

# KIC 005355850

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005355850-01	OBS	No	363.303917	188.384520	390.5	2.157	22.7	16.4	3.22	8124	6.87	25.21
005355850-02	OBS	No	261.397664	254.166483	155.9	5.354	17.7	8.7	3.22	8124	7.84	39.10
005355850-03	OBS	No	489.717510	531.314029	121.3	4.500	15.9	-1.0	3.22	8124	3.58	16.93
005355850-04	OBS	No	444.499747	297.281267	95.3	0.621	13.1	1.4	3.22	8124	3.99	19.26
005355850-05	OBS	No	444.554759	295.827628	224.1	2.515	12.6	7.8	3.22	8124	5.52	19.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005355850-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

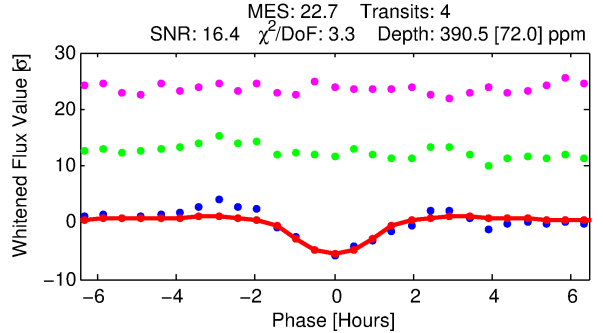
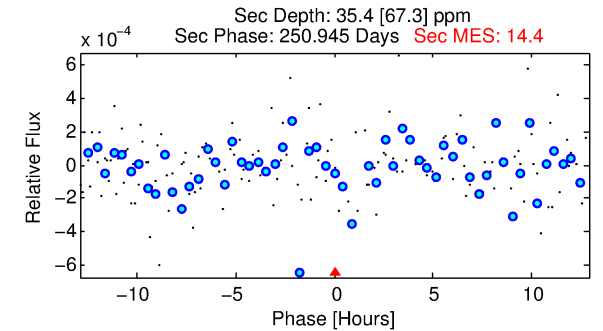
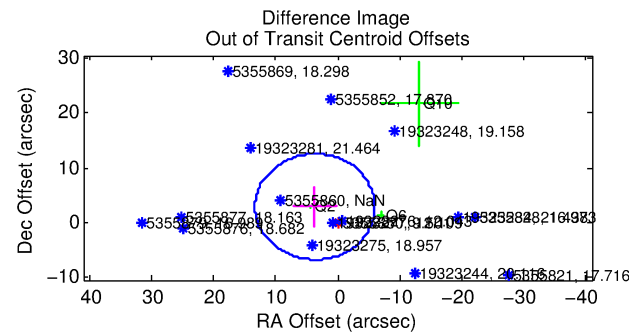
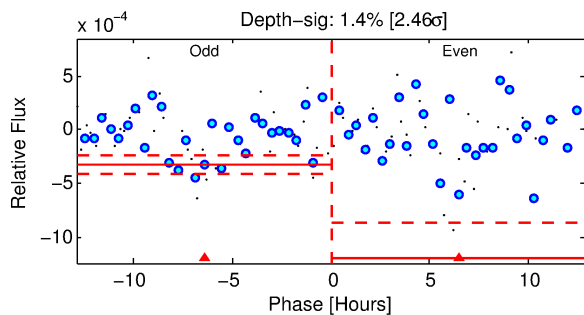
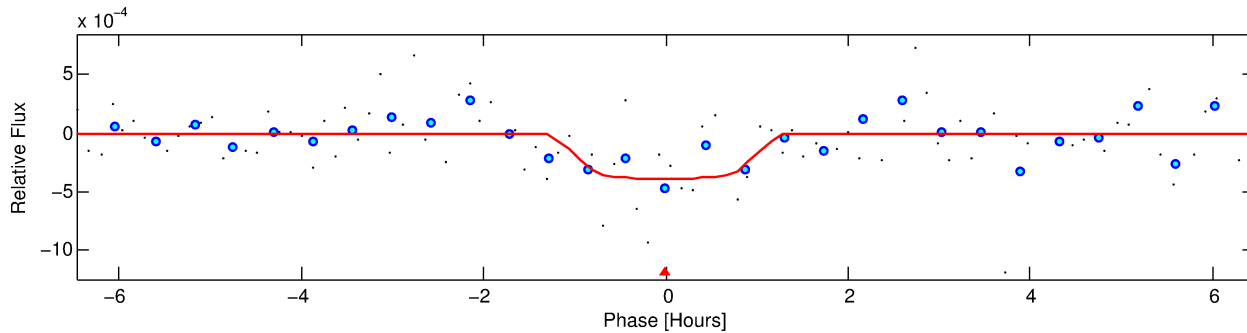
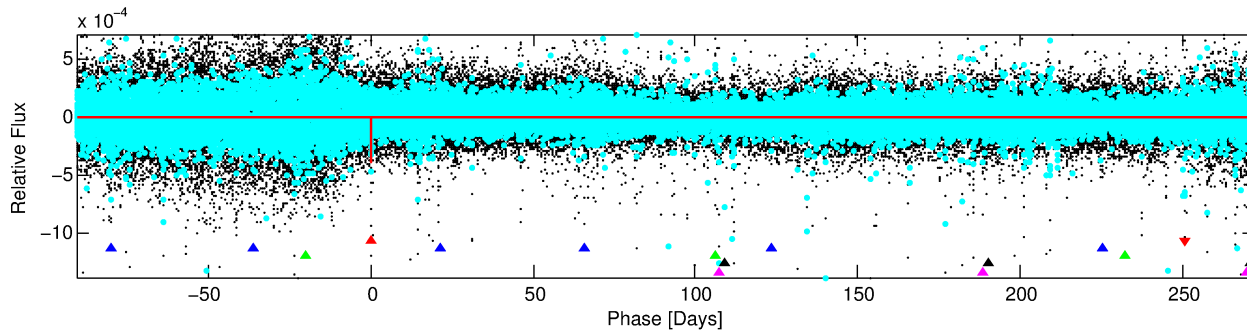
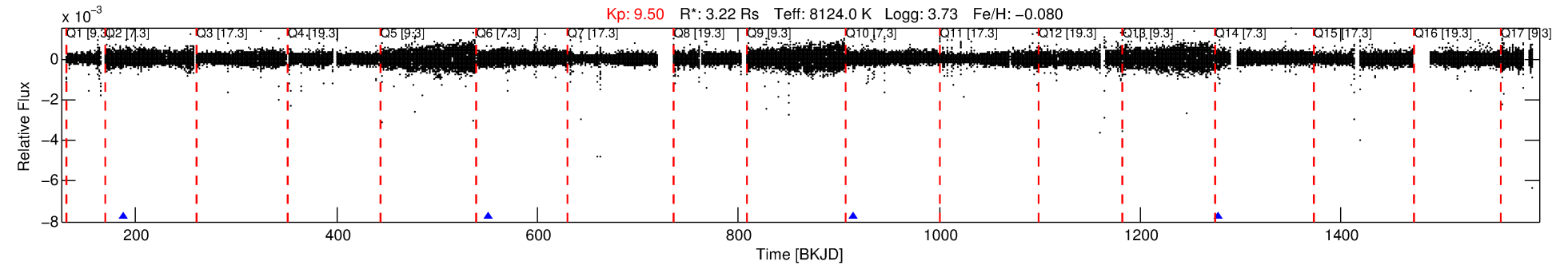
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005355850-01

No Significant Match Found

# DV One-Page Summary

KIC: 5355850 Candidate: 1 of 5 Period: 363.304 d



## DV Fit Results:

Period = 363.30392 [0.00473] d  
Epoch = 188.3845 [0.0093] BKJD  
Rp/R\* = 0.0195 [0.0283]  
a/R\* = 926.53 [7624.41]  
b = 0.72 [5.57]  
Seff = 25.21 [13.55]  
Teq = 571 [77] K  
Rp = 6.87 [10.22] Re  
a = 1.2670 [0.4225] AU  
Ag = 663.71 [2326.60] [0.28σ]  
Teffp = 4484 [3884] K [1.01σ]

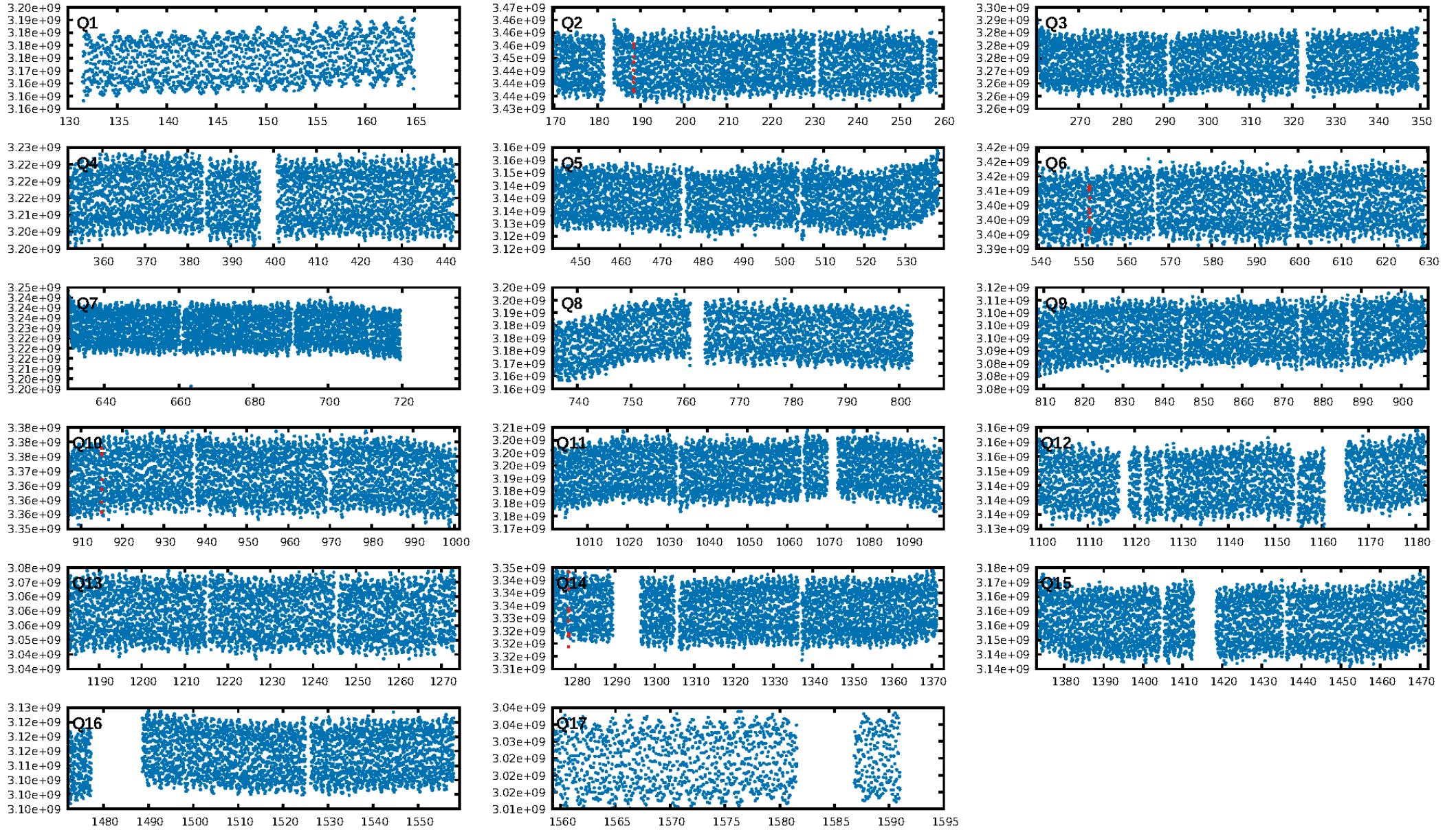
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [423.73σ]  
LongPeriod-sig: 100.0% [868.17σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 1.35e-07  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 39.4%  
Centroid-so: 0.501 arcsec [0.87σ]  
OotOffset-rm: 4.649 arcsec [1.44σ]  
KicOffset-rm: 3.050 arcsec [1.41σ]  
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]

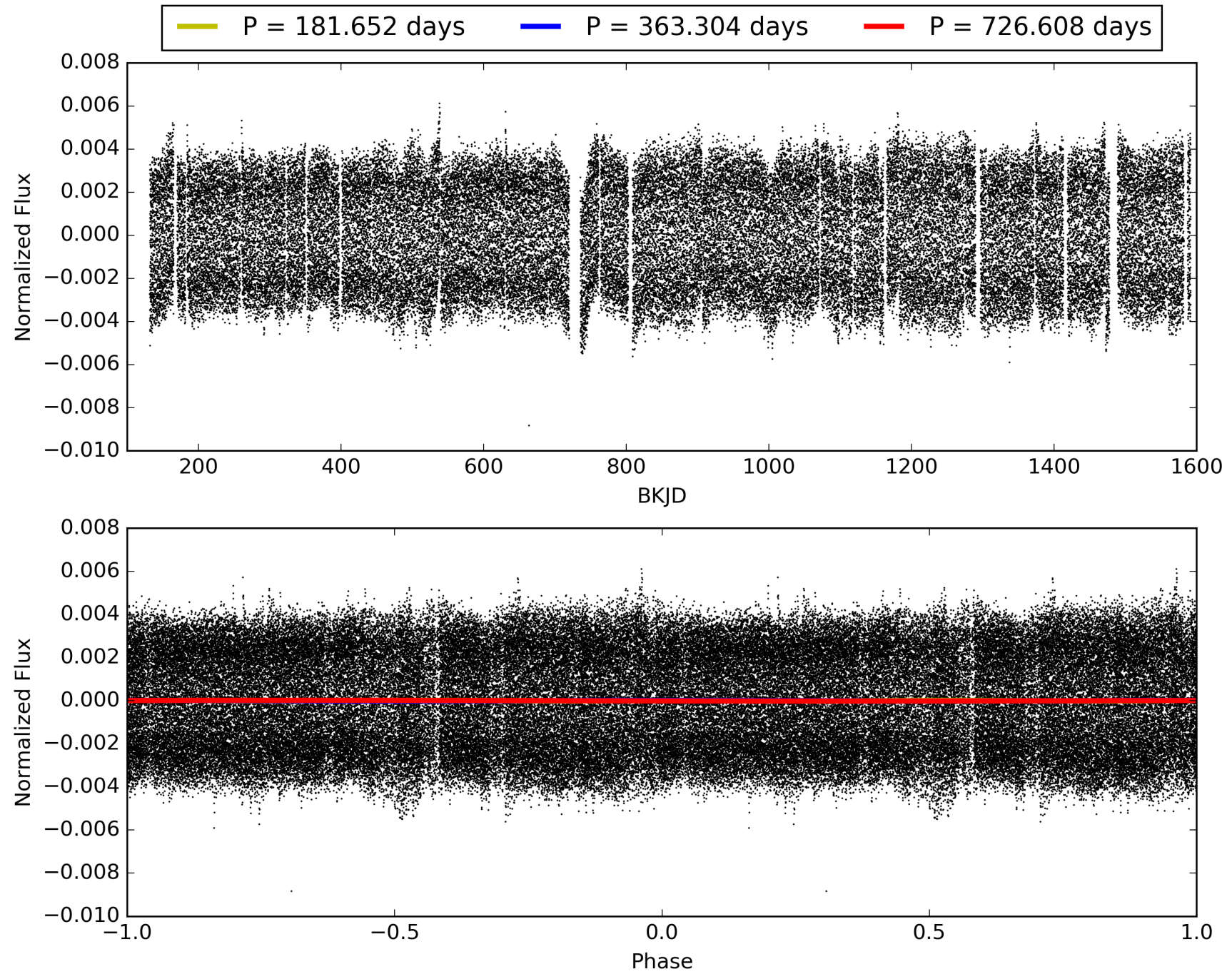
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:52:51 Z

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

# TCE 005355850-01, PDC Light Curves



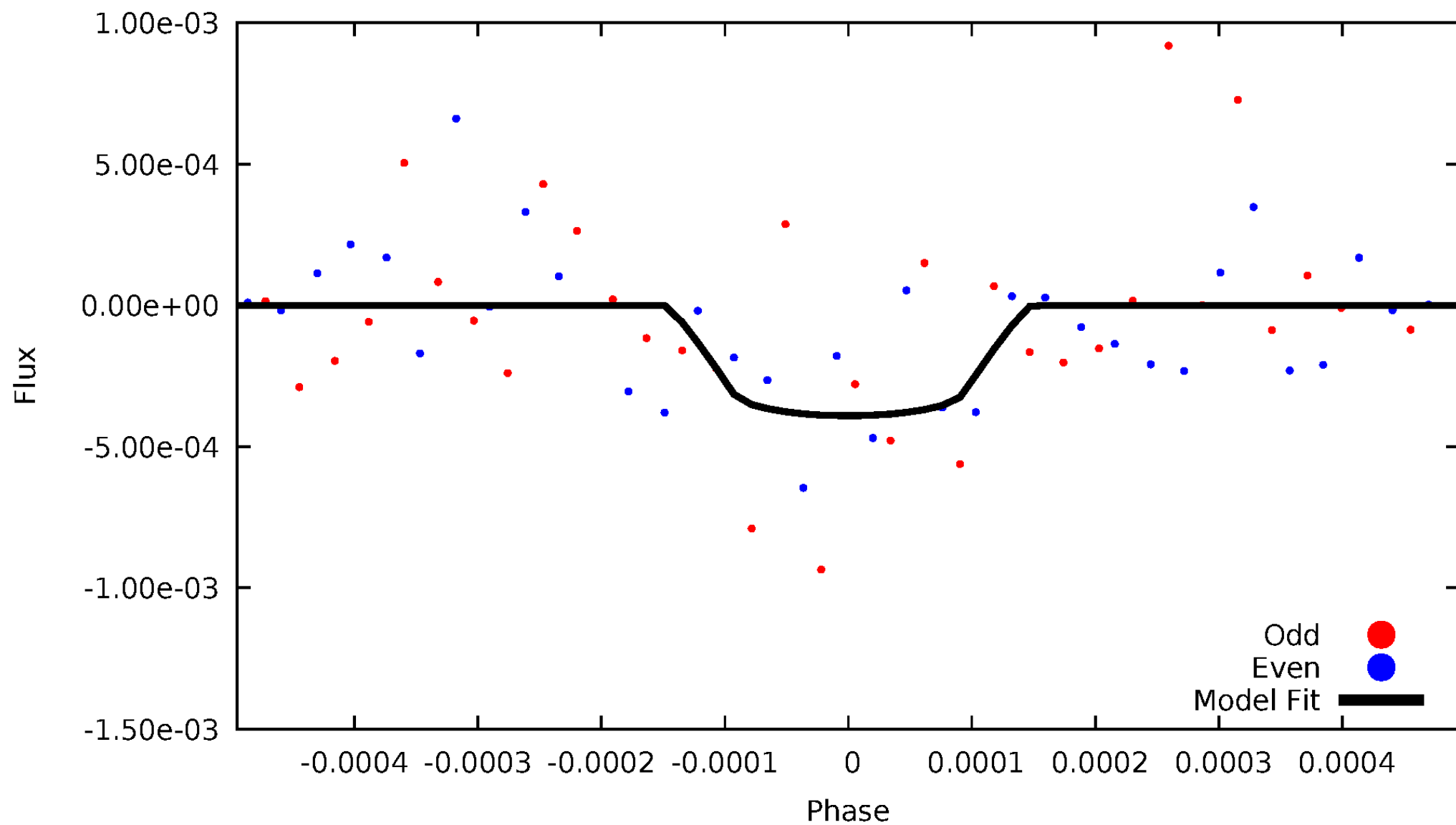
TCE 005355850-01





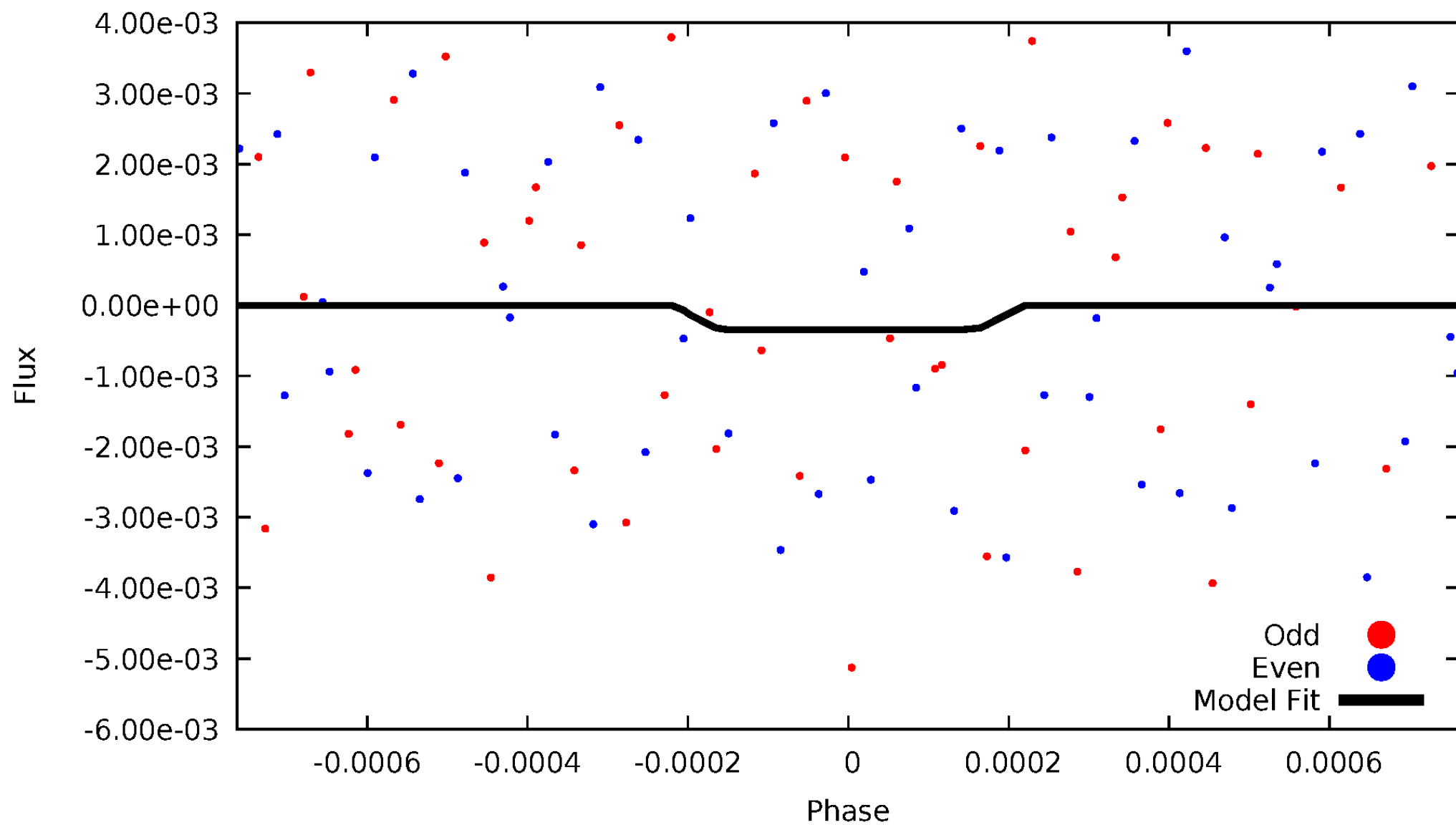
# DV Odd/Even

TCE 005355850-01



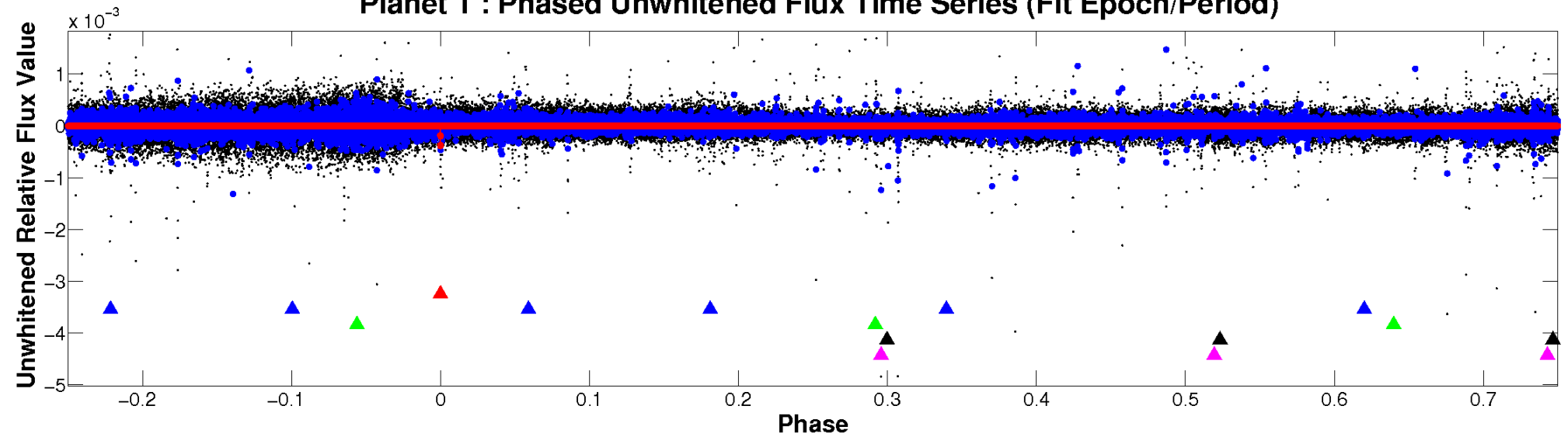
# ALT Odd/Even

TCE 005355850-01

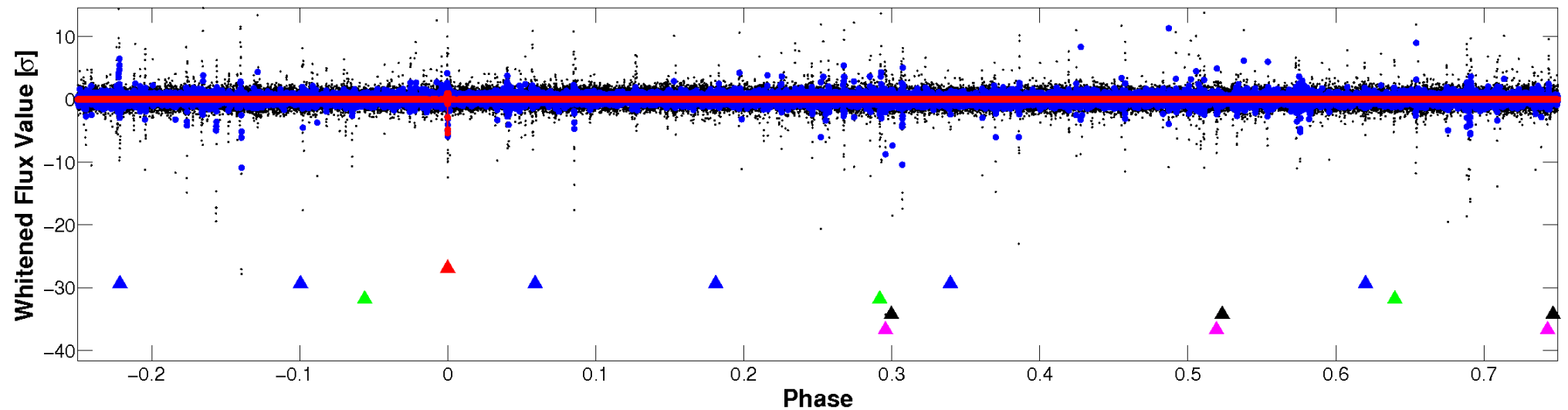


# Non-Whitened Vs. Whitened Light Curve

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

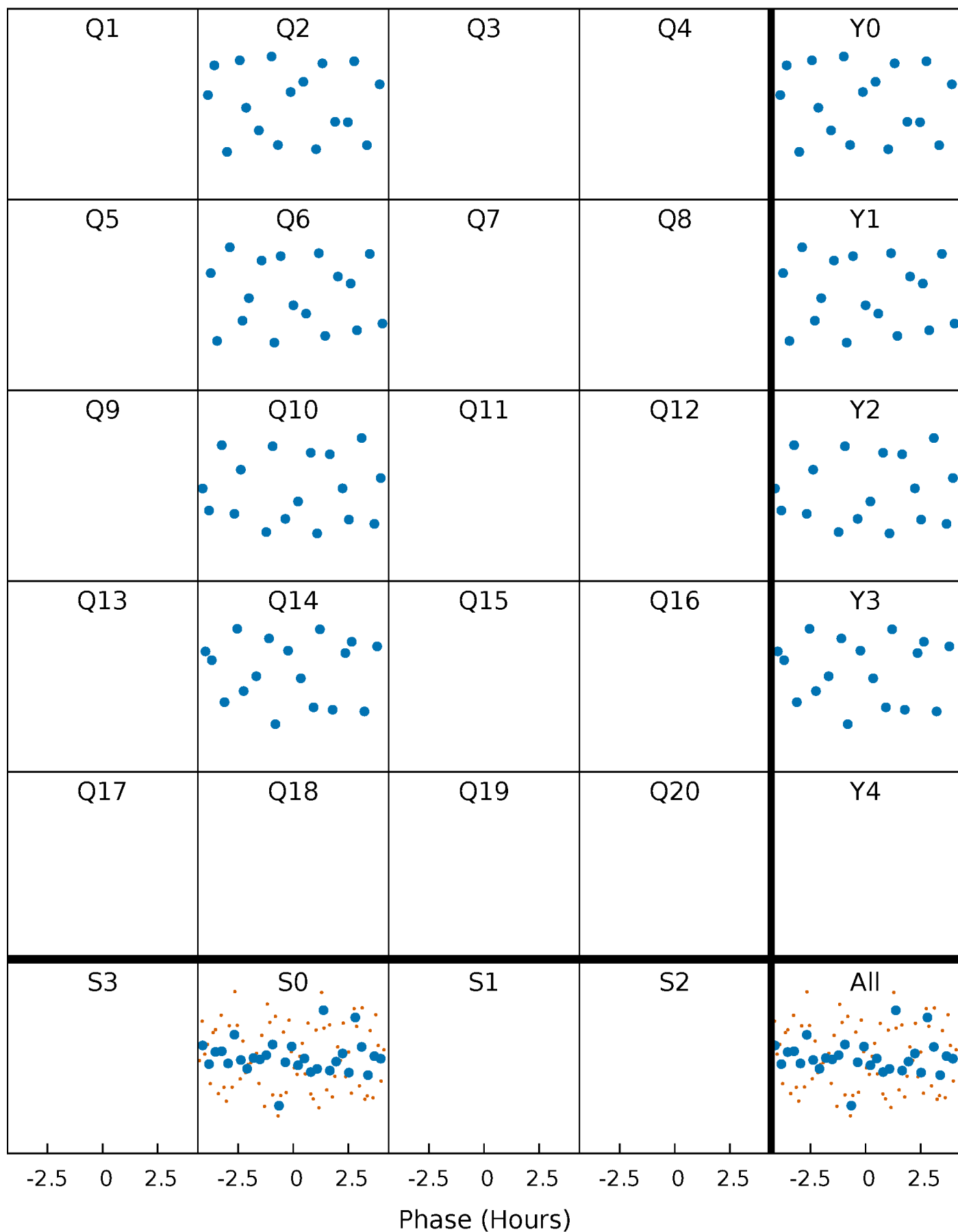


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

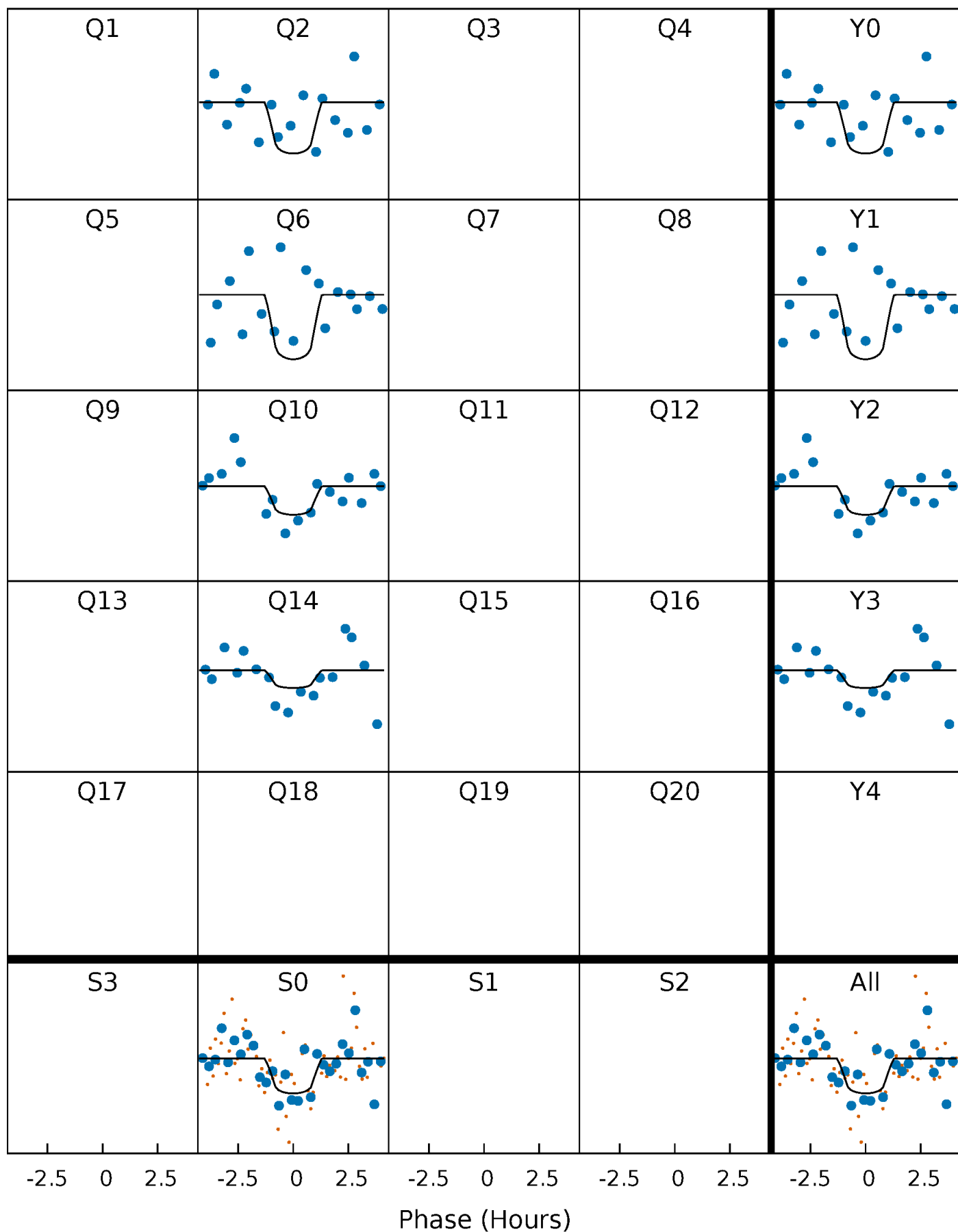
TCE 005355850-01 P=363.303917 Days  $T_0=188.384520$  (BKJD)





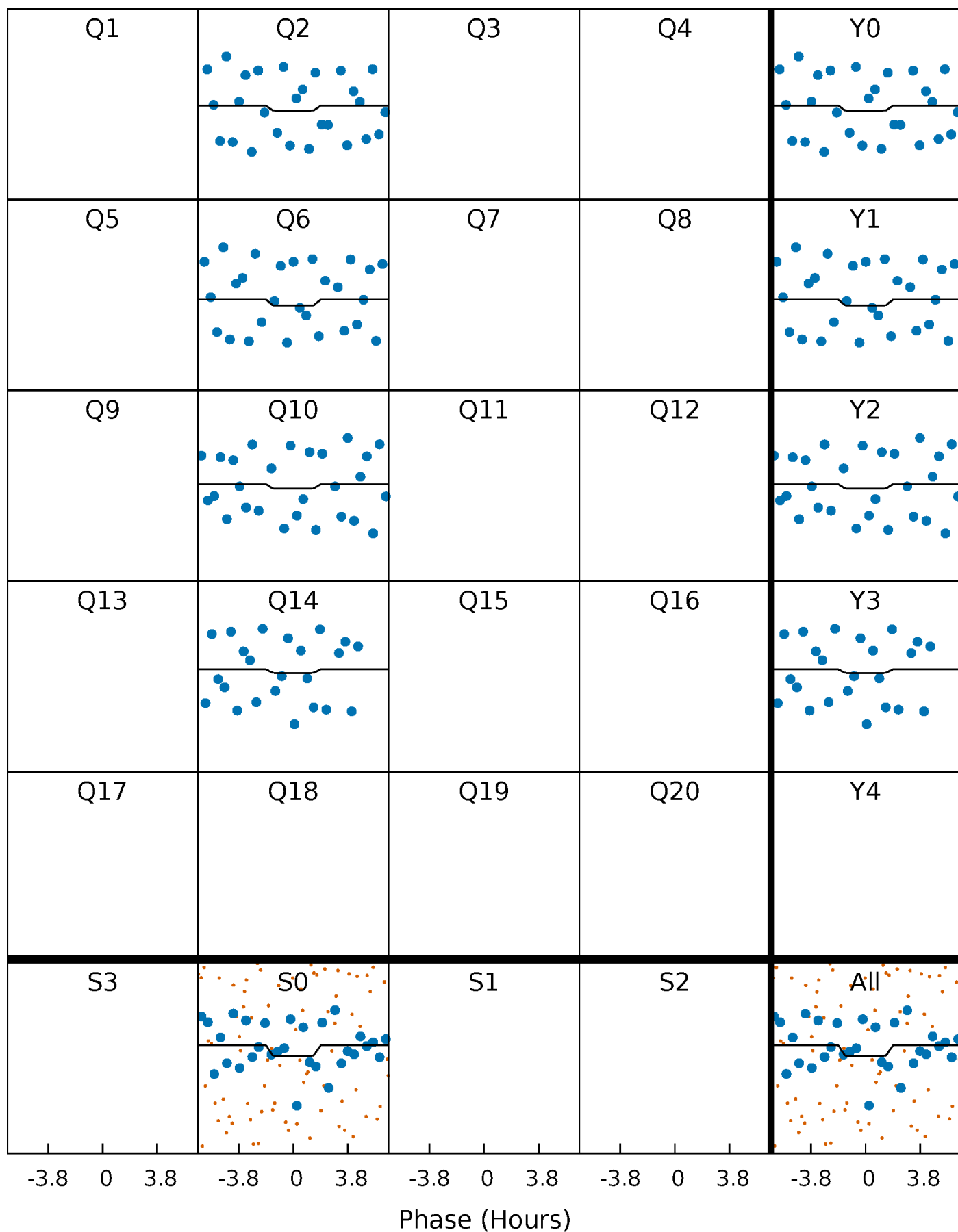
# DV Quarter-Phased Transit Curves

TCE 005355850-01 P=363.303917 Days  $T_0=188.384520$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

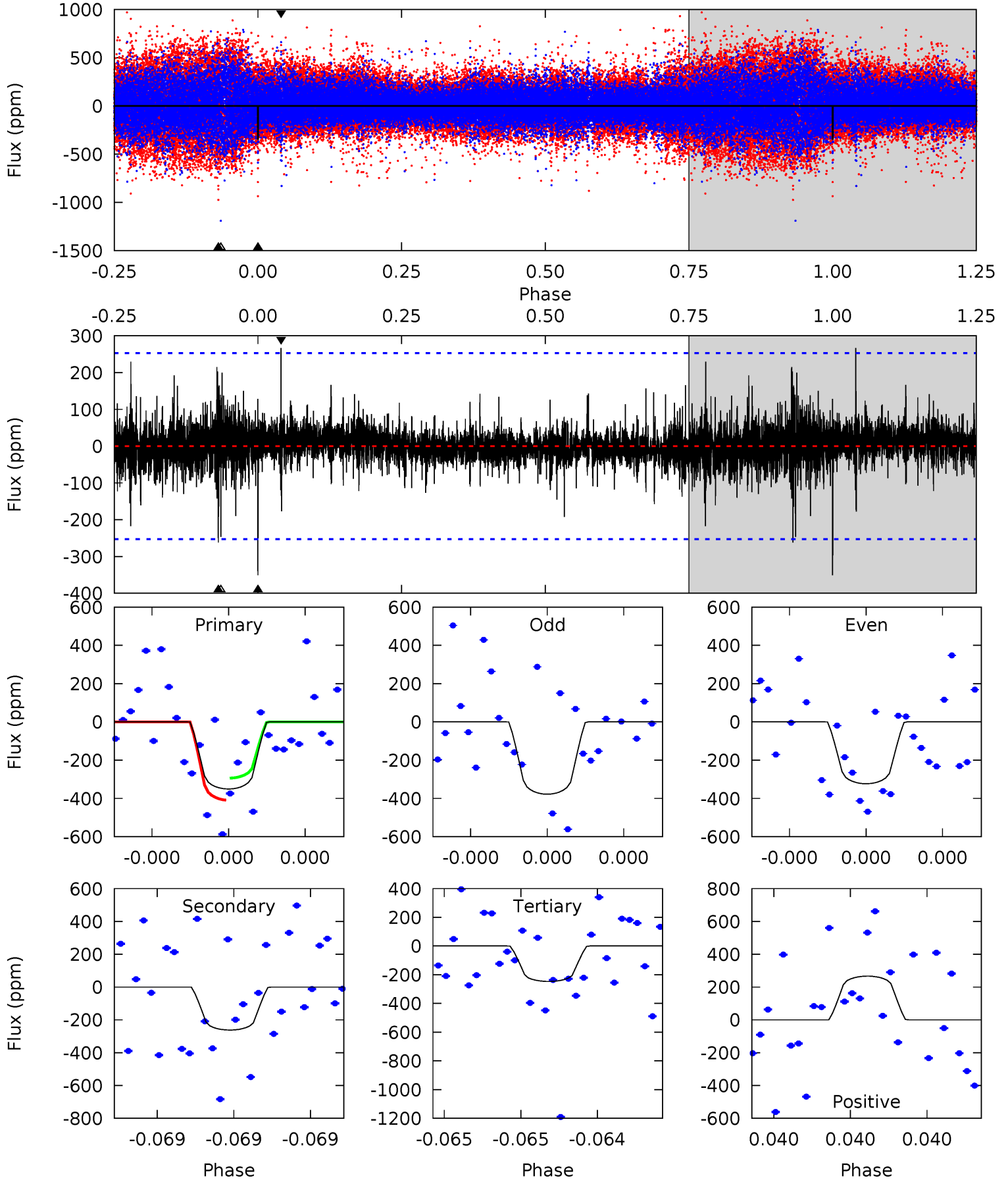
TCE 005355850-01 P=363.297413 Days  $T_0=188.374082$  (BKJD)



