

# KIC 003745690

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003745690-01	OBS	0442.01	13.540589	144.595449	465.5	4.820	42.2	45.2	1.01	5767	2.60	87.20
003745690-02	OBS	0442.02	1.732338	132.801201	169.2	2.354	33.5	35.9	1.01	5767	1.57	1352.72
003745690-03	OBS	0442.03	7.025737	133.626769	186.7	2.267	15.9	17.7	1.01	5767	1.63	209.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003745690-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
003745690-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003745690-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

**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.

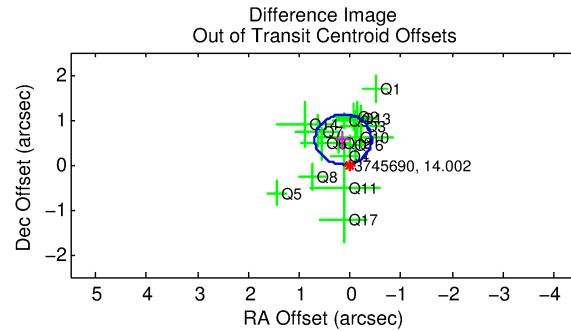
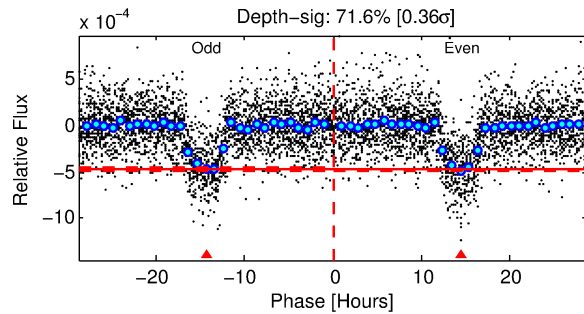
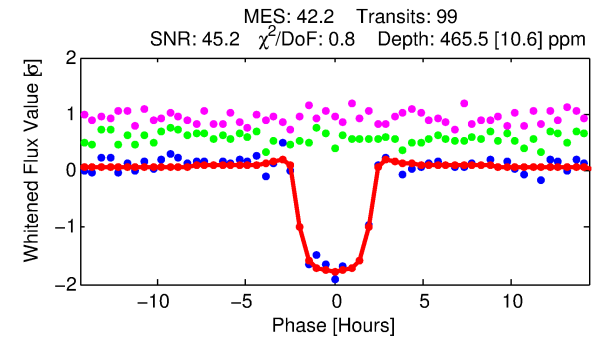
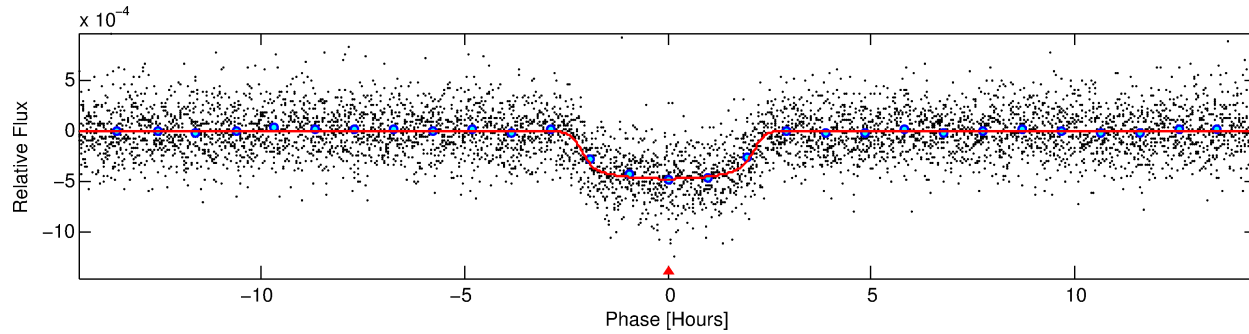
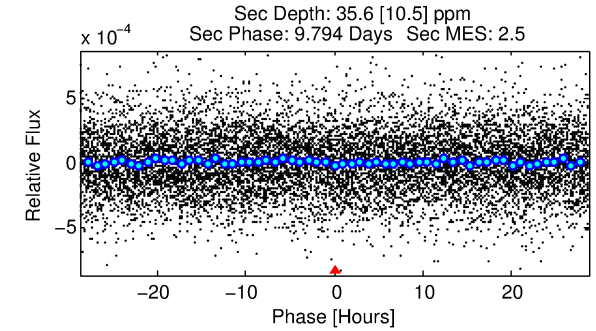
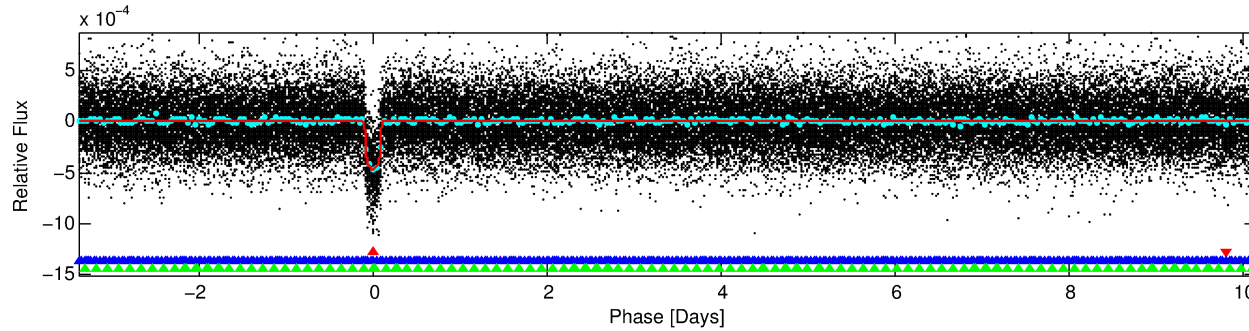
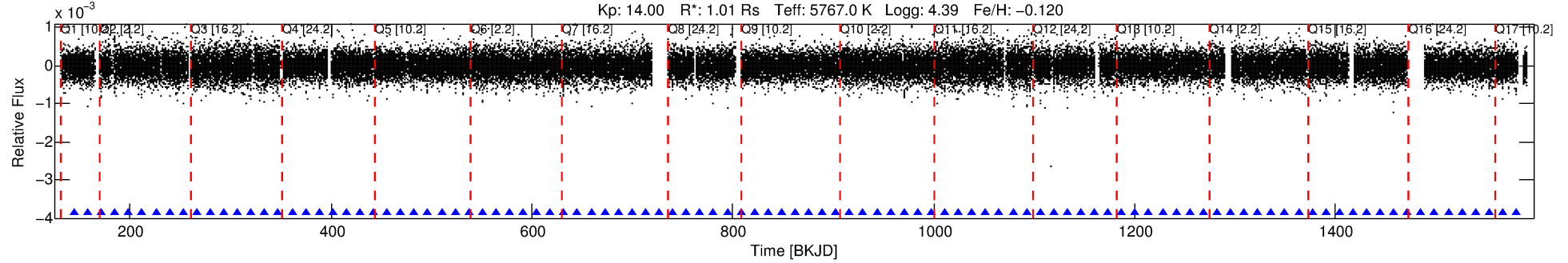
Ephemeris Match Information For 003745690-01

No Significant Match Found

# DV One-Page Summary

KIC: 3745690 Candidate: 1 of 3 Period: 13.541 d  
KOI: K00442.01 Name: Kepler-157c Corr: 0.971

Kp: 14.00 R\*: 1.01 Rs Teff: 5767.0 K Logg: 4.39 Fe/H: -0.120



## DV Fit Results:

Period = 13.54059 [0.00003] d  
Epoch = 144.5954 [0.0020] BKJD  
Rp/R\* = 0.0235 [0.0010]  
a/R\* = 10.46 [1.97]  
b = 0.90 [0.04]  
Seff = 87.20 [18.28]  
Teq = 779 [41] K  
Rp = 2.60 [0.39] Re  
a = 0.1081 [0.0138] AU  
Ag = 33.81 [12.30] [2.67σ]  
Teffp = 2905 [231] K [9.06σ]

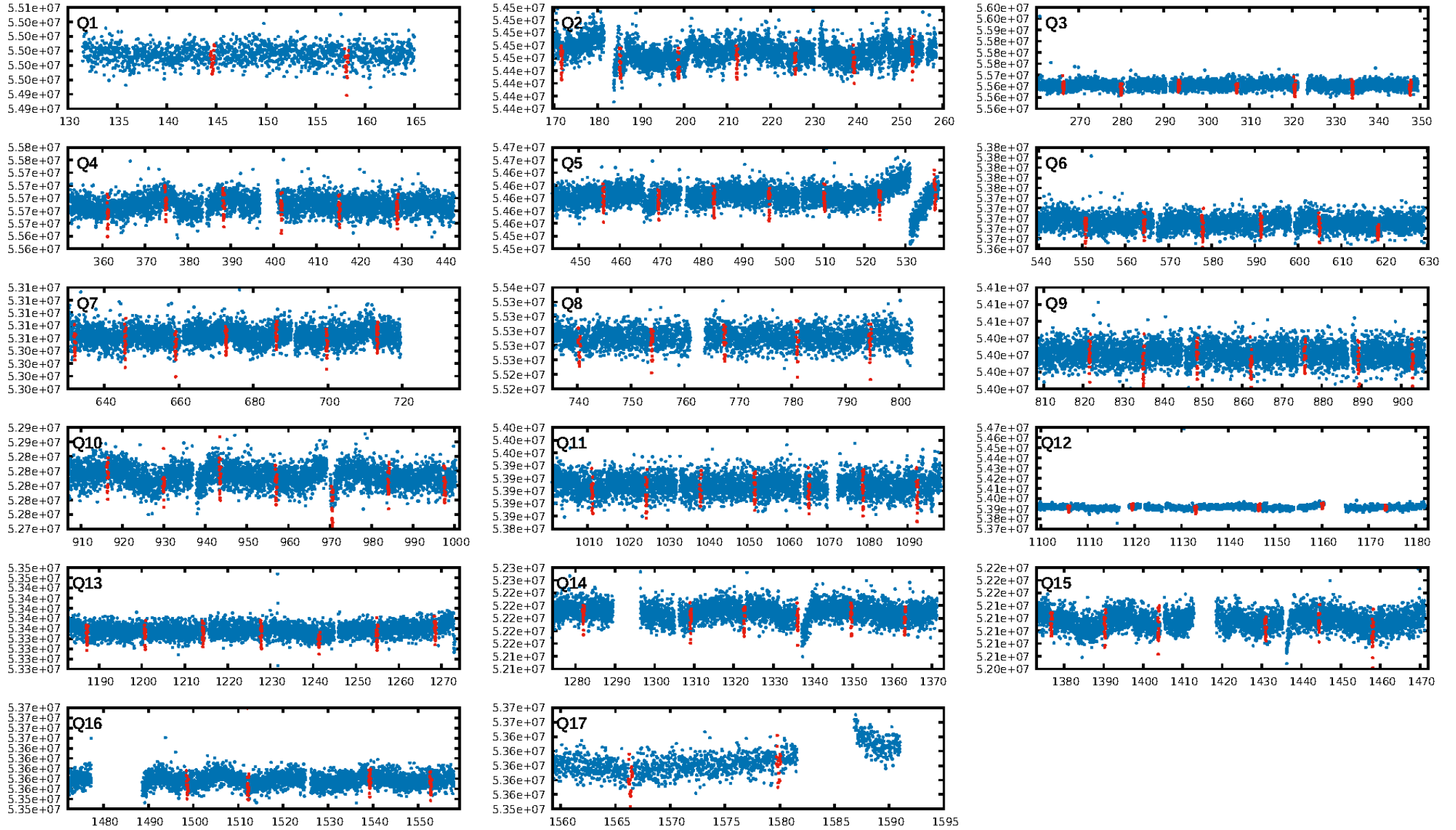
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.36σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [95/95]  
GhostDiagnostic-chr: 2.66  
Centroid-sig: 0.0%  
Centroid-so: 0.616 arcsec [2.78σ]  
OotOffset-rm: 0.573 arcsec [3.08σ]  
KicOffset-rm: 0.407 arcsec [2.00σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 0.94 [16/17]

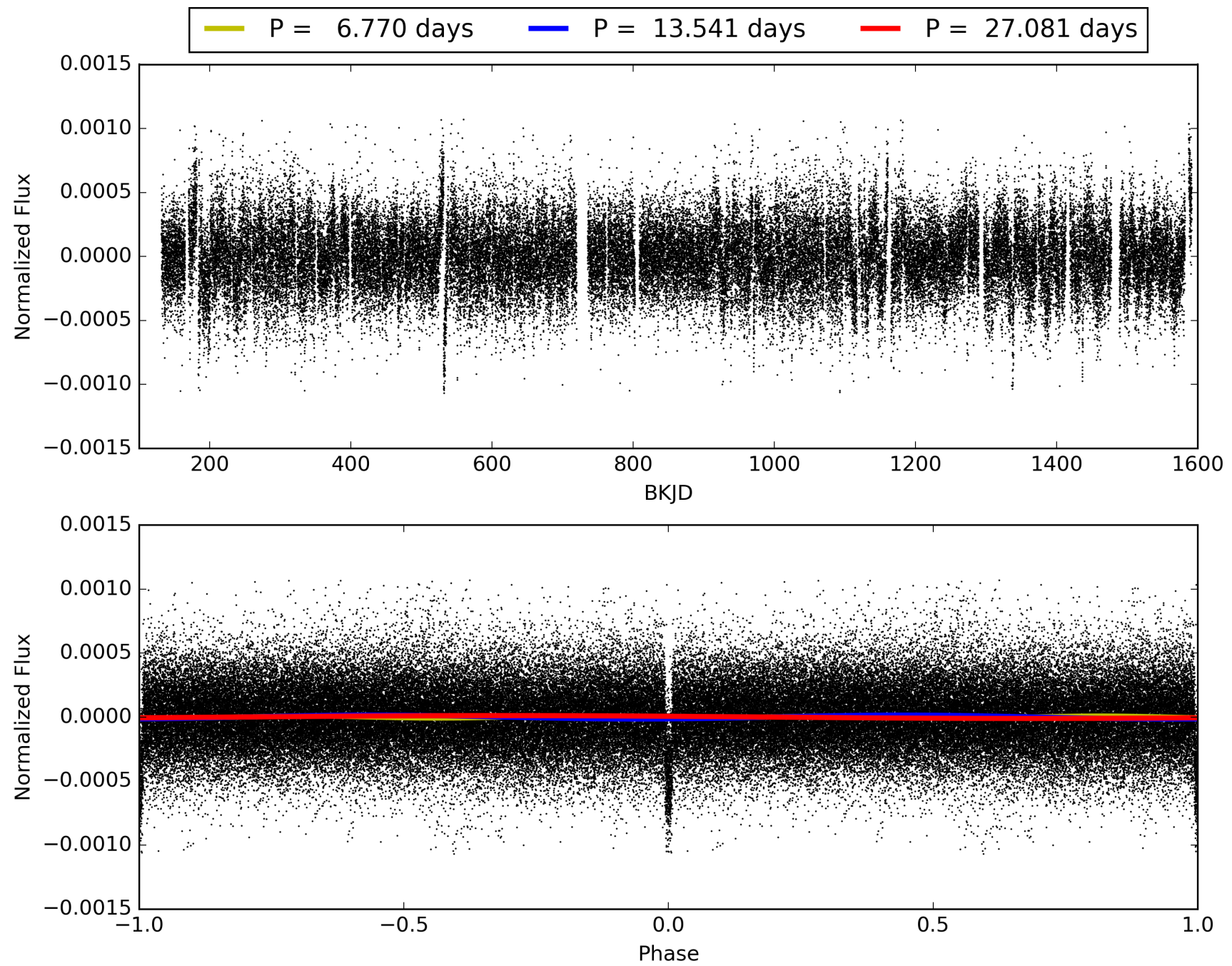
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:18:33 Z

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

# TCE 003745690-01, PDC Light Curves



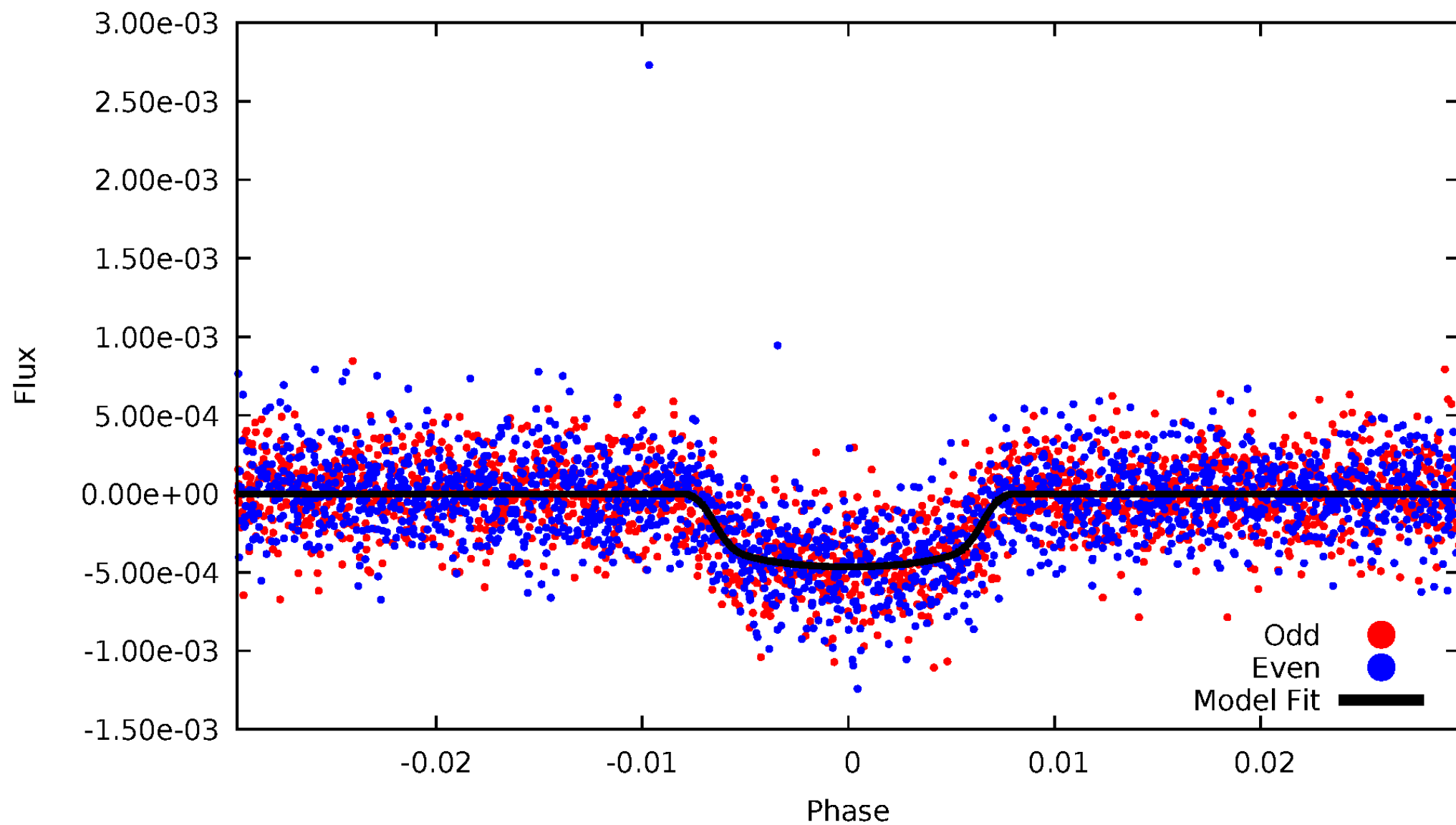
TCE 003745690-01





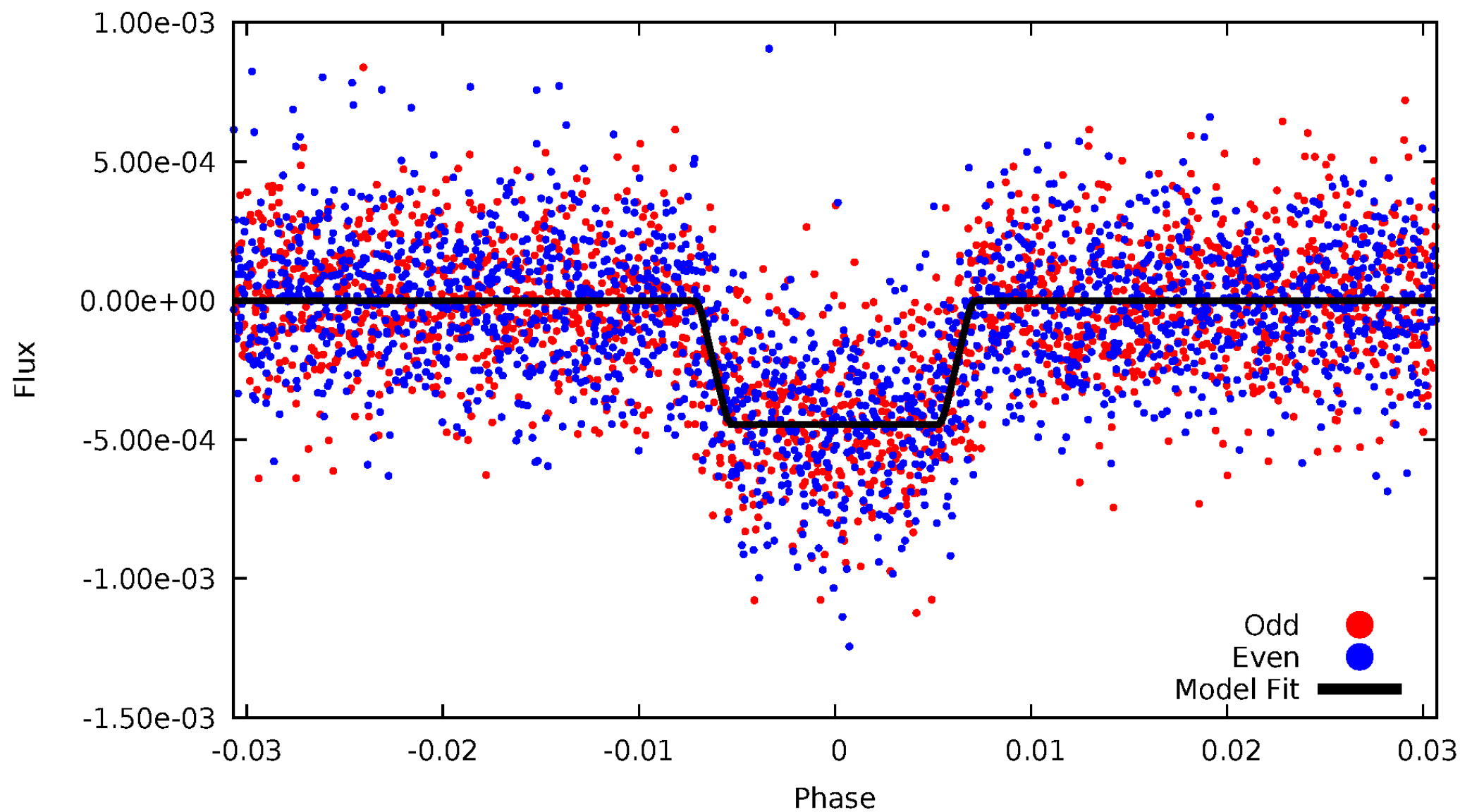
# DV Odd/Even

TCE 003745690-01



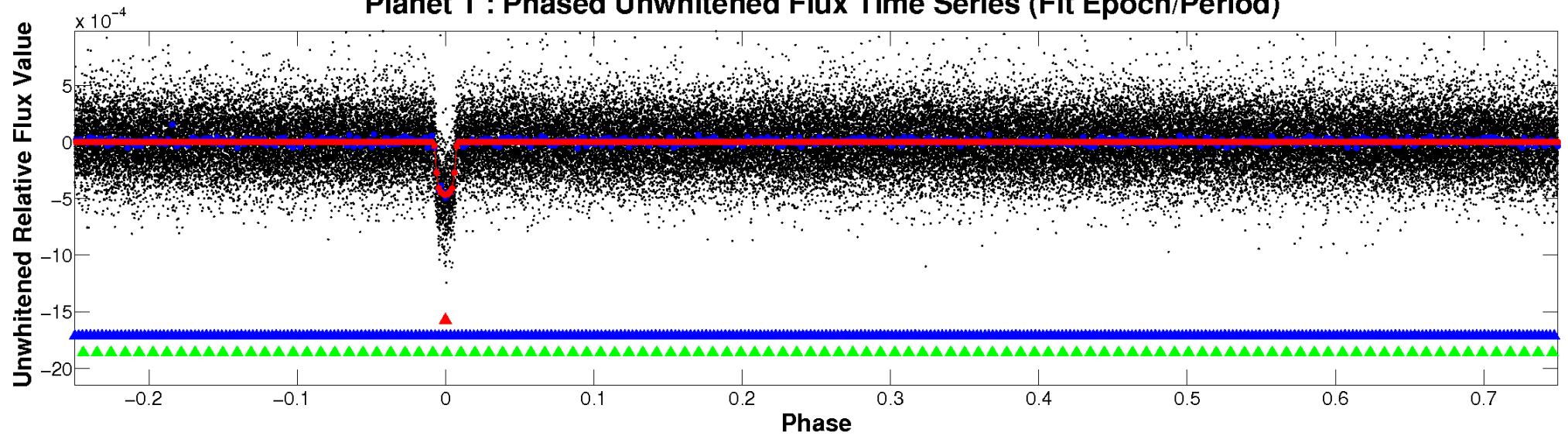
# ALT Odd/Even

TCE 003745690-01

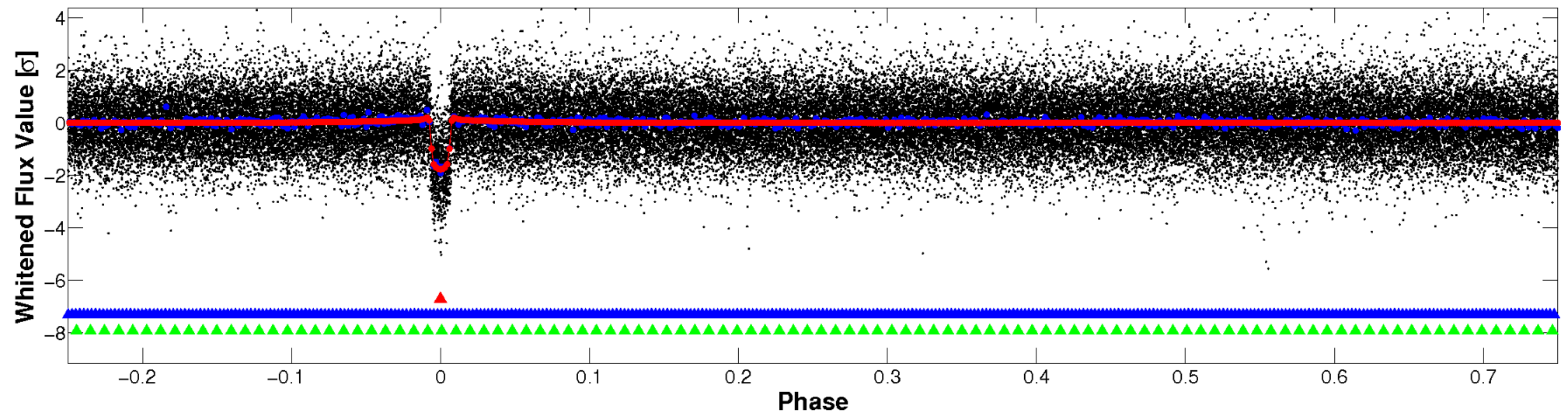


# Non-Whitened Vs. Whitened Light Curve

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

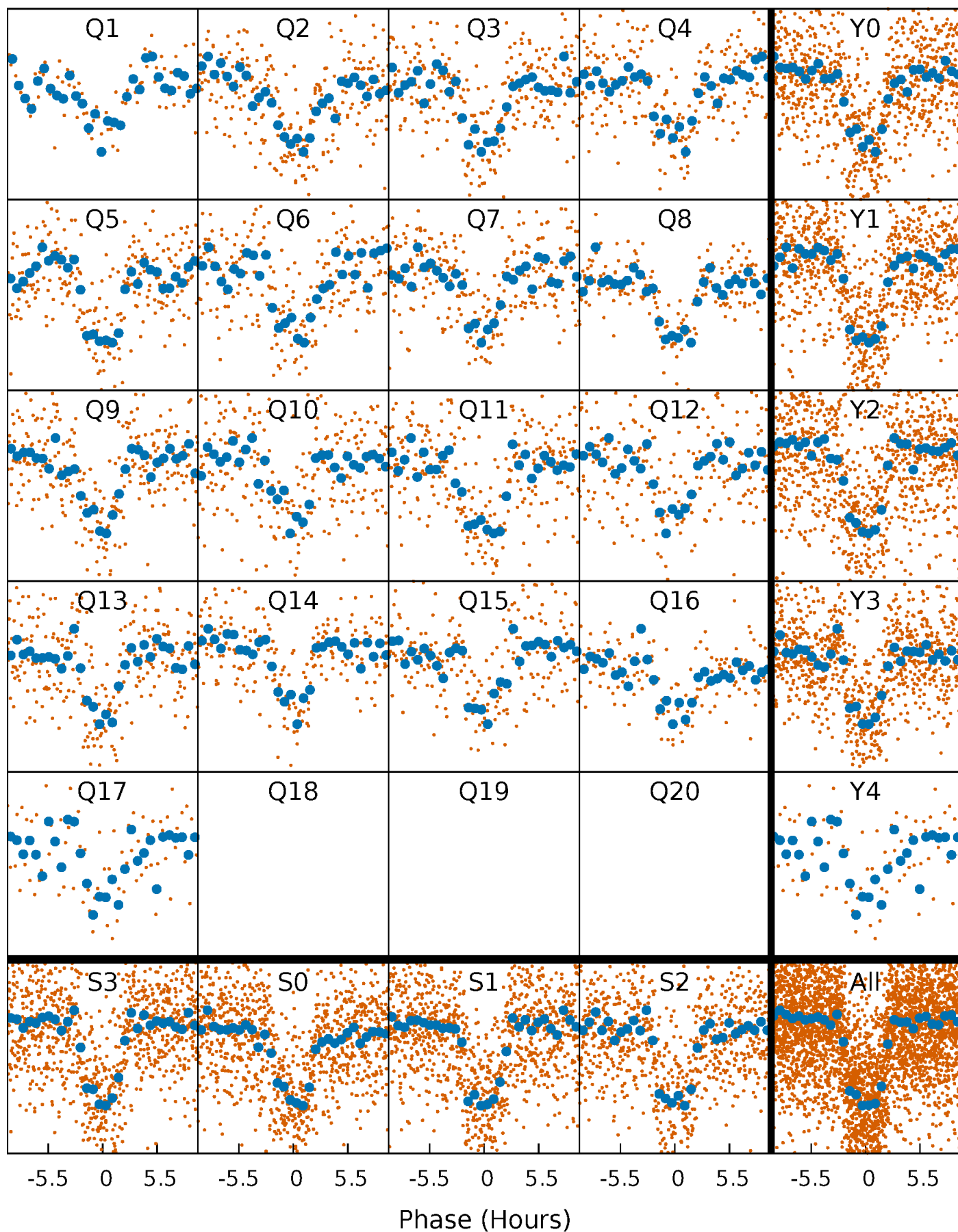


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

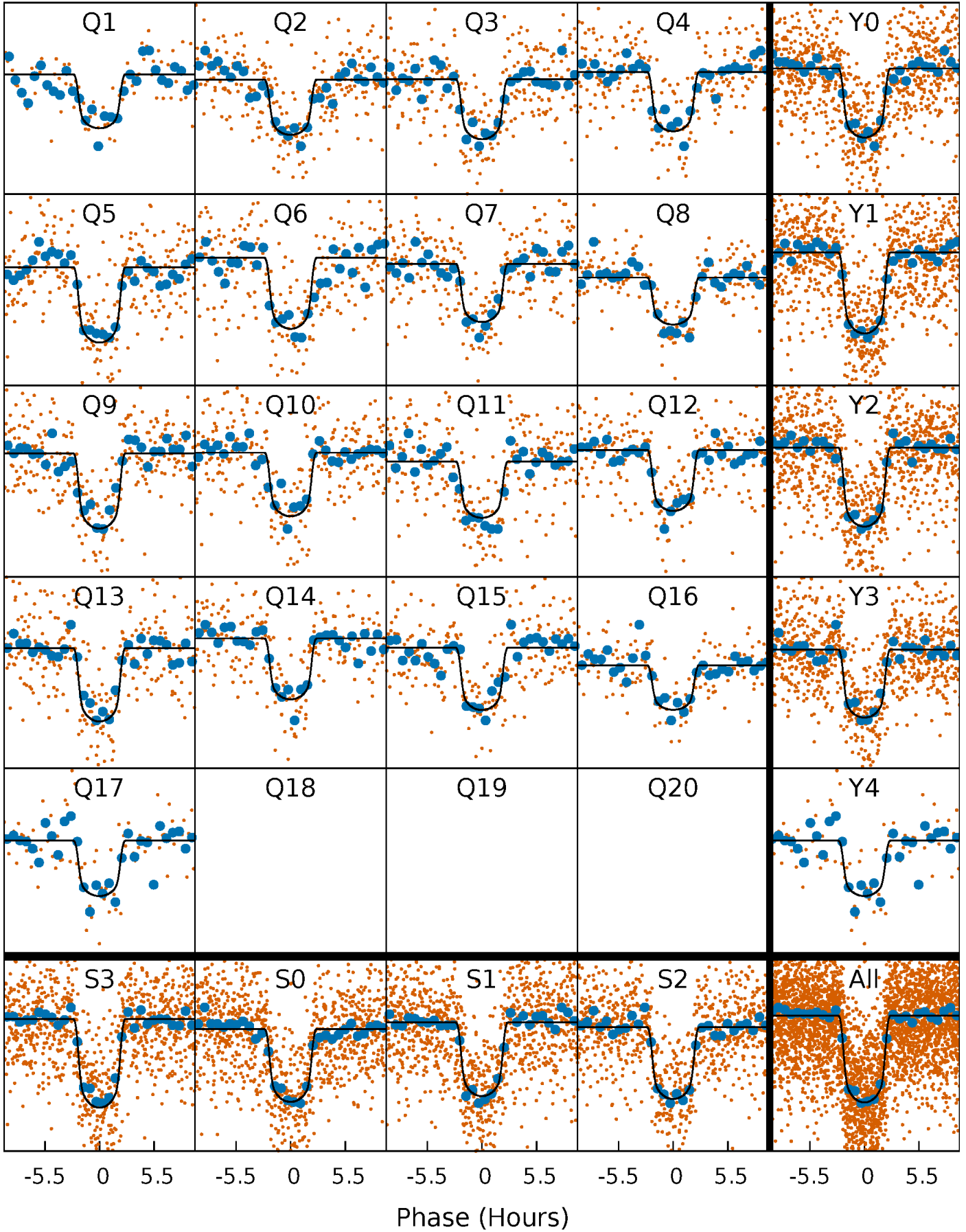
TCE 003745690-01 P= 13.540589 Days  $T_0=144.595449$  (BKJD)





