

# KIC 007106877

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007106877-01	OBS	No	1.459868	132.853379	78.3	2.352	9.9	12.7	2.39	7769	2.48	20395.55
007106877-02	OBS	No	0.521847	131.718812	28.8	2.308	9.0	7.9	2.39	7769	1.30	80394.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007106877-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007106877-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

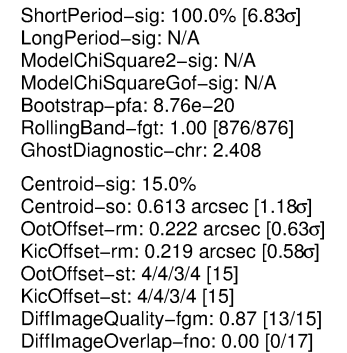
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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.

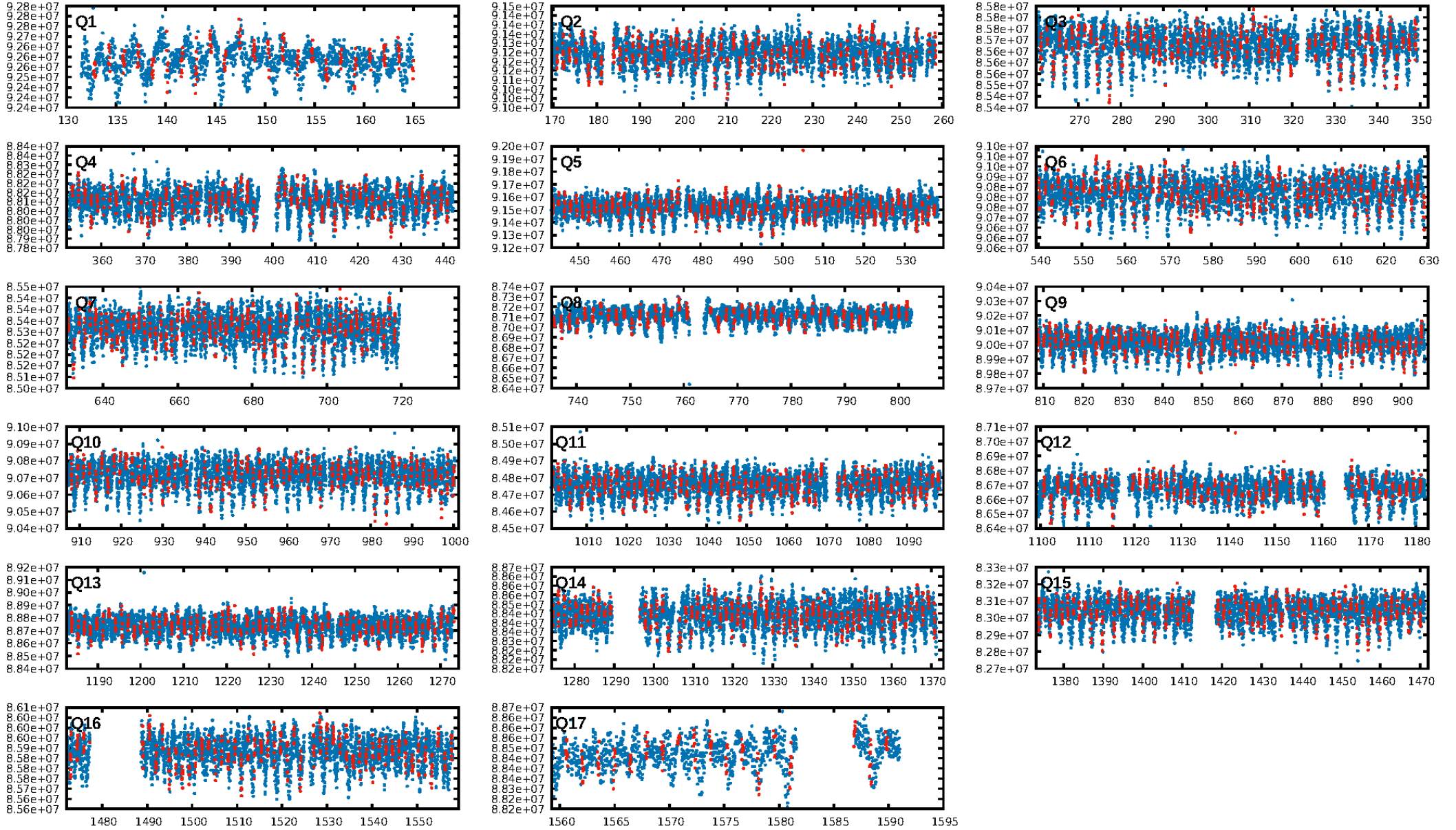
## Ephemeris Match Information For 007106877-01

No Significant Match Found

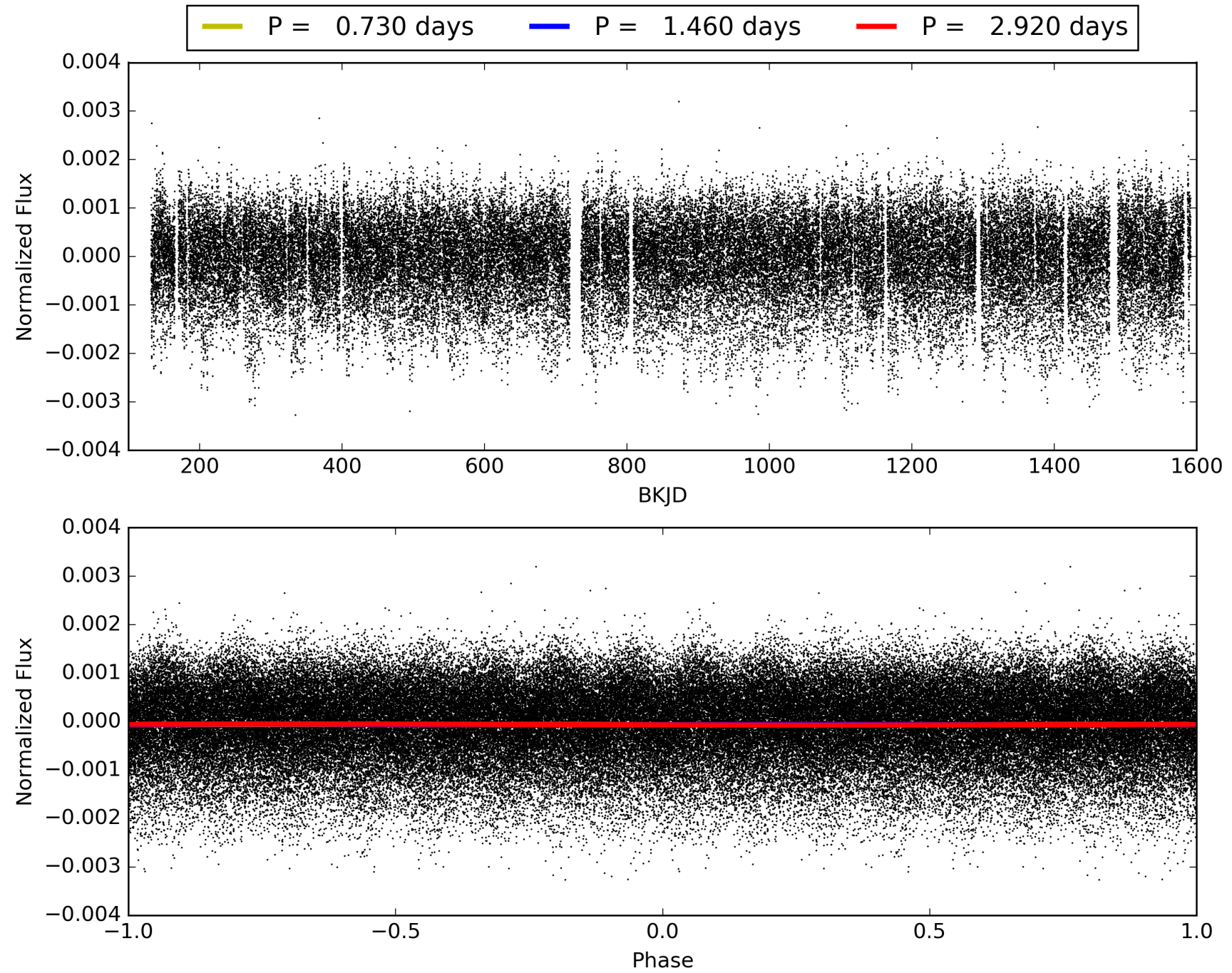
## KIC: 7106877    Candidate: 1 of 2    Period: 1.460 d



