

# KIC 011807397

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011807397-01	OBS	No	451.556642	294.557878	813.2	8.169	17.7	8.0	0.87	5895	2.58	0.73
011807397-02	OBS	No	462.681861	223.910196	708.1	3.796	14.7	7.7	0.87	5895	2.39	0.70
011807397-03	OBS	No	472.816279	450.463587	724.7	3.402	10.4	8.4	0.87	5895	2.46	0.68
011807397-04	OBS	No	277.074865	326.993909	1079.9	7.061	10.5	9.8	0.87	5895	5.45	1.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011807397-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011807397-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

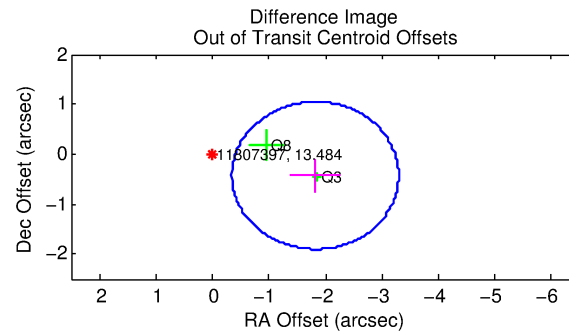
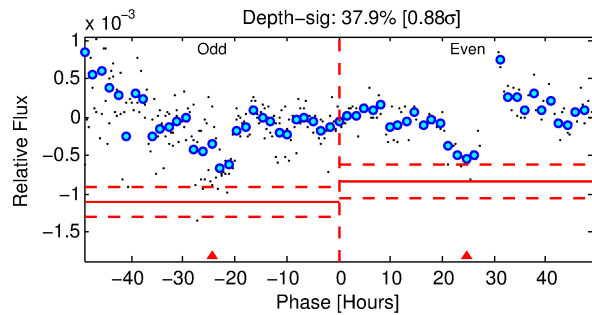
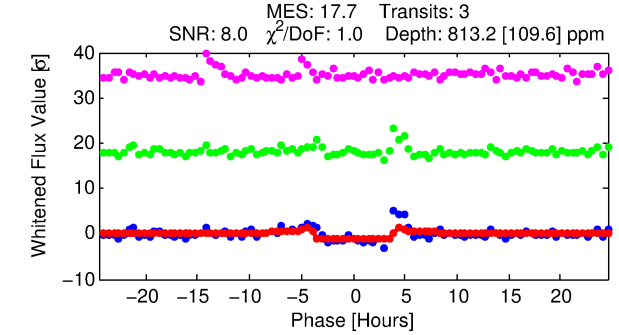
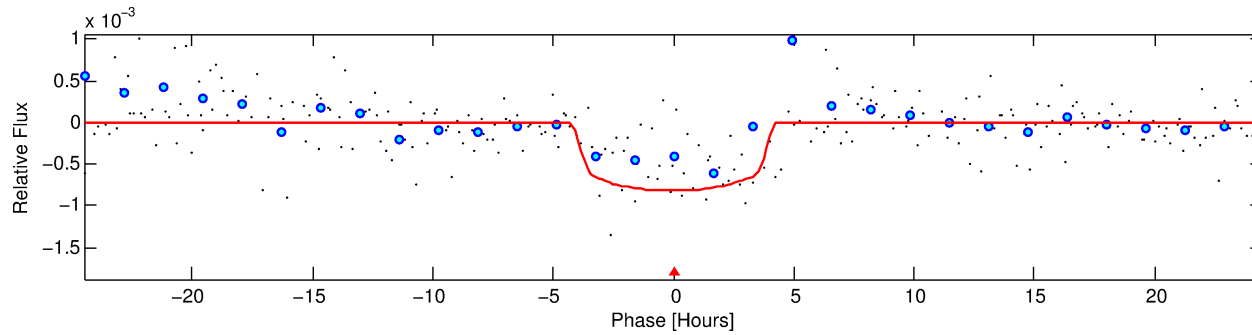
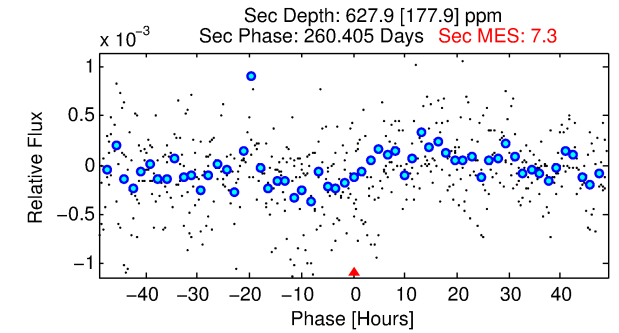
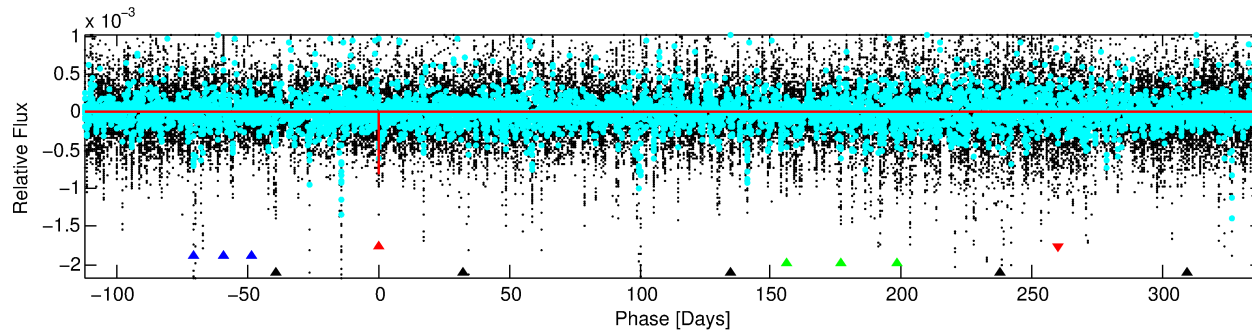
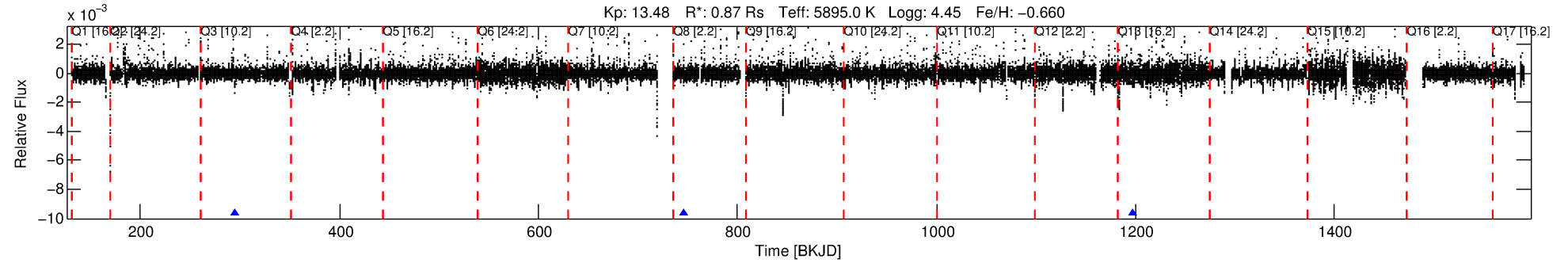
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011807397-01

No Significant Match Found

# DV One-Page Summary

KIC: 11807397 Candidate: 1 of 4 Period: 451.557 d



## DV Fit Results:

Period = 451.55664 [0.00630] d  
Epoch = 294.5579 [0.0076] BKJD  
Rp/R\* = 0.0271 [0.0160]  
a/R\* = 365.91 [1062.29]  
b = 0.55 [3.69]  
Seff = 0.73 [0.22]  
Teff = 235 [18] K  
Rp = 2.58 [1.64] Re  
a = 1.0662 [0.2108] AU  
Ag = 58813.09 [73504.92] [0.80σ]  
Teffp = 5669 [1730] K [3.14σ]

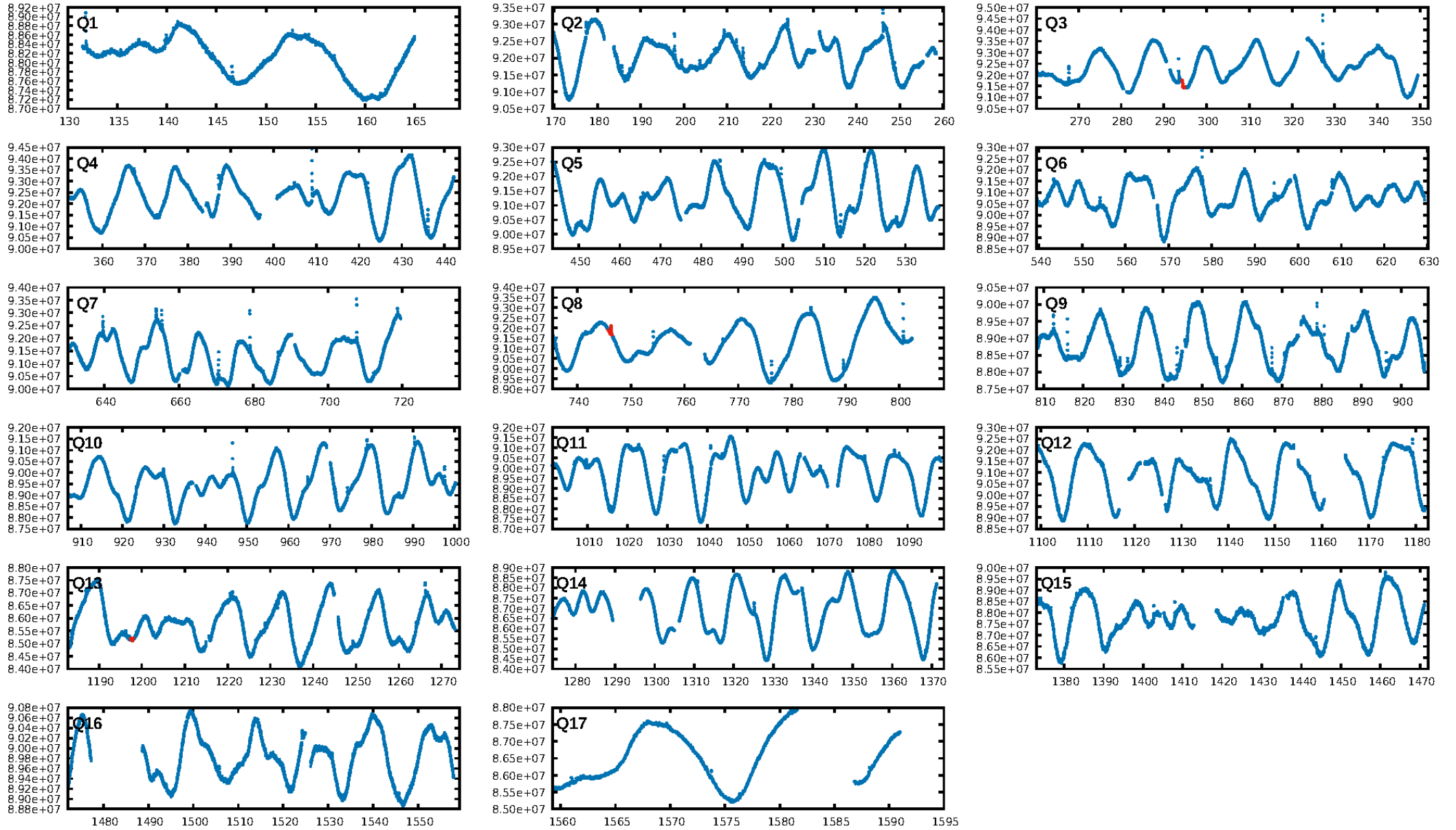
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [387.80σ]  
LongPeriod-sig: 100.0% [29.64σ]  
ModelChiSquare2-sig: 9.8%  
ModelChiSquareGof-sig: 99.4%  
Bootstrap-pfa: 3.82e-15  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.5172  
Centroid-sig: 40.8%  
Centroid-so: 0.547 arcsec [0.94σ]  
OotOffset-rm: 1.871 arcsec [3.80σ]  
KicOffset-rm: 2.012 arcsec [6.92σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

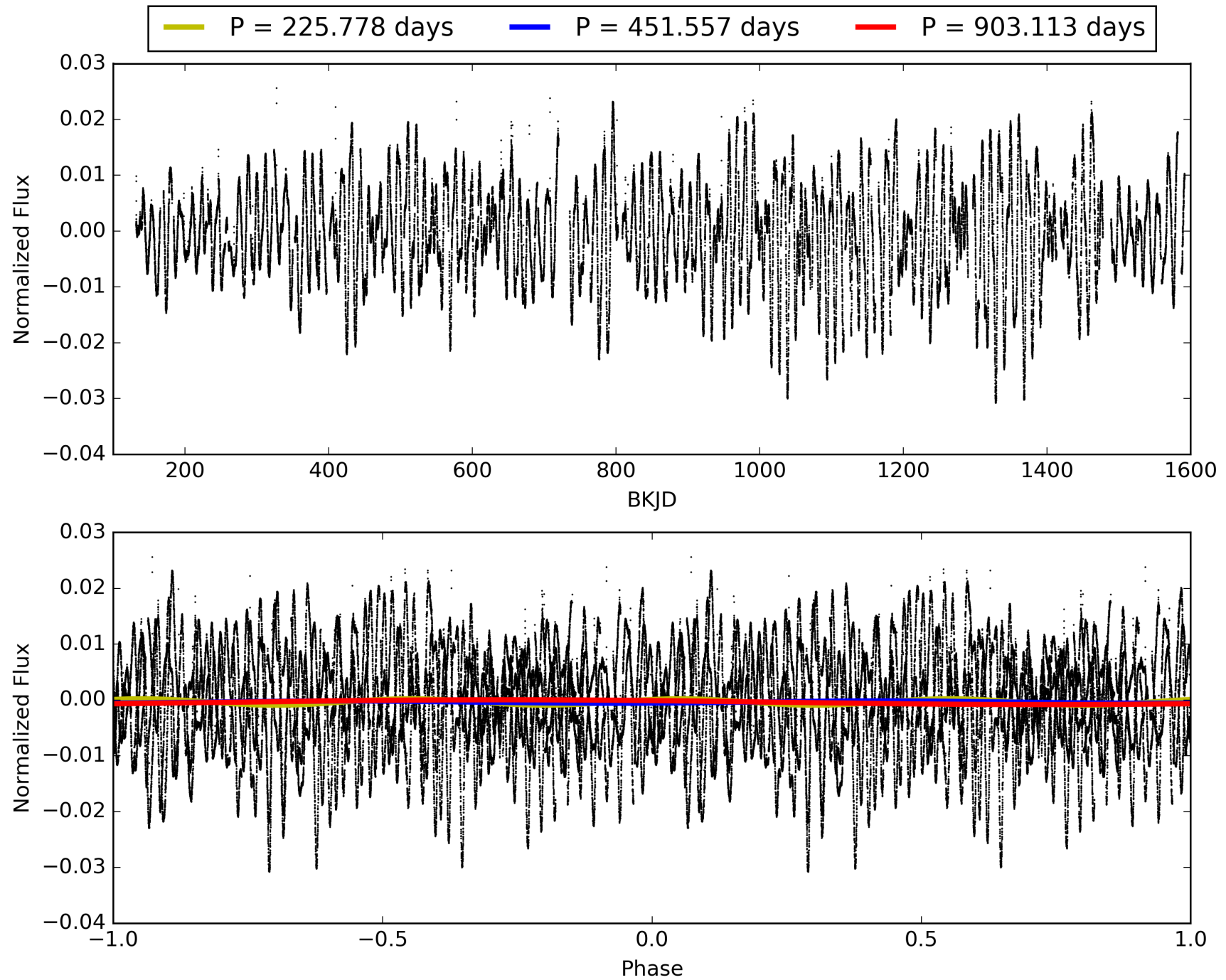
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:47:15 Z

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

# TCE 011807397-01, PDC Light Curves



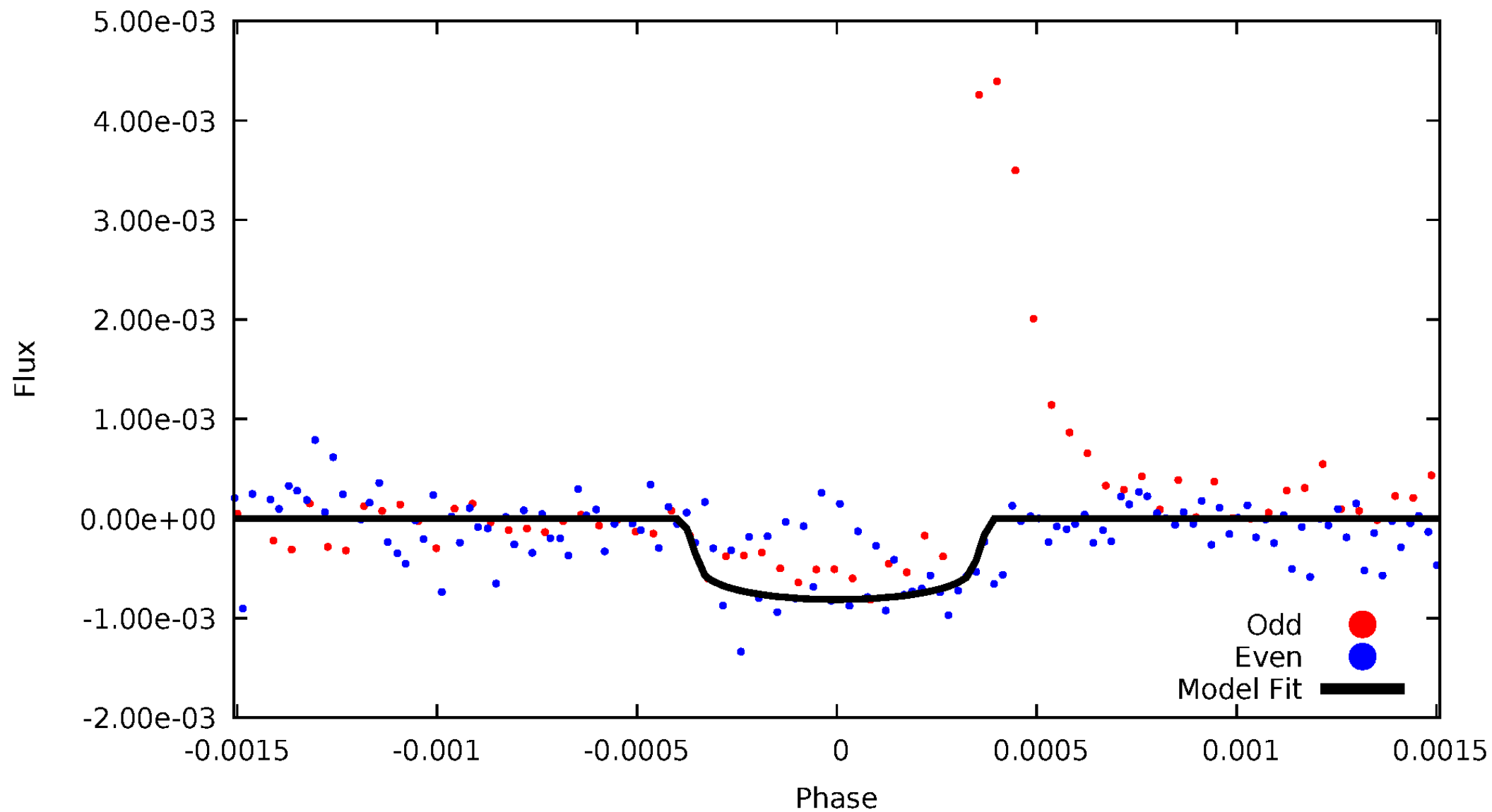
TCE 011807397-01





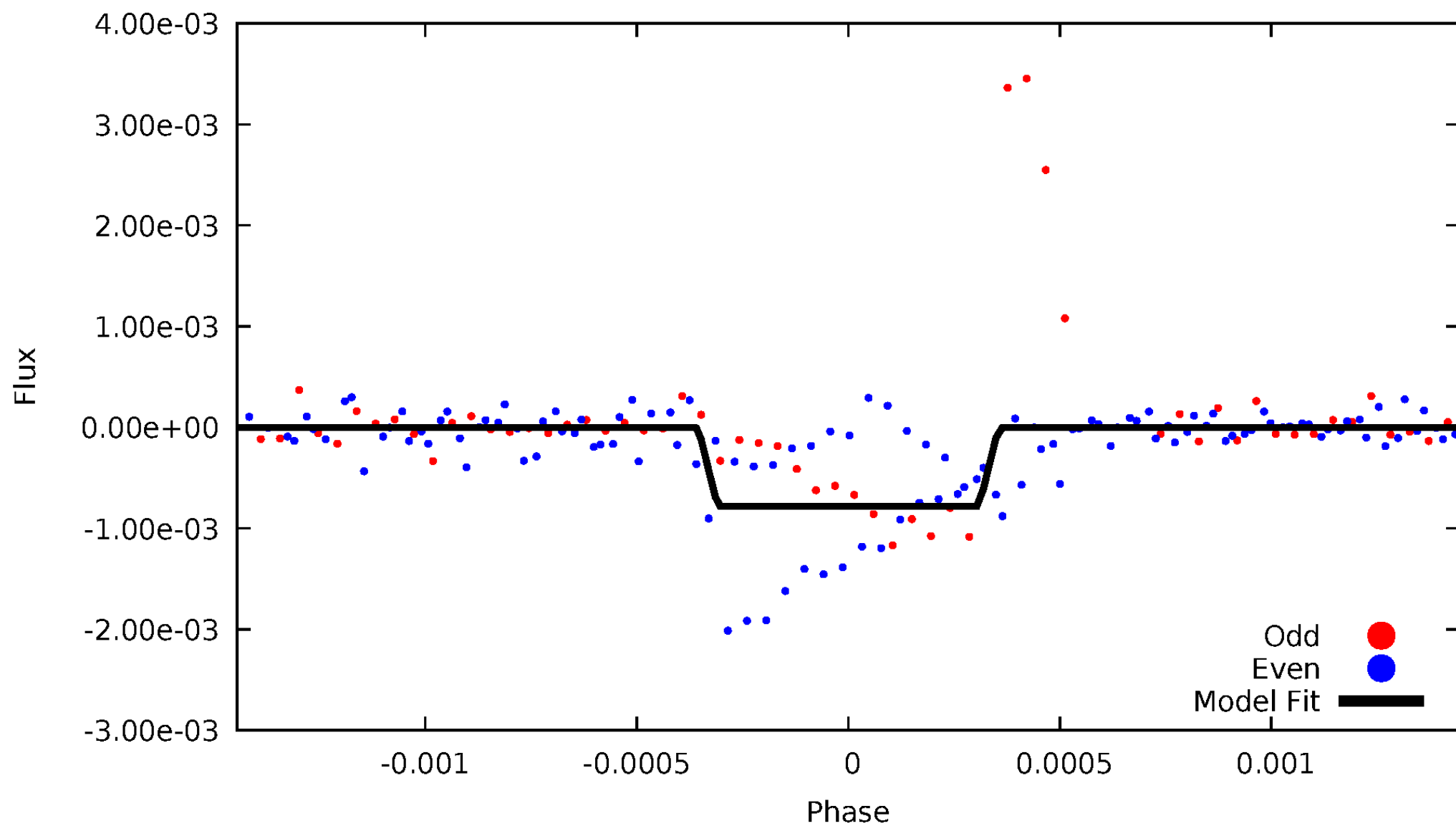
# DV Odd/Even

TCE 011807397-01



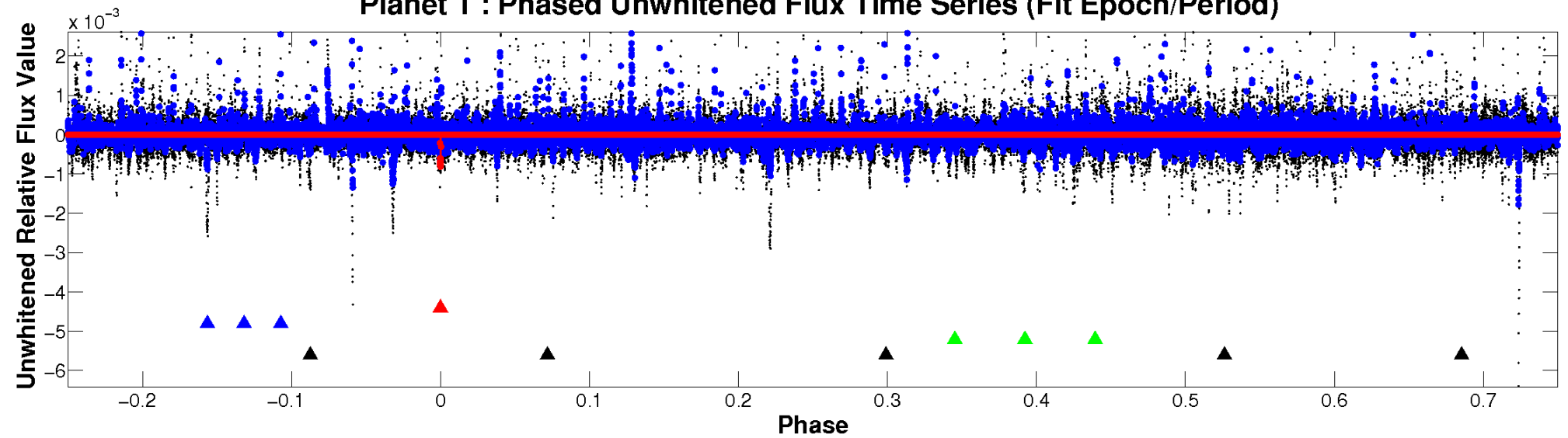
# ALT Odd/Even

TCE 011807397-01

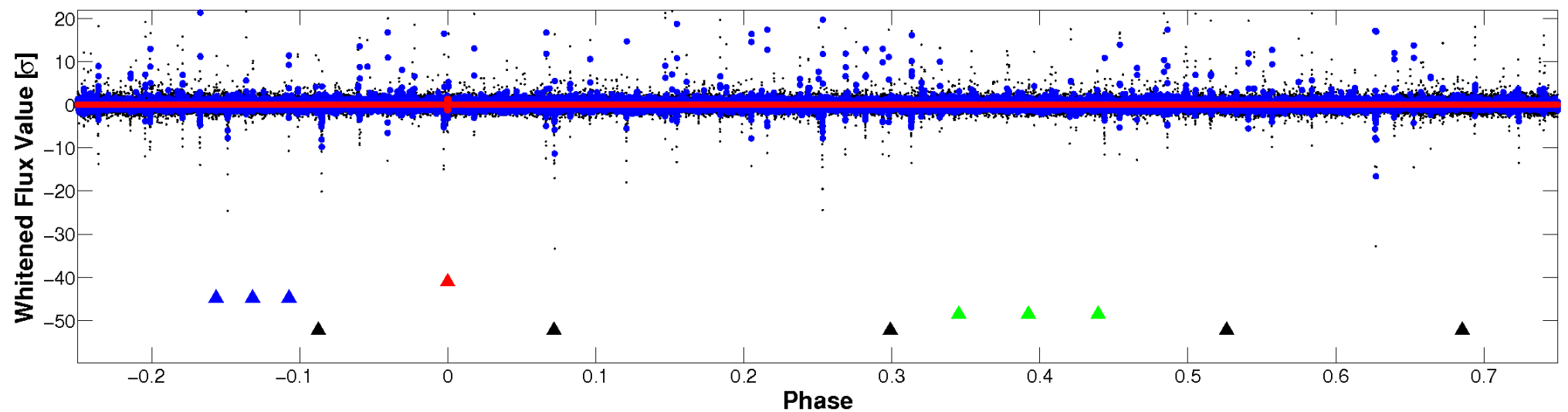


# Non-Whitened Vs. Whitened Light Curve

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

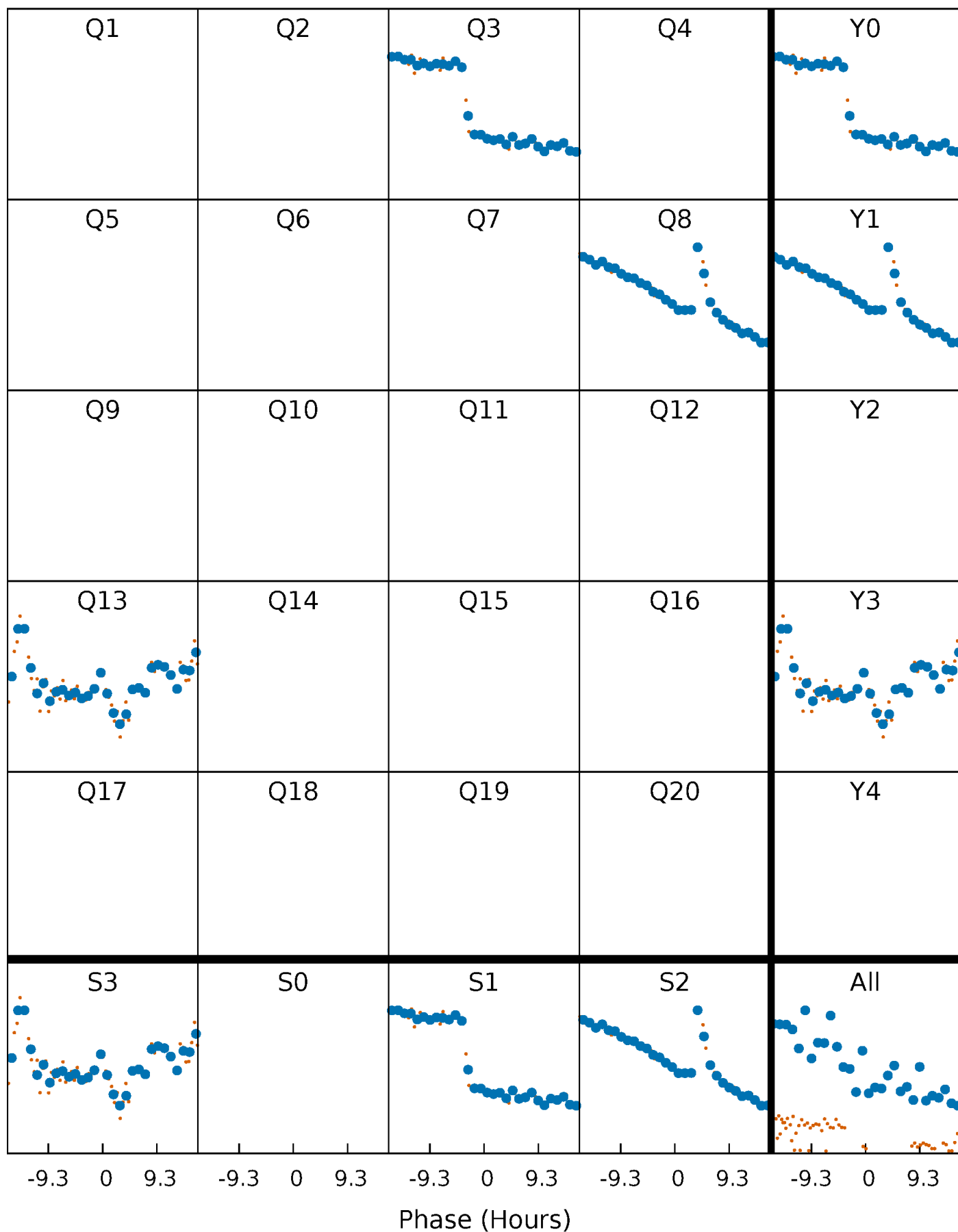


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



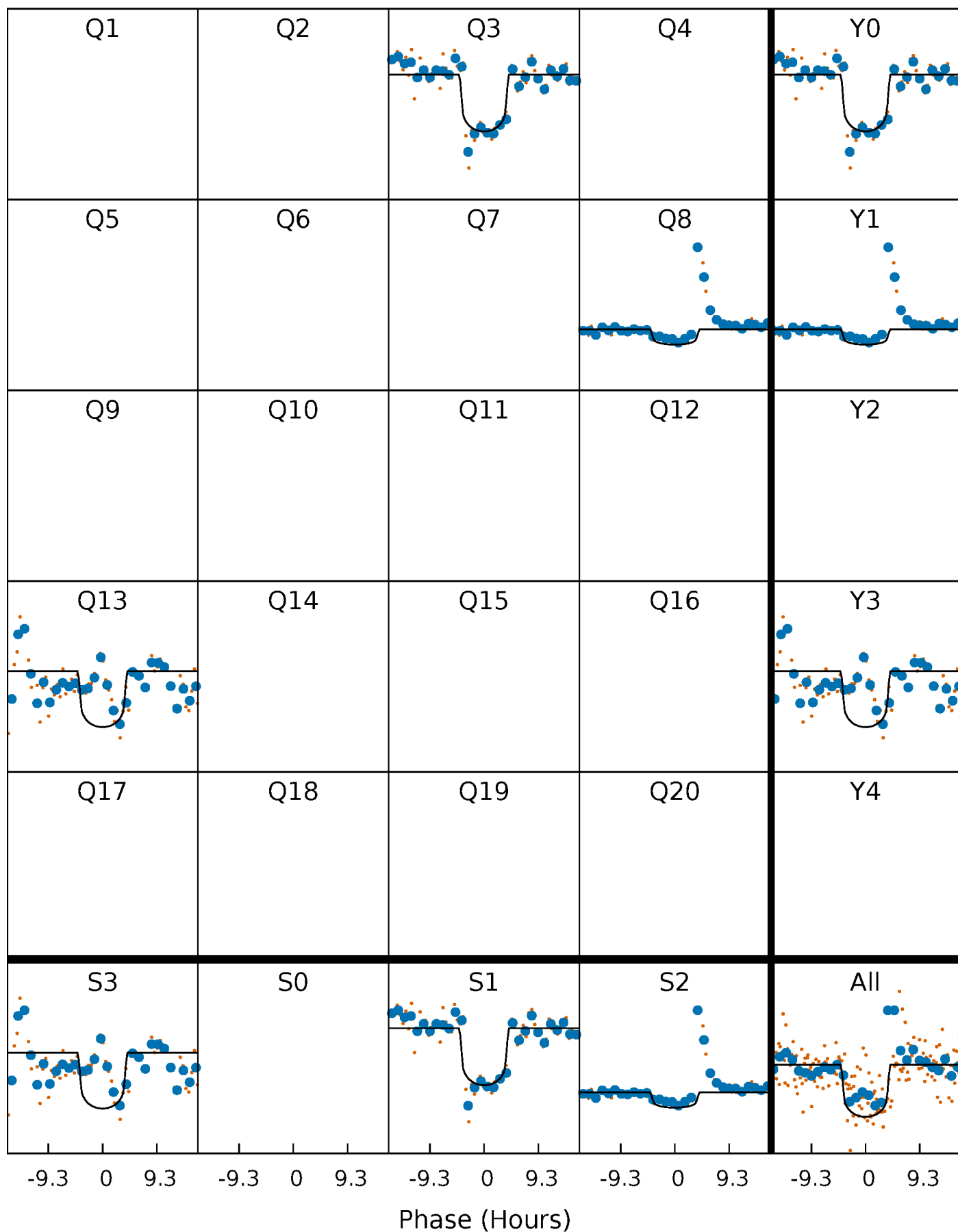
# PDC Quarter-Phased Transit Curves

TCE 011807397-01   P=451.556642 Days    $T_0=294.557878$  (BKJD)



