

# KIC 008046010

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008046010-01	OBS	No	0.524271	131.814503	147.0	3.245	10.5	10.3	1.73	7392	2.44	37603.50
008046010-02	OBS	No	0.590526	131.763536	433.6	1.889	12.1	13.8	1.73	7392	4.19	32086.10
008046010-03	OBS	No	27.585670	148.485325	1889.1	3.143	9.4	8.3	1.73	7392	8.10	190.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008046010-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008046010-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008046010-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

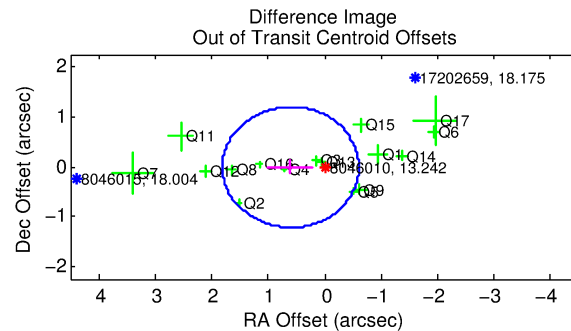
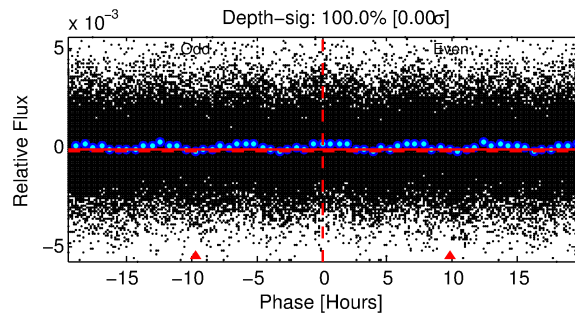
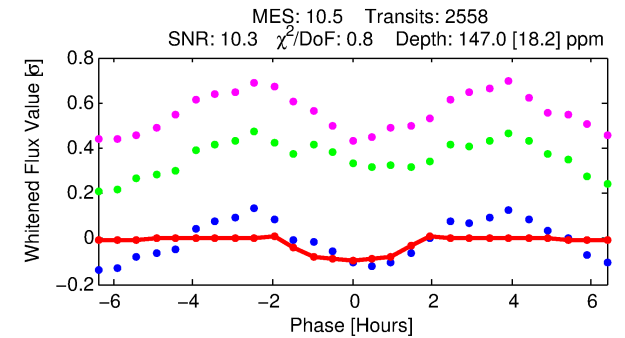
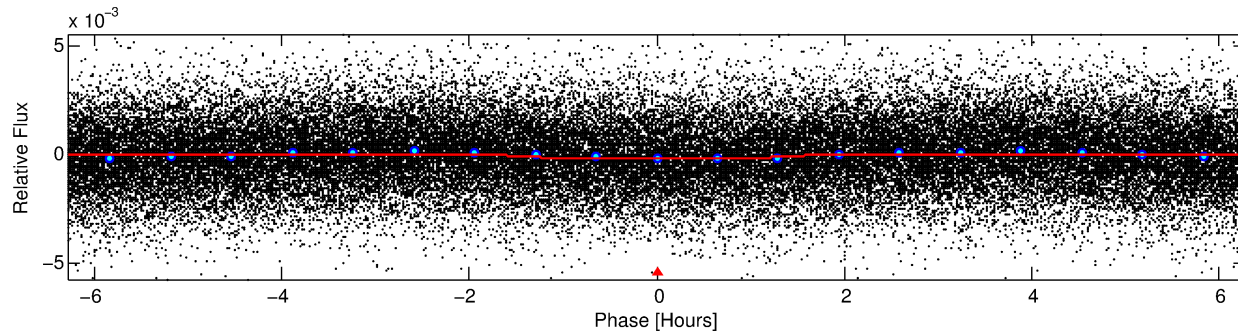
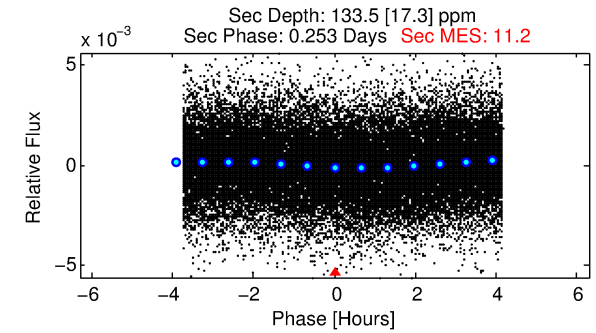
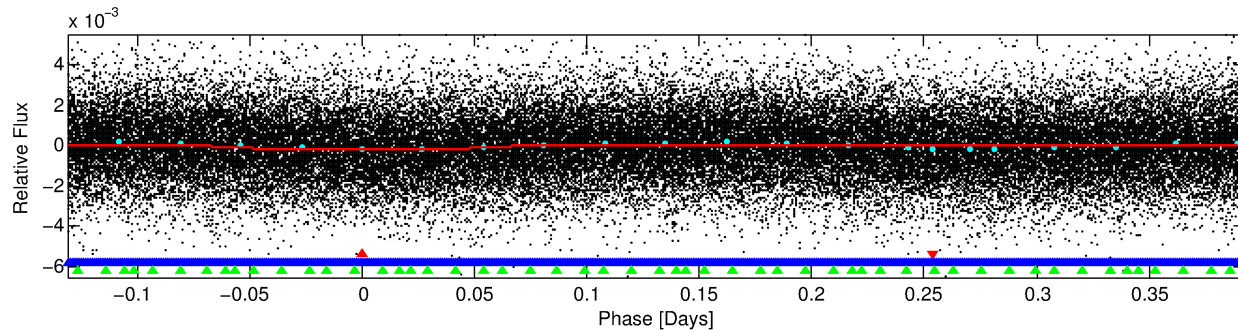
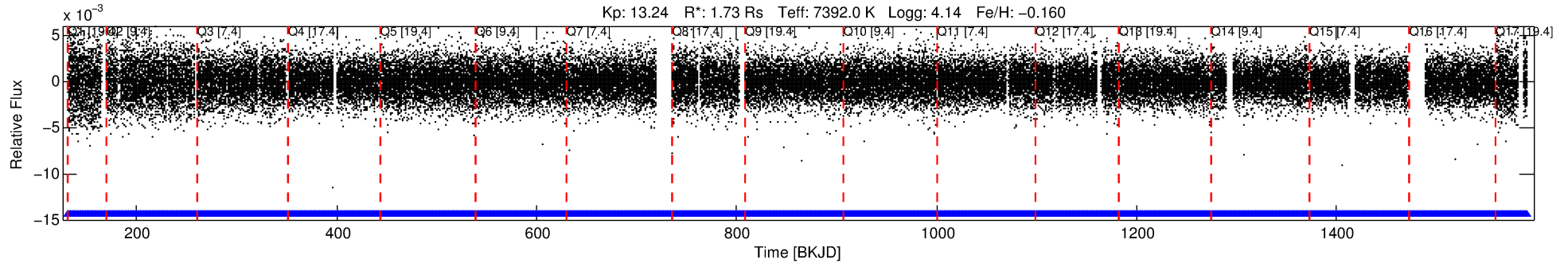
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008046010-01

No Significant Match Found

# DV One-Page Summary

KIC: 8046010 Candidate: 1 of 3 Period: 0.524 d



## DV Fit Results:

Period = 0.52427 [0.00001] d  
Epoch = 131.8145 [0.0035] BKJD  
Rp/R\* = 0.0129 [0.0049]  
a/R\* = 1.11 [0.45]  
b = 0.90 [0.49]  
Seff = 37603.51 [14804.47]  
Teq = 3551 [349] K  
Rp = 2.44 [1.20] Re  
a = 0.0146 [0.0037] AU  
Ag = 2.62 [2.20] [0.74σ]  
Teffp = 6987 [1370] K [2.43σ]

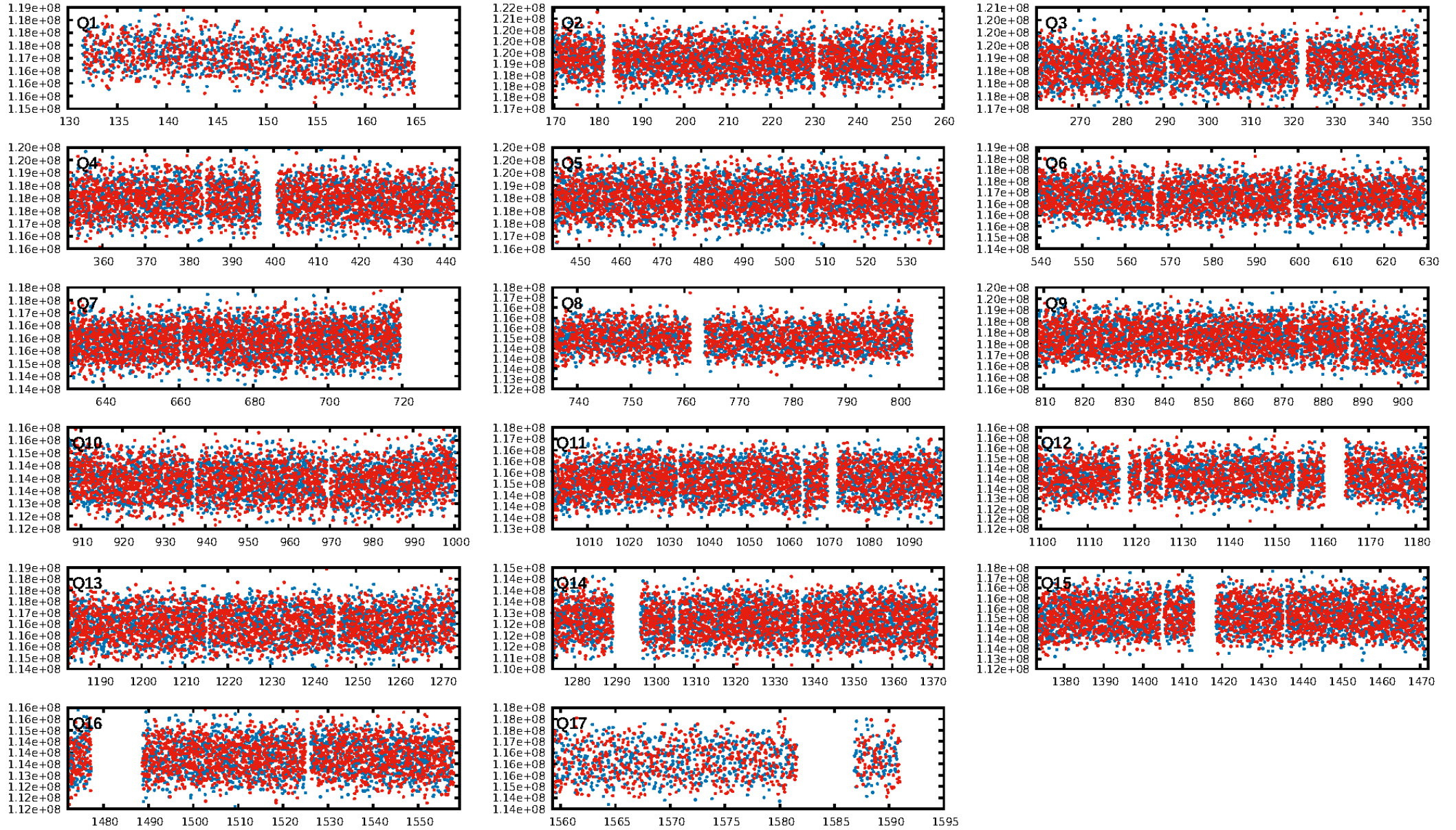
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 32.8% [0.42σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 3.00e-07**  
RollingBand-fgt: 1.00 [2443/2443]  
**GhostDiagnostic-chr: 0.8752**  
Centroid-sig: 0.7%  
Centroid-so: 0.263 arcsec [2.74σ]  
OotOffset-rm: 0.602 arcsec [1.50σ]  
KicOffset-rm: 0.580 arcsec [1.45σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:33:31 Z

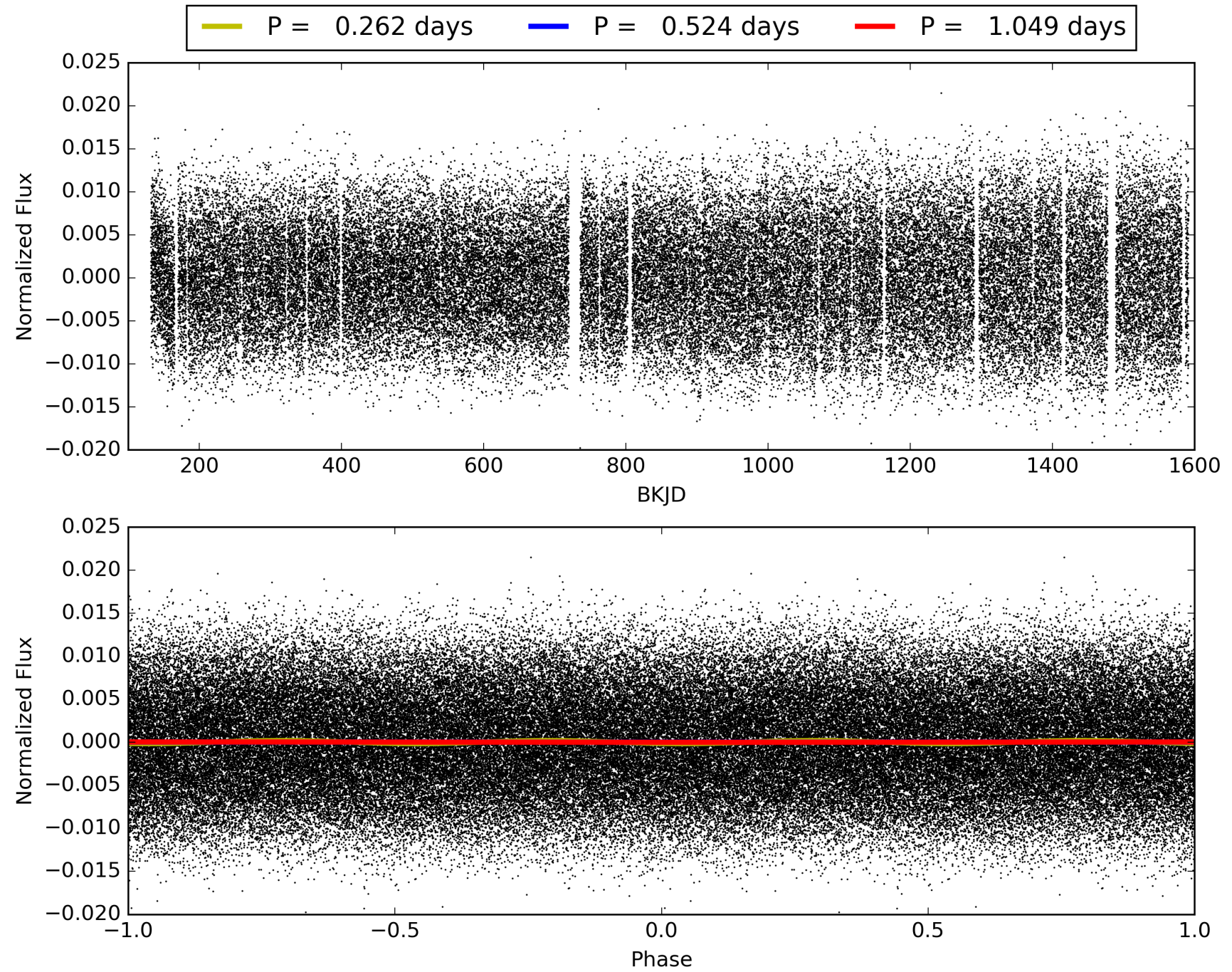
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008046010-01, PDC Light Curves





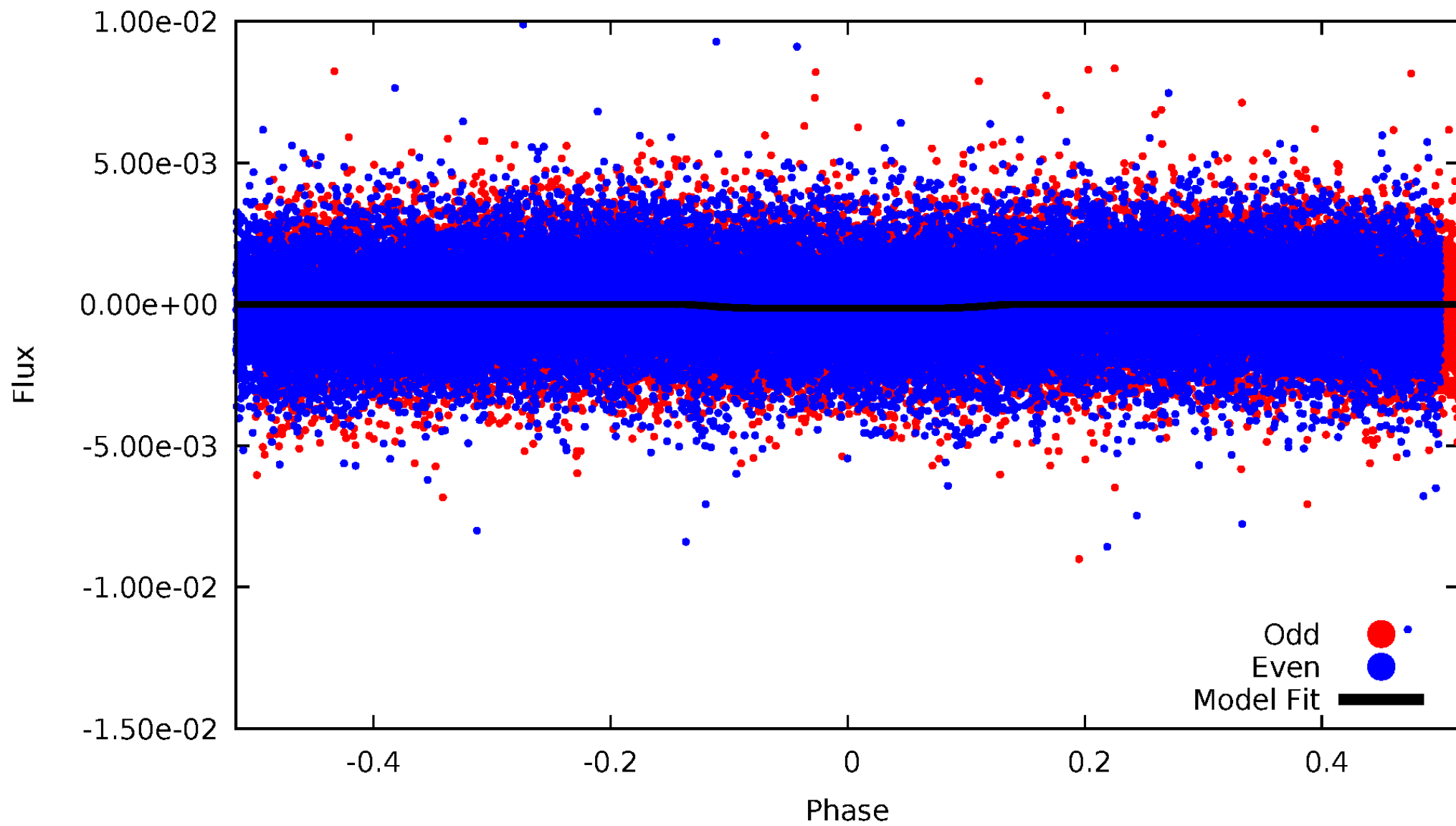
# TCE 008046010-01





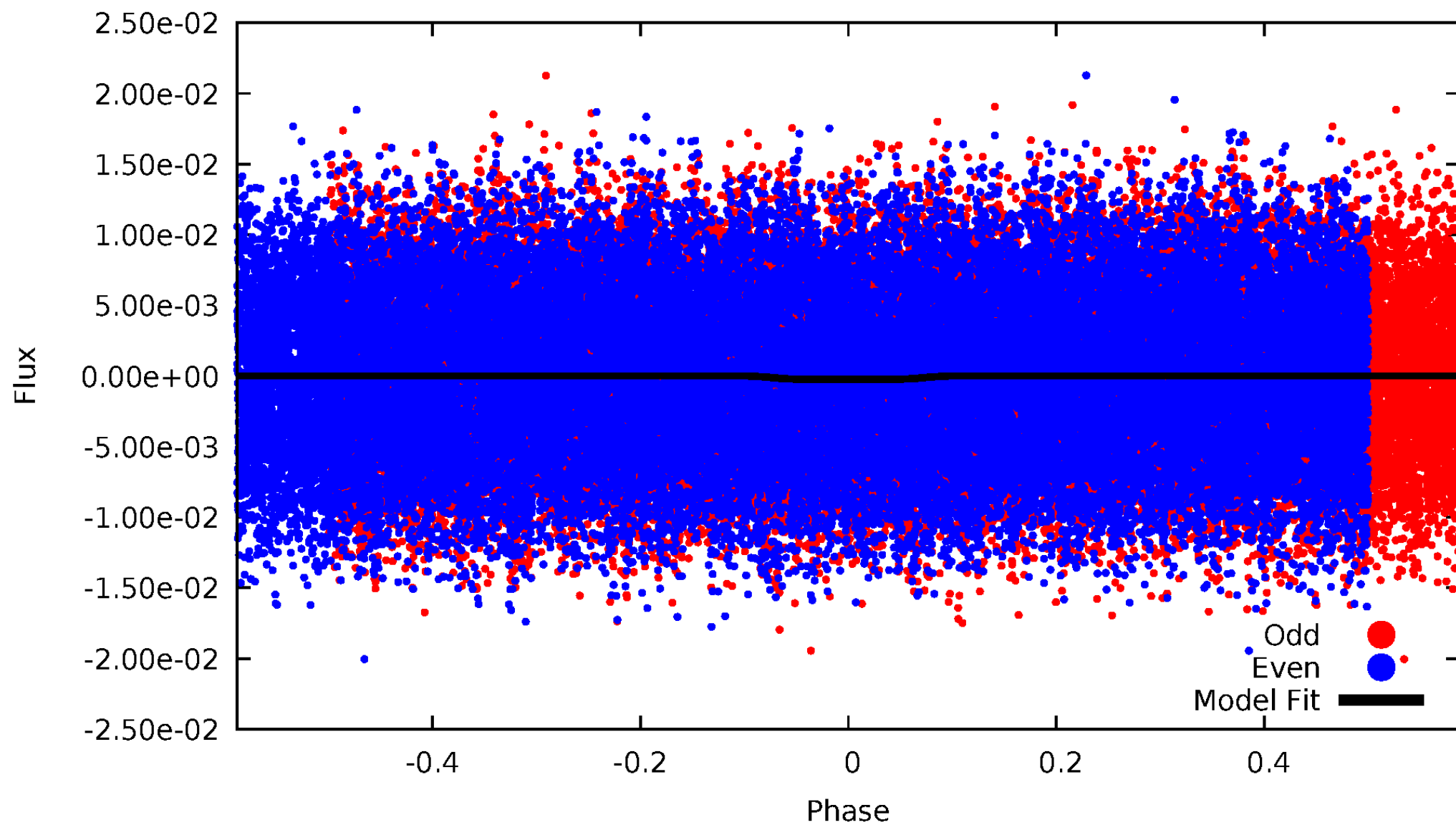
# DV Odd/Even

TCE 008046010-01



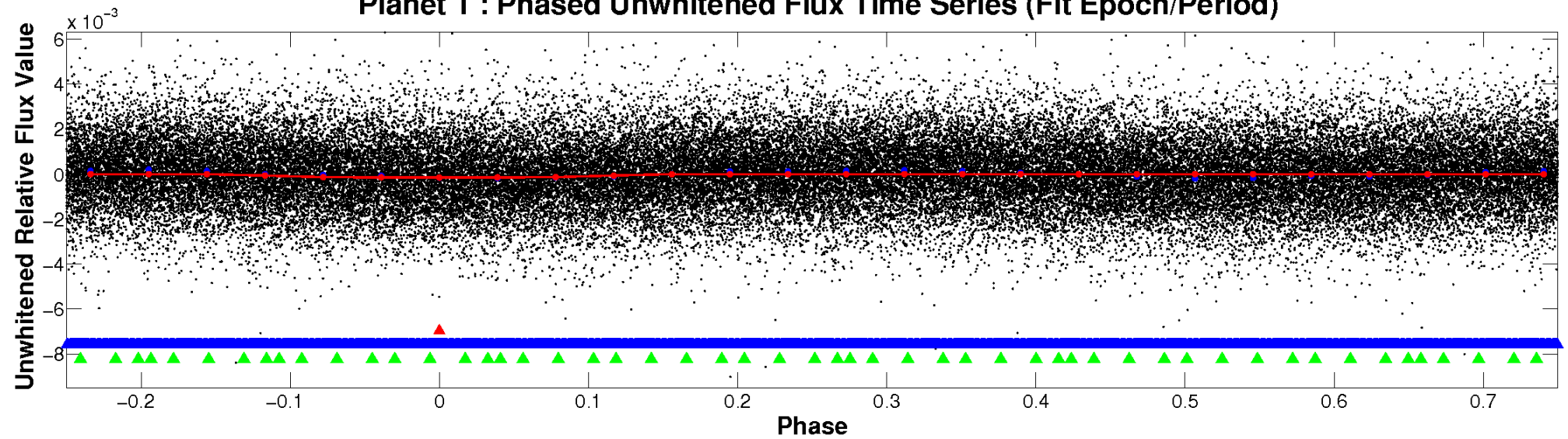
# ALT Odd/Even

TCE 008046010-01

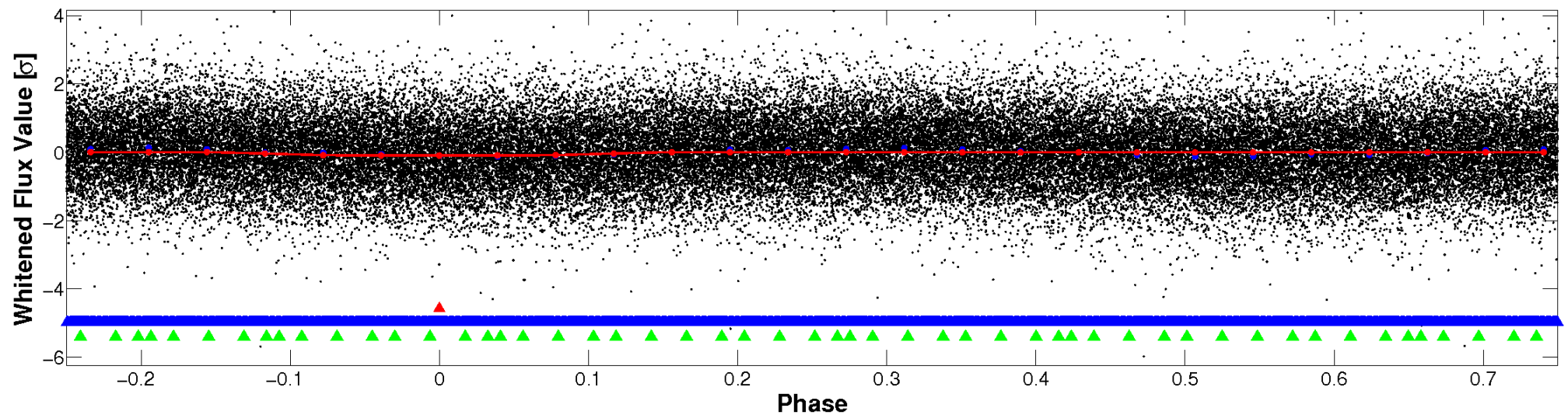


# Non-Whitened Vs. Whitened Light Curve

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



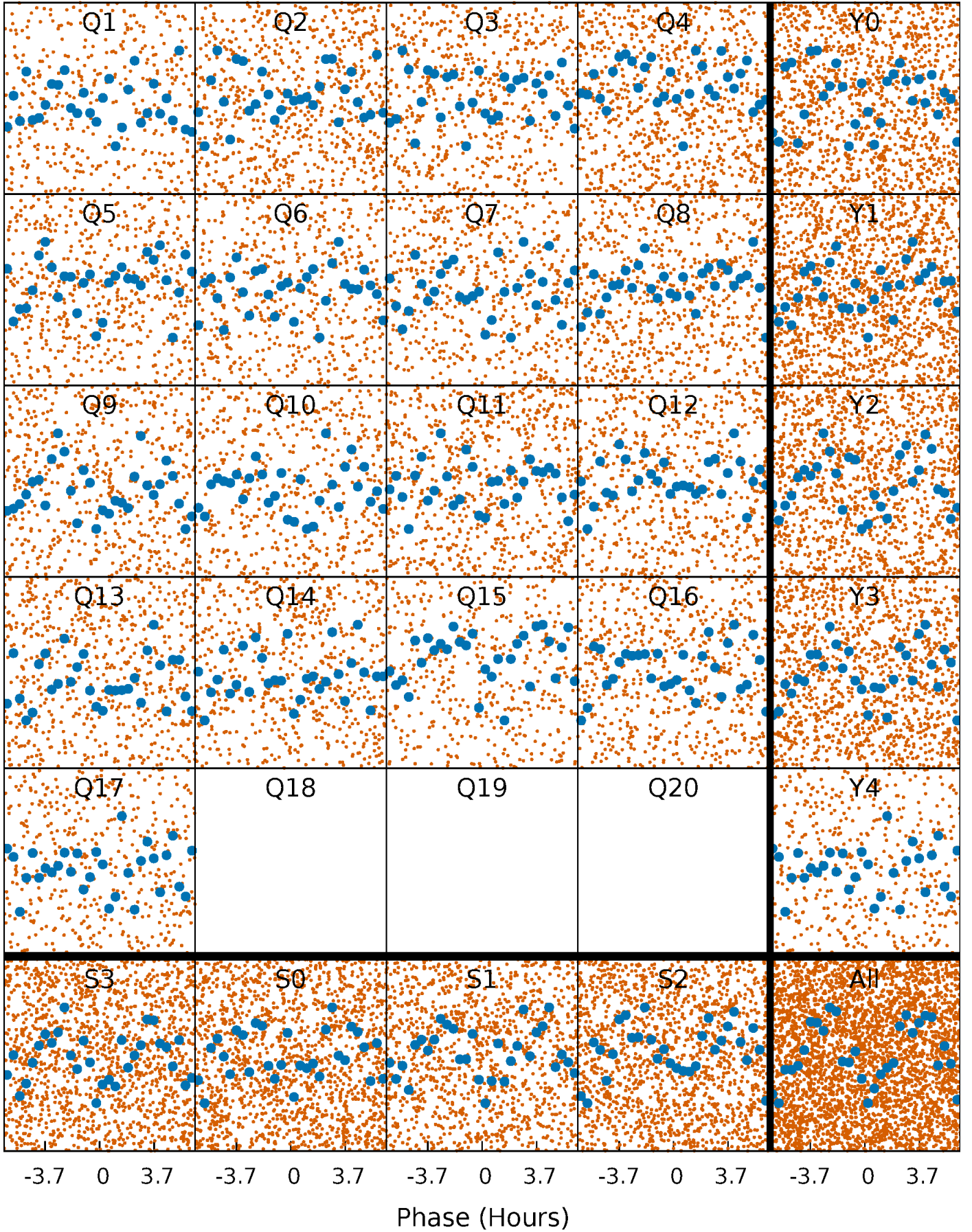
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





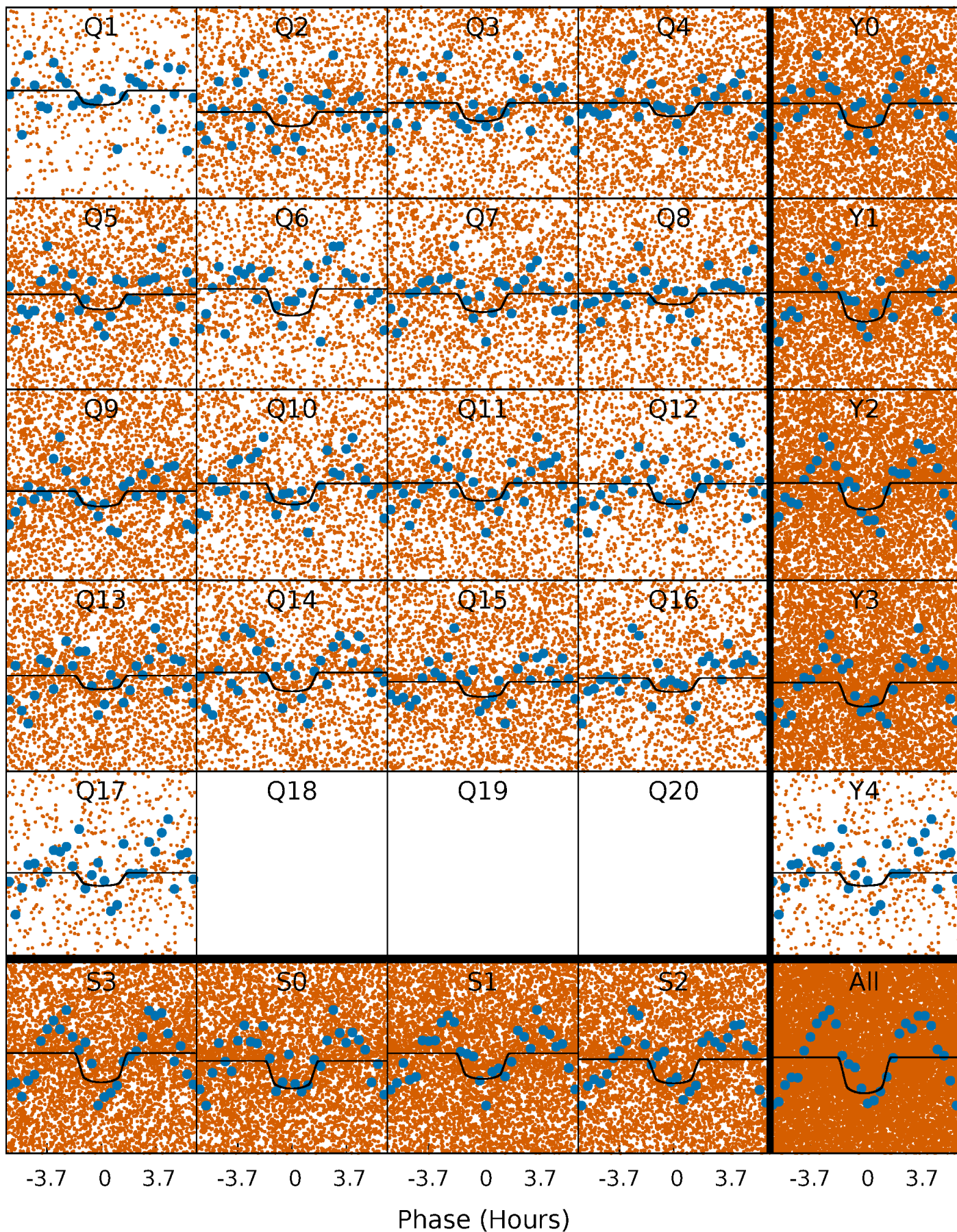
# PDC Quarter-Phased Transit Curves

TCE 008046010-01 P= 0.524271 Days  $T_0=131.814503$  (BKJD)



