

# KIC 006584042

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006584042-01	OBS	No	9.601249	134.680166	271.2	23.288	16.9	21.9	1.75	7274	5.55	737.46
006584042-02	OBS	No	4.800810	135.720511	150.2	20.894	12.8	12.8	1.75	7274	2.86	1858.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006584042-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006584042-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

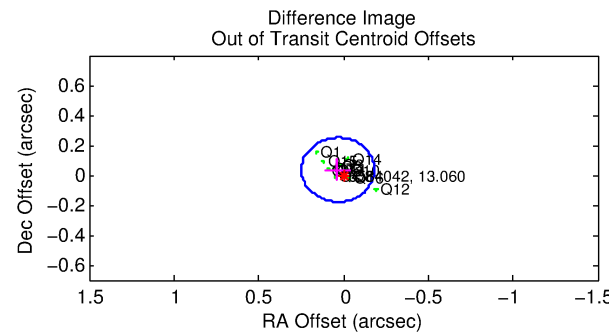
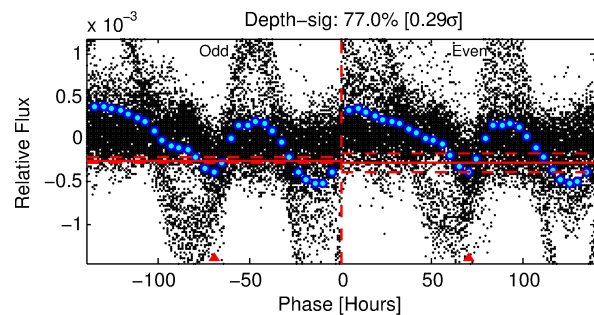
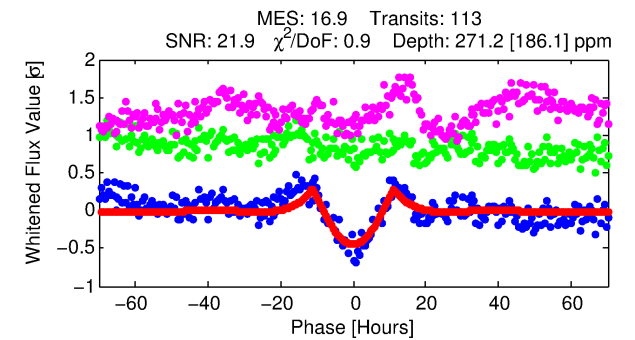
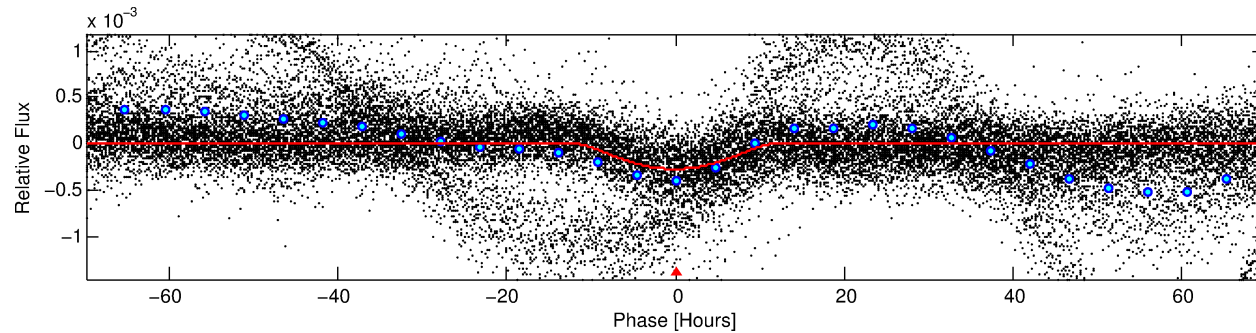
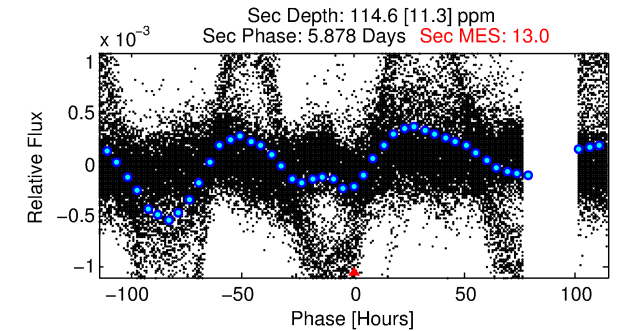
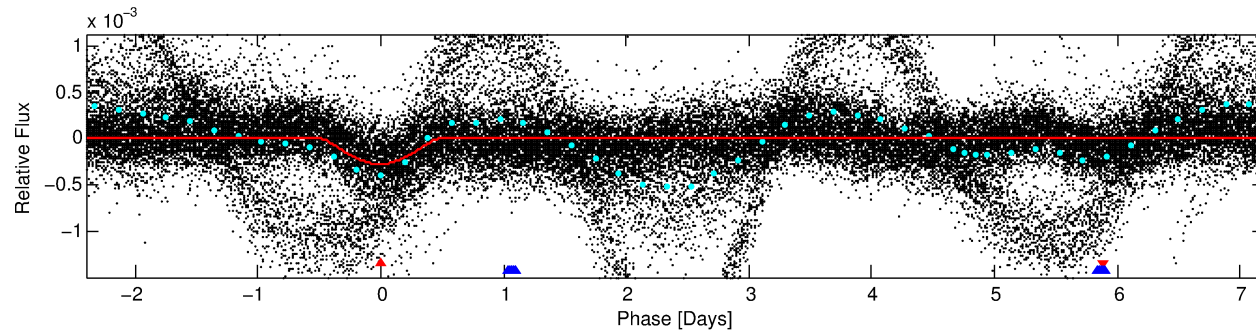
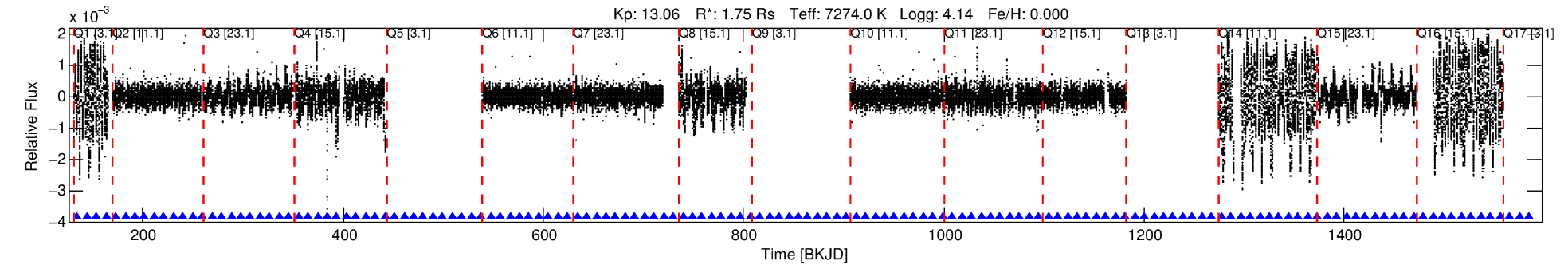
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006584042-01

No Significant Match Found

# DV One-Page Summary

KIC: 6584042 Candidate: 1 of 2 Period: 9.601 d



## DV Fit Results:

Period = 9.60125 [0.00017] d  
Epoch = 134.6802 [0.0147] BKJD  
Rp/R\* = 0.0290 [0.0166]  
a/R\* = 1.27 [0.05]  
b = 1.00 [0.01]  
Seff = 737.45 [302.80]  
Teff = 1329 [136] K  
Rp = 5.55 [3.64] Re  
a = 0.1024 [0.0266] AU  
Ag = 21.43 [25.78] [0.79σ]  
Teffp = 4420 [1284] K [2.39σ]

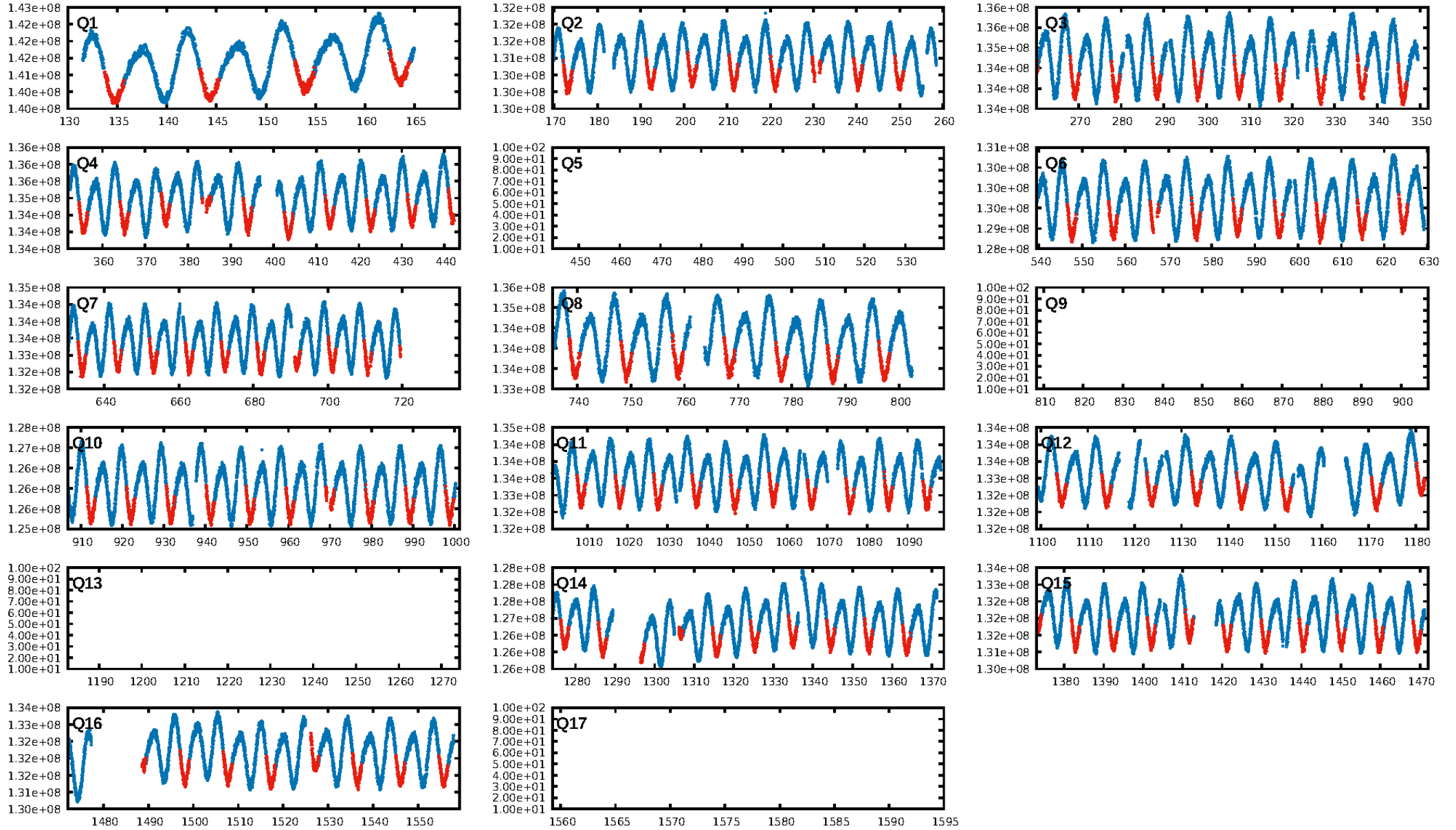
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.68σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.86e-70  
RollingBand-fgt: 1.00 [109/109]  
**GhostDiagnostic-chr: 0.5485**  
Centroid-sig: 0.0%  
**Centroid-so: 0.780 arcsec [4.39σ]**  
OotOffset-rm: 0.049 arcsec [0.68σ]  
KicOffset-rm: 0.145 arcsec [1.98σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 0.00 [0/13]

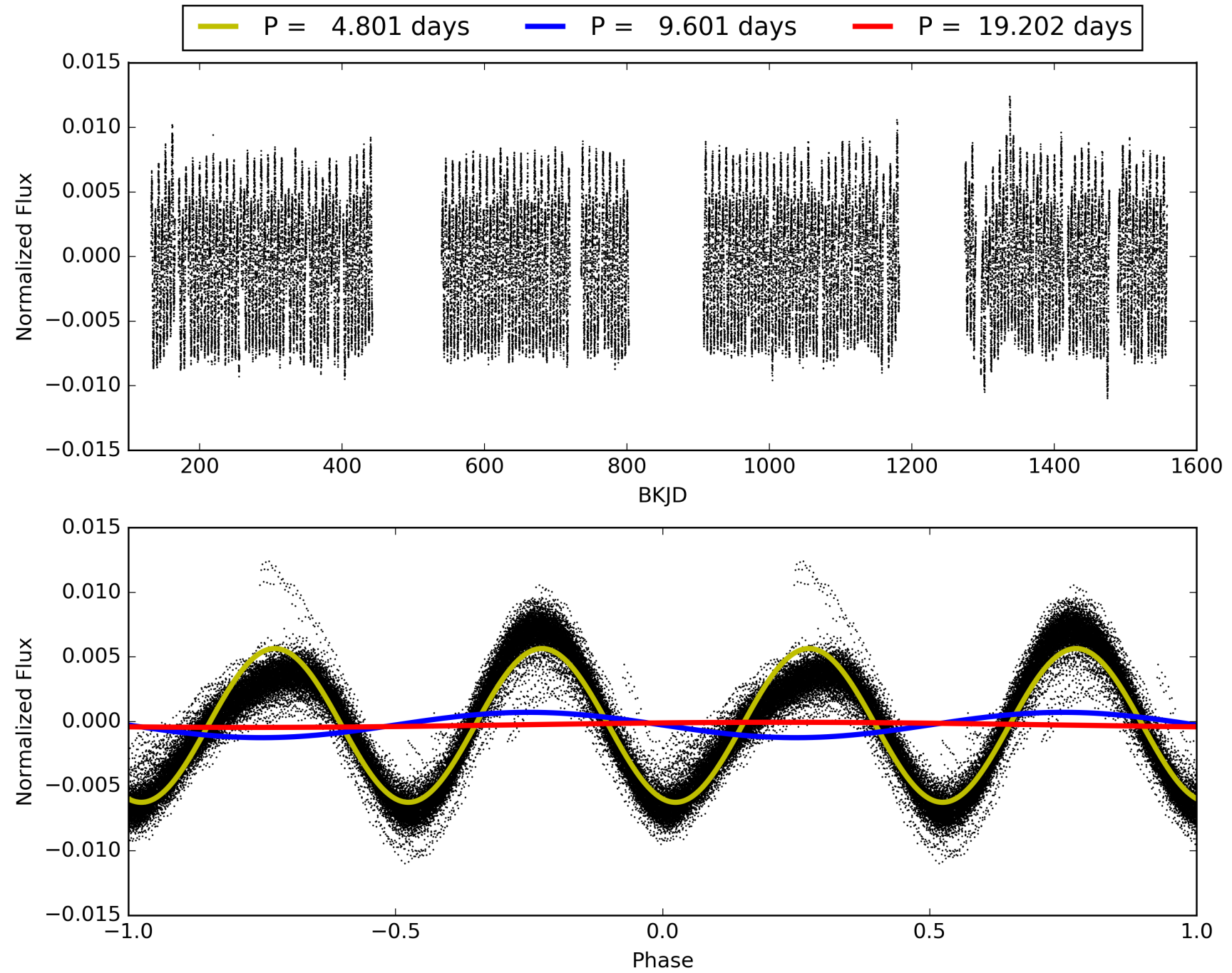
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:13:04 Z