# DV Quarter-Phased Transit Curves

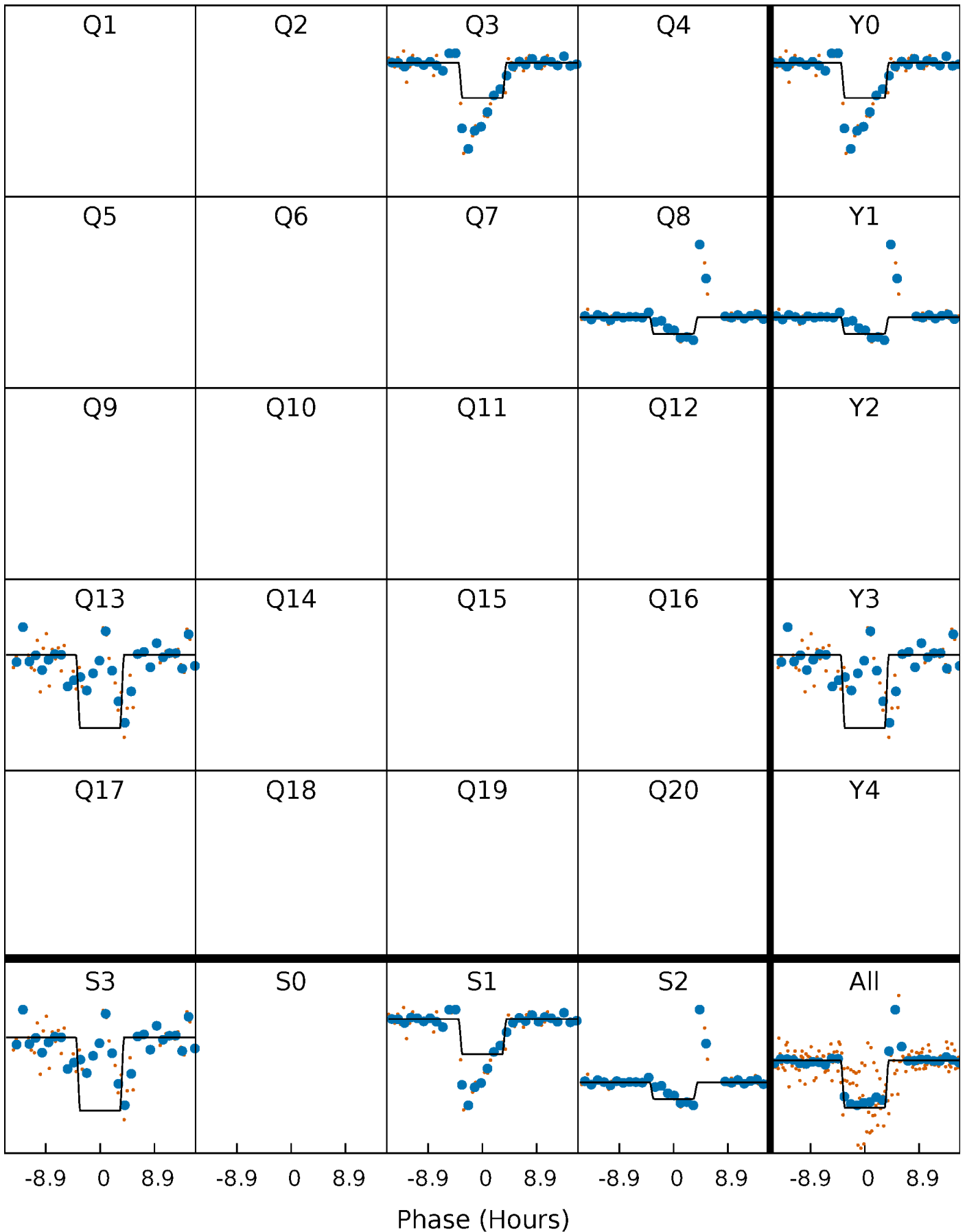
TCE 011807397-01     $P=451.556642$  Days     $T_0=294.557878$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

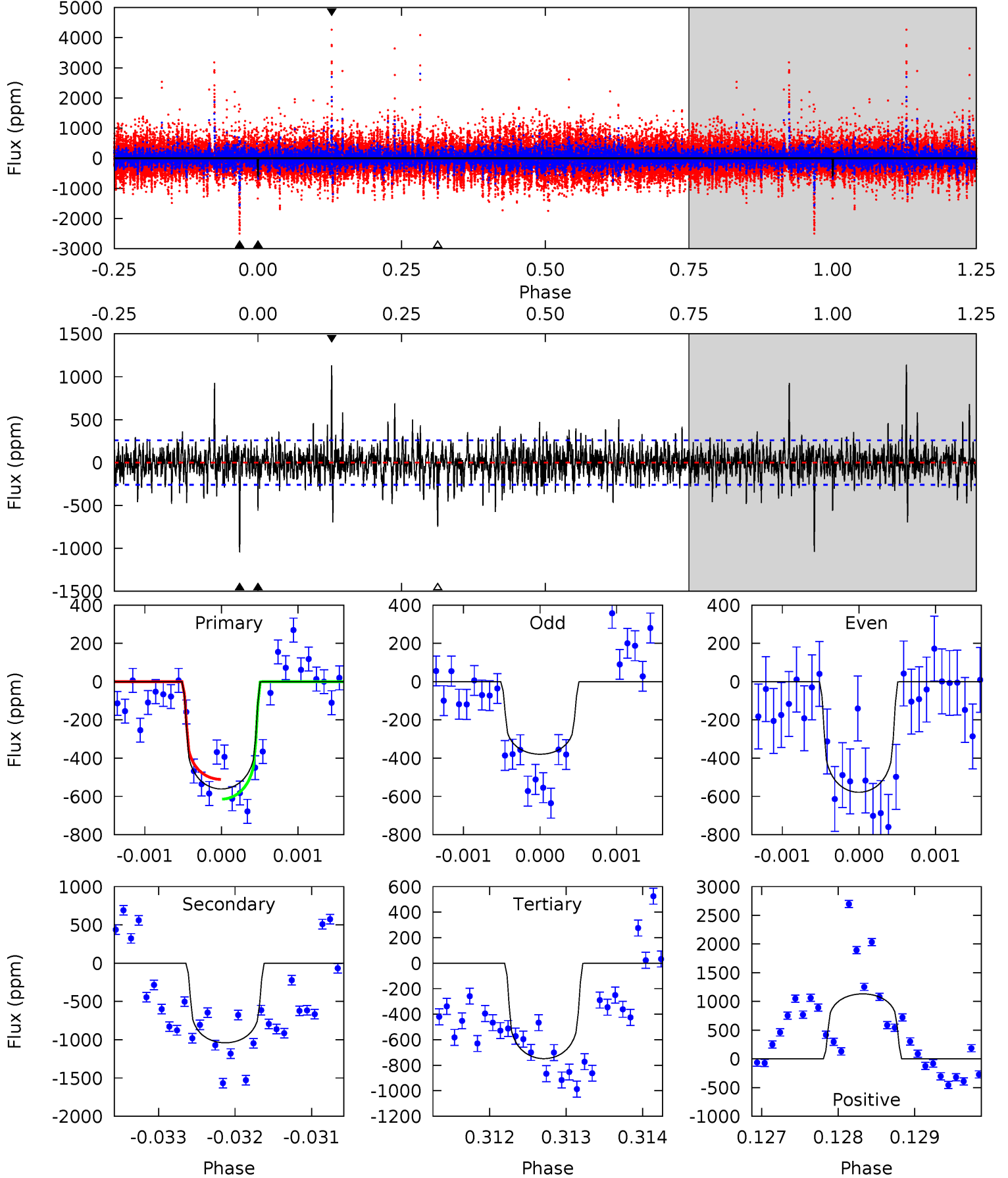
TCE 011807397-01 P=451.527187 Days  $T_0=294.578219$  (BKJD)



# DV Model-Shift Uniqueness Test

011807397-01, P = 451.556642 Days, E = 294.557878 Days

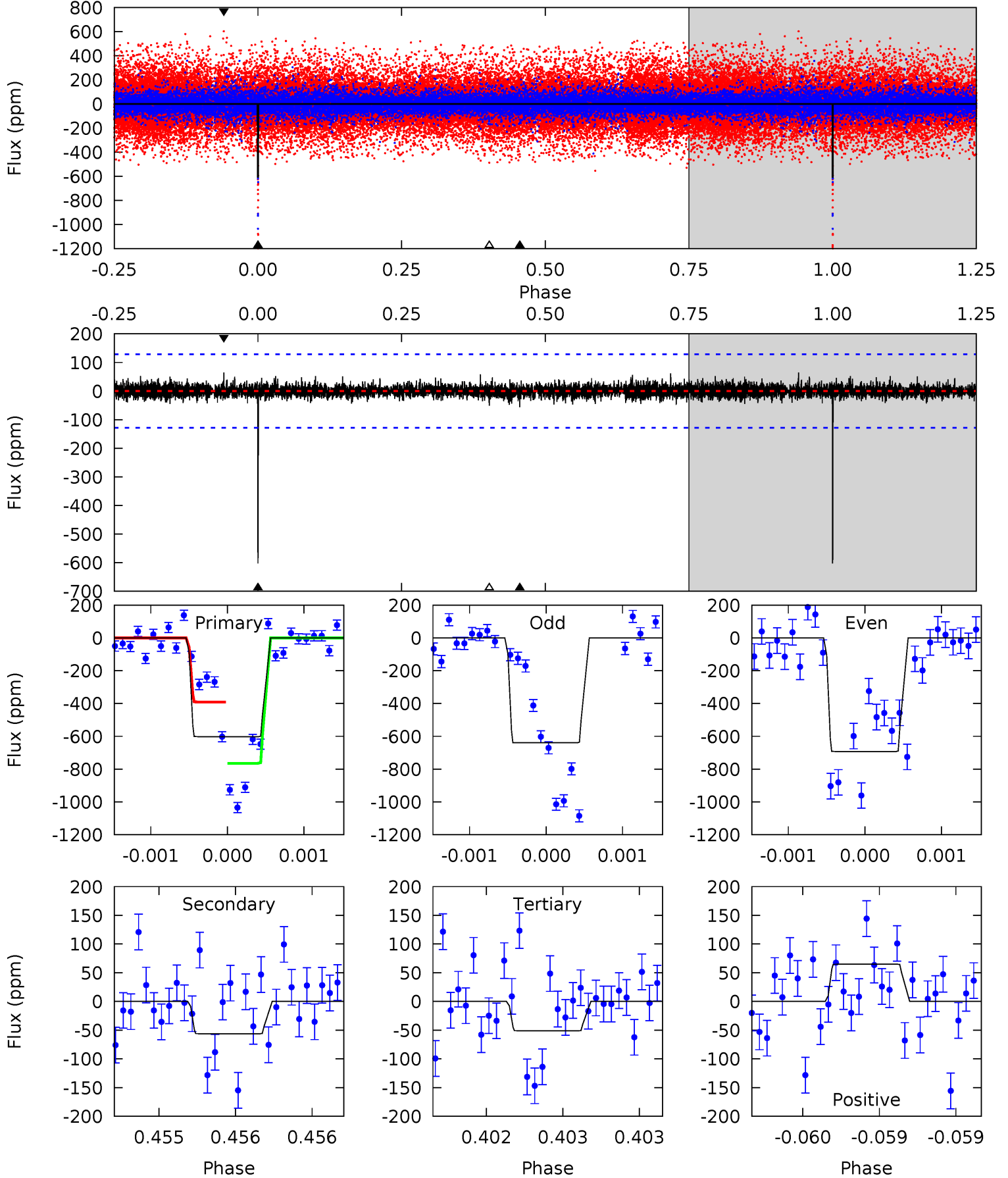
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	22.0	15.9	24.0	5.50	3.36	2.99	-3.97	-12.1	6.18	-1.94	1.53	1.35	0.52	1.10



# Alt Model-Shift Uniqueness Test

011807397-01, P = 451.527187 Days, E = 294.578219 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
25.8	2.40	2.18	2.78	5.52	3.39	0.52	23.6	23.0	0.22	-0.37	1.26	1.09	0.10	8.18



### Stellar Parameters For KIC 011807397

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5895^{+159}_{-159}$	$4.454^{+0.116}_{-0.159}$	$-0.660^{+0.300}_{-0.300}$	$0.874^{+0.204}_{-0.119}$	$0.792^{+0.095}_{-0.055}$	$1.673^{+0.947}_{-0.747}$
	+3%/-3%	+3%/-4%	+45%/-45%	+23%/-14%	+12%/-7%	+57%/-45%
Source	PHO1	KIC0	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 011807397-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1040 \pm 47$	$2.70^{+1.54}_{-1.43}$	$330^{+19}_{-16}$	$6350^{+3679}_{-1185}$	$88054^{+305636}_{-51013}$
Alt.	$-56 \pm 23$	$2.74^{+1.66}_{-1.40}$	$331^{+22}_{-16}$	$3453^{+1080}_{-459}$	$4273^{+15096}_{-2717}$

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

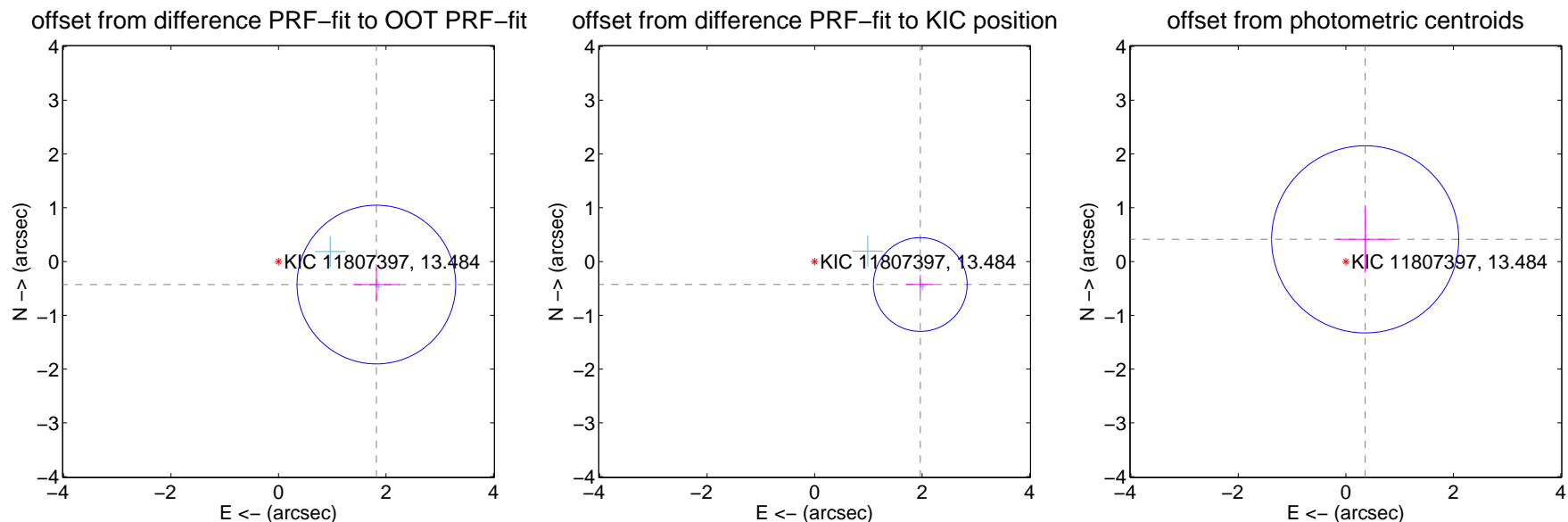
## DV Centroid Data

Supplemental centroid analysis for 011807397-01. Kepler magnitude: 13.48. Transit SNR 8.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

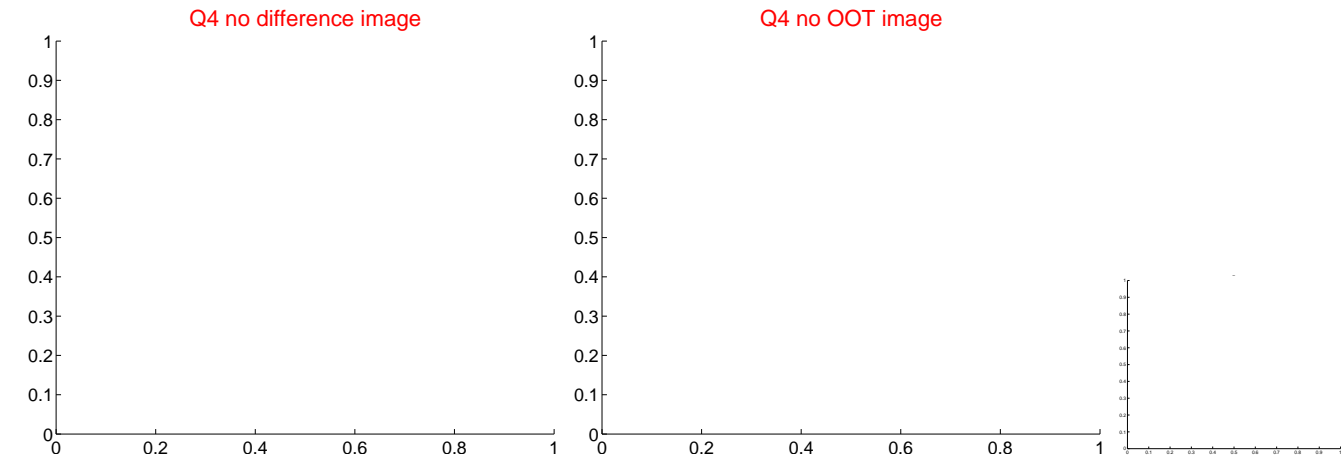
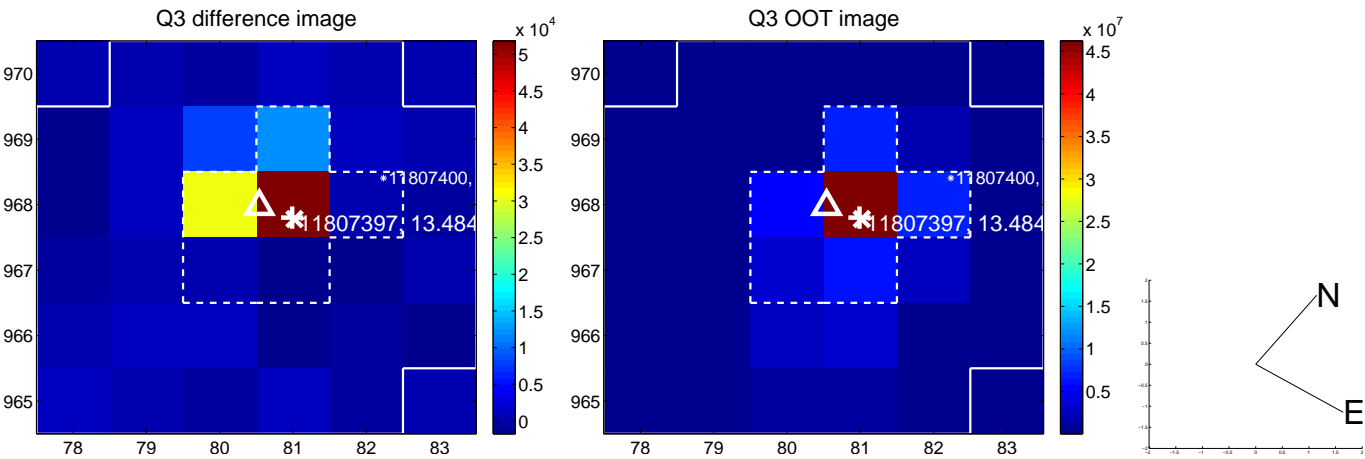
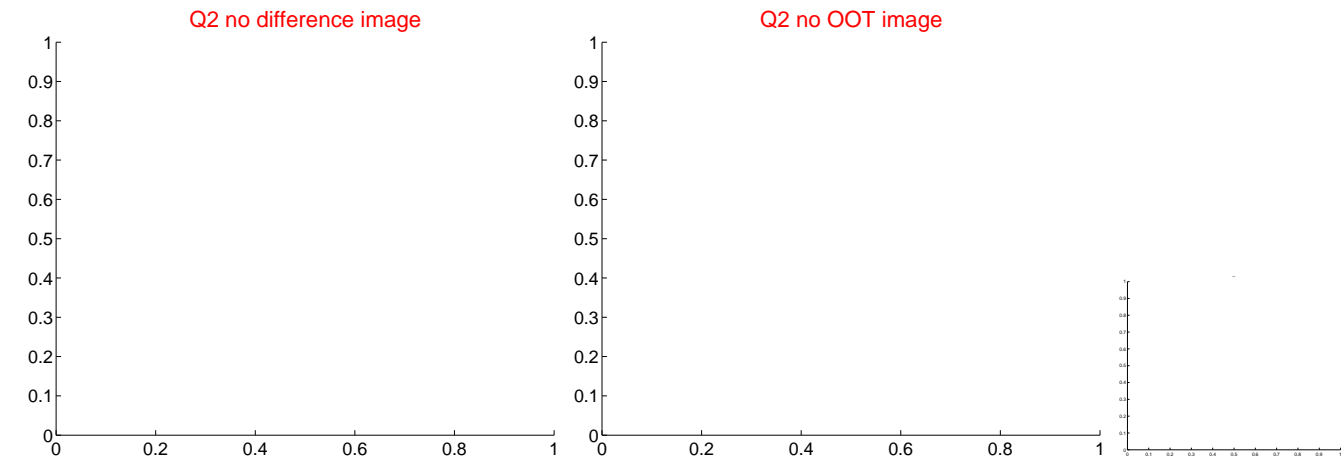
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.871 \pm 0.492$	3.80	$-1.821 \pm 0.433$	$-0.428 \pm 0.318$
PRF-fit source offset from KIC position	$2.012 \pm 0.291$	6.92	$-1.966 \pm 0.262$	$-0.427 \pm 0.177$
photometric centroid source offset	$0.55 \pm 0.58$	0.94	$-0.36 \pm 0.53$	$0.41 \pm 0.62$



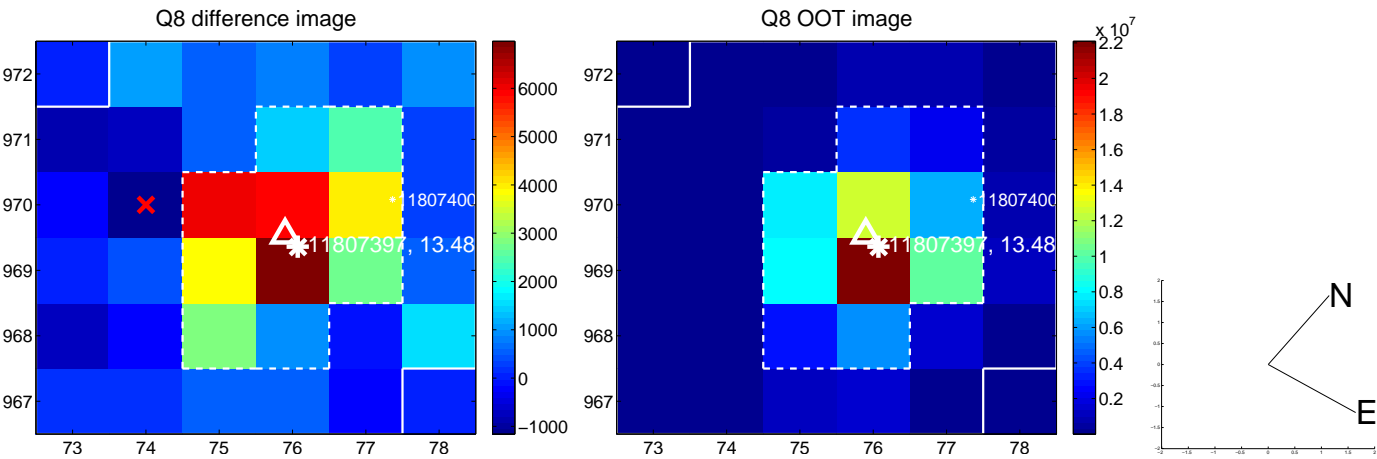
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



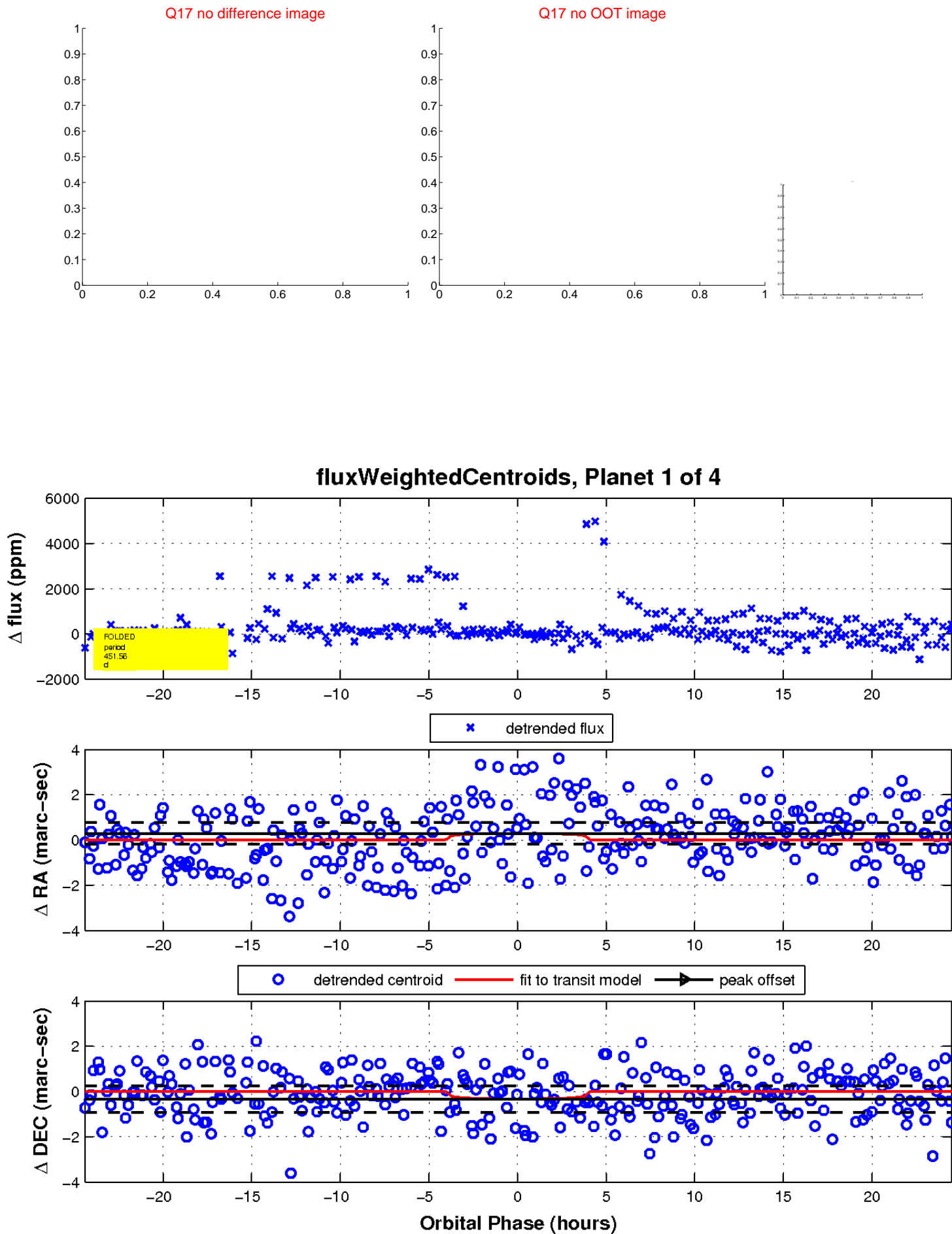
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



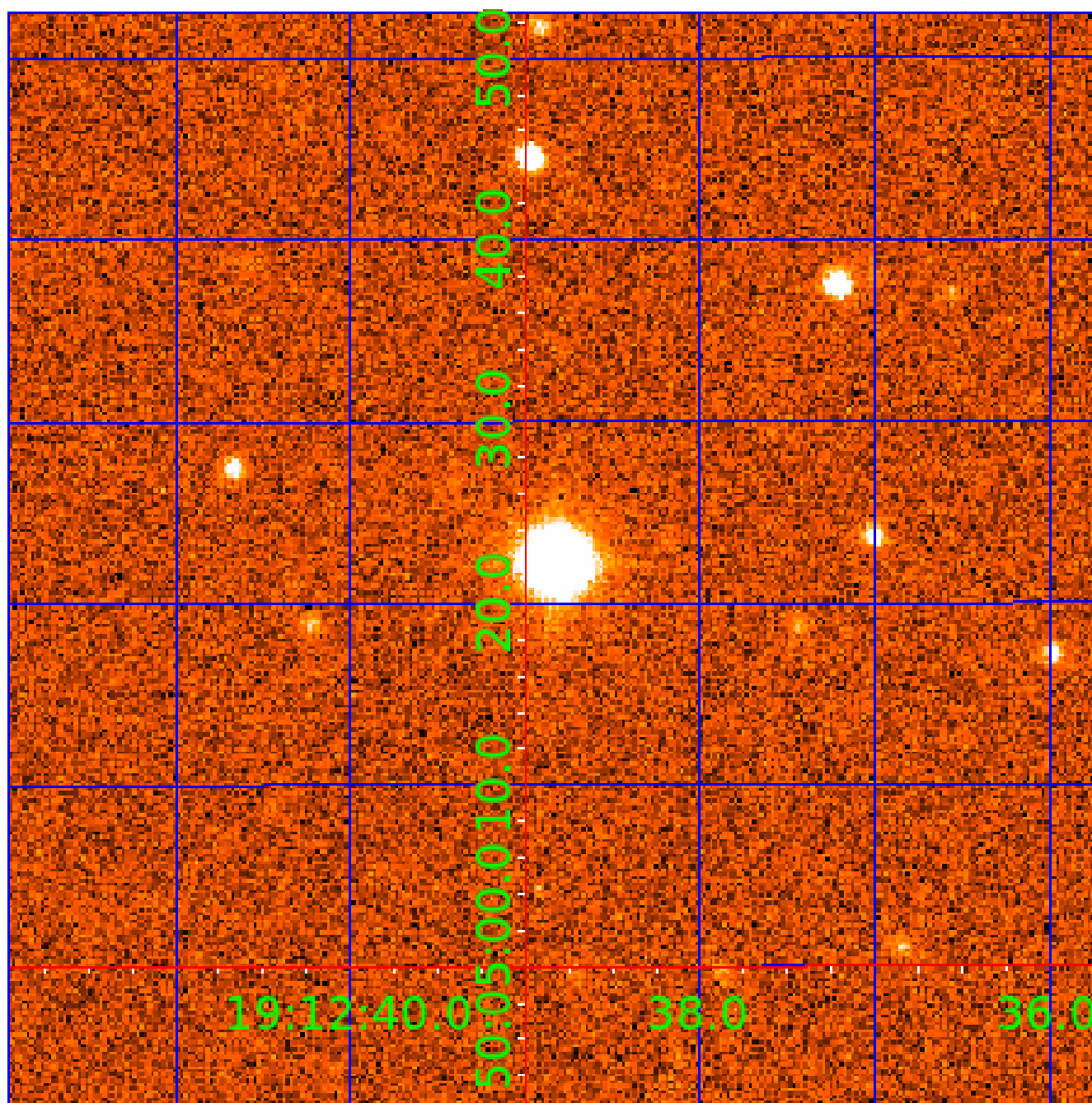
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011807397