# TCE 007106877-01, PDC Light Curves



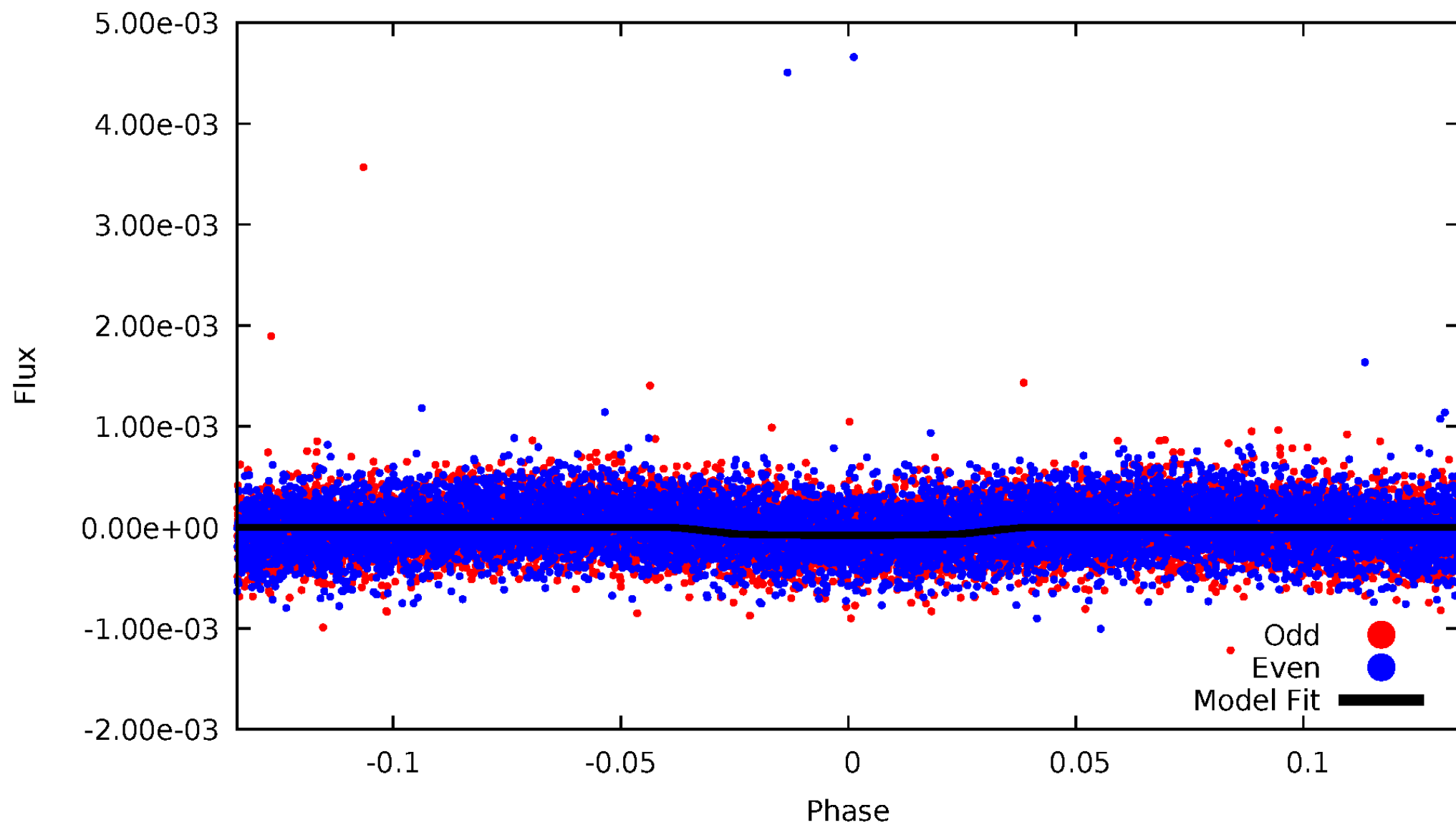
TCE 007106877-01





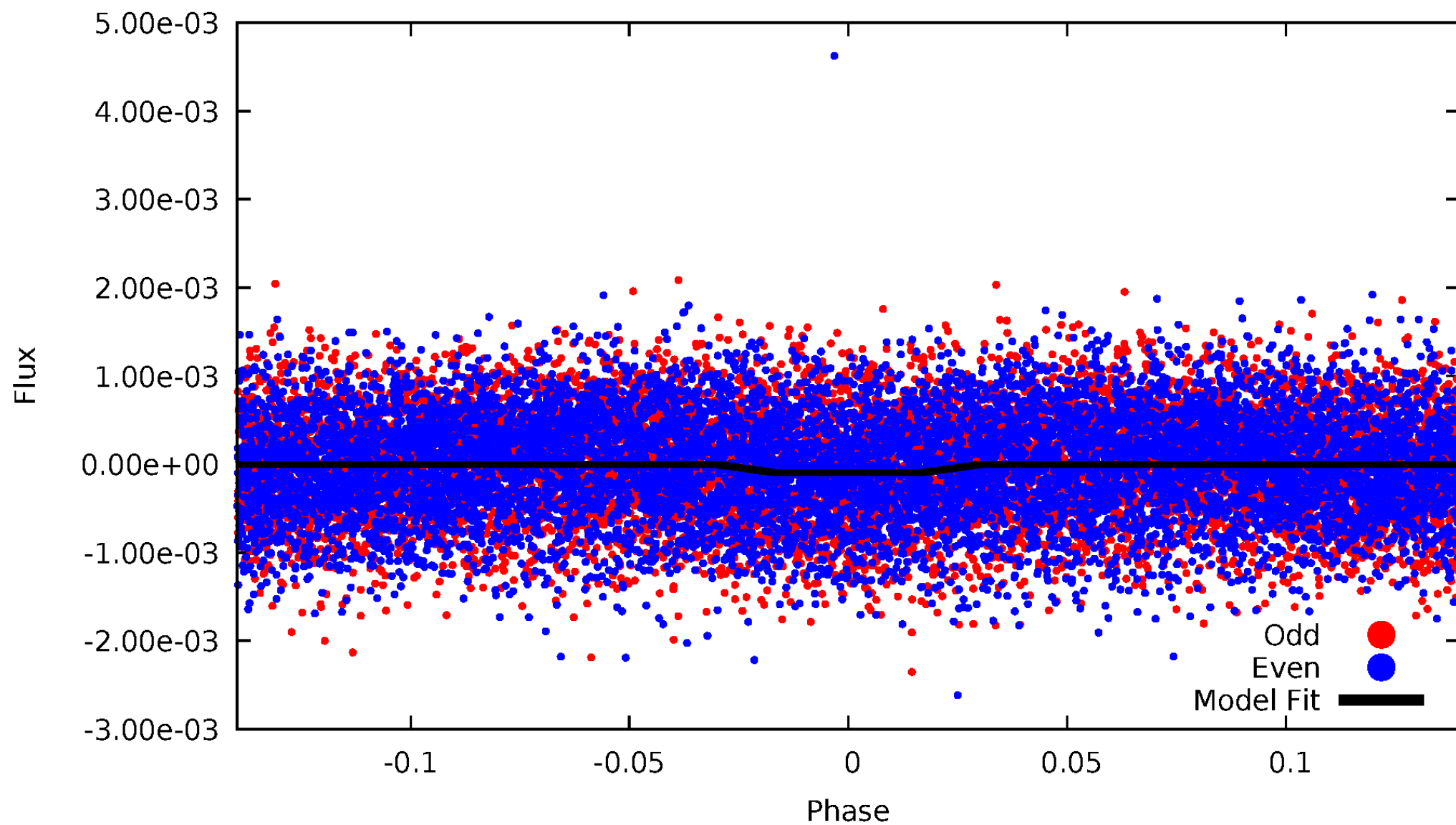
# DV Odd/Even

TCE 007106877-01



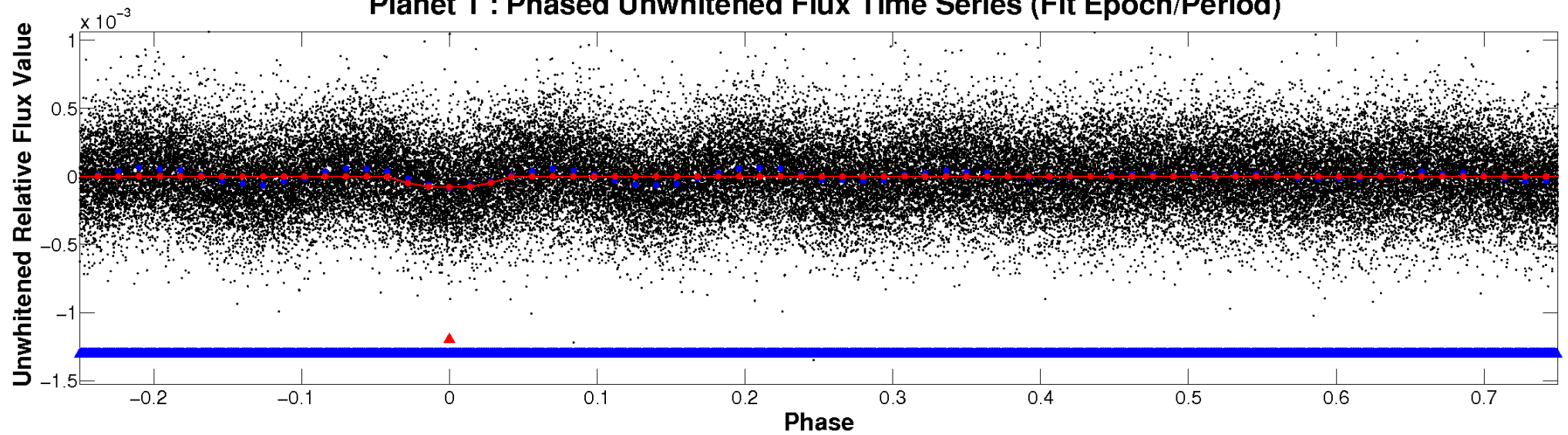
# ALT Odd/Even

TCE 007106877-01

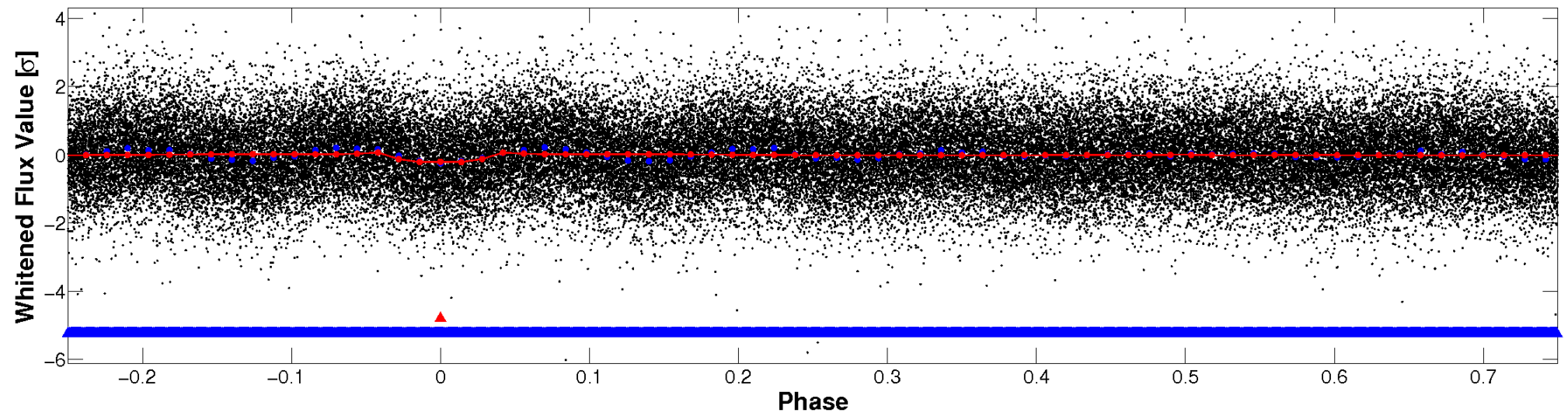


# Non-Whitened Vs. Whitened Light Curve

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

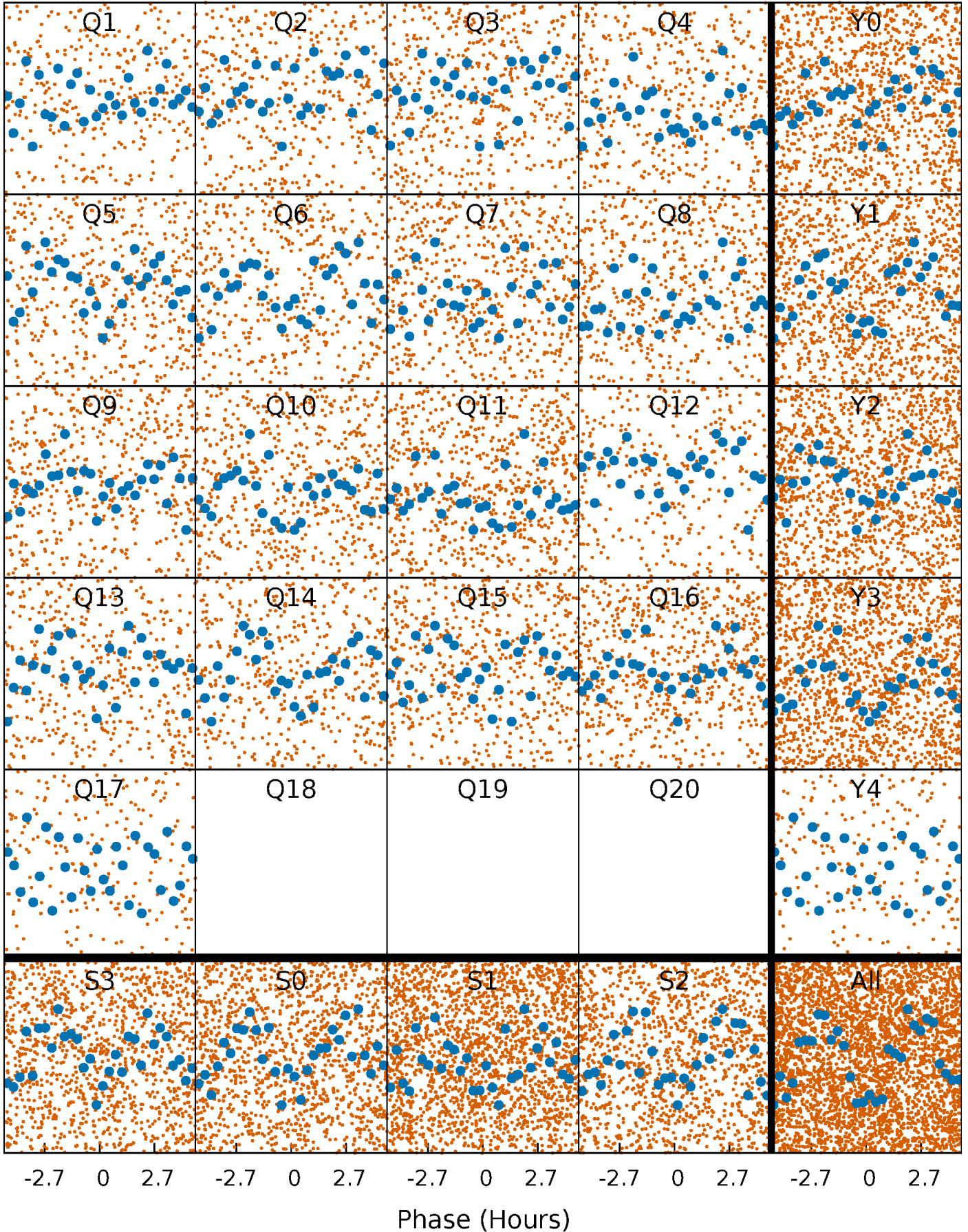


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

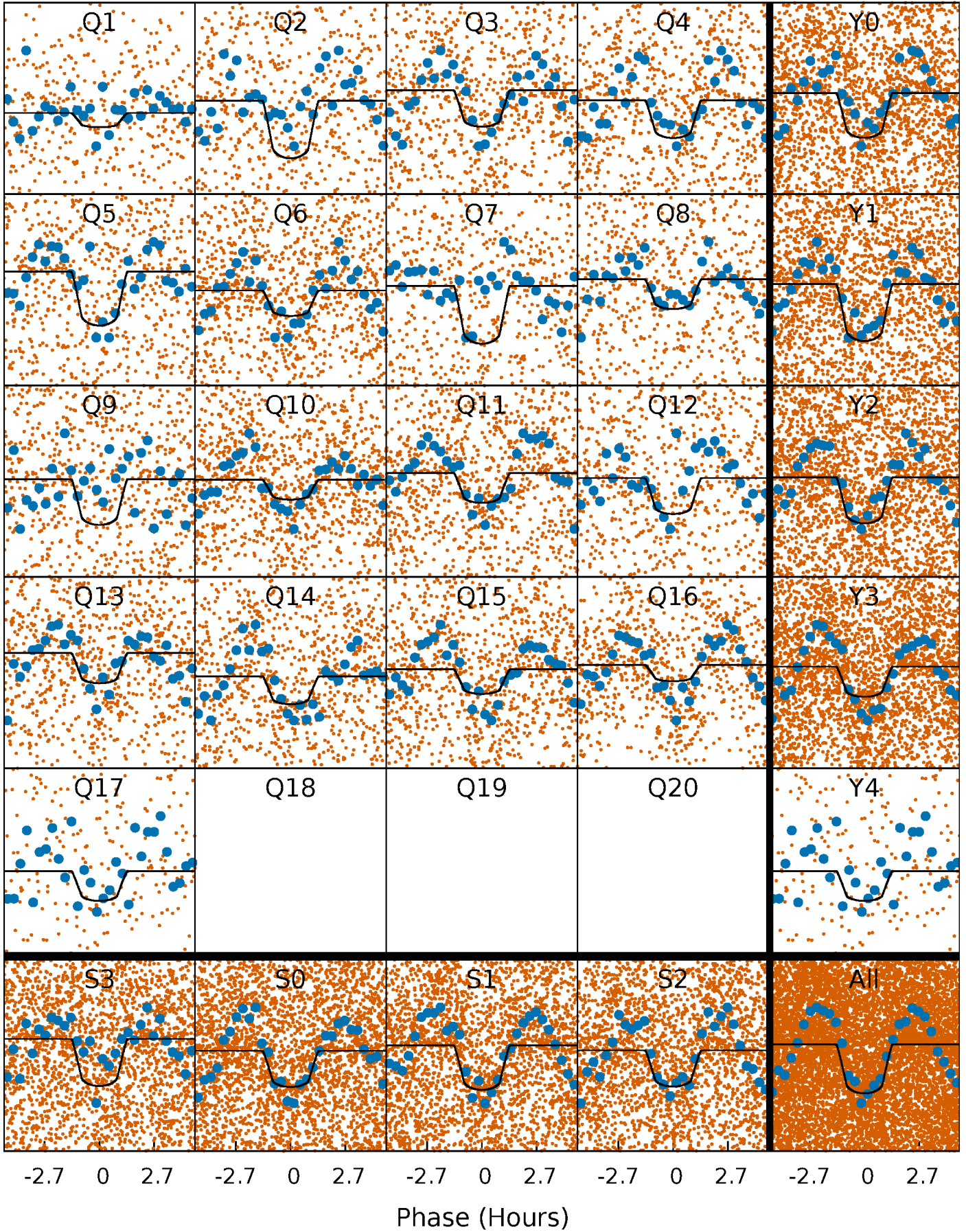
TCE 007106877-01 P= 1.459868 Days  $T_0=132.853379$  (BKJD)





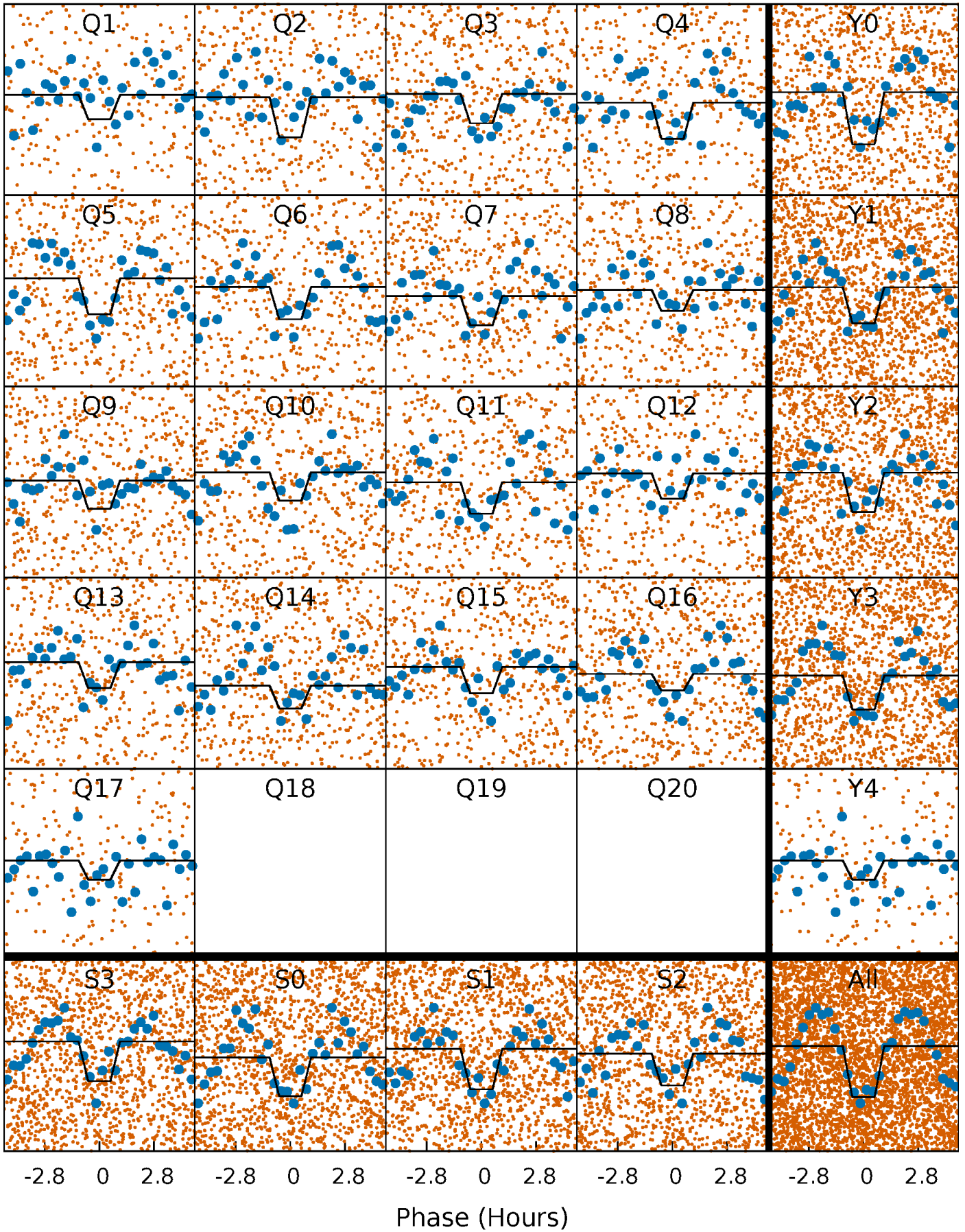
# DV Quarter-Phased Transit Curves

TCE 007106877-01 P= 1.459868 Days  $T_0=132.853379$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

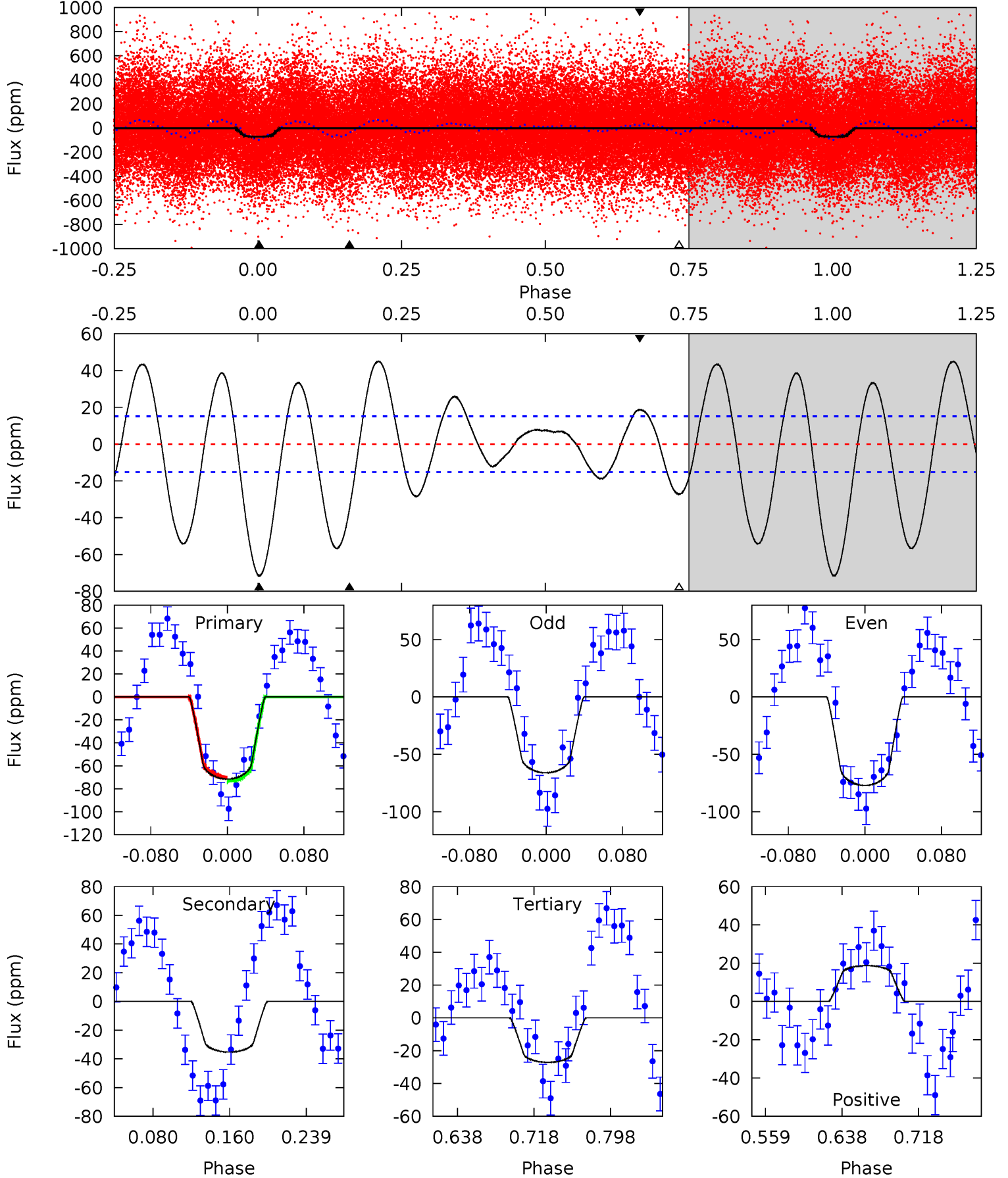
TCE 007106877-01 P= 1.459878 Days  $T_0=132.852897$  (BKJD)



# DV Model-Shift Uniqueness Test

007106877-01, P = 1.459868 Days, E = 131.393511 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	10.7	8.25	5.69	4.61	1.75	6.19	13.5	16.1	2.47	5.03	1.69	0.97	0.39	0.53

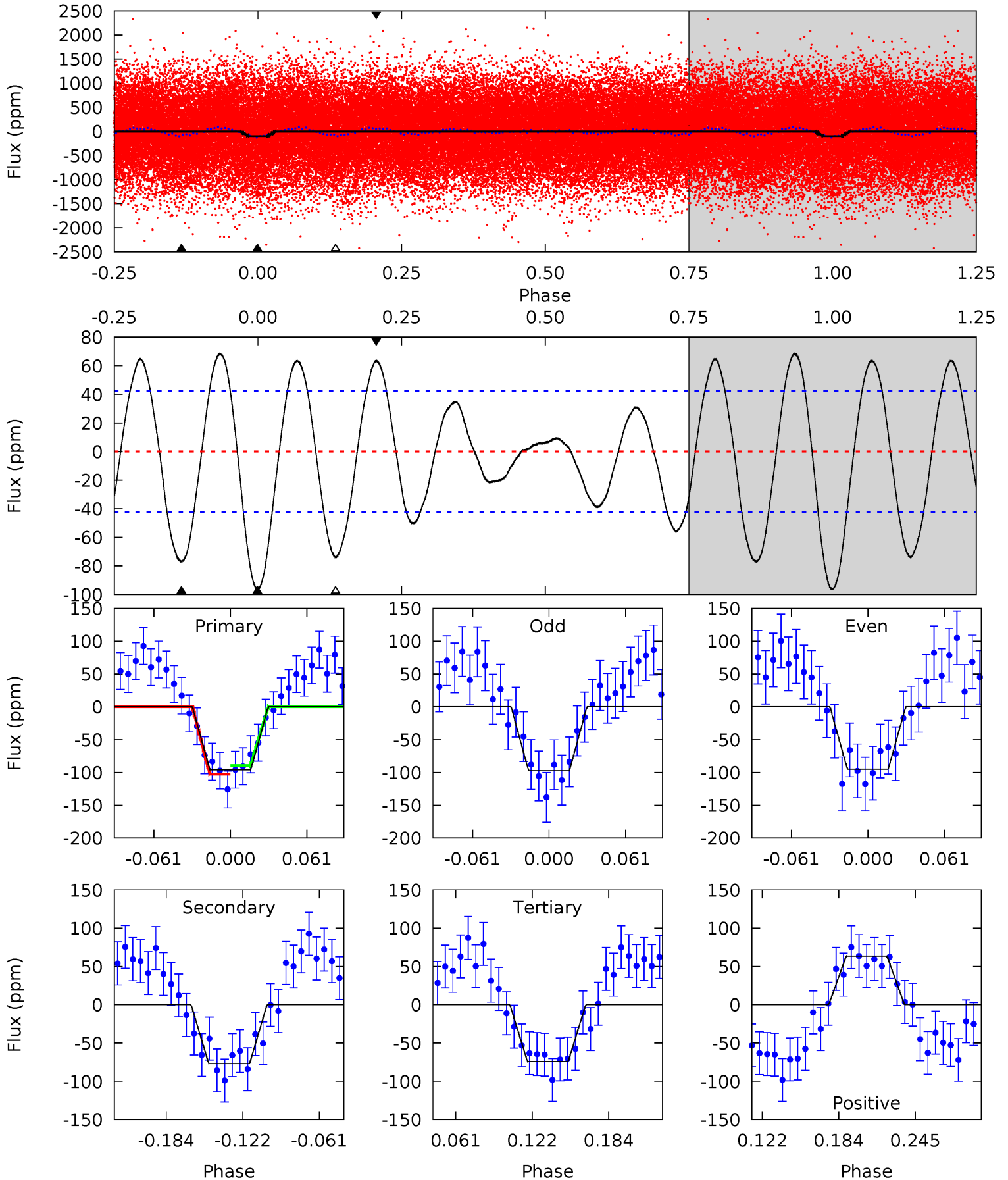




# Alt Model-Shift Uniqueness Test

007106877-01, P = 1.459878 Days, E = 131.393019 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
10.6	8.50	8.17	7.02	4.67	1.87	3.84	2.46	3.61	0.33	1.48	0.13	0.90	0.42	0.71





### Stellar Parameters For KIC 007106877

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7769^{+244}_{-325}$	$3.919^{+0.301}_{-0.108}$	$-0.300^{+0.200}_{-0.350}$	$2.390^{+0.470}_{-0.872}$	$1.727^{+0.165}_{-0.384}$	$0.178^{+0.377}_{-0.060}$
	+3%/-4%	+8%/-3%	+67%/-117%	+20%/-36%	+10%/-22%	+212%/-34%
Source	KIC0	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 007106877-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-35 \pm 3$	$2.28^{+0.89}_{-0.74}$	$4149^{+301}_{-383}$	$5865^{+1257}_{-797}$	$3.321^{+3.958}_{-1.553}$
Alt.	$-77 \pm 9$	$2.47^{+0.82}_{-0.73}$	$4181^{+287}_{-363}$	$7030^{+1671}_{-931}$	$6.195^{+6.248}_{-2.707}$

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

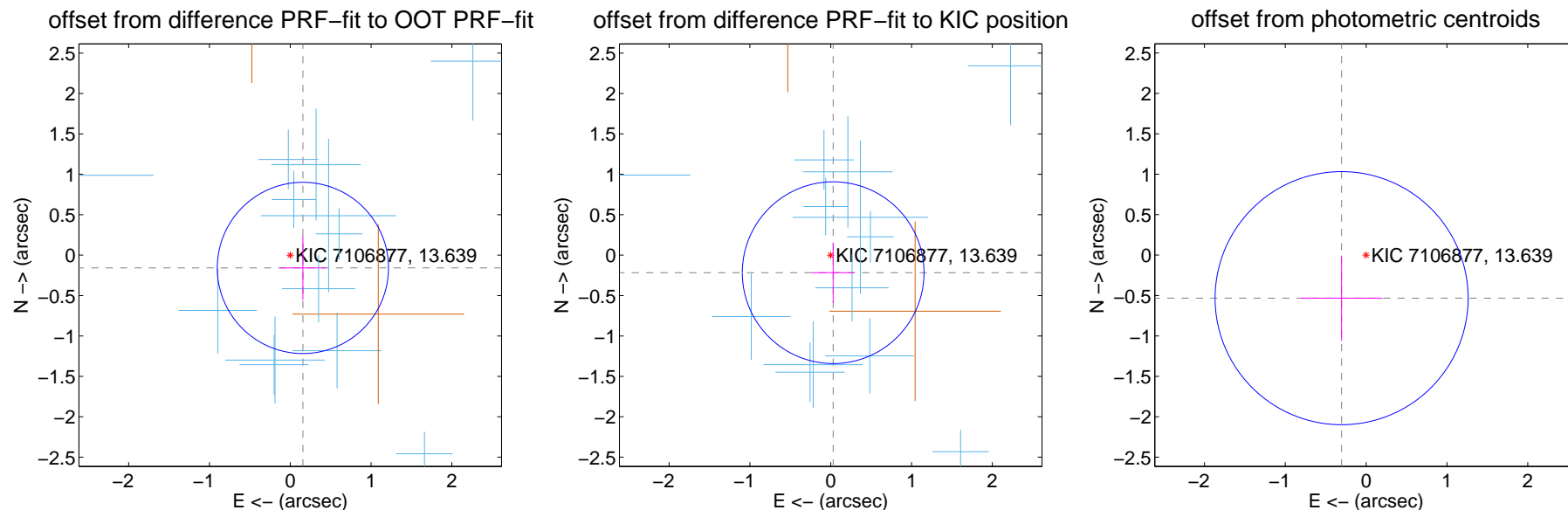
## DV Centroid Data

Supplemental centroid analysis for 007106877-01. Kepler magnitude: 13.64. Transit SNR 12.66