# DV Model-Shift Uniqueness Test

005355850-01, P = 363.303917 Days, E = 188.384520 Days

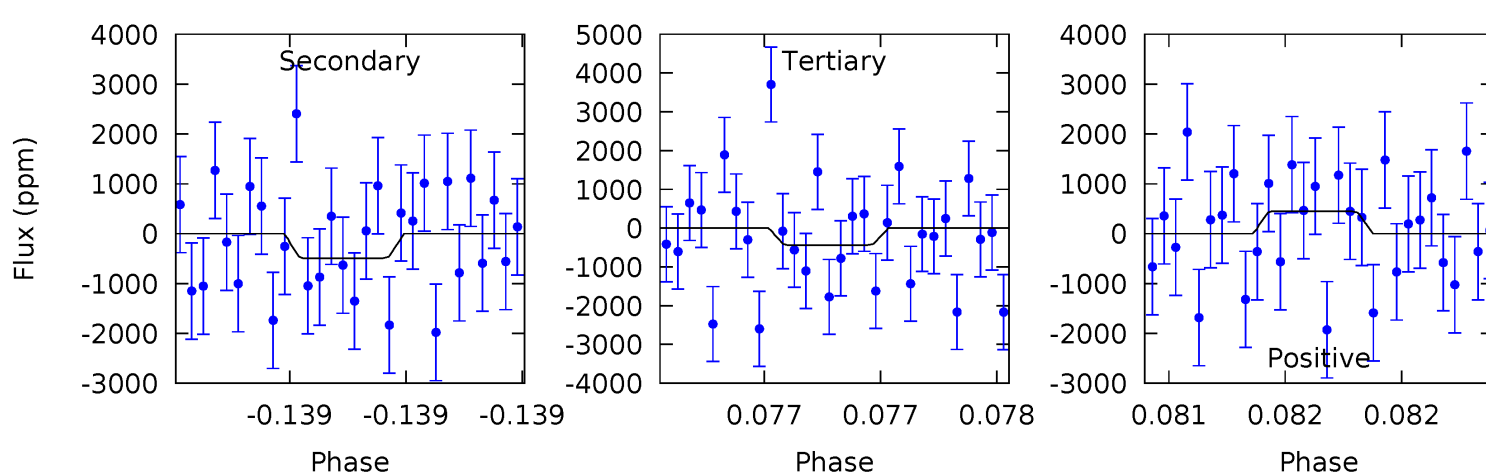
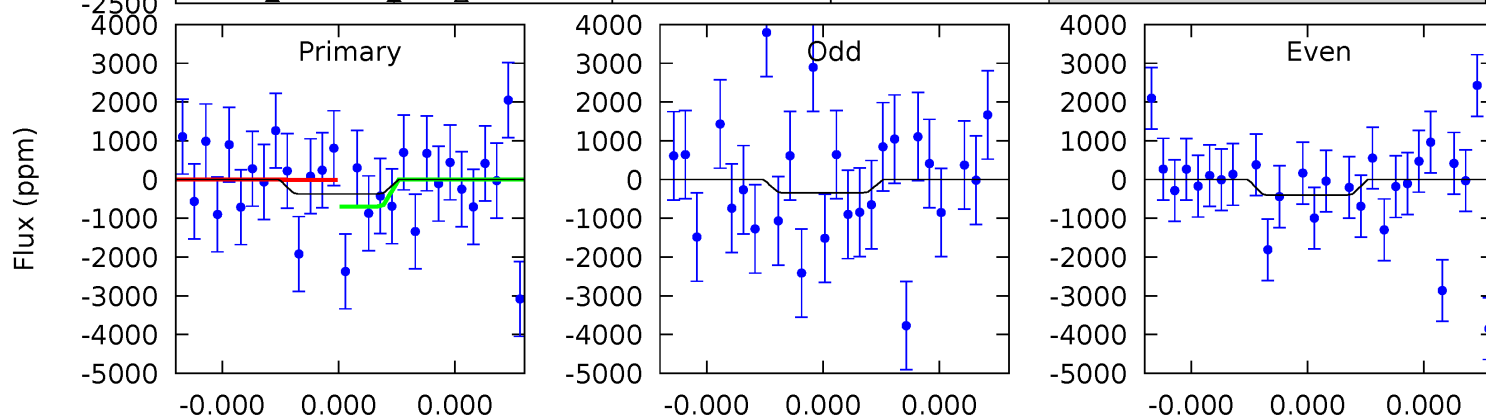
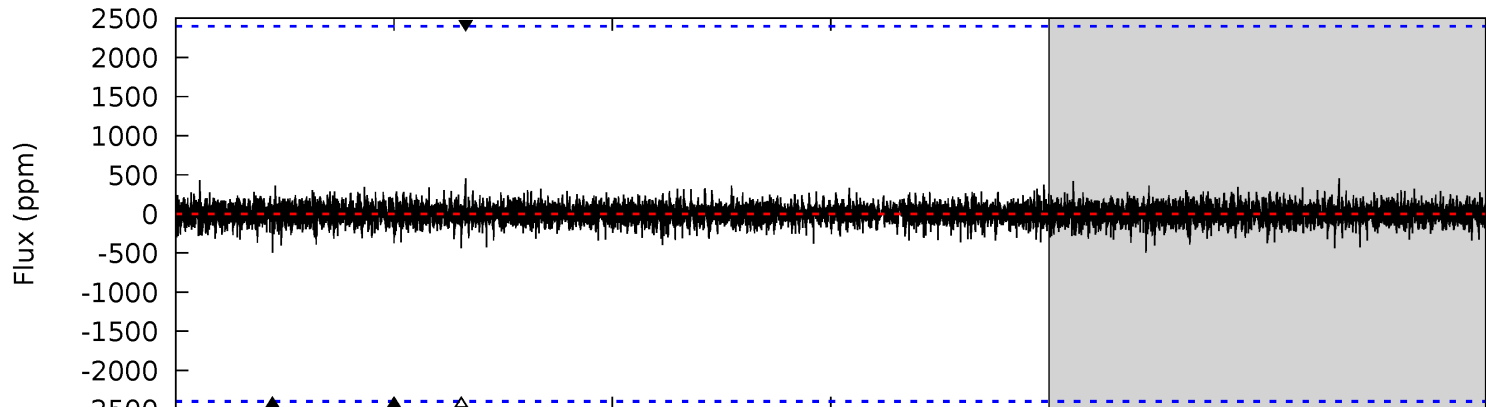
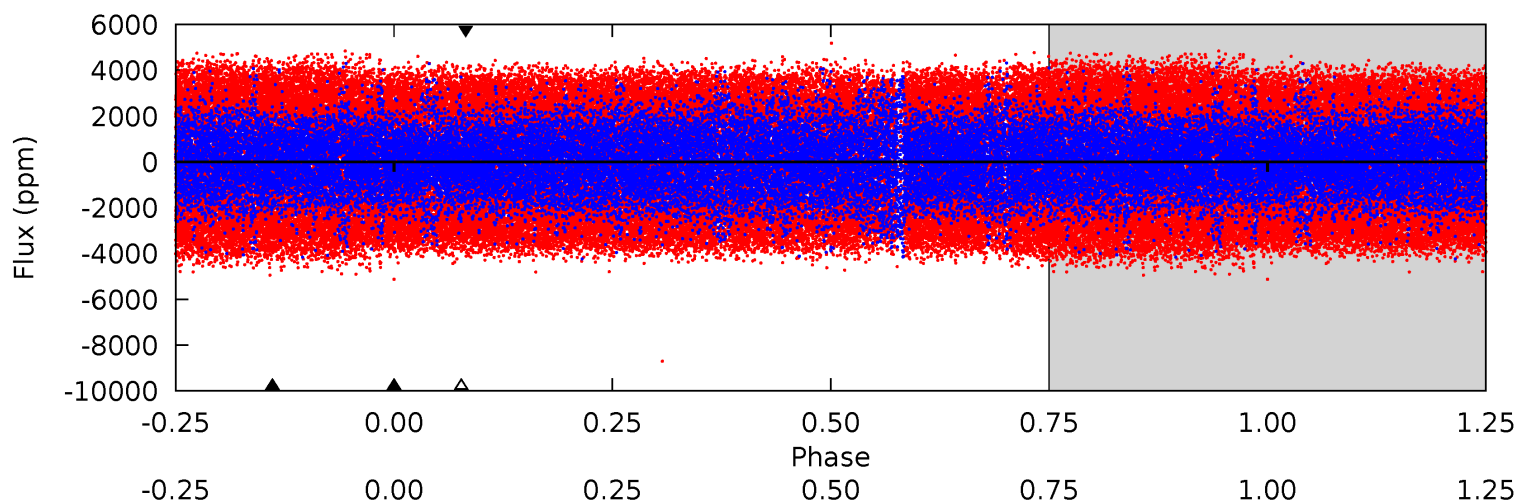
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.86	5.87	5.53	5.97	5.66	3.62	0.75	2.33	1.88	0.34	-0.10	0.64	1.07	0.43	1.26



# Alt Model-Shift Uniqueness Test

005355850-01, P = 363.297413 Days, E = 188.374082 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
0.87	1.16	1.03	1.05	5.60	3.52	0.20	-0.16	-0.18	0.13	0.10	0.07	0.92	0.48	0.80





### Stellar Parameters For KIC 005355850

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8124^{+64}_{-97}$	$3.735^{+0.315}_{-0.052}$	$-0.080^{+0.200}_{-0.150}$	$3.220^{+0.370}_{-1.109}$	$2.054^{+0.208}_{-0.261}$	$0.087^{+0.175}_{-0.021}$
	+1%/-1%	+8%/-1%	+250%/-188%	+11%/-34%	+10%/-13%	+201%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005355850-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-262 \pm 45$	$9.11^{+8.49}_{-6.02}$	$779^{+31}_{-67}$	$5968^{+6046}_{-1446}$	$2820^{+22538}_{-2077}$
Alt.	$-496 \pm 428$	$9.07^{+8.09}_{-6.25}$	$778^{+32}_{-66}$	$6618^{+9101}_{-2984}$	$4283^{+43873}_{-4046}$

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

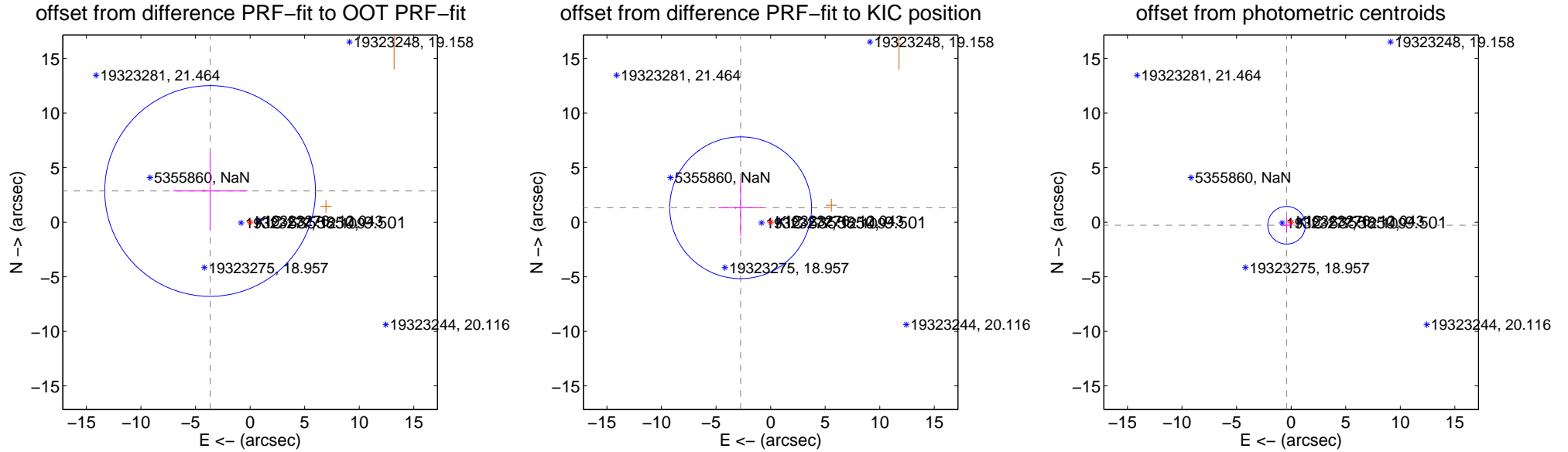
## DV Centroid Data

Supplemental centroid analysis for 005355850-01. **Kepler magnitude: 9.50.** Transit SNR 16.36

**There are 0 quarters with good PRF difference image offsets**

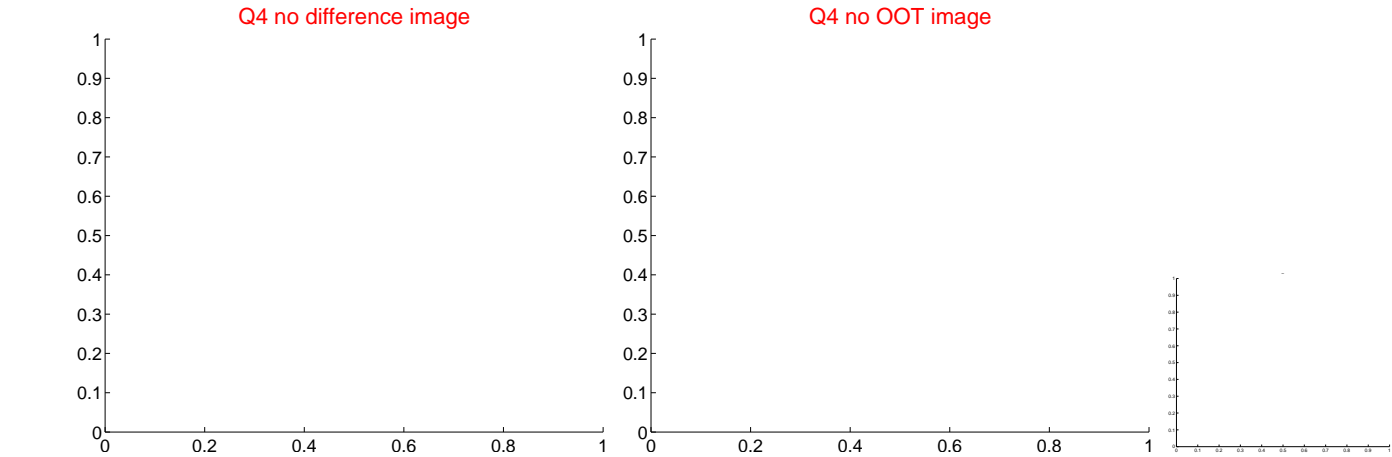
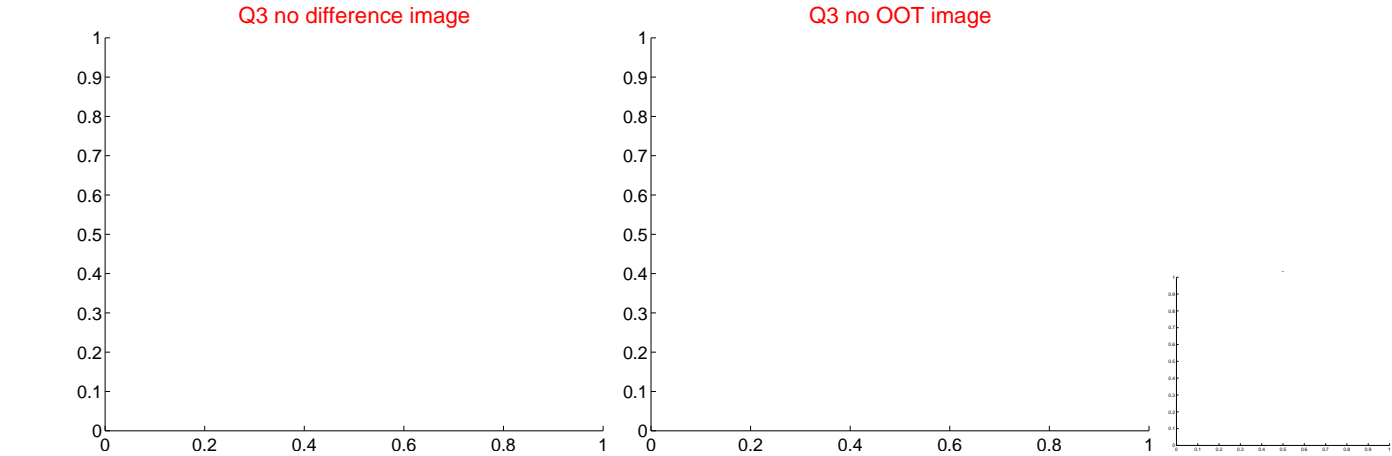
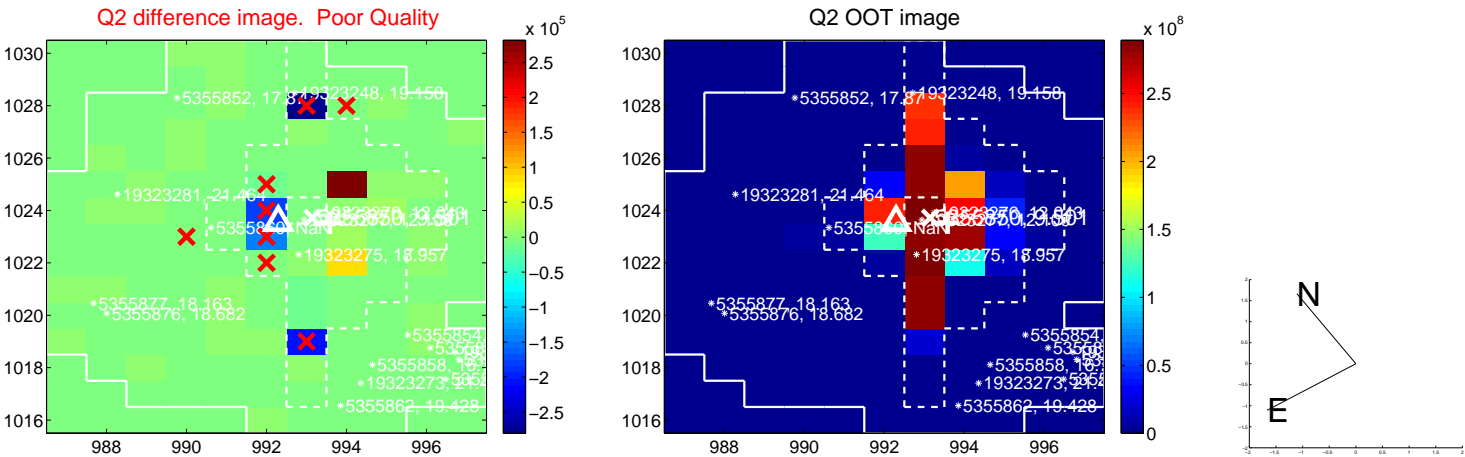
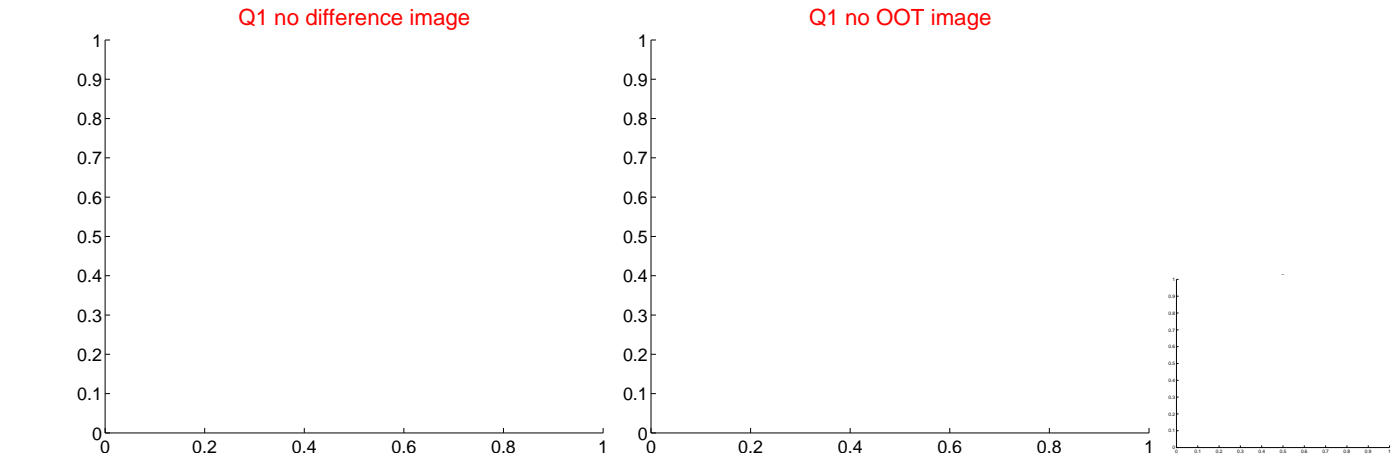
The direct PRF centroid is offset from the target star catalog position by about 1.42 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.649 \pm 3.218$	1.44	$3.666 \pm 3.405$	$2.860 \pm 3.606$
PRF-fit source offset from KIC position	$3.050 \pm 2.165$	1.41	$2.747 \pm 2.059$	$1.326 \pm 2.573$
photometric centroid source offset	$0.50 \pm 0.57$	0.87	$0.42 \pm 0.51$	$-0.28 \pm 0.70$

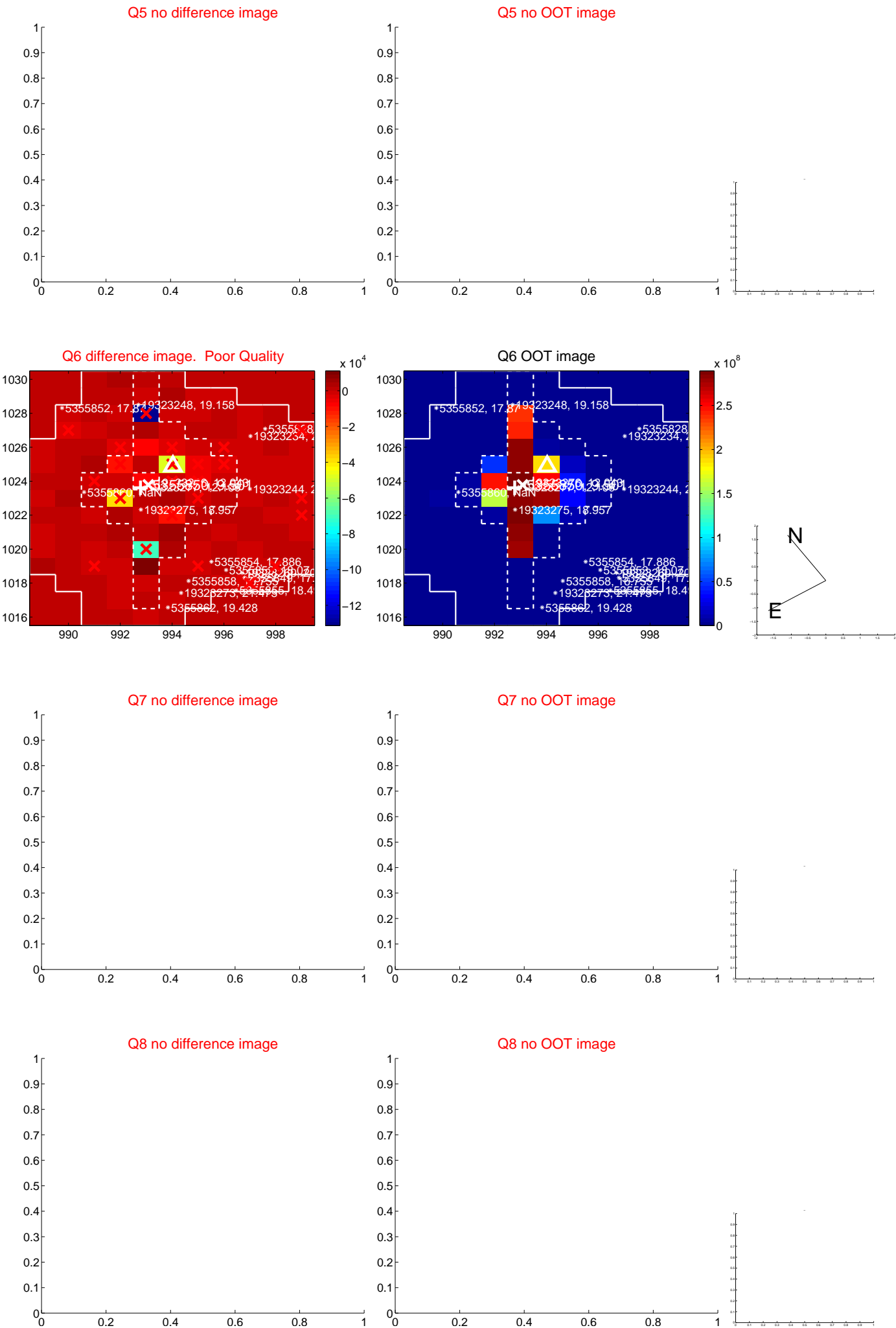


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

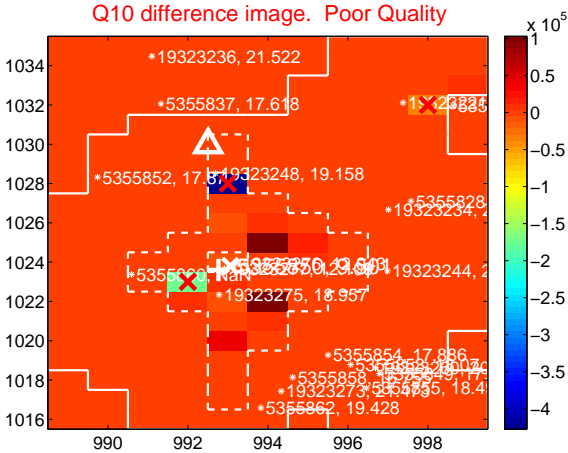
Q9 no difference image



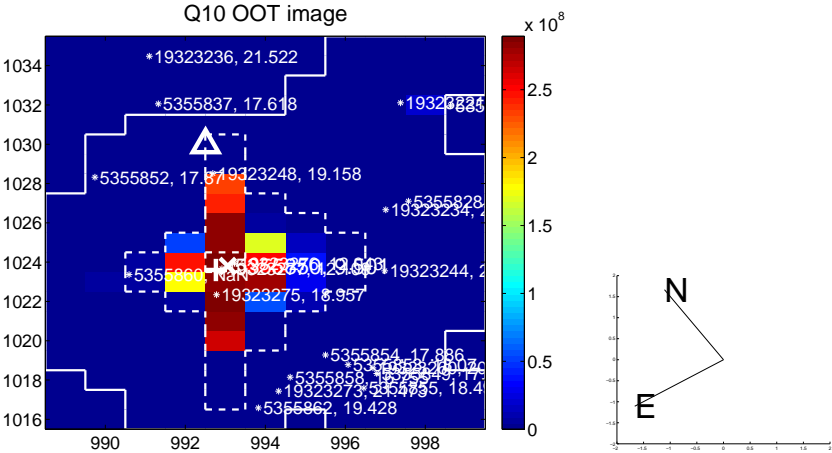
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



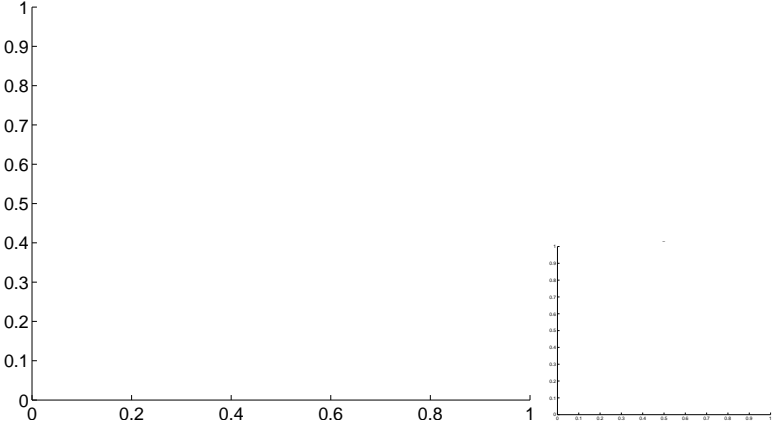
Q11 no OOT image



Q12 no difference image



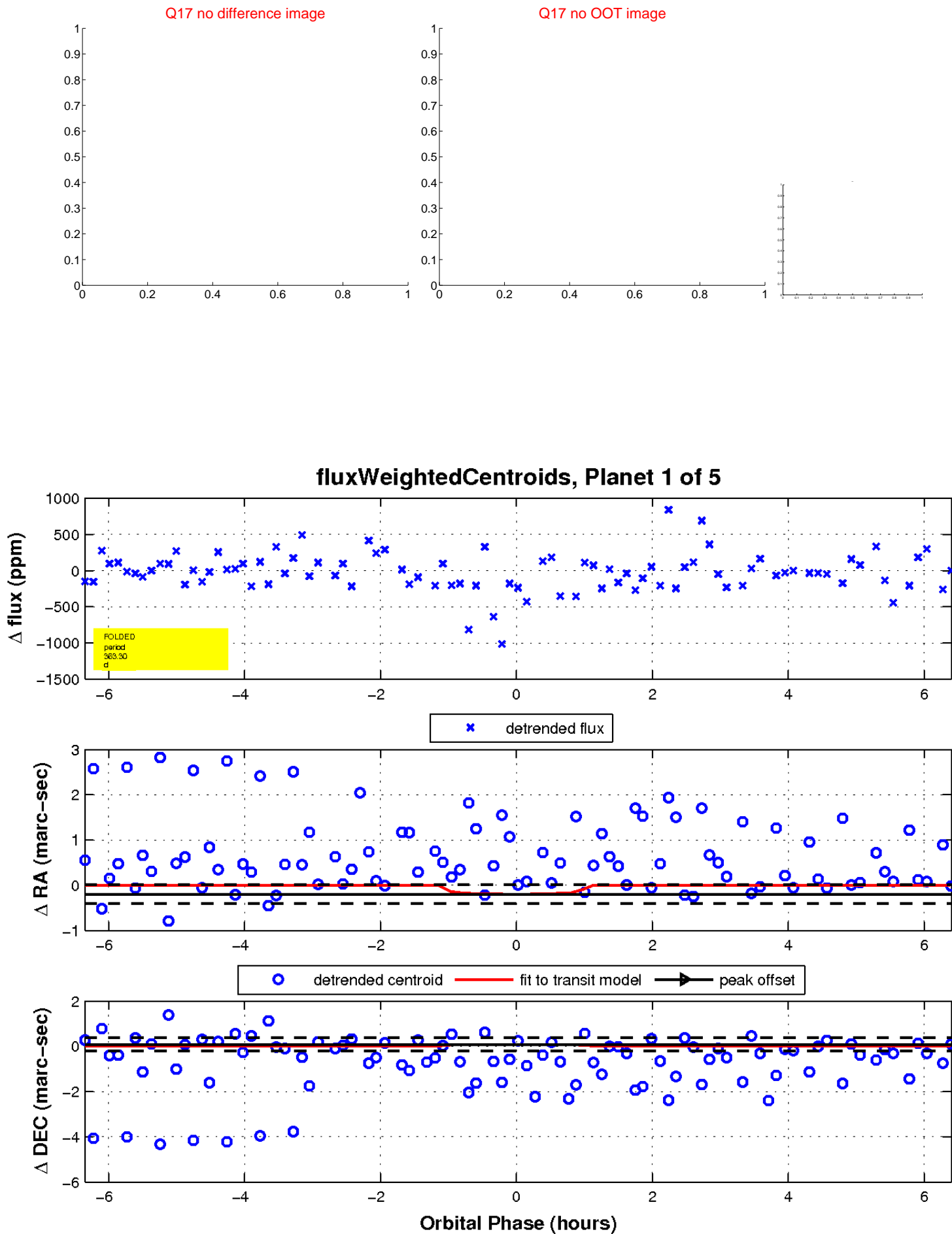
Q12 no OOT image



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

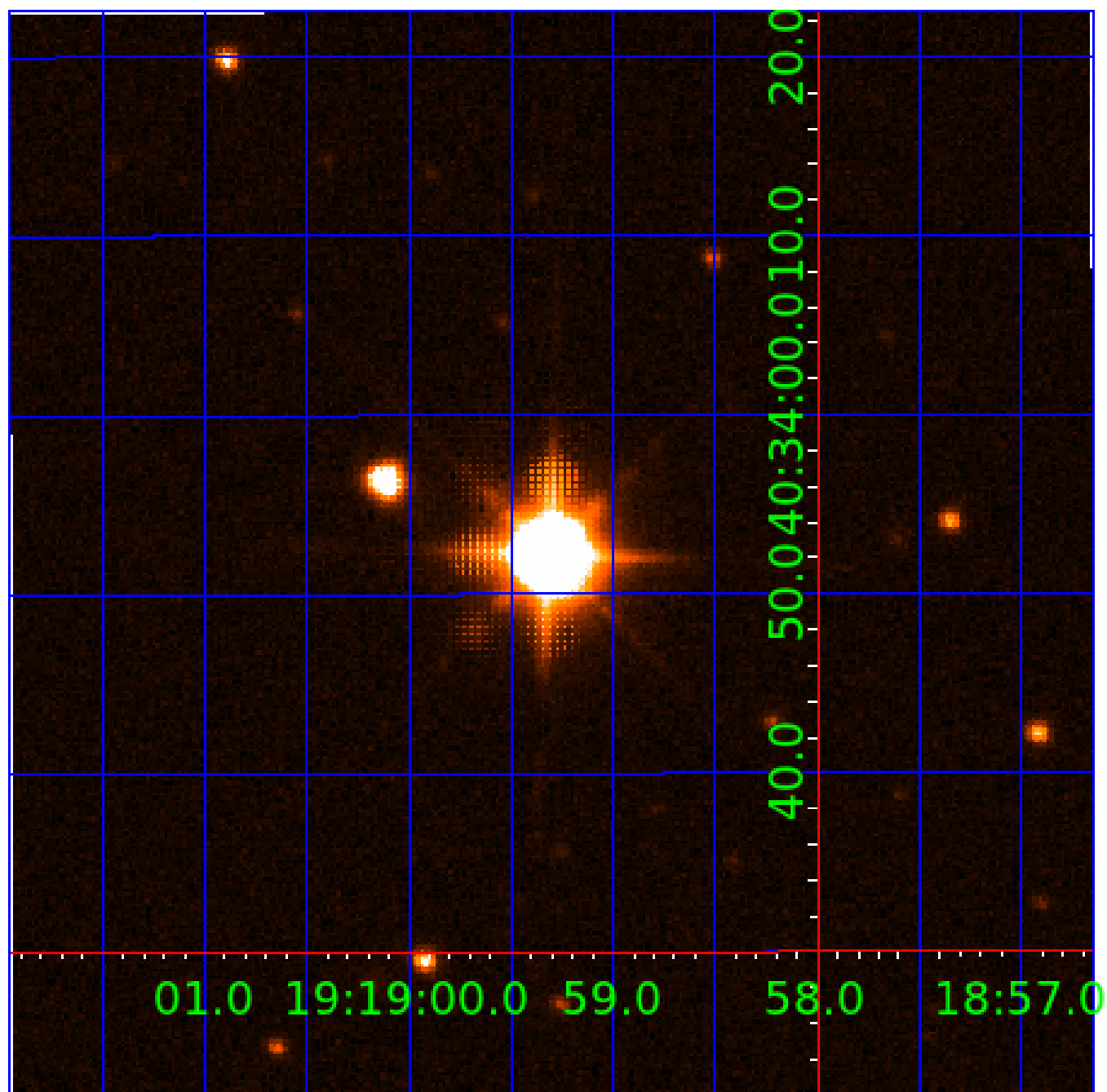


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005355850

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005355850-01	OBS	No	363.303917	188.384520	390.5	2.157	22.7	16.4	3.22	8124	6.87	25.21
005355850-02	OBS	No	261.397664	254.166483	155.9	5.354	17.7	8.7	3.22	8124	7.84	39.10
005355850-03	OBS	No	489.717510	531.314029	121.3	4.500	15.9	-1.0	3.22	8124	3.58	16.93
005355850-04	OBS	No	444.499747	297.281267	95.3	0.621	13.1	1.4	3.22	8124	3.99	19.26
005355850-05	OBS	No	444.554759	295.827628	224.1	2.515	12.6	7.8	3.22	8124	5.52	19.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005355850-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

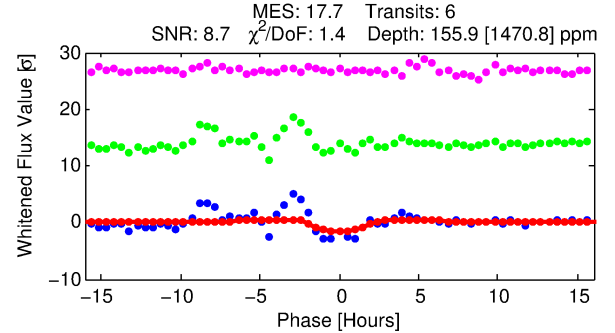
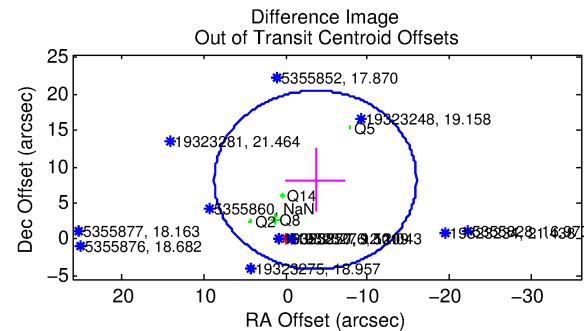
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 005355850-02

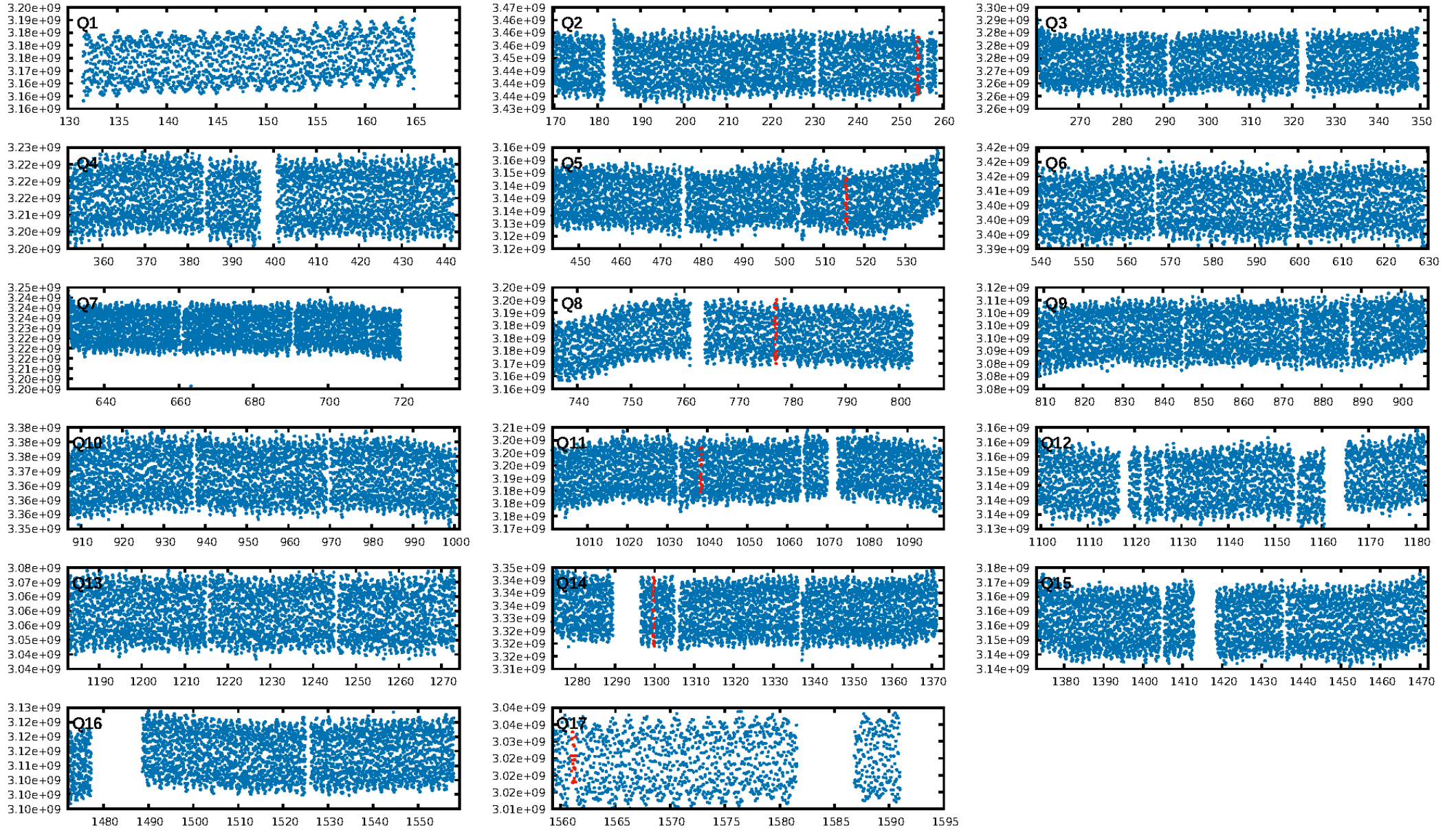
No Significant Match Found

KIC: 5355850    Candidate: 2 of 5    Period: 261.398 d

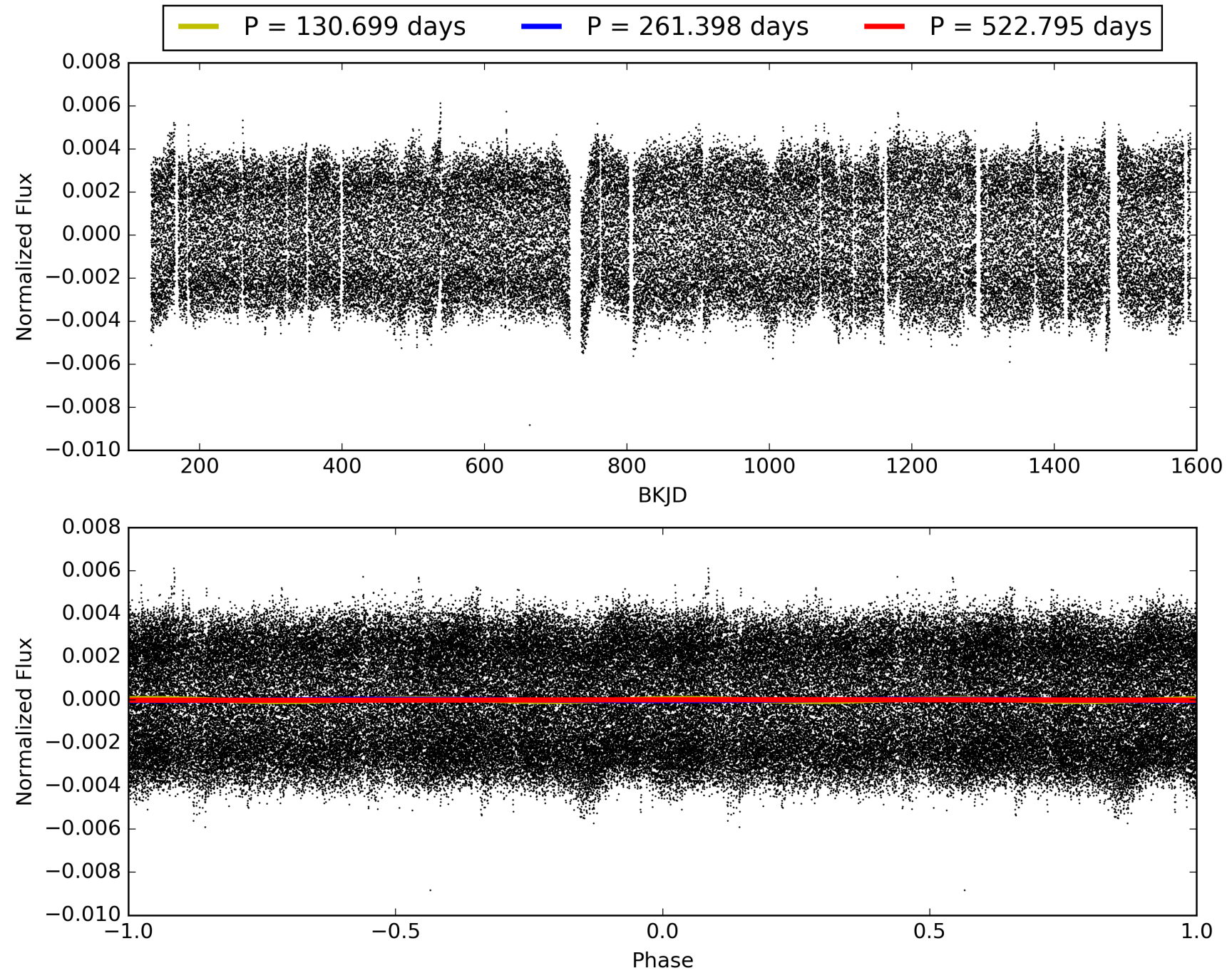


ShortPeriod-sig: N/A  
 LongPeriod-sig: 100.0% [423.73σ]  
 ModelChiSquare2-sig: 0.0%  
 ModelChiSquareGof-sig: 58.1%  
 Bootstrap-pfa: 4.35e-07  
 RollingBand-fgt: 1.00 [5/5]  
 GhostDiagnostic-chr: N/A  
 Centroid-sig: 8.4%  
 Centroid-so: 2.046 arcsec [1.71σ]  
 OotOffset-rm: 8.941 arcsec [2.18σ]  
 KicOffset-rm: 8.569 arcsec [2.11σ]  
 OotOffset-st: 2/0/1/1 [4]  
 KicOffset-st: 2/0/1/1 [4]  
 DiffImageQuality-fgm: 0.00 [0/4]  
 DiffImageOverlap-fno: 1.00 [4/4]