# DV Quarter-Phased Transit Curves

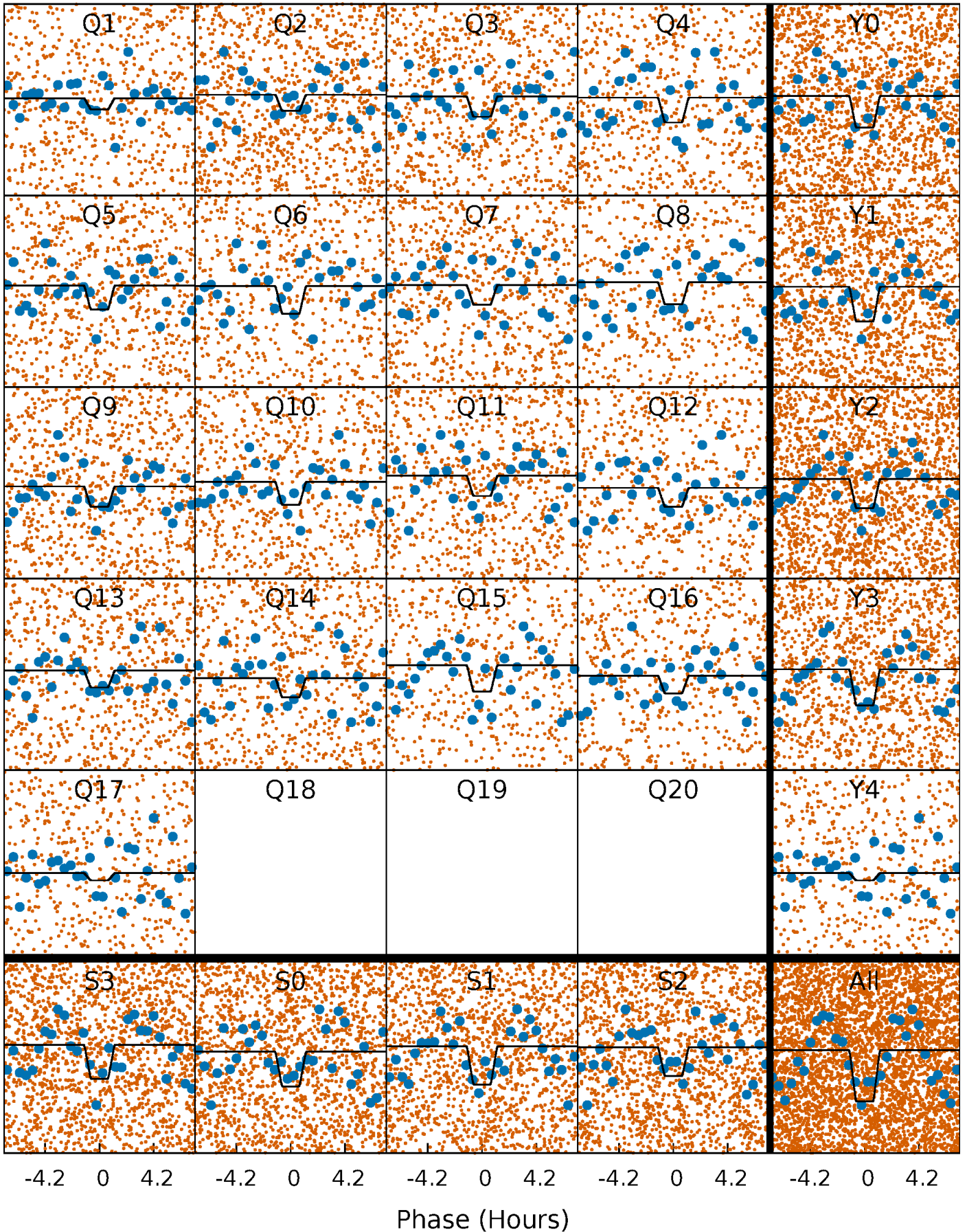
TCE 008046010-01 P= 0.524271 Days  $T_0=131.814503$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008046010-01 P= 0.524282 Days  $T_0=131.815627$  (BKJD)

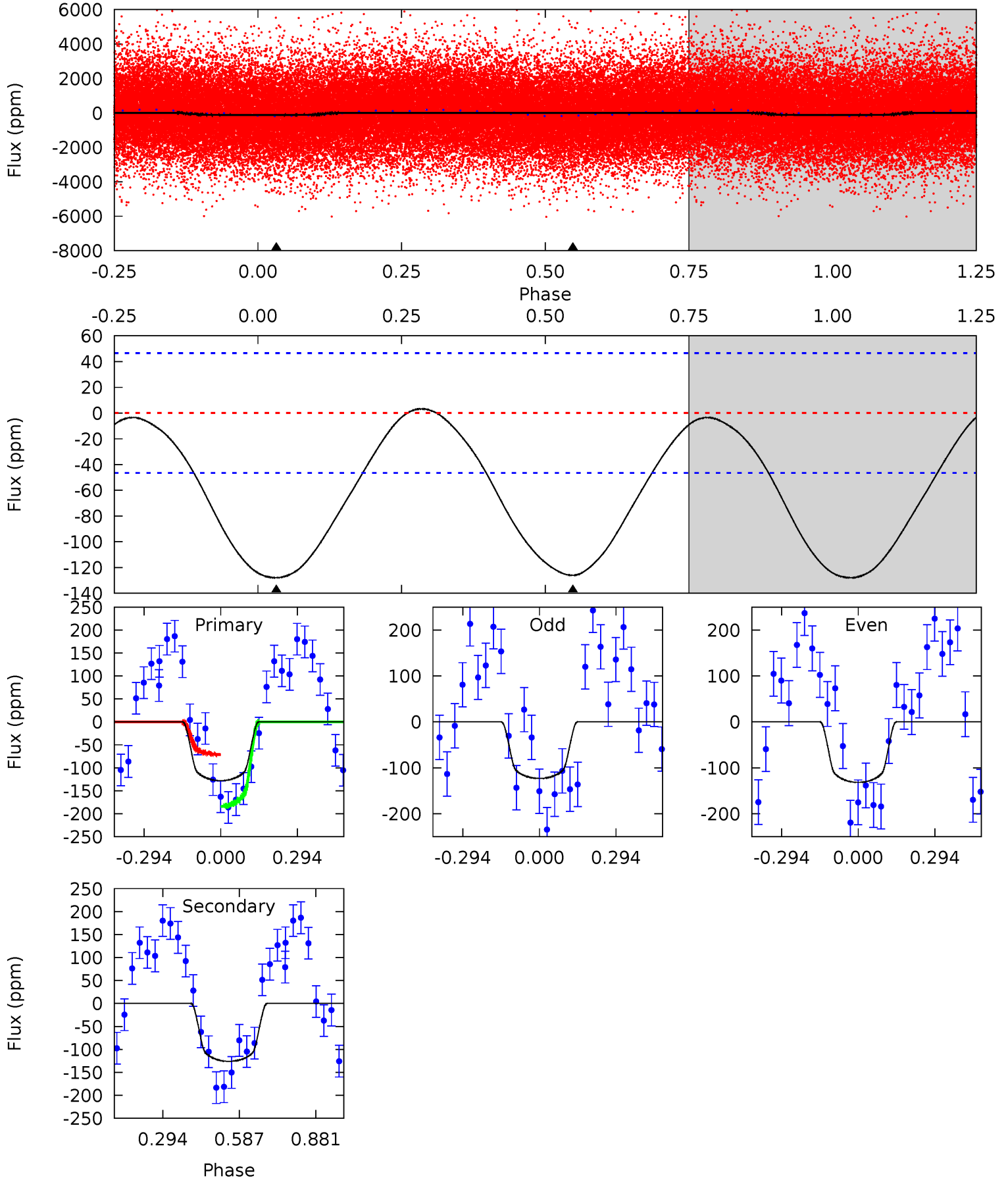




# DV Model-Shift Uniqueness Test

008046010-01, P = 0.524271 Days, E = 131.290232 Days

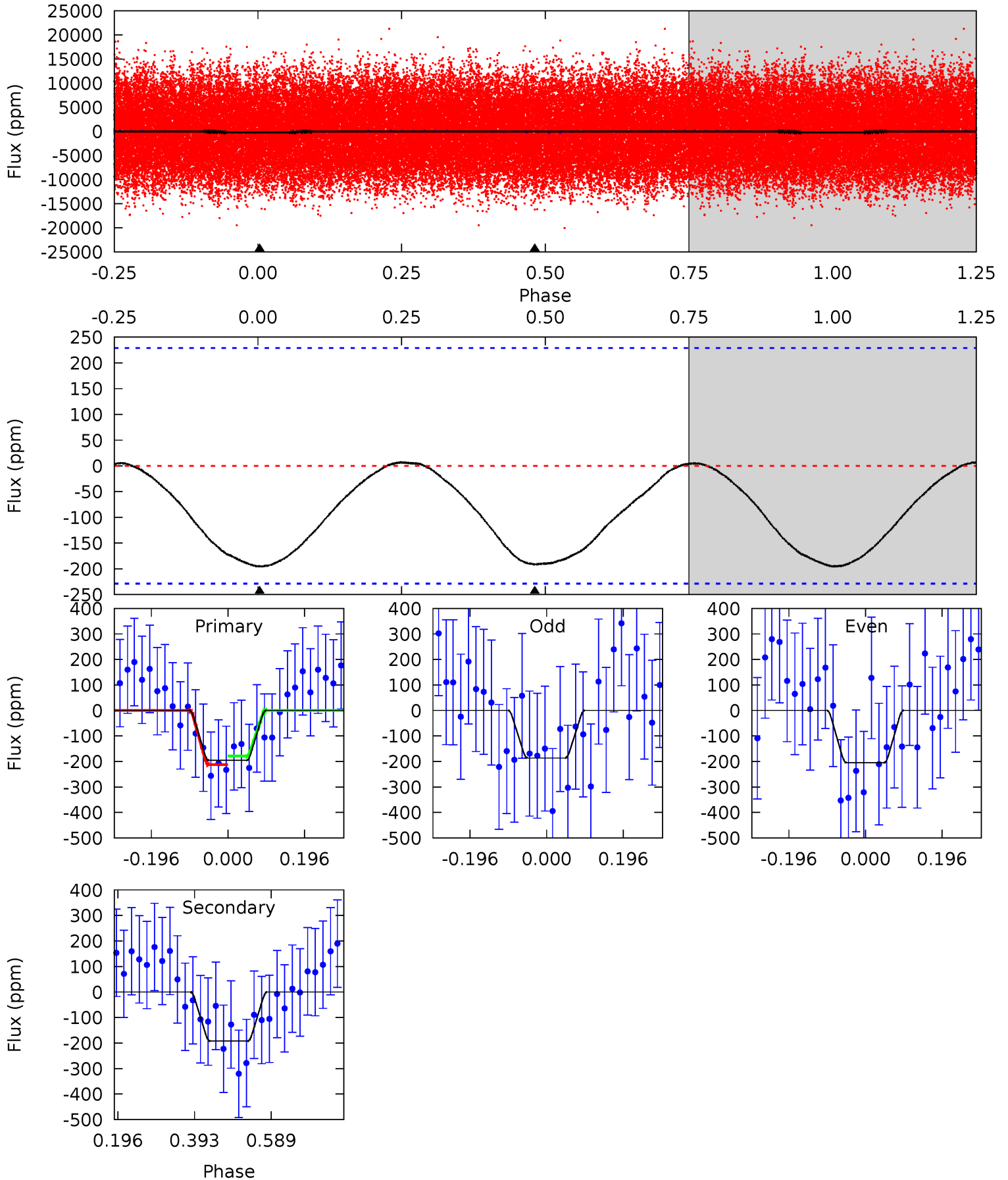
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	11.7	0	0	4.33	1.05	0.29	11.9	11.9	11.7	11.7	0.40	1.06	0.02	5.26



# Alt Model-Shift Uniqueness Test

008046010-01, P = 0.524282 Days, E = 131.291345 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.78	3.71	0	0	4.42	1.29	0.25	3.78	3.78	3.71	3.71	0.18	1.29	0.04	0.33



### Stellar Parameters For KIC 008046010

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+205}_{-333}$	$4.139^{+0.149}_{-0.182}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.546}_{-0.364}$	$1.493^{+0.209}_{-0.255}$	$0.409^{+0.316}_{-0.206}$
	+3%/-5%	+4%/-4%	+156%/-219%	+32%/-21%	+14%/-17%	+77%/-51%
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 008046010-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-126 \pm 11$	$2.47^{+1.10}_{-0.95}$	$4969^{+402}_{-341}$	$6453^{+2577}_{-1161}$	$2.354^{+4.023}_{-1.243}$
Alt.	$-192 \pm 52$	$2.87^{+1.03}_{-1.03}$	$4960^{+372}_{-381}$	$6691^{+2268}_{-1122}$	$2.681^{+3.777}_{-1.330}$

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



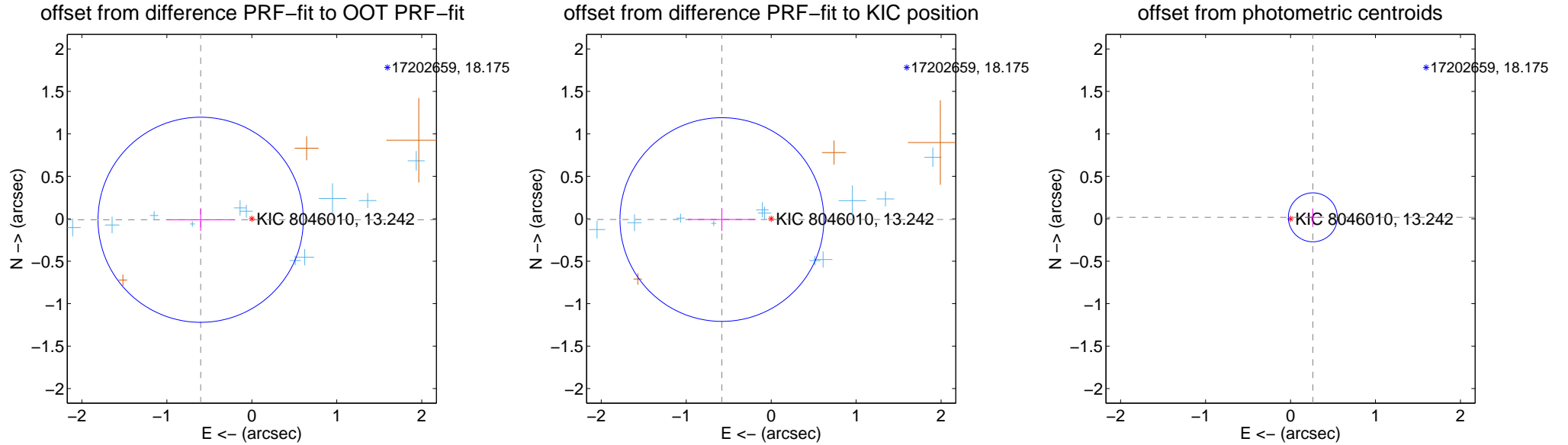
## DV Centroid Data

Supplemental centroid analysis for 008046010-01. Kepler magnitude: 13.24. Transit SNR 10.33

There are 13 quarters with good PRF difference image offsets

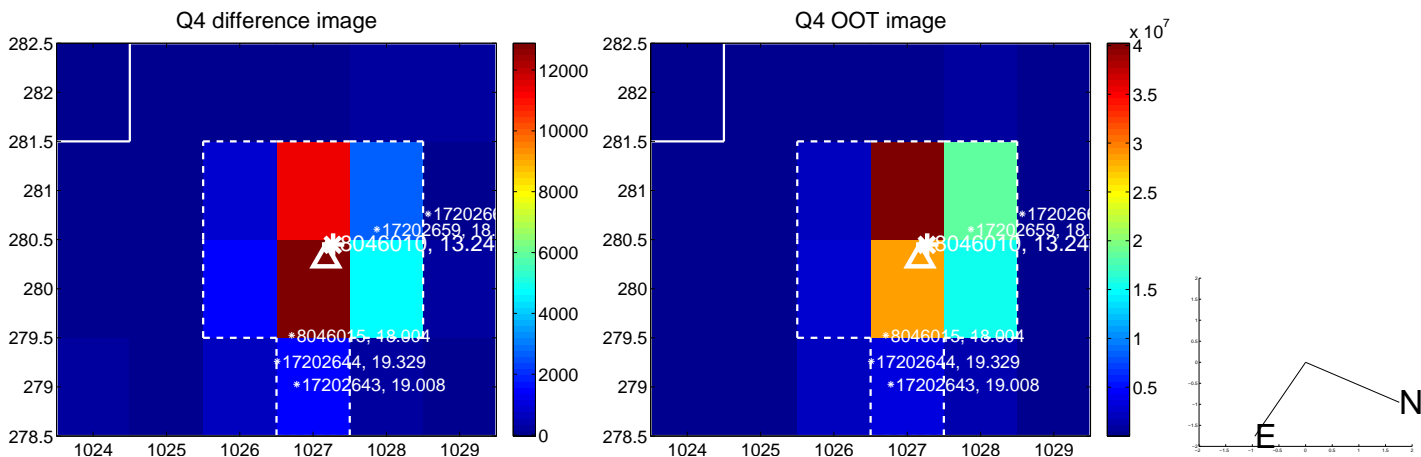
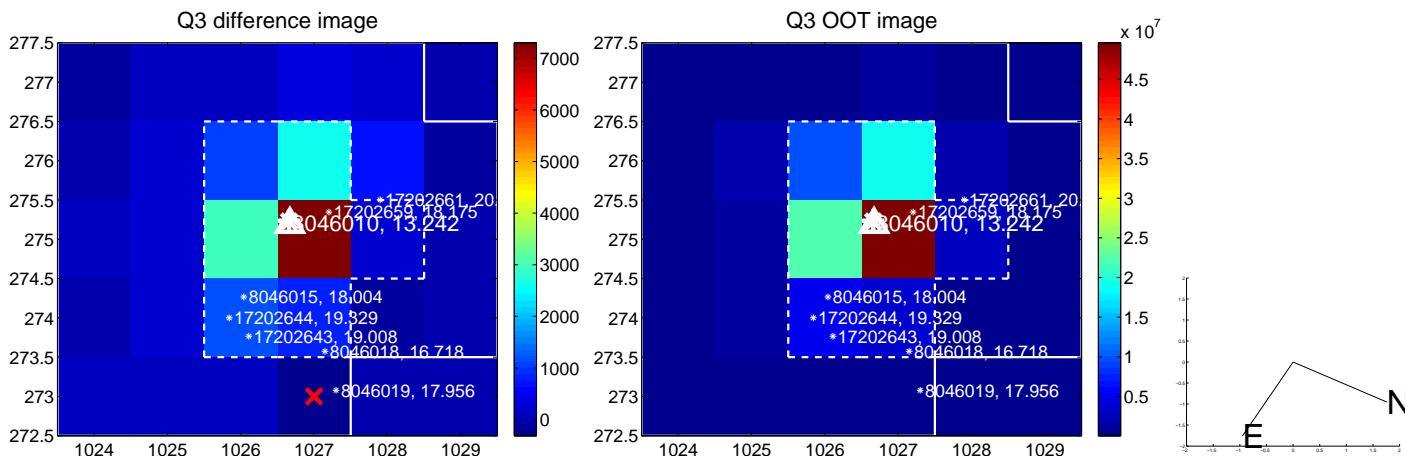
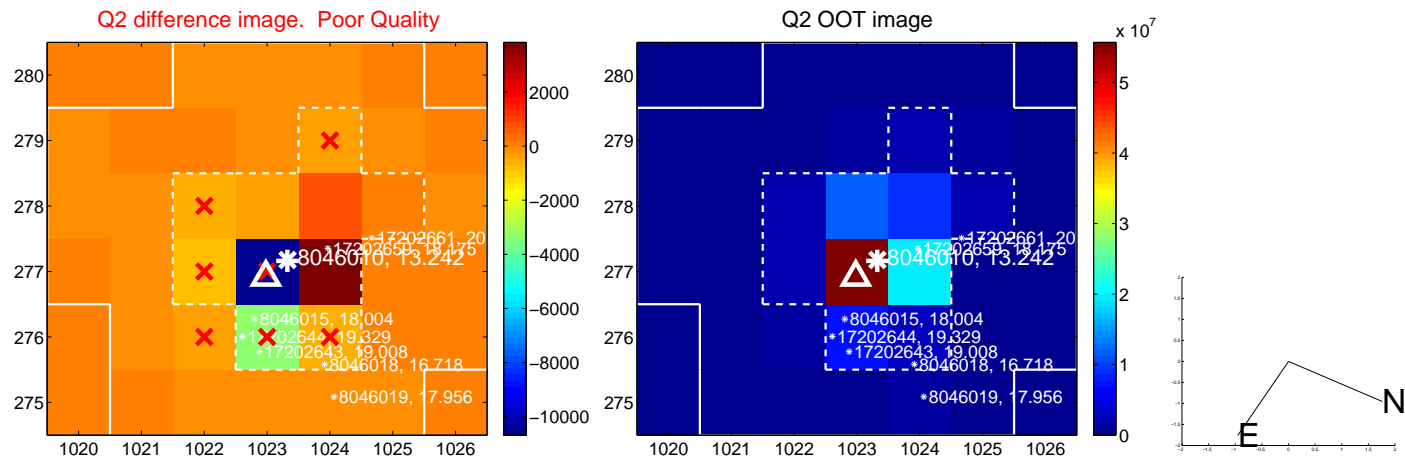
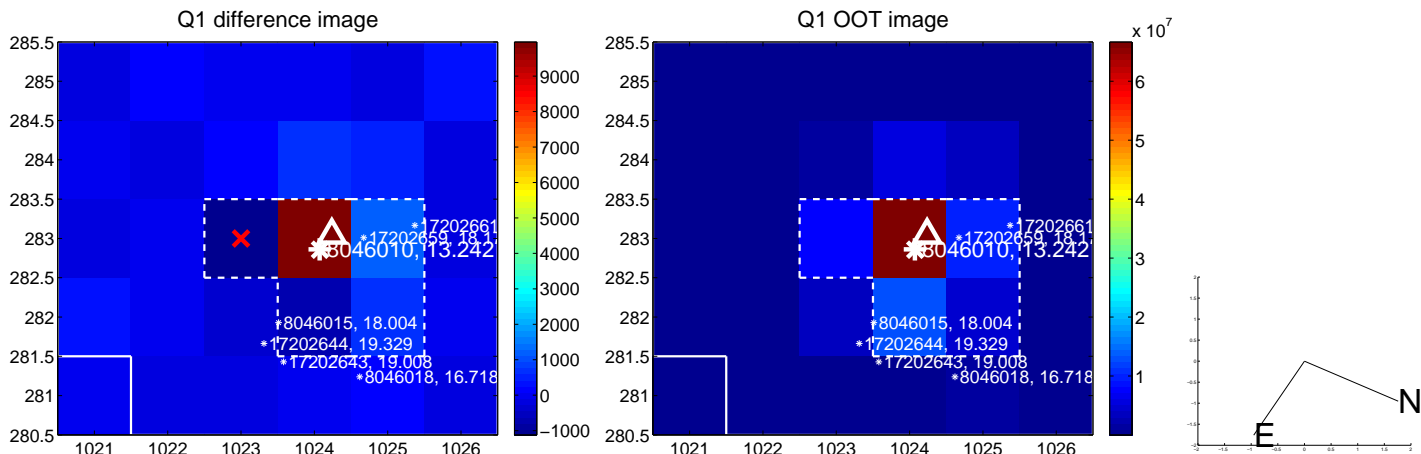
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.602 \pm 0.403$	1.50	$0.602 \pm 0.402$	$-0.012 \pm 0.132$
PRF-fit source offset from KIC position	$0.580 \pm 0.400$	1.45	$0.580 \pm 0.399$	$-0.009 \pm 0.133$
photometric centroid source offset	$0.26 \pm 0.10$	2.74	$-0.26 \pm 0.10$	$0.02 \pm 0.10$

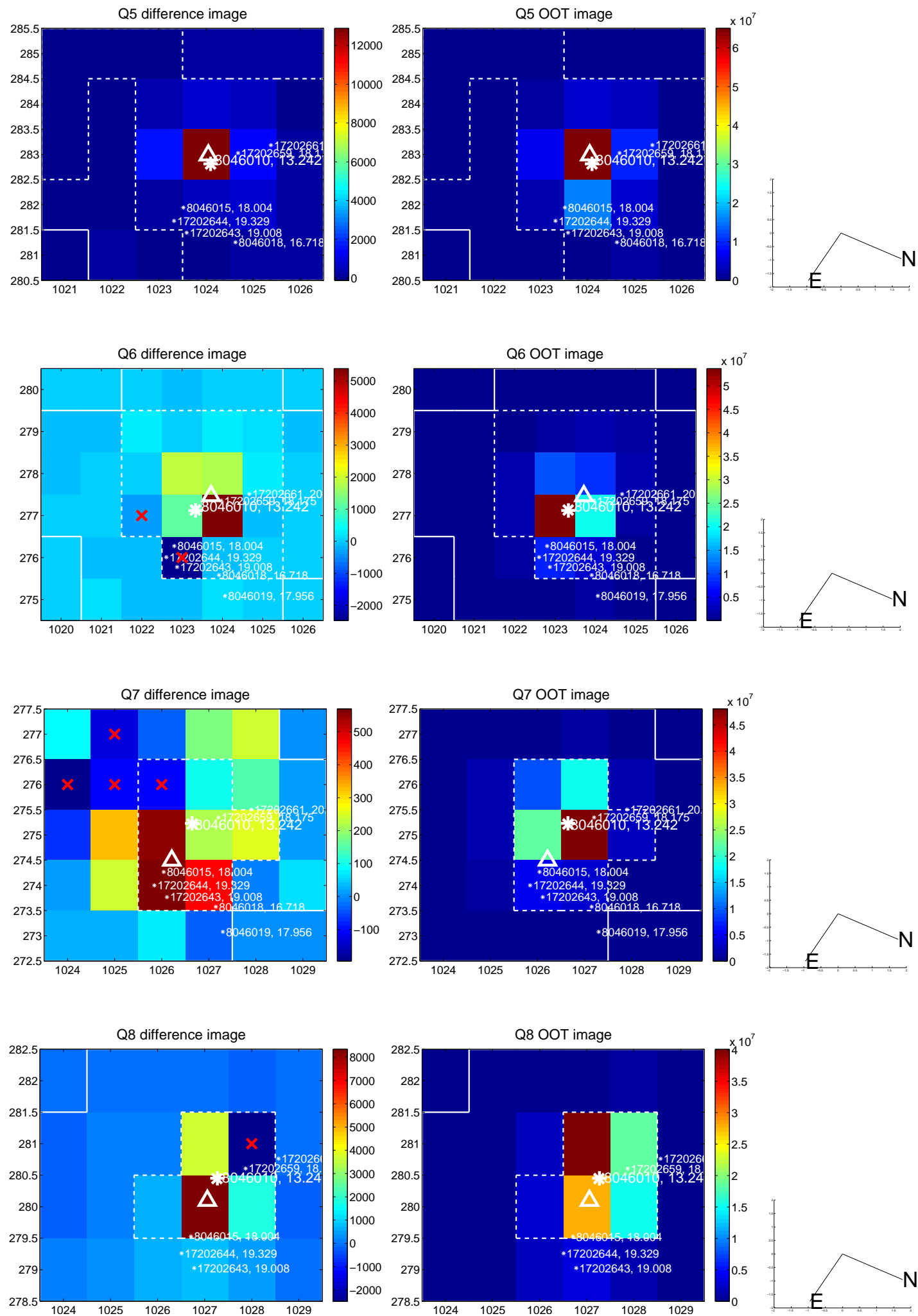


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

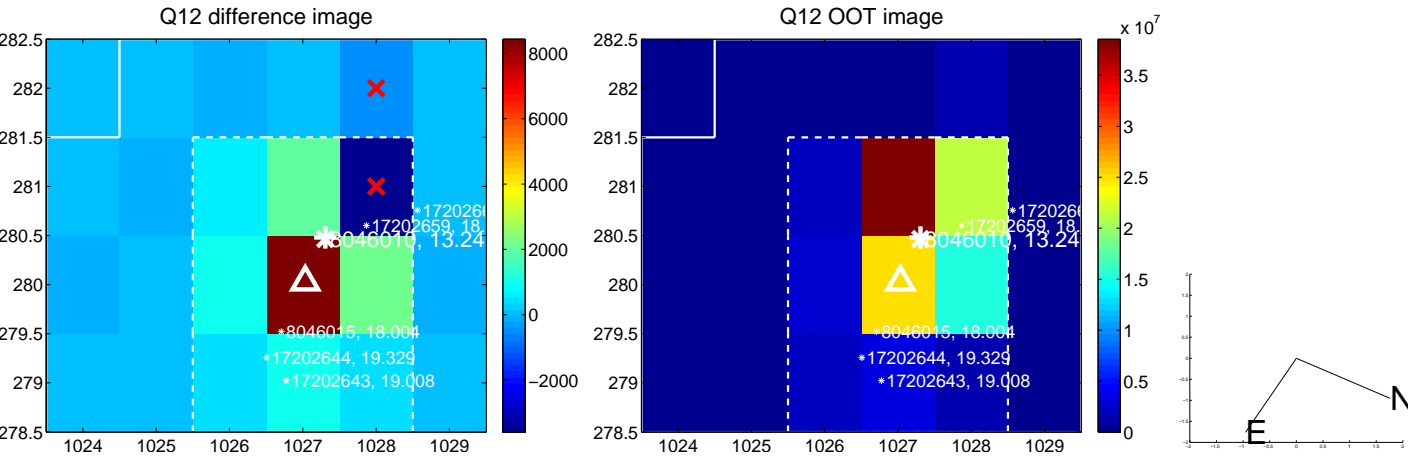
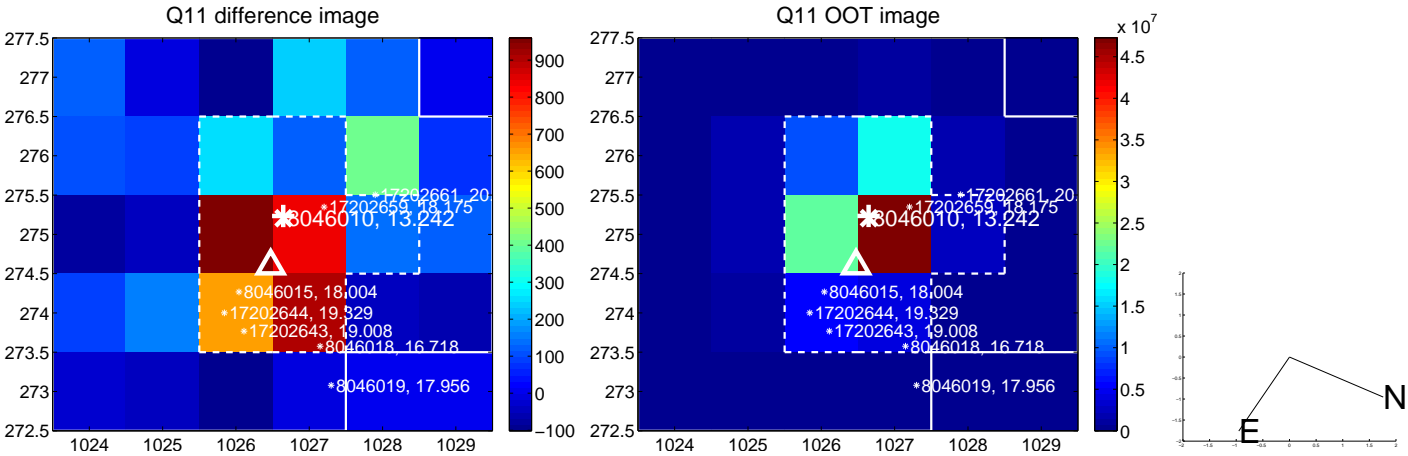
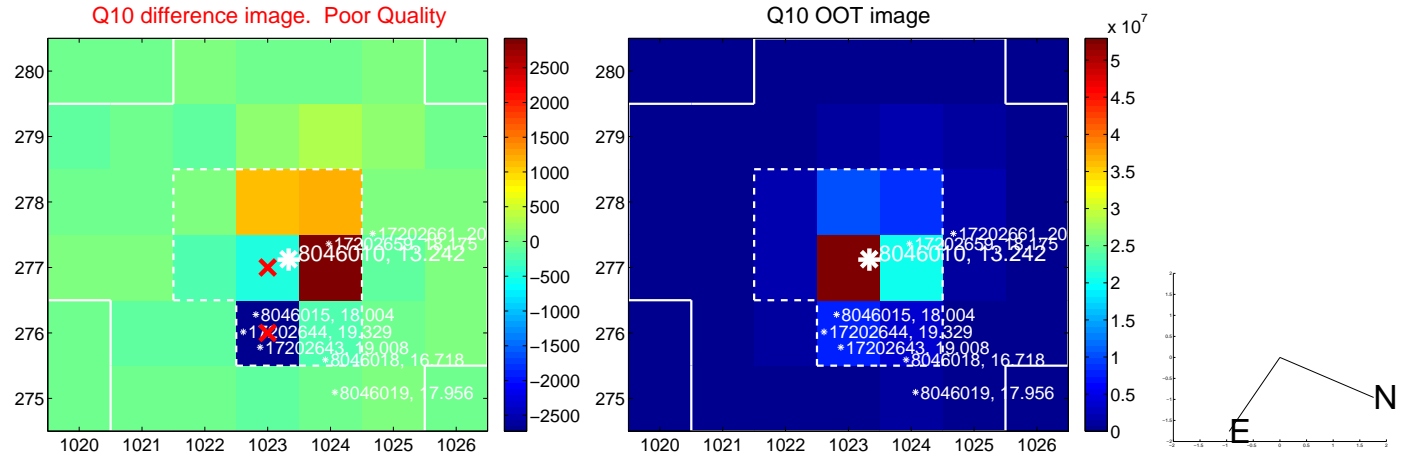
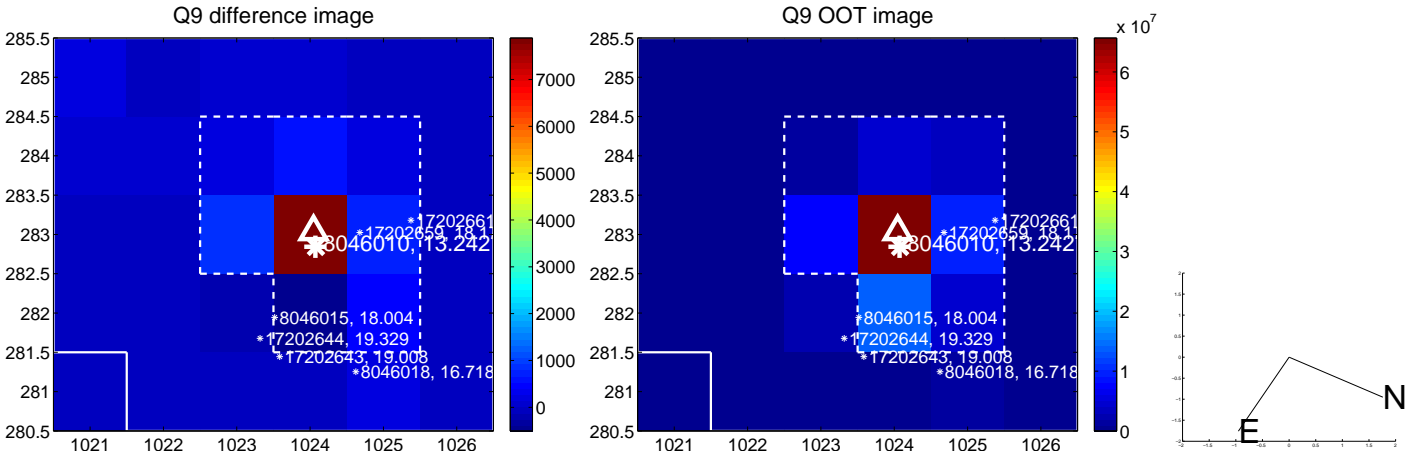


