

# KIC 008058507

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008058507-01	OBS	No	3.814875	133.567152	40.2	12.136	12.2	12.3	3.09	6362	2.65	4593.27
008058507-02	OBS	No	663.733329	224.233190	381.1	8.930	16.2	10.9	3.09	6362	6.71	4.73
008058507-03	OBS	No	297.975325	156.548531	303.1	16.201	10.9	8.0	3.09	6362	9.41	13.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008058507-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008058507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008058507-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_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 008058507-01

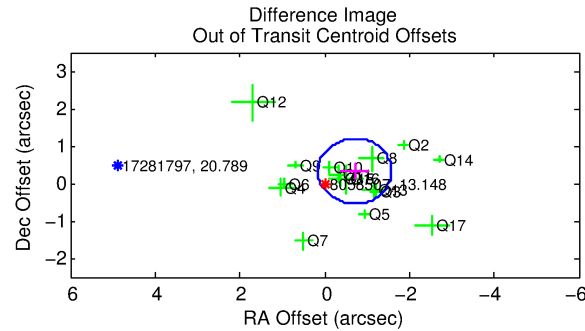
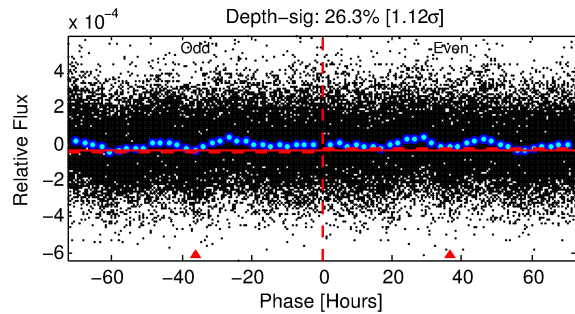
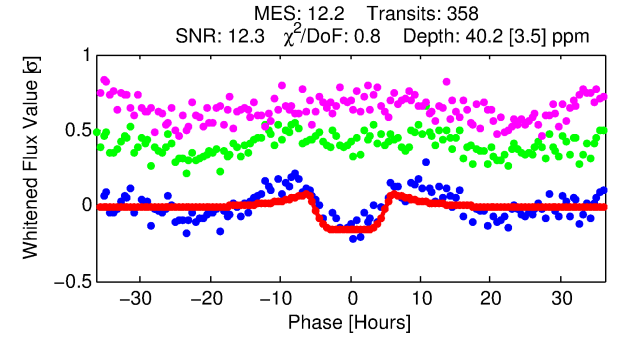
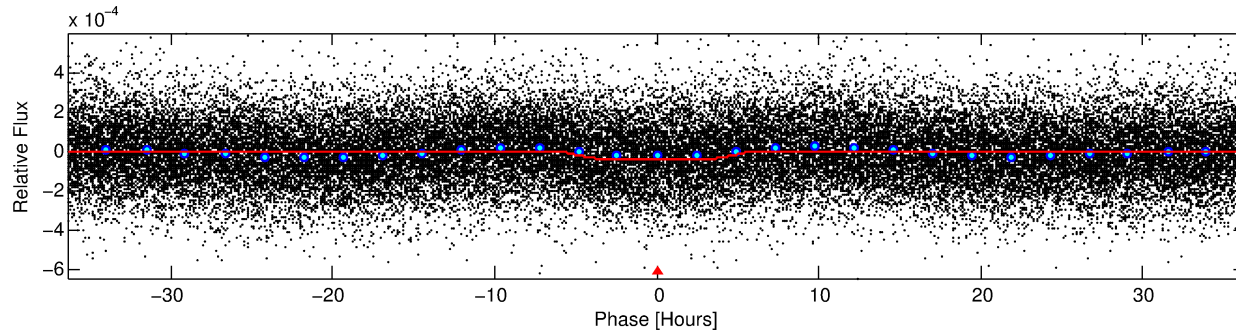
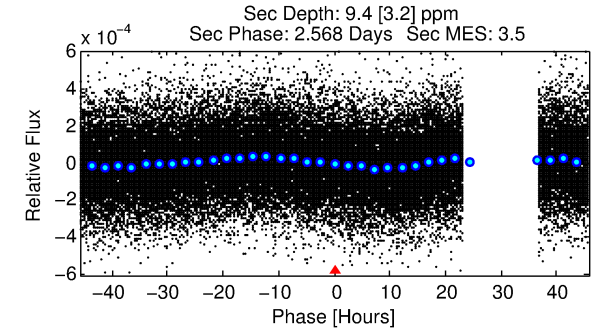
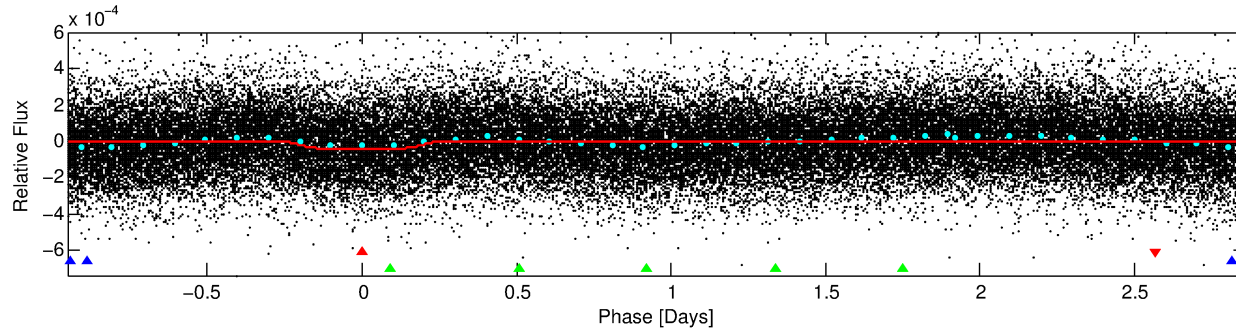
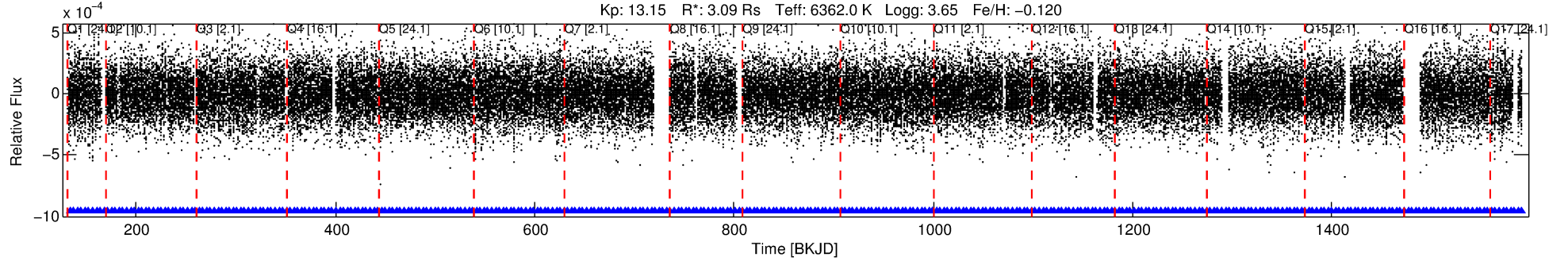
No Significant Match Found

# DV One-Page Summary

KIC: 8058507 Candidate: 1 of 3 Period: 3.815 d

KOI: K06170 Corr: No Ephemeris Match

Kp: 13.15 R\*: 3.09 Rs Teff: 6362.0 K Logg: 3.65 Fe/H: -0.120



## DV Fit Results:

Period = 3.81487 [0.00007] d  
Epoch = 133.5672 [0.0141] BKJD  
Rp/R\* = 0.0078 [0.0004]  
a/R\* = 1.12 [0.04]  
b = 0.98 [0.01]  
Seff = 4593.27 [2654.45]  
Teq = 2099 [303] K  
Rp = 2.65 [1.05] Re  
a = 0.0553 [0.0201] AU  
Ag = 2.25 [1.51] [0.83σ]  
Teffp = 3975 [374] K [3.90σ]

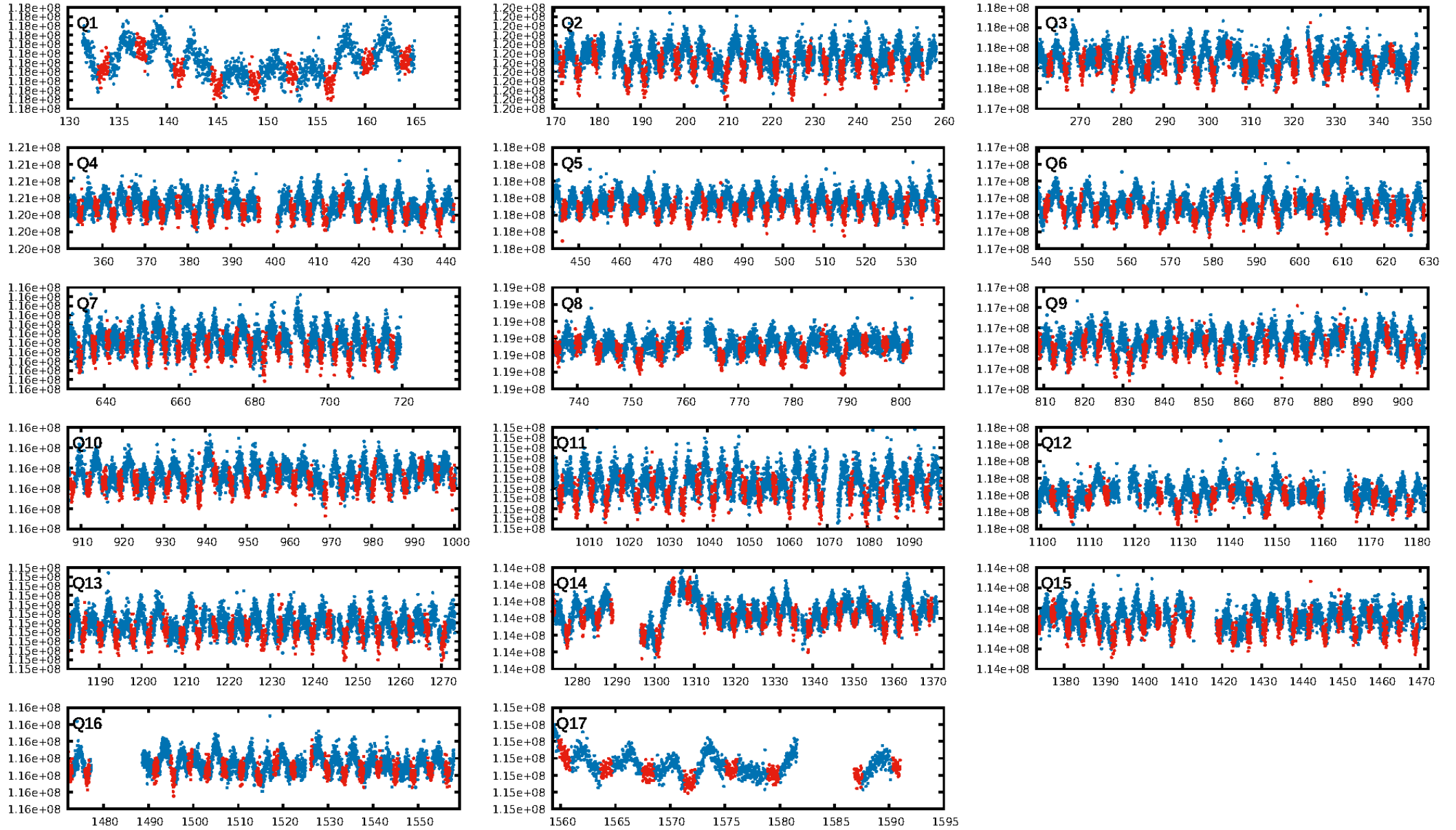
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [348.77σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.71e-28  
RollingBand-fgt: 1.00 [341/341]  
GhostDiagnostic-chr: 1.698  
Centroid-sig: 95.4%  
Centroid-so: 0.342 arcsec [0.36σ]  
OotOffset-rm: 0.779 arcsec [2.68σ]  
KicOffset-rm: 0.813 arcsec [2.72σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 1.00 [17/17]

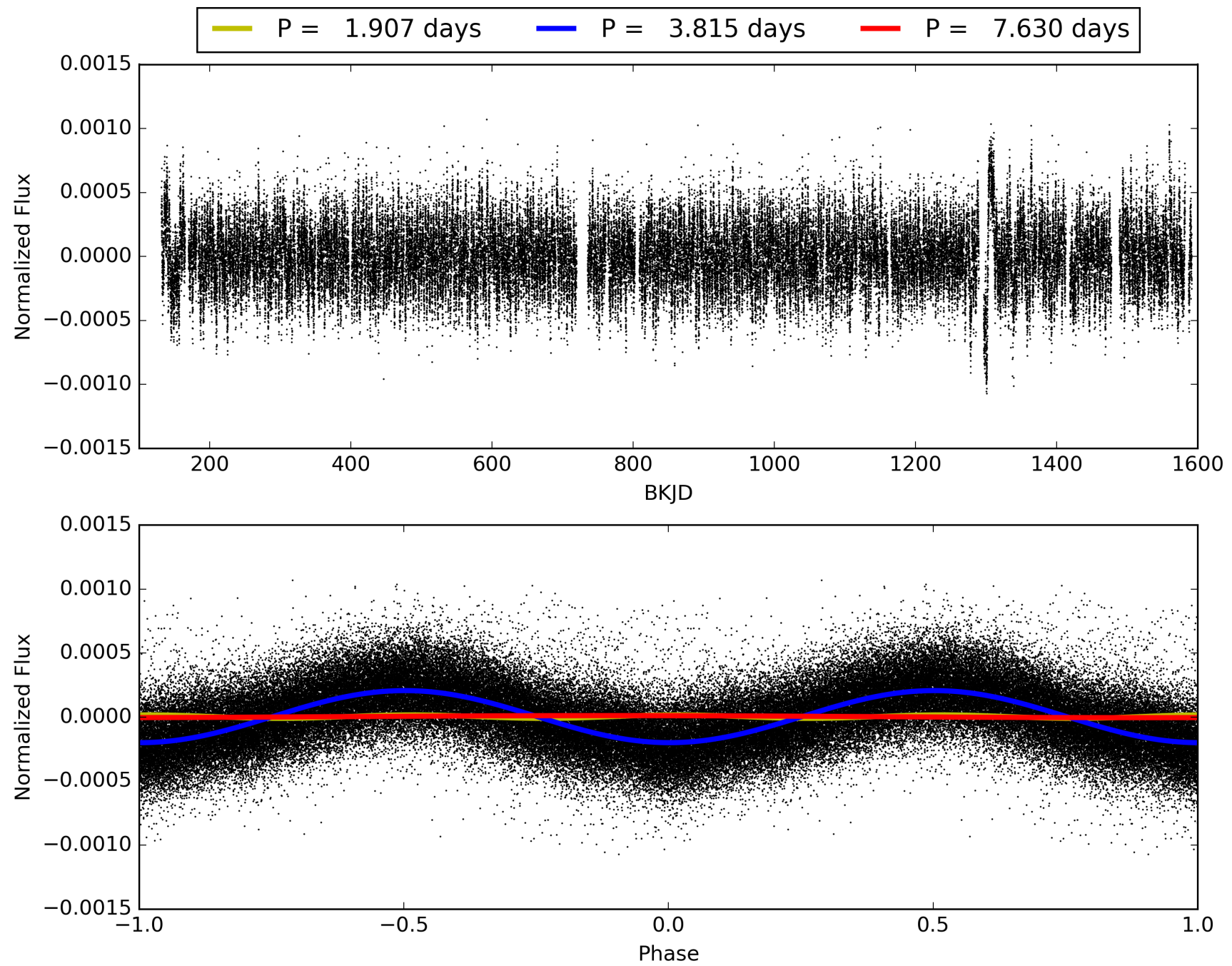
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:39:00 Z

