

# KIC 008328376

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008328376-01	OBS	No	4.346005	132.508505	147.0	14.730	15.7	17.0	2.62	6609	6.30	3330.58
008328376-02	OBS	No	219.119395	317.313432	330.0	3.033	8.6	8.6	2.62	6609	5.91	17.88
008328376-03	OBS	No	366.265535	404.886055	379.0	7.645	7.3	7.7	2.62	6609	7.33	9.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008328376-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008328376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008328376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

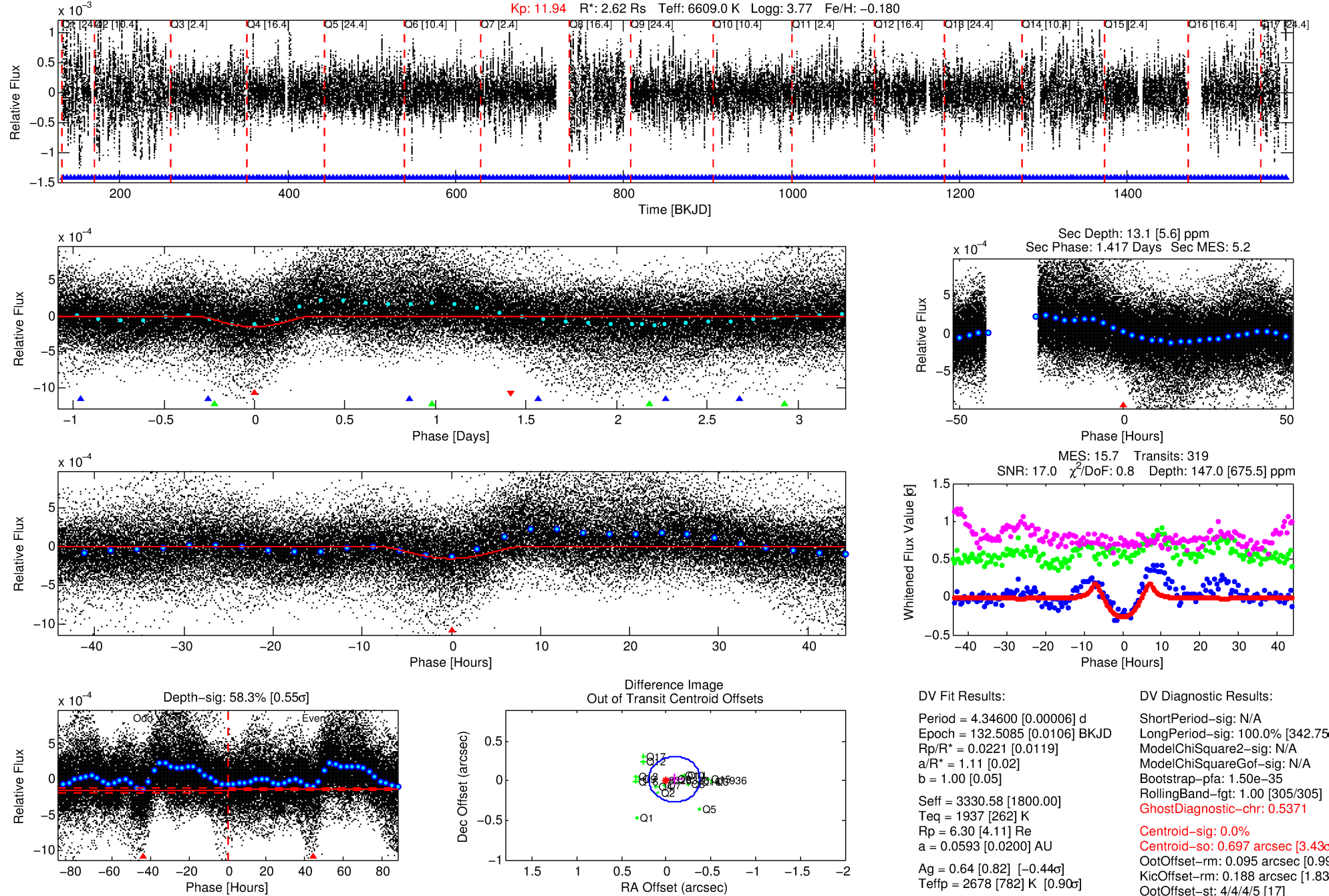
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008328376-01

No Significant Match Found

# DV One-Page Summary

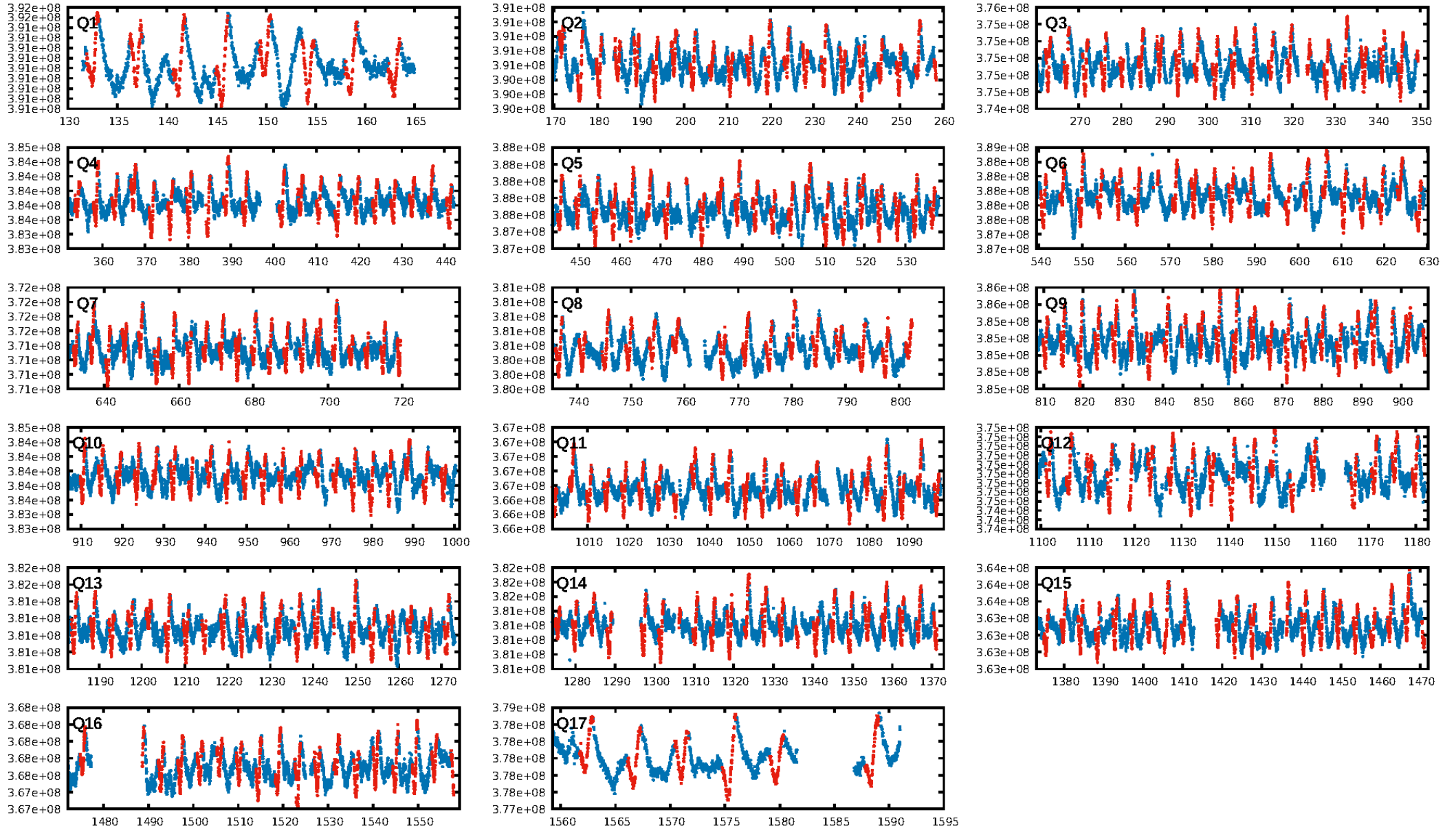
KIC: 8328376 Candidate: 1 of 3 Period: 4.346 d



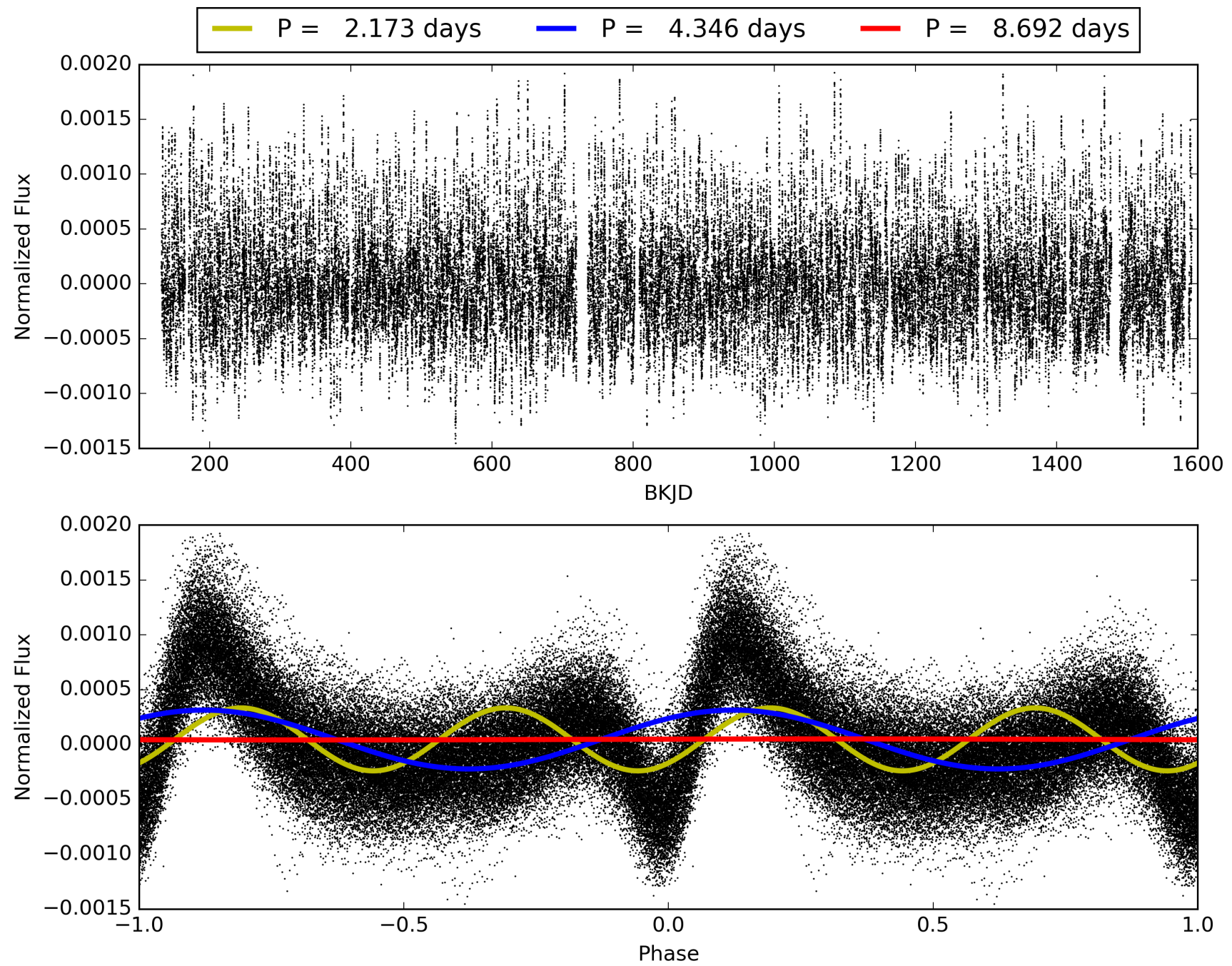
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:37 Z

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

# TCE 008328376-01, PDC Light Curves



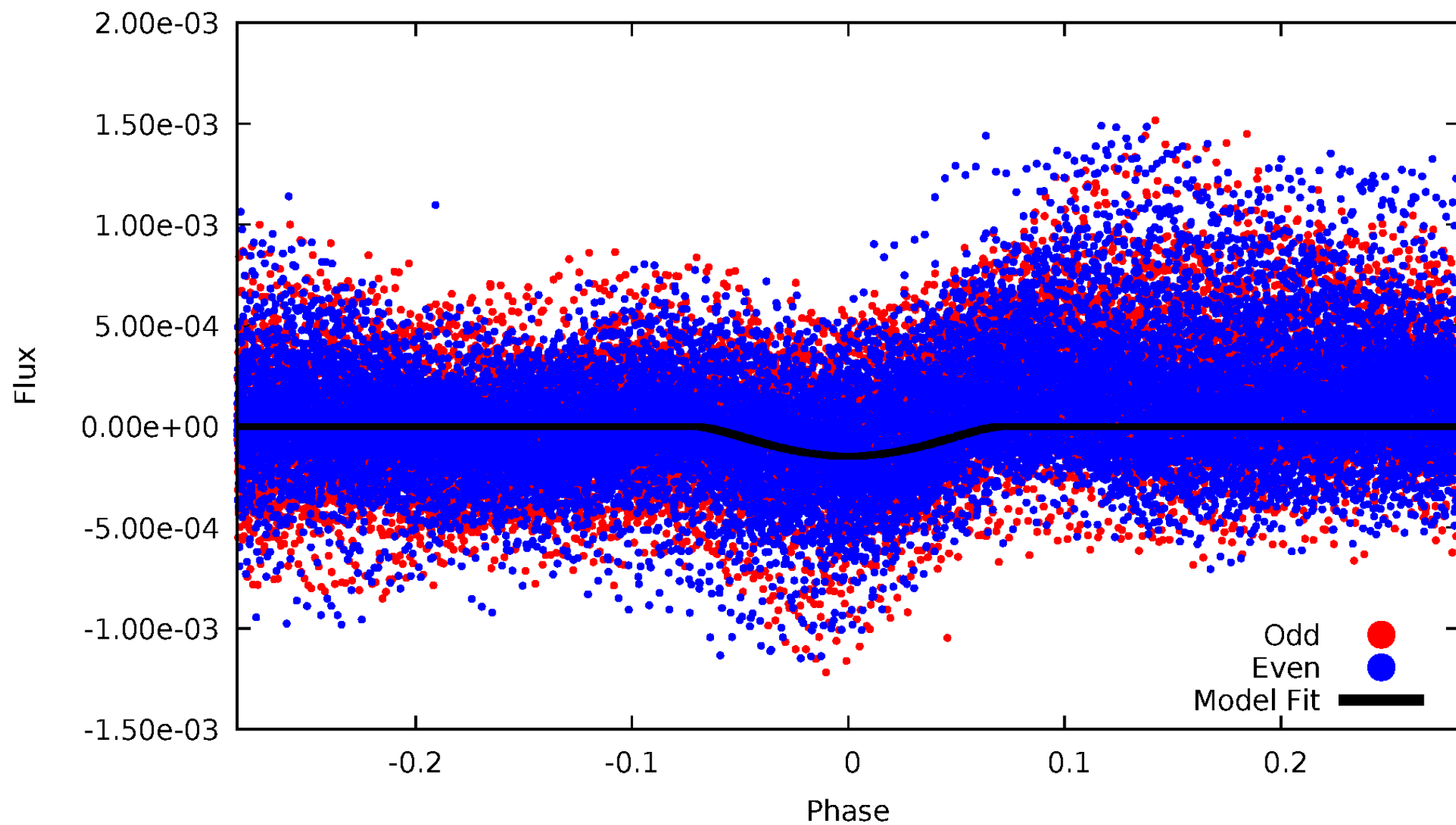
TCE 008328376-01





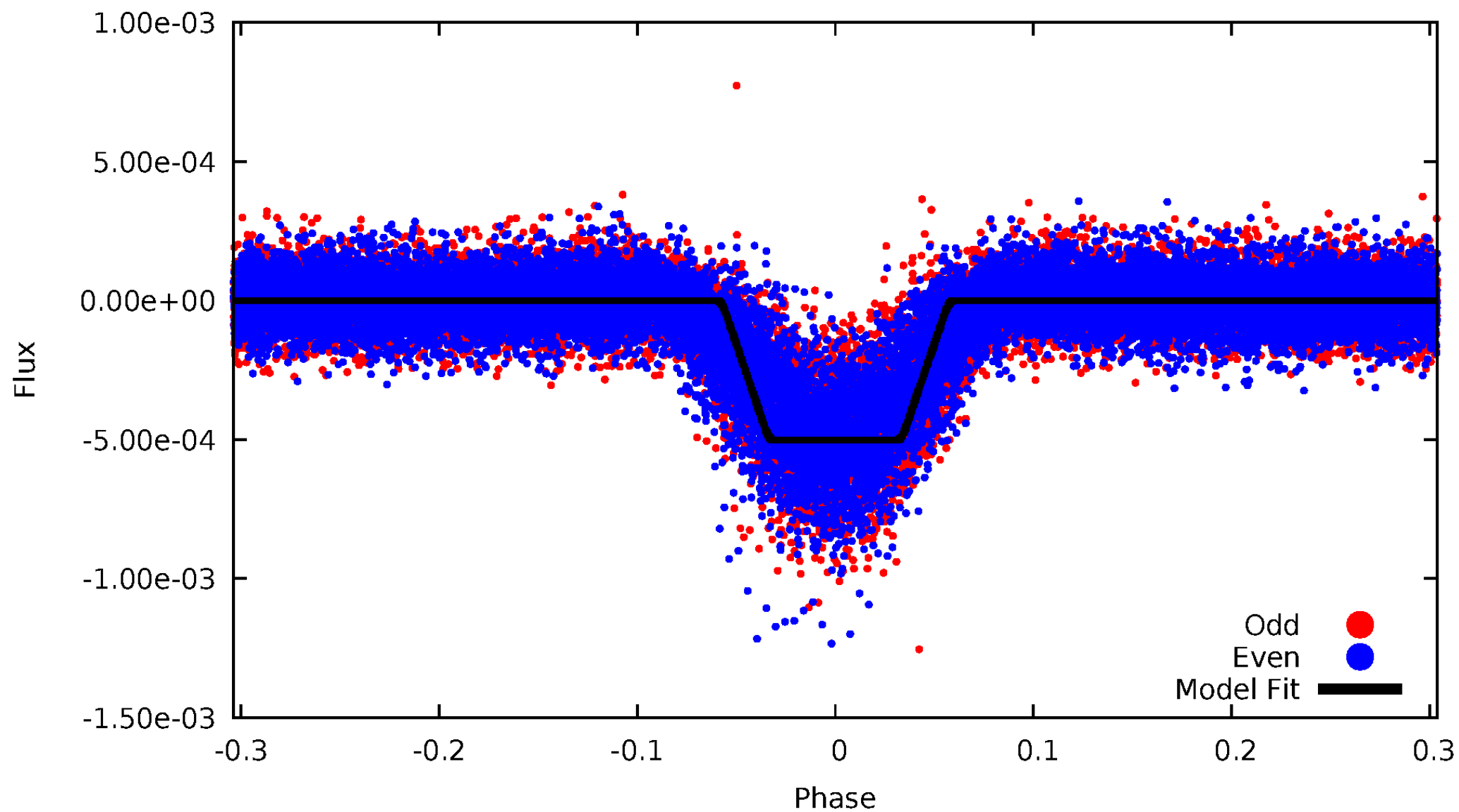
# DV Odd/Even

TCE 008328376-01

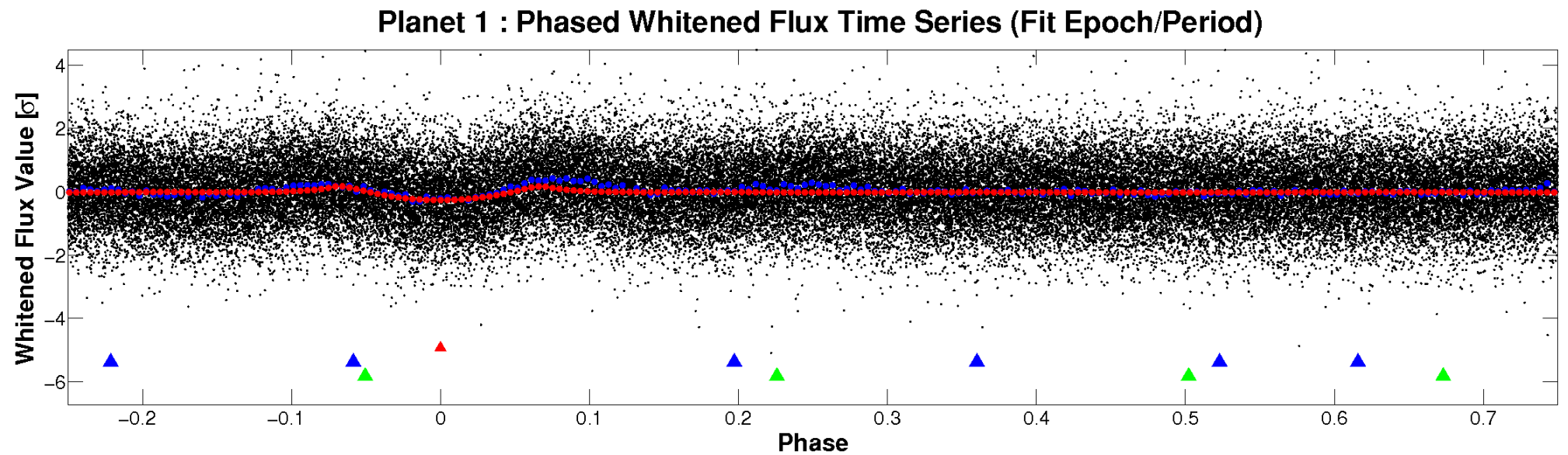
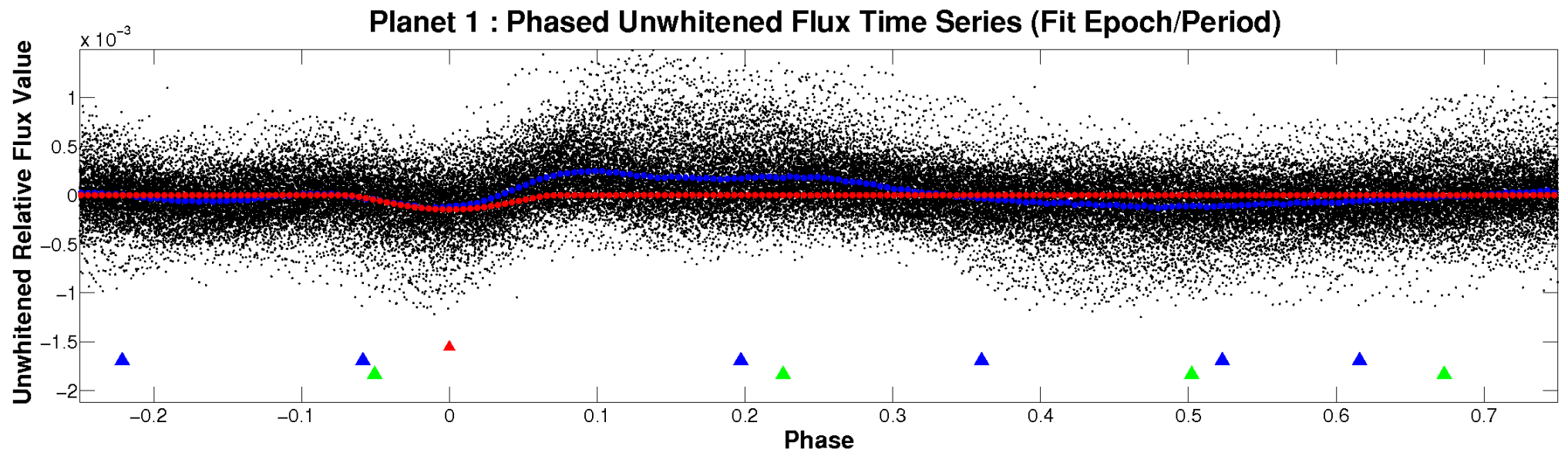


# ALT Odd/Even

TCE 008328376-01

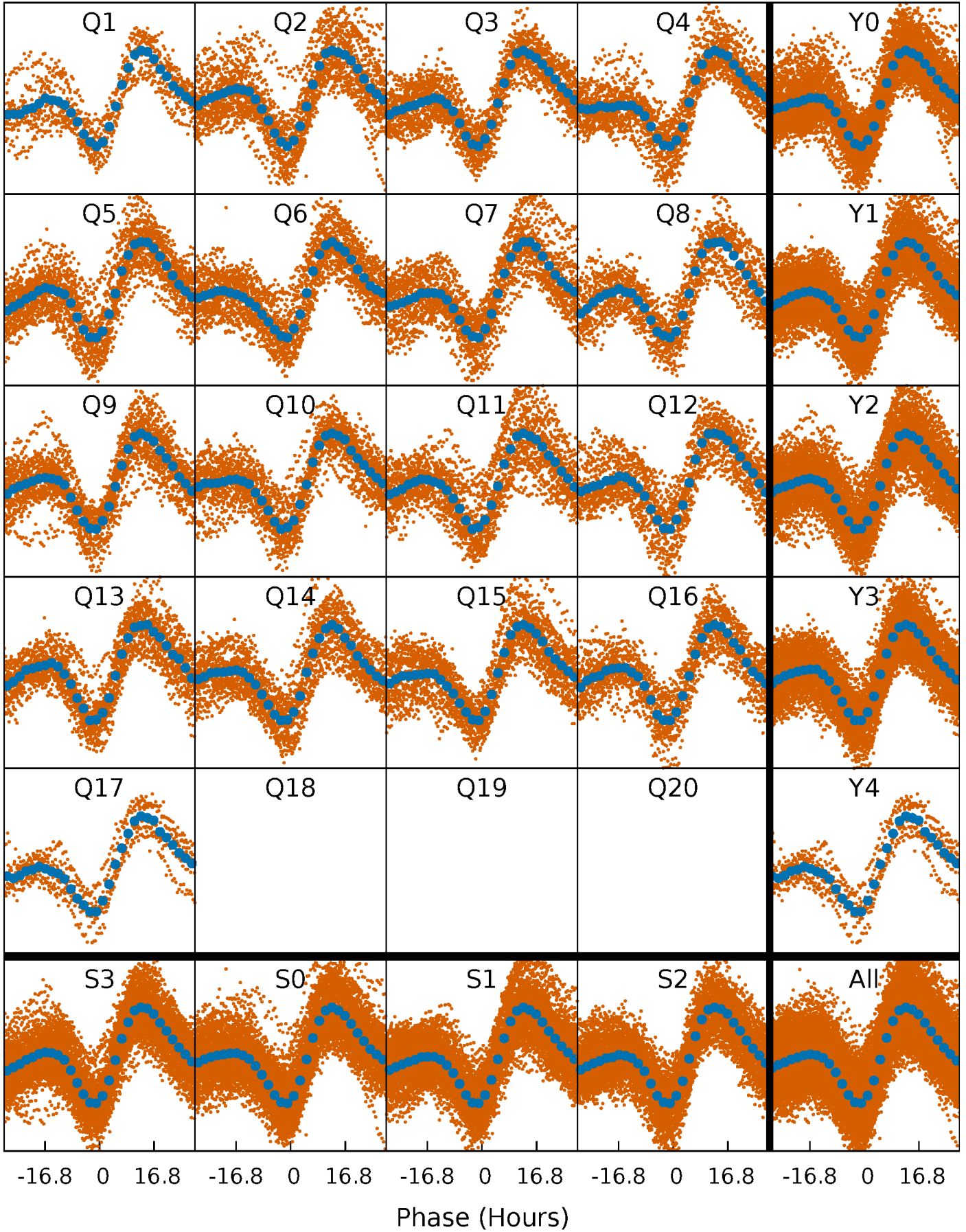


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

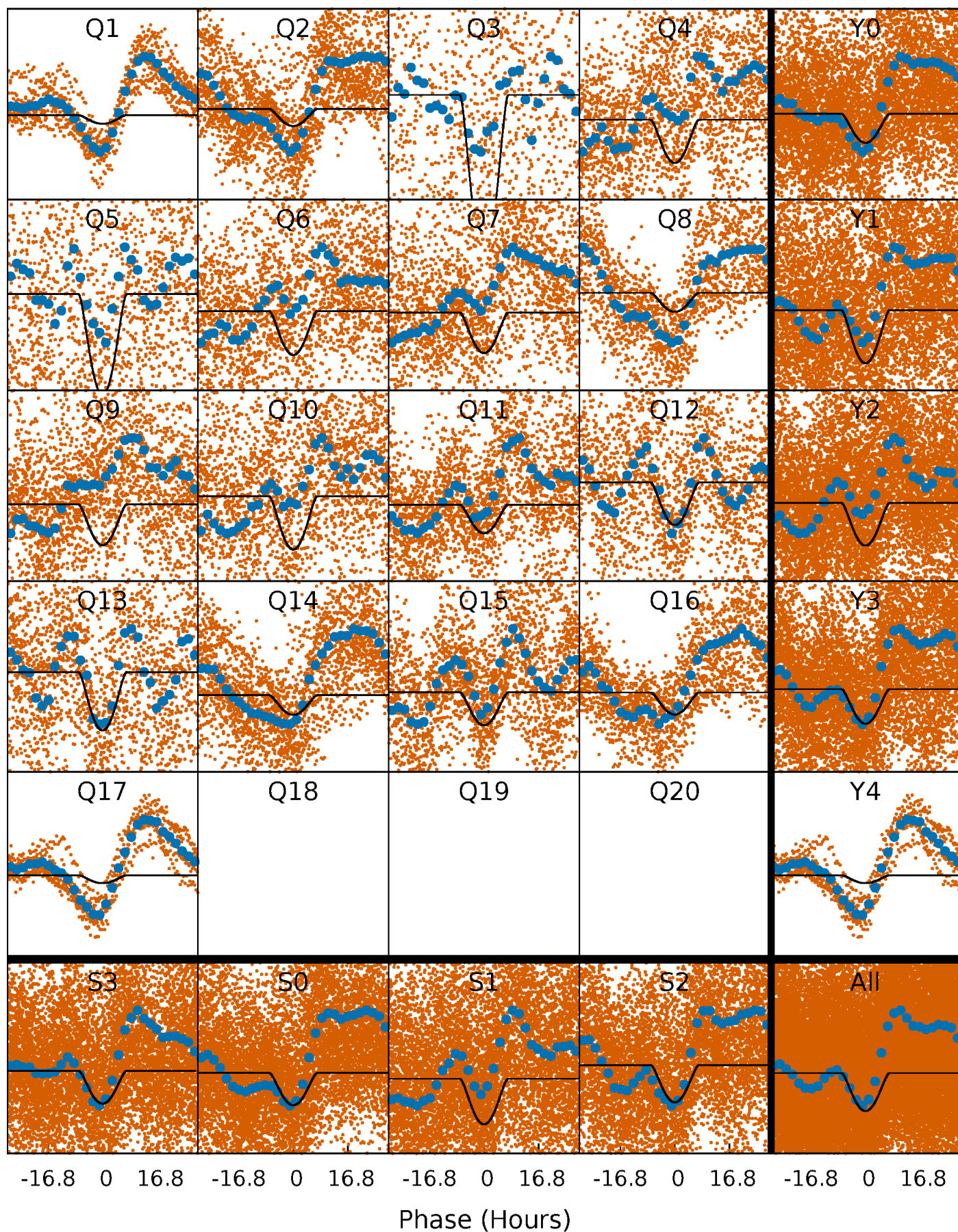
TCE 008328376-01   P= 4.346005 Days    $T_0=132.508505$  (BKJD)