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011807397-01	OBS	No	451.556642	294.557878	813.2	8.169	17.7	8.0	0.87	5895	2.58	0.73
011807397-02	OBS	No	462.681861	223.910196	708.1	3.796	14.7	7.7	0.87	5895	2.39	0.70
011807397-03	OBS	No	472.816279	450.463587	724.7	3.402	10.4	8.4	0.87	5895	2.46	0.68
011807397-04	OBS	No	277.074865	326.993909	1079.9	7.061	10.5	9.8	0.87	5895	5.45	1.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011807397-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011807397-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

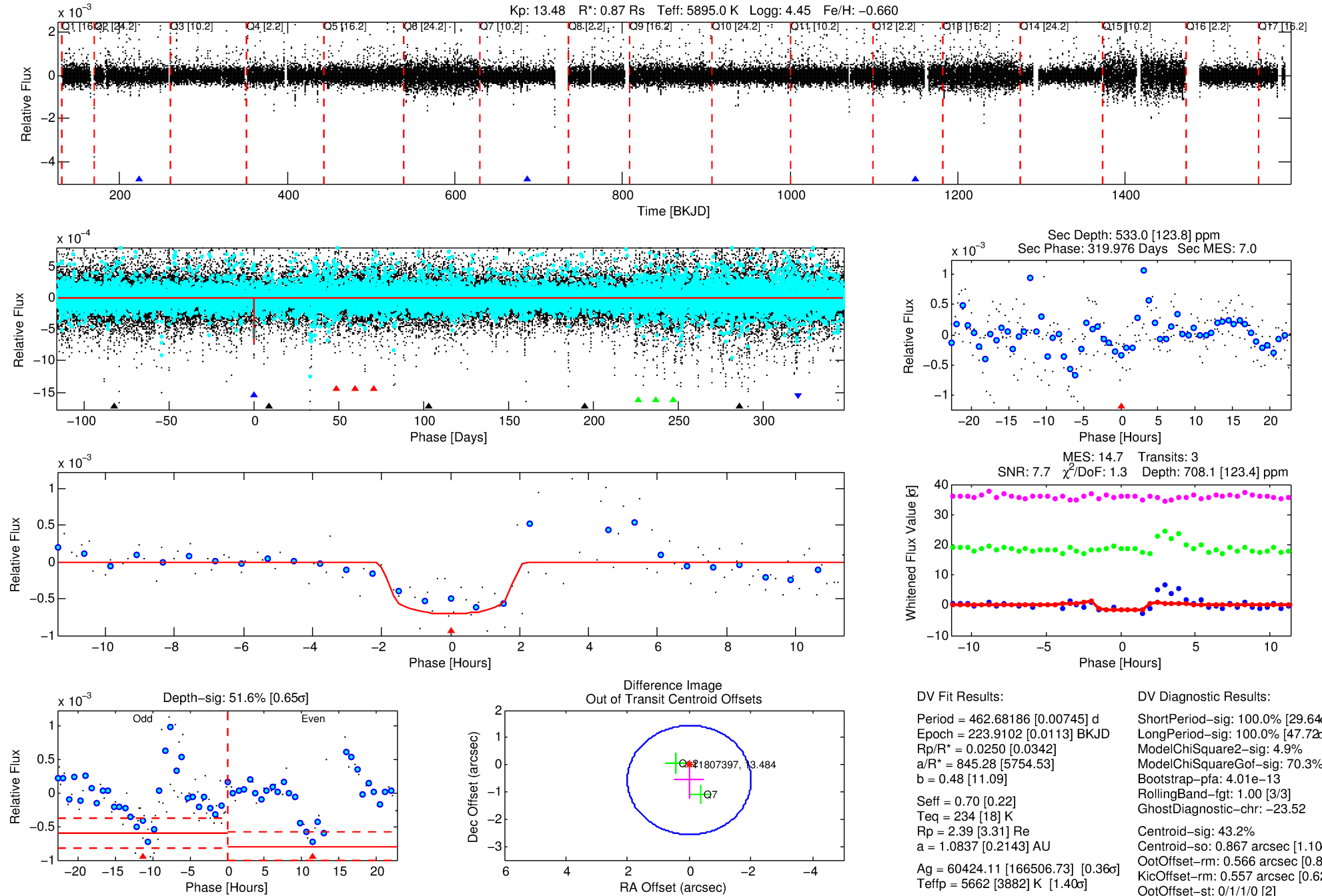
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011807397-02

No Significant Match Found

# DV One-Page Summary

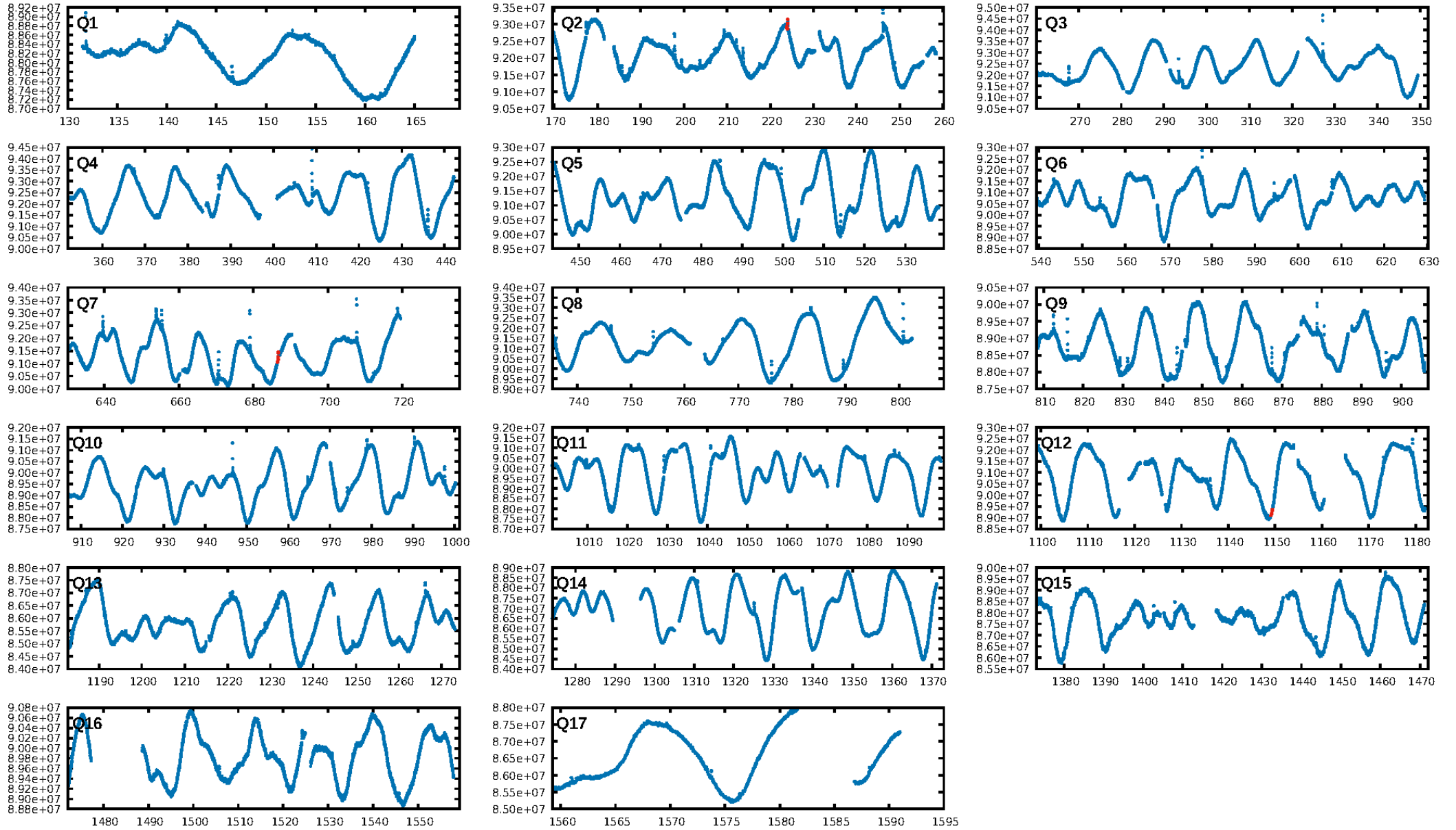
KIC: 11807397 Candidate: 2 of 4 Period: 462.682 d



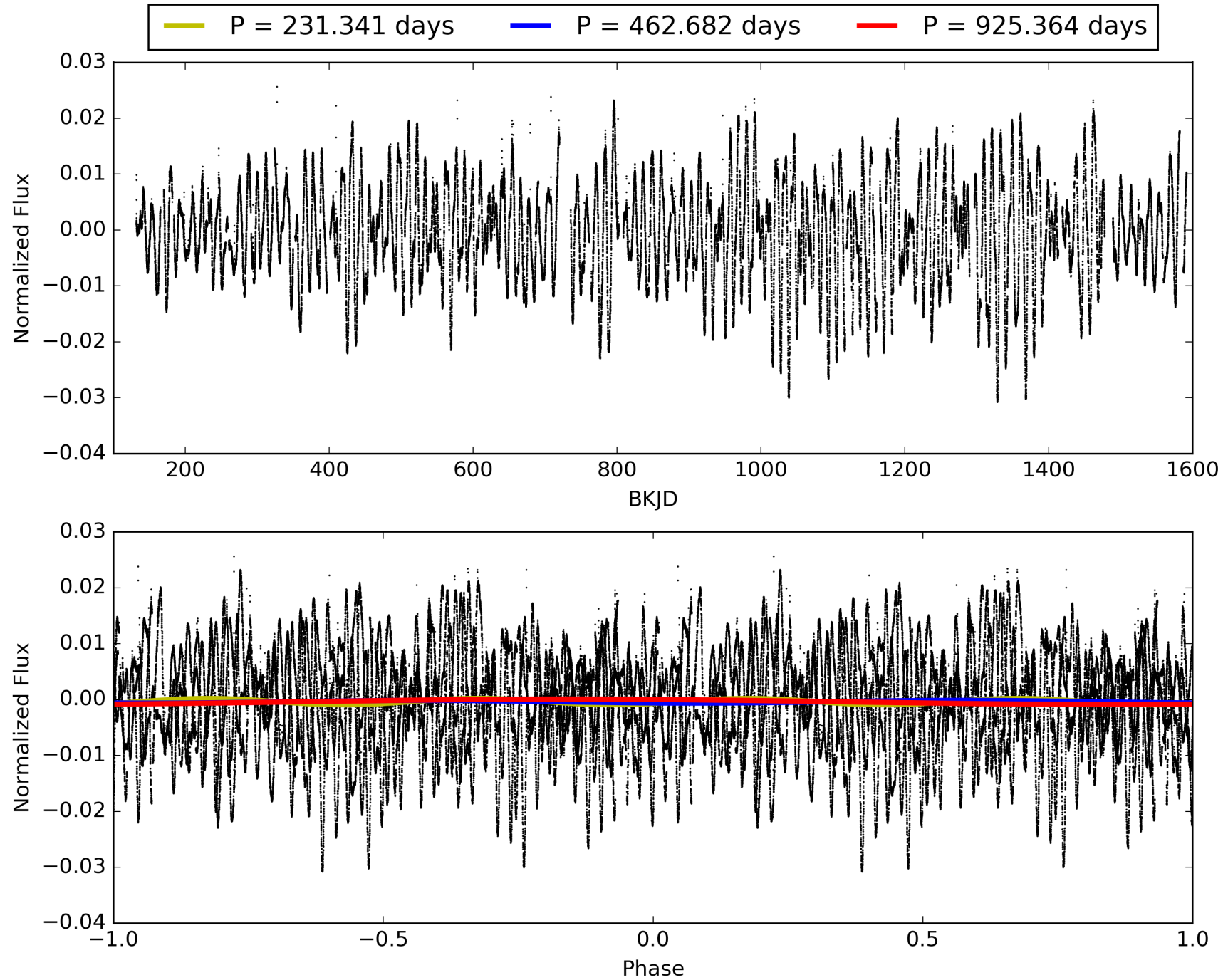
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:47:32 Z

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

# TCE 011807397-02, PDC Light Curves



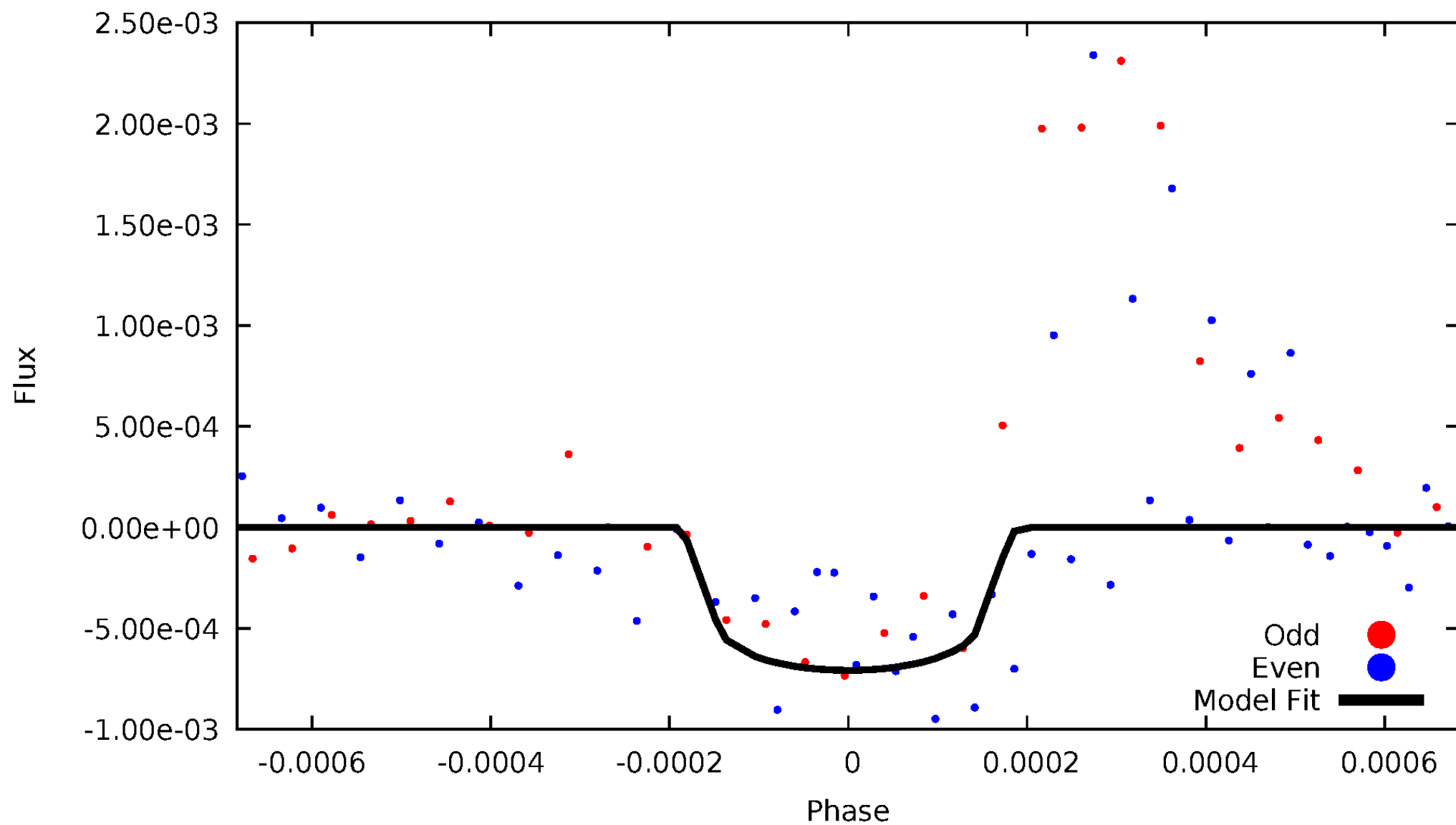
TCE 011807397-02





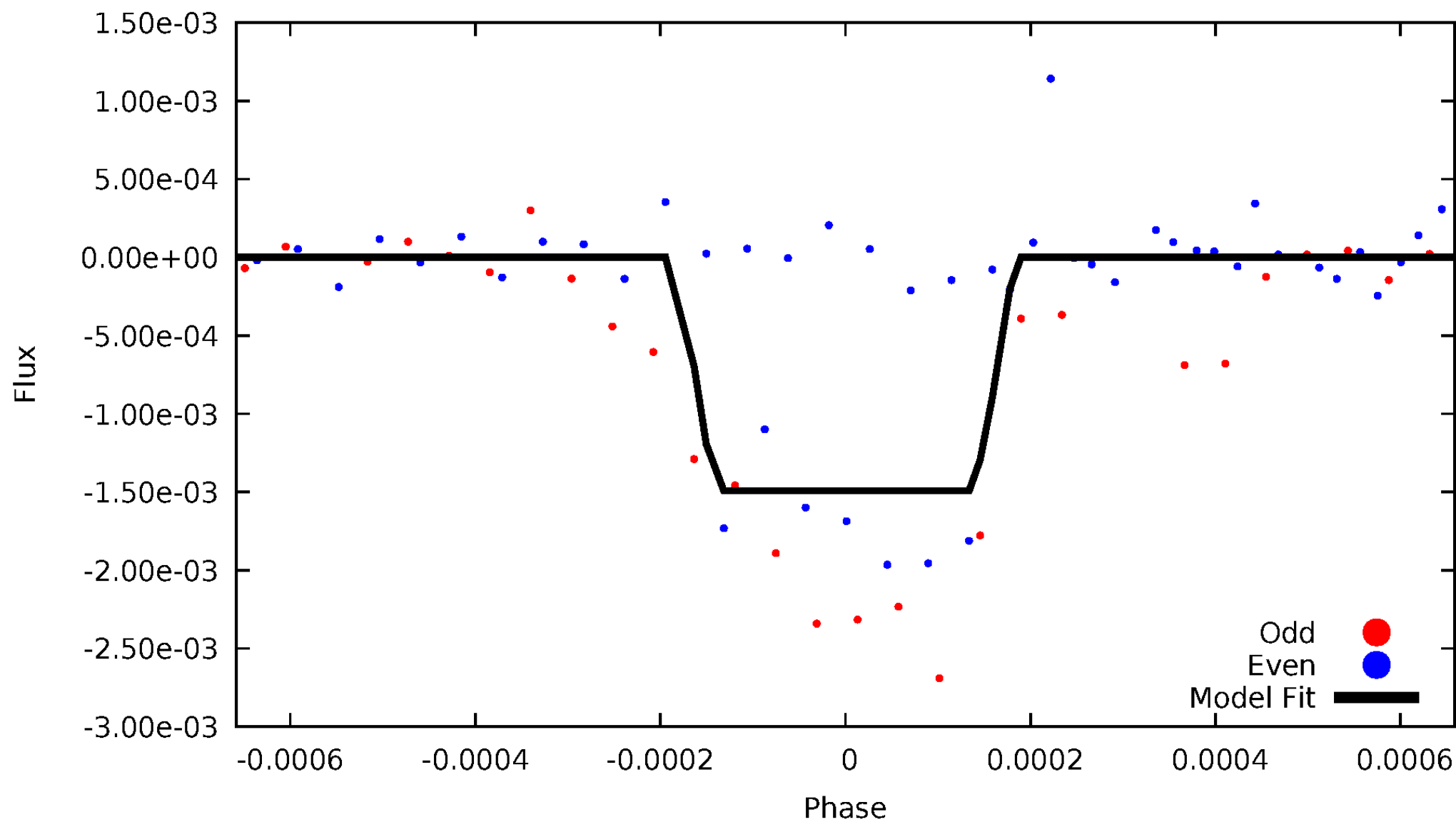
# DV Odd/Even

TCE 011807397-02



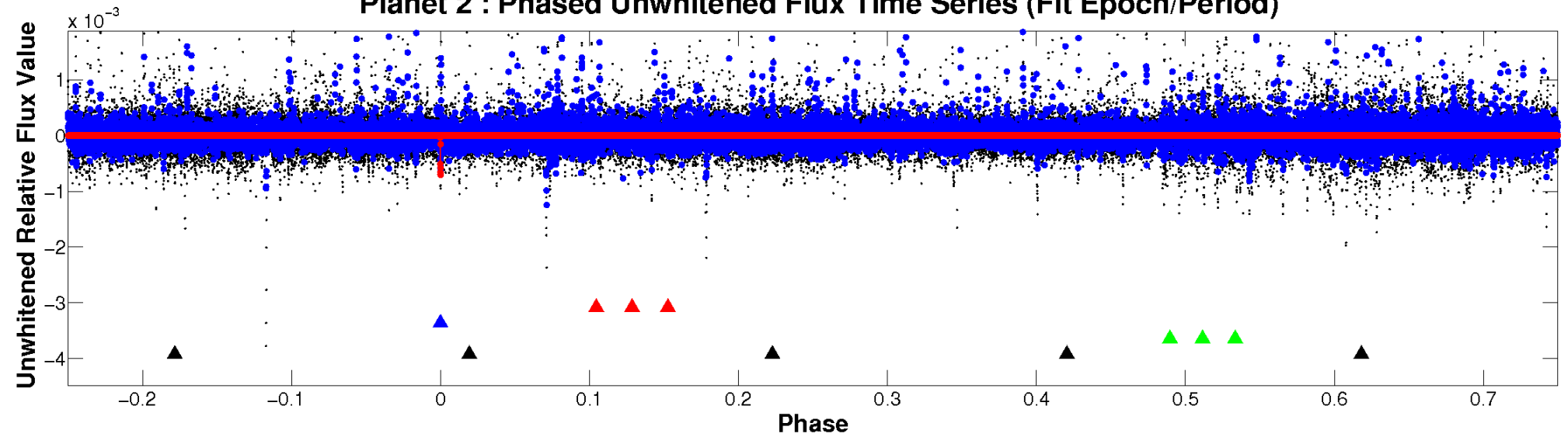
# ALT Odd/Even

TCE 011807397-02

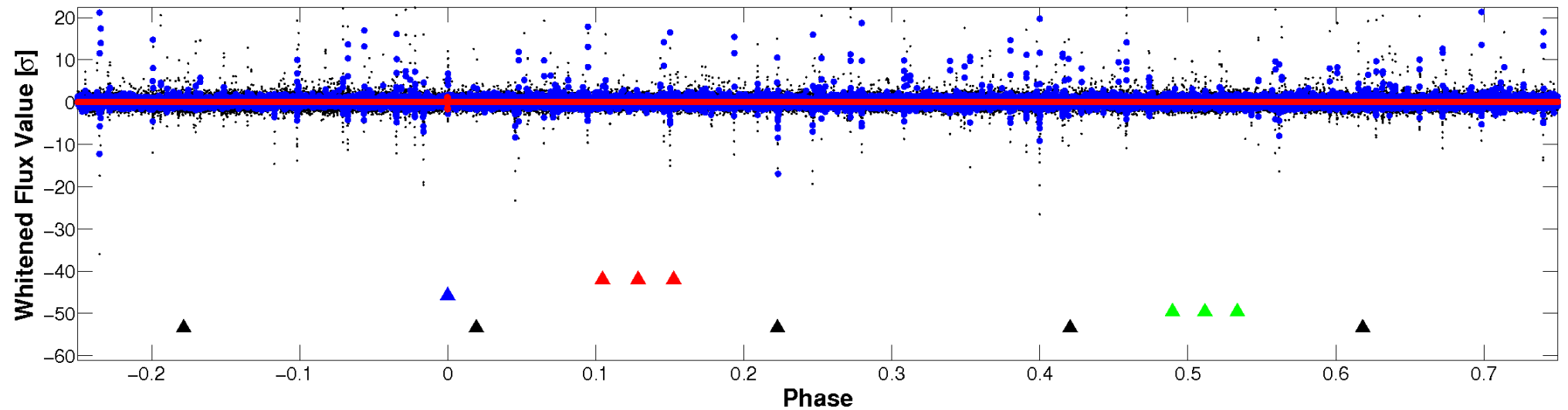


# Non-Whitened Vs. Whitened Light Curve

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

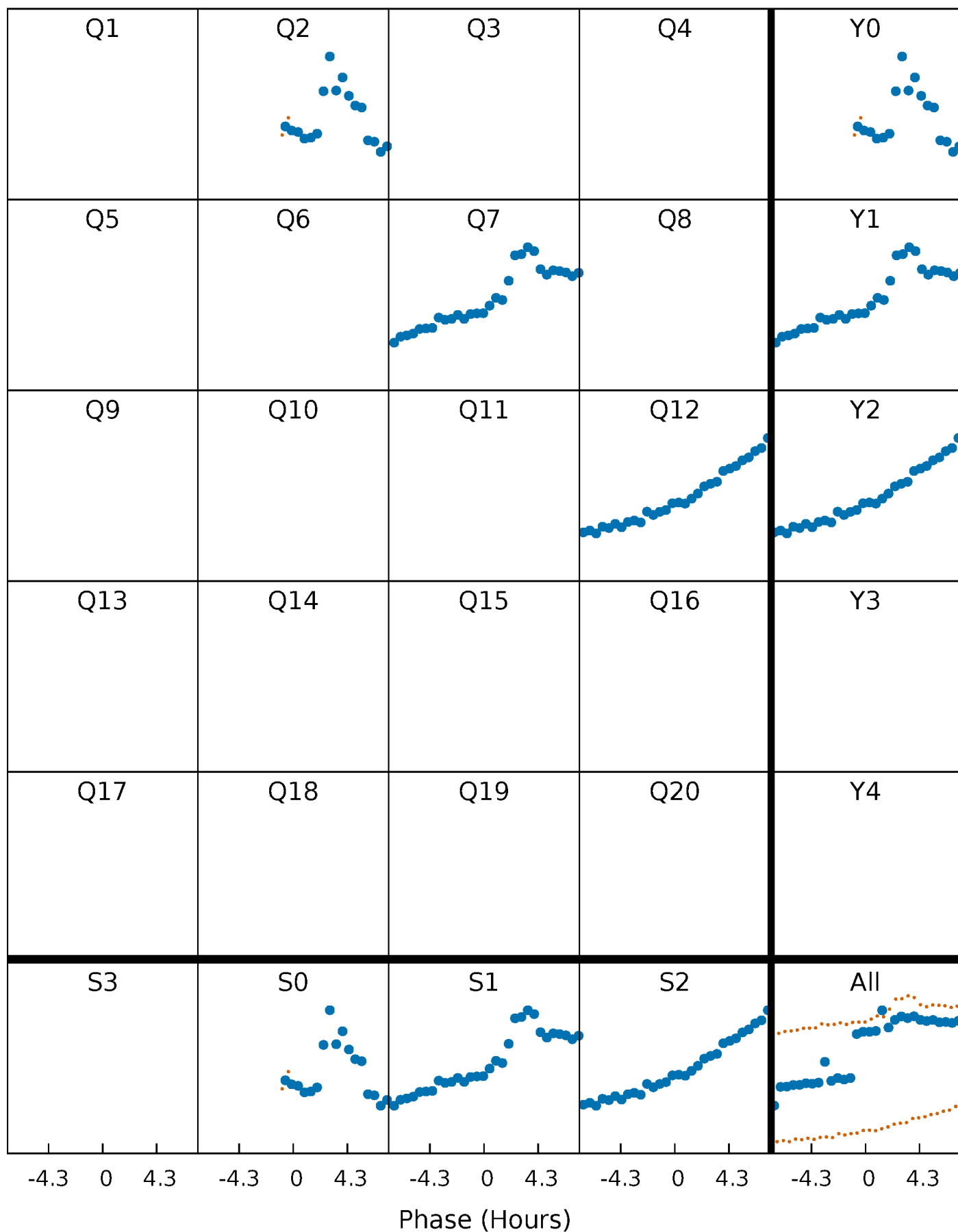


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



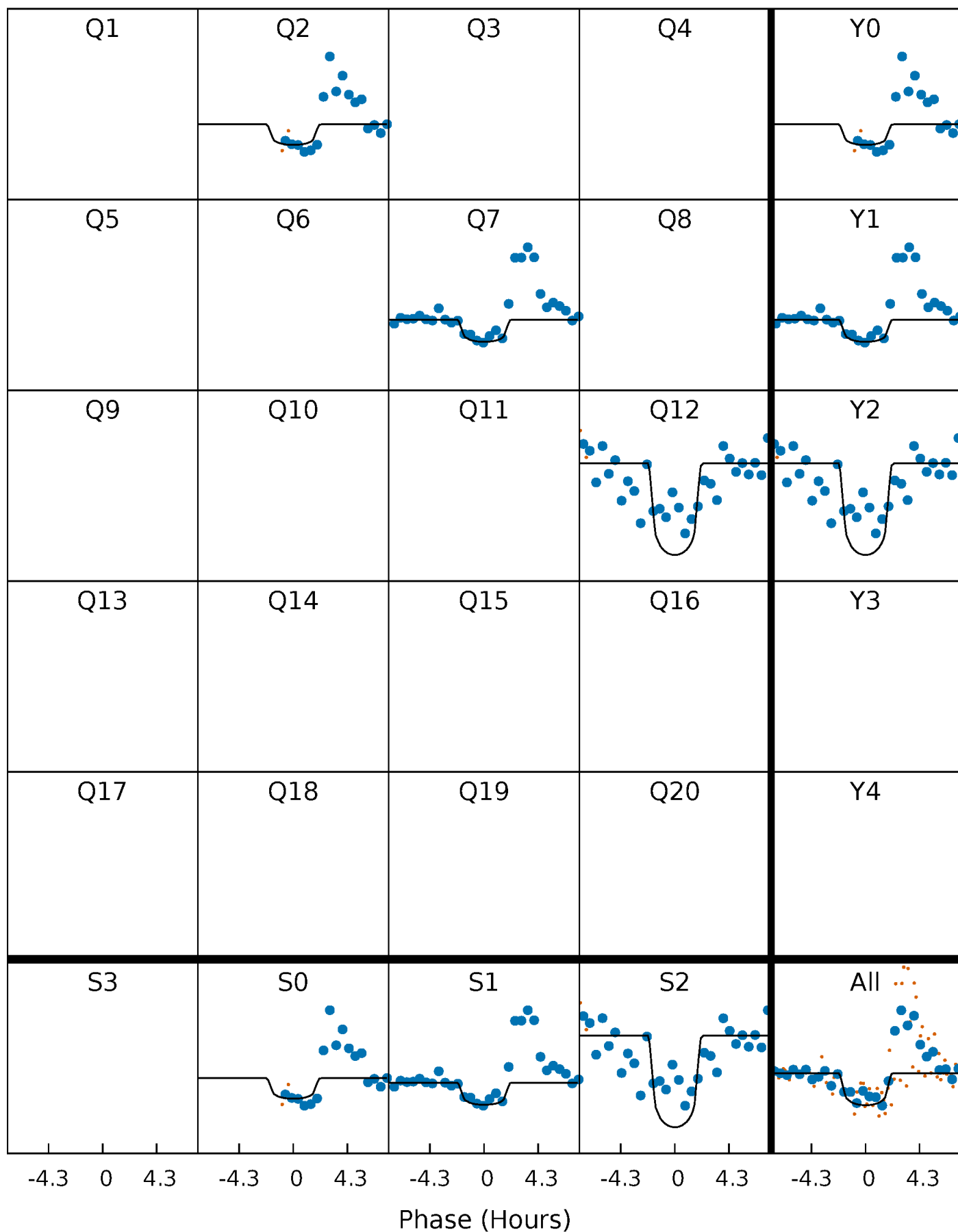
# PDC Quarter-Phased Transit Curves

TCE 011807397-02 P=462.681861 Days  $T_0=223.910196$  (BKJD)