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

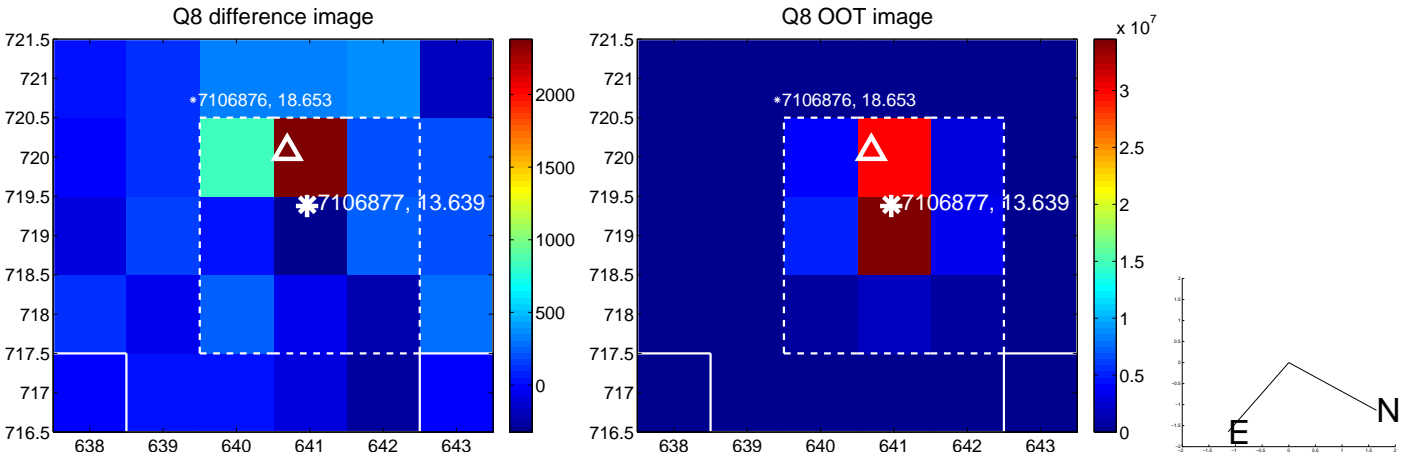
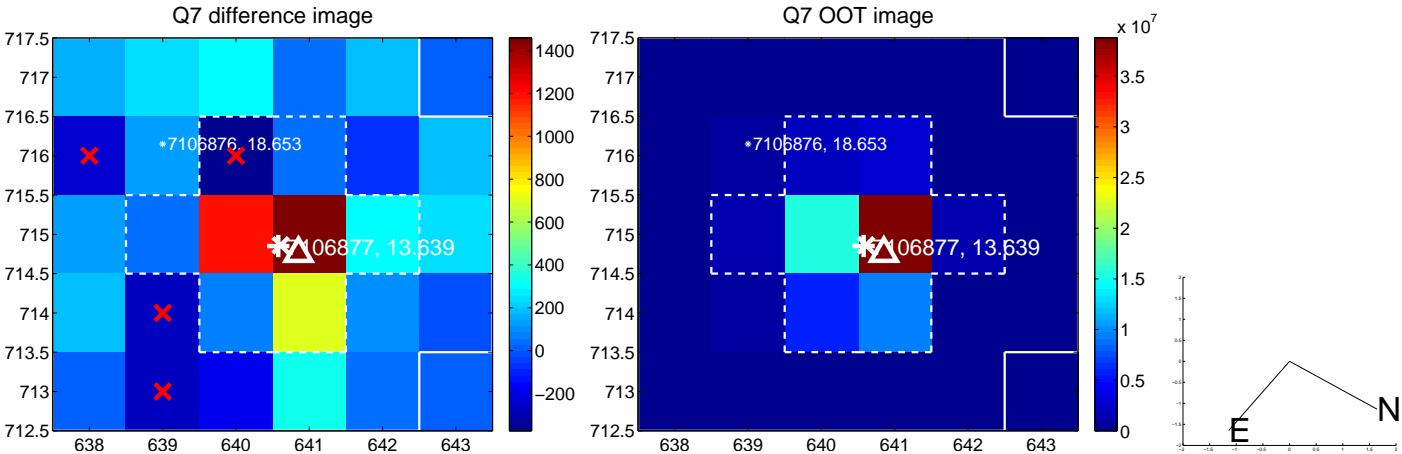
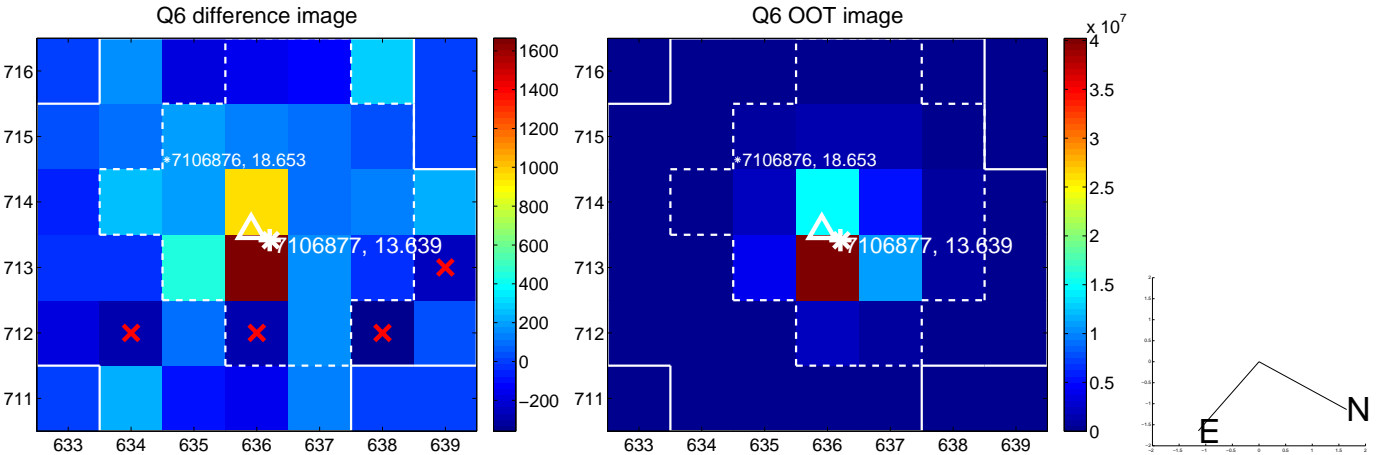
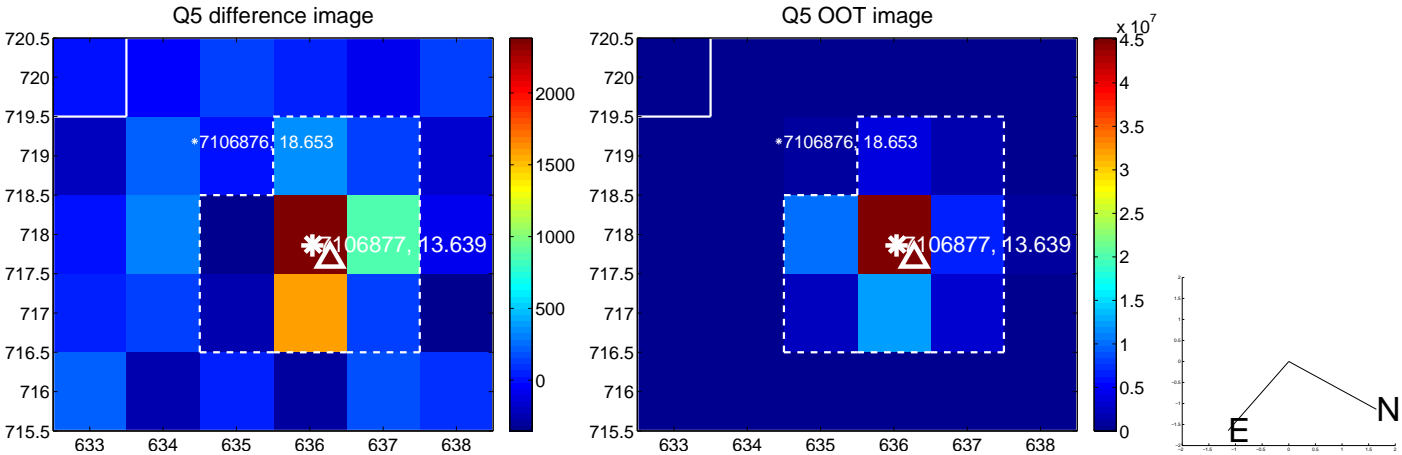
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.222 \pm 0.353$	0.63	$-0.156 \pm 0.285$	$-0.158 \pm 0.396$
PRF-fit source offset from KIC position	$0.219 \pm 0.375$	0.58	$-0.030 \pm 0.267$	$-0.217 \pm 0.375$
photometric centroid source offset	$0.61 \pm 0.52$	1.18	$0.30 \pm 0.50$	$-0.53 \pm 0.53$



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.

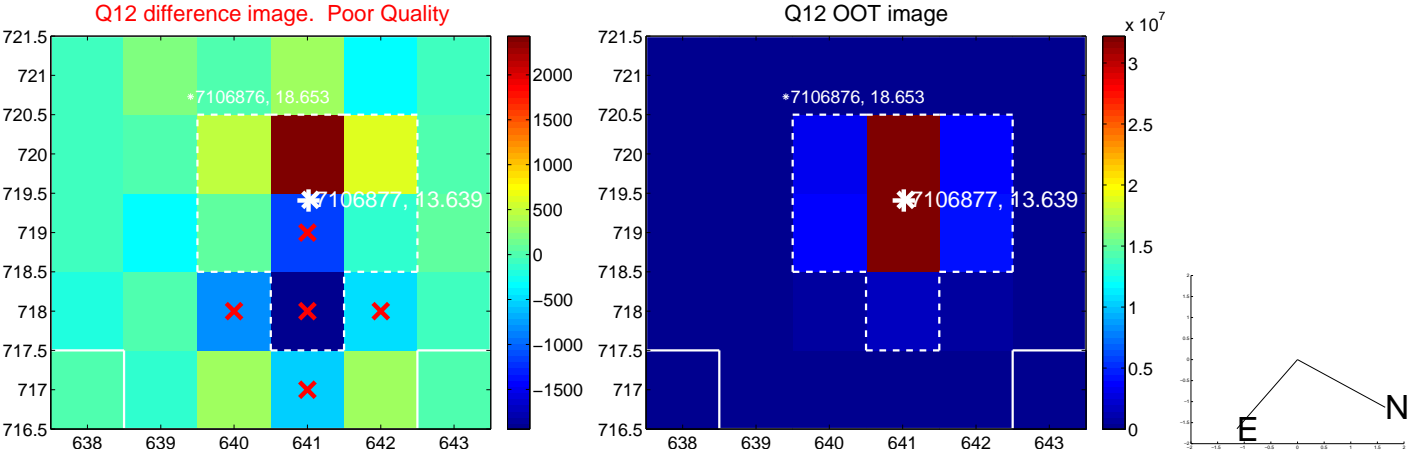
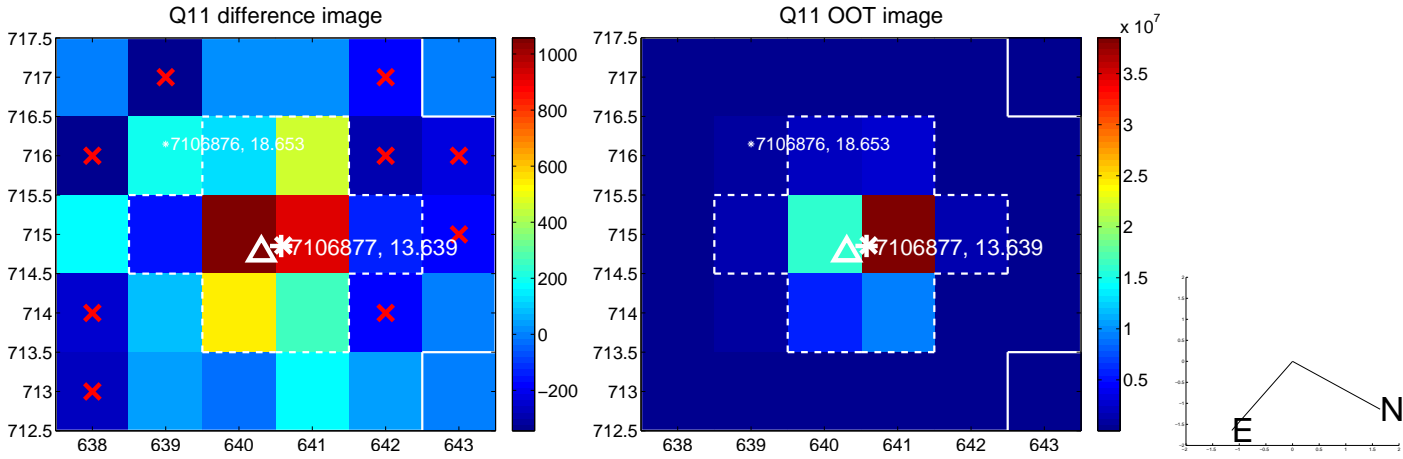
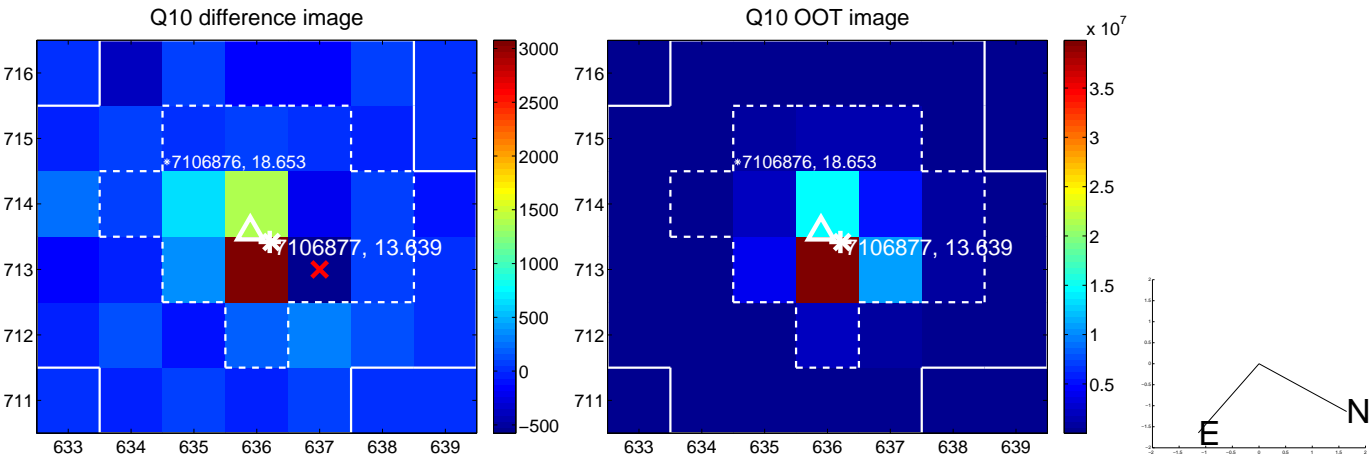
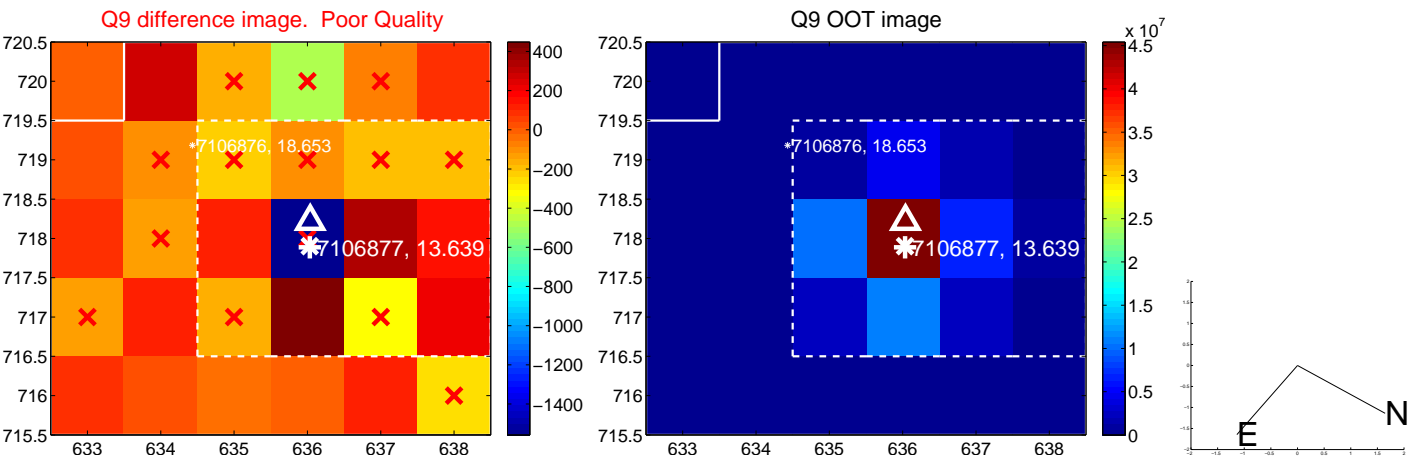


