

# KIC 006468337

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006468337-01	OBS	1620.01	0.959849	131.854015	48.4	2.022	34.6	37.2	1.65	6061	1.37	8783.13
006468337-02	OBS	No	371.222234	142.458513	207.2	2.678	10.4	8.1	1.65	6061	2.78	3.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006468337-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET
006468337-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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 006468337-01

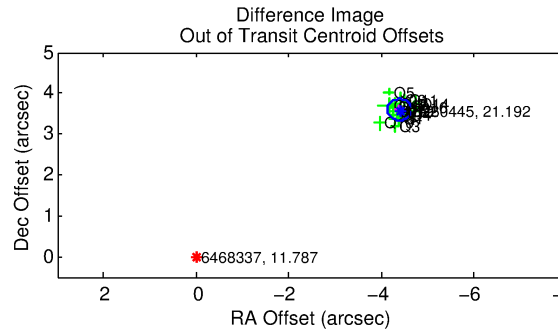
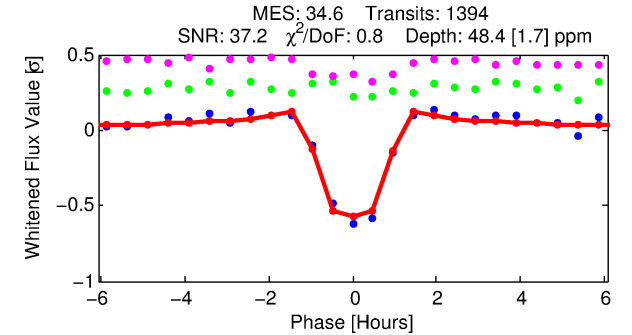
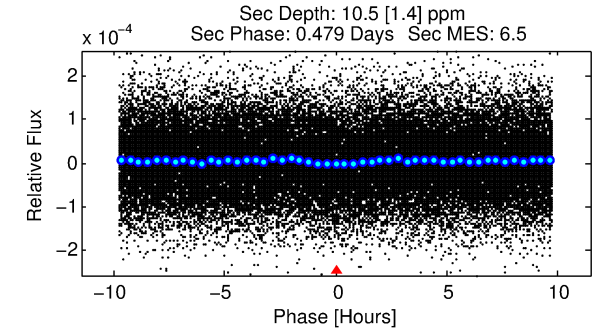
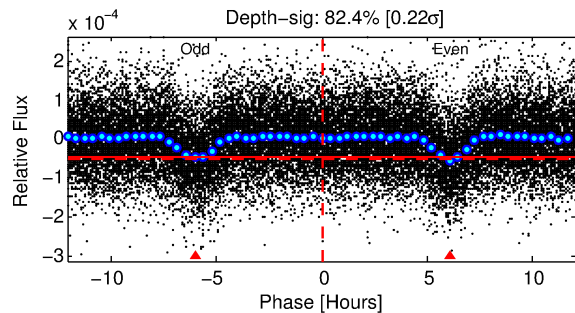
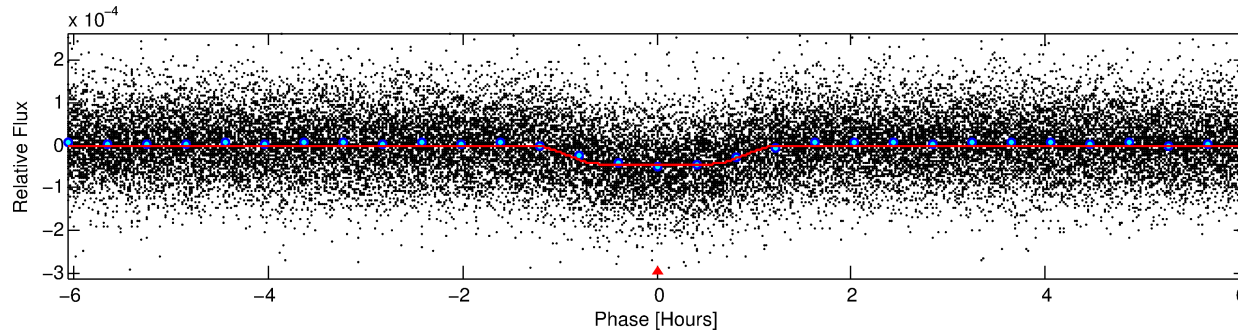
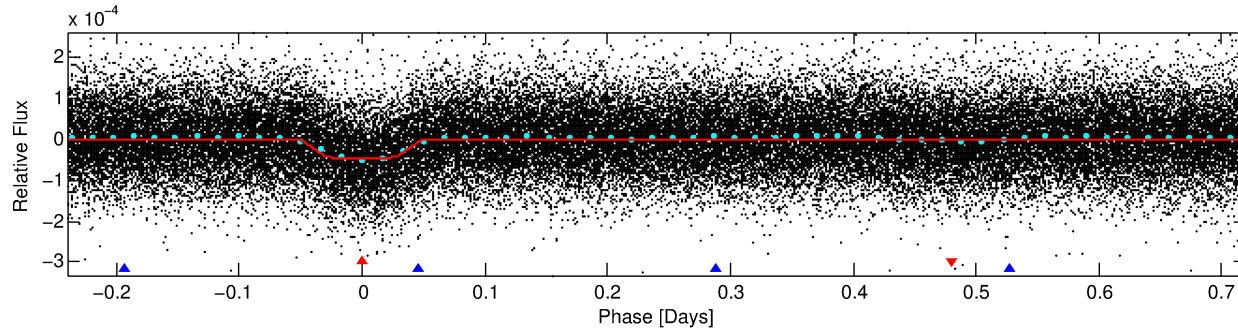
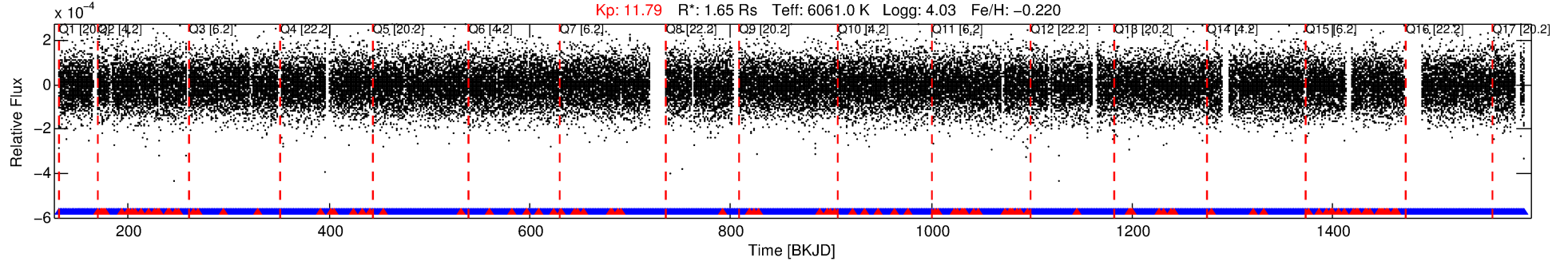
No Significant Match Found

# DV One-Page Summary

KIC: 6468337 Candidate: 1 of 2 Period: 0.960 d

KOI: K01620.01 Corr: 0.972

Kp: 11.79 R\*: 1.65 Rs Teff: 6061.0 K Logg: 4.03 Fe/H: -0.220



## DV Fit Results:

Period = 0.95985 [0.00000] d  
Epoch = 131.8540 [0.0006] BKJD  
Rp/R\* = 0.0076 [0.0010]  
a/R\* = 1.80 [0.85]  
b = 0.91 [0.12]  
Seff = 8783.13 [5843.01]  
Teq = 2469 [411] K  
Rp = 1.37 [0.55] Re  
a = 0.0194 [0.0076] AU  
Ag = 1.16 [0.82] [0.19σ]  
Teff = 3957 [314] K [2.88σ]

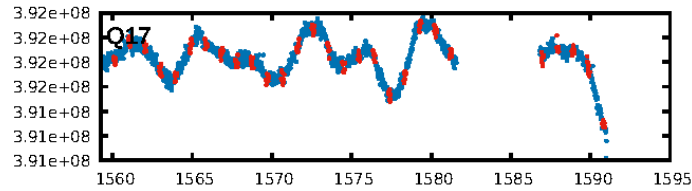
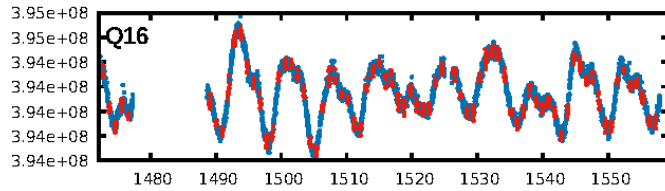
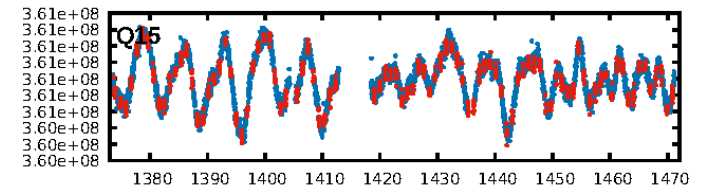
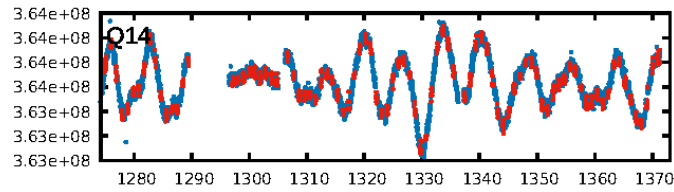
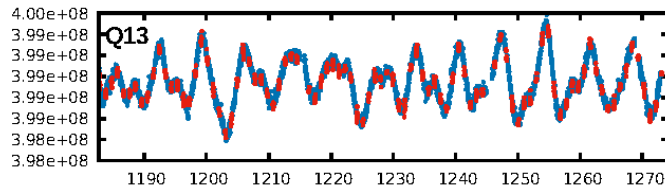
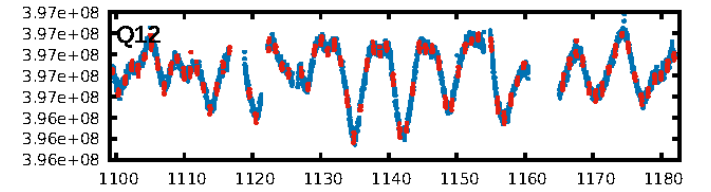
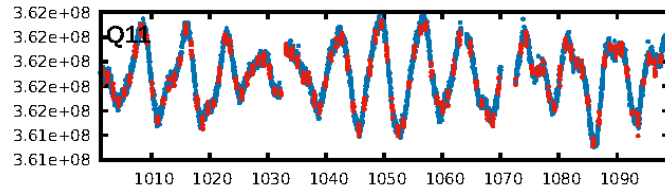
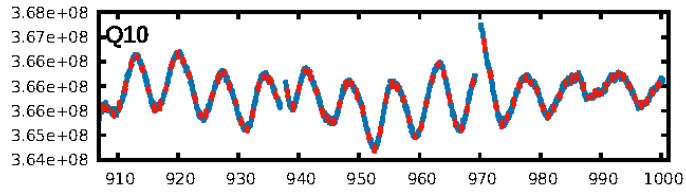
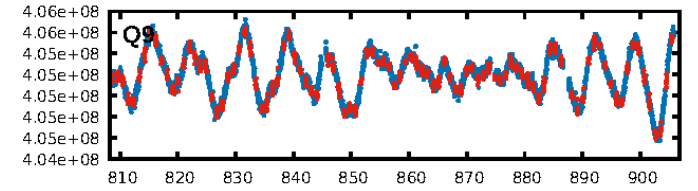
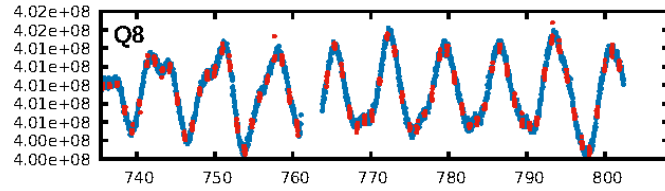
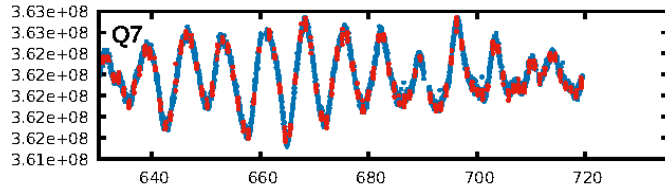
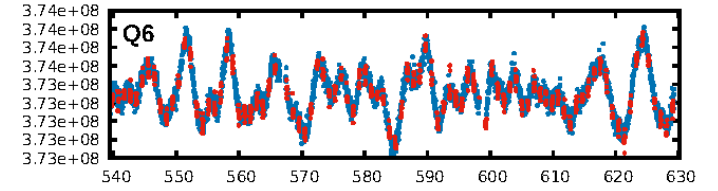
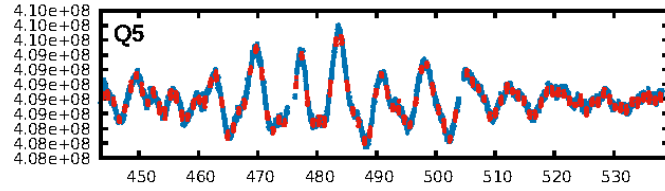
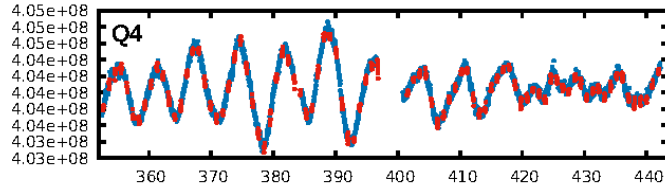
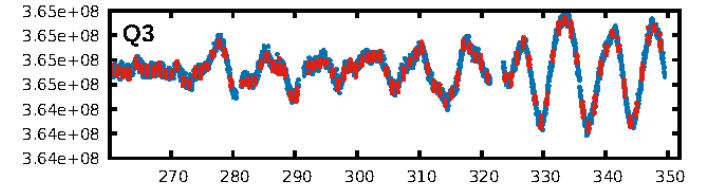
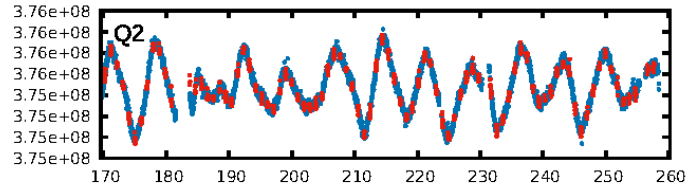
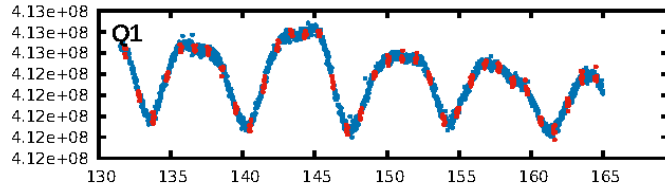
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [2648.63σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.26e-241  
RollingBand-fgt: 0.91 [1214/1331]  
GhostDiagnostic-chr: 0.957  
Centroid-sig: 0.0%  
Centroid-so: 5.669 arcsec [18.74σ]  
OotOffset-rm: 5.674 arcsec [65.72σ]  
KicOffset-rm: 5.646 arcsec [66.51σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.88 [15/17]  
DiffImageOverlap-fno: 1.00 [17/17]

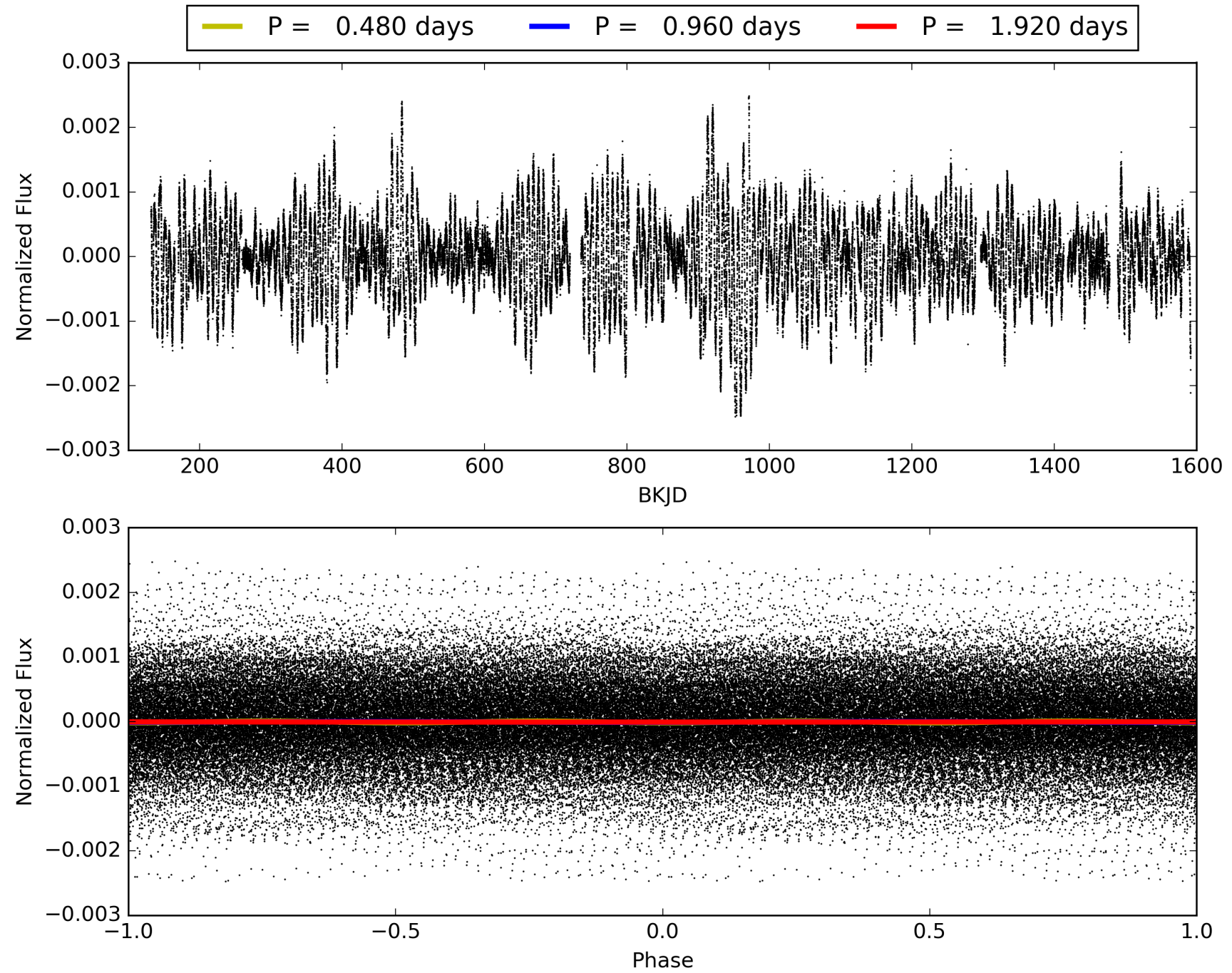
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:40:10 Z

