

# KIC 005460274

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005460274-01	OBS	No	128.446844	227.308062	40.1	2.890	10.3	11.6	36.80	4208	27.41	1037.94
005460274-02	OBS	No	168.693057	204.654528	20.6	16.613	8.3	3.7	36.80	4208	17.93	721.67

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005460274-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005460274-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

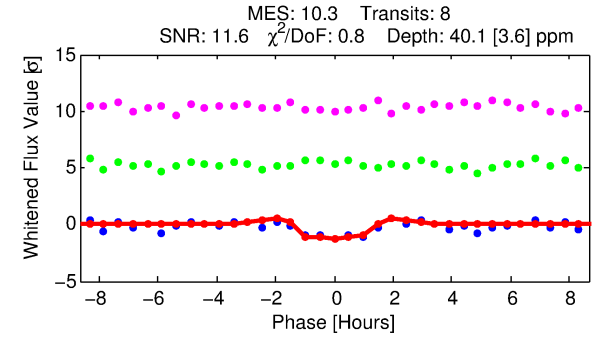
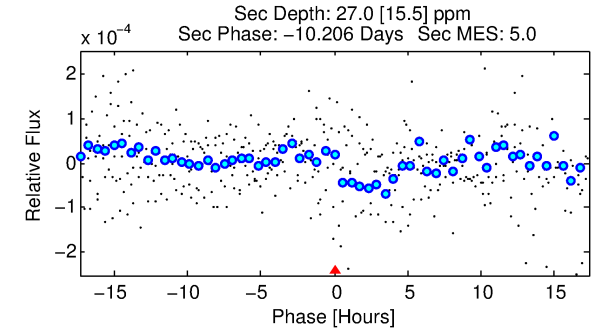
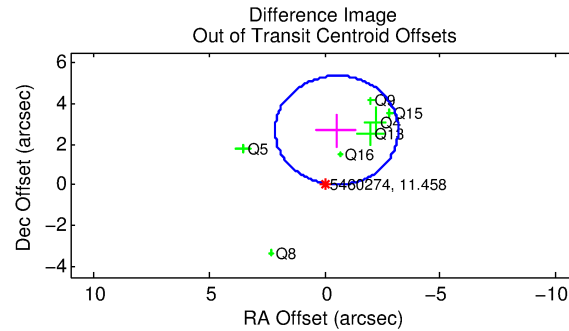
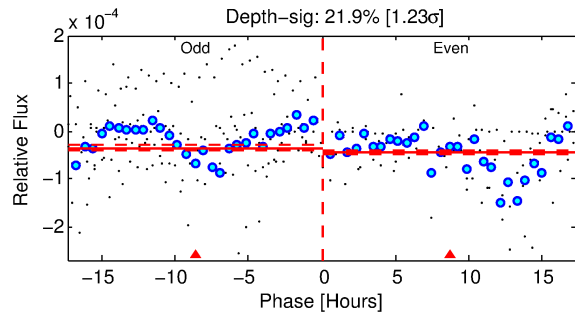
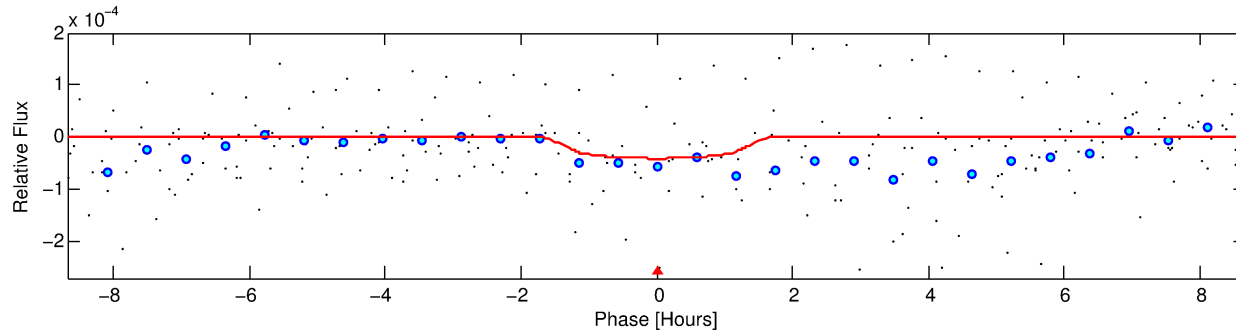
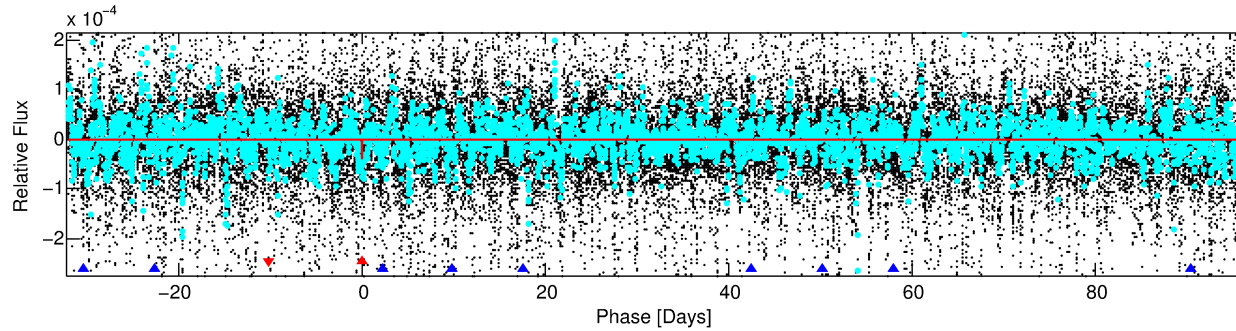
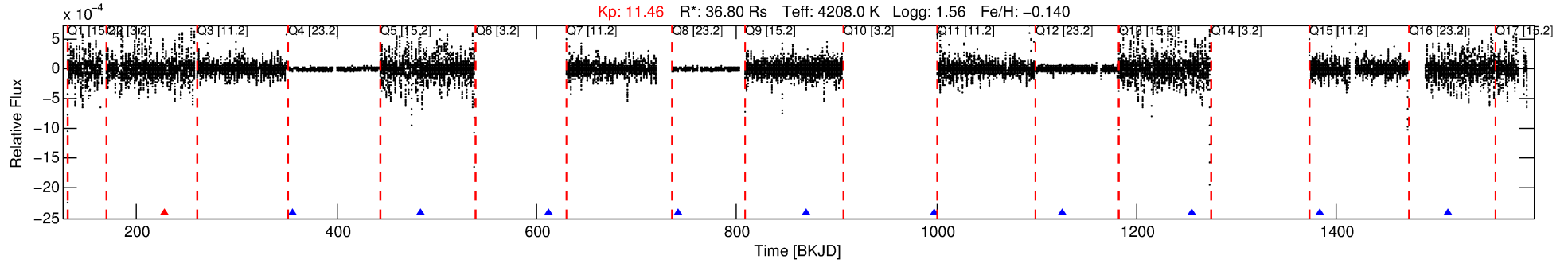
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005460274-01

No Significant Match Found

# DV One-Page Summary

KIC: 5460274 Candidate: 1 of 2 Period: 128.447 d



## DV Fit Results:

Period = 128.44684 [0.00112] d  
Epoch = 227.3081 [0.0034] BKJD  
Rp/R\* = 0.0068 [0.0042]  
a/R\* = 185.15 [359.67]  
b = 0.85 [0.68]  
Seff = 1037.94 [193.64]  
Teq = 1447 [68] K  
Rp = 27.41 [17.77] Re  
a = 0.6055 [0.0883] AU  
Ag = 7.25 [9.85] [0.63 $\sigma$ ]  
Teffp = 3672 [1243] K [1.79 $\sigma$ ]

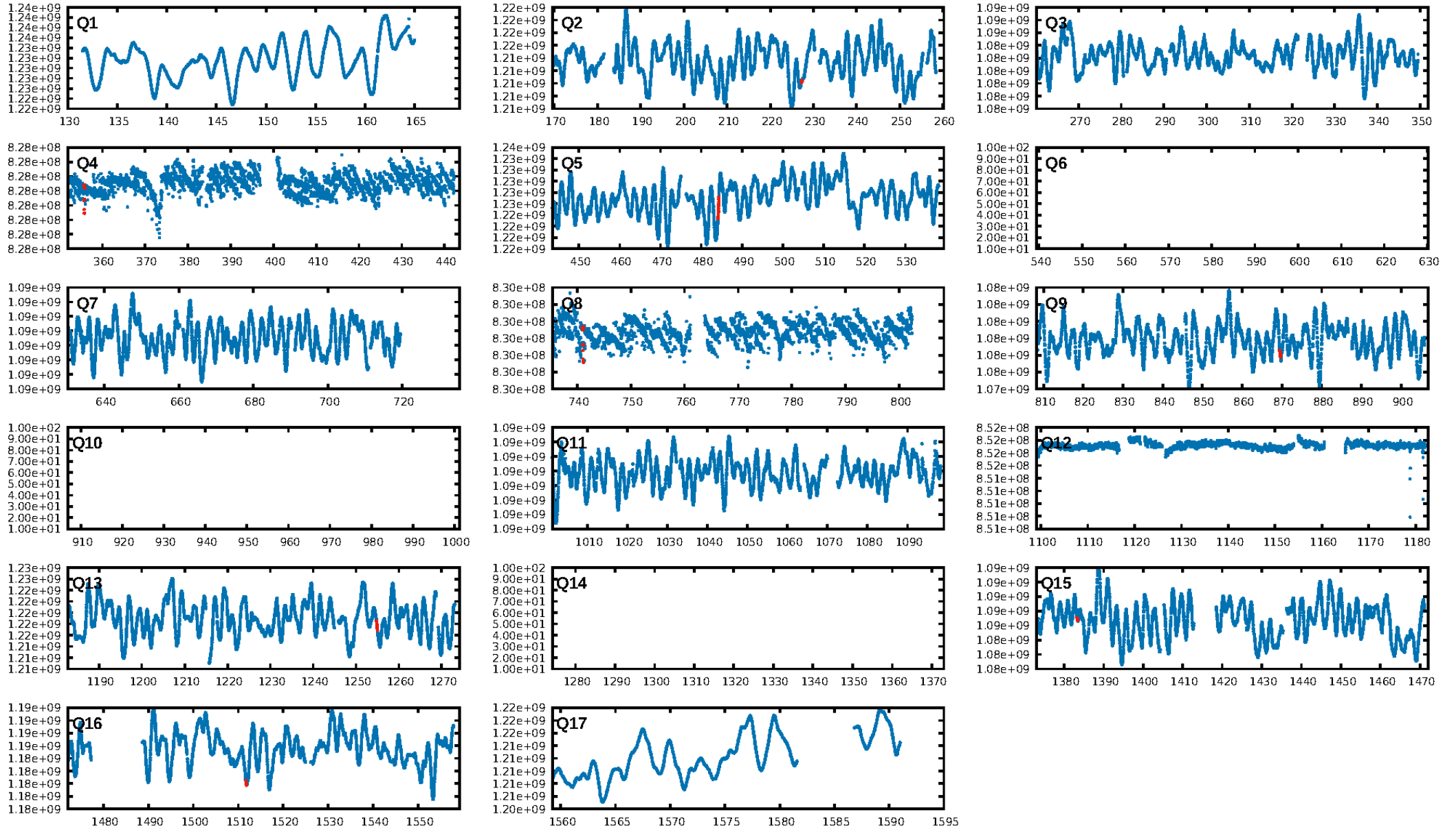
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [57.28 $\sigma$ ]  
ModelChiSquare2-sig: 81.5%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 1.43e-10  
RollingBand-fgt: 0.88 [7/8]  
GhostDiagnostic-chr: -2.041  
Centroid-sig: N/A  
Centroid-so: 2.985 arcsec [1.00 $\sigma$ ]  
OotOffset-rm: 2.733 arcsec [3.07 $\sigma$ ]  
KicOffset-rm: 3.139 arcsec [3.12 $\sigma$ ]  
OotOffset-st: 0/1/3/3 [7]  
KicOffset-st: 0/1/3/3 [7]  
DiffImageQuality-fgm: 0.14 [1/7]  
DiffImageOverlap-fno: 1.00 [8/8]

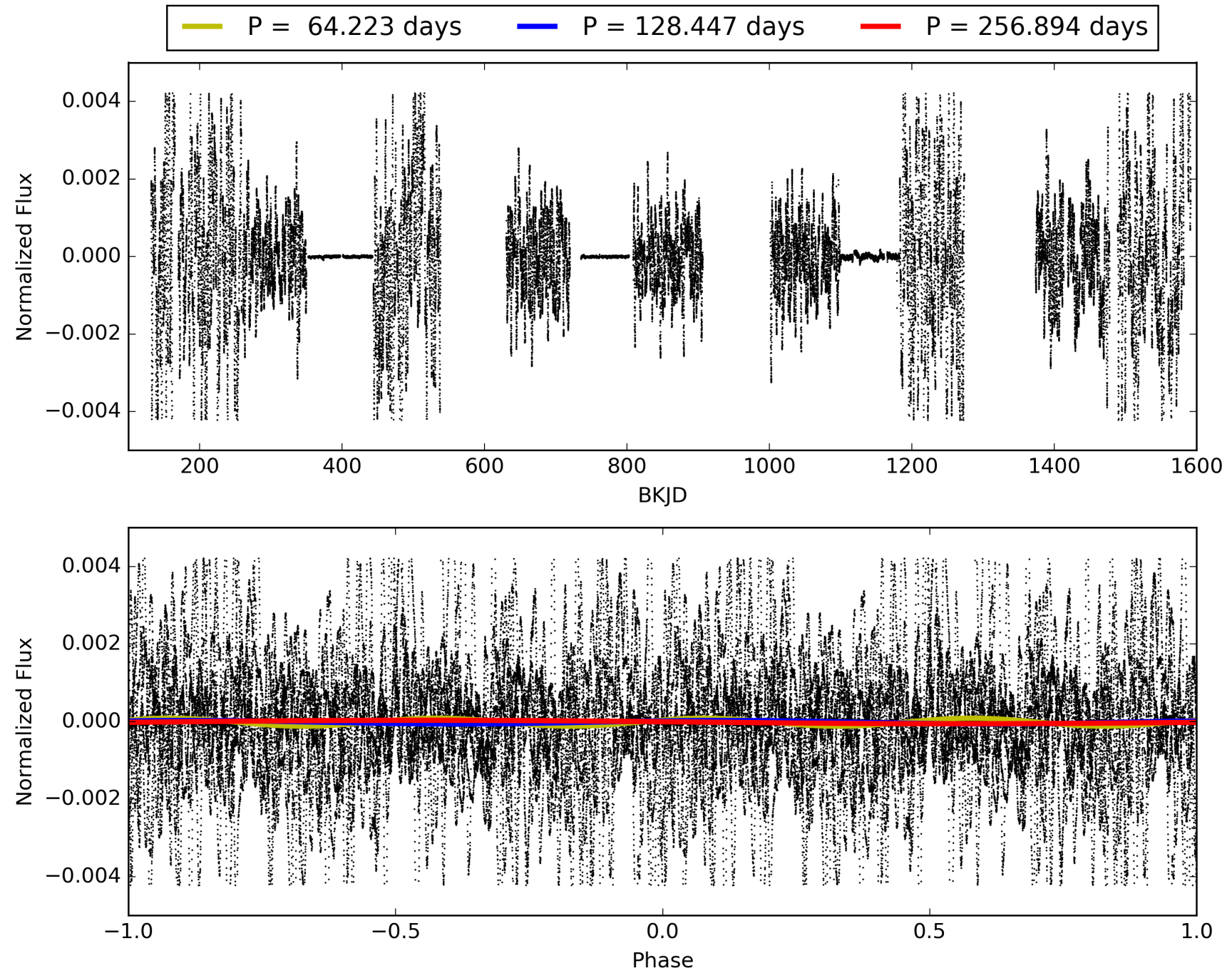
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:27:19 Z