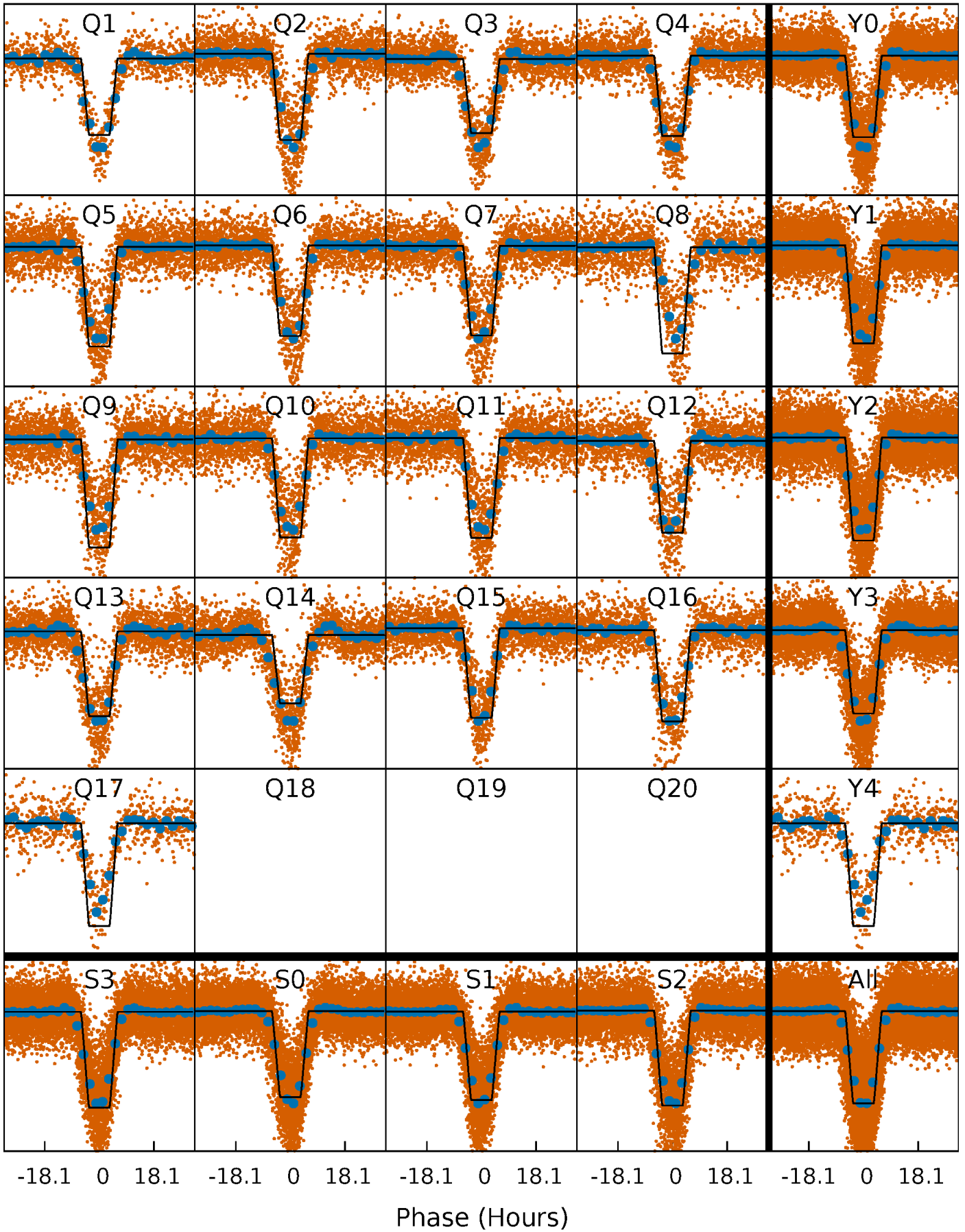
# DV Quarter-Phased Transit Curves

TCE 008328376-01 P= 4.346005 Days  $T_0=132.508505$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

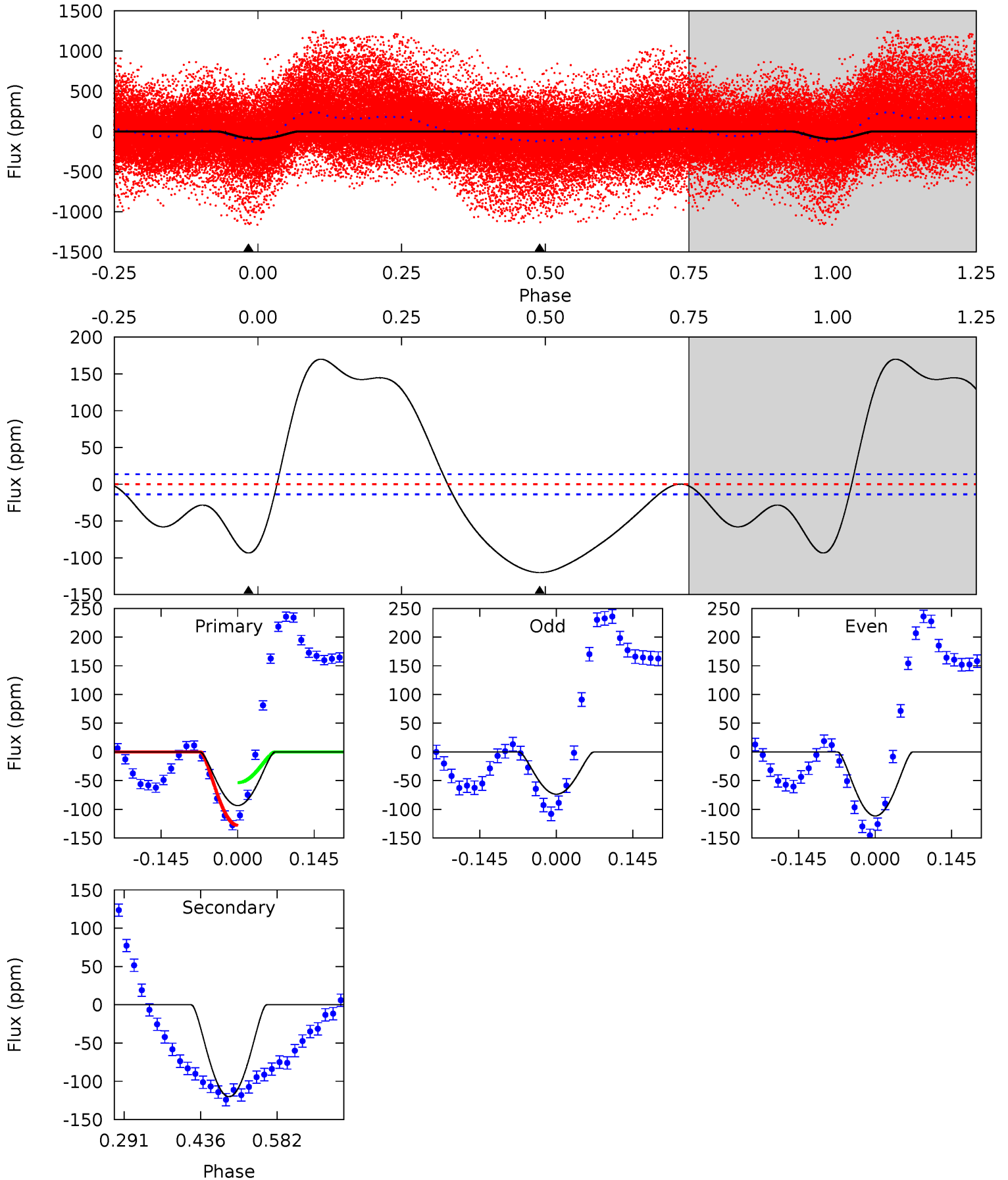
TCE 008328376-01   P= 4.345922 Days    $T_0=132.524274$  (BKJD)



# DV Model-Shift Uniqueness Test

008328376-01, P = 4.346005 Days, E = 128.162500 Days

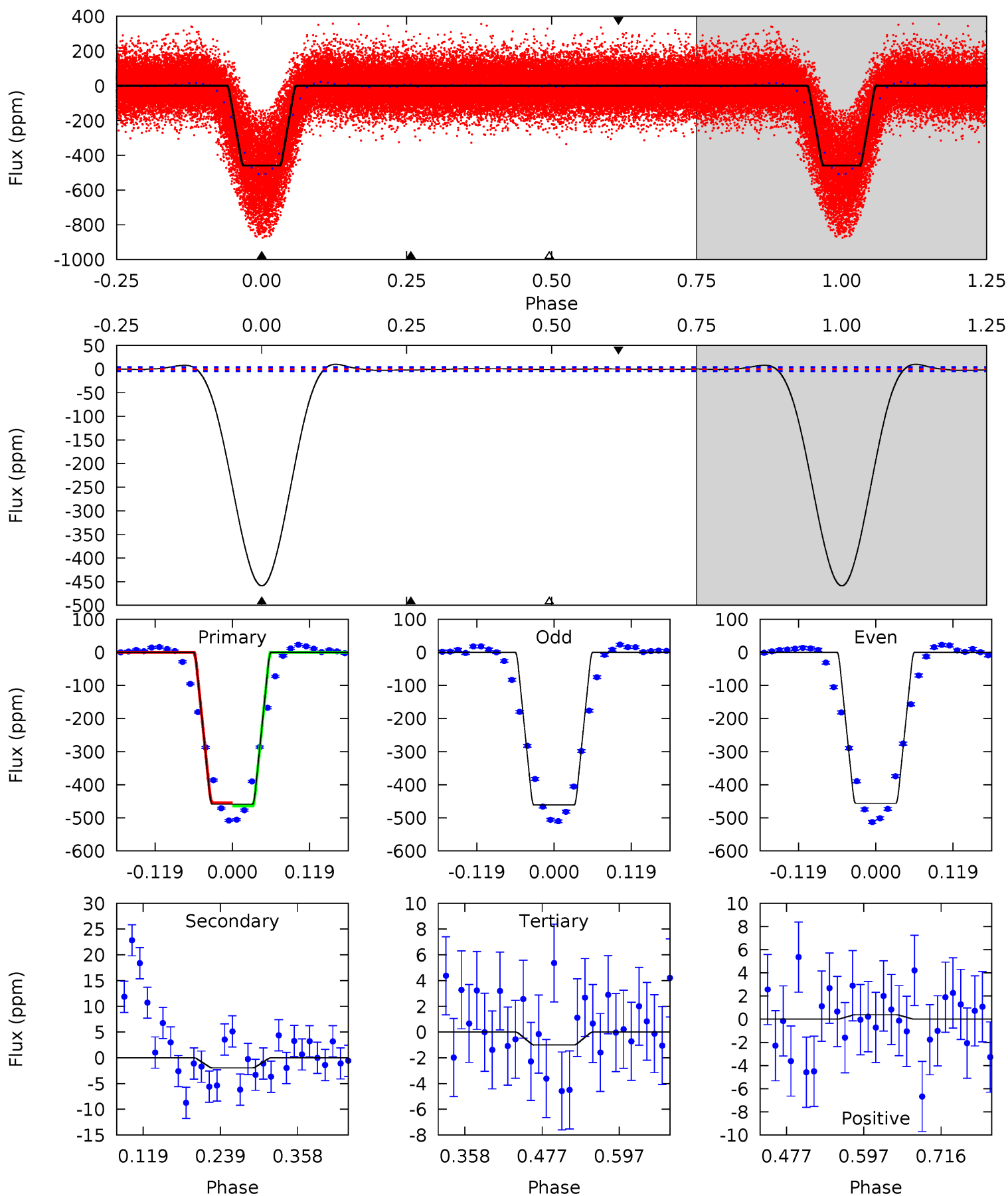
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.7	39.4	0	0	4.49	1.46	25.5	30.7	30.7	39.4	39.4	6.27	1.19	0.59	12.0



# Alt Model-Shift Uniqueness Test

008328376-01, P = 4.345922 Days, E = 128.178352 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
483.9	2.07	1.05	0.41	4.53	1.56	2.71	482.8	483.5	1.02	1.66	2.73	1.03	0.02	5.25





### Stellar Parameters For KIC 008328376

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6609^{+159}_{-199}$	$3.770^{+0.304}_{-0.095}$	$-0.180^{+0.300}_{-0.250}$	$2.617^{+0.480}_{-0.960}$	$1.472^{+0.239}_{-0.293}$	$0.116^{+0.230}_{-0.035}$
	+2%/-3%	+8%/-3%	+167%/-139%	+18%/-37%	+16%/-20%	+199%/-30%
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 008328376-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-120 \pm 3$	$5.95^{+3.43}_{-2.93}$	$2660^{+158}_{-232}$	$4701^{+1780}_{-718}$	$6.506^{+19.757}_{-3.858}$
Alt.	$-2 \pm 1$	$5.86^{+3.58}_{-2.78}$	$2653^{+161}_{-258}$	$-2685^{+5088}_{-193}$	$0.100^{+0.301}_{-0.067}$

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

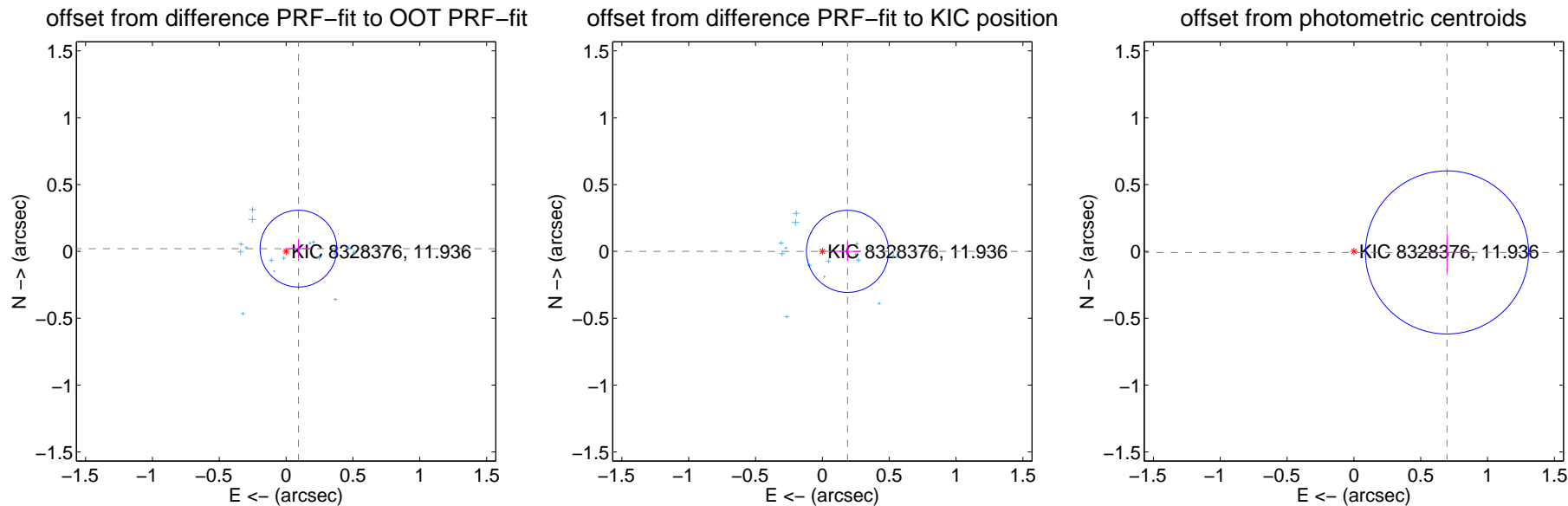
## DV Centroid Data

Supplemental centroid analysis for 008328376-01. **Kepler magnitude: 11.94.** Transit SNR 17.02

There are 17 quarters with good PRF difference image offsets

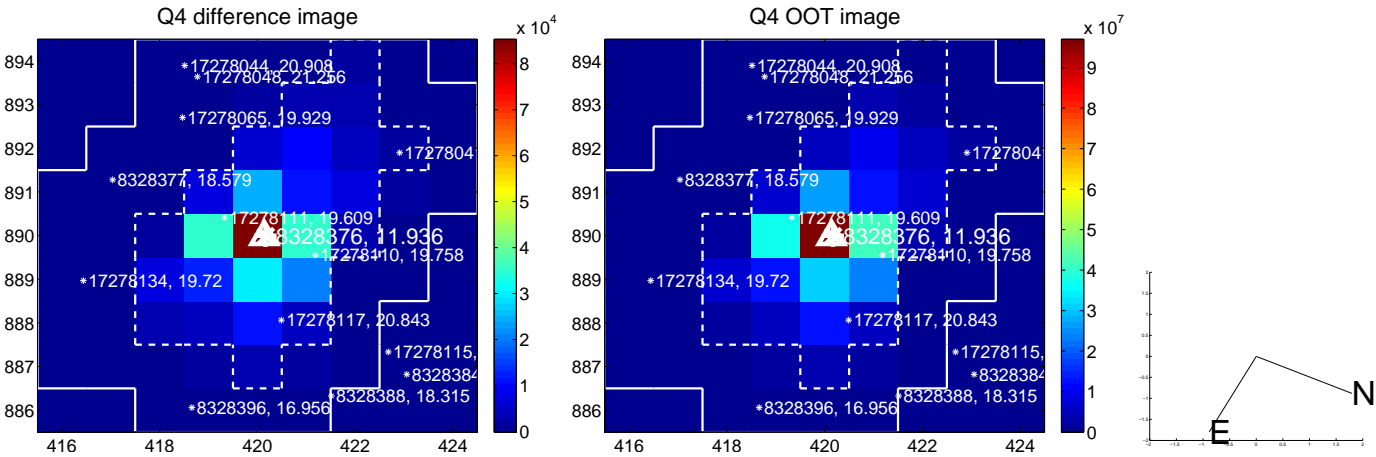
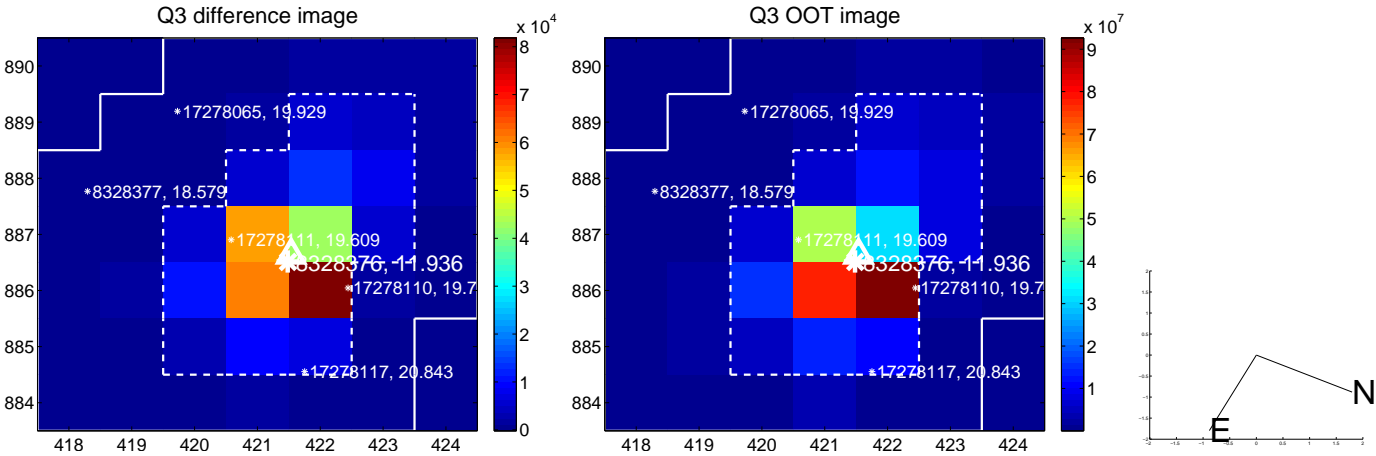
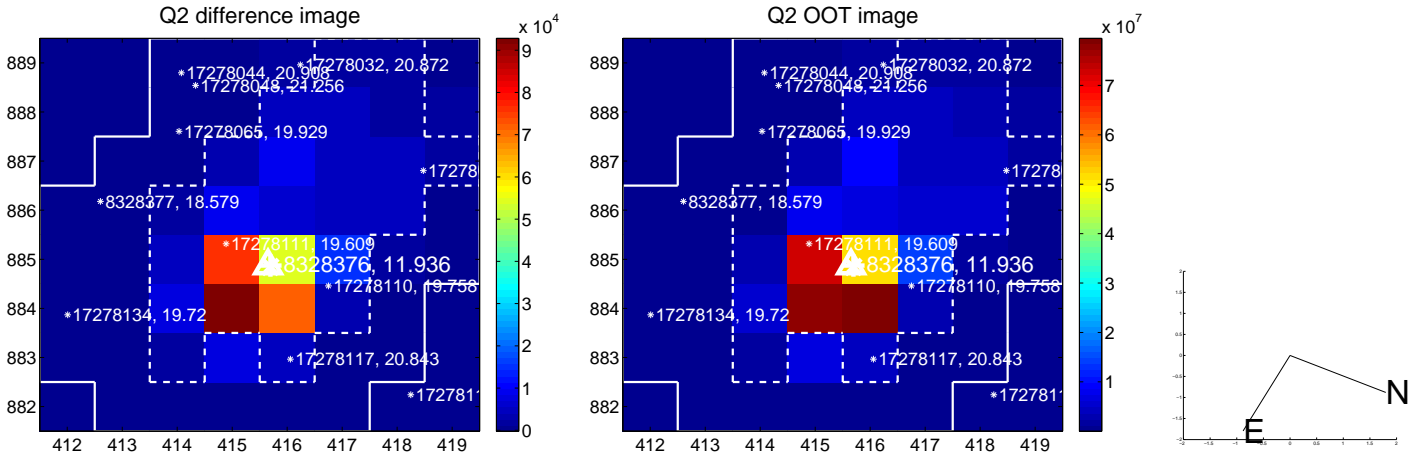
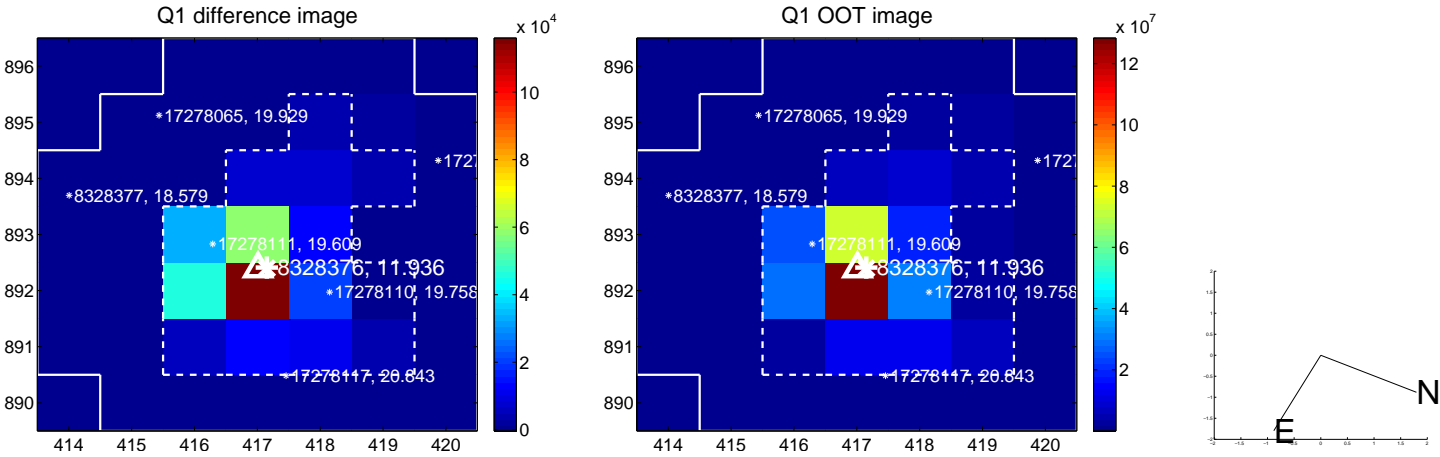
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.095 \pm 0.096$	0.99	$-0.092 \pm 0.097$	$0.021 \pm 0.070$
PRF-fit source offset from KIC position	$0.188 \pm 0.102$	1.83	$-0.188 \pm 0.102$	$0.001 \pm 0.070$
photometric centroid source offset	<b><math>0.70 \pm 0.20</math></b>	<b>3.43</b>	$-0.70 \pm 0.20$	$-0.01 \pm 0.14$

