

# KIC 011234677

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011234677-01	OBS	7423.01	1.587417	131.988258	75640.3	2.603	6111.1	3168.4	1.24	6440	37.18	3038.77
011234677-02	OBS	No	1.587769	132.758780	51.0	1.376	21.0	4.9	1.24	6440	1.08	3037.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011234677-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE
011234677-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

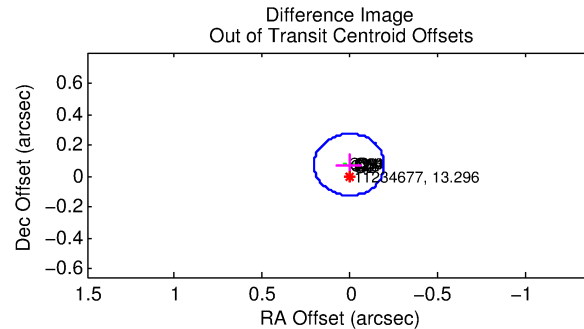
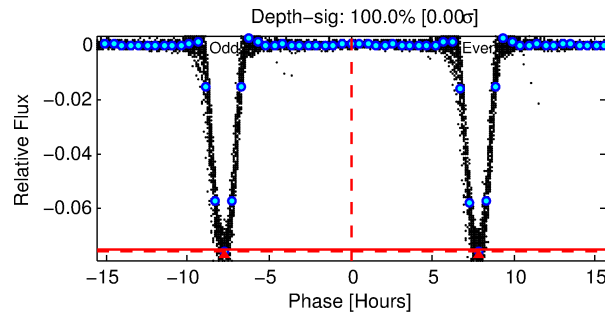
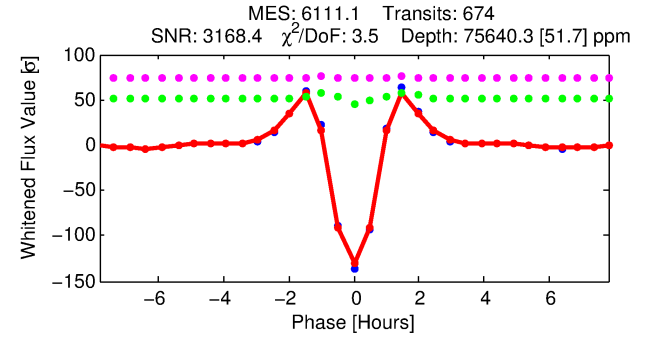
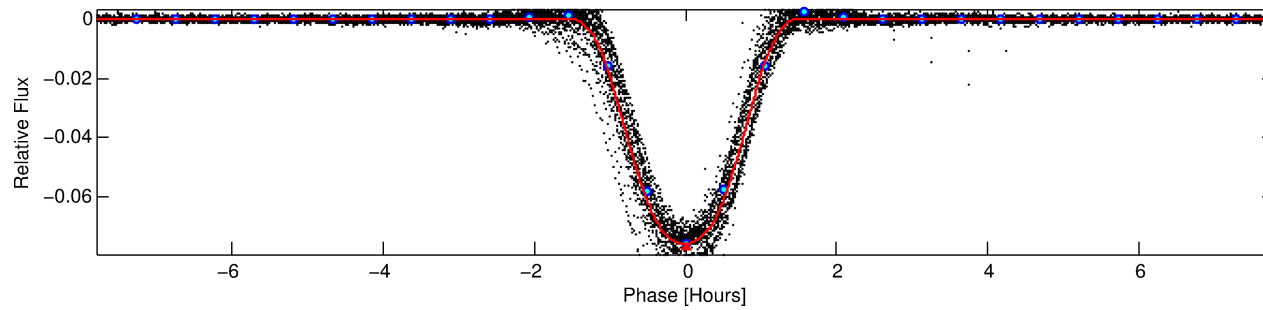
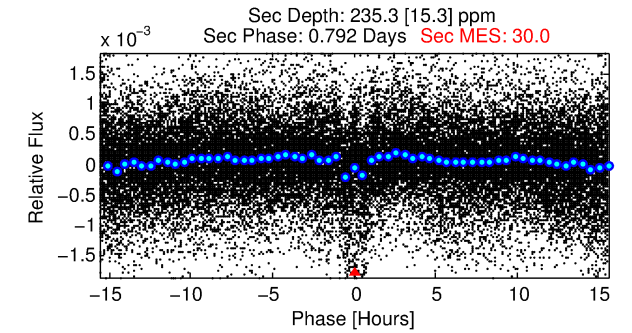
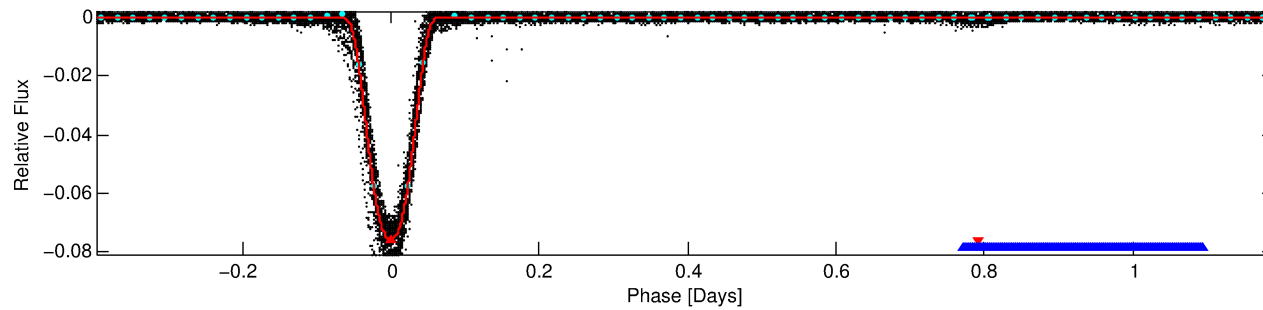
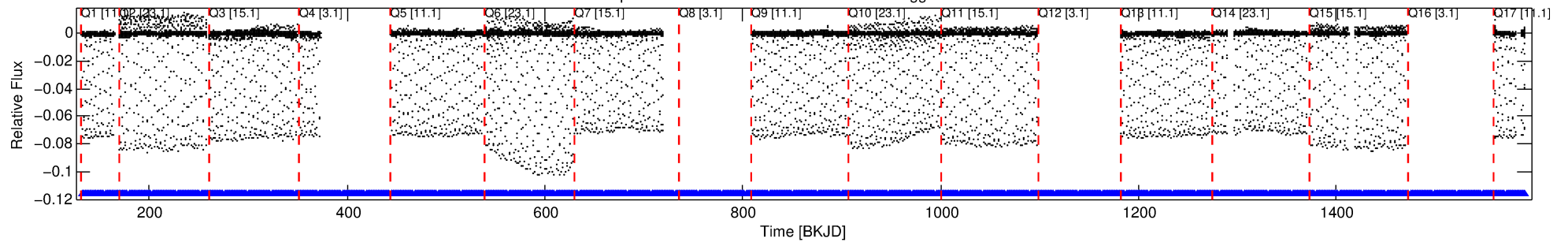
Ephemeris Match Information For 011234677-01

No Significant Match Found

# DV One-Page Summary

KIC: 11234677 Candidate: 1 of 2 Period: 1.587 d  
KOI: K07423.01 Corr: 0.978

Kp: 13.30 R\*: 1.24 Rs Teff: 6440.0 K Logg: 4.31 Fe/H: -0.120



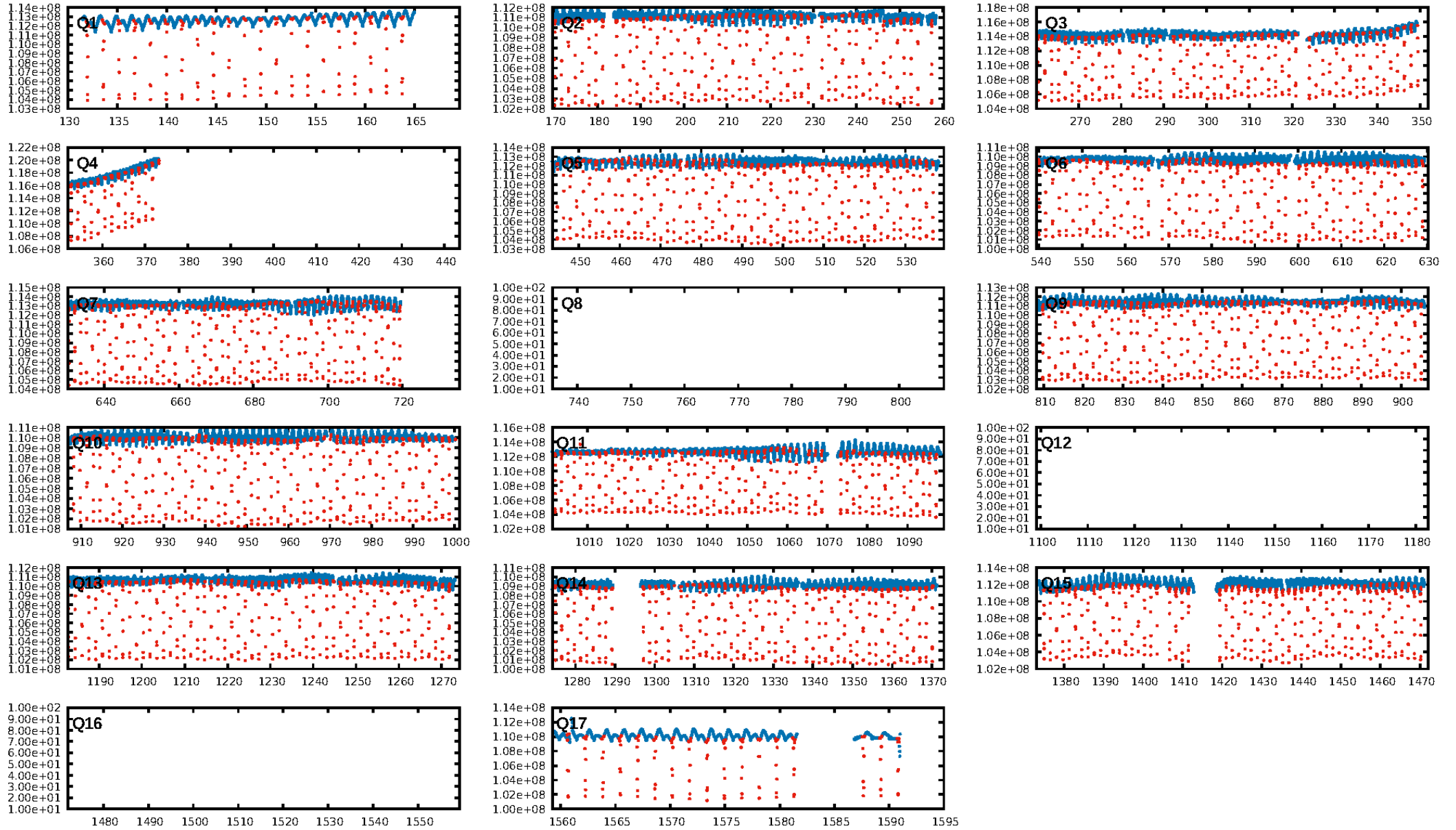
## DV Fit Results:

Period = 1.58742 [0.00000] d  
Epoch = 131.9883 [0.0000] BKJD  
Rp/R\* = 0.2746 [0.0001]  
a/R\* = 5.05 [0.00]  
b = 0.70 [0.00]  
Seff = 3038.77 [1193.45]  
Teff = 1893 [186] K  
Rp = 37.18 [12.52] Re  
a = 0.0279 [0.0075] AU  
Ag = 0.07 [0.03] [-33.36σ]  
Teffp = 1522 [52] K [-1.92σ]

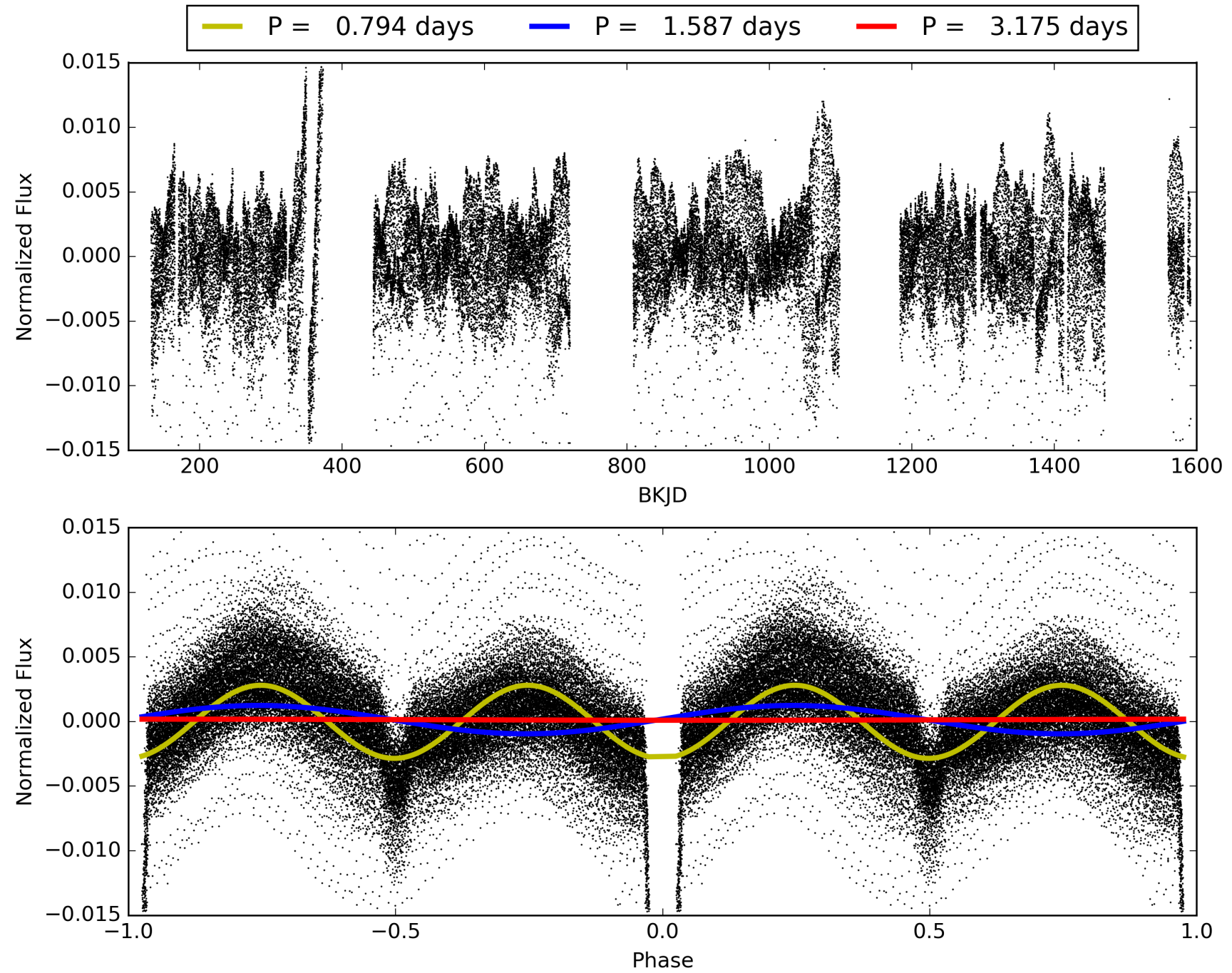
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.2% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [622/622]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.148 arcsec [212.87σ]  
OotOffset-rm: 0.075 arcsec [1.13σ]  
KicOffset-rm: 0.128 arcsec [1.81σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 011234677-01, PDC Light Curves