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

# TCE 006584042-01, PDC Light Curves

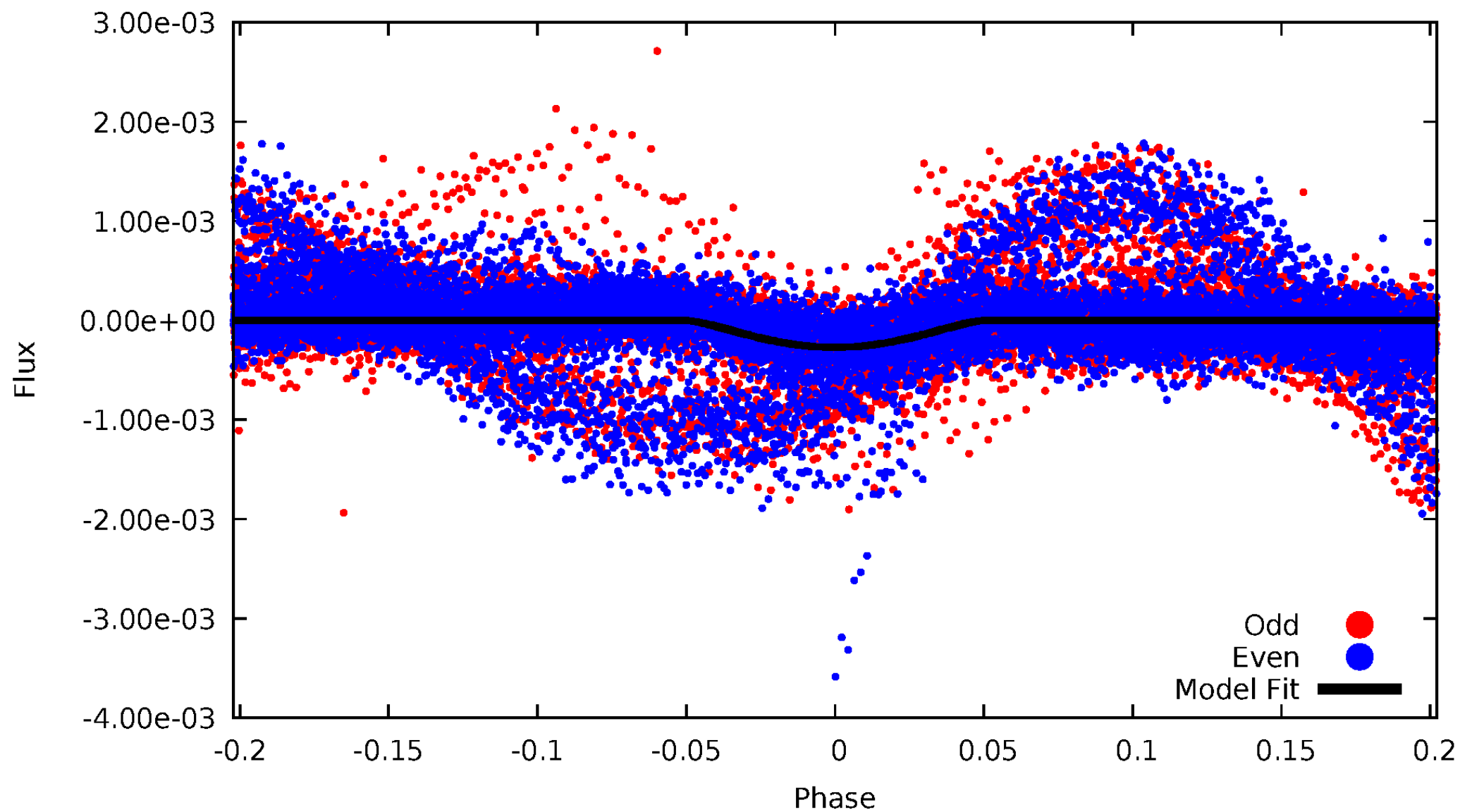


TCE 006584042-01



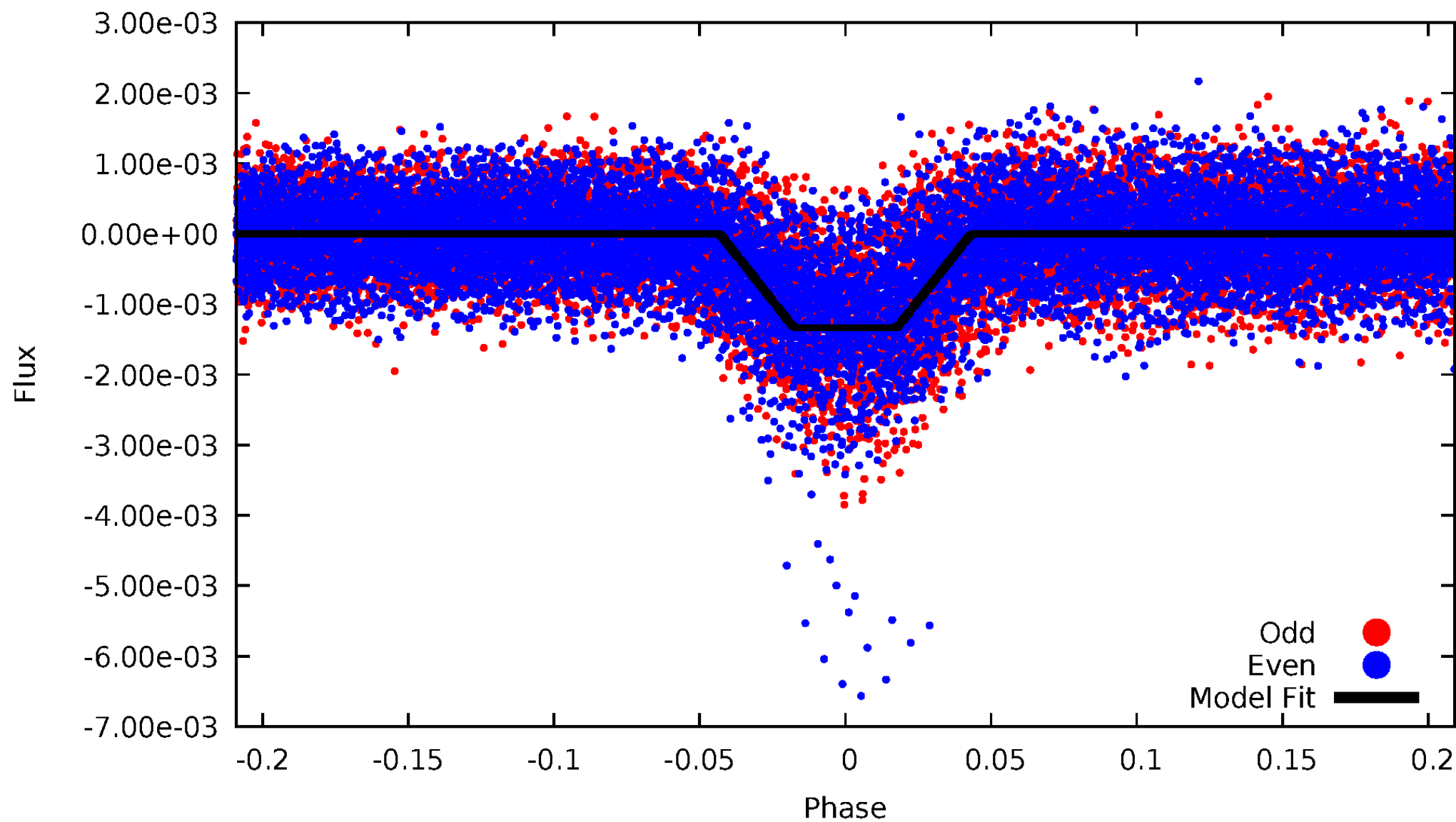
# DV Odd/Even

TCE 006584042-01



# ALT Odd/Even

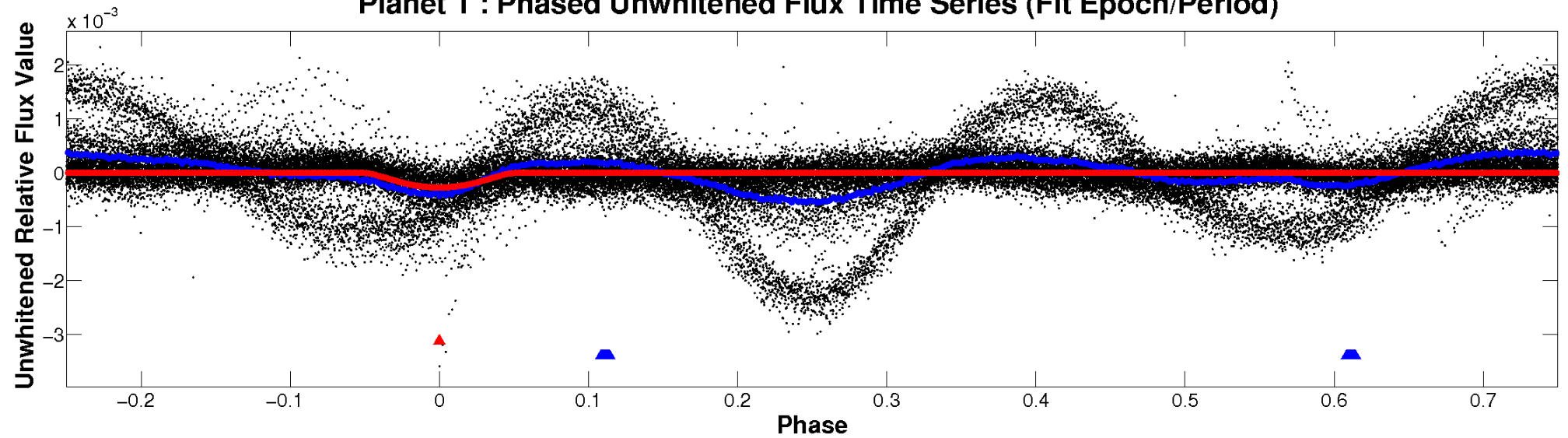
TCE 006584042-01



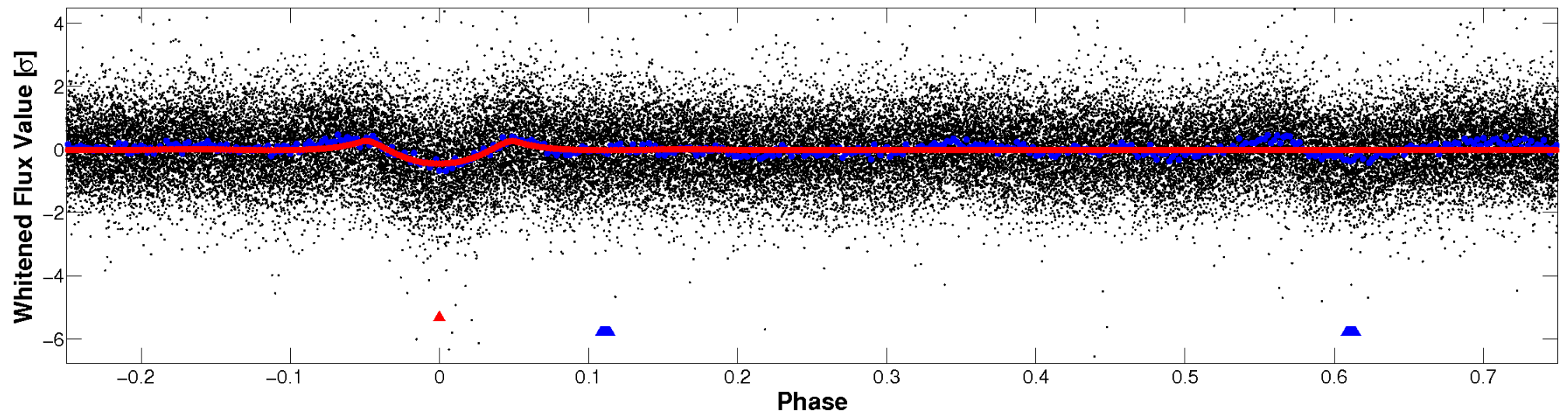


# Non-Whitened Vs. Whitened Light Curve

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

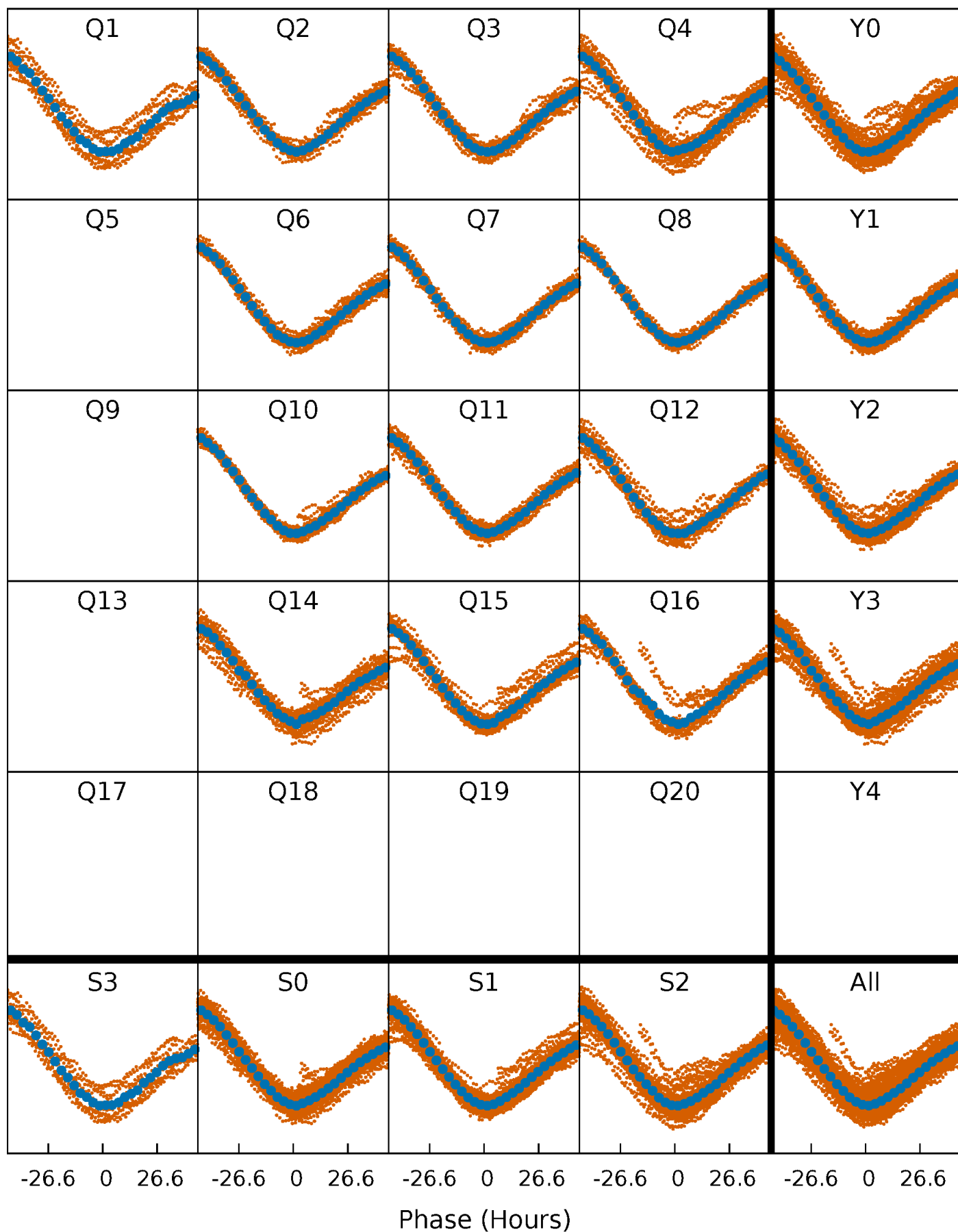


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

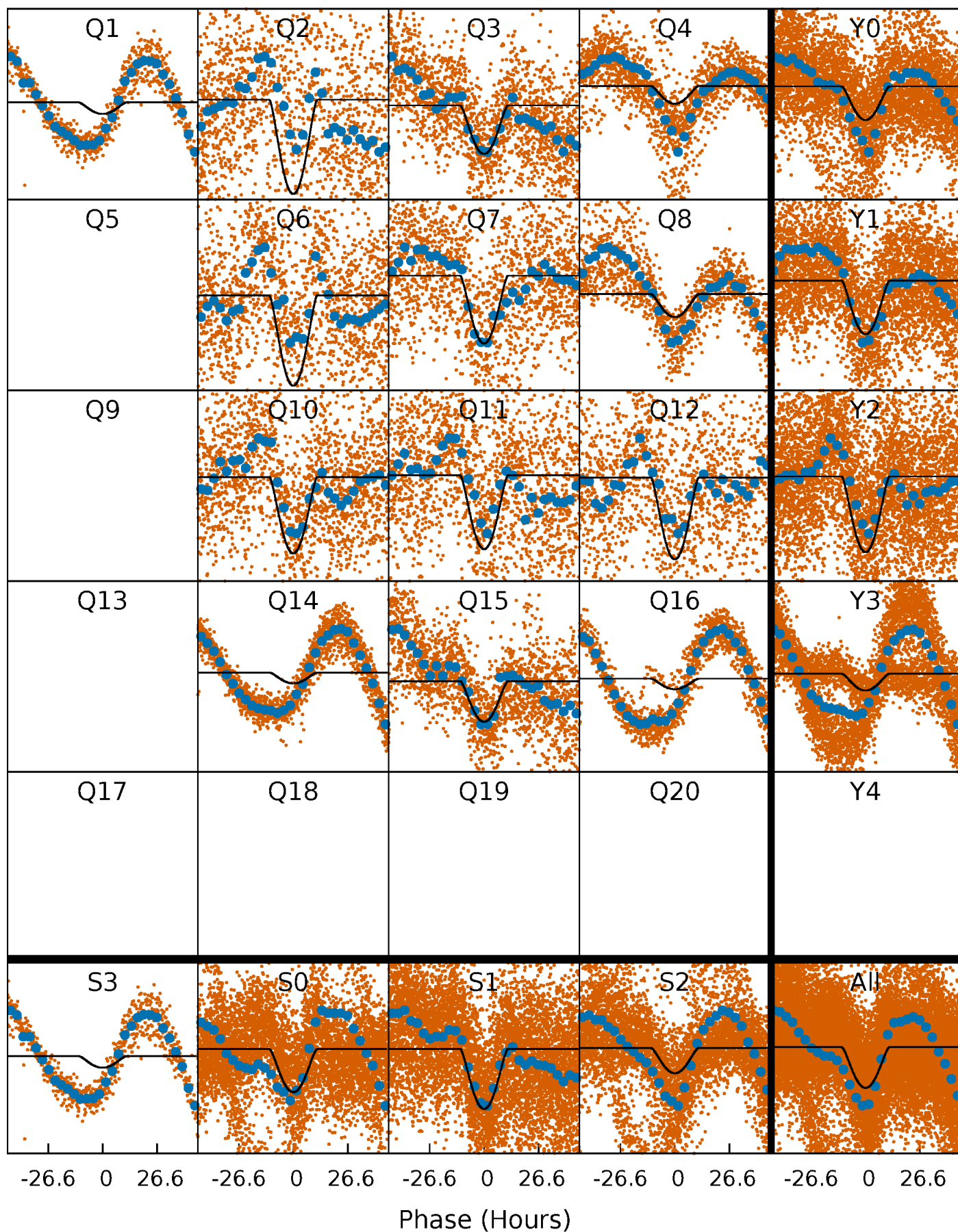
TCE 006584042-01 P= 9.601249 Days  $T_0=134.680166$  (BKJD)





