

# KIC 007373877

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007373877-01	OBS	6037.01	32.669952	159.487032	388.4	3.320	9.5	9.4	0.74	4871	1.71	7.97
007373877-02	OBS	No	32.668703	153.091187	322.1	4.847	8.1	8.5	0.74	4871	1.54	7.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007373877-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
007373877-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

**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 007373877-01

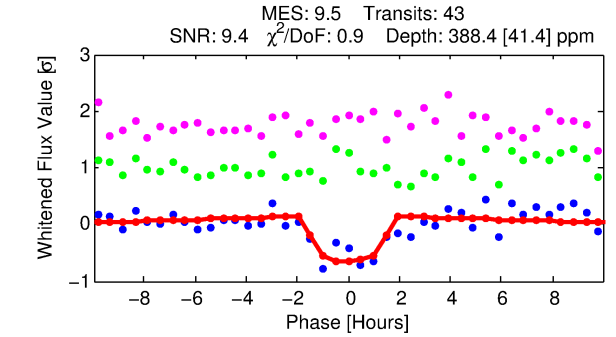
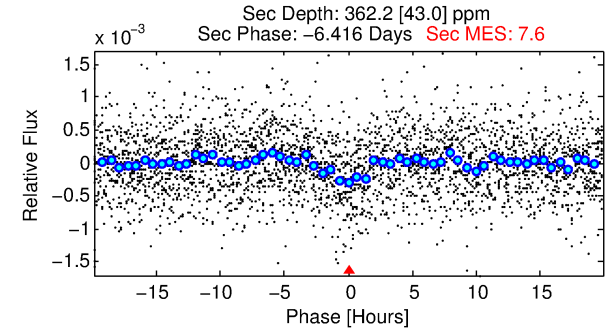
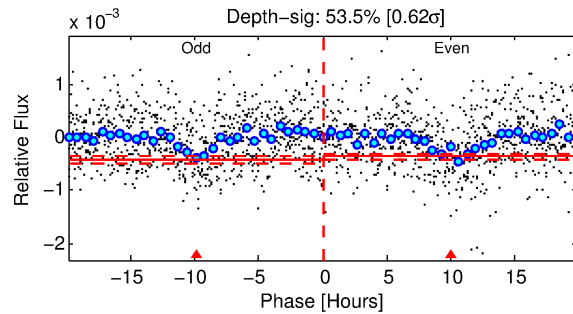
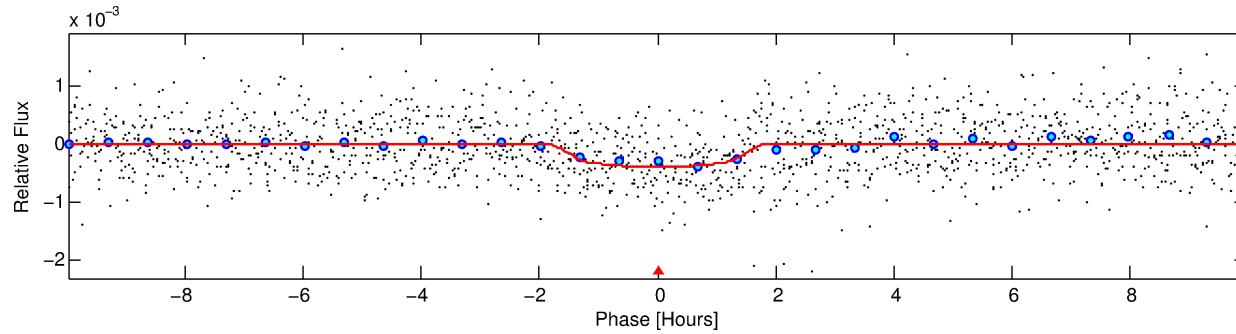
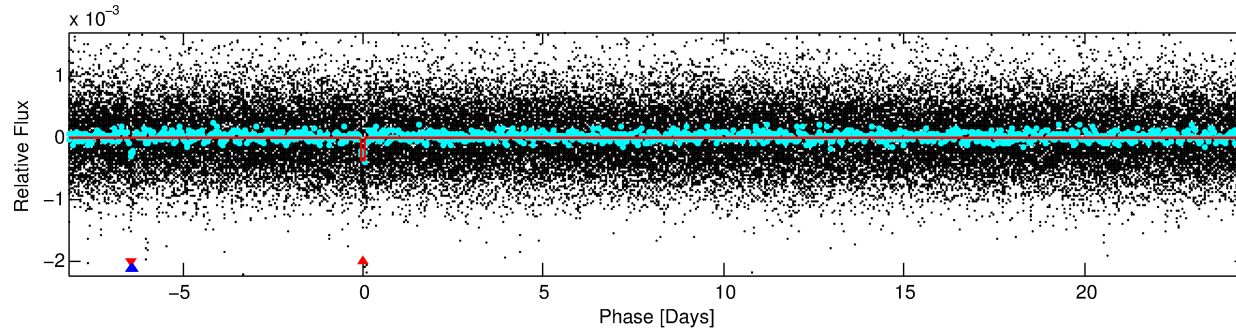
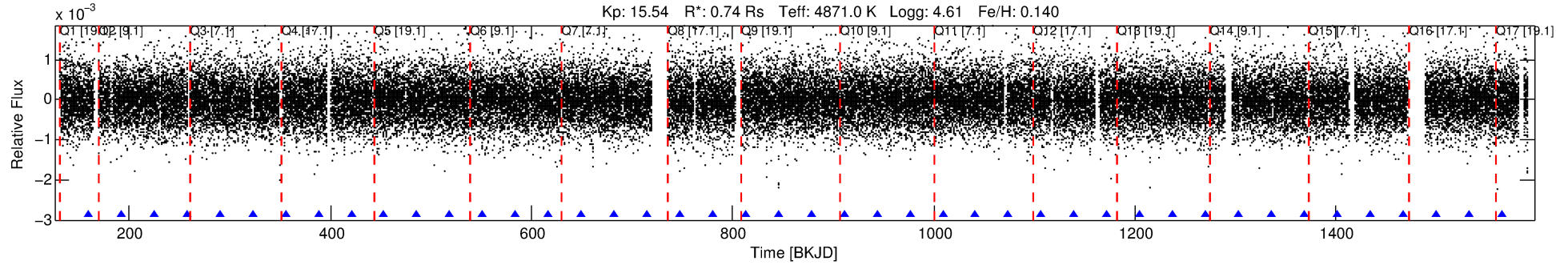
No Significant Match Found

# DV One-Page Summary

KIC: 7373877 Candidate: 1 of 2 Period: 32.670 d

KOI: K06037.01 Corr: 0.974

Kp: 15.54 R\*: 0.74 Rs Teff: 4871.0 K Logg: 4.61 Fe/H: 0.140



## DV Fit Results:

Period = 32.66995 [0.00029] d  
Epoch = 159.4870 [0.0074] BKJD  
Rp/R\* = 0.0211 [0.0158]  
a/R\* = 42.10 [114.27]  
b = 0.85 [0.89]  
Seff = 7.97 [1.29]  
Teq = 429 [17] K  
Rp = 1.71 [1.29] Re  
a = 0.1864 [0.0142] AU  
Ag = 2374.95 [3585.92] [0.66σ]  
Teffp = 4625 [1747] K [2.40σ]

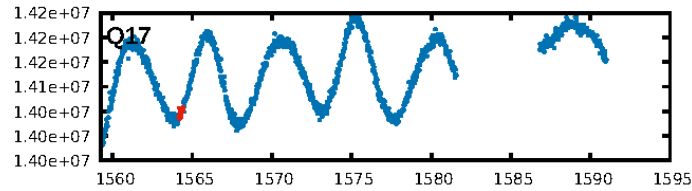
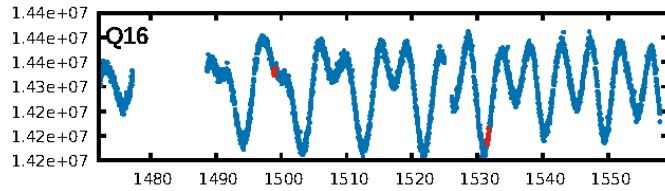
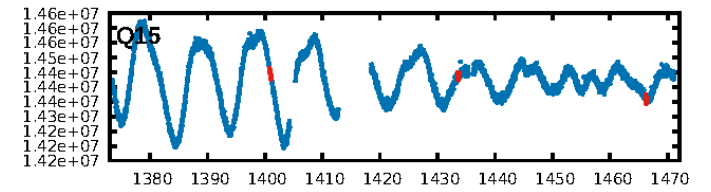
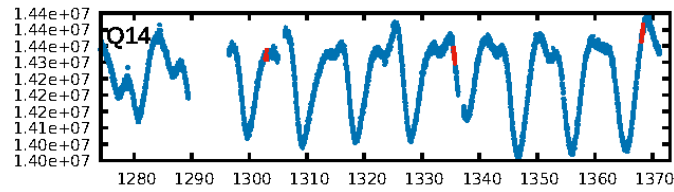
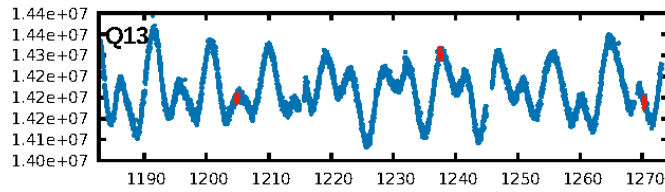
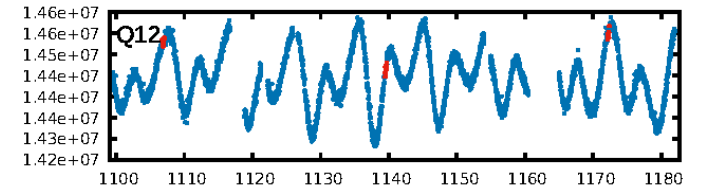
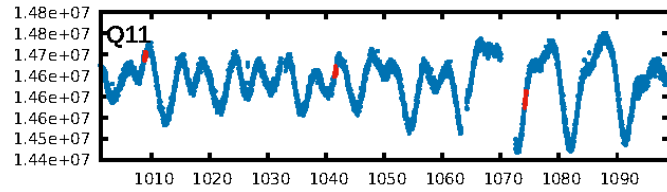
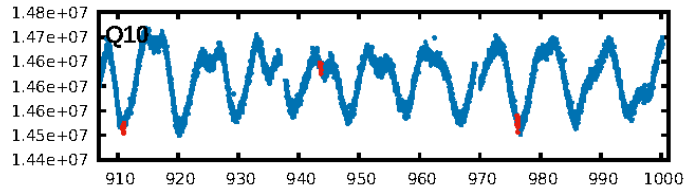
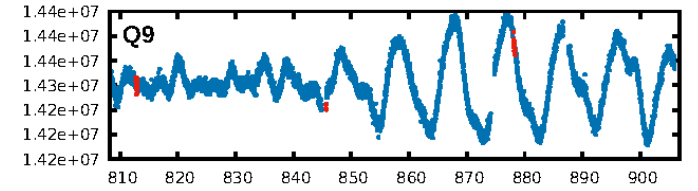
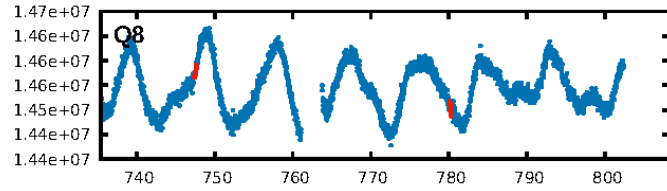
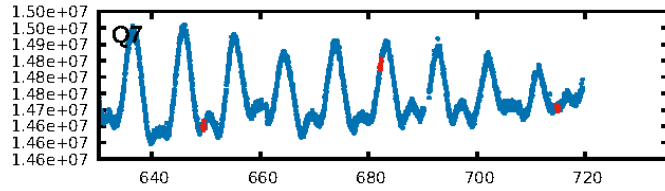
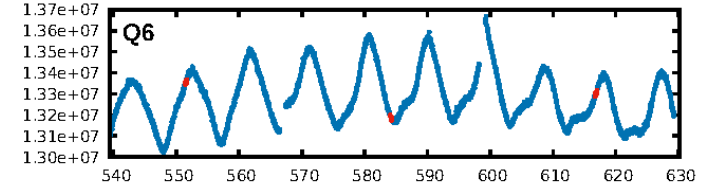
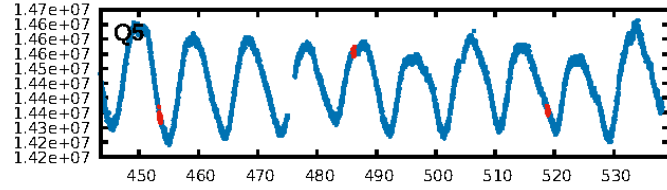
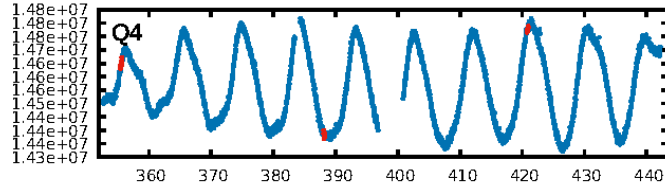
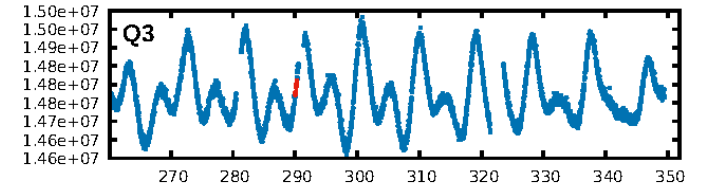
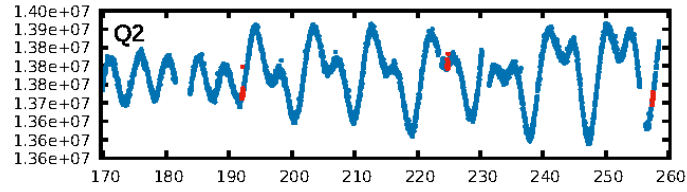
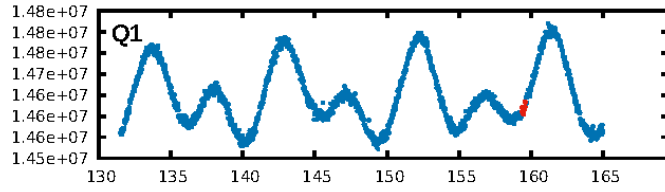
## DV Diagnostic Results:

ShortPeriod-sig: 0.4% [0.01σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.36e-19  
RollingBand-fgt: 1.00 [41/41]  
GhostDiagnostic-chr: -0.2988  
Centroid-sig: 0.0%  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

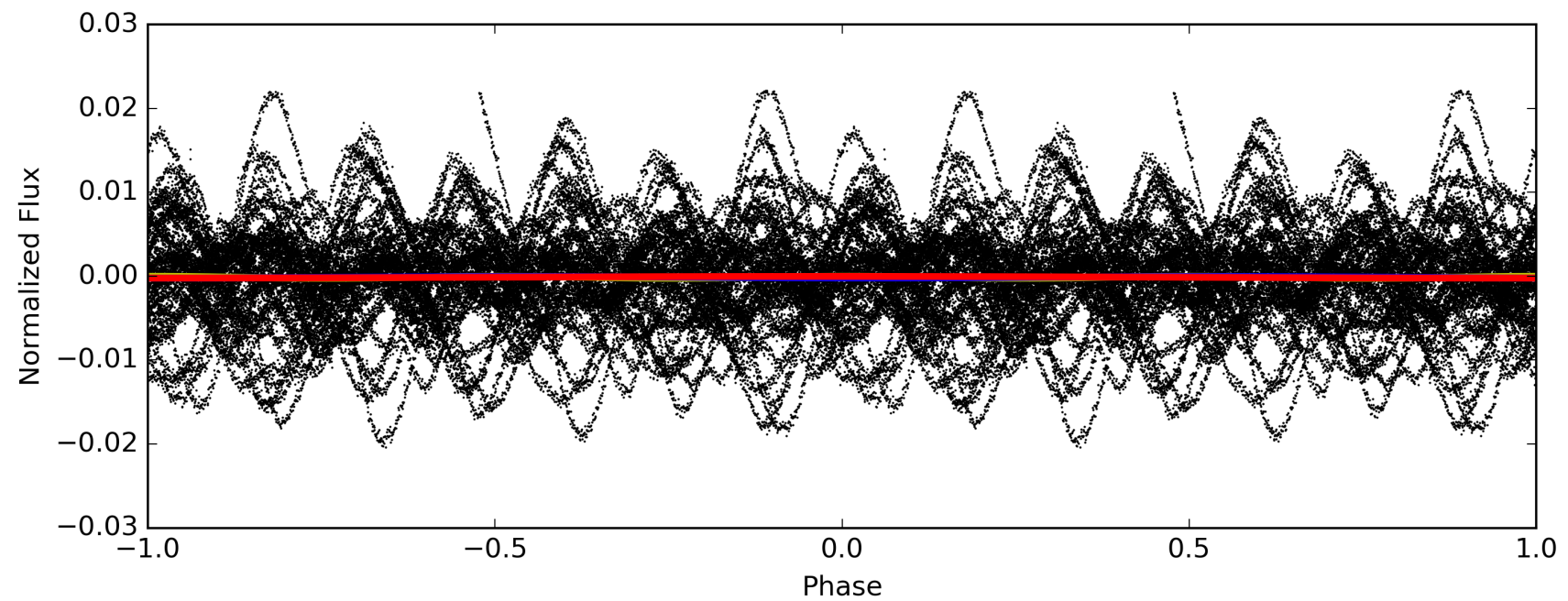
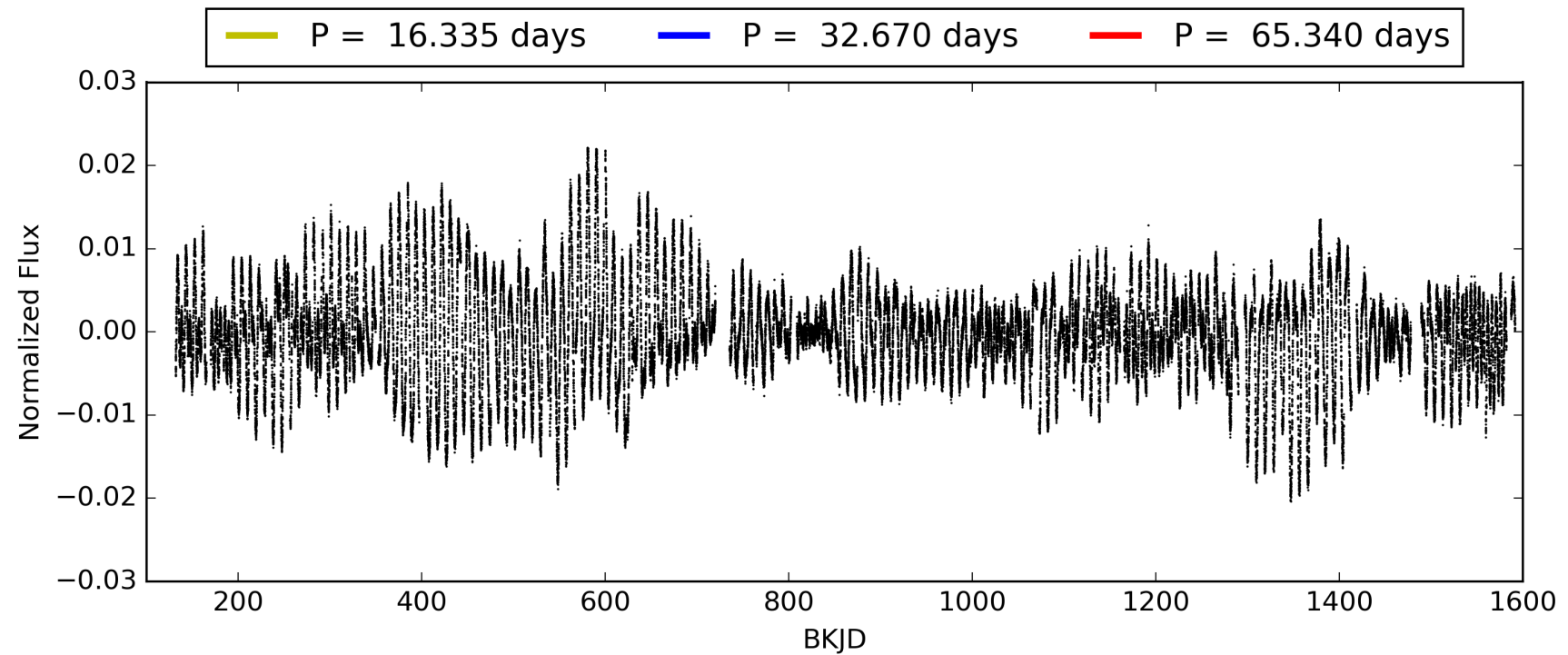
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:54:48 Z