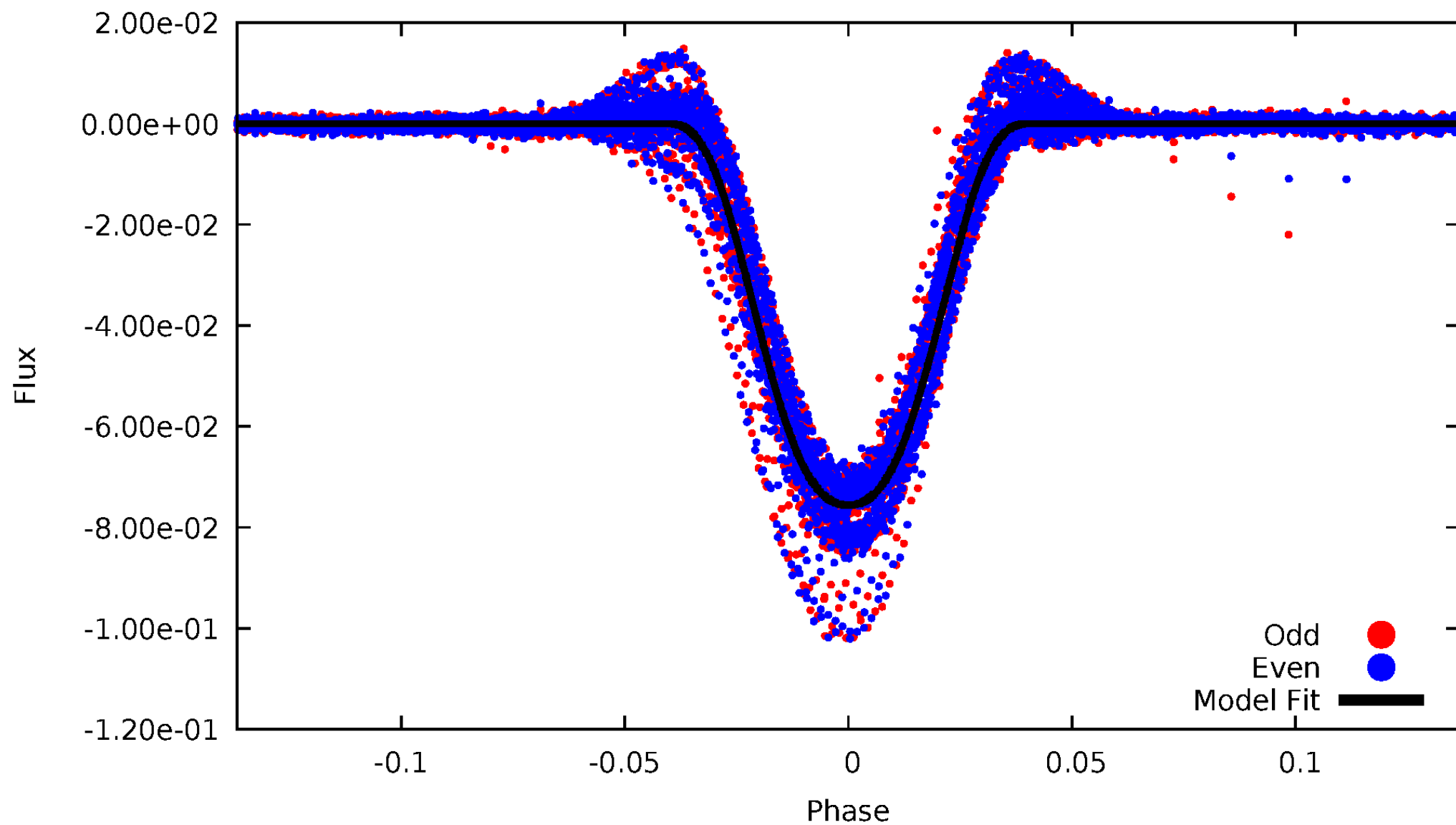


TCE 011234677-01



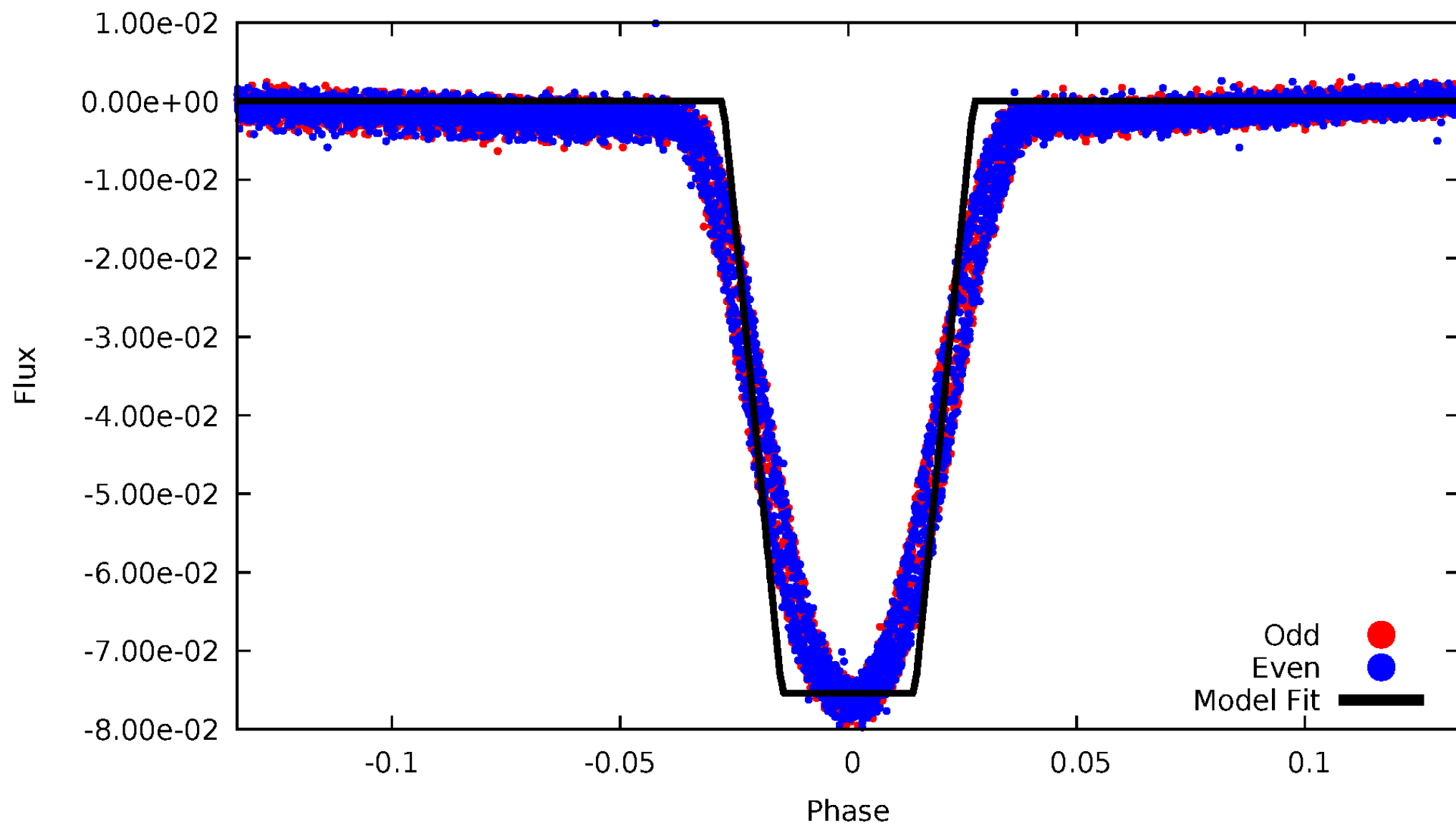
# DV Odd/Even

TCE 011234677-01



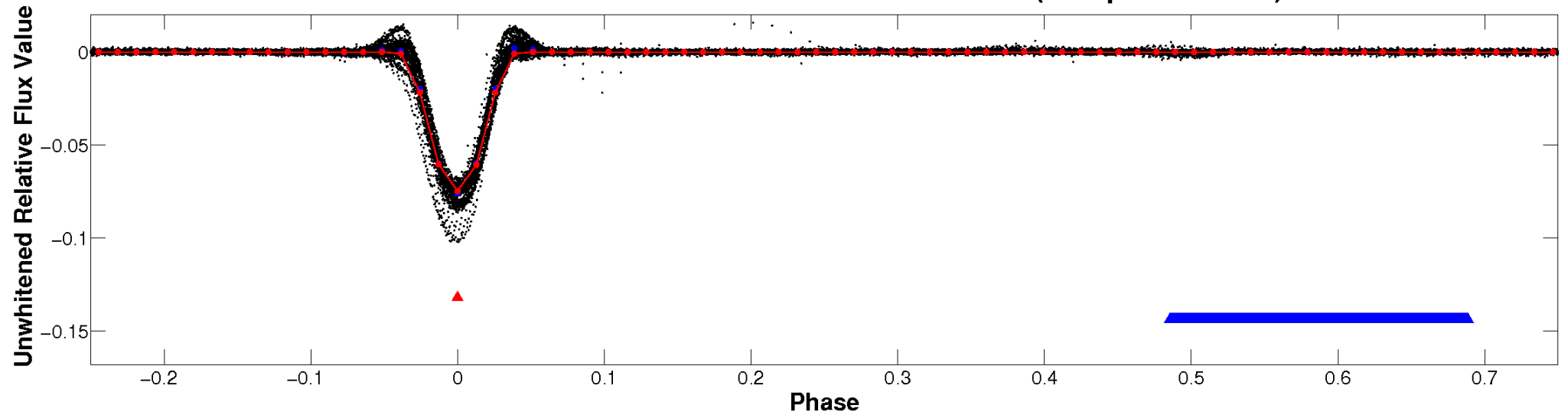
# ALT Odd/Even

TCE 011234677-01

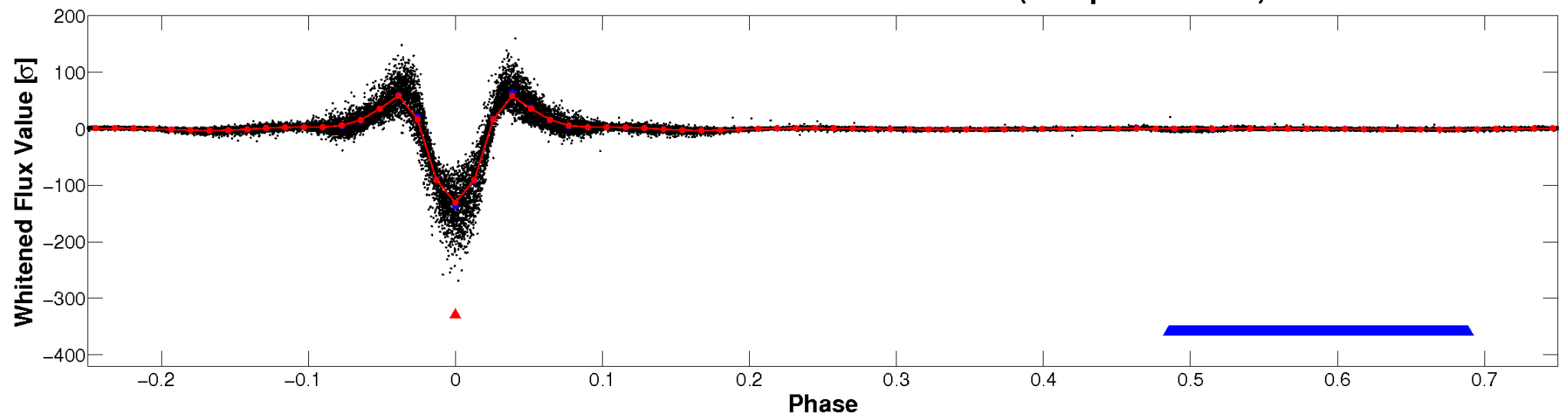


# Non-Whitened Vs. Whitened Light Curve

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

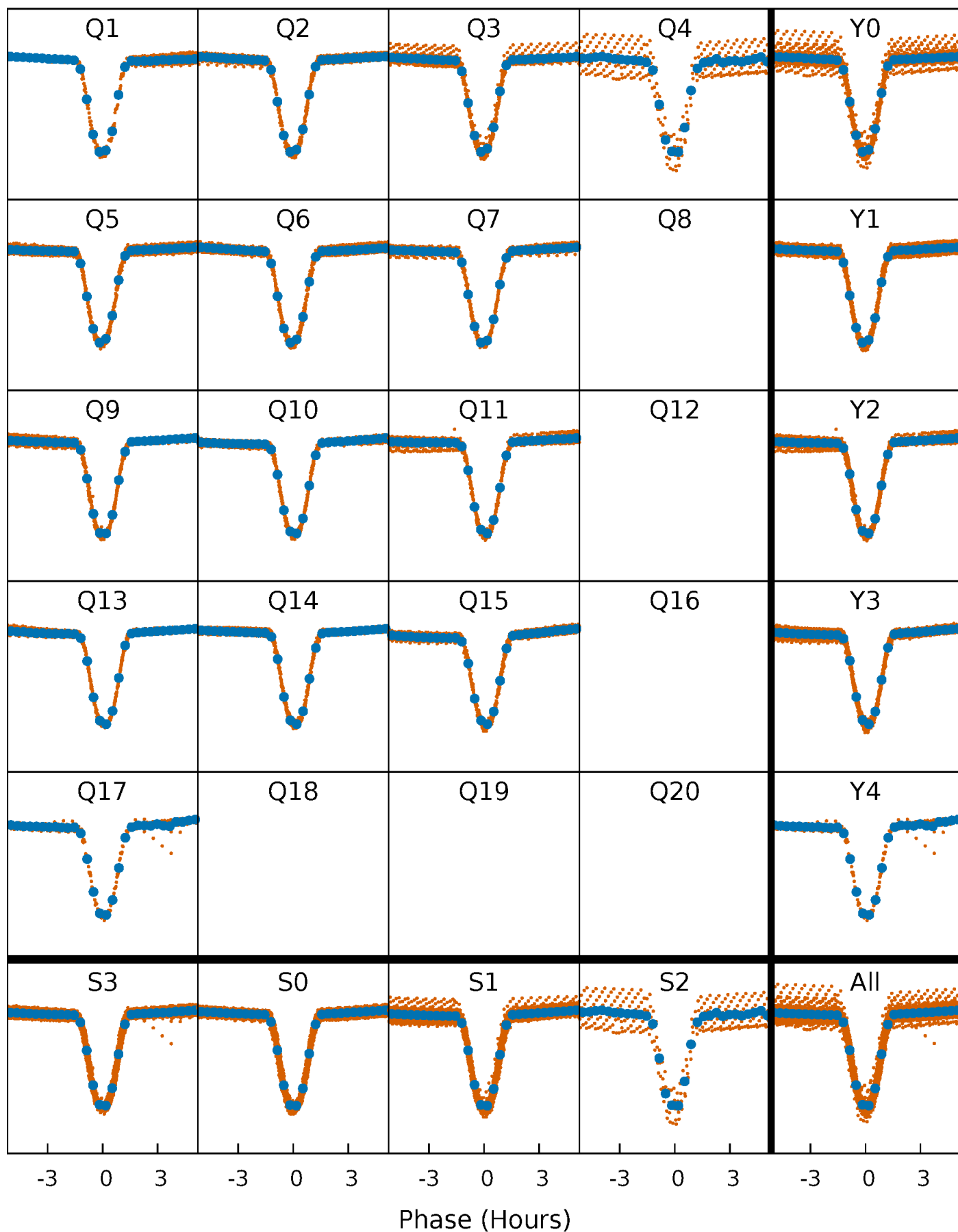


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

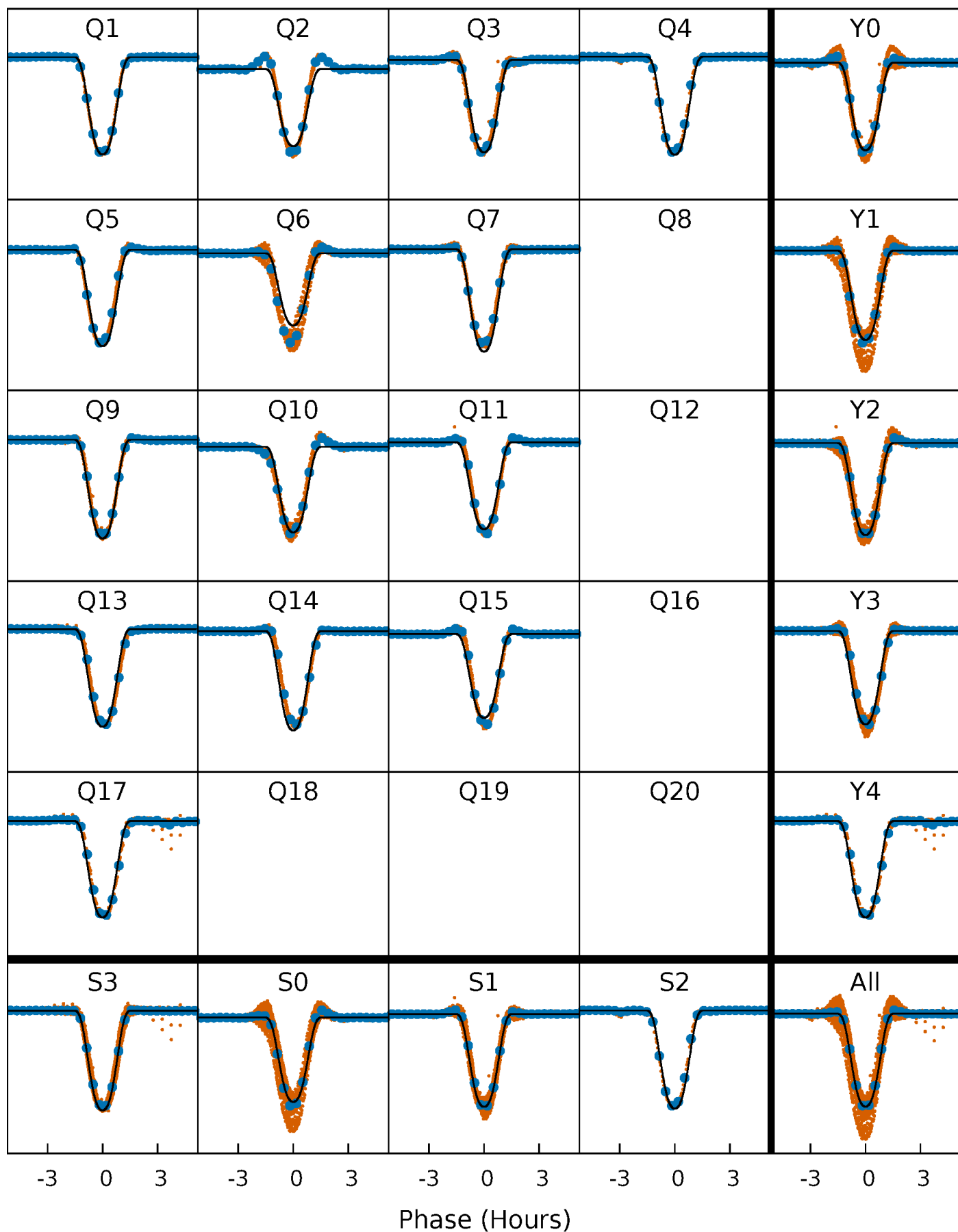
TCE 011234677-01 P= 1.587417 Days  $T_0=131.988258$  (BKJD)





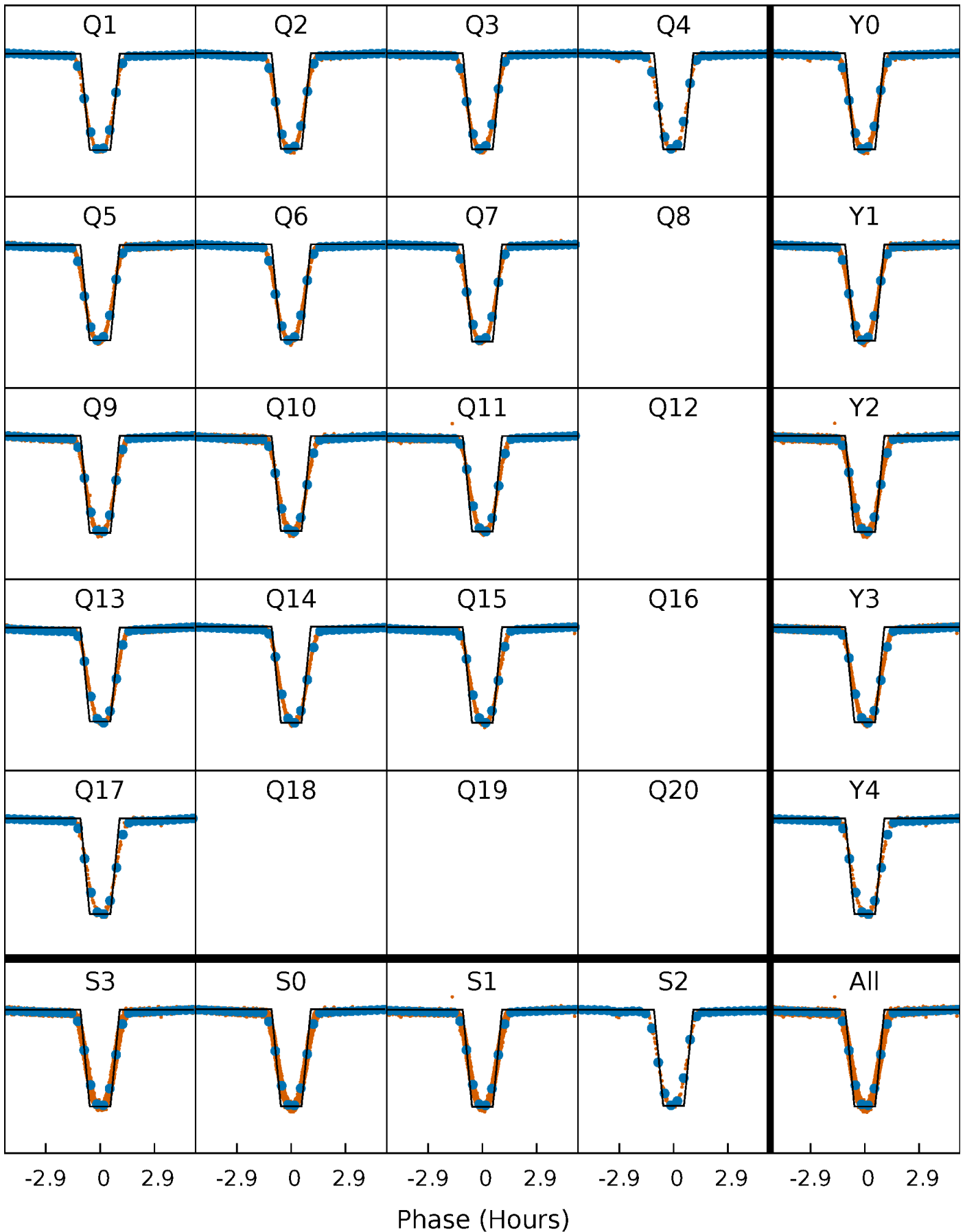
# DV Quarter-Phased Transit Curves

TCE 011234677-01 P= 1.587417 Days  $T_0=131.988258$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

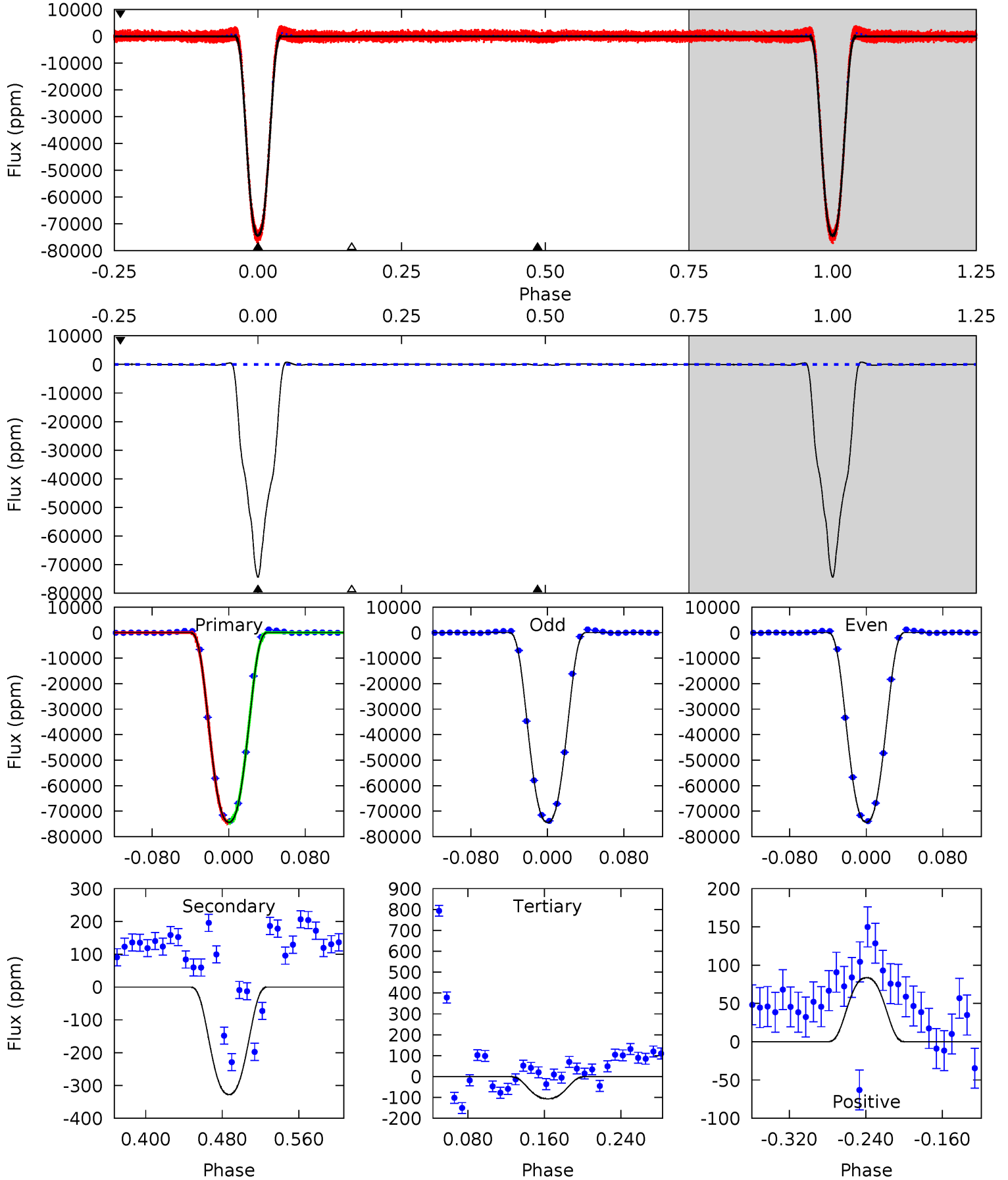
TCE 011234677-01 P= 1.587417 Days  $T_0=131.988258$  (BKJD)



# DV Model-Shift Uniqueness Test

011234677-01, P = 1.587417 Days, E = 130.400841 Days

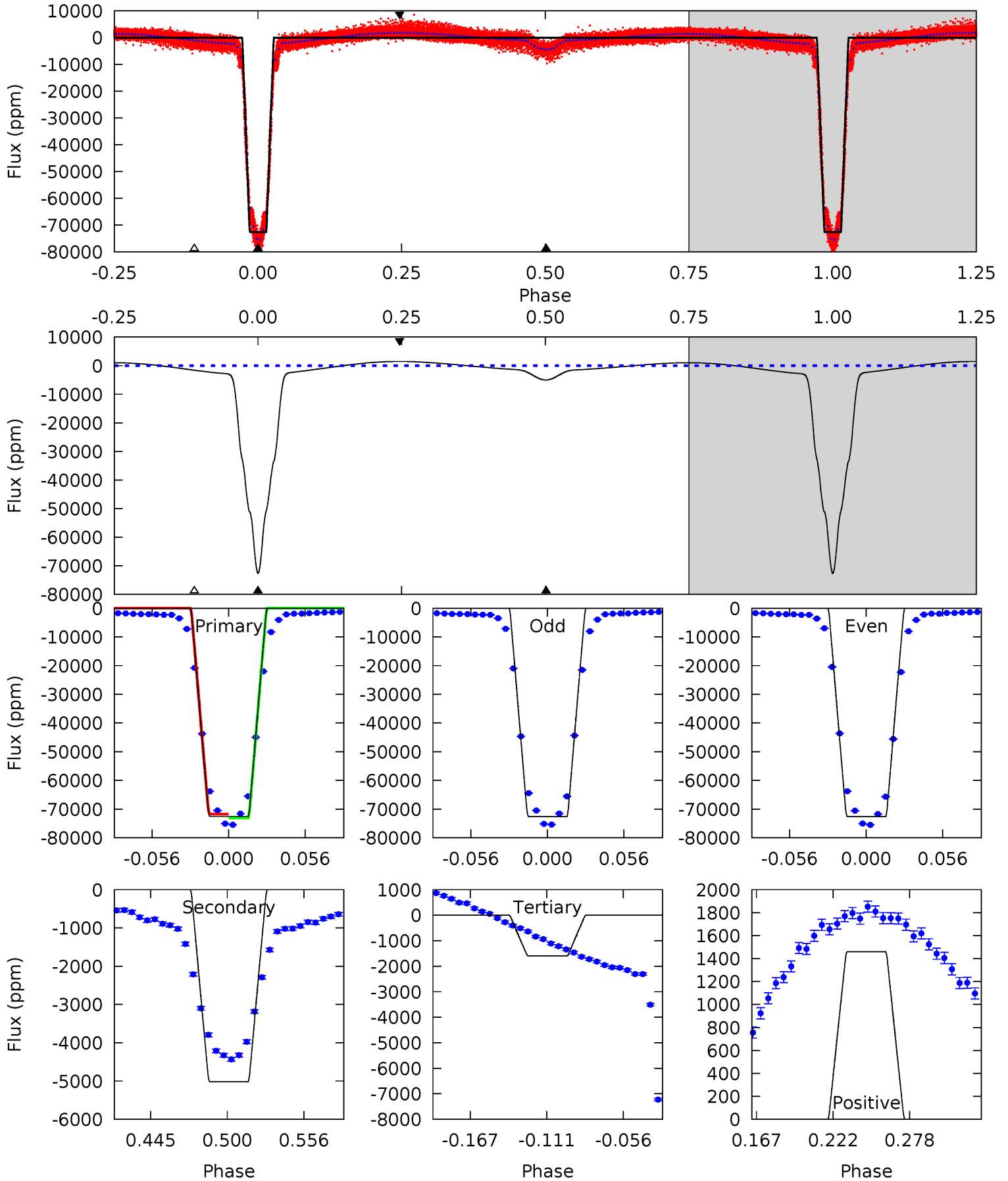
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4494	19.8	6.44	5.06	4.61	1.75	4.27	4487	4489	13.4	14.7	2.70	1.01	0.01	0