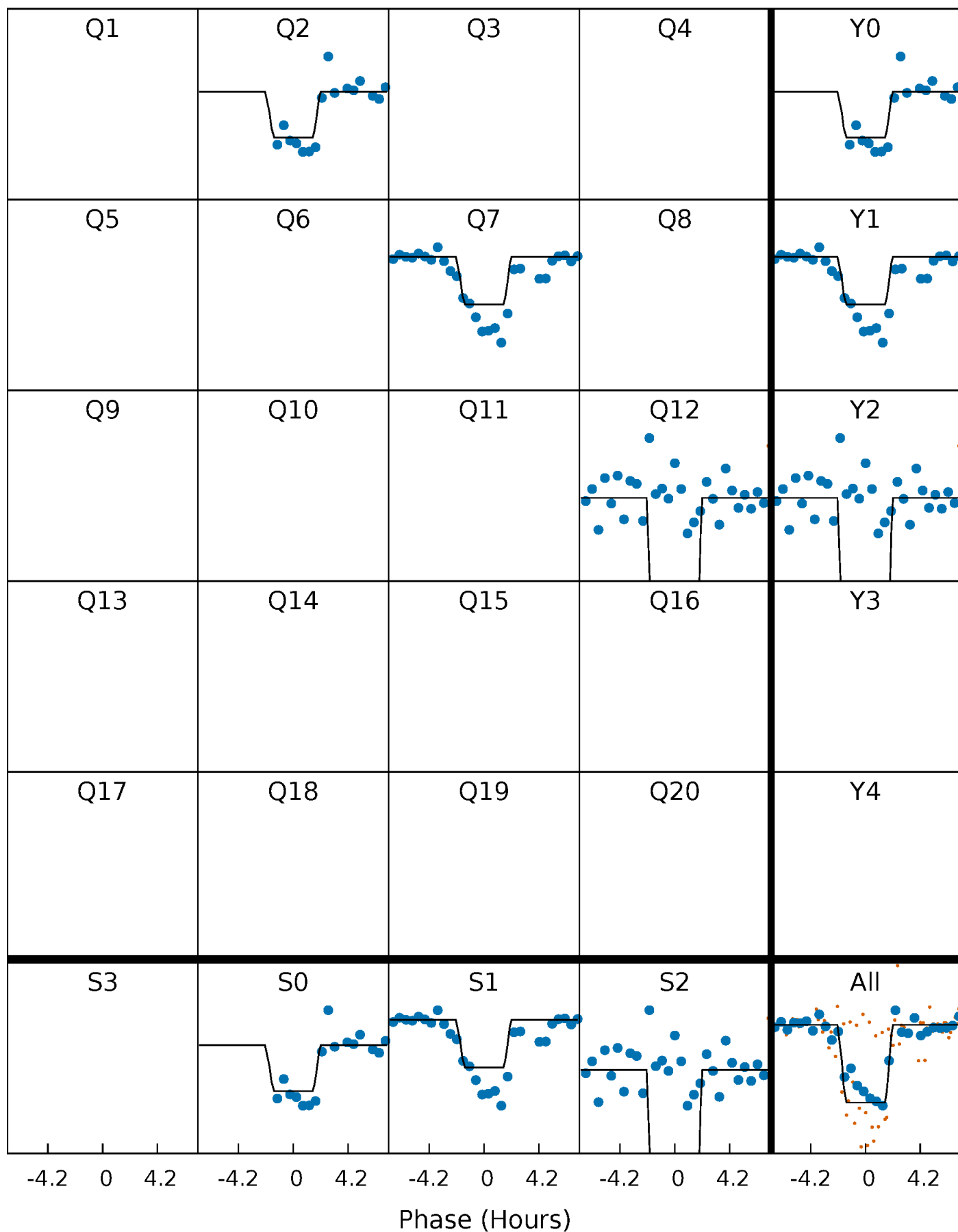
# DV Quarter-Phased Transit Curves

TCE 011807397-02 P=462.681861 Days  $T_0=223.910196$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

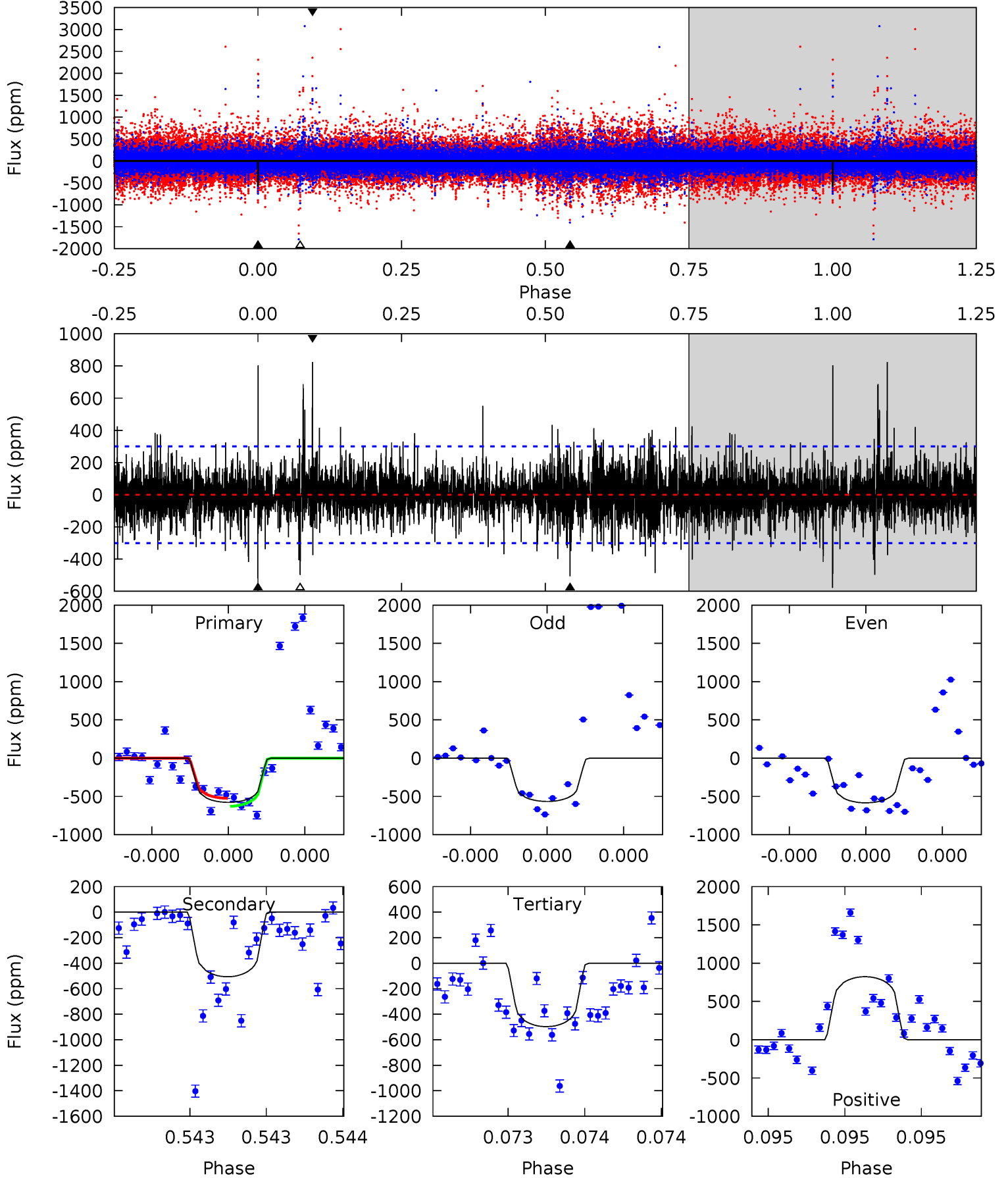
TCE 011807397-02 P=462.670288 Days  $T_0=223.934249$  (BKJD)



# DV Model-Shift Uniqueness Test

011807397-02, P = 462.681861 Days, E = 223.910196 Days

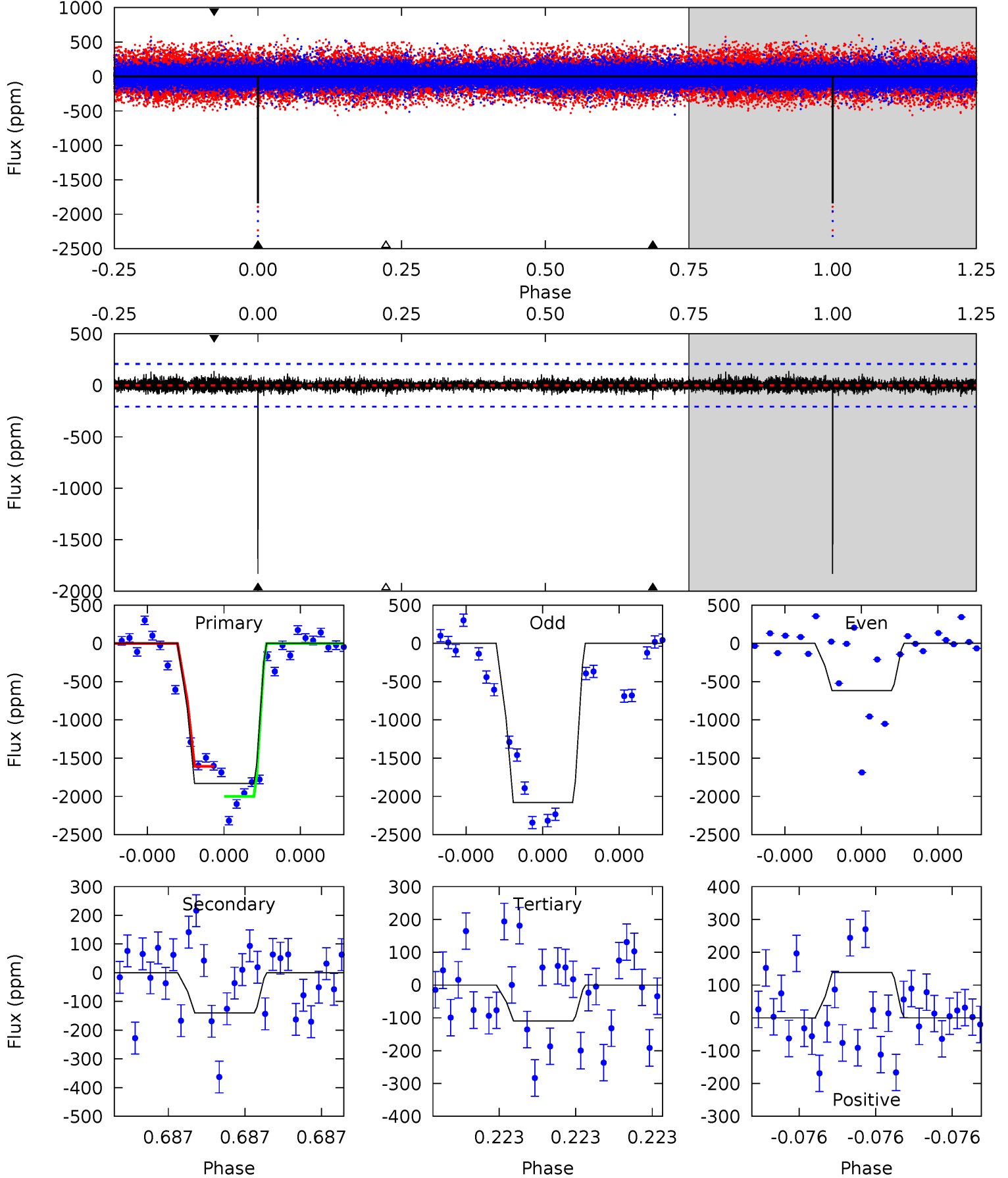
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	9.48	9.31	15.4	5.63	3.56	1.87	1.50	-4.60	0.17	-5.93	0.12	1.03	0.59	0.98



# Alt Model-Shift Uniqueness Test

011807397-02, P = 462.670288 Days, E = 223.934249 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
49.8	3.81	2.98	3.77	5.64	3.58	0.67	46.8	46.0	0.83	0.03	21.4	0.76	0.07	0





### Stellar Parameters For KIC 011807397

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5895^{+159}_{-159}$	$4.454^{+0.116}_{-0.159}$	$-0.660^{+0.300}_{-0.300}$	$0.874^{+0.204}_{-0.119}$	$0.792^{+0.095}_{-0.055}$	$1.673^{+0.947}_{-0.747}$
	+3%/-3%	+3%/-4%	+45%/-45%	+23%/-14%	+12%/-7%	+57%/-45%
Source	PHO1	KIC0	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 011807397-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-507 \pm 53$	$3.36^{+3.08}_{-2.16}$	$327^{+21}_{-16}$	$4831^{+3335}_{-1012}$	$28765^{+196717}_{-20715}$
Alt.	$-140 \pm 37$	$4.35^{+2.99}_{-2.68}$	$327^{+22}_{-17}$	$3521^{+1373}_{-546}$	$4785^{+25544}_{-3200}$

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

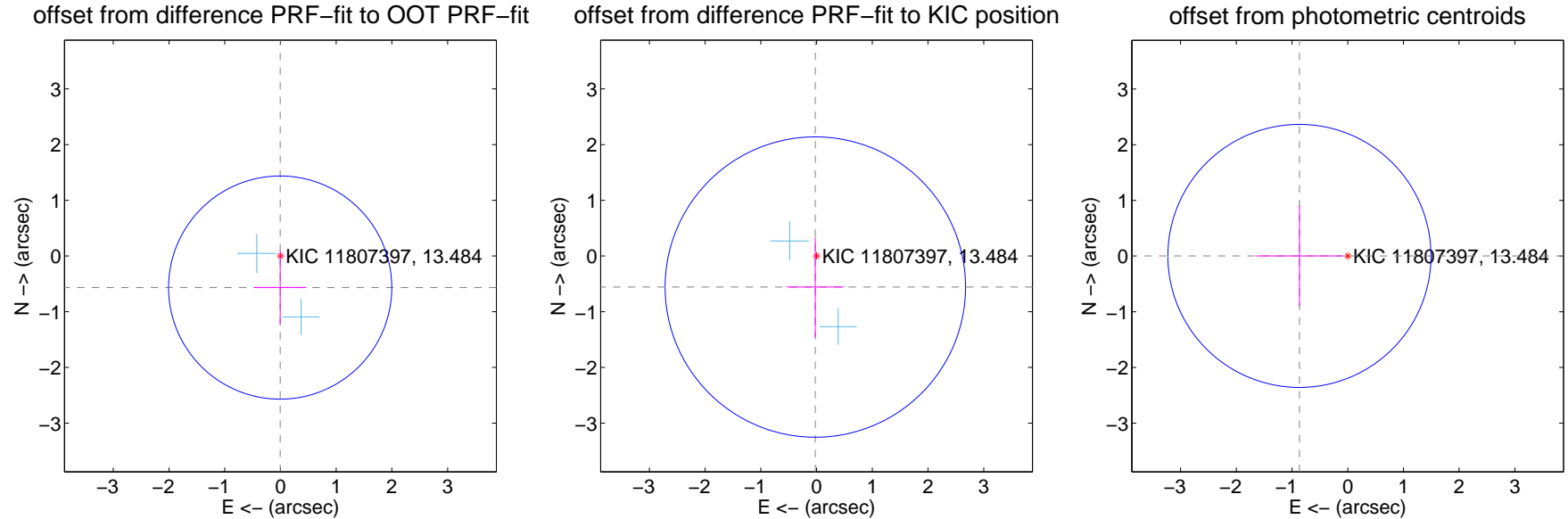
## DV Centroid Data

Supplemental centroid analysis for 011807397-02. Kepler magnitude: 13.48. Transit SNR 7.67

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.566 \pm 0.668$	0.85	$0.005 \pm 0.468$	$-0.566 \pm 0.668$
PRF-fit source offset from KIC position	$0.557 \pm 0.899$	0.62	$0.022 \pm 0.512$	$-0.557 \pm 0.899$
photometric centroid source offset	$0.87 \pm 0.79$	1.10	$0.87 \pm 0.79$	$0.00 \pm 0.91$

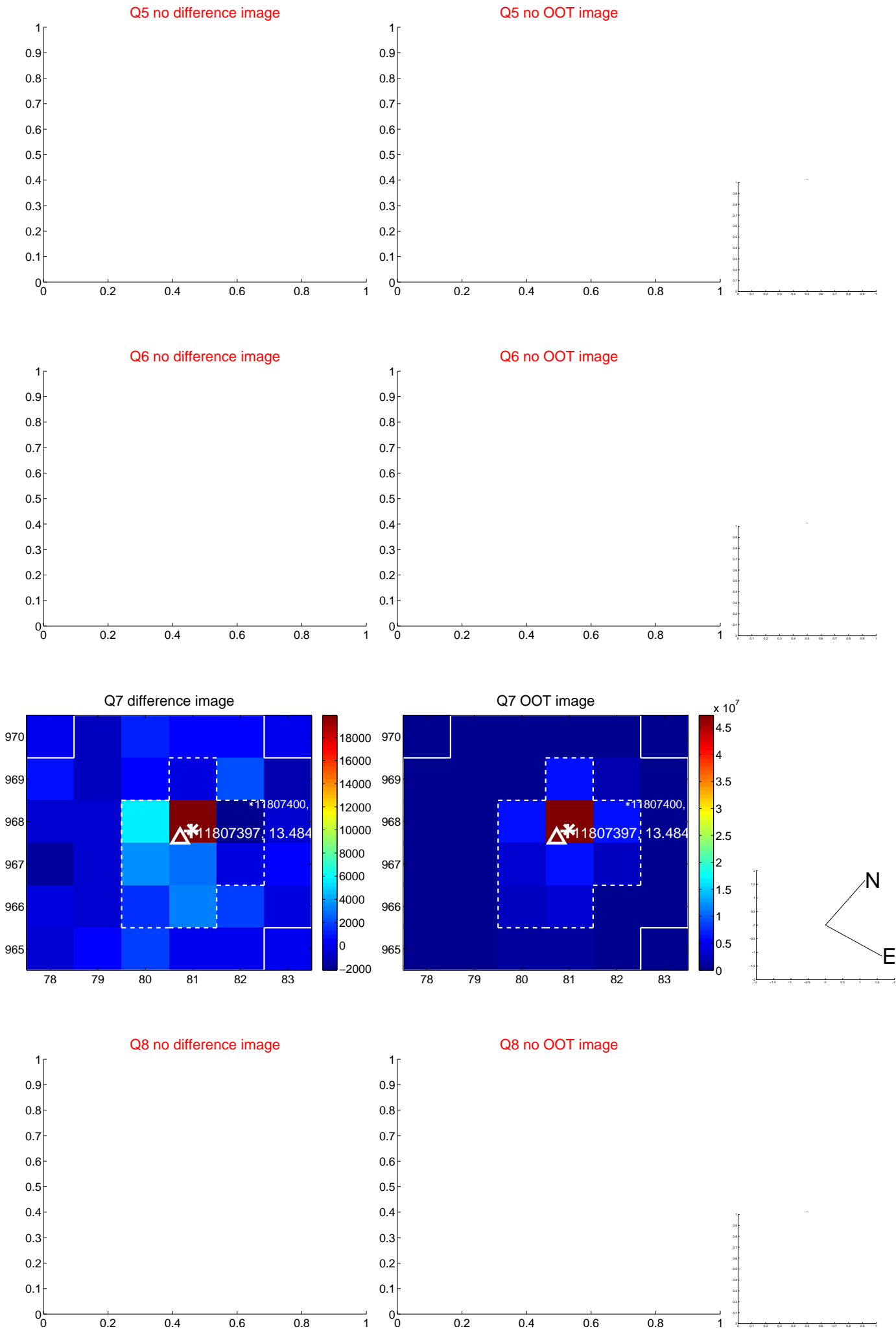


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

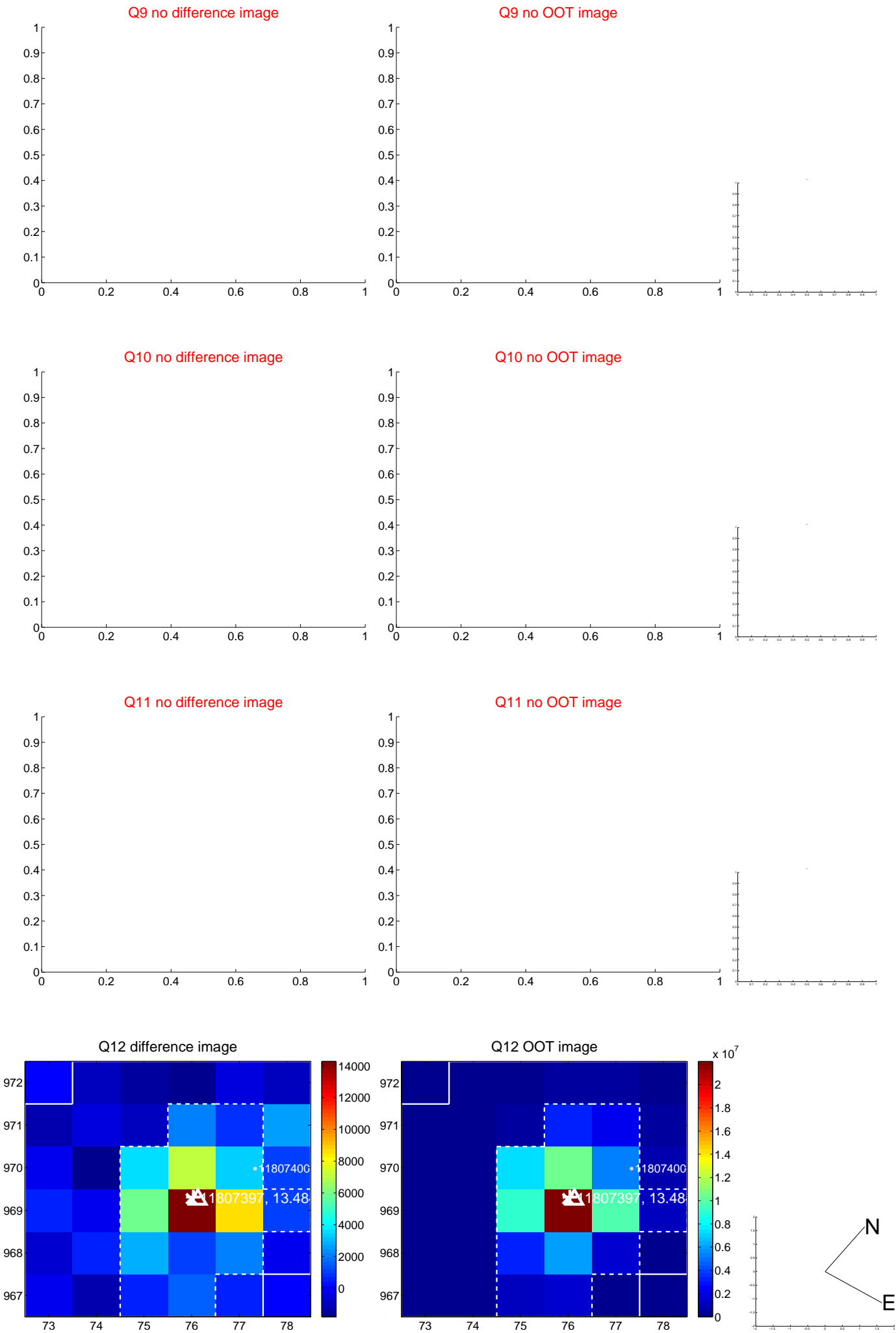
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



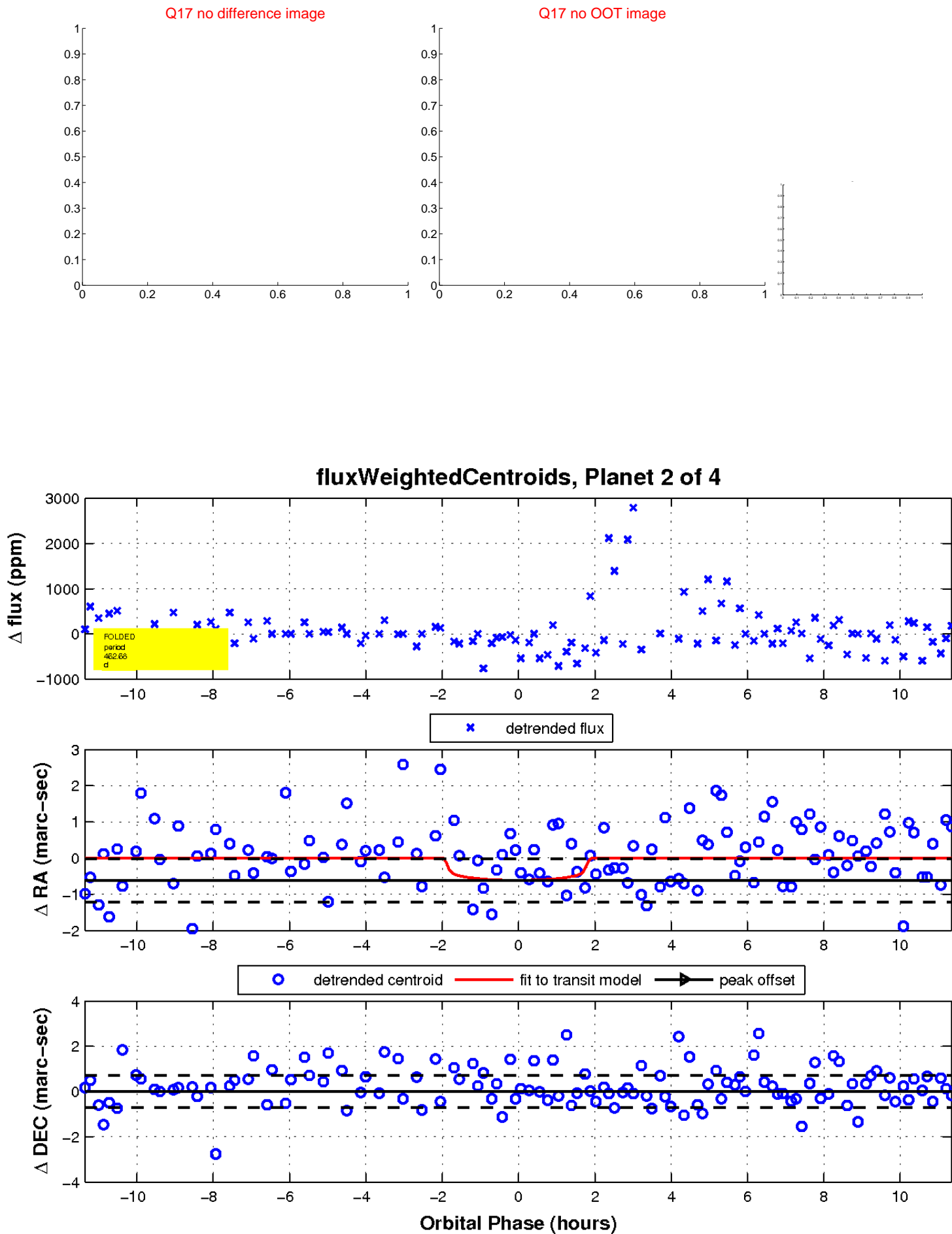
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

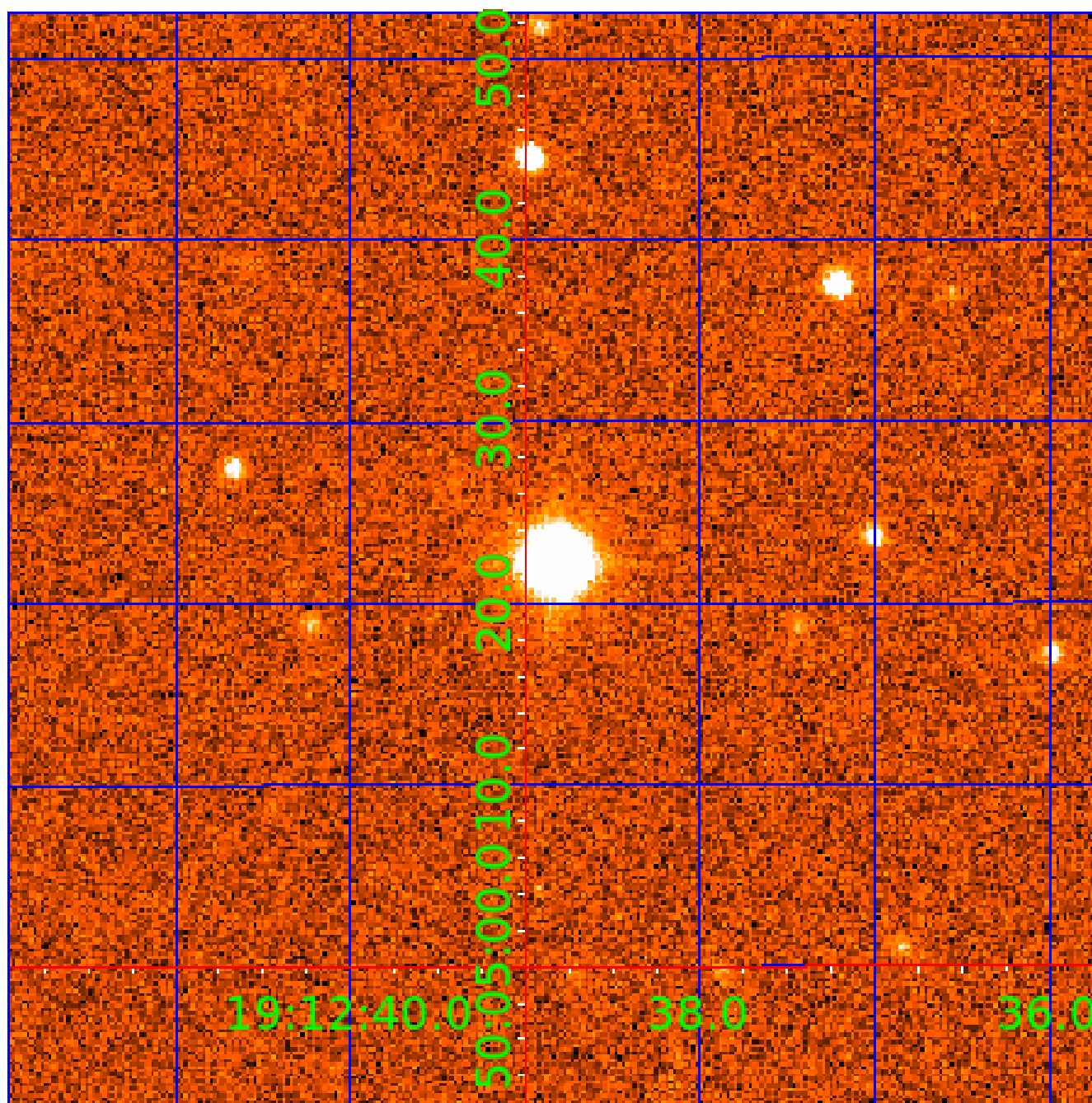


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011807397

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011807397-01	OBS	No	451.556642	294.557878	813.2	8.169	17.7	8.0	0.87	5895	2.58	0.73
011807397-02	OBS	No	462.681861	223.910196	708.1	3.796	14.7	7.7	0.87	5895	2.39	0.70
011807397-03	OBS	No	472.816279	450.463587	724.7	3.402	10.4	8.4	0.87	5895	2.46	0.68
011807397-04	OBS	No	277.074865	326.993909	1079.9	7.061	10.5	9.8	0.87	5895	5.45	1.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011807397-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011807397-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