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

# TCE 006468337-01, PDC Light Curves

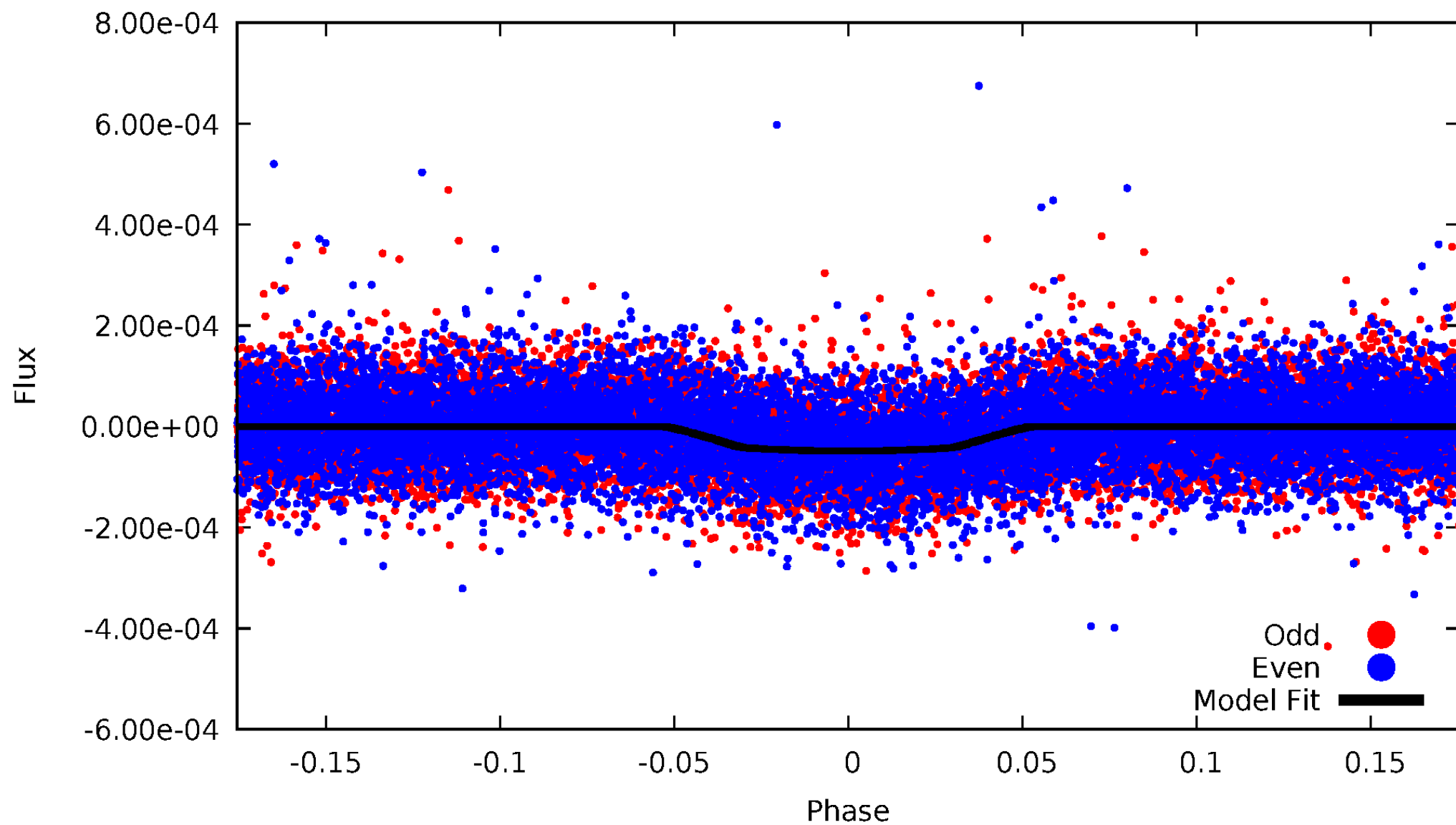


TCE 006468337-01



# DV Odd/Even

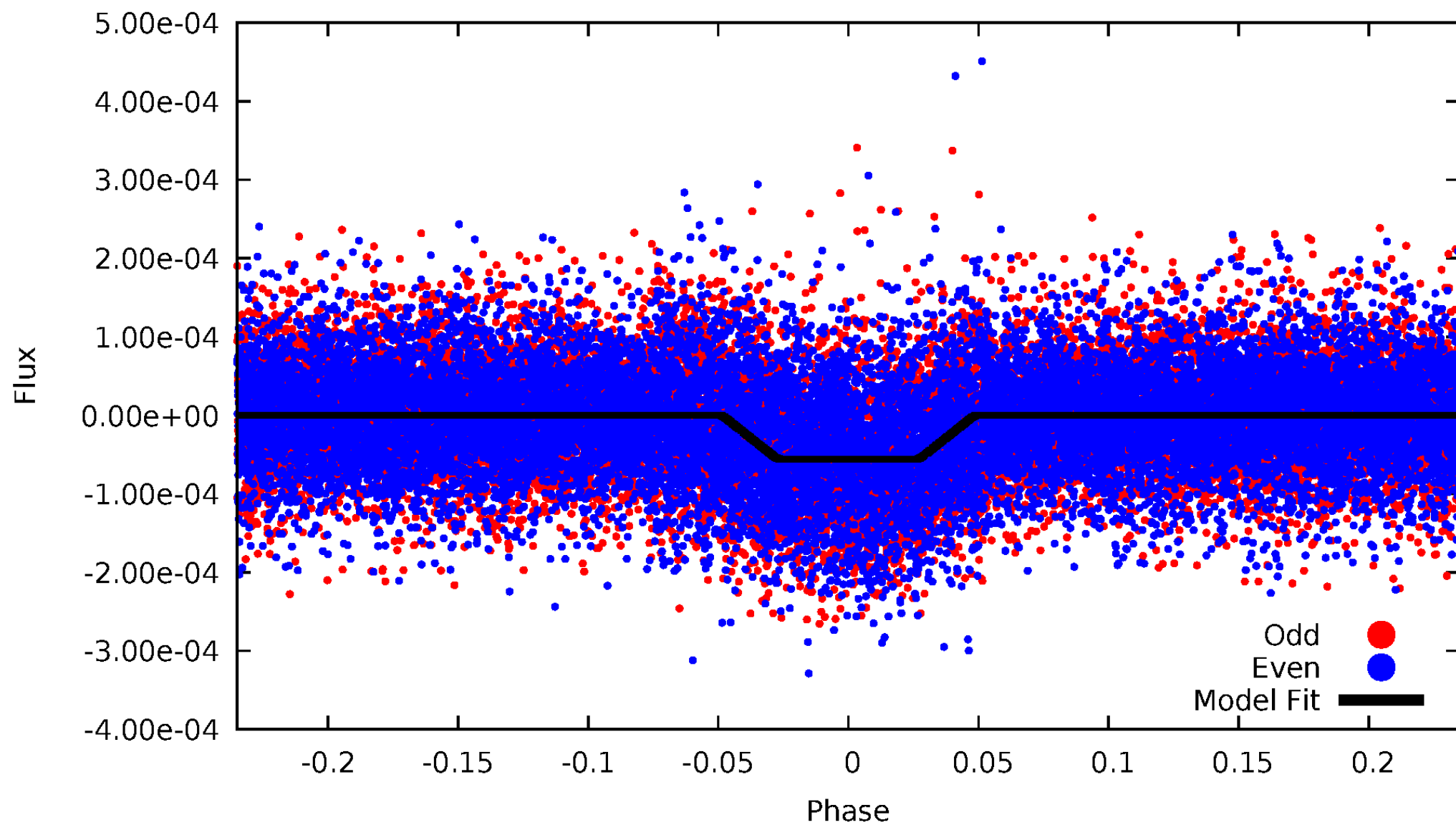
TCE 006468337-01





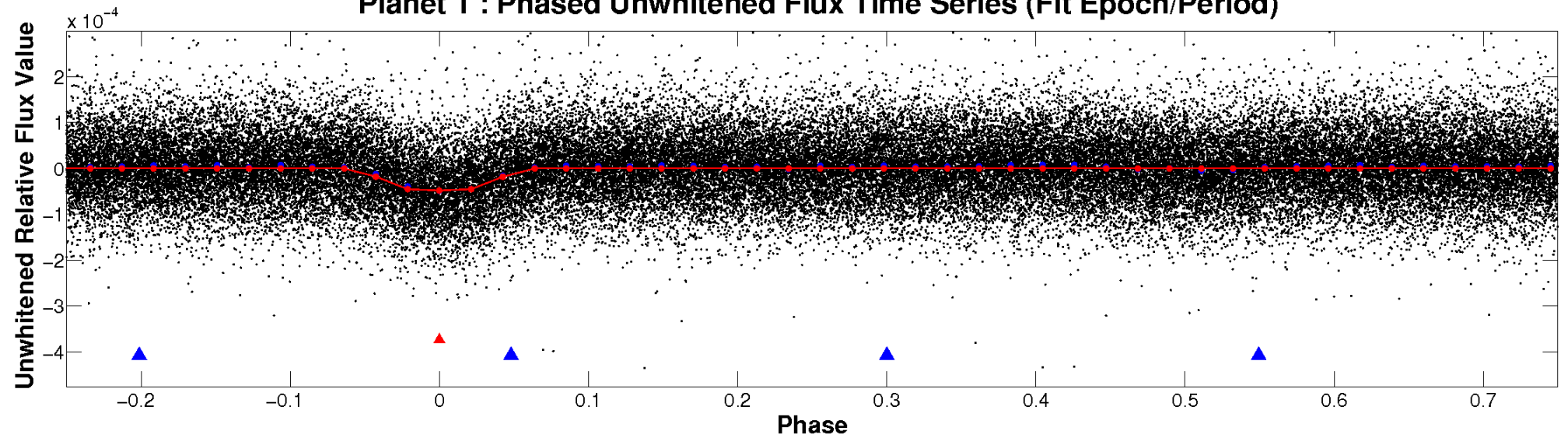
# ALT Odd/Even

TCE 006468337-01

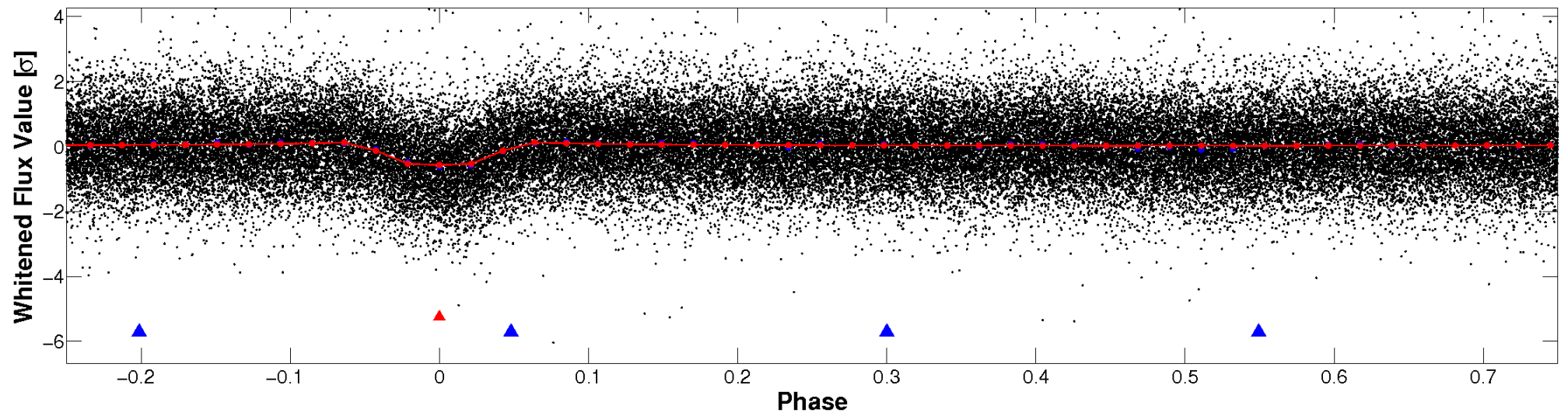


# Non-Whitened Vs. Whitened Light Curve

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

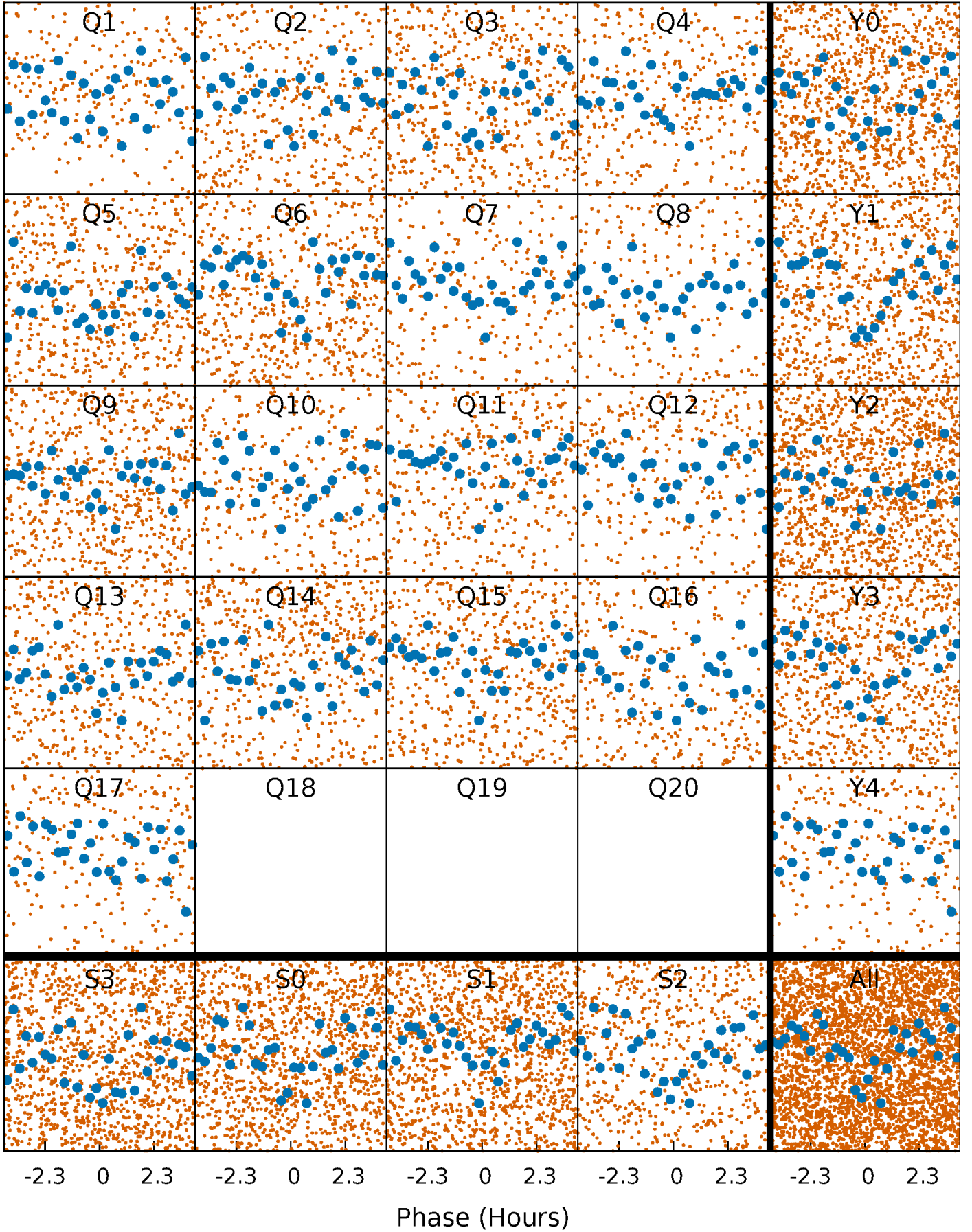


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

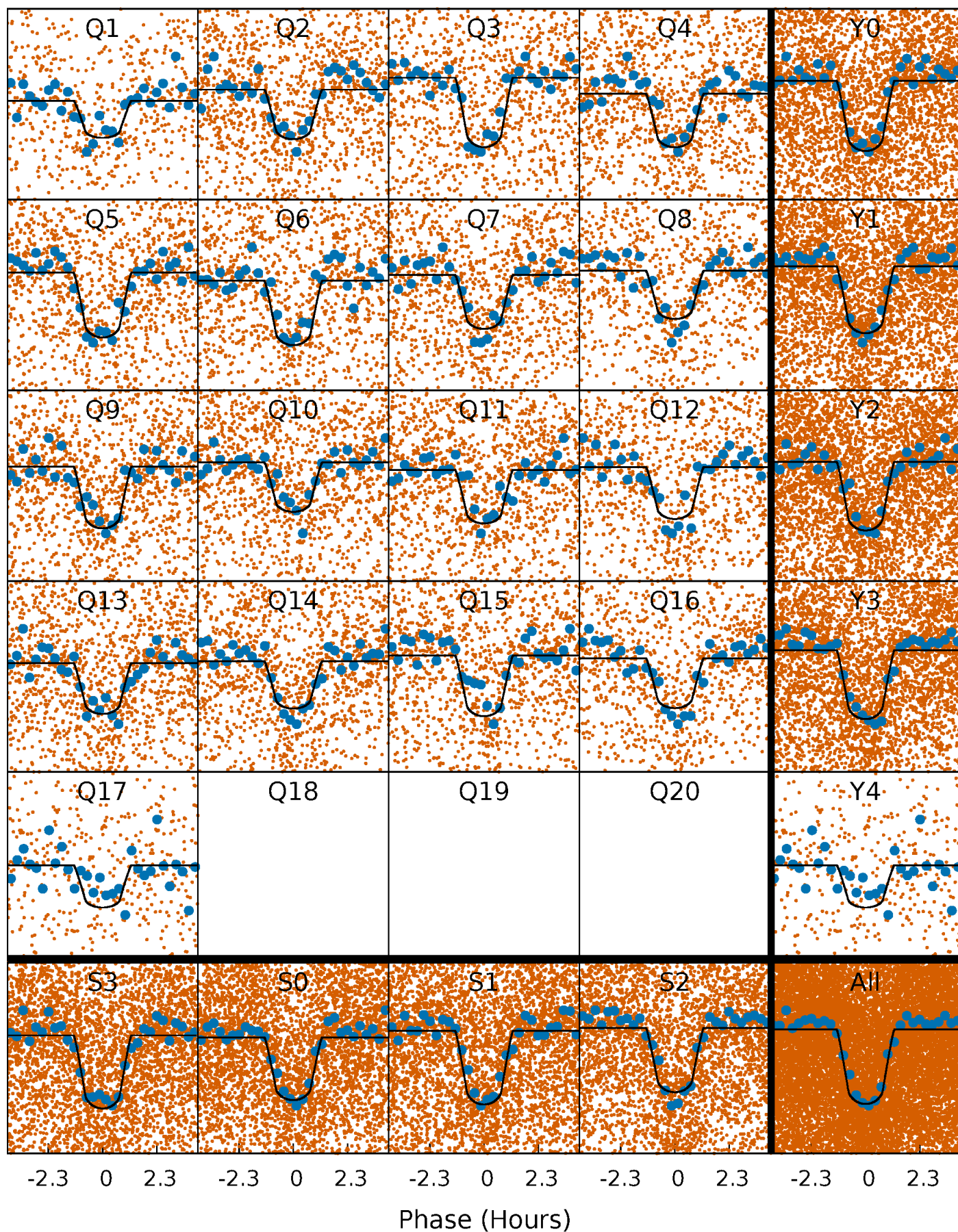
TCE 006468337-01 P= 0.959849 Days  $T_0=131.854015$  (BKJD)





