

# KIC 010874614

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010874614-01	OBS	0017.01	3.234699	134.425348	10561.5	3.591	2986.3	2864.6	1.29	5640	13.04	799.56
010874614-02	OBS	No	412.028308	436.545001	170.4	5.418	8.0	5.2	1.29	5640	2.00	1.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010874614-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010874614-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

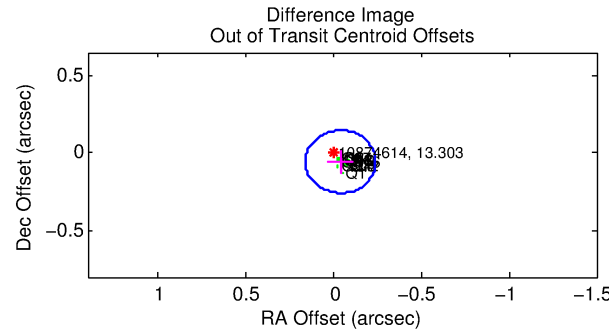
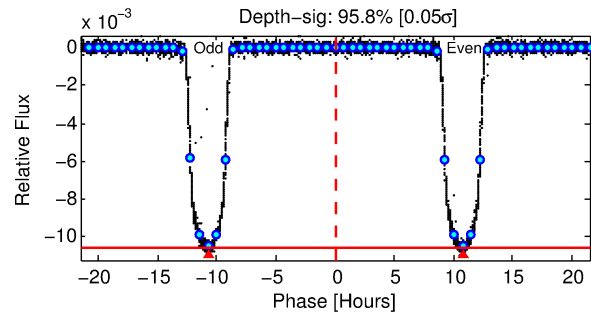
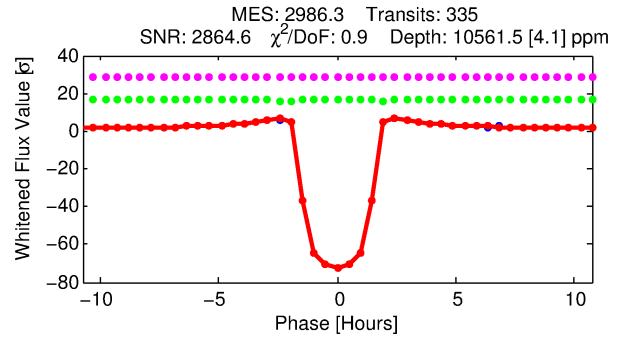
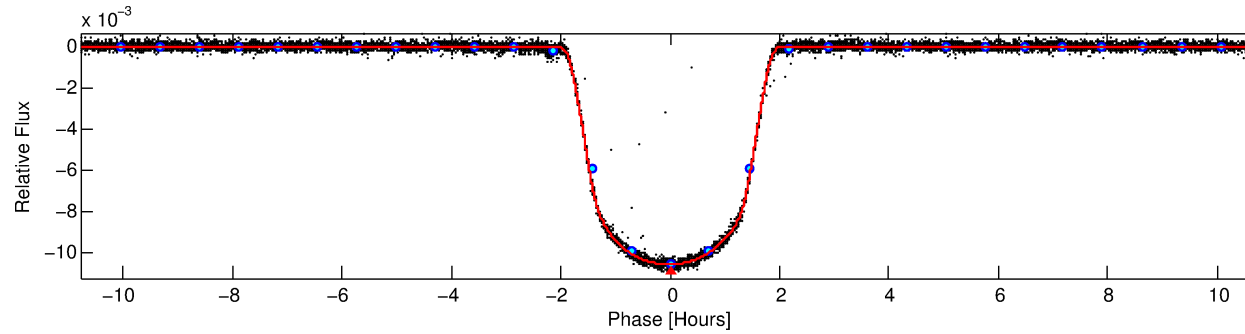
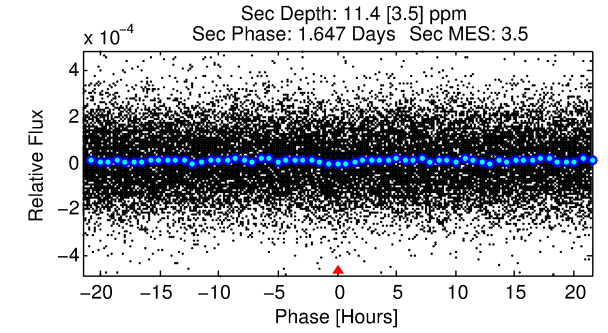
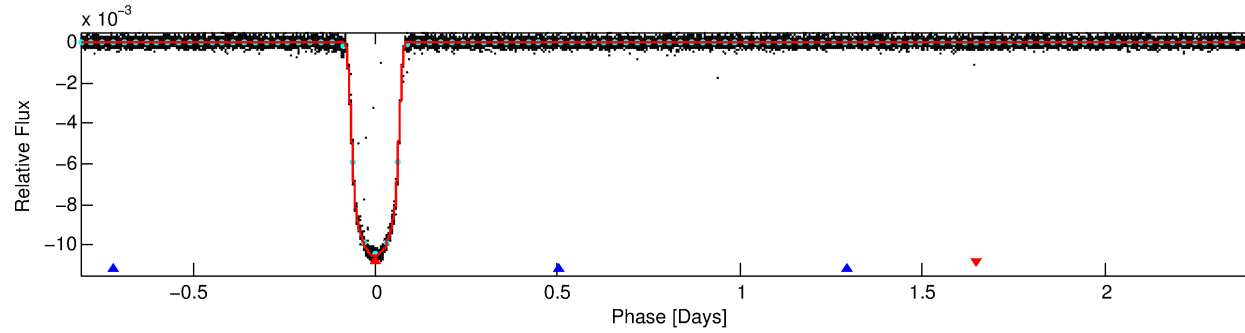
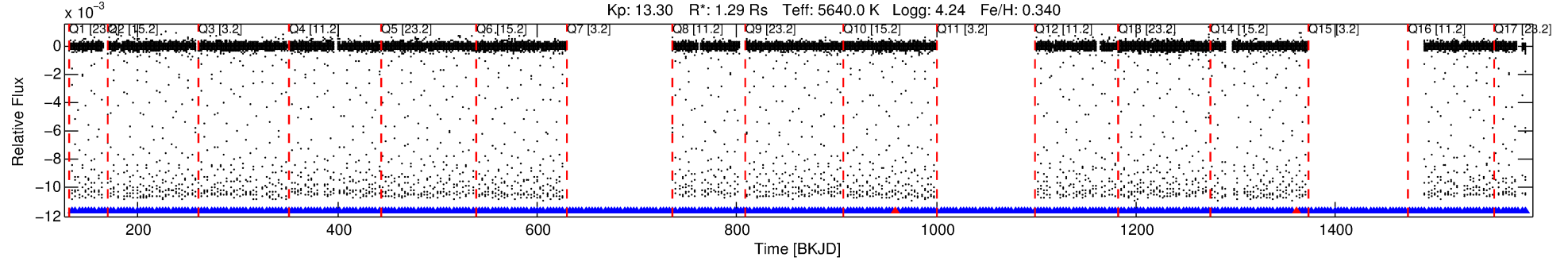
## Ephemeris Match Information For 010874614-01

No Significant Match Found

# DV One-Page Summary

KIC: 10874614 Candidate: 1 of 2 Period: 3.235 d  
KOI: K00017.01 Name: Kepler-6b Corr: 0.999

Kp: 13.30 R\*: 1.29 Rs Teff: 5640.0 K Logg: 4.24 Fe/H: 0.340



## DV Fit Results:

Period = 3.23470 [0.00000] d  
Epoch = 134.4253 [0.0000] BKJD  
Rp/R\* = 0.0925 [0.0002]  
a/R\* = 7.54 [0.06]  
b = 0.02 [0.38]  
Seff = 799.56 [101.00]  
Teq = 1356 [43] K  
Rp = 13.04 [0.96] Re  
a = 0.0435 [0.0028] AU  
Ag = 0.07 [0.02] [-40.98σ]  
Teffp = 1077 [86] K [-2.89σ]

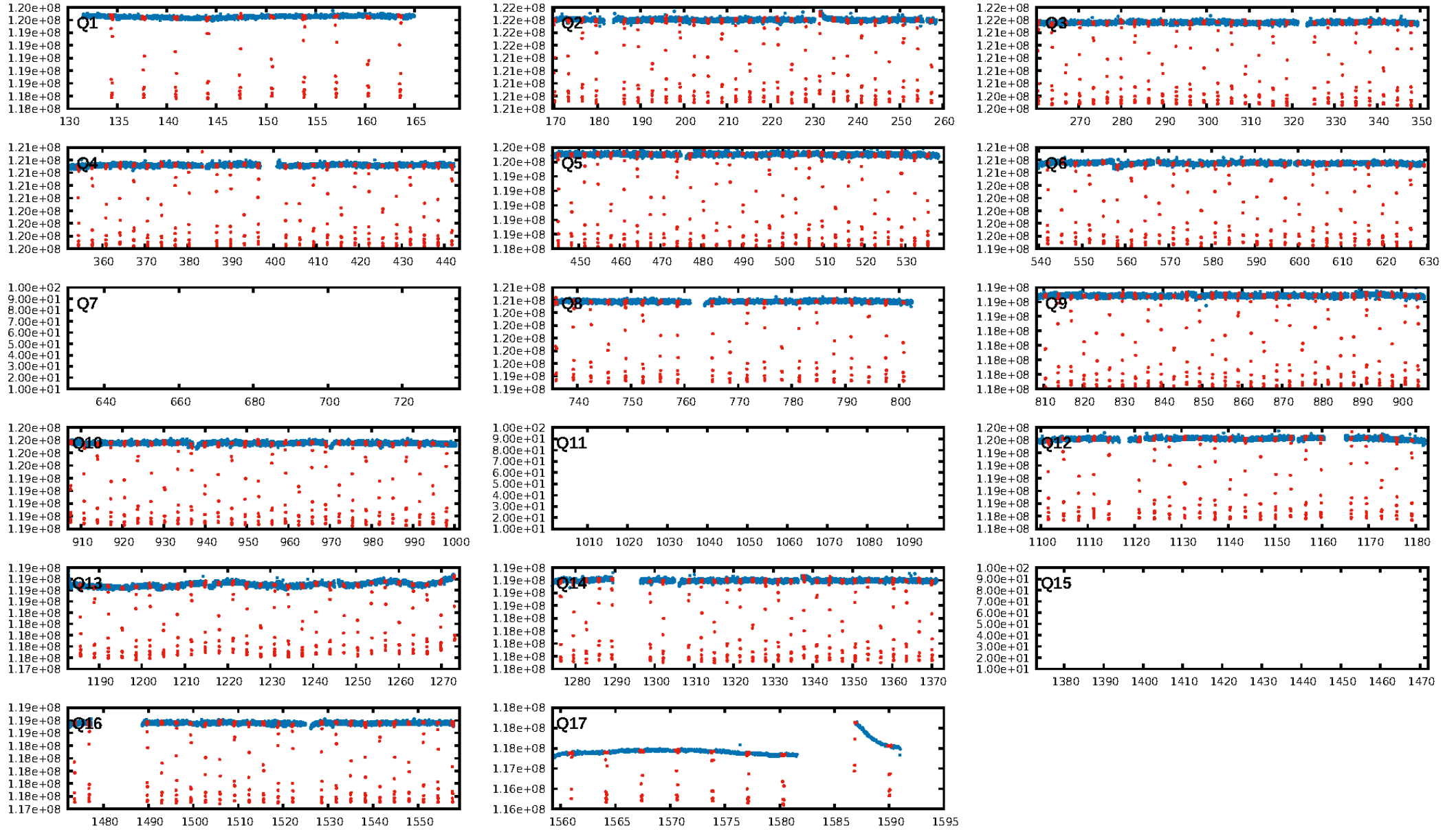
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1509.32σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-figt: 0.99 [314/316]  
GhostDiagnostic-chr: 5.983  
Centroid-sig: 0.0%  
Centroid-so: 0.155 arcsec [36.94σ]  
OotOffset-rm: 0.069 arcsec [1.03σ]  
KicOffset-rm: 0.189 arcsec [2.72σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

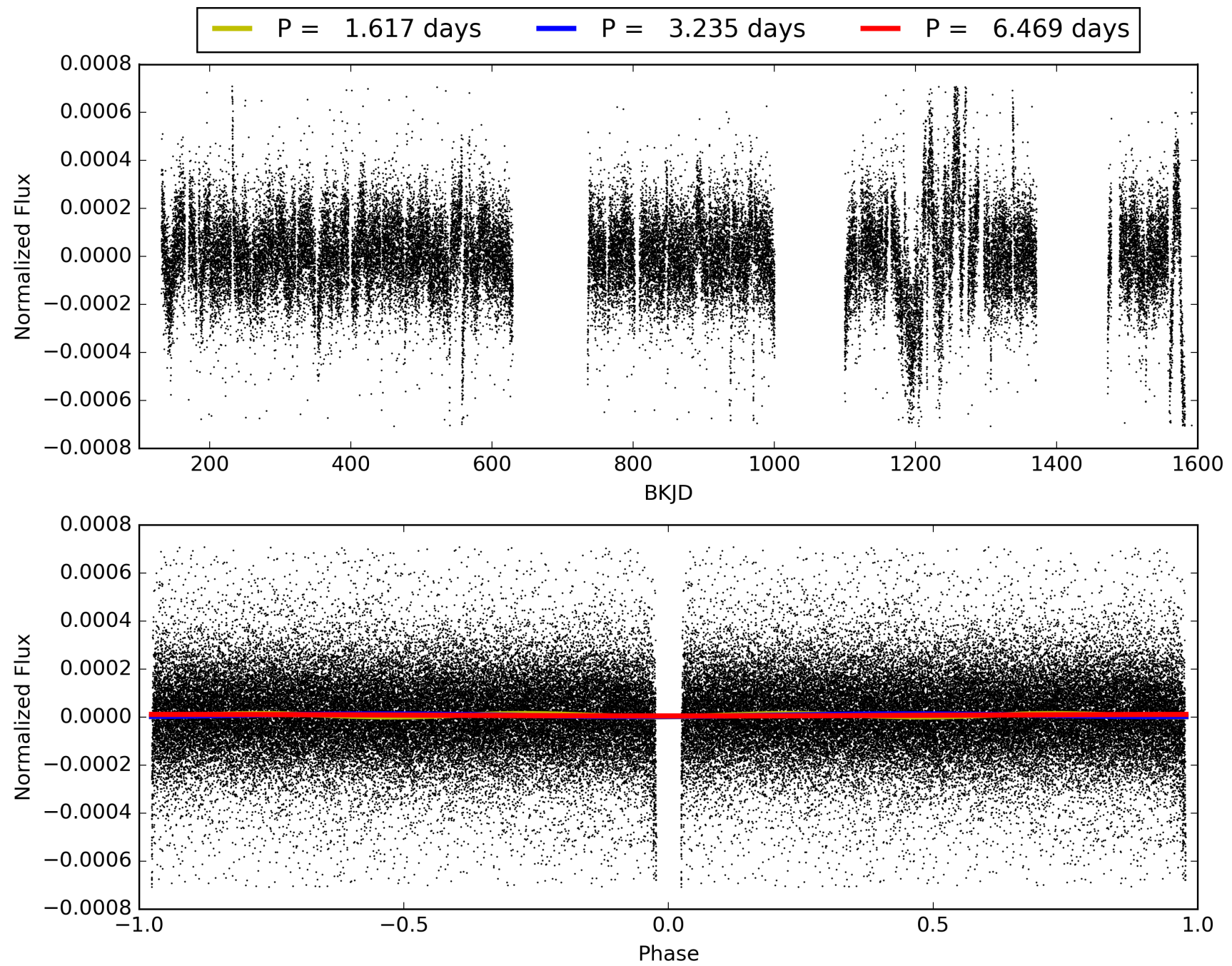
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:24:28 Z

