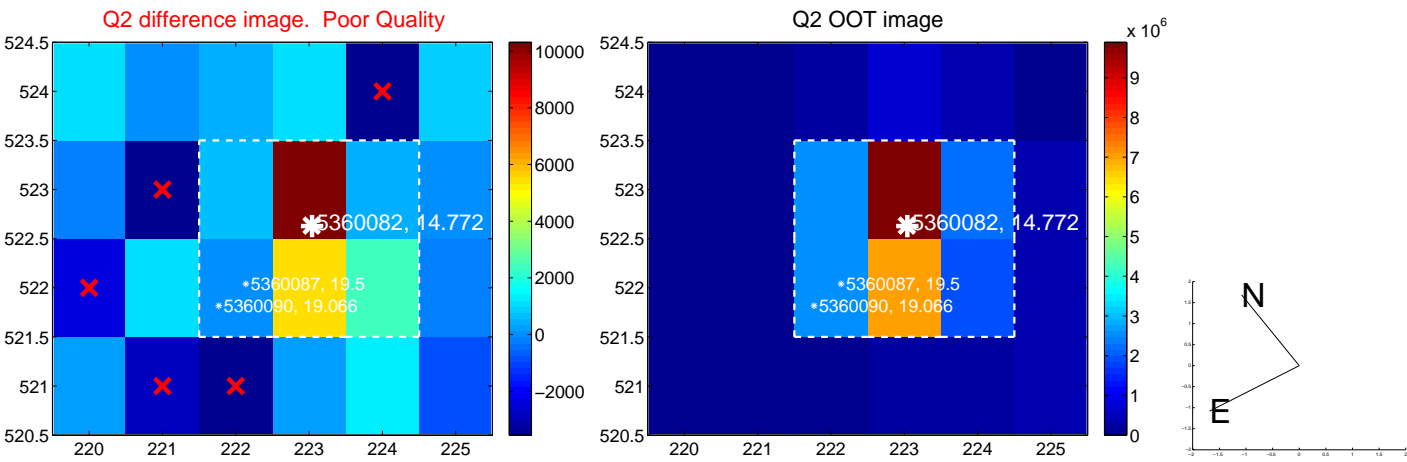
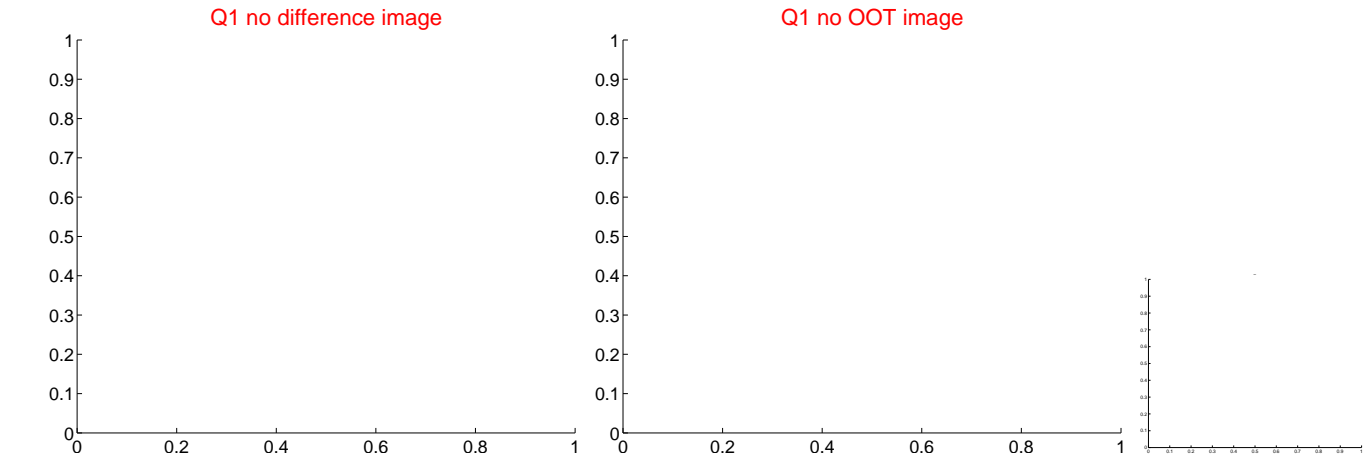
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.824 \pm 0.900$	0.91	$-0.625 \pm 0.769$	$-0.537 \pm 1.053$
