

# KIC 005393802

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005393802-01	OBS	No	466.302021	461.727999	590.2	3.489	16.3	6.4	1.02	6101	2.58	0.92
005393802-02	OBS	No	476.252155	380.105784	702.7	2.333	11.6	8.3	1.02	6101	2.87	0.89
005393802-03	OBS	No	473.168495	307.290561	750.0	10.483	12.0	2.9	1.02	6101	3.56	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005393802-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005393802-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005393802-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV

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

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

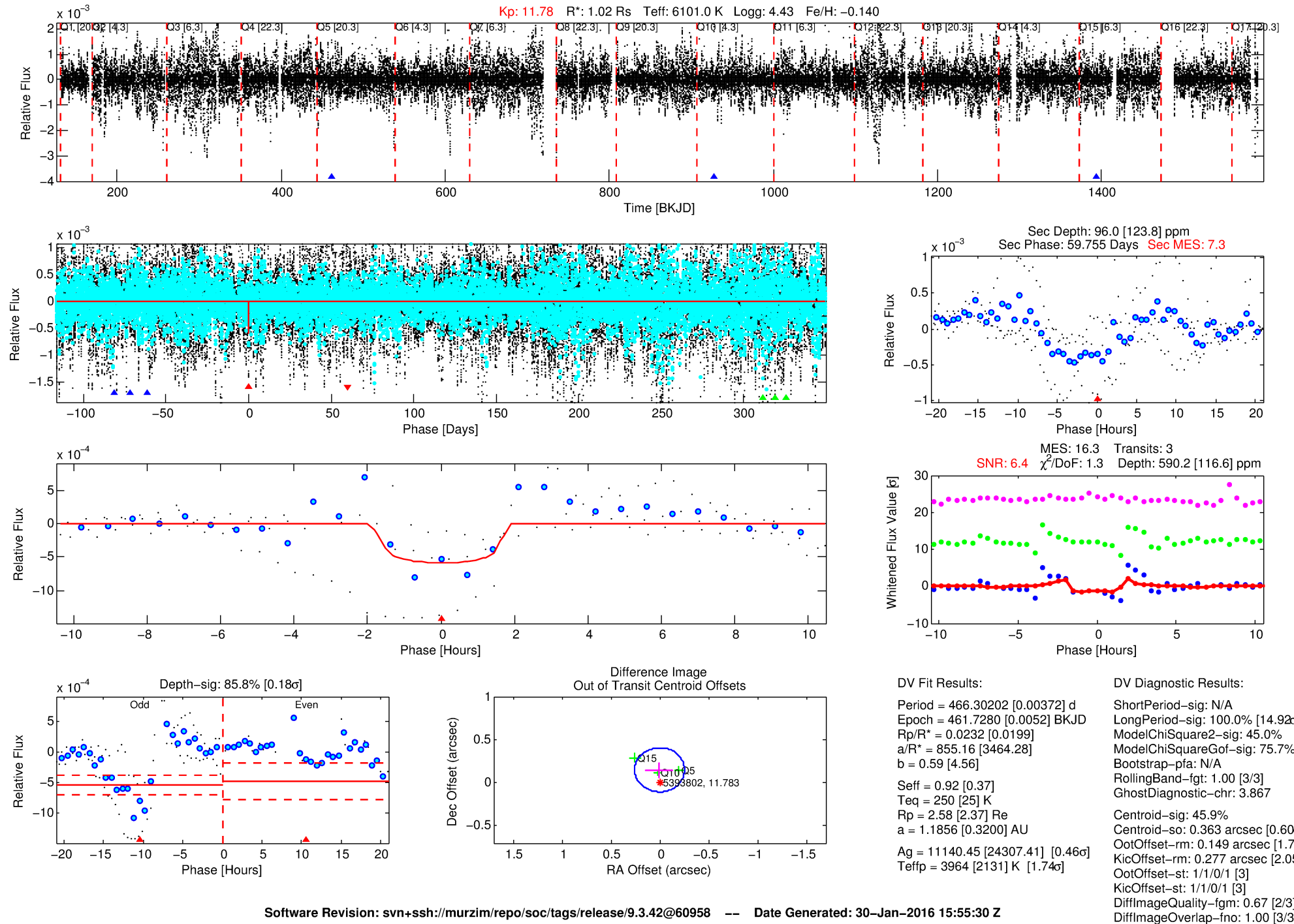
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005393802-01

No Significant Match Found

# DV One-Page Summary

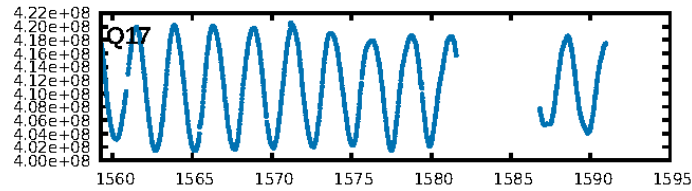
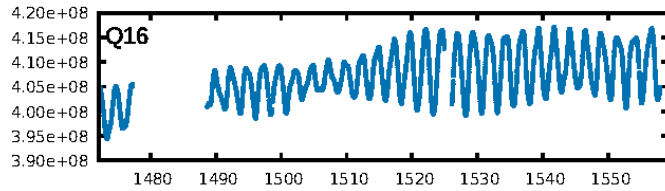
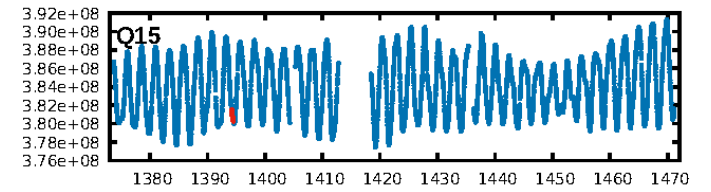
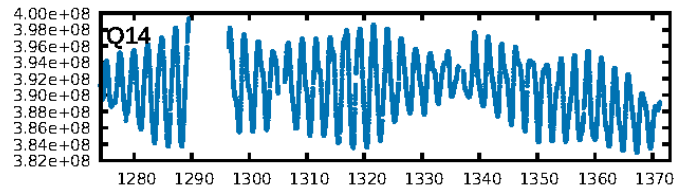
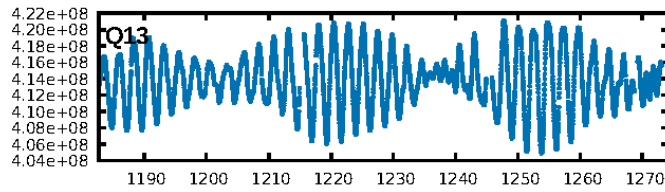
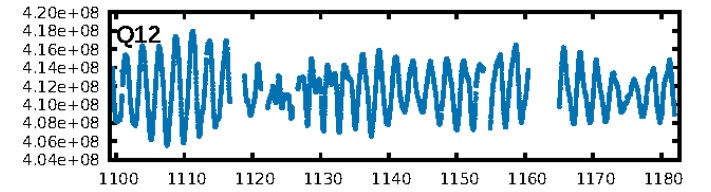
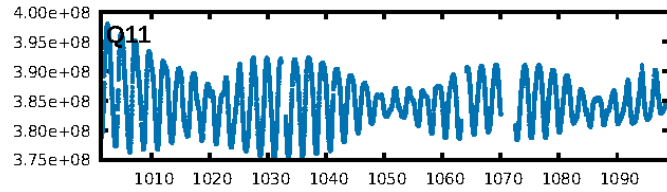
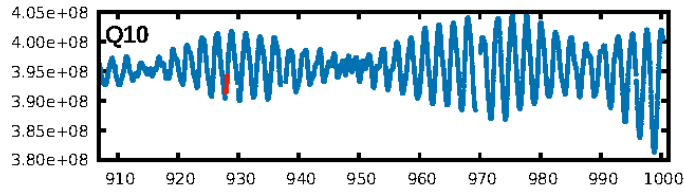
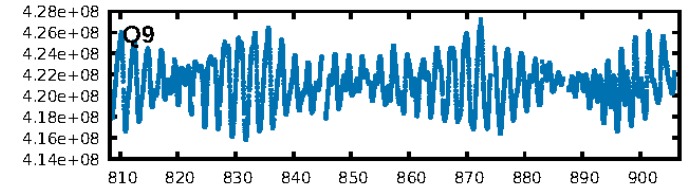
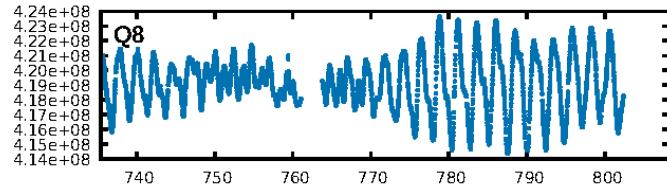
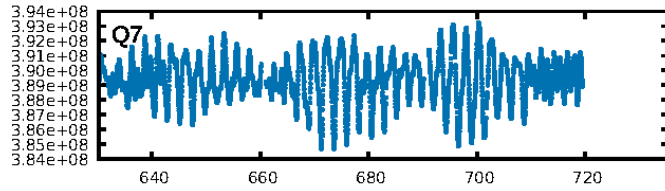
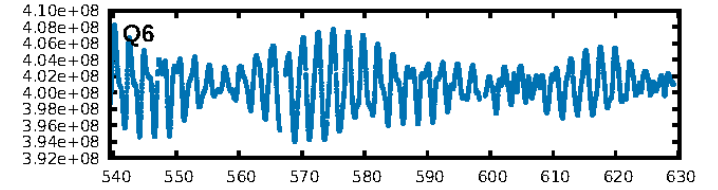
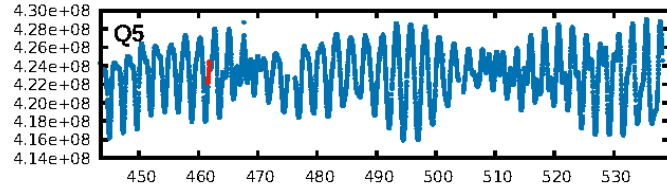
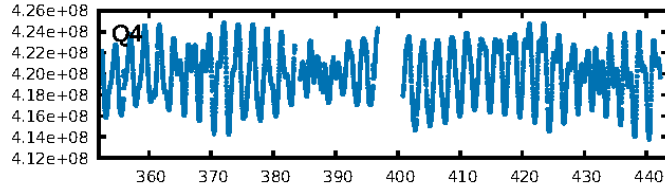
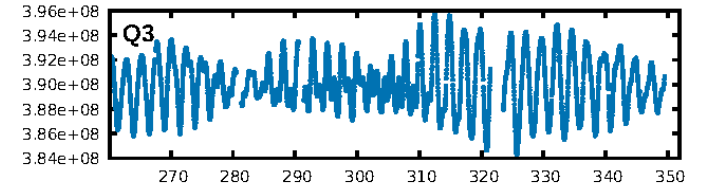
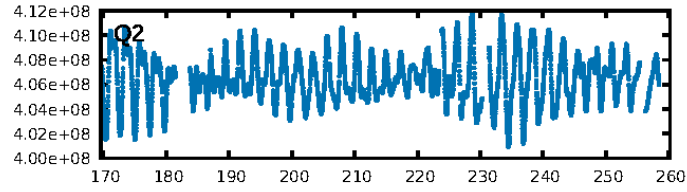
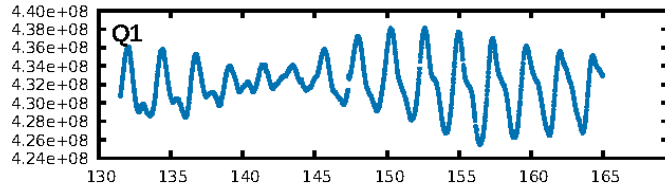
KIC: 5393802 Candidate: 1 of 3 Period: 466.302 d



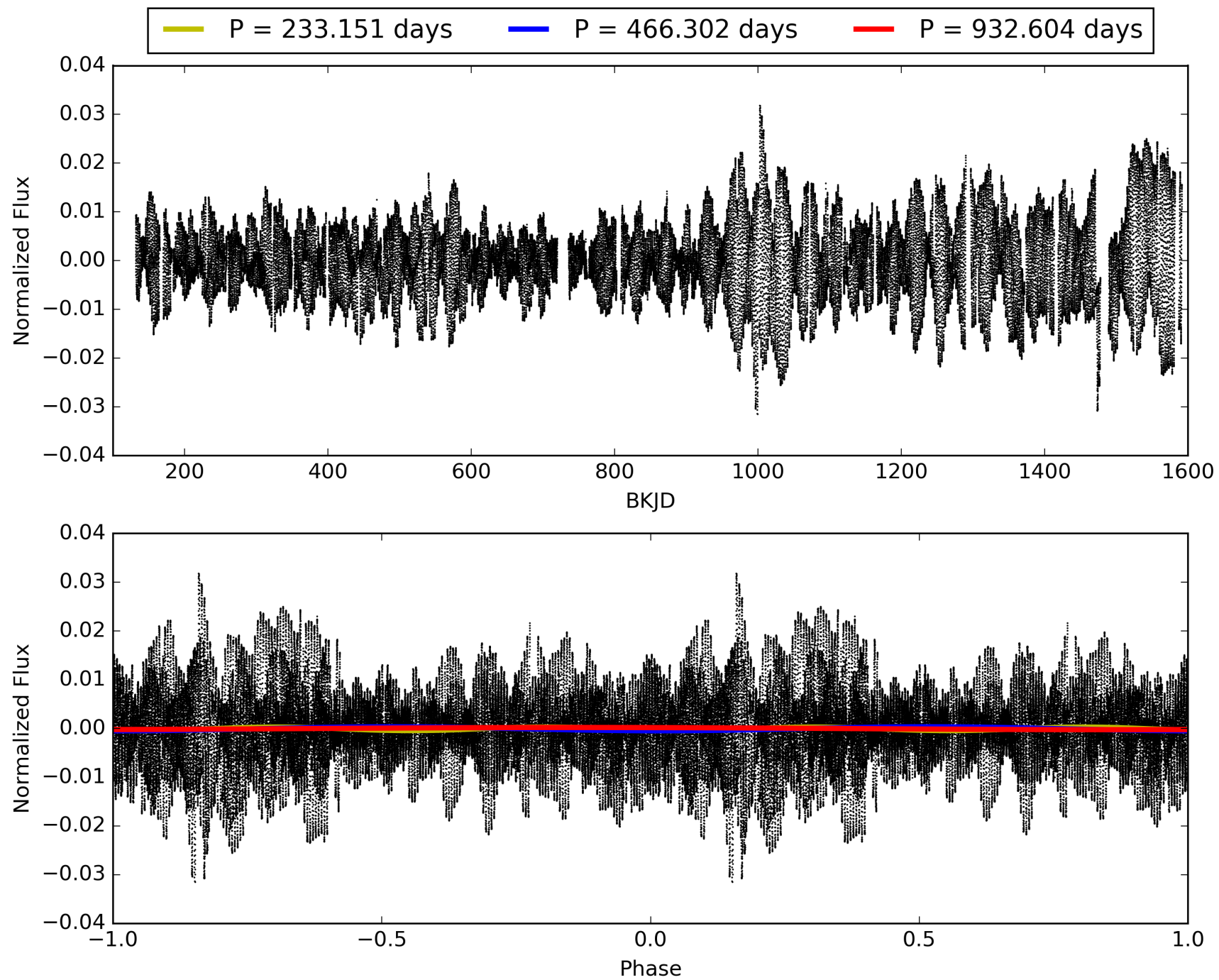
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:55:30 Z

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

# TCE 005393802-01, PDC Light Curves

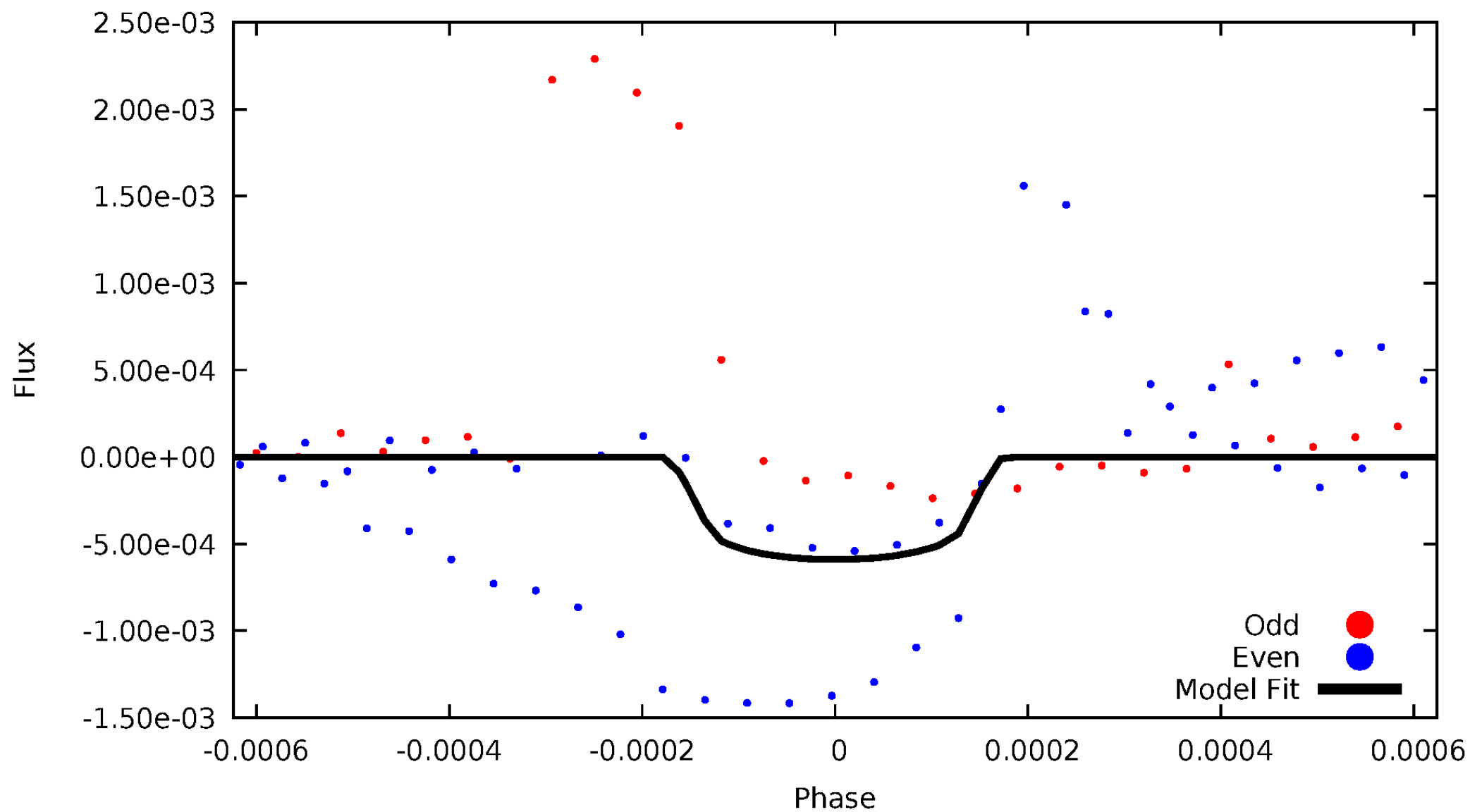


TCE 005393802-01



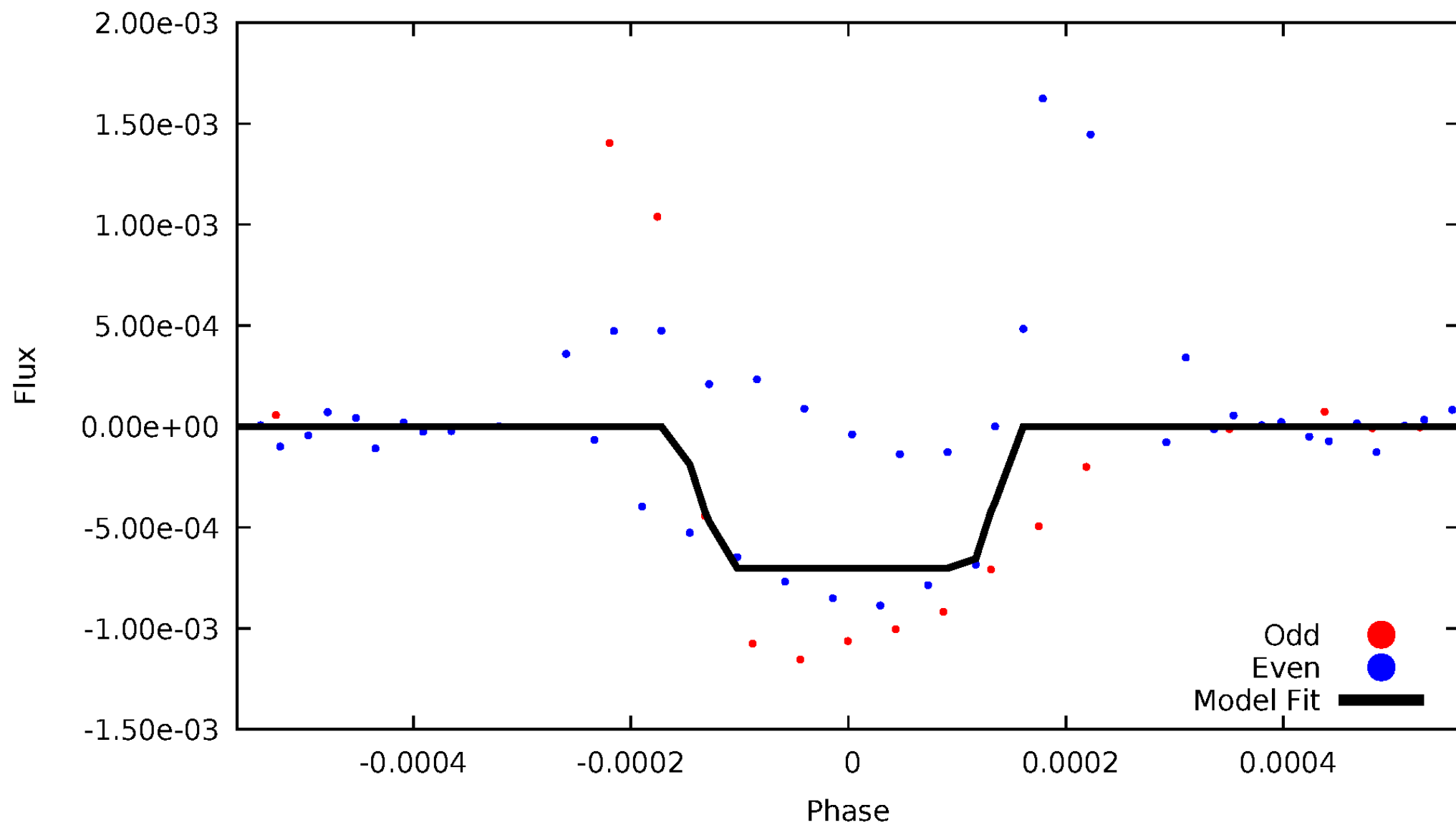
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TCE 005393802-01