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

# TCE 010874614-01, PDC Light Curves

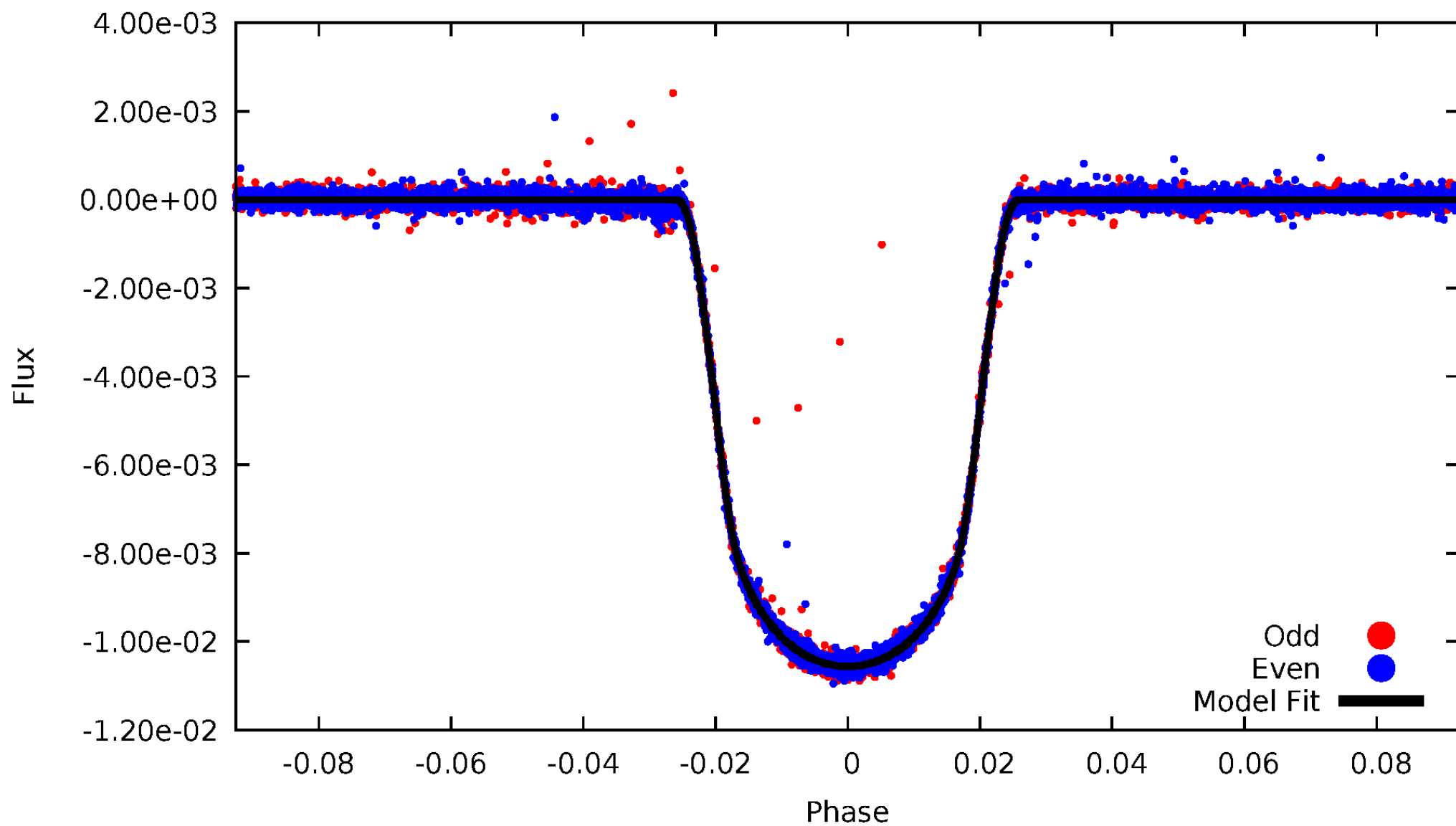


# TCE 010874614-01



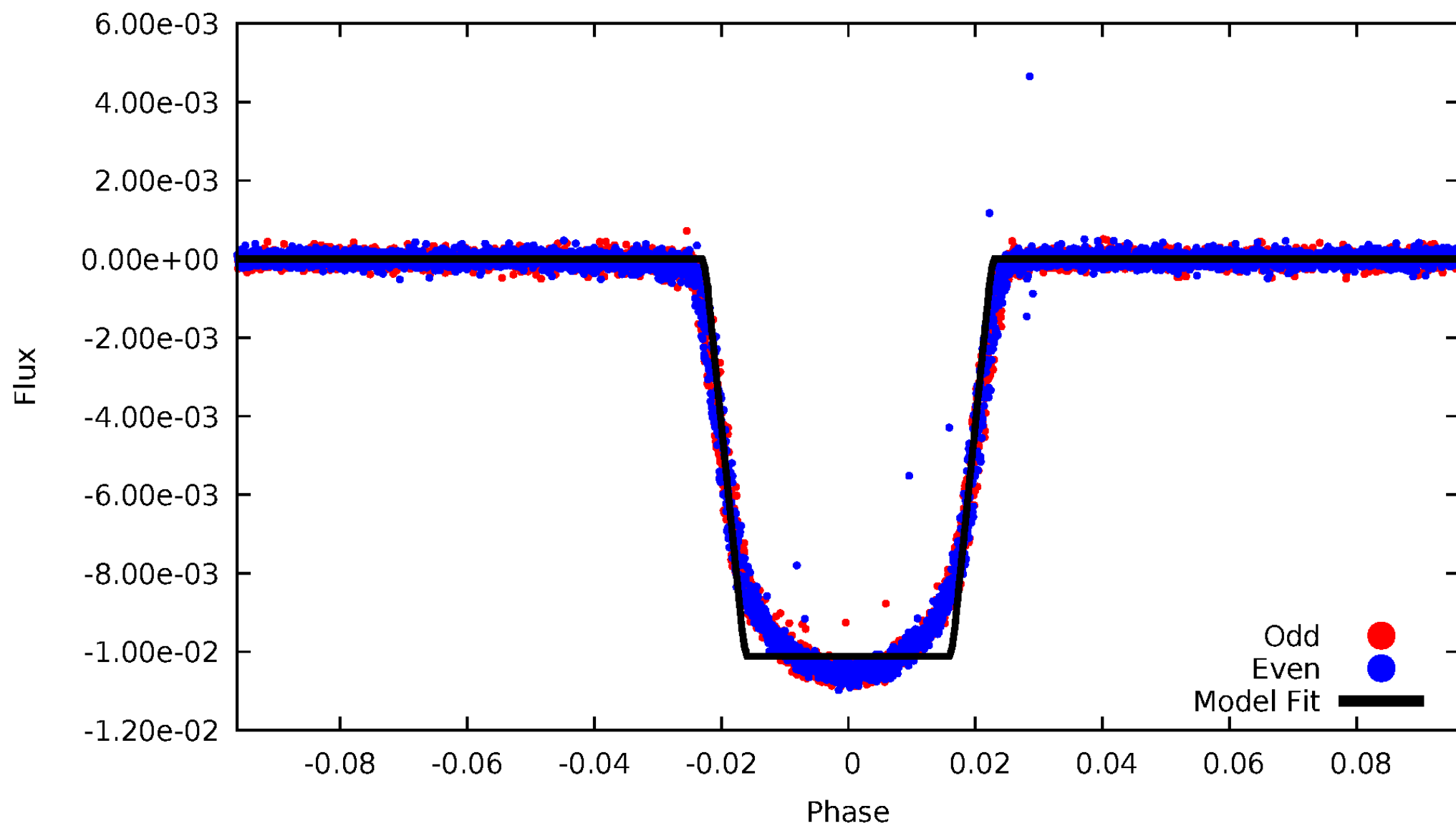
# DV Odd/Even

TCE 010874614-01



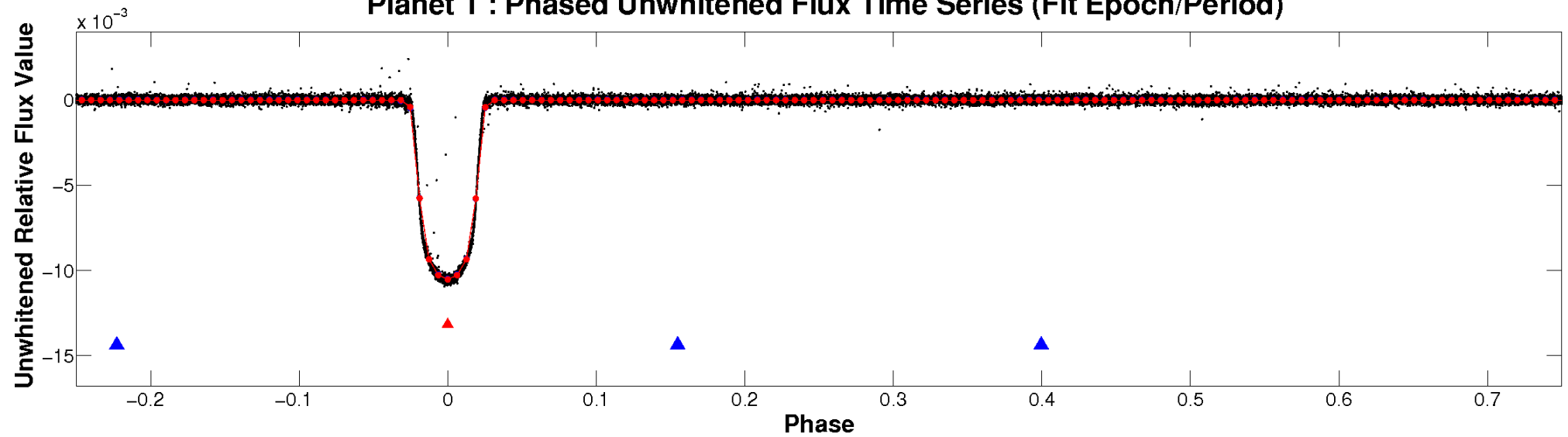
# ALT Odd/Even

TCE 010874614-01

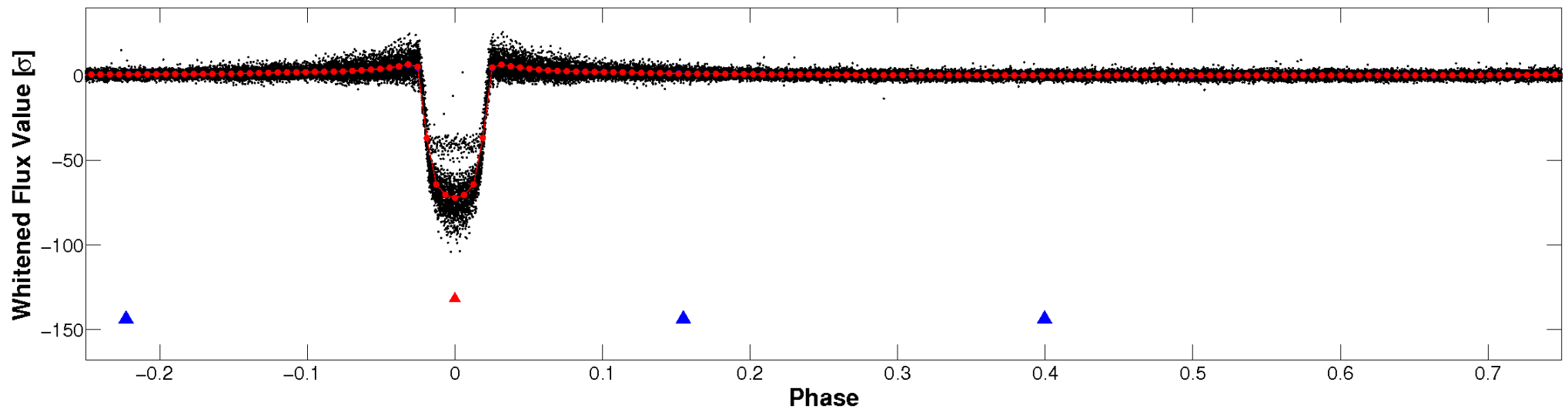


# Non-Whitened Vs. Whitened Light Curve

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

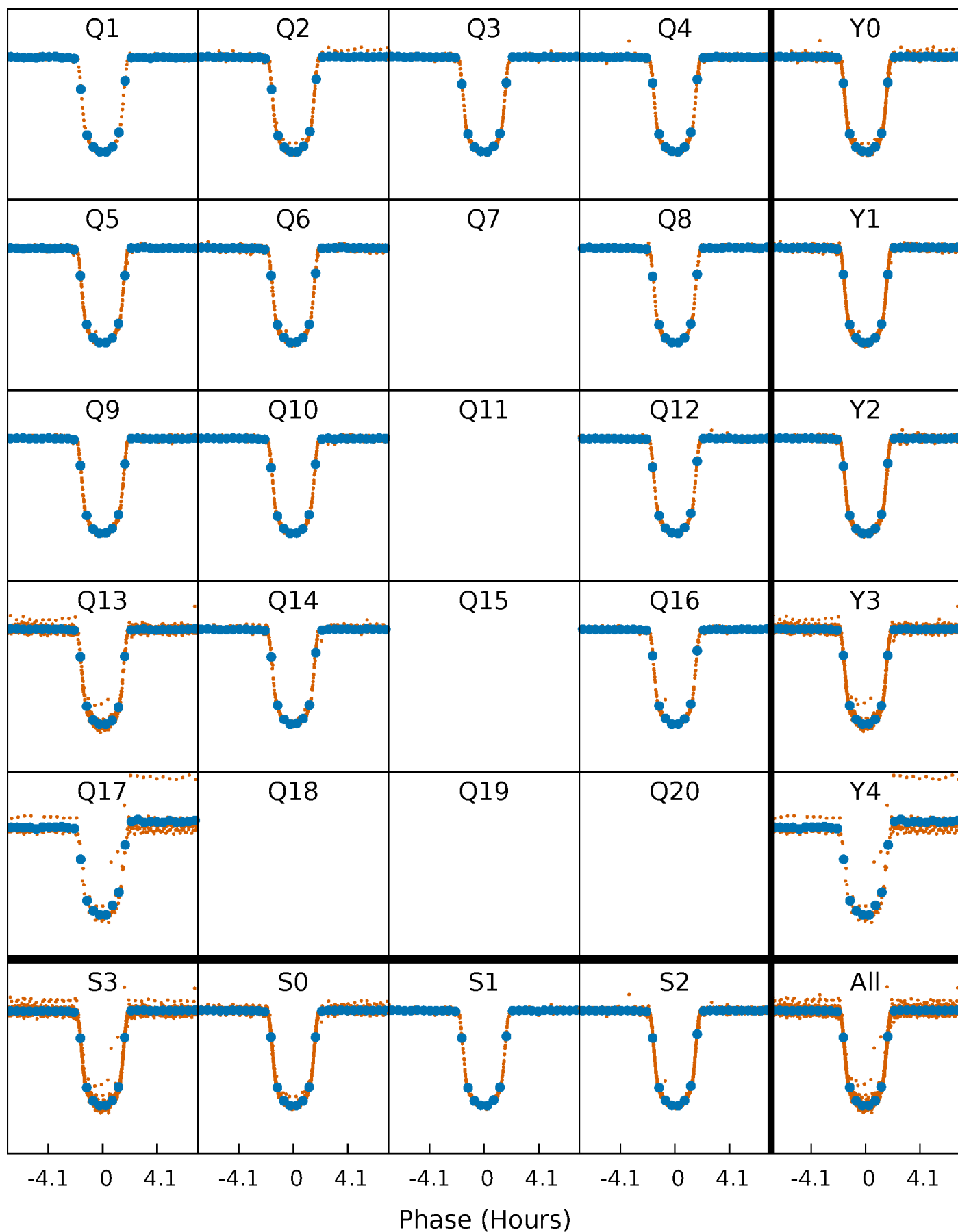


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

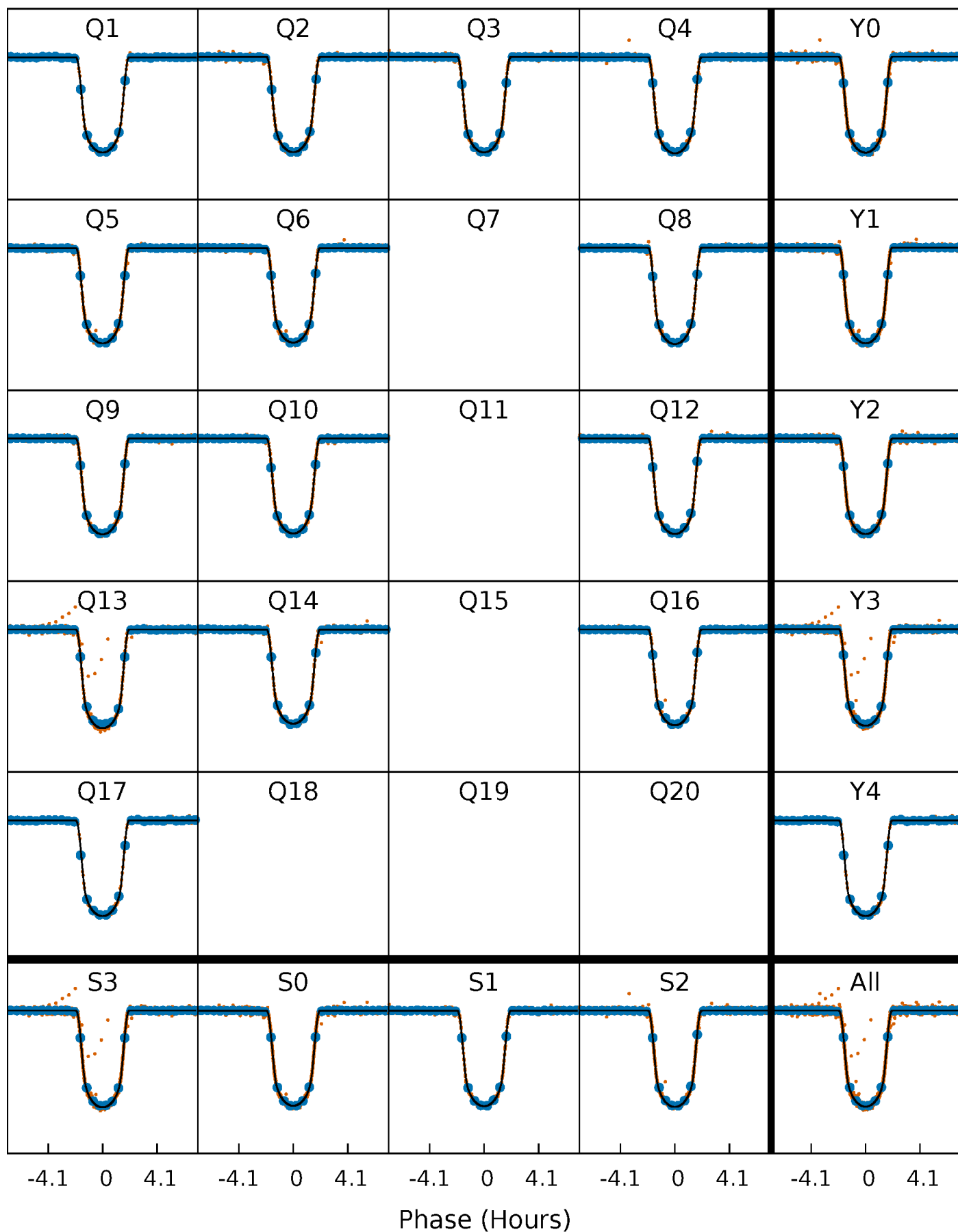
TCE 010874614-01 P= 3.234699 Days  $T_0=134.425348$  (BKJD)





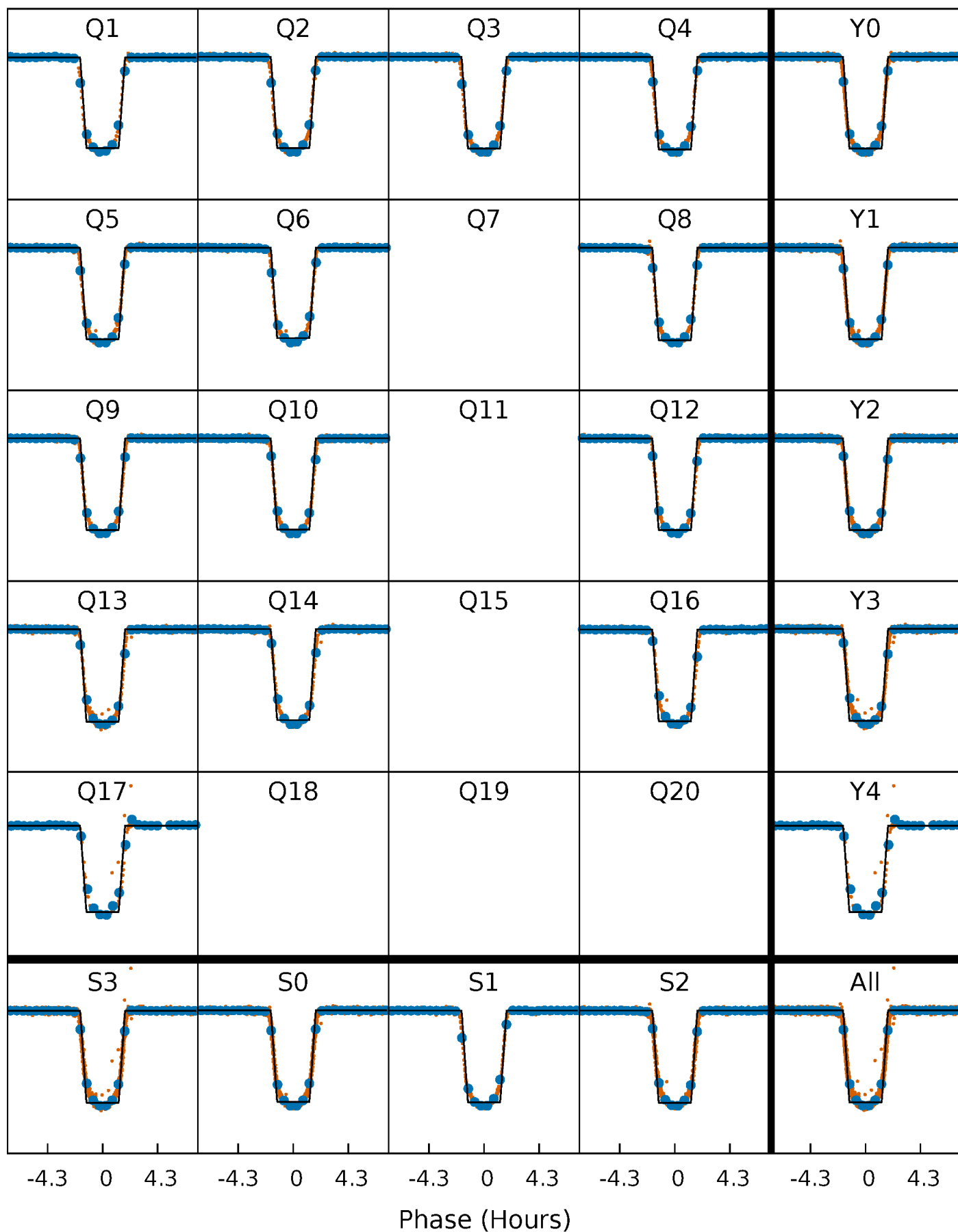
# DV Quarter-Phased Transit Curves

TCE 010874614-01 P= 3.234699 Days  $T_0=134.425348$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