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

# TCE 008058507-01, PDC Light Curves

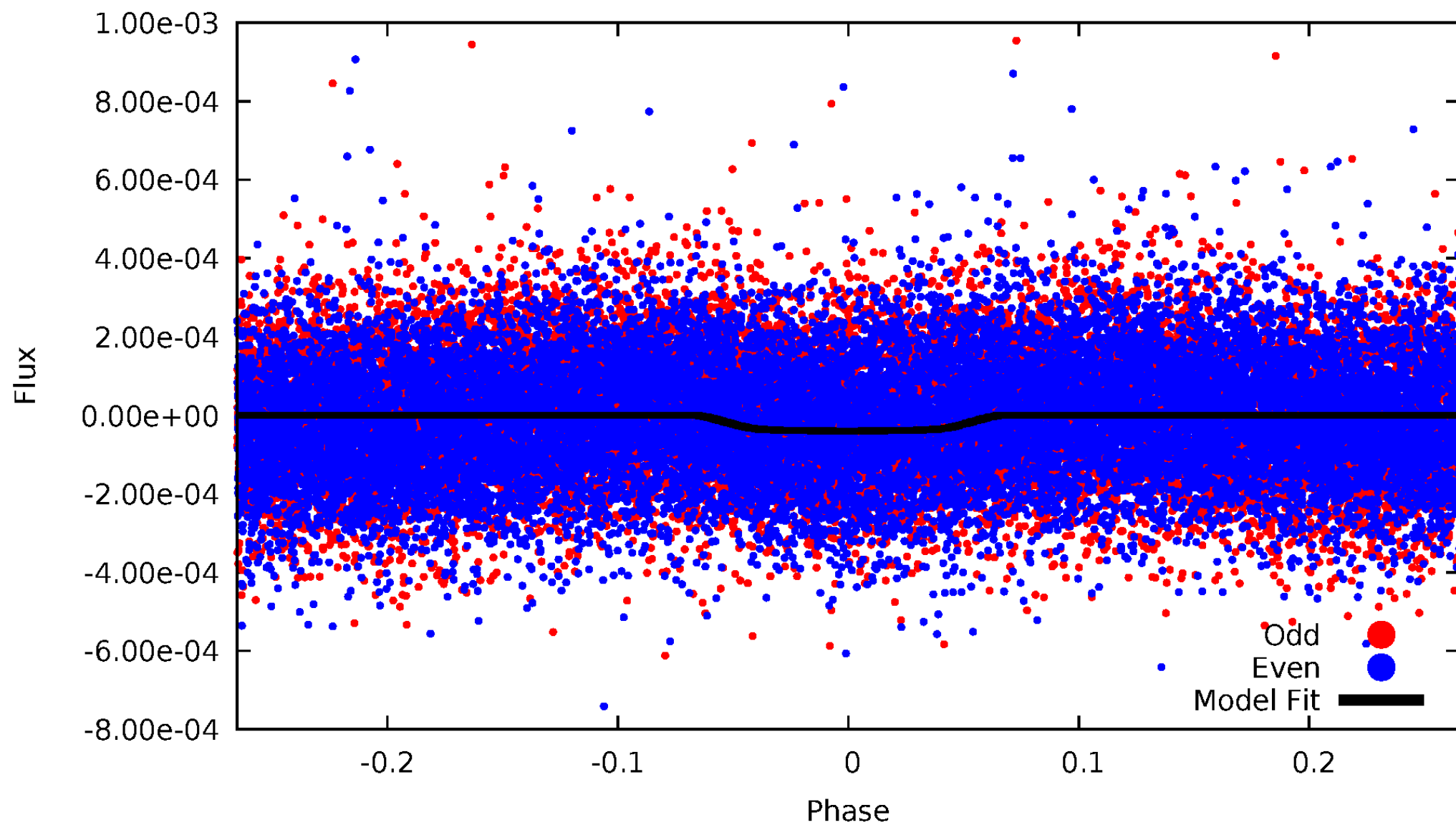


TCE 008058507-01



# DV Odd/Even

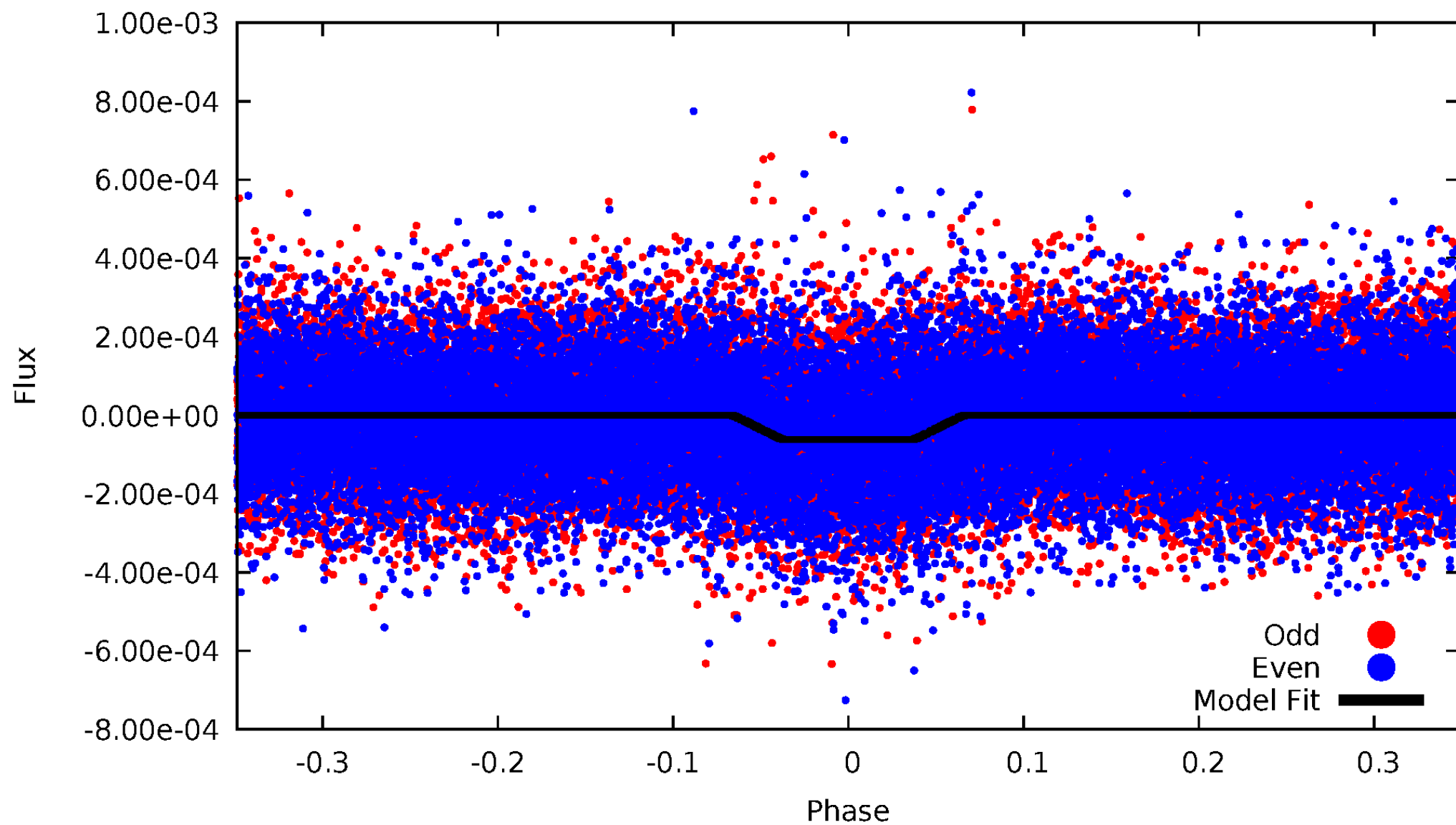
TCE 008058507-01





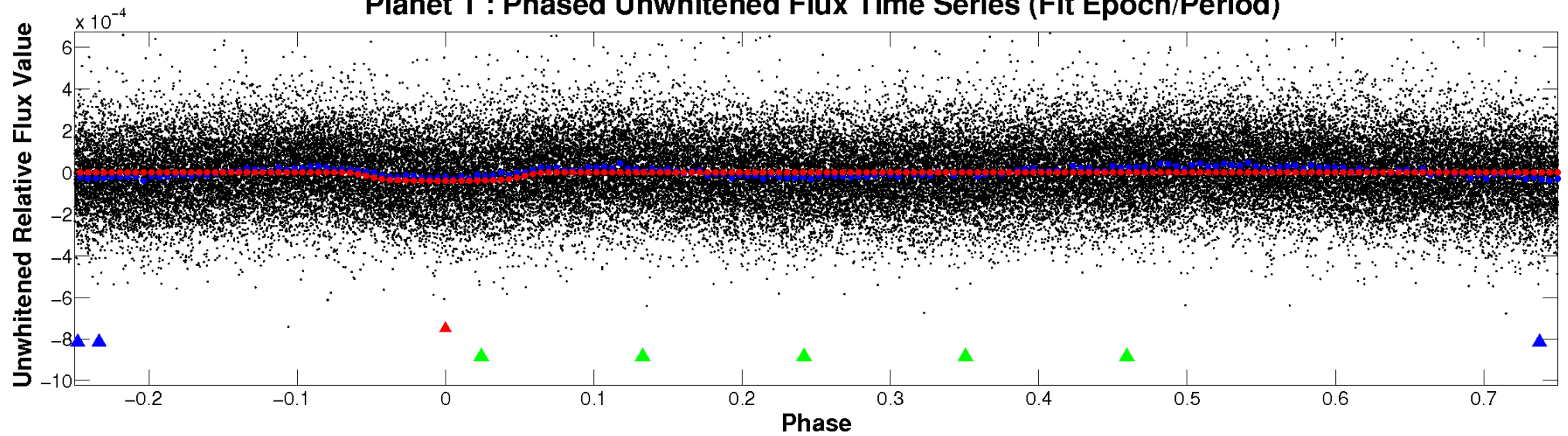
# ALT Odd/Even

TCE 008058507-01

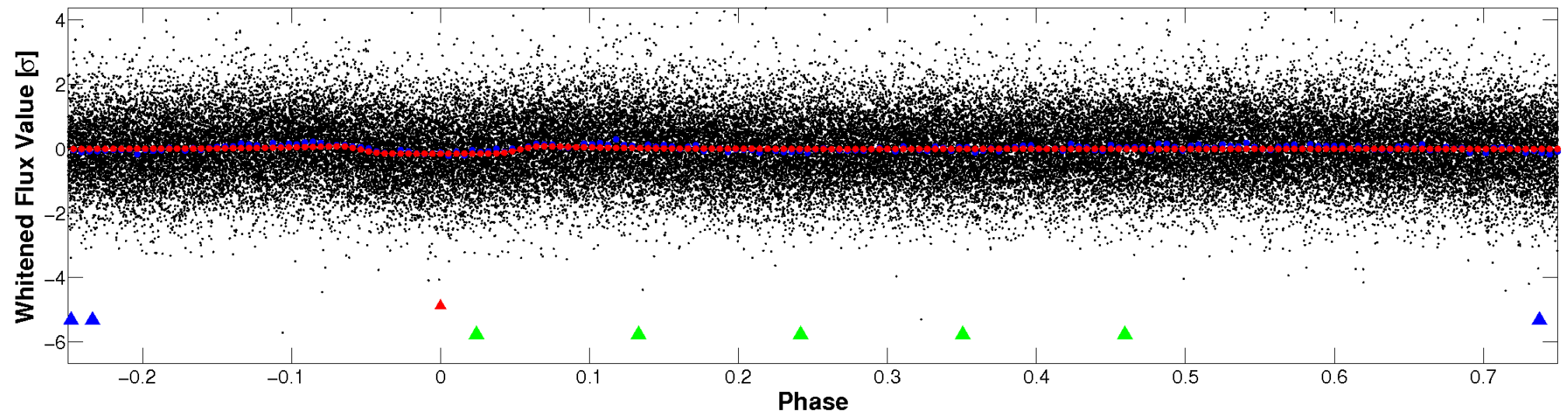


# Non-Whitened Vs. Whitened Light Curve

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

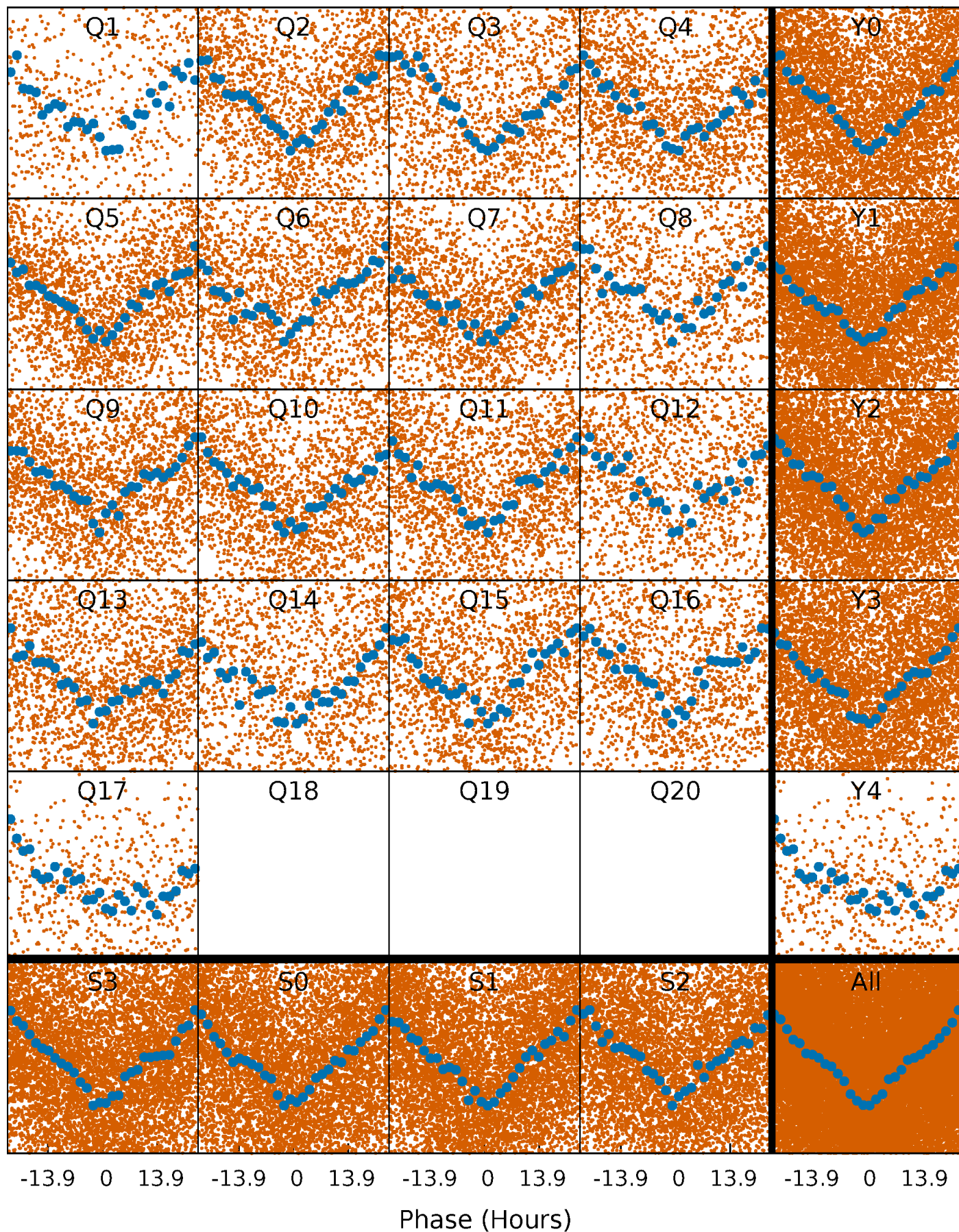


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

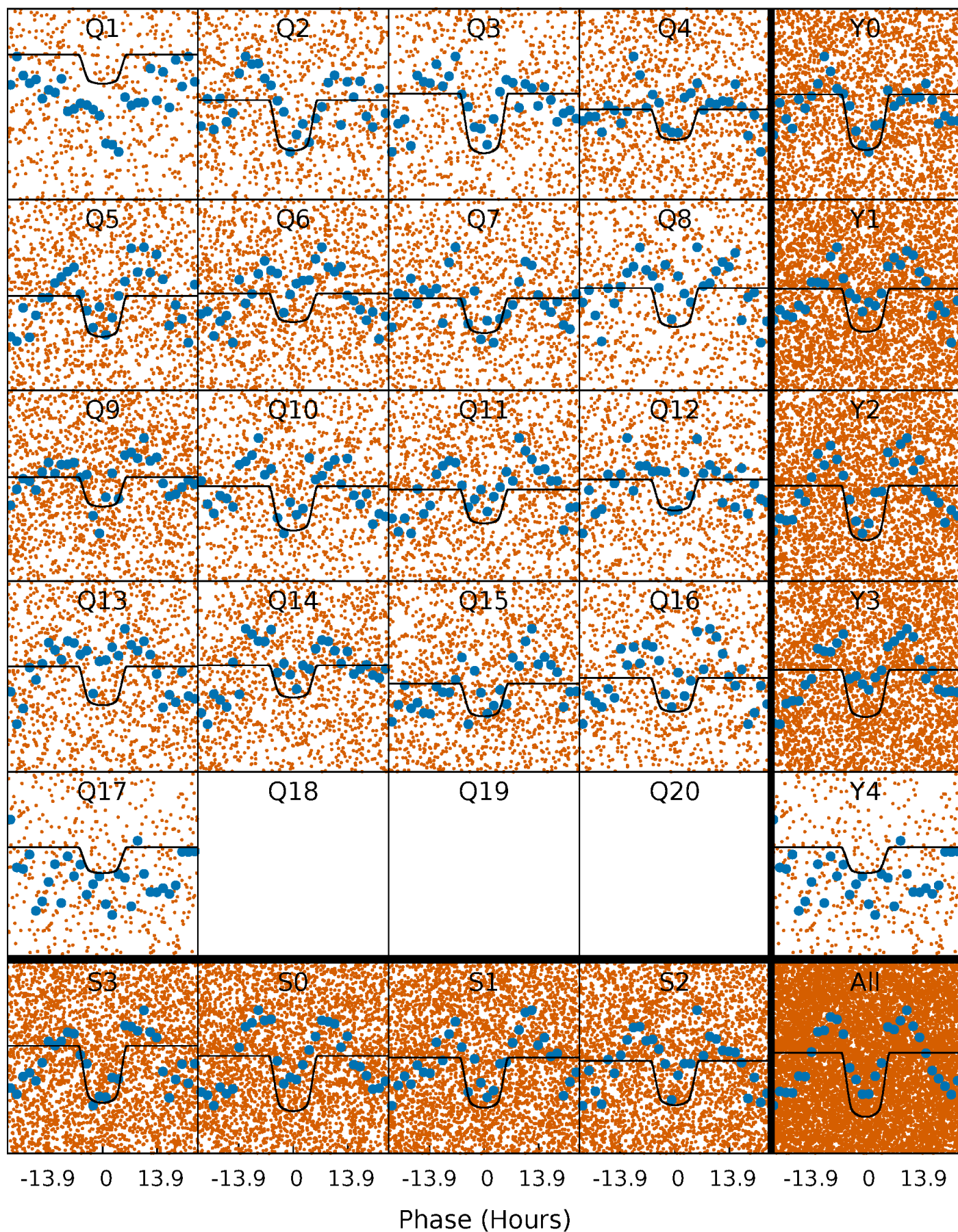
TCE 008058507-01 P= 3.814875 Days  $T_0=133.567151$  (BKJD)





# DV Quarter-Phased Transit Curves

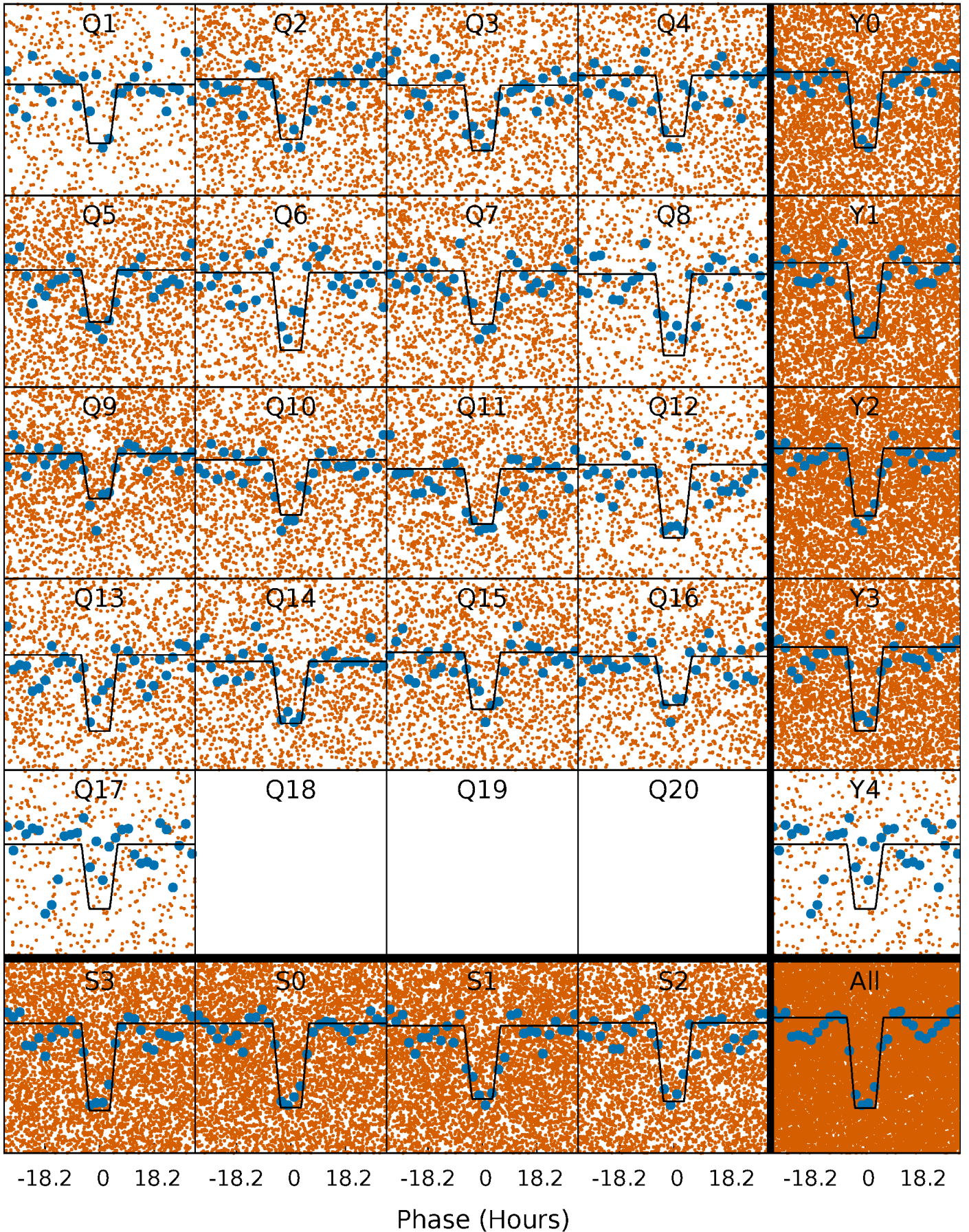
TCE 008058507-01 P= 3.814875 Days  $T_0=133.567151$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

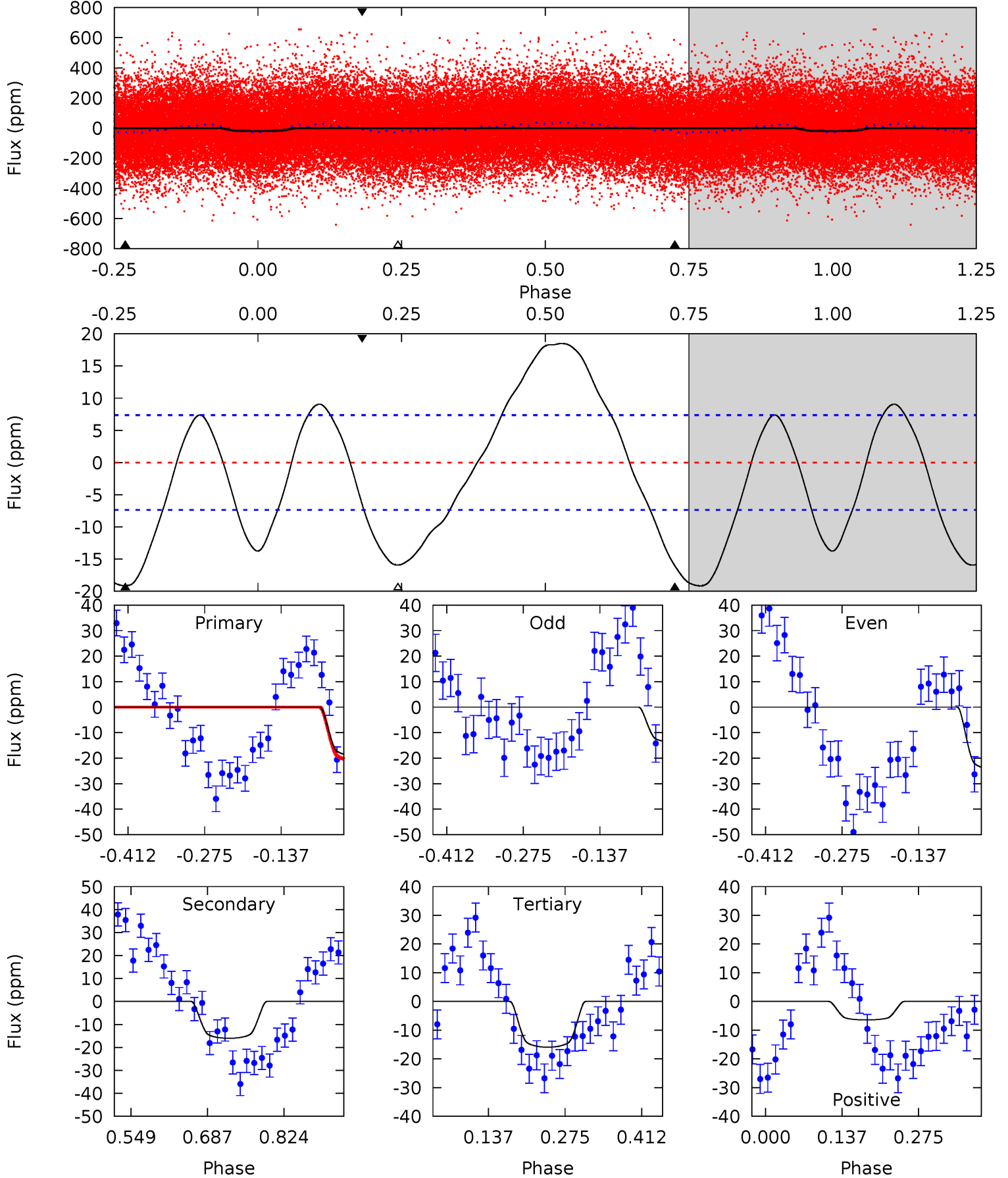
TCE 008058507-01 P= 3.814900 Days  $T_0=133.566892$  (BKJD)



# DV Model-Shift Uniqueness Test

008058507-01, P = 3.814875 Days, E = 129.752276 Days

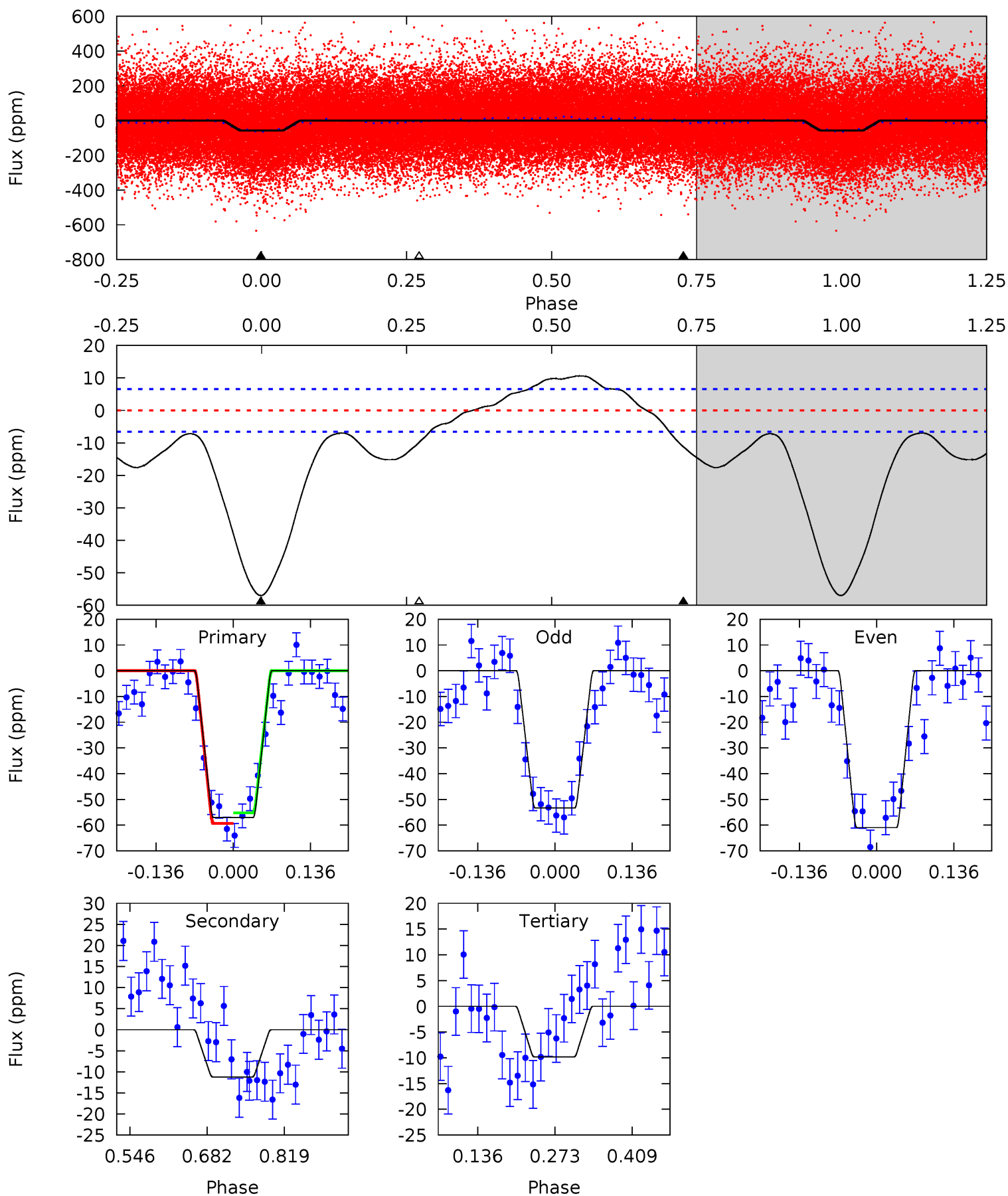
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	9.81	9.74	-3.93	4.50	1.49	6.67	1.97	15.6	0.07	13.7	3.26	0.90	0.49	1.15



# Alt Model-Shift Uniqueness Test

008058507-01, P = 3.814900 Days, E = 129.751992 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
39.2	7.70	6.75	0	4.50	1.49	6.06	32.4	39.2	0.95	7.70	2.61	0.96	0.16	1.40





### Stellar Parameters For KIC 008058507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6362^{+173}_{-173}$	$3.647^{+0.328}_{-0.082}$	$-0.120^{+0.300}_{-0.250}$	$3.092^{+0.486}_{-1.215}$	$1.547^{+0.234}_{-0.351}$	$0.074^{+0.180}_{-0.020}$
	+3%/-3%	+9%/-2%	+250%/-208%	+16%/-39%	+15%/-23%	+244%/-27%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008058507-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-16 \pm 2$	$2.54^{+0.37}_{-0.51}$	$2867^{+172}_{-279}$	$4626^{+175}_{-174}$	$4.219^{+2.229}_{-1.011}$
Alt.	$-11 \pm 1$	$2.57^{+0.34}_{-0.52}$	$2875^{+171}_{-255}$	$4285^{+180}_{-176}$	$2.963^{+1.335}_{-0.730}$

$T_{\text{max}}$  = 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

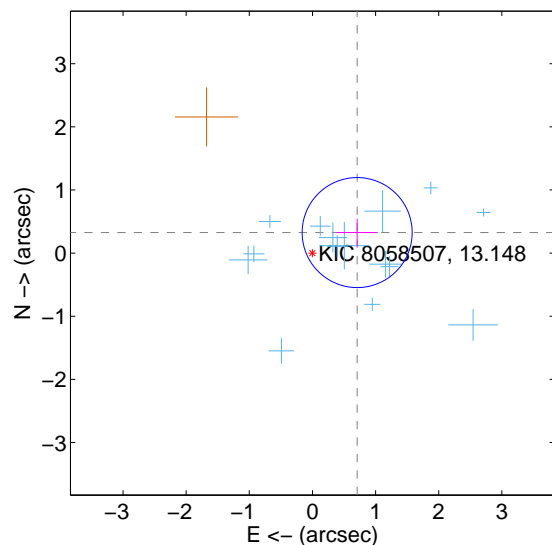
Supplemental centroid analysis for 008058507-01. Kepler magnitude: 13.15. Transit SNR 12.30

There are 15 quarters with good PRF difference image offsets

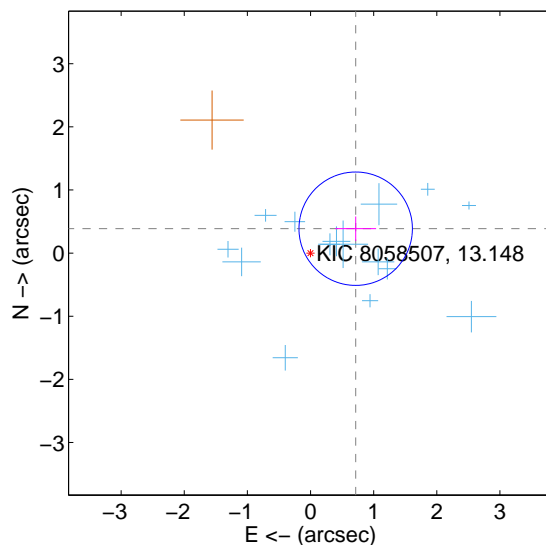
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.779 \pm 0.290$	2.68	$-0.708 \pm 0.325$	$0.325 \pm 0.219$
PRF-fit source offset from KIC position	$0.813 \pm 0.299$	2.72	$-0.715 \pm 0.324$	$0.386 \pm 0.193$
photometric centroid source offset	$0.34 \pm 0.95$	0.36	$0.34 \pm 0.95$	$0.00 \pm 0.77$

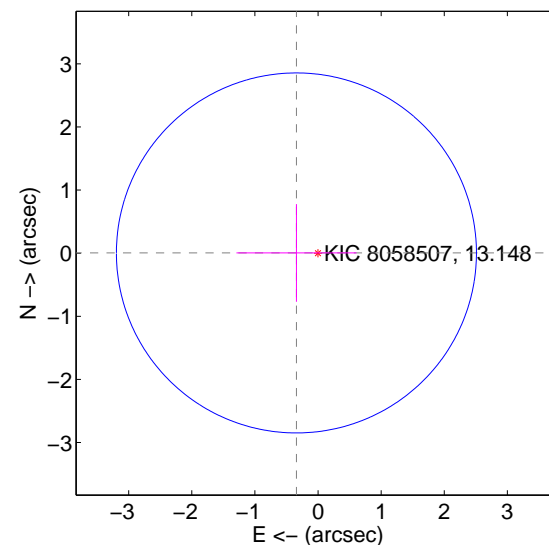
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