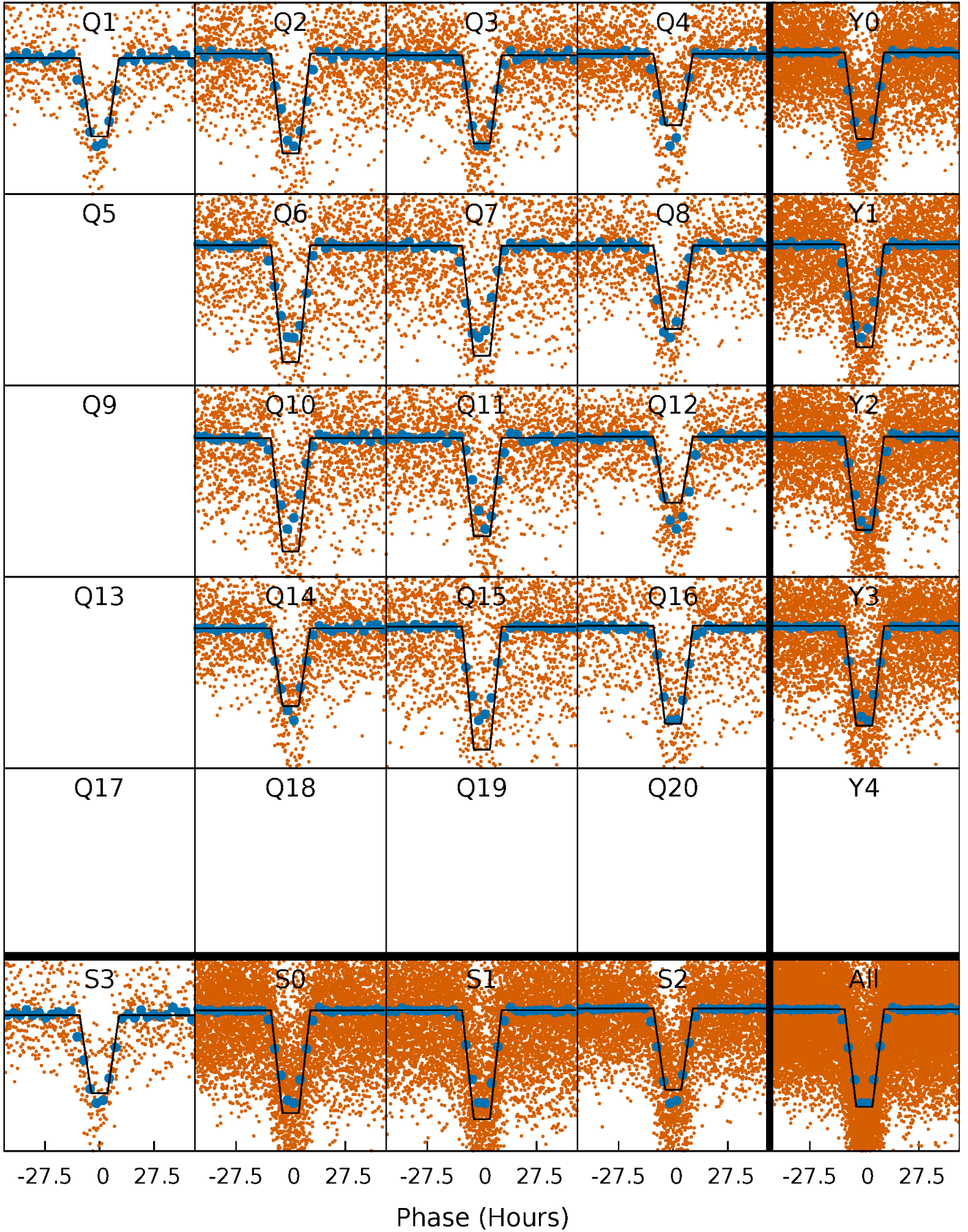
# DV Quarter-Phased Transit Curves

TCE 006584042-01 P= 9.601249 Days  $T_0=134.680166$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

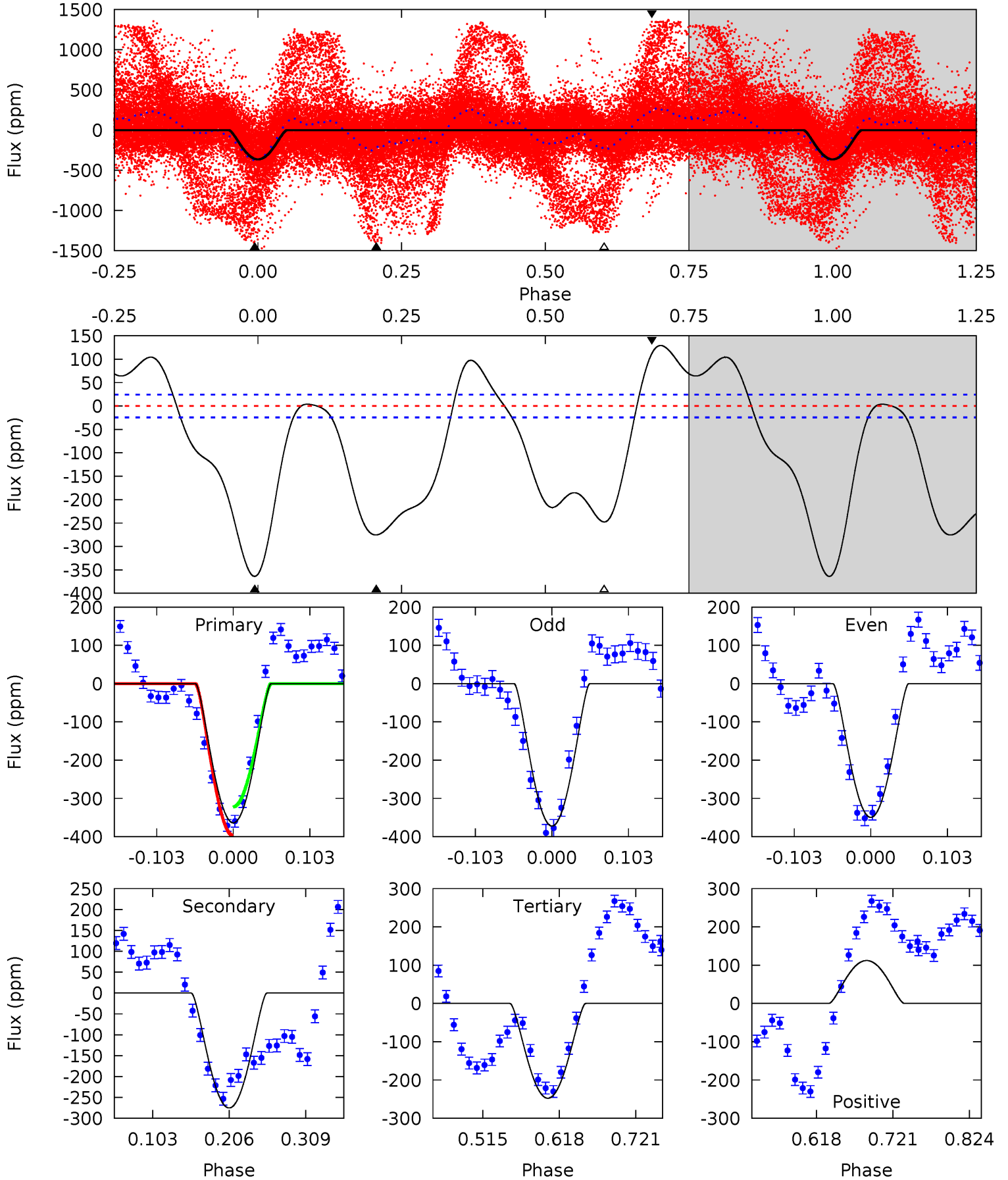
TCE 006584042-01 P= 9.601479 Days  $T_0=134.638431$  (BKJD)



# DV Model-Shift Uniqueness Test

006584042-01, P = 9.601249 Days, E = 125.078917 Days

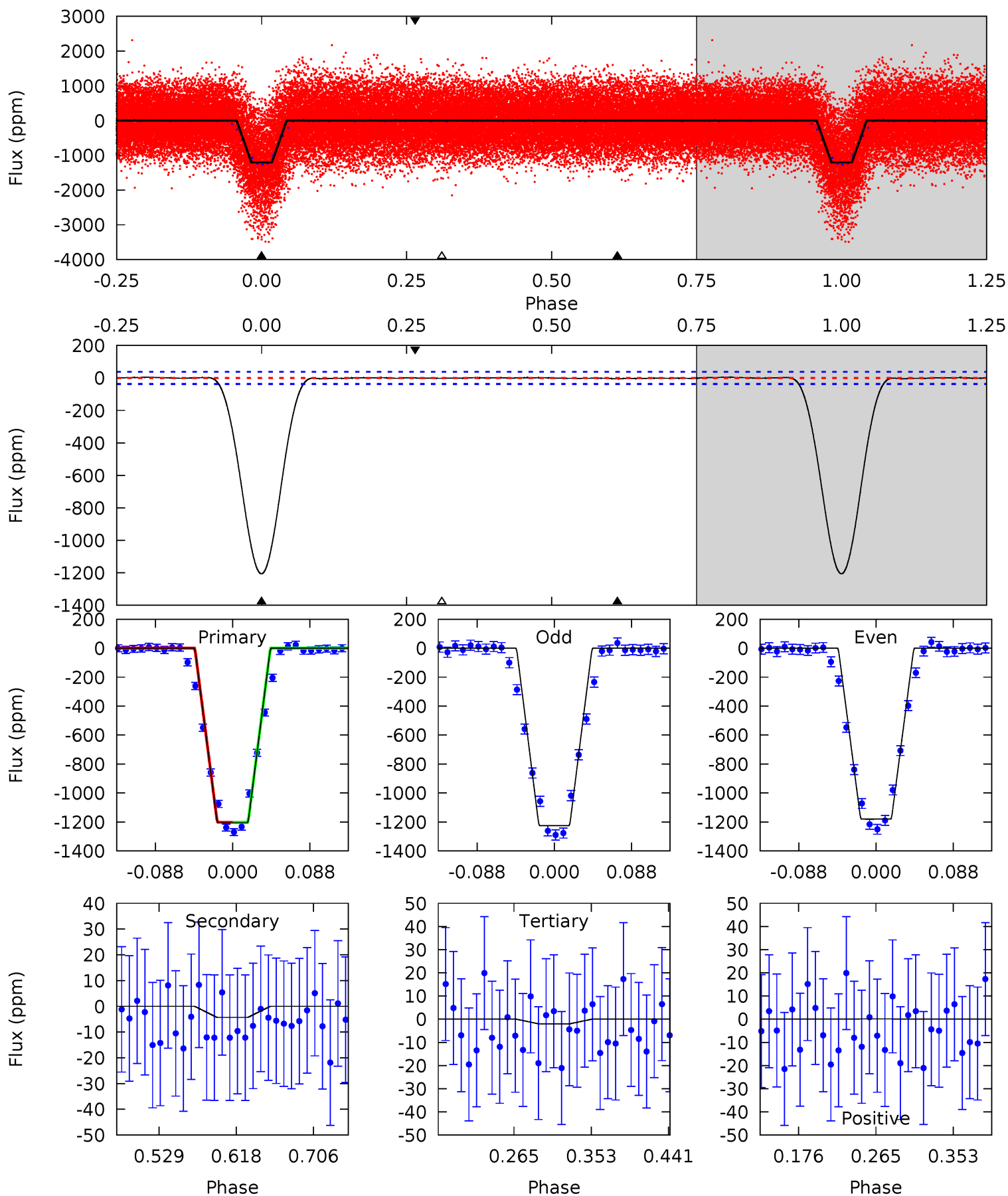
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
68.4	51.8	46.6	21.1	4.56	1.63	23.0	21.8	47.3	5.20	30.7	2.17	1.34	0.26	7.31



# Alt Model-Shift Uniqueness Test

006584042-01, P = 9.601479 Days, E = 125.036952 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
147.8	0.53	0.25	0.01	4.59	1.70	0.22	147.6	147.8	0.28	0.52	2.72	1.00	0.00	0.08



### Stellar Parameters For KIC 006584042

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7274^{+201}_{-345}$	$4.140^{+0.128}_{-0.192}$	$0.000^{+0.200}_{-0.350}$	$1.755^{+0.563}_{-0.375}$	$1.549^{+0.221}_{-0.243}$	$0.404^{+0.255}_{-0.208}$
	+3%/-5%	+3%/-5%	+inf%/-inf%	+32%/-21%	+14%/-16%	+63%/-51%
Source	KIC0	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 006584042-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-275 \pm 5$	$5.73^{+3.36}_{-2.85}$	$1861^{+144}_{-125}$	$5379^{+2181}_{-929}$	$47^{+145}_{-28}$
Alt.	$-4 \pm 8$	$7.12^{+3.39}_{-2.89}$	$1862^{+154}_{-123}$	$2154^{+824}_{-4858}$	$0.418^{+1.411}_{-0.835}$

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



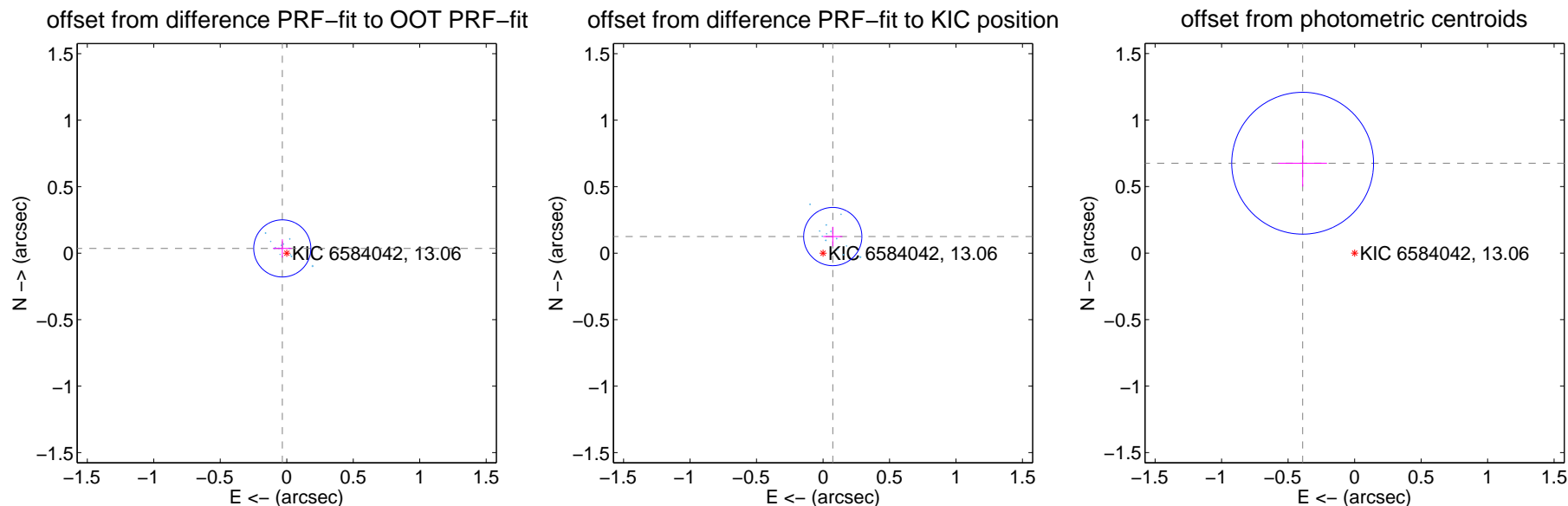
## DV Centroid Data

Supplemental centroid analysis for 006584042-01. Kepler magnitude: 13.06. Transit SNR 21.91

There are 13 quarters with good PRF difference image offsets

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

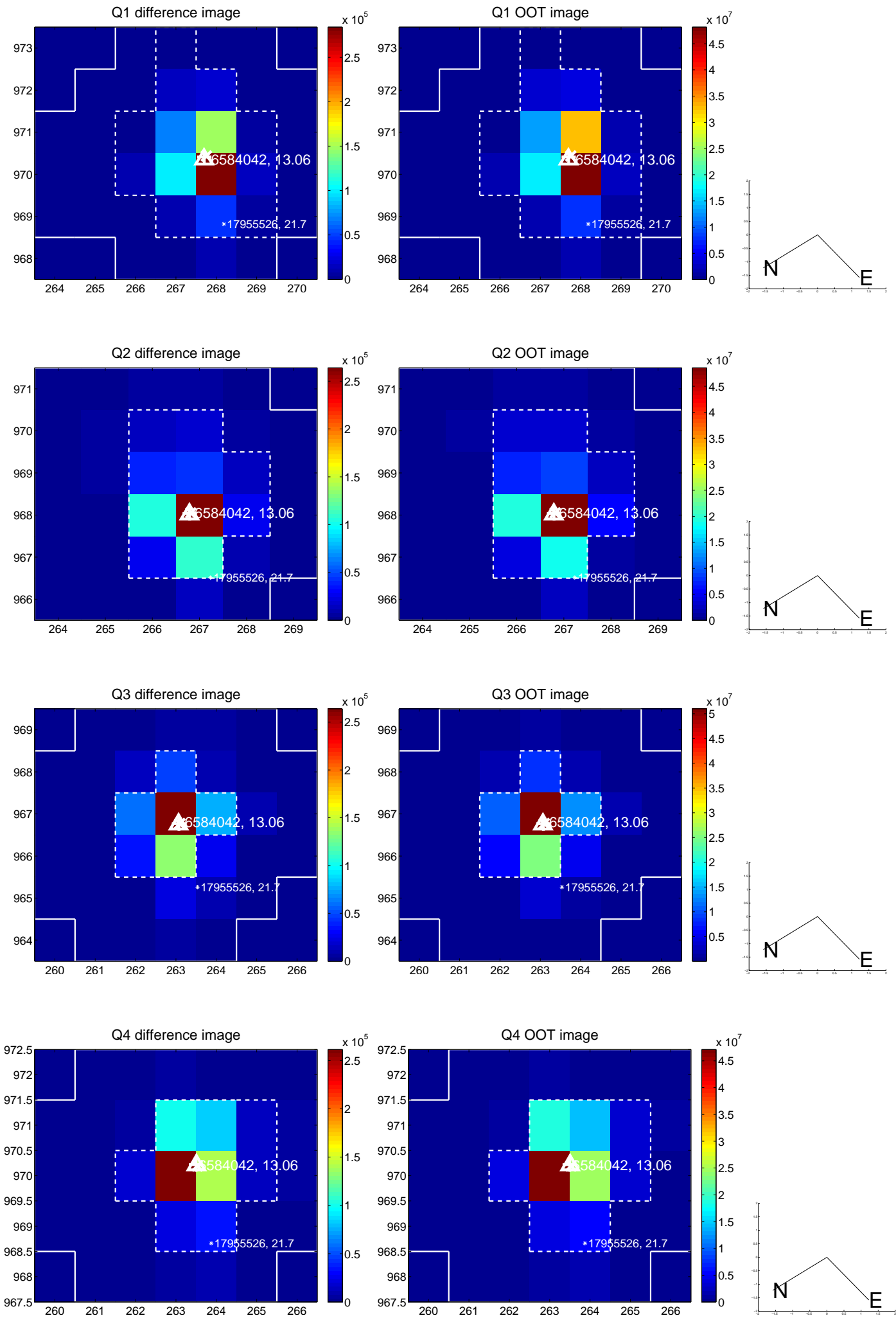
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.049 \pm 0.072$	0.68	$0.034 \pm 0.071$	$0.036 \pm 0.069$
PRF-fit source offset from KIC position	$0.145 \pm 0.073$	1.98	$-0.073 \pm 0.072$	$0.125 \pm 0.073$
photometric centroid source offset	$0.78 \pm 0.18$	4.39	$0.39 \pm 0.18$	$0.68 \pm 0.18$



