

# KIC 008548329

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008548329-01	OBS	No	430.946265	478.632192	272.9	16.009	9.0	8.6	1.47	6198	2.56	2.23
008548329-02	OBS	No	370.115780	232.376882	207.2	7.379	8.6	5.9	1.47	6198	2.39	2.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008548329-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008548329-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

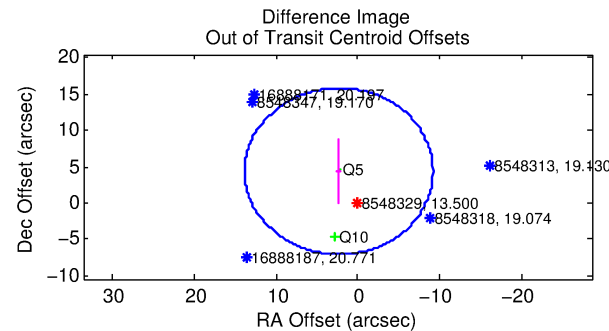
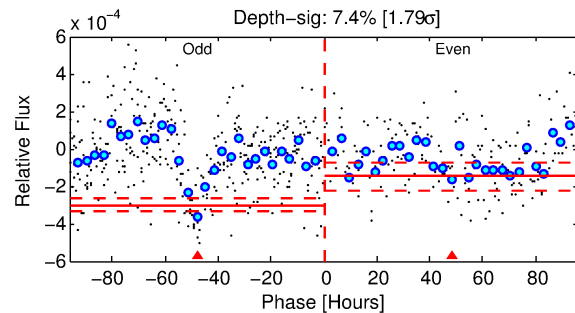
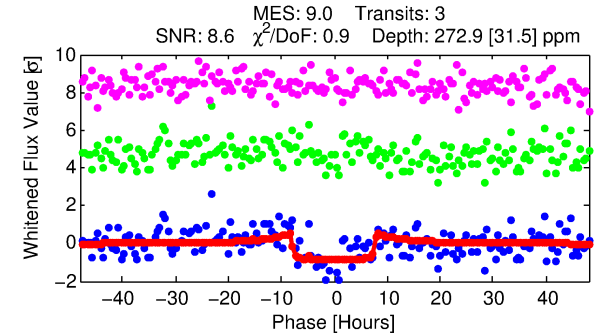
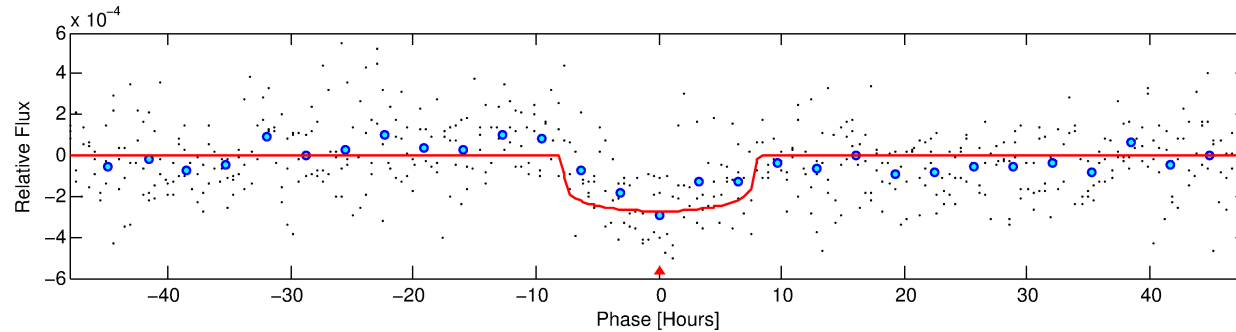
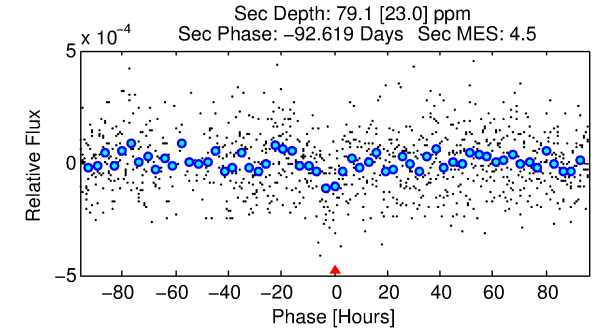
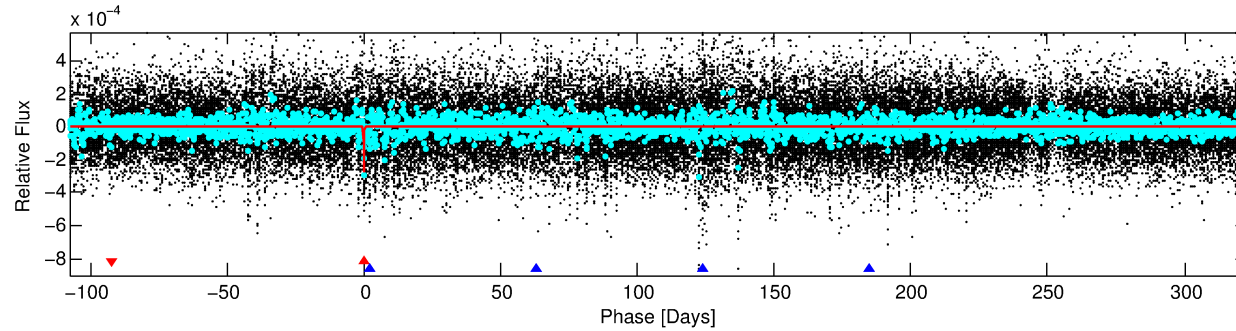
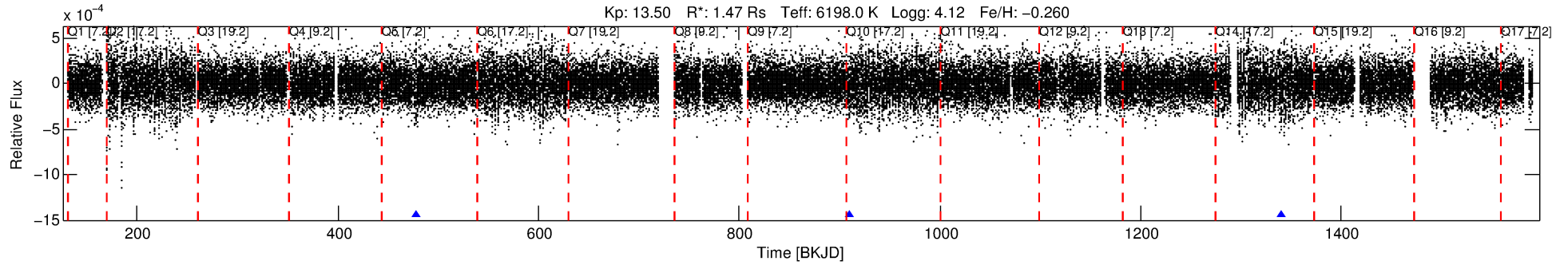
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008548329-01

No Significant Match Found

# DV One-Page Summary

KIC: 8548329 Candidate: 1 of 2 Period: 430.946 d



## DV Fit Results:

Period = 430.94627 [0.00998] d  
Epoch = 478.6322 [0.0131] BKJD  
Rp/R\* = 0.0159 [0.0053]  
a/R\* = 162.78 [272.00]  
b = 0.64 [1.57]  
Seff = 2.23 [0.86]  
Teq = 312 [30] K  
Rp = 2.56 [1.07] Re  
a = 1.1344 [0.2681] AU  
Ag = 8526.75 [6960.27] [1.22σ]  
Teffp = 4629 [850] K [5.07σ]

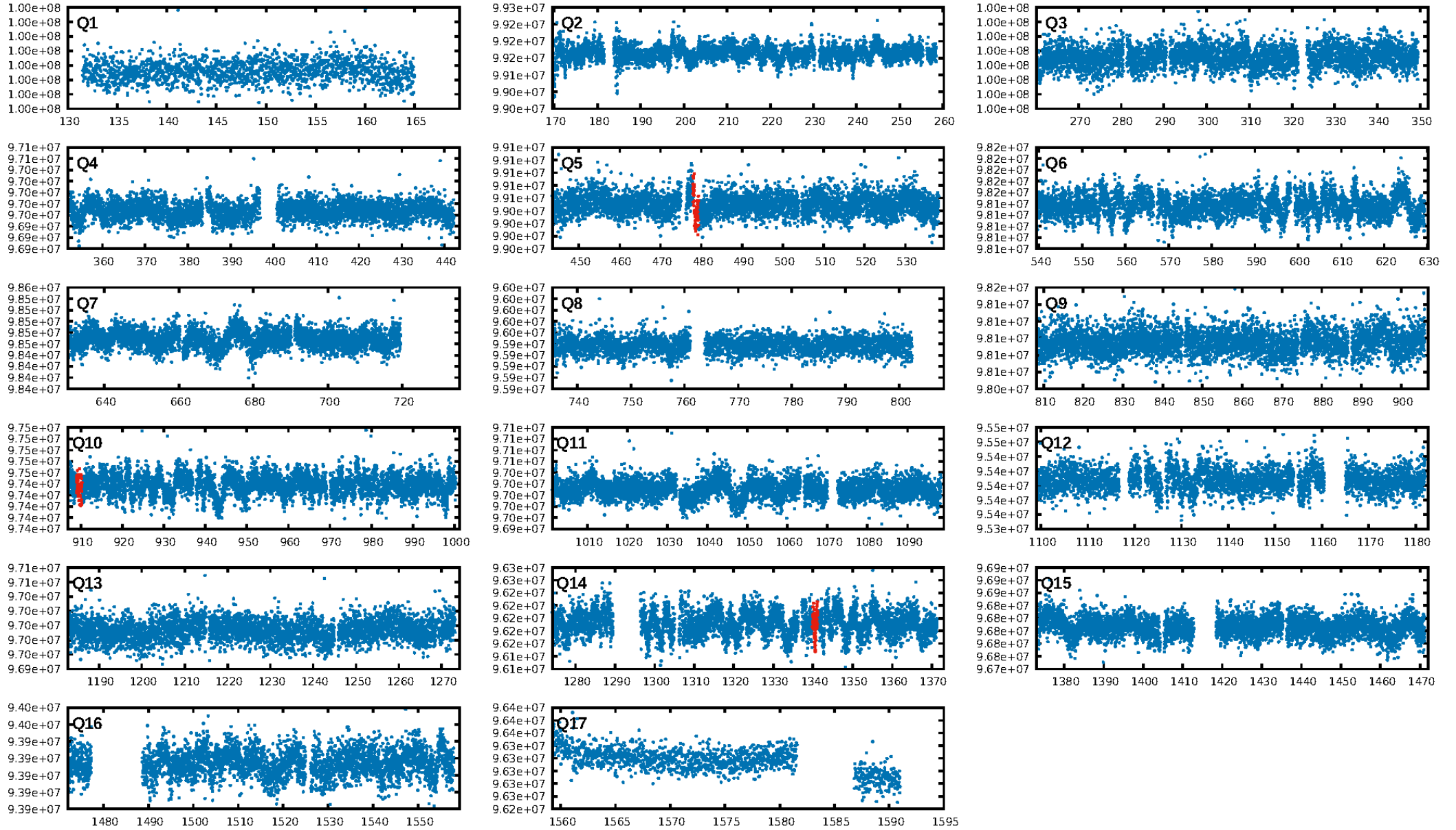
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [82.82σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 37.6%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.90e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -3.205  
**Centroid-sig: 0.0%**  
**Centroid-so: 5.663 arcsec [3.89σ]**  
OotOffset-rm: 4.948 arcsec [1.29σ]  
KicOffset-rm: 5.189 arcsec [2.91σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

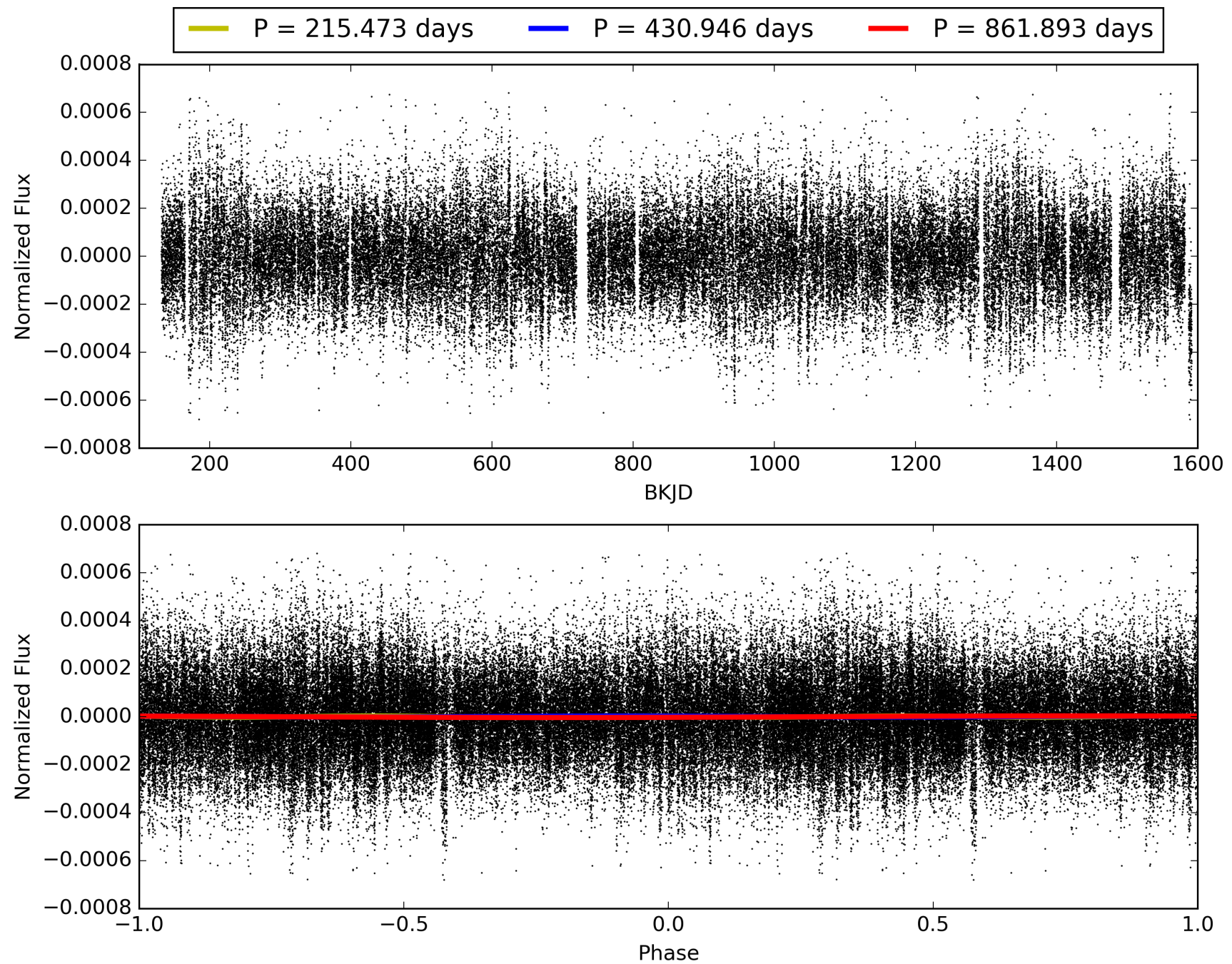
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:52:24 Z

