

# KIC 006442060

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006442060-01	OBS	No	1.377763	131.728487	31.5	5.108	9.9	8.9	3.77	7090	3.77	36794.37
006442060-02	OBS	No	176.598516	189.772096	322.3	3.476	7.5	7.3	3.77	7090	7.96	56.93
006442060-03	OBS	No	55.891371	178.432938	138.2	6.421	7.3	7.2	3.77	7090	4.92	263.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006442060-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006442060-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
006442060-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

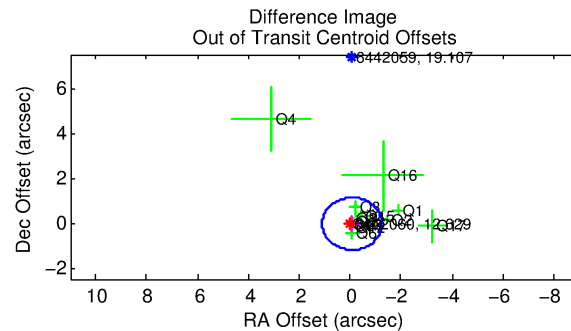
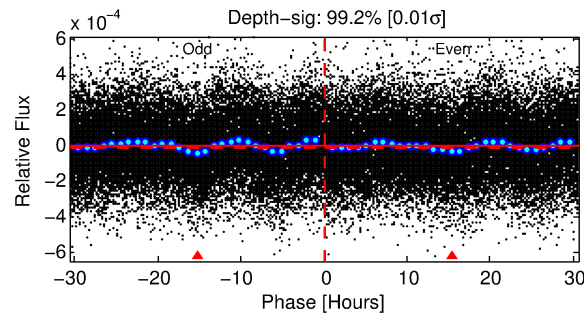
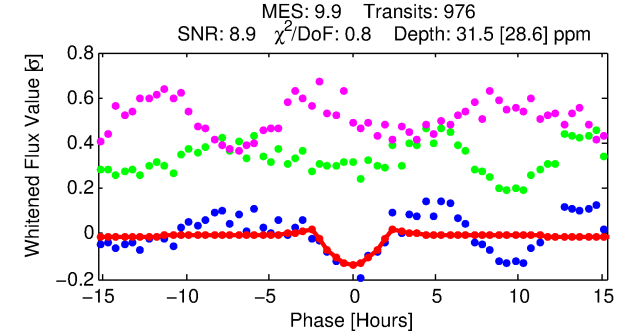
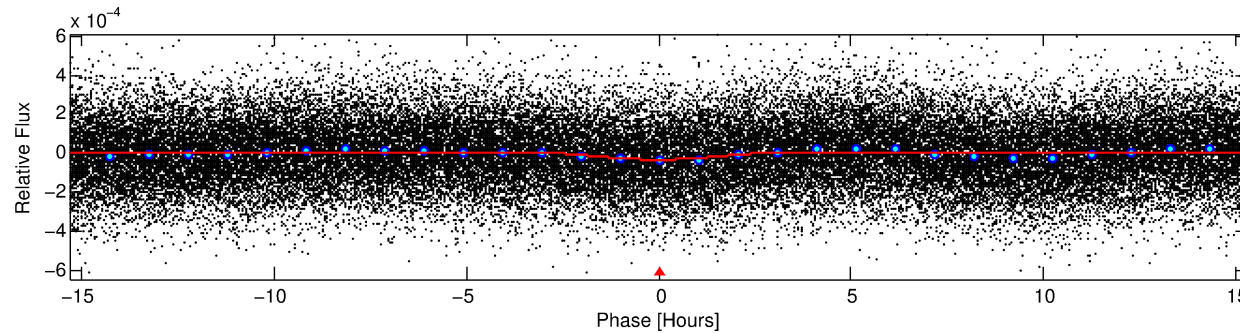
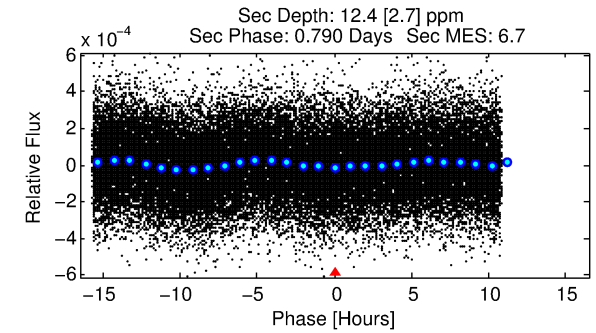
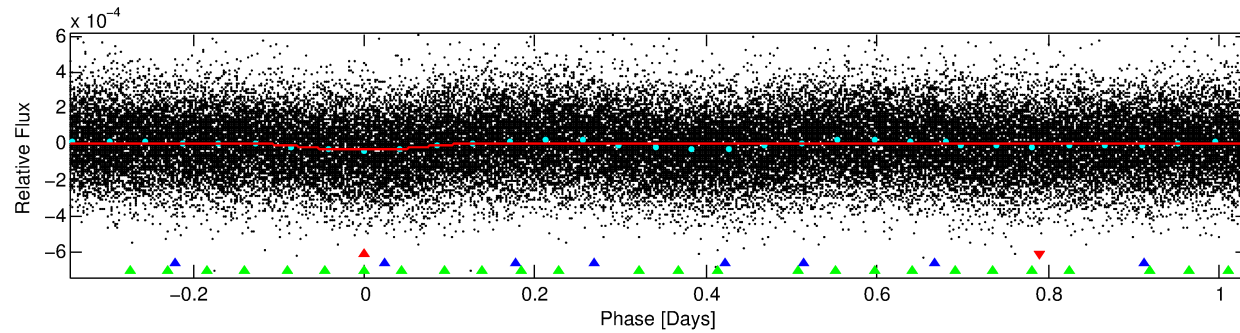
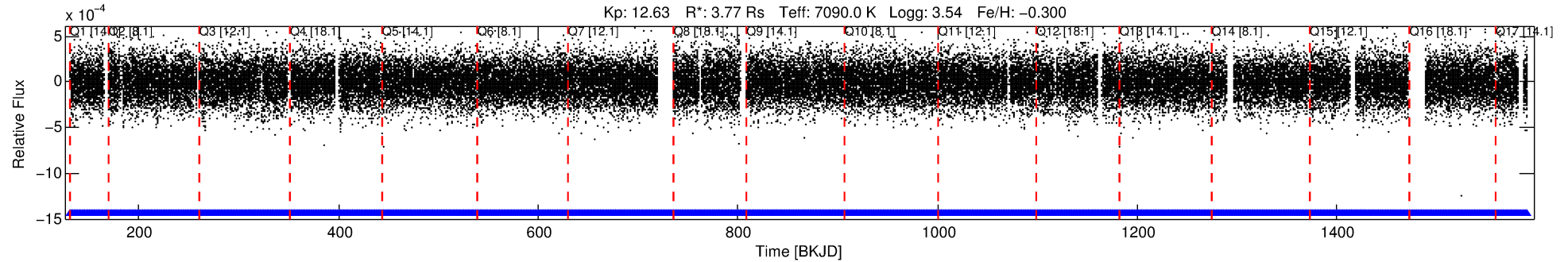
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006442060-01

No Significant Match Found

# DV One-Page Summary

KIC: 6442060 Candidate: 1 of 3 Period: 1.378 d



## DV Fit Results:

Period = 1.37776 [0.00002] d  
Epoch = 131.7285 [0.0076] BKJD  
Rp/R\* = 0.0092 [0.0116]  
a/R\* = 1.05 [0.03]  
b = 1.00 [0.02]  
Seff = 36794.37 [21756.67]  
Teq = 3532 [522] K  
Rp = 3.77 [4.98] Re  
a = 0.0296 [0.0108] AU  
Ag = 0.42 [1.09] [-0.53σ]  
Teffp = 4395 [2787] K [0.30σ]

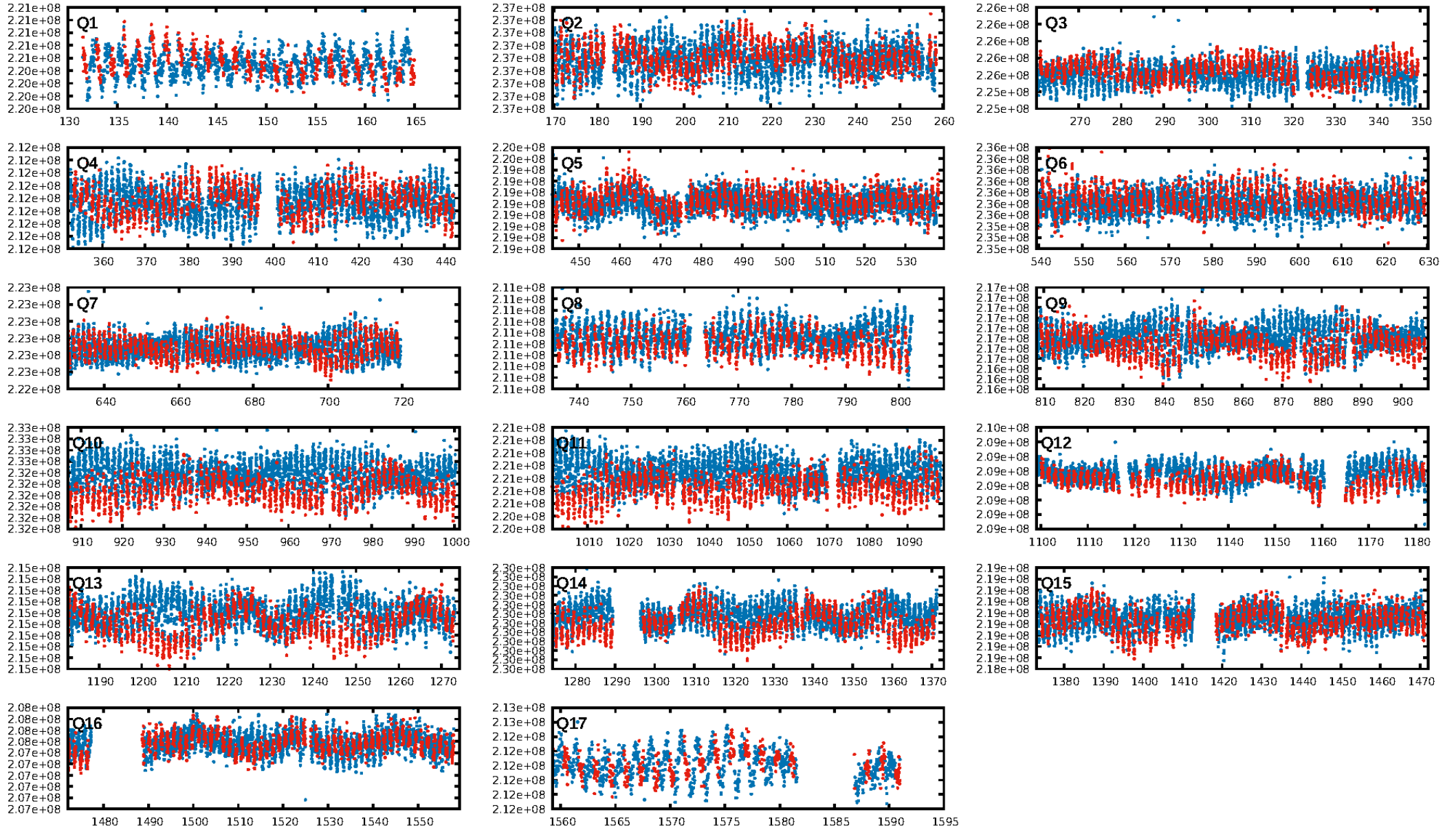
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [159.45σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.03e-14  
RollingBand-fgt: 1.00 [932/932]  
GhostDiagnostic-chr: 3.09  
Centroid-sig: 61.9%  
Centroid-so: 0.424 arcsec [0.74σ]  
OotOffset-rm: 0.079 arcsec [0.20σ]  
KicOffset-rm: 0.050 arcsec [0.13σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.69 [11/16]  
DiffImageOverlap-fno: 1.00 [17/17]

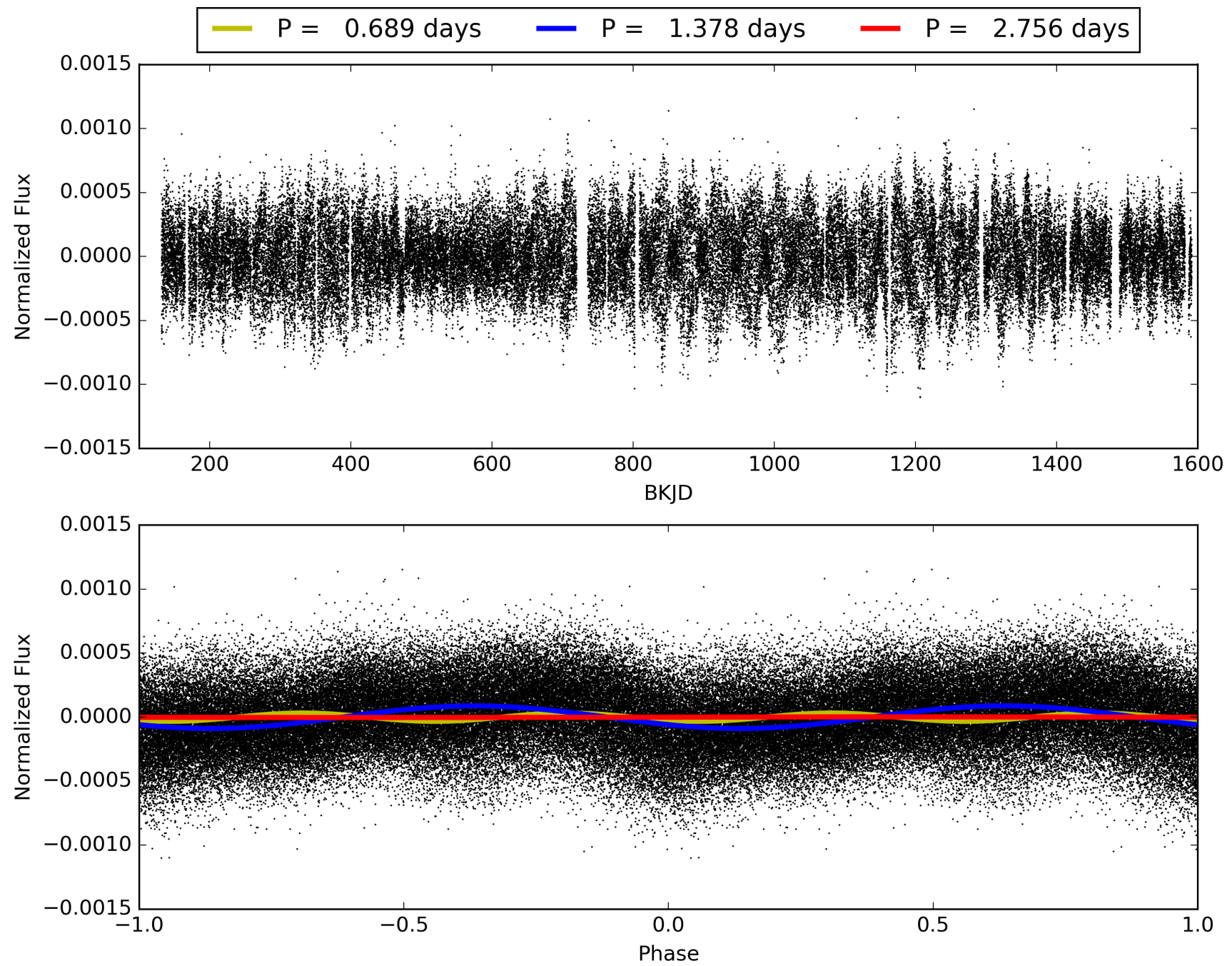
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:44:13 Z

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

# TCE 006442060-01, PDC Light Curves



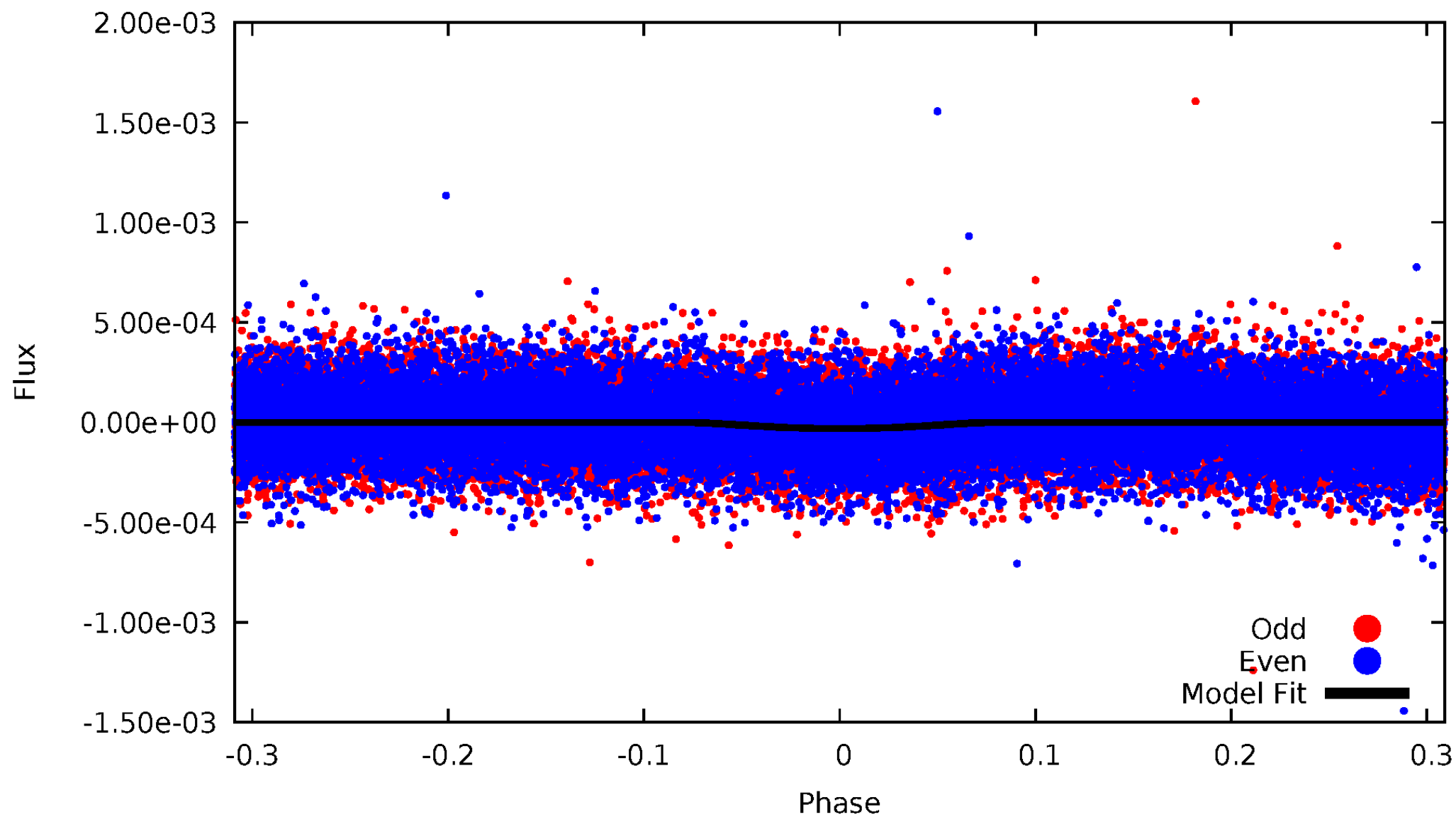
TCE 006442060-01





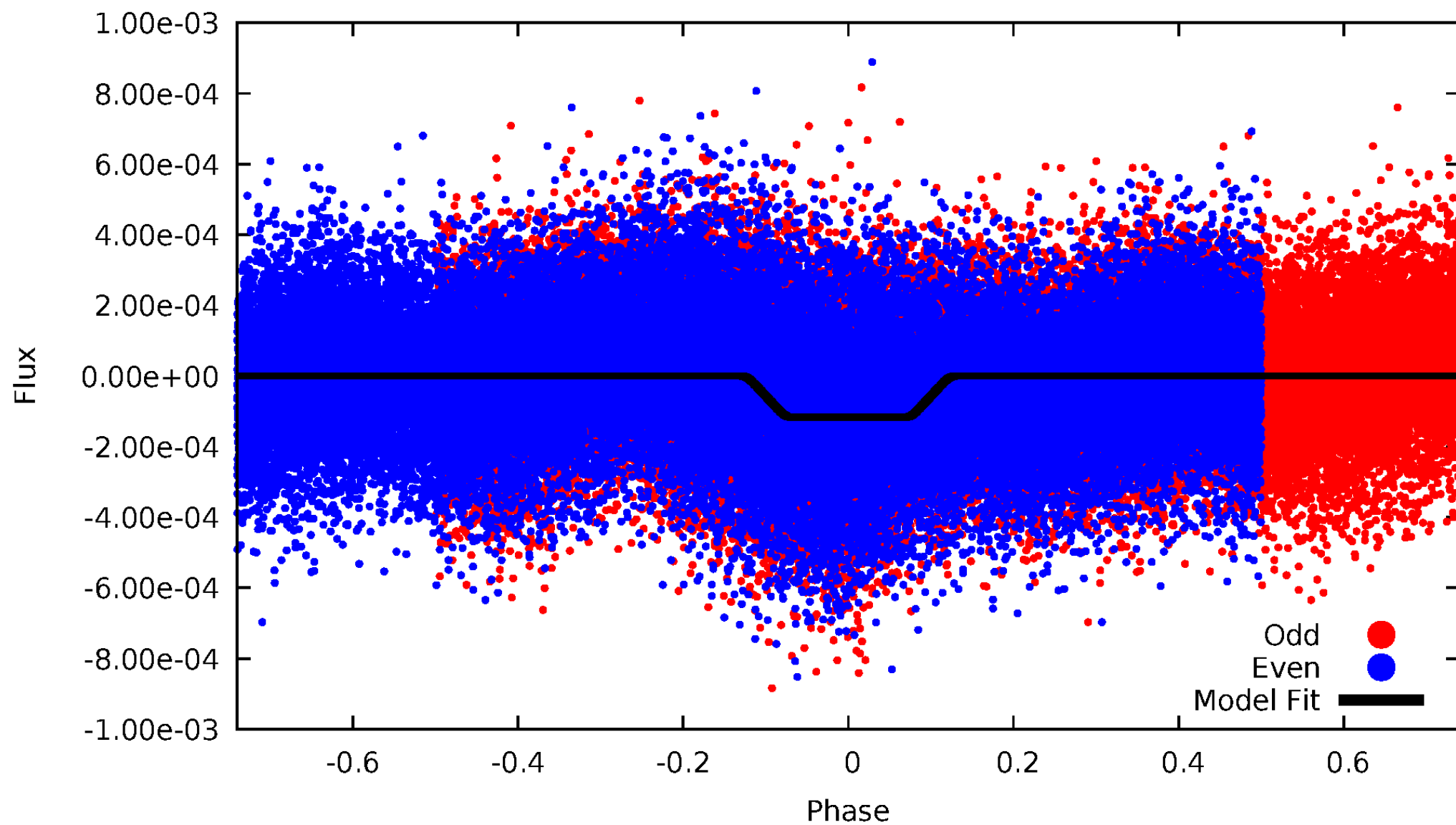
# DV Odd/Even

TCE 006442060-01

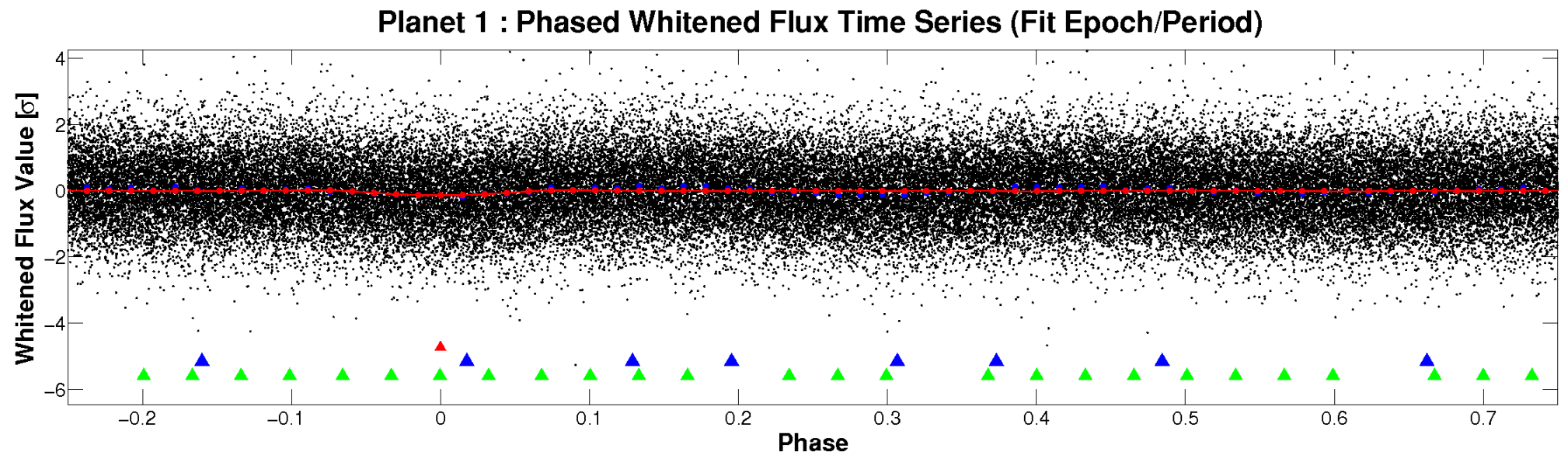
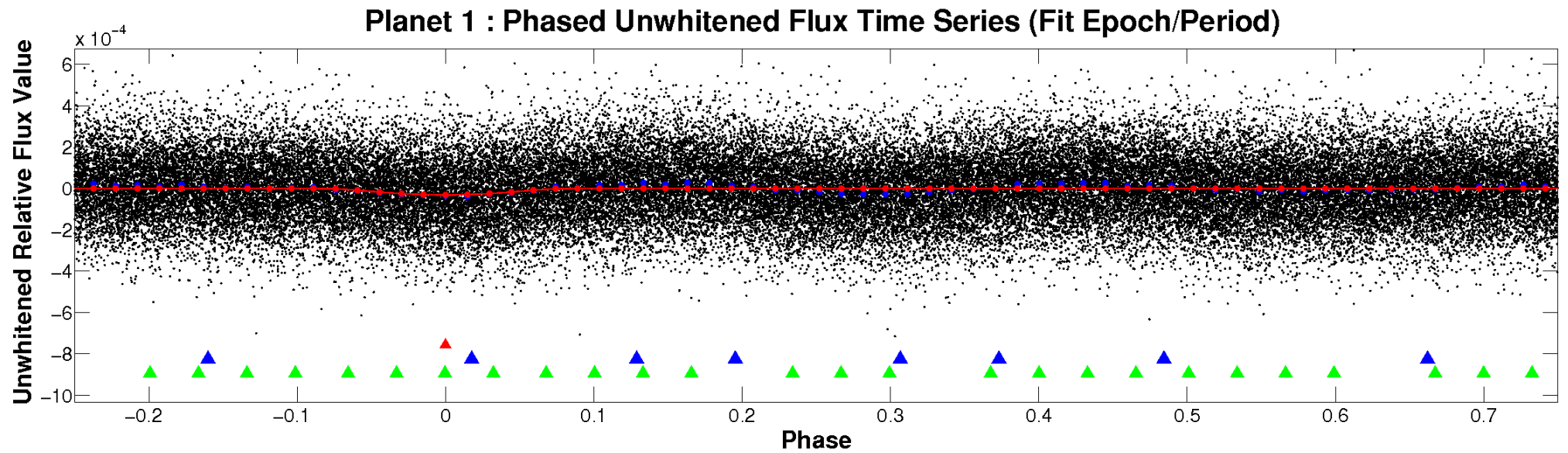


# ALT Odd/Even

TCE 006442060-01

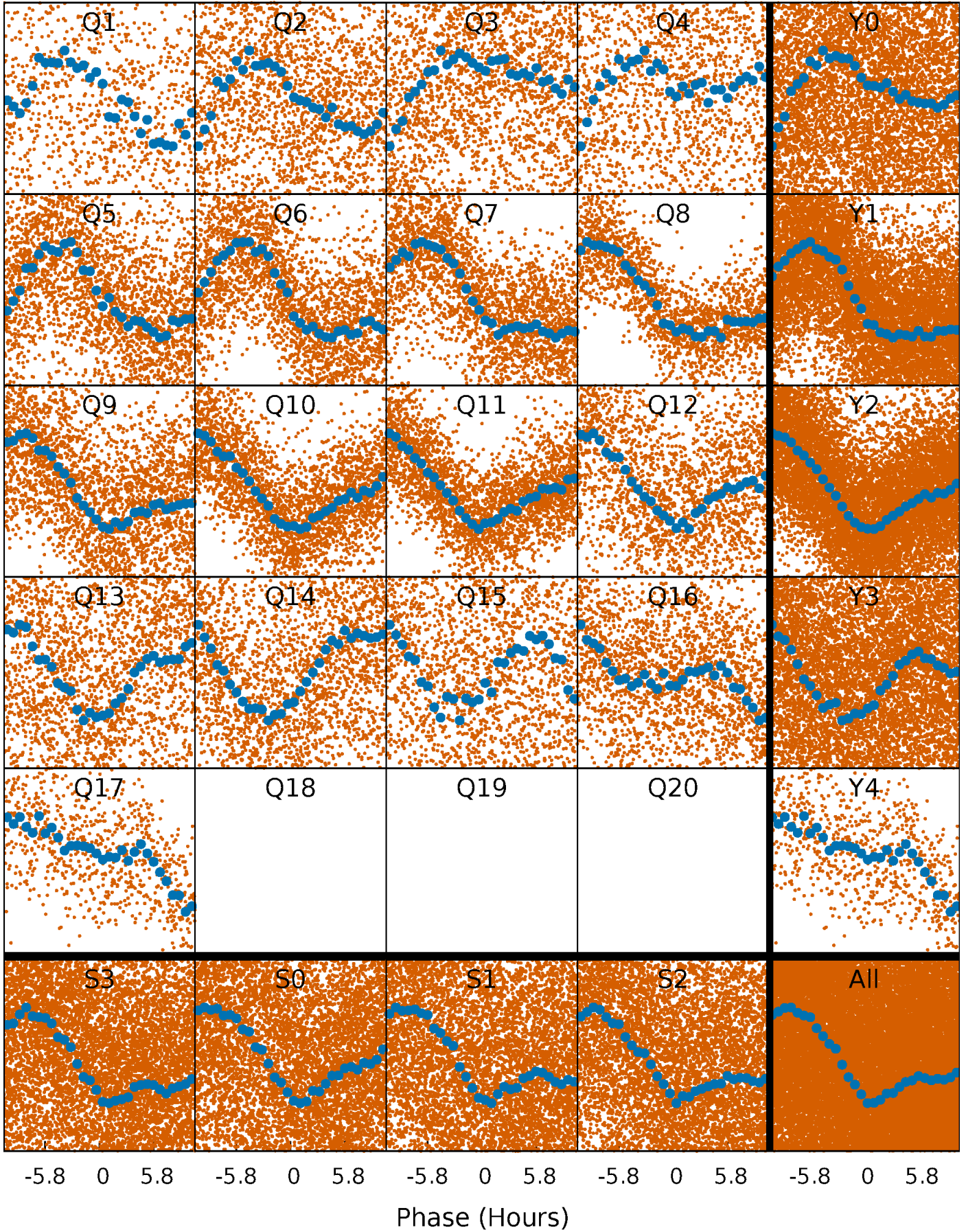


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

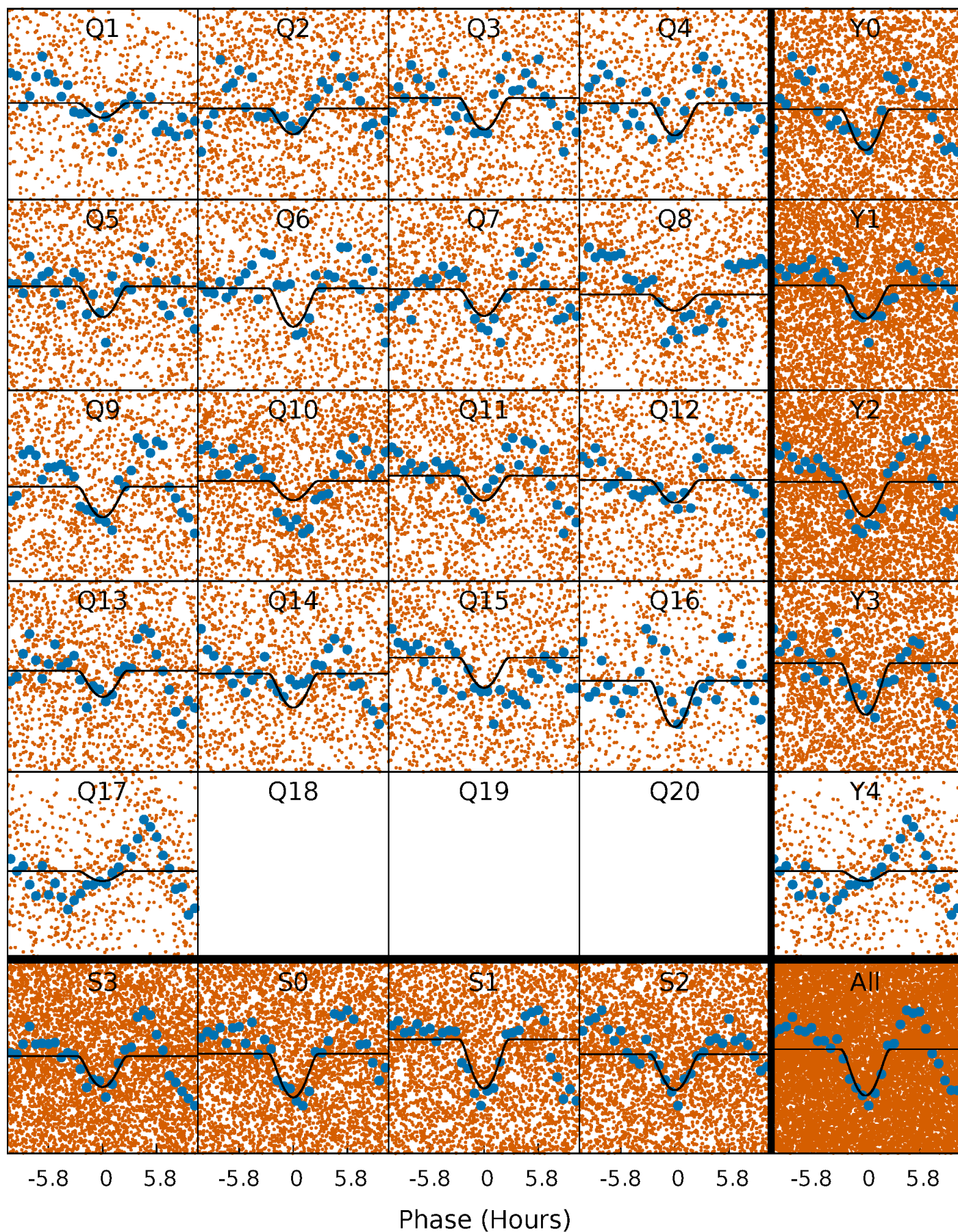
TCE 006442060-01 P= 1.377763 Days  $T_0=131.728487$  (BKJD)