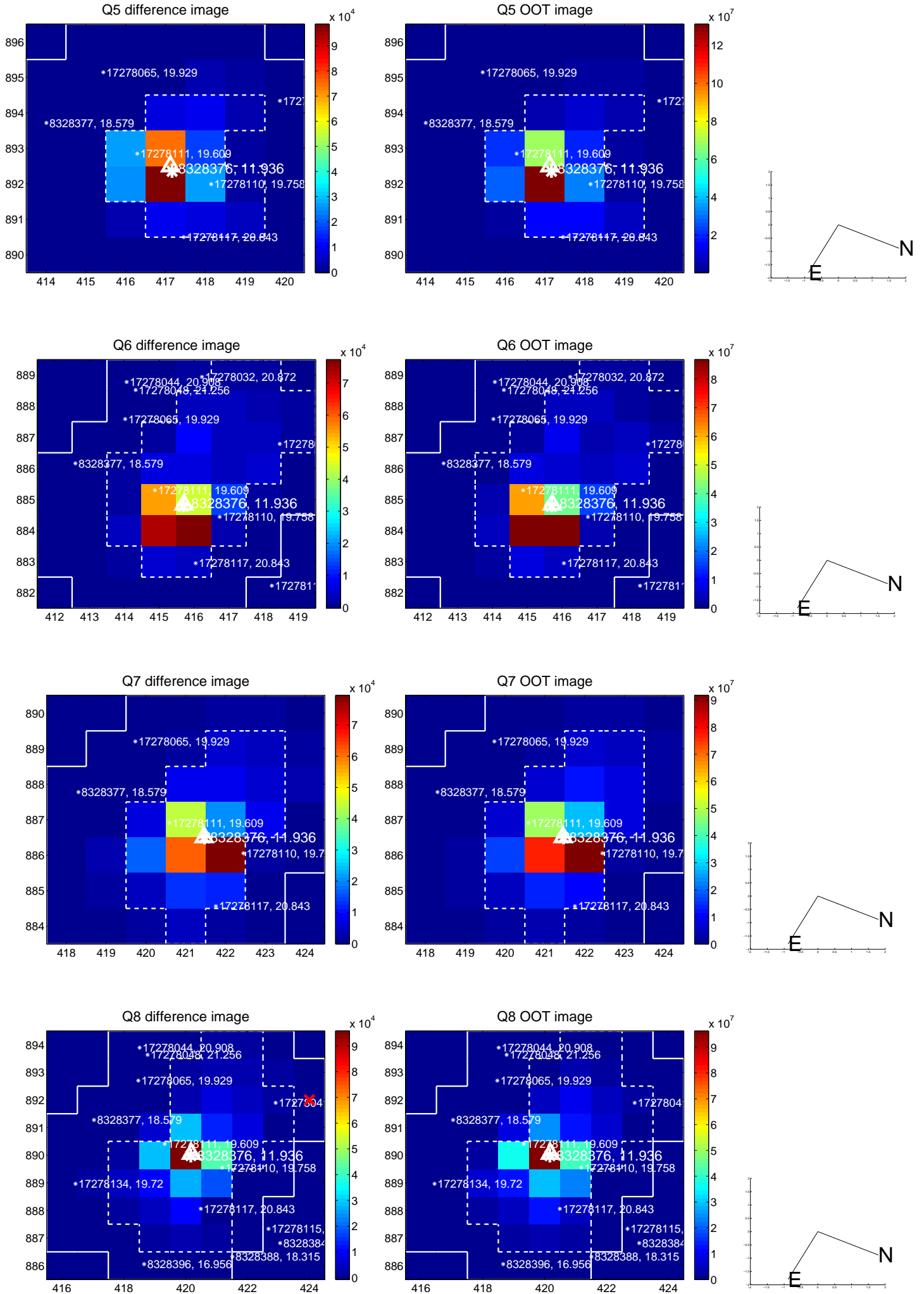


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

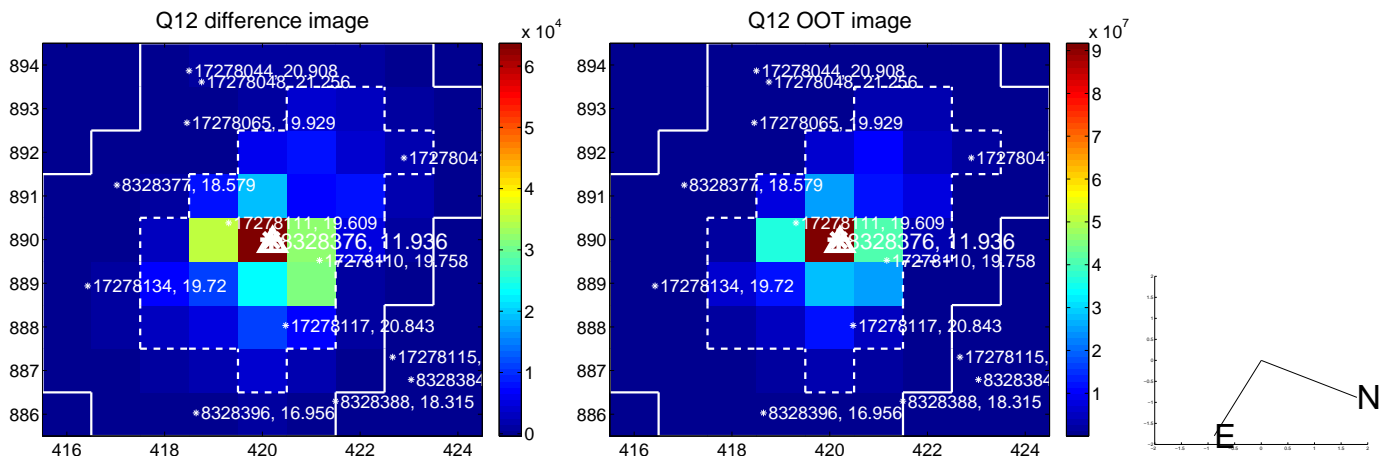
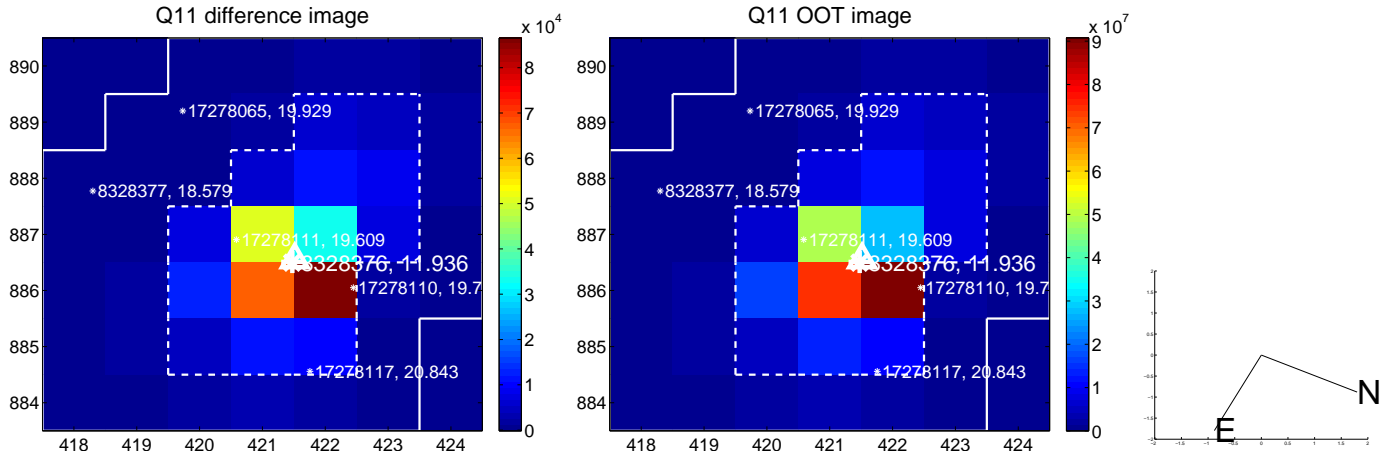
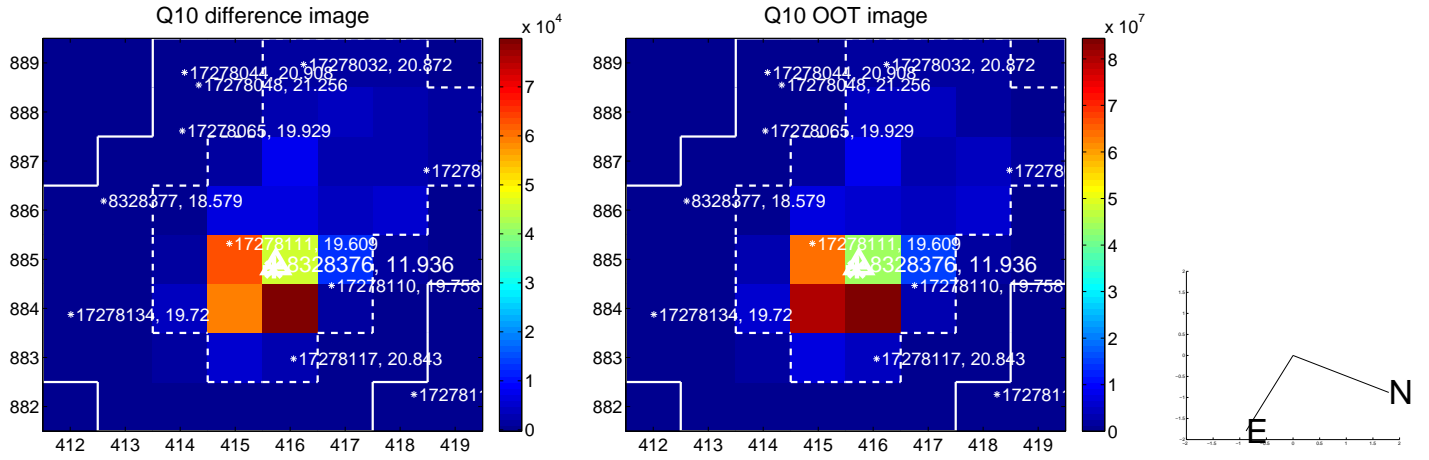
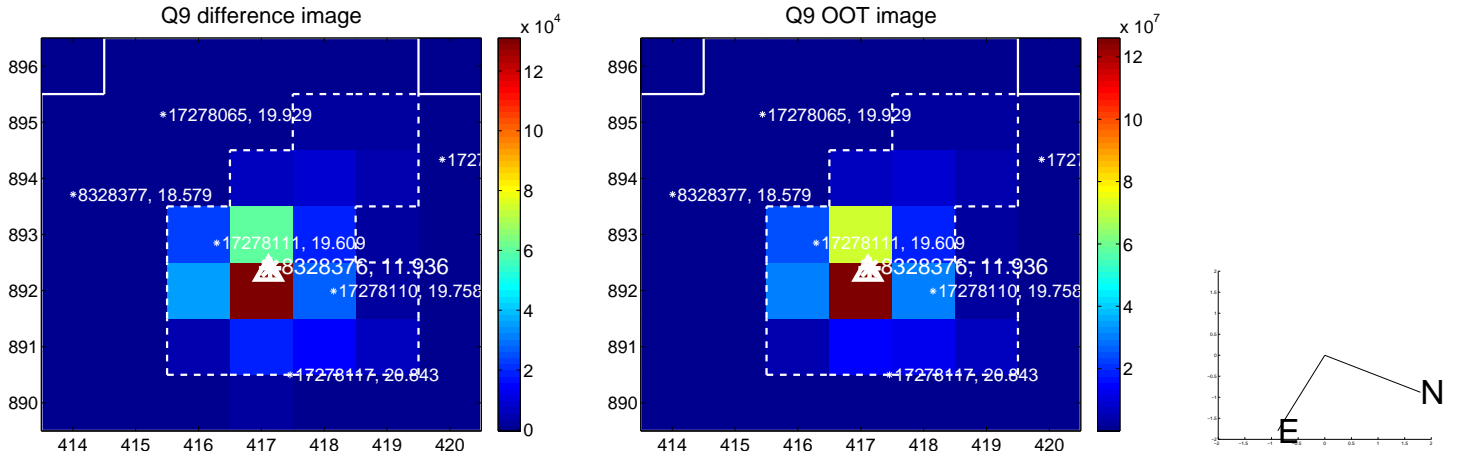


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

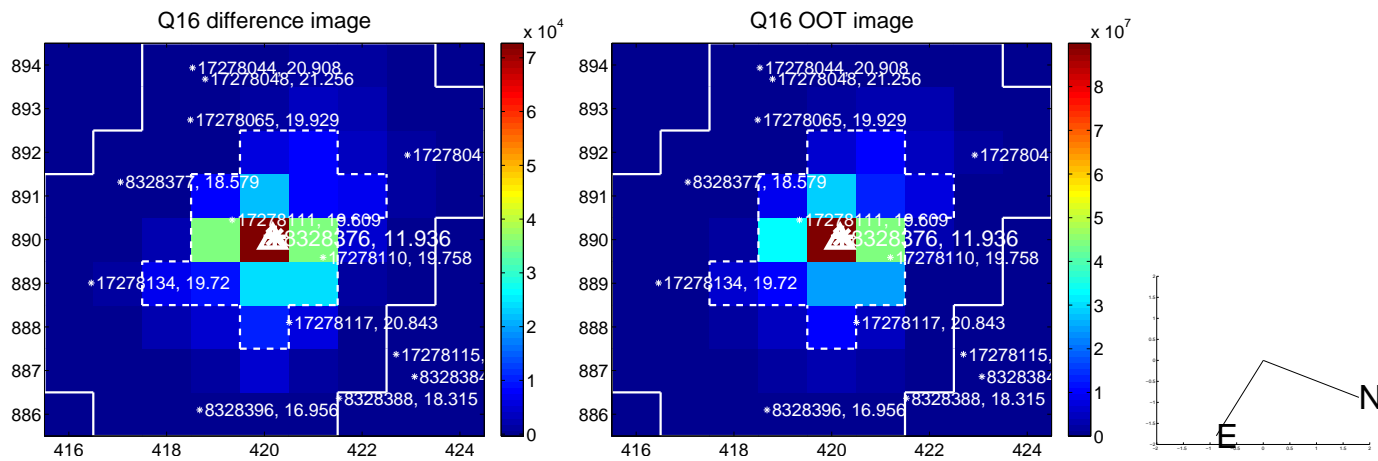
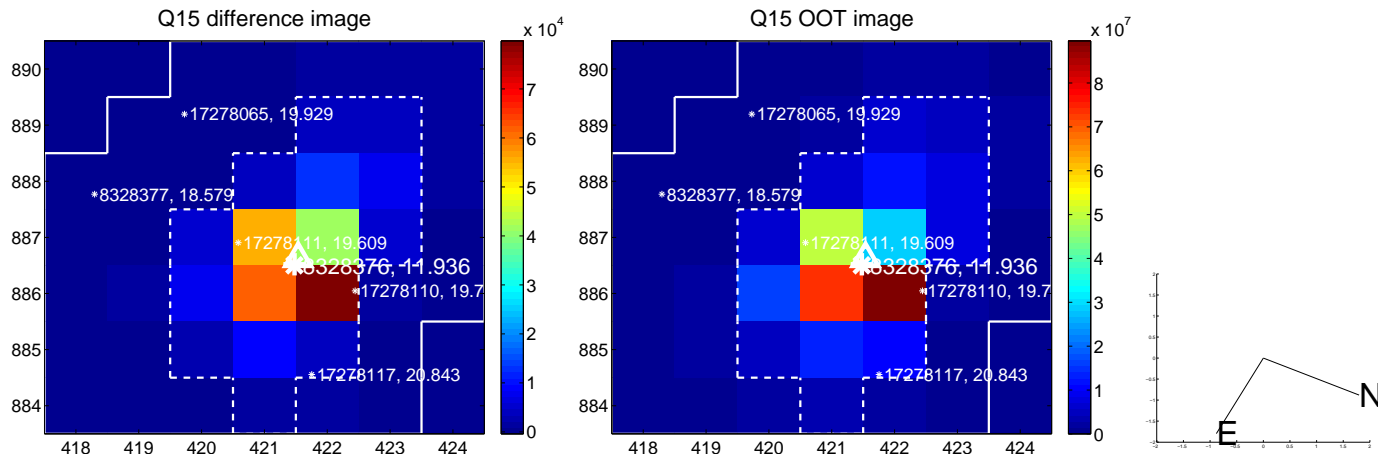
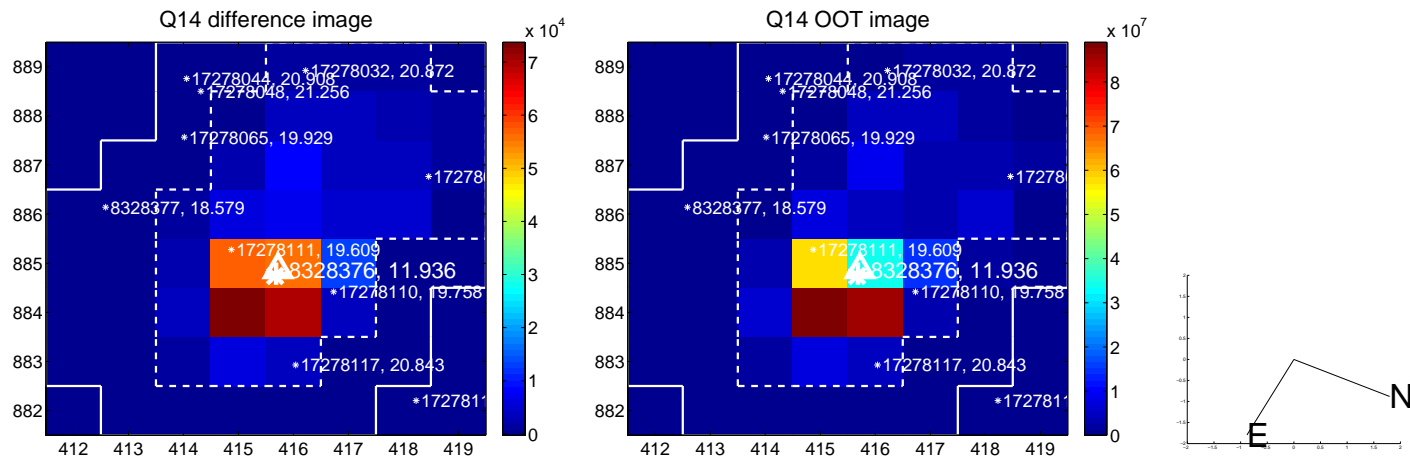
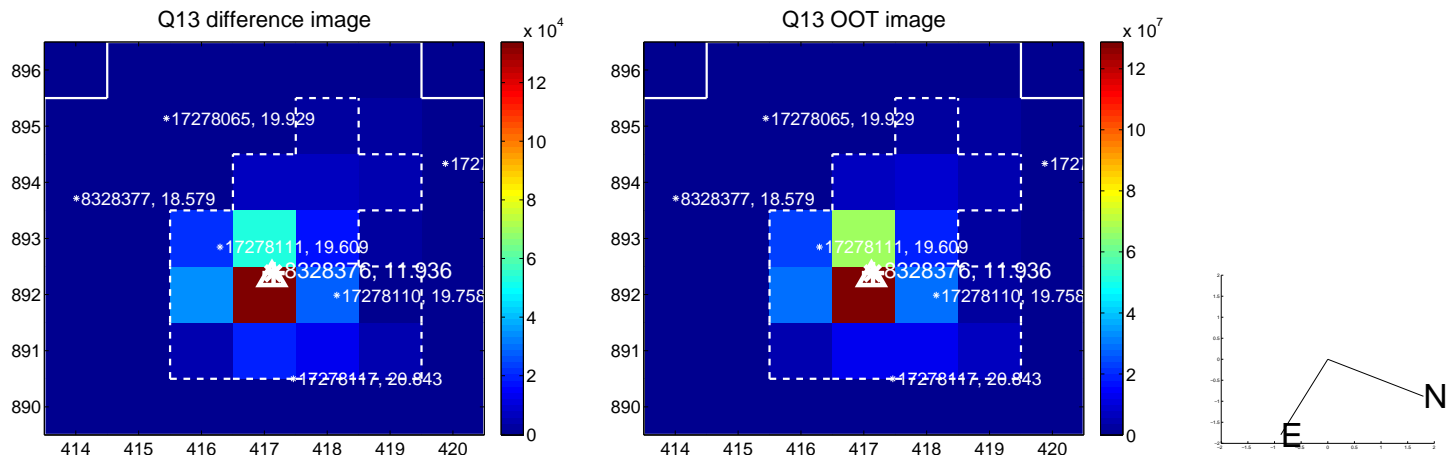




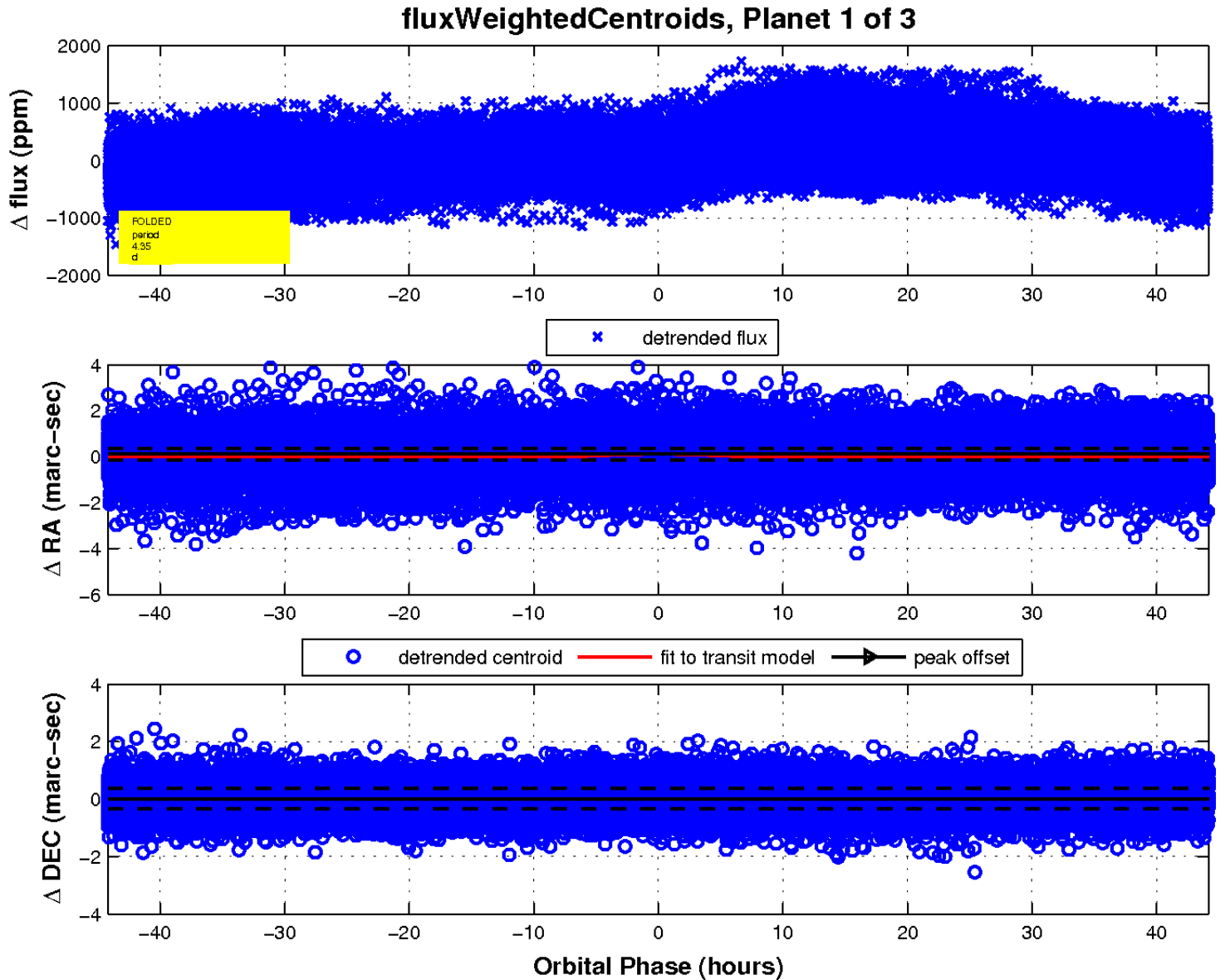
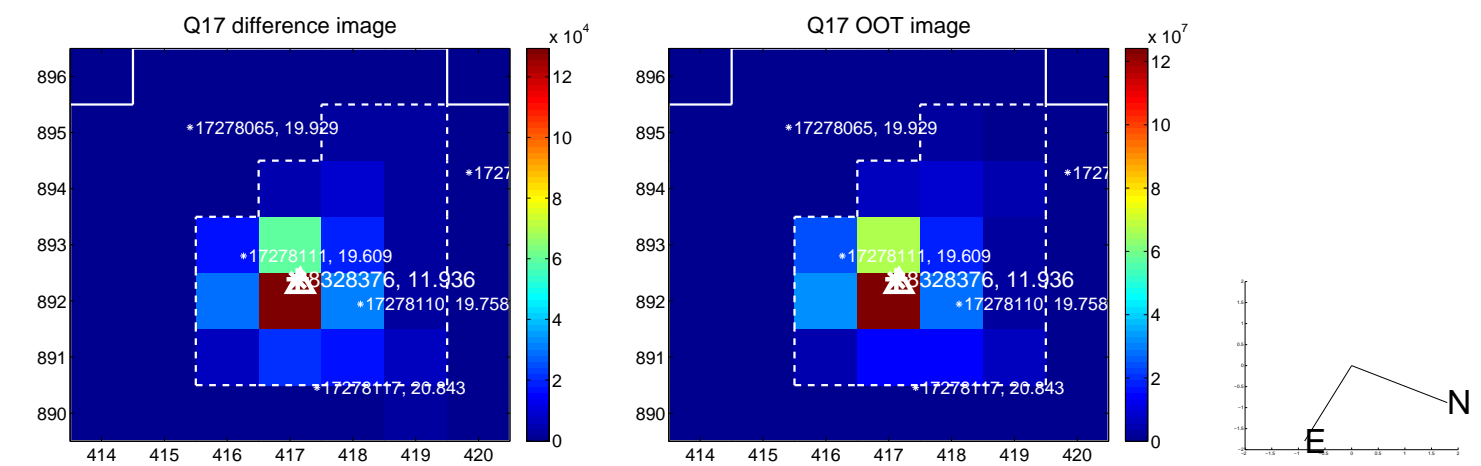
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

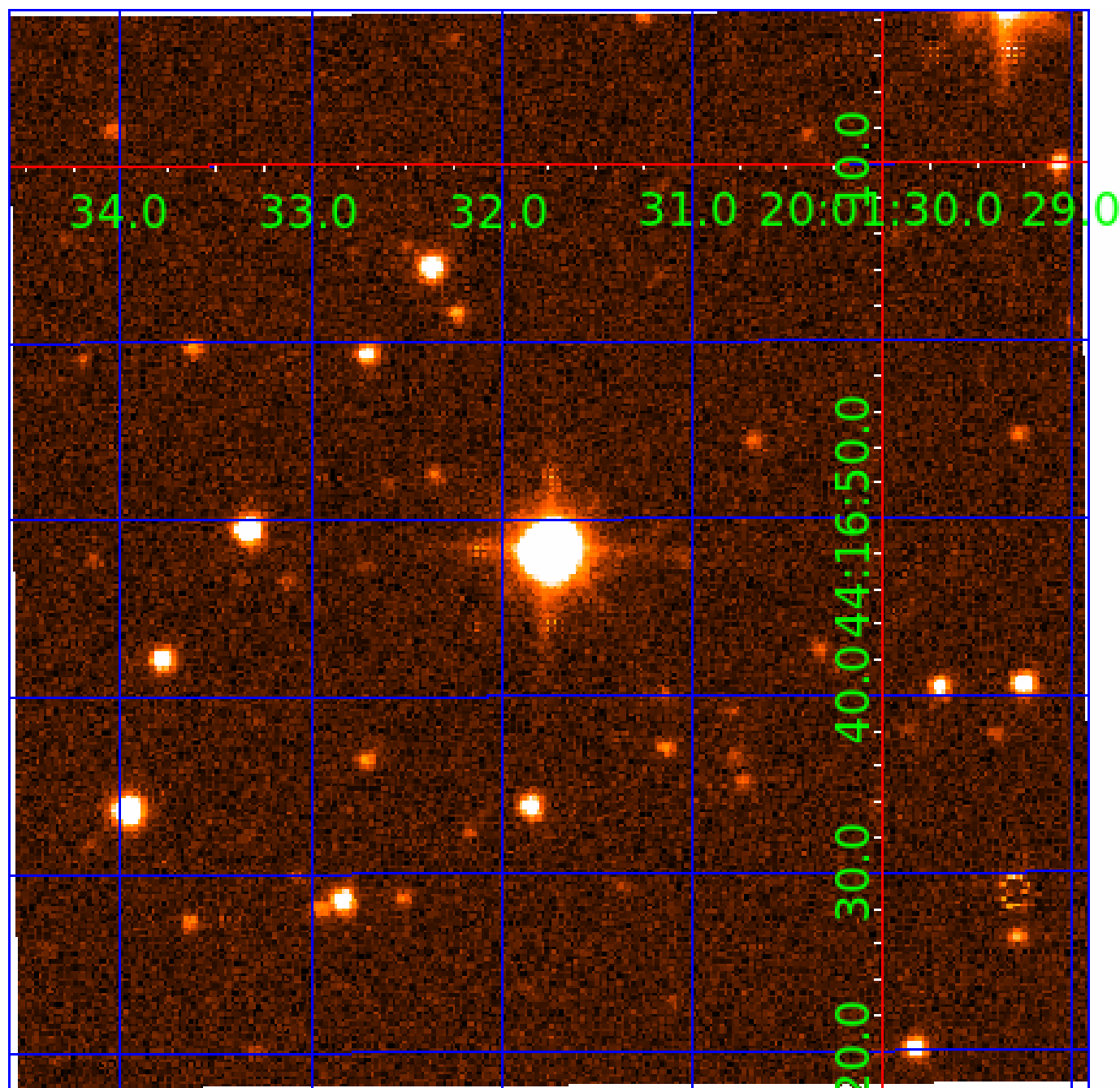


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008328376

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008328376-01	OBS	No	4.346005	132.508505	147.0	14.730	15.7	17.0	2.62	6609	6.30	3330.58
008328376-02	OBS	No	219.119395	317.313432	330.0	3.033	8.6	8.6	2.62	6609	5.91	17.88
008328376-03	OBS	No	366.265535	404.886055	379.0	7.645	7.3	7.7	2.62	6609	7.33	9.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008328376-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008328376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008328376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