PRF-fit source offset from KIC position	$0.916 \pm 0.899$	1.02	$-0.698 \pm 0.769$	$-0.593 \pm 1.053$
photometric centroid source offset	$2.43 \pm 5.01$	0.48	$-2.41 \pm 5.01$	$-0.27 \pm 5.16$

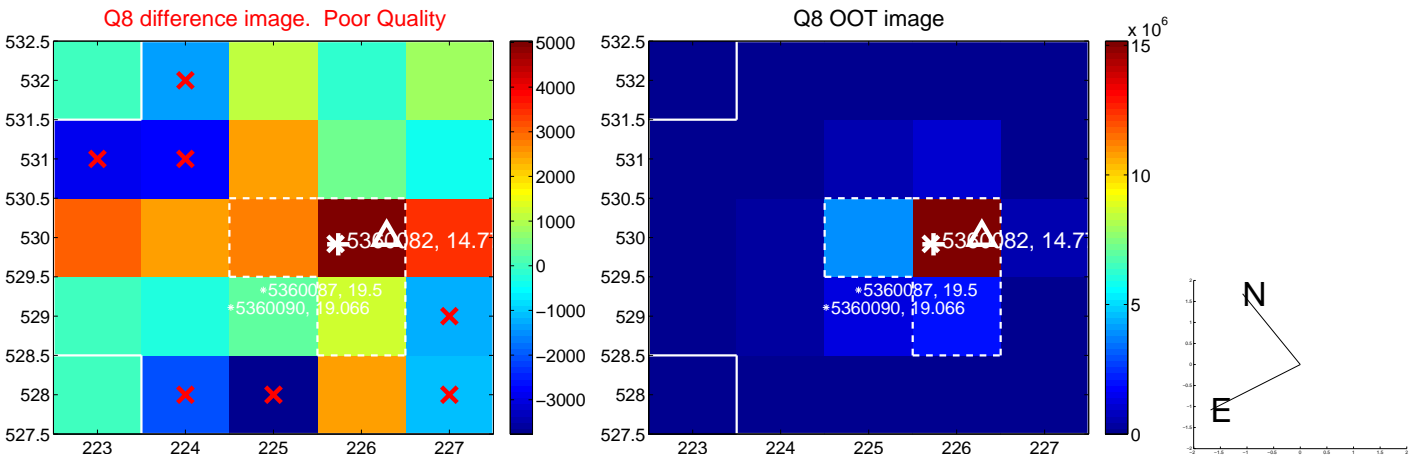


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



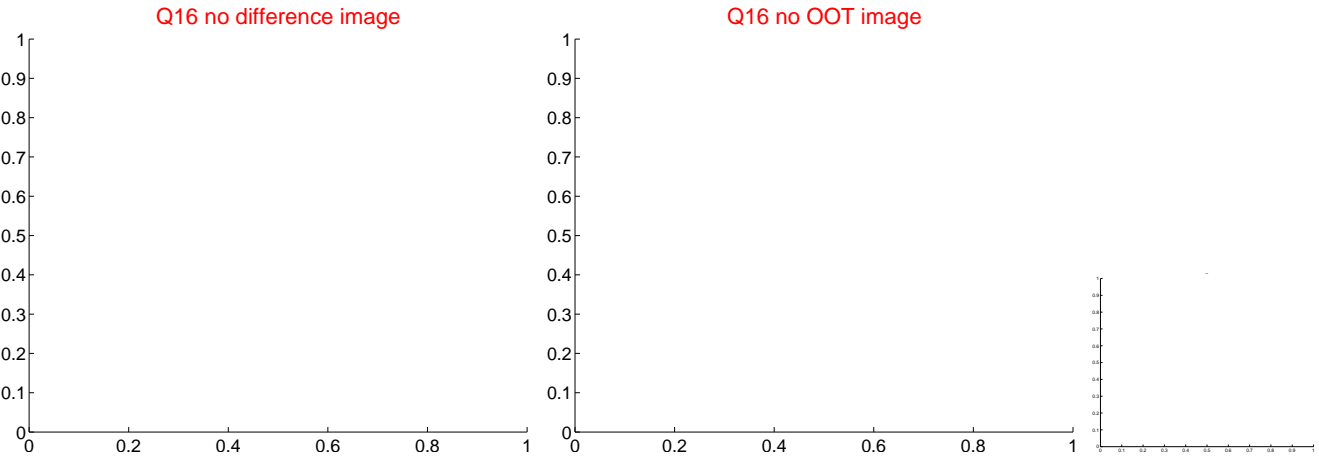
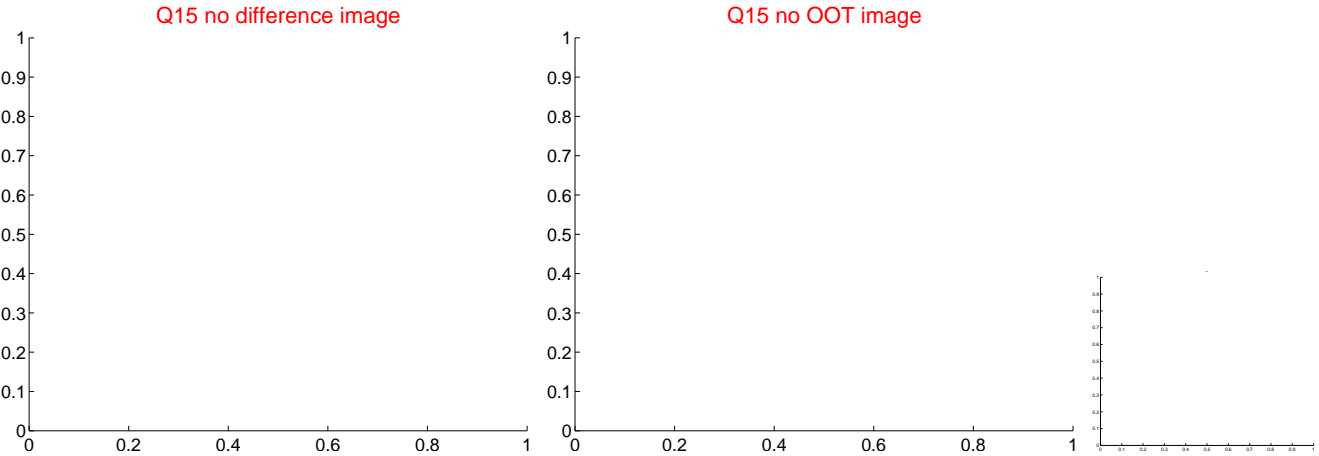