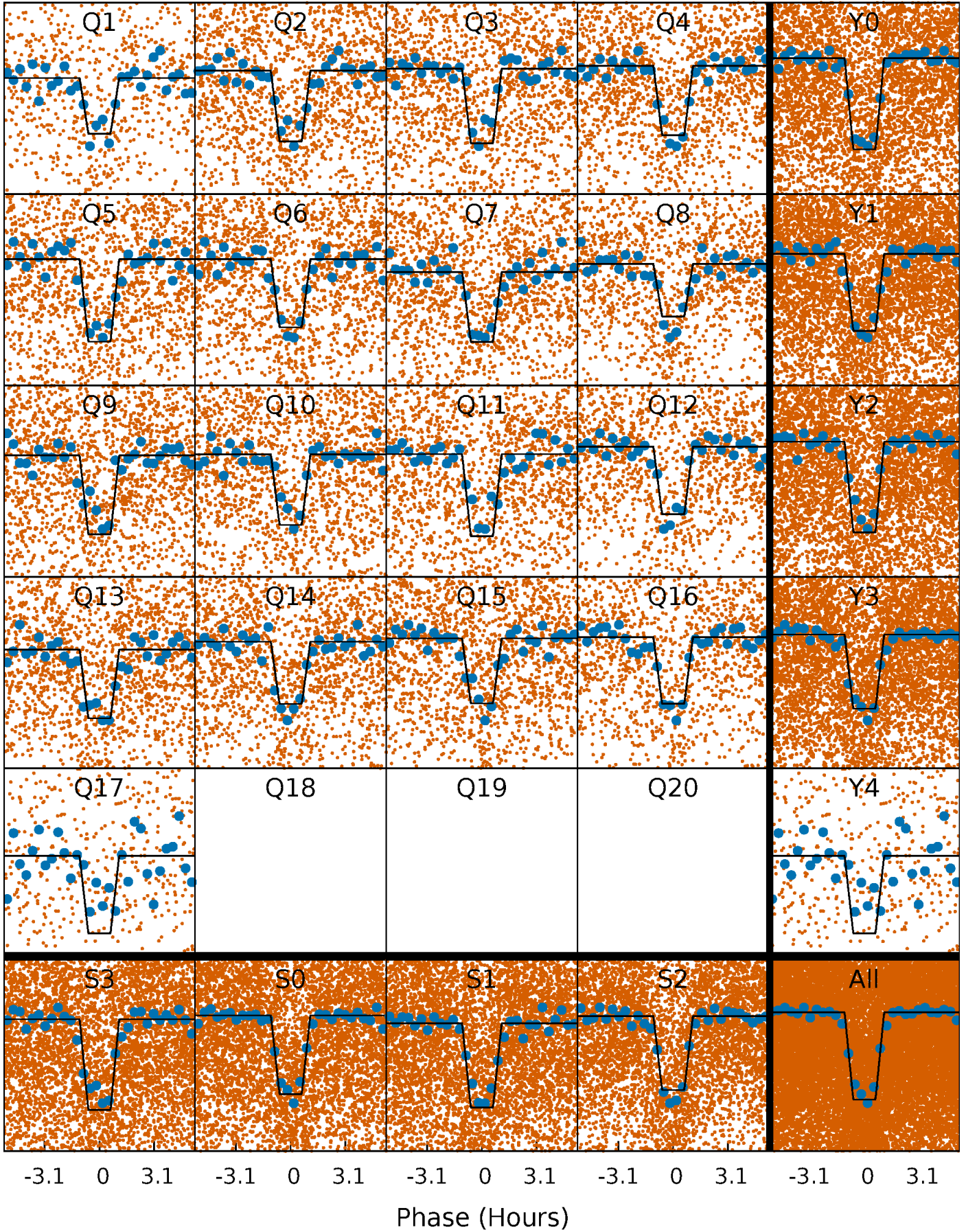
# DV Quarter-Phased Transit Curves

TCE 006468337-01 P= 0.959849 Days  $T_0=131.854015$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006468337-01 P= 0.959857 Days  $T_0=131.850139$  (BKJD)

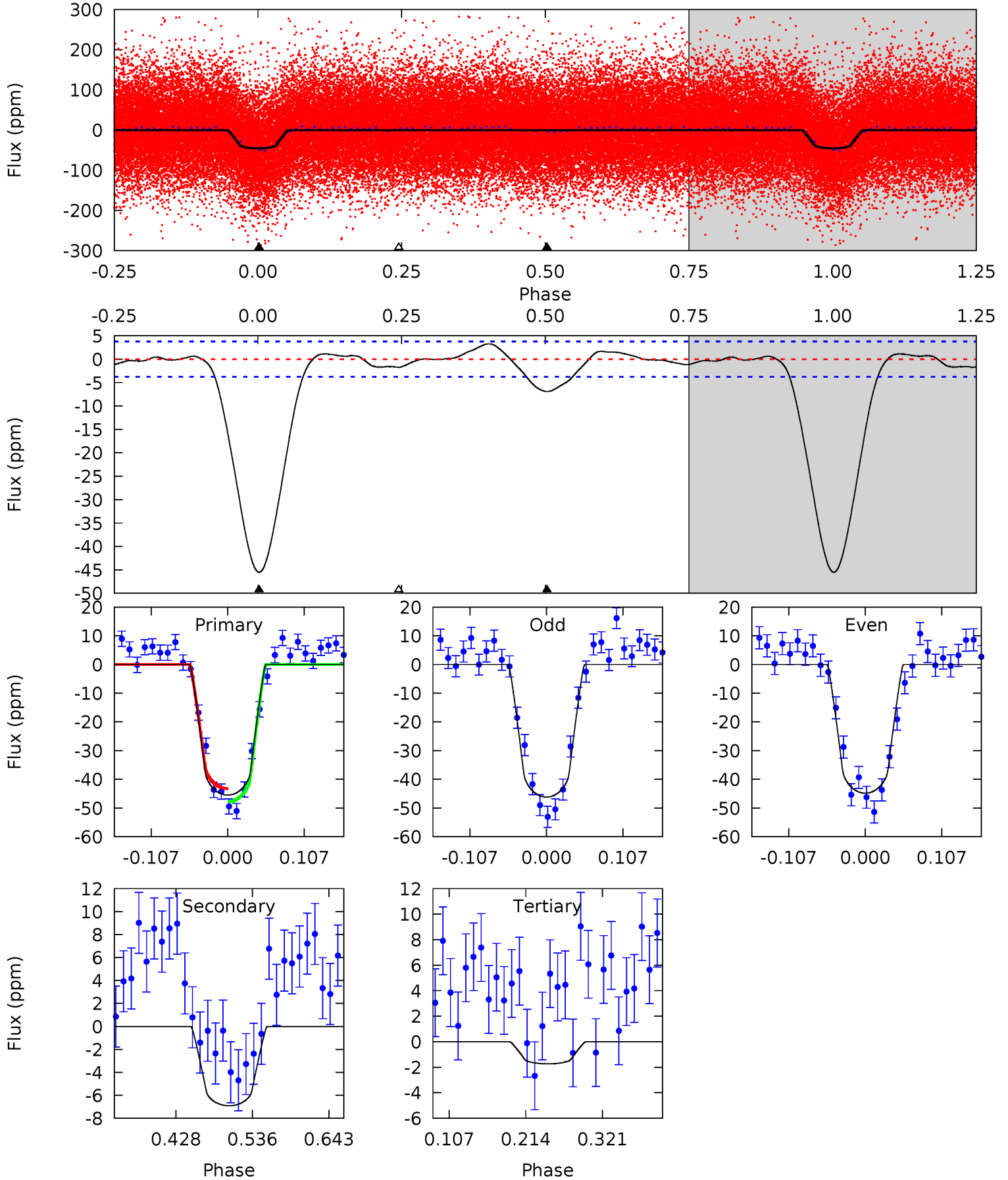




# DV Model-Shift Uniqueness Test

006468337-01, P = 0.959849 Days, E = 130.894166 Days

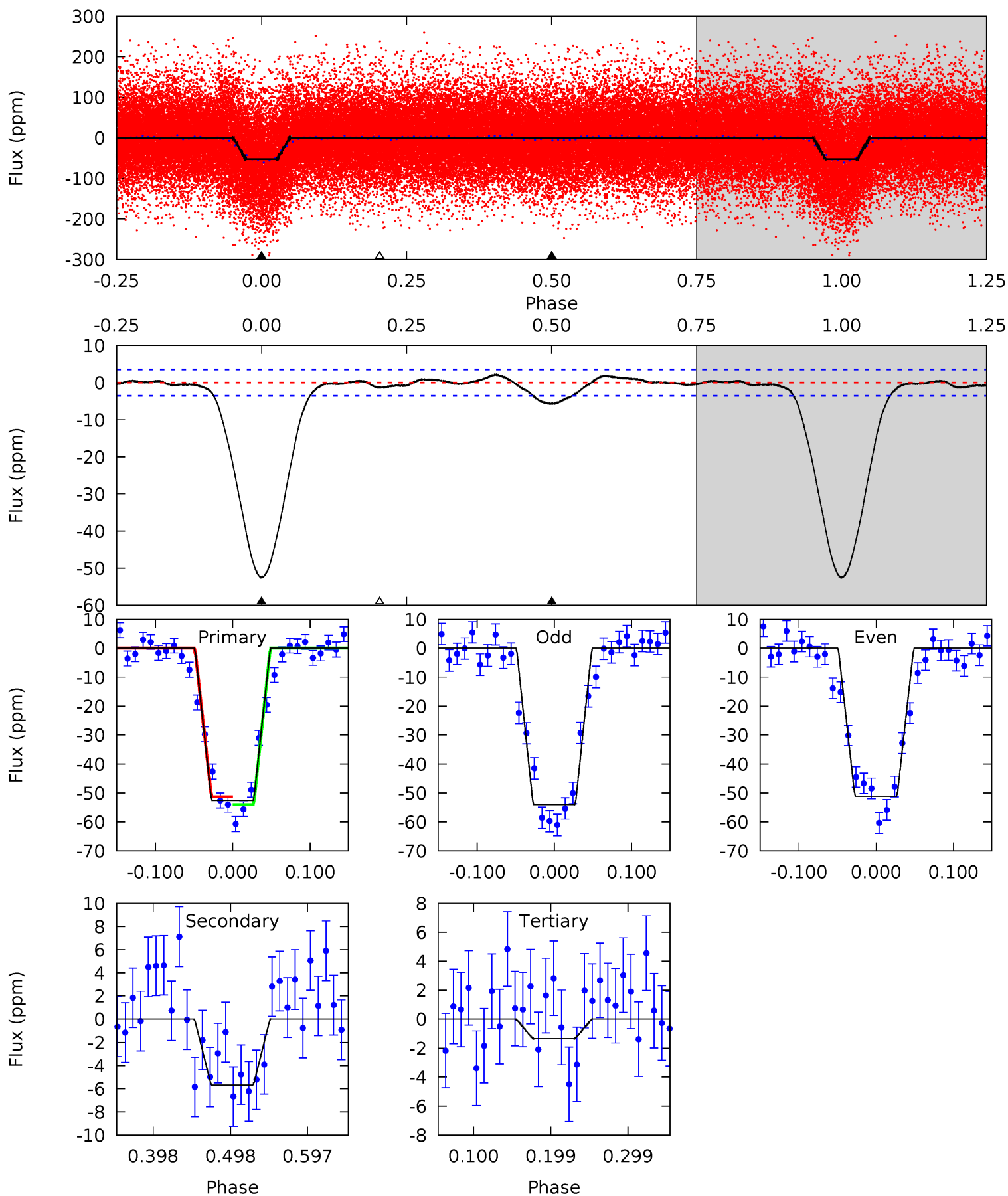
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.0	8.35	2.09	0	4.55	1.61	1.19	52.9	55.0	6.25	8.35	0.83	1.02	0.07	2.74



# Alt Model-Shift Uniqueness Test

006468337-01, P = 0.959857 Days, E = 130.890282 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
67.3	7.29	1.72	0	4.57	1.65	0.89	65.6	67.3	5.58	7.29	1.85	1.03	0.04	1.69



### Stellar Parameters For KIC 006468337

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6061^{+211}_{-211}$	$4.025^{+0.390}_{-0.130}$	$-0.220^{+0.300}_{-0.300}$	$1.653^{+0.421}_{-0.631}$	$1.056^{+0.160}_{-0.160}$	$0.330^{+0.954}_{-0.148}$
	+3%/-3%	+10%/-3%	+136%/-136%	+25%/-38%	+15%/-15%	+289%/-45%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006468337-01 / KOI 1620.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-7 \pm 1$	$1.32^{+0.27}_{-0.31}$	$3367^{+271}_{-372}$	$3617^{+312}_{-312}$	$0.829^{+0.573}_{-0.269}$
Alt.	$-6 \pm 1$	$1.26^{+0.31}_{-0.30}$	$3365^{+254}_{-352}$	$3496^{+330}_{-365}$	$0.750^{+0.517}_{-0.275}$

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



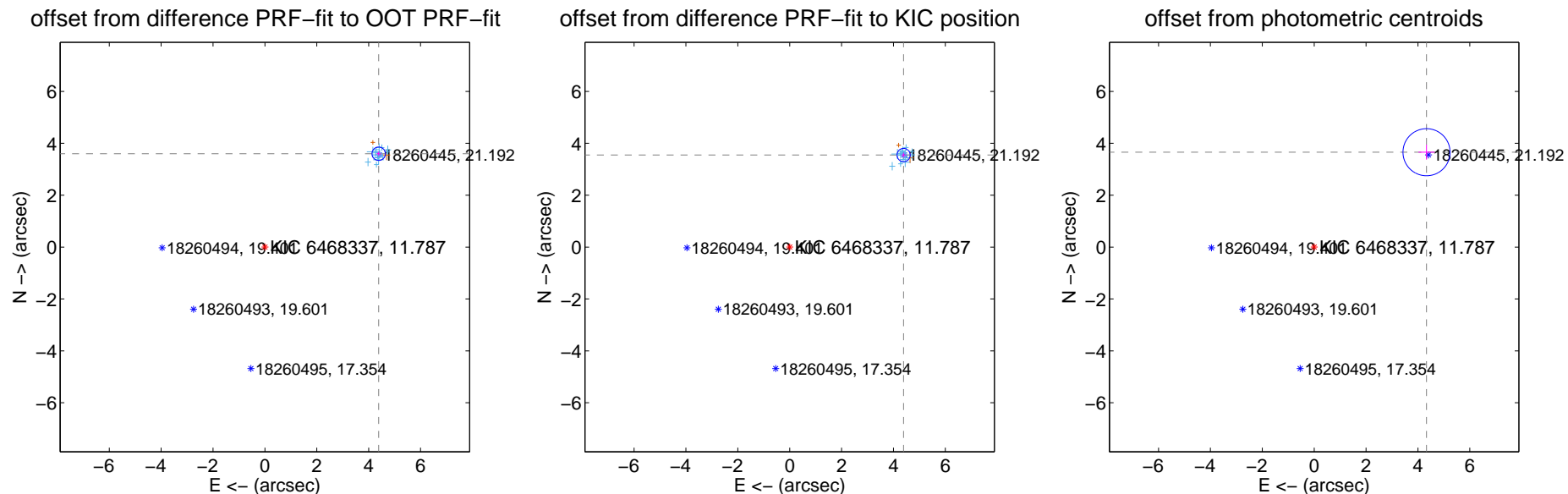
## DV Centroid Data

Supplemental centroid analysis for 006468337-01. **Kepler magnitude: 11.79.** Transit SNR 37.20

There are 15 quarters with good PRF difference image offsets

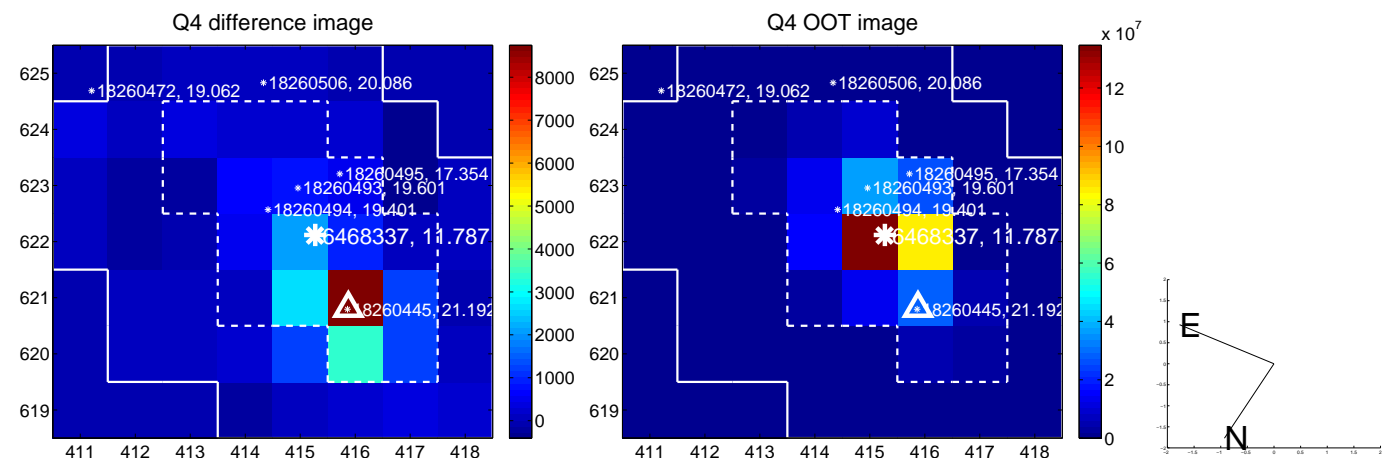
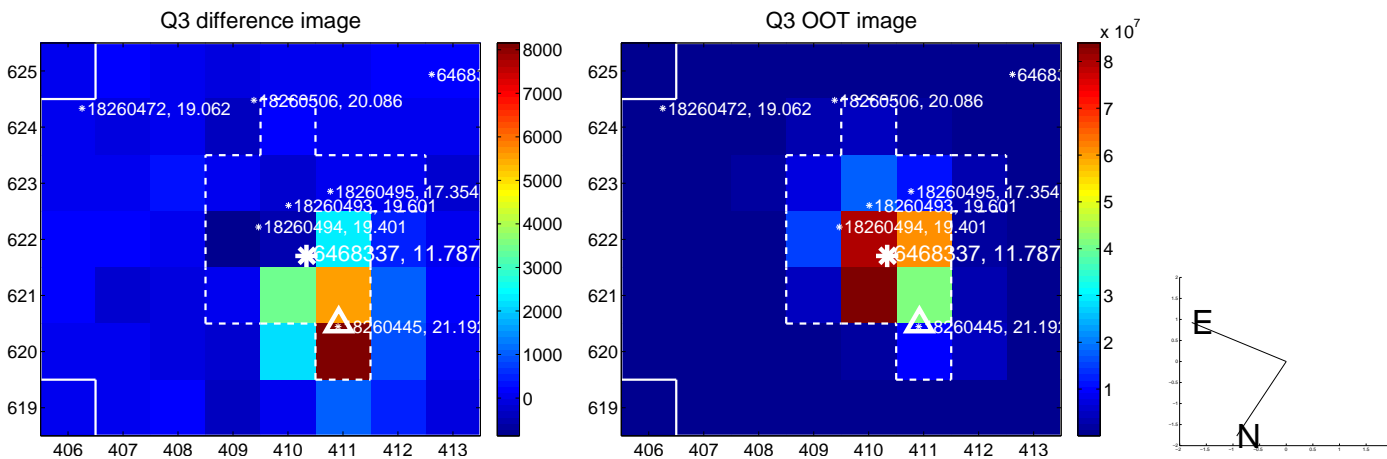
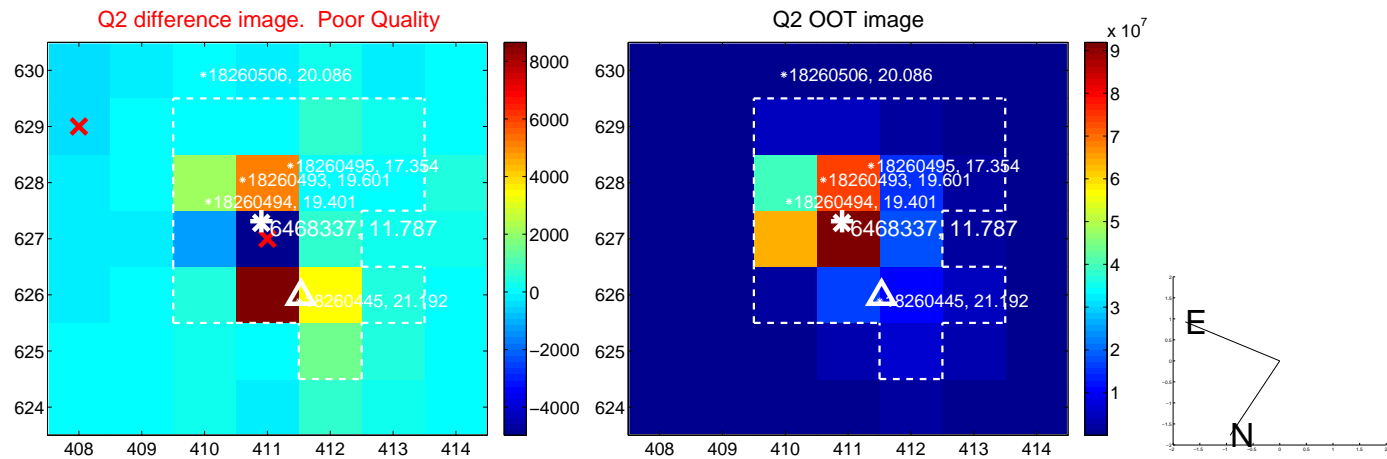
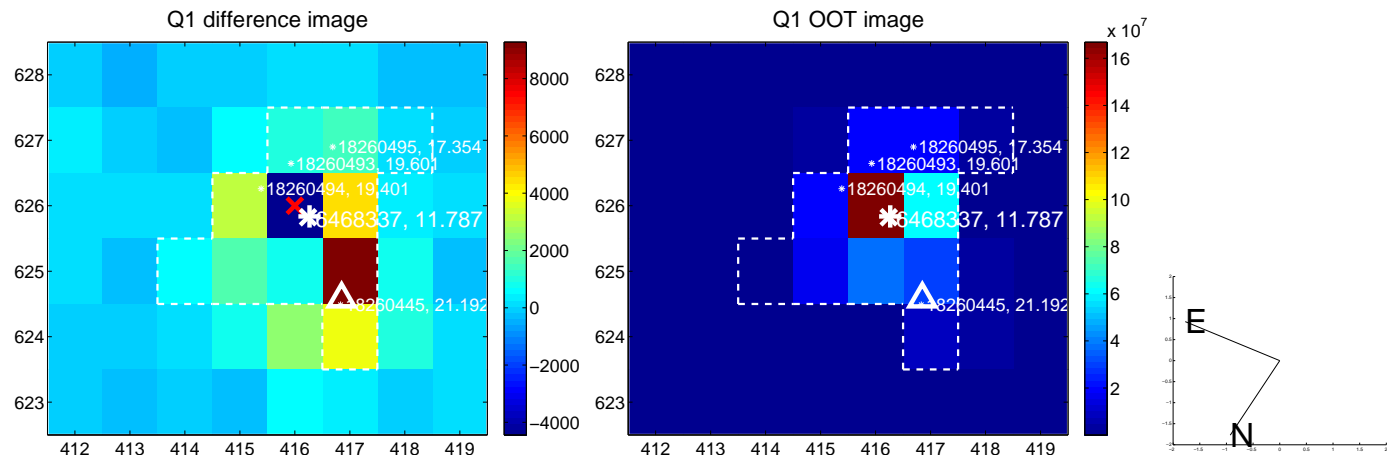
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>5.674 <math>\pm</math> 0.086</b>	<b>65.72</b>	-4.387 $\pm$ 0.082	3.598 $\pm$ 0.085
PRF-fit source offset from KIC position	<b>5.646 <math>\pm</math> 0.085</b>	<b>66.51</b>	-4.392 $\pm$ 0.081	3.549 $\pm$ 0.082
photometric centroid source offset	<b>5.67 <math>\pm</math> 0.30</b>	<b>18.74</b>	-4.33 $\pm$ 0.31	3.66 $\pm$ 0.29