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

# TCE 005460274-01, PDC Light Curves

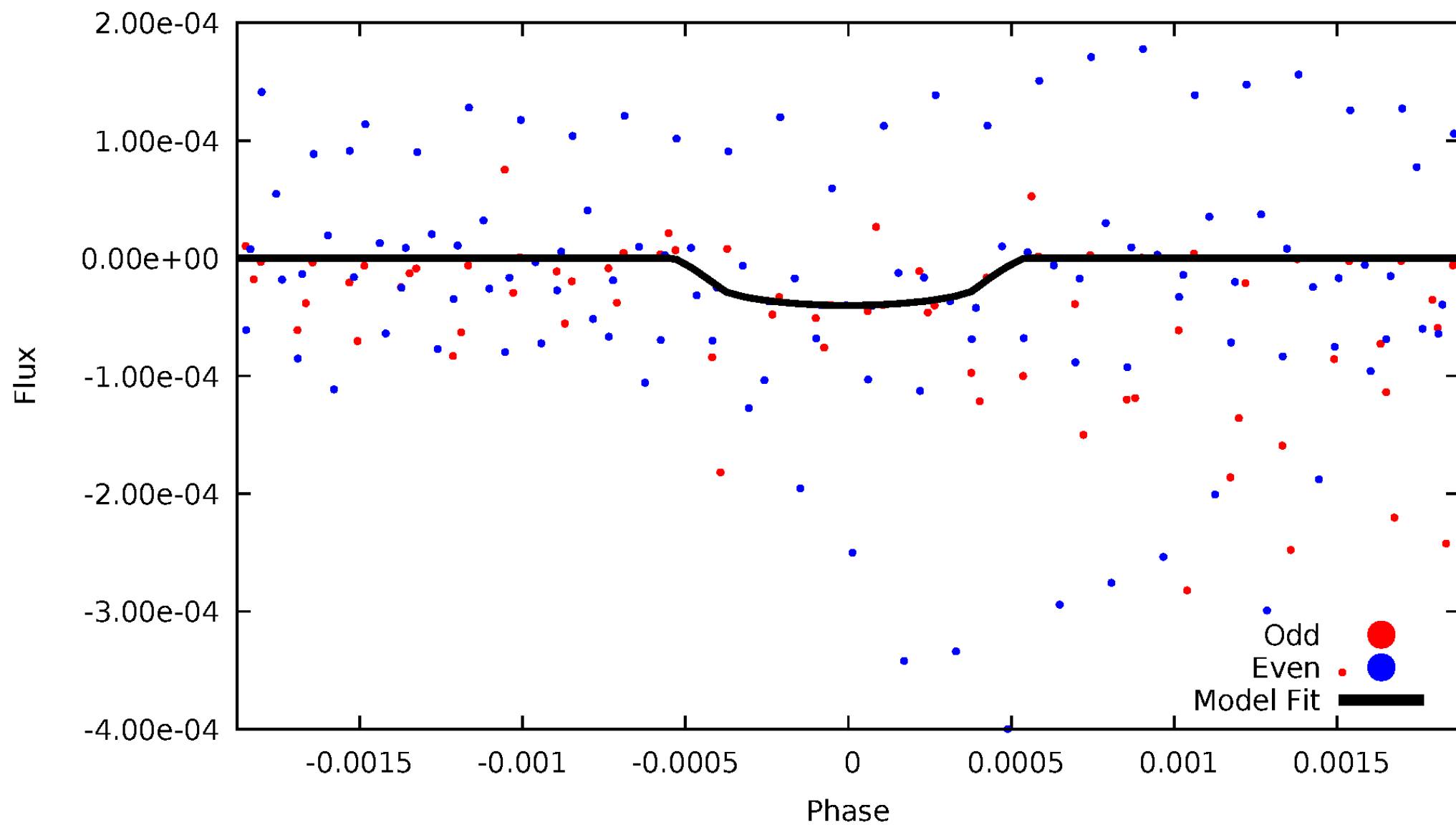


TCE 005460274-01



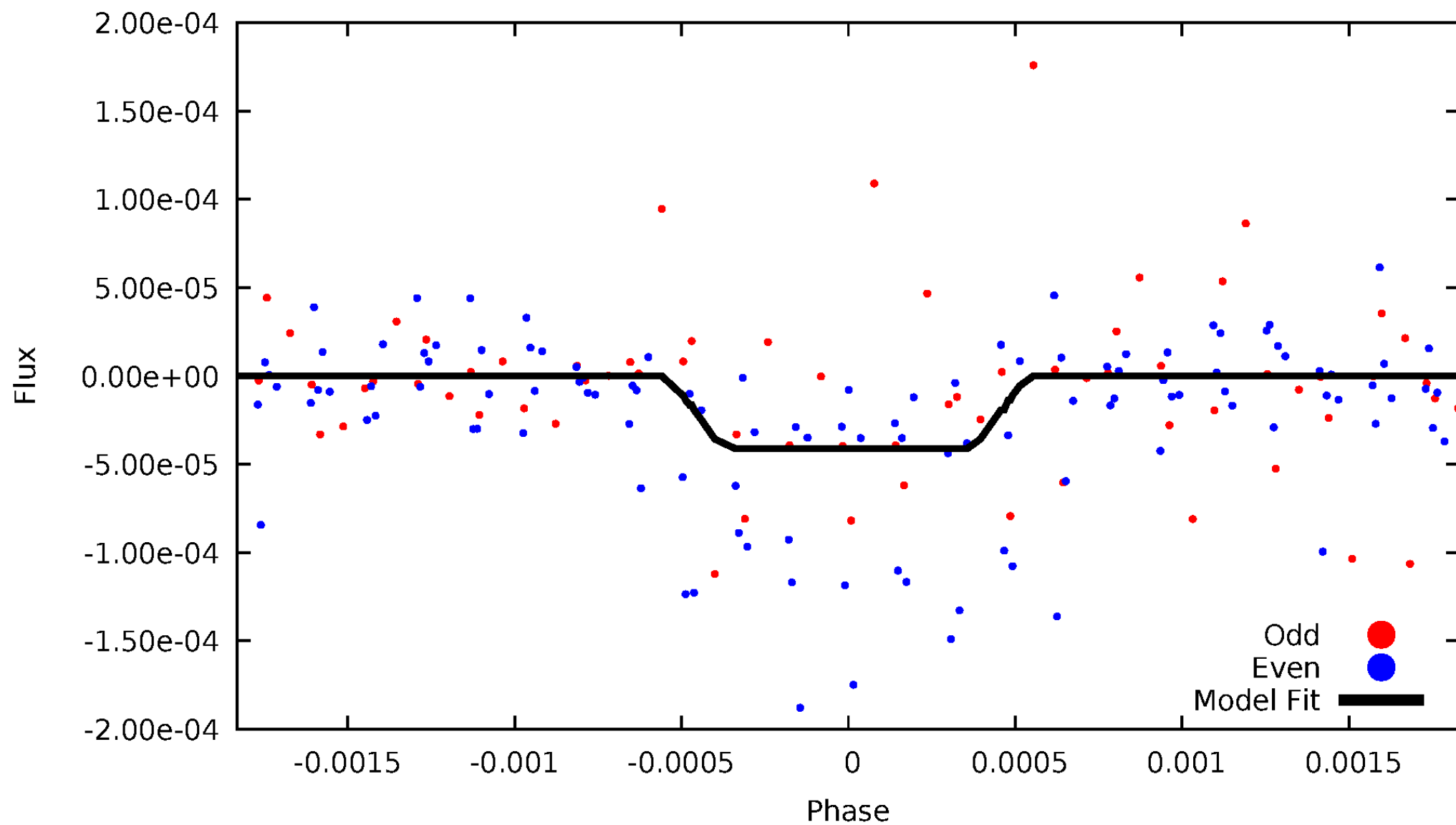
# DV Odd/Even

TCE 005460274-01



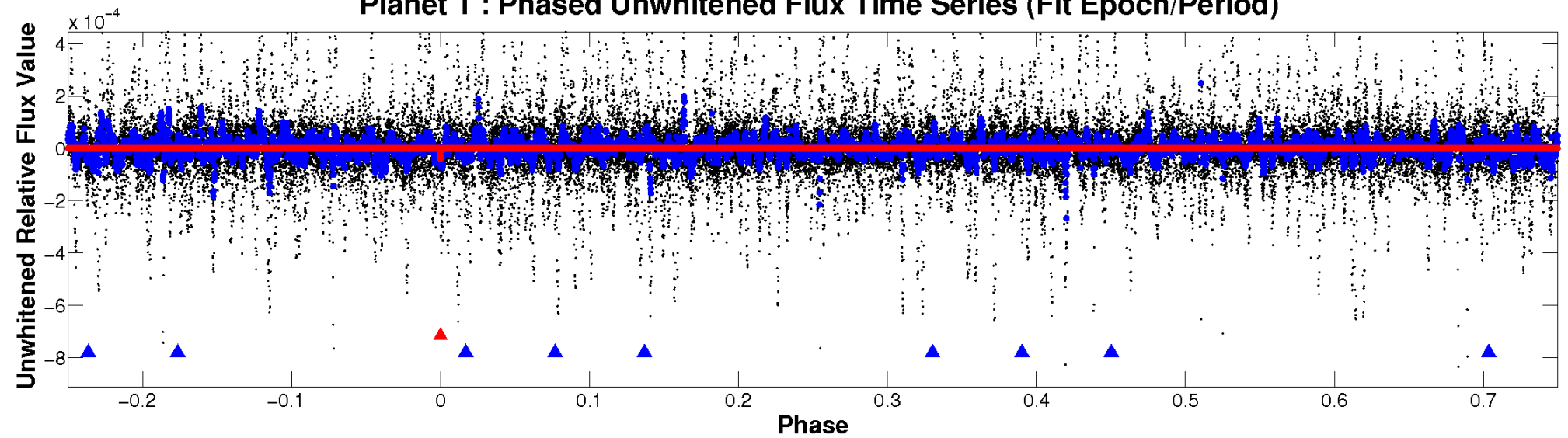
# ALT Odd/Even

TCE 005460274-01

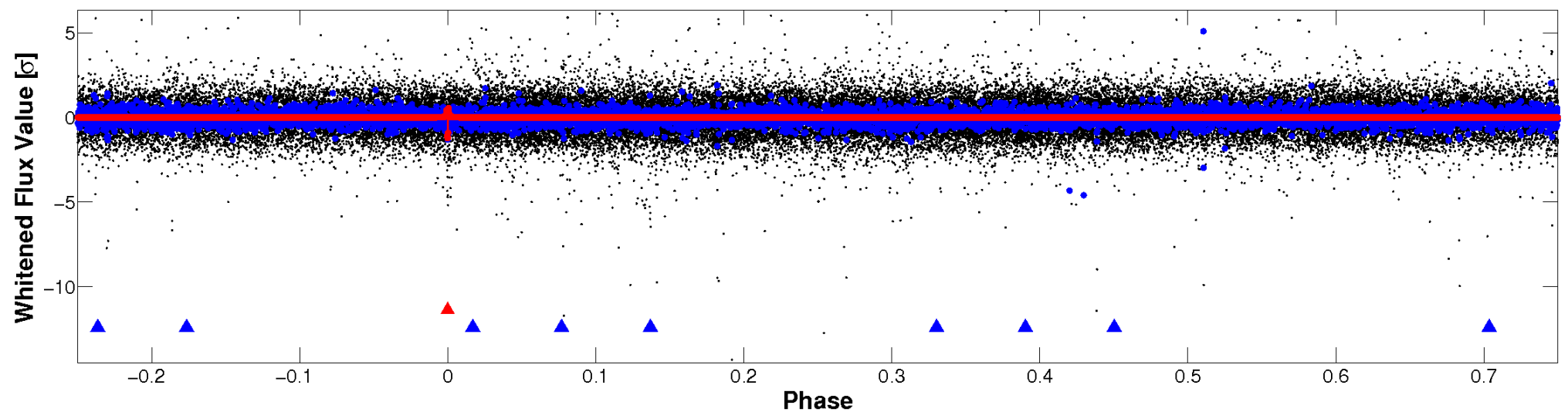


# Non-Whitened Vs. Whitened Light Curve

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



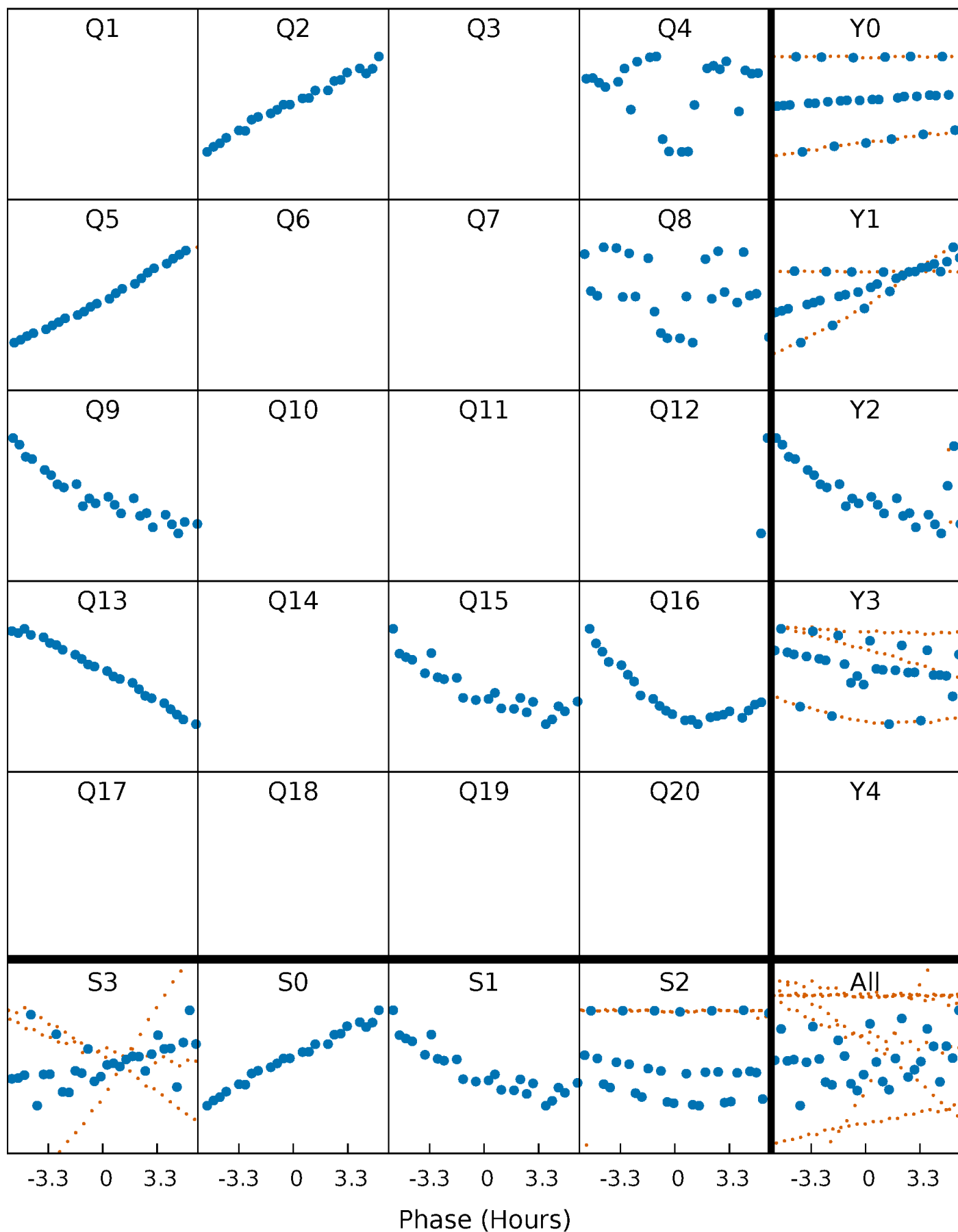
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

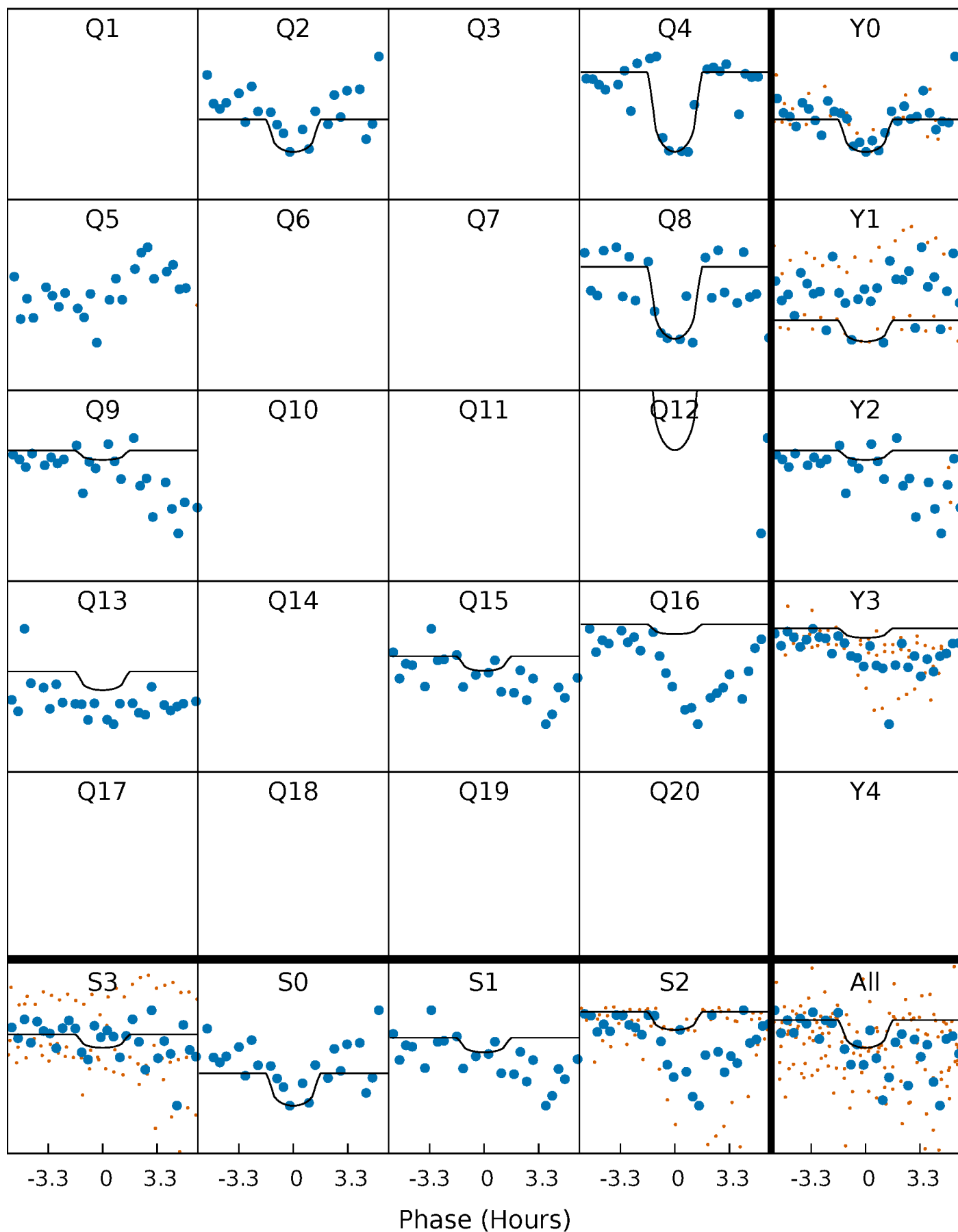
TCE 005460274-01 P=128.446844 Days  $T_0=227.308062$  (BKJD)





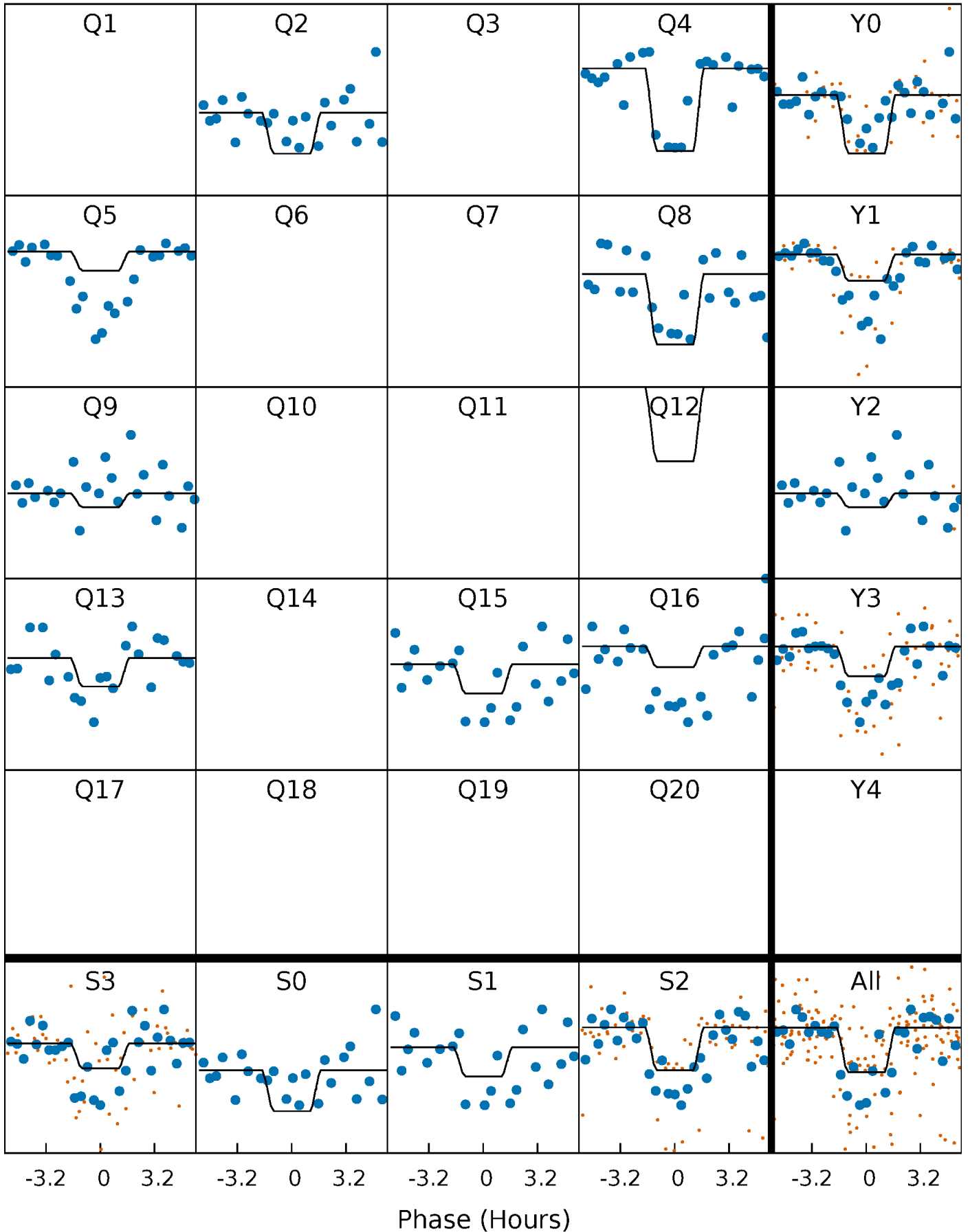
# DV Quarter-Phased Transit Curves

TCE 005460274-01 P=128.446844 Days  $T_0=227.308062$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