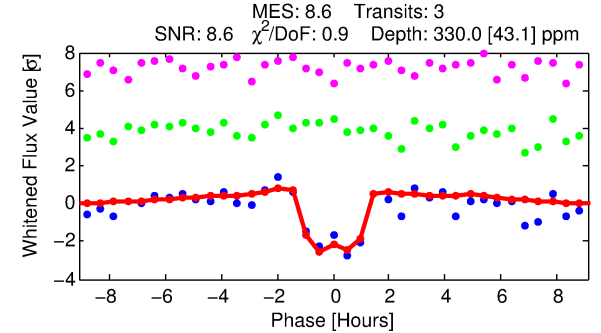
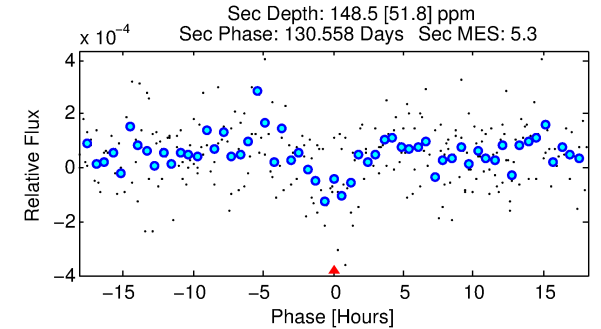
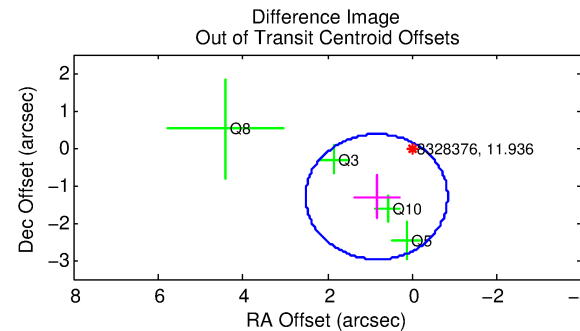
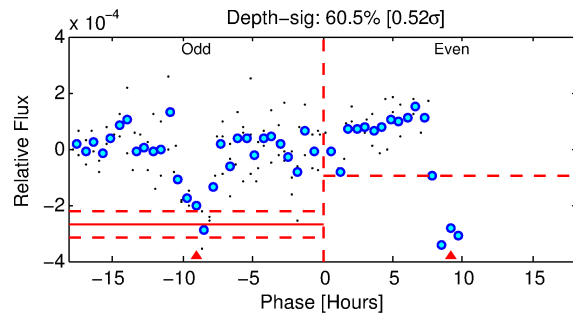
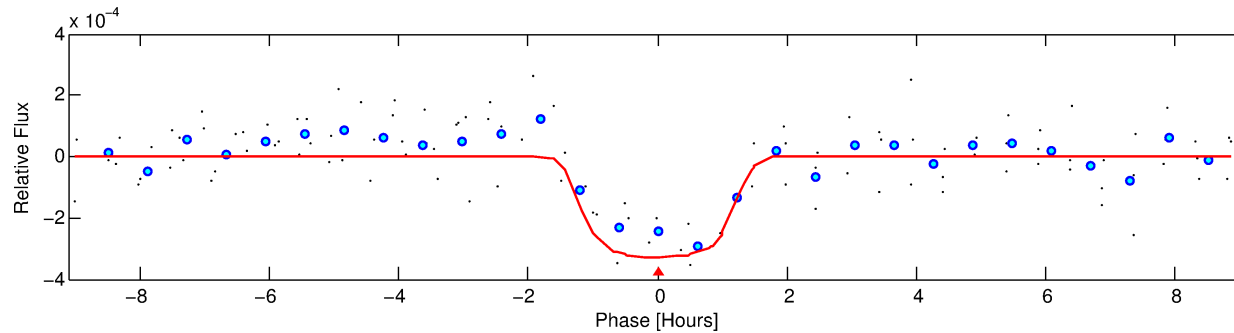
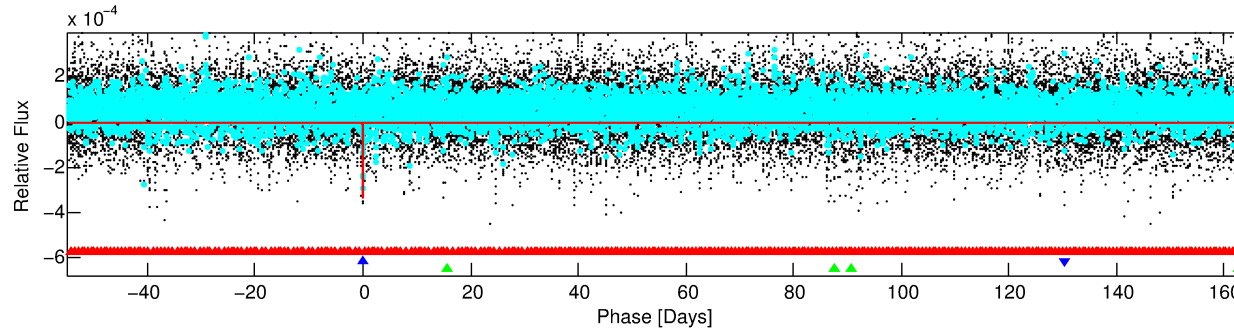
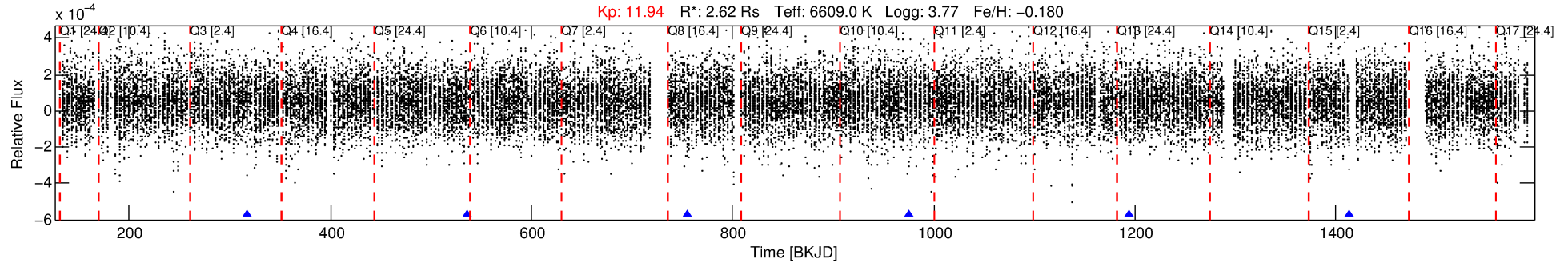
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008328376-02

No Significant Match Found

# DV One-Page Summary

KIC: 8328376 Candidate: 2 of 3 Period: 219.119 d



## DV Fit Results:

Period = 219.11939 [0.00304] d  
Epoch = 317.3134 [0.0051] BKJD  
Rp/R\* = 0.0207 [0.0023]  
a/R\* = 199.87 [89.32]  
b = 0.95 [0.04]  
Seff = 17.88 [9.66]  
Teq = 524 [71] K  
Rp = 5.91 [2.27] Re  
a = 0.8091 [0.2735] AU  
Ag = 1533.18 [1029.05] [1.49 $\sigma$ ]  
Teffp = 5073 [549] K [8.22 $\sigma$ ]

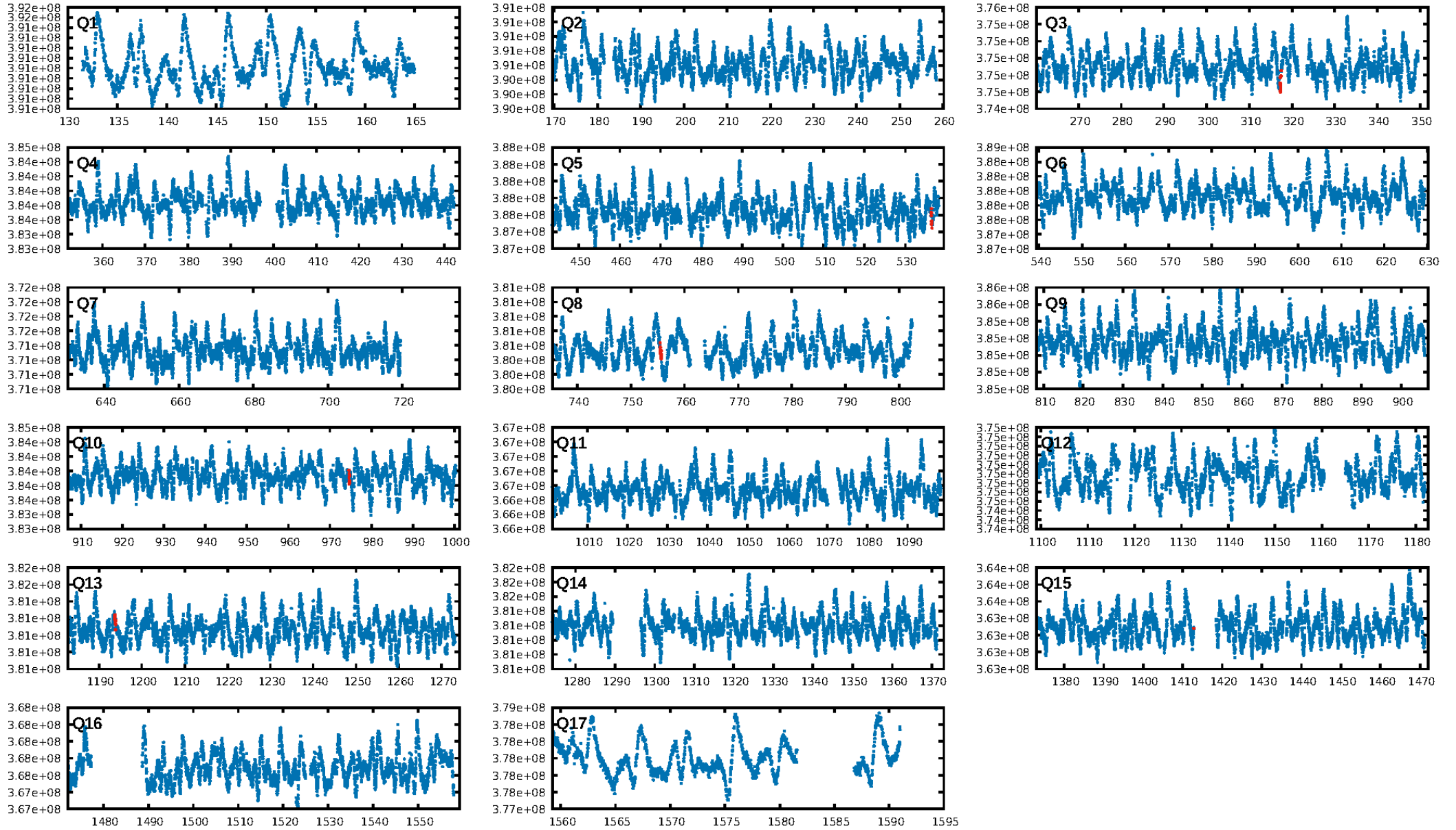
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [342.75 $\sigma$ ]  
LongPeriod-sig: 100.0% [429.37 $\sigma$ ]  
ModelChiSquare2-sig: 2.0%  
ModelChiSquareGof-sig: 96.5%  
Bootstrap-pfa: 1.39e-13  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.5369**  
Centroid-sig: 27.7%  
Centroid-so: 0.723 arcsec [0.94 $\sigma$ ]  
OotOffset-rm: 1.553 arcsec [2.78 $\sigma$ ]  
KicOffset-rm: 1.501 arcsec [2.68 $\sigma$ ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.75 [3/4]

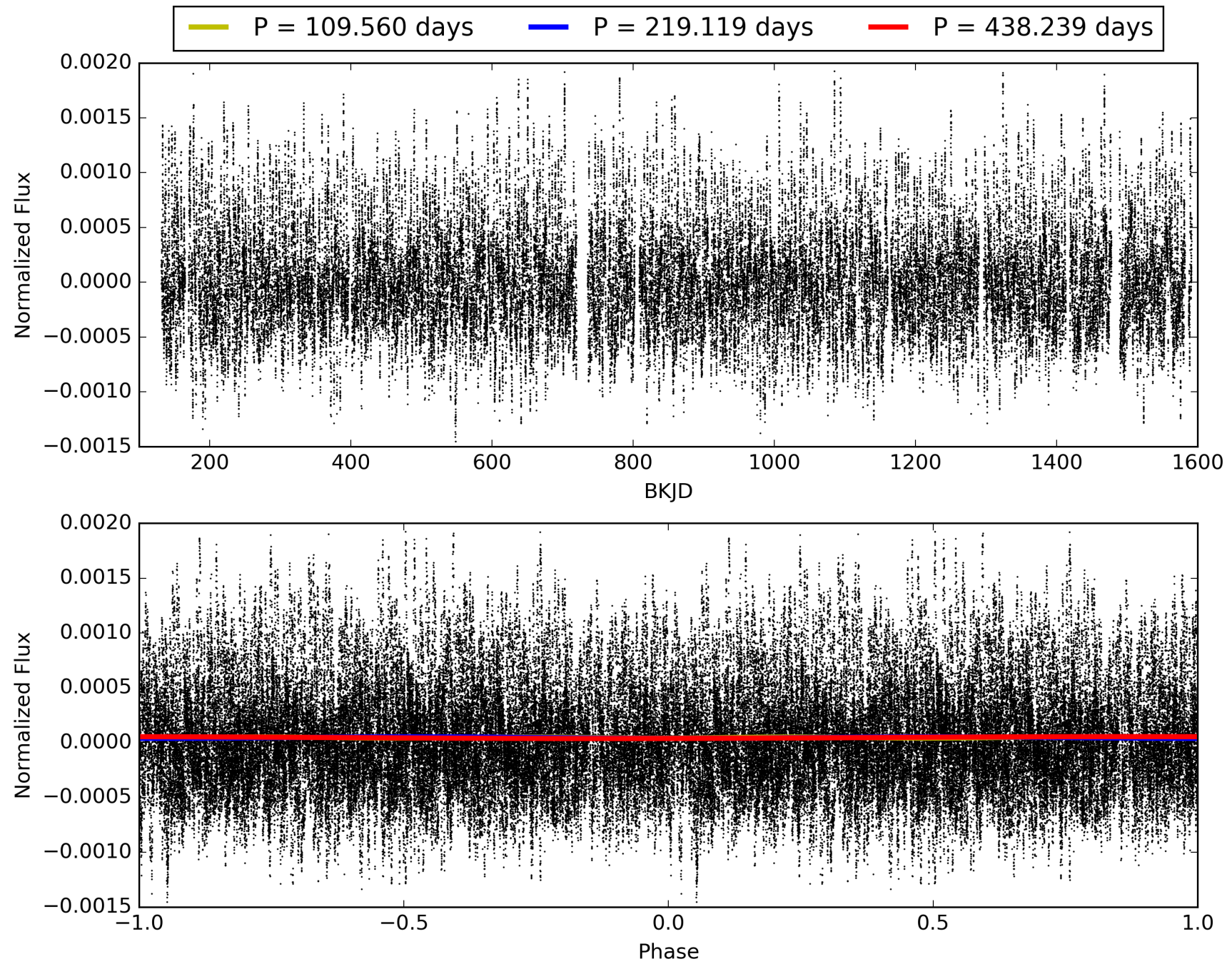
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:51 Z

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

# TCE 008328376-02, PDC Light Curves

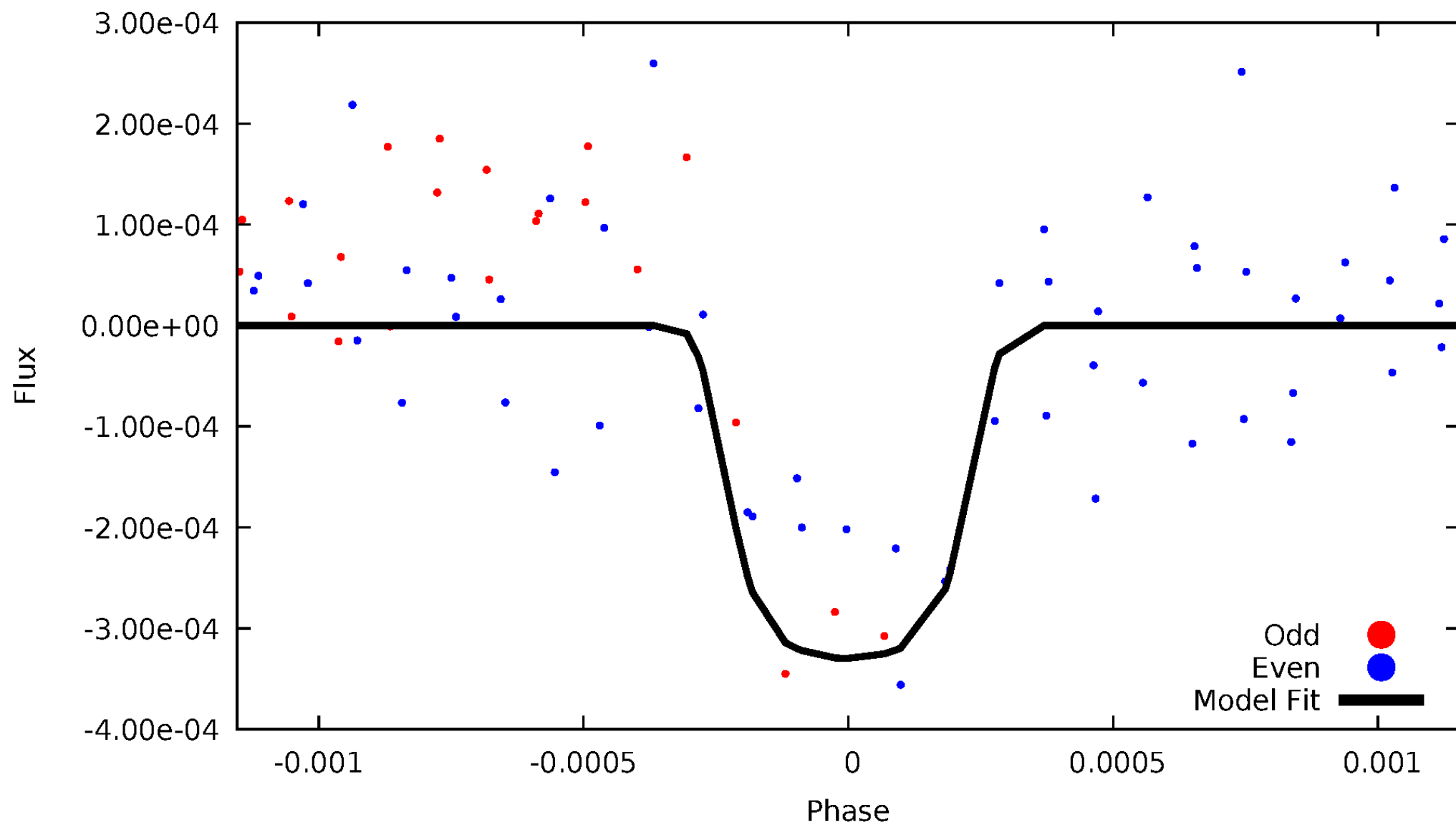


# TCE 008328376-02



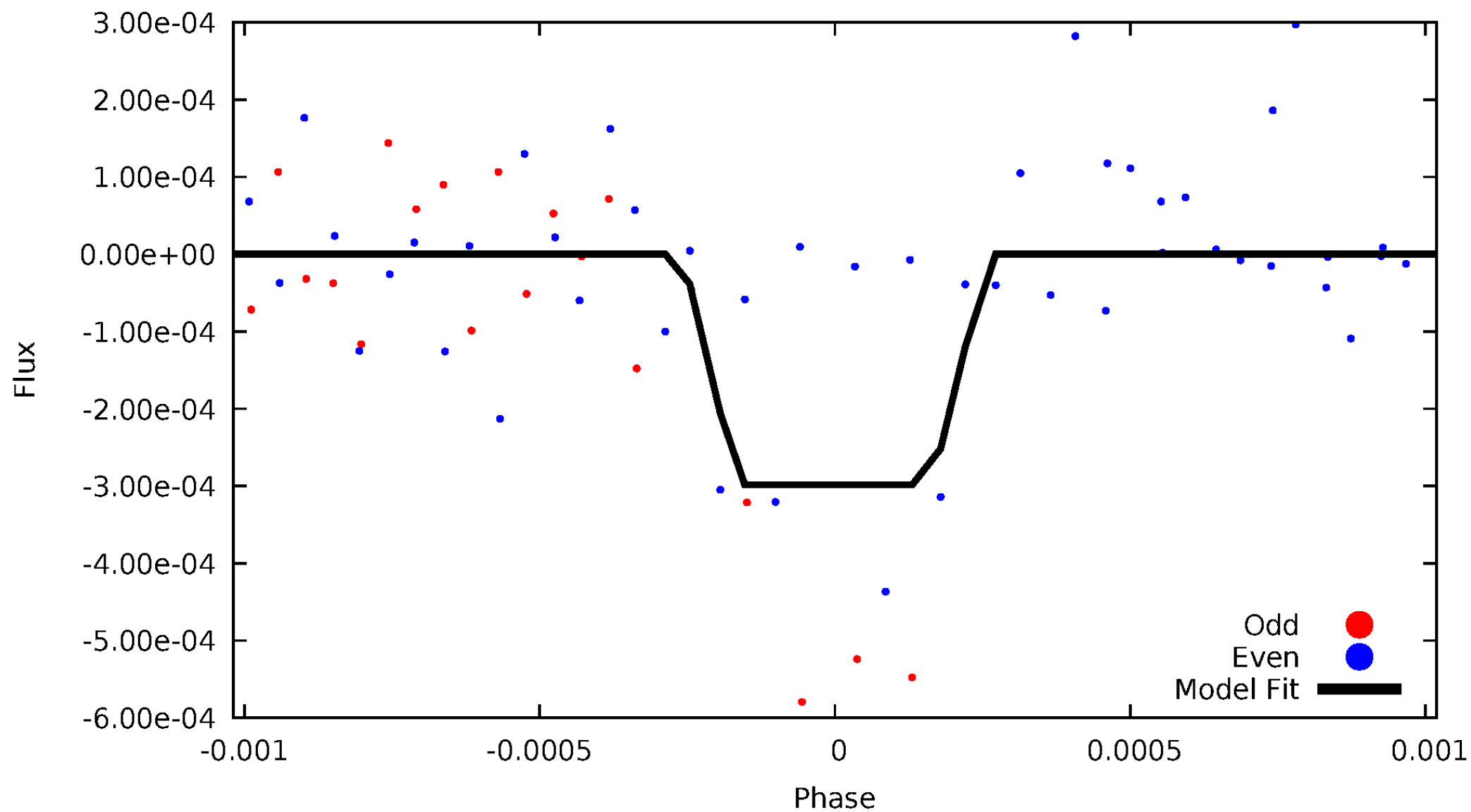
# DV Odd/Even

TCE 008328376-02



# ALT Odd/Even

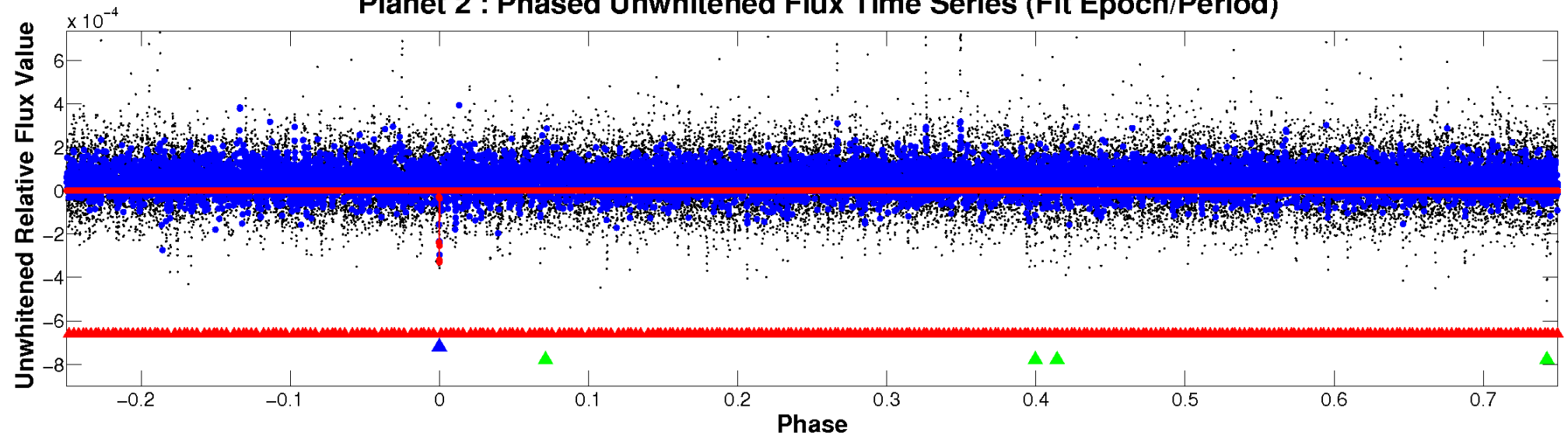
TCE 008328376-02



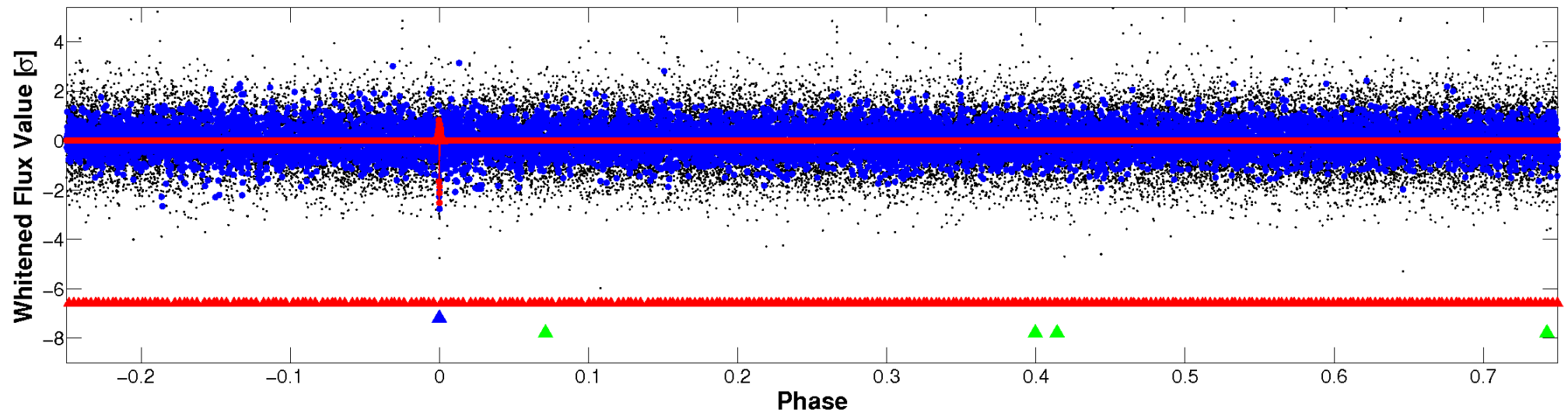


# Non-Whitened Vs. Whitened Light Curve

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

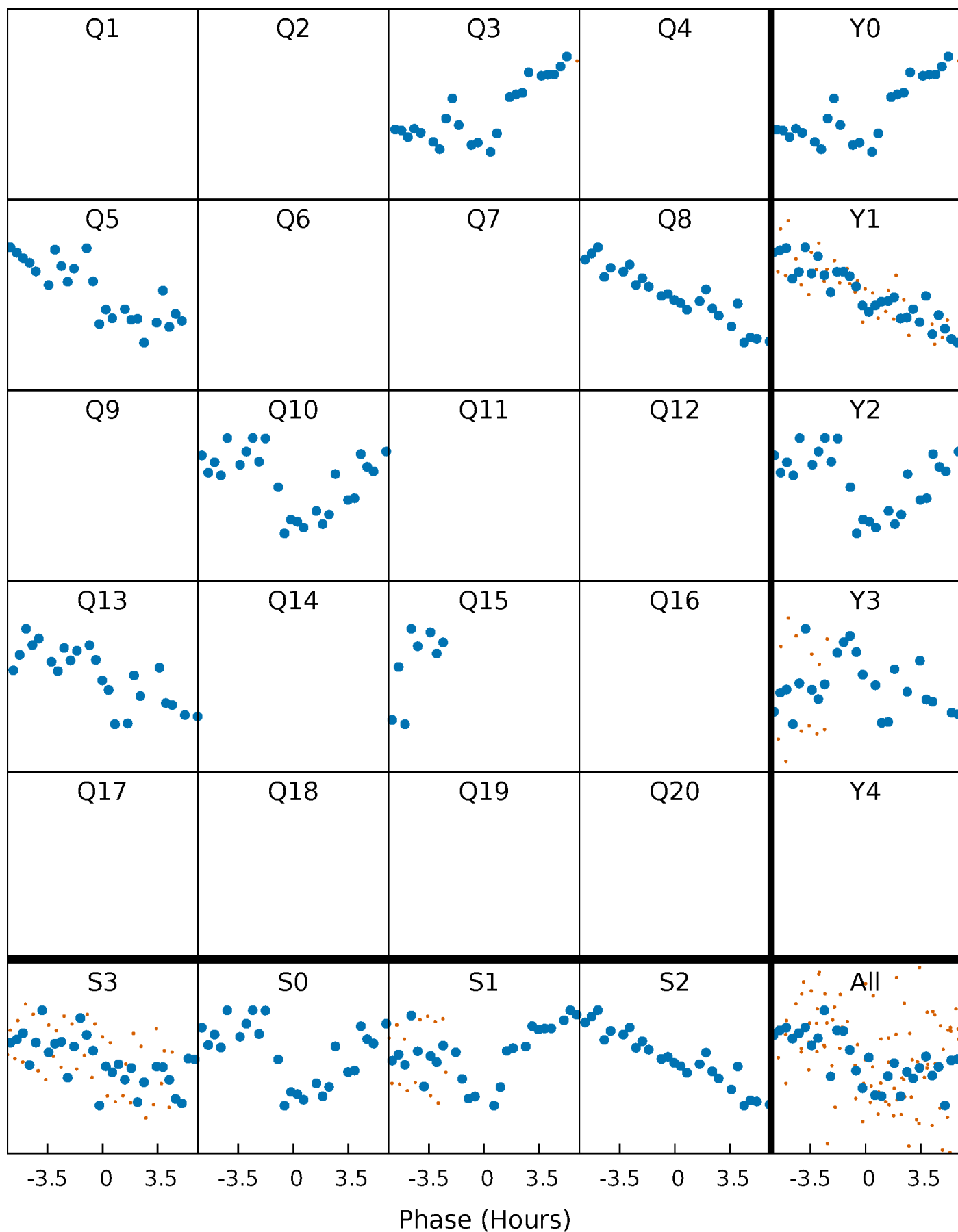


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



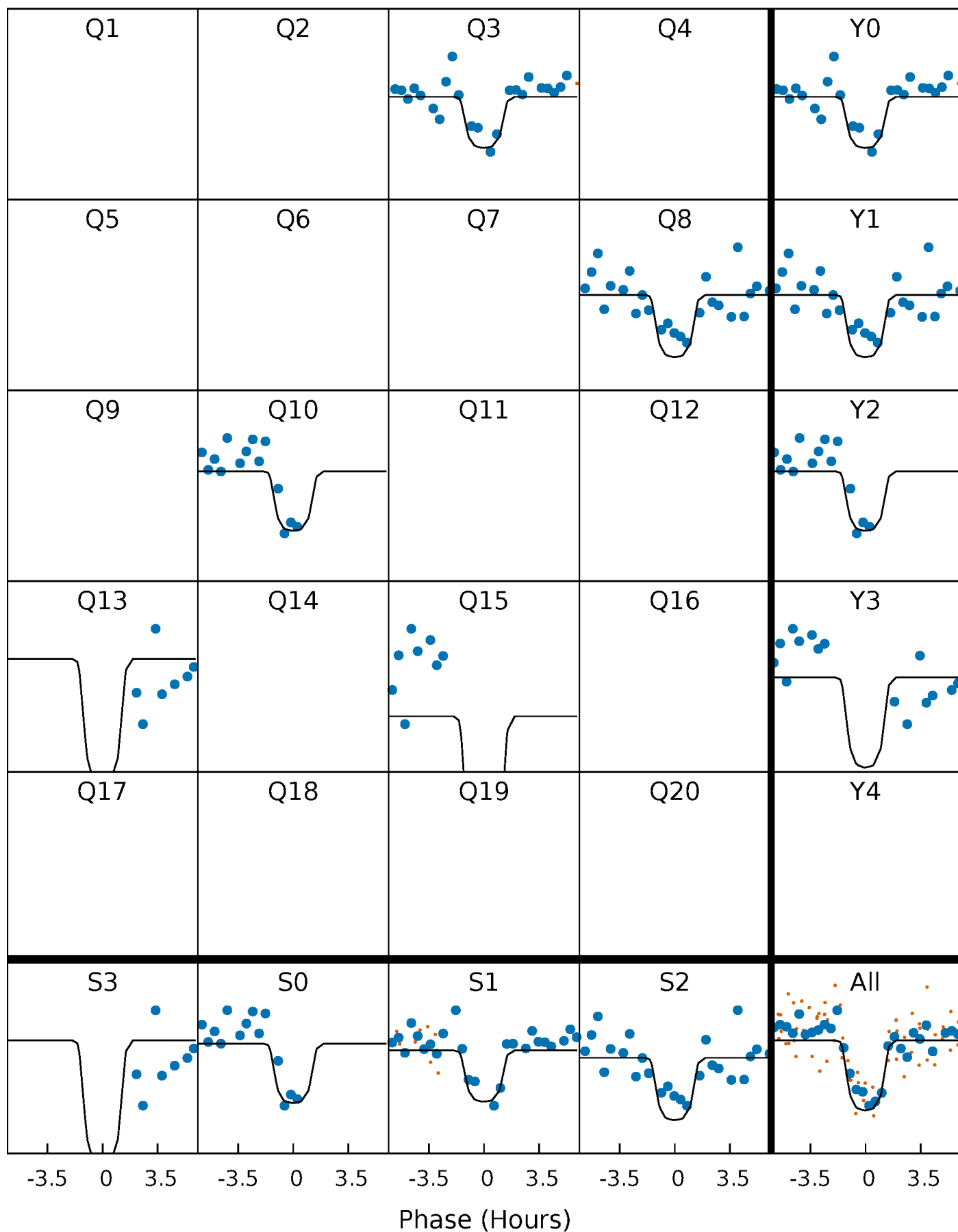
# PDC Quarter-Phased Transit Curves

TCE 008328376-02     $P=219.119395$  Days     $T_0=317.313432$  (BKJD)