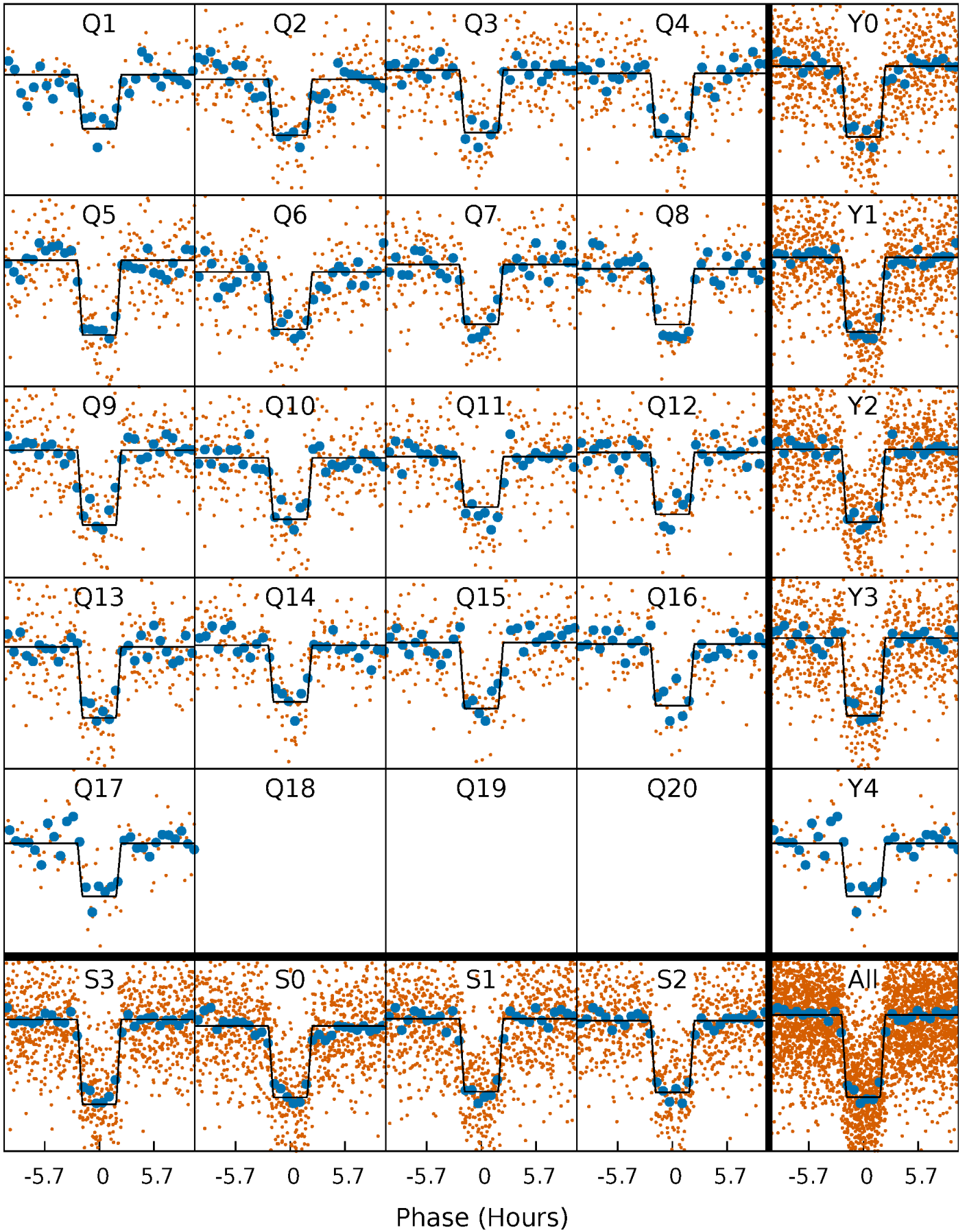
# DV Quarter-Phased Transit Curves

TCE 003745690-01 P= 13.540589 Days  $T_0=144.595449$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

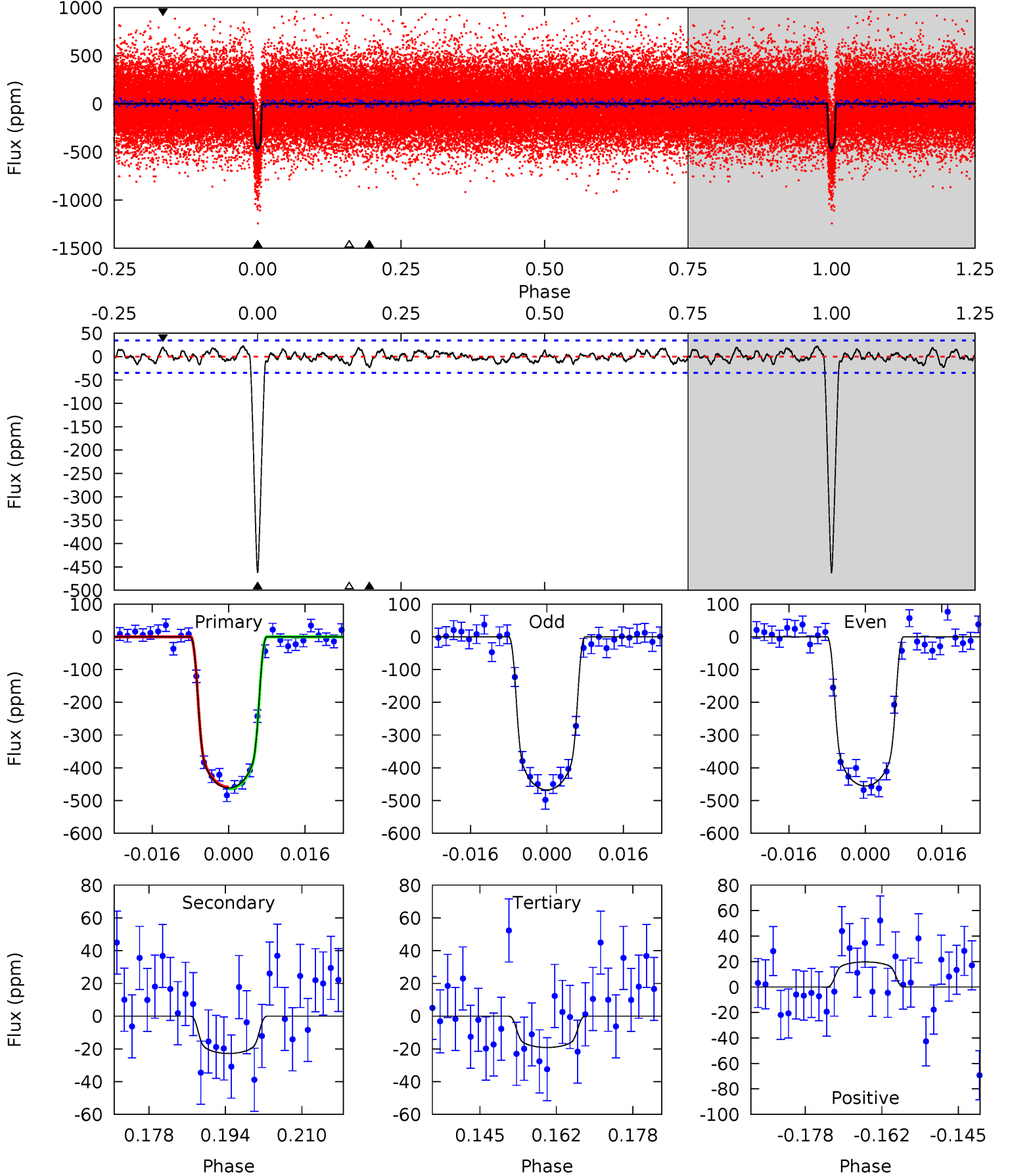
TCE 003745690-01 P= 13.540512 Days  $T_0=144.599134$  (BKJD)



# DV Model-Shift Uniqueness Test

003745690-01, P = 13.540589 Days, E = 131.054860 Days

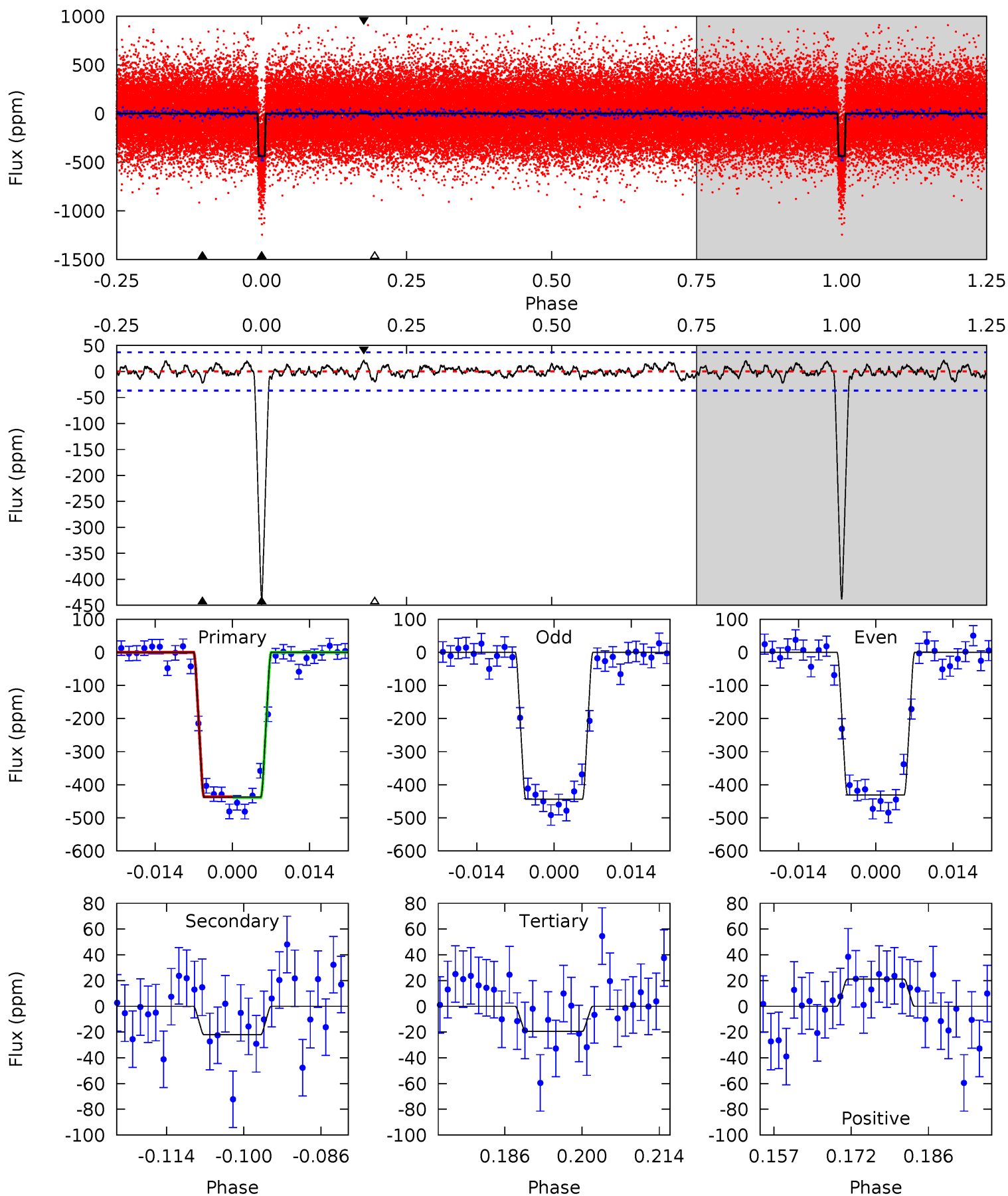
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
65.9	3.25	2.73	2.81	4.93	2.41	1.13	63.1	63.1	0.52	0.44	0.87	1.01	0.05	0.37



# Alt Model-Shift Uniqueness Test

003745690-01, P = 13.540512 Days, E = 131.058622 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
59.0	2.98	2.63	2.84	4.96	2.45	1.01	56.4	56.1	0.35	0.14	0.84	1.00	0.05	0.12





### Stellar Parameters For KIC 003745690

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5767^{+115}_{-104}$	$4.389^{+0.099}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.014^{+0.145}_{-0.119}$	$0.918^{+0.072}_{-0.059}$	$1.240^{+0.513}_{-0.398}$
	+2%/-2%	+2%/-3%	+125%/-125%	+14%/-12%	+8%/-6%	+41%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 003745690-01 / KOI 0442.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-23 \pm 7$	$2.62^{+0.25}_{-0.20}$	$1096^{+43}_{-46}$	$3187^{+149}_{-185}$	$21^{+8}_{-7}$
Alt.	$-22 \pm 7$	$2.34^{+0.22}_{-0.20}$	$1089^{+48}_{-43}$	$3278^{+172}_{-203}$	$26^{+10}_{-9}$

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

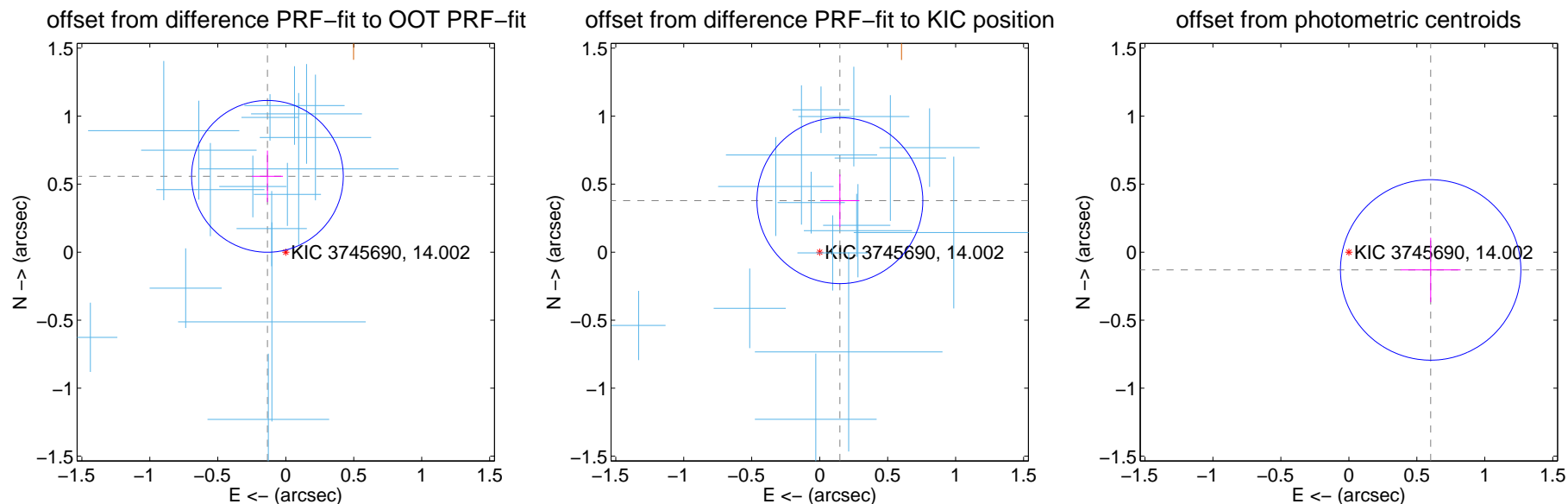
## DV Centroid Data

Supplemental centroid analysis for 003745690-01. Kepler magnitude: 14.00. Transit SNR 45.22

There are 15 quarters with good PRF difference image offsets

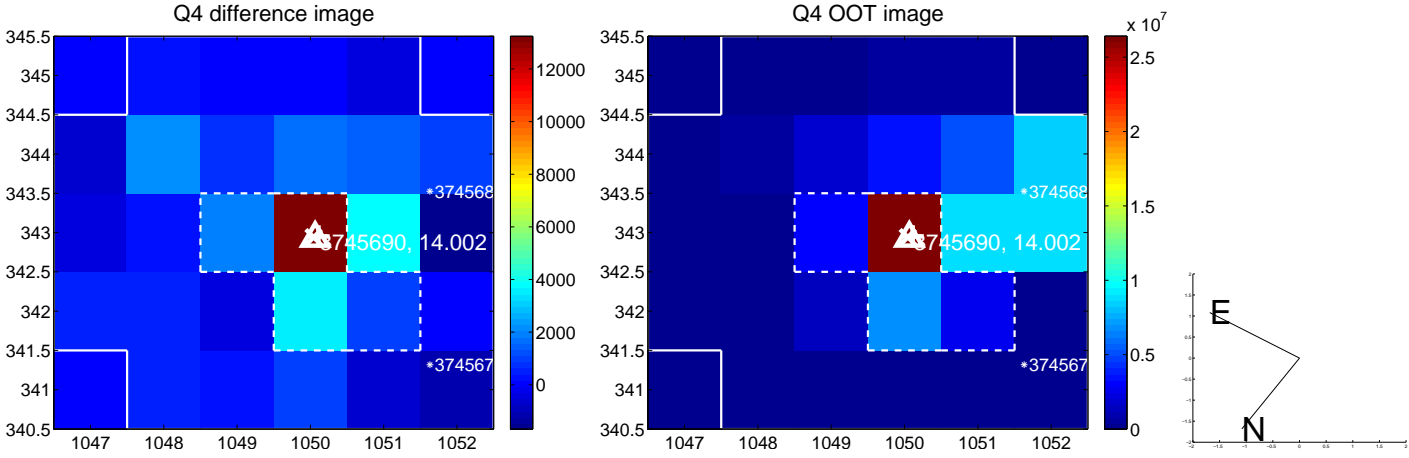
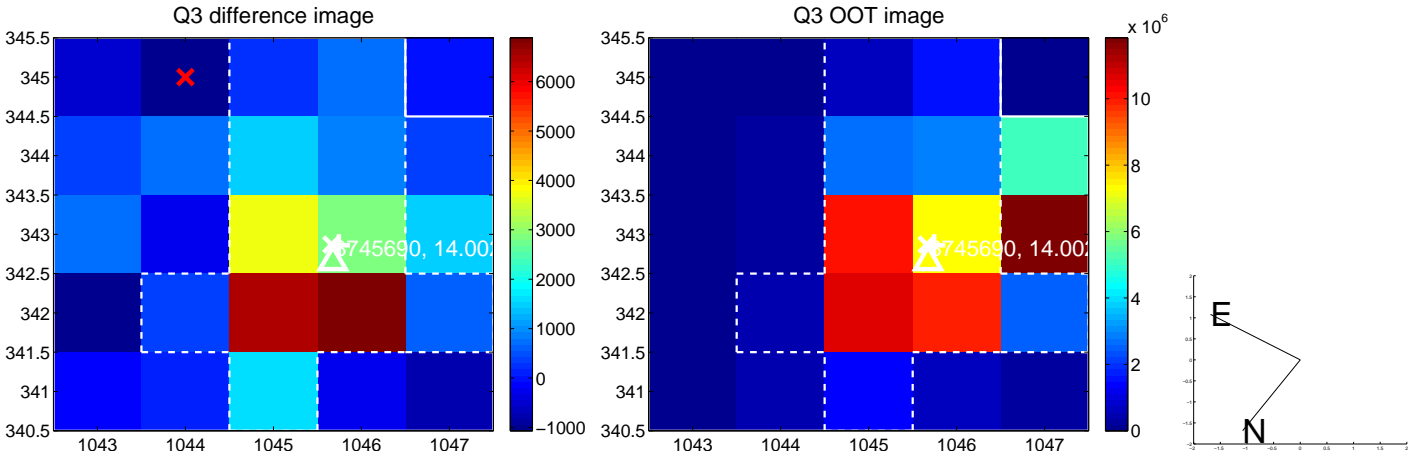
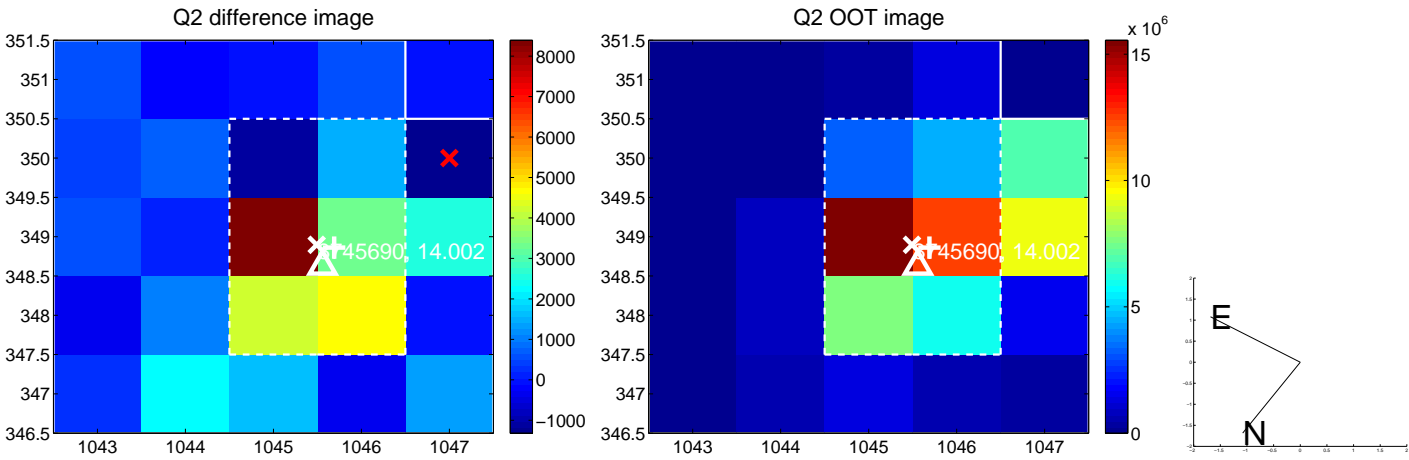
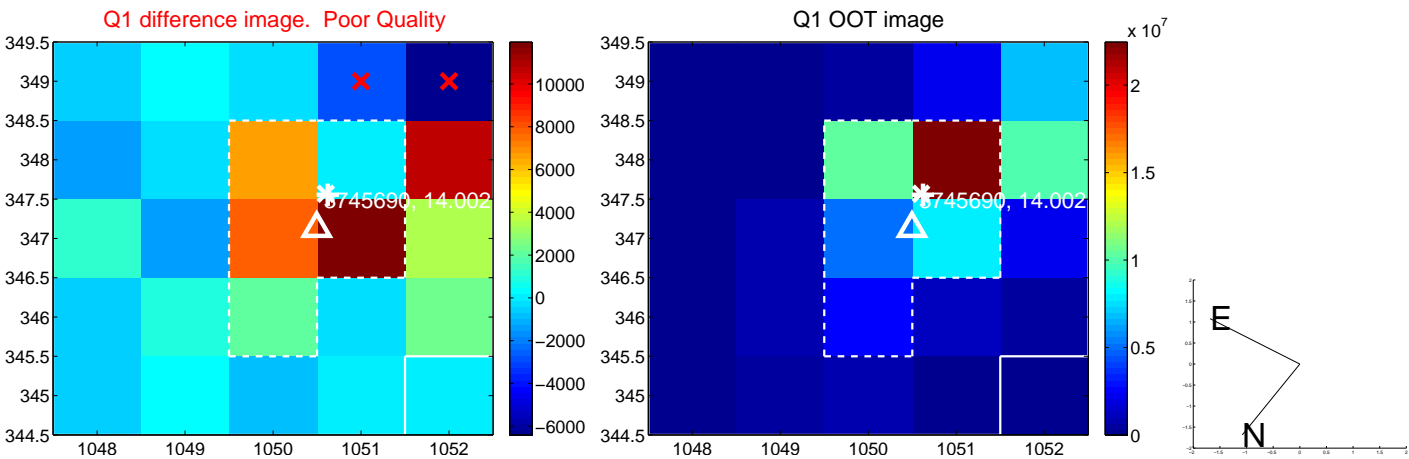
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>0.573 \pm 0.186</math></b>	<b>3.08</b>	$0.135 \pm 0.114$	$0.557 \pm 0.189$
PRF-fit source offset from KIC position	$0.407 \pm 0.203$	2.00	$-0.148 \pm 0.144$	$0.379 \pm 0.193$
photometric centroid source offset	$0.62 \pm 0.22$	2.78	$-0.60 \pm 0.22$	$-0.13 \pm 0.24$