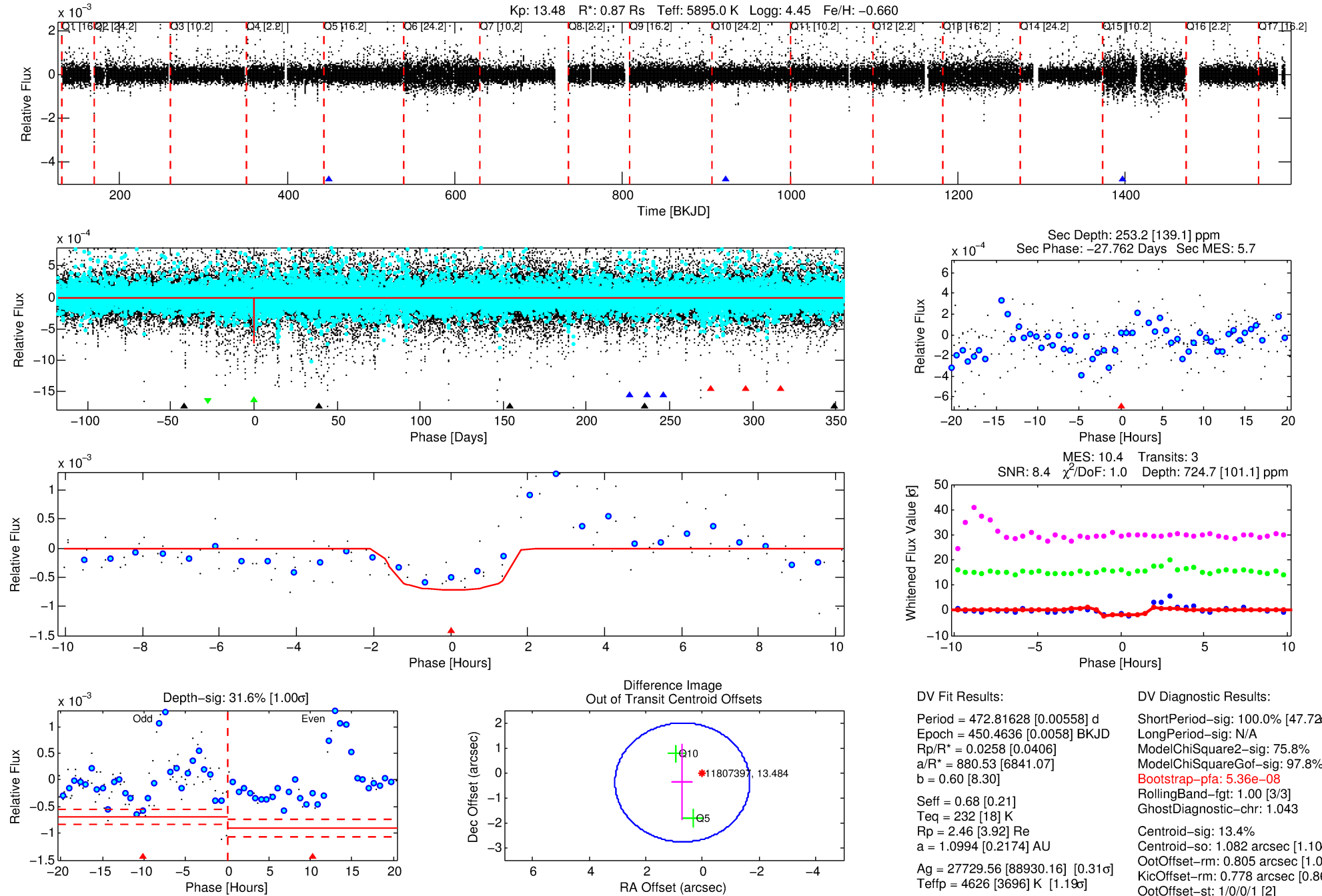
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011807397-03

No Significant Match Found

# DV One-Page Summary

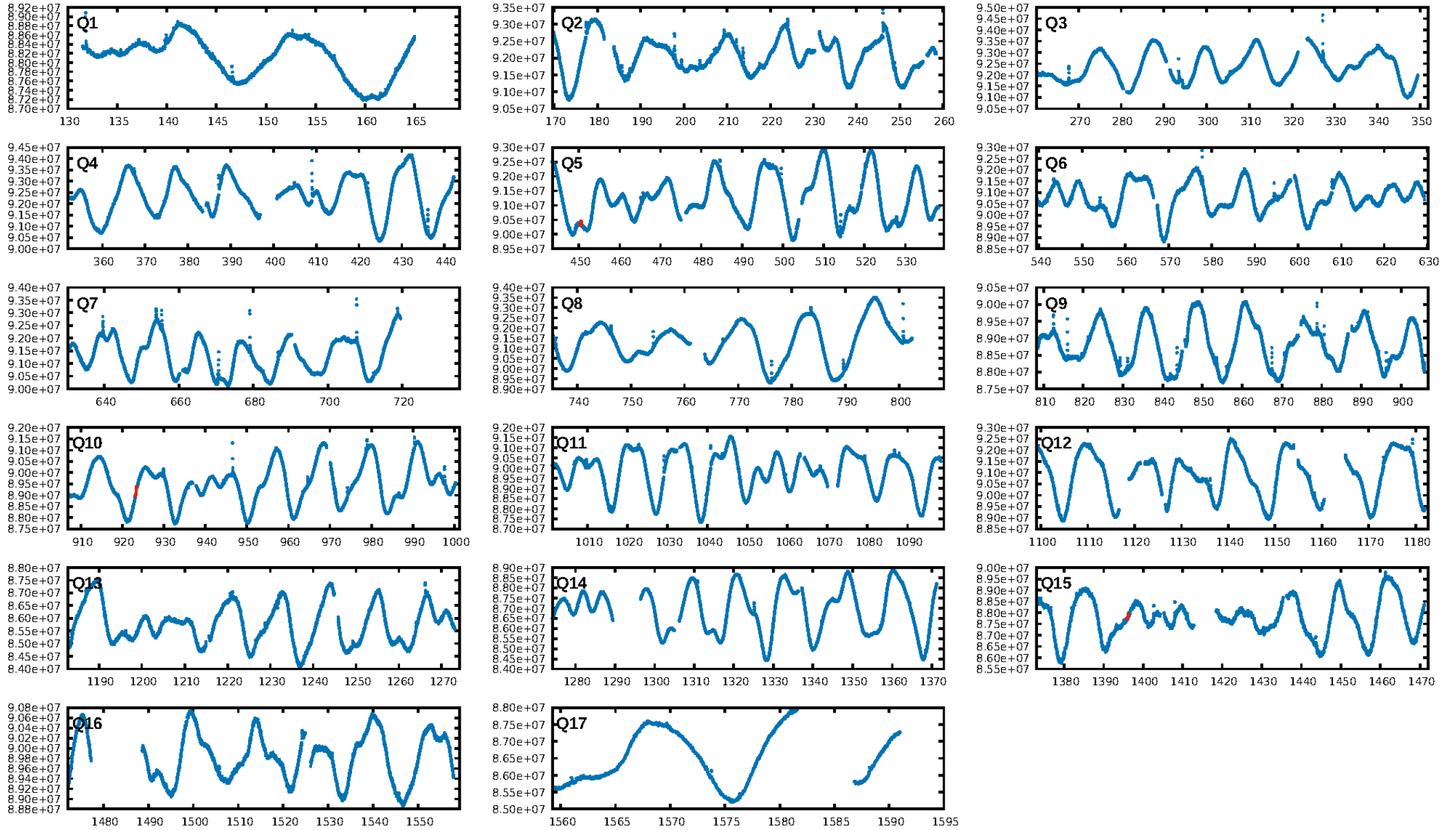
KIC: 11807397 Candidate: 3 of 4 Period: 472.816 d



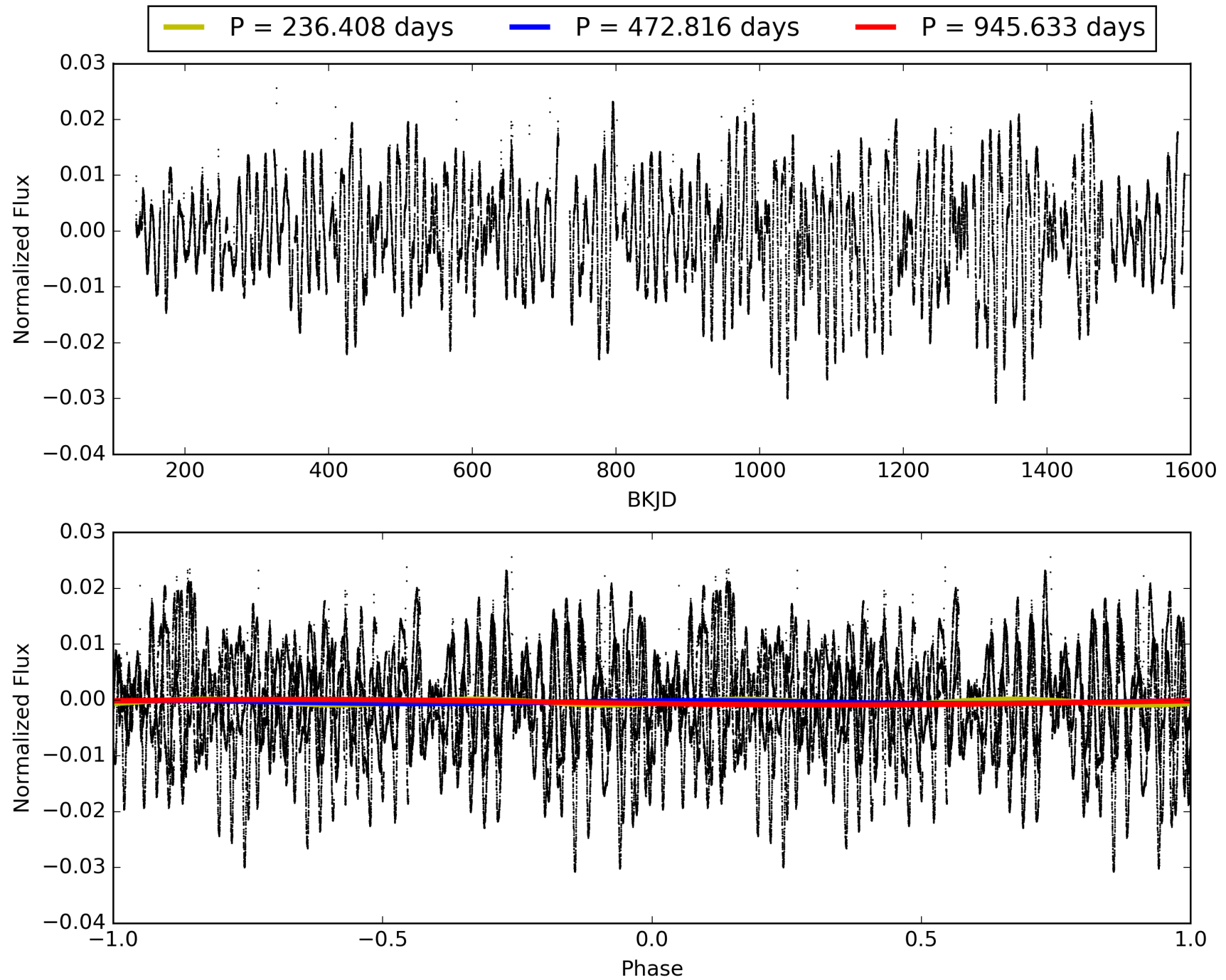
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:47:52 Z

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

# TCE 011807397-03, PDC Light Curves

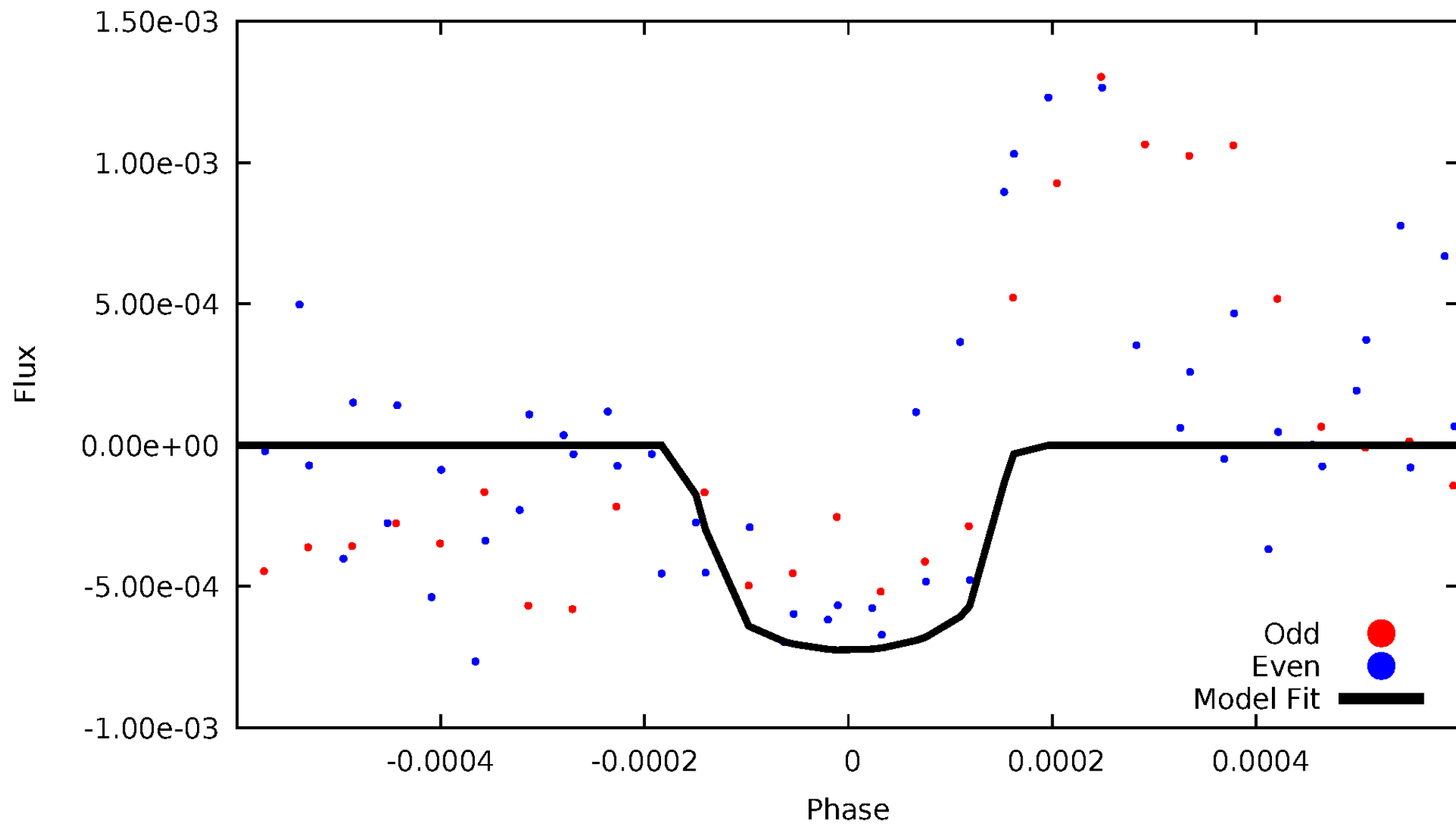


# TCE 011807397-03



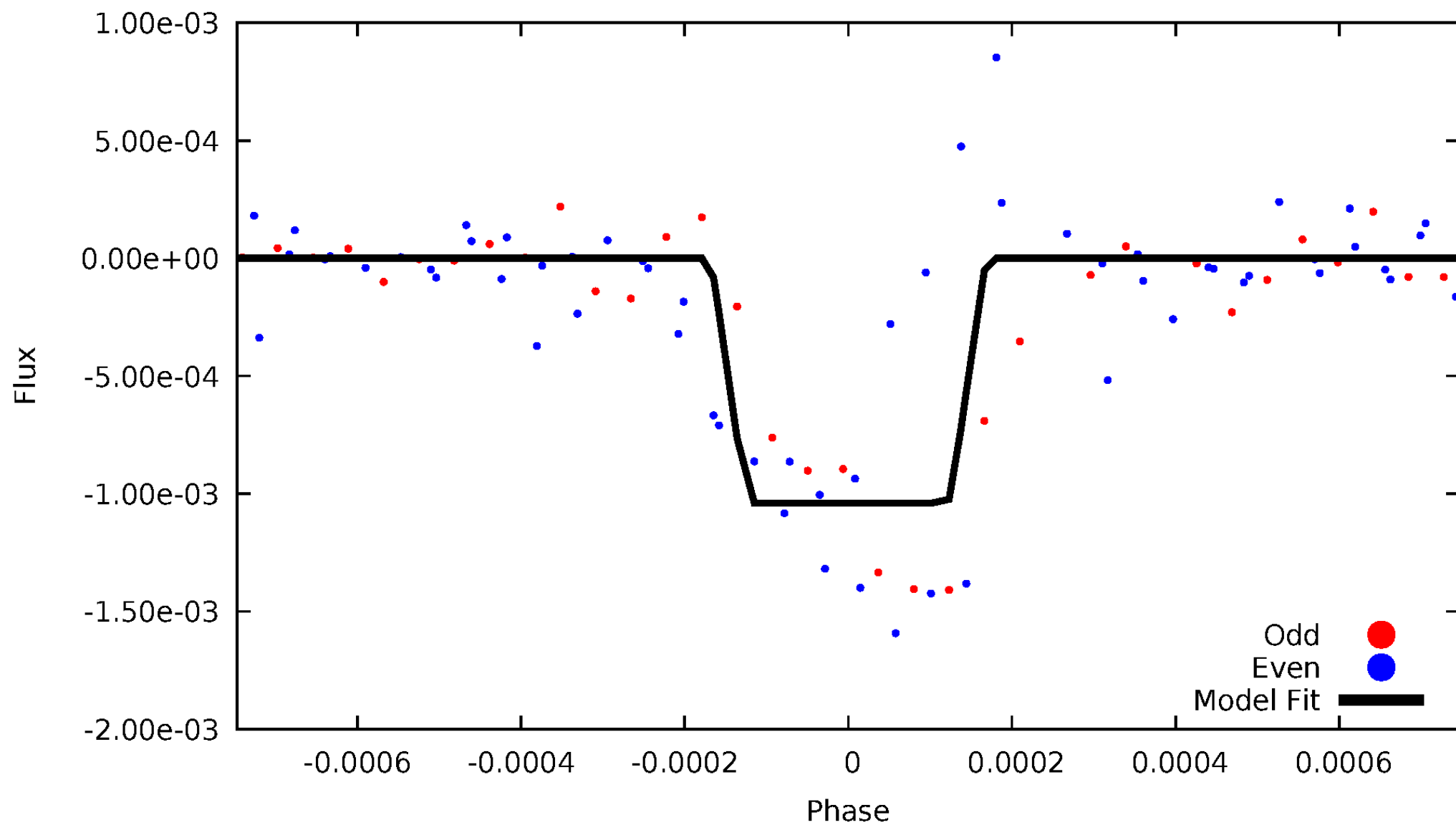
# DV Odd/Even

TCE 011807397-03



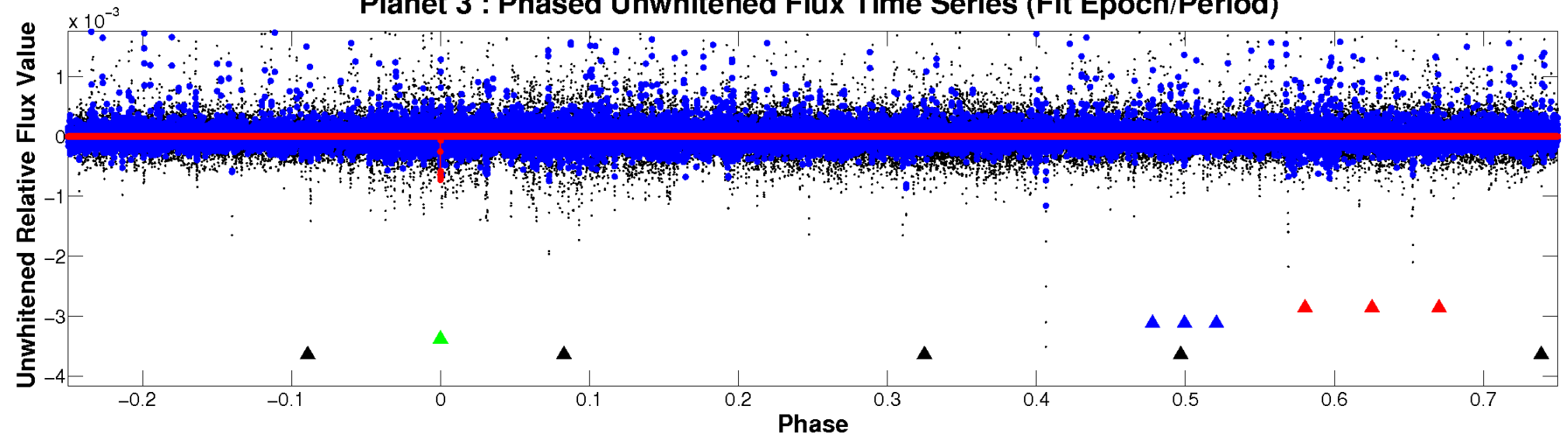
# ALT Odd/Even

TCE 011807397-03

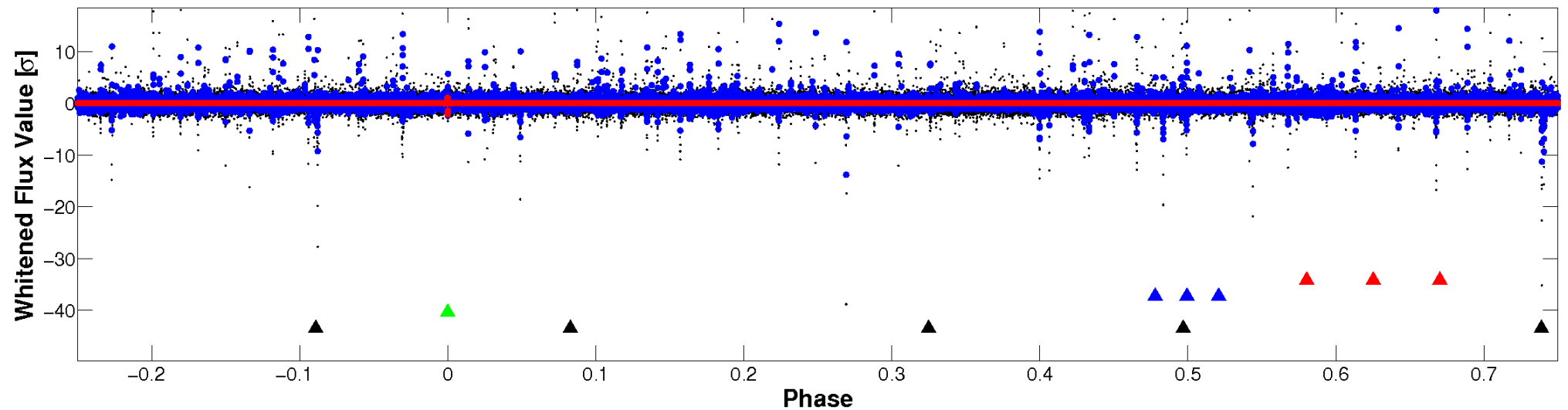


# Non-Whitened Vs. Whitened Light Curve

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

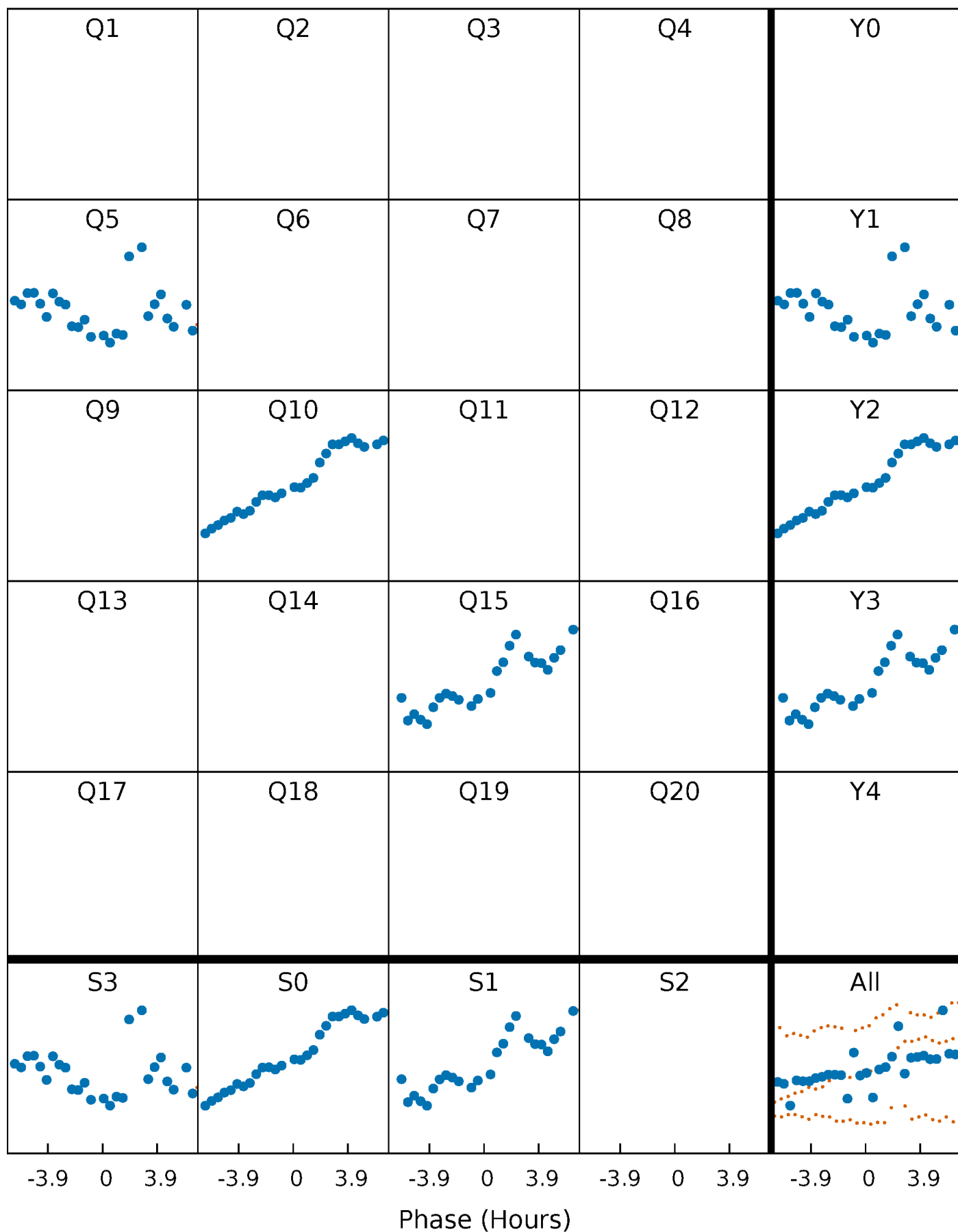


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

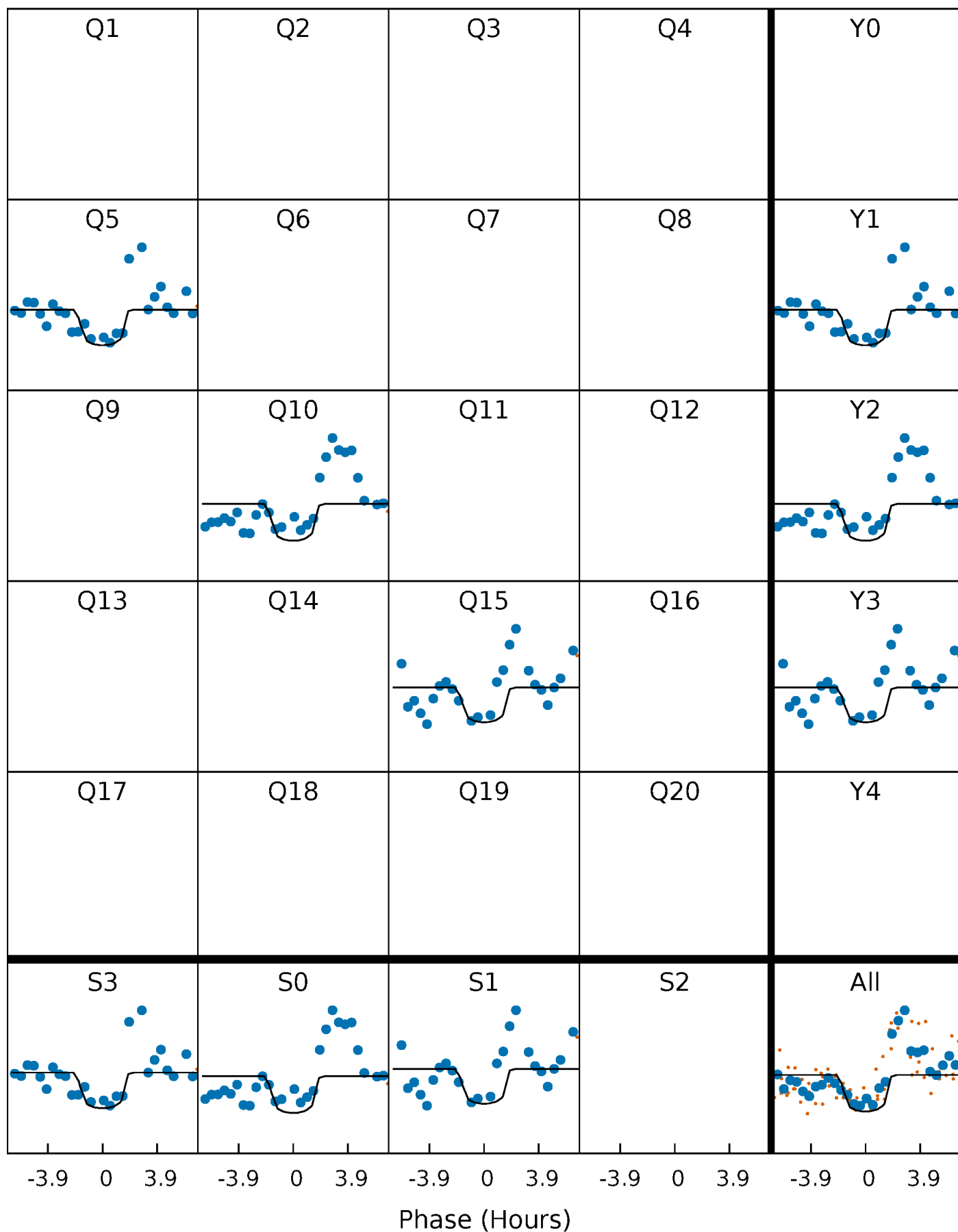
TCE 011807397-03     $P=472.816279$  Days     $T_0=450.463587$  (BKJD)





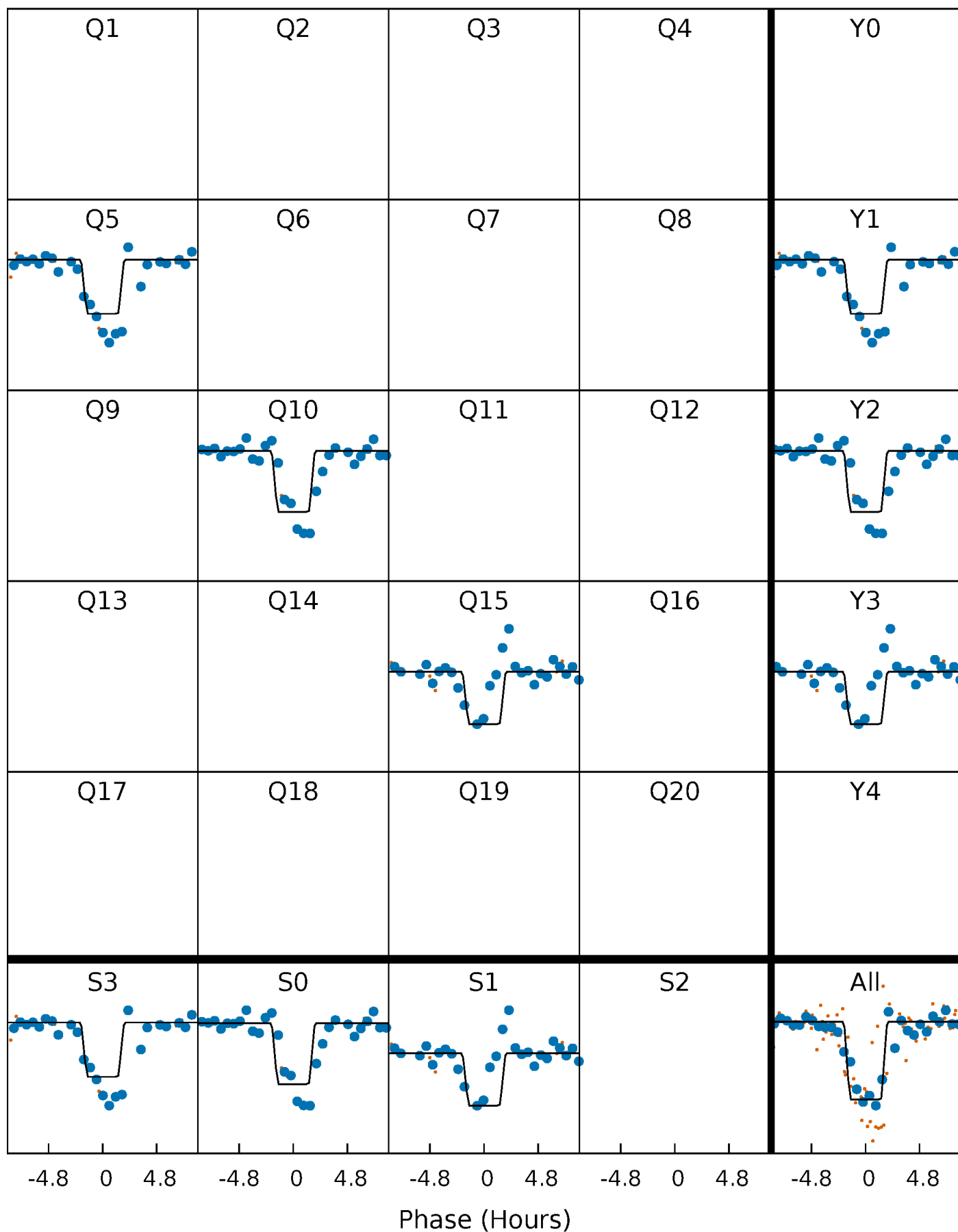
# DV Quarter-Phased Transit Curves

TCE 011807397-03     $P=472.816279$  Days     $T_0=450.463587$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