# Alt Model-Shift Uniqueness Test

011234677-01, P = 1.587417 Days, E = 130.400841 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
2197	152.0	48.3	44.2	4.69	1.91	33.7	2149	2153	103.6	107.8	0.10	1.00	0.02	19.5



### Stellar Parameters For KIC 011234677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6440^{+144}_{-192}$	$4.313^{+0.090}_{-0.195}$	$-0.120^{+0.250}_{-0.300}$	$1.241^{+0.418}_{-0.179}$	$1.153^{+0.185}_{-0.135}$	$0.850^{+0.417}_{-0.448}$
	+2%/-3%	+2%/-5%	+208%/-250%	+34%/-14%	+16%/-12%	+49%/-53%
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 011234677-01 / KOI 7423.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-328 \pm 17$	$37.45^{+6.08}_{-2.90}$	$2670^{+173}_{-132}$	$-2748^{+98}_{-134}$	$0.097^{+0.018}_{-0.022}$
Alt.	$-5020 \pm 33$	$37.55^{+6.74}_{-3.30}$	$2676^{+194}_{-152}$	$3553^{+62}_{-79}$	$1.509^{+0.289}_{-0.367}$

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

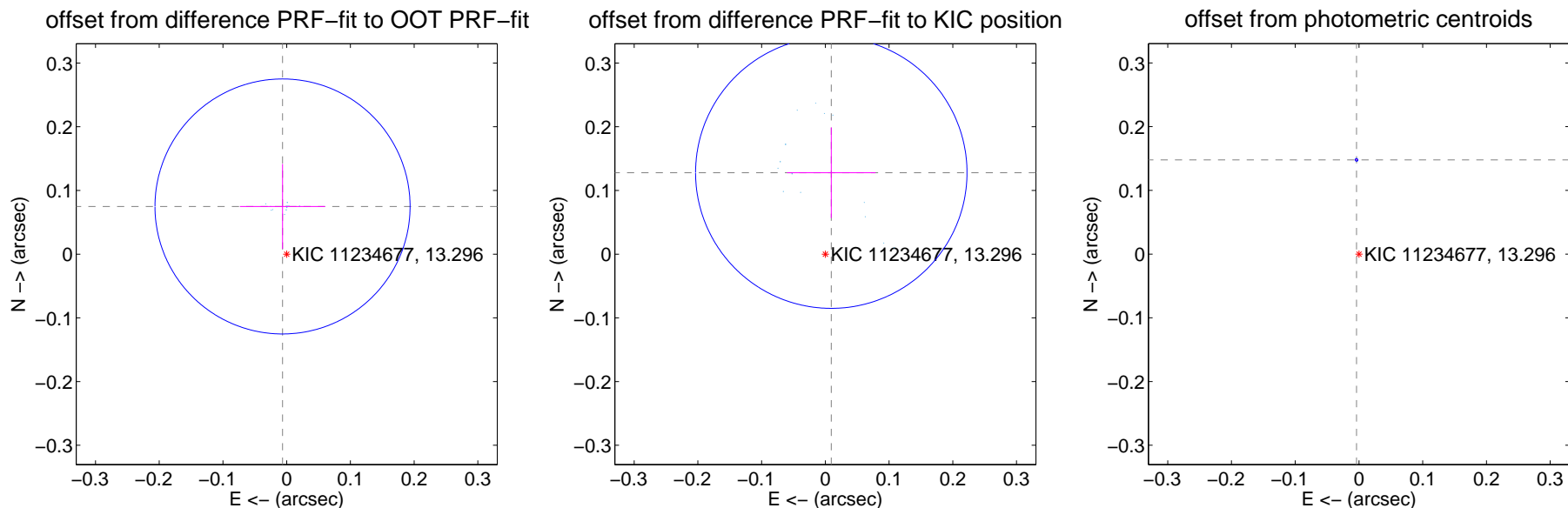
## DV Centroid Data

Supplemental centroid analysis for 011234677-01. Kepler magnitude: 13.30. Transit SNR 3168.39

There are 14 quarters with good PRF difference image offsets

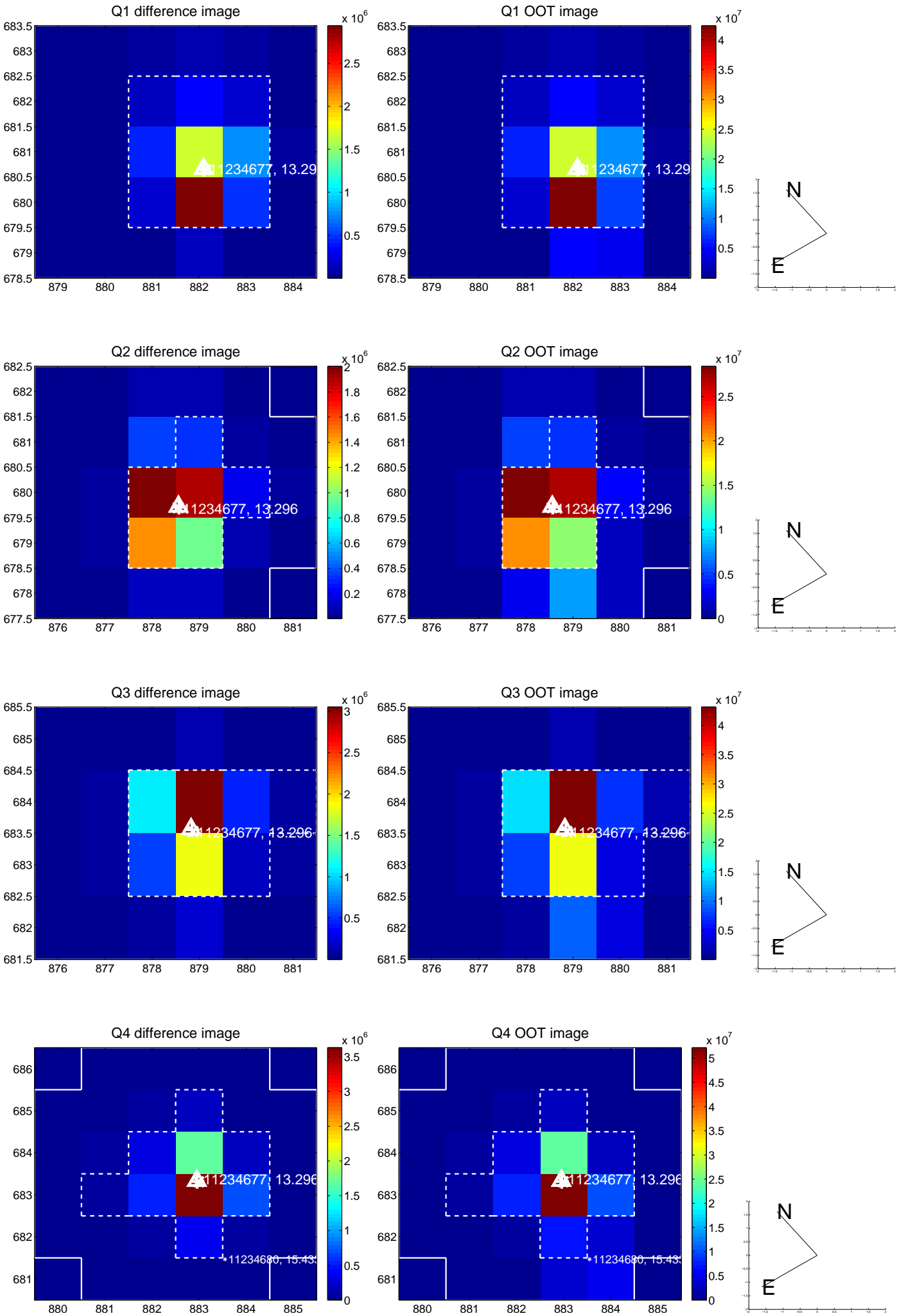
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.075 \pm 0.067$	1.13	$0.007 \pm 0.067$	$0.075 \pm 0.067$
PRF-fit source offset from KIC position	$0.128 \pm 0.071$	1.81	$-0.009 \pm 0.069$	$0.128 \pm 0.071$
photometric centroid source offset	$0.15 \pm 0.00$	212.87	$0.00 \pm 0.00$	$0.15 \pm 0.00$

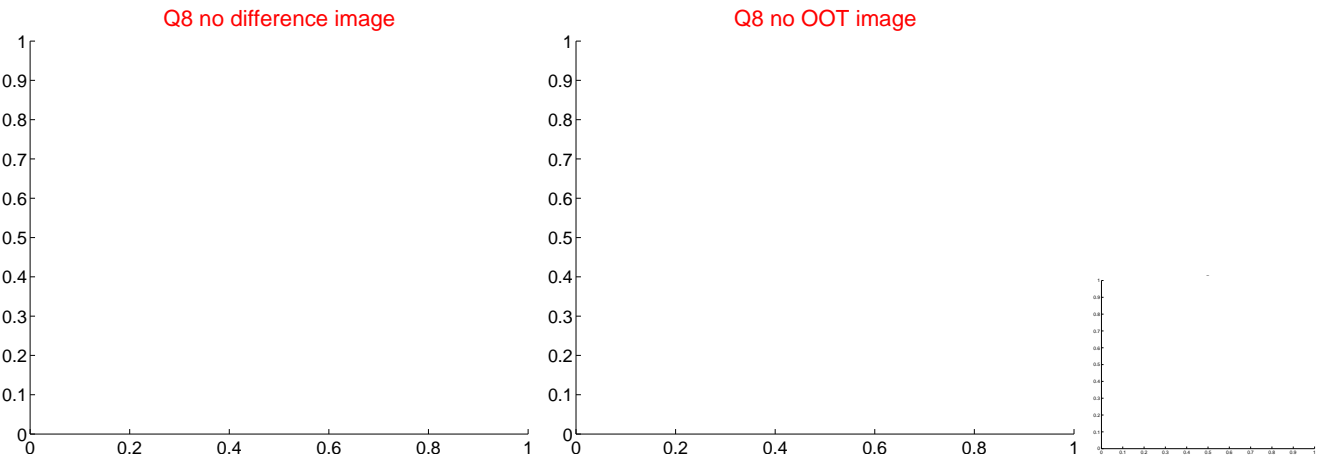
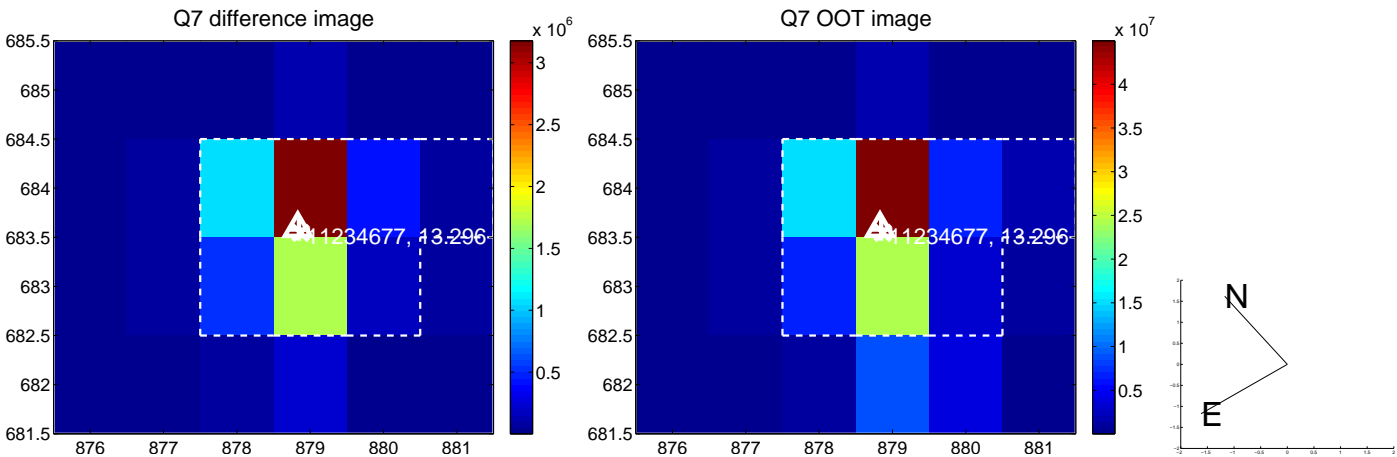
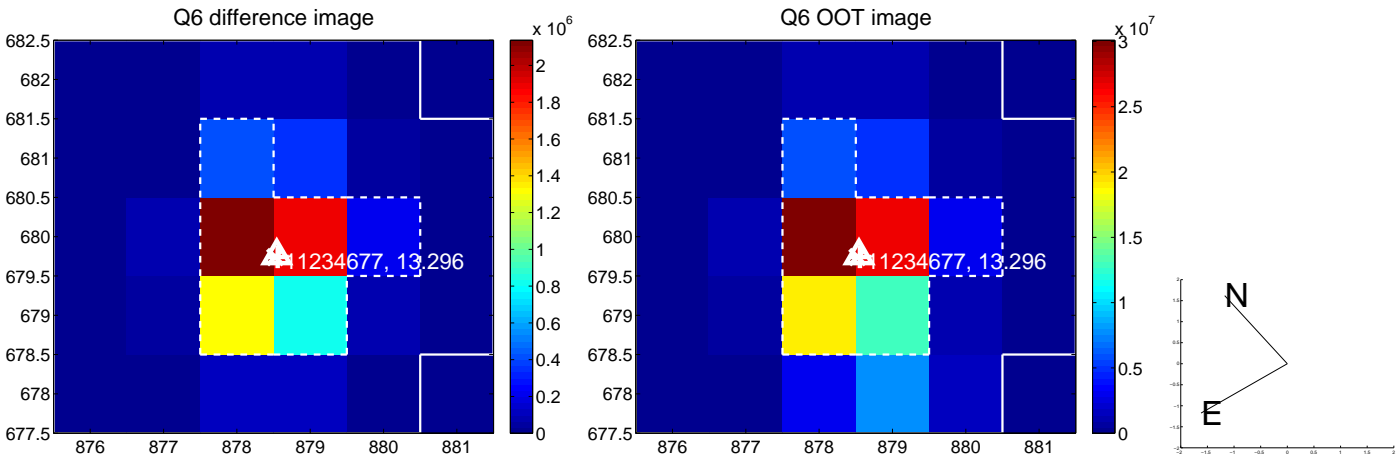
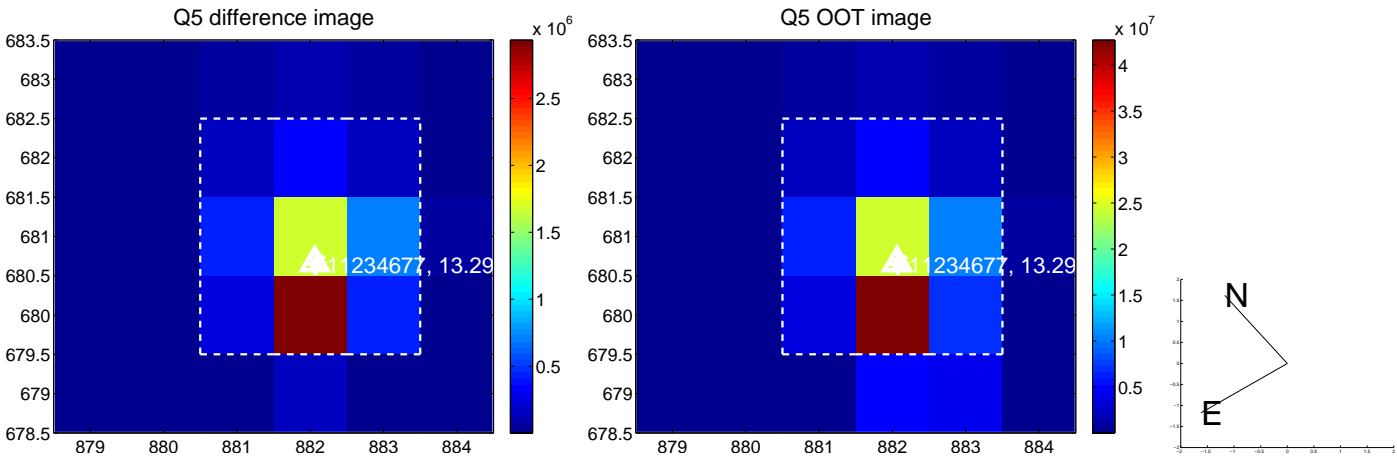


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

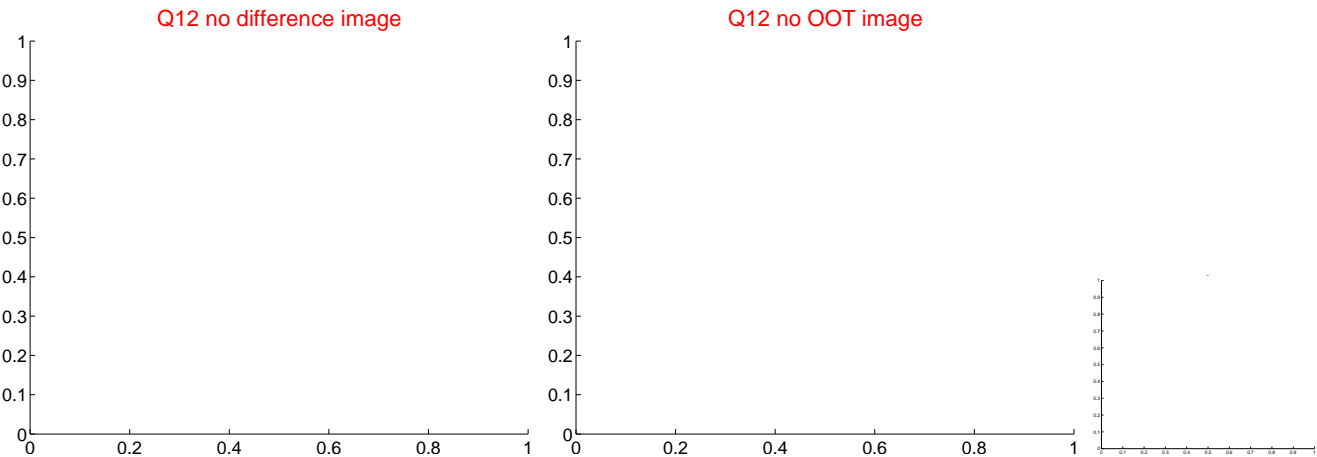
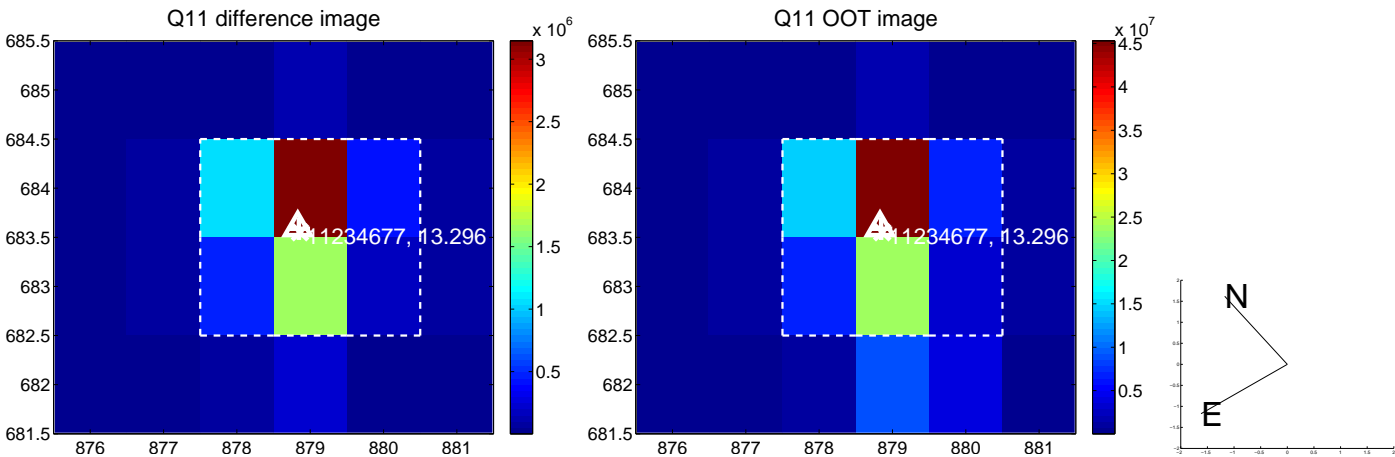
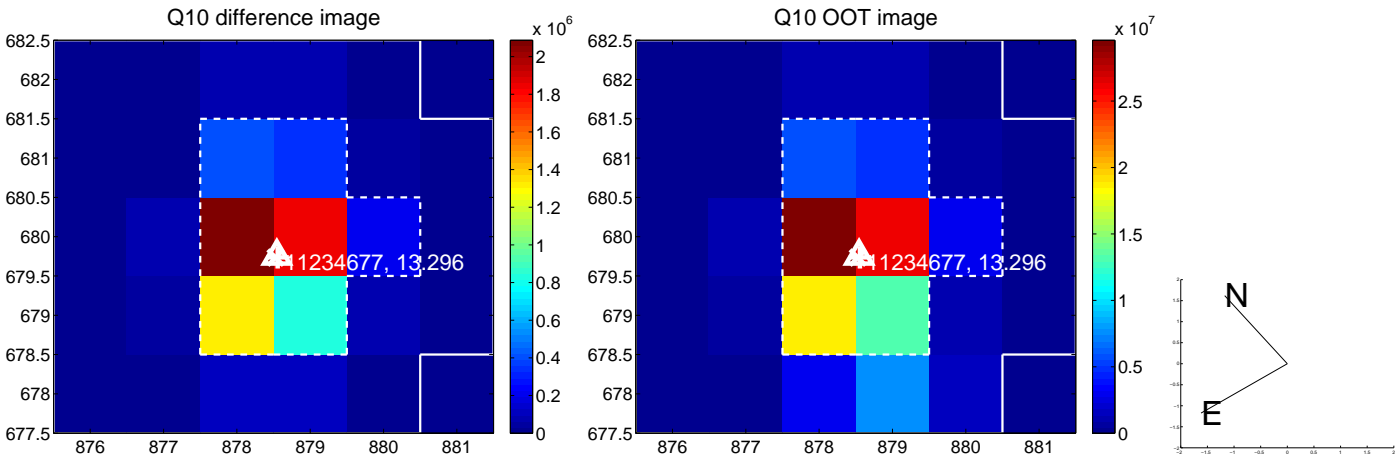
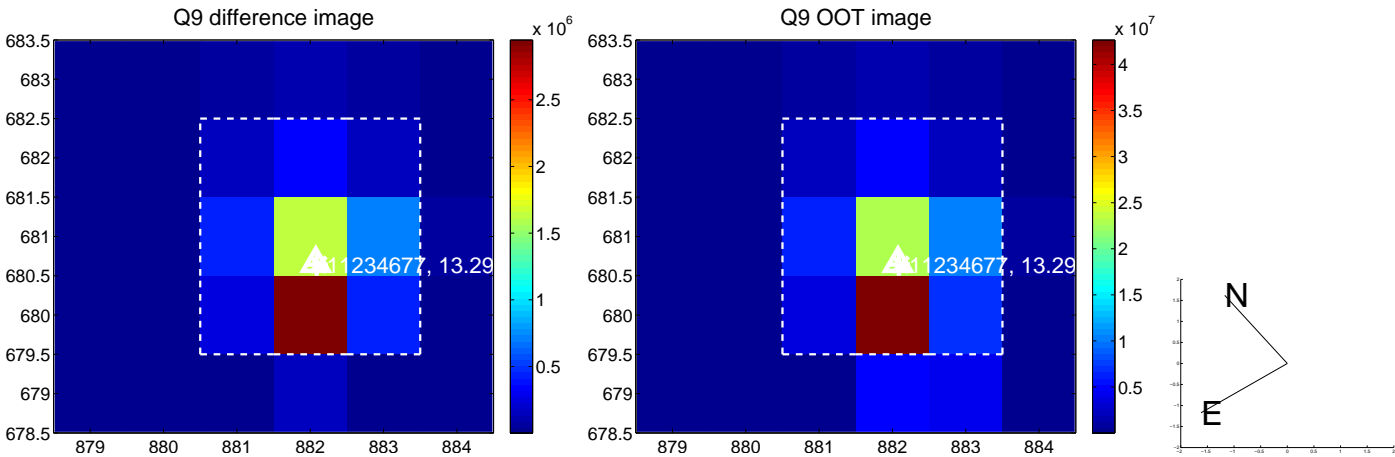