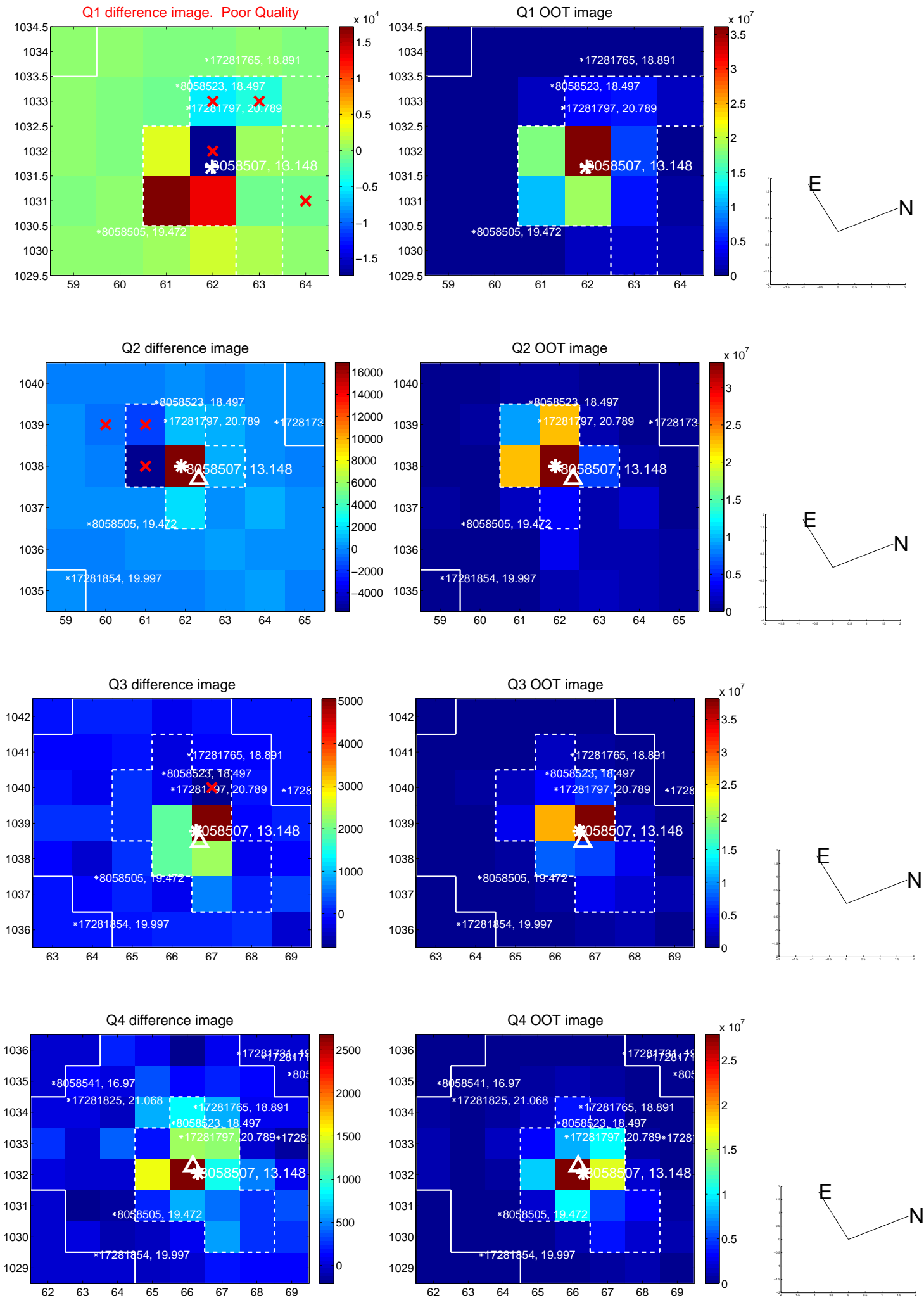


offset from photometric centroids



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

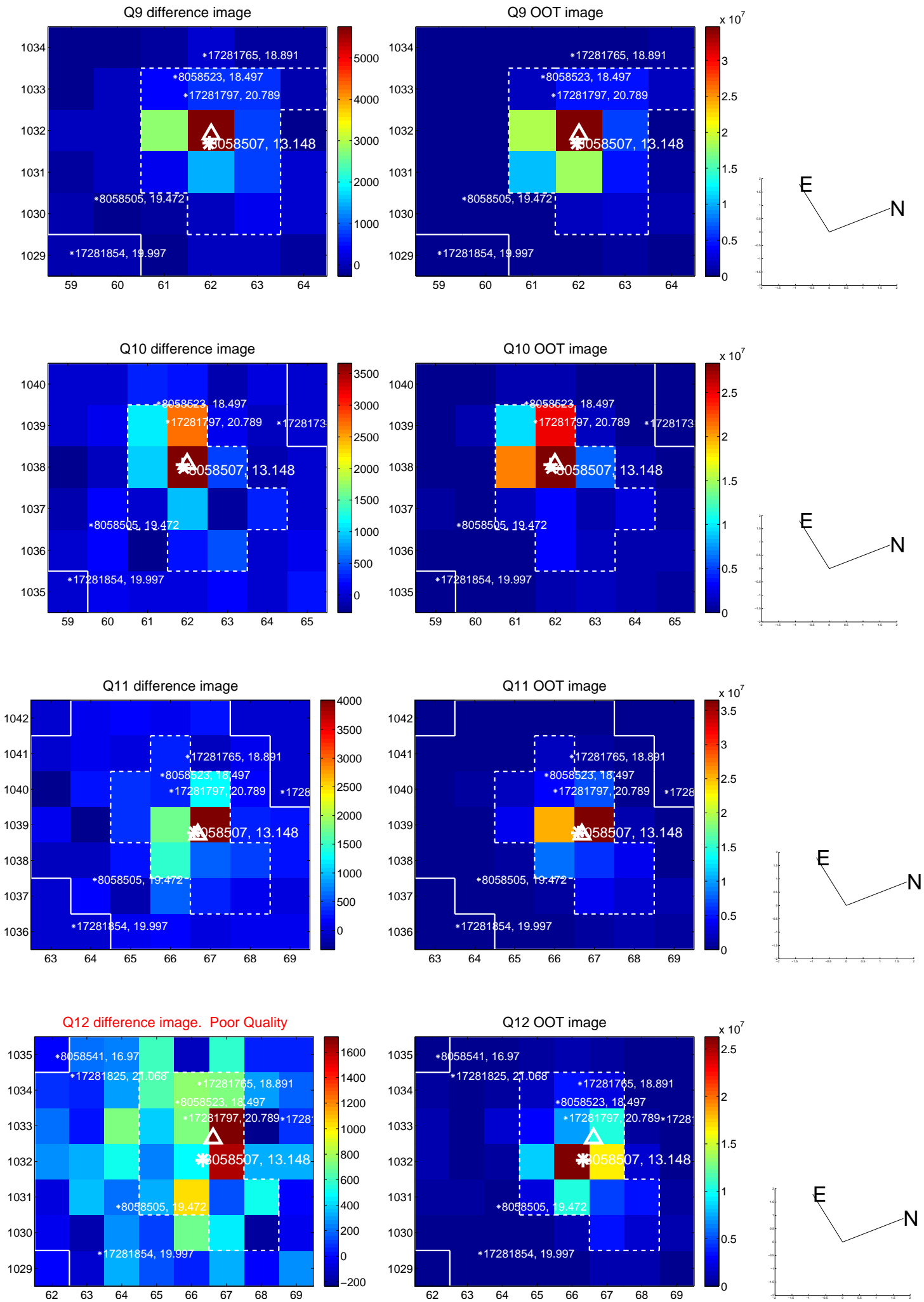
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



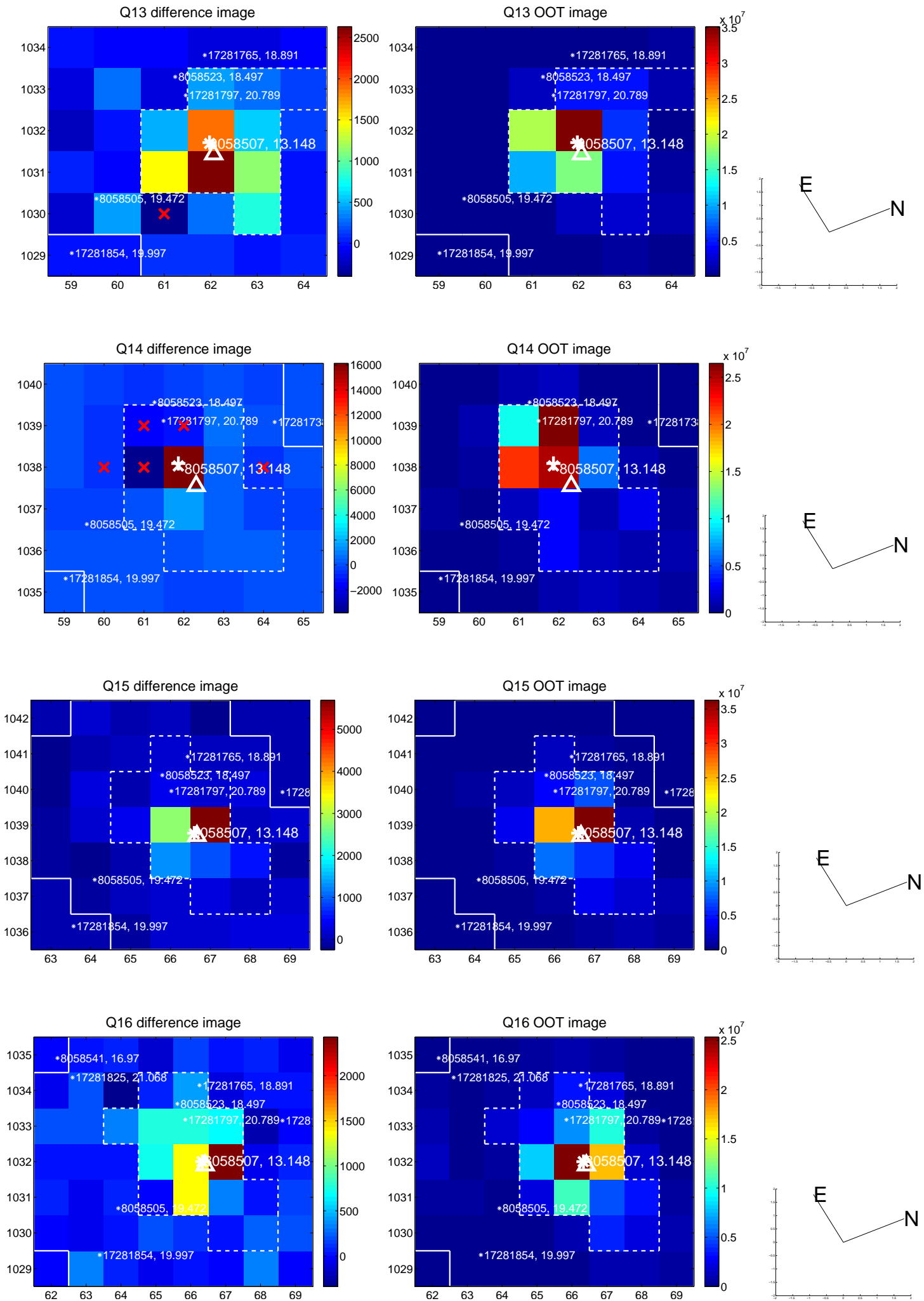




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

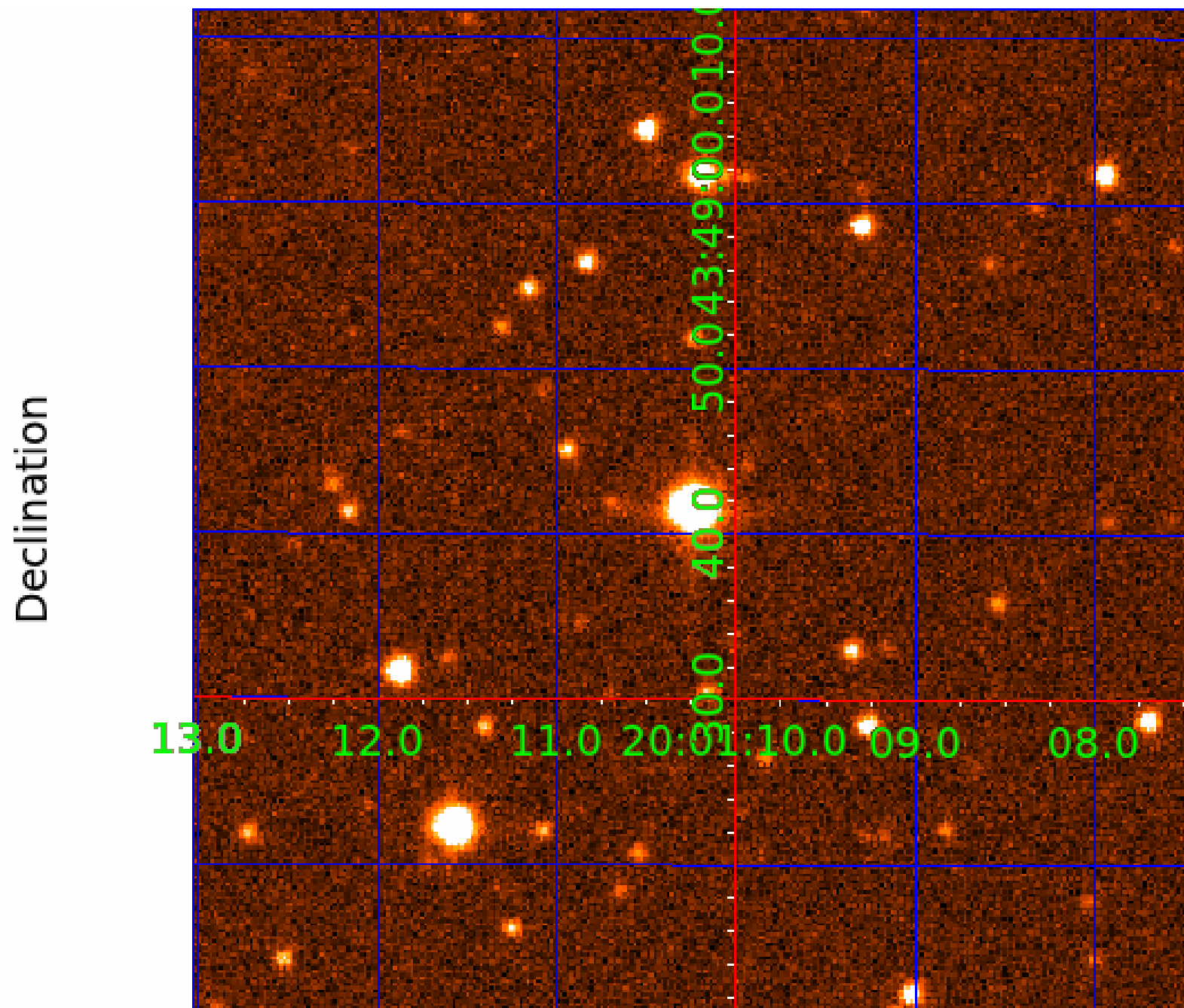


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image





# KIC 008058507

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008058507-01	OBS	No	3.814875	133.567152	40.2	12.136	12.2	12.3	3.09	6362	2.65	4593.27
008058507-02	OBS	No	663.733329	224.233190	381.1	8.930	16.2	10.9	3.09	6362	6.71	4.73
008058507-03	OBS	No	297.975325	156.548531	303.1	16.201	10.9	8.0	3.09	6362	9.41	13.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008058507-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008058507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008058507-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_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 008058507-02

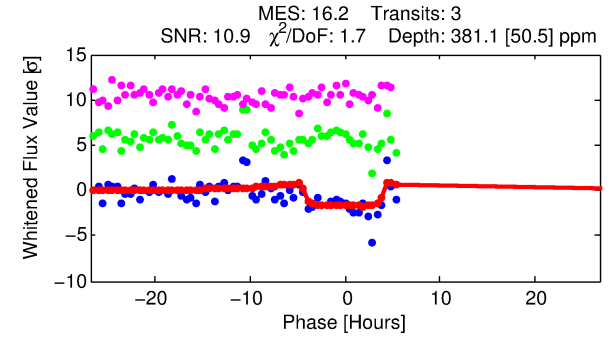
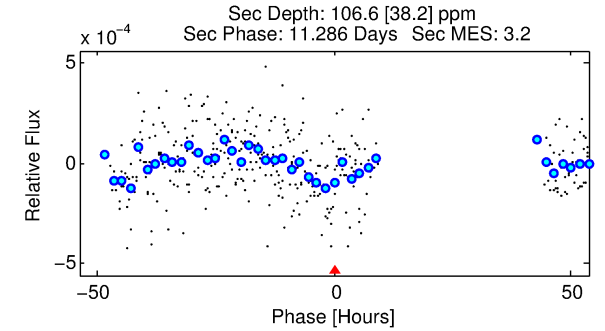
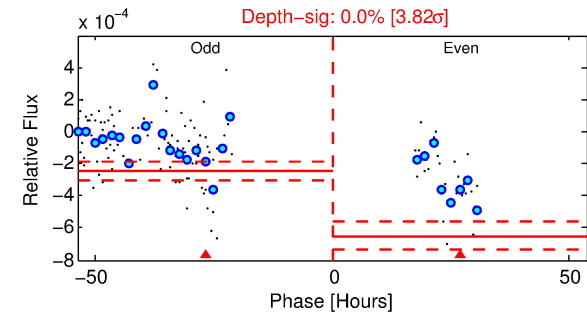
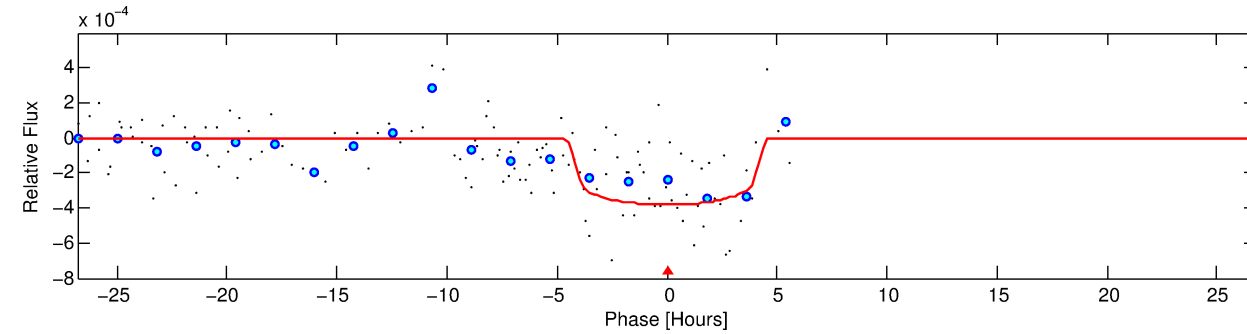
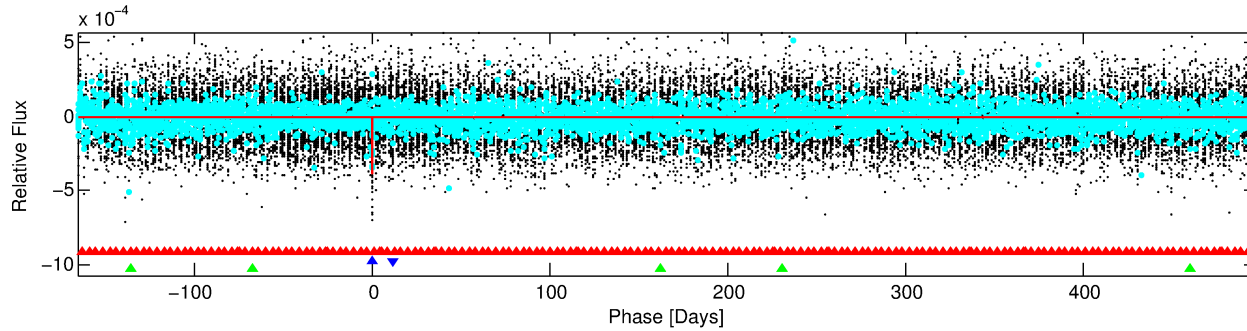
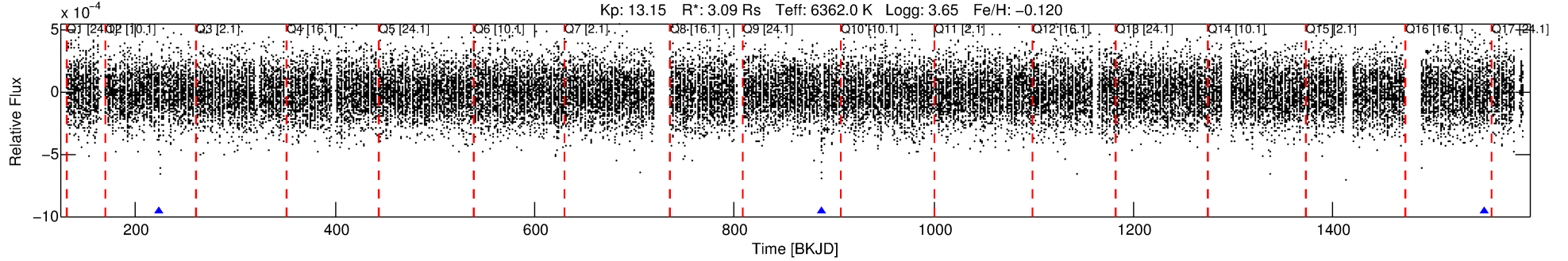
No Significant Match Found

# DV One-Page Summary

KIC: 8058507 Candidate: 2 of 3 Period: 663.733 d

KOI: K06170 Corr: No Ephemeris Match

Kp: 13.15 R\*: 3.09 Rs Teff: 6362.0 K Logg: 3.65 Fe/H: -0.120



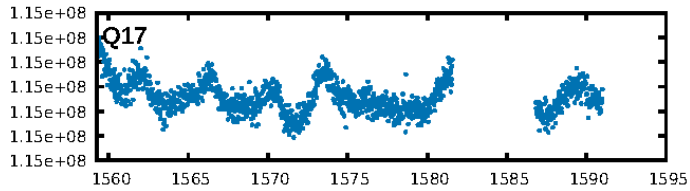
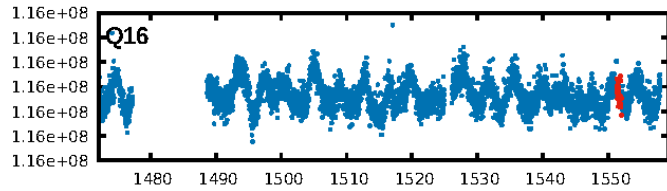
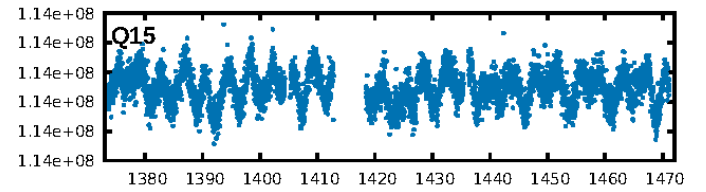
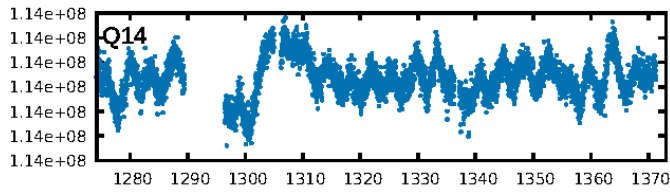
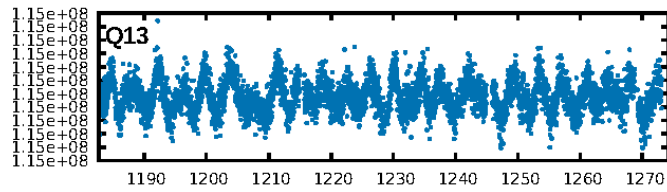
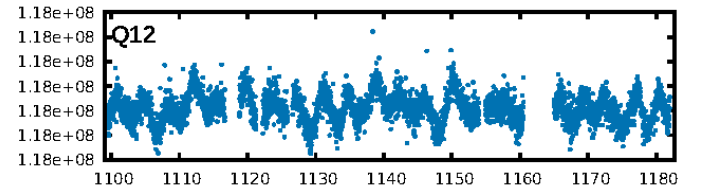
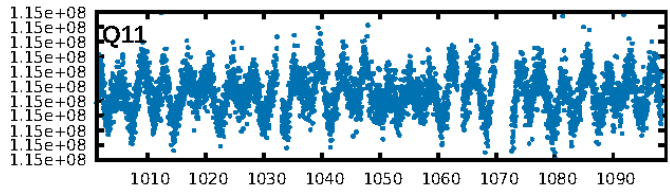
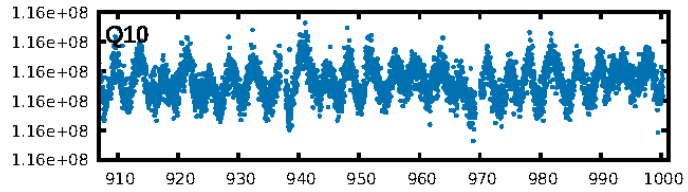
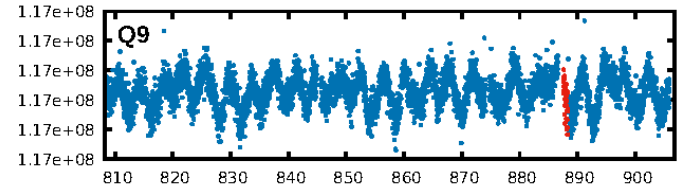
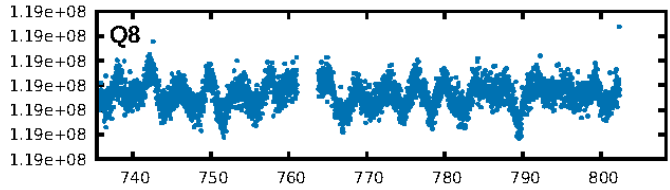
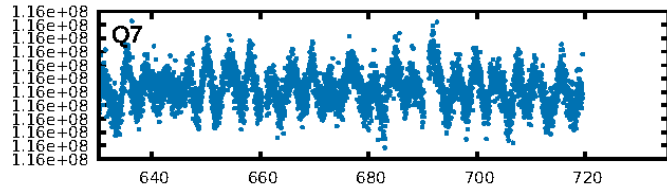
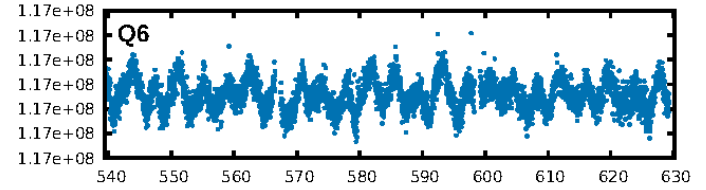
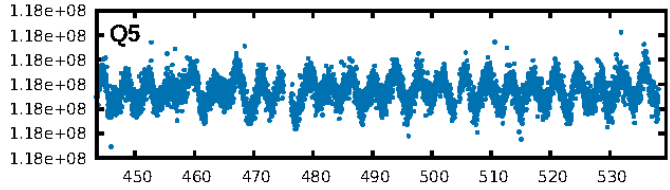
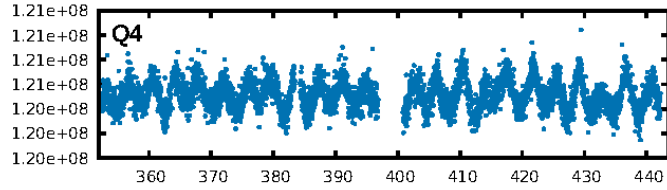
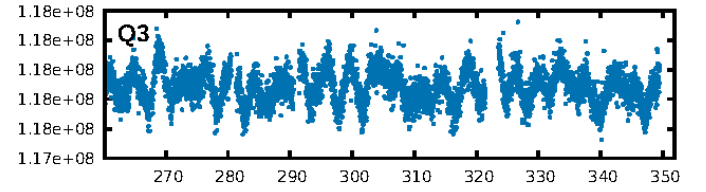
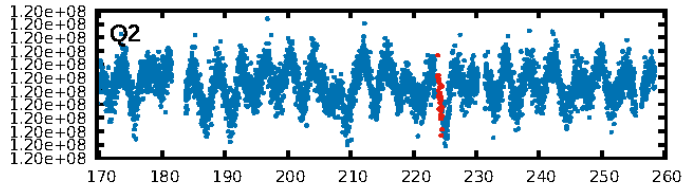
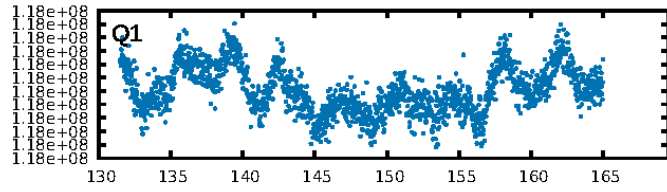
## DV Fit Results:

Period = 663.73333 [0.01083] d  
Epoch = 224.2332 [0.0178] BKJD  
Rp/R\* = 0.0199 [0.0060]  
a/R\* = 348.64 [548.55]  
b = 0.81 [0.65]  
Seff = 4.73 [2.73]  
Teq = 376 [54] K  
Rp = 6.71 [3.32] Re  
a = 1.7226 [0.6259] AU  
Ag = 3864.82 [3483.01] [1.11σ]  
Teffp = 4584 [812] K [5.17σ]

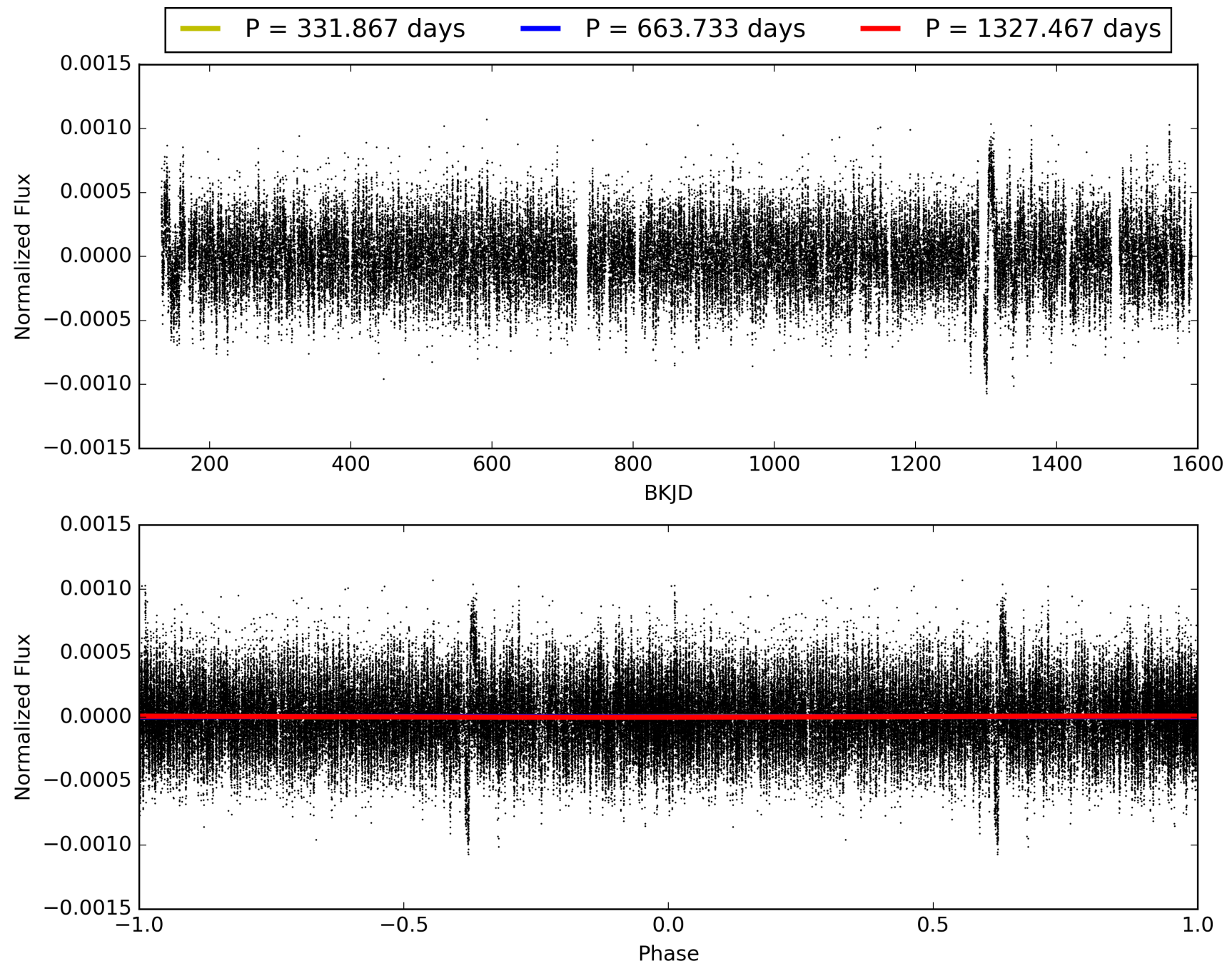
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [474.53σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 13.4%  
Bootstrap-pfa: 6.39e-36  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -5.392  
Centroid-sig: 48.3%  
Centroid-so: 0.714 arcsec [0.61σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [1/1]

## TCE 008058507-02, PDC Light Curves



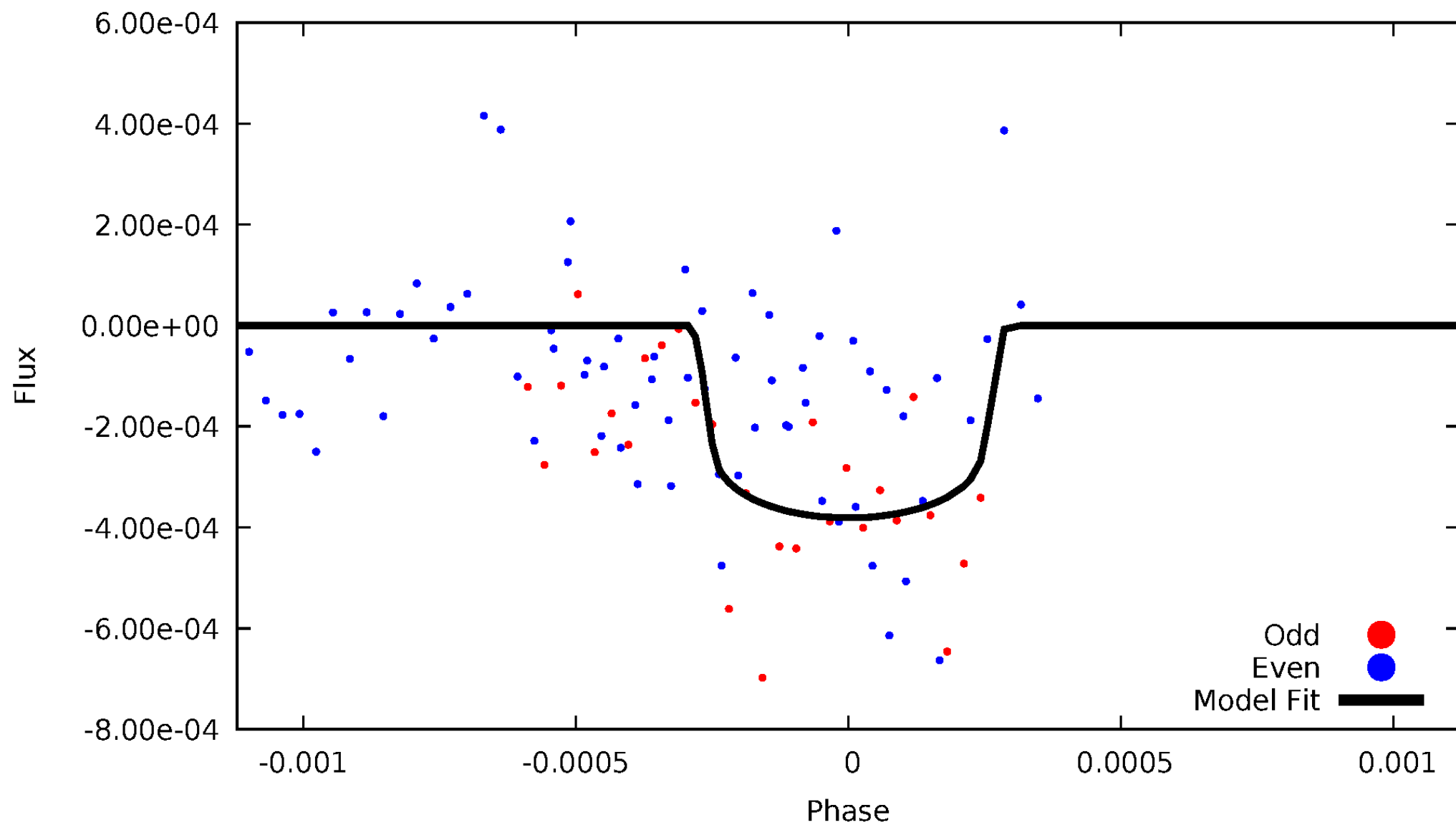
# TCE 008058507-02





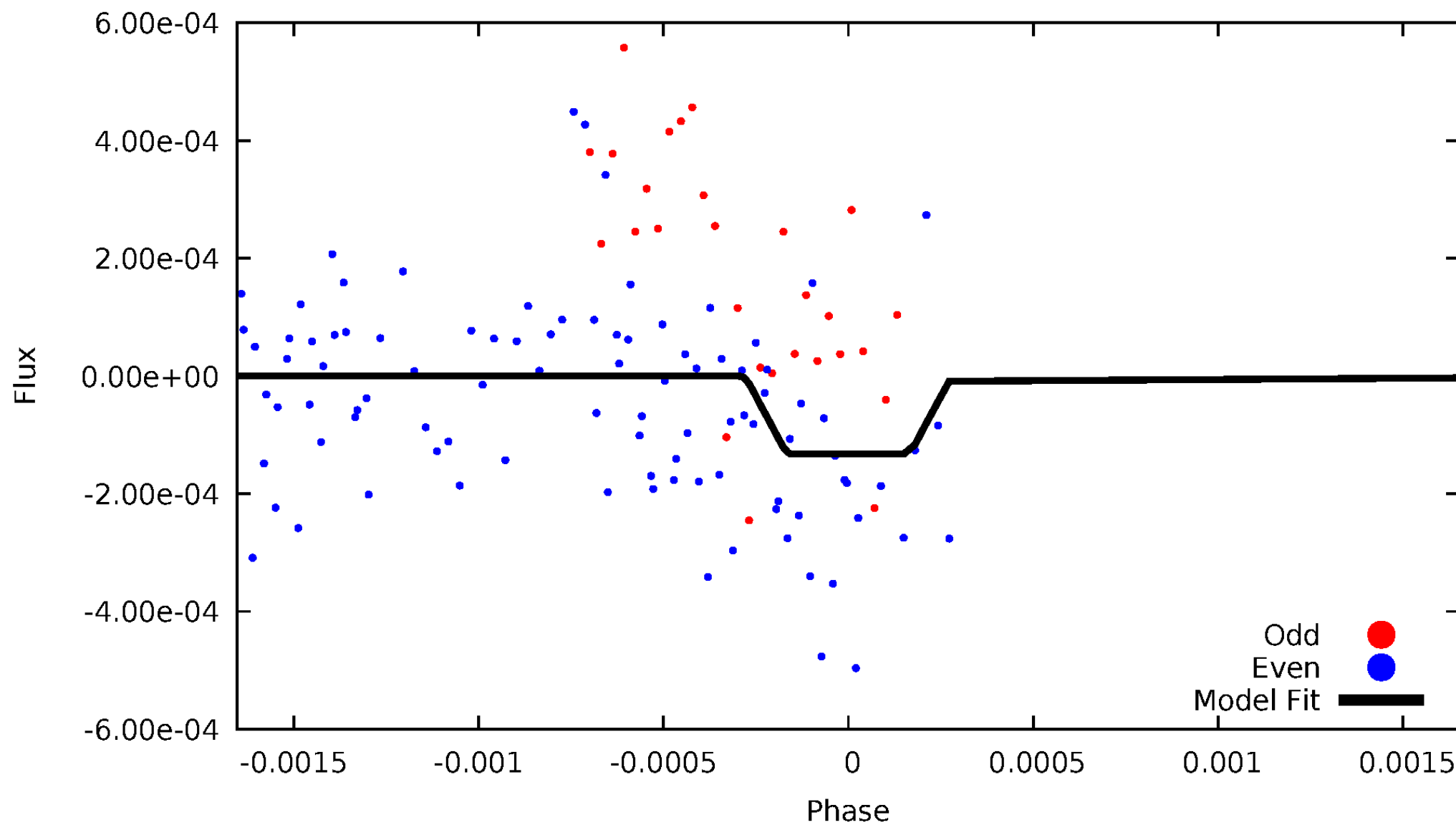
# DV Odd/Even

TCE 008058507-02



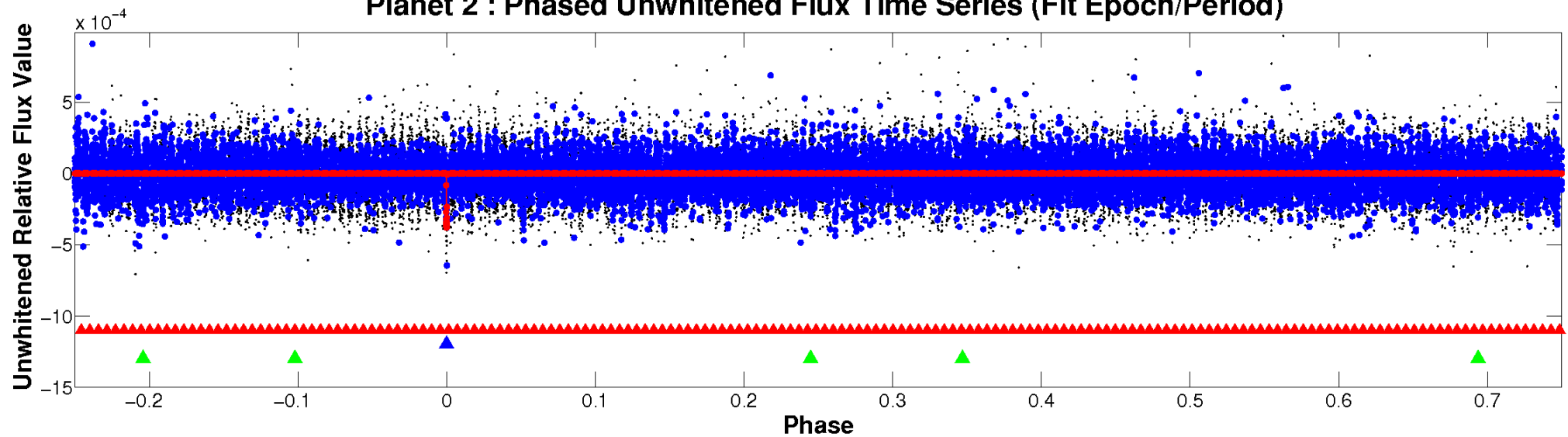
# ALT Odd/Even

TCE 008058507-02

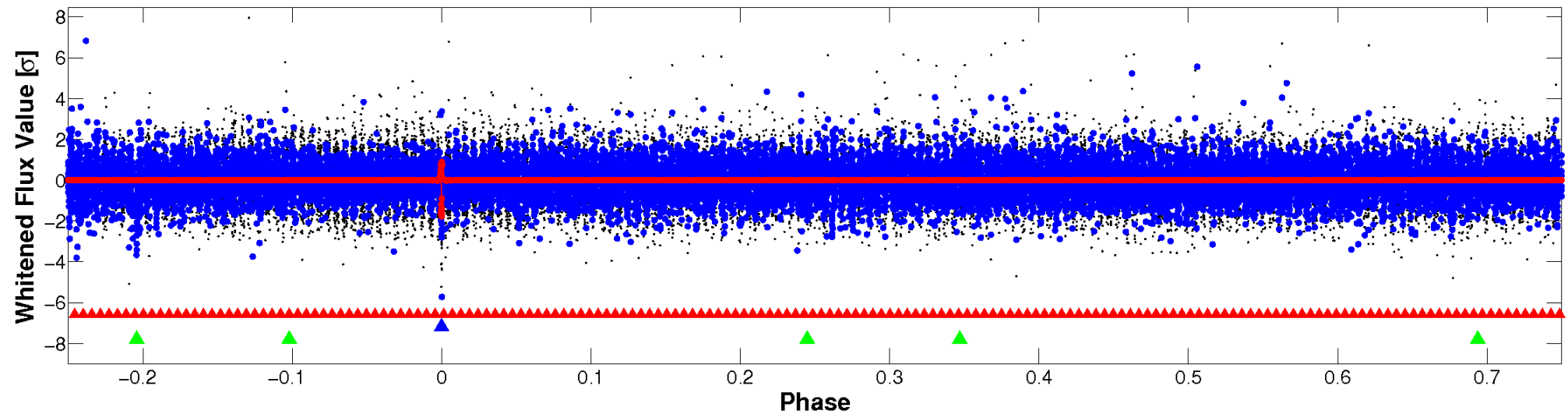


# Non-Whitened Vs. Whitened Light Curve

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

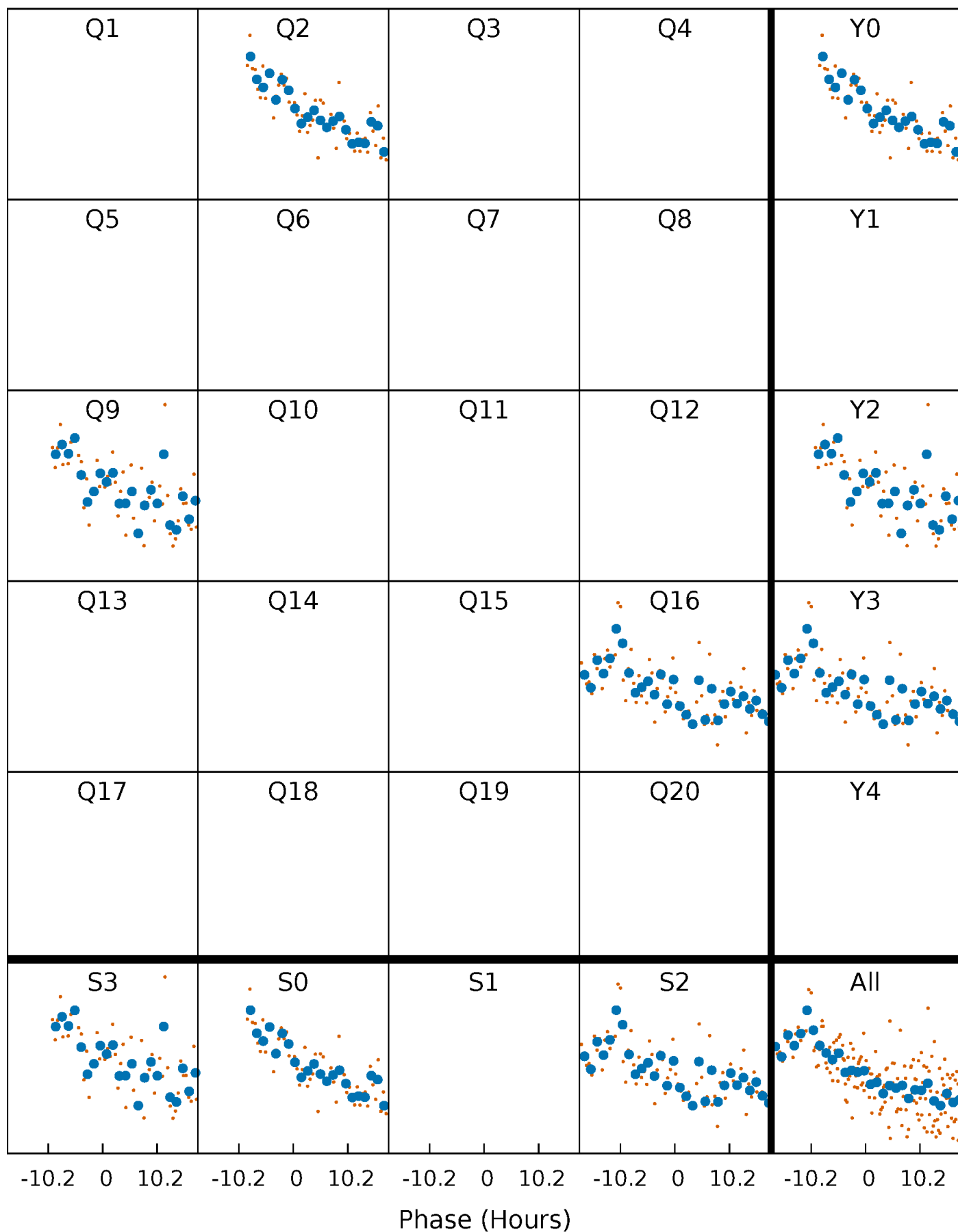


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



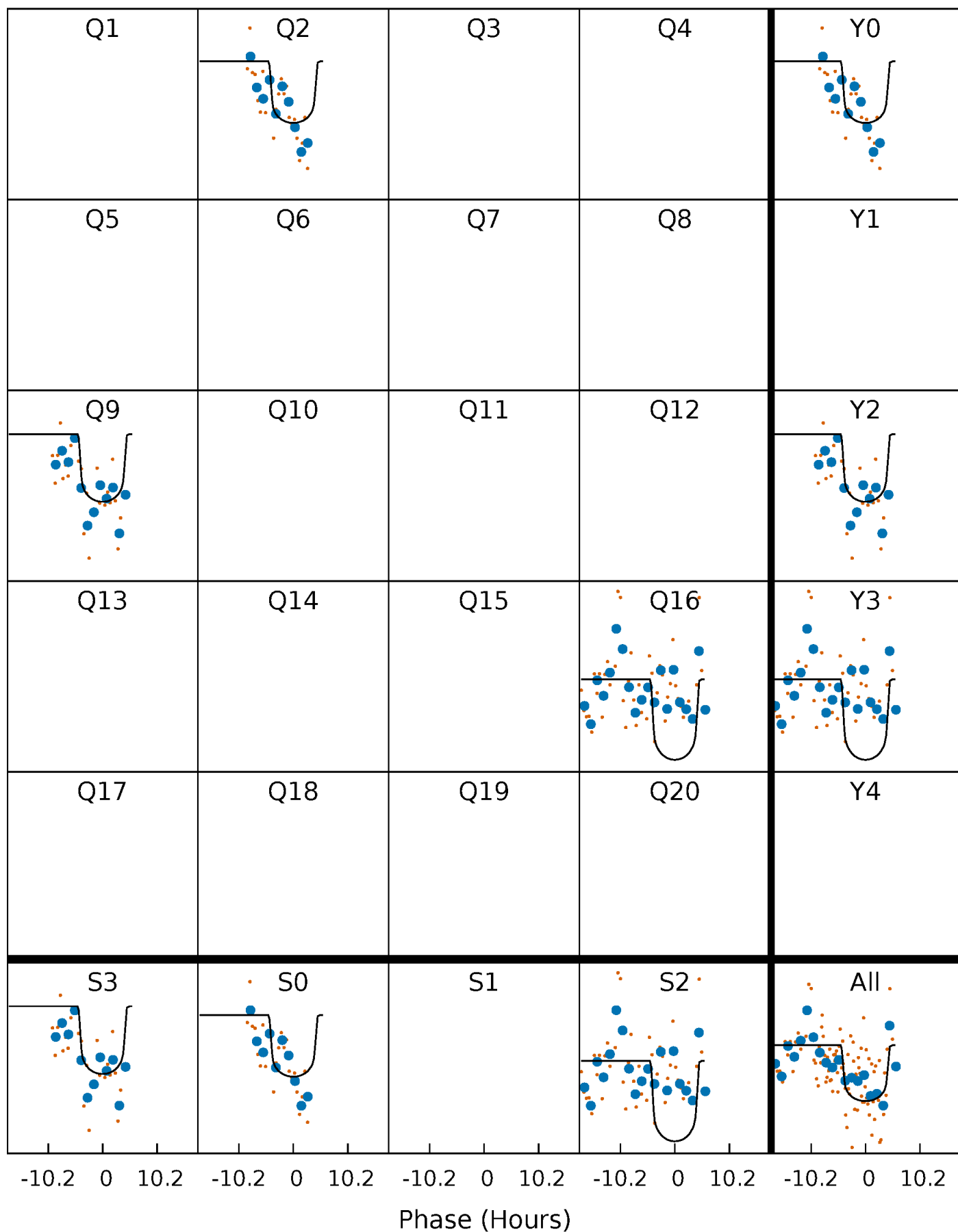
# PDC Quarter-Phased Transit Curves

TCE 008058507-02     $P=663.733329$  Days     $T_0=224.233190$  (BKJD)



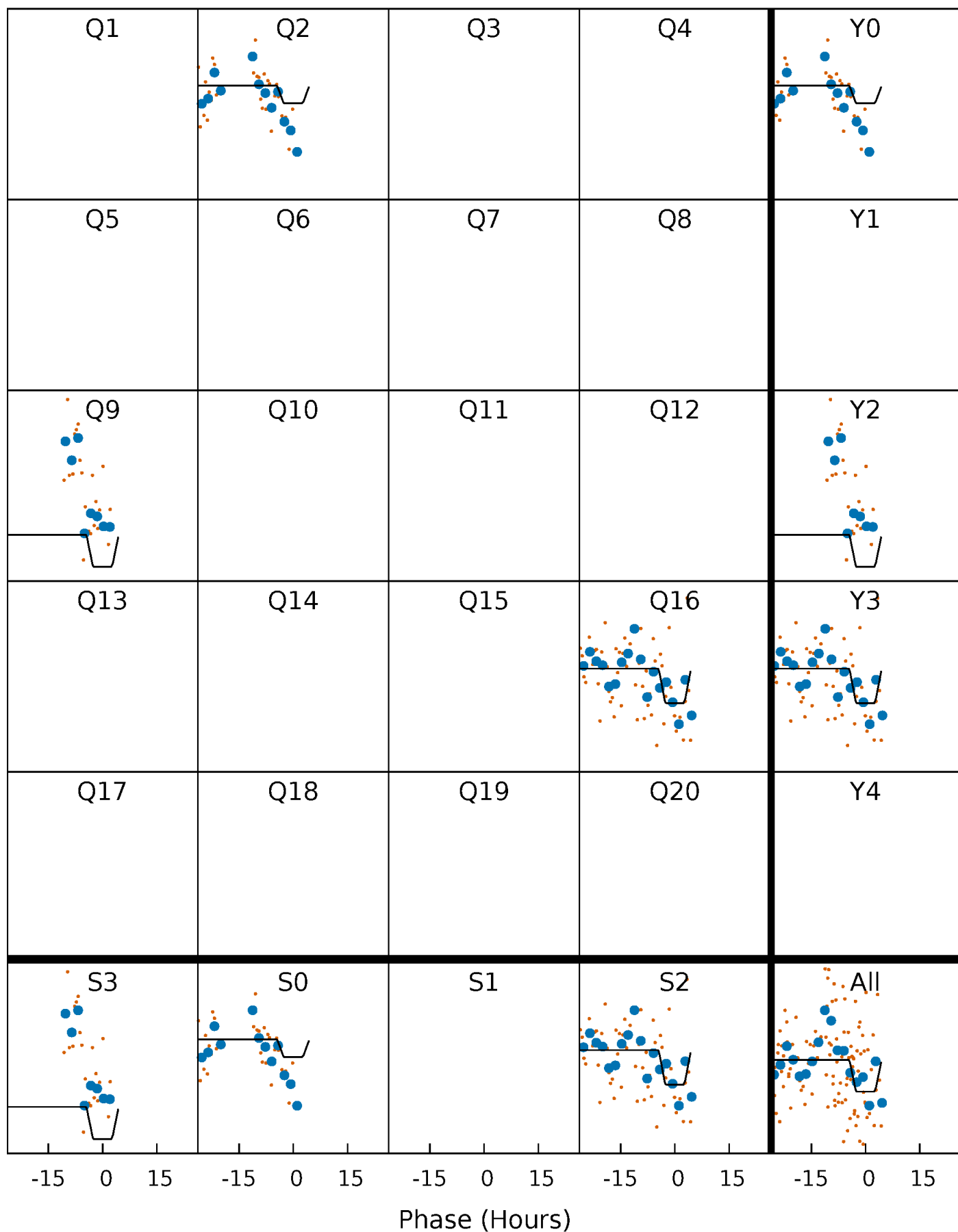
# DV Quarter-Phased Transit Curves

TCE 008058507-02 P=663.733329 Days  $T_0=224.233190$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008058507-02 P=663.709273 Days  $T_0=224.330850$  (BKJD)