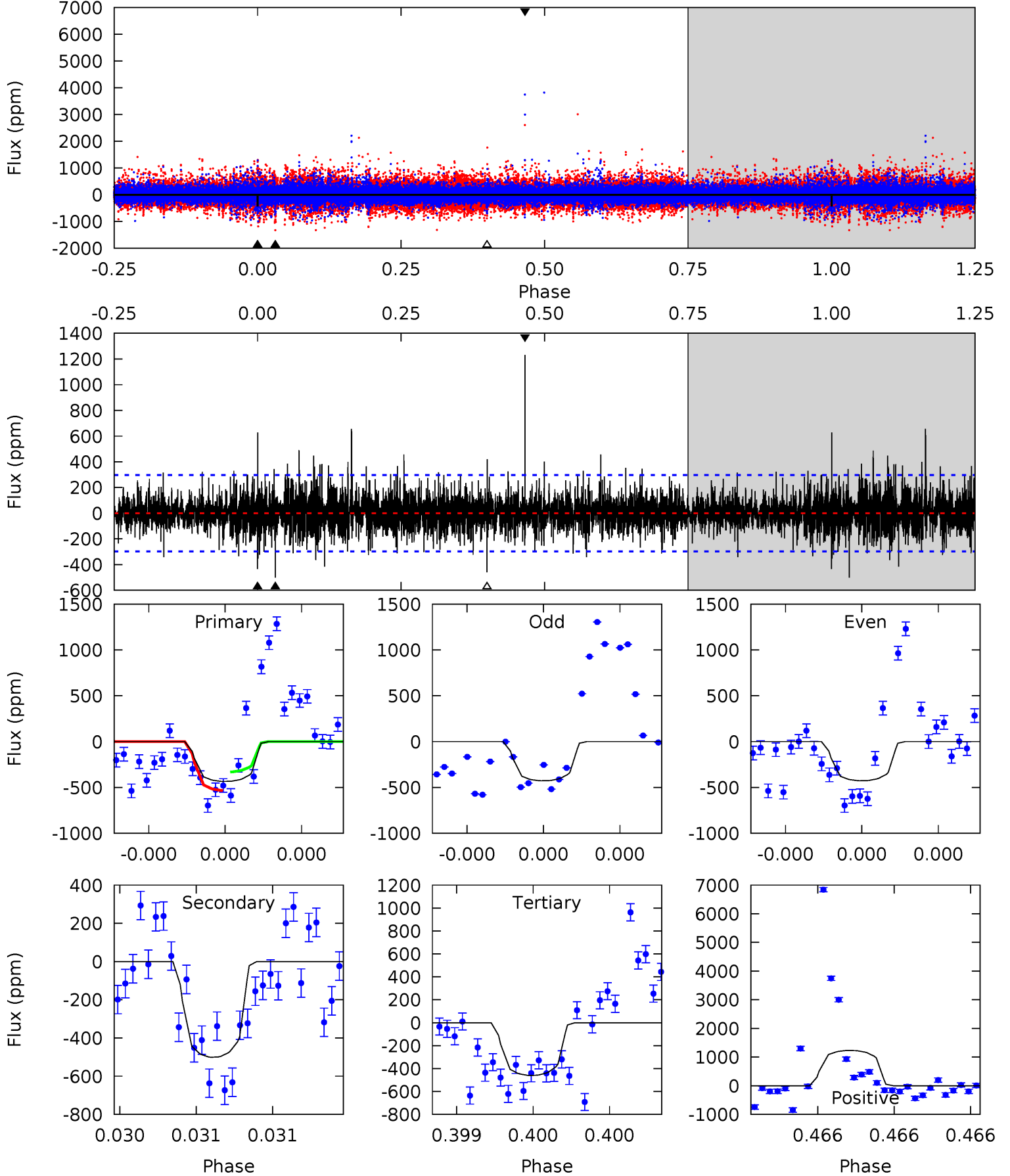
TCE 011807397-03     $P=472.825767$  Days     $T_0=450.451745$  (BKJD)



# DV Model-Shift Uniqueness Test

011807397-03, P = 472.816279 Days, E = 450.463587 Days

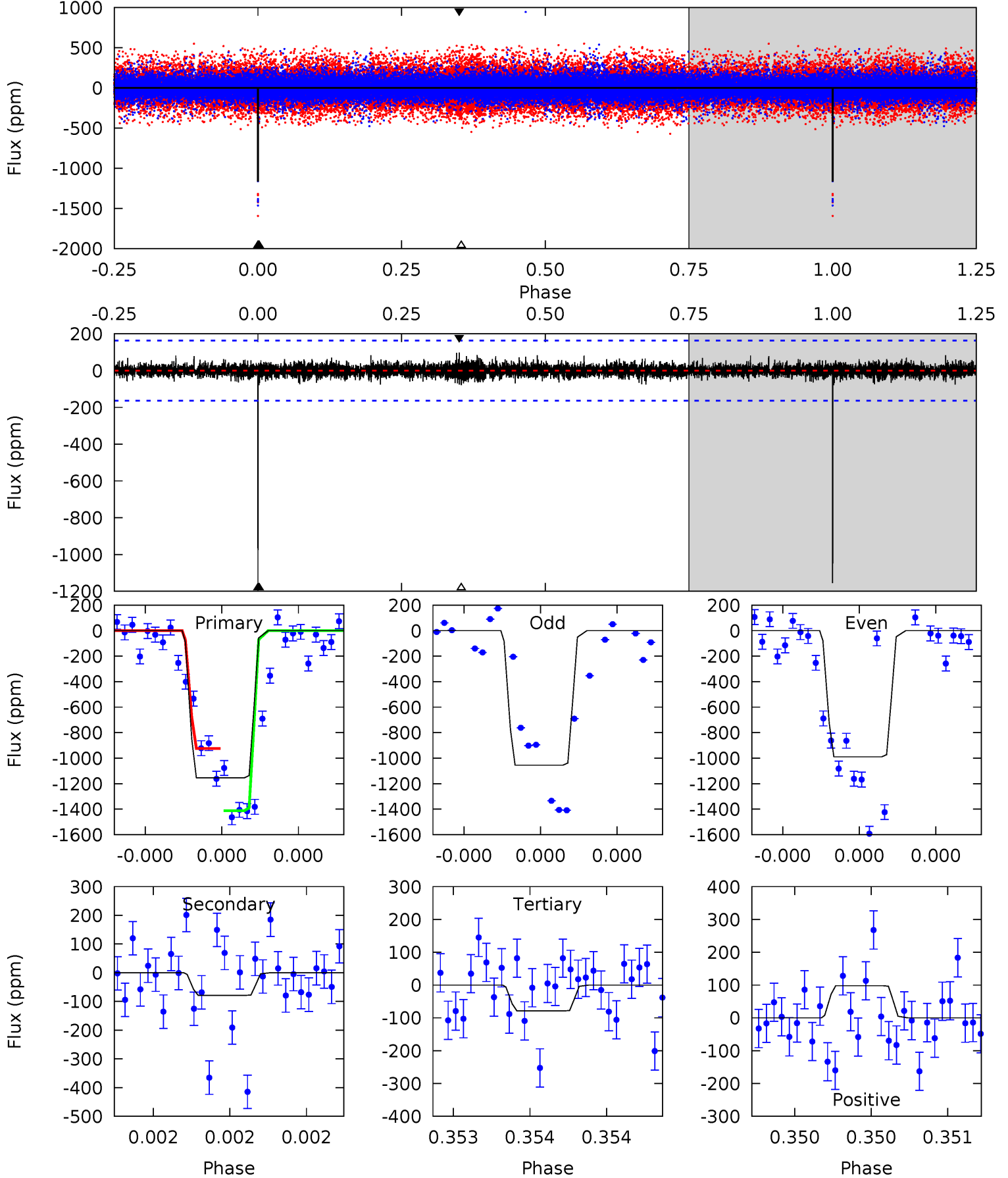
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.24	9.50	8.73	23.3	5.64	3.58	1.77	-0.48	-15.1	0.78	-13.8	0.00	1.00	0.71	1.94



# Alt Model-Shift Uniqueness Test

011807397-03, P = 472.825767 Days, E = 450.451745 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
39.8	2.71	2.71	3.37	5.64	3.58	0.61	37.1	36.4	0.00	-0.66	1.13	0.93	0.08	8.27



### Stellar Parameters For KIC 011807397

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5895^{+159}_{-159}$	$4.454^{+0.116}_{-0.159}$	$-0.660^{+0.300}_{-0.300}$	$0.874^{+0.204}_{-0.119}$	$0.792^{+0.095}_{-0.055}$	$1.673^{+0.947}_{-0.747}$
	+3%/-3%	+3%/-4%	+45%/-45%	+23%/-14%	+12%/-7%	+57%/-45%
Source	PHO1	KIC0	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 011807397-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-501 \pm 53$	$3.82^{+3.55}_{-2.59}$	$325^{+20}_{-17}$	$4621^{+3524}_{-988}$	$23359^{+206902}_{-17019}$
Alt.	$-79 \pm 29$	$4.04^{+3.49}_{-2.55}$	$324^{+19}_{-16}$	$3251^{+1392}_{-561}$	$3090^{+20989}_{-2317}$

$T_{\text{max}}$  = 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

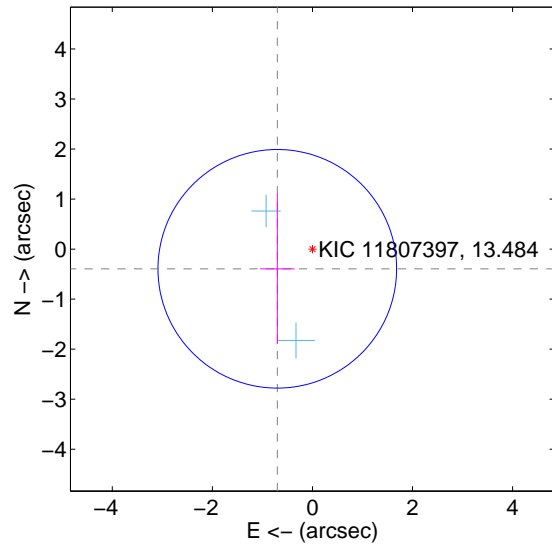
Supplemental centroid analysis for 011807397-03. Kepler magnitude: 13.48. Transit SNR 8.38

There are 2 quarters with good PRF difference image offsets

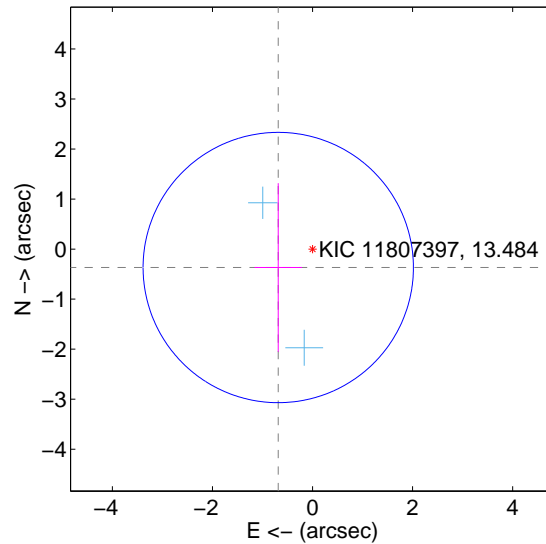
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.805 \pm 0.795$	1.01	$0.702 \pm 0.345$	$-0.394 \pm 1.504$
PRF-fit source offset from KIC position	$0.778 \pm 0.900$	0.86	$0.685 \pm 0.473$	$-0.368 \pm 1.684$
photometric centroid source offset	$1.08 \pm 0.98$	1.10	$0.10 \pm 0.89$	$1.08 \pm 0.98$

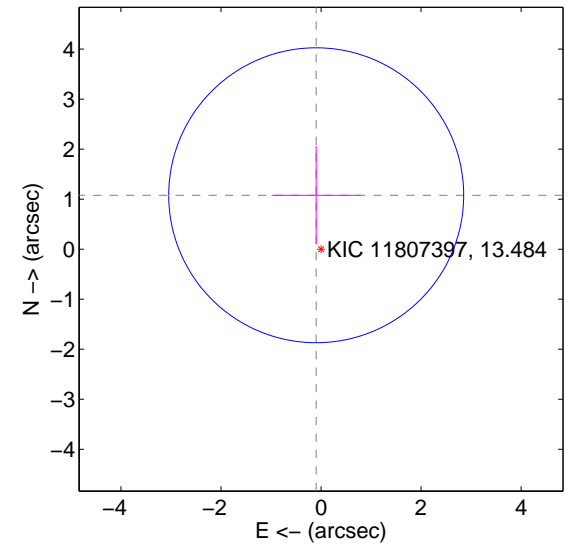
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

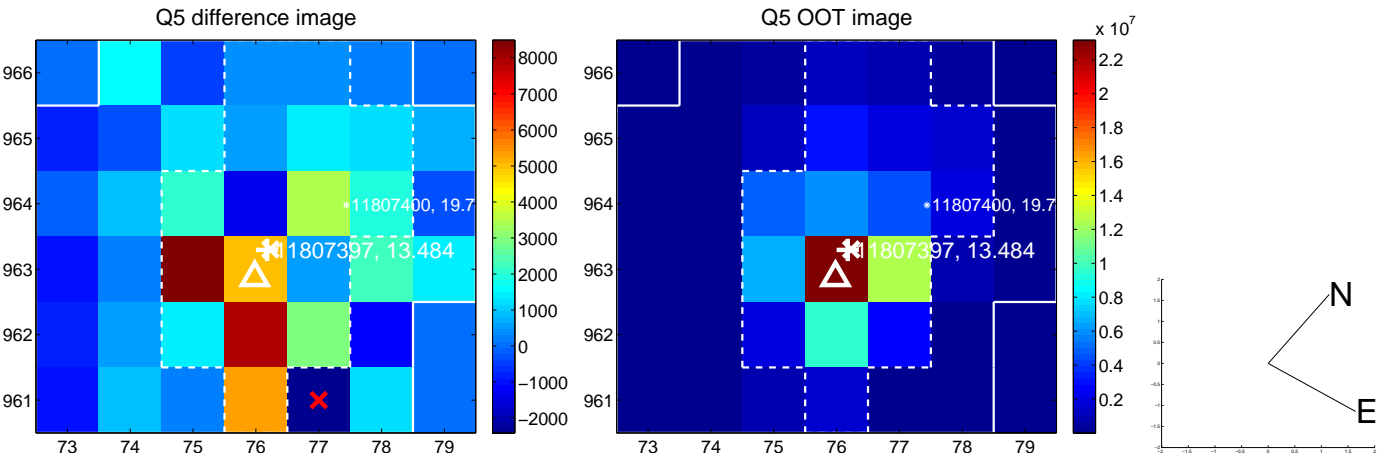


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

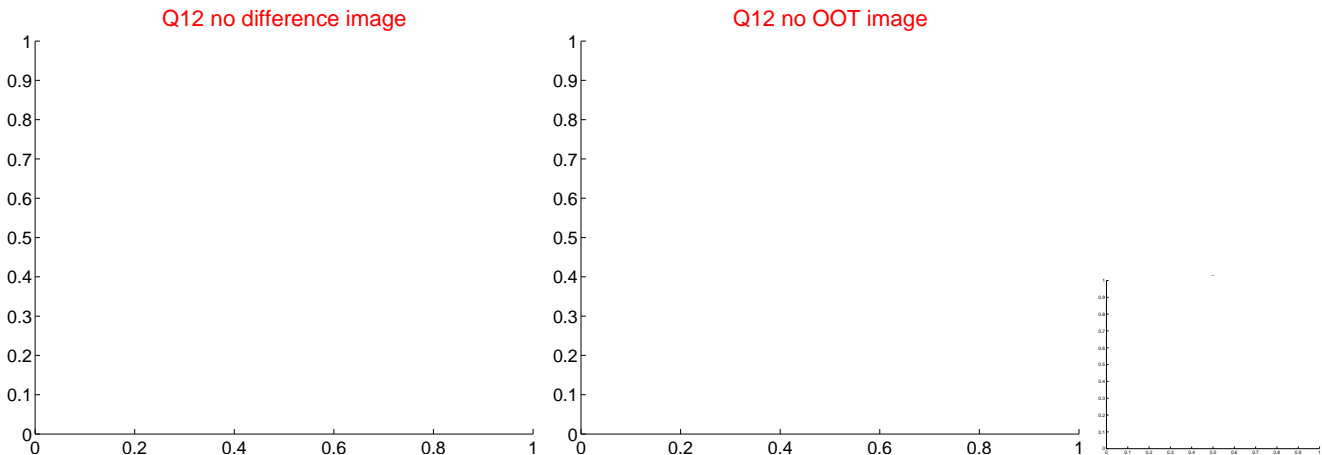
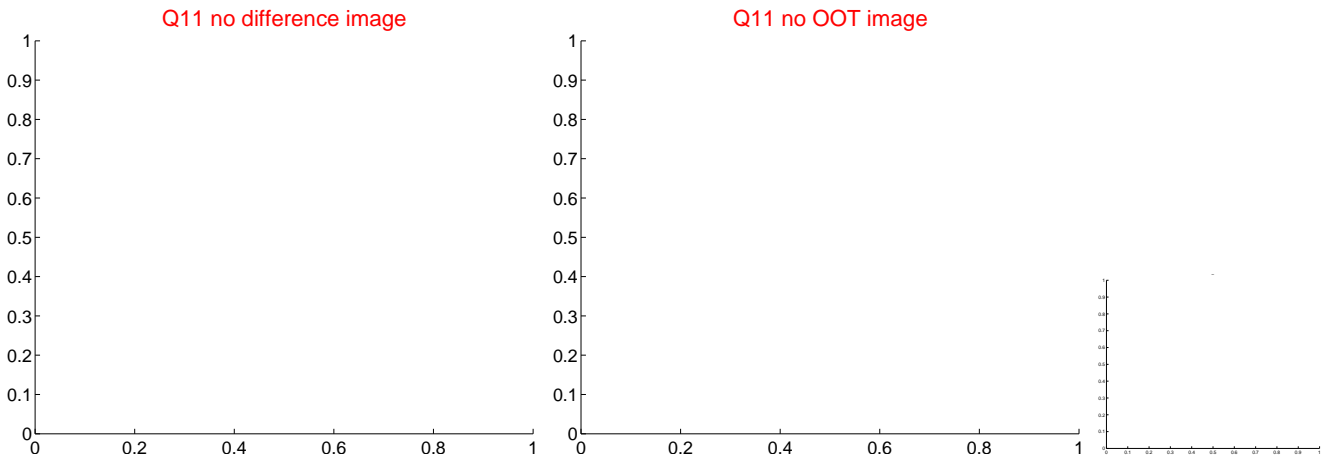
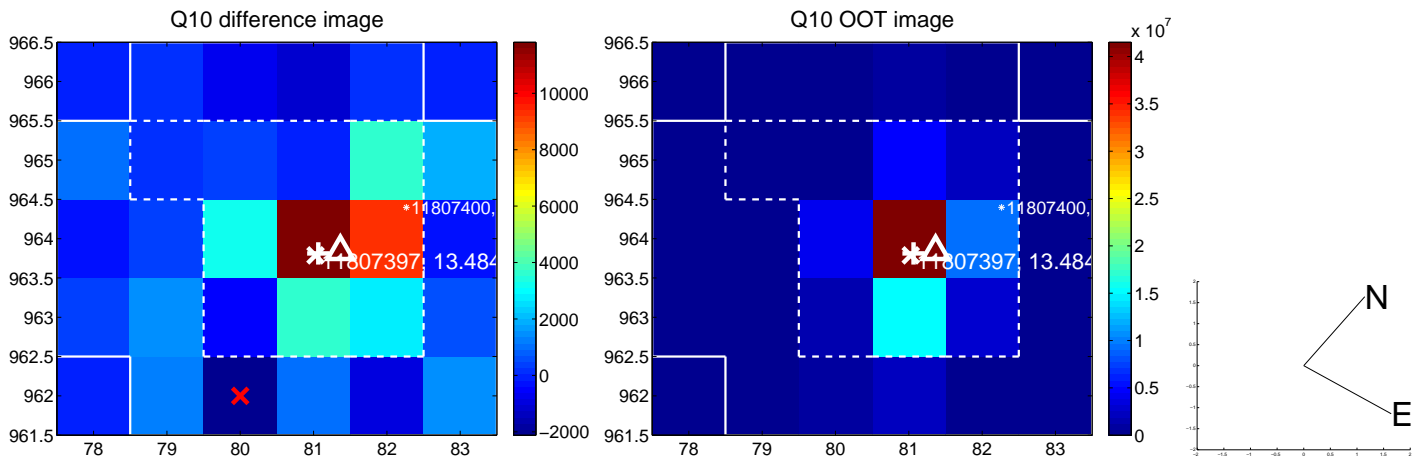
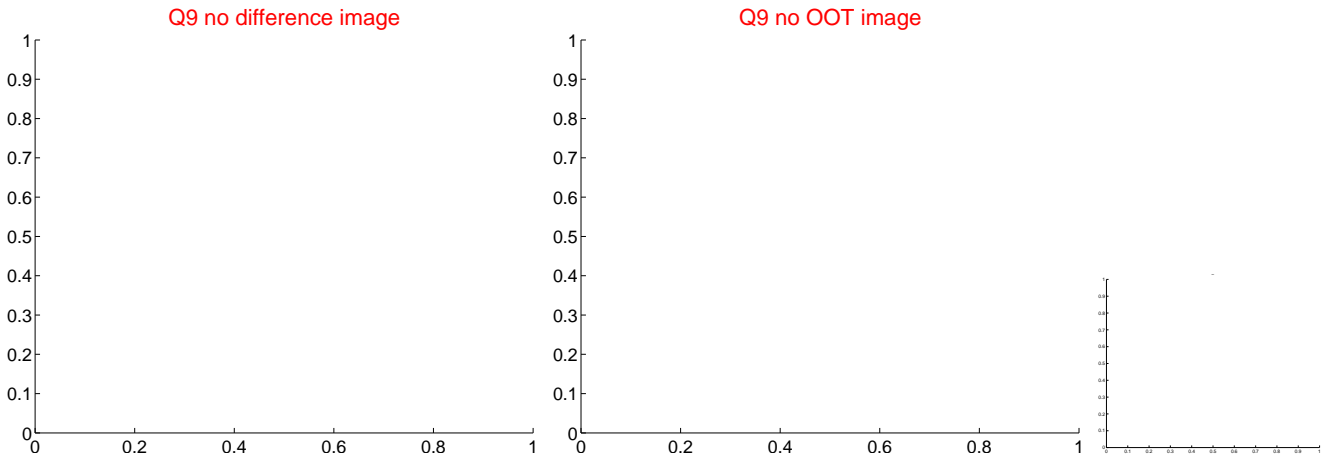


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





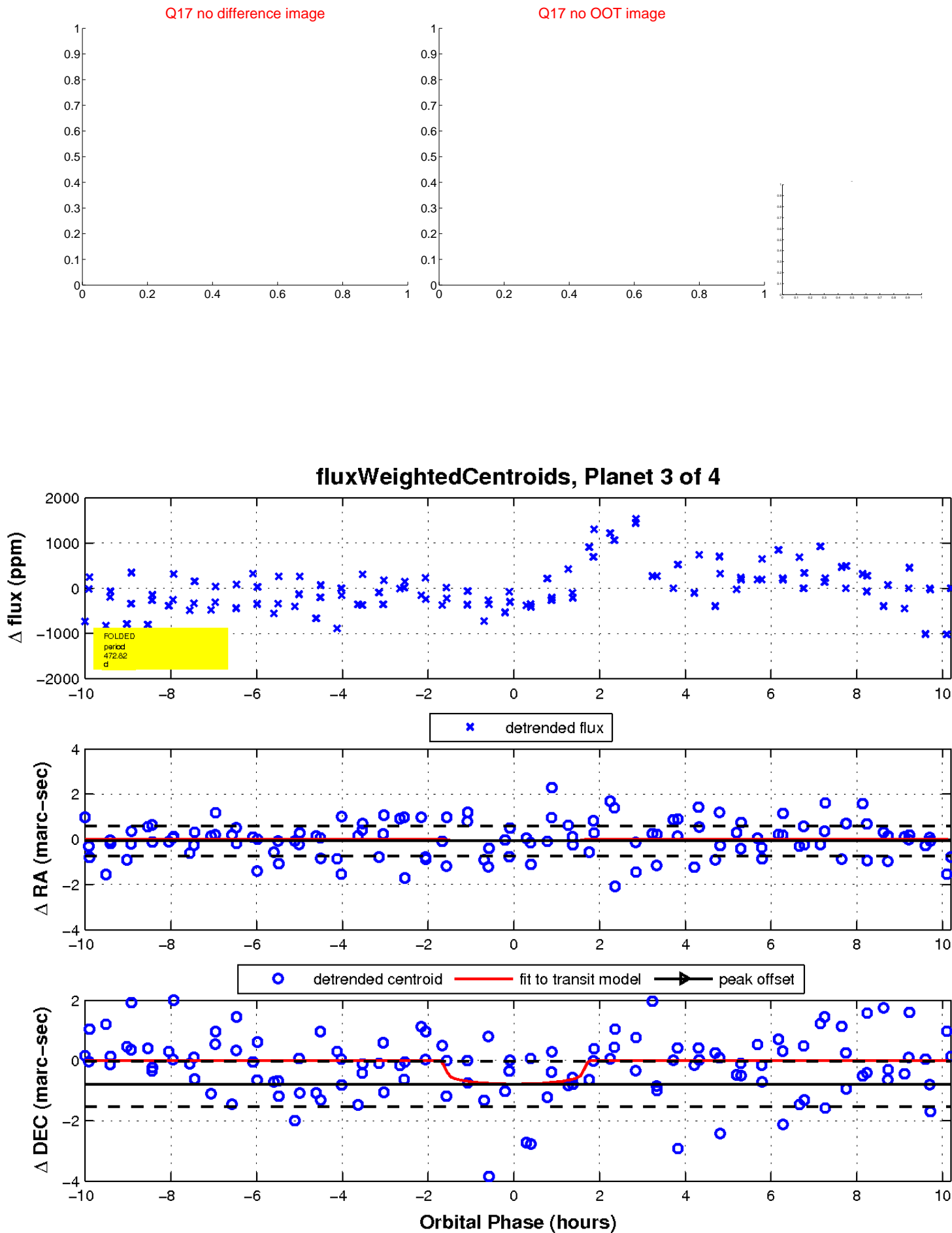
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

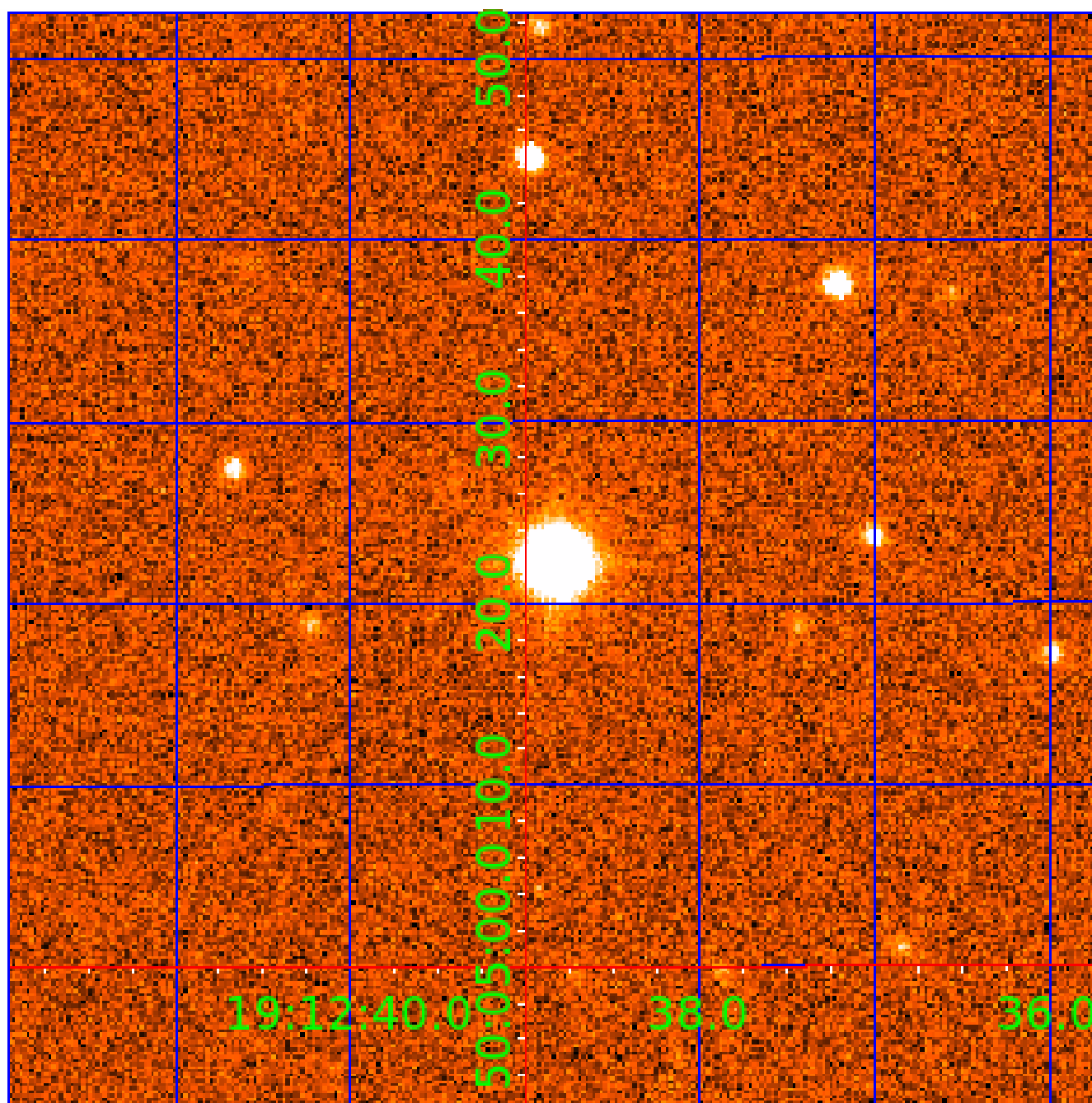


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011807397

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011807397-01	OBS	No	451.556642	294.557878	813.2	8.169	17.7	8.0	0.87	5895	2.58	0.73
011807397-02	OBS	No	462.681861	223.910196	708.1	3.796	14.7	7.7	0.87	5895	2.39	0.70
011807397-03	OBS	No	472.816279	450.463587	724.7	3.402	10.4	8.4	0.87	5895	2.46	0.68
011807397-04	OBS	No	277.074865	326.993909	1079.9	7.061	10.5	9.8	0.87	5895	5.45	1.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011807397-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011807397-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011807397-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