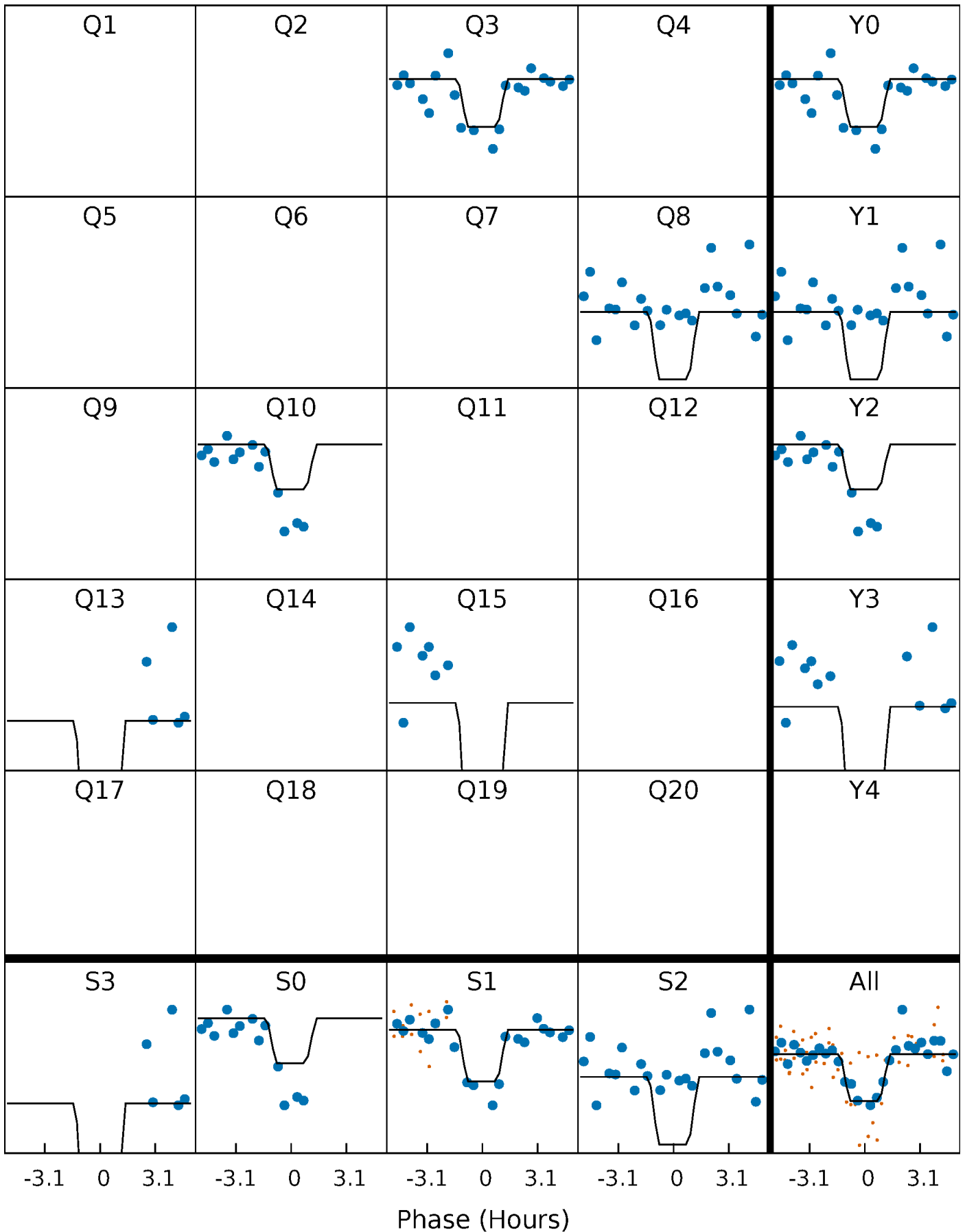
# DV Quarter-Phased Transit Curves

TCE 008328376-02   P=219.119395 Days    $T_0=317.313432$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

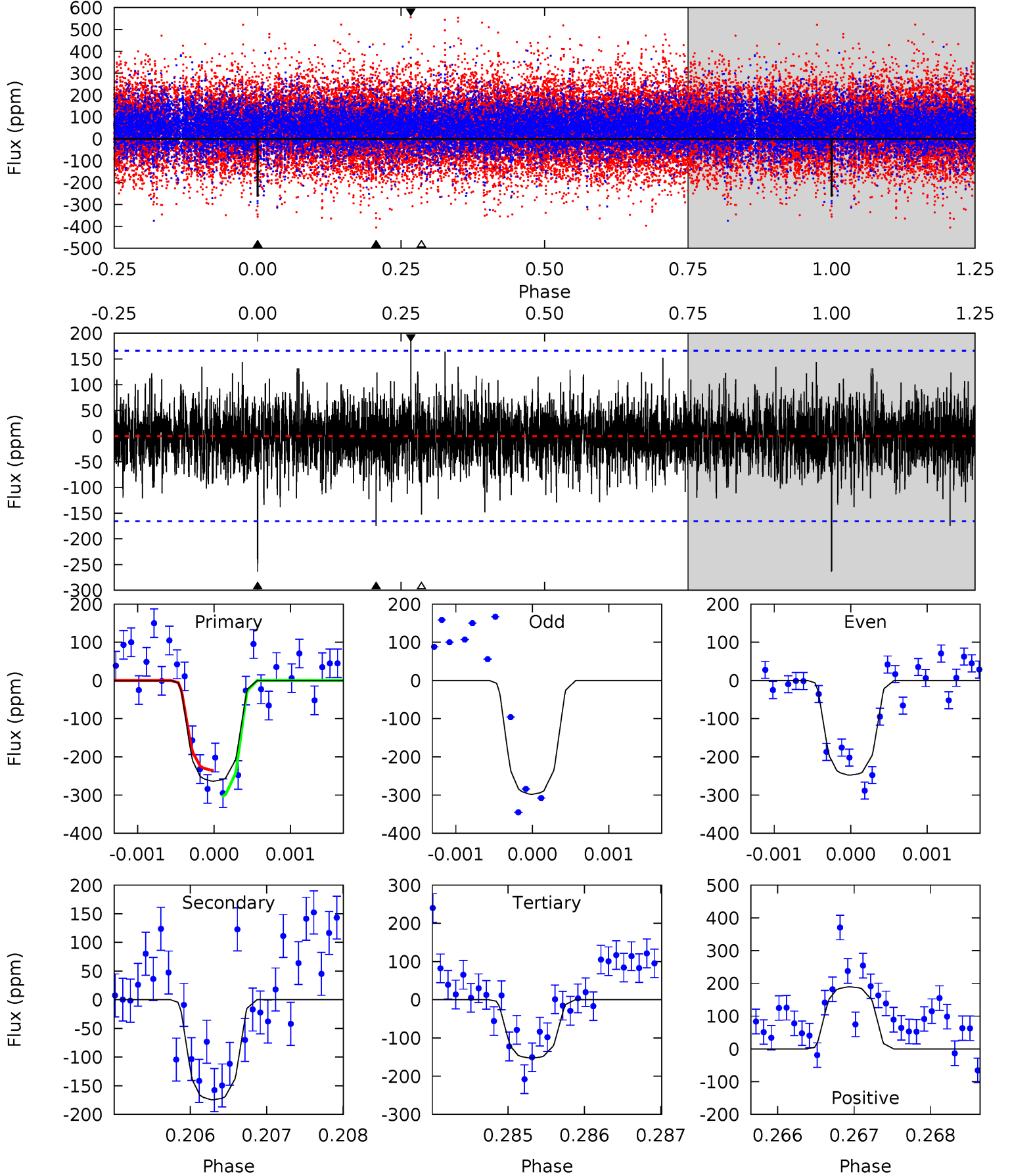
TCE 008328376-02 P=219.113866 Days  $T_0=317.316265$  (BKJD)



# DV Model-Shift Uniqueness Test

008328376-02, P = 219.119395 Days, E = 98.194037 Days

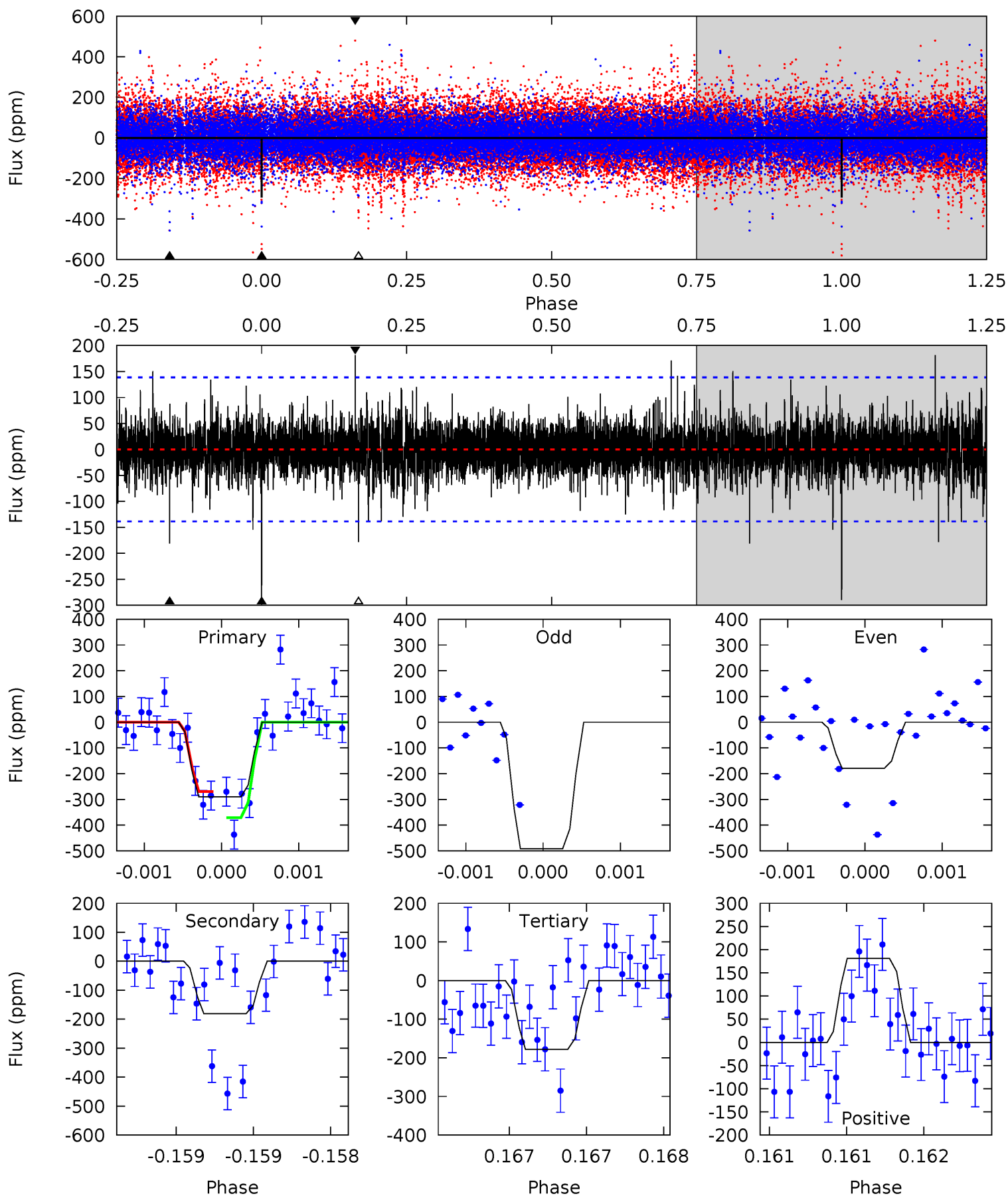
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.80	5.82	5.09	6.33	5.53	3.41	1.30	3.71	2.47	0.73	-0.50	0.72	0.96	0.42	1.14



# Alt Model-Shift Uniqueness Test

008328376-02, P = 219.113866 Days, E = 98.202399 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
11.6	7.28	7.17	7.28	5.57	3.47	1.32	4.48	4.36	0.11	-0.01	5.93	0.77	0.38	1.96





### Stellar Parameters For KIC 008328376

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6609^{+159}_{-199}$	$3.770^{+0.304}_{-0.095}$	$-0.180^{+0.300}_{-0.250}$	$2.617^{+0.480}_{-0.960}$	$1.472^{+0.239}_{-0.293}$	$0.116^{+0.230}_{-0.035}$
	+2%/-3%	+8%/-3%	+167%/-139%	+18%/-37%	+16%/-20%	+199%/-30%
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 008328376-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-175 \pm 30$	$5.67^{+1.10}_{-1.17}$	$716^{+41}_{-64}$	$5278^{+396}_{-305}$	$1957^{+1167}_{-595}$
Alt.	$-181 \pm 25$	$4.71^{+0.99}_{-0.98}$	$717^{+45}_{-61}$	$5811^{+497}_{-424}$	$2927^{+1798}_{-926}$

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

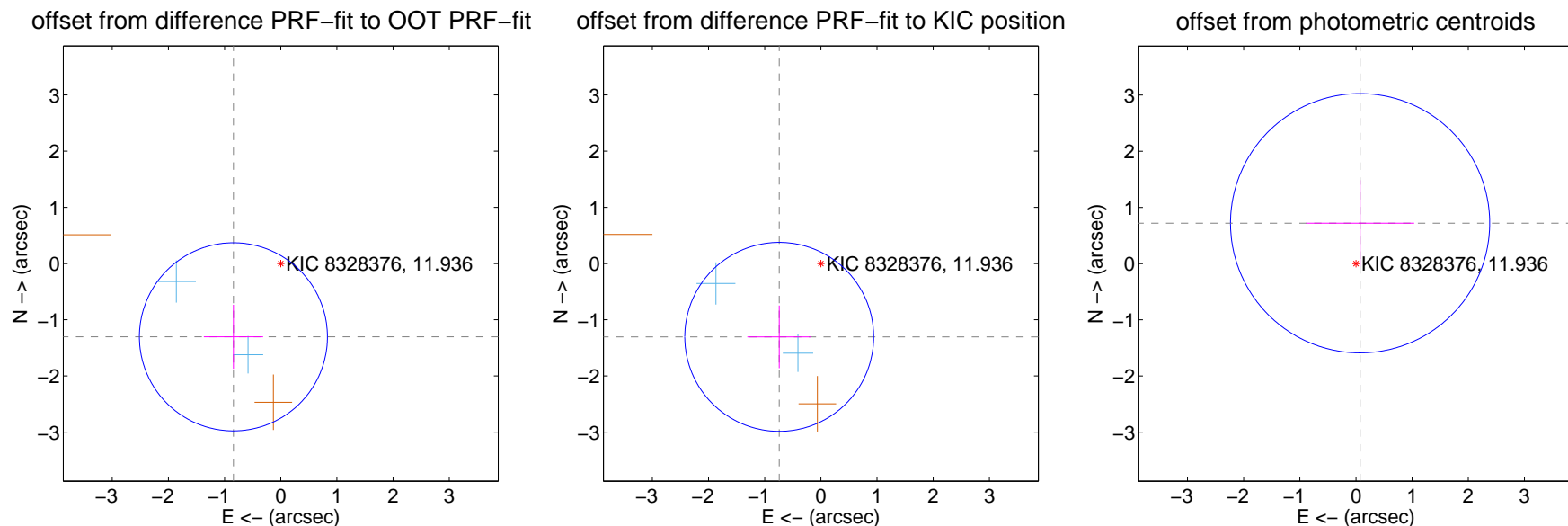
## DV Centroid Data

Supplemental centroid analysis for 008328376-02. **Kepler magnitude: 11.94.** Transit SNR 8.63

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

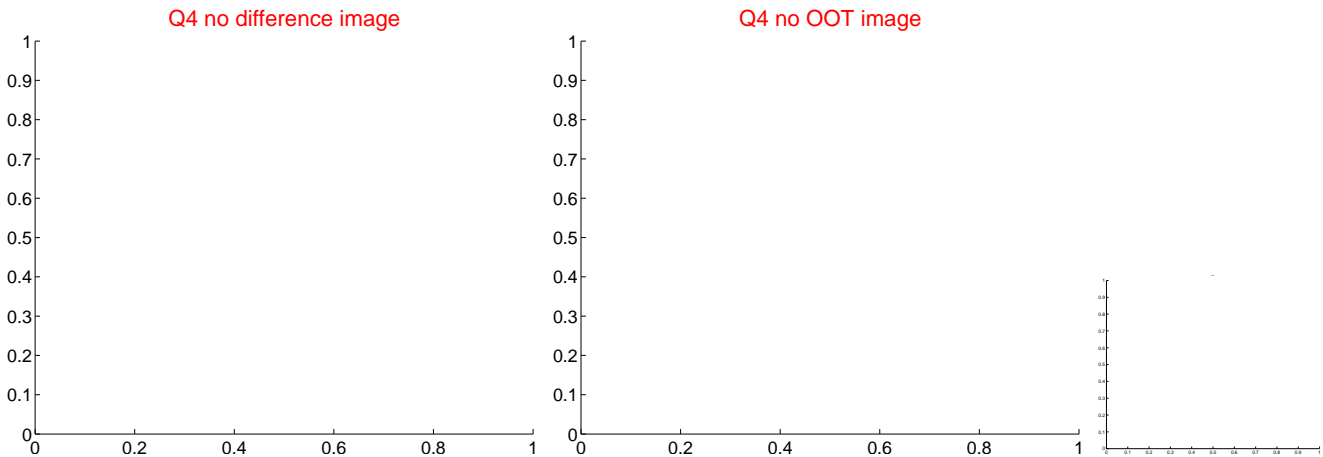
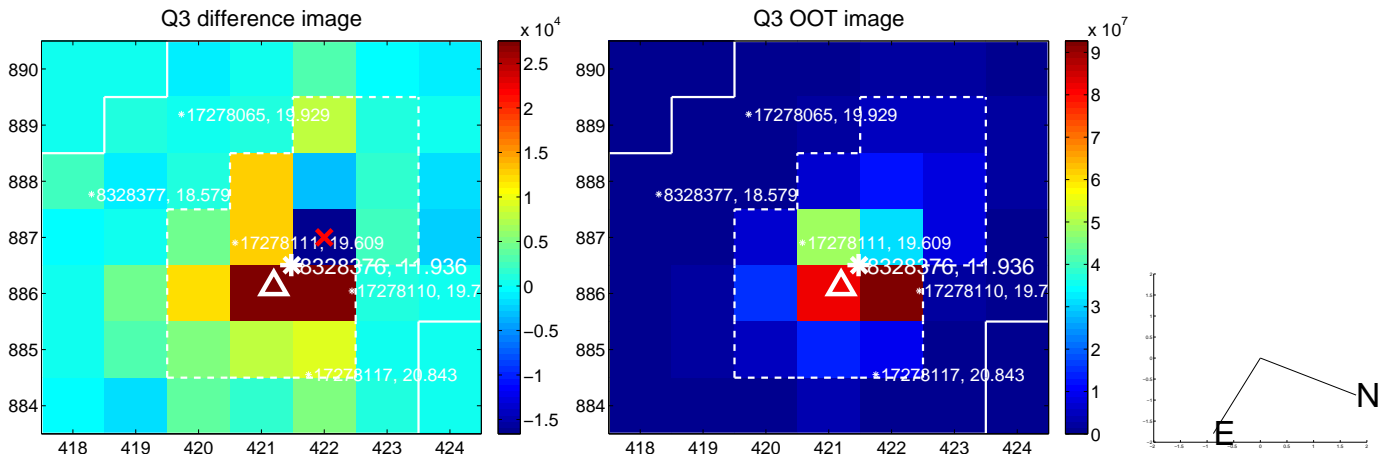
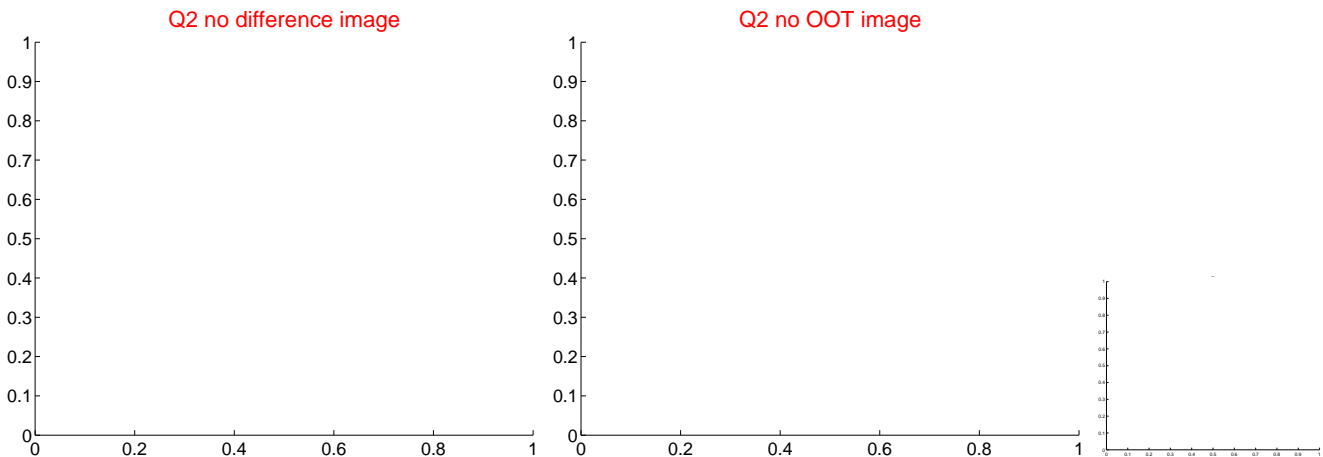
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.553 \pm 0.558$	2.78	$0.843 \pm 0.528$	$-1.304 \pm 0.570$
PRF-fit source offset from KIC position	$1.501 \pm 0.560$	2.68	$0.742 \pm 0.567$	$-1.305 \pm 0.558$
photometric centroid source offset	$0.72 \pm 0.77$	0.94	$-0.07 \pm 0.96$	$0.72 \pm 0.77$

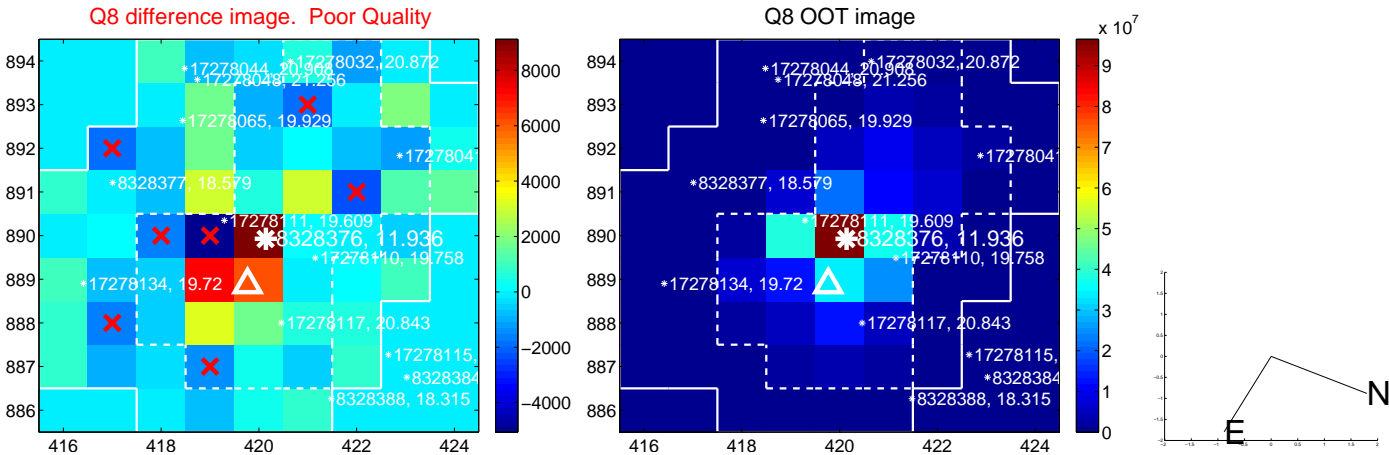
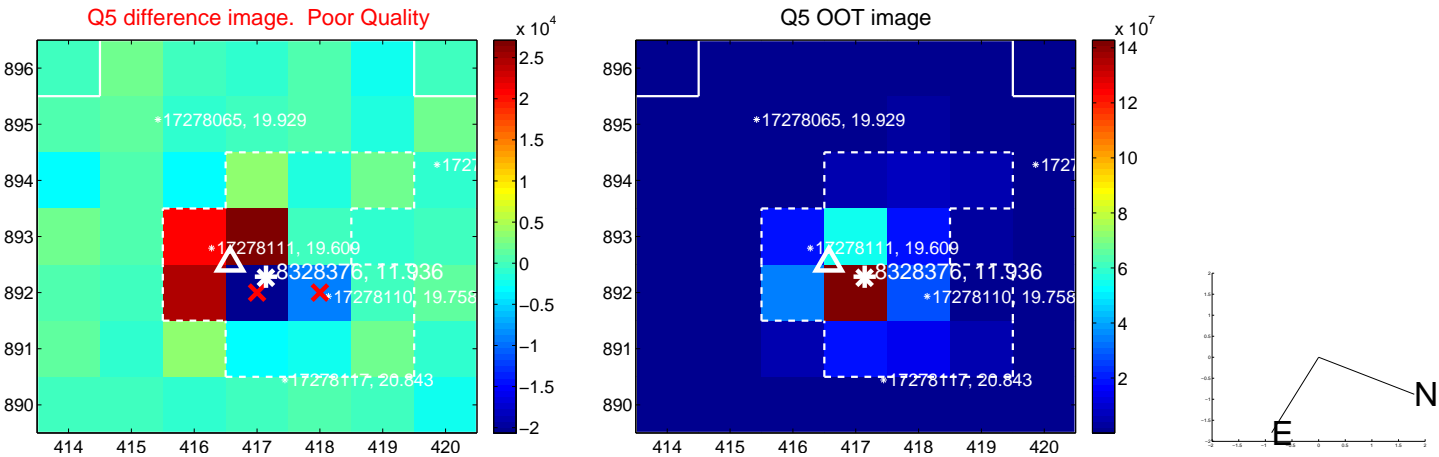