# TCE 005355850-02, PDC Light Curves



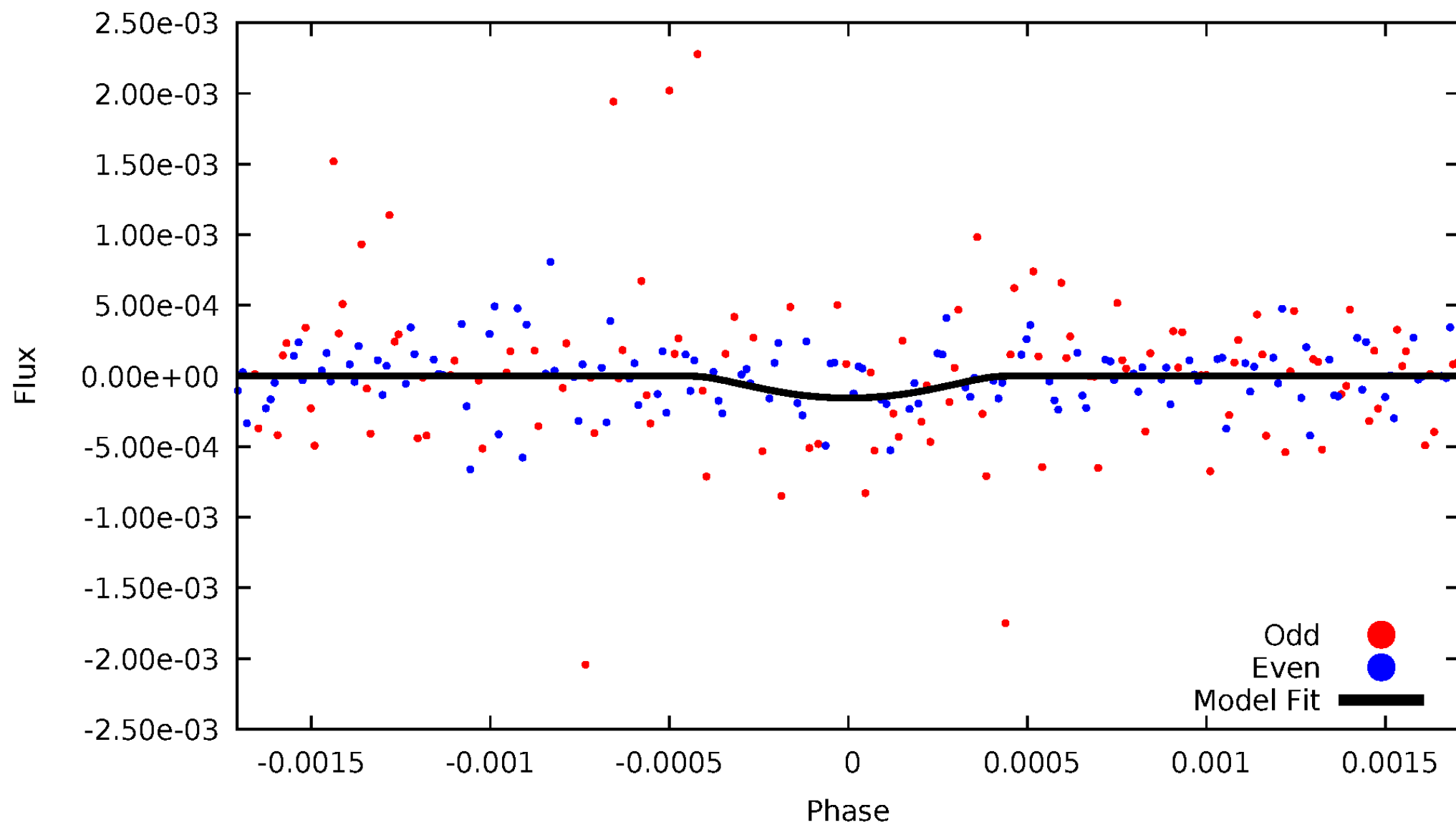
TCE 005355850-02





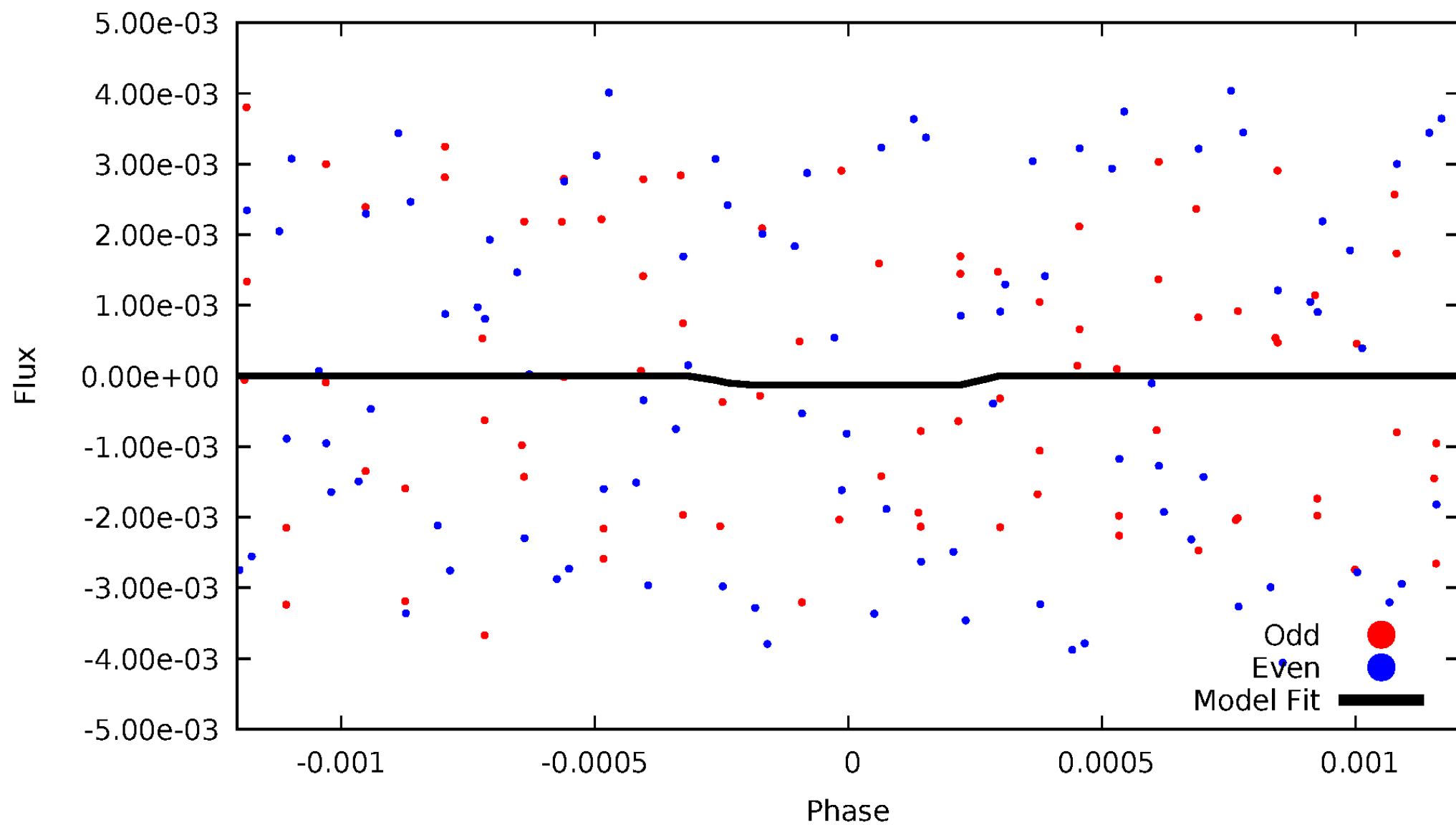
# DV Odd/Even

TCE 005355850-02



# ALT Odd/Even

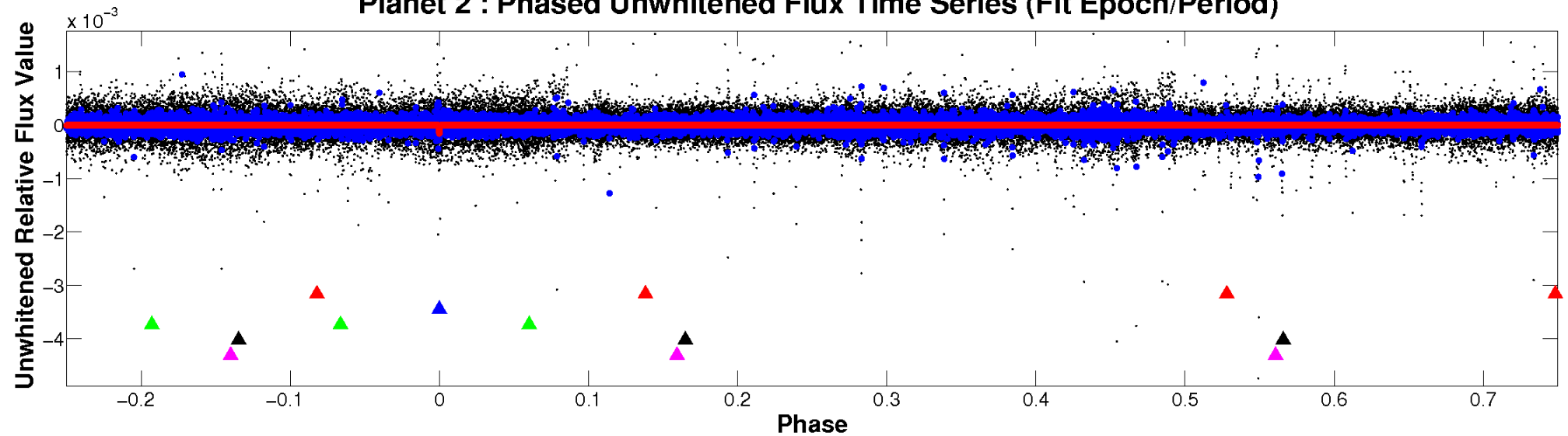
TCE 005355850-02



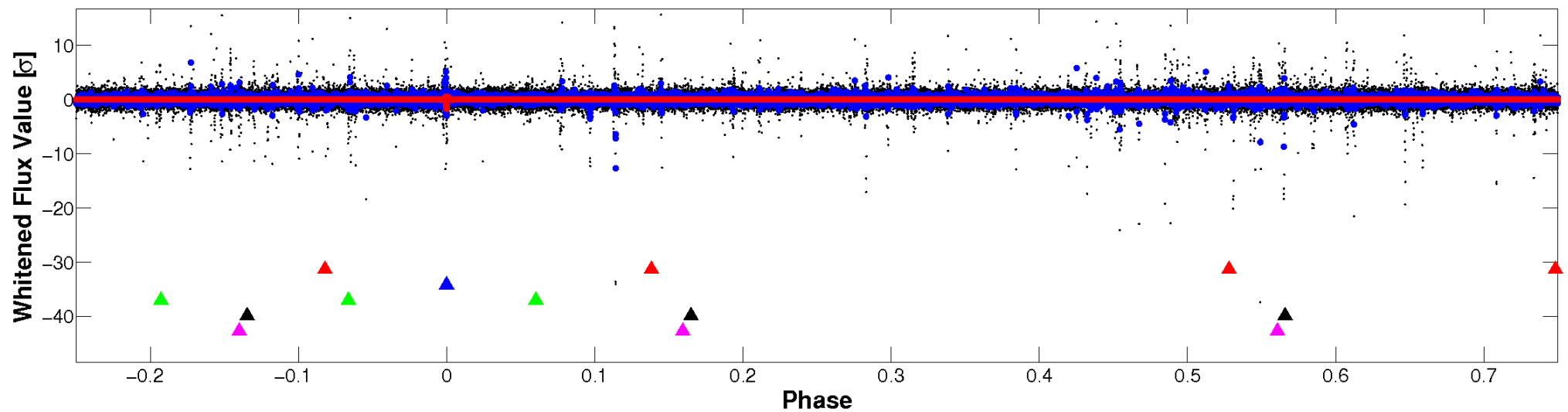


# Non-Whitened Vs. Whitened Light Curve

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

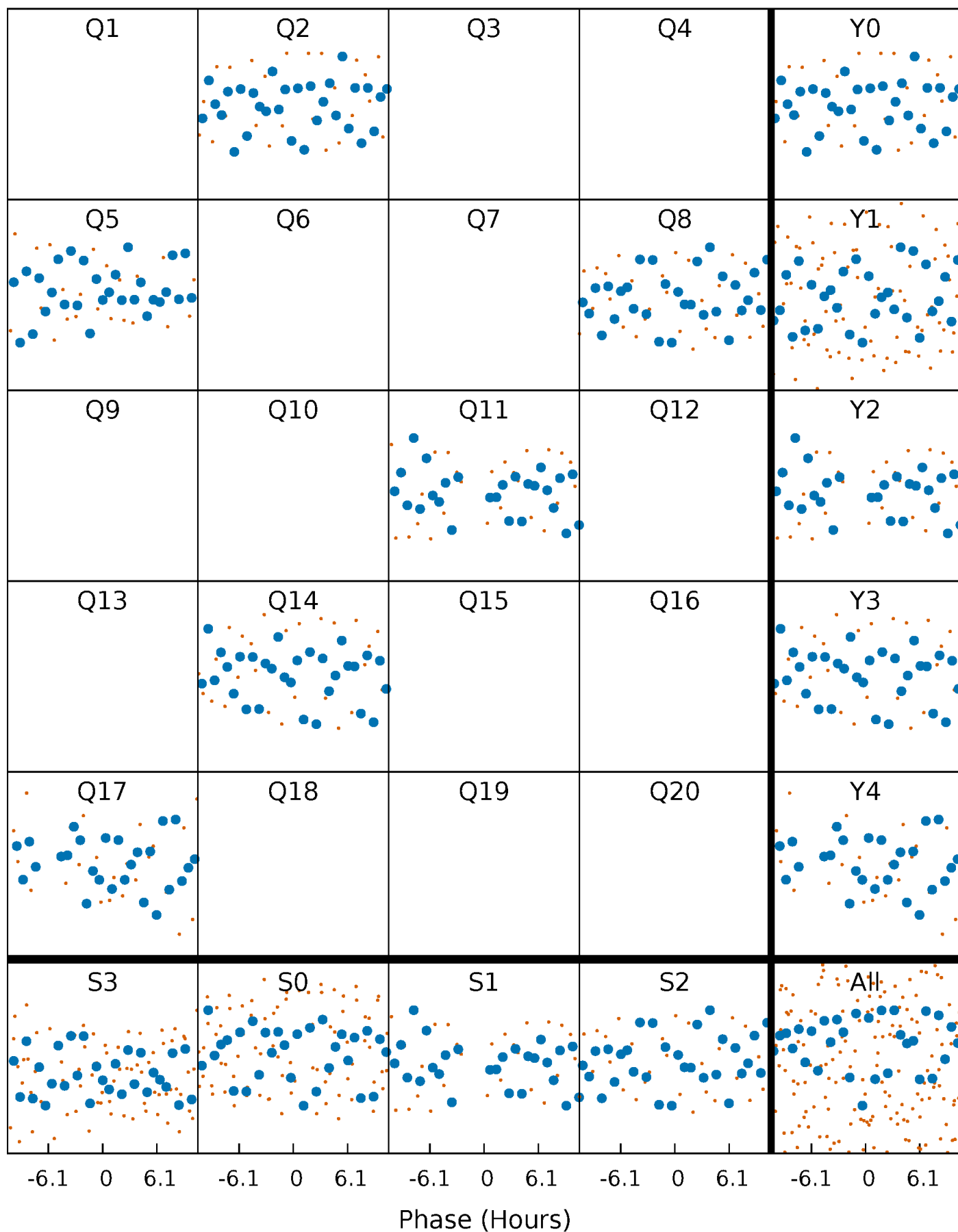


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



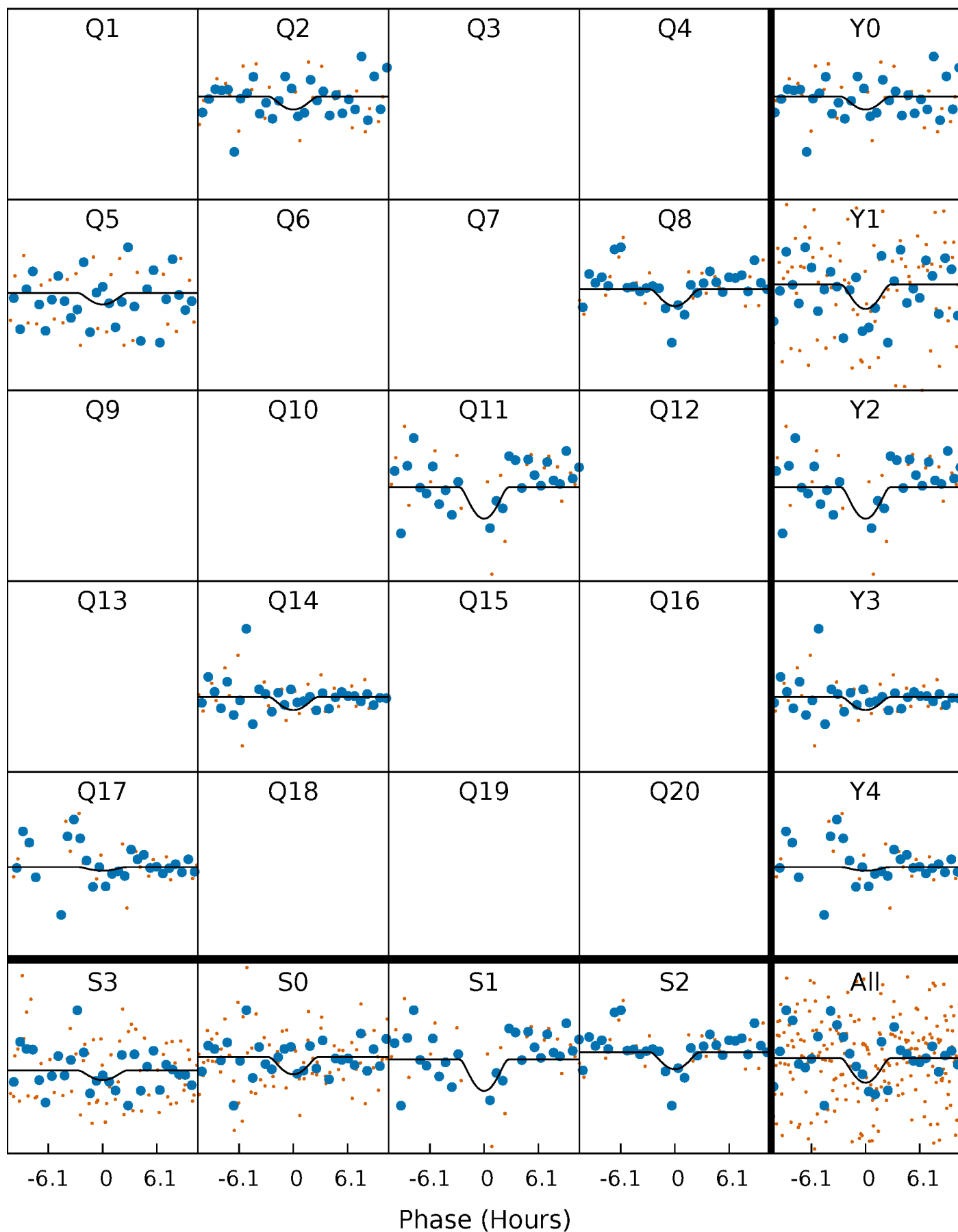
# PDC Quarter-Phased Transit Curves

TCE 005355850-02 P=261.397664 Days  $T_0=254.166483$  (BKJD)



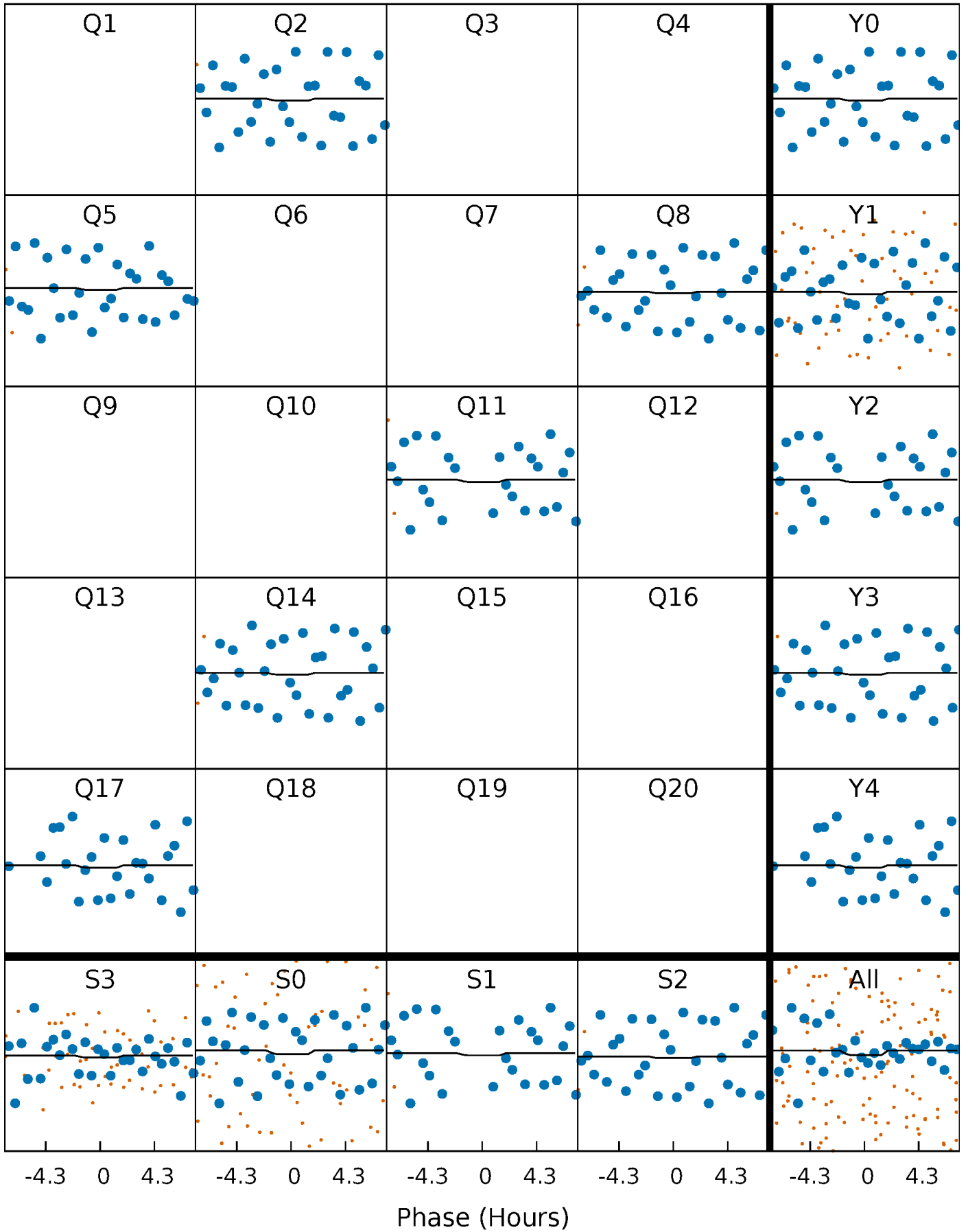
# DV Quarter-Phased Transit Curves

TCE 005355850-02     $P=261.397664$  Days     $T_0=254.166483$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

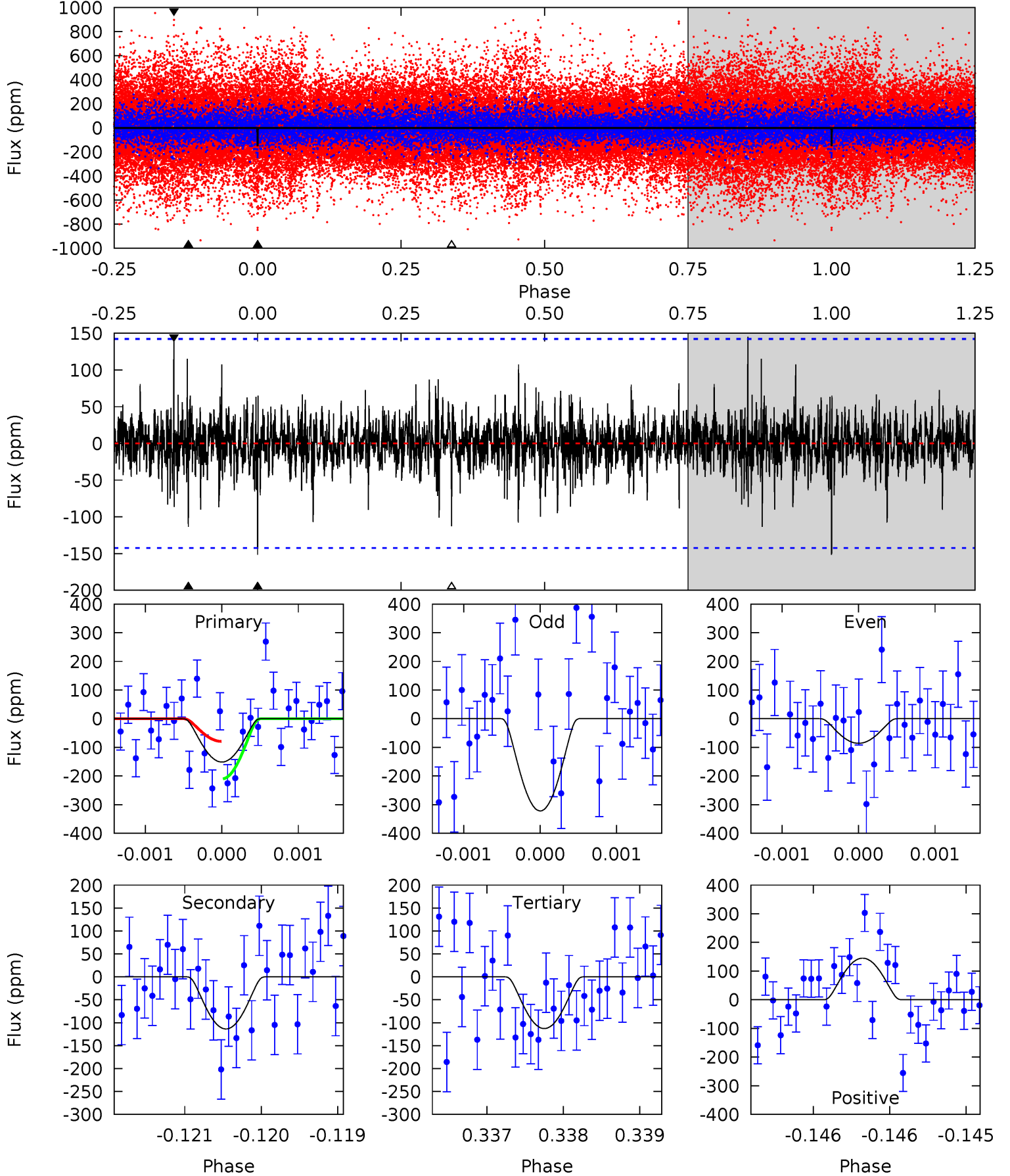
TCE 005355850-02 P=261.406533 Days  $T_0=254.118804$  (BKJD)



# DV Model-Shift Uniqueness Test

005355850-02, P = 261.397664 Days, E = 254.166483 Days

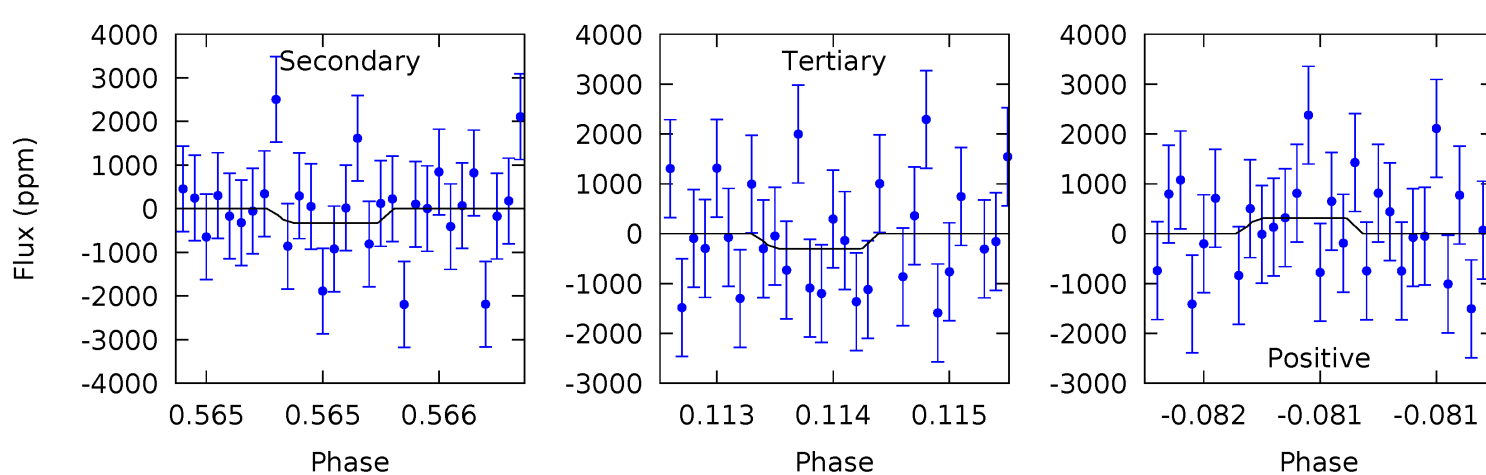
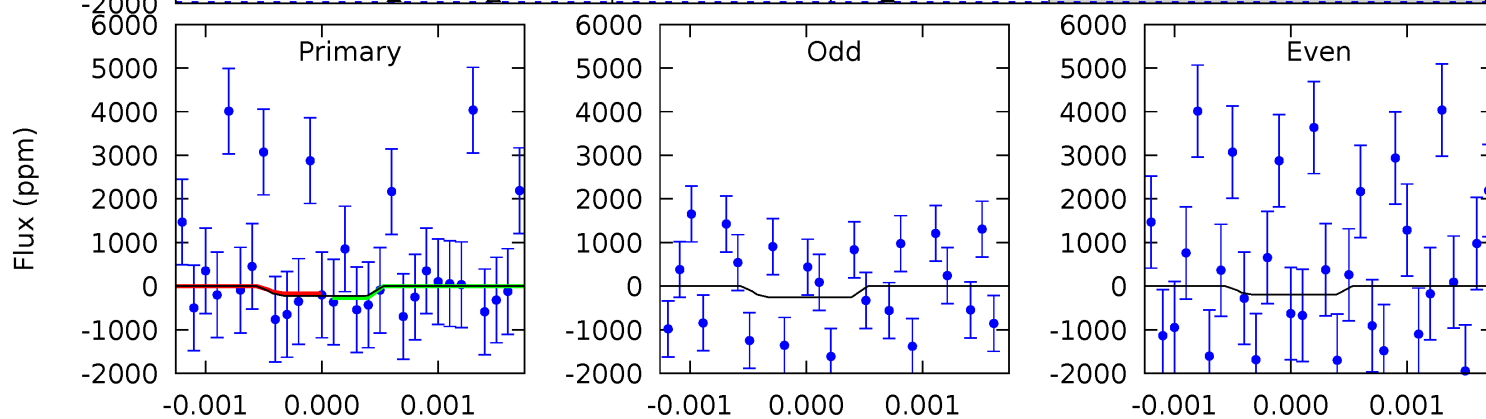
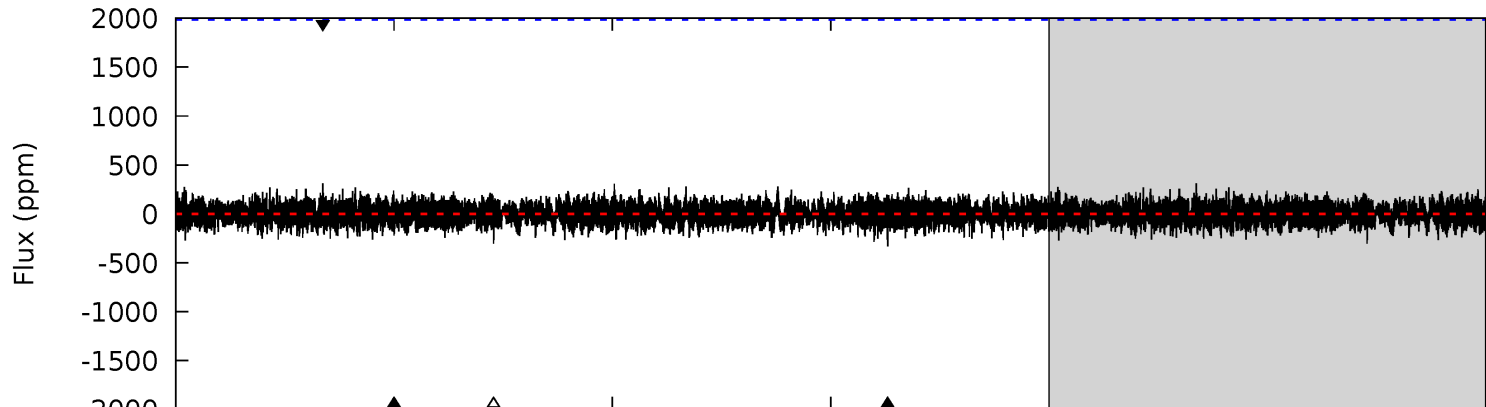
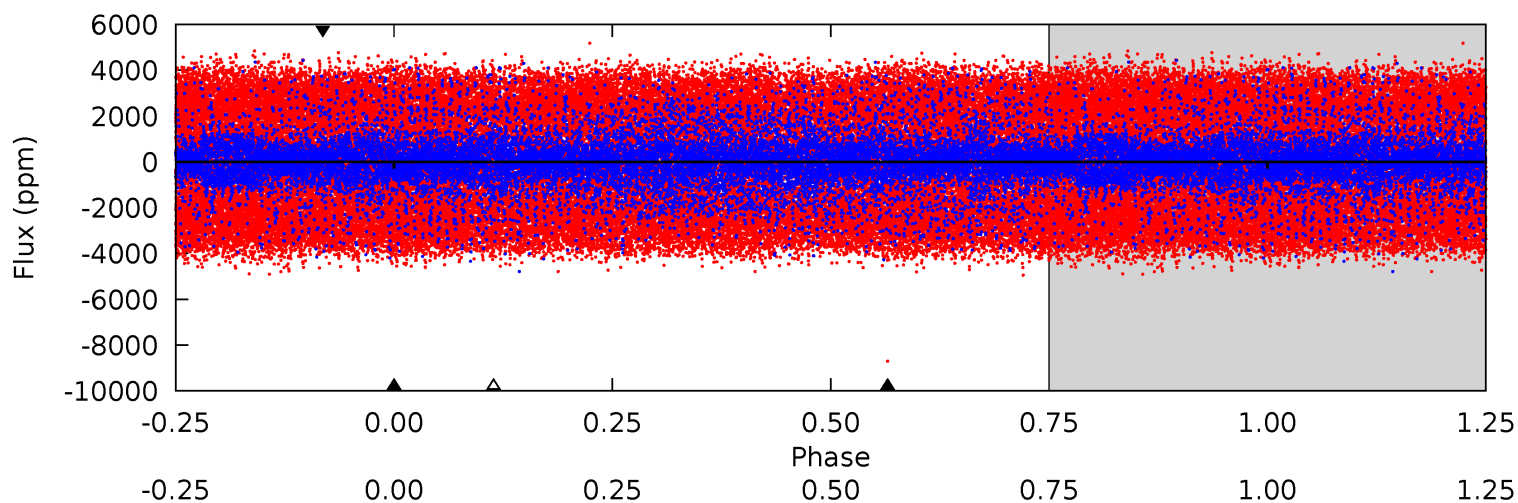
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.81	4.37	4.33	5.57	5.47	3.32	0.94	1.48	0.24	0.03	-1.21	4.31	0.94	0.49	2.49



# Alt Model-Shift Uniqueness Test

005355850-02, P = 261.406533 Days, E = 254.118804 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
0.62	0.92	0.84	0.87	5.55	3.45	0.21	-0.22	-0.25	0.08	0.05	0.08	0.96	0.49	0.14



### Stellar Parameters For KIC 005355850

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8124^{+64}_{-97}$	$3.735^{+0.315}_{-0.052}$	$-0.080^{+0.200}_{-0.150}$	$3.220^{+0.370}_{-1.109}$	$2.054^{+0.208}_{-0.261}$	$0.087^{+0.175}_{-0.021}$
	+1%/-1%	+8%/-1%	+250%/-188%	+11%/-34%	+10%/-13%	+201%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005355850-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-114 \pm 26$	$49.95^{+56.91}_{-36.42}$	$871^{+36}_{-77}$	$2810^{+1437}_{-508}$	$26^{+369}_{-21}$
Alt.	$-330 \pm 358$	$48.07^{+56.23}_{-34.25}$	$870^{+35}_{-75}$	$3137^{+1877}_{-5278}$	$58^{+771}_{-61}$

$T_{max}$  = 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

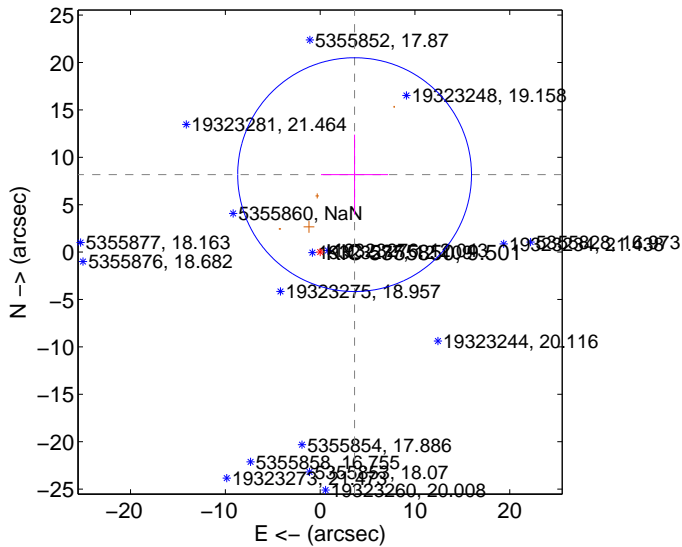
Supplemental centroid analysis for 005355850-02. **Kepler magnitude: 9.50.** Transit SNR 8.74

There are 0 quarters with good PRF difference image offsets

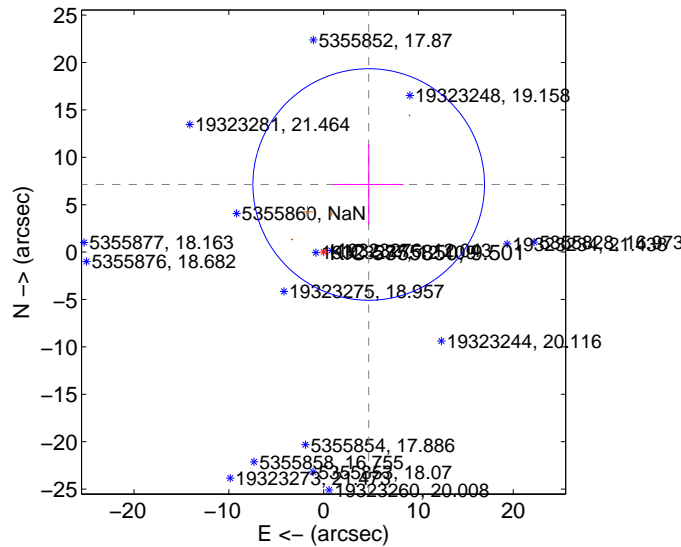
The OOT PRF centroid is offset from the target star catalog position by about 2.19 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.941 \pm 4.110$	2.18	$-3.633 \pm 3.540$	$8.170 \pm 4.213$
PRF-fit source offset from KIC position	$8.569 \pm 4.071$	2.11	$-4.754 \pm 3.656$	$7.130 \pm 4.242$
photometric centroid source offset	$2.05 \pm 1.19$	1.71	$-1.98 \pm 1.17$	$0.52 \pm 1.56$

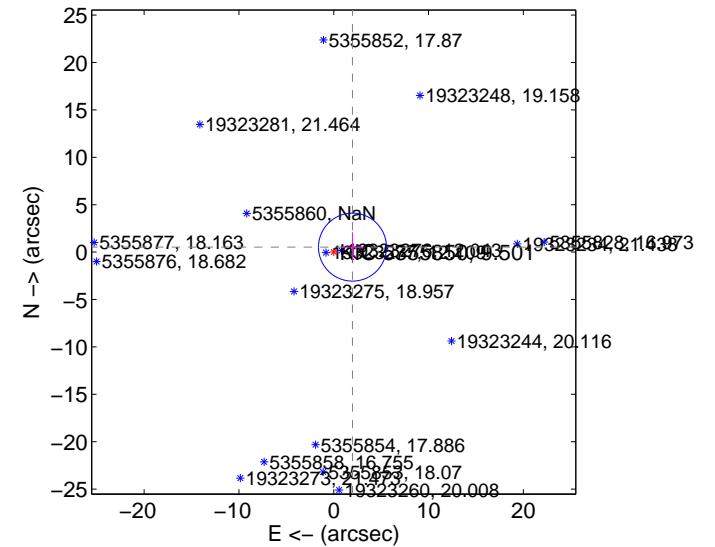
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