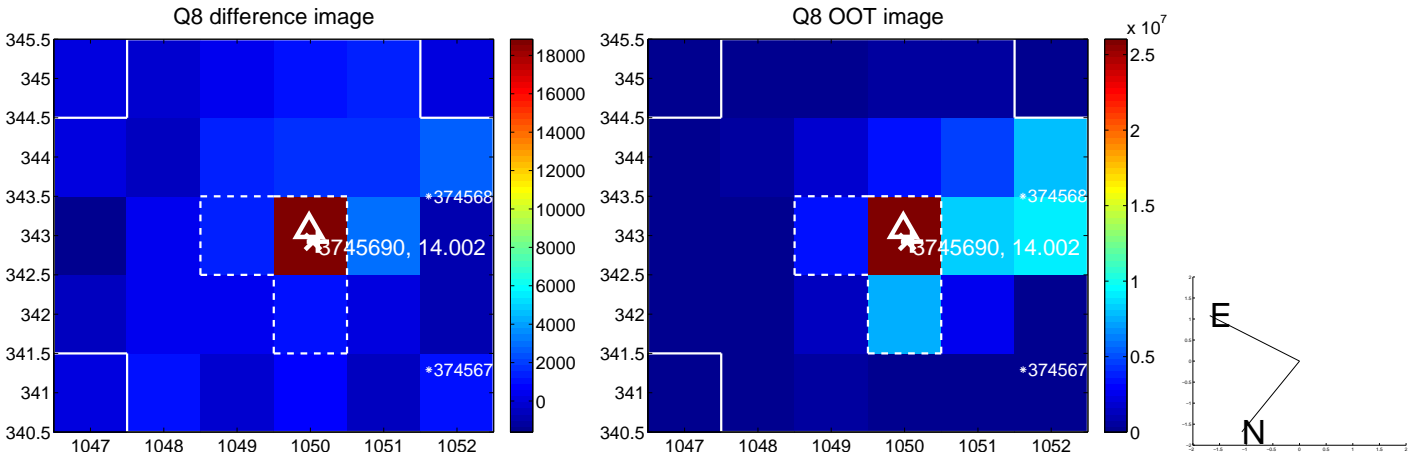
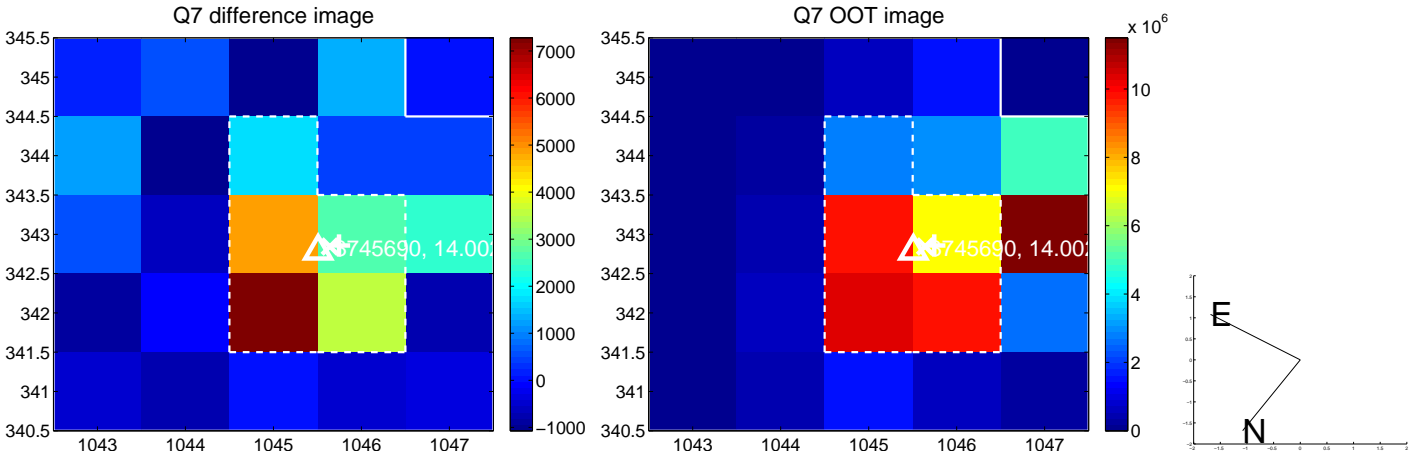
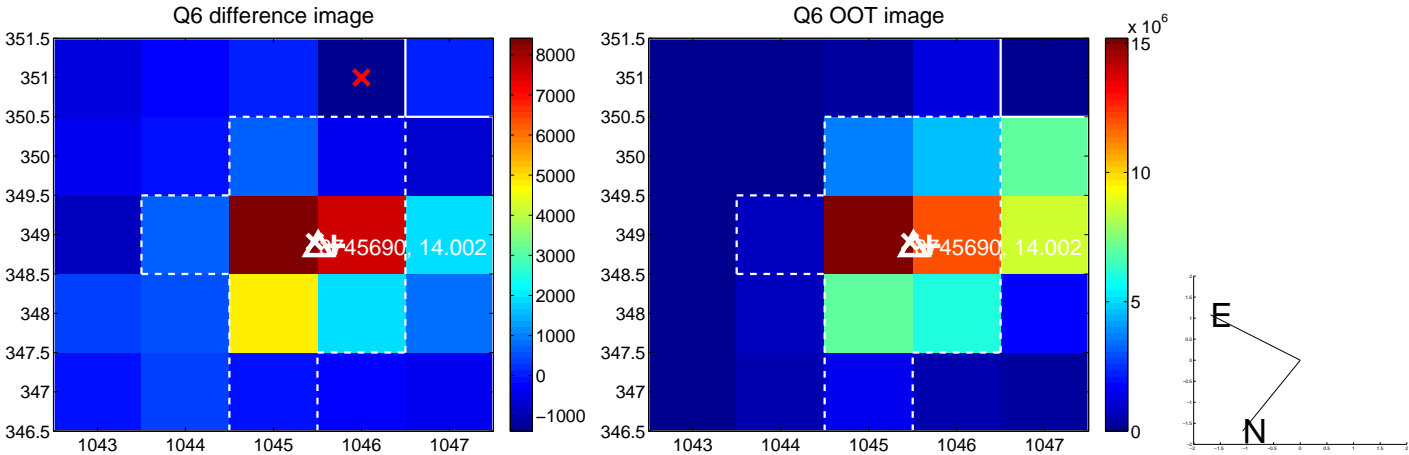
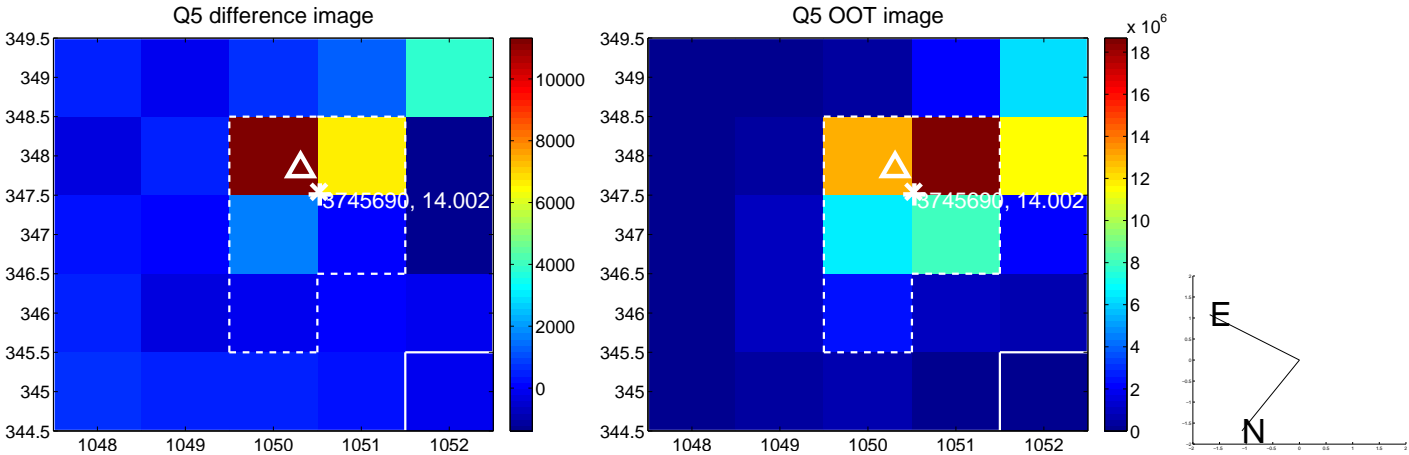


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

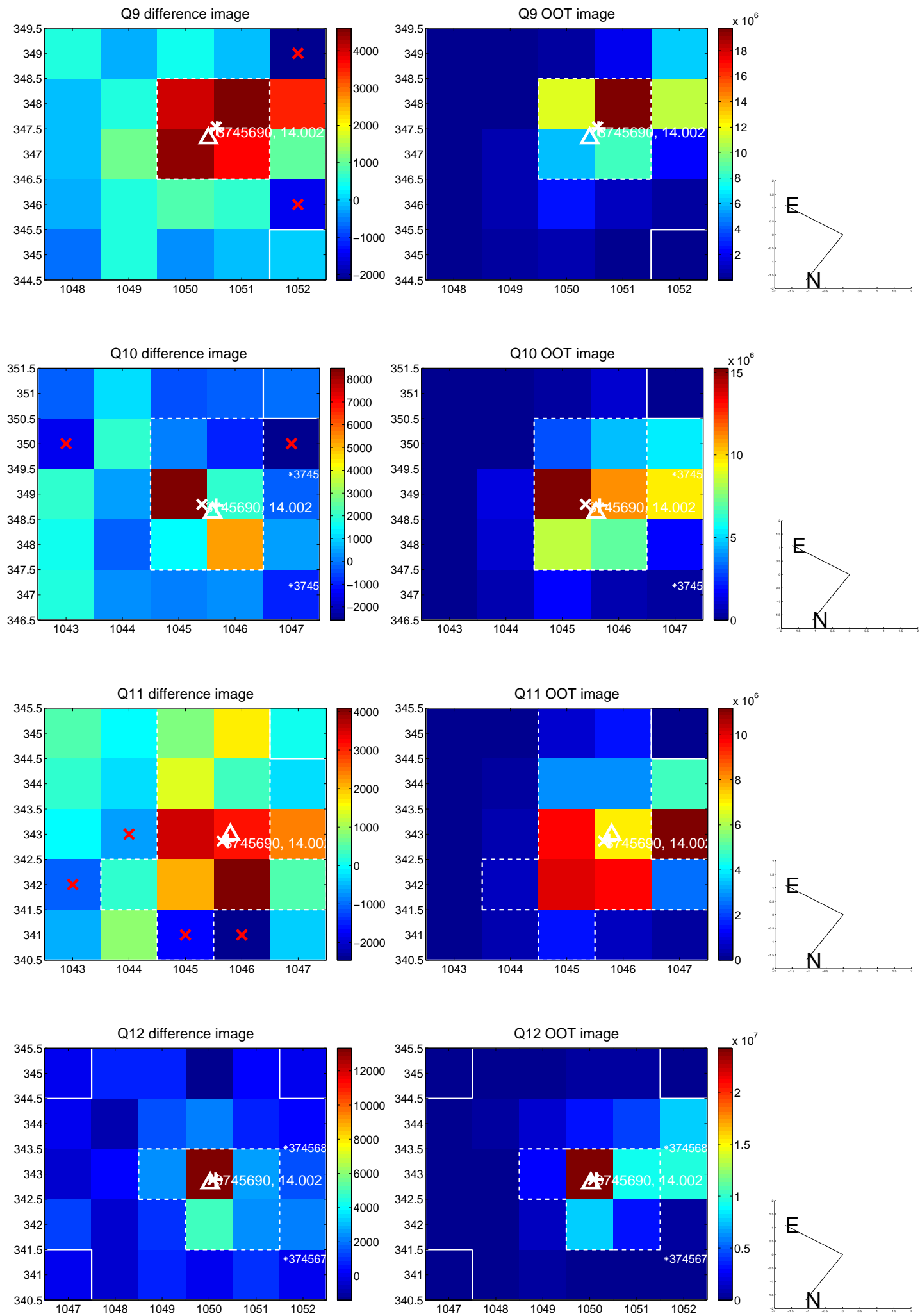


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

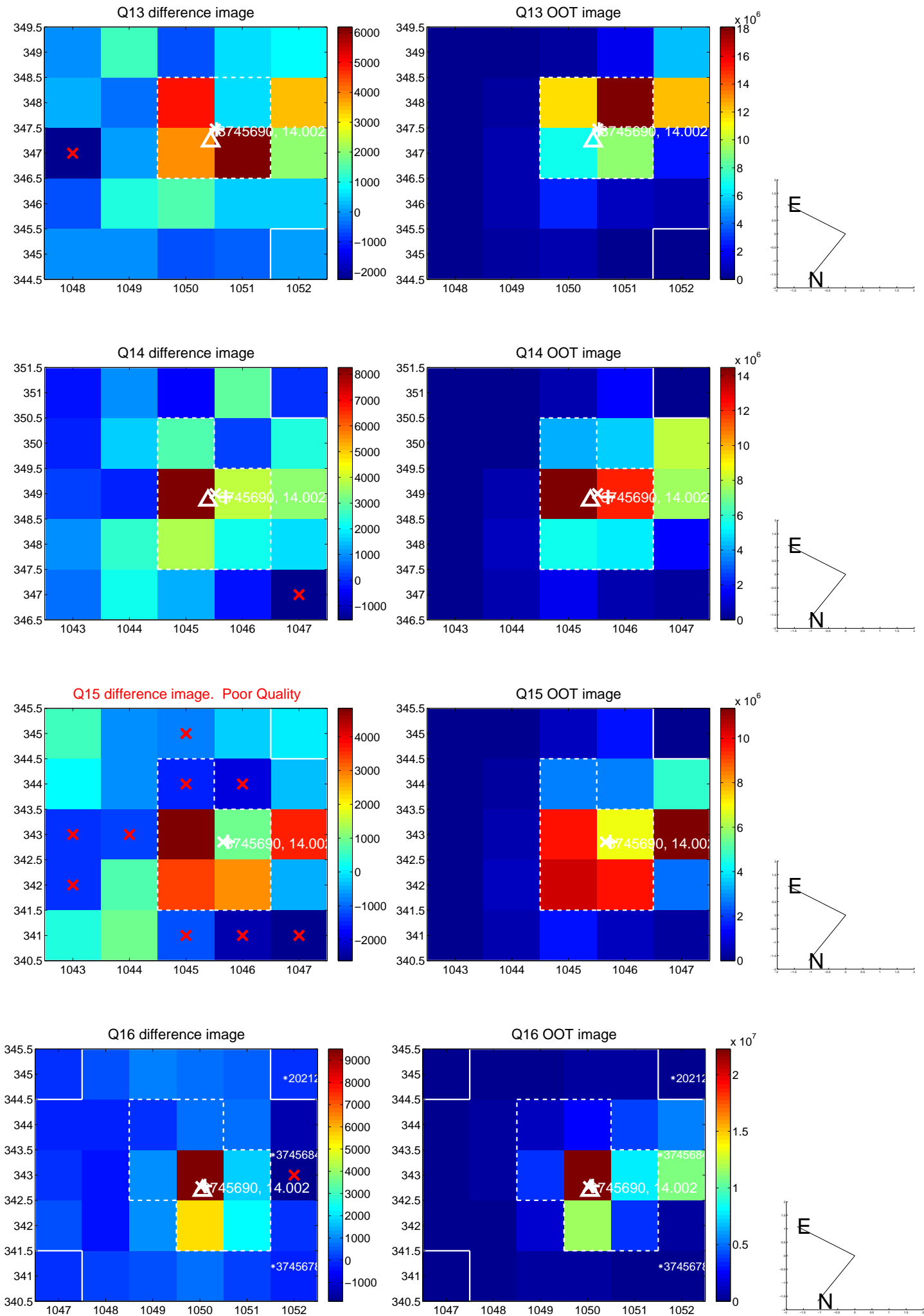




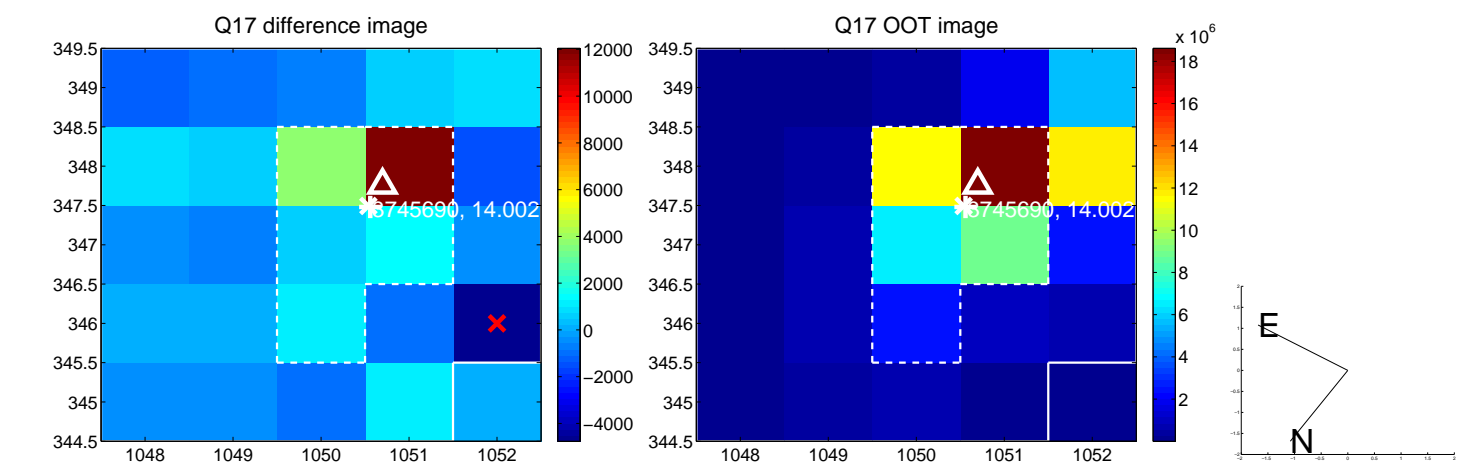
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



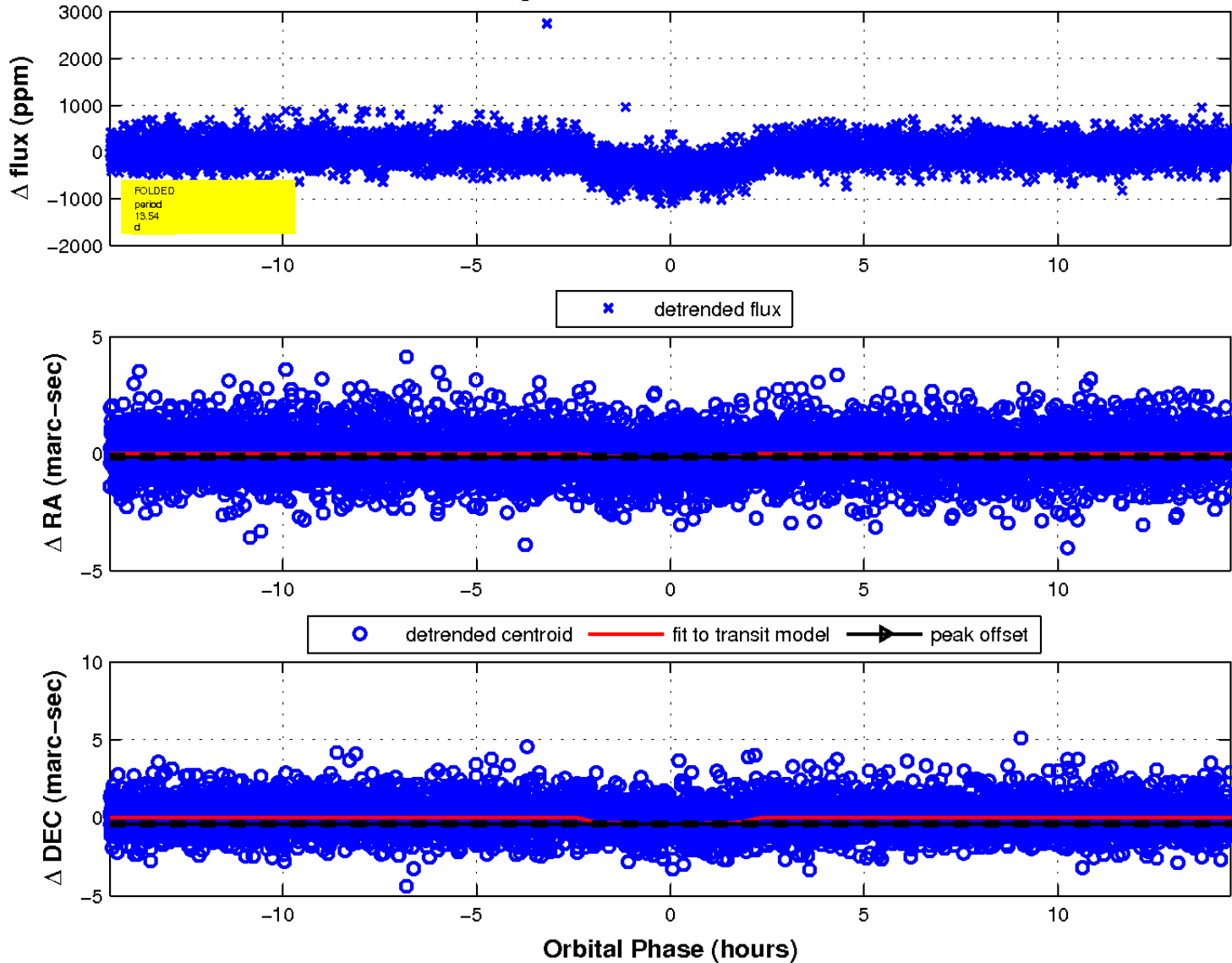
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

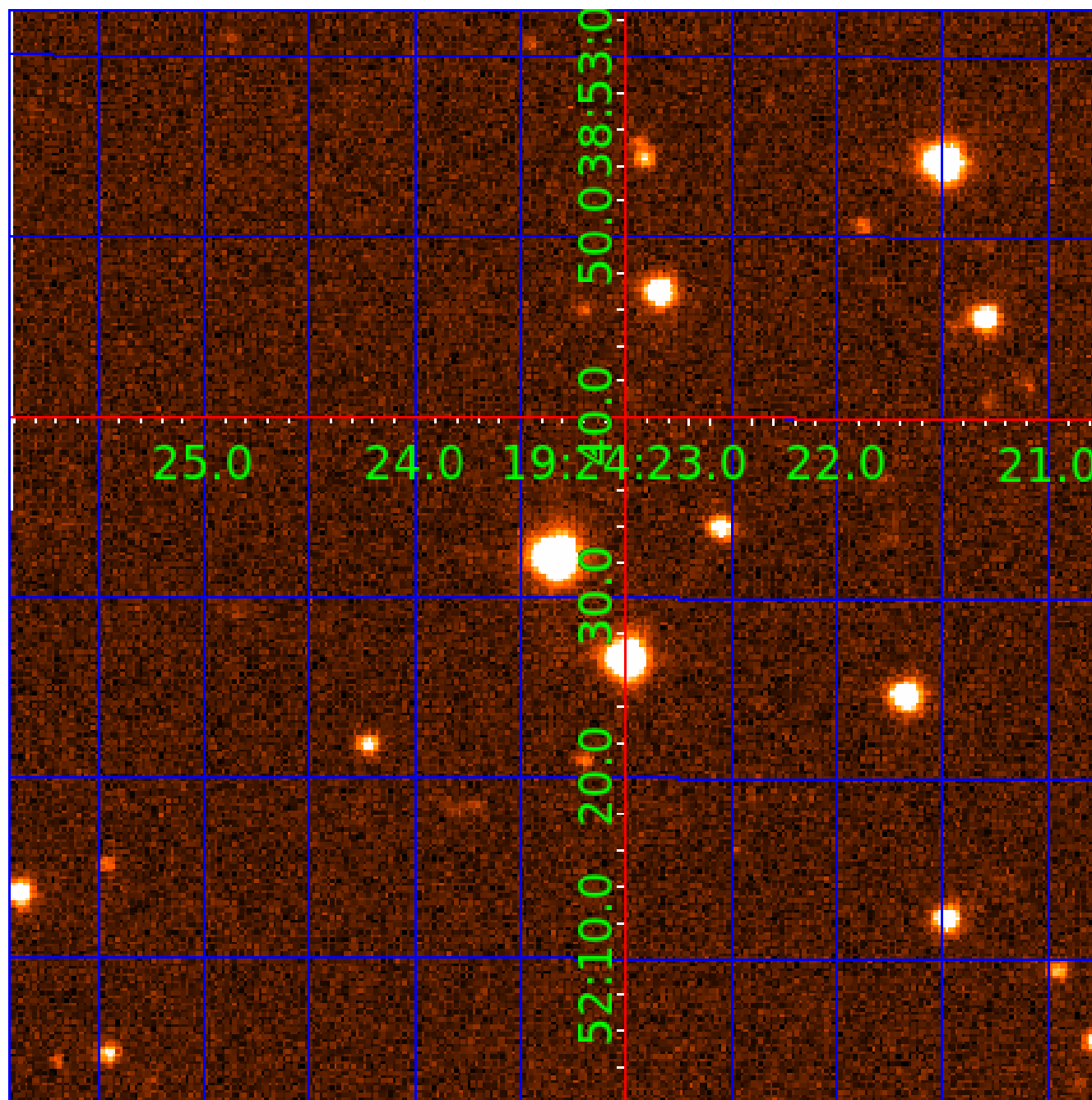


### fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 003745690

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003745690-01	OBS	0442.01	13.540589	144.595449	465.5	4.820	42.2	45.2	1.01	5767	2.60	87.20
003745690-02	OBS	0442.02	1.732338	132.801201	169.2	2.354	33.5	35.9	1.01	5767	1.57	1352.72
003745690-03	OBS	0442.03	7.025737	133.626769	186.7	2.267	15.9	17.7	1.01	5767	1.63	209.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003745690-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
003745690-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003745690-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

**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.

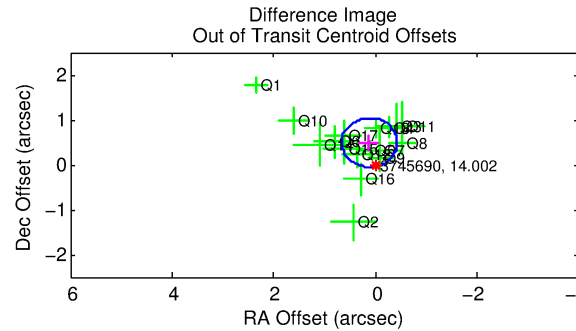
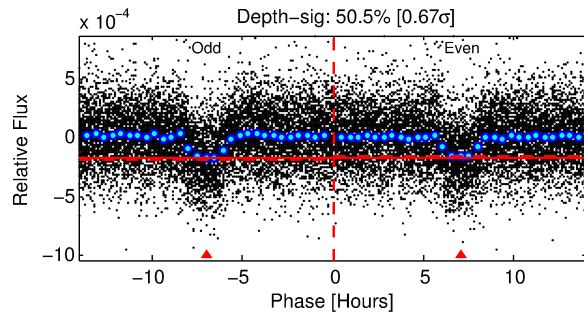
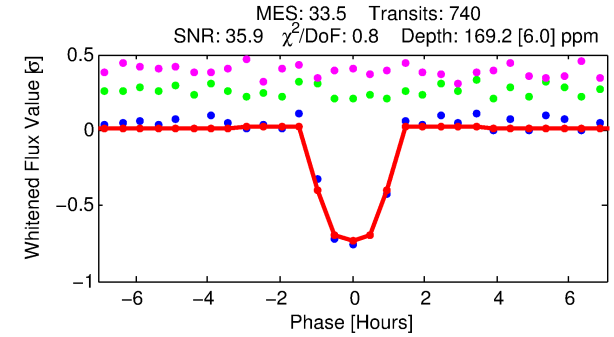
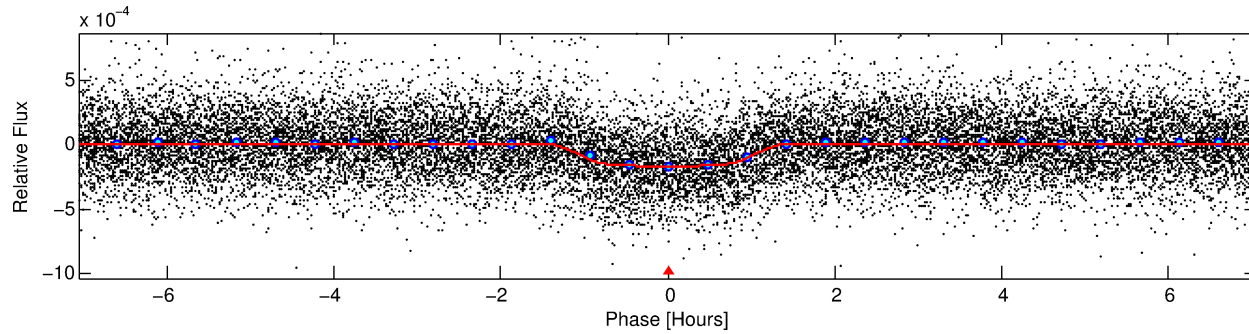
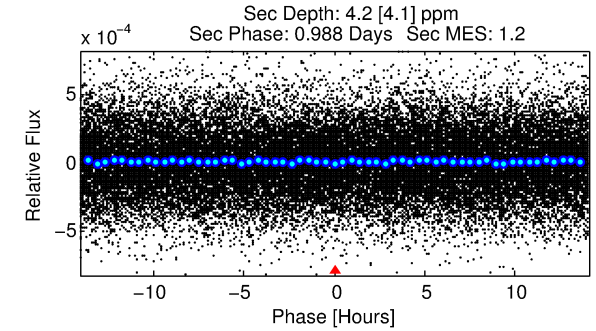
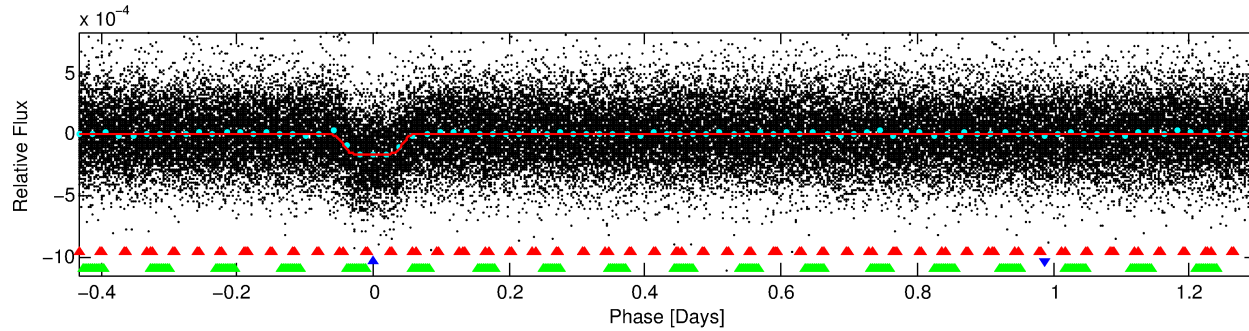
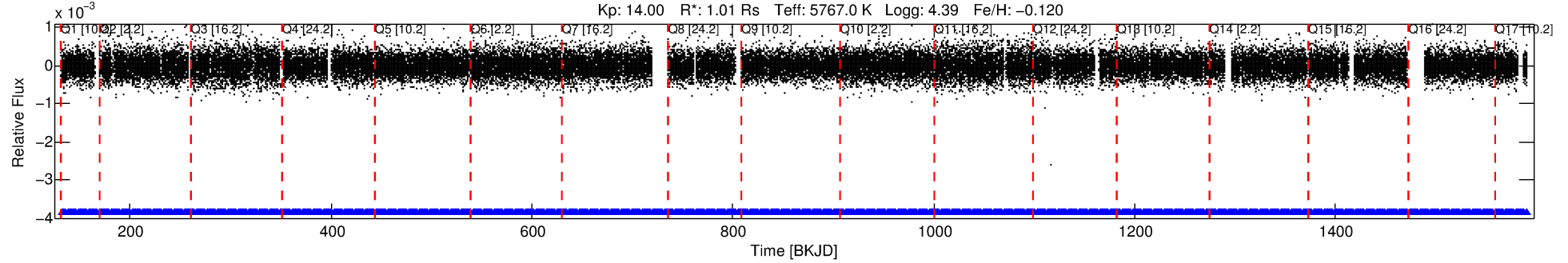
Ephemeris Match Information For 003745690-02

No Significant Match Found

# DV One-Page Summary

KIC: 3745690 Candidate: 2 of 3 Period: 1.732 d  
KOI: K00442.02 Name: Kepler-157b Corr: 0.968