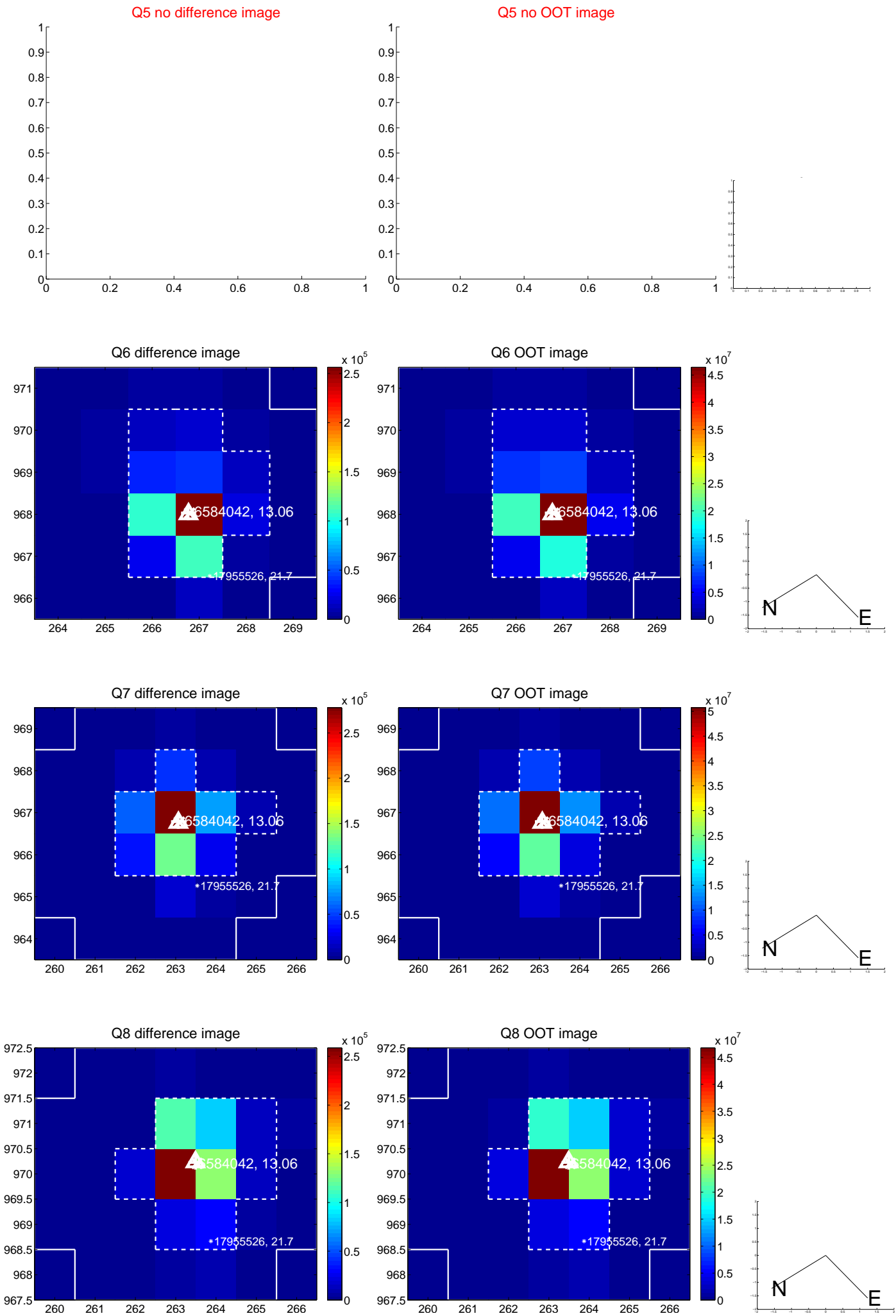
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



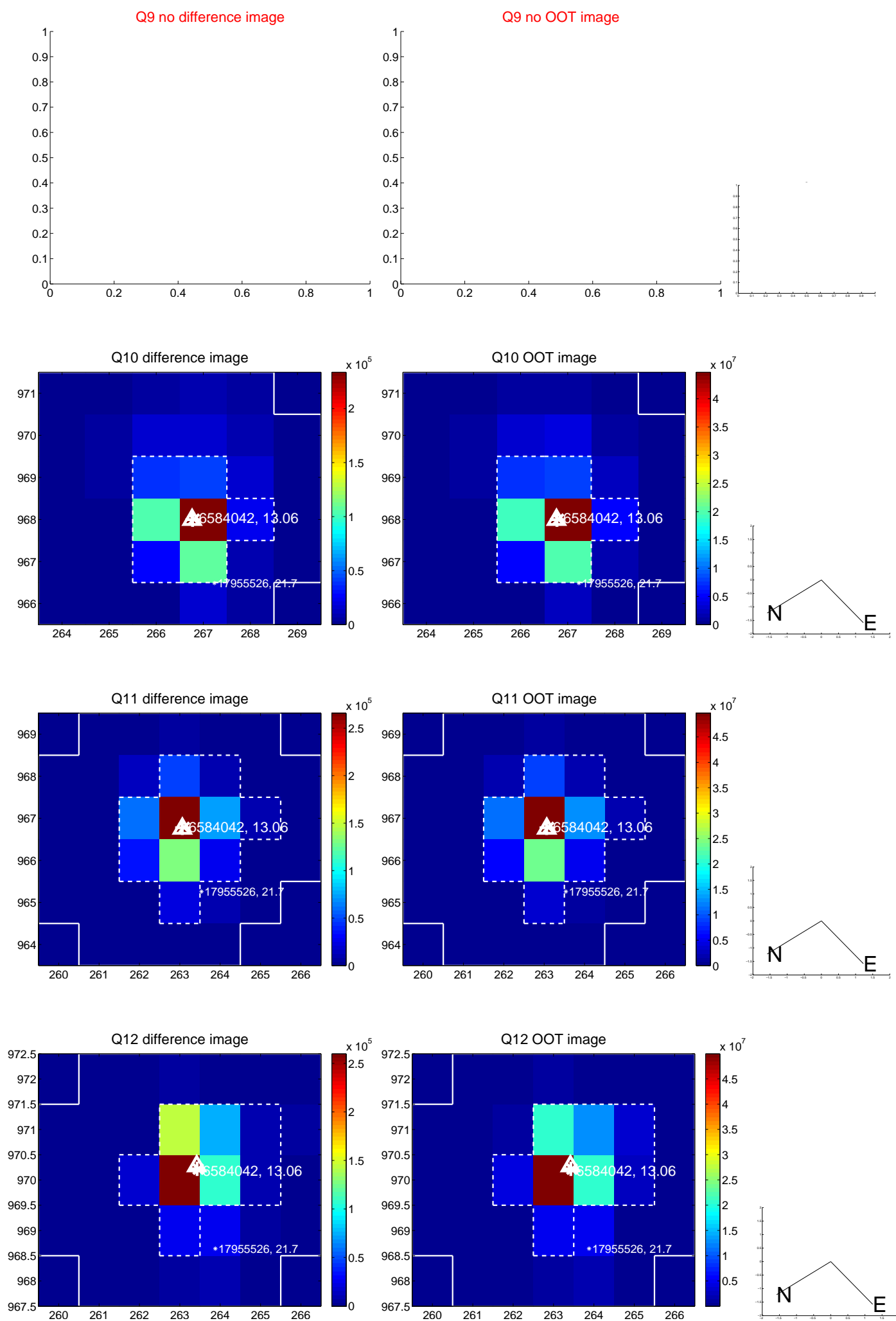
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



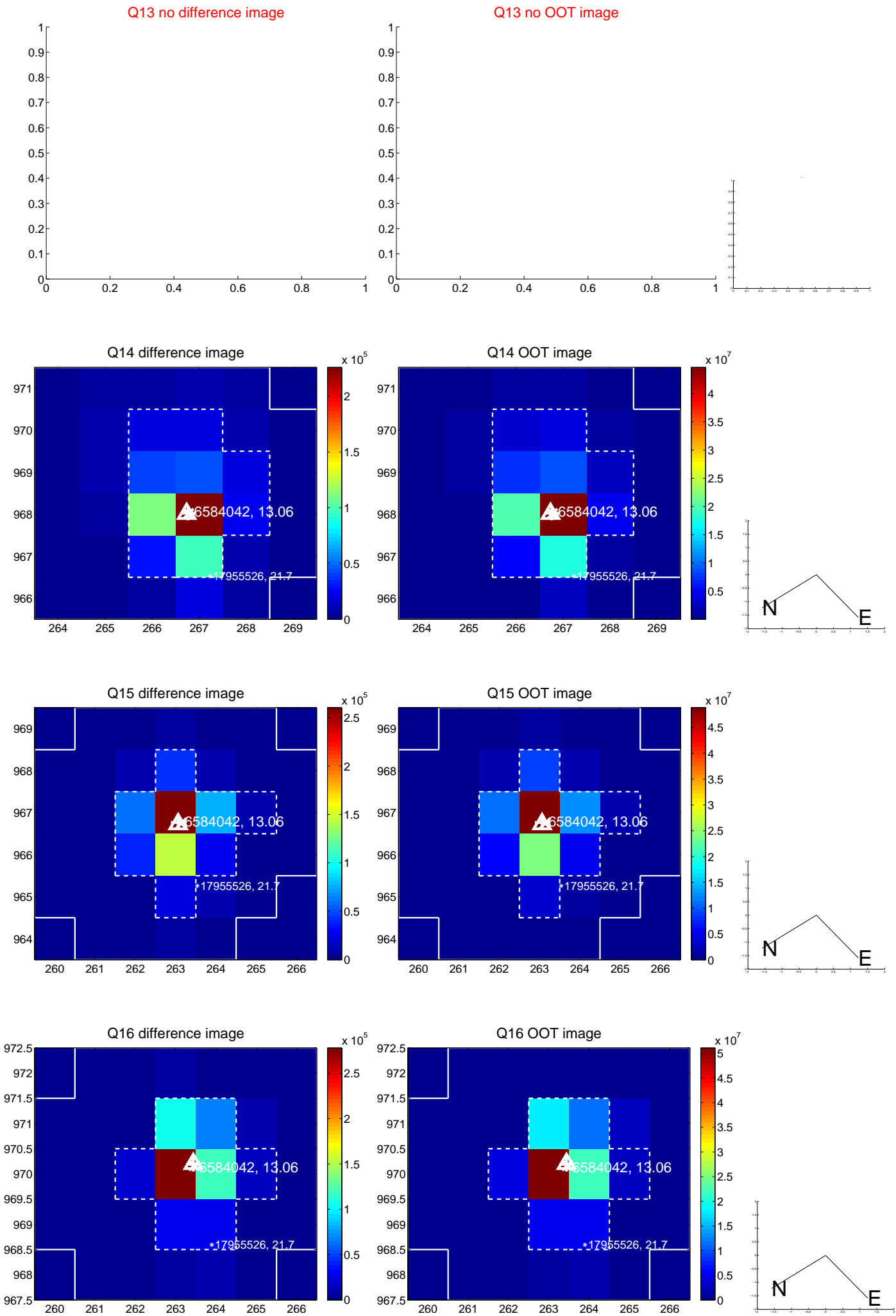
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



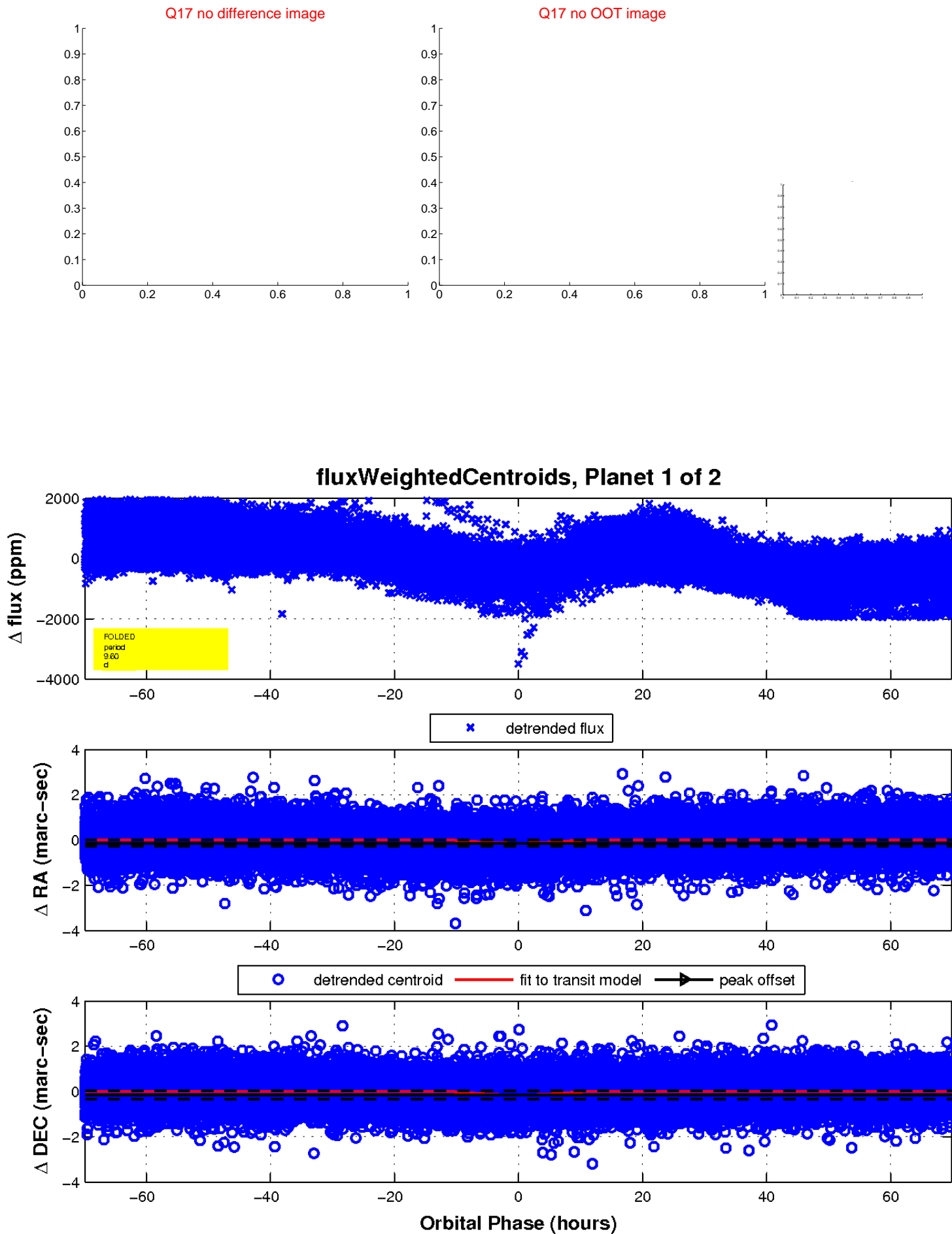
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