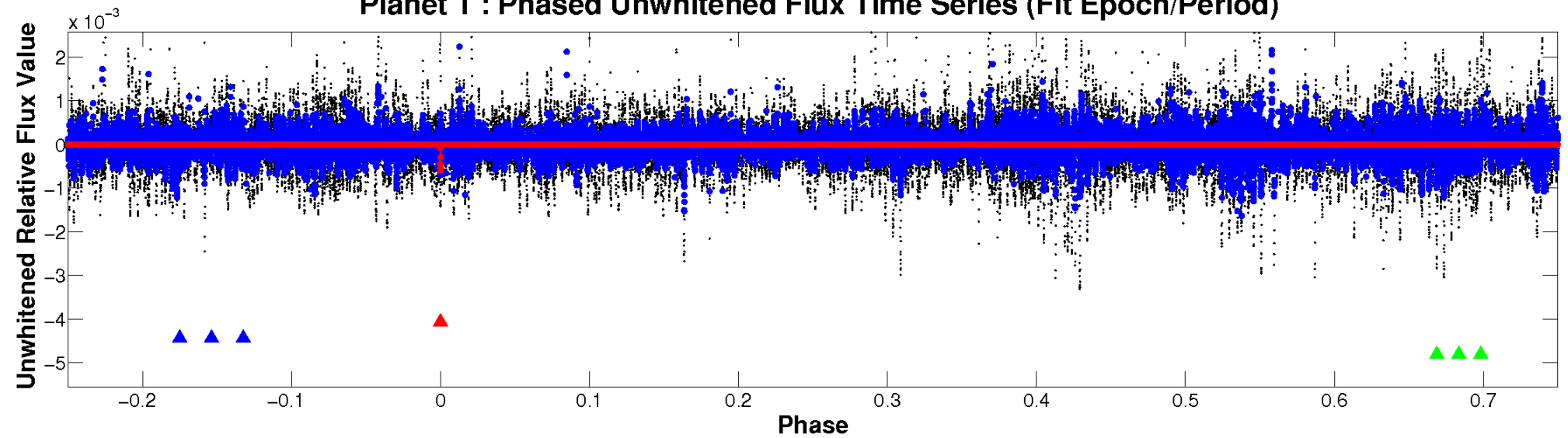
# ALT Odd/Even

TCE 005393802-01

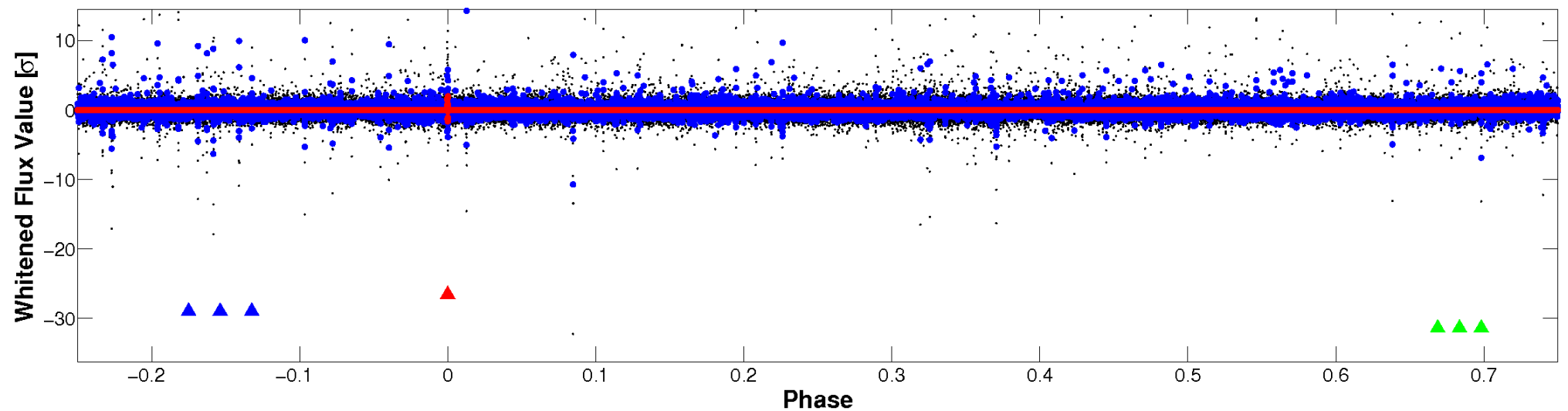


# Non-Whitened Vs. Whitened Light Curve

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

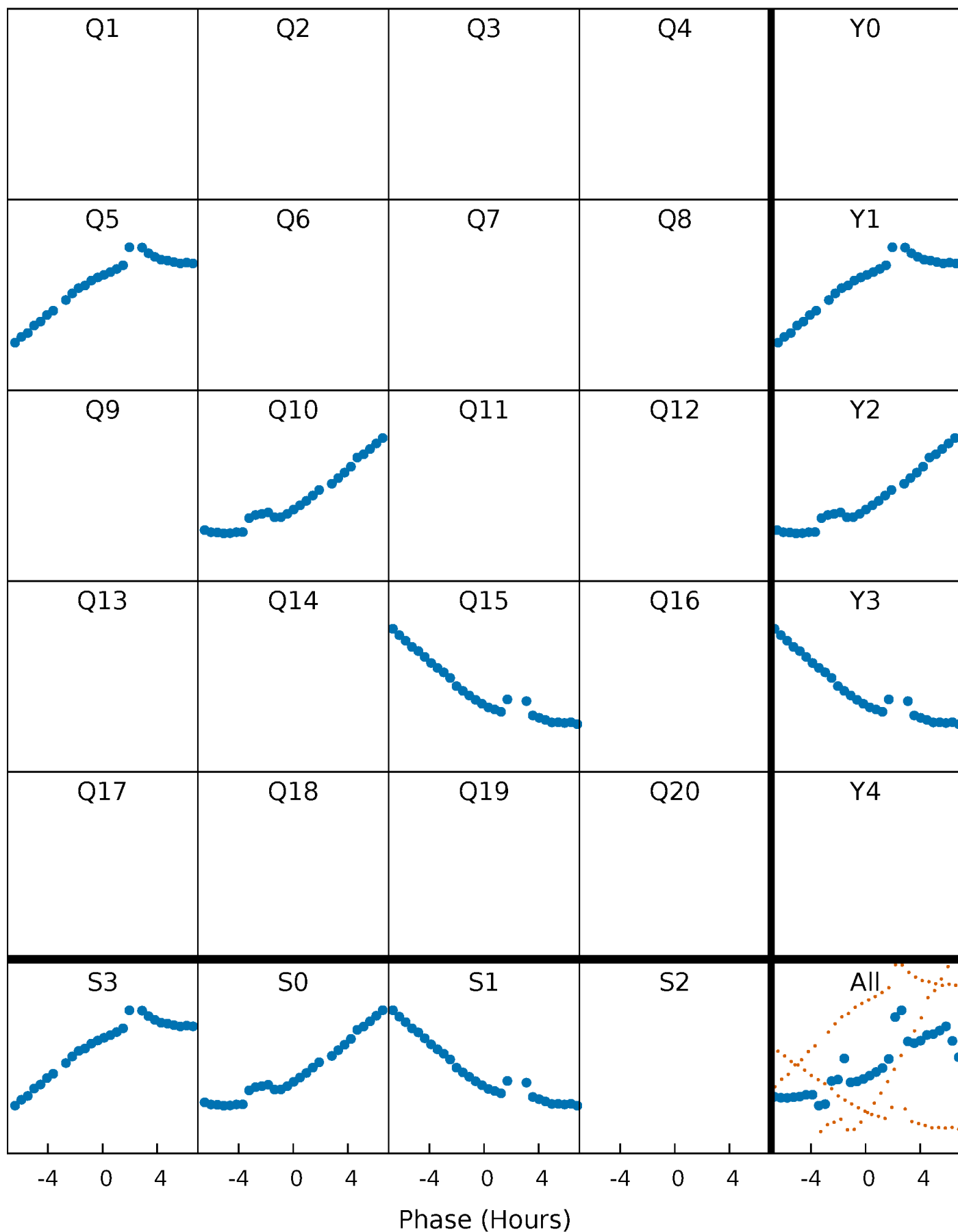


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

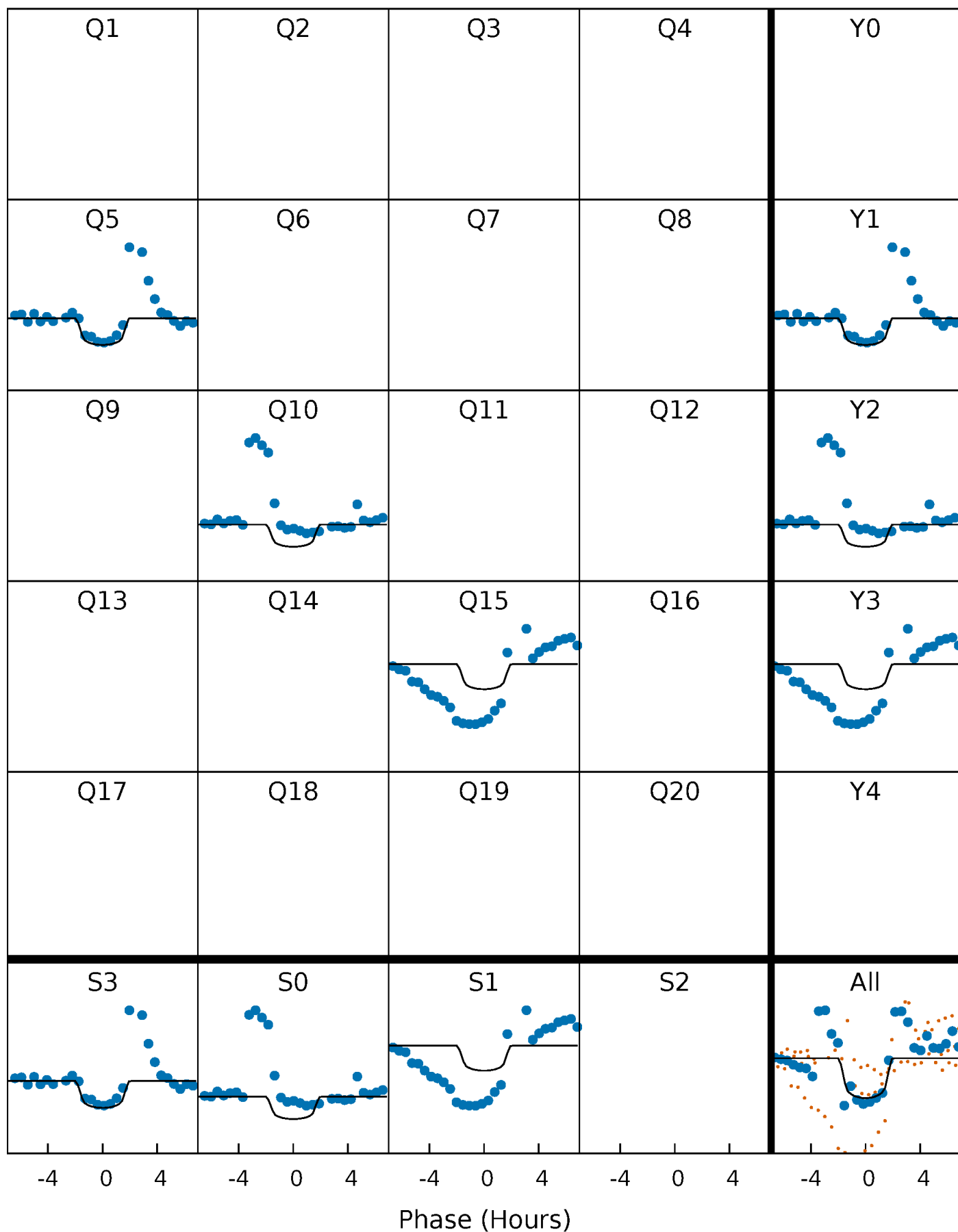
TCE 005393802-01 P=466.302021 Days  $T_0=461.727999$  (BKJD)





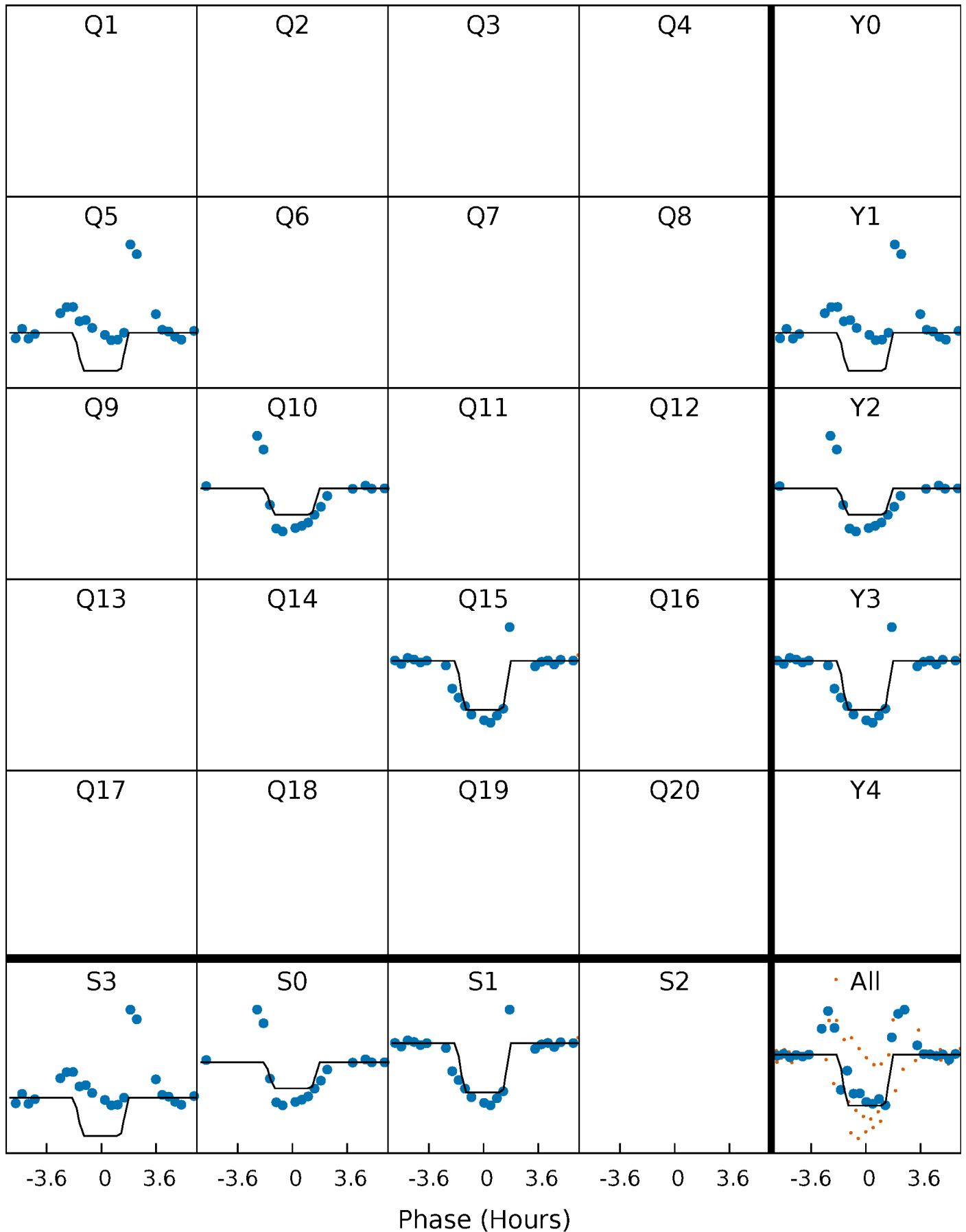
# DV Quarter-Phased Transit Curves

TCE 005393802-01 P=466.302021 Days  $T_0=461.727999$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

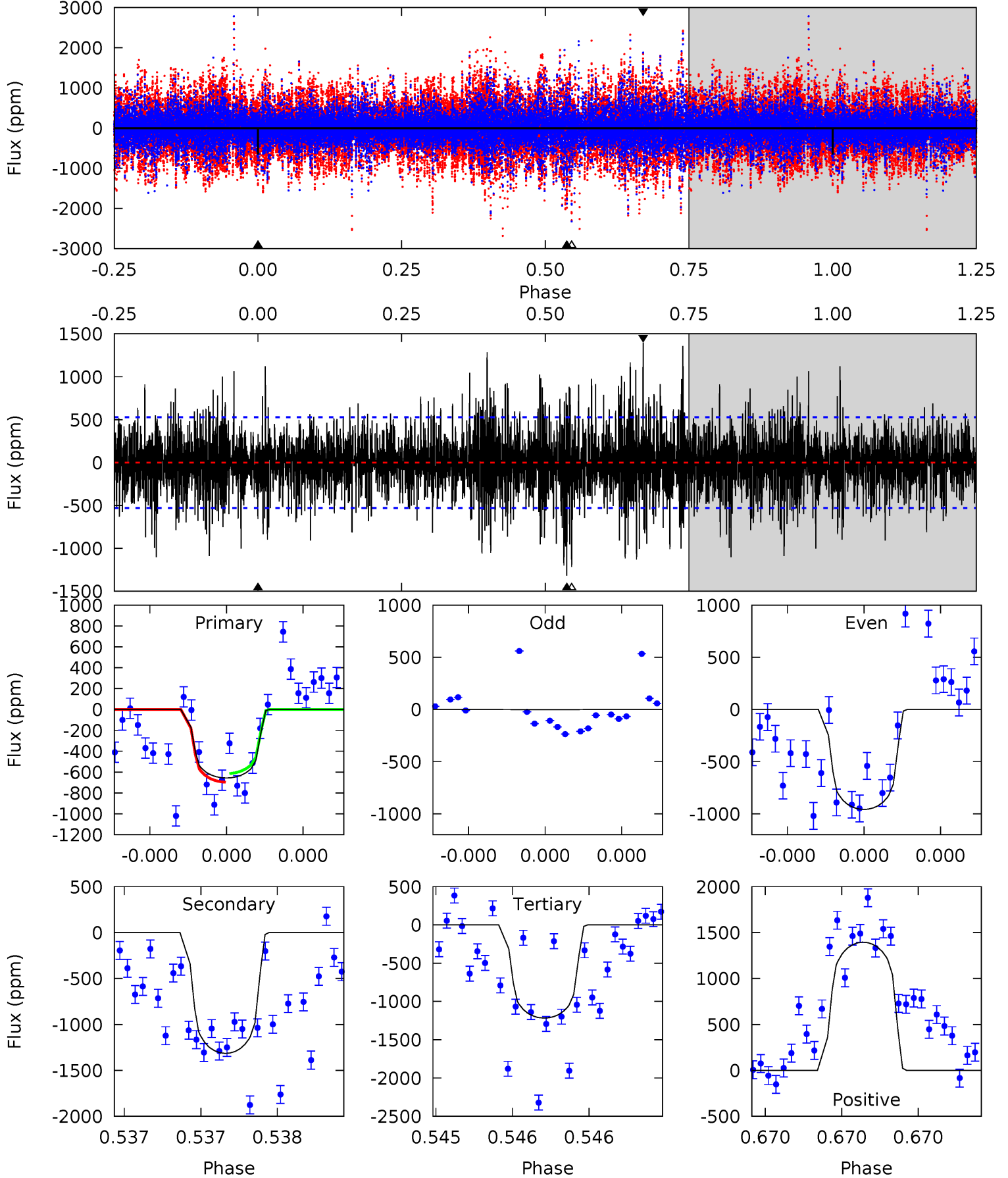
TCE 005393802-01 P=466.300650 Days  $T_0=461.735811$  (BKJD)



# DV Model-Shift Uniqueness Test

005393802-01, P = 466.302021 Days, E = 461.727999 Days

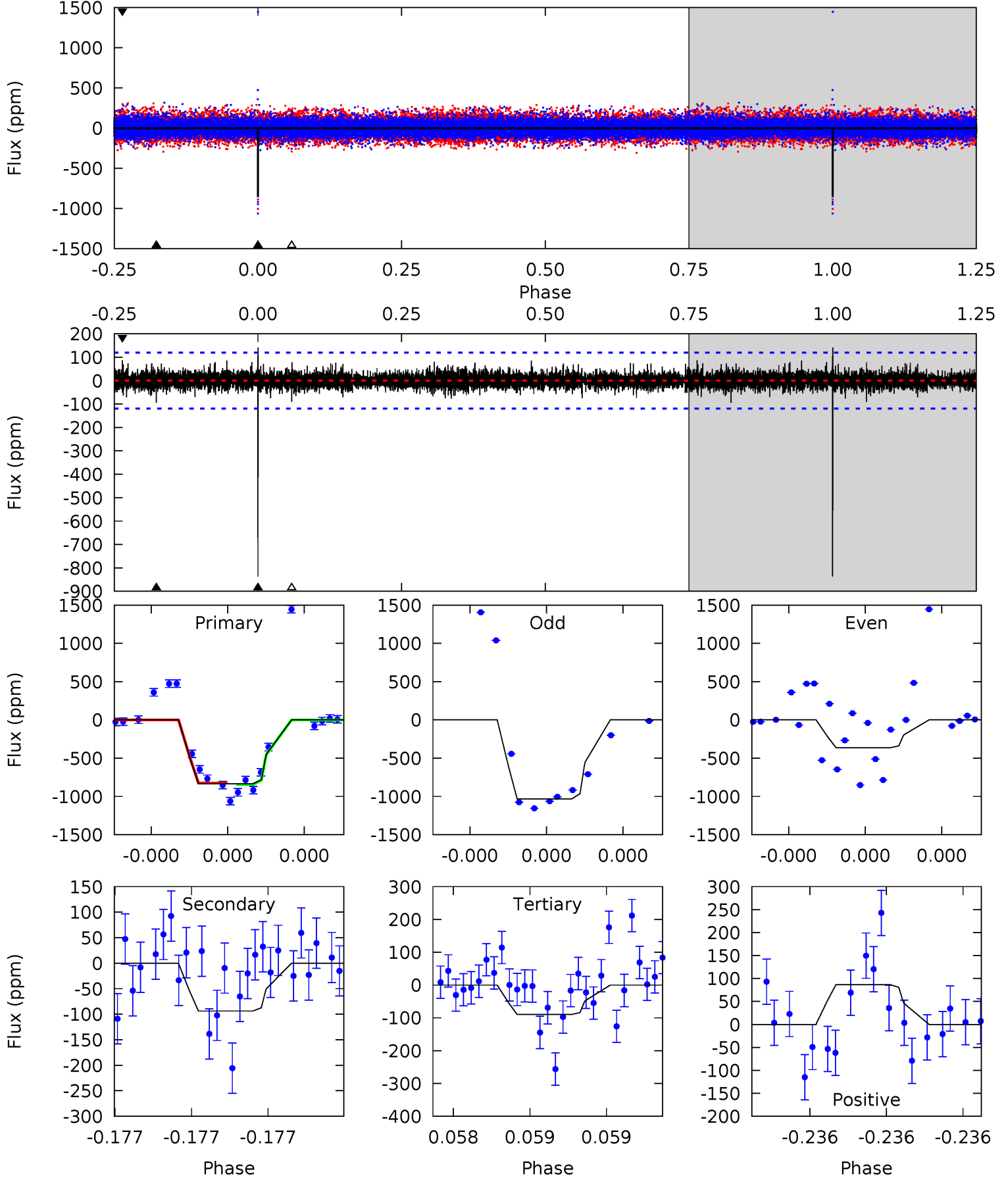
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.01	14.0	13.0	14.9	5.64	3.59	3.03	-5.98	-7.88	1.04	-0.85	4.30	1.31	0.51	0.44



# Alt Model-Shift Uniqueness Test

005393802-01, P = 466.300650 Days, E = 461.735811 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
39.7	4.45	4.26	4.10	5.68	3.65	0.83	35.4	35.6	0.18	0.35	19.2	0.76	0.14	0.47



### Stellar Parameters For KIC 005393802

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6101^{+163}_{-181}$	$4.431^{+0.070}_{-0.210}$	$-0.140^{+0.300}_{-0.300}$	$1.019^{+0.331}_{-0.110}$	$1.020^{+0.154}_{-0.126}$	$1.356^{+0.496}_{-0.694}$
	+3%/-3%	+2%/-5%	+214%/-214%	+32%/-11%	+15%/-12%	+37%/-51%
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 005393802-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1315 \pm 94$	$3.08^{+2.20}_{-1.81}$	$353^{+27}_{-17}$	$7160^{+6405}_{-1693}$	$107081^{+509539}_{-71360}$
Alt.	$-94 \pm 21$	$3.33^{+2.28}_{-2.05}$	$354^{+27}_{-17}$	$3886^{+1728}_{-596}$	$6387^{+34459}_{-4149}$

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

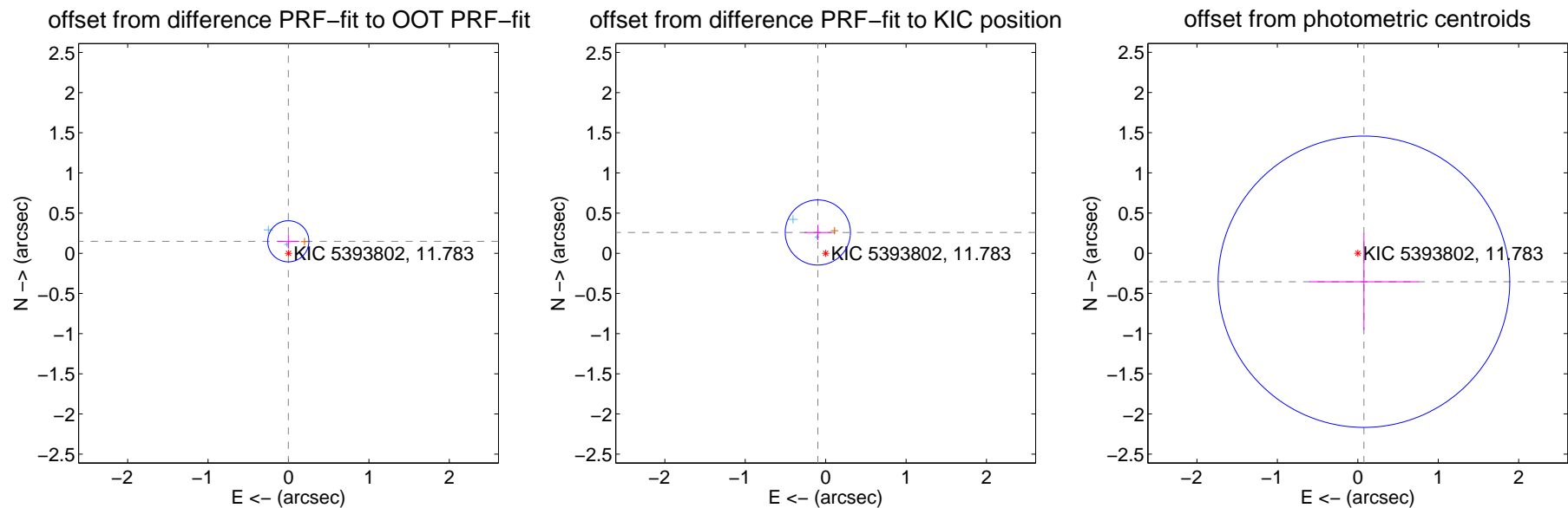
## DV Centroid Data

Supplemental centroid analysis for 005393802-01. **Kepler magnitude: 11.78.** Transit SNR 6.40