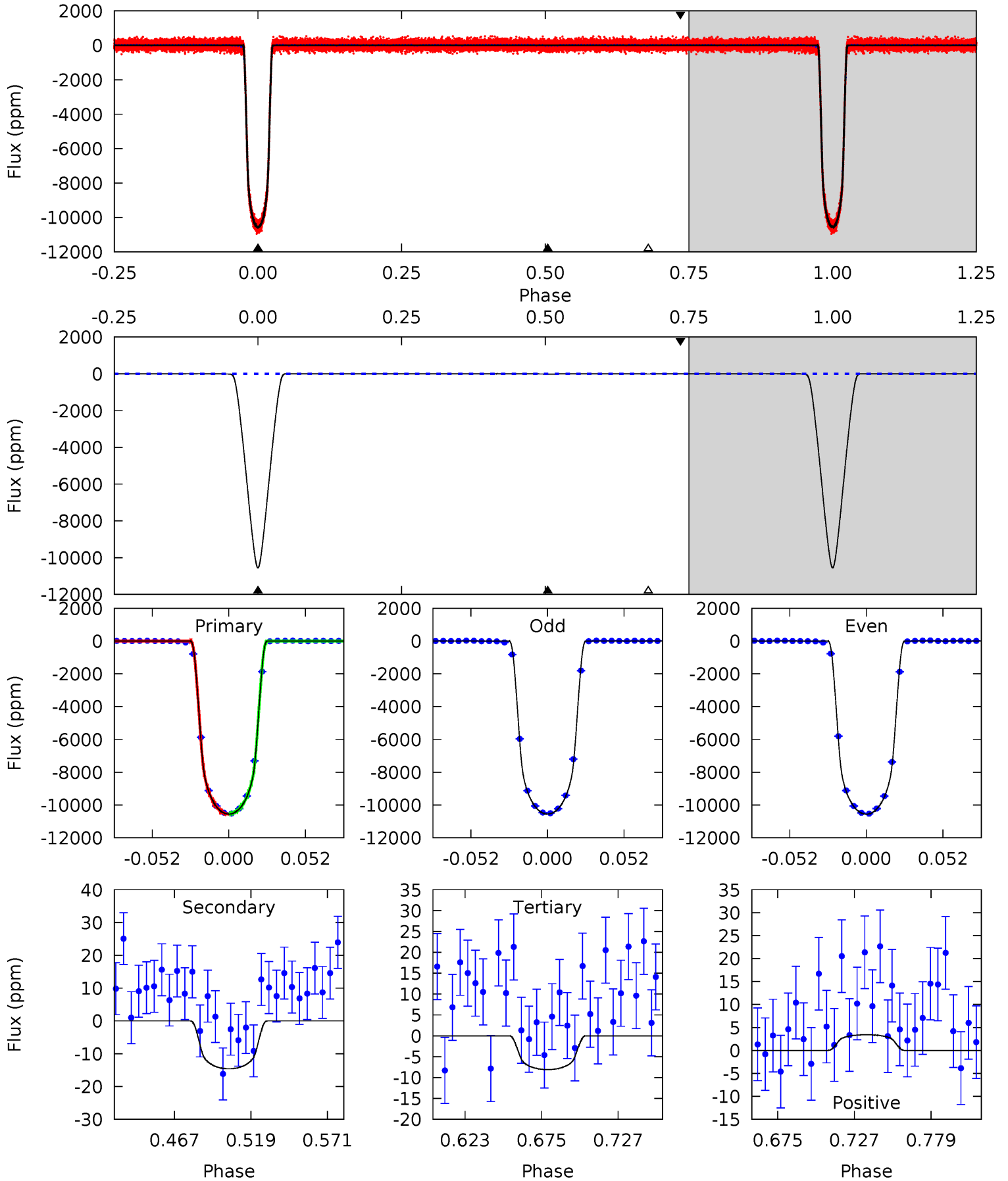
TCE 010874614-01 P= 3.234684 Days  $T_0=134.428469$  (BKJD)



# DV Model-Shift Uniqueness Test

010874614-01, P = 3.234699 Days, E = 131.190649 Days

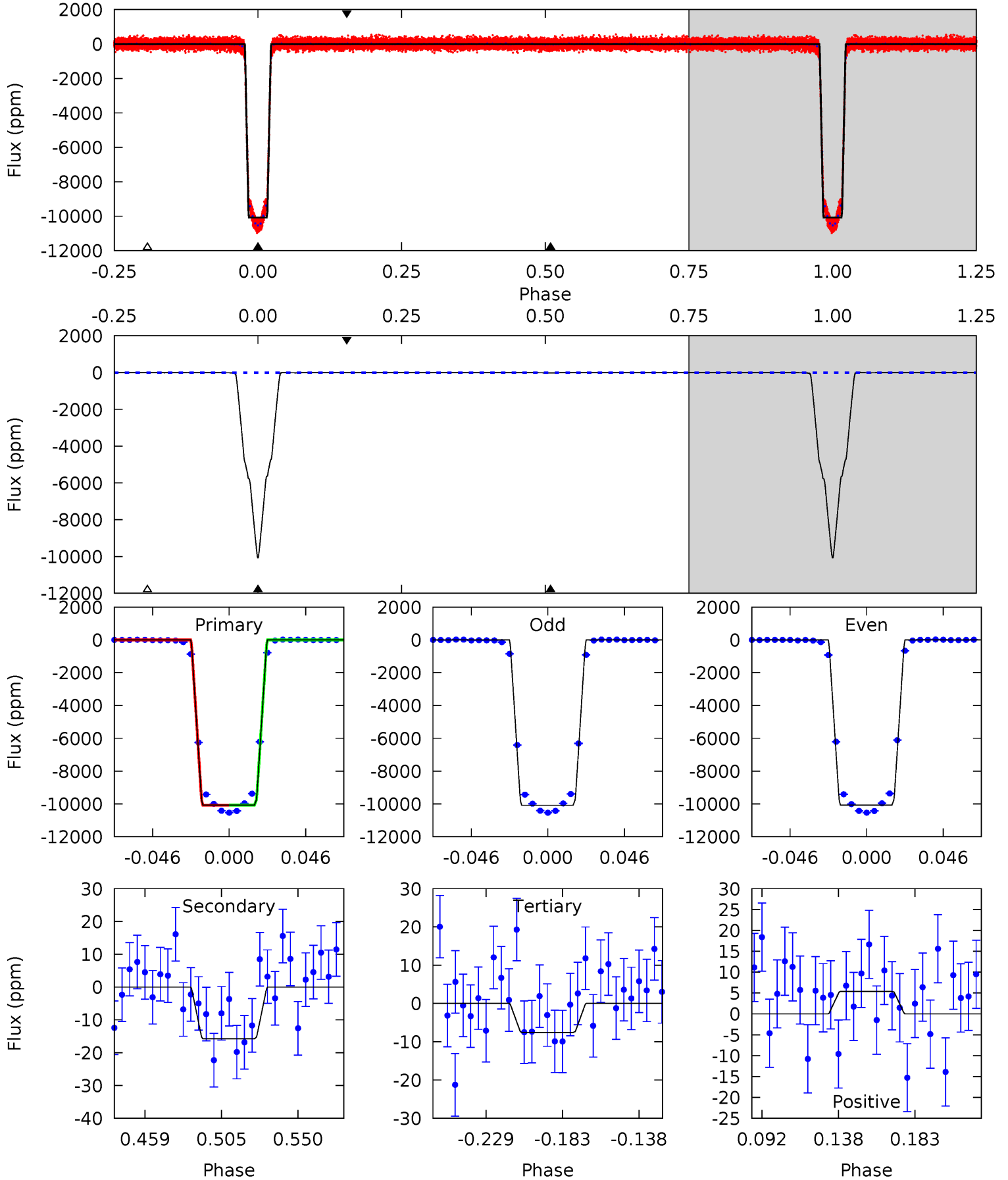
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4275	5.92	3.28	1.38	4.70	1.94	1.49	4271	4273	2.64	4.54	1.25	1.00	0.00	1.87



# Alt Model-Shift Uniqueness Test

010874614-01, P = 3.234684 Days, E = 131.193785 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
3311	5.18	2.49	1.77	4.73	2.00	1.19	3309	3310	2.69	3.41	1.19	1.00	0.00	1.44



### Stellar Parameters For KIC 010874614

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5640^{+113}_{-101}$	$4.236^{+0.055}_{-0.045}$	$0.340^{+0.100}_{-0.150}$	$1.291^{+0.095}_{-0.095}$	$1.047^{+0.088}_{-0.064}$	$0.685^{+0.144}_{-0.109}$
	+2%/-2%	+1%/-1%	+29%/-44%	+7%/-7%	+8%/-6%	+21%/-16%
Source	SPE22	TRA22	SPE22	DSEP		

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

### Secondary Eclipse Parameters for KIC 010874614-01 / KOI 0017.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-15 \pm 2$	$13.04^{+0.58}_{-0.53}$	$1894^{+47}_{-49}$	$-2327^{+41}_{-40}$	$0.090^{+0.017}_{-0.016}$
Alt.	$-16 \pm 3$	$14.16^{+0.69}_{-0.63}$	$1891^{+54}_{-47}$	$-2339^{+43}_{-39}$	$0.082^{+0.017}_{-0.016}$

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

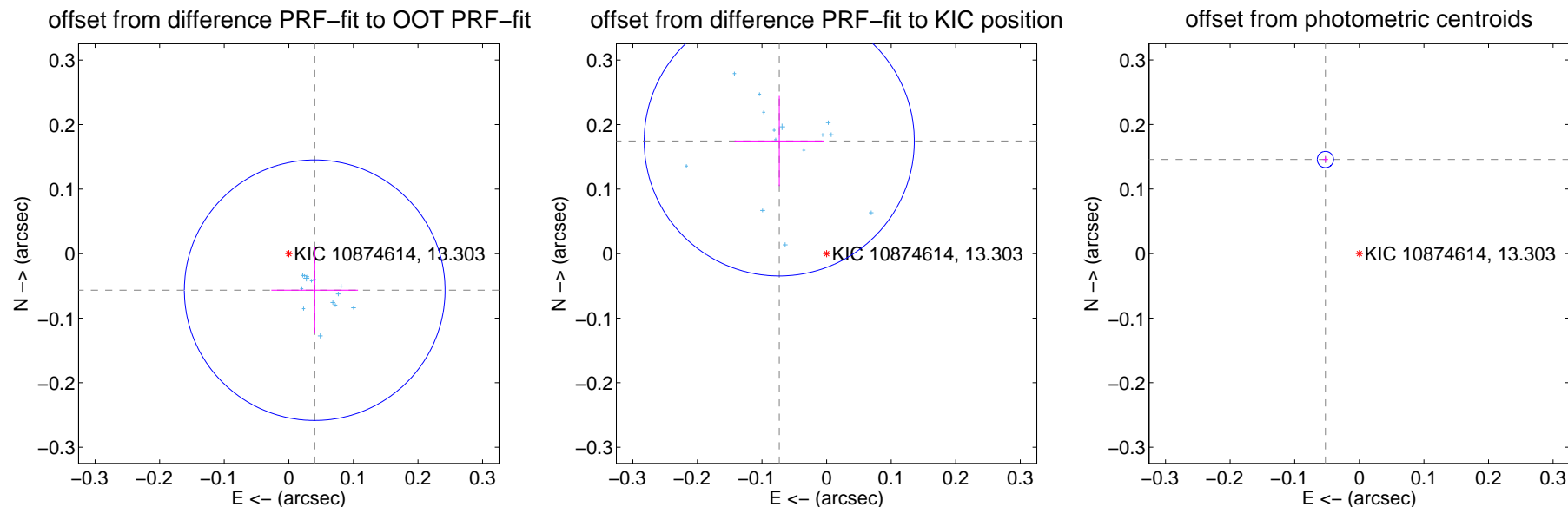
## DV Centroid Data

Supplemental centroid analysis for 010874614-01. Kepler magnitude: 13.30. Transit SNR 2864.56

There are 14 quarters with good PRF difference image offsets

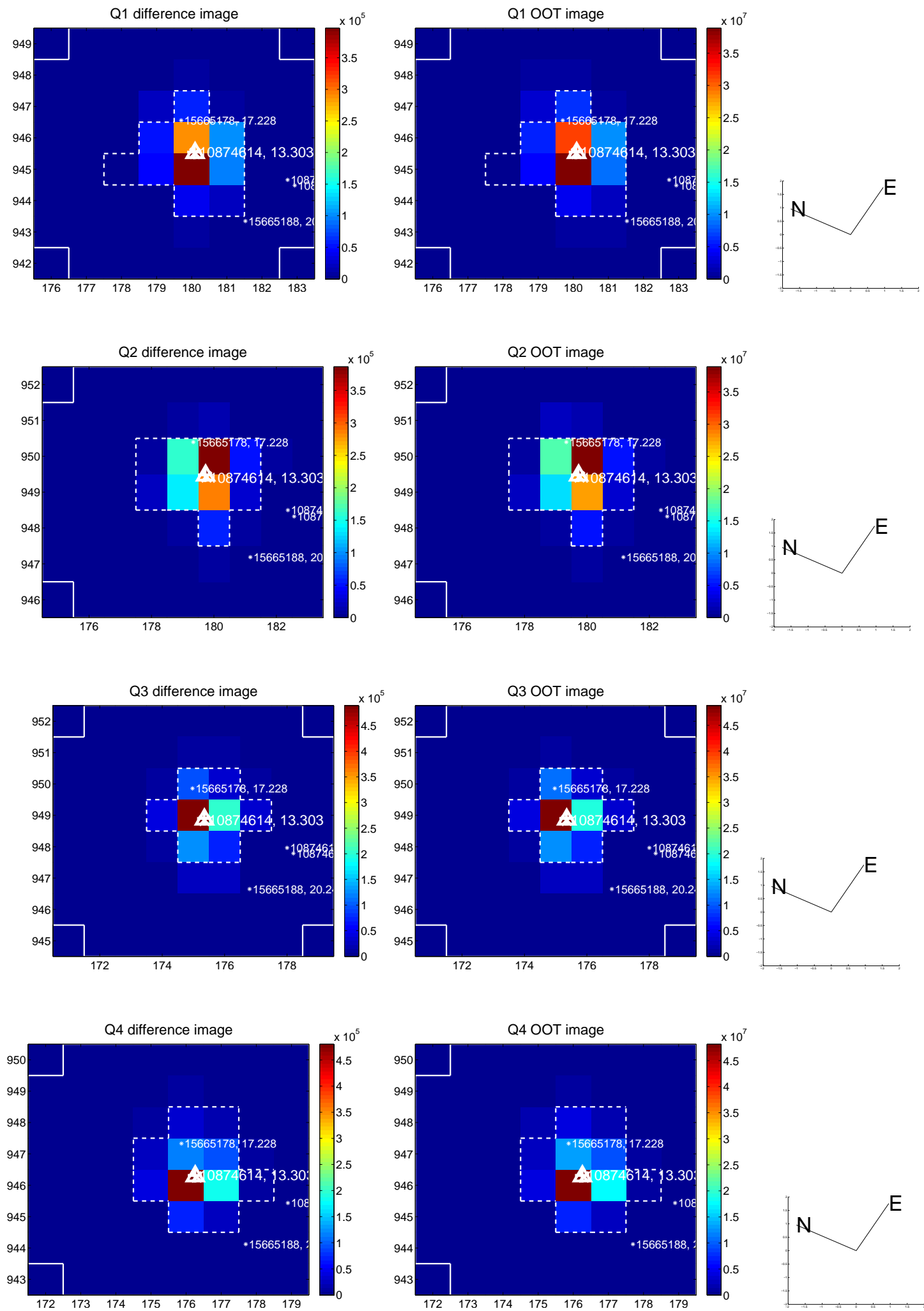
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.069 \pm 0.067$	1.03	$-0.040 \pm 0.067$	$-0.057 \pm 0.067$
PRF-fit source offset from KIC position	$0.189 \pm 0.070$	2.72	$0.073 \pm 0.069$	$0.175 \pm 0.070$
photometric centroid source offset	$0.15 \pm 0.00$	36.94	$0.05 \pm 0.00$	$0.15 \pm 0.00$

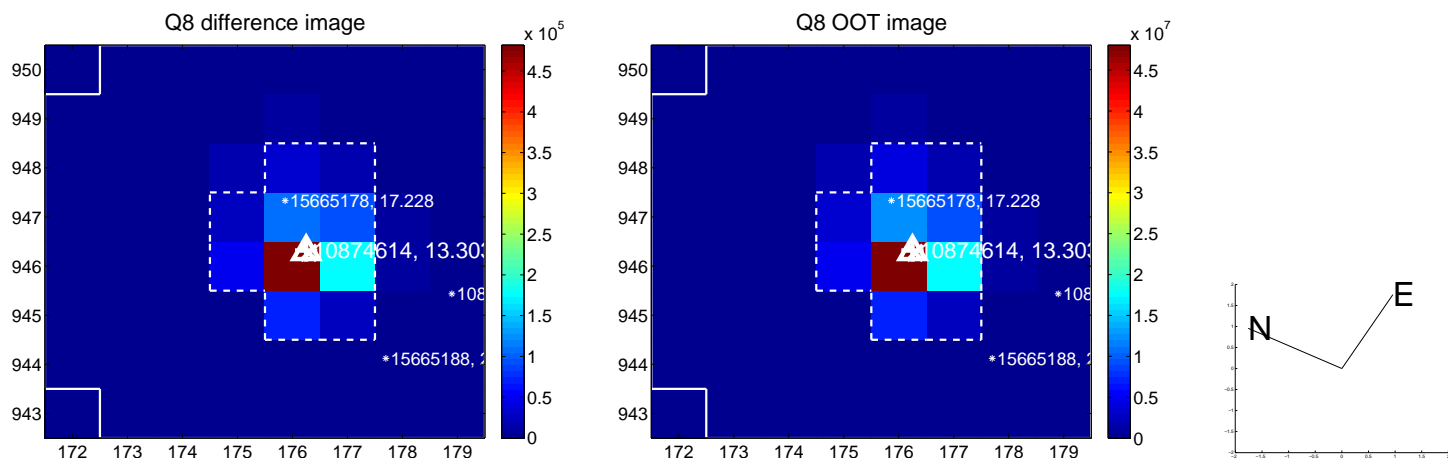
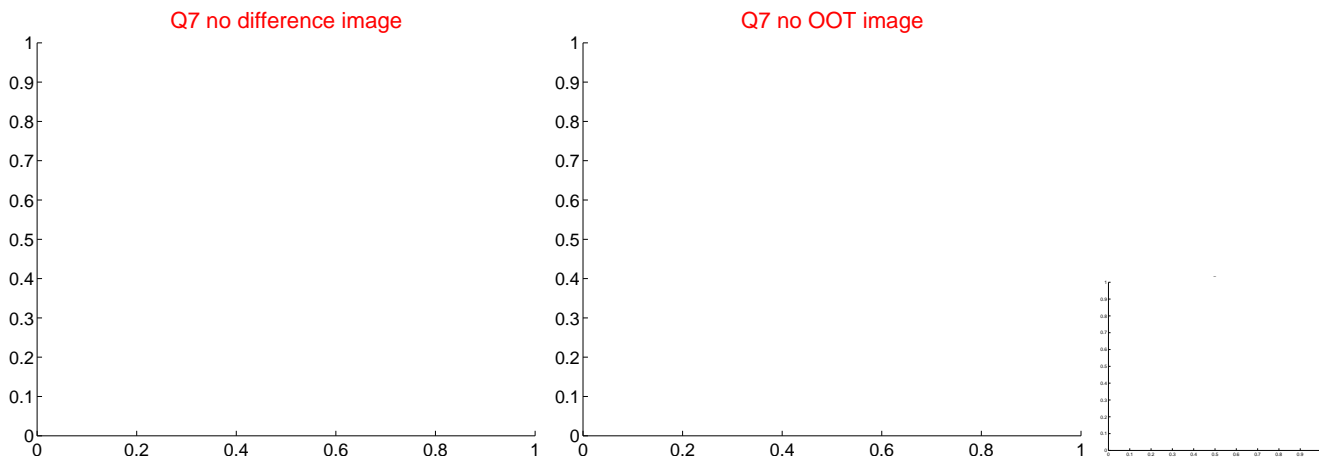
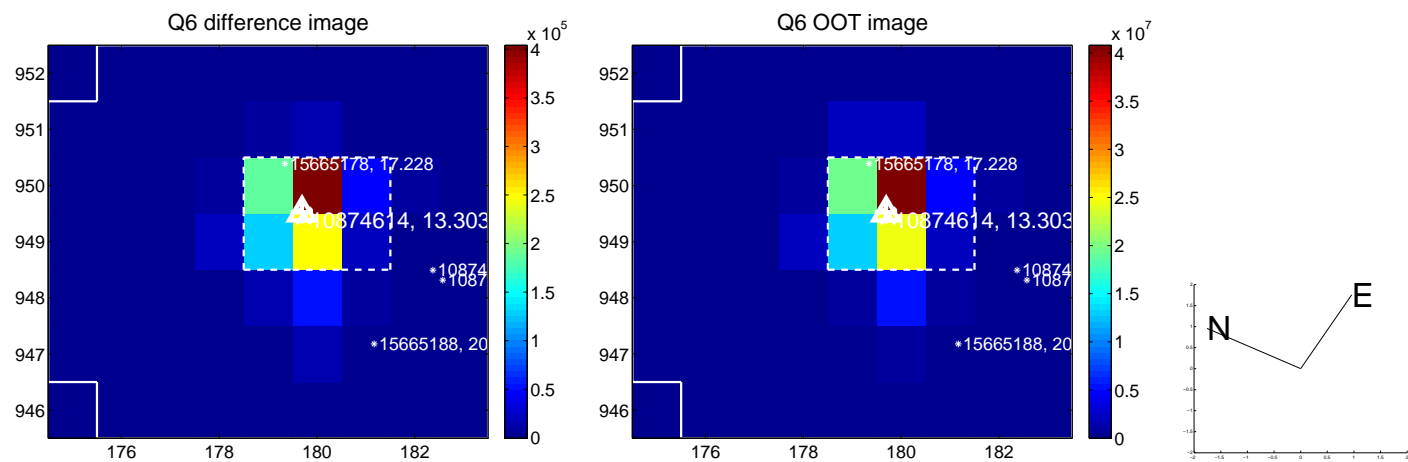
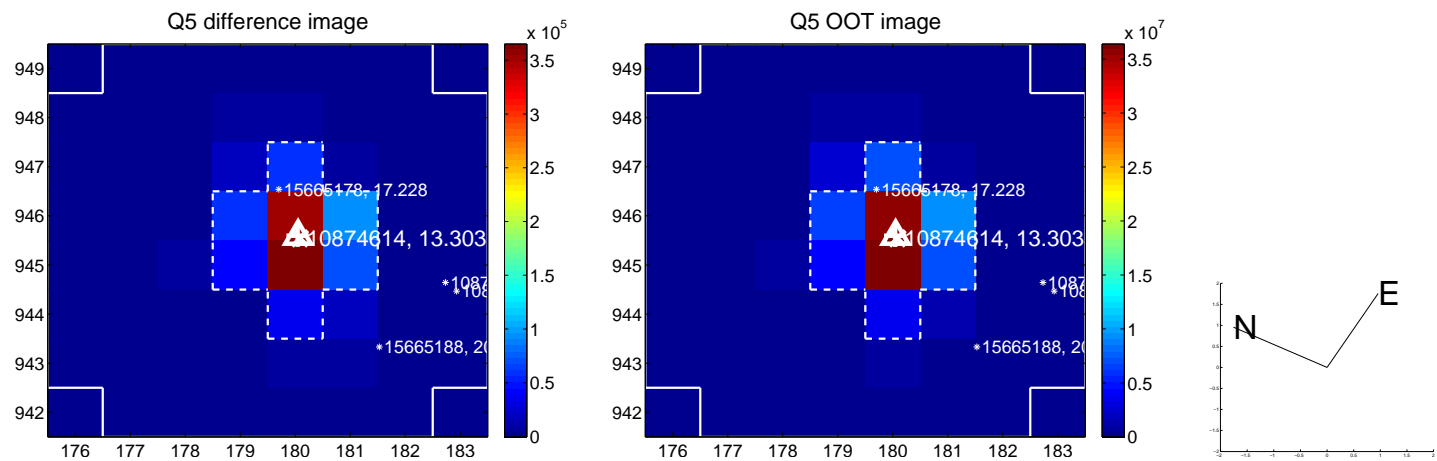