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

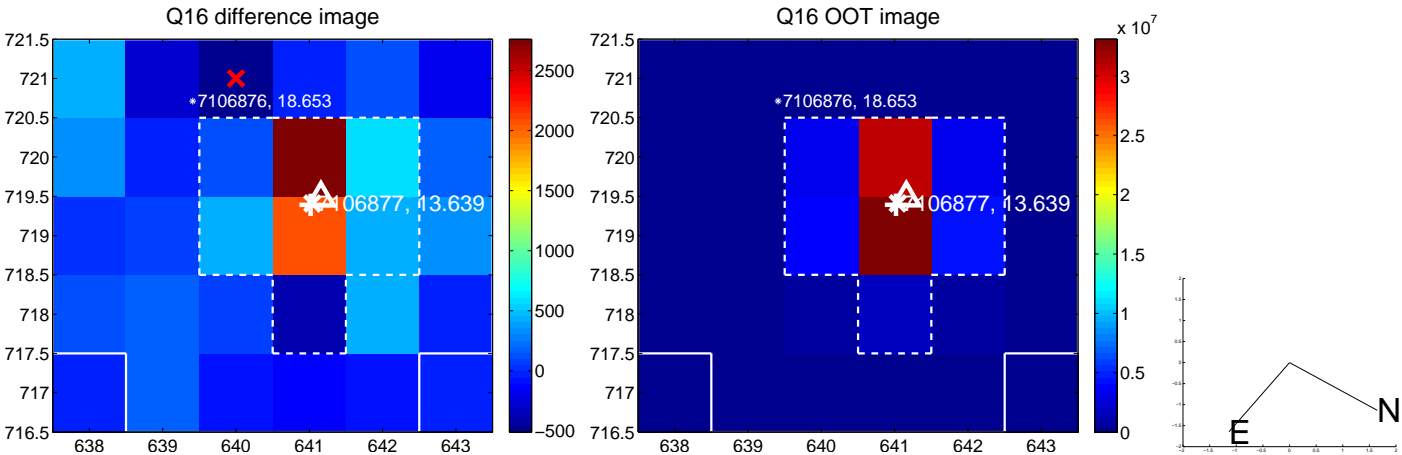
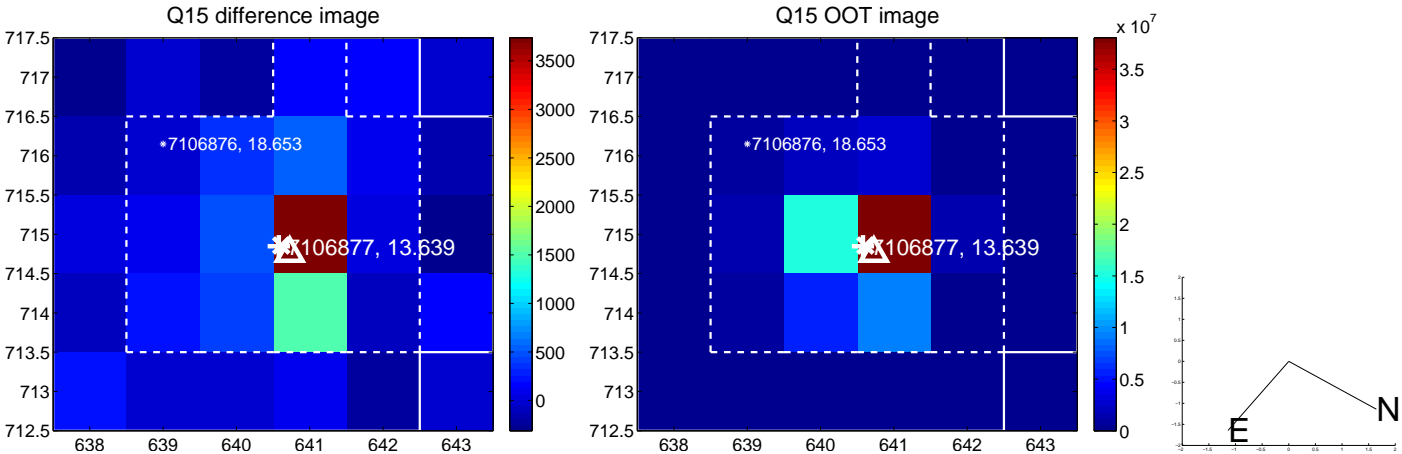
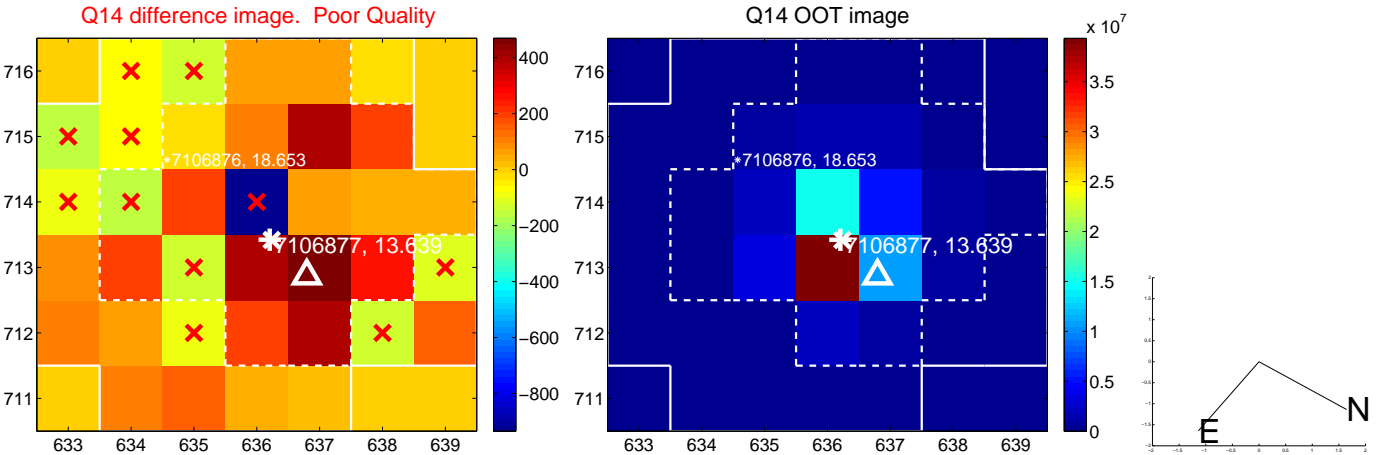
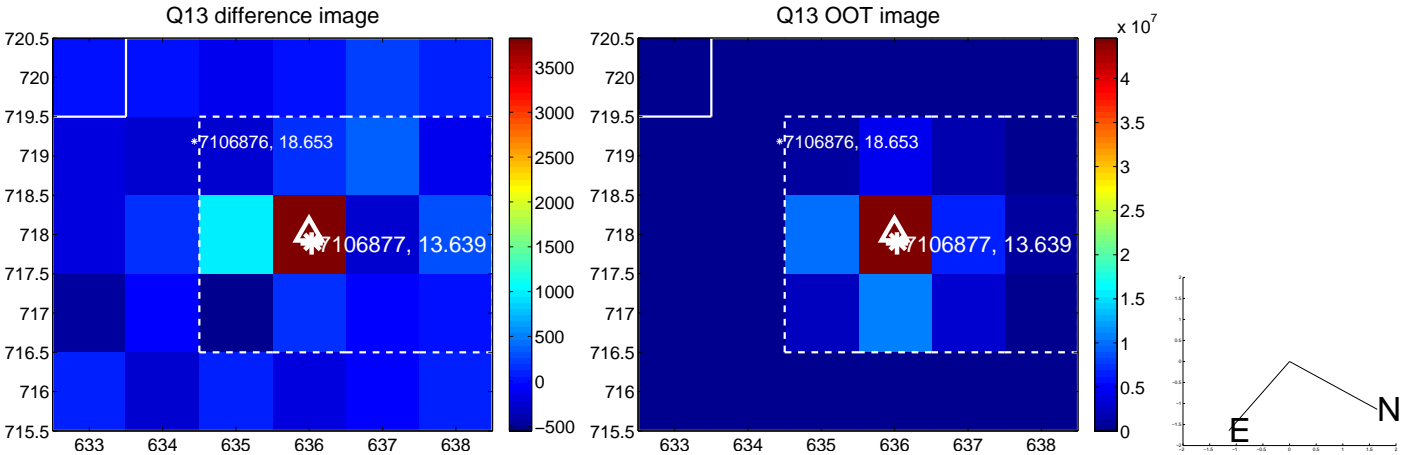




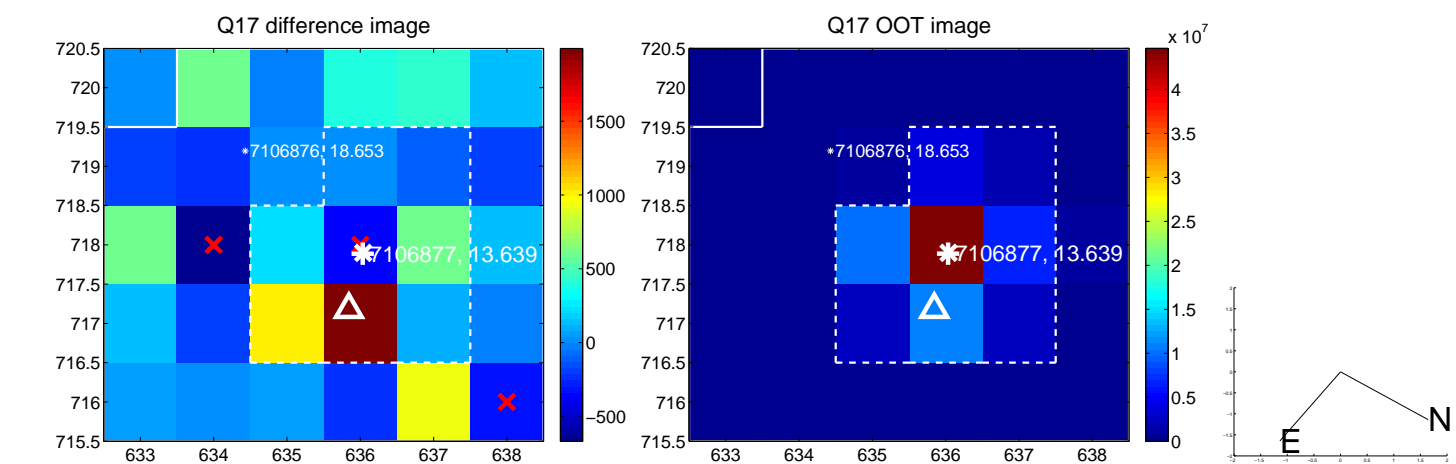
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



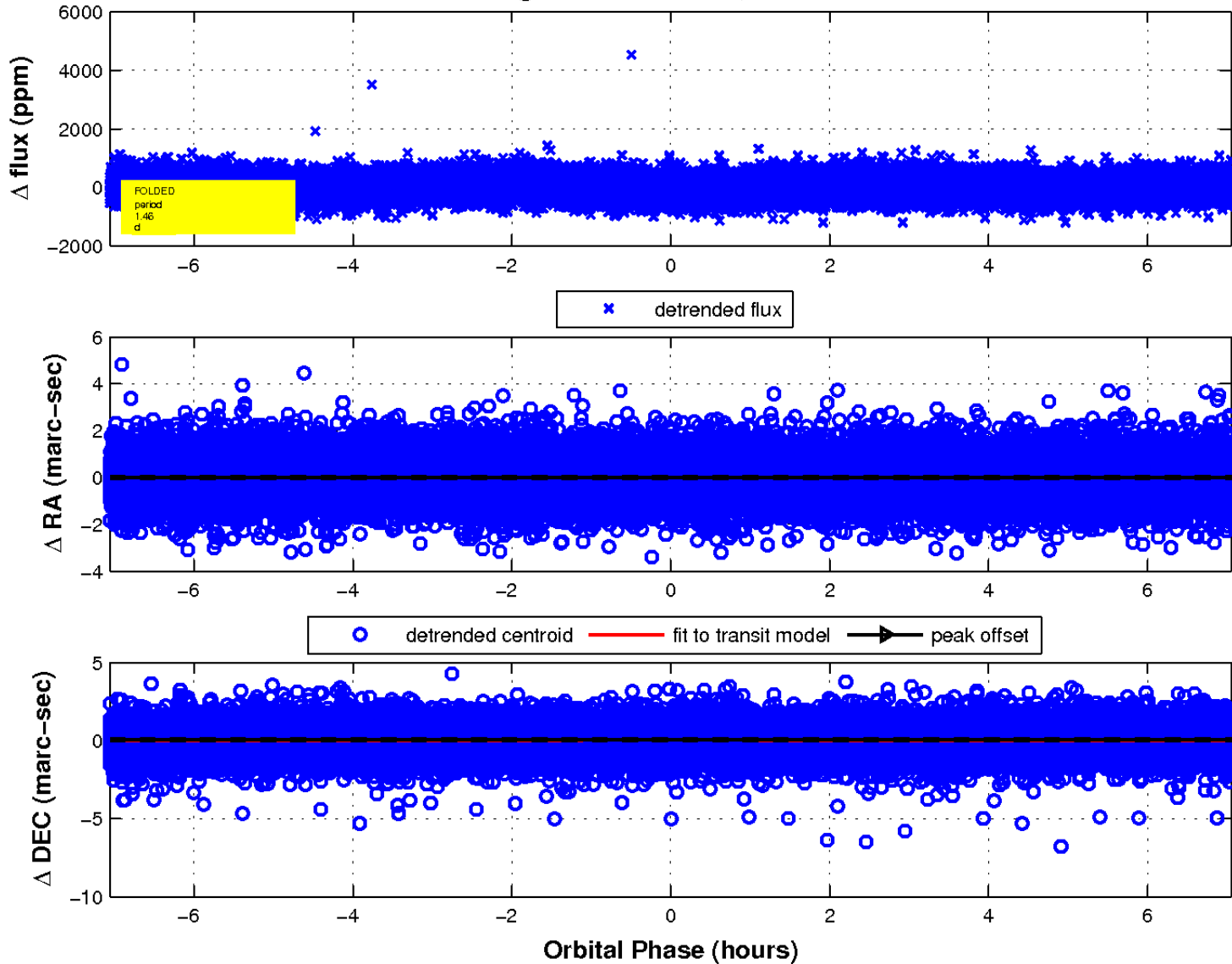
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



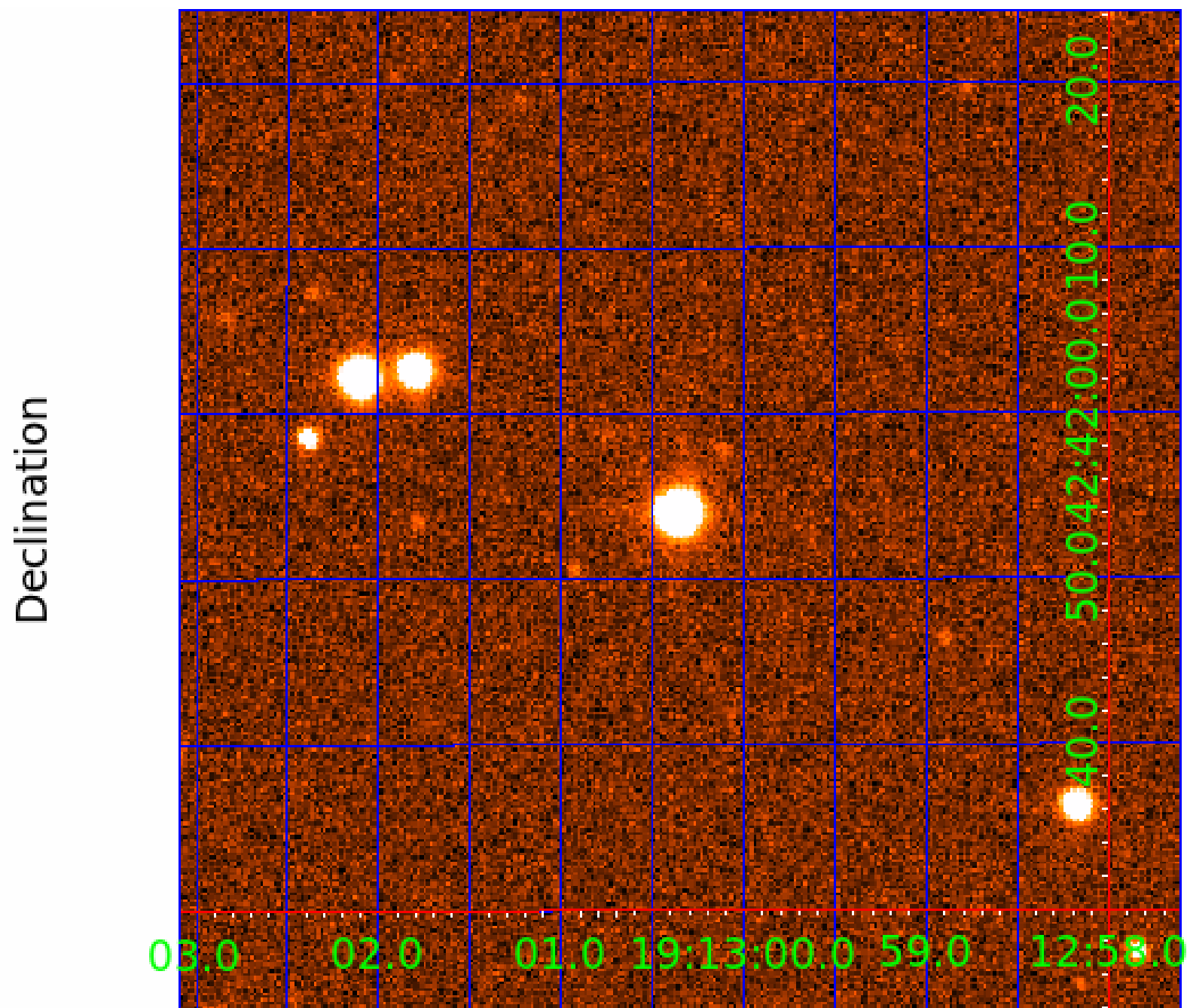
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image





# KIC 007106877

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007106877-01	OBS	No	1.459868	132.853379	78.3	2.352	9.9	12.7	2.39	7769	2.48	20395.55
007106877-02	OBS	No	0.521847	131.718812	28.8	2.308	9.0	7.9	2.39	7769	1.30	80394.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007106877-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007106877-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—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.

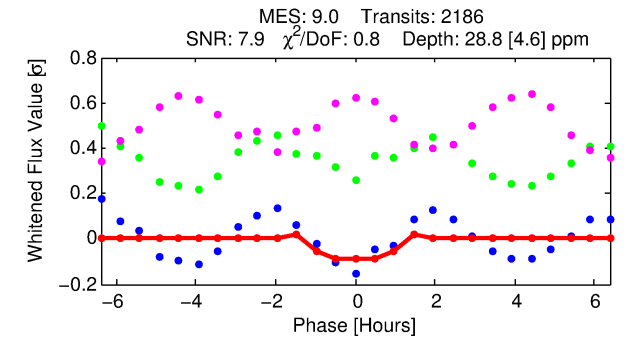
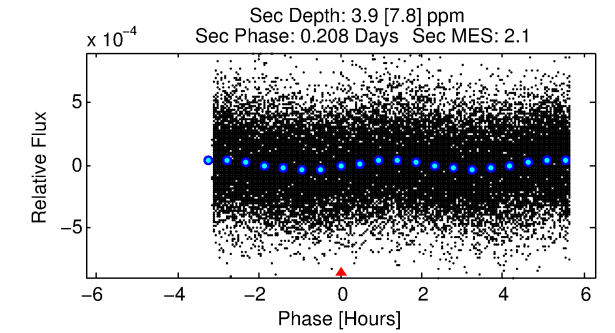
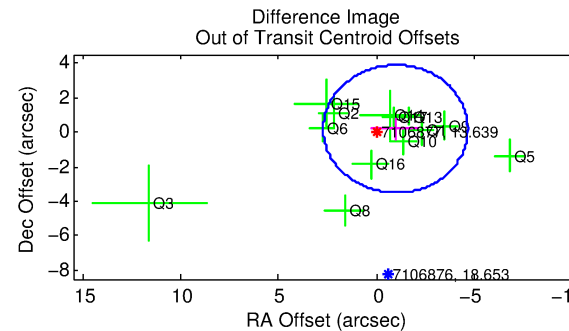
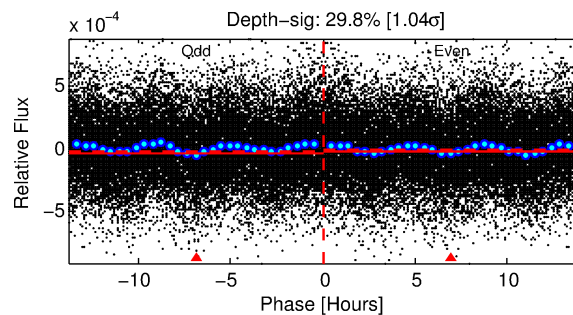
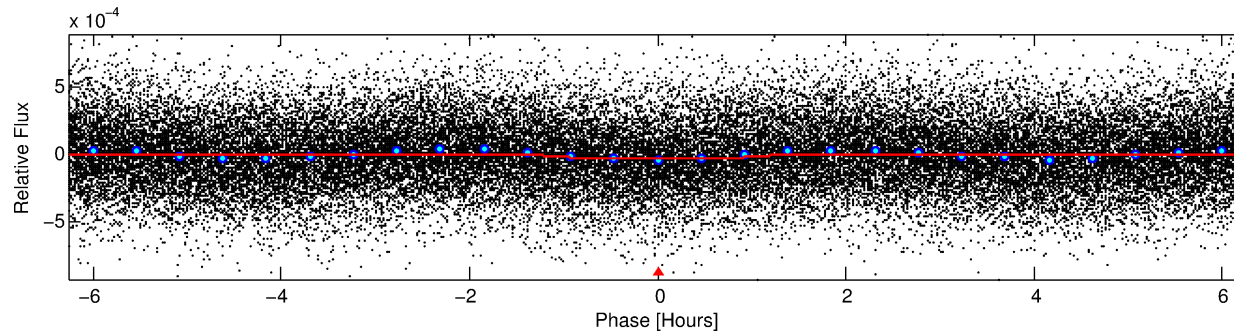
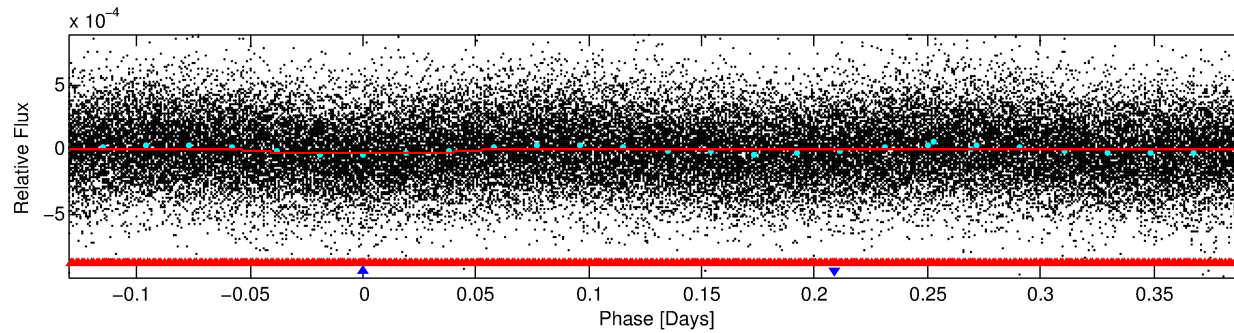
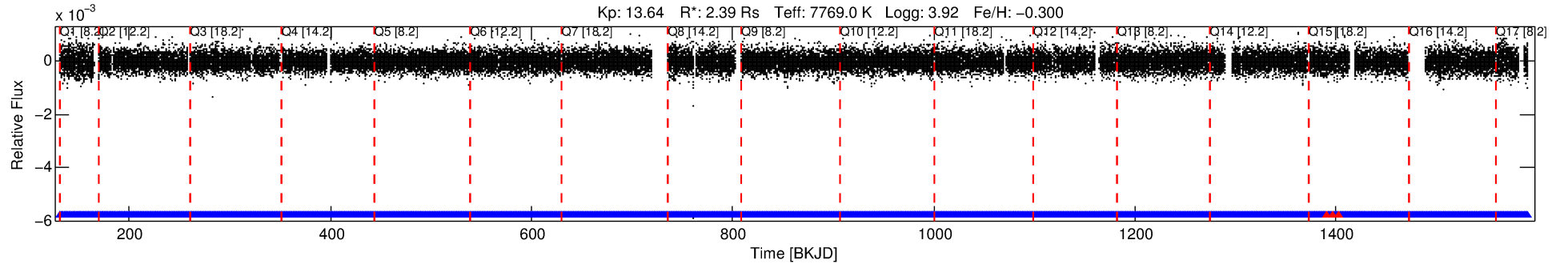
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007106877-02