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

# TCE 008548329-01, PDC Light Curves

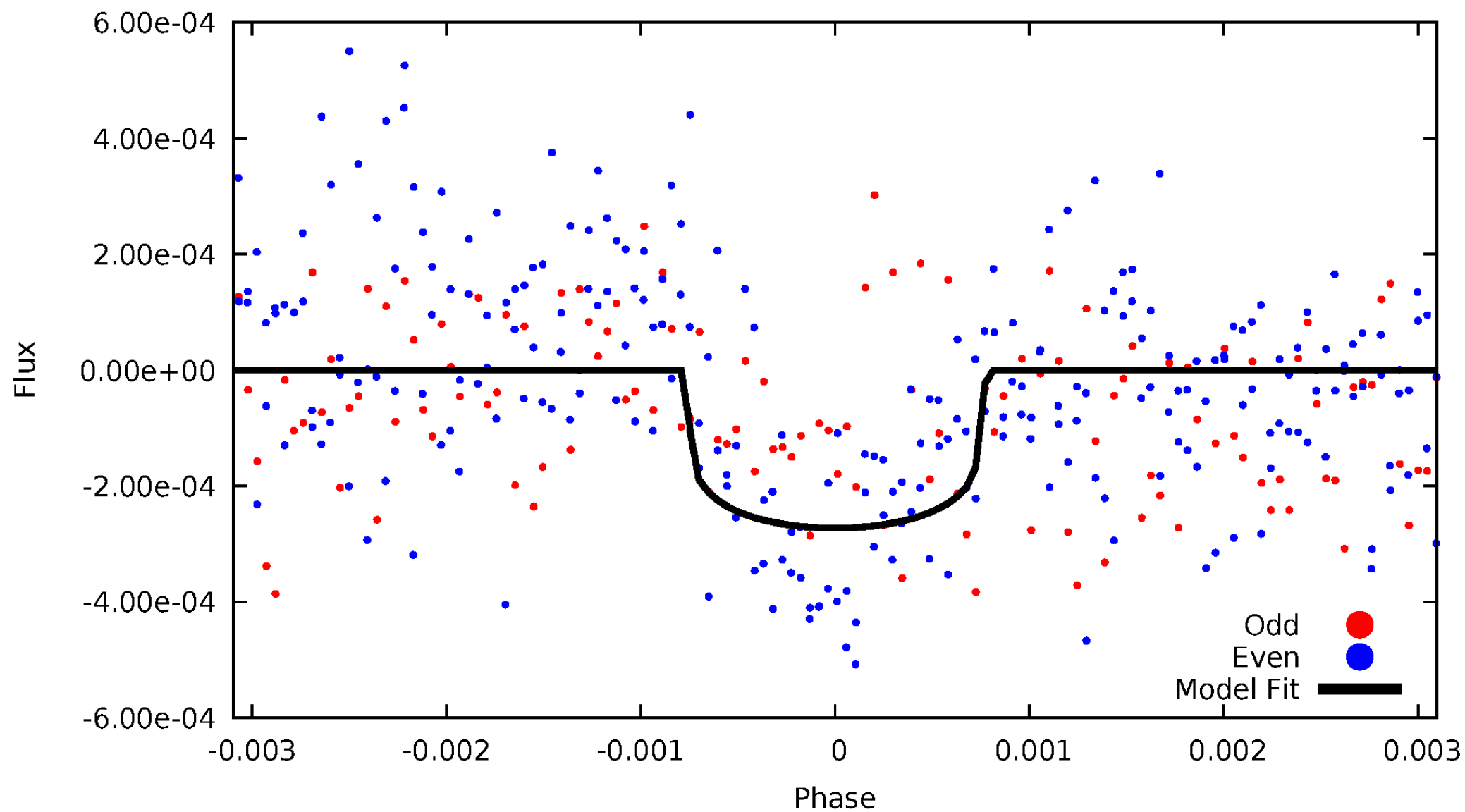


TCE 008548329-01



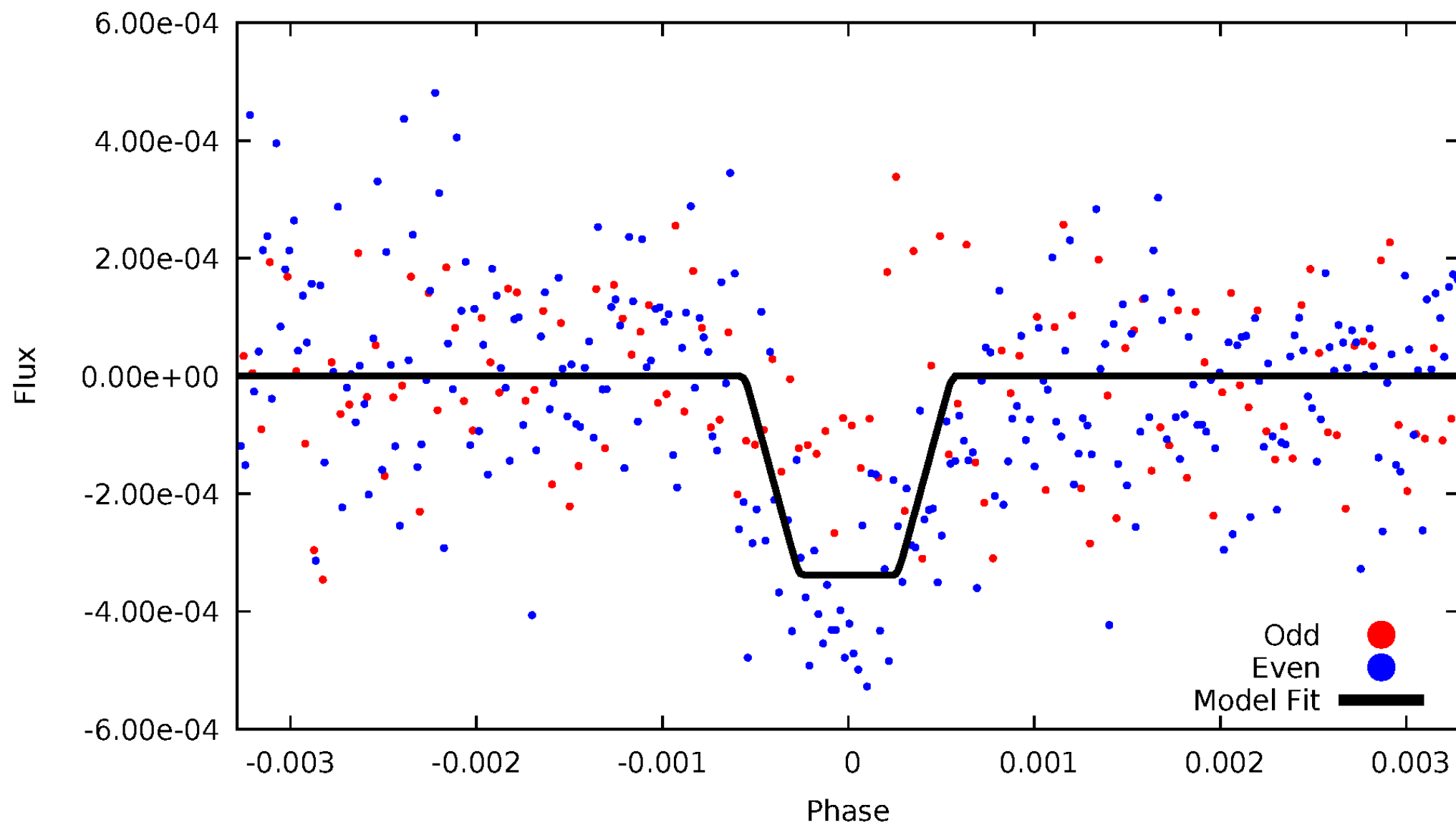
# DV Odd/Even

TCE 008548329-01



# ALT Odd/Even

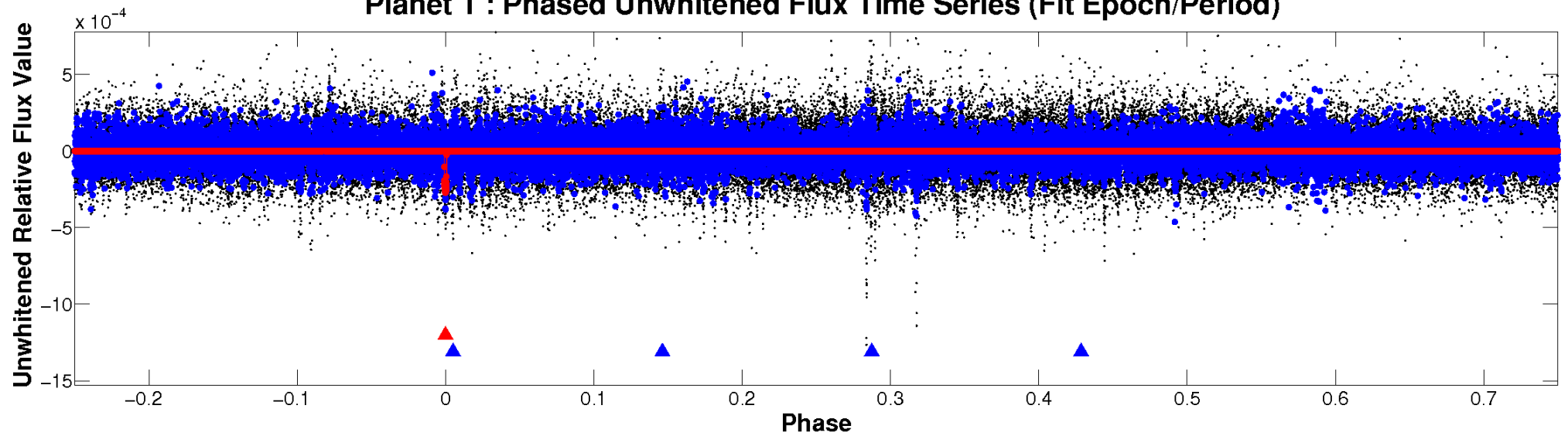
TCE 008548329-01



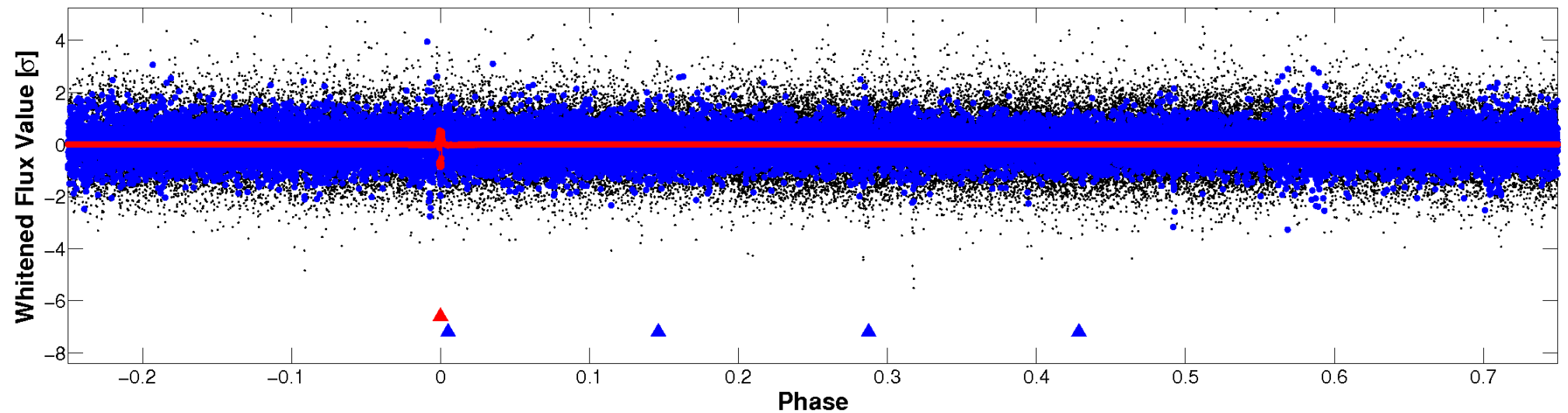


# Non-Whitened Vs. Whitened Light Curve

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

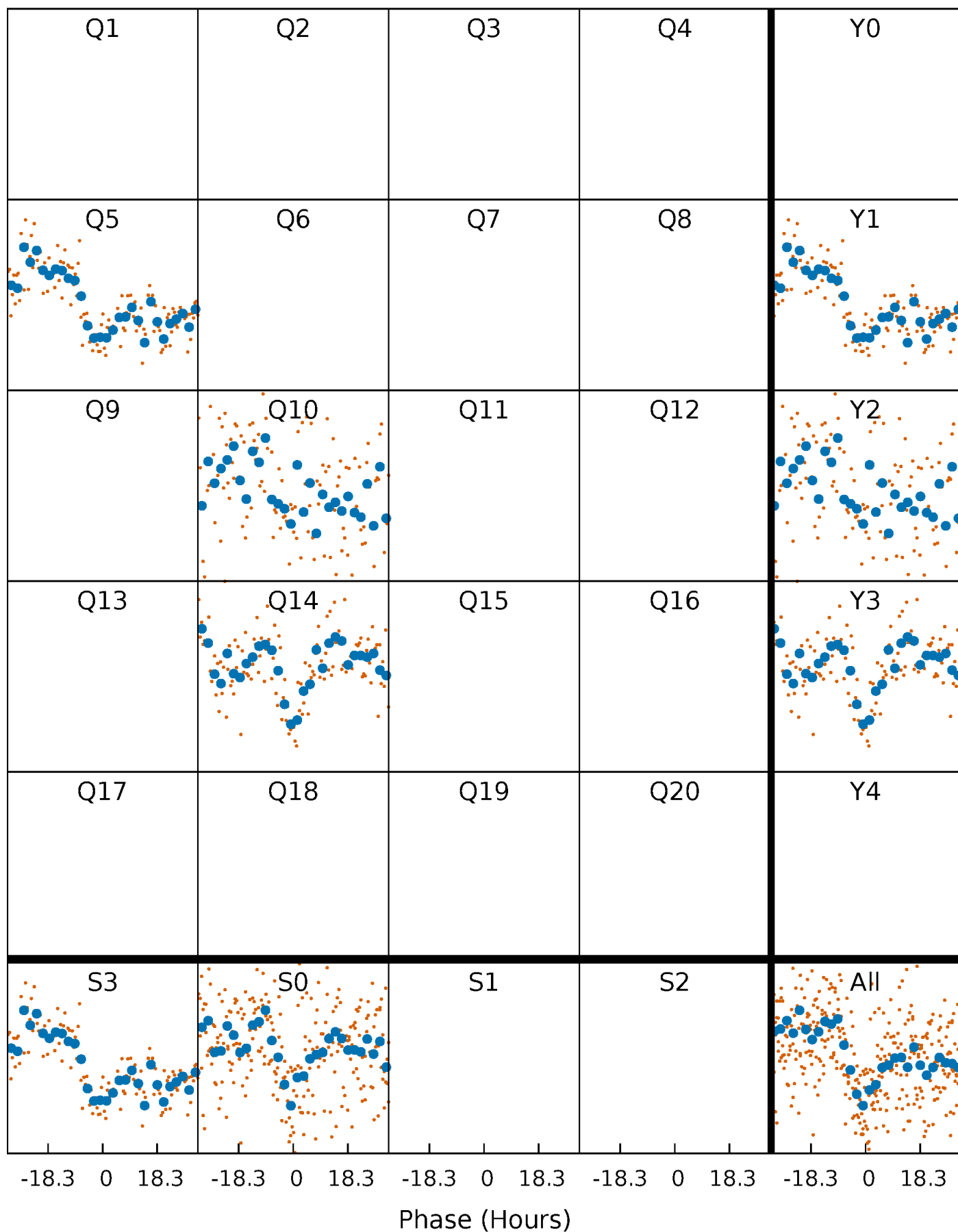


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

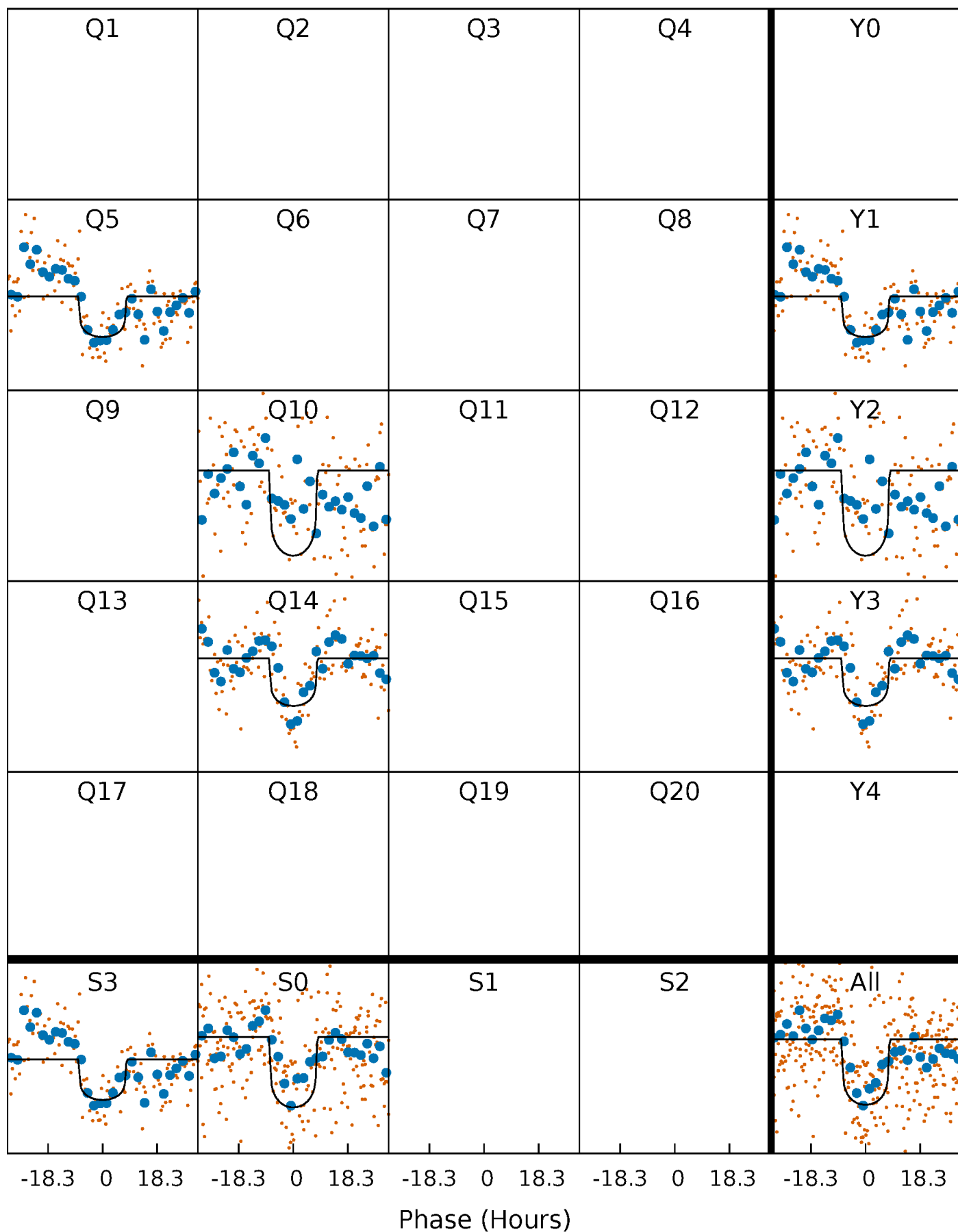
TCE 008548329-01   P=430.946265 Days    $T_0=478.632191$  (BKJD)





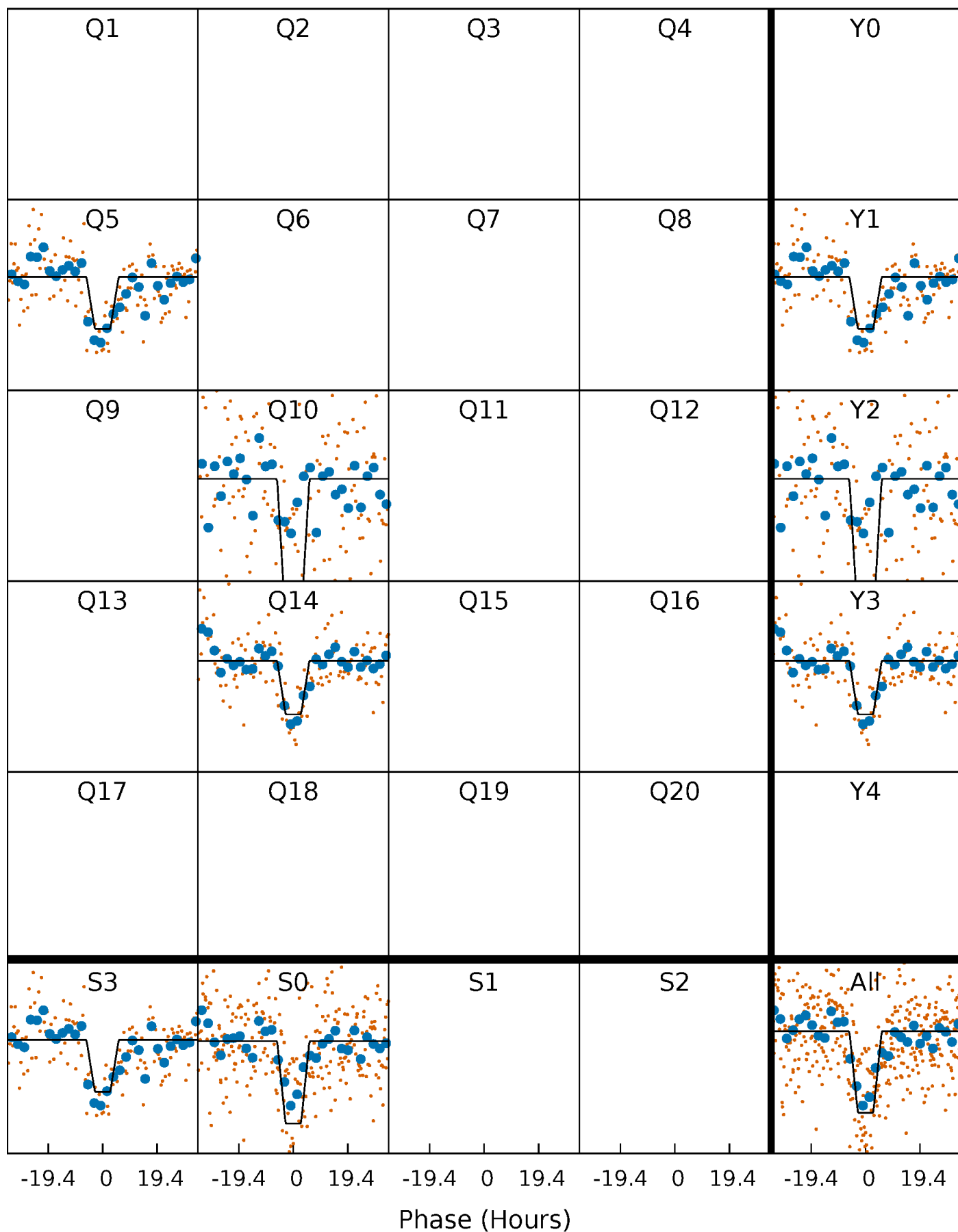
# DV Quarter-Phased Transit Curves

TCE 008548329-01 P=430.946265 Days  $T_0=478.632191$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

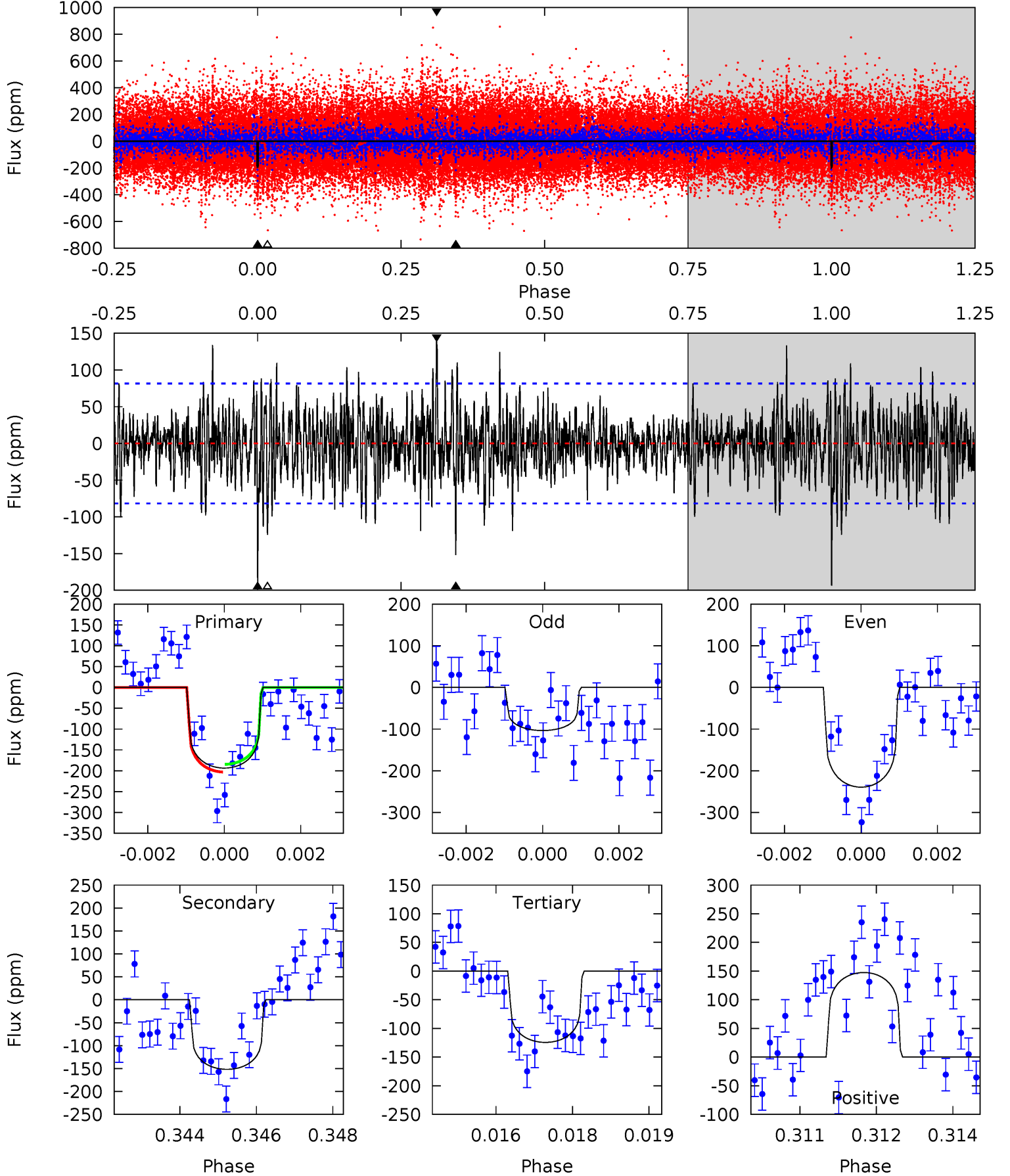
TCE 008548329-01 P=430.971025 Days  $T_0=478.584565$  (BKJD)