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

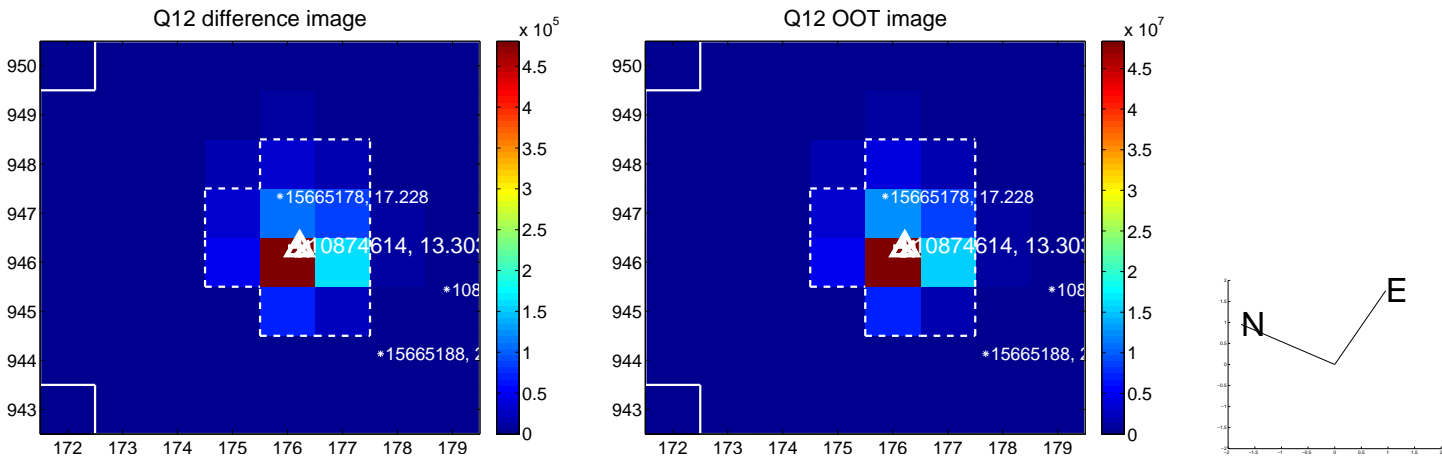
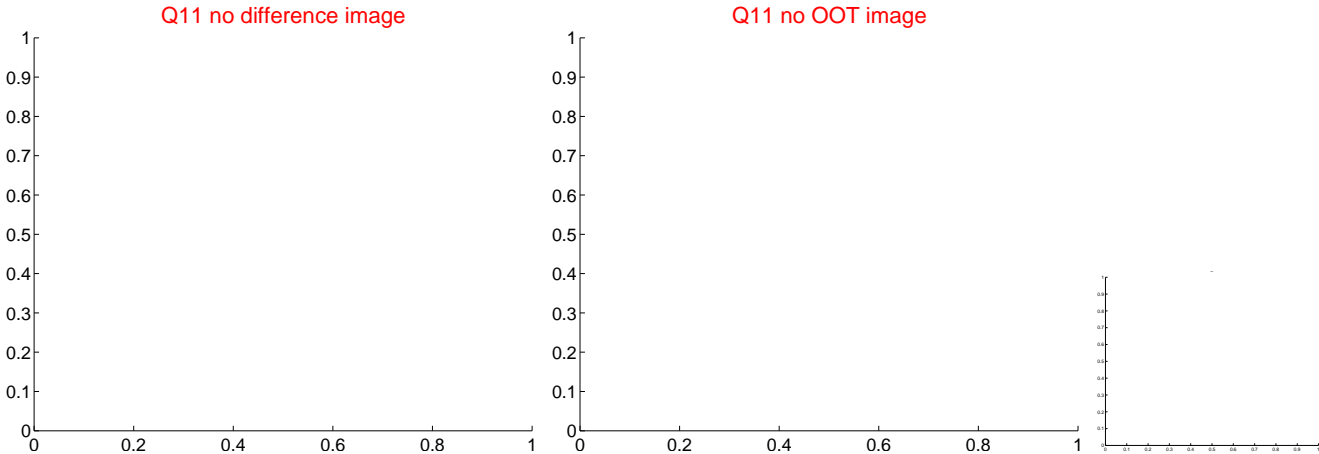
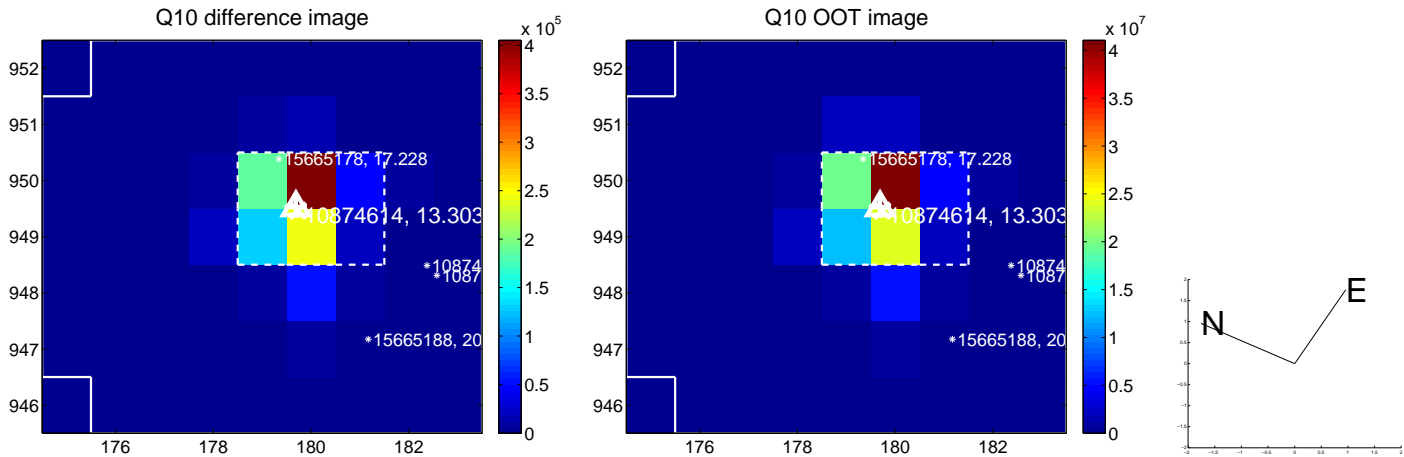
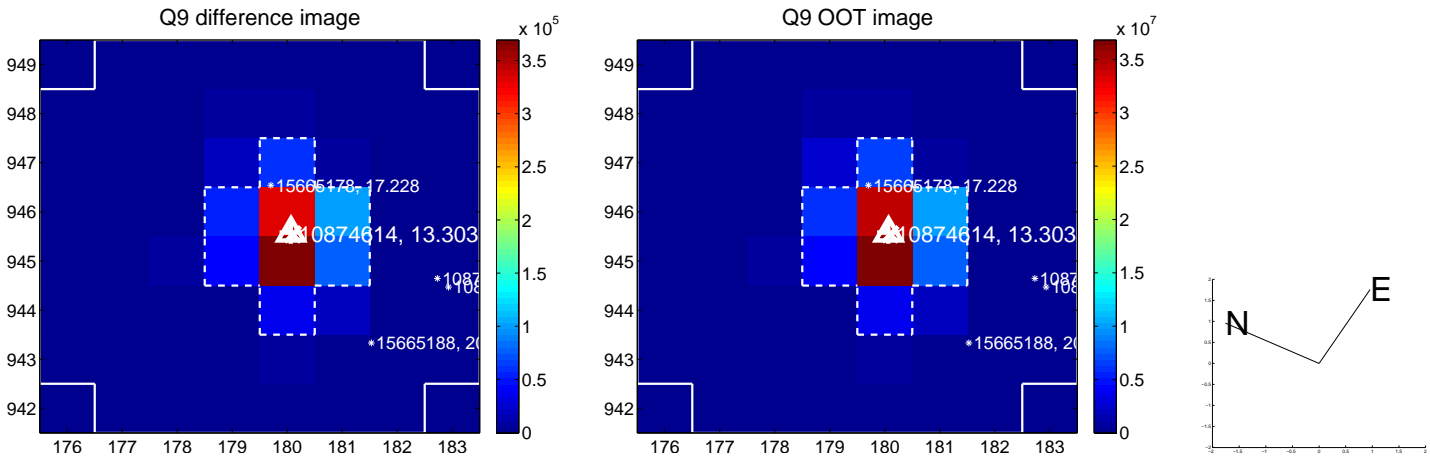


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

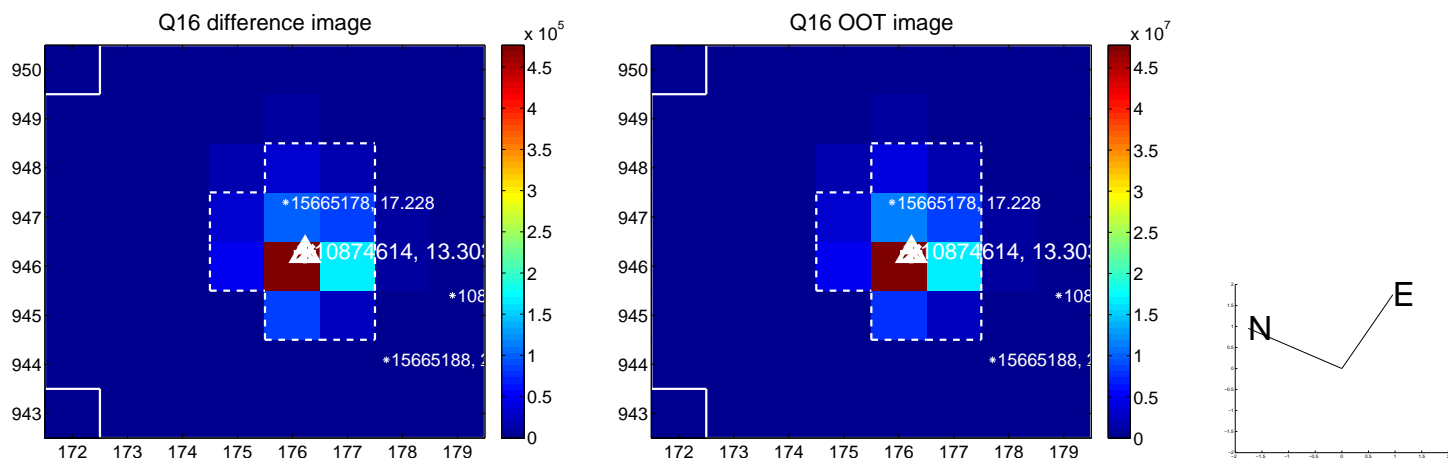
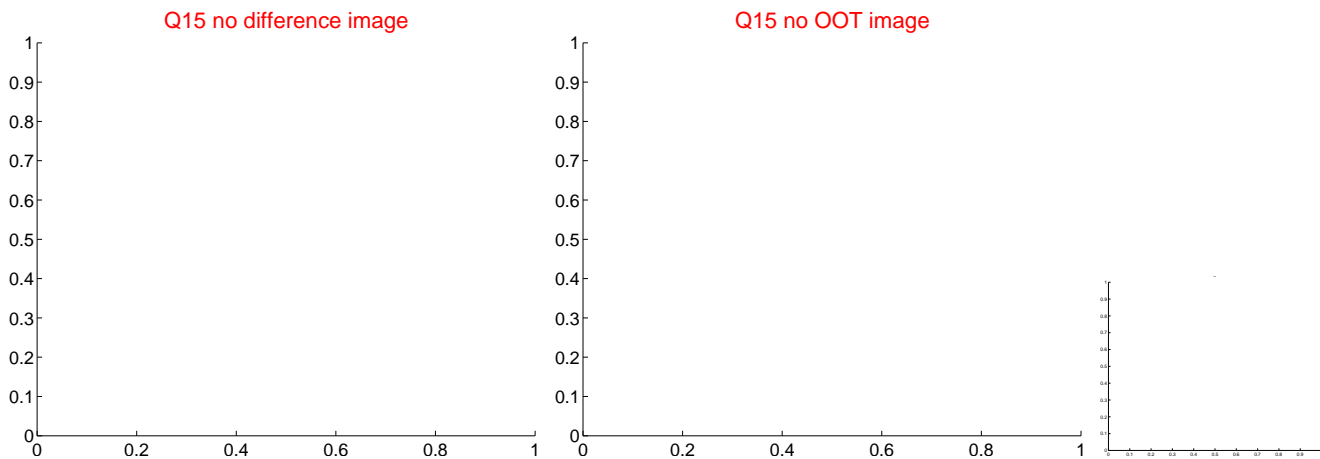
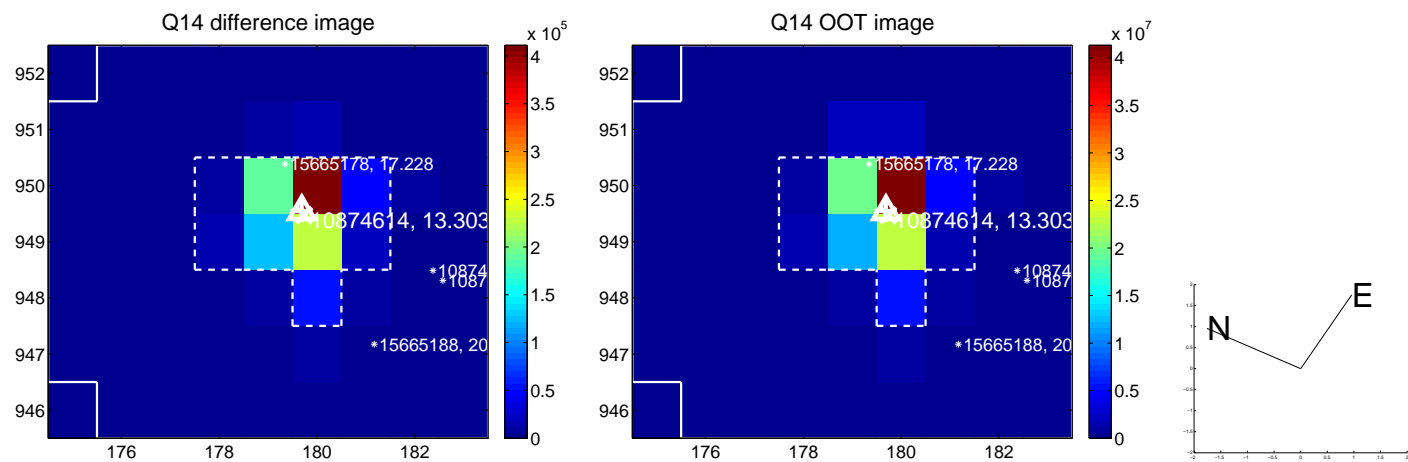
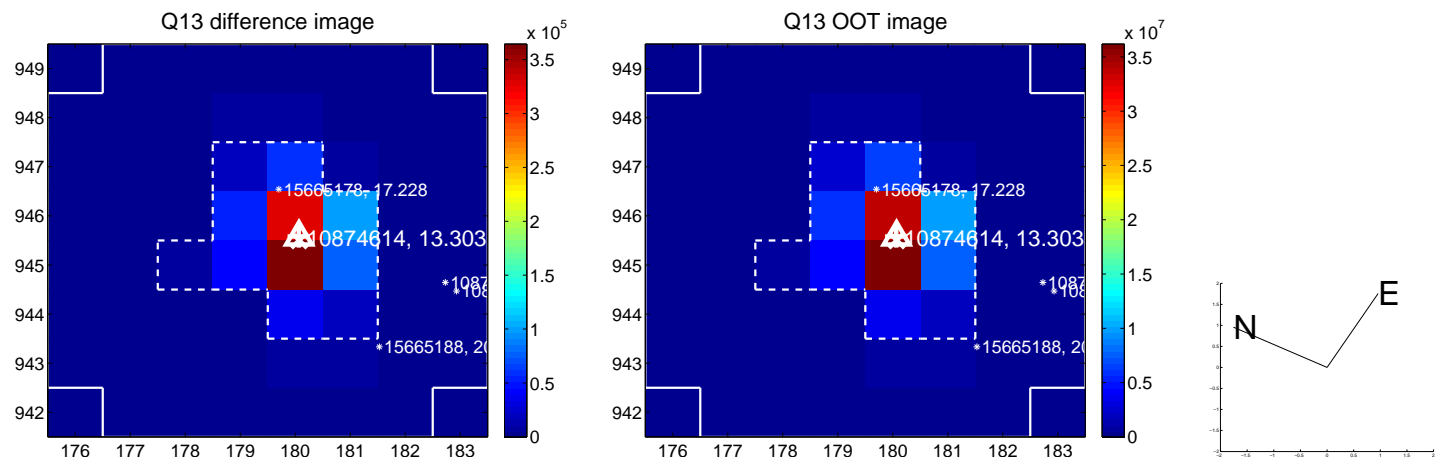