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

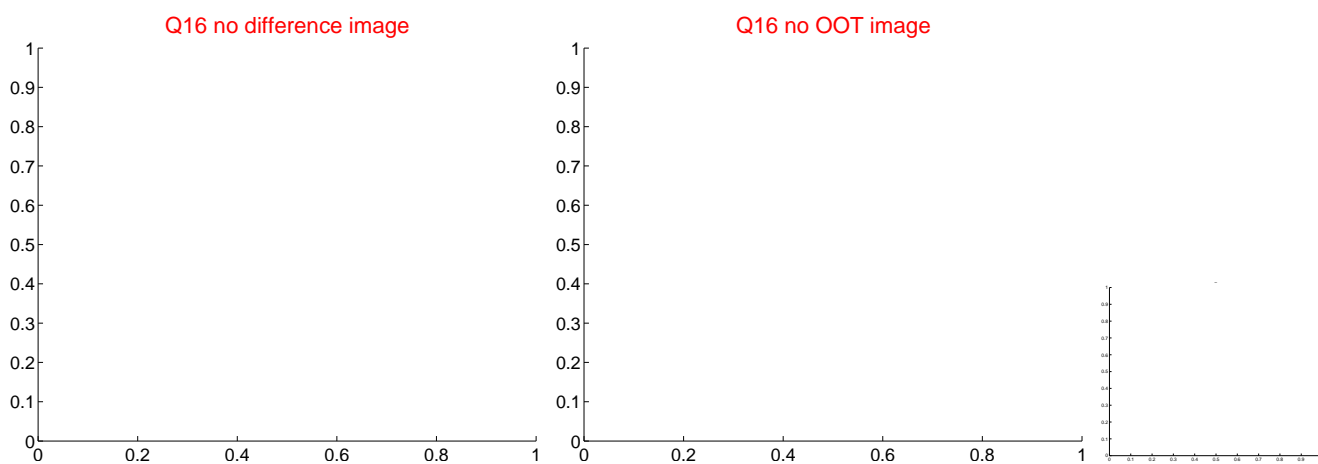
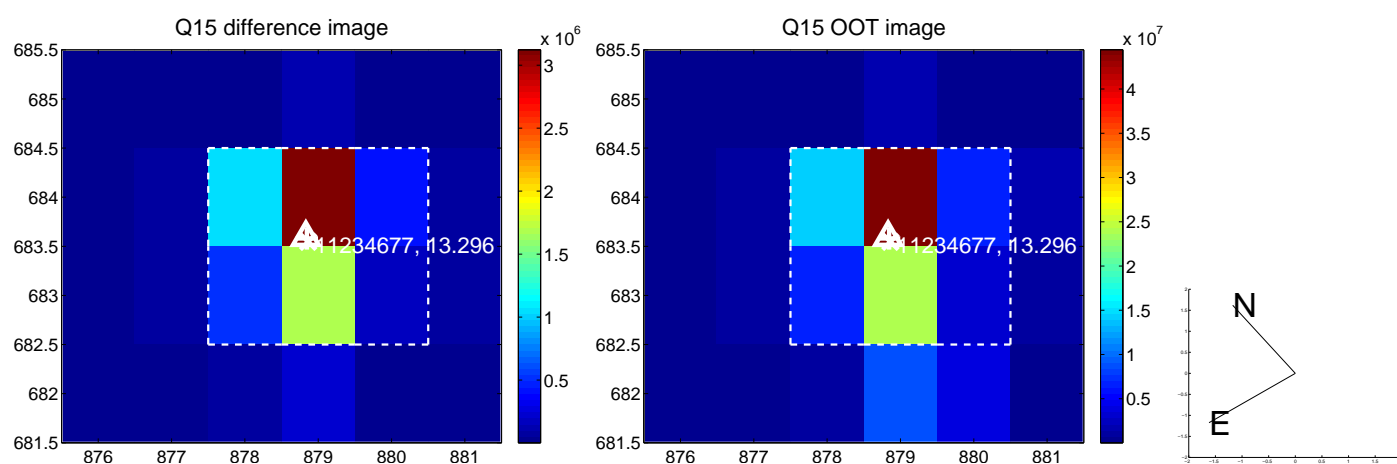
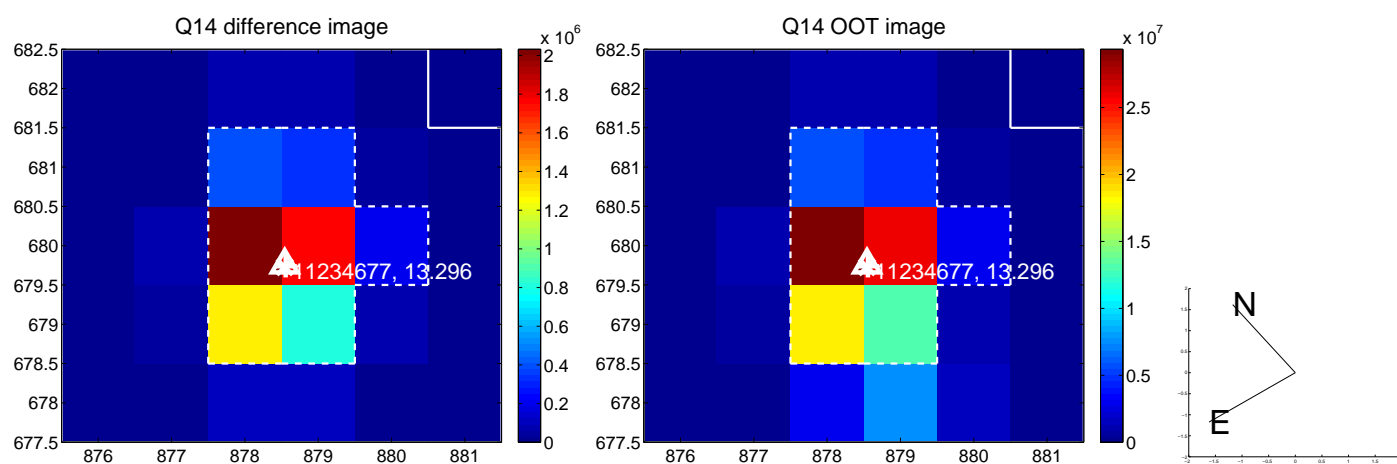
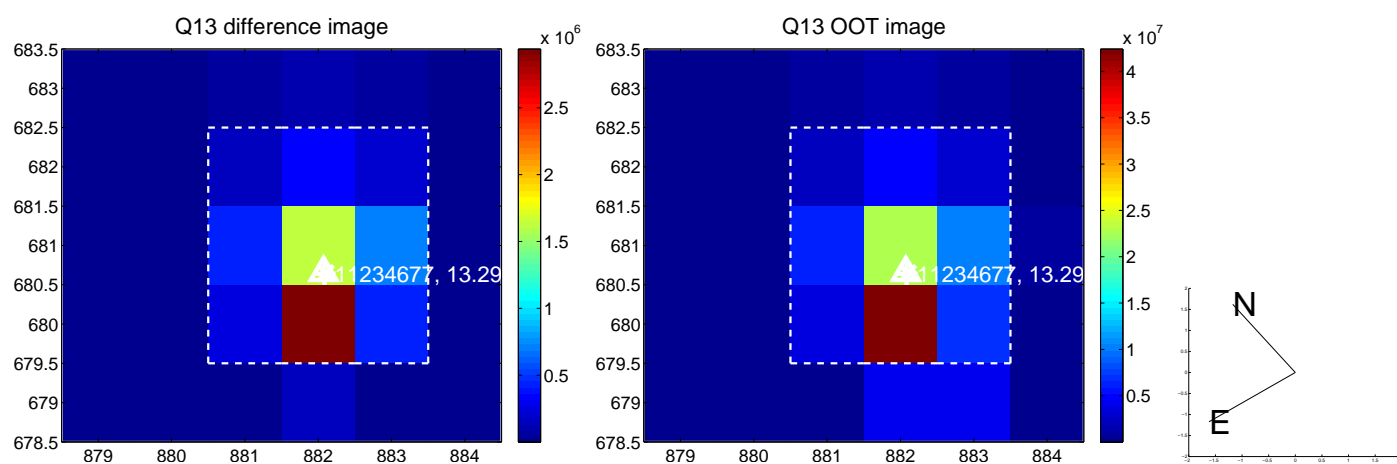




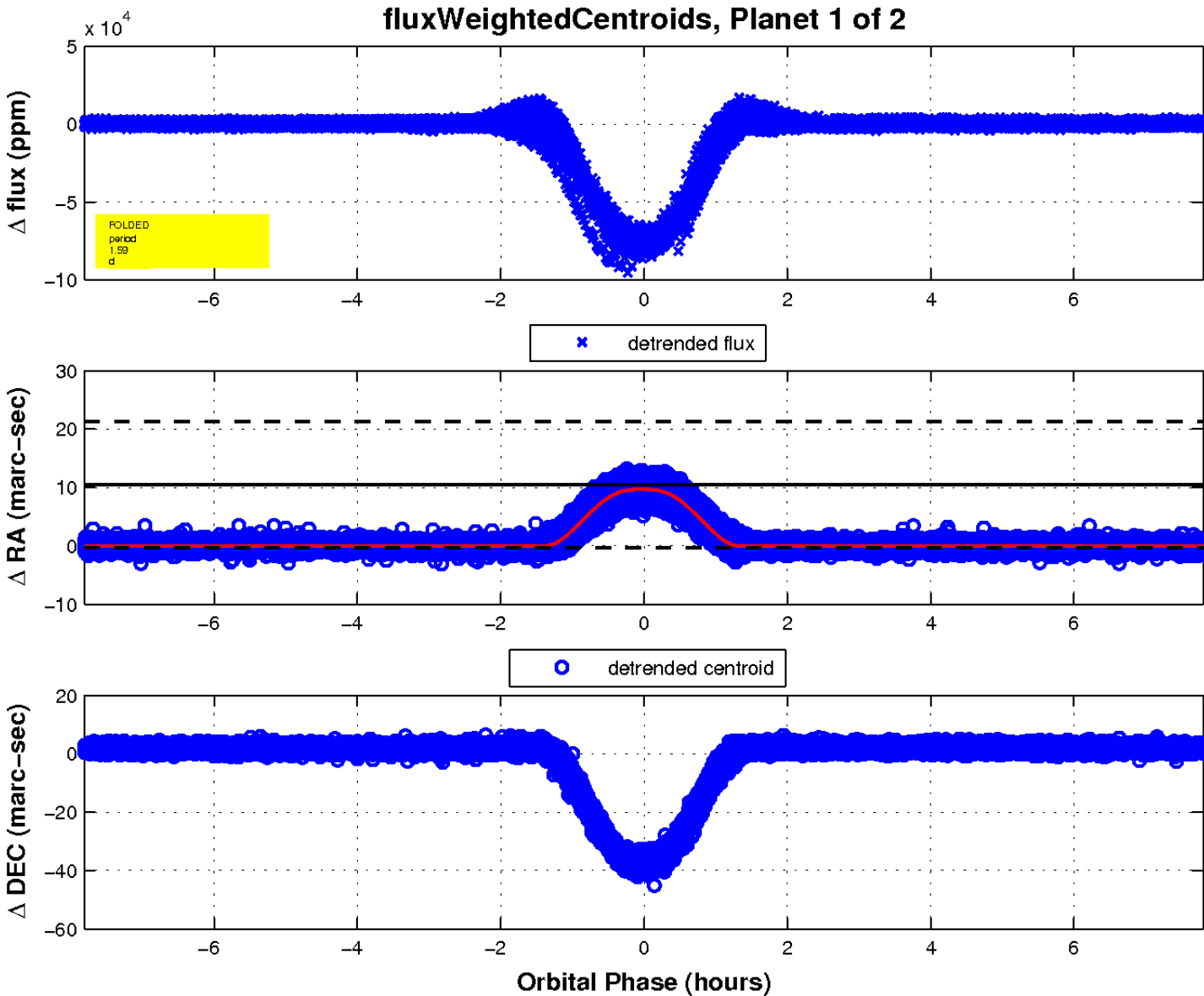
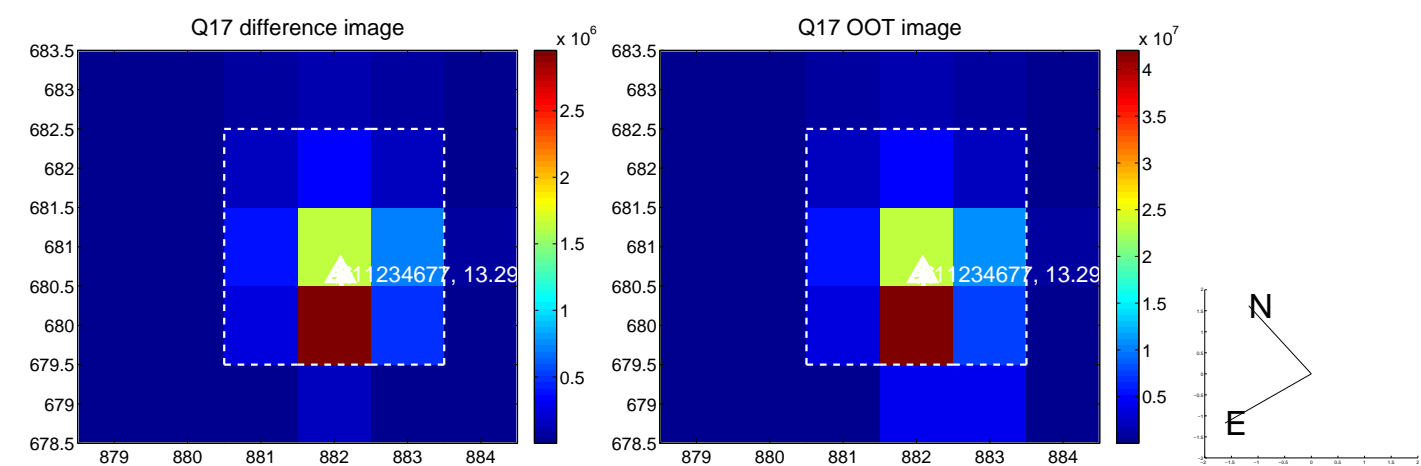
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

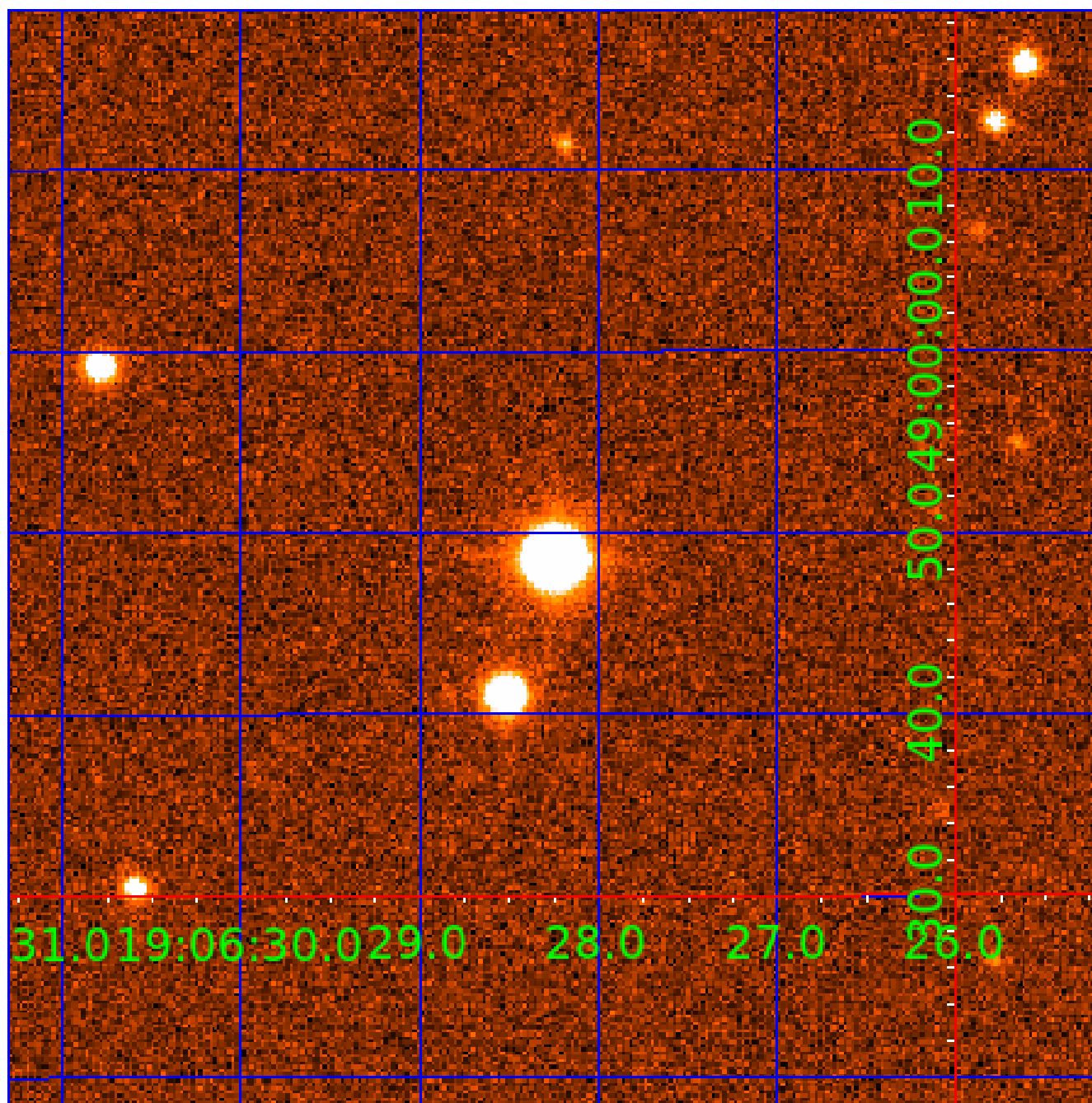


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011234677

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011234677-01	OBS	7423.01	1.587417	131.988258	75640.3	2.603	6111.1	3168.4	1.24	6440	37.18	3038.77
011234677-02	OBS	No	1.587769	132.758780	51.0	1.376	21.0	4.9	1.24	6440	1.08	3037.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011234677-01	OBS	FP	0.00	0	1	0	0	HAS_SEC_TCE
011234677-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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 011234677-02