Kp: 14.00 R\*: 1.01 Rs Teff: 5767.0 K Logg: 4.39 Fe/H: -0.120



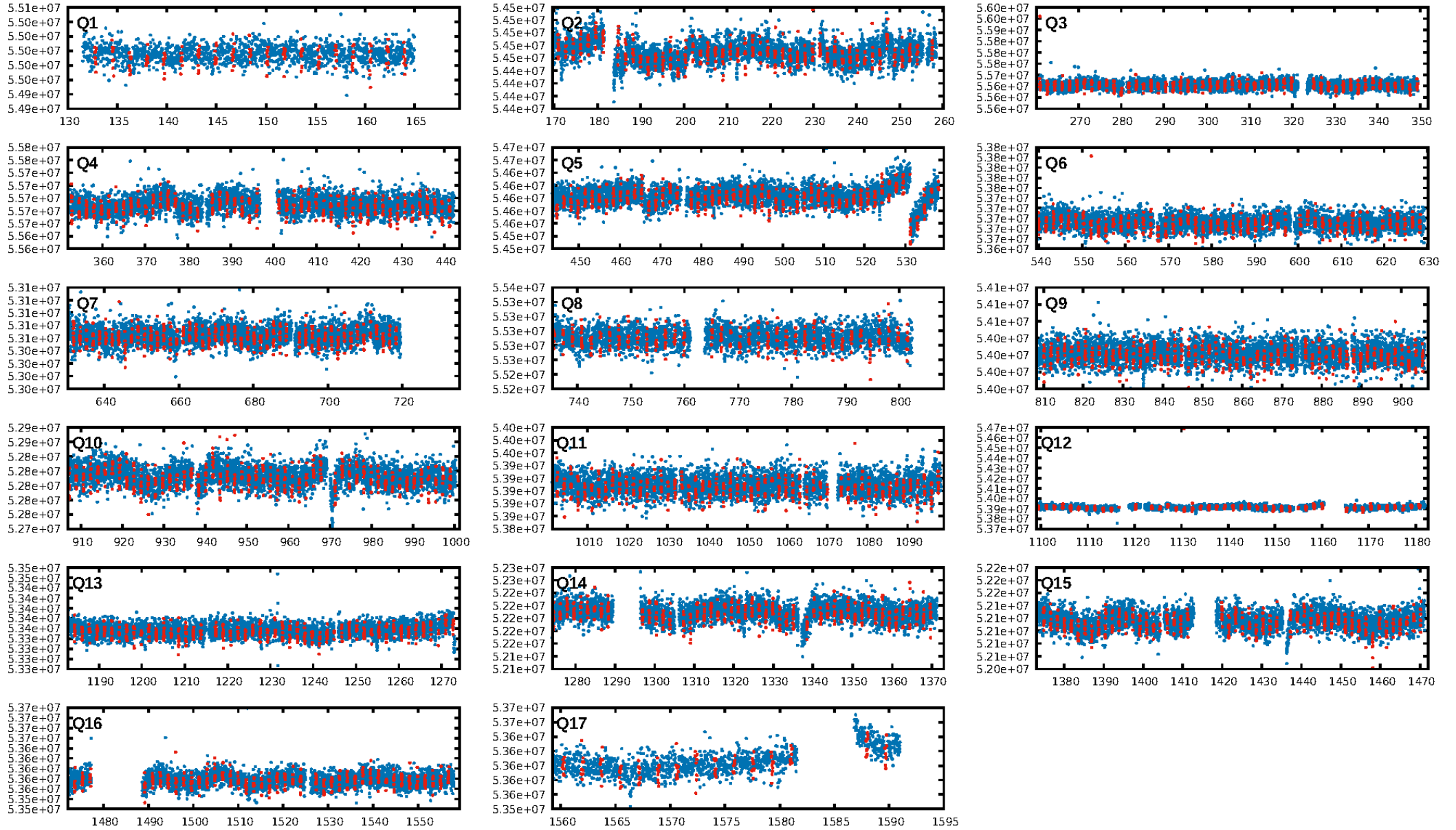
## DV Fit Results:

Period = 1.73234 [0.00000] d  
Epoch = 132.8012 [0.0010] BKJD  
Rp/R\* = 0.0142 [0.0028]  
a/R\* = 2.79 [2.33]  
b = 0.90 [0.21]  
Seff = 1352.72 [283.63]  
Teq = 1546 [81] K  
Rp = 1.57 [0.38] Re  
a = 0.0274 [0.0035] AU  
Ag = 0.71 [0.76] [-0.38σ]  
Teffp = 2192 [584] K [1.10σ]

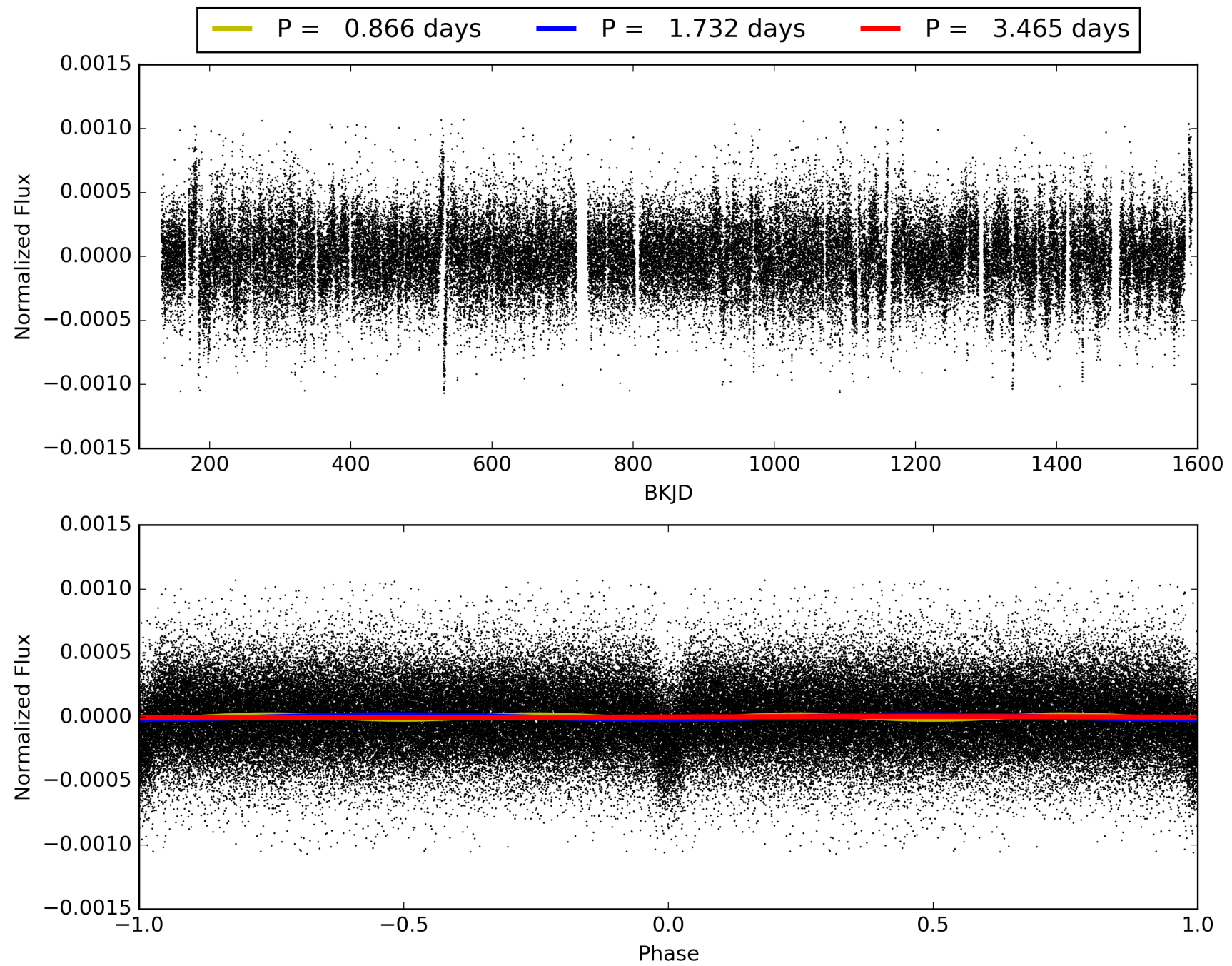
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [38.87σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.06e-232  
RollingBand-fgt: 1.00 [706/706]  
GhostDiagnostic-chr: 3.638  
Centroid-sig: 0.0%  
Centroid-so: 0.386 arcsec [1.29σ]  
OotOffset-rm: 0.506 arcsec [2.78σ]  
KicOffset-rm: 0.398 arcsec [2.72σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 003745690-02, PDC Light Curves

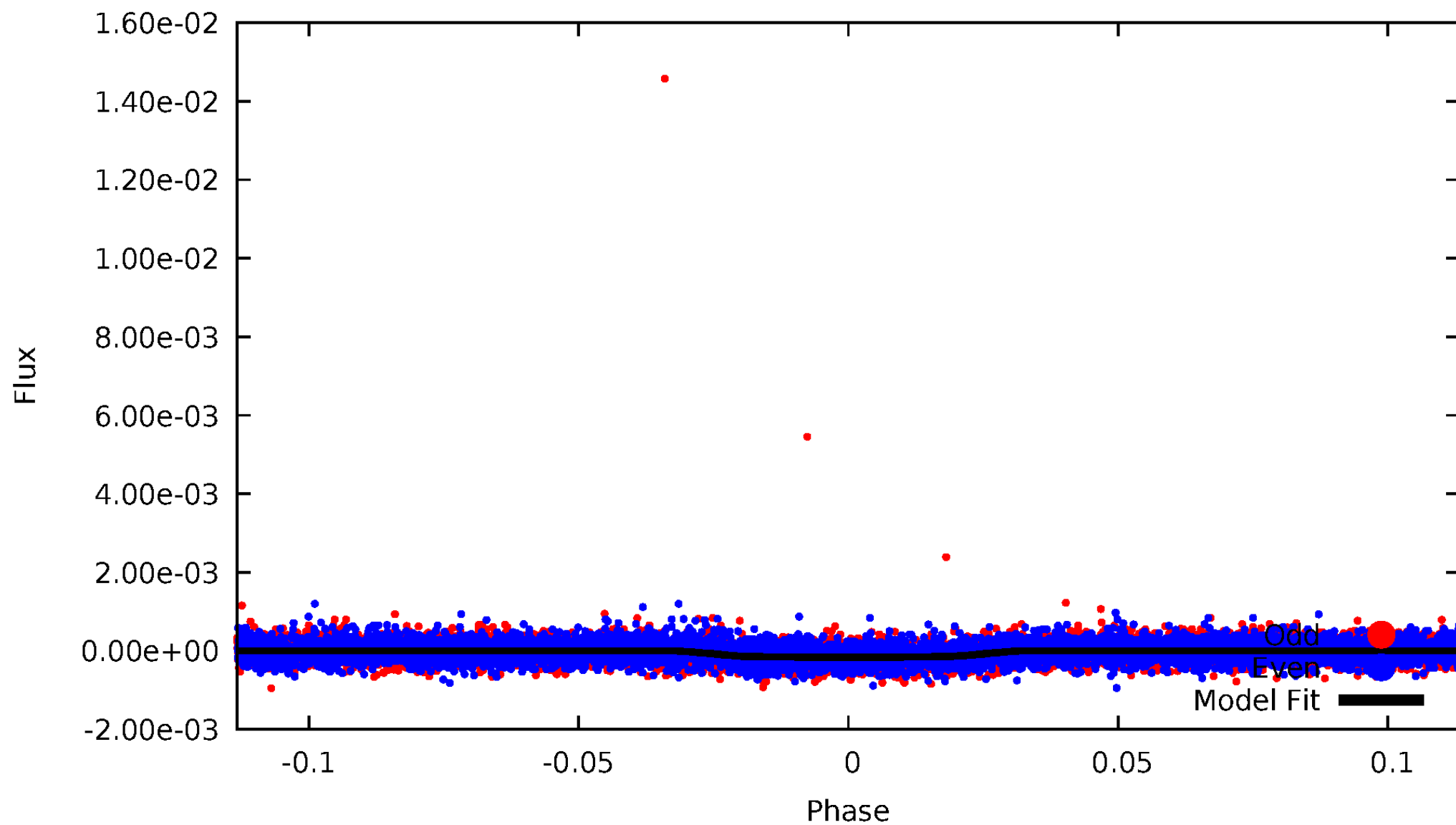


TCE 003745690-02



# DV Odd/Even

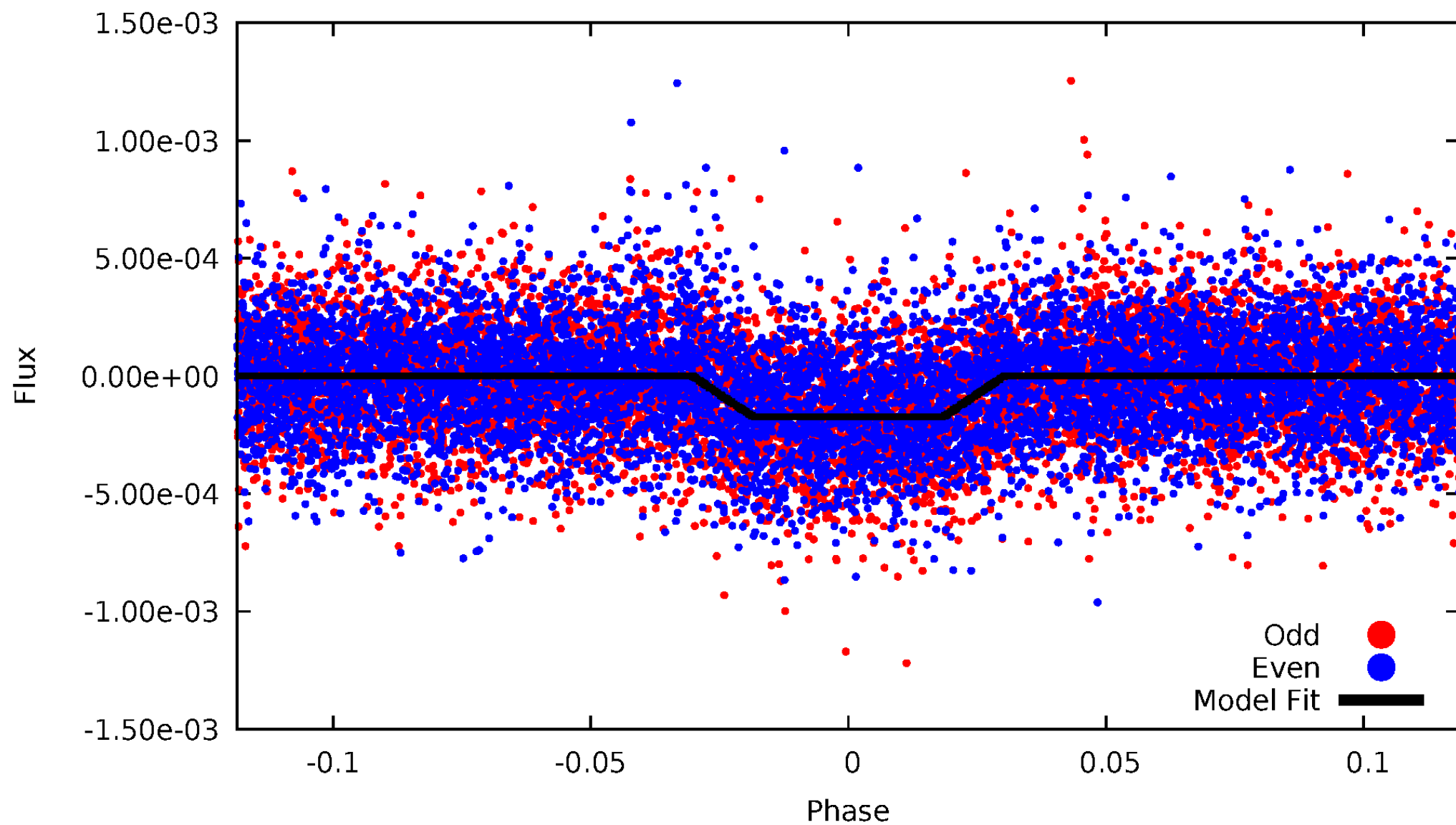
TCE 003745690-02





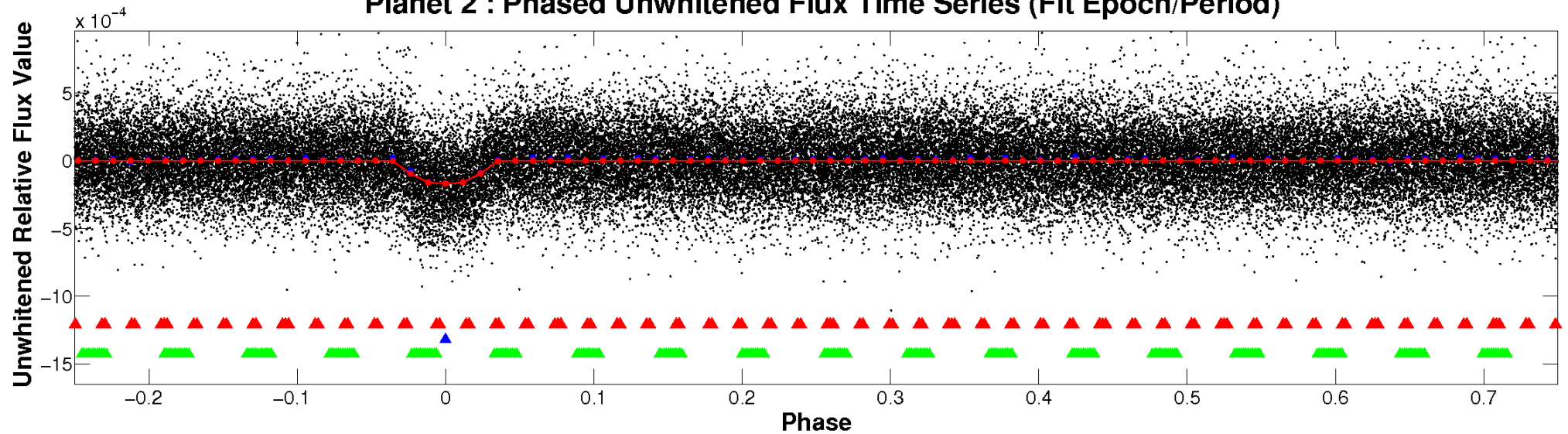
# ALT Odd/Even

TCE 003745690-02

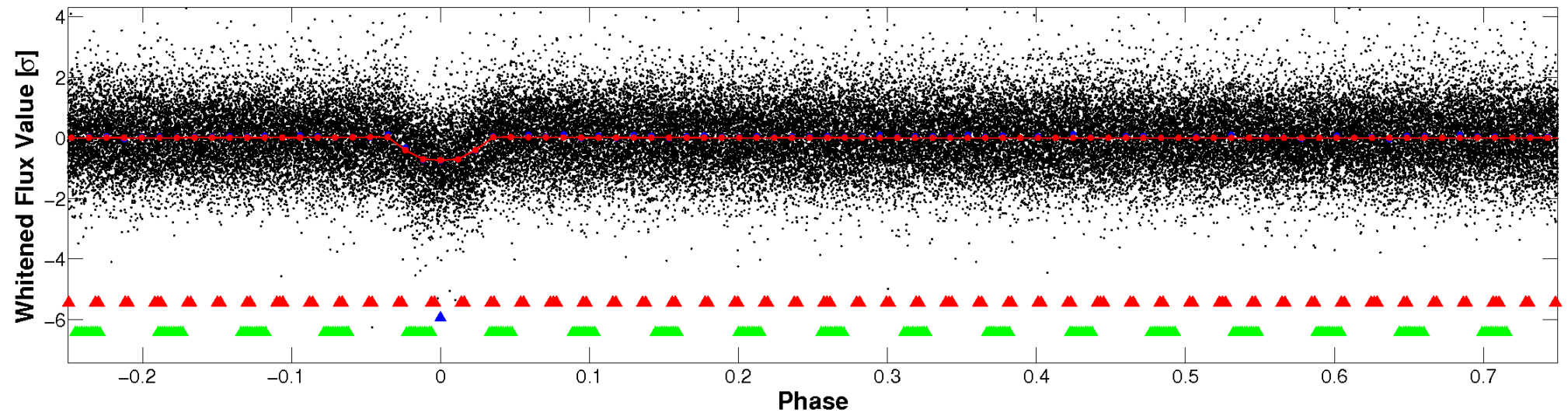


# Non-Whitened Vs. Whitened Light Curve

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



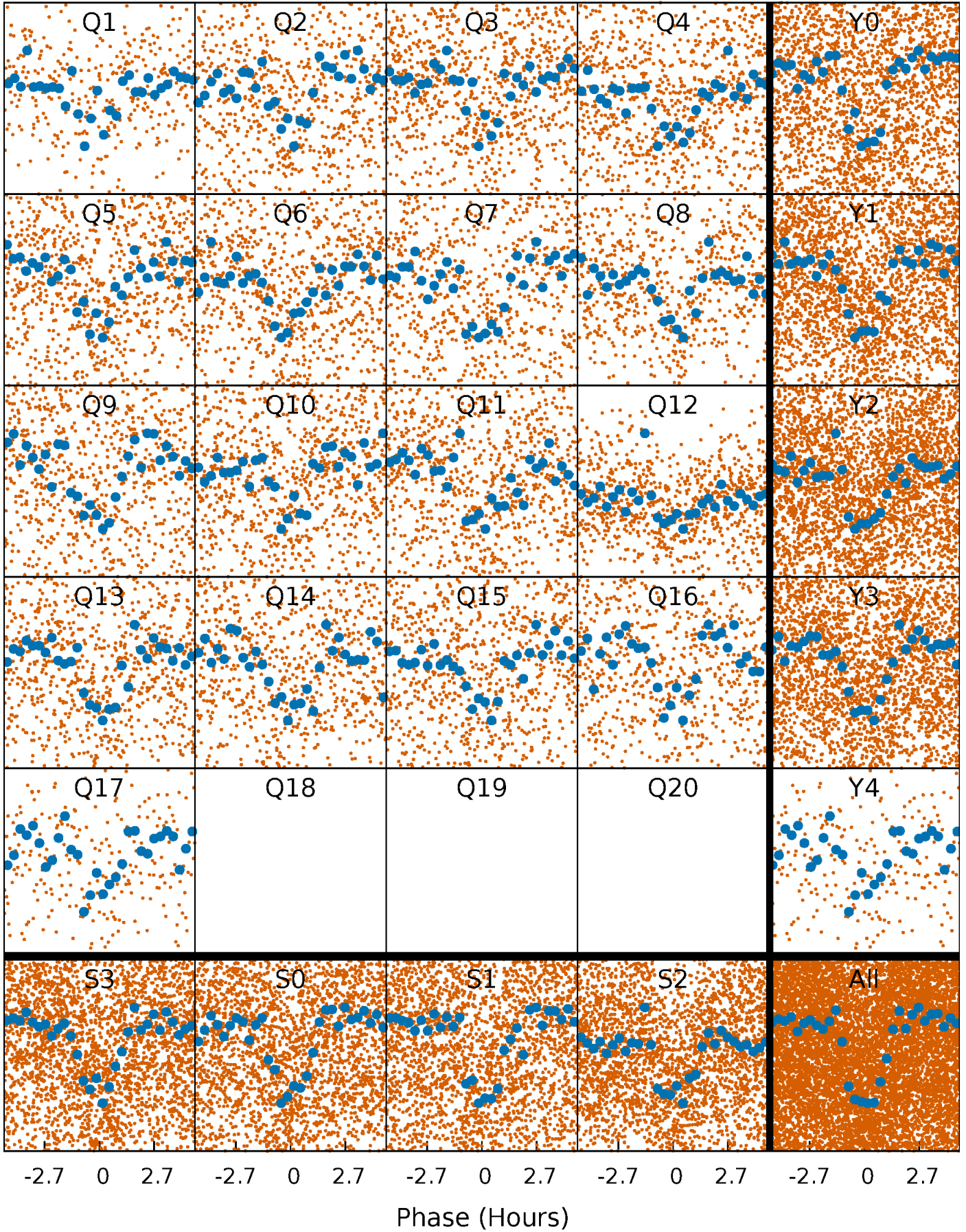
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





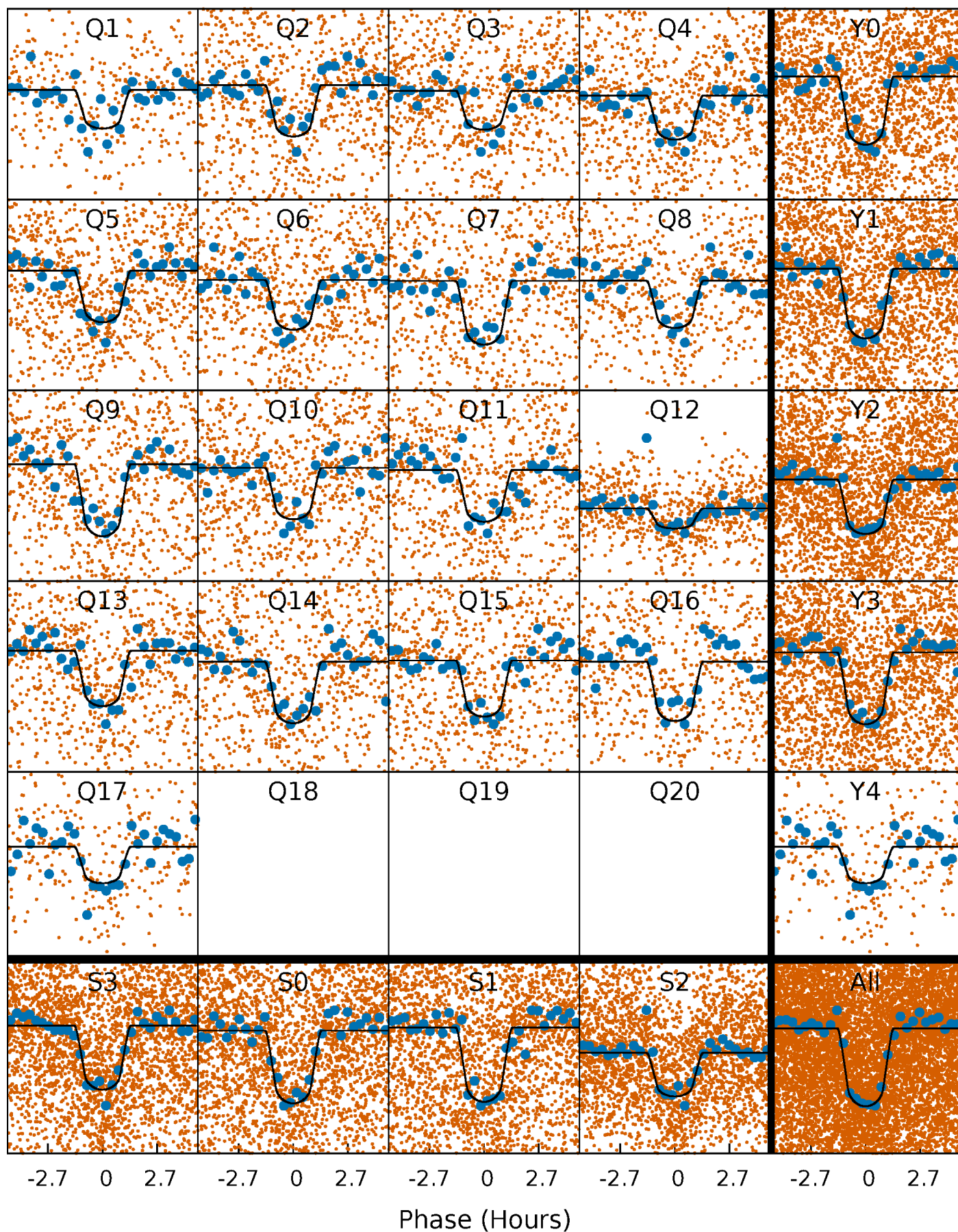
# PDC Quarter-Phased Transit Curves

TCE 003745690-02   P= 1.732338 Days    $T_0=132.801201$  (BKJD)



# DV Quarter-Phased Transit Curves

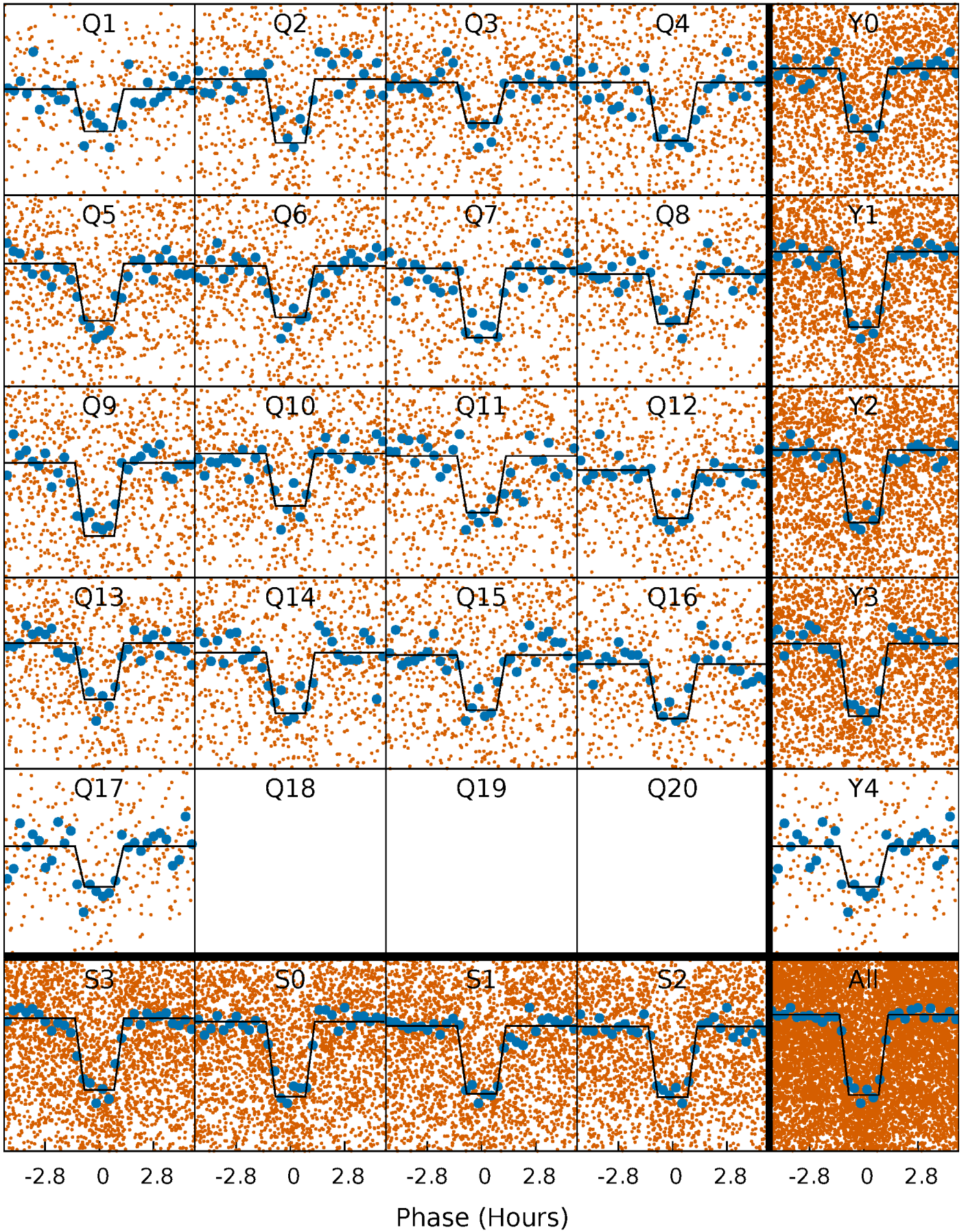
TCE 003745690-02 P= 1.732338 Days  $T_0=132.801201$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