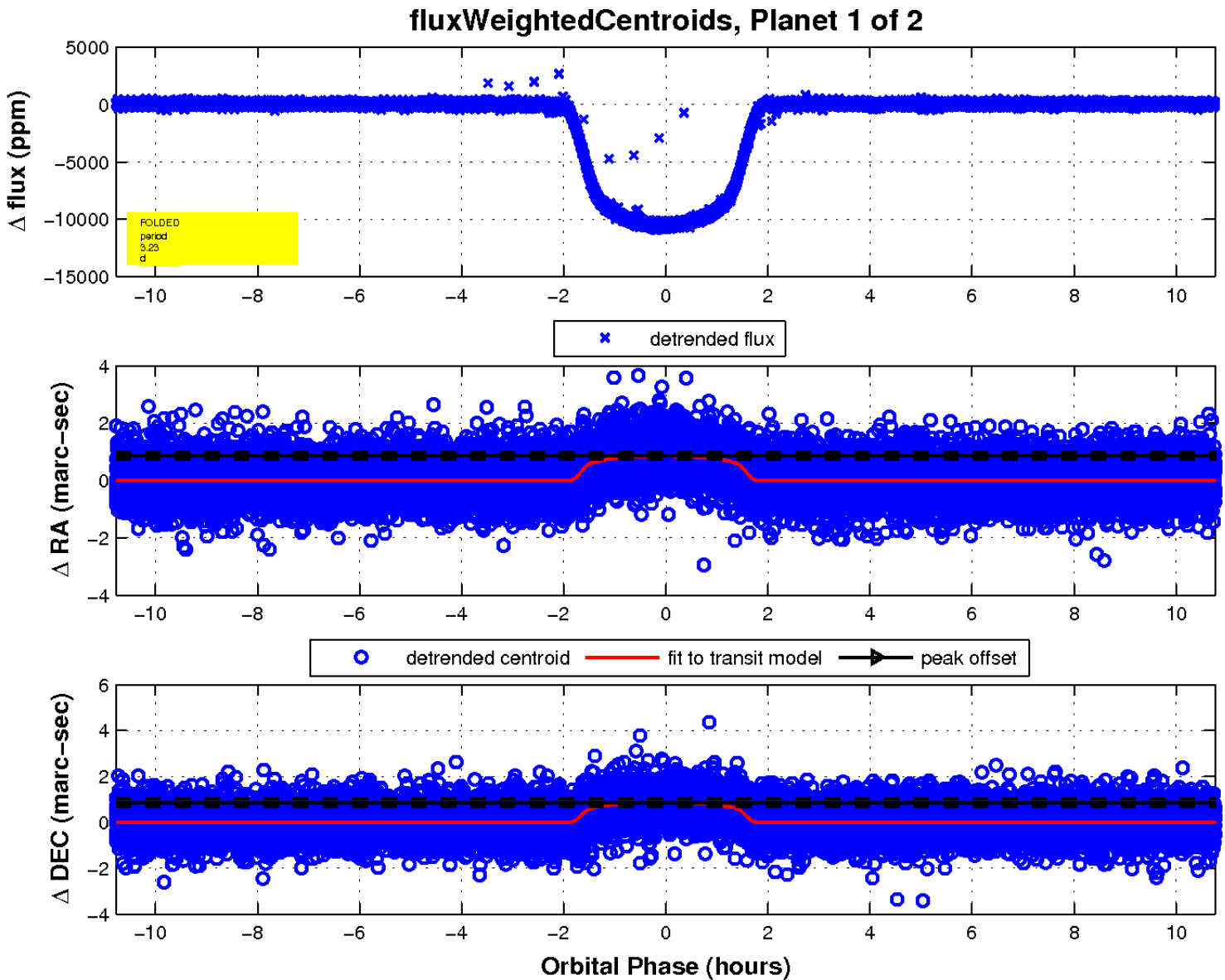
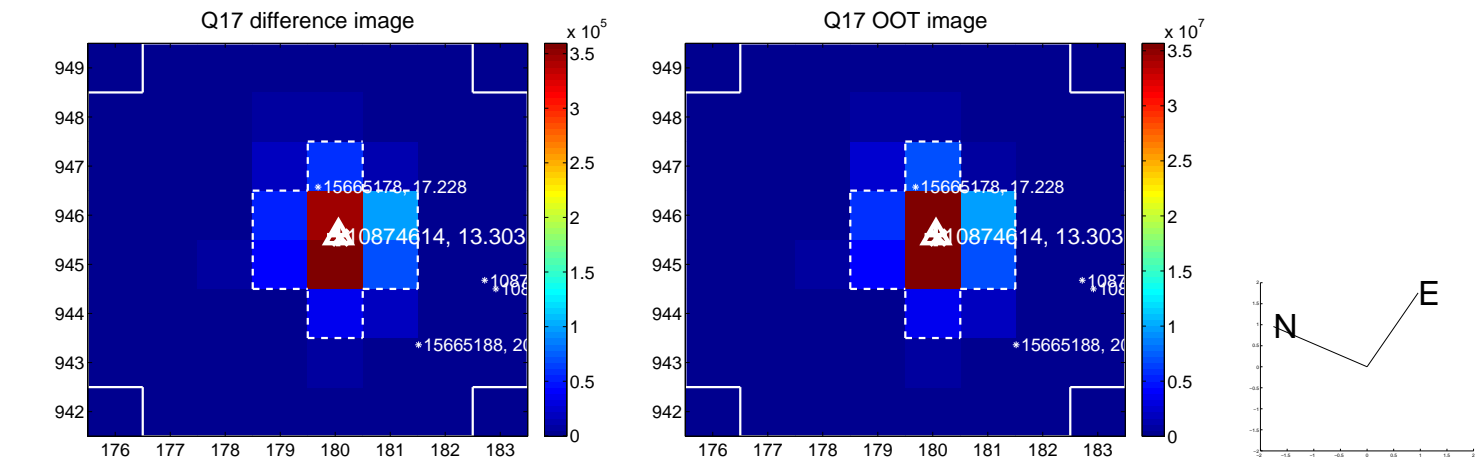
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

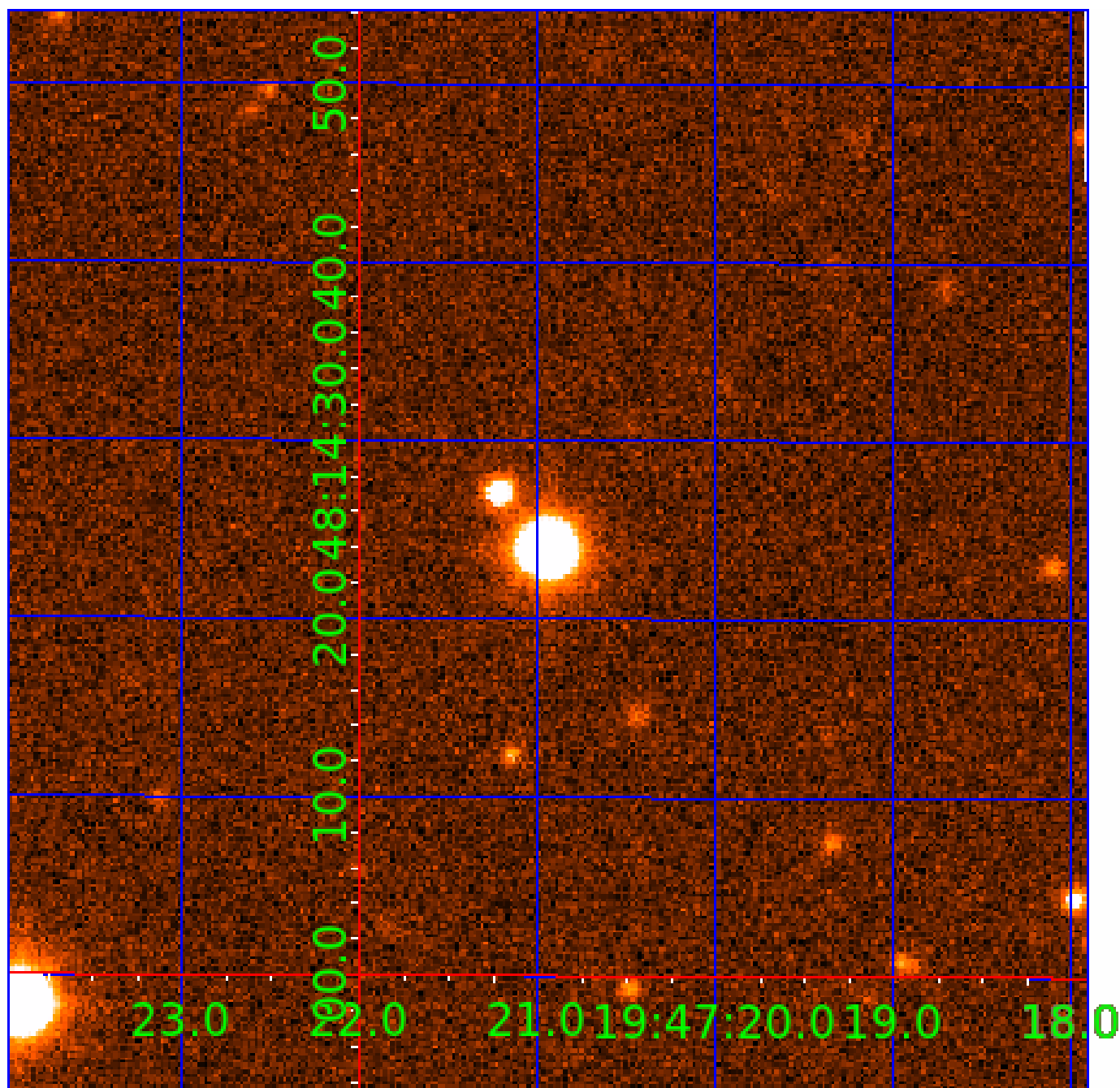


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010874614

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010874614-01	OBS	0017.01	3.234699	134.425348	10561.5	3.591	2986.3	2864.6	1.29	5640	13.04	799.56
010874614-02	OBS	No	412.028308	436.545001	170.4	5.418	8.0	5.2	1.29	5640	2.00	1.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010874614-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
010874614-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

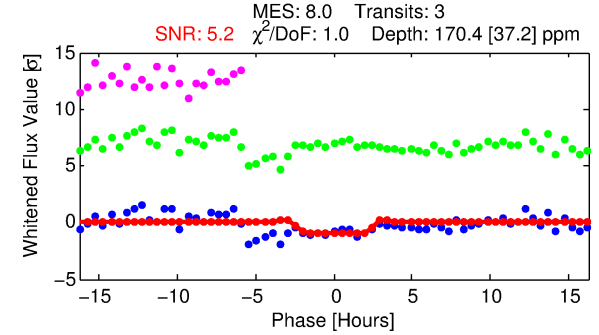
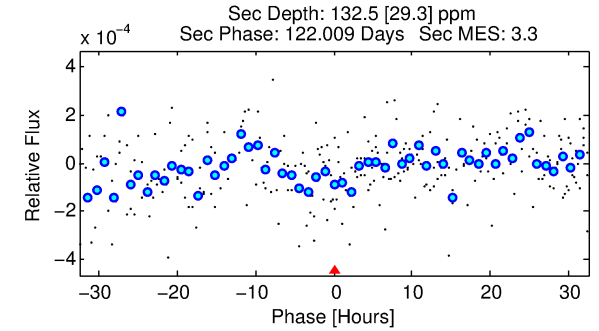
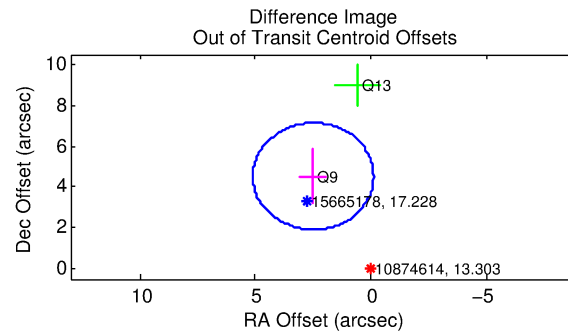
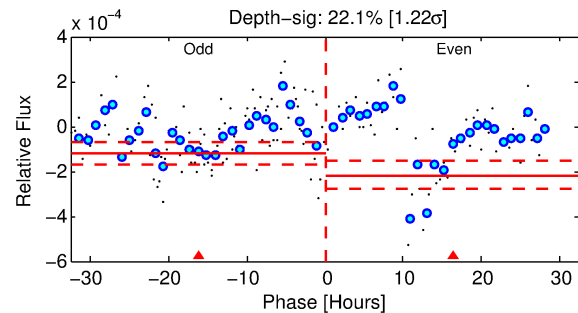
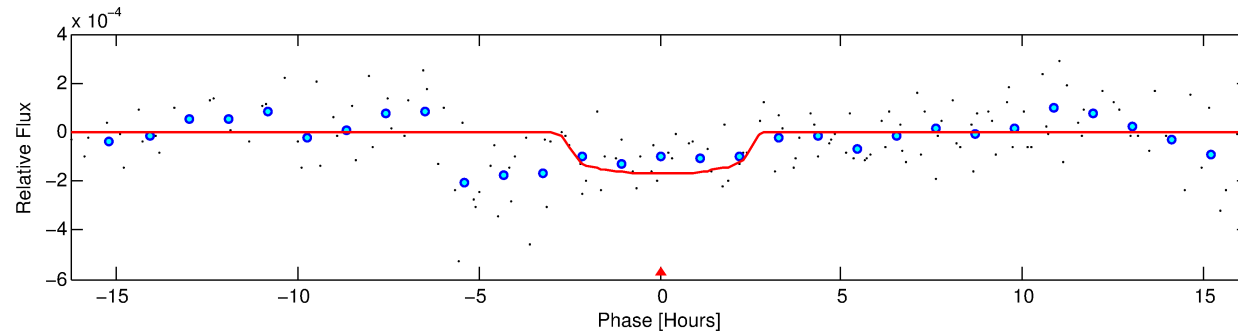
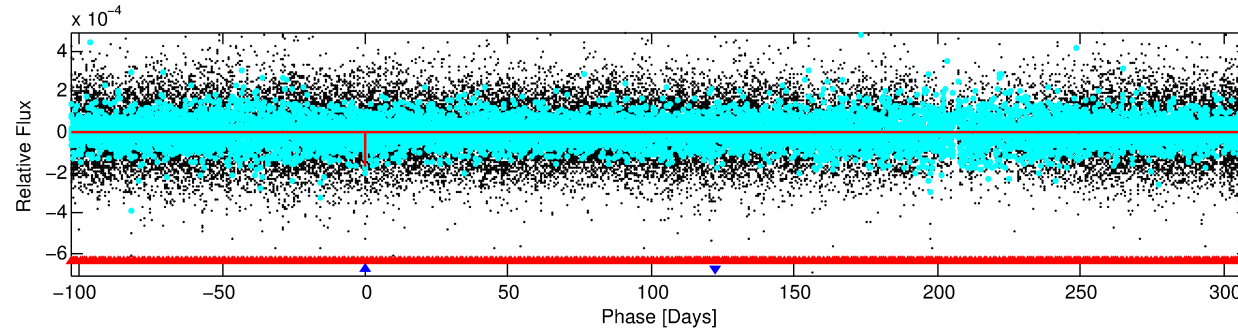
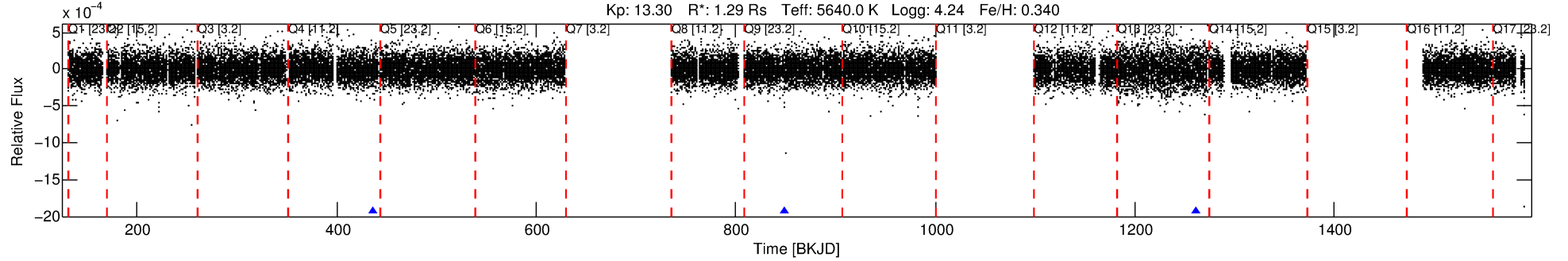
## Ephemeris Match Information For 010874614-02

No Significant Match Found

# DV One-Page Summary

KIC: 10874614 Candidate: 2 of 2 Period: 412.028 d  
KOI: K00017 Name: Kepler-6 Corr: No Ephemeris Match

Kp: 13.30 R\*: 1.29 Rs Teff: 5640.0 K Logg: 4.24 Fe/H: 0.340



## DV Fit Results:

Period = 412.02831 [0.01429] d  
Epoch = 436.5450 [0.0155] BKJD  
Rp/R\* = 0.0142 [0.0103]  
a/R\* = 281.73 [886.66]  
b = 0.89 [0.75]  
Seff = 1.25 [0.16]  
Teq = 269 [9] K  
Rp = 2.00 [1.46] Re  
a = 1.1005 [0.0712] AU  
Ag = 22061.66 [32370.01] [0.68σ]  
Teffp = 5078 [1861] K [2.58σ]

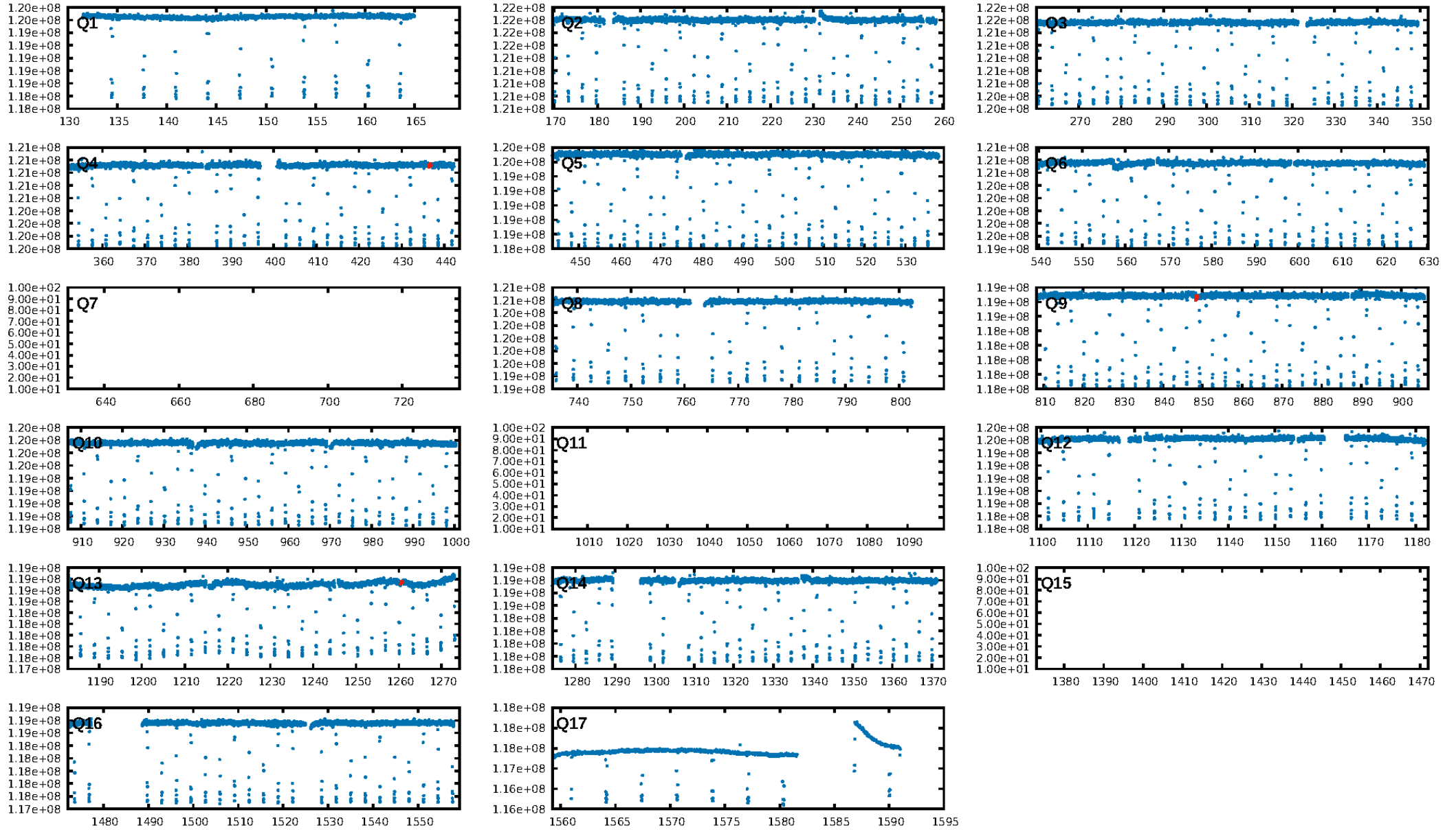
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1509.32σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 33.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.14e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -65.67  
Centroid-sig: 95.8%  
Centroid-so: 0.698 arcsec [0.27σ]  
OotOffset-rm: 5.175 arcsec [5.94σ]  
KicOffset-rm: 5.394 arcsec [7.00σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.50 [1/2]