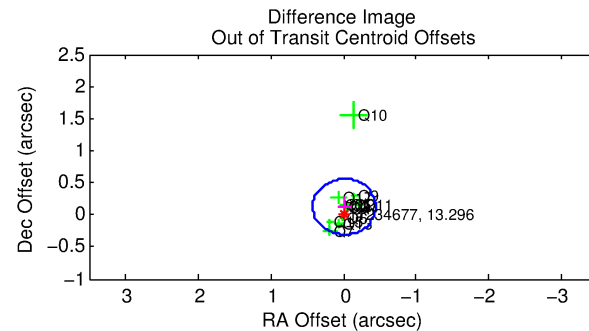
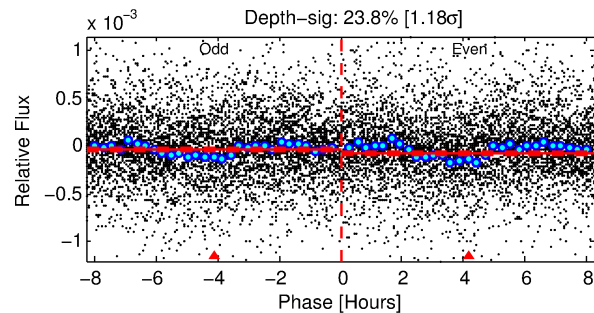
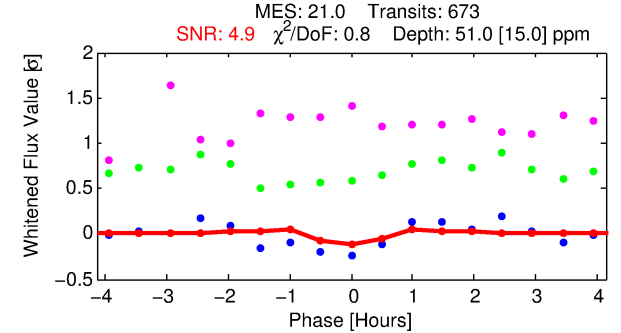
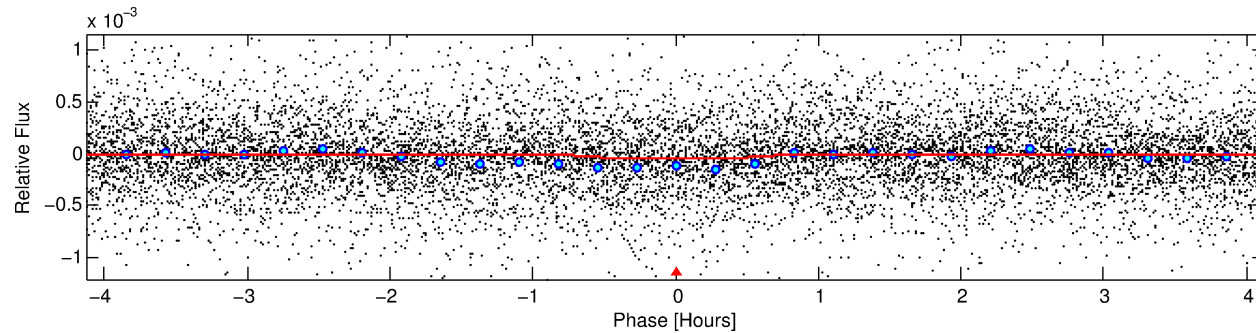
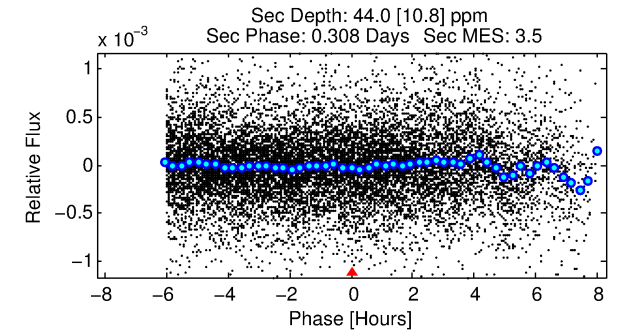
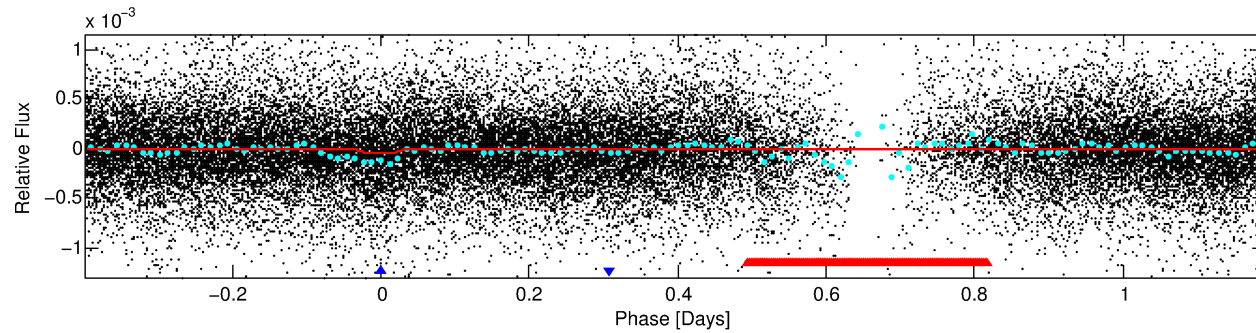
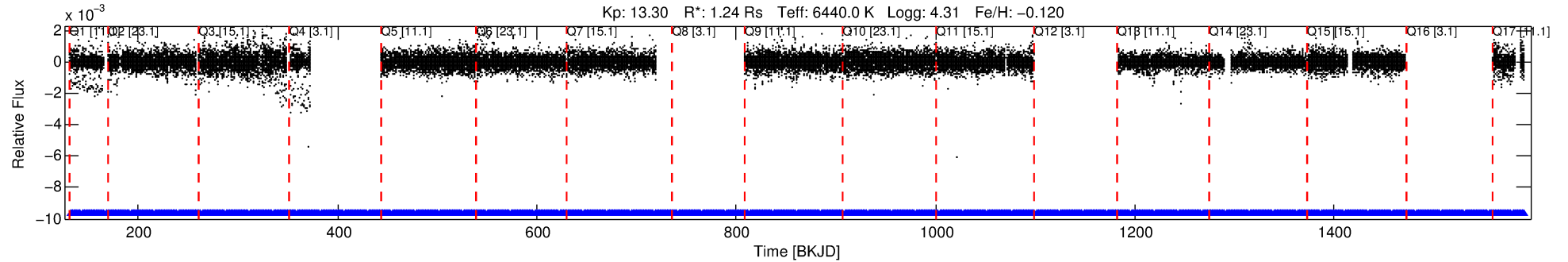
No Significant Match Found

# DV One-Page Summary

KIC: 11234677 Candidate: 2 of 2 Period: 1.588 d

KOI: K07423 Corr: No Ephemeris Match

Kp: 13.30 R\*: 1.24 Rs Teff: 6440.0 K Logg: 4.31 Fe/H: -0.120



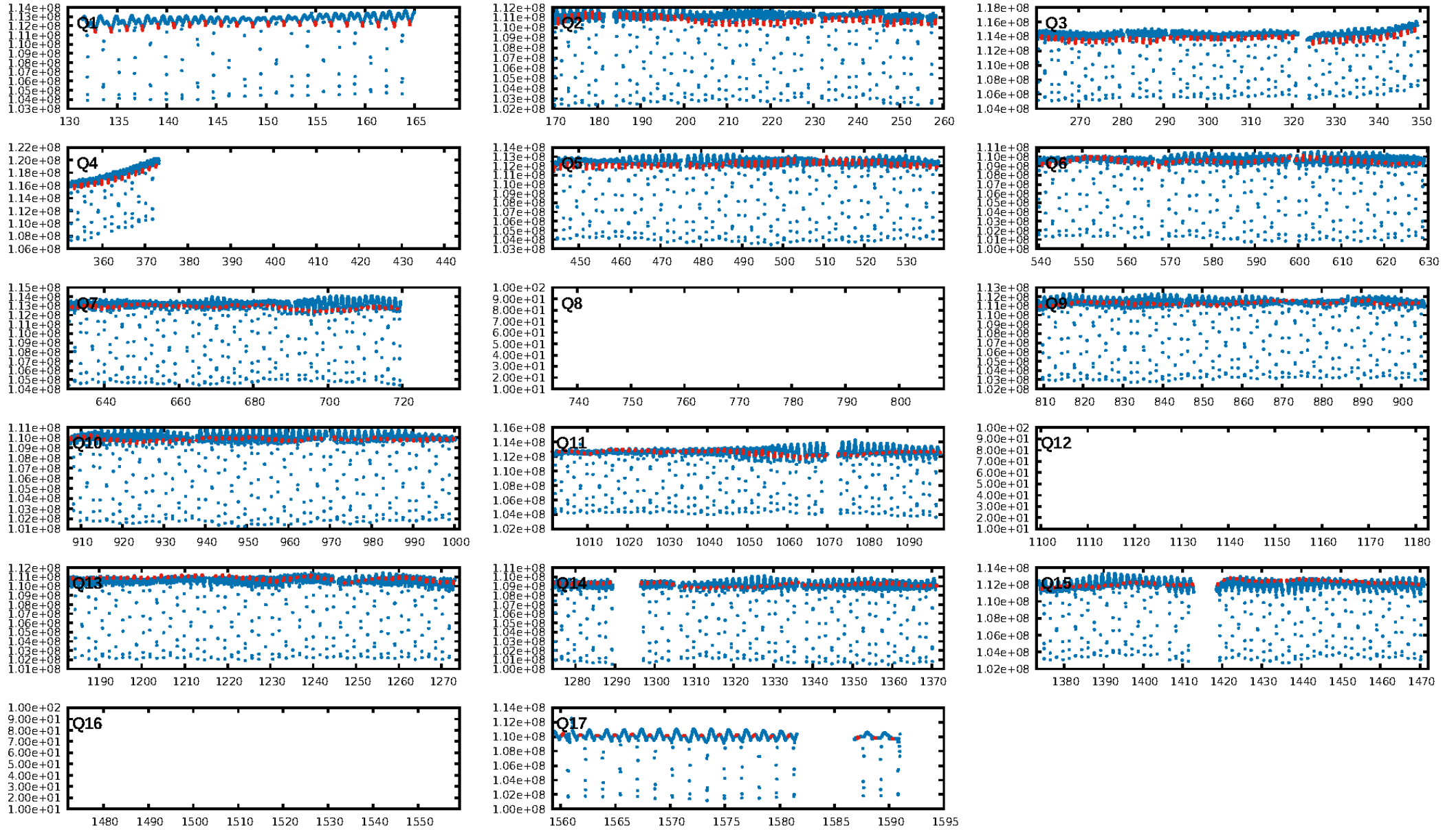
## DV Fit Results:

Period = 1.58777 [0.00002] d  
Epoch = 132.7588 [0.0030] BKJD  
Rp/R\* = 0.0080 [0.0051]  
a/R\* = 3.46 [11.44]  
b = 0.93 [0.50]  
Seff = 3037.87 [1193.10]  
Teq = 1893 [186] K  
Rp = 1.08 [0.78] Re  
a = 0.0280 [0.0075] AU  
Ag = 16.28 [21.96] [0.70σ]  
Teffp = 5879 [1912] K [2.07σ]

## DV Diagnostic Results:

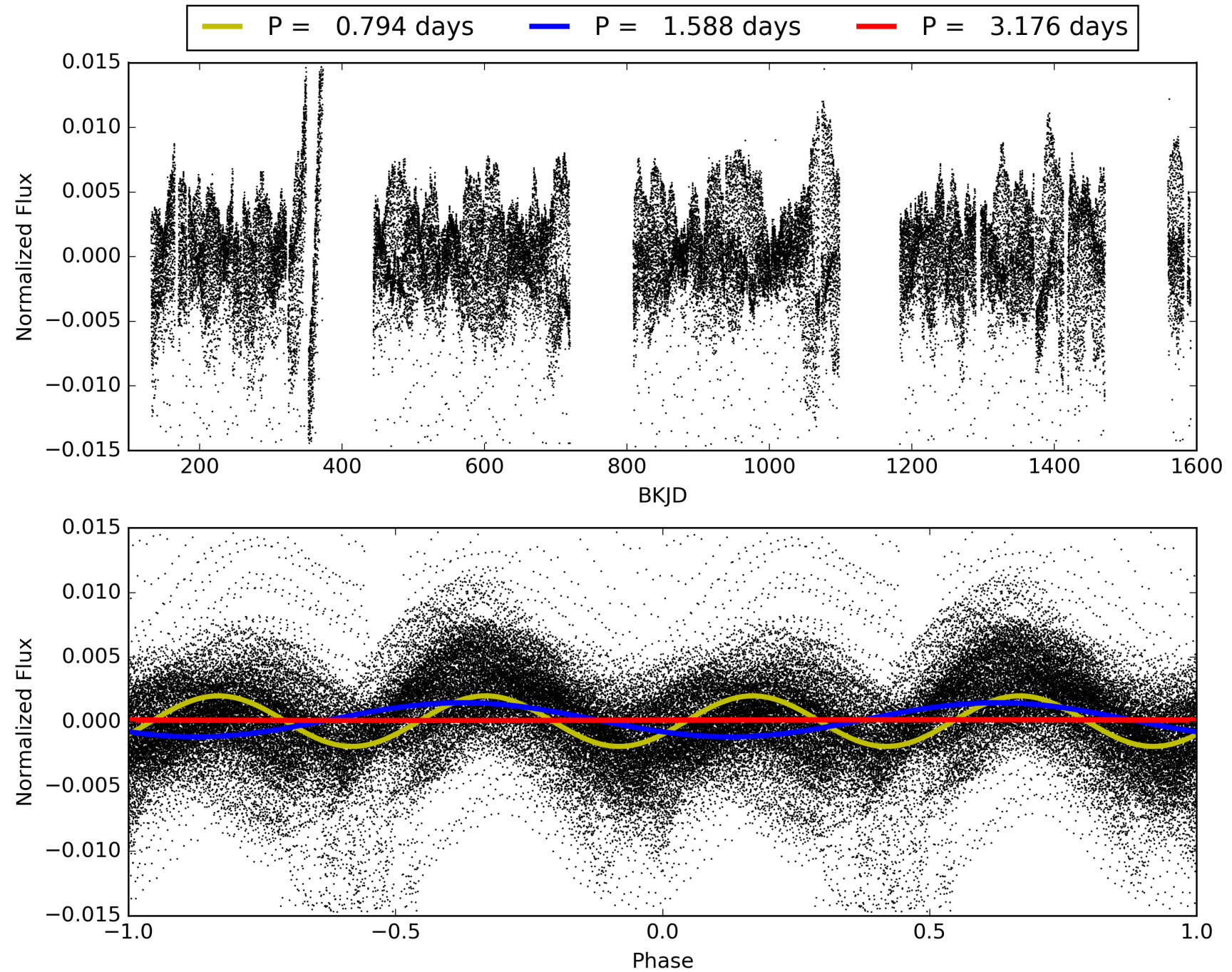
ShortPeriod-sig: 0.2% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.00e-104  
RollingBand-fgt: 1.00 [622/622]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 1.081 arcsec [1.27σ]  
OotOffset-rm: 0.126 arcsec [0.87σ]  
KicOffset-rm: 0.194 arcsec [1.63σ]  
OotOffset-st: 3/4/1/5 [13]  
KicOffset-st: 3/4/1/5 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 011234677-02, PDC Light Curves