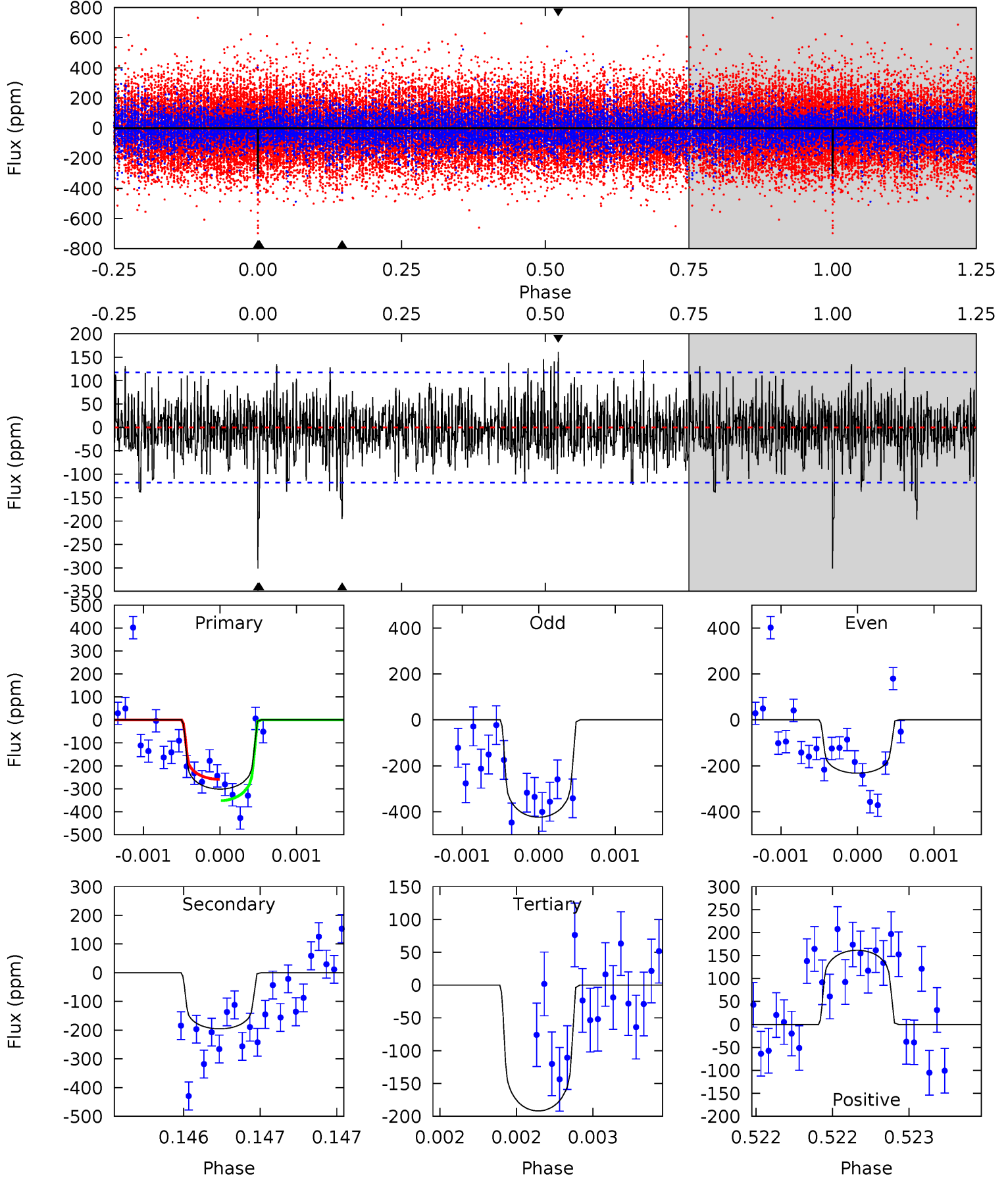




# DV Model-Shift Uniqueness Test

008058507-02, P = 663.733329 Days, E = 224.233190 Days

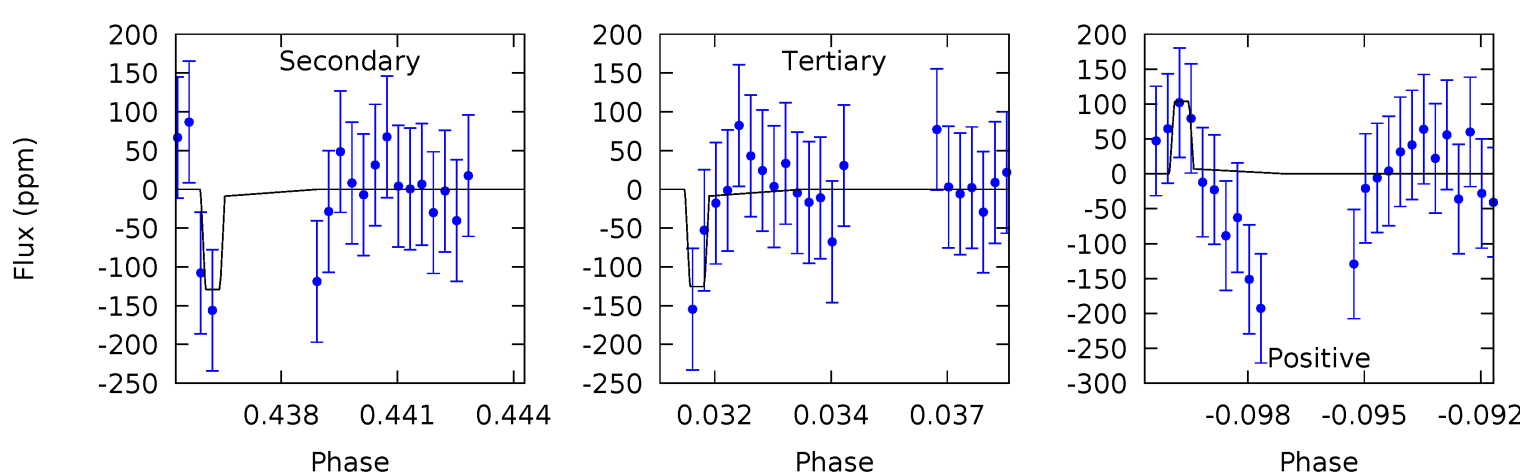
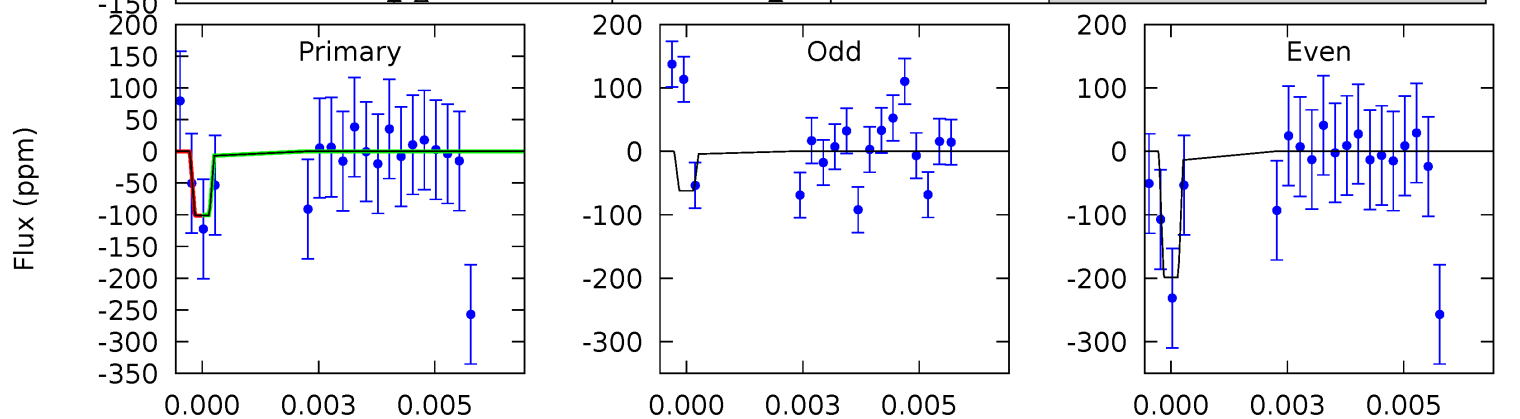
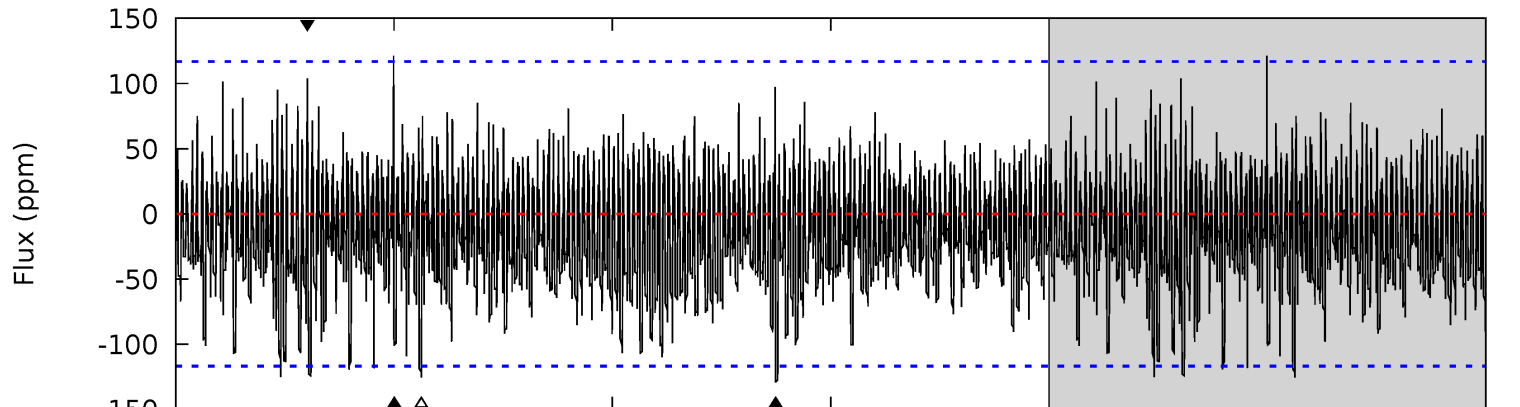
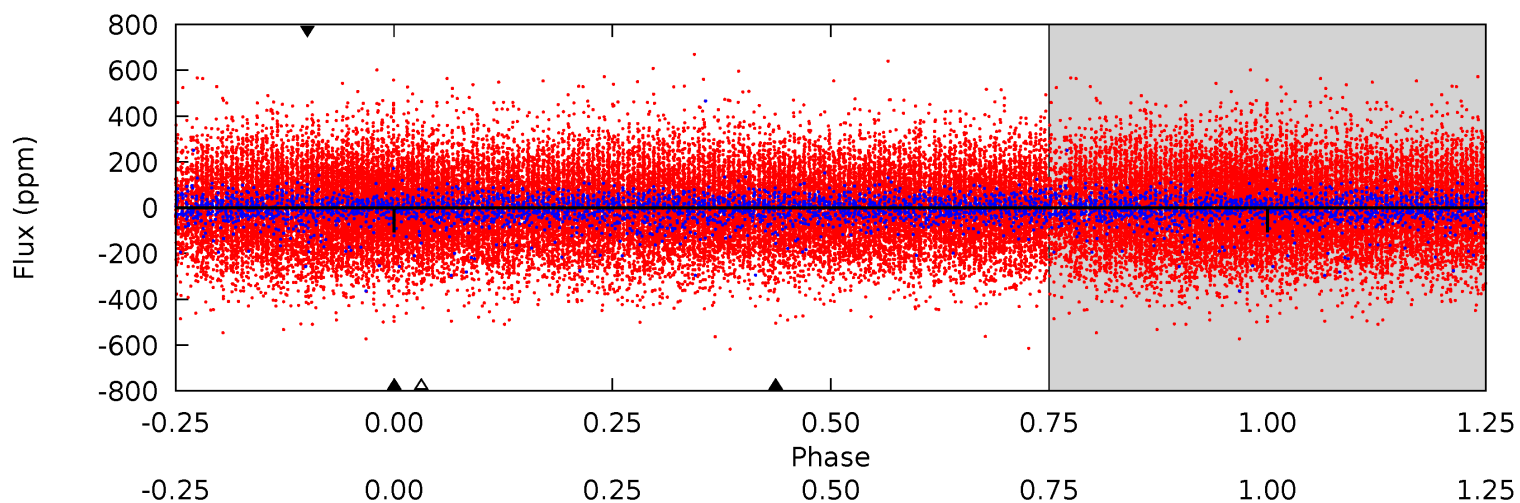
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	9.21	9.05	7.61	5.55	3.44	1.92	5.16	6.60	0.17	1.60	4.38	0.77	0.35	2.18



# Alt Model-Shift Uniqueness Test

008058507-02, P = 663.709273 Days, E = 224.330850 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
4.56	5.83	5.66	4.68	5.28	3.01	1.43	-1.10	-0.12	0.17	1.15	2.95	1.14	0.48	0.02



### Stellar Parameters For KIC 008058507

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6362^{+173}_{-173}$	$3.647^{+0.328}_{-0.082}$	$-0.120^{+0.300}_{-0.250}$	$3.092^{+0.486}_{-1.215}$	$1.547^{+0.234}_{-0.351}$	$0.074^{+0.180}_{-0.020}$
	+3%/-3%	+9%/-2%	+250%/-208%	+16%/-39%	+15%/-23%	+244%/-27%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008058507-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-195 \pm 21$	$6.01^{+2.45}_{-1.96}$	$511^{+31}_{-51}$	$5412^{+1091}_{-629}$	$8712^{+10817}_{-4074}$
Alt.	$-129 \pm 22$	$3.62^{+2.13}_{-1.68}$	$514^{+30}_{-45}$	$6264^{+2676}_{-1094}$	$15552^{+41581}_{-9043}$

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

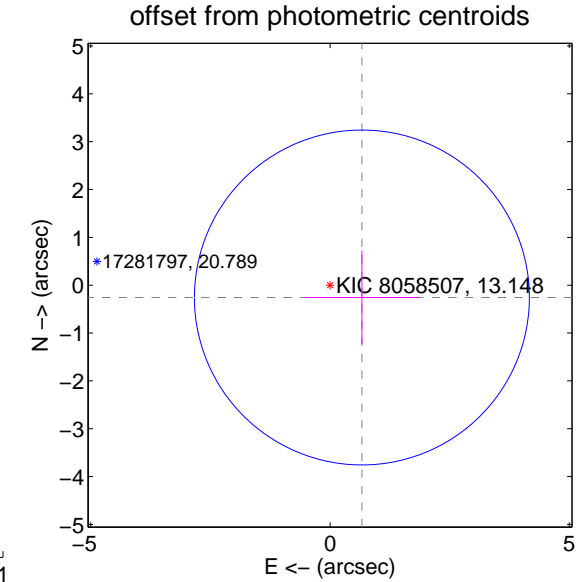
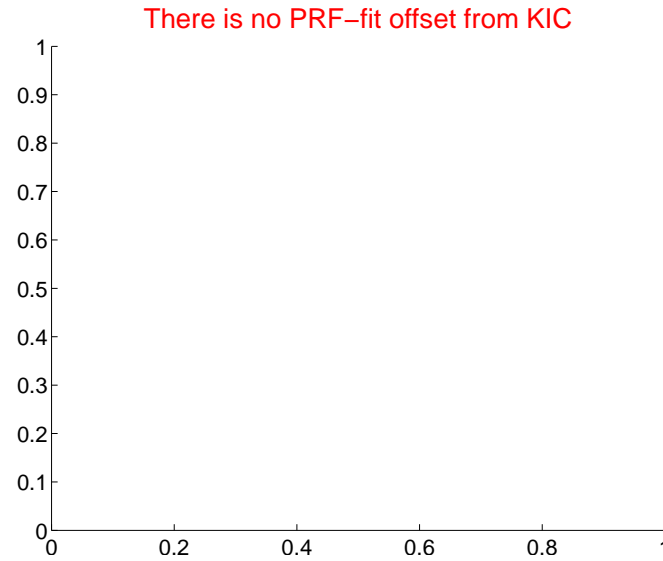
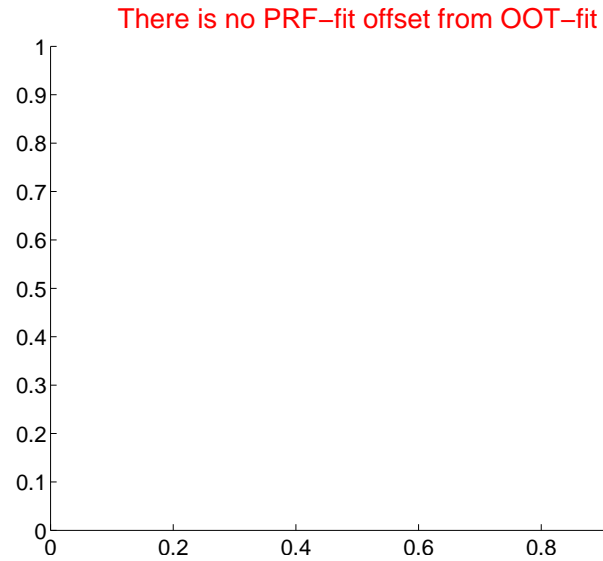
## DV Centroid Data

Supplemental centroid analysis for 008058507-02. Kepler magnitude: 13.15. Transit SNR 10.93

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$0.71 \pm 1.17$	0.61	$-0.67 \pm 1.19$	$-0.26 \pm 0.98$



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.

Q13 no difference image



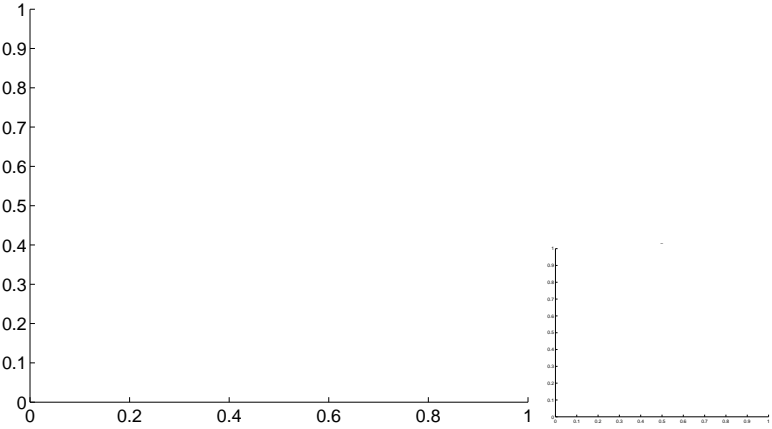
Q13 no OOT image



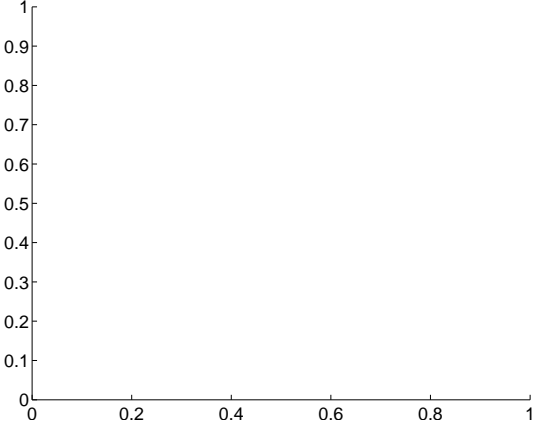
Q14 no difference image



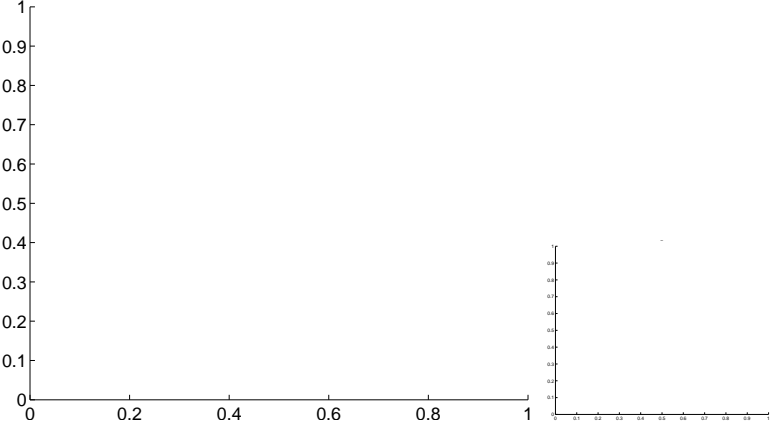
Q14 no OOT image



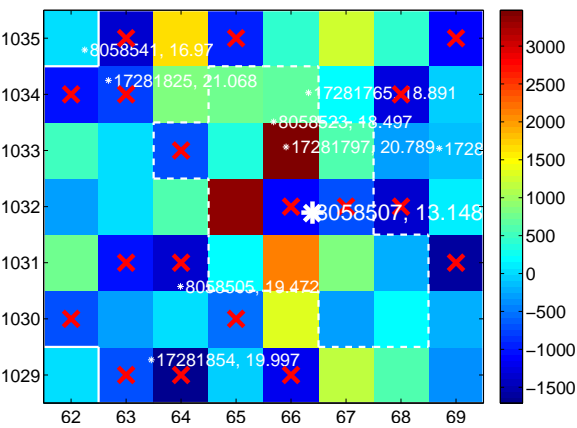
Q15 no difference image



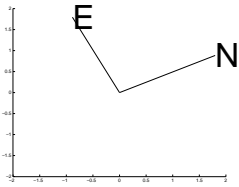
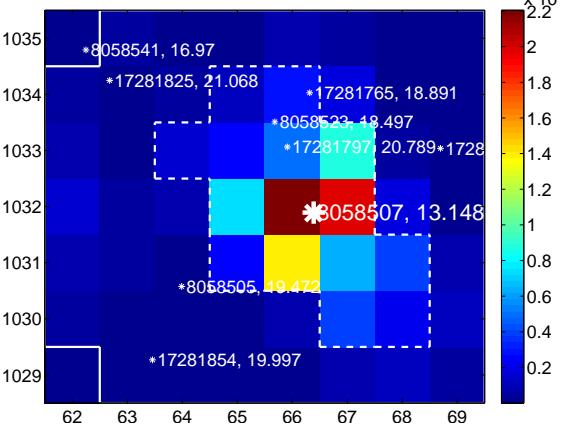
Q15 no OOT image