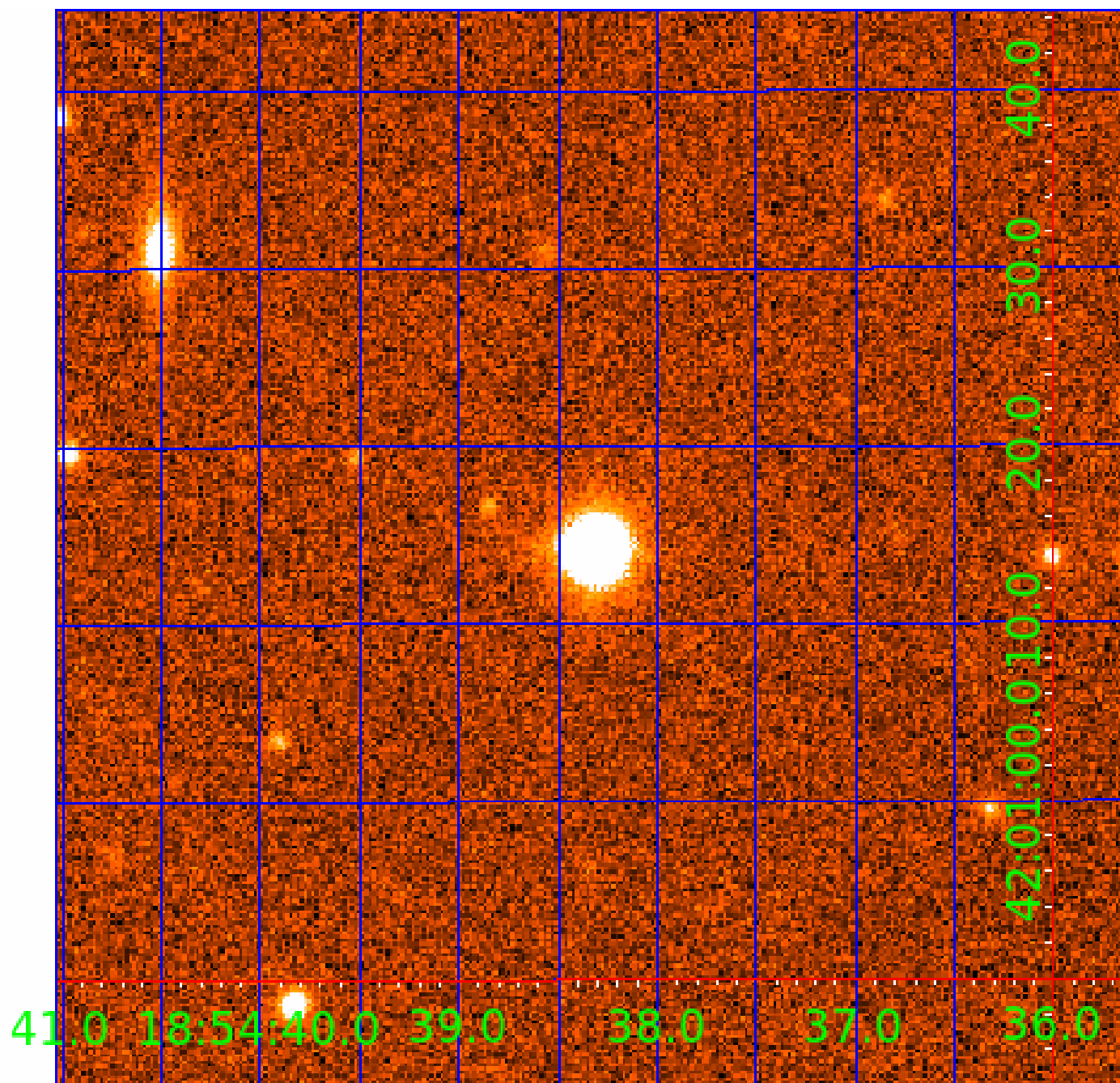


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006584042

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006584042-01	OBS	No	9.601249	134.680166	271.2	23.288	16.9	21.9	1.75	7274	5.55	737.46
006584042-02	OBS	No	4.800810	135.720511	150.2	20.894	12.8	12.8	1.75	7274	2.86	1858.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006584042-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
006584042-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

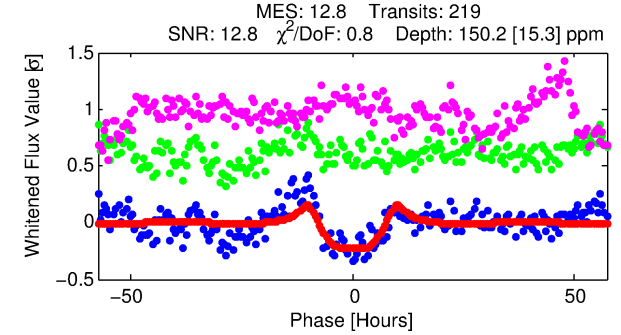
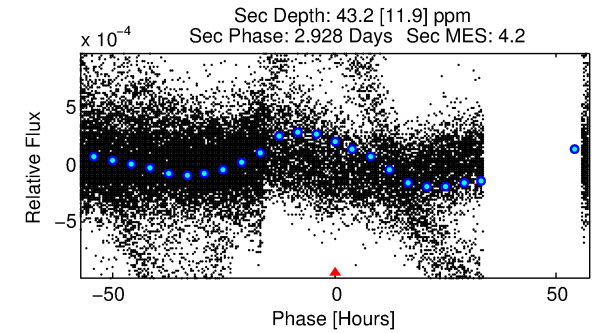
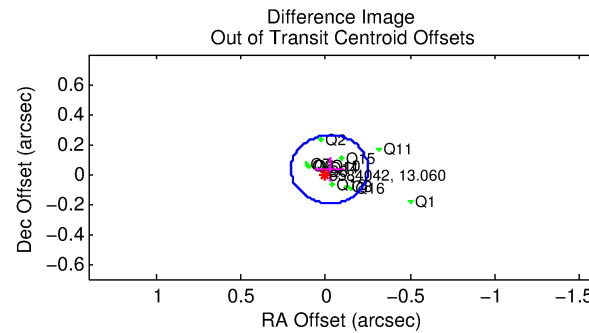
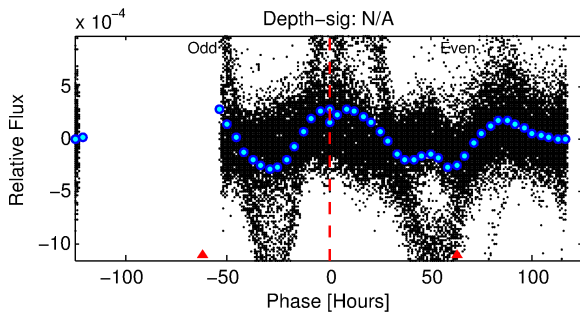
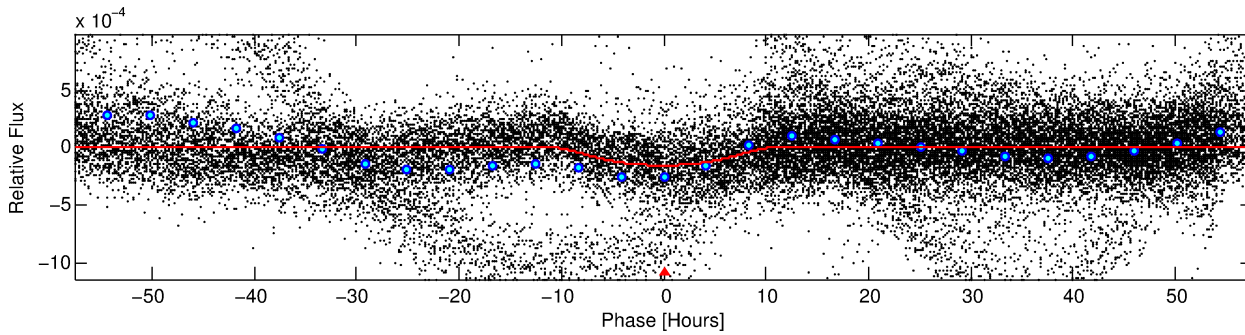
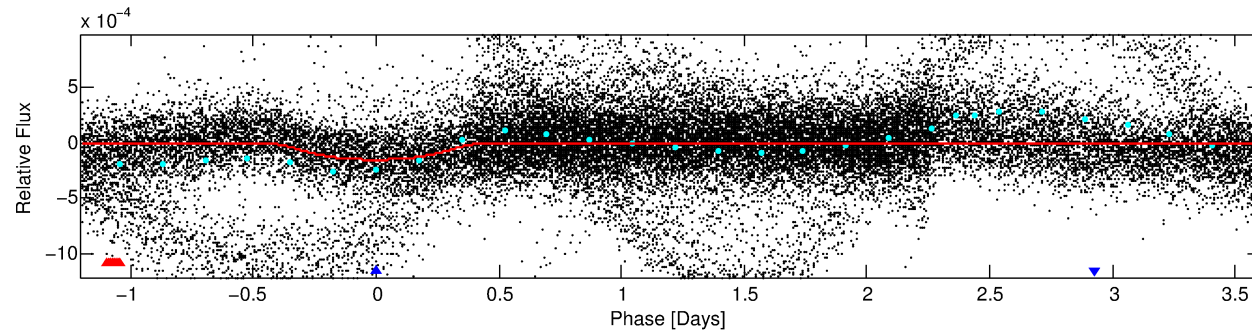
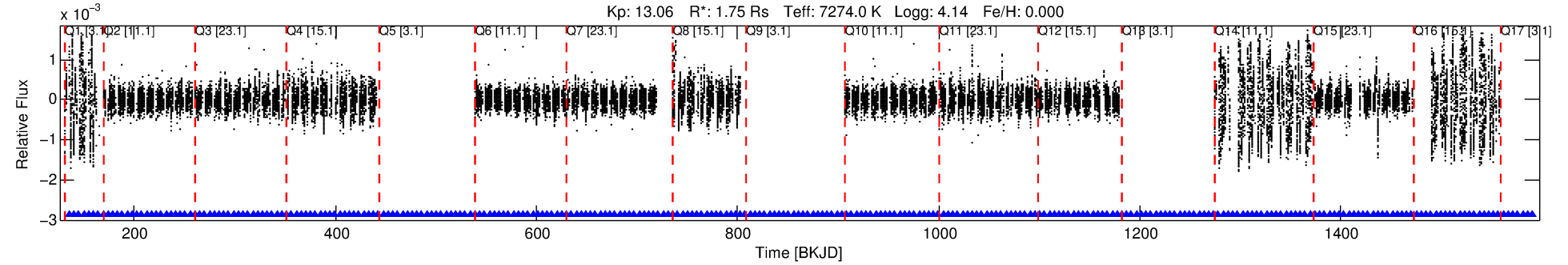
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006584042-02

No Significant Match Found

# DV One-Page Summary

KIC: 6584042 Candidate: 2 of 2 Period: 4.801 d



## DV Fit Results:

Period = 4.80081 [0.00013] d  
Epoch = 135.7205 [0.0208] BKJD  
Rp/R\* = 0.0150 [0.0009]  
a/R\* = 1.08 [0.01]  
b = 0.99 [0.00]  
Seff = 1858.17 [762.98]  
Teq = 1674 [172] K  
Rp = 2.86 [0.93] Re  
a = 0.0645 [0.0167] AU  
Ag = 12.05 [5.68] [1.94σ]  
Teffp = 4822 [428] K [6.83σ]

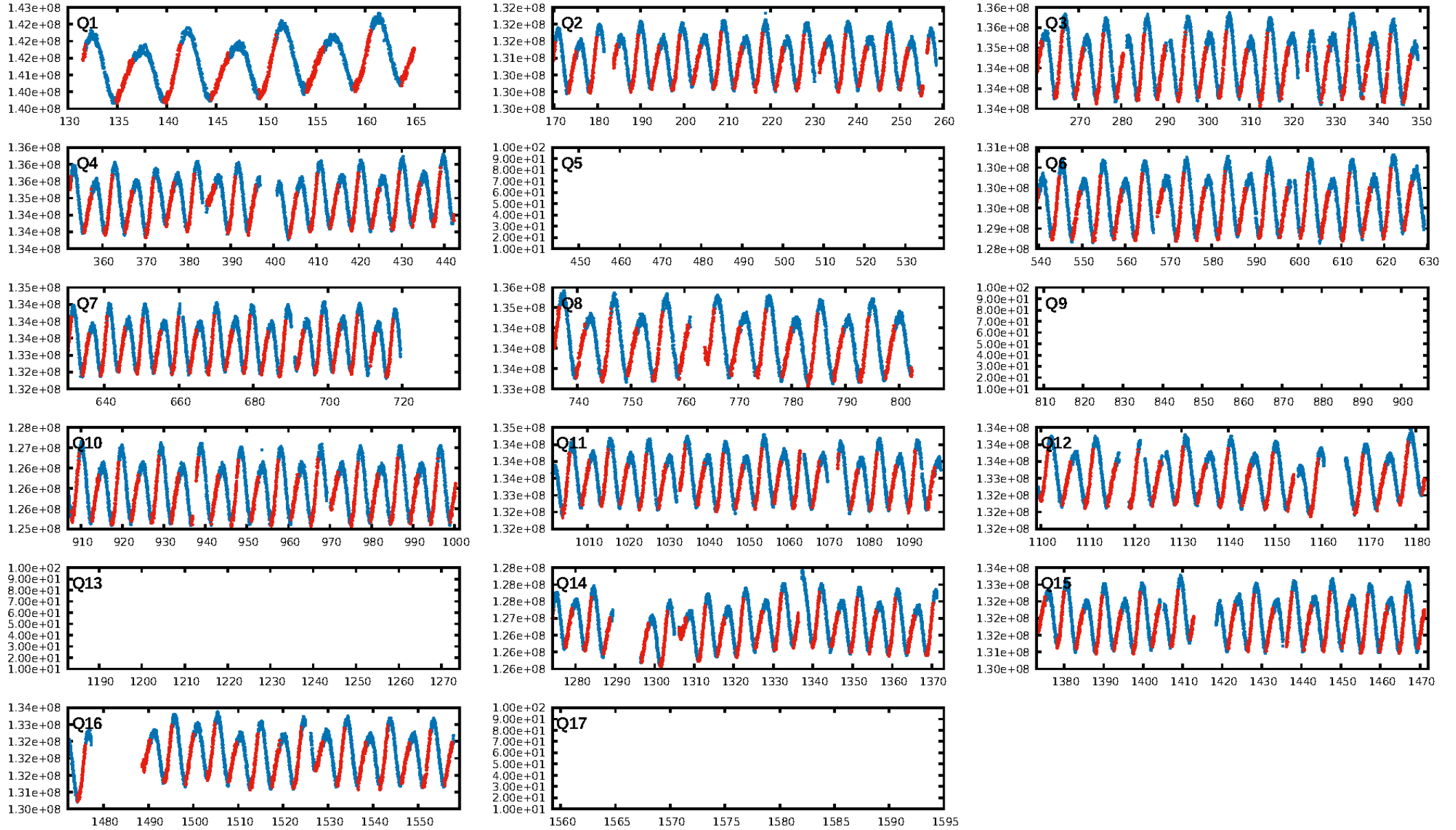
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [3.68σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.14e-41  
RollingBand-fgt: 1.00 [212/212]  
**GhostDiagnostic-chr: 6.059**  
Centroid-sig: 8.4%  
Centroid-so: 0.287 arcsec [1.37σ]  
OotOffset-rm: 0.040 arcsec [0.53σ]  
KicOffset-rm: 0.179 arcsec [2.17σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

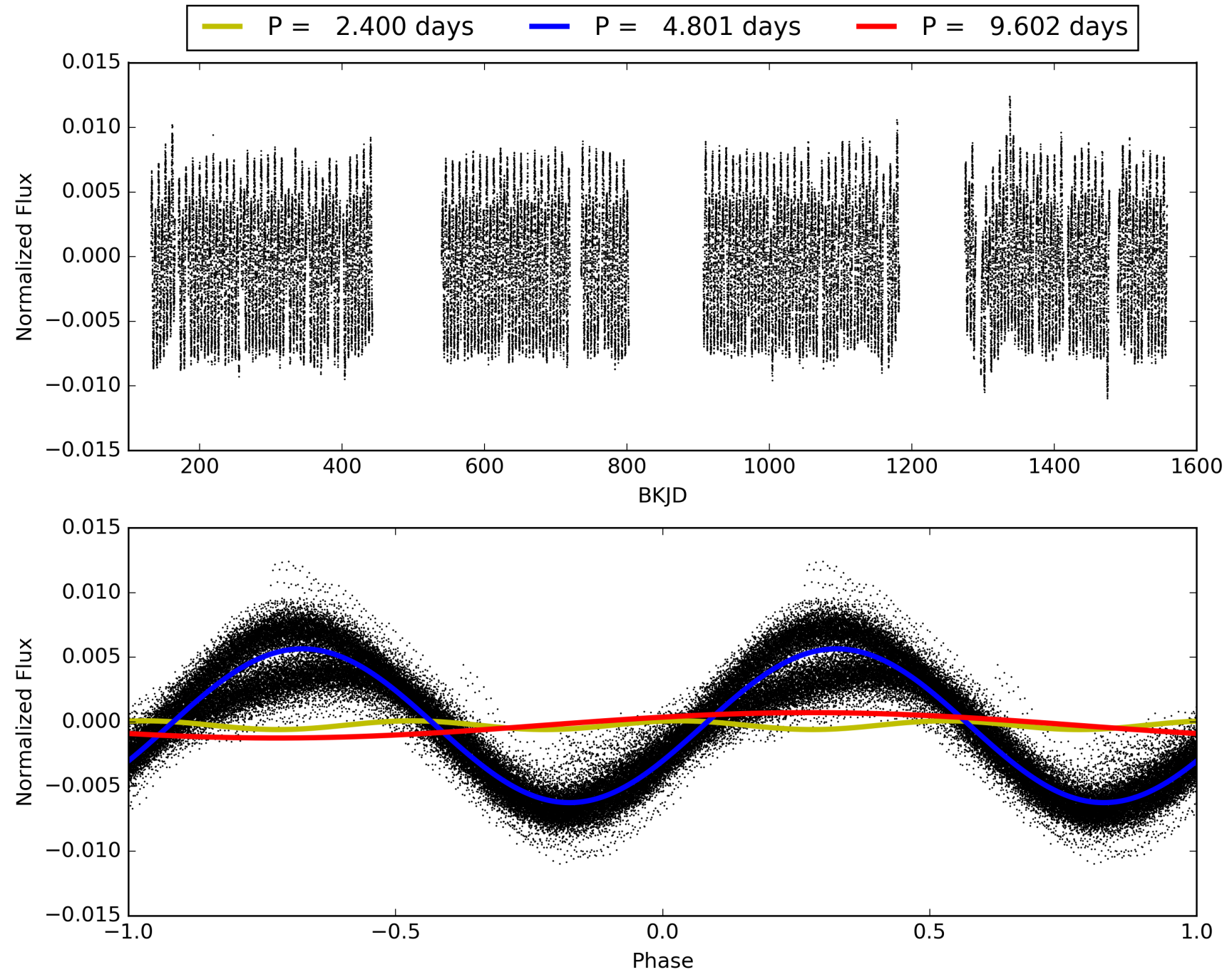
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:13:16 Z