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

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.149 \pm 0.085$	1.75	$0.002 \pm 0.136$	$0.149 \pm 0.084$
PRF-fit source offset from KIC position	$0.277 \pm 0.135$	2.05	$0.097 \pm 0.168$	$0.259 \pm 0.097$
photometric centroid source offset	$0.36 \pm 0.60$	0.60	$-0.08 \pm 0.68$	$-0.35 \pm 0.60$

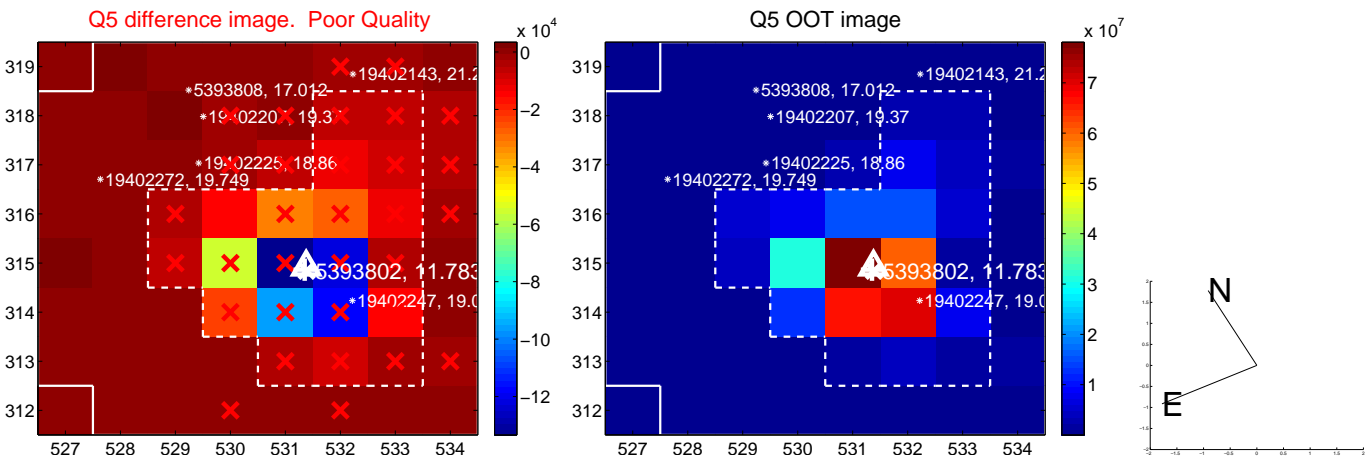


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

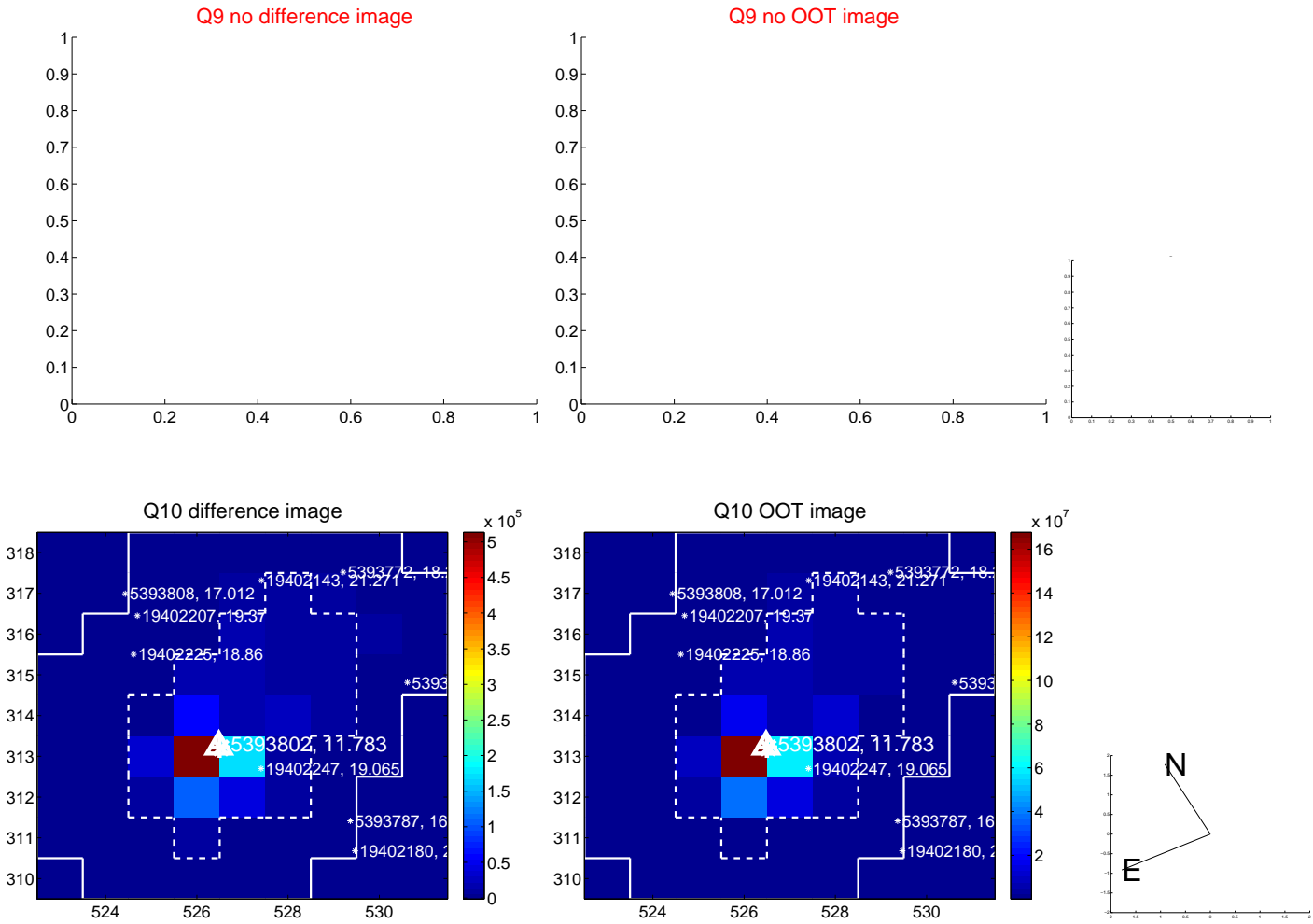


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



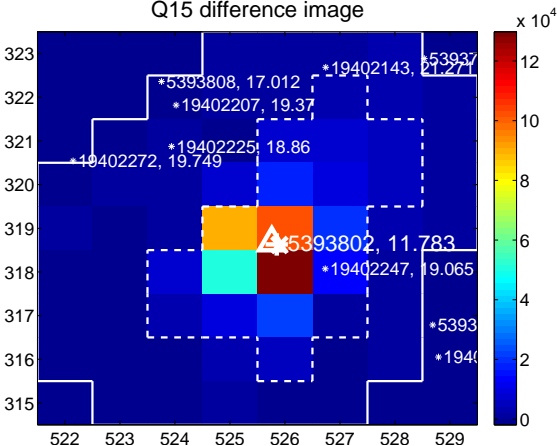
Q14 no difference image



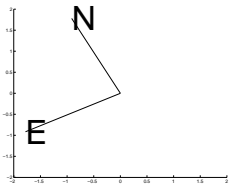
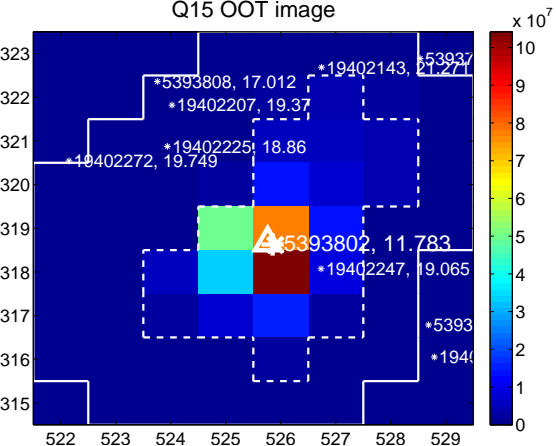
Q14 no OOT image



Q15 difference image



Q15 OOT image



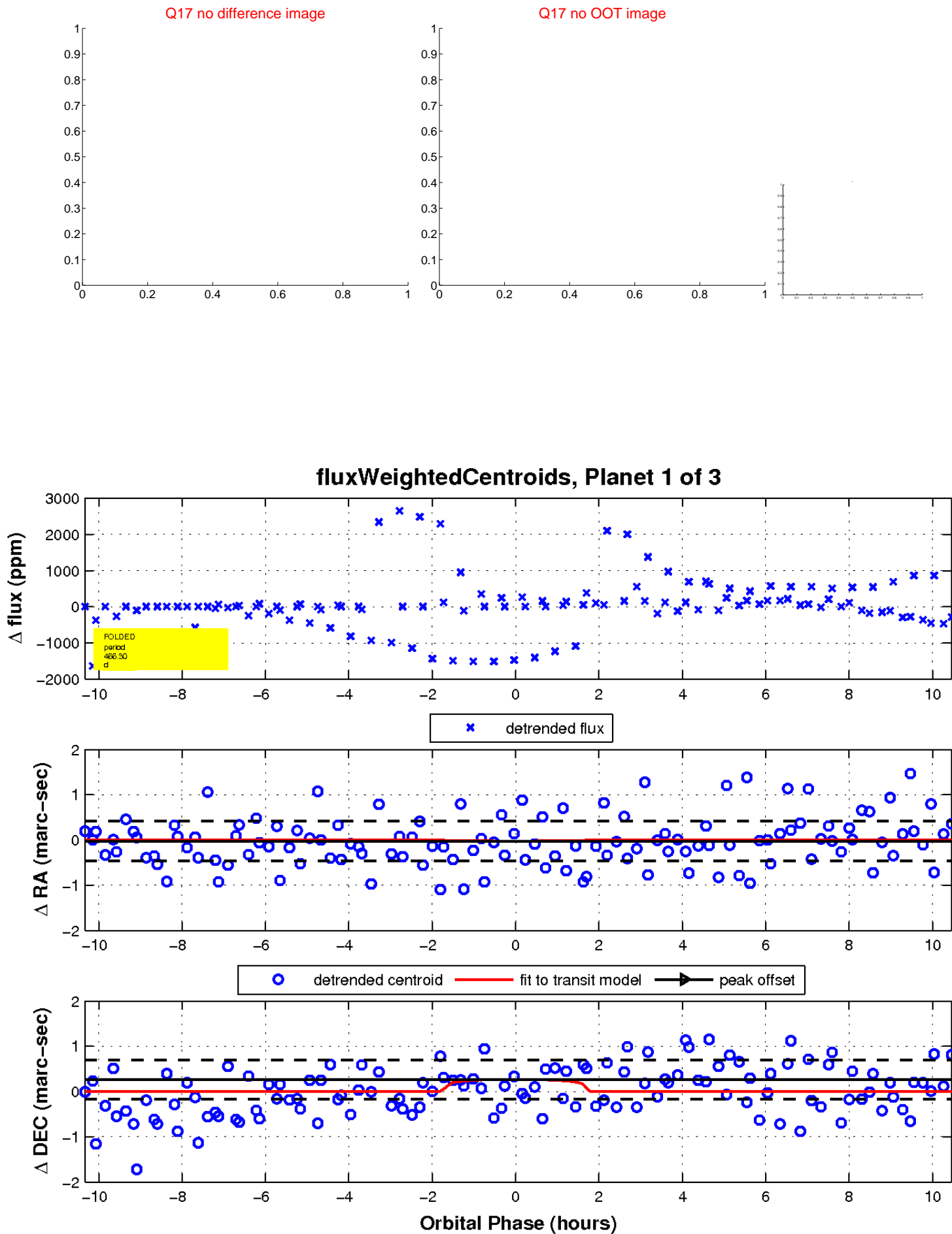
Q16 no difference image



Q16 no OOT image

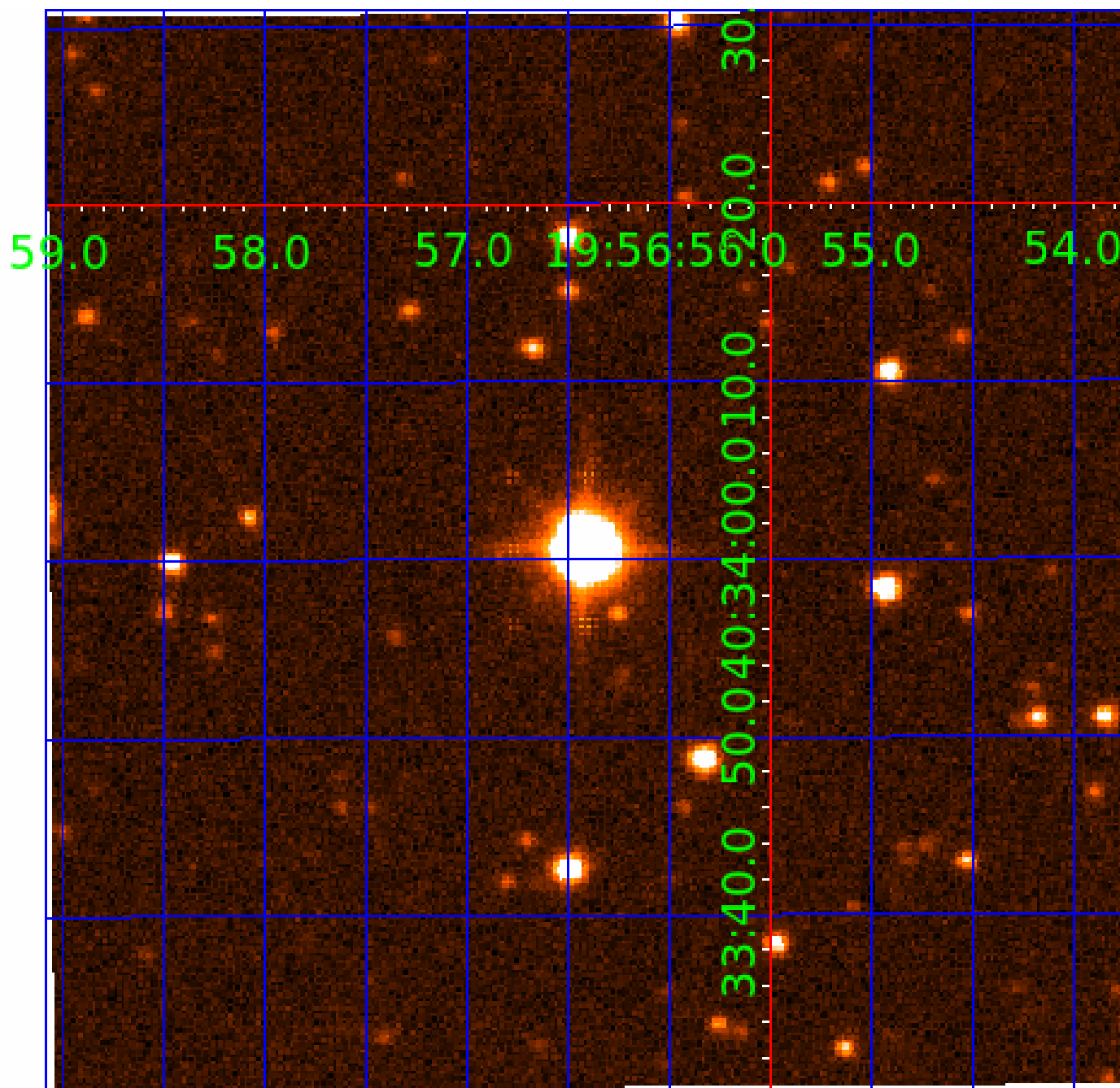


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005393802

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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005393802-02	OBS	No	476.252155	380.105784	702.7	2.333	11.6	8.3	1.02	6101	2.87	0.89
005393802-03	OBS	No	473.168495	307.290561	750.0	10.483	12.0	2.9	1.02	6101	3.56	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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005393802-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005393802-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV

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

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

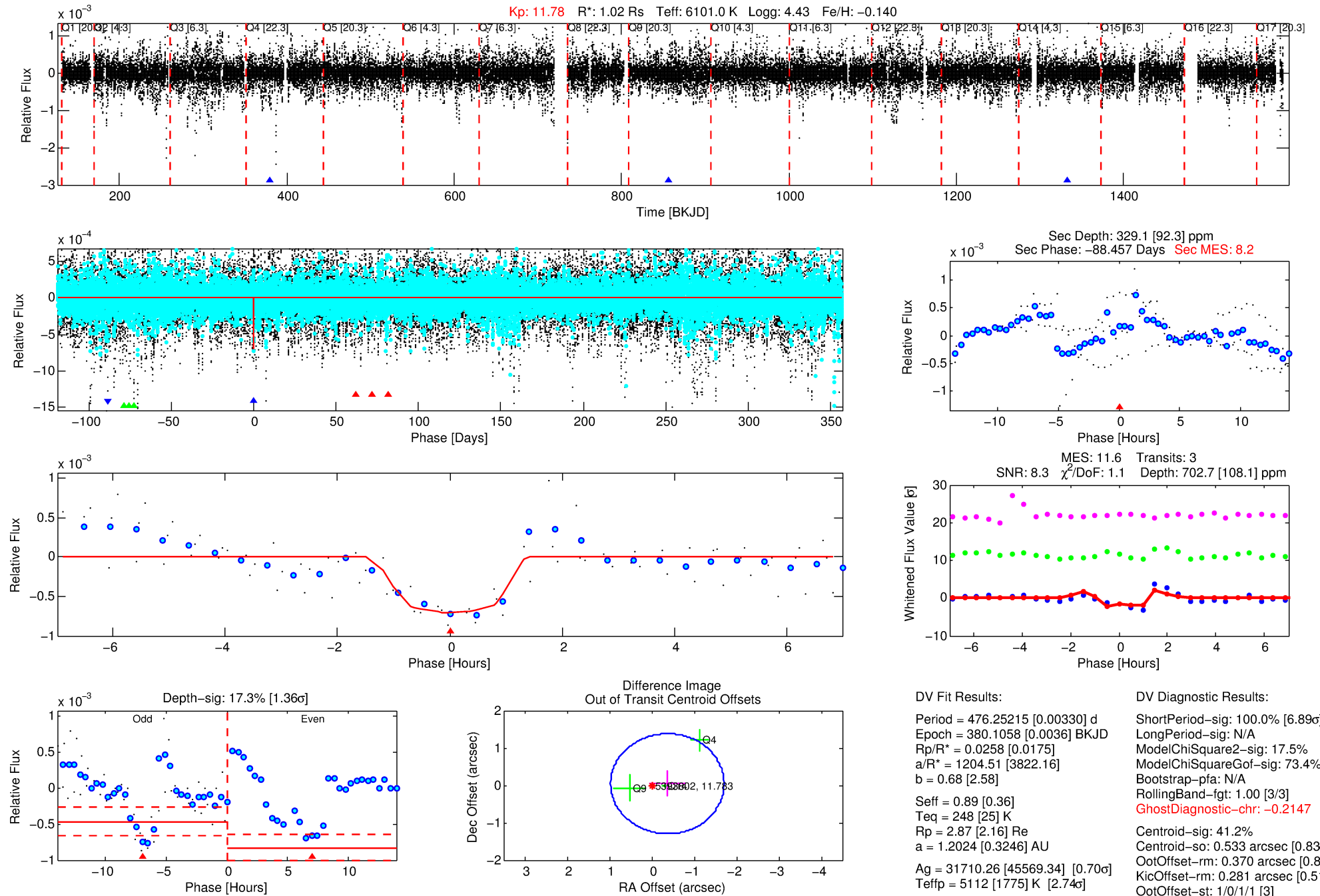
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005393802-02

No Significant Match Found

# DV One-Page Summary

KIC: 5393802 Candidate: 2 of 3 Period: 476.252 d



## DV Fit Results:

Period = 476.25215 [0.00330] d  
Epoch = 380.1058 [0.0036] BKJD  
Rp/R\* = 0.0258 [0.0175]  
a/R\* = 1204.51 [3822.16]  
b = 0.68 [2.58]  
Seff = 0.89 [0.36]  
T<sub>eq</sub> = 248 [25] K  
Rp = 2.87 [2.16] Re  
a = 1.2024 [0.3246] AU  
Ag = 31710.26 [45569.34] [0.70σ]  
T<sub>eff</sub> = 5112 [1775] K [2.74σ]

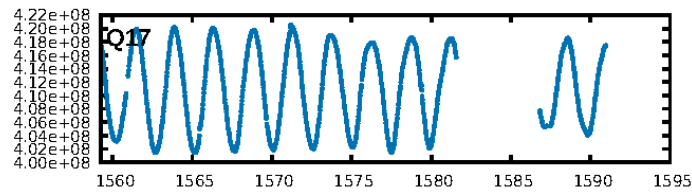
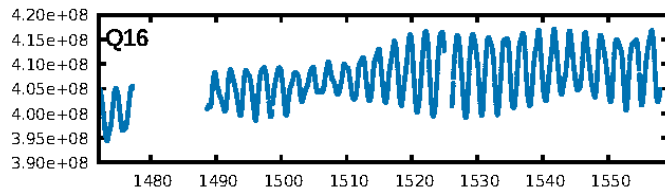
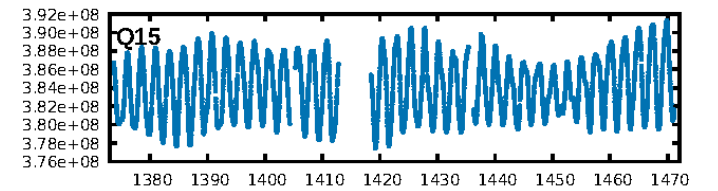
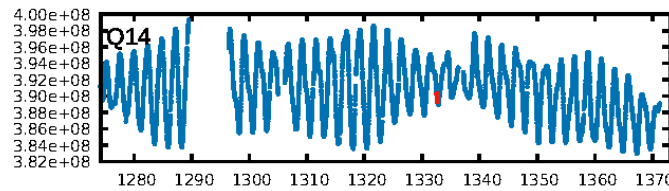
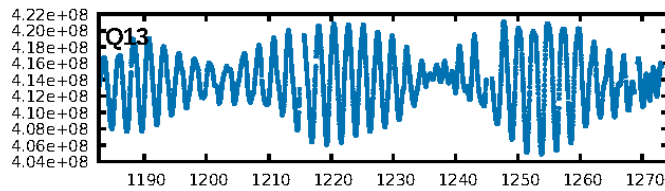
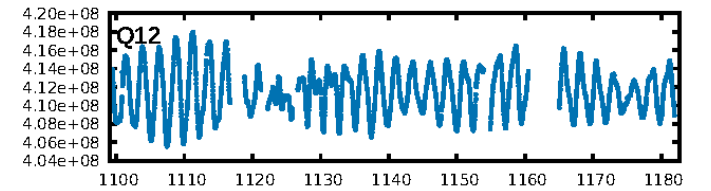
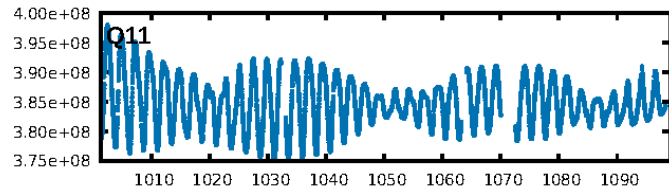
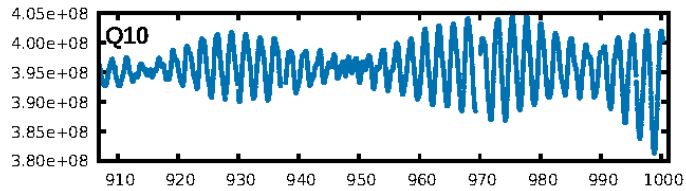
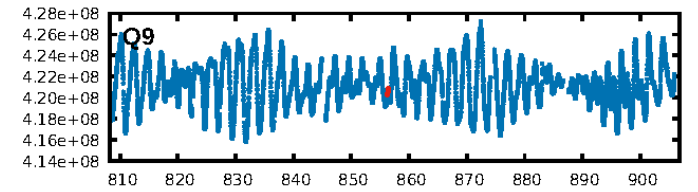
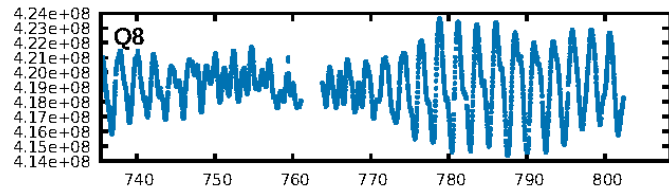
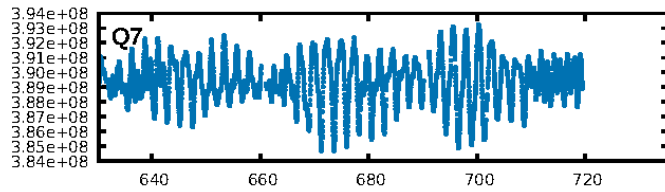
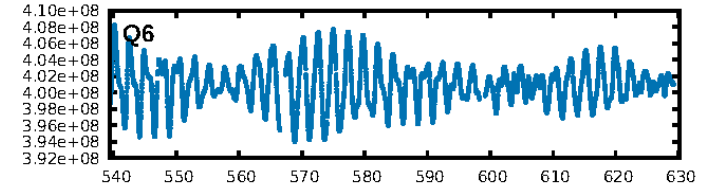
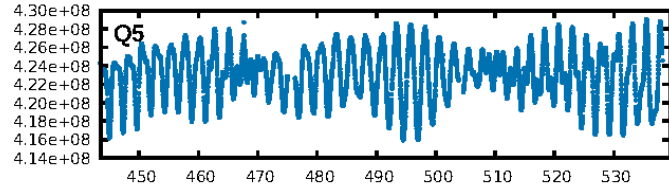
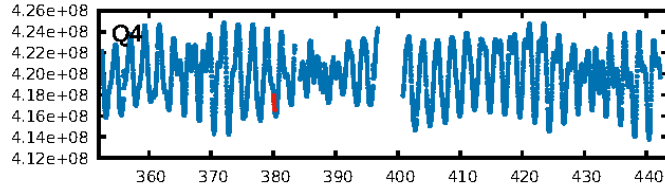
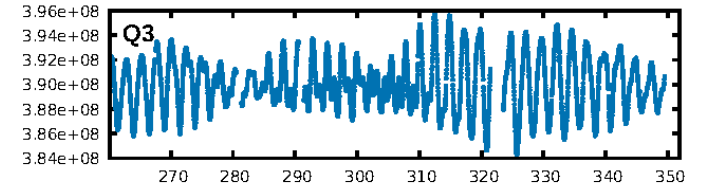
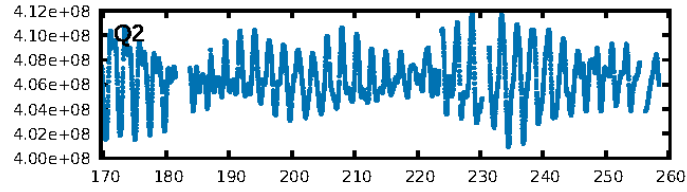
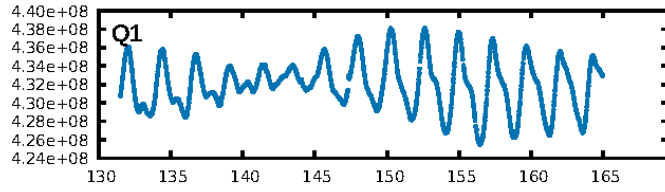
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.89σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.5%  
ModelChiSquareGof-sig: 73.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.2147  
Centroid-sig: 41.2%  
Centroid-so: 0.533 arcsec [0.83σ]  
OotOffset-rm: 0.370 arcsec [0.83σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.281 arcsec [0.51σ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