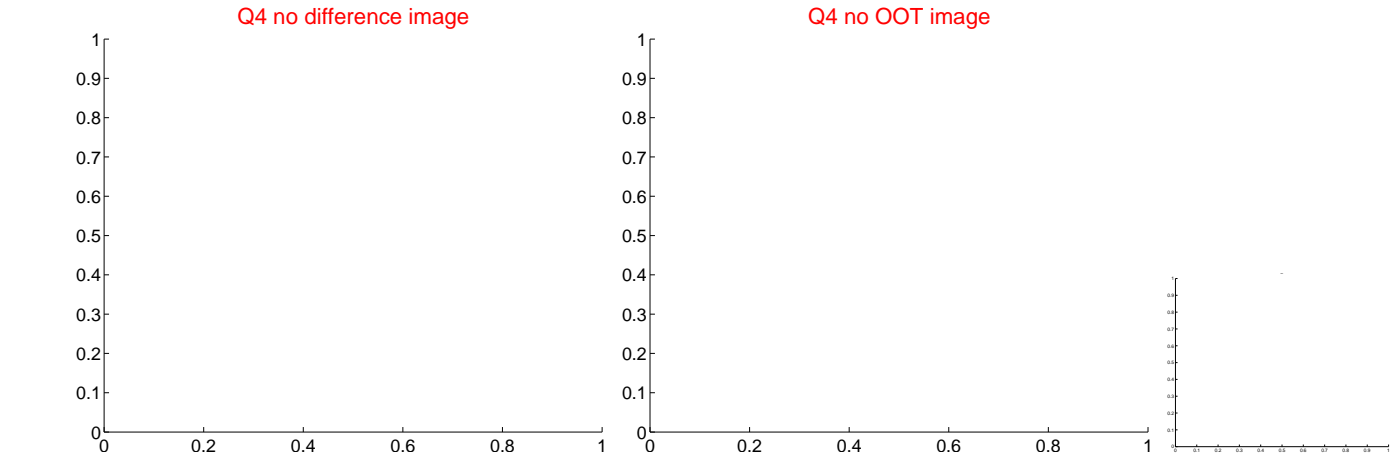
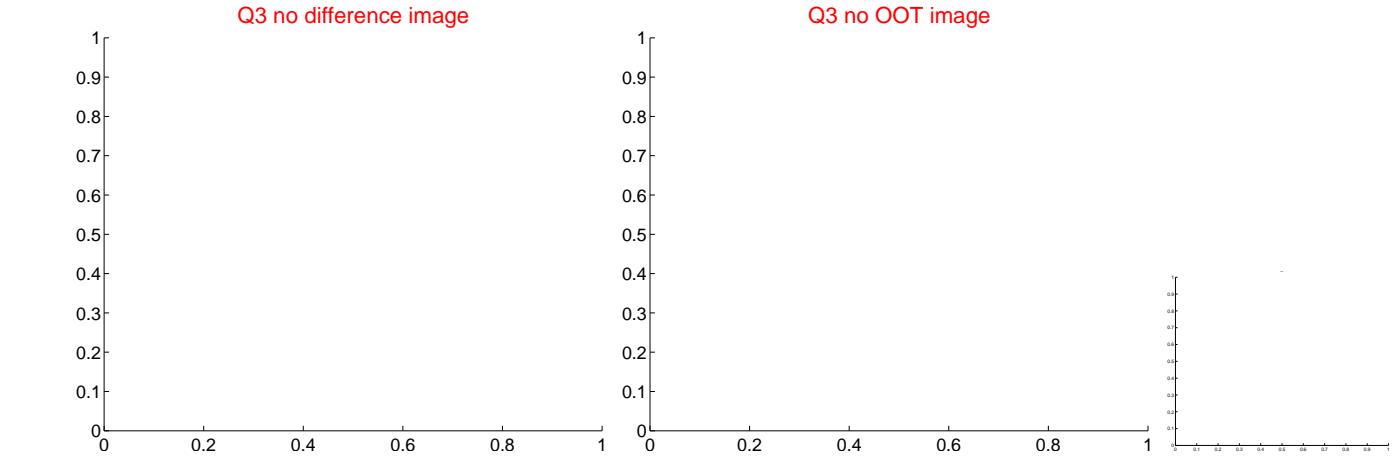
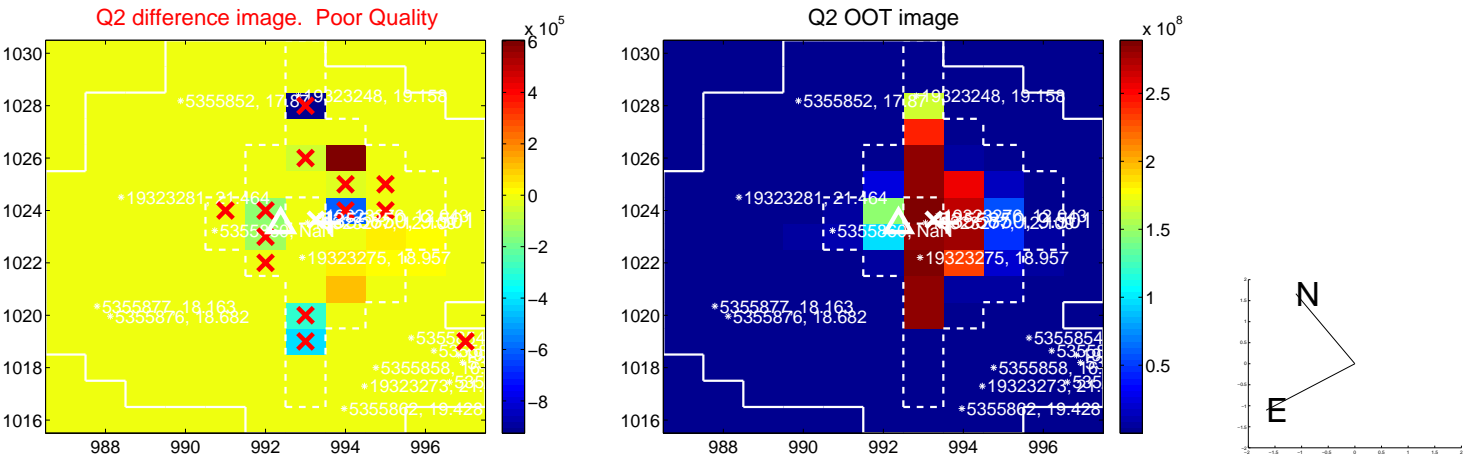
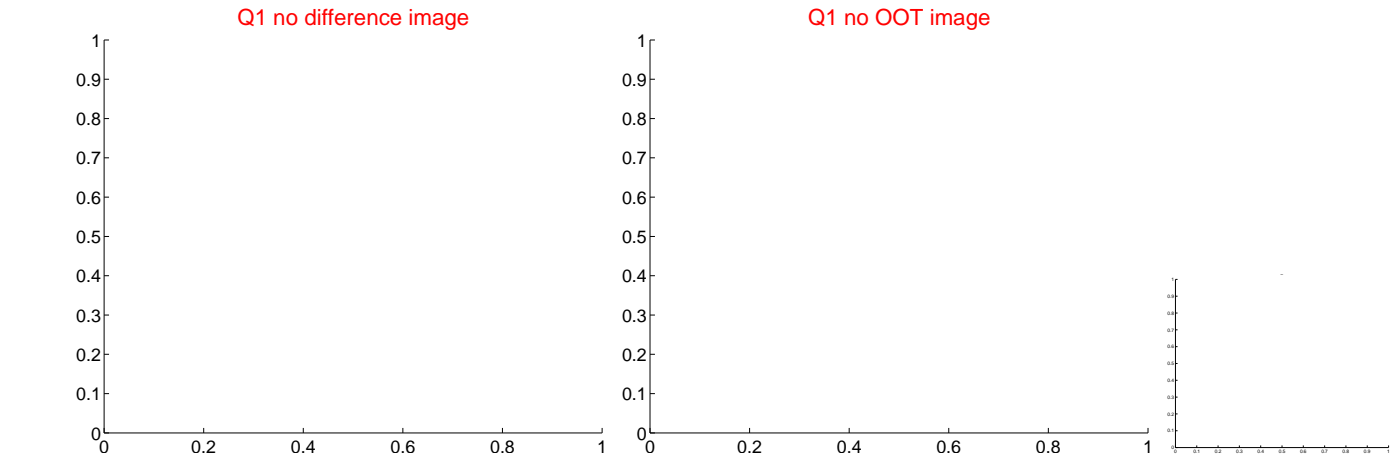
offset from photometric centroids



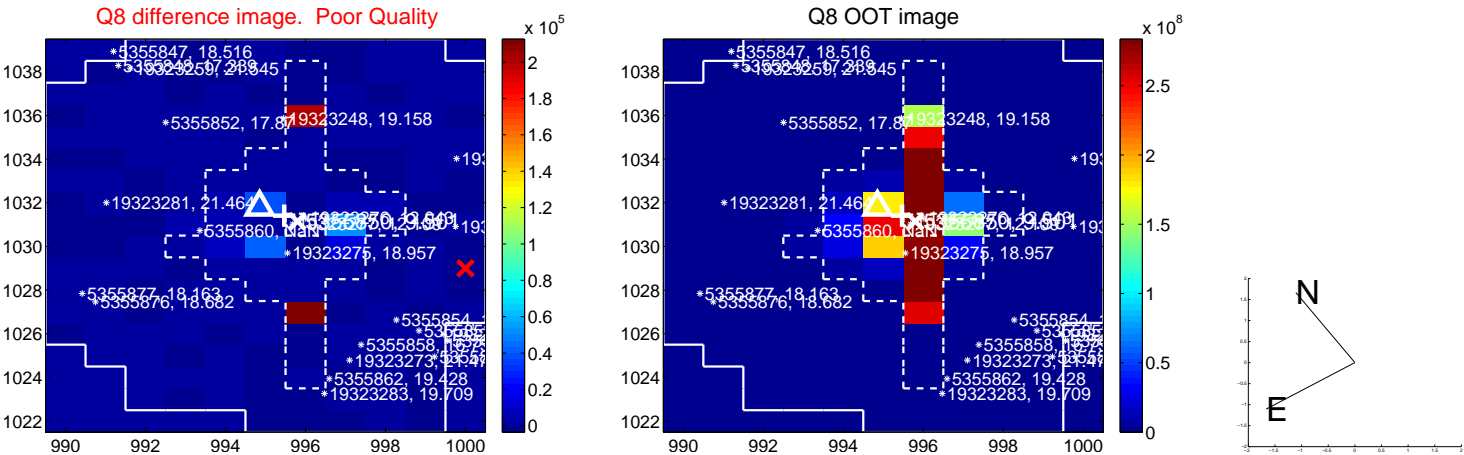
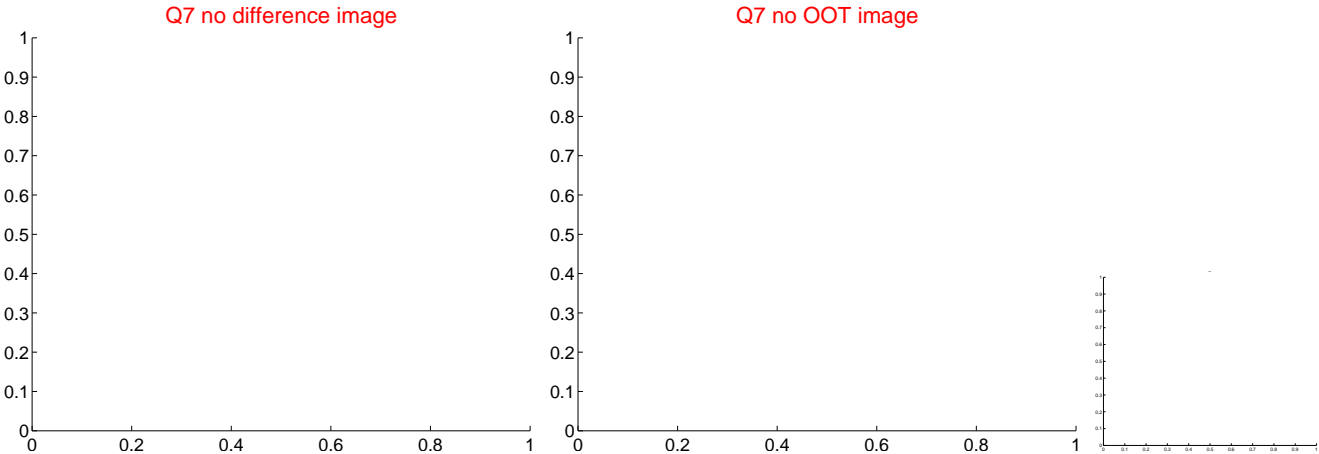
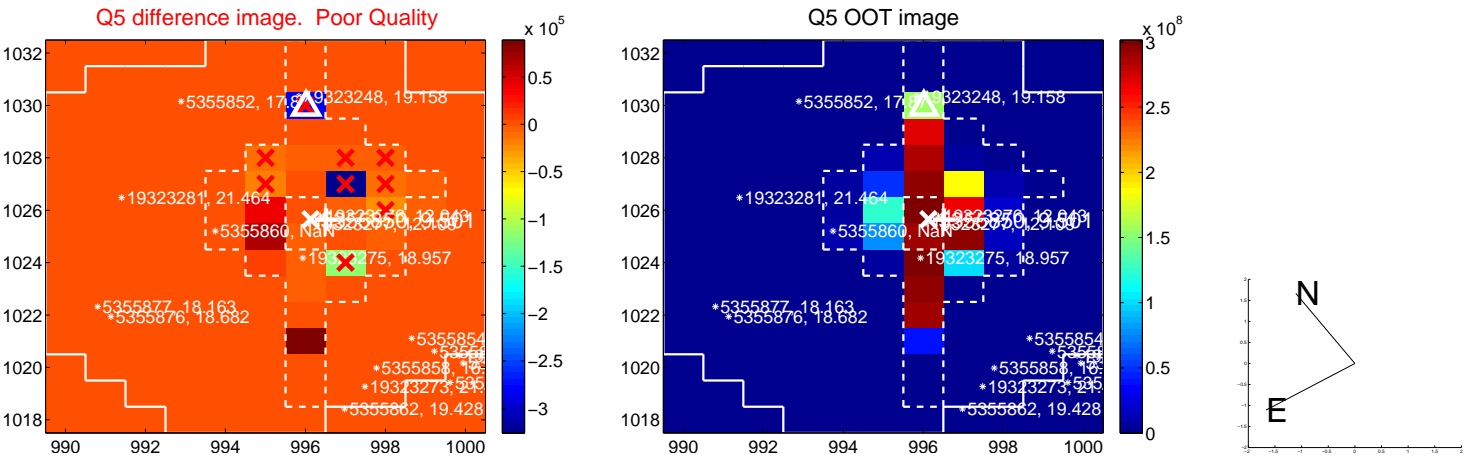
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

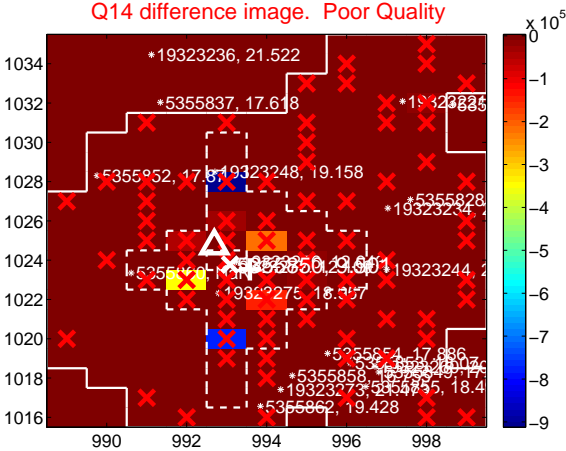
Q13 no difference image



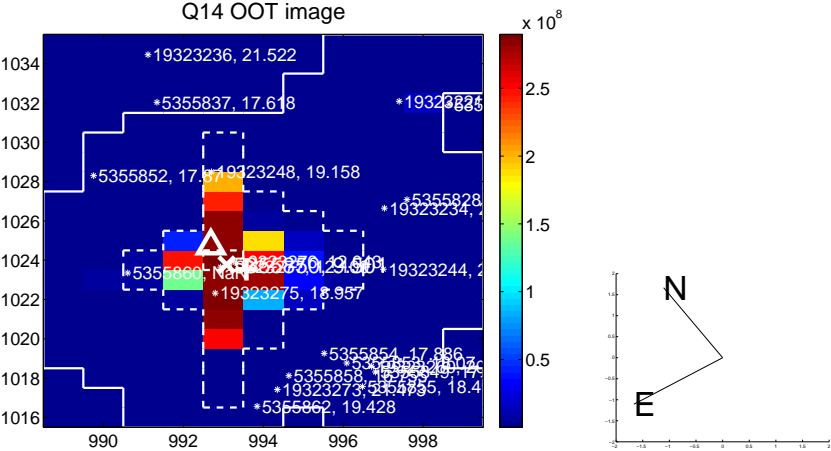
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



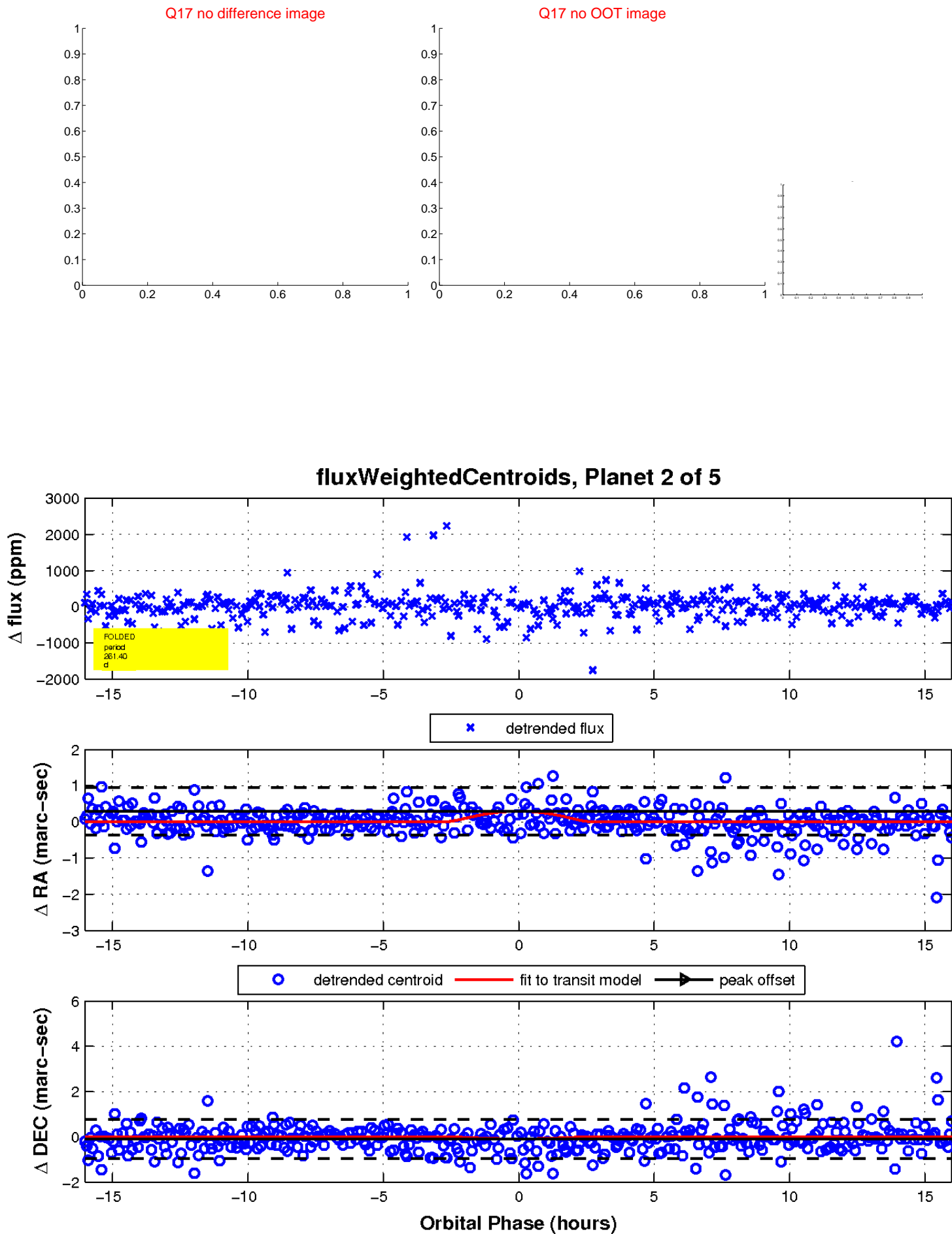
Q16 no difference image



Q16 no OOT image

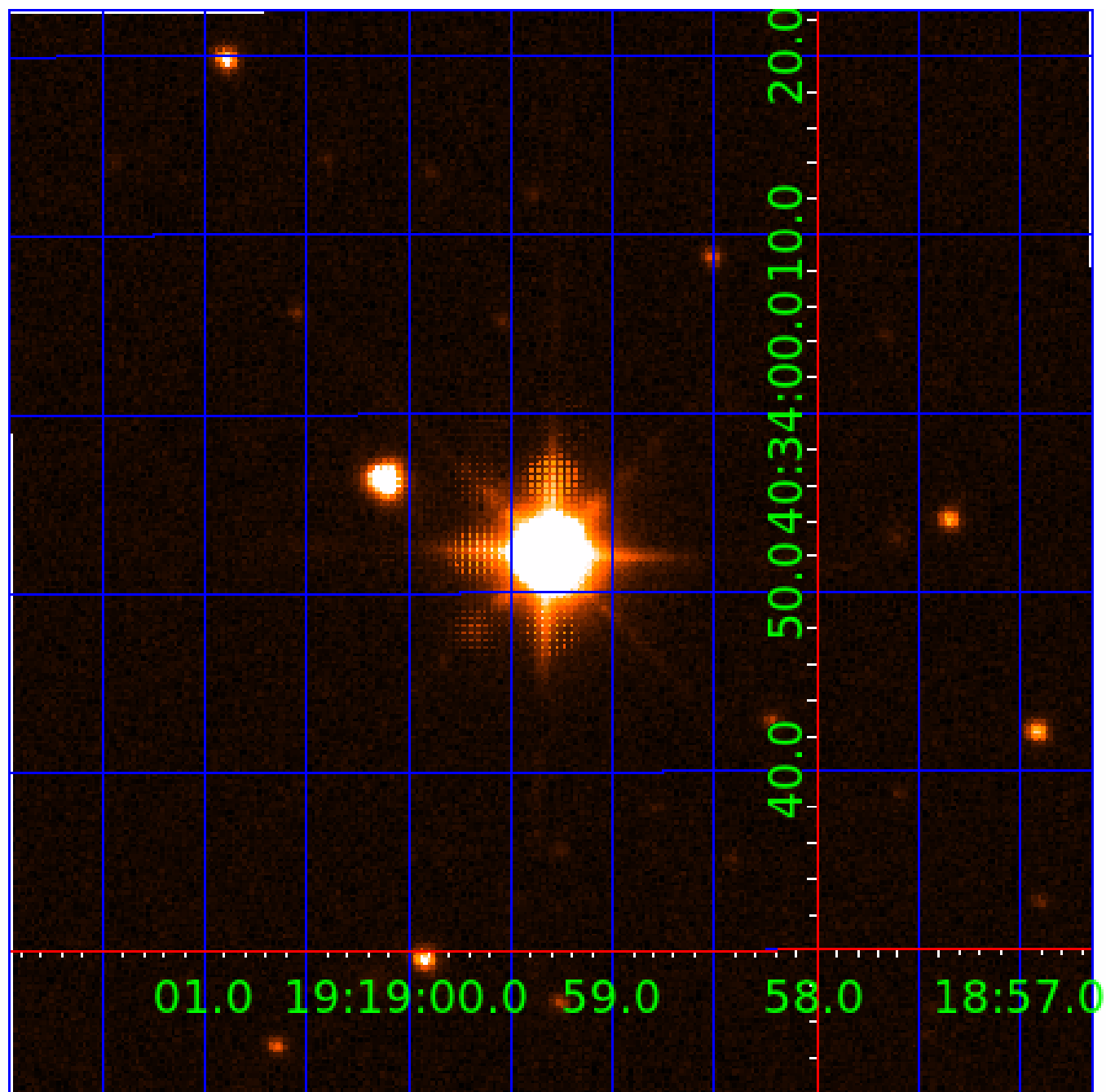


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005355850

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005355850-01	OBS	No	363.303917	188.384520	390.5	2.157	22.7	16.4	3.22	8124	6.87	25.21
005355850-02	OBS	No	261.397664	254.166483	155.9	5.354	17.7	8.7	3.22	8124	7.84	39.10
005355850-03	OBS	No	489.717510	531.314029	121.3	4.500	15.9	-1.0	3.22	8124	3.58	16.93
005355850-04	OBS	No	444.499747	297.281267	95.3	0.621	13.1	1.4	3.22	8124	3.99	19.26
005355850-05	OBS	No	444.554759	295.827628	224.1	2.515	12.6	7.8	3.22	8124	5.52	19.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005355850-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

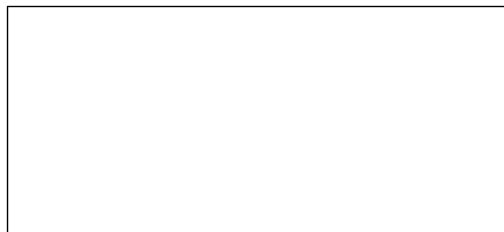
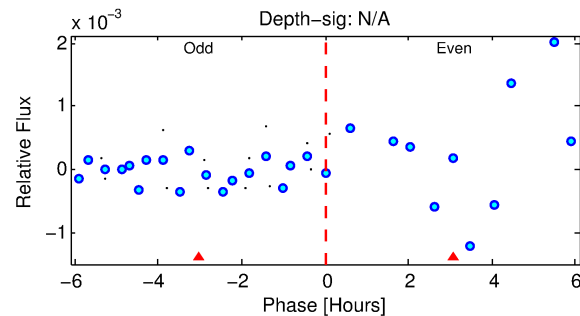
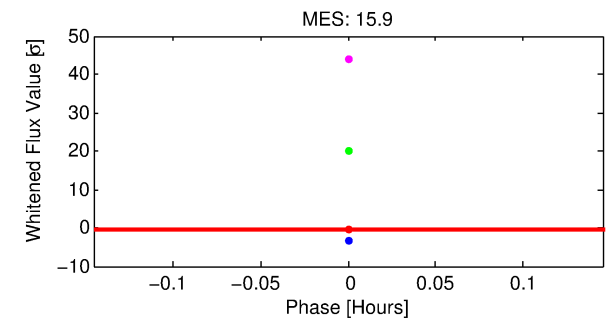
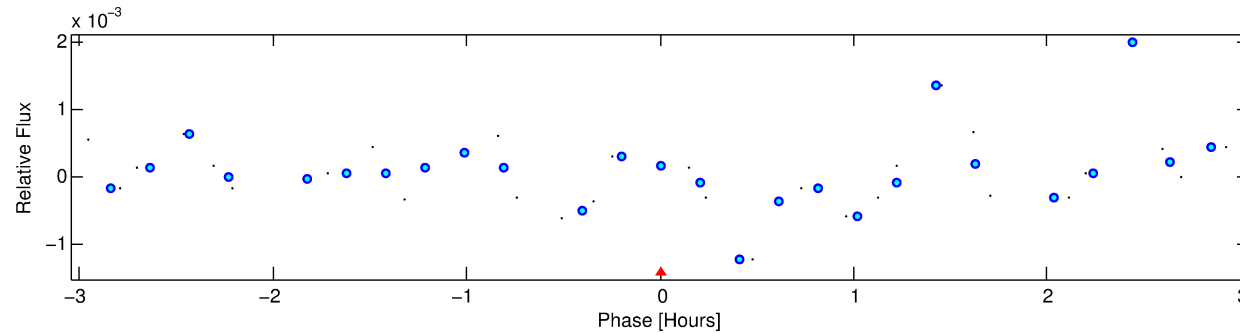
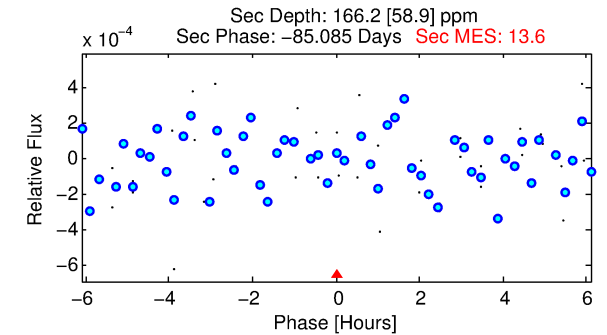
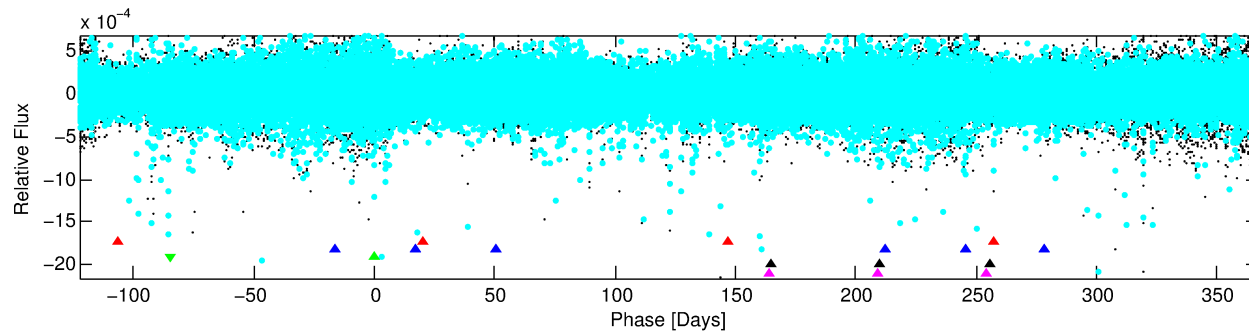
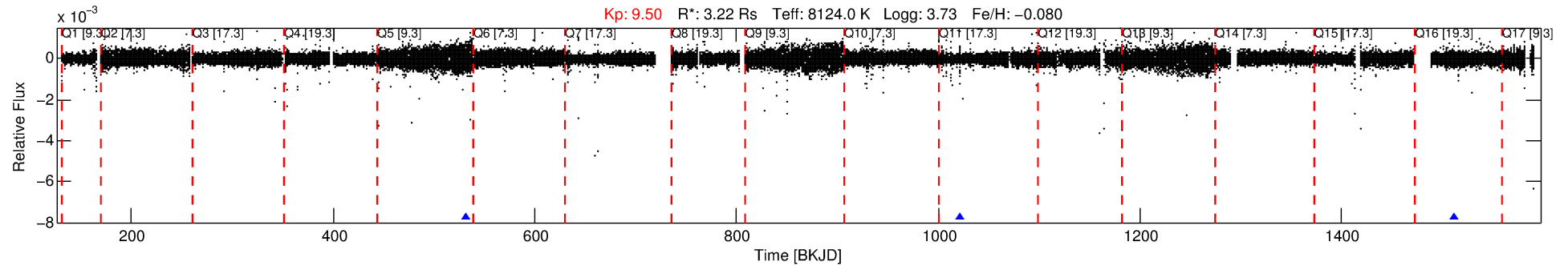
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005355850-03

No Significant Match Found

# DV One-Page Summary

KIC: 5355850 Candidate: 3 of 5 Period: 489.718 d



## TPS TCE Results:

Period = 489.71751 d  
Epoch = 531.3140 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

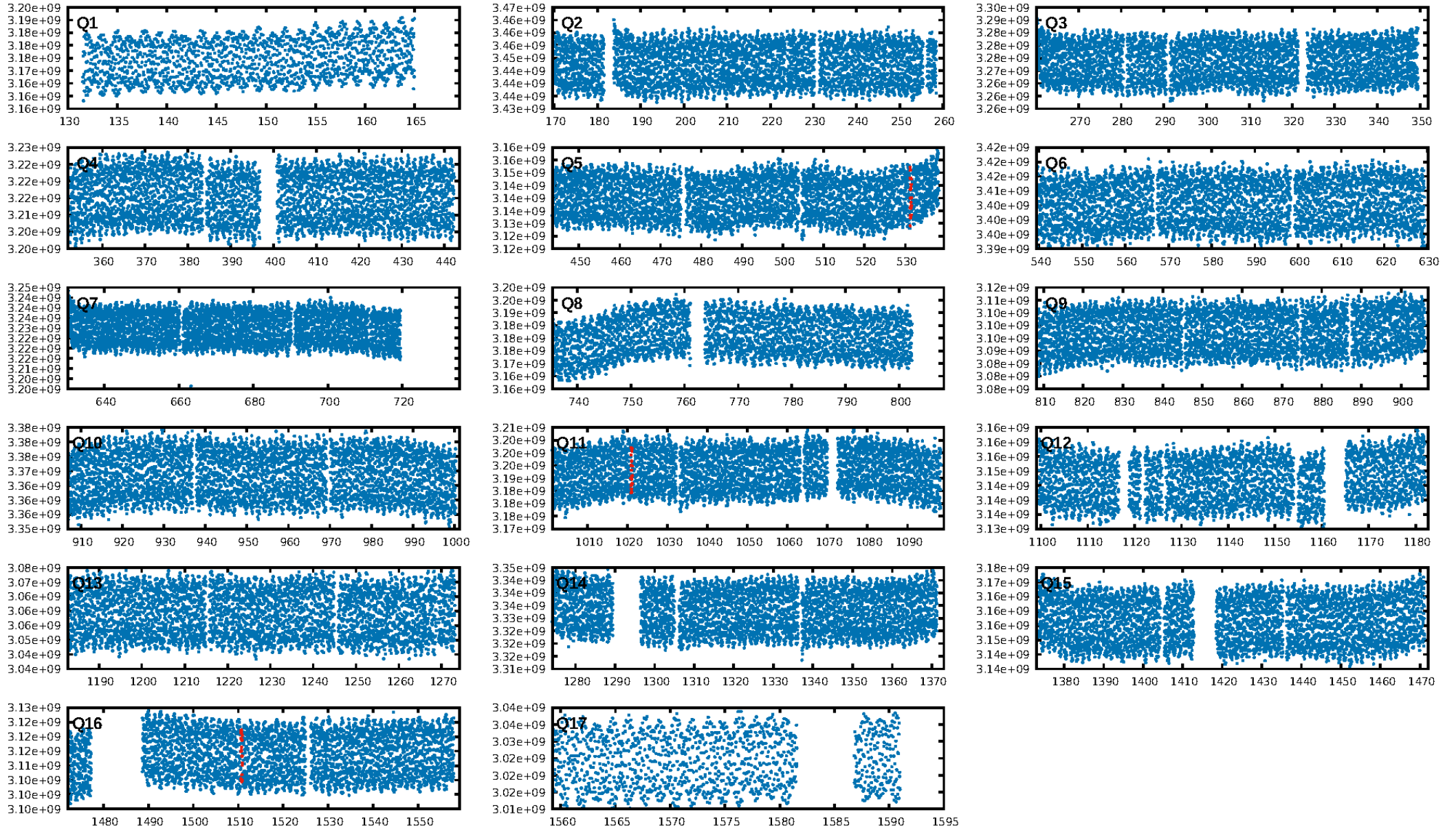
ShortPeriod-sig: 100.0% [210.26σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
**Bootstrap-pfa: 4.90e-05**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 85.7%  
Centroid-so: 0.092 arcsec [0.19σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:53:54 Z

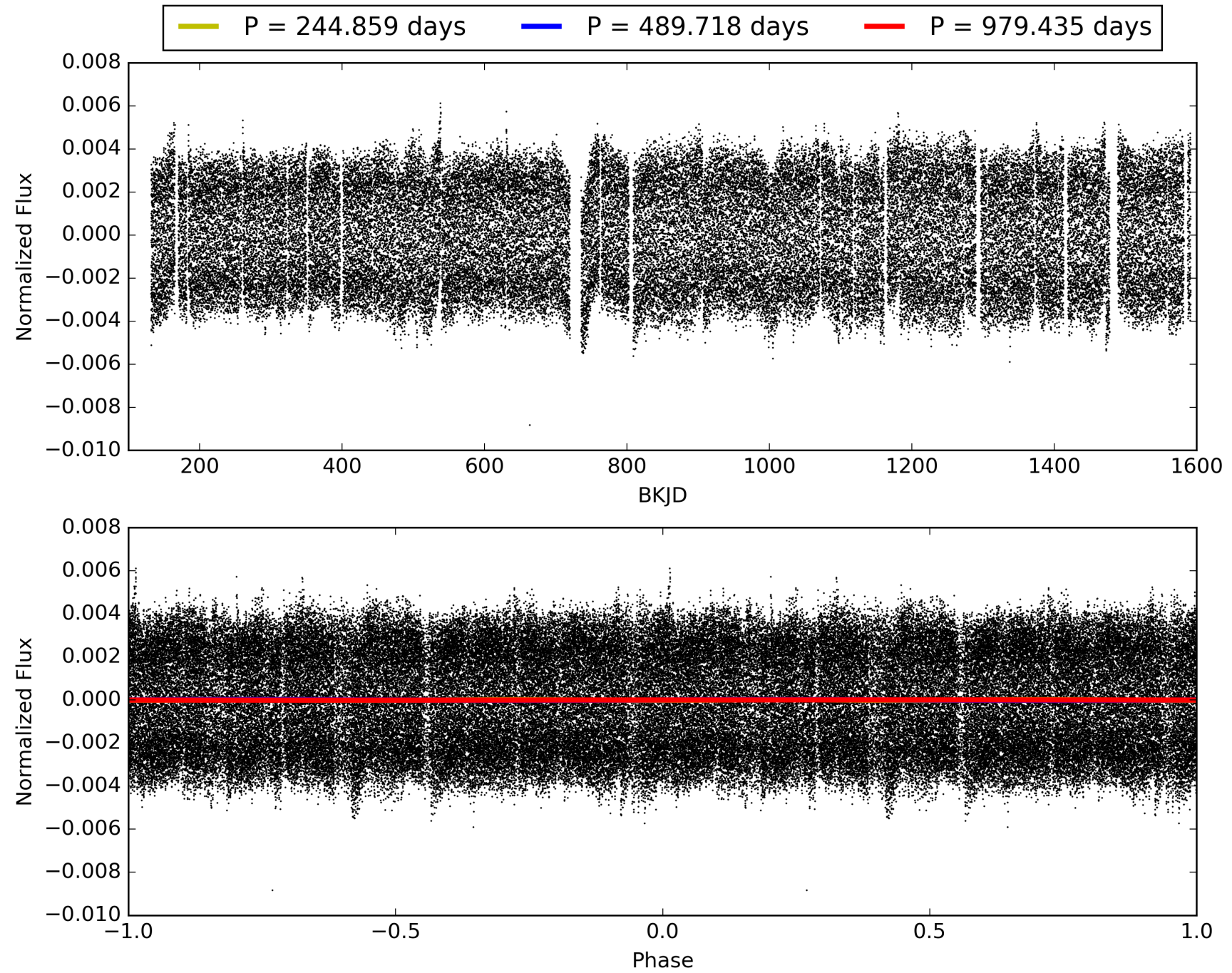
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005355850-03, PDC Light Curves