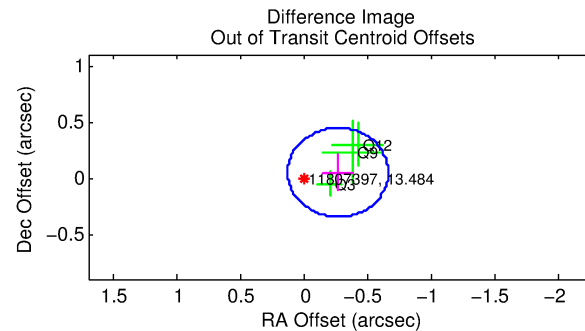
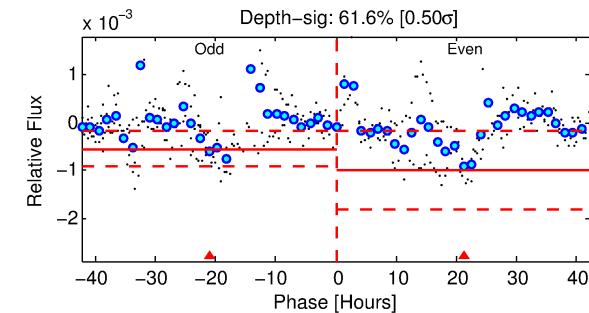
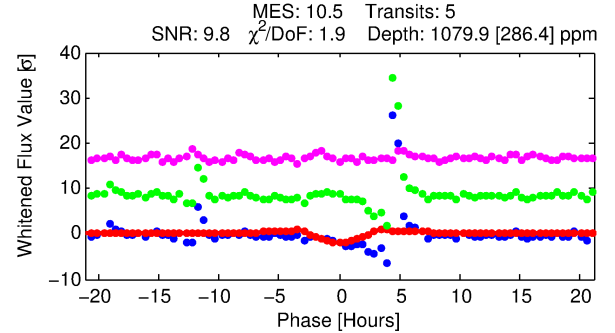
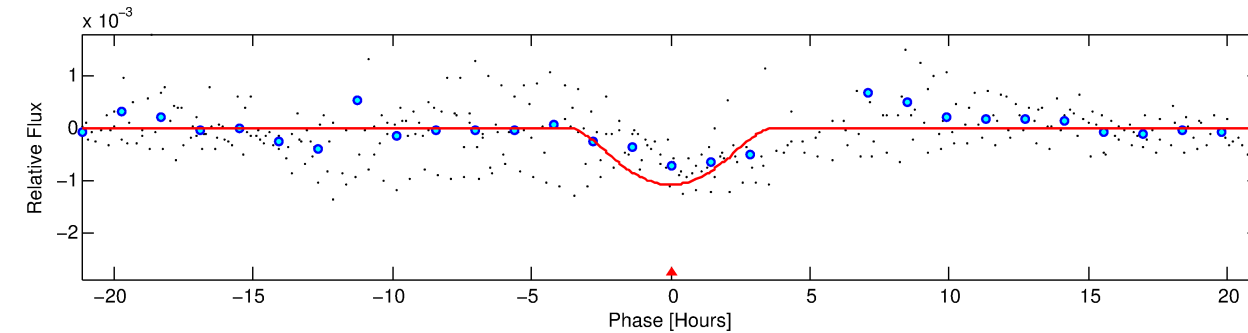
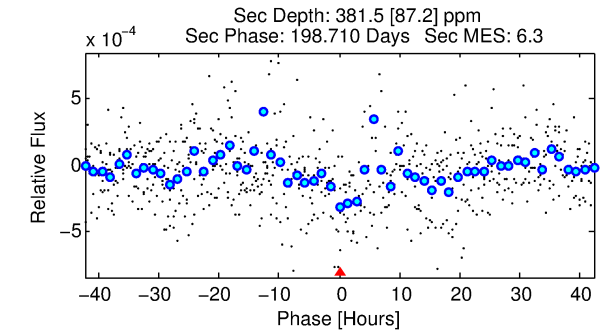
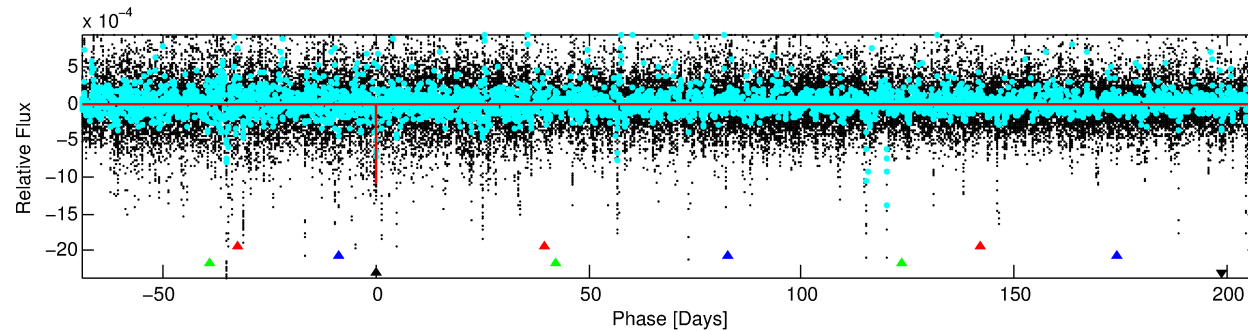
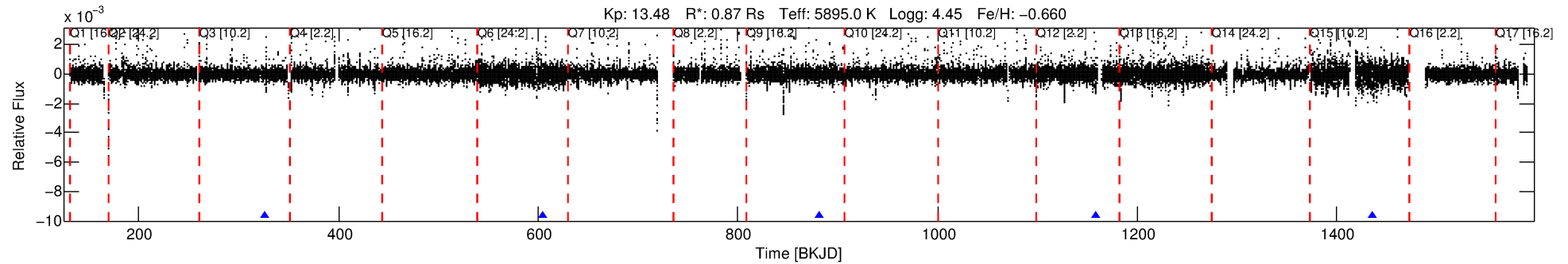
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011807397-04

No Significant Match Found

# DV One-Page Summary

KIC: 11807397 Candidate: 4 of 4 Period: 277.075 d



## DV Fit Results:

Period = 277.07486 [0.01083] d  
Epoch = 326.9939 [0.0186] BKJD  
Rp/R\* = 0.0572 [0.2428]  
a/R\* = 103.13 [103.51]  
b = 1.00 [0.34]  
Seff = 1.39 [0.43]  
Teq = 277 [21] K  
Rp = 5.45 [23.20] Re  
a = 0.7699 [0.1523] AU  
Ag = 4185.45 [35595.12] [0.12 $\sigma$ ]  
Teffp = 3446 [7323] K [0.43 $\sigma$ ]

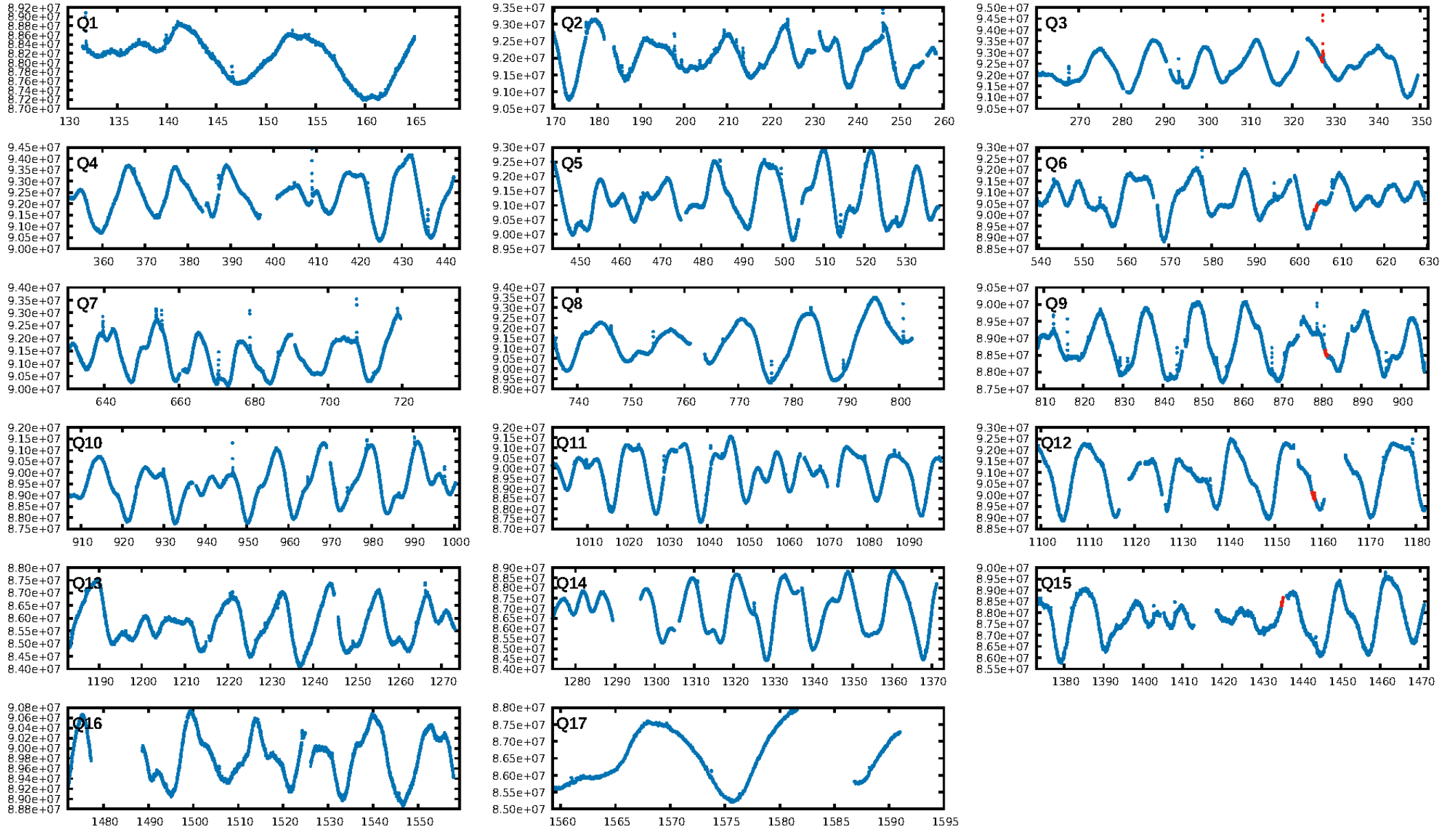
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [387.80 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 36.6%  
Bootstrap-pfa: 1.45e-08  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -1.147  
Centroid-sig: 95.4%  
Centroid-so: 0.089 arcsec [0.22 $\sigma$ ]  
OotOffset-rm: 0.267 arcsec [2.02 $\sigma$ ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.392 arcsec [3.10 $\sigma$ ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [4/4]

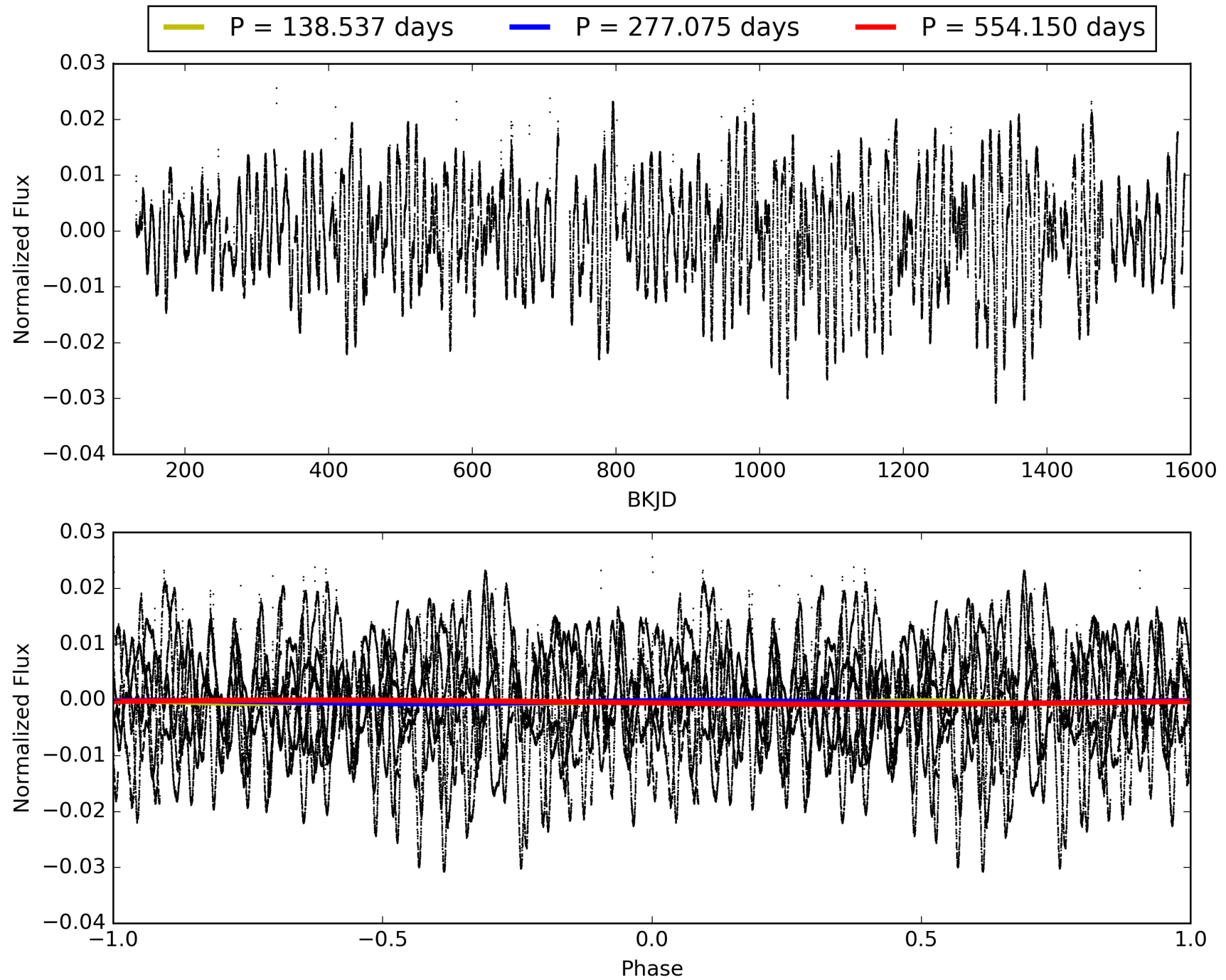
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:48:02 Z

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

# TCE 011807397-04, PDC Light Curves



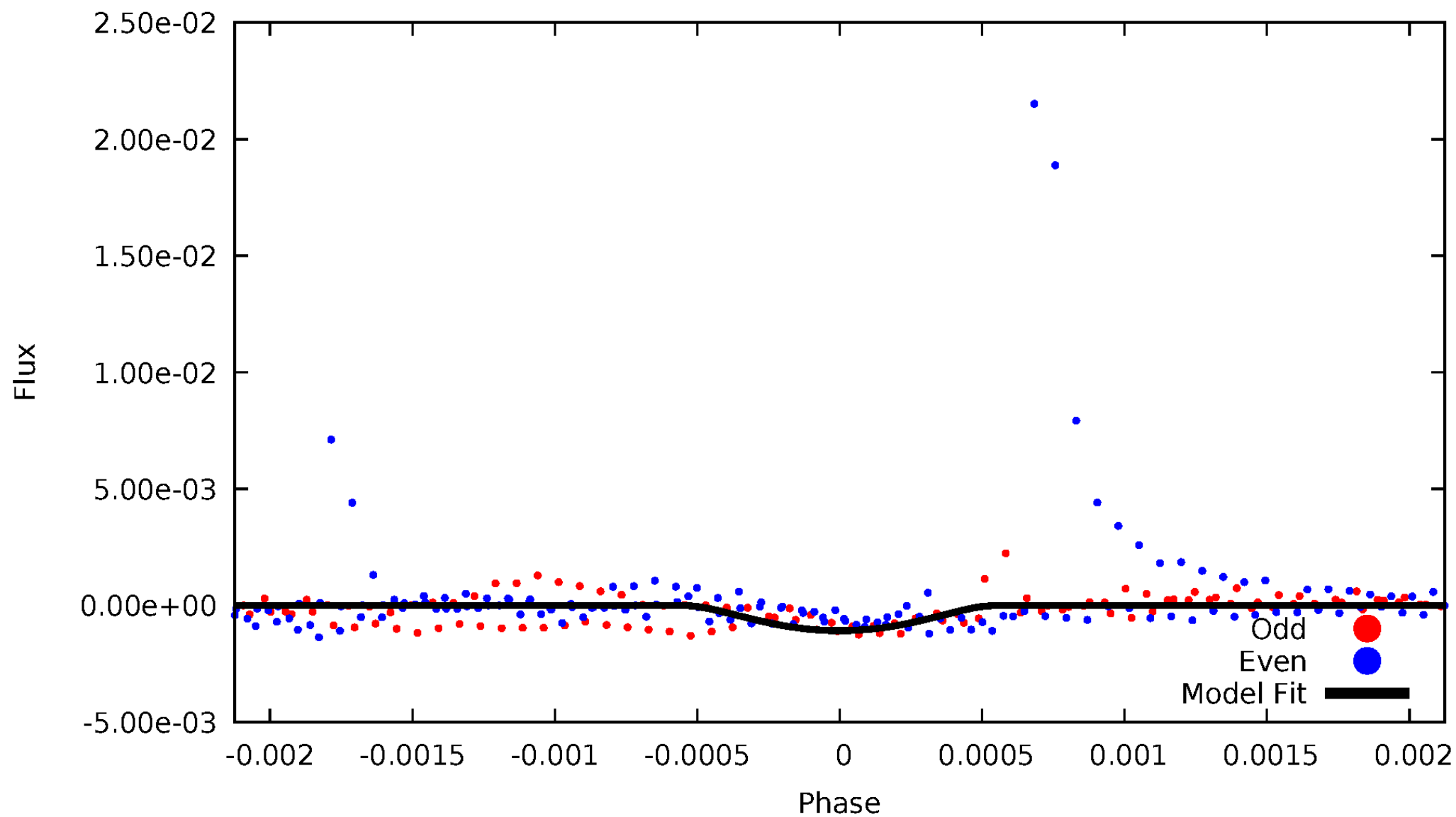
TCE 011807397-04





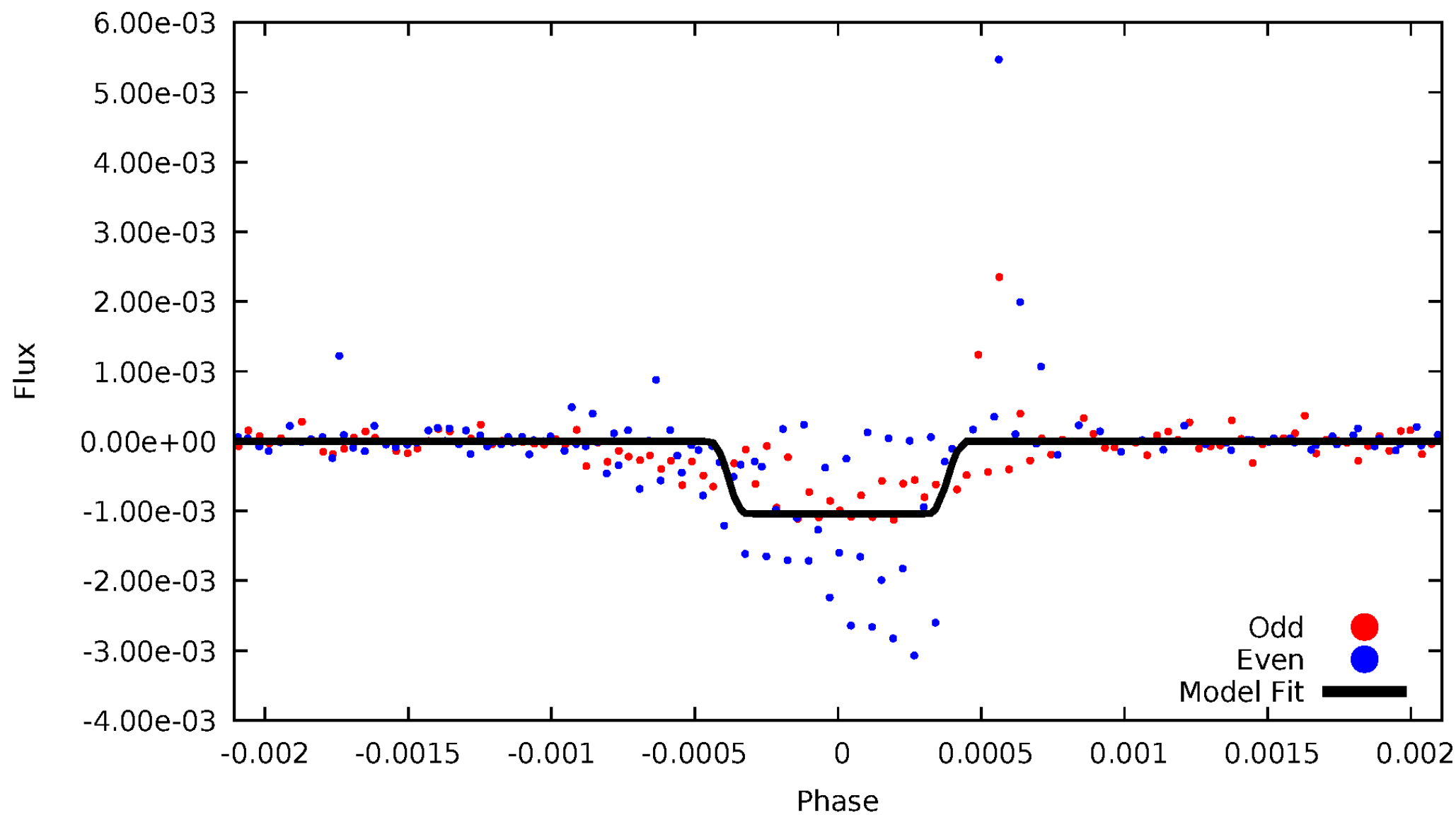
# DV Odd/Even

TCE 011807397-04



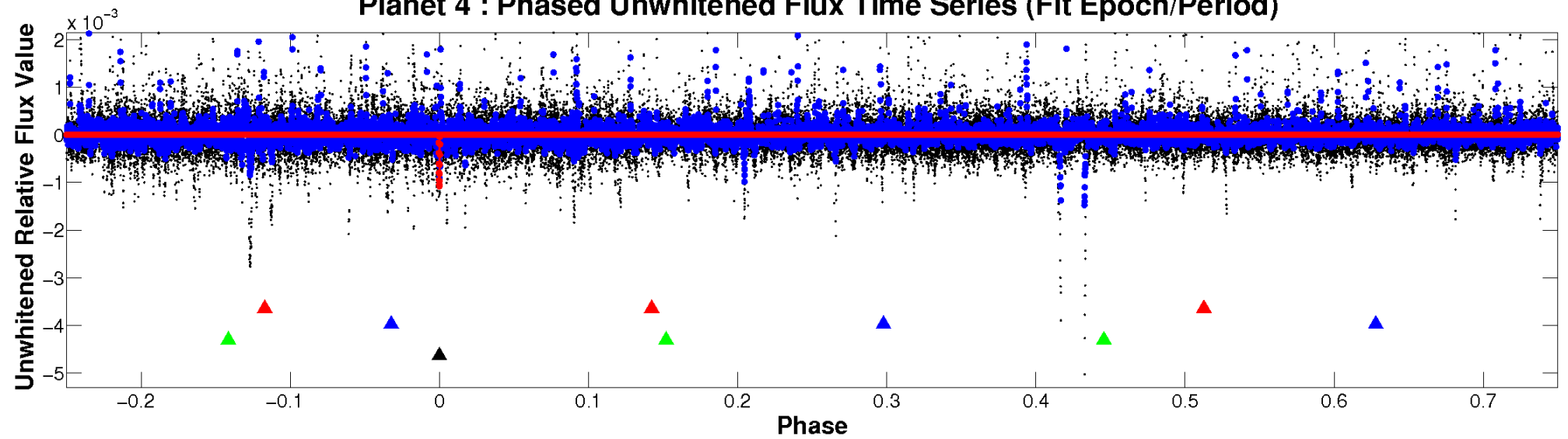
# ALT Odd/Even

TCE 011807397-04

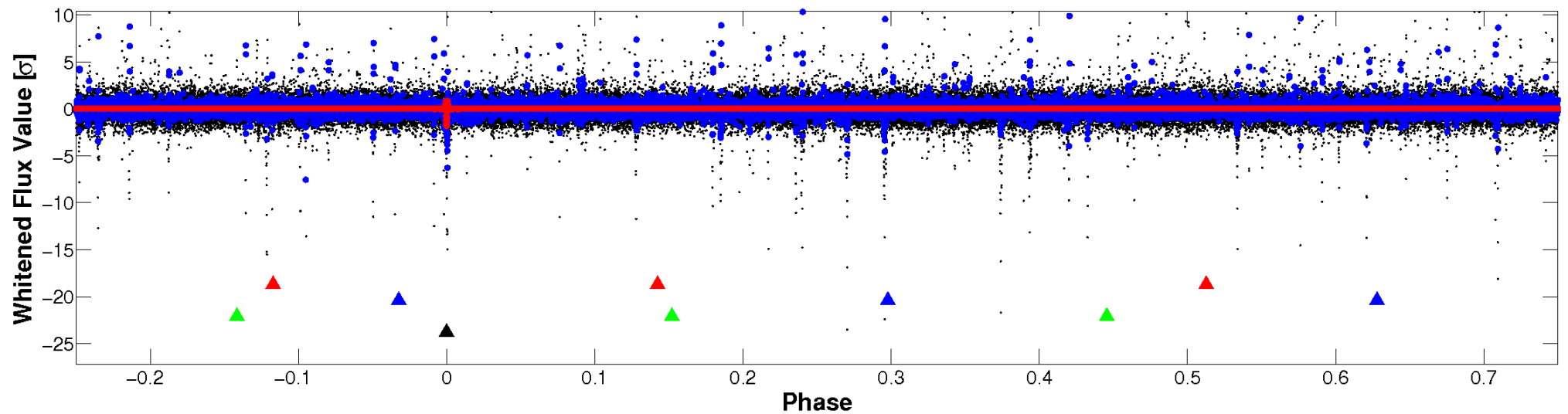


# Non-Whitened Vs. Whitened Light Curve

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

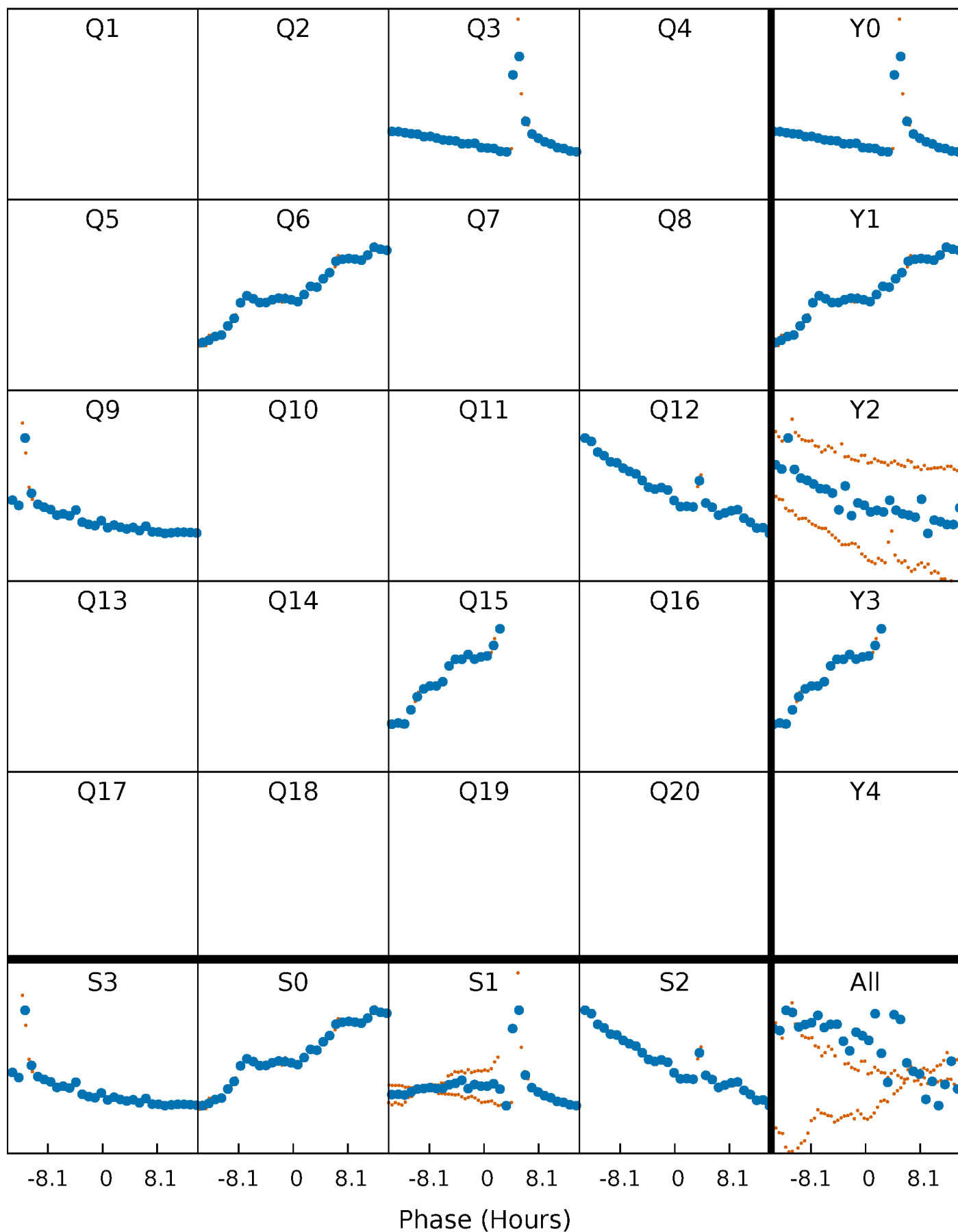


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



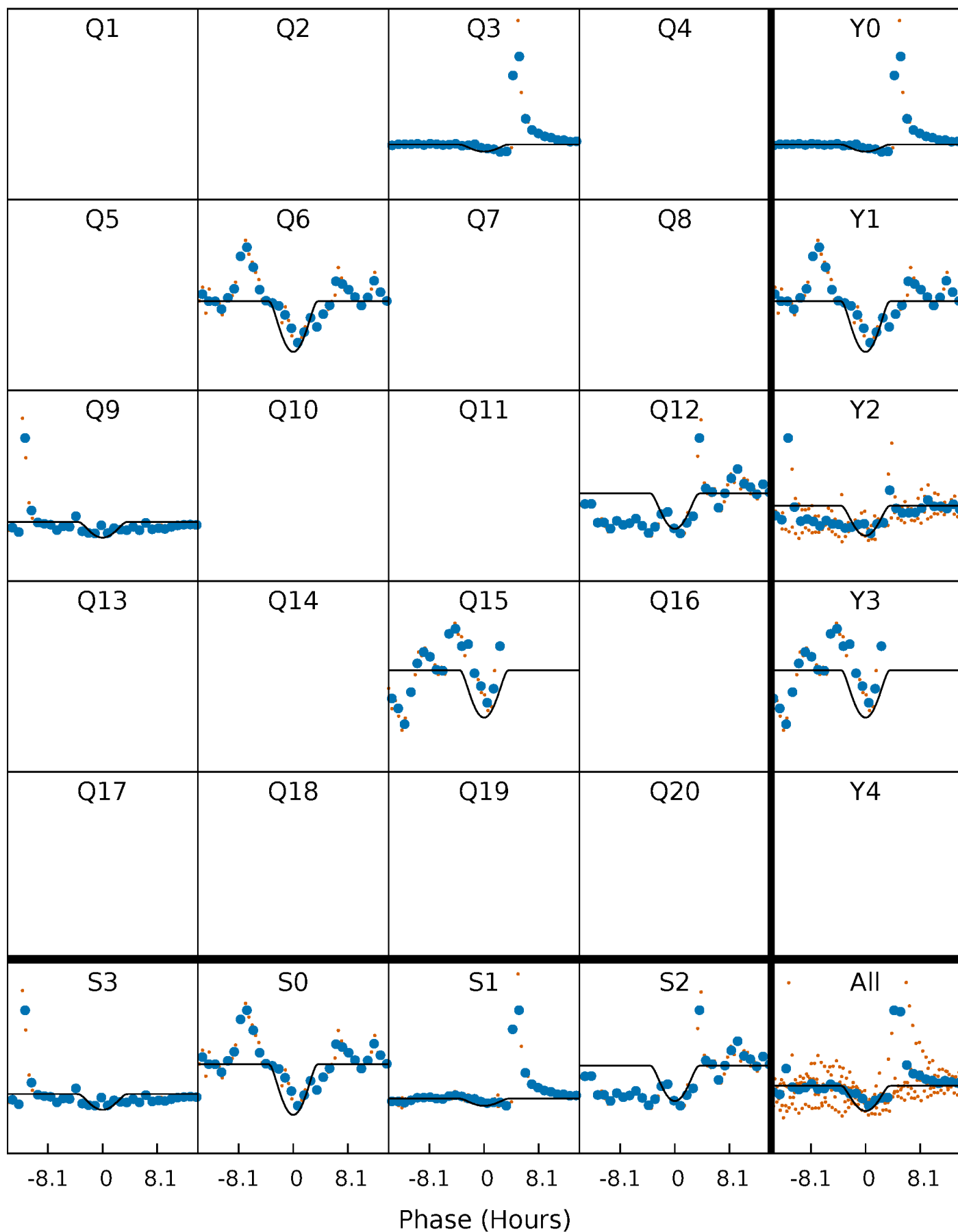
# PDC Quarter-Phased Transit Curves

TCE 011807397-04 P=277.074865 Days  $T_0=326.993909$  (BKJD)