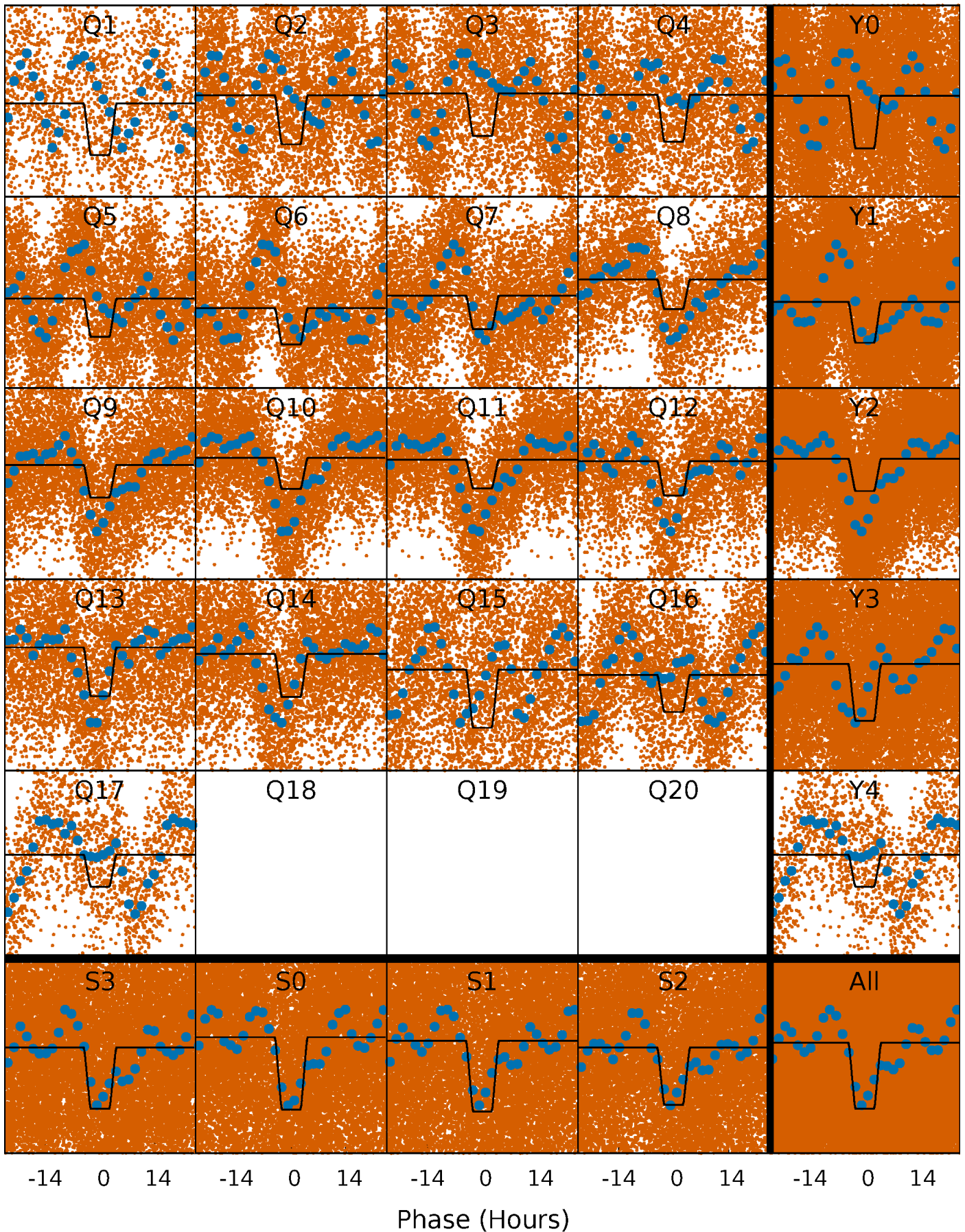
# DV Quarter-Phased Transit Curves

TCE 006442060-01 P= 1.377763 Days  $T_0=131.728487$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006442060-01 P= 1.377753 Days  $T_0=131.782944$  (BKJD)

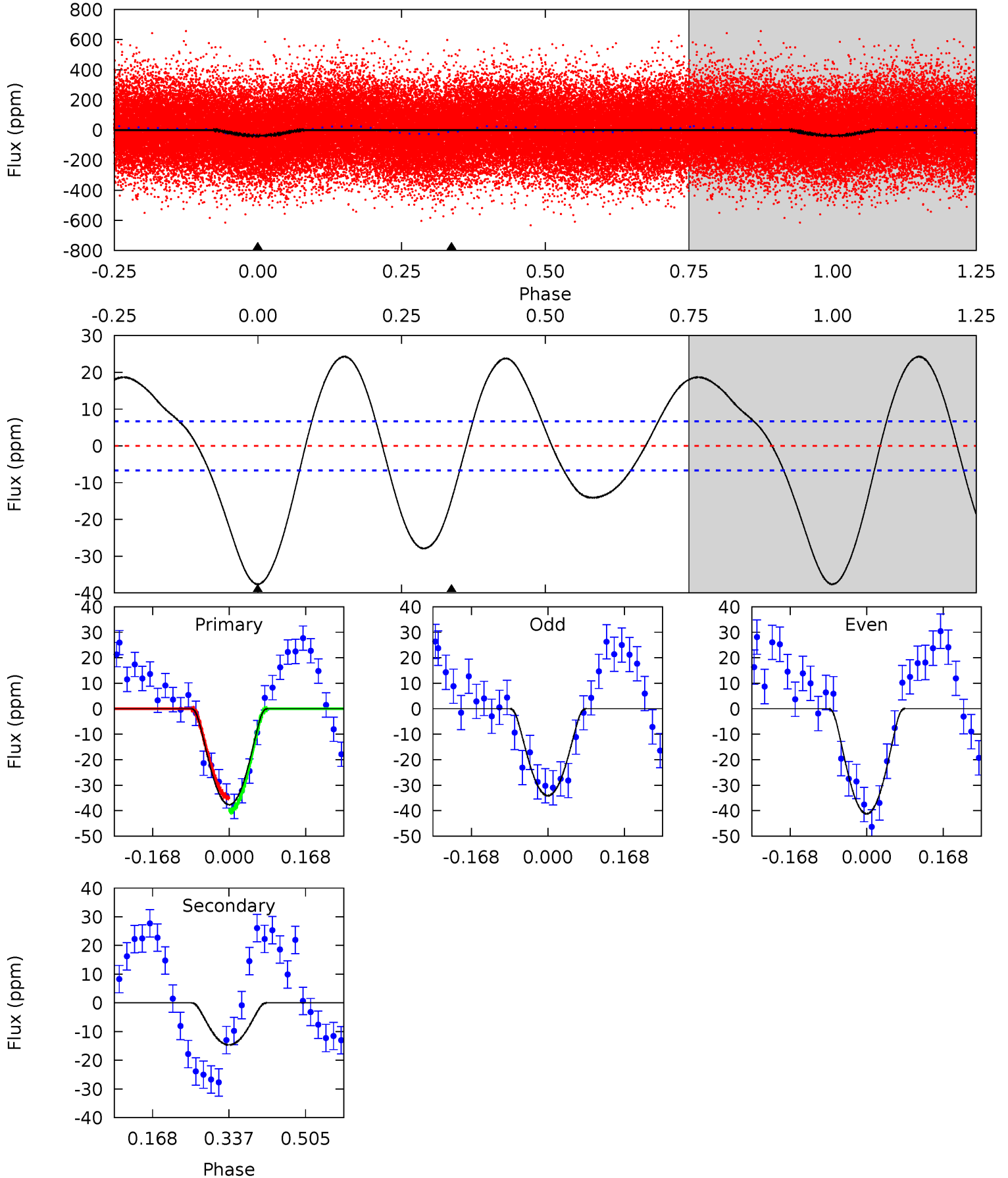




# DV Model-Shift Uniqueness Test

006442060-01, P = 1.377763 Days, E = 130.350724 Days

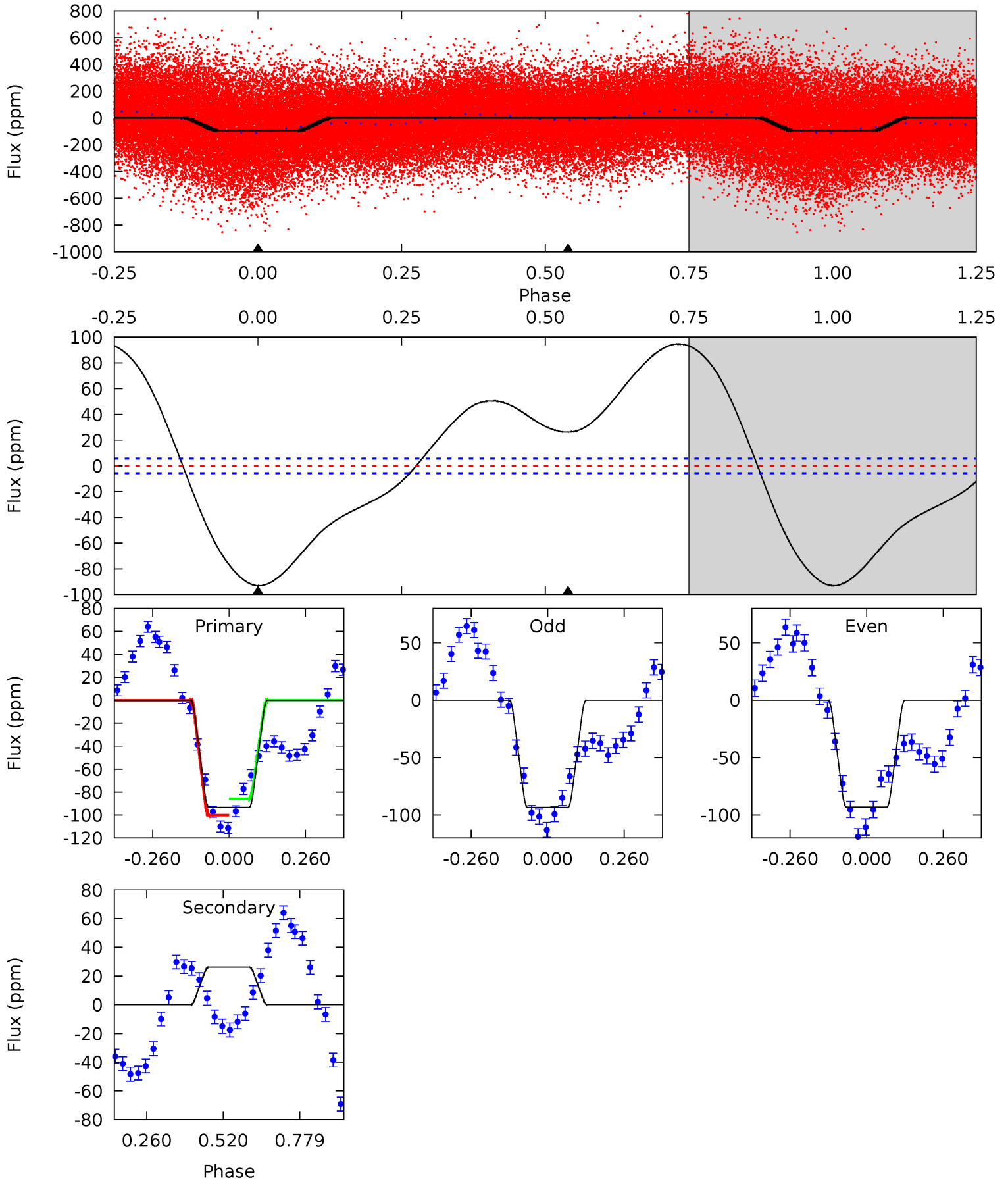
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.1	9.78	0	0	4.45	1.38	8.19	25.1	25.1	9.78	9.78	2.36	0.98	0.39	1.79



# Alt Model-Shift Uniqueness Test

006442060-01, P = 1.377753 Days, E = 130.405191 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
71.7	-20.2	0	0	4.36	1.13	23.4	71.7	71.7	-20.2	-20.2	0.15	1.14	0.50	4.76





### Stellar Parameters For KIC 006442060

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7090^{+191}_{-233}$	$3.545^{+0.336}_{-0.084}$	$-0.300^{+0.300}_{-0.250}$	$3.774^{+0.343}_{-1.458}$	$1.821^{+0.192}_{-0.357}$	$0.048^{+0.116}_{-0.013}$
	+3%/-3%	+9%/-2%	+100%/-83%	+9%/-39%	+11%/-20%	+242%/-26%
Source	PHO1	FLK73	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 006442060-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-15 \pm 1$	$4.69^{+4.22}_{-3.13}$	$4859^{+263}_{-450}$	$2957^{+3638}_{-6918}$	$0.335^{+2.640}_{-0.248}$
Alt.	$26 \pm 1$	$5.34^{+4.11}_{-3.44}$	$4844^{+265}_{-470}$	$-4982^{+504}_{-2239}$	$-0.440^{+0.301}_{-3.043}$

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

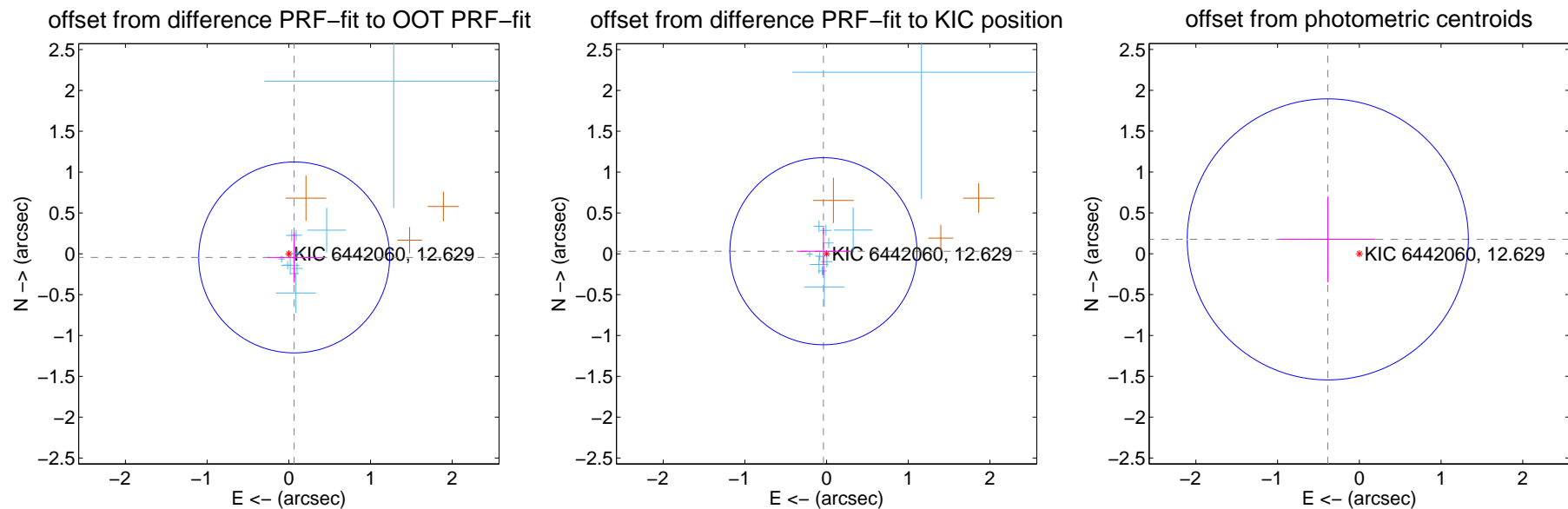
## DV Centroid Data

Supplemental centroid analysis for 006442060-01. Kepler magnitude: 12.63. Transit SNR 8.94

There are 11 quarters with good PRF difference image offsets

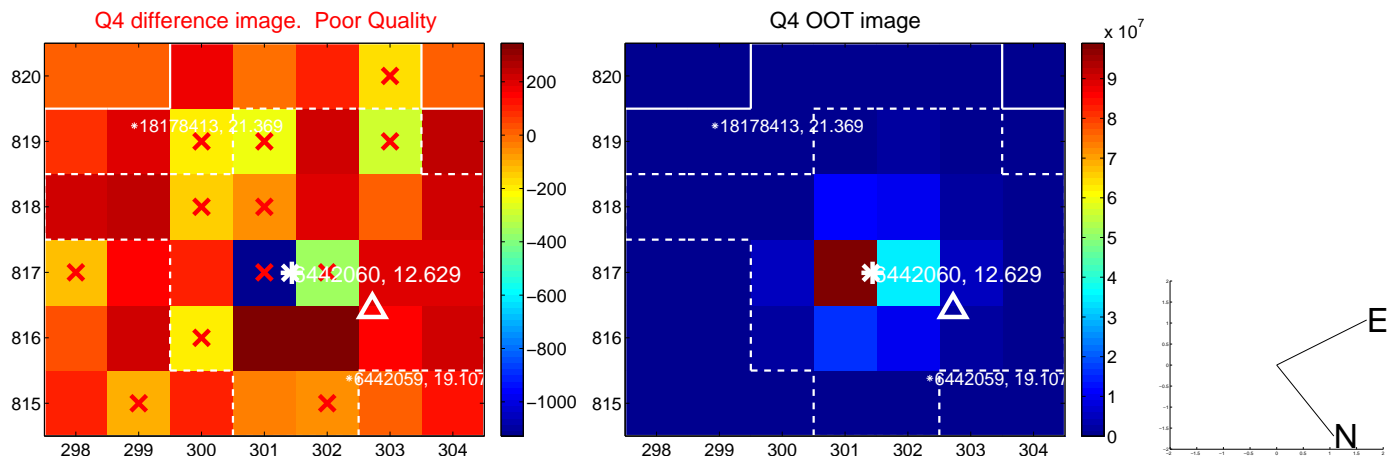
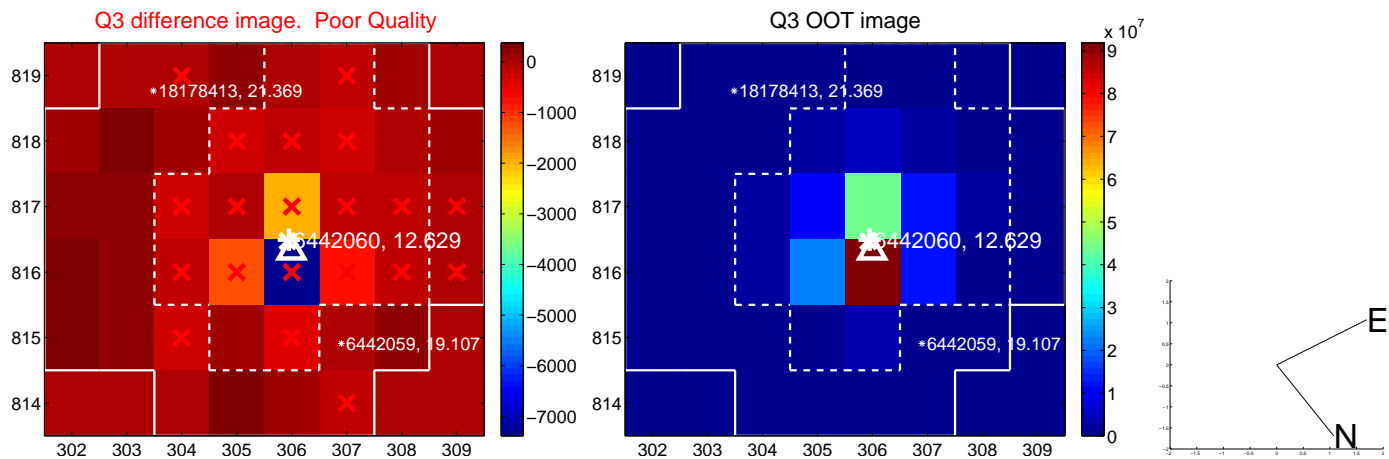
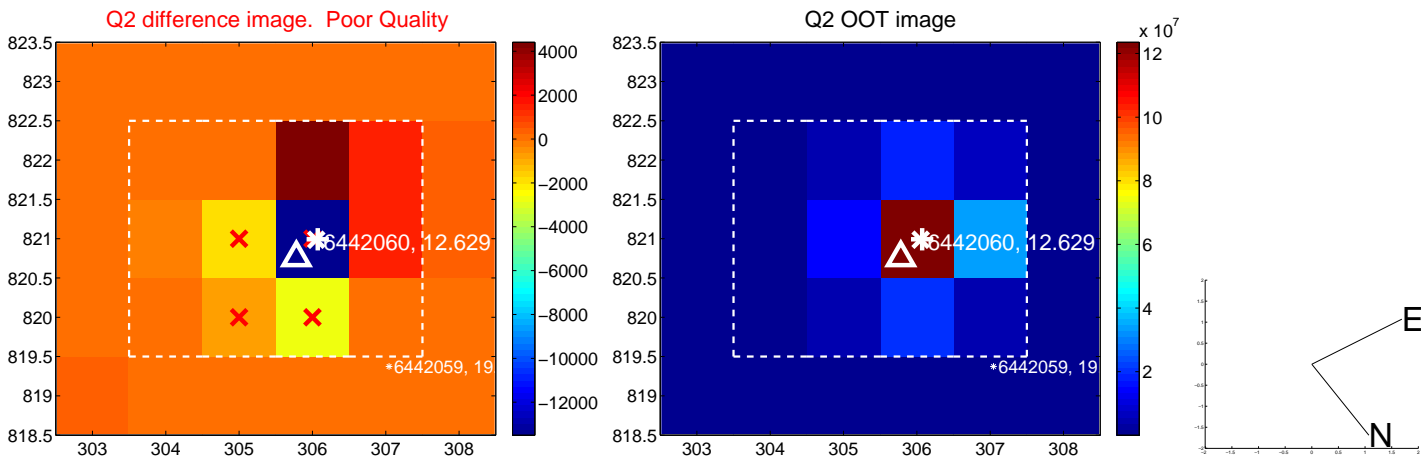
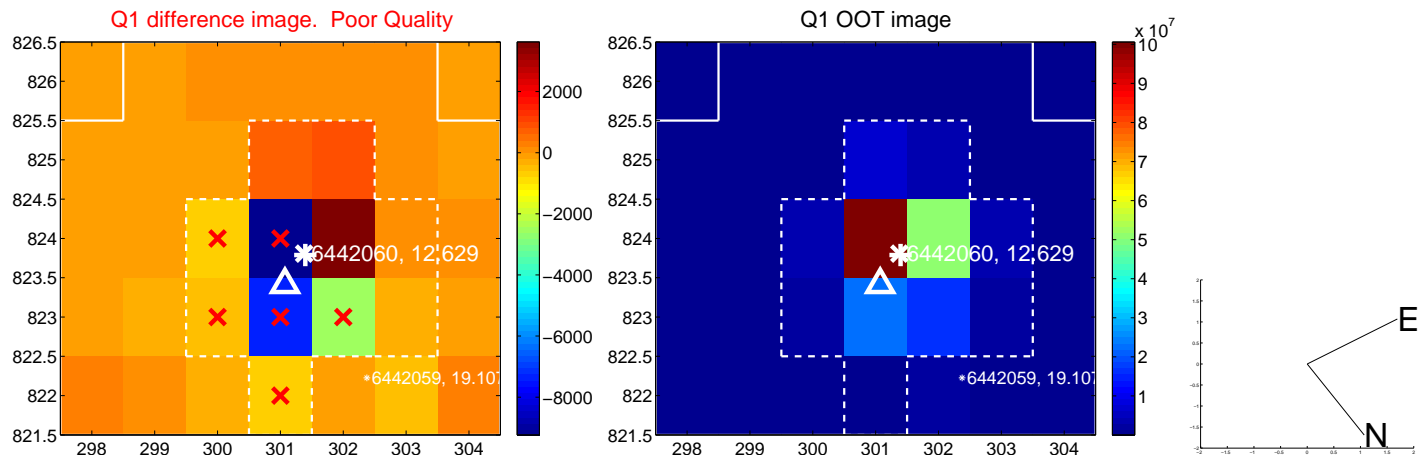
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.079 \pm 0.389$	0.20	$-0.066 \pm 0.326$	$-0.045 \pm 0.308$
PRF-fit source offset from KIC position	$0.050 \pm 0.382$	0.13	$0.039 \pm 0.328$	$0.031 \pm 0.291$
photometric centroid source offset	$0.42 \pm 0.57$	0.74	$0.39 \pm 0.58$	$0.18 \pm 0.52$

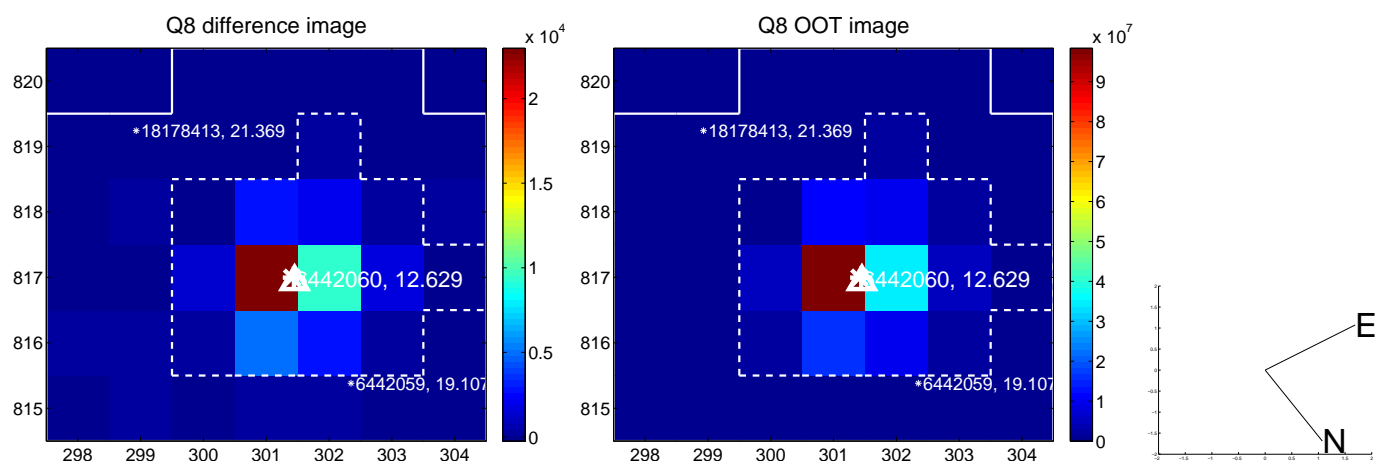
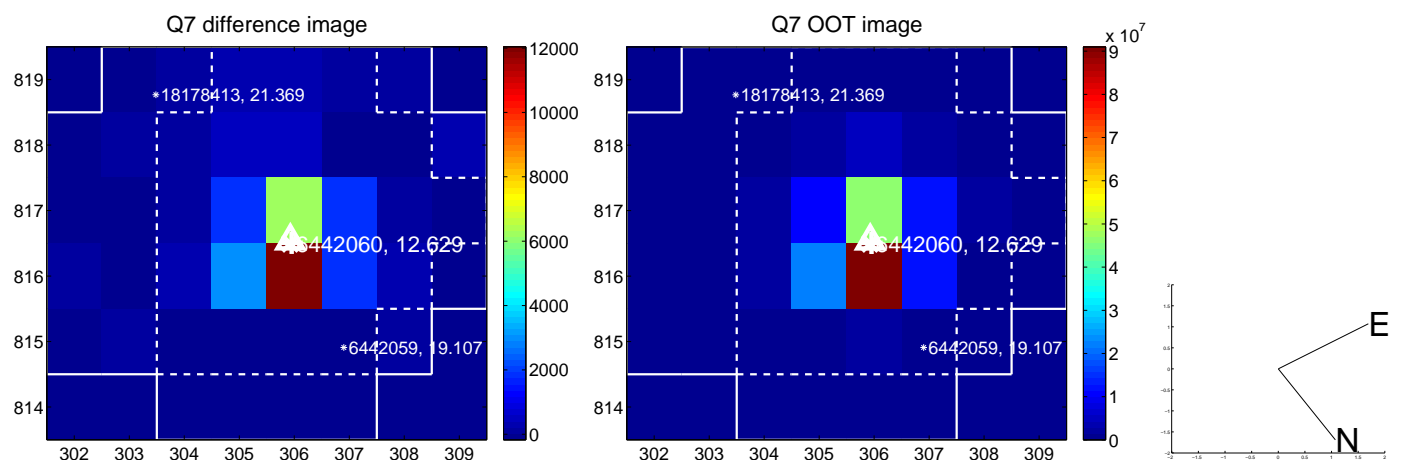
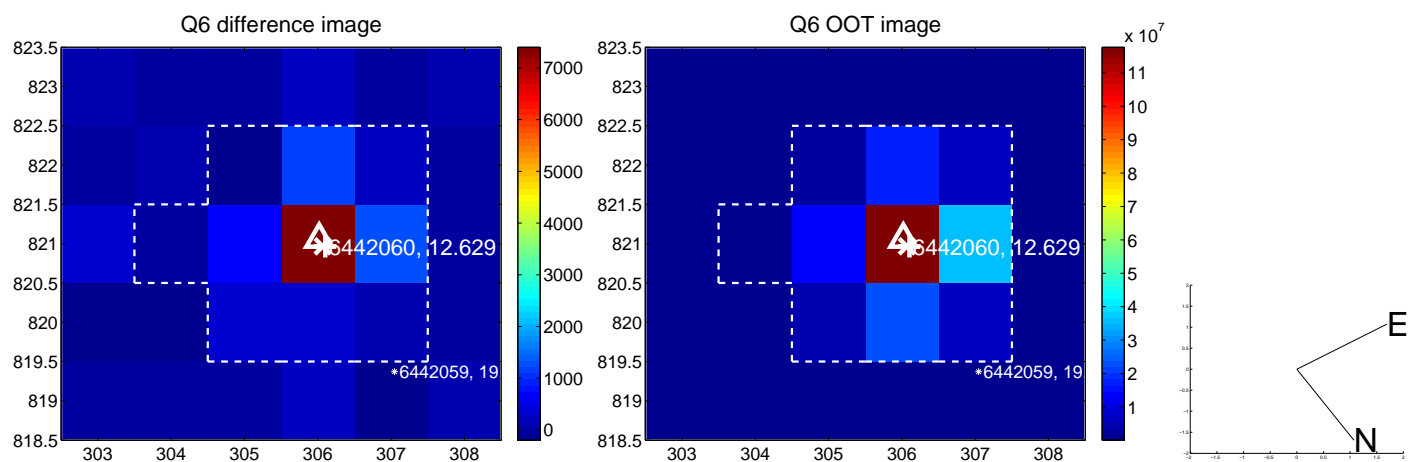
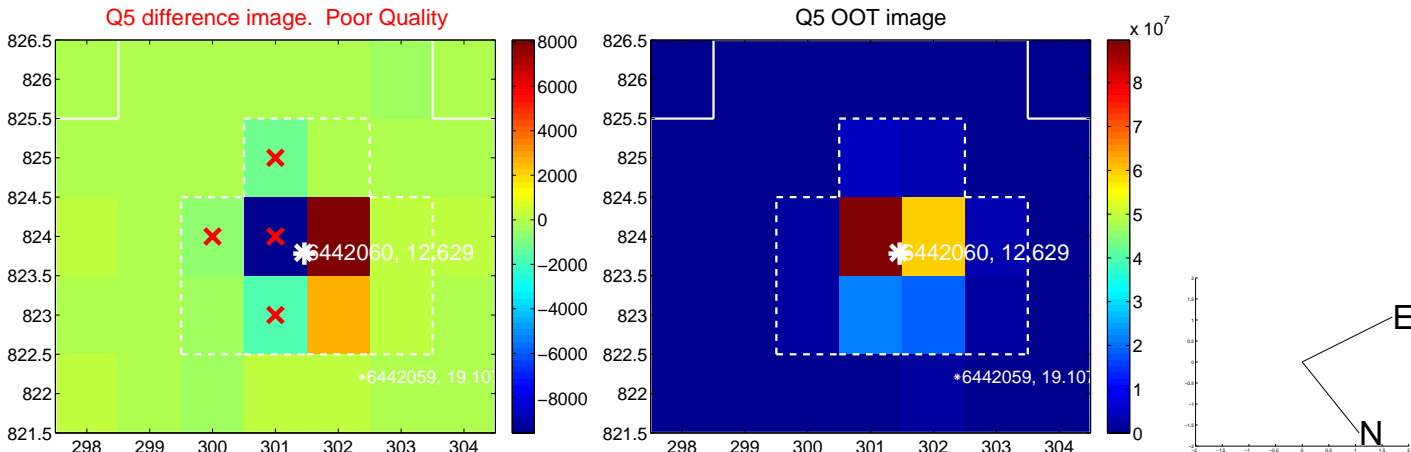