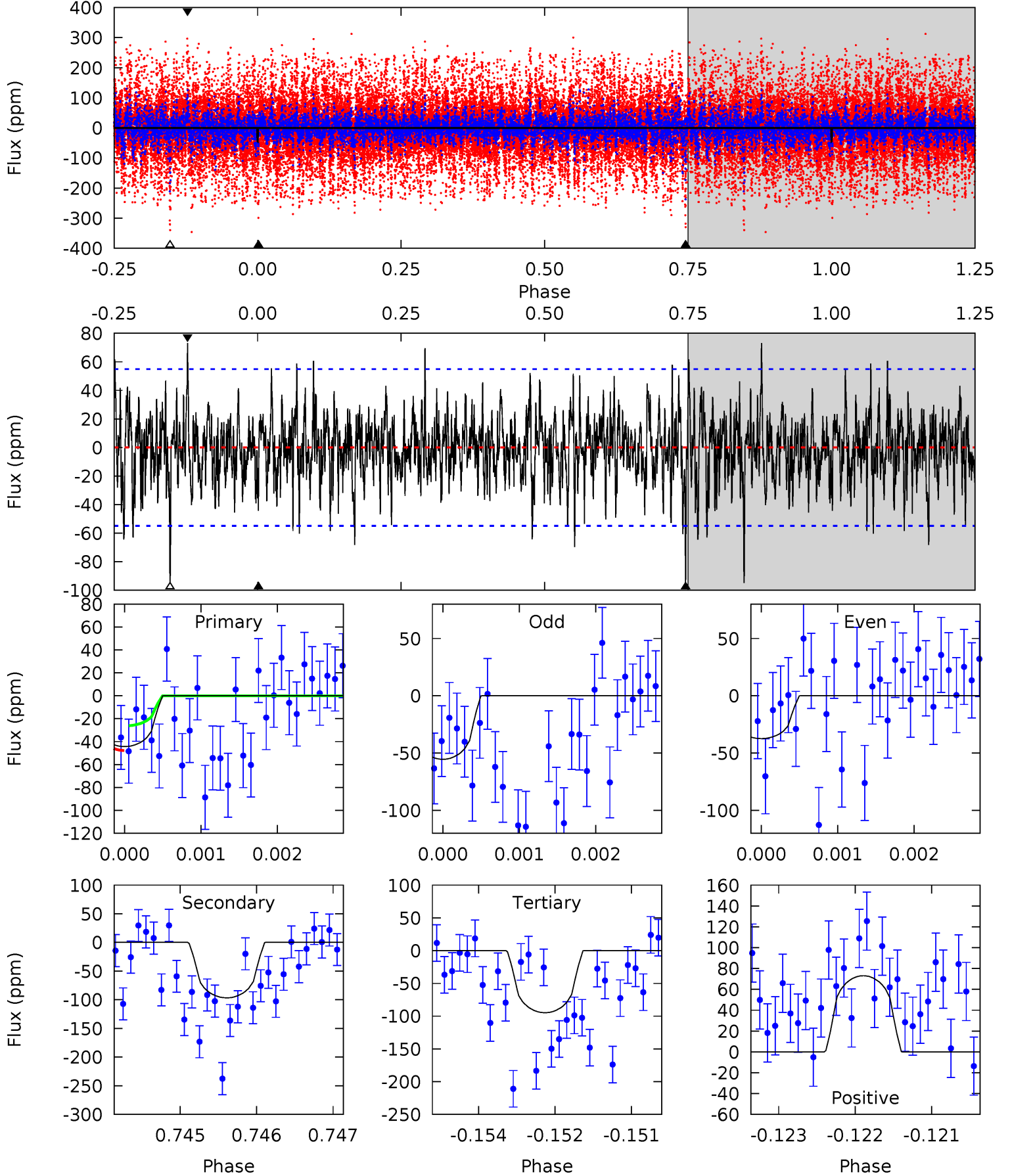
TCE 005460274-01 P=128.443143 Days  $T_0=227.327535$  (BKJD)



# DV Model-Shift Uniqueness Test

005460274-01, P = 128.446844 Days, E = 98.861218 Days

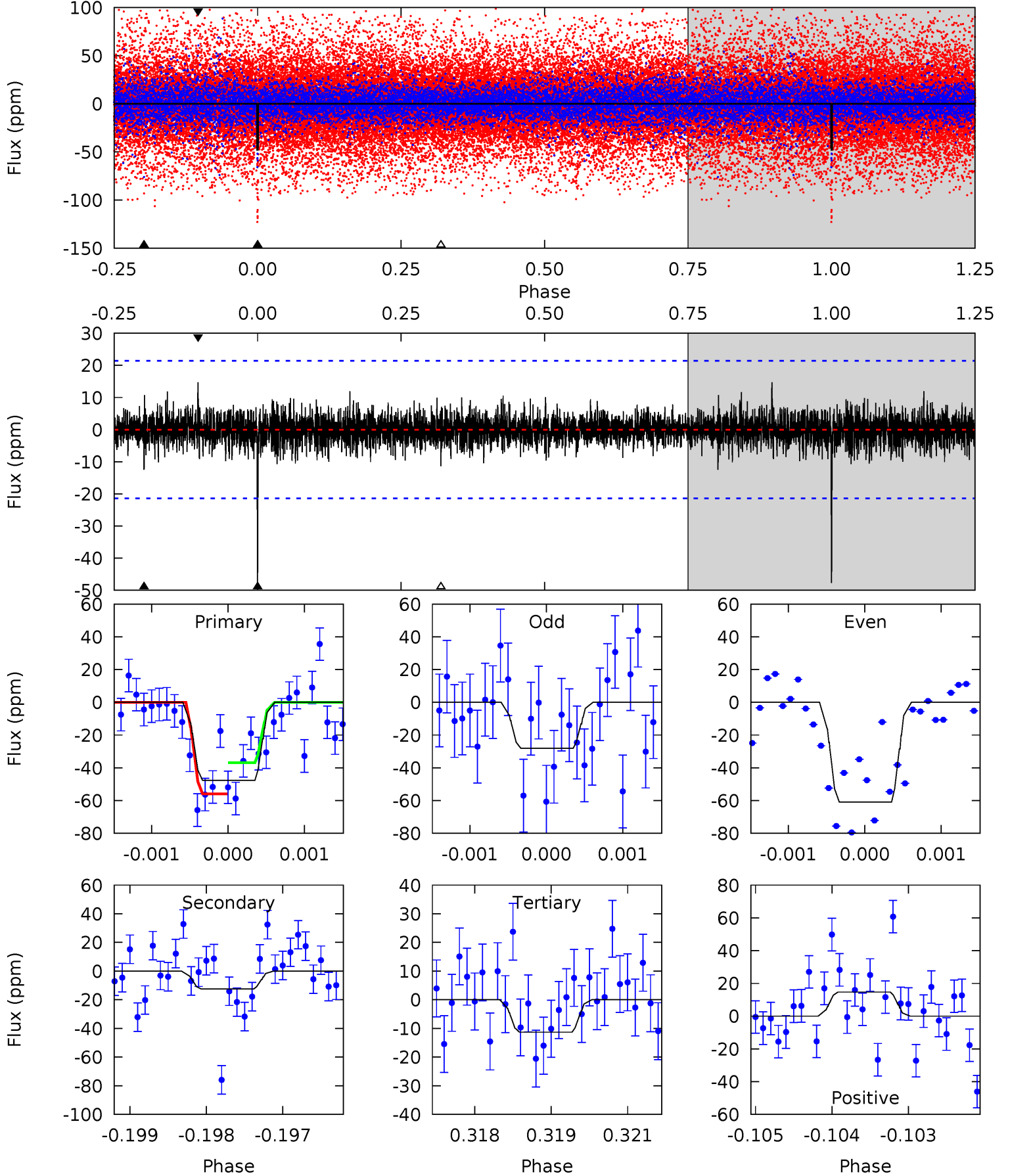
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.39	9.57	9.39	7.23	5.44	3.27	1.92	-5.00	-2.84	0.18	2.34	0.85	1.25	0.43	1.07



# Alt Model-Shift Uniqueness Test

005460274-01,  $P = 128.443143$  Days,  $E = 98.884392$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.18	2.88	3.74	5.45	3.29	0.79	9.27	8.41	0.30	-0.56	3.92	1.41	0.24	2.40



### Stellar Parameters For KIC 005460274

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4208^{+94}_{-115}$	$1.560^{+0.030}_{-0.030}$	$-0.140^{+0.200}_{-0.250}$	$36.805^{+1.325}_{-7.950}$	$1.795^{+0.072}_{-0.646}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+143%/-179%	+4%/-22%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005460274-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-97 \pm 10$	$27.49^{+16.71}_{-13.44}$	$2027^{+52}_{-60}$	$4822^{+1850}_{-782}$	$25^{+77}_{-15}$
Alt.	$-12 \pm 4$	$26.93^{+15.93}_{-13.88}$	$2023^{+54}_{-62}$	$3308^{+933}_{-509}$	$3.390^{+10.604}_{-2.175}$

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

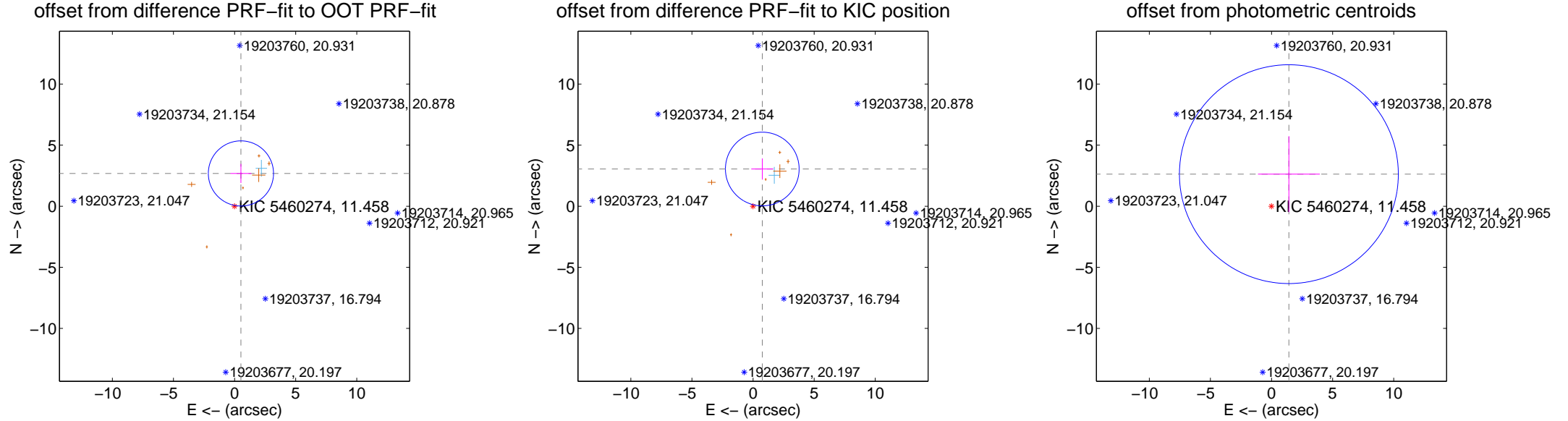
## DV Centroid Data

Supplemental centroid analysis for 005460274-01. **Kepler magnitude: 11.46.** Transit SNR 11.58

**There are 1 quarters with good PRF difference image offsets**

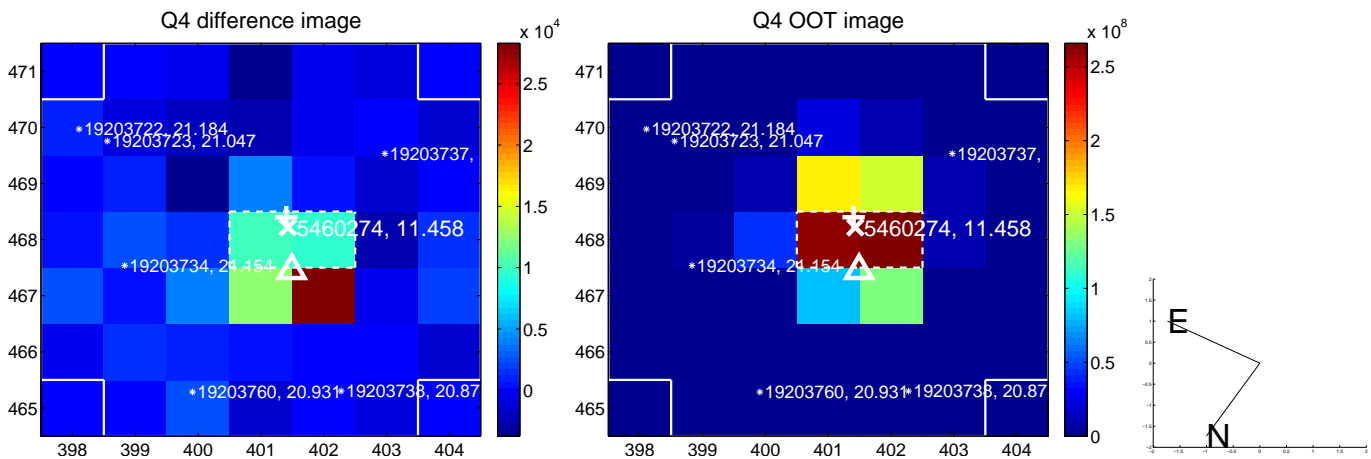
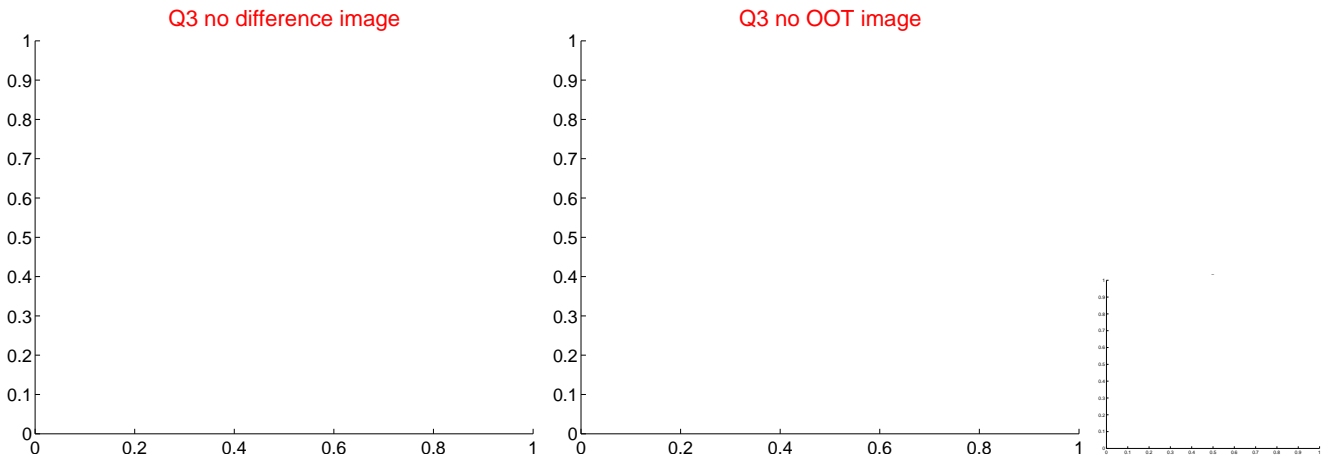
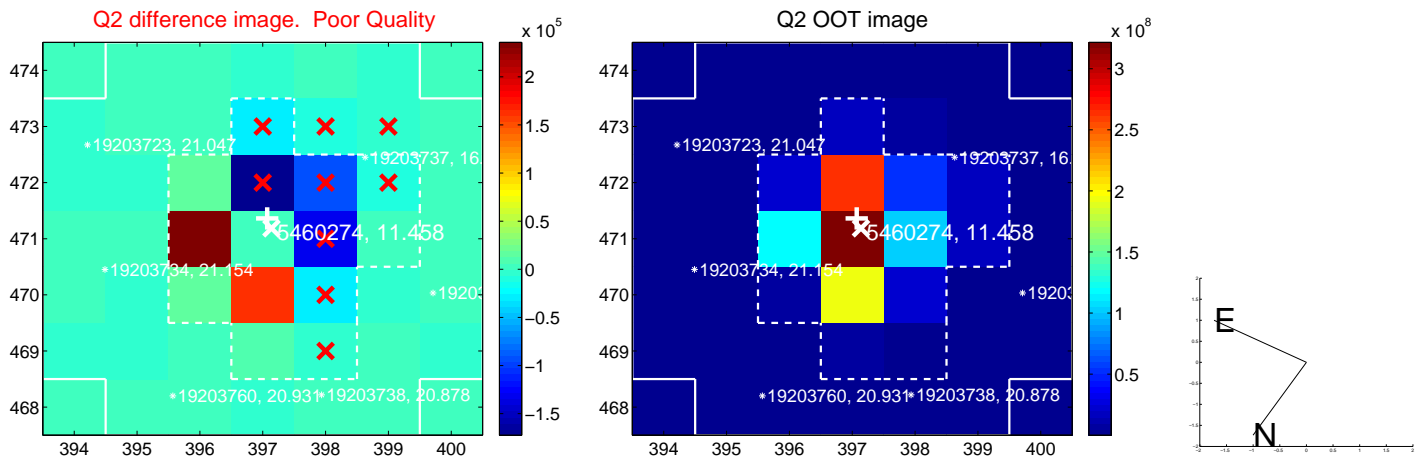
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.733 \pm 0.889</math></b>	<b>3.07</b>	$-0.520 \pm 0.854$	$2.683 \pm 0.780$
PRF-fit source offset from KIC position	<b><math>3.139 \pm 1.005</math></b>	<b>3.12</b>	$-0.755 \pm 0.898$	$3.047 \pm 0.865$
photometric centroid source offset	$2.99 \pm 2.98$	1.00	$-1.42 \pm 2.53$	$2.63 \pm 3.10$