No Significant Match Found

# DV One-Page Summary

KIC: 7106877 Candidate: 2 of 2 Period: 0.522 d



## DV Fit Results:

Period = 0.52185 [0.00001] d  
Epoch = 131.7188 [0.0030] BKJD  
Rp/R\* = 0.0050 [0.0037]  
a/R\* = 1.77 [4.83]  
b = 0.32 [11.36]  
Seff = 80394.97 [44082.23]  
Teq = 4294 [589] K  
Rp = 1.30 [1.09] Re  
a = 0.0152 [0.0051] AU  
Ag = 0.29 [0.74] [-0.95 $\sigma$ ]  
Teffp = 4878 [3050] K [0.19 $\sigma$ ]

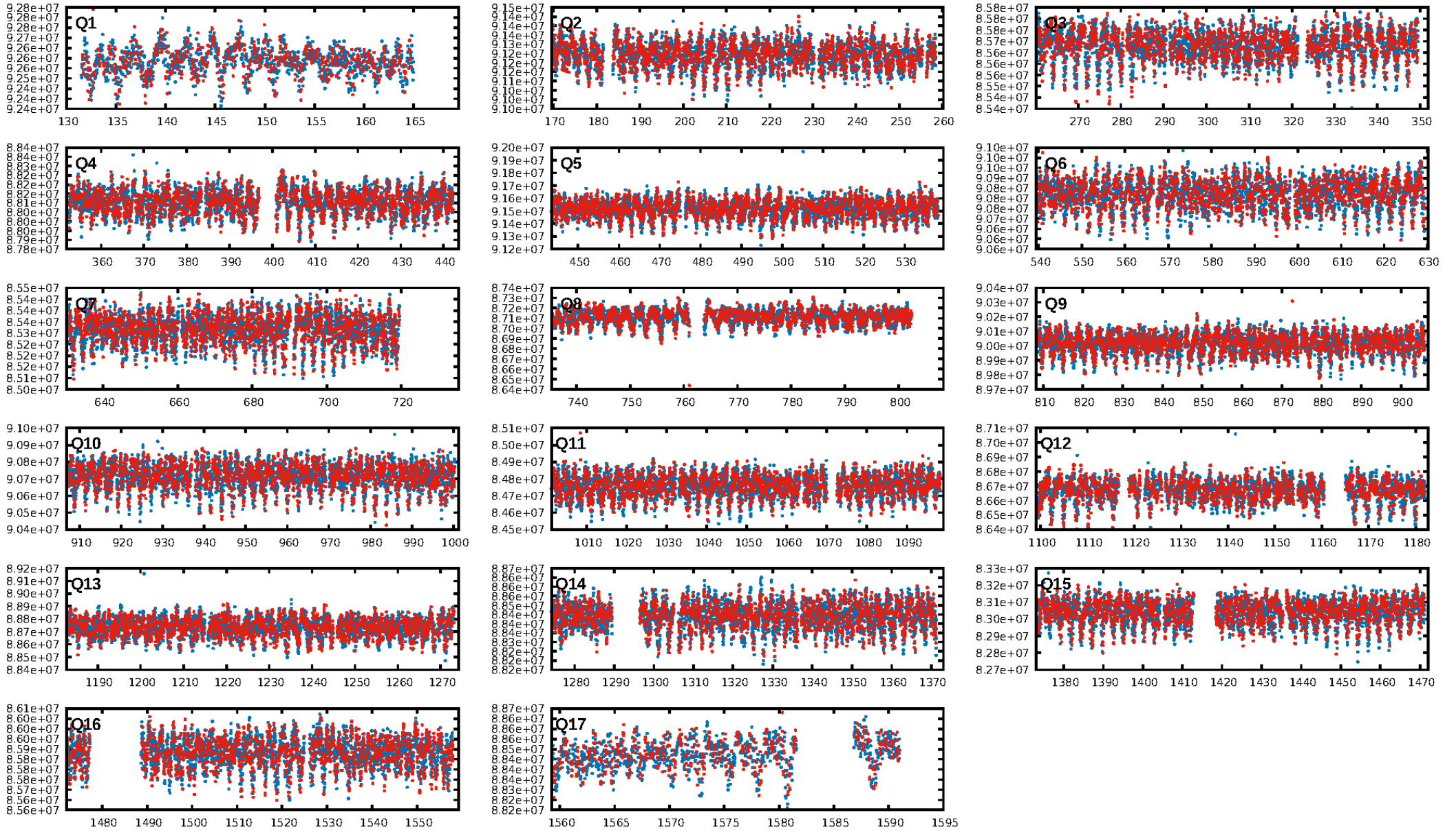
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.83 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.57e-15  
RollingBand-fgt: 1.00 [2085/2088]  
GhostDiagnostic-chr: -2.679  
Centroid-sig: 26.4%  
Centroid-so: 0.729 arcsec [0.85 $\sigma$ ]  
OotOffset-rm: 0.993 arcsec [0.81 $\sigma$ ]  
KicOffset-rm: 0.926 arcsec [0.83 $\sigma$ ]  
OotOffset-st: 4/2/2/5 [13]  
KicOffset-st: 4/2/2/5 [13]  
DiffImageQuality-fgm: 0.23 [3/13]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:24:56 Z

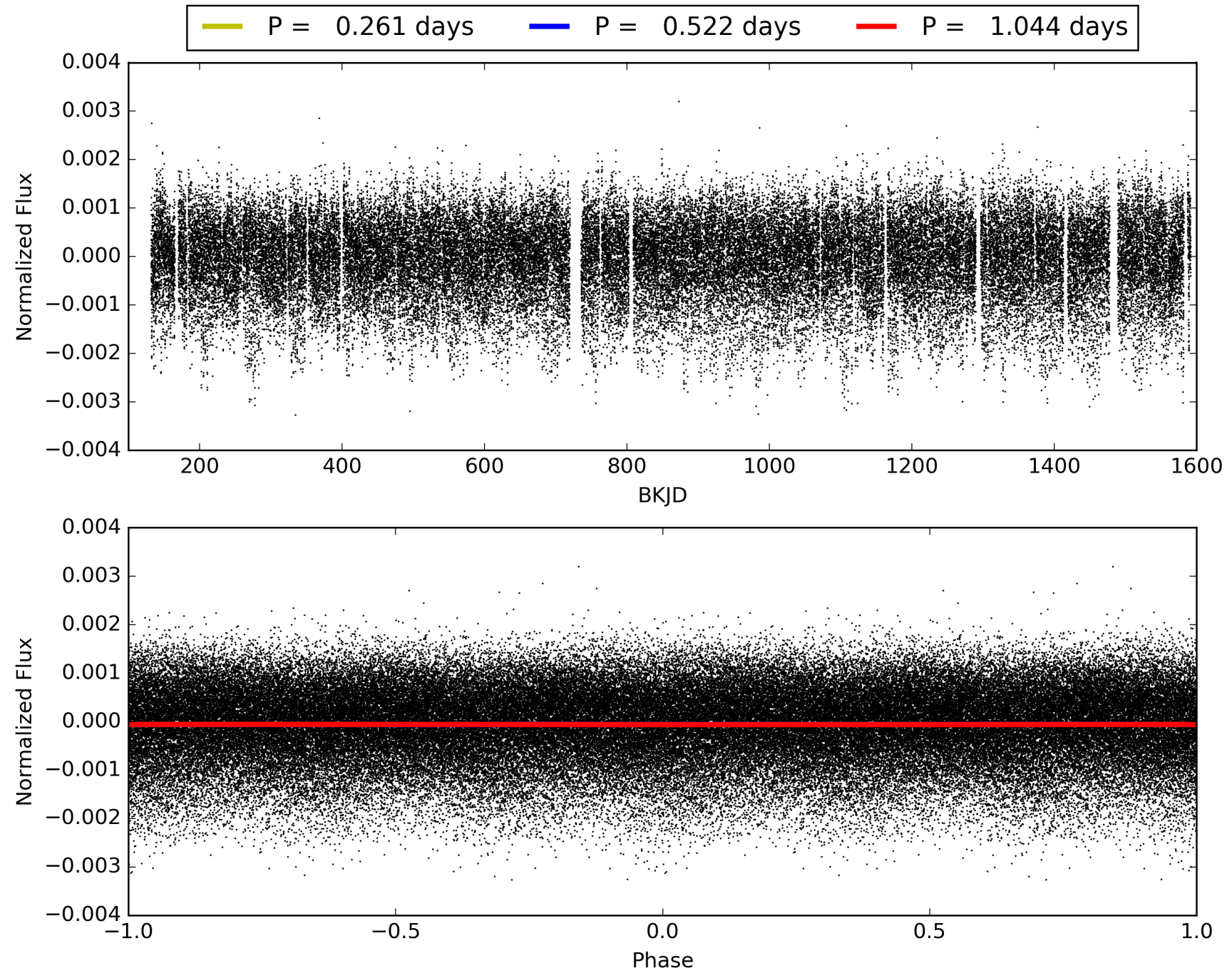
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007106877-02, PDC Light Curves



