

# KIC 007117355

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007117355-01	OBS	4866.01	0.566734	131.872068	9.2	3.051	8.2	3.3	1.04	5864	0.34	6307.44
007117355-02	OBS	No	115.279258	133.300800	316.3	5.427	8.9	8.3	1.04	5864	2.11	5.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117355-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
007117355-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT

**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 007117355-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007117355-01	7117355	RR-Lyr-pri	7198959	1:1	946.7	220	90	7.86	14.89	69255.00	Direct-PRF	0	2.75	21.16

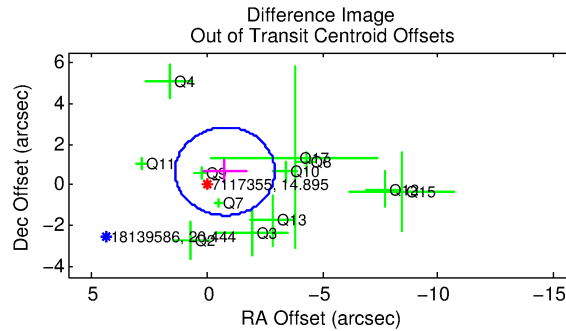
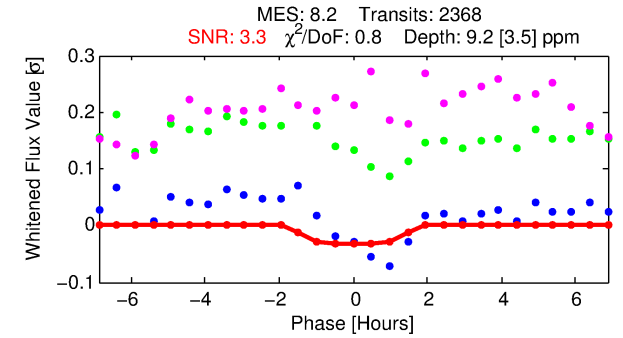
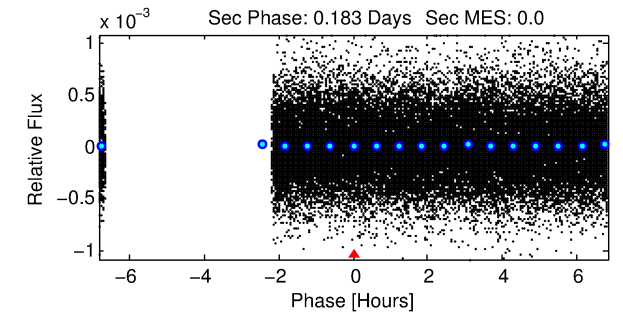
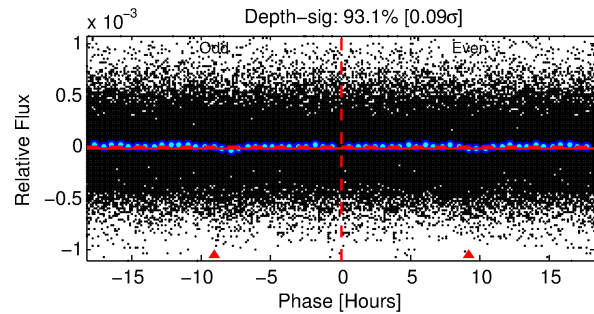
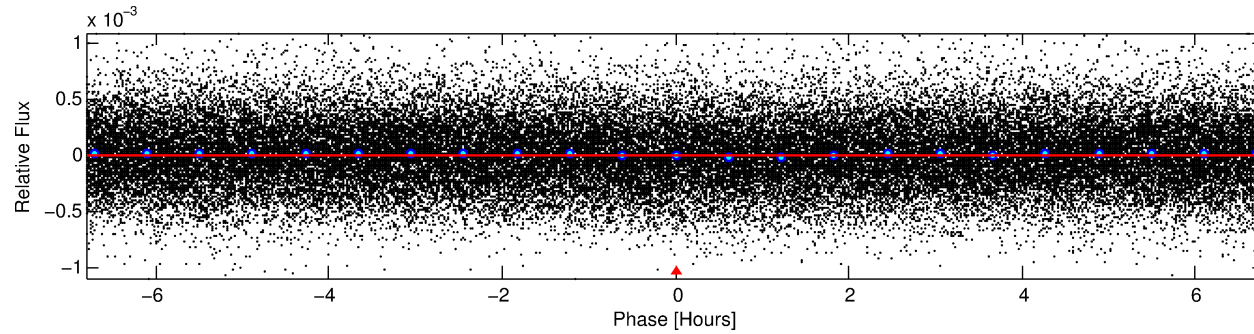
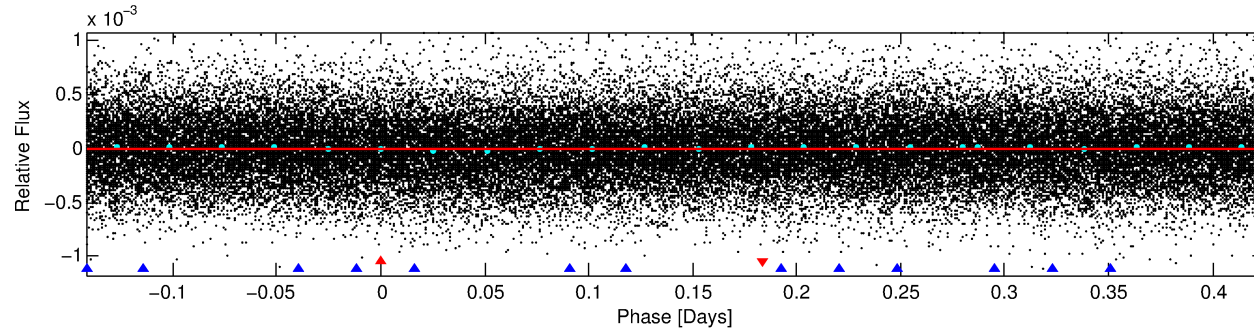
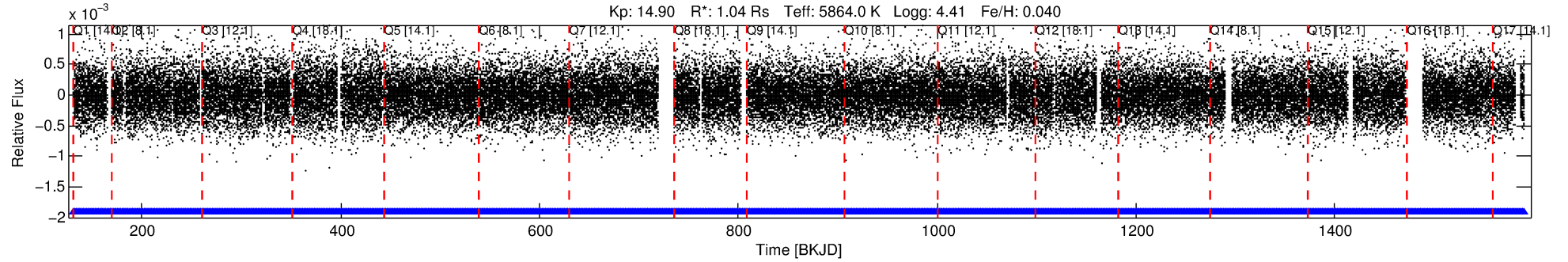
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7117355 Candidate: 1 of 2 Period: 0.567 d

KOI: K04866 Corr: No Ephemeris Match

Kp: 14.90 R\*: 1.04 Rs Teff: 5864.0 K Logg: 4.41 Fe/H: 0.040



## DV Fit Results:

Period = 0.56673 [0.00003] d  
Epoch = 131.8721 [0.0119] BKJD  
Rp/R\* = 0.0030 [0.0030]  
a/R\* = 1.31 [2.41]  
b = 0.70 [3.22]  
Seff = 6307.44 [2451.67]  
Teff = 2272 [221] K  
Rp = 0.34 [0.35] Re  
a = 0.0135 [0.0034] AU  
Ag = N/A  
Teffp = N/A

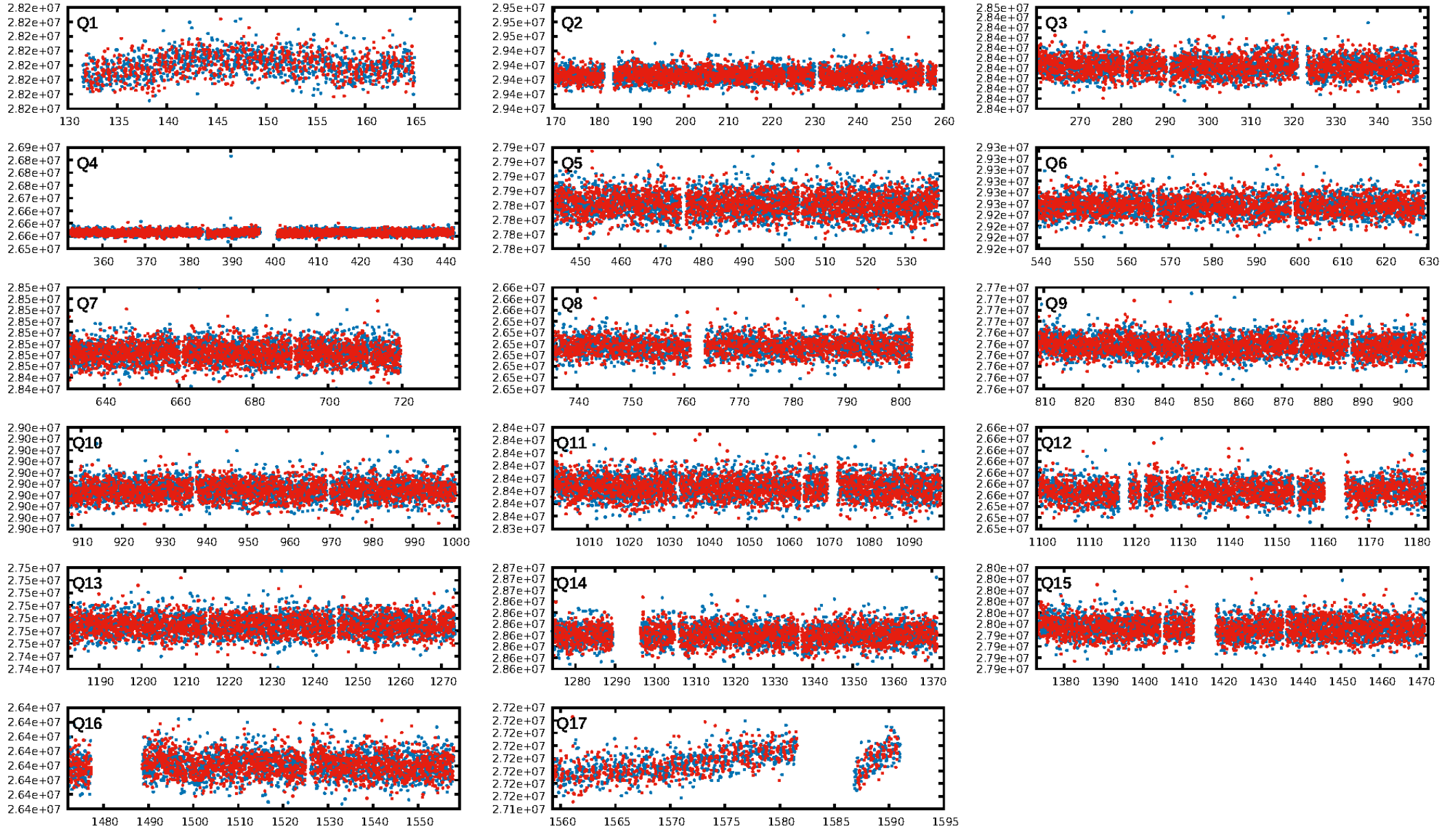
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [442.23σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.15e-15  
RollingBand-fgt: 1.00 [2262/2262]  
GhostDiagnostic-chr: 0.2394  
Centroid-sig: 3.5%  
Centroid-so: 5.699 arcsec [1.36σ]  
OotOffset-rm: 1.031 arcsec [1.44σ]  
KicOffset-rm: 0.865 arcsec [0.89σ]  
OotOffset-st: 2/4/3/3 [12]  
KicOffset-st: 2/4/3/3 [12]  
DiffImageQuality-fgm: 0.00 [0/12]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:55:25 Z

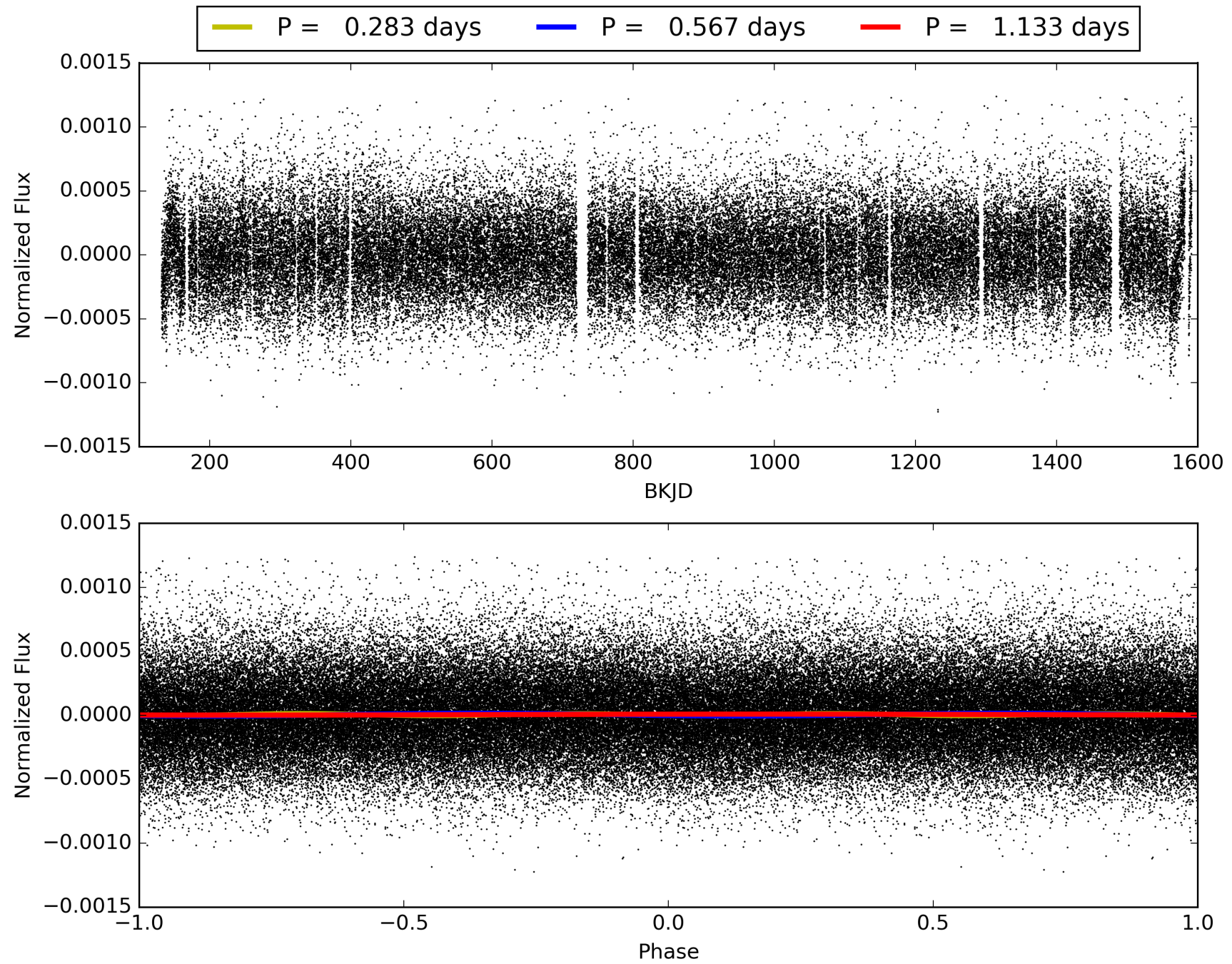
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007117355-01, PDC Light Curves