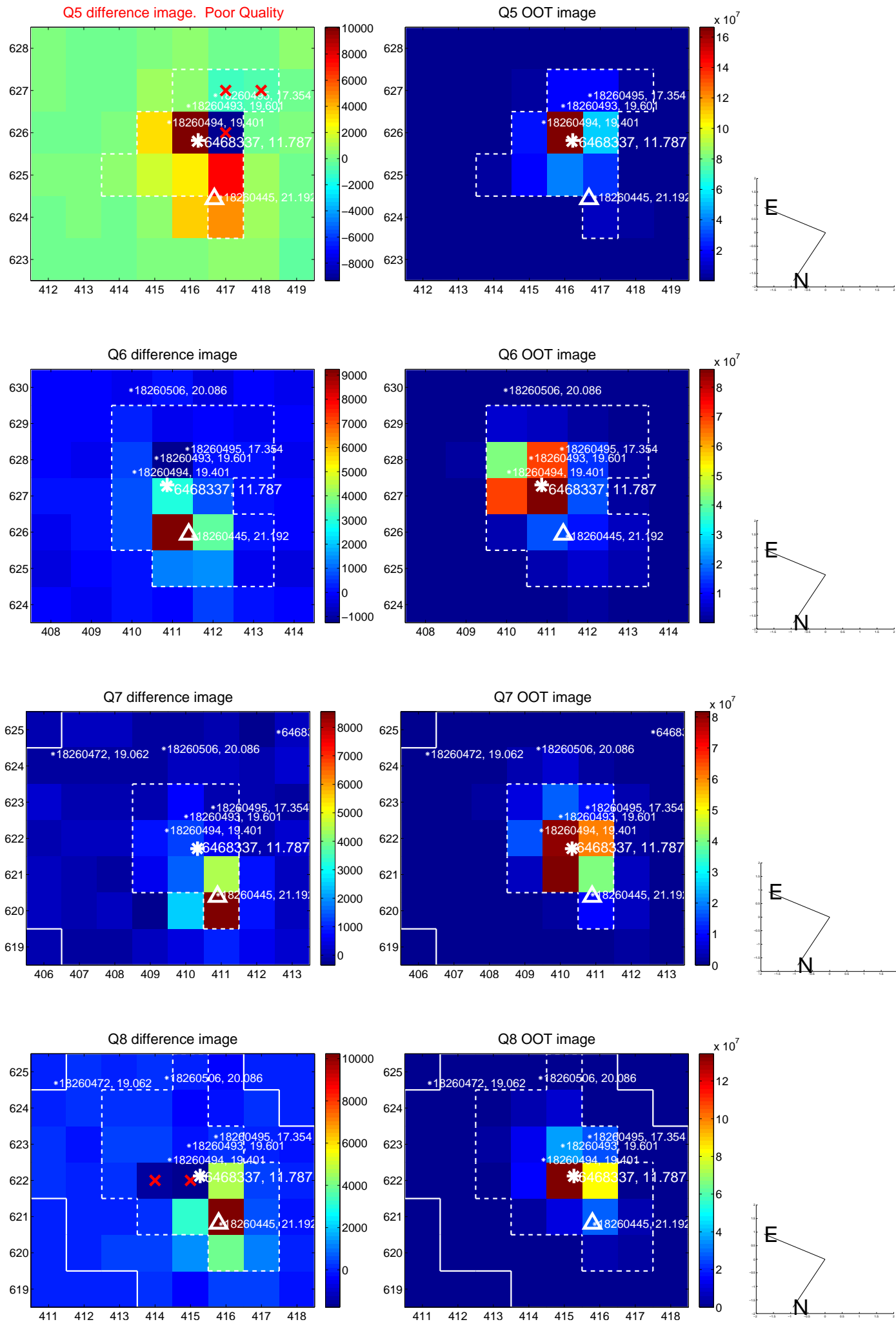


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

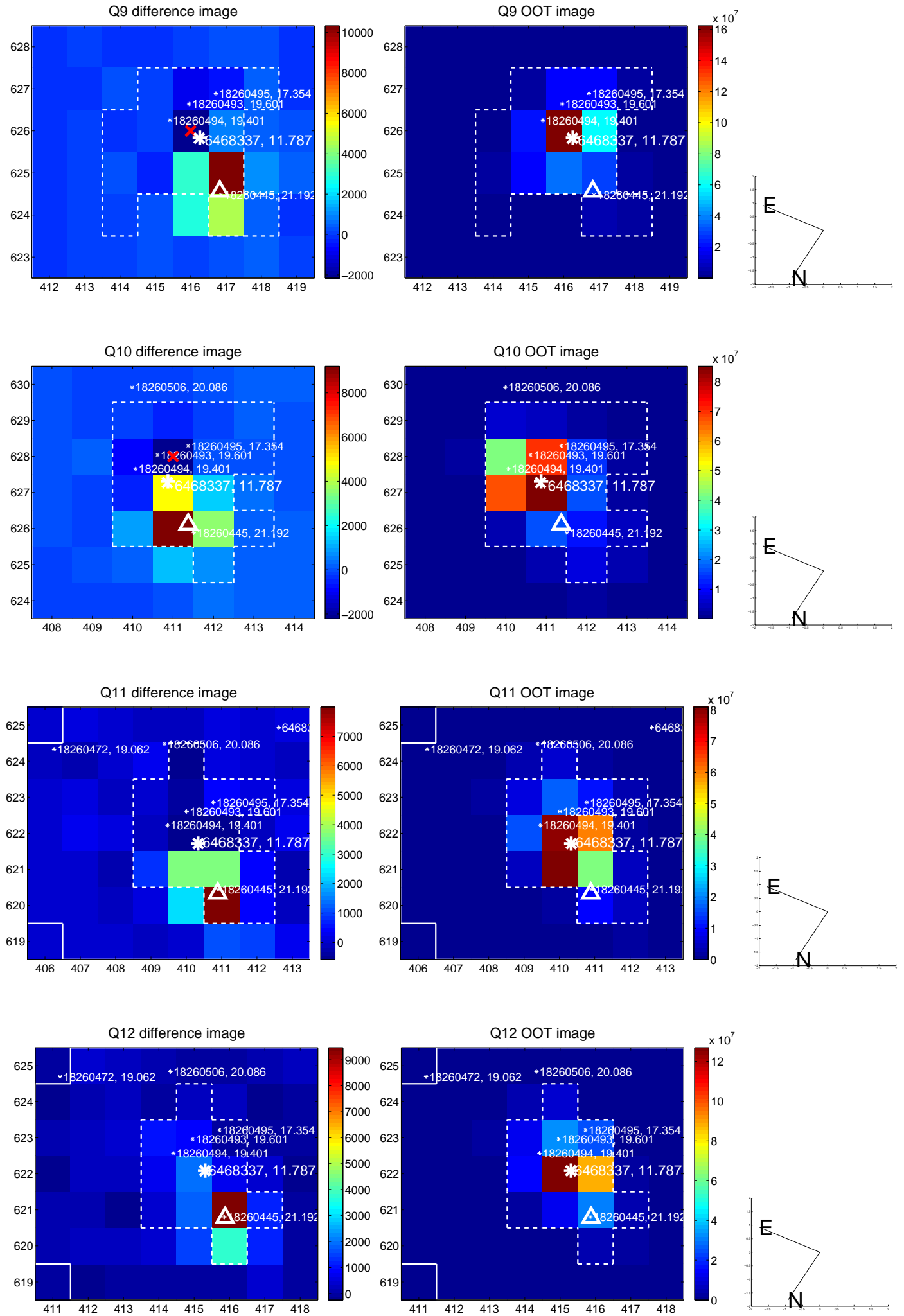
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



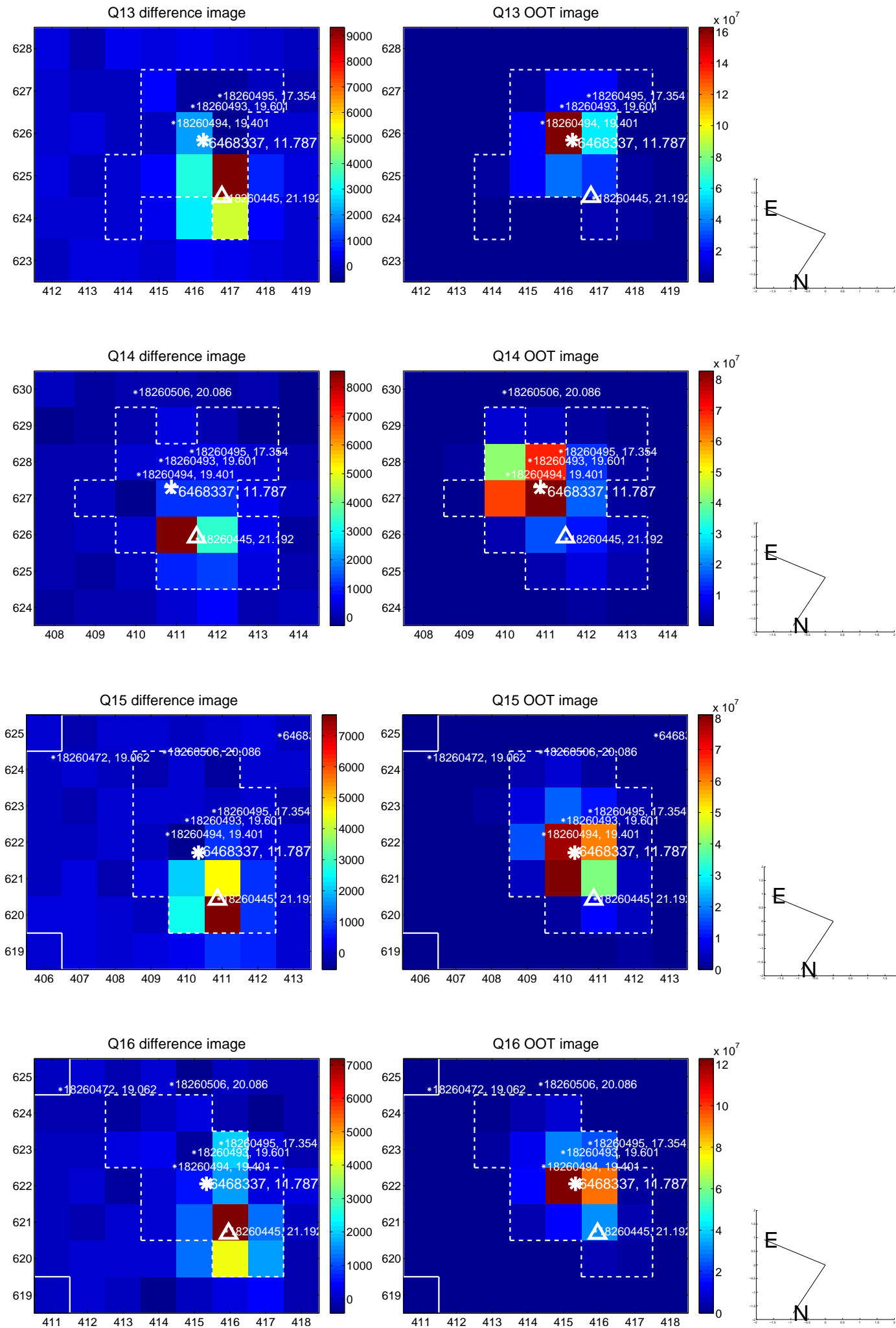
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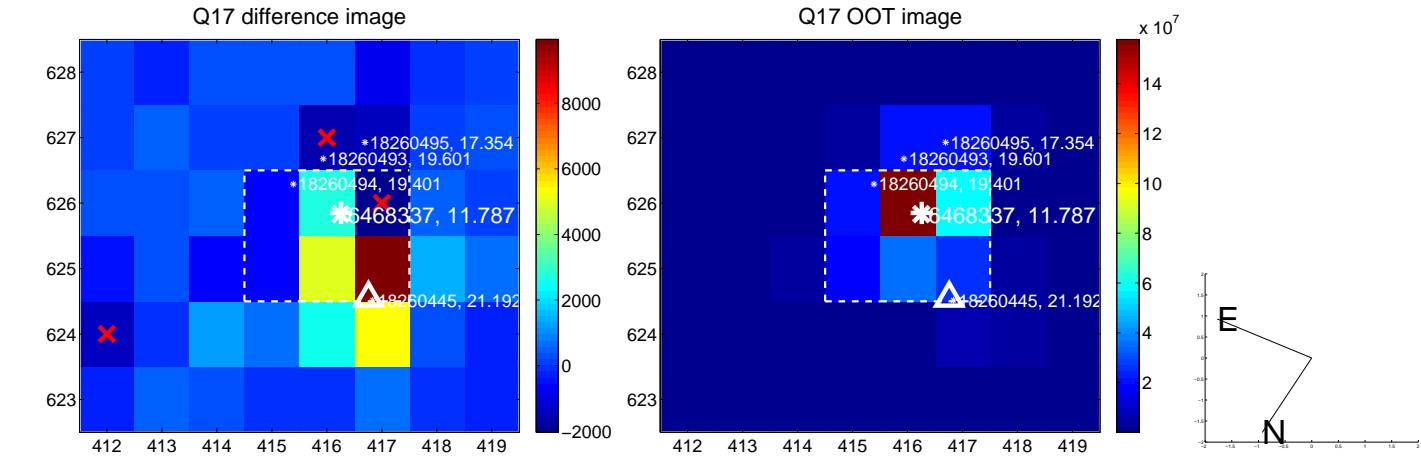