# DV Model-Shift Uniqueness Test

008548329-01,  $P = 430.946265$  Days,  $E = 47.685926$  Days

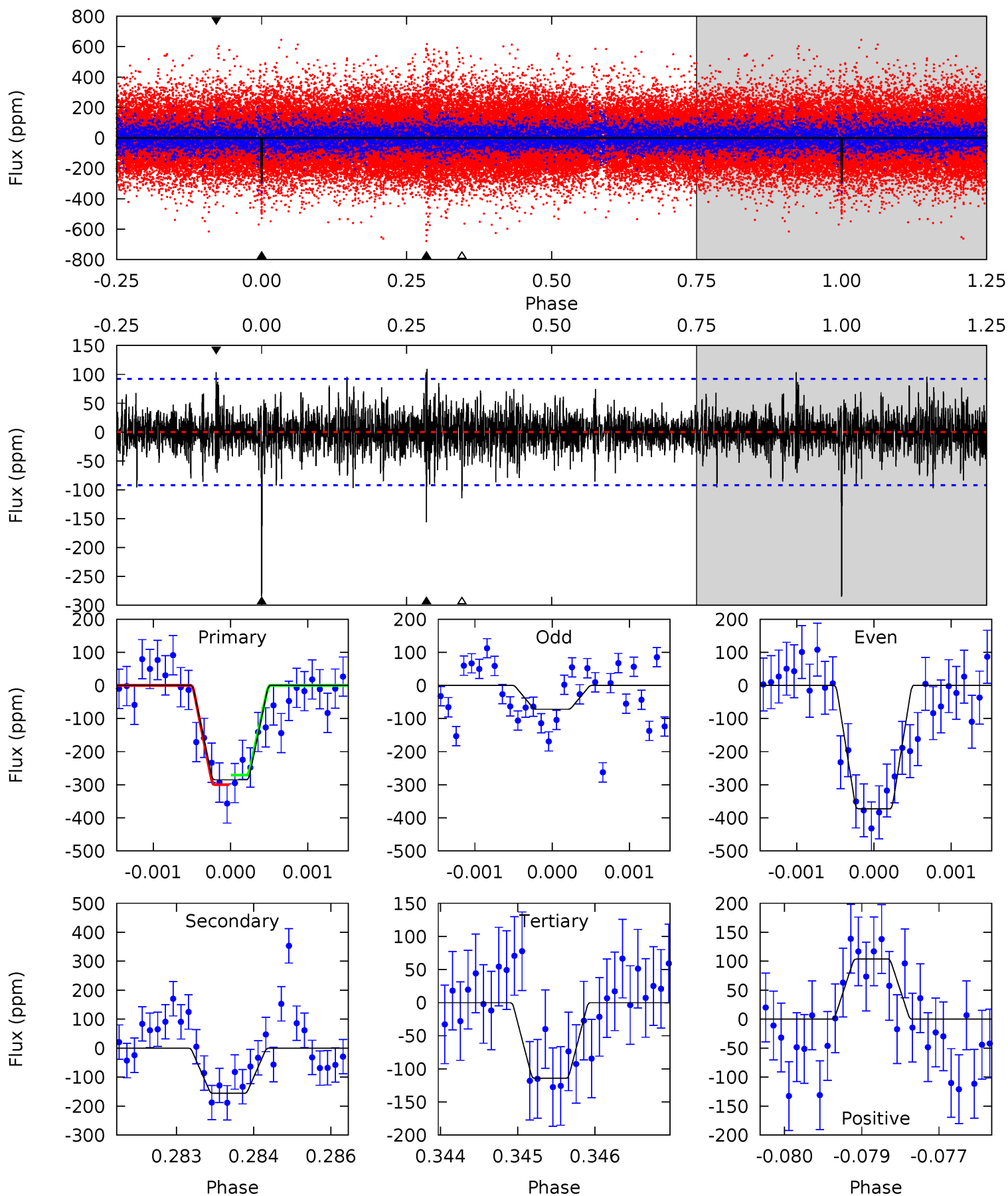
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	9.98	8.18	9.70	5.37	3.15	2.21	4.55	3.03	1.80	0.28	4.19	0.87	0.43	0.61



# Alt Model-Shift Uniqueness Test

008548329-01, P = 430.971025 Days, E = 47.613540 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
16.8	9.18	6.74	6.11	5.43	3.25	1.46	10.1	10.7	2.44	3.07	8.35	0.77	0.28	0.86



### Stellar Parameters For KIC 008548329

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6198^{+170}_{-170}$	$4.122^{+0.216}_{-0.126}$	$-0.260^{+0.300}_{-0.300}$	$1.473^{+0.339}_{-0.372}$	$1.047^{+0.180}_{-0.135}$	$0.461^{+0.588}_{-0.183}$
	+3%/-3%	+5%/-3%	+115%/-115%	+23%/-25%	+17%/-13%	+128%/-40%
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 008548329-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-152 \pm 15$	$2.55^{+0.96}_{-0.88}$	$433^{+26}_{-28}$	$5403^{+1239}_{-592}$	$16362^{+22826}_{-7170}$
Alt.	$-156 \pm 17$	$2.92^{+0.96}_{-0.82}$	$430^{+28}_{-28}$	$5157^{+737}_{-542}$	$13027^{+12155}_{-5635}$

$T_{\text{max}}$  = 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

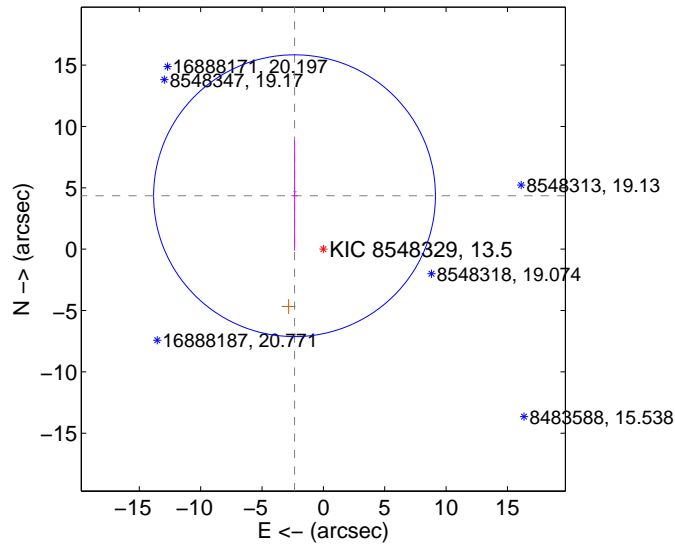
Supplemental centroid analysis for 008548329-01. Kepler magnitude: 13.50. Transit SNR 8.64

There are 1 quarters with good PRF difference image offsets

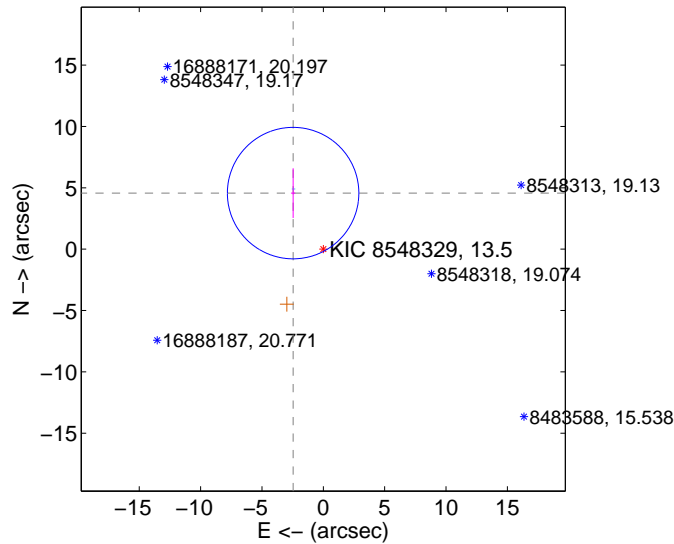
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.948 \pm 3.827$	1.29	$2.350 \pm 0.255$	$4.355 \pm 4.481$
PRF-fit source offset from KIC position	$5.189 \pm 1.785$	2.91	$2.461 \pm 0.170$	$4.568 \pm 2.026$
photometric centroid source offset	$5.66 \pm 1.46$	3.89	$4.31 \pm 1.39$	$3.67 \pm 1.54$

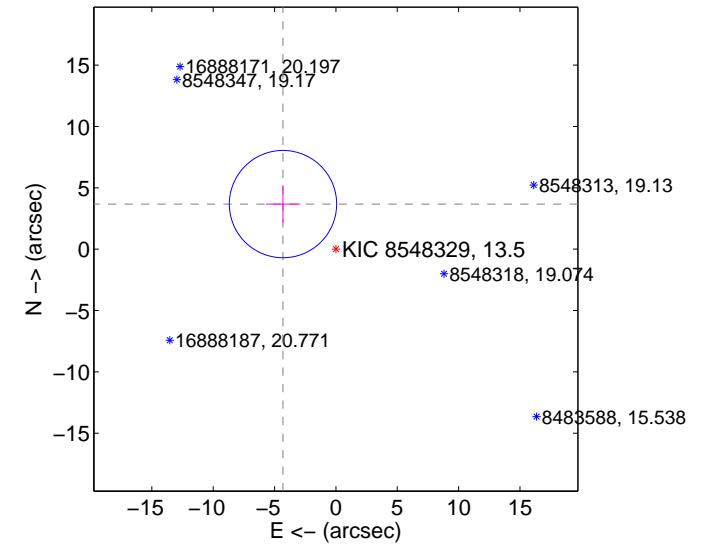
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



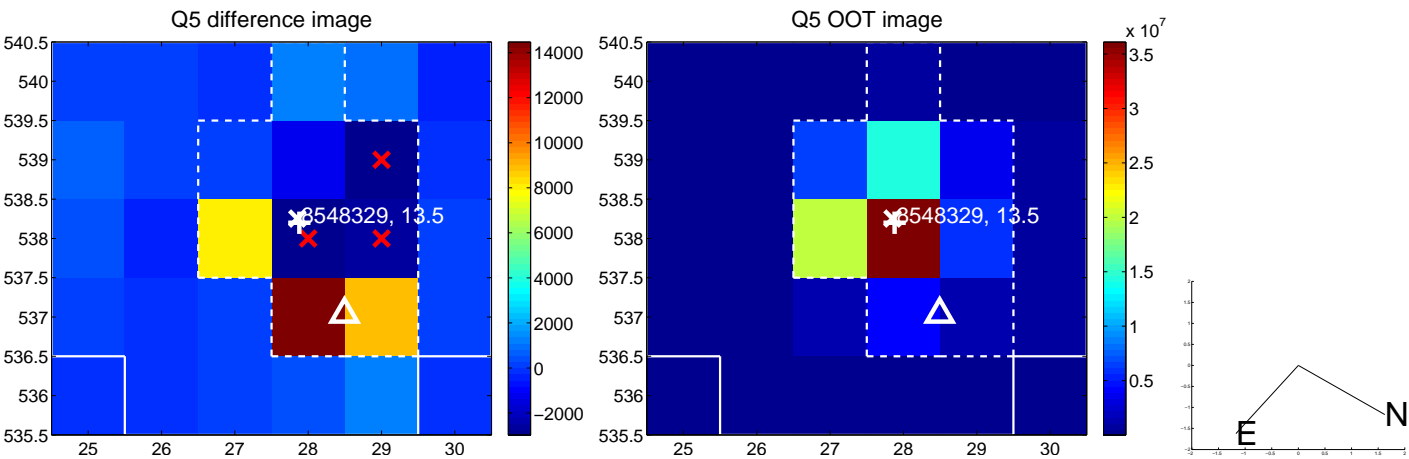
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

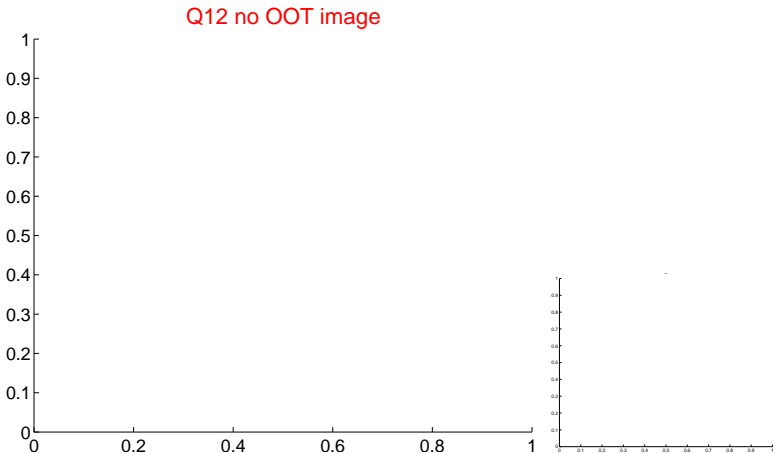
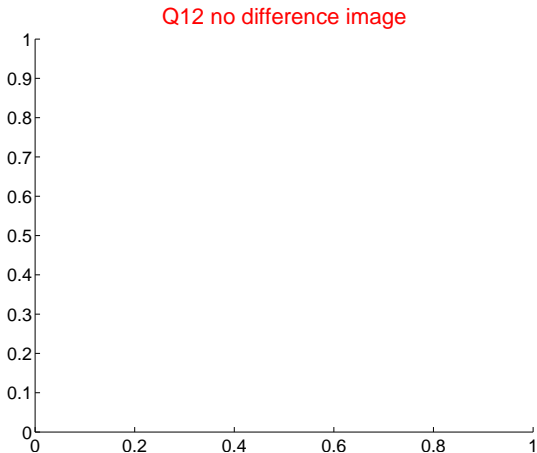
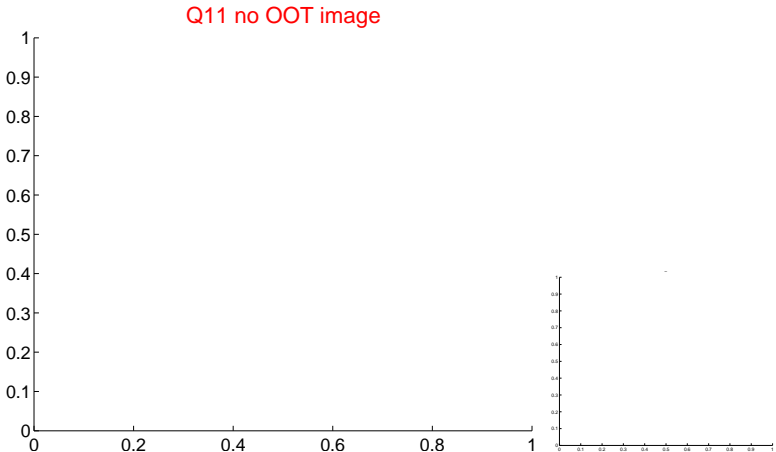
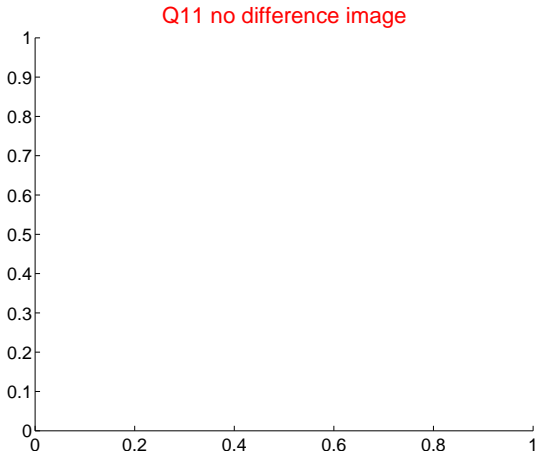
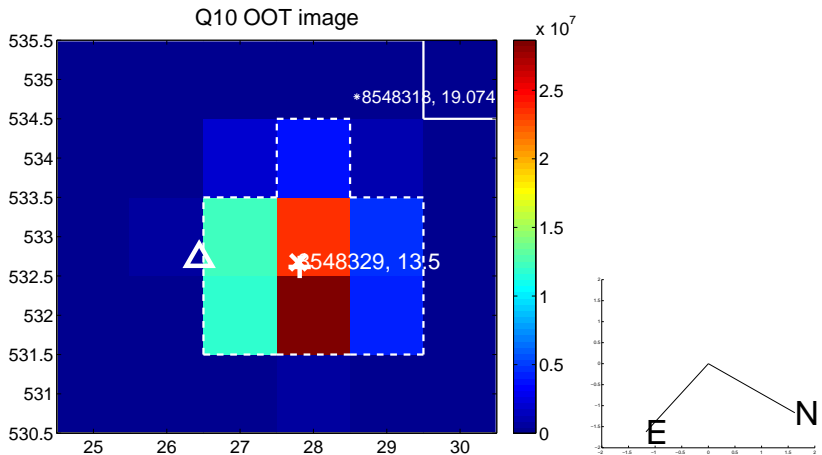
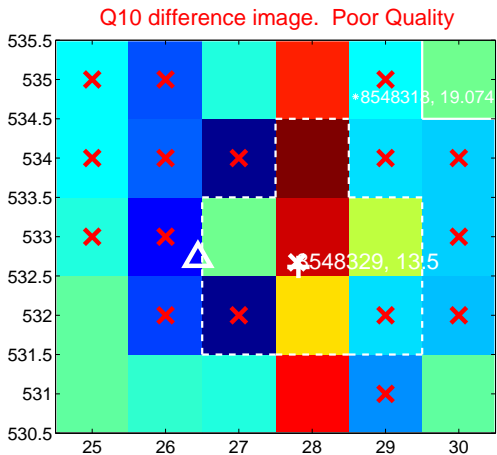
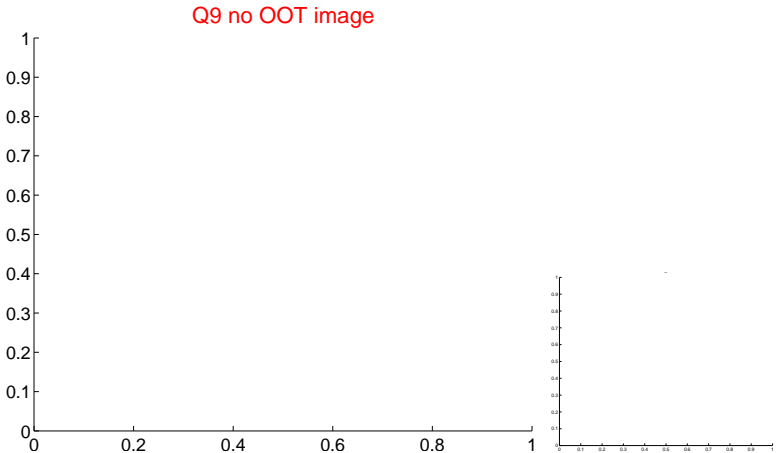
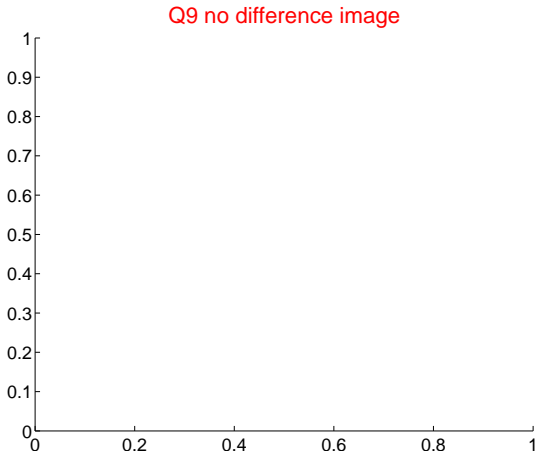