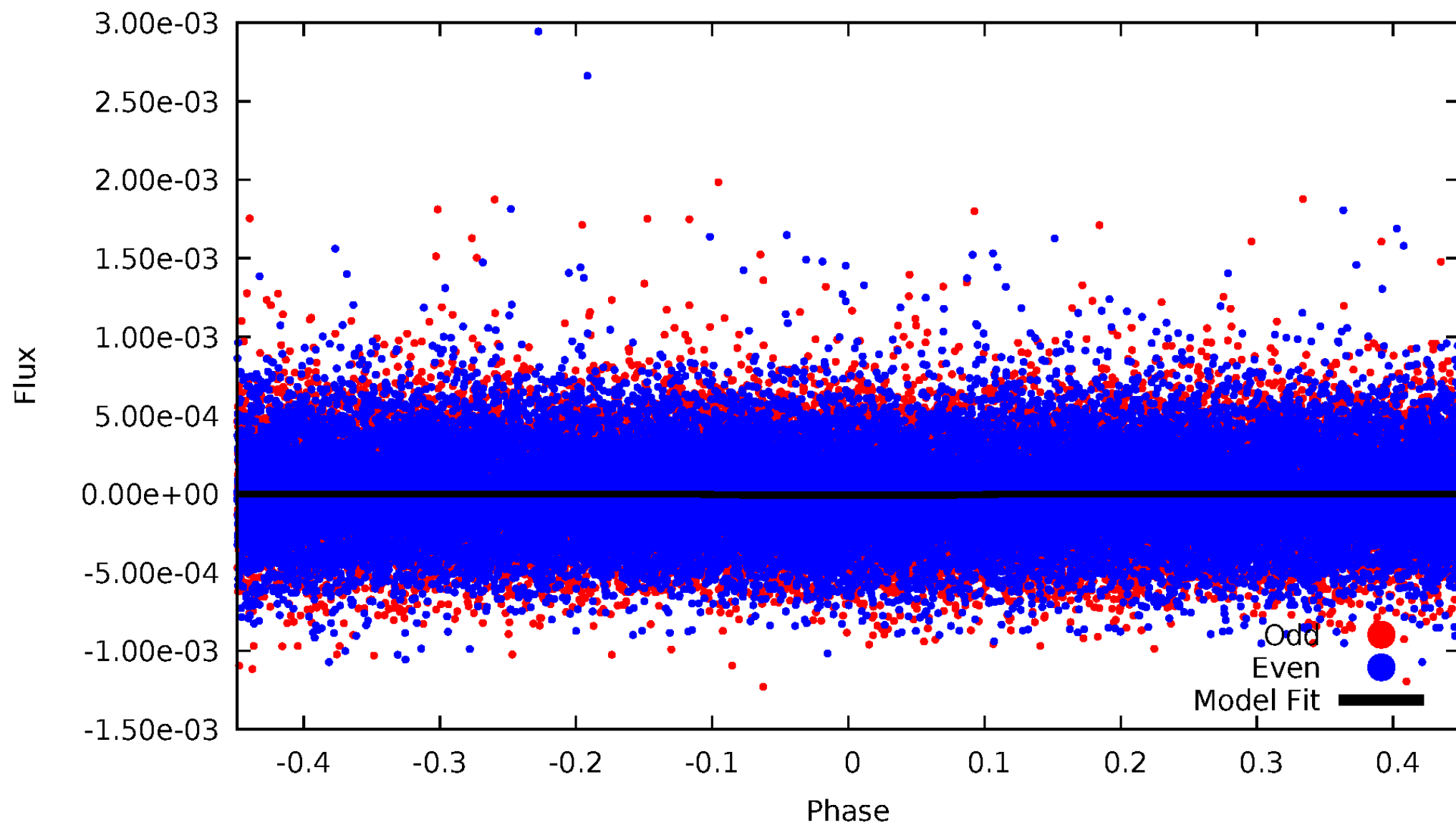


# TCE 007117355-01



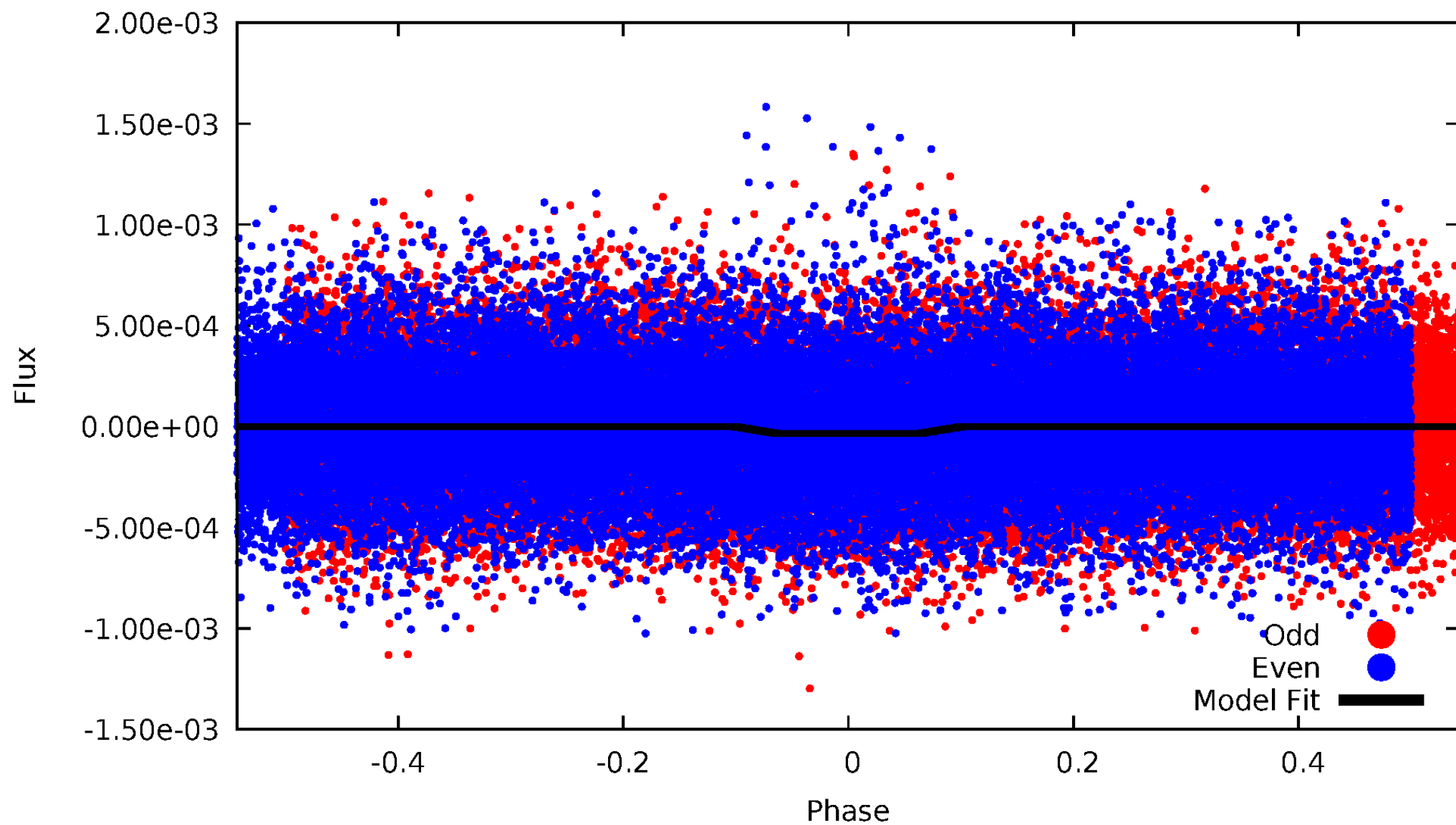
# DV Odd/Even

TCE 007117355-01



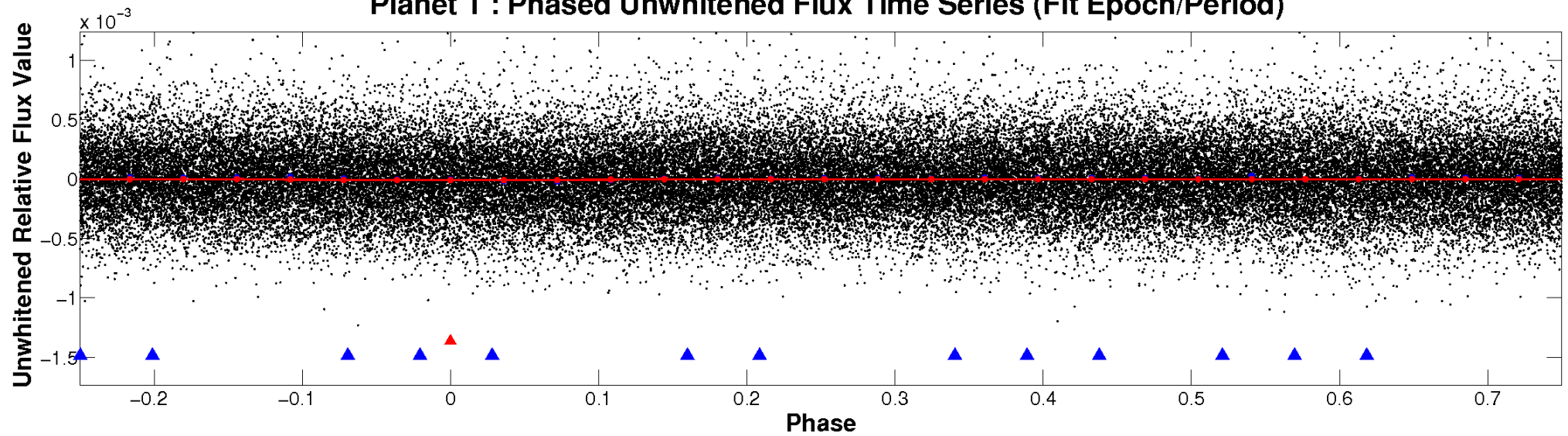
# ALT Odd/Even

TCE 007117355-01

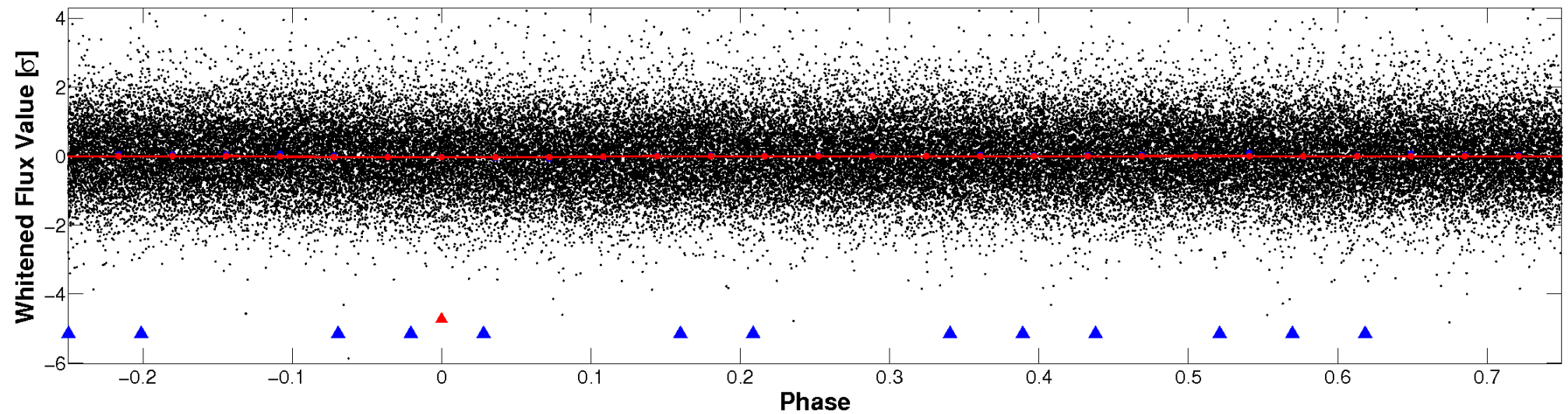


# Non-Whitened Vs. Whitened Light Curve

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



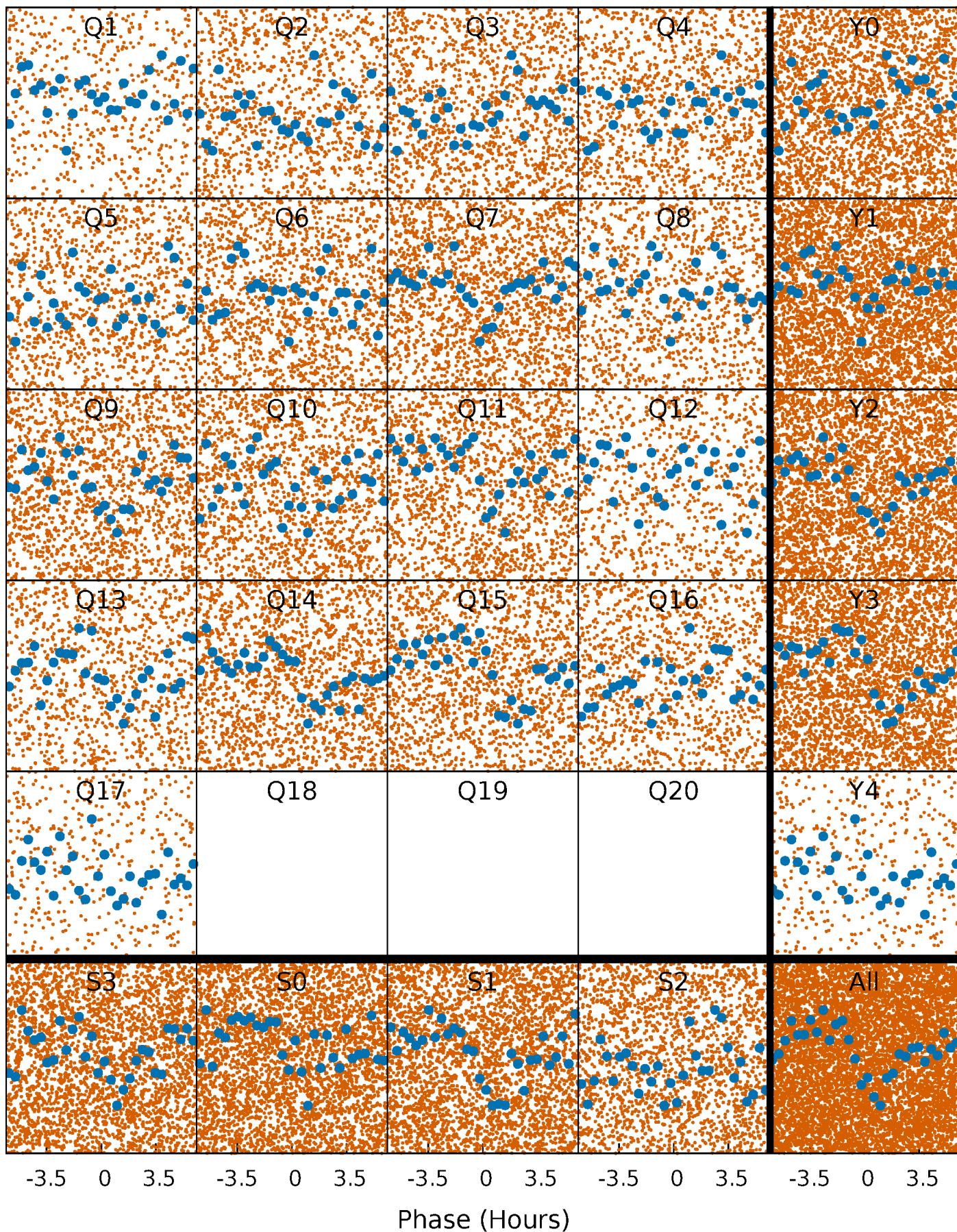
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

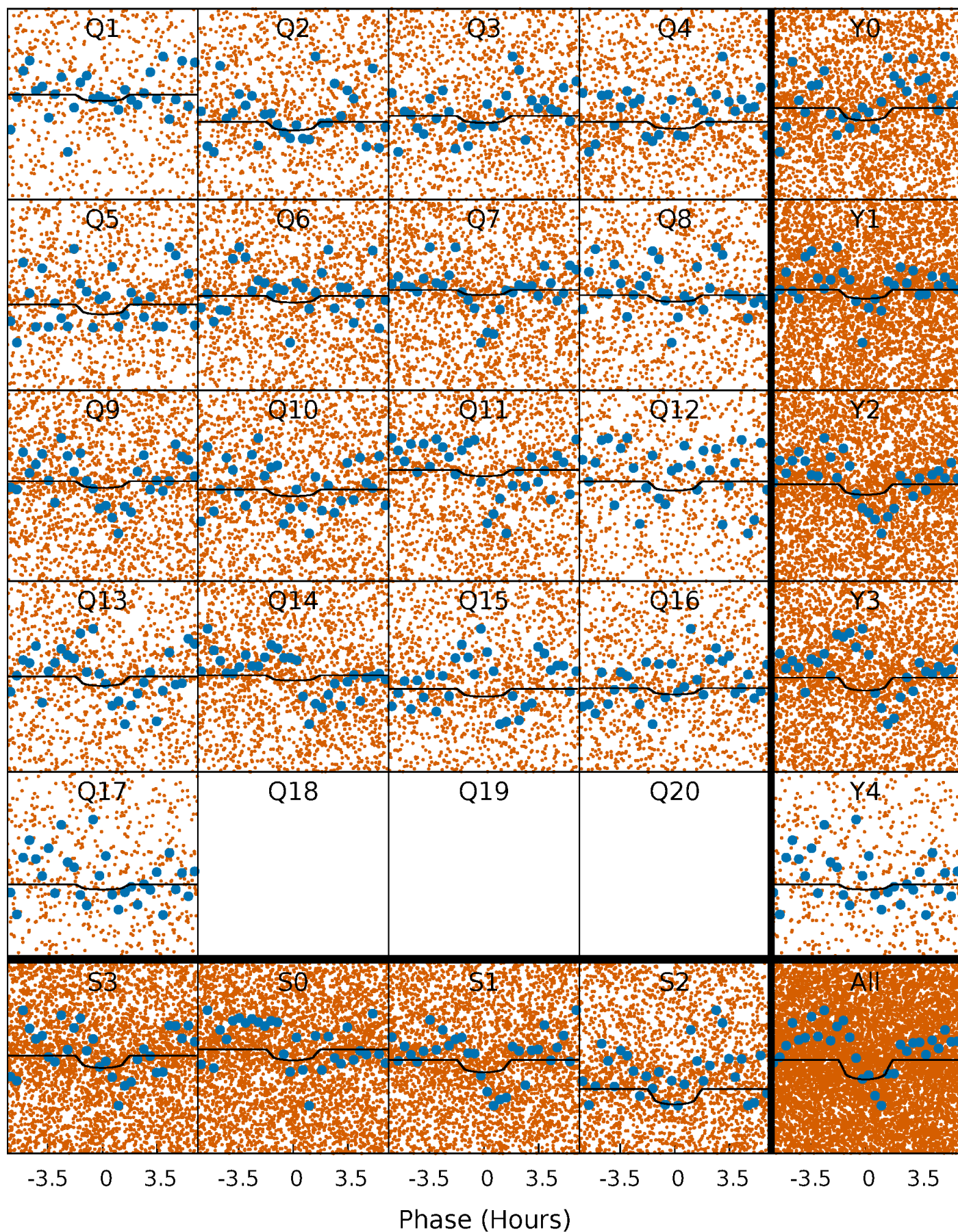
TCE 007117355-01 P= 0.566734 Days  $T_0=131.872068$  (BKJD)





# DV Quarter-Phased Transit Curves

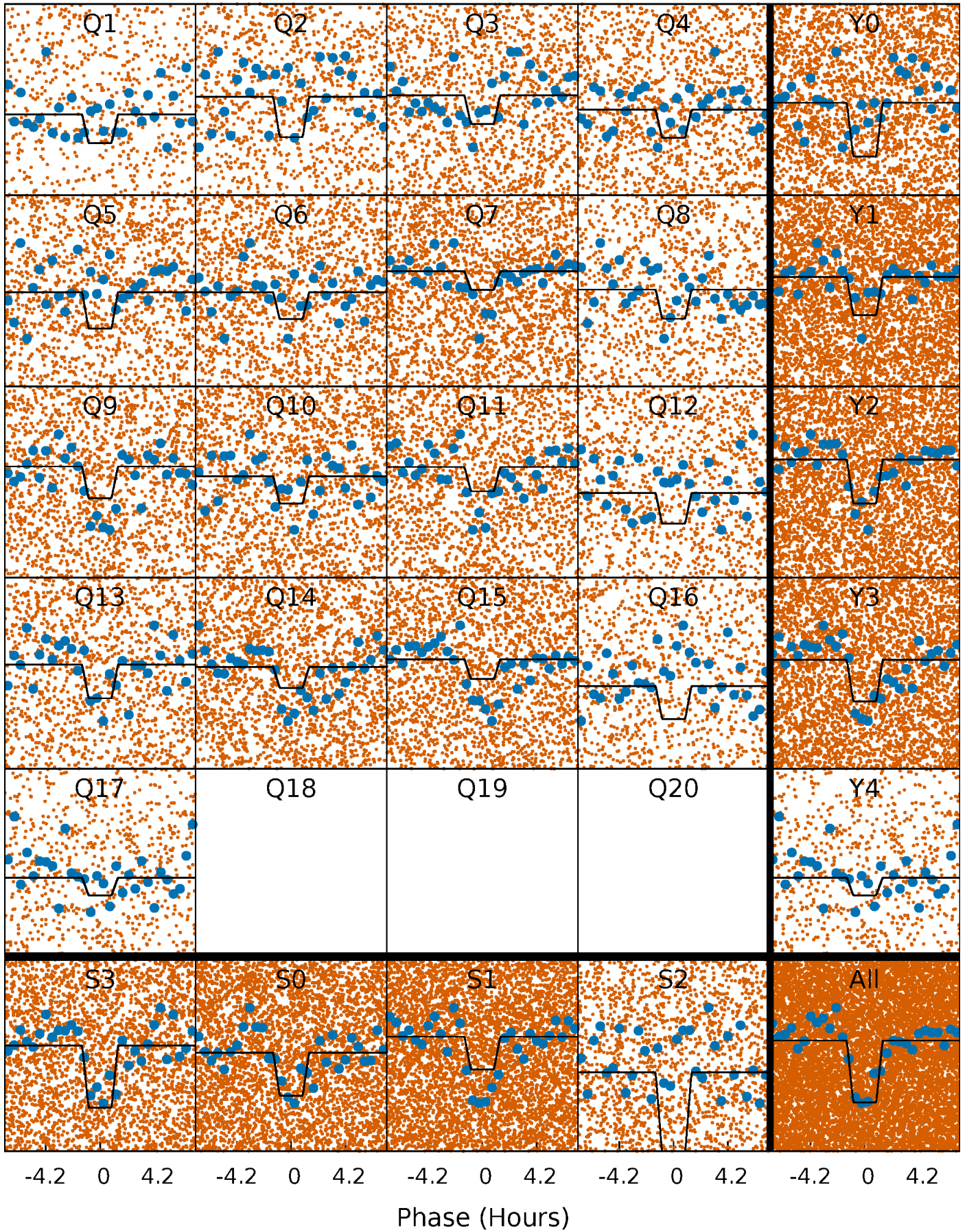
TCE 007117355-01 P= 0.566734 Days  $T_0=131.872068$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

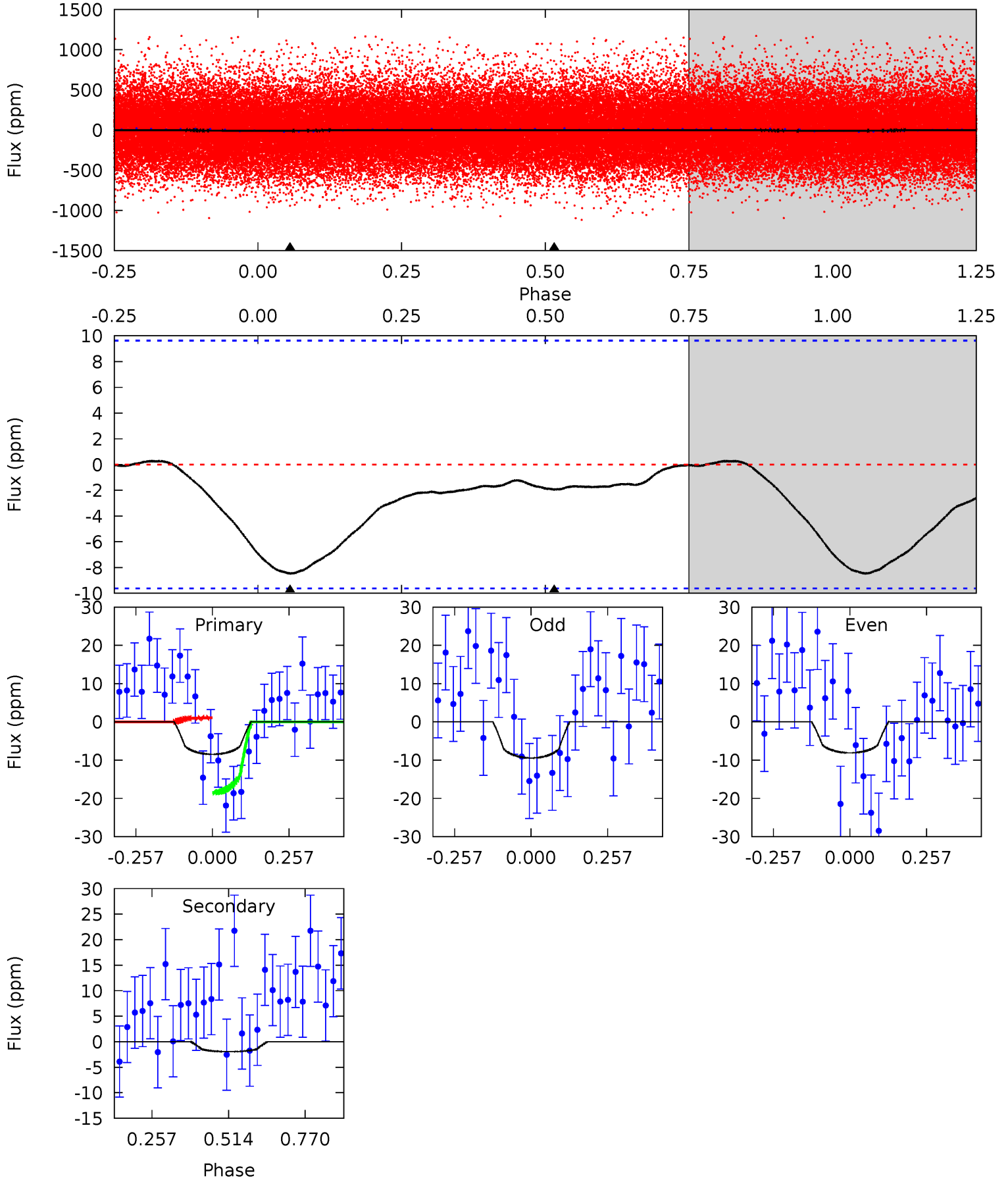
TCE 007117355-01 P= 0.566782 Days  $T_0=131.836482$  (BKJD)