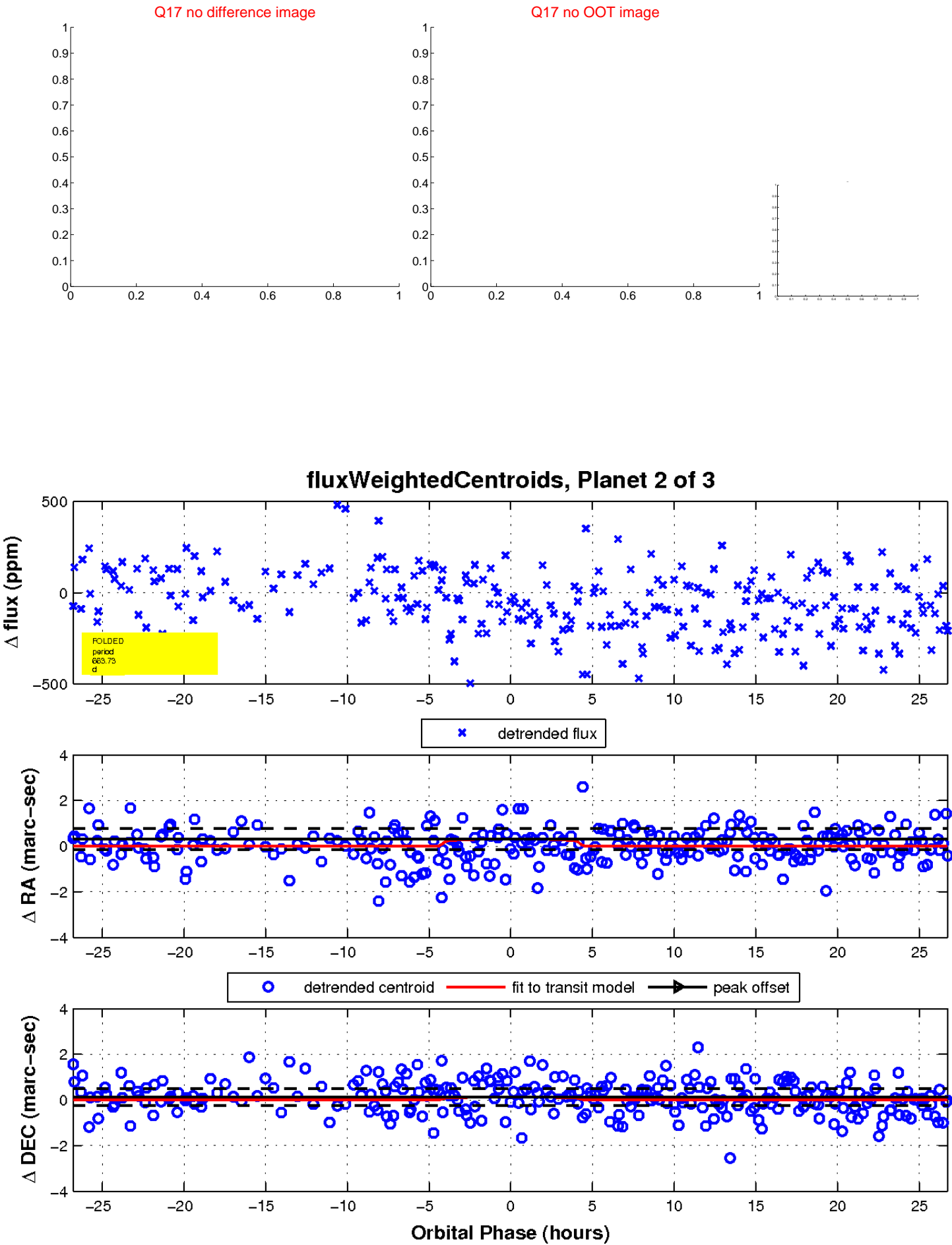
Q16 difference image. Poor Quality



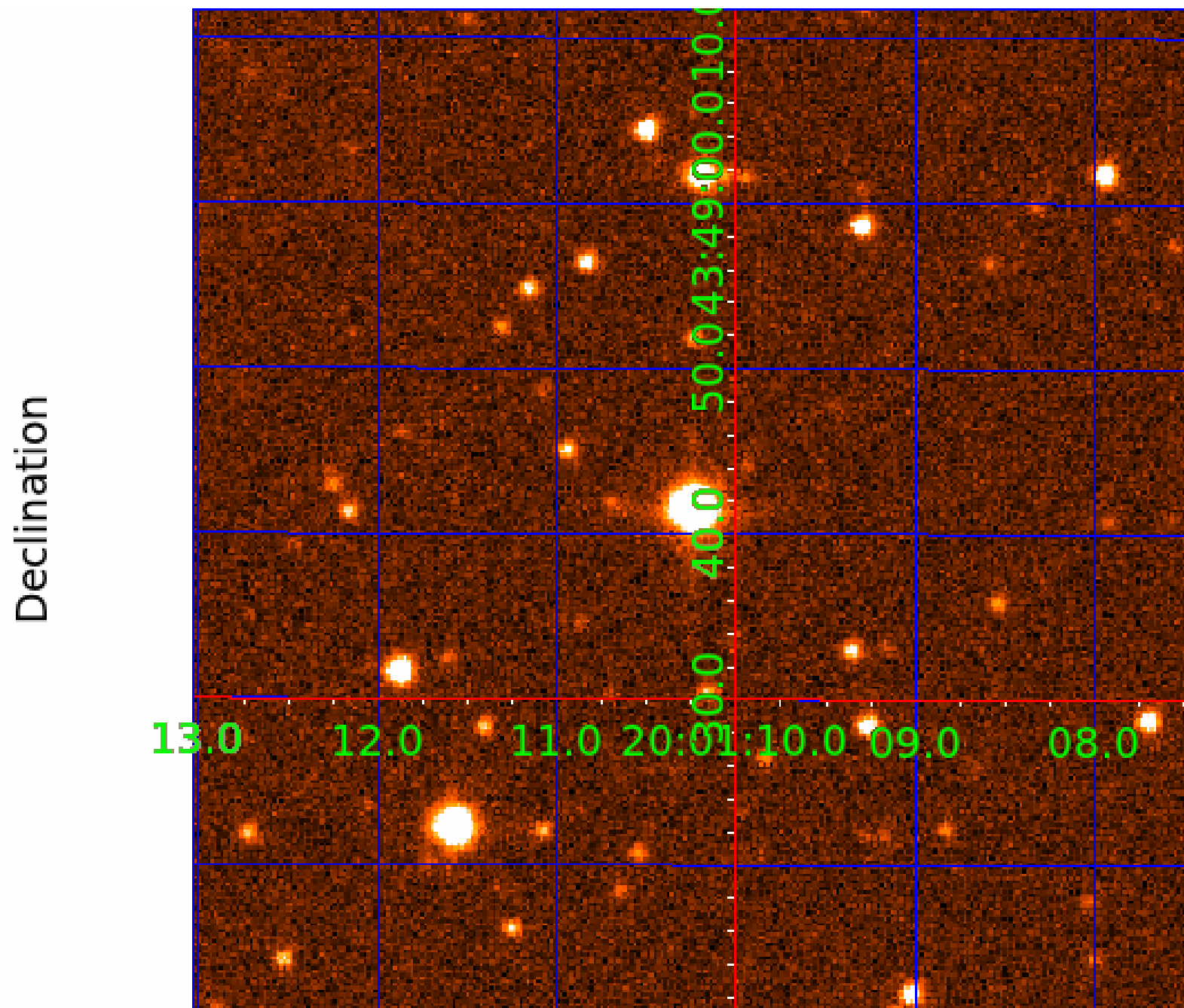
Q16 OOT image



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



UKIRT Image



# KIC 008058507

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008058507-01	OBS	No	3.814875	133.567152	40.2	12.136	12.2	12.3	3.09	6362	2.65	4593.27
008058507-02	OBS	No	663.733329	224.233190	381.1	8.930	16.2	10.9	3.09	6362	6.71	4.73
008058507-03	OBS	No	297.975325	156.548531	303.1	16.201	10.9	8.0	3.09	6362	9.41	13.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008058507-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008058507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008058507-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_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 008058507-03

No Significant Match Found

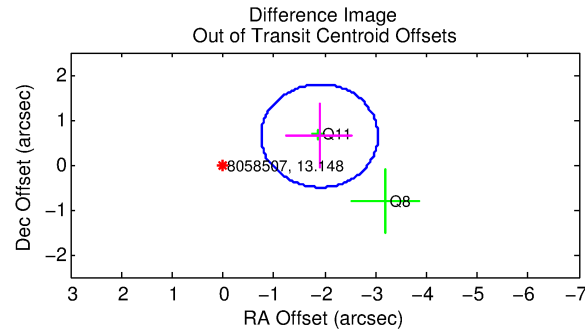
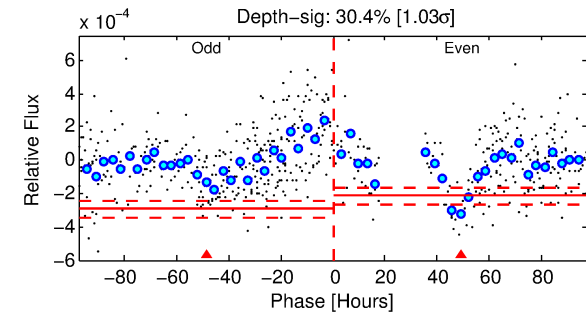
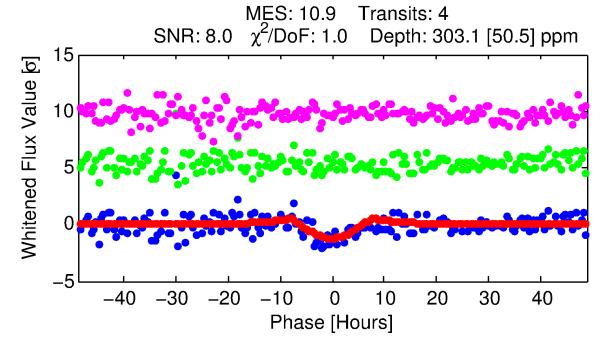
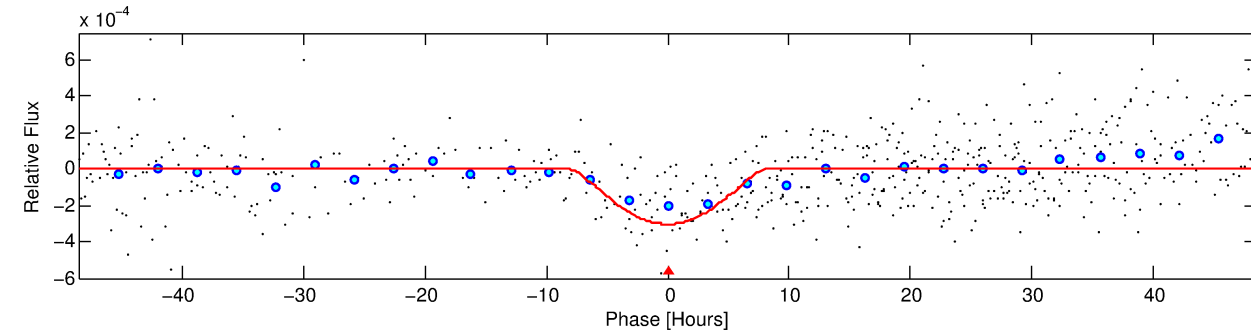
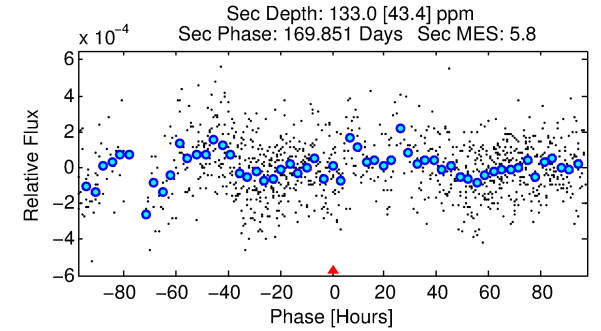
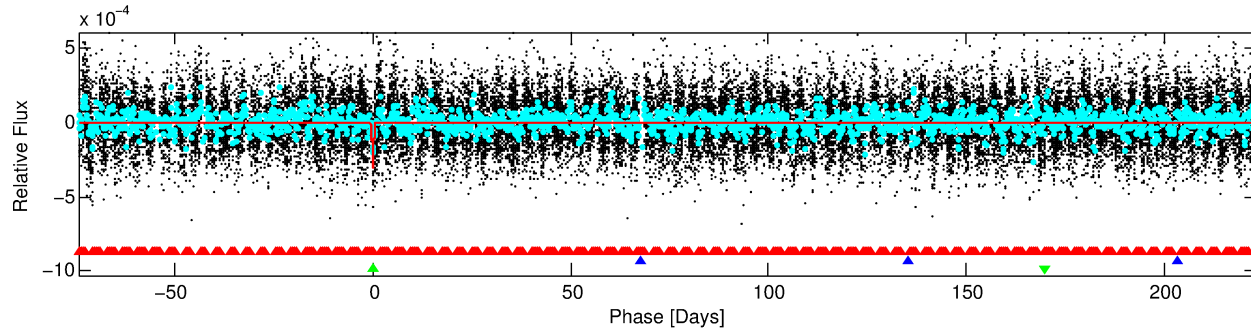
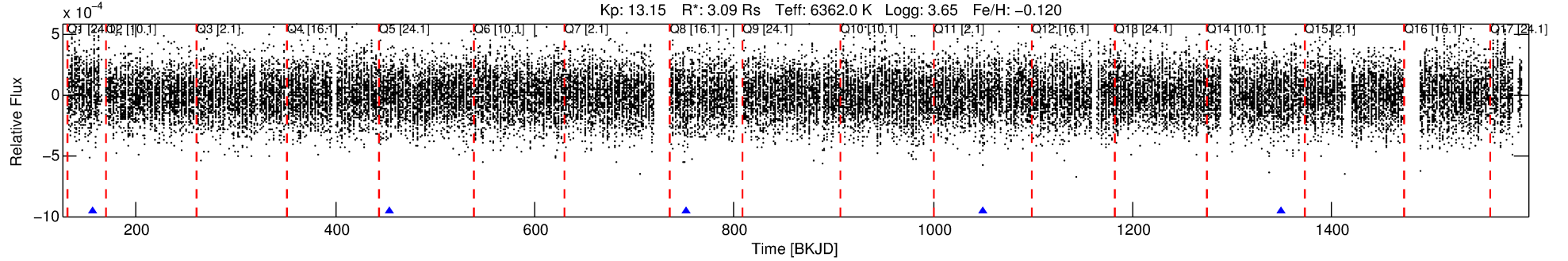


# DV One-Page Summary

KIC: 8058507 Candidate: 3 of 3 Period: 297.975 d

KOI: K06170 Corr: No Ephemeris Match

Kp: 13.15 R\*: 3.09 Rs Teff: 6362.0 K Logg: 3.65 Fe/H: -0.120



## DV Fit Results:

Period = 297.97533 [0.02437] d  
Epoch = 156.5485 [0.0780] BKJD  
Rp/R\* = 0.0279 [0.0531]  
a/R\* = 36.45 [21.89]  
b = 0.99 [0.09]  
Seff = 13.76 [7.95]  
Teq = 491 [71] K  
Rp = 9.41 [18.28] Re  
a = 1.0100 [0.3669] AU  
Ag = 842.57 [3251.61] [0.26 sigma]  
Teffp = 4091 [3905] K [0.92 sigma]

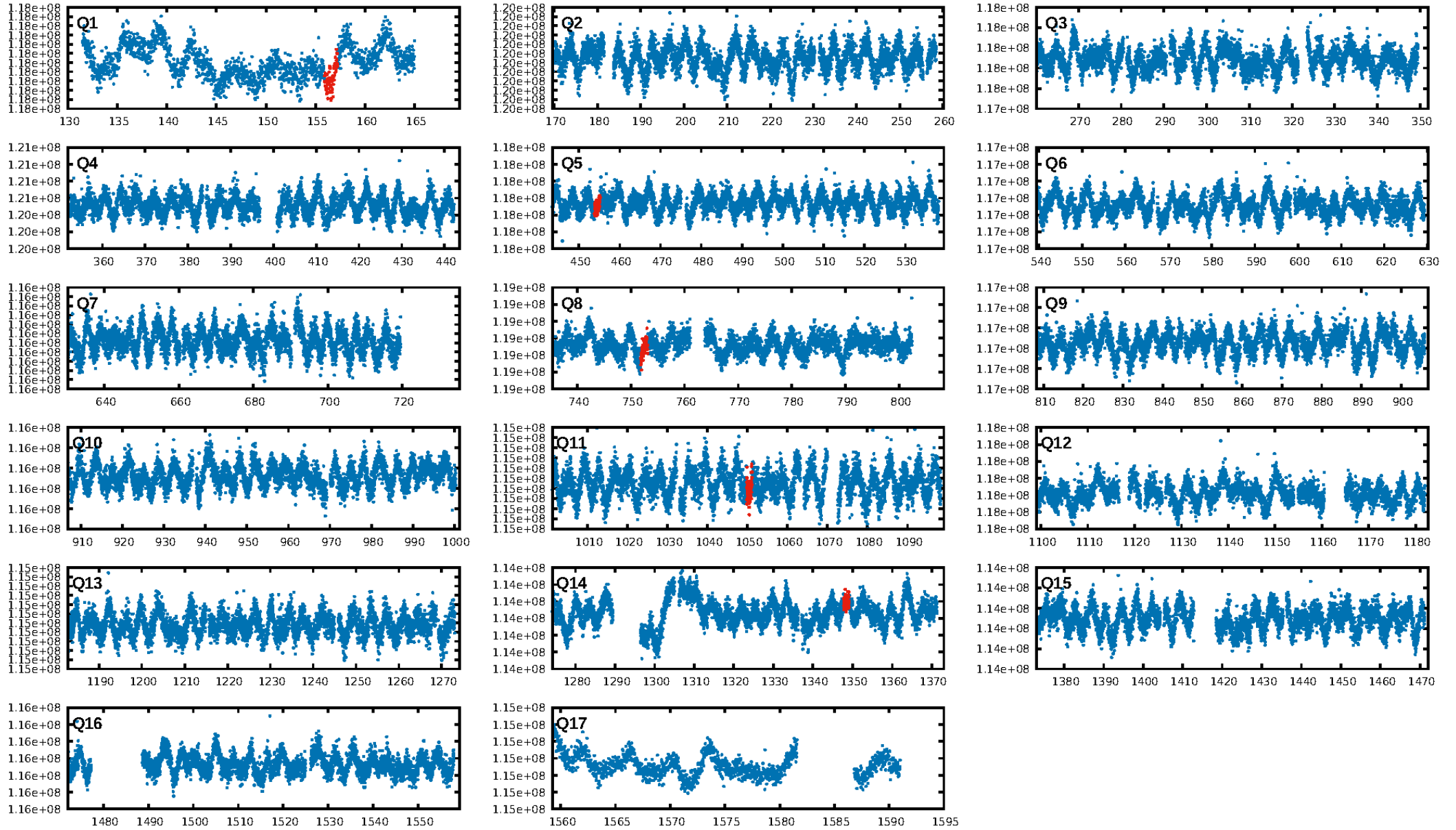
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [348.77 sigma]  
LongPeriod-sig: 100.0% [474.53 sigma]  
ModelChiSquare2-sig: 5.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.65e-19  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 2.156  
Centroid-sig: 72.0%  
Centroid-so: 0.435 arcsec [0.43 sigma]  
OotOffset-rm: 2.005 arcsec [5.24 sigma]  
KicOffset-rm: 2.080 arcsec [6.15 sigma]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.20 [1/5]

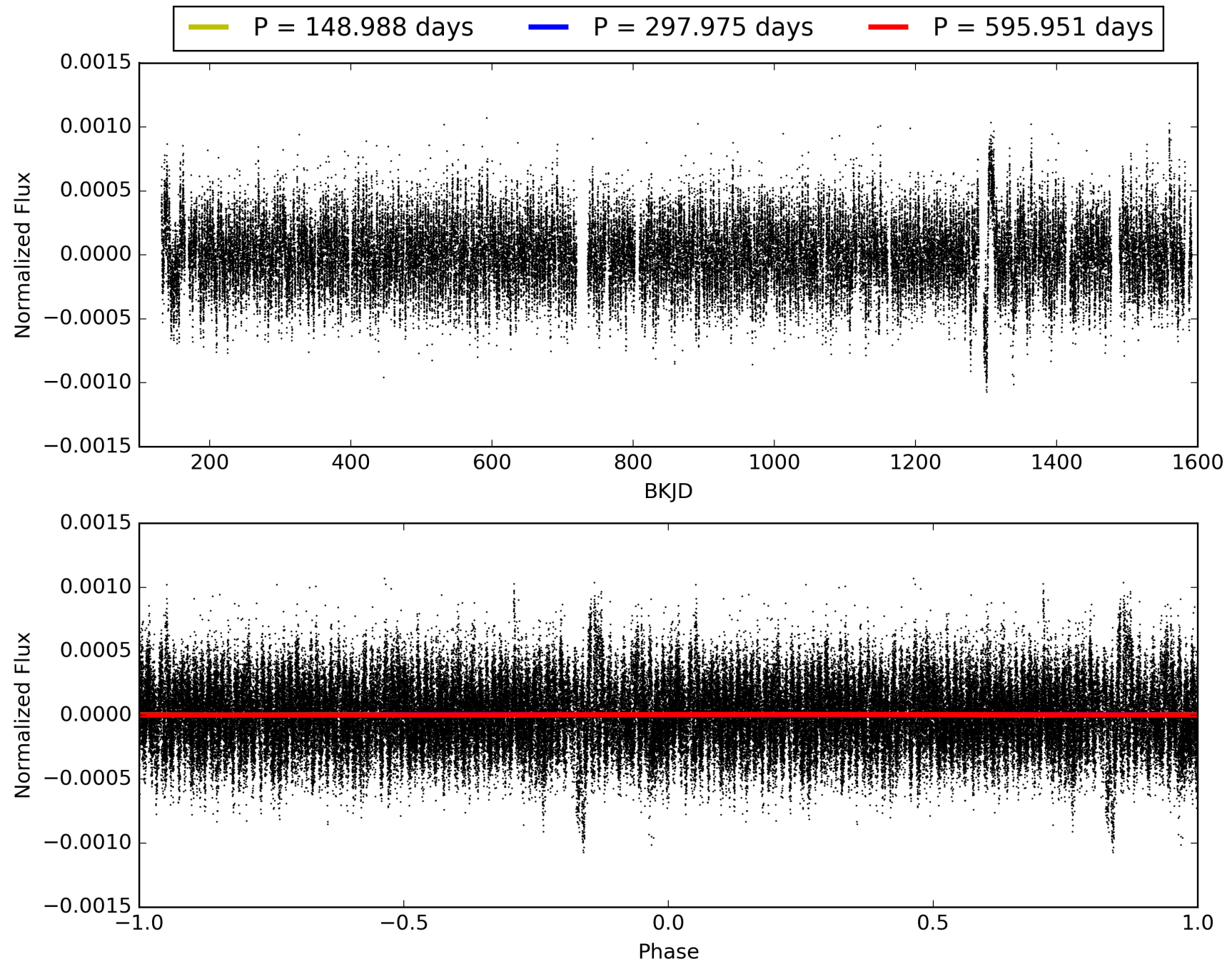
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:39:21 Z