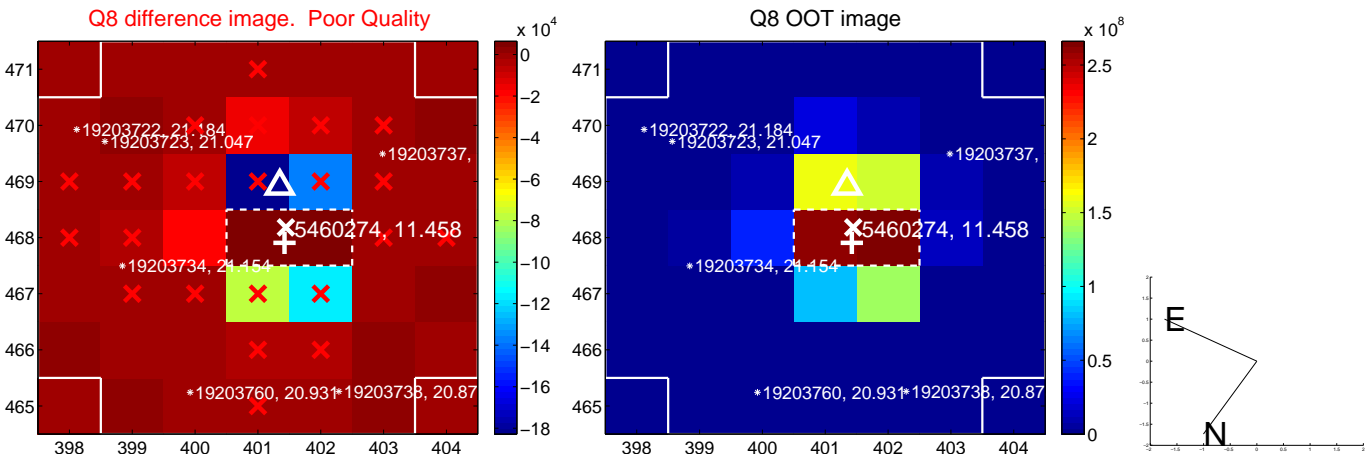
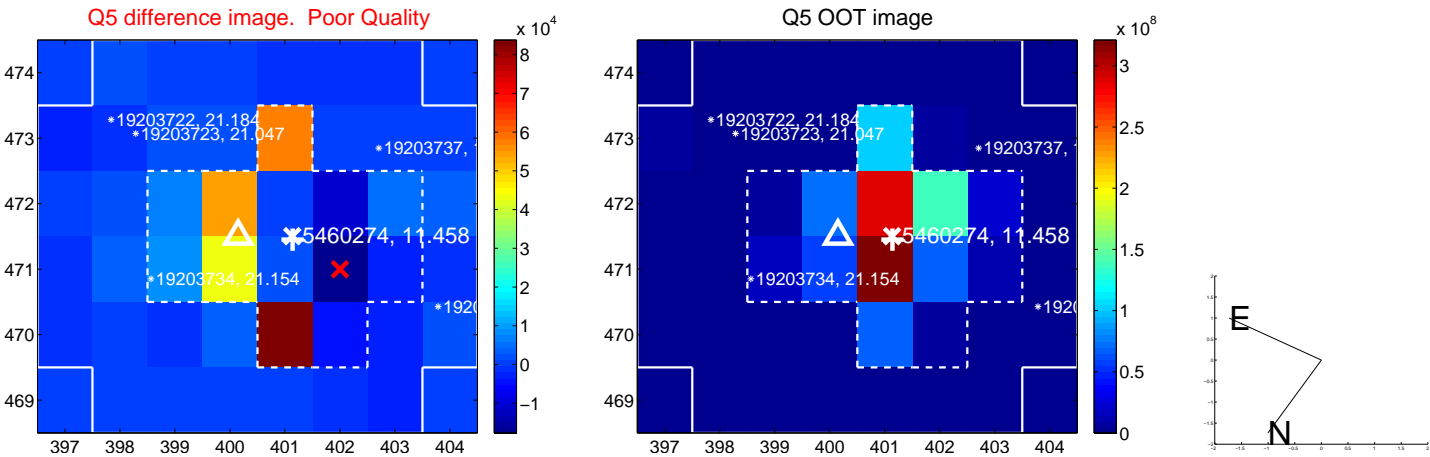
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

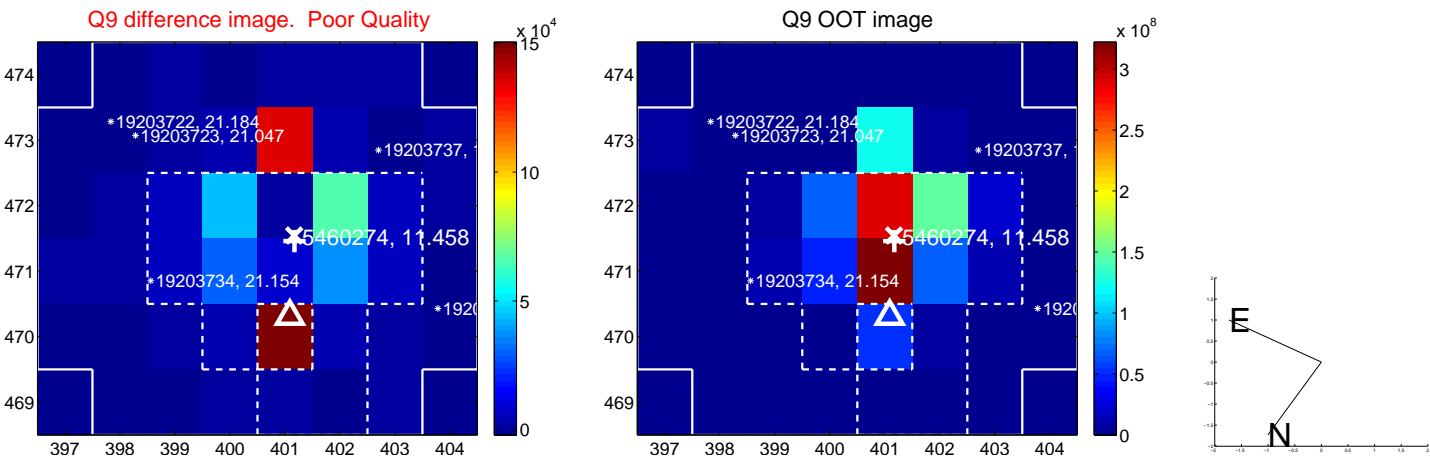




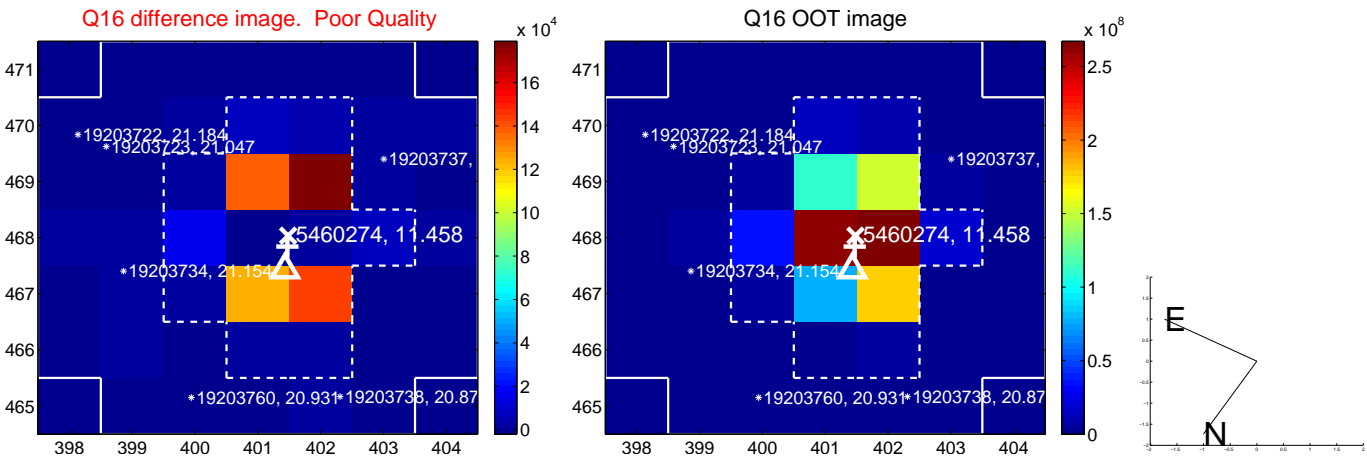
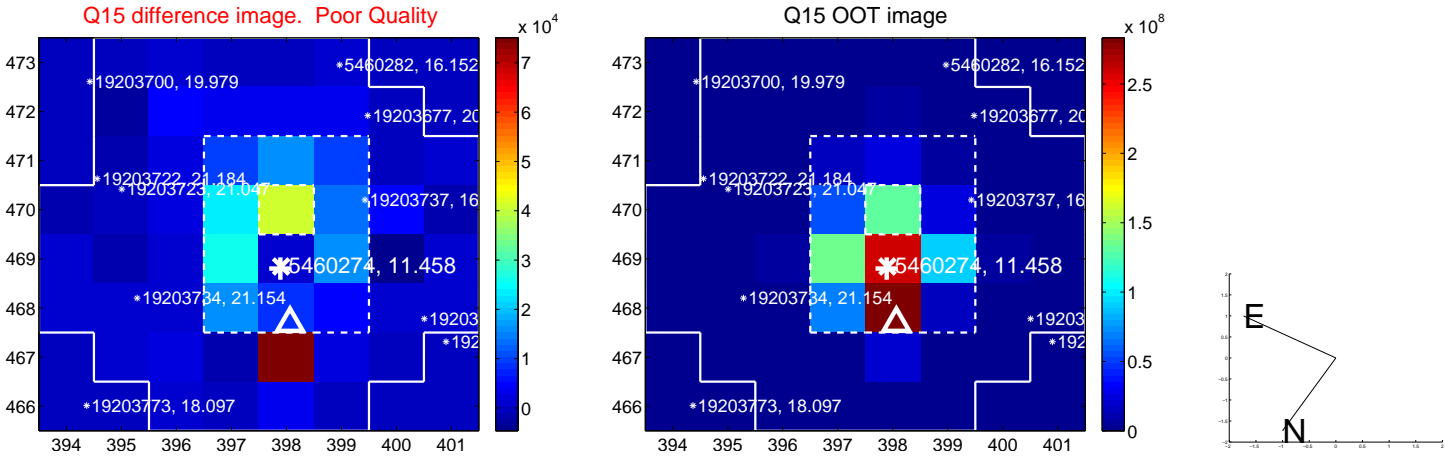
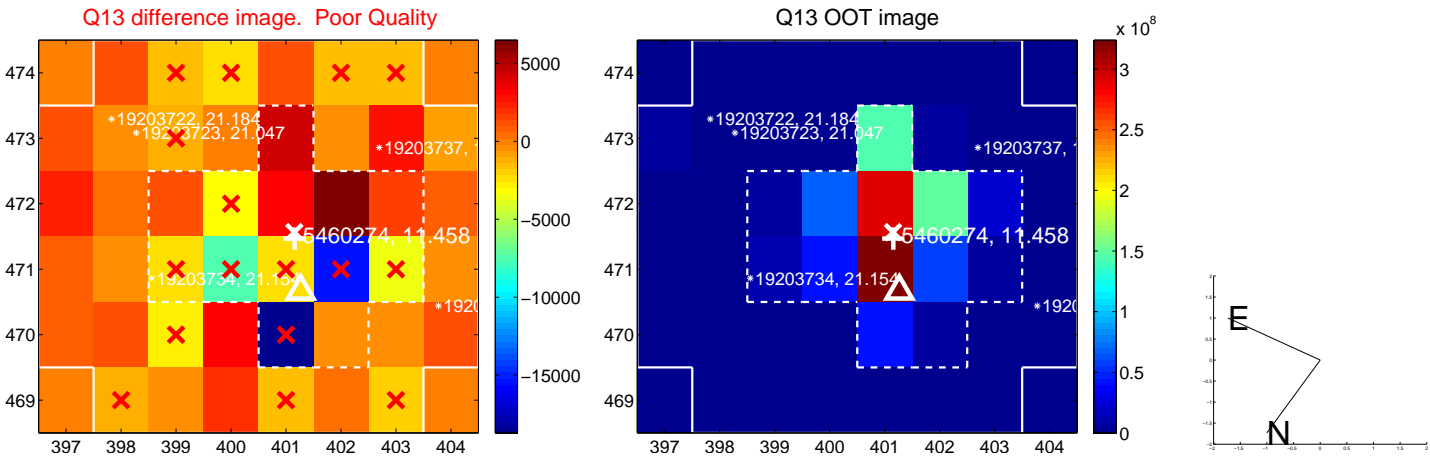
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



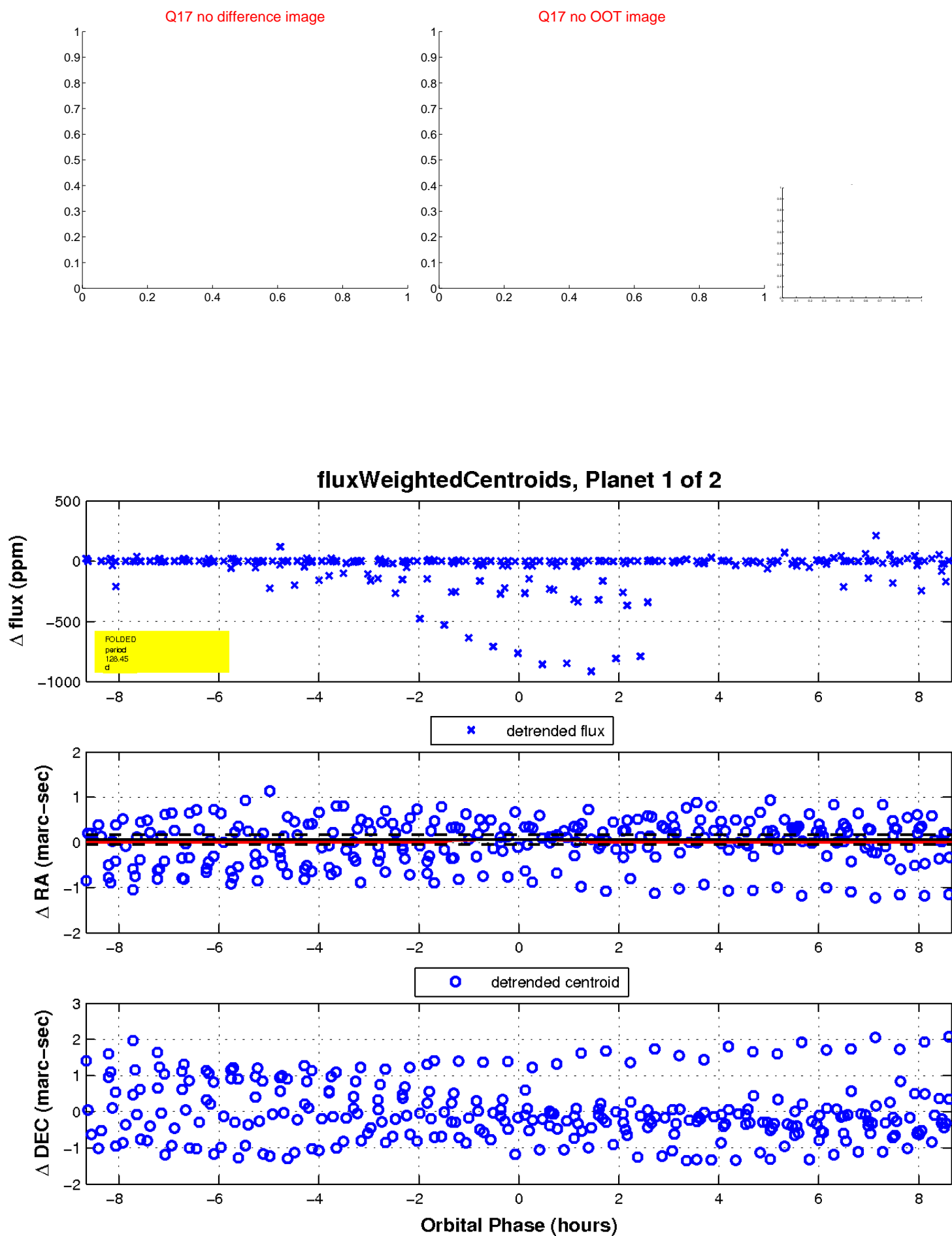
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



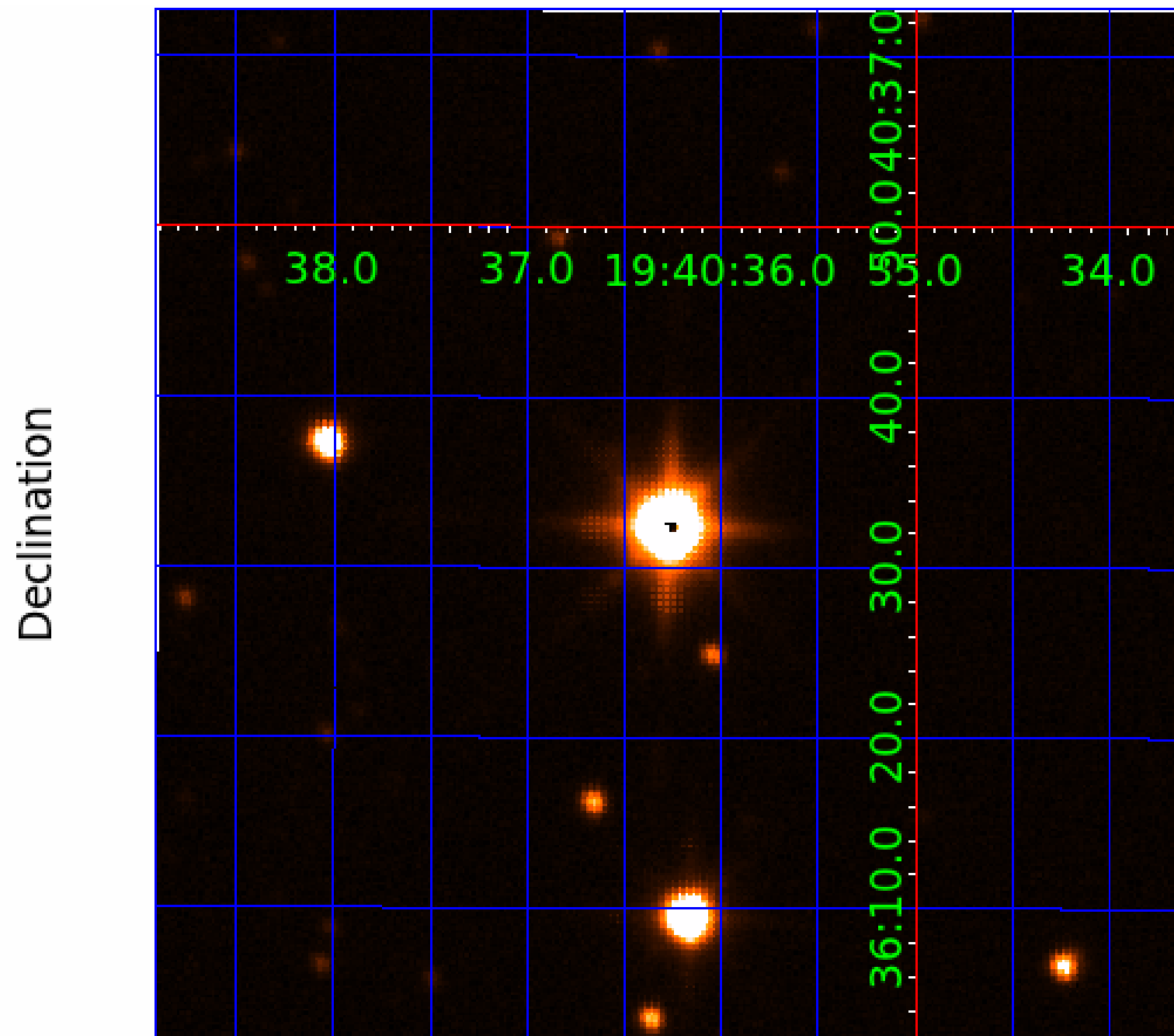
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 005460274