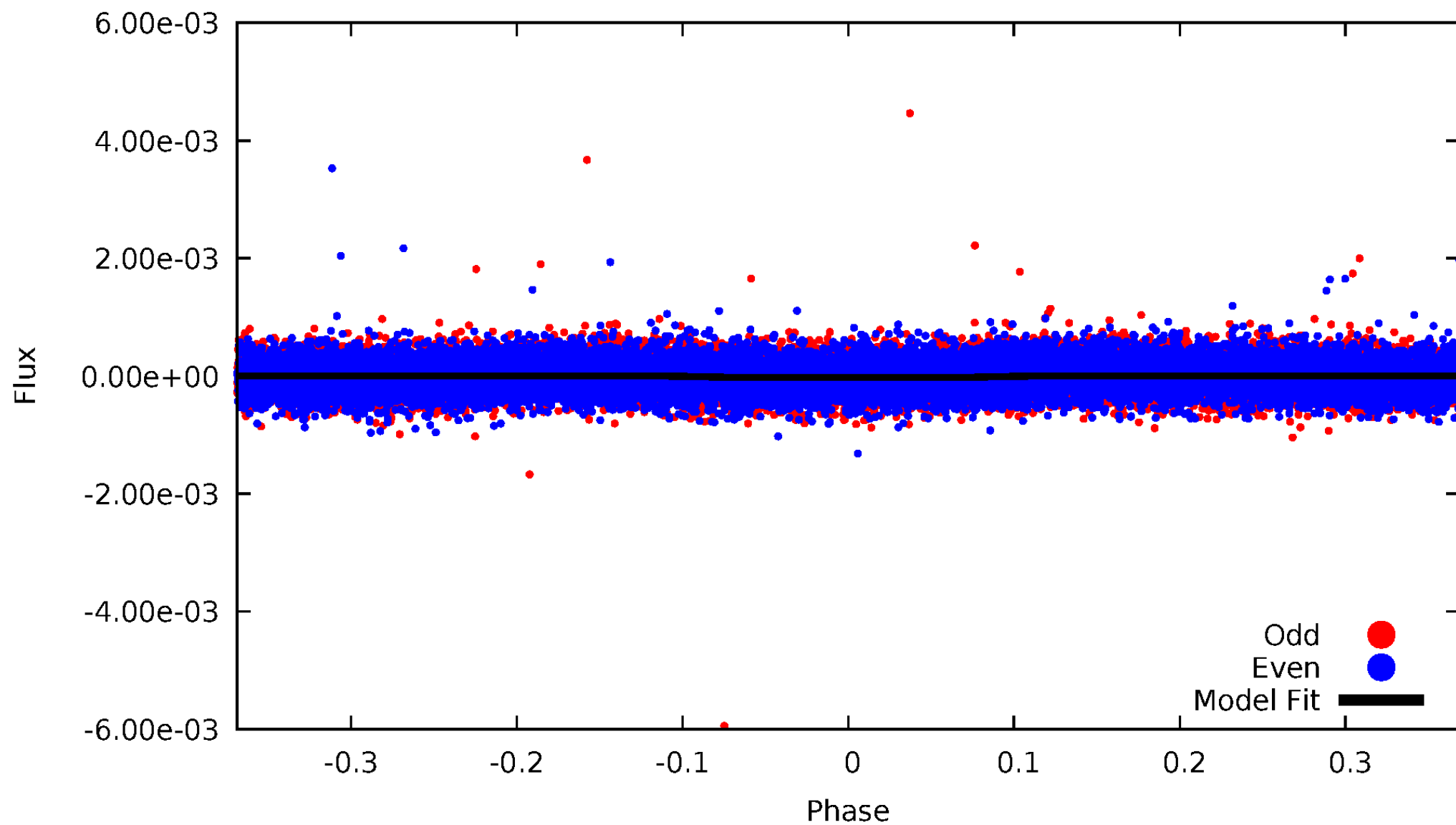


# TCE 007106877-02



# DV Odd/Even

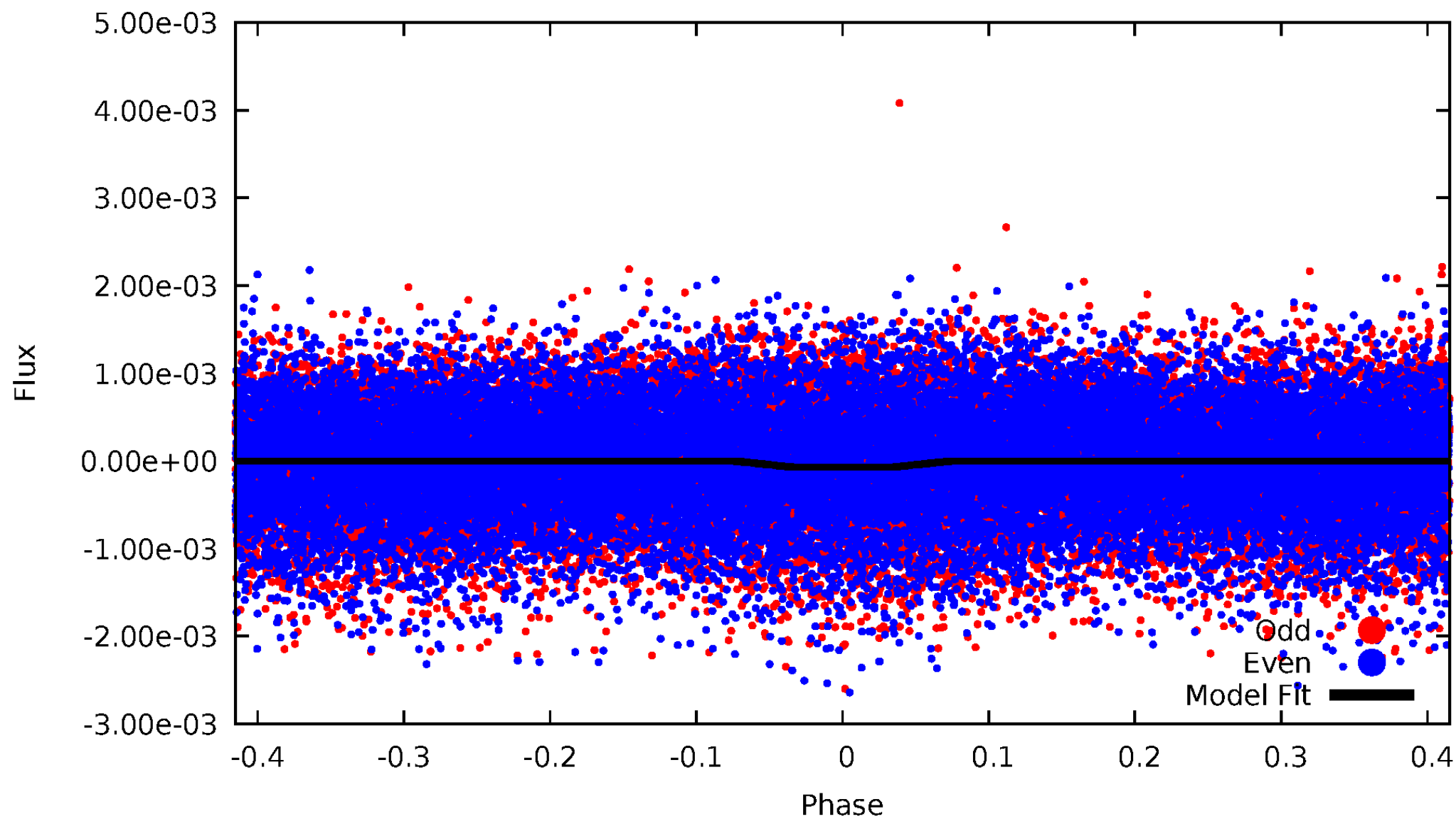
TCE 007106877-02





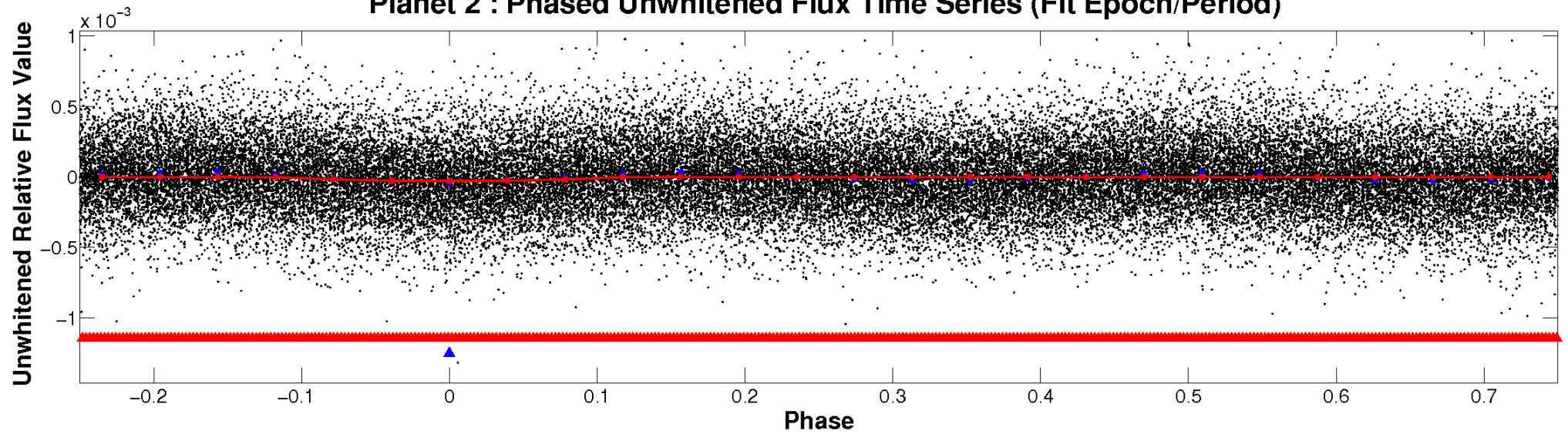
# ALT Odd/Even

TCE 007106877-02

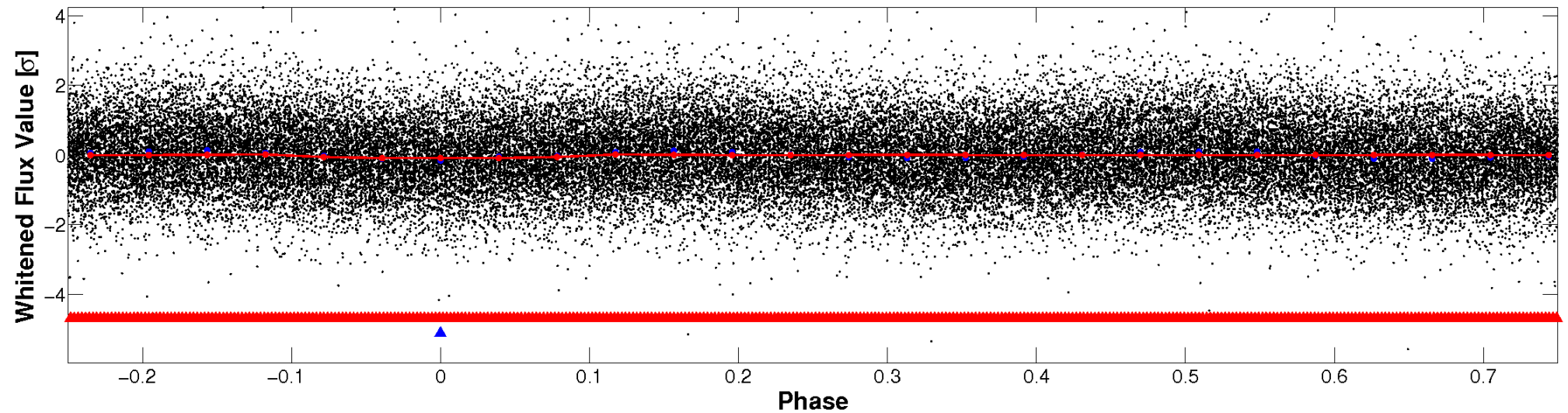


# Non-Whitened Vs. Whitened Light Curve

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

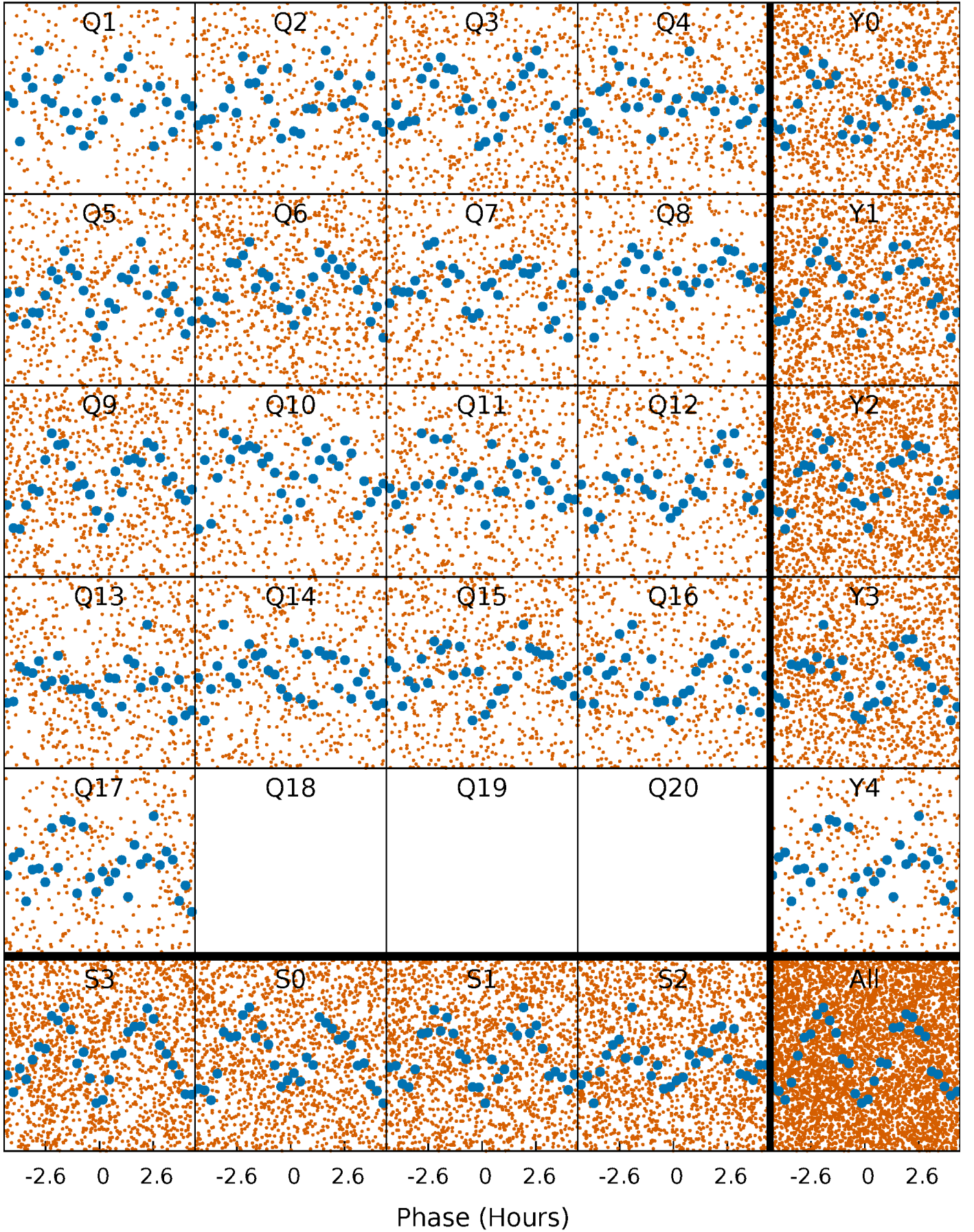


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

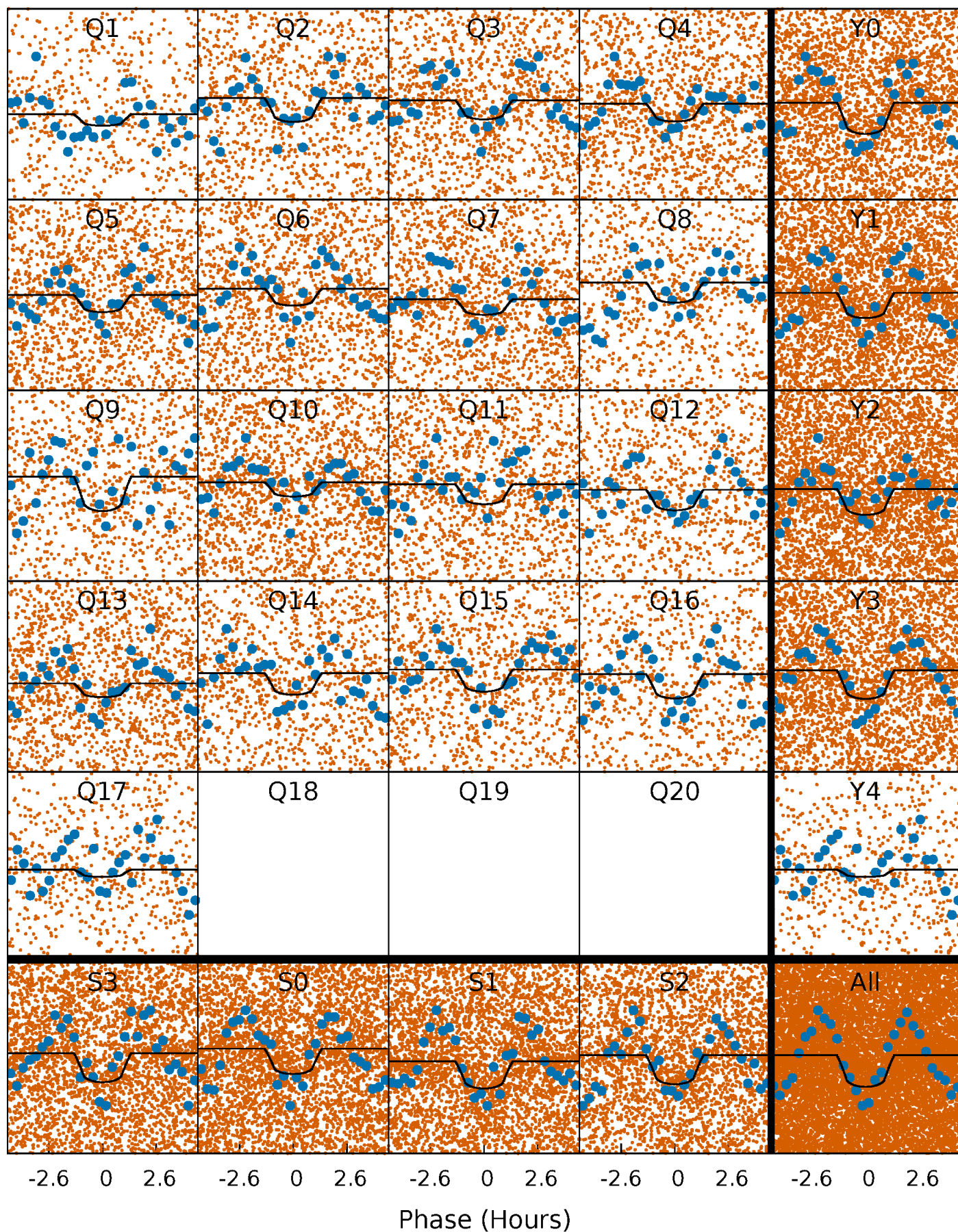
TCE 007106877-02   P= 0.521847 Days    $T_0=131.718812$  (BKJD)





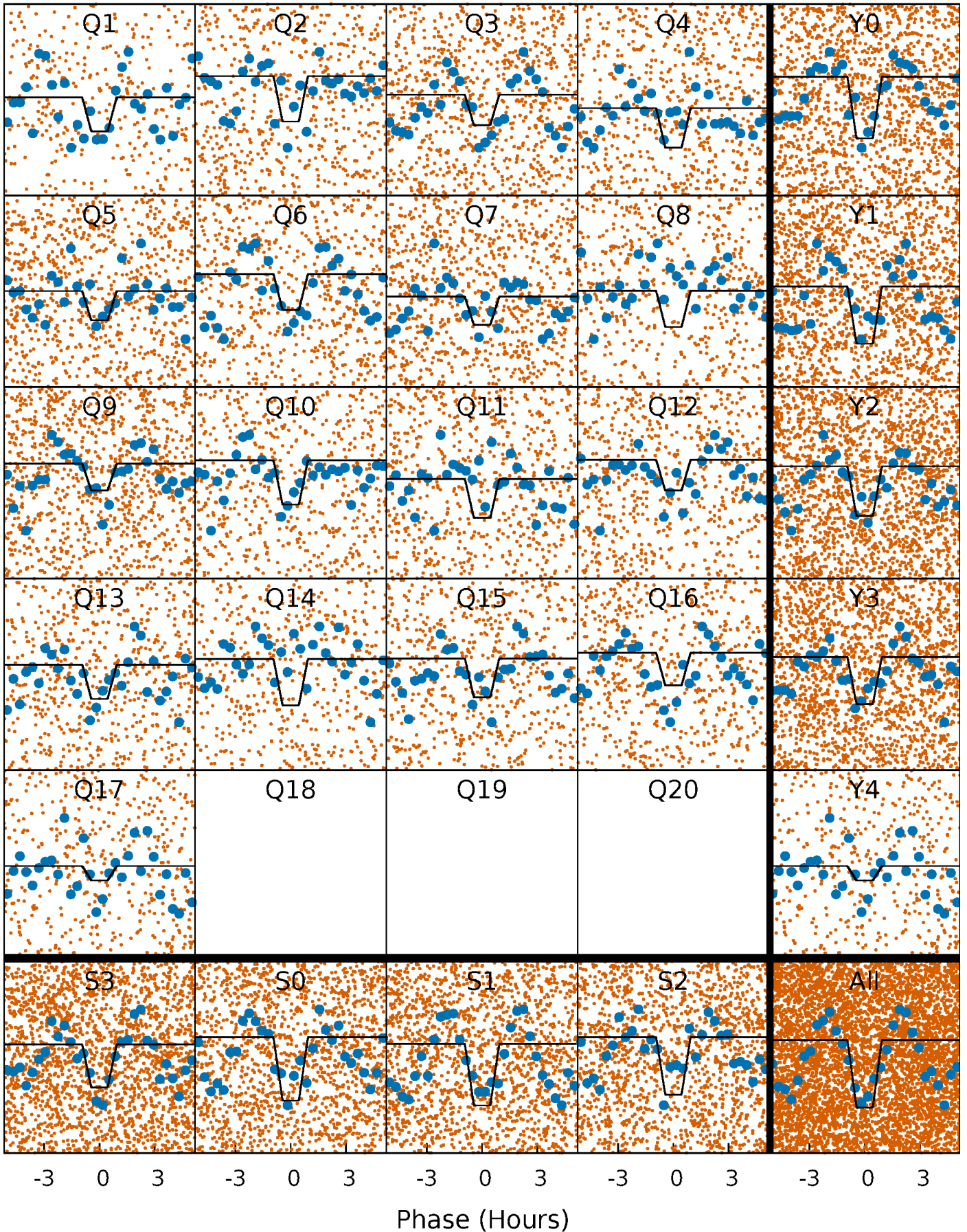
# DV Quarter-Phased Transit Curves

TCE 007106877-02 P= 0.521847 Days  $T_0=131.718812$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007106877-02   P= 0.521851 Days    $T_0=131.711231$  (BKJD)

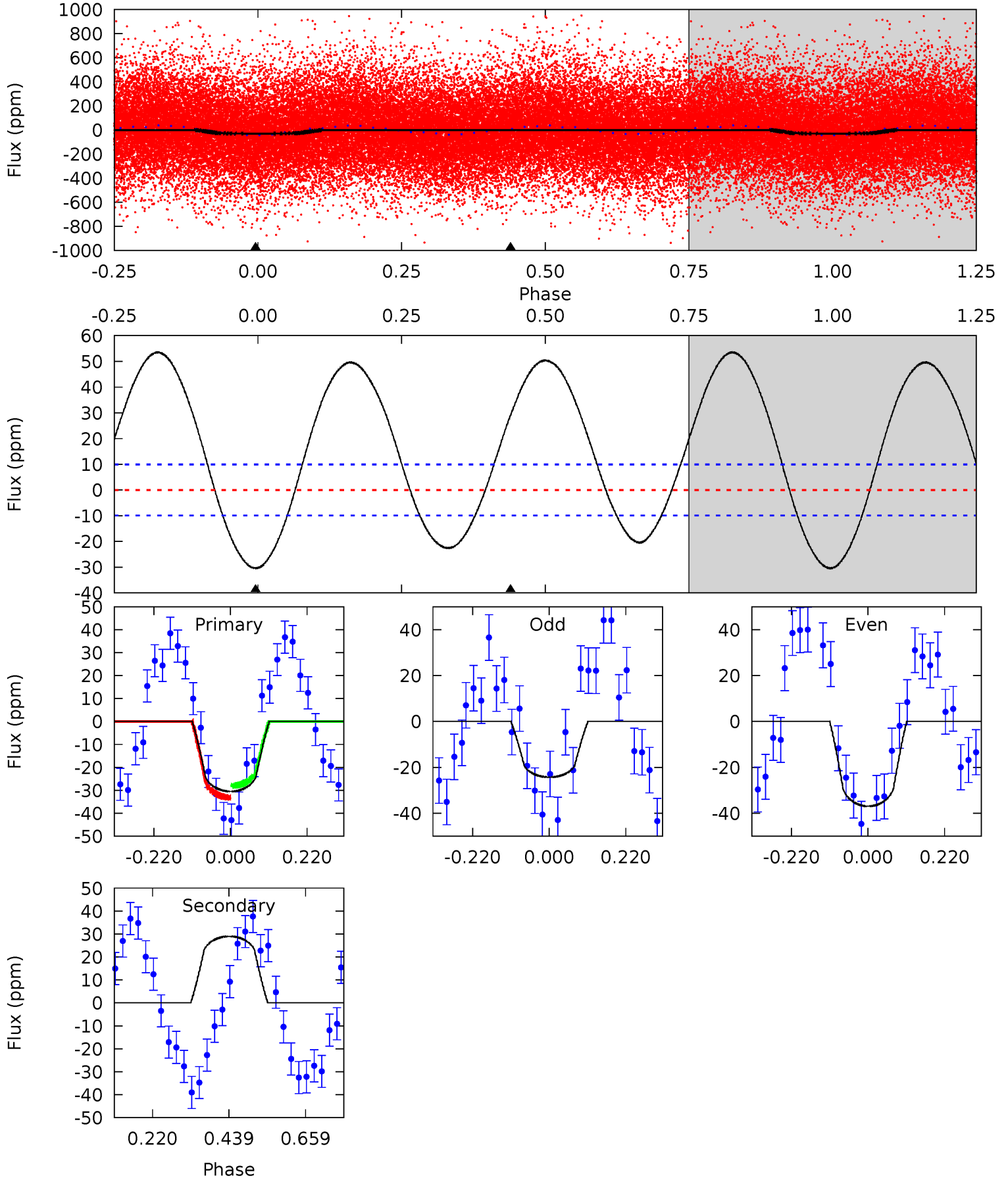




# DV Model-Shift Uniqueness Test

007106877-02, P = 0.521847 Days, E = 131.196965 Days

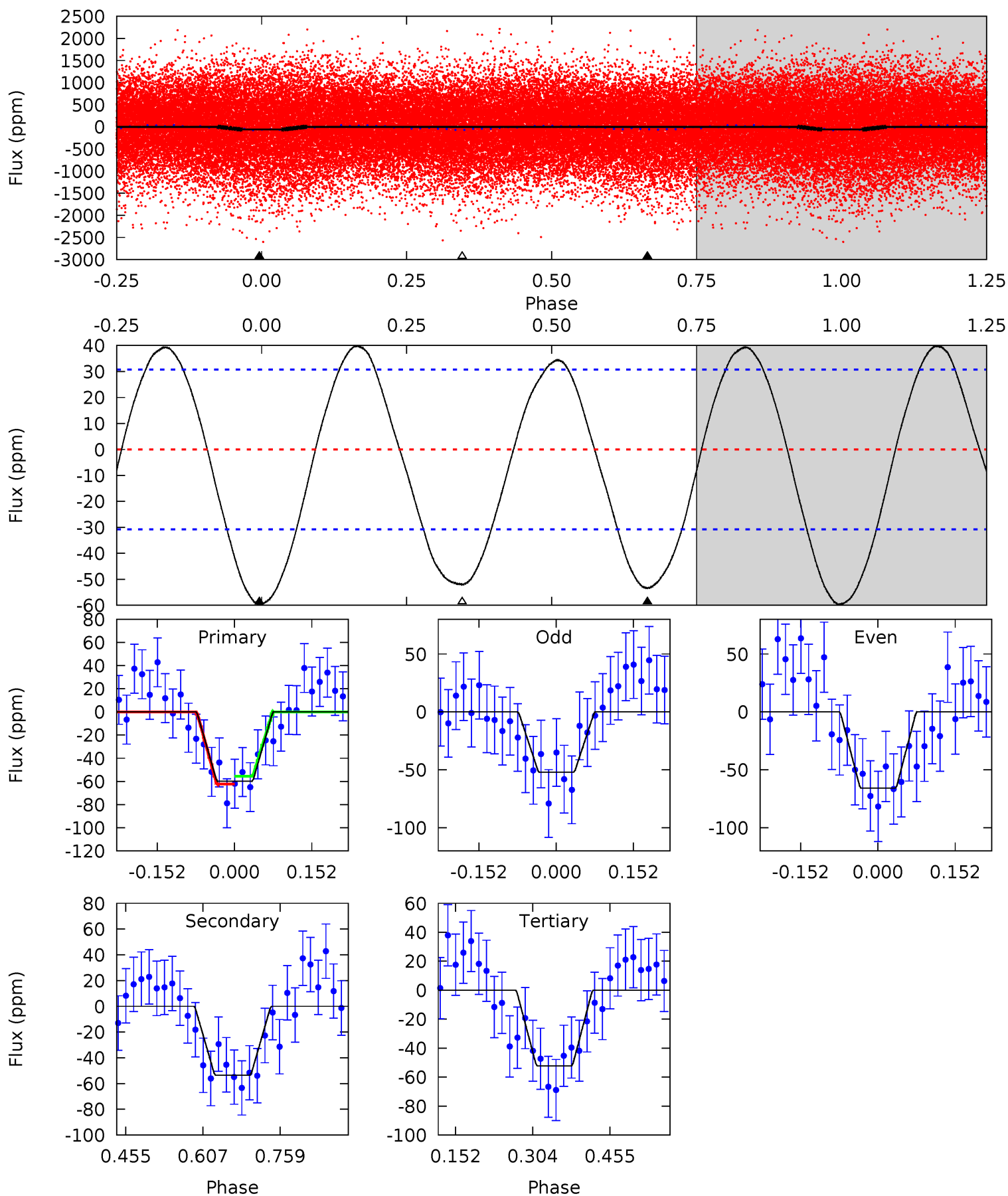
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	-12.8	0	0	4.40	1.23	8.34	13.5	13.5	-12.8	-12.8	2.79	1.09	0.64	1.15



# Alt Model-Shift Uniqueness Test

007106877-02, P = 0.521851 Days, E = 131.189380 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.72	7.81	7.60	0	4.48	1.43	4.86	1.12	8.72	0.20	7.81	0.99	2.34	0.40	0.46



### Stellar Parameters For KIC 007106877

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7769^{+244}_{-325}$	$3.919^{+0.301}_{-0.108}$	$-0.300^{+0.200}_{-0.350}$	$2.390^{+0.470}_{-0.872}$	$1.727^{+0.165}_{-0.384}$	$0.178^{+0.377}_{-0.060}$
	+3%/-4%	+8%/-3%	+67%/-117%	+20%/-36%	+10%/-22%	+212%/-34%
Source	KIC0	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 007106877-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$29 \pm 2$	$1.32^{+0.91}_{-0.75}$	$5882^{+426}_{-518}$	$-8038^{+1629}_{-6070}$	$-2.034^{+1.296}_{-9.158}$
Alt.	$-54 \pm 7$	$2.04^{+1.06}_{-0.88}$	$5858^{+466}_{-537}$	$6736^{+3031}_{-1661}$	$1.613^{+3.233}_{-0.927}$