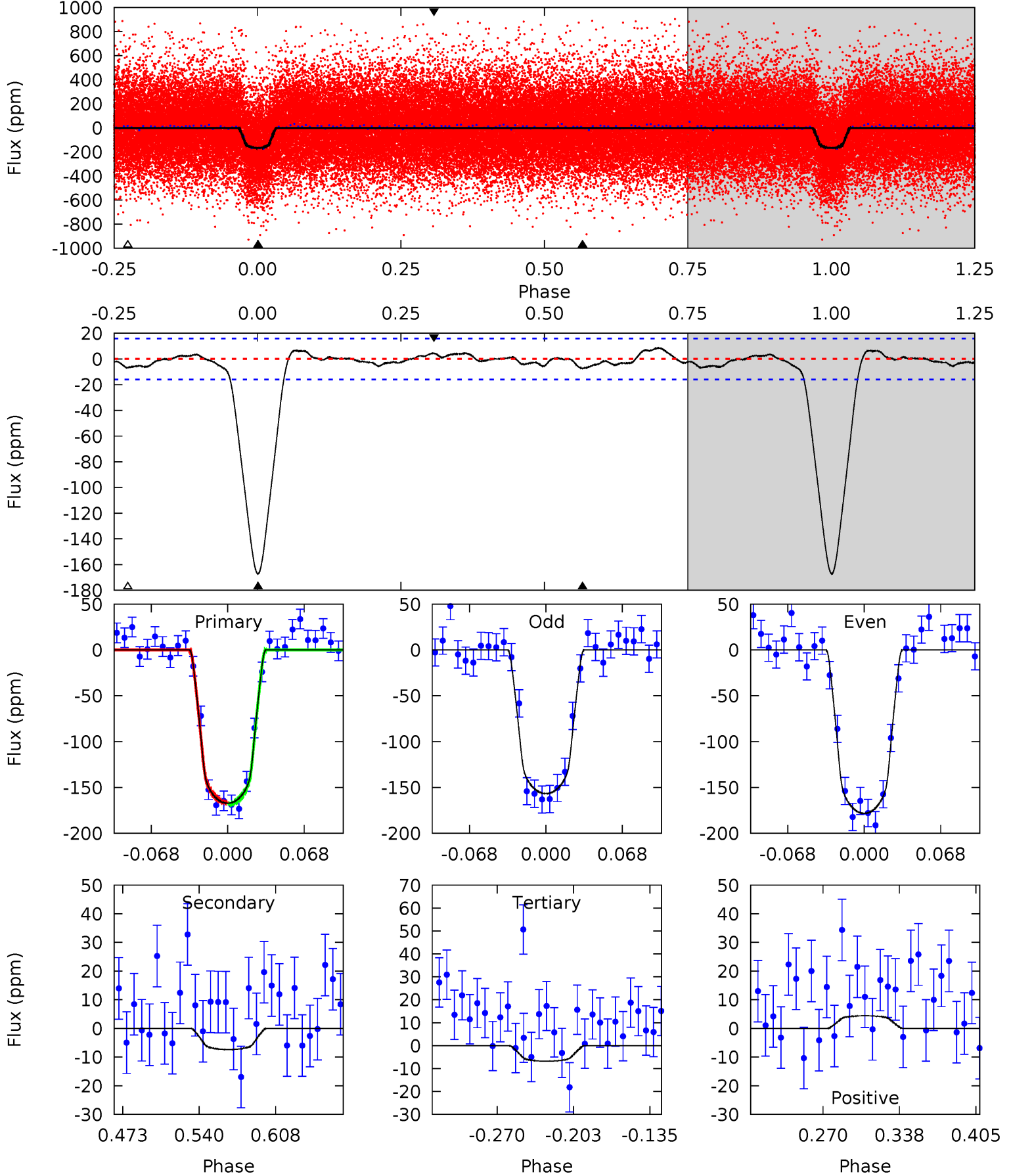
TCE 003745690-02   P= 1.732354 Days    $T_0=132.795201$  (BKJD)



# DV Model-Shift Uniqueness Test

003745690-02, P = 1.732338 Days, E = 131.068863 Days

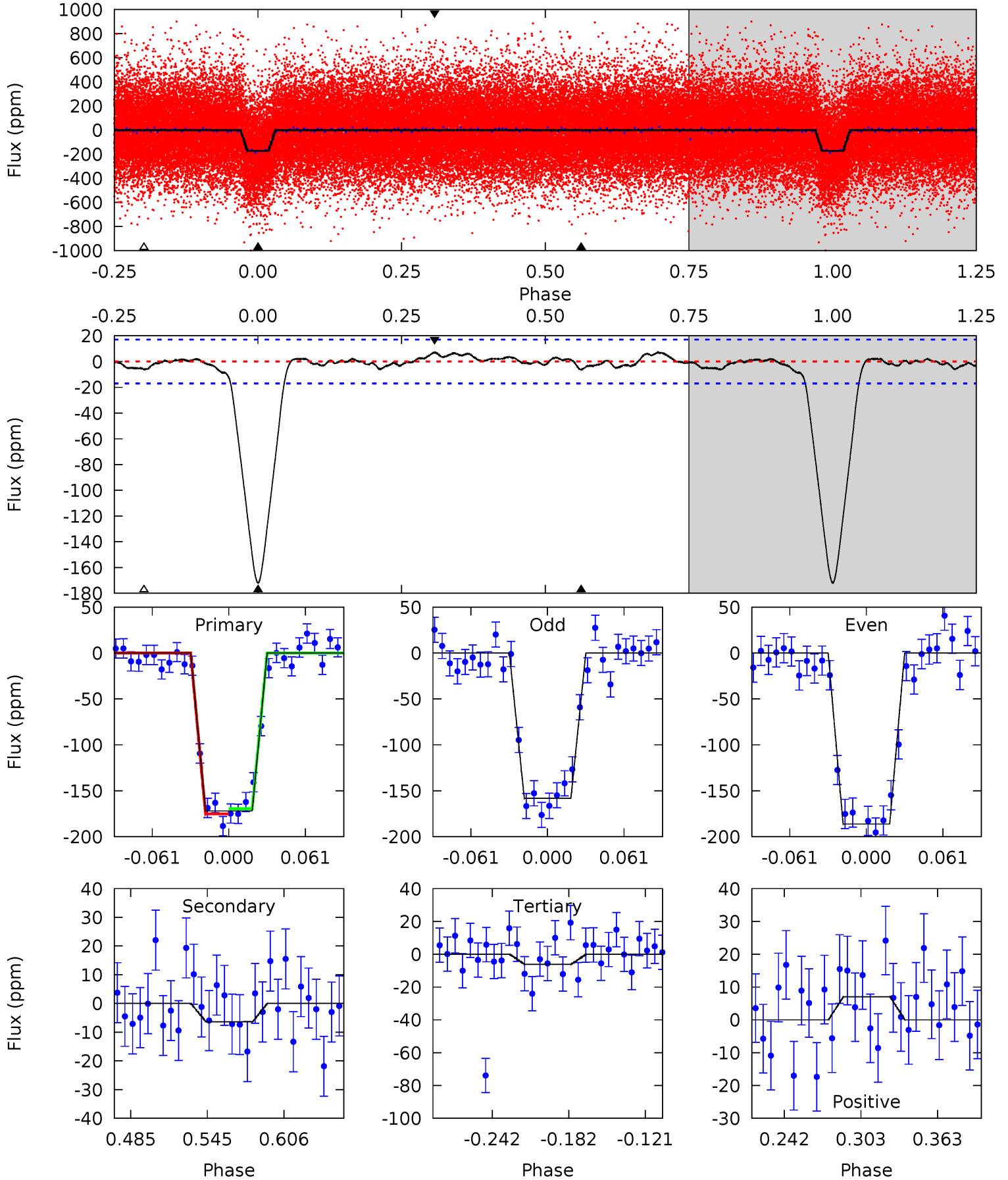
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.6	2.14	1.98	1.28	4.65	1.83	1.00	46.6	47.3	0.16	0.86	3.16	1.02	0.05	0.23



# Alt Model-Shift Uniqueness Test

003745690-02, P = 1.732354 Days, E = 131.062847 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
47.1	1.75	1.67	1.93	4.67	1.88	0.90	45.4	45.1	0.08	-0.18	3.84	0.98	0.04	0.77



### Stellar Parameters For KIC 003745690

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5767^{+115}_{-104}$	$4.389^{+0.099}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.014^{+0.145}_{-0.119}$	$0.918^{+0.072}_{-0.059}$	$1.240^{+0.513}_{-0.398}$
	+2%/-2%	+2%/-3%	+125%/-125%	+14%/-12%	+8%/-6%	+41%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 003745690-02 / KOI 0442.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-7 \pm 3$	$1.54^{+0.34}_{-0.31}$	$2165^{+92}_{-79}$	$3033^{+336}_{-402}$	$1.254^{+1.045}_{-0.624}$
Alt.	$-6 \pm 4$	$1.46^{+0.36}_{-0.35}$	$2167^{+83}_{-89}$	$2974^{+421}_{-551}$	$1.174^{+1.181}_{-0.690}$

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

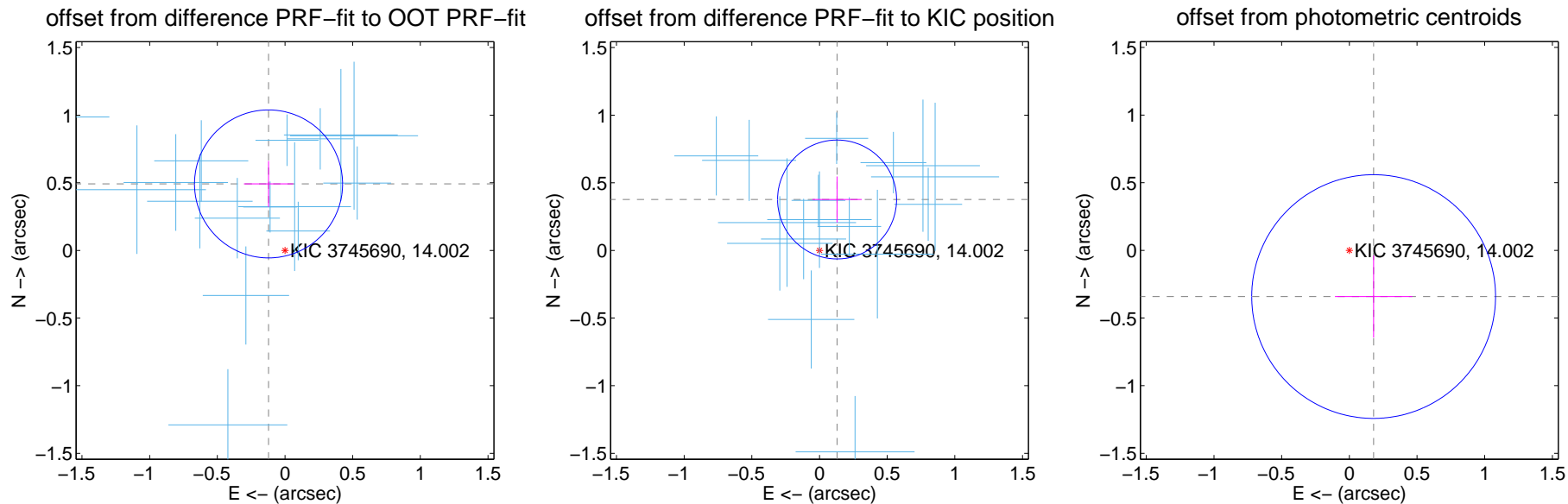
## DV Centroid Data

Supplemental centroid analysis for 003745690-02. Kepler magnitude: 14.00. Transit SNR 35.94

There are 16 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

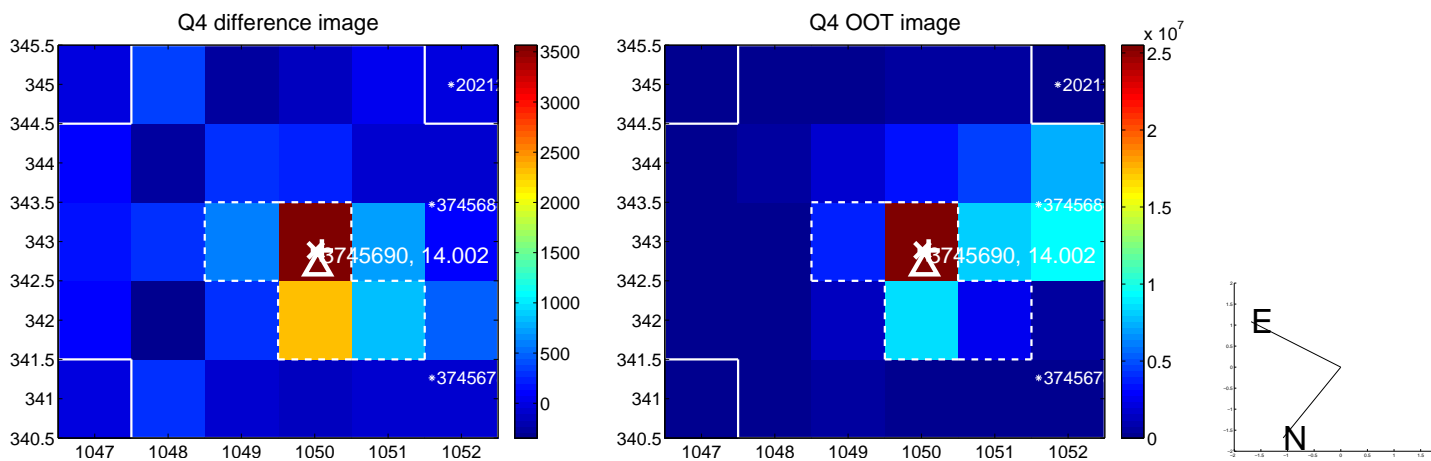
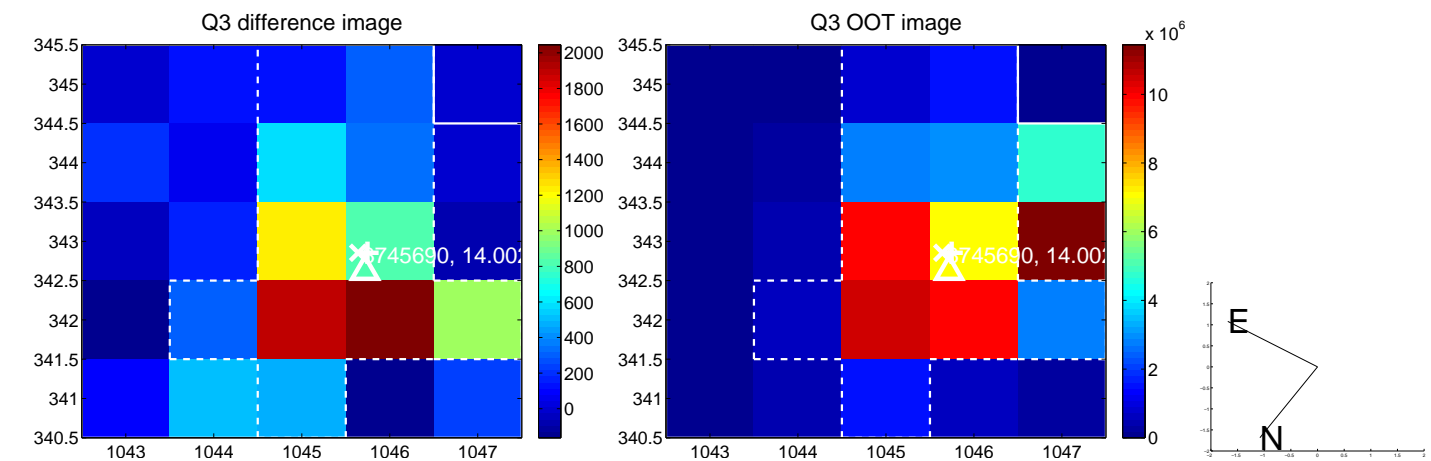
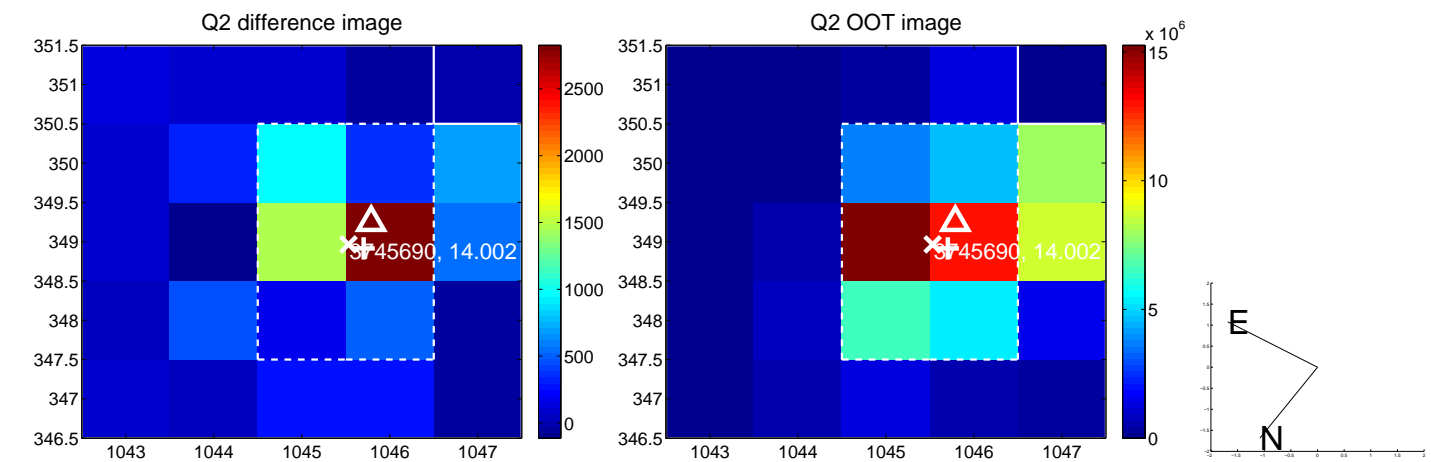
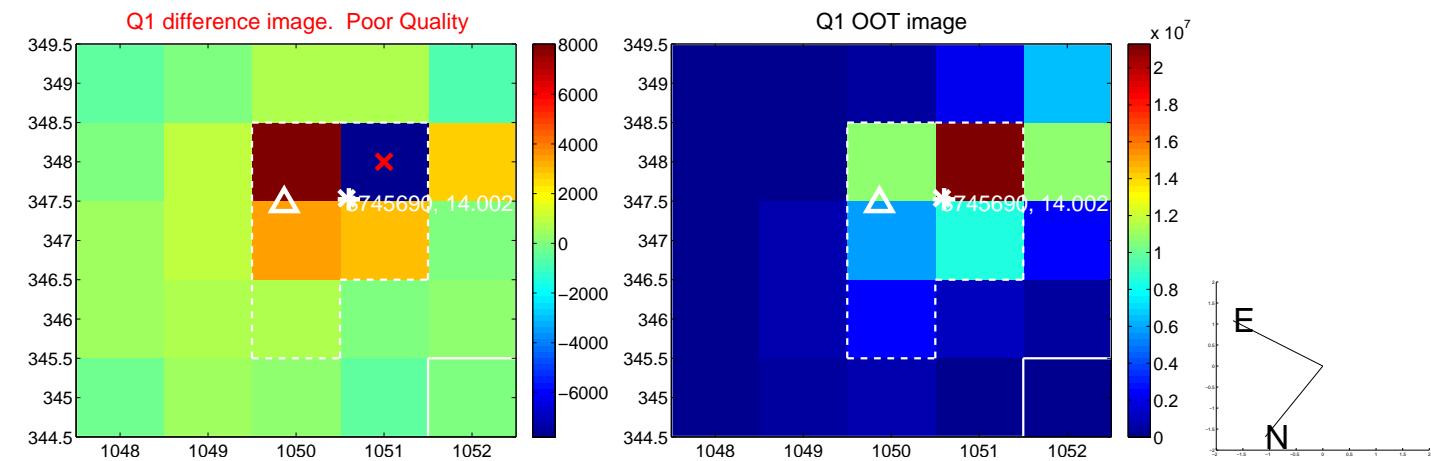
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.506 \pm 0.182$	2.78	$0.122 \pm 0.182$	$0.492 \pm 0.170$
PRF-fit source offset from KIC position	$0.398 \pm 0.147$	2.72	$-0.130 \pm 0.182$	$0.377 \pm 0.170$
photometric centroid source offset	$0.39 \pm 0.30$	1.29	$-0.18 \pm 0.29$	$-0.34 \pm 0.30$



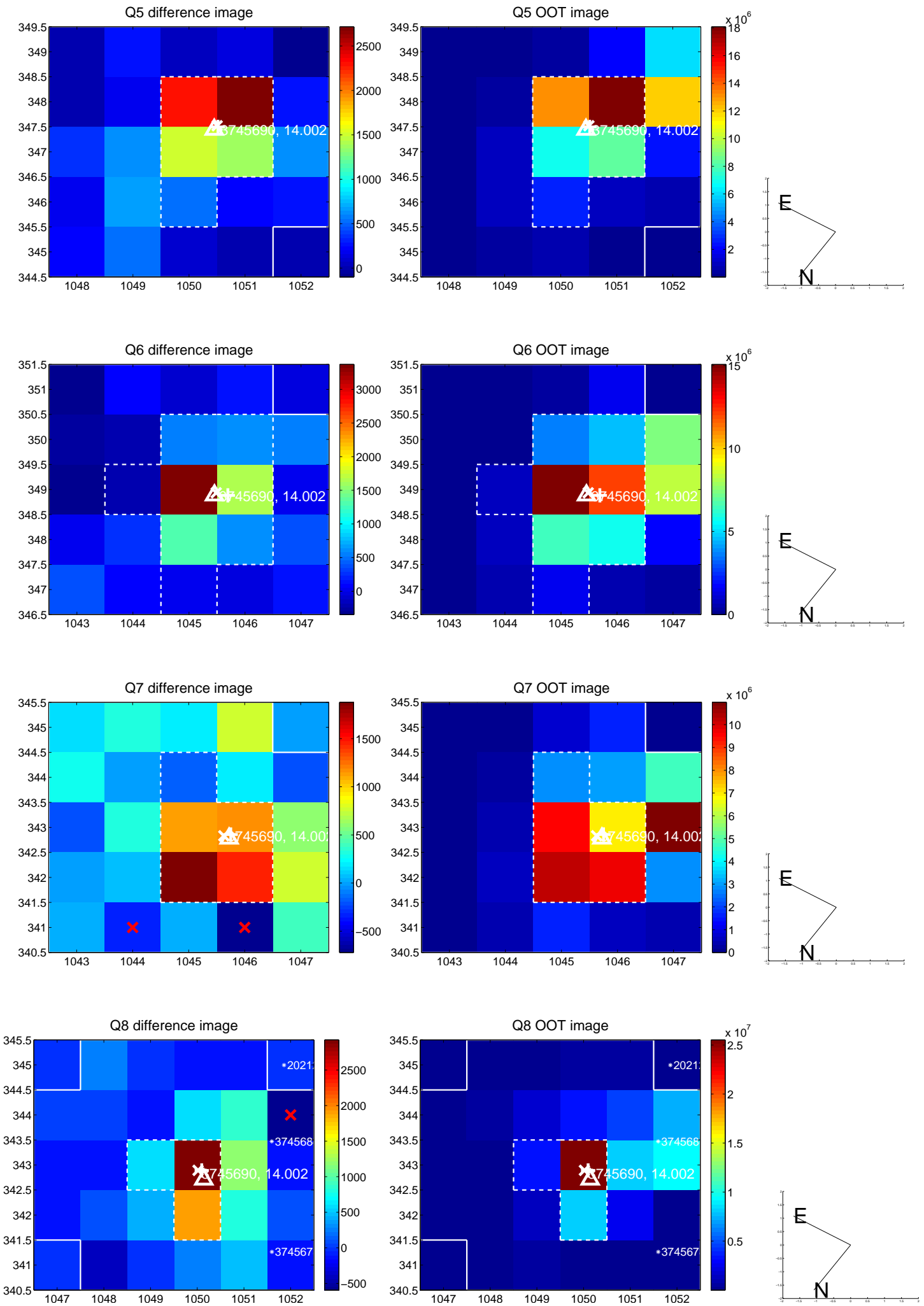
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



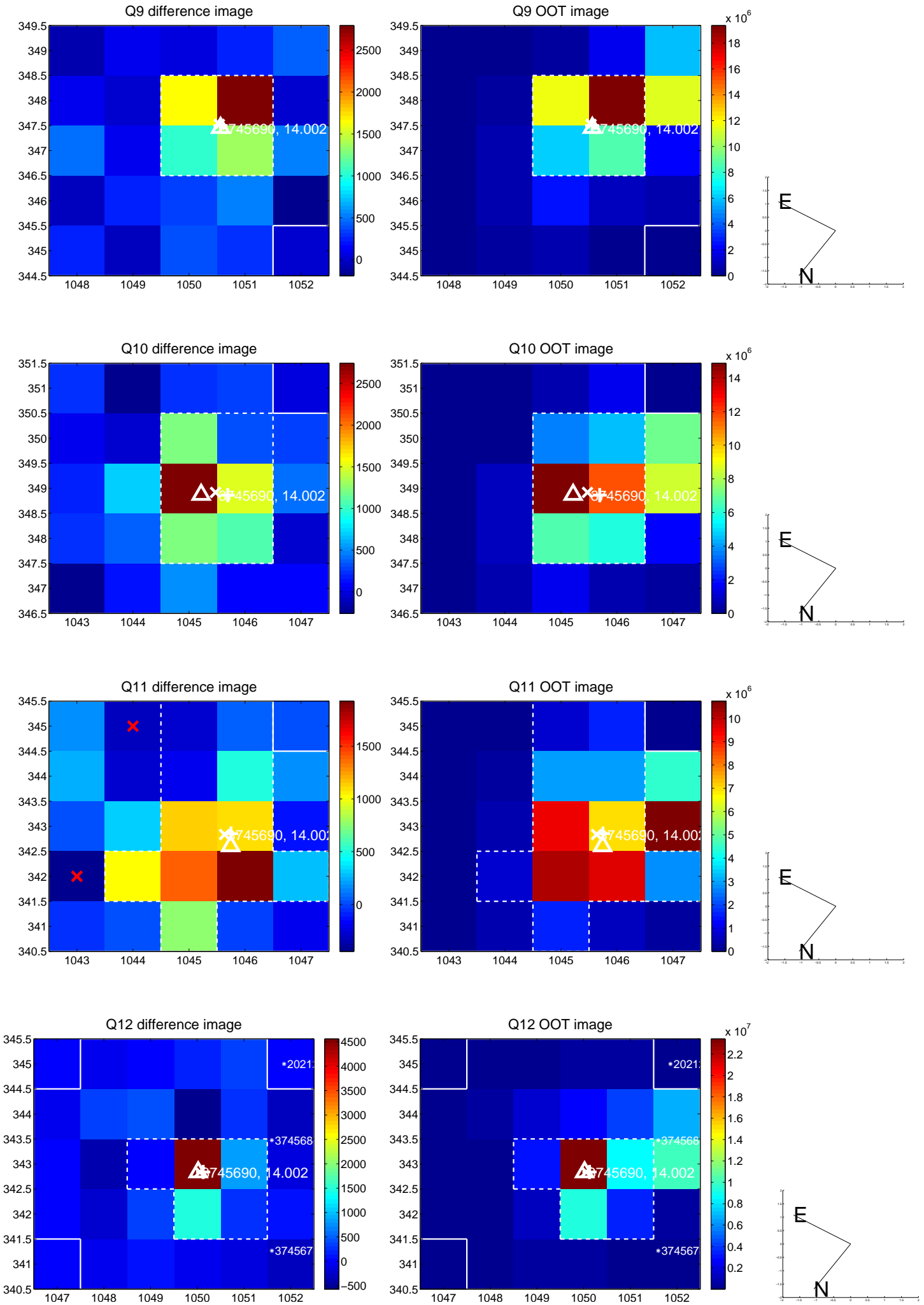
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



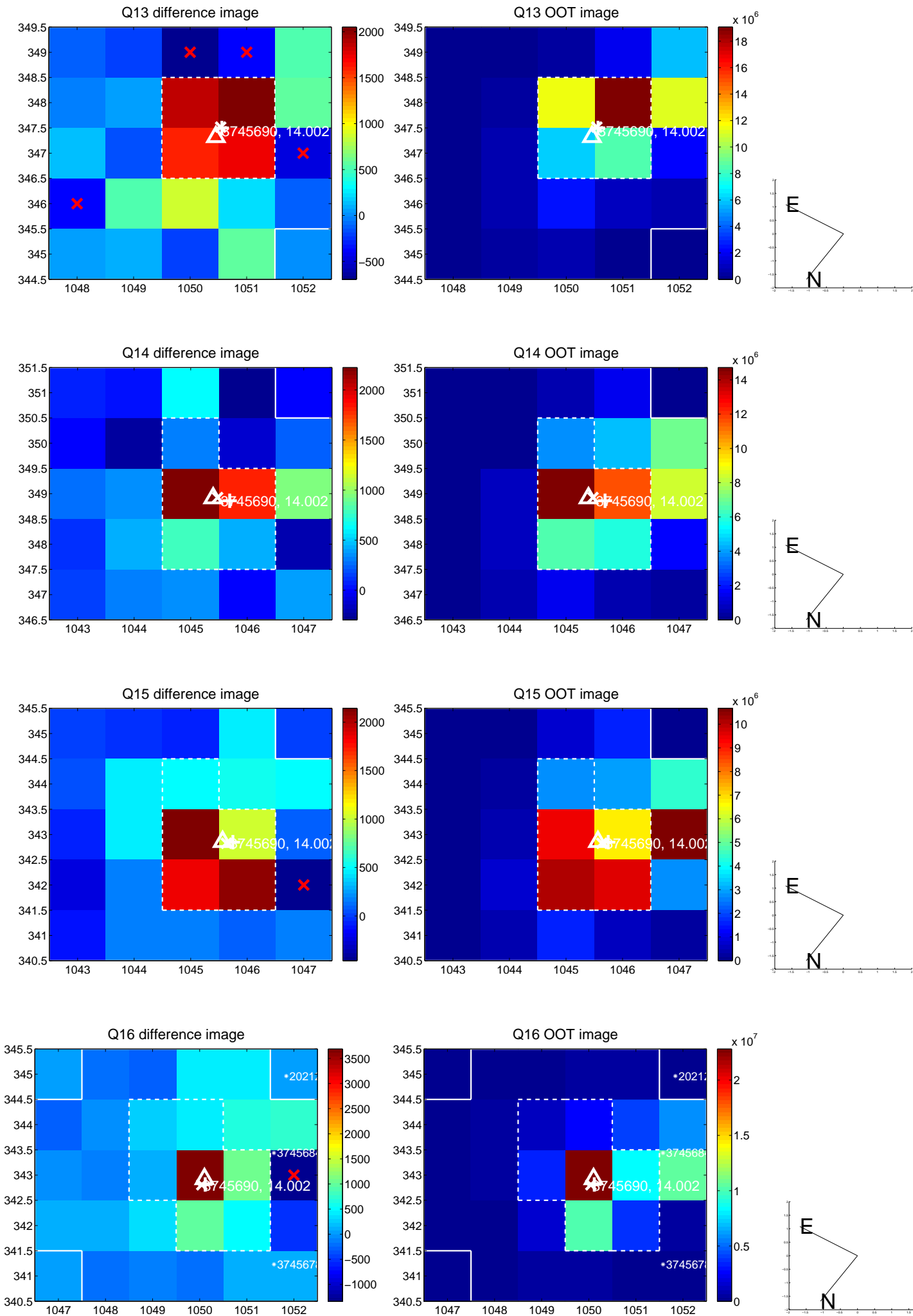
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