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

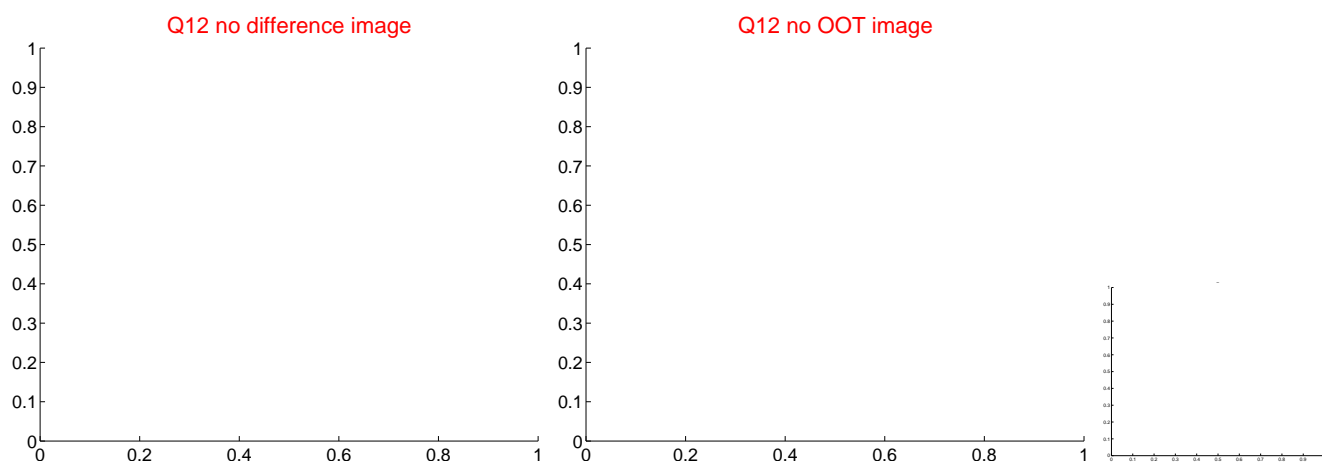
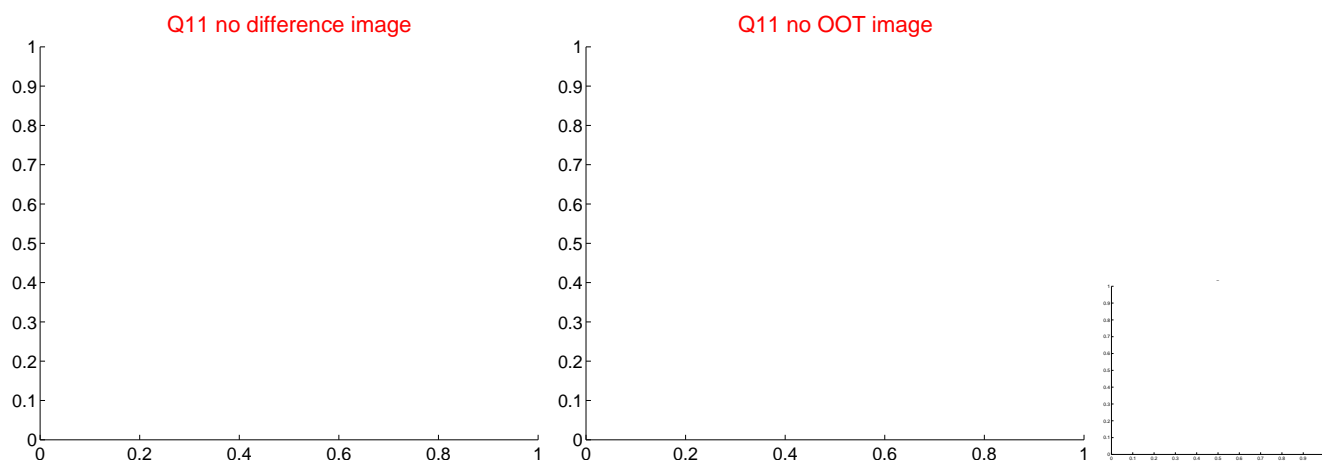
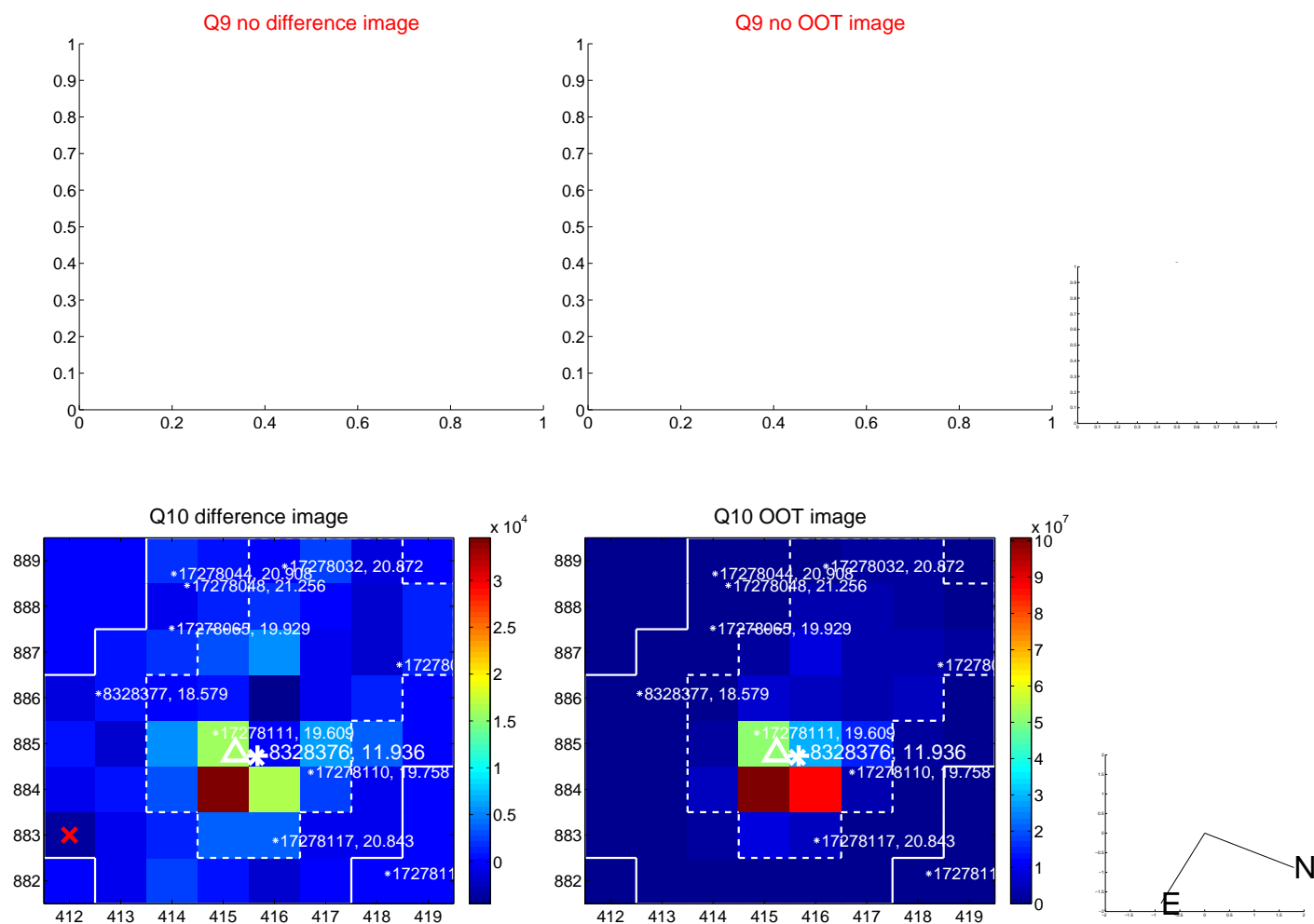
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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.

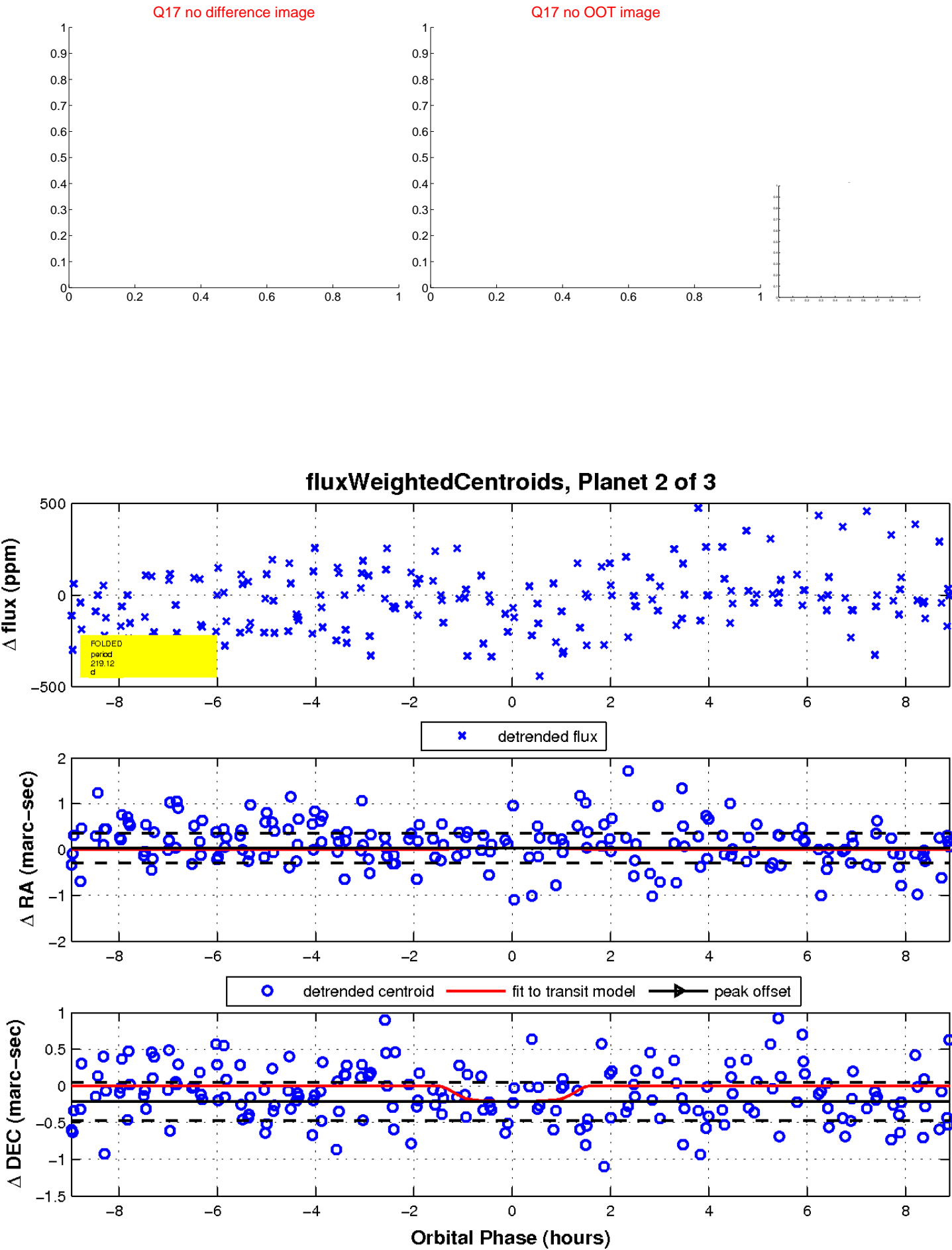


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



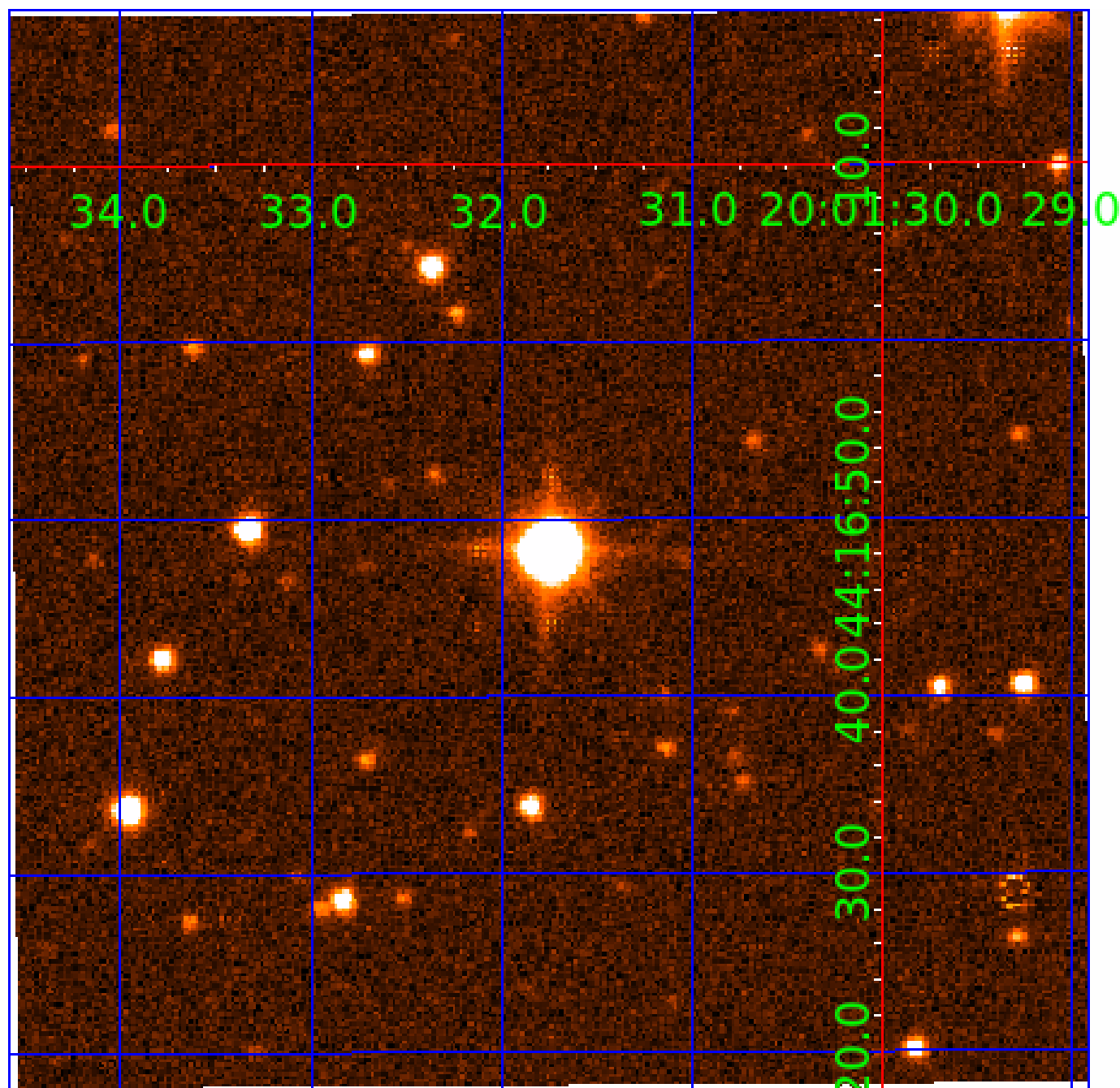


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008328376

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008328376-01	OBS	No	4.346005	132.508505	147.0	14.730	15.7	17.0	2.62	6609	6.30	3330.58
008328376-02	OBS	No	219.119395	317.313432	330.0	3.033	8.6	8.6	2.62	6609	5.91	17.88
008328376-03	OBS	No	366.265535	404.886055	379.0	7.645	7.3	7.7	2.62	6609	7.33	9.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008328376-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008328376-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008328376-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

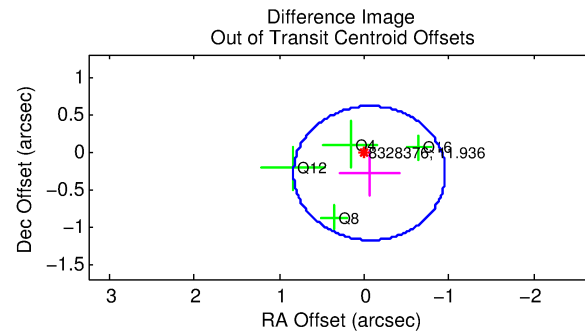
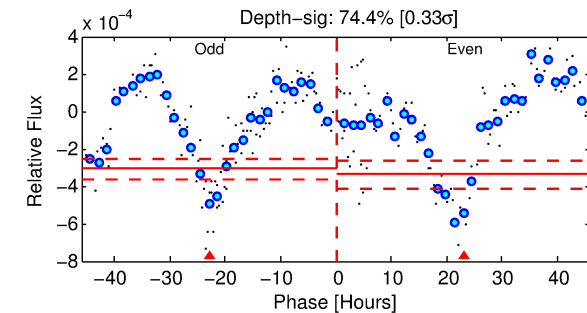
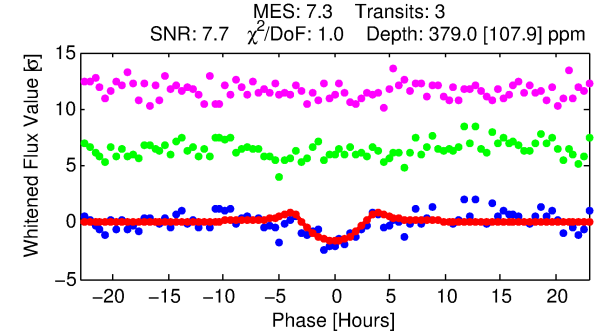
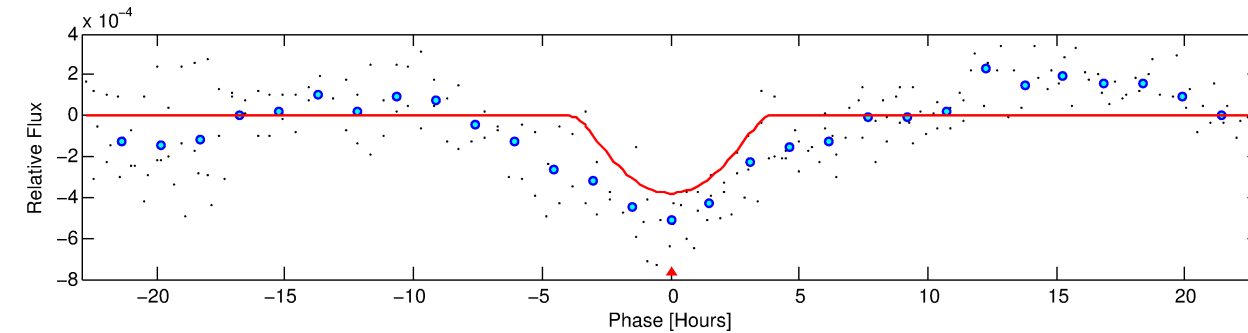
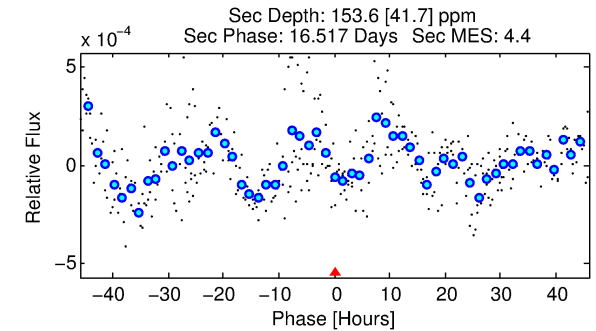
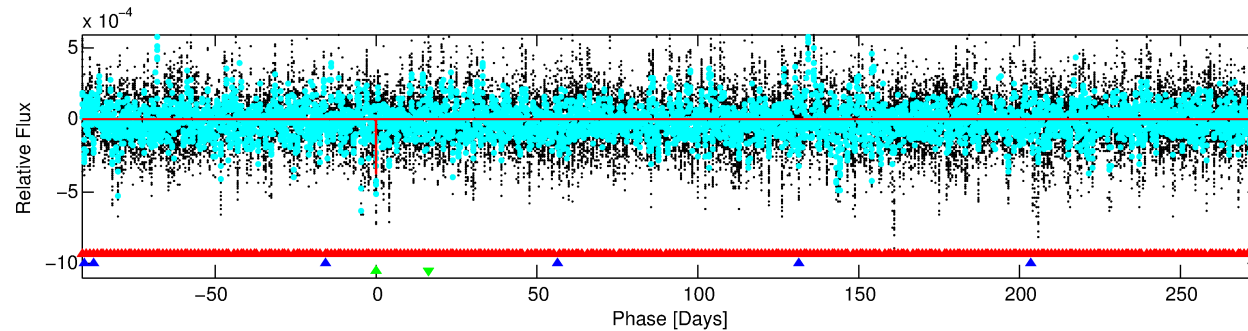
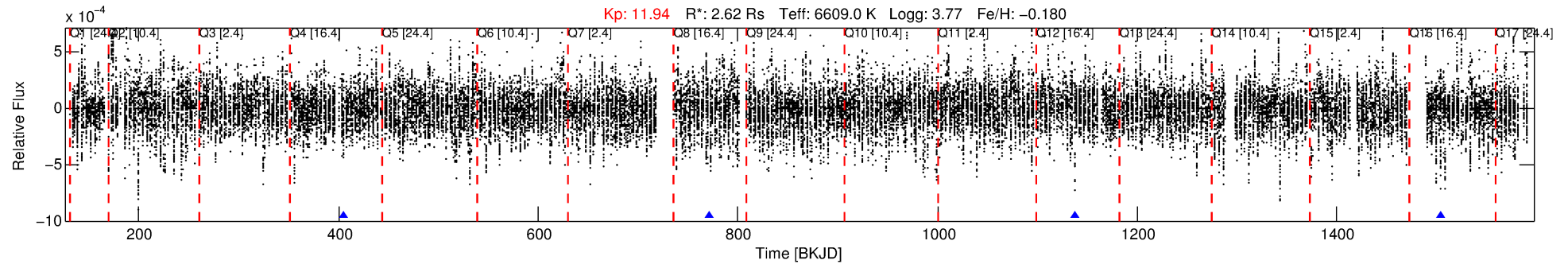
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008328376-03

No Significant Match Found

# DV One-Page Summary

KIC: 8328376 Candidate: 3 of 3 Period: 366.266 d



## DV Fit Results:

Period = 366.26553 [0.00661] d  
Epoch = 404.8861 [0.0135] BKJD  
 $R_p/R^*$  = 0.0257 [0.0151]  
 $a/R^*$  = 105.79 [33.49]  
 $b$  = 0.98 [0.03]  
 $\text{Seff}$  = 9.01 [4.87]  
 $T_{\text{eq}}$  = 442 [60] K  
 $R_p$  = 7.33 [5.08]  $R_e$   
 $a$  = 1.1396 [0.3852] AU  
 $A_g$  = 2044.34 [2694.93] [0.76σ]  
 $T_{\text{eff}}$  = 4593 [1395] K [2.97σ]

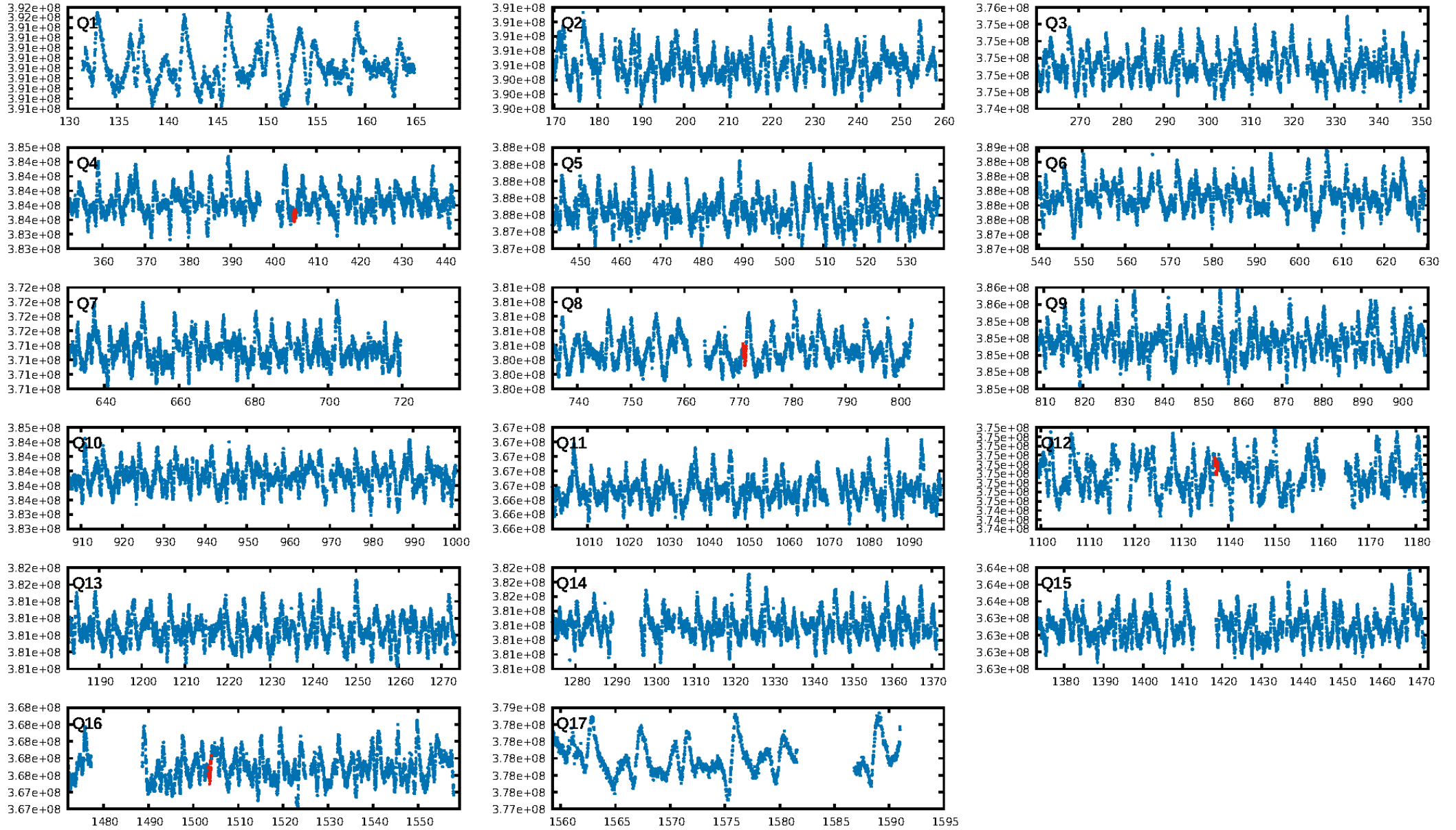
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [429.37σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 58.8%  
ModelChiSquareGof-sig: 99.4%  
**Bootstrap-pfa: 2.77e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.074  
Centroid-sig: 64.6%  
Centroid-so: 0.618 arcsec [0.68σ]  
OotOffset-rm: 0.294 arcsec [0.99σ]  
OotOffset-st: 0/0/4/0 [4]  
KicOffset-rm: 0.305 arcsec [1.00σ]  
KicOffset-st: 0/0/4/0 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 0.75 [3/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:28:59 Z