# DV Model-Shift Uniqueness Test

007117355-01,  $P = 0.566734$  Days,  $E = 131.305334$  Days

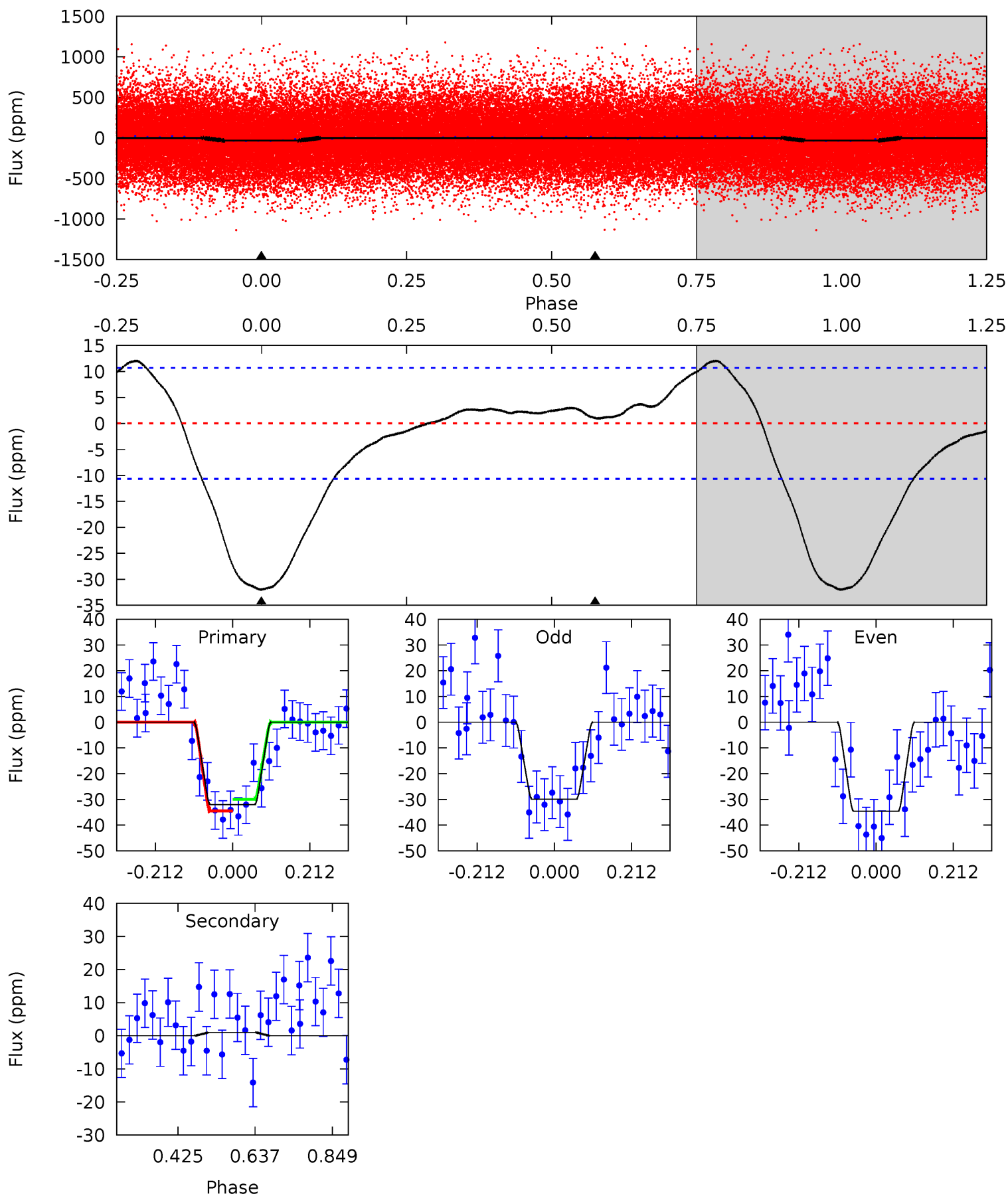
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.84	0.88	0	0	4.36	1.13	0.32	3.84	3.84	0.88	0.88	0.30	0.54	0.03	3.94



# Alt Model-Shift Uniqueness Test

007117355-01, P = 0.566782 Days, E = 131.269700 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
13.2	-0.41	0	0	4.40	1.25	0.67	13.2	13.2	-0.41	-0.41	0.98	0.85	0.27	0.93





### Stellar Parameters For KIC 007117355

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5864^{+164}_{-184}$	$4.411^{+0.087}_{-0.203}$	$0.040^{+0.250}_{-0.300}$	$1.040^{+0.305}_{-0.153}$	$1.014^{+0.140}_{-0.117}$	$1.271^{+0.486}_{-0.680}$
	+3%/-3%	+2%/-5%	+625%/-750%	+29%/-15%	+14%/-12%	+38%/-54%
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 007117355-01 / KOI 4866.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2 \pm 2$	$0.41^{+0.35}_{-0.26}$	$3228^{+244}_{-179}$	$3514^{+2576}_{-7004}$	$0.817^{+7.950}_{-1.006}$
Alt.	$1 \pm 2$	$0.70^{+0.35}_{-0.32}$	$3228^{+238}_{-173}$	$-3495^{+5589}_{-640}$	$-0.166^{+0.478}_{-0.851}$

$T_{max}$  = 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

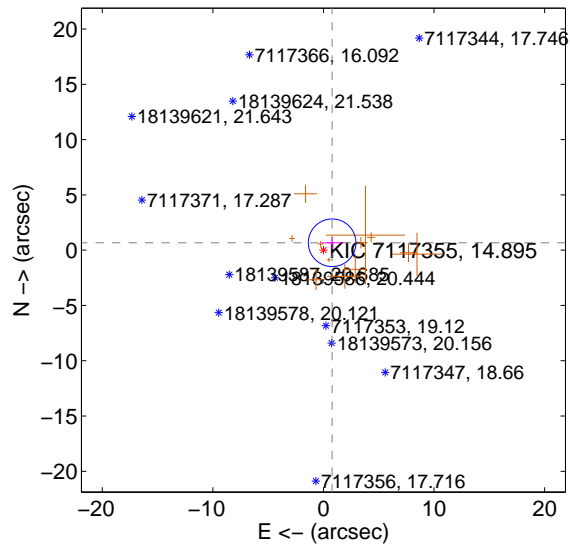
Supplemental centroid analysis for 007117355-01. Kepler magnitude: 14.89. Transit SNR 3.31

There are 0 quarters with good PRF difference image offsets

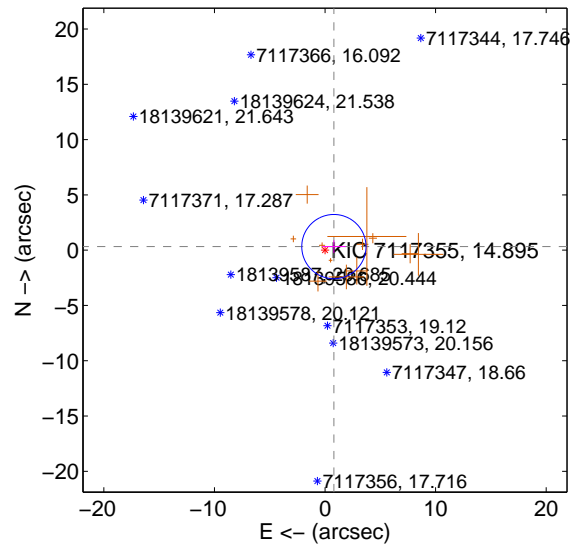
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.031 \pm 0.718$	1.44	$-0.784 \pm 0.954$	$0.670 \pm 0.567$
PRF-fit source offset from KIC position	$0.865 \pm 0.969$	0.89	$-0.802 \pm 1.069$	$0.323 \pm 0.577$
photometric centroid source offset	$5.70 \pm 4.18$	1.36	$0.83 \pm 4.24$	$5.64 \pm 4.18$

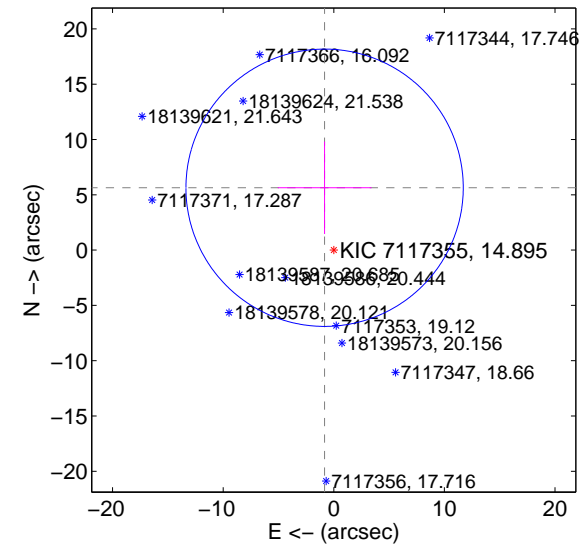
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

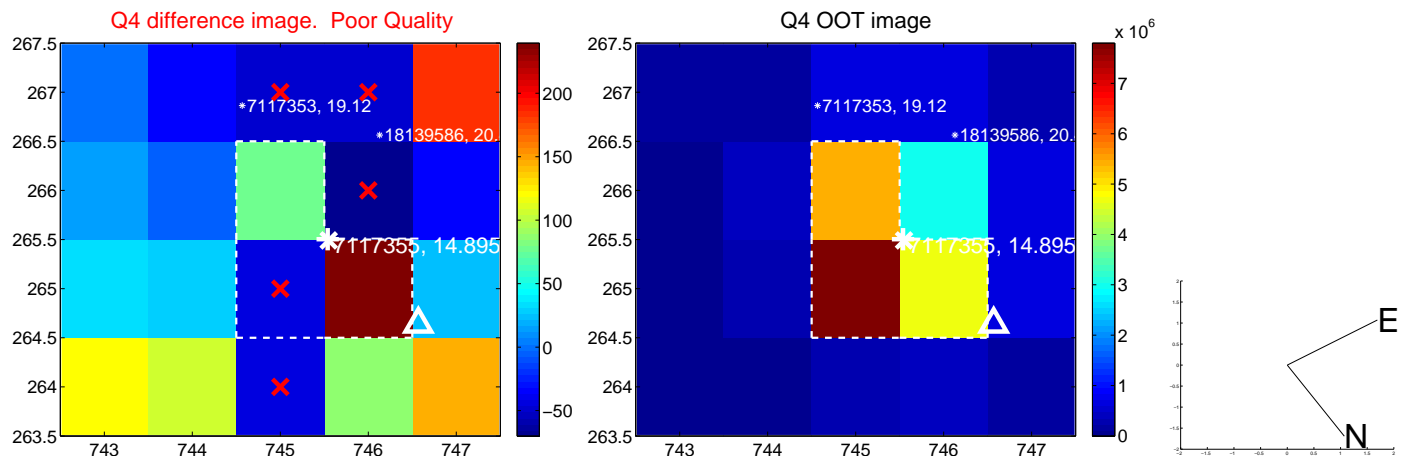
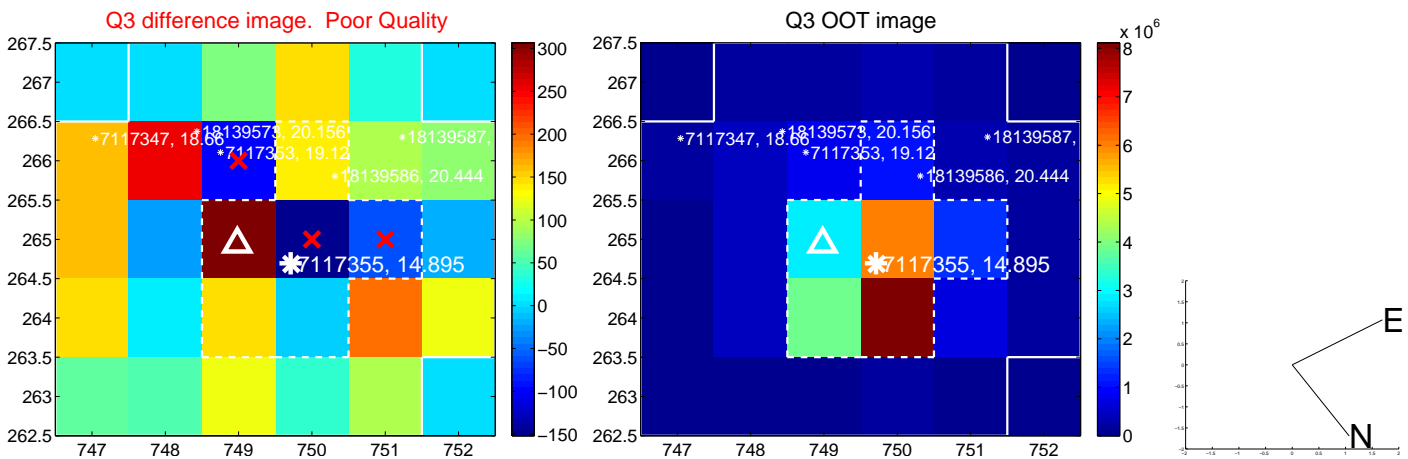
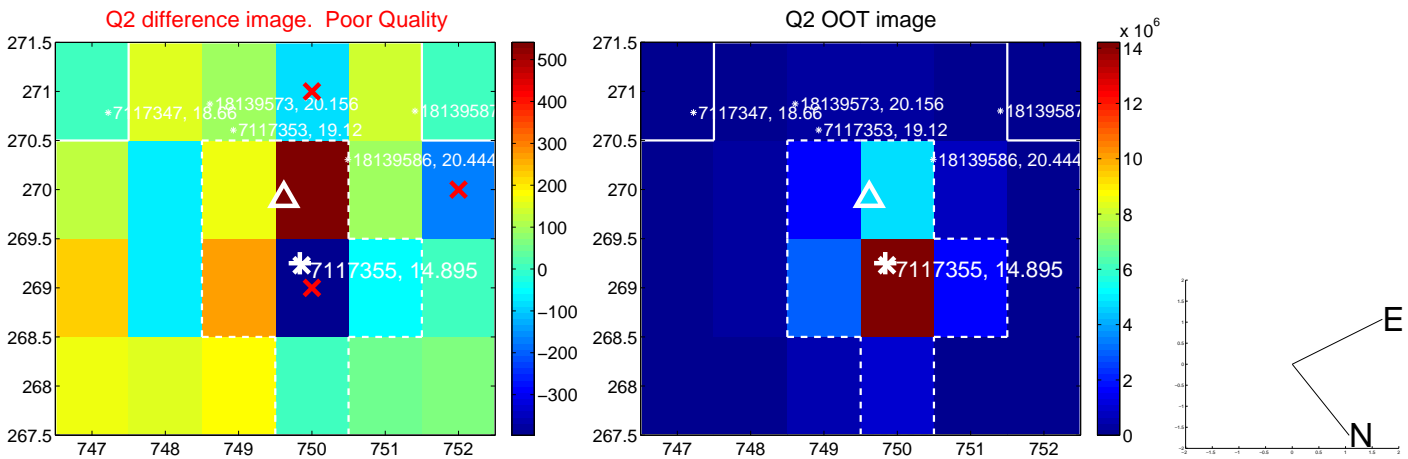
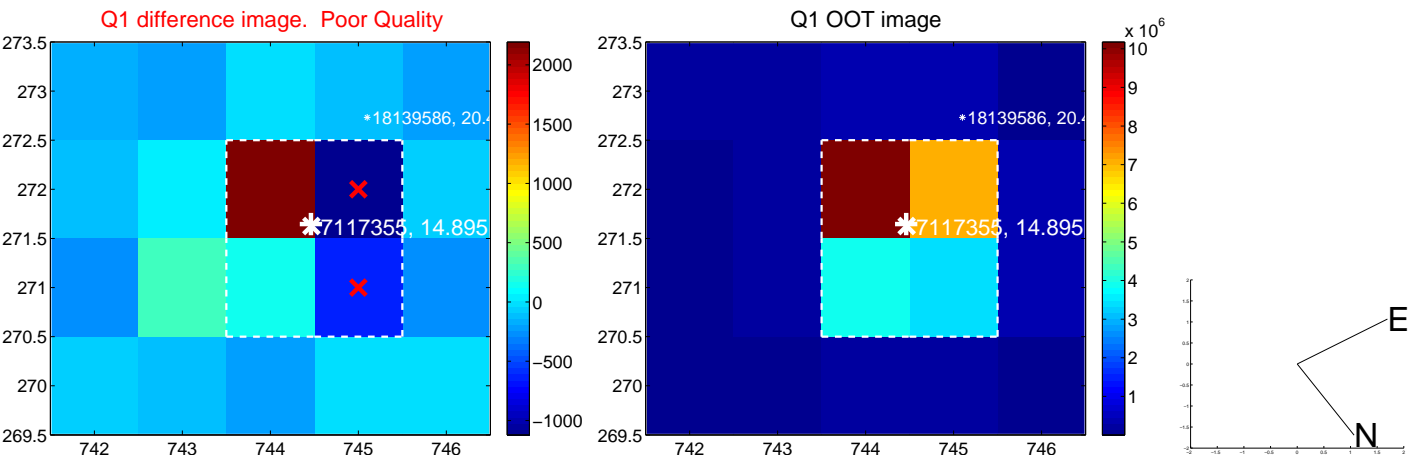


offset from photometric centroids

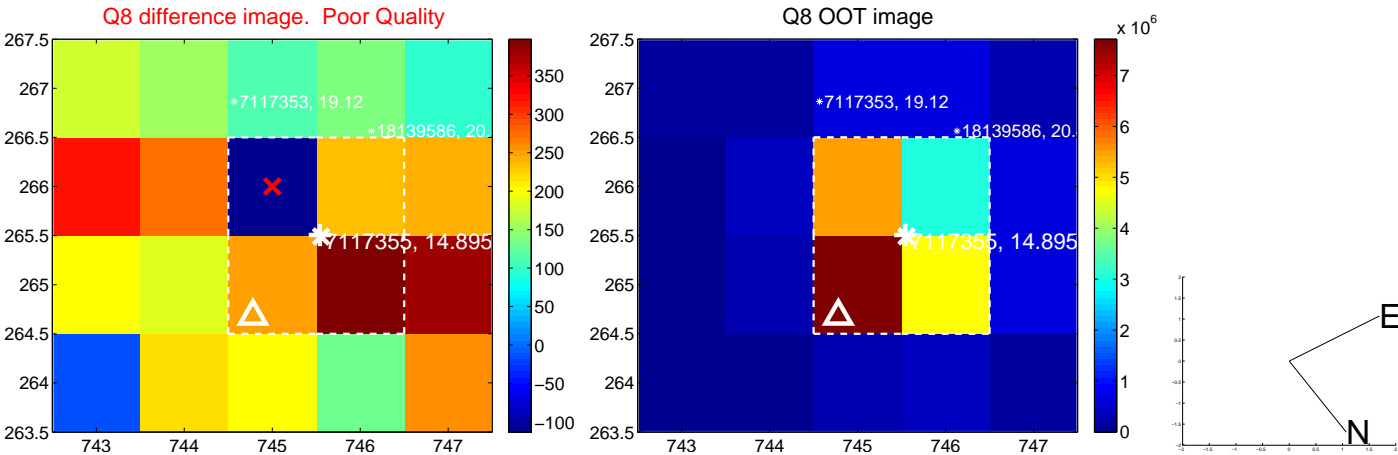
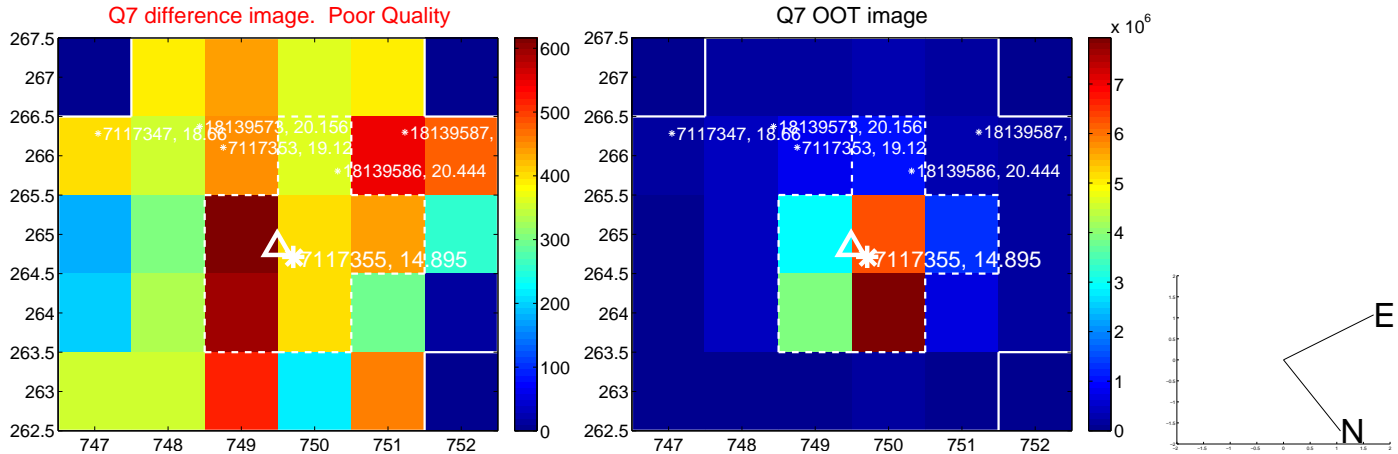
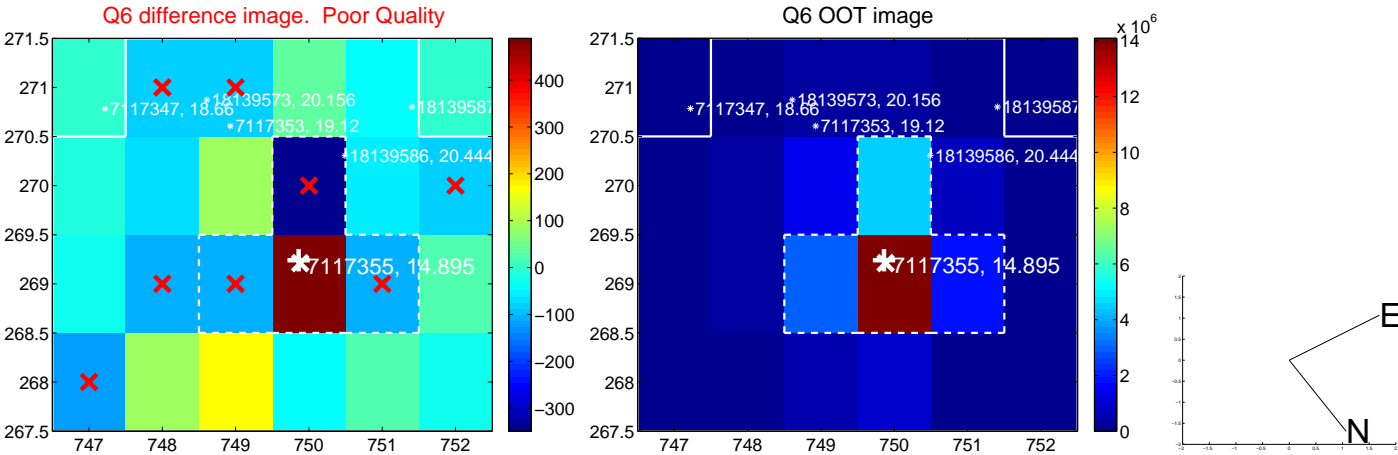
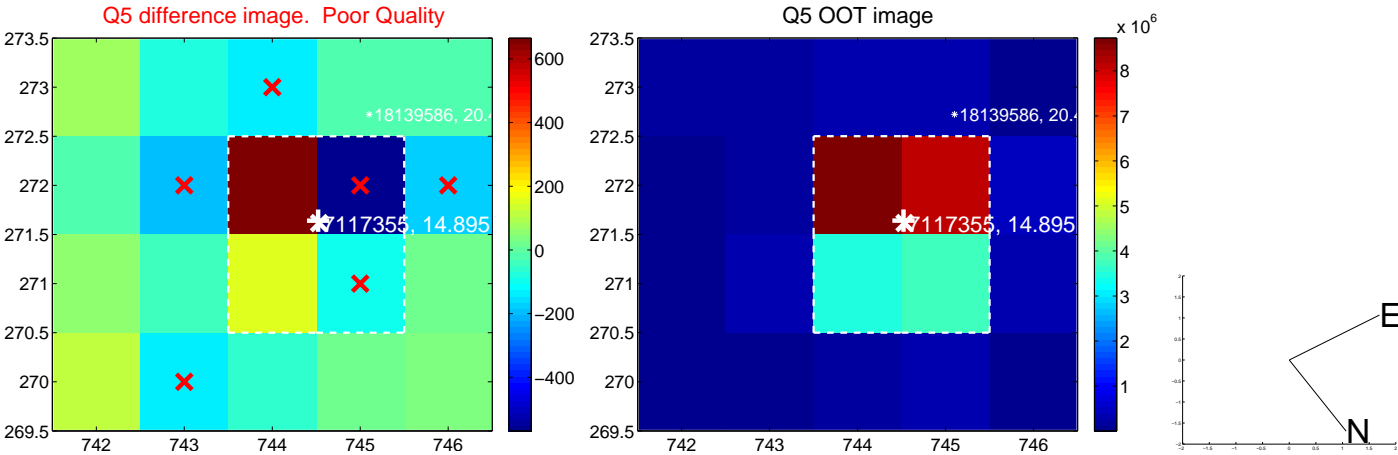