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

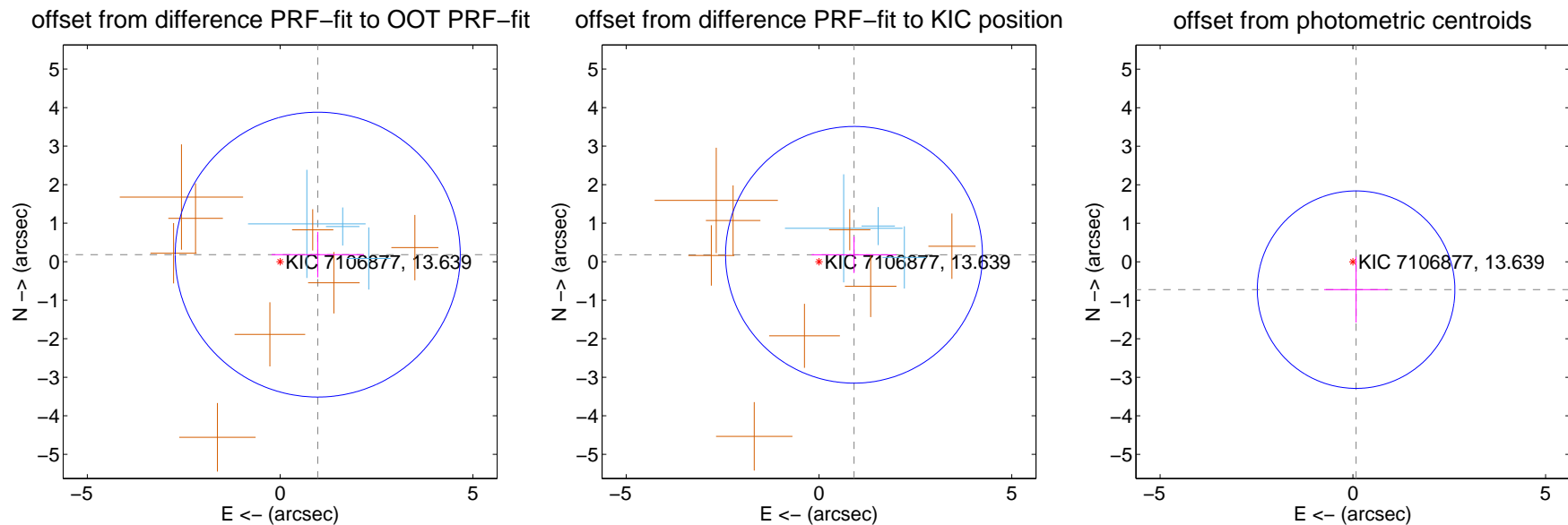
## DV Centroid Data

Supplemental centroid analysis for 007106877-02. Kepler magnitude: 13.64. Transit SNR 7.90

There are 3 quarters with good PRF difference image offsets

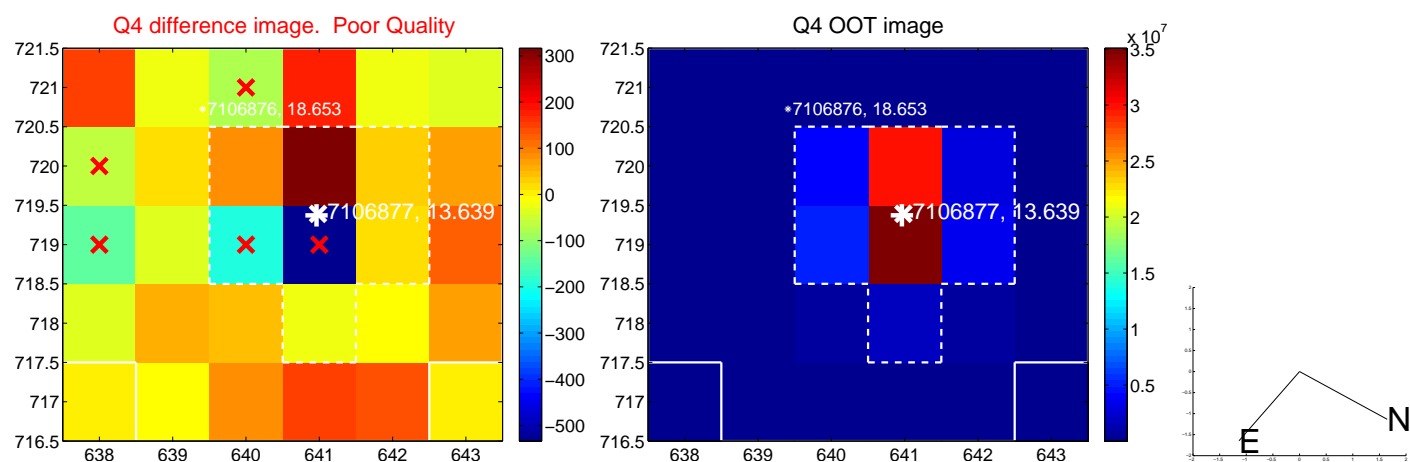
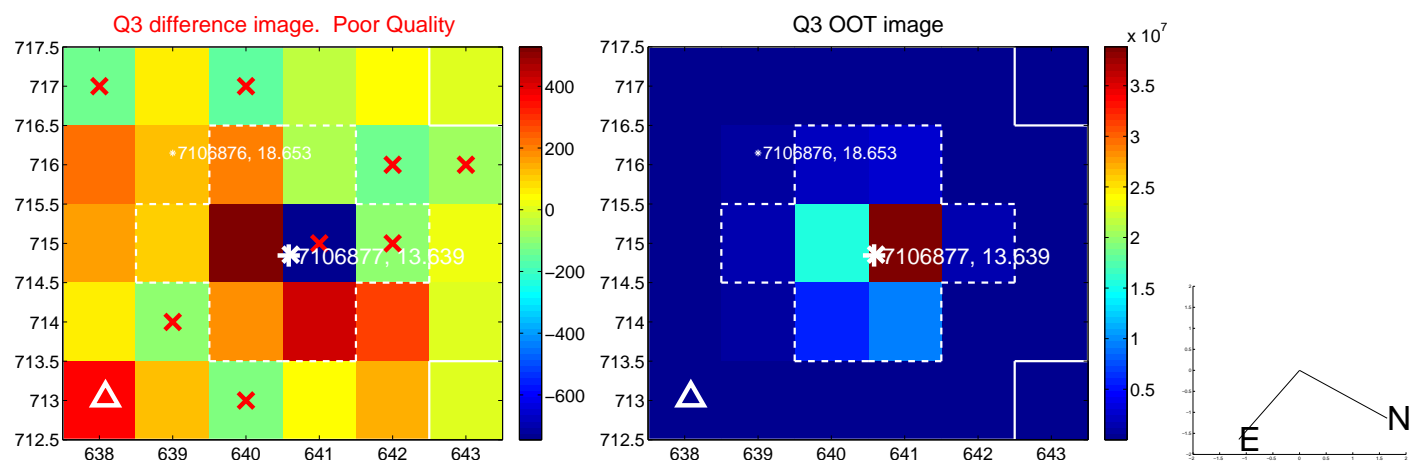
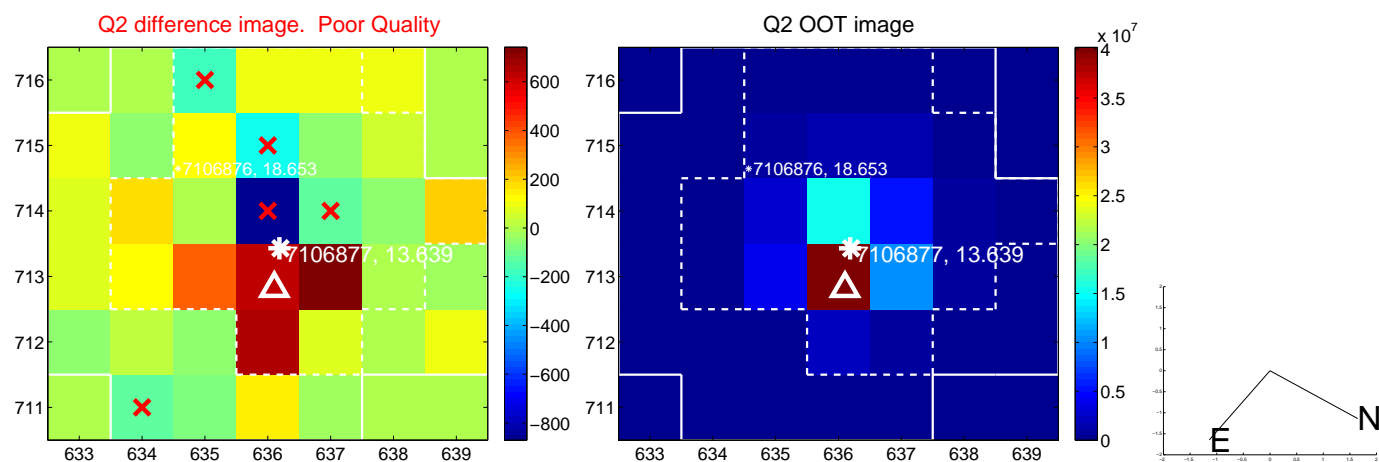
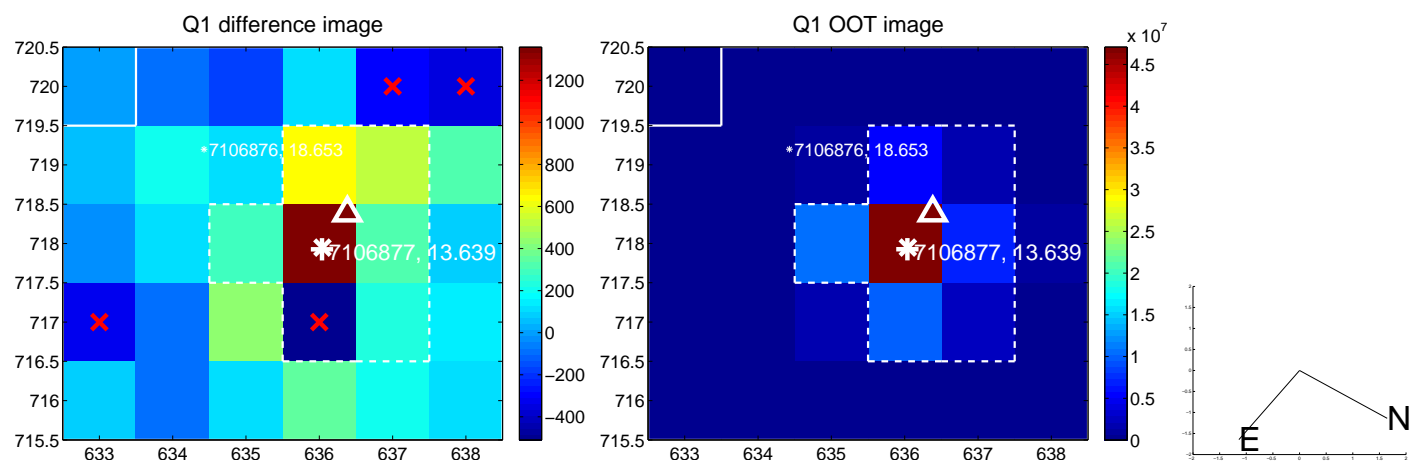
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.993 \pm 1.232$	0.81	$-0.976 \pm 1.196$	$0.183 \pm 0.589$
PRF-fit source offset from KIC position	$0.926 \pm 1.110$	0.83	$-0.908 \pm 1.100$	$0.179 \pm 0.473$
photometric centroid source offset	$0.73 \pm 0.85$	0.85	$-0.08 \pm 0.83$	$-0.72 \pm 0.85$



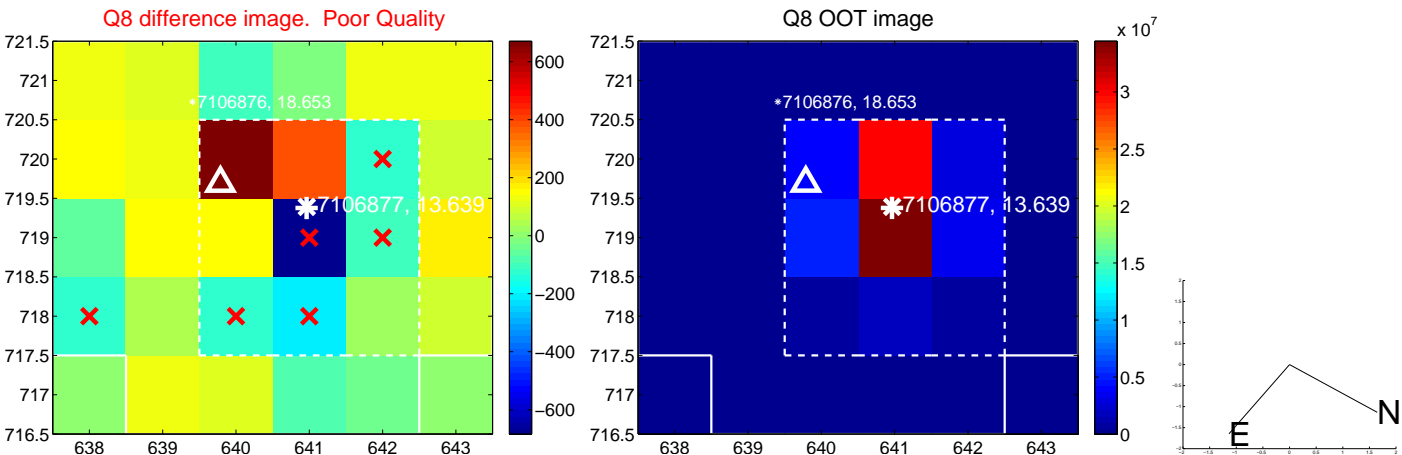
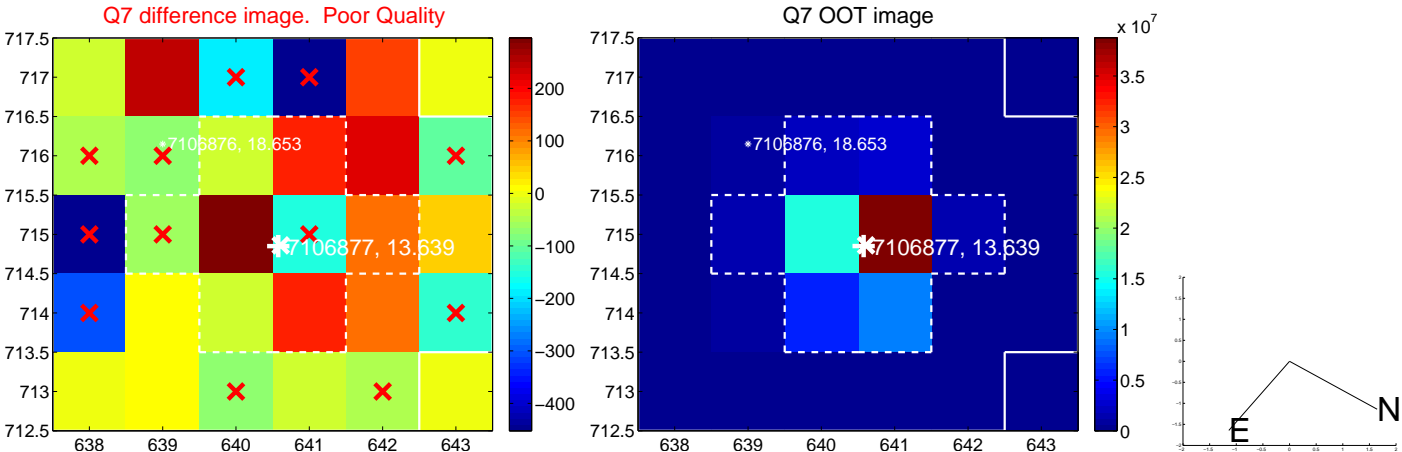
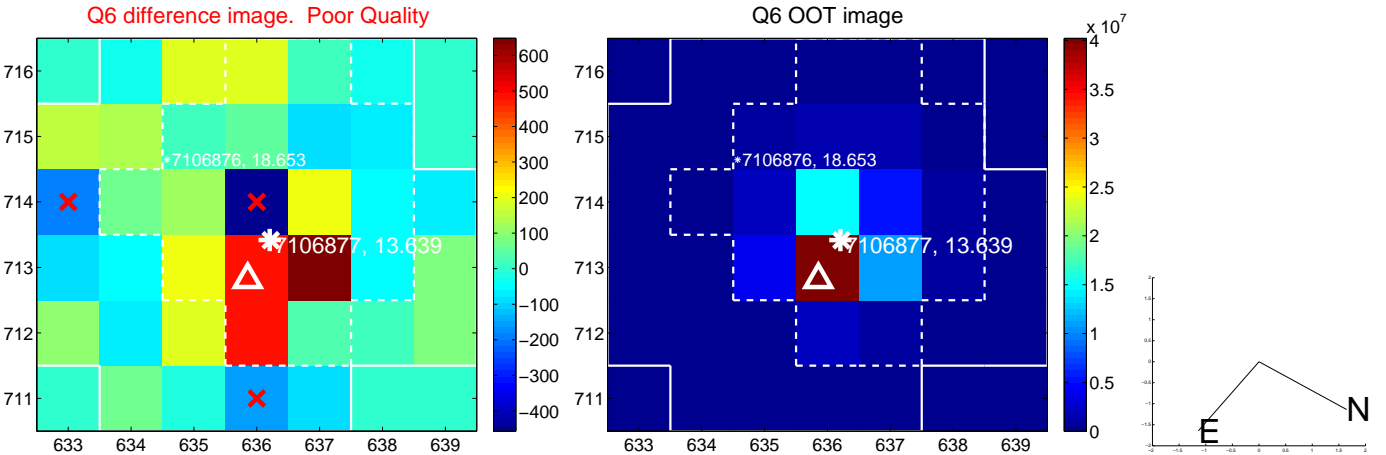
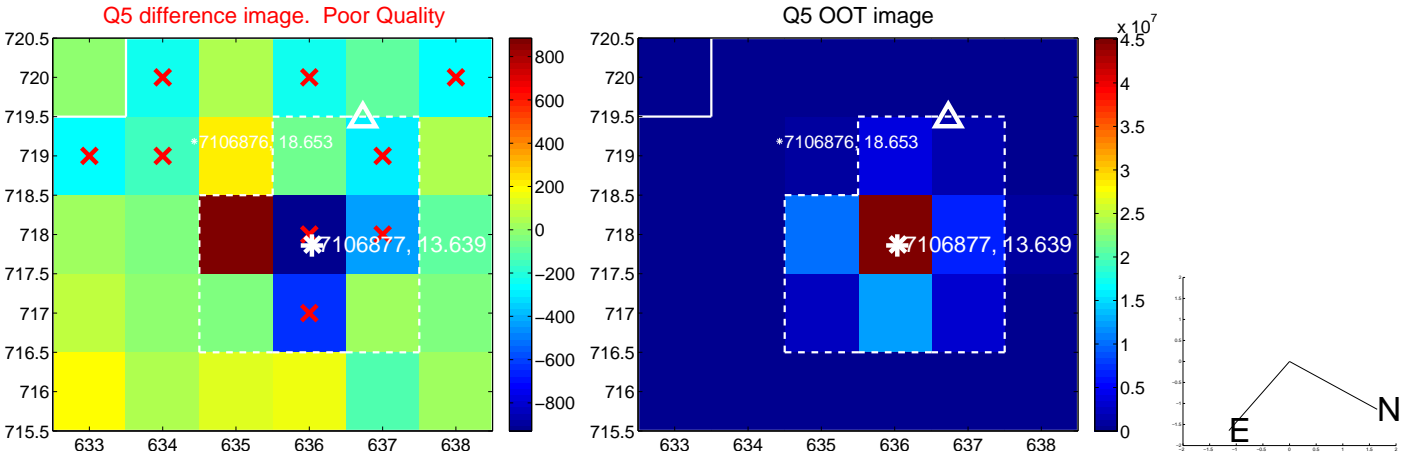
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