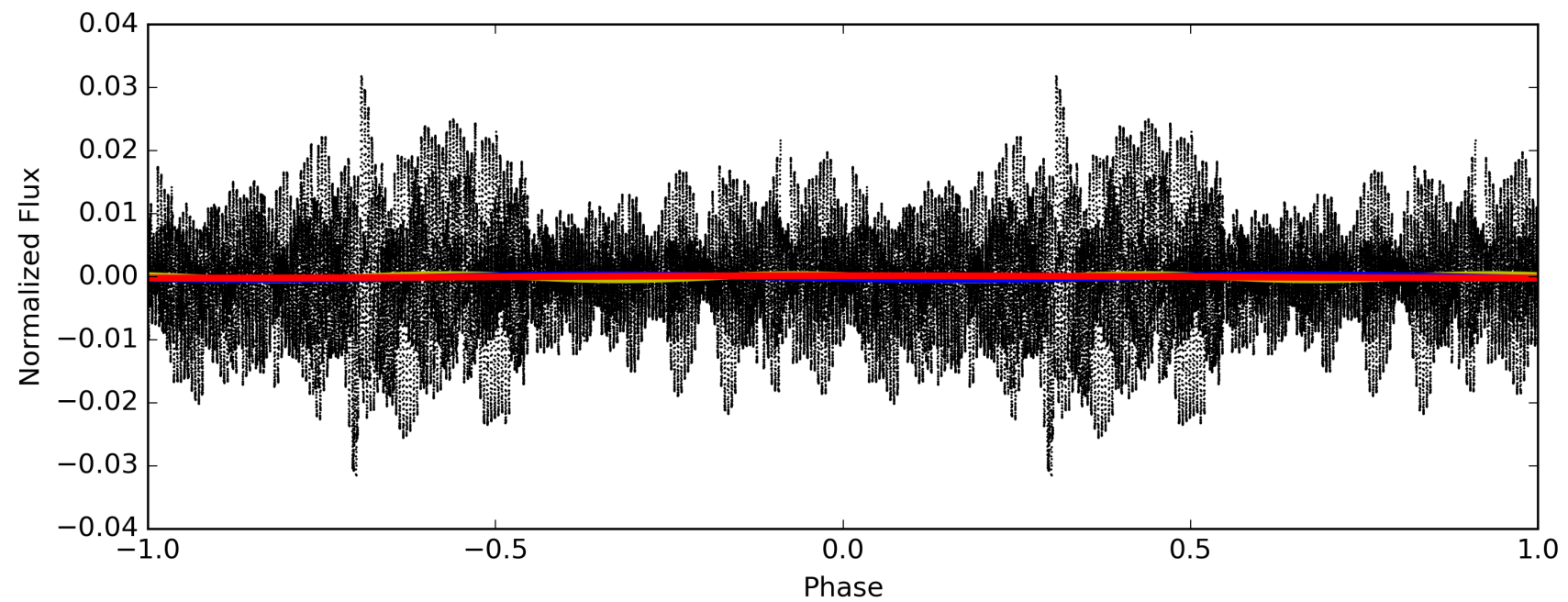
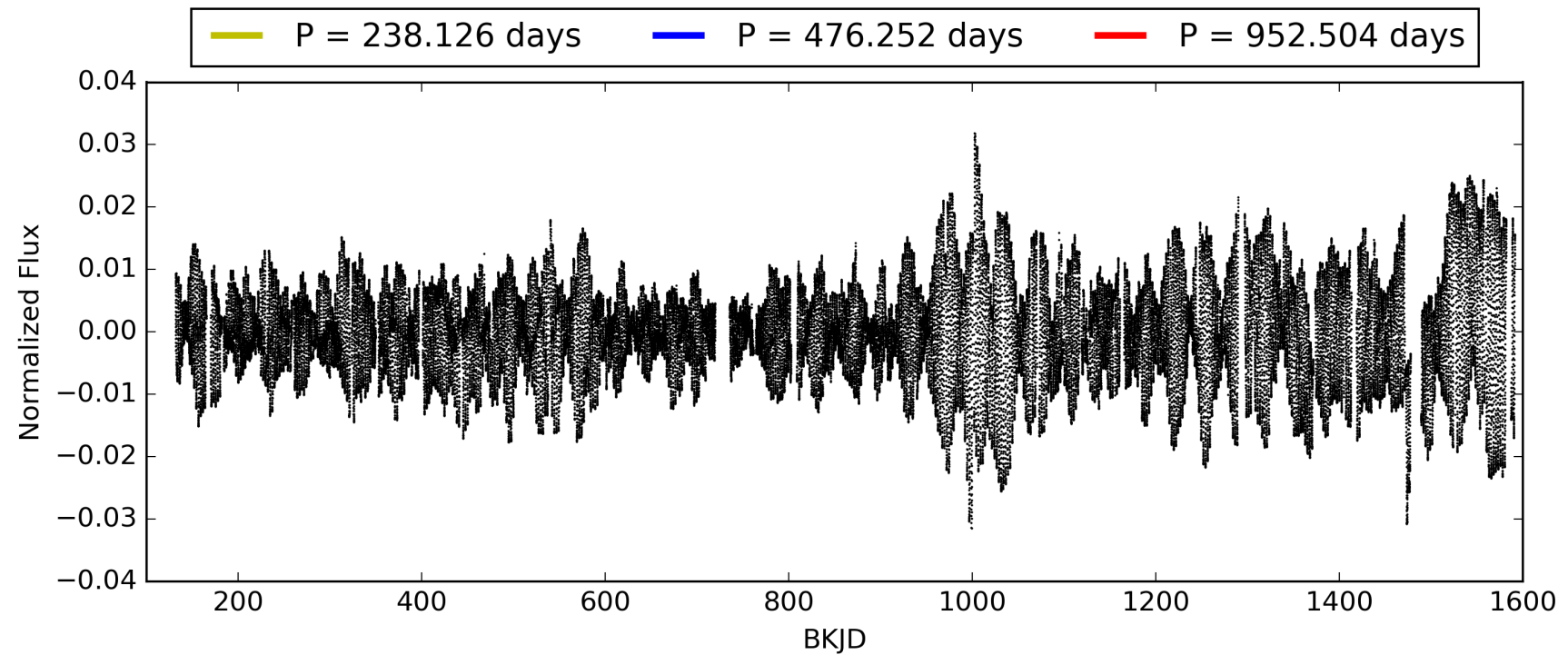
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:55:56 Z