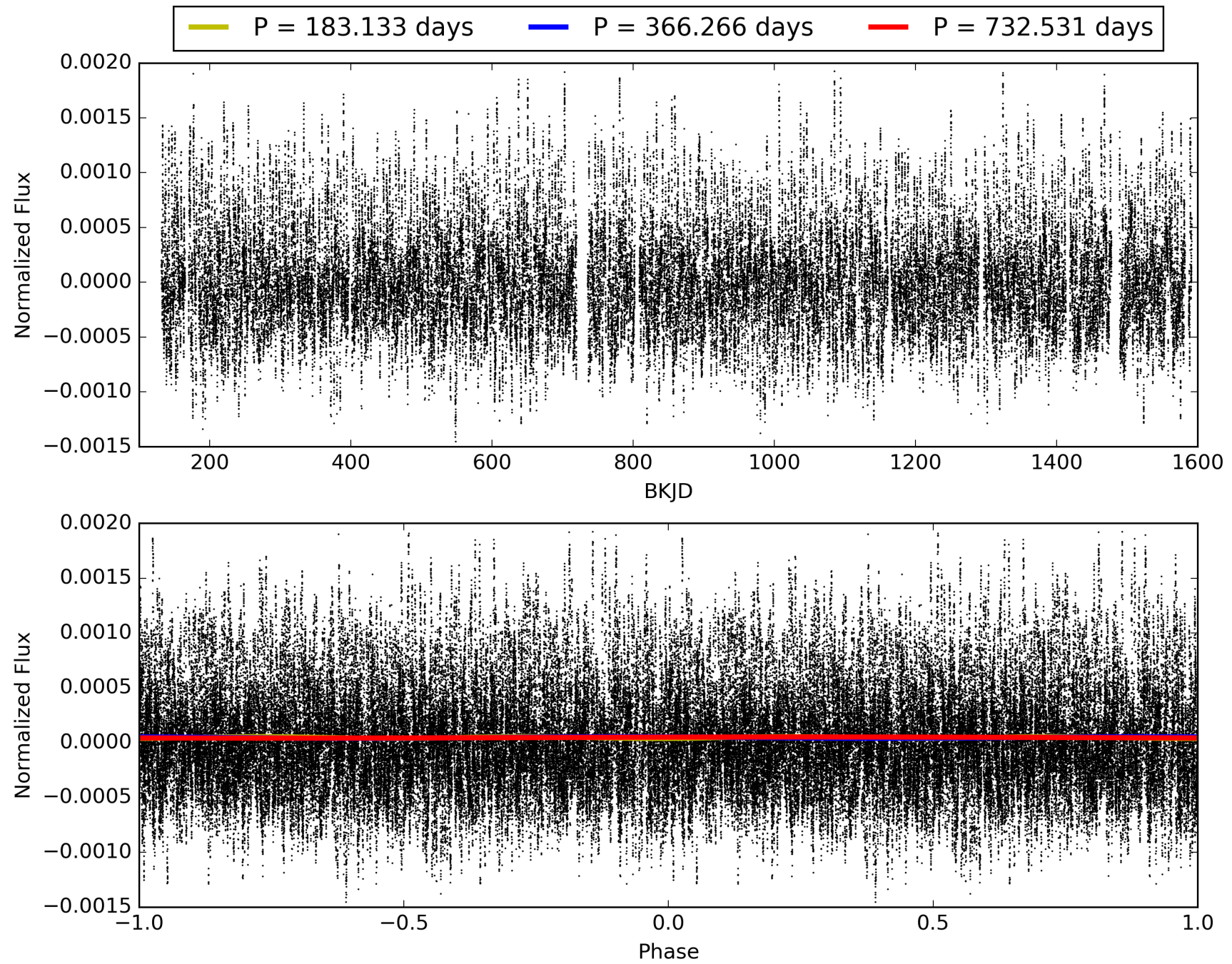
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008328376-03, PDC Light Curves





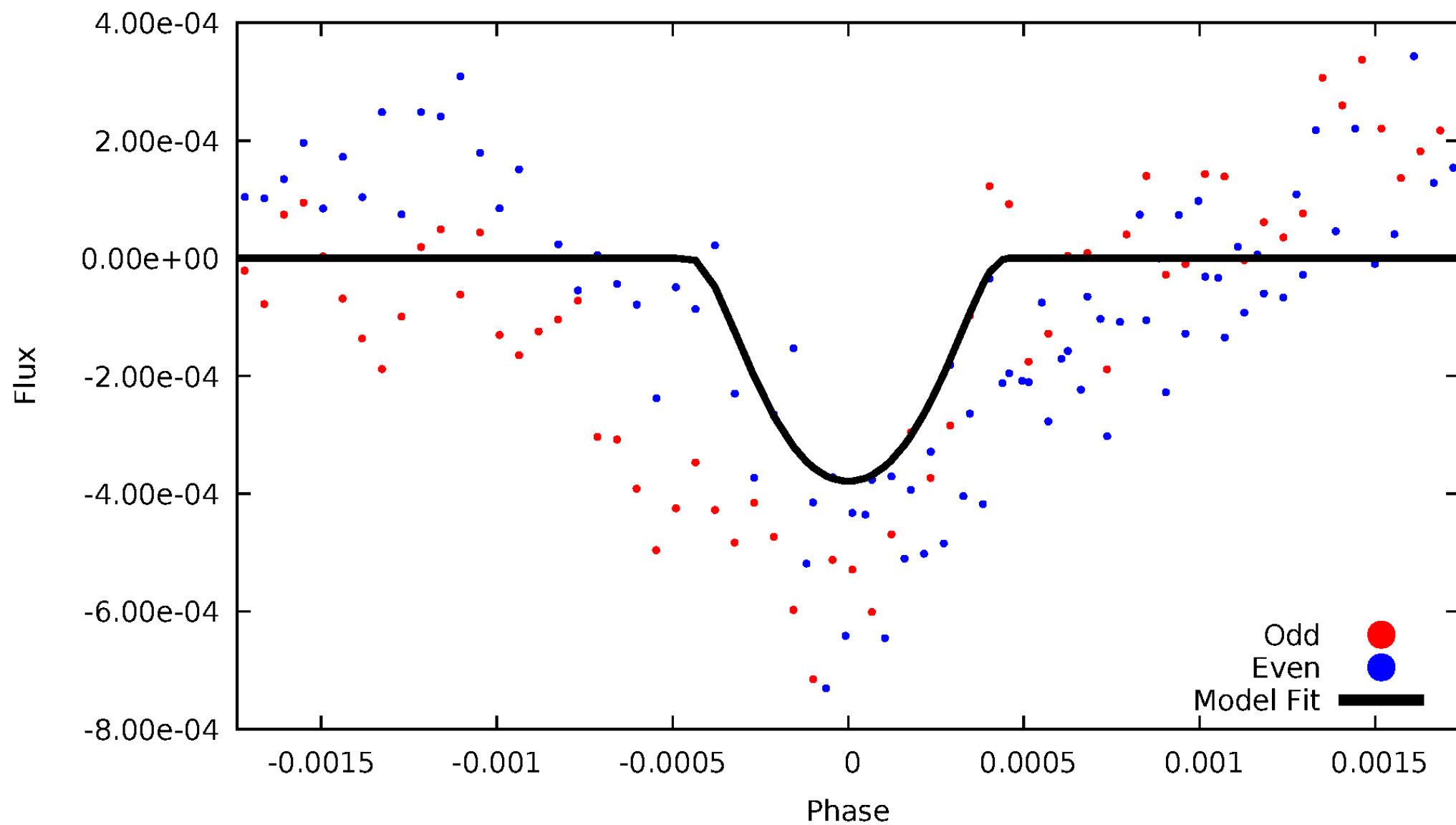
TCE 008328376-03





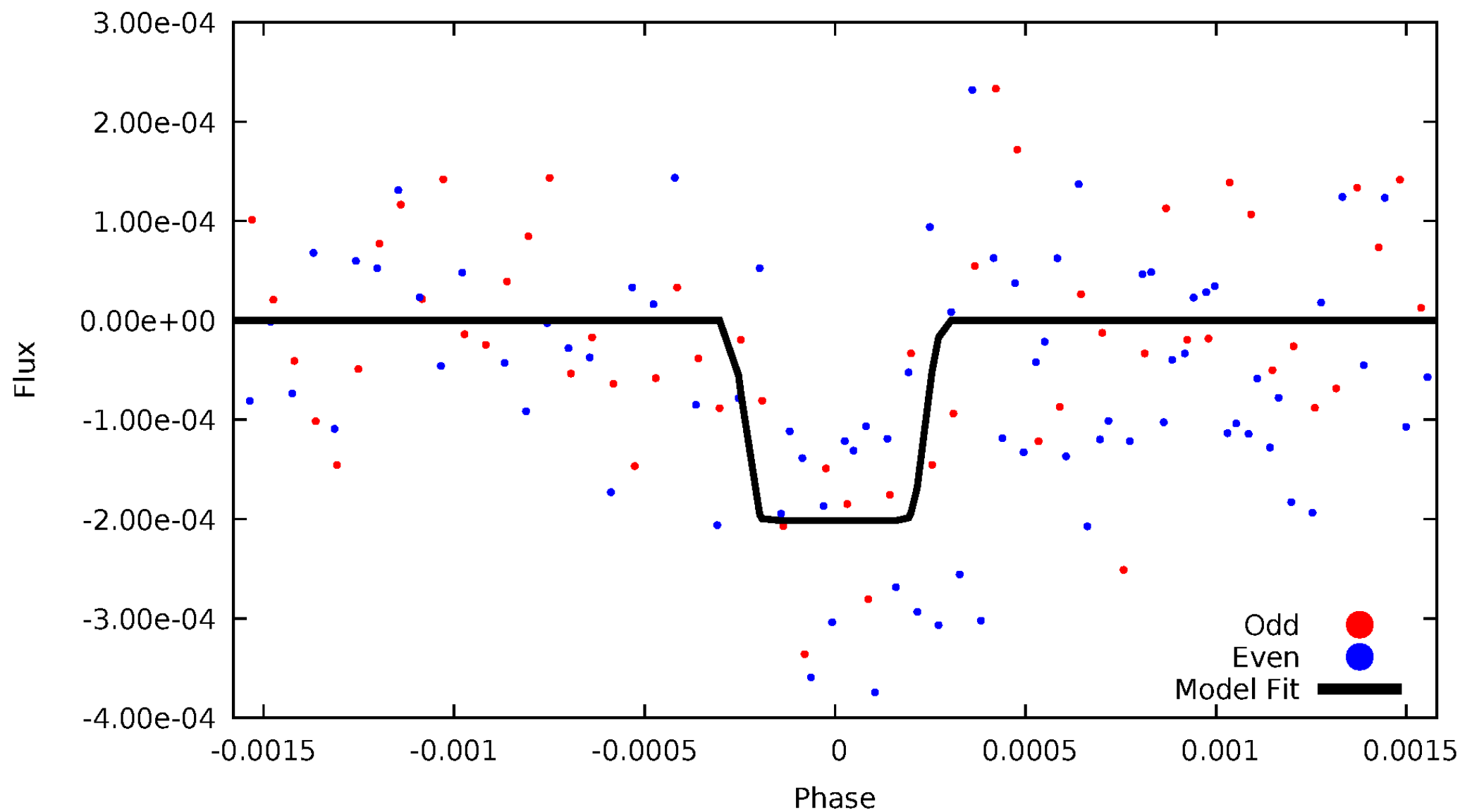
# DV Odd/Even

TCE 008328376-03



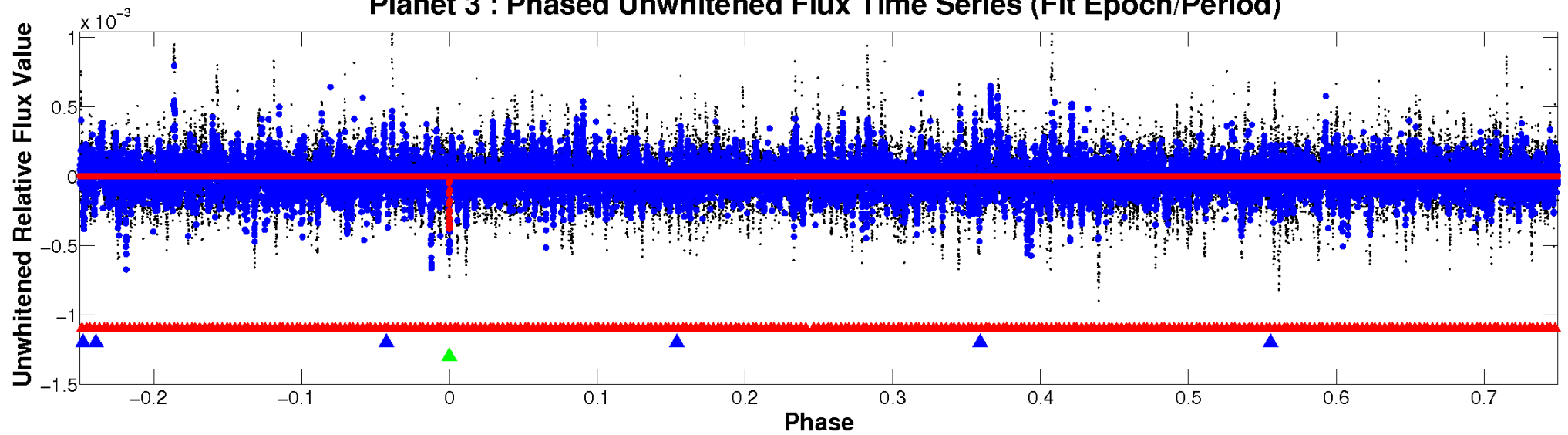
# ALT Odd/Even

TCE 008328376-03

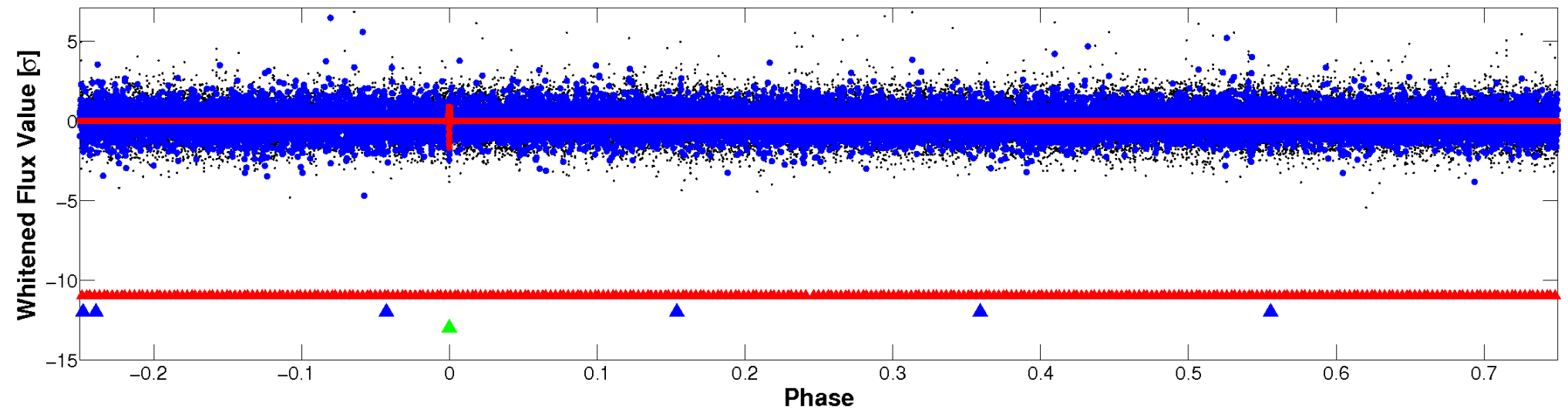


# Non-Whitened Vs. Whitened Light Curve

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

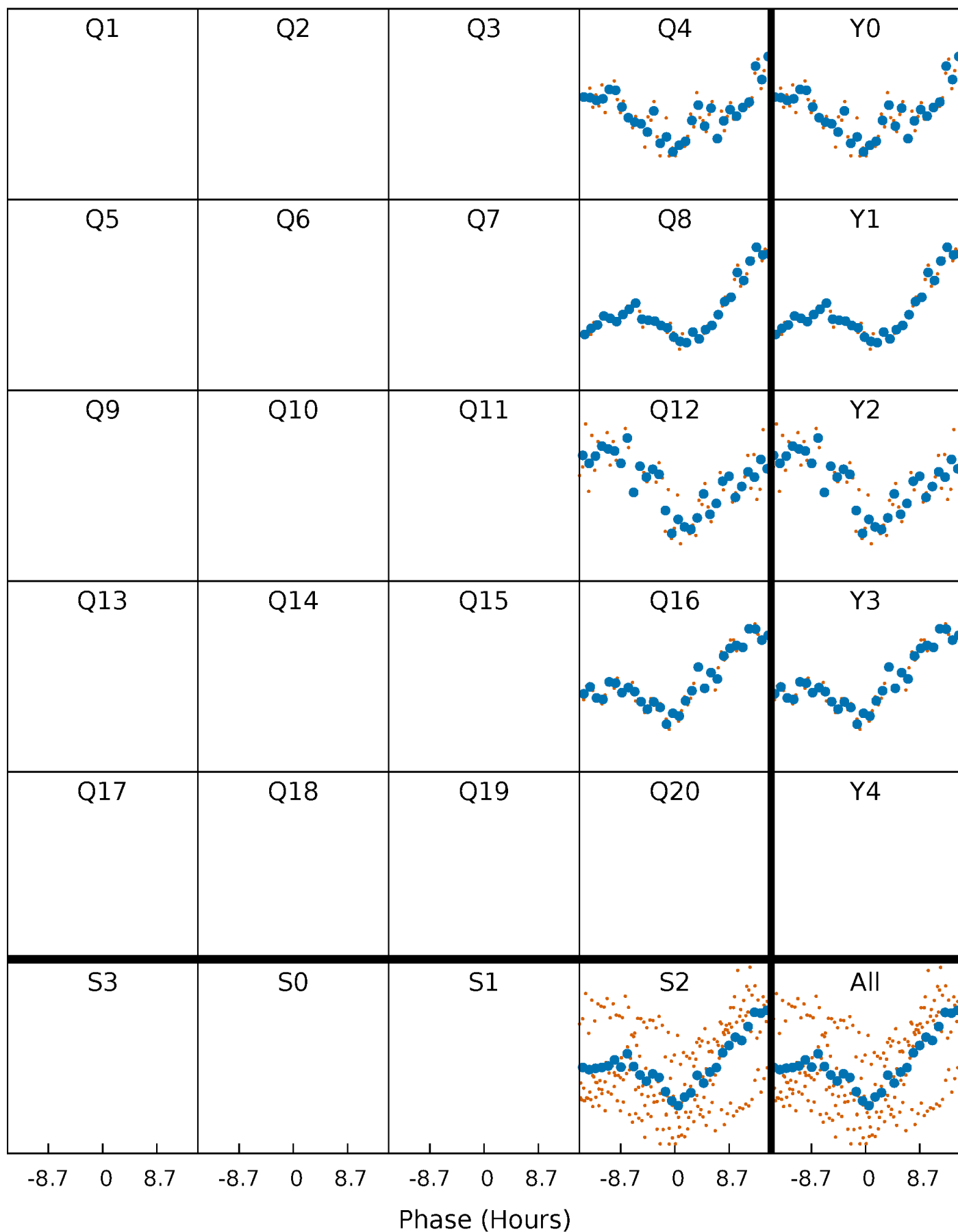


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



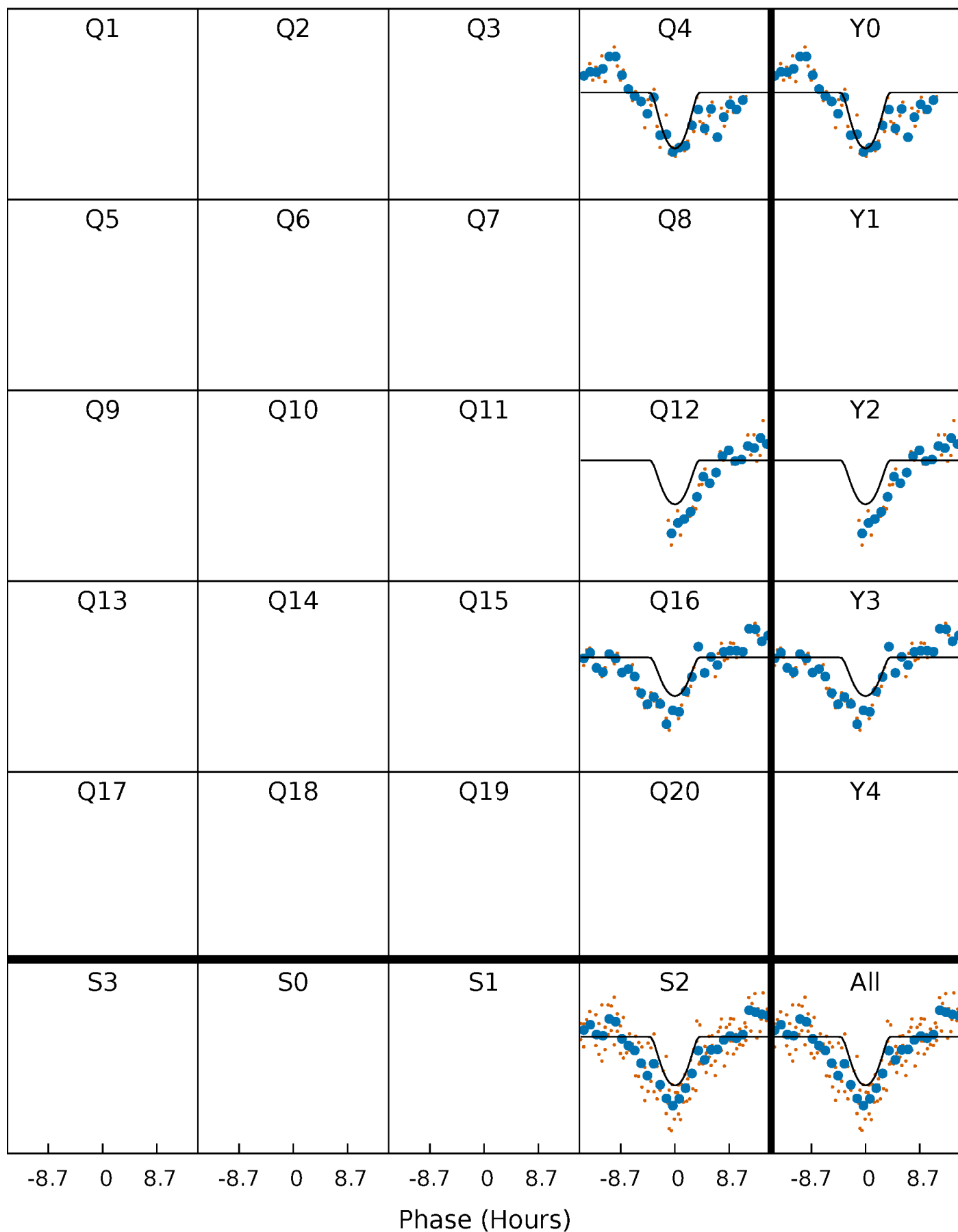
# PDC Quarter-Phased Transit Curves

TCE 008328376-03     $P=366.265535$  Days     $T_0=404.886055$  (BKJD)



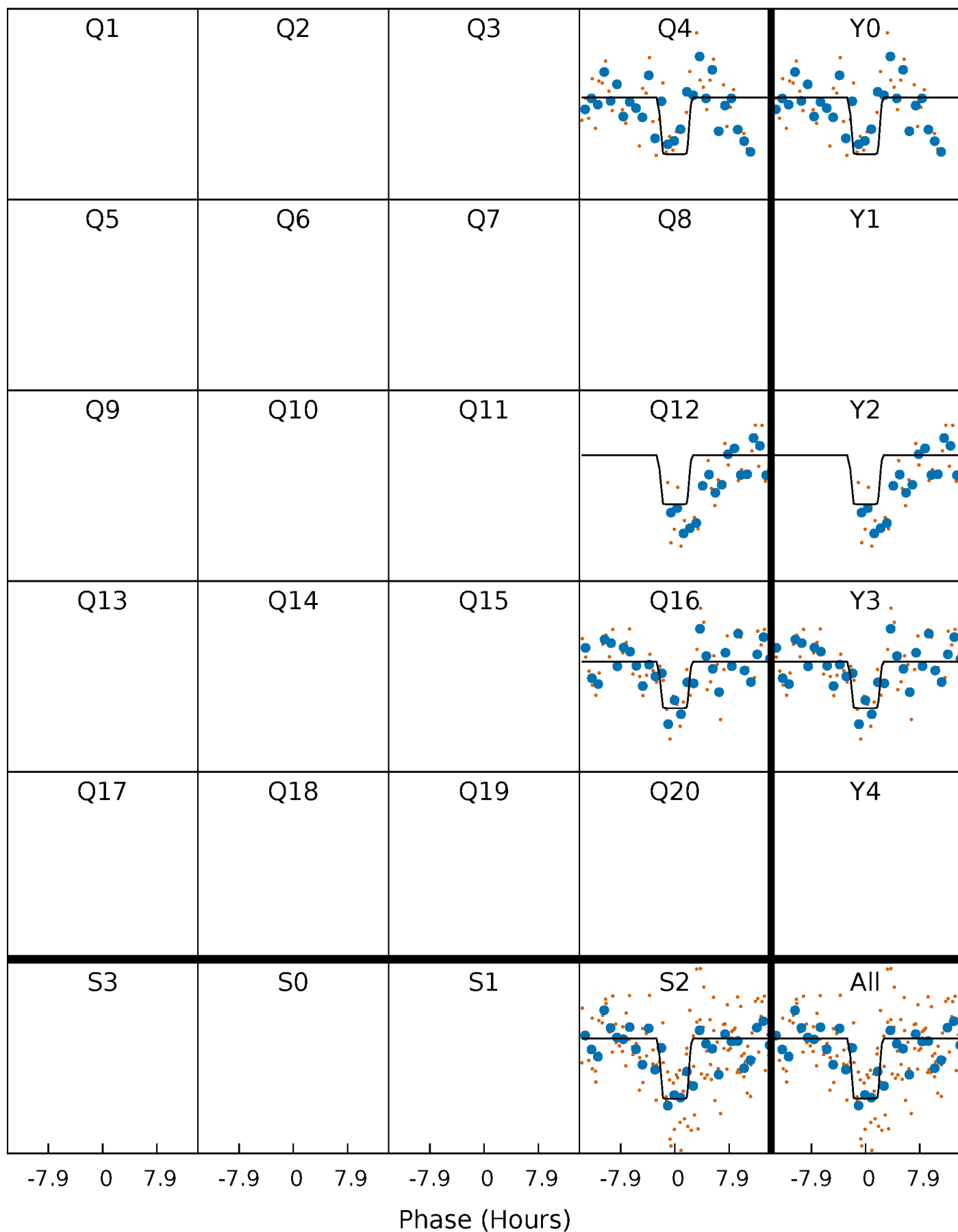
# DV Quarter-Phased Transit Curves

TCE 008328376-03 P=366.265535 Days  $T_0=404.886055$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008328376-03 P=366.257941 Days  $T_0=404.901238$  (BKJD)

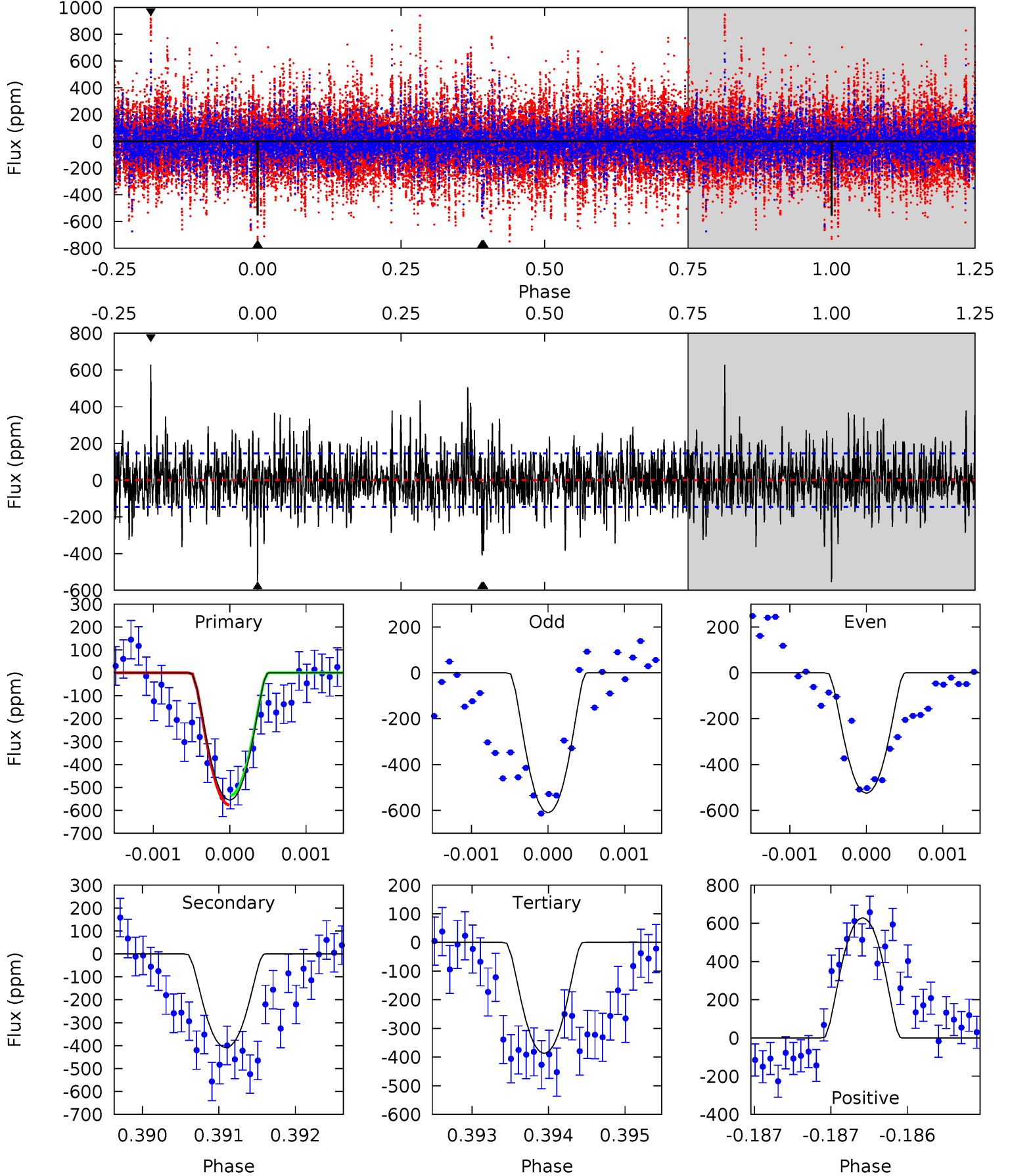




# DV Model-Shift Uniqueness Test

008328376-03,  $P = 366.265535$  Days,  $E = 38.620520$  Days

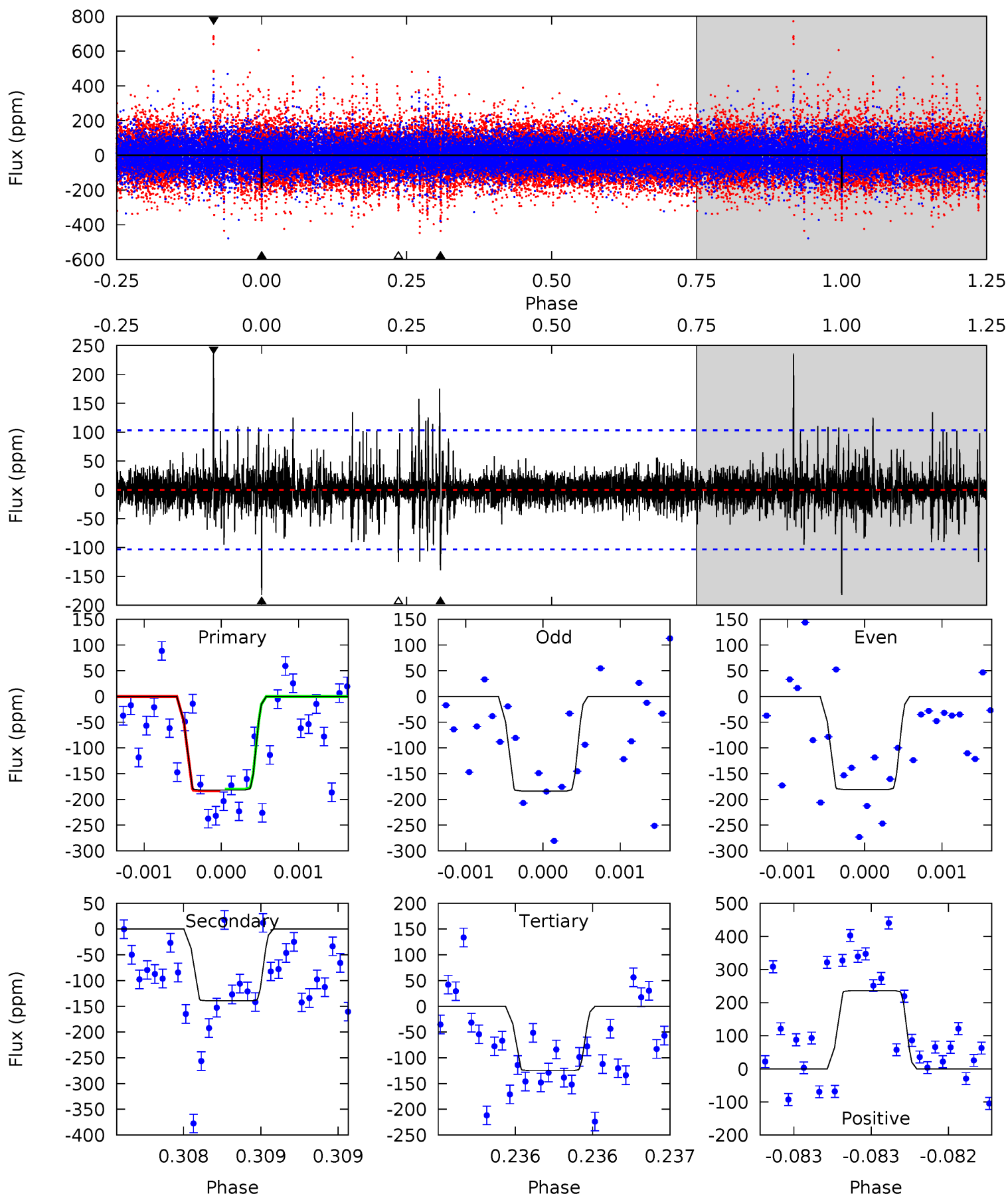
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	15.3	14.5	23.5	5.47	3.32	4.08	6.31	-2.73	0.82	-8.23	1.52	0.92	0.53	0.77