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

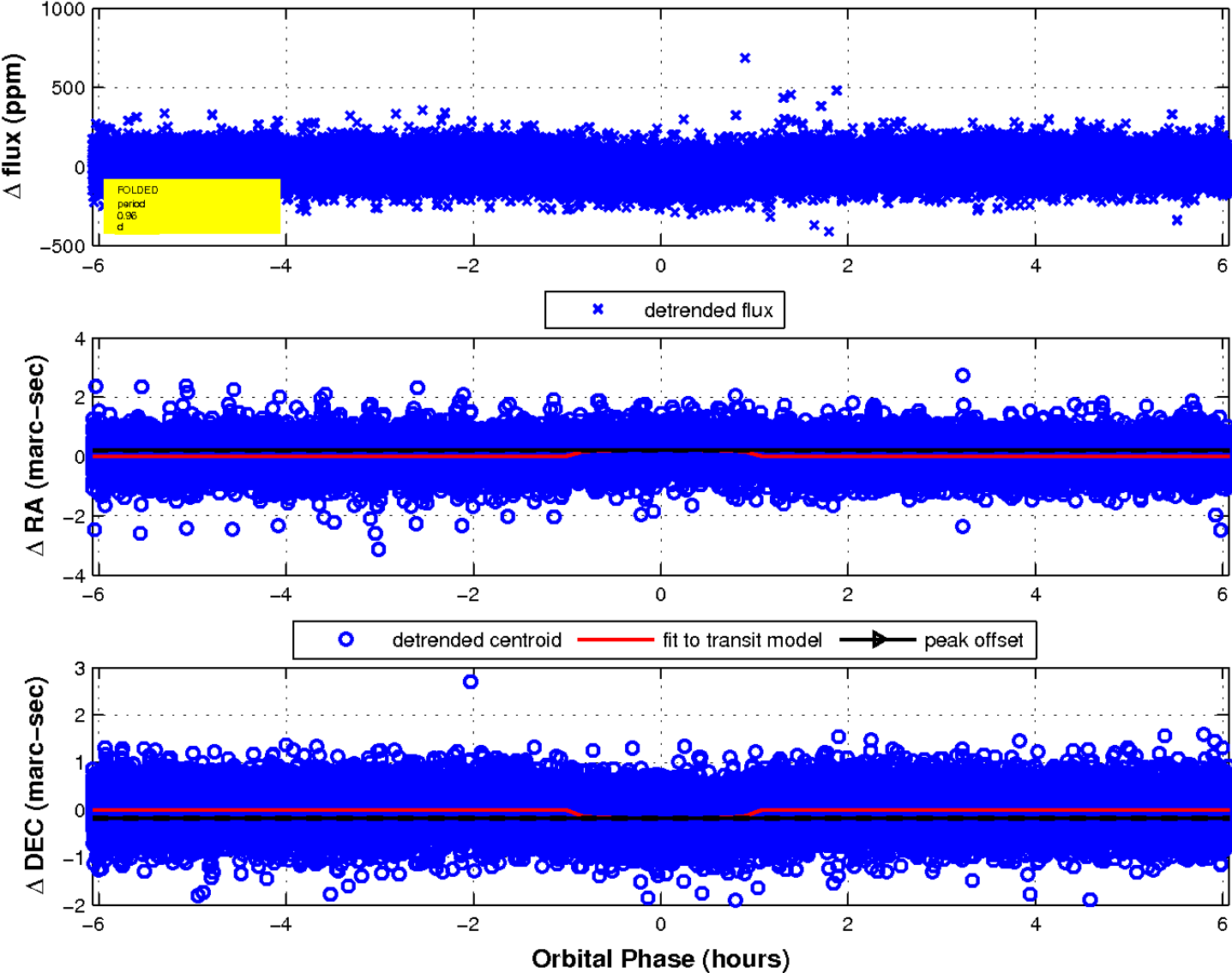




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

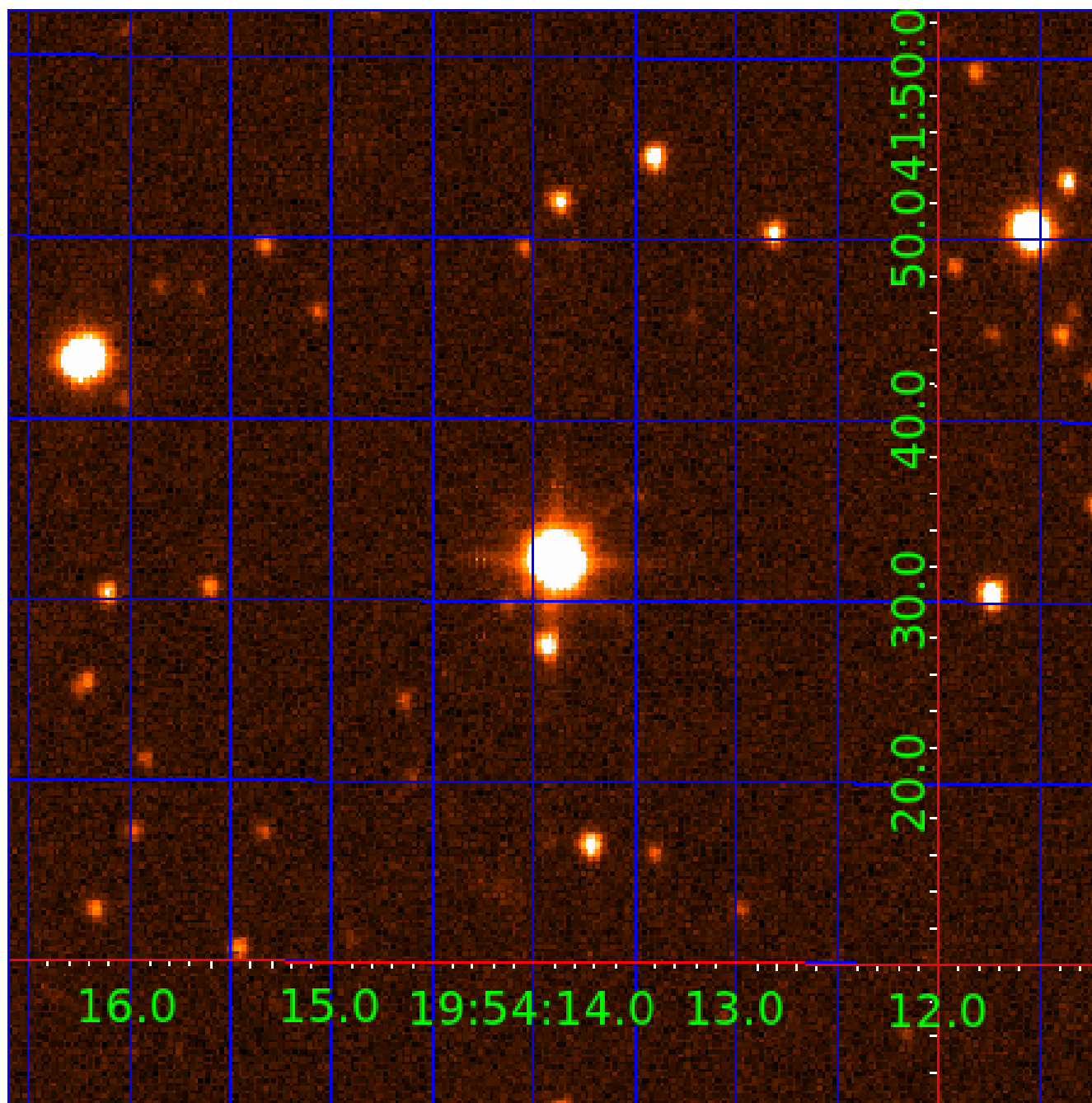


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 006468337

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006468337-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET
006468337-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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.

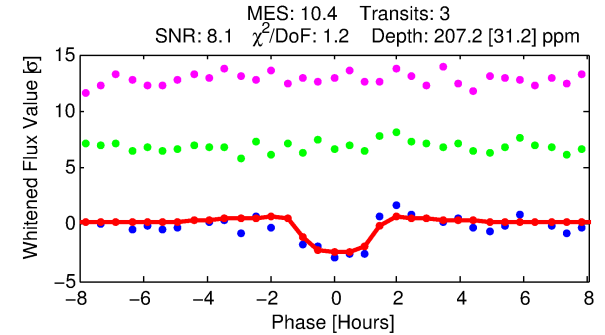
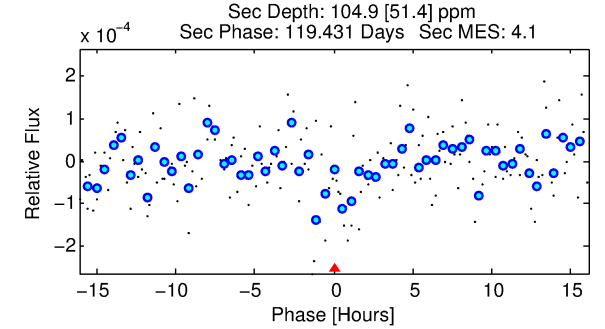
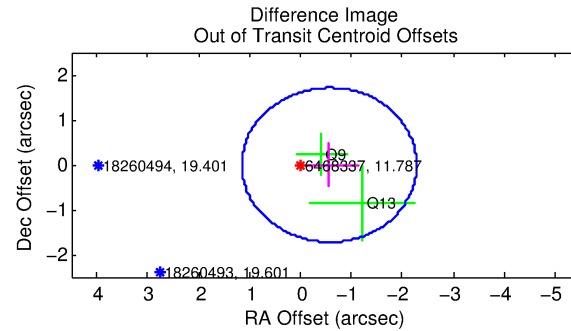
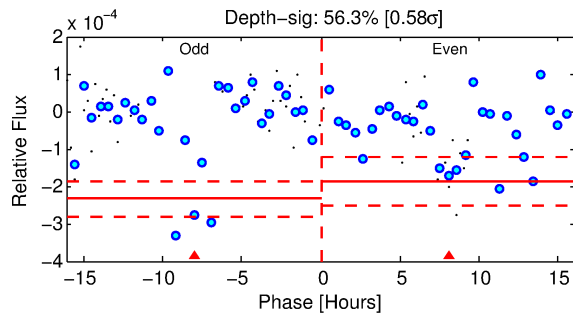
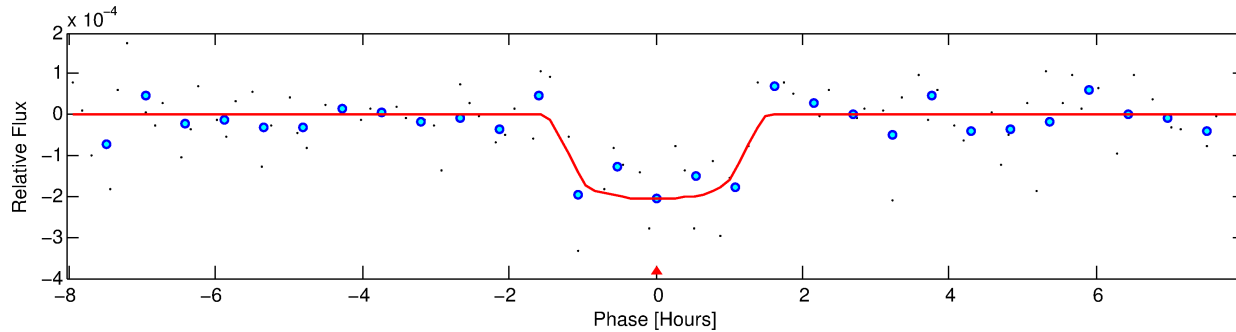
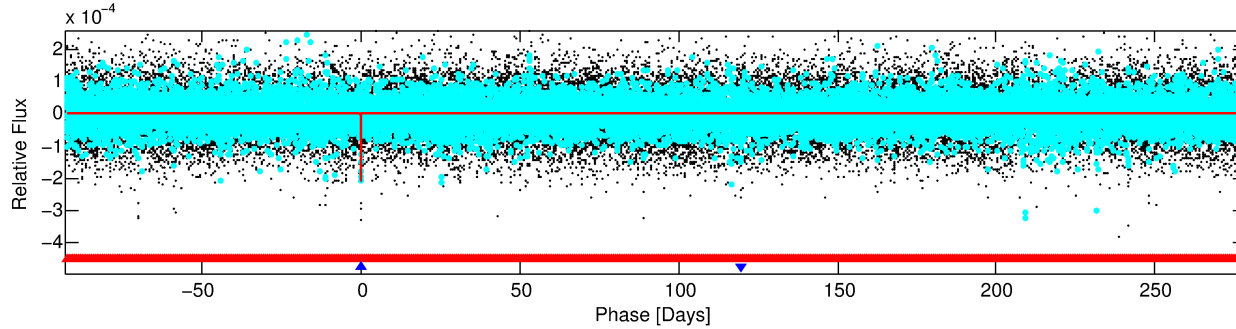
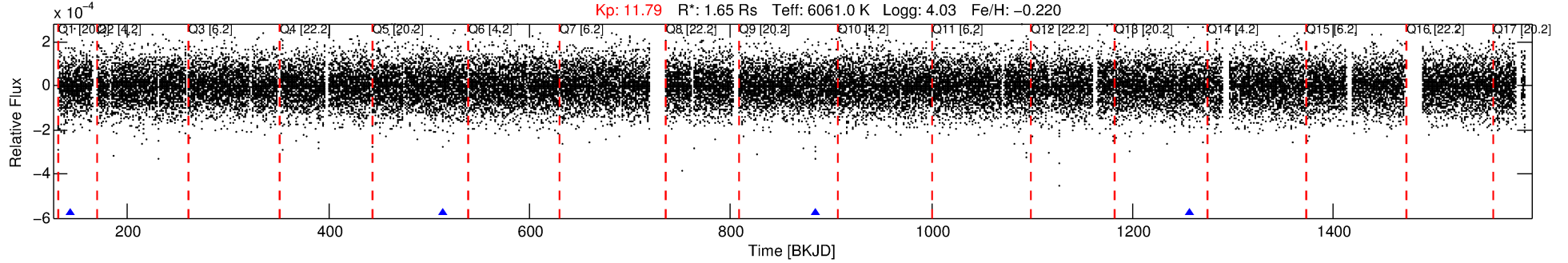
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006468337-02

No Significant Match Found

# DV One-Page Summary

KIC: 6468337 Candidate: 2 of 2 Period: 371.222 d  
KOI: K01620 Corr: No Ephemeris Match



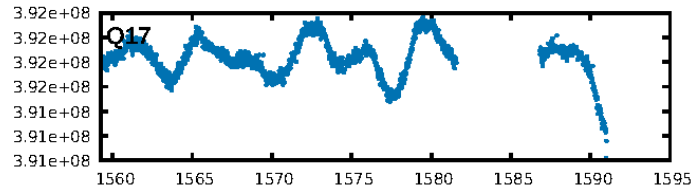
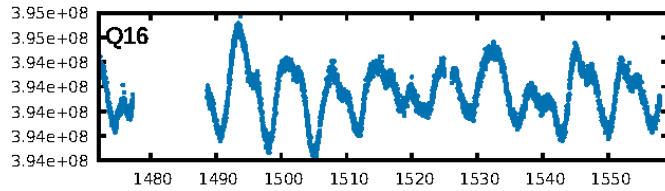
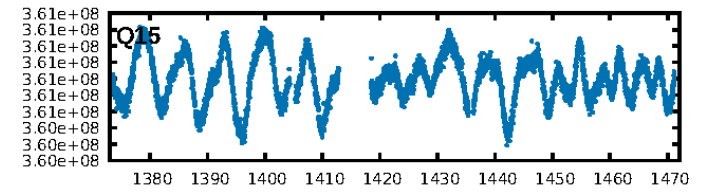
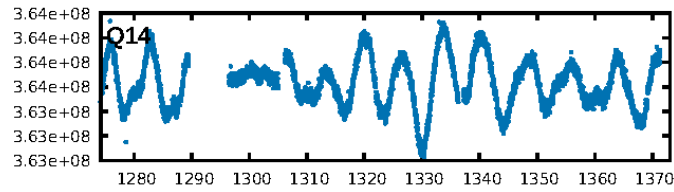
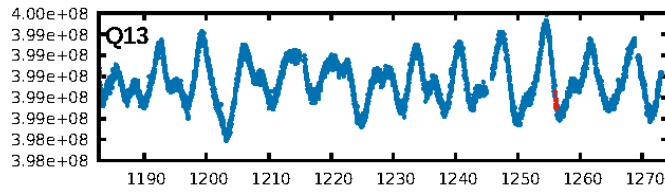
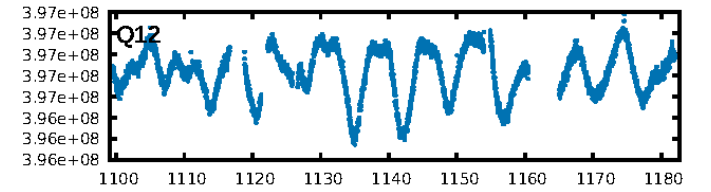
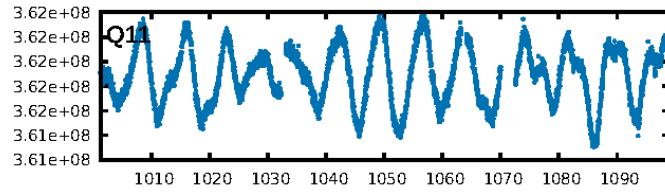
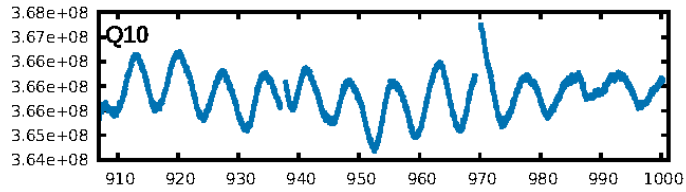
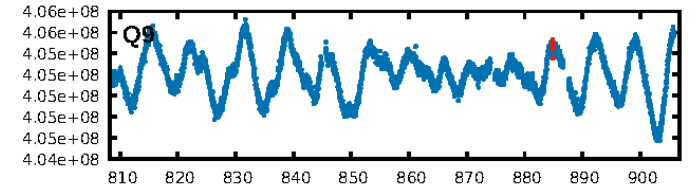
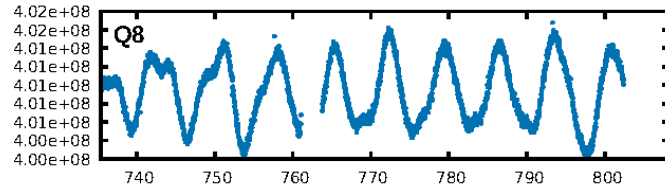
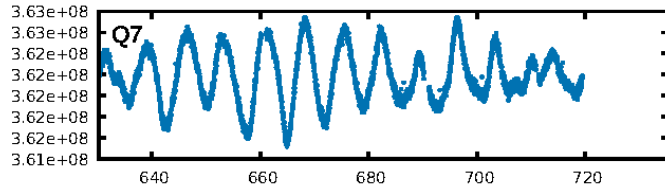
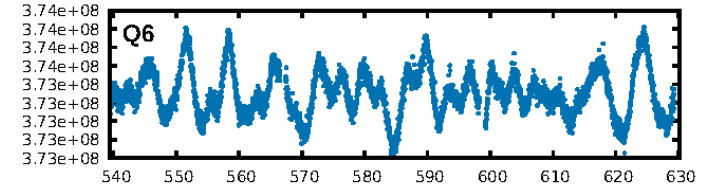
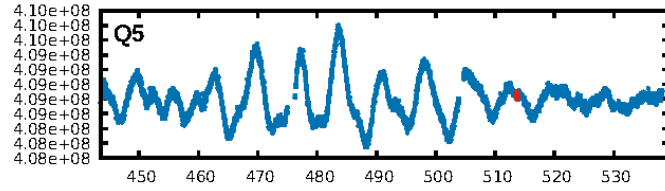
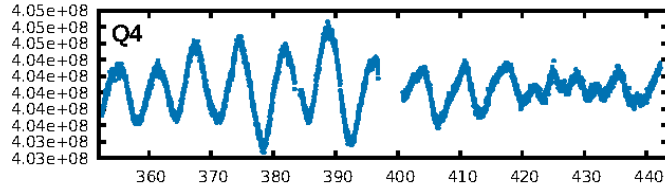
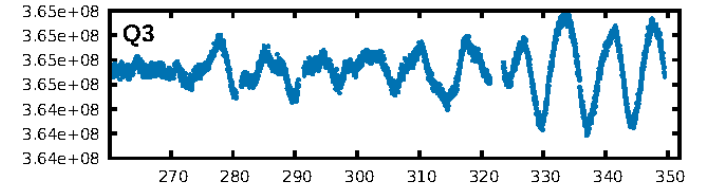
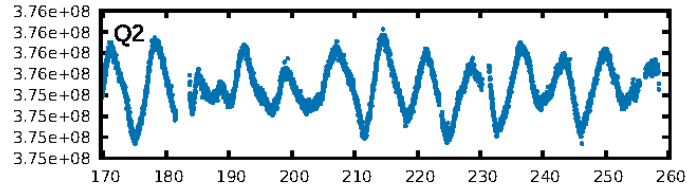
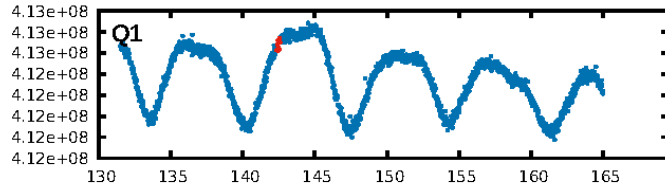
## DV Fit Results:

Period = 371.22223 [0.00847] d  
Epoch = 142.4585 [0.0206] BKJD  
Rp/R\* = 0.0154 [0.0132]  
a/R\* = 517.03 [2289.44]  
b = 0.89 [1.05]  
Seff = 3.12 [2.07]  
Teq = 339 [56] K  
Rp = 2.78 [2.60] Re  
a = 1.0295 [0.4045] AU  
Ag = 7923.36 [15002.62] [0.53 $\sigma$ ]  
Teff = 4942 [2204] K [2.09 $\sigma$ ]