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

# TCE 007373877-01, PDC Light Curves

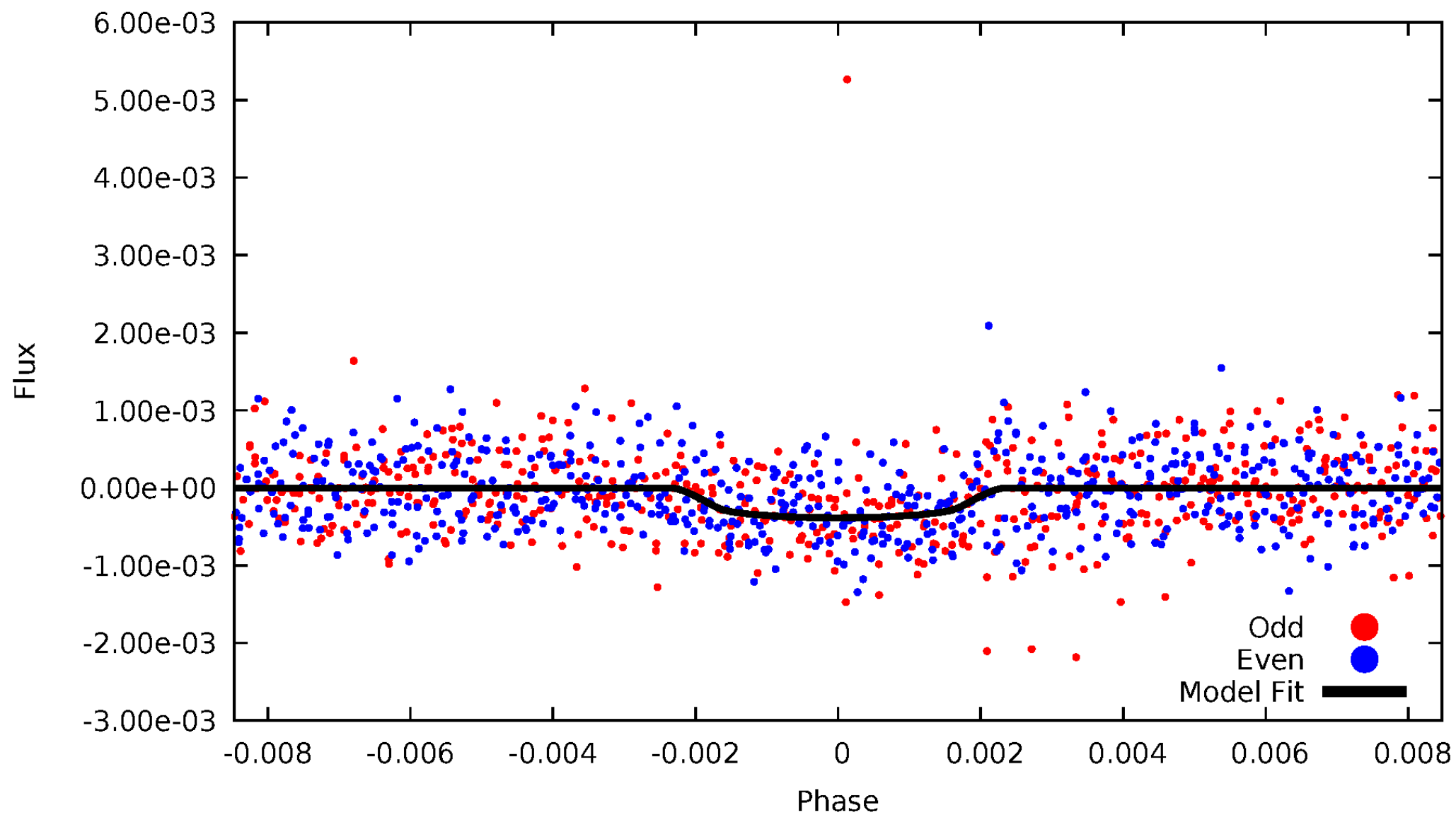


TCE 007373877-01



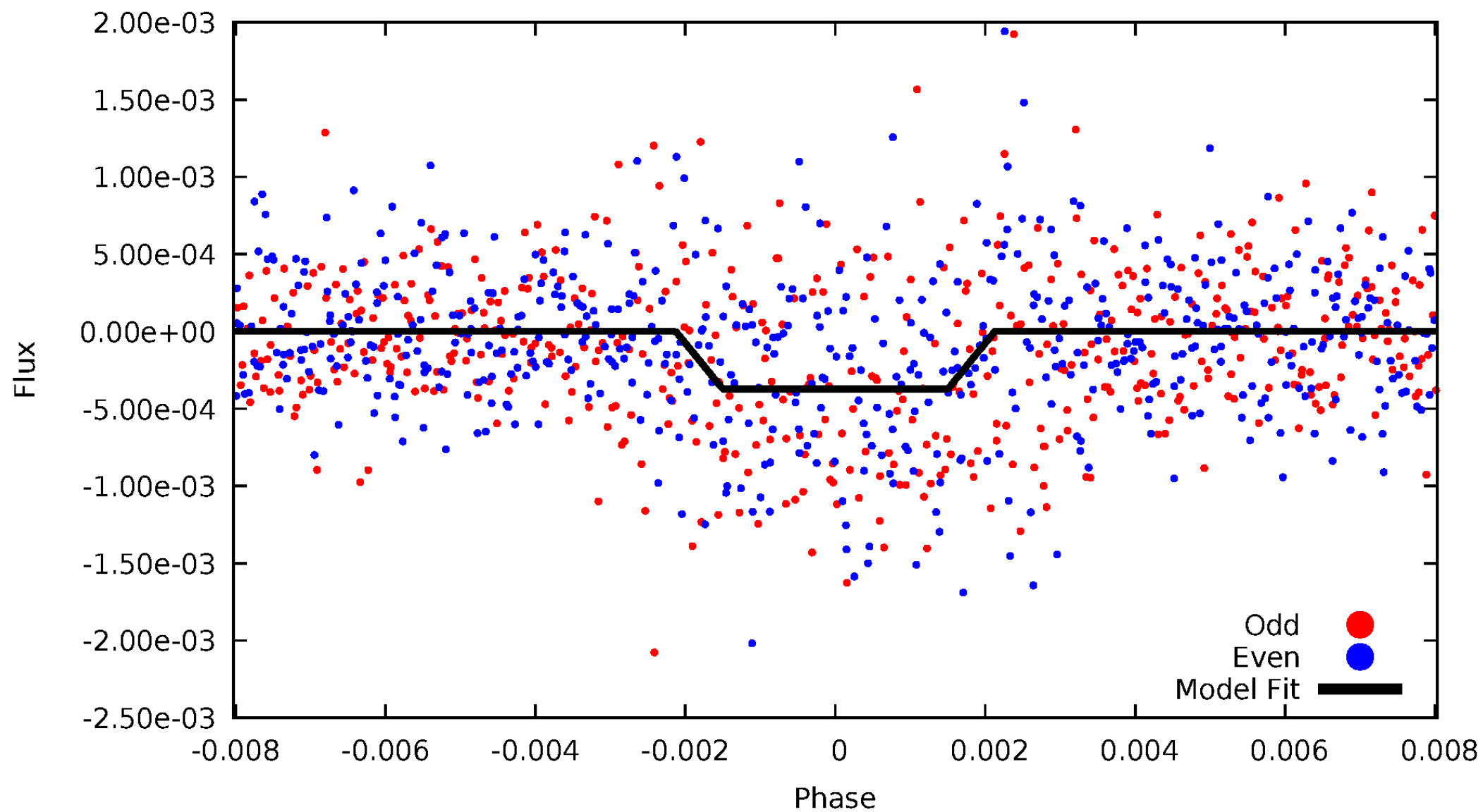
# DV Odd/Even

TCE 007373877-01



# ALT Odd/Even

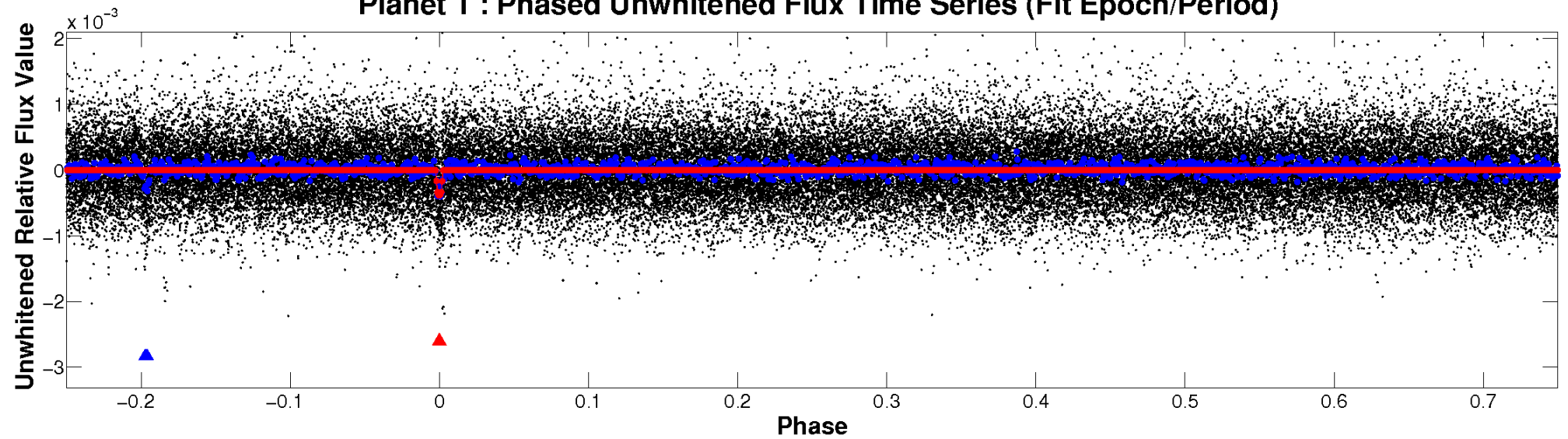
TCE 007373877-01



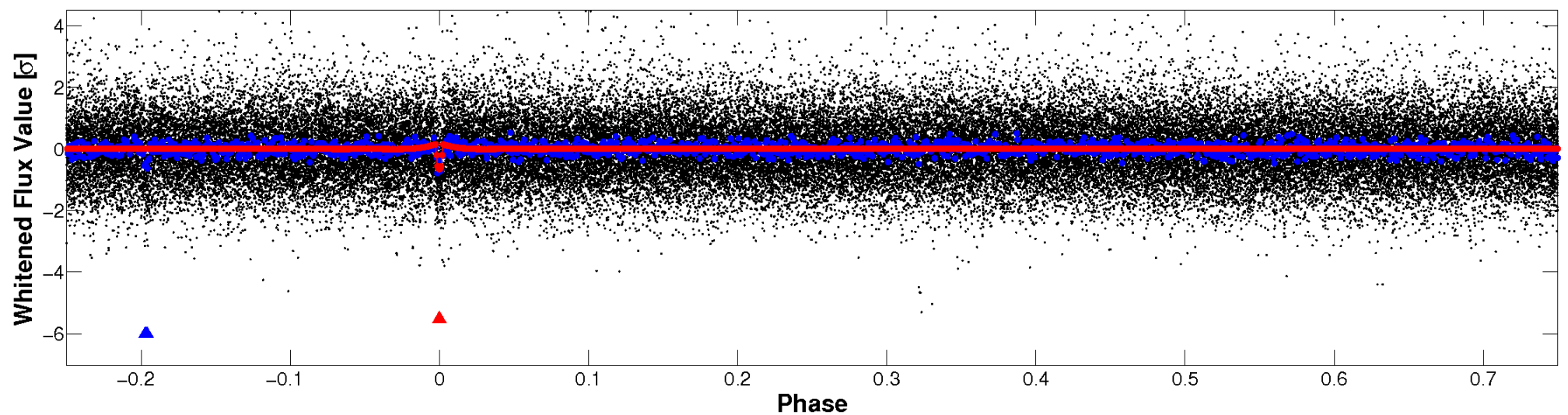


# Non-Whitened Vs. Whitened Light Curve

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

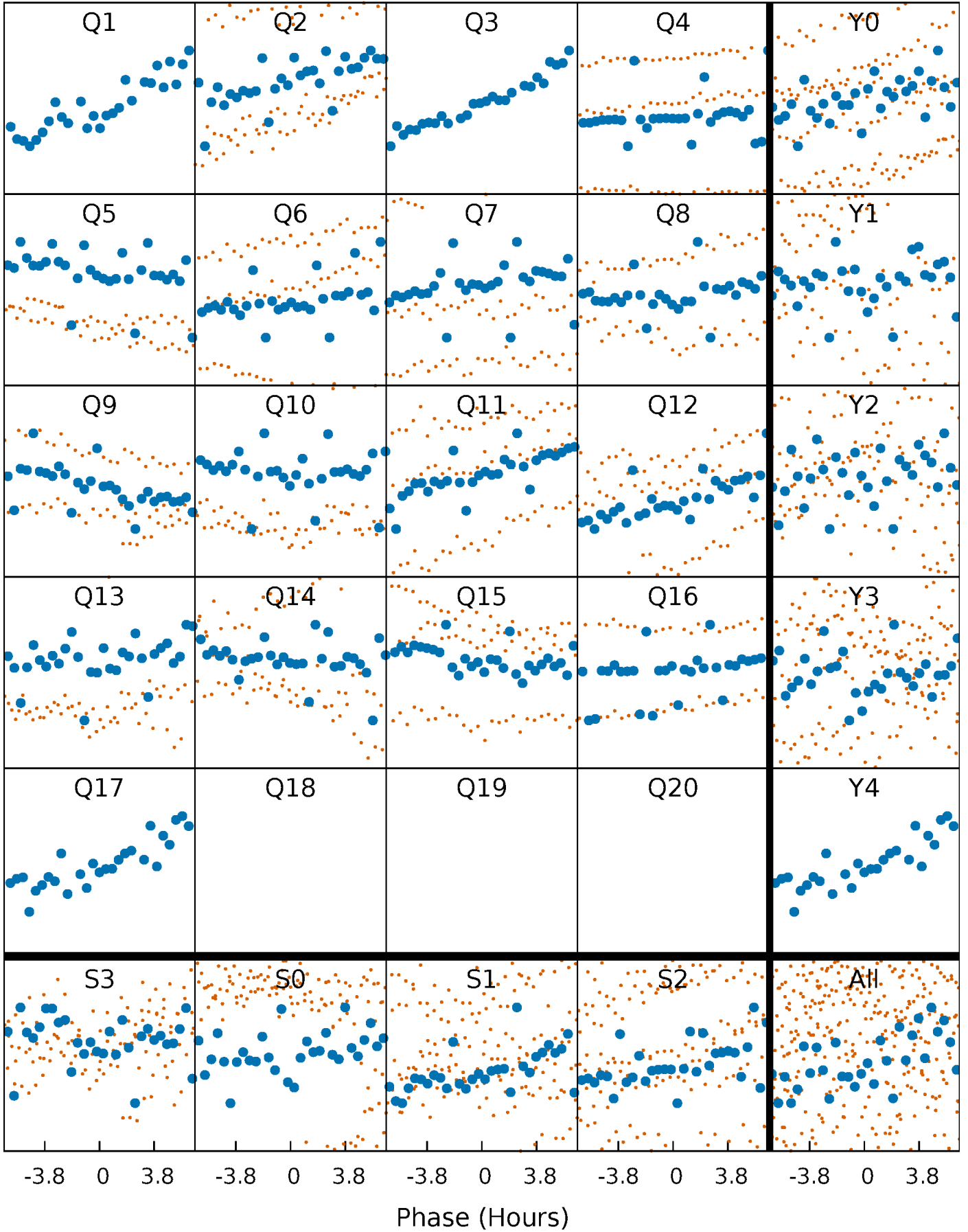


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

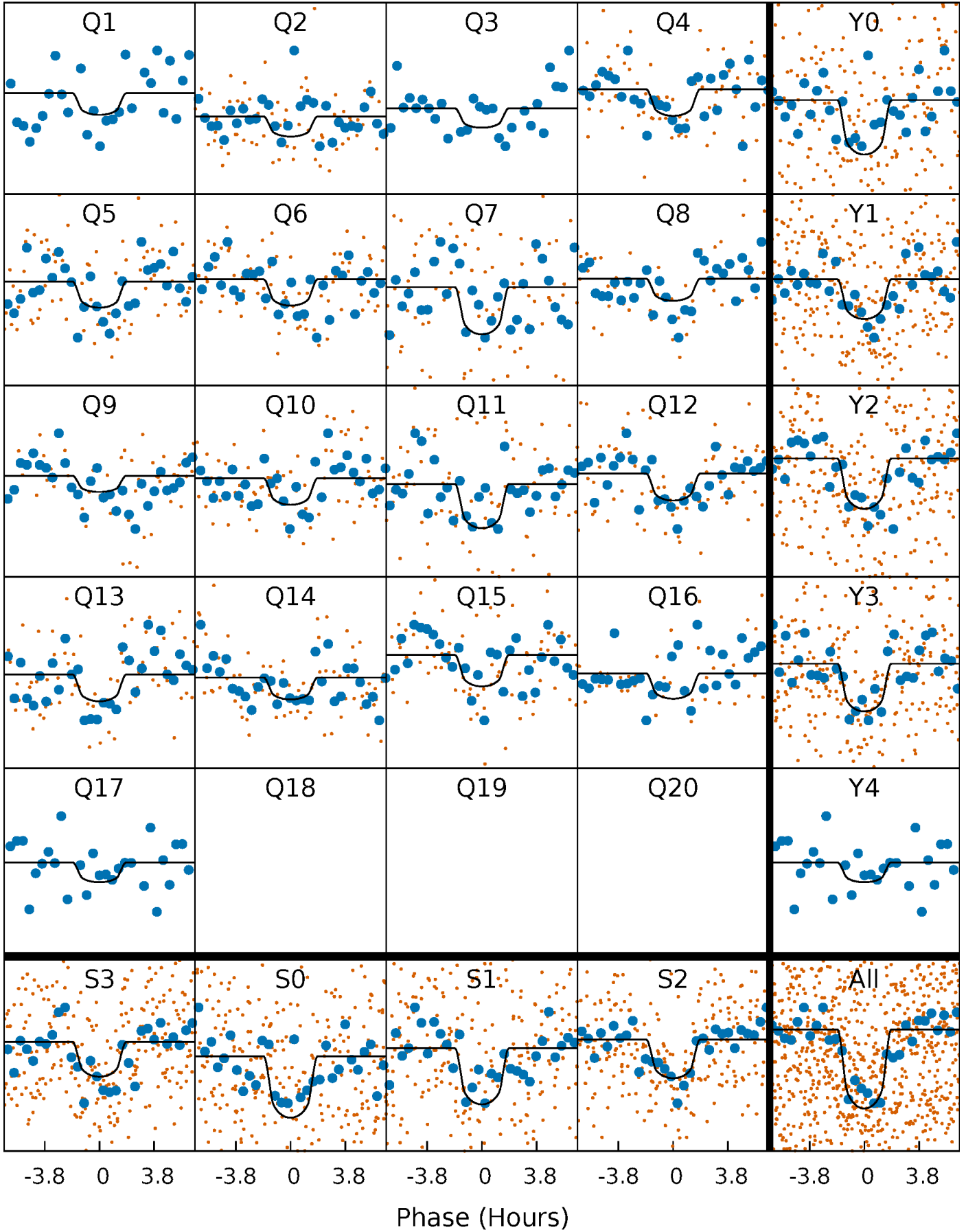
TCE 007373877-01 P= 32.669952 Days  $T_0=159.487032$  (BKJD)





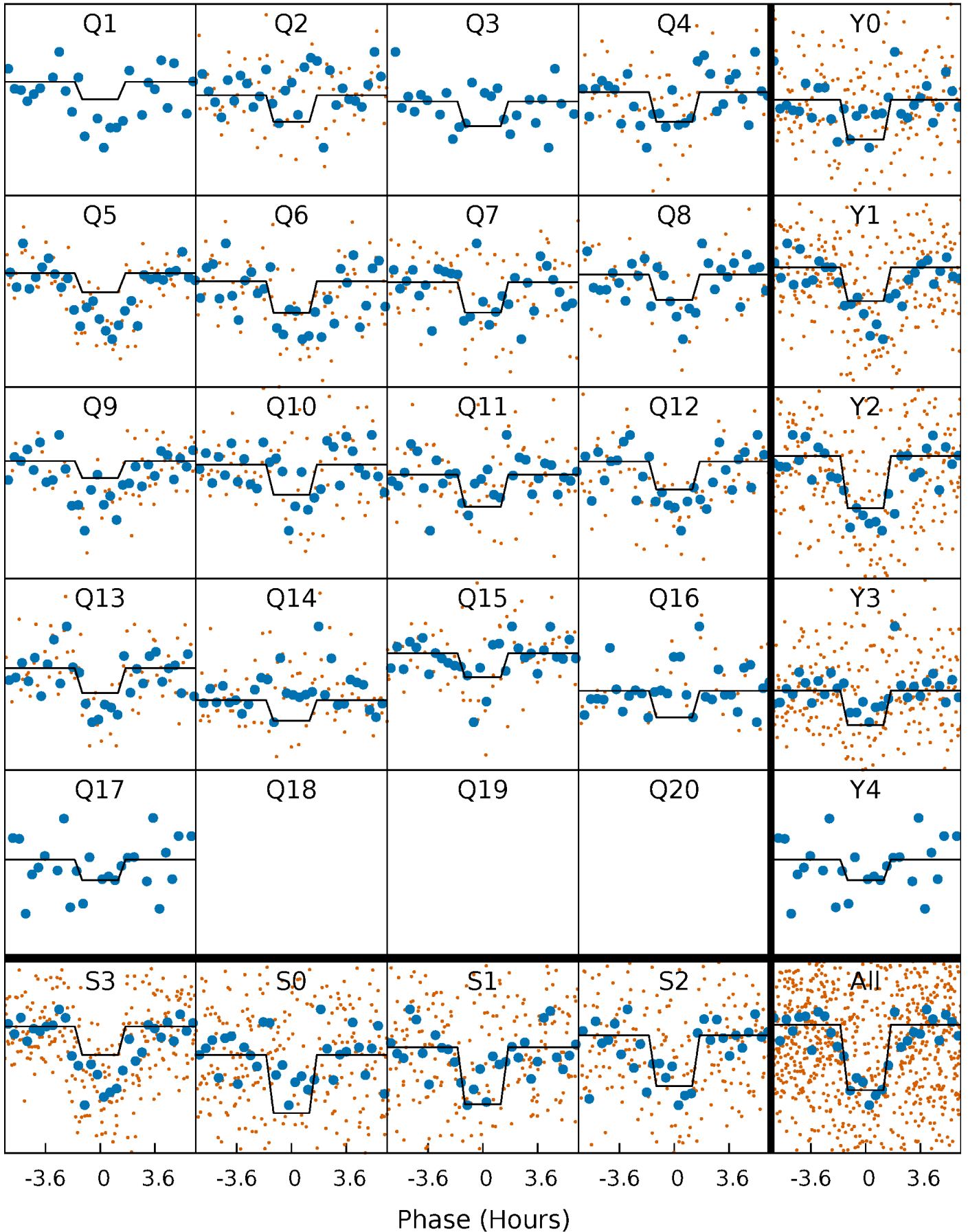
# DV Quarter-Phased Transit Curves

TCE 007373877-01   P= 32.669952 Days    $T_0=159.487032$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

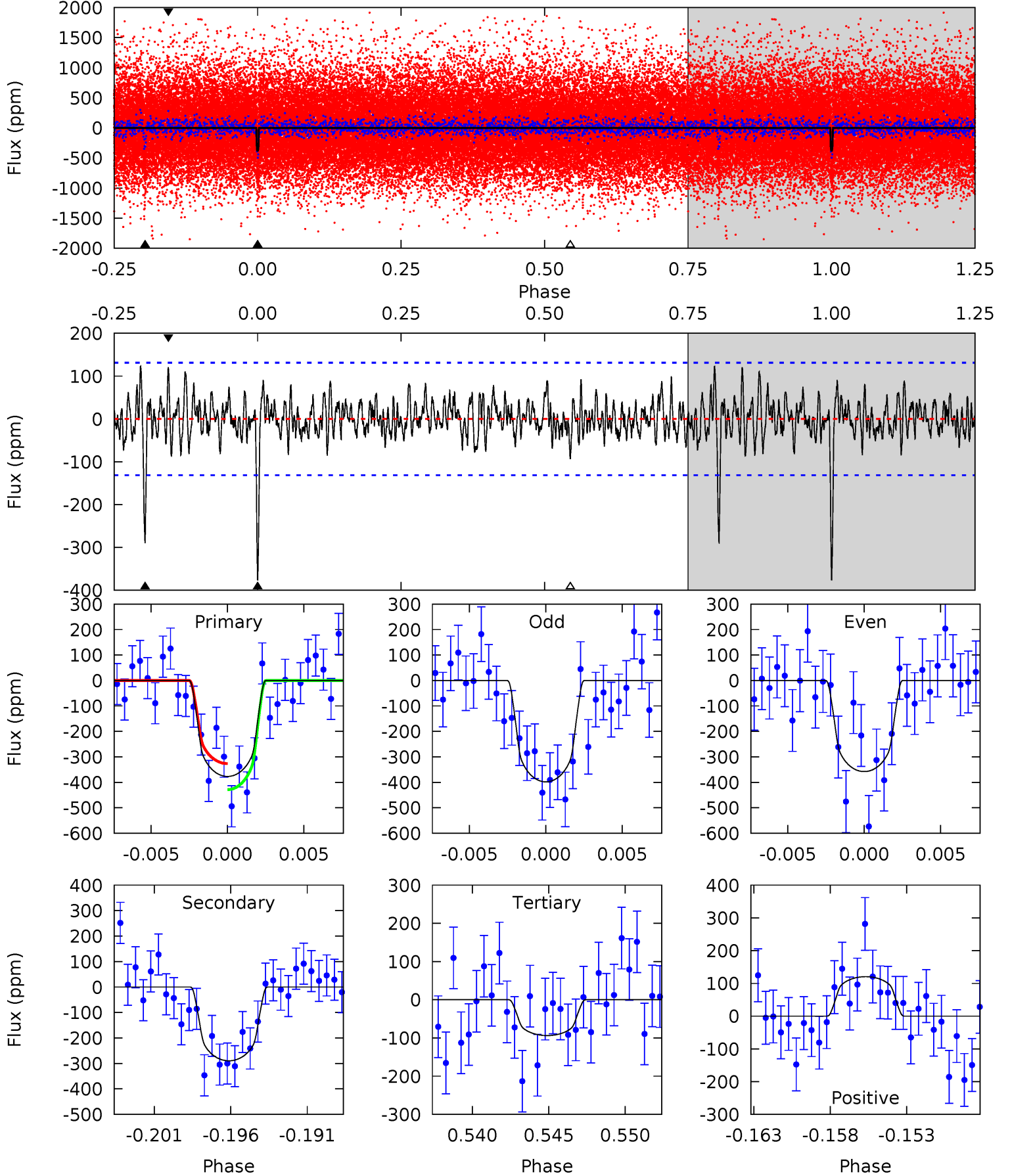
TCE 007373877-01 P= 32.670095 Days  $T_0=159.482009$  (BKJD)