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005460274-01	OBS	No	128.446844	227.308062	40.1	2.890	10.3	11.6	36.80	4208	27.41	1037.94
005460274-02	OBS	No	168.693057	204.654528	20.6	16.613	8.3	3.7	36.80	4208	17.93	721.67

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005460274-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005460274-02	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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

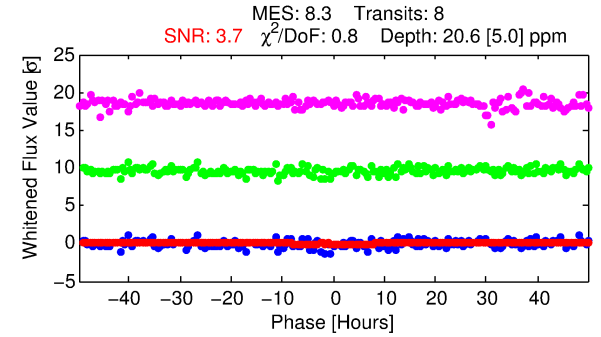
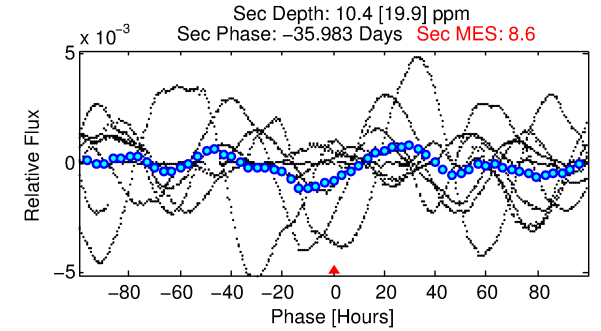
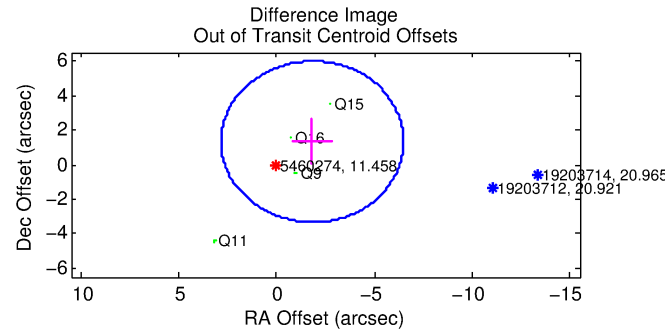
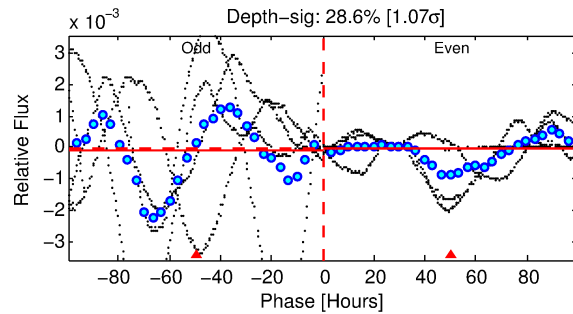
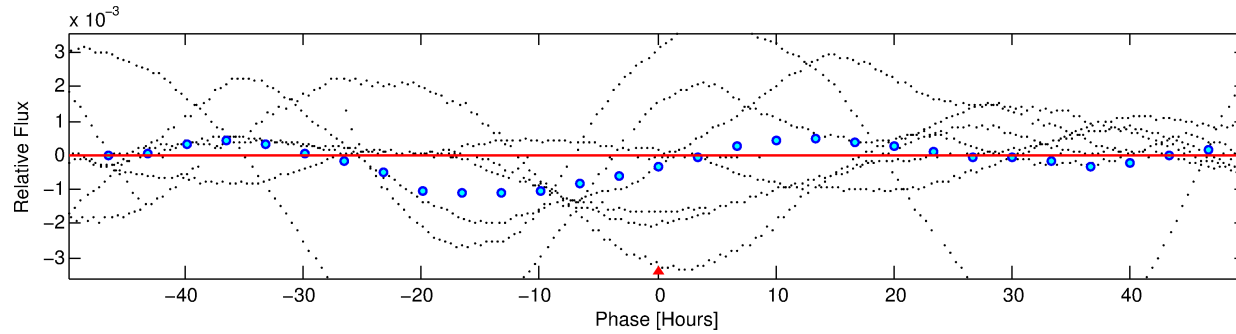
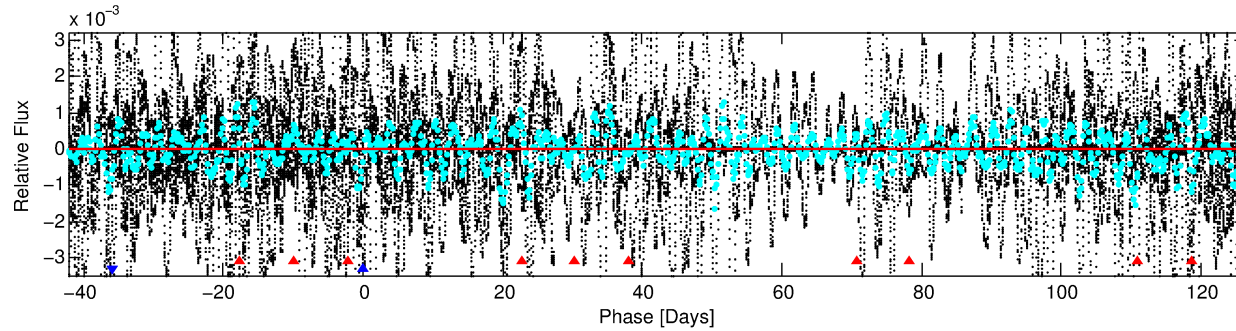
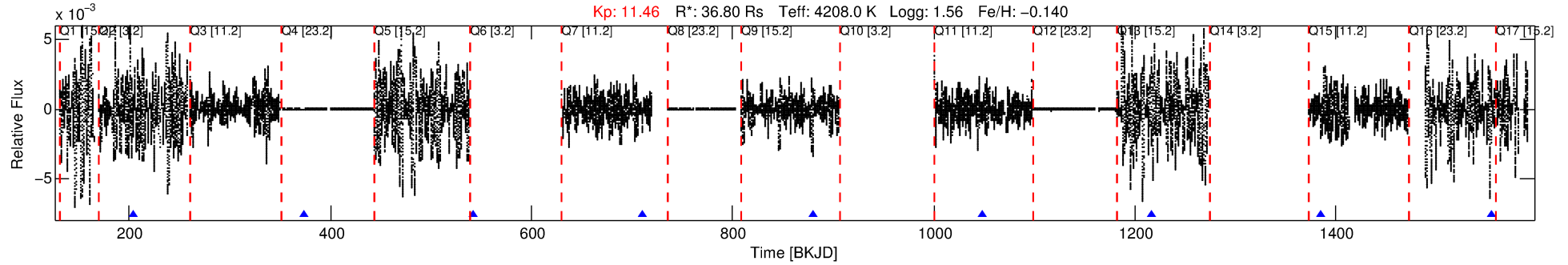
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005460274-02

No Significant Match Found

# DV One-Page Summary

KIC: 5460274 Candidate: 2 of 2 Period: 168.693 d



## DV Fit Results:

Period = 168.69306 [0.00600] d  
Epoch = 204.6545 [0.0107] BKJD  
Rp/R\* = 0.0045 [0.0021]  
a/R\* = 54.91 [78.43]  
b = 0.71 [0.98]  
Seff = 721.67 [134.64]  
Teq = 1322 [62] K  
Rp = 17.93 [9.35] Re  
a = 0.7262 [0.1059] AU  
Ag = 9.36 [20.10] [0.42 $\sigma$ ]  
Teffp = 3574 [1917] K [1.17 $\sigma$ ]

## DV Diagnostic Results:

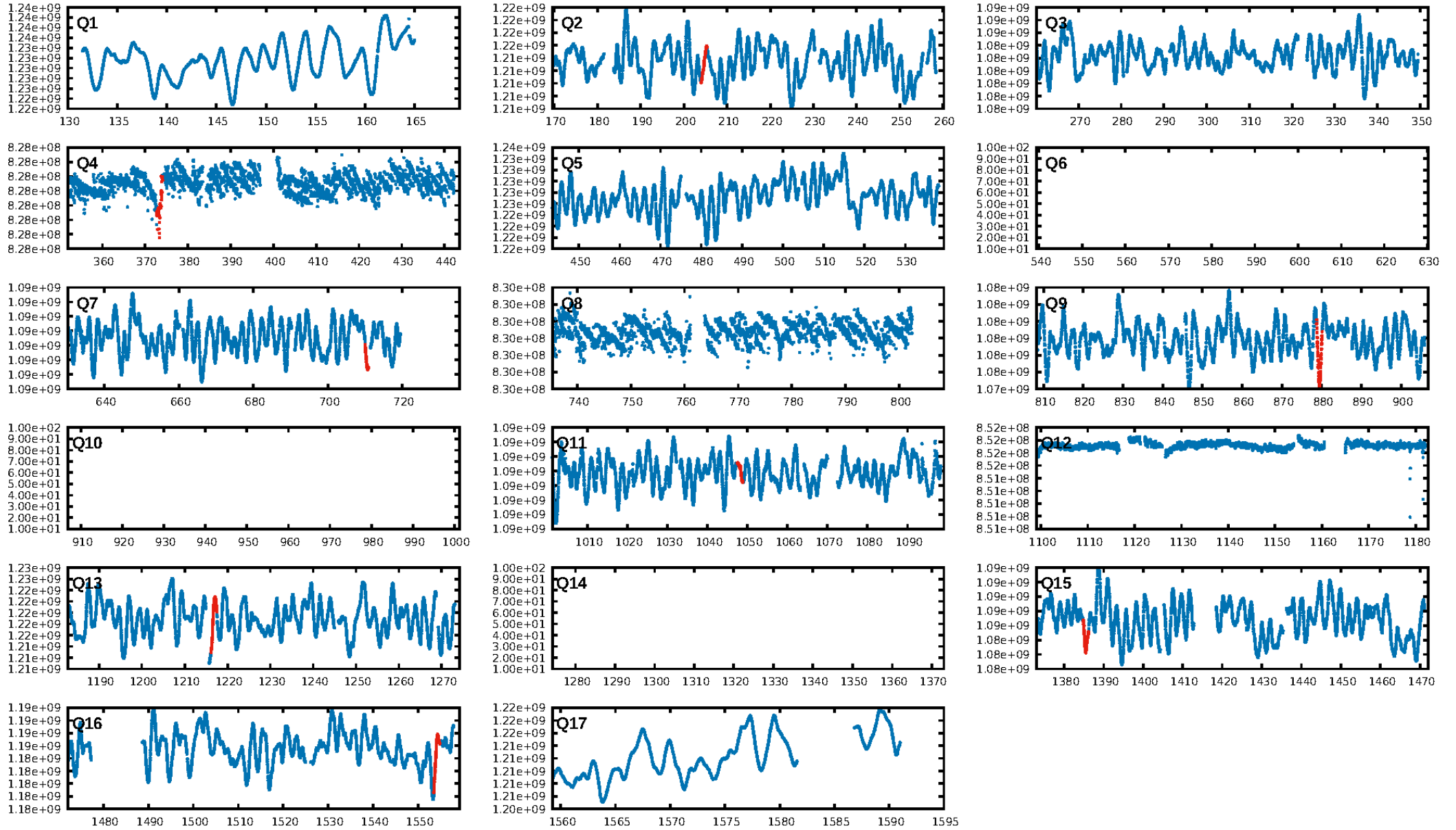
ShortPeriod-sig: 100.0% [57.28 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 11.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.27e-08  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -0.1489  
Centroid-sig: N/A  
Centroid-so: 2.421 arcsec [0.26 $\sigma$ ]  
OotOffset-rm: 2.258 arcsec [1.45 $\sigma$ ]  
KicOffset-rm: 2.524 arcsec [1.46 $\sigma$ ]  
OotOffset-st: 0/2/1/1 [4]  
KicOffset-st: 0/2/1/1 [4]  
DiffImageQuality-fgm: 0.00 [0/4]  
DiffImageOverlap-fno: 1.00 [5/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:27:25 Z

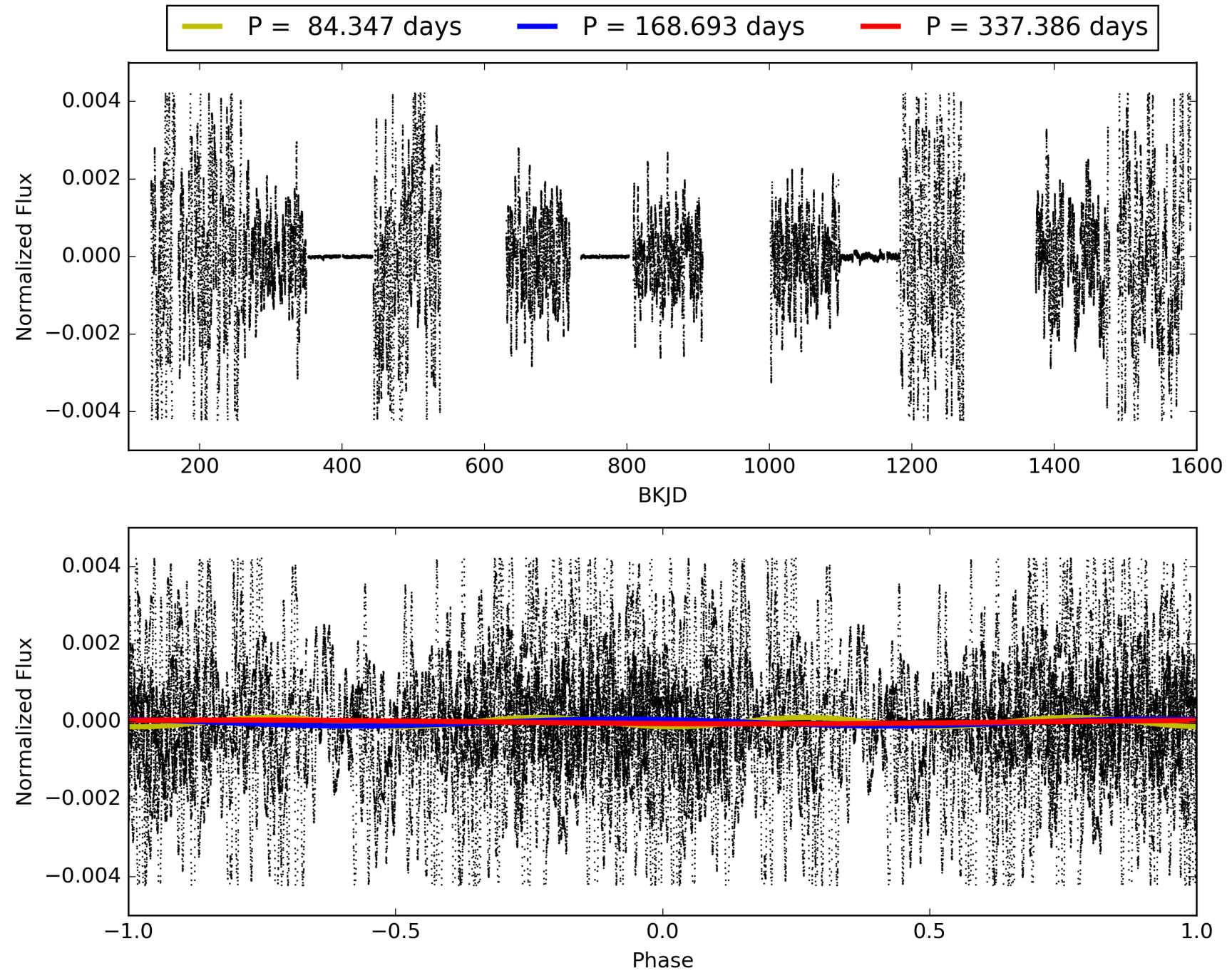
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005460274-02, PDC Light Curves