## DV Diagnostic Results:

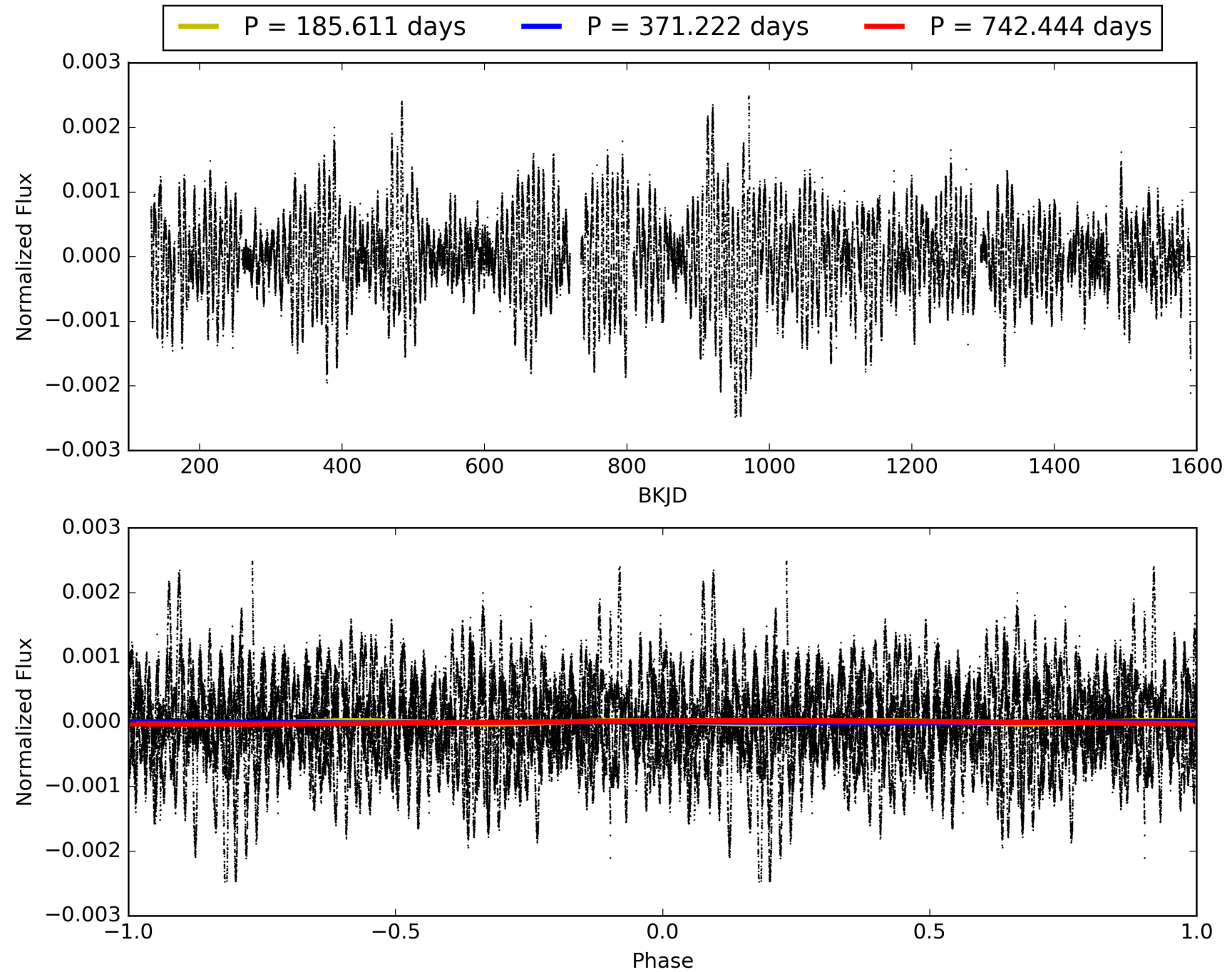
ShortPeriod-sig: 100.0% [2648.63 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 54.1%  
Bootstrap-pfa: 1.45e-15  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 5.242  
Centroid-sig: 5.2%  
Centroid-so: 1.622 arcsec [1.48 $\sigma$ ]  
OotOffset-rm: 0.569 arcsec [0.99 $\sigma$ ]  
KicOffset-rm: 0.616 arcsec [1.08 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 0.25 [1/4]