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

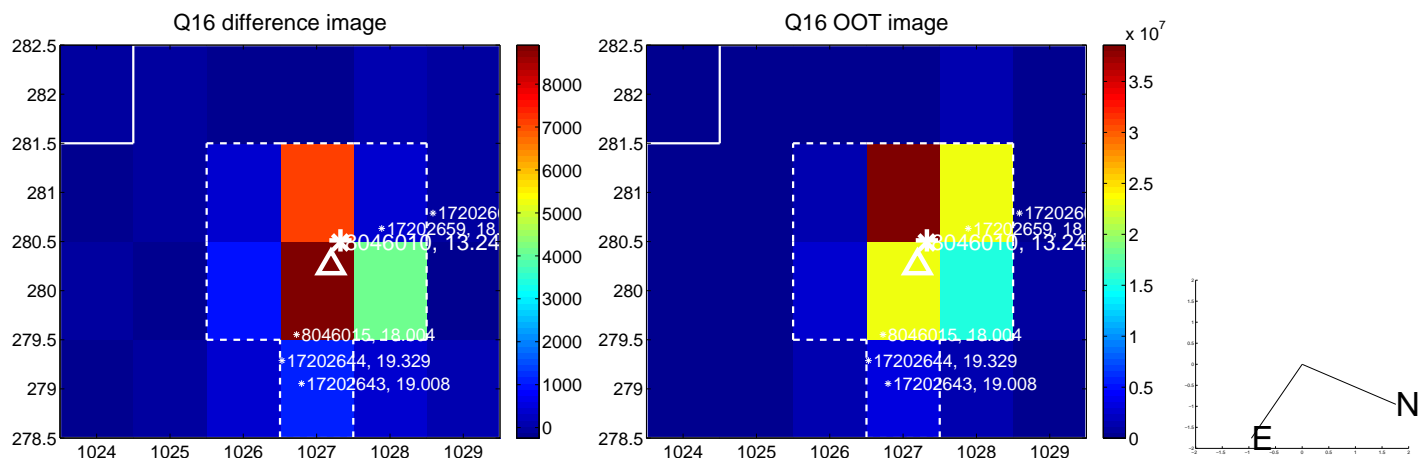
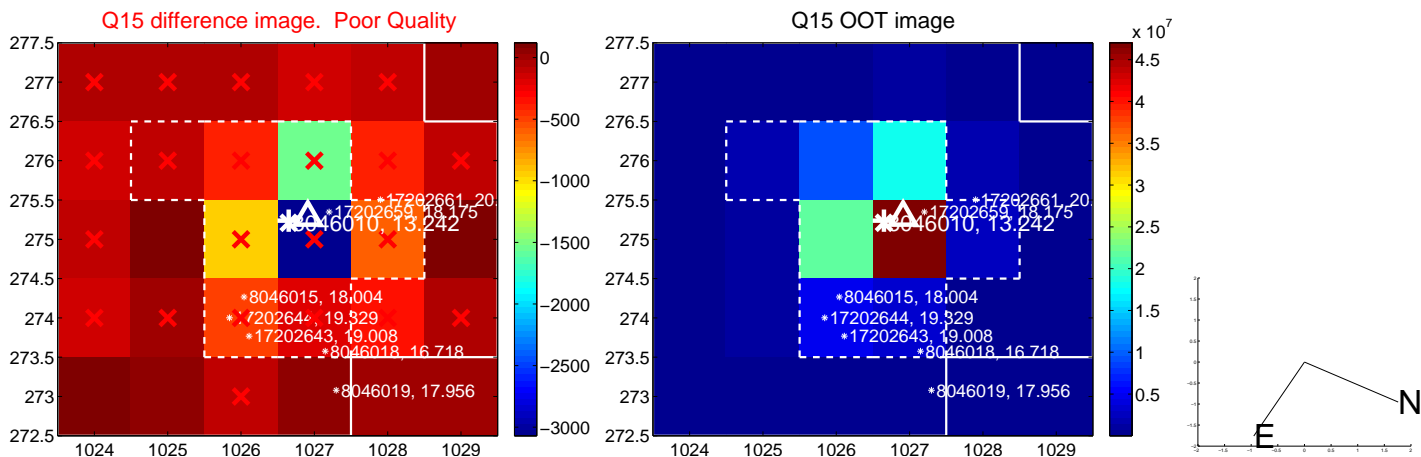
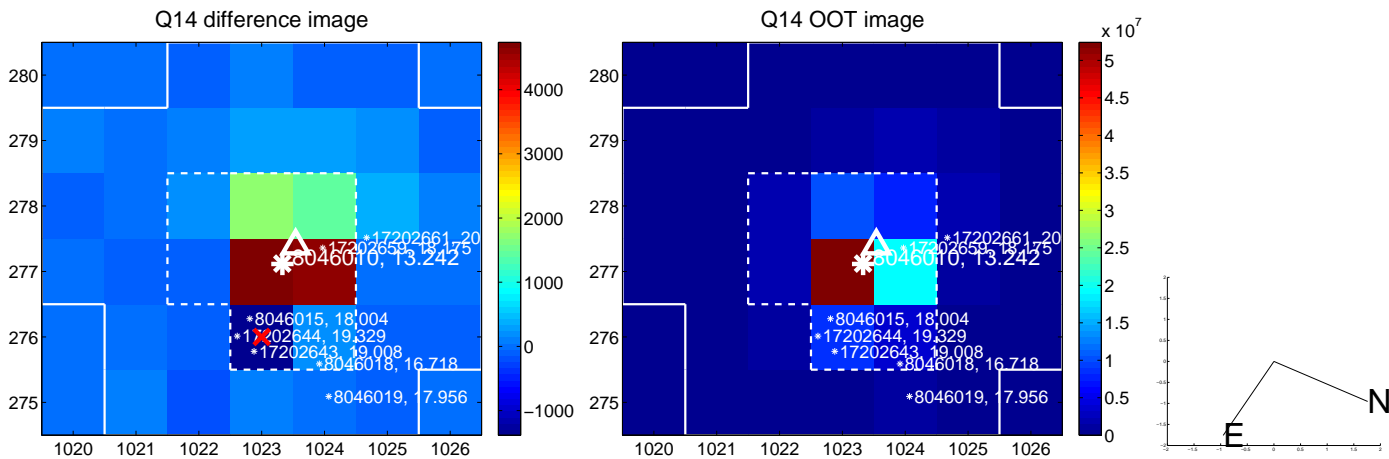
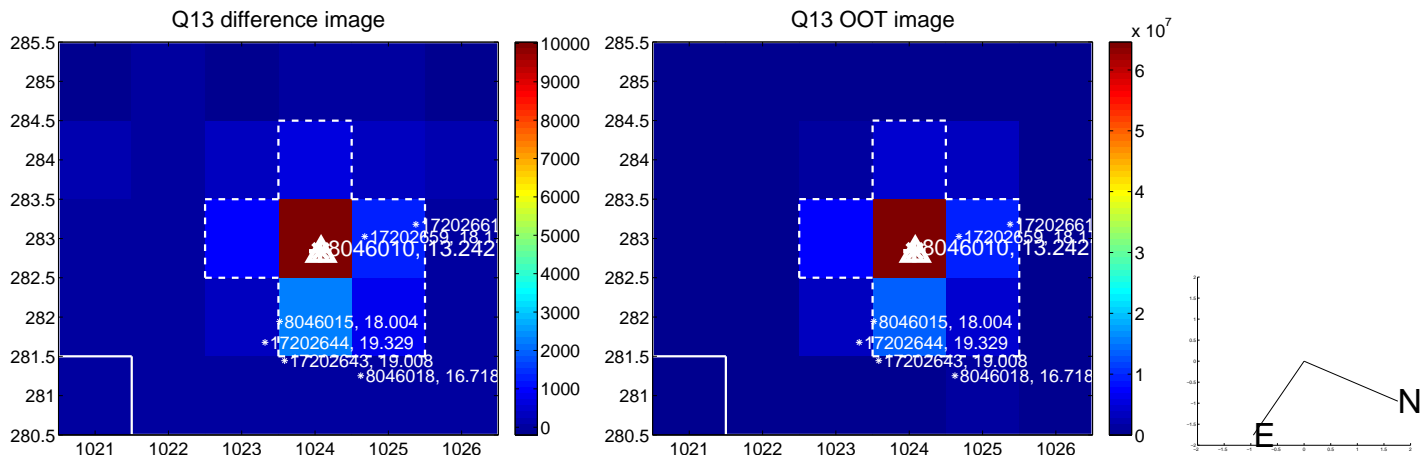




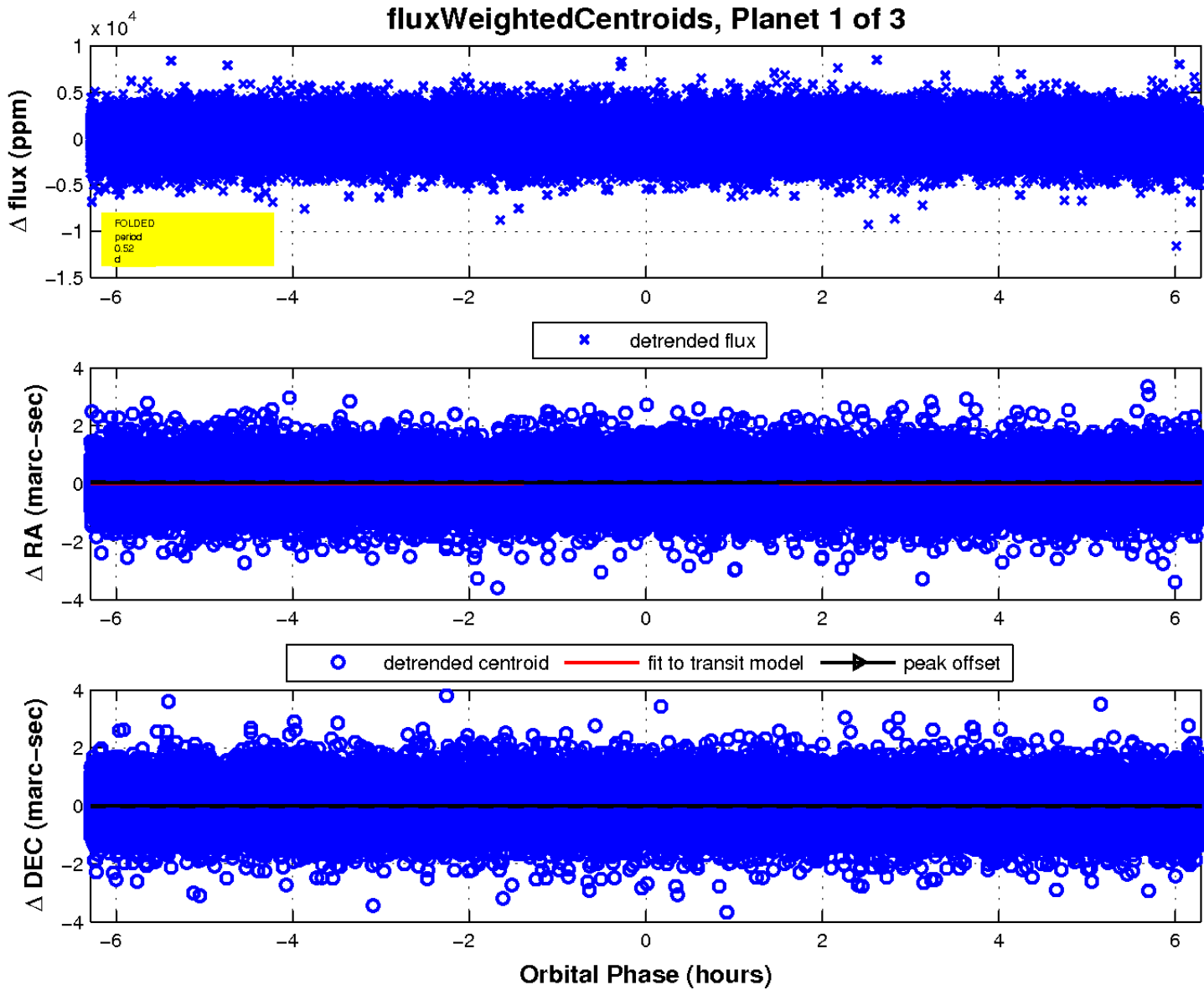
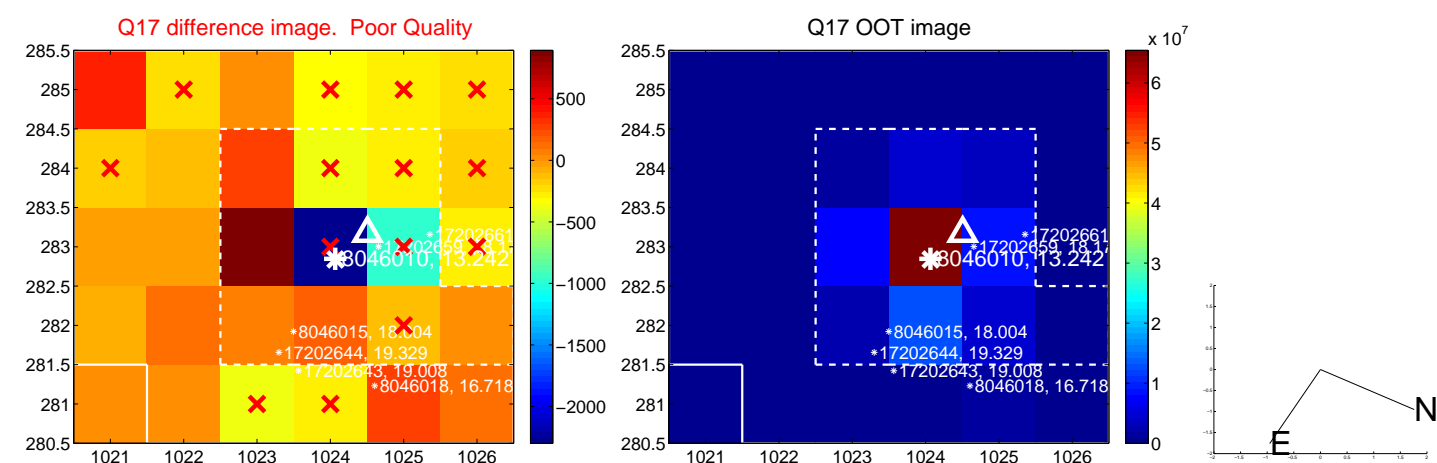
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

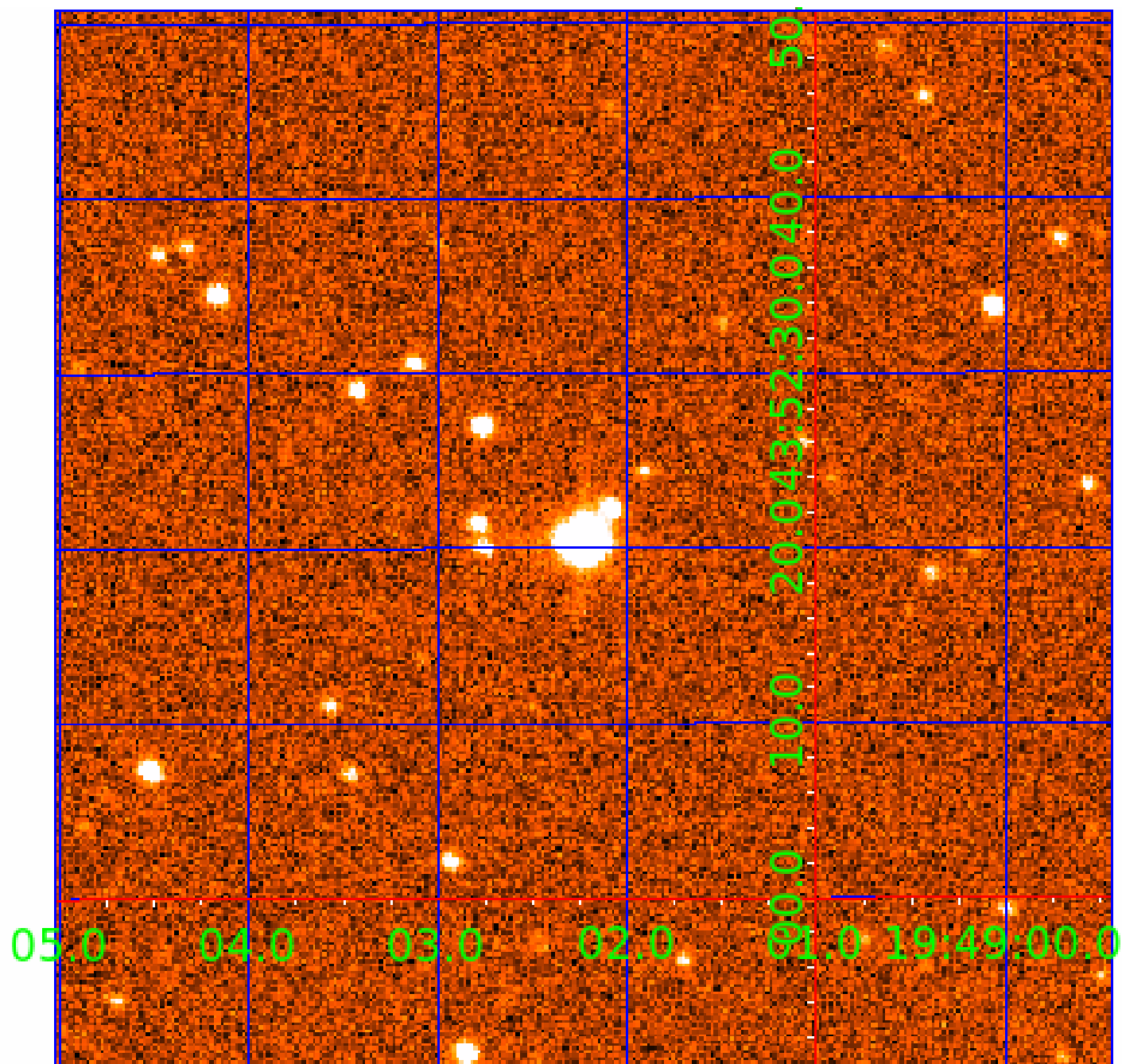


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 008046010

## 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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008046010-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008046010-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

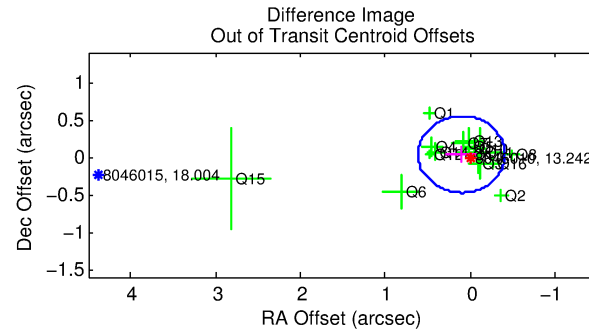
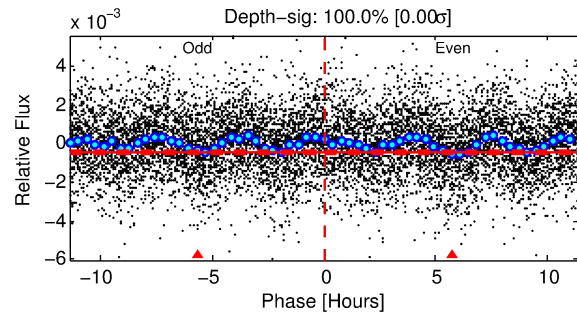
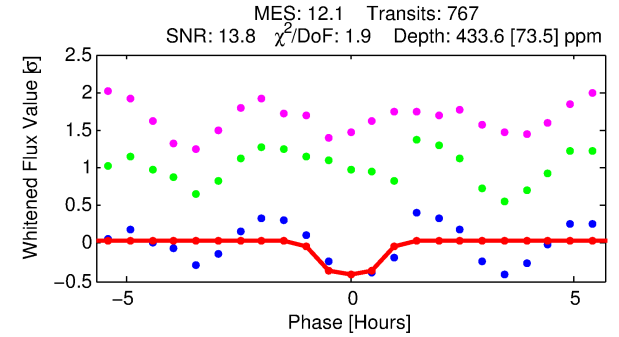
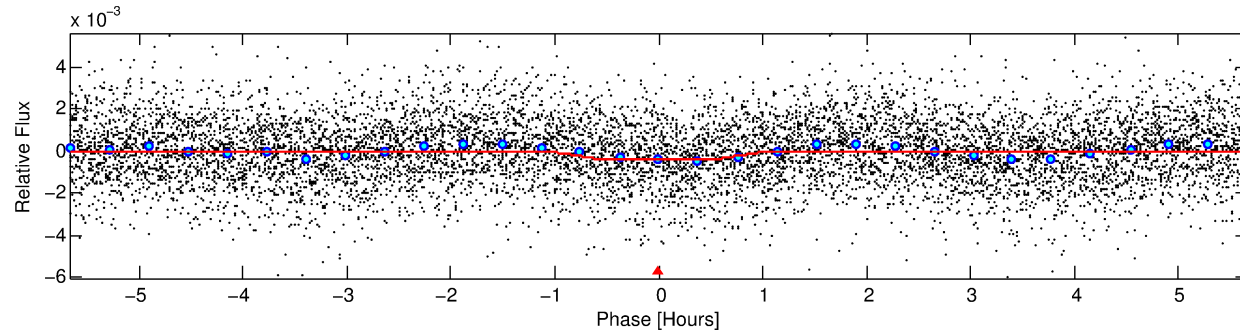
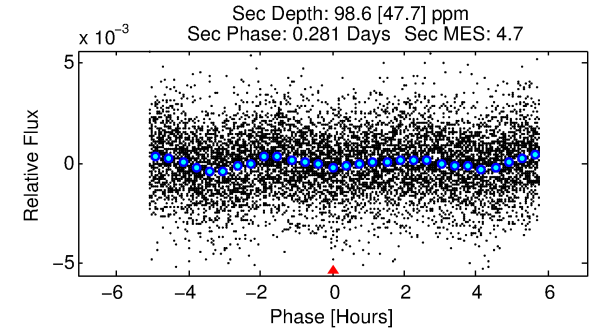
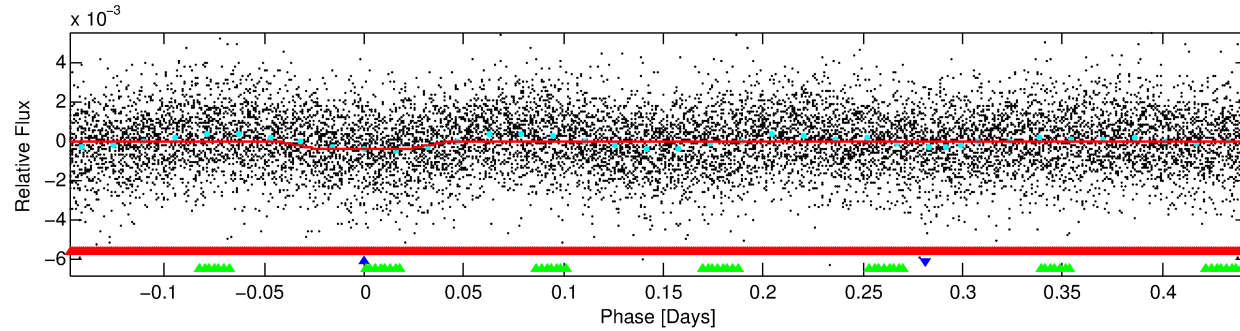
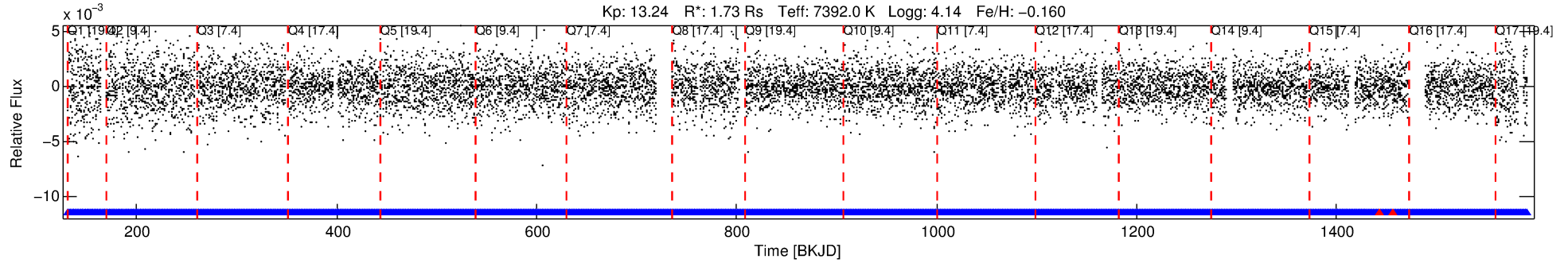
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008046010-02

No Significant Match Found

# DV One-Page Summary

KIC: 8046010 Candidate: 2 of 3 Period: 0.591 d



## DV Fit Results:

Period = 0.59053 [0.00001] d  
Epoch = 131.7635 [0.0027] BKJD  
Rp/R\* = 0.0222 [0.0091]  
a/R\* = 1.49 [1.94]  
b = 0.90 [0.50]  
Seff = 32086.10 [12632.27]  
Teq = 3413 [336] K  
Rp = 4.19 [2.17] Re  
a = 0.0158 [0.0040] AU  
Ag = 0.77 [0.78] [-0.30σ]  
Teffp = 4938 [1196] K [1.23σ]

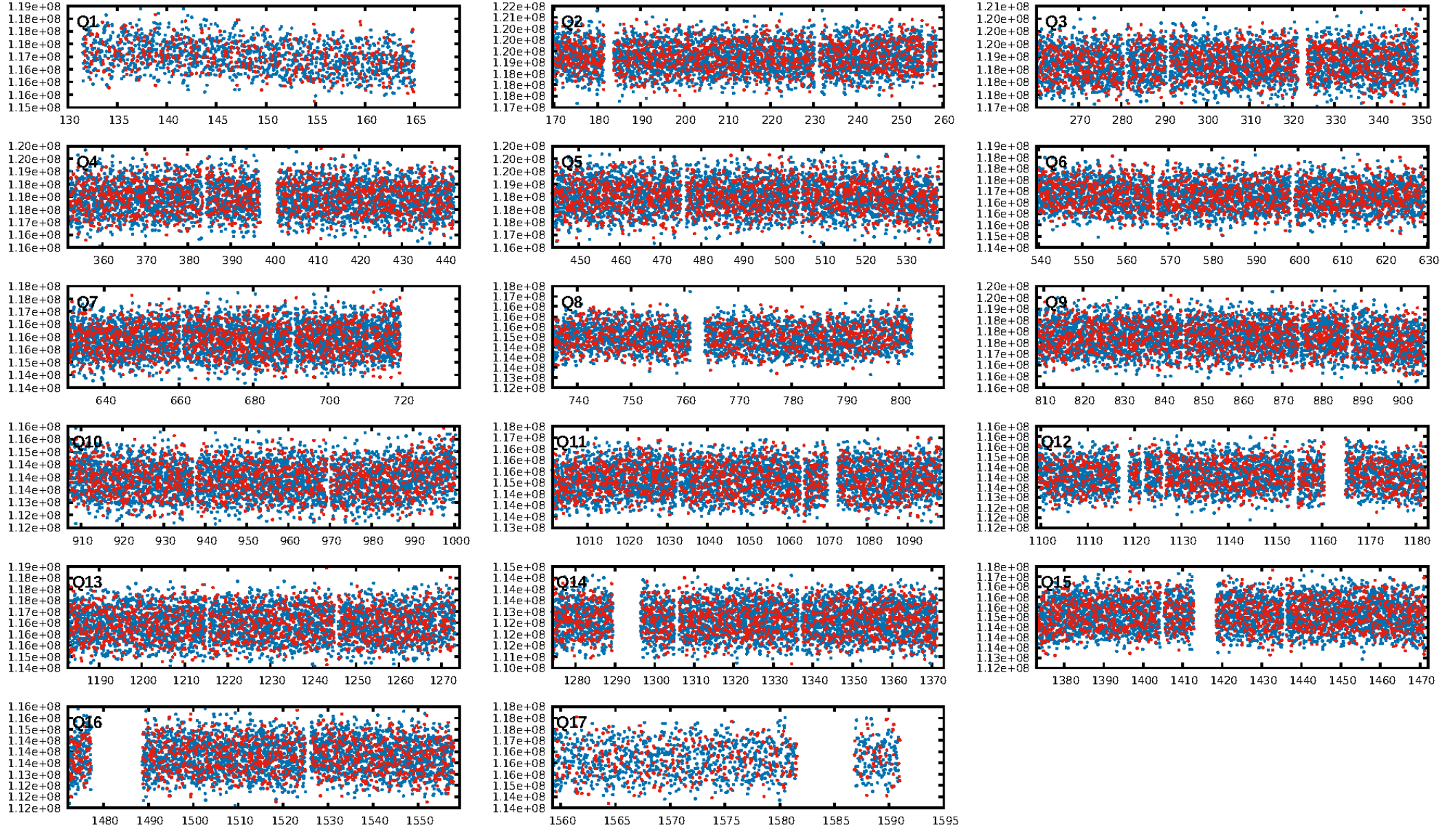
## DV Diagnostic Results:

ShortPeriod-sig: 32.8% [0.42σ]  
LongPeriod-sig: 100.0% [176.67σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.70e-11**  
RollingBand-fgt: 1.00 [731/733]  
**GhostDiagnostic-chr: -0.2381**  
**Centroid-sig: 0.2%**  
Centroid-so: 0.101 arcsec [2.06σ]  
OotOffset-rm: 0.104 arcsec [0.61σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 0.084 arcsec [0.42σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.62 [10/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:33:44 Z