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

# TCE 005393802-02, PDC Light Curves



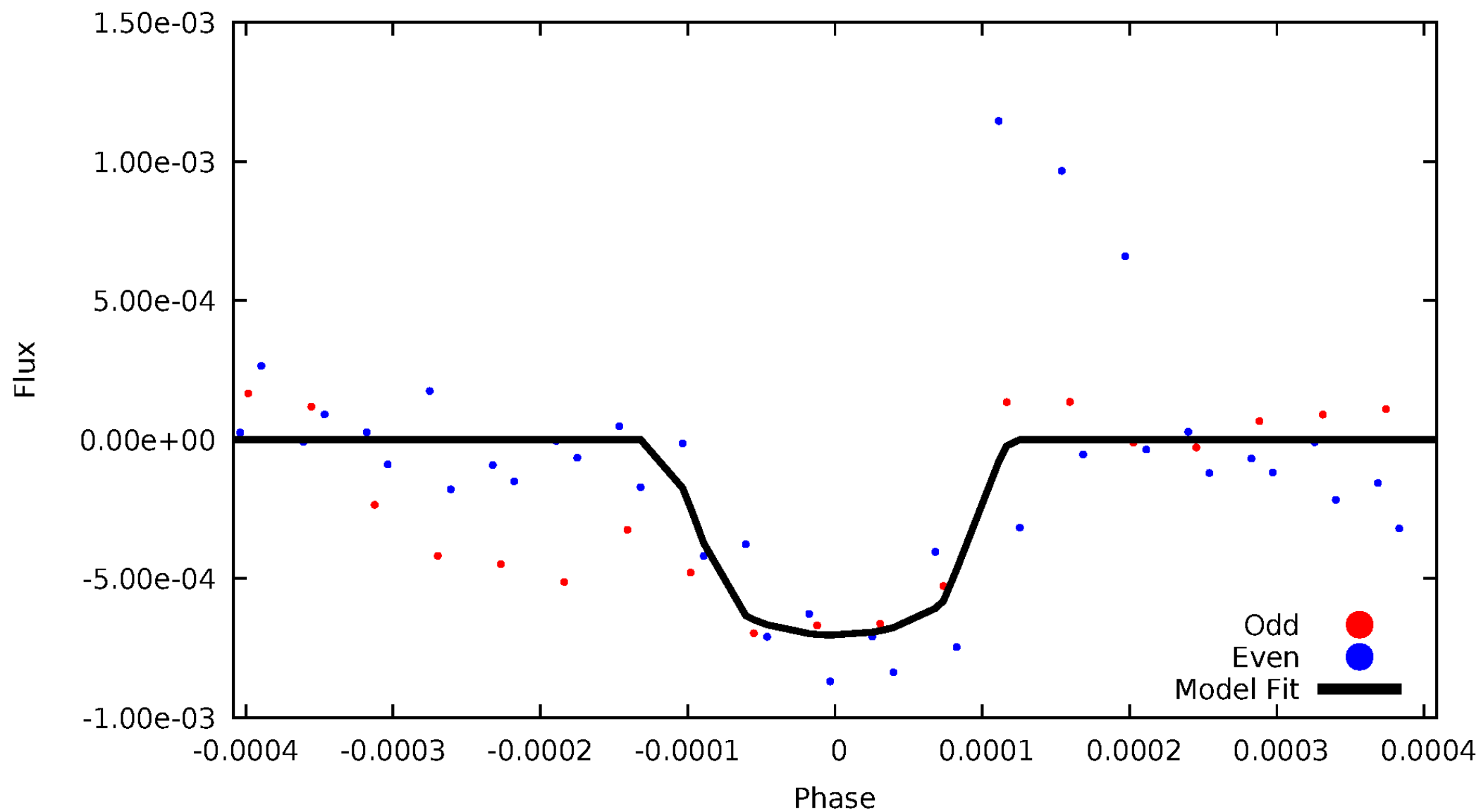
TCE 005393802-02





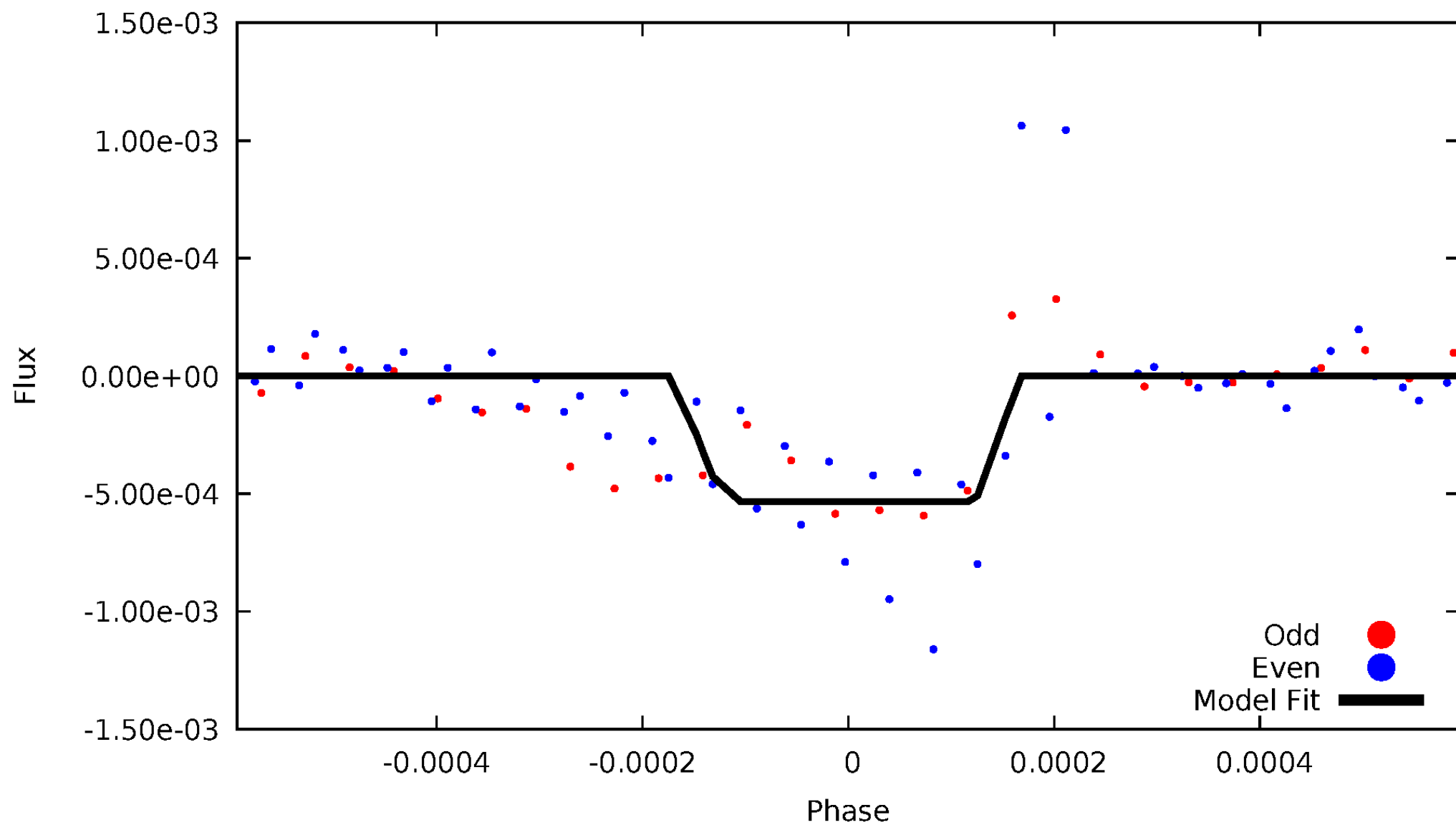
# DV Odd/Even

TCE 005393802-02



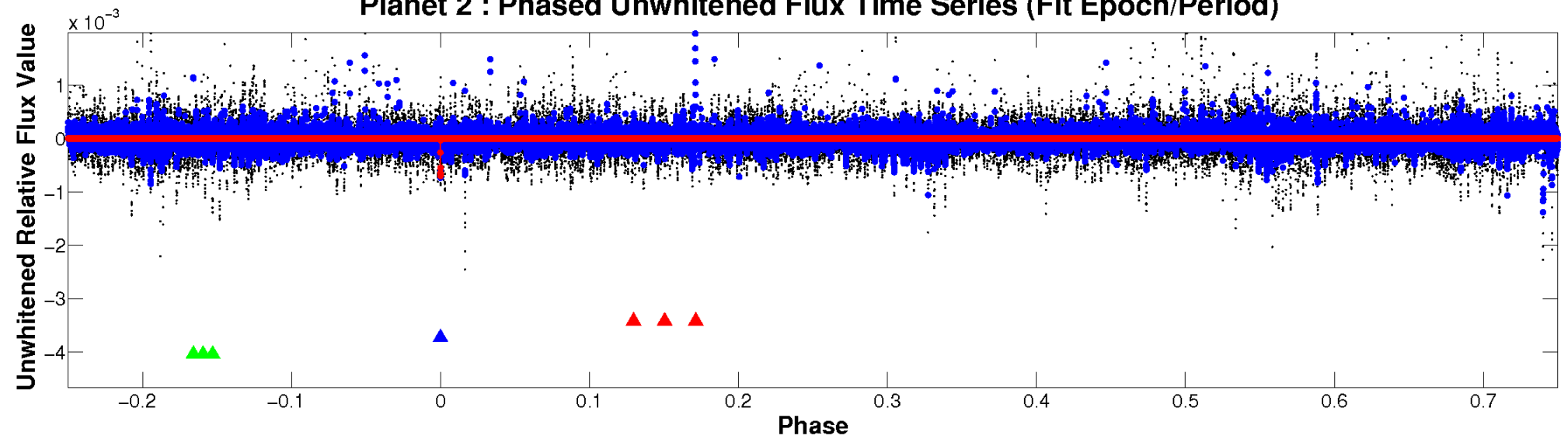
# ALT Odd/Even

TCE 005393802-02

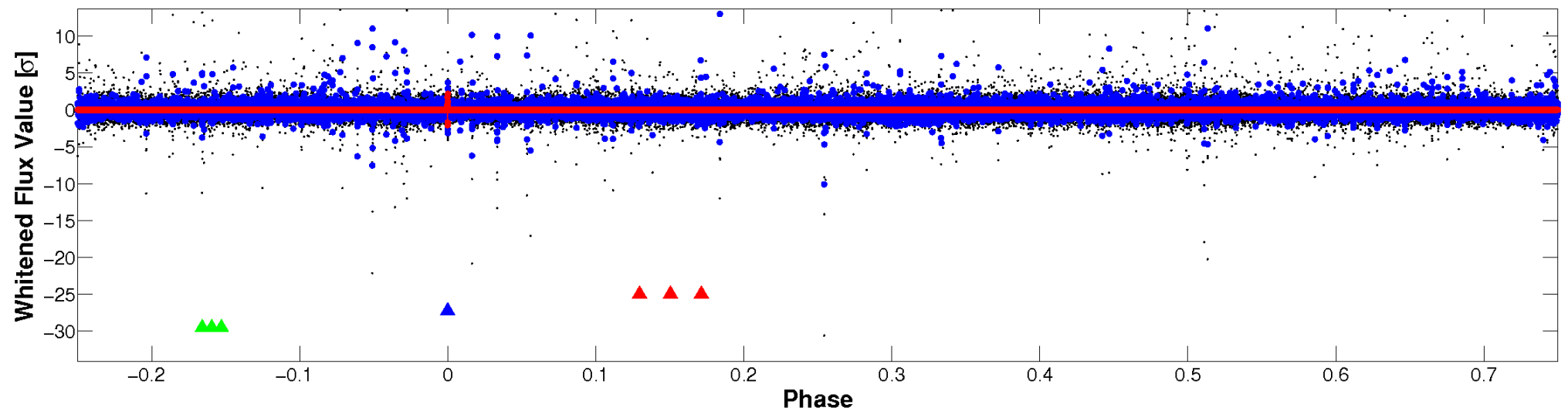


# Non-Whitened Vs. Whitened Light Curve

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

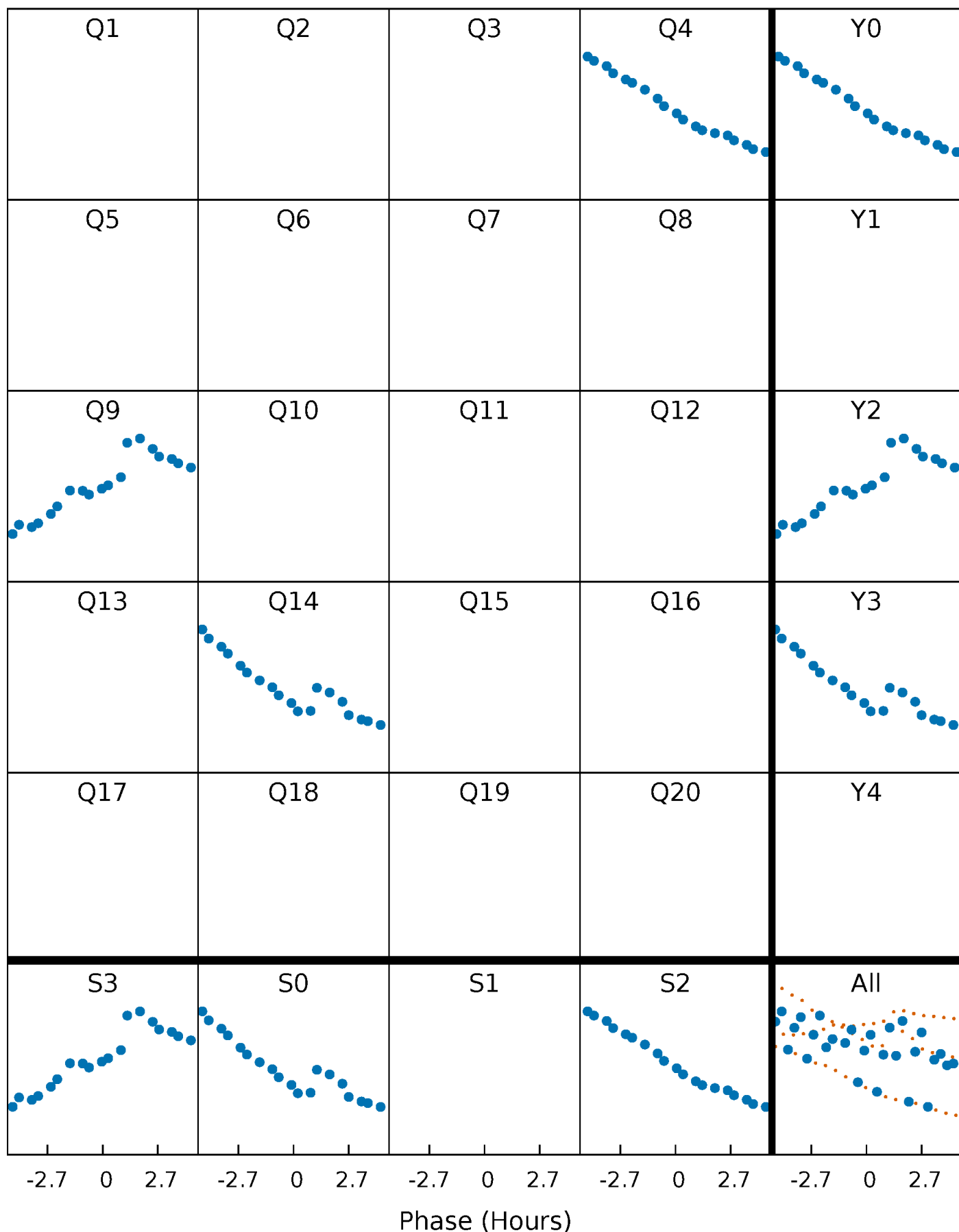


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



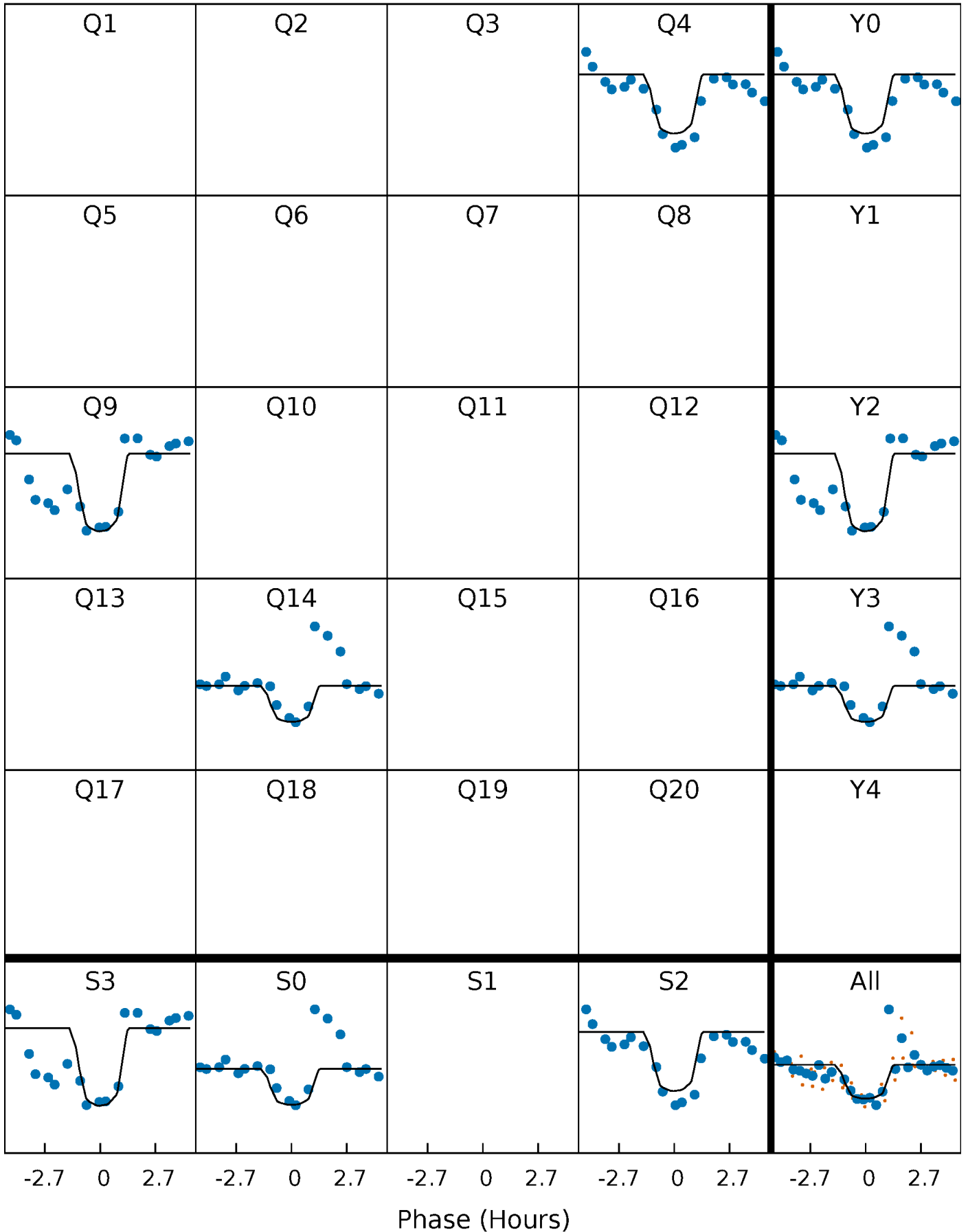
# PDC Quarter-Phased Transit Curves

TCE 005393802-02     $P=476.252155$  Days     $T_0=380.105784$  (BKJD)



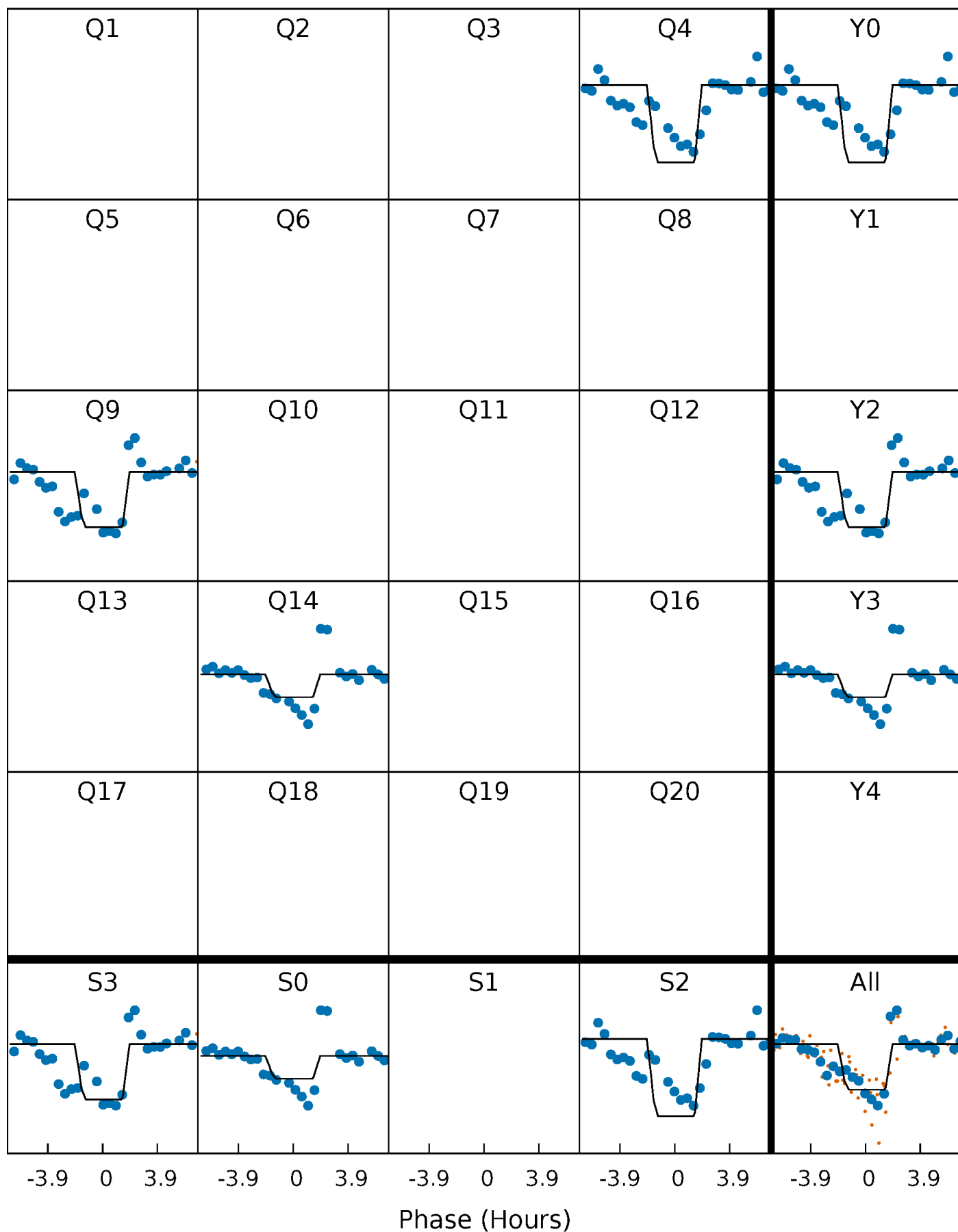
# DV Quarter-Phased Transit Curves

TCE 005393802-02     $P=476.252155$  Days     $T_0=380.105784$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

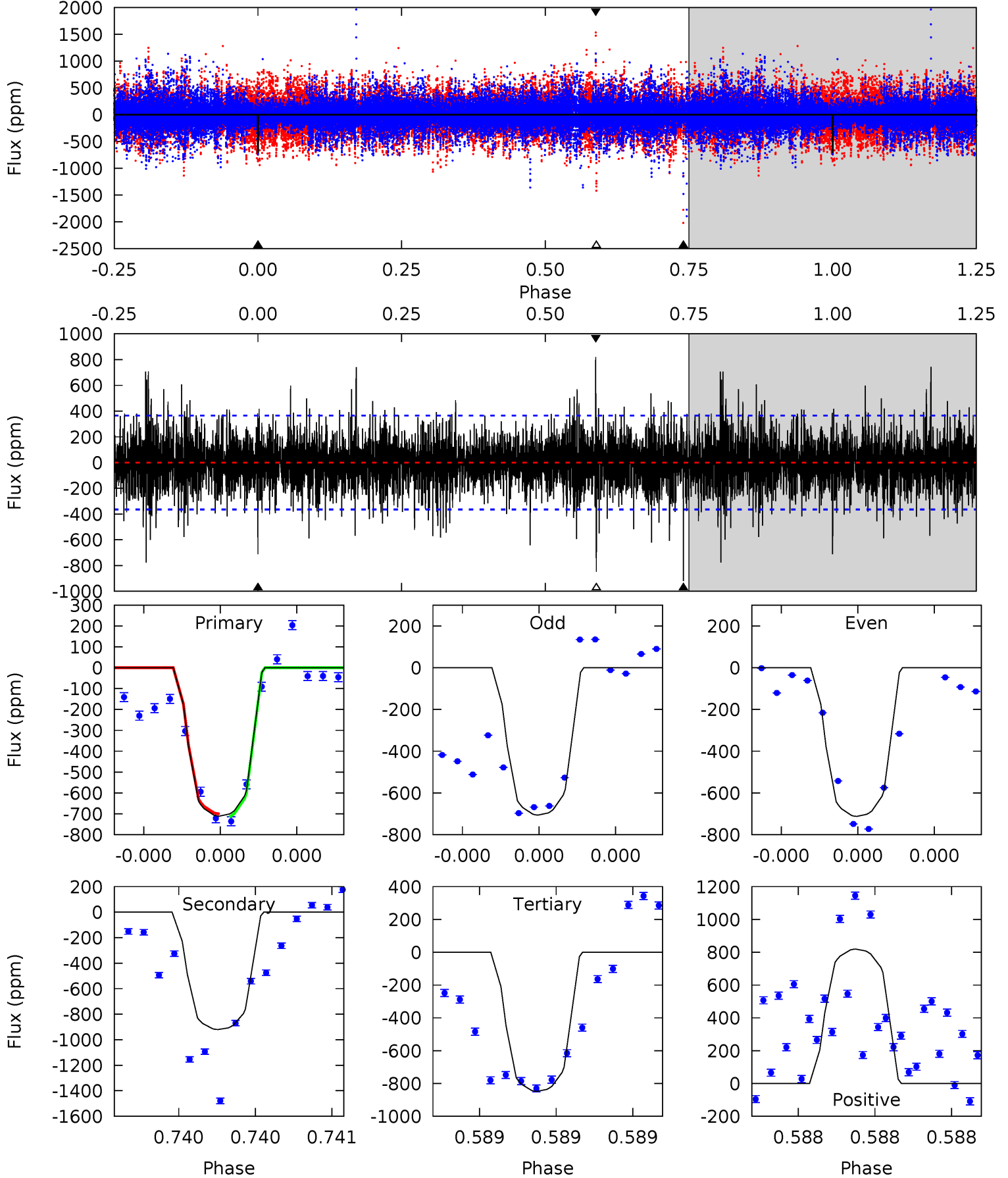
TCE 005393802-02     $P=476.244983$  Days     $T_0=380.092803$  (BKJD)



# DV Model-Shift Uniqueness Test

005393802-02, P = 476.252155 Days, E = 380.105784 Days

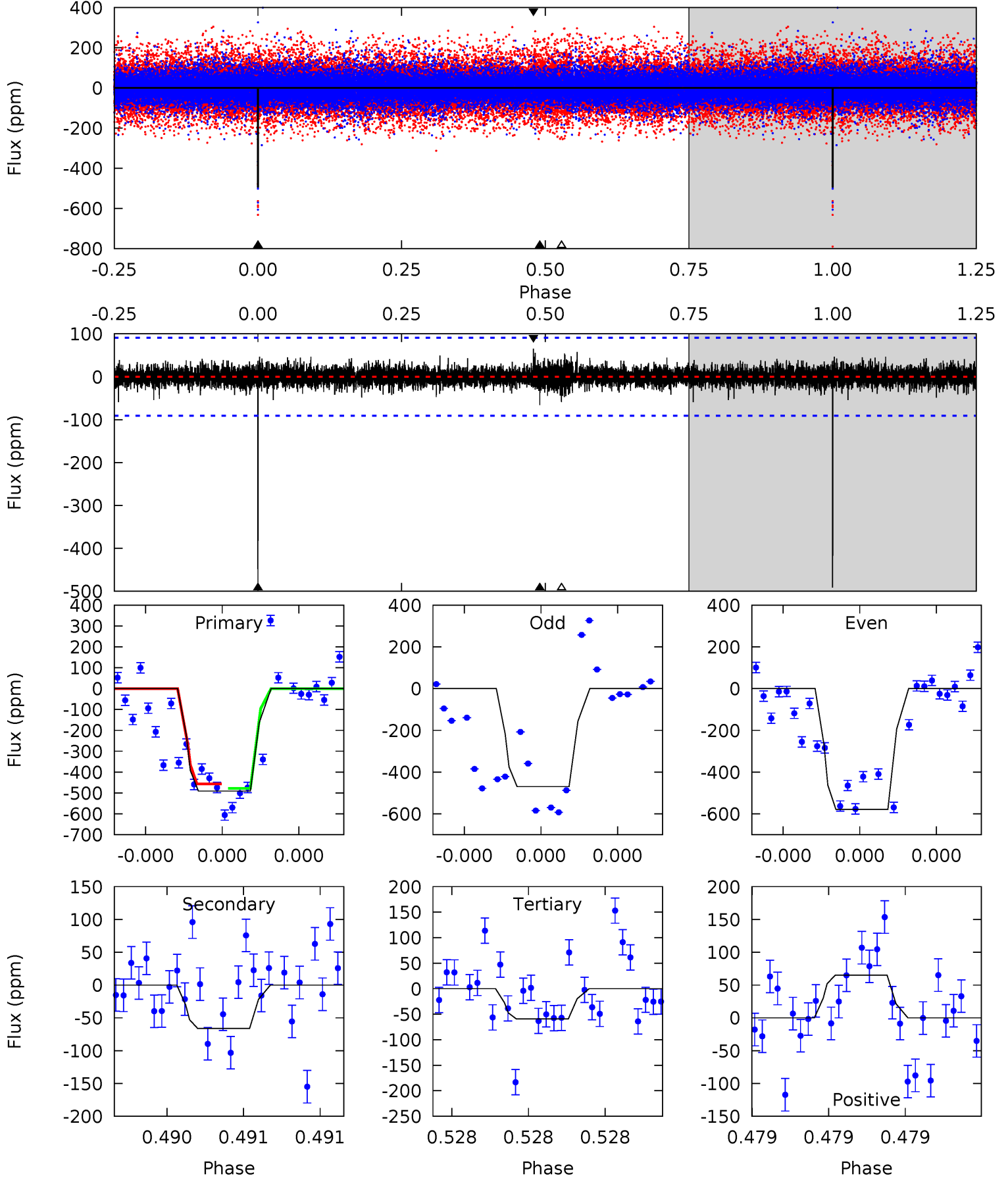
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	14.4	13.3	12.9	5.72	3.70	2.21	-2.15	-1.70	1.14	1.58	0.04	0.99	0.47	0.12



# Alt Model-Shift Uniqueness Test

005393802-02, P = 476.244983 Days, E = 380.092803 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.5	4.11	3.67	4.03	5.65	3.60	0.72	26.8	26.5	0.43	0.07	3.50	1.15	0.12	0.70





### Stellar Parameters For KIC 005393802

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6101^{+163}_{-181}$	$4.431^{+0.070}_{-0.210}$	$-0.140^{+0.300}_{-0.300}$	$1.019^{+0.331}_{-0.110}$	$1.020^{+0.154}_{-0.126}$	$1.356^{+0.496}_{-0.694}$
	+3%/-3%	+2%/-5%	+214%/-214%	+32%/-11%	+15%/-12%	+37%/-51%
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 005393802-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-921 \pm 64$	$3.17^{+2.10}_{-1.73}$	$352^{+28}_{-17}$	$6340^{+4642}_{-1227}$	$70638^{+278037}_{-44294}$
Alt.	$-66 \pm 16$	$2.97^{+1.97}_{-1.72}$	$353^{+28}_{-17}$	$3799^{+1605}_{-550}$	$5804^{+28896}_{-3766}$

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

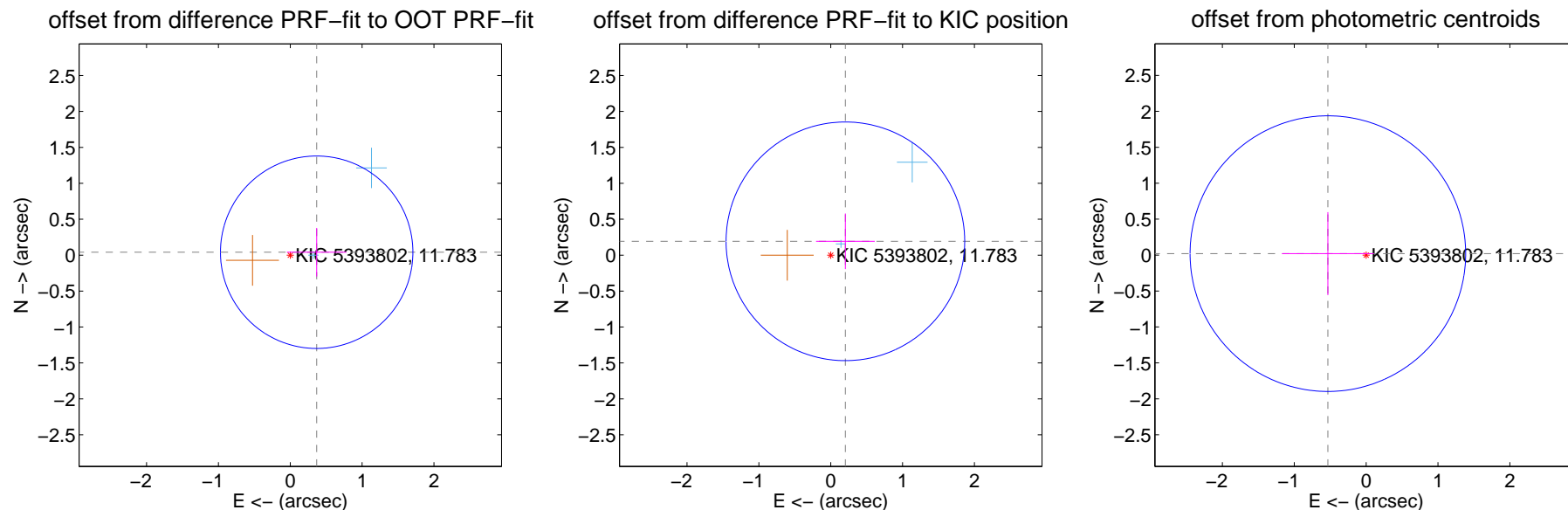
## DV Centroid Data

Supplemental centroid analysis for 005393802-02. **Kepler magnitude: 11.78.** Transit SNR 8.29

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

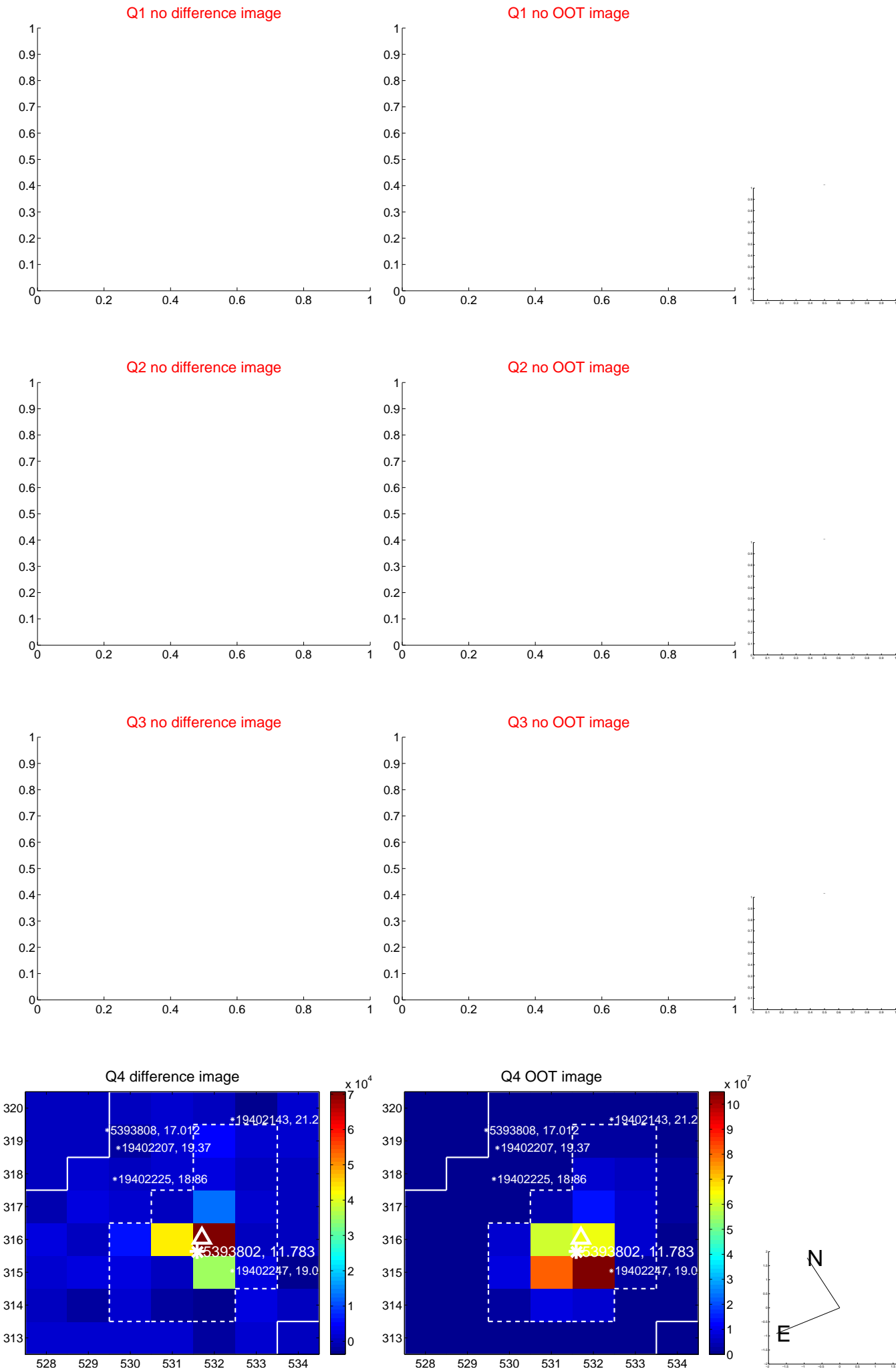
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.370 \pm 0.446$	0.83	$-0.368 \pm 0.414$	$0.041 \pm 0.338$
PRF-fit source offset from KIC position	$0.281 \pm 0.554$	0.51	$-0.204 \pm 0.408$	$0.193 \pm 0.387$
photometric centroid source offset	$0.53 \pm 0.64$	0.83	$0.53 \pm 0.64$	$0.02 \pm 0.58$



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

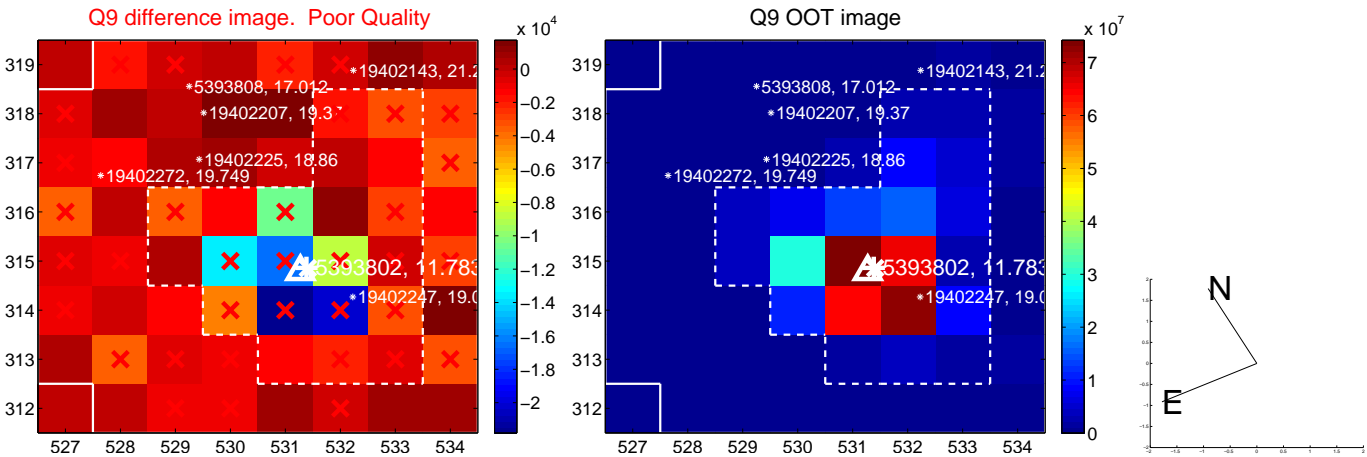
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