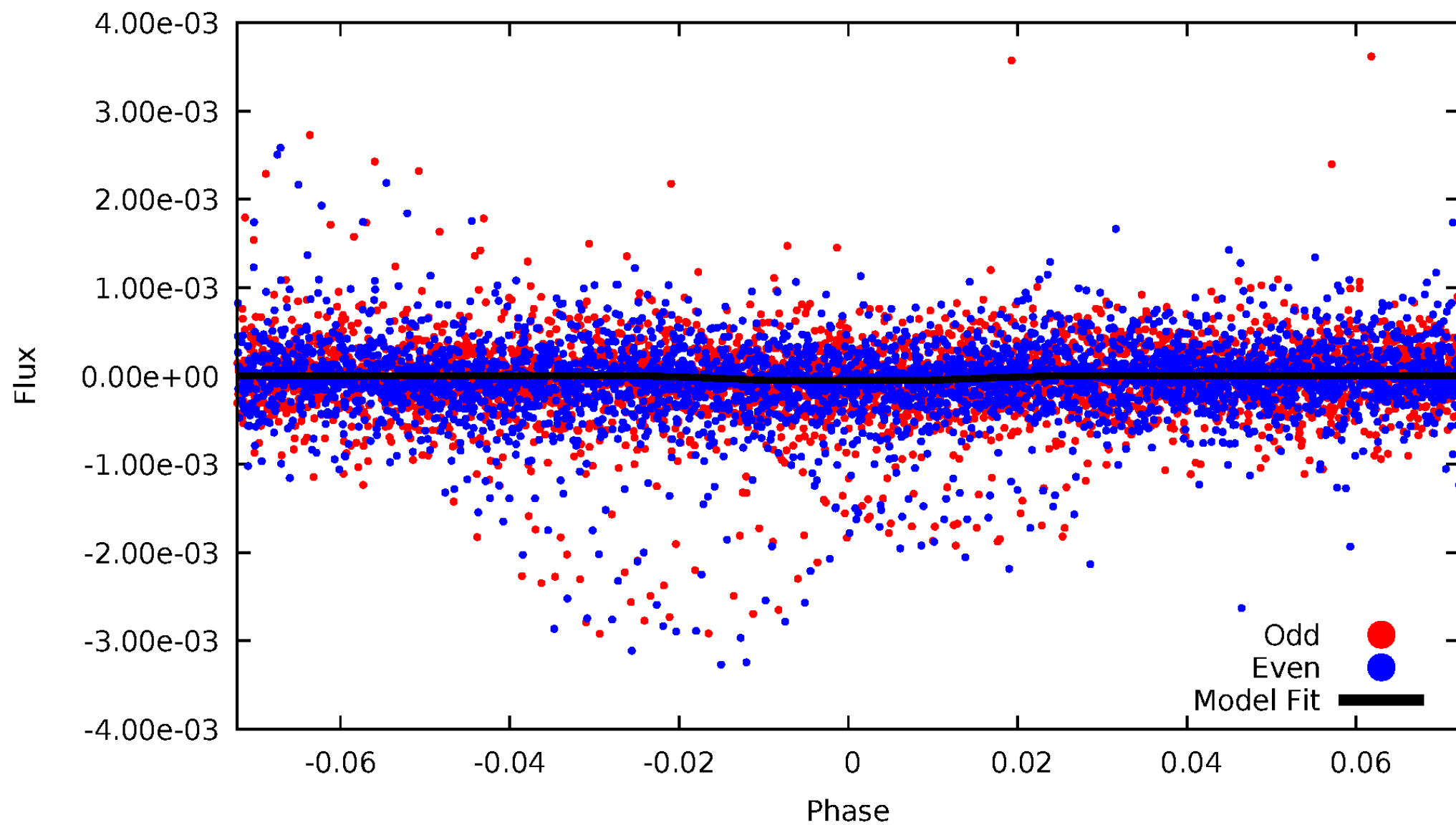
TCE 011234677-02





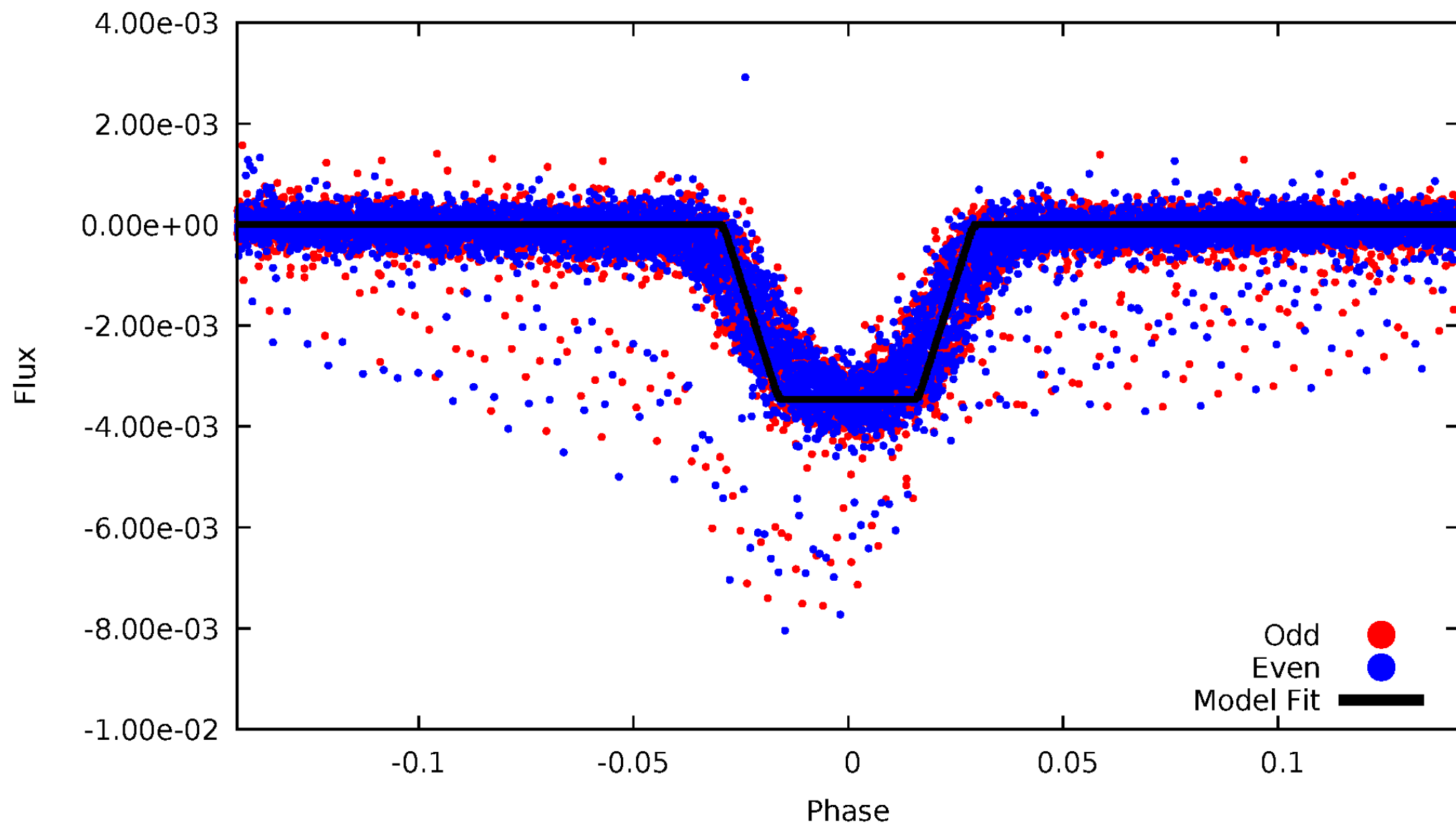
# DV Odd/Even

TCE 011234677-02



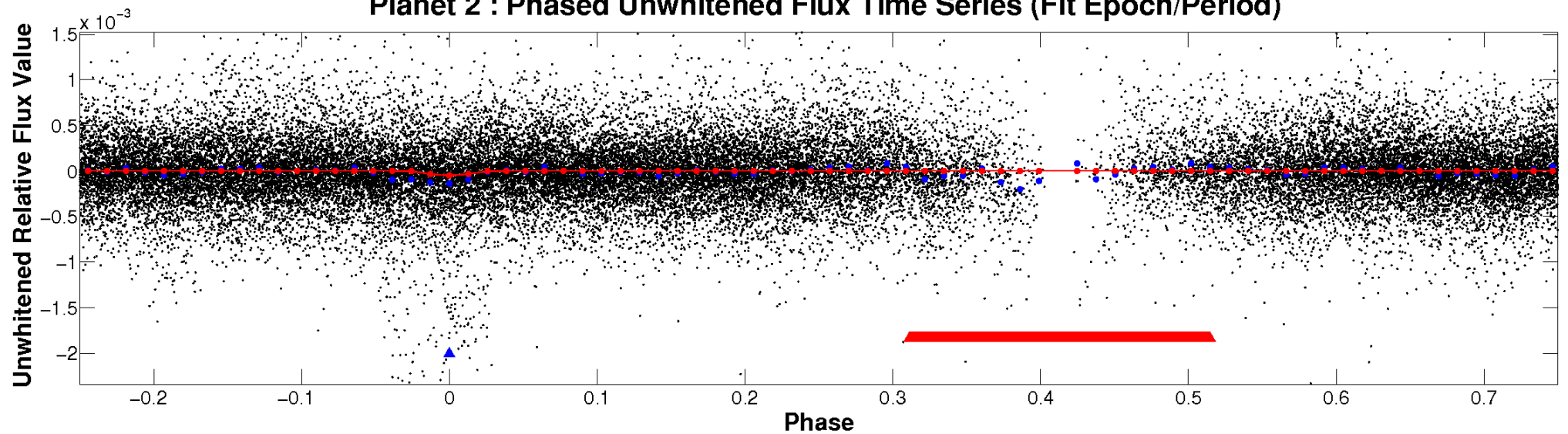
# ALT Odd/Even

TCE 011234677-02

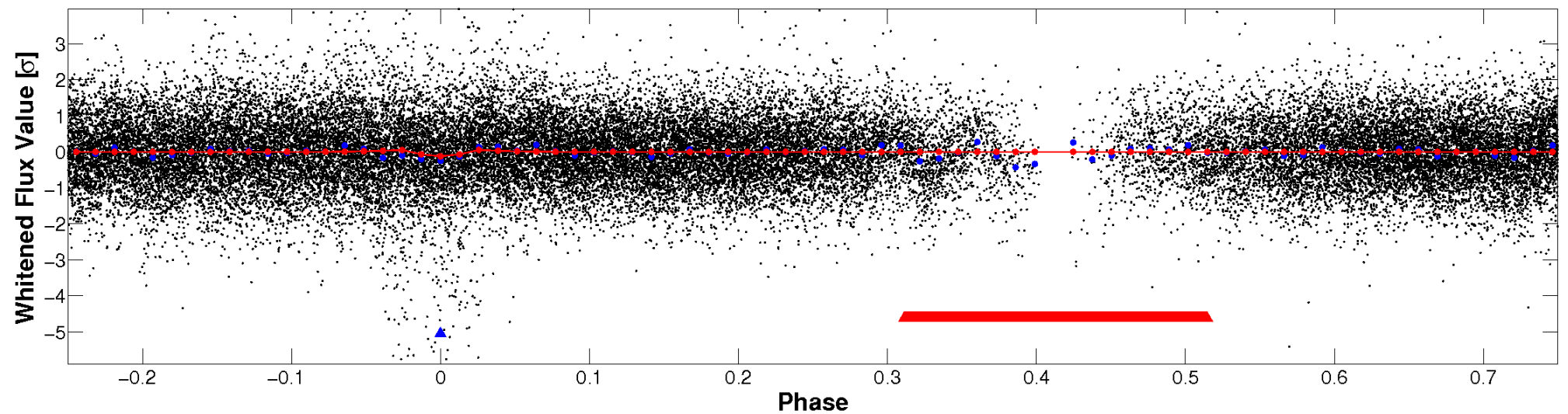


# Non-Whitened Vs. Whitened Light Curve

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

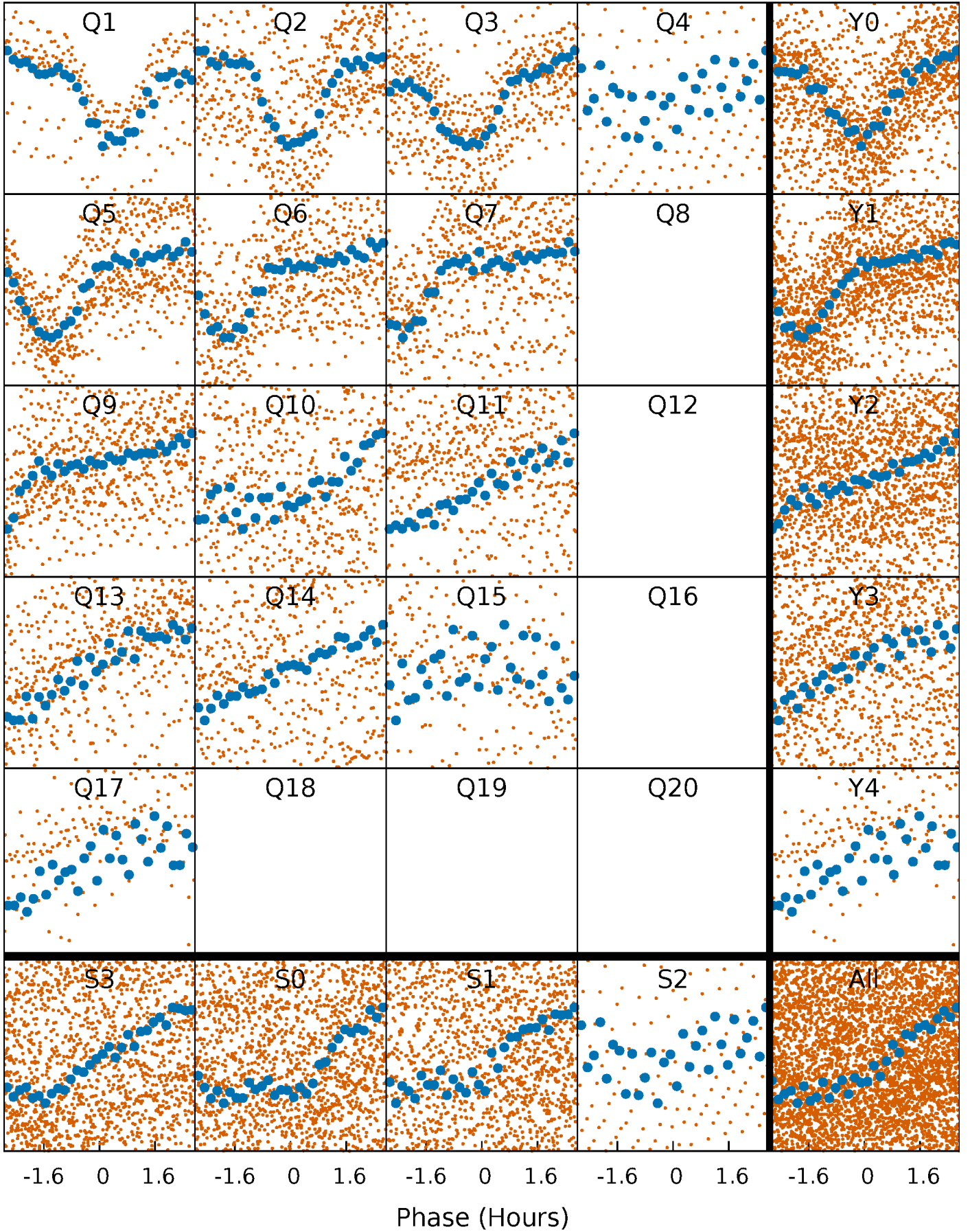


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



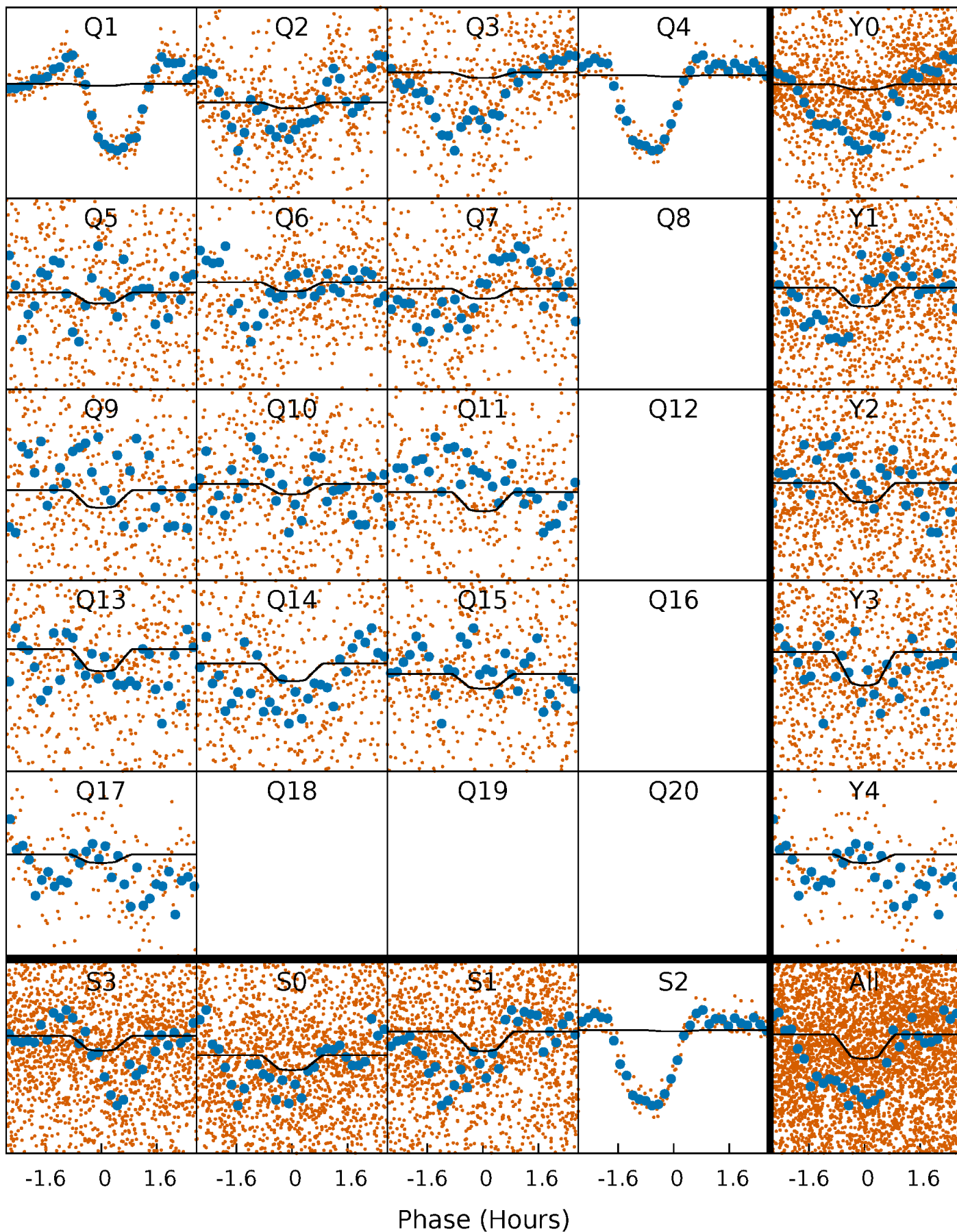
# PDC Quarter-Phased Transit Curves

TCE 011234677-02     $P = 1.587769$  Days     $T_0 = 132.758780$  (BKJD)



# DV Quarter-Phased Transit Curves

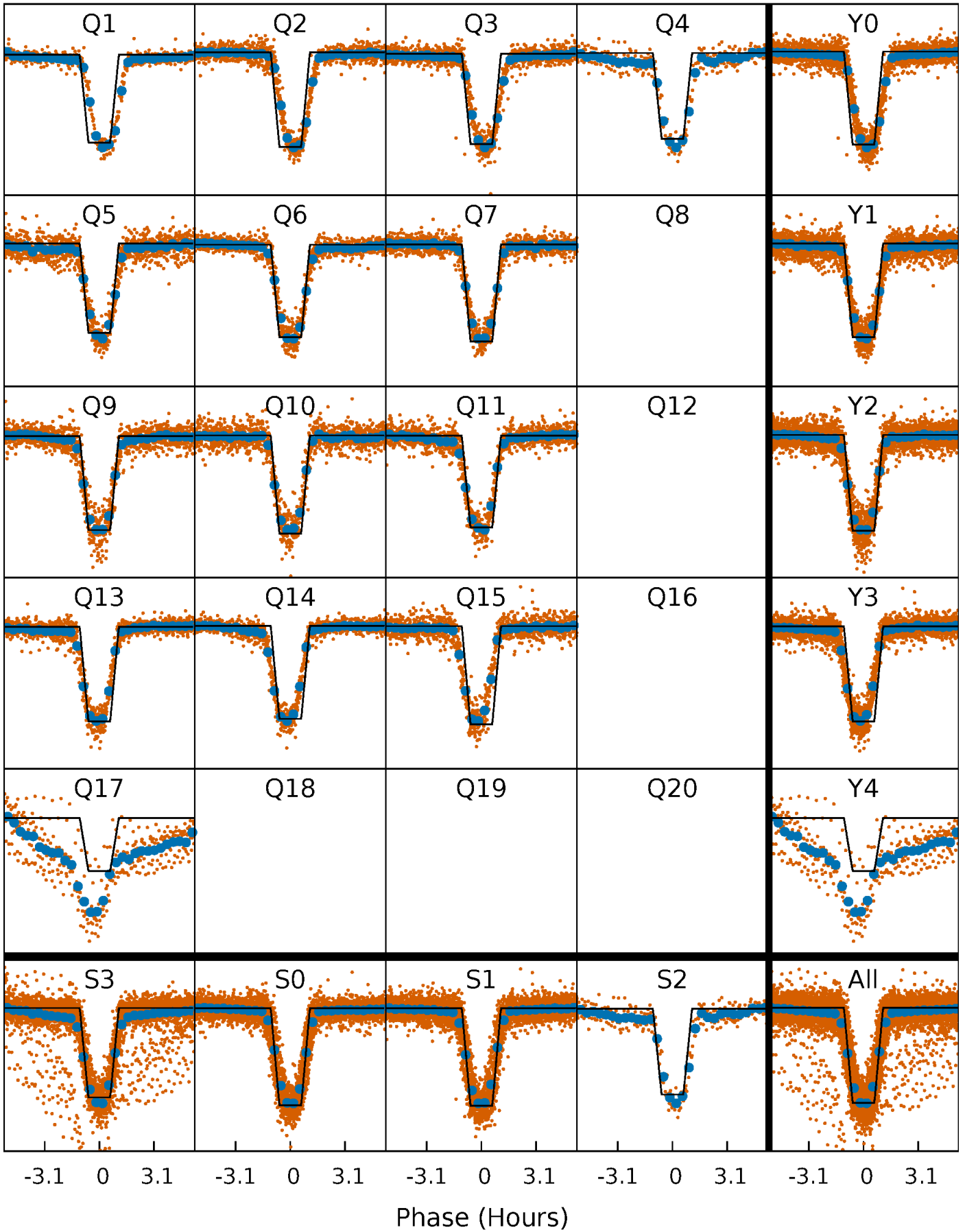
TCE 011234677-02   P= 1.587769 Days    $T_0=132.758780$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

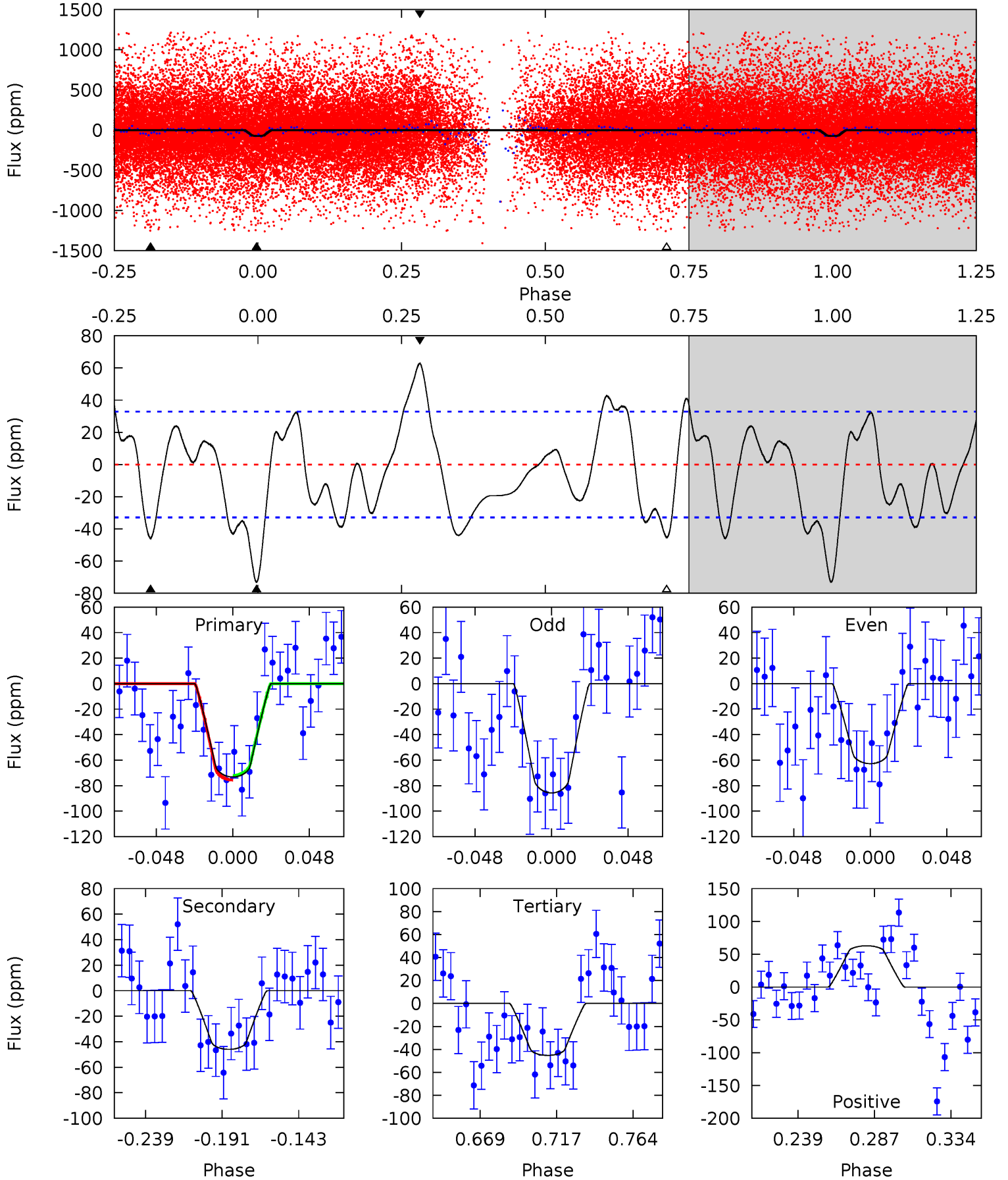
TCE 011234677-02     $P = 1.587454$  Days     $T_0 = 132.767677$  (BKJD)



# DV Model-Shift Uniqueness Test

011234677-02, P = 1.587769 Days, E = 131.171011 Days

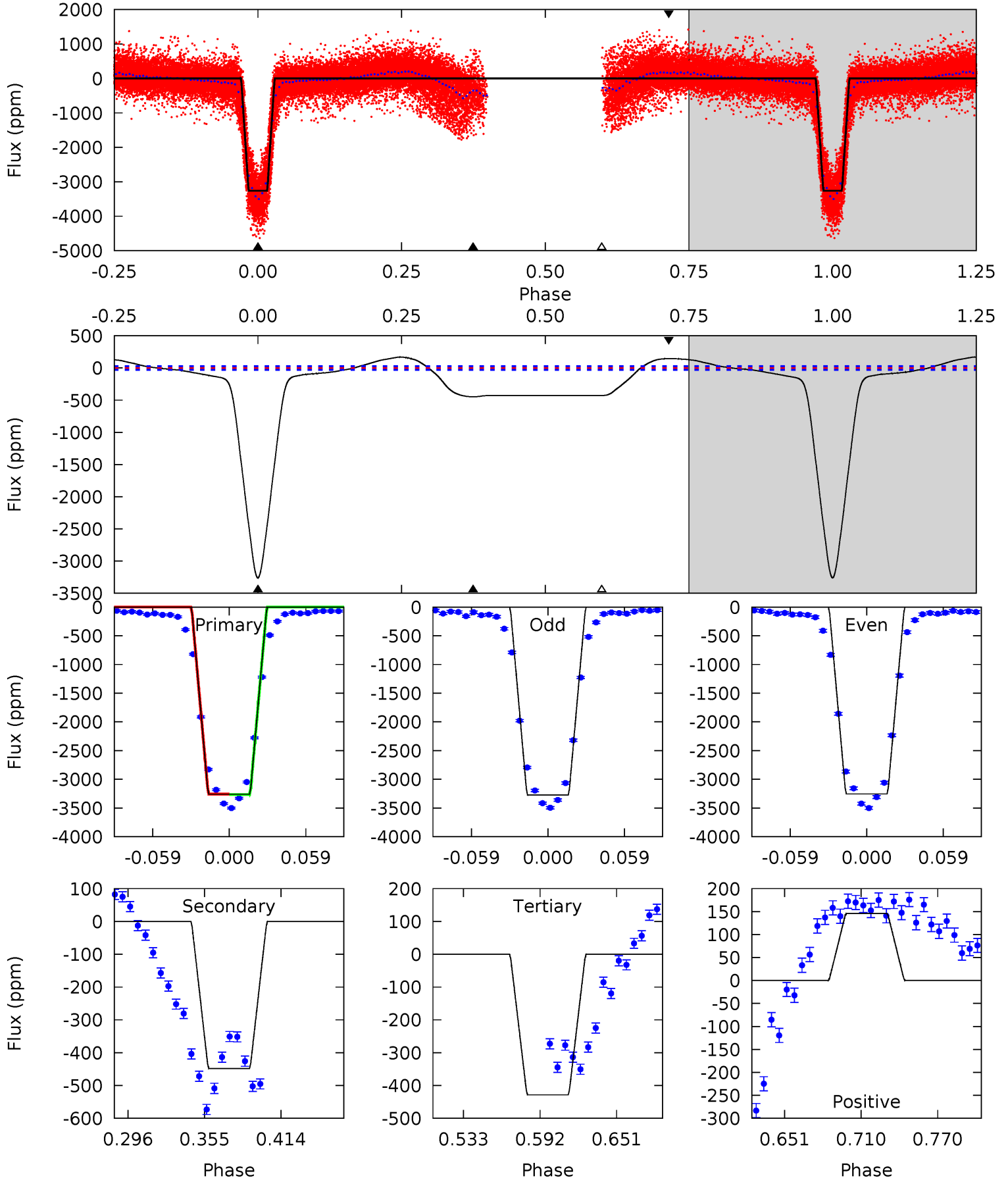
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	6.59	6.49	9.01	4.72	1.98	3.72	4.00	1.48	0.10	-2.42	1.65	1.81	0.46	0.25