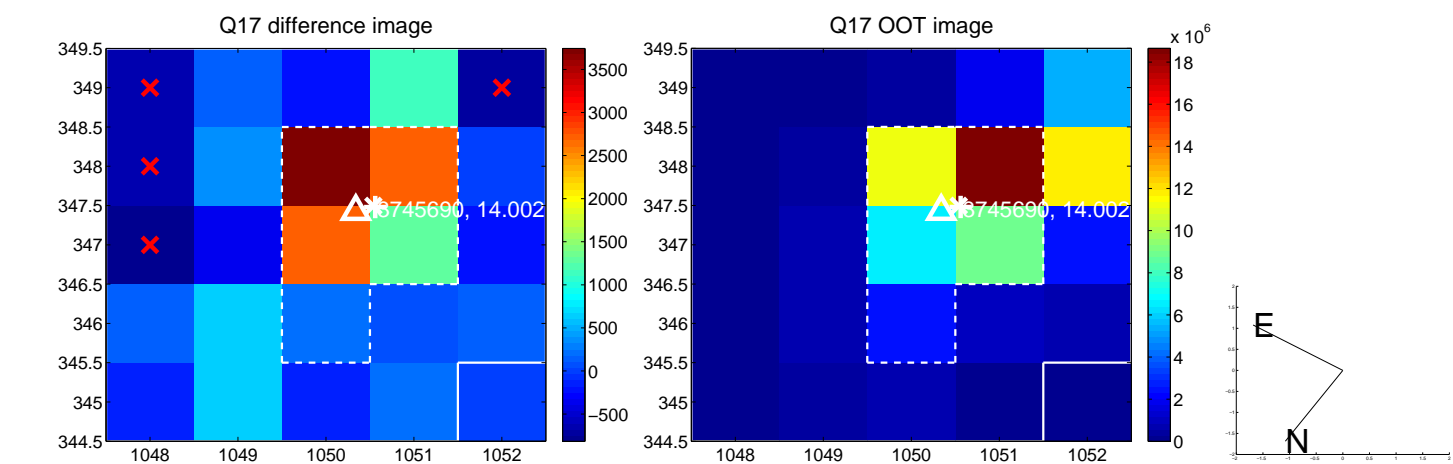
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



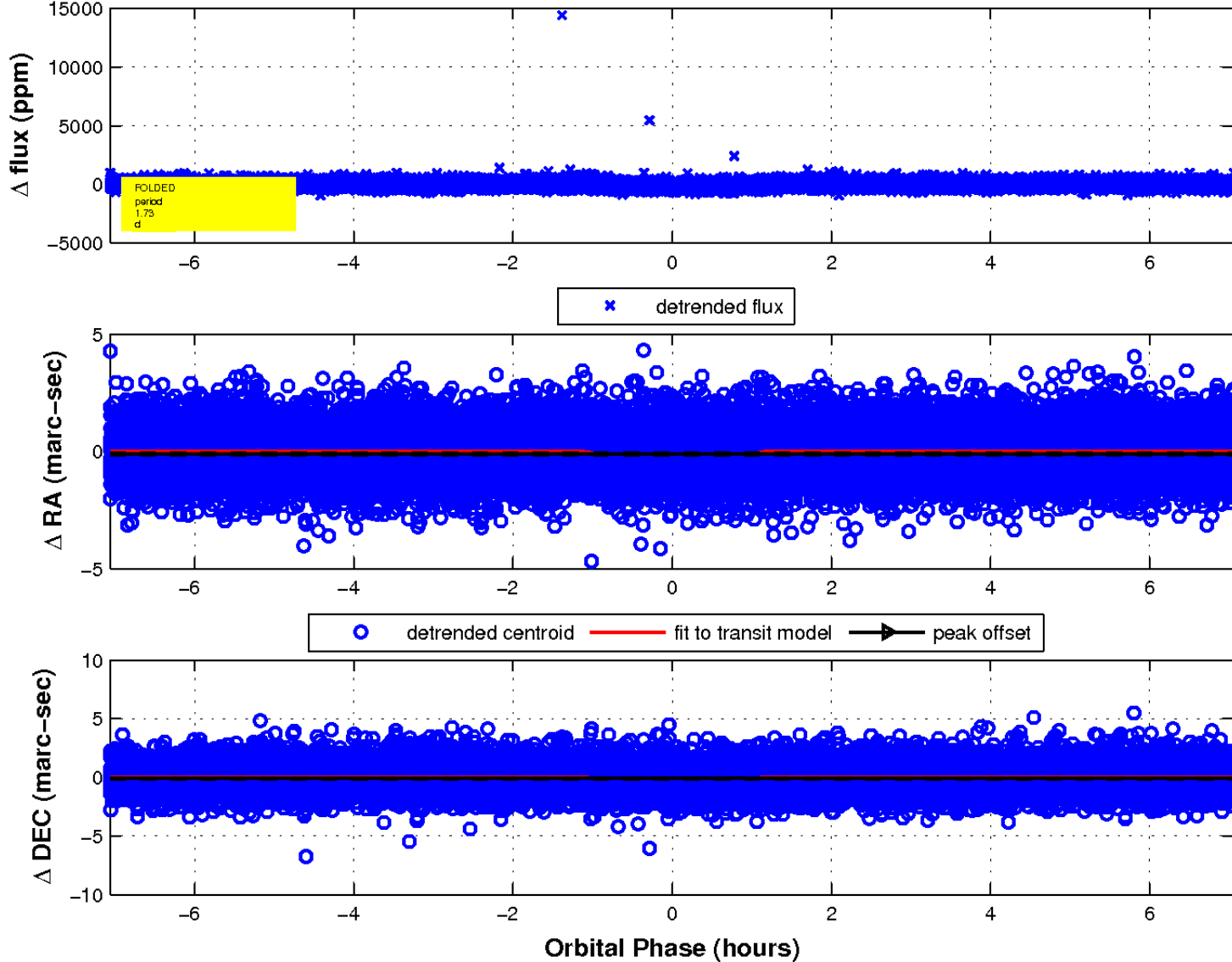
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

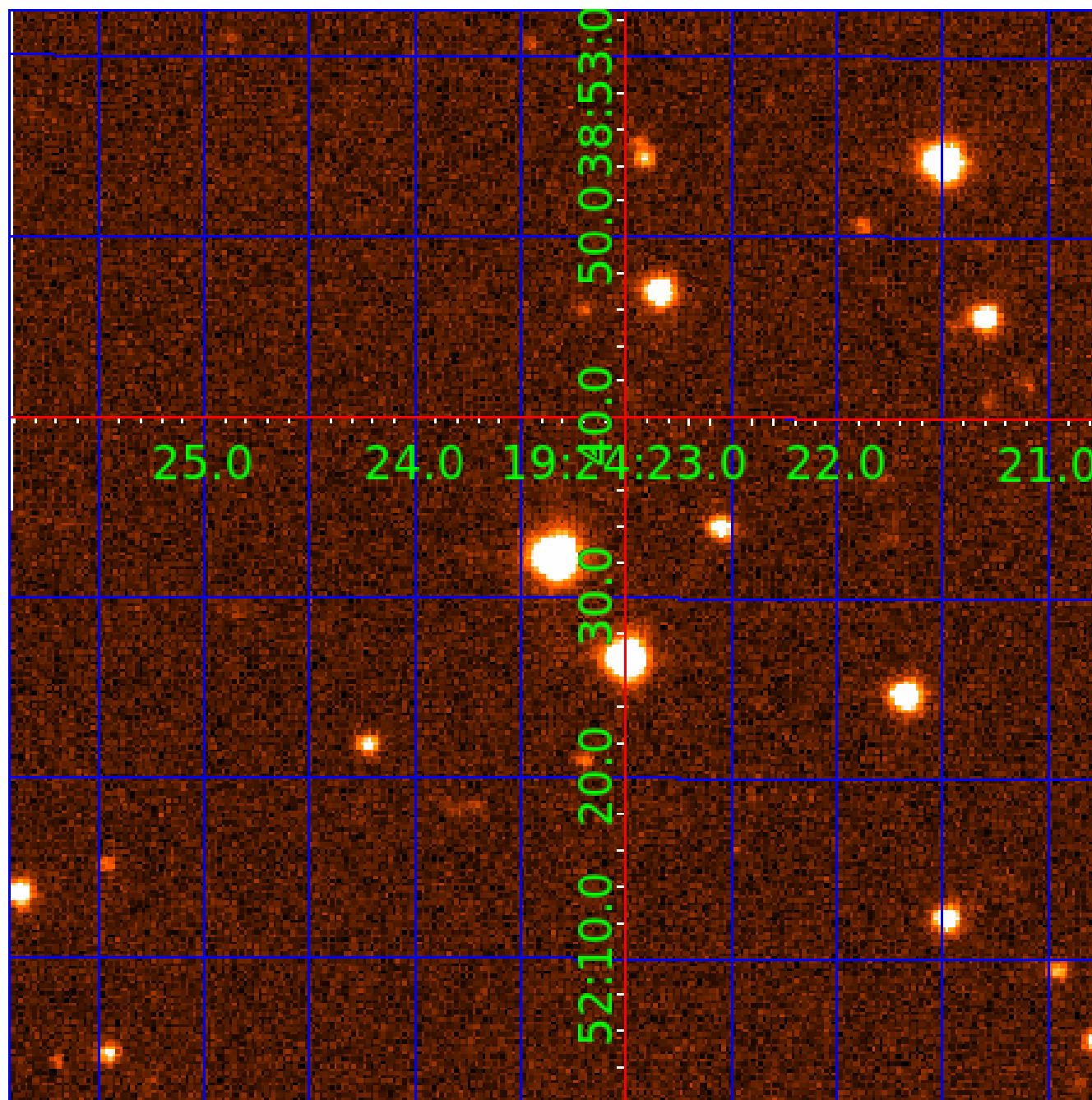


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 003745690

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003745690-01	OBS	0442.01	13.540589	144.595449	465.5	4.820	42.2	45.2	1.01	5767	2.60	87.20
003745690-02	OBS	0442.02	1.732338	132.801201	169.2	2.354	33.5	35.9	1.01	5767	1.57	1352.72
003745690-03	OBS	0442.03	7.025737	133.626769	186.7	2.267	15.9	17.7	1.01	5767	1.63	209.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003745690-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
003745690-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
003745690-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

**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.

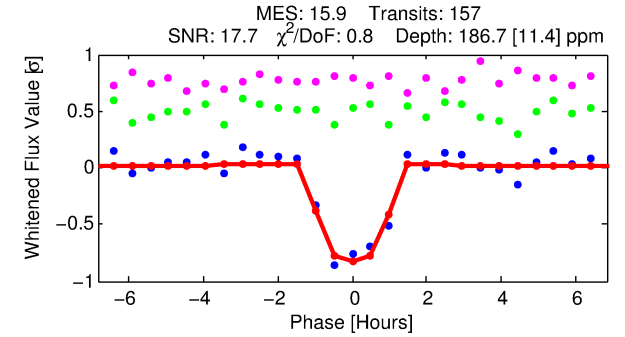
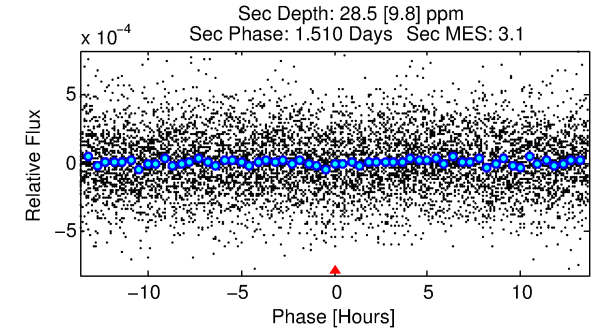
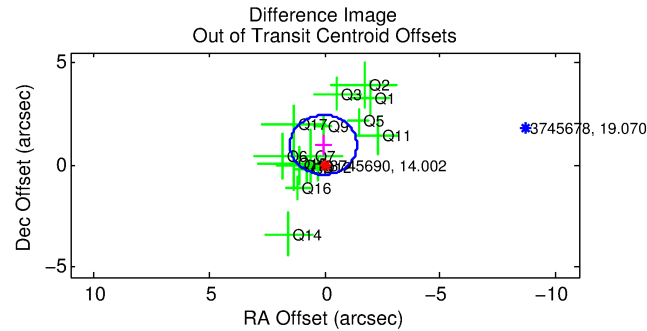
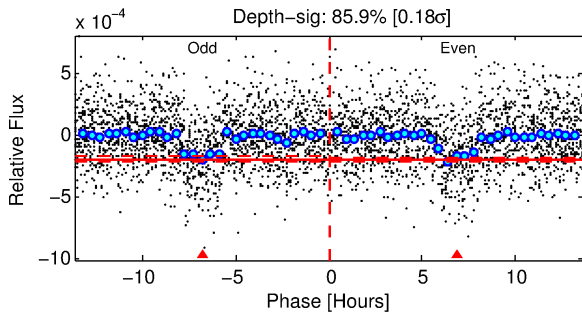
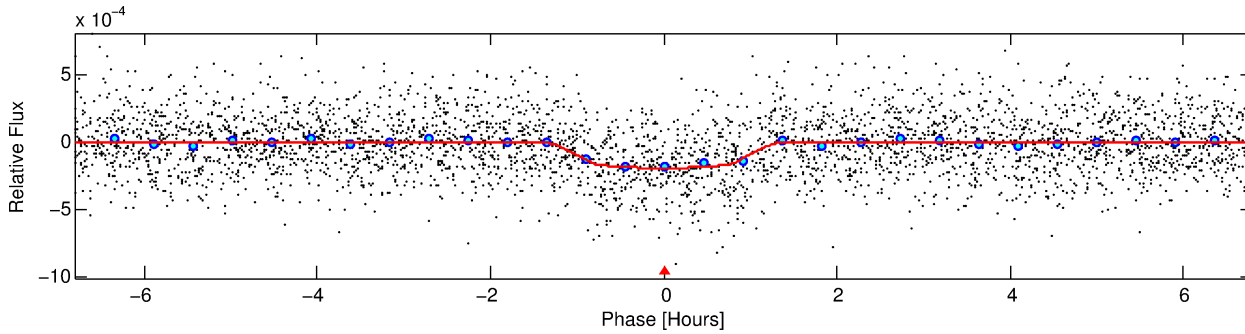
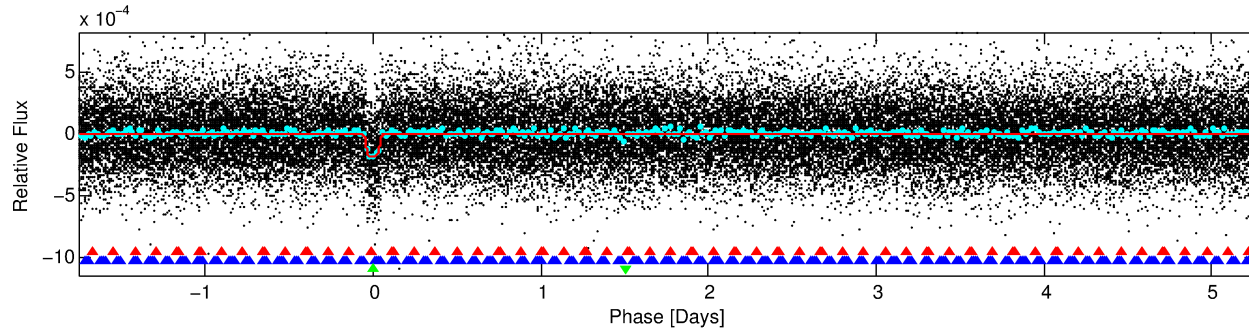
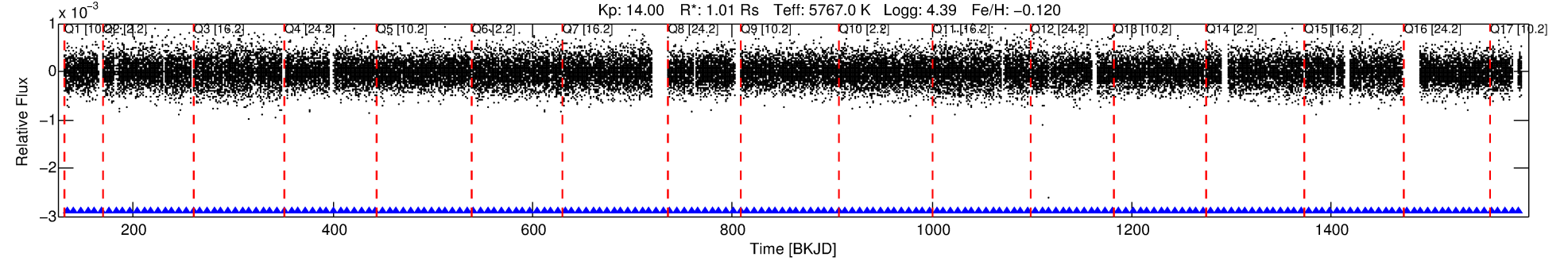
## Ephemeris Match Information For 003745690-03

No Significant Match Found



# DV One-Page Summary

KIC: 3745690 Candidate: 3 of 3 Period: 7.026 d  
KOI: K00442.03 Corr: 0.964



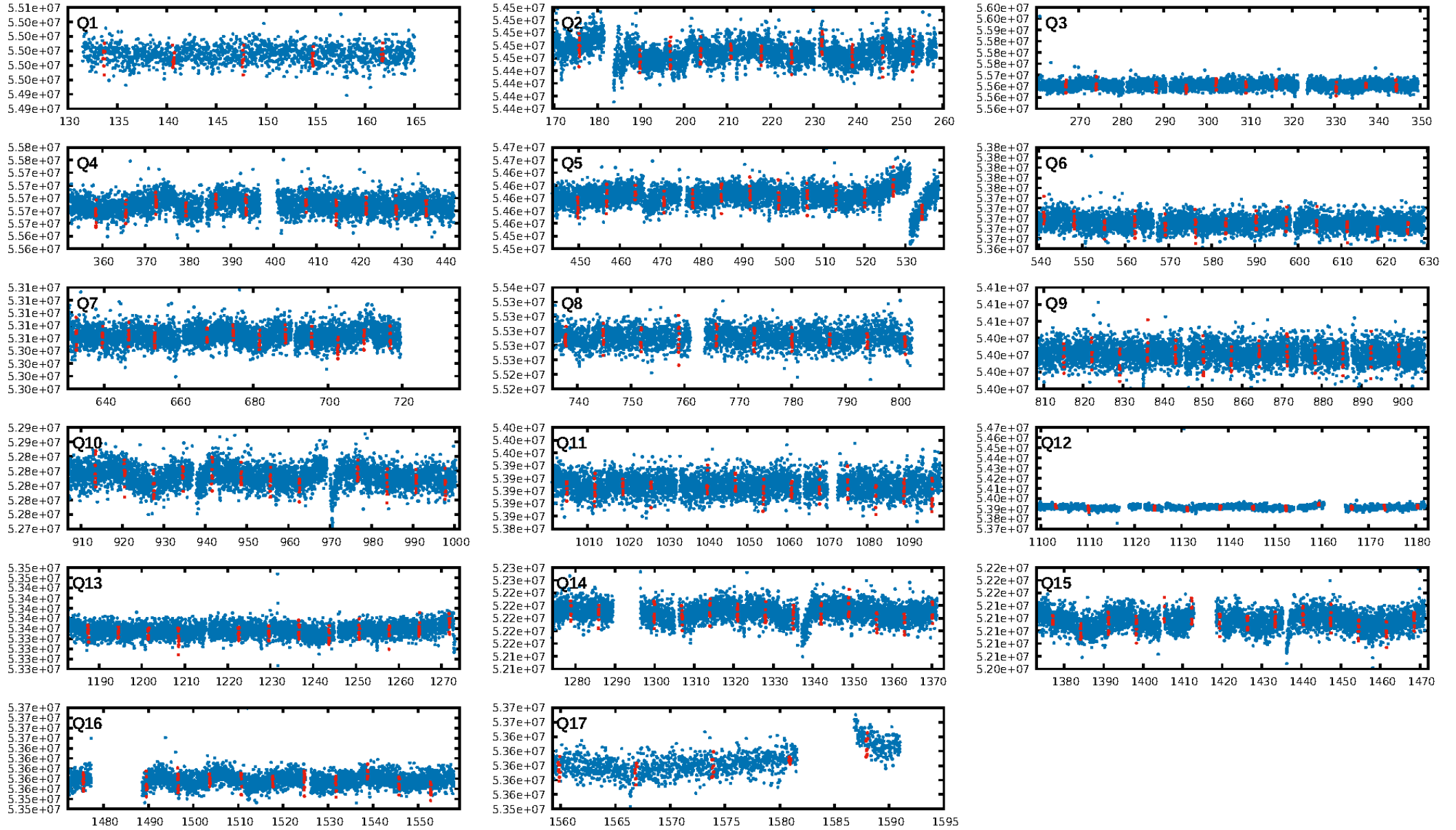
## DV Fit Results:

Period = 7.02574 [0.00002] d  
Epoch = 133.6268 [0.0027] BKJD  
Rp/R\* = 0.0148 [0.0062]  
a/R\* = 11.52 [23.20]  
b = 0.89 [0.48]  
Seff = 209.15 [43.85]  
Teff = 970 [51] K  
Rp = 1.63 [0.73] Re  
a = 0.0698 [0.0089] AU  
Ag = 28.67 [26.67] [1.04 $\sigma$ ]  
Teffp = 3469 [792] K [3.15 $\sigma$ ]

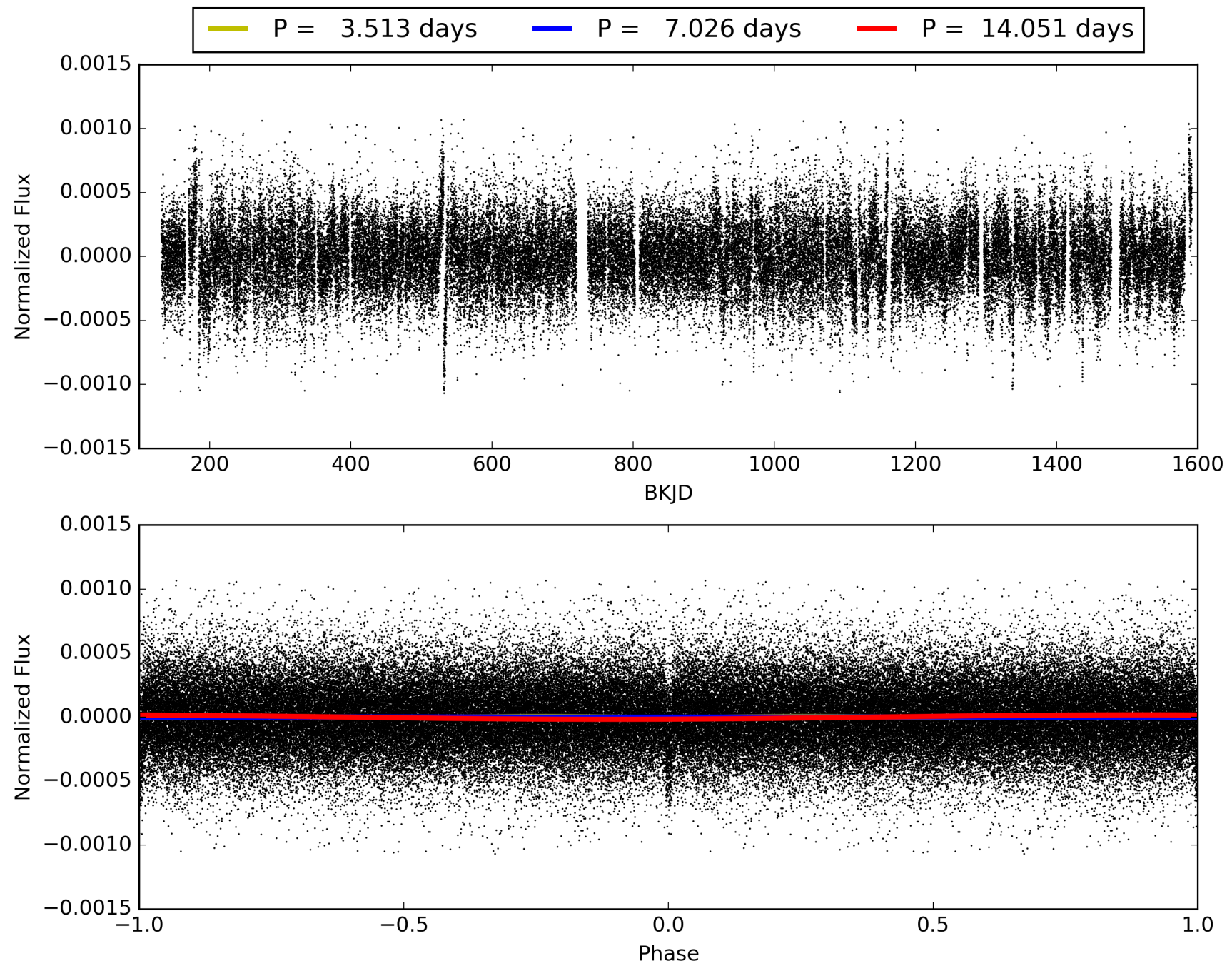
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.87 $\sigma$ ]  
LongPeriod-sig: 100.0% [29.36 $\sigma$ ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.61e-54  
RollingBand-fgt: 1.00 [149/149]  
GhostDiagnostic-chr: 2.03  
Centroid-sig: 0.0%  
Centroid-so: 1.435 arcsec [2.50 $\sigma$ ]  
OotOffset-rm: 0.969 arcsec [2.00 $\sigma$ ]  
KicOffset-rm: 0.829 arcsec [1.60 $\sigma$ ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.53 [8/15]  
DiffImageOverlap-fno: 0.94 [16/17]