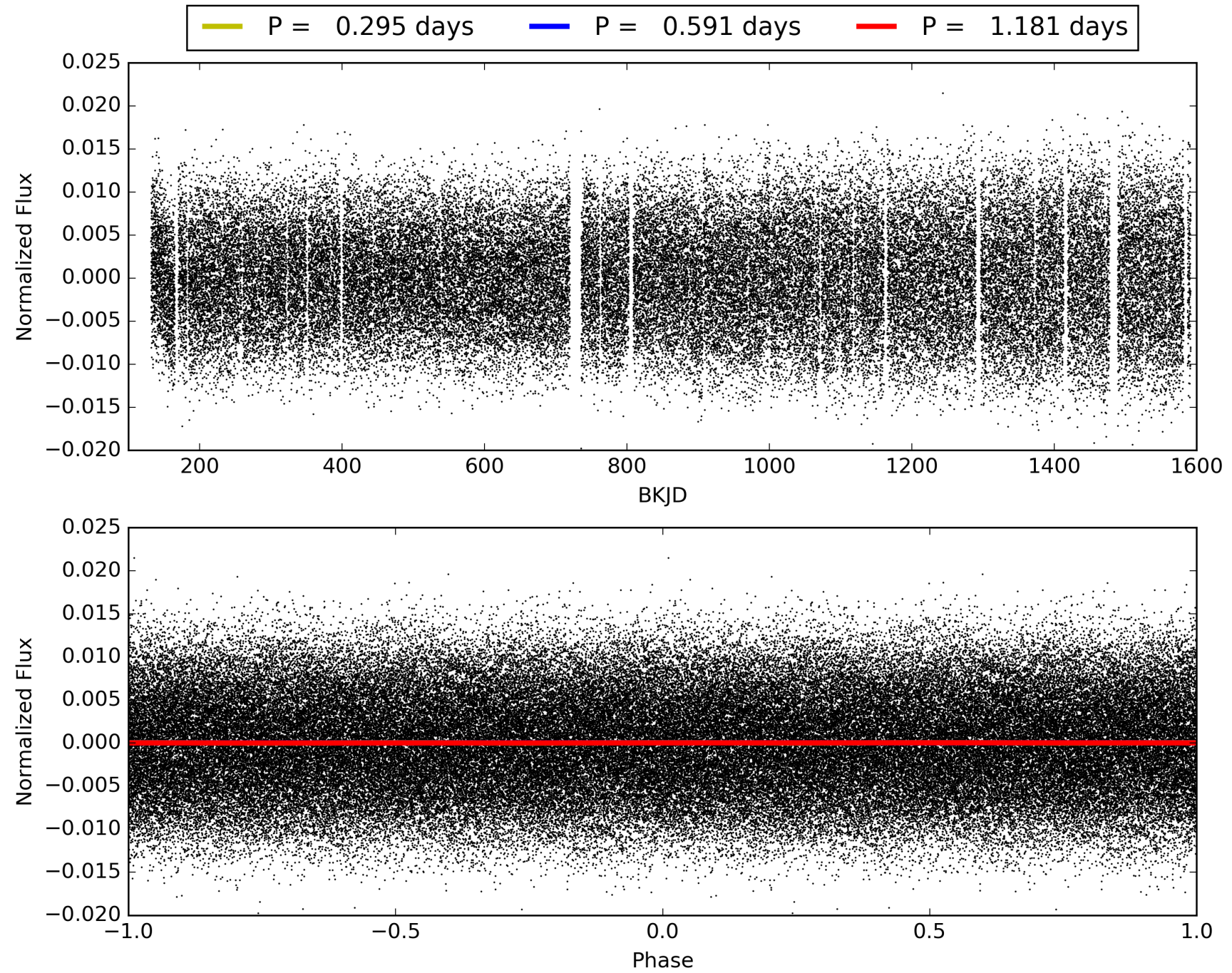
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008046010-02, PDC Light Curves



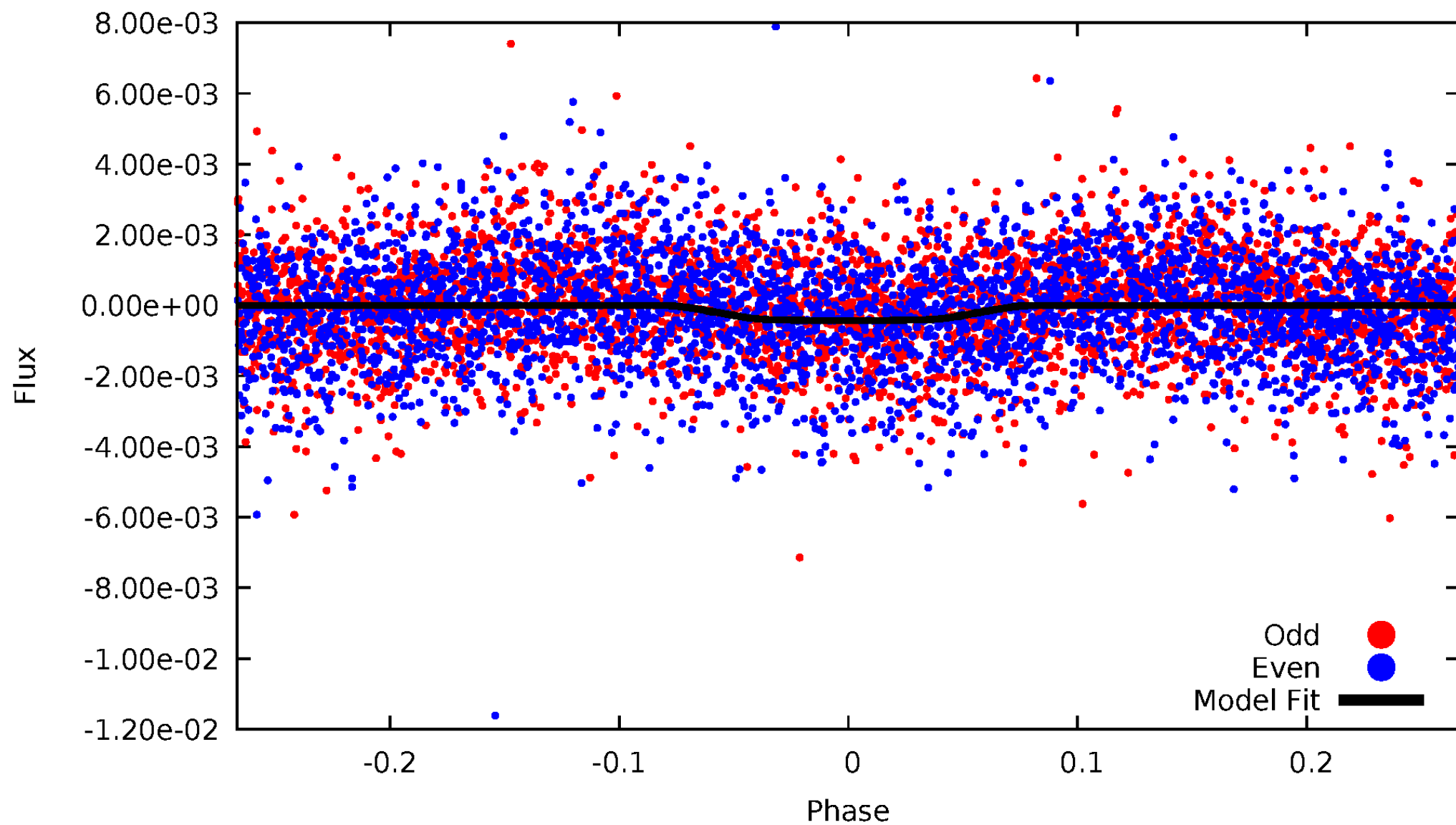


TCE 008046010-02



DV Odd/Even

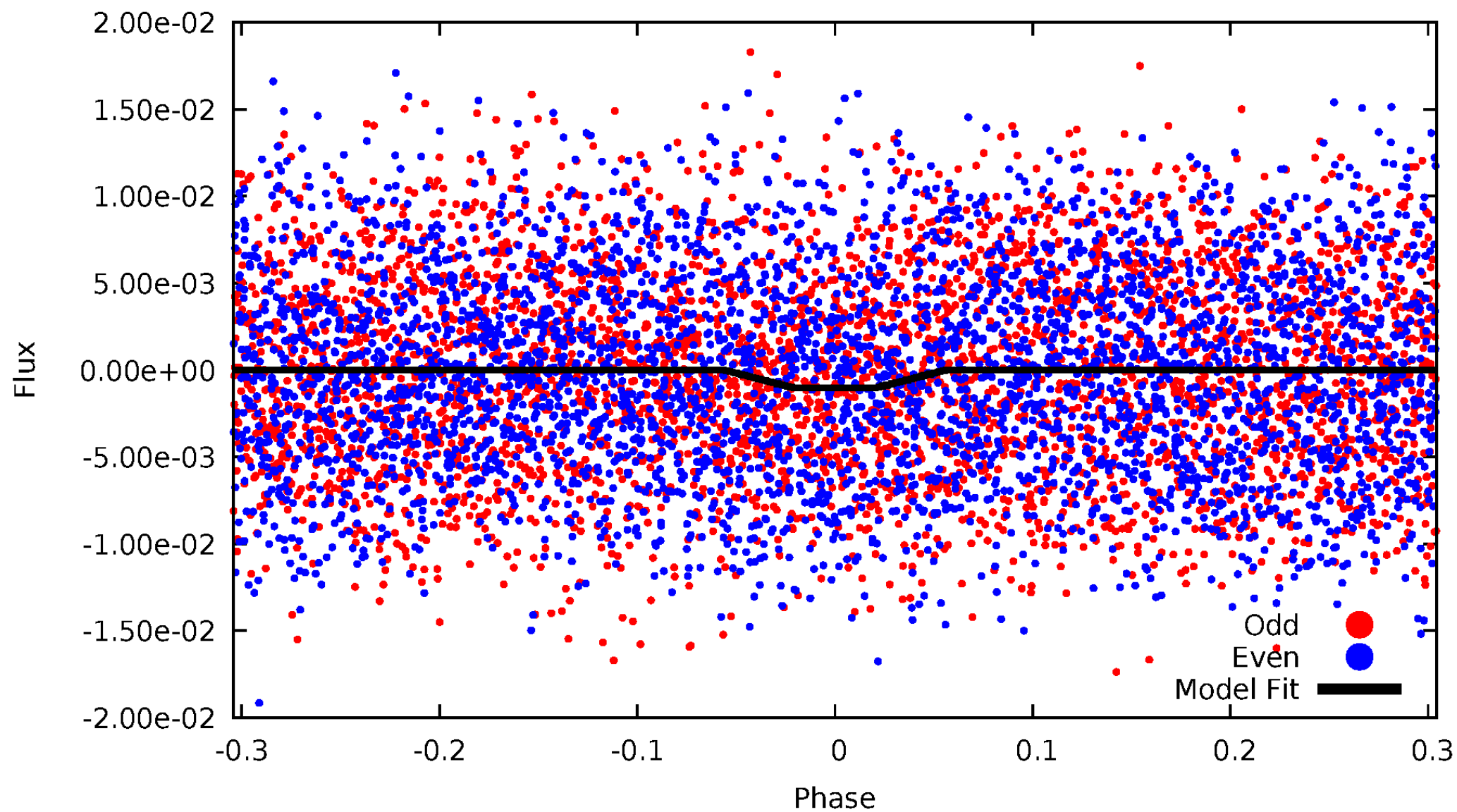
TCE 008046010-02





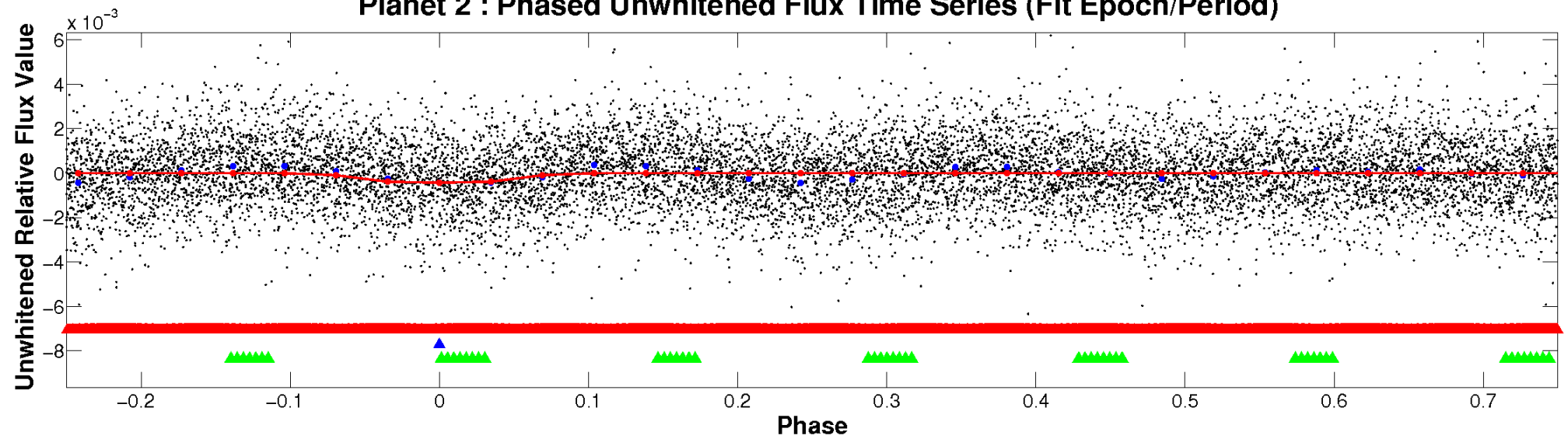
# ALT Odd/Even

TCE 008046010-02

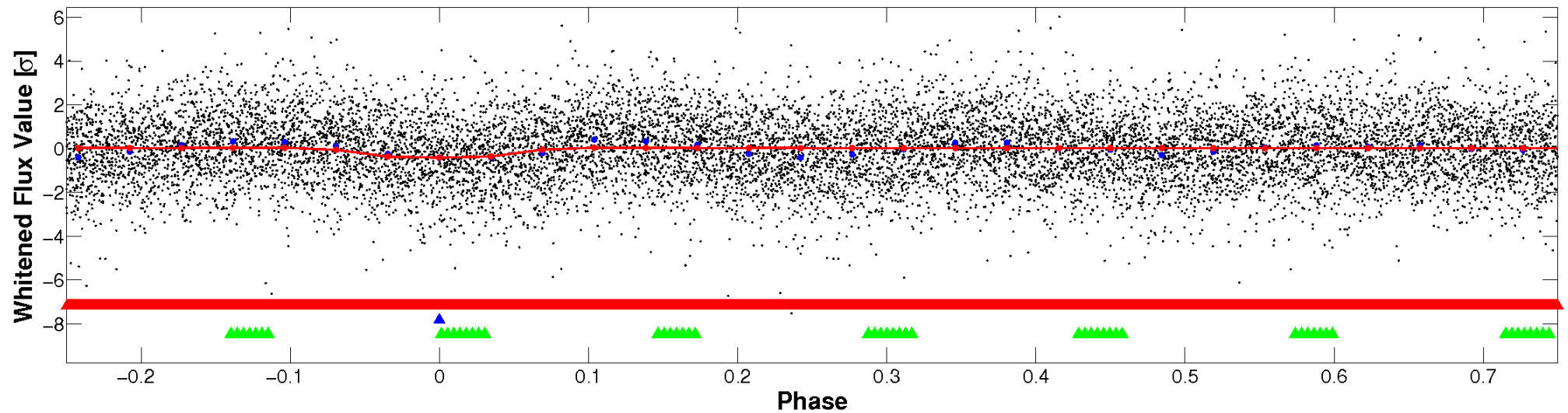


# Non-Whitened Vs. Whitened Light Curve

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

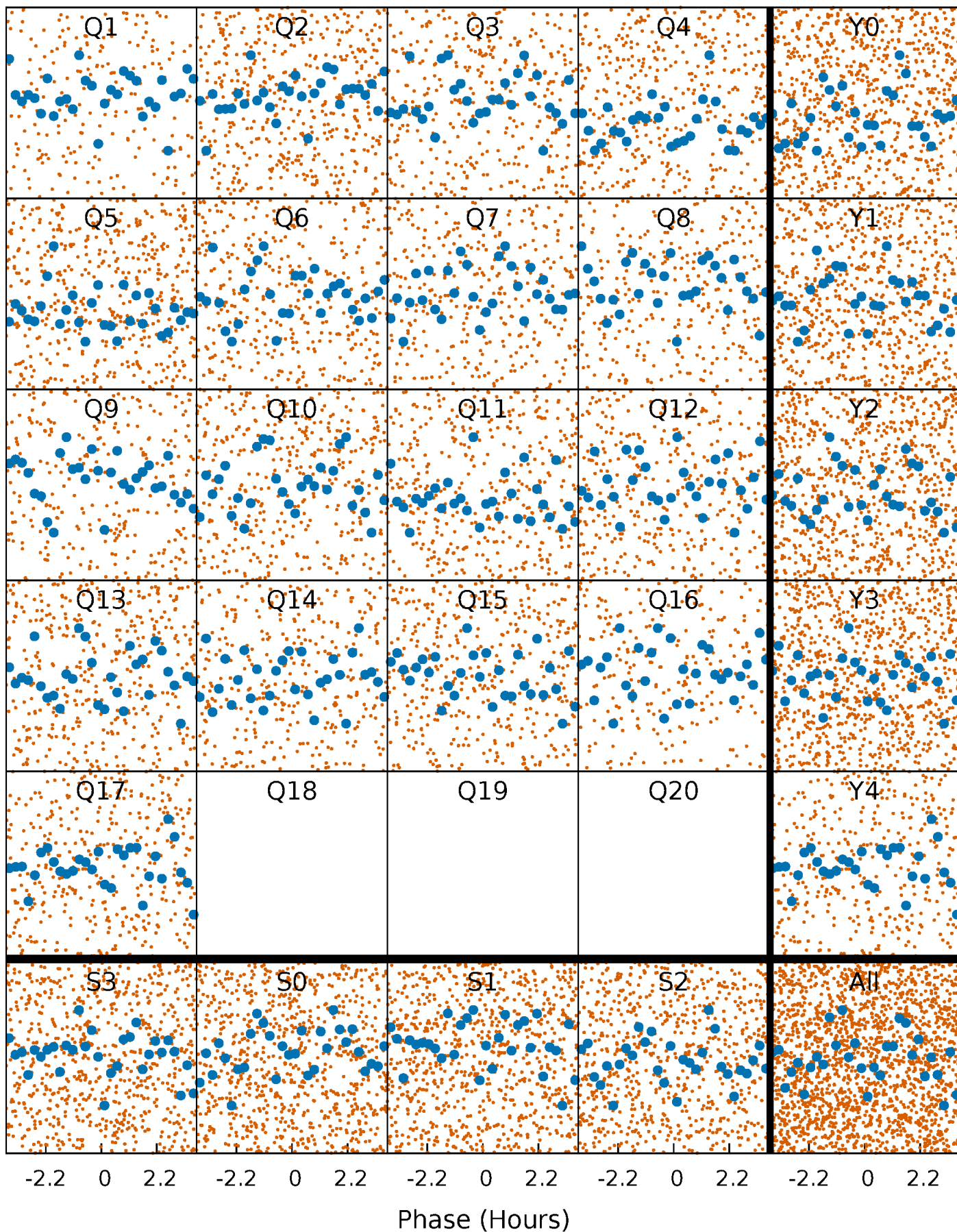


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



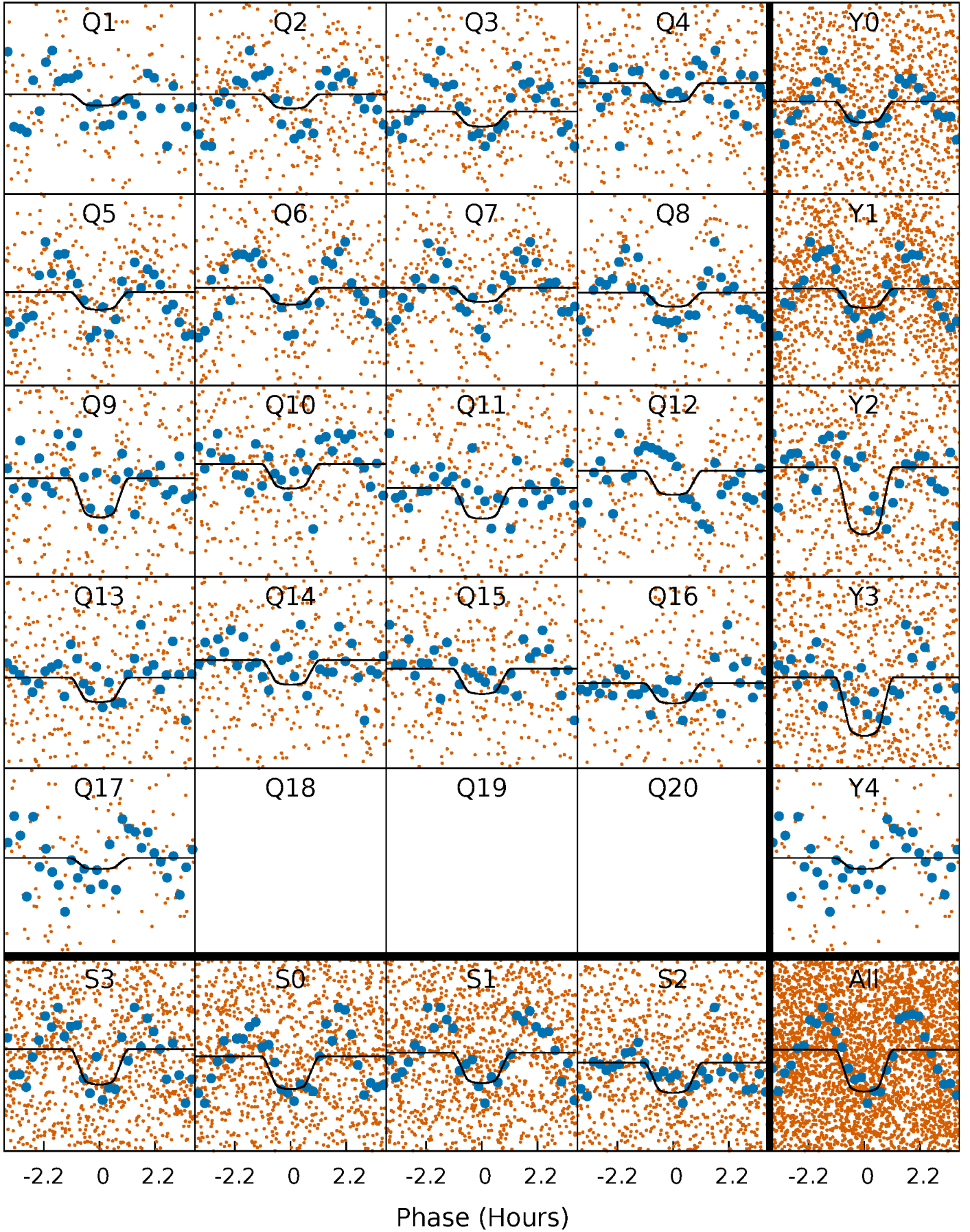
# PDC Quarter-Phased Transit Curves

TCE 008046010-02 P= 0.590526 Days  $T_0=131.763536$  (BKJD)



# DV Quarter-Phased Transit Curves

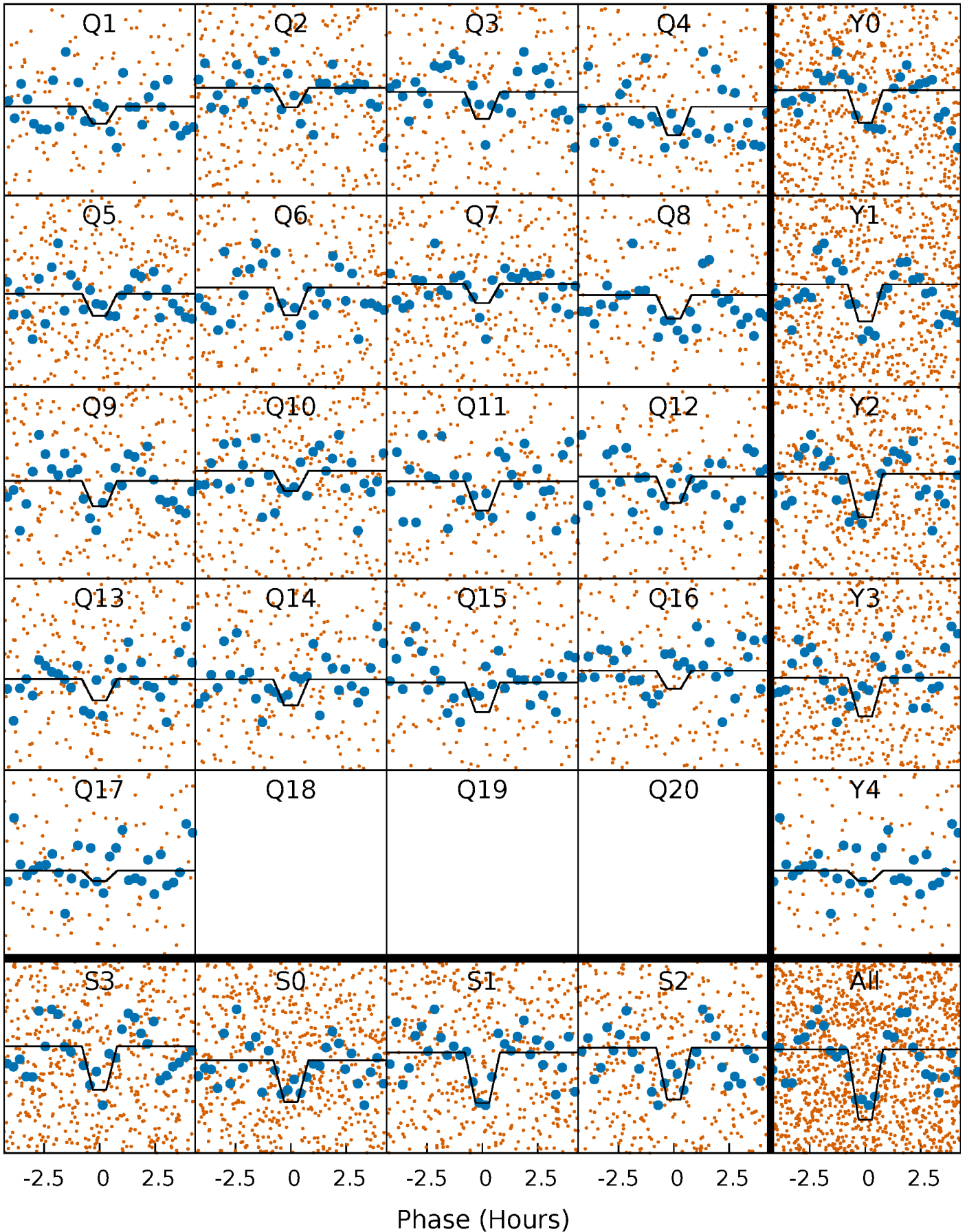
TCE 008046010-02 P= 0.590526 Days  $T_0=131.763536$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008046010-02   P= 0.590540 Days    $T_0=131.749029$  (BKJD)

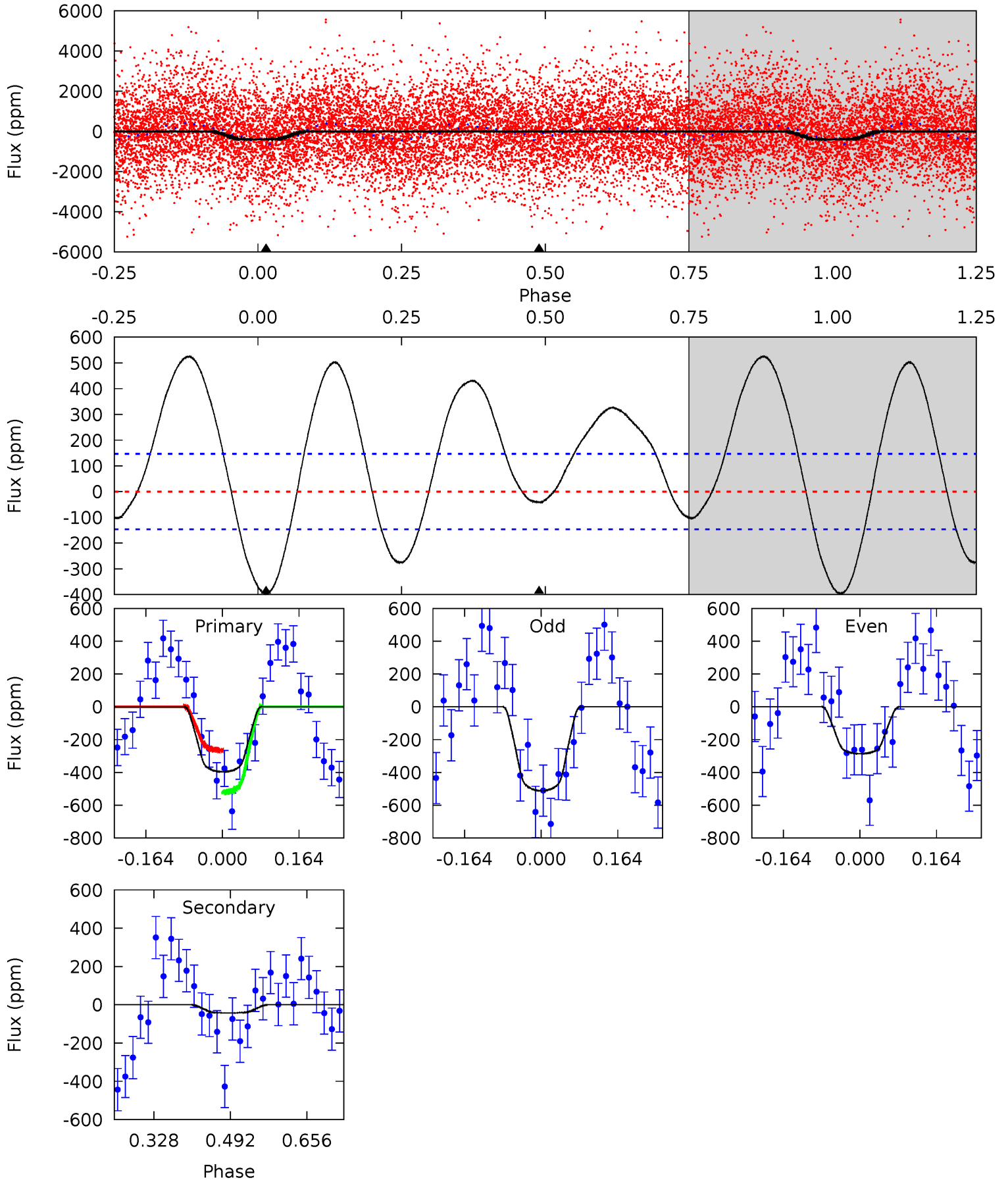




# DV Model-Shift Uniqueness Test

008046010-02, P = 0.590526 Days, E = 131.173010 Days

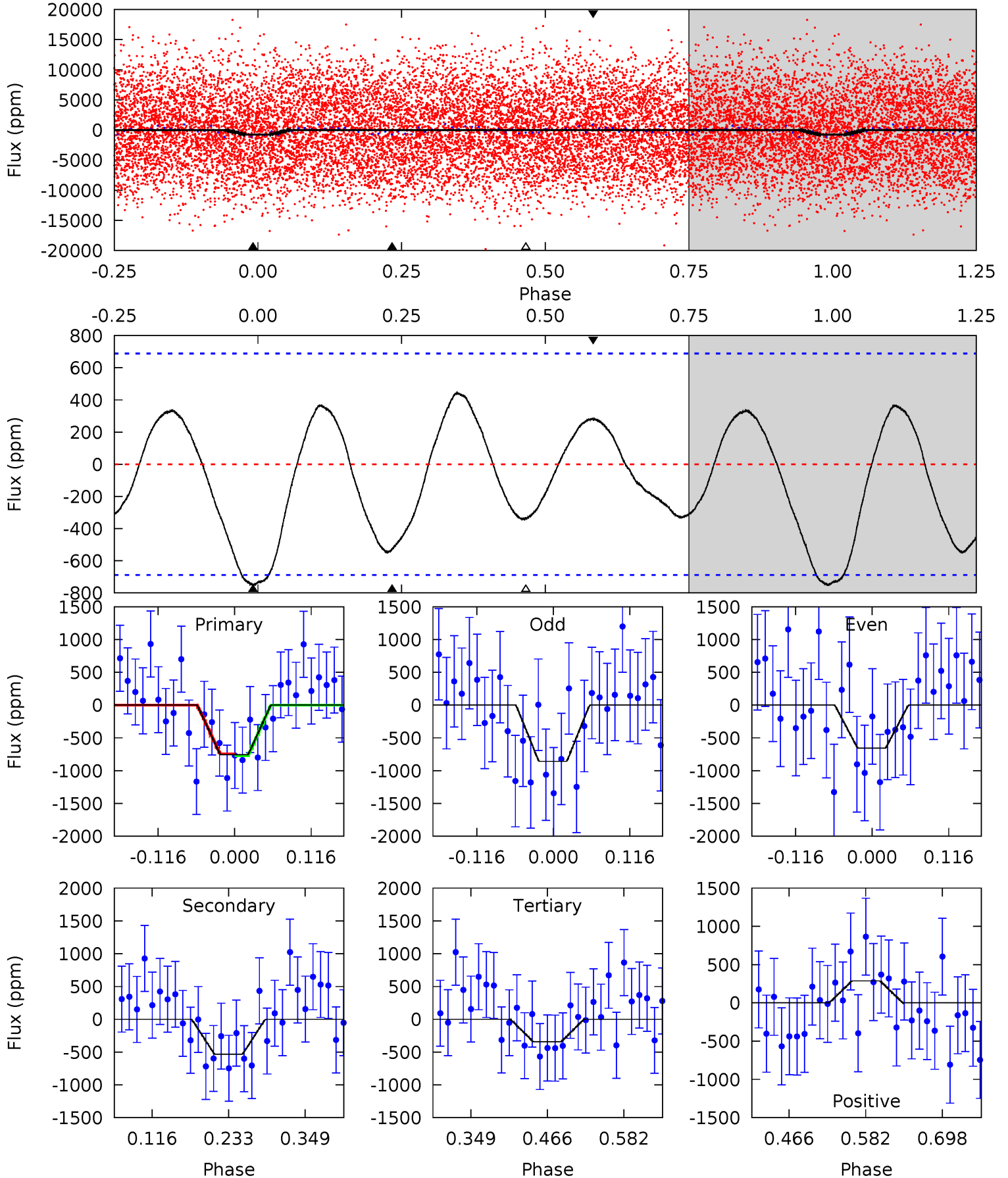
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	1.30	0	0	4.46	1.39	5.43	12.1	12.1	1.30	1.30	3.50	1.11	0.57	3.91



# Alt Model-Shift Uniqueness Test

008046010-02, P = 0.590540 Days, E = 131.158489 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
4.98	3.51	2.25	1.89	4.53	1.57	1.58	2.73	3.09	1.25	1.61	0.66	0.96	0.37	0.09