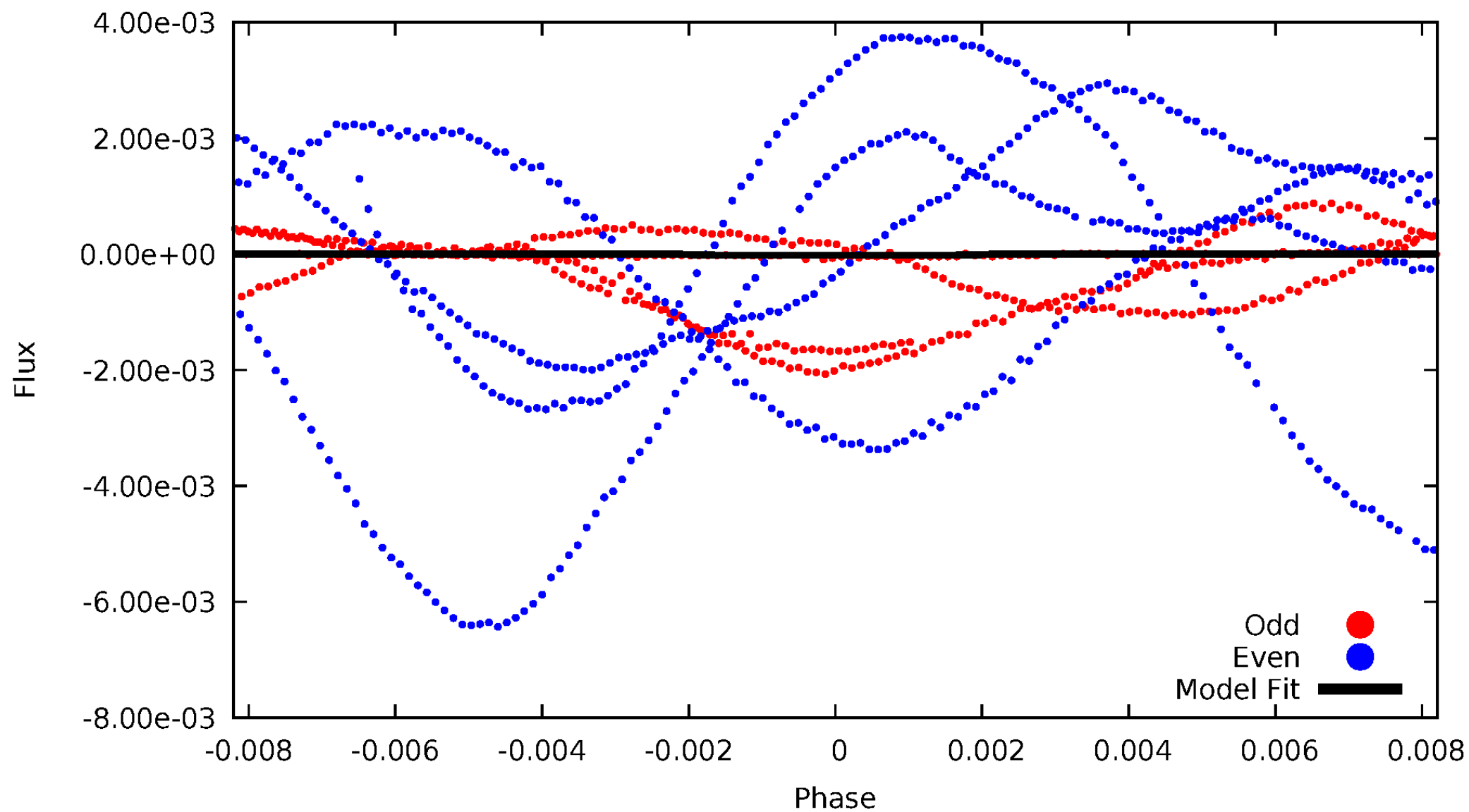


TCE 005460274-02



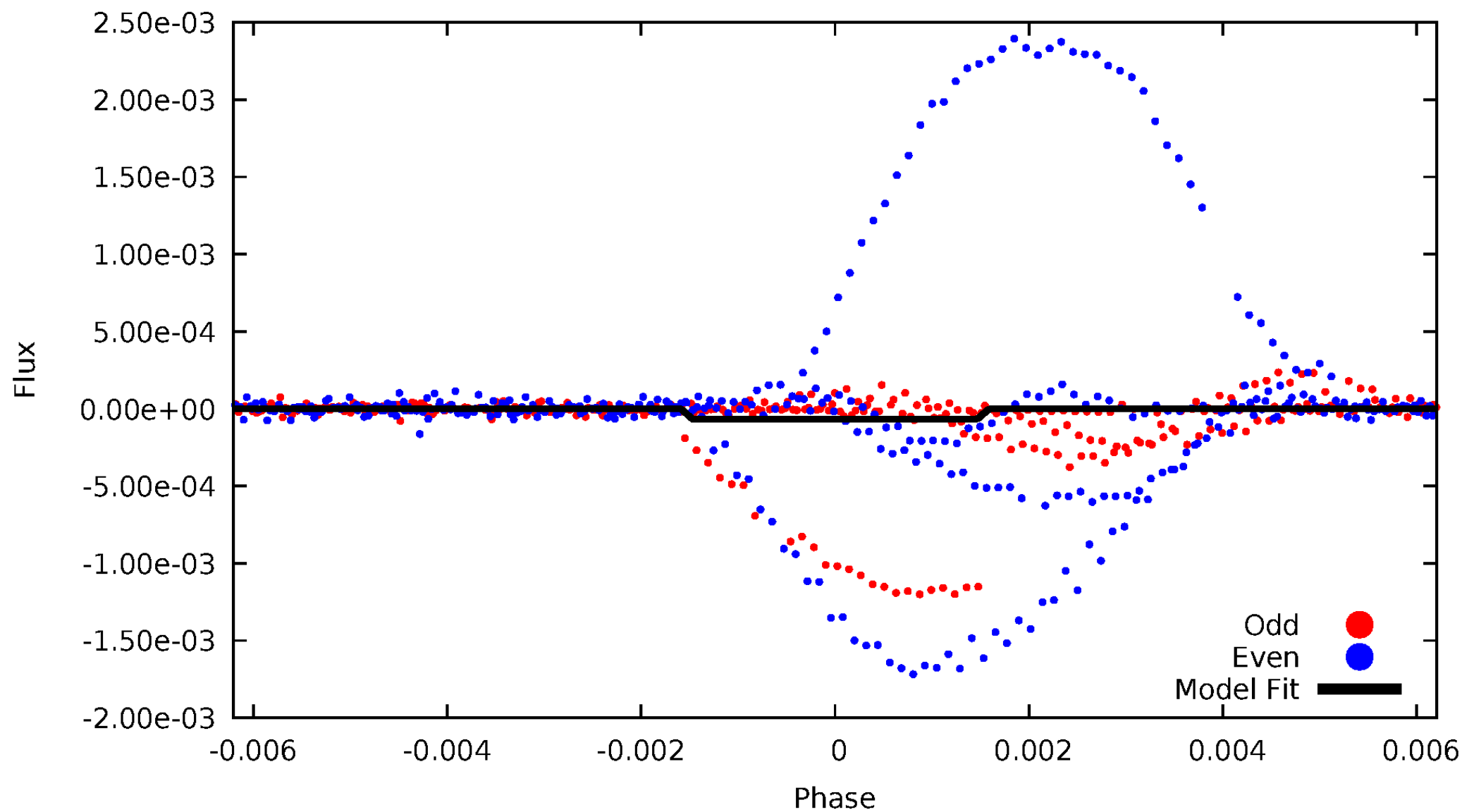
# DV Odd/Even

TCE 005460274-02



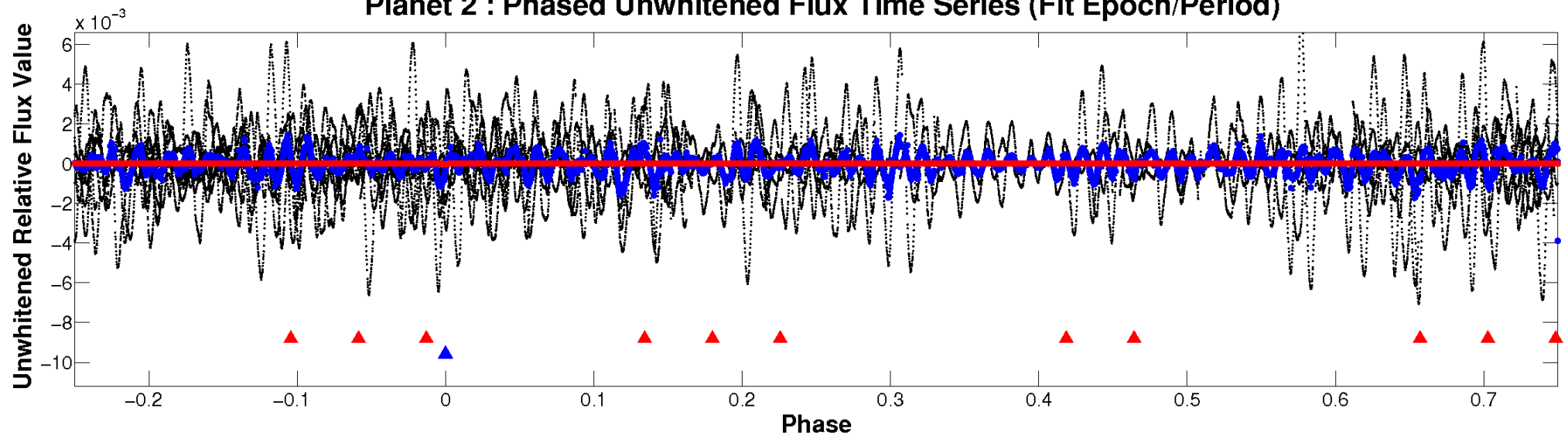
# ALT Odd/Even

TCE 005460274-02

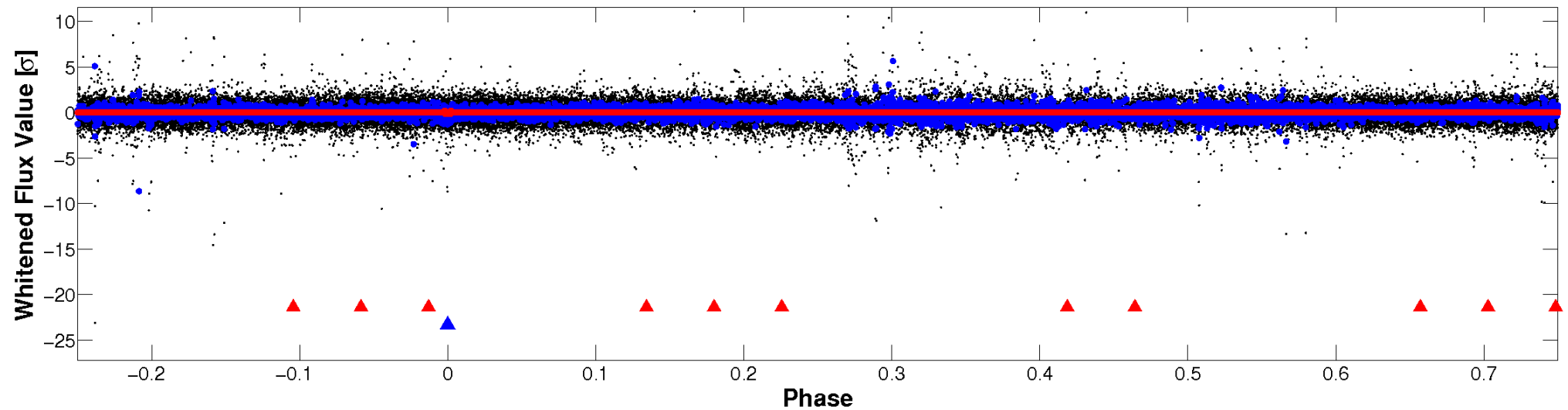


# Non-Whitened Vs. Whitened Light Curve

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

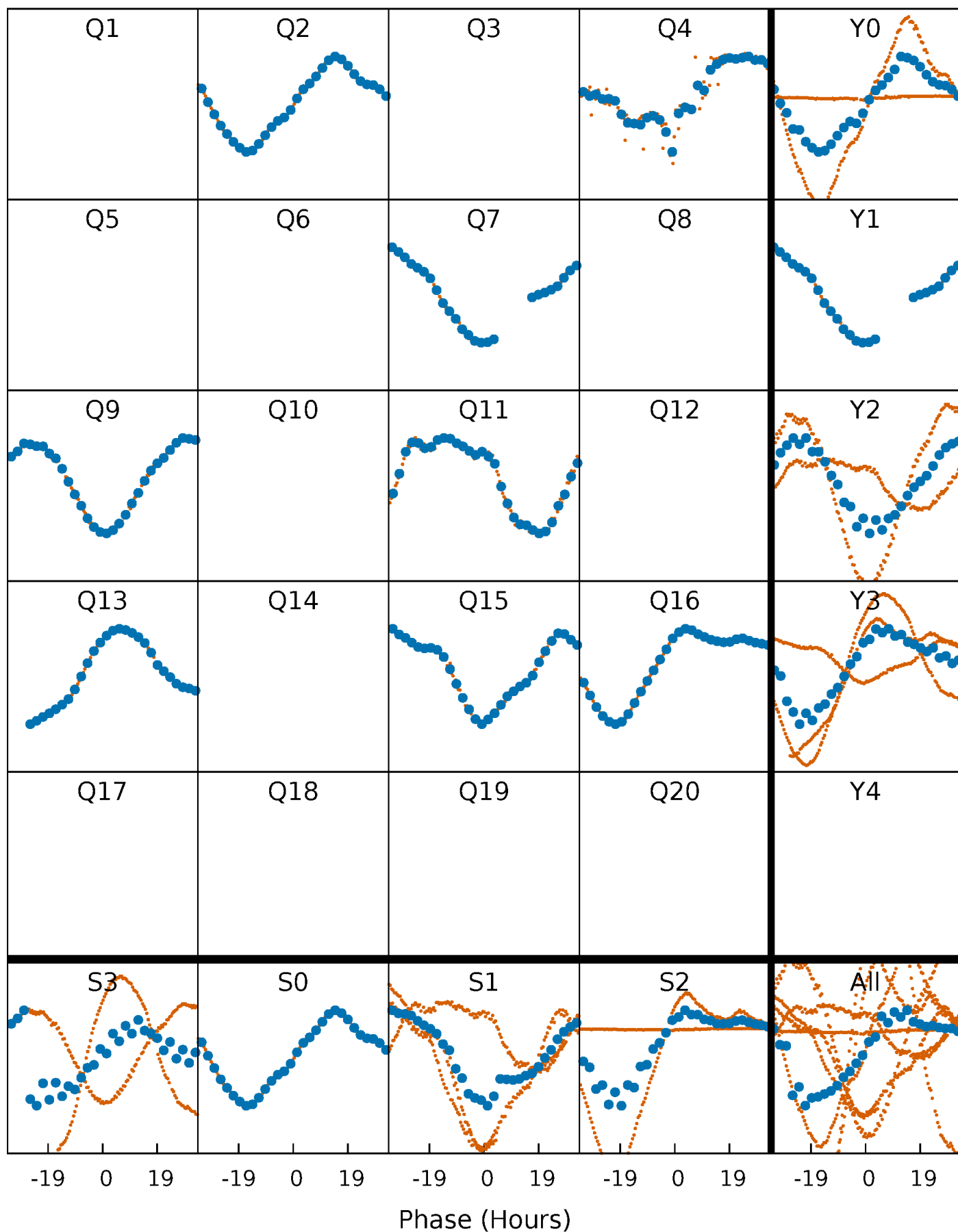


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



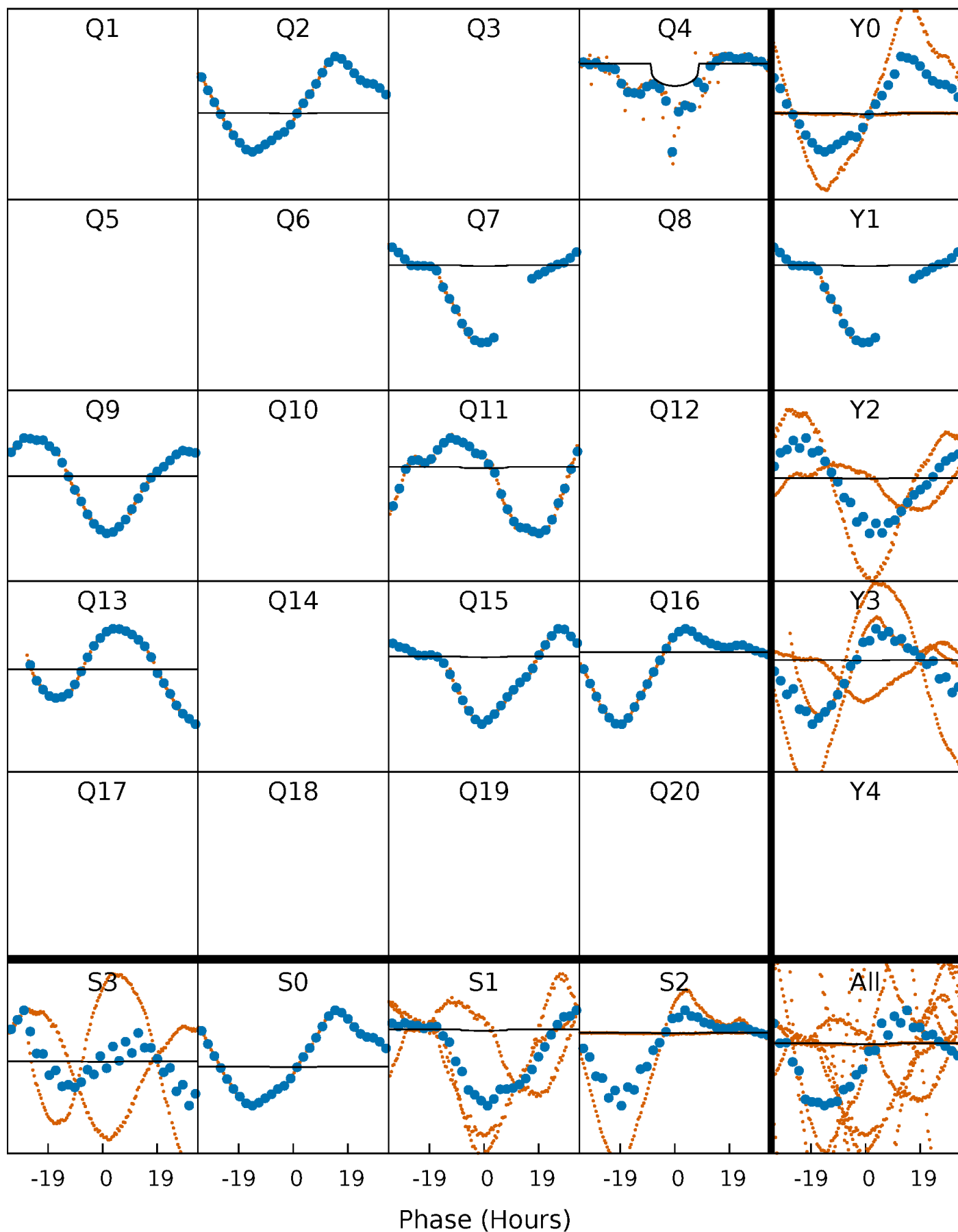
# PDC Quarter-Phased Transit Curves

TCE 005460274-02 P=168.693057 Days  $T_0=204.654528$  (BKJD)