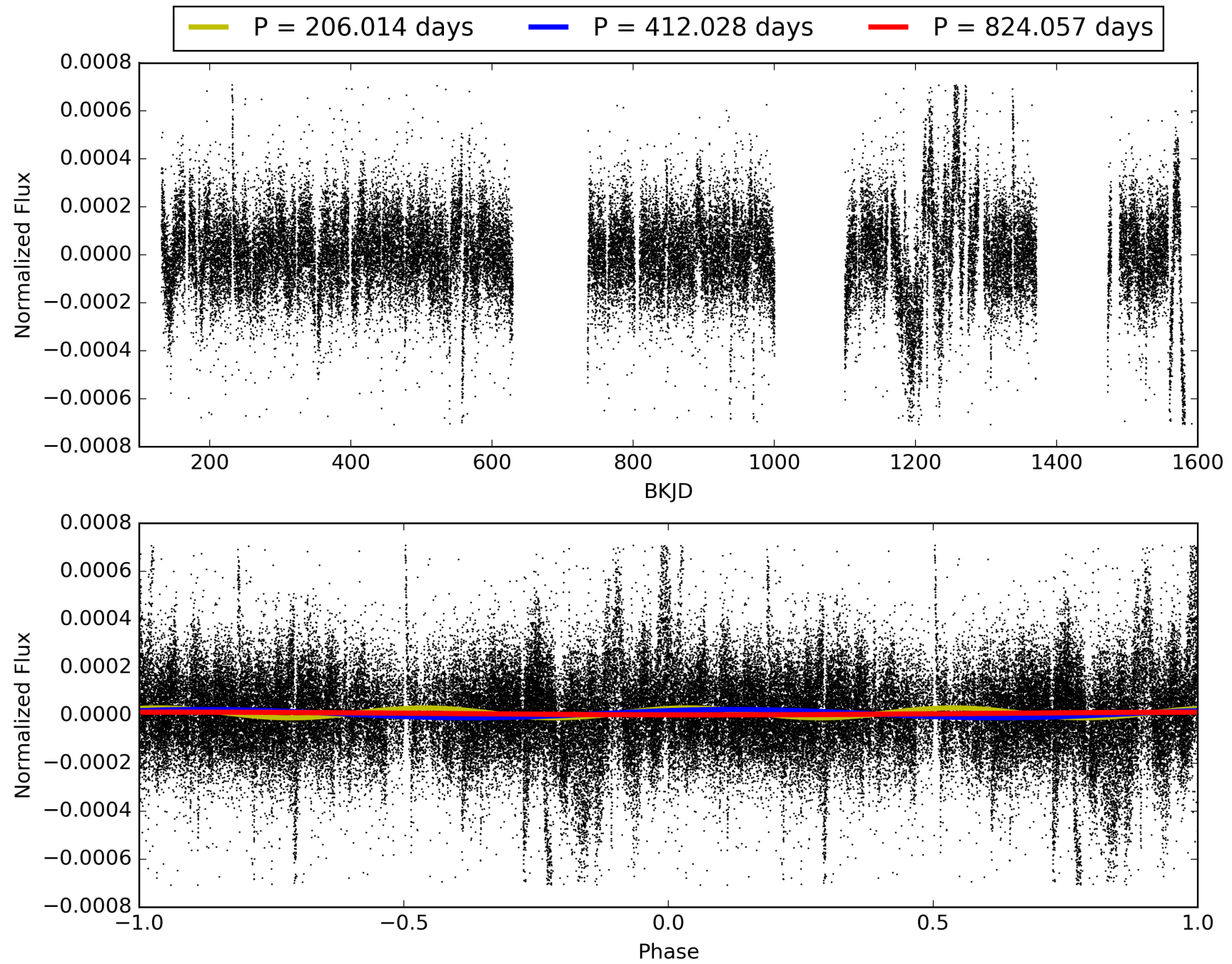
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:24:39 Z