### Stellar Parameters For KIC 008046010

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+205}_{-333}$	$4.139^{+0.149}_{-0.182}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.546}_{-0.364}$	$1.493^{+0.209}_{-0.255}$	$0.409^{+0.316}_{-0.206}$
	+3%/-5%	+4%/-4%	+156%/-219%	+32%/-21%	+14%/-17%	+77%/-51%
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 008046010-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-43 \pm 33$	$4.07^{+1.95}_{-1.68}$	$4771^{+363}_{-325}$	$2209^{+2703}_{-6253}$	$0.303^{+0.725}_{-0.237}$
Alt.	$-533 \pm 152$	$6.05^{+2.09}_{-1.84}$	$4776^{+361}_{-314}$	$5943^{+1357}_{-1071}$	$1.970^{+2.058}_{-1.016}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

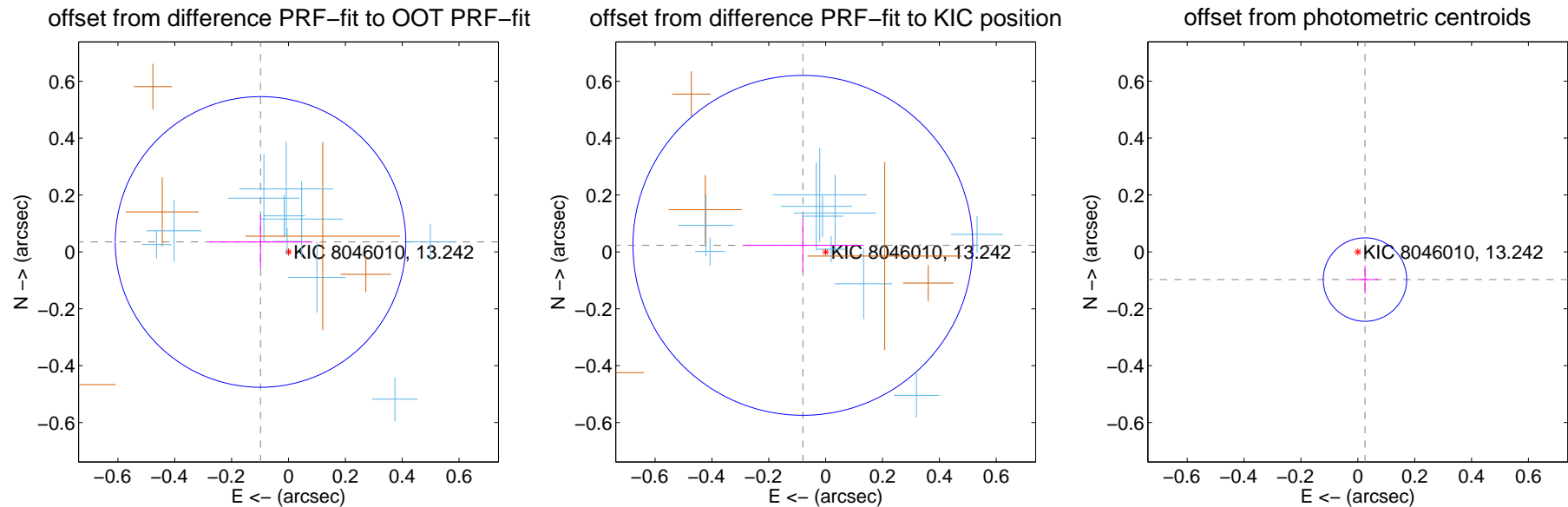
## DV Centroid Data

Supplemental centroid analysis for 008046010-02. Kepler magnitude: 13.24. Transit SNR 13.77

There are 10 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

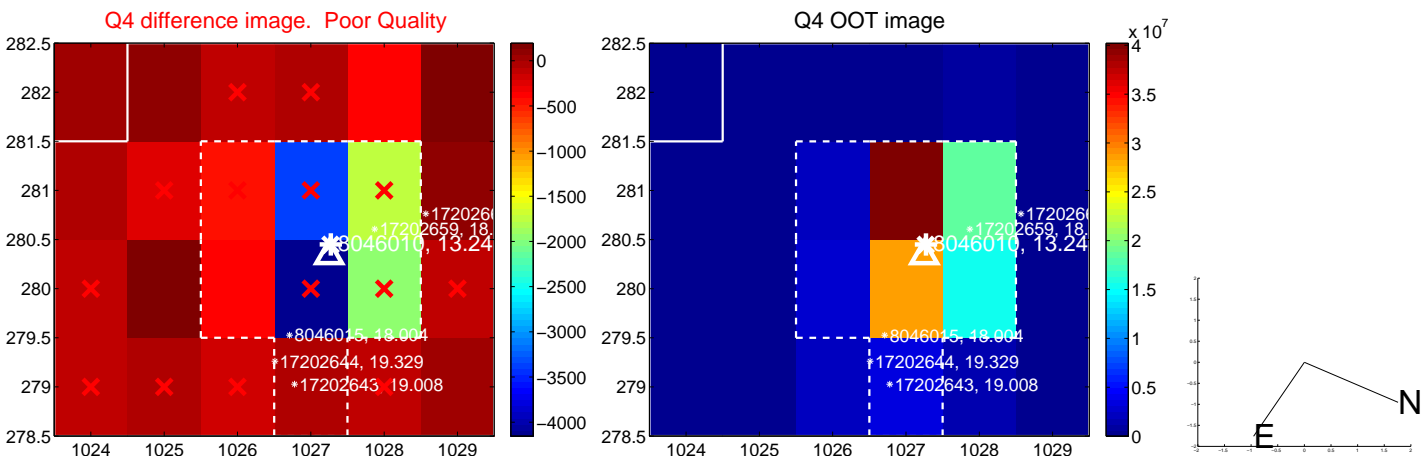
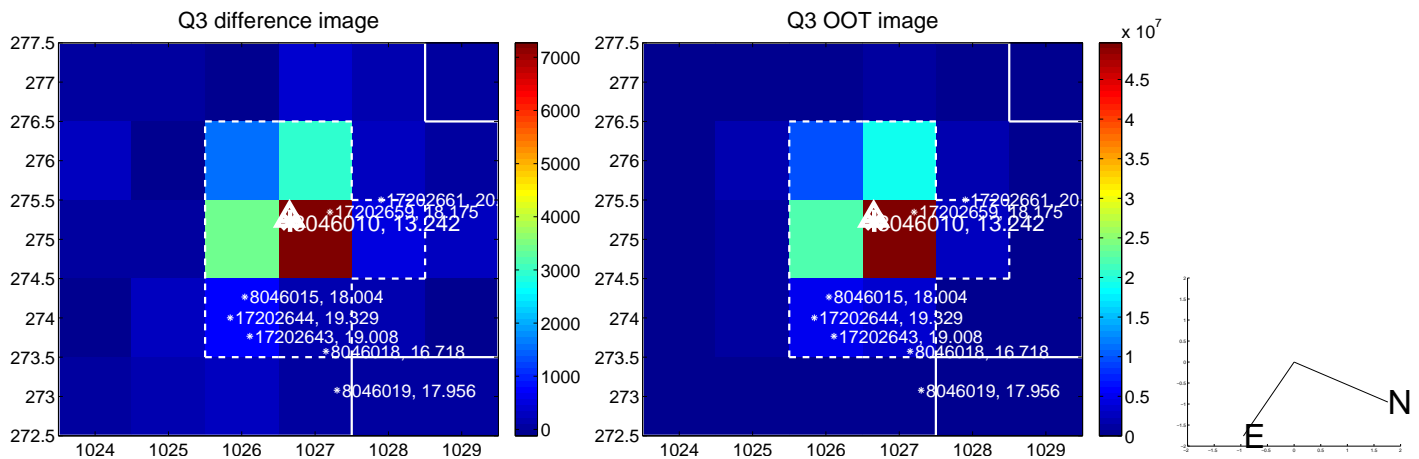
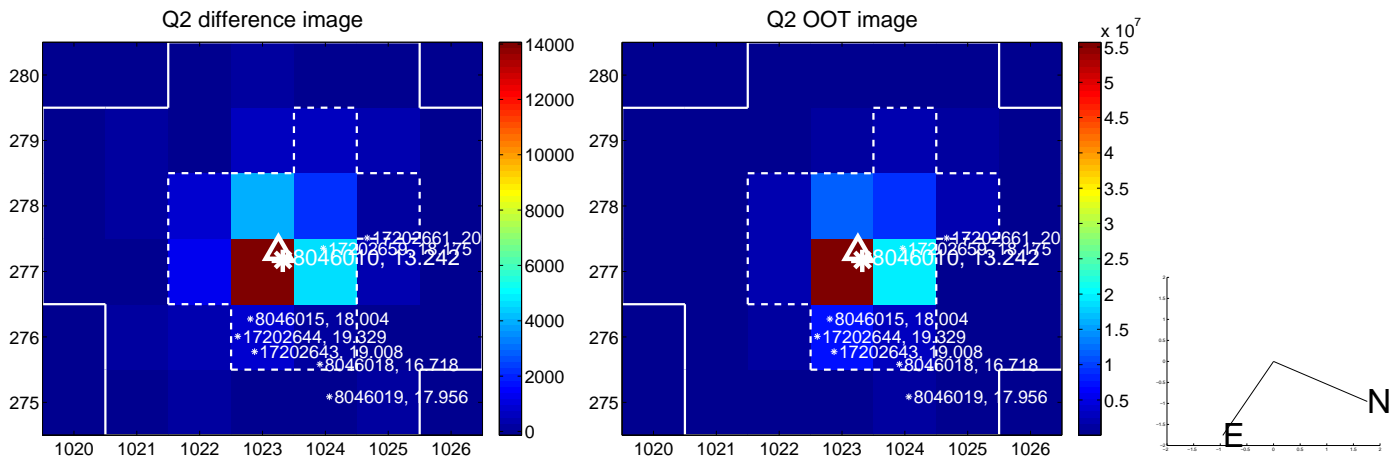
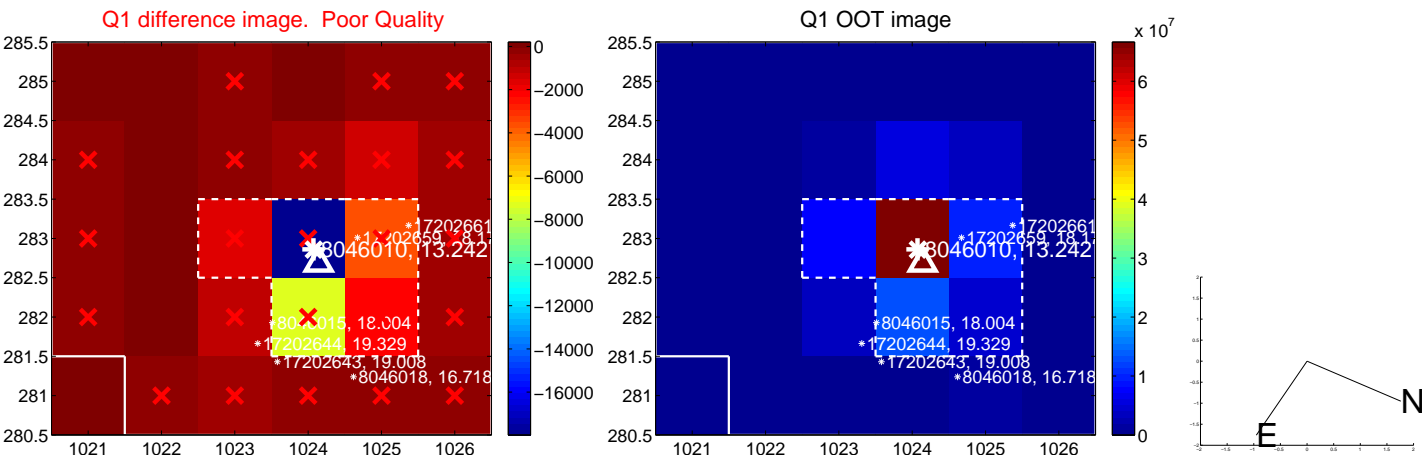
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.104 \pm 0.170$	0.61	$0.098 \pm 0.181$	$0.035 \pm 0.095$
PRF-fit source offset from KIC position	$0.084 \pm 0.199$	0.42	$0.080 \pm 0.210$	$0.023 \pm 0.094$
photometric centroid source offset	$0.10 \pm 0.05$	2.06	$-0.03 \pm 0.05$	$-0.10 \pm 0.05$



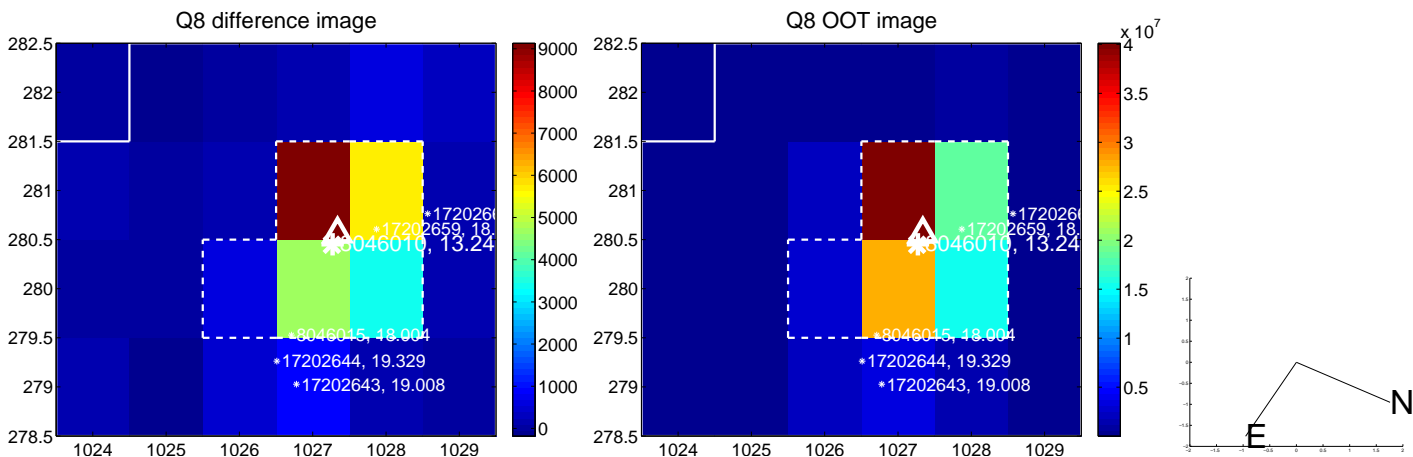
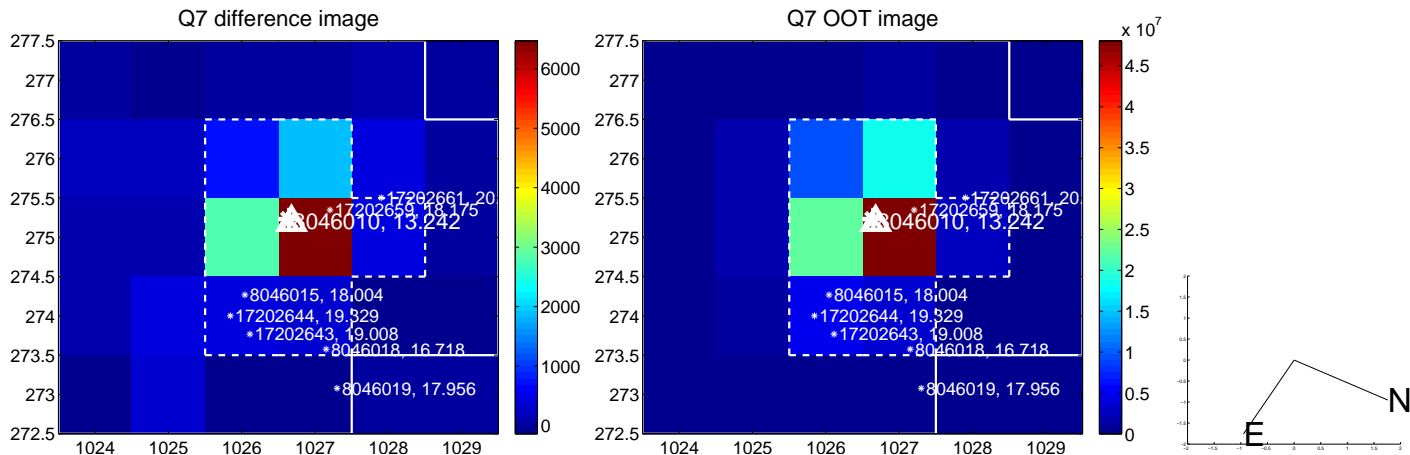
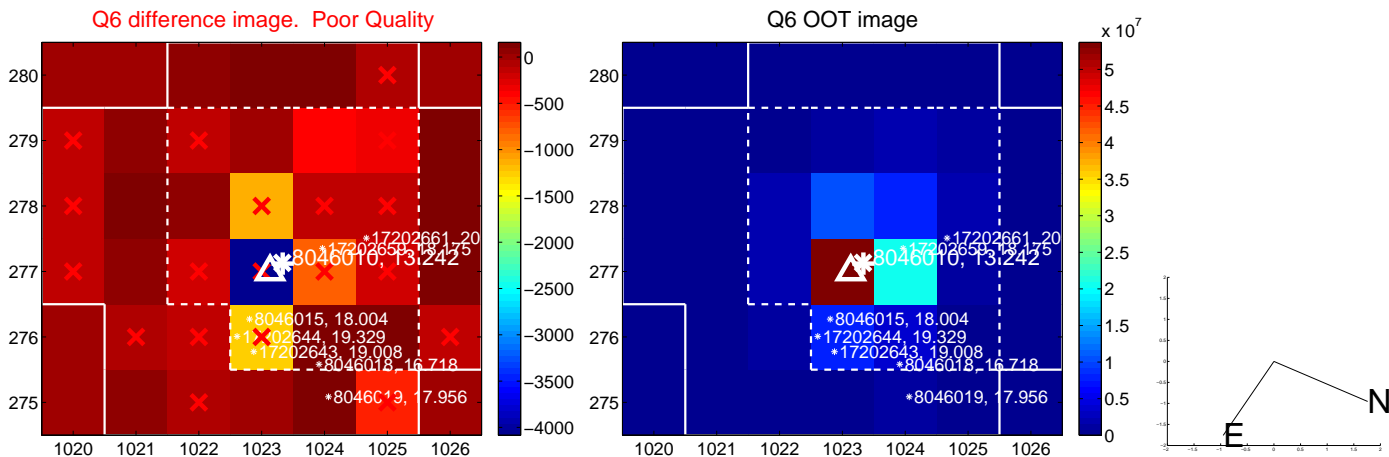
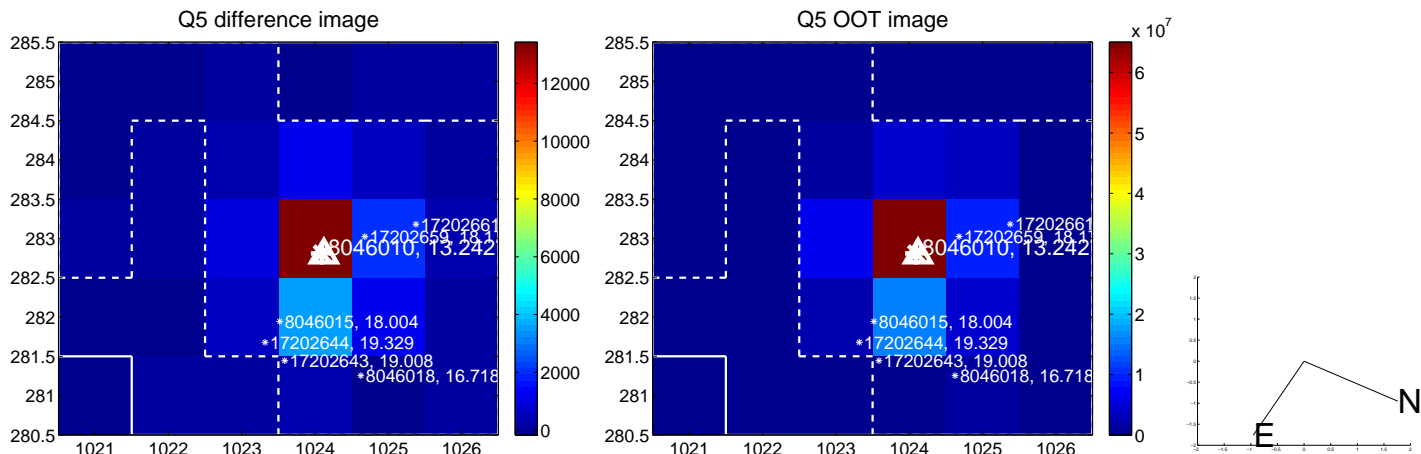
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



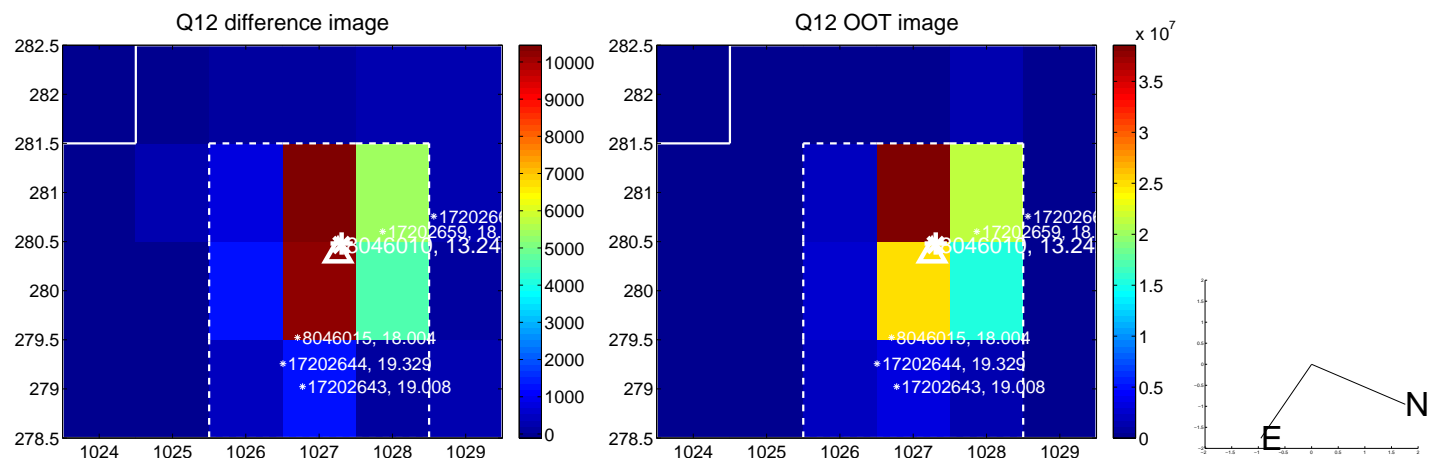
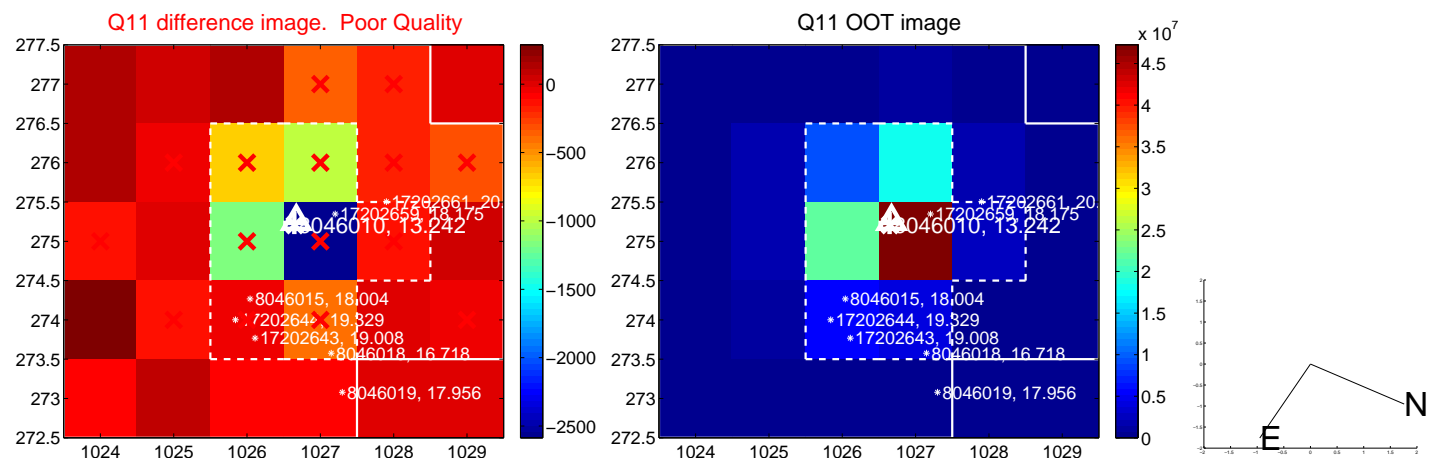
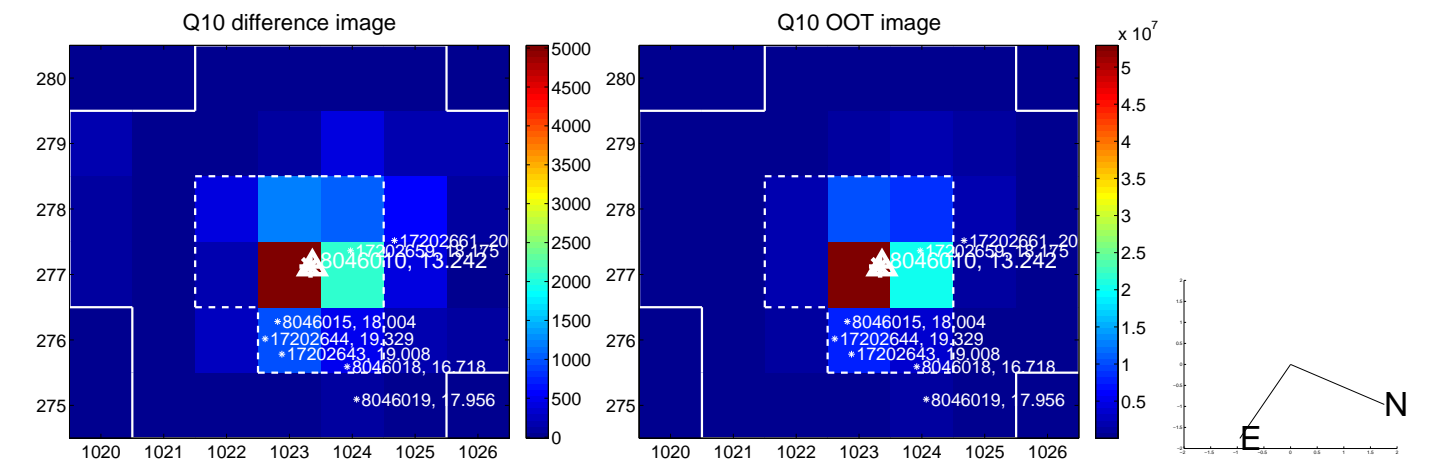
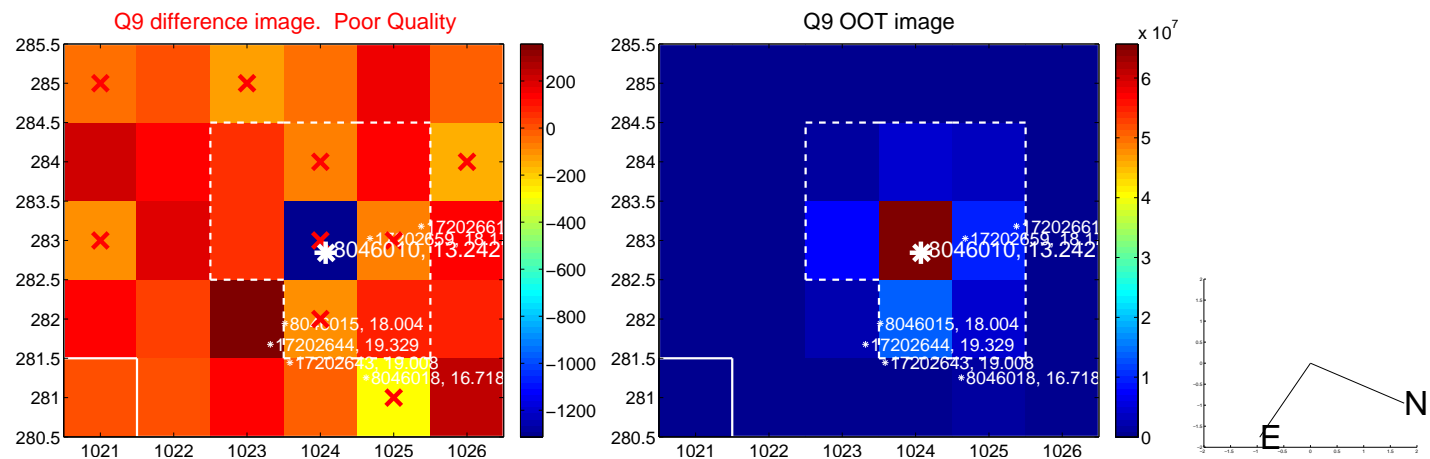
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



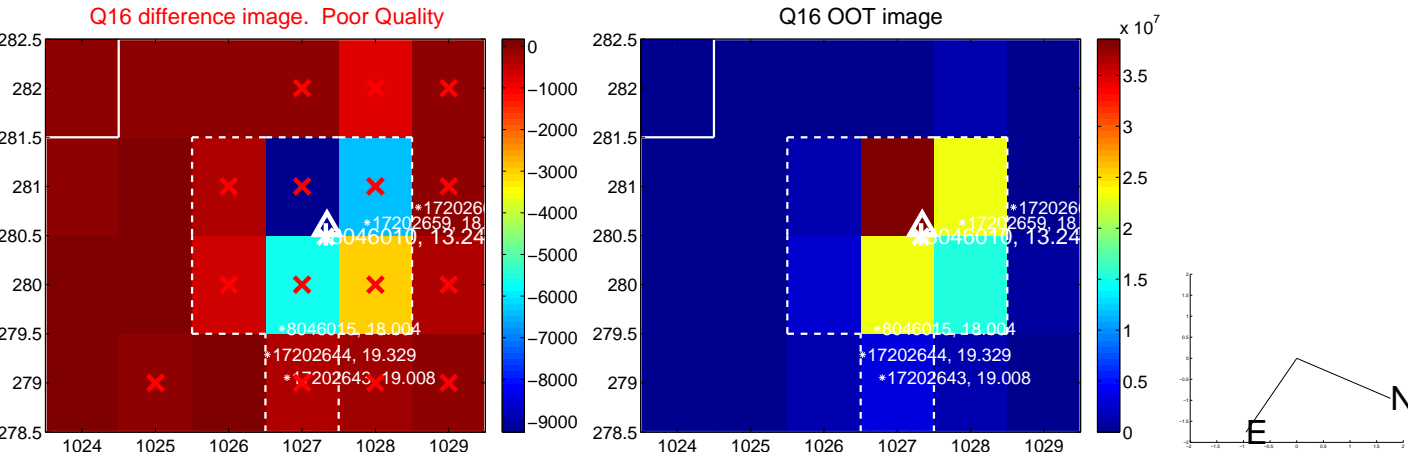
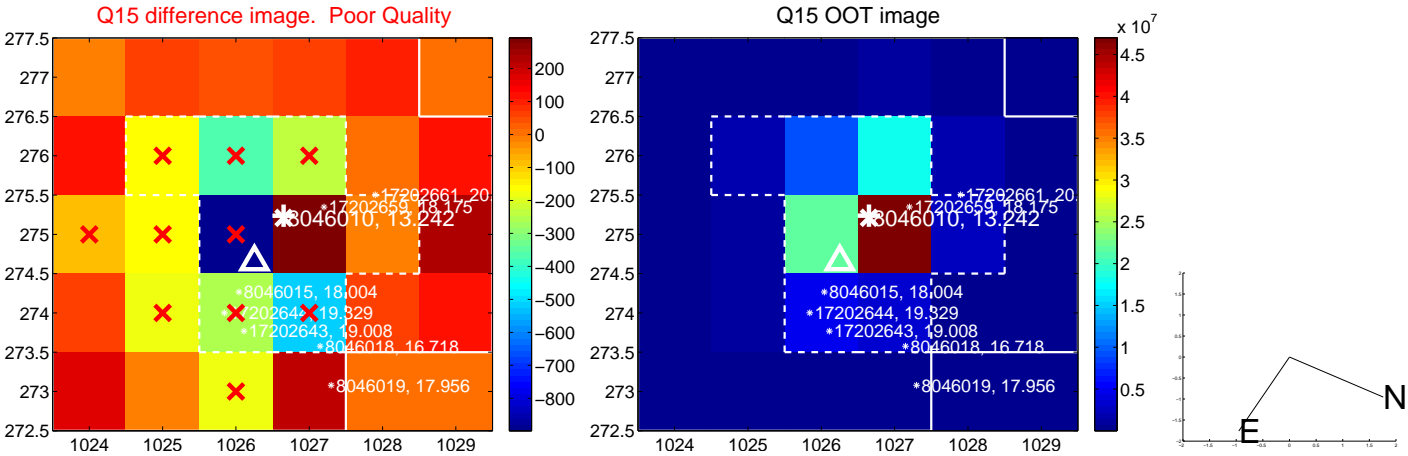
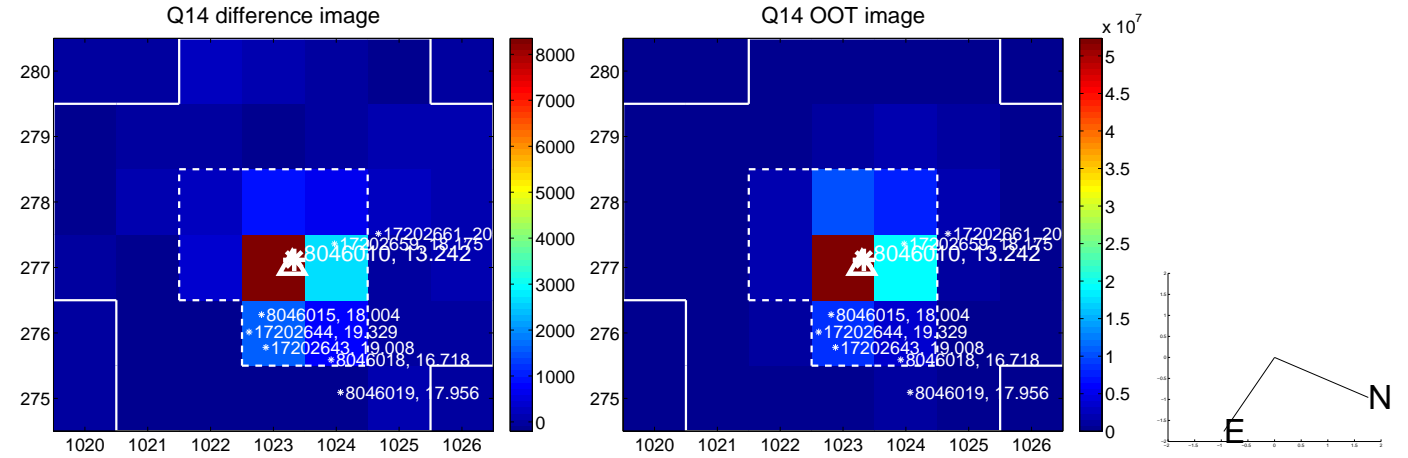
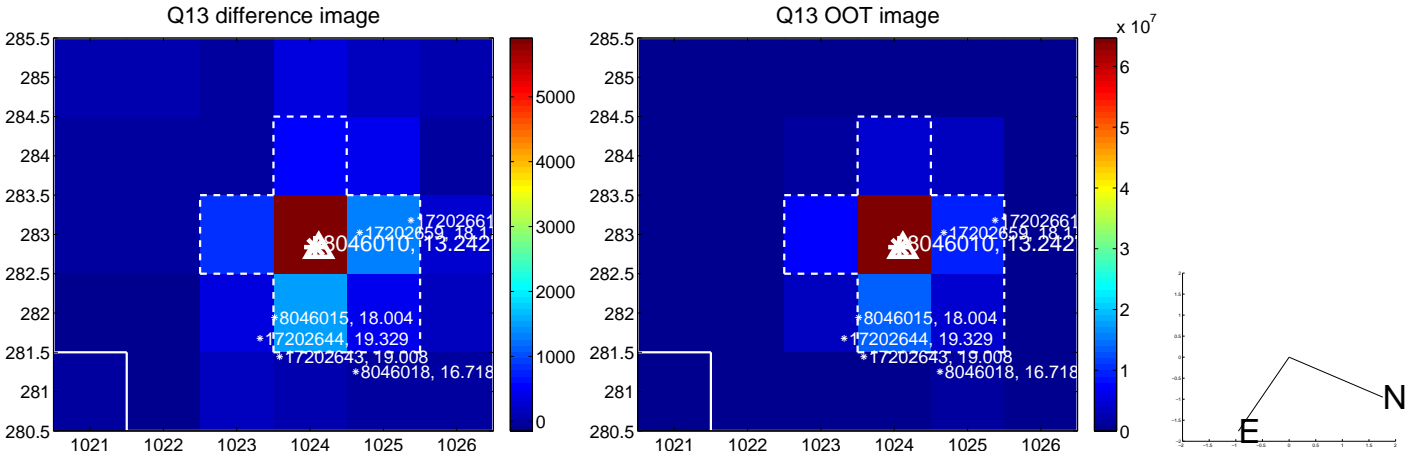
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