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

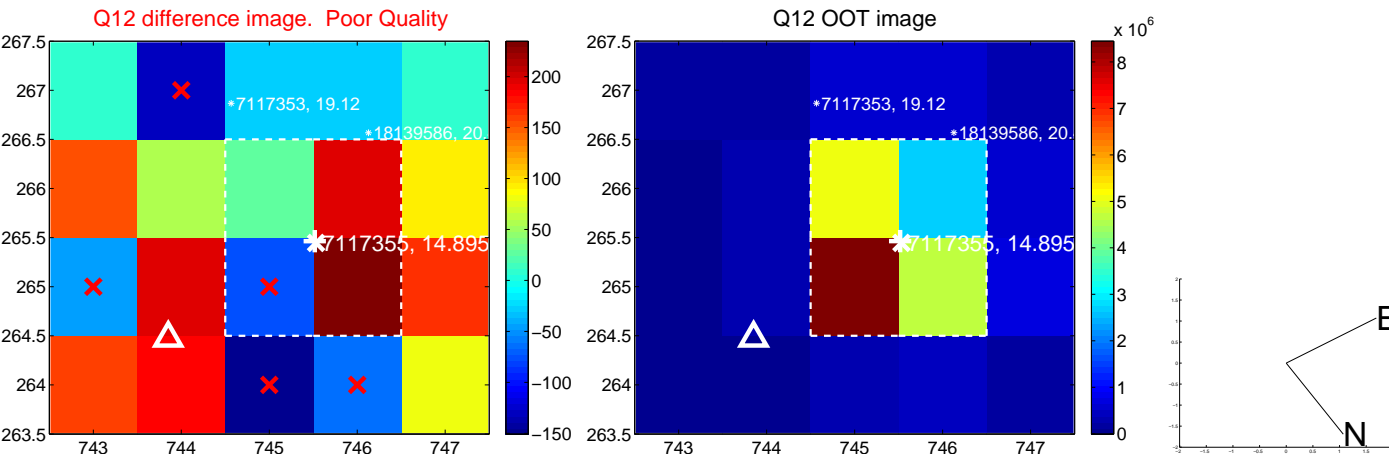
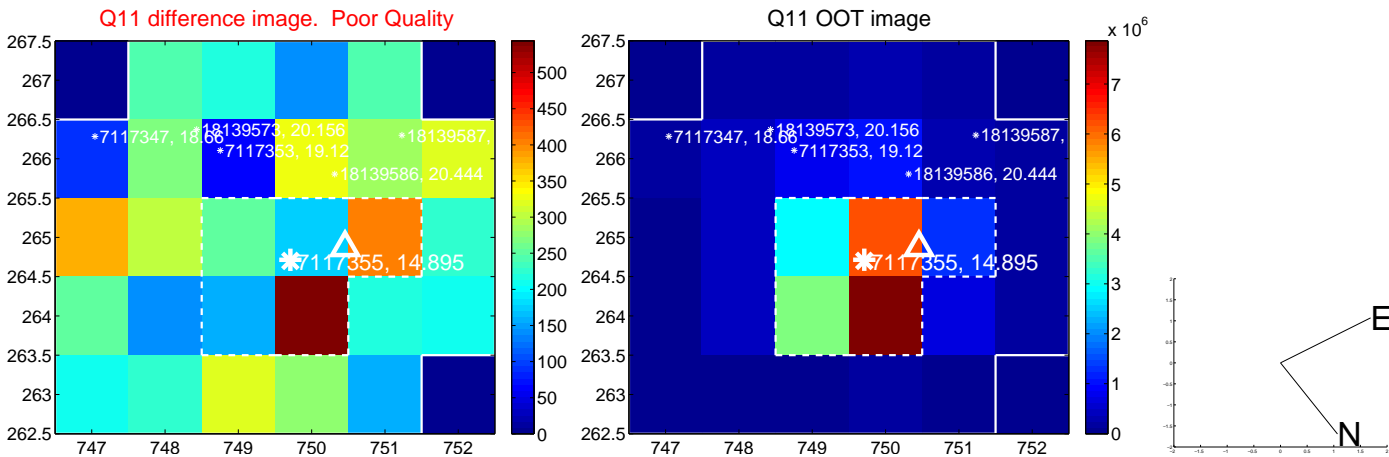
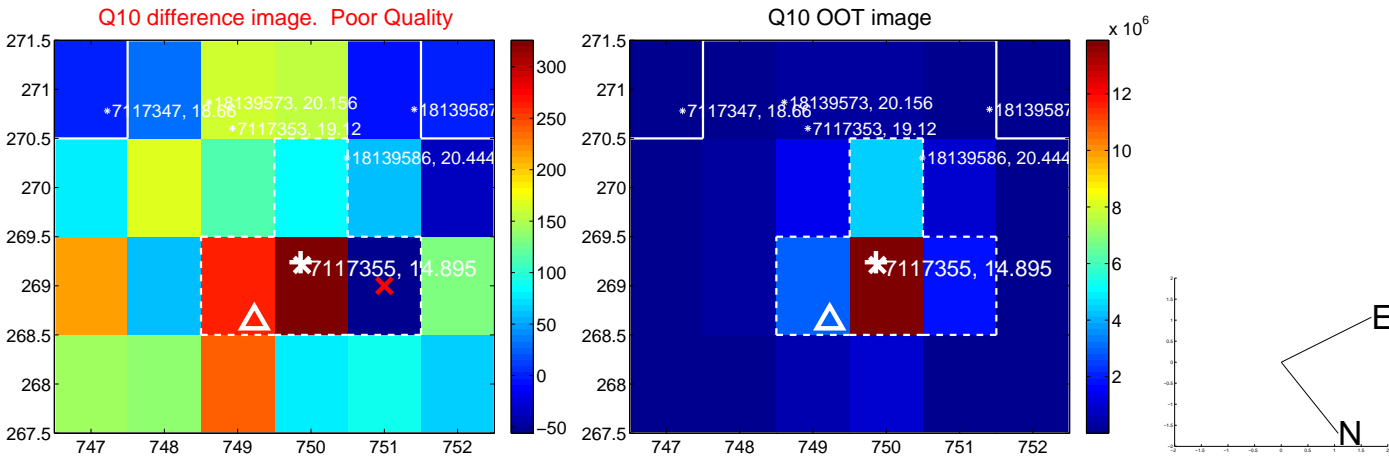
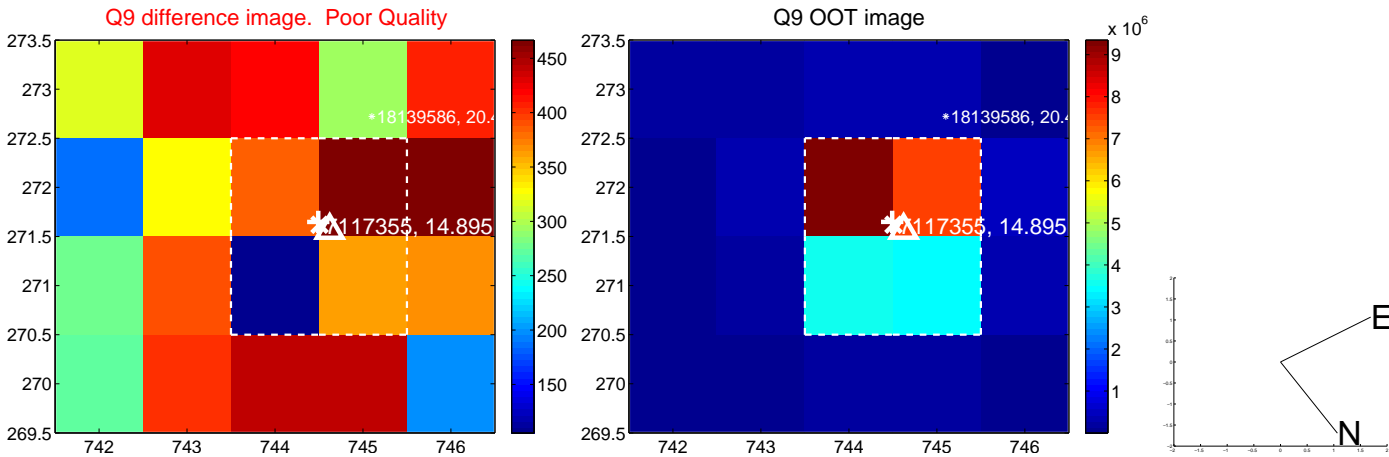


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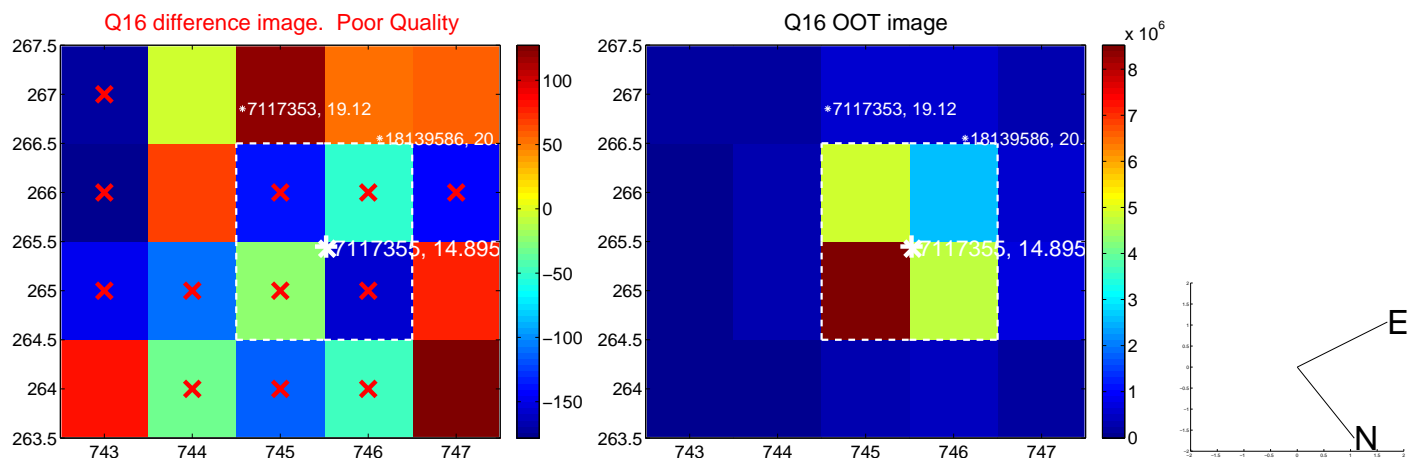
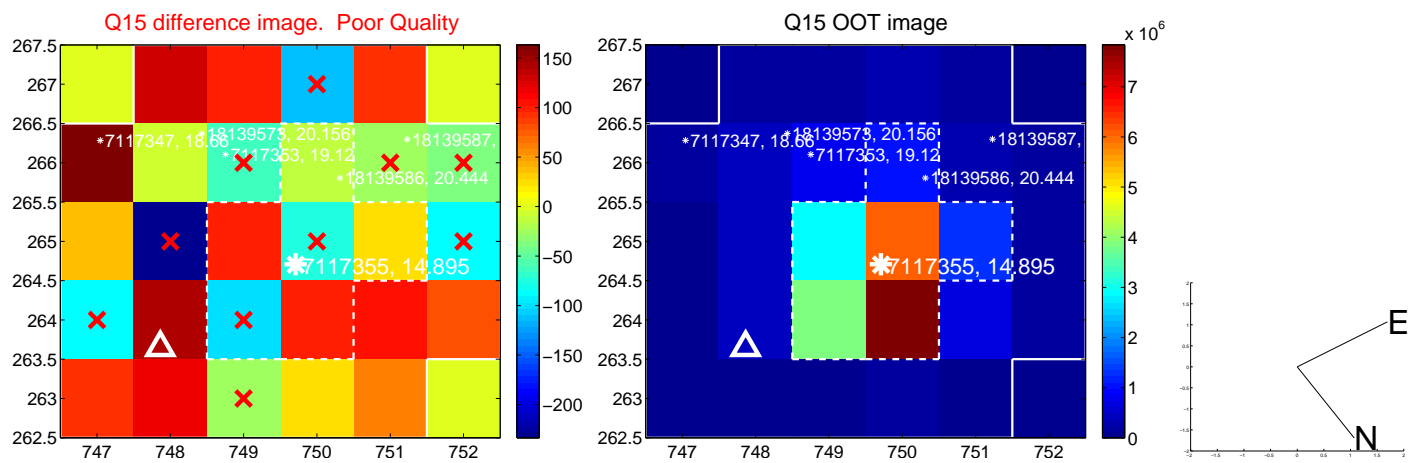
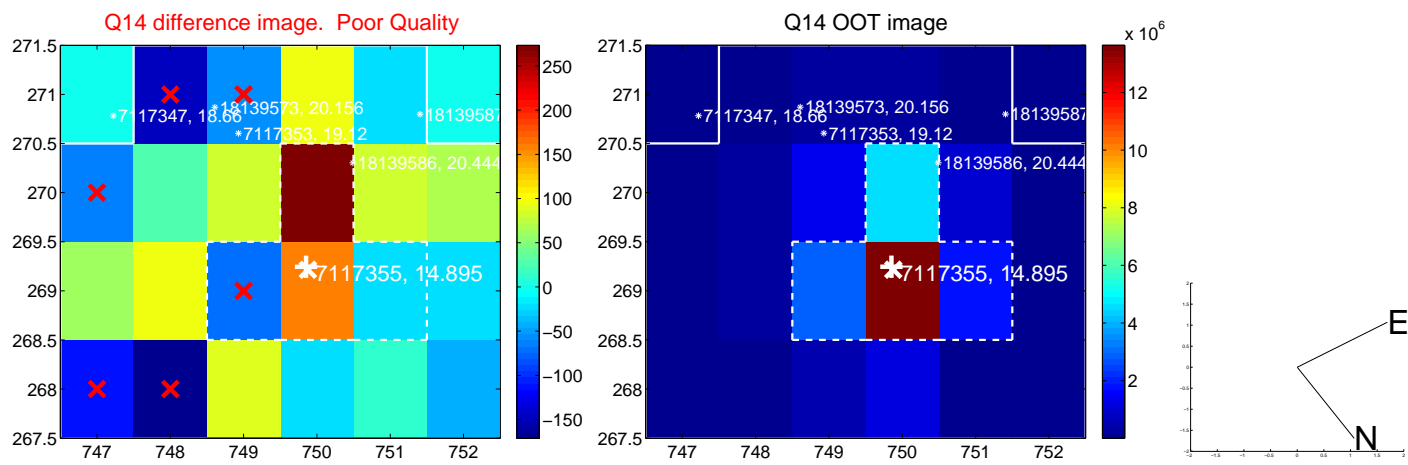
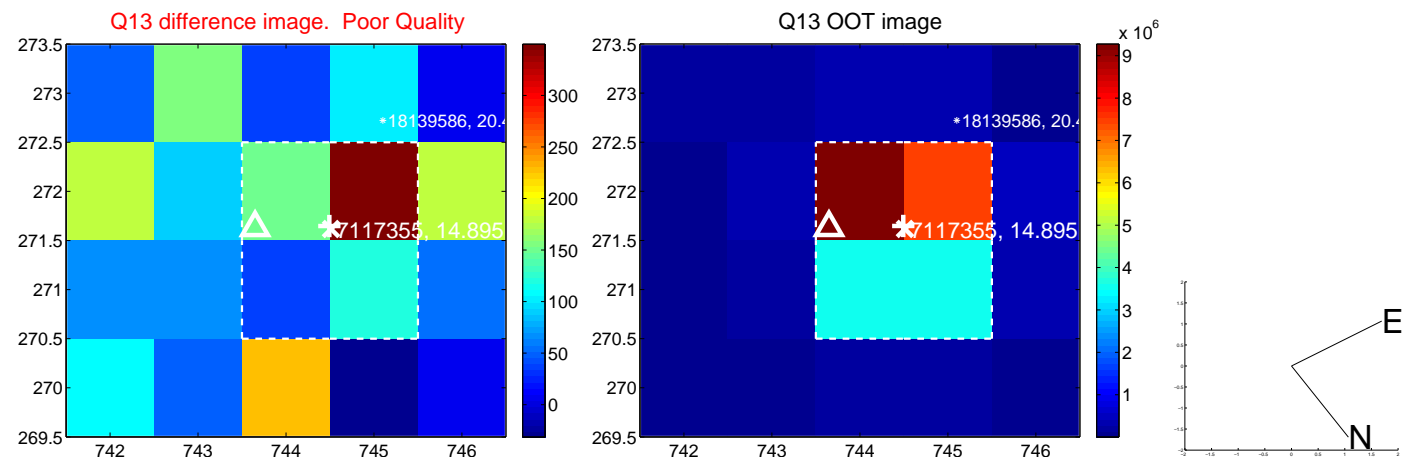