# DV Model-Shift Uniqueness Test

007373877-01,  $P = 32.669952$  Days,  $E = 126.817080$  Days

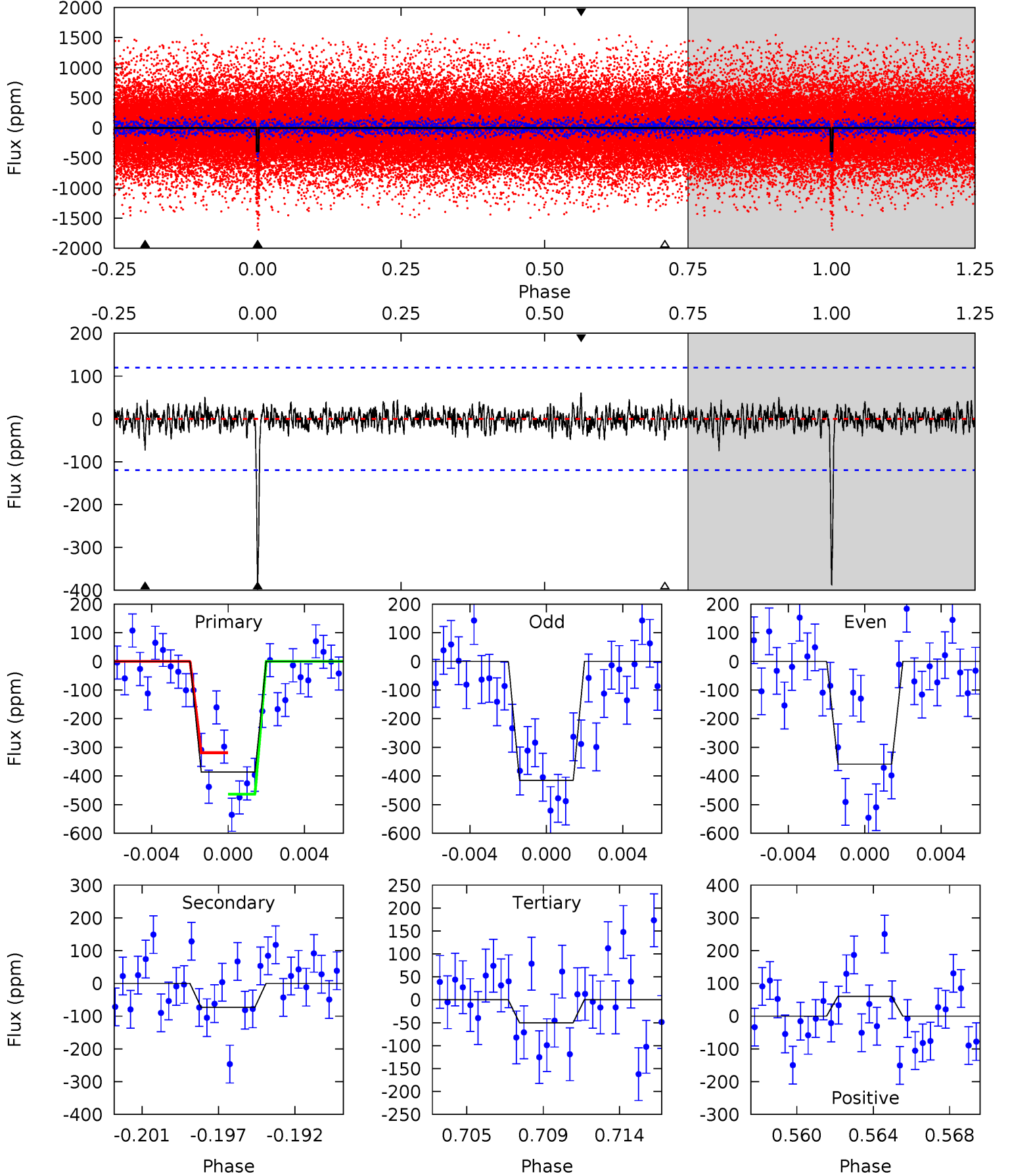
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	11.4	3.69	4.74	5.17	2.82	1.37	11.1	10.1	7.71	6.66	0.80	0.82	0.25	2.02



# Alt Model-Shift Uniqueness Test

007373877-01,  $P = 32.670095$  Days,  $E = 126.811914$  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
16.8	3.18	2.17	2.61	5.19	2.86	0.71	14.6	14.1	1.01	0.57	1.21	1.03	0.13	3.13



### Stellar Parameters For KIC 007373877

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4871^{+145}_{-145}$	$4.606^{+0.027}_{-0.059}$	$0.140^{+0.250}_{-0.300}$	$0.741^{+0.068}_{-0.050}$	$0.822^{+0.036}_{-0.079}$	$2.844^{+0.393}_{-0.566}$
	+3%/-3%	+1%/-1%	+179%/-214%	+9%/-7%	+4%/-10%	+14%/-20%
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 007373877-01 / KOI 6037.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-290 \pm 25$	$1.89^{+1.28}_{-1.17}$	$603^{+23}_{-21}$	$4308^{+2372}_{-717}$	$1557^{+9238}_{-1008}$
Alt.	$-73 \pm 23$	$1.86^{+1.28}_{-1.08}$	$604^{+21}_{-21}$	$3446^{+1268}_{-524}$	$398^{+1963}_{-264}$

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

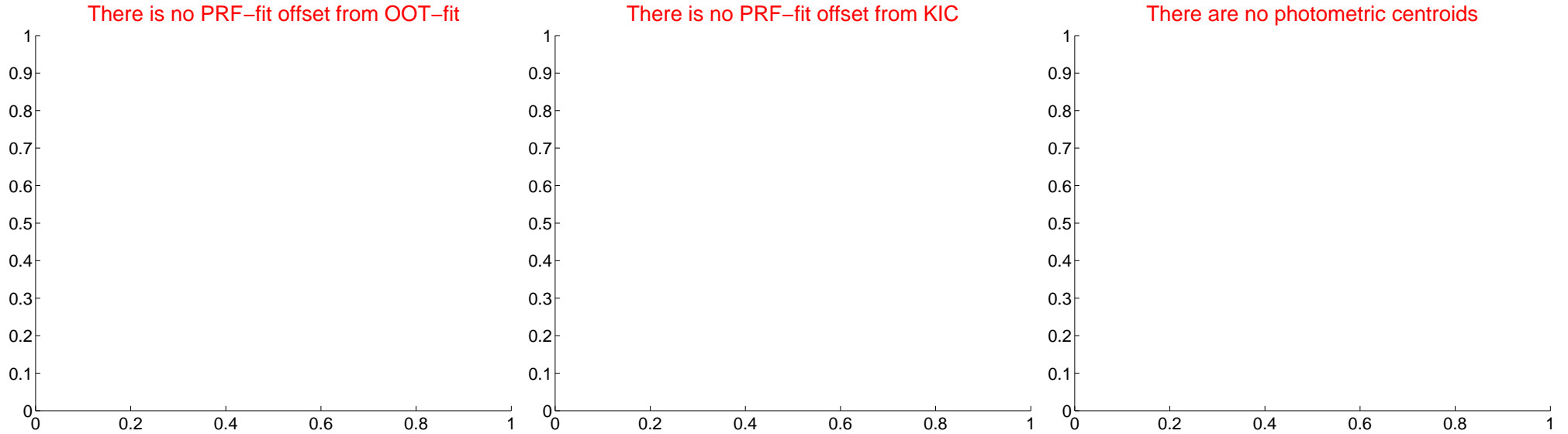
## DV Centroid Data

Supplemental centroid analysis for 007373877-01. Kepler magnitude: 15.54. Transit SNR 9.44

There are 0 quarters with good PRF difference image offsets

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

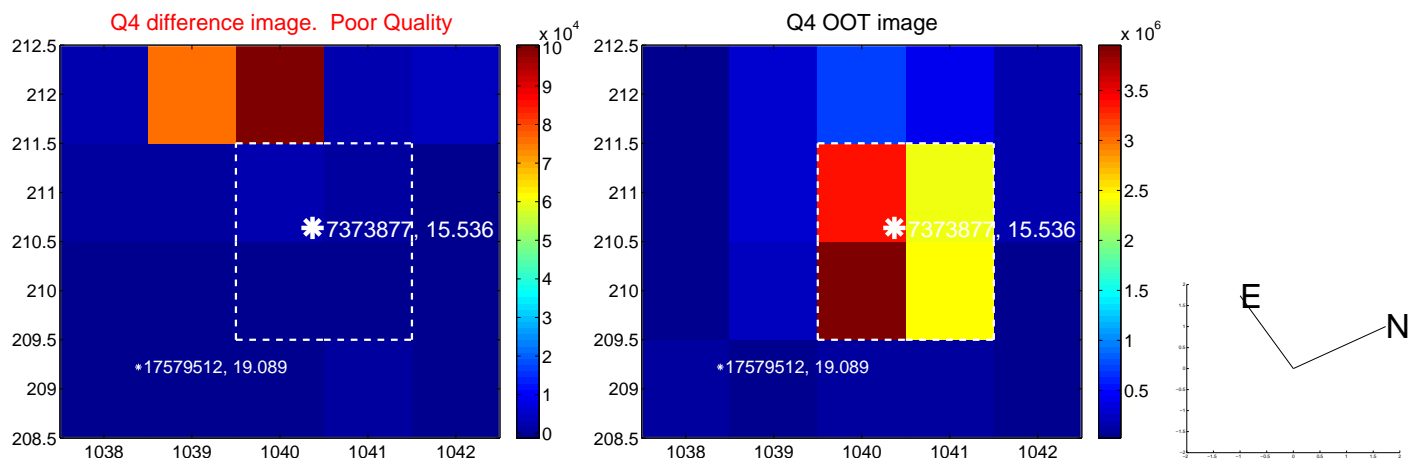
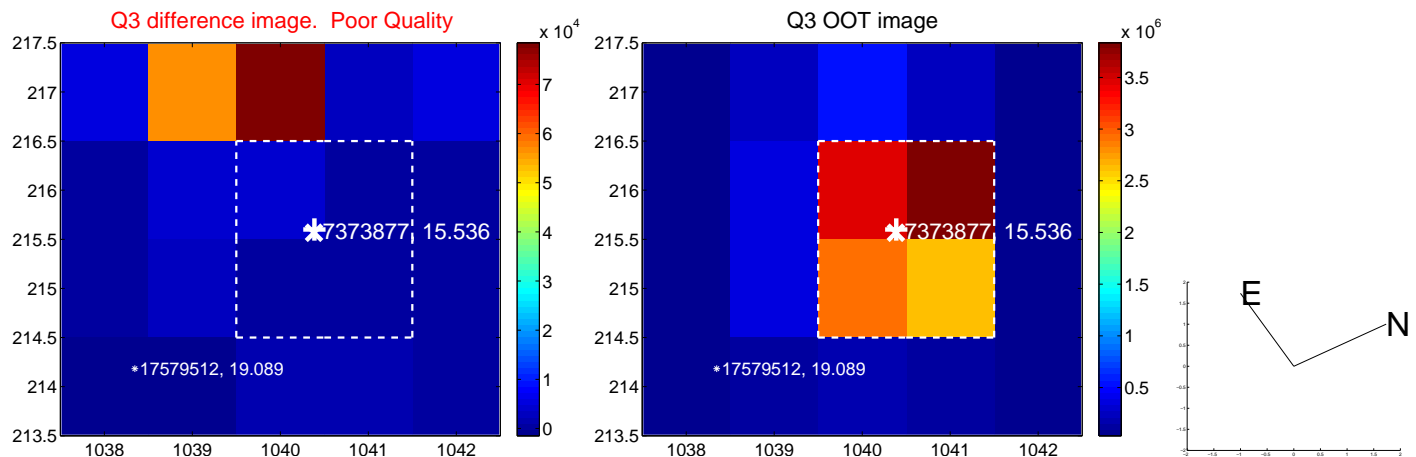
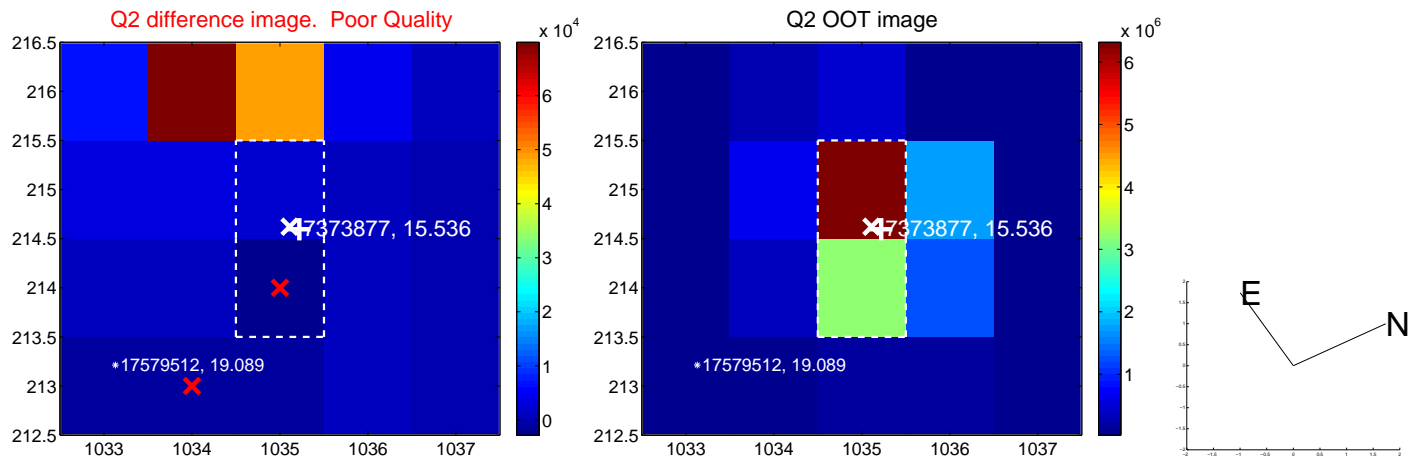
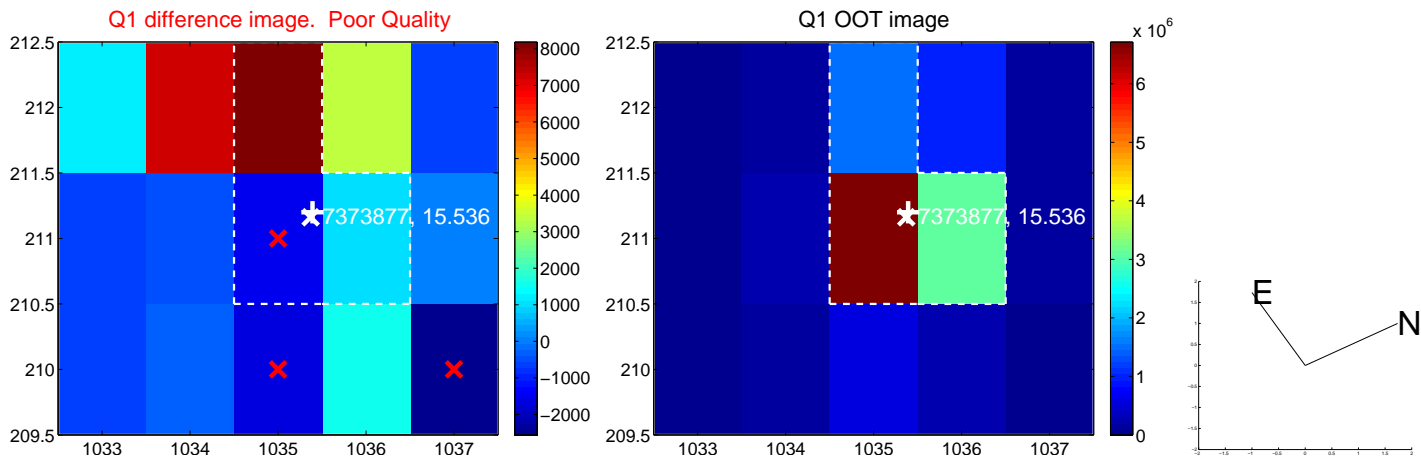
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



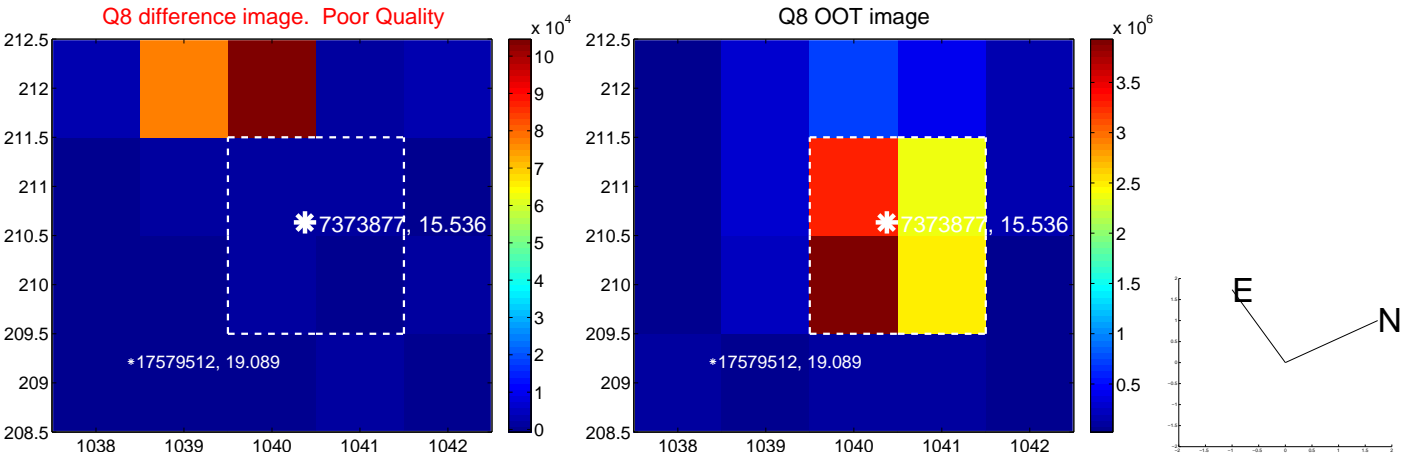
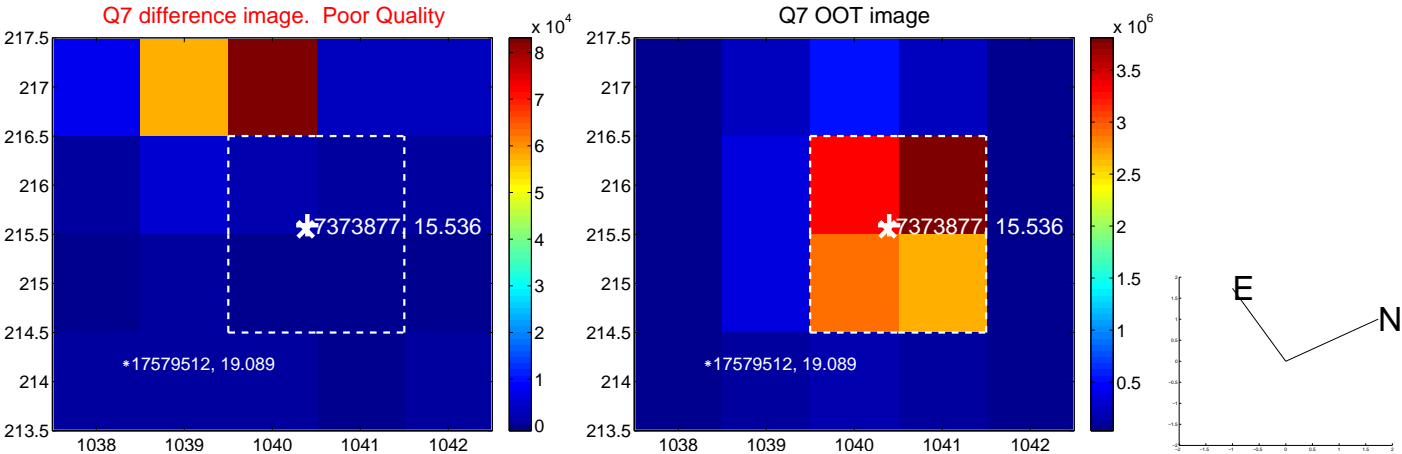
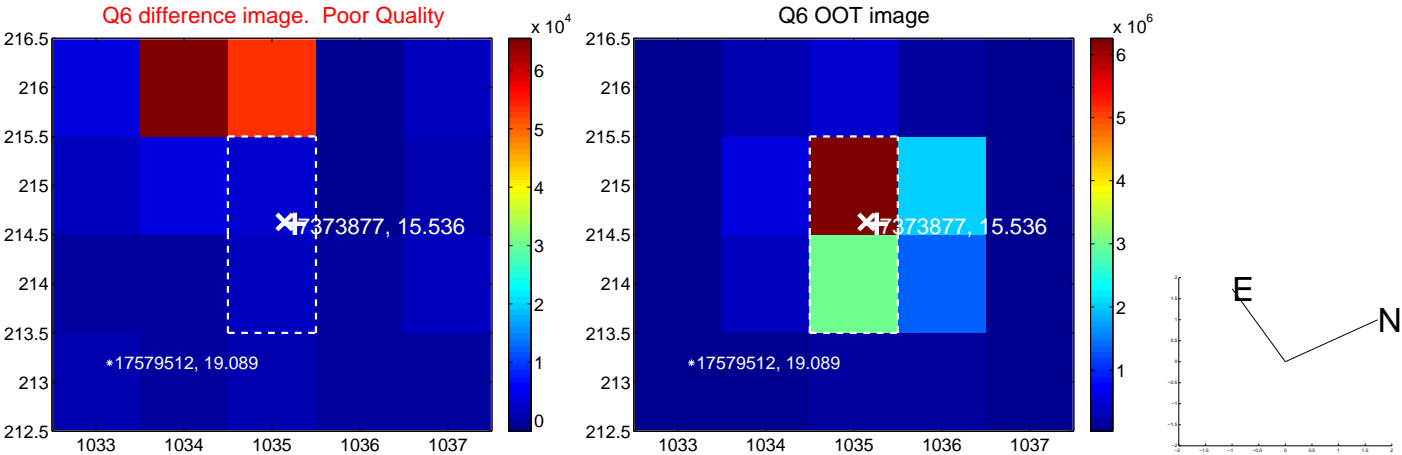
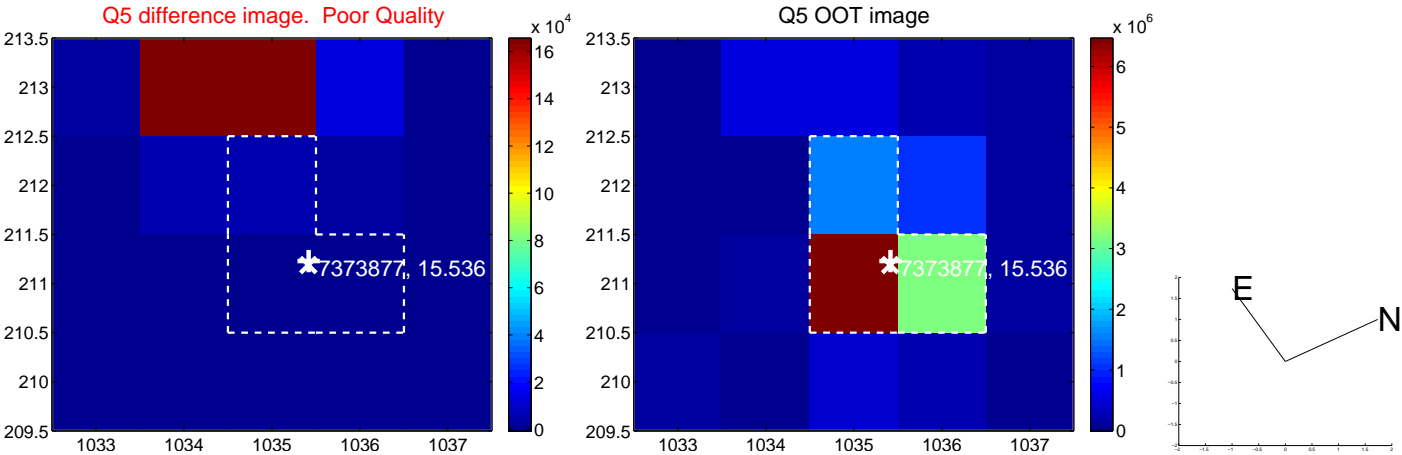
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