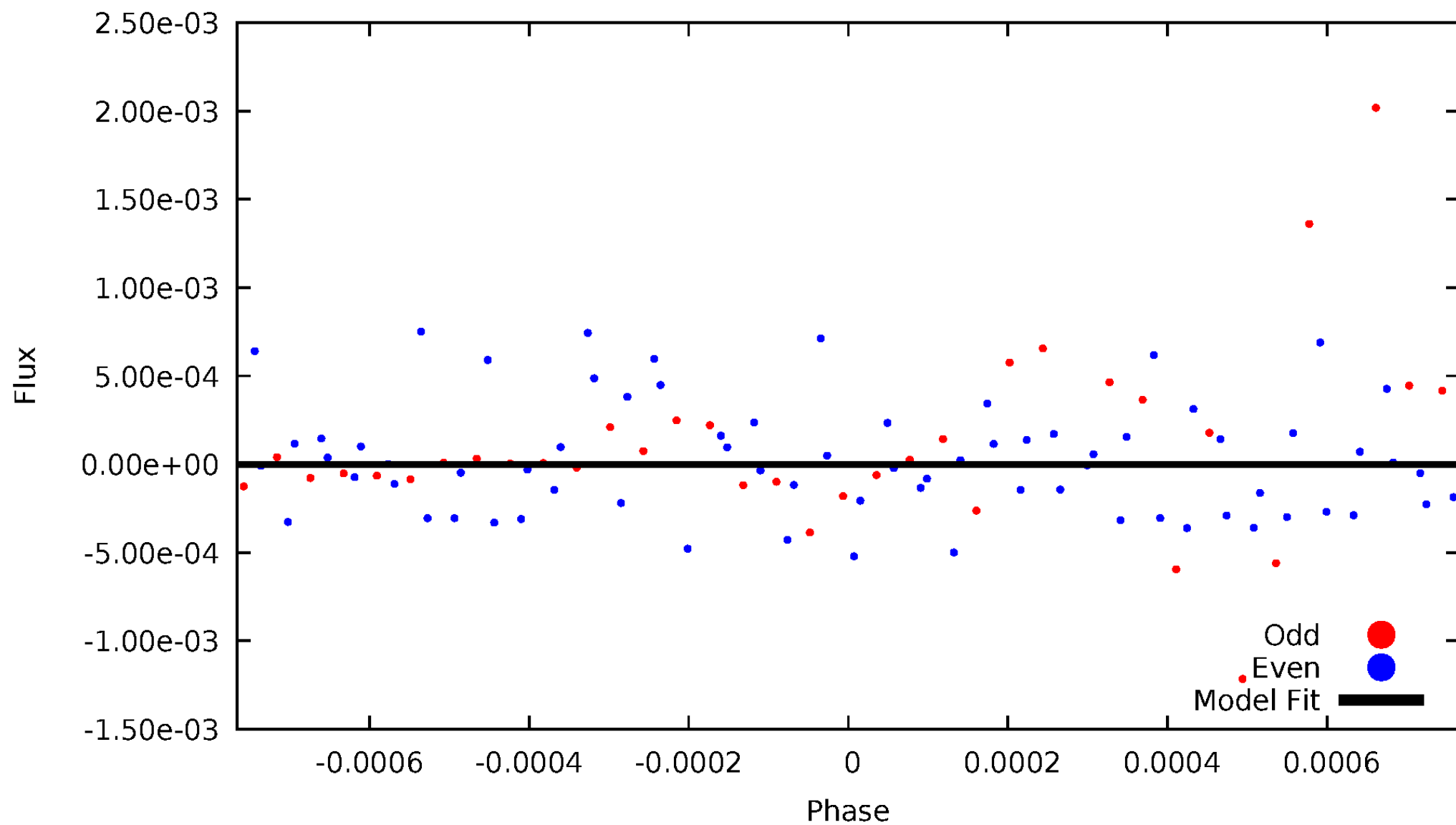


# TCE 005355850-03



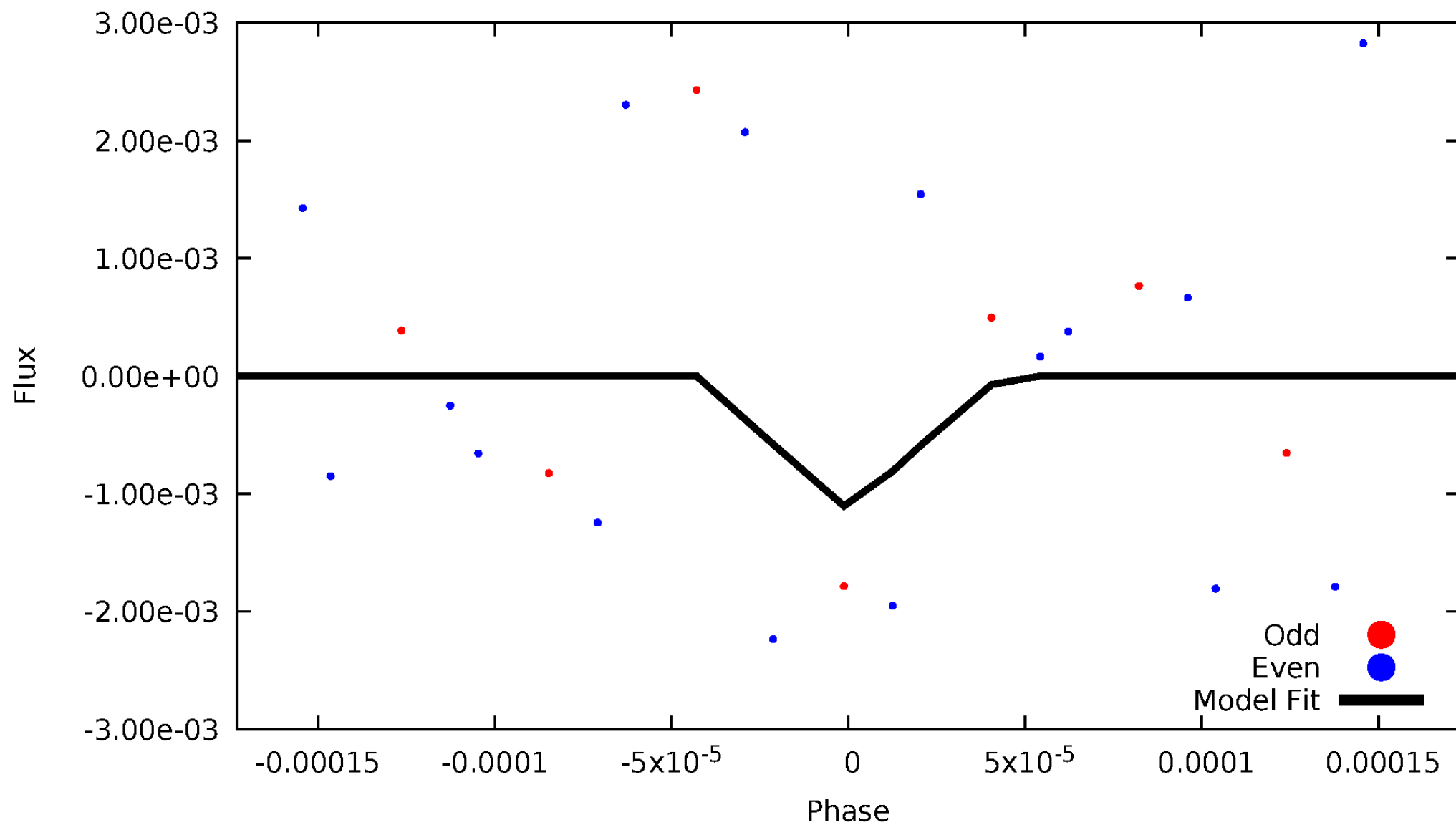
# DV Odd/Even

TCE 005355850-03

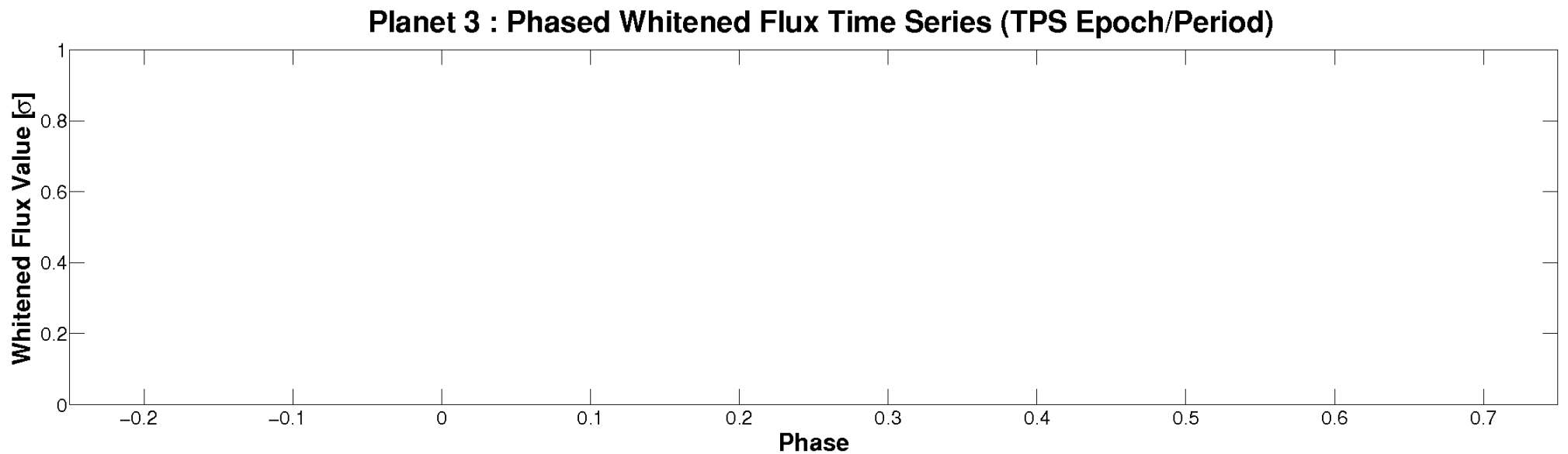
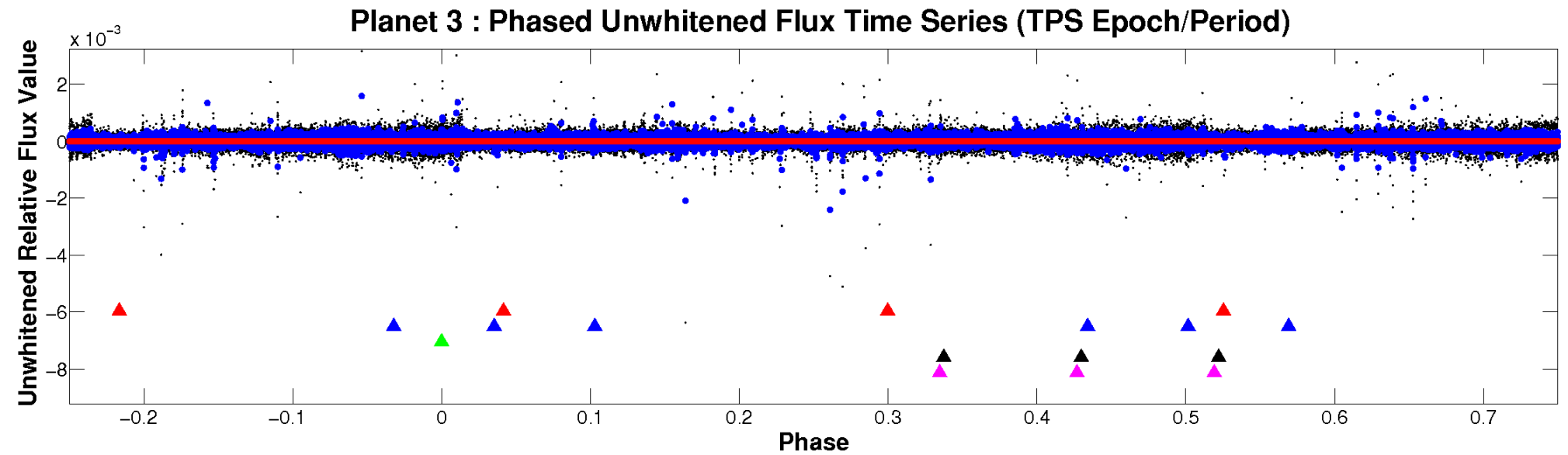


# ALT Odd/Even

TCE 005355850-03

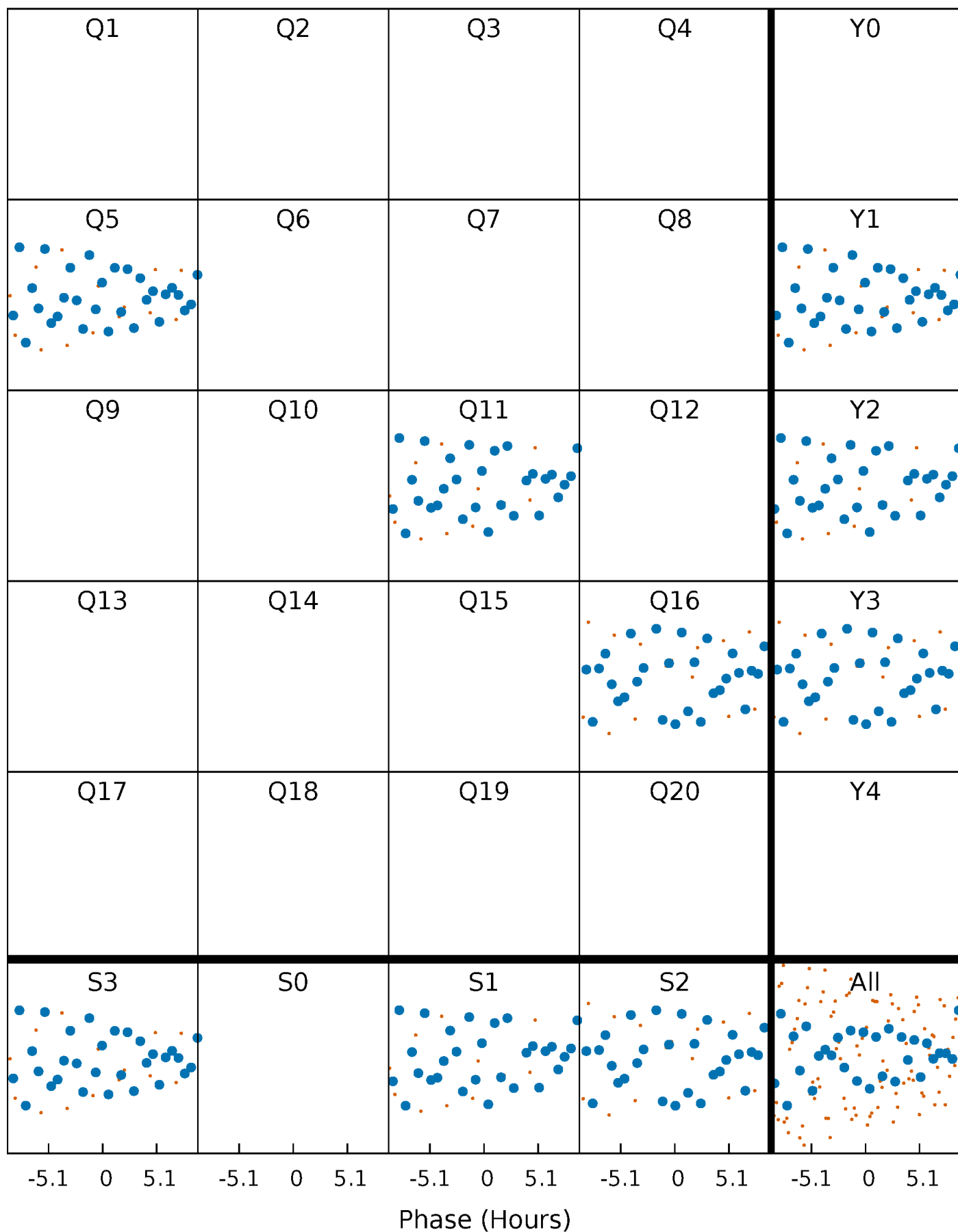


# Non-Whitened Vs. Whitened Light Curve



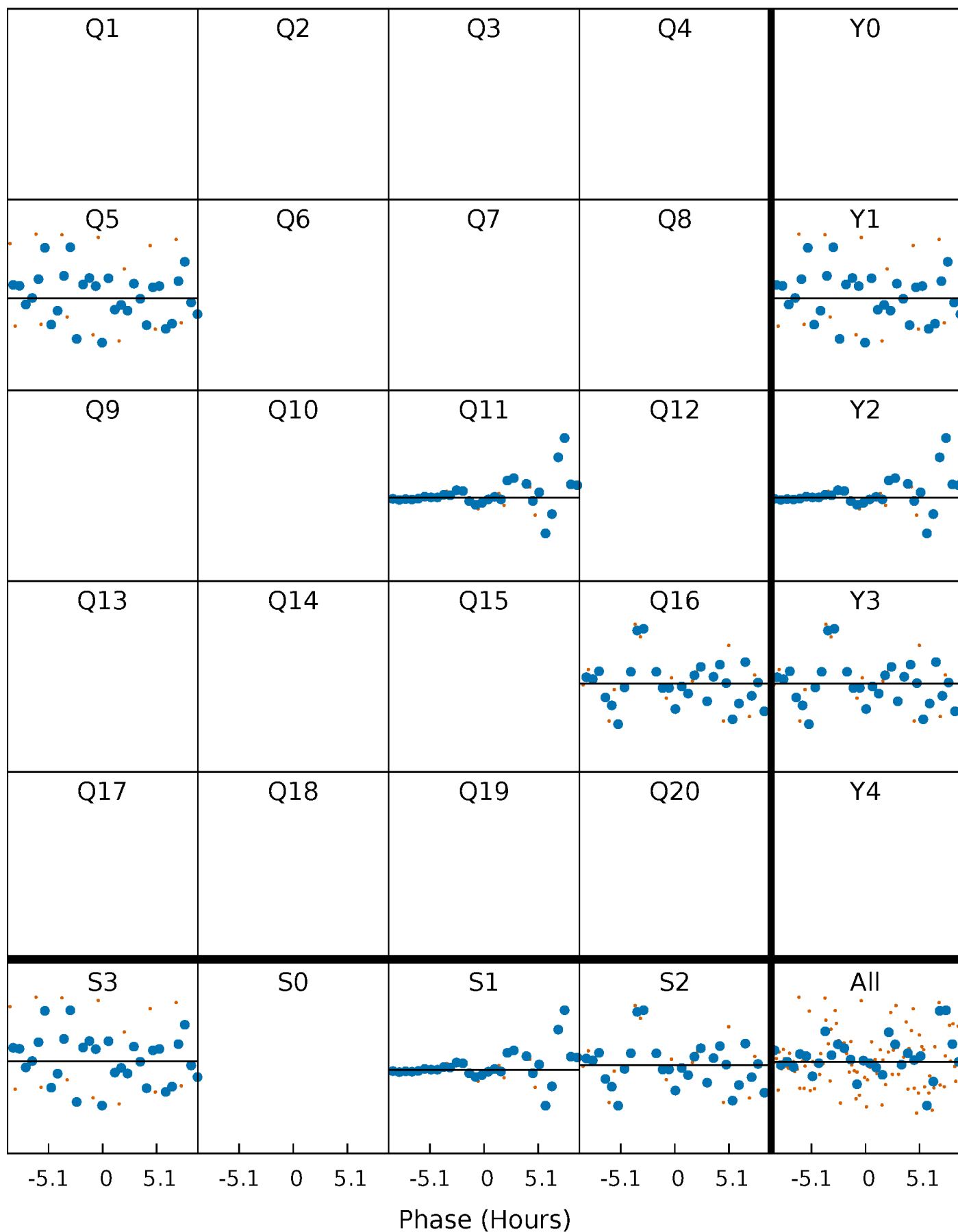
# PDC Quarter-Phased Transit Curves

TCE 005355850-03 P=489.717510 Days  $T_0=531.314029$  (BKJD)



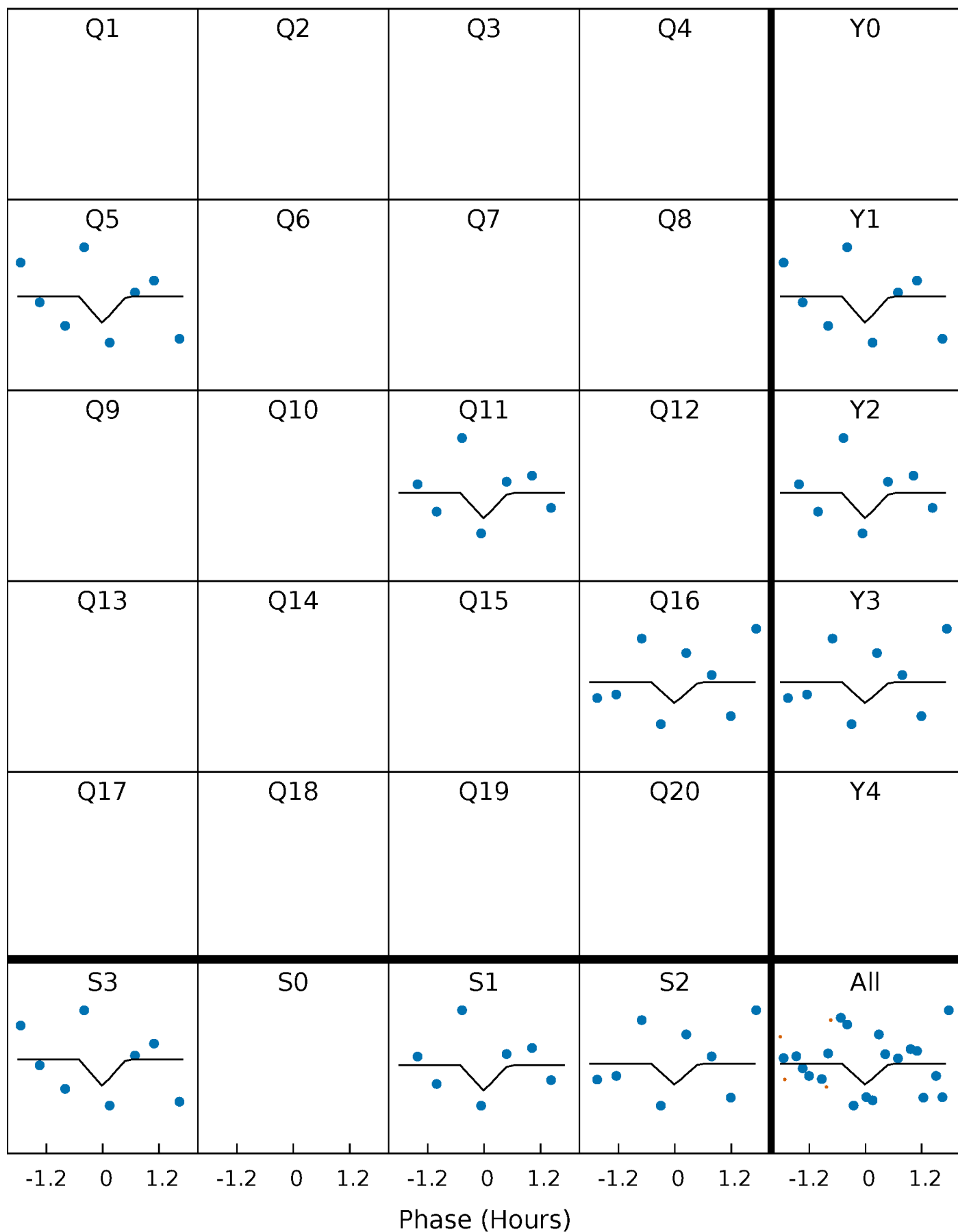
# DV Quarter-Phased Transit Curves

TCE 005355850-03     $P=489.717510$  Days     $T_0=531.314029$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005355850-03 P=489.717510 Days  $T_0=531.536186$  (BKJD)

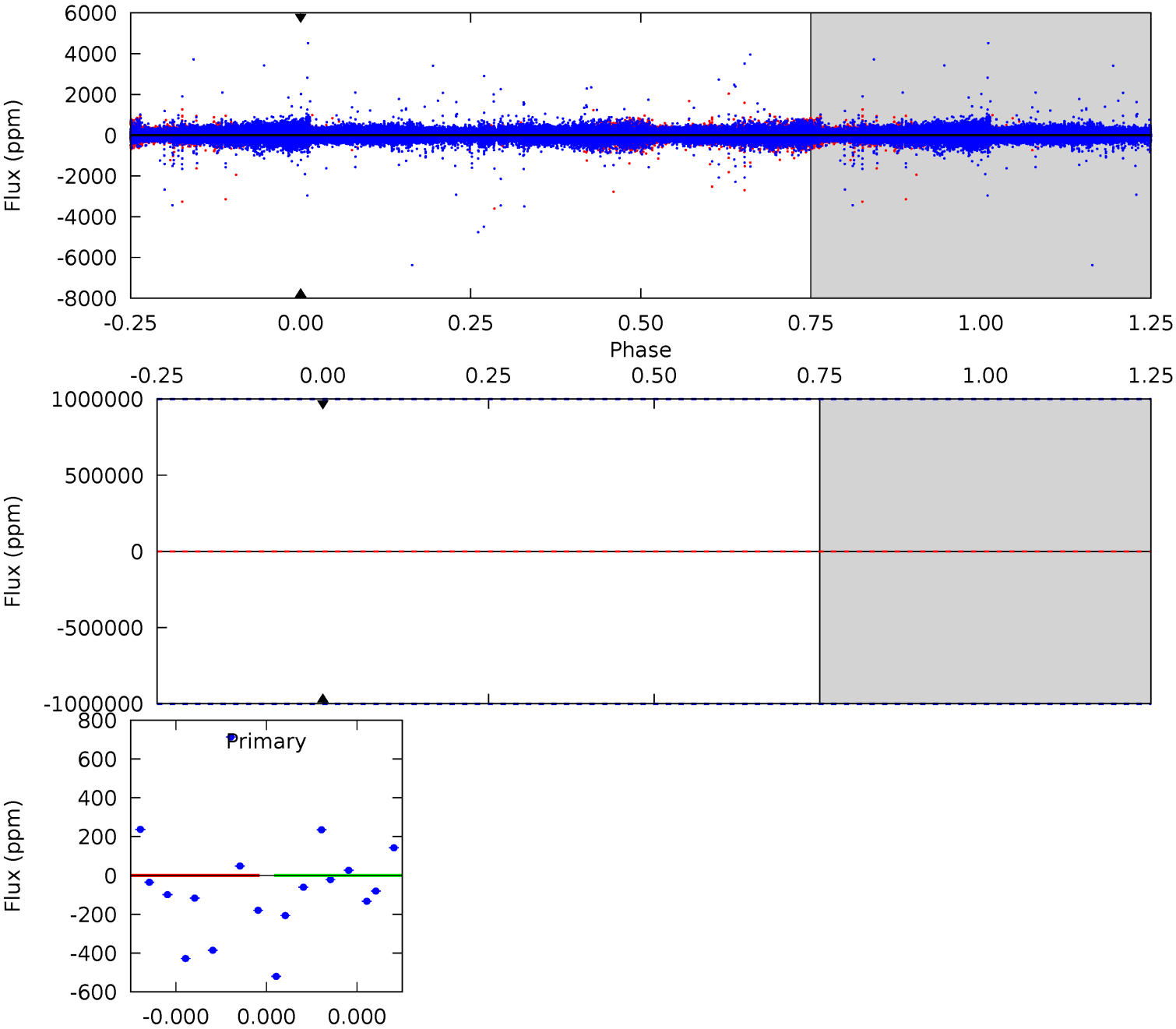




# DV Model-Shift Uniqueness Test

005355850-03, P = 489.717510 Days, E = 41.596519 Days

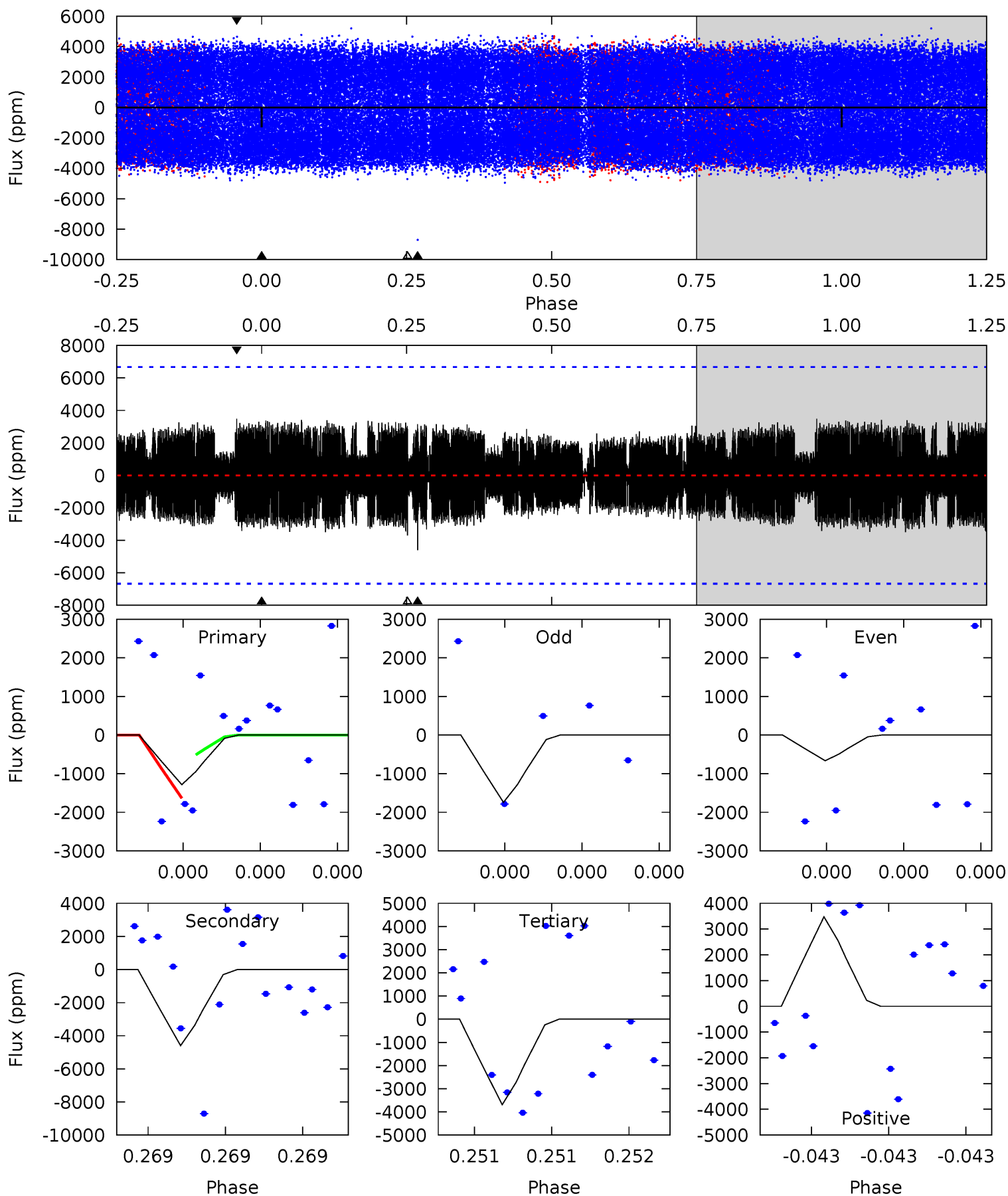
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005355850-03, P = 489.717510 Days, E = 41.818676 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
1.13	4.06	3.26	3.07	5.89	3.96	1.11	-2.12	-1.93	0.80	0.99	0.52	1.03	0.43	0.43



### Stellar Parameters For KIC 005355850

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8124^{+64}_{-97}$	$3.735^{+0.315}_{-0.052}$	$-0.080^{+0.200}_{-0.150}$	$3.220^{+0.370}_{-1.109}$	$2.054^{+0.208}_{-0.261}$	$0.087^{+0.175}_{-0.021}$
	+1%/-1%	+8%/-1%	+250%/-188%	+11%/-34%	+10%/-13%	+201%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005355850-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$22.56^{+28.72}_{-15.42}$	$706^{+27}_{-64}$	$-5145^{+56291}_{-43027}$	$-1911.858^{+456708.952}_{-461603.620}$
Alt.	$-4597 \pm 1133$	$28.21^{+25.35}_{-19.49}$	$706^{+29}_{-59}$	$7168^{+9606}_{-2105}$	$7950^{+71886}_{-6043}$

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

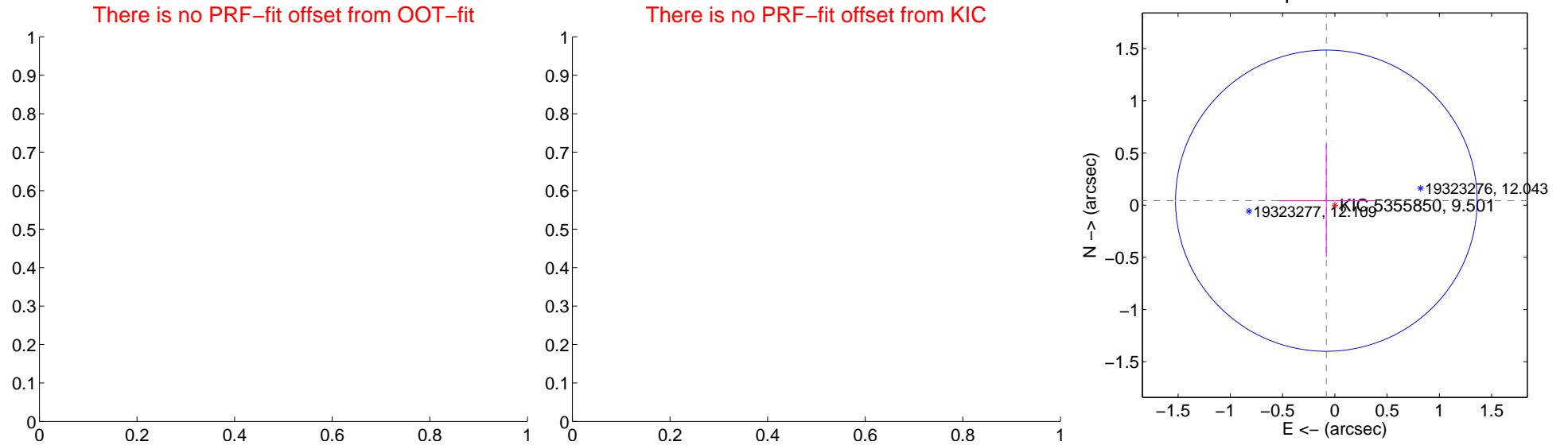
## DV Centroid Data

Supplemental centroid analysis for 005355850-03. **Kepler magnitude: 9.50.** Transit SNR -1.00

**There are 0 quarters with good PRF difference image offsets**

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$0.09 \pm 0.48$	0.19	$0.08 \pm 0.46$	$0.04 \pm 0.54$



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.

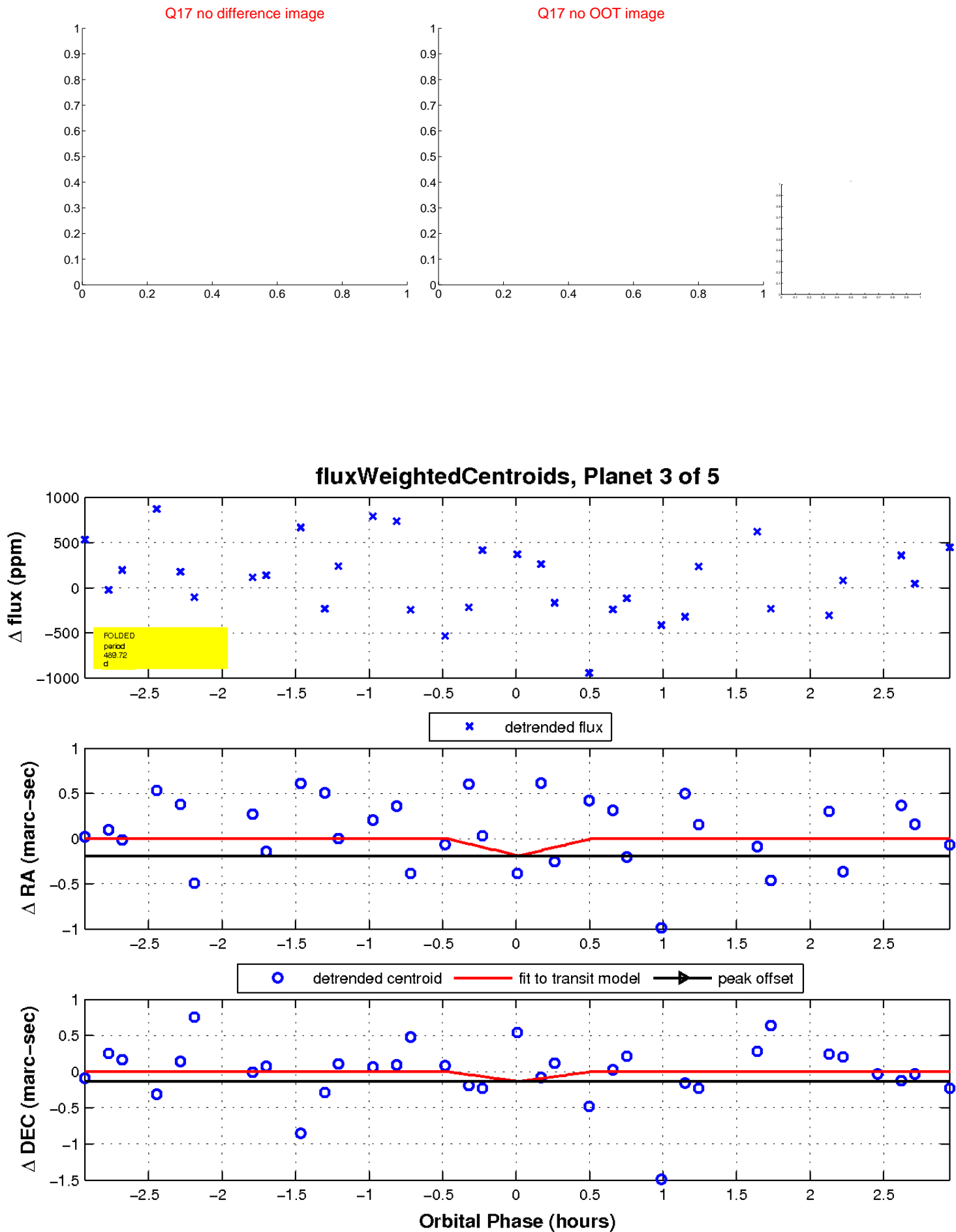


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



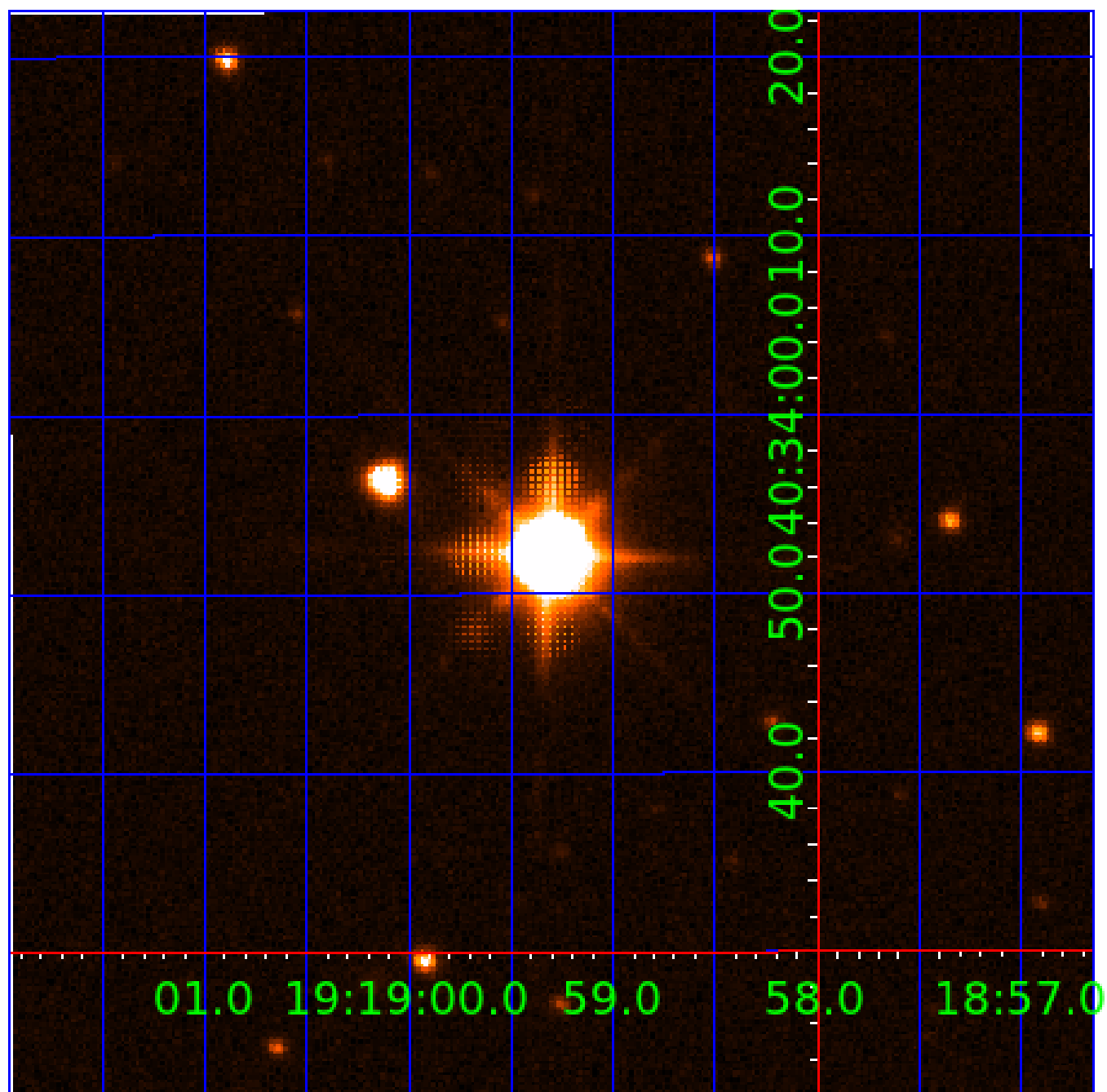


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005355850

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005355850-01	OBS	No	363.303917	188.384520	390.5	2.157	22.7	16.4	3.22	8124	6.87	25.21
005355850-02	OBS	No	261.397664	254.166483	155.9	5.354	17.7	8.7	3.22	8124	7.84	39.10
005355850-03	OBS	No	489.717510	531.314029	121.3	4.500	15.9	-1.0	3.22	8124	3.58	16.93
005355850-04	OBS	No	444.499747	297.281267	95.3	0.621	13.1	1.4	3.22	8124	3.99	19.26
005355850-05	OBS	No	444.554759	295.827628	224.1	2.515	12.6	7.8	3.22	8124	5.52	19.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005355850-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

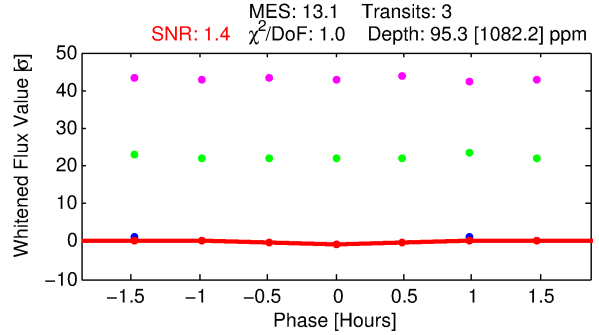
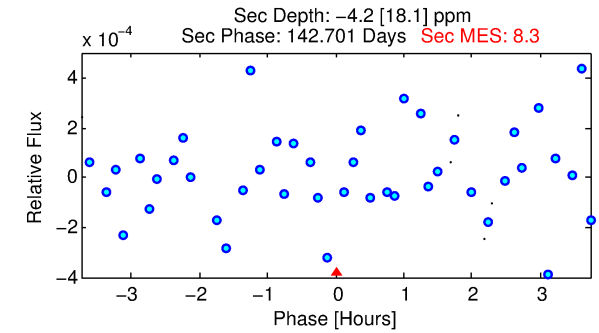
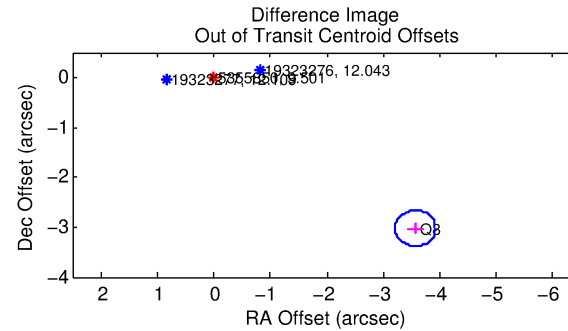
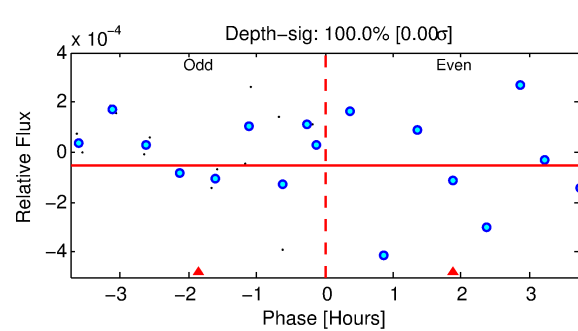
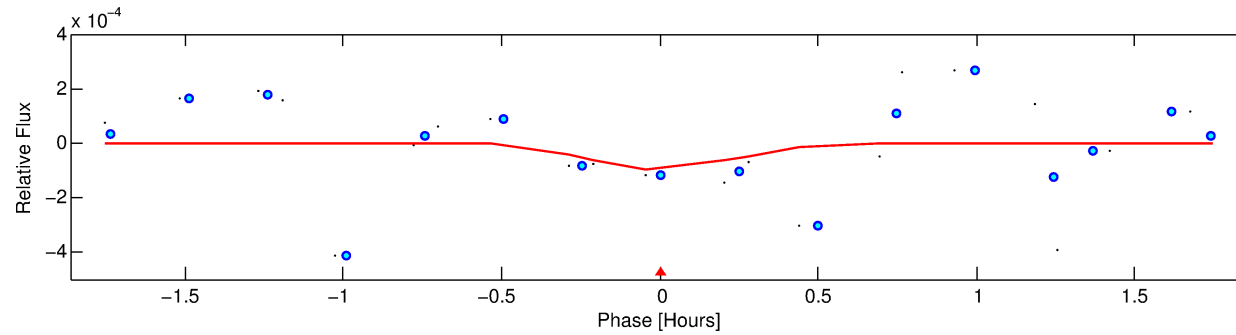
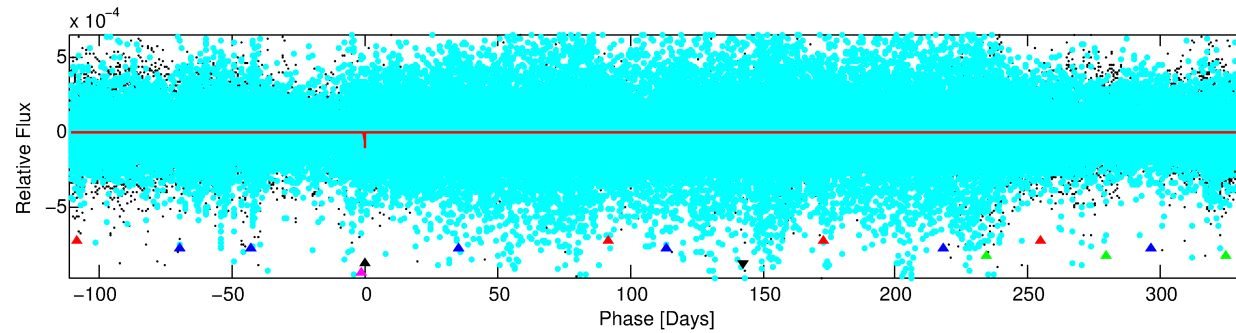
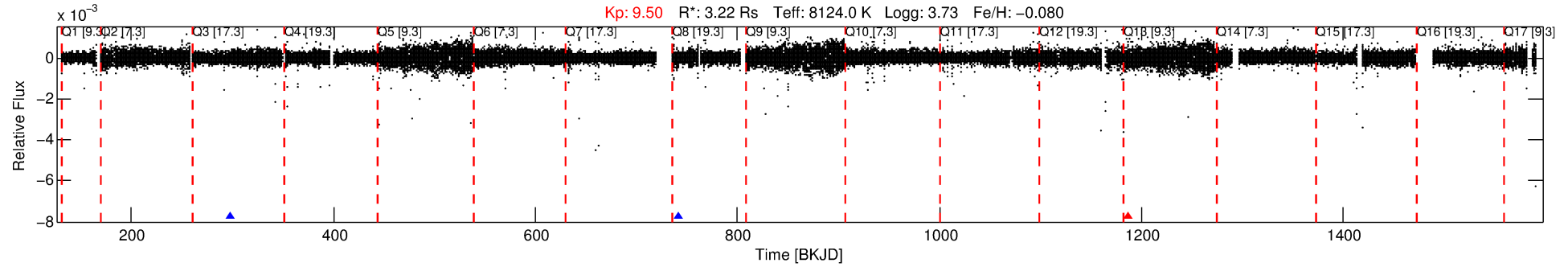
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005355850-04