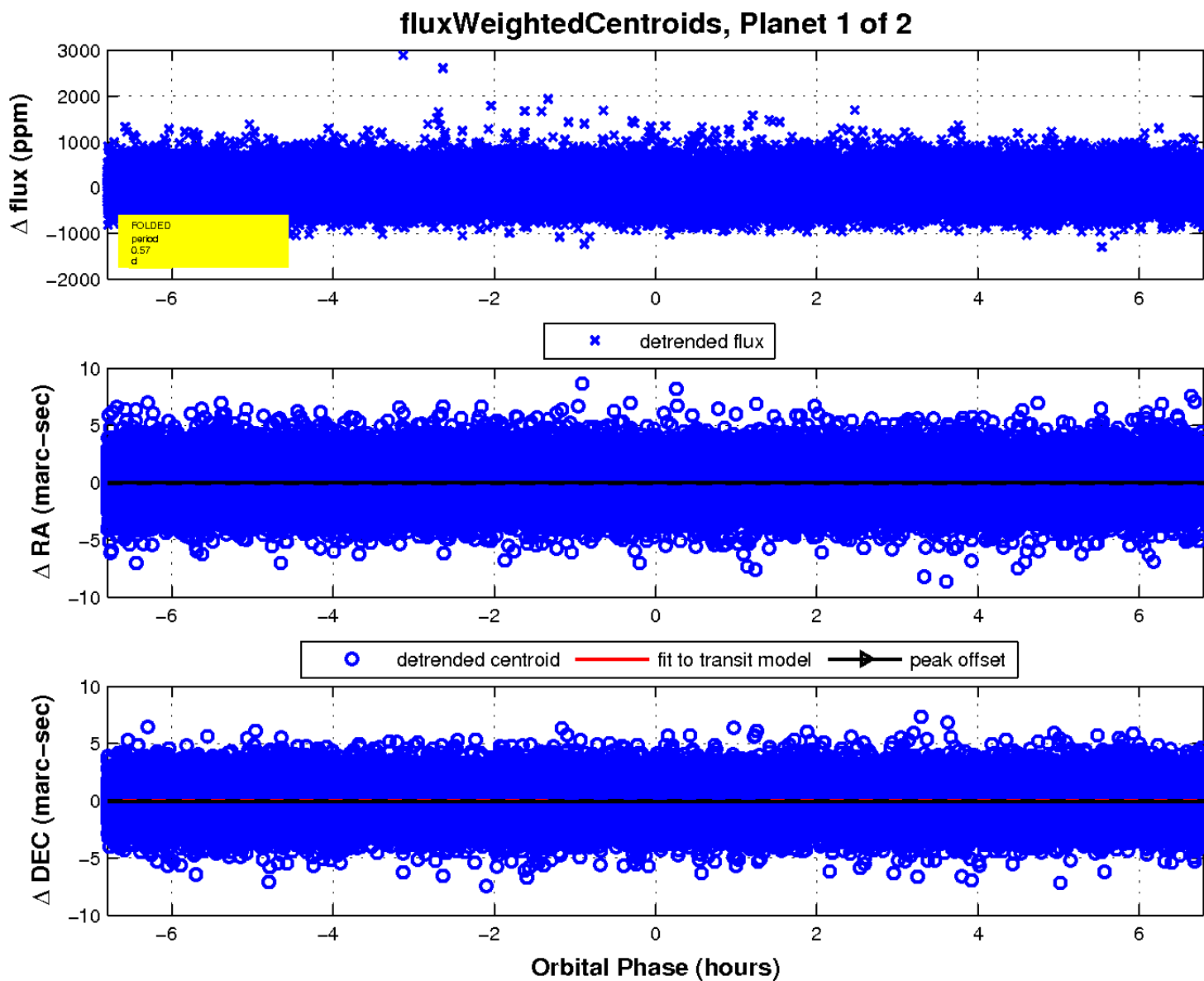
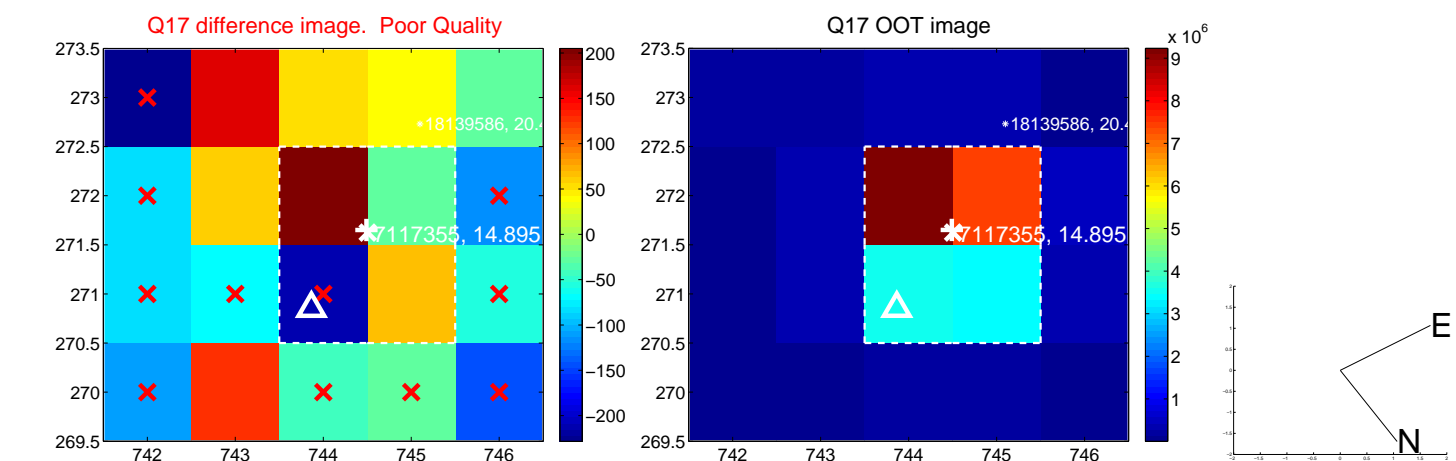
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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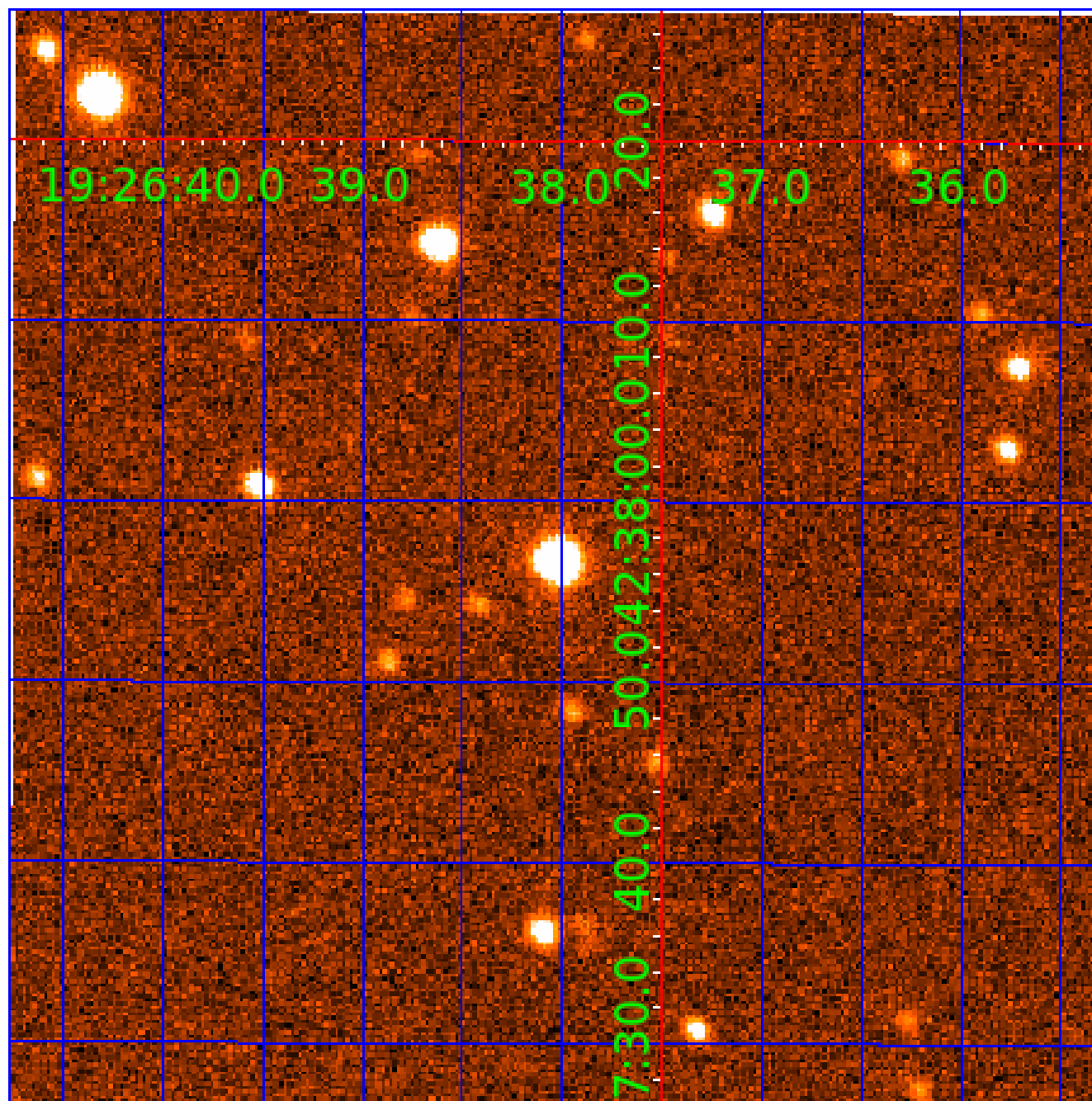


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007117355

## Q1-17 DR25 TCE Parameters

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007117355-01	OBS	4866.01	0.566734	131.872068	9.2	3.051	8.2	3.3	1.04	5864	0.34	6307.44
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007117355-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
007117355-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

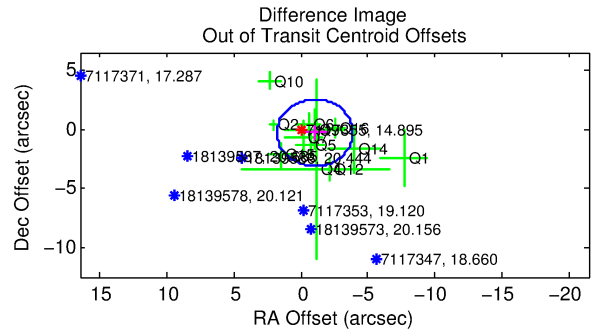
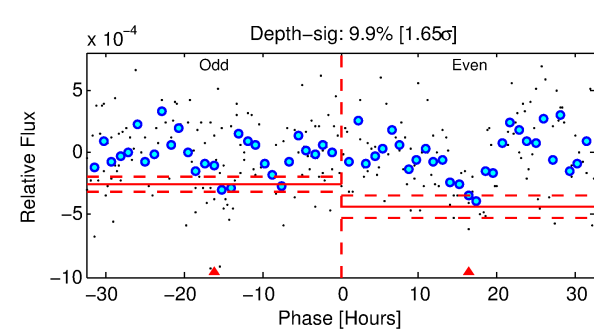
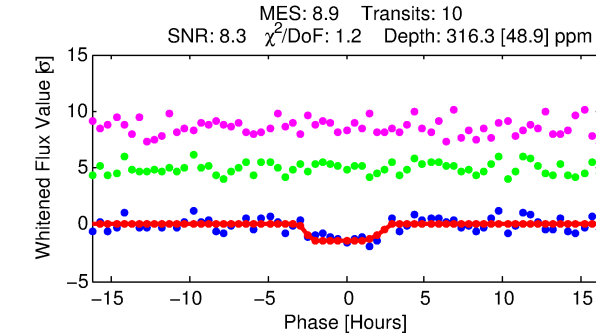
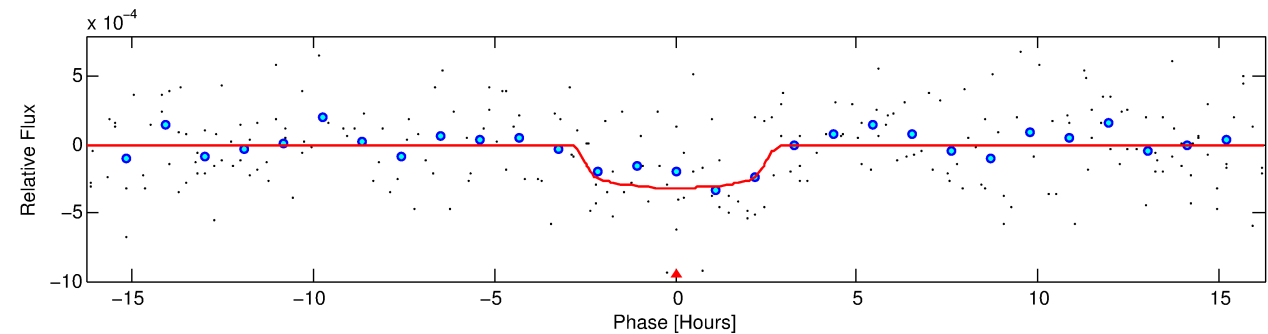
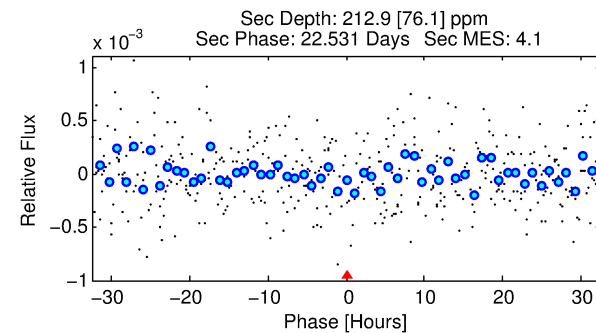
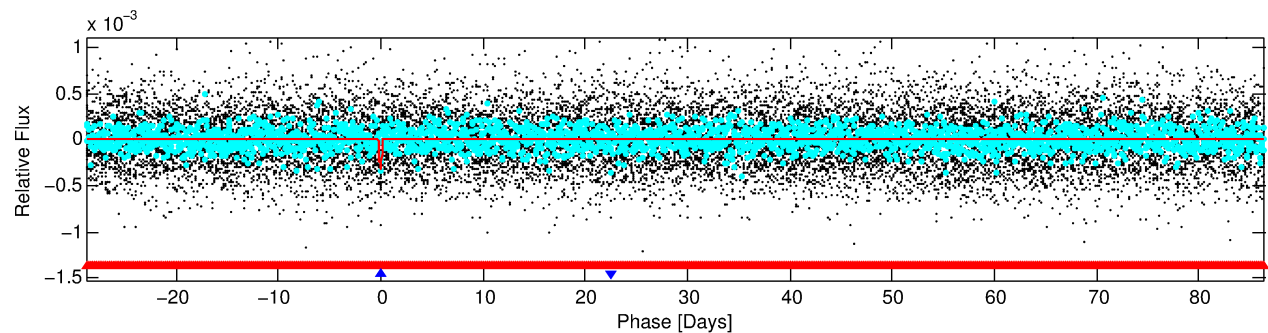
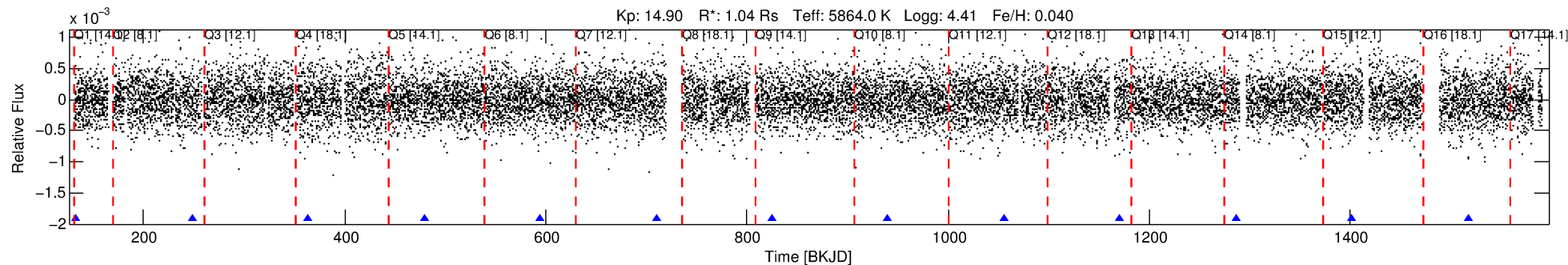
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007117355-02

No Significant Match Found

# DV One-Page Summary

KIC: 7117355 Candidate: 2 of 2 Period: 115.279 d  
KOI: K04866 Corr: No Ephemeris Match



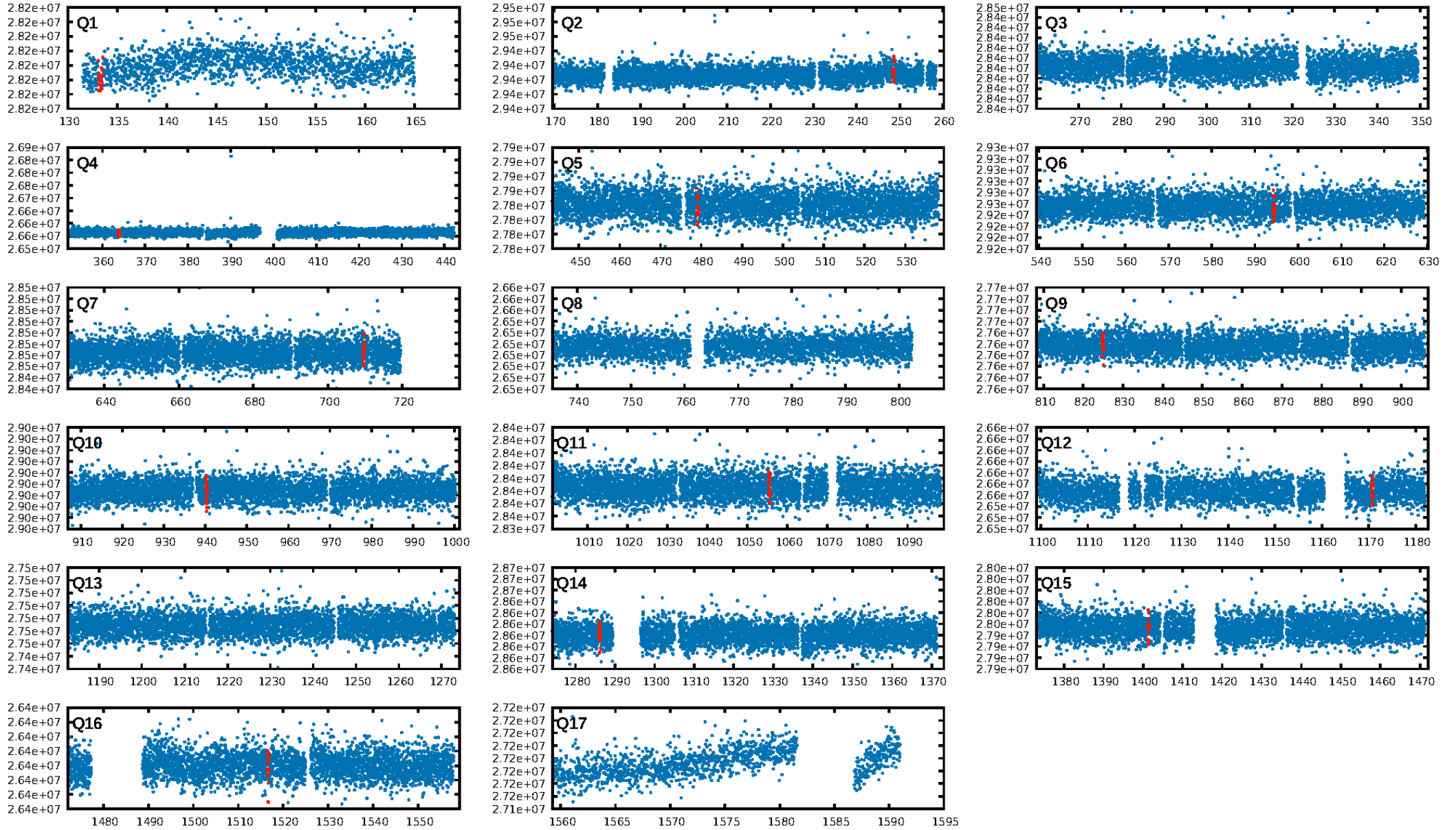
## DV Fit Results:

Period = 115.27926 [0.00263] d  
Epoch = 133.3008 [0.0196] BKJD  
Rp/R\* = 0.0186 [0.0152]  
a/R\* = 91.43 [347.98]  
b = 0.85 [1.27]  
Seff = 5.27 [2.05]  
Teq = 386 [38] K  
Rp = 2.11 [1.83] Re  
a = 0.4662 [0.1165] AU  
Ag = 5727.22 [9799.92] [0.58σ]  
Teffp = 5197 [2177] K [2.21σ]

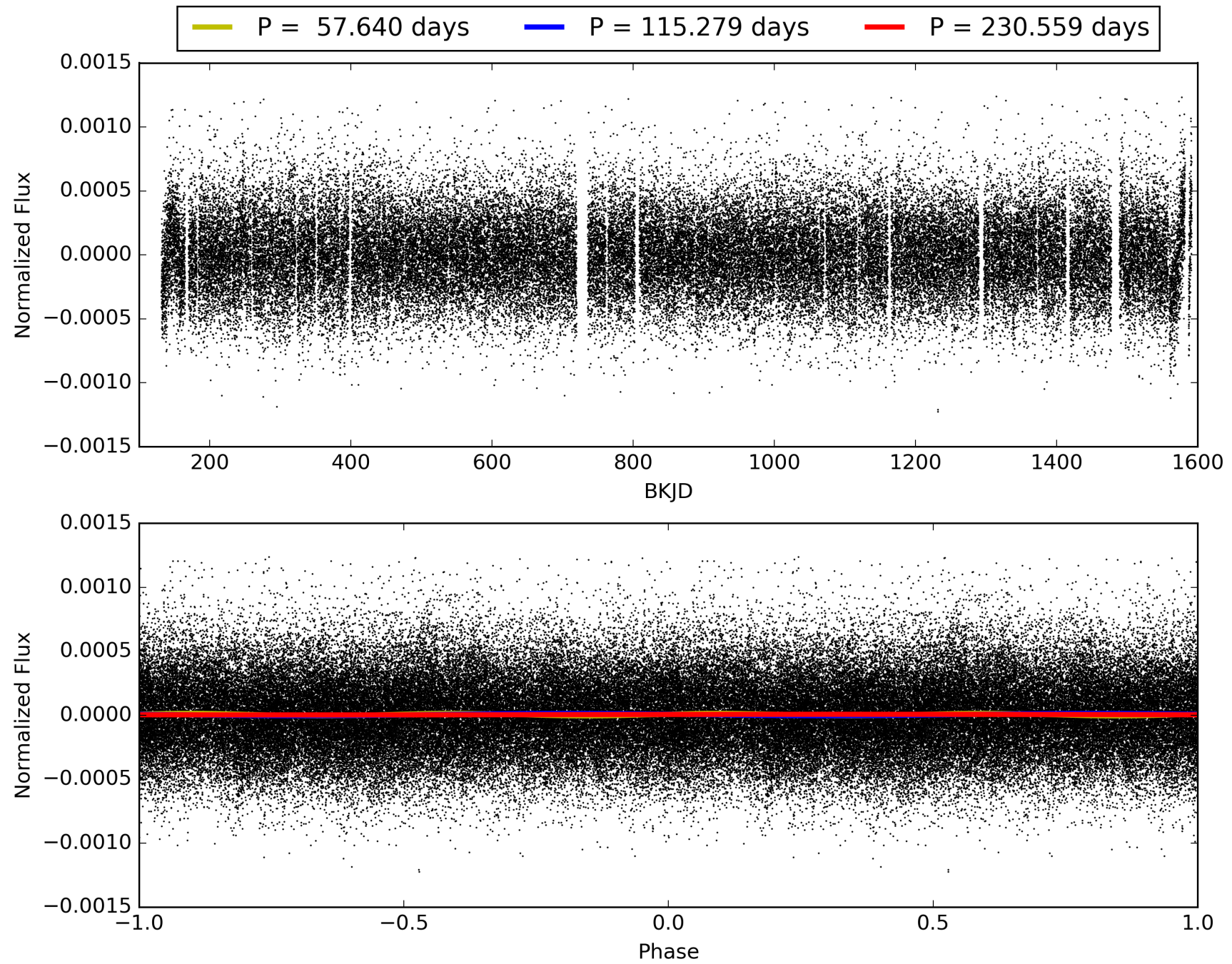
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [442.23σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.31e-15  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.3566  
Centroid-sig: 0.4%  
Centroid-so: 2.929 arcsec [2.31σ]  
OotOffset-rm: 1.073 arcsec [1.14σ]  
KicOffset-rm: 1.111 arcsec [1.38σ]  
OotOffset-st: 4/2/3/3 [12]  
KicOffset-st: 4/2/3/3 [12]  
DiffImageQuality-fgm: 0.42 [5/12]  
DiffImageOverlap-fno: 0.00 [0/13]