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

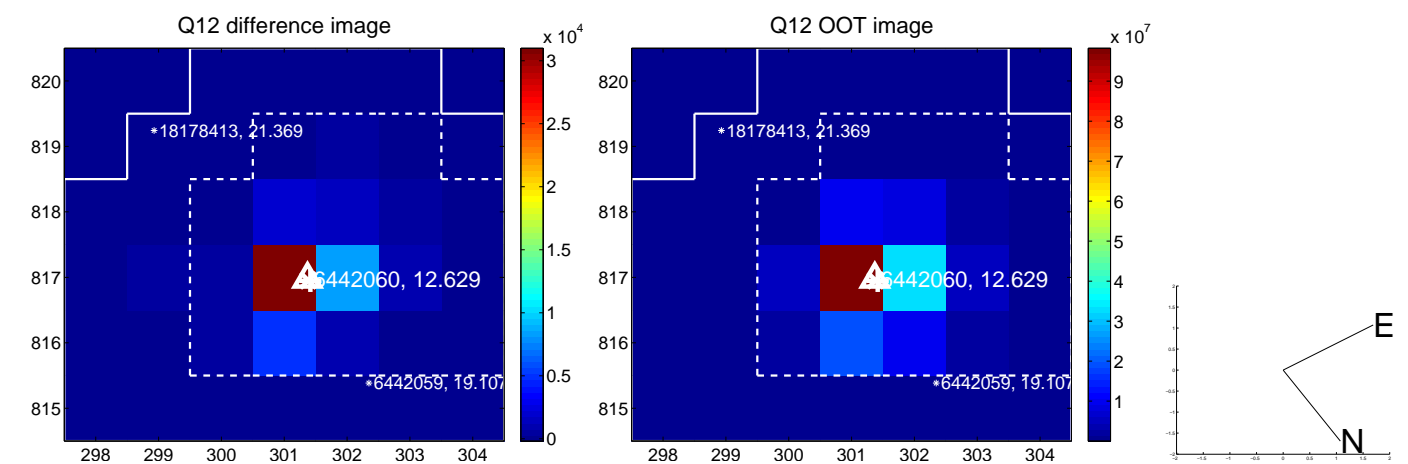
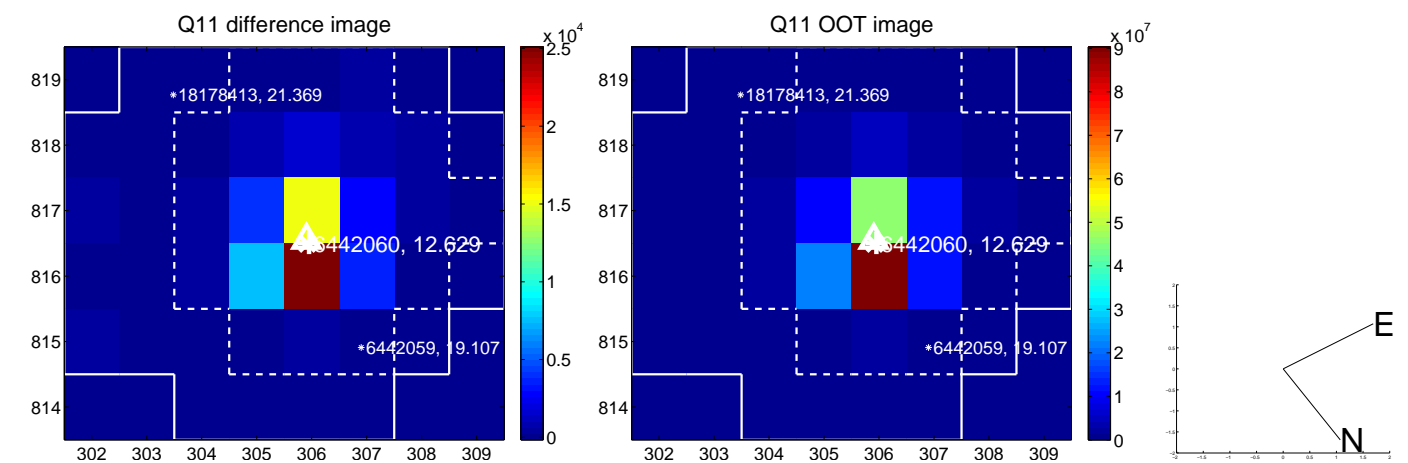
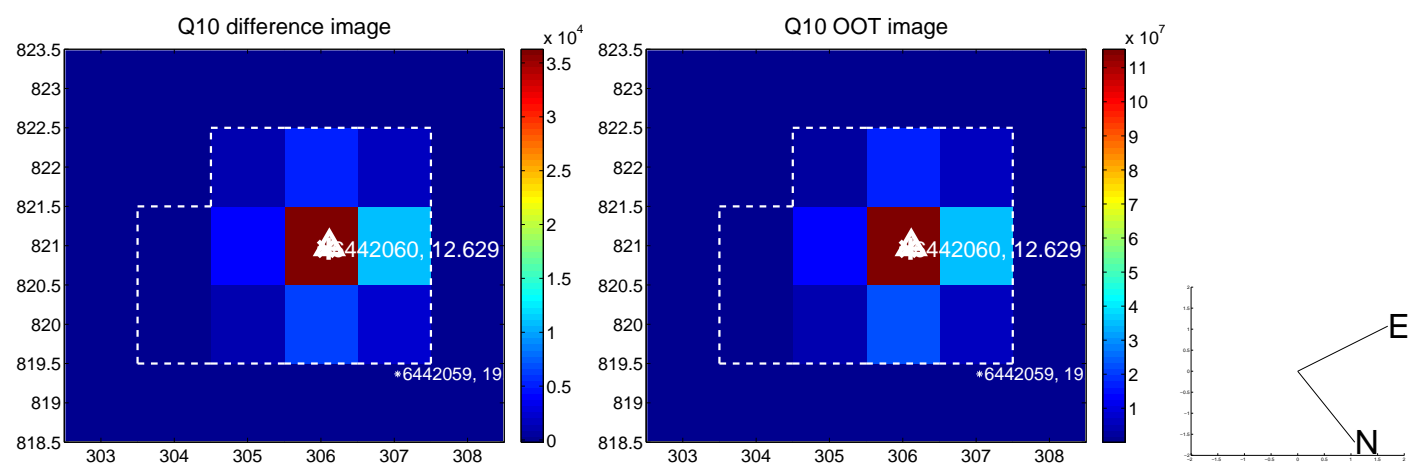
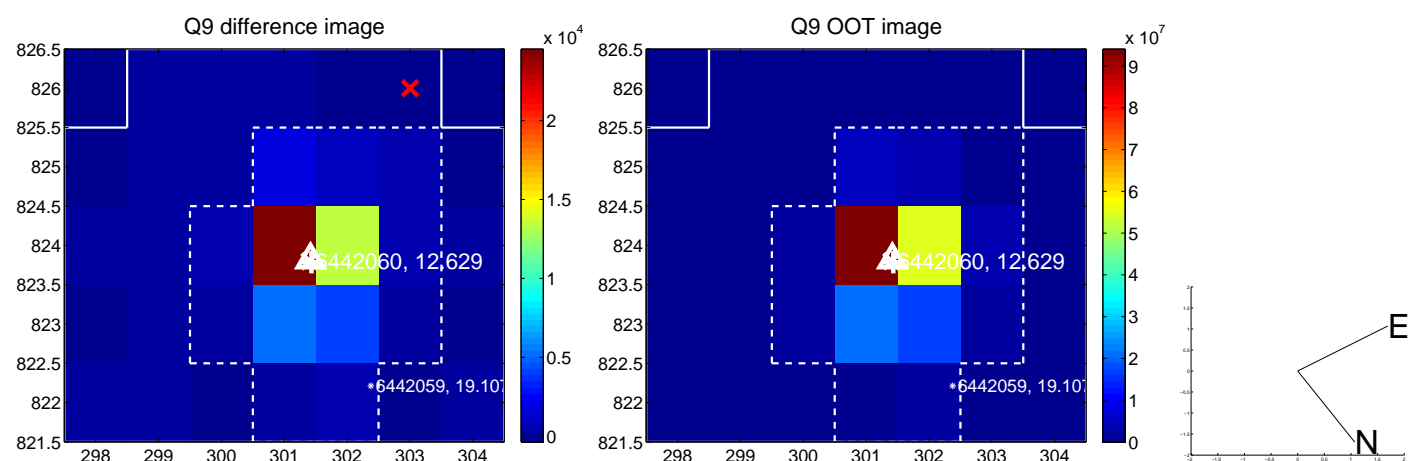


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

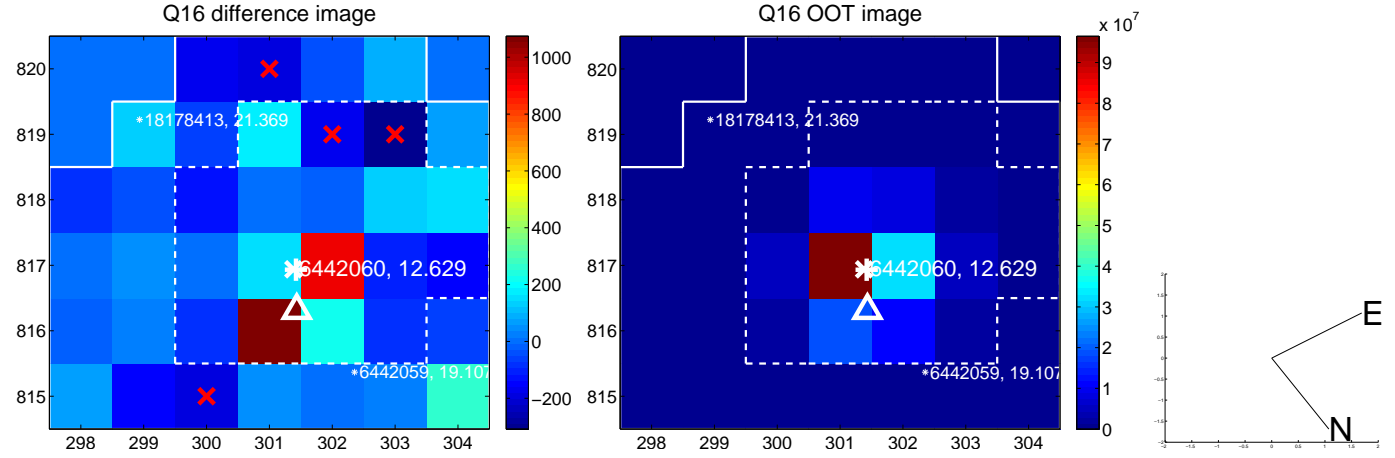
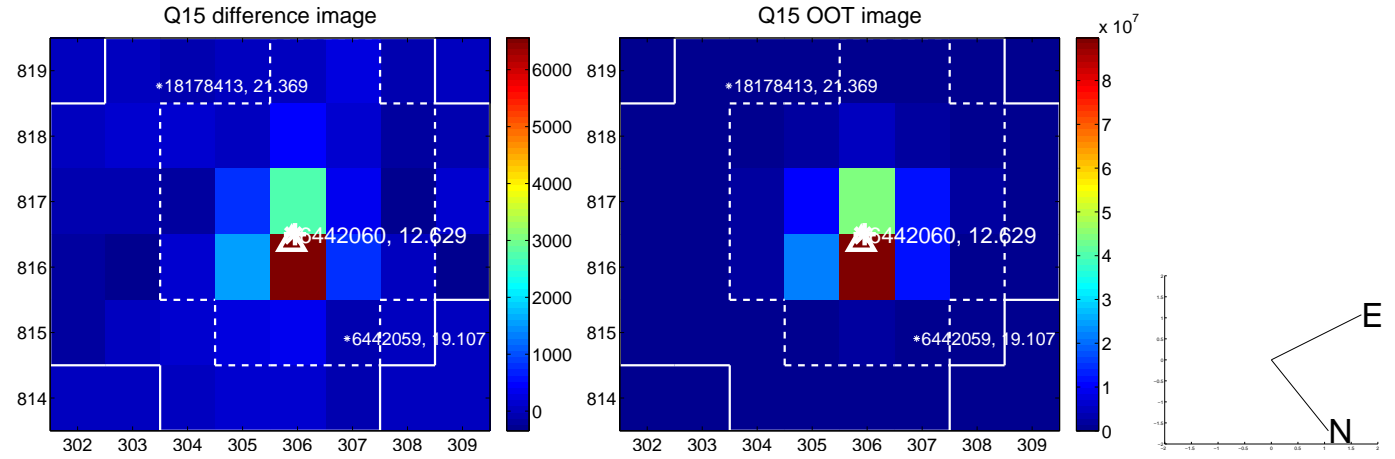
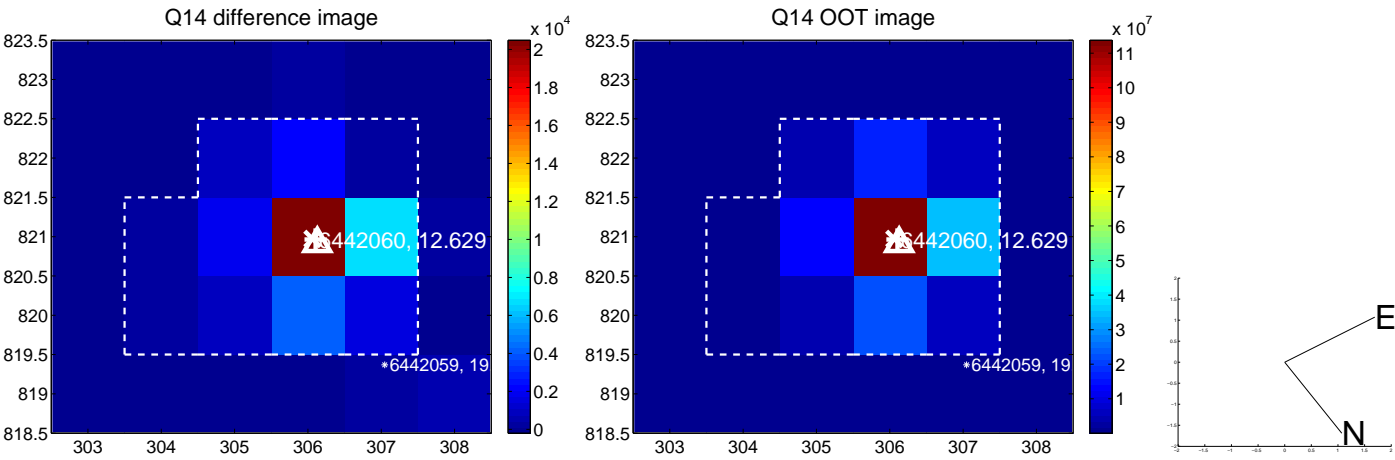
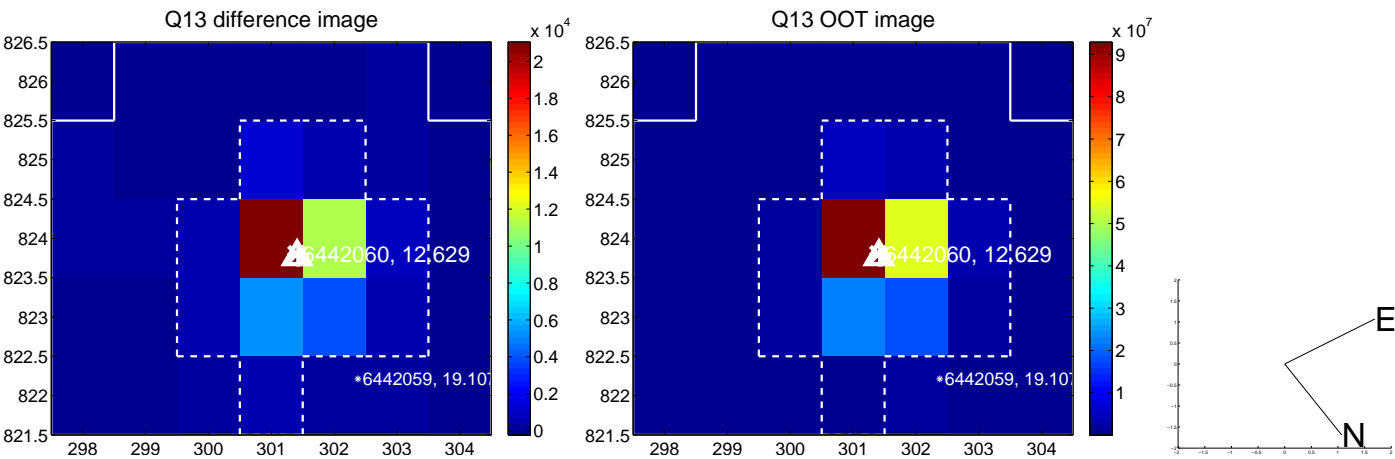




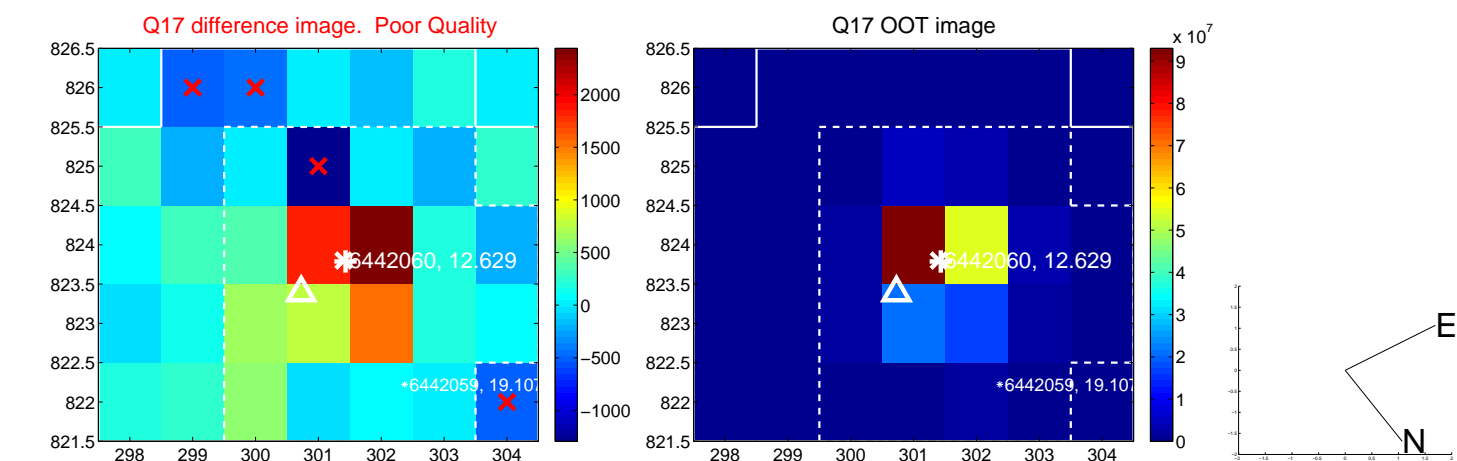
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



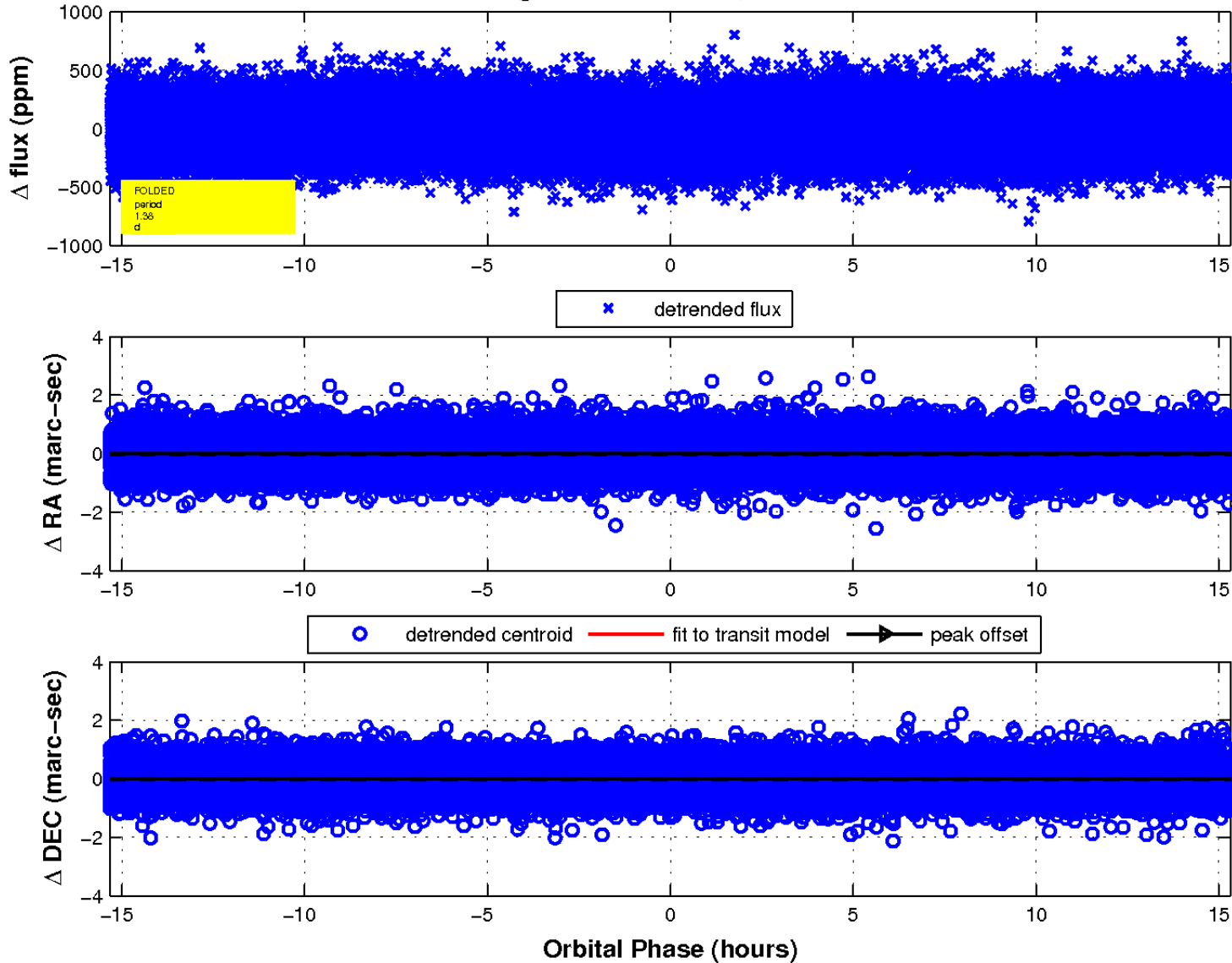
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

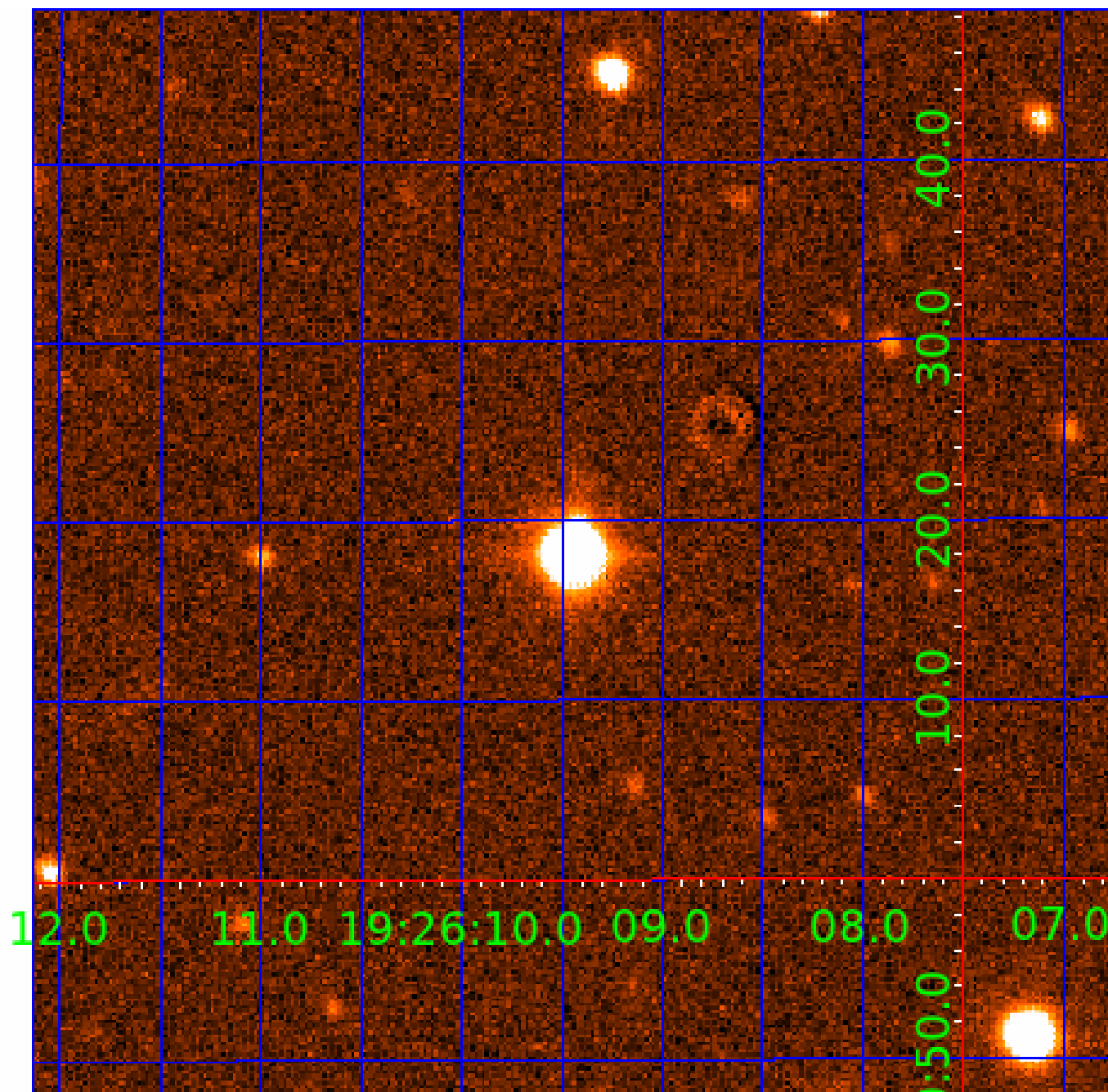


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 006442060

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006442060-01	OBS	No	1.377763	131.728487	31.5	5.108	9.9	8.9	3.77	7090	3.77	36794.37
006442060-02	OBS	No	176.598516	189.772096	322.3	3.476	7.5	7.3	3.77	7090	7.96	56.93
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006442060-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006442060-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
006442060-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT

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

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

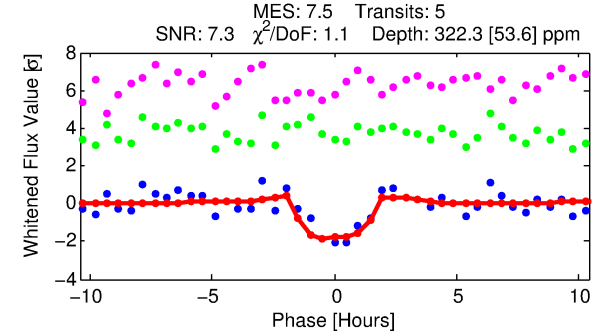
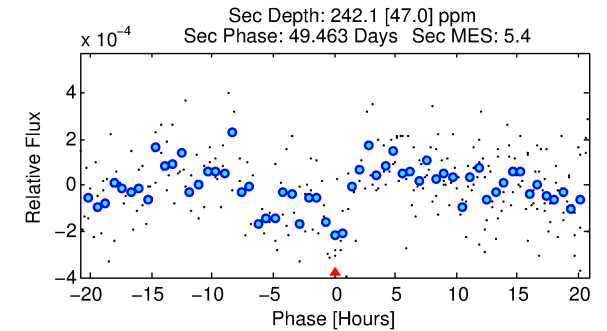
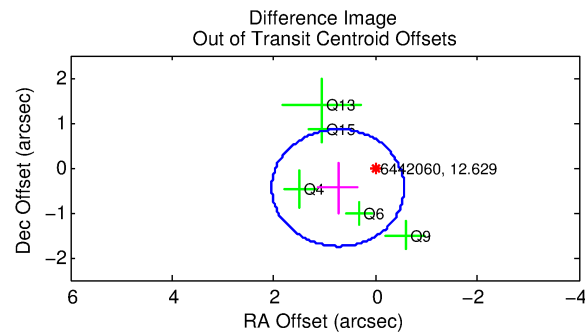
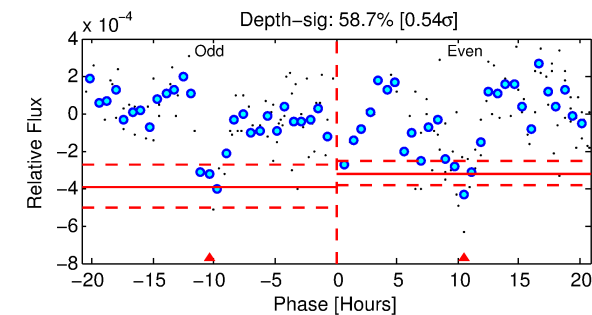
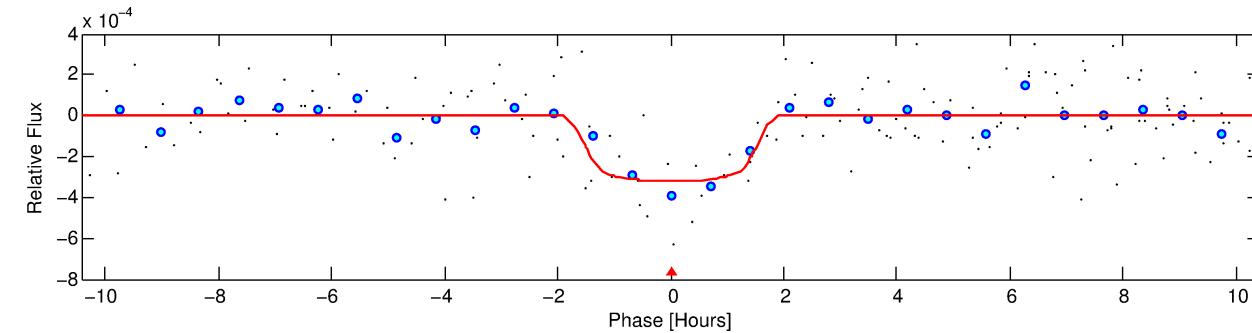
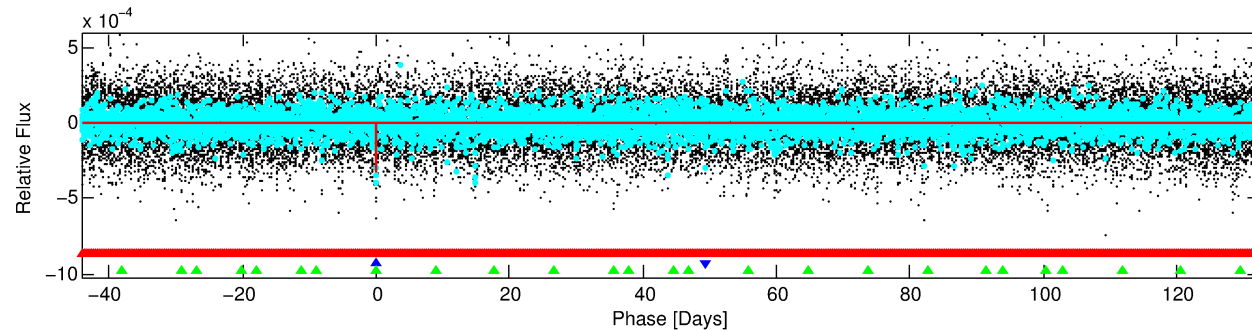
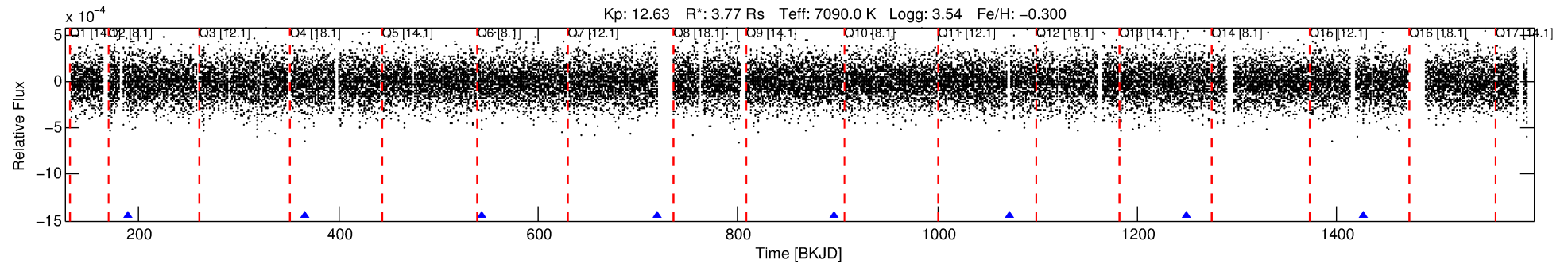
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006442060-02

No Significant Match Found

# DV One-Page Summary

KIC: 6442060 Candidate: 2 of 3 Period: 176.599 d



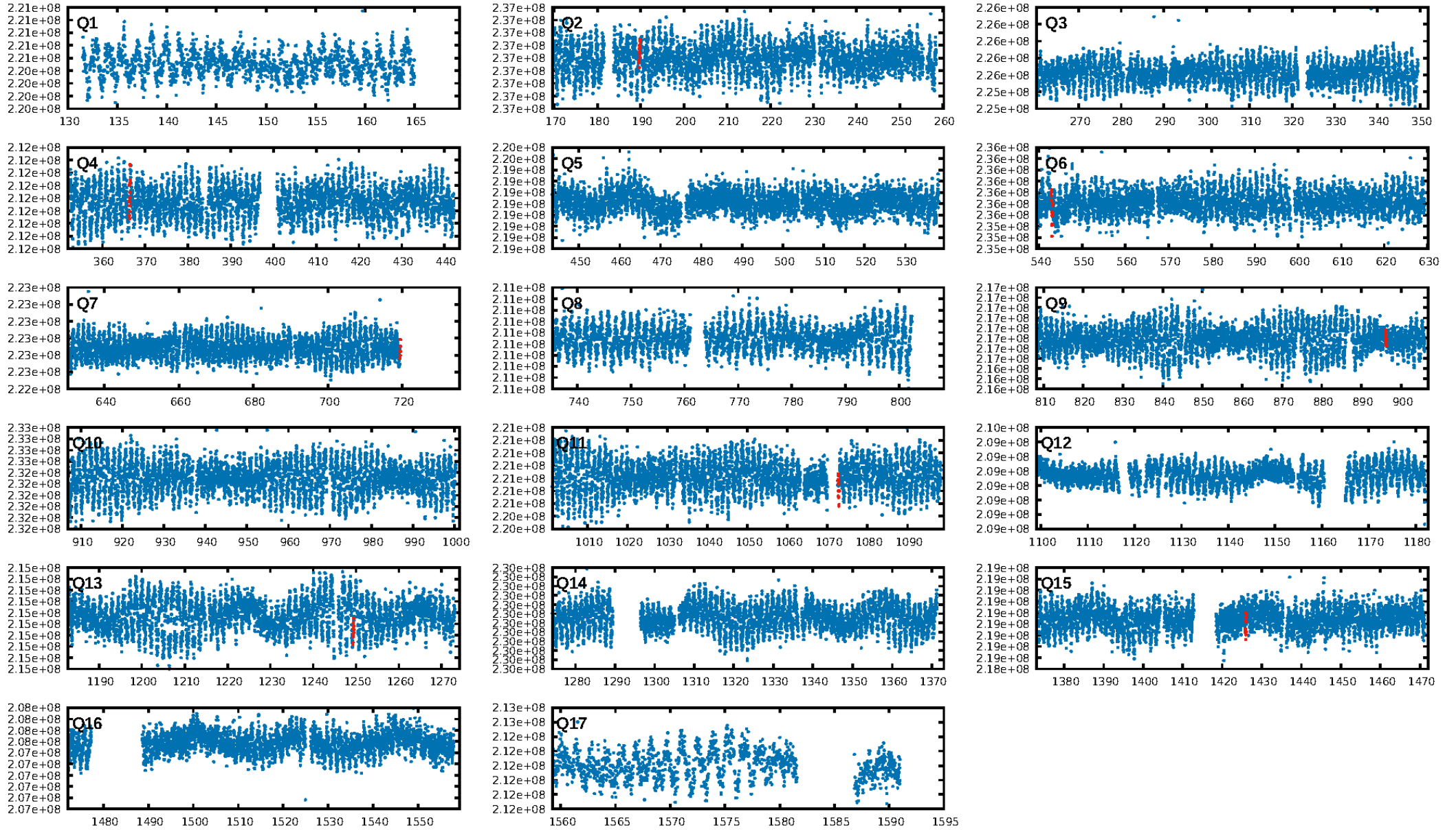
## DV Fit Results:

Period = 176.59852 [0.00190] d  
Epoch = 189.7721 [0.0085] BKJD  
Rp/R\* = 0.0193 [0.0081]  
a/R\* = 180.94 [428.91]  
b = 0.91 [0.47]  
Seff = 56.93 [33.66]  
Teq = 700 [104] K  
Rp = 7.96 [4.52] Re  
a = 0.7526 [0.2743] AU  
Ag = 1191.60 [1230.86] [0.97 $\sigma$ ]  
Teffp = 6363 [1379] K [4.09 $\sigma$ ]

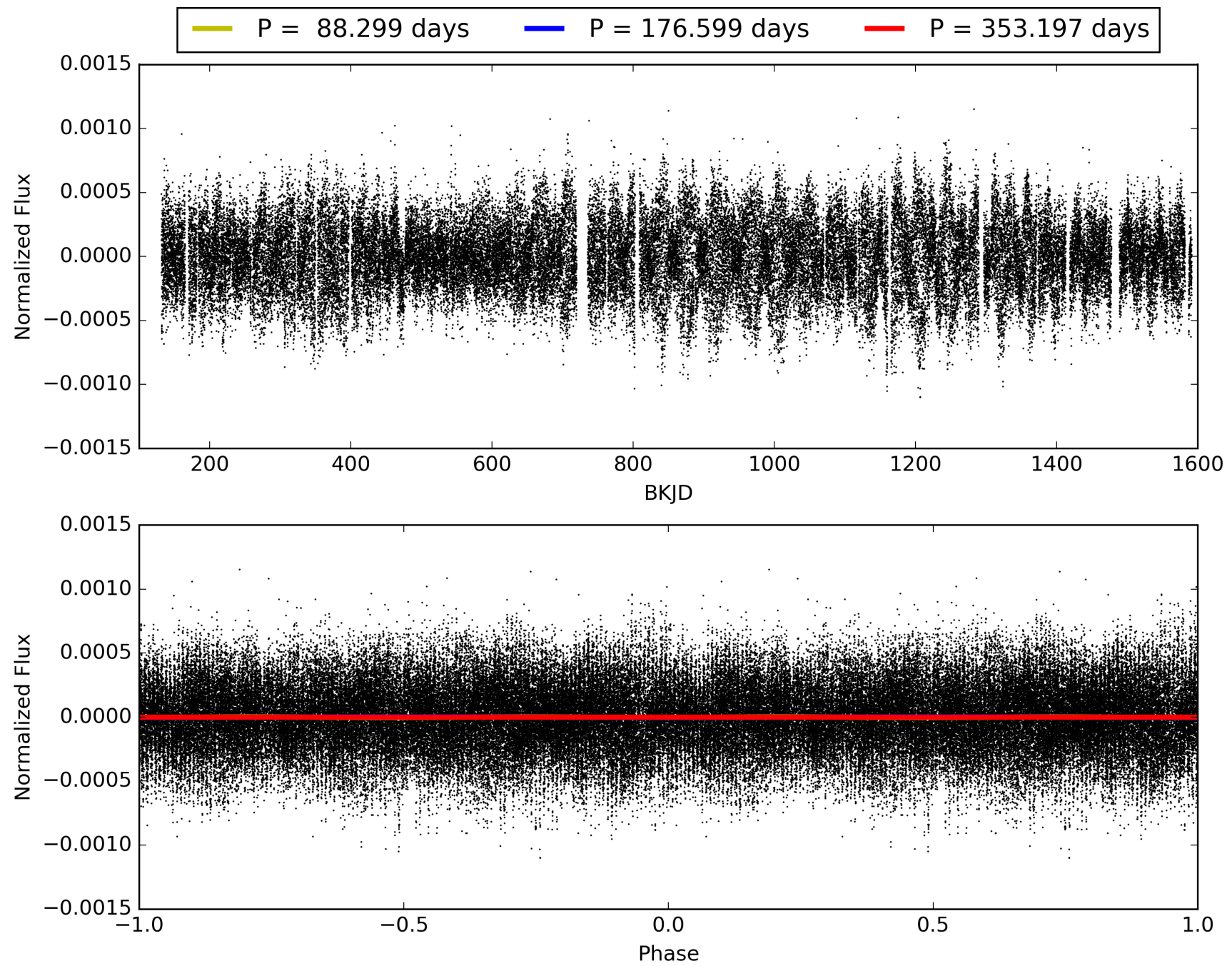
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [396.74 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 46.6%  
ModelChiSquareGof-sig: 99.6%  
**Bootstrap-pfa: 3.19e-09**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -2.602  
Centroid-sig: 84.6%  
Centroid-so: 0.208 arcsec [0.35 $\sigma$ ]  
OotOffset-rm: 0.863 arcsec [1.99 $\sigma$ ]  
OotOffset-st: 1/1/1/2 [5]  
KicOffset-rm: 0.920 arcsec [2.22 $\sigma$ ]  
KicOffset-st: 1/1/1/2 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 0.33 [2/6]

# TCE 006442060-02, PDC Light Curves

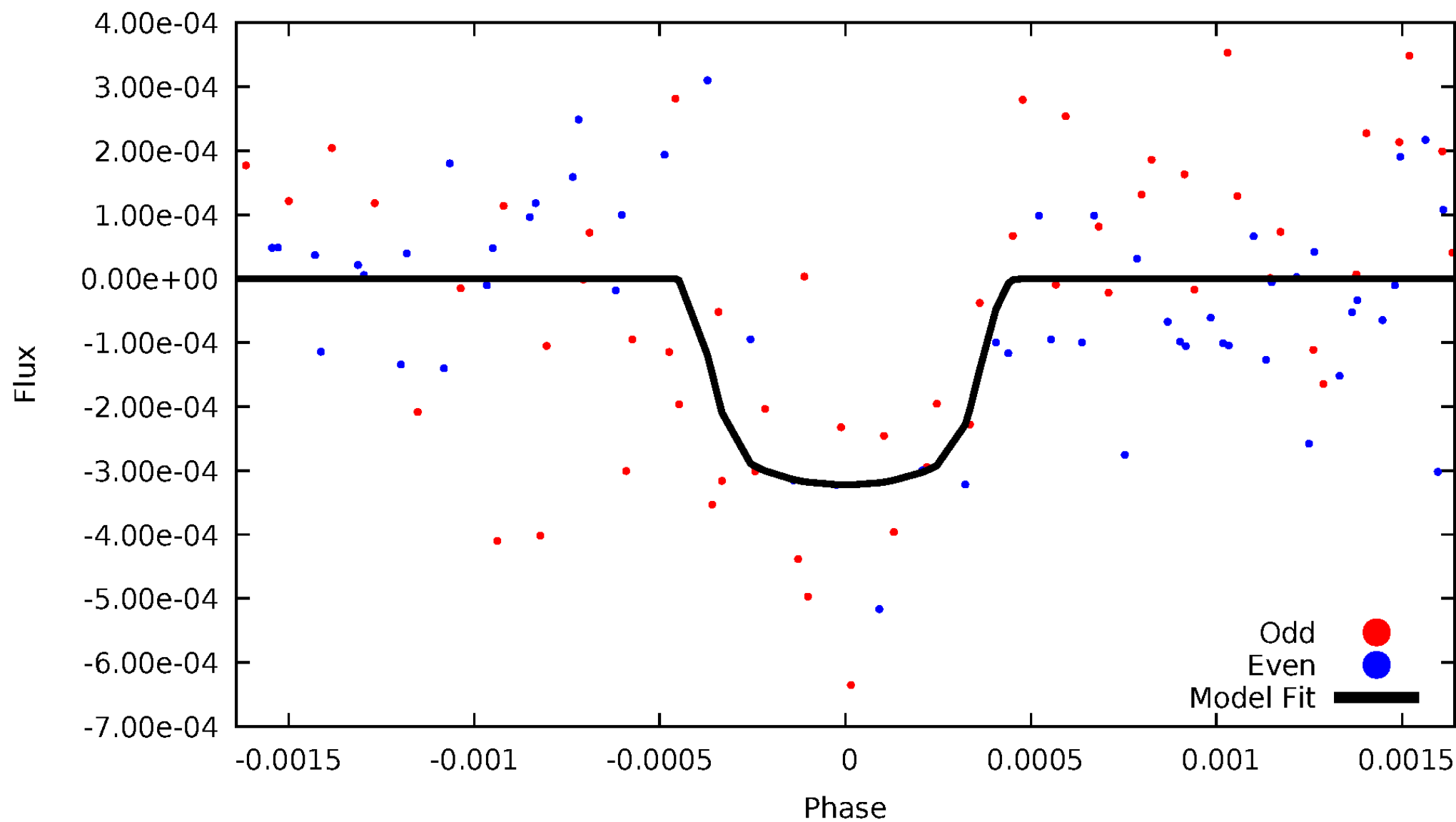


TCE 006442060-02



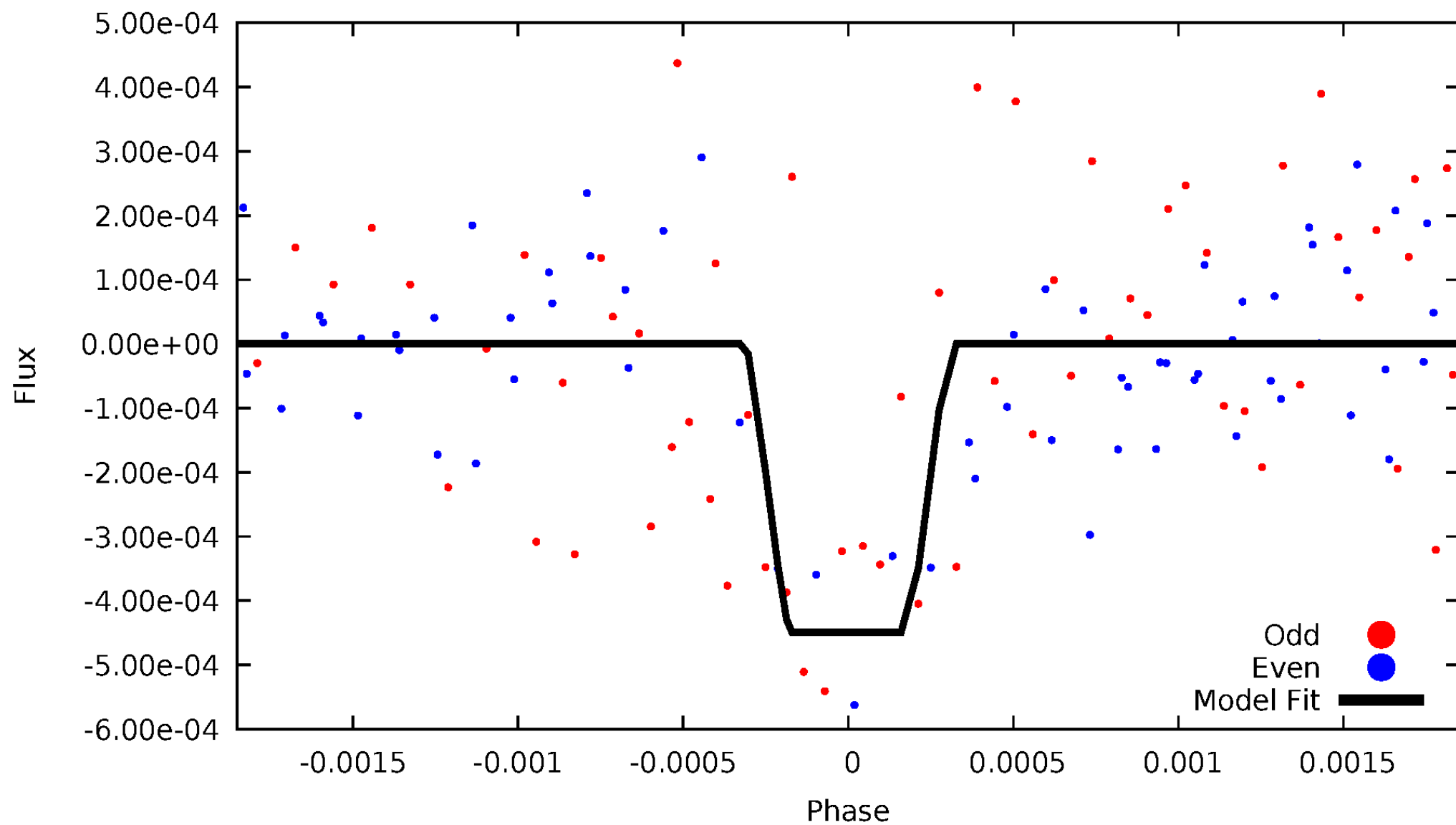
# DV Odd/Even

TCE 006442060-02



# ALT Odd/Even

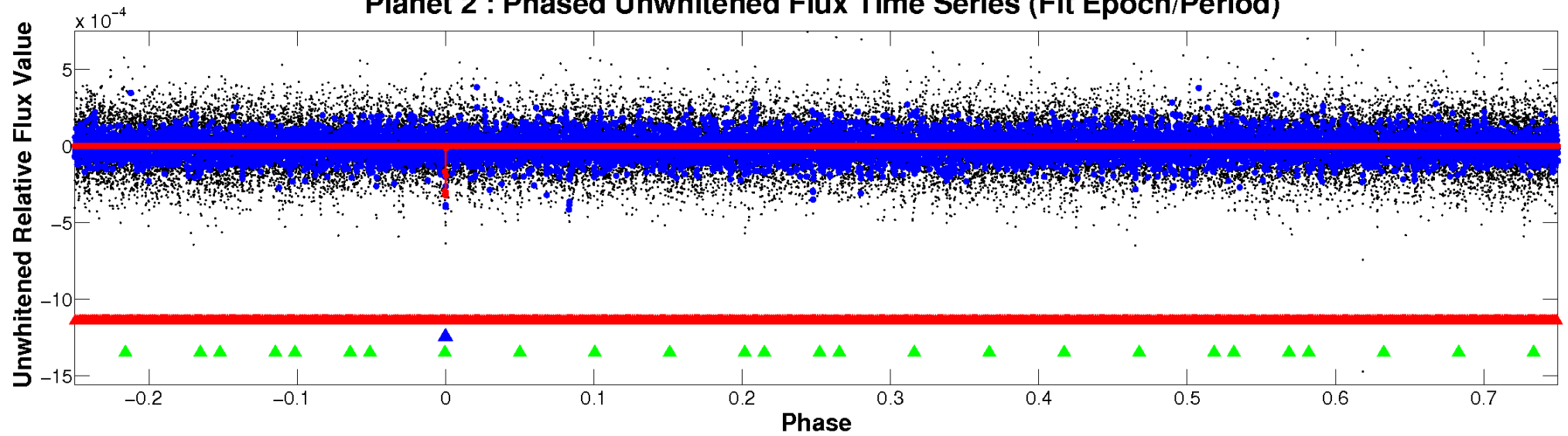
TCE 006442060-02



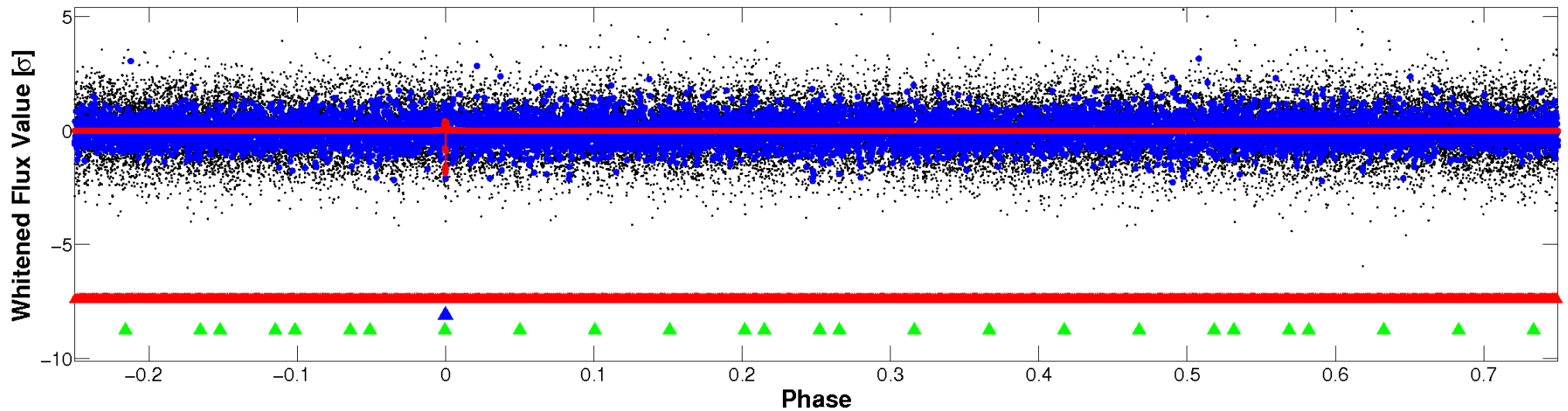


# Non-Whitened Vs. Whitened Light Curve

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

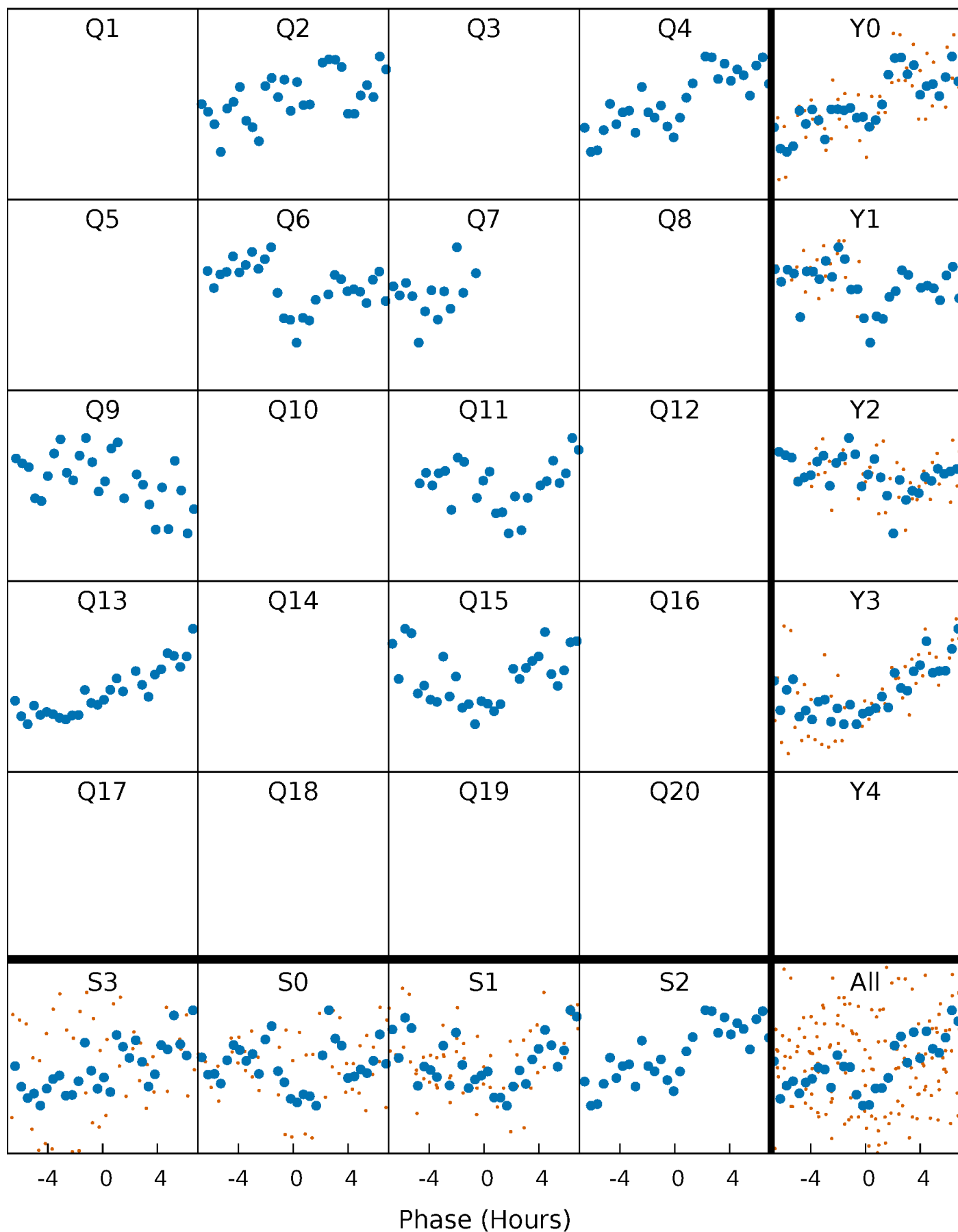


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



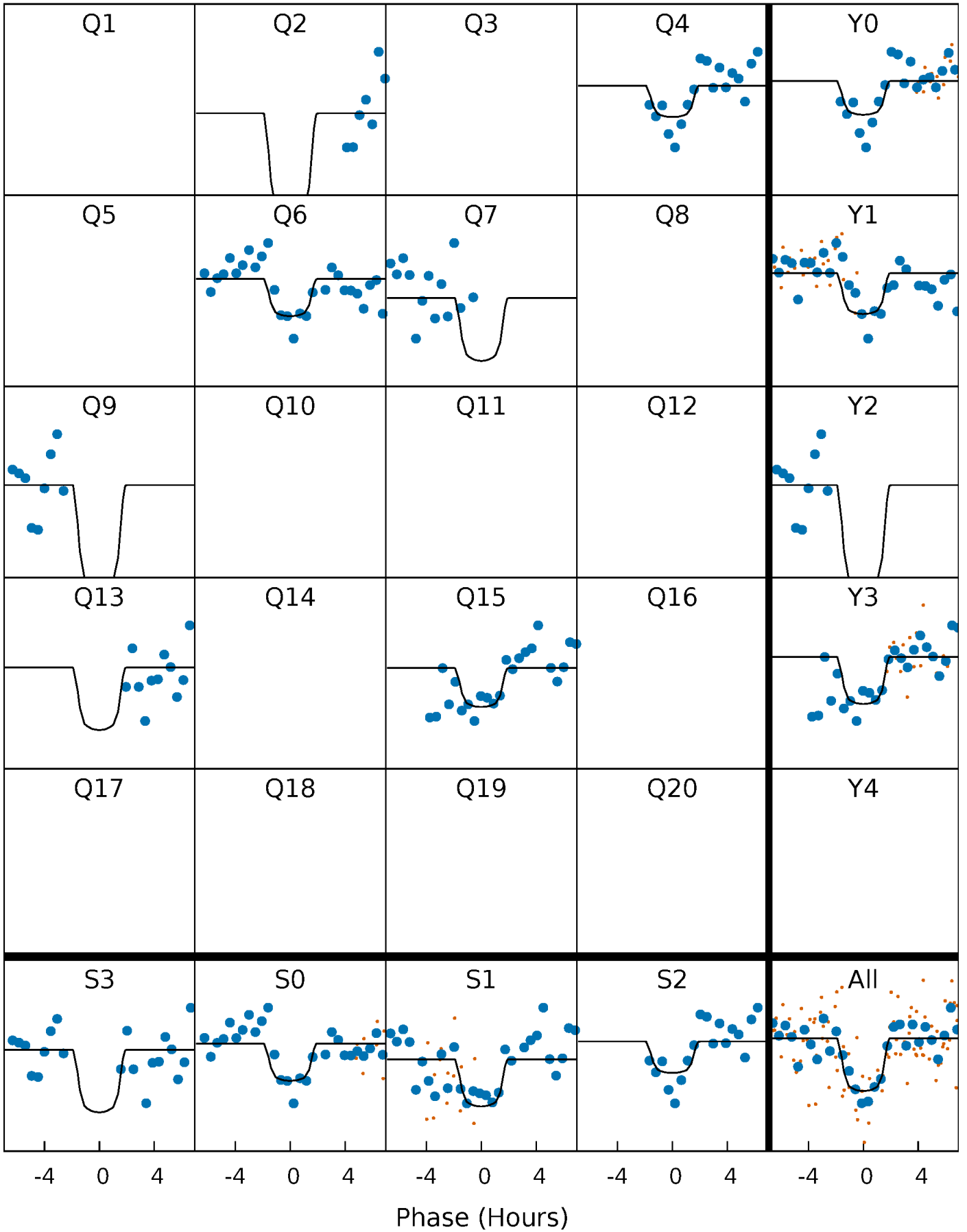
# PDC Quarter-Phased Transit Curves

TCE 006442060-02 P=176.598516 Days  $T_0=189.772096$  (BKJD)