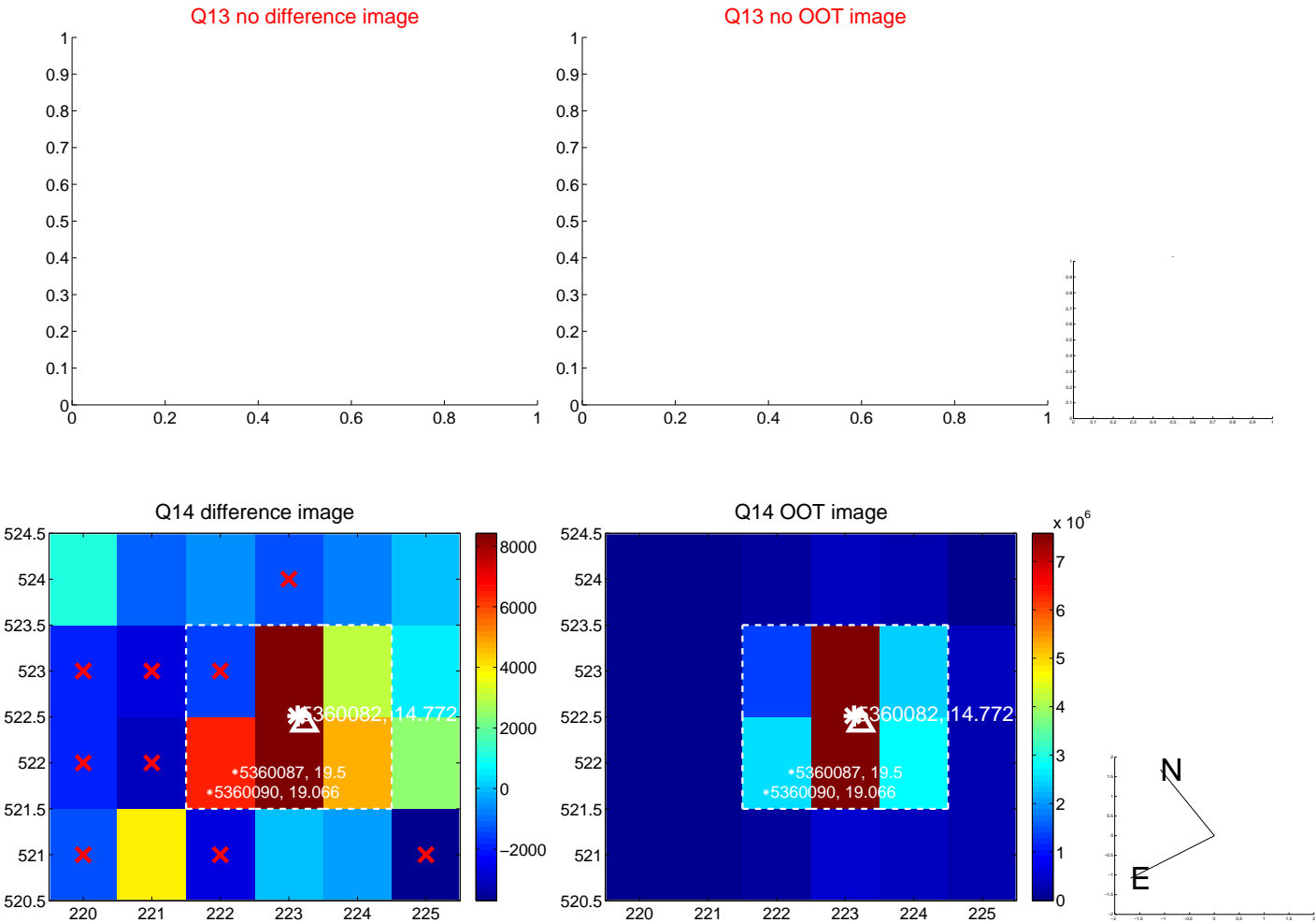
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



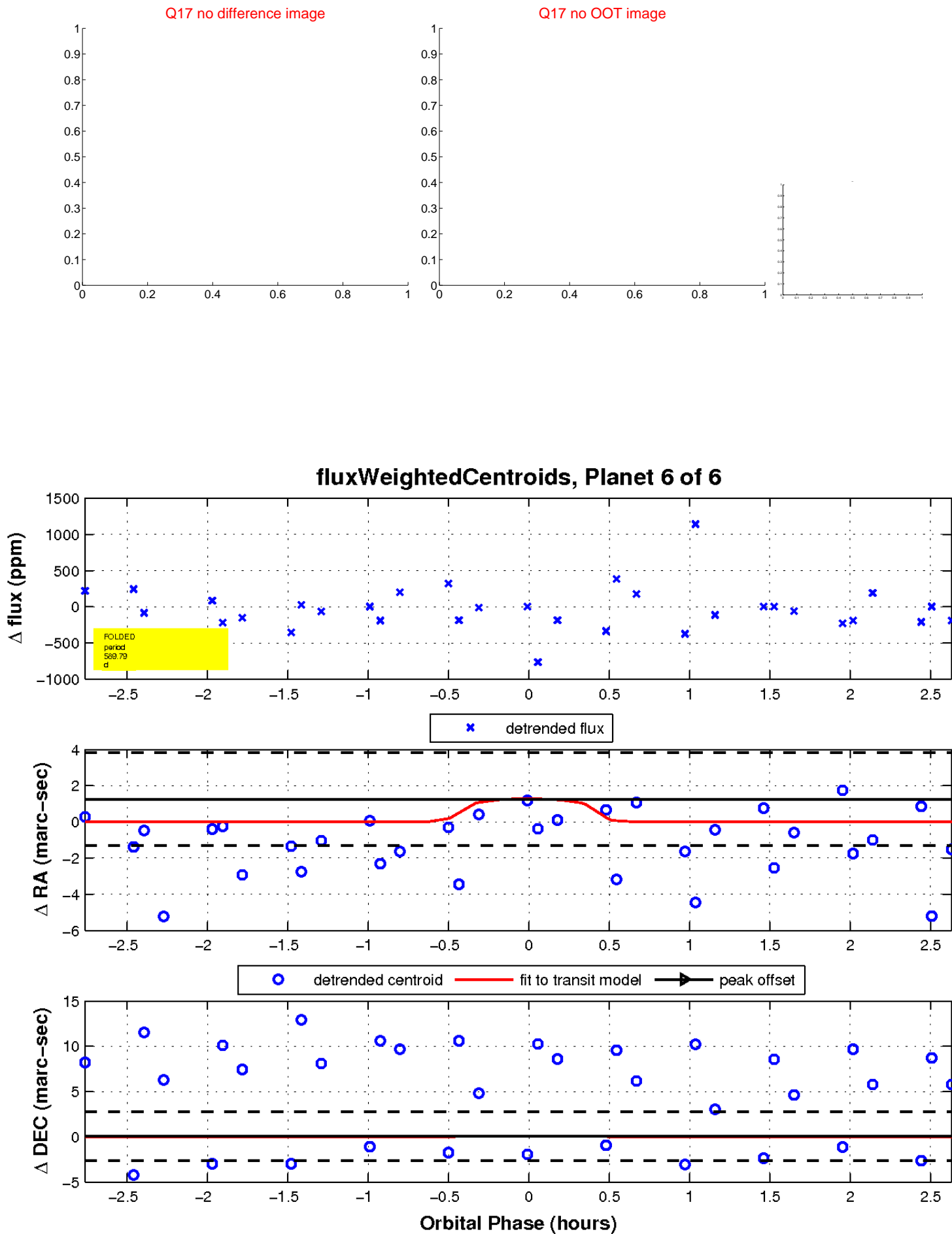
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image

Declination