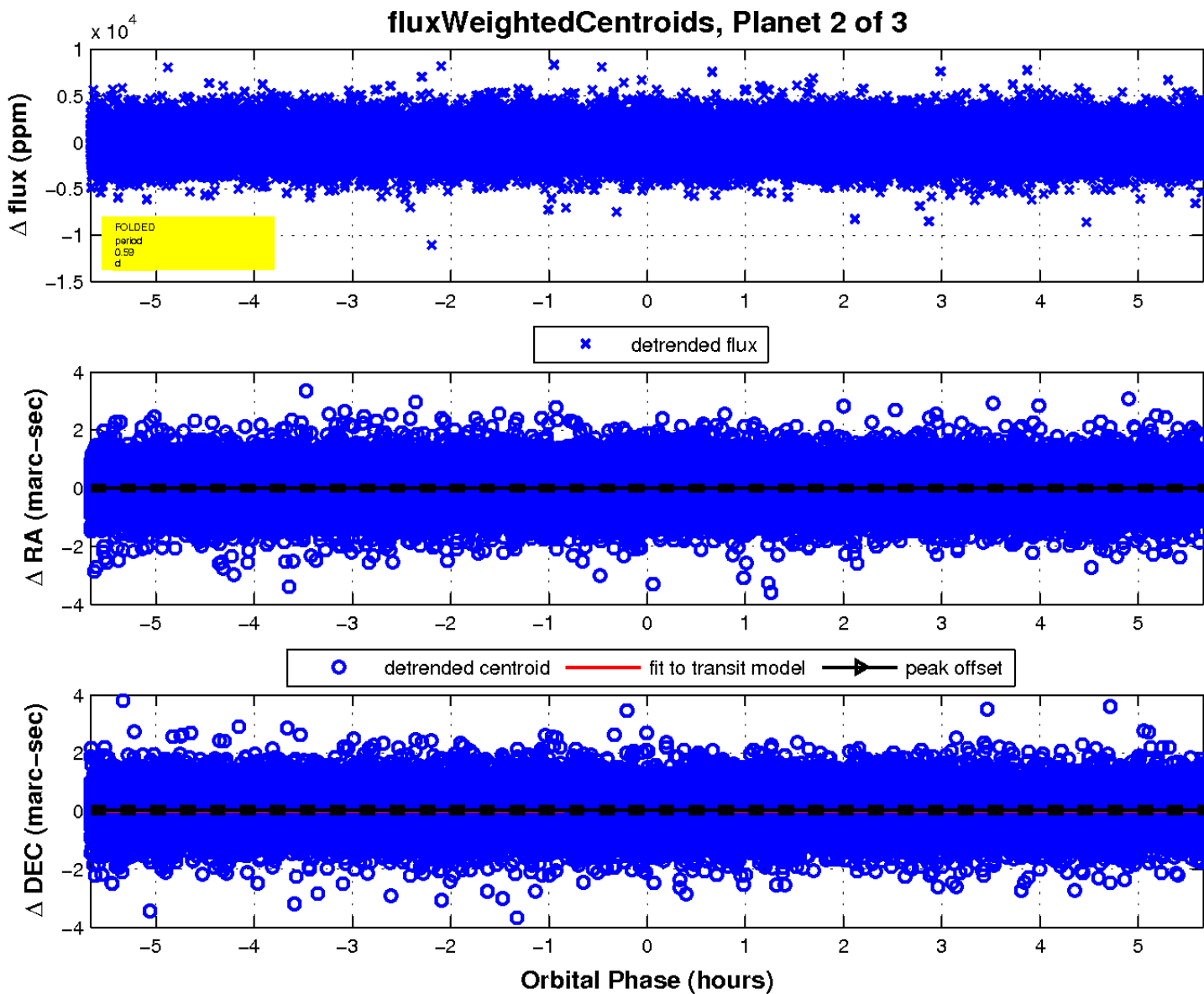
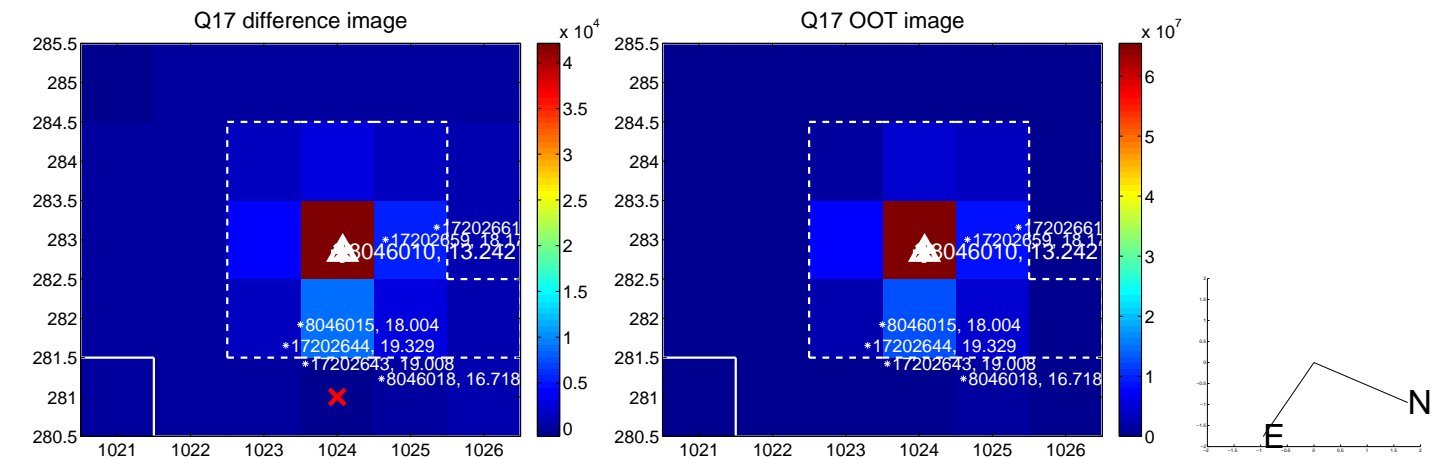
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



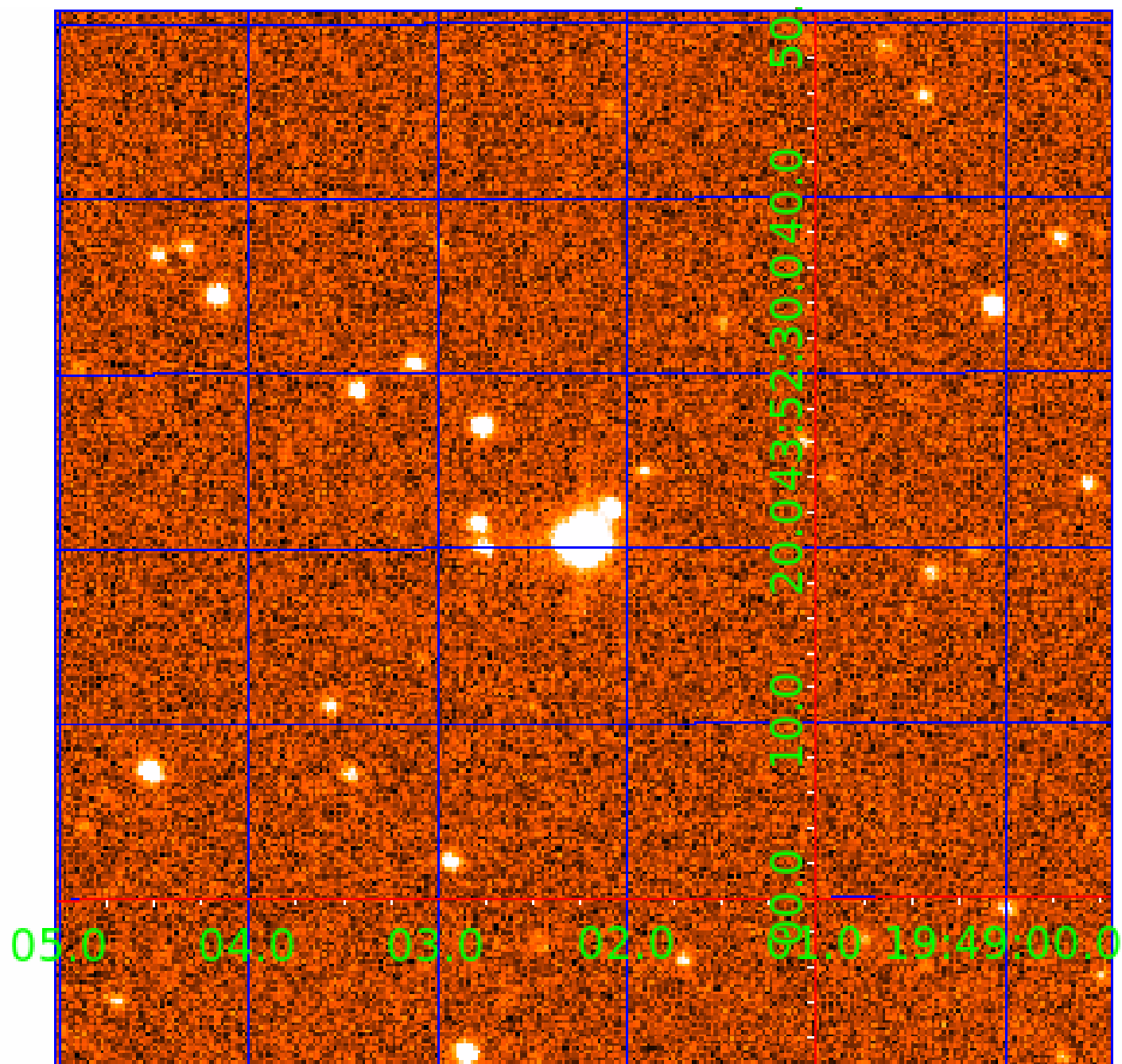
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 008046010

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008046010-01	OBS	No	0.524271	131.814503	147.0	3.245	10.5	10.3	1.73	7392	2.44	37603.50
008046010-02	OBS	No	0.590526	131.763536	433.6	1.889	12.1	13.8	1.73	7392	4.19	32086.10
008046010-03	OBS	No	27.585670	148.485325	1889.1	3.143	9.4	8.3	1.73	7392	8.10	190.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008046010-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008046010-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
008046010-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

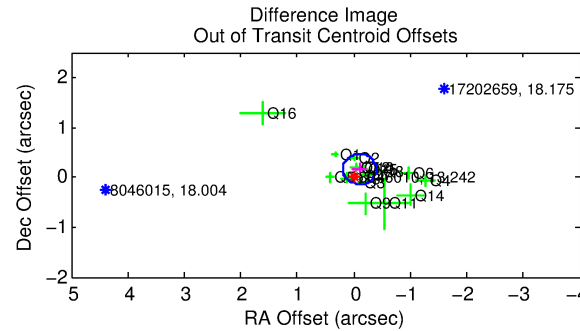
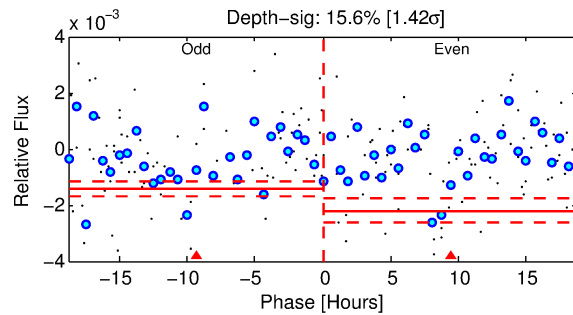
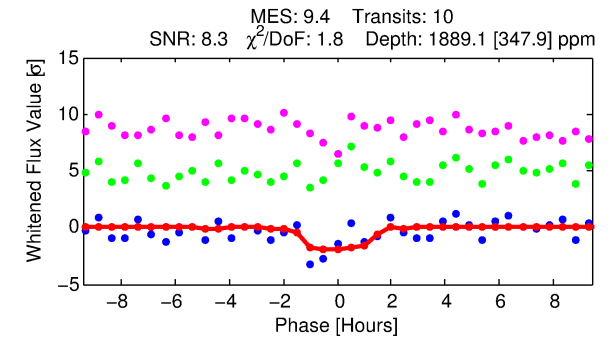
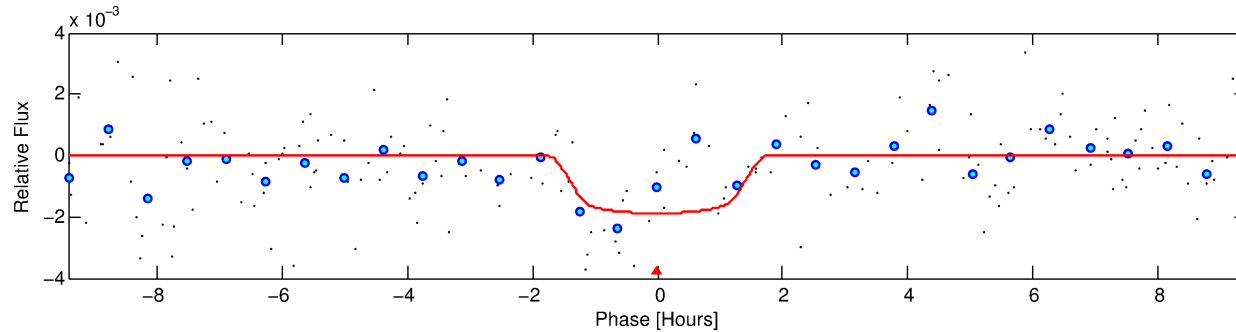
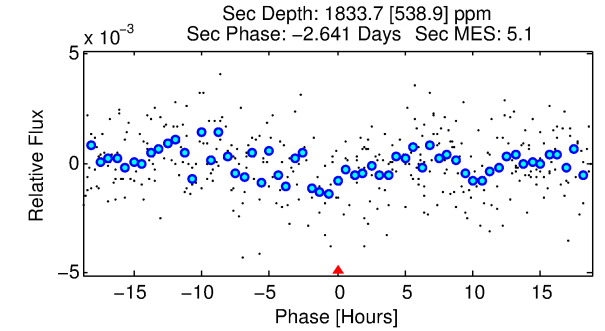
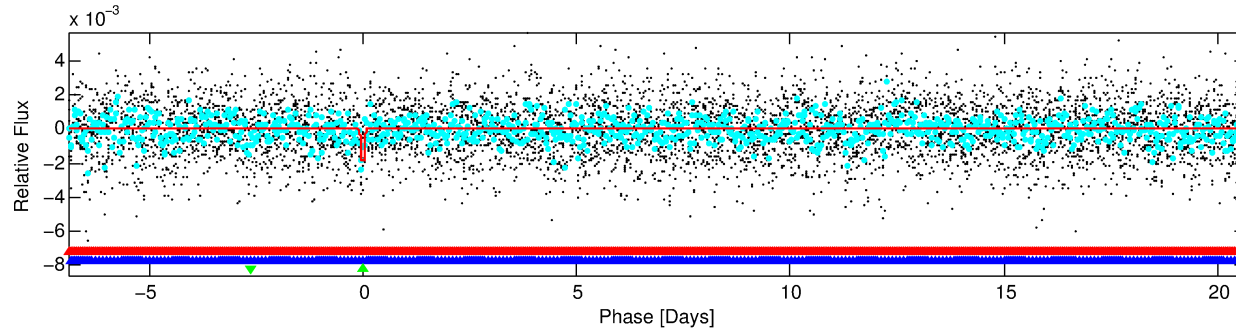
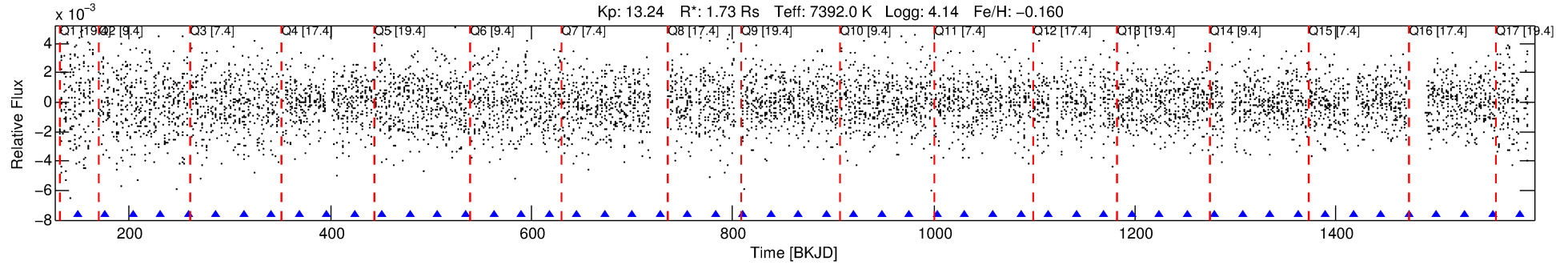
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008046010-03

No Significant Match Found

# DV One-Page Summary

KIC: 8046010 Candidate: 3 of 3 Period: 27.586 d



## DV Fit Results:

Period = 27.58567 [0.00059] d  
Epoch = 148.4853 [0.0166] BKJD  
Rp/R\* = 0.0430 [0.0376]  
a/R\* = 50.15 [243.56]  
b = 0.73 [3.20]  
Seff = 190.72 [75.09]  
Teq = 948 [93] K  
Rp = 8.10 [7.53] Re  
a = 0.2044 [0.0517] AU  
Ag = 643.17 [1162.52] [0.55σ]  
Teffp = 7378 [3288] K [1.96σ]

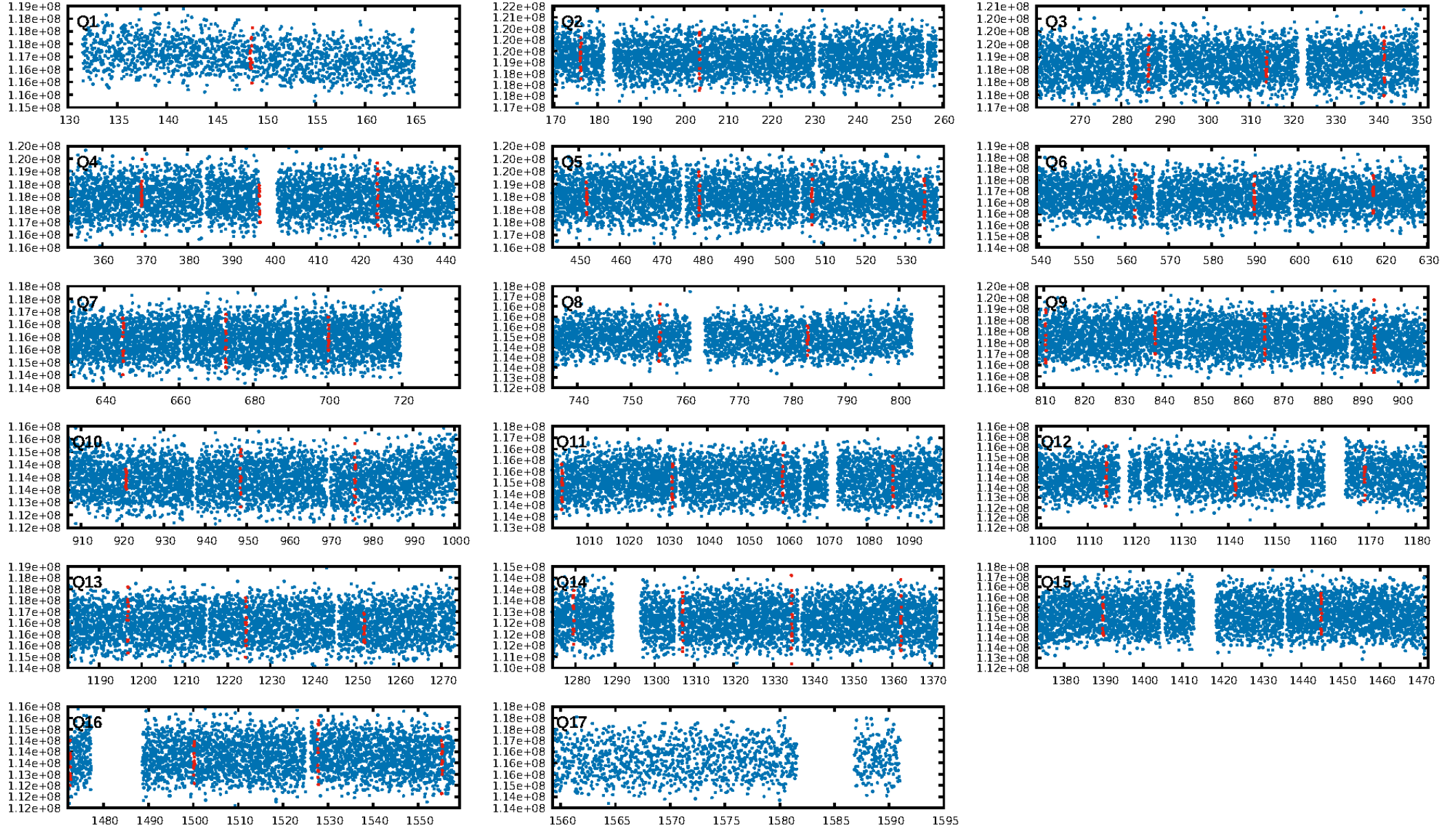
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [176.67σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.6%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.16e-09**  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 1.18  
Centroid-sig: 41.0%  
Centroid-so: 0.010 arcsec [0.18σ]  
OotOffset-rm: 0.190 arcsec [1.88σ]  
KicOffset-rm: 0.175 arcsec [1.78σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.69 [11/16]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:33:49 Z

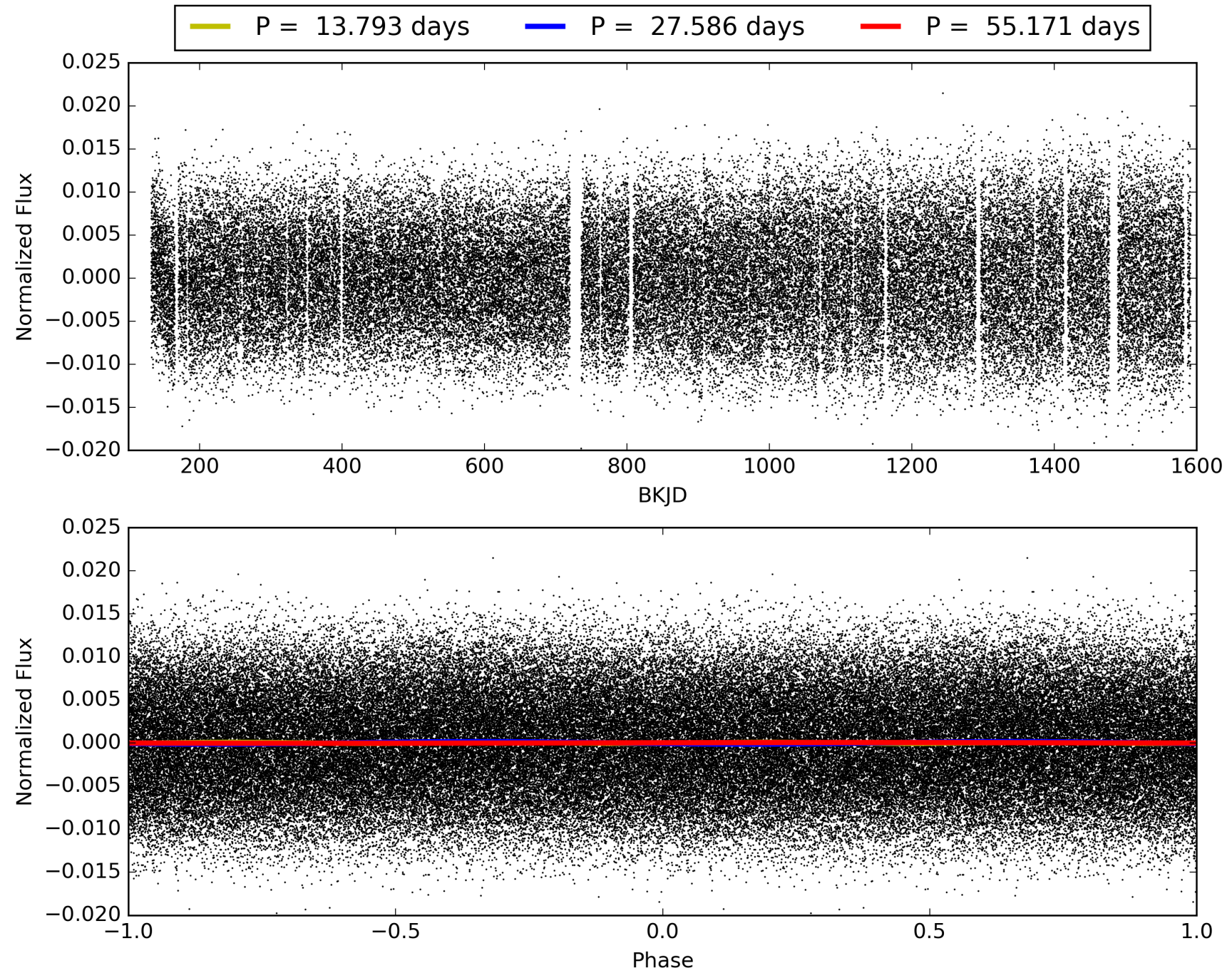
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008046010-03, PDC Light Curves