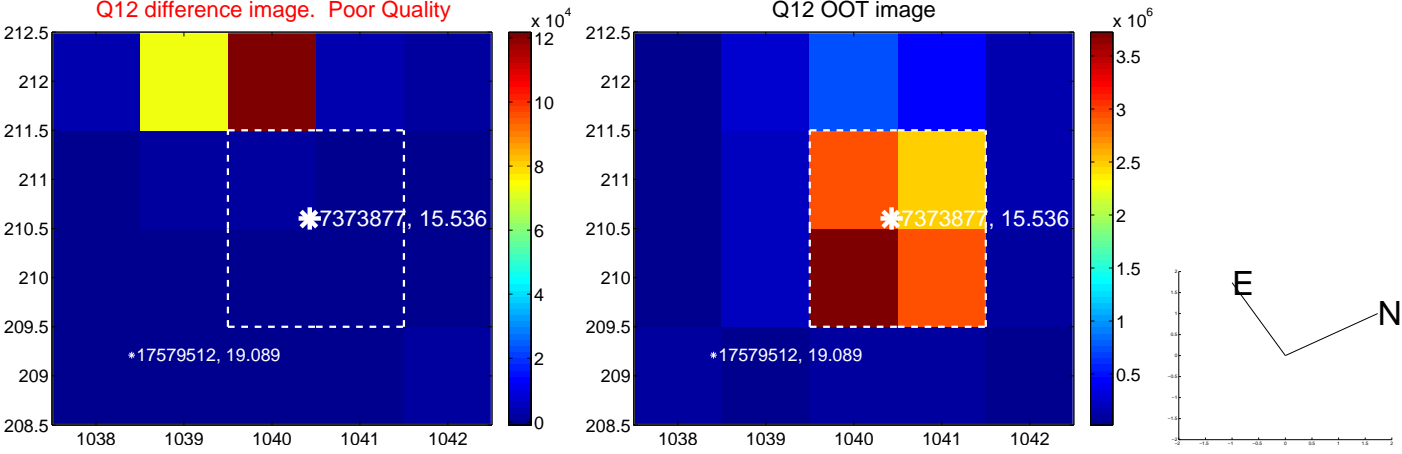
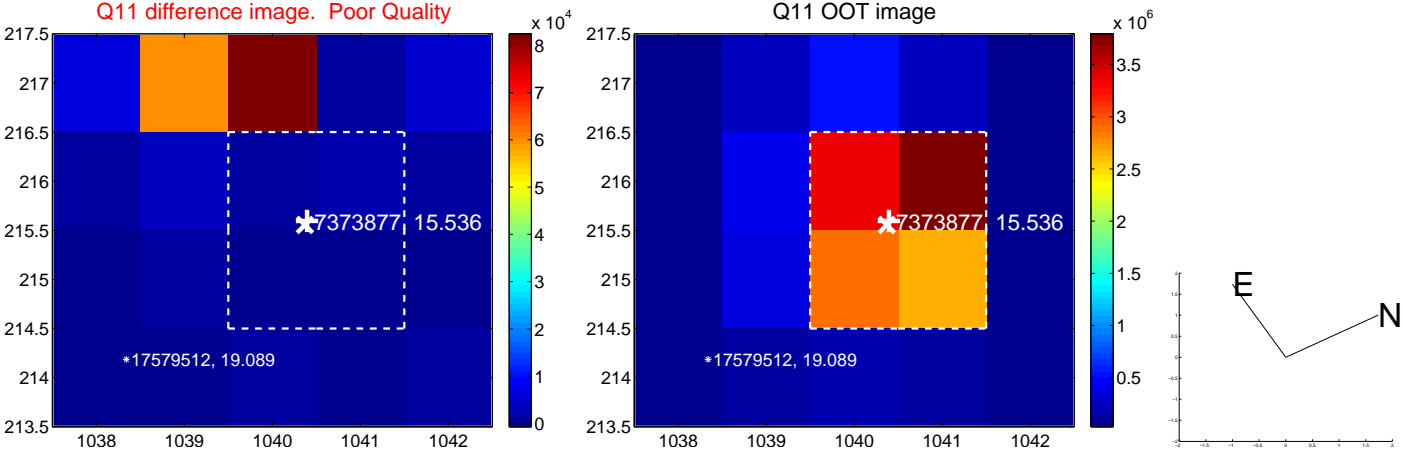
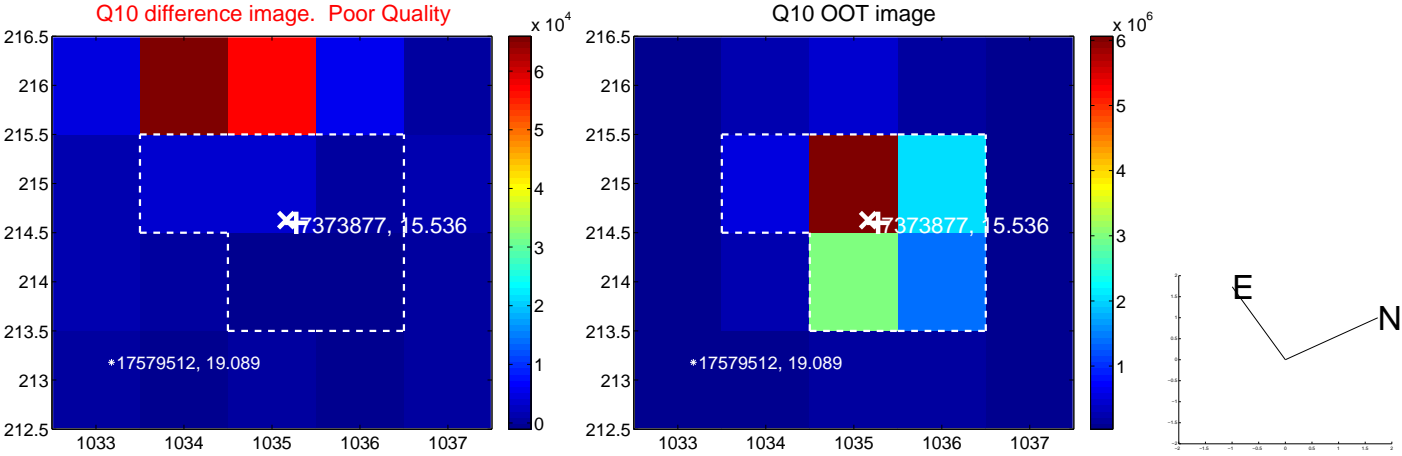
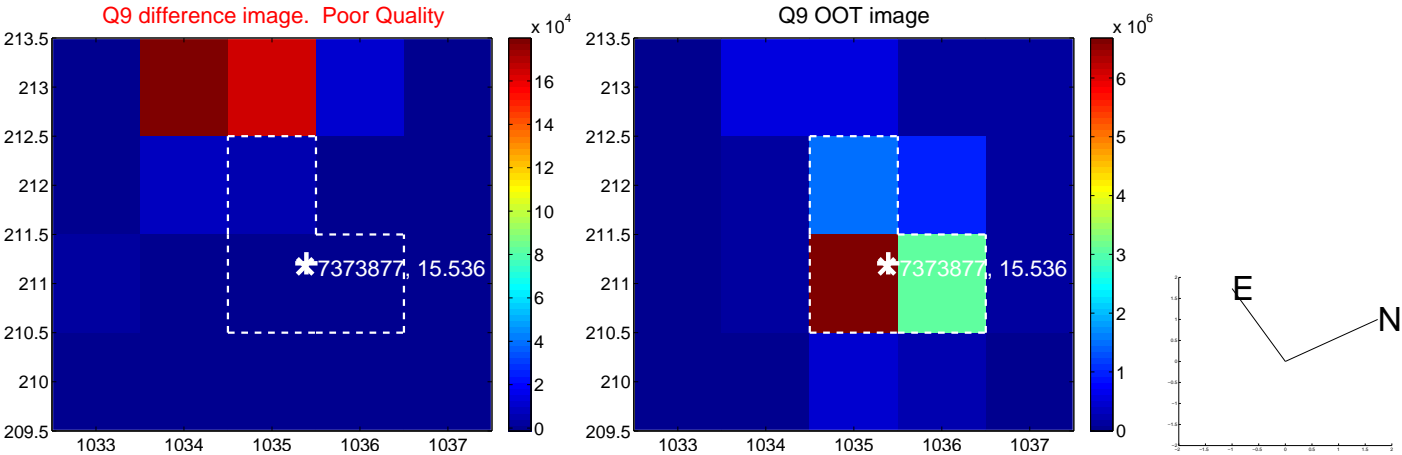
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



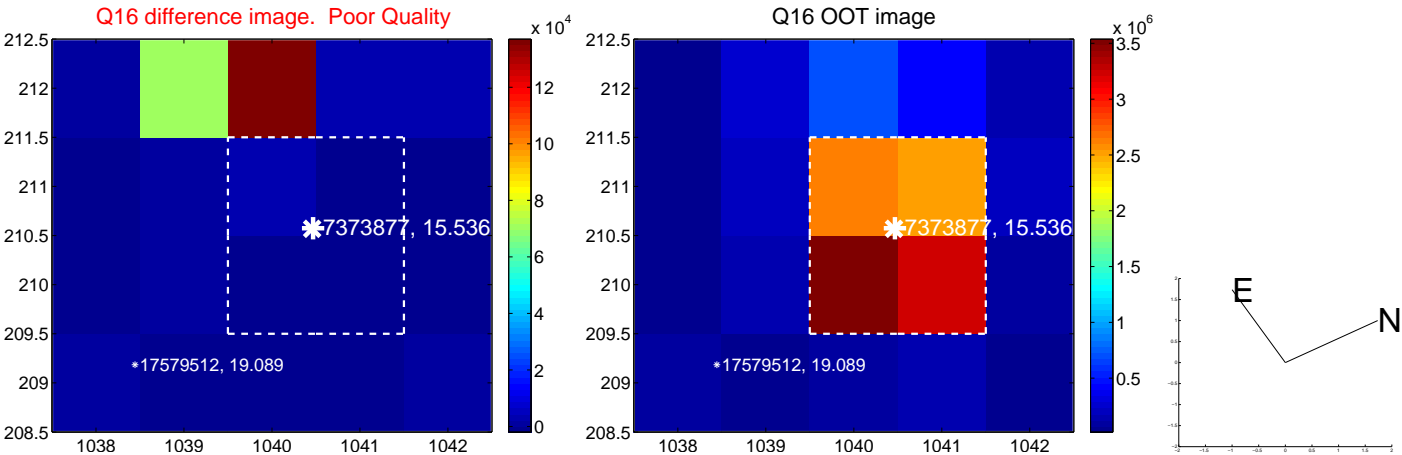
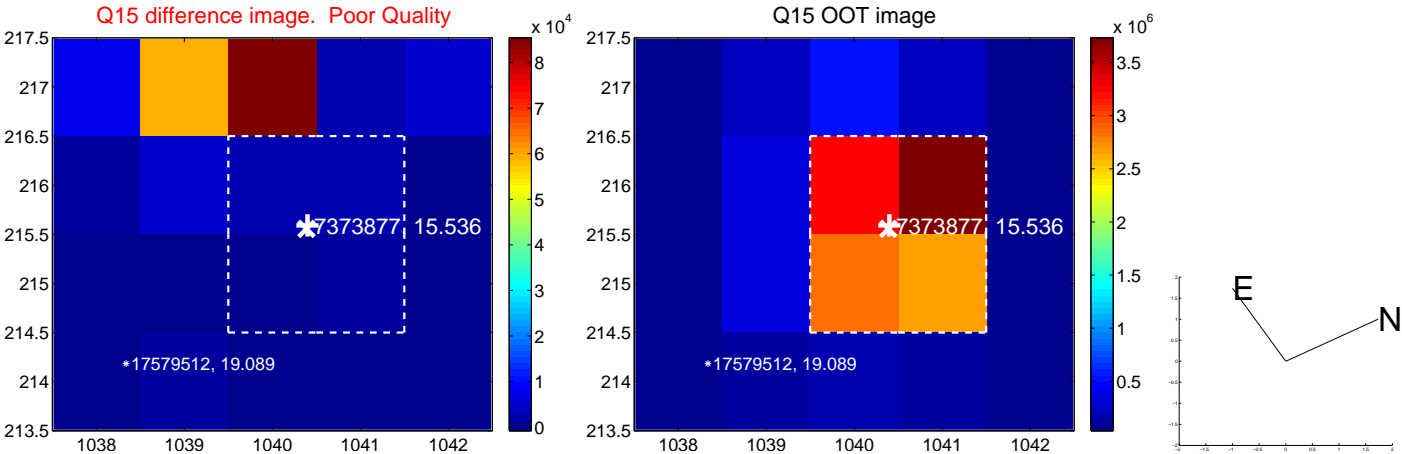
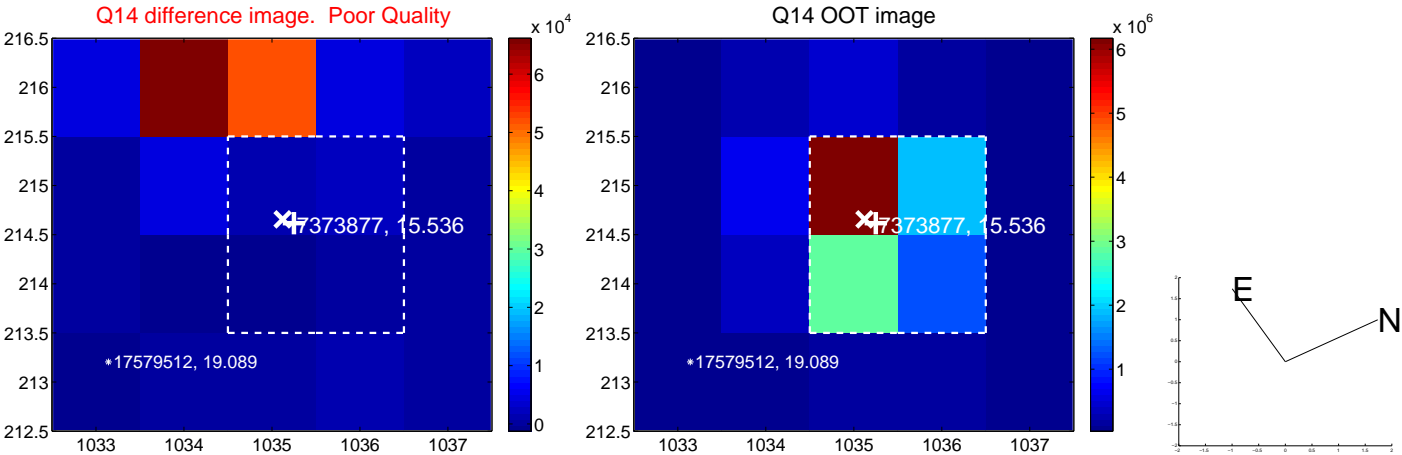
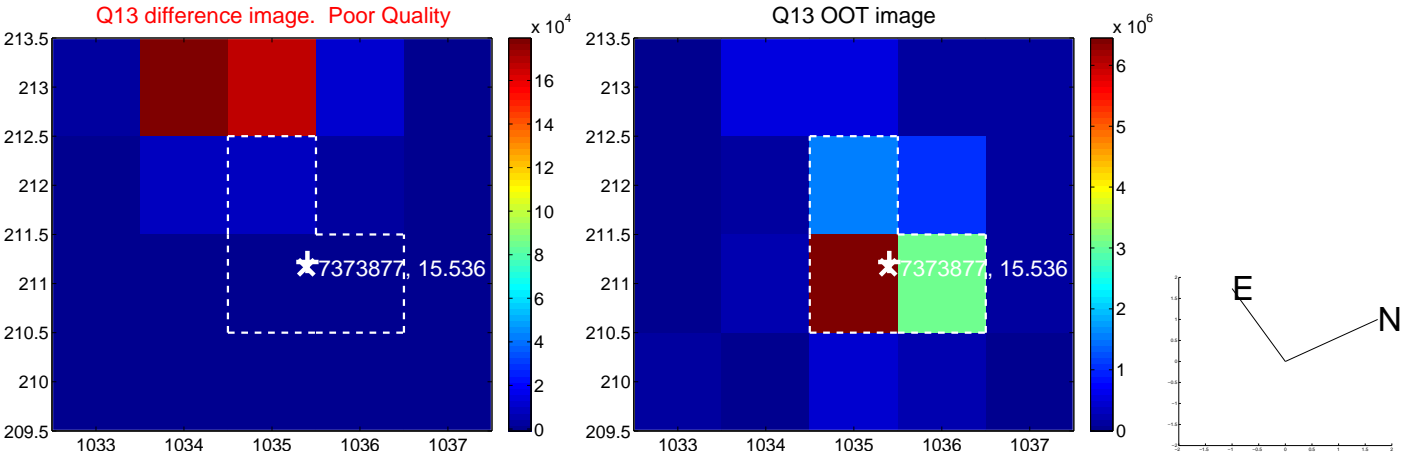
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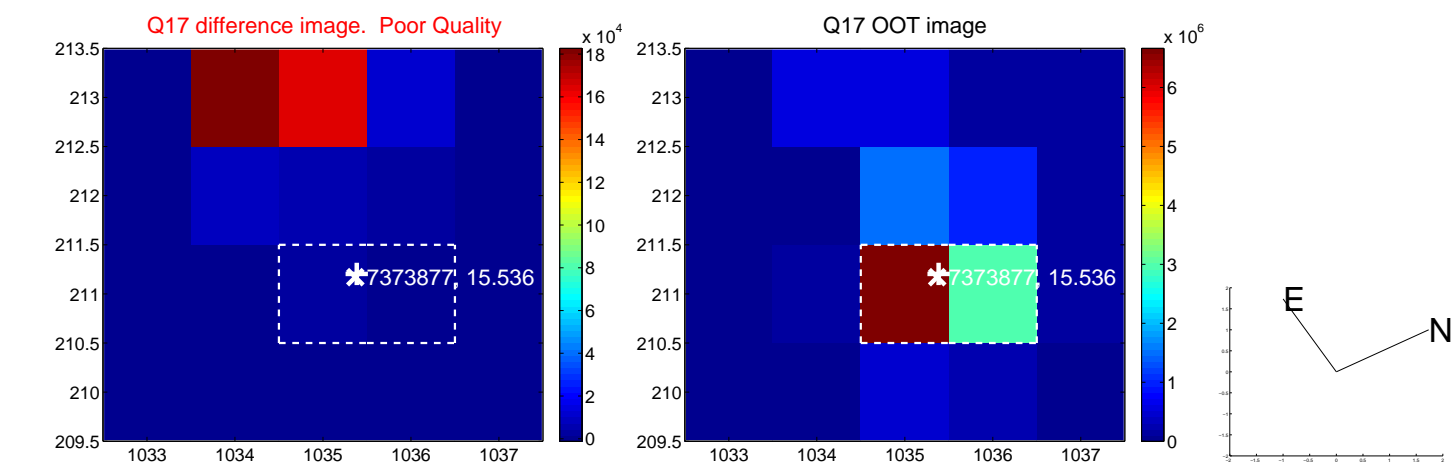
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



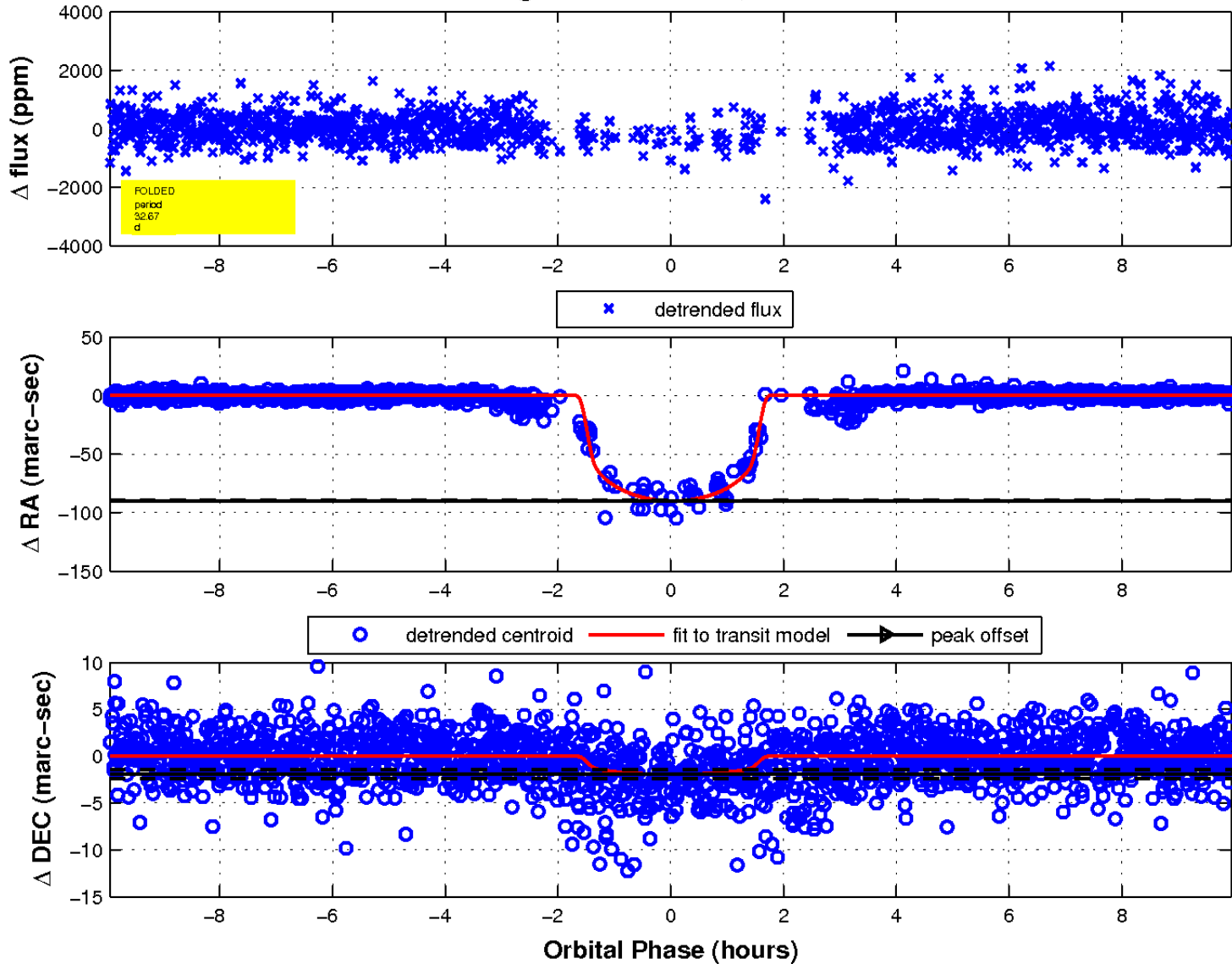
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