No Significant Match Found

# DV One-Page Summary

KIC: 5355850 Candidate: 4 of 5 Period: 444.500 d



## DV Fit Results:

Period = 444.49975 [0.02019] d  
Epoch = 297.2813 [0.0246] BKJD  
 $R_p/R^* = 0.0114$  [0.1288]  
 $a/R^* = 1937.50$  [114740.56]  
 $b = 0.95$  [6.95]  
 $Seff = 19.26$  [10.35]  
 $Teq = 534$  [72] K  
 $R_p = 3.99$  [45.29]  $R_e$   
 $a = 1.4494$  [0.4833] AU  
 $Ag = N/A$   
 $Teff = N/A$

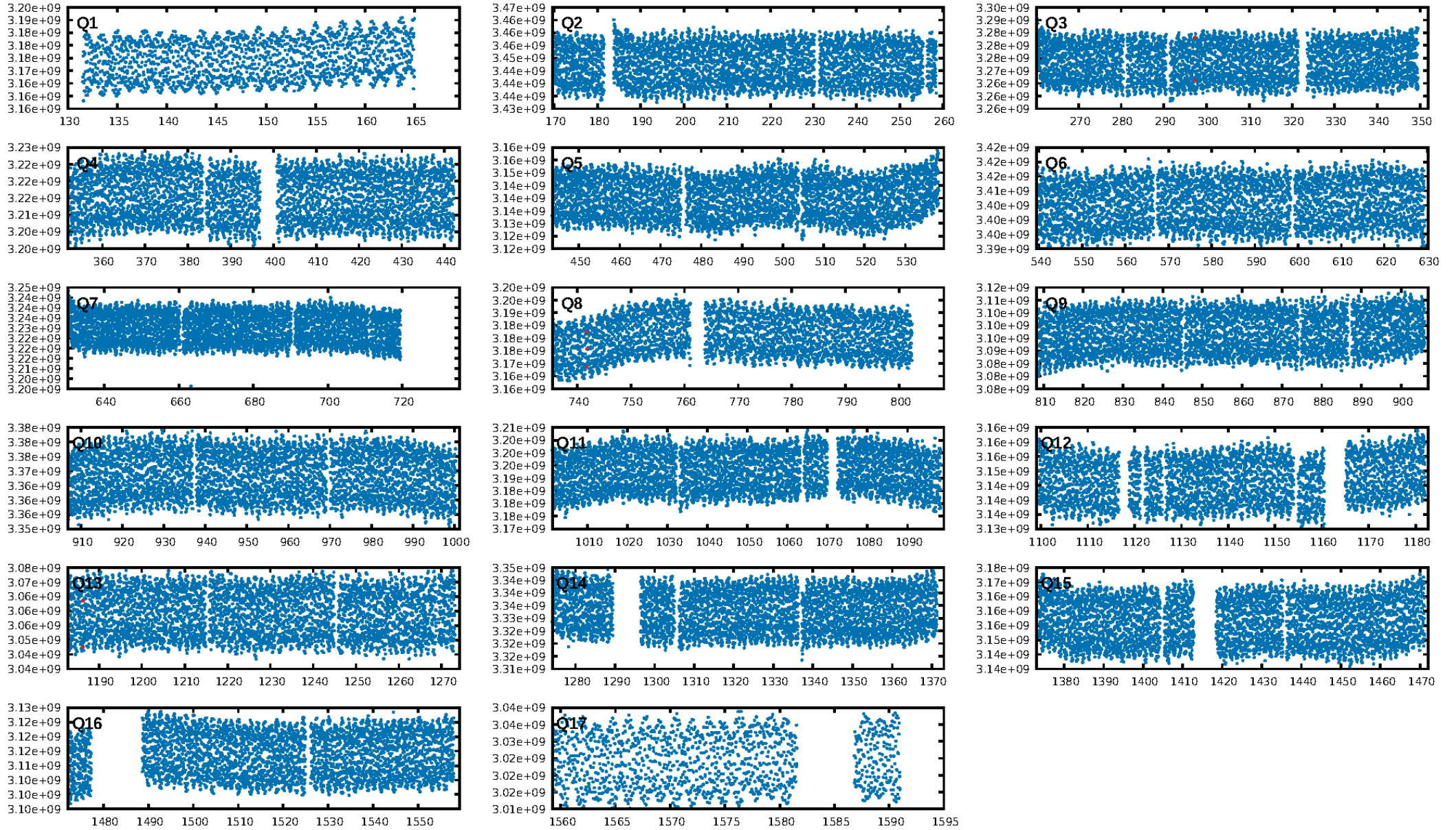
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [868.17 $\sigma$ ]  
LongPeriod-sig: 39.0% [0.51 $\sigma$ ]  
ModelChiSquare2-sig: 57.2%  
ModelChiSquareGoF-sig: 91.5%  
**Bootstrap-pfa: 3.82e-06**  
**RollingBand-fgt: 0.67 [2/3]**  
GhostDiagnostic-chr: N/A  
Centroid-sig: 96.0%  
Centroid-so: 0.842 arcsec [0.15 $\sigma$ ]  
**OotOffset-rm: 4.674 arcsec [39.24 $\sigma$ ]**  
**KicOffset-rm: 3.323 arcsec [27.12 $\sigma$ ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [1/1]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:55:11 Z

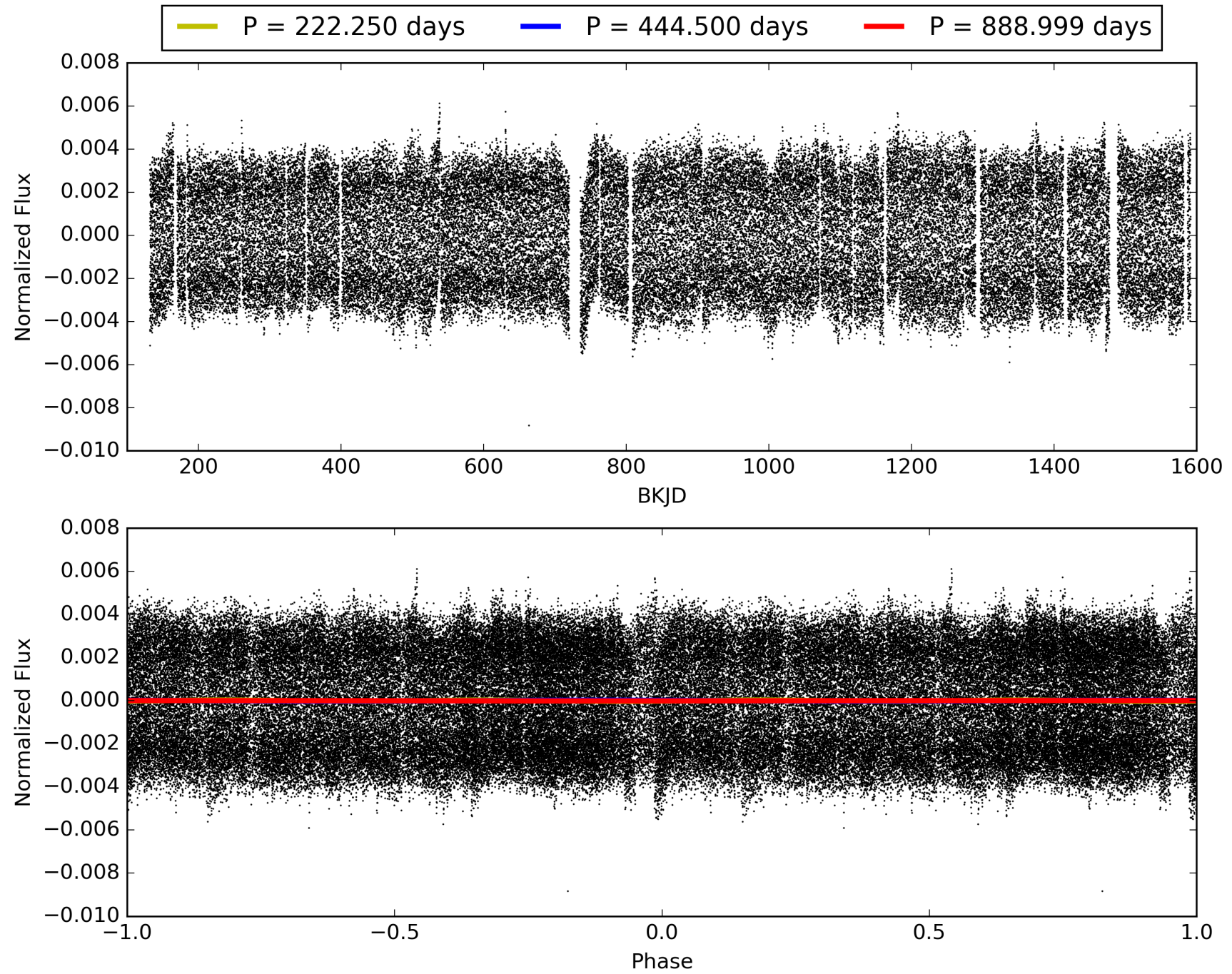
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005355850-04, PDC Light Curves



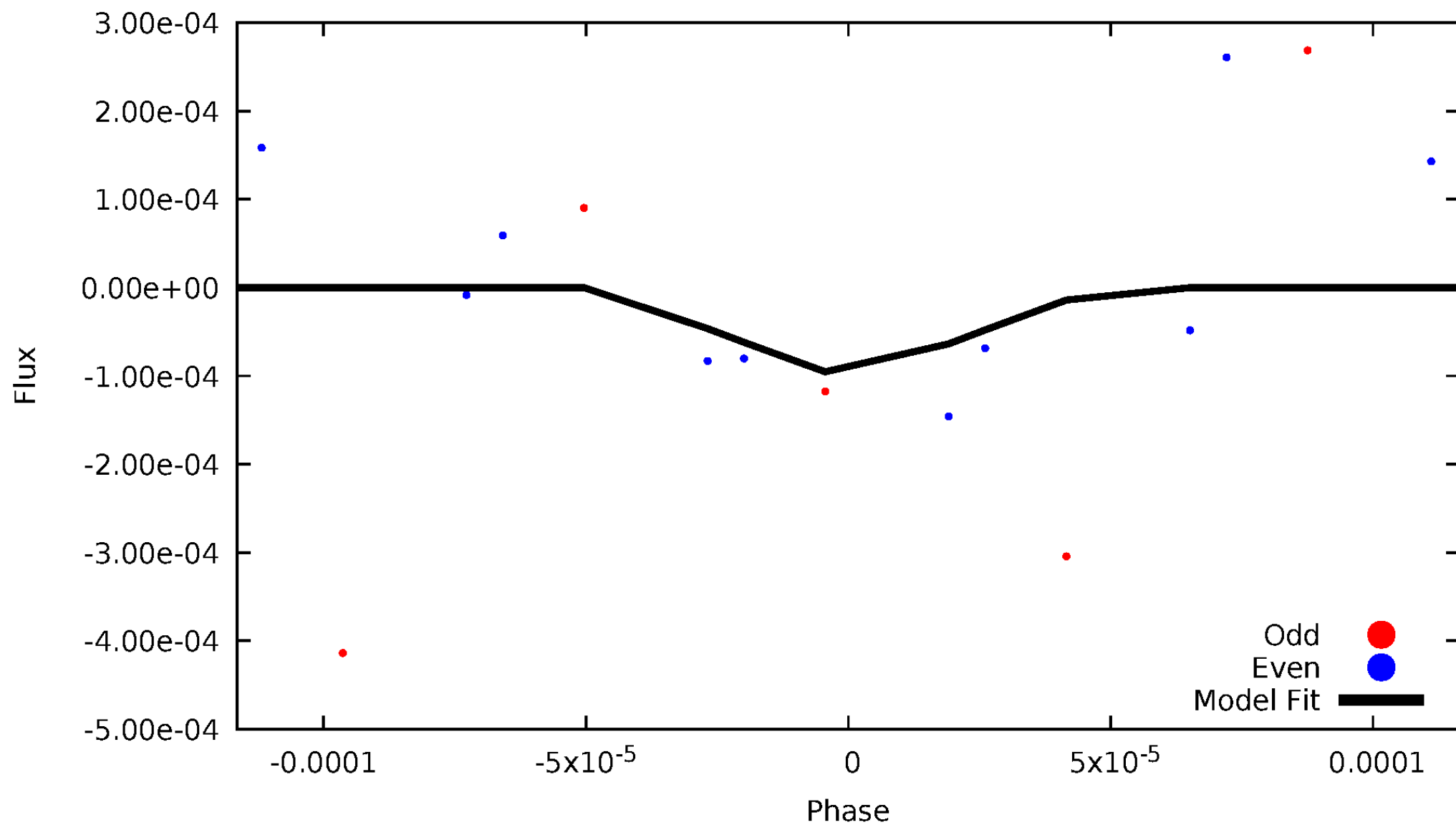


TCE 005355850-04



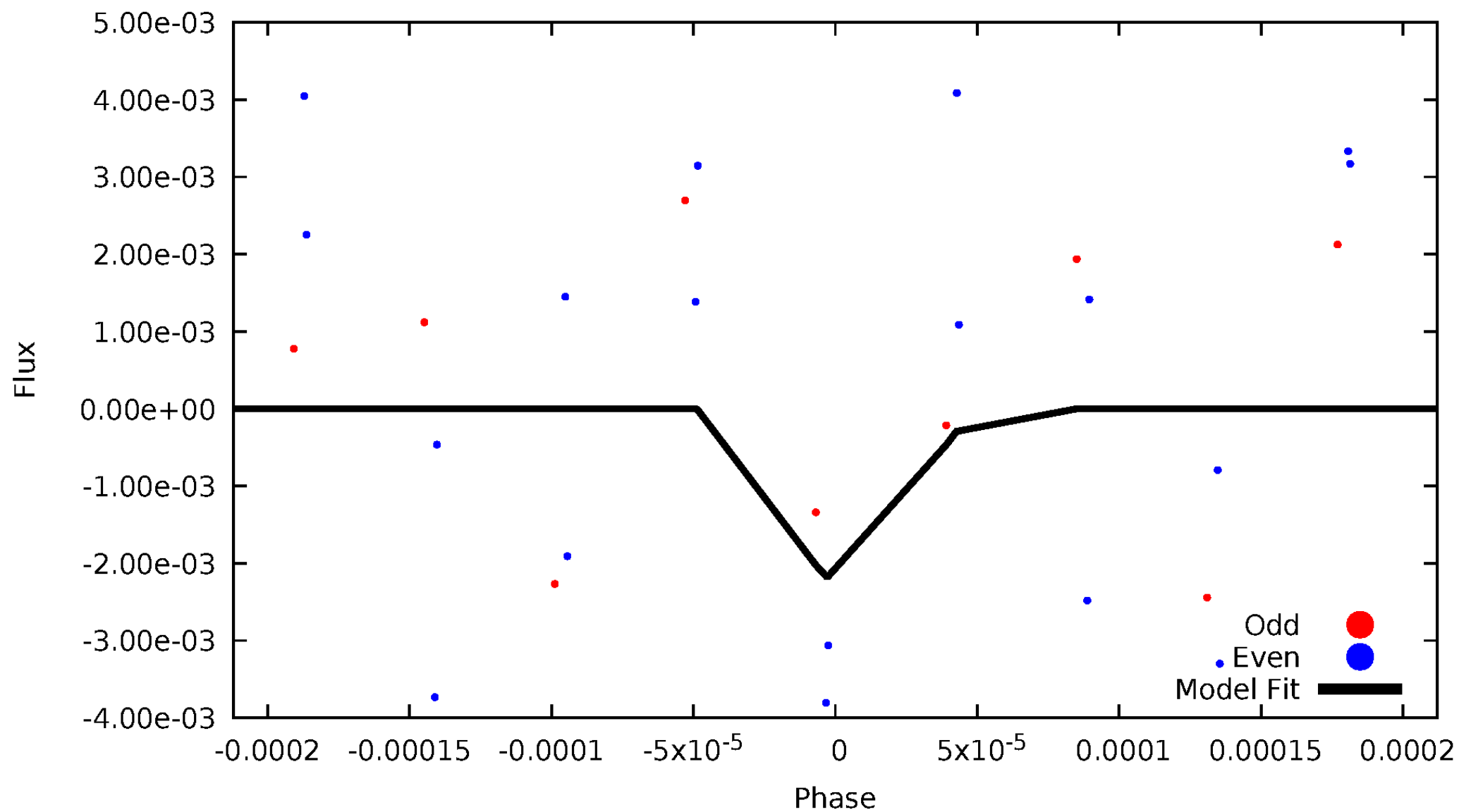
# DV Odd/Even

TCE 005355850-04



# ALT Odd/Even

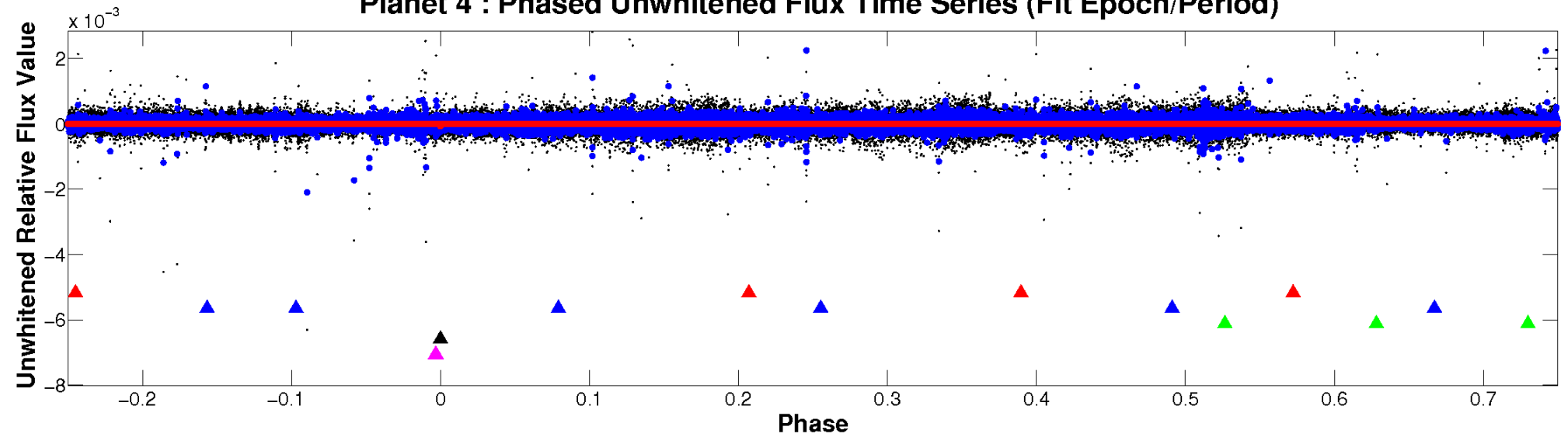
TCE 005355850-04



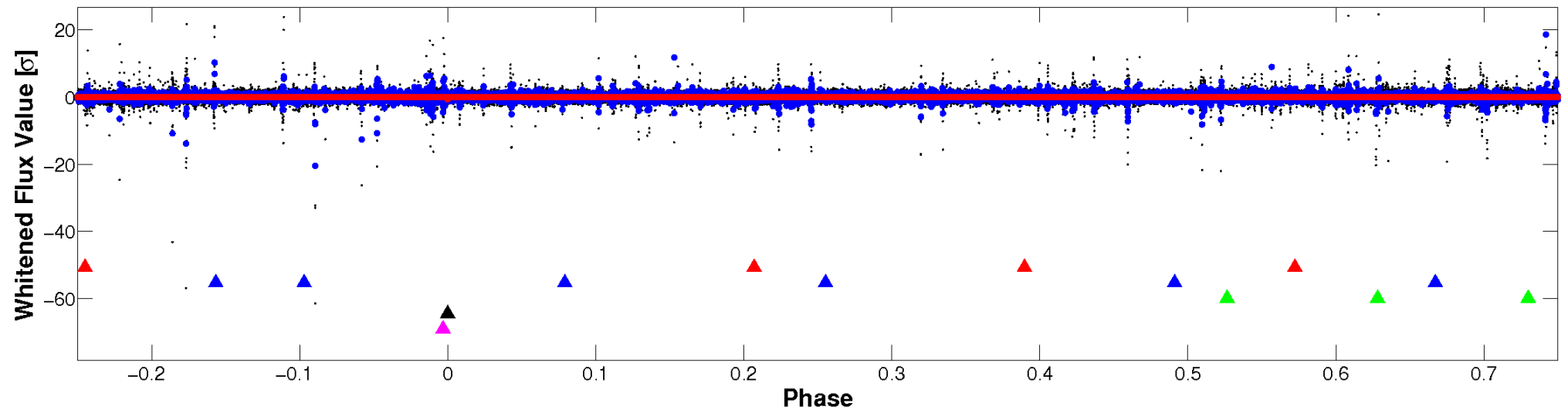


# Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

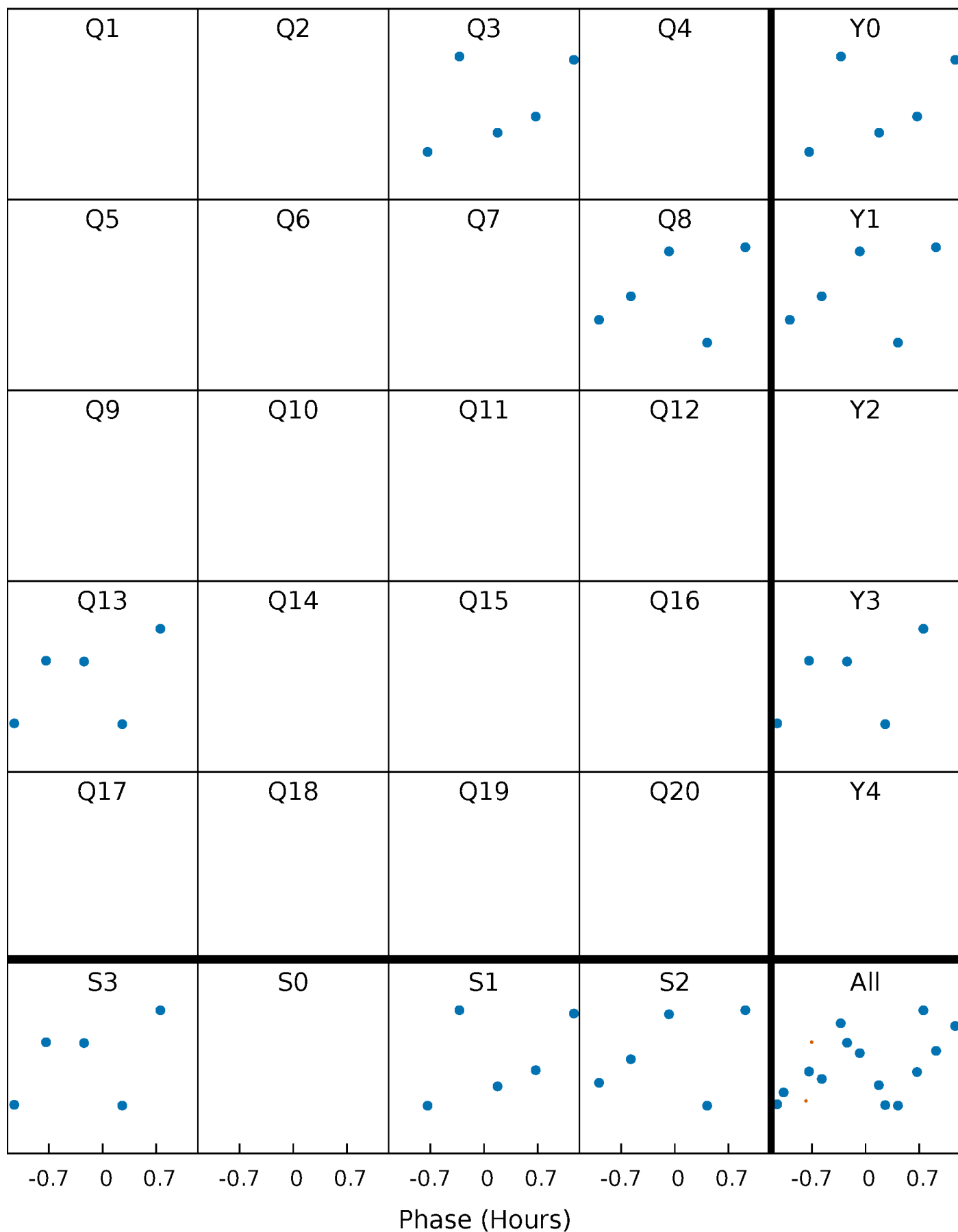


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



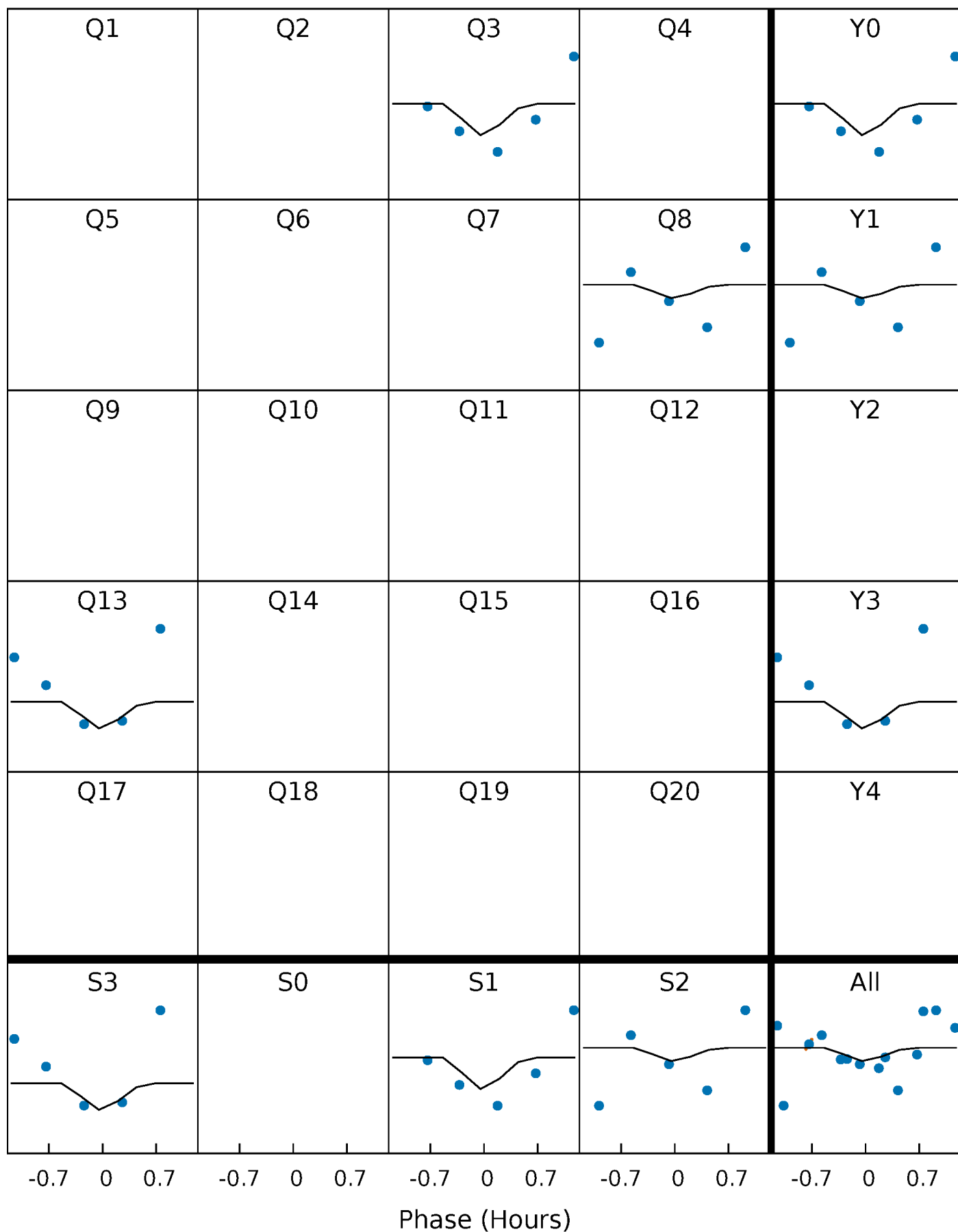
# PDC Quarter-Phased Transit Curves

TCE 005355850-04 P=444.499747 Days  $T_0=297.281267$  (BKJD)



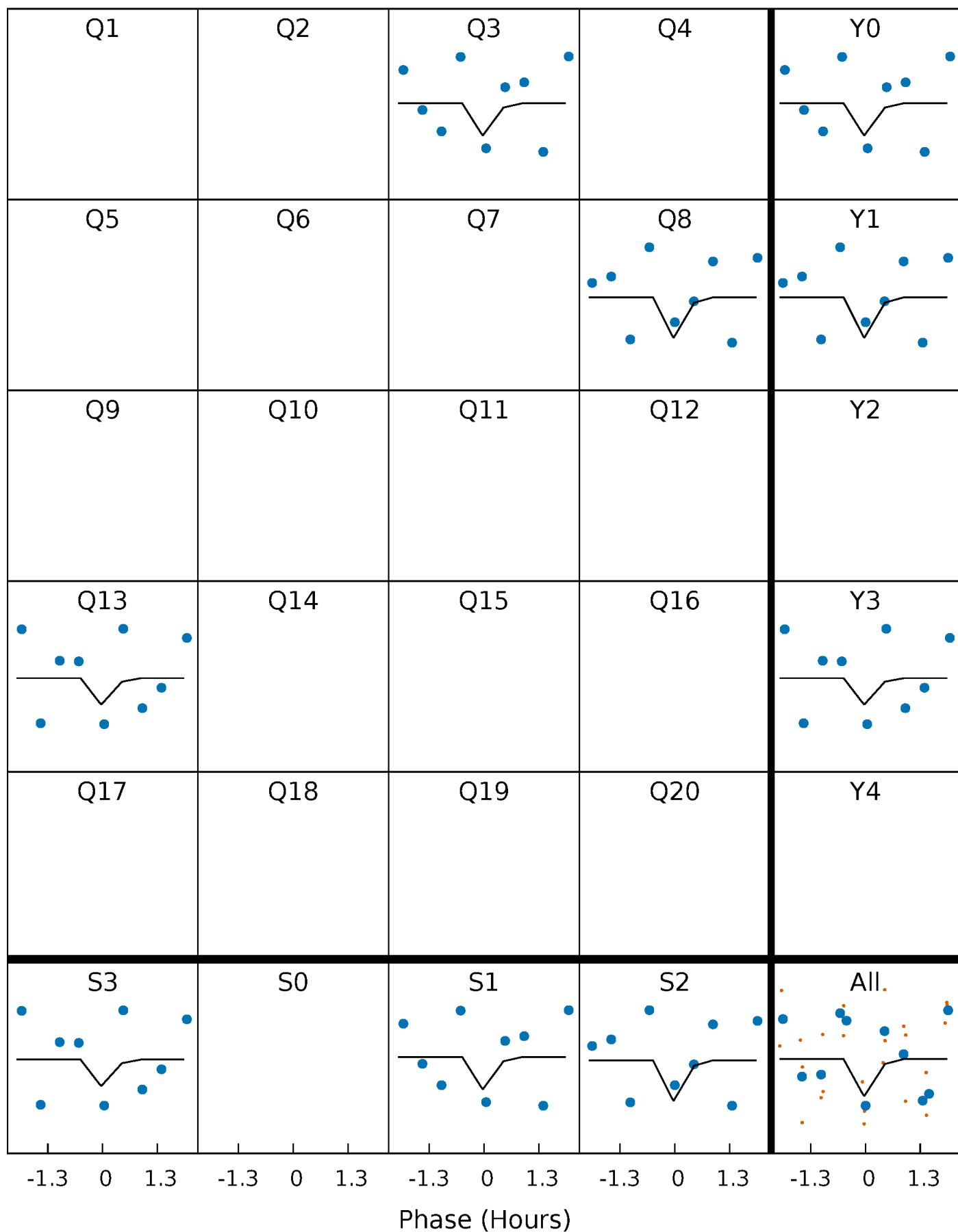
# DV Quarter-Phased Transit Curves

TCE 005355850-04     $P=444.499747$  Days     $T_0=297.281267$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

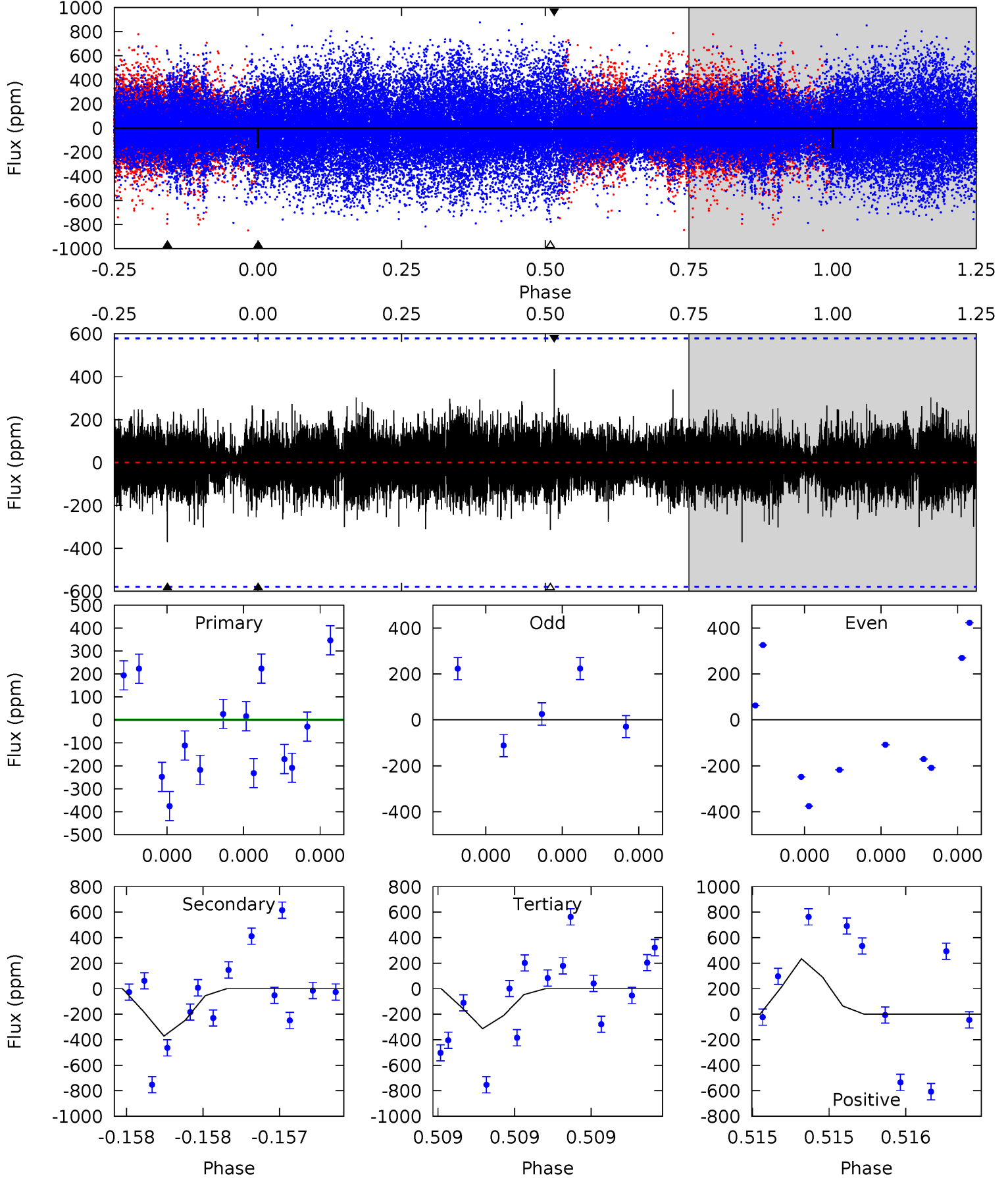
TCE 005355850-04 P=444.552531 Days  $T_0=297.188717$  (BKJD)



# DV Model-Shift Uniqueness Test

005355850-04, P = 444.499747 Days, E = 297.281267 Days

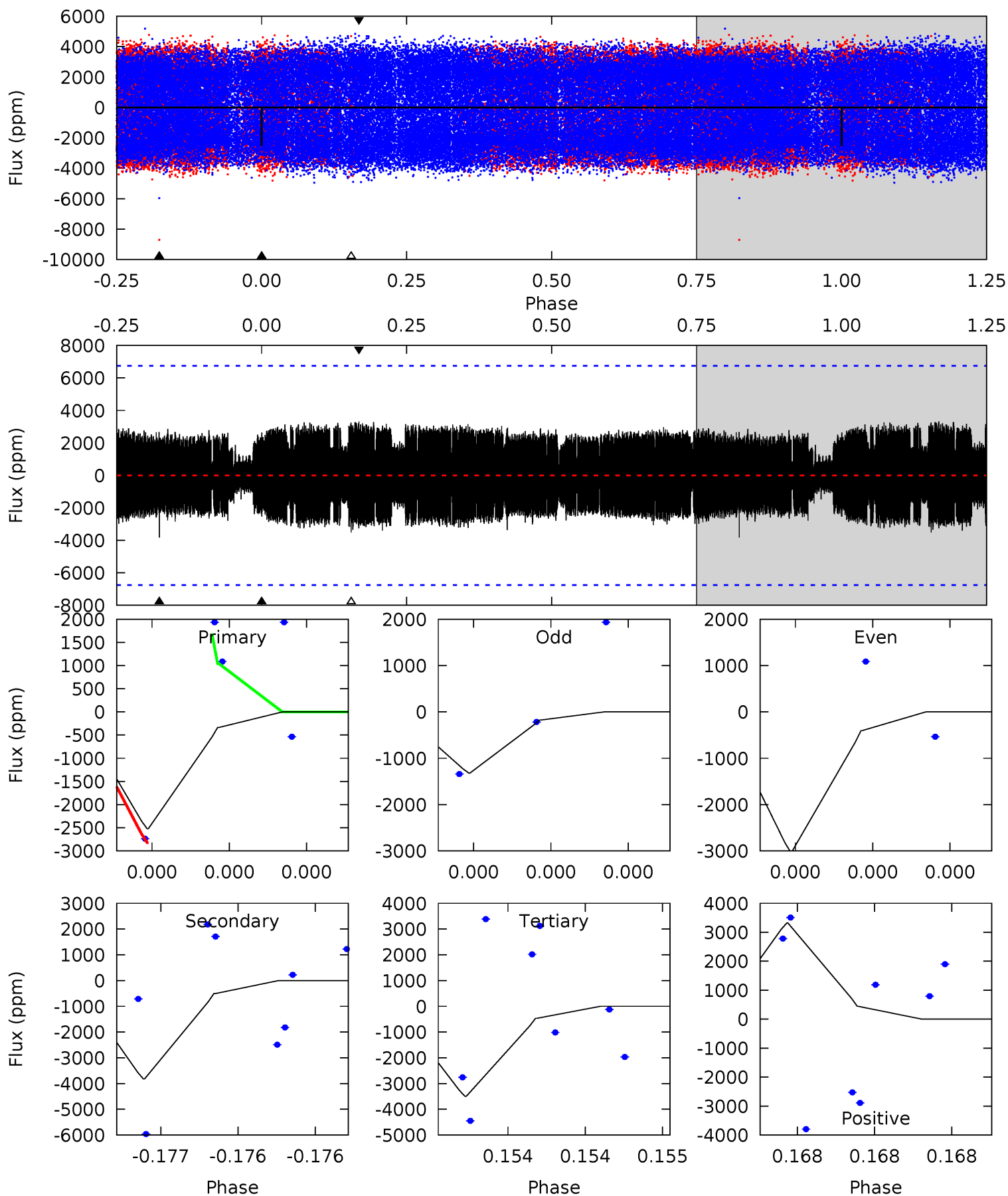
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.65	3.77	3.18	4.41	5.87	3.93	0.68	-1.53	-2.76	0.59	-0.64	0.25	1.03	0.54	0.17



# Alt Model-Shift Uniqueness Test

005355850-04, P = 444.552531 Days, E = 297.188717 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
2.23	3.38	3.09	2.93	5.96	4.05	1.13	-0.86	-0.70	0.28	0.44	0.65	0.88	0.46	0.50



### Stellar Parameters For KIC 005355850

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8124^{+64}_{-97}$	$3.735^{+0.315}_{-0.052}$	$-0.080^{+0.200}_{-0.150}$	$3.220^{+0.370}_{-1.109}$	$2.054^{+0.208}_{-0.261}$	$0.087^{+0.175}_{-0.021}$
	+1%/-1%	+8%/-1%	+250%/-188%	+11%/-34%	+10%/-13%	+201%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005355850-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-371 \pm 99$	$28.21^{+31.67}_{-18.76}$	$730^{+28}_{-64}$	$3978^{+2508}_{-852}$	$542^{+4495}_{-428}$
Alt.	$-3823 \pm 1133$	$34.84^{+33.17}_{-24.59}$	$731^{+28}_{-64}$	$5834^{+7572}_{-1410}$	$3410^{+36399}_{-2457}$