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

# TCE 008058507-03, PDC Light Curves

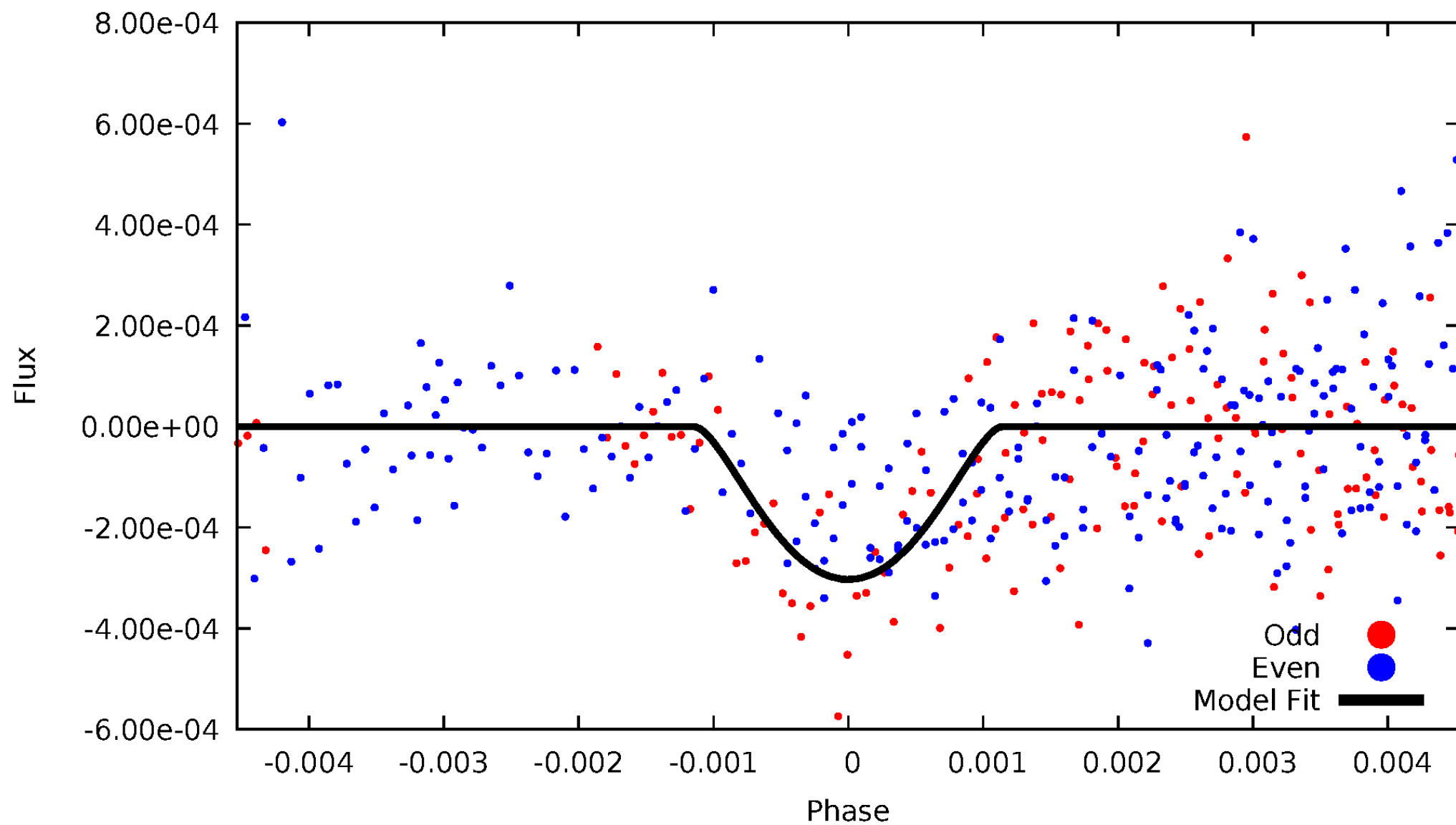


TCE 008058507-03



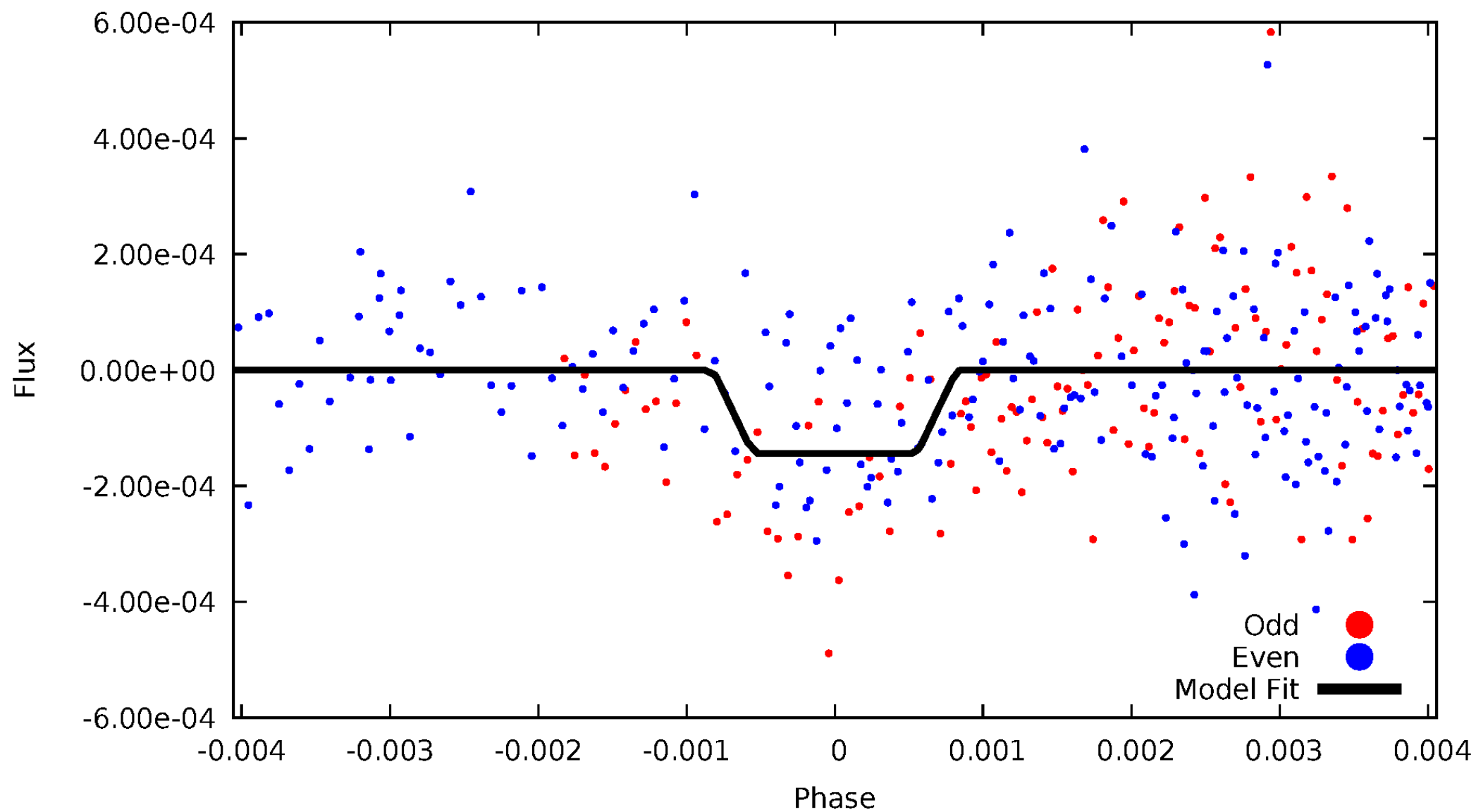
# DV Odd/Even

TCE 008058507-03



# ALT Odd/Even

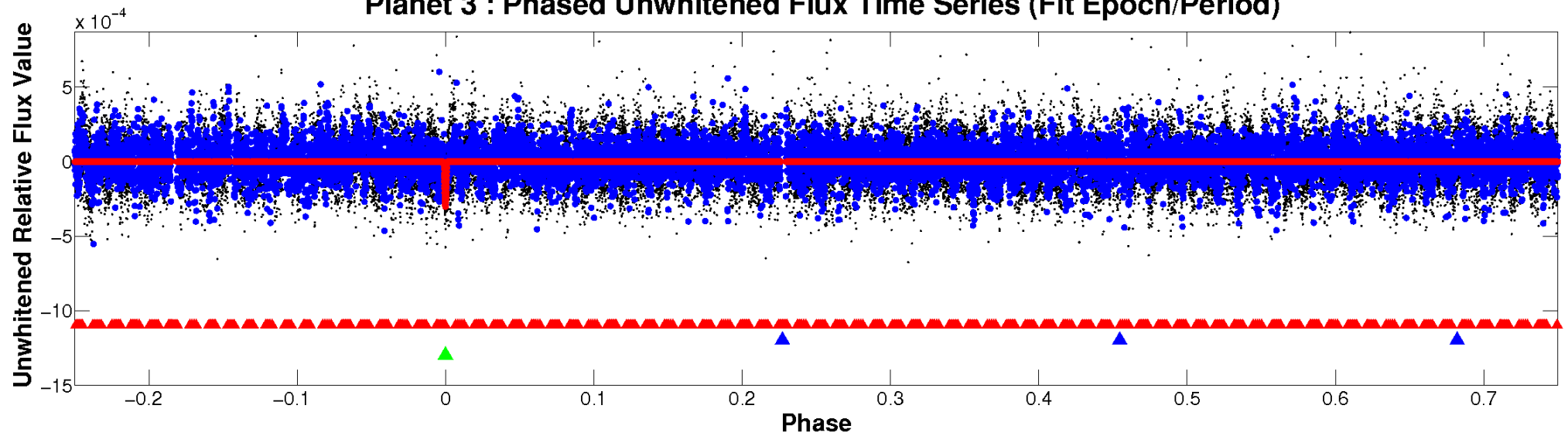
TCE 008058507-03



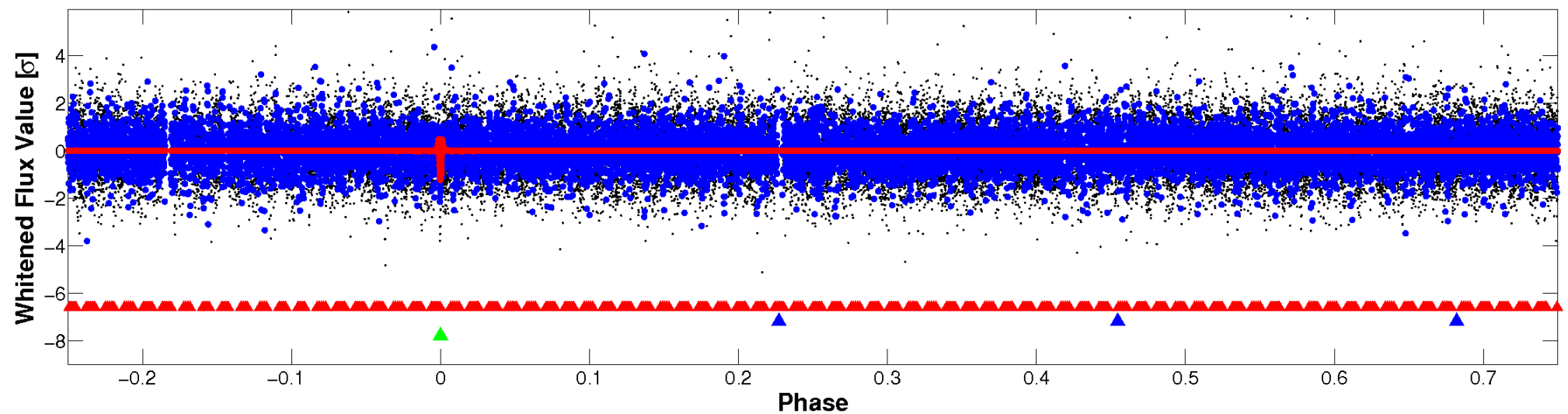


# Non-Whitened Vs. Whitened Light Curve

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

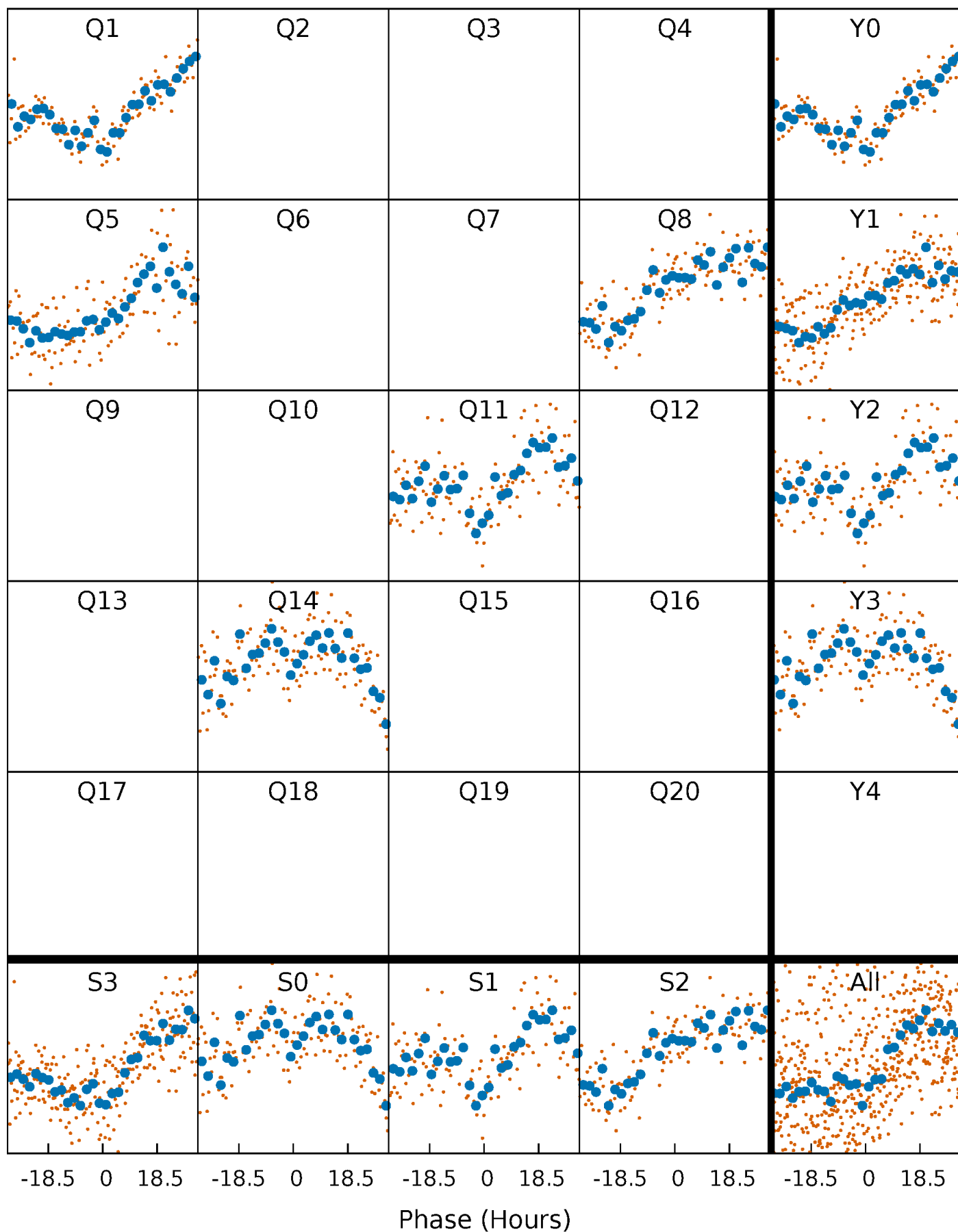


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



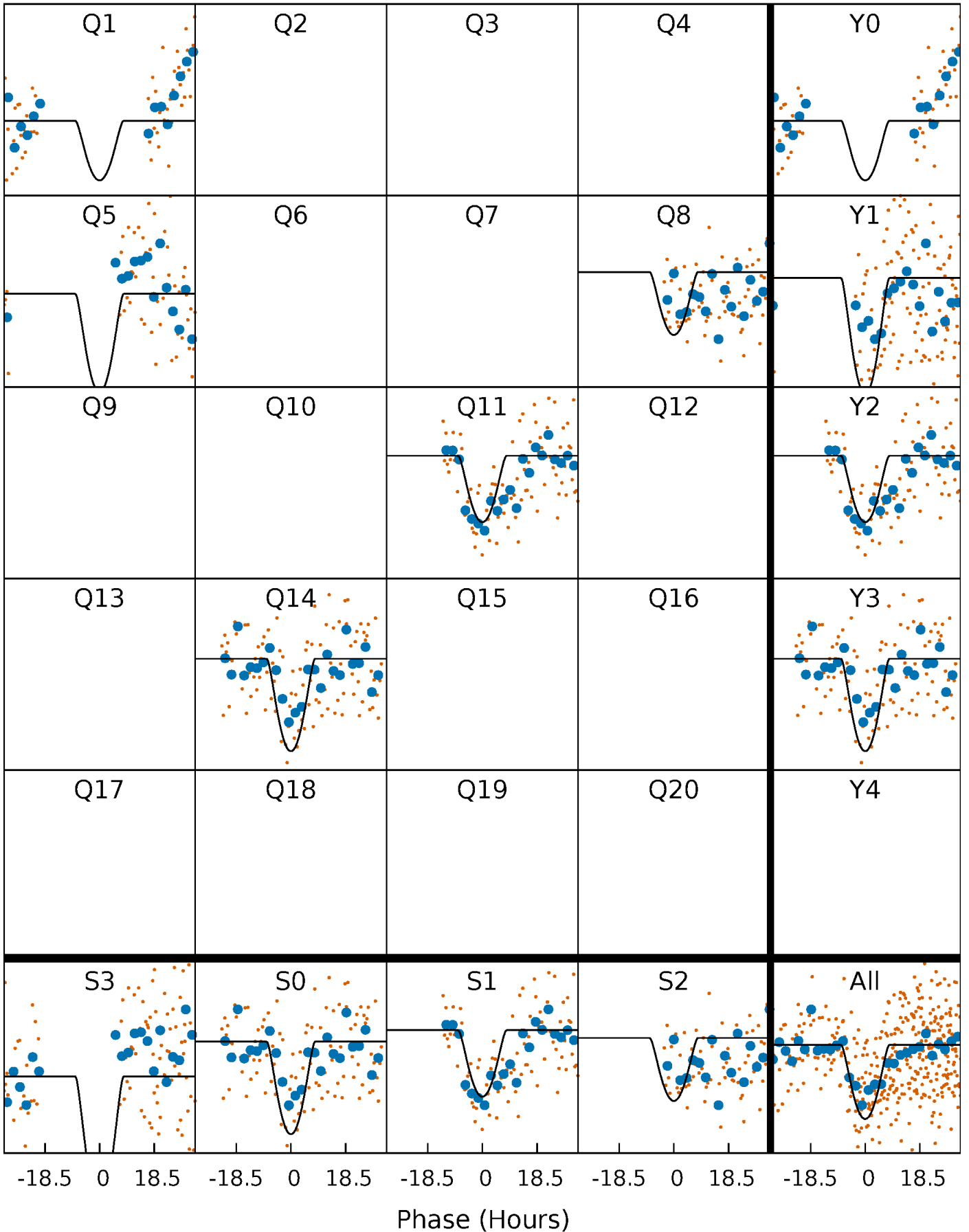
# PDC Quarter-Phased Transit Curves

TCE 008058507-03     $P=297.975325$  Days     $T_0=156.548531$  (BKJD)



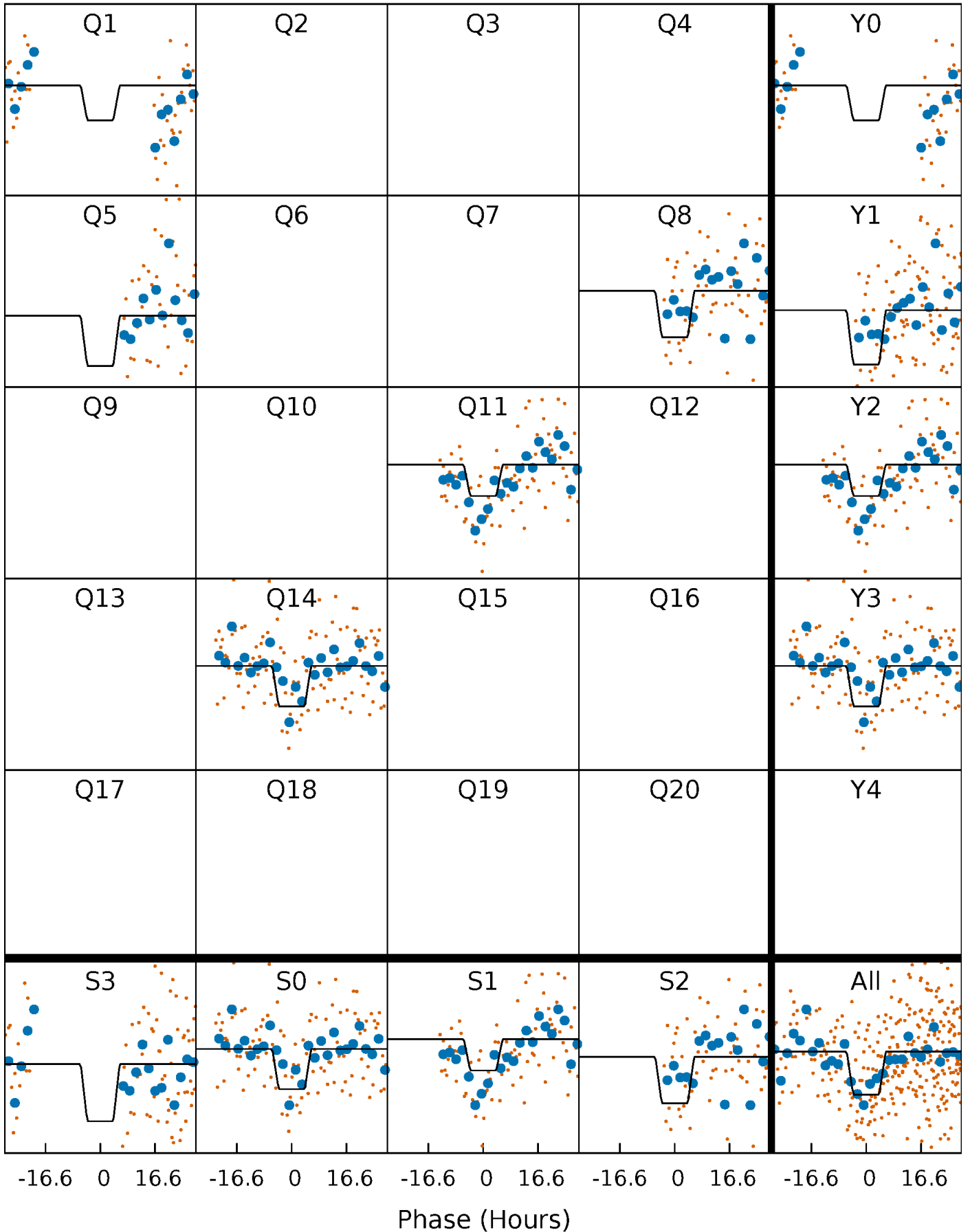
# DV Quarter-Phased Transit Curves

TCE 008058507-03     $P=297.975325$  Days     $T_0=156.548531$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

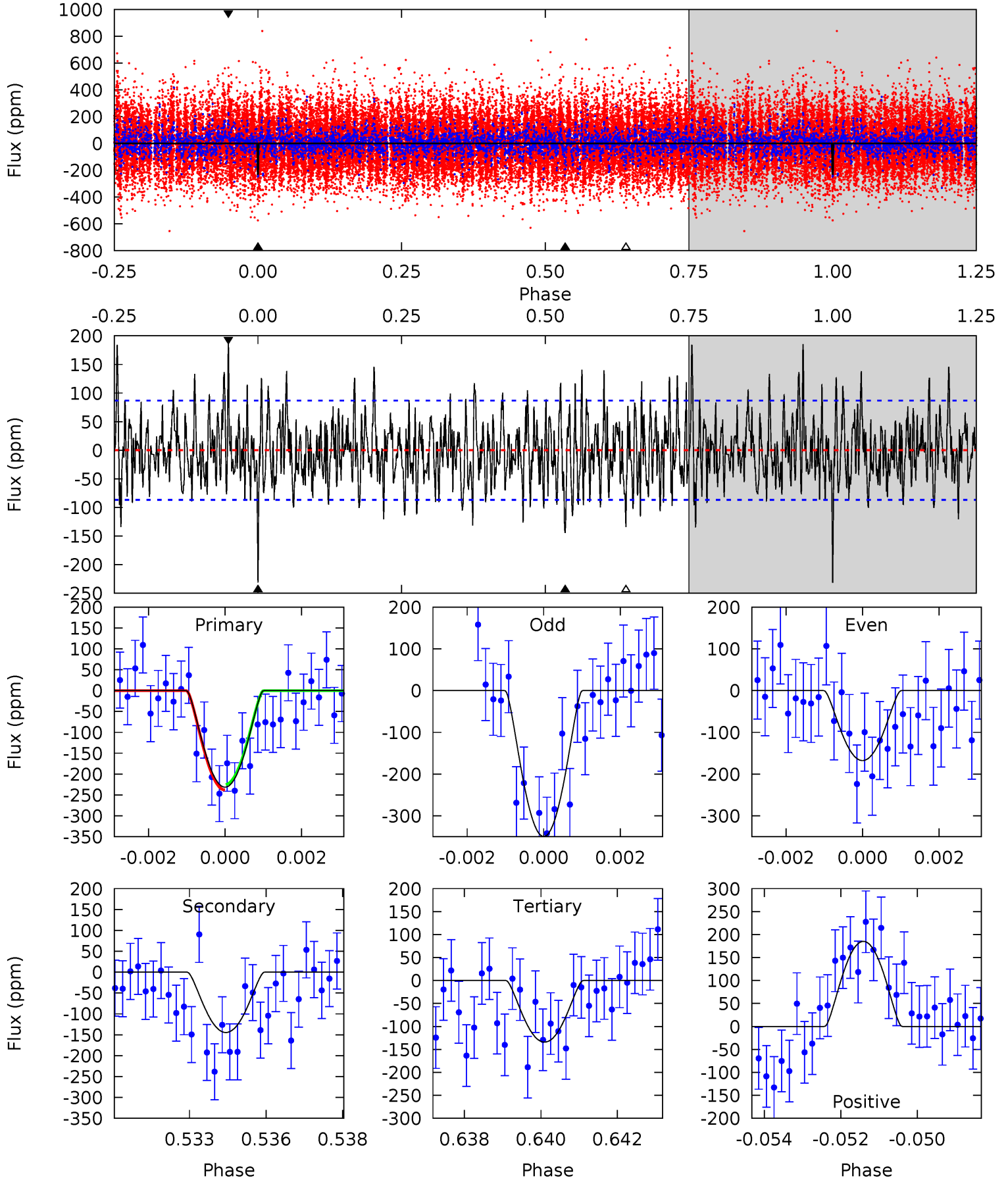
TCE 008058507-03     $P=297.968983$  Days     $T_0=156.557733$  (BKJD)



# DV Model-Shift Uniqueness Test

008058507-03, P = 297.975325 Days, E = 156.548531 Days

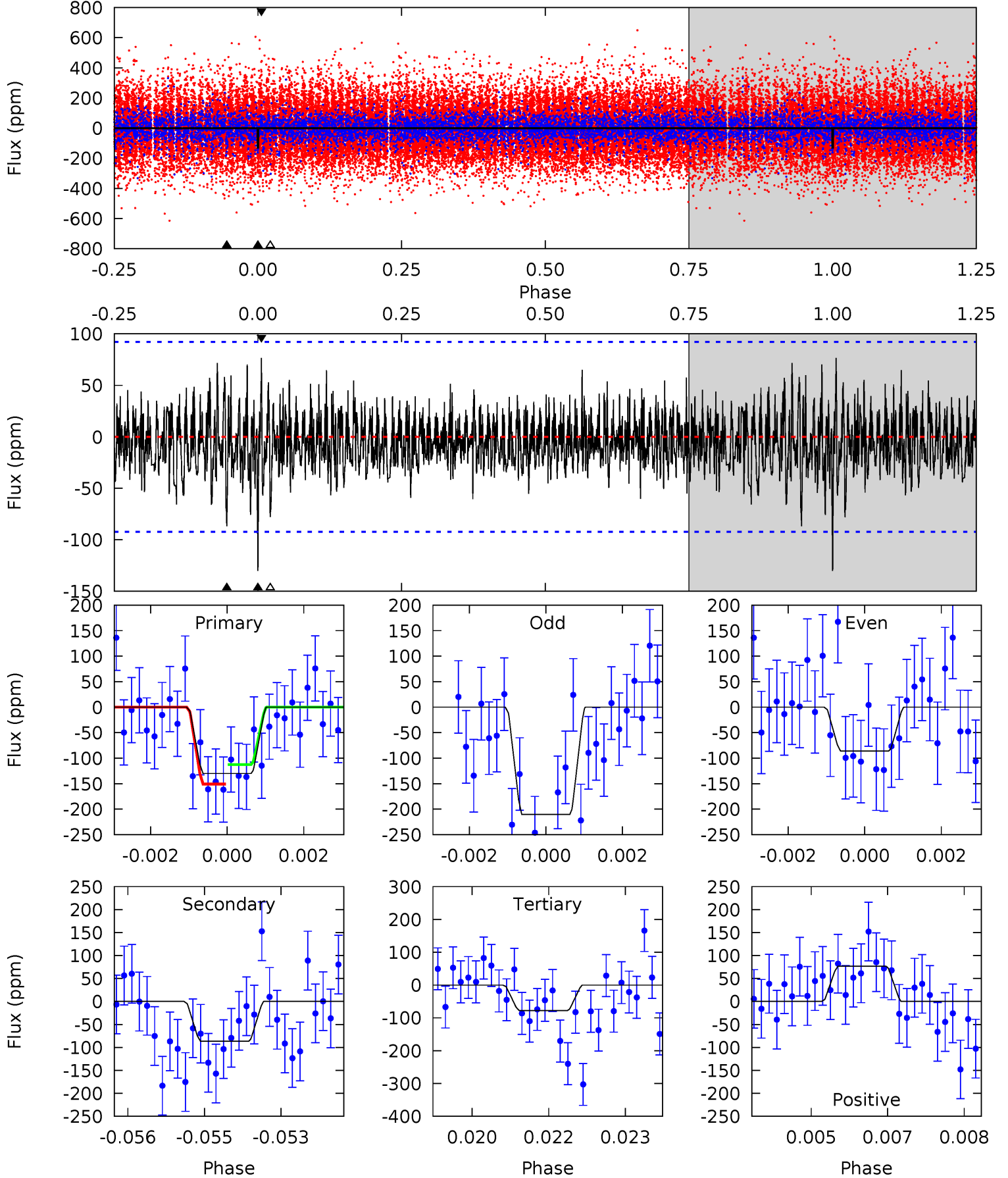
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	8.85	8.21	11.3	5.30	3.05	2.94	5.95	2.83	0.64	-2.49	5.42	0.58	0.44	0.39



# Alt Model-Shift Uniqueness Test

008058507-03, P = 297.968983 Days, E = 156.557733 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
7.56	5.04	4.53	4.45	5.36	3.15	1.18	3.04	3.11	0.51	0.59	3.47	1.22	0.37	1.10





### Stellar Parameters For KIC 008058507

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6362^{+173}_{-173}$	$3.647^{+0.328}_{-0.082}$	$-0.120^{+0.300}_{-0.250}$	$3.092^{+0.486}_{-1.215}$	$1.547^{+0.234}_{-0.351}$	$0.074^{+0.180}_{-0.020}$
	+3%/-3%	+9%/-2%	+250%/-208%	+16%/-39%	+15%/-23%	+244%/-27%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008058507-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-145 \pm 16$	$15.33^{+13.62}_{-10.21}$	$672^{+39}_{-66}$	$3601^{+1922}_{-641}$	$339^{+2781}_{-246}$
Alt.	$-87 \pm 17$	$13.03^{+13.12}_{-9.17}$	$673^{+37}_{-64}$	$3478^{+1960}_{-620}$	$288^{+2784}_{-218}$

$T_{\text{max}}$  = 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

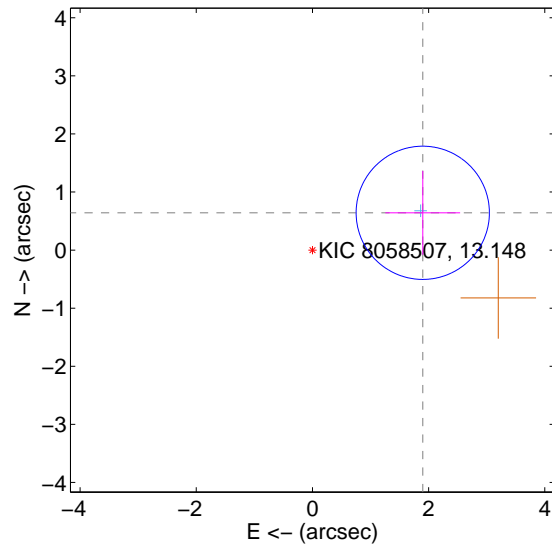
Supplemental centroid analysis for 008058507-03. Kepler magnitude: 13.15. Transit SNR 7.96