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

# TCE 010874614-02, PDC Light Curves



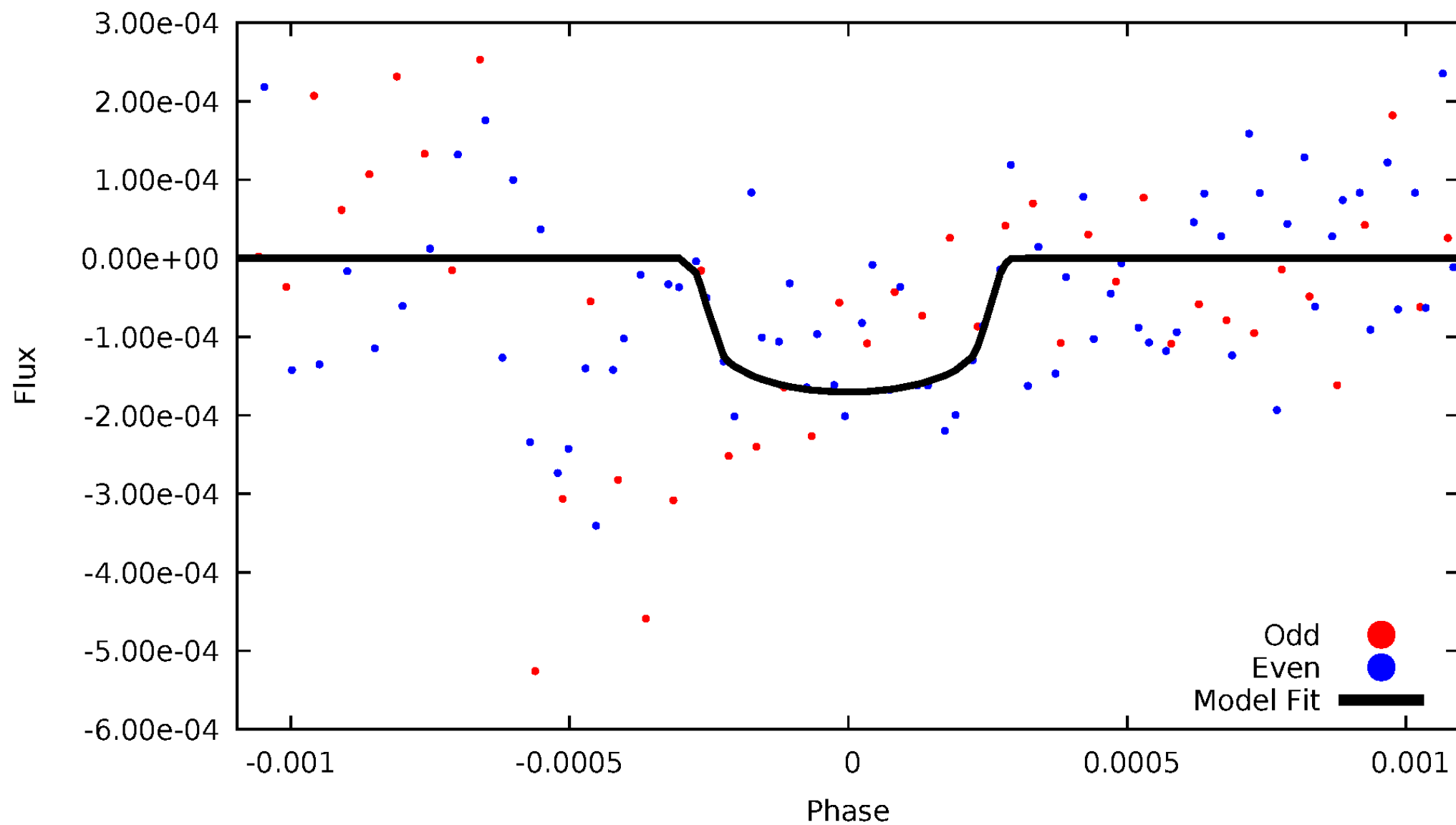
TCE 010874614-02





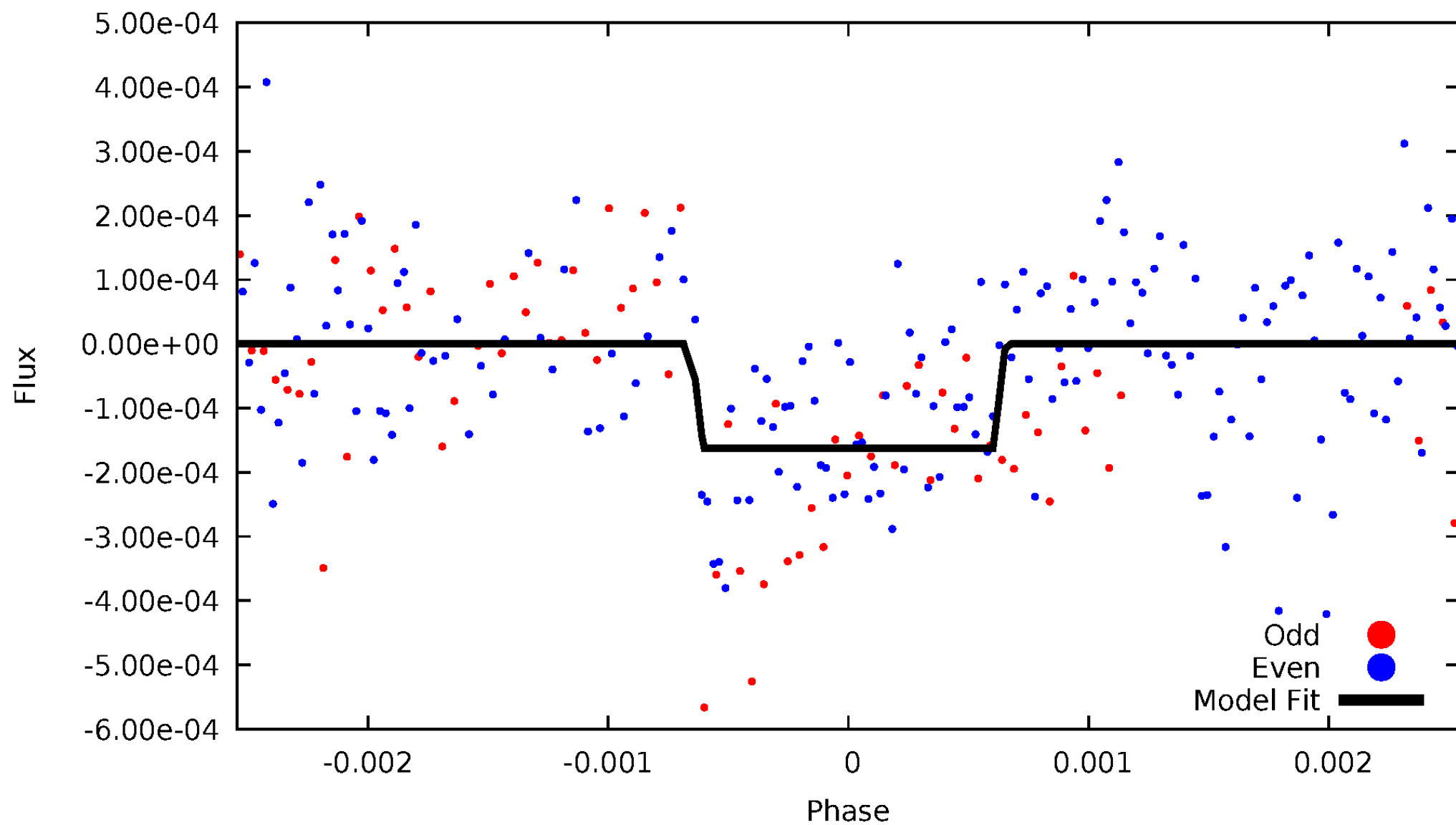
# DV Odd/Even

TCE 010874614-02



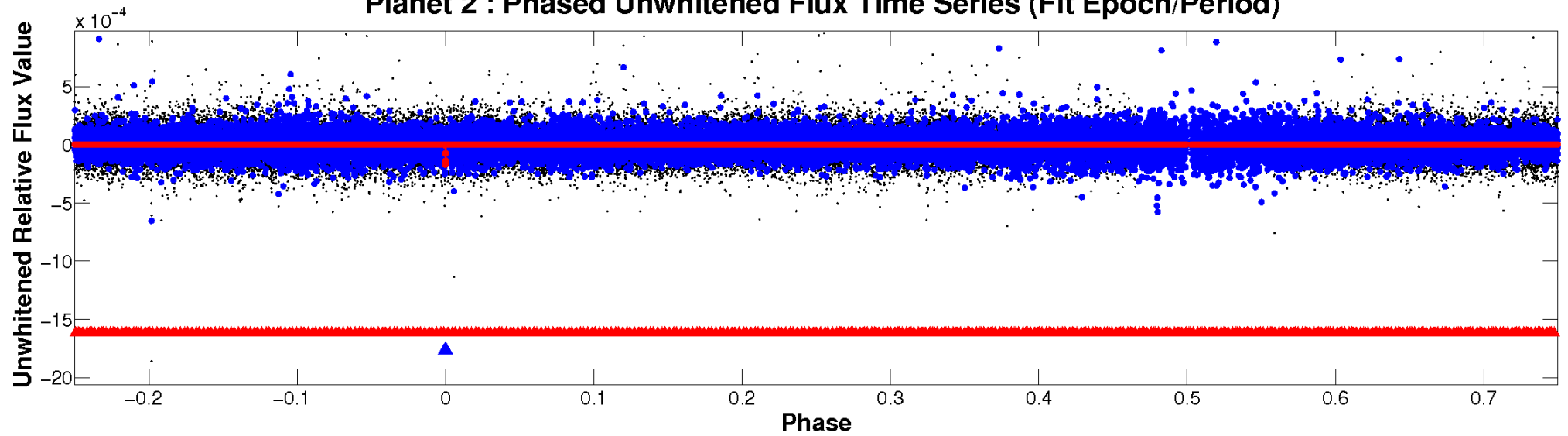
# ALT Odd/Even

TCE 010874614-02

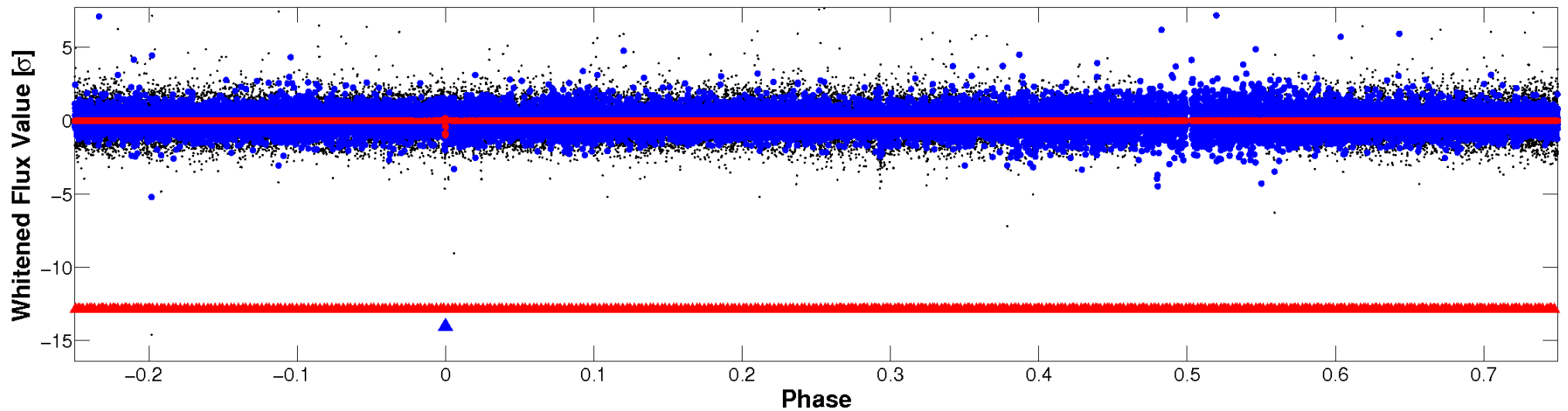


# Non-Whitened Vs. Whitened Light Curve

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

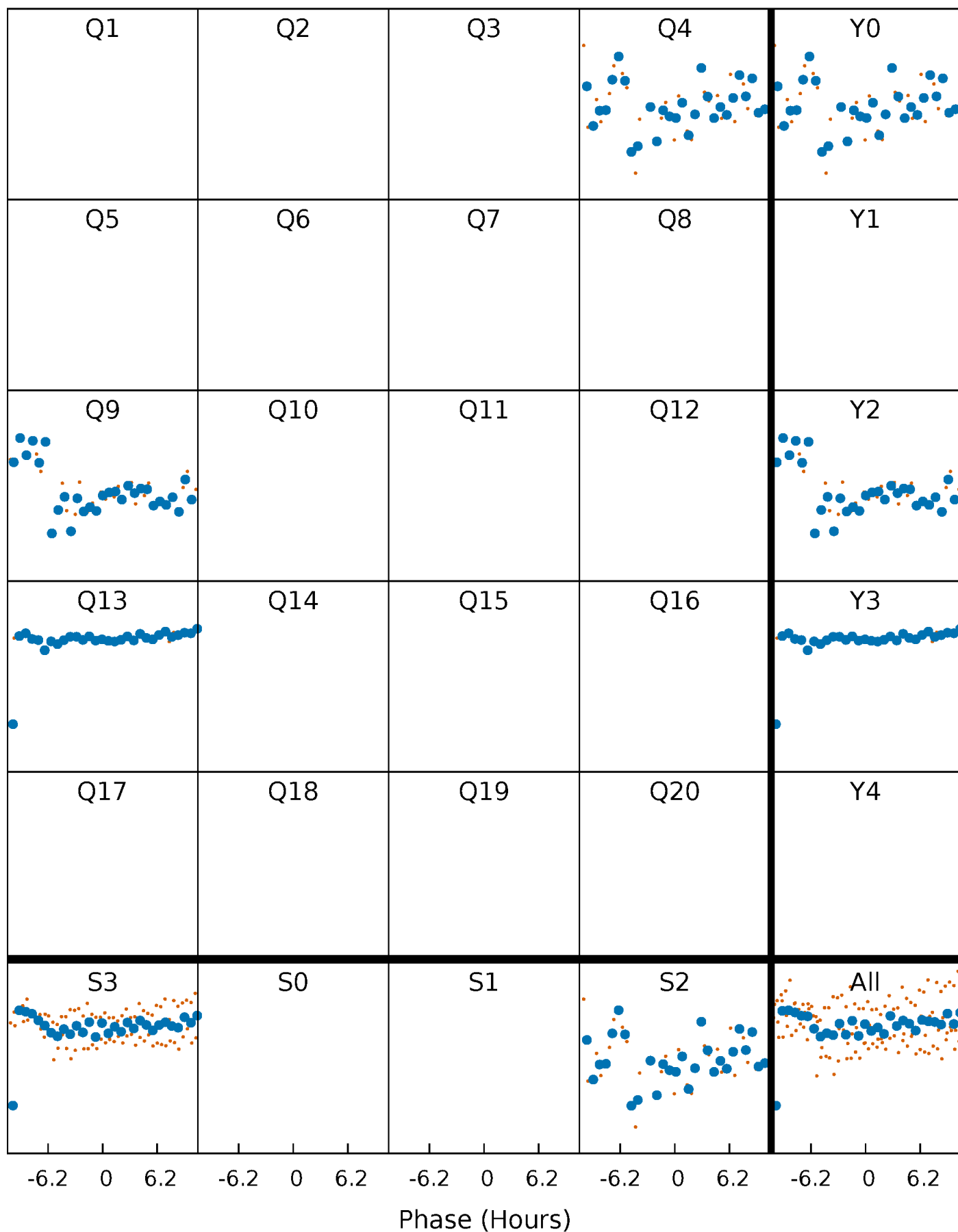


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



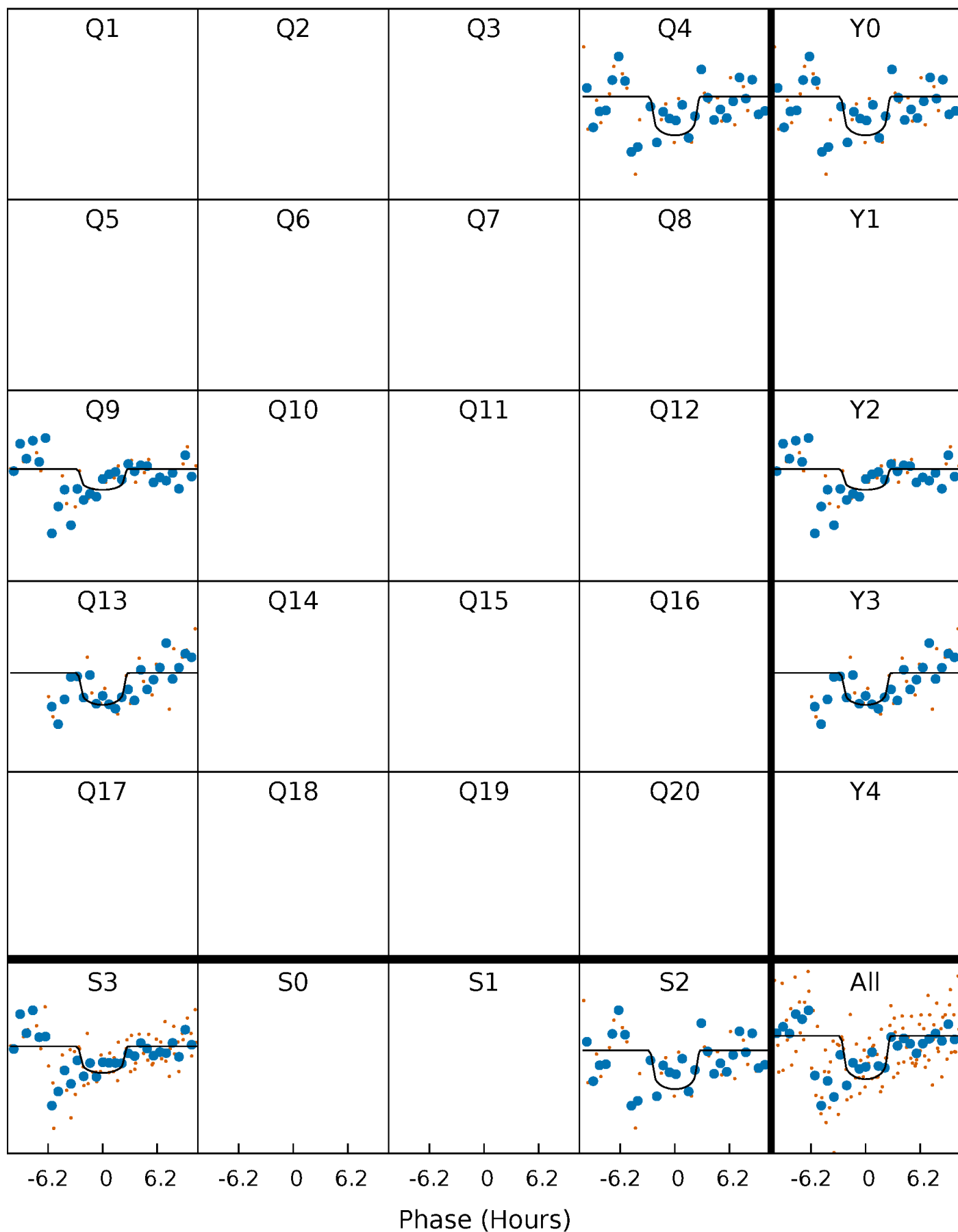
# PDC Quarter-Phased Transit Curves

TCE 010874614-02 P=412.028308 Days  $T_0=436.545001$  (BKJD)



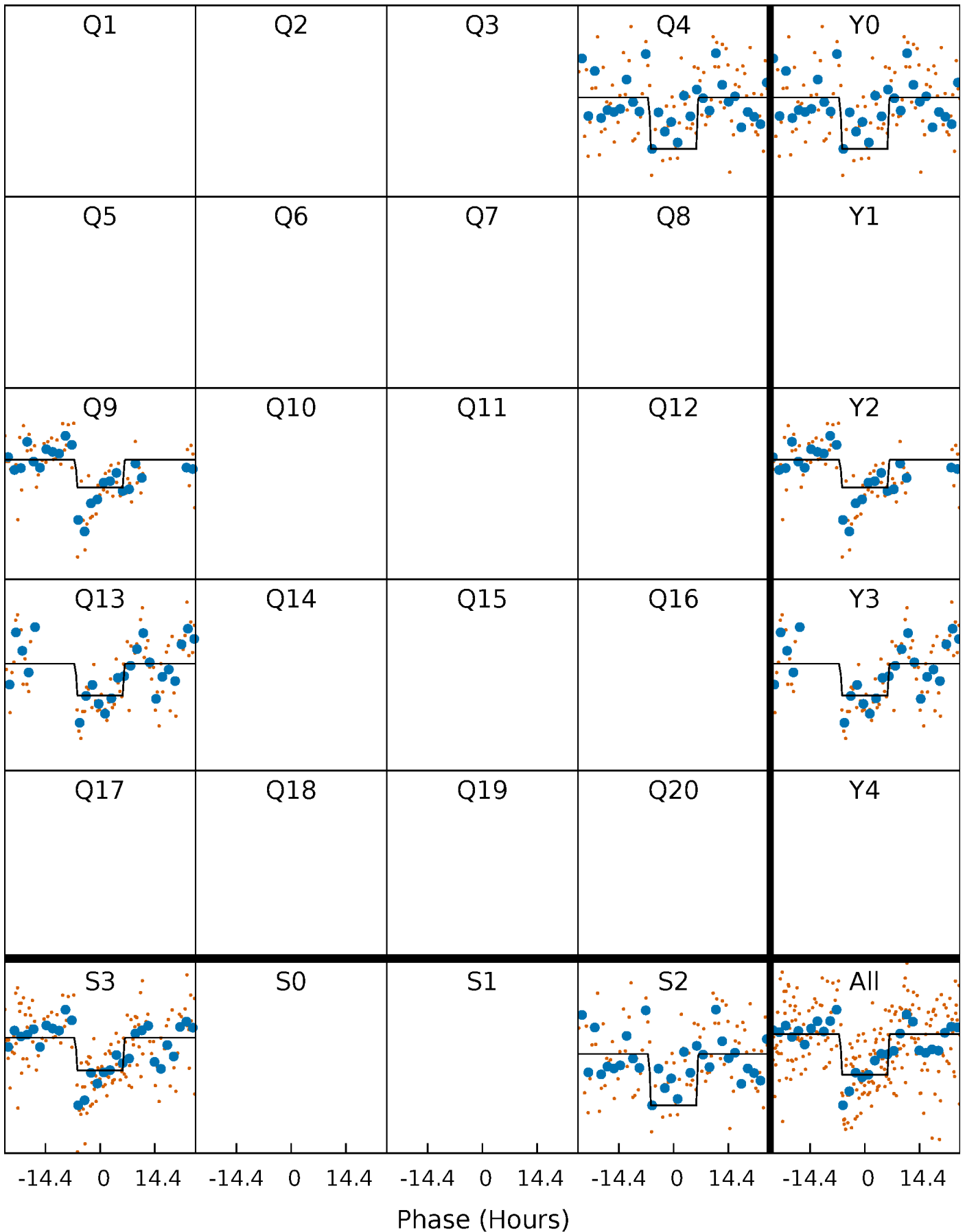
# DV Quarter-Phased Transit Curves

TCE 010874614-02     $P=412.028308$  Days     $T_0=436.545001$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

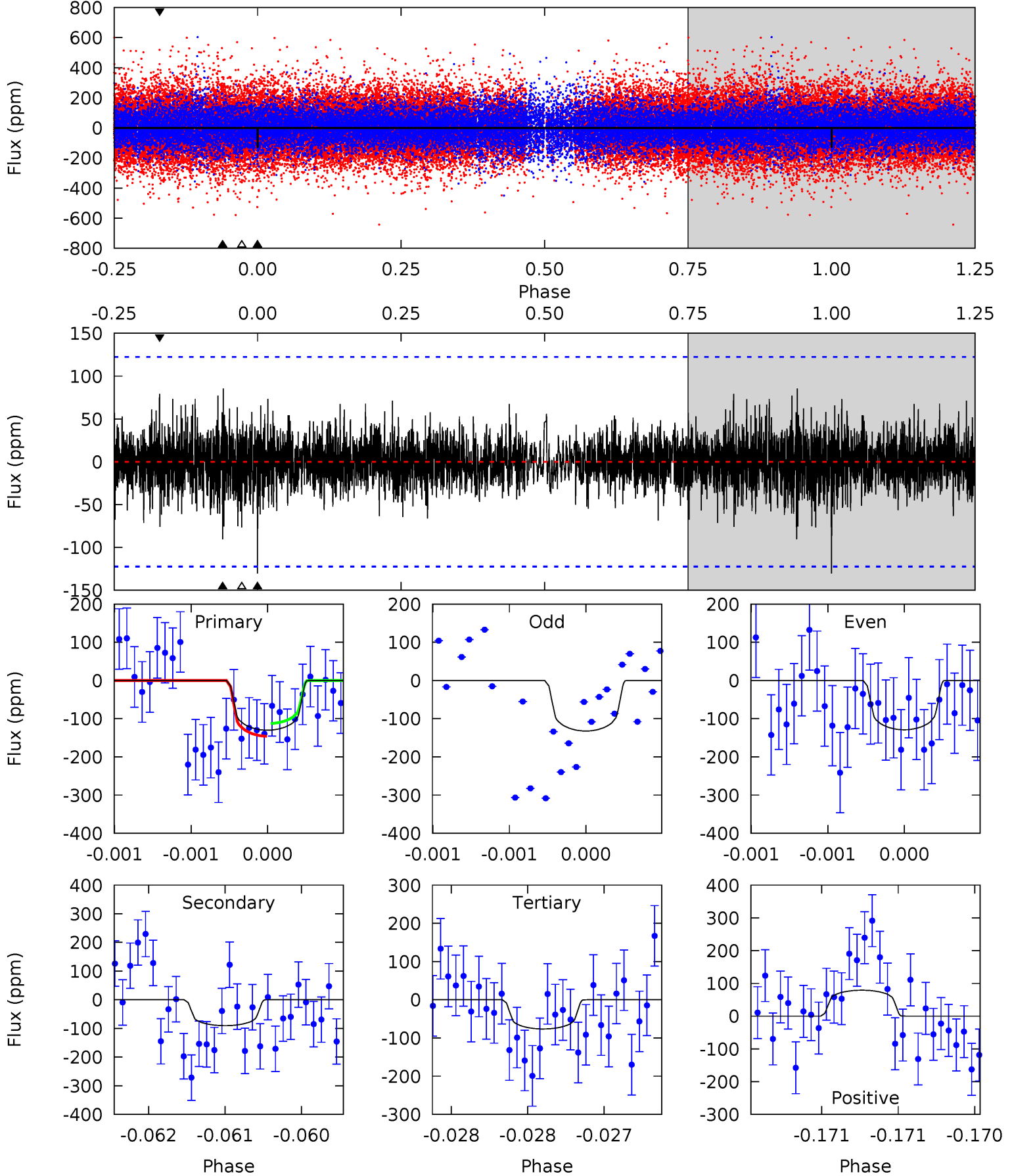
TCE 010874614-02 P=412.008682 Days  $T_0=436.580322$  (BKJD)



# DV Model-Shift Uniqueness Test

010874614-02,  $P = 412.028308$  Days,  $E = 24.516693$  Days

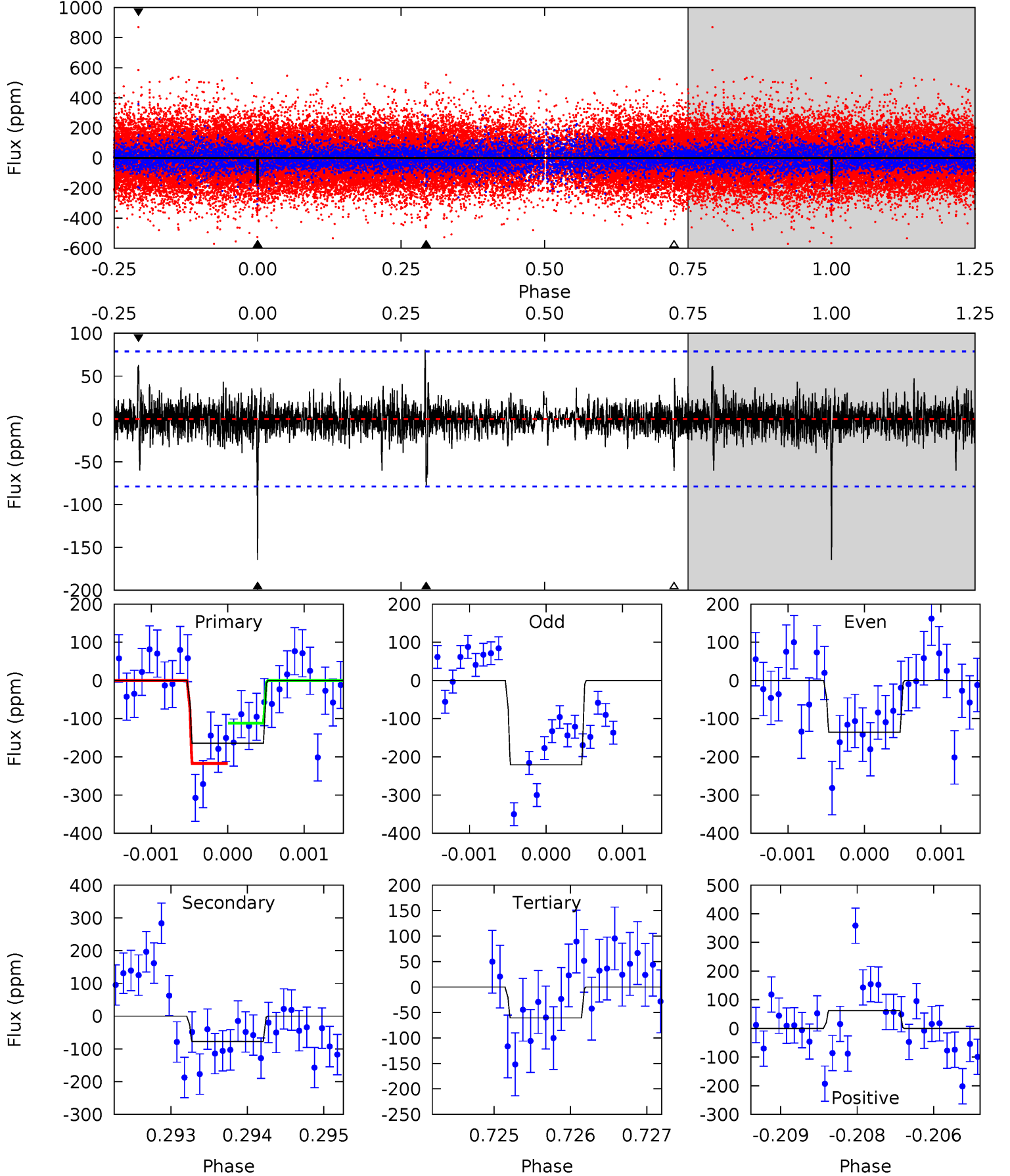
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.90	4.10	3.47	3.59	5.55	3.45	0.94	2.44	2.32	0.63	0.51	0.07	0.98	0.40	0.76



# Alt Model-Shift Uniqueness Test

010874614-02,  $P = 412.008682$  Days,  $E = 24.571640$  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
11.3	5.32	4.16	4.25	5.41	3.22	0.87	7.10	7.01	1.15	1.07	2.81	0.88	0.33	3.62





### Stellar Parameters For KIC 010874614

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5640^{+113}_{-101}$	$4.236^{+0.055}_{-0.045}$	$0.340^{+0.100}_{-0.150}$	$1.291^{+0.095}_{-0.095}$	$1.047^{+0.088}_{-0.064}$	$0.685^{+0.144}_{-0.109}$
	+2%/-2%	+1%/-1%	+29%/-44%	+7%/-7%	+8%/-6%	+21%/-16%
Source	SPE22	TRA22	SPE22	DSEP		

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

### Secondary Eclipse Parameters for KIC 010874614-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-90 \pm 22$	$2.20^{+1.33}_{-1.26}$	$376^{+11}_{-9}$	$4562^{+2163}_{-755}$	$12314^{+56013}_{-7684}$
Alt.	$-78 \pm 15$	$1.97^{+1.33}_{-1.15}$	$376^{+10}_{-9}$	$4655^{+2314}_{-868}$	$13722^{+64449}_{-9337}$

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

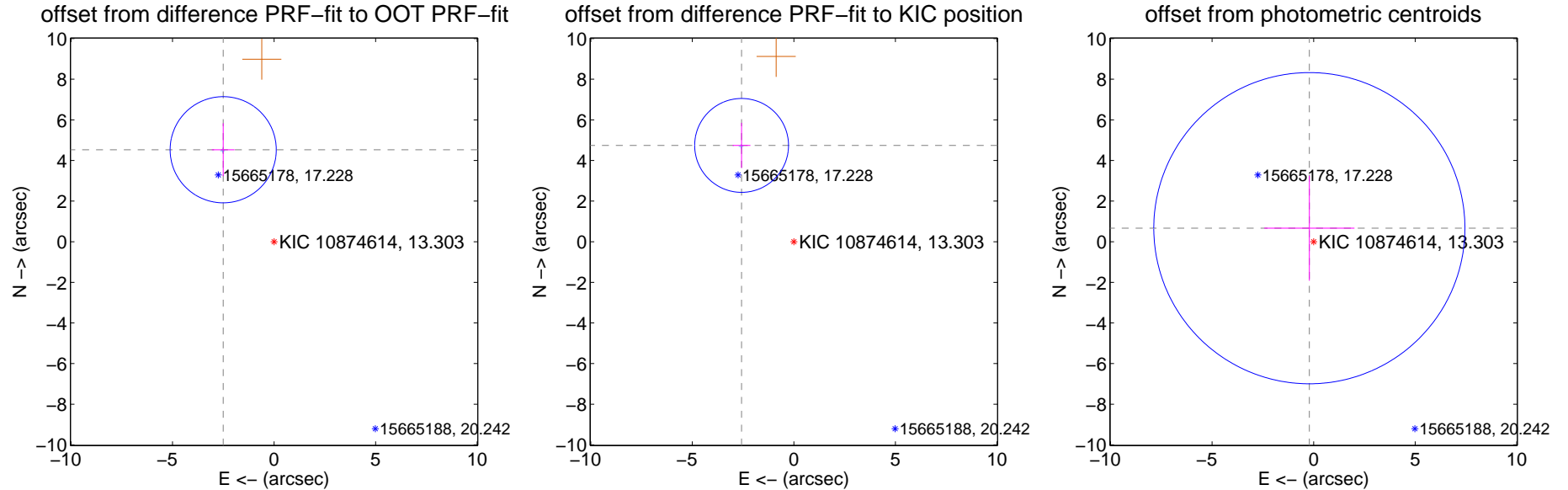
## DV Centroid Data

Supplemental centroid analysis for 010874614-02. Kepler magnitude: 13.30. Transit SNR 5.19

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.175 \pm 0.871$	5.94	$2.505 \pm 0.561$	$4.528 \pm 1.302$
PRF-fit source offset from KIC position	$5.394 \pm 0.770$	7.00	$2.573 \pm 0.436$	$4.741 \pm 1.109$
photometric centroid source offset	$0.70 \pm 2.55$	0.27	$0.21 \pm 2.22$	$0.67 \pm 2.58$



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.