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

# TCE 006584042-02, PDC Light Curves

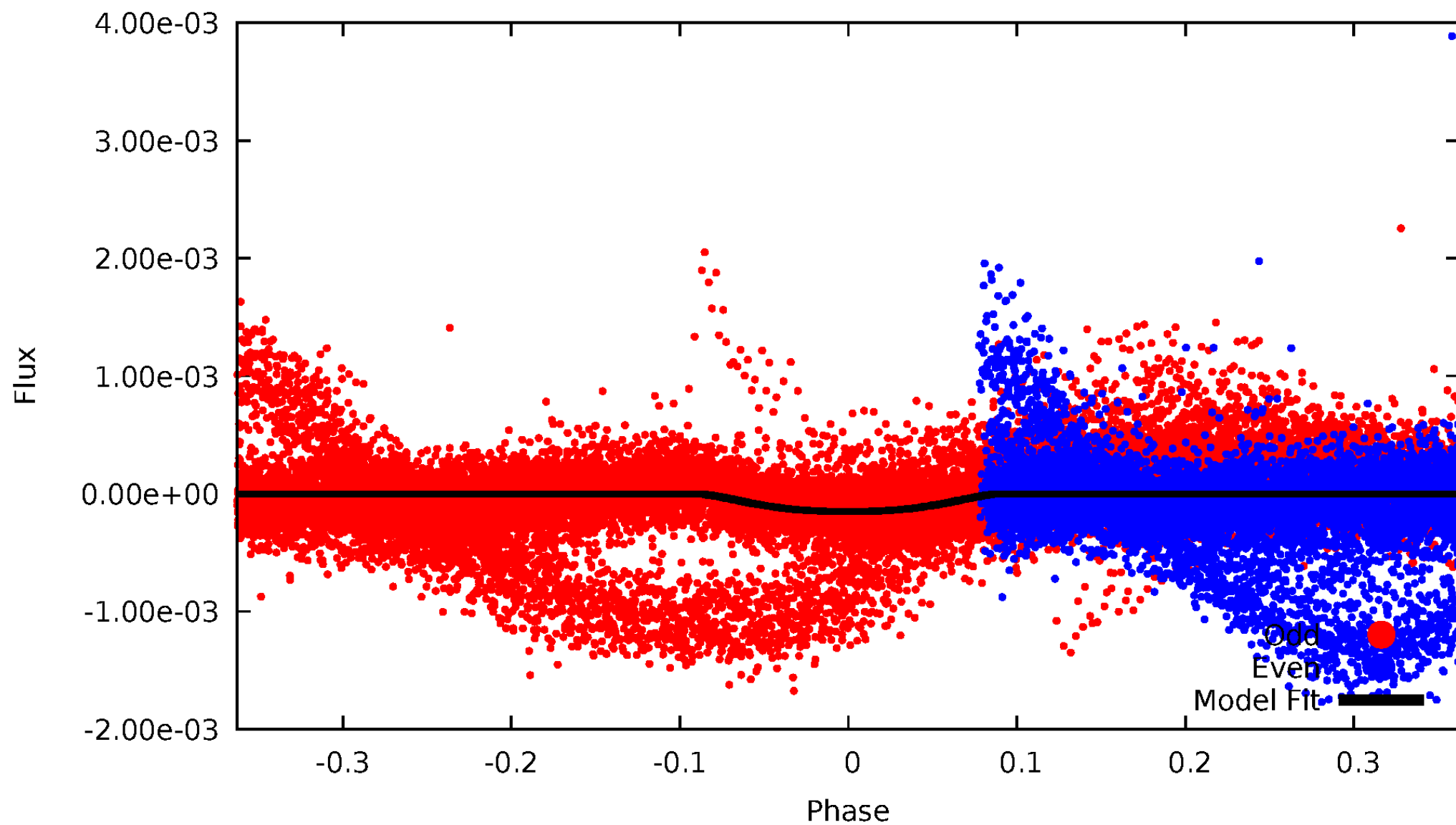


TCE 006584042-02



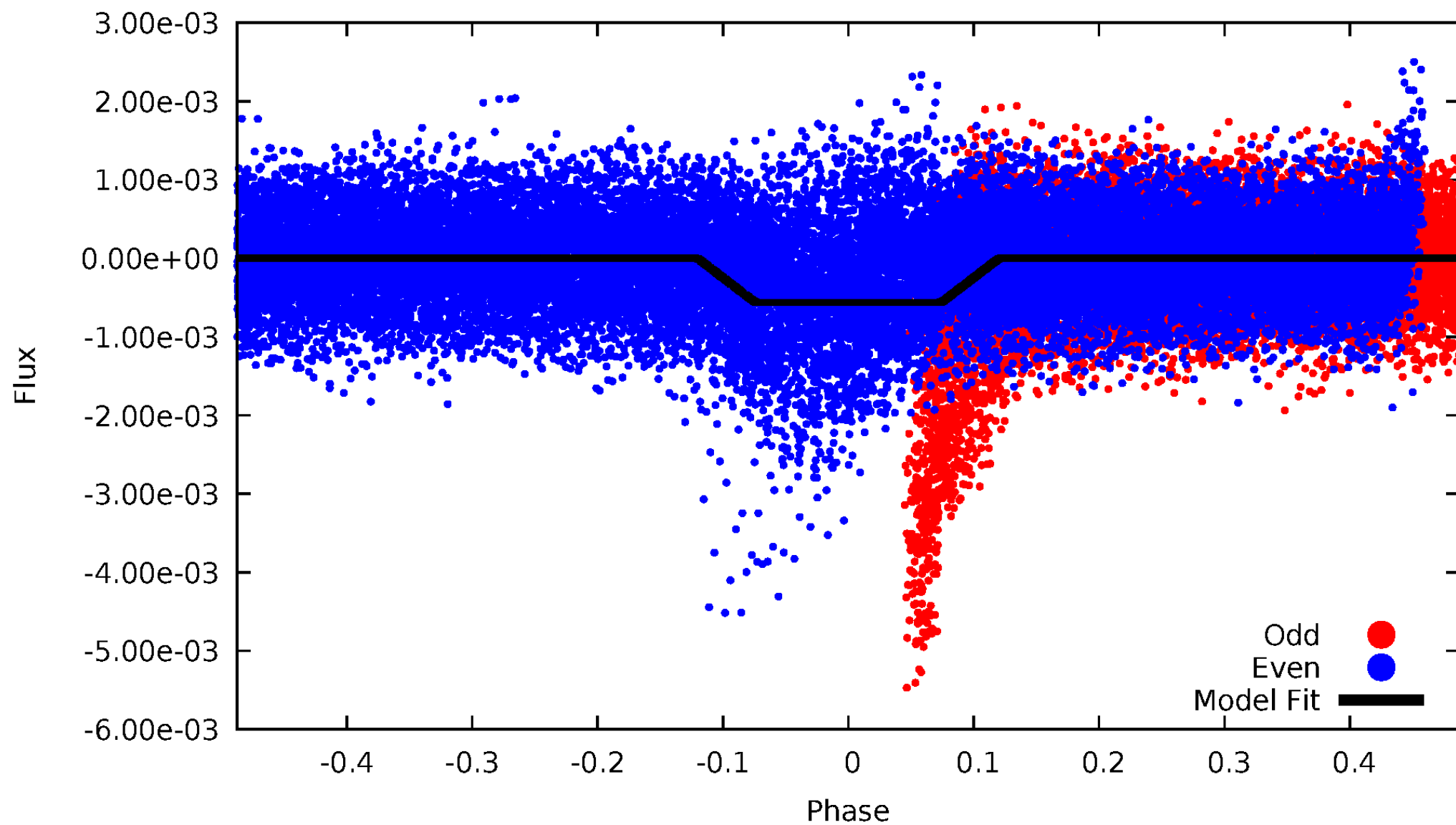
# DV Odd/Even

TCE 006584042-02



# ALT Odd/Even

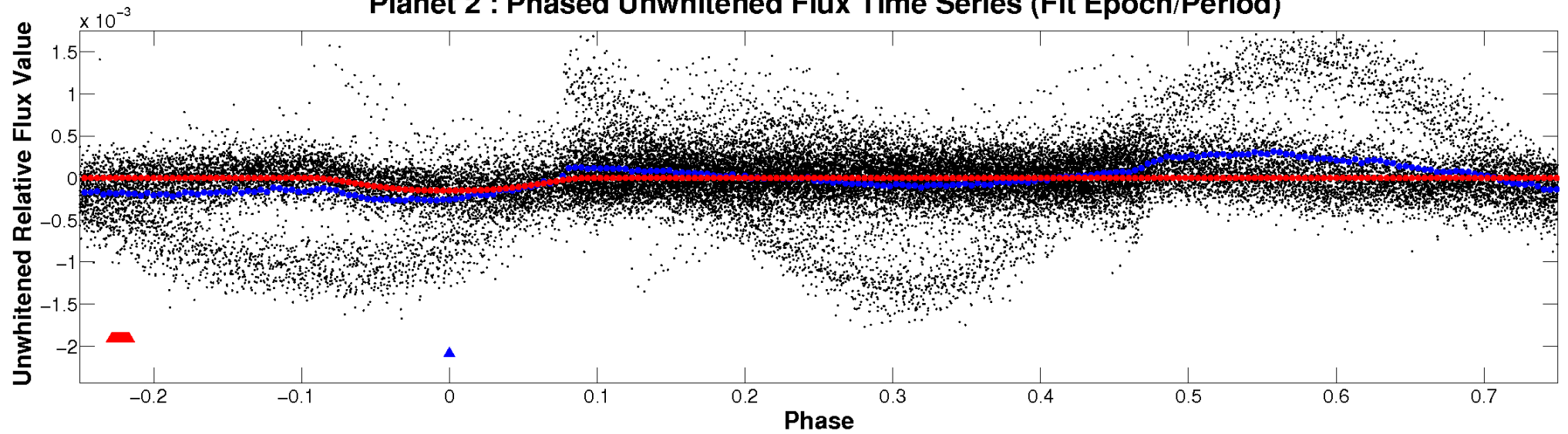
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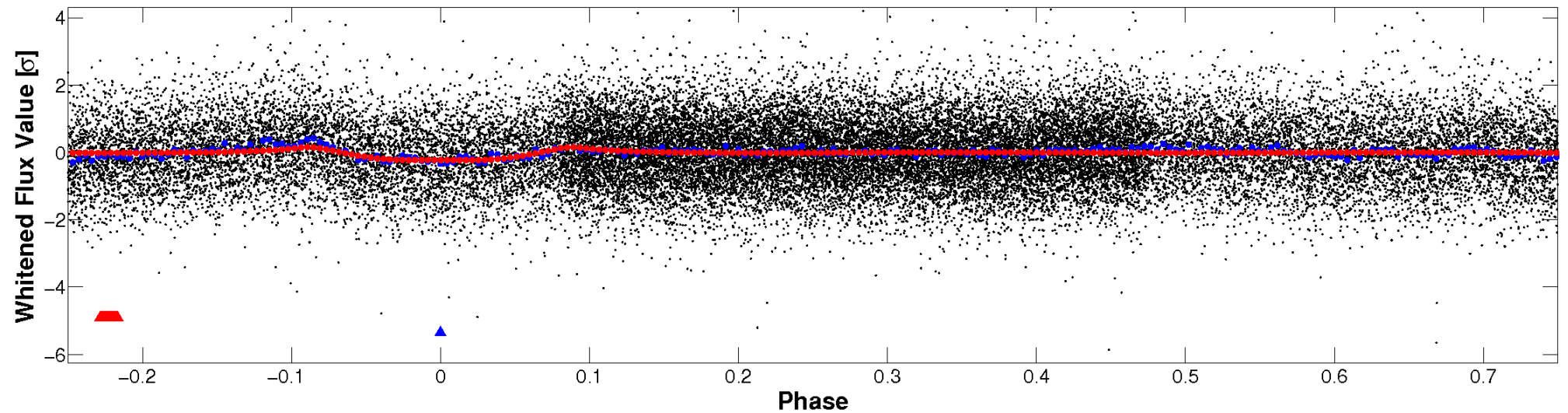


# Non-Whitened Vs. Whitened Light Curve

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

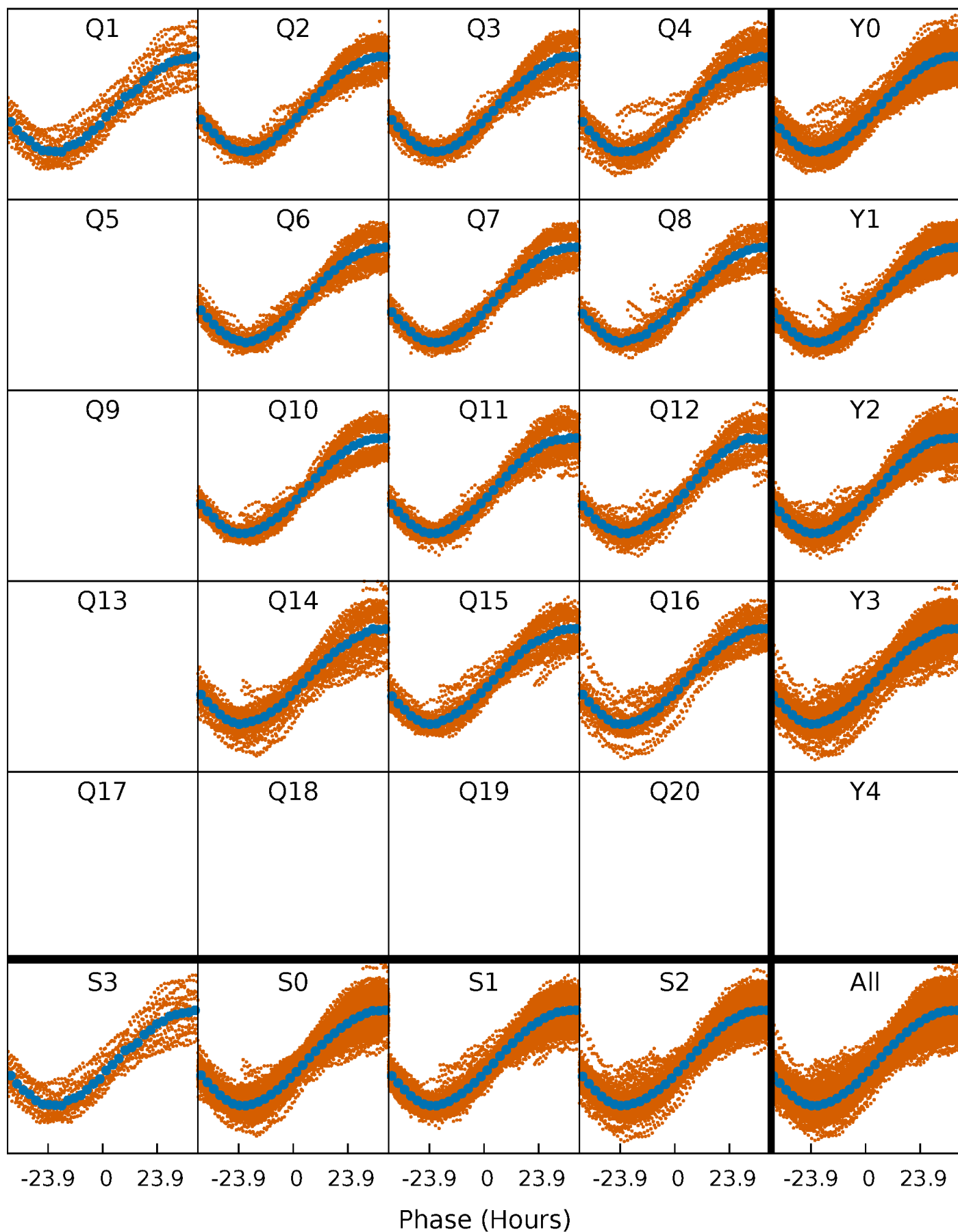


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



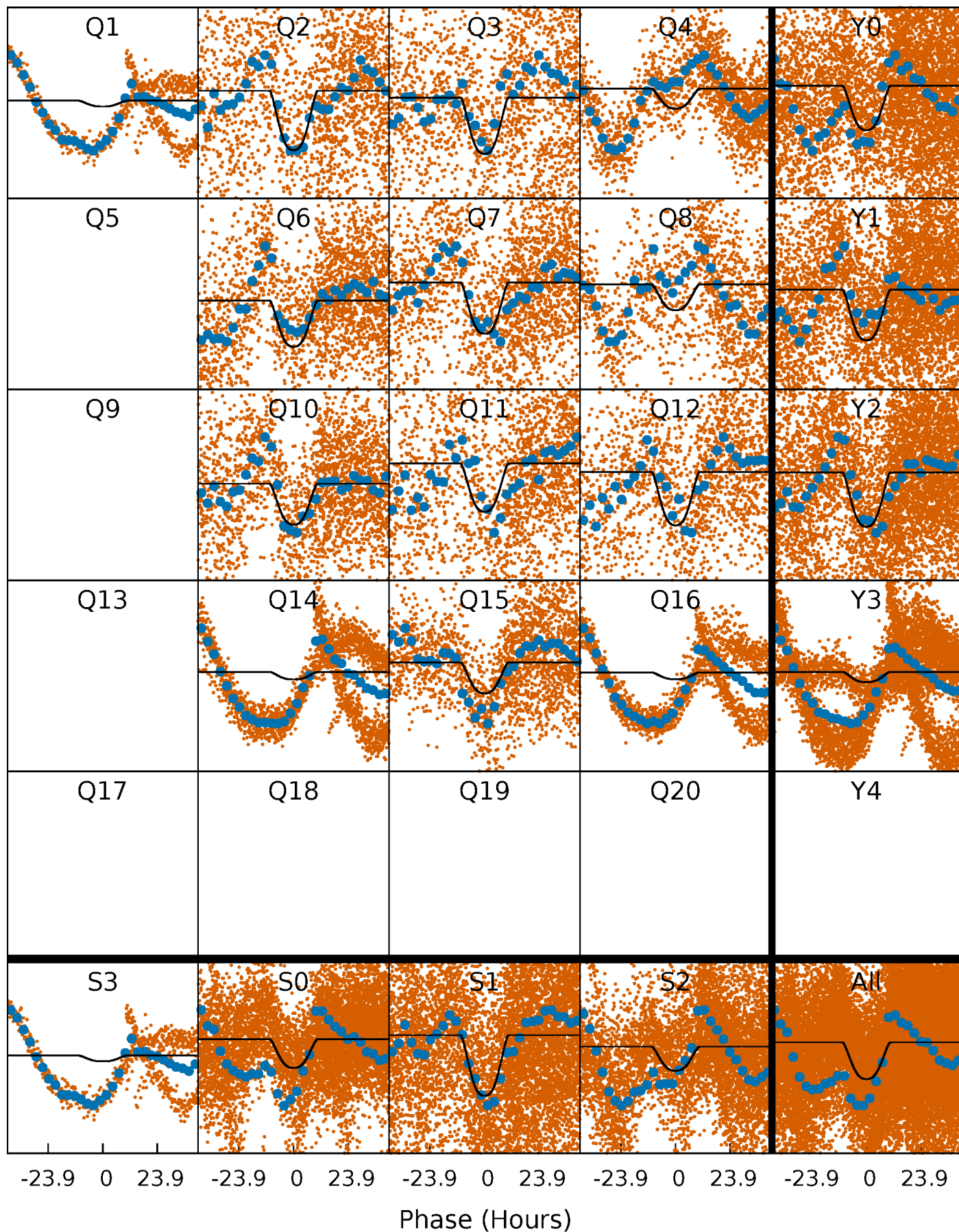
# PDC Quarter-Phased Transit Curves

TCE 006584042-02   P= 4.800810 Days    $T_0=135.720511$  (BKJD)