# TCE 006468337-02, PDC Light Curves



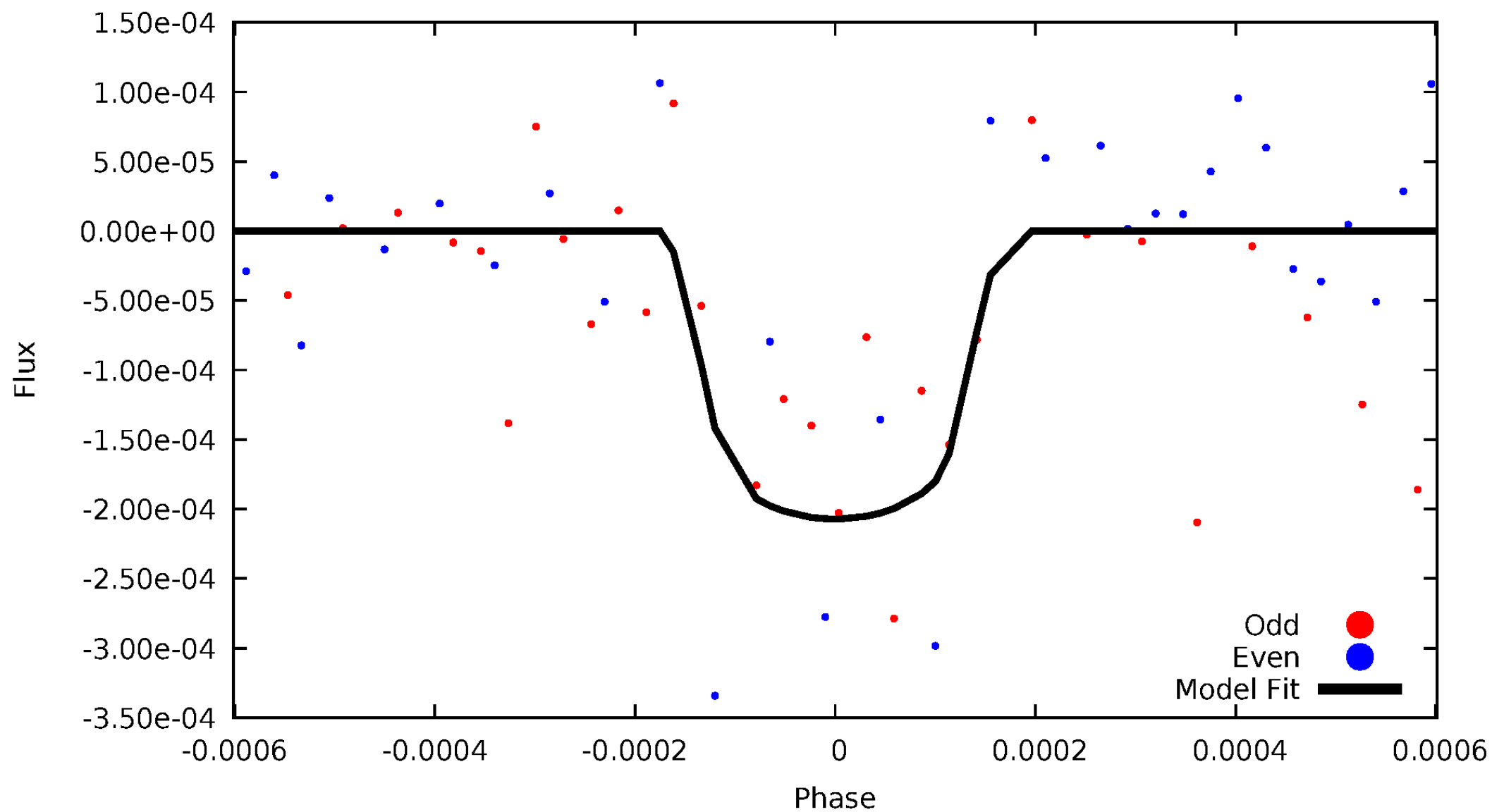


# TCE 006468337-02



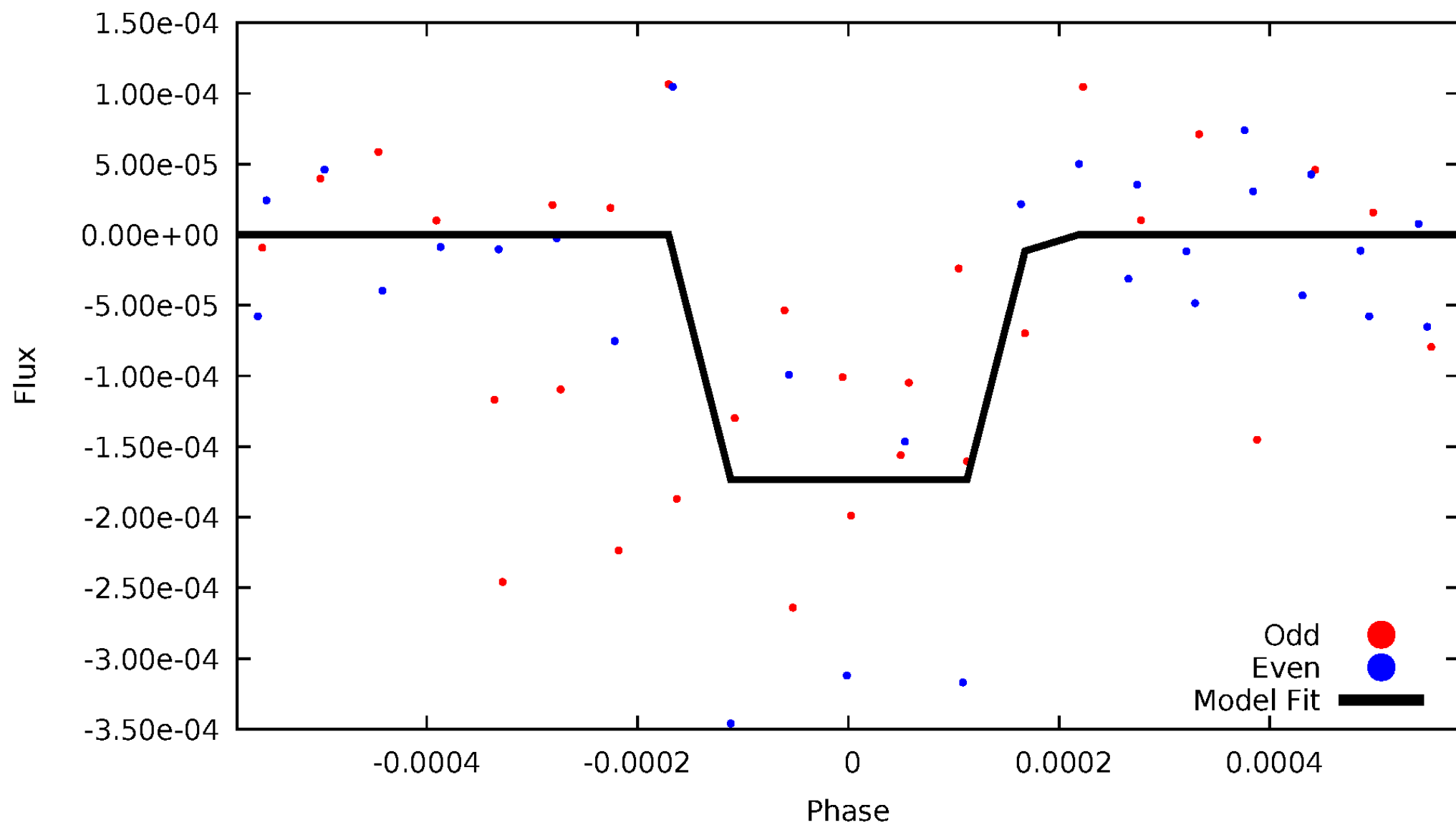
# DV Odd/Even

TCE 006468337-02



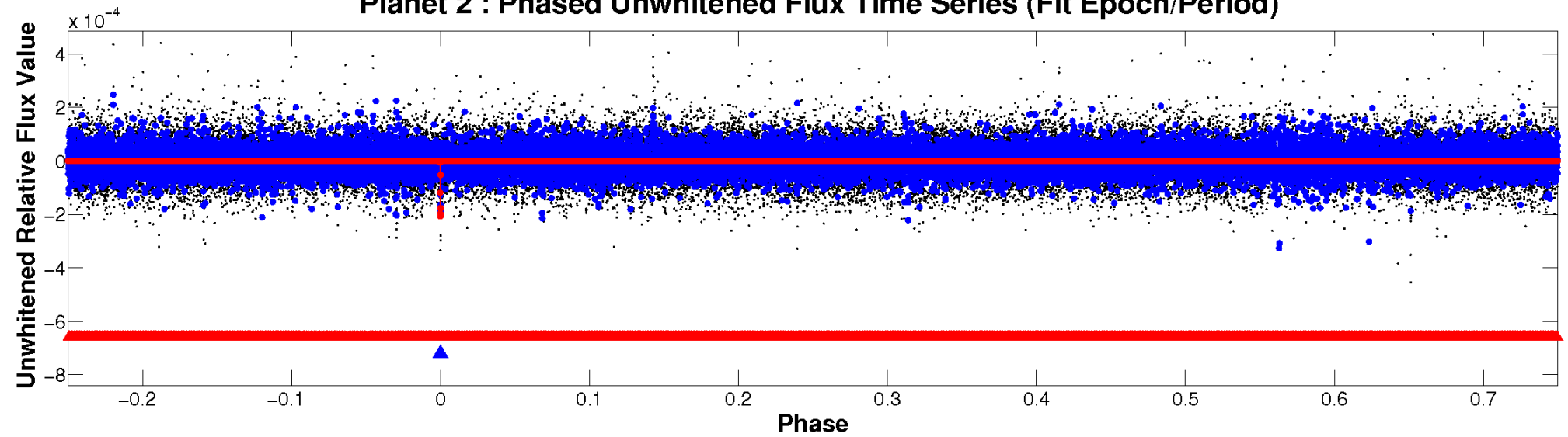
# ALT Odd/Even

TCE 006468337-02

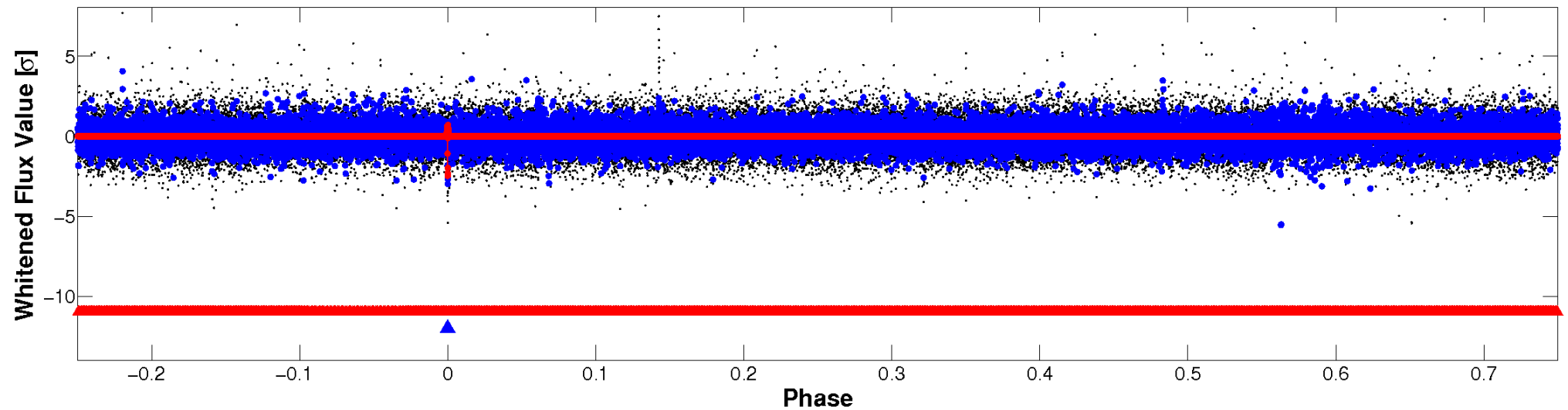


# Non-Whitened Vs. Whitened Light Curve

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

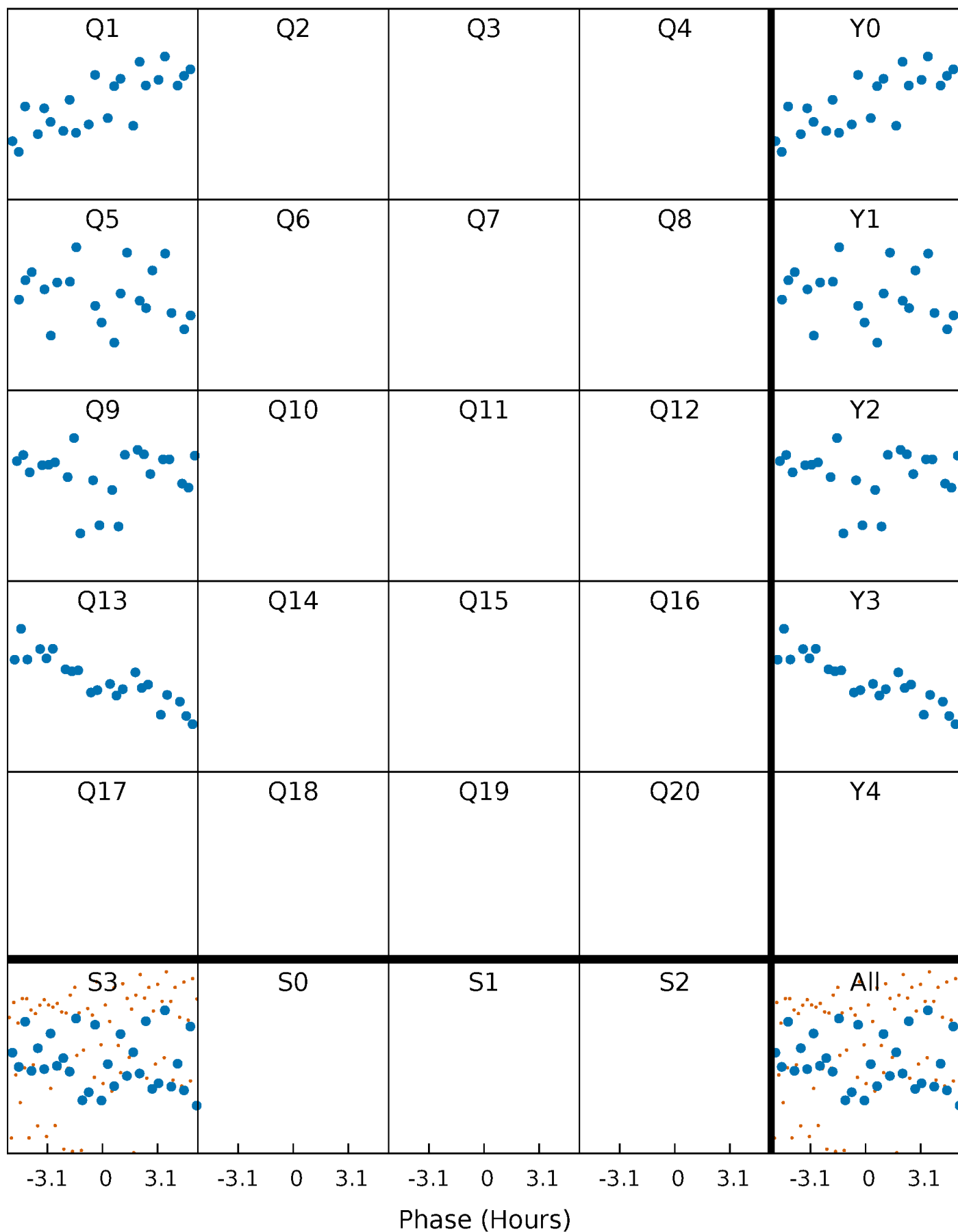


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

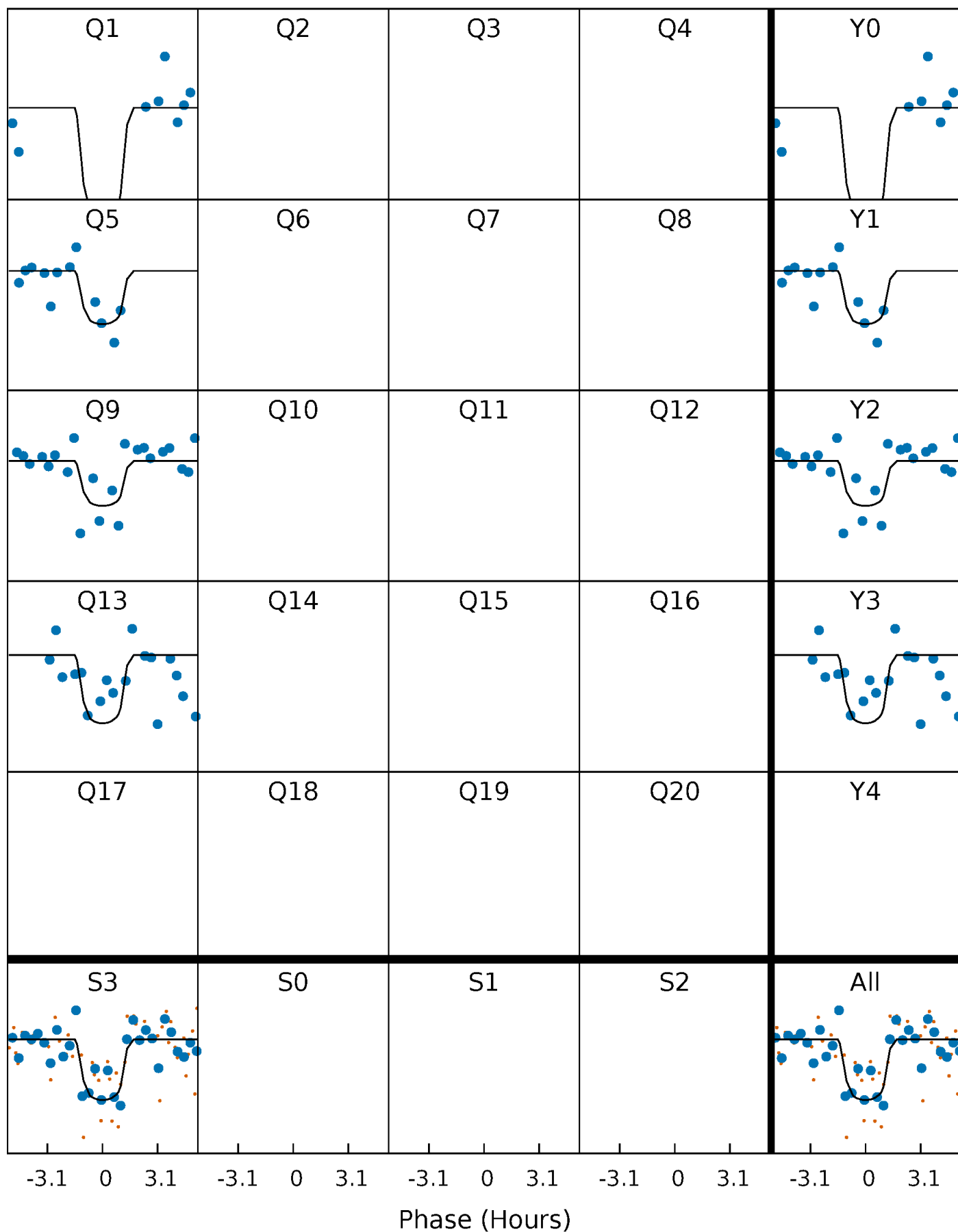
TCE 006468337-02     $P=371.222234$  Days     $T_0=142.458513$  (BKJD)





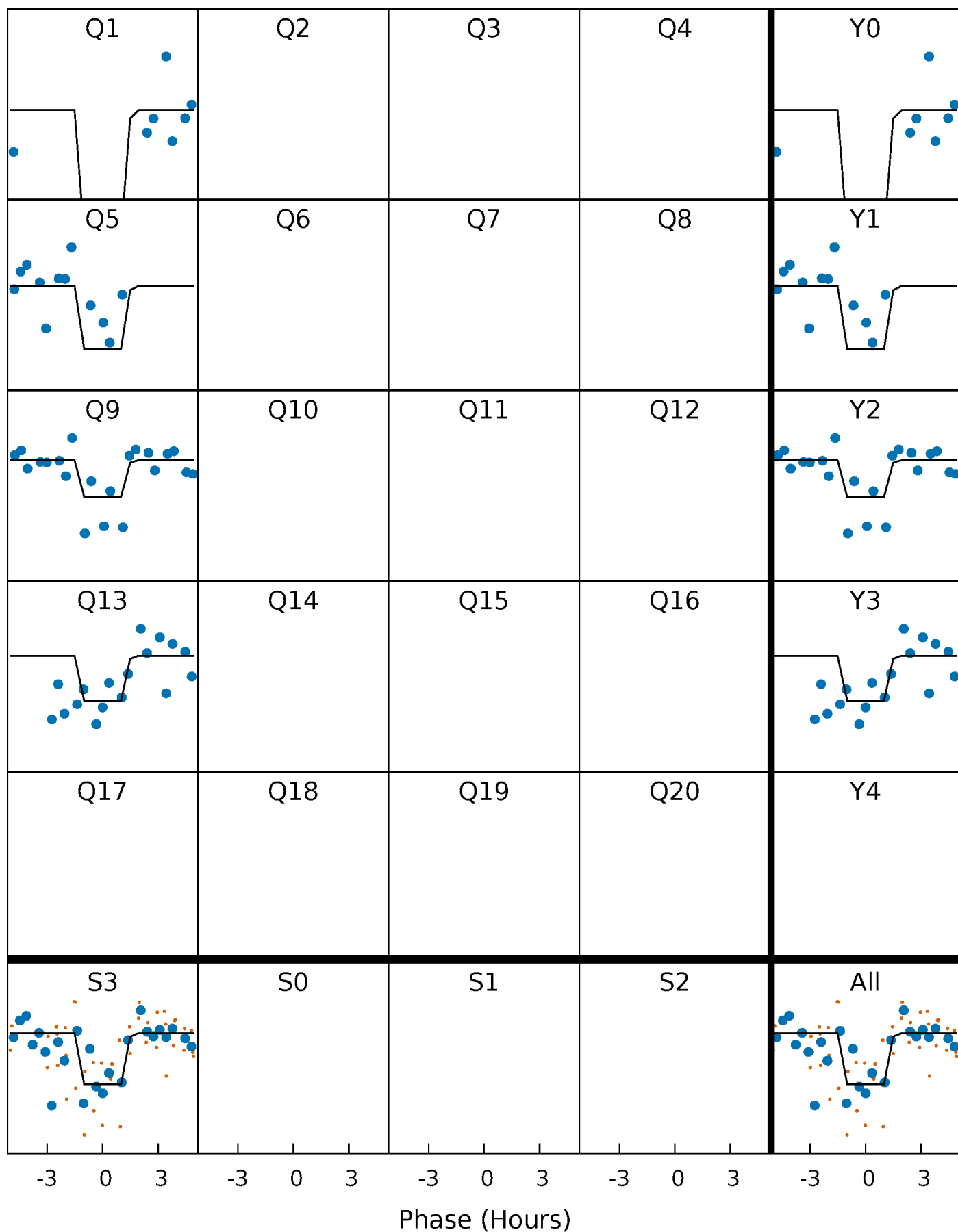
# DV Quarter-Phased Transit Curves

TCE 006468337-02     $P=371.222234$  Days     $T_0=142.458513$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

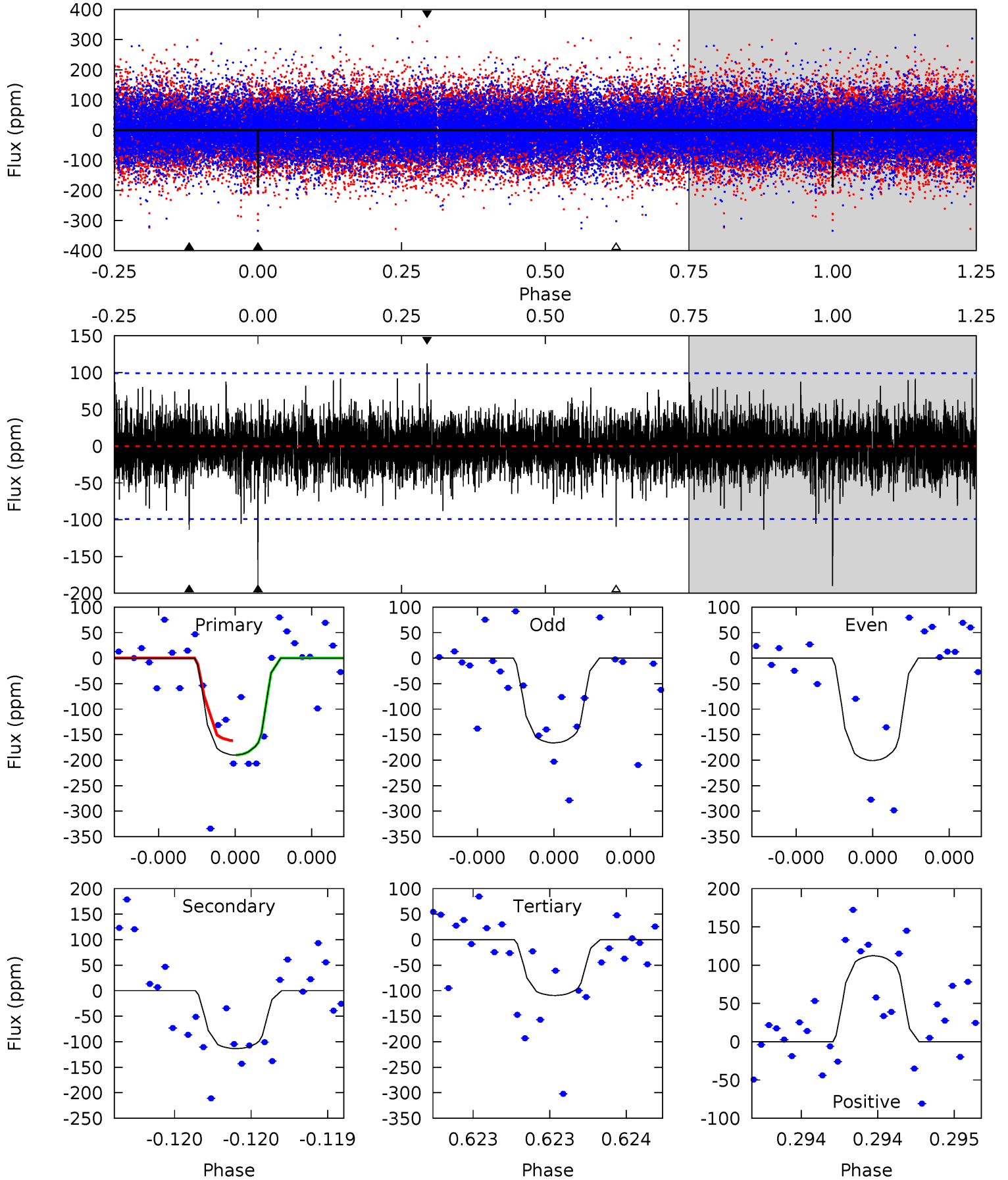
TCE 006468337-02 P=371.215688 Days  $T_0=142.468418$  (BKJD)



# DV Model-Shift Uniqueness Test

006468337-02, P = 371.222234 Days, E = 142.458513 Days

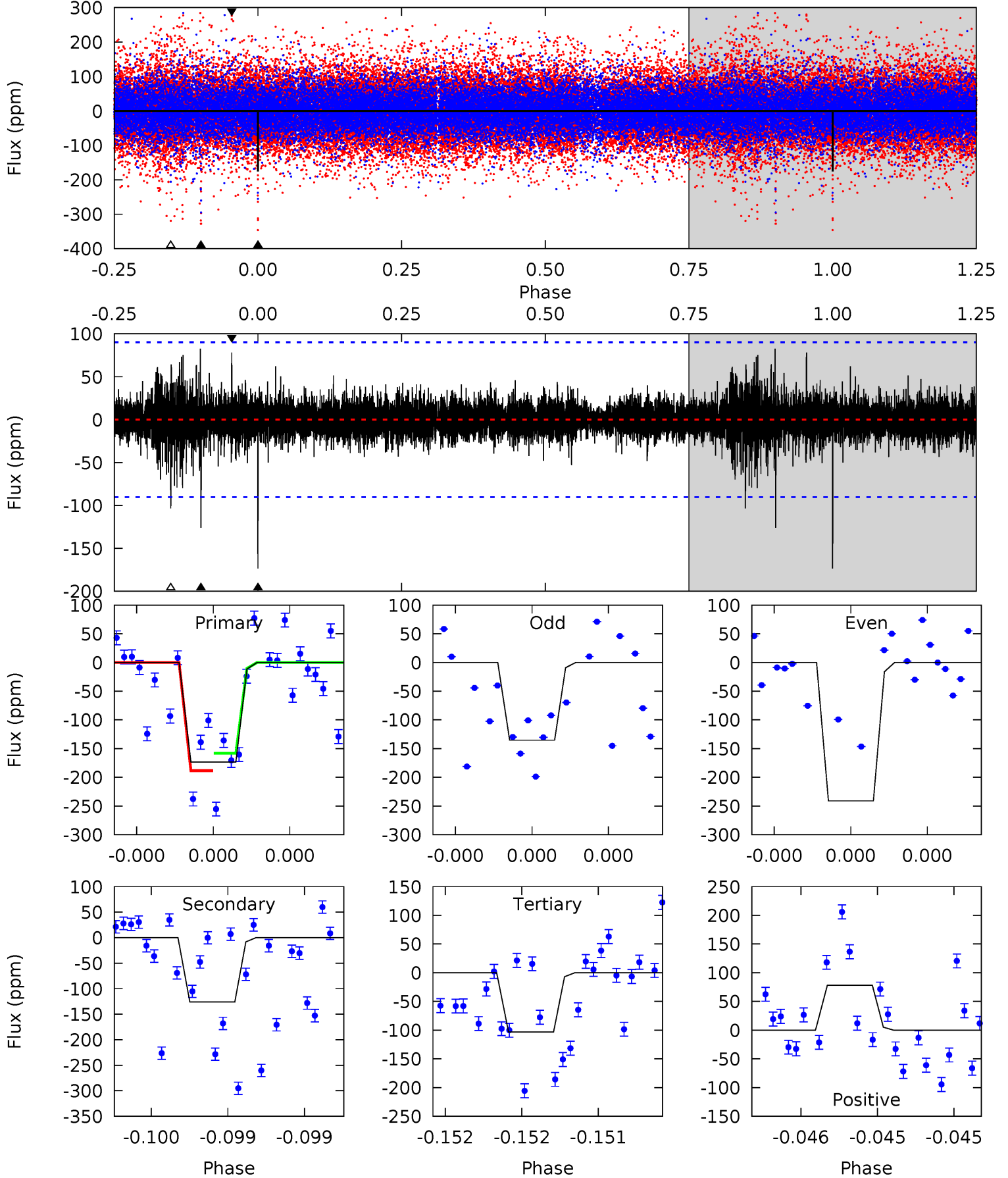
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	6.46	6.23	6.39	5.65	3.59	1.30	4.59	4.43	0.23	0.07	0.91	0.94	0.37	0.78



# Alt Model-Shift Uniqueness Test

006468337-02, P = 371.215688 Days, E = 142.468418 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
10.8	7.84	6.44	4.87	5.62	3.55	0.86	4.35	5.92	1.41	2.97	3.16	0.95	0.32	0.94



### Stellar Parameters For KIC 006468337

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6061^{+211}_{-211}$	$4.025^{+0.390}_{-0.130}$	$-0.220^{+0.300}_{-0.300}$	$1.653^{+0.421}_{-0.631}$	$1.056^{+0.160}_{-0.160}$	$0.330^{+0.954}_{-0.148}$
	+3%/-3%	+10%/-3%	+136%/-136%	+25%/-38%	+15%/-15%	+289%/-45%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006468337-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-114 \pm 18$	$2.91^{+2.51}_{-1.81}$	$460^{+36}_{-48}$	$4799^{+2924}_{-929}$	$7889^{+47778}_{-5625}$
Alt.	$-126 \pm 16$	$2.69^{+2.22}_{-1.70}$	$460^{+41}_{-44}$	$5109^{+3321}_{-1026}$	$10440^{+62844}_{-7418}$

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

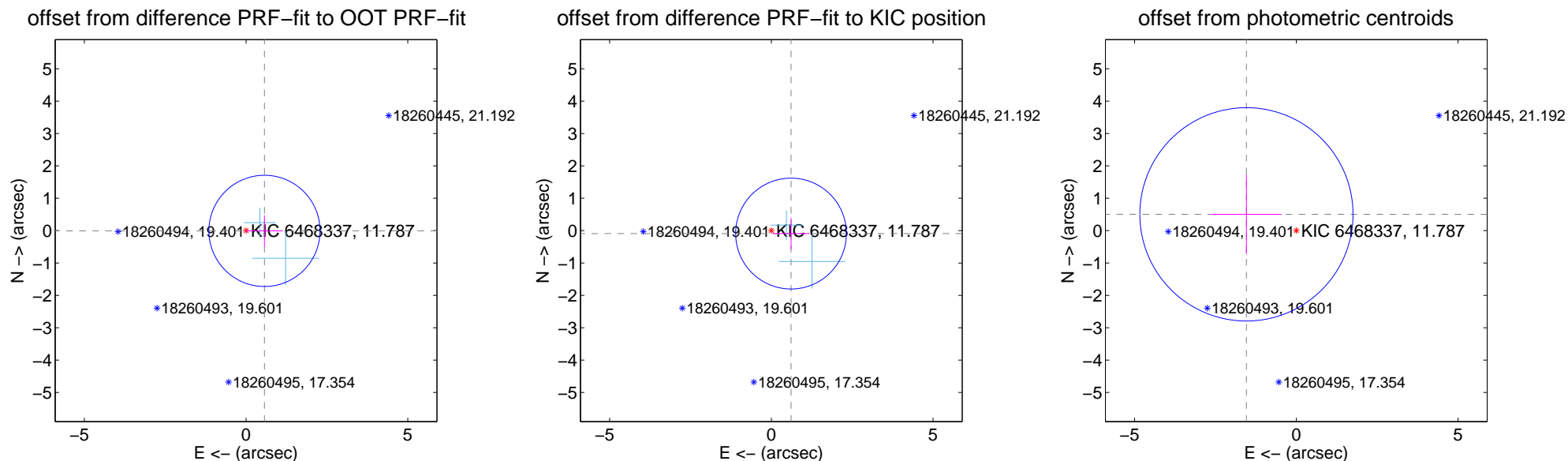
## DV Centroid Data

Supplemental centroid analysis for 006468337-02. **Kepler magnitude: 11.79.** Transit SNR 8.14