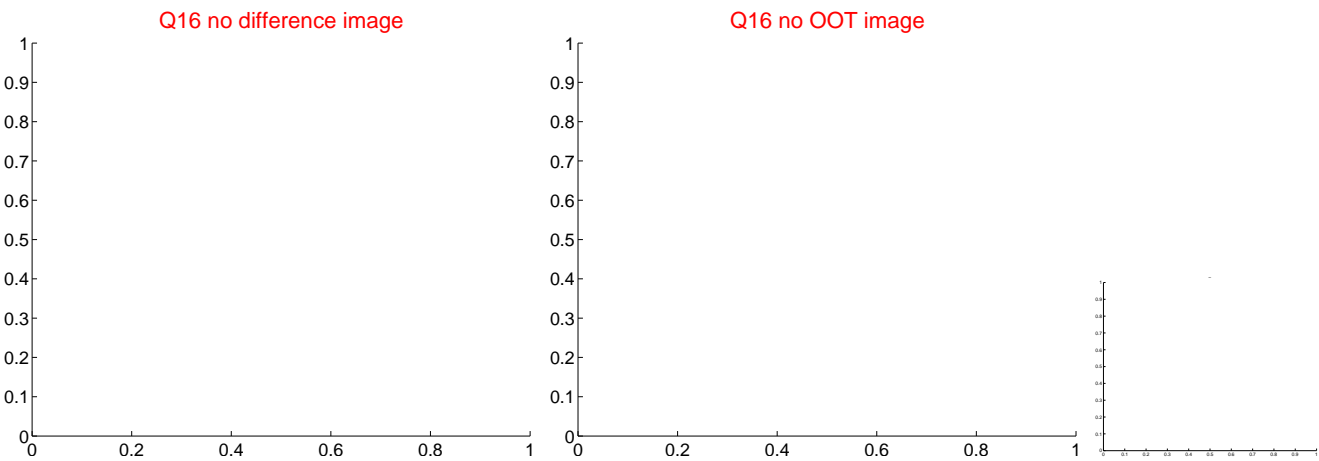
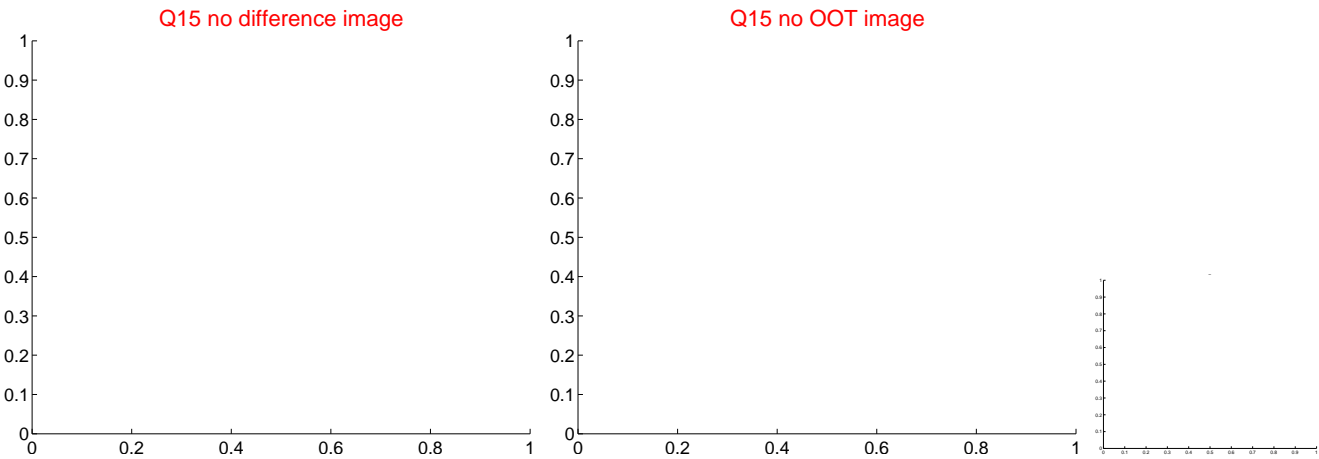
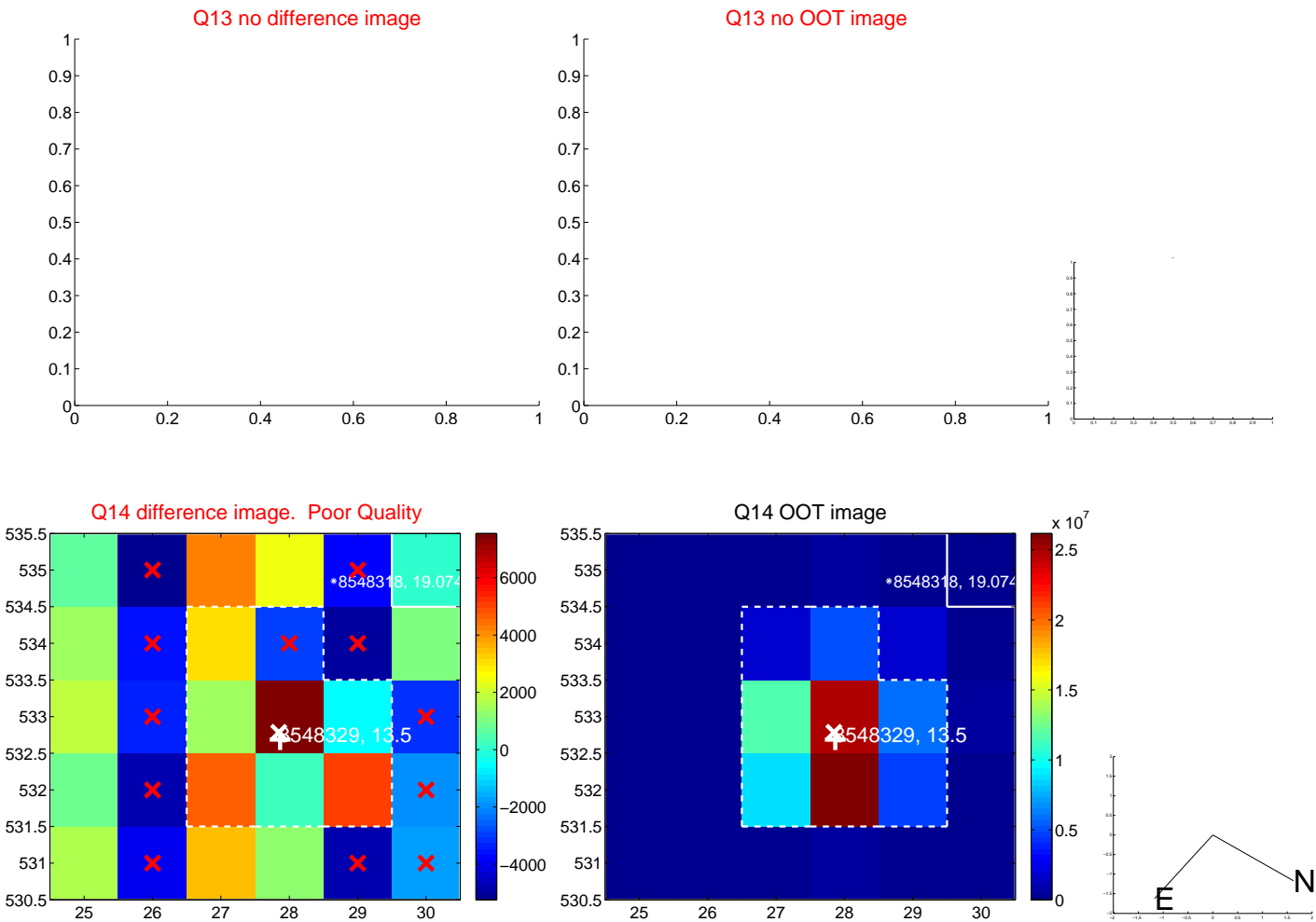
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



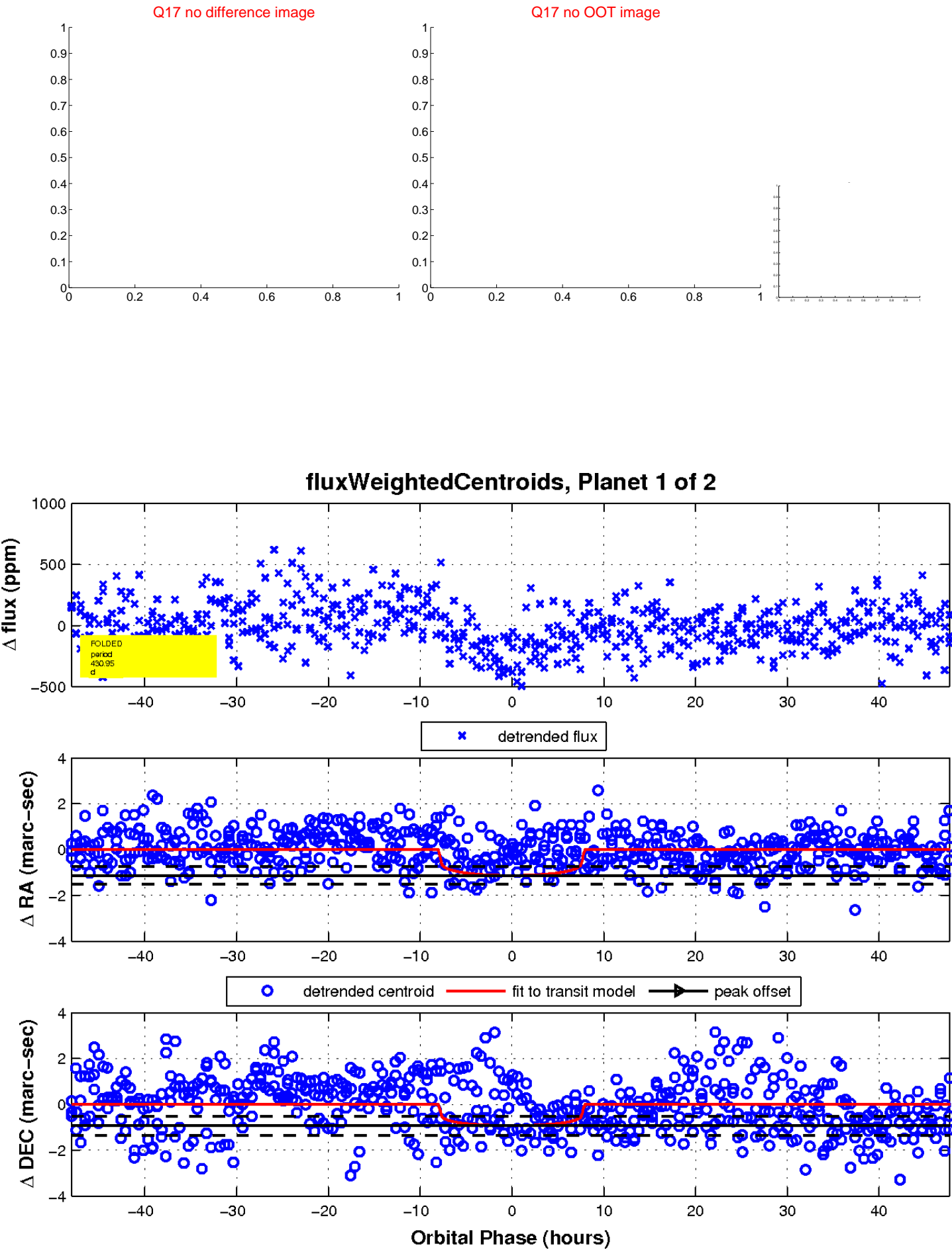
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

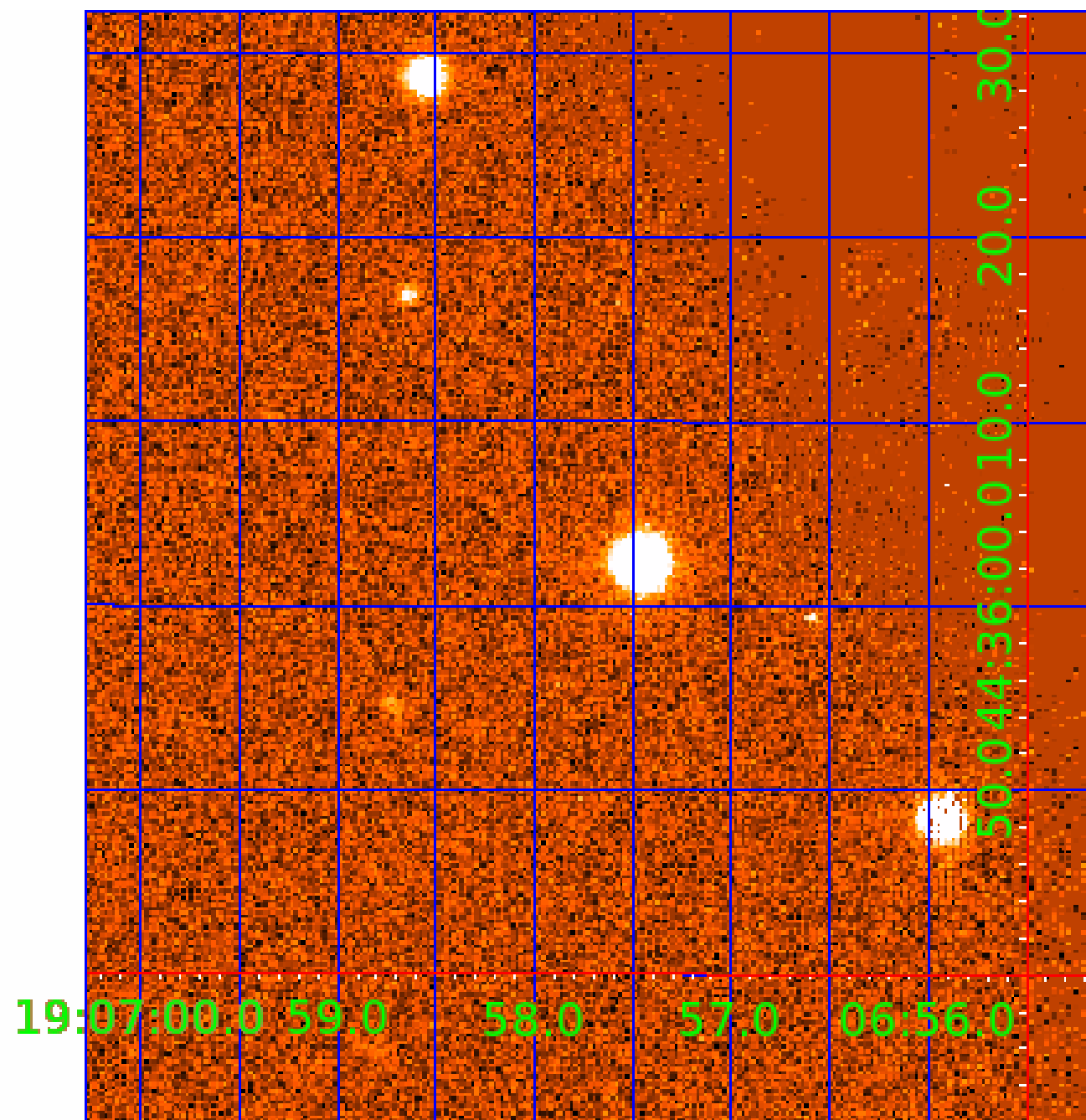


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 008548329

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008548329-01	OBS	No	430.946265	478.632192	272.9	16.009	9.0	8.6	1.47	6198	2.56	2.23
008548329-02	OBS	No	370.115780	232.376882	207.2	7.379	8.6	5.9	1.47	6198	2.39	2.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008548329-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008548329-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

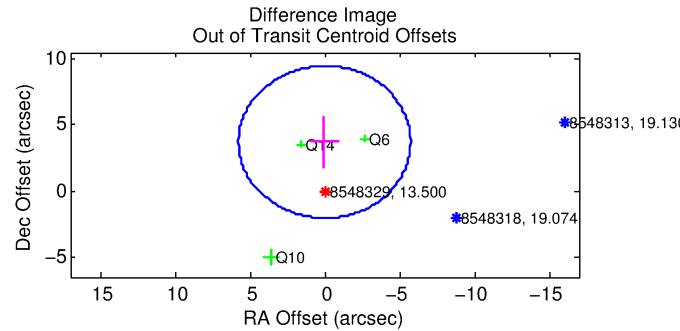
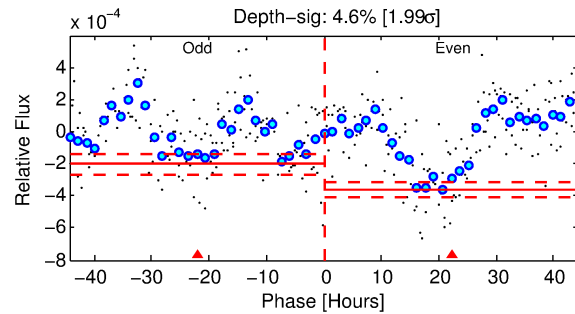
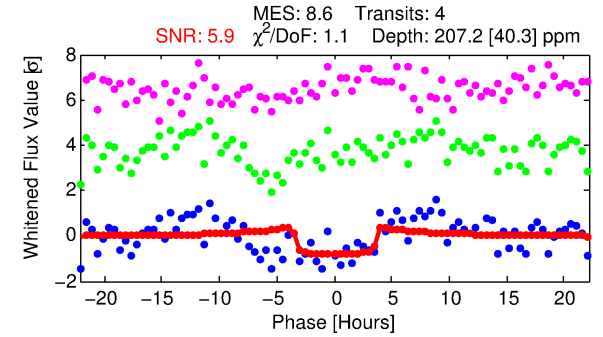
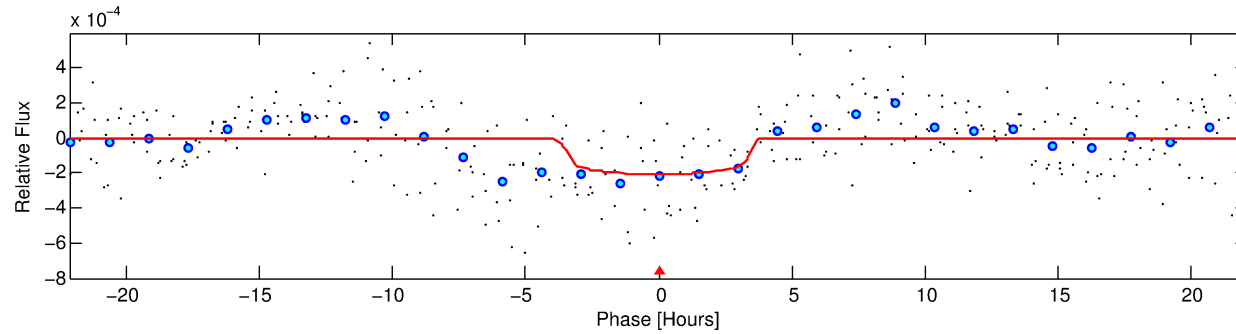
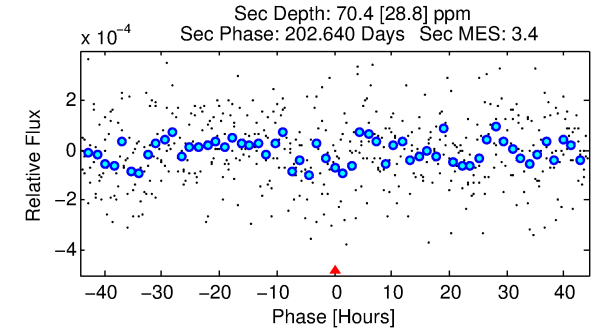
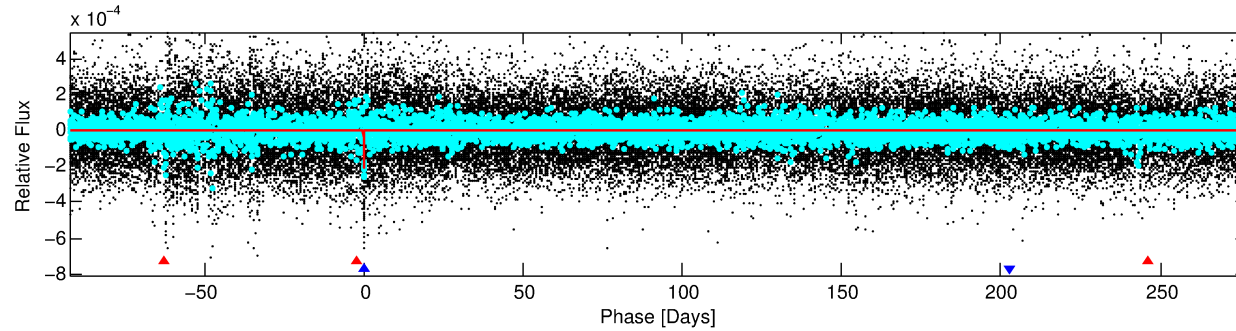
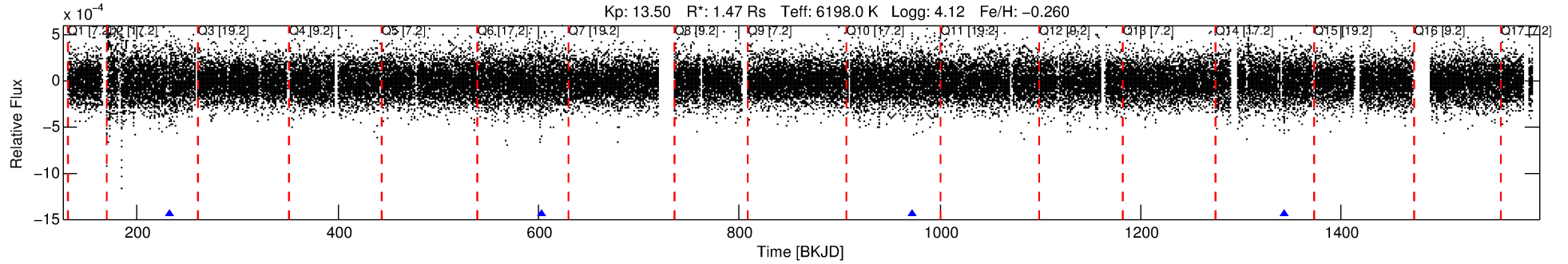
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008548329-02