# TCE 007117355-02, PDC Light Curves



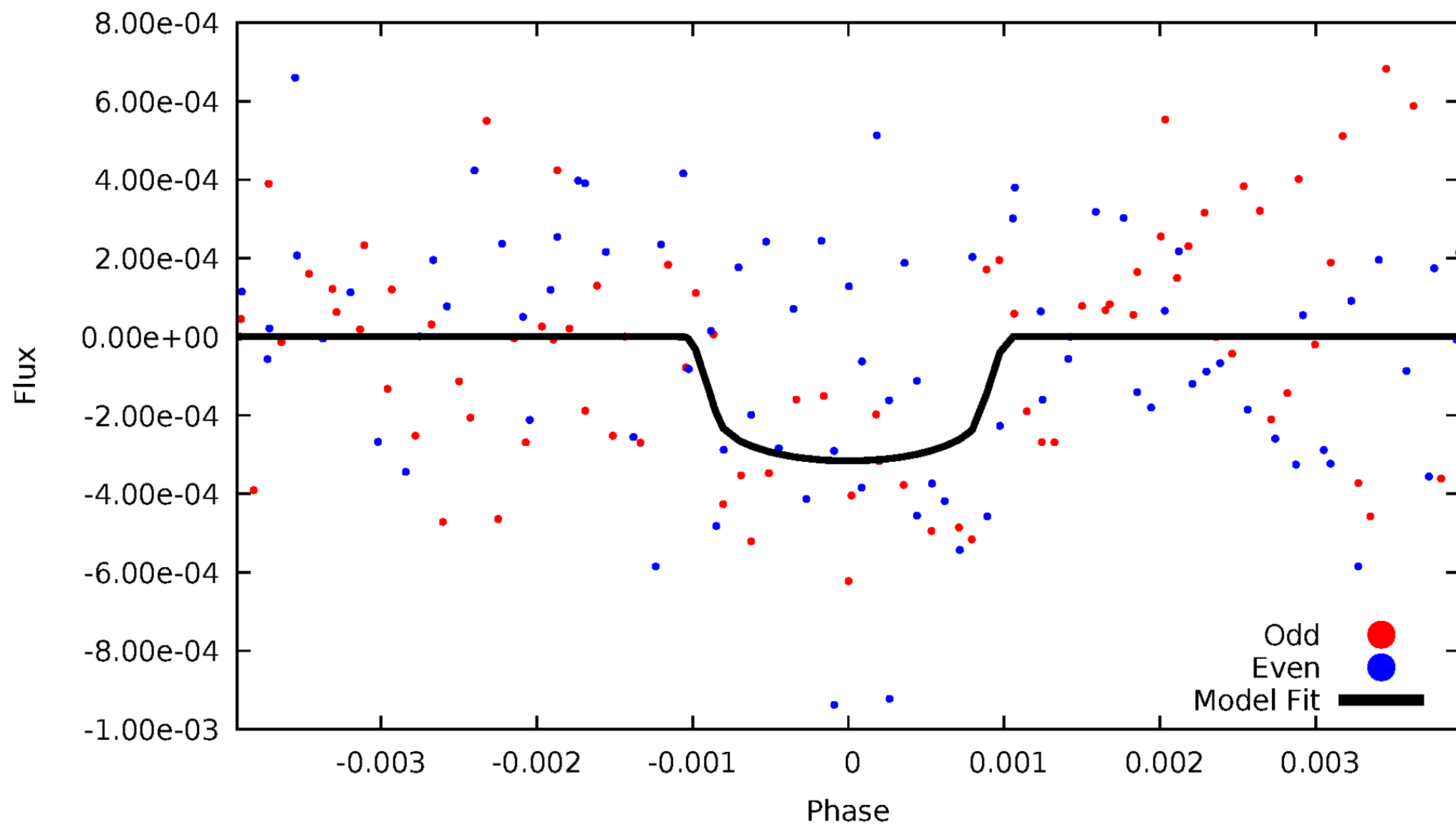
# TCE 007117355-02





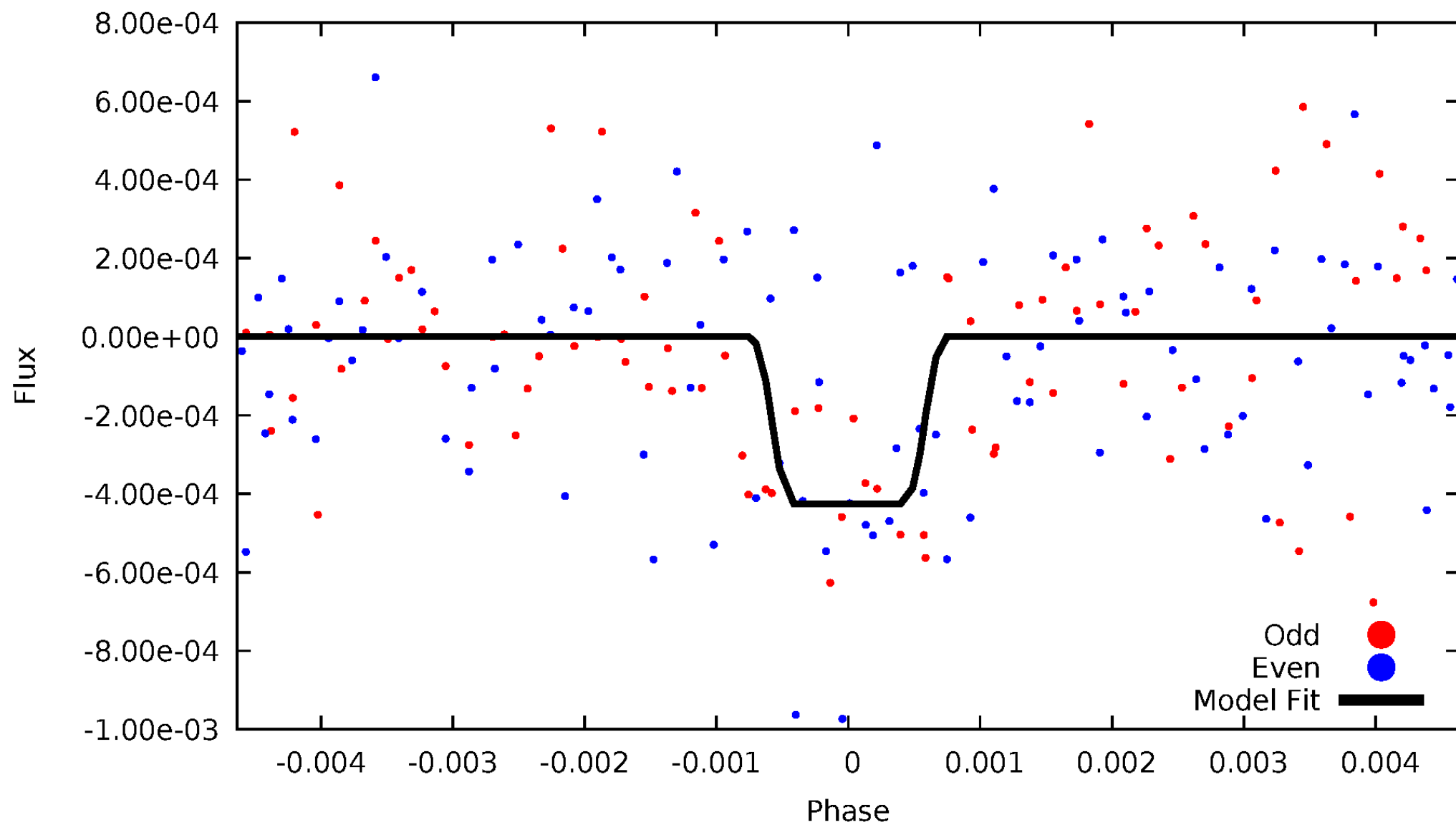
# DV Odd/Even

TCE 007117355-02



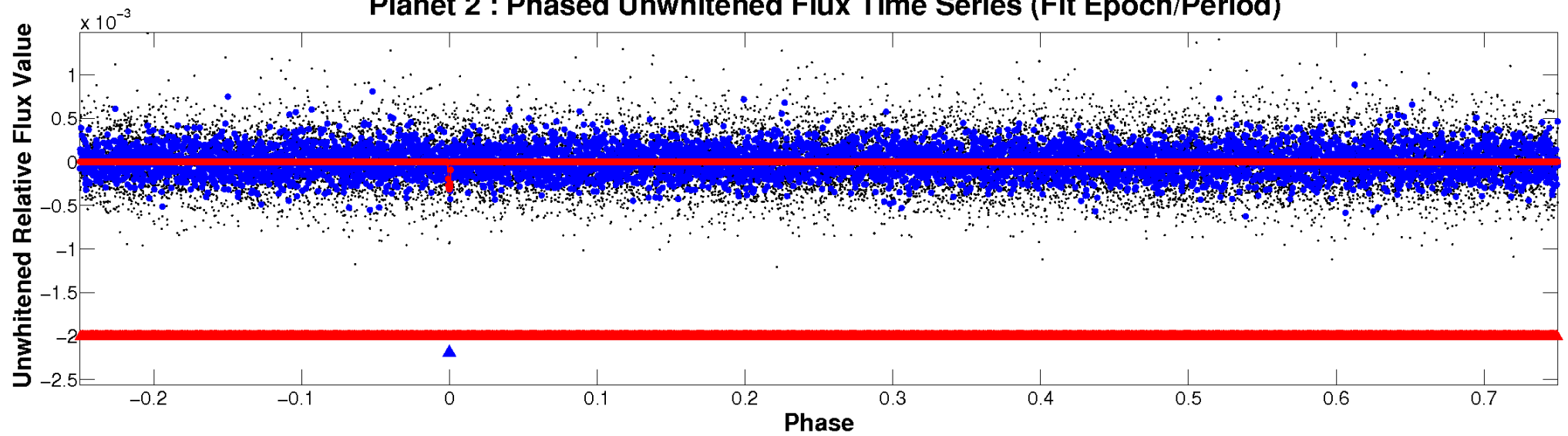
# ALT Odd/Even

TCE 007117355-02

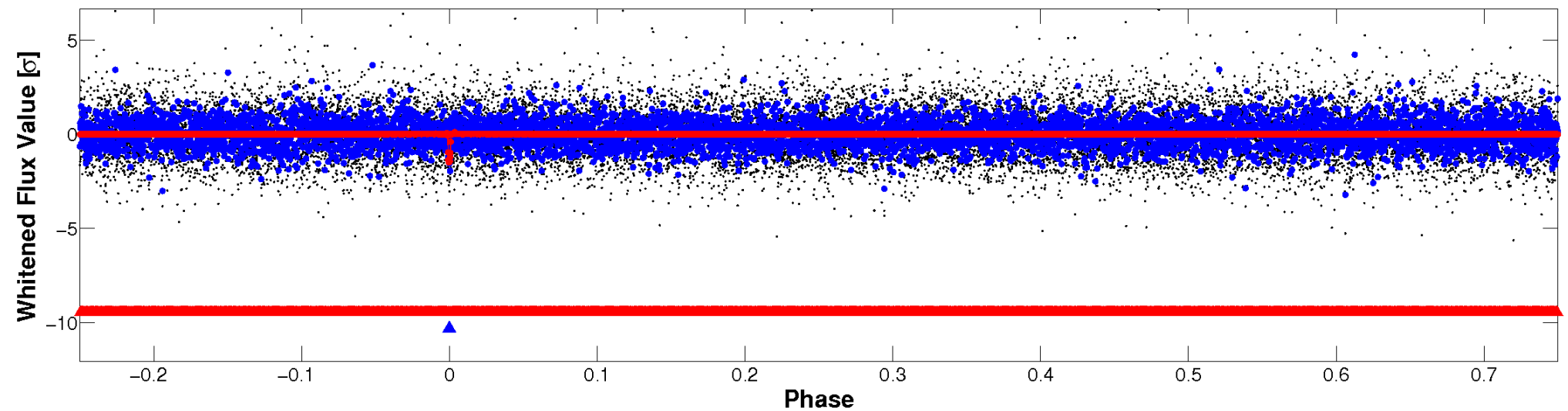


# Non-Whitened Vs. Whitened Light Curve

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

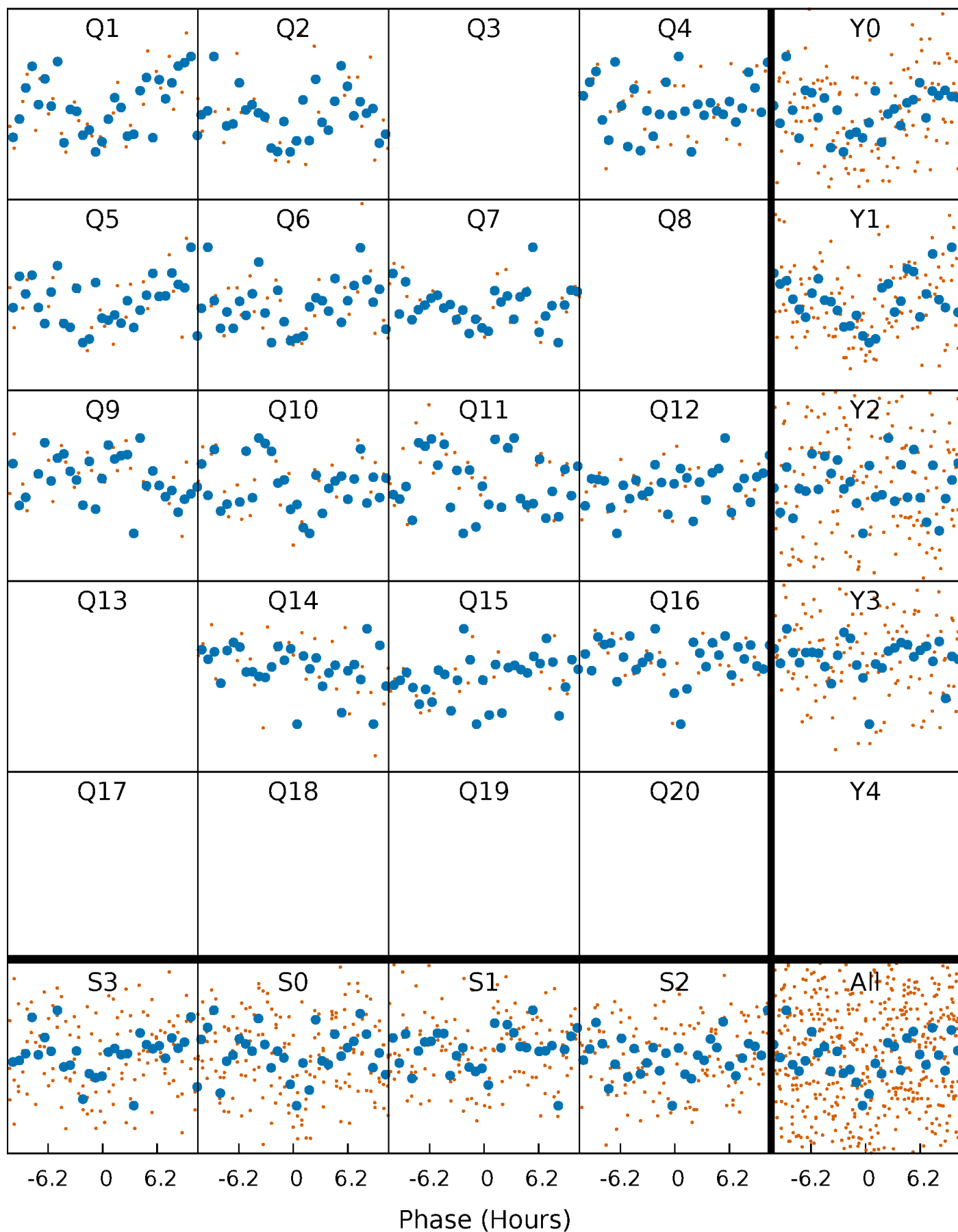


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



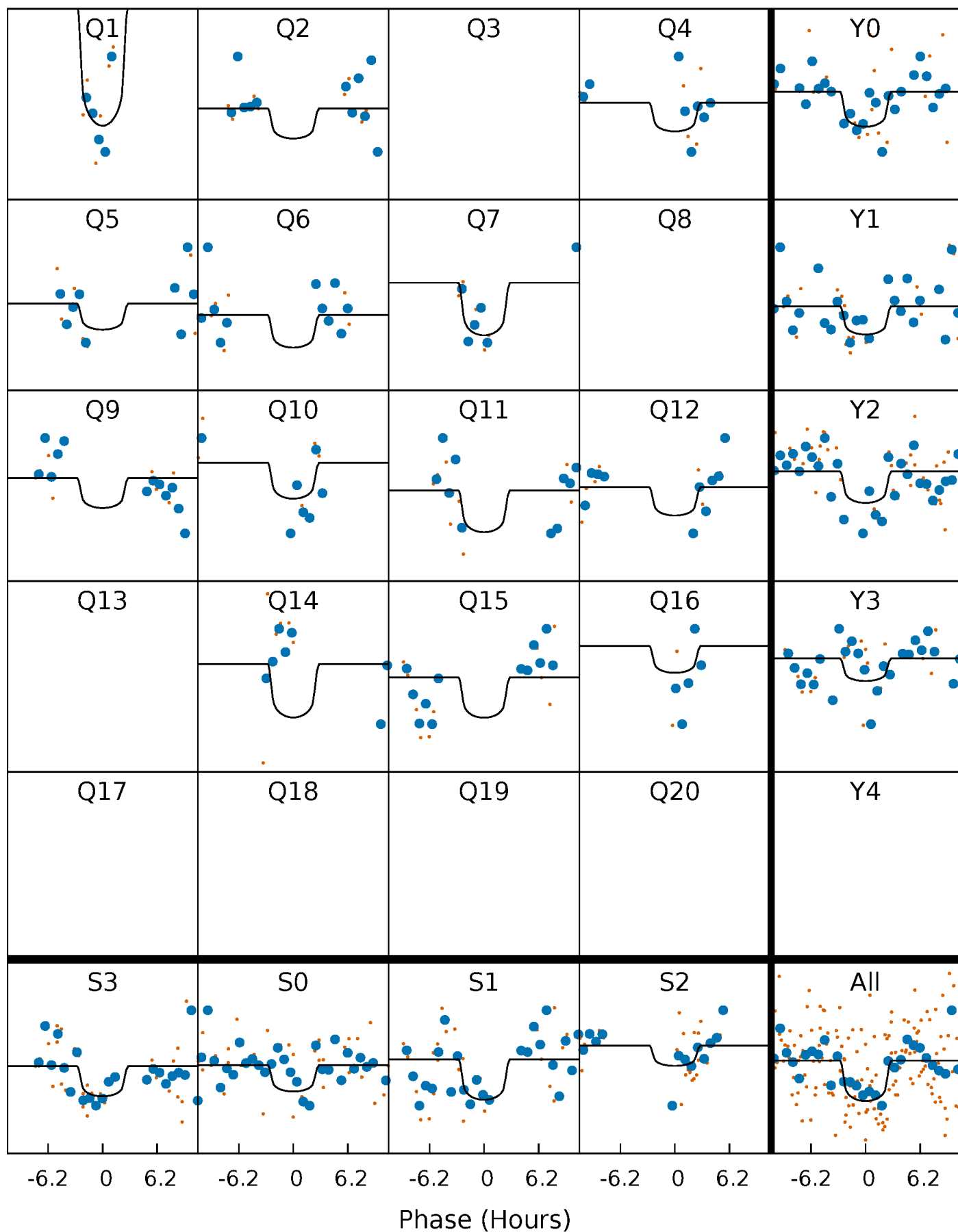
# PDC Quarter-Phased Transit Curves

TCE 007117355-02 P=115.279258 Days  $T_0=133.300800$  (BKJD)



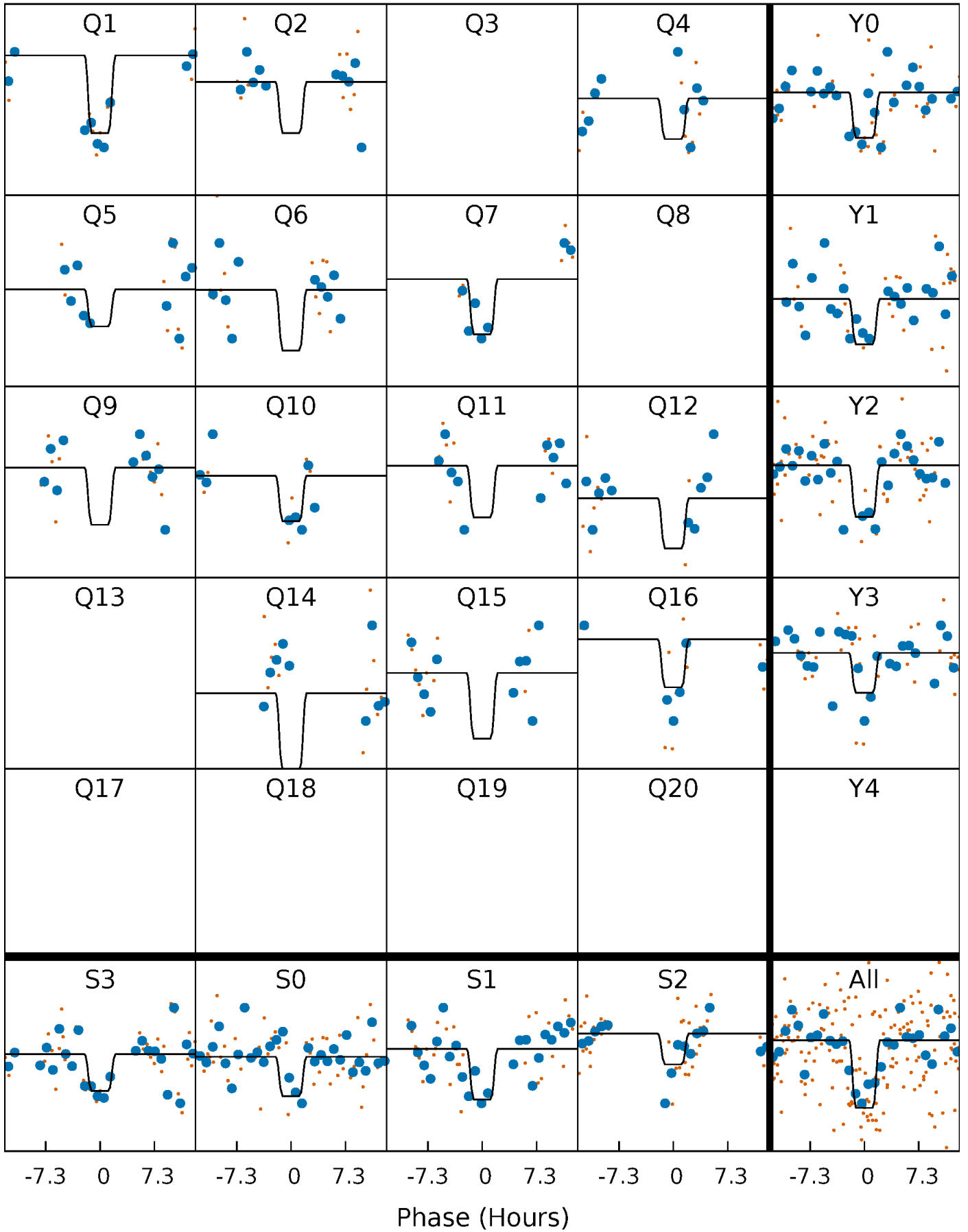
# DV Quarter-Phased Transit Curves

TCE 007117355-02 P=115.279258 Days  $T_0=133.300800$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007117355-02 P=115.283193 Days  $T_0=133.289154$  (BKJD)