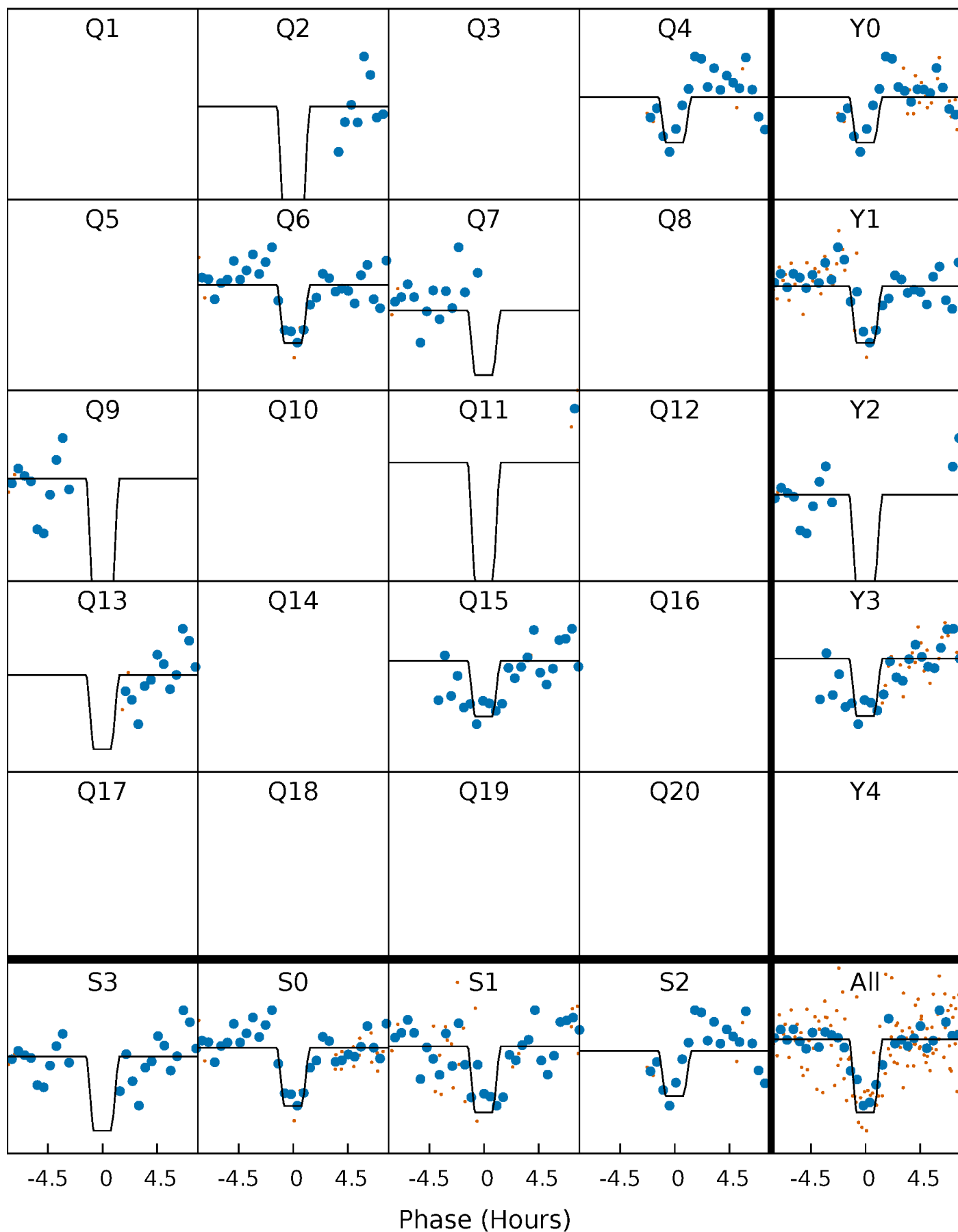
# DV Quarter-Phased Transit Curves

TCE 006442060-02 P=176.598516 Days  $T_0=189.772096$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

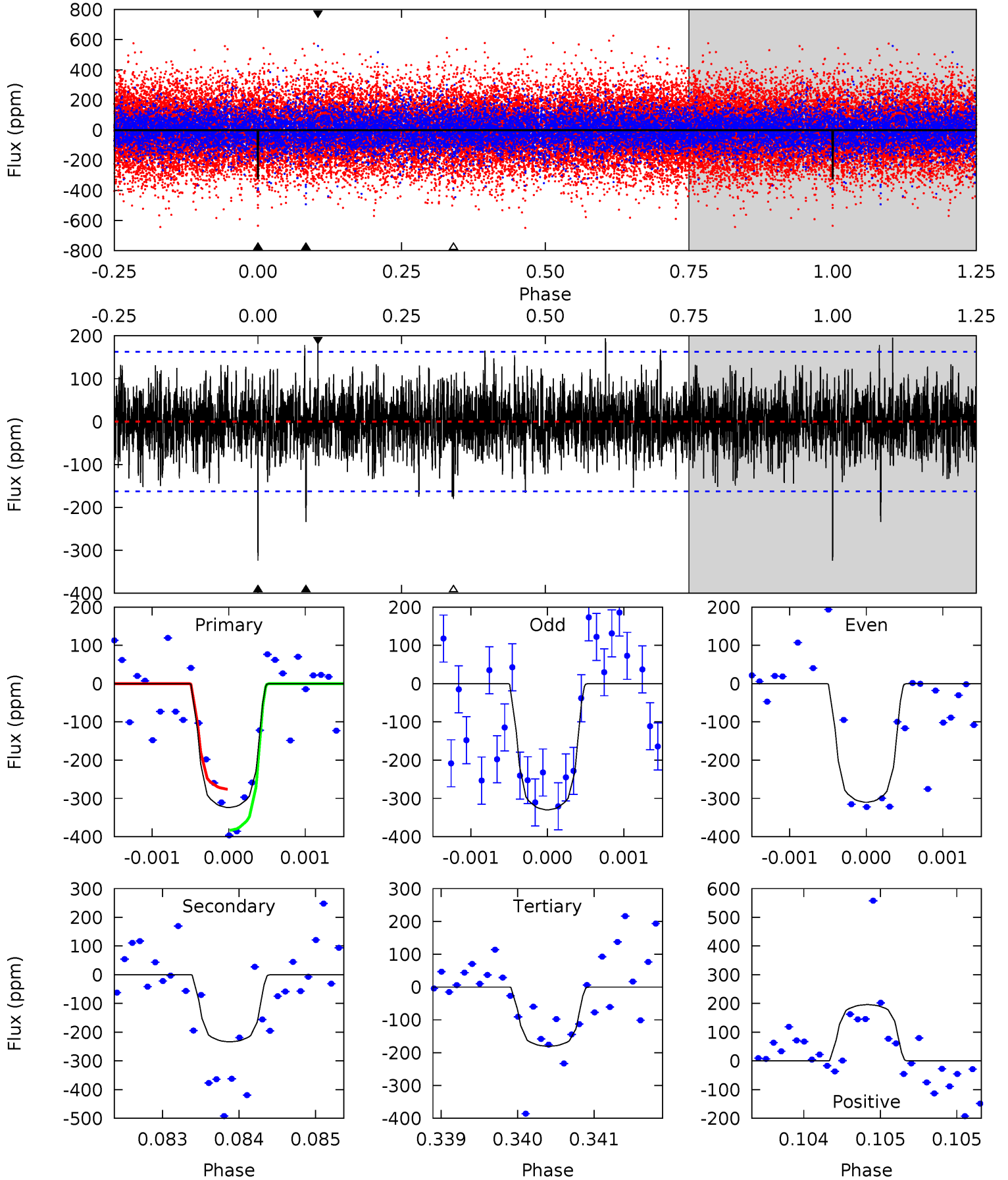
TCE 006442060-02 P=176.596197 Days  $T_0=189.789651$  (BKJD)



# DV Model-Shift Uniqueness Test

006442060-02, P = 176.598516 Days, E = 13.173580 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
10.9	7.85	6.07	6.58	5.47	3.32	1.65	4.82	4.30	1.79	1.27	0.32	0.83	0.38	1.81

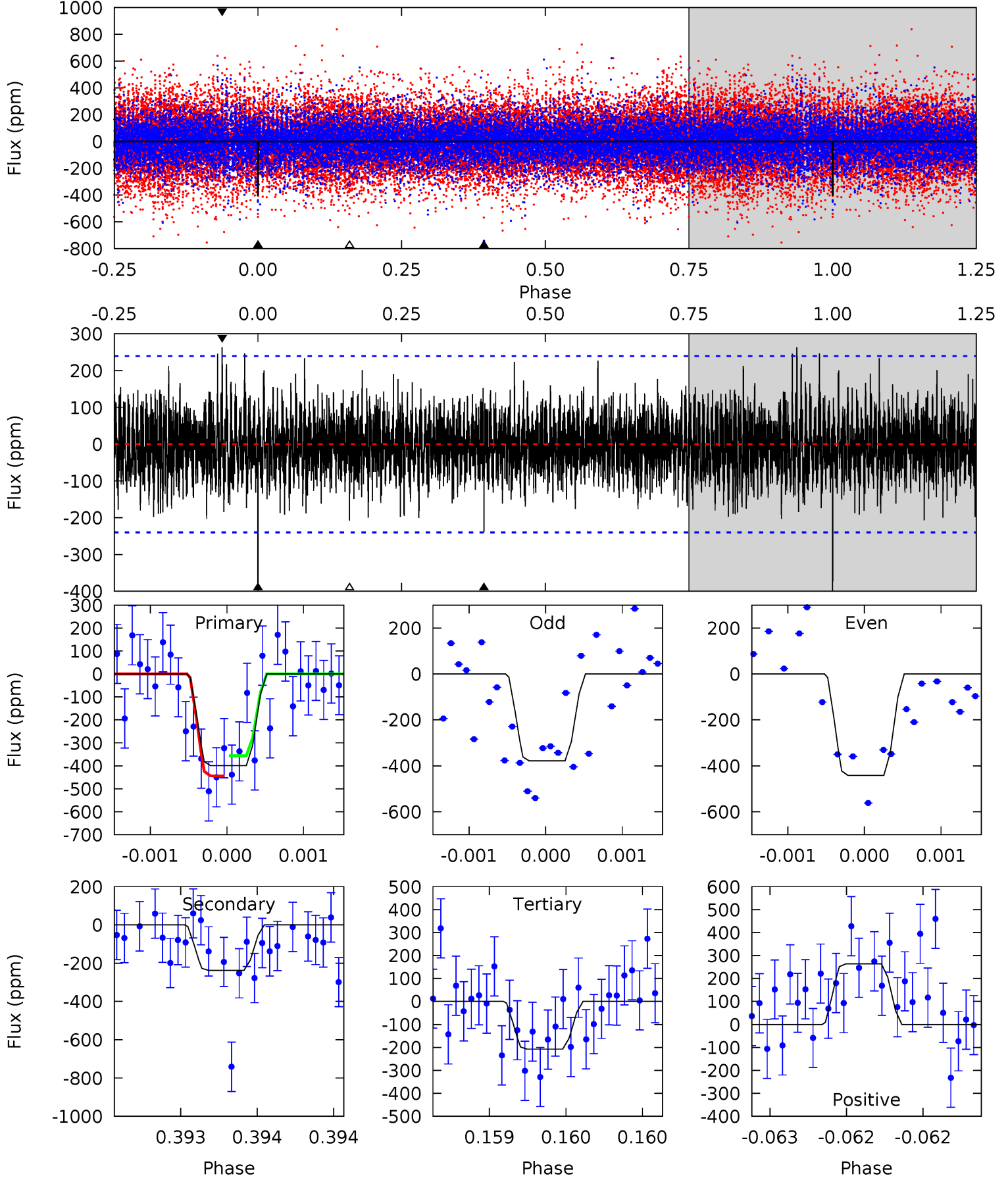




# Alt Model-Shift Uniqueness Test

006442060-02, P = 176.596197 Days, E = 13.193454 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
9.22	5.47	4.78	6.08	5.53	3.42	1.45	4.44	3.14	0.69	-0.61	0.70	0.92	0.40	1.01



### Stellar Parameters For KIC 006442060

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7090^{+191}_{-233}$	$3.545^{+0.336}_{-0.084}$	$-0.300^{+0.300}_{-0.250}$	$3.774^{+0.343}_{-1.458}$	$1.821^{+0.192}_{-0.357}$	$0.048^{+0.116}_{-0.013}$
	+3%/-3%	+9%/-2%	+100%/-83%	+9%/-39%	+11%/-20%	+242%/-26%
Source	PHO1	FLK73	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 006442060-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-234 \pm 30$	$7.48^{+3.61}_{-3.32}$	$960^{+49}_{-79}$	$6223^{+2388}_{-993}$	$1314^{+2925}_{-722}$
Alt.	$-237 \pm 43$	$8.21^{+3.47}_{-3.19}$	$960^{+55}_{-84}$	$5941^{+1718}_{-848}$	$1064^{+1869}_{-549}$

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

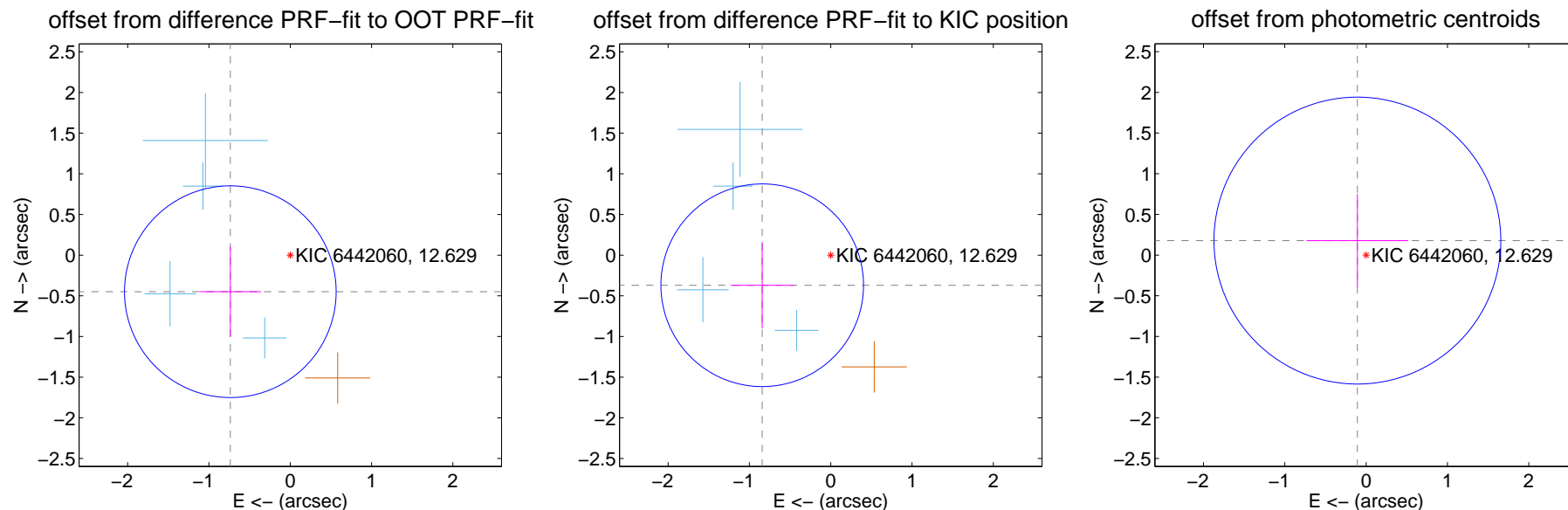
## DV Centroid Data

Supplemental centroid analysis for 006442060-02. Kepler magnitude: 12.63. Transit SNR 7.29

There are 4 quarters with good PRF difference image offsets

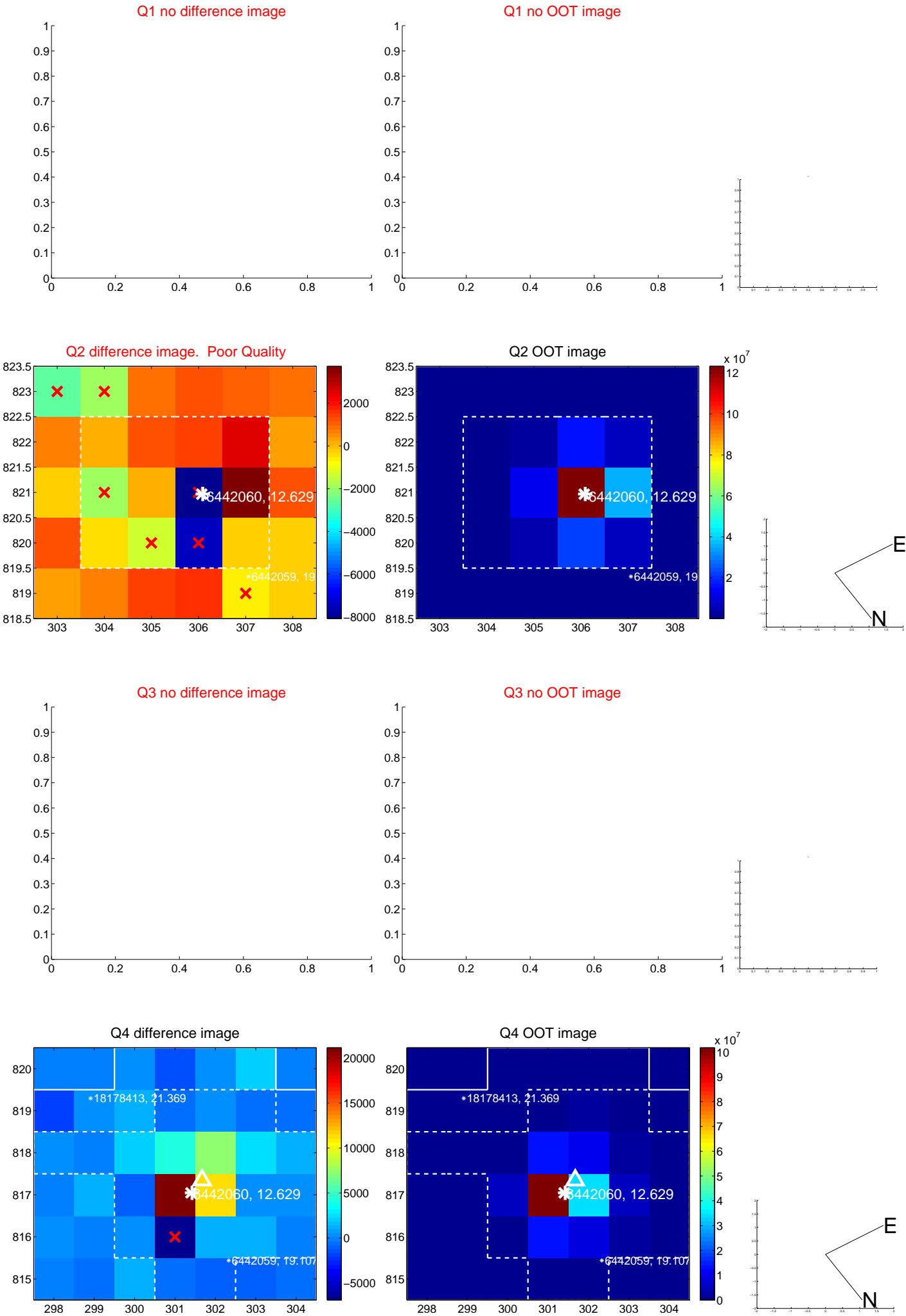
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.863 \pm 0.434$	1.99	$0.737 \pm 0.379$	$-0.449 \pm 0.556$
PRF-fit source offset from KIC position	$0.920 \pm 0.415$	2.22	$0.842 \pm 0.389$	$-0.370 \pm 0.531$
photometric centroid source offset	$0.21 \pm 0.59$	0.35	$0.11 \pm 0.63$	$0.18 \pm 0.57$

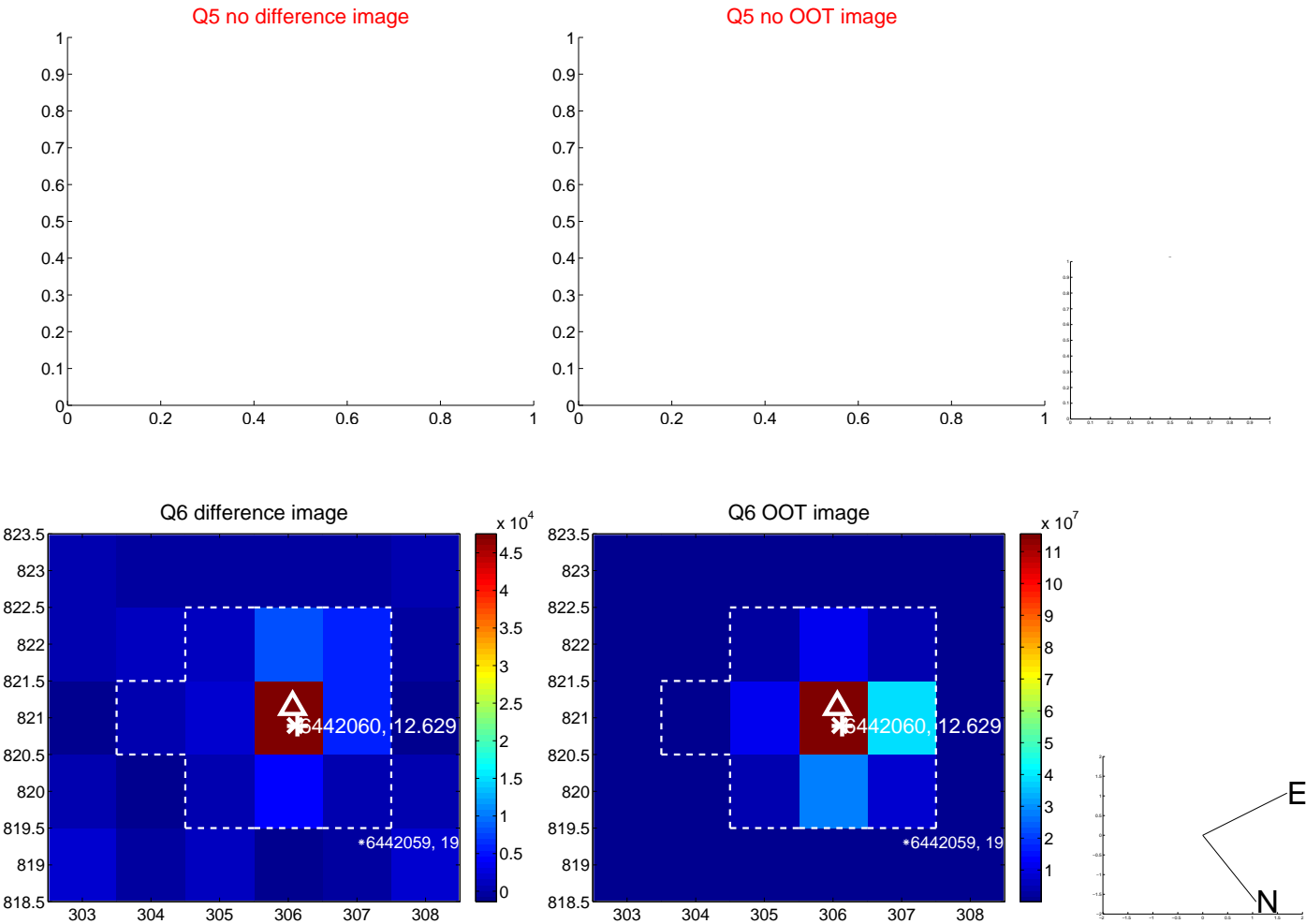


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

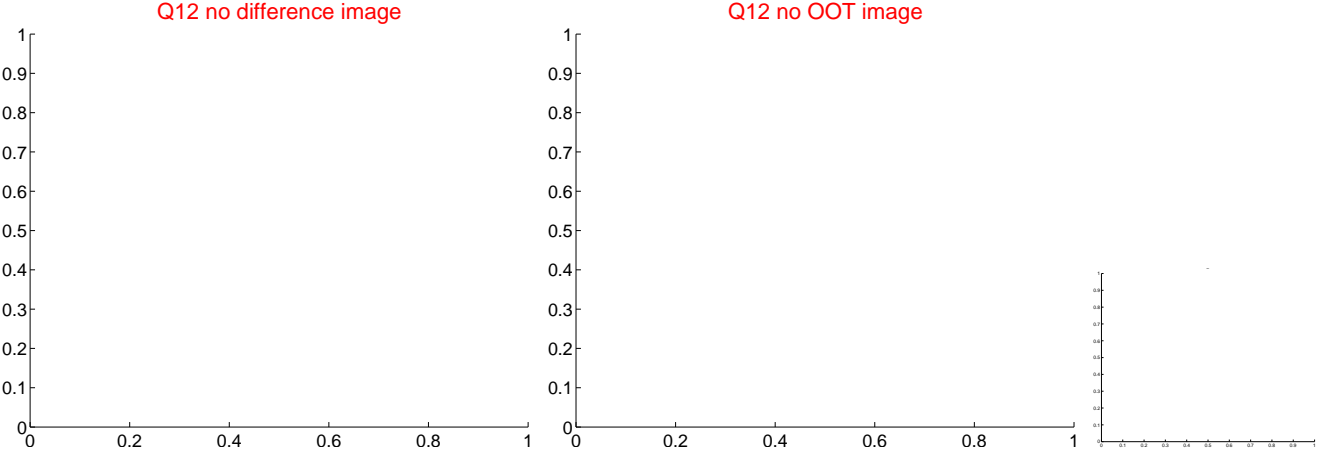
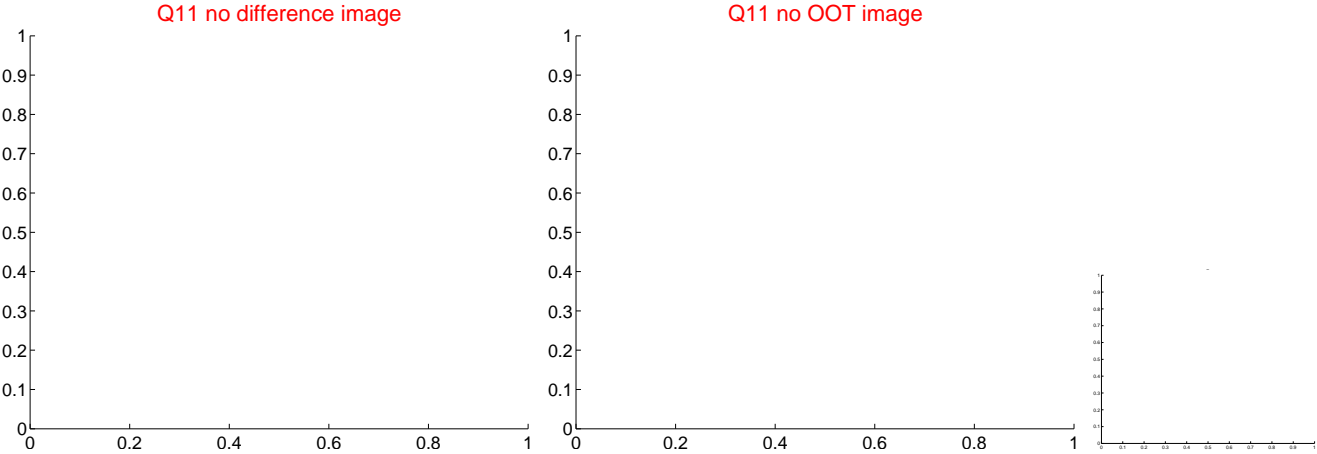
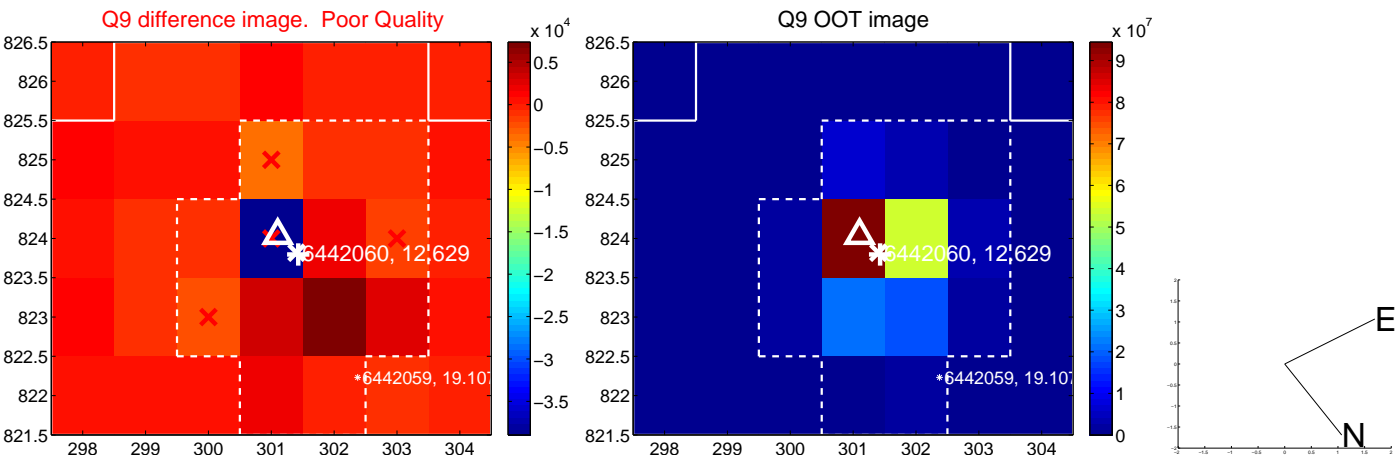