No Significant Match Found

# DV One-Page Summary

KIC: 8548329 Candidate: 2 of 2 Period: 370.116 d



## DV Fit Results:

Period = 370.11578 [0.00849] d  
Epoch = 232.3769 [0.0155] BKJD  
Rp/R\* = 0.0149 [0.0070]  
a/R\* = 218.68 [522.57]  
b = 0.84 [0.85]  
Seff = 2.73 [1.06]  
Teq = 328 [32] K  
Rp = 2.39 [1.27] Re  
a = 1.0250 [0.2422] AU  
Ag = 7135.68 [7786.50] [0.92σ]  
Teffp = 4658 [1201] K [3.60σ]

## DV Diagnostic Results:

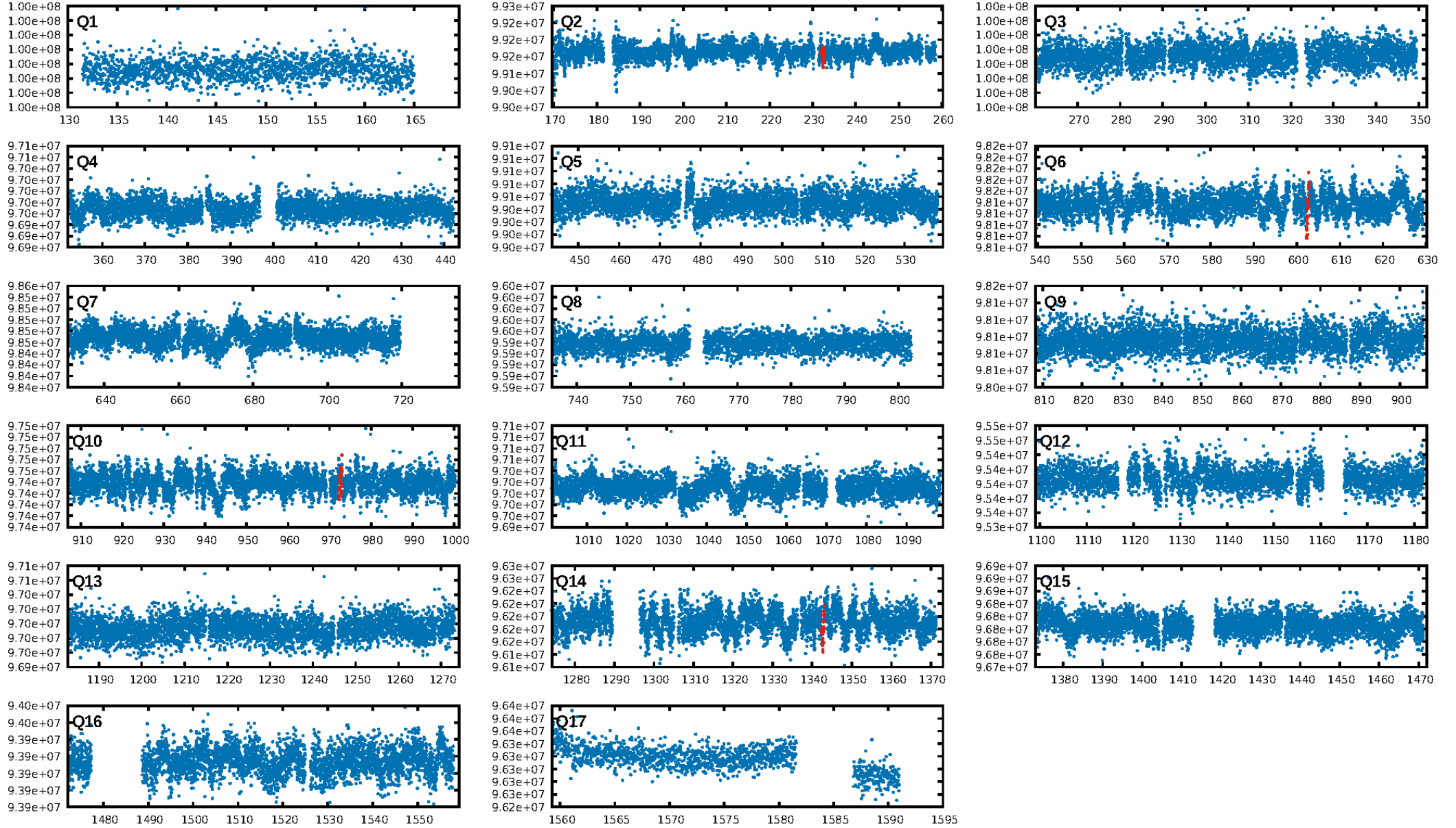
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [82.8σ]  
ModelChiSquare2-sig: 37.7%  
ModelChiSquareGof-sig: 85.2%  
**Bootstrap-pfa: 6.34e-12**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 4.137  
Centroid-sig: 64.5%  
Centroid-so: 1.976 arcsec [0.64σ]  
OotOffset-rm: 3.713 arcsec [1.94σ]  
KicOffset-rm: 4.001 arcsec [2.29σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:52:35 Z

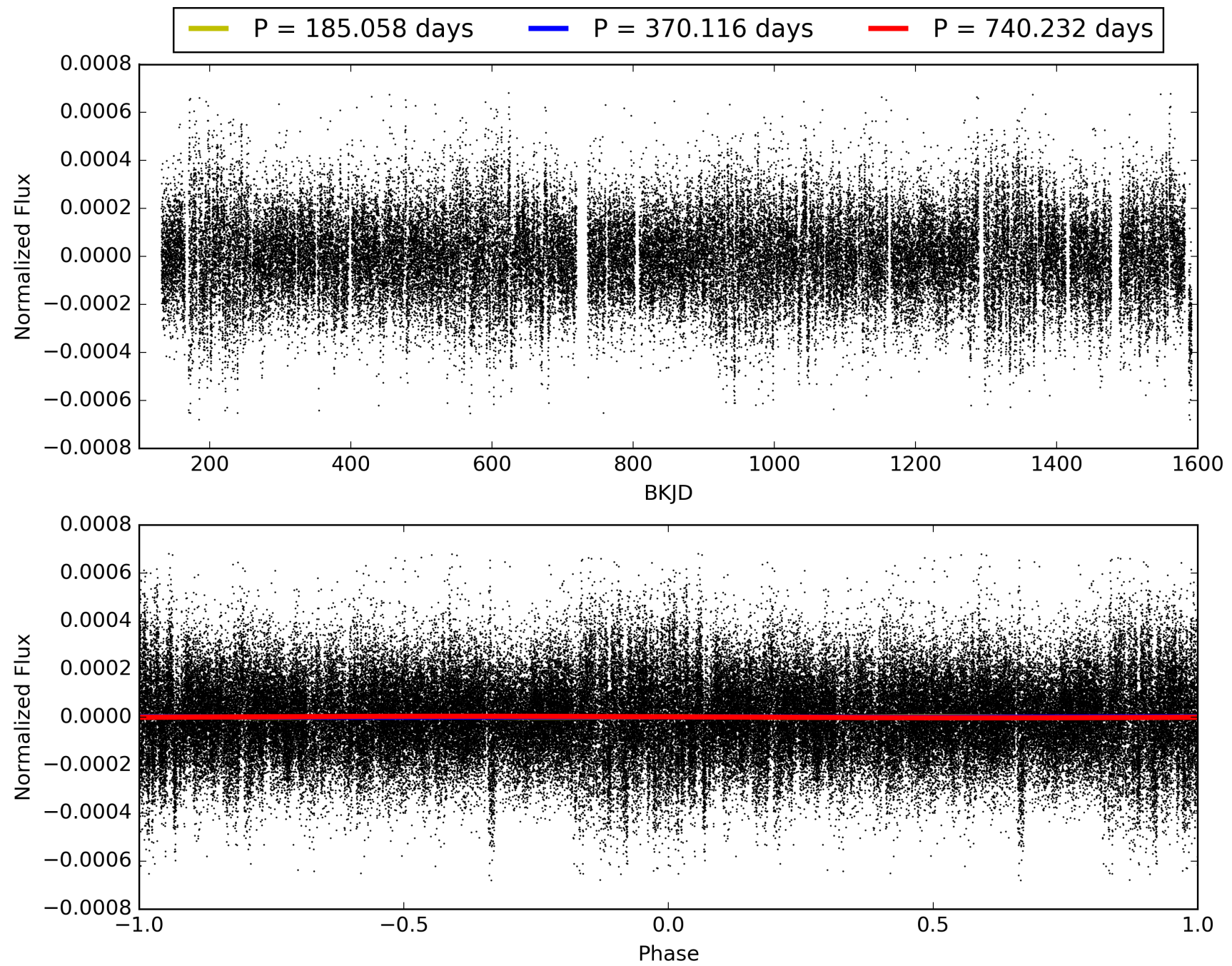
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008548329-02, PDC Light Curves