**There are 2 quarters with good PRF difference image offsets**

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

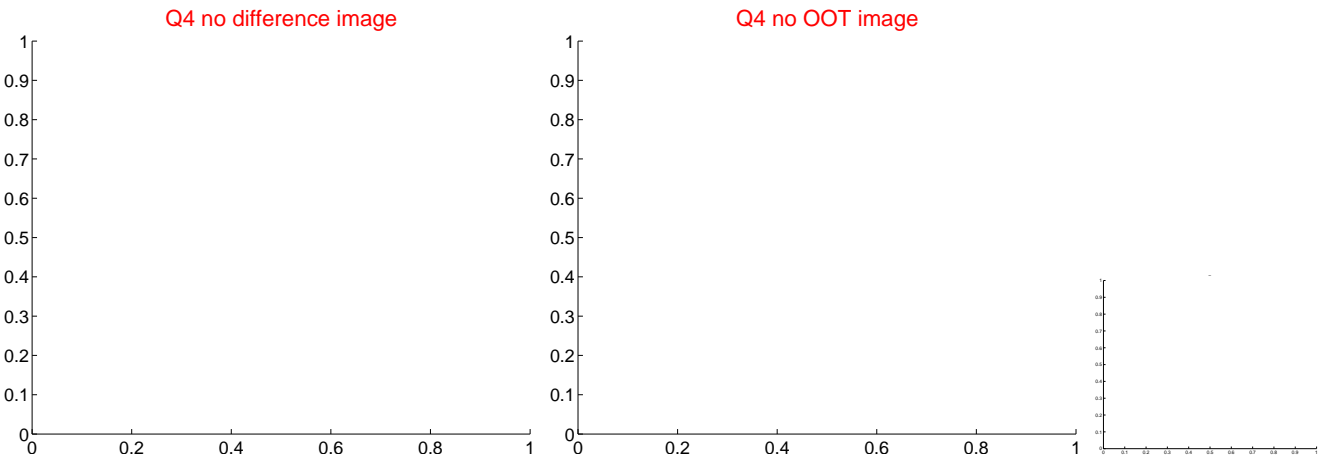
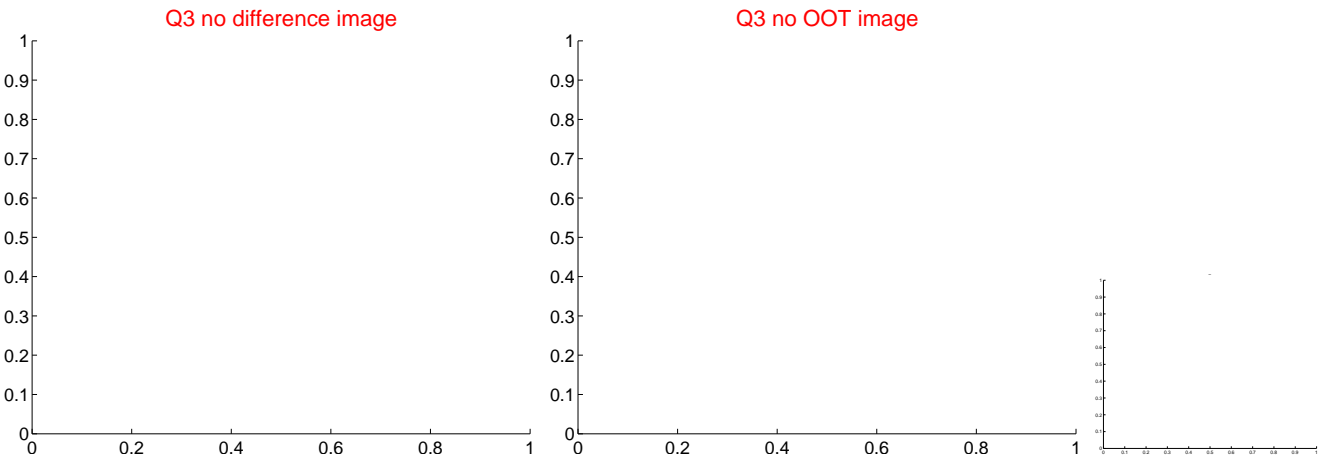
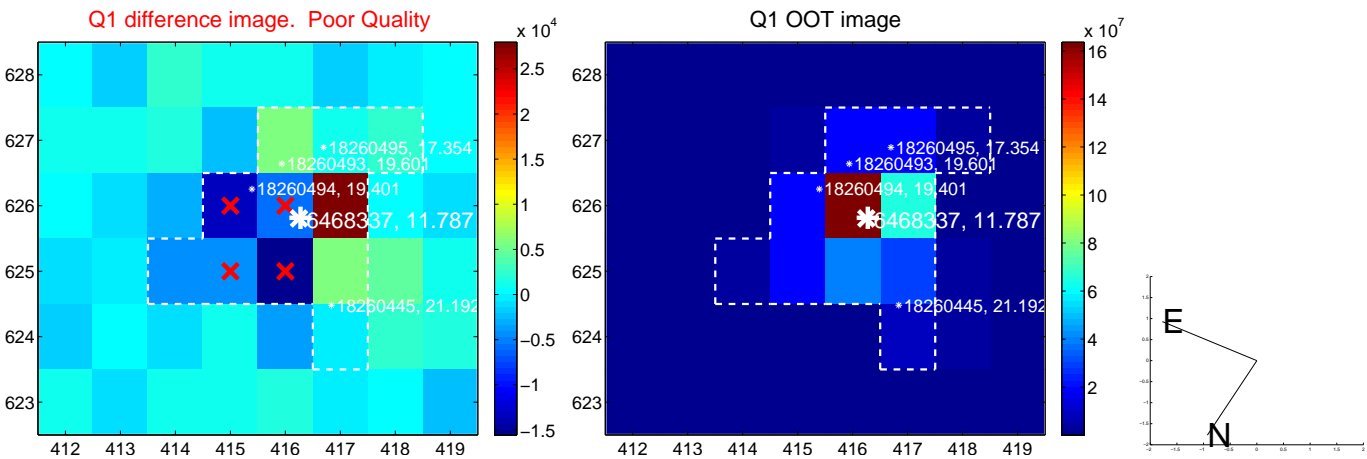
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.569 \pm 0.573$	0.99	$-0.569 \pm 0.573$	$-0.008 \pm 0.480$
PRF-fit source offset from KIC position	$0.616 \pm 0.571$	1.08	$-0.609 \pm 0.573$	$-0.091 \pm 0.480$
photometric centroid source offset	$1.62 \pm 1.10$	1.48	$1.54 \pm 1.08$	$0.50 \pm 1.23$



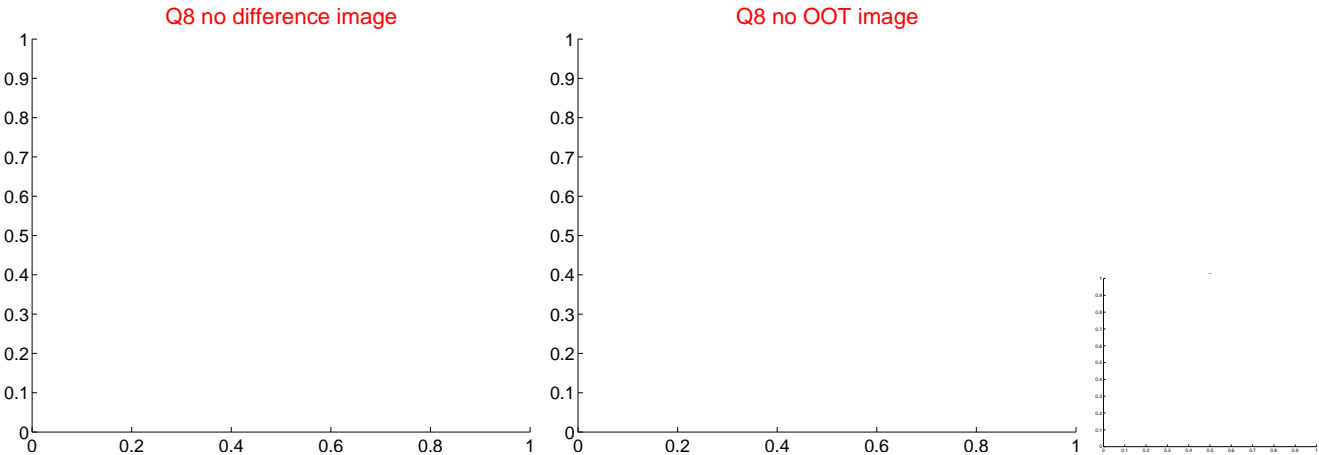
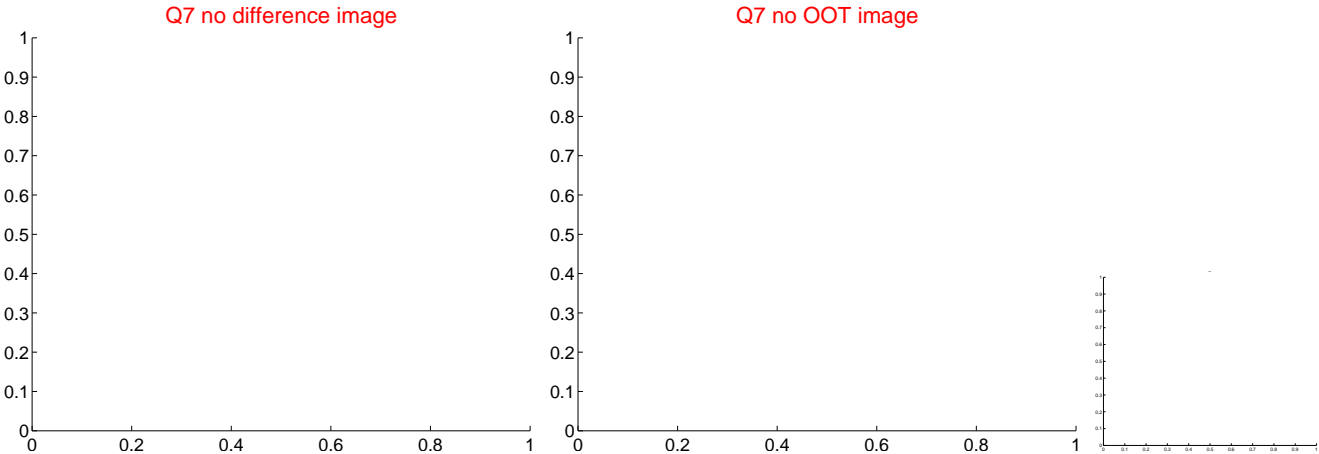
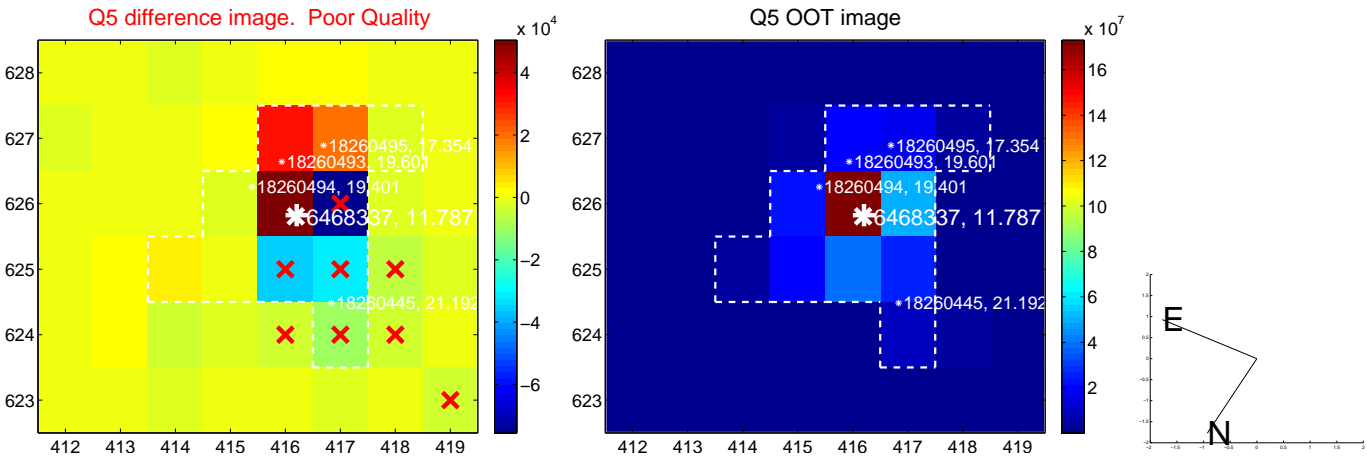
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



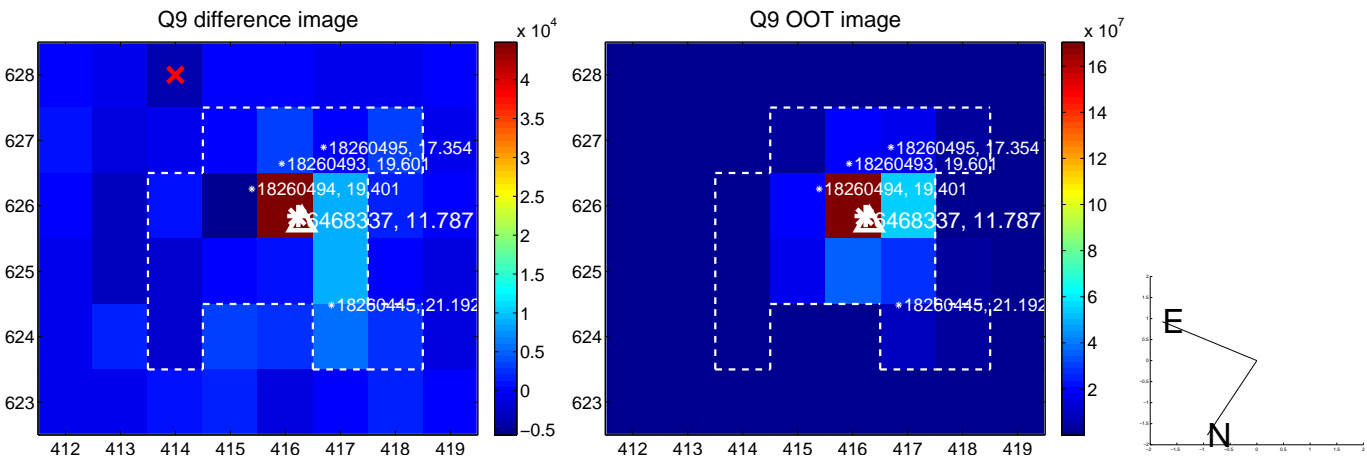
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



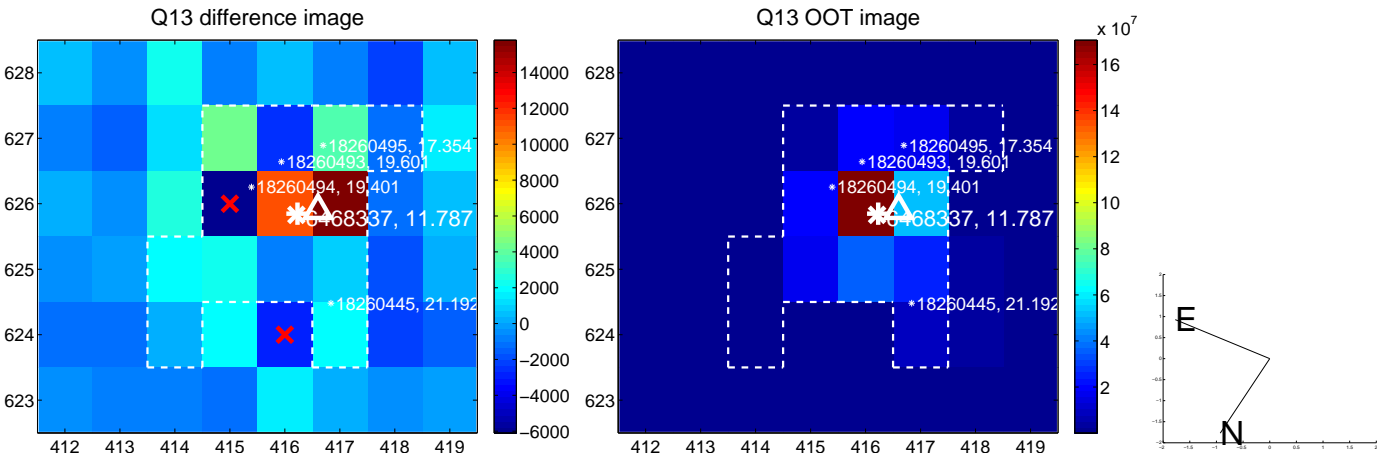
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



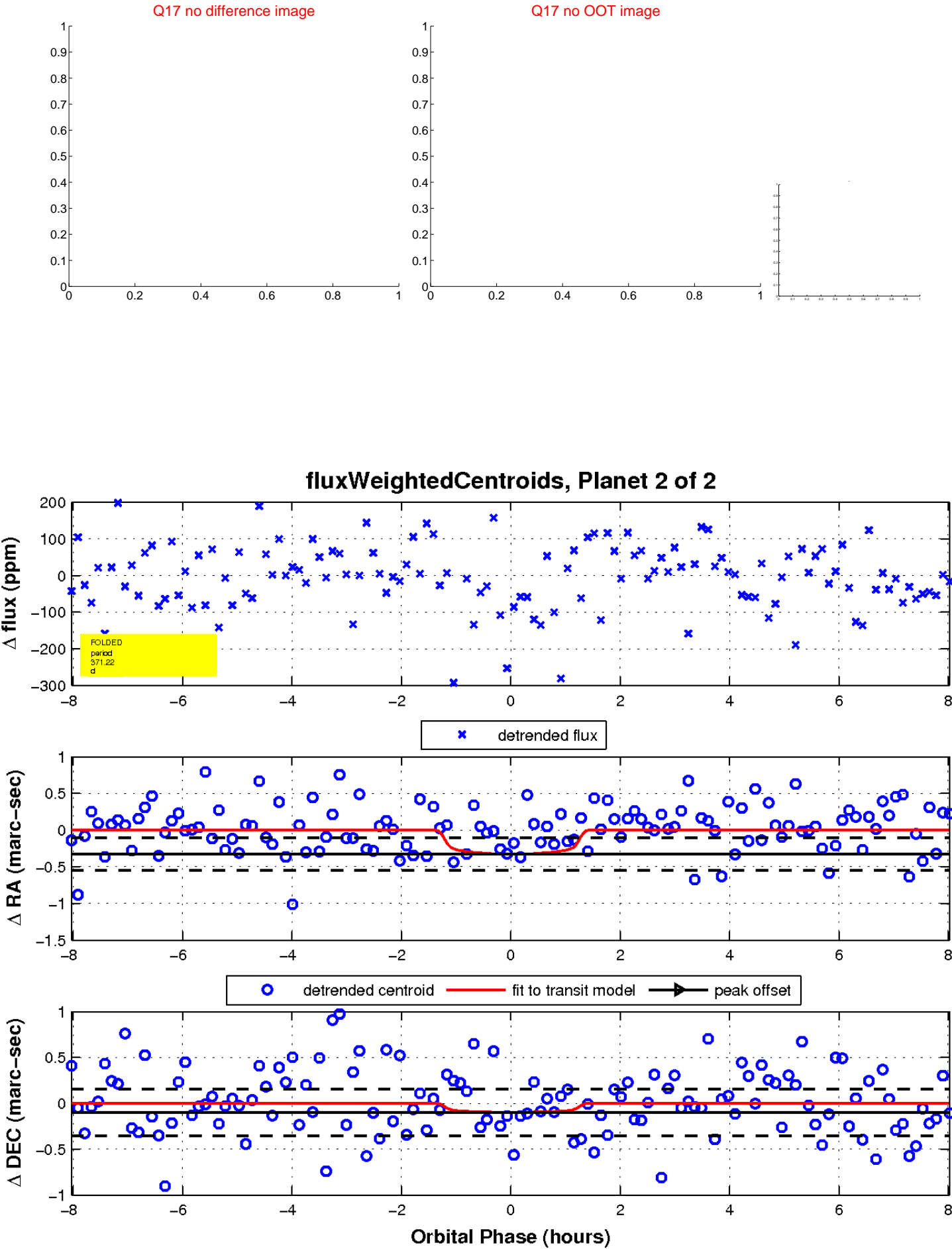
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