# DV Quarter-Phased Transit Curves

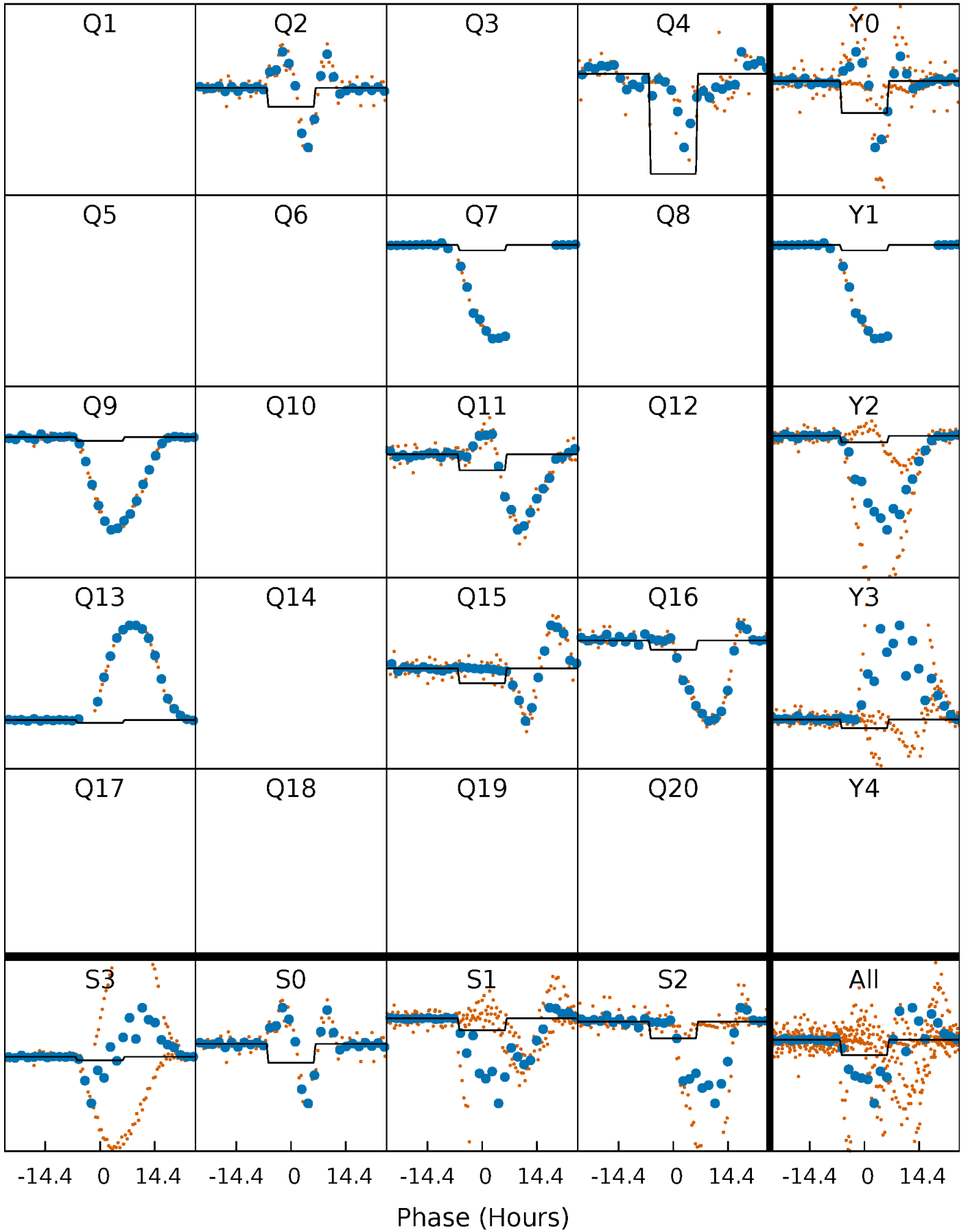
TCE 005460274-02 P=168.693057 Days  $T_0=204.654528$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

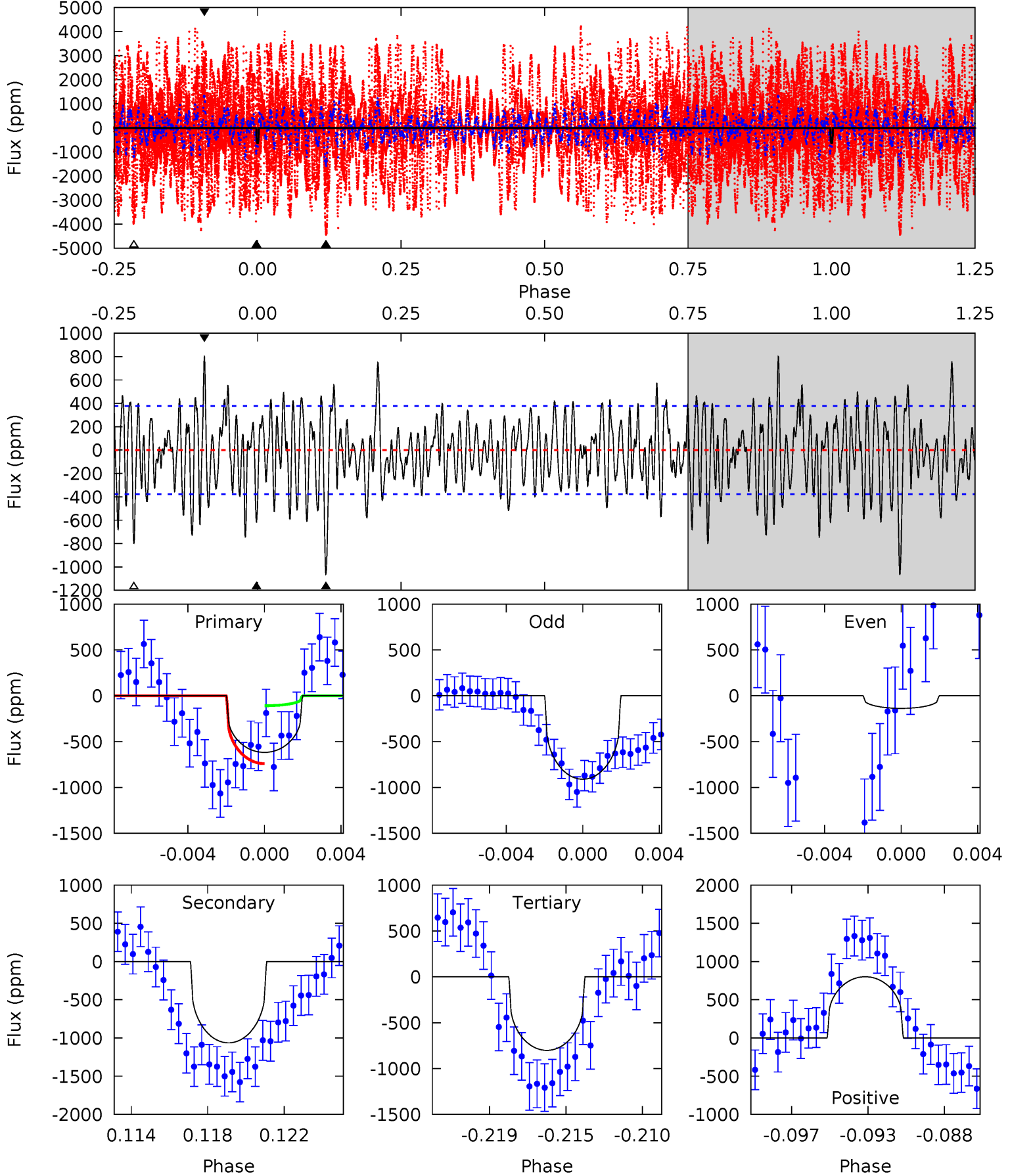
TCE 005460274-02 P=168.753961 Days  $T_0=204.393888$  (BKJD)



# DV Model-Shift Uniqueness Test

005460274-02, P = 168.693057 Days, E = 35.961471 Days

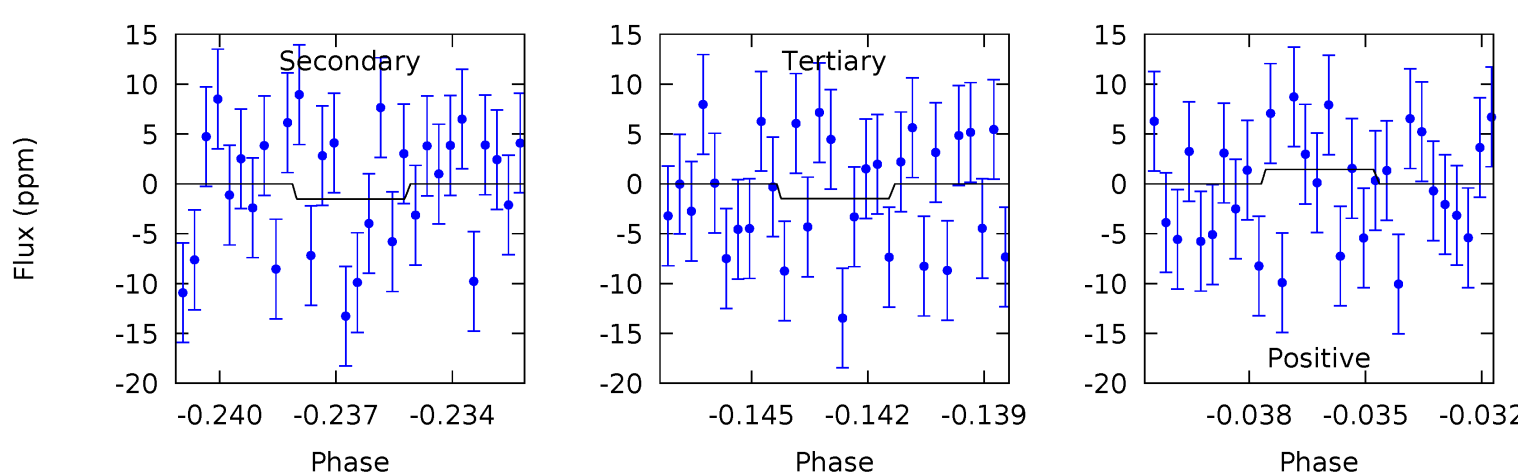
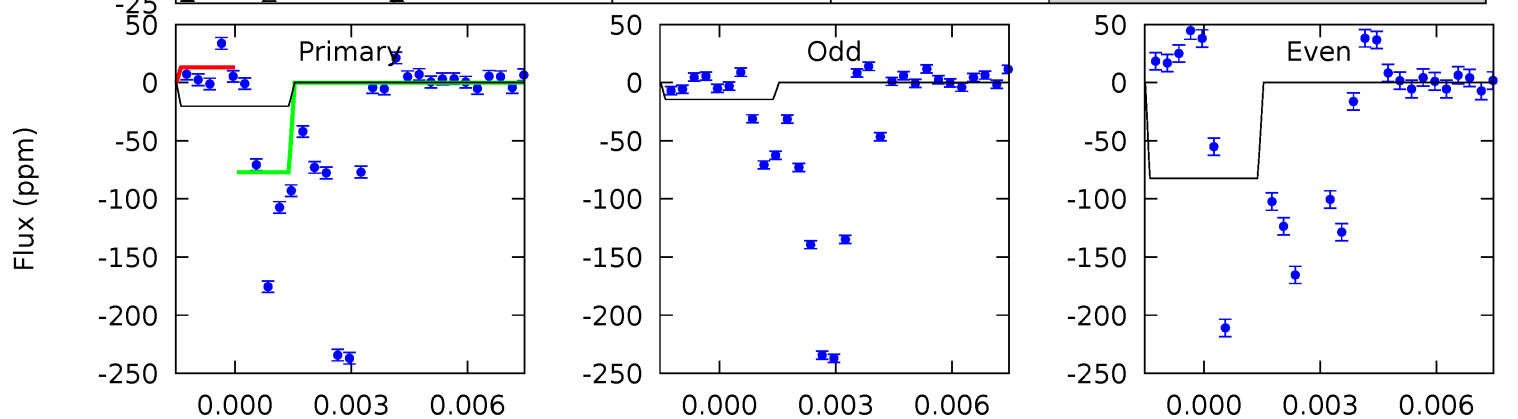
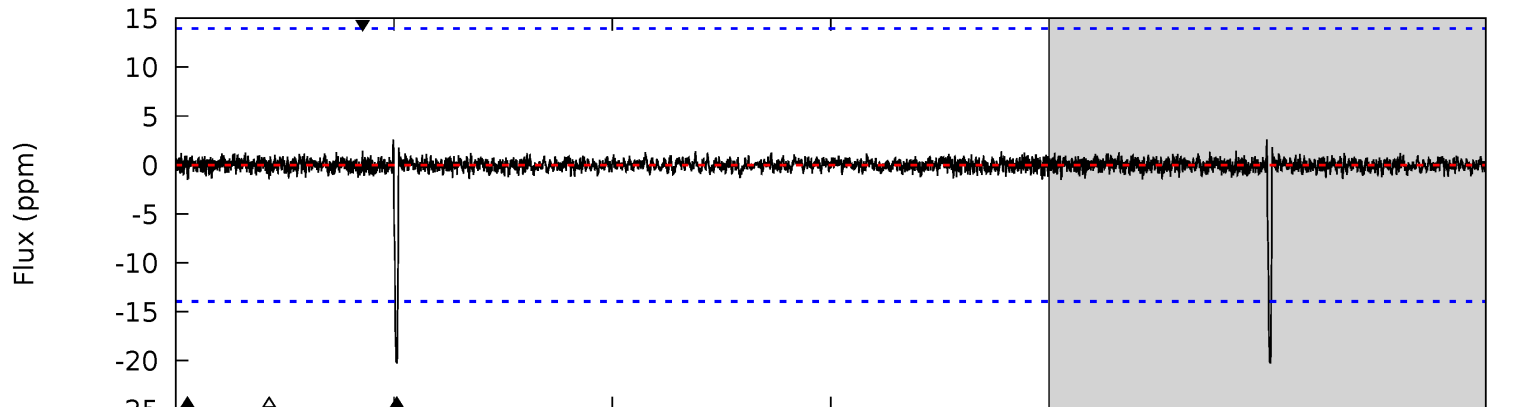
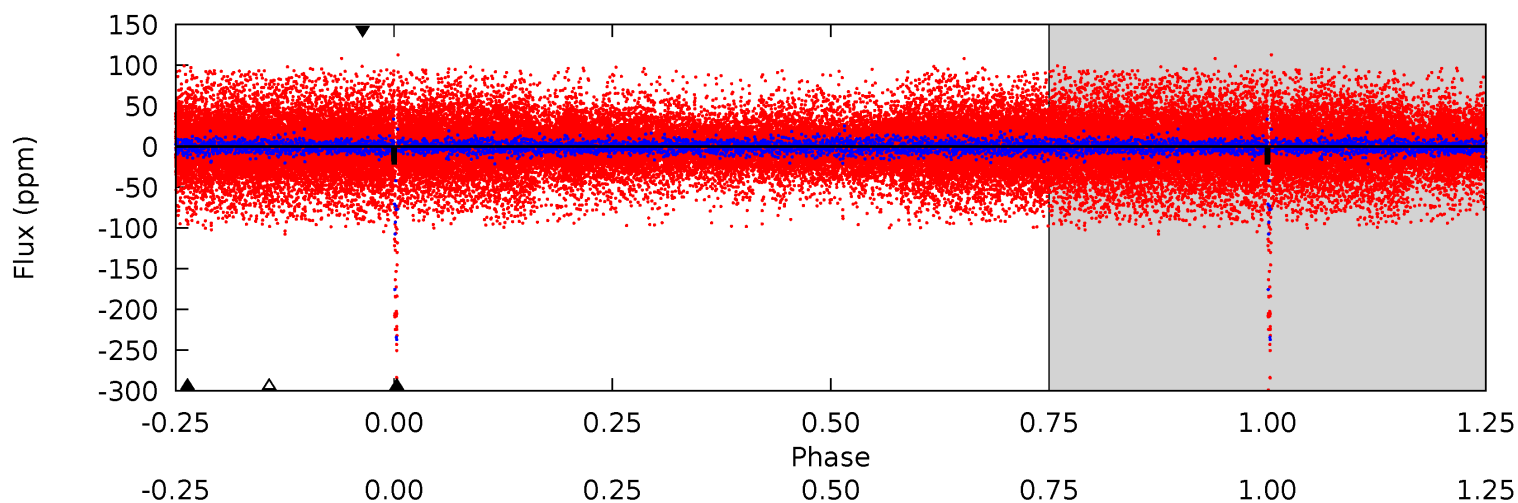
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.50	14.6	11.0	11.0	5.19	2.86	3.57	-2.53	-2.52	3.61	3.62	4.94	2.63	0.43	4.46



# Alt Model-Shift Uniqueness Test

005460274-02, P = 168.753961 Days, E = 35.639927 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
7.62	0.58	0.56	0.54	5.24	2.95	0.16	7.06	7.08	0.01	0.03	13.5	8.40	0.11	11.7



### Stellar Parameters For KIC 005460274

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4208^{+94}_{-115}$	$1.560^{+0.030}_{-0.030}$	$-0.140^{+0.200}_{-0.250}$	$36.805^{+1.325}_{-7.950}$	$1.795^{+0.072}_{-0.646}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+2%/-2%	+143%/-179%	+4%/-22%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005460274-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1064 \pm 73$	$18.23^{+8.63}_{-8.73}$	$1852^{+48}_{-58}$	$12521^{+10966}_{-3324}$	$944^{+2292}_{-520}$
Alt.	$-2 \pm 3$	$33.55^{+8.82}_{-8.24}$	$1853^{+43}_{-58}$	$2058^{+617}_{-4580}$	$0.394^{+0.802}_{-0.674}$

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

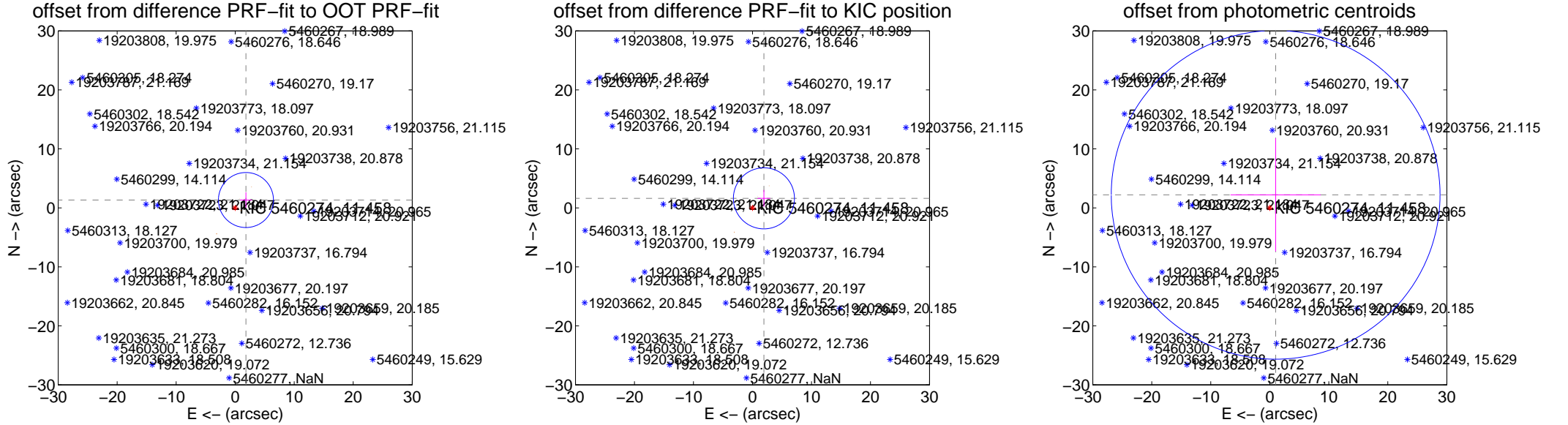
## DV Centroid Data

Supplemental centroid analysis for 005460274-02. **Kepler magnitude: 11.46.** Transit SNR 3.70