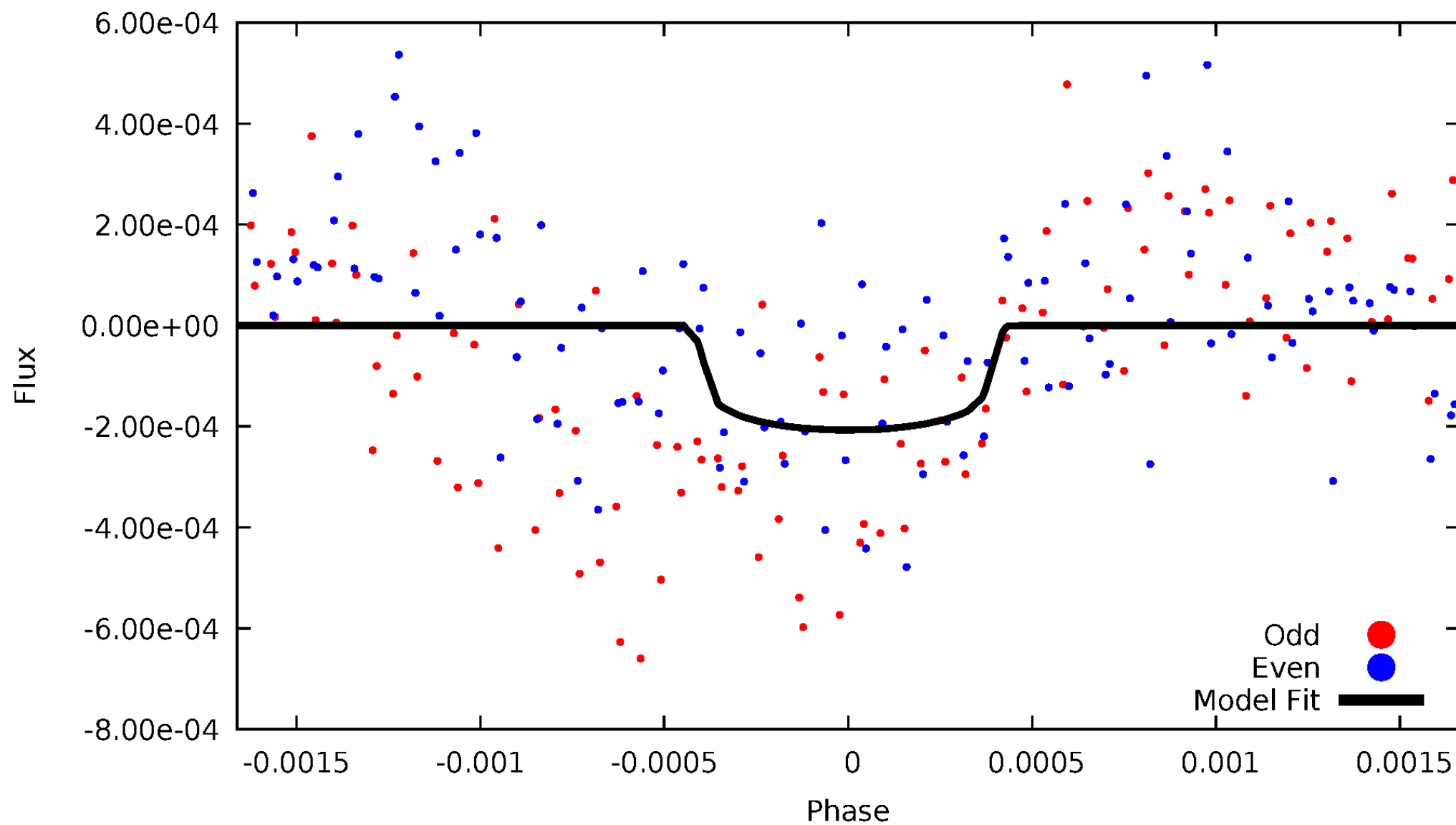


TCE 008548329-02



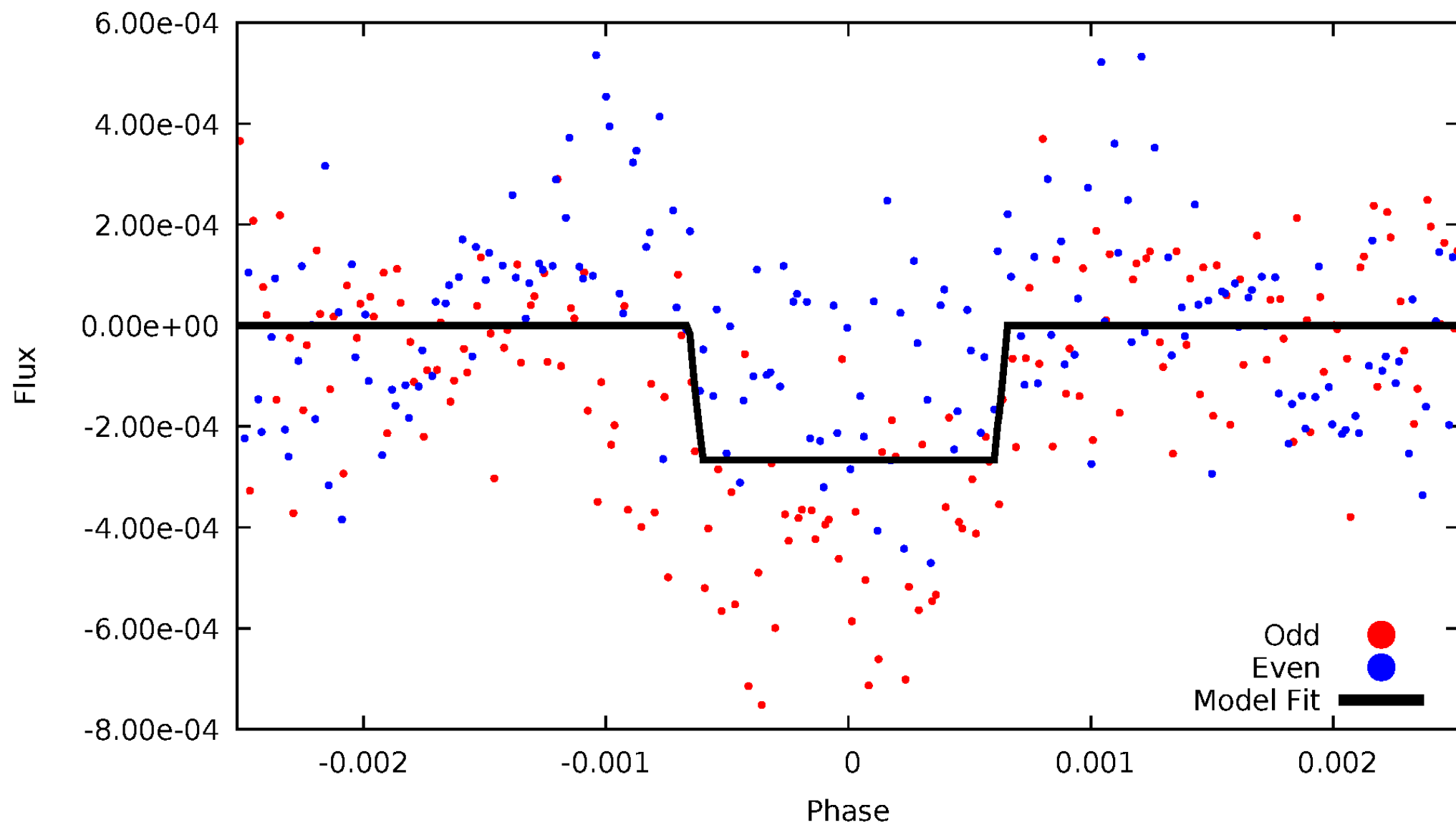
# DV Odd/Even

TCE 008548329-02



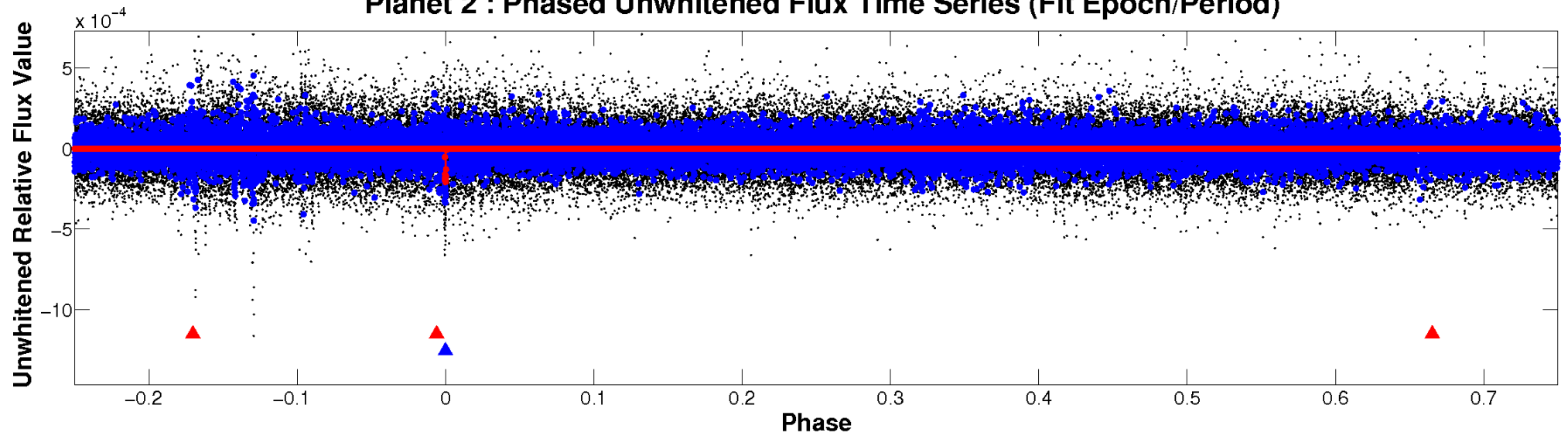
# ALT Odd/Even

TCE 008548329-02

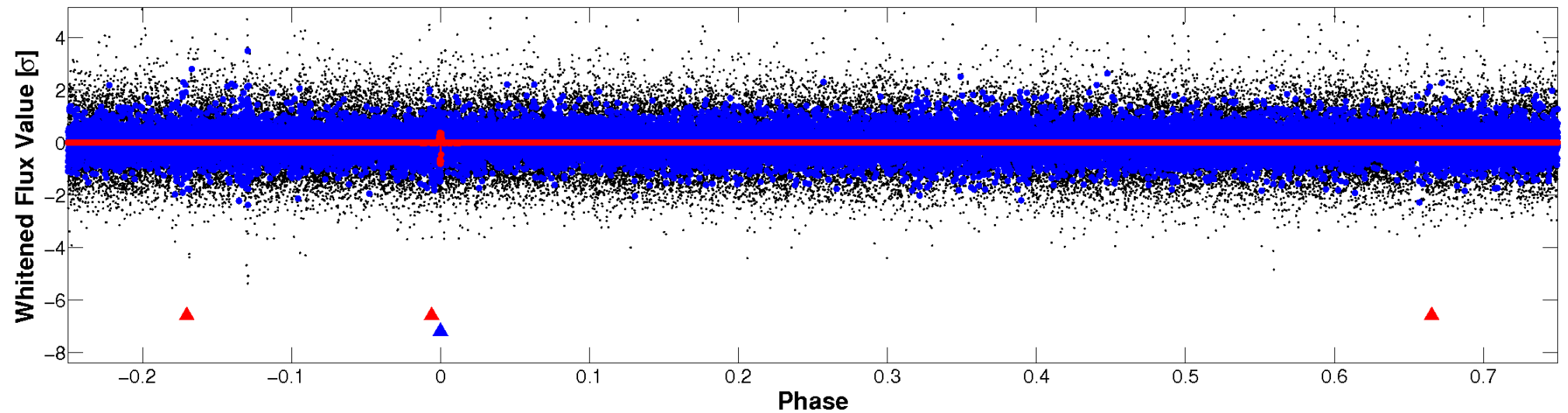


# Non-Whitened Vs. Whitened Light Curve

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

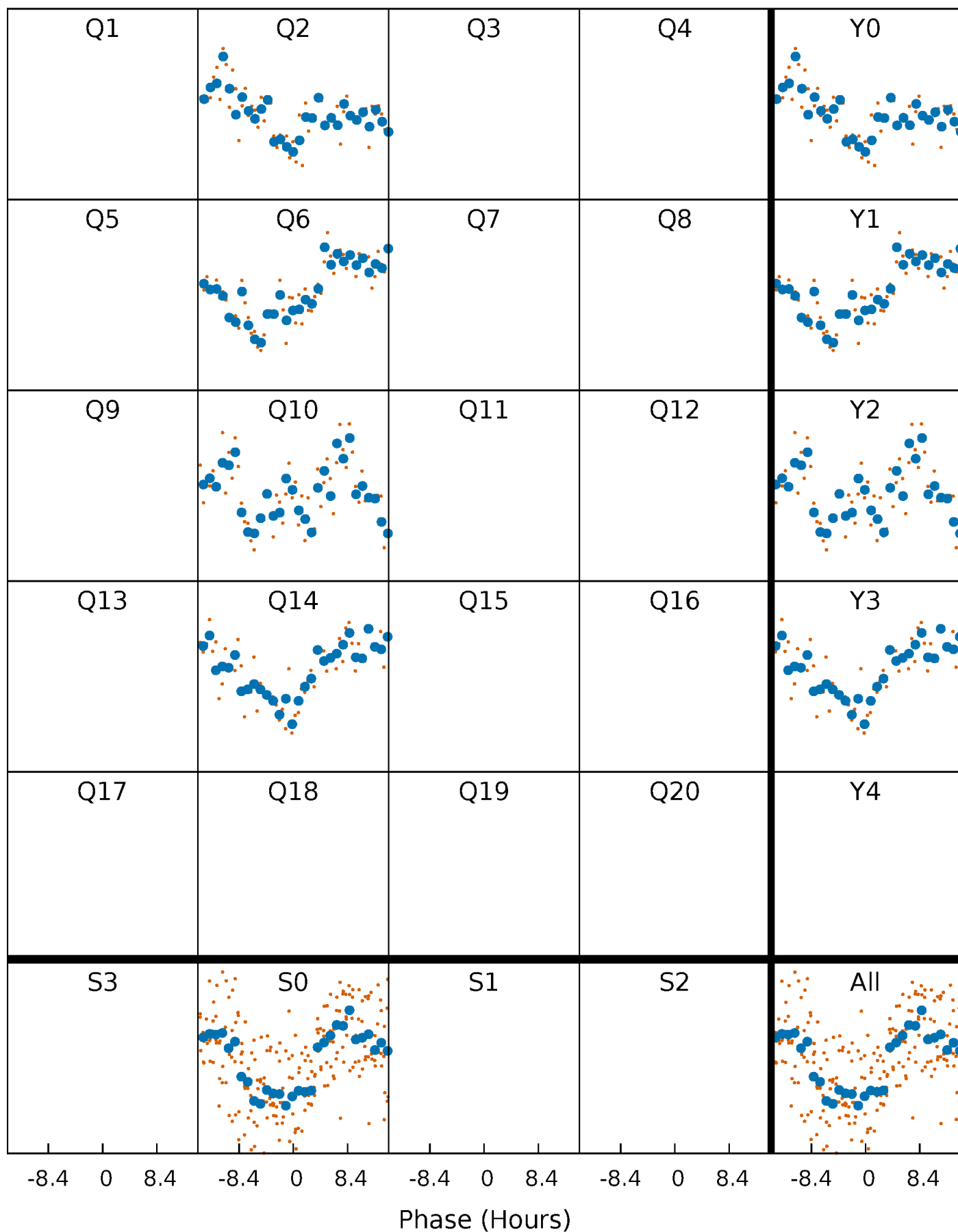


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



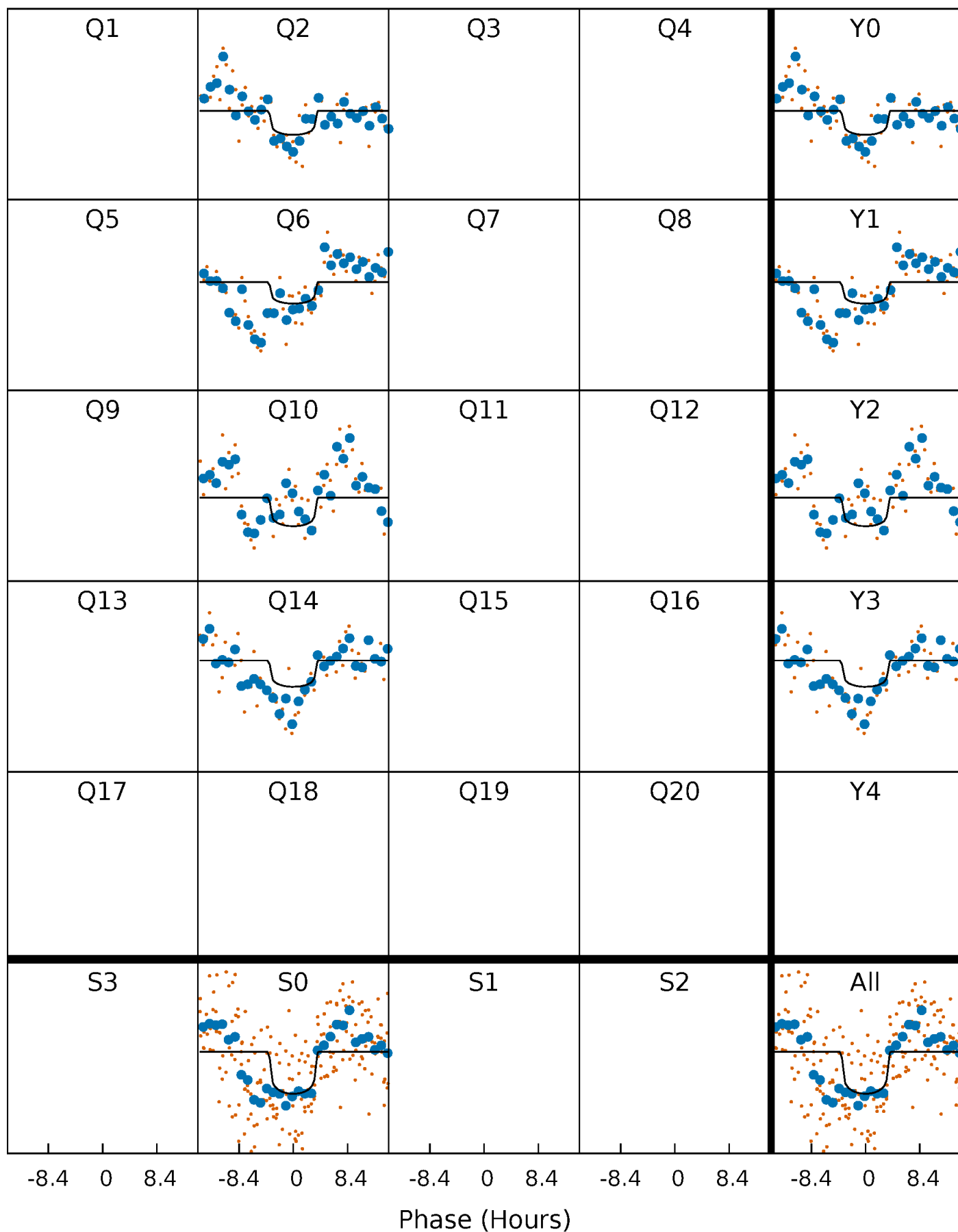
# PDC Quarter-Phased Transit Curves

TCE 008548329-02 P=370.115780 Days  $T_0=232.376882$  (BKJD)



# DV Quarter-Phased Transit Curves

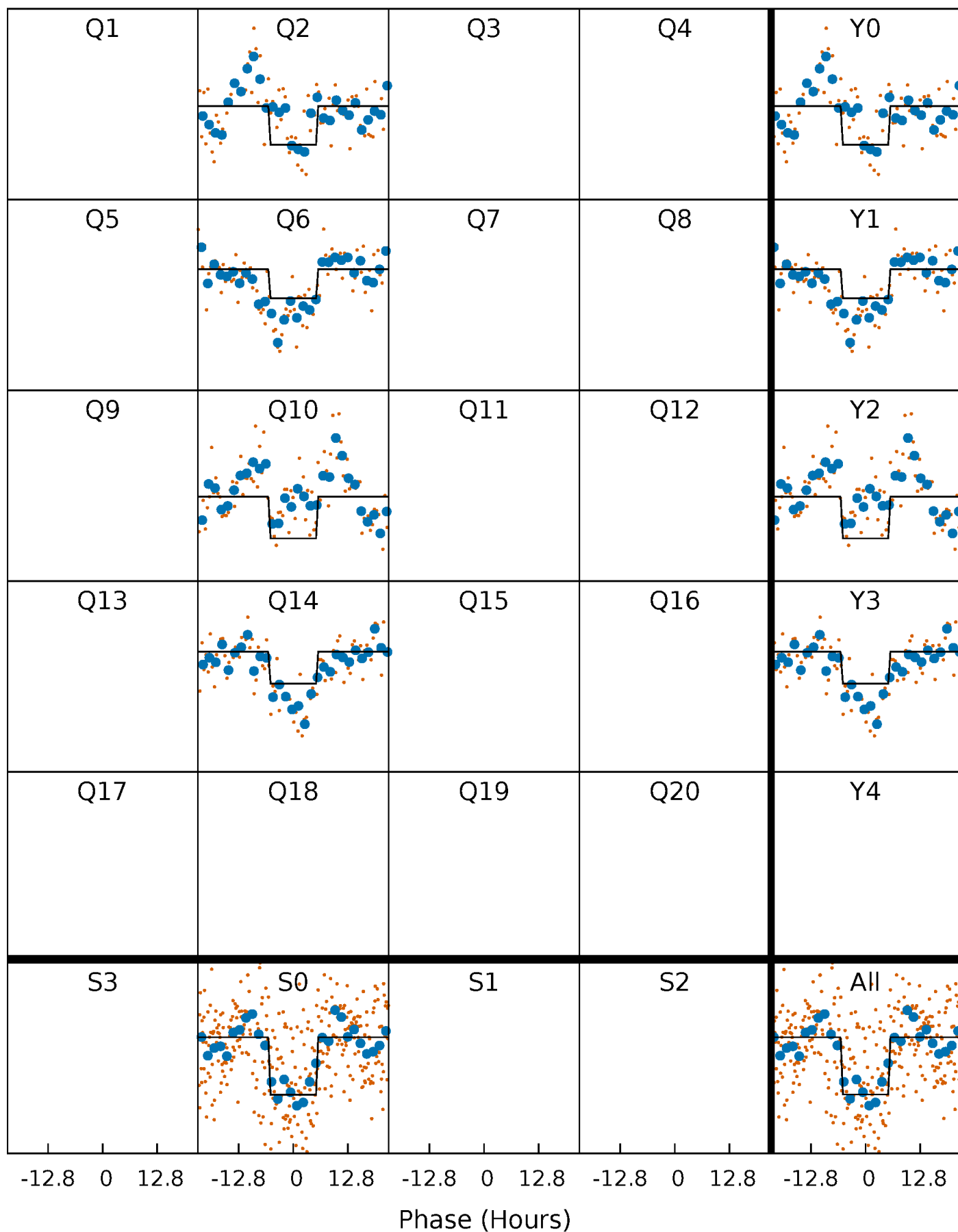
TCE 008548329-02   P=370.115780 Days    $T_0=232.376882$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

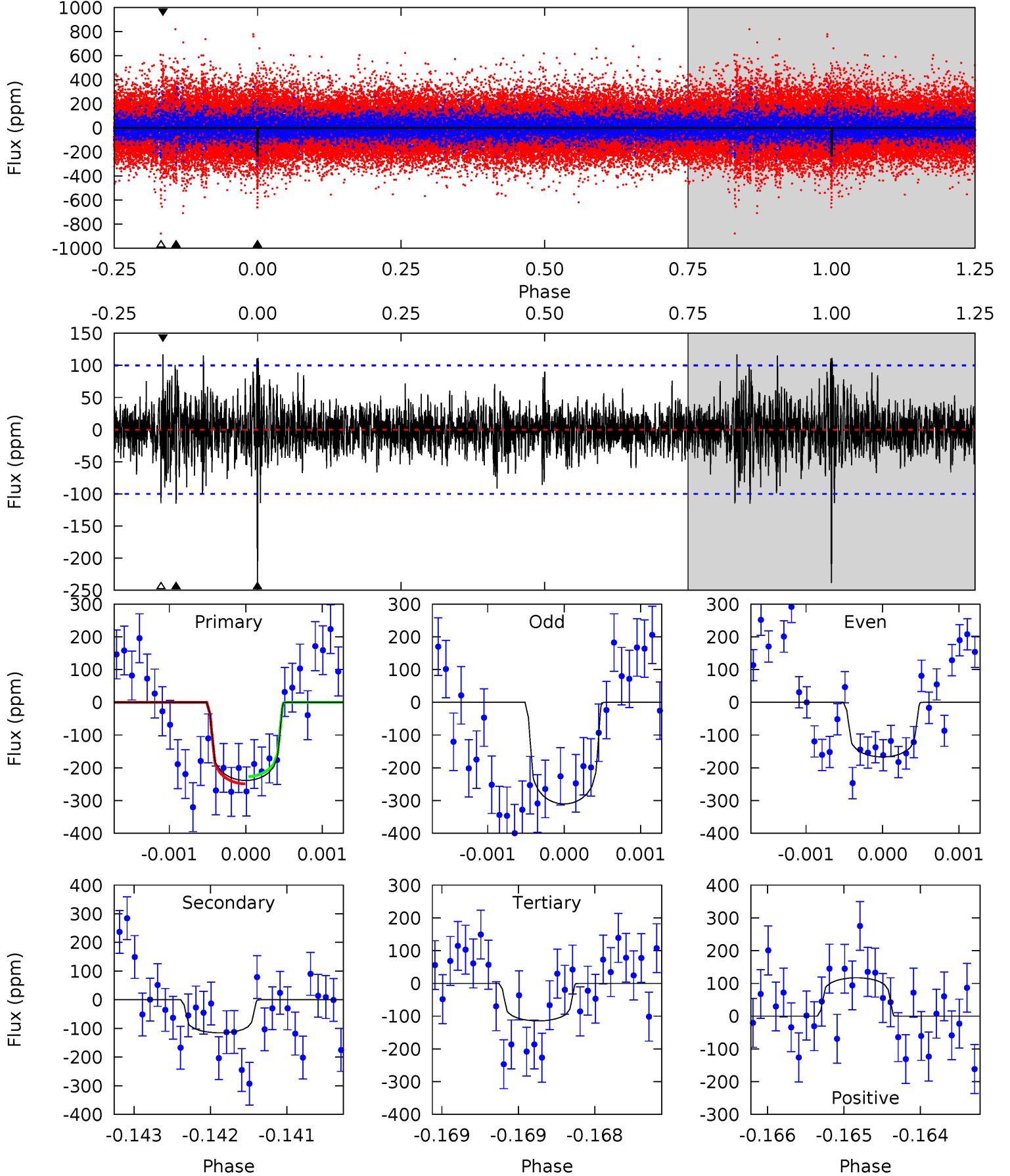
TCE 008548329-02 P=370.106261 Days  $T_0=232.309545$  (BKJD)



# DV Model-Shift Uniqueness Test

008548329-02, P = 370.115780 Days, E = 232.376882 Days

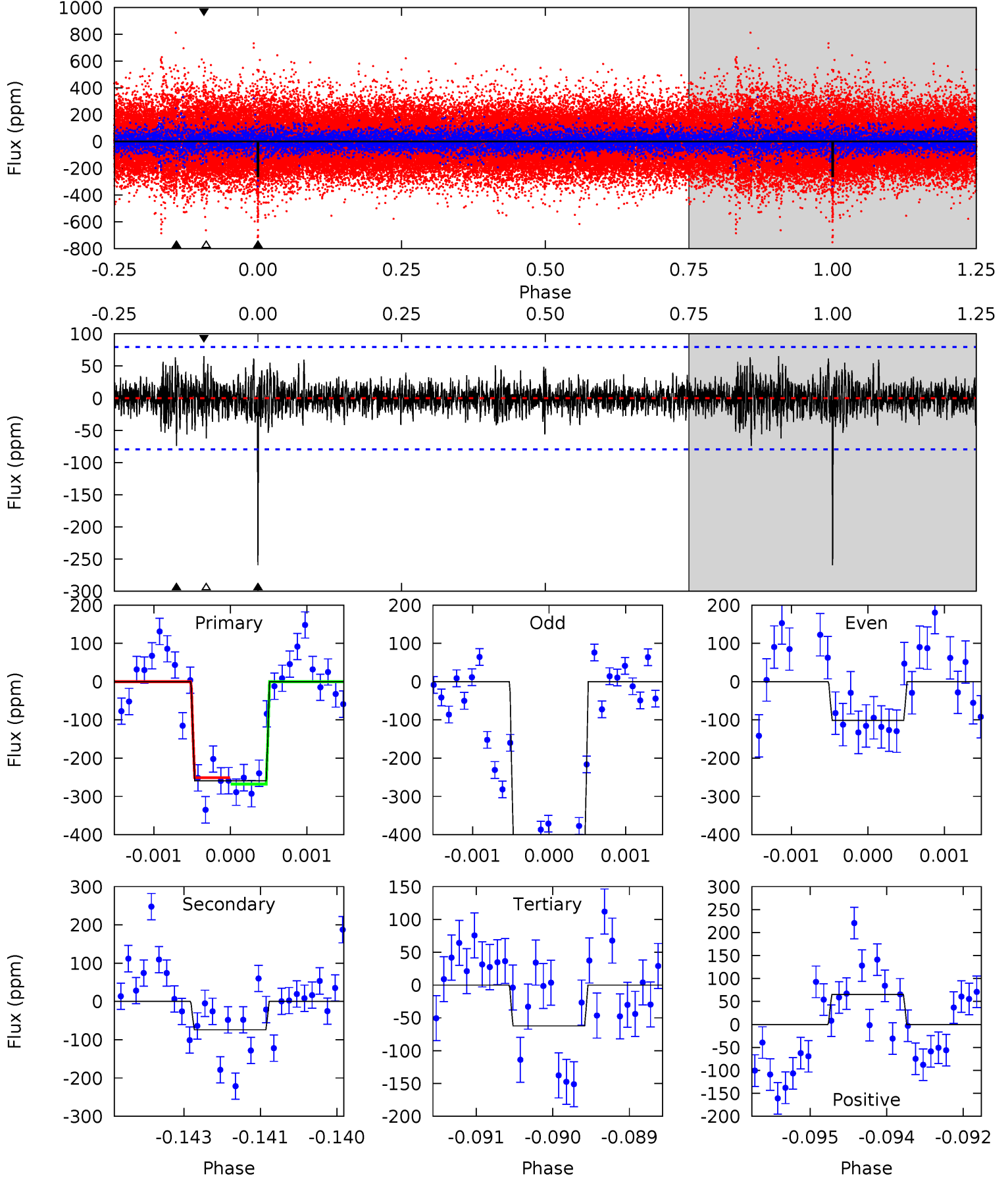
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	6.32	6.27	6.42	5.47	3.33	1.38	6.81	6.66	0.05	-0.10	3.93	0.93	0.33	0.60