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

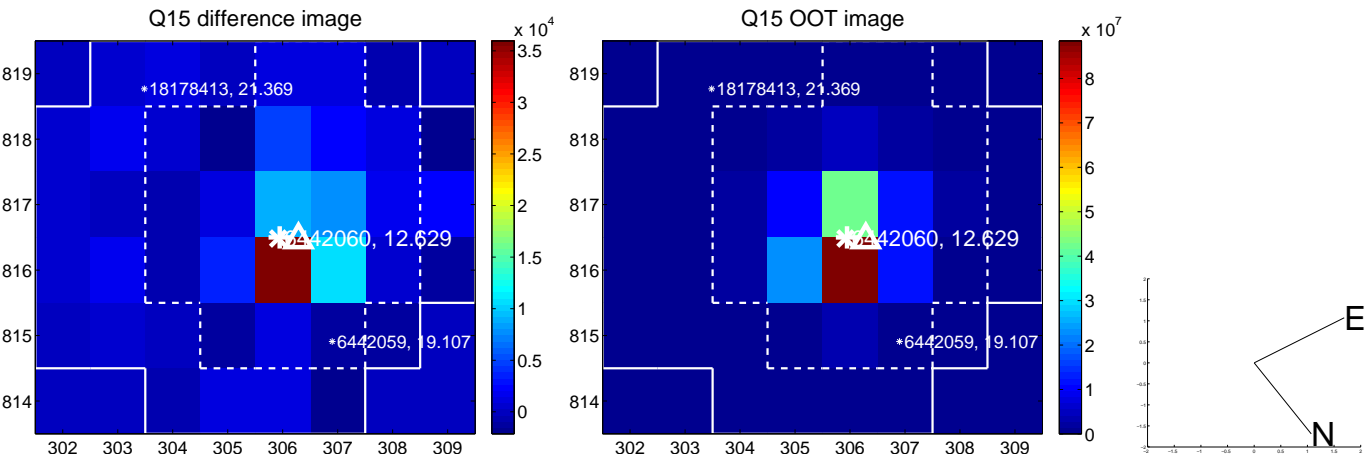
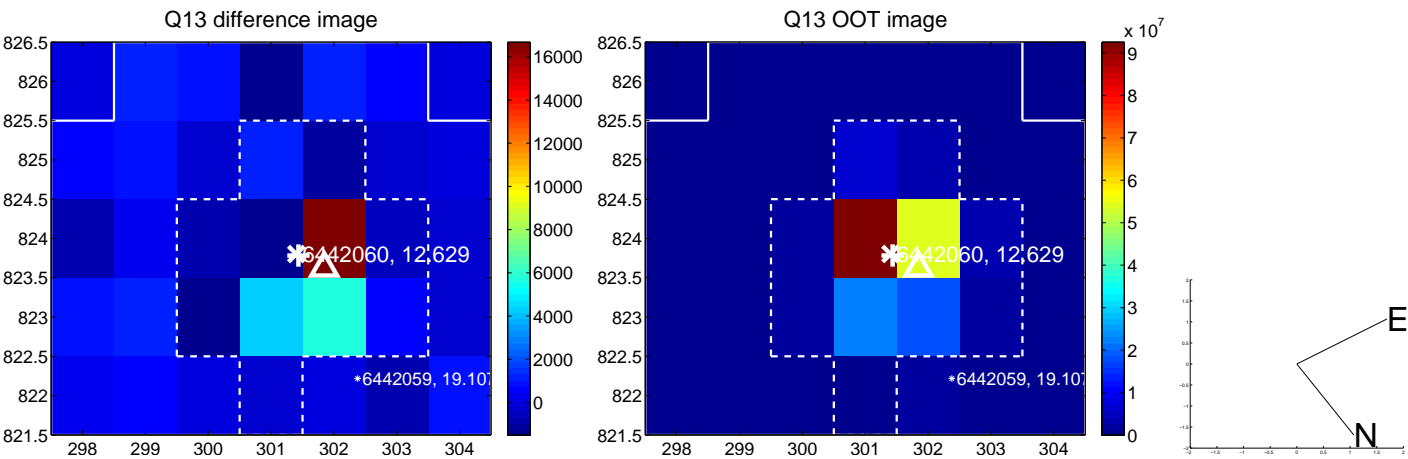




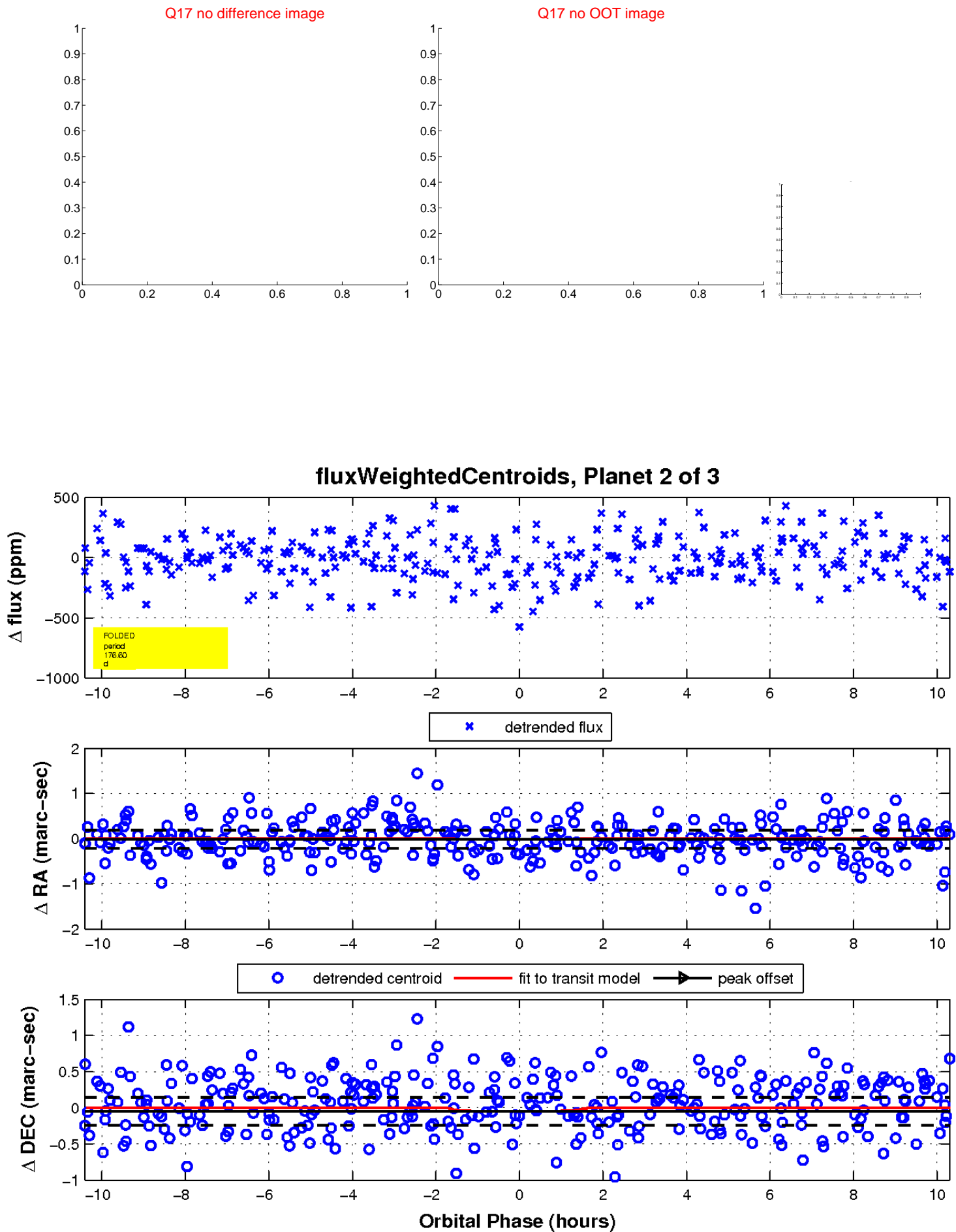
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

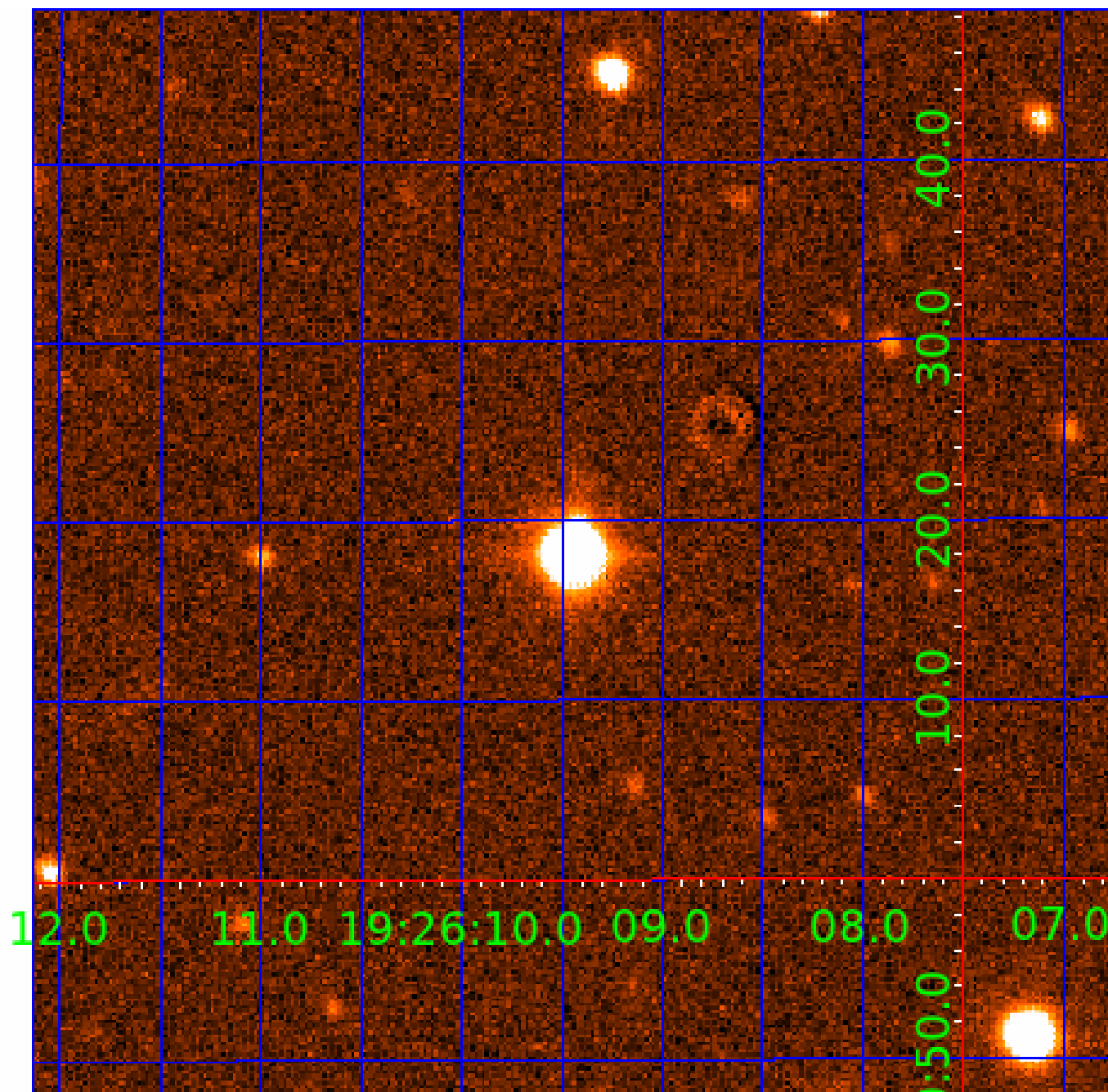


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006442060

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006442060-01	OBS	No	1.377763	131.728487	31.5	5.108	9.9	8.9	3.77	7090	3.77	36794.37
006442060-02	OBS	No	176.598516	189.772096	322.3	3.476	7.5	7.3	3.77	7090	7.96	56.93
006442060-03	OBS	No	55.891371	178.432938	138.2	6.421	7.3	7.2	3.77	7090	4.92	263.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006442060-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006442060-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
006442060-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

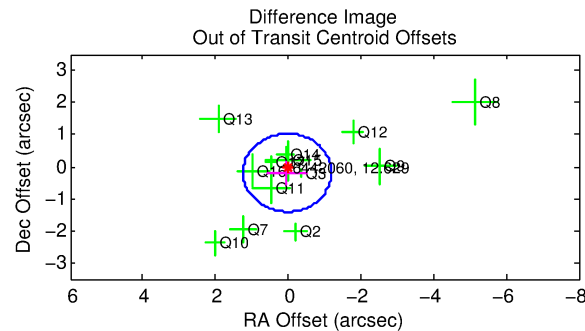
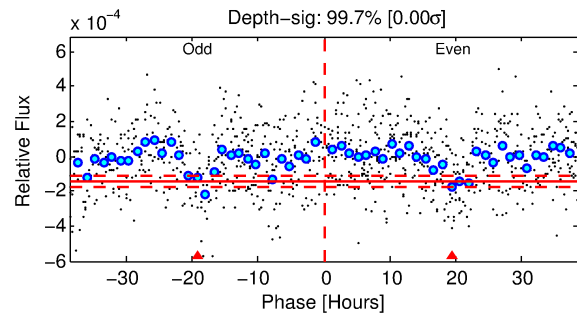
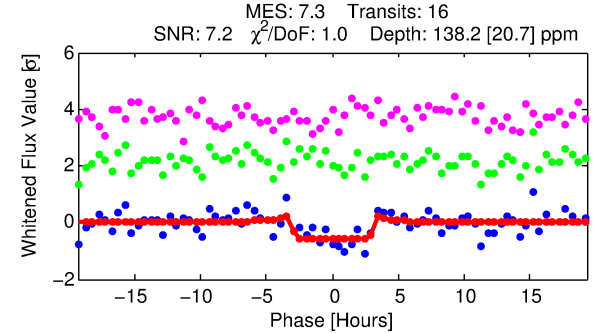
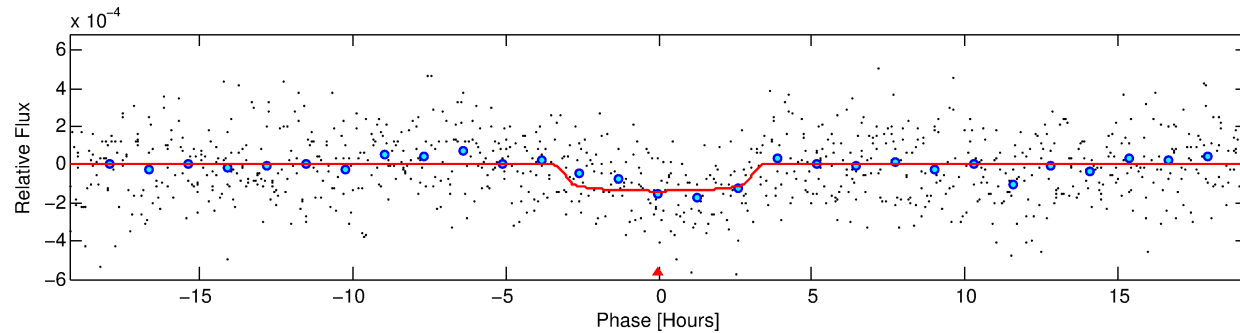
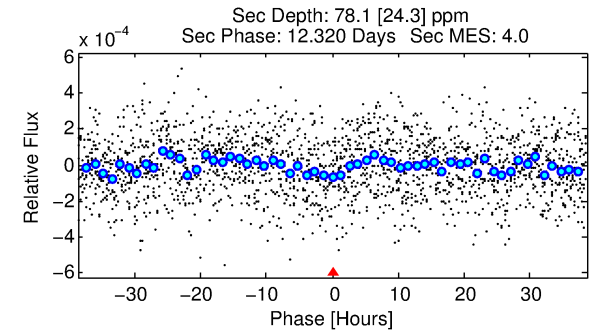
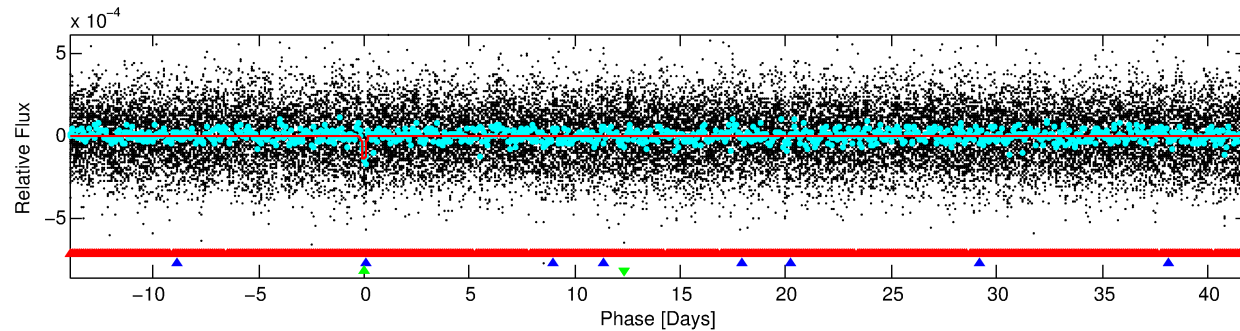
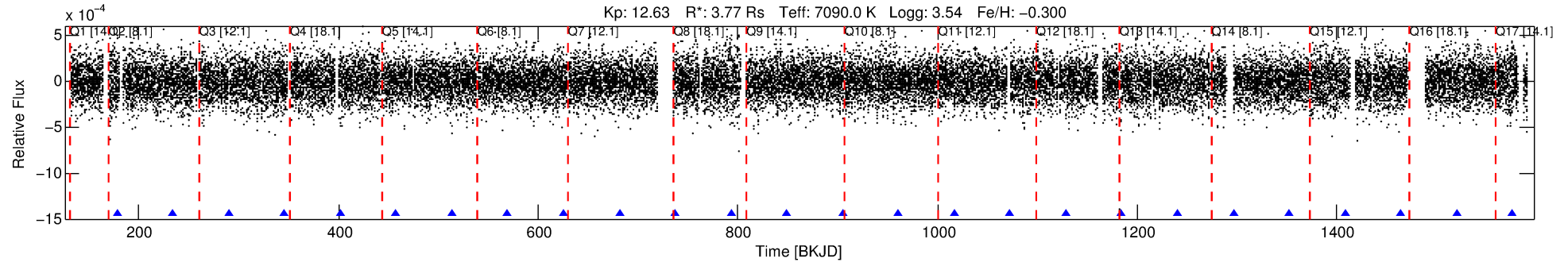
## Ephemeris Match Information For 006442060-03

No Significant Match Found



# DV One-Page Summary

KIC: 6442060 Candidate: 3 of 3 Period: 55.891 d



## DV Fit Results:

Period = 55.89137 [0.00080] d  
Epoch = 178.4329 [0.0112] BKJD  
Rp/R\* = 0.0119 [0.0053]  
a/R\* = 40.52 [98.41]  
b = 0.81 [1.05]  
Seff = 263.97 [156.09]  
Teq = 1028 [152] K  
Rp = 4.92 [2.88] Re  
a = 0.3495 [0.1274] AU  
Ag = 217.25 [238.54] [0.91σ]  
Teffp = 6101 [1439] K [3.51σ]

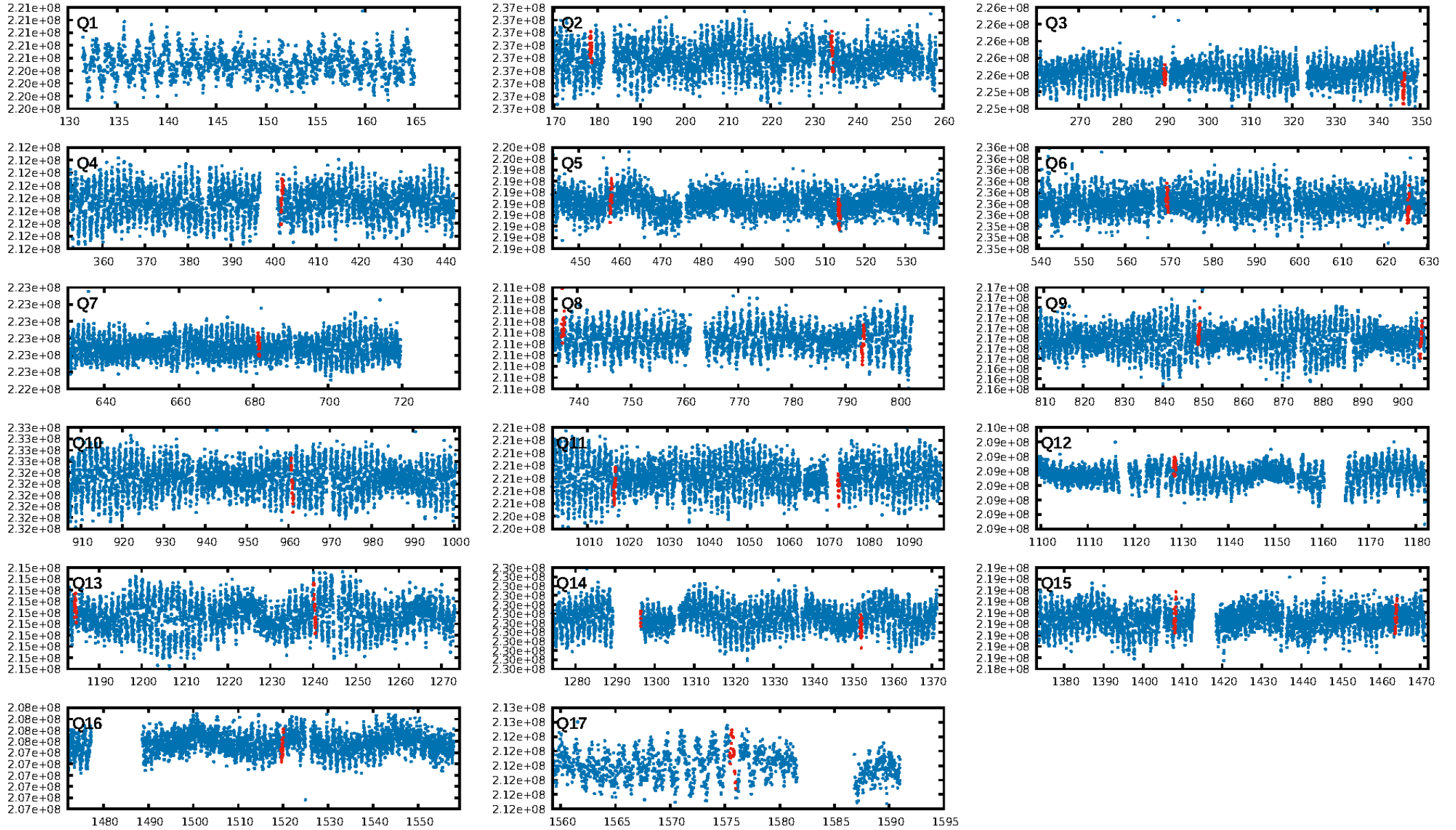
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [159.45σ]  
LongPeriod-sig: 100.0% [396.74σ]  
ModelChiSquare2-sig: 65.9%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 8.80e-09**  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: 8.704  
Centroid-sig: 11.2%  
Centroid-so: 0.660 arcsec [1.18σ]  
OotOffset-rm: 0.193 arcsec [0.48σ]  
KicOffset-rm: 0.213 arcsec [0.44σ]  
OotOffset-st: 3/4/3/3 [13]  
KicOffset-st: 3/4/3/3 [13]  
DiffImageQuality-fgm: 0.38 [5/13]  
DiffImageOverlap-fno: 0.13 [2/15]

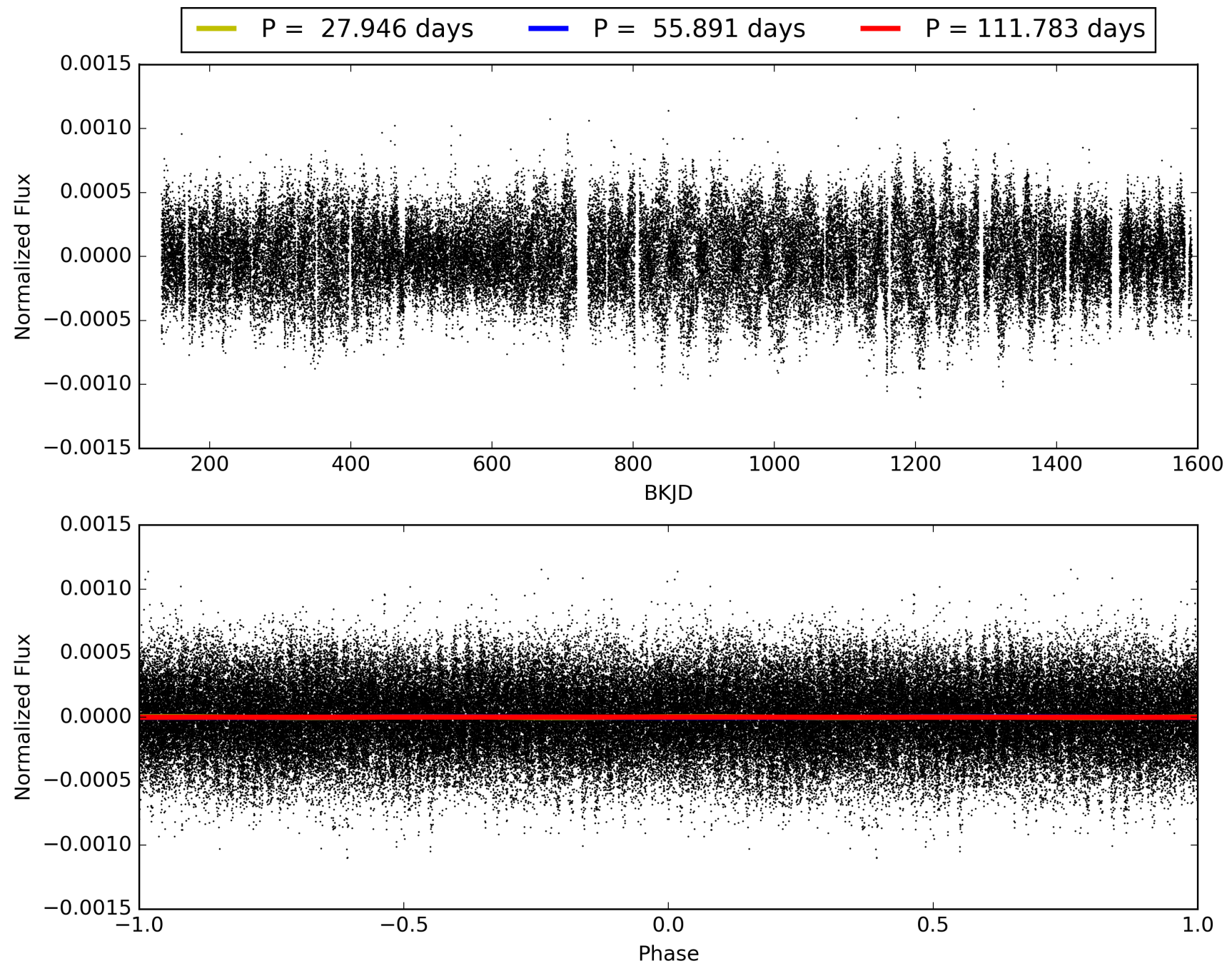
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:44:31 Z