# Alt Model-Shift Uniqueness Test

011234677-02, P = 1.587454 Days, E = 131.180223 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
545.5	75.0	71.7	24.4	4.67	1.89	19.5	473.8	521.1	3.31	50.6	1.38	1.02	0.05	0.54





### Stellar Parameters For KIC 011234677

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6440^{+144}_{-192}$	$4.313^{+0.090}_{-0.195}$	$-0.120^{+0.250}_{-0.300}$	$1.241^{+0.418}_{-0.179}$	$1.153^{+0.185}_{-0.135}$	$0.850^{+0.417}_{-0.448}$
	+2%/-3%	+2%/-5%	+208%/-250%	+34%/-14%	+16%/-12%	+49%/-53%
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 011234677-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-46 \pm 7$	$1.15^{+0.78}_{-0.64}$	$2668^{+191}_{-133}$	$5784^{+3458}_{-1196}$	$14^{+61}_{-9}$
Alt.	$-448 \pm 6$	$8.19^{+1.58}_{-1.08}$	$2669^{+197}_{-130}$	$4051^{+156}_{-163}$	$2.836^{+0.848}_{-0.720}$

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

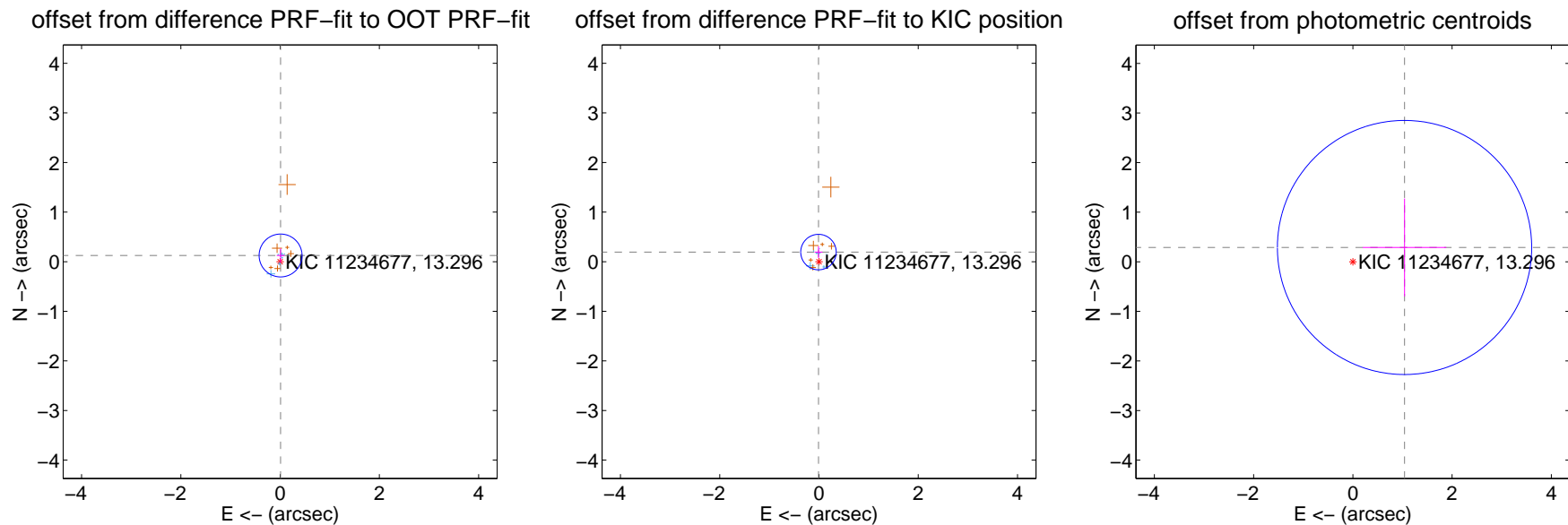
## DV Centroid Data

Supplemental centroid analysis for 011234677-02. Kepler magnitude: 13.30. Transit SNR 4.86

There are 7 quarters with good PRF difference image offsets

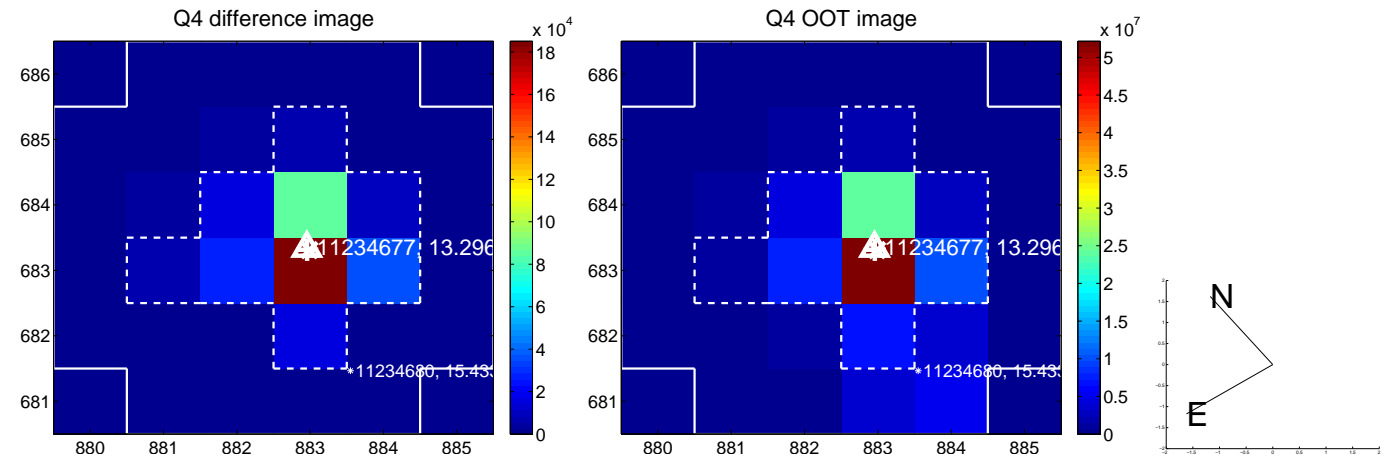
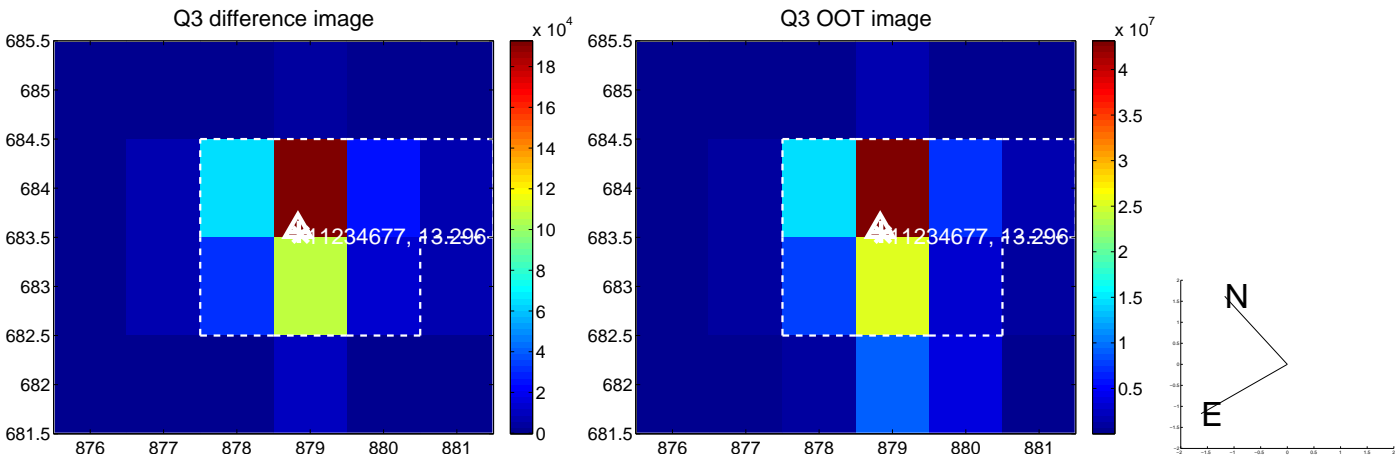
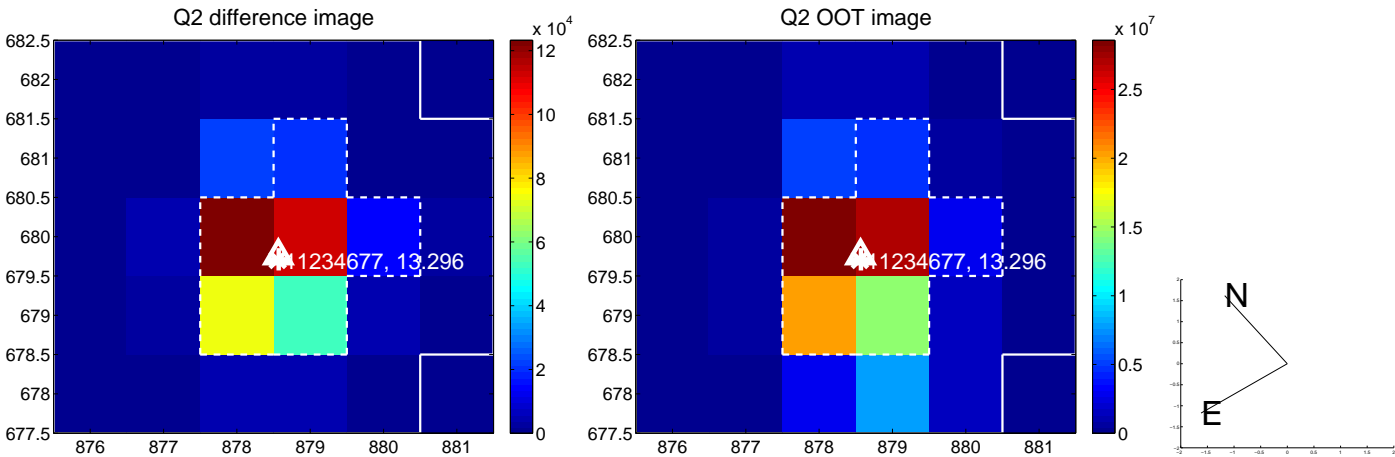
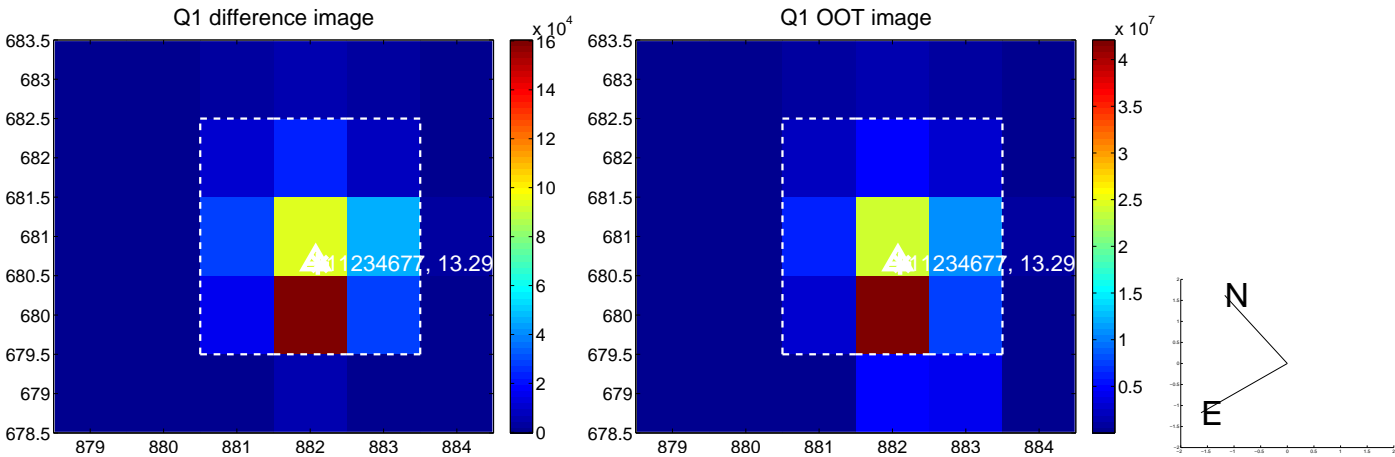
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.126 \pm 0.144$	0.87	$-0.009 \pm 0.076$	$0.125 \pm 0.143$
PRF-fit source offset from KIC position	$0.194 \pm 0.119$	1.63	$0.010 \pm 0.079$	$0.194 \pm 0.120$
photometric centroid source offset	$1.08 \pm 0.85$	1.27	$-1.04 \pm 0.84$	$0.29 \pm 0.99$

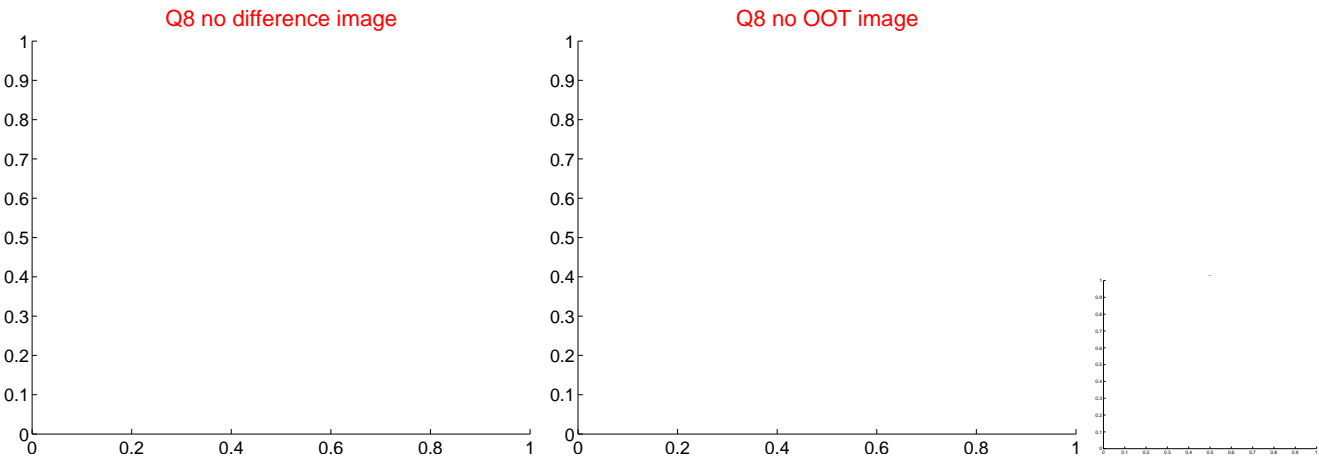
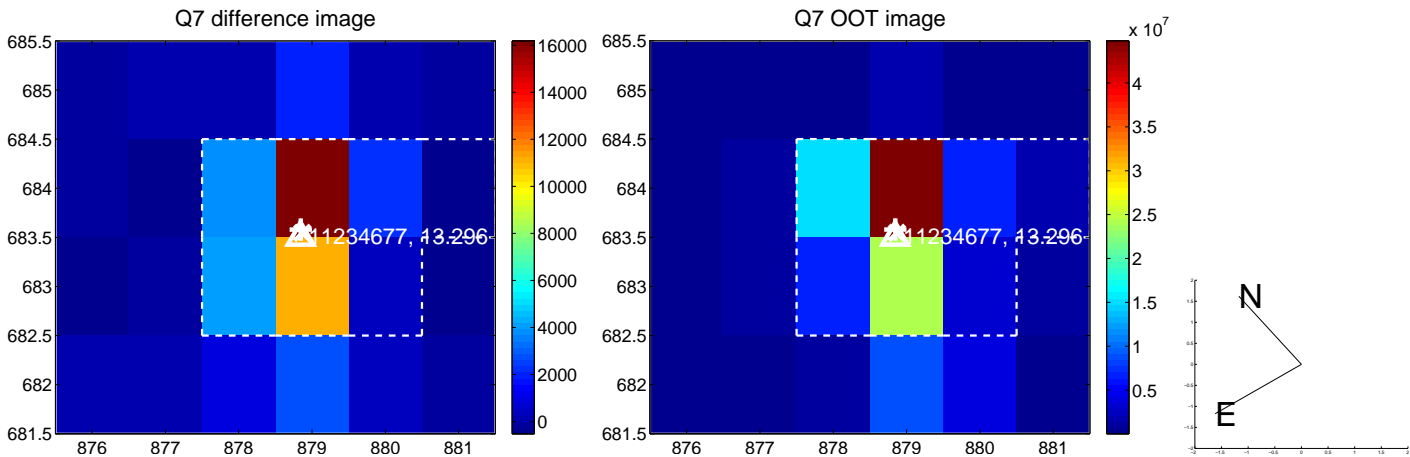
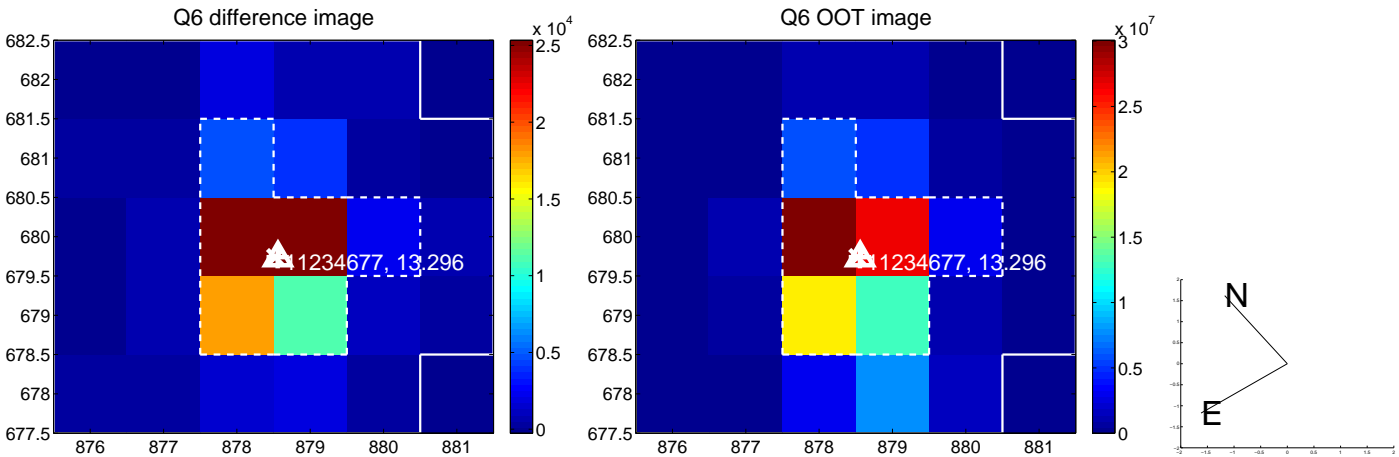
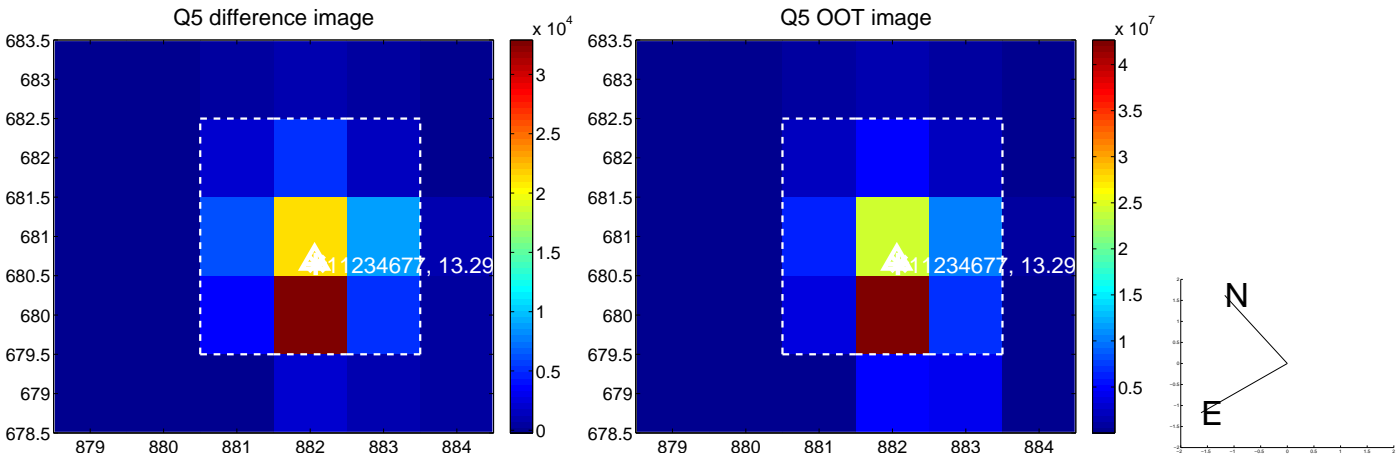