# Alt Model-Shift Uniqueness Test

008548329-02, P = 370.106261 Days, E = 232.309545 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
17.7	5.03	4.24	4.44	5.41	3.22	1.06	13.4	13.2	0.79	0.59	10.8	0.96	0.20	0.58



### Stellar Parameters For KIC 008548329

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6198^{+170}_{-170}$	$4.122^{+0.216}_{-0.126}$	$-0.260^{+0.300}_{-0.300}$	$1.473^{+0.339}_{-0.372}$	$1.047^{+0.180}_{-0.135}$	$0.461^{+0.588}_{-0.183}$
	+3%/-3%	+5%/-3%	+115%/-115%	+23%/-25%	+17%/-13%	+128%/-40%
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 008548329-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-115 \pm 18$	$2.39^{+1.11}_{-1.06}$	$455^{+27}_{-32}$	$5283^{+1796}_{-781}$	$11888^{+25284}_{-6710}$
Alt.	$-74 \pm 15$	$2.69^{+1.19}_{-1.05}$	$455^{+28}_{-32}$	$4555^{+1062}_{-595}$	$5803^{+10732}_{-3097}$

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

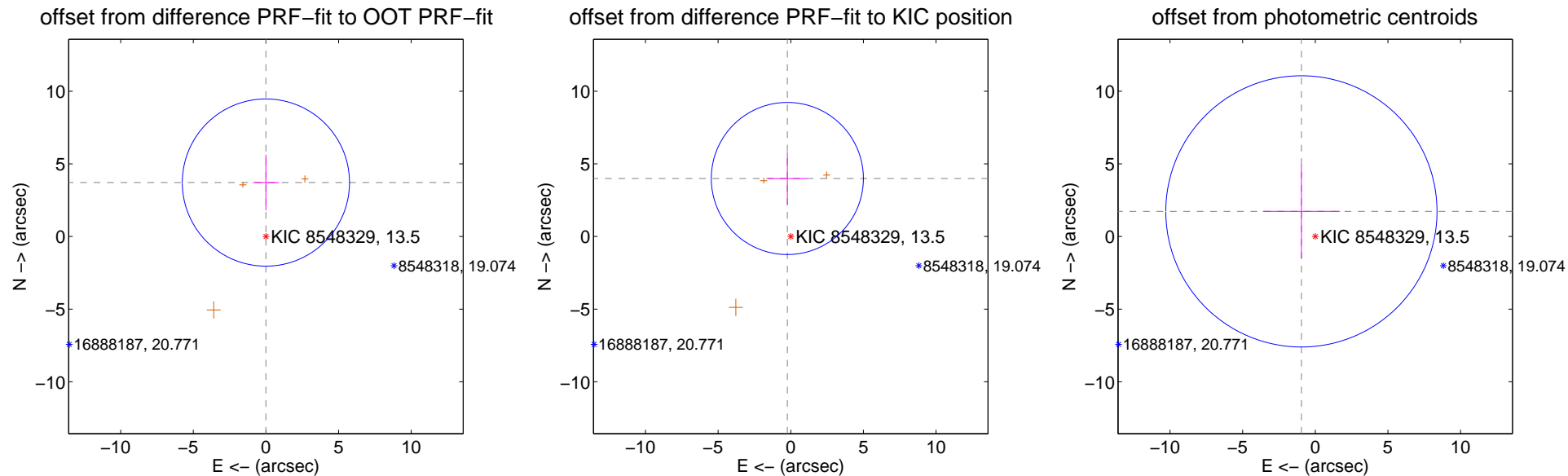
## DV Centroid Data

Supplemental centroid analysis for 008548329-02. Kepler magnitude: 13.50. Transit SNR 5.88

There are 0 quarters with good PRF difference image offsets

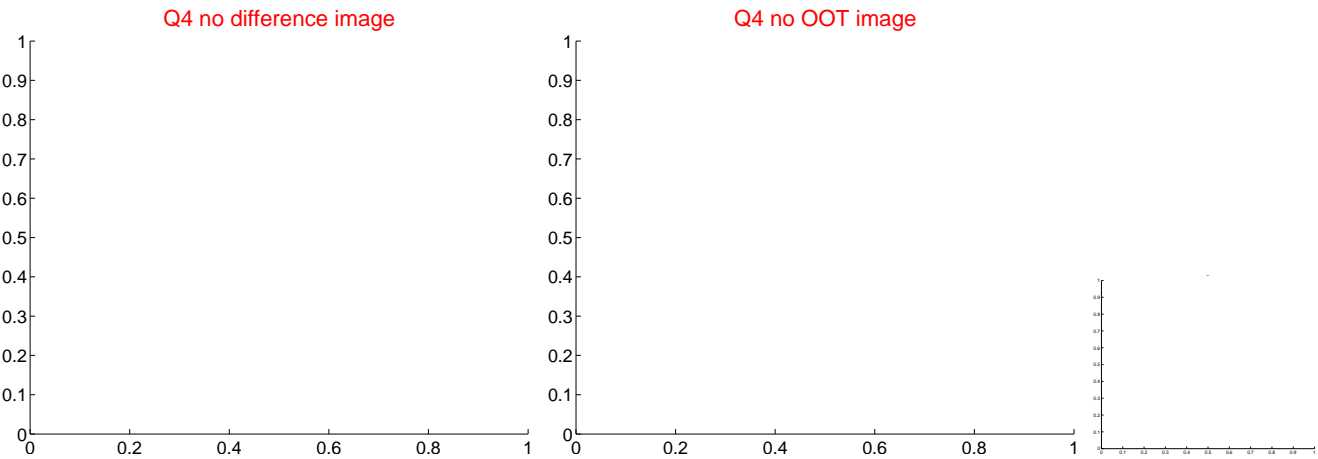
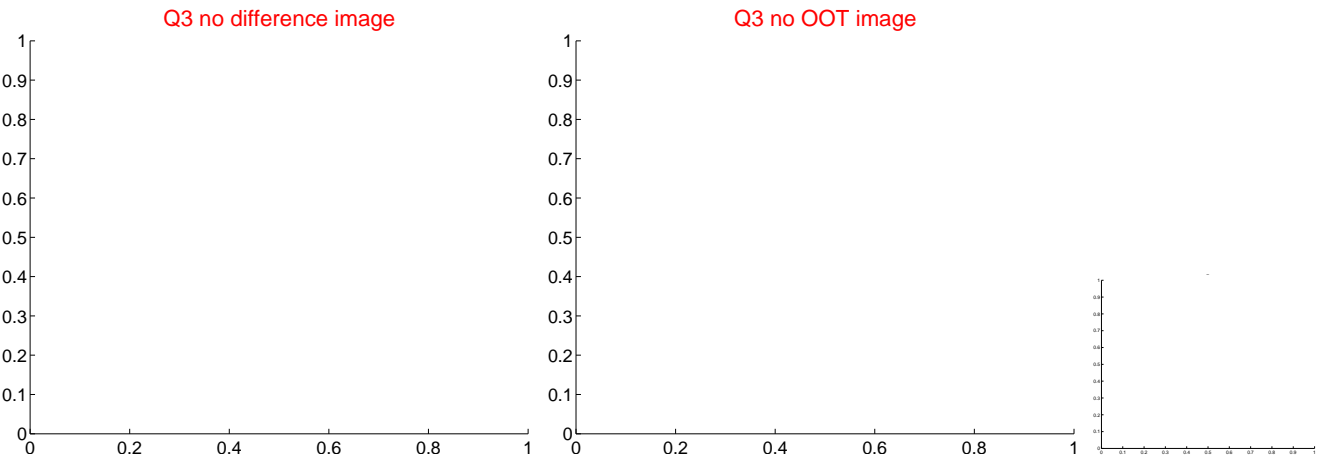
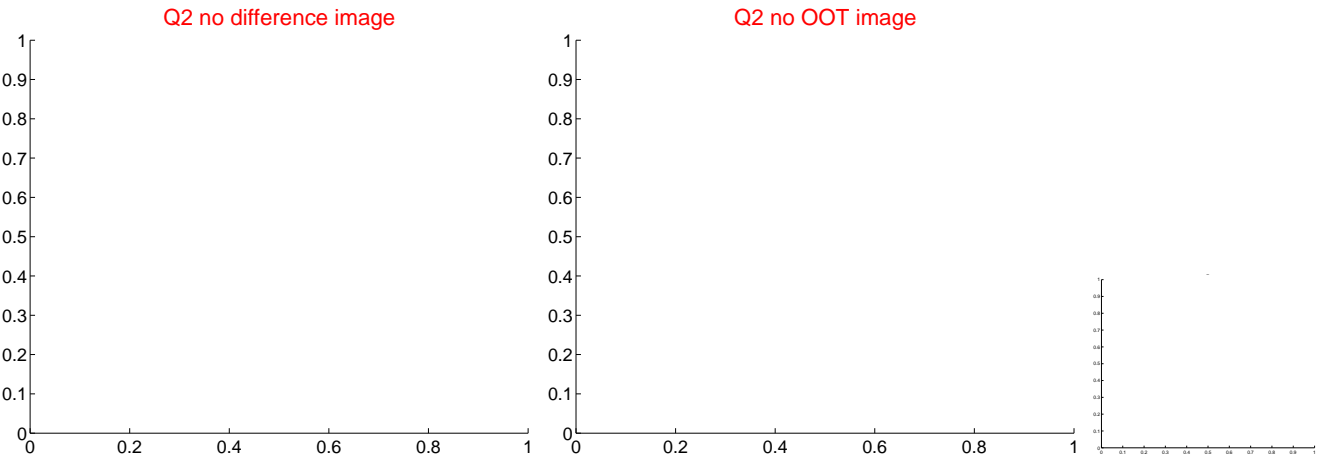
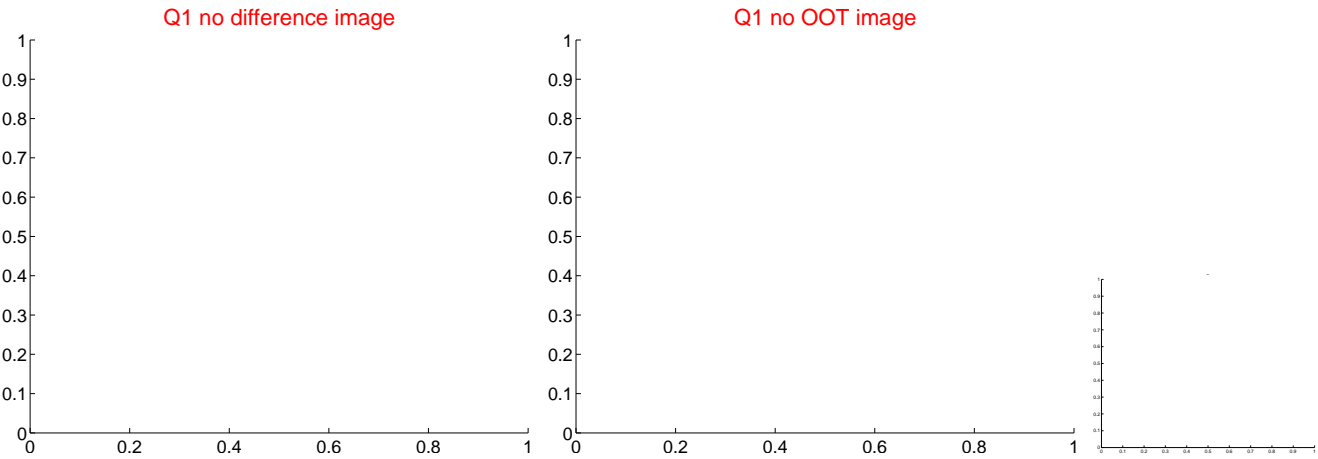
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.713 \pm 1.918$	1.94	$0.004 \pm 0.891$	$3.713 \pm 1.918$
PRF-fit source offset from KIC position	$4.001 \pm 1.745$	2.29	$0.236 \pm 1.347$	$3.994 \pm 1.815$
photometric centroid source offset	$1.98 \pm 3.11$	0.64	$0.95 \pm 2.66$	$1.73 \pm 3.24$

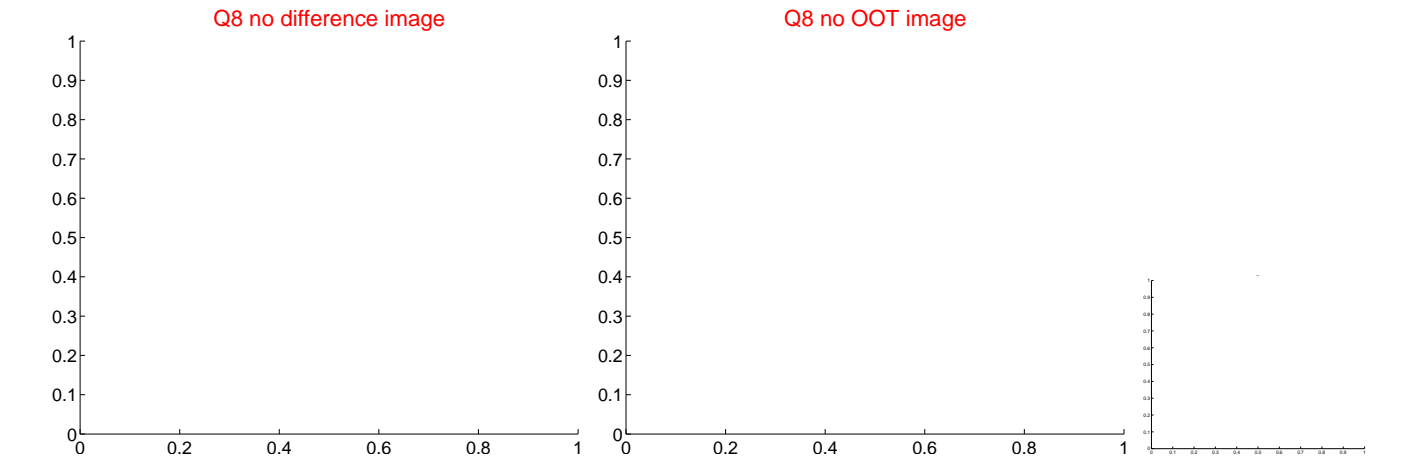
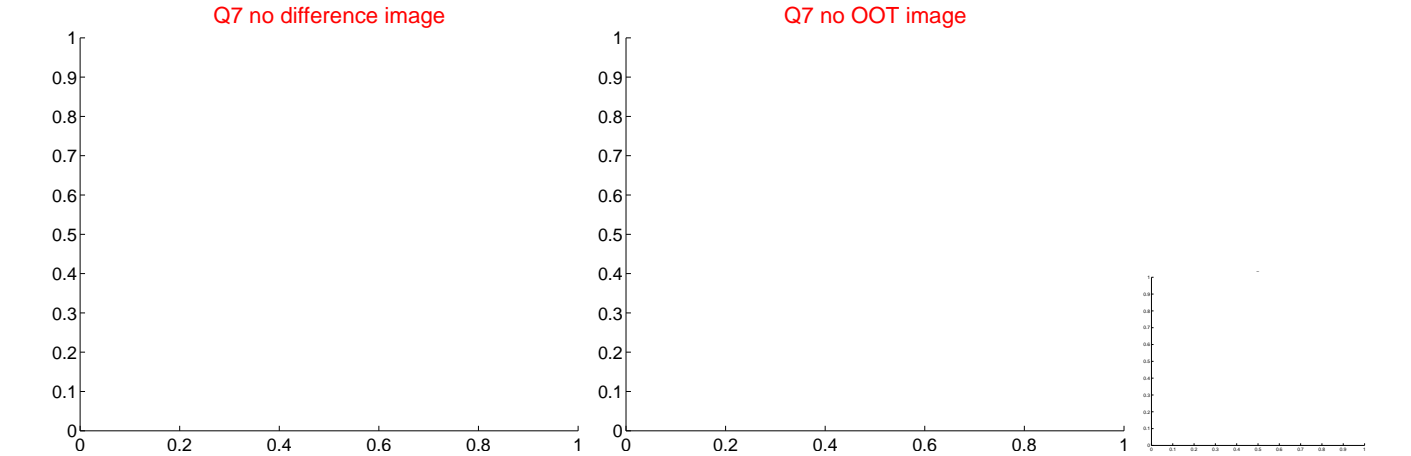
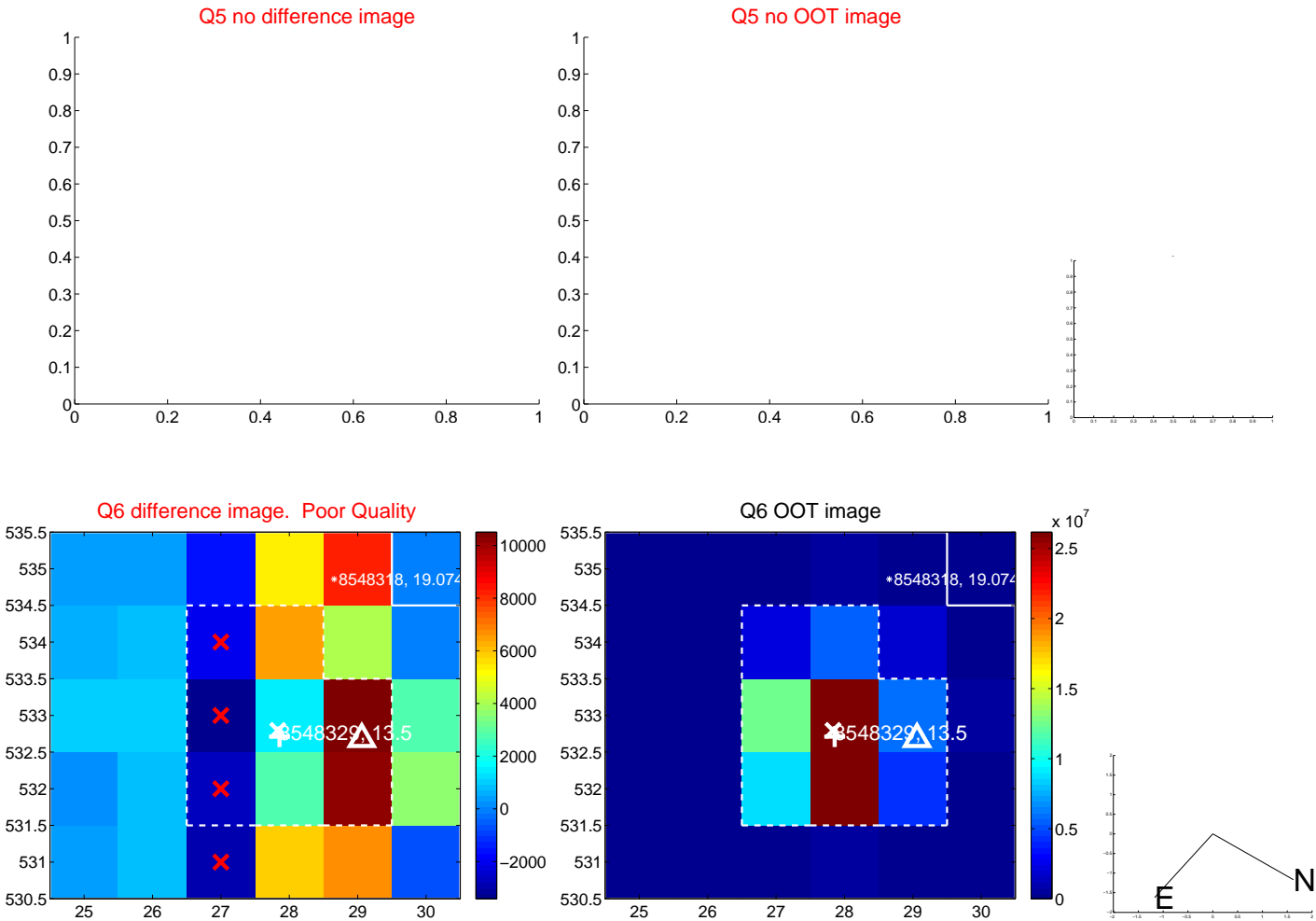