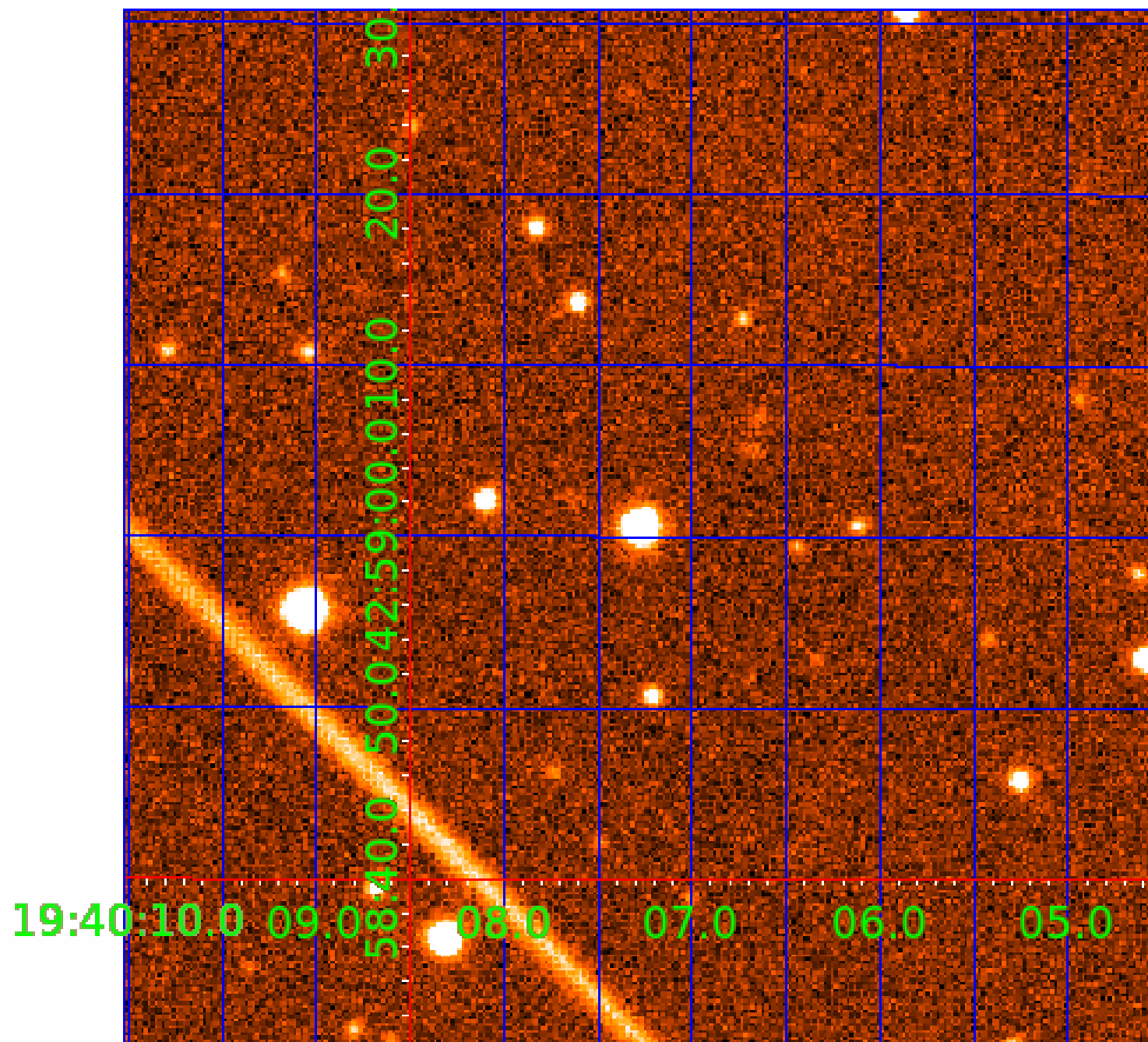


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 007373877

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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007373877-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

**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.

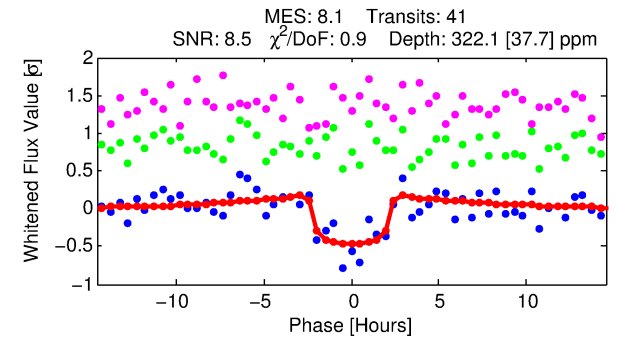
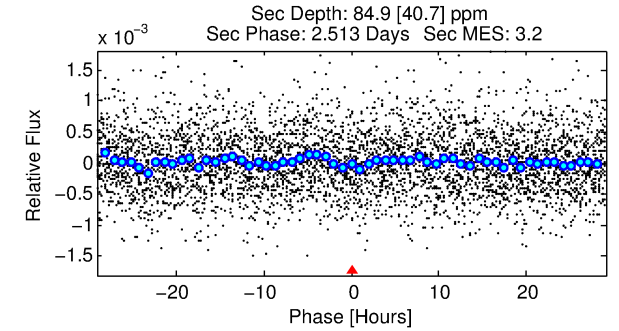
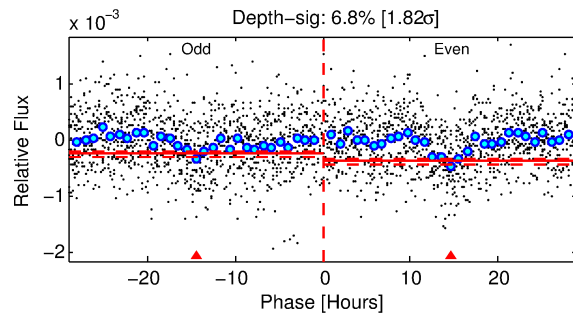
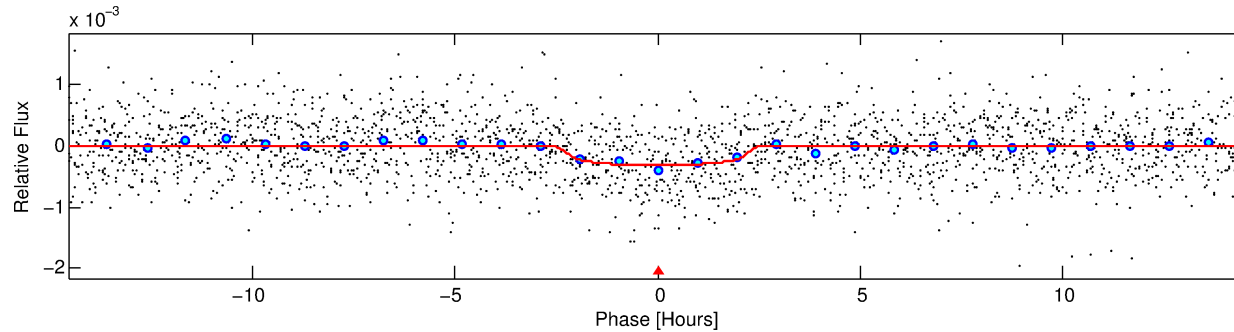
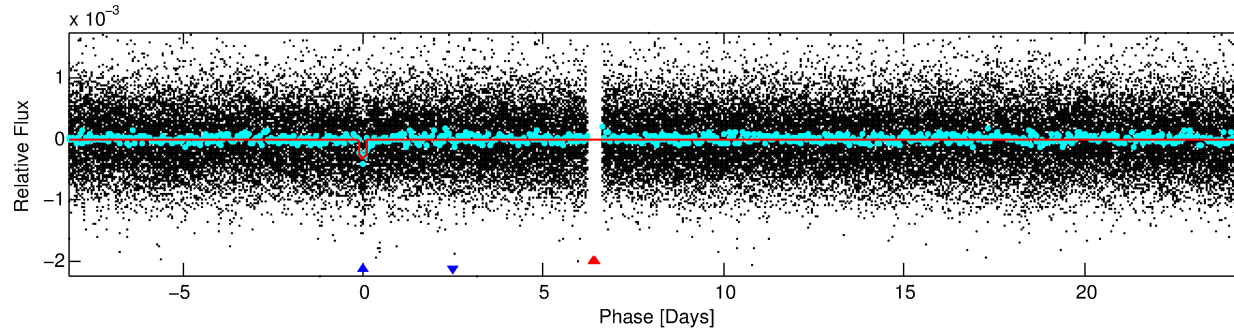
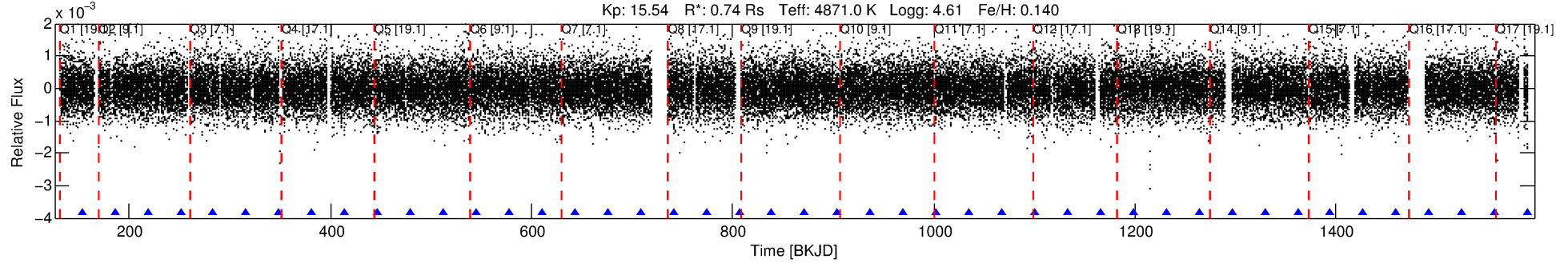
## Ephemeris Match Information For 007373877-02

No Significant Match Found

# DV One-Page Summary

KIC: 7373877 Candidate: 2 of 2 Period: 32.669 d  
KOI: K06037 Corr: No Ephemeris Match

Kp: 15.54 R\*: 0.74 Rs Teff: 4871.0 K Logg: 4.61 Fe/H: 0.140



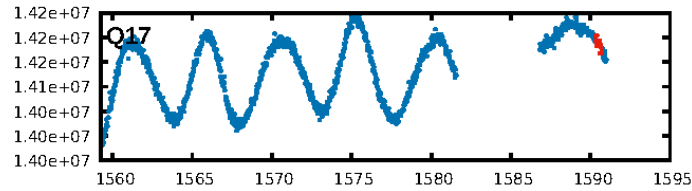
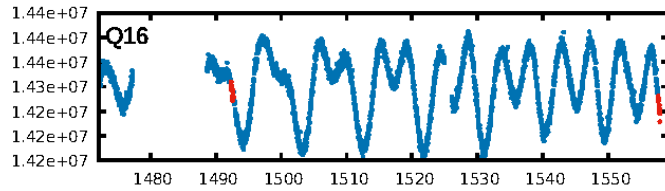
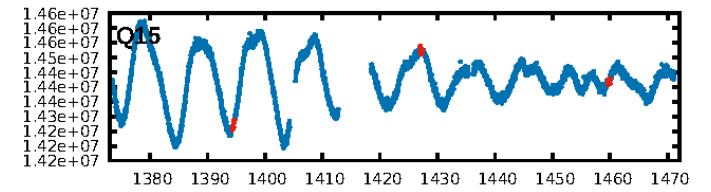
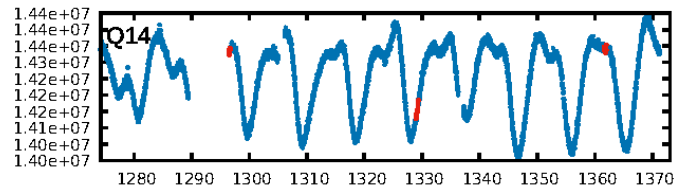
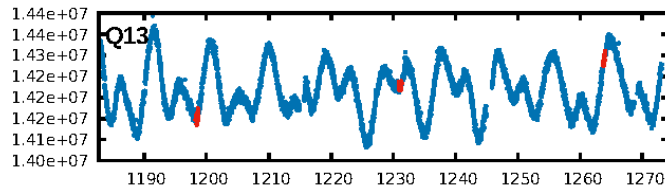
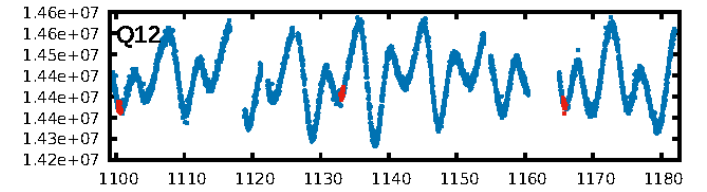
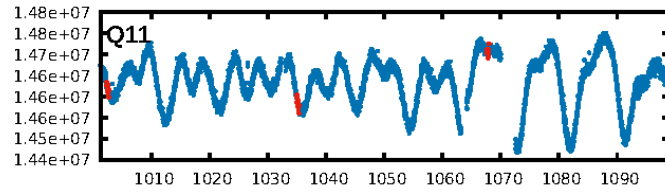
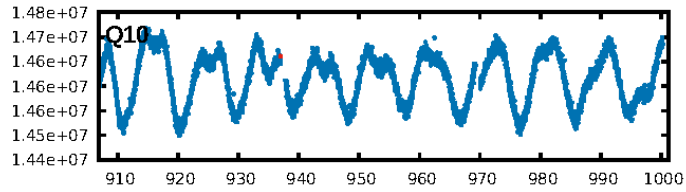
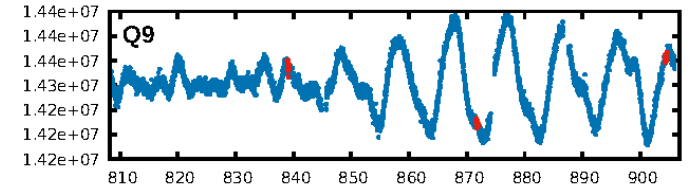
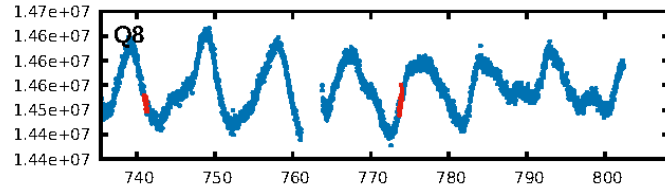
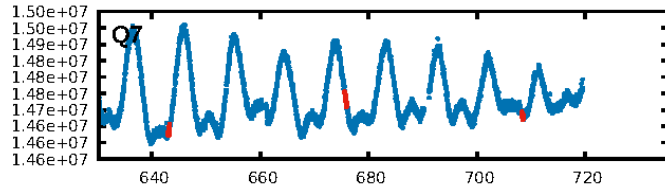
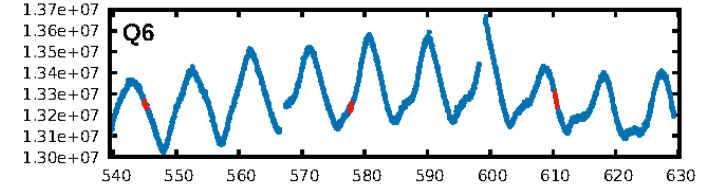
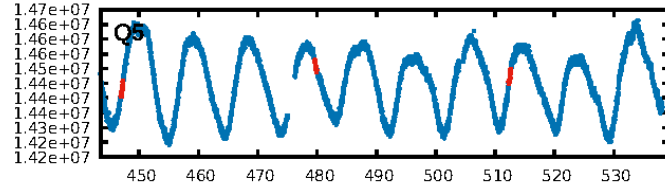
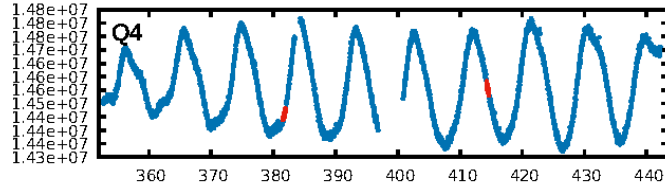
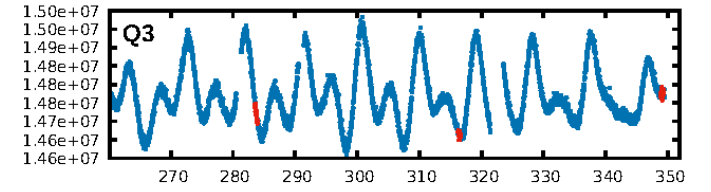
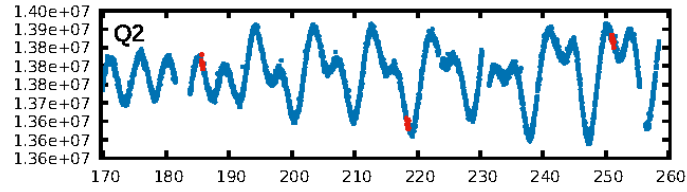
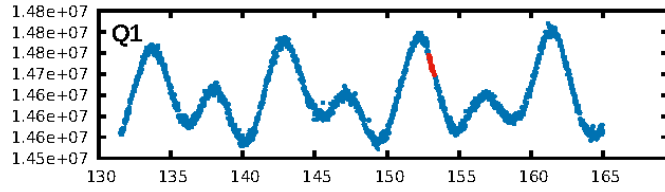
## DV Fit Results:

Period = 32.66870 [0.00037] d  
Epoch = 153.0912 [0.0093] BKJD  
Rp/R\* = 0.0190 [0.0113]  
a/R\* = 29.44 [62.81]  
b = 0.84 [0.75]  
Seff = 7.98 [1.29]  
Teq = 429 [17] K  
Rp = 1.54 [0.92] Re  
a = 0.1864 [0.0142] AU  
Ag = 683.65 [876.45] [0.78σ]  
Teffp = 3388 [1087] K [2.72σ]

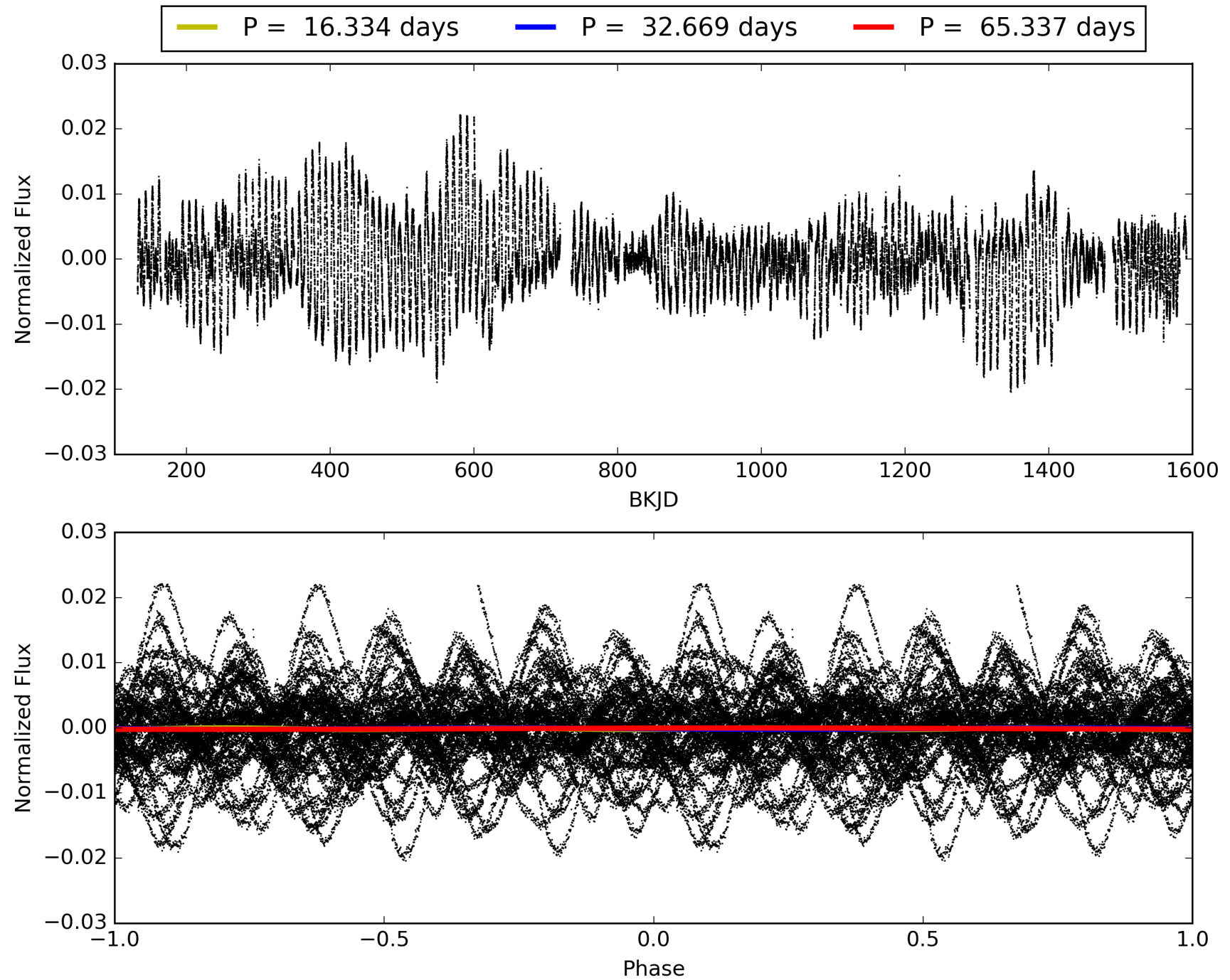
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.4% [0.01σ]  
ModelChiSquare2-sig: 94.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.42e-14  
RollingBand-fgt: 1.00 [39/39]  
GhostDiagnostic-chr: -0.2895  
Centroid-sig: 0.0%  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [16/16]