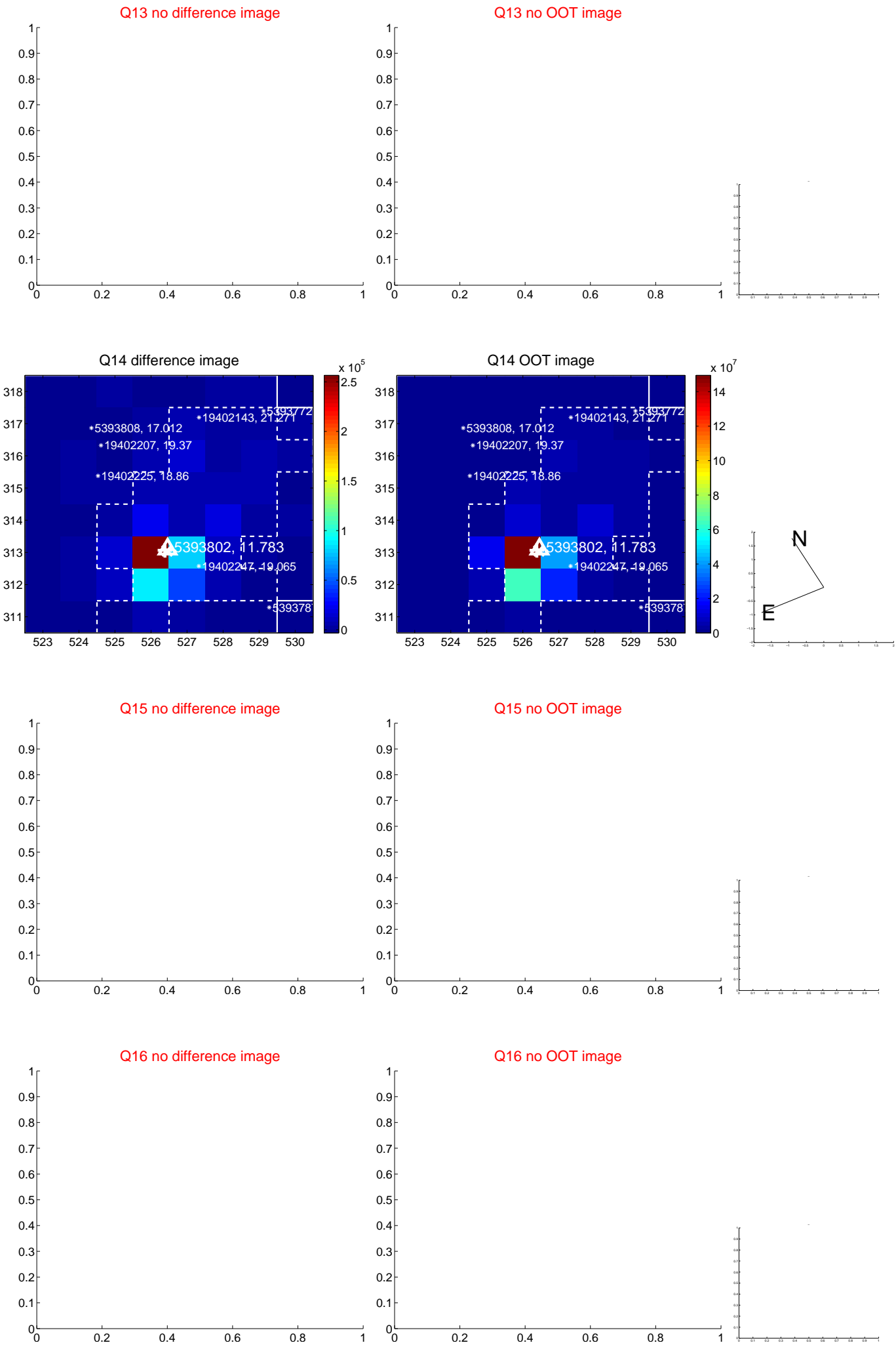
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



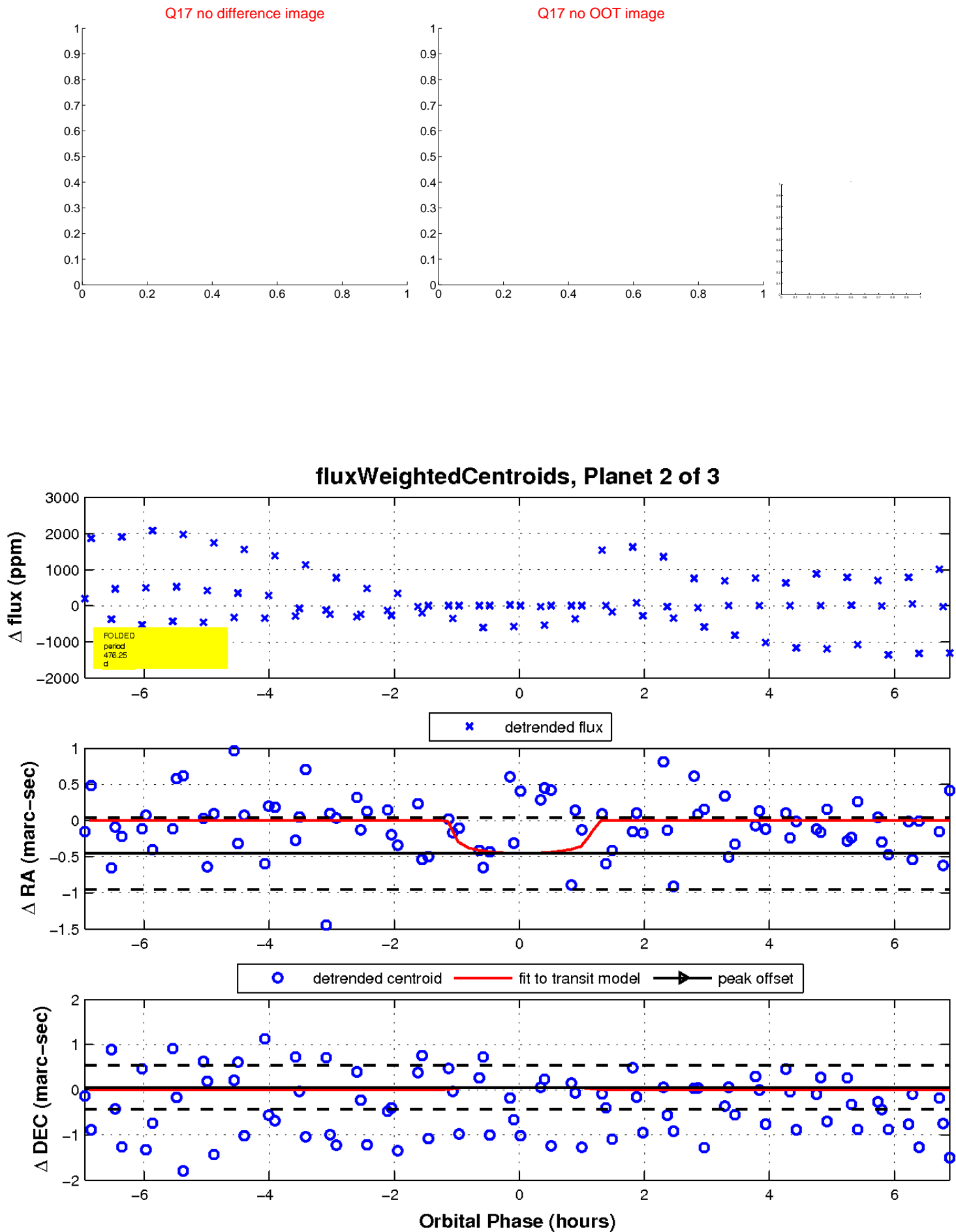
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

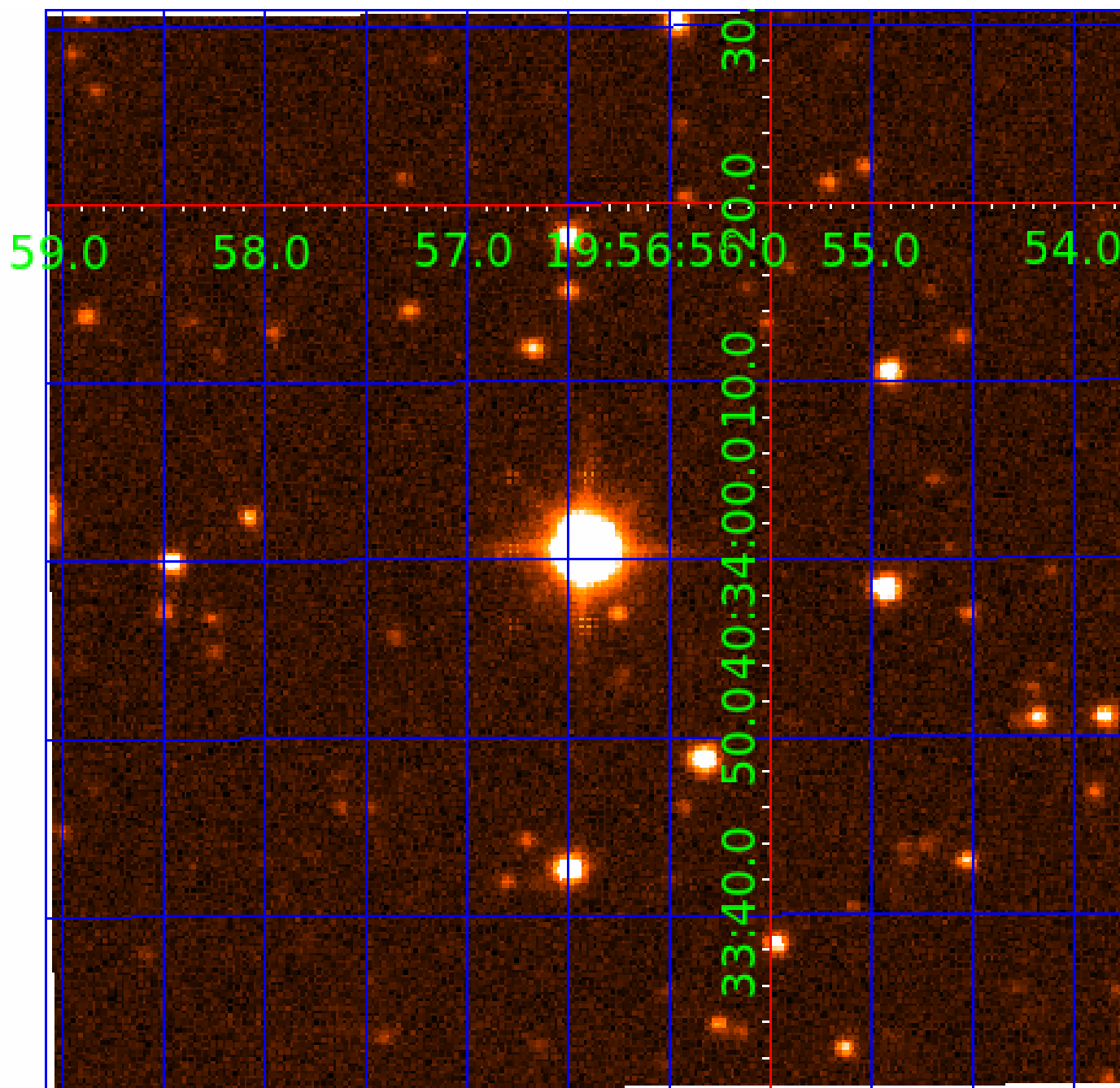


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005393802

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005393802-01	OBS	No	466.302021	461.727999	590.2	3.489	16.3	6.4	1.02	6101	2.58	0.92
005393802-02	OBS	No	476.252155	380.105784	702.7	2.333	11.6	8.3	1.02	6101	2.87	0.89
005393802-03	OBS	No	473.168495	307.290561	750.0	10.483	12.0	2.9	1.02	6101	3.56	0.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005393802-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005393802-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005393802-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV

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

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

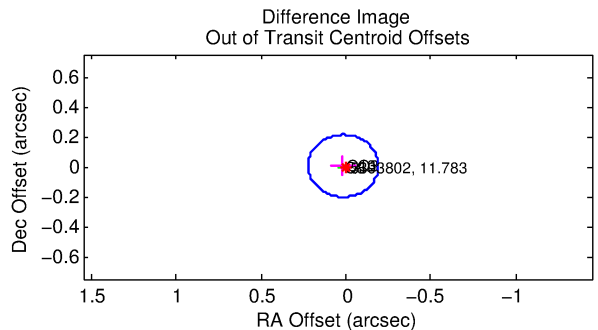
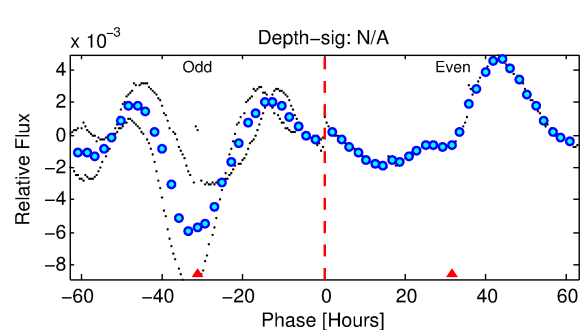
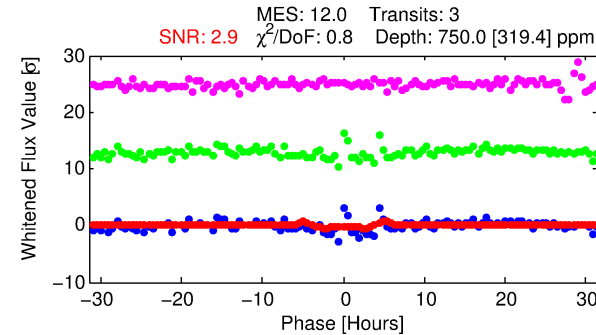
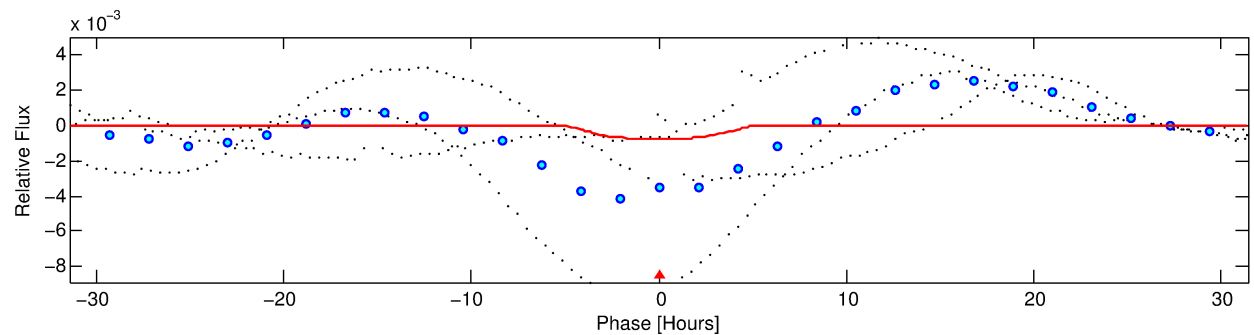
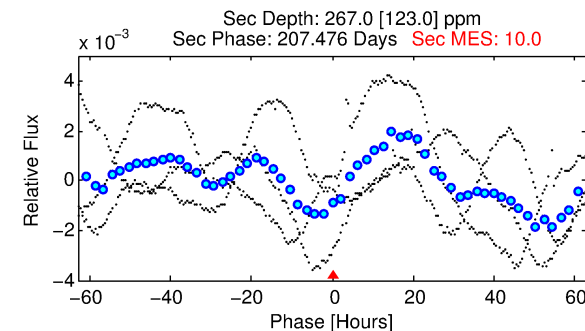
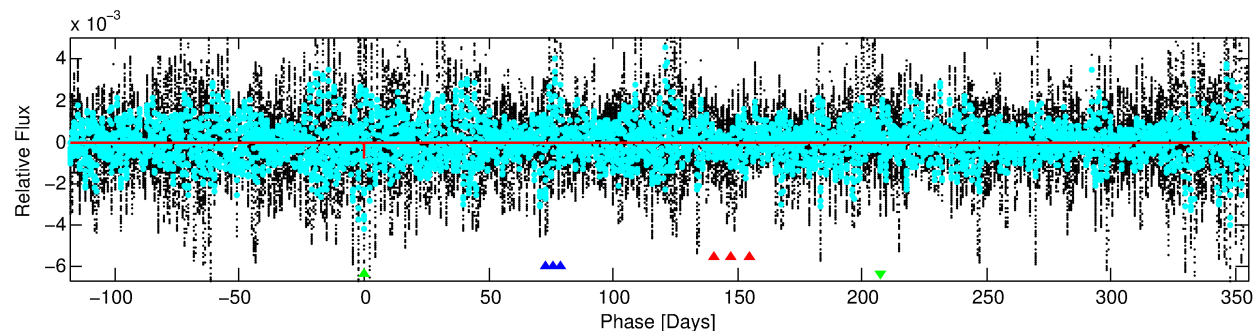
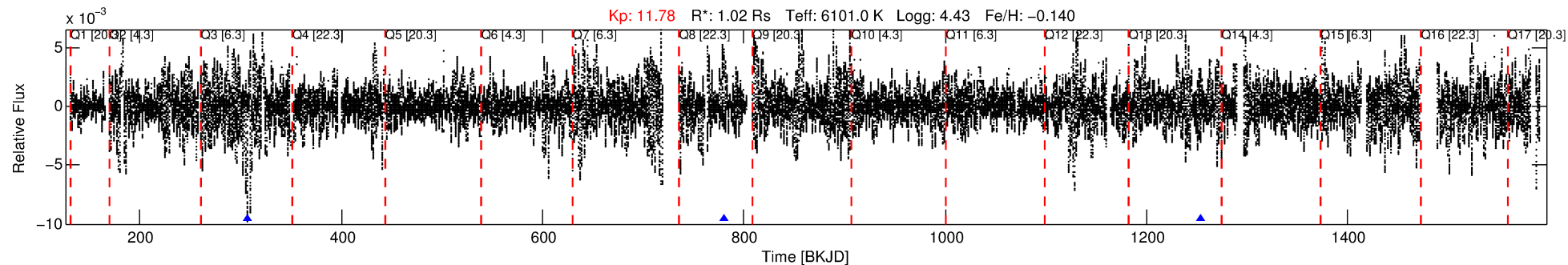
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005393802-03

No Significant Match Found

# DV One-Page Summary

KIC: 5393802 Candidate: 3 of 3 Period: 473.168 d



## DV Fit Results:

Period = 473.16850 [0.01839] d  
Epoch = 307.2906 [0.0206] BKJD  
 $R_p/R^*$  = 0.0320 [0.0070]  
 $a/R^*$  = 132.01 [14.48]  
 $b$  = 0.96 [0.01]  
 $\text{Seff}$  = 0.90 [0.37]  
 $T_{\text{eq}}$  = 248 [25] K  
 $R_p$  = 3.56 [1.39]  $R_e$   
 $a$  = 1.1972 [0.3232] AU  
 $A_g$  = 16650.11 [12384.49] [1.34 $\sigma$ ]  
 **$T_{\text{effp}}$  = 4361 [704] K [5.84 $\sigma$ ]**

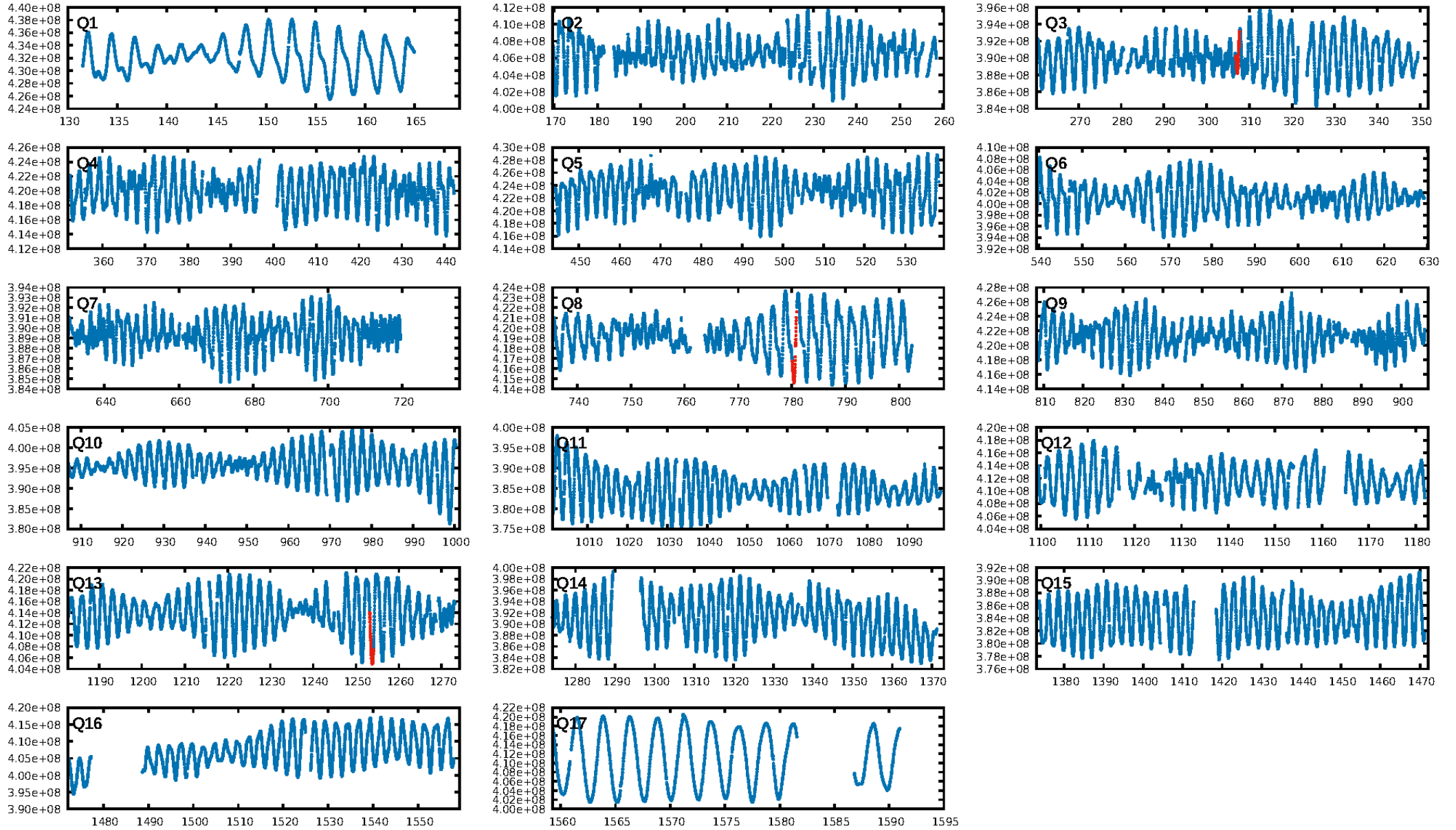
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.92 $\sigma$ ]  
LongPeriod-sig: 100.0% [6.89 $\sigma$ ]  
ModelChiSquare2-sig: 67.4%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.72  
Centroid-sig: 1.2%  
Centroid-so: 0.696 arcsec [1.75 $\sigma$ ]  
OotOffset-rm: 0.019 arcsec [0.28 $\sigma$ ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-rm: 0.102 arcsec [1.46 $\sigma$ ]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