# DV Quarter-Phased Transit Curves

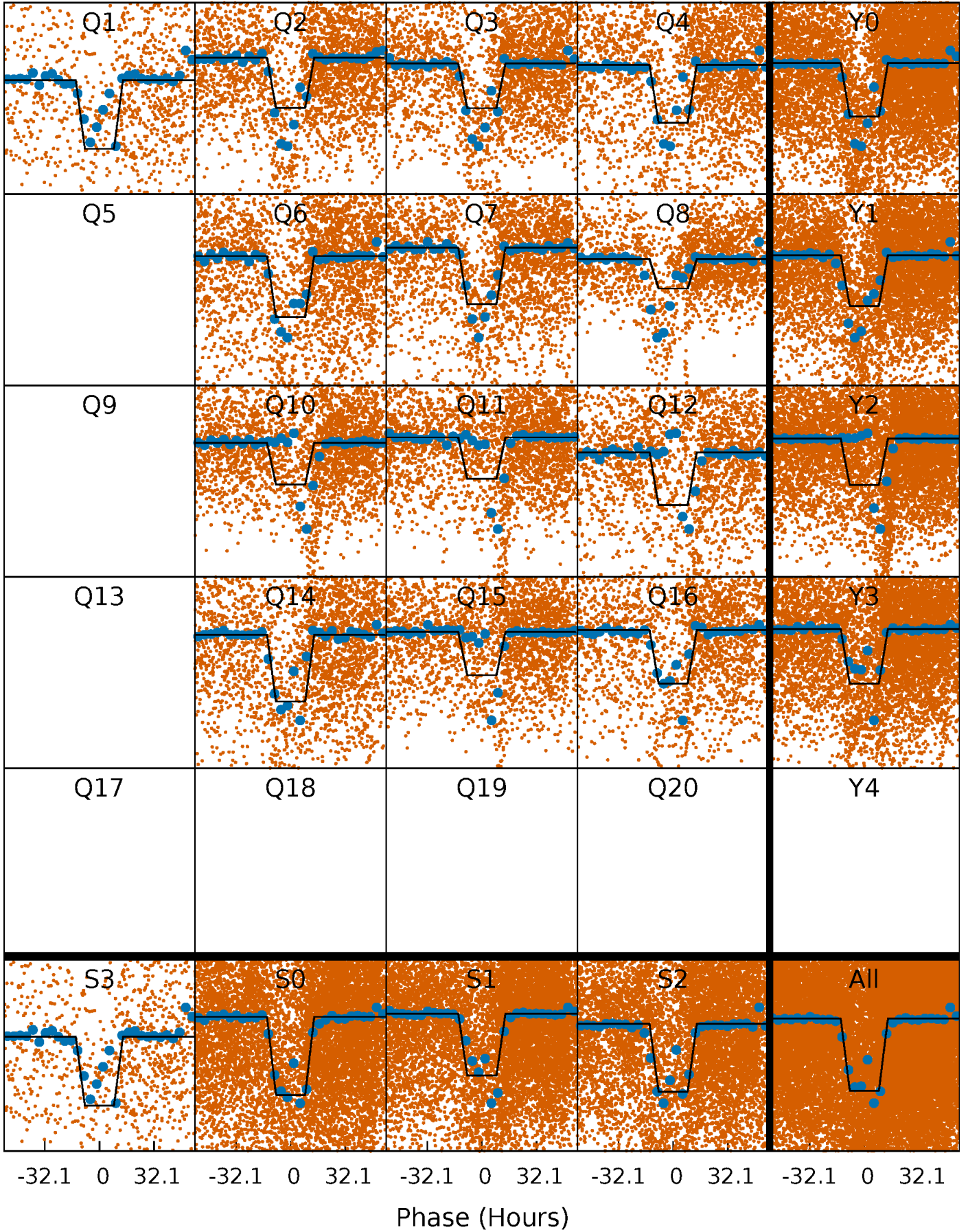
TCE 006584042-02   P= 4.800810 Days    $T_0=135.720511$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

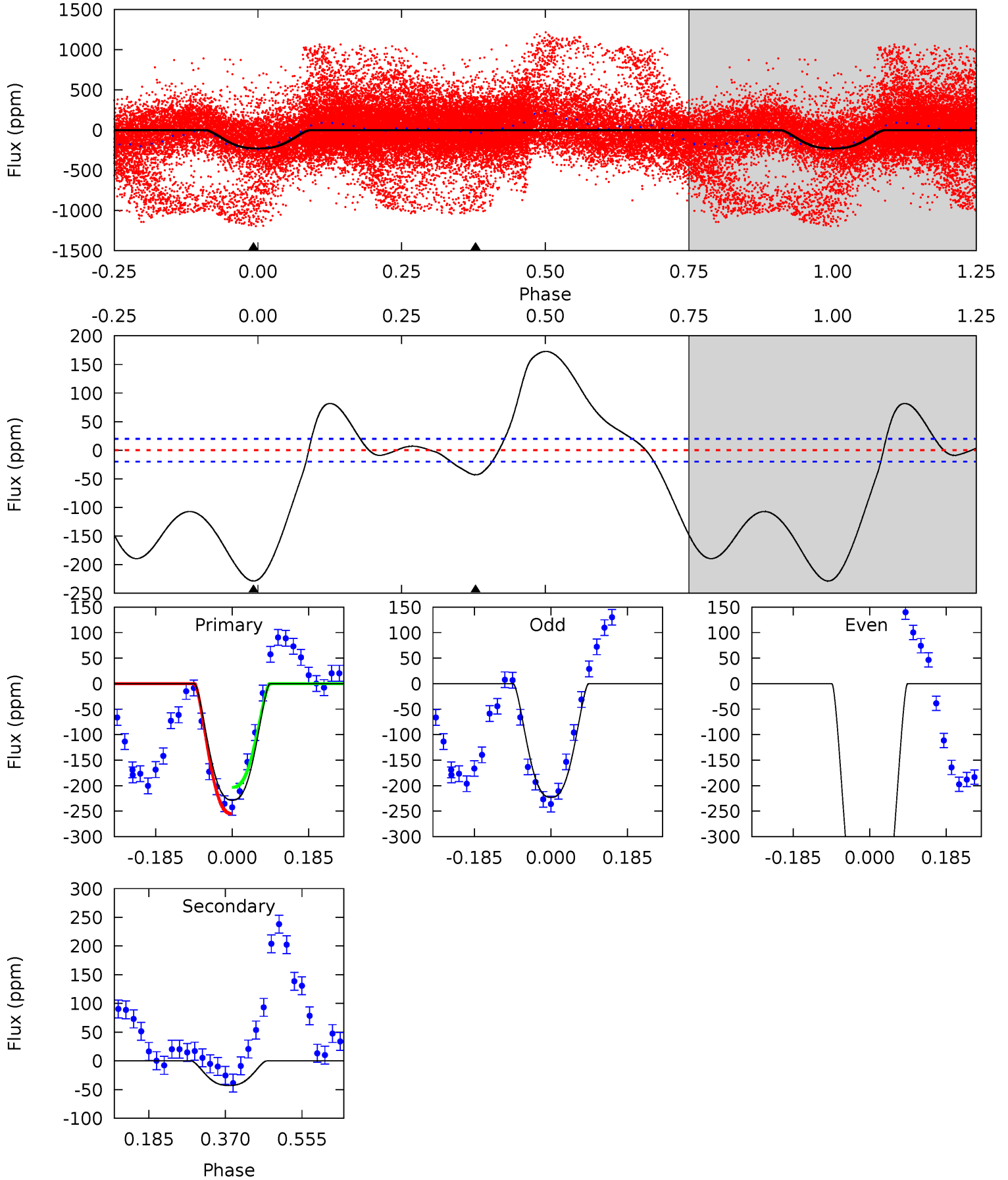
TCE 006584042-02 P= 4.801061 Days  $T_0=135.804638$  (BKJD)



# DV Model-Shift Uniqueness Test

006584042-02, P = 4.800810 Days, E = 130.919701 Days

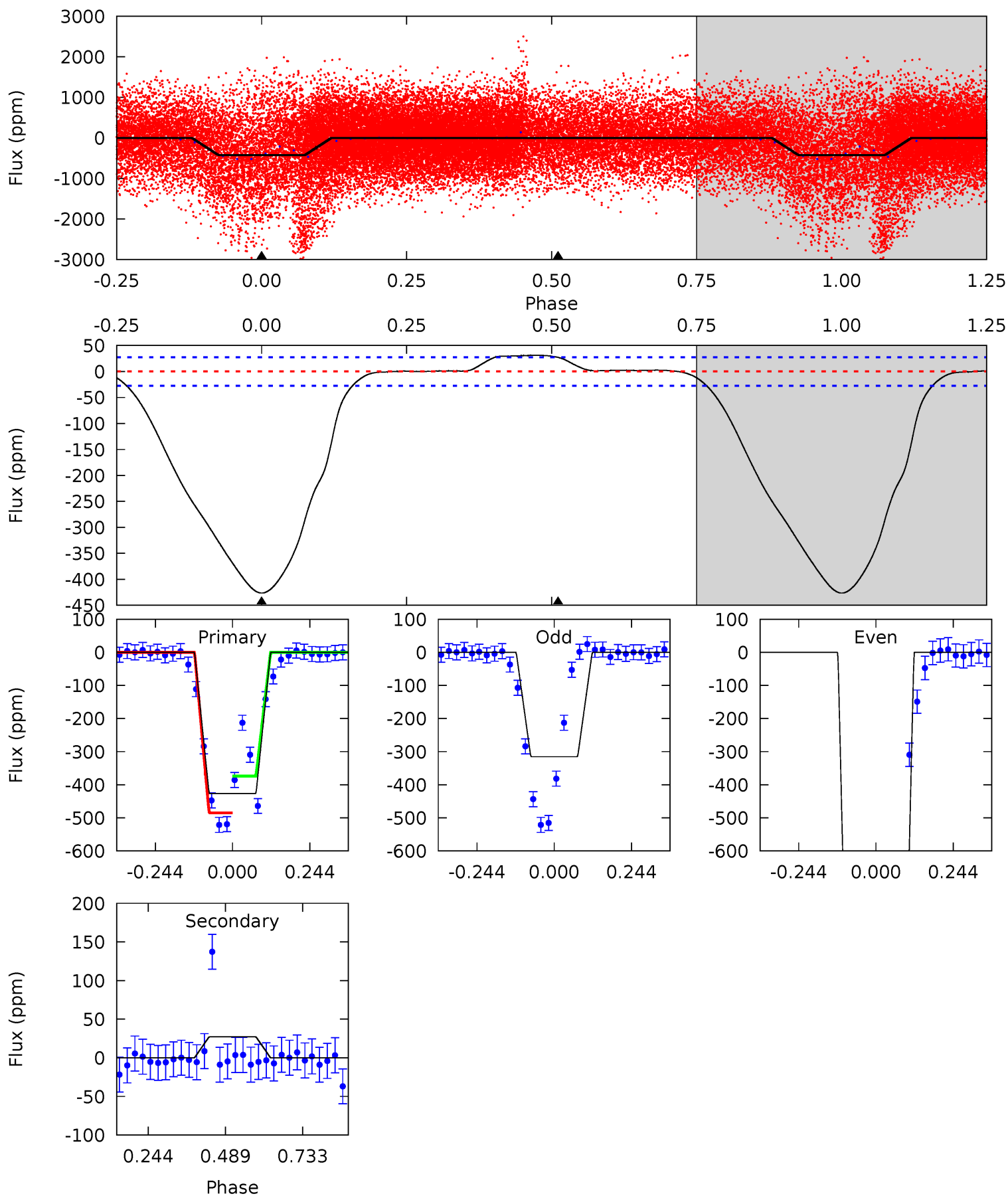
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.9	9.56	0	0	4.43	1.33	20.1	50.9	50.9	9.56	9.56	16.1	-11.6	0.43	5.71



# Alt Model-Shift Uniqueness Test

006584042-02, P = 4.801061 Days, E = 131.003577 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
68.2	-4.34	0	0	4.37	1.16	1.30	68.2	68.2	-4.34	-4.34	98.2	1.33	0.07	8.64





### Stellar Parameters For KIC 006584042

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7274^{+201}_{-345}$	$4.140^{+0.128}_{-0.192}$	$0.000^{+0.200}_{-0.350}$	$1.755^{+0.563}_{-0.375}$	$1.549^{+0.221}_{-0.243}$	$0.404^{+0.255}_{-0.208}$
	+3%/-5%	+3%/-5%	+inf%/-inf%	+32%/-21%	+14%/-16%	+63%/-51%
Source	KIC0	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 006584042-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-43 \pm 4$	$2.88^{+0.57}_{-0.39}$	$2344^{+214}_{-162}$	$4831^{+216}_{-205}$	$12^{+4}_{-3}$
Alt.	$27 \pm 6$	$4.63^{+0.73}_{-0.60}$	$2358^{+178}_{-165}$	$-3807^{+170}_{-175}$	$-2.747^{+0.847}_{-1.189}$

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

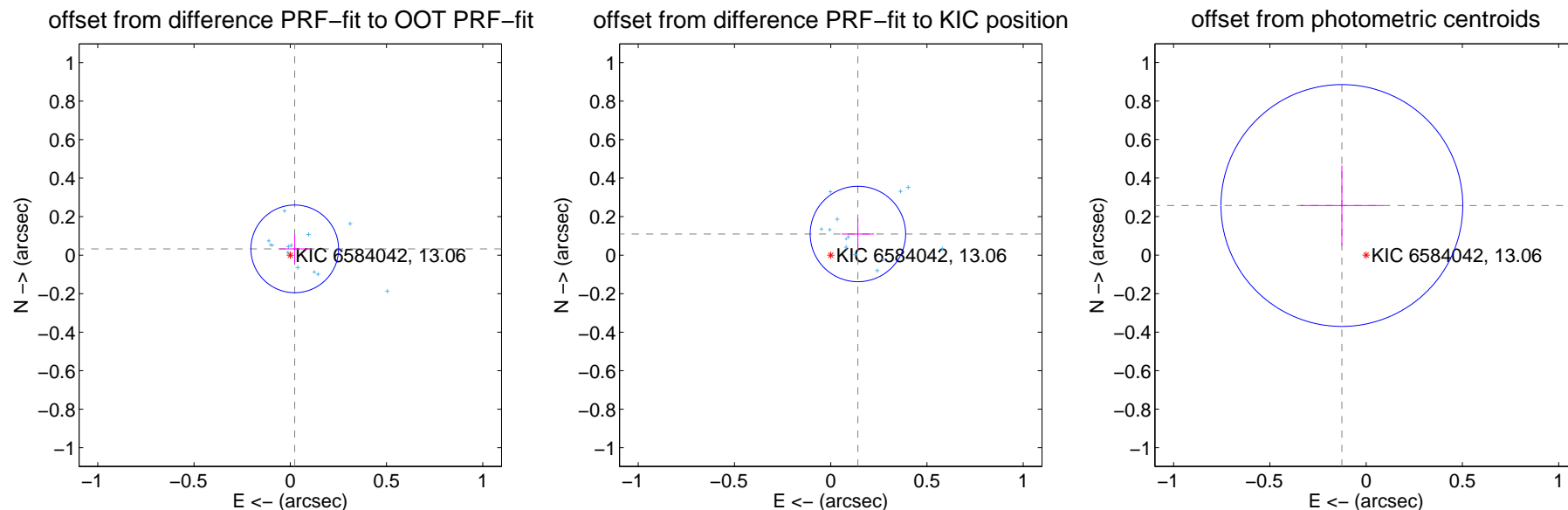
## DV Centroid Data

Supplemental centroid analysis for 006584042-02. Kepler magnitude: 13.06. Transit SNR 12.83