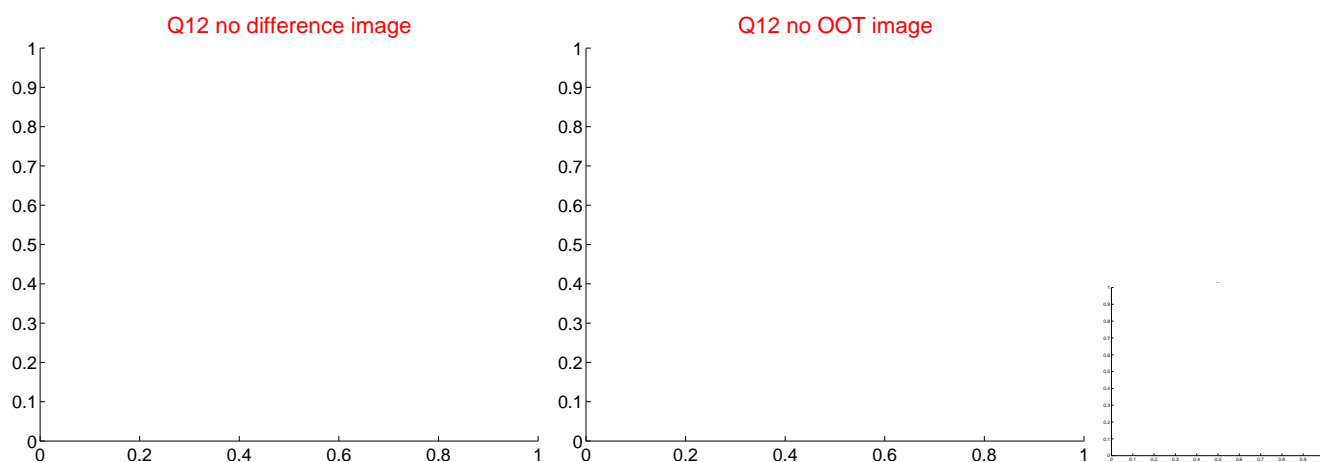
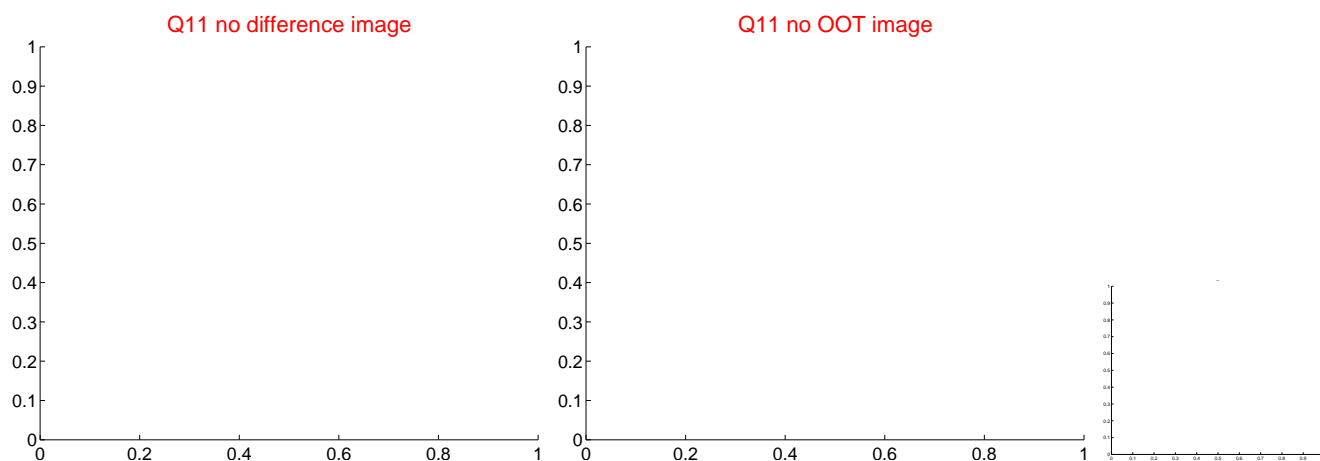
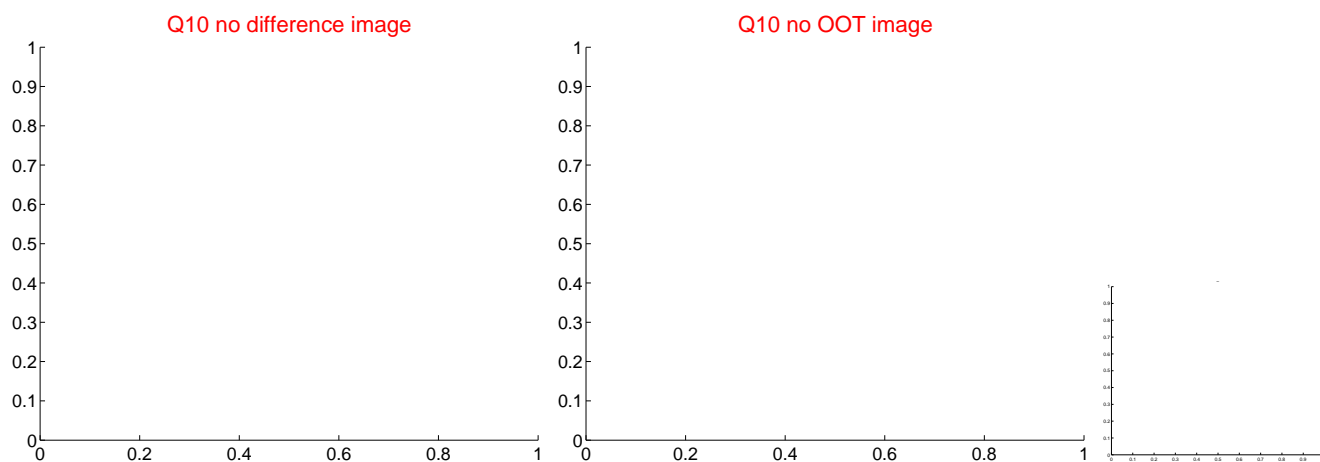
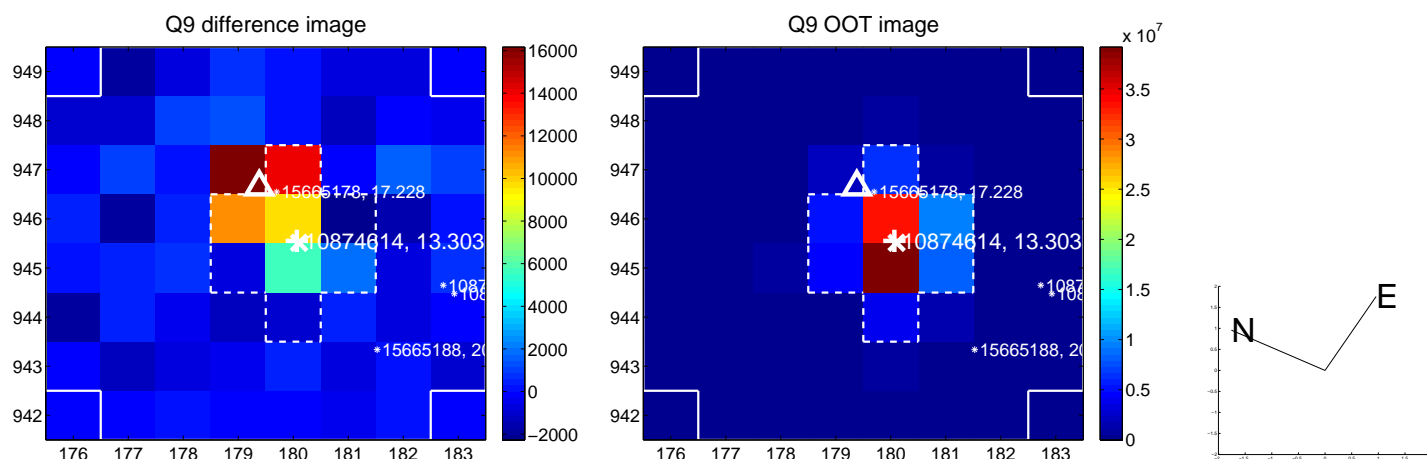
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



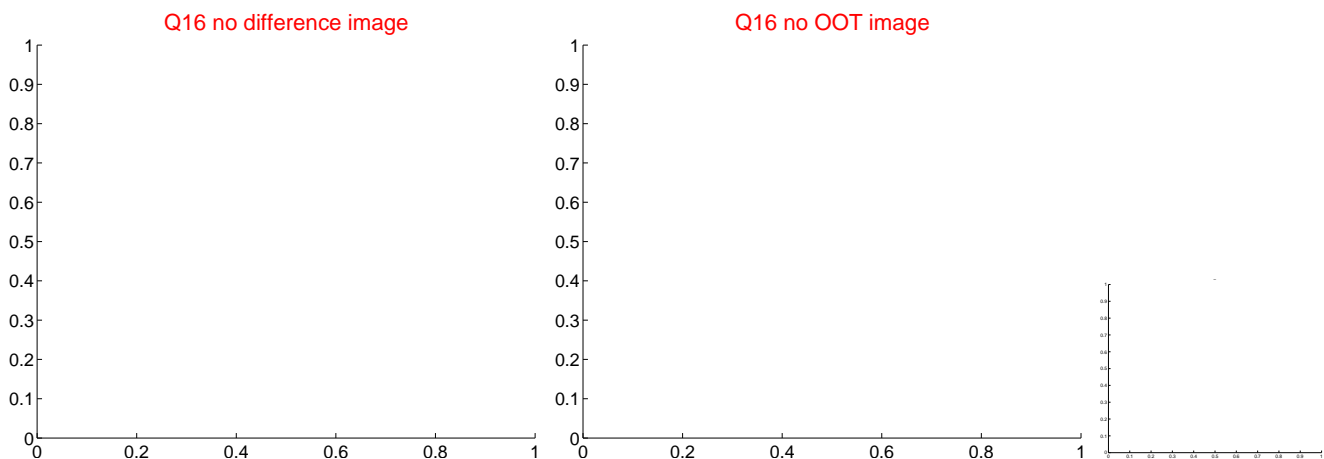
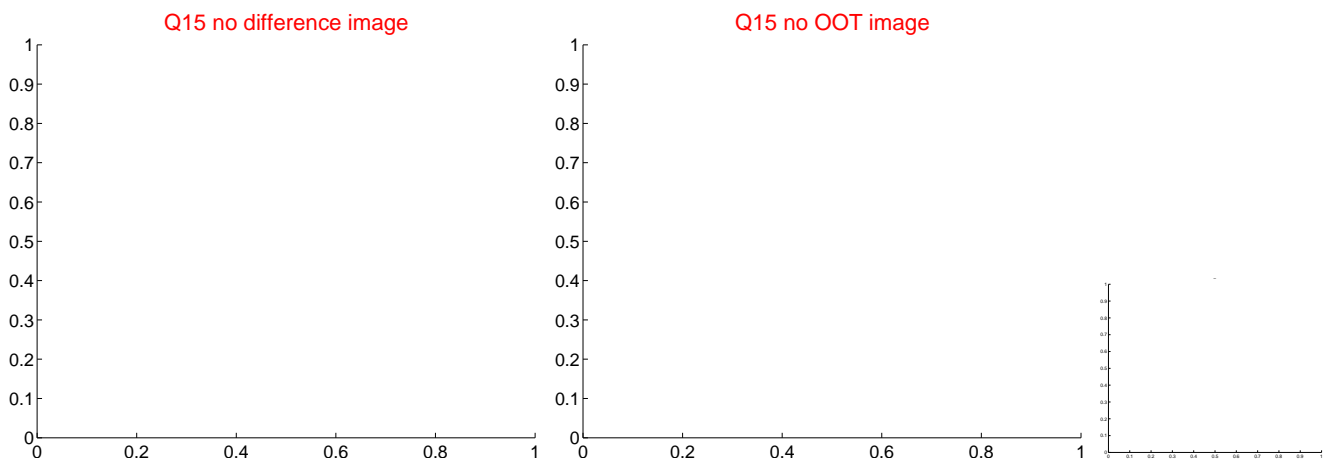
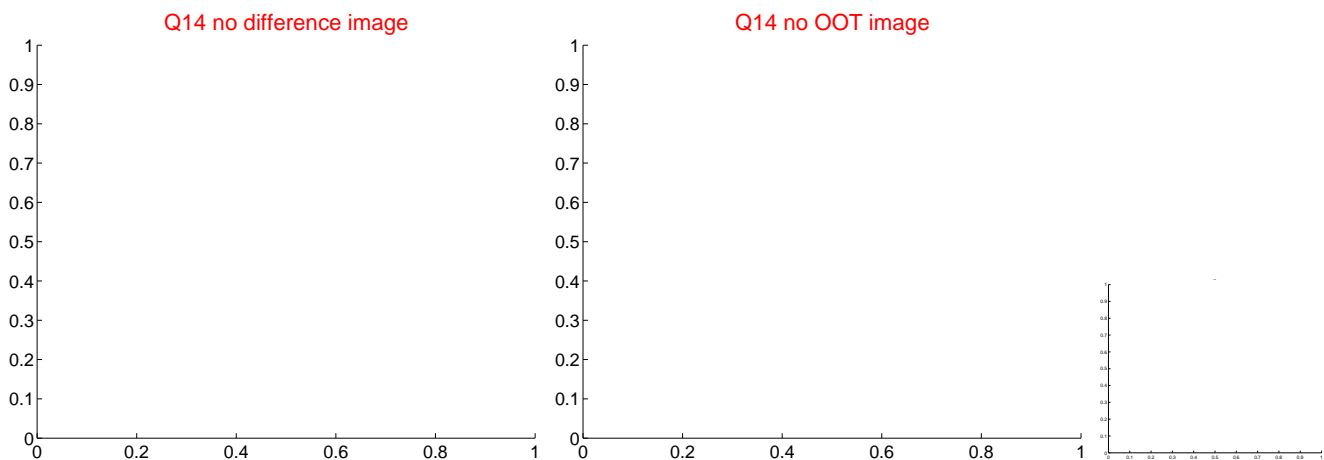
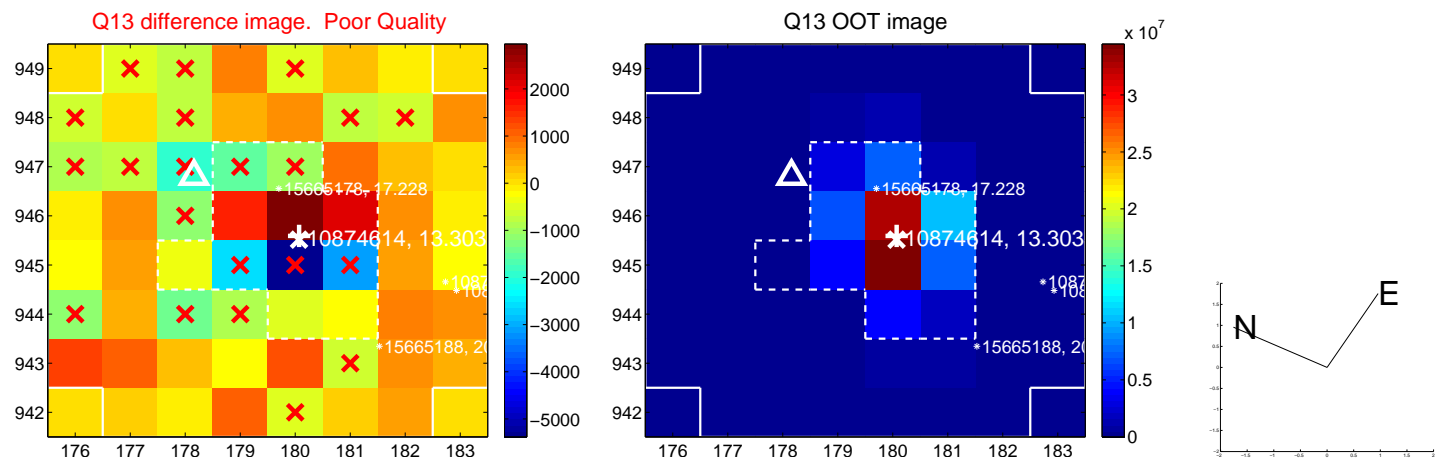
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



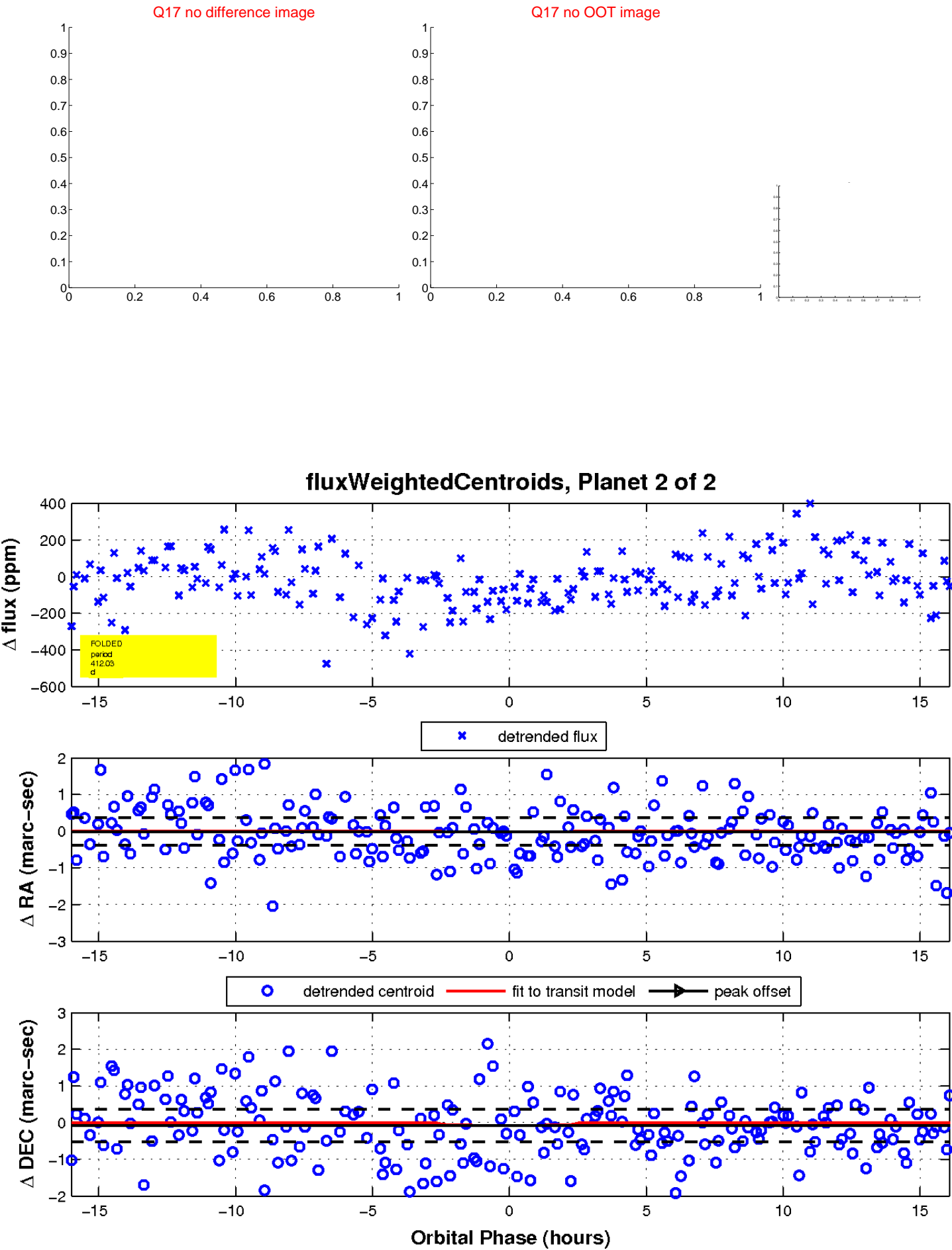
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