There are 1 quarters with good PRF difference image offsets

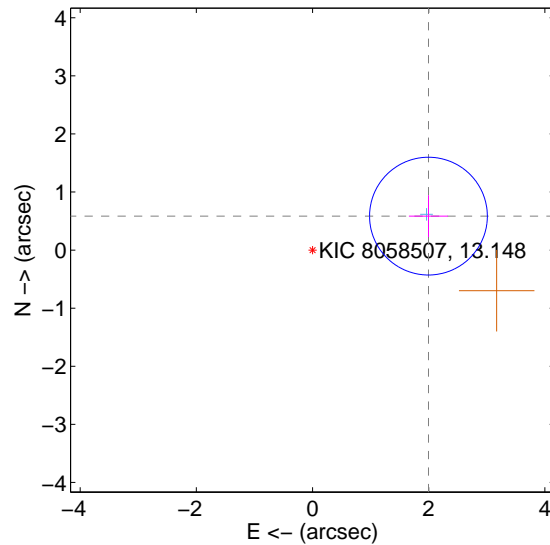
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.005 \pm 0.382$	5.24	$-1.899 \pm 0.644$	$0.642 \pm 0.721$
PRF-fit source offset from KIC position	$2.080 \pm 0.338$	6.15	$-1.996 \pm 0.336$	$0.585 \pm 0.361$
photometric centroid source offset	$0.44 \pm 1.01$	0.43	$-0.11 \pm 1.03$	$0.42 \pm 1.01$

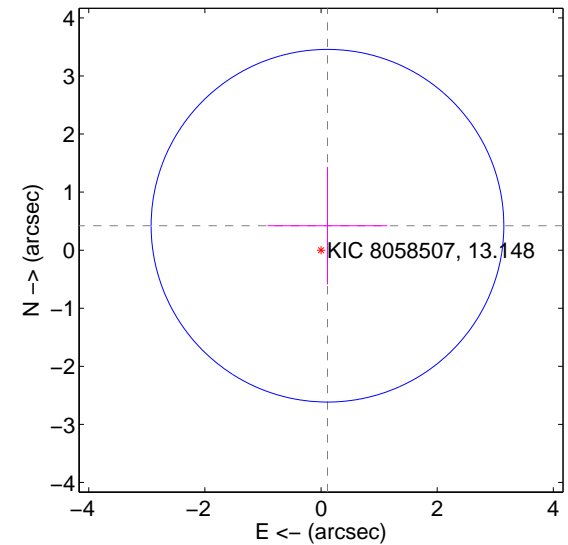
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

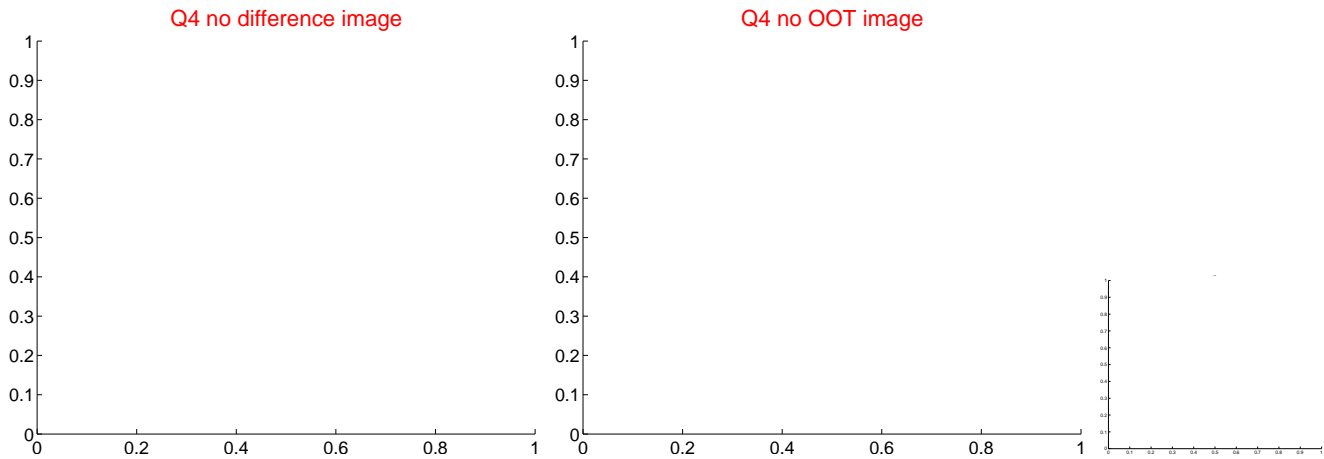
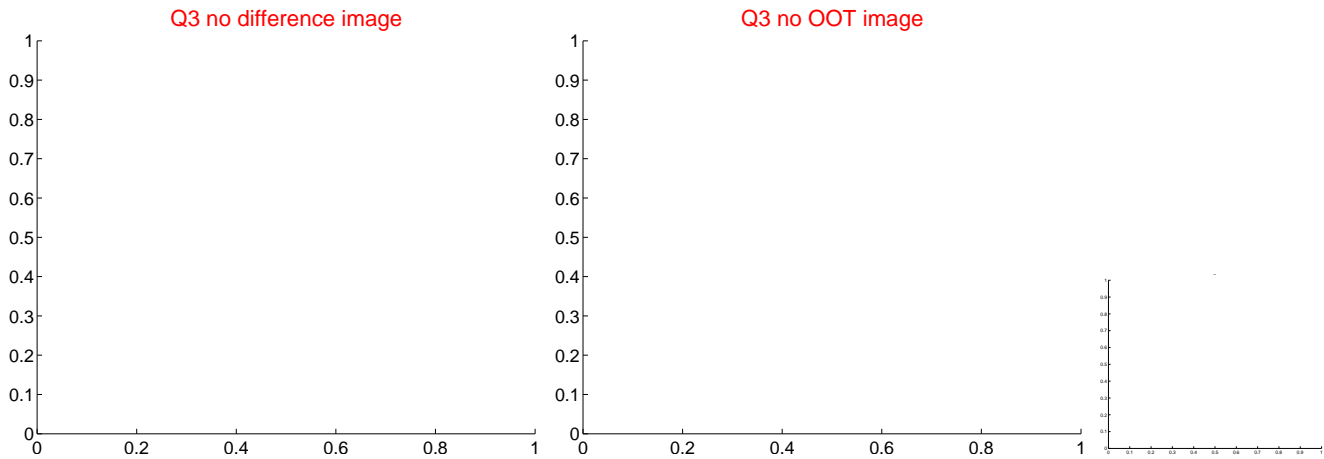
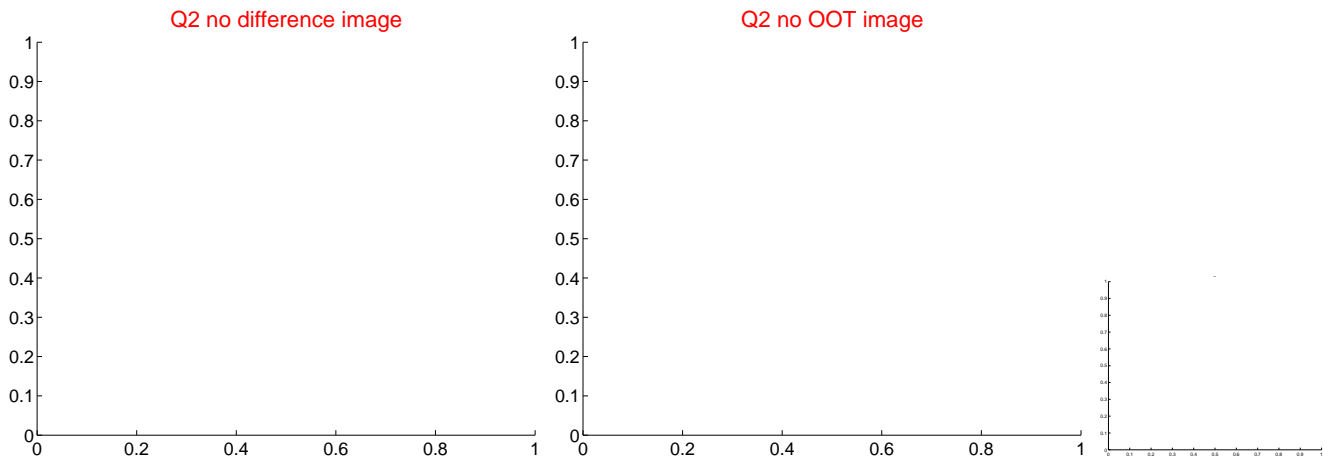
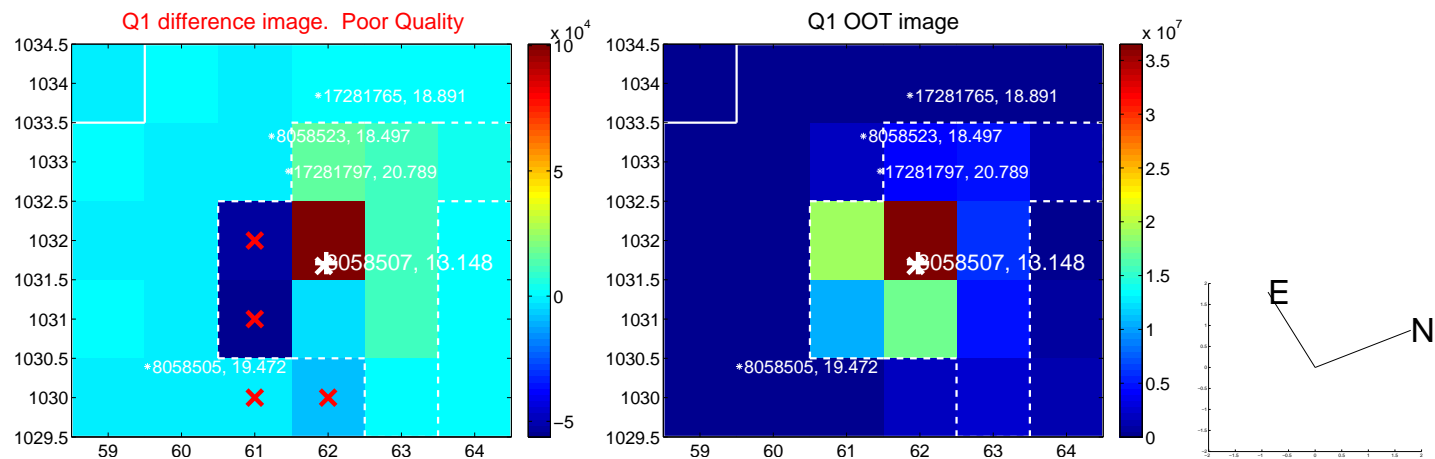


offset from photometric centroids

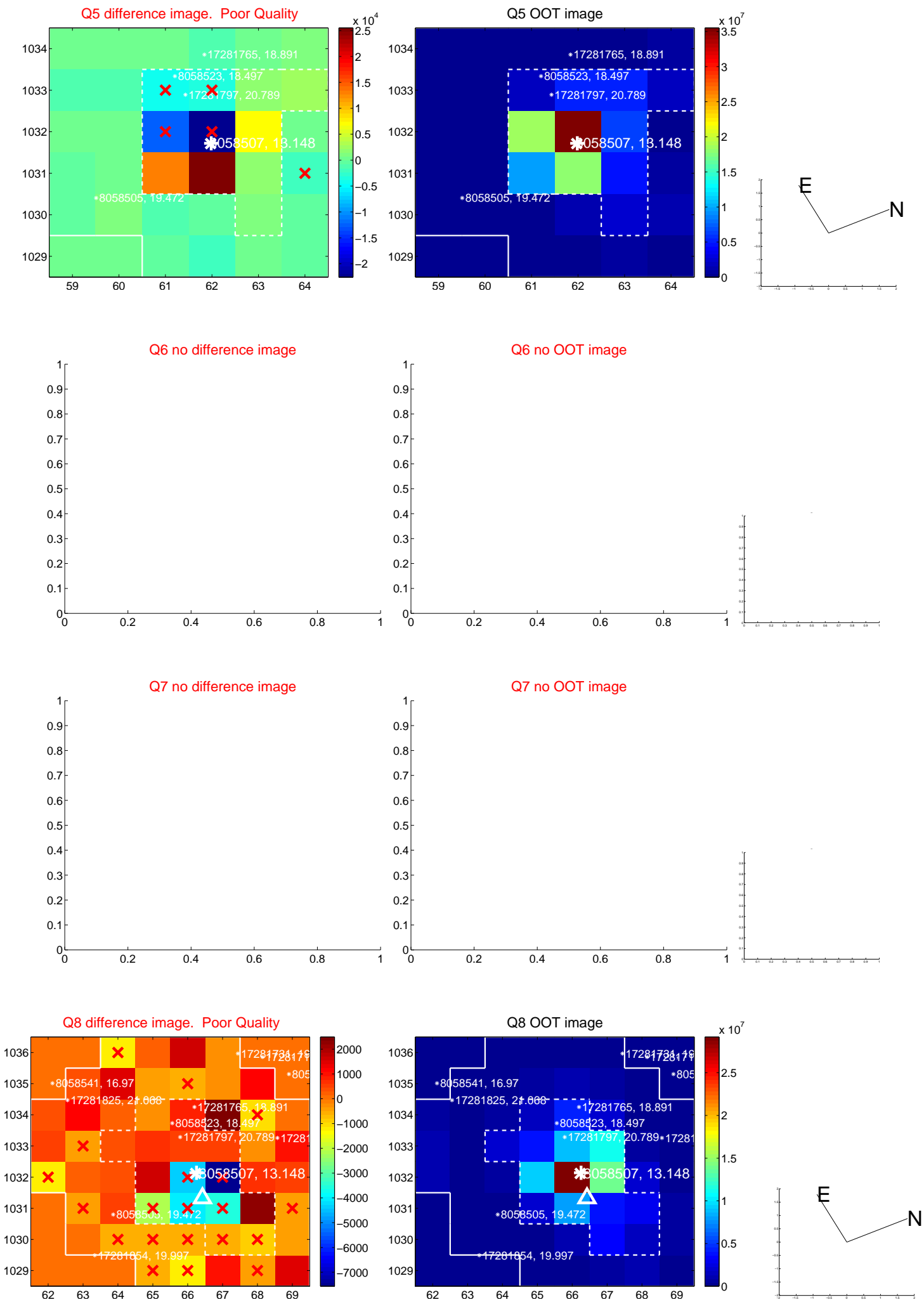


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

white ×: 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.

Q9 no difference image



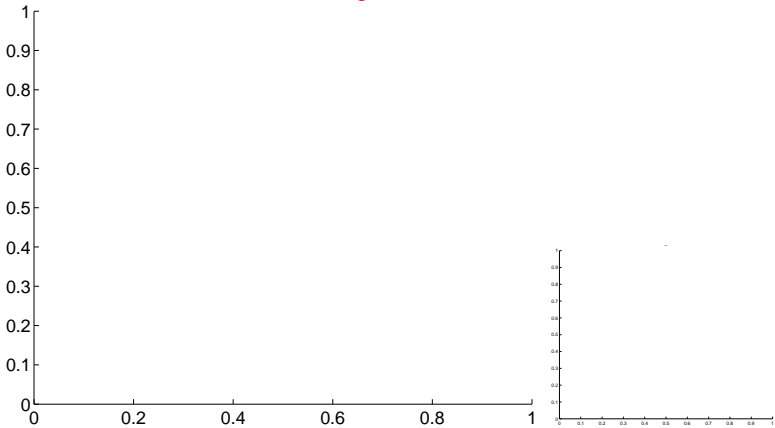
Q9 no OOT image



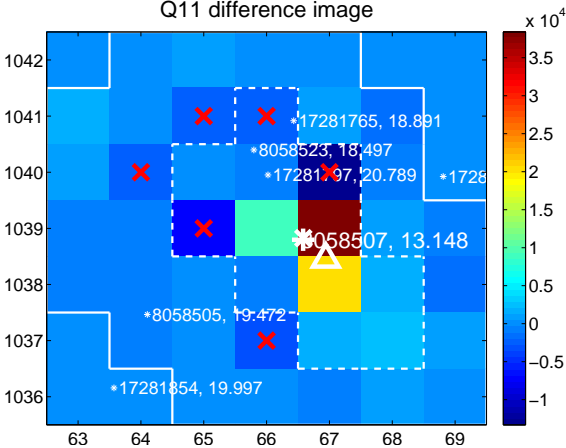
Q10 no difference image



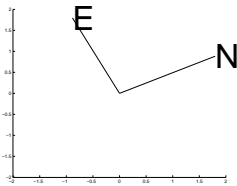
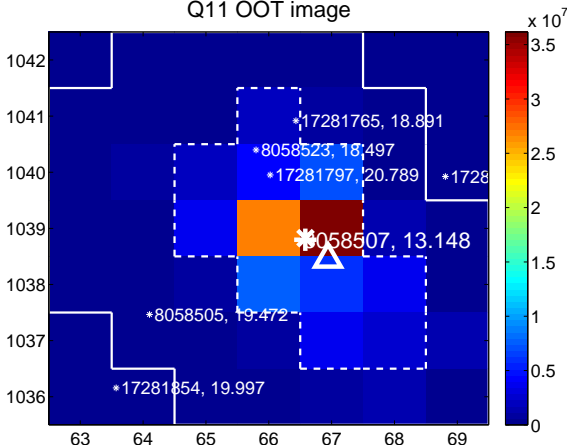
Q10 no OOT image



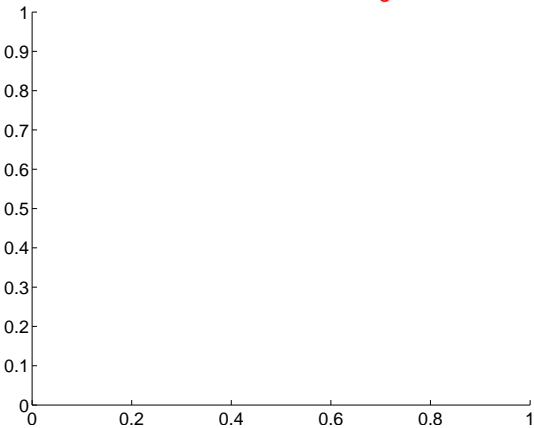
Q11 difference image



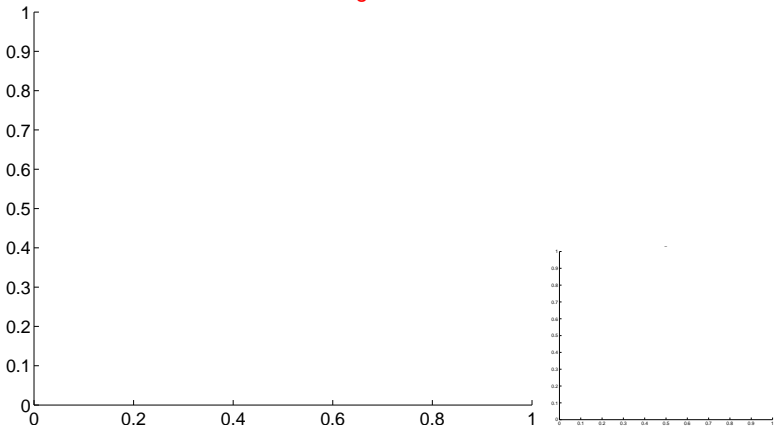
Q11 OOT image



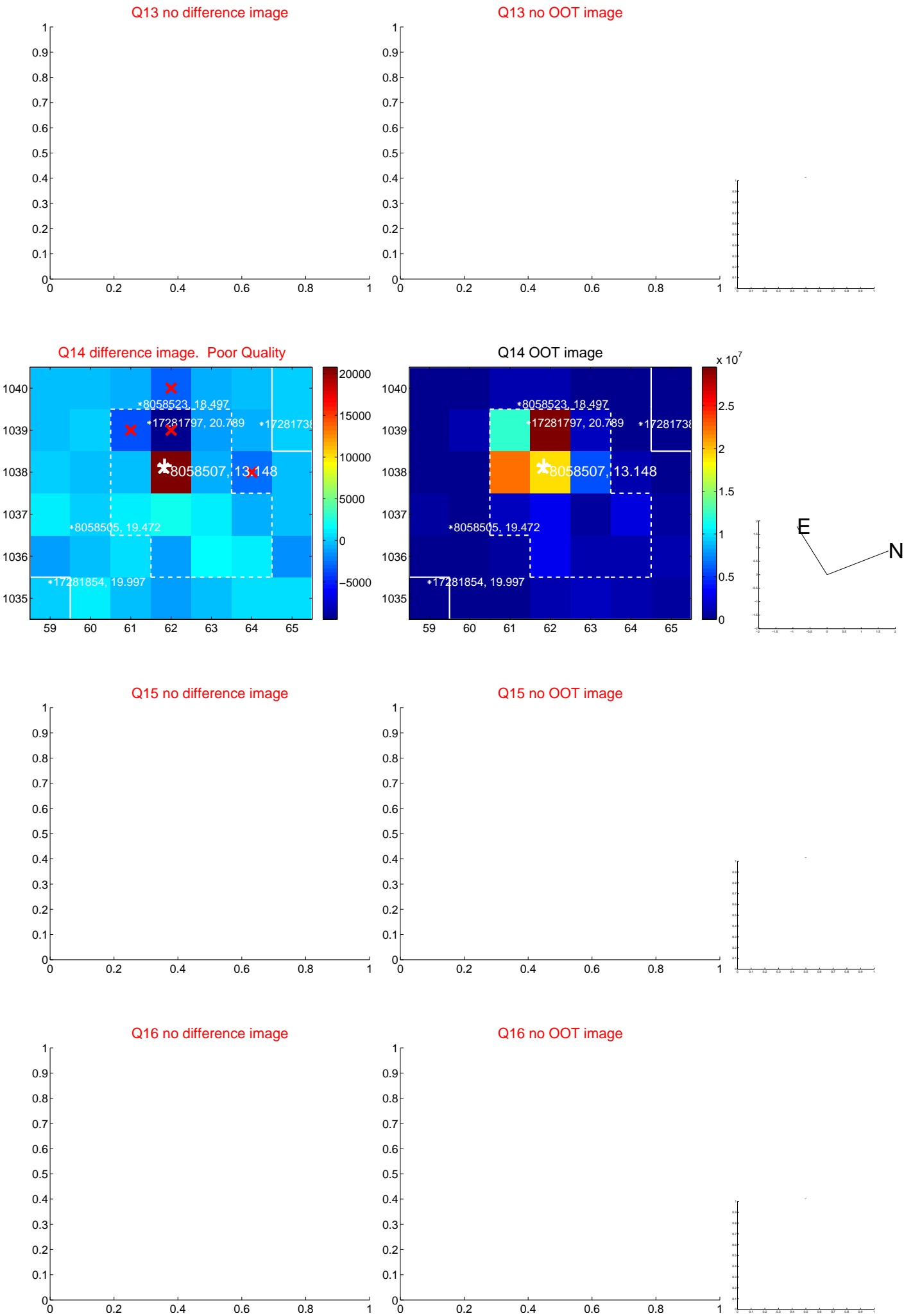
Q12 no difference image



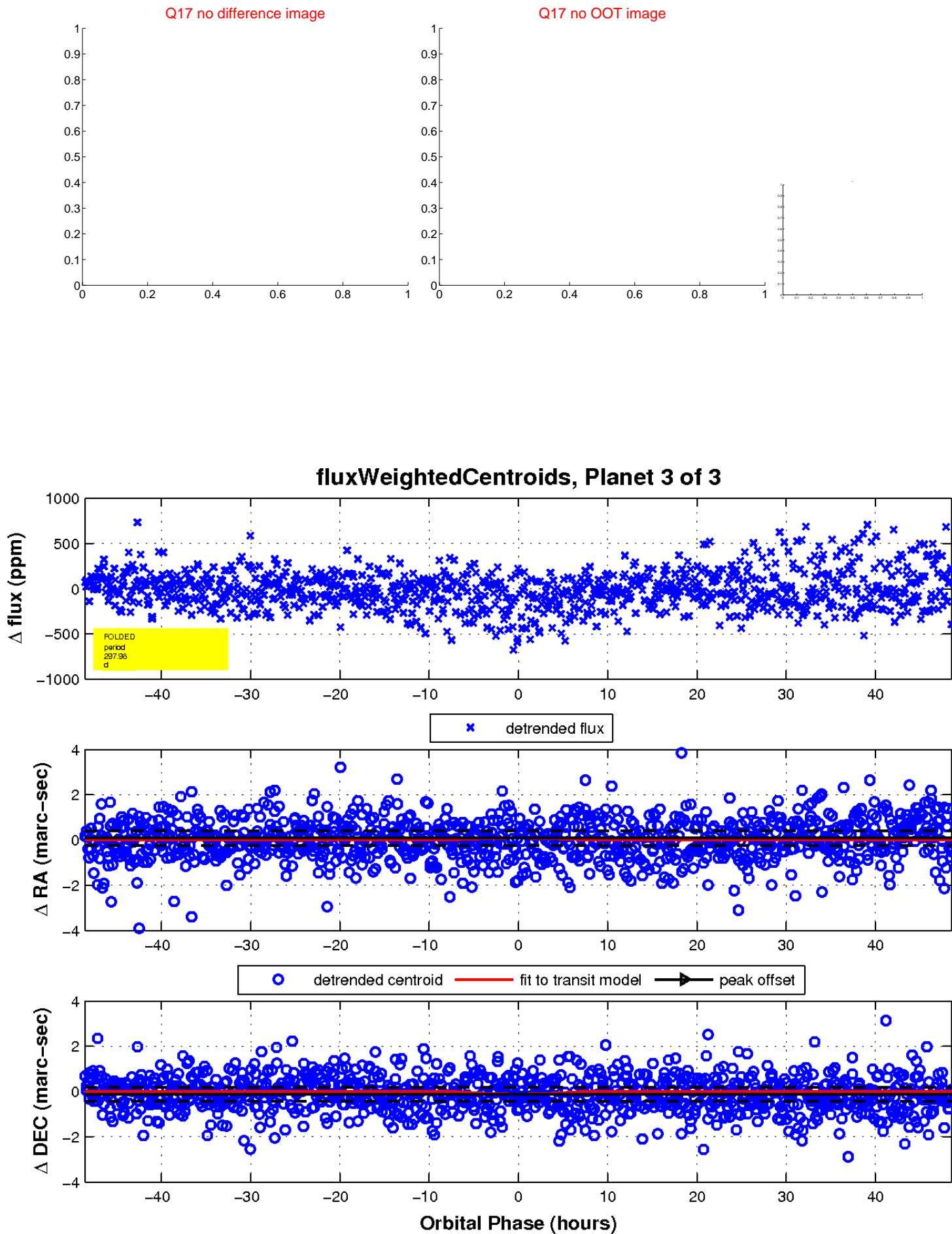
Q12 no OOT image



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.





UKIRT Image