# TCE 007373877-02, PDC Light Curves

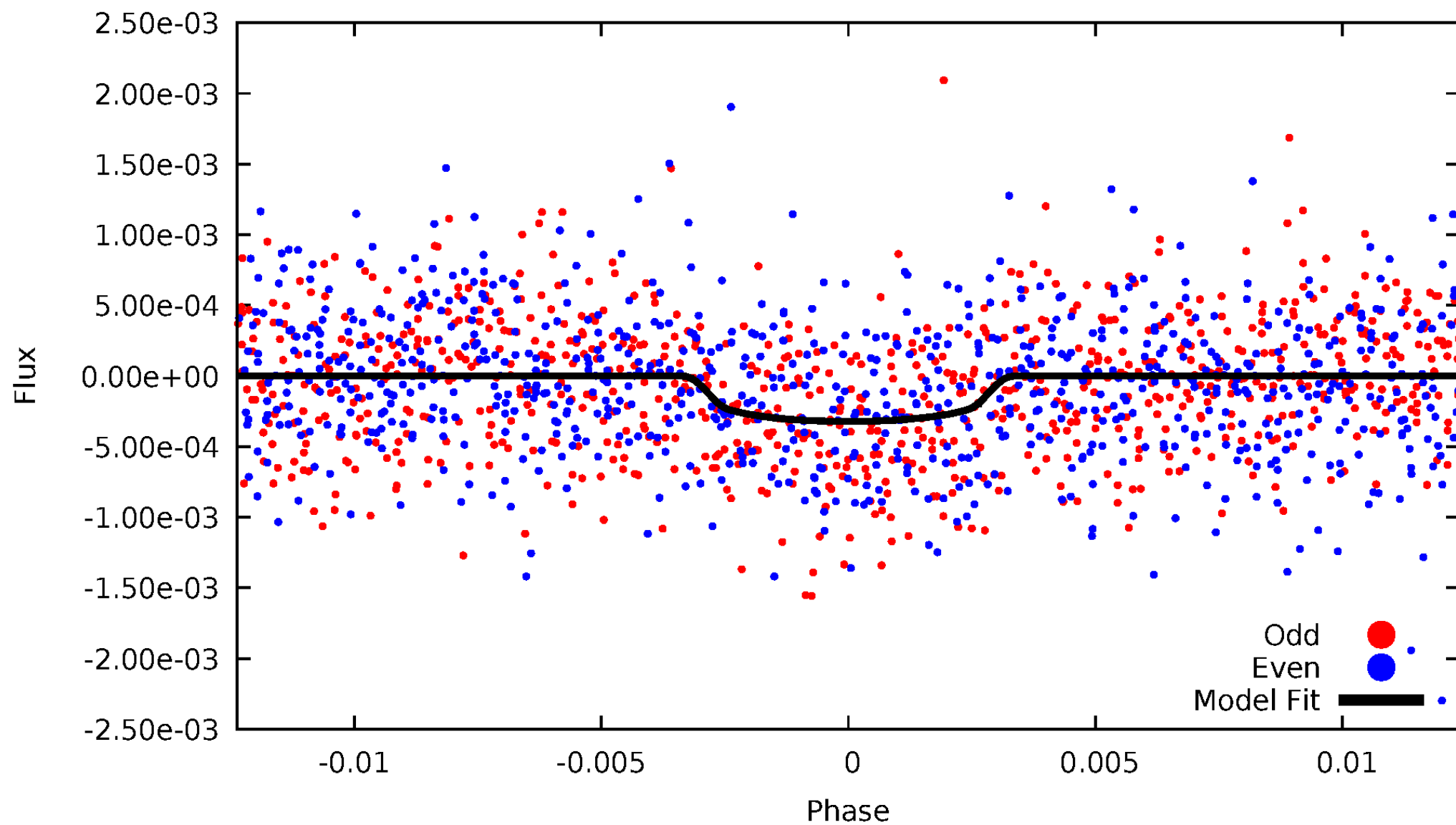


# TCE 007373877-02



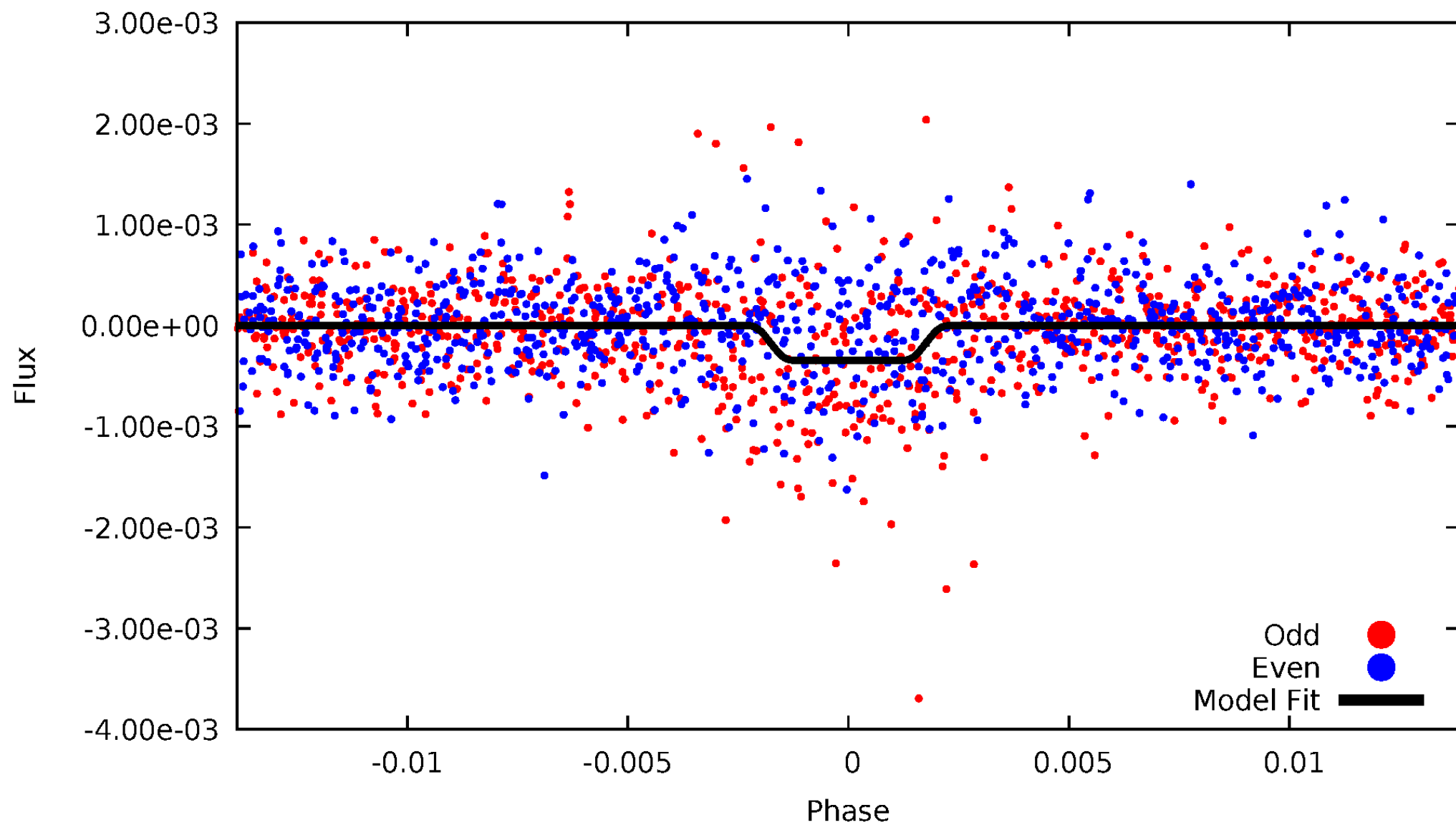
# DV Odd/Even

TCE 007373877-02



# ALT Odd/Even

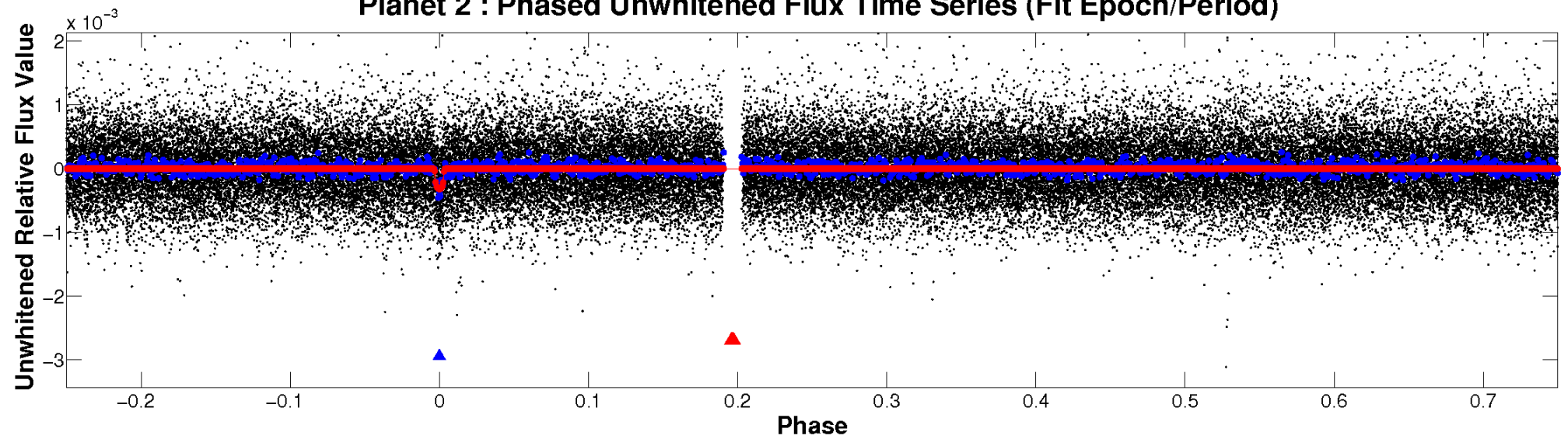
TCE 007373877-02



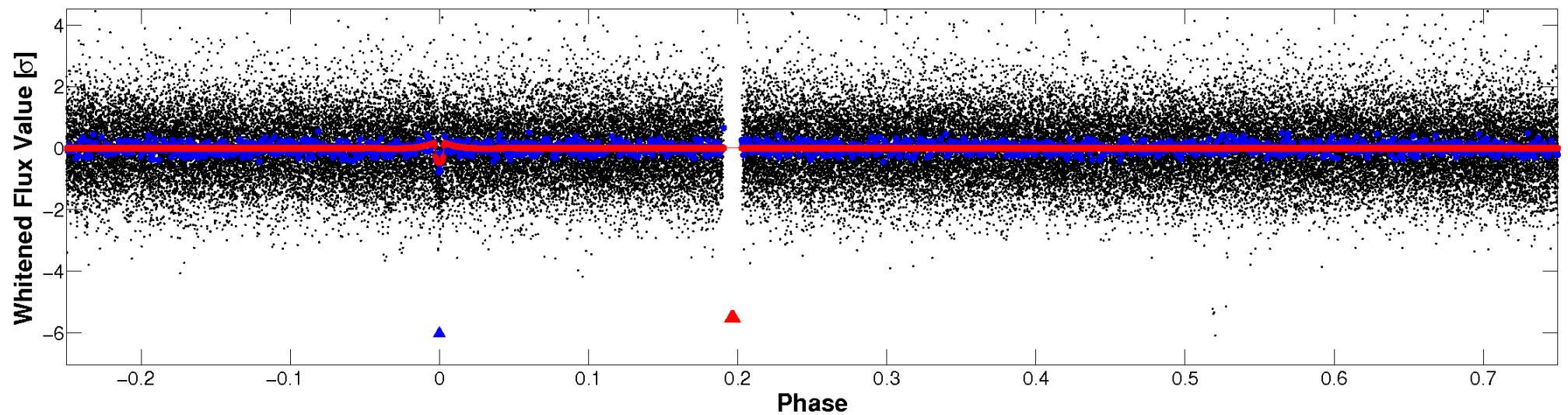


# Non-Whitened Vs. Whitened Light Curve

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

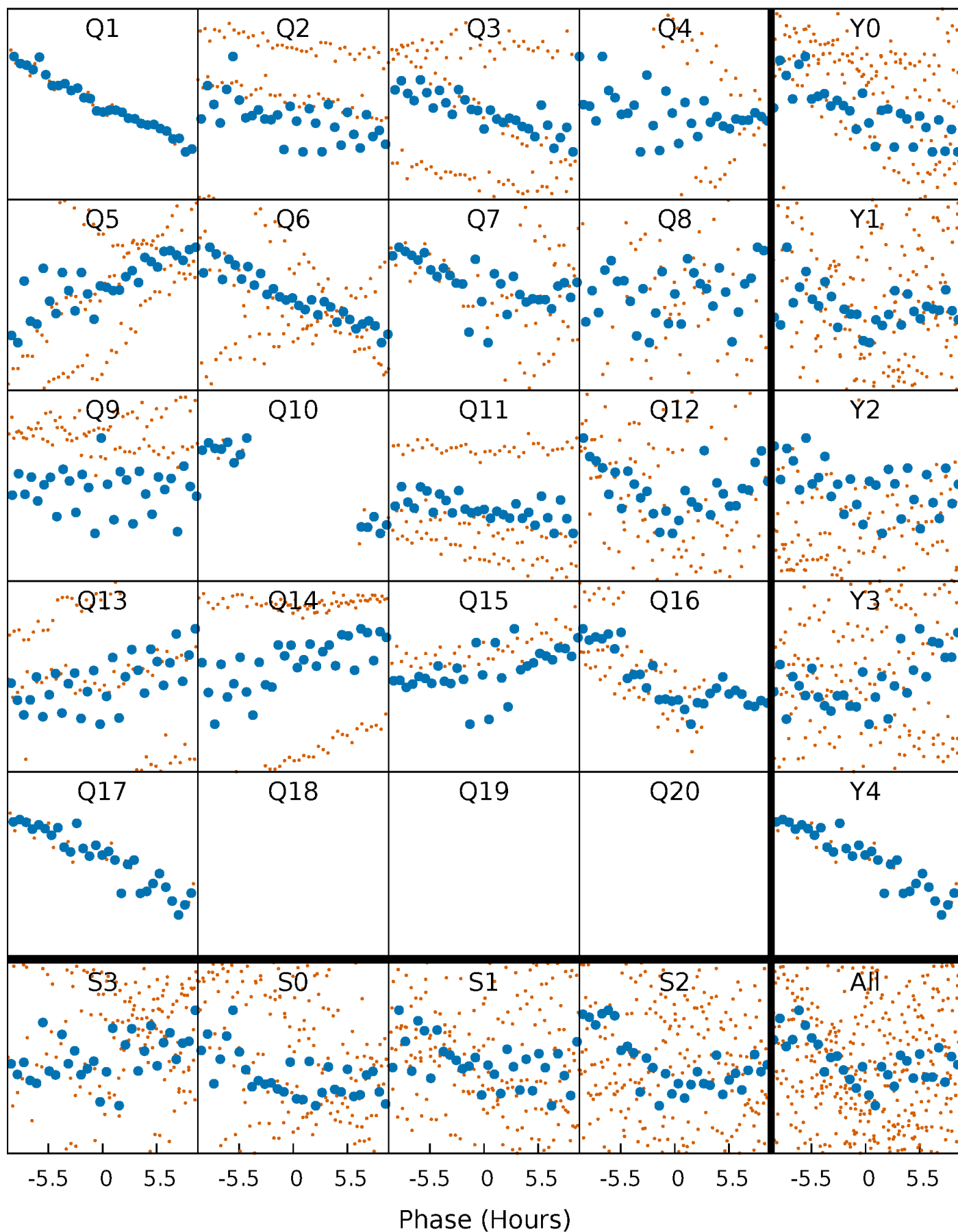


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



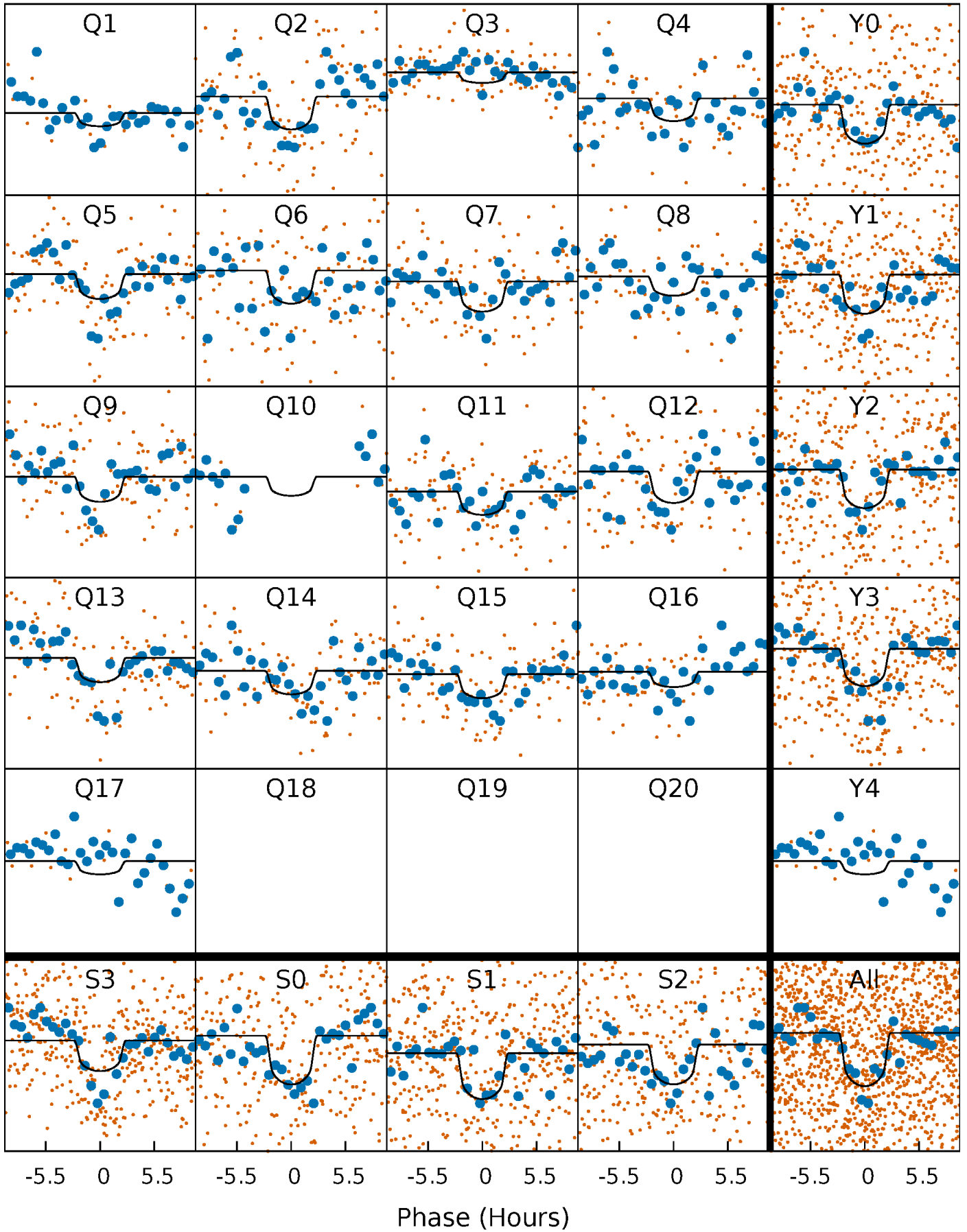
# PDC Quarter-Phased Transit Curves

TCE 007373877-02   P= 32.668703 Days    $T_0=153.091187$  (BKJD)



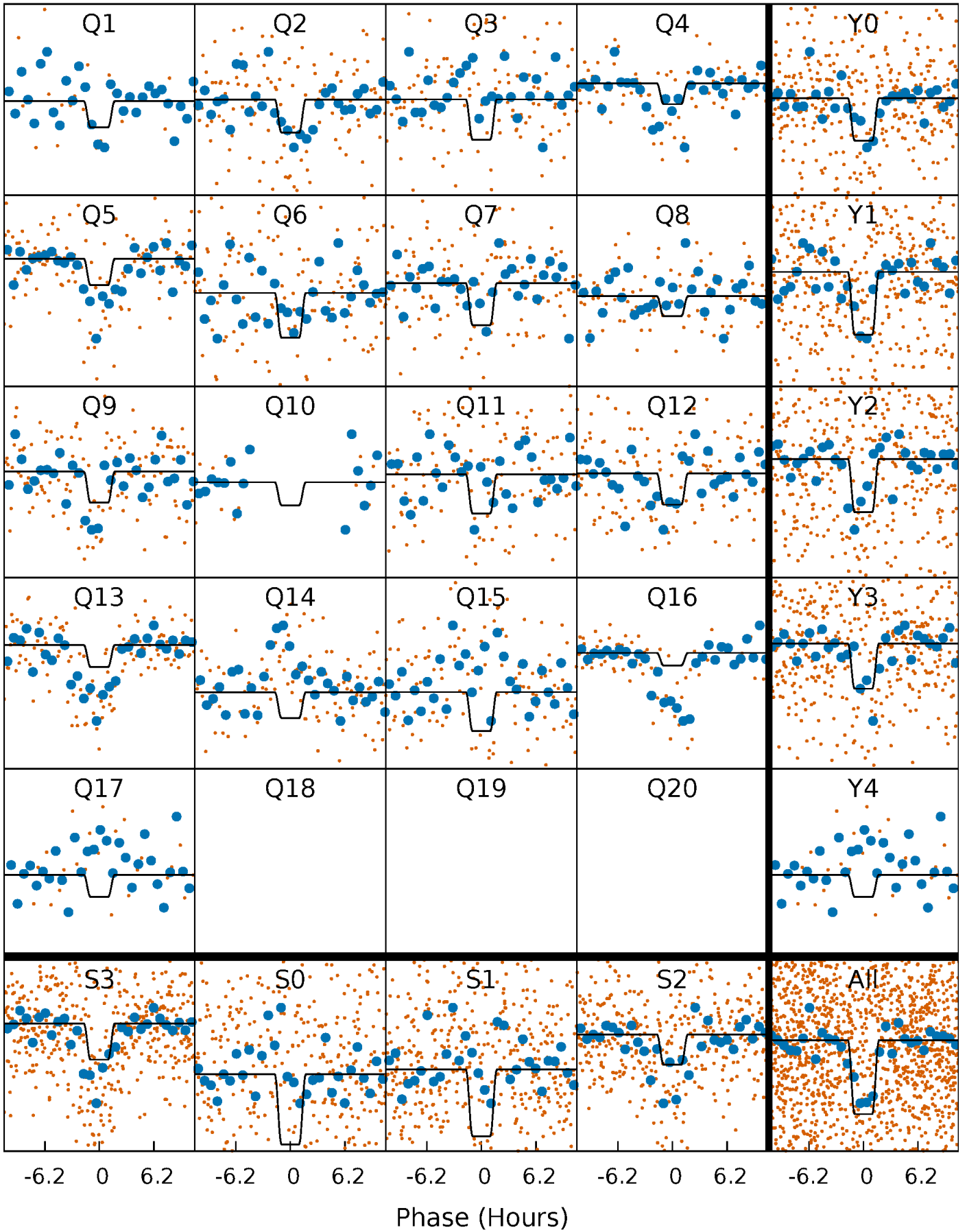
# DV Quarter-Phased Transit Curves

TCE 007373877-02 P= 32.668703 Days  $T_0=153.091187$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