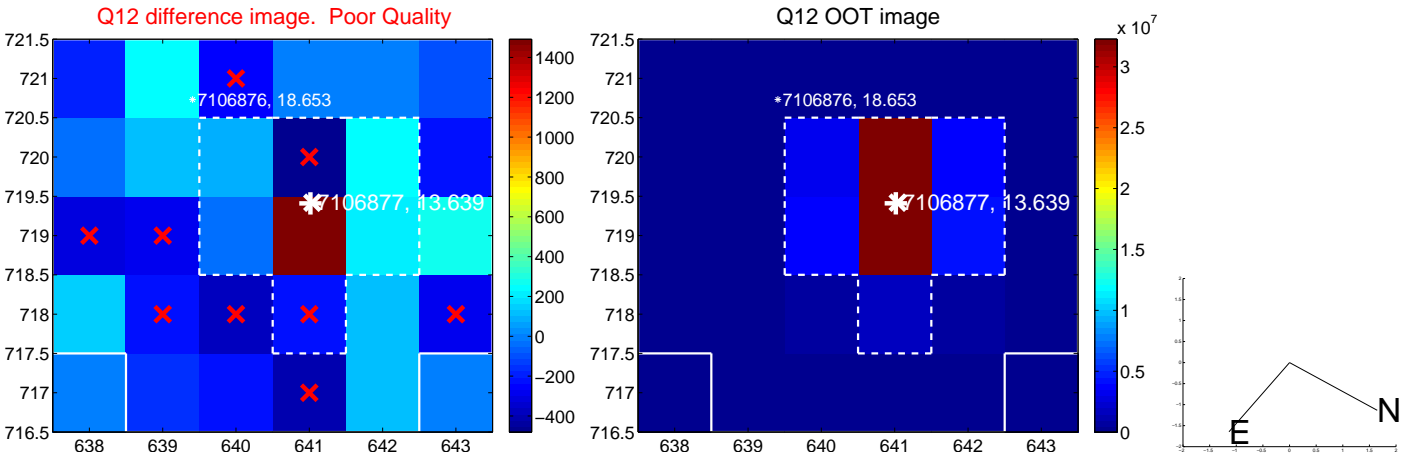
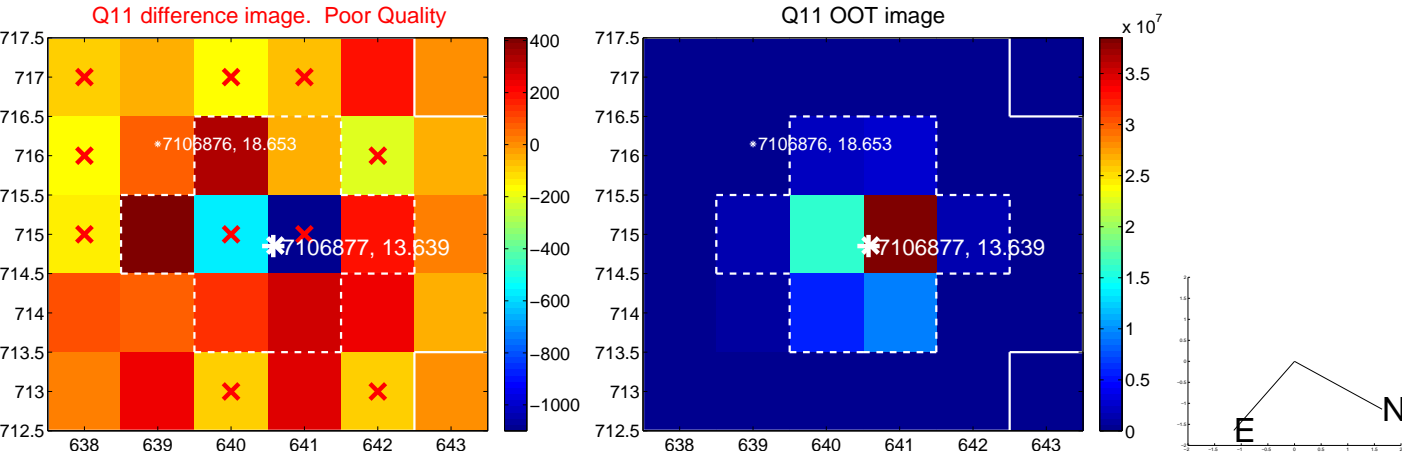
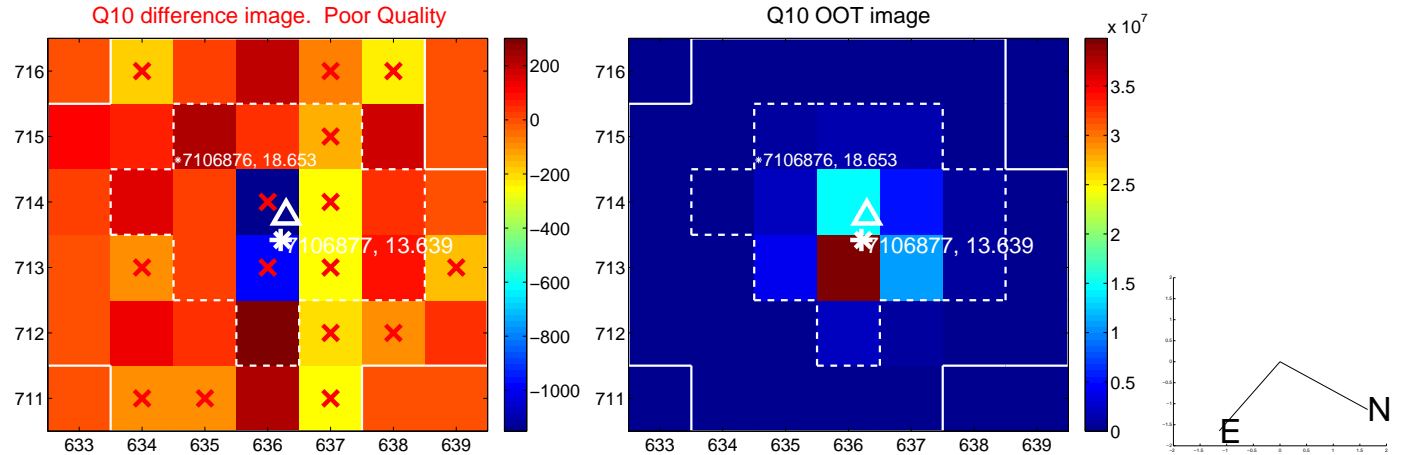
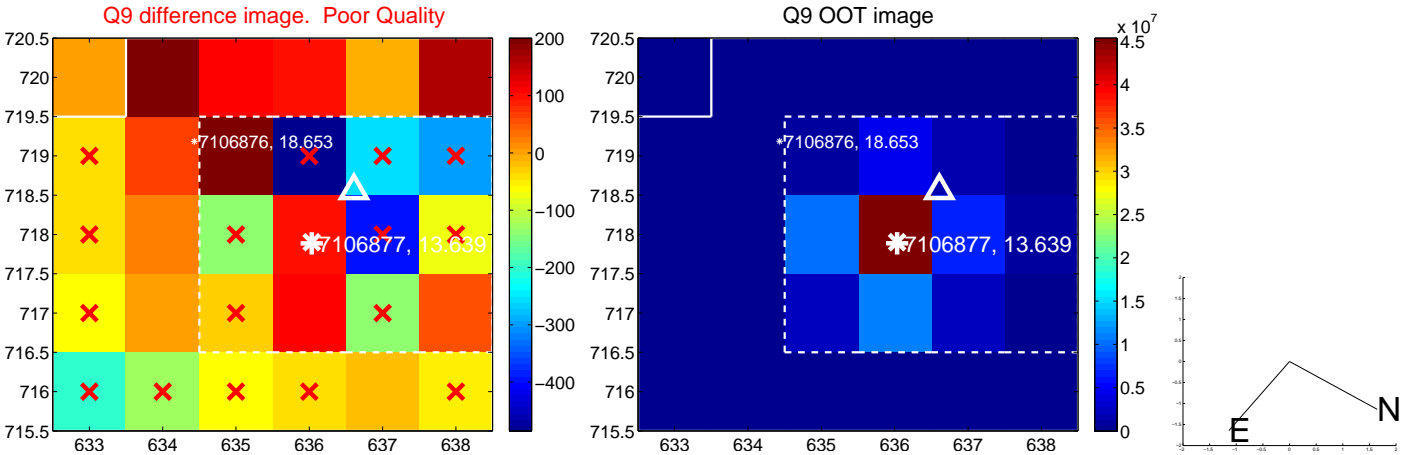




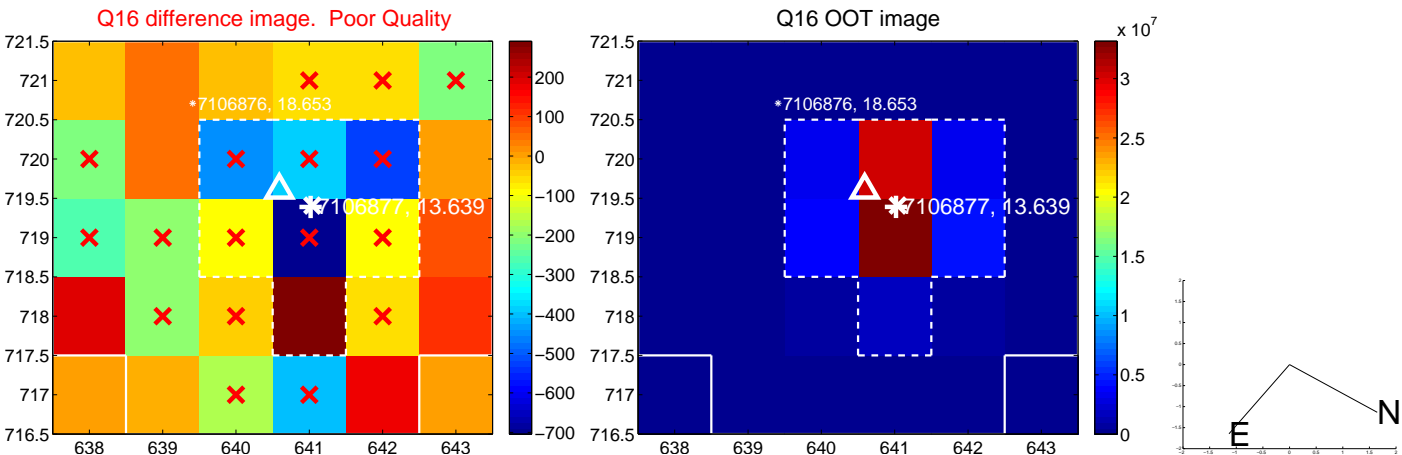
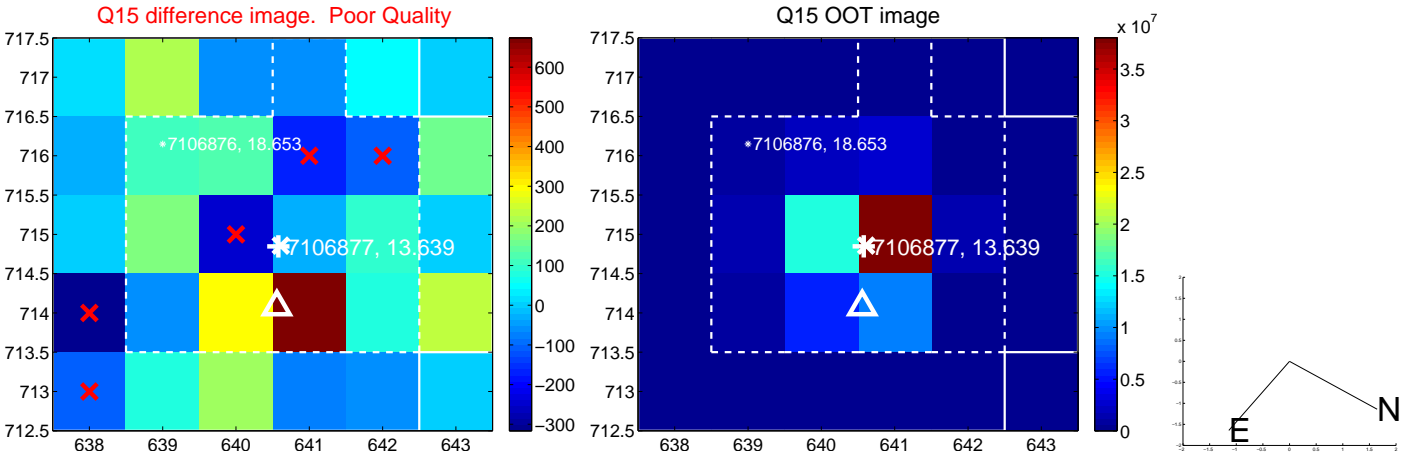
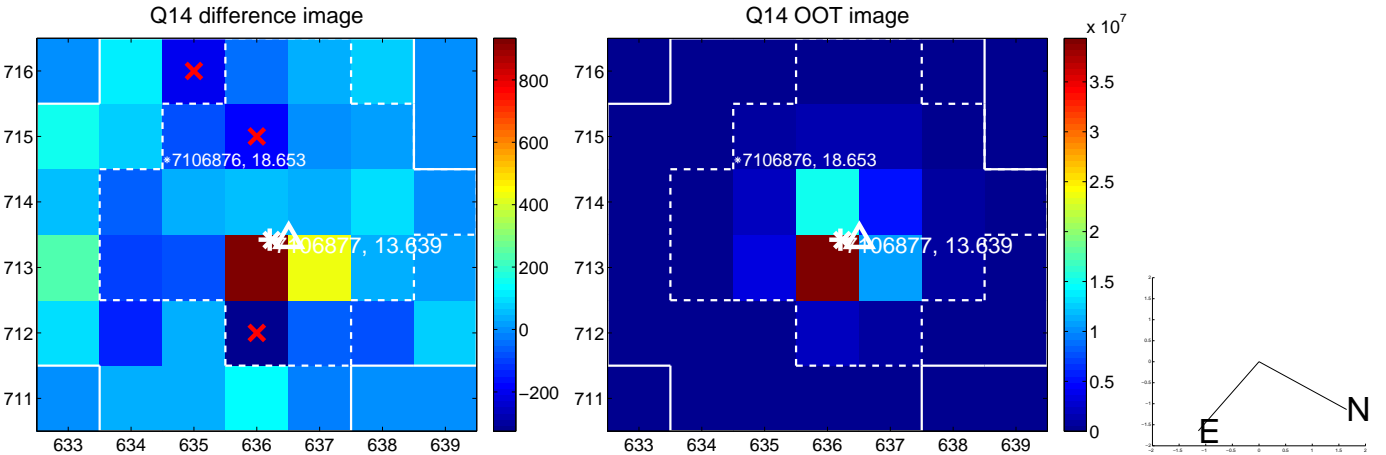
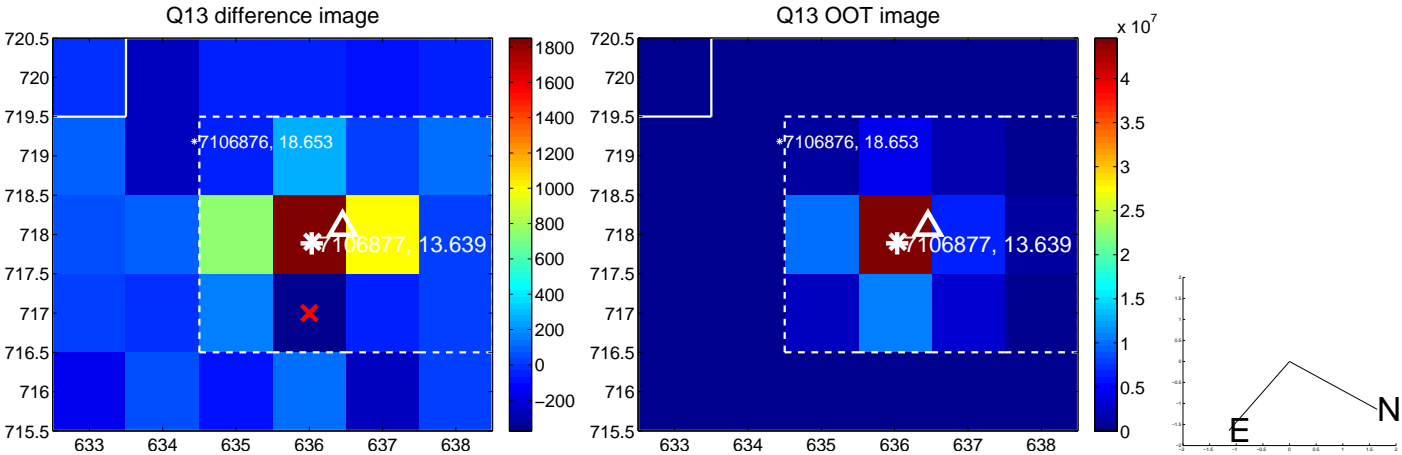
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



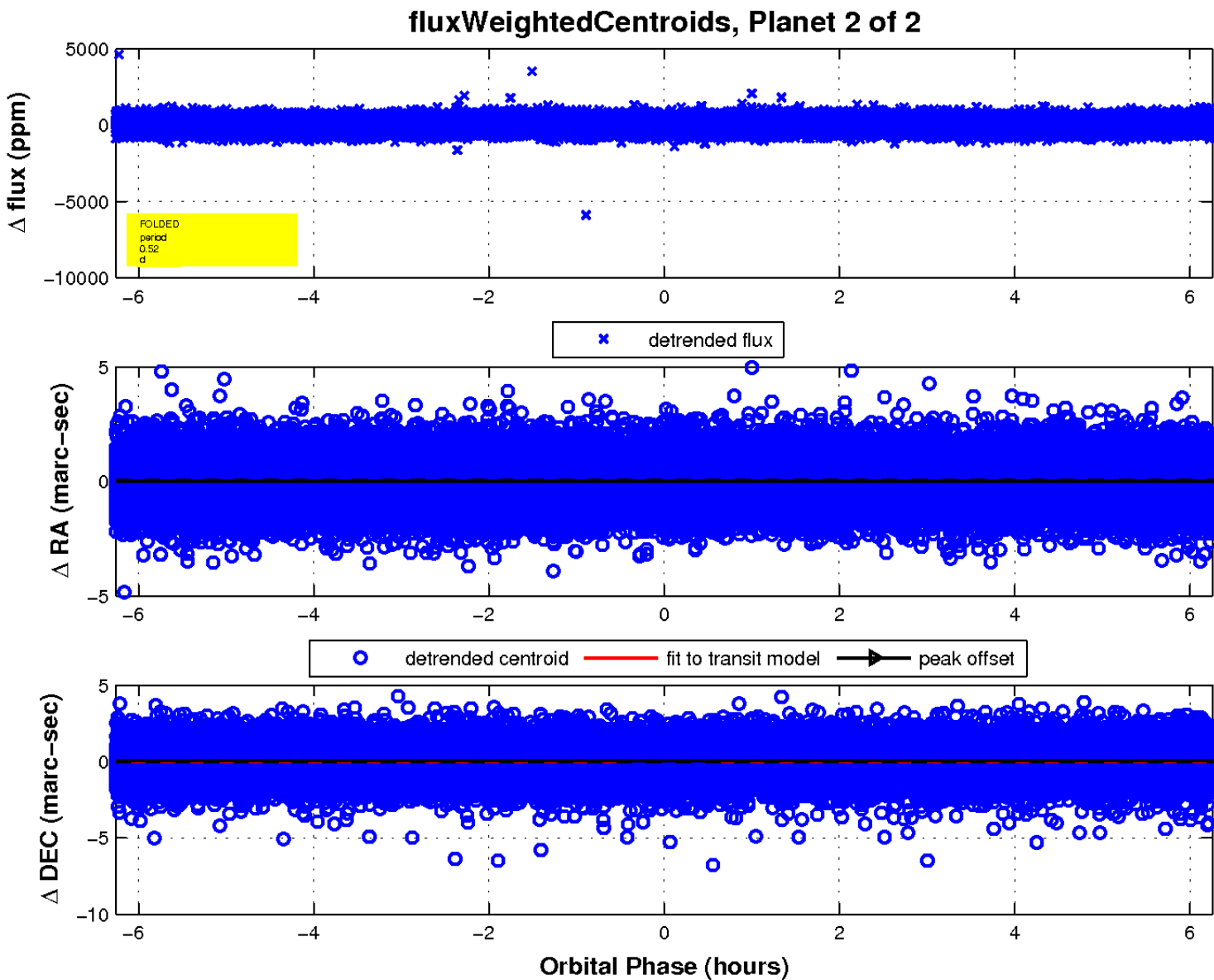
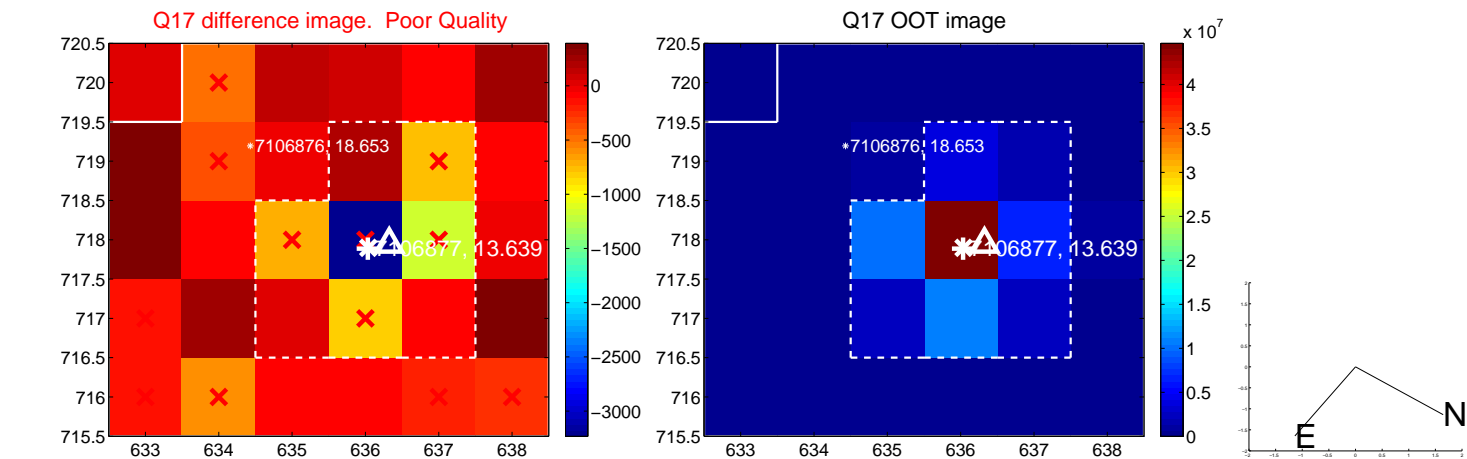
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