There are 13 quarters with good PRF difference image offsets

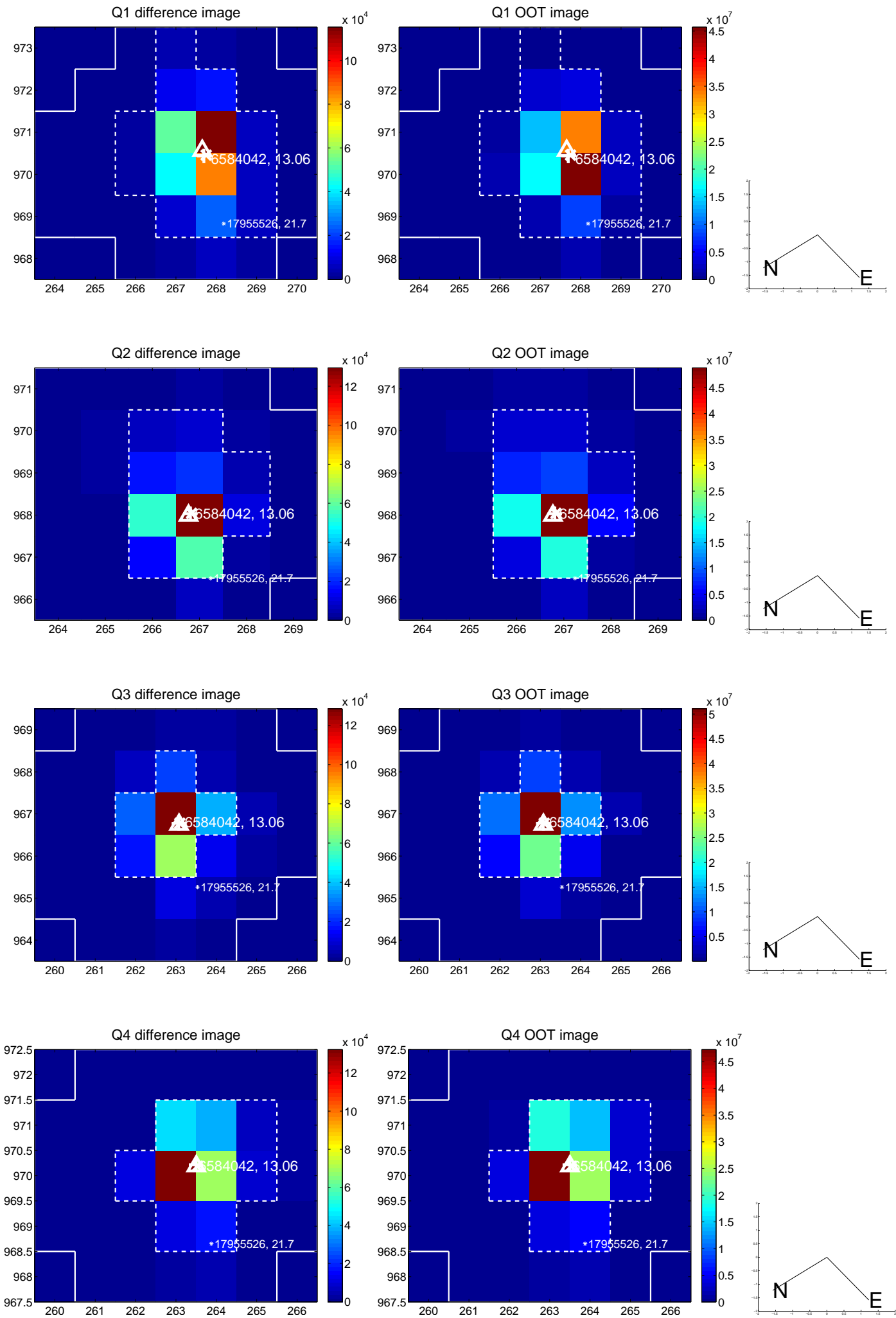
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.040 \pm 0.076$	0.53	$-0.023 \pm 0.080$	$0.033 \pm 0.074$
PRF-fit source offset from KIC position	$0.179 \pm 0.083$	2.17	$-0.141 \pm 0.084$	$0.110 \pm 0.080$
photometric centroid source offset	$0.29 \pm 0.21$	1.37	$0.13 \pm 0.22$	$0.26 \pm 0.21$

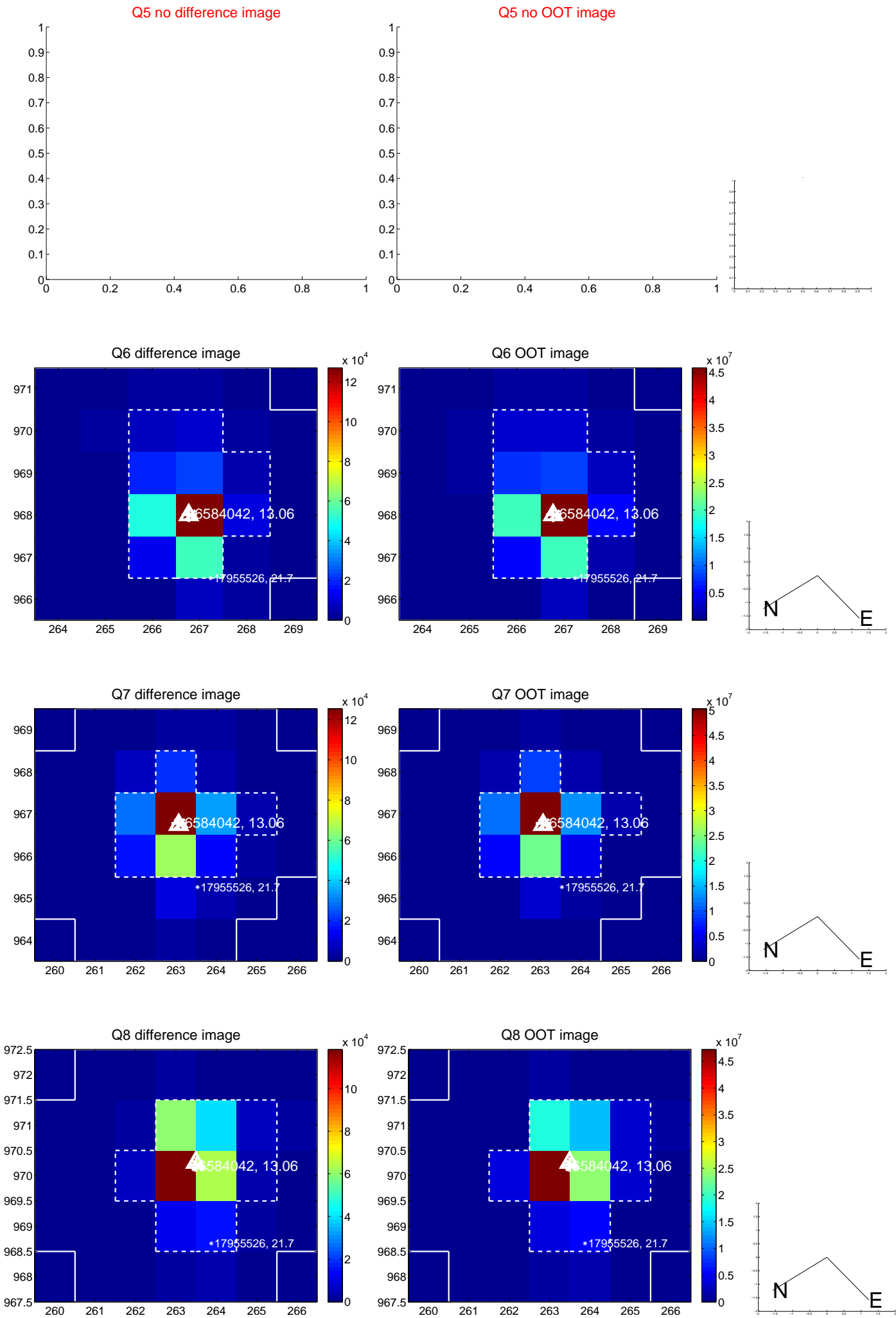


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

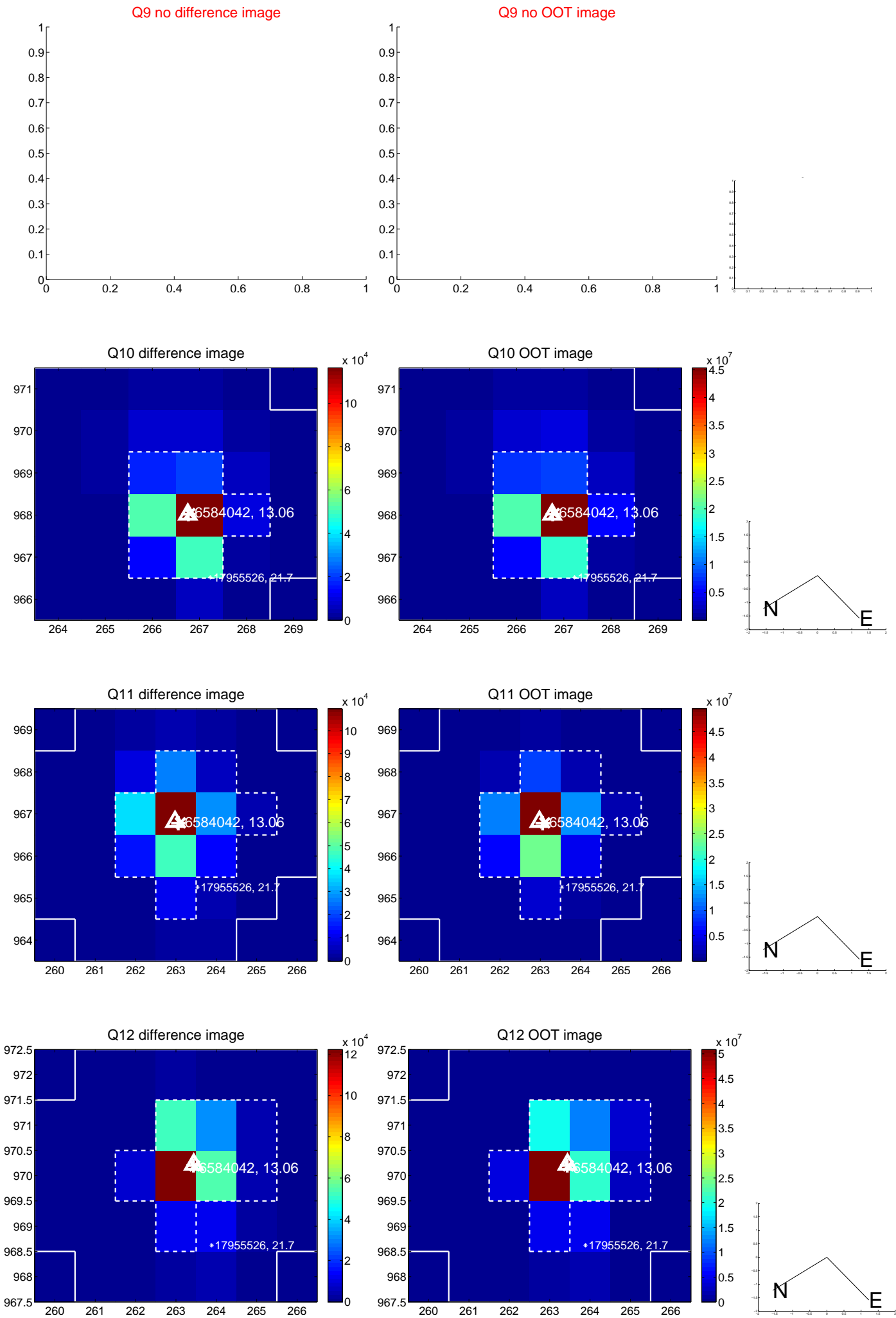
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



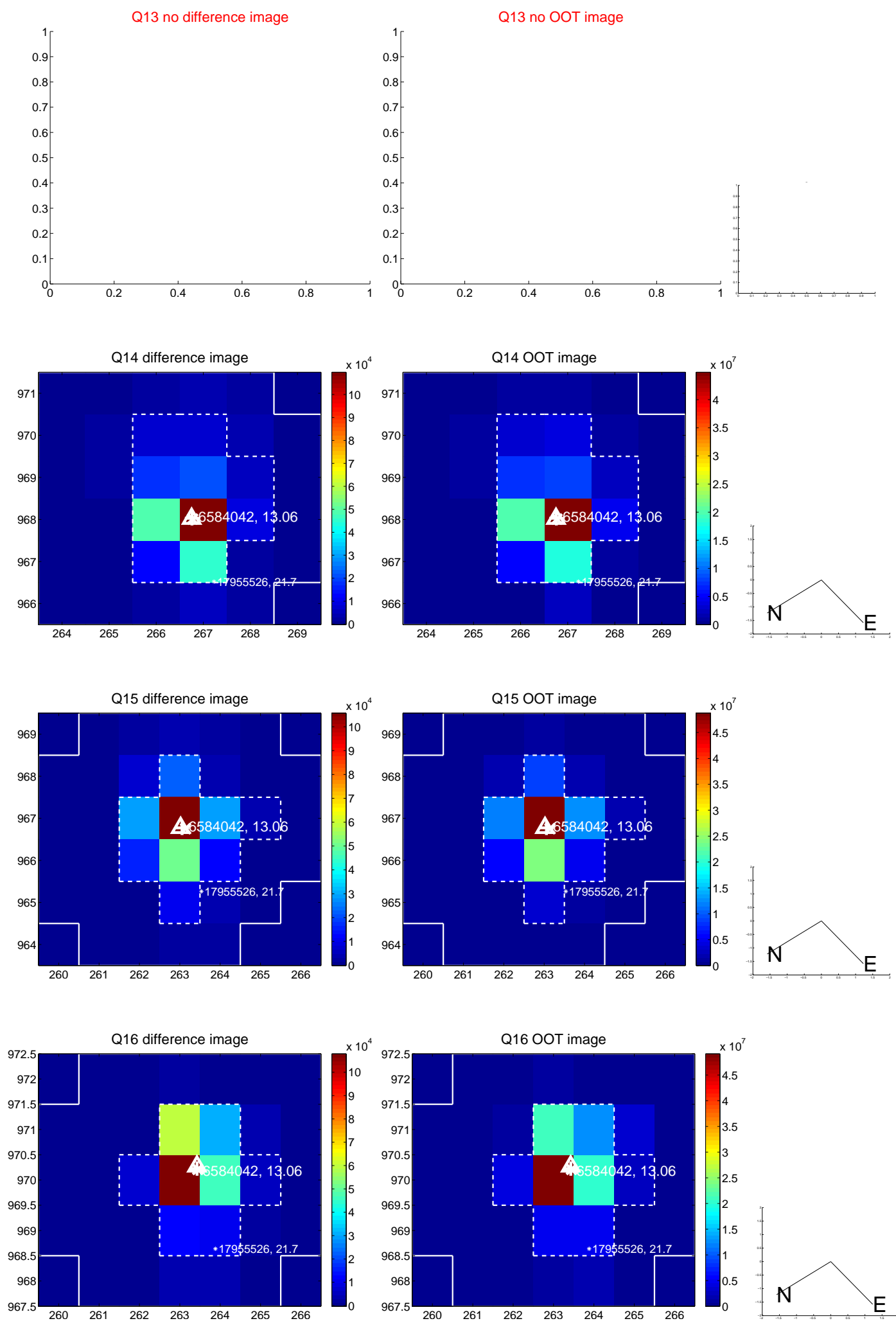
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



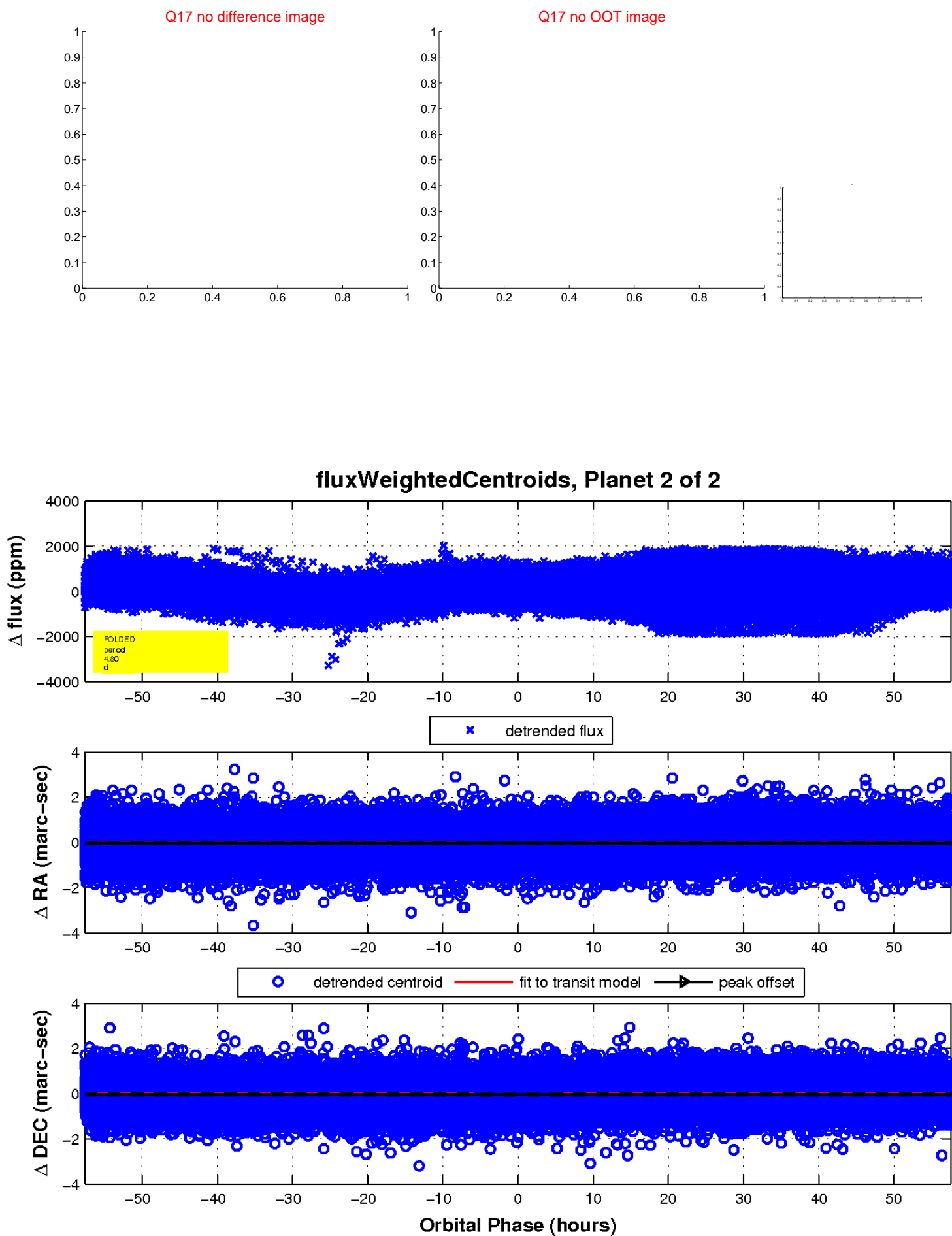
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