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

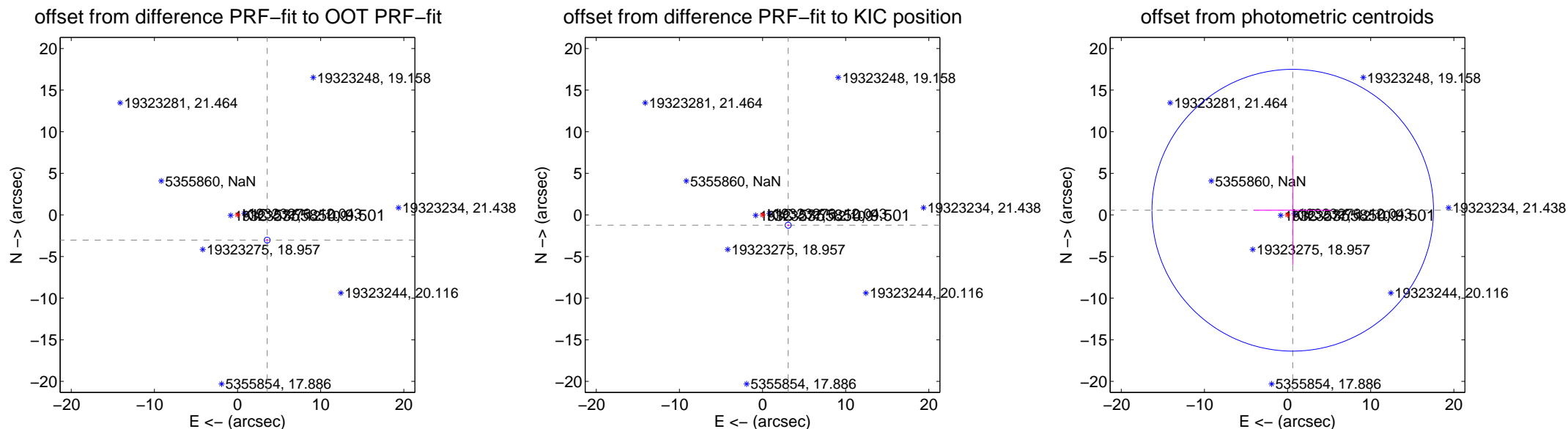
## DV Centroid Data

Supplemental centroid analysis for 005355850-04. **Kepler magnitude: 9.50.** Transit SNR 1.41

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.85 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>4.674 \pm 0.119</math></b>	<b>39.24</b>	$-3.563 \pm 0.124$	$-3.025 \pm 0.112$
PRF-fit source offset from KIC position	<b><math>3.323 \pm 0.123</math></b>	<b>27.12</b>	$-3.084 \pm 0.124$	$-1.237 \pm 0.112$
photometric centroid source offset	$0.84 \pm 5.64$	0.15	$-0.62 \pm 4.70$	$0.57 \pm 6.60$



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.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



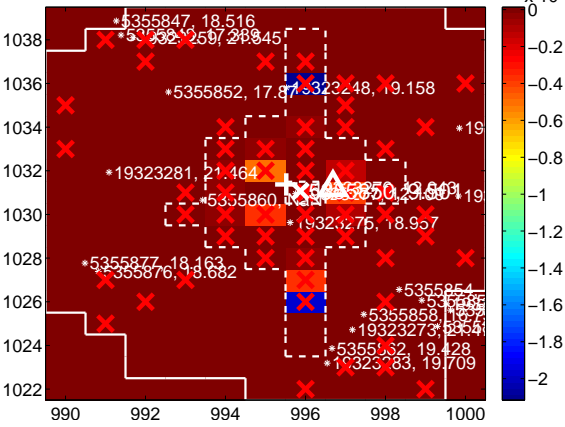
Q7 no difference image



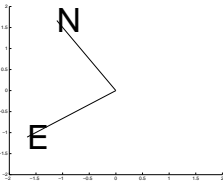
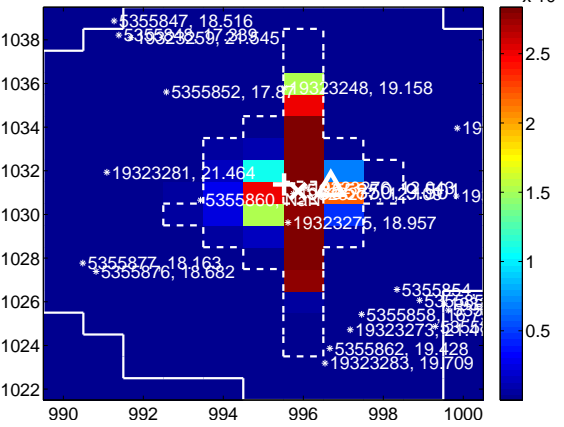
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image



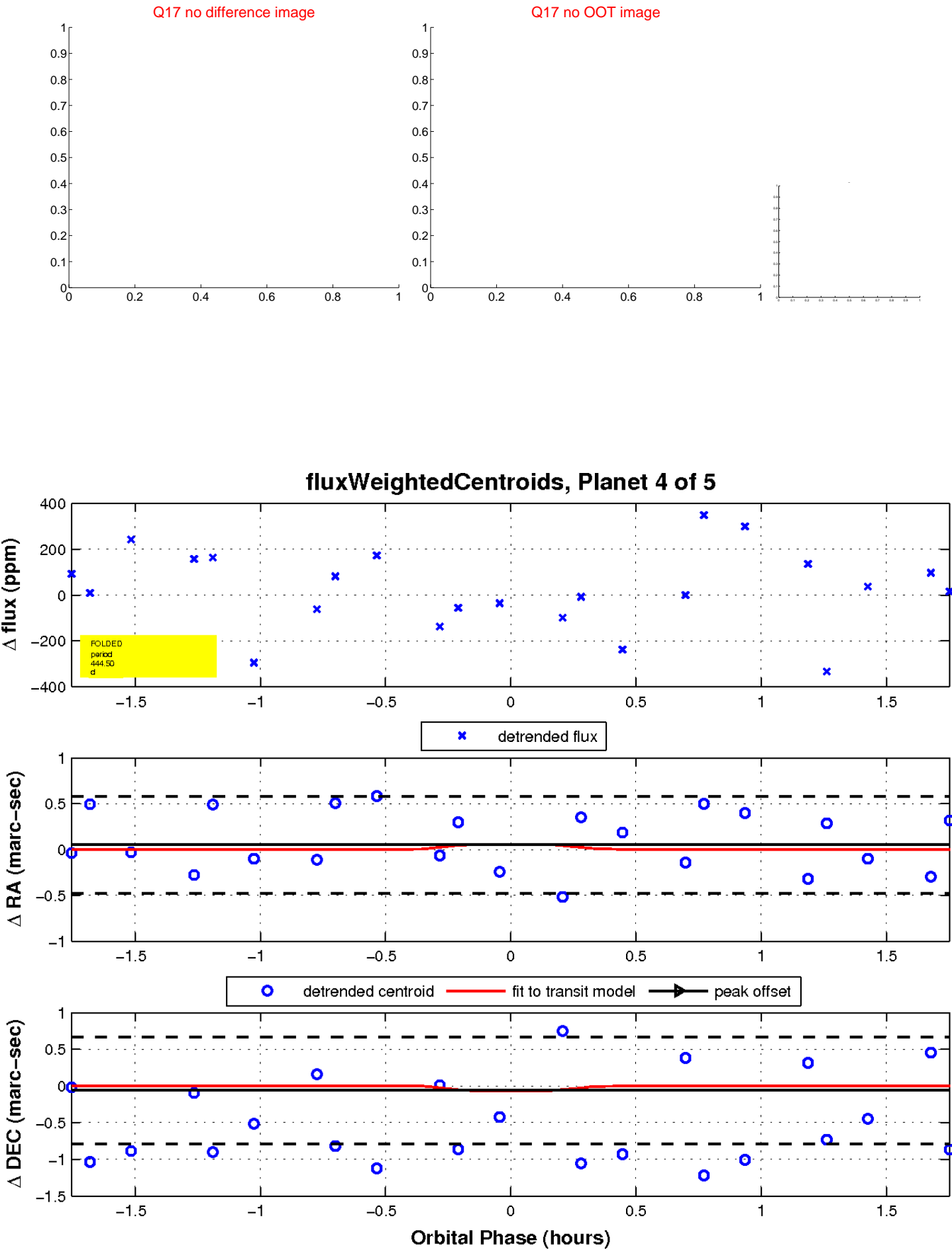
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

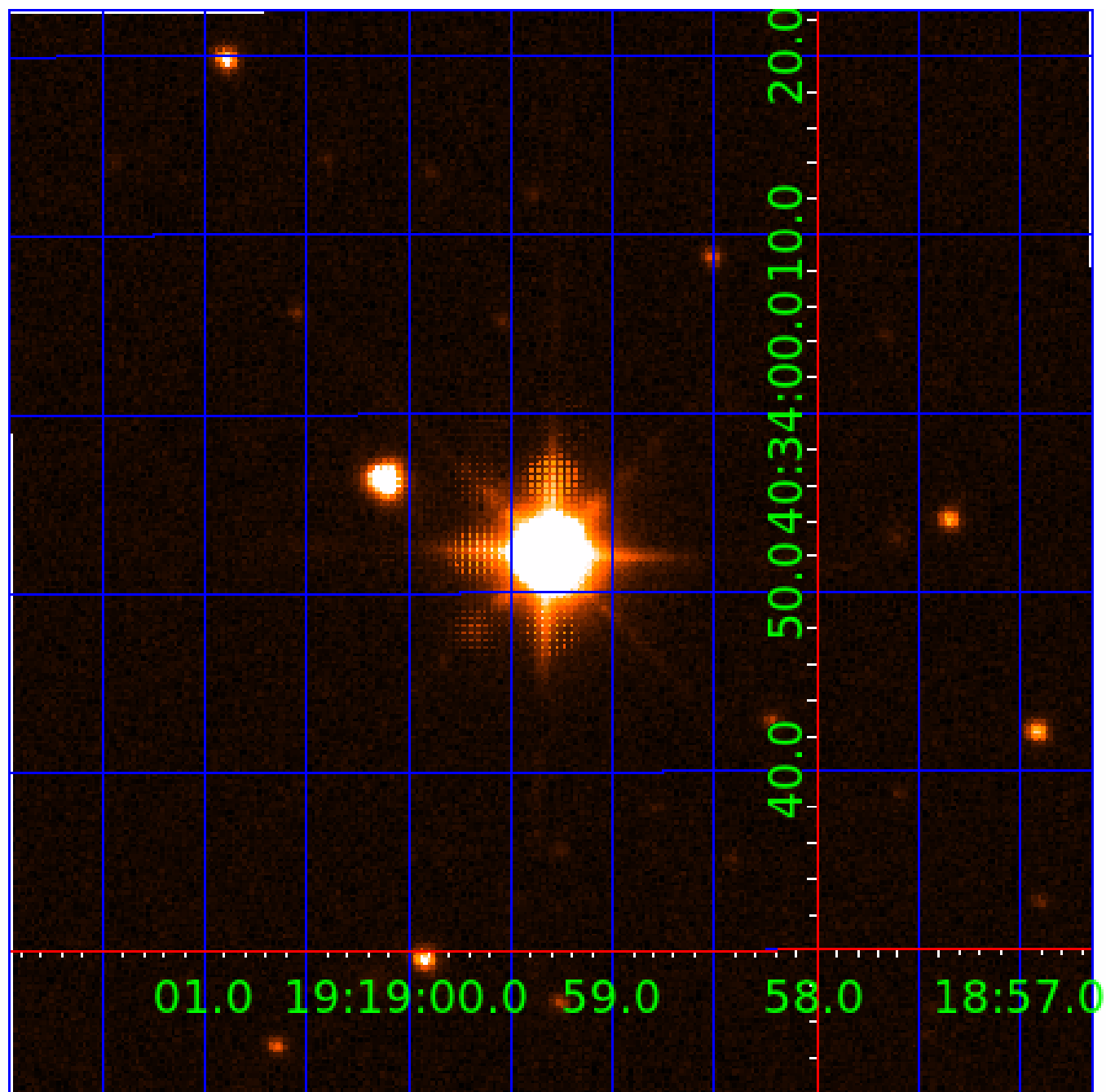


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005355850

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005355850-01	OBS	No	363.303917	188.384520	390.5	2.157	22.7	16.4	3.22	8124	6.87	25.21
005355850-02	OBS	No	261.397664	254.166483	155.9	5.354	17.7	8.7	3.22	8124	7.84	39.10
005355850-03	OBS	No	489.717510	531.314029	121.3	4.500	15.9	-1.0	3.22	8124	3.58	16.93
005355850-04	OBS	No	444.499747	297.281267	95.3	0.621	13.1	1.4	3.22	8124	3.99	19.26
005355850-05	OBS	No	444.554759	295.827628	224.1	2.515	12.6	7.8	3.22	8124	5.52	19.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005355850-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
005355850-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

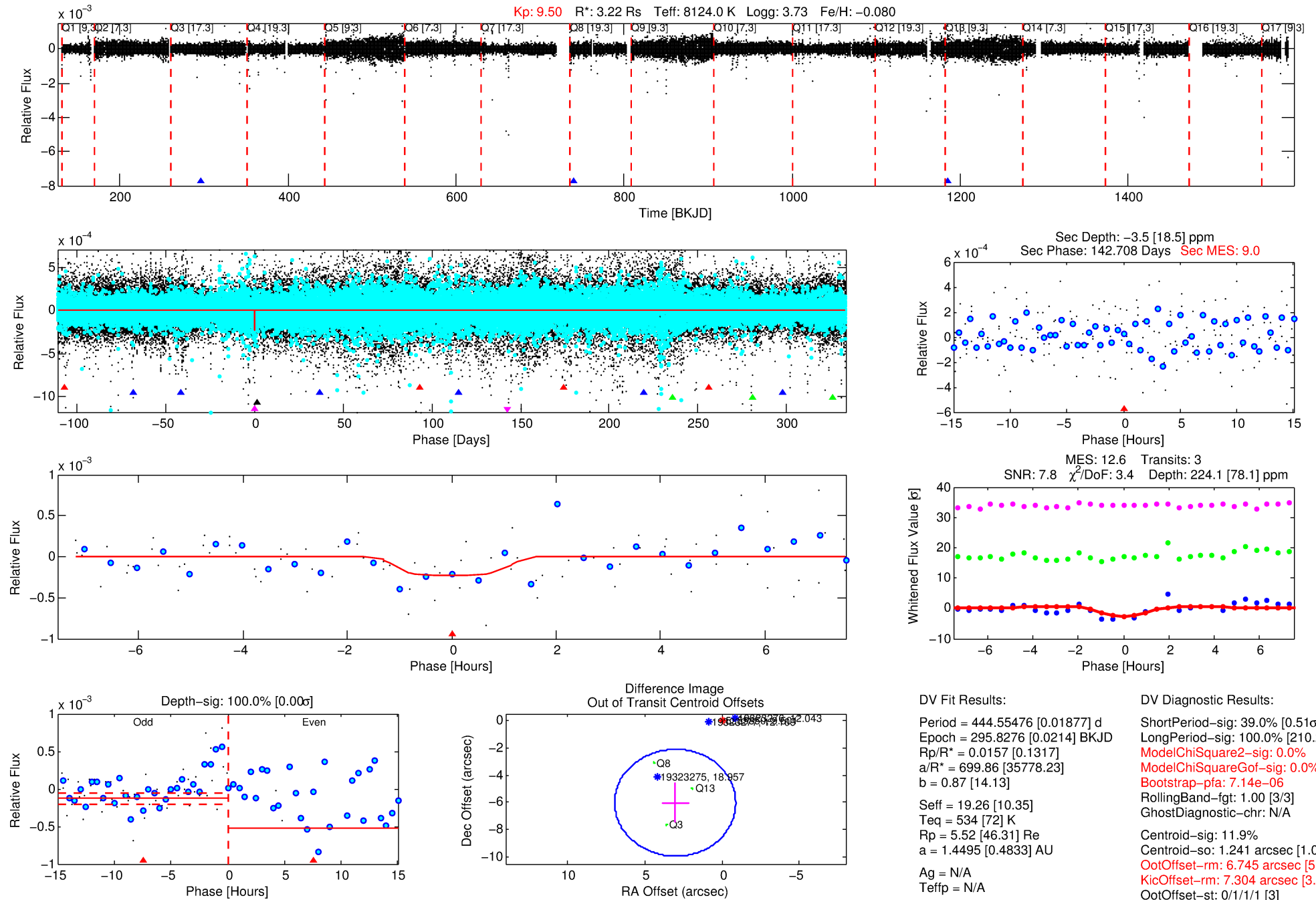
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005355850-05

No Significant Match Found

# DV One-Page Summary

KIC: 5355850 Candidate: 5 of 5 Period: 444.555 d



## DV Fit Results:

Period = 444.55476 [0.01877] d  
Epoch = 295.8276 [0.0214] BKJD  
Rp/R\* = 0.0157 [0.1317]  
a/R\* = 699.86 [35778.23]  
b = 0.87 [14.13]  
Seff = 19.26 [10.35]  
Teq = 534 [72] K  
Rp = 5.52 [46.31] Re  
a = 1.4495 [0.4833] AU  
Ag = N/A  
Teffp = N/A

## DV Diagnostic Results:

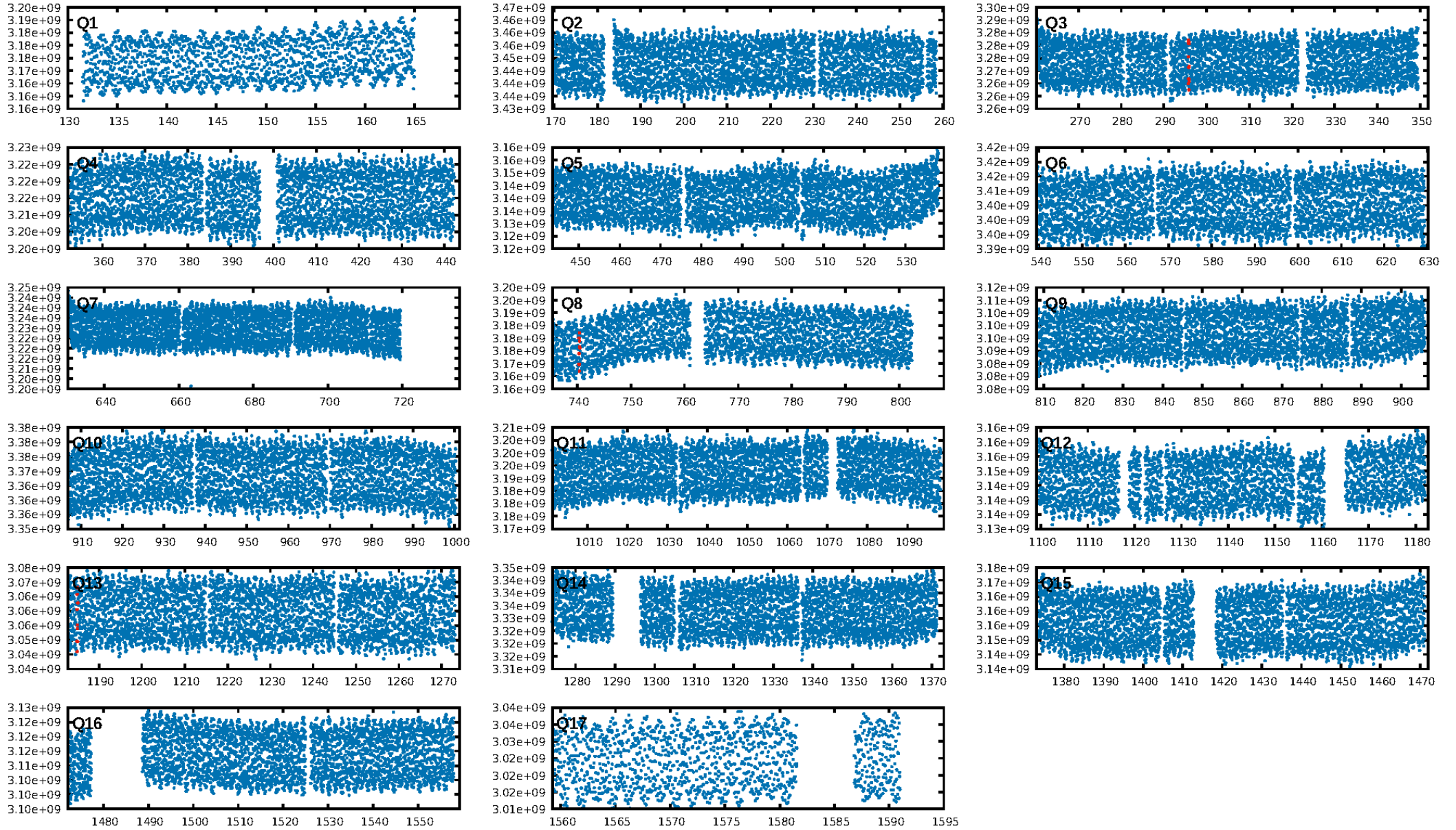
ShortPeriod-sig: 39.0% [0.51σ]  
LongPeriod-sig: 100.0% [210.26σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 7.14e-06  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 11.9%  
Centroid-so: 1.241 arcsec [1.01σ]  
OotOffset-rm: 6.745 arcsec [5.17σ]  
KicOffset-rm: 7.304 arcsec [3.58σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-st: 0/1/1/1 [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: 01-Feb-2016 12:55:37 Z

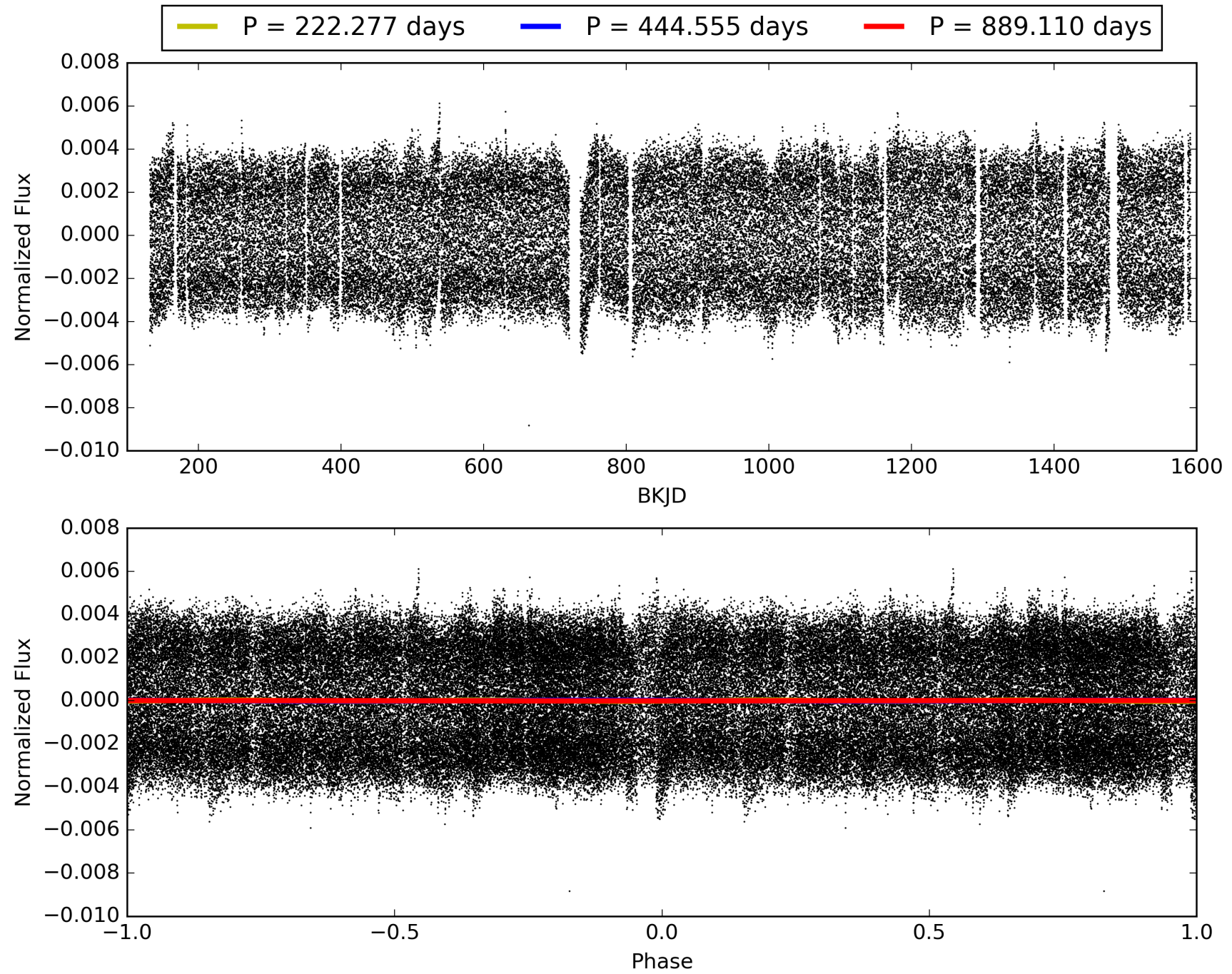
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005355850-05, PDC Light Curves

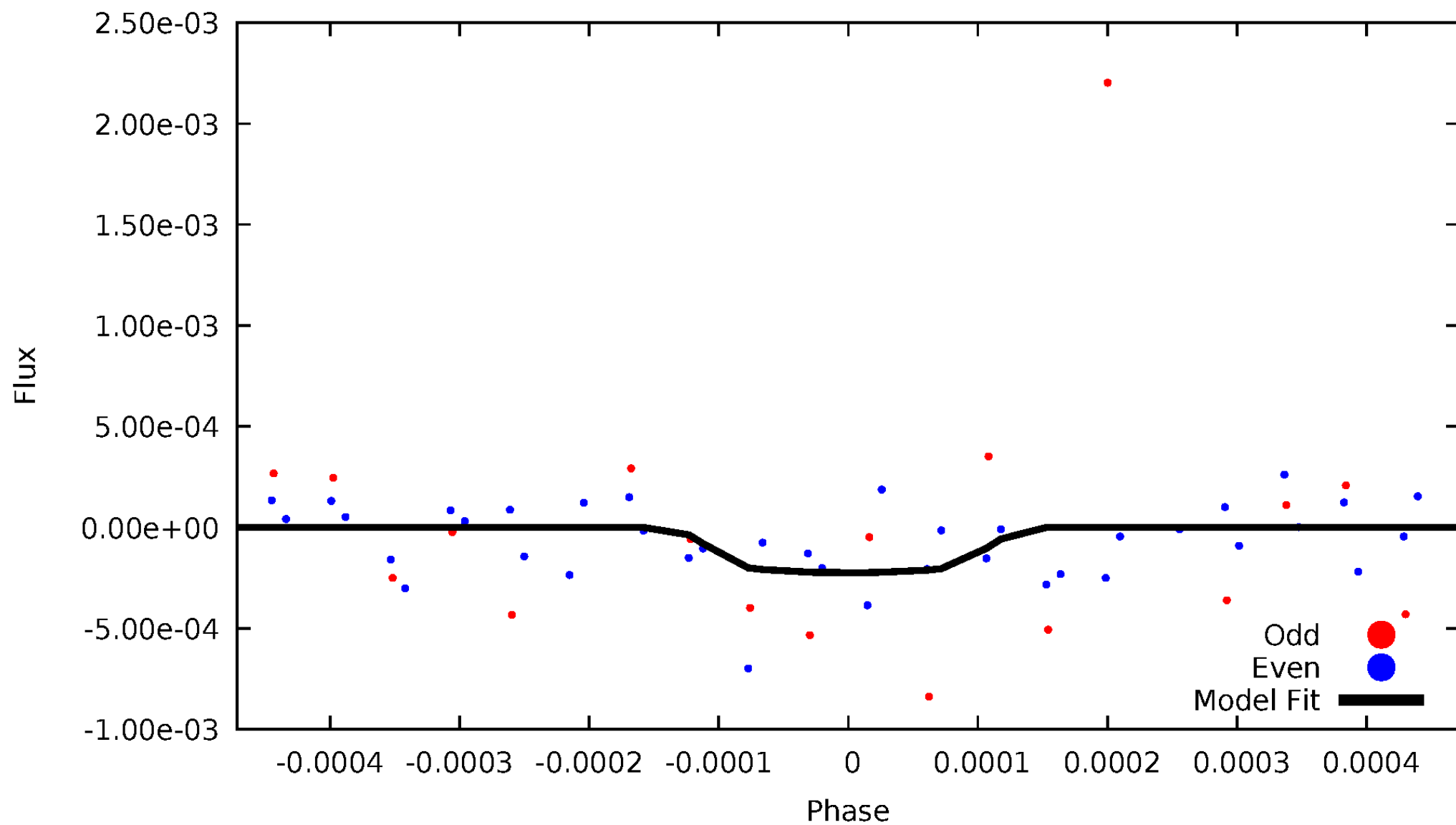


TCE 005355850-05



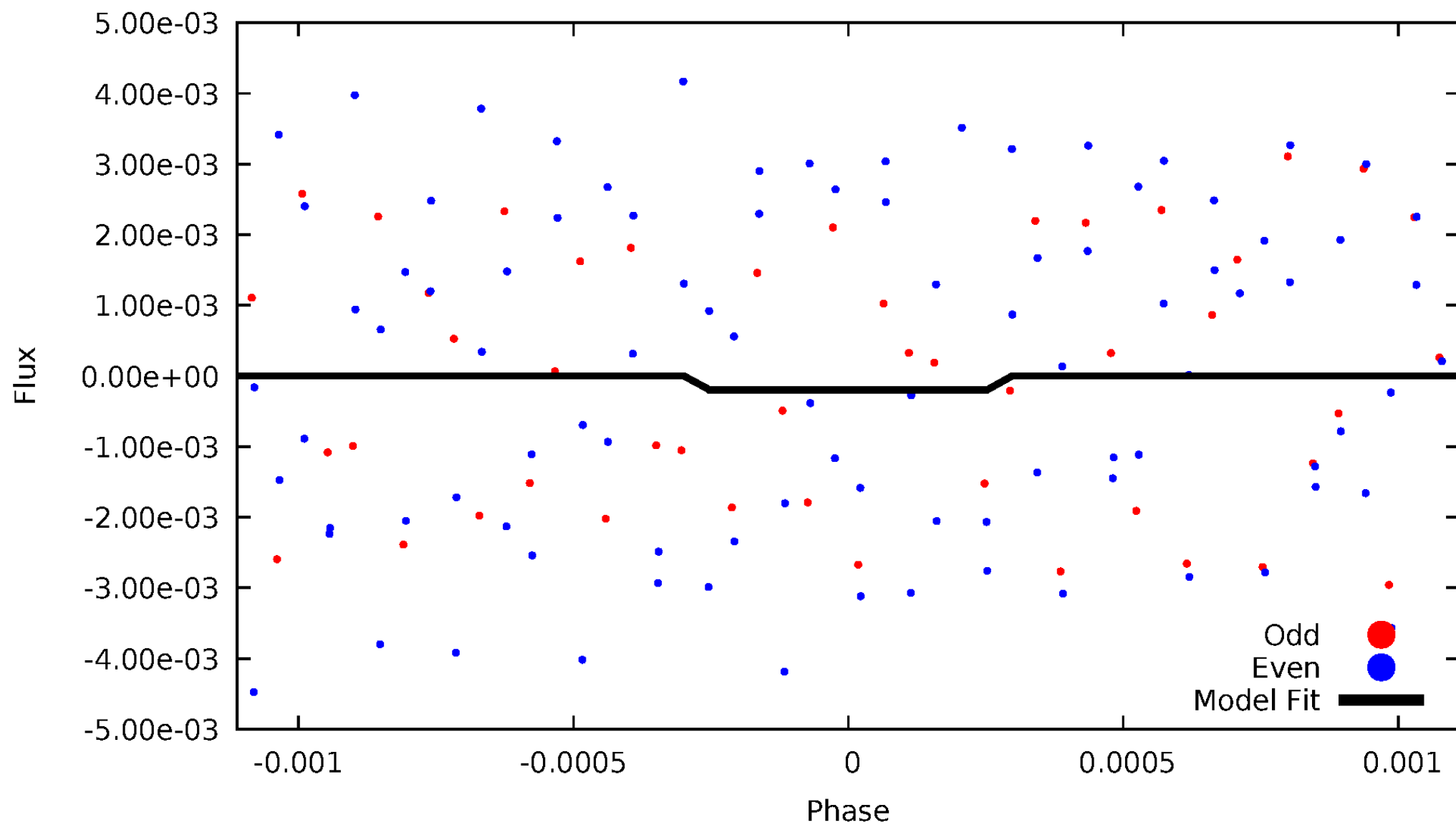
# DV Odd/Even

TCE 005355850-05



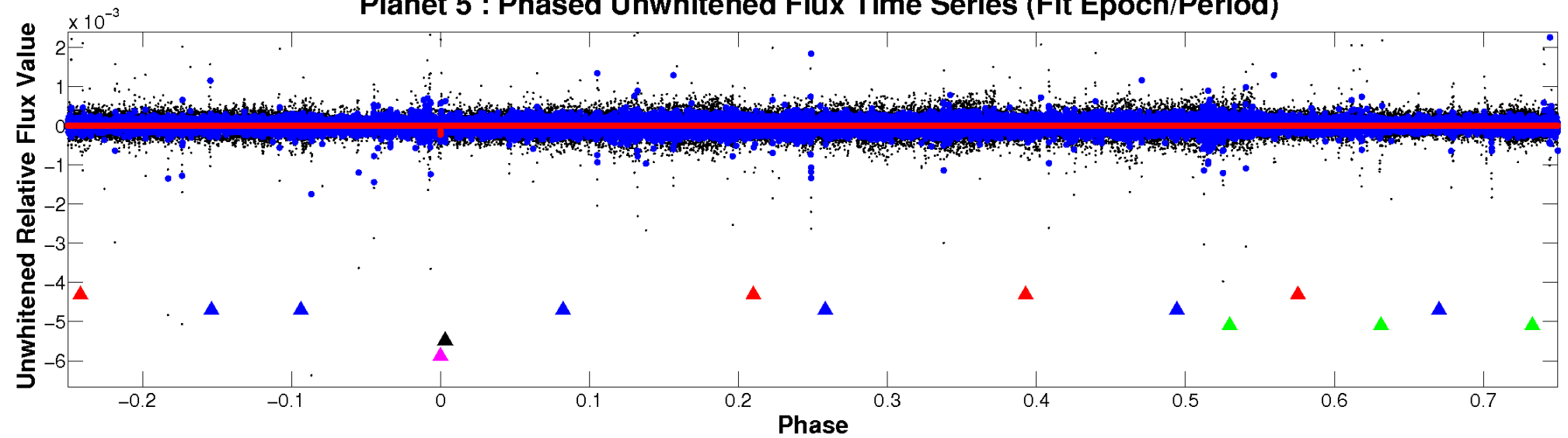
# ALT Odd/Even

TCE 005355850-05

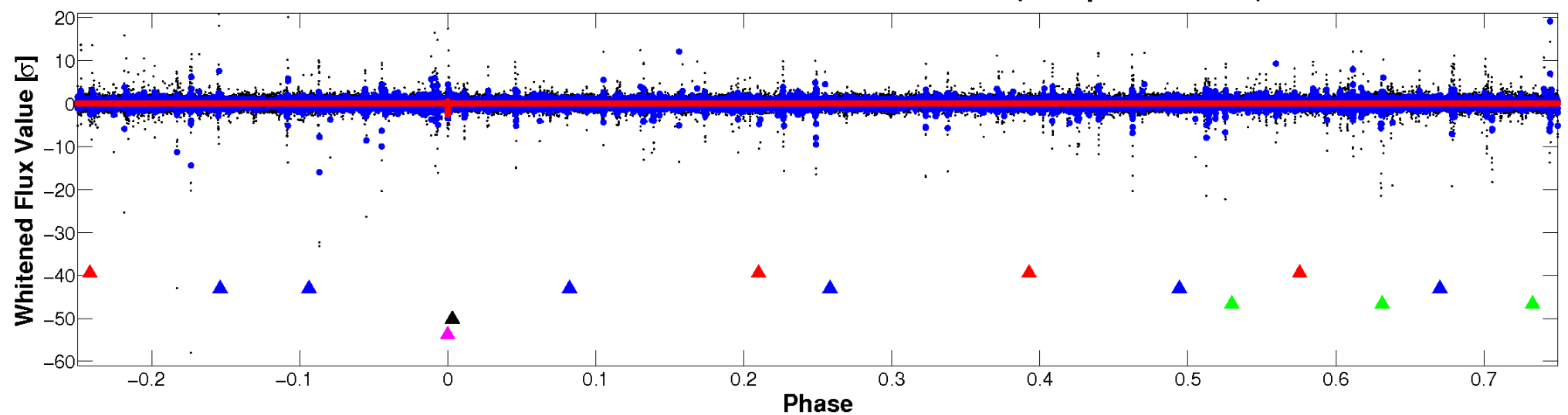


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

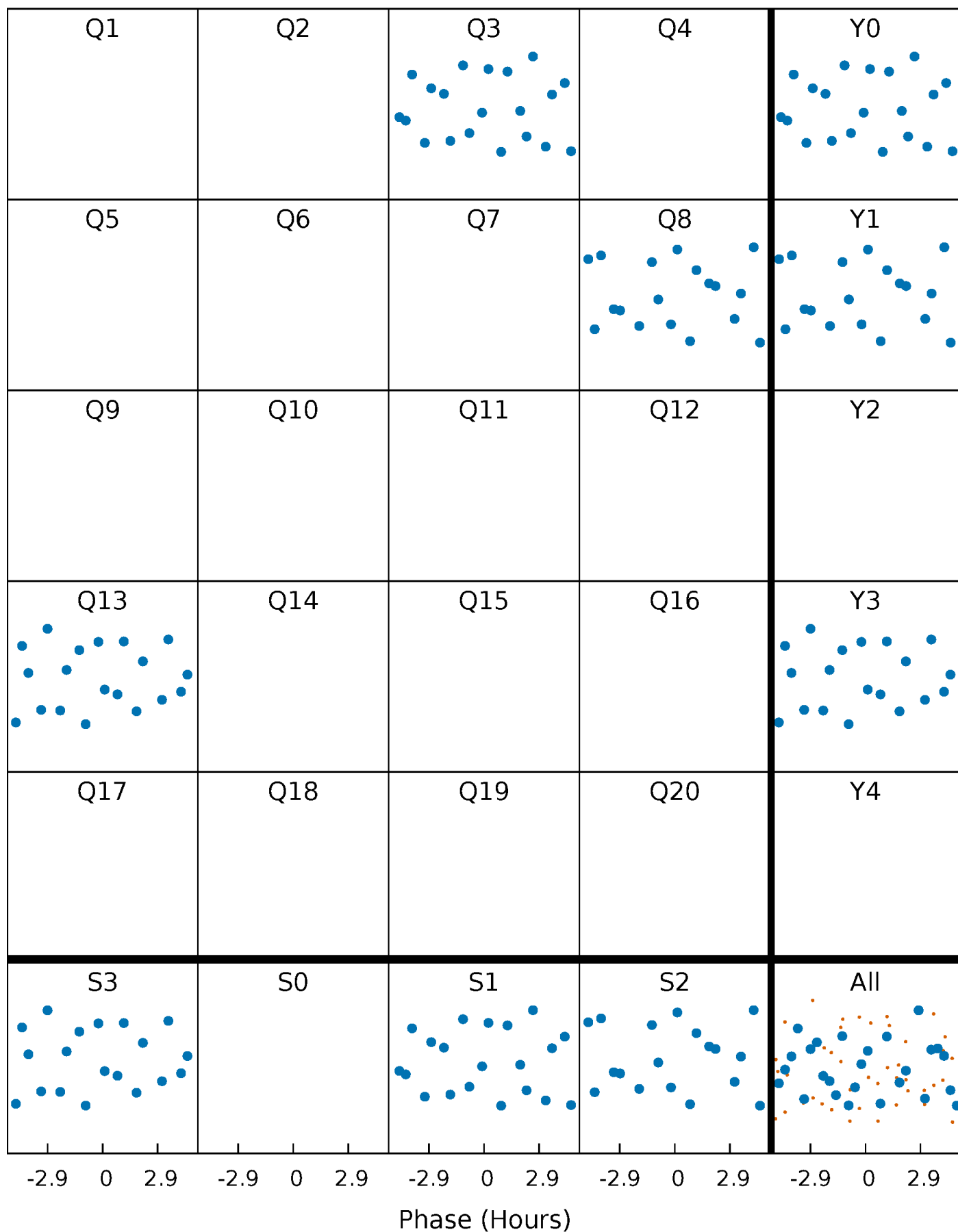


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



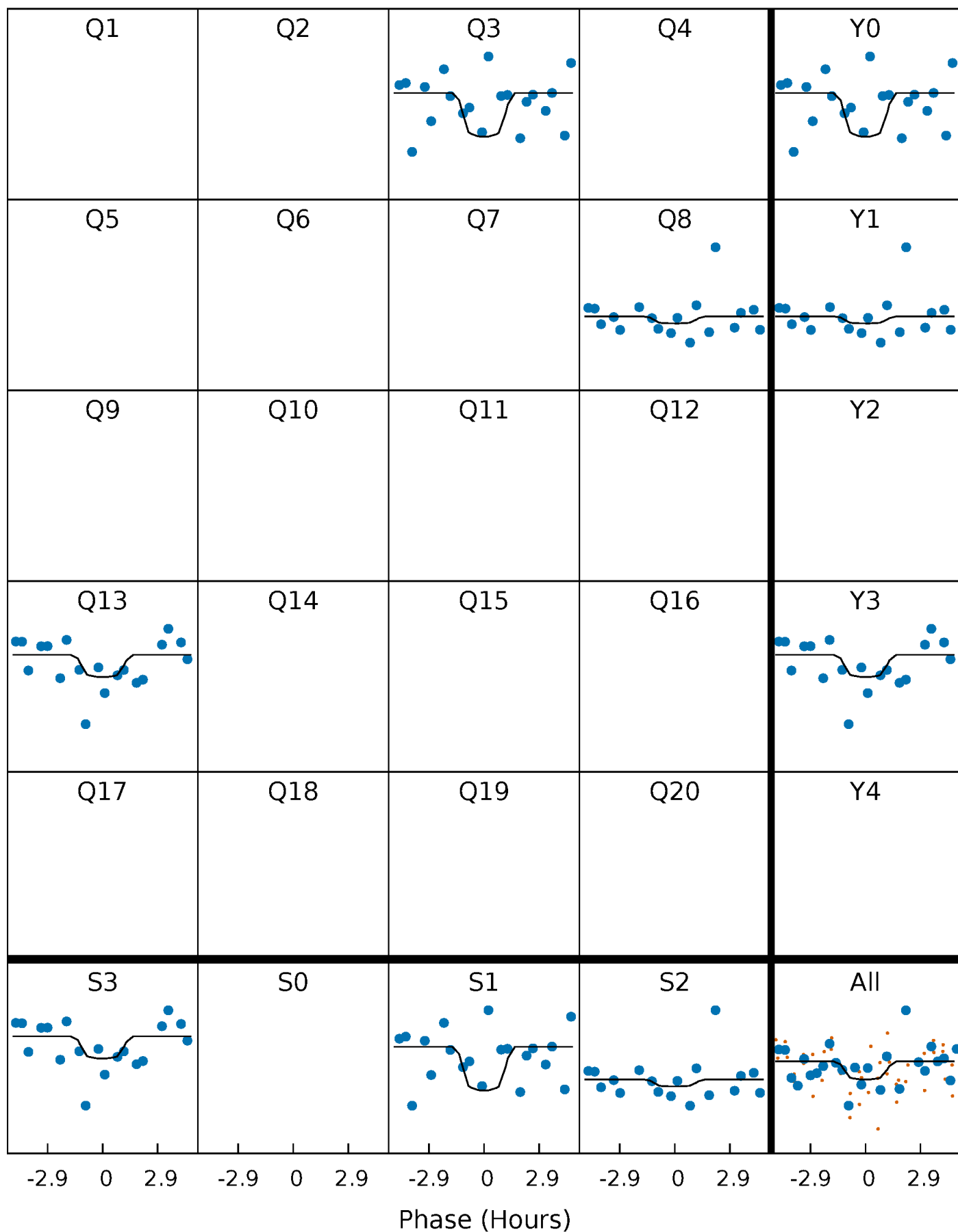
# PDC Quarter-Phased Transit Curves

TCE 005355850-05     $P=444.554759$  Days     $T_0=295.827628$  (BKJD)