# TCE 003745690-03, PDC Light Curves

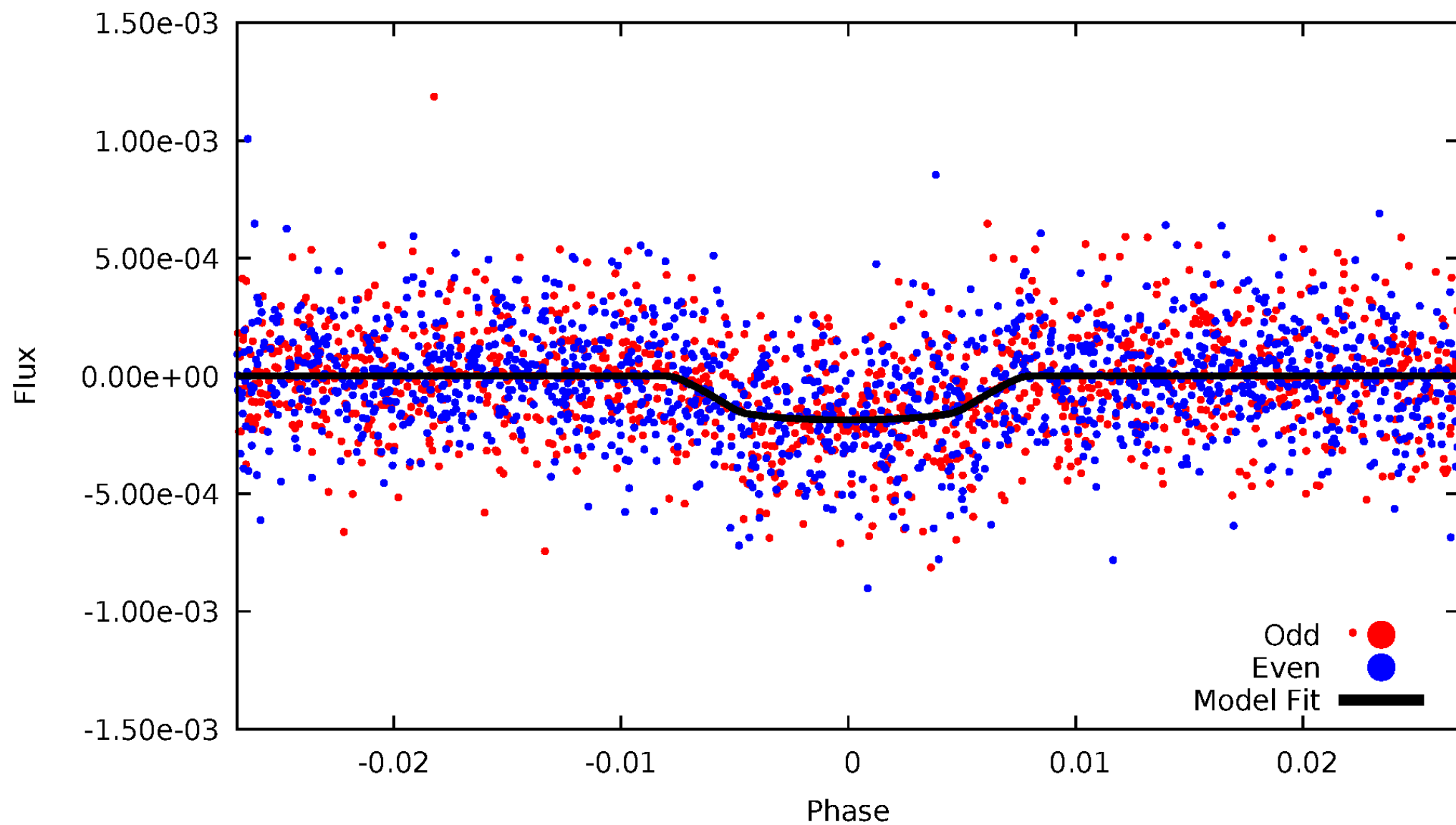


TCE 003745690-03



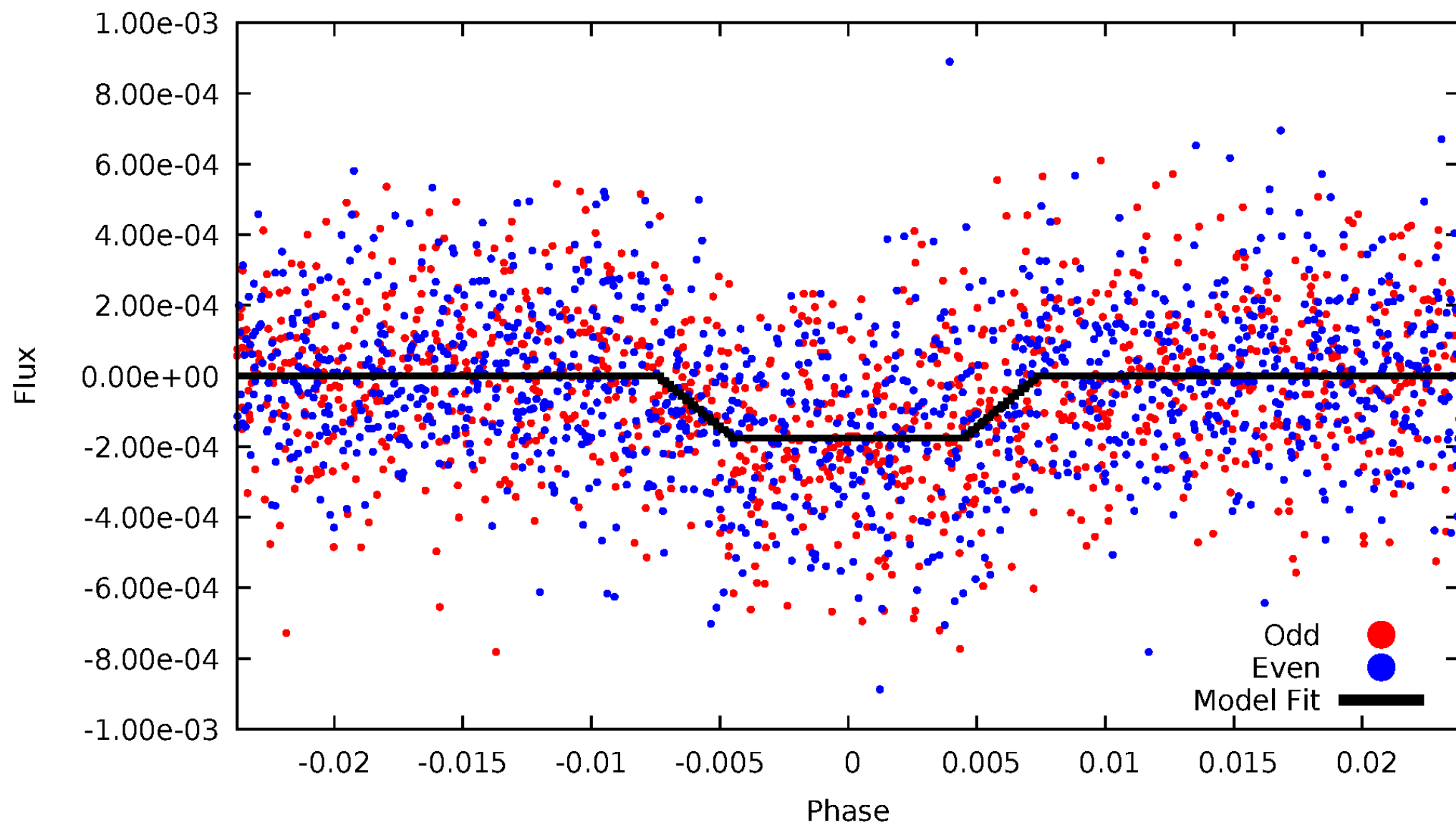
# DV Odd/Even

TCE 003745690-03



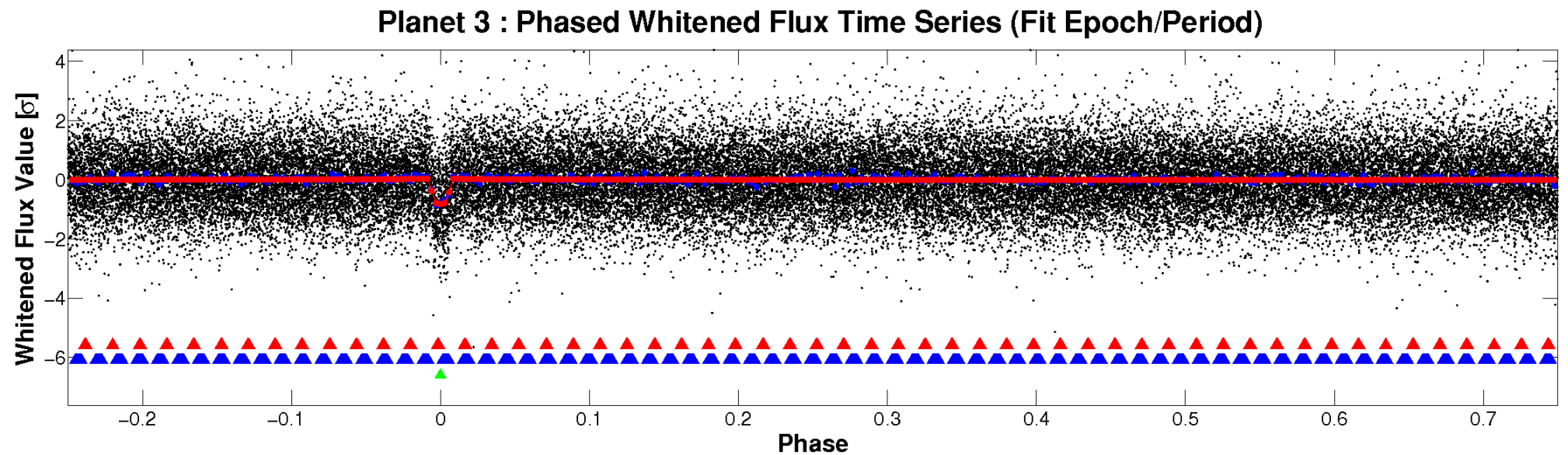
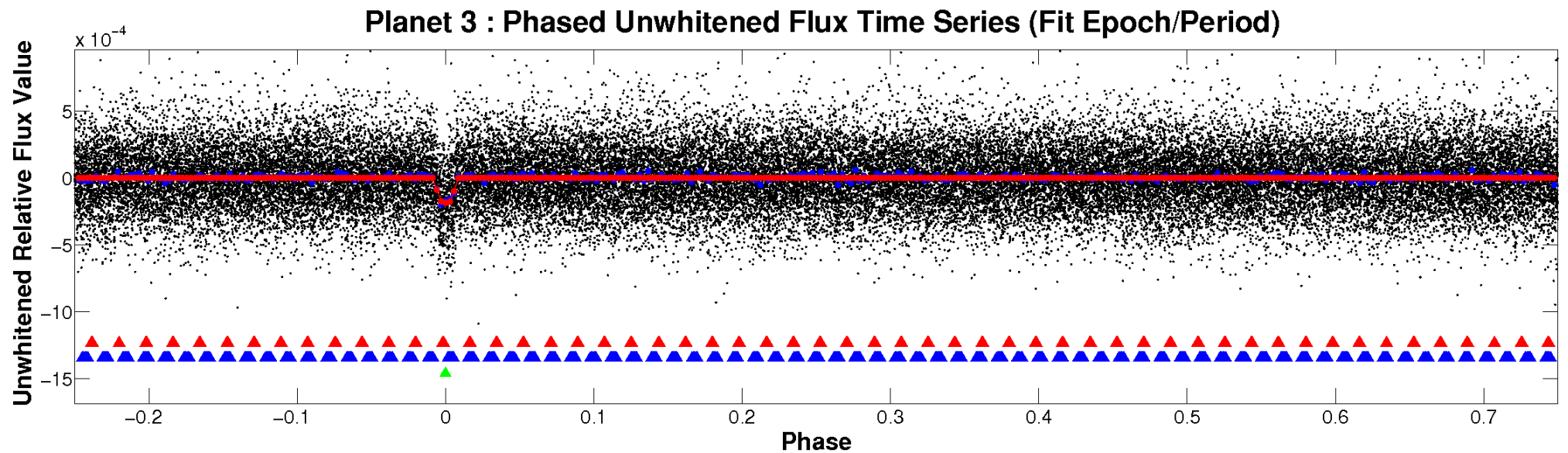
# ALT Odd/Even

TCE 003745690-03



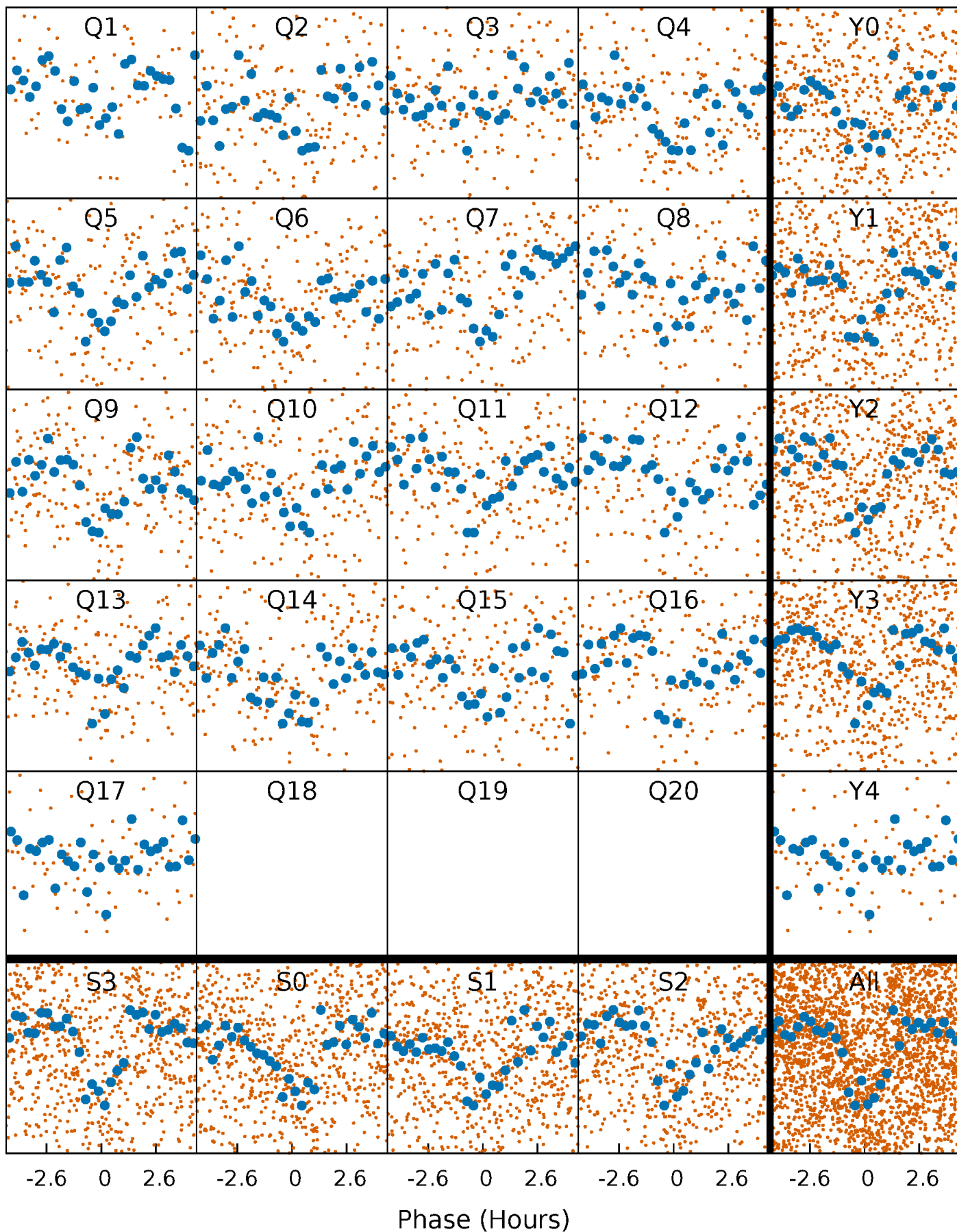


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

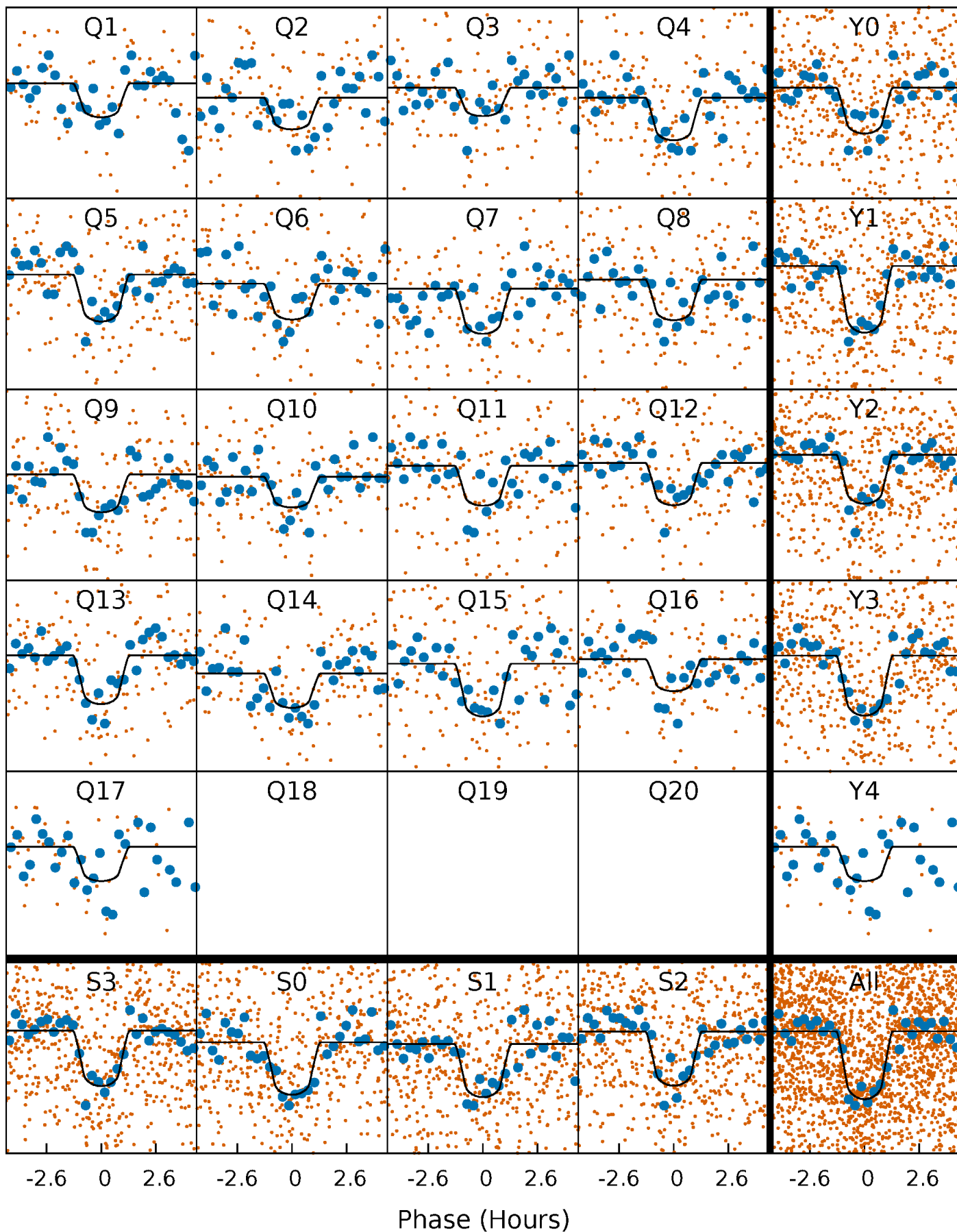
TCE 003745690-03   P= 7.025737 Days    $T_0=133.626769$  (BKJD)





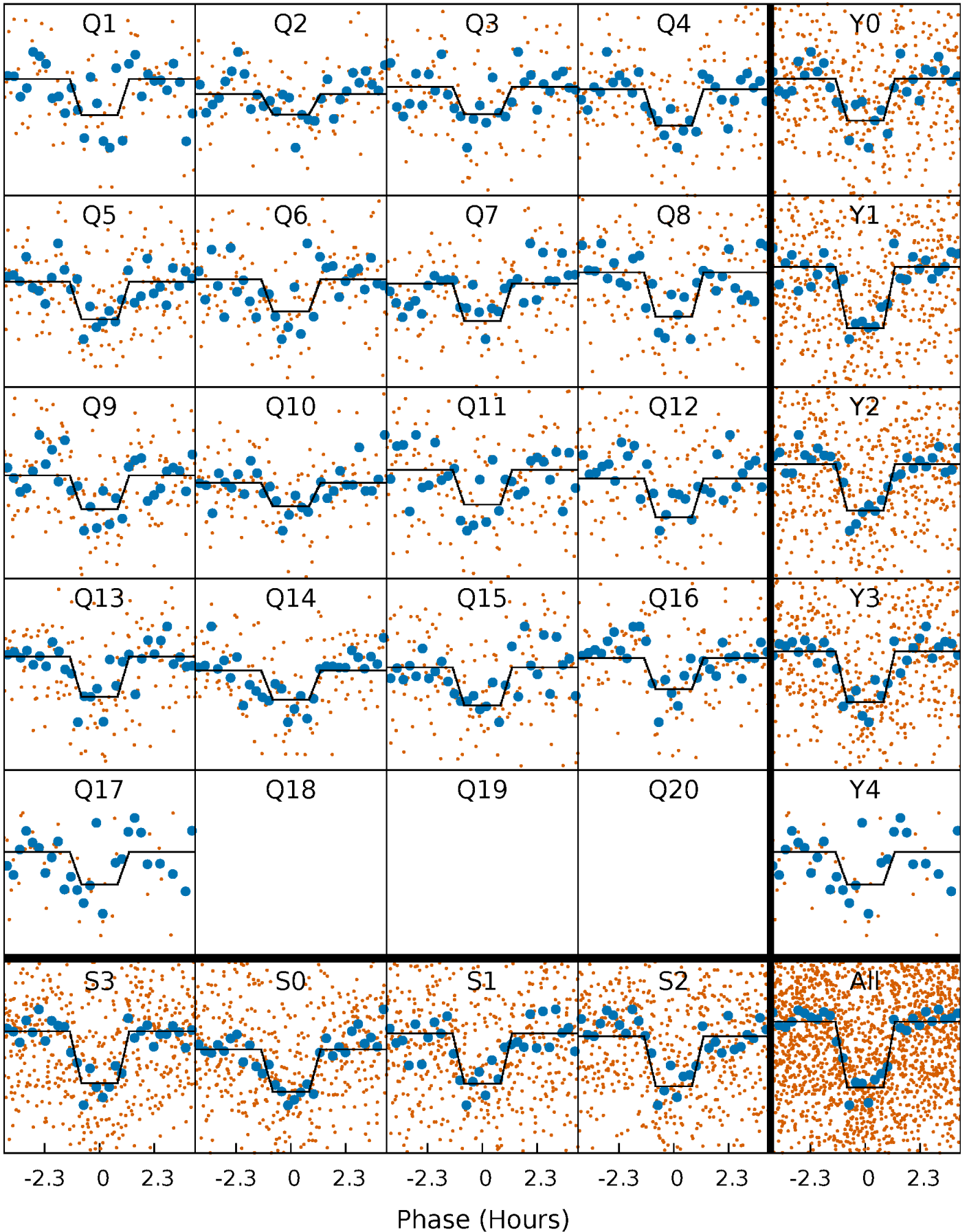
# DV Quarter-Phased Transit Curves

TCE 003745690-03   P= 7.025737 Days    $T_0=133.626769$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

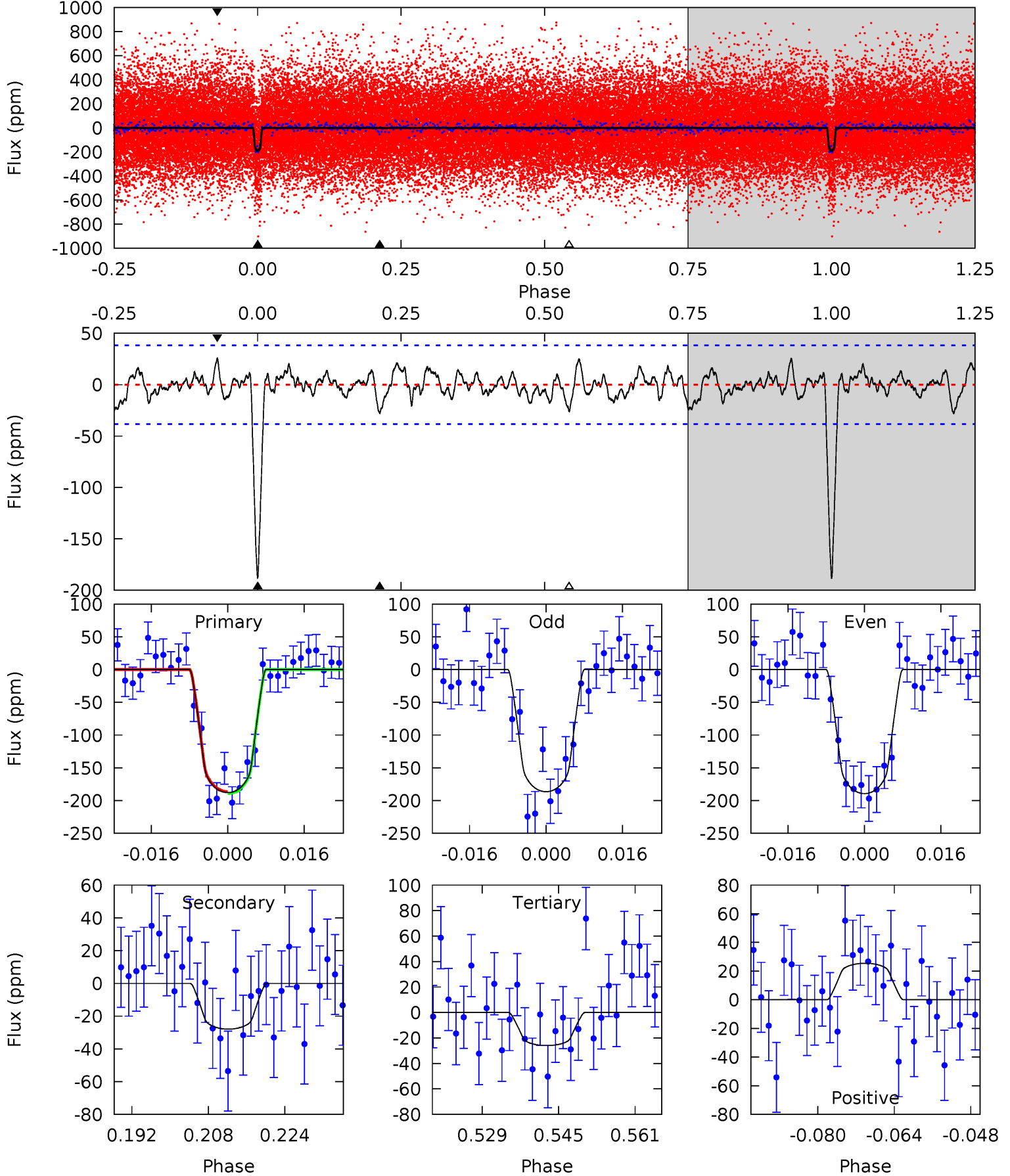
TCE 003745690-03 P= 7.025782 Days  $T_0=133.623417$  (BKJD)



# DV Model-Shift Uniqueness Test

003745690-03, P = 7.025737 Days, E = 126.601032 Days

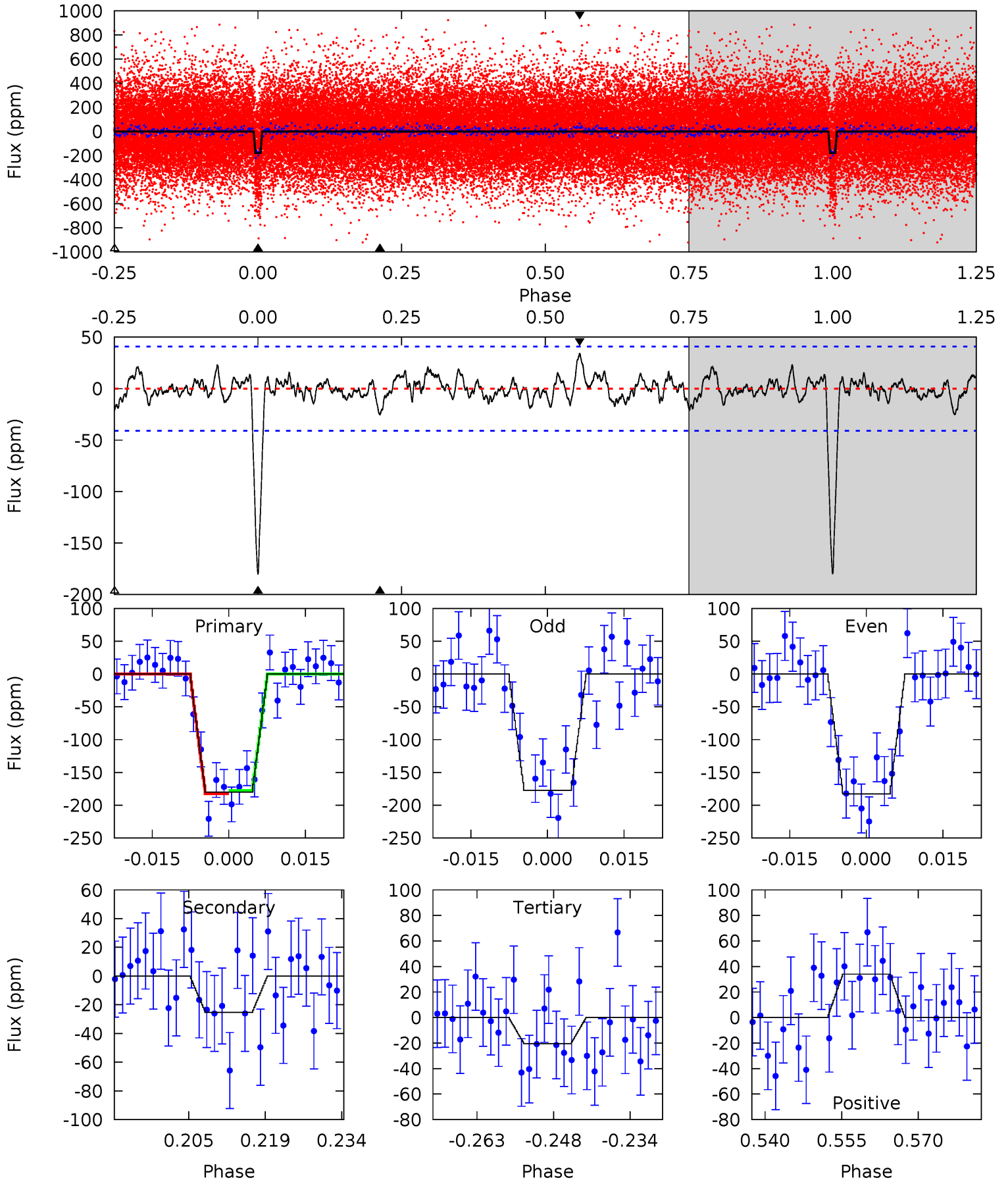
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.2	3.60	3.35	3.28	4.93	2.41	1.18	20.9	20.9	0.25	0.32	0.19	1.01	0.12	0.17



# Alt Model-Shift Uniqueness Test

003745690-03, P = 7.025782 Days, E = 126.597635 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
21.8	3.06	2.48	4.12	4.95	2.44	1.07	19.3	17.7	0.58	-1.06	0.33	0.97	0.16	0.30



### Stellar Parameters For KIC 003745690

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5767^{+115}_{-104}$	$4.389^{+0.099}_{-0.110}$	$-0.120^{+0.150}_{-0.150}$	$1.014^{+0.145}_{-0.119}$	$0.918^{+0.072}_{-0.059}$	$1.240^{+0.513}_{-0.398}$
	+2%/-2%	+2%/-3%	+125%/-125%	+14%/-12%	+8%/-6%	+41%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 003745690-03 / KOI 0442.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-28 \pm 8$	$1.61^{+0.74}_{-0.69}$	$1360^{+60}_{-53}$	$3859^{+998}_{-501}$	$30^{+68}_{-17}$
Alt.	$-25 \pm 8$	$1.49^{+0.72}_{-0.65}$	$1361^{+60}_{-55}$	$3895^{+878}_{-560}$	$31^{+64}_{-19}$

$T_{\text{max}}$  = 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

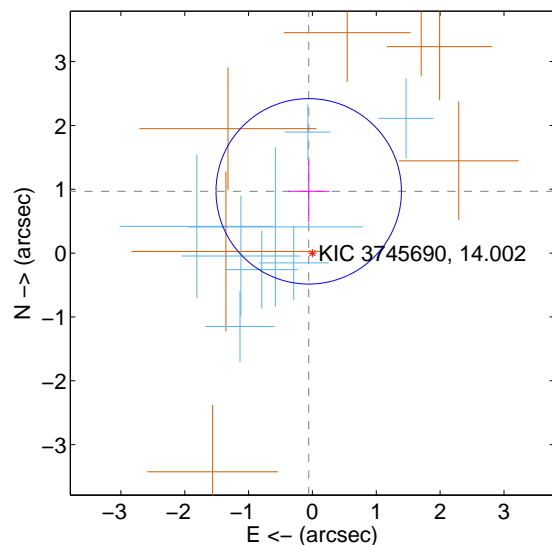
Supplemental centroid analysis for 003745690-03. Kepler magnitude: 14.00. Transit SNR 17.69

There are 8 quarters with good PRF difference image offsets

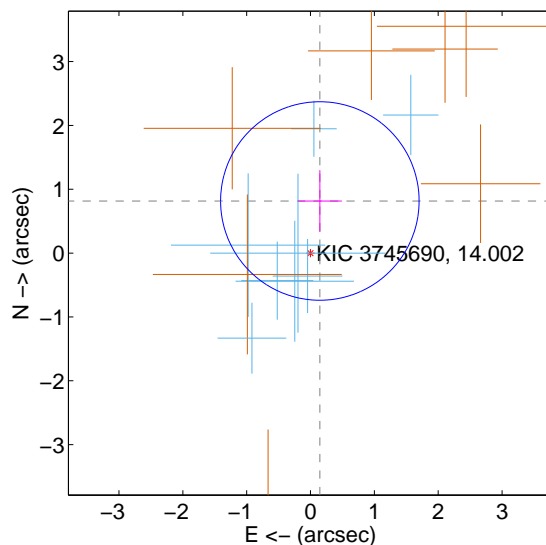
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.969 \pm 0.484$	2.00	$0.058 \pm 0.327$	$0.967 \pm 0.485$
PRF-fit source offset from KIC position	$0.829 \pm 0.518$	1.60	$-0.146 \pm 0.345$	$0.816 \pm 0.484$
photometric centroid source offset	$1.44 \pm 0.57$	2.50	$-0.29 \pm 0.54$	$1.41 \pm 0.58$