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

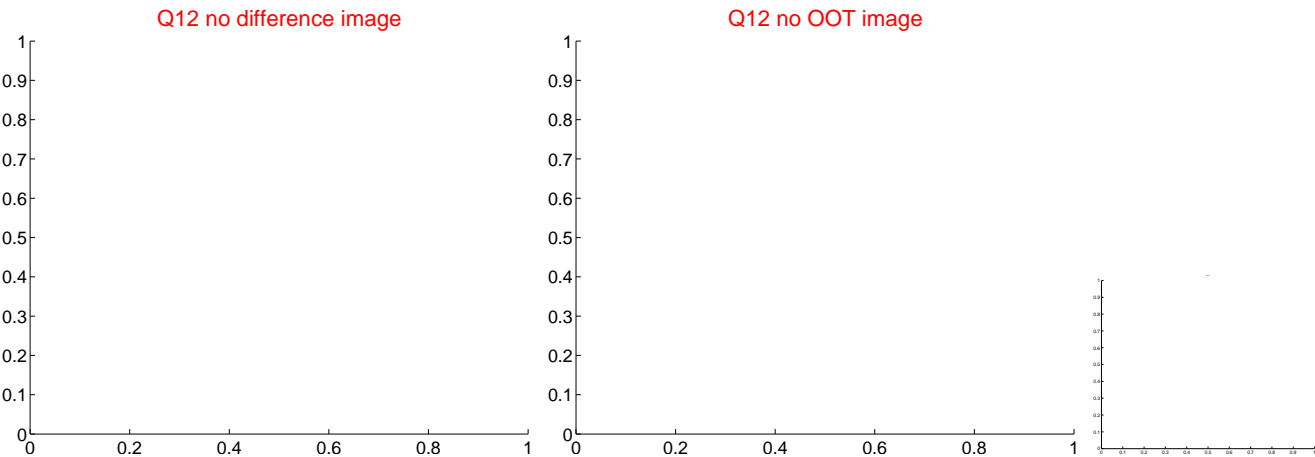
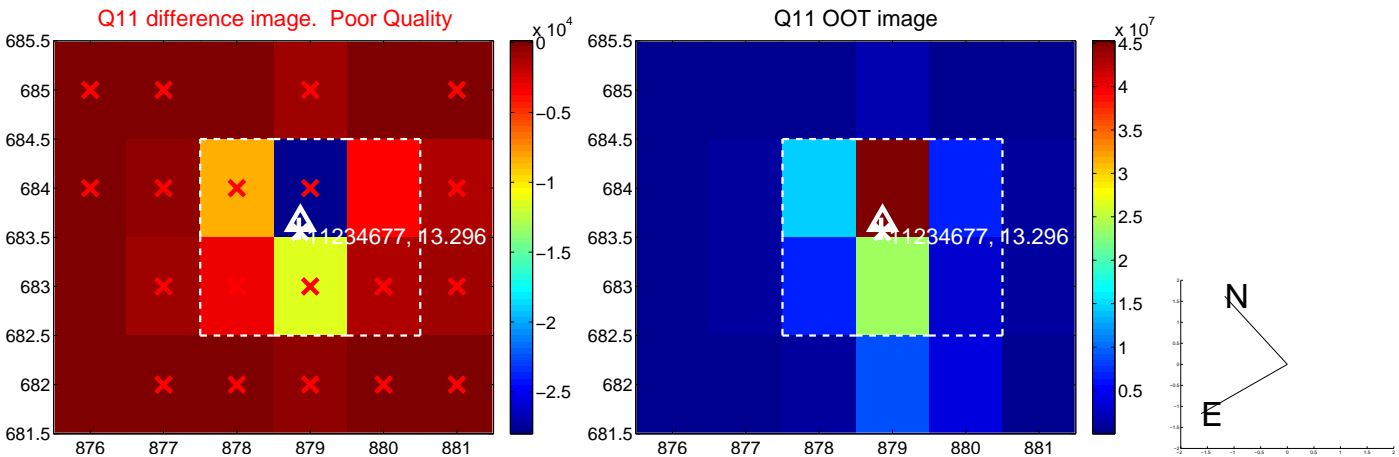
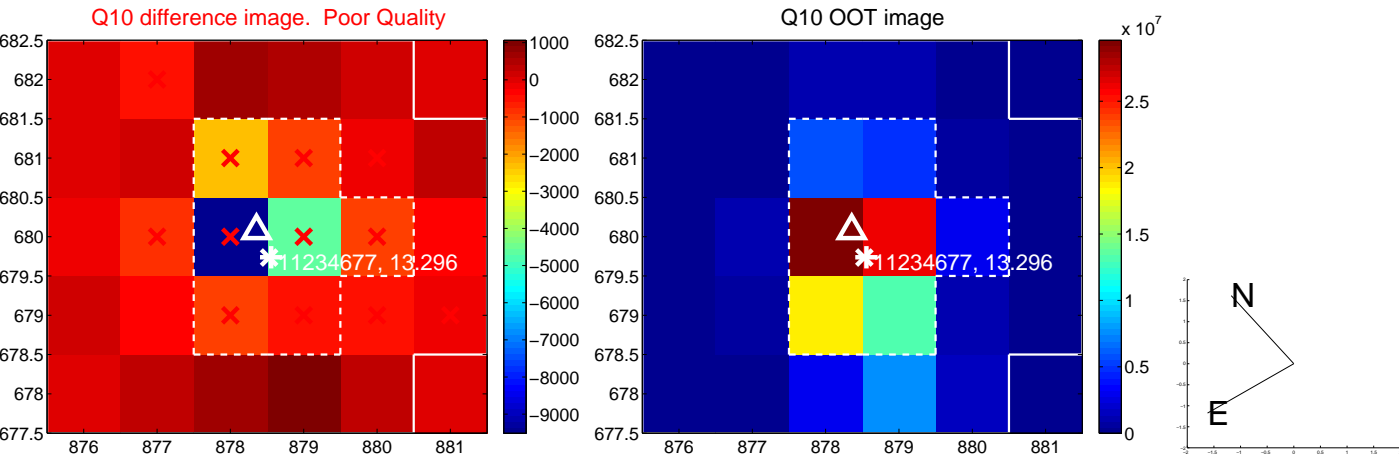
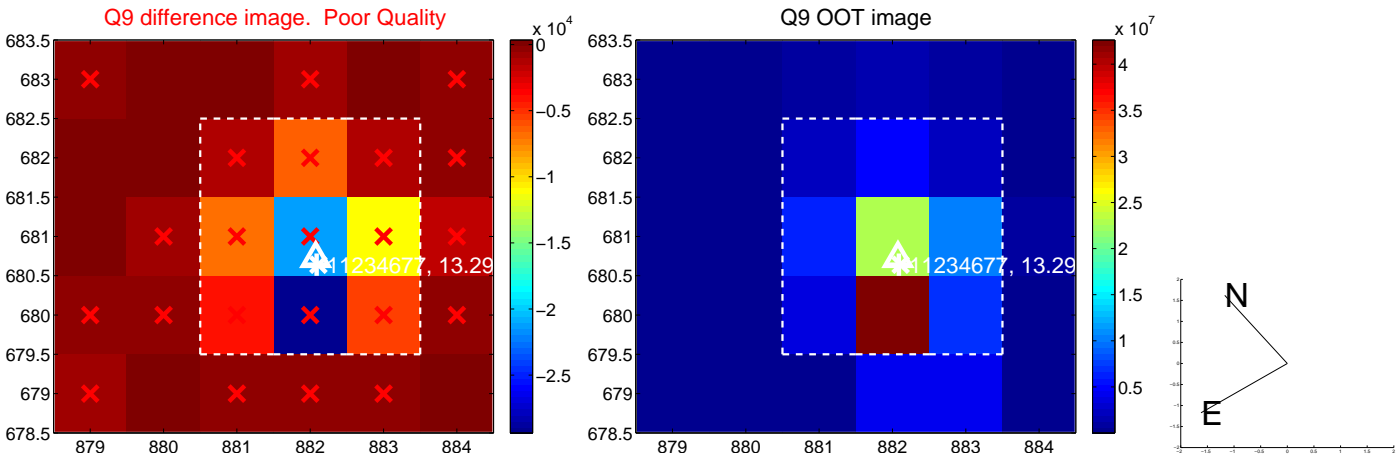
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



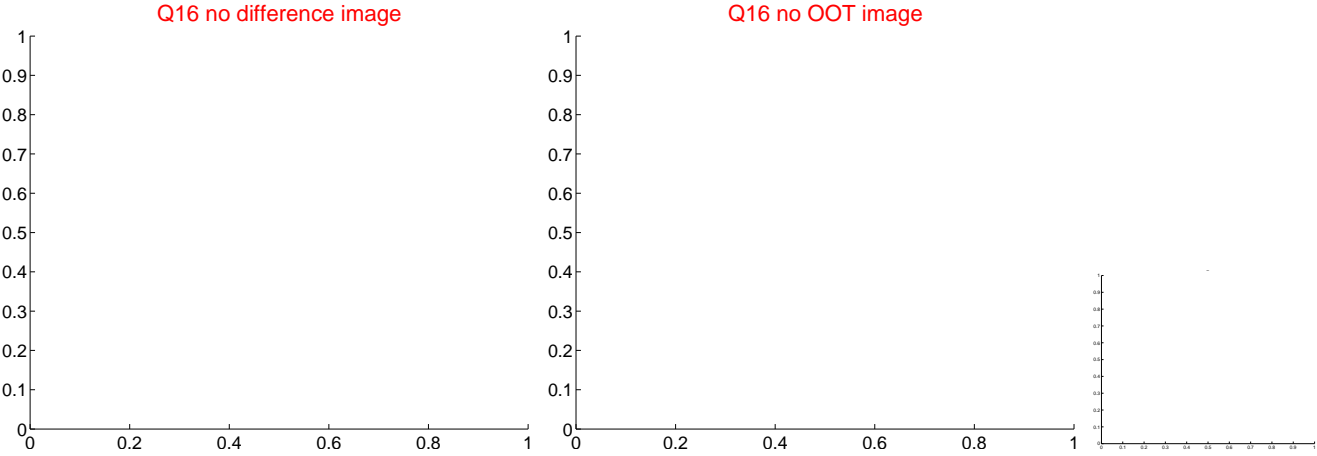
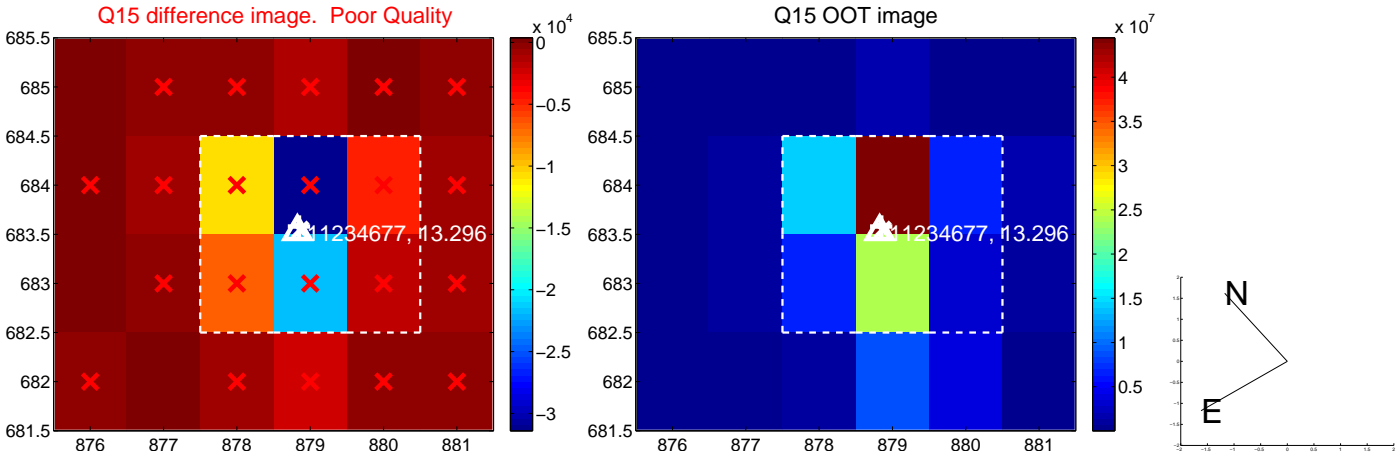
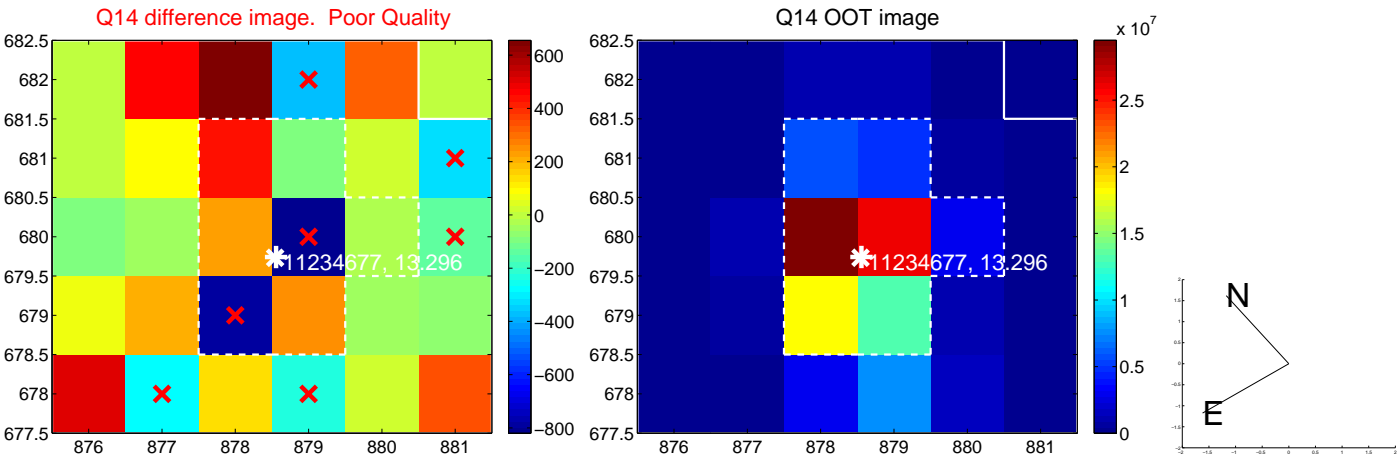
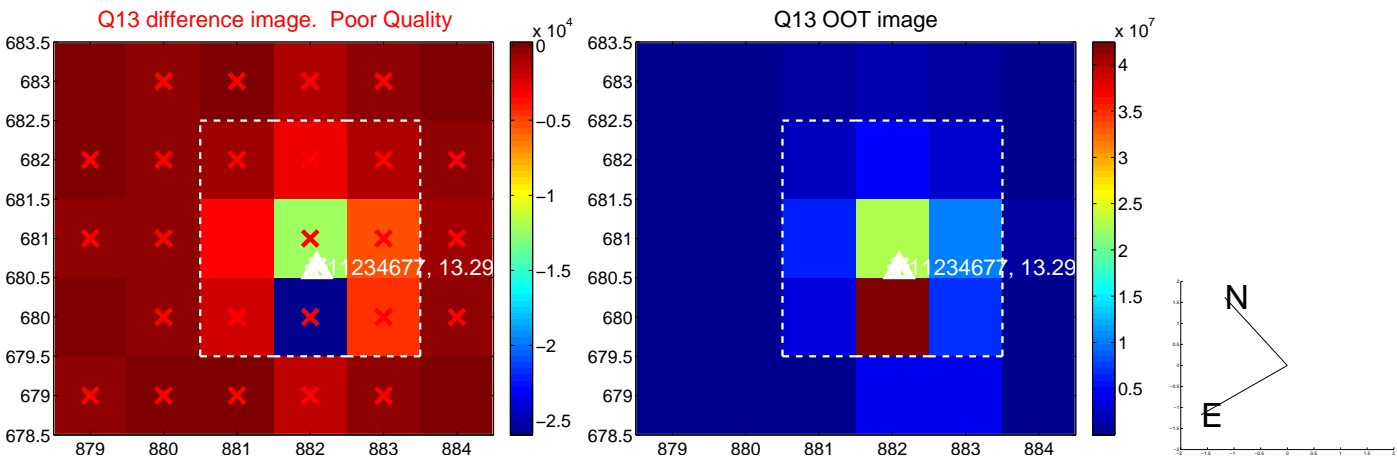
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



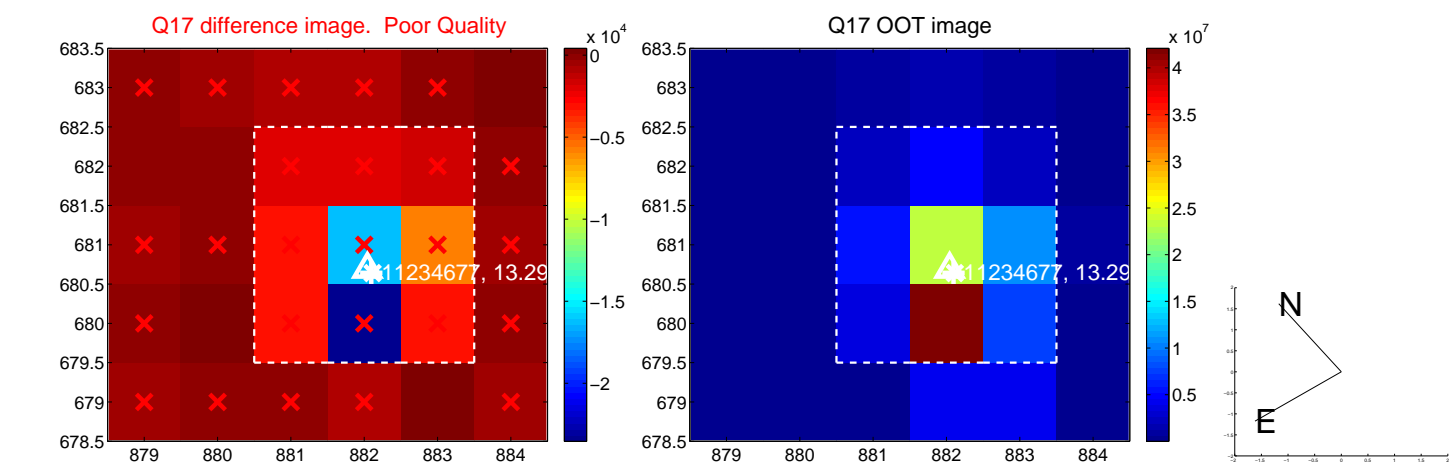
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



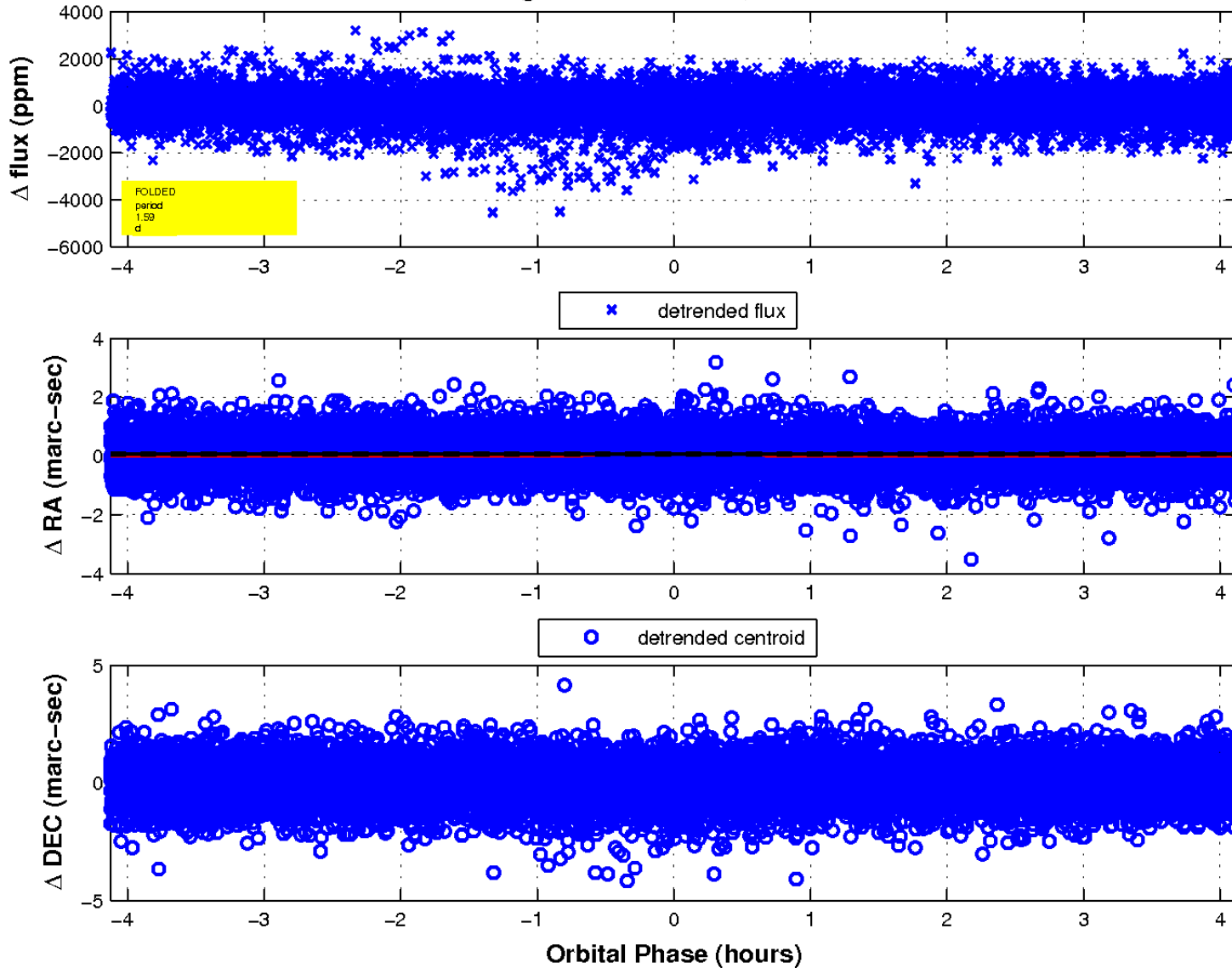
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