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

# TCE 006442060-03, PDC Light Curves

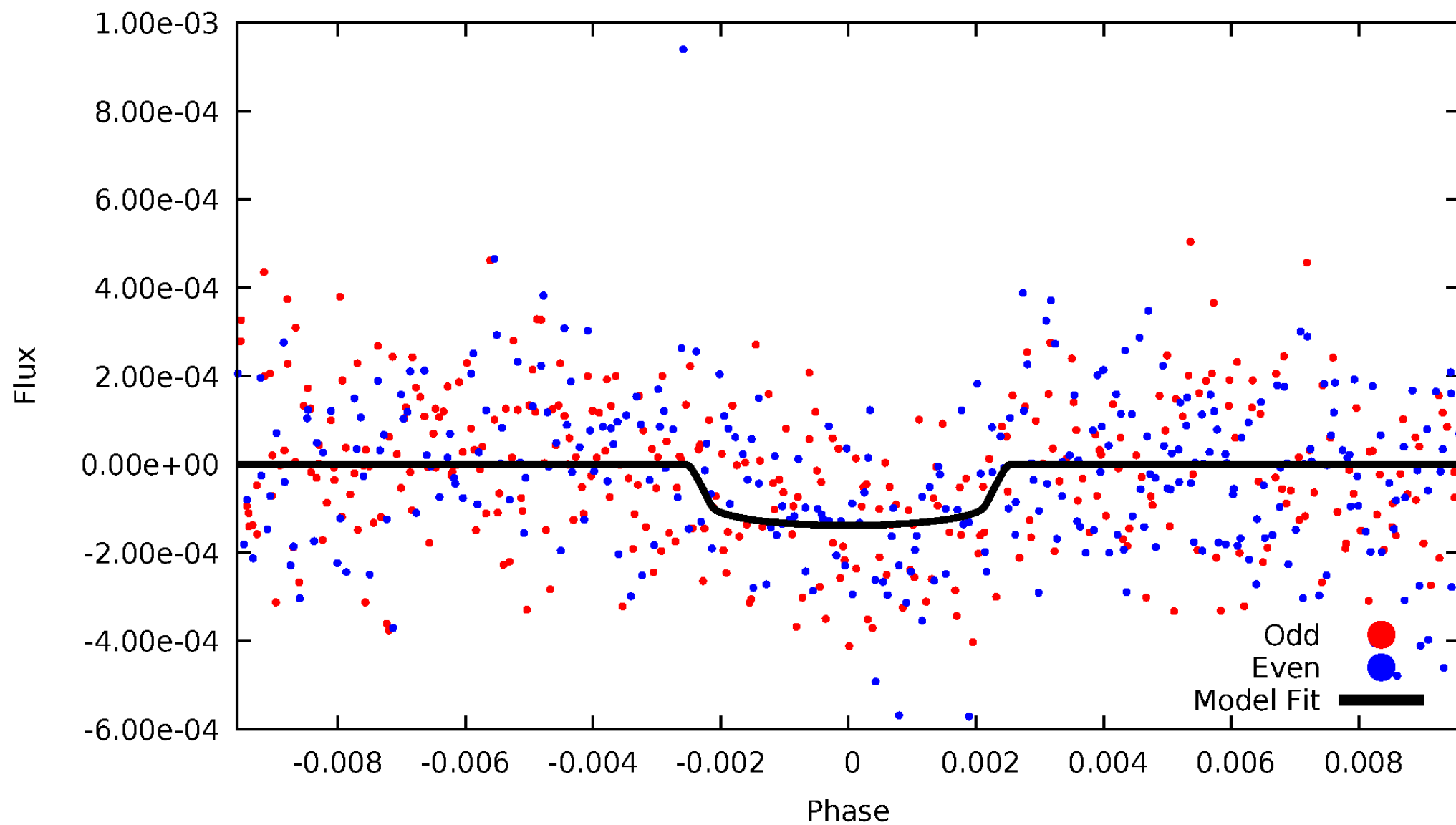


TCE 006442060-03



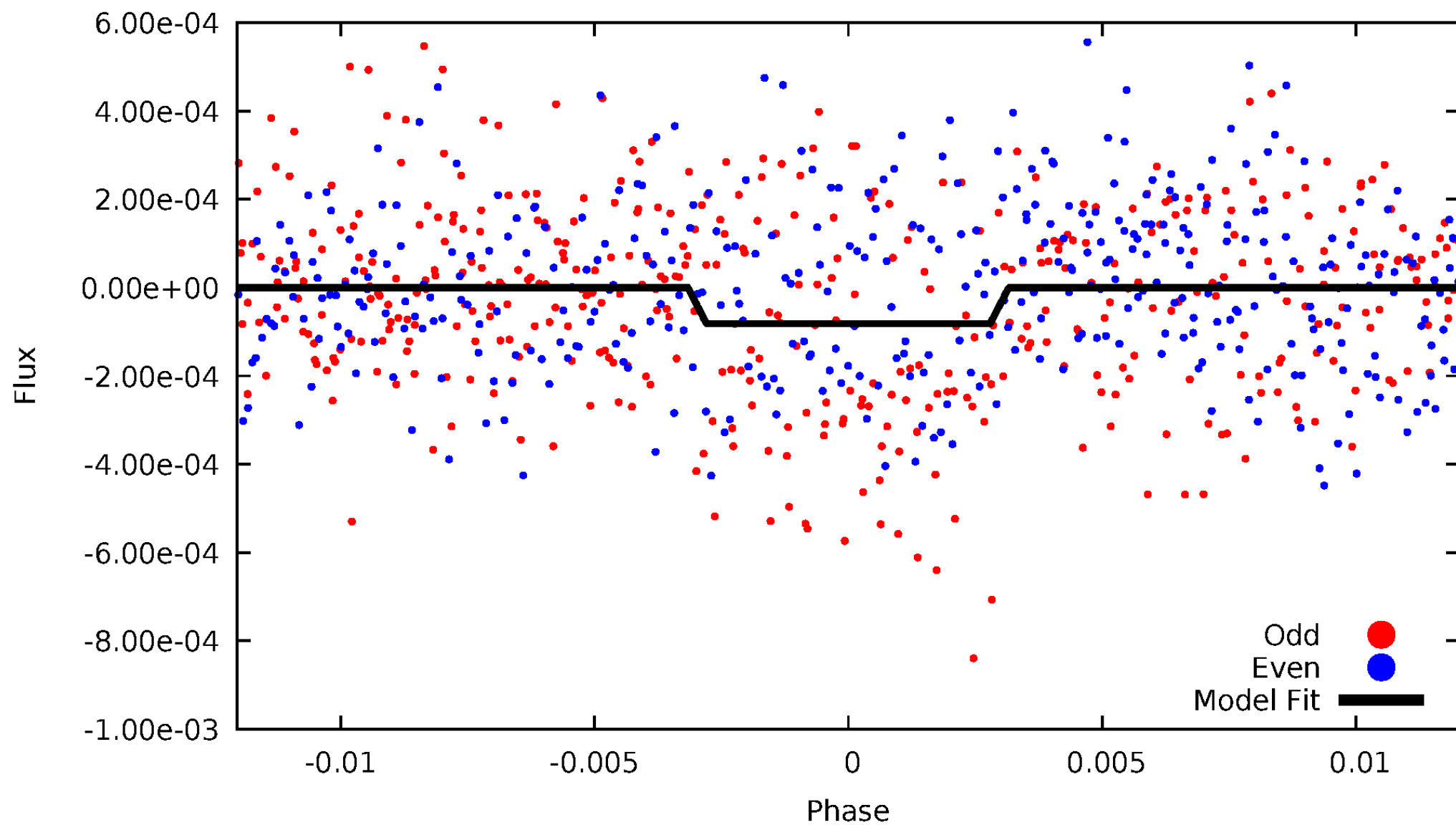
# DV Odd/Even

TCE 006442060-03



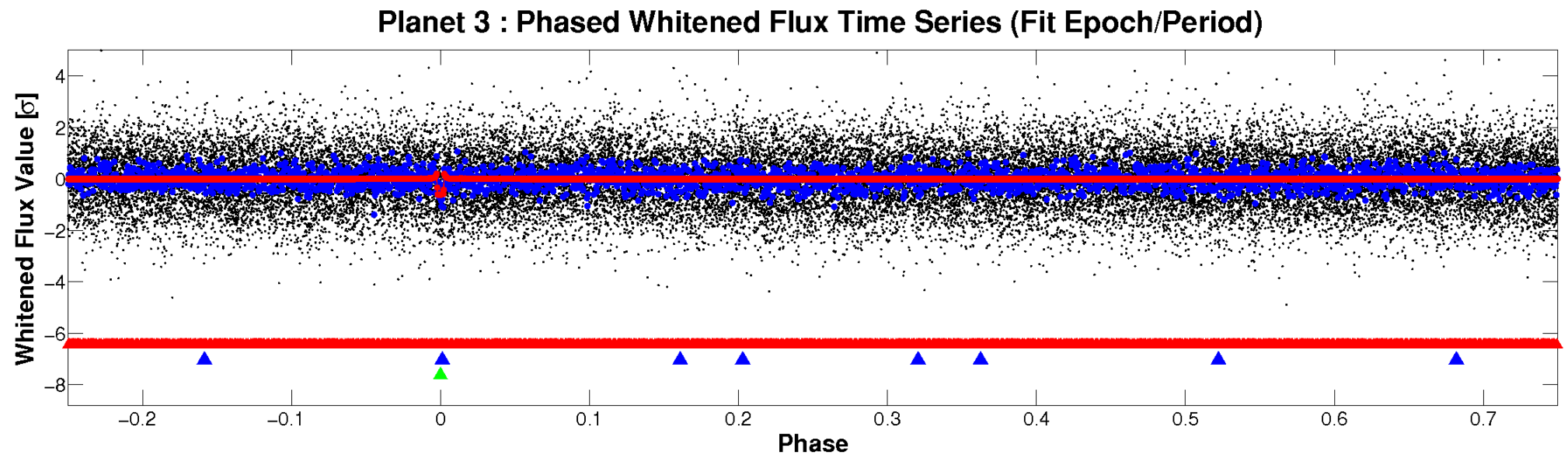
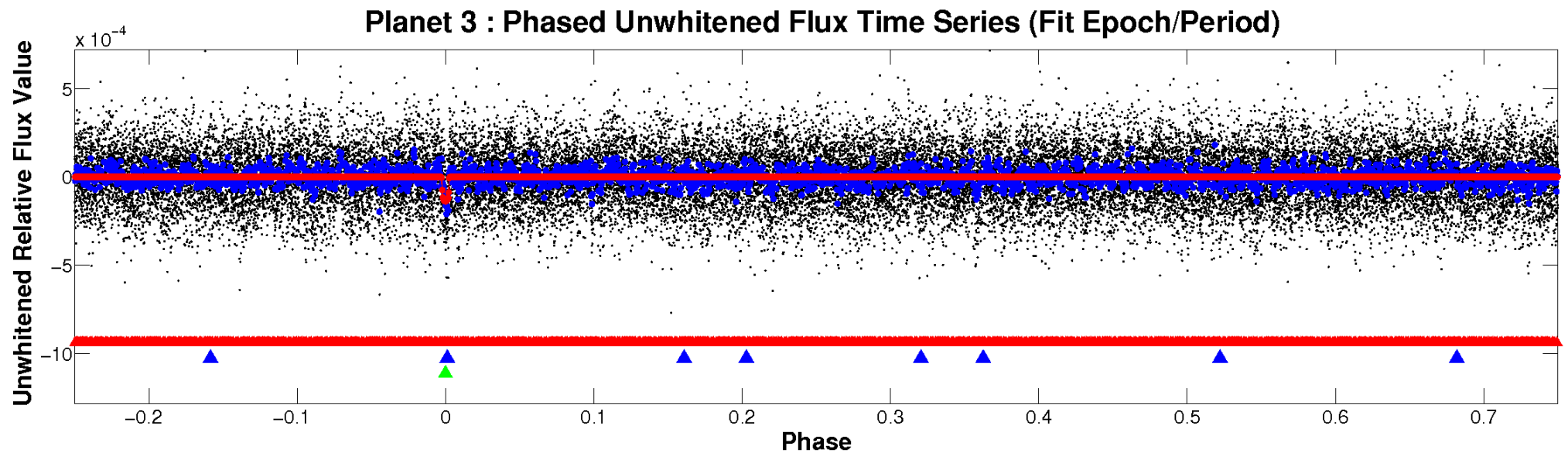
# ALT Odd/Even

TCE 006442060-03





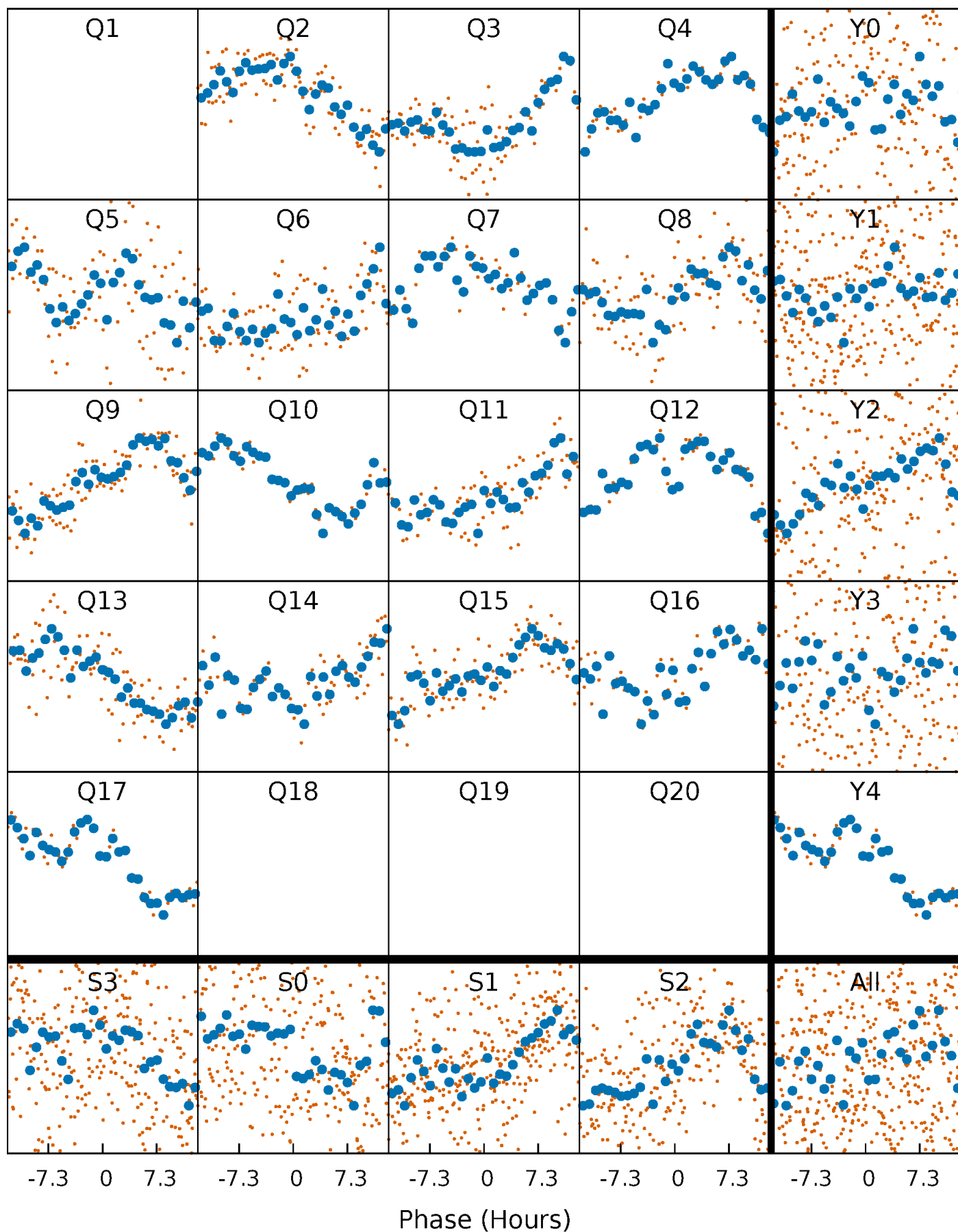
# Non-Whitened Vs. Whitened Light Curve





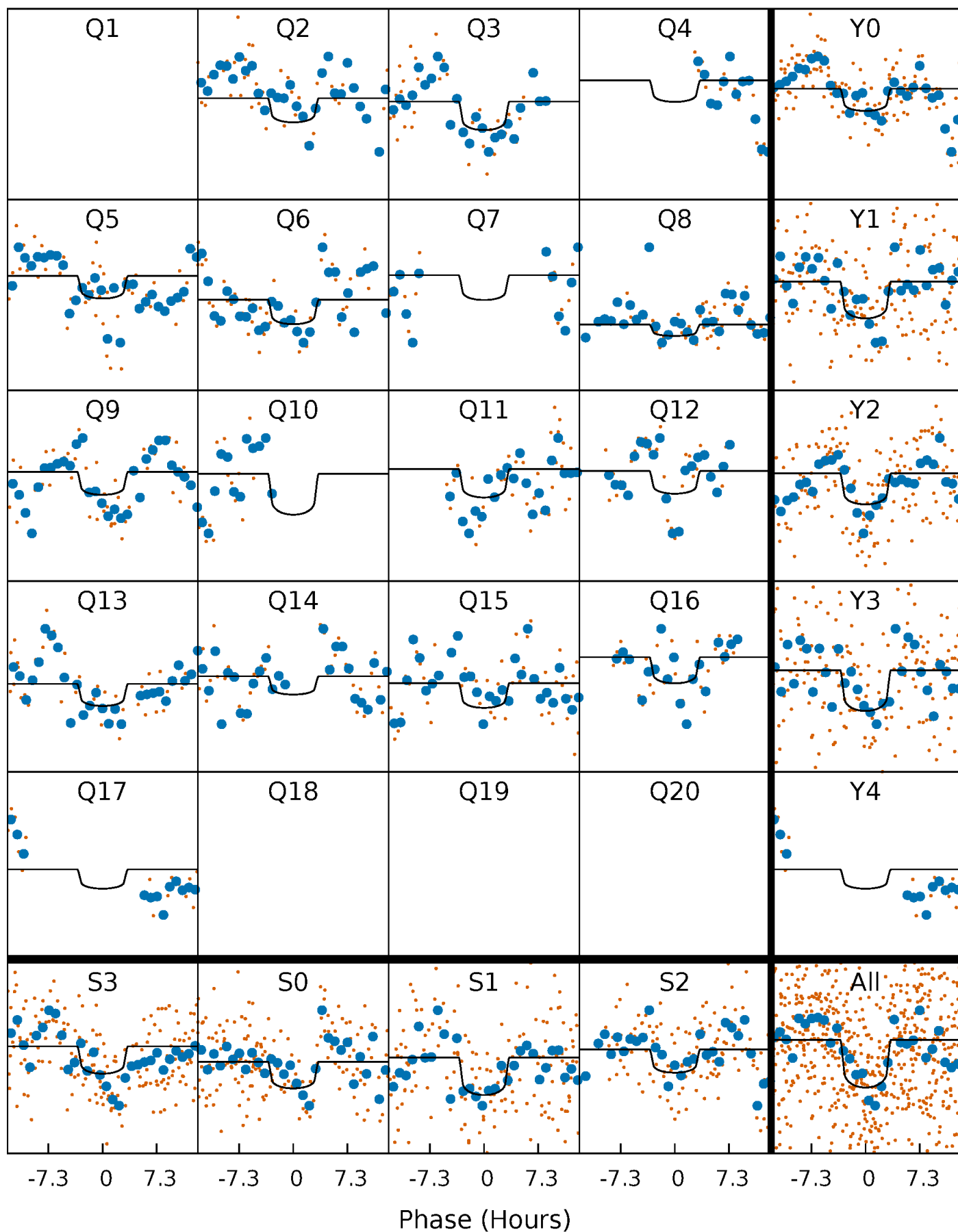
# PDC Quarter-Phased Transit Curves

TCE 006442060-03 P= 55.891371 Days  $T_0=178.432938$  (BKJD)



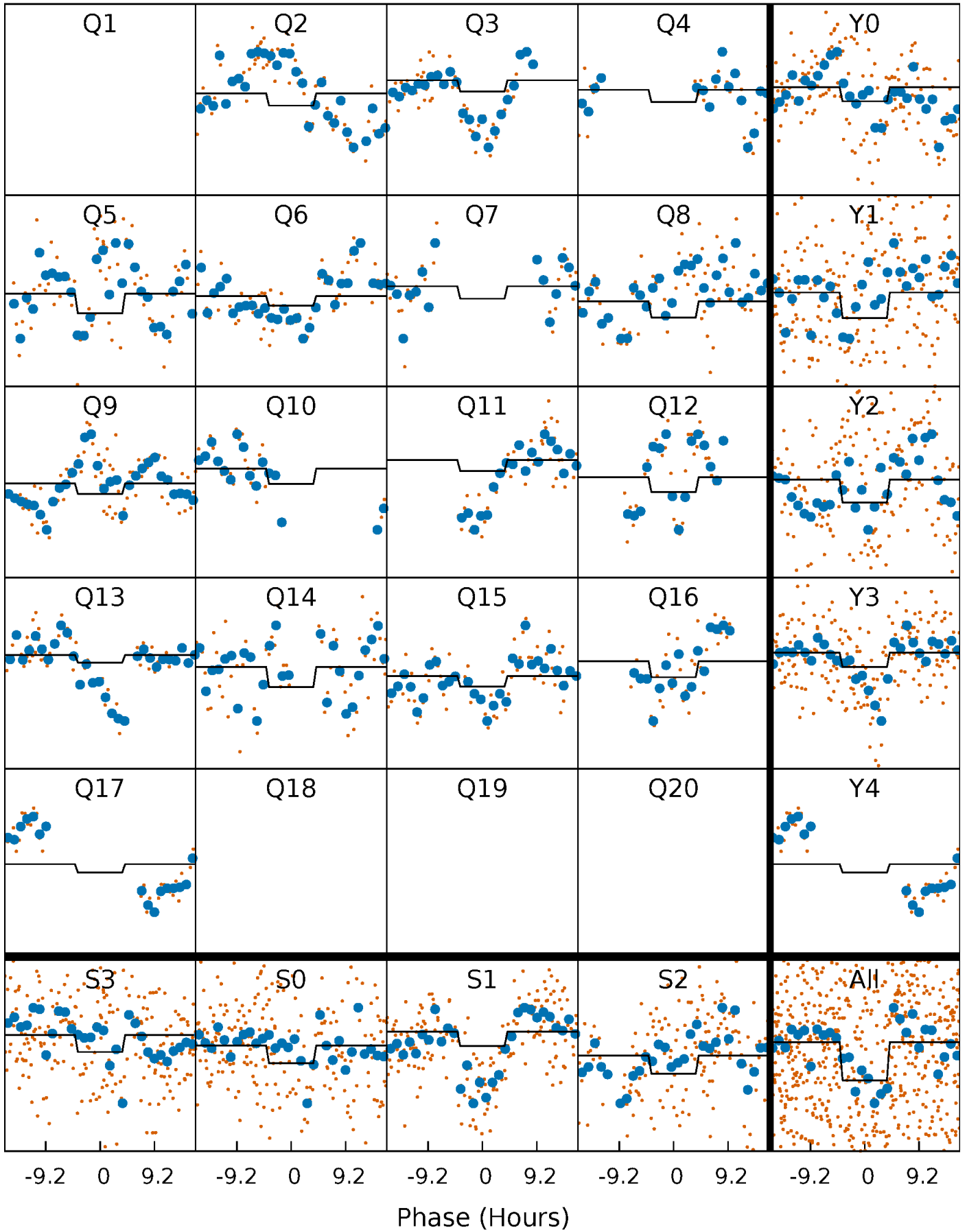
# DV Quarter-Phased Transit Curves

TCE 006442060-03 P= 55.891371 Days  $T_0=178.432938$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

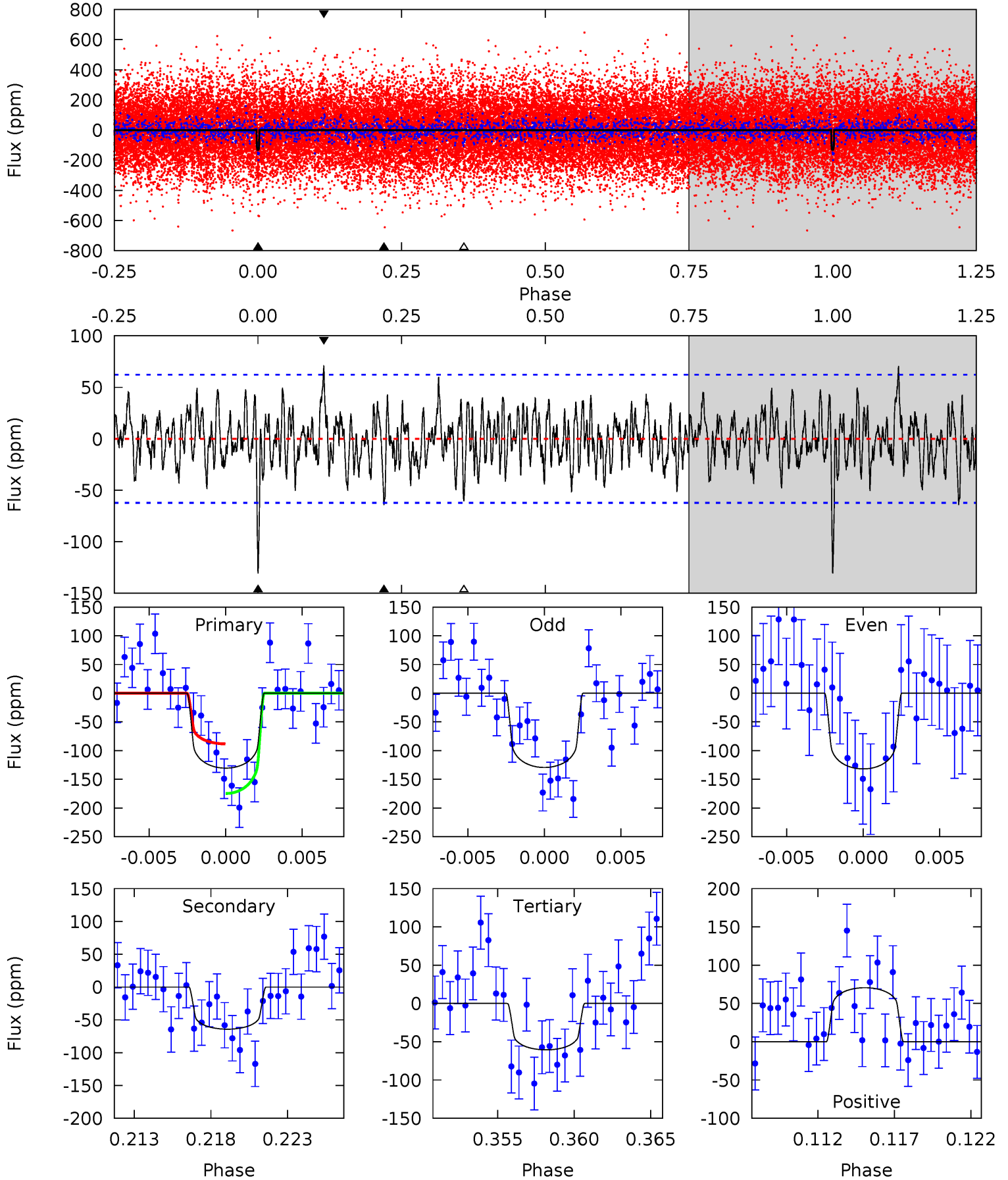
TCE 006442060-03 P= 55.891071 Days  $T_0=178.395895$  (BKJD)



# DV Model-Shift Uniqueness Test

006442060-03, P = 55.891371 Days, E = 122.541567 Days

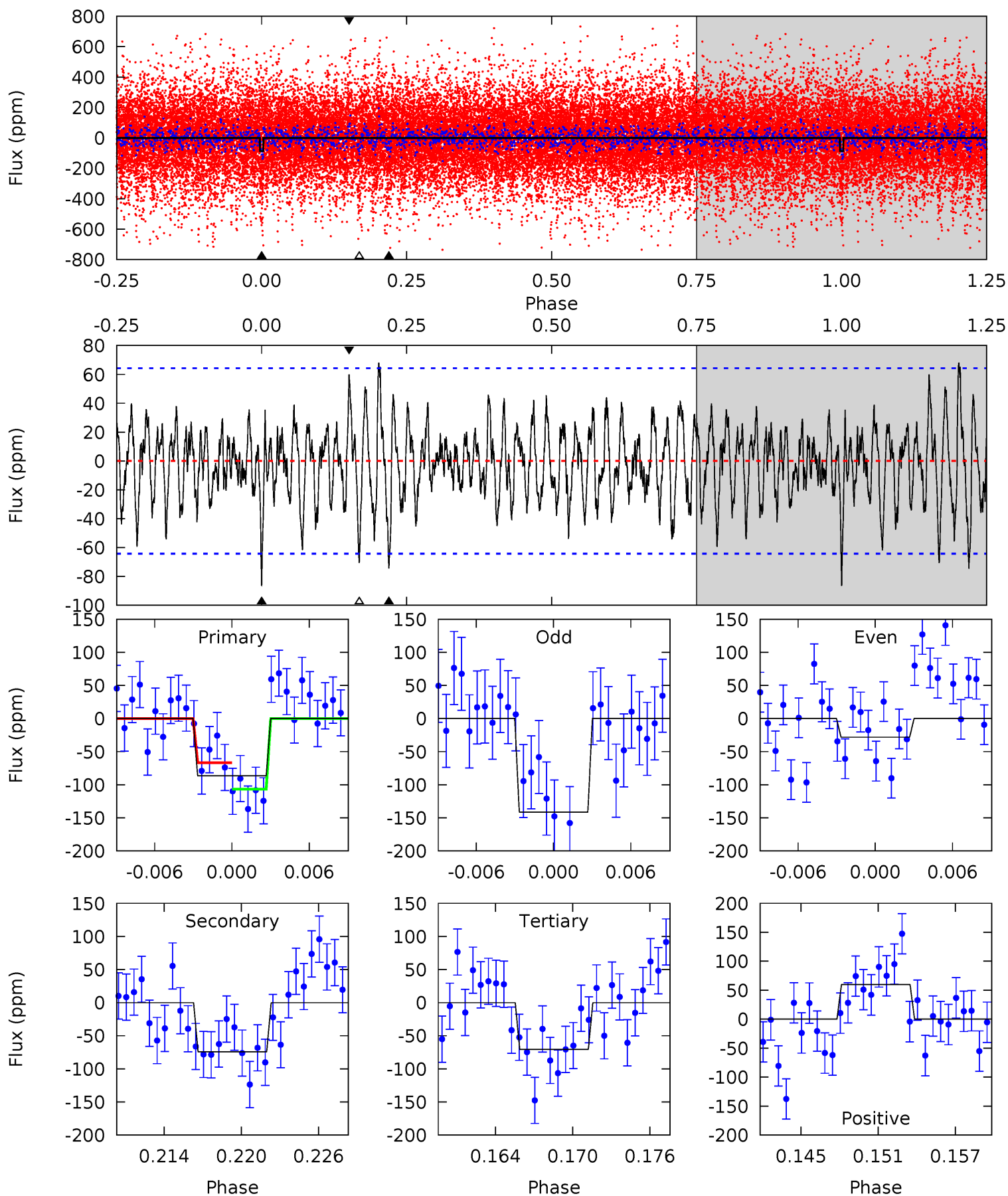
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	5.32	5.02	5.85	5.15	2.80	1.70	5.80	4.98	0.30	-0.53	0.10	0.95	0.35	3.59



# Alt Model-Shift Uniqueness Test

006442060-03, P = 55.891071 Days, E = 122.504824 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
6.88	5.92	5.62	4.76	5.11	2.73	1.75	1.26	2.12	0.30	1.15	4.50	4.83	0.44	1.58



### Stellar Parameters For KIC 006442060

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7090^{+191}_{-233}$	$3.545^{+0.336}_{-0.084}$	$-0.300^{+0.300}_{-0.250}$	$3.774^{+0.343}_{-1.458}$	$1.821^{+0.192}_{-0.357}$	$0.048^{+0.116}_{-0.013}$
	+3%/-3%	+9%/-2%	+100%/-83%	+9%/-39%	+11%/-20%	+242%/-26%
Source	PHO1	FLK73	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 006442060-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-64 \pm 12$	$4.69^{+2.16}_{-2.05}$	$1420^{+69}_{-129}$	$5753^{+1901}_{-896}$	$195^{+401}_{-103}$
Alt.	$-74 \pm 13$	$3.45^{+2.13}_{-1.82}$	$1412^{+78}_{-132}$	$6810^{+4272}_{-1415}$	$406^{+1315}_{-252}$

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



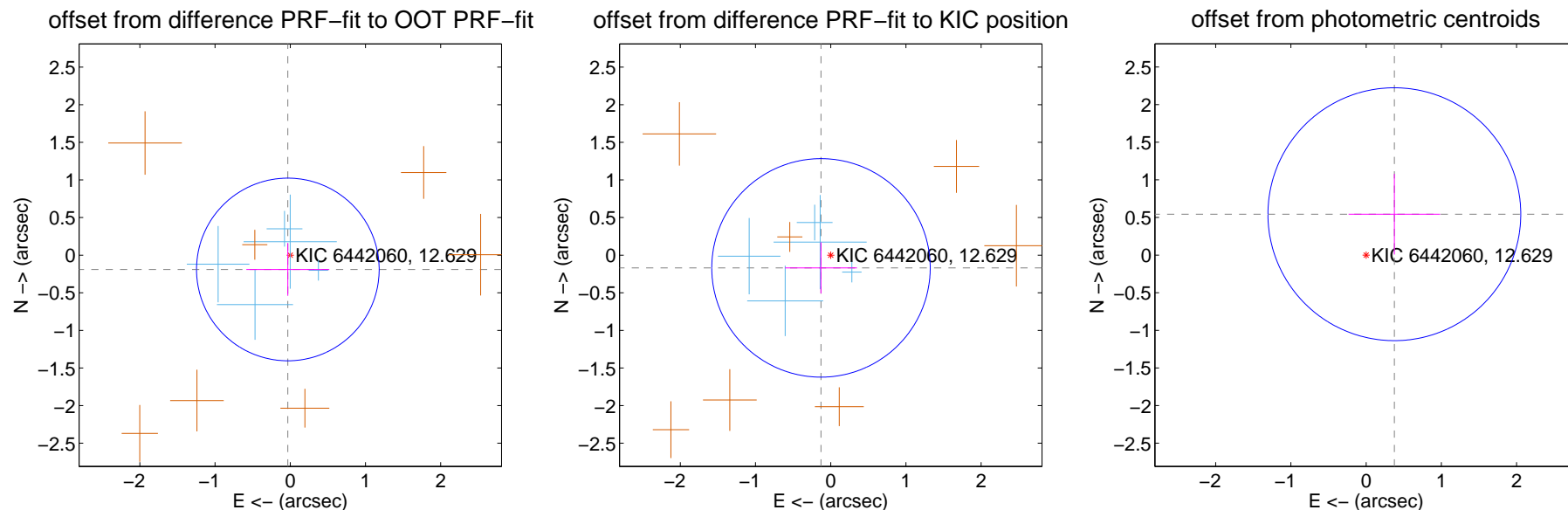
## DV Centroid Data

Supplemental centroid analysis for 006442060-03. Kepler magnitude: 12.63. Transit SNR 7.20

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.193 \pm 0.405$	0.48	$0.032 \pm 0.552$	$-0.190 \pm 0.351$
PRF-fit source offset from KIC position	$0.213 \pm 0.484$	0.44	$0.129 \pm 0.479$	$-0.169 \pm 0.340$
photometric centroid source offset	$0.66 \pm 0.56$	1.18	$-0.38 \pm 0.61$	$0.54 \pm 0.54$



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.