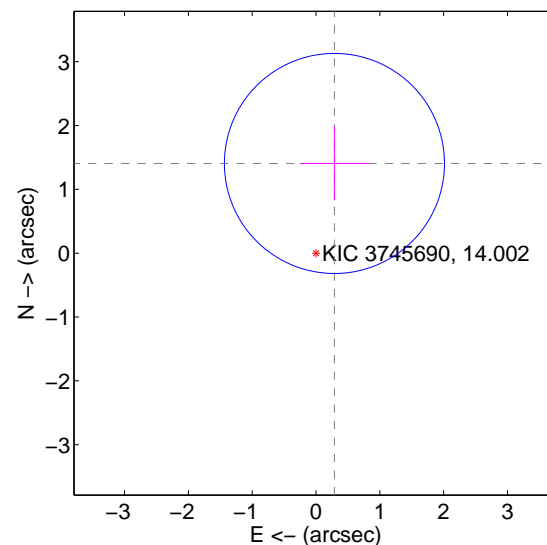
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

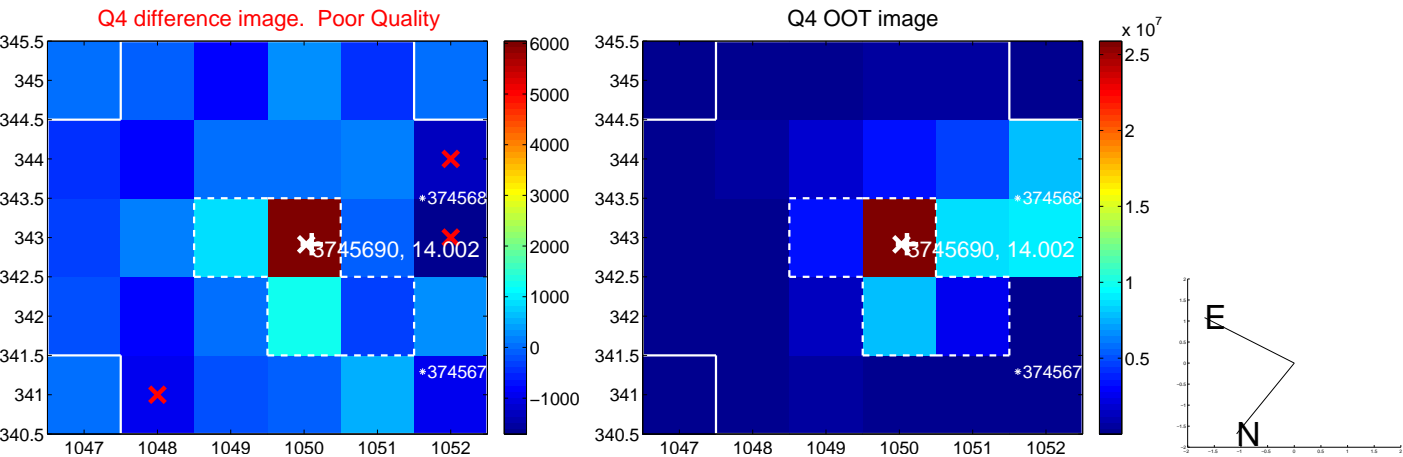
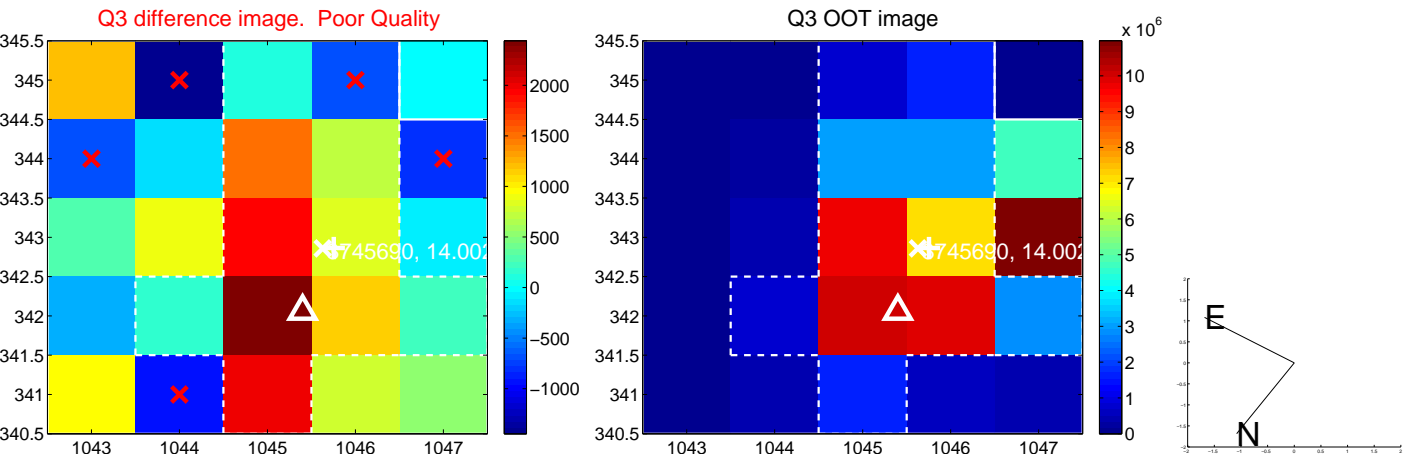
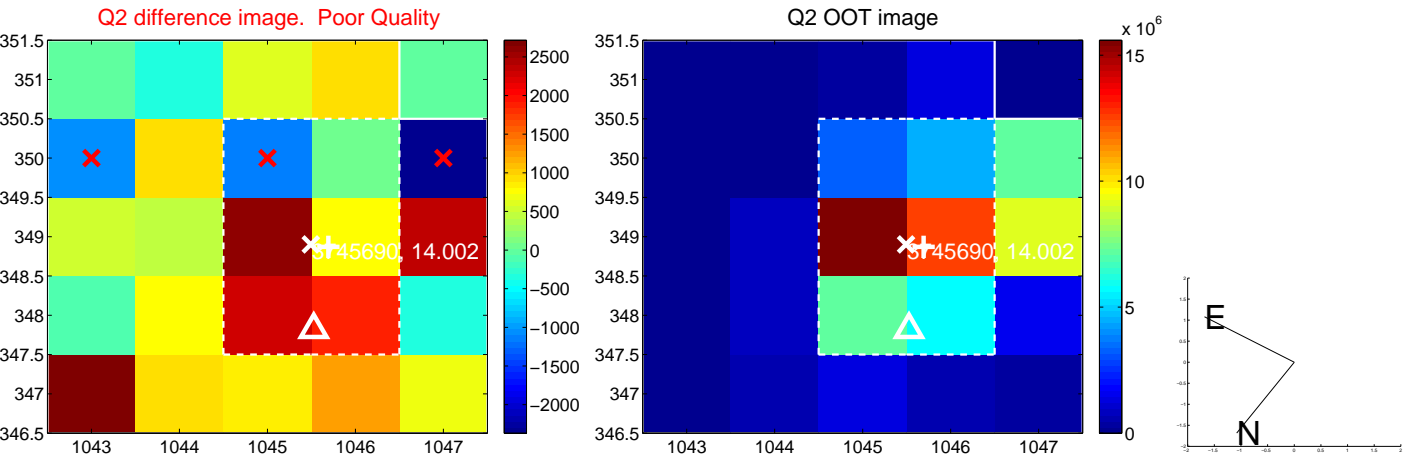
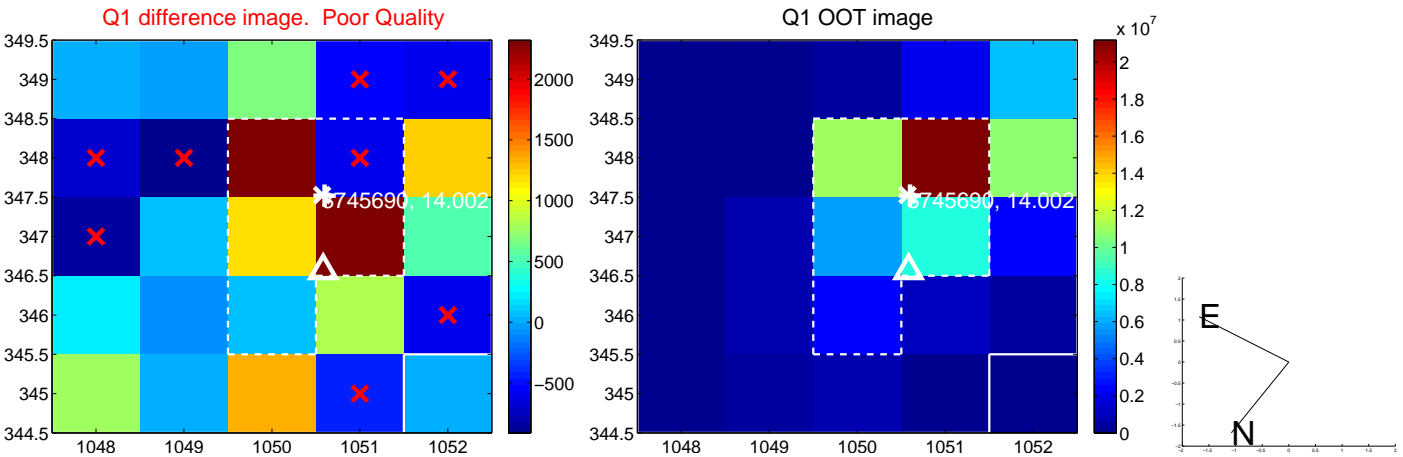


offset from photometric centroids



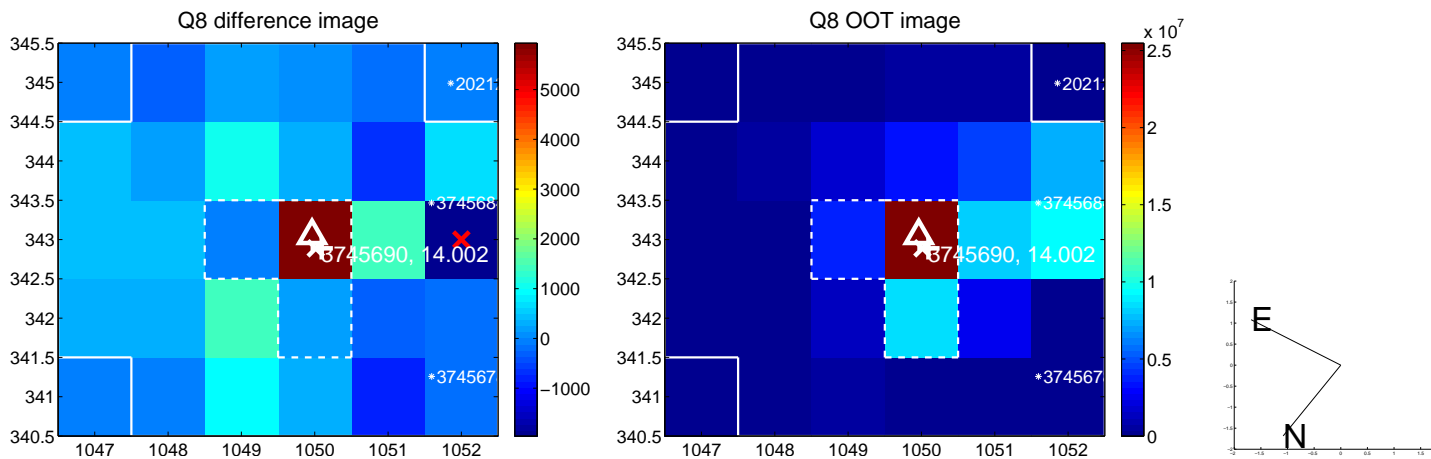
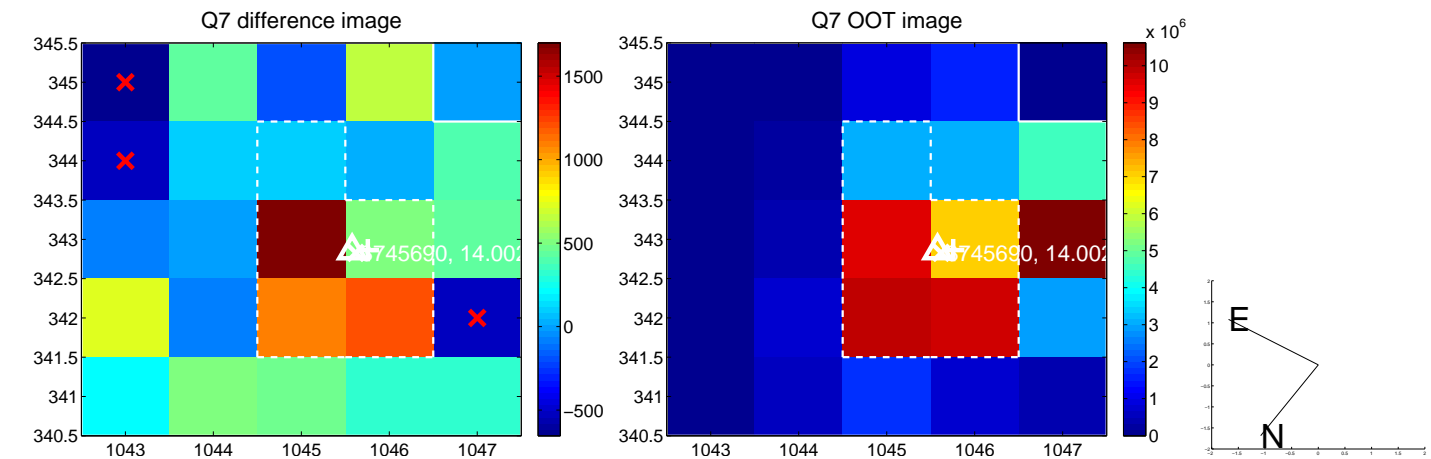
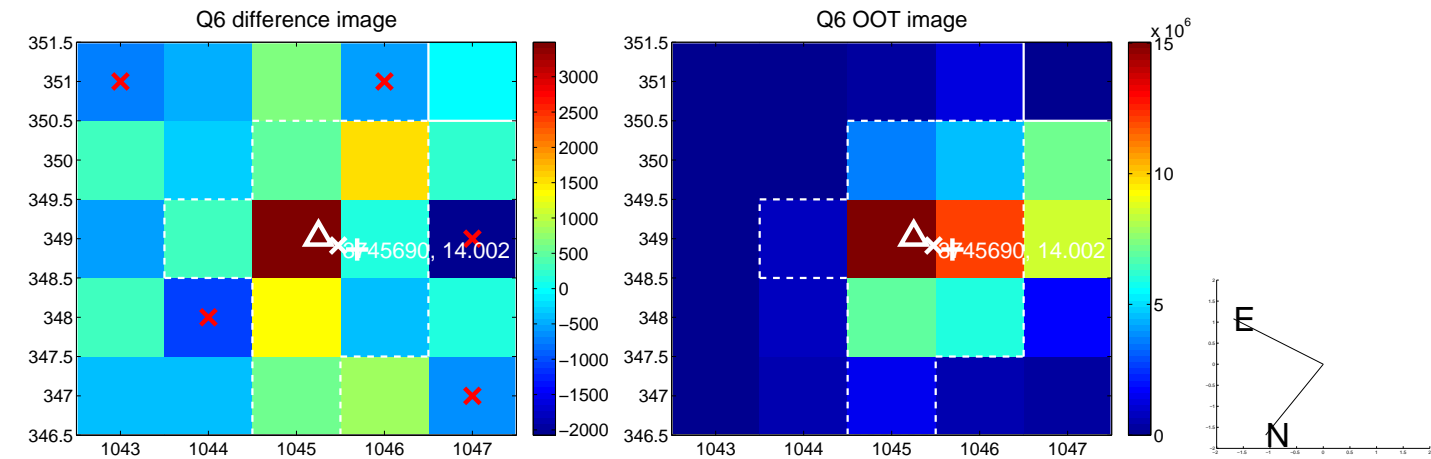
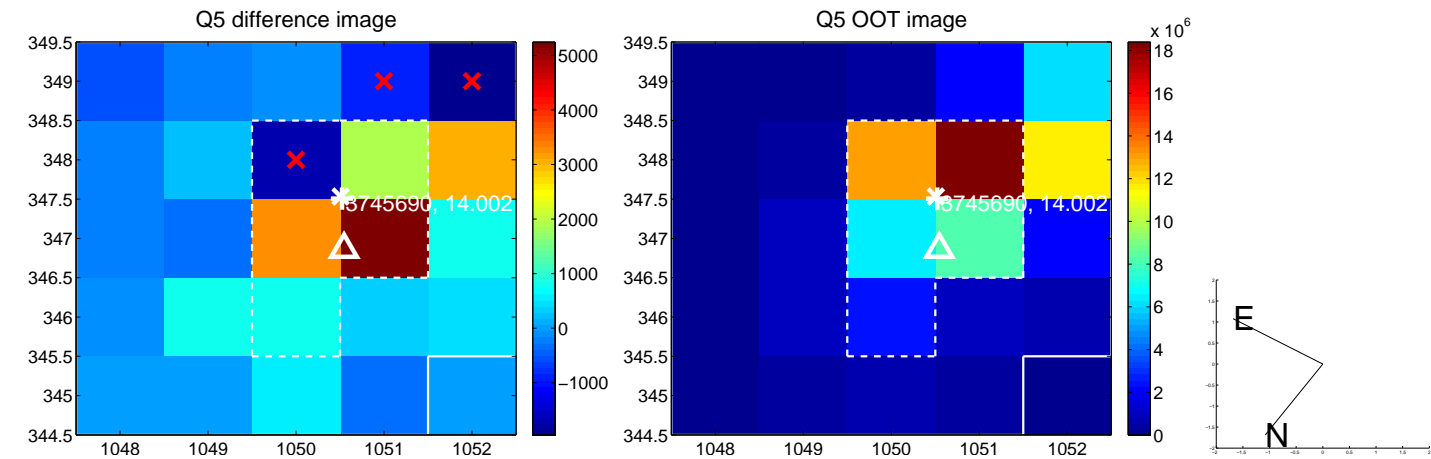
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

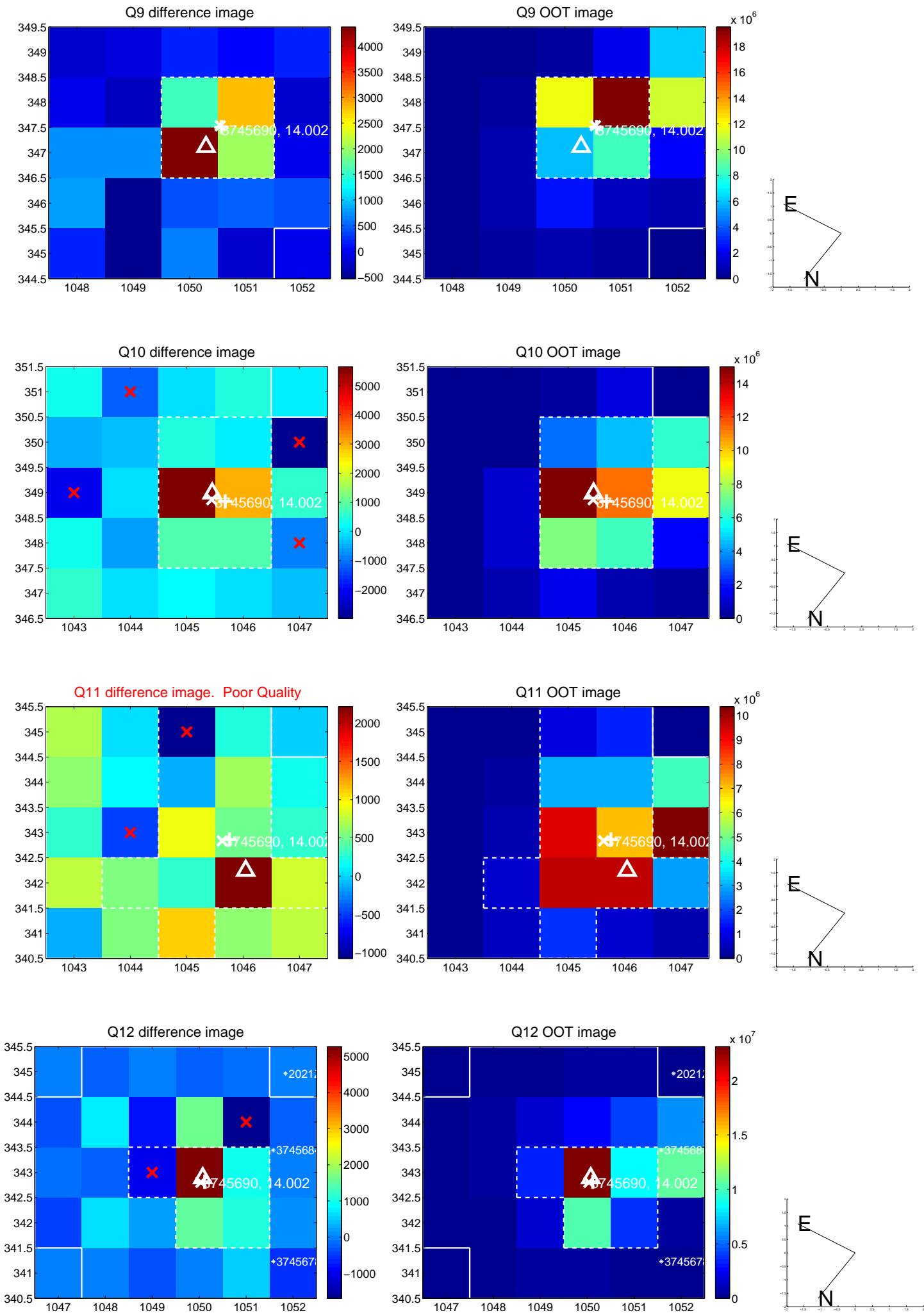




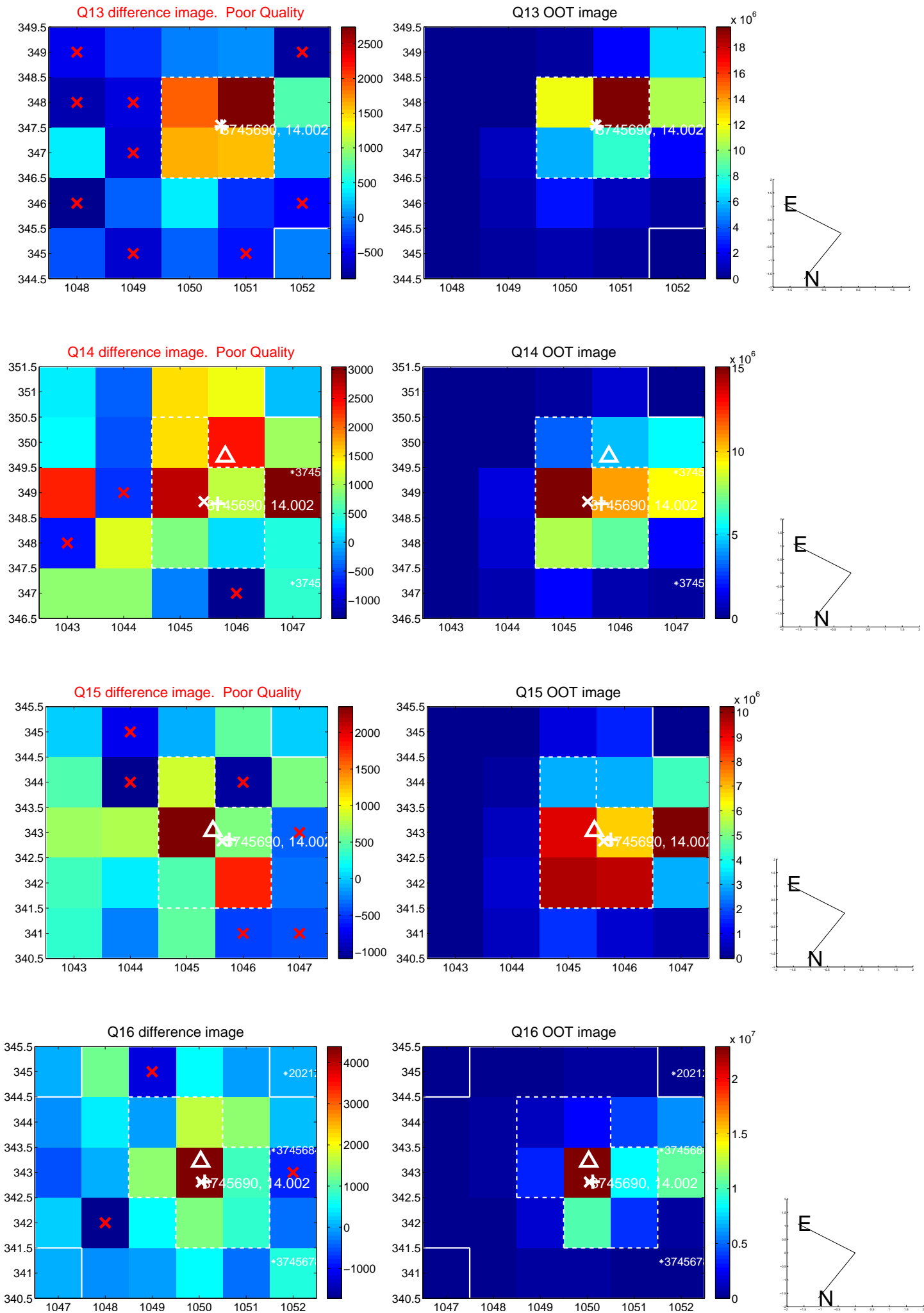
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



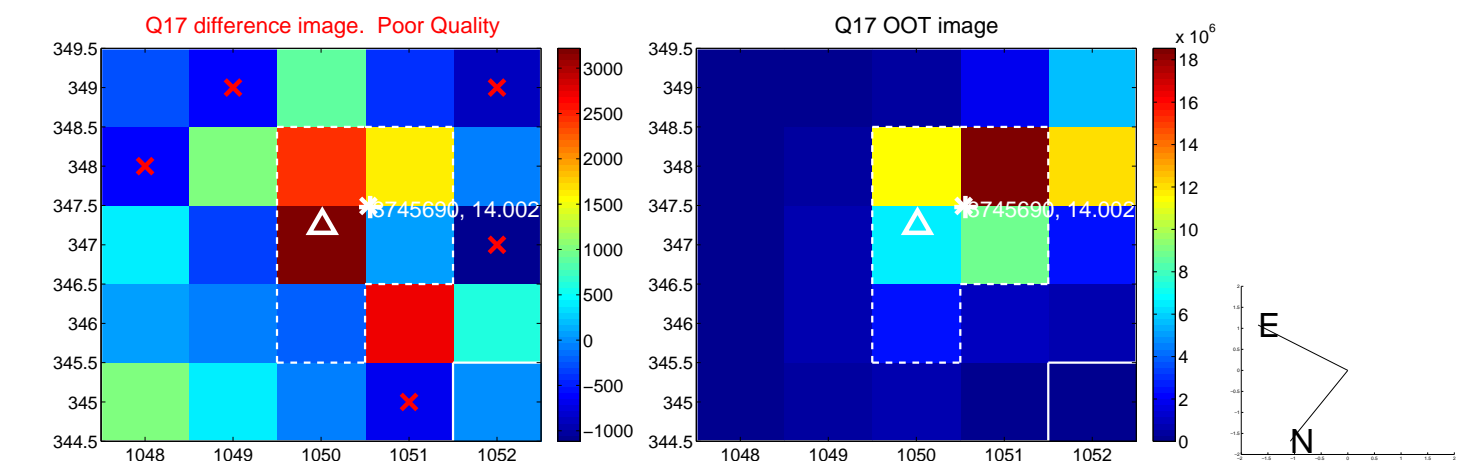
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



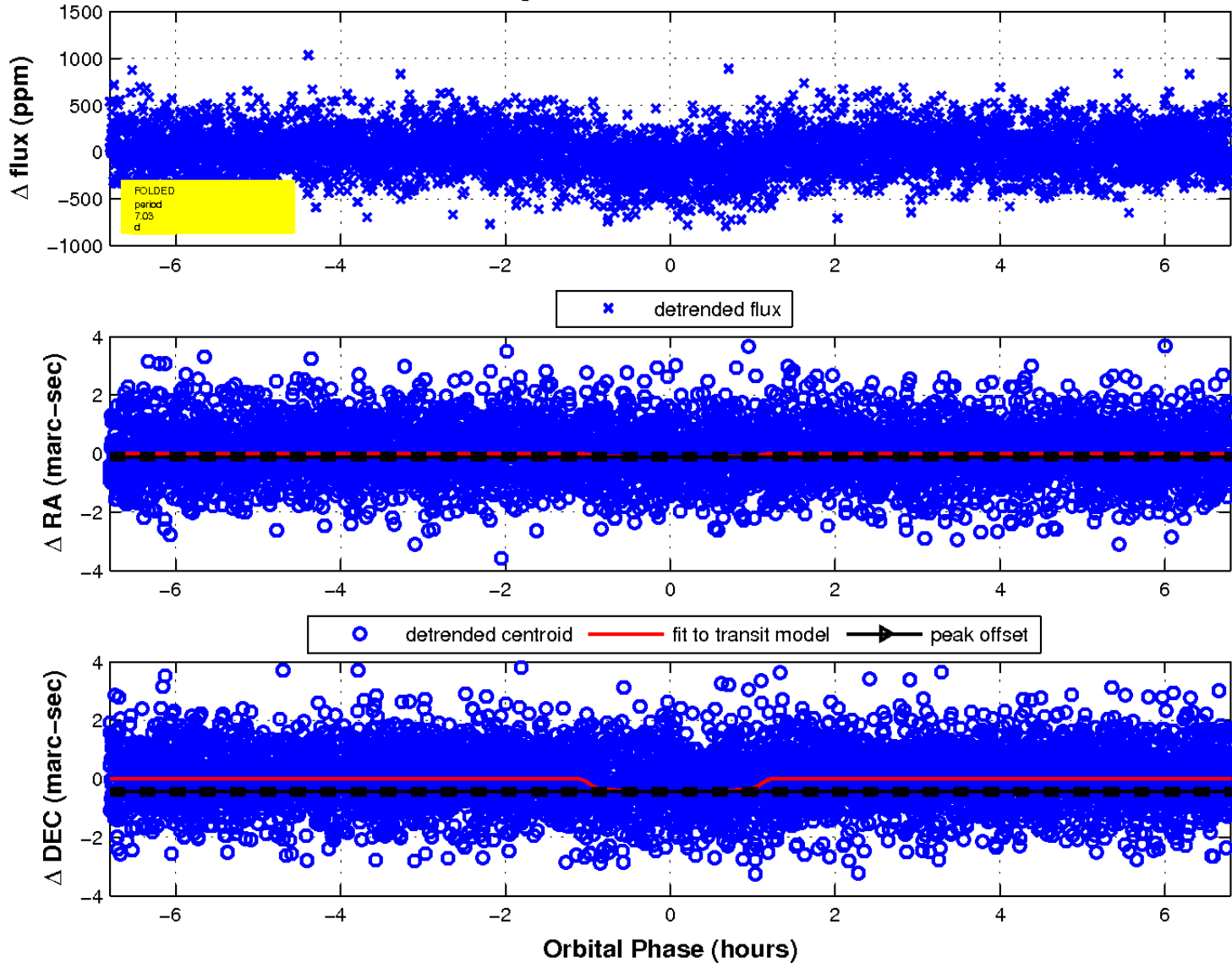
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



### fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