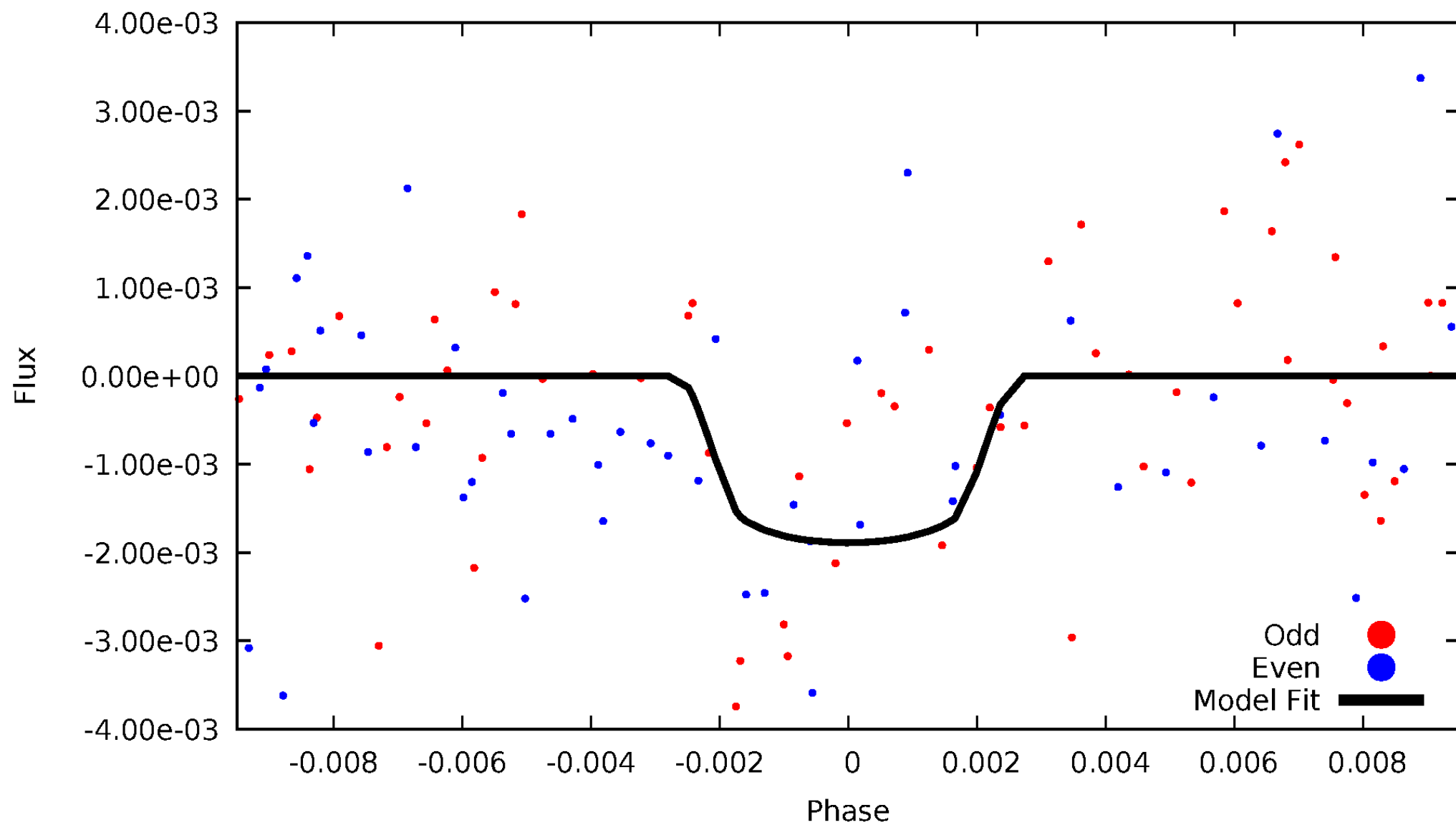


TCE 008046010-03



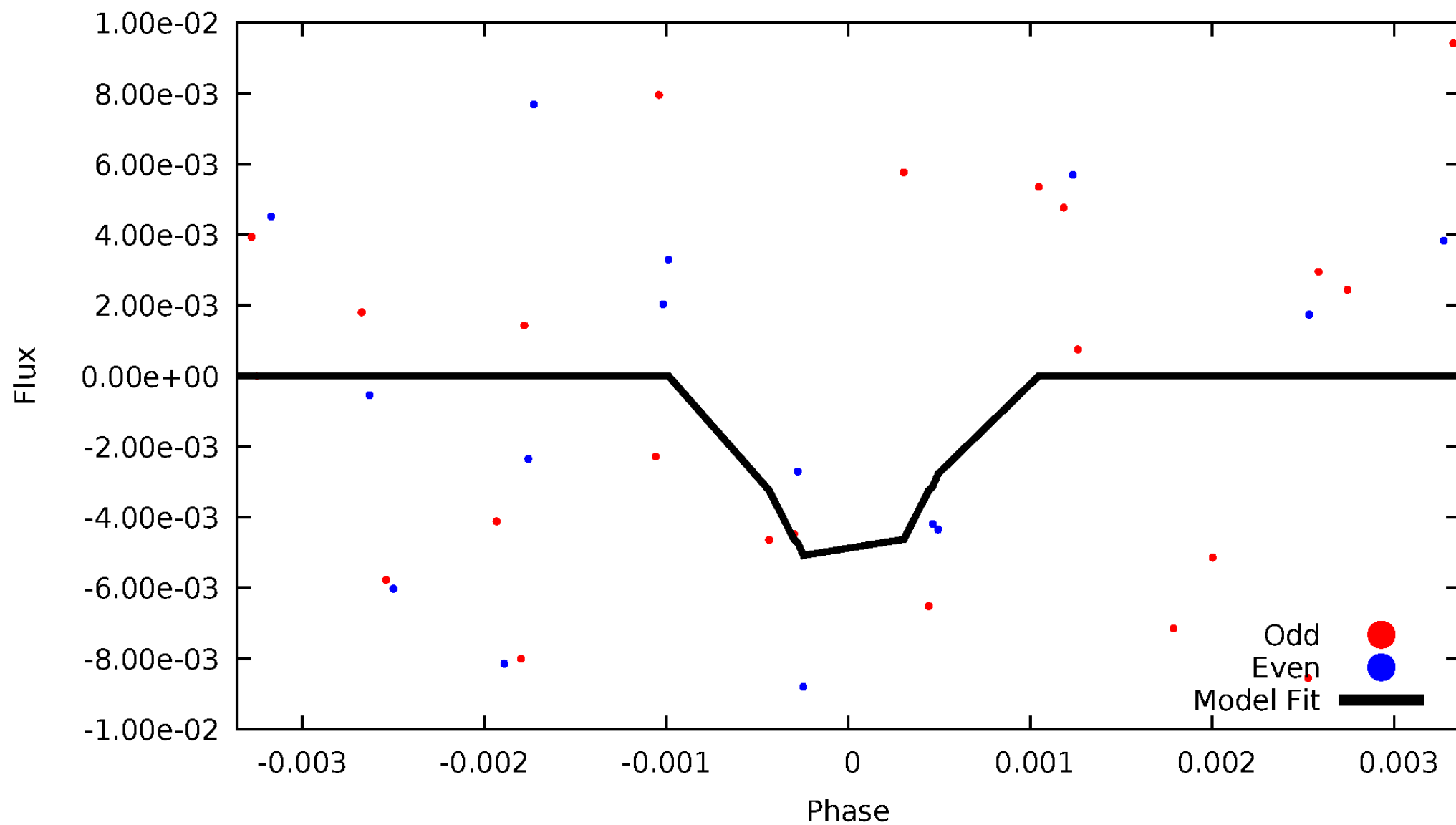
# DV Odd/Even

TCE 008046010-03



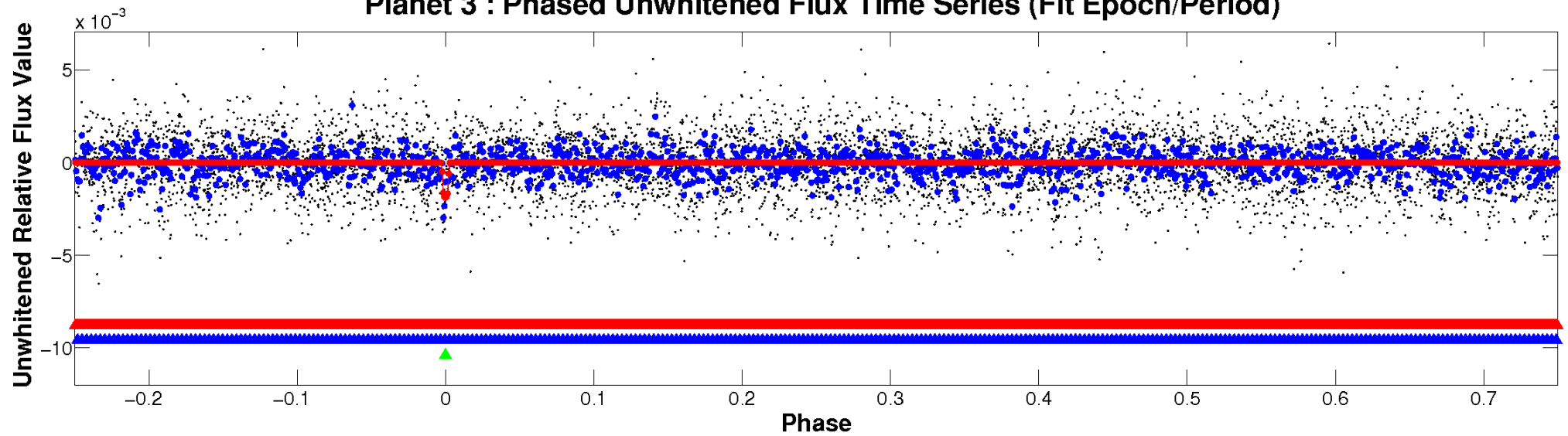
# ALT Odd/Even

TCE 008046010-03

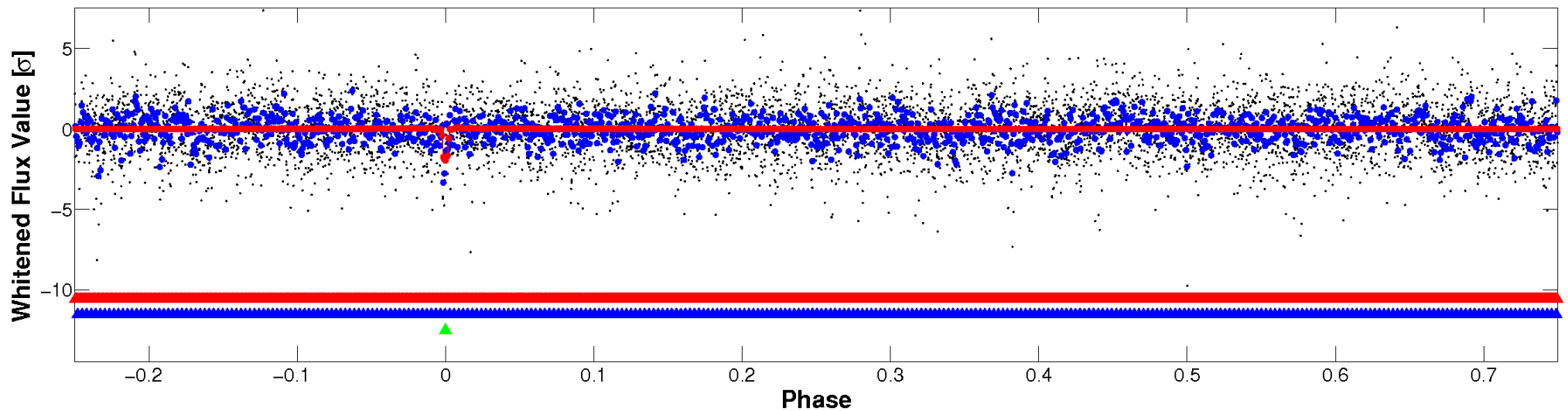


# Non-Whitened Vs. Whitened Light Curve

**Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**



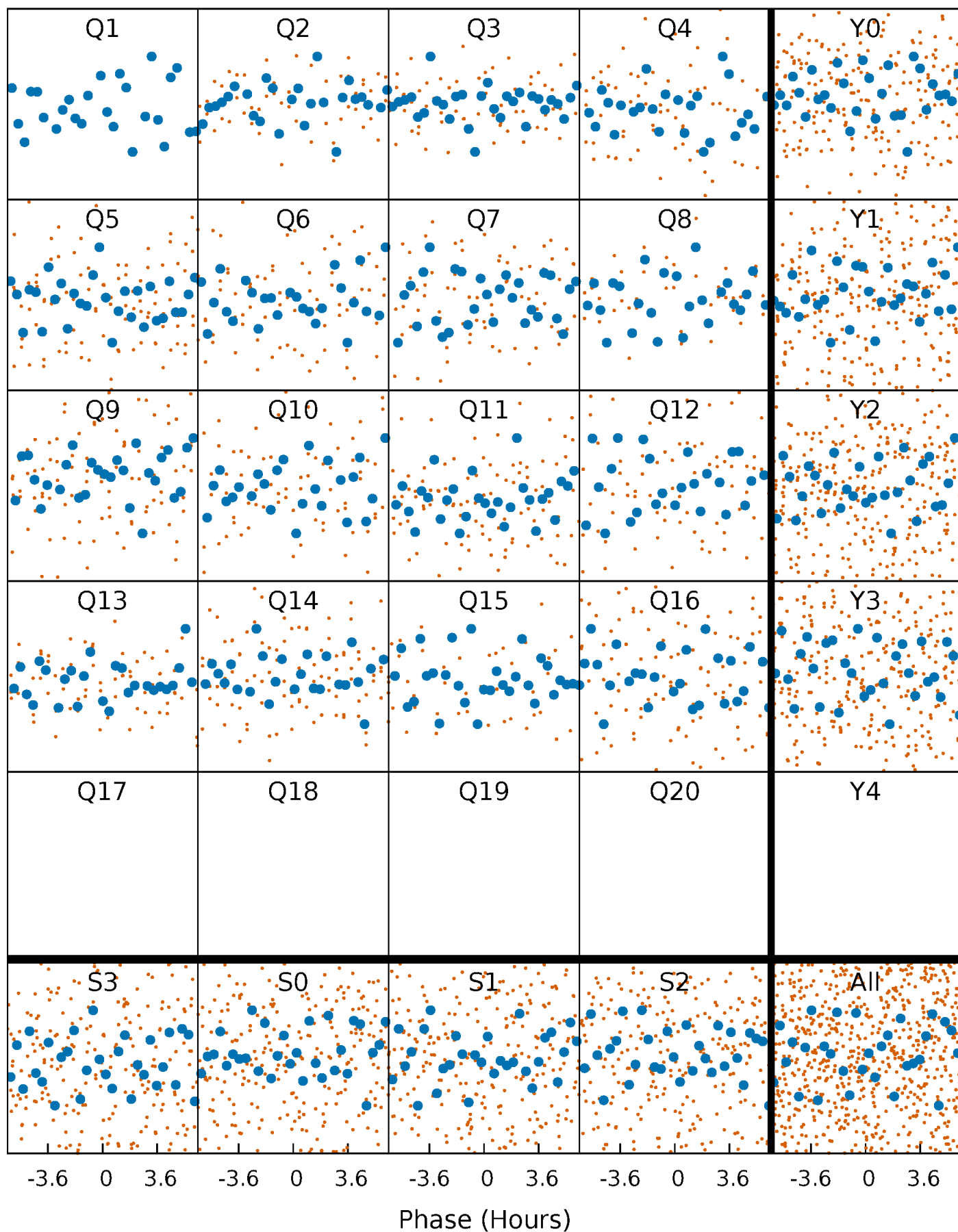
**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





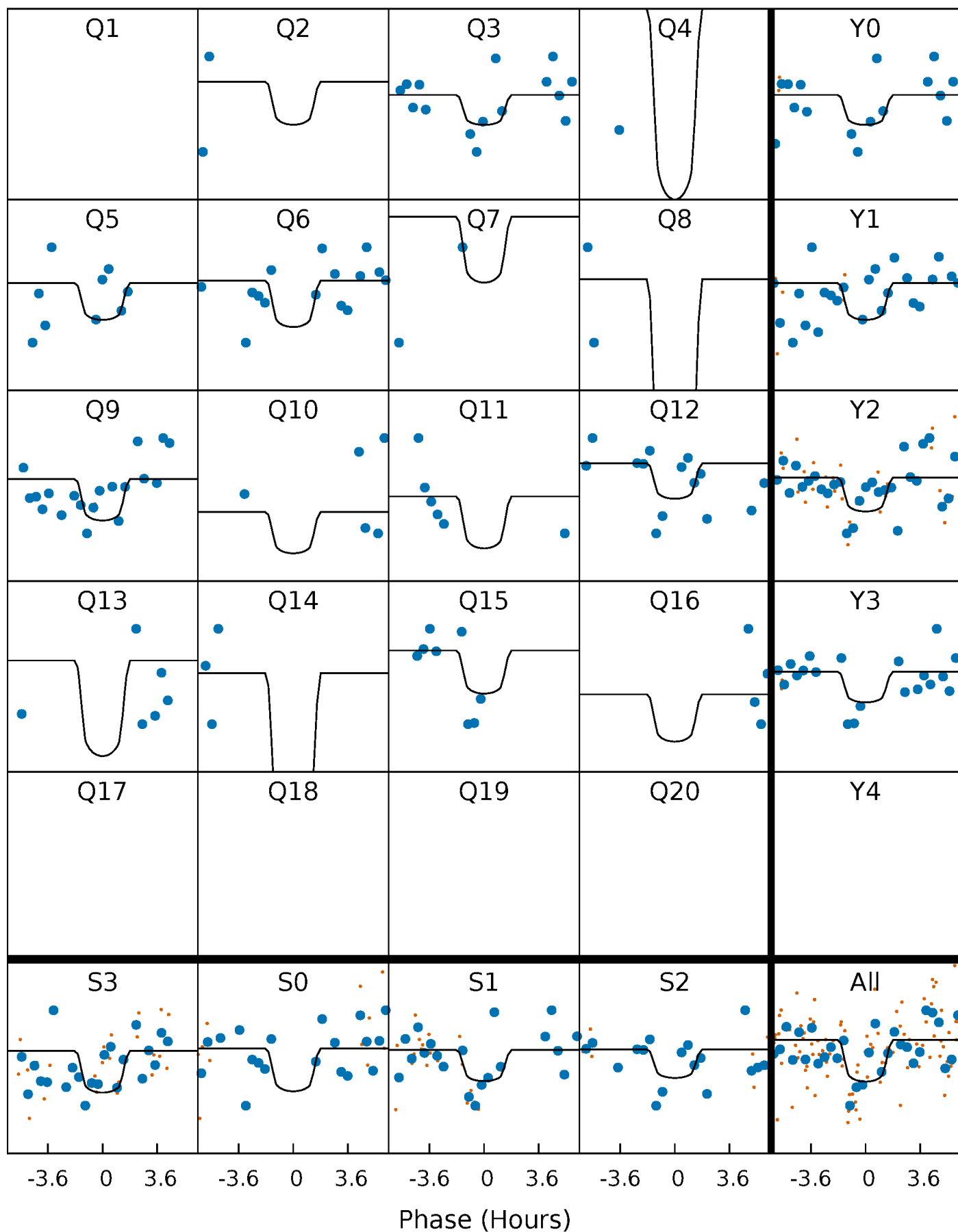
# PDC Quarter-Phased Transit Curves

TCE 008046010-03 P= 27.585670 Days  $T_0=148.485325$  (BKJD)



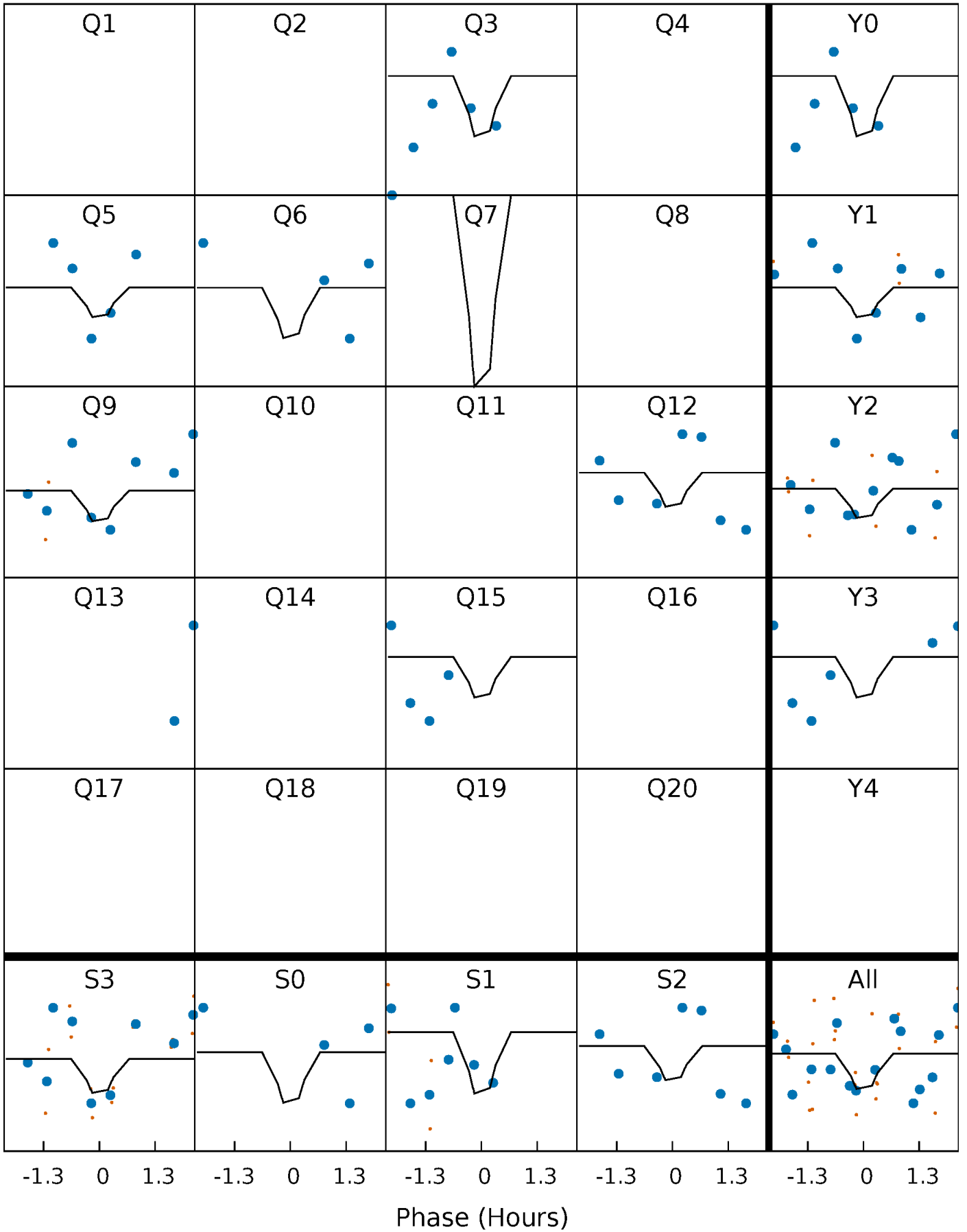
# DV Quarter-Phased Transit Curves

TCE 008046010-03 P= 27.585670 Days  $T_0=148.485325$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

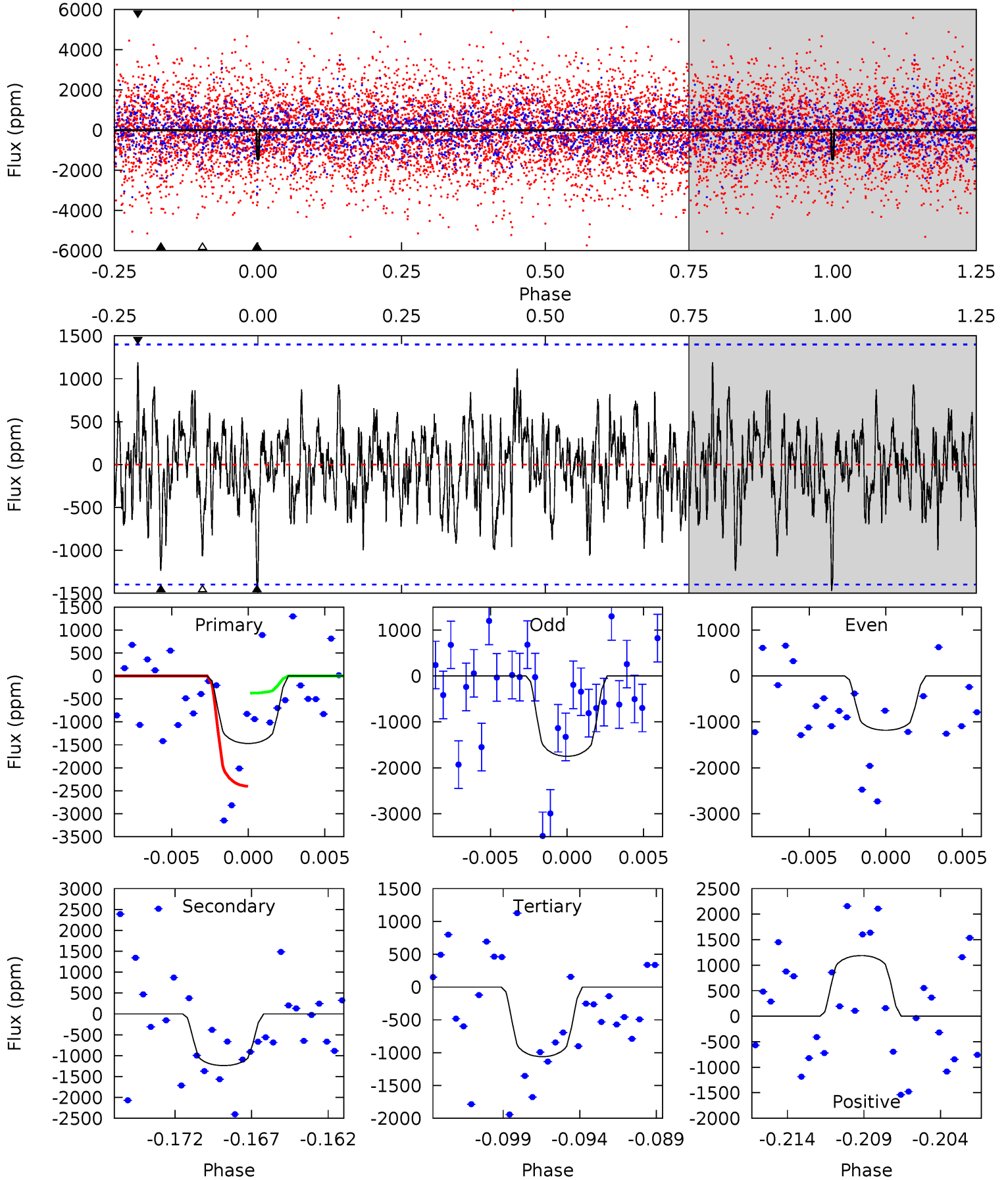
TCE 008046010-03 P= 27.585430 Days  $T_0=148.519822$  (BKJD)



# DV Model-Shift Uniqueness Test

008046010-03, P = 27.585670 Days, E = 120.899655 Days

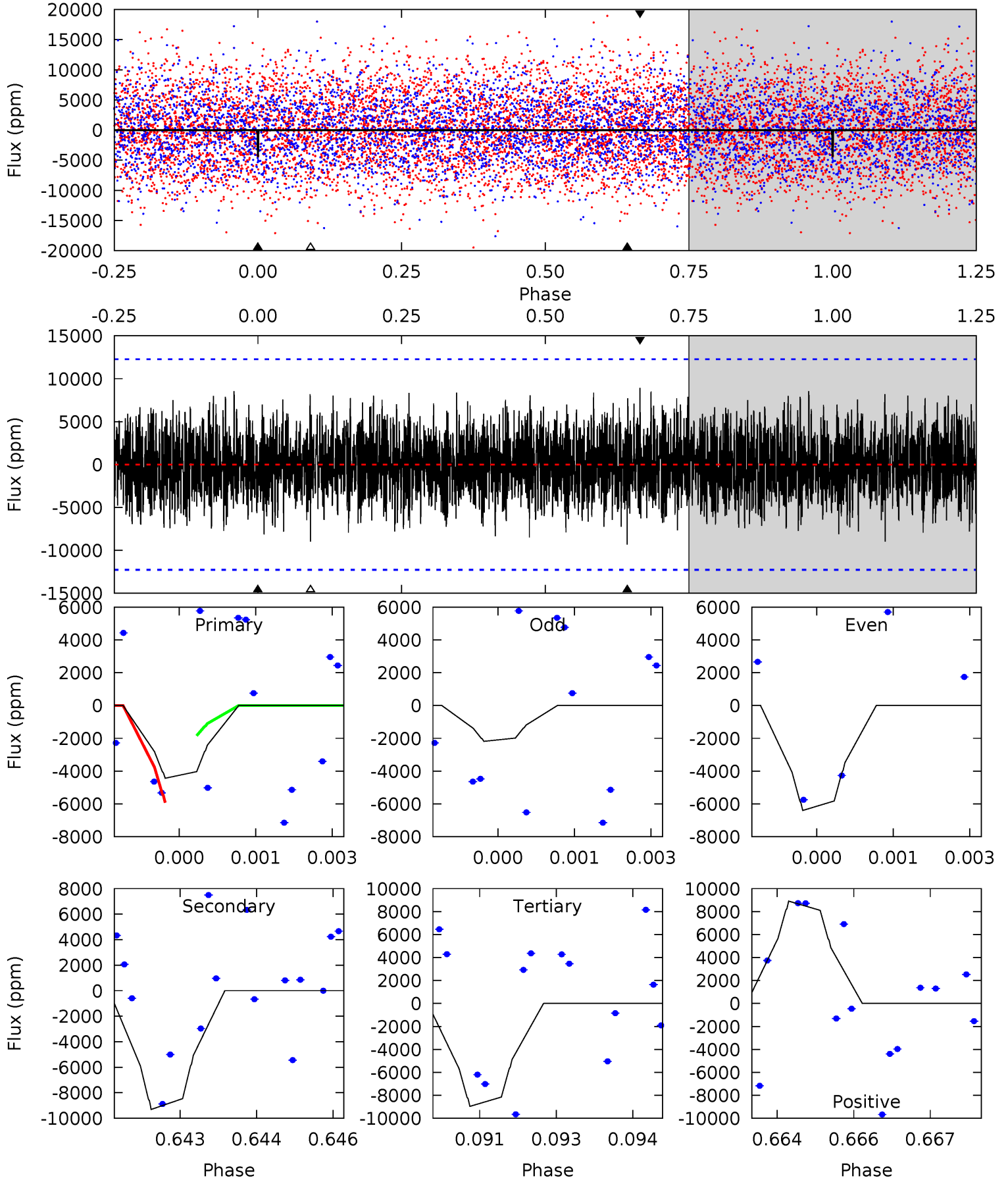
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.41	4.56	3.91	4.38	5.15	2.79	1.36	1.51	1.04	0.65	0.18	1.04	1.24	0.45	3.72



# Alt Model-Shift Uniqueness Test

008046010-03, P = 27.585430 Days, E = 120.934392 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
1.95	4.09	3.94	3.92	5.40	3.21	1.38	-1.99	-1.97	0.15	0.17	0.87	0.81	0.49	0.85





### Stellar Parameters For KIC 008046010

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+205}_{-333}$	$4.139^{+0.149}_{-0.182}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.546}_{-0.364}$	$1.493^{+0.209}_{-0.255}$	$0.409^{+0.316}_{-0.206}$
	+3%/-5%	+4%/-4%	+156%/-219%	+32%/-21%	+14%/-17%	+77%/-51%
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 008046010-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1238 \pm 272$	$8.70^{+7.36}_{-5.42}$	$1323^{+102}_{-97}$	$6236^{+5561}_{-1409}$	$361^{+2282}_{-249}$
Alt.	$-9304 \pm 2273$	$15.45^{+7.98}_{-7.19}$	$1327^{+102}_{-103}$	$7962^{+4218}_{-1537}$	$867^{+2139}_{-511}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming A=0.3)  
 $A_{\text{obs}}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

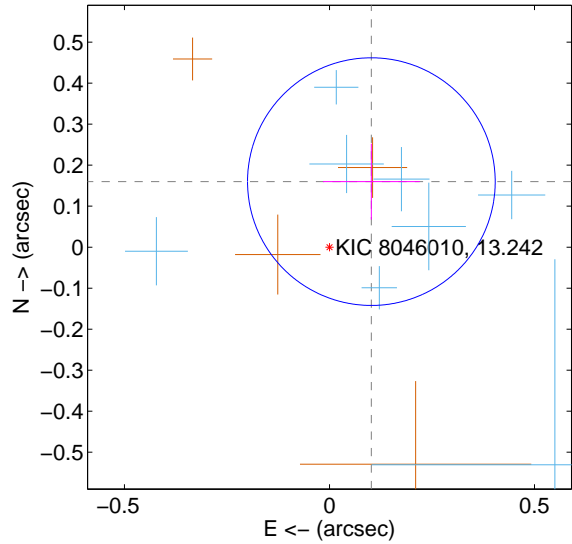
Supplemental centroid analysis for 008046010-03. Kepler magnitude: 13.24. Transit SNR 8.31

There are 11 quarters with good PRF difference image offsets

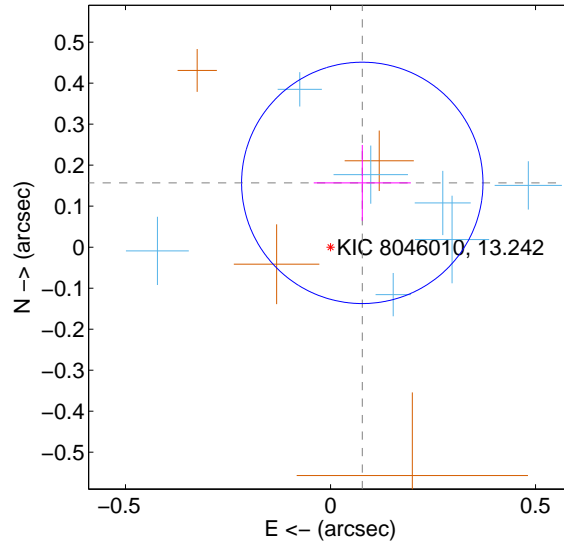
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.190 \pm 0.101$	1.88	$-0.102 \pm 0.118$	$0.160 \pm 0.093$
PRF-fit source offset from KIC position	$0.175 \pm 0.098$	1.78	$-0.077 \pm 0.118$	$0.157 \pm 0.092$
photometric centroid source offset	$0.01 \pm 0.06$	0.18	$0.01 \pm 0.06$	$0.00 \pm 0.06$

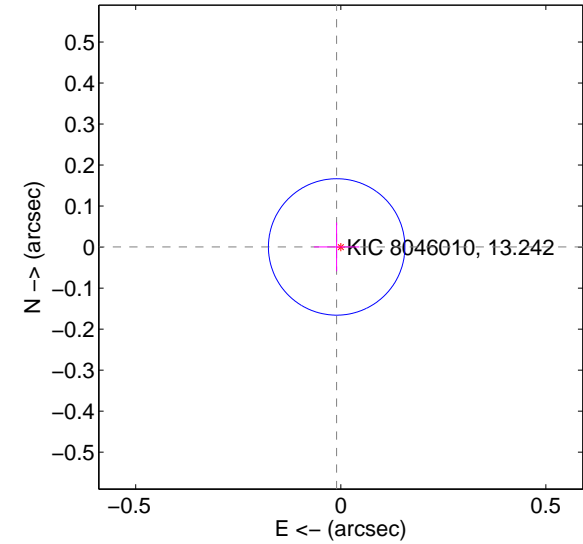
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