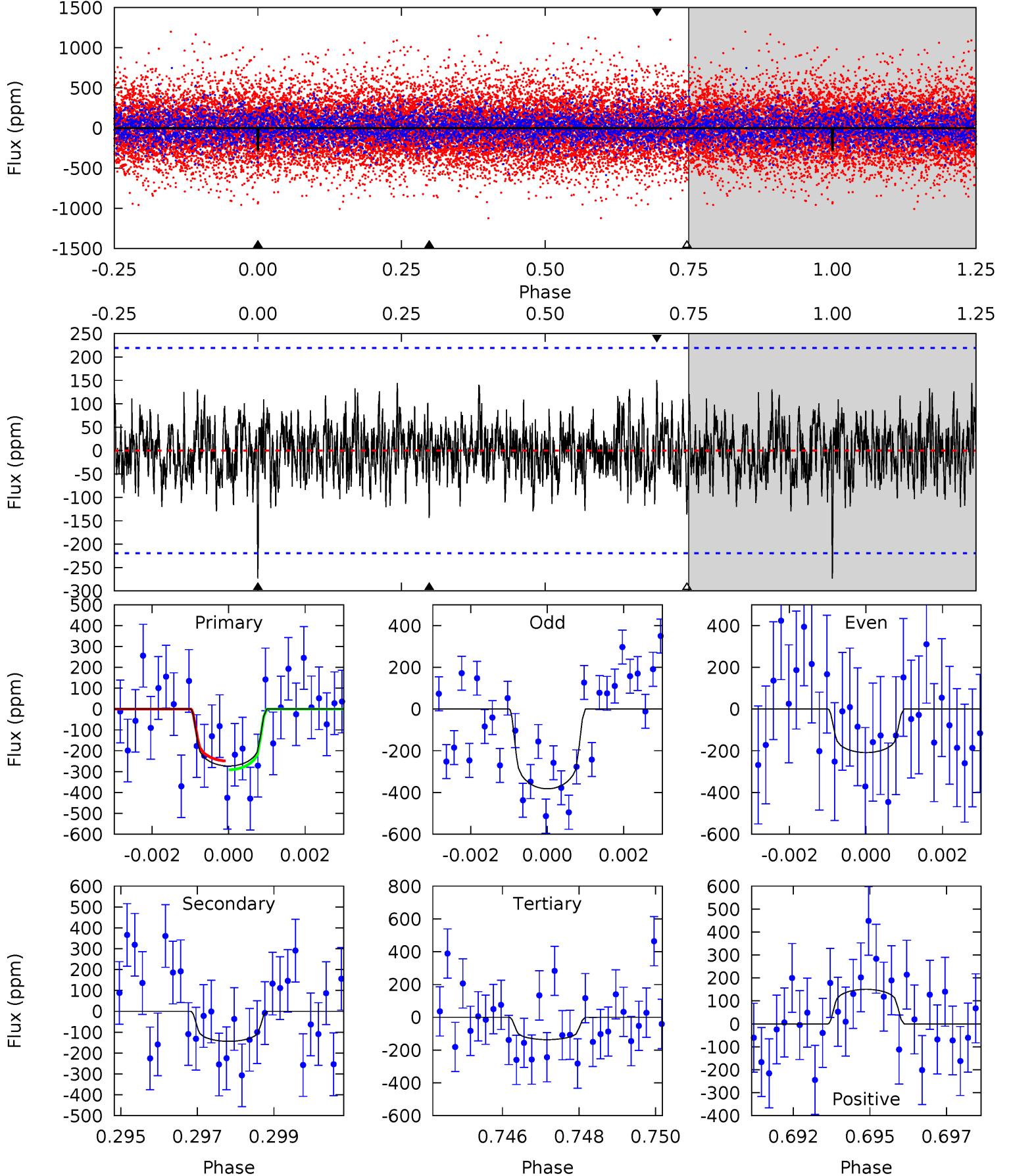




# DV Model-Shift Uniqueness Test

007117355-02,  $P = 115.279258$  Days,  $E = 18.021542$  Days

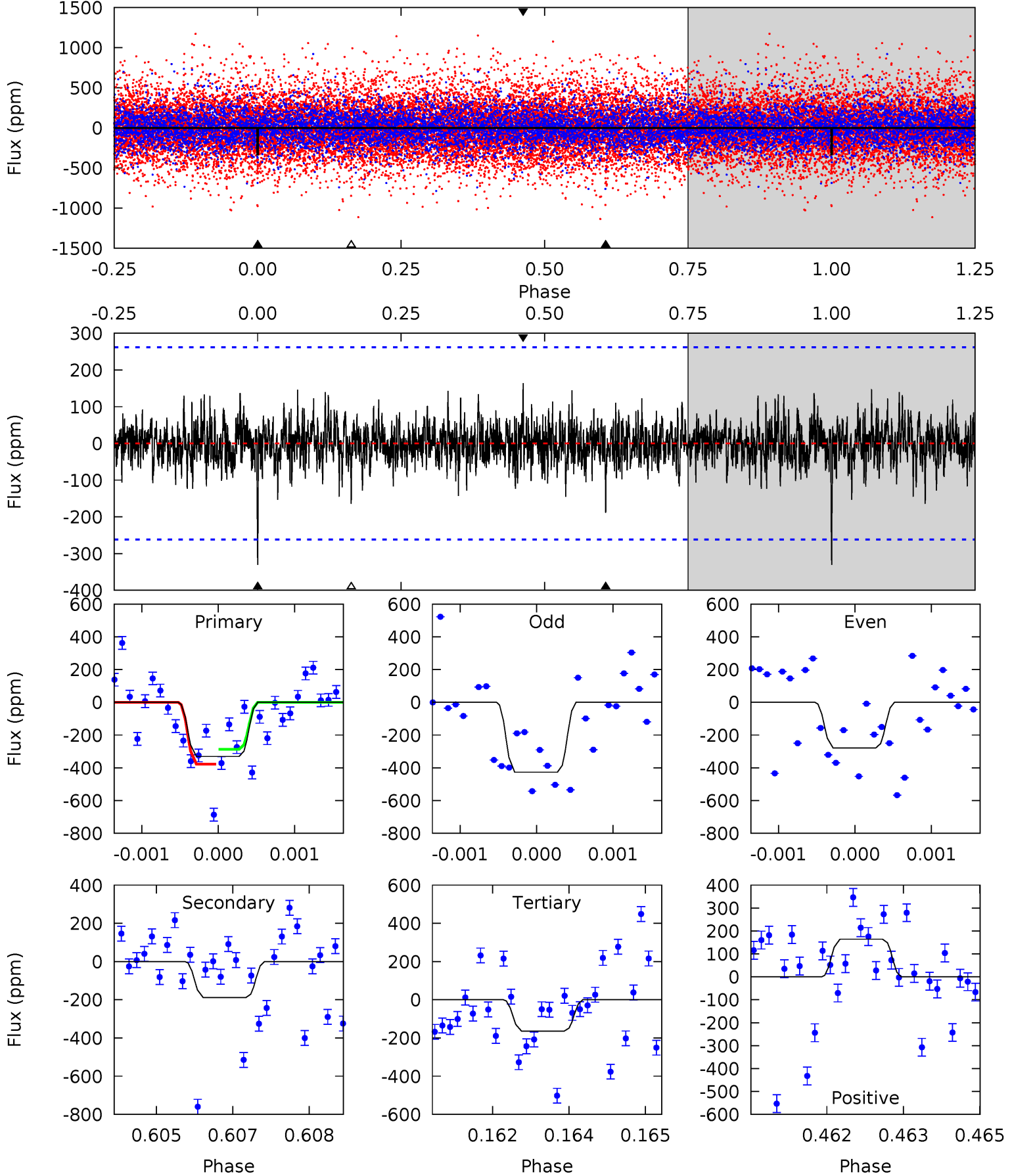
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.61	3.48	3.31	3.64	5.32	3.07	1.10	3.31	2.97	0.18	-0.16	2.06	0.89	0.36	0.51



# Alt Model-Shift Uniqueness Test

007117355-02,  $P = 115.283193$  Days,  $E = 18.005961$  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
6.79	3.88	3.37	3.37	5.39	3.18	0.87	3.42	3.42	0.51	0.51	1.48	0.58	0.33	0.92



### Stellar Parameters For KIC 007117355

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5864^{+164}_{-184}$	$4.411^{+0.087}_{-0.203}$	$0.040^{+0.250}_{-0.300}$	$1.040^{+0.305}_{-0.153}$	$1.014^{+0.140}_{-0.117}$	$1.271^{+0.486}_{-0.680}$
	+3%/-3%	+2%/-5%	+625%/-750%	+29%/-15%	+14%/-12%	+38%/-54%
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 007117355-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-144 \pm 41$	$2.34^{+1.72}_{-1.32}$	$549^{+41}_{-30}$	$4680^{+2149}_{-870}$	$3052^{+13339}_{-2063}$
Alt.	$-189 \pm 49$	$2.68^{+1.70}_{-1.55}$	$549^{+39}_{-30}$	$4694^{+2297}_{-834}$	$3112^{+13803}_{-2025}$

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

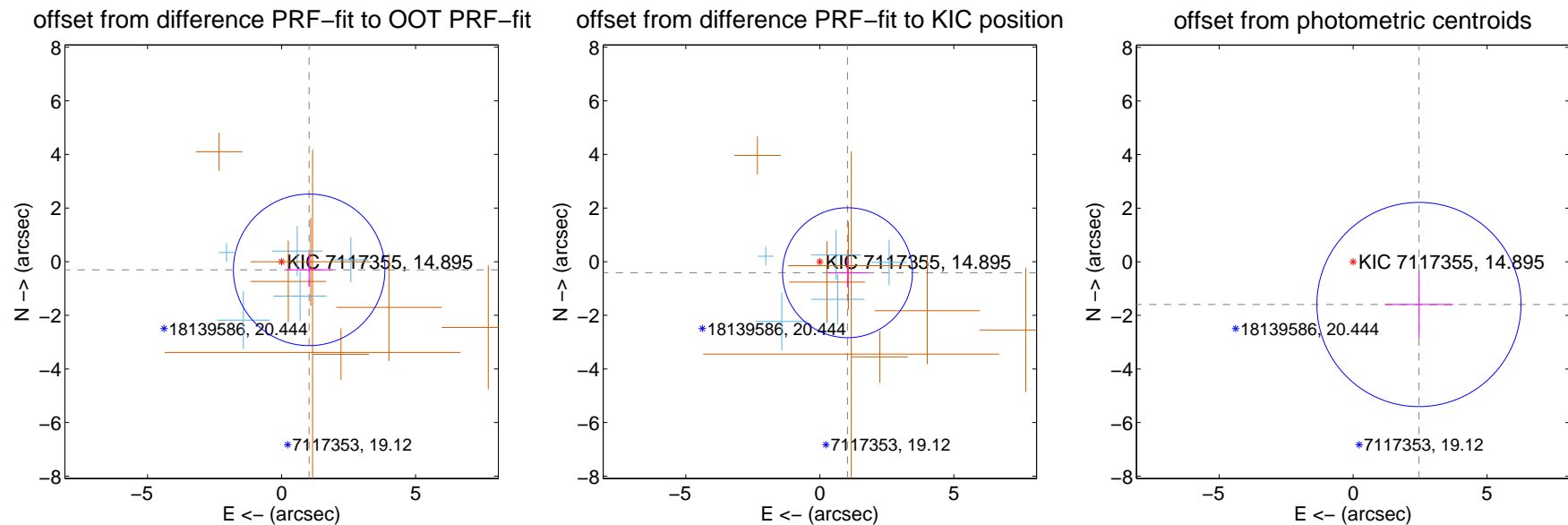
## DV Centroid Data

Supplemental centroid analysis for 007117355-02. Kepler magnitude: 14.89. Transit SNR 8.34

There are 5 quarters with good PRF difference image offsets

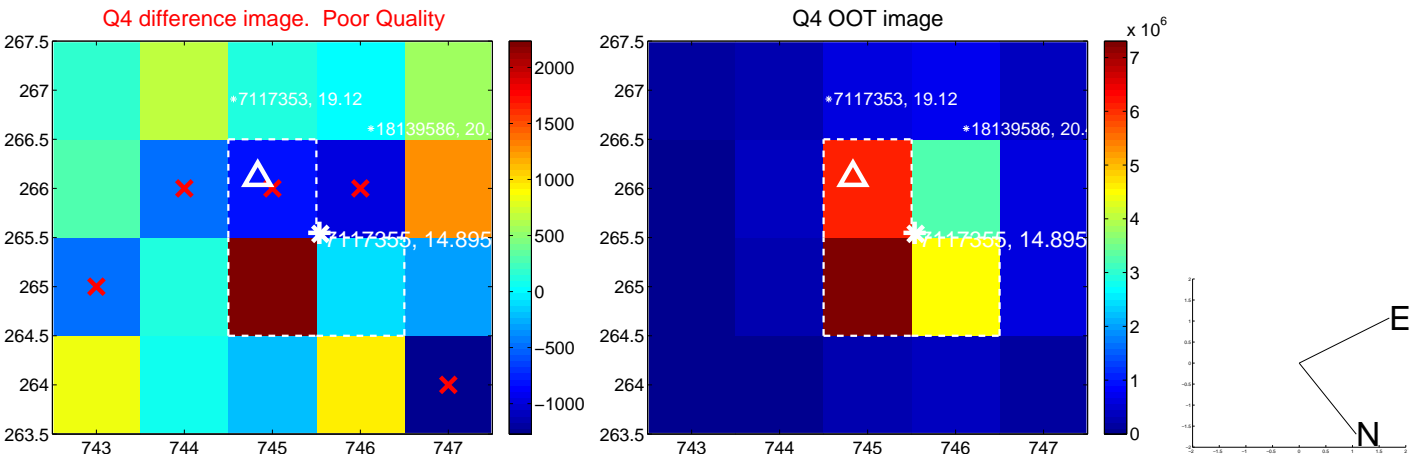
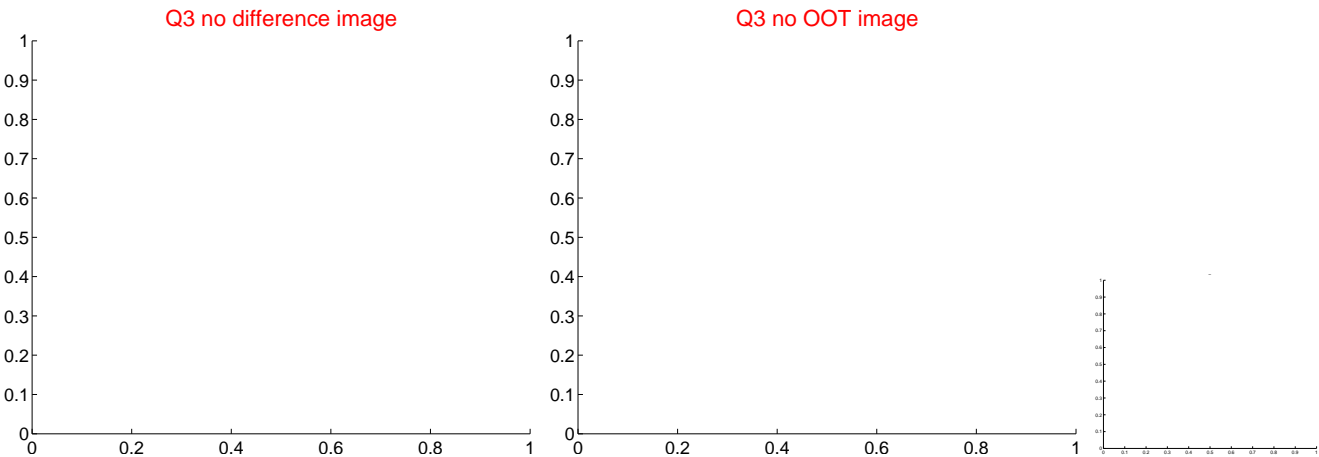
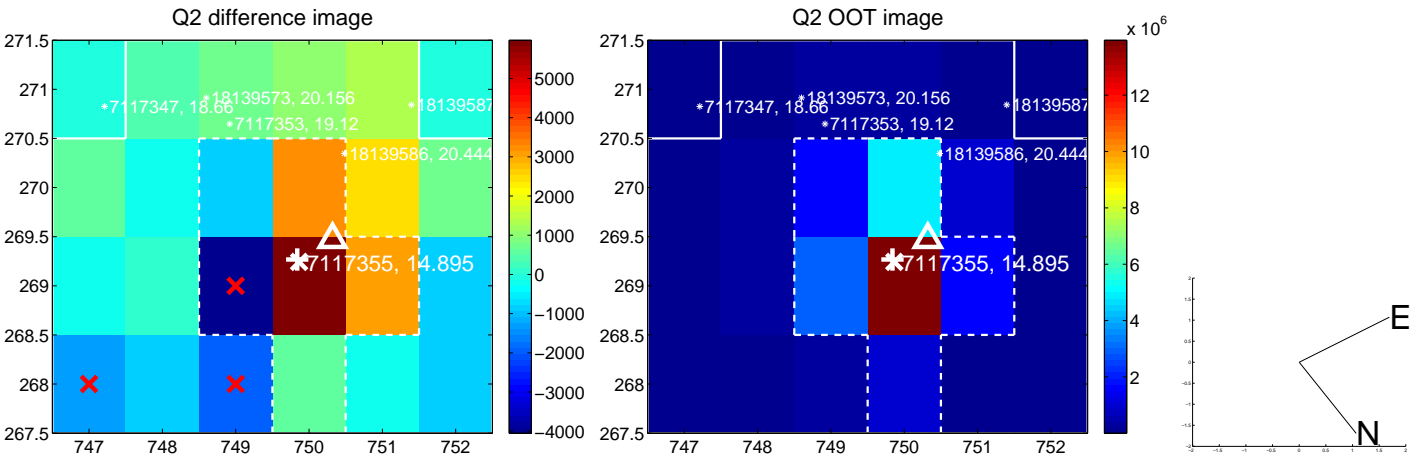
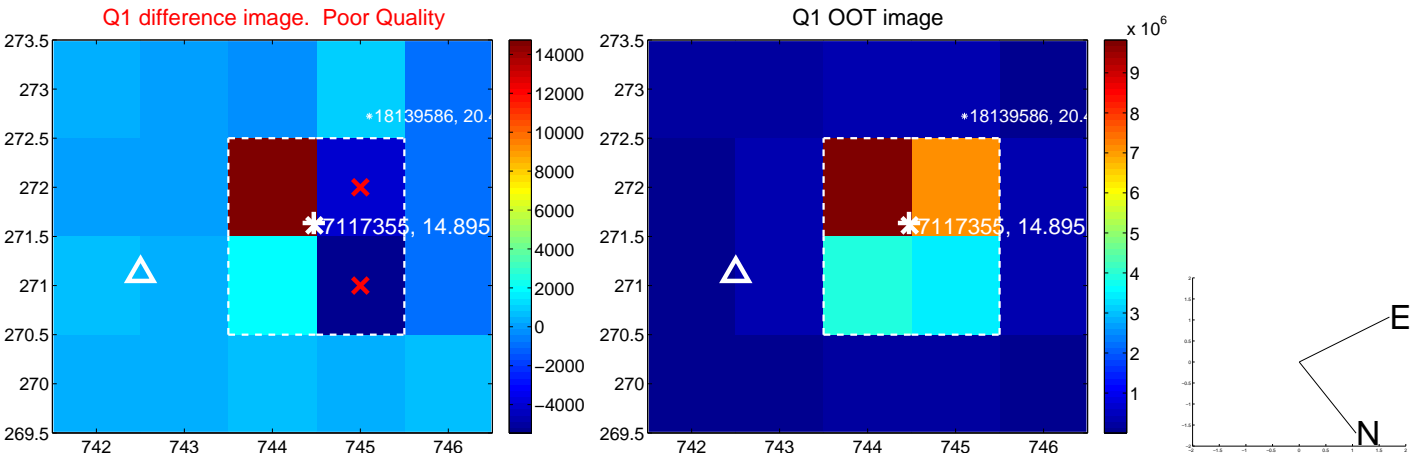
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.073 \pm 0.942$	1.14	$-1.029 \pm 0.866$	$-0.304 \pm 0.621$
PRF-fit source offset from KIC position	$1.111 \pm 0.808$	1.38	$-1.032 \pm 0.735$	$-0.411 \pm 0.548$
photometric centroid source offset	$2.93 \pm 1.27$	2.31	$-2.46 \pm 1.27$	$-1.59 \pm 1.26$