# Alt Model-Shift Uniqueness Test

008328376-03,  $P = 366.257941$  Days,  $E = 38.643297$  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
9.81	7.52	6.73	12.7	5.56	3.47	1.32	3.08	-2.92	0.79	-5.21	0.08	1.02	0.56	0.10



### Stellar Parameters For KIC 008328376

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6609^{+159}_{-199}$	$3.770^{+0.304}_{-0.095}$	$-0.180^{+0.300}_{-0.250}$	$2.617^{+0.480}_{-0.960}$	$1.472^{+0.239}_{-0.293}$	$0.116^{+0.230}_{-0.035}$
	+2%/-3%	+8%/-3%	+167%/-139%	+18%/-37%	+16%/-20%	+199%/-30%
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 008328376-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-409 \pm 27$	$7.36^{+4.20}_{-4.03}$	$602^{+41}_{-50}$	$5614^{+3200}_{-910}$	$5705^{+19750}_{-3432}$
Alt.	$-139 \pm 19$	$4.72^{+3.66}_{-2.97}$	$601^{+37}_{-51}$	$5445^{+3845}_{-1147}$	$4588^{+28302}_{-3166}$

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

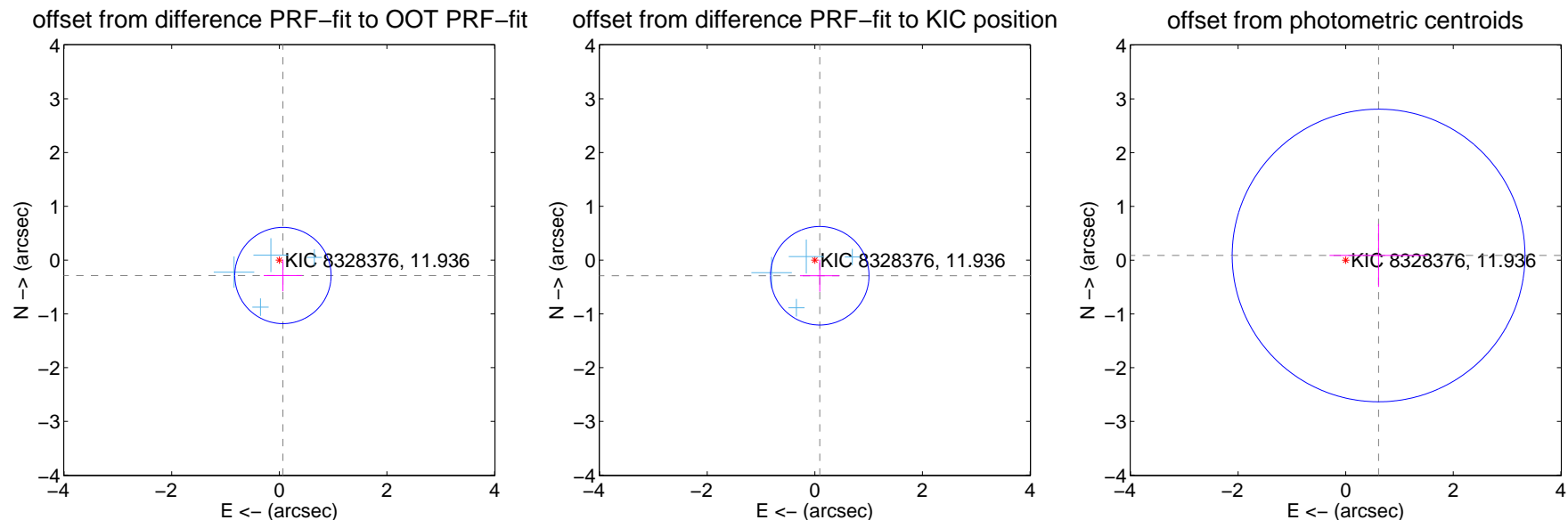
## DV Centroid Data

Supplemental centroid analysis for 008328376-03. **Kepler magnitude: 11.94.** Transit SNR 7.67

There are 4 quarters with good PRF difference image offsets

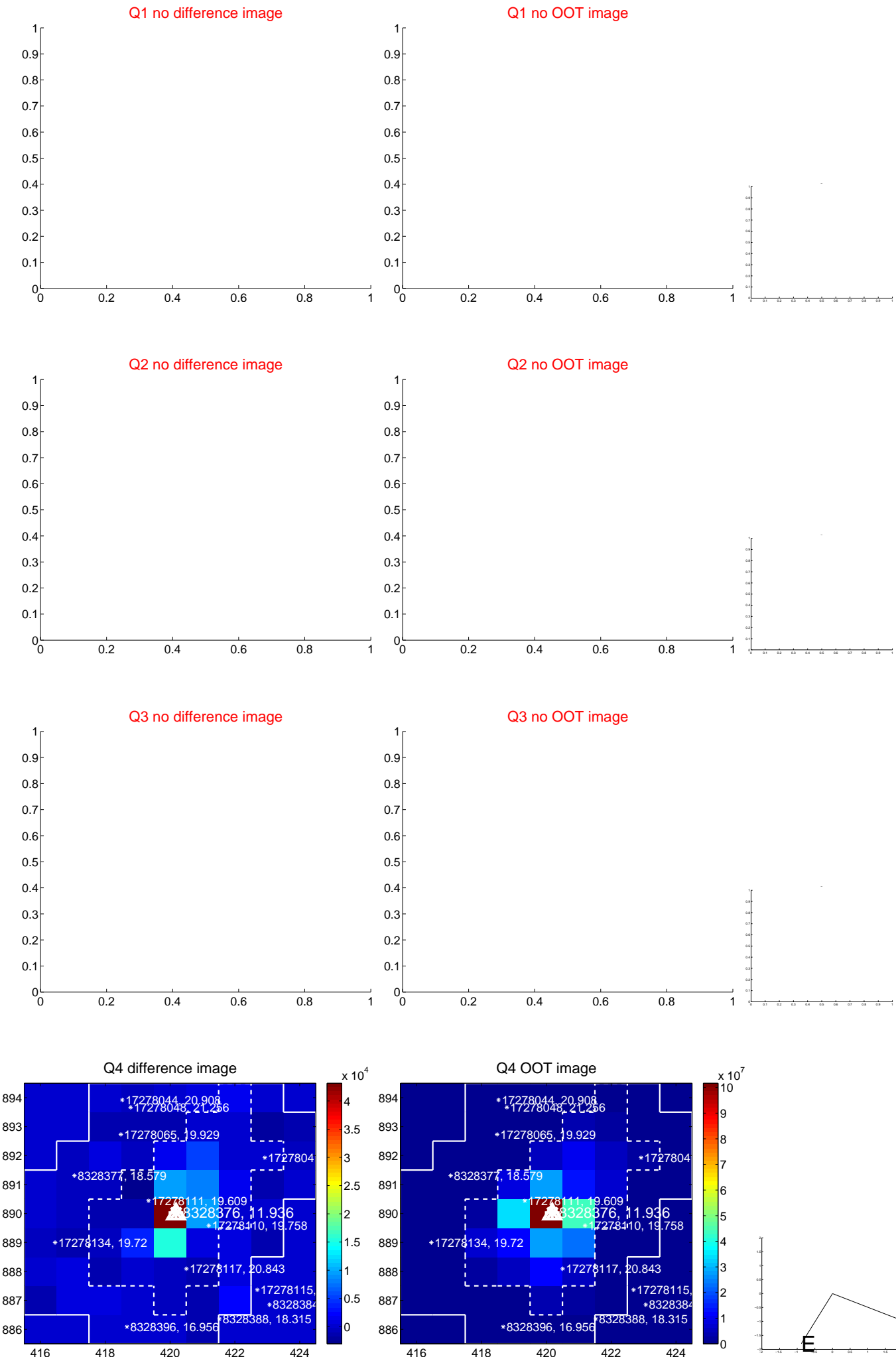
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.294 \pm 0.298$	0.99	$-0.067 \pm 0.356$	$-0.287 \pm 0.295$
PRF-fit source offset from KIC position	$0.305 \pm 0.305$	1.00	$-0.091 \pm 0.367$	$-0.291 \pm 0.299$
photometric centroid source offset	$0.62 \pm 0.91$	0.68	$-0.61 \pm 0.91$	$0.09 \pm 0.59$

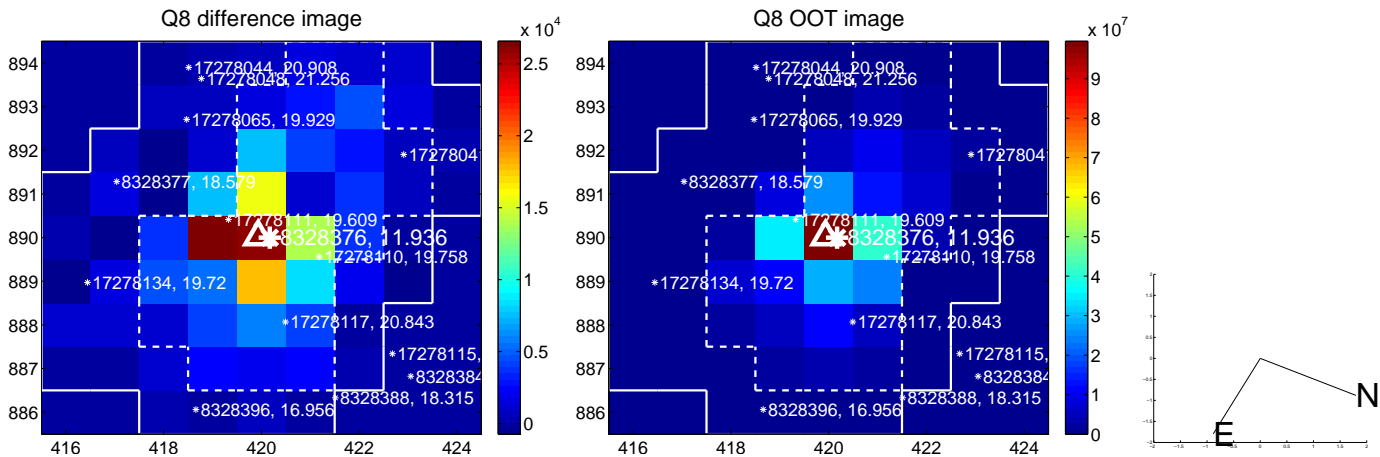
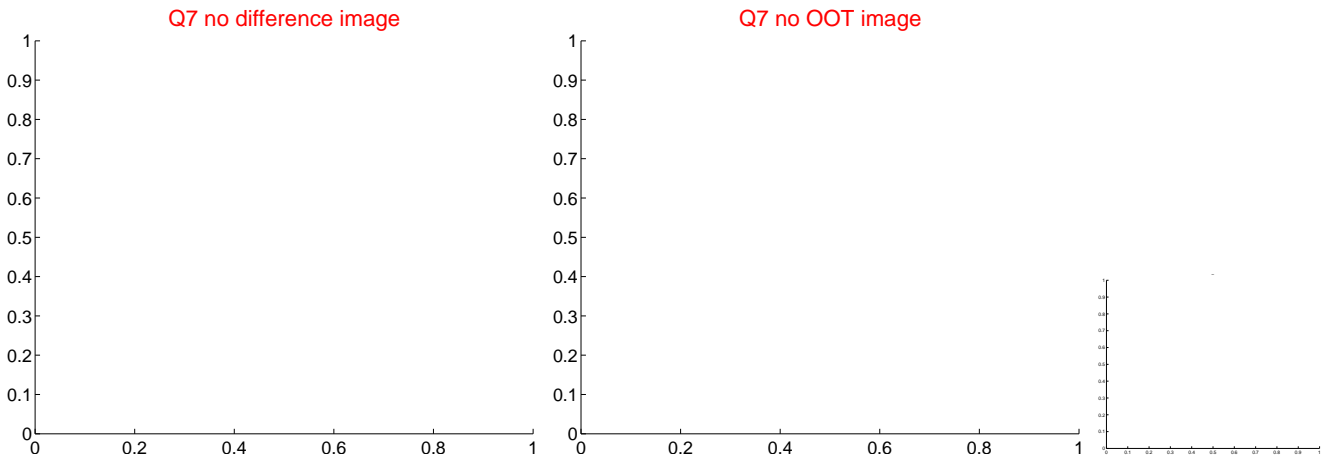
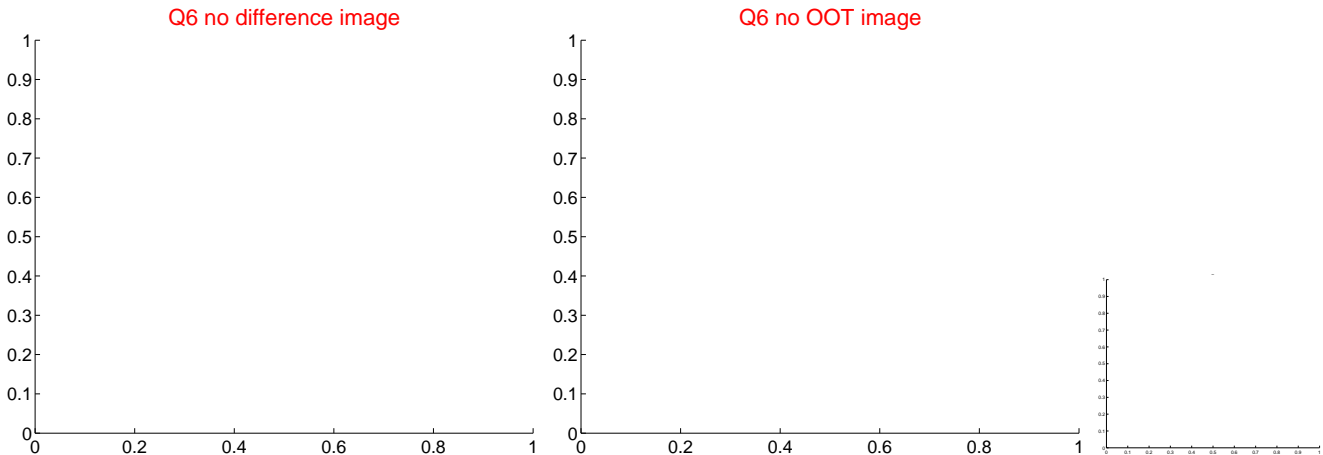
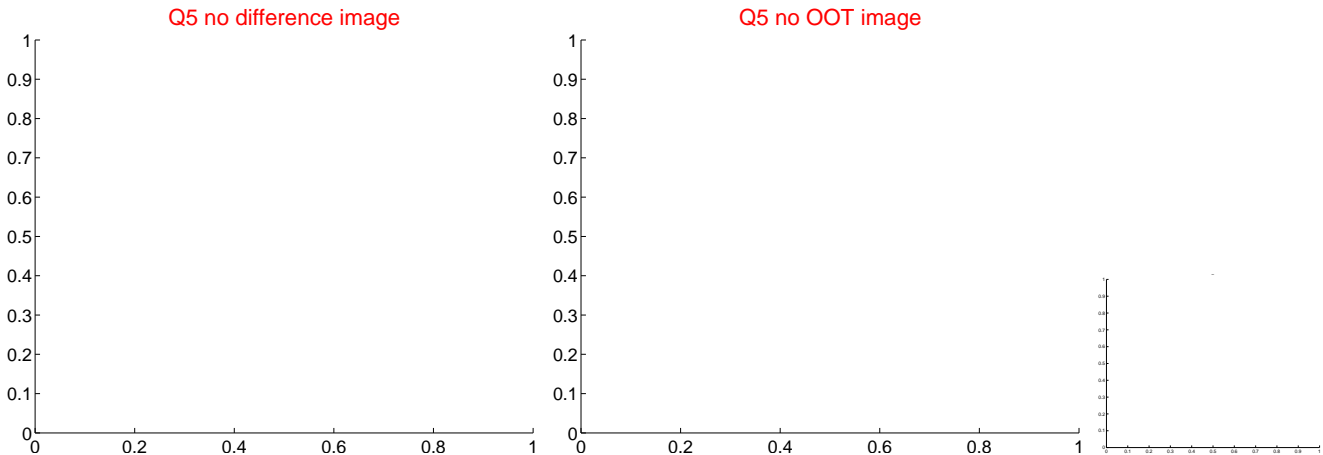


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

Q9 no difference image



Q9 no OOT image



Q10 no difference image



Q10 no OOT image



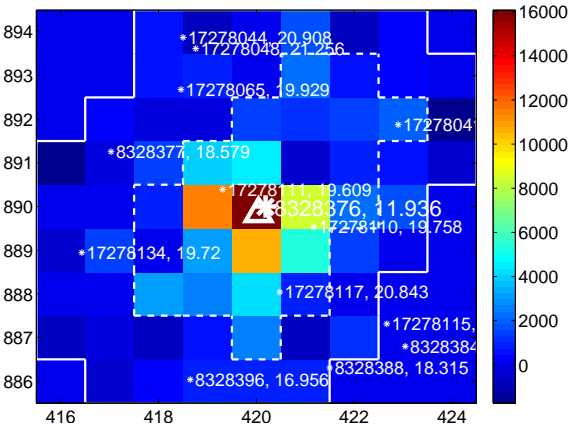
Q11 no difference image



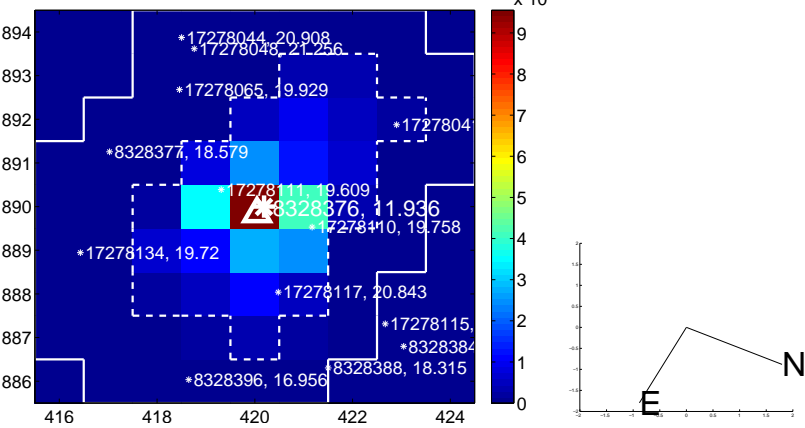
Q11 no OOT image



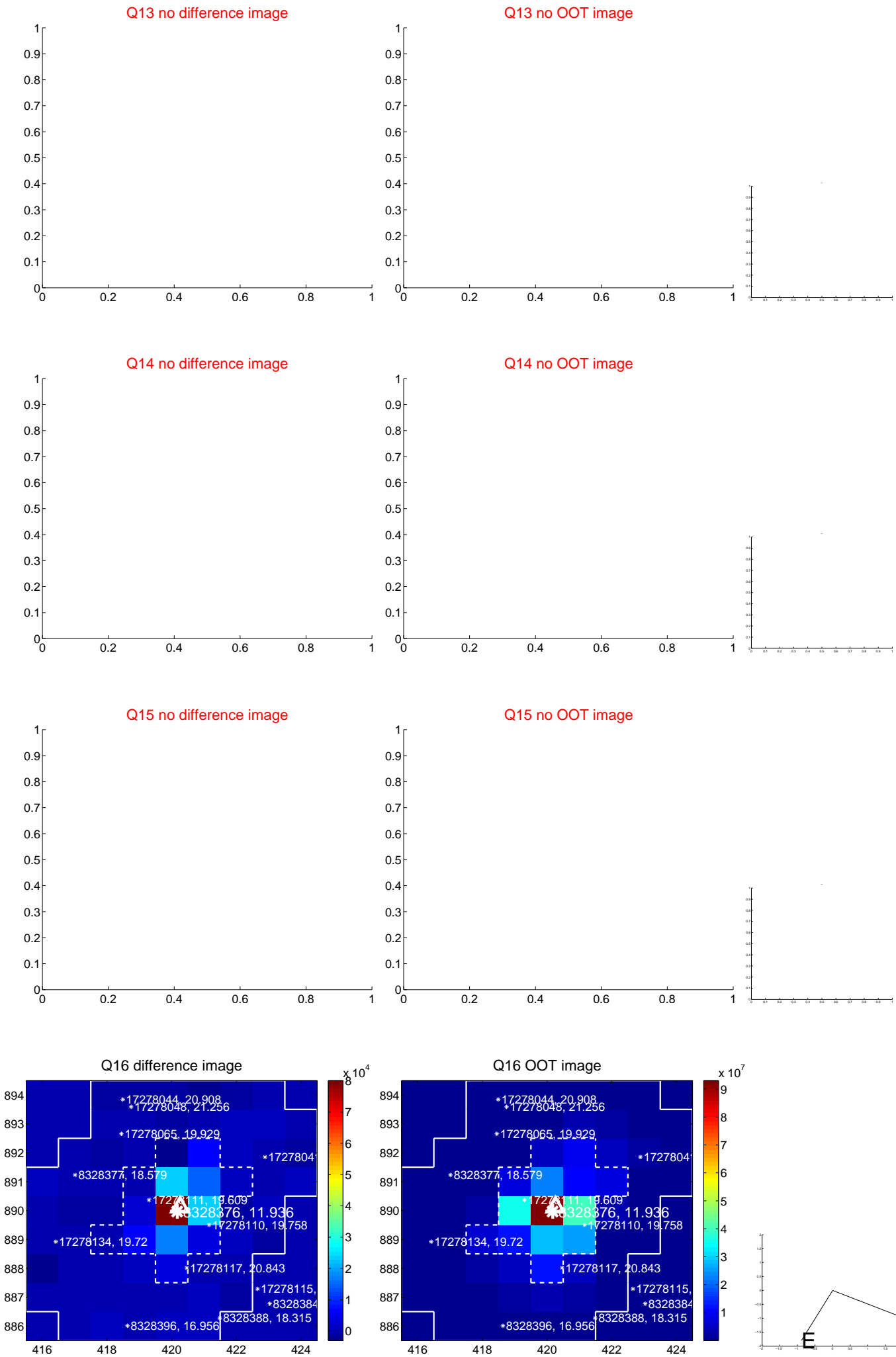
Q12 difference image



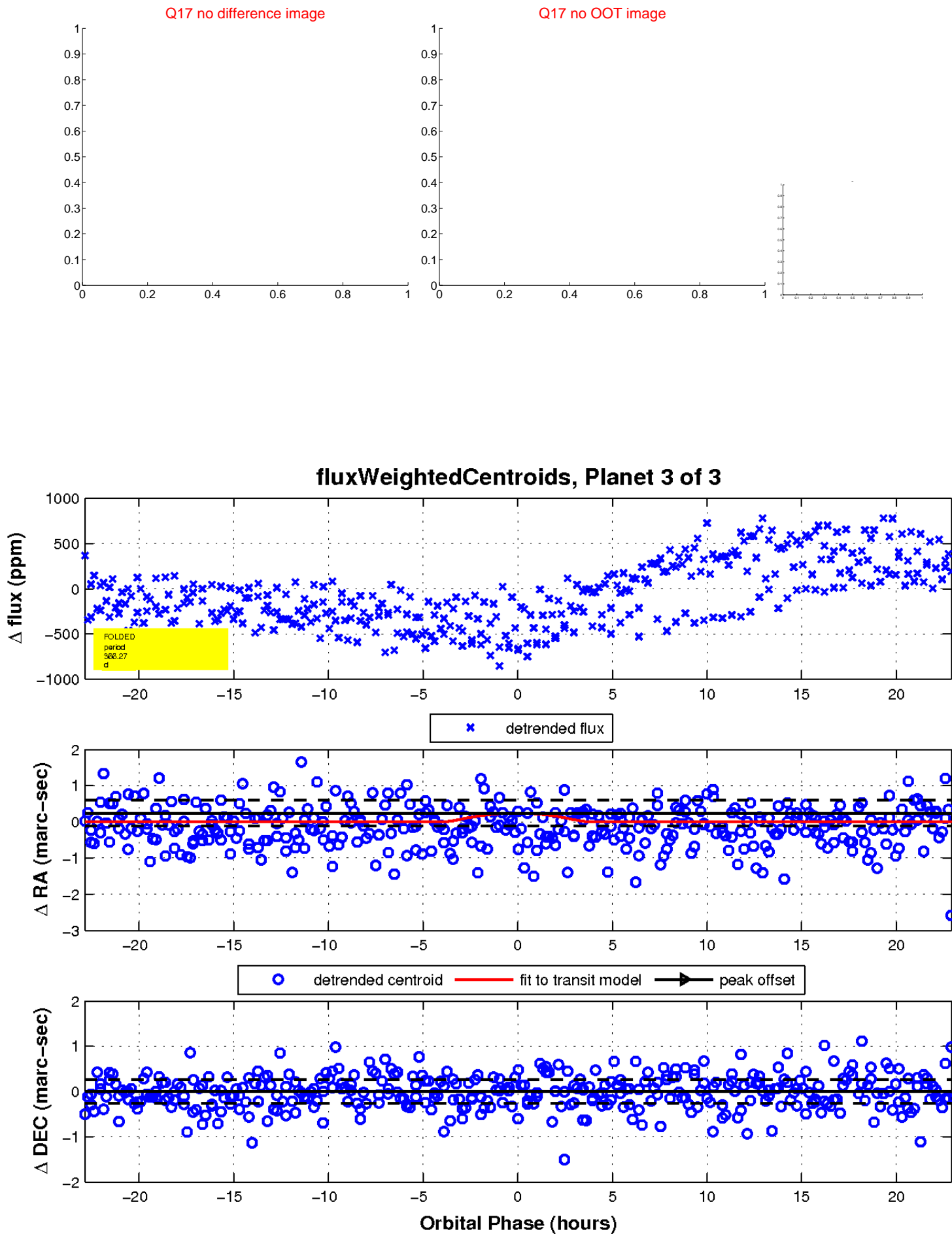
Q12 OOT image



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



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



UKIRT Image

Declination