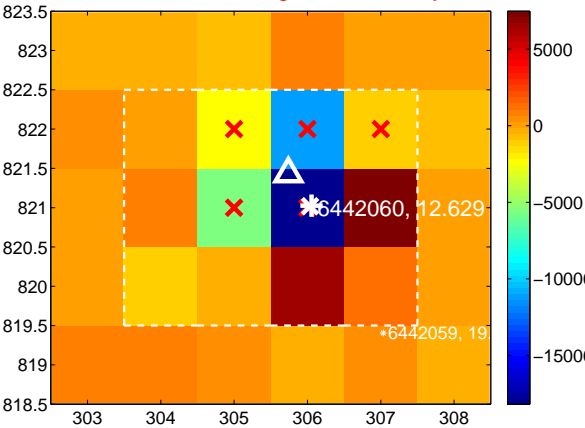
Q1 no difference image



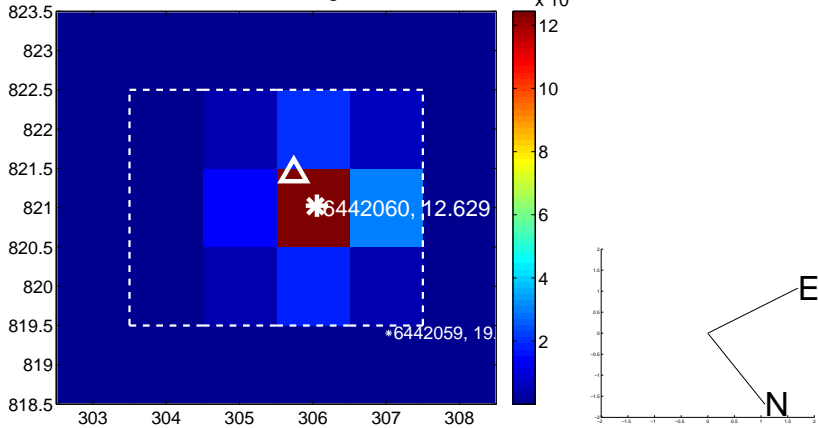
Q1 no OOT image



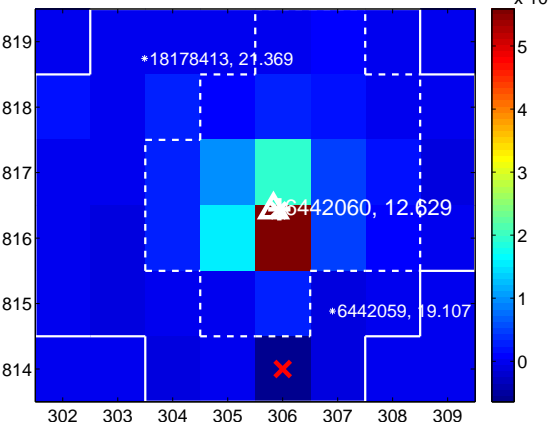
Q2 difference image. Poor Quality



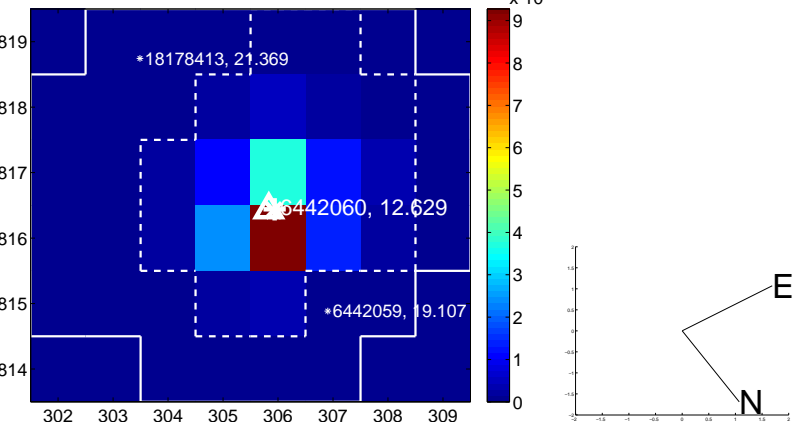
Q2 OOT image



Q3 difference image



Q3 OOT image



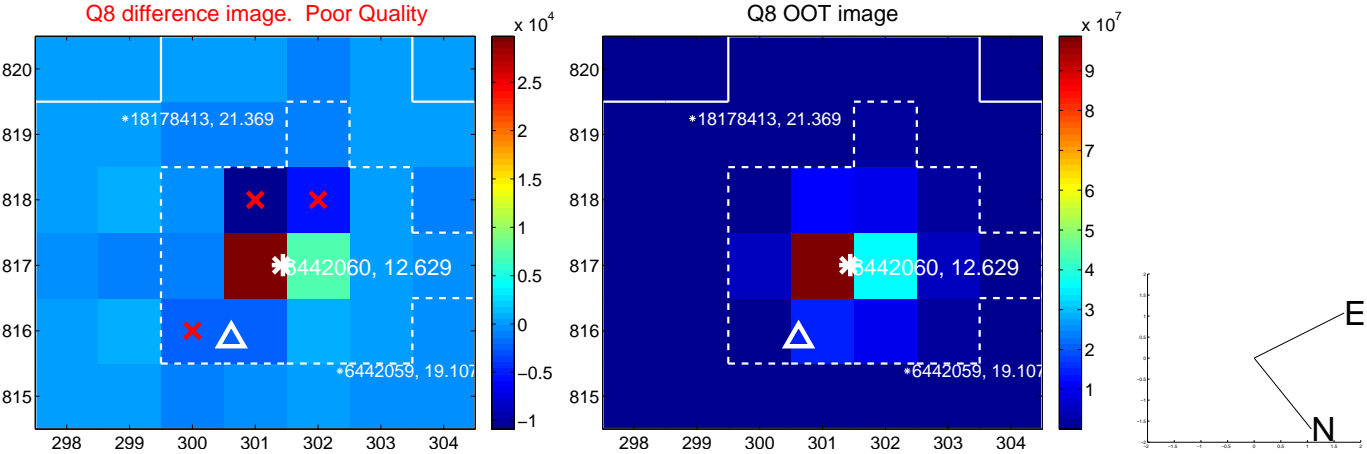
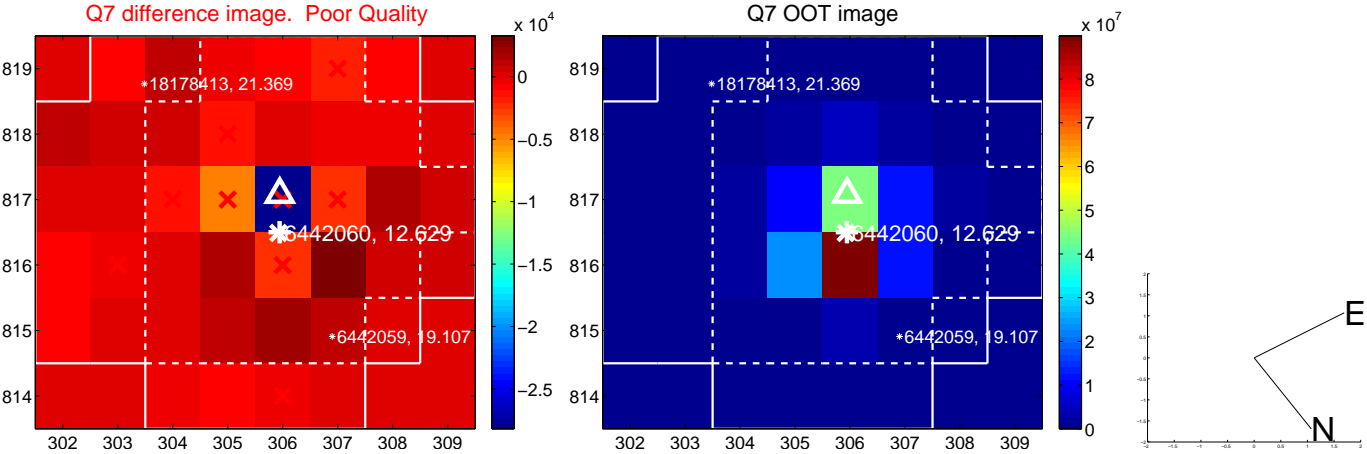
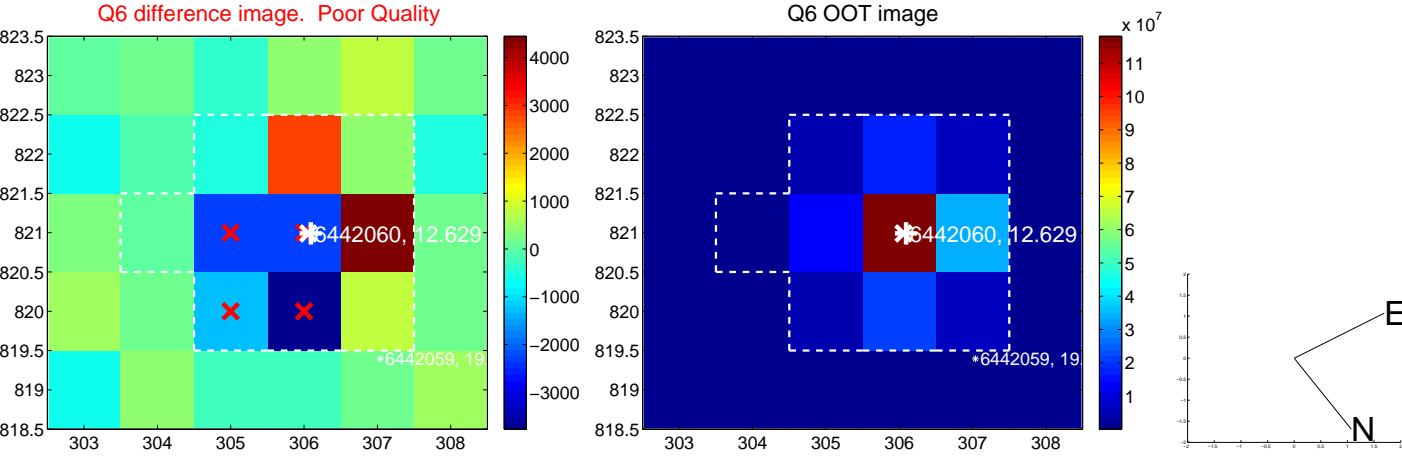
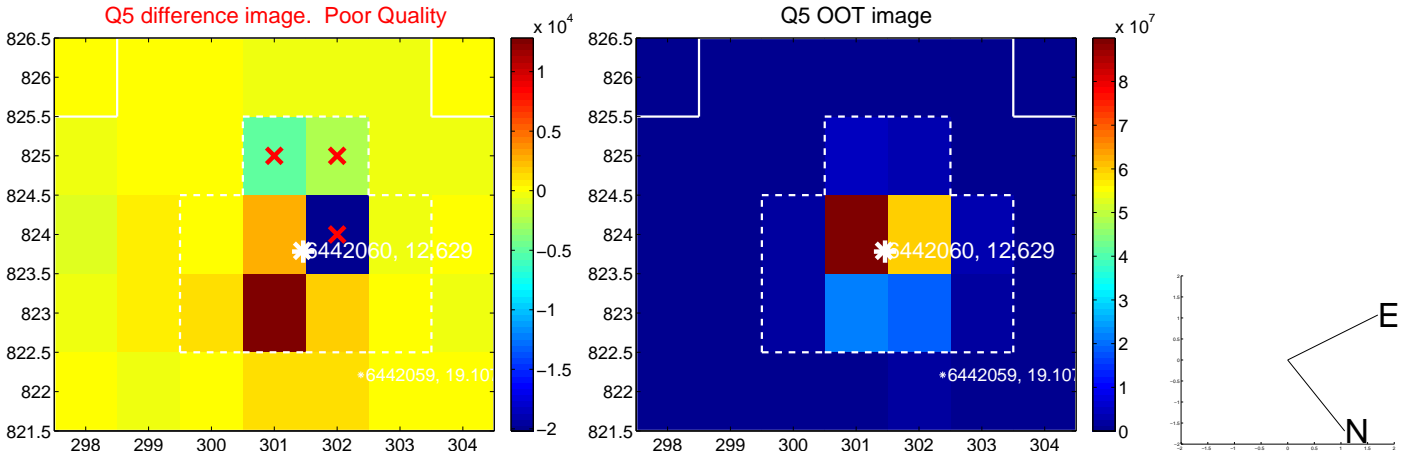
Q4 no difference image



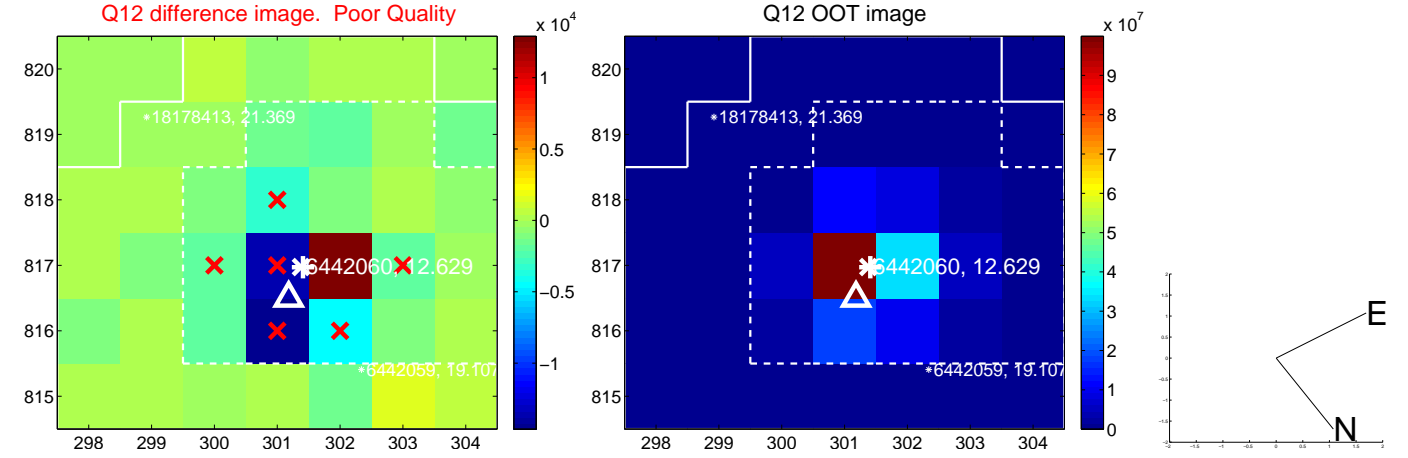
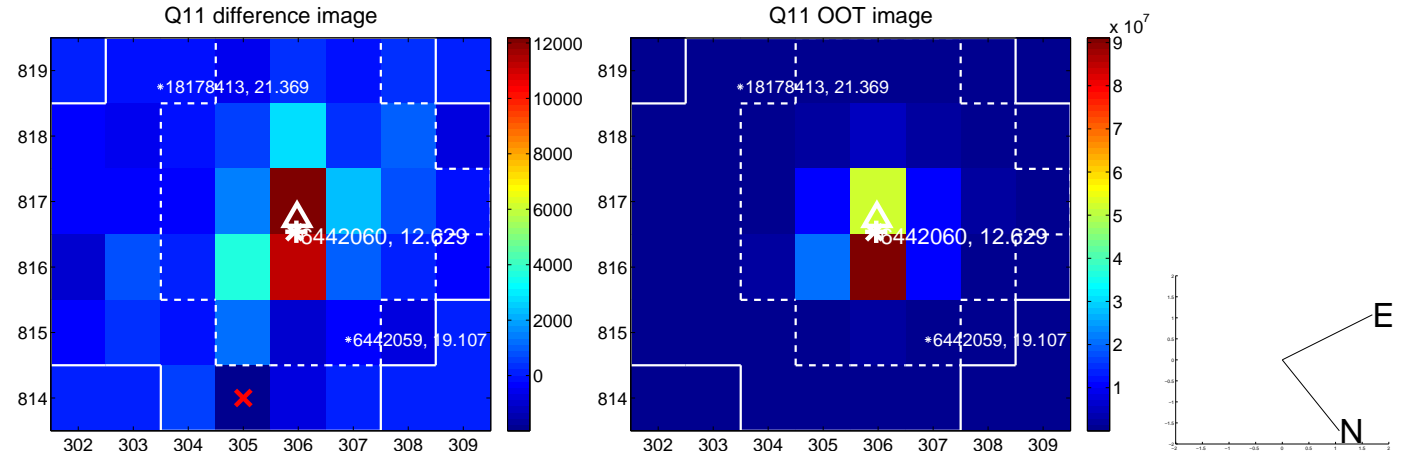
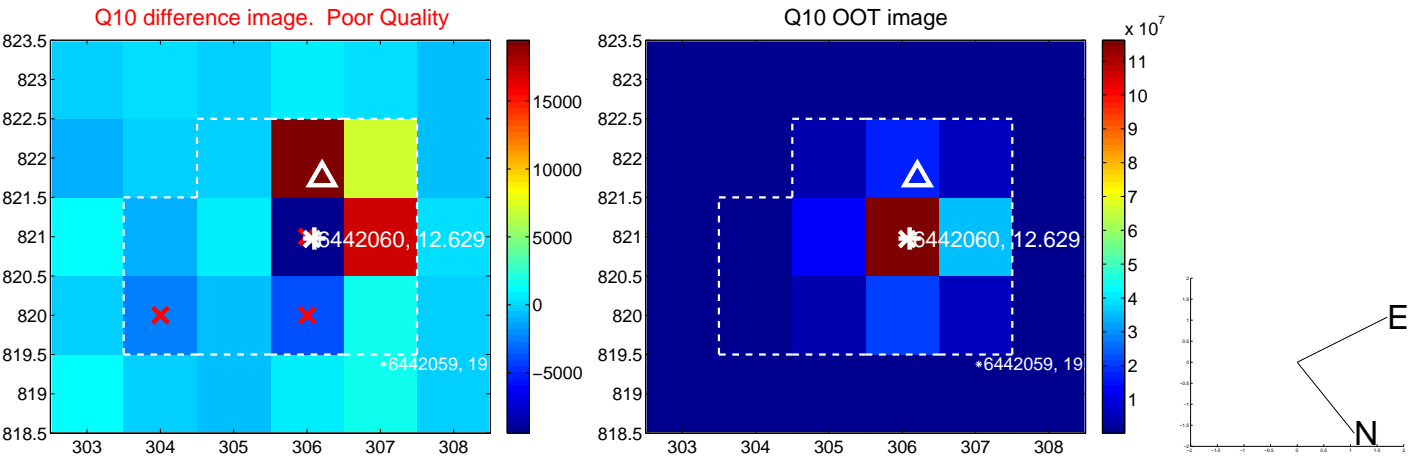
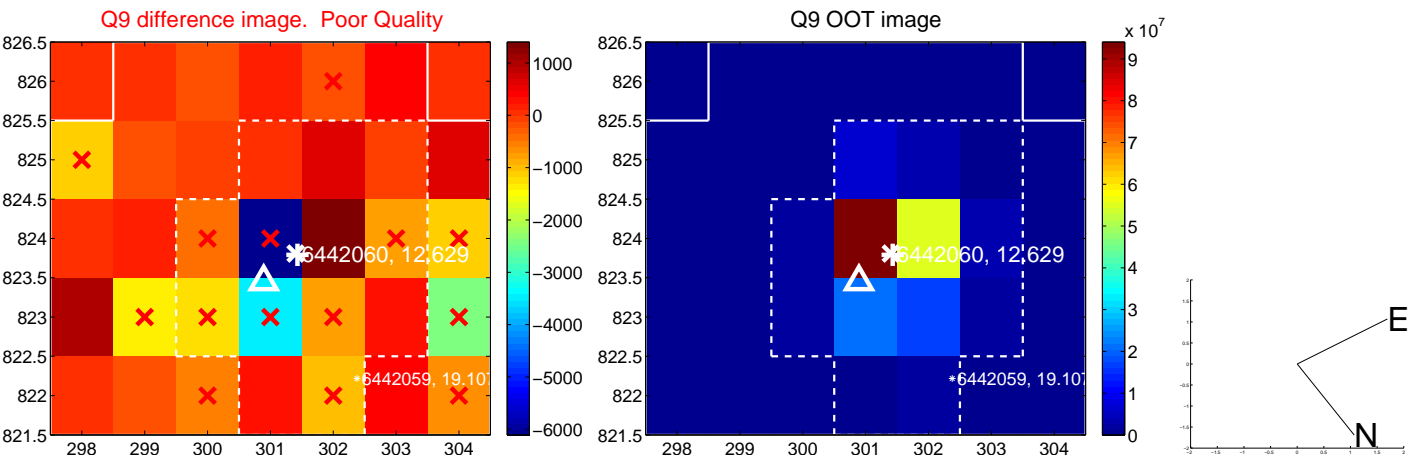
Q4 no OOT image



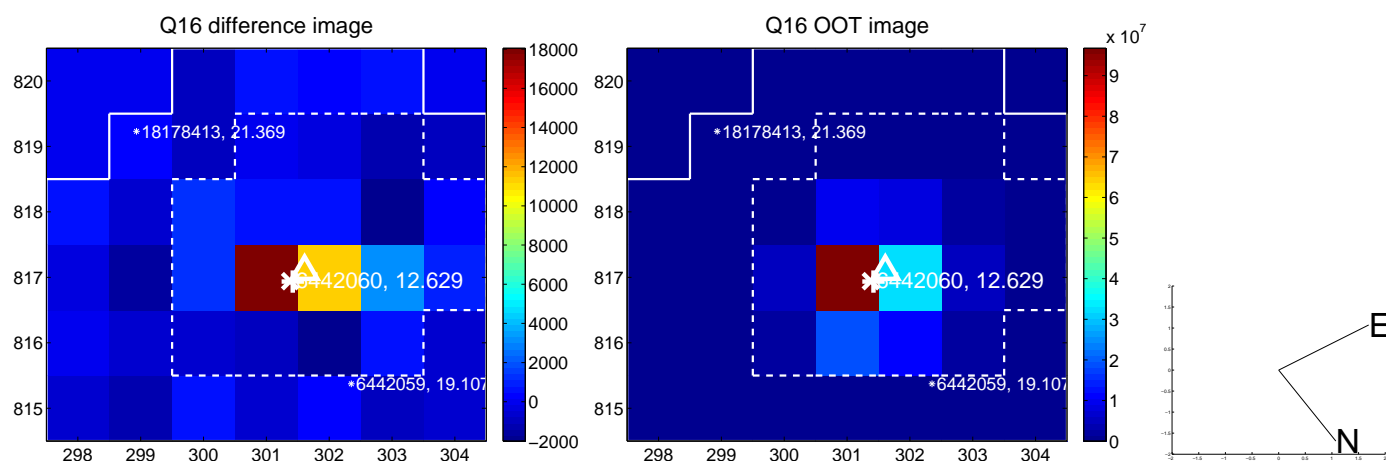
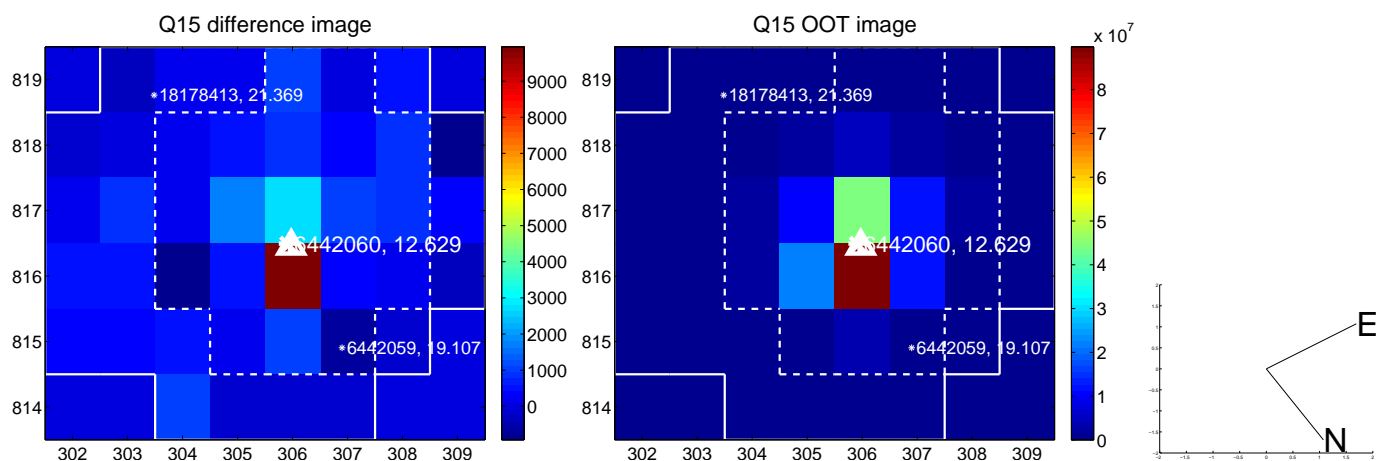
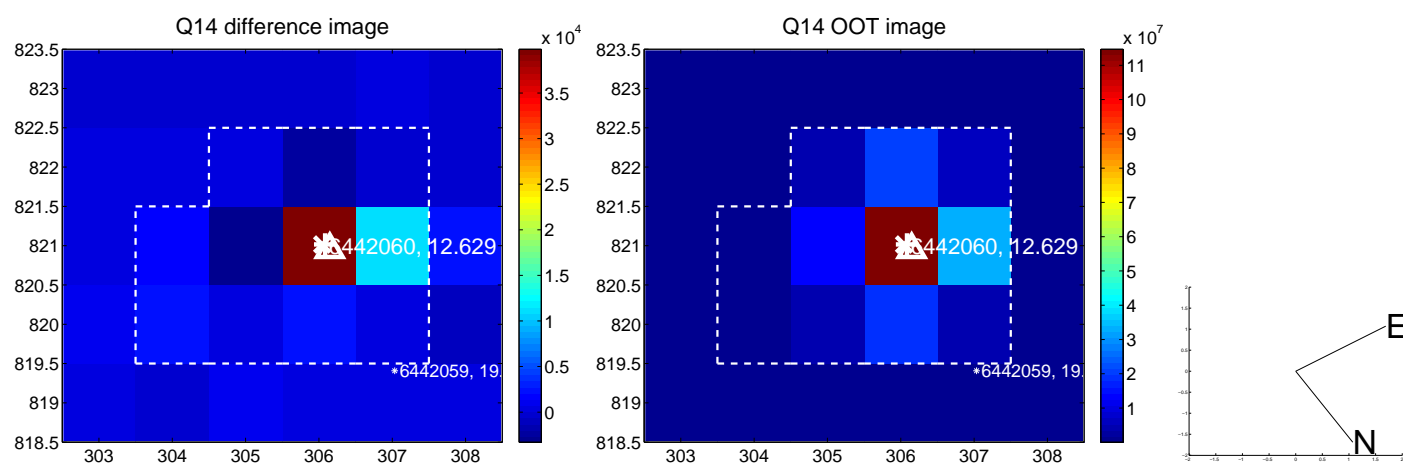
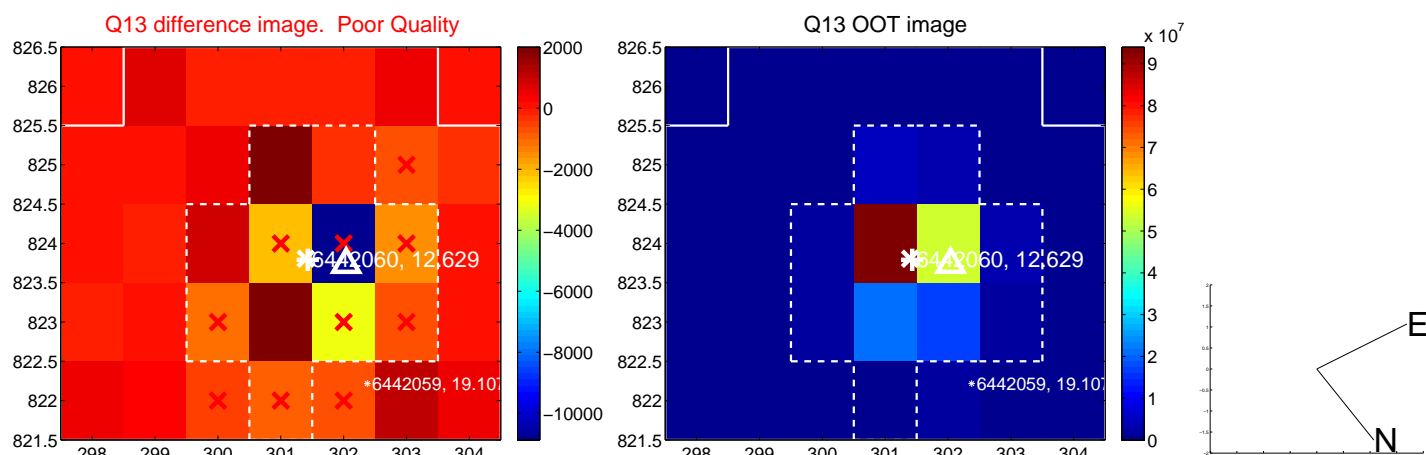
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



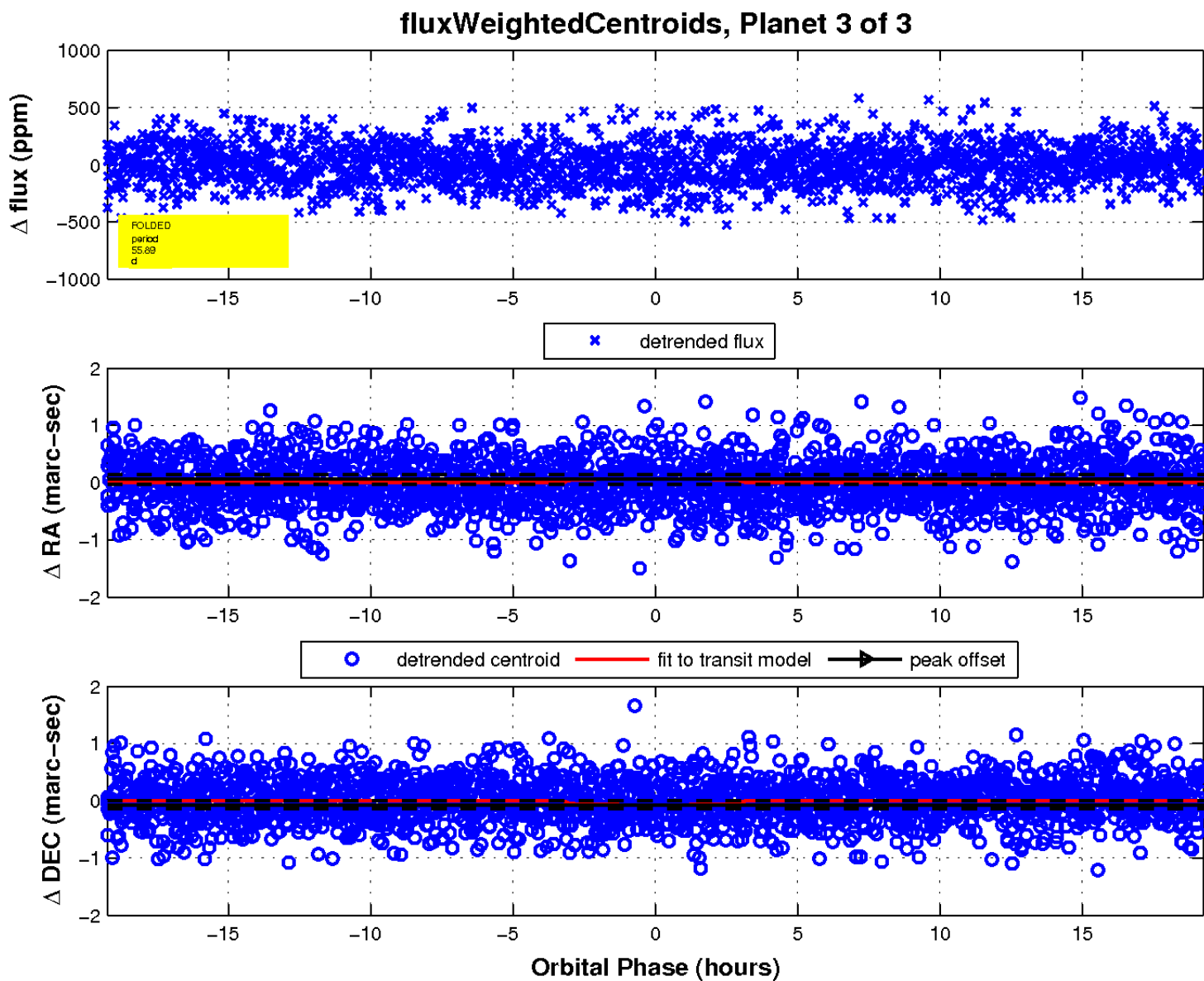
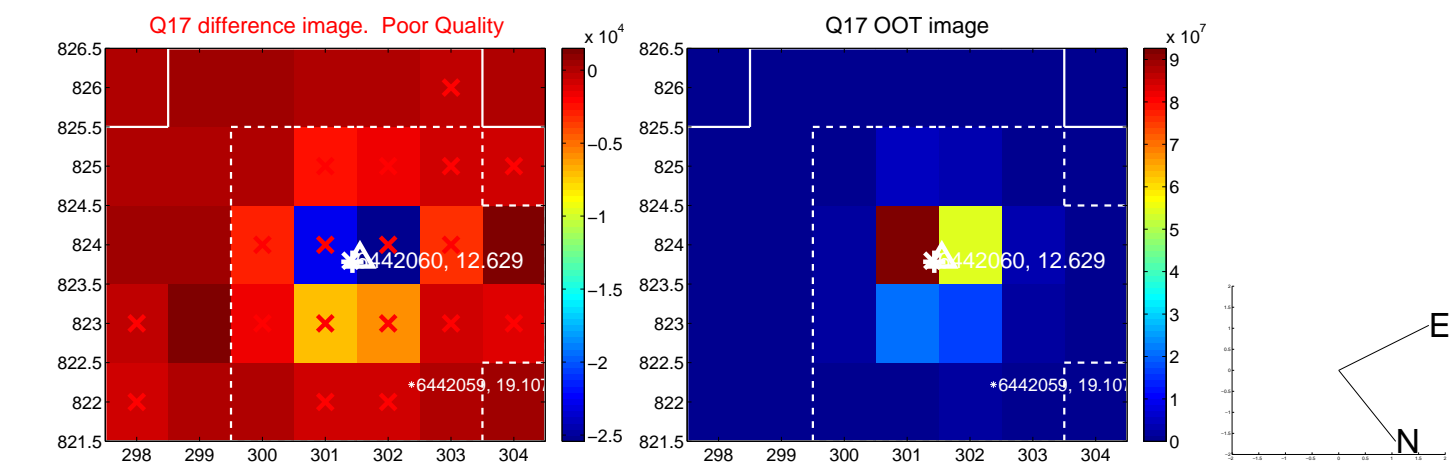
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