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

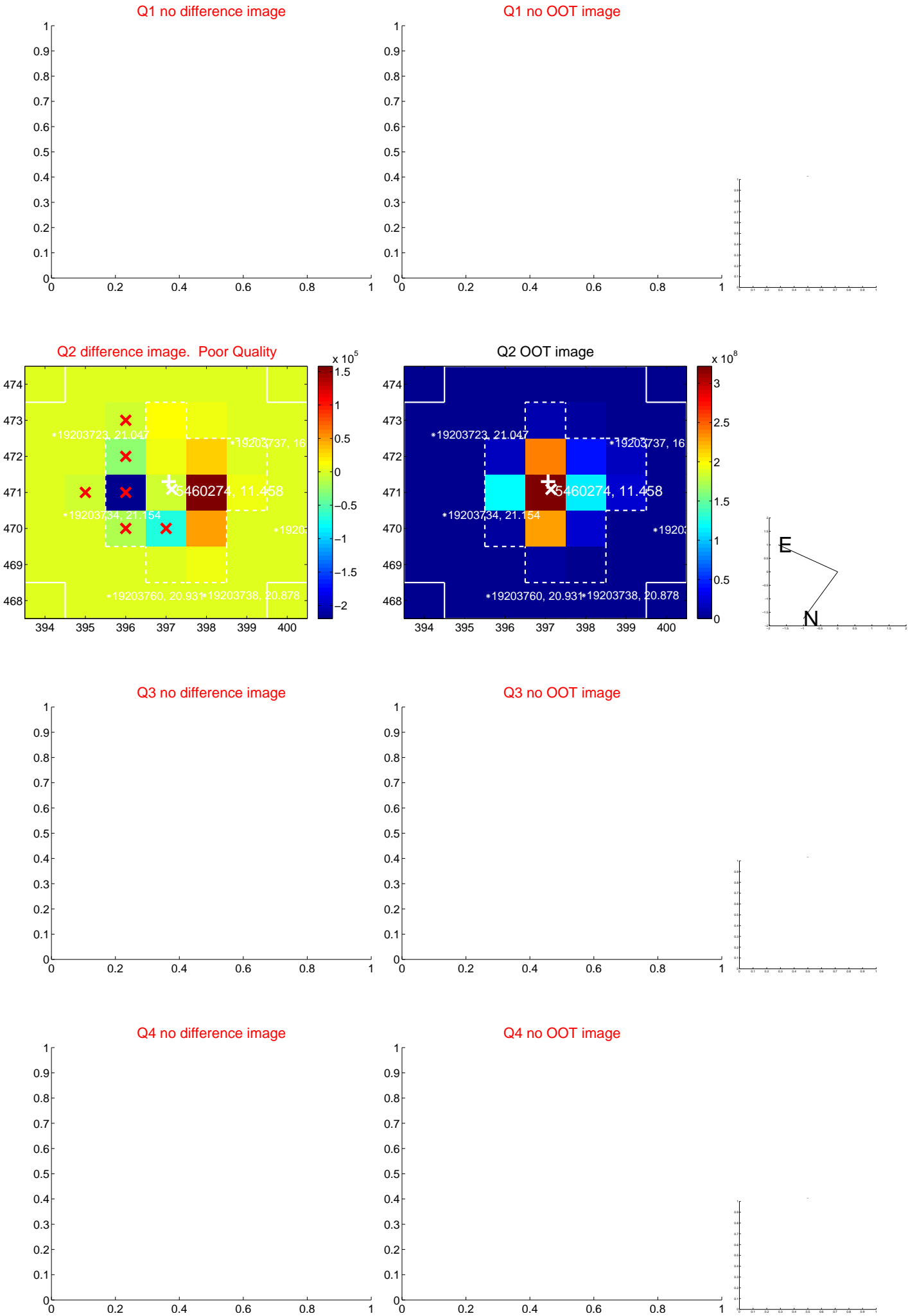
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.258 \pm 1.554$	1.45	$-1.824 \pm 0.997$	$1.330 \pm 1.299$
PRF-fit source offset from KIC position	$2.524 \pm 1.725$	1.46	$-1.940 \pm 1.077$	$1.615 \pm 1.422$
photometric centroid source offset	$2.42 \pm 9.29$	0.26	$-0.99 \pm 7.65$	$2.21 \pm 9.58$



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.

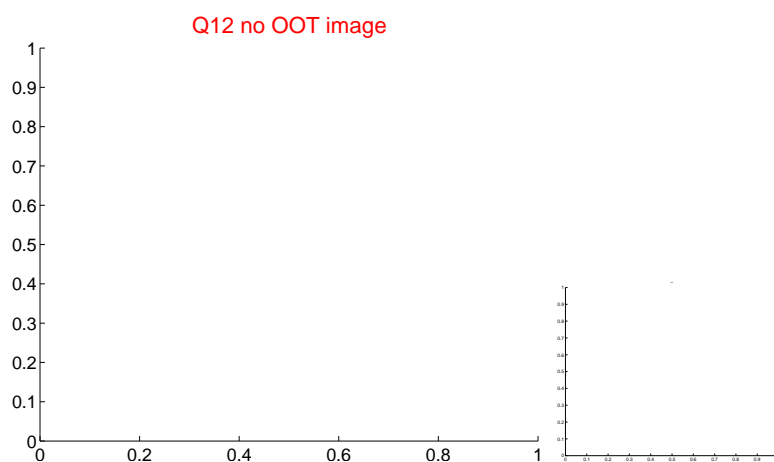
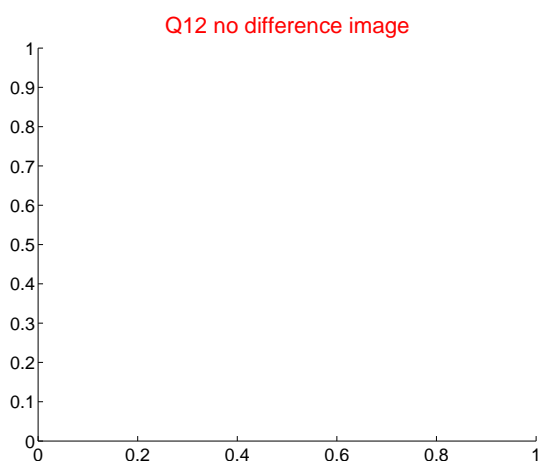
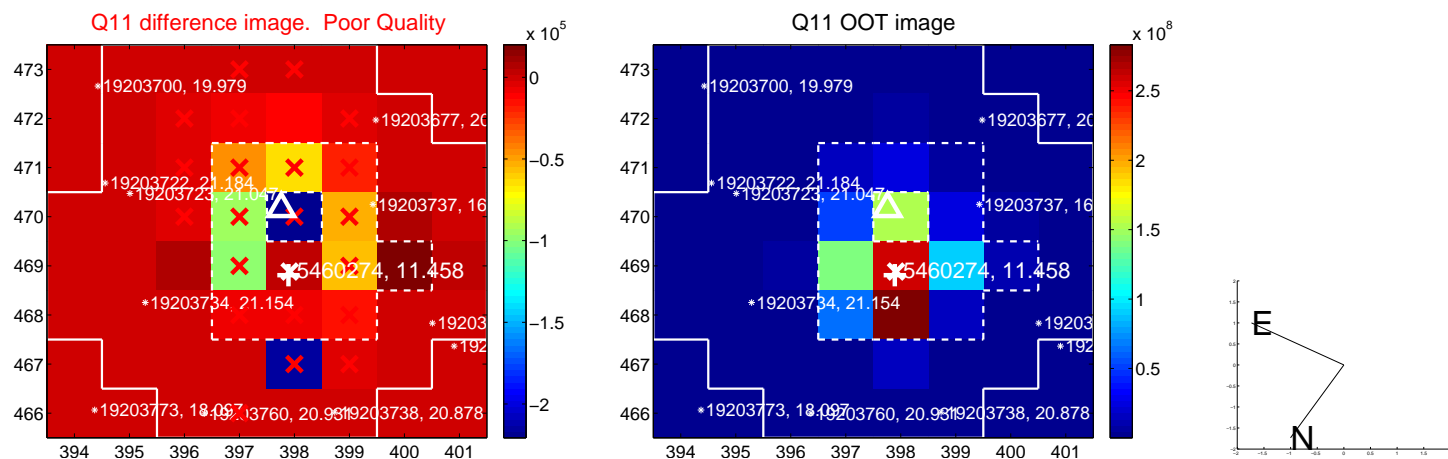
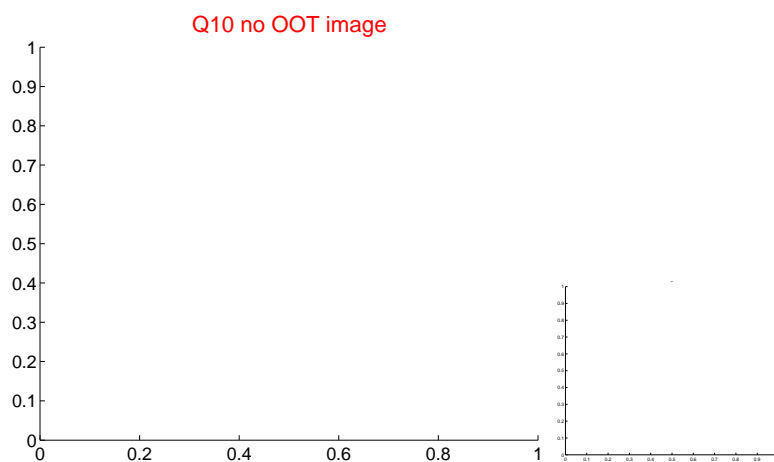
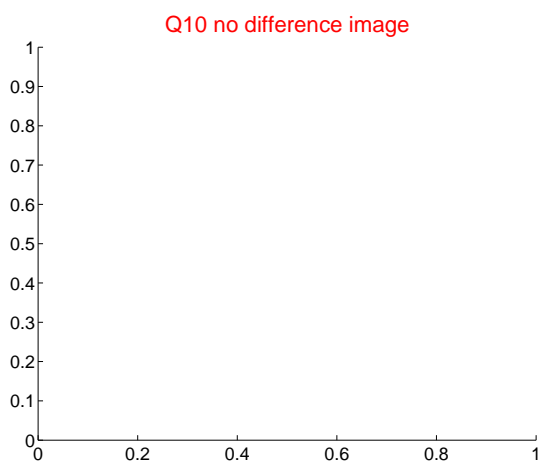
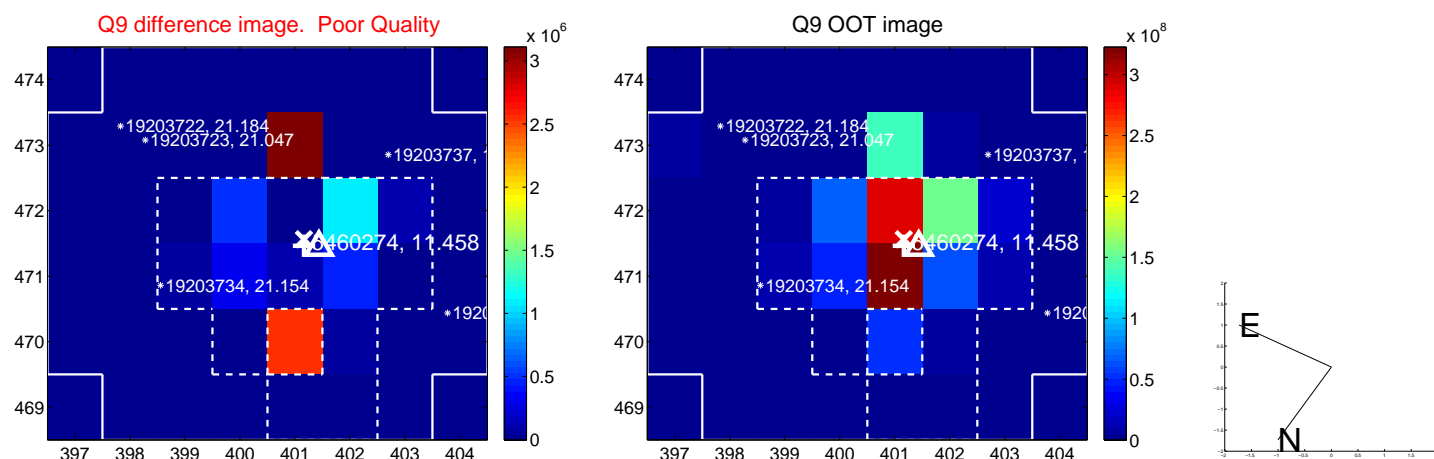


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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.

Q13 no difference image



Q13 no OOT image



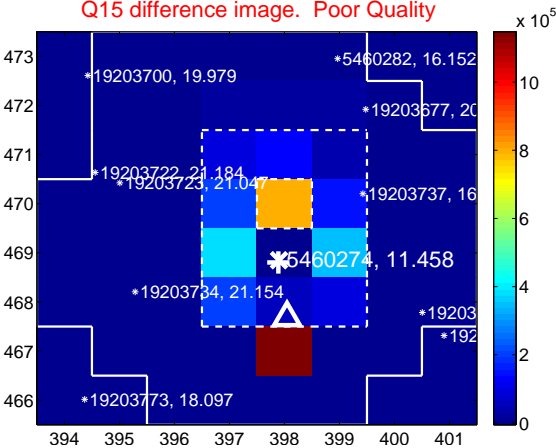
Q14 no difference image



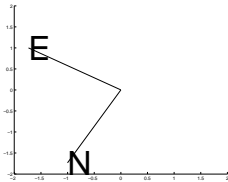
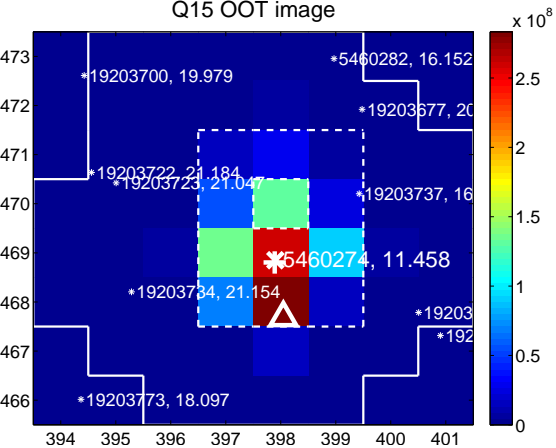
Q14 no OOT image



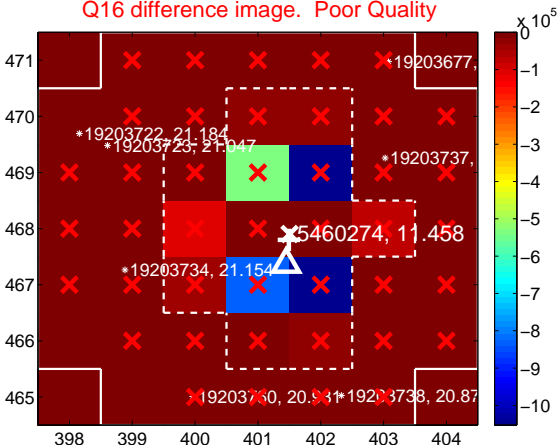
Q15 difference image. Poor Quality



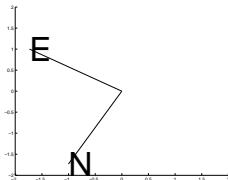
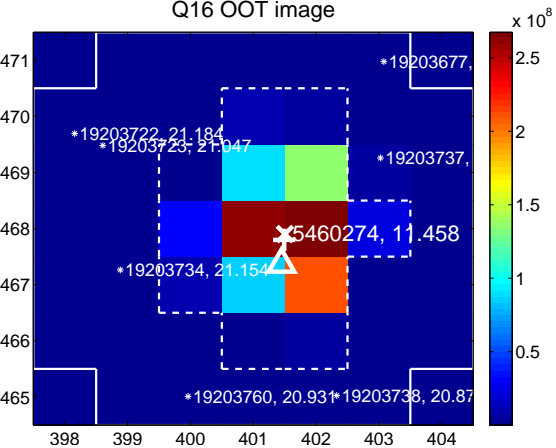
Q15 OOT image



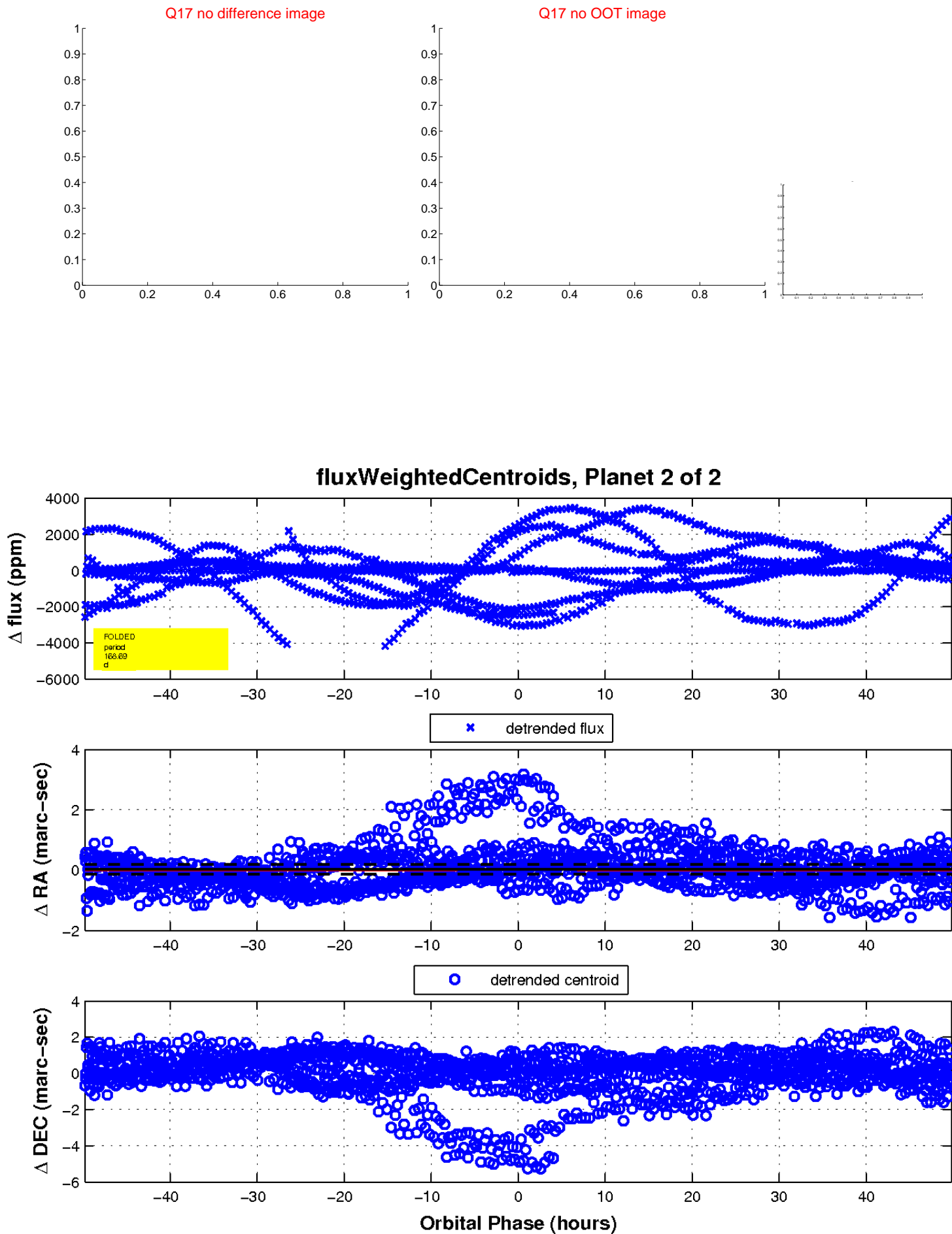
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