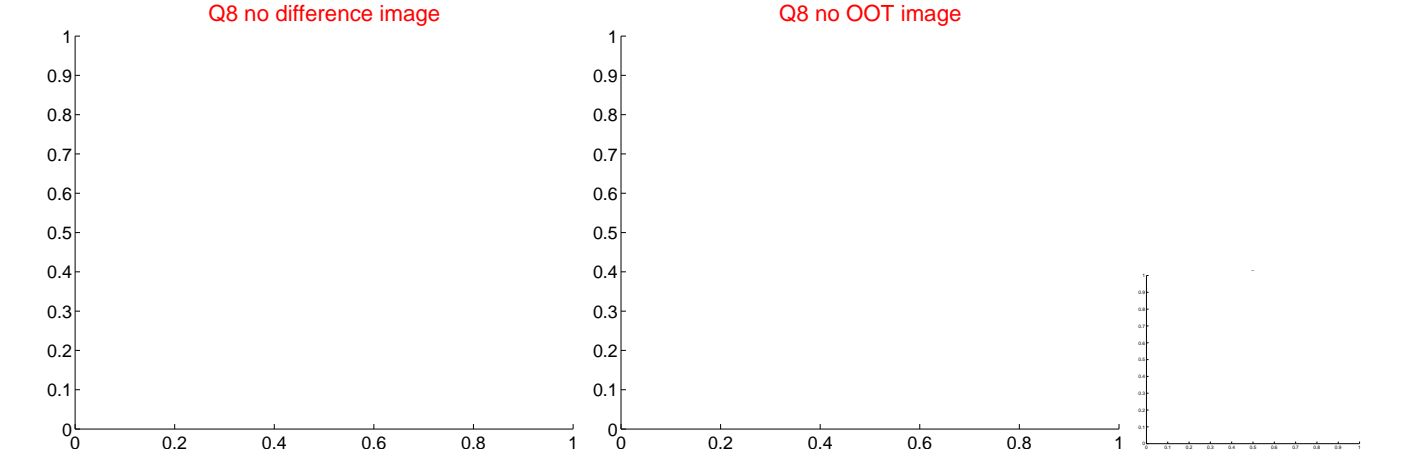
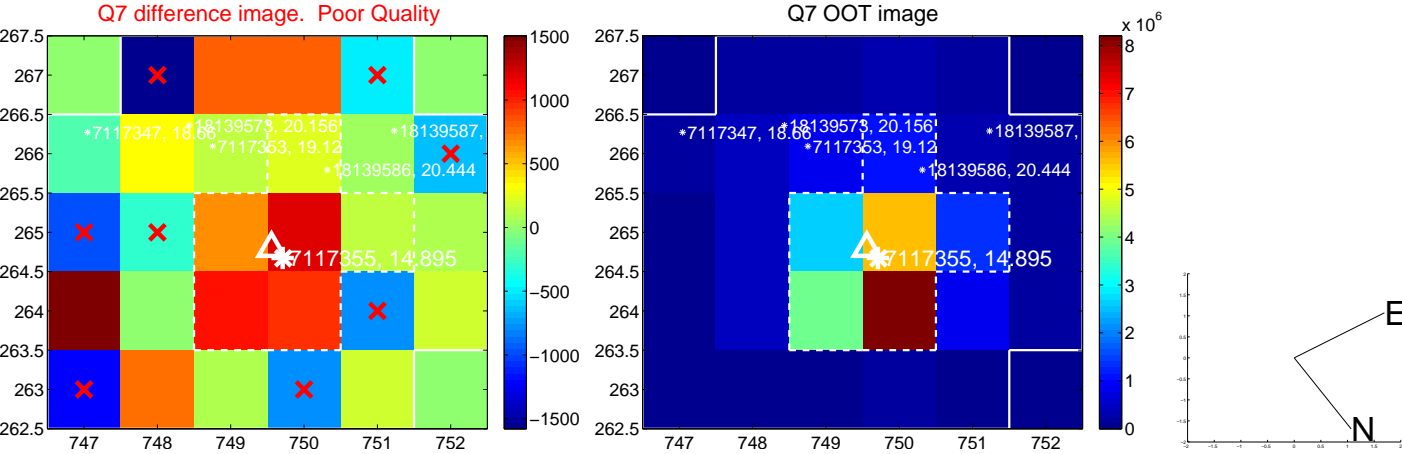
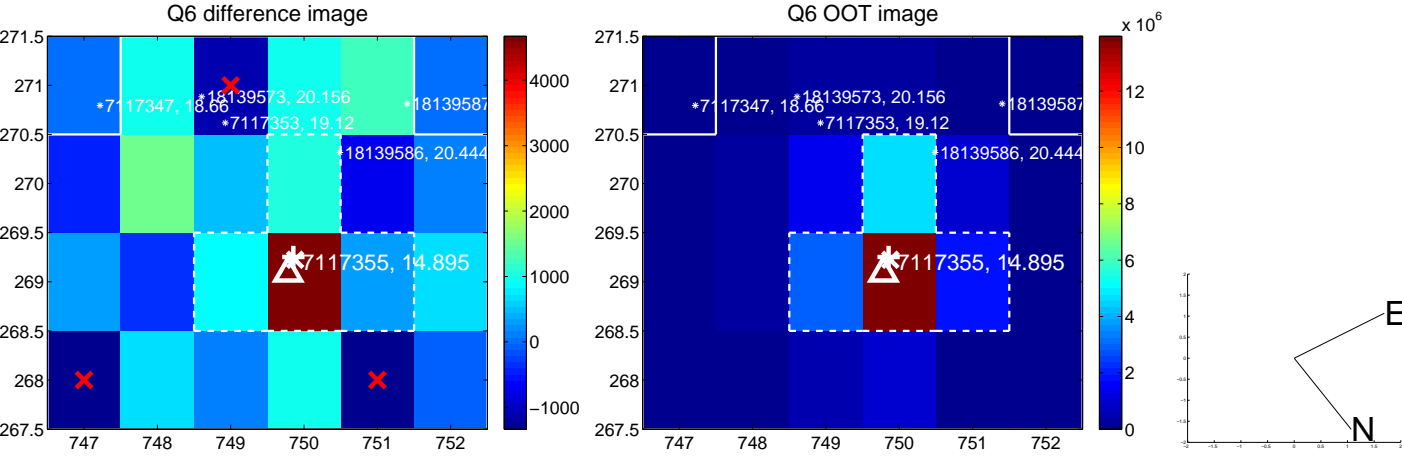
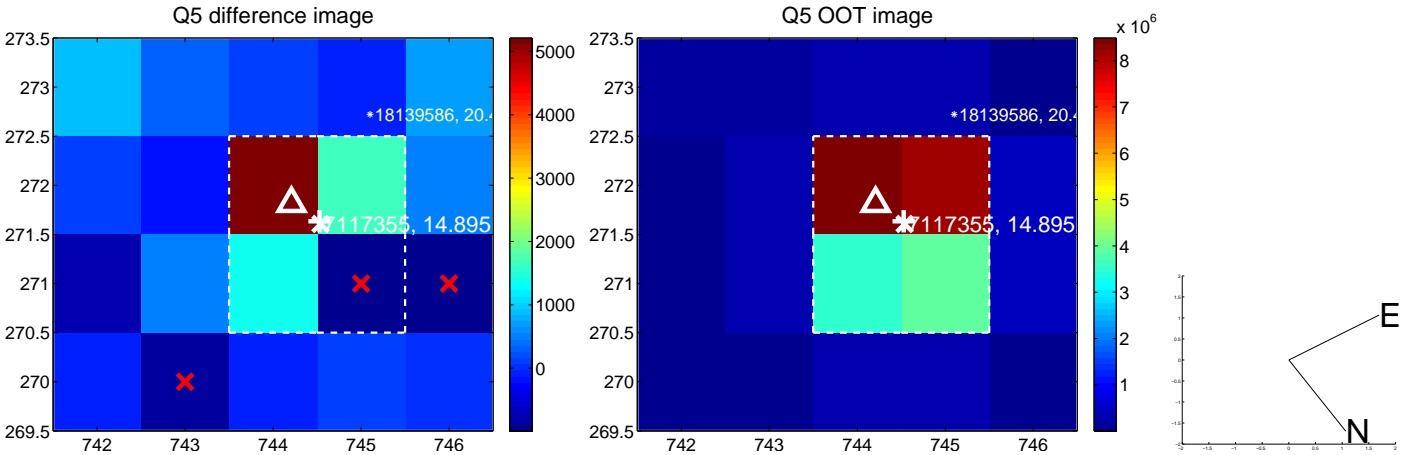


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

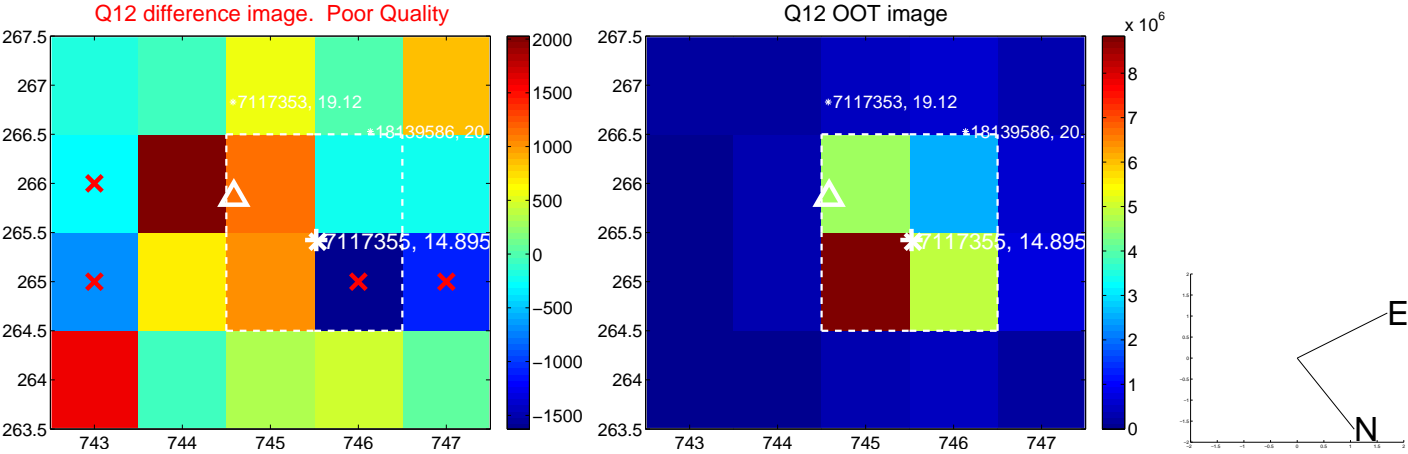
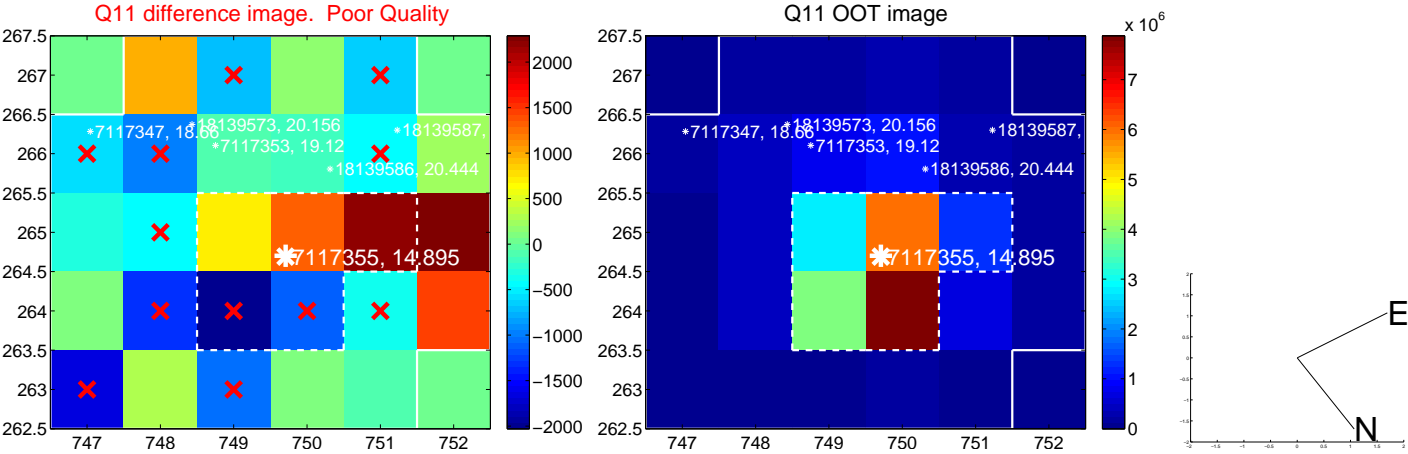
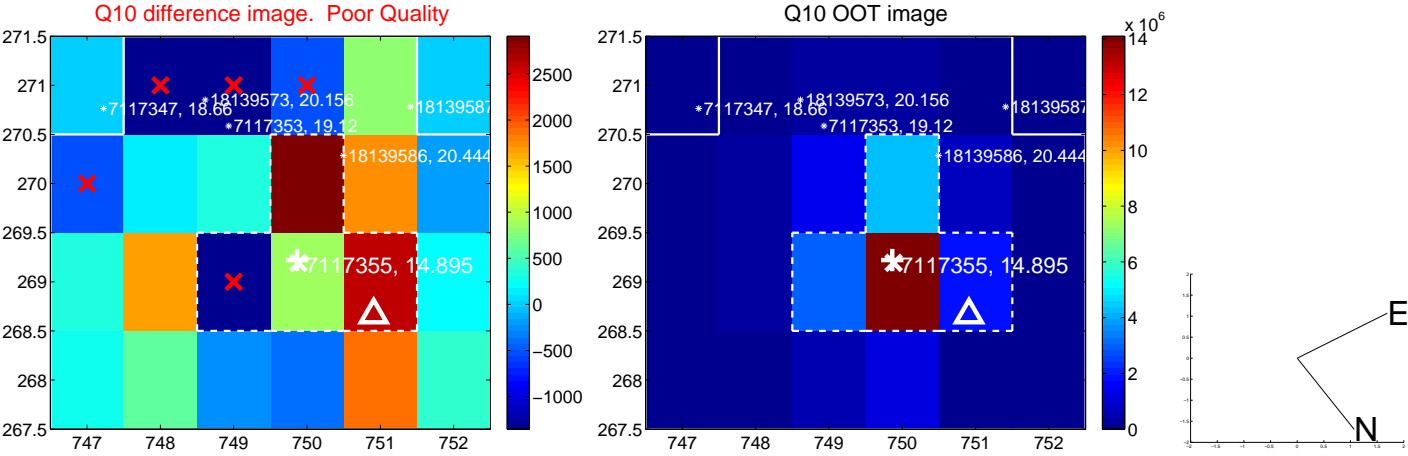
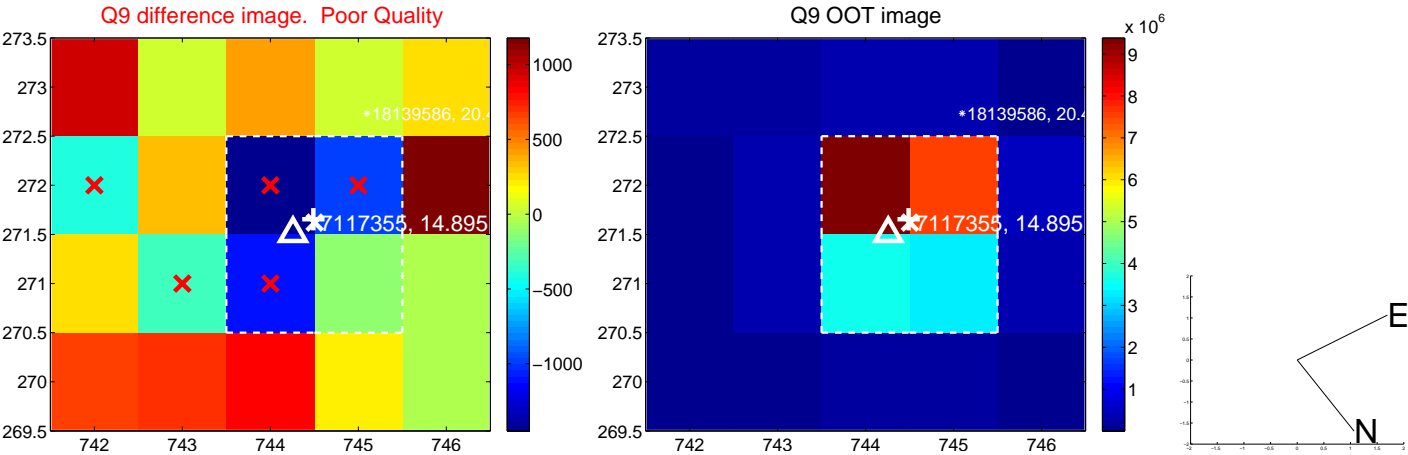


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

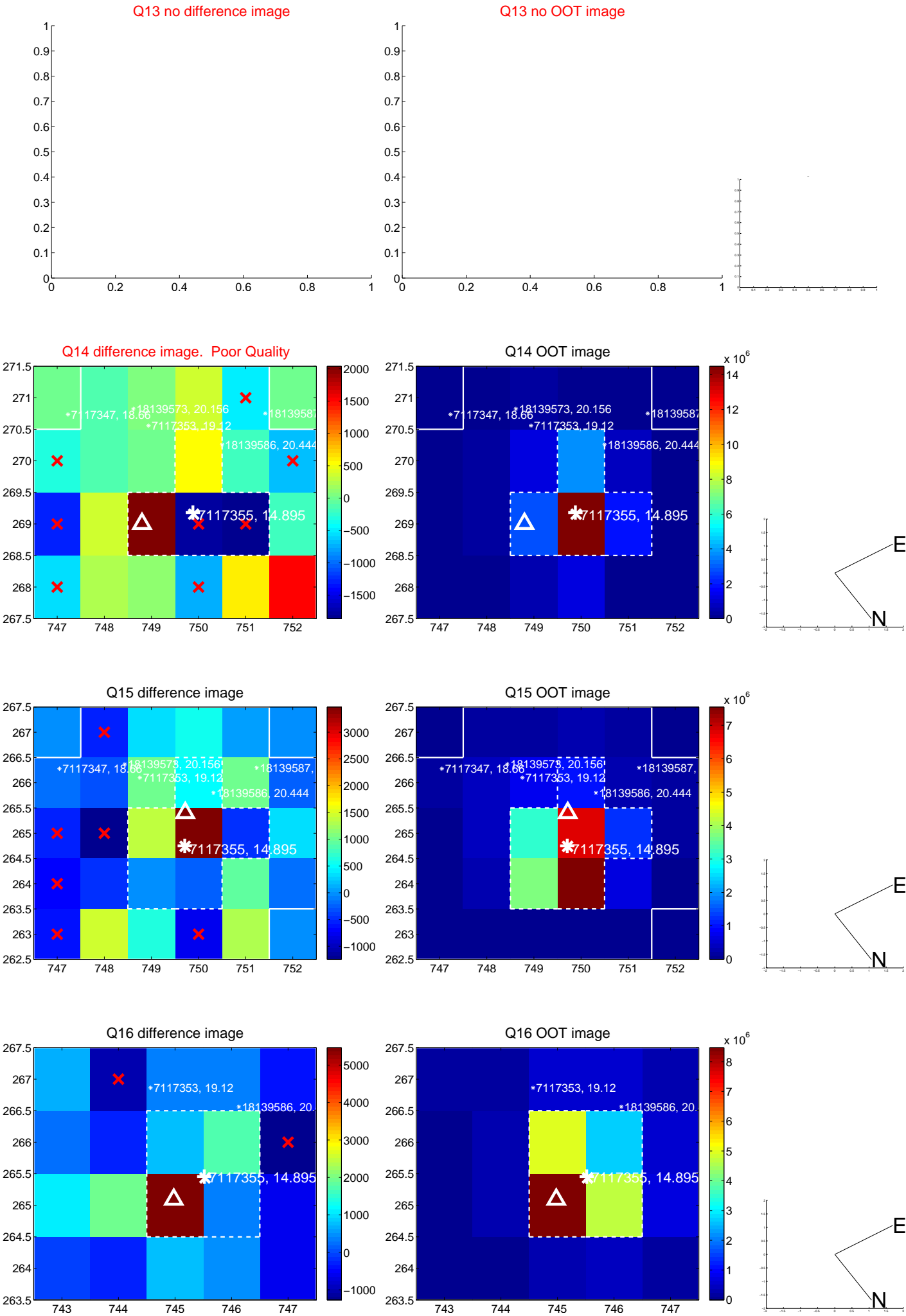




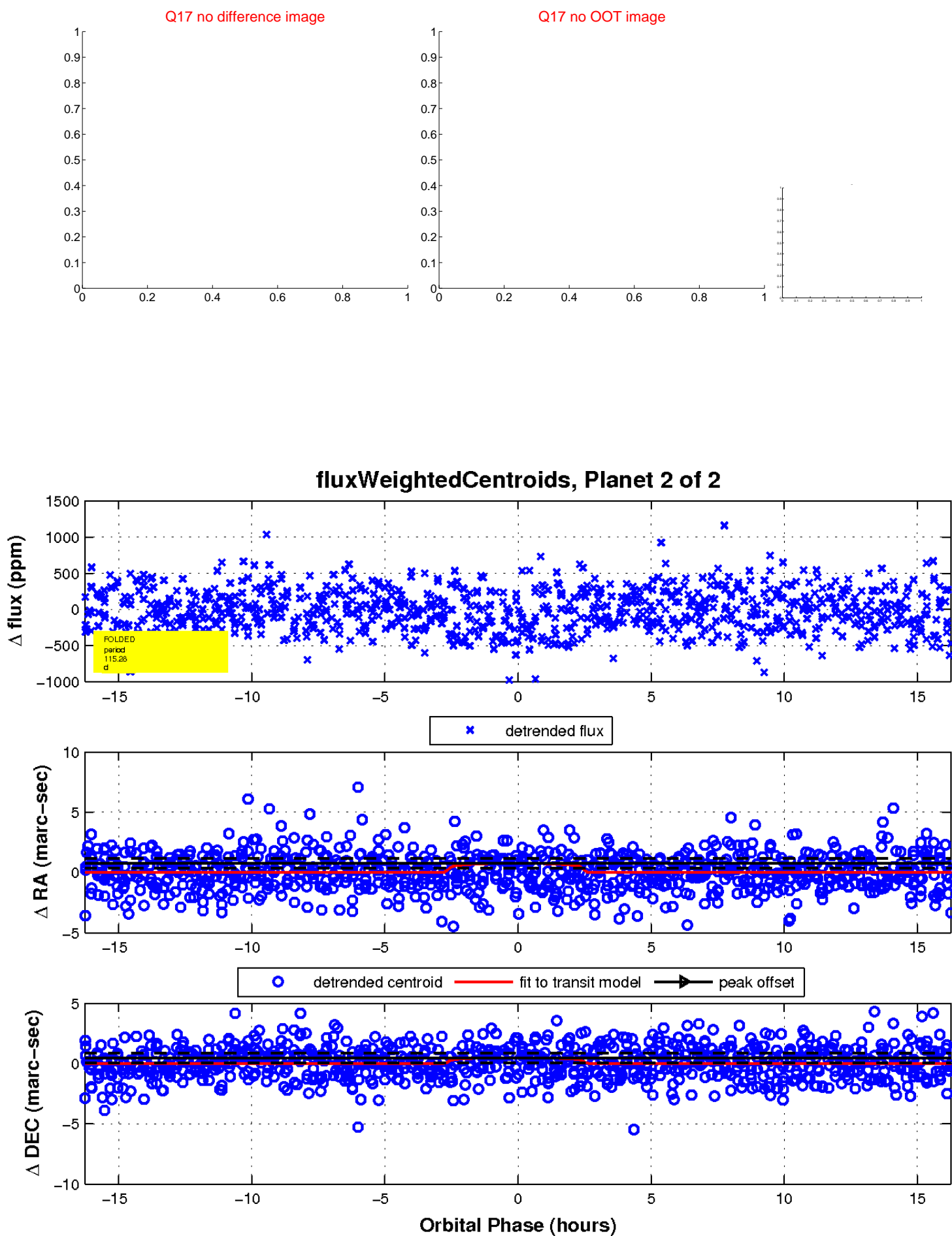
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