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

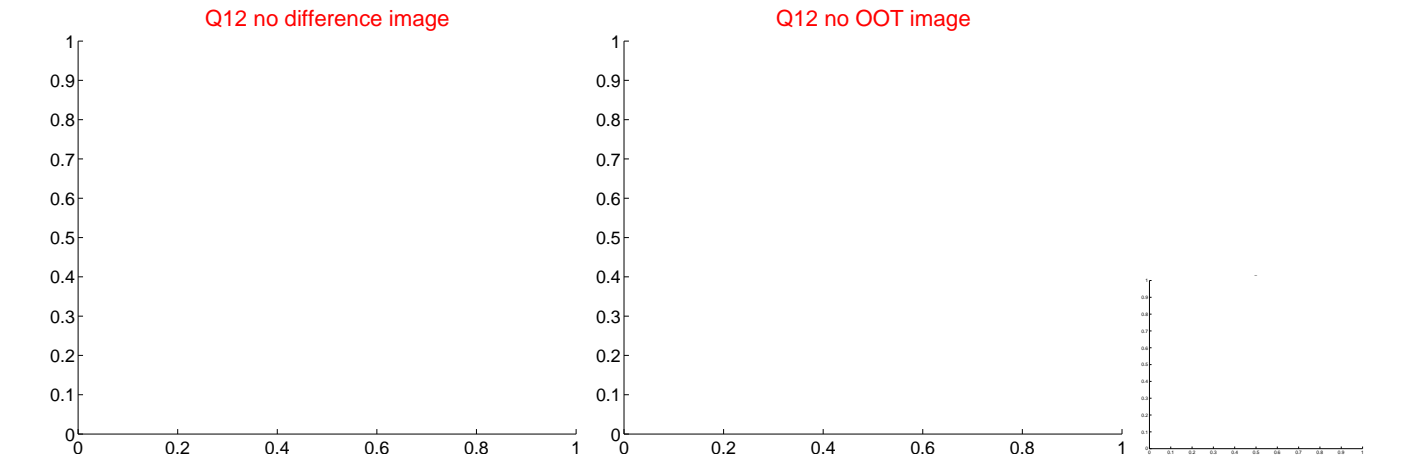
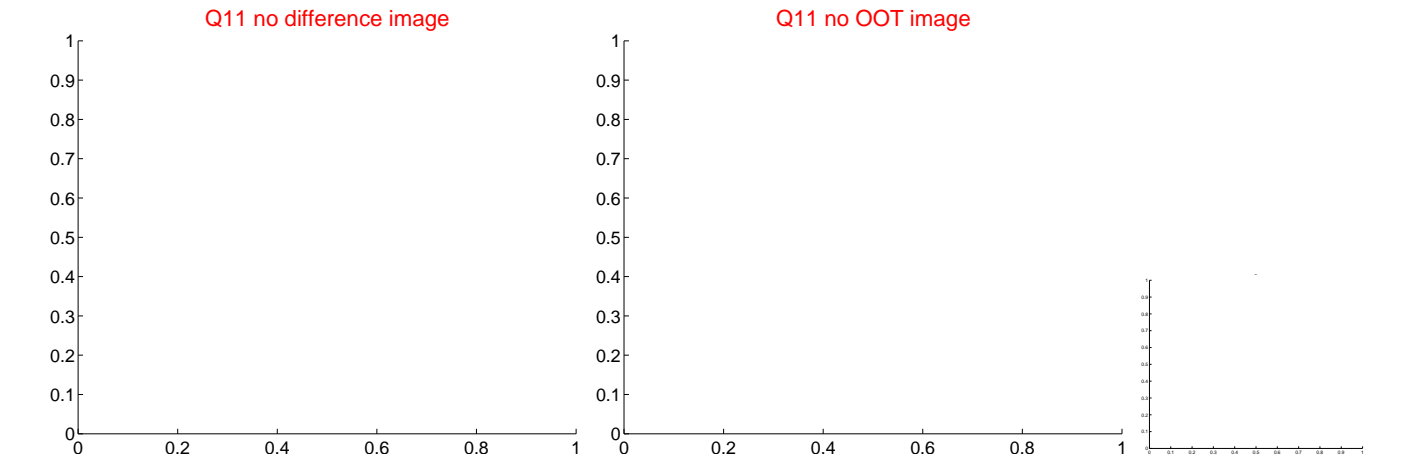
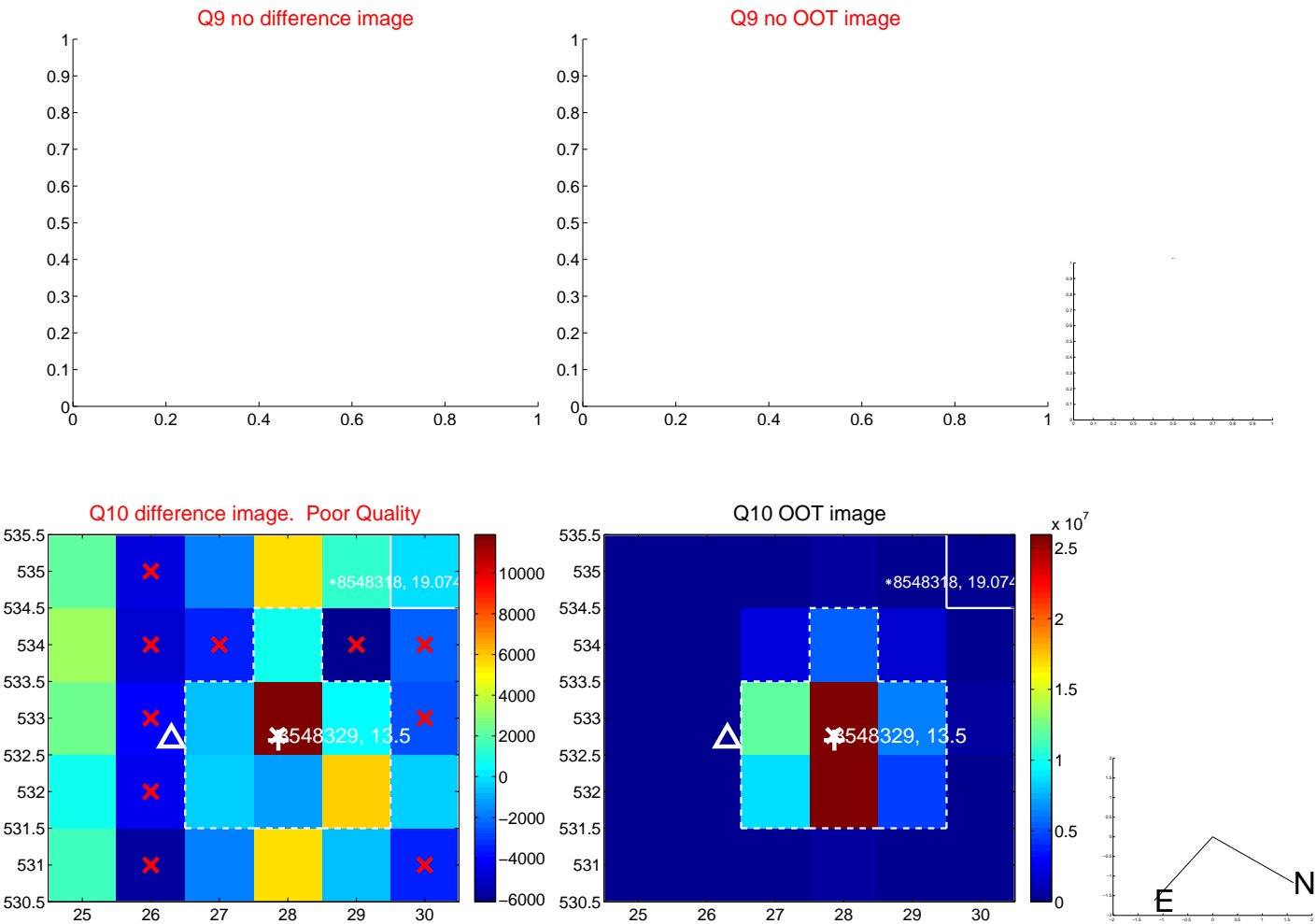


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

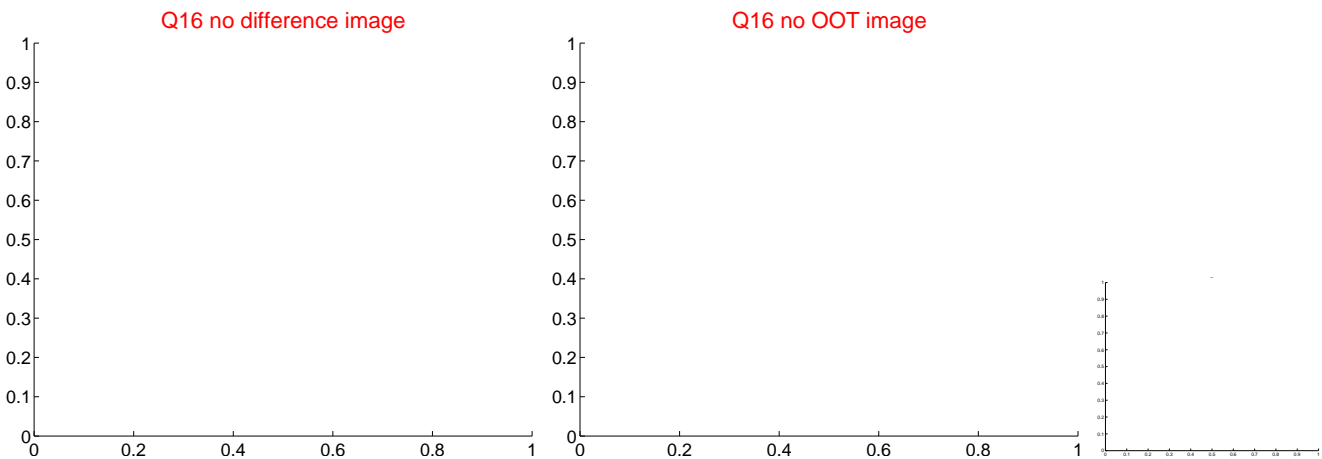
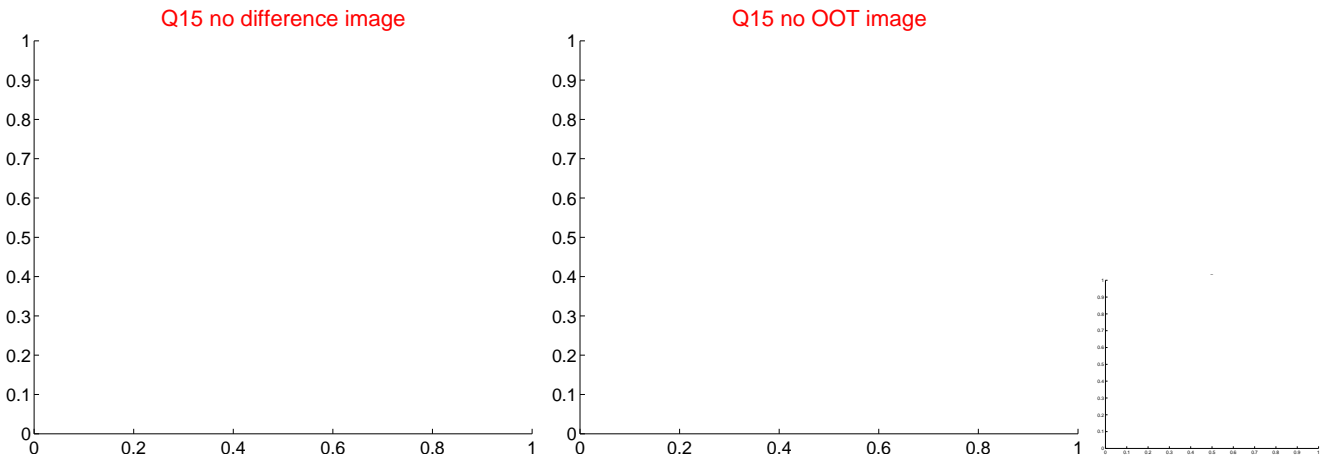
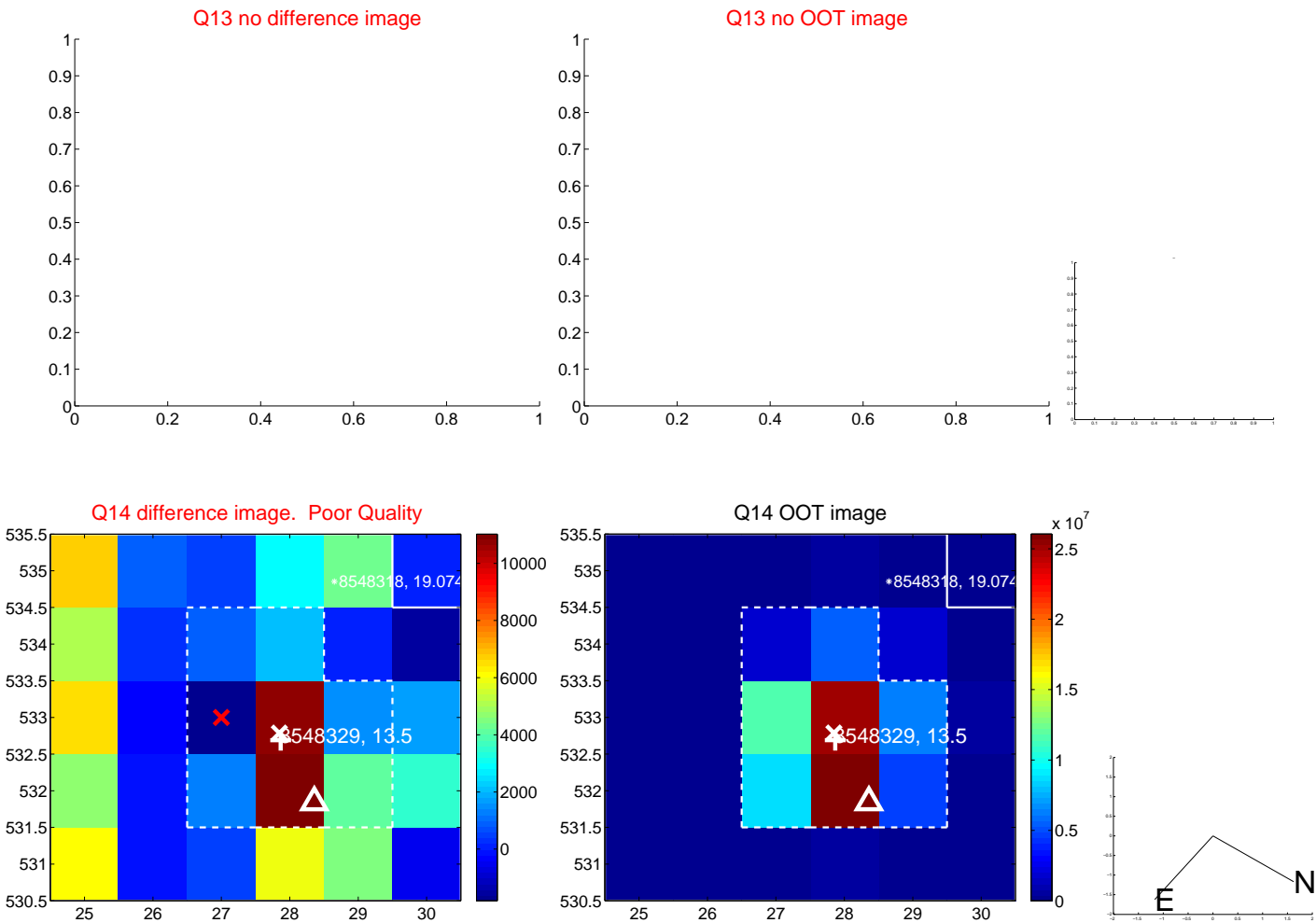




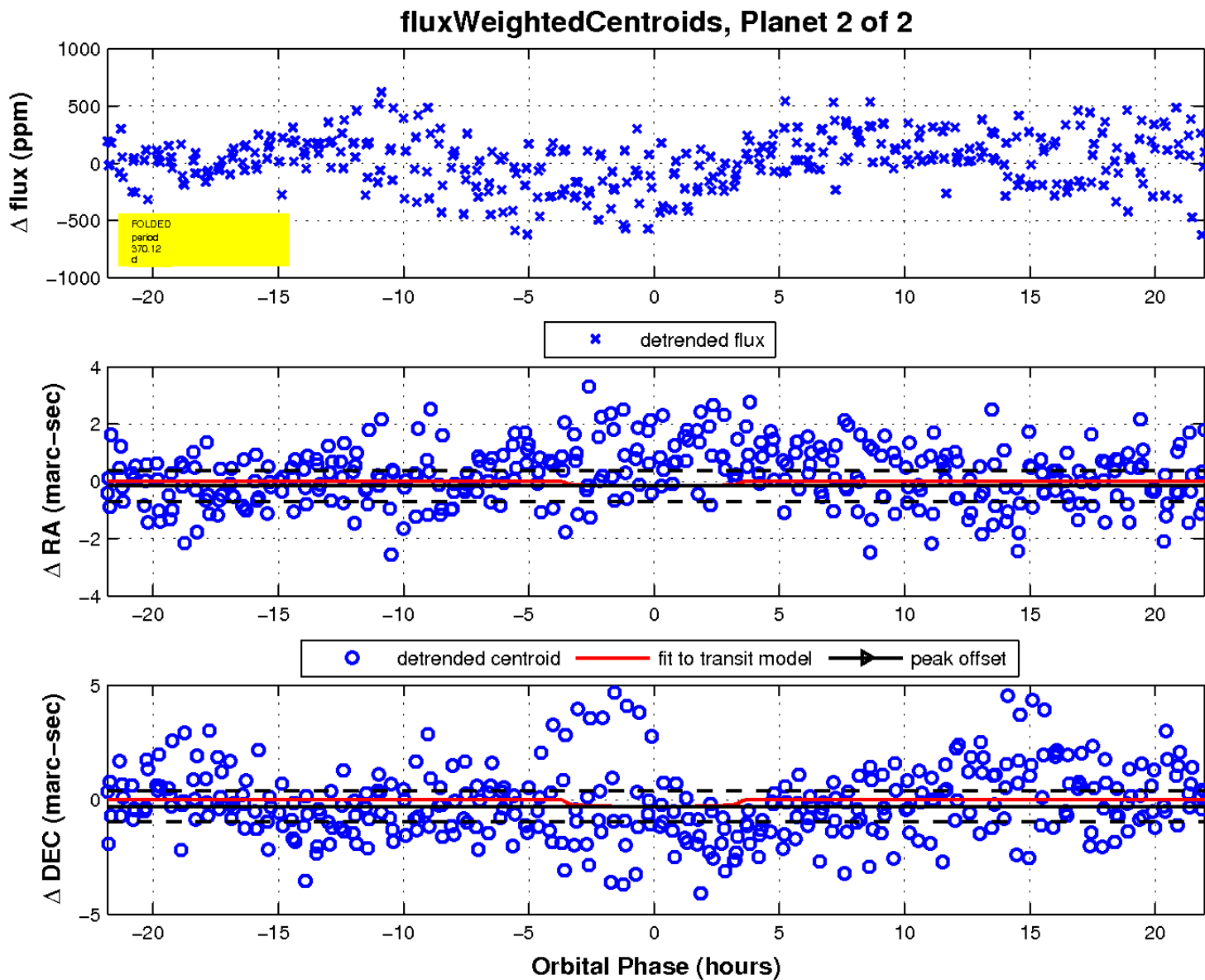
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