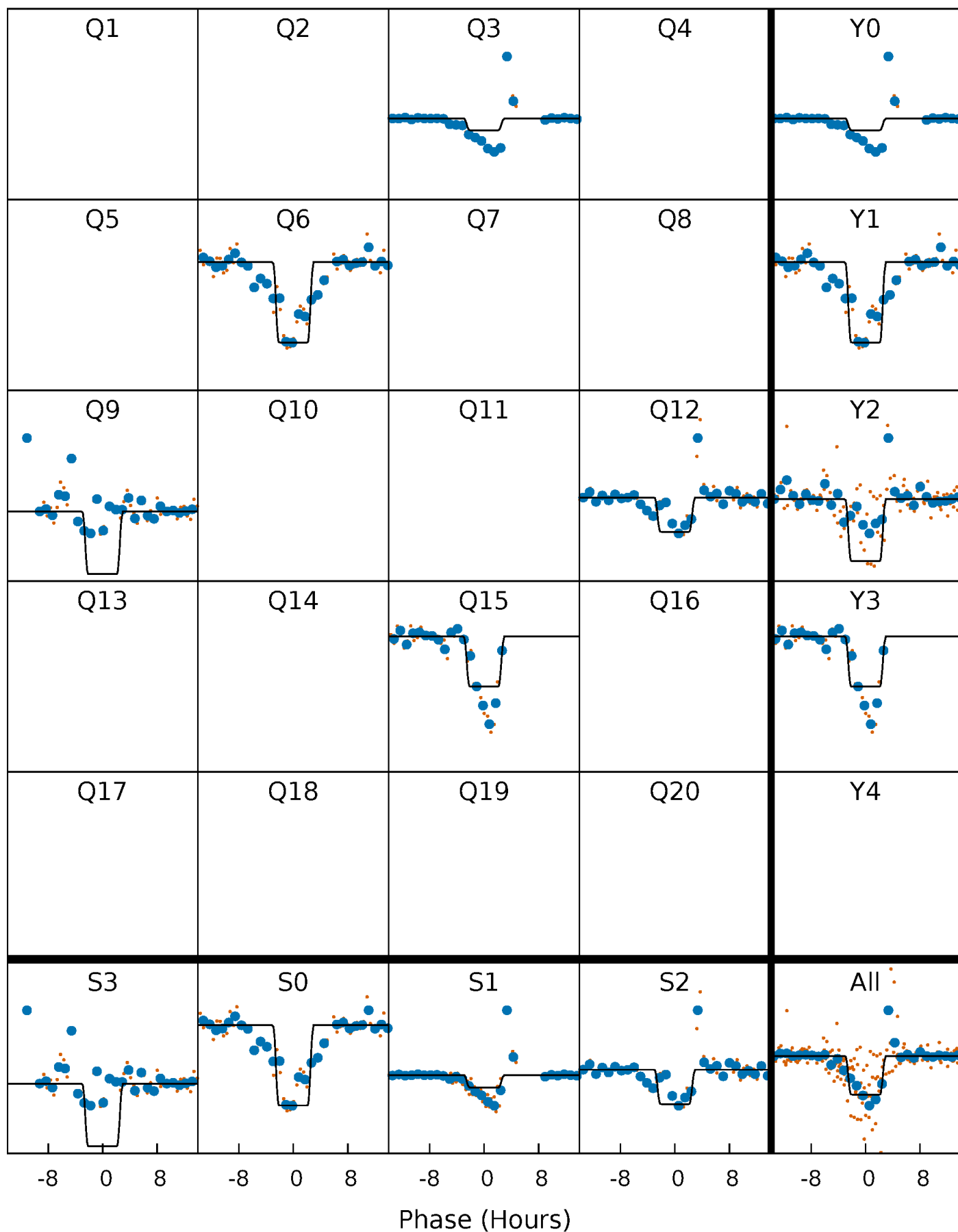
# DV Quarter-Phased Transit Curves

TCE 011807397-04     $P=277.074865$  Days     $T_0=326.993909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

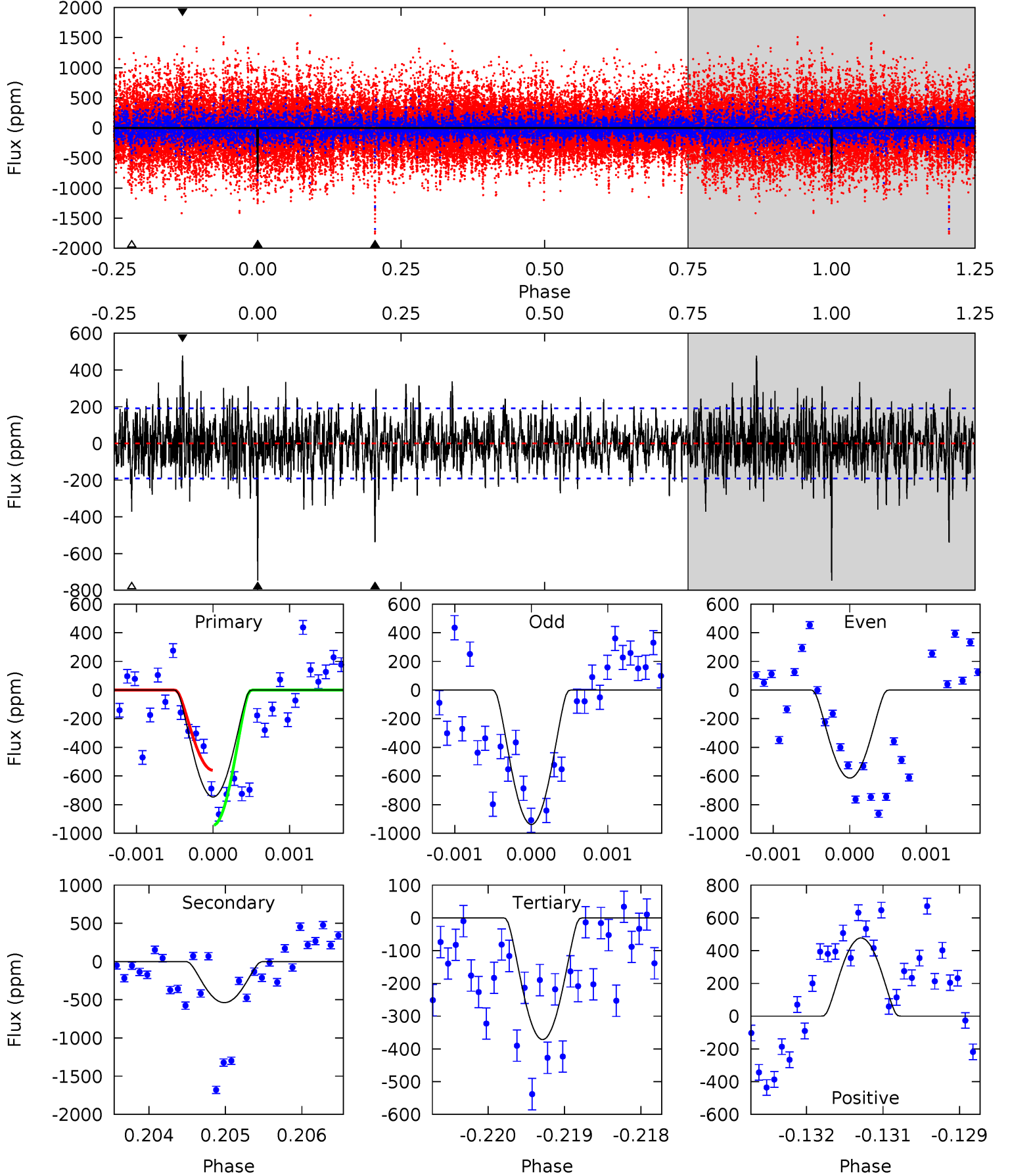
TCE 011807397-04     $P=277.051829$  Days     $T_0=327.068619$  (BKJD)



# DV Model-Shift Uniqueness Test

011807397-04,  $P = 277.074865$  Days,  $E = 49.919044$  Days

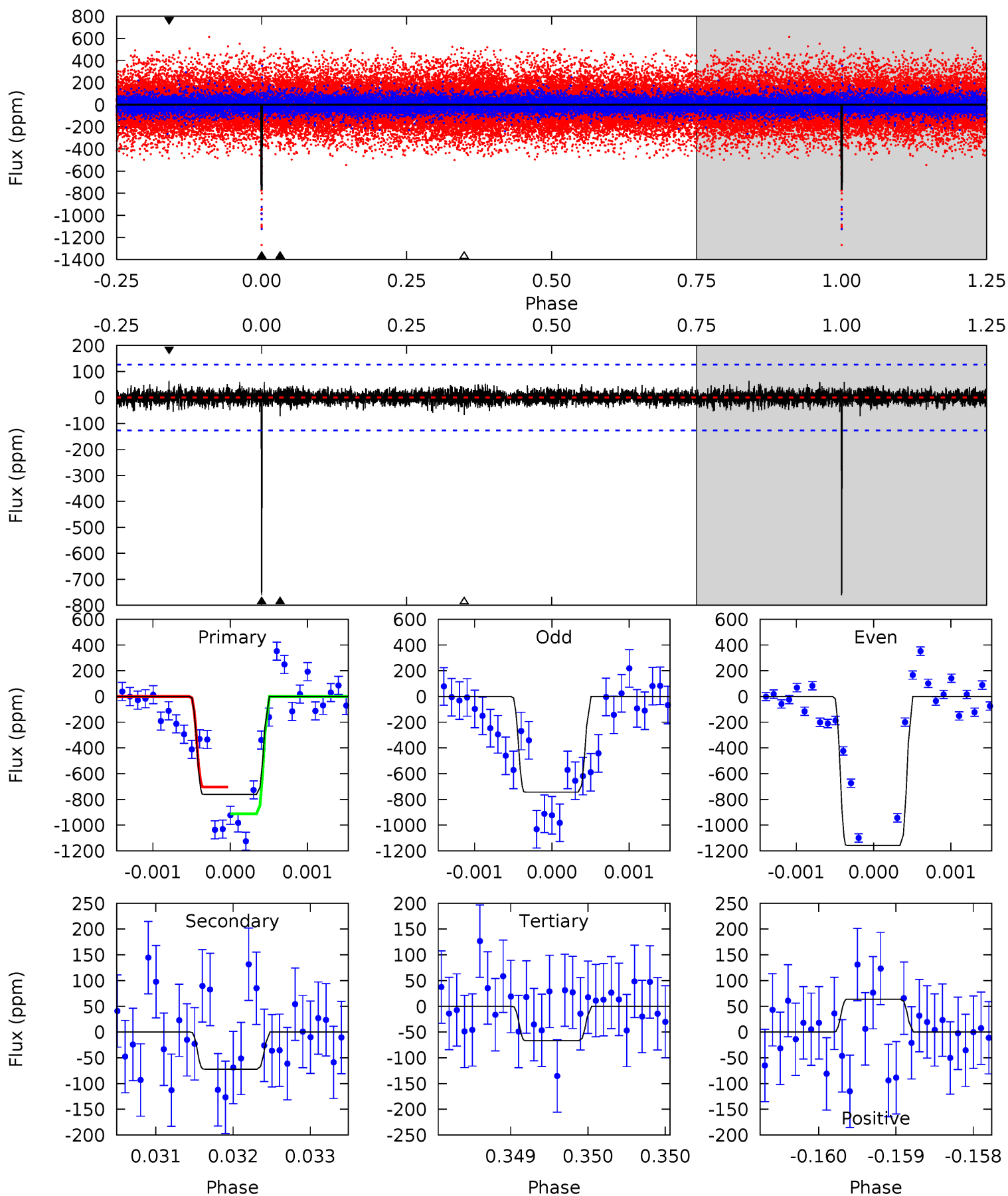
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	15.3	10.6	13.6	5.43	3.26	2.81	10.7	7.66	4.73	1.73	4.21	1.05	0.39	5.49



# Alt Model-Shift Uniqueness Test

011807397-04, P = 277.051829 Days, E = 50.016790 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
33.0	3.12	2.89	2.76	5.47	3.32	0.61	30.1	30.2	0.22	0.35	9.43	1.25	0.08	4.52





### Stellar Parameters For KIC 011807397

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5895^{+159}_{-159}$	$4.454^{+0.116}_{-0.159}$	$-0.660^{+0.300}_{-0.300}$	$0.874^{+0.204}_{-0.119}$	$0.792^{+0.095}_{-0.055}$	$1.673^{+0.947}_{-0.747}$
	+3%/-3%	+3%/-4%	+45%/-45%	+23%/-14%	+12%/-7%	+57%/-45%
Source	PHO1	KIC0	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 011807397-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-538 \pm 35$	$17.02^{+17.90}_{-12.35}$	$390^{+24}_{-22}$	$2860^{+1391}_{-478}$	$608^{+7547}_{-465}$
Alt.	$-72 \pm 23$	$17.04^{+17.38}_{-11.96}$	$389^{+24}_{-19}$	$2217^{+817}_{-313}$	$78^{+852}_{-60}$

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

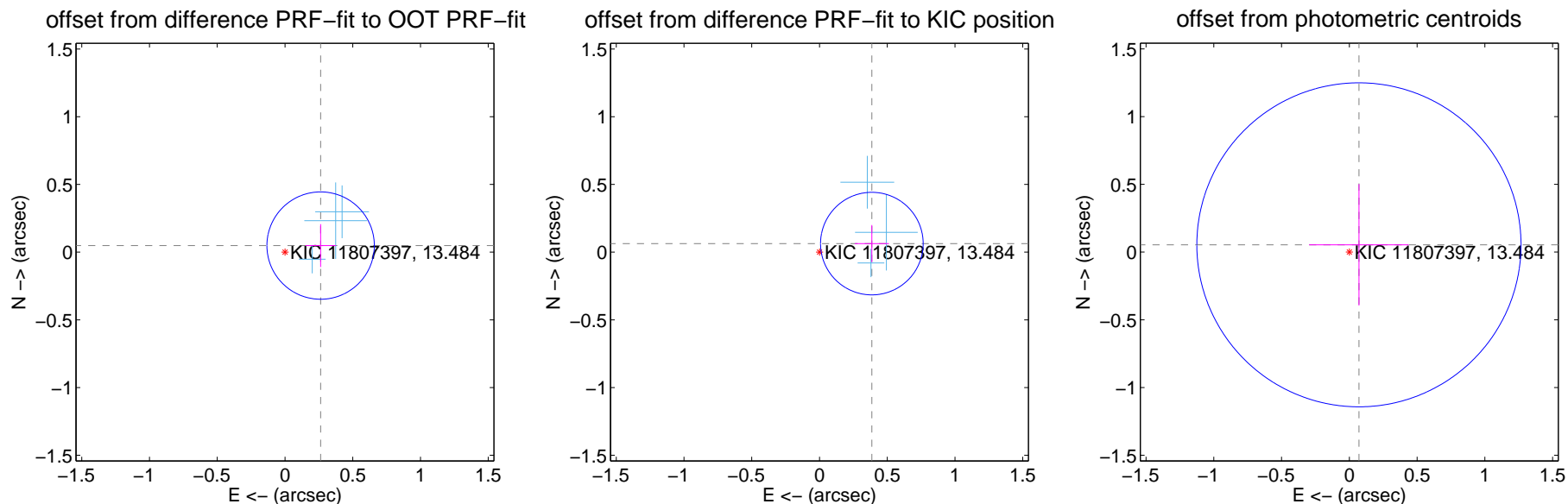
## DV Centroid Data

Supplemental centroid analysis for 011807397-04. Kepler magnitude: 13.48. Transit SNR 9.80

There are 3 quarters with good PRF difference image offsets

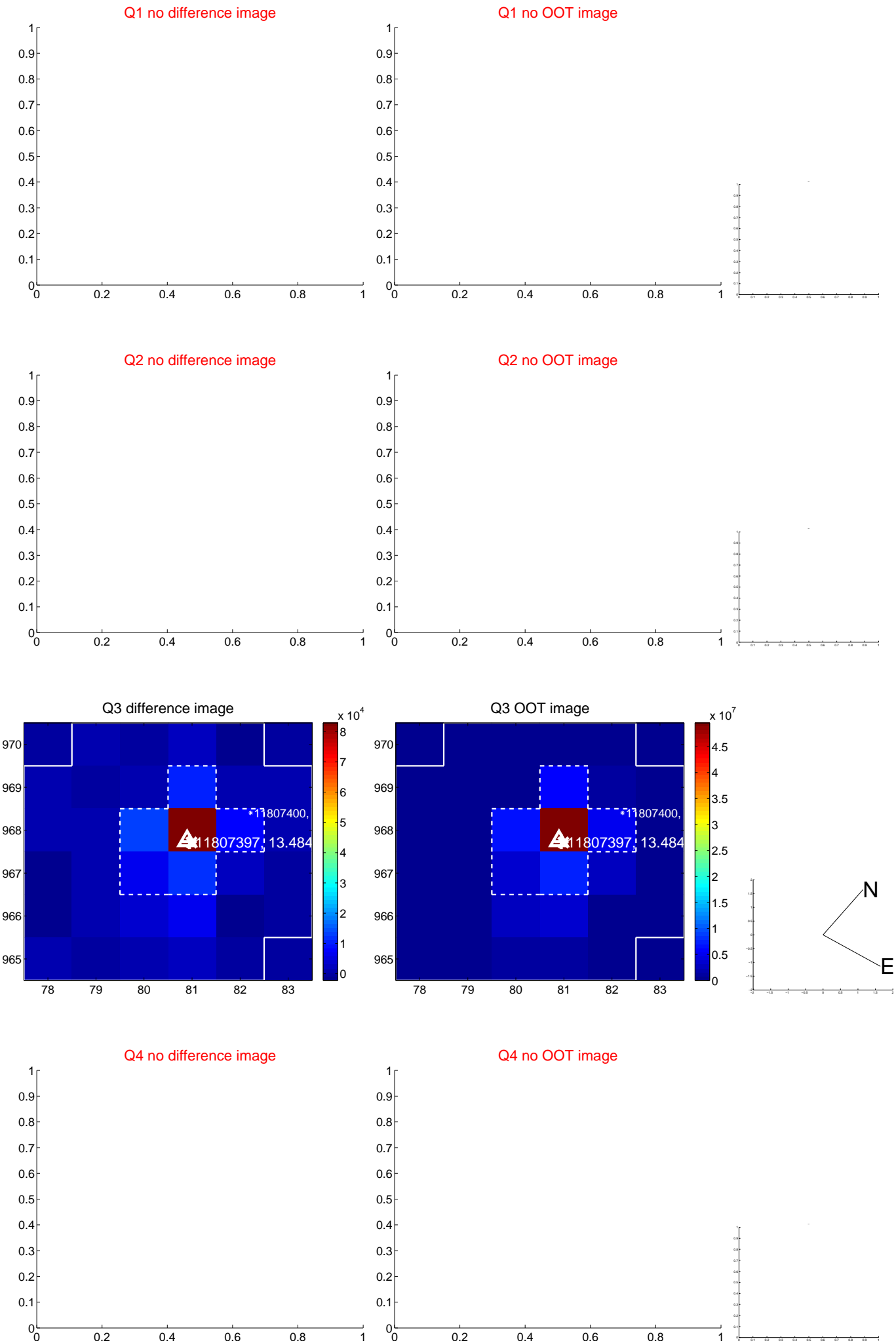
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.267 \pm 0.132$	2.02	$-0.263 \pm 0.112$	$0.049 \pm 0.158$
PRF-fit source offset from KIC position	$0.392 \pm 0.126$	3.10	$-0.386 \pm 0.126$	$0.063 \pm 0.137$
photometric centroid source offset	$0.09 \pm 0.40$	0.22	$-0.07 \pm 0.37$	$0.05 \pm 0.45$

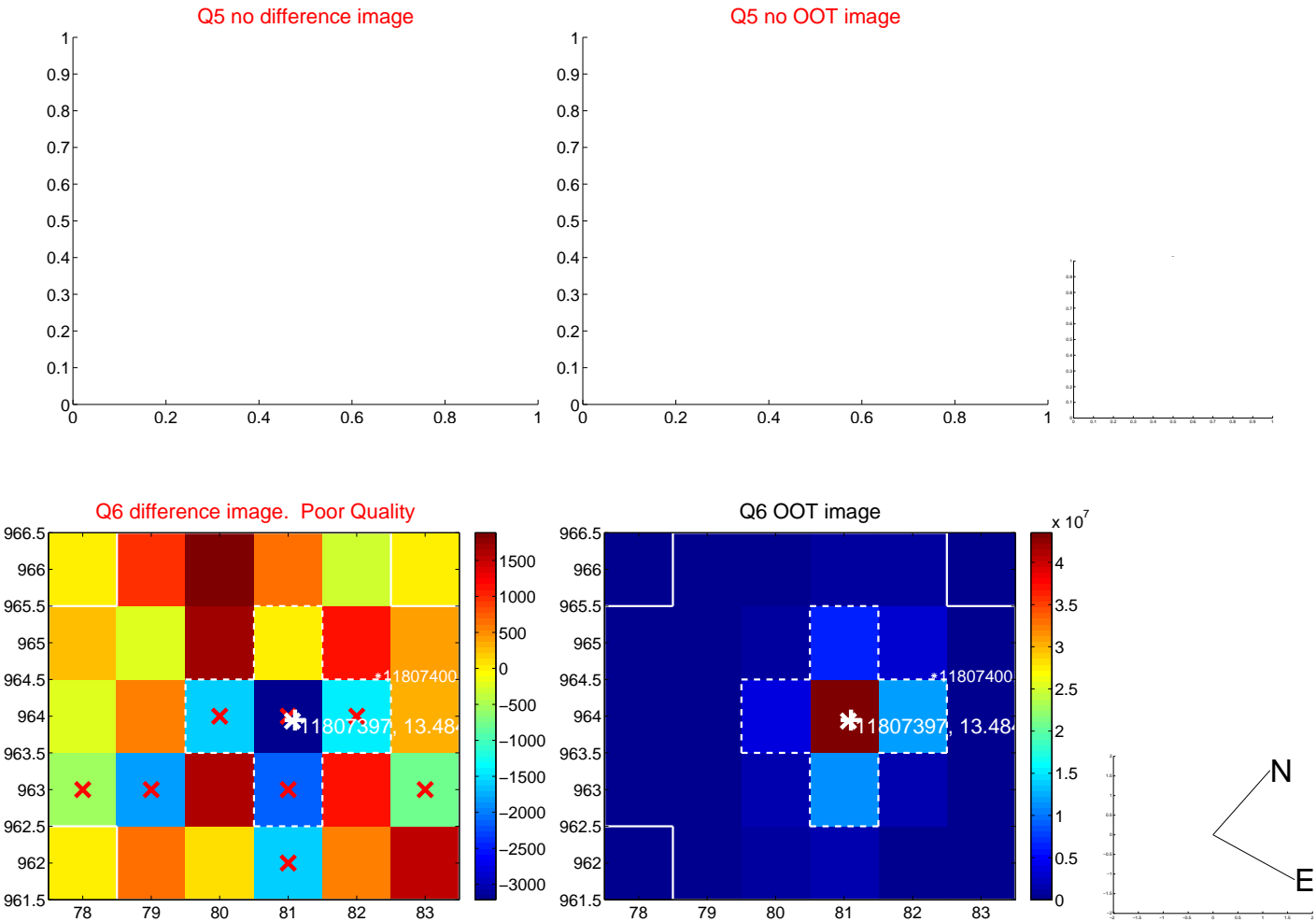


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

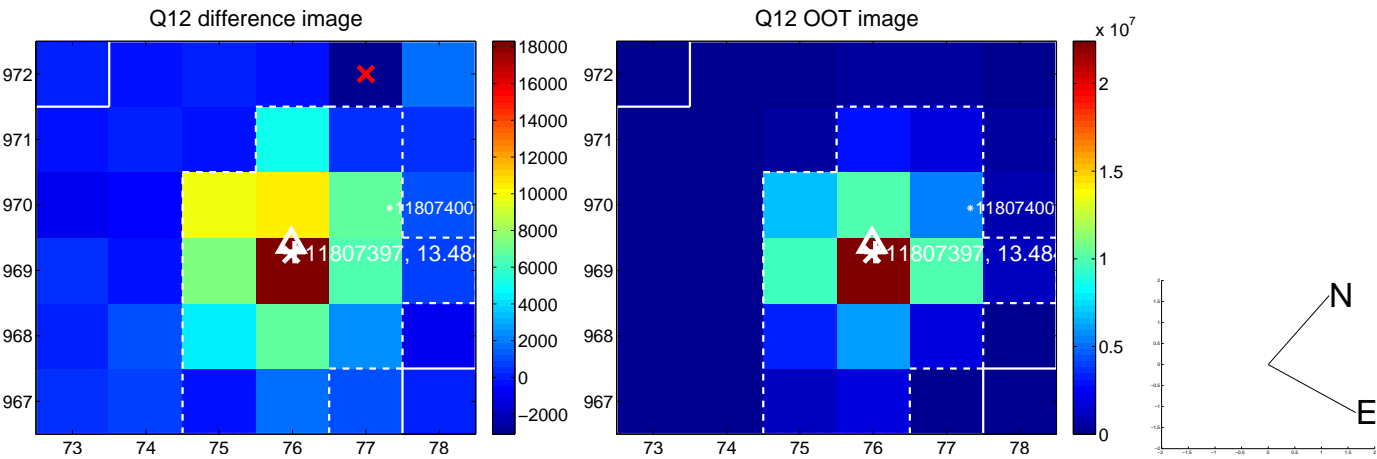
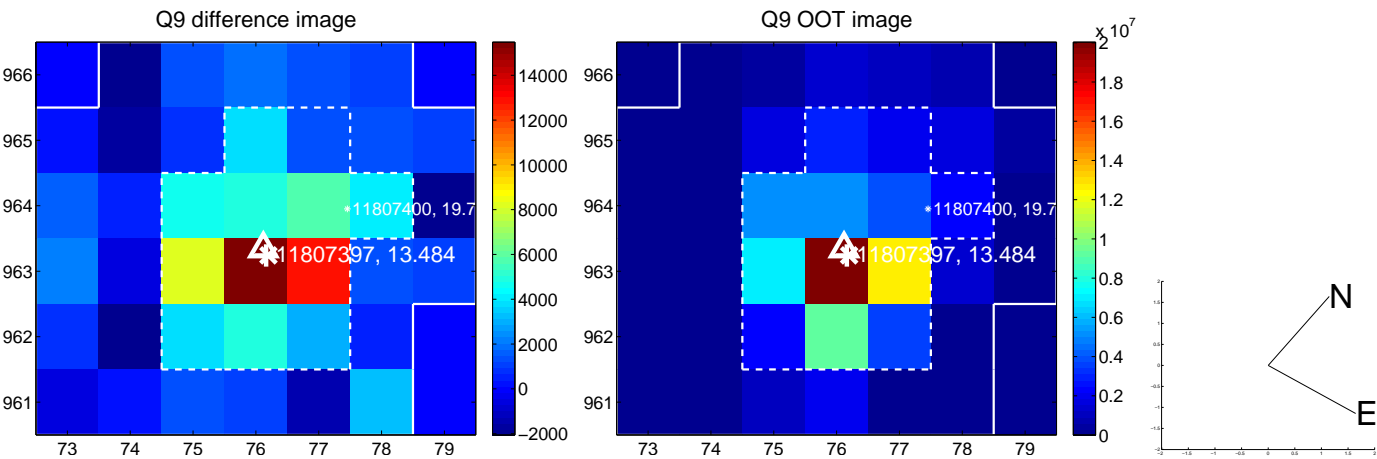
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



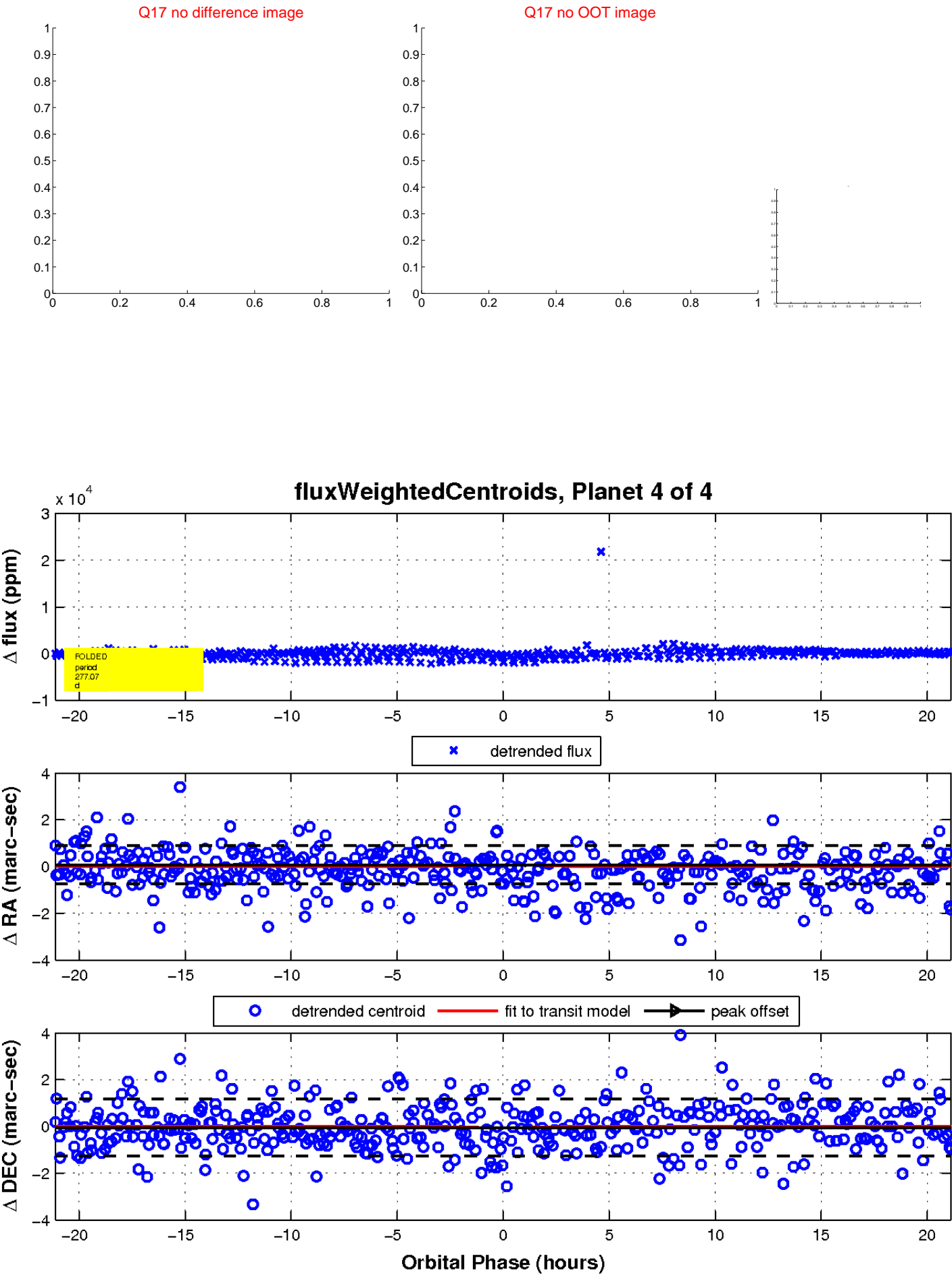
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