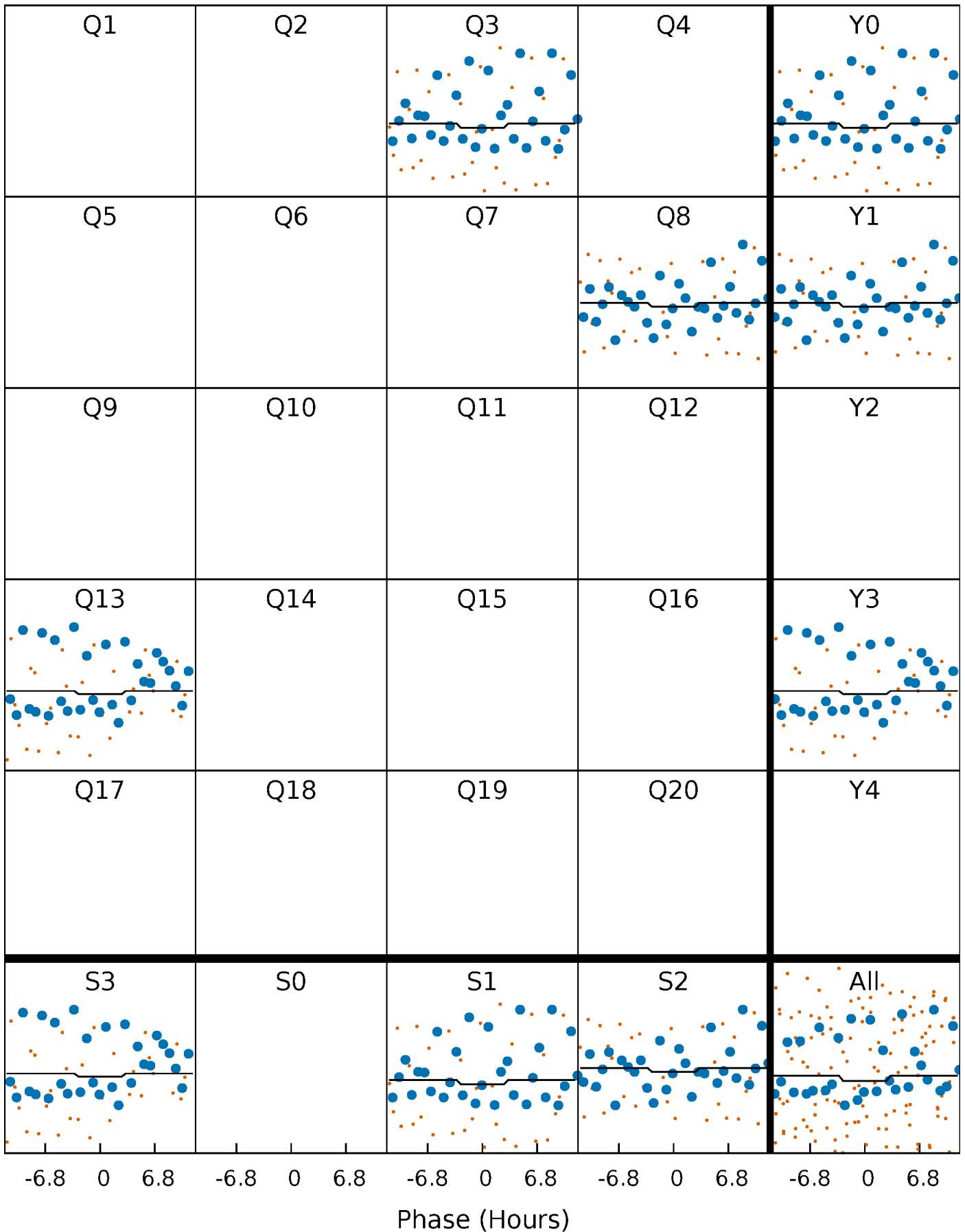
# DV Quarter-Phased Transit Curves

TCE 005355850-05     $P=444.554759$  Days     $T_0=295.827628$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005355850-05     $P=444.552531$  Days     $T_0=295.849456$  (BKJD)

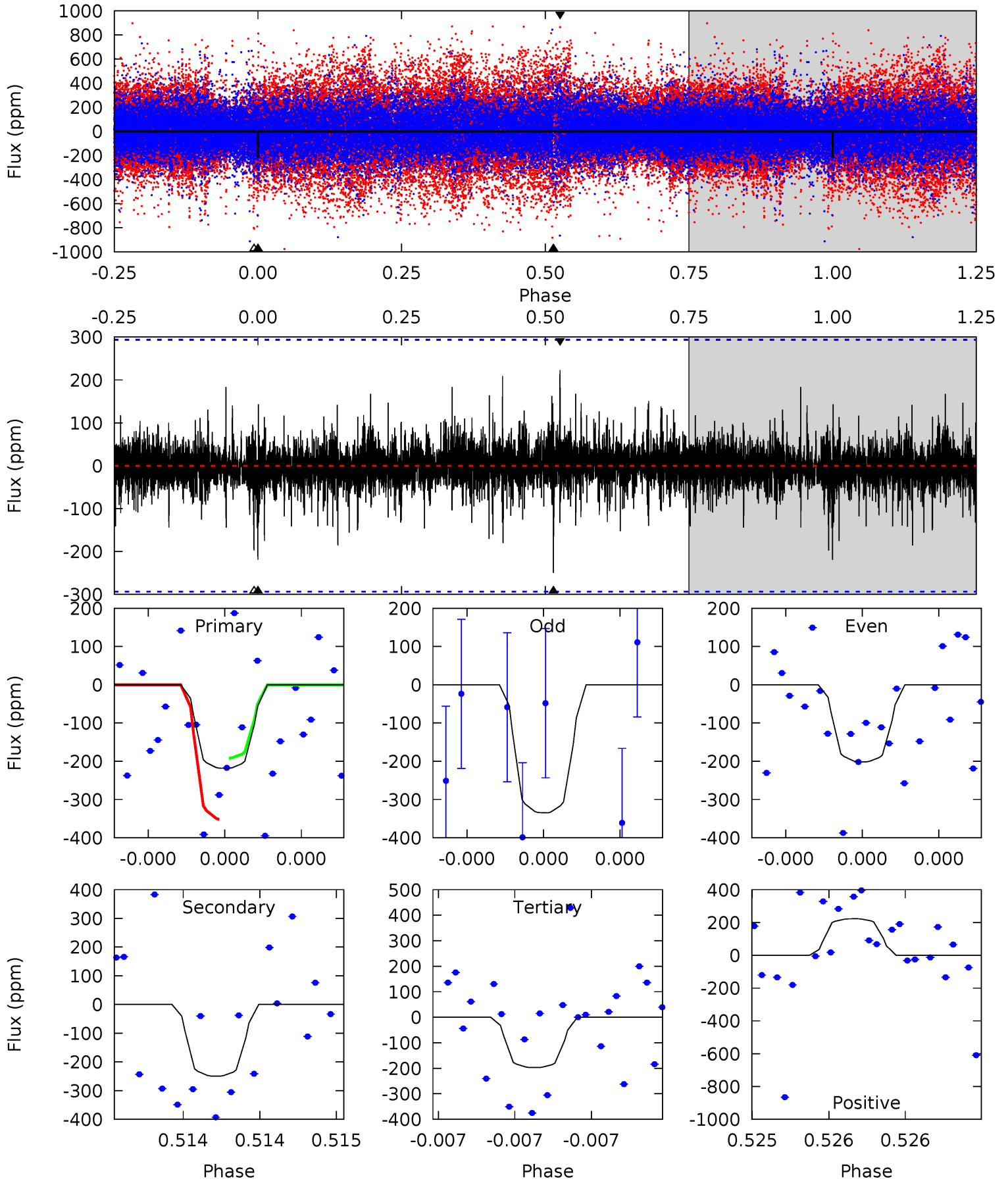




# DV Model-Shift Uniqueness Test

005355850-05, P = 444.554759 Days, E = 295.827628 Days

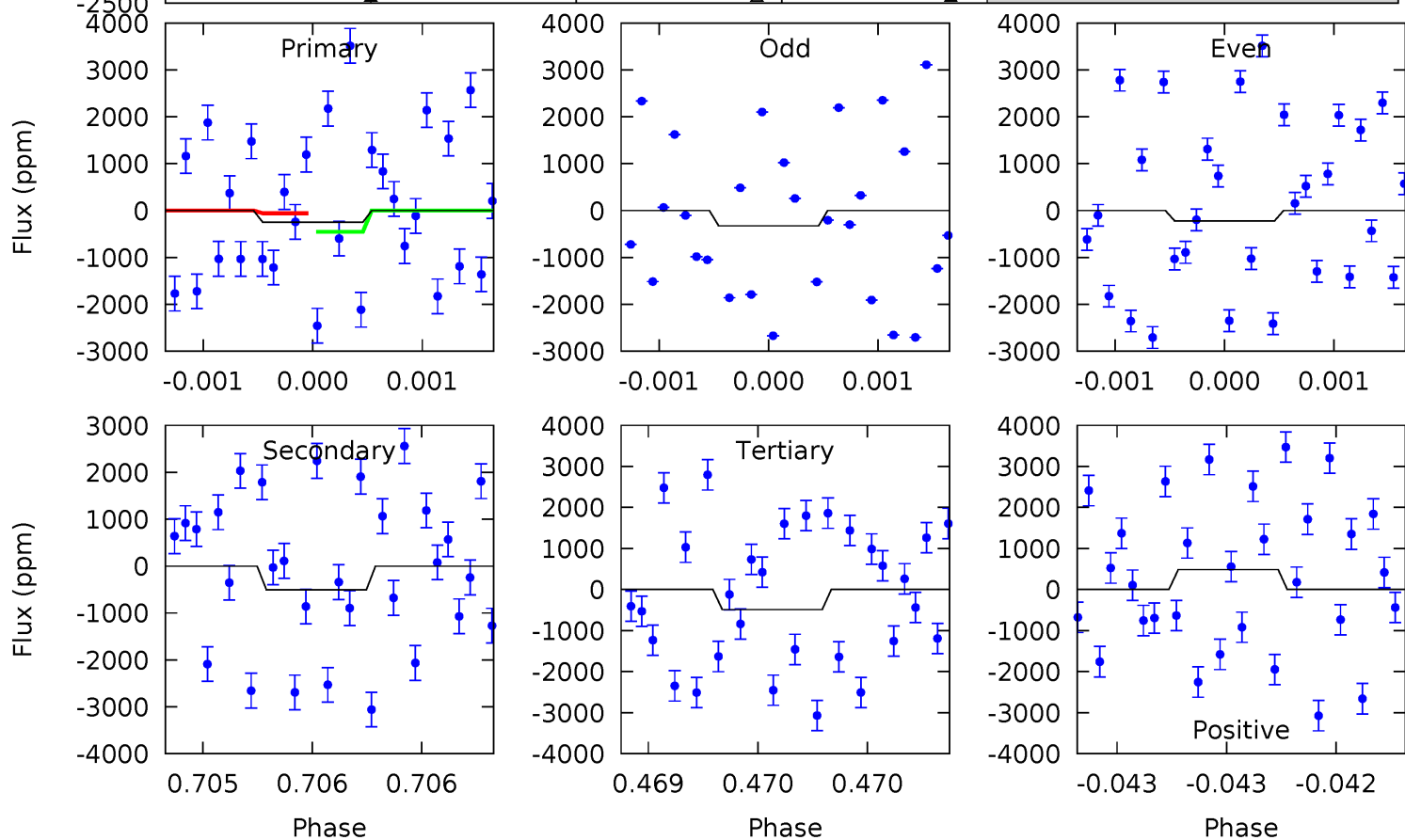
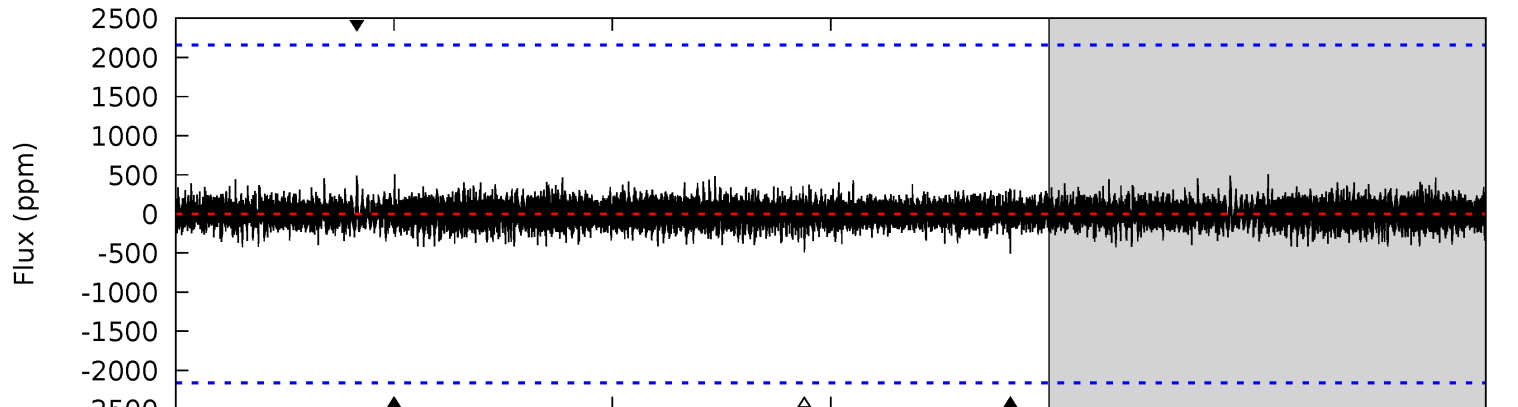
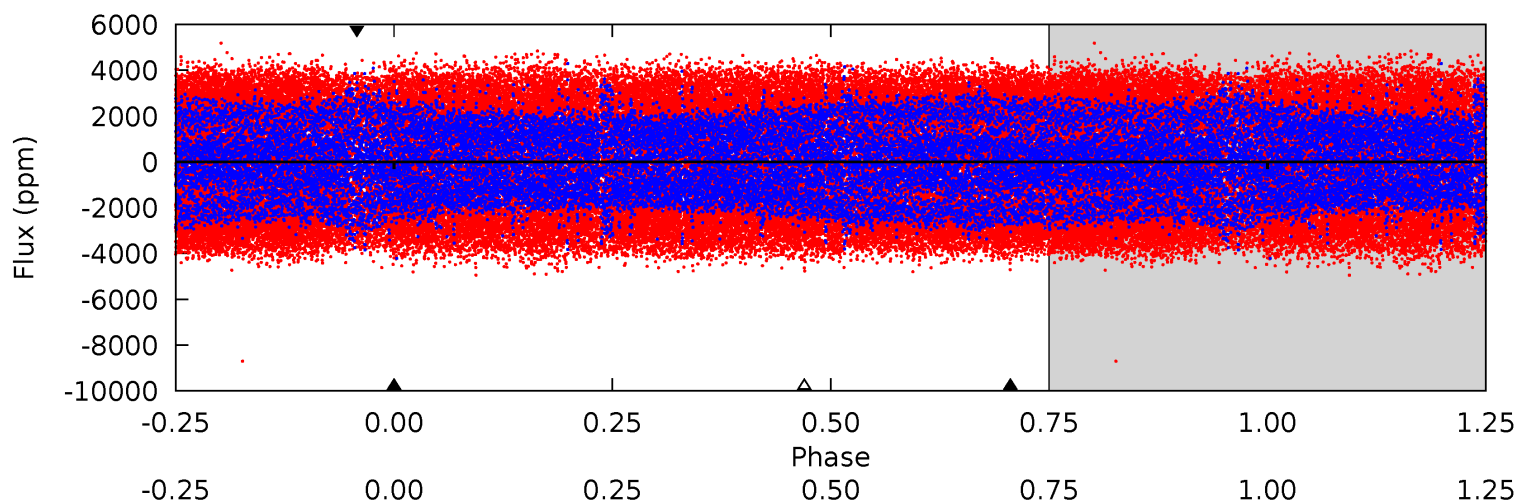
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.23	4.83	3.82	4.31	5.68	3.64	0.61	0.41	-0.08	1.01	0.52	1.05	0.74	0.47	1.60



# Alt Model-Shift Uniqueness Test

005355850-05, P = 444.552531 Days, E = 295.849456 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
0.65	1.31	1.26	1.25	5.56	3.45	0.28	-0.62	-0.60	0.05	0.06	0.13	0.80	0.50	0.51



### Stellar Parameters For KIC 005355850

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8124^{+64}_{-97}$	$3.735^{+0.315}_{-0.052}$	$-0.080^{+0.200}_{-0.150}$	$3.220^{+0.370}_{-1.109}$	$2.054^{+0.208}_{-0.261}$	$0.087^{+0.175}_{-0.021}$
	+1%/-1%	+8%/-1%	+250%/-188%	+11%/-34%	+10%/-13%	+201%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005355850-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-250 \pm 52$	$31.25^{+34.20}_{-23.14}$	$732^{+28}_{-68}$	$3634^{+2631}_{-729}$	$296^{+4269}_{-231}$
Alt.	$-509 \pm 389$	$30.45^{+32.96}_{-22.61}$	$730^{+28}_{-70}$	$4029^{+3152}_{-1207}$	$530^{+7370}_{-478}$

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

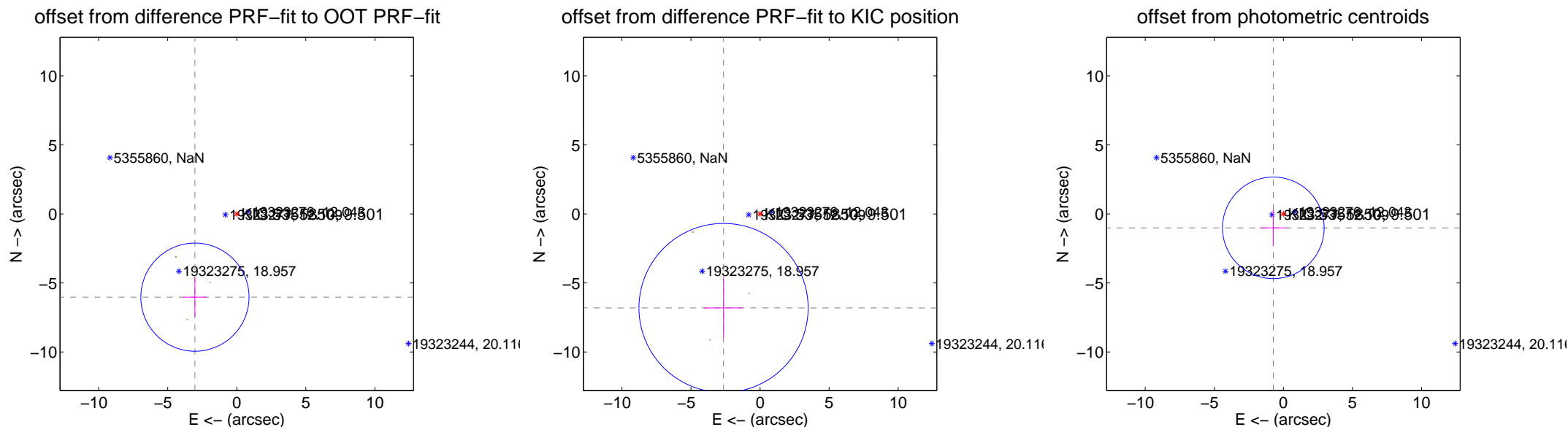
## DV Centroid Data

Supplemental centroid analysis for 005355850-05. **Kepler magnitude: 9.50.** Transit SNR 7.79

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>6.745 <math>\pm</math> 1.305</b>	<b>5.17</b>	3.027 $\pm$ 0.837	-6.027 $\pm$ 1.399
PRF-fit source offset from KIC position	<b>7.304 <math>\pm</math> 2.041</b>	<b>3.58</b>	2.644 $\pm$ 1.401	-6.809 $\pm$ 2.120
photometric centroid source offset	1.24 $\pm$ 1.23	1.01	0.73 $\pm$ 0.98	-1.01 $\pm$ 1.34



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.

Q1 no difference image



Q1 no OOT image



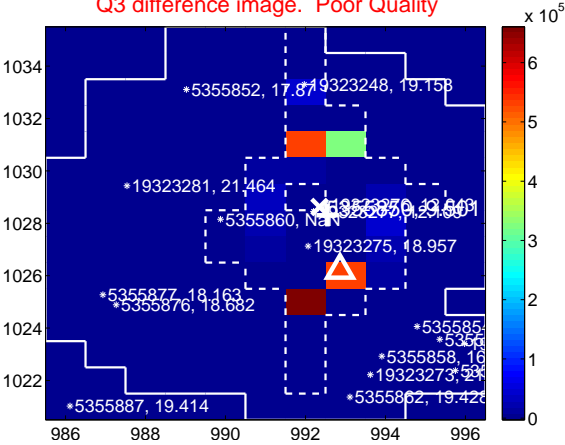
Q2 no difference image



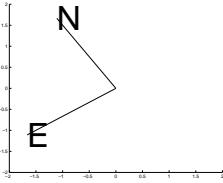
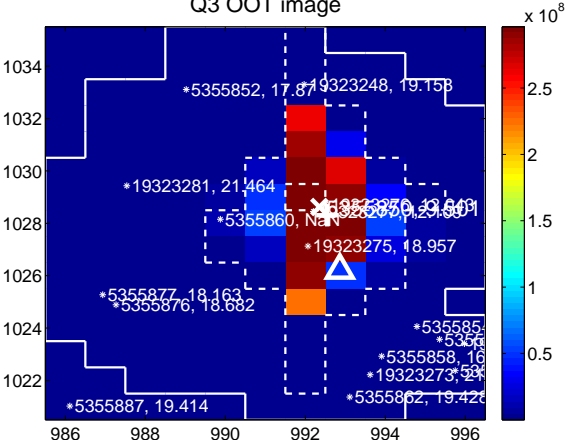
Q2 no OOT image



Q3 difference image. Poor Quality



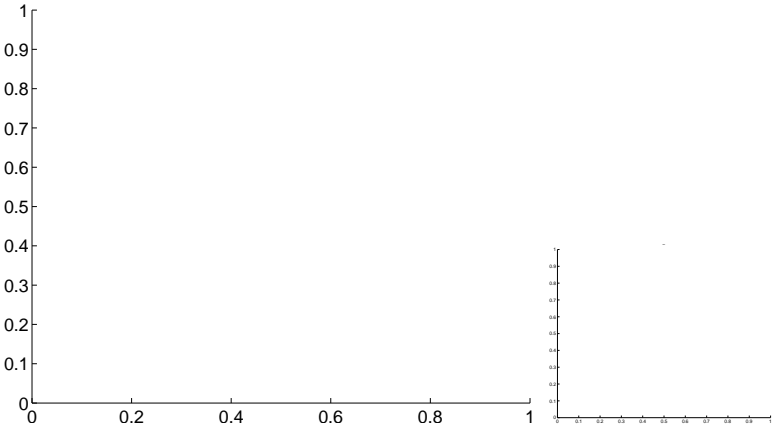
Q3 OOT image



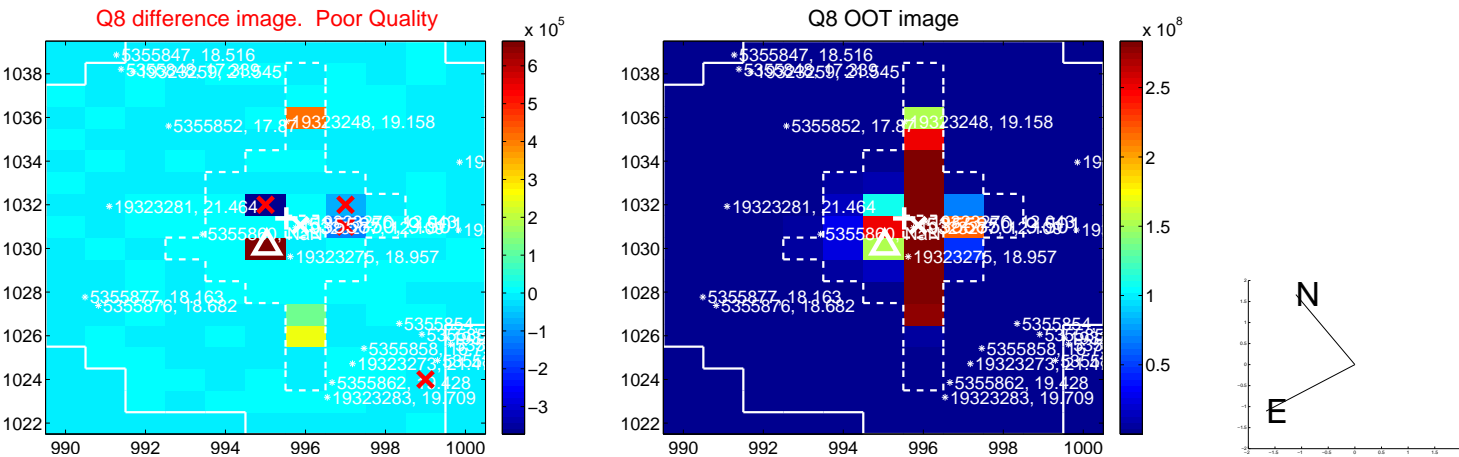
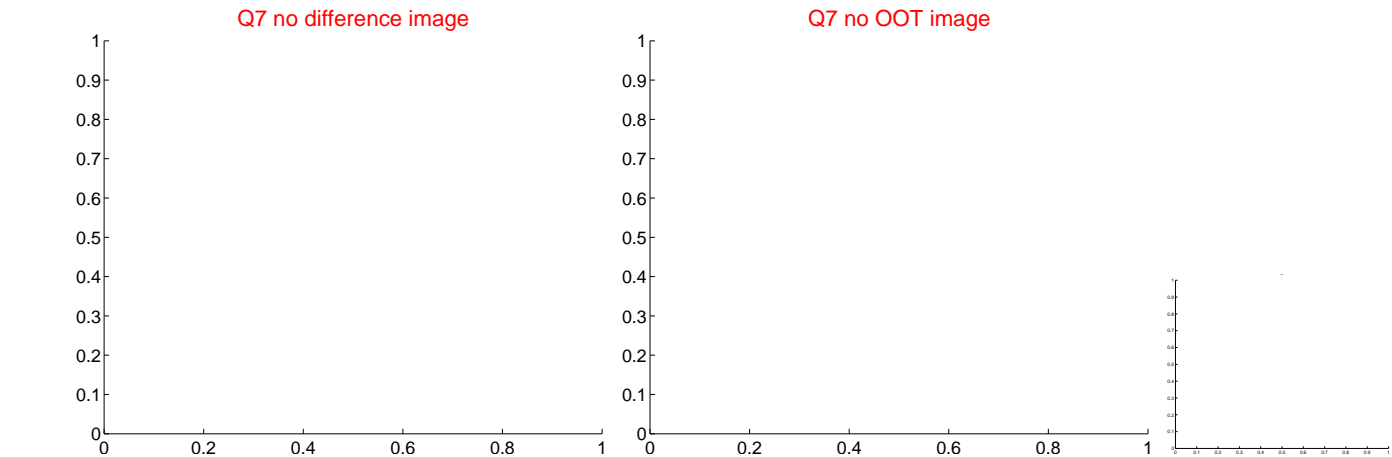
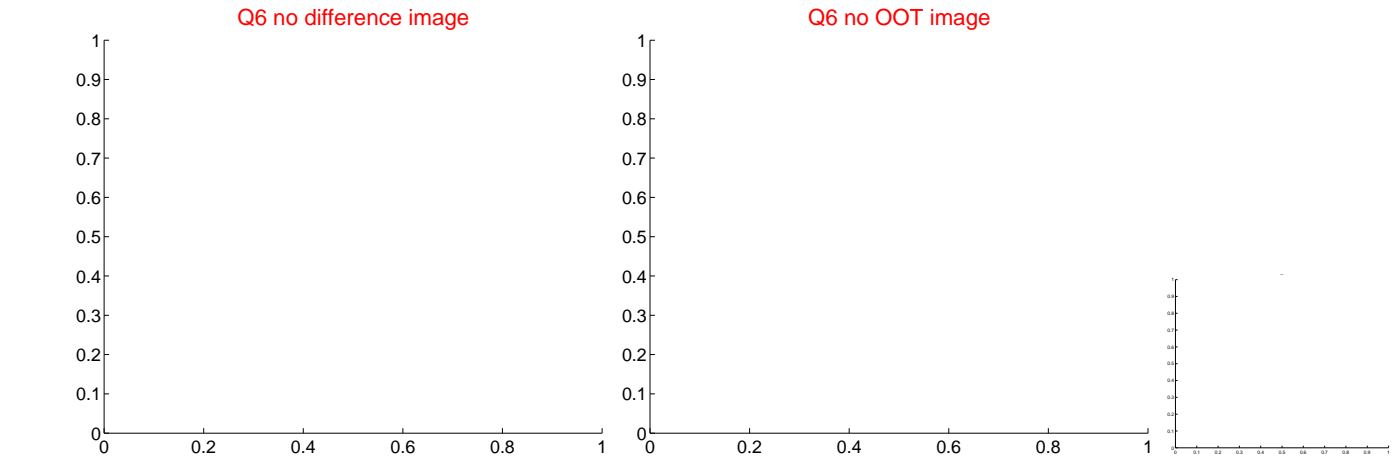
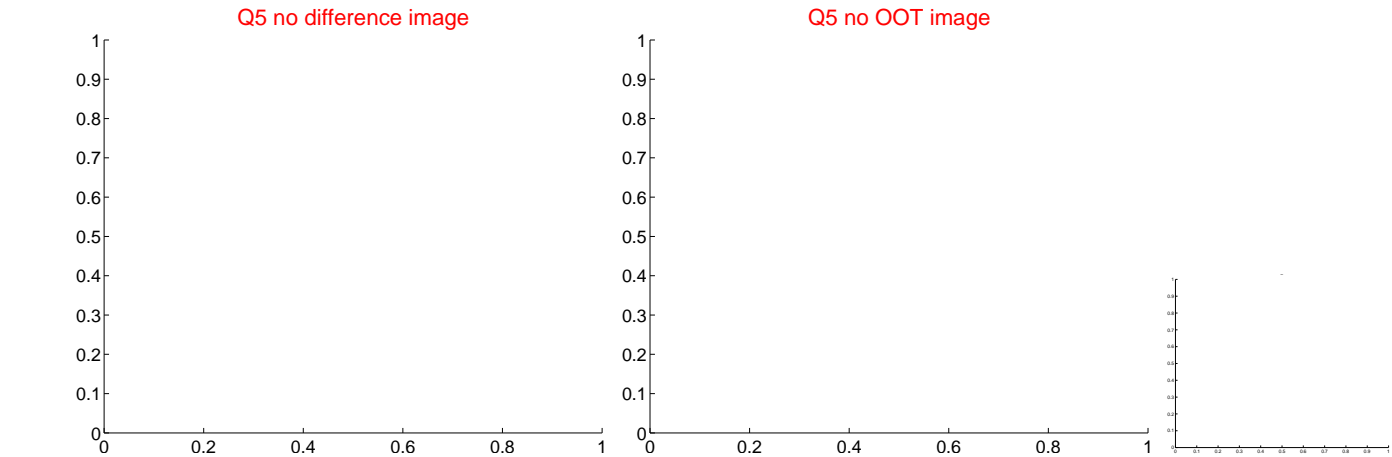
Q4 no difference image



Q4 no OOT image



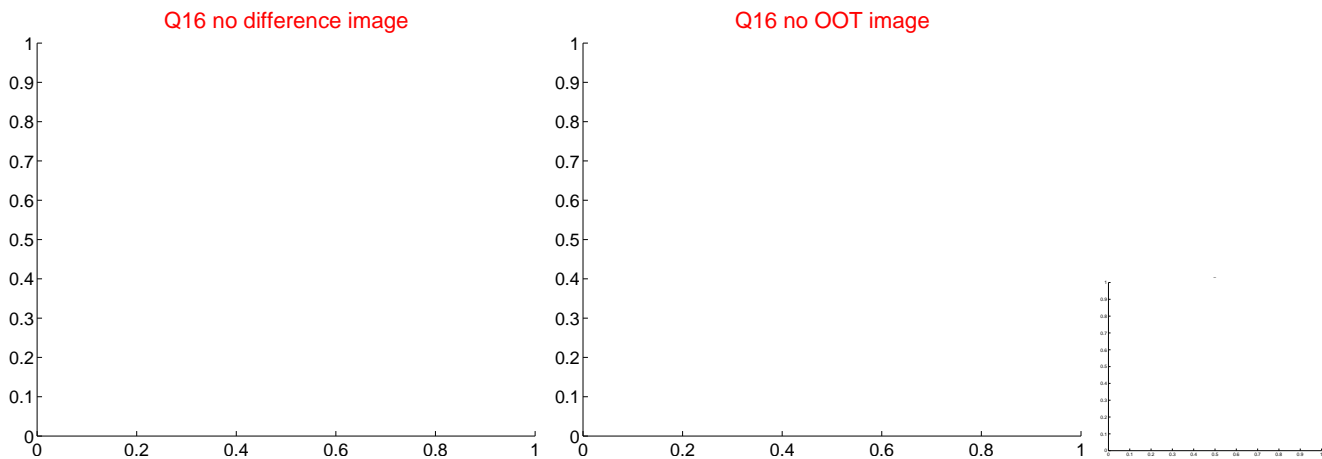
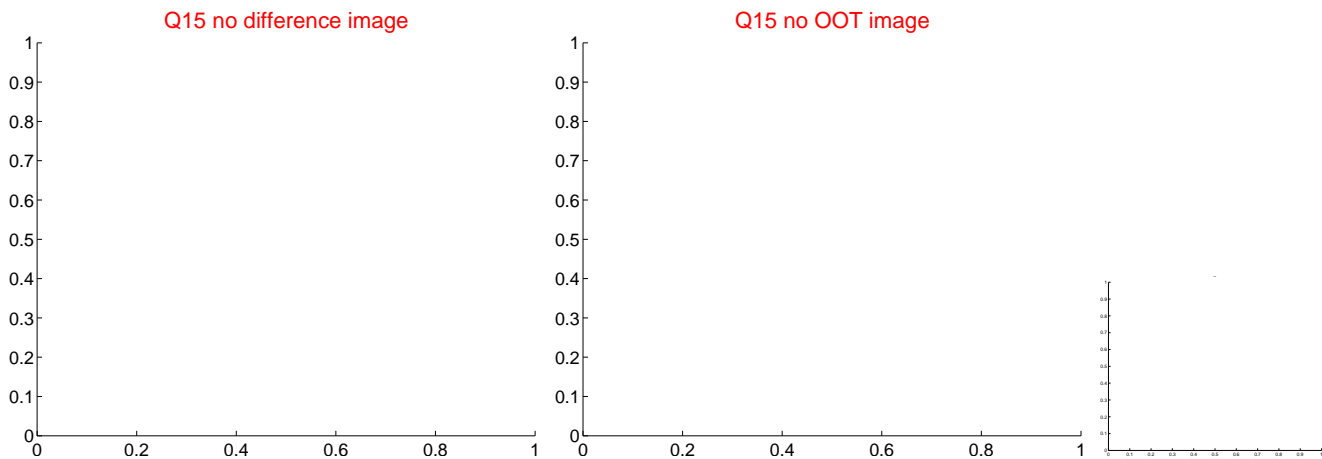
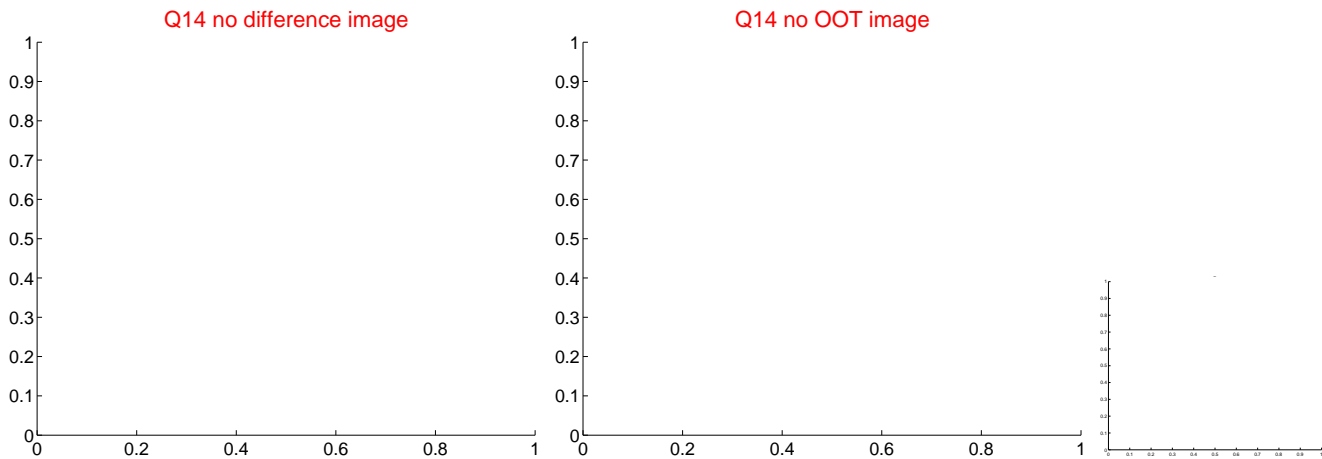
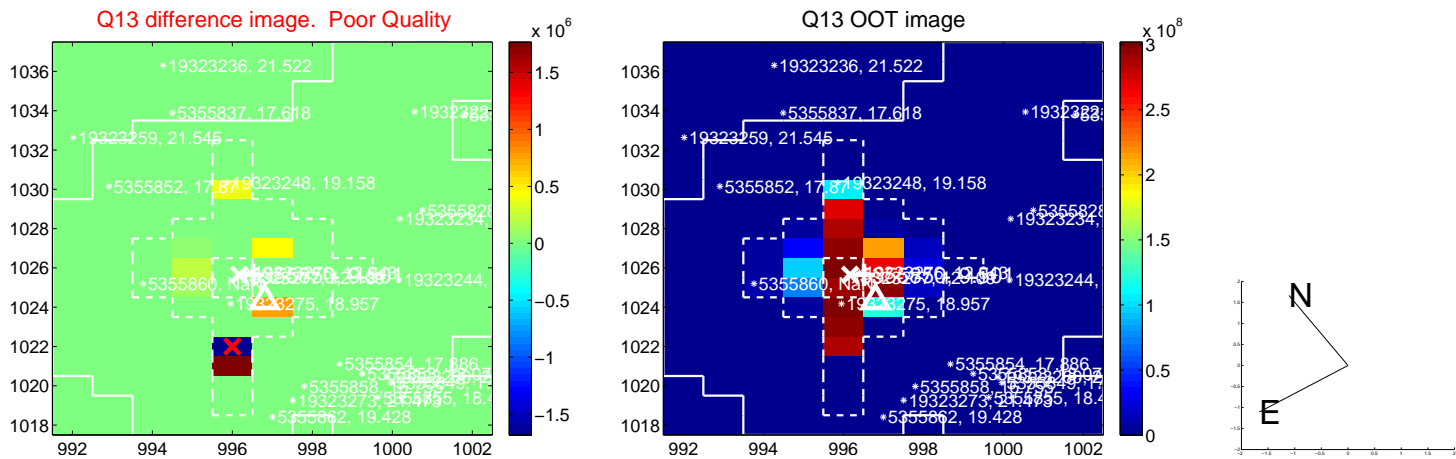
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

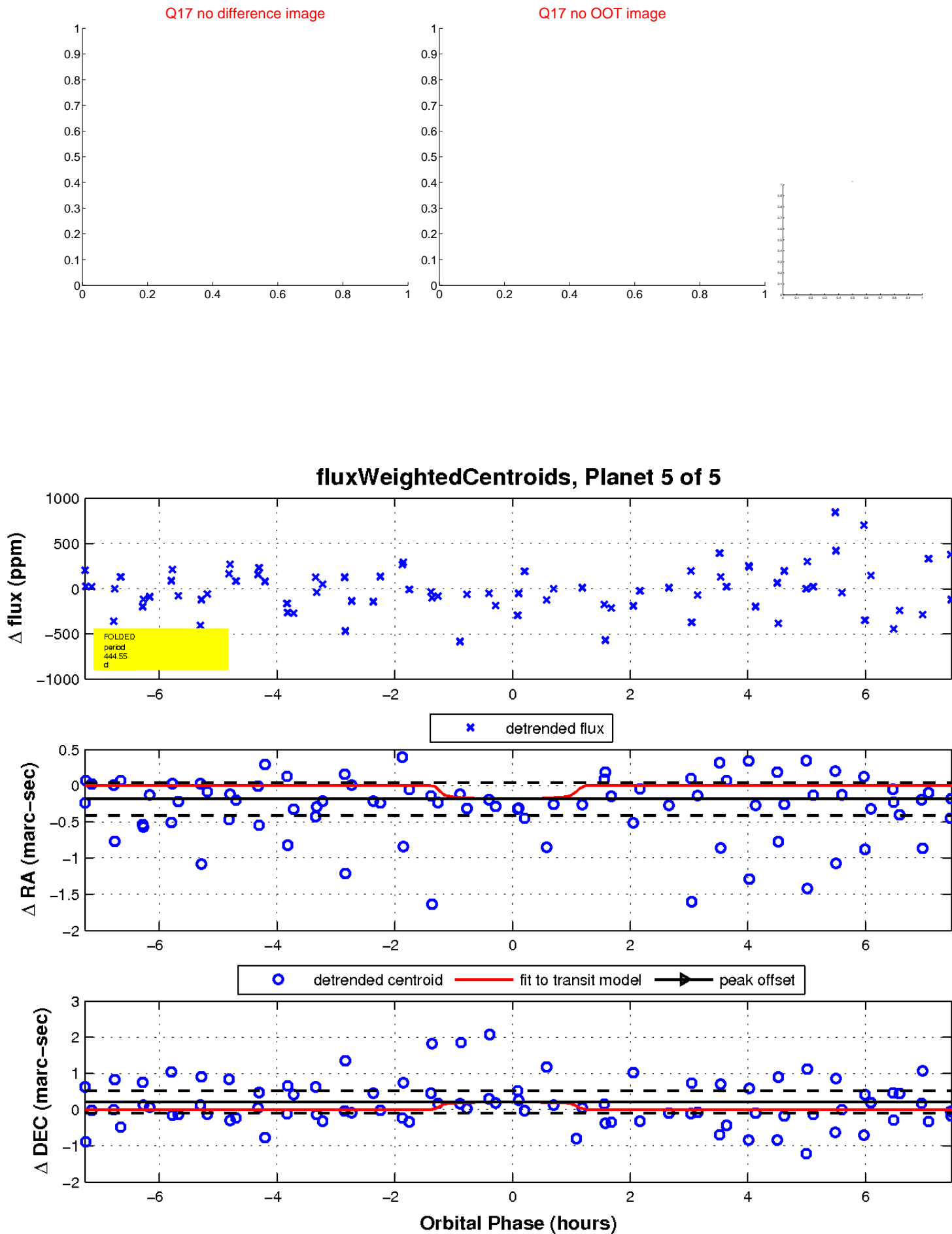


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