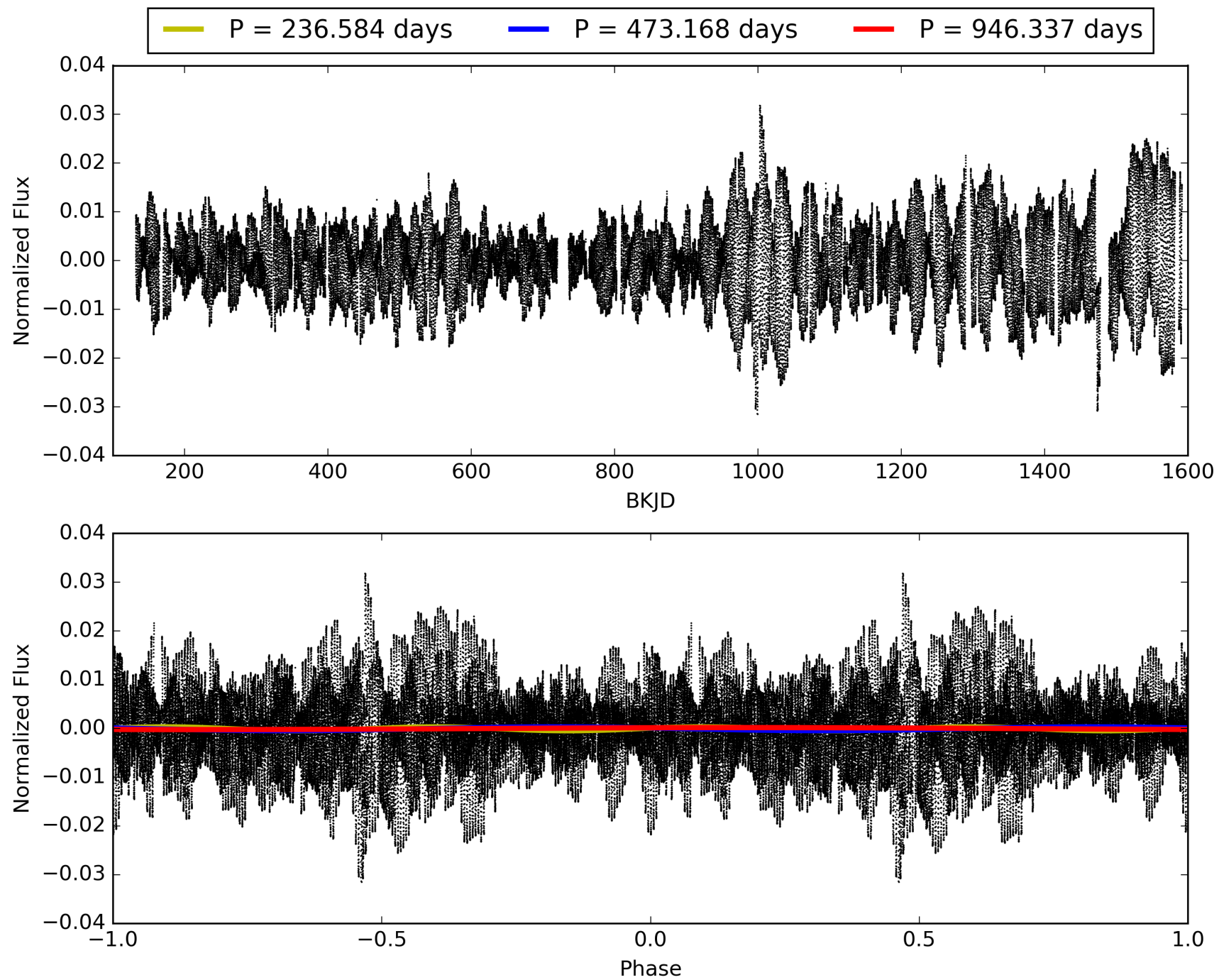
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:56:07 Z

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

# TCE 005393802-03, PDC Light Curves

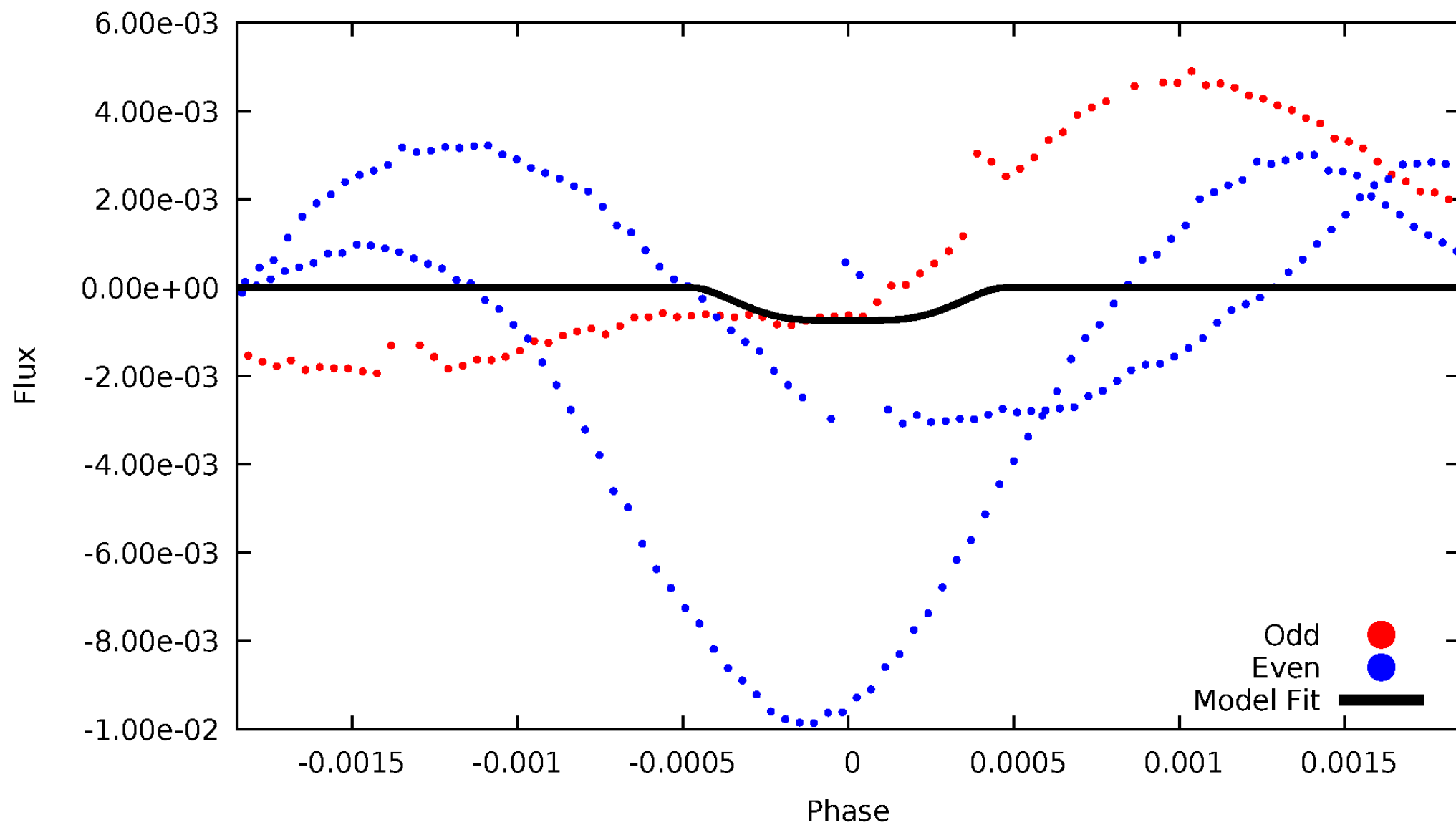


TCE 005393802-03



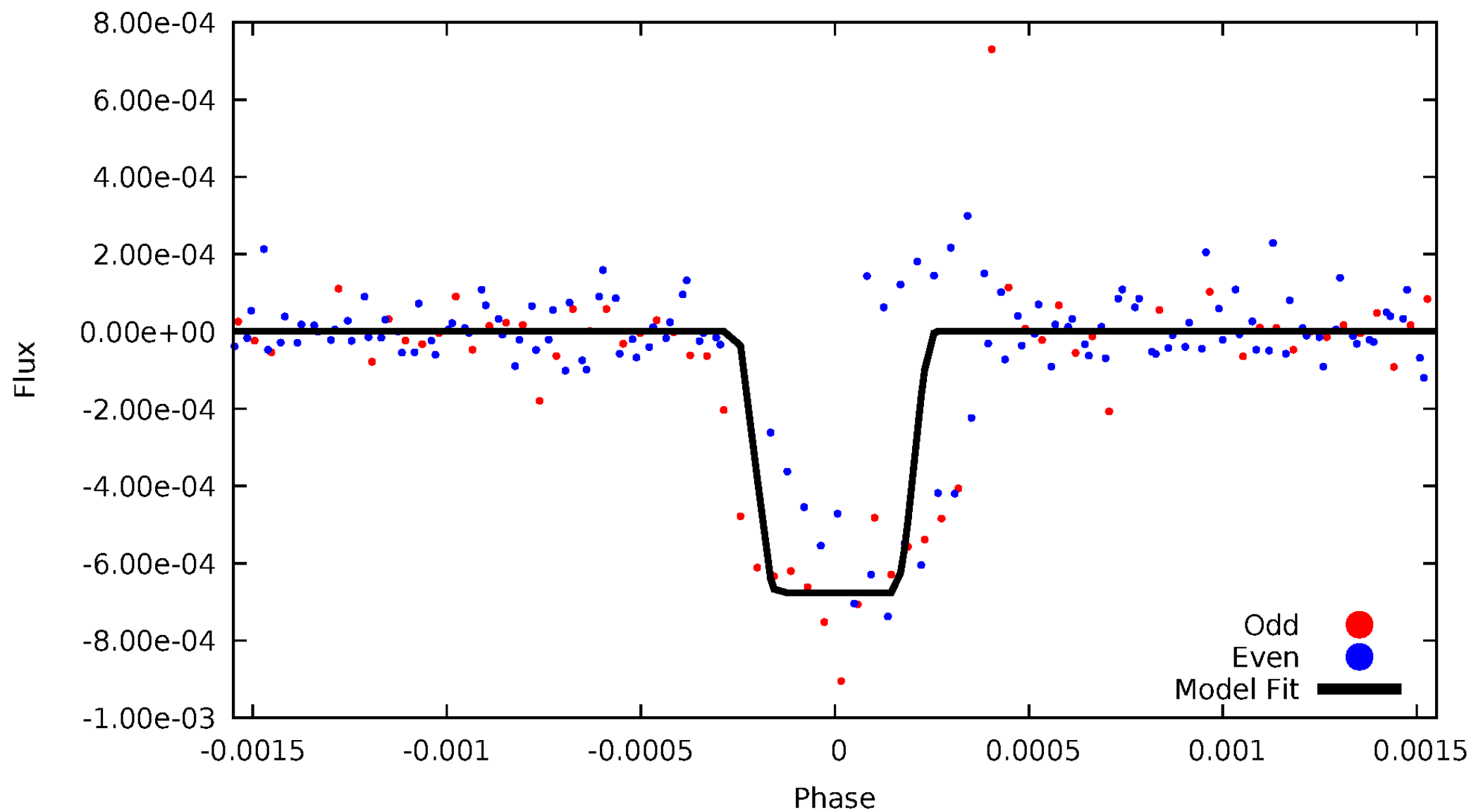
# DV Odd/Even

TCE 005393802-03



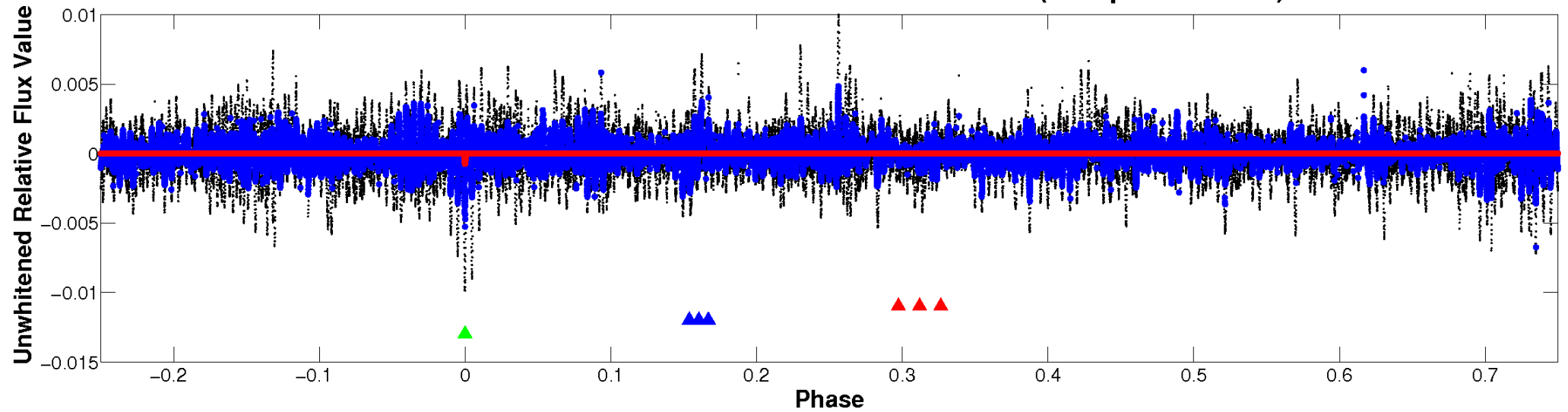
# ALT Odd/Even

TCE 005393802-03

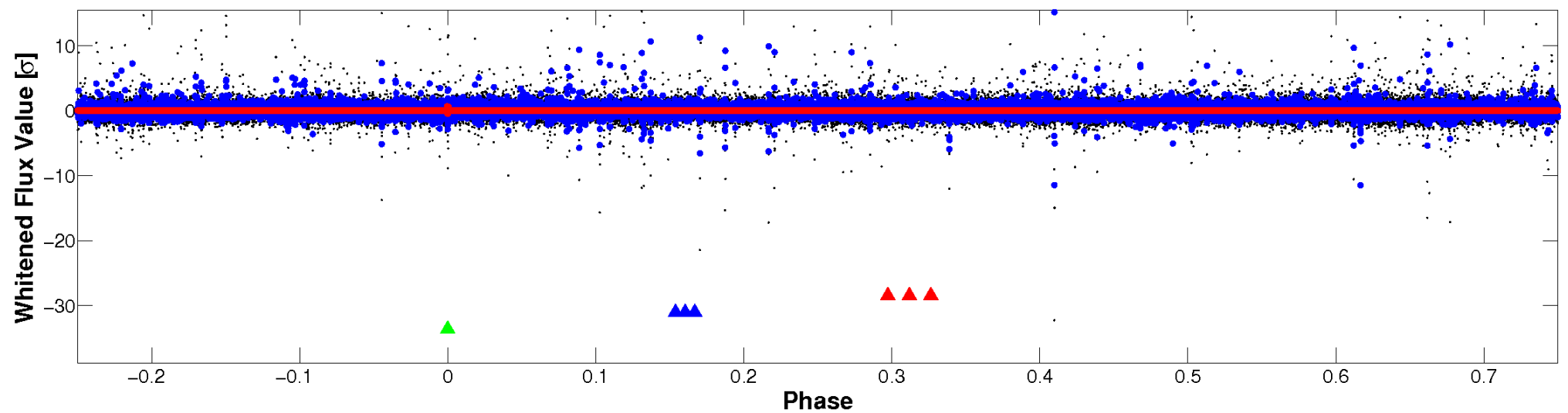


# Non-Whitened Vs. Whitened Light Curve

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

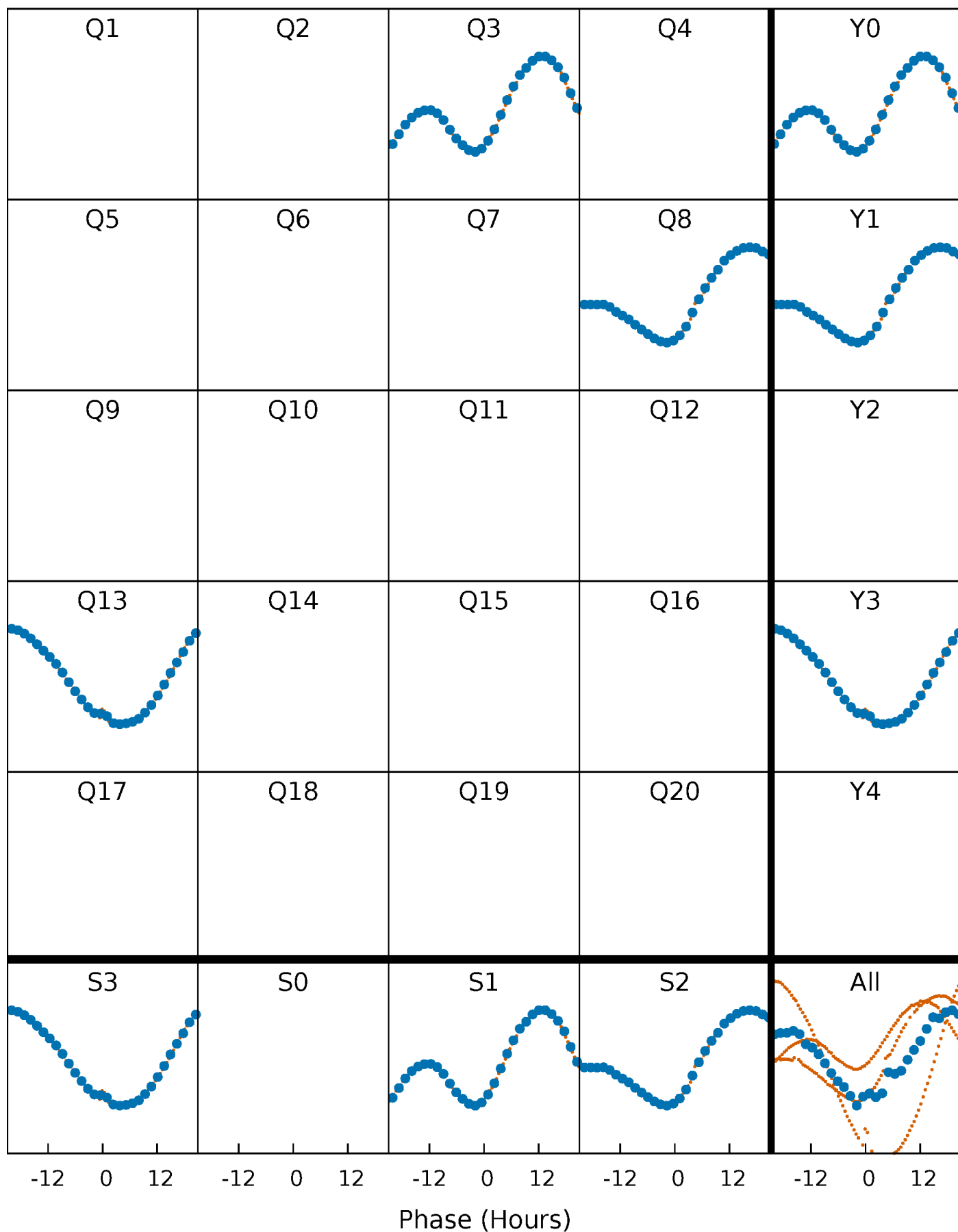


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

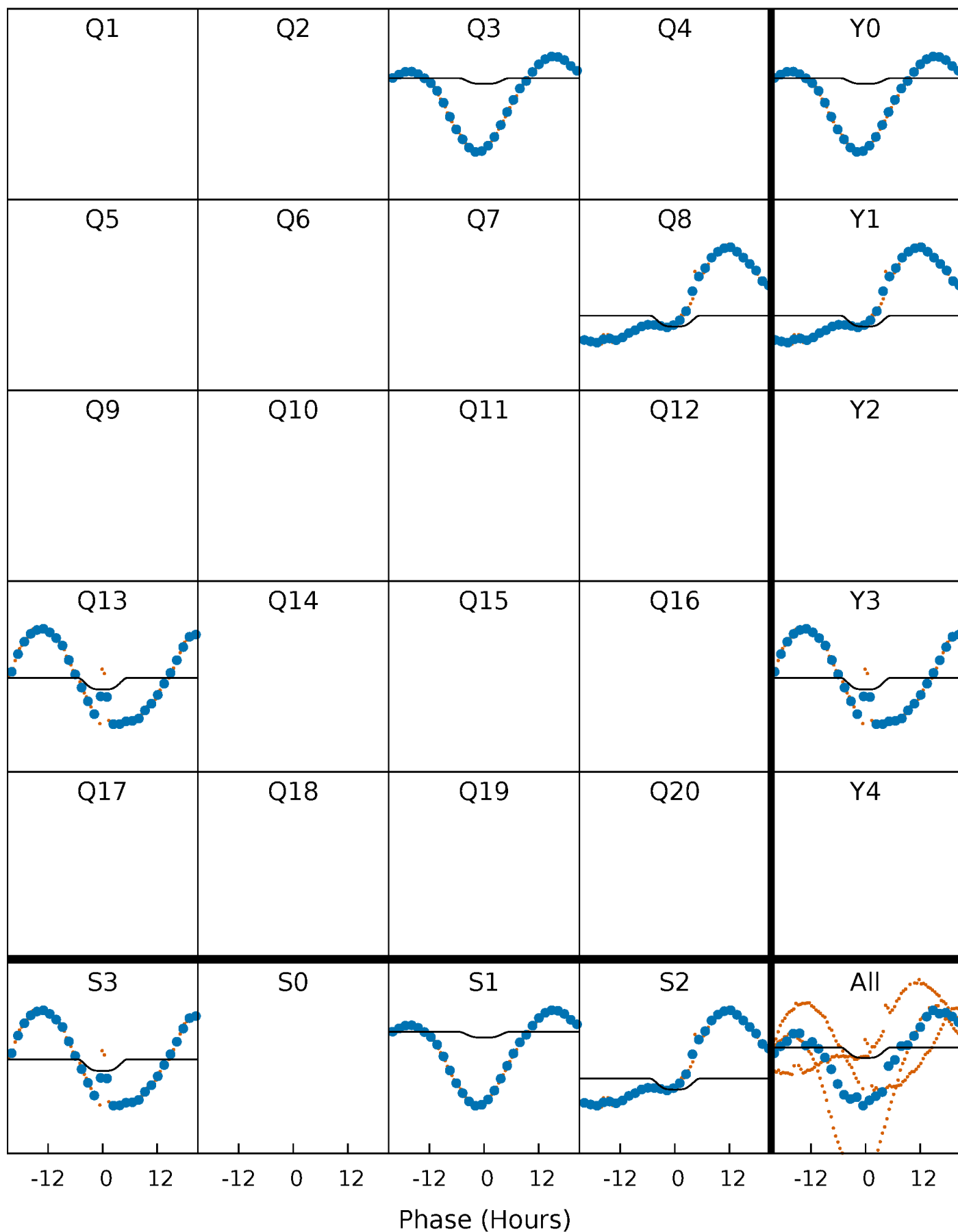
TCE 005393802-03     $P=473.168495$  Days     $T_0=307.290561$  (BKJD)





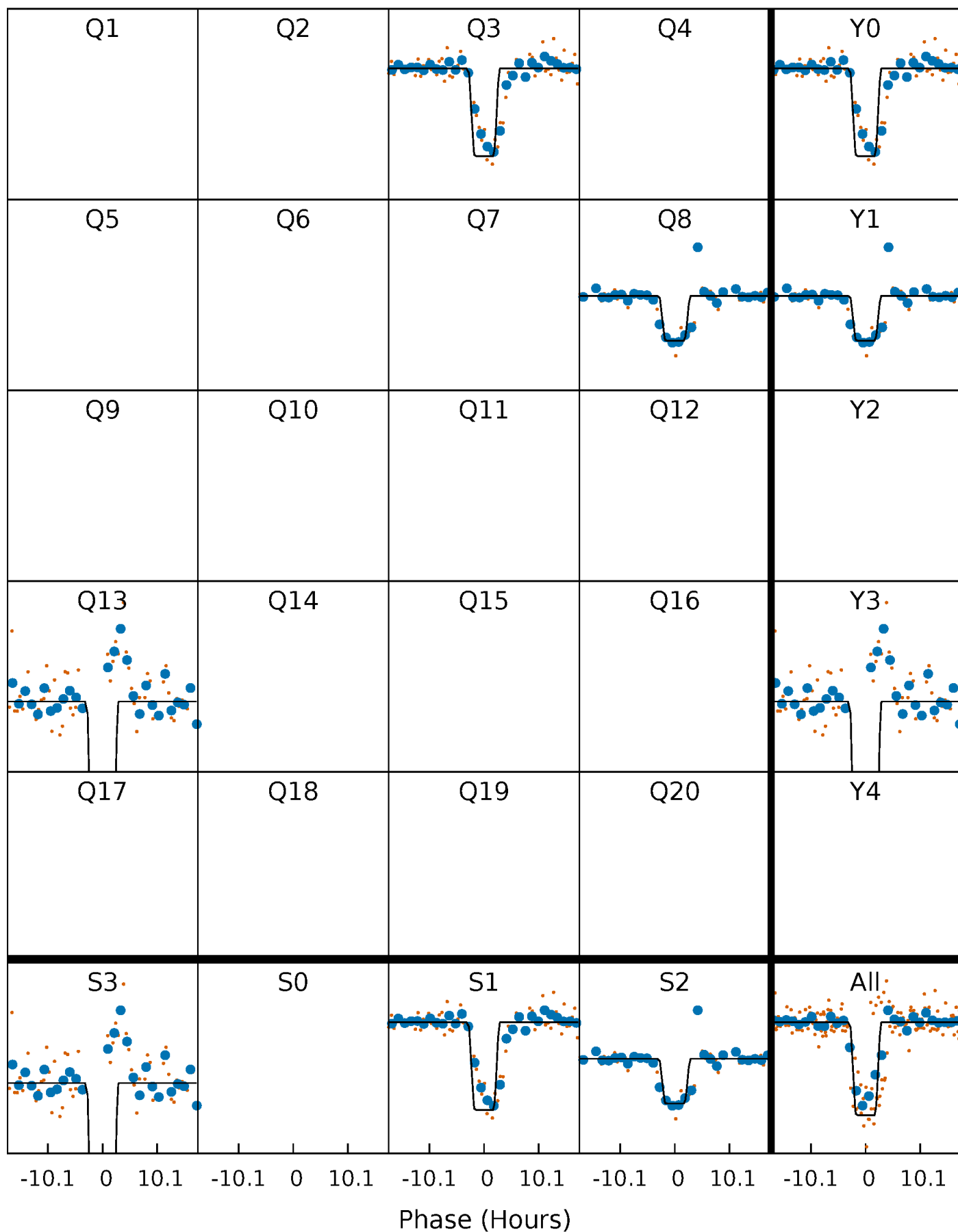
# DV Quarter-Phased Transit Curves

TCE 005393802-03     $P=473.168495$  Days     $T_0=307.290561$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