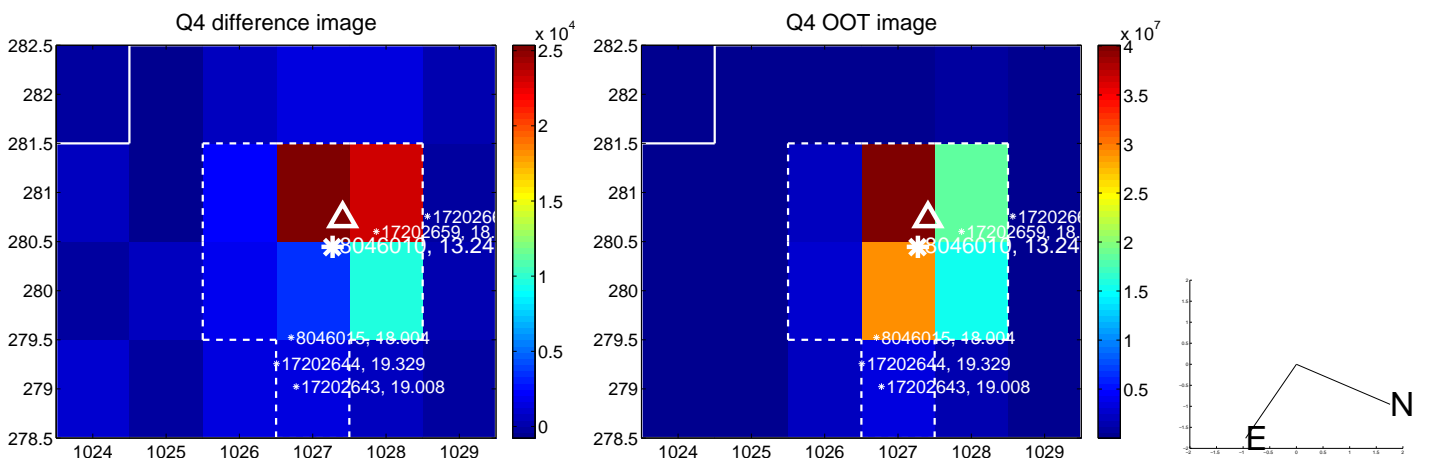
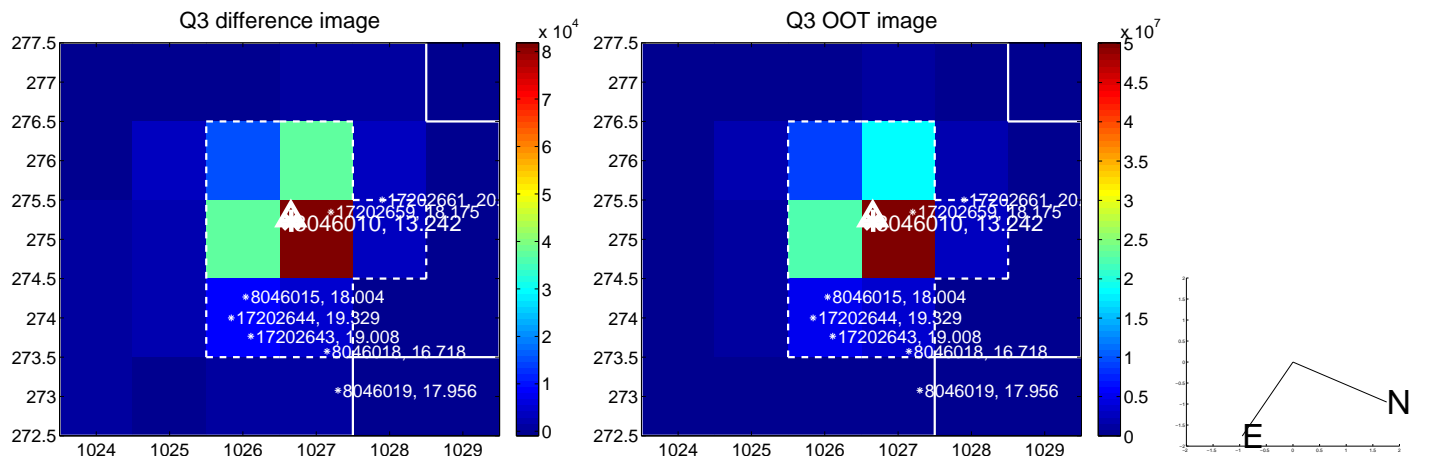
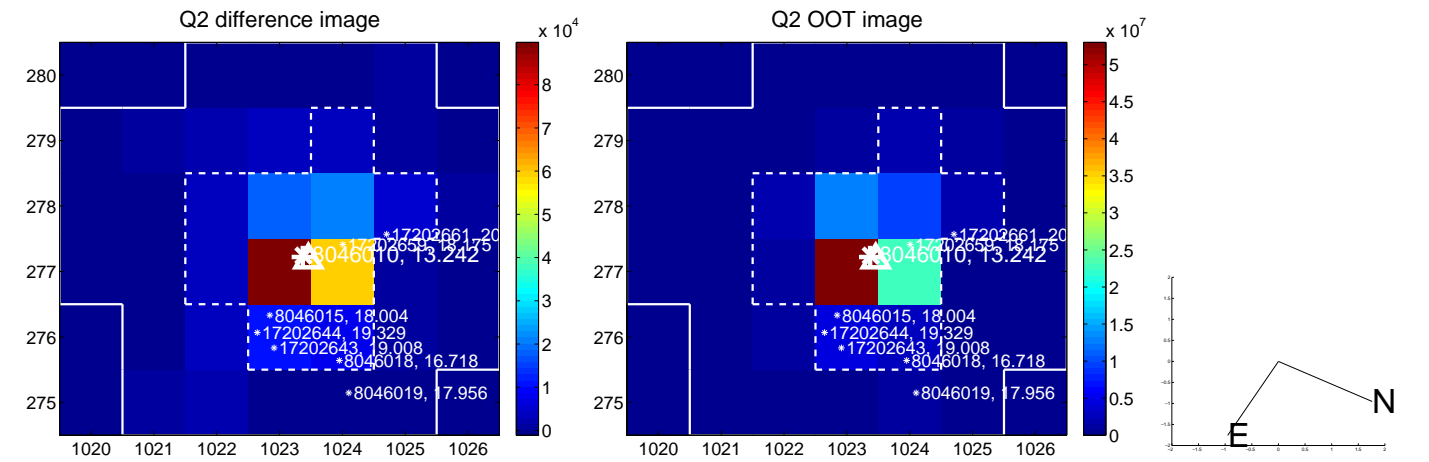
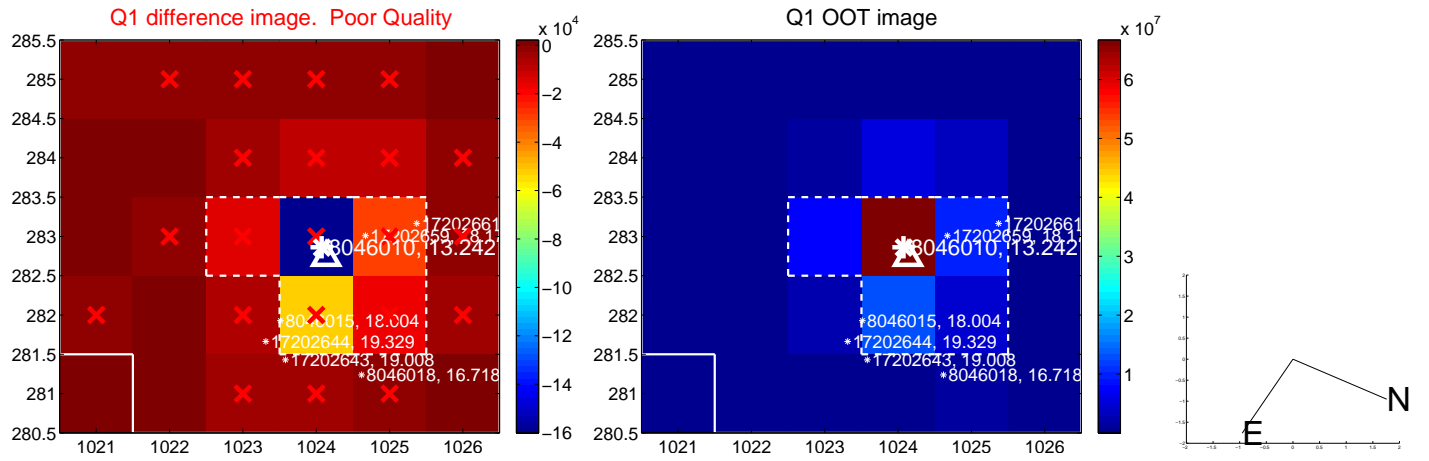


offset from photometric centroids

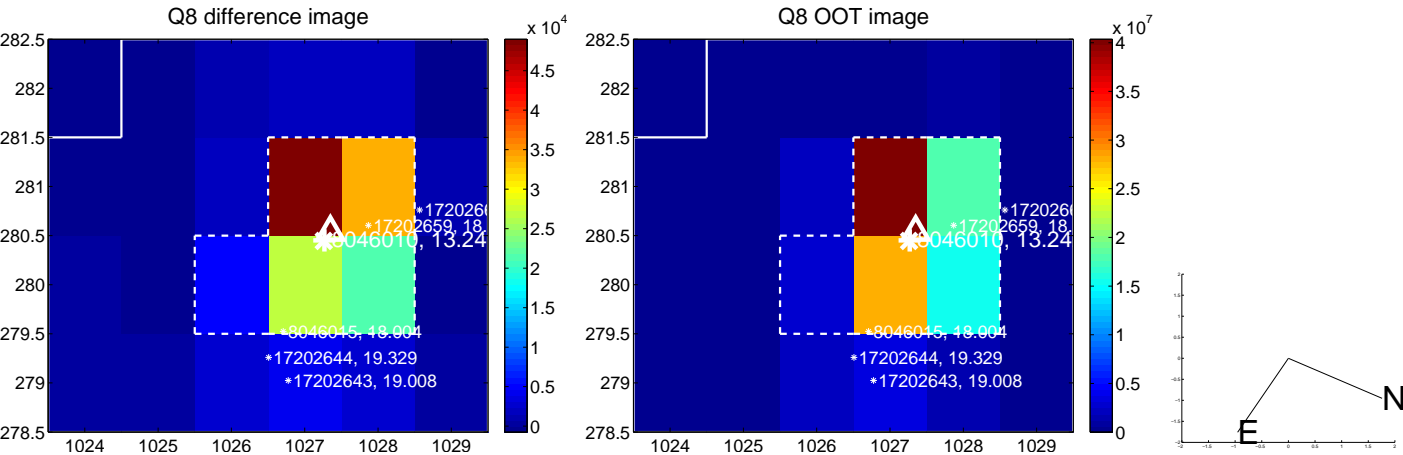
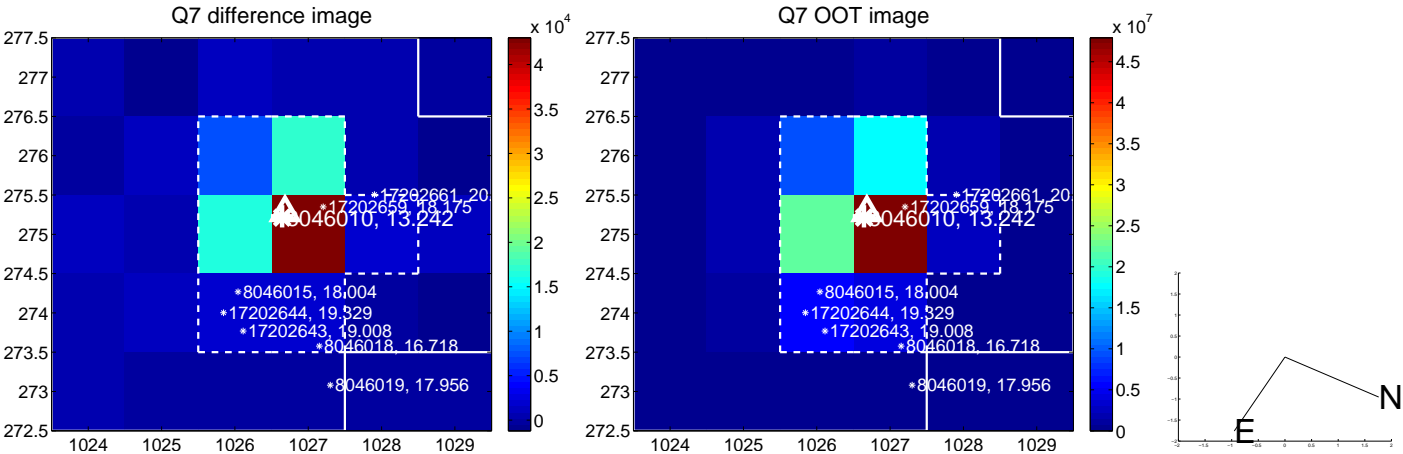
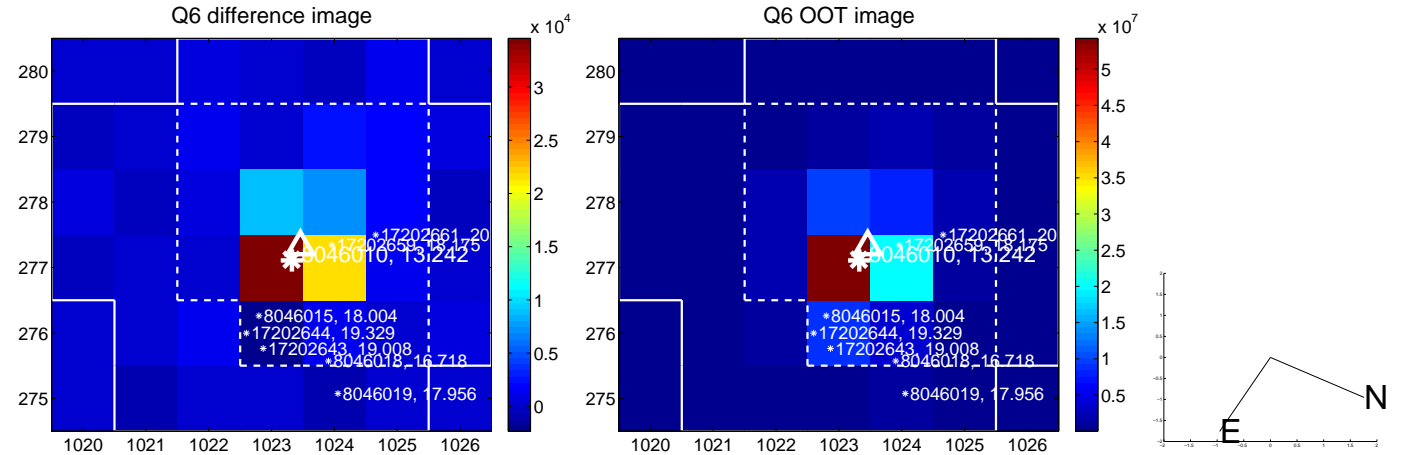
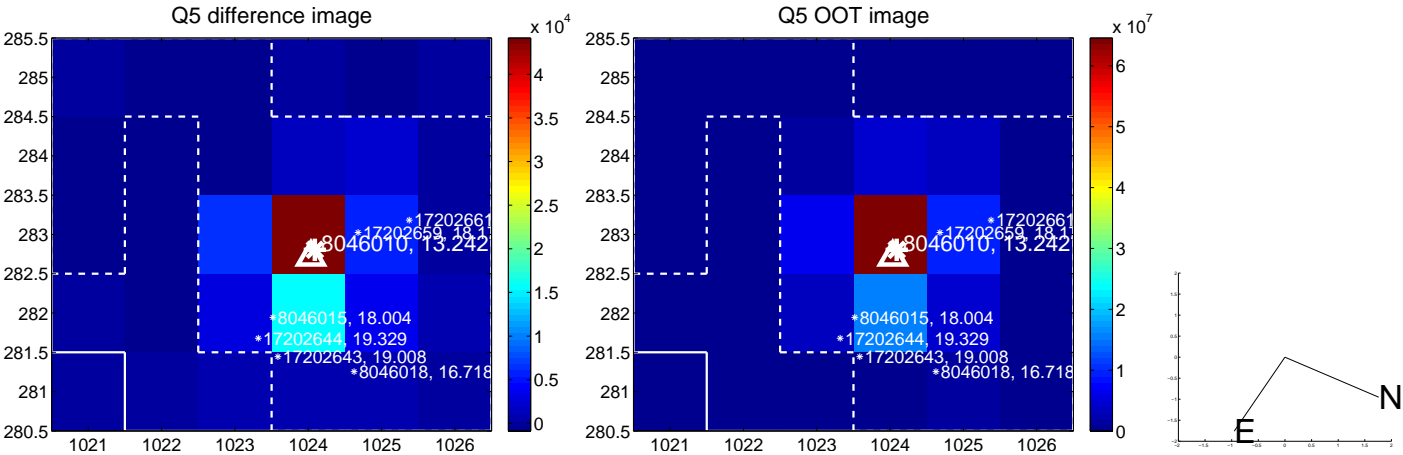


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

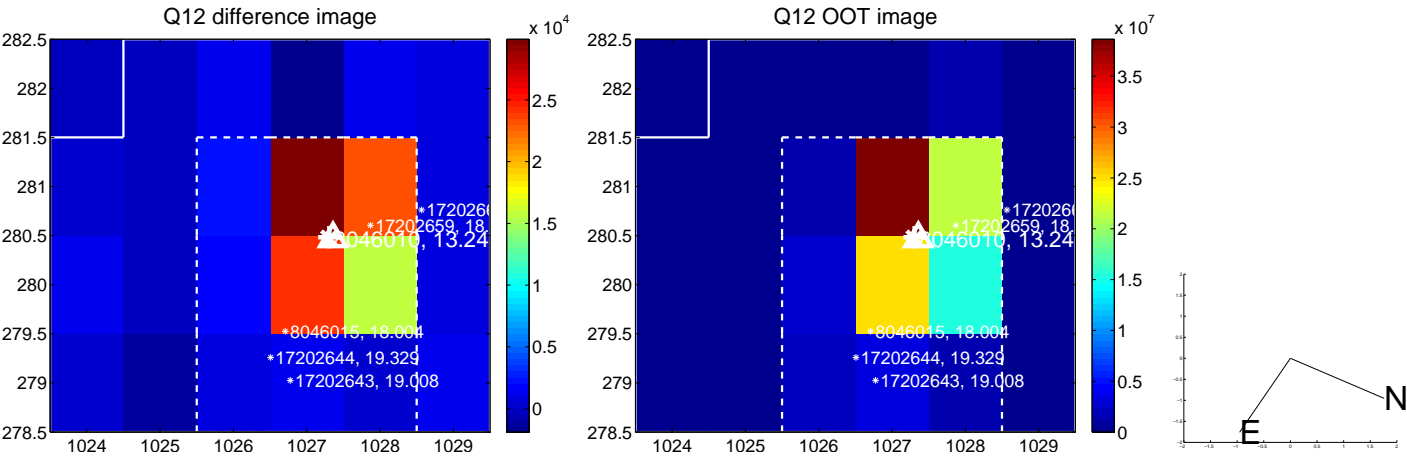
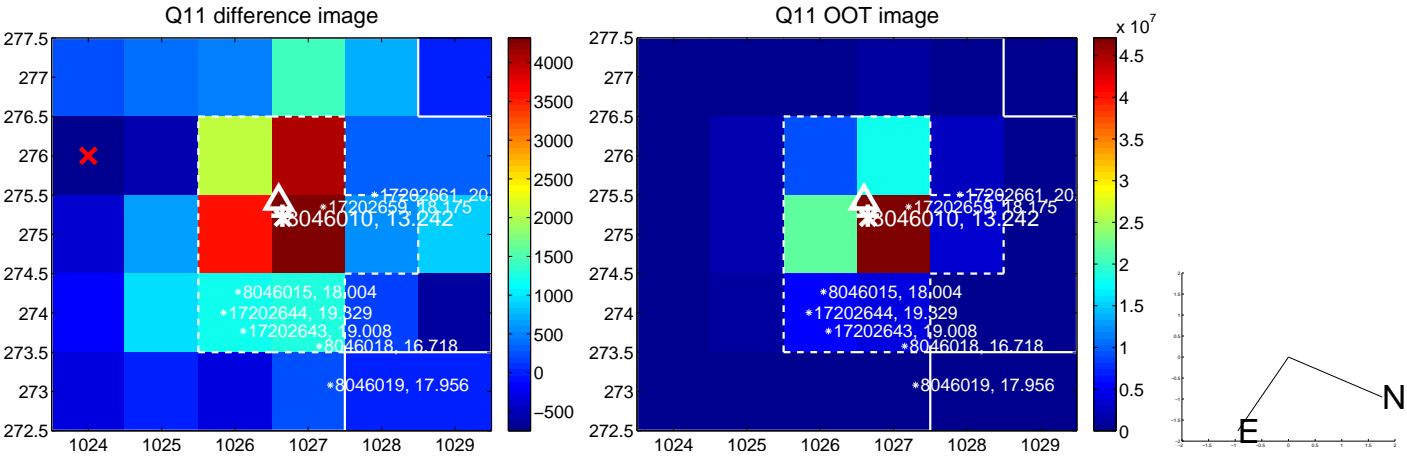
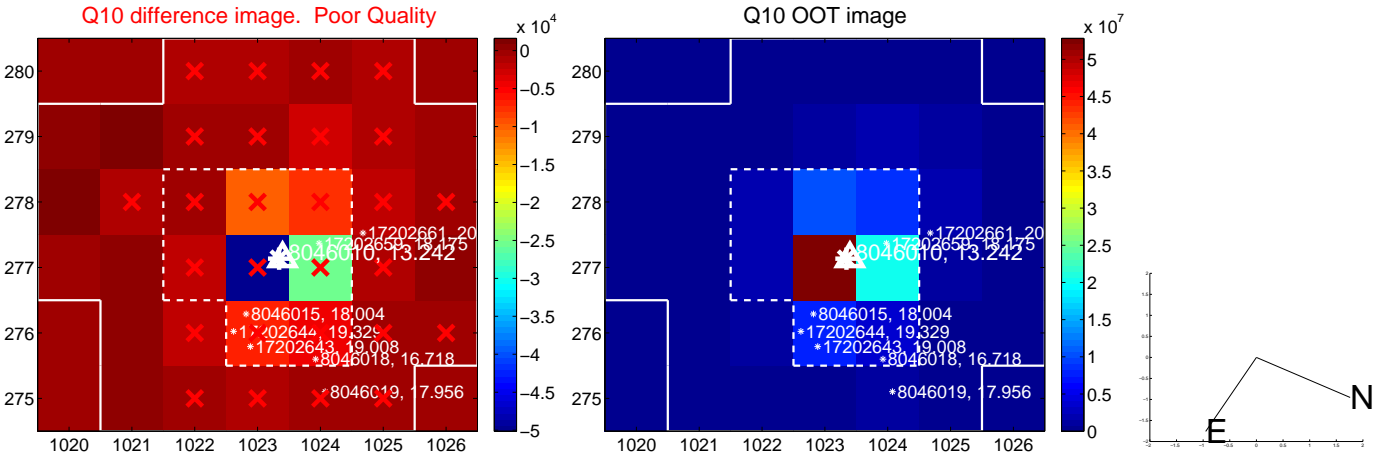
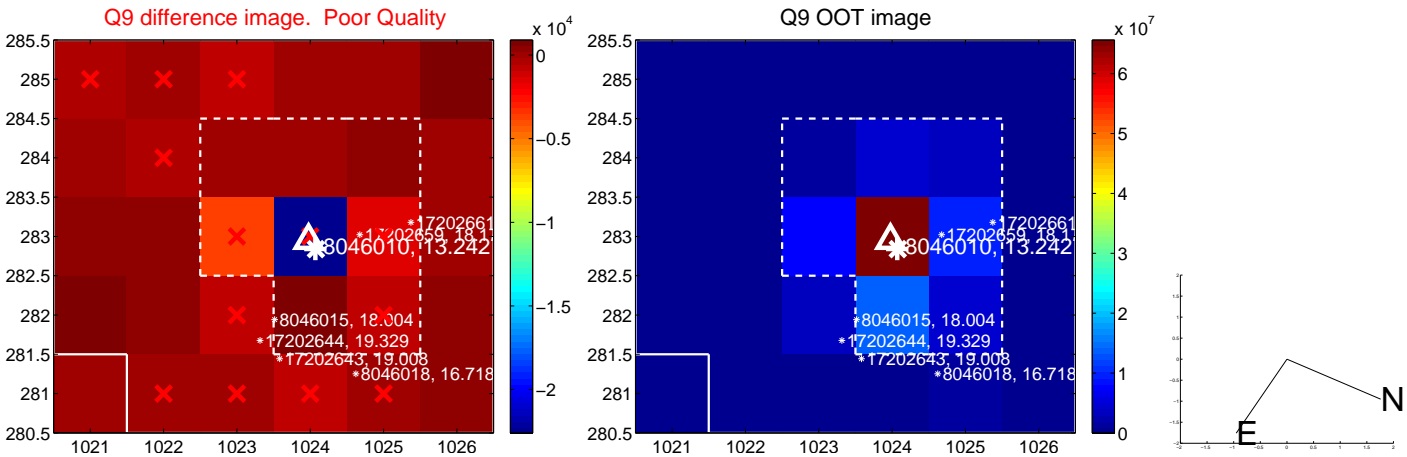
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

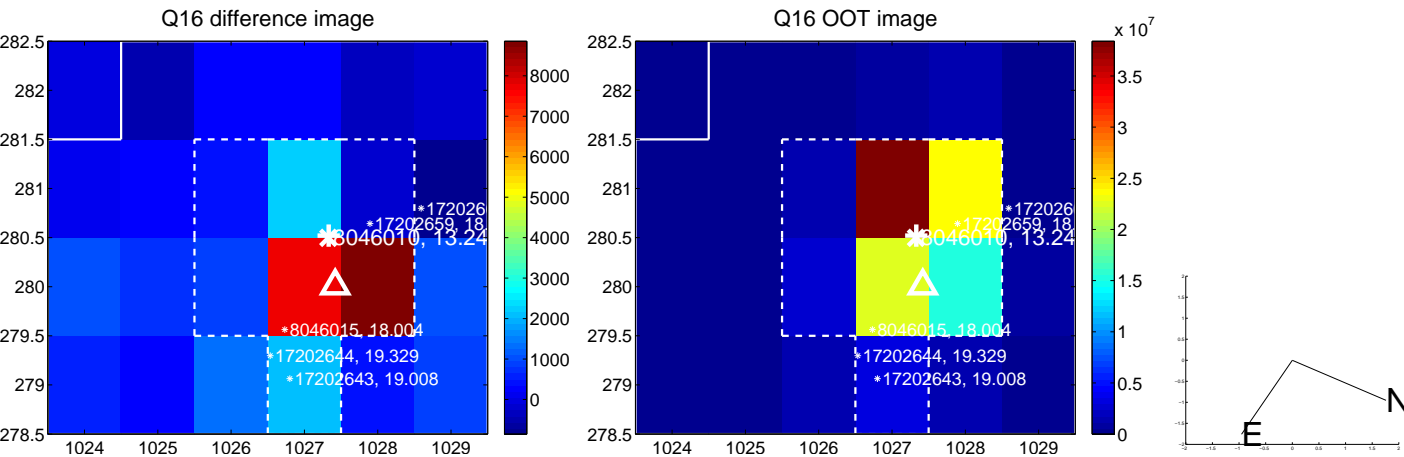
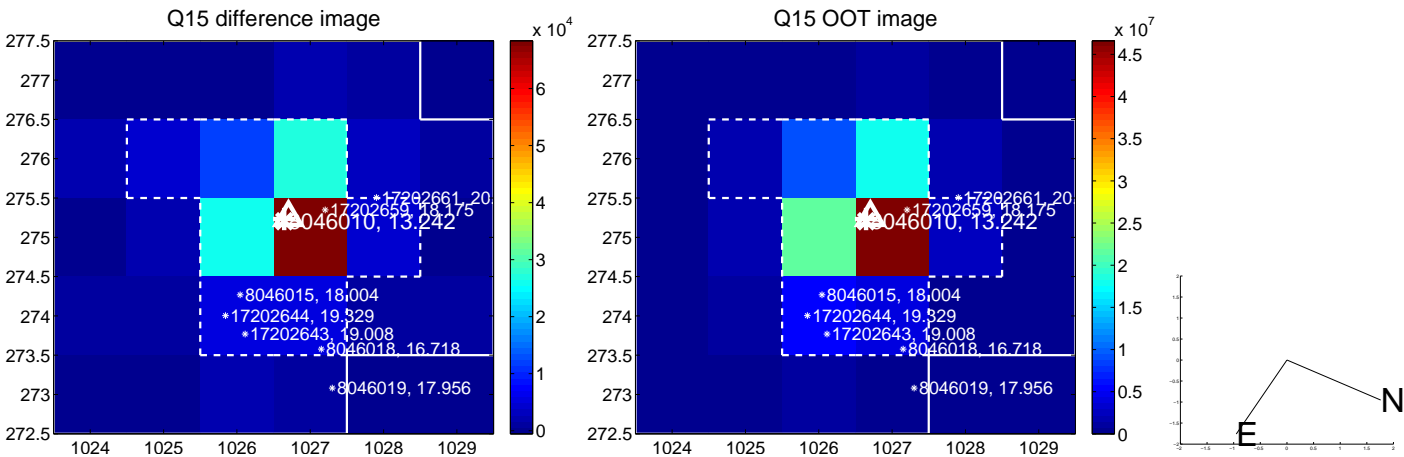
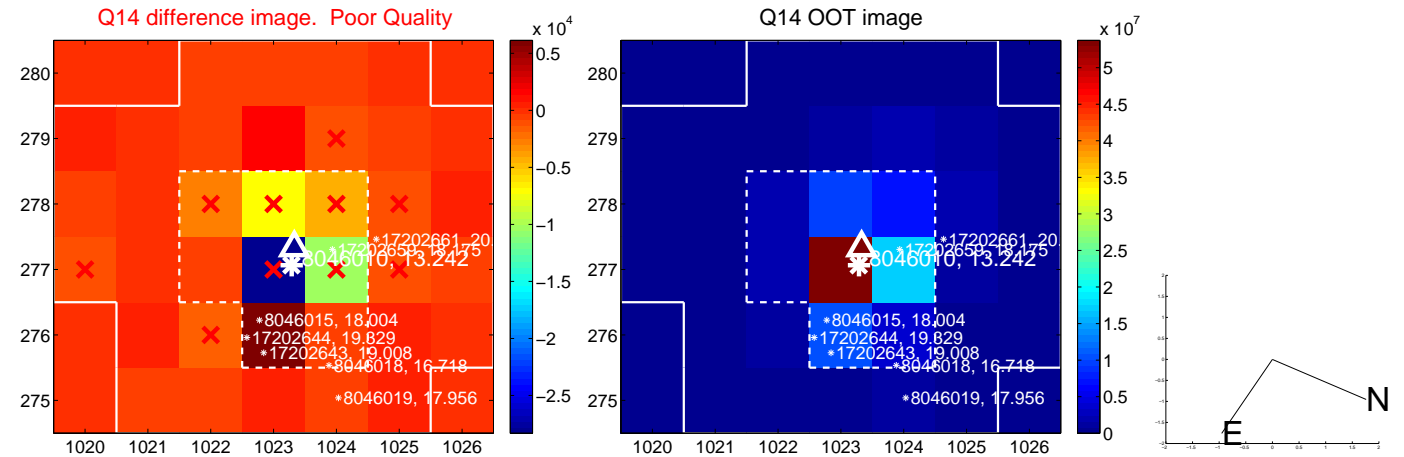
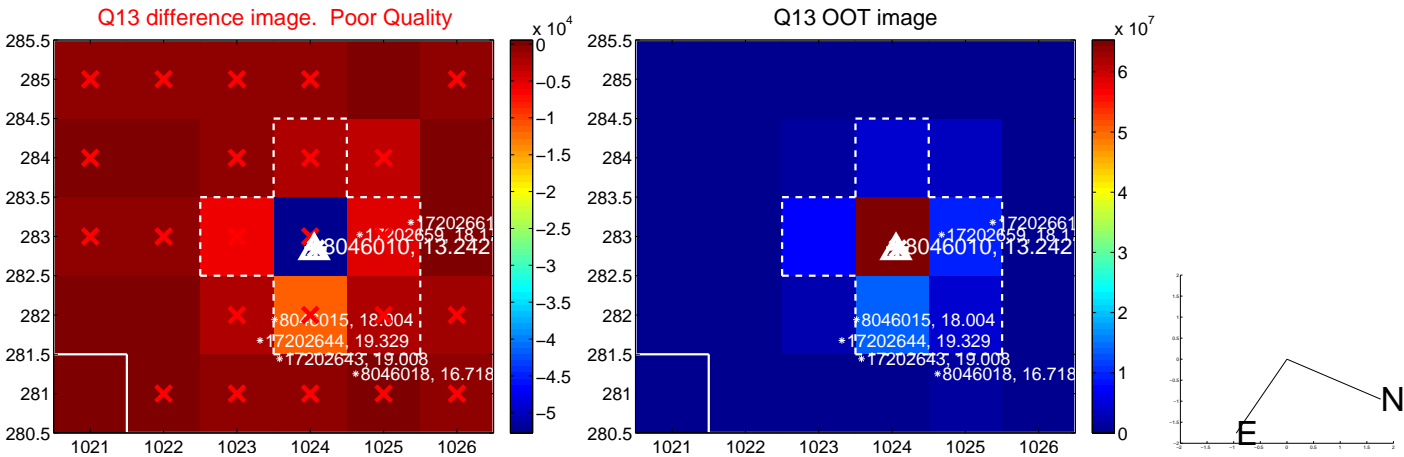


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

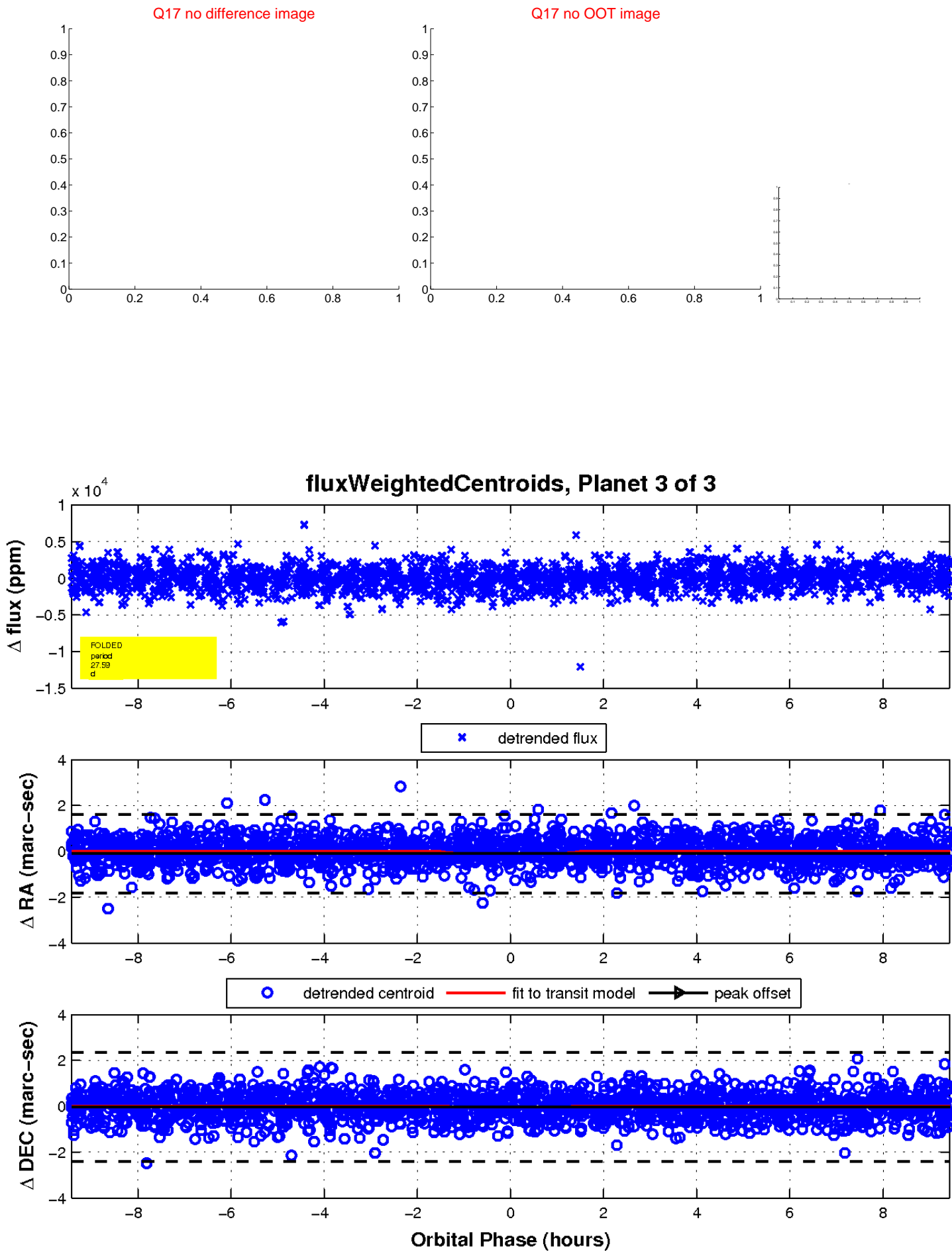




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