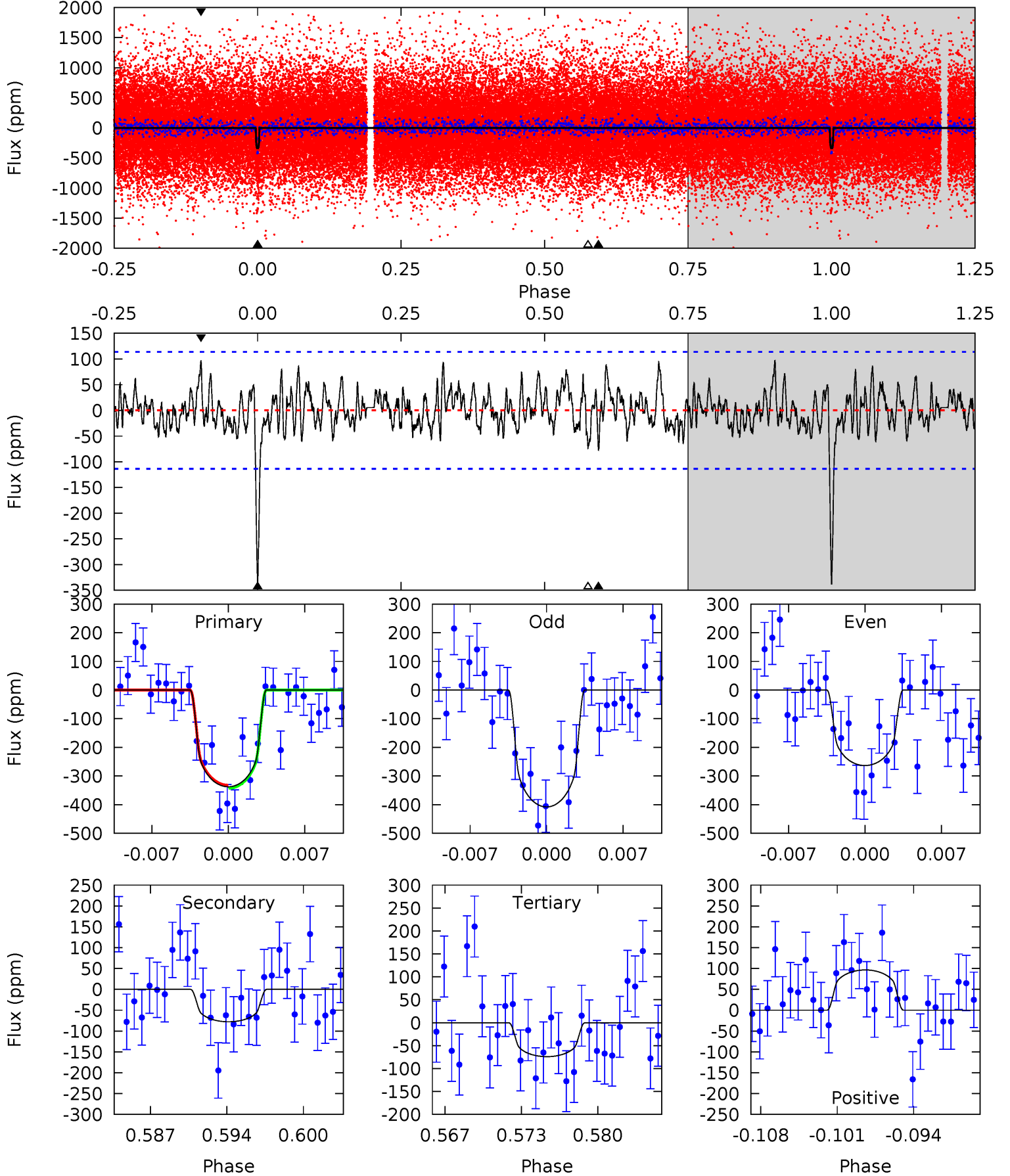
TCE 007373877-02 P= 32.669323 Days  $T_0=153.084904$  (BKJD)



# DV Model-Shift Uniqueness Test

007373877-02, P = 32.668703 Days, E = 120.422484 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	3.49	3.32	4.33	5.10	2.71	1.38	11.8	10.8	0.17	-0.84	3.25	0.88	0.22	0.24

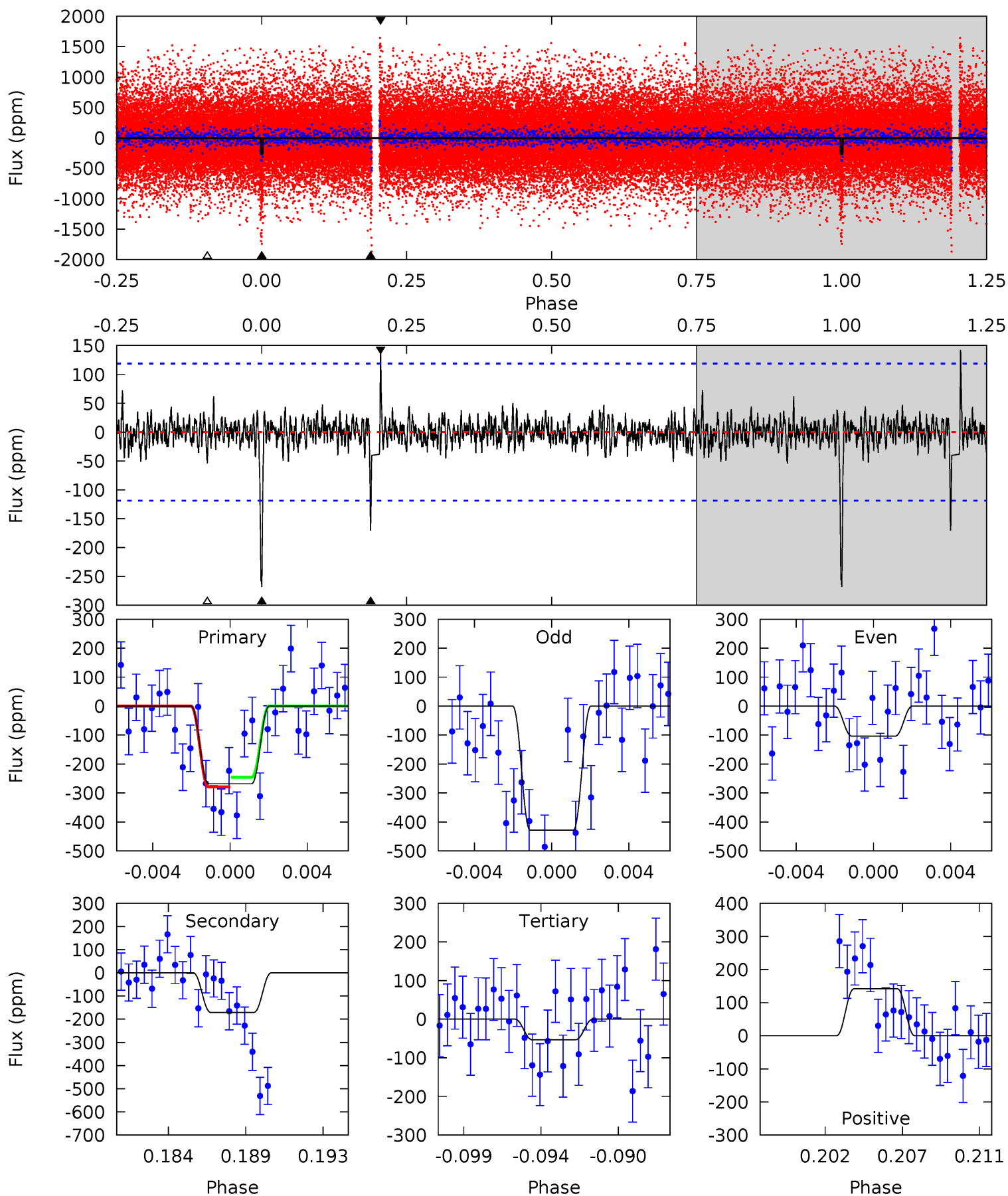




# Alt Model-Shift Uniqueness Test

007373877-02,  $P = 32.669323$  Days,  $E = 120.415581$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	7.44	2.32	6.19	5.18	2.84	0.78	9.37	5.50	5.12	1.26	7.07	1.10	0.35	0.72





### Stellar Parameters For KIC 007373877

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4871^{+145}_{-145}$	$4.606^{+0.027}_{-0.059}$	$0.140^{+0.250}_{-0.300}$	$0.741^{+0.068}_{-0.050}$	$0.822^{+0.036}_{-0.079}$	$2.844^{+0.393}_{-0.566}$
	+3%/-3%	+1%/-1%	+179%/-214%	+9%/-7%	+4%/-10%	+14%/-20%
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 007373877-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-78 \pm 22$	$1.60^{+0.93}_{-0.84}$	$603^{+20}_{-20}$	$3634^{+1110}_{-507}$	$571^{+1909}_{-358}$
Alt.	$-171 \pm 23$	$1.57^{+0.94}_{-0.84}$	$604^{+21}_{-21}$	$4193^{+1463}_{-636}$	$1283^{+4473}_{-771}$

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

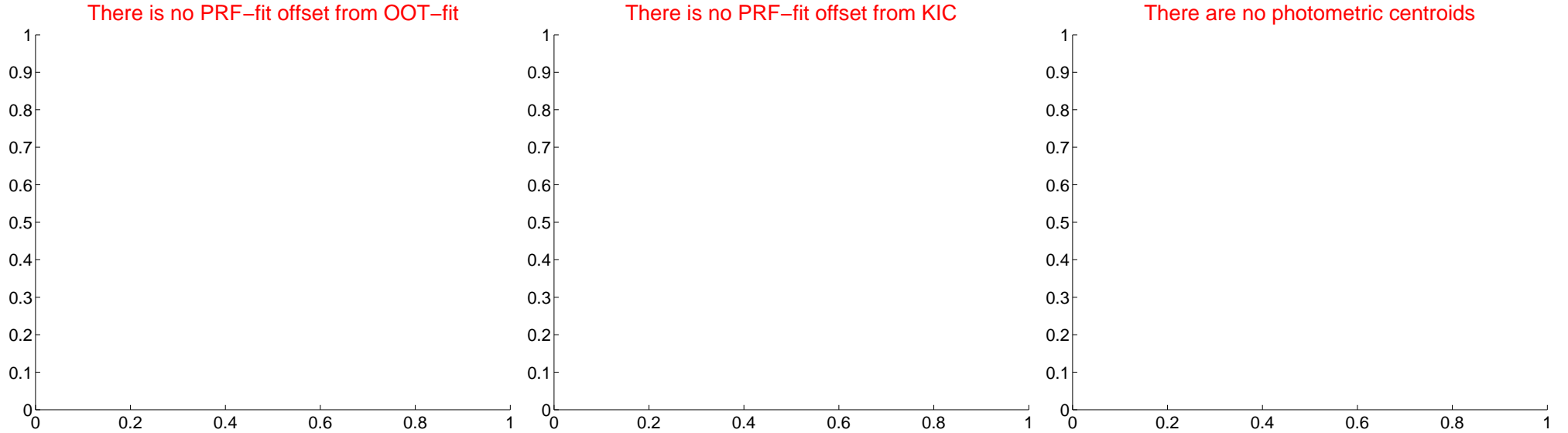
## DV Centroid Data

Supplemental centroid analysis for 007373877-02. Kepler magnitude: 15.54. Transit SNR 8.51

There are 0 quarters with good PRF difference image offsets

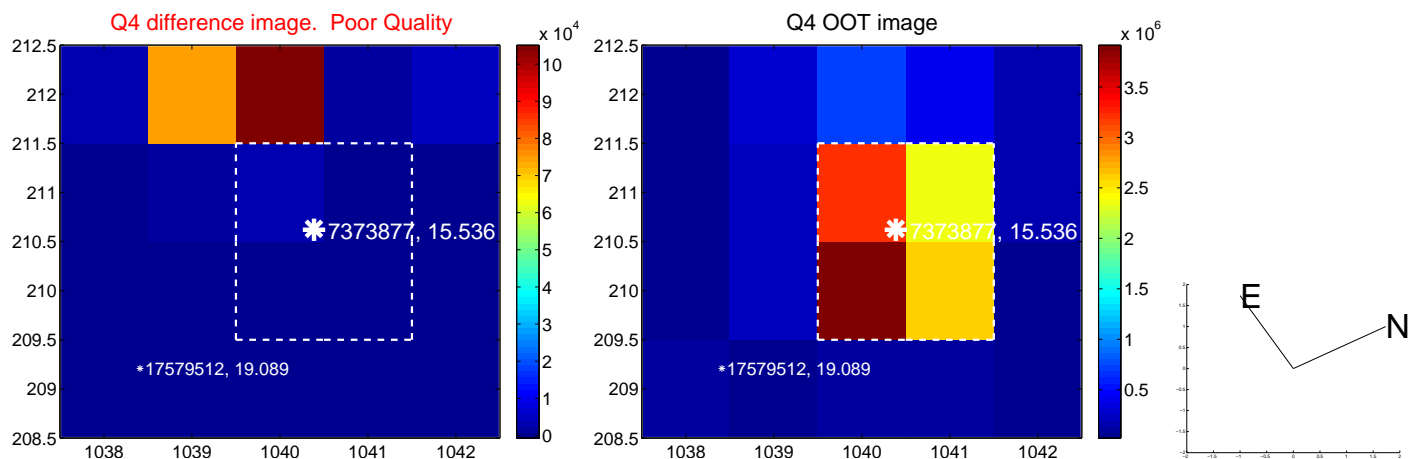
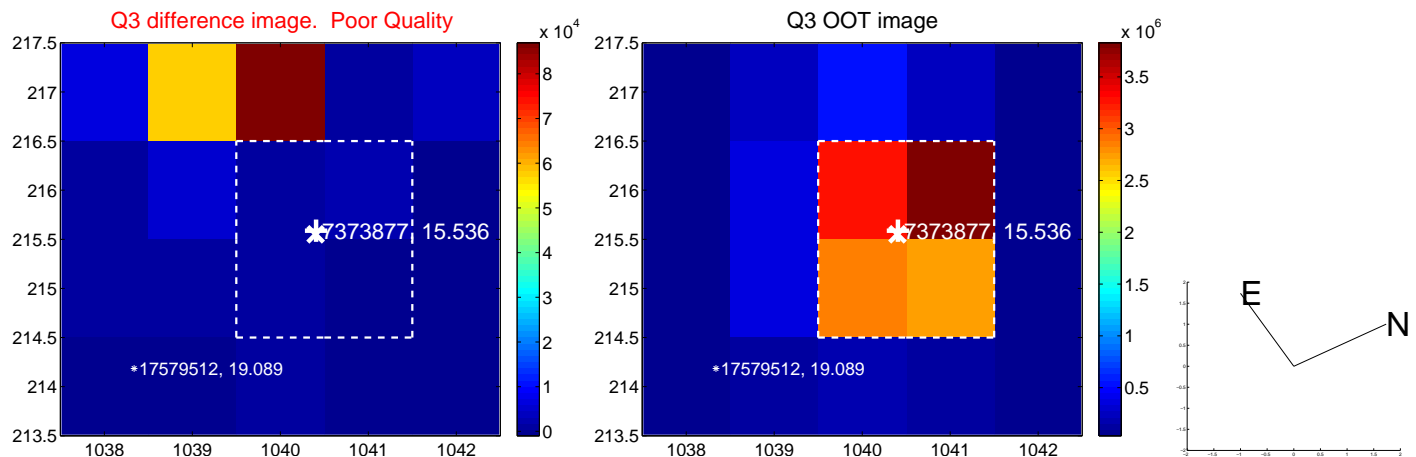
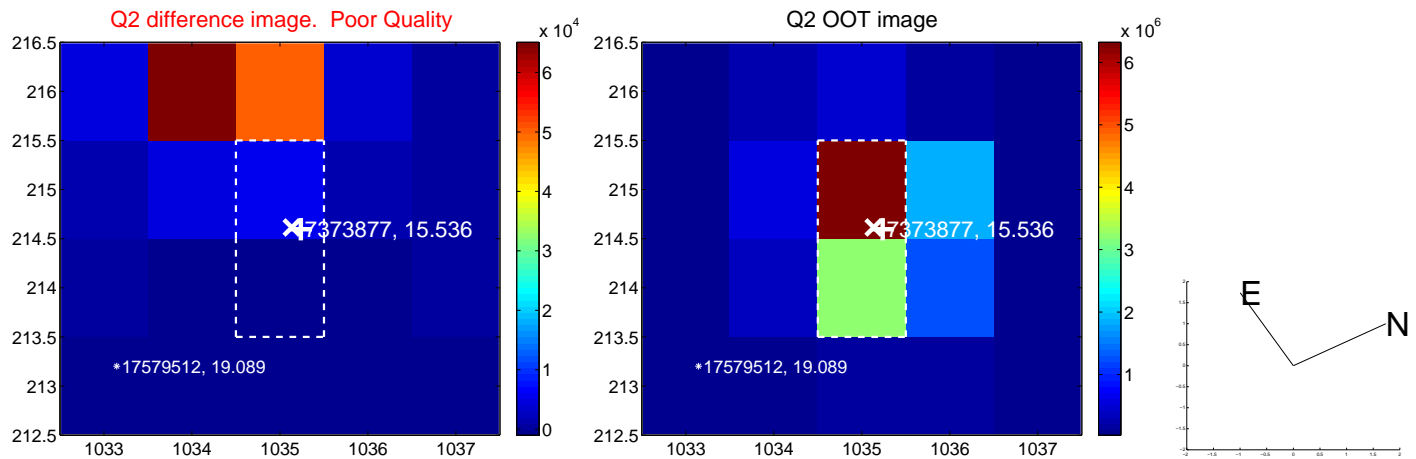
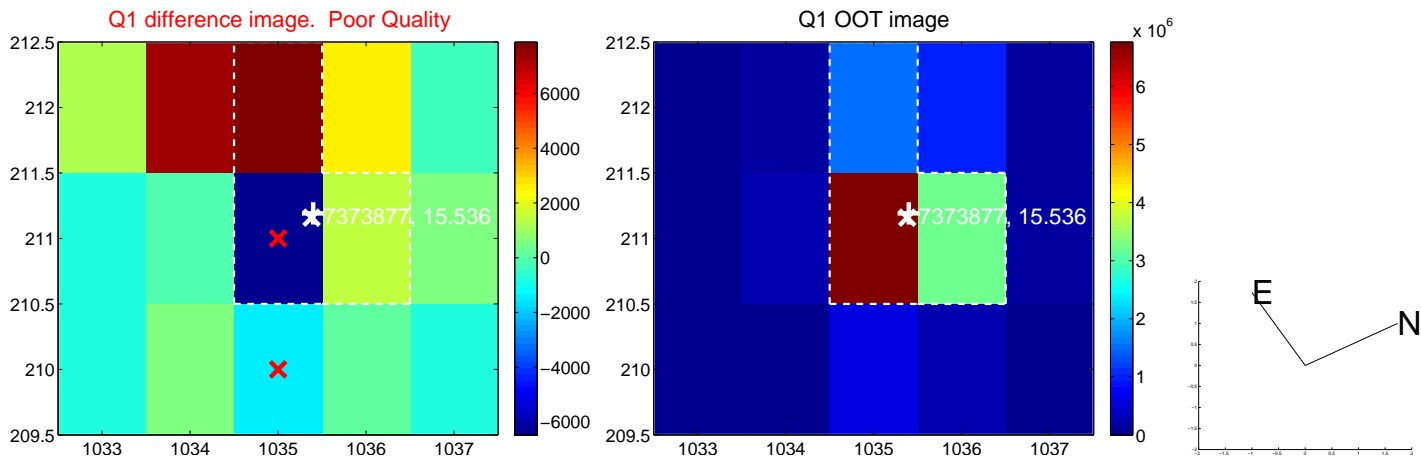
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—

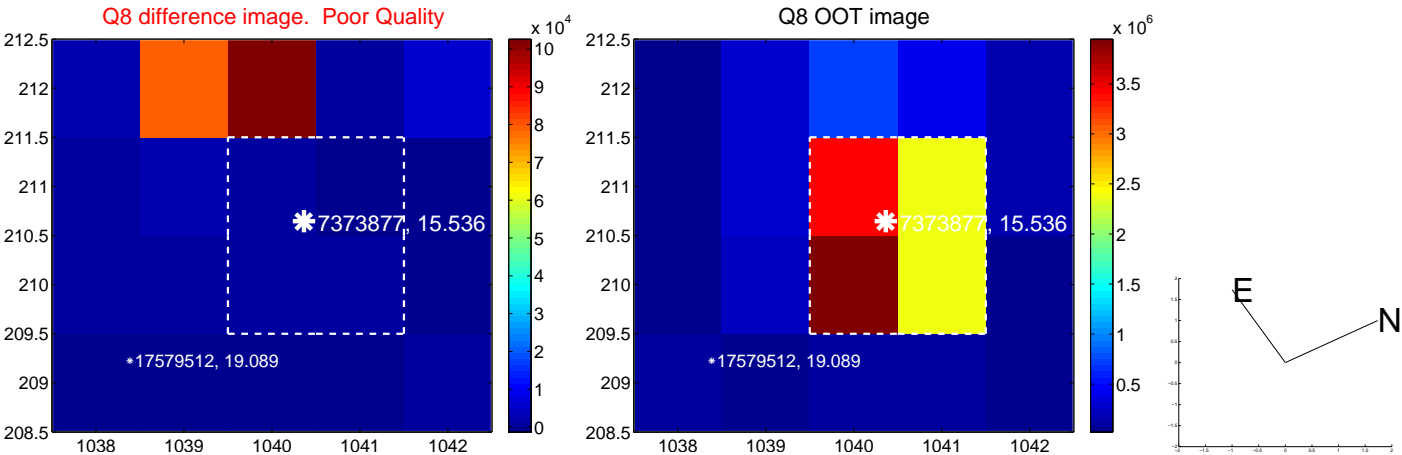
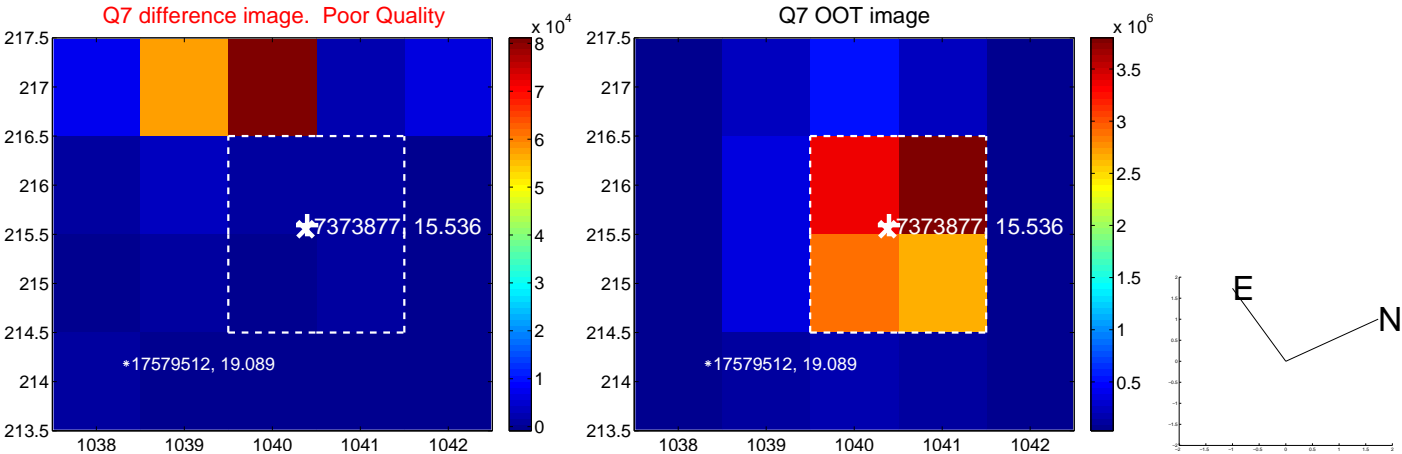
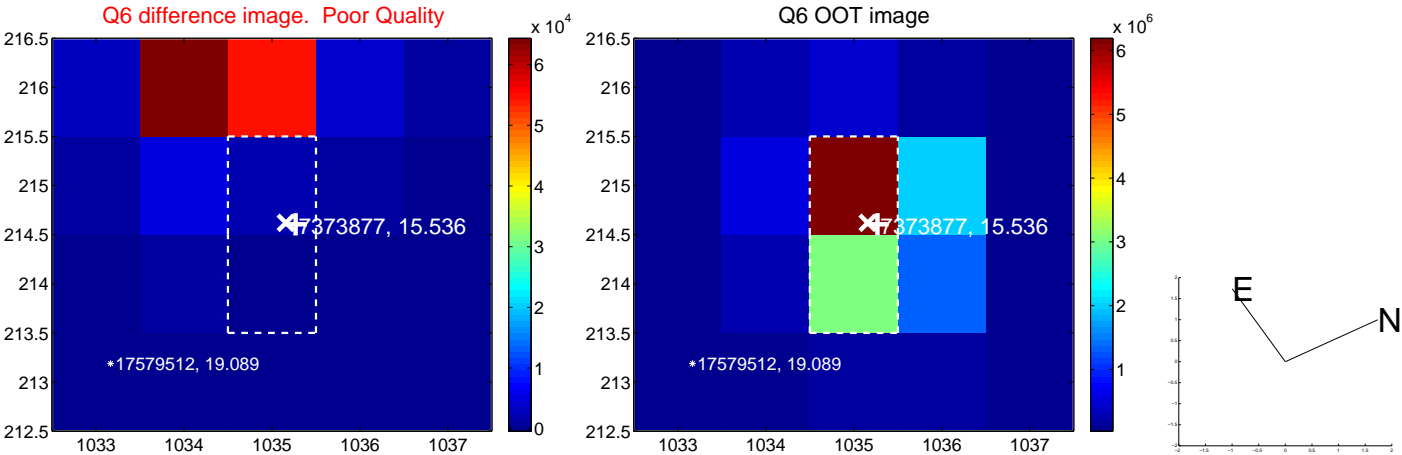
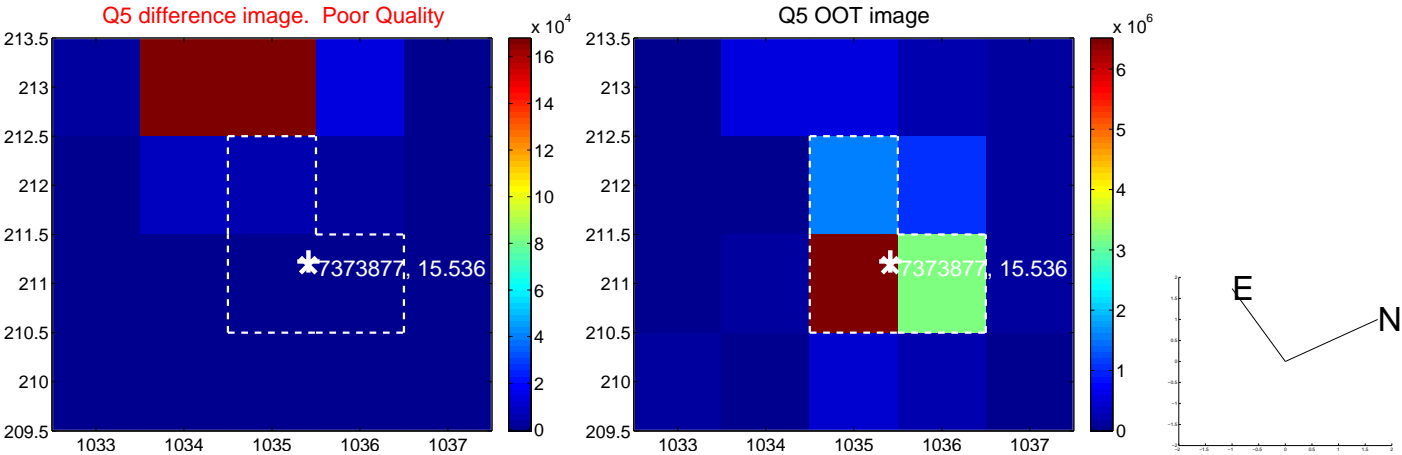