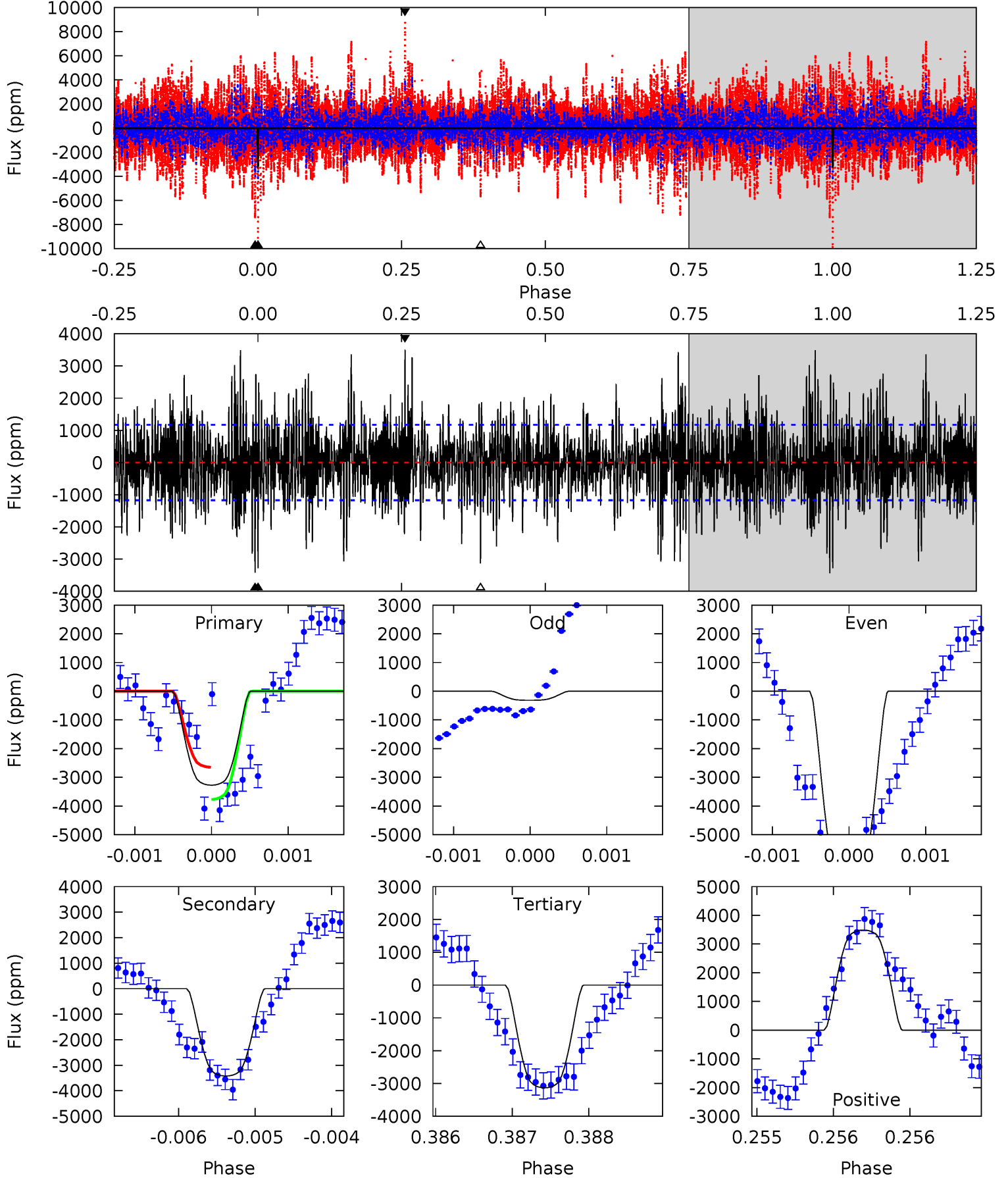
TCE 005393802-03     $P=473.214005$  Days     $T_0=307.258402$  (BKJD)



# DV Model-Shift Uniqueness Test

005393802-03, P = 473.168495 Days, E = 307.290561 Days

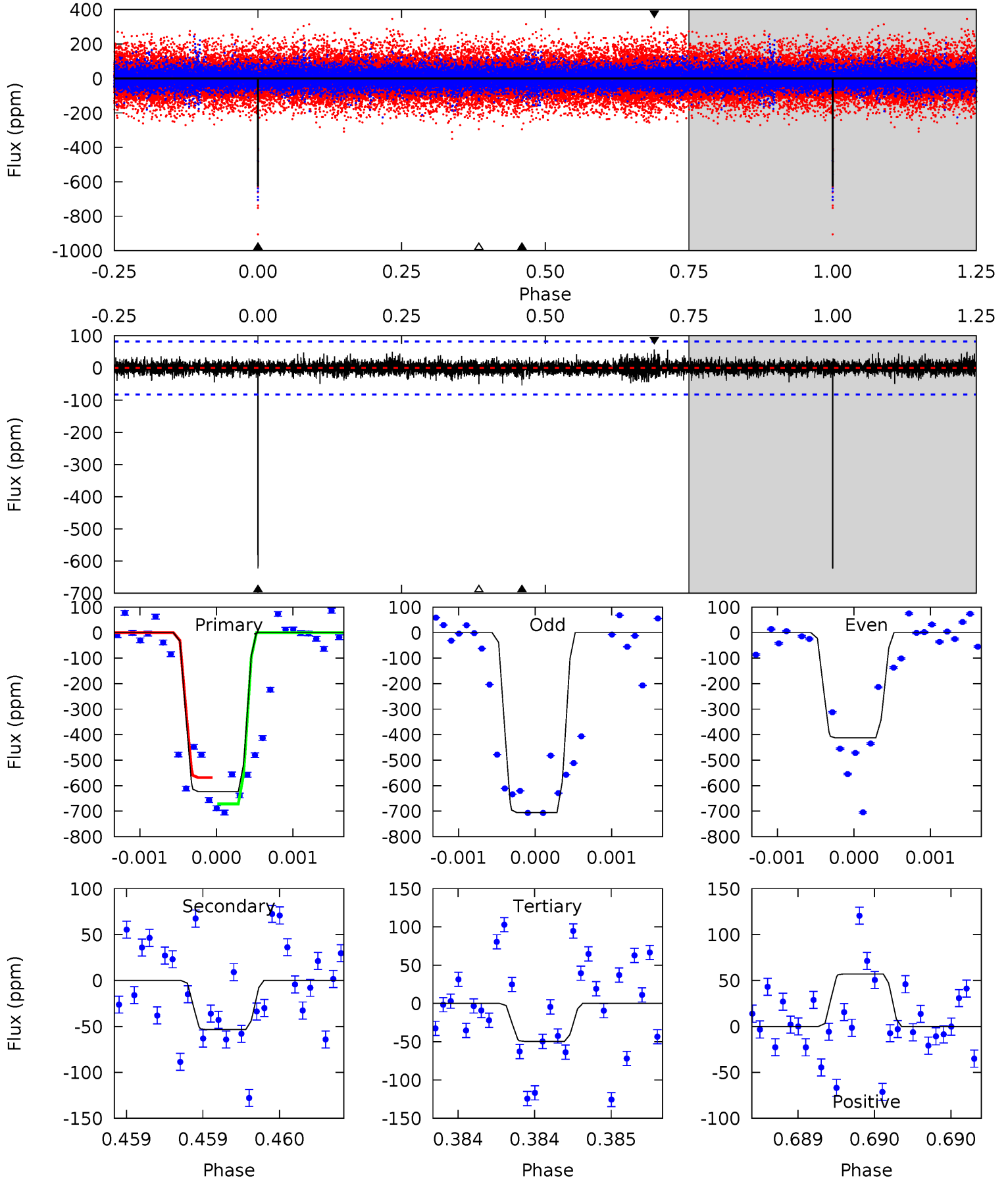
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	15.9	14.6	16.3	5.47	3.31	4.13	0.67	-0.99	1.35	-0.31	15.0	1.80	0.50	2.60



# Alt Model-Shift Uniqueness Test

005393802-03, P = 473.214005 Days, E = 307.258402 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
42.3	3.62	3.36	3.87	5.57	3.48	0.70	38.9	38.4	0.26	-0.25	10.9	0.68	0.08	3.52



### Stellar Parameters For KIC 005393802

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6101^{+163}_{-181}$	$4.431^{+0.070}_{-0.210}$	$-0.140^{+0.300}_{-0.300}$	$1.019^{+0.331}_{-0.110}$	$1.020^{+0.154}_{-0.126}$	$1.356^{+0.496}_{-0.694}$
	+3%/-3%	+2%/-5%	+214%/-214%	+32%/-11%	+15%/-12%	+37%/-51%
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 005393802-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-3423 \pm 215$	$3.67^{+0.97}_{-0.93}$	$352^{+29}_{-18}$	$8721^{+1624}_{-1178}$	$195667^{+158135}_{-71827}$
Alt.	$-53 \pm 15$	$3.00^{+0.96}_{-0.80}$	$354^{+27}_{-18}$	$3653^{+461}_{-315}$	$4499^{+4063}_{-2147}$

$T_{\text{max}}$  = 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

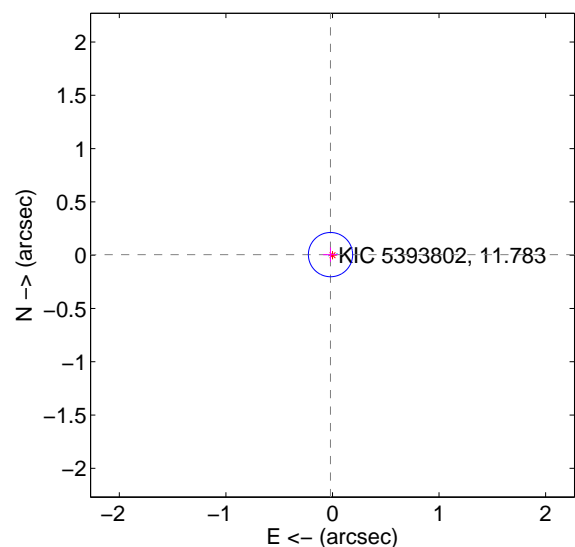
Supplemental centroid analysis for 005393802-03. **Kepler magnitude: 11.78.** Transit SNR 2.89

**There are 3 quarters with good PRF difference image offsets**

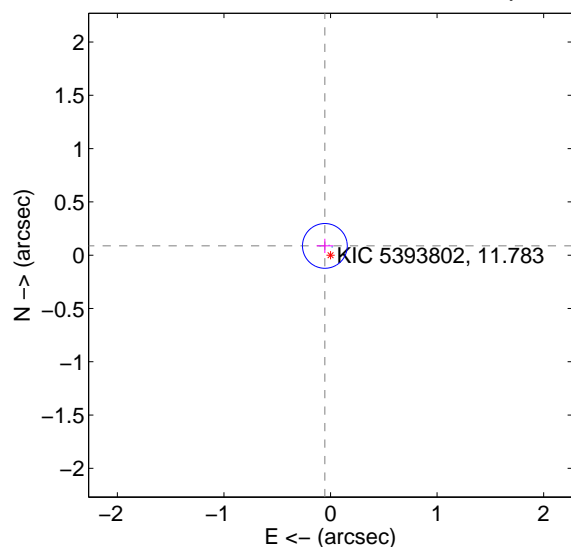
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.019 \pm 0.069$	0.28	$0.018 \pm 0.069$	$0.005 \pm 0.067$
PRF-fit source offset from KIC position	$0.102 \pm 0.070$	1.46	$0.053 \pm 0.078$	$0.087 \pm 0.067$
photometric centroid source offset	$0.70 \pm 0.40$	1.75	$0.37 \pm 0.40$	$0.59 \pm 0.40$

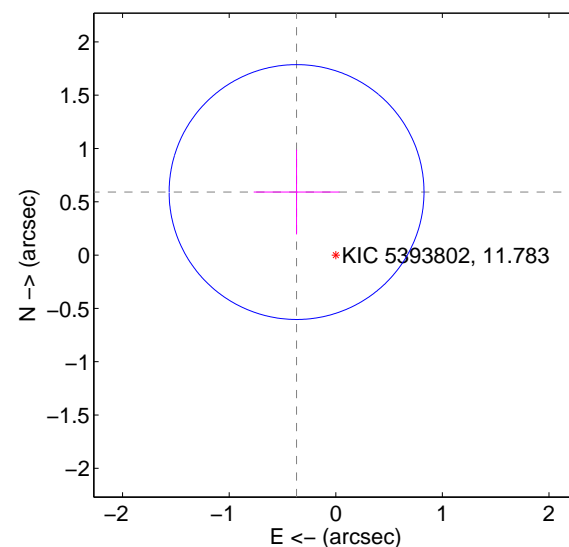
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



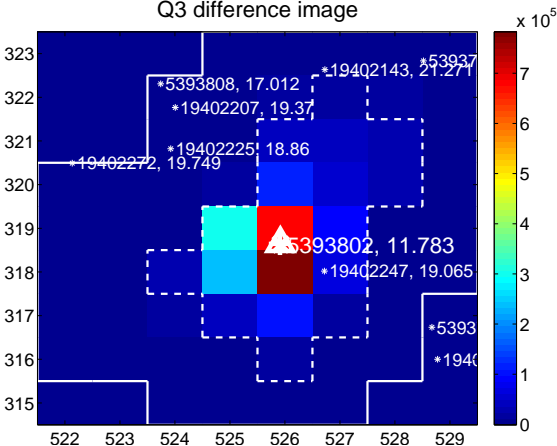
Q2 no difference image



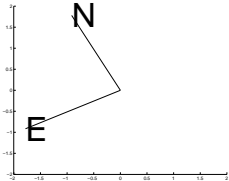
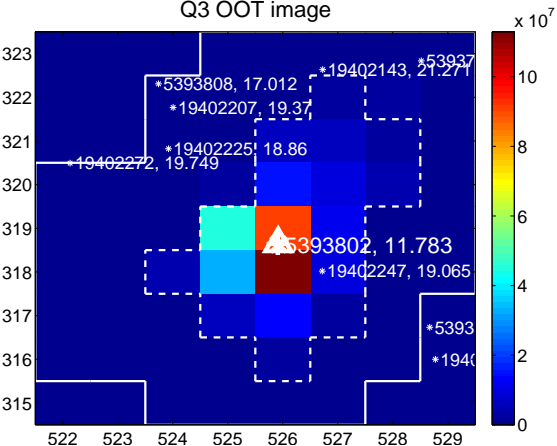
Q2 no OOT image



Q3 difference image



Q3 OOT image



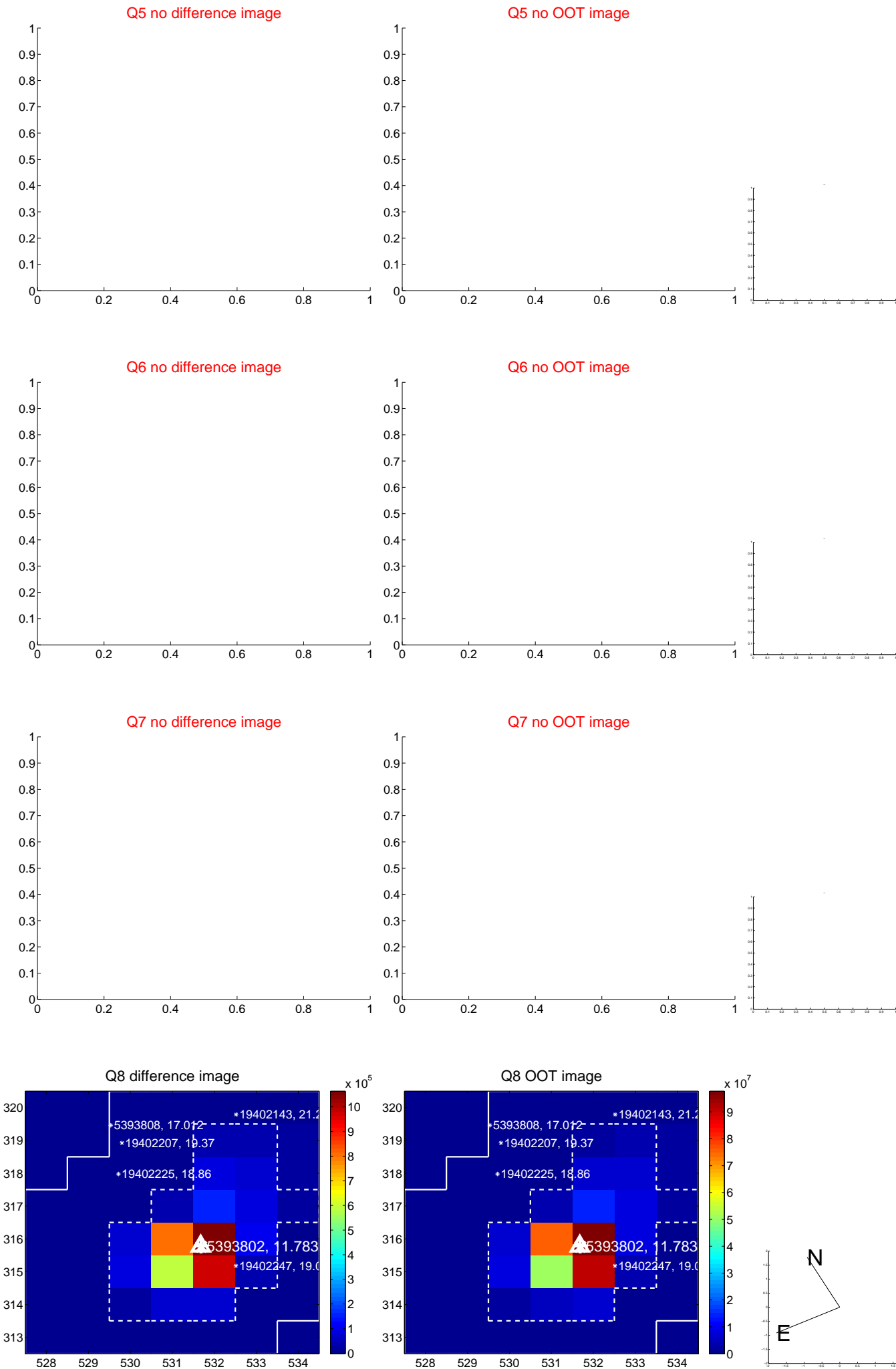
Q4 no difference image



Q4 no OOT image



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

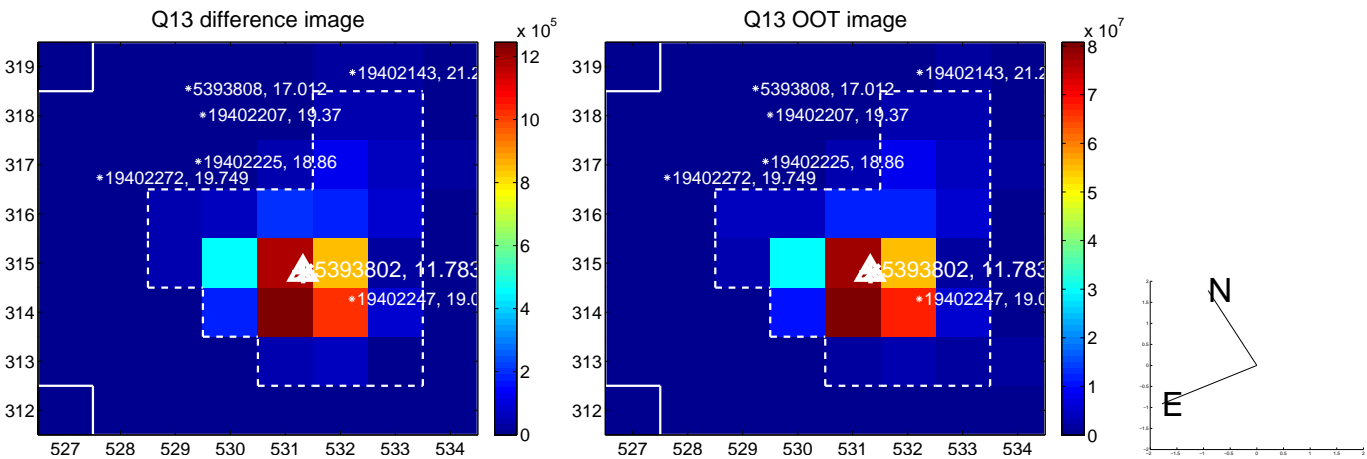




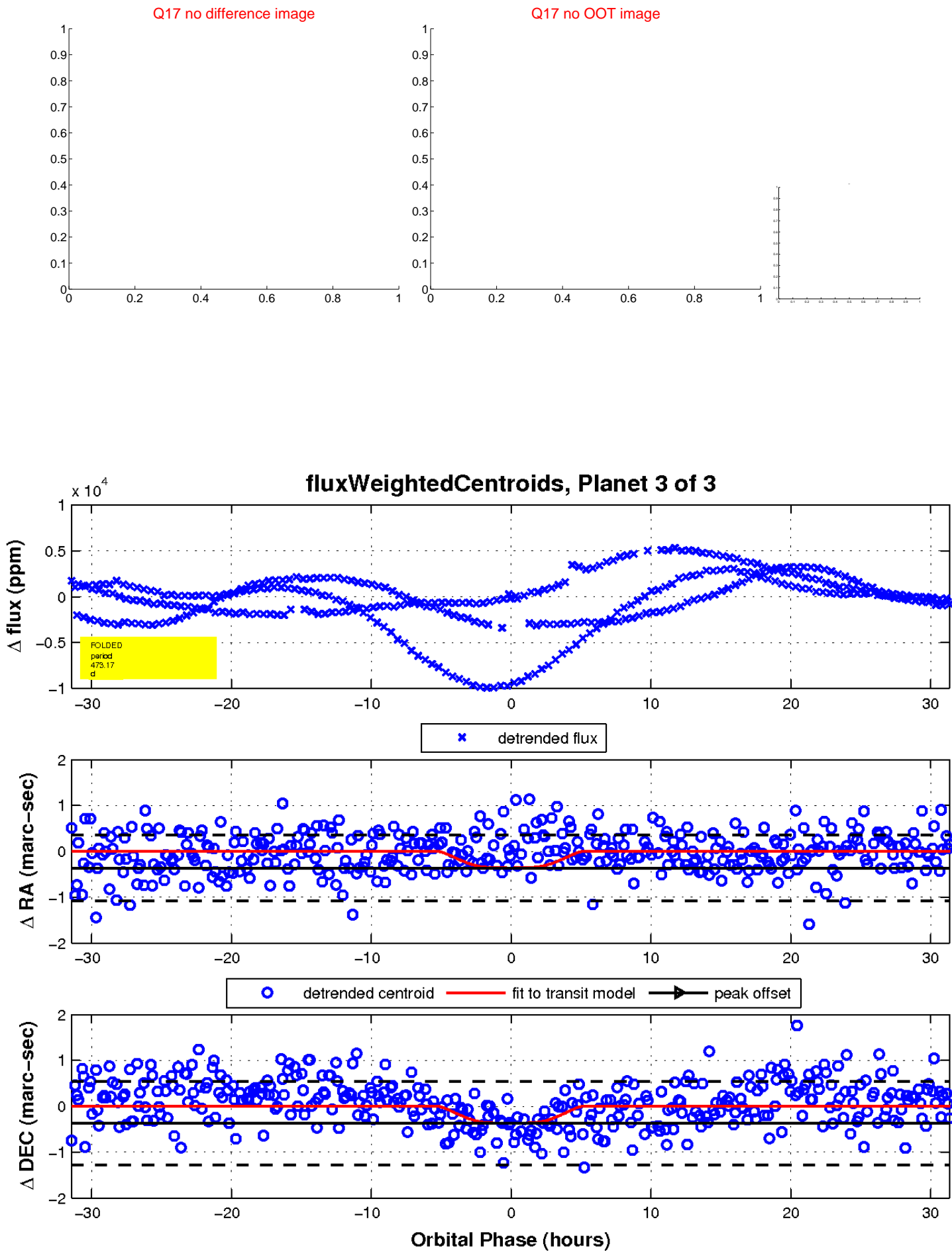
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