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

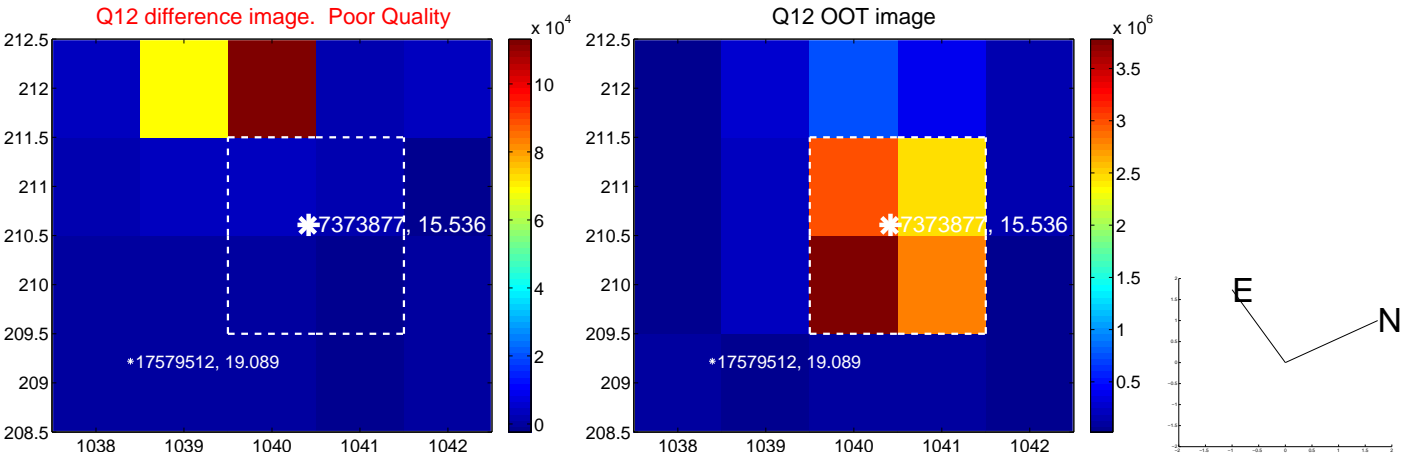
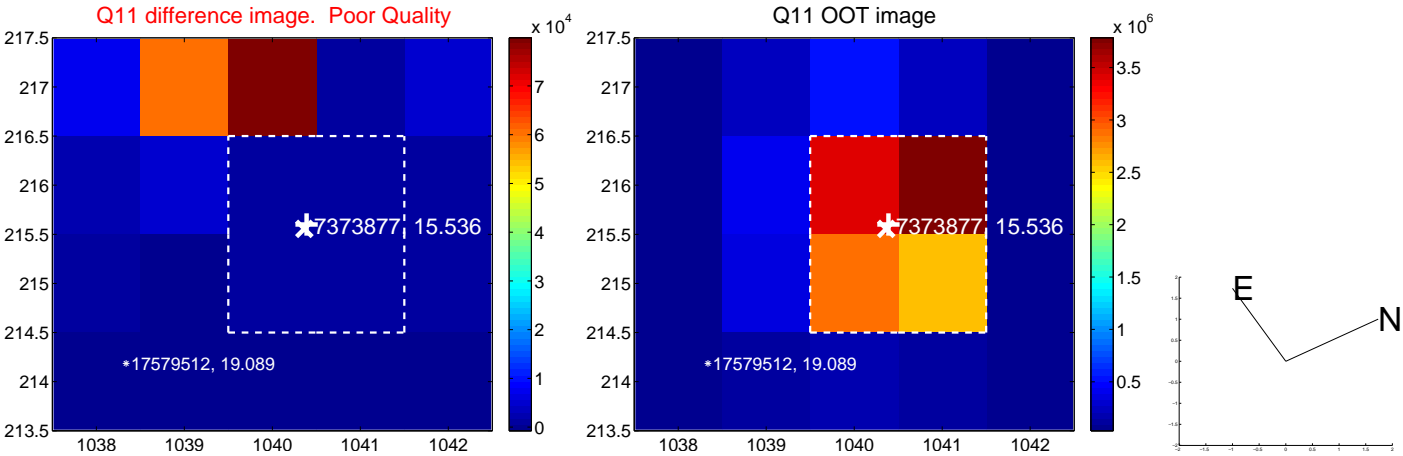
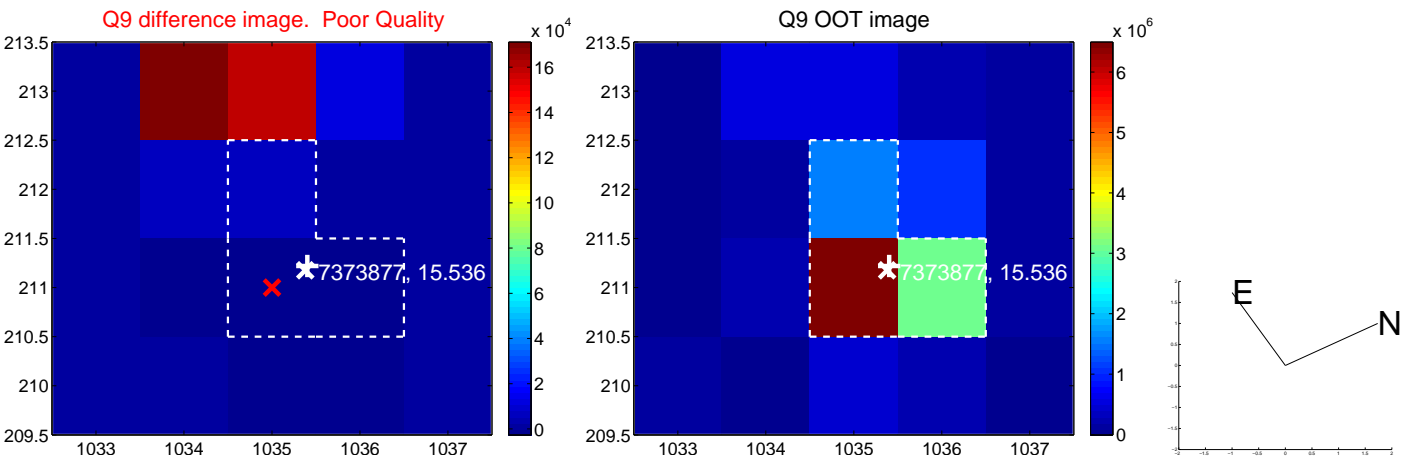
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



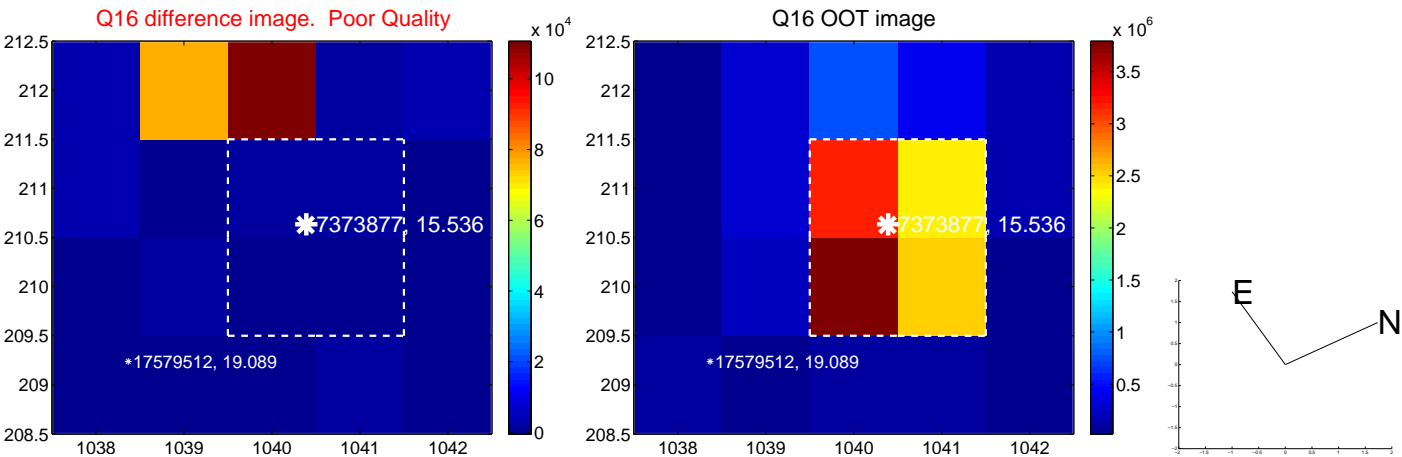
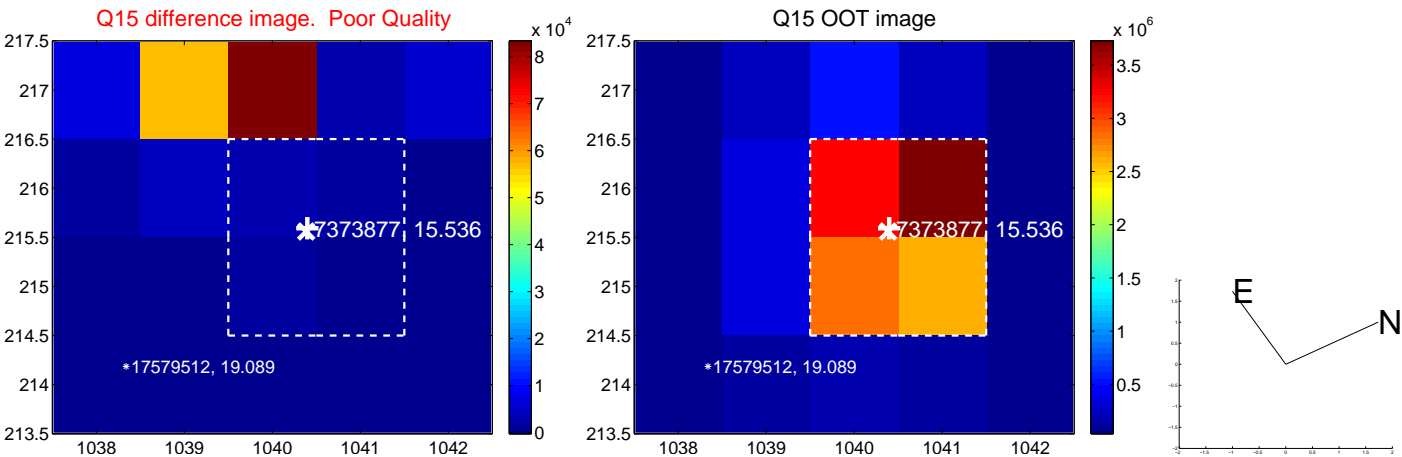
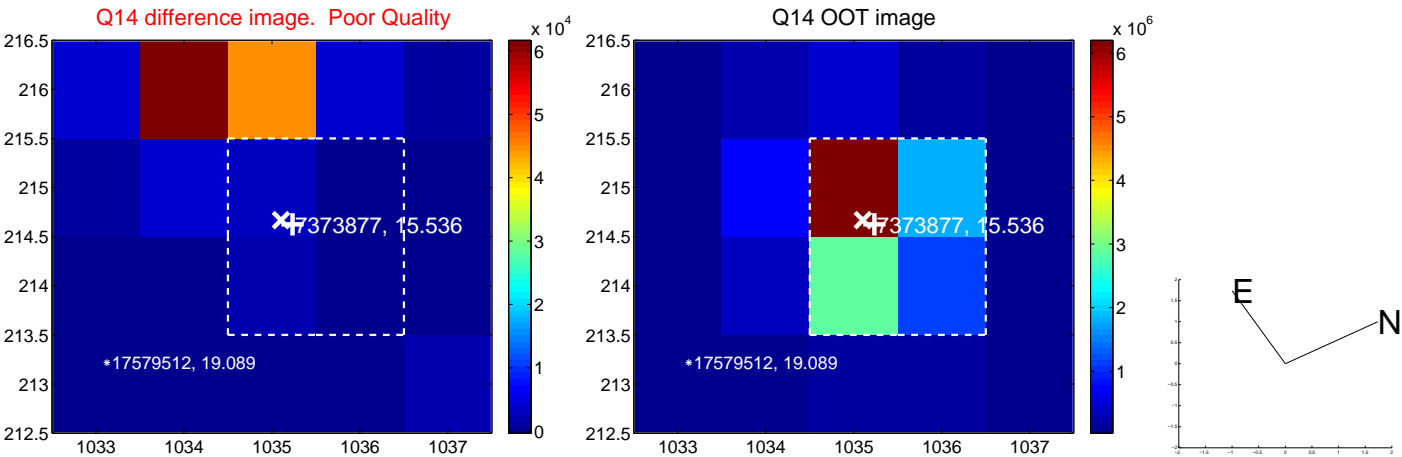
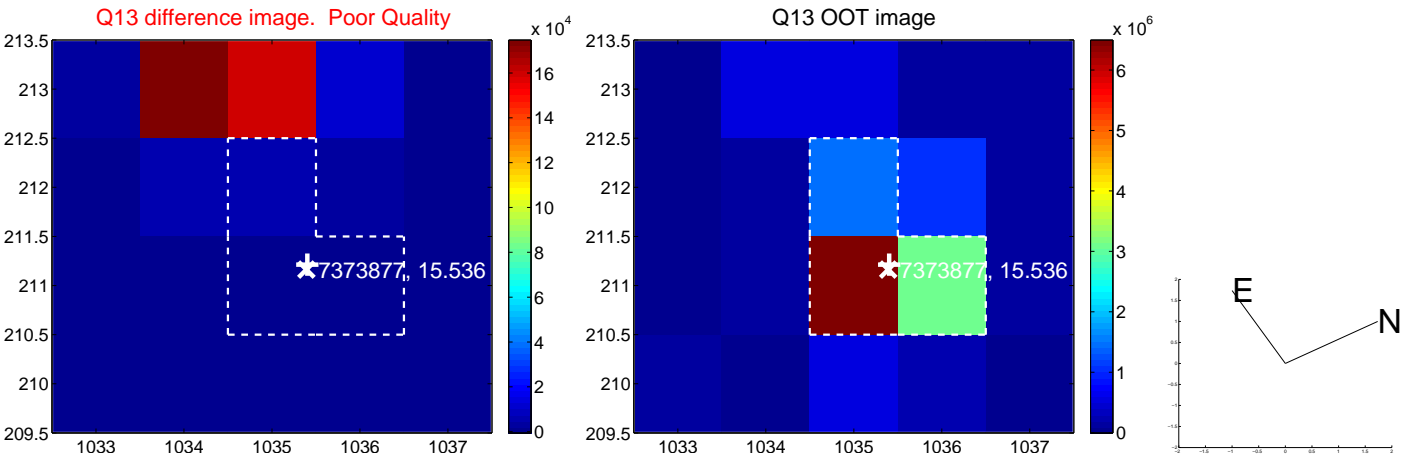
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



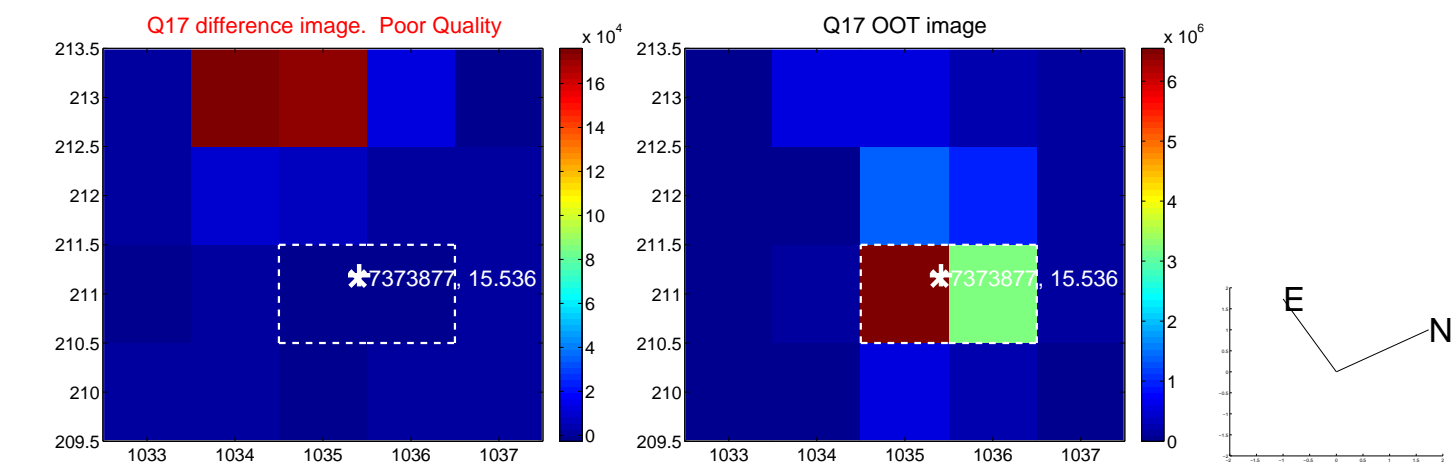
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



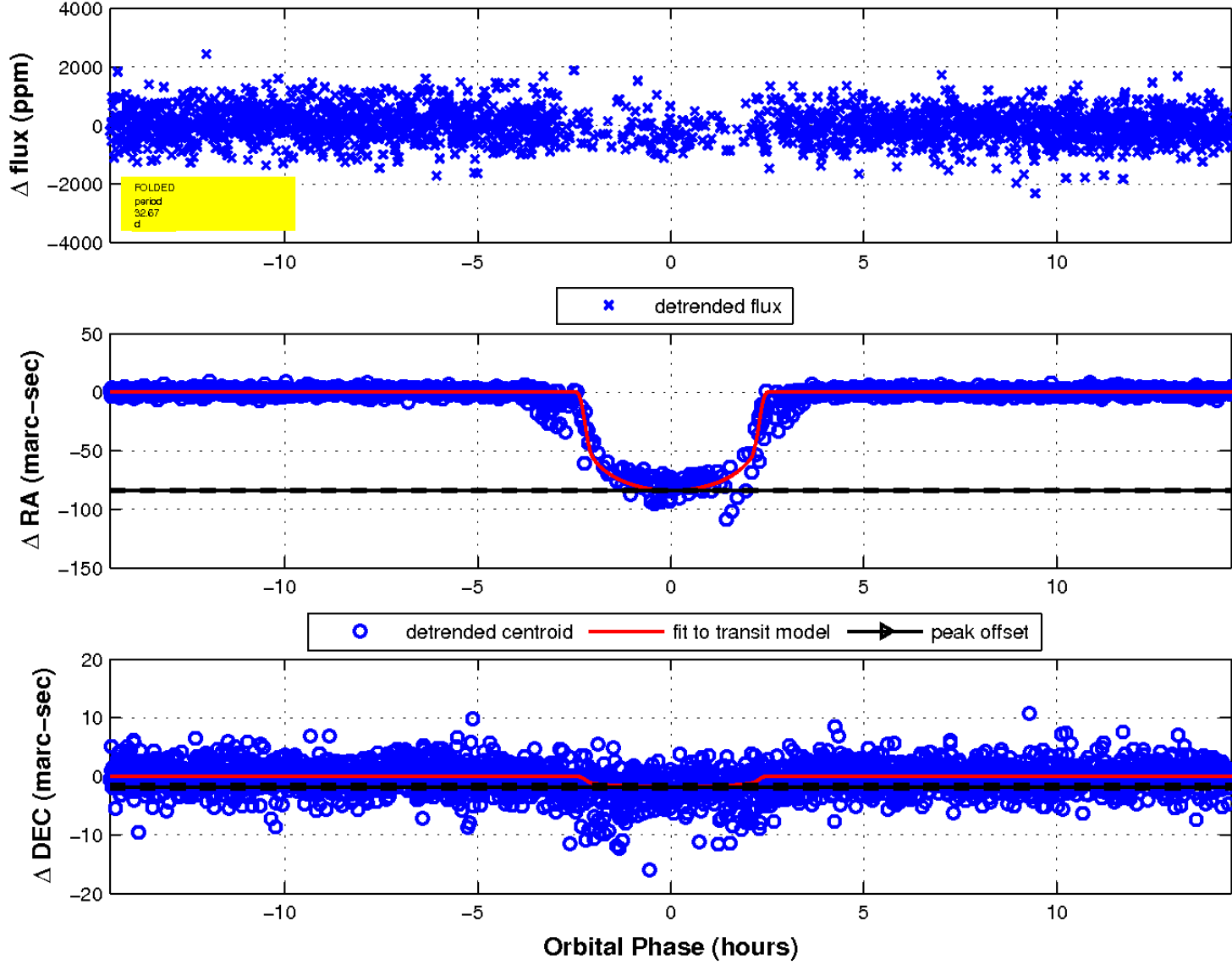
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

