

# KIC 012365719

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012365719-01	OBS	No	0.844831	131.803355	45.7	1.672	12.8	1.8	0.39	3557	0.26	128.63
012365719-02	OBS	No	0.844796	131.792445	0.0	5.634	11.0	0.0	0.39	3557	0.00	128.64
012365719-03	OBS	No	38.940722	148.660508	1412.0	6.765	8.3	8.4	0.39	3557	1.47	0.78
012365719-04	OBS	No	22.227078	133.762331	1951.1	1.505	9.0	9.8	0.39	3557	1.84	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012365719-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
012365719-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—SAME_NTL_PERIOD
012365719-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012365719-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV

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

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

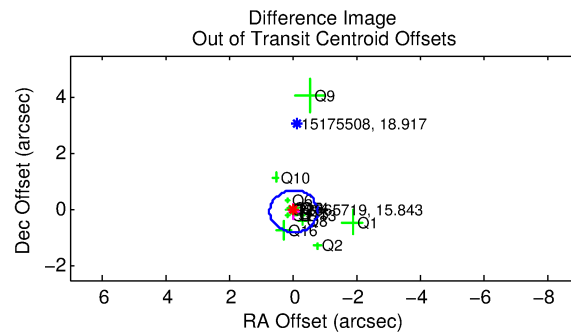
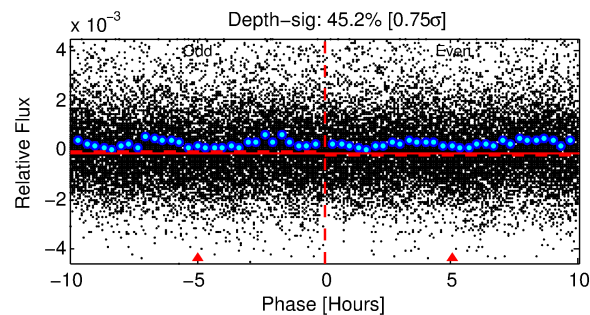
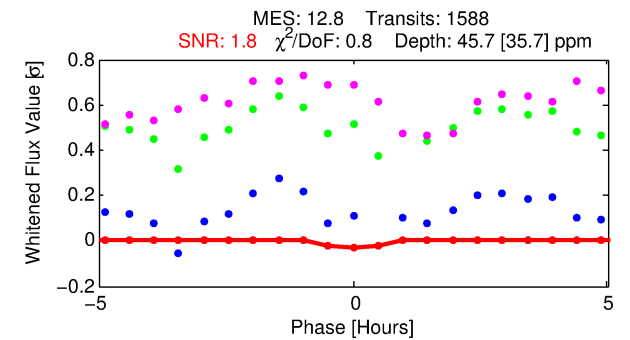
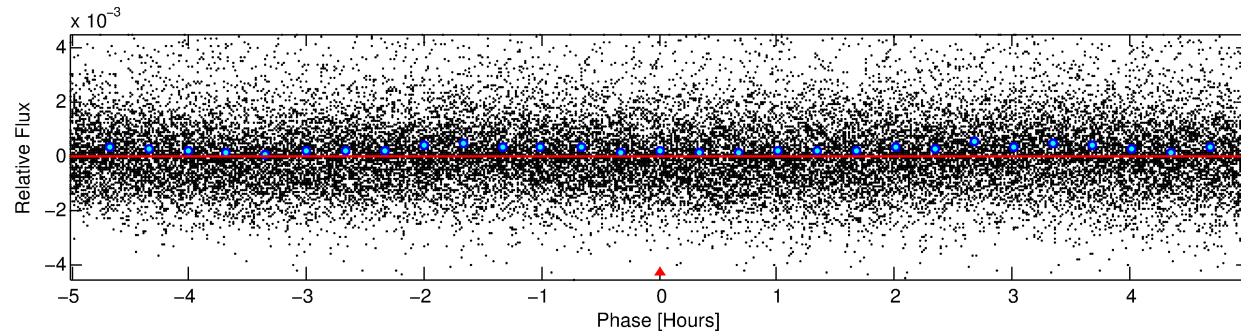
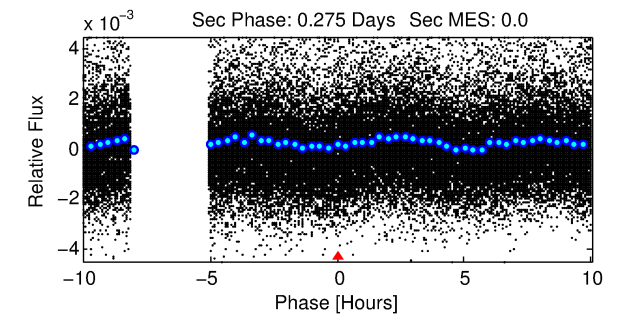
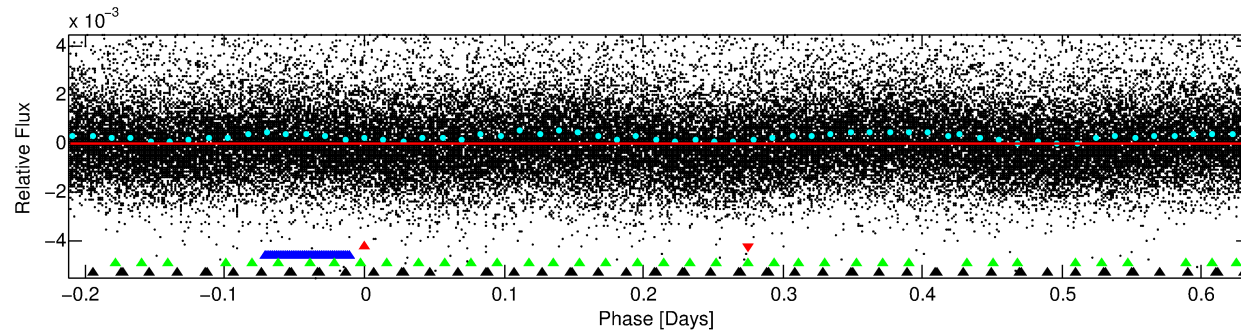
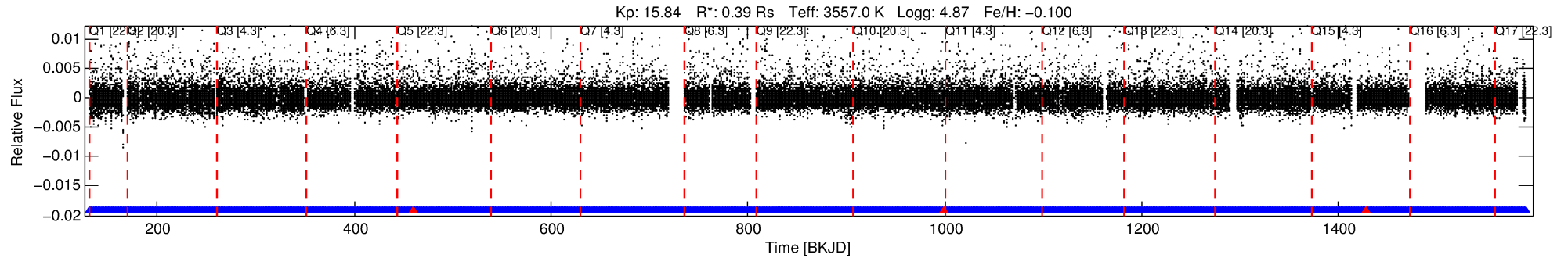
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012365719-01

No Significant Match Found

# DV One-Page Summary

KIC: 12365719 Candidate: 1 of 4 Period: 0.845 d



## DV Fit Results:

Period = 0.84483 [0.00006] d  
Epoch = 131.8034 [0.0105] BKJD  
Rp/R\* = 0.0062 [0.0220]  
a/R\* = 3.71 [53.54]  
b = 0.34 [40.50]  
Seff = 128.63 [13.67]  
Teq = 859 [23] K  
Rp = 0.26 [0.93] Re  
a = 0.0129 [0.0009] AU  
Ag = N/A  
Teffp = N/A

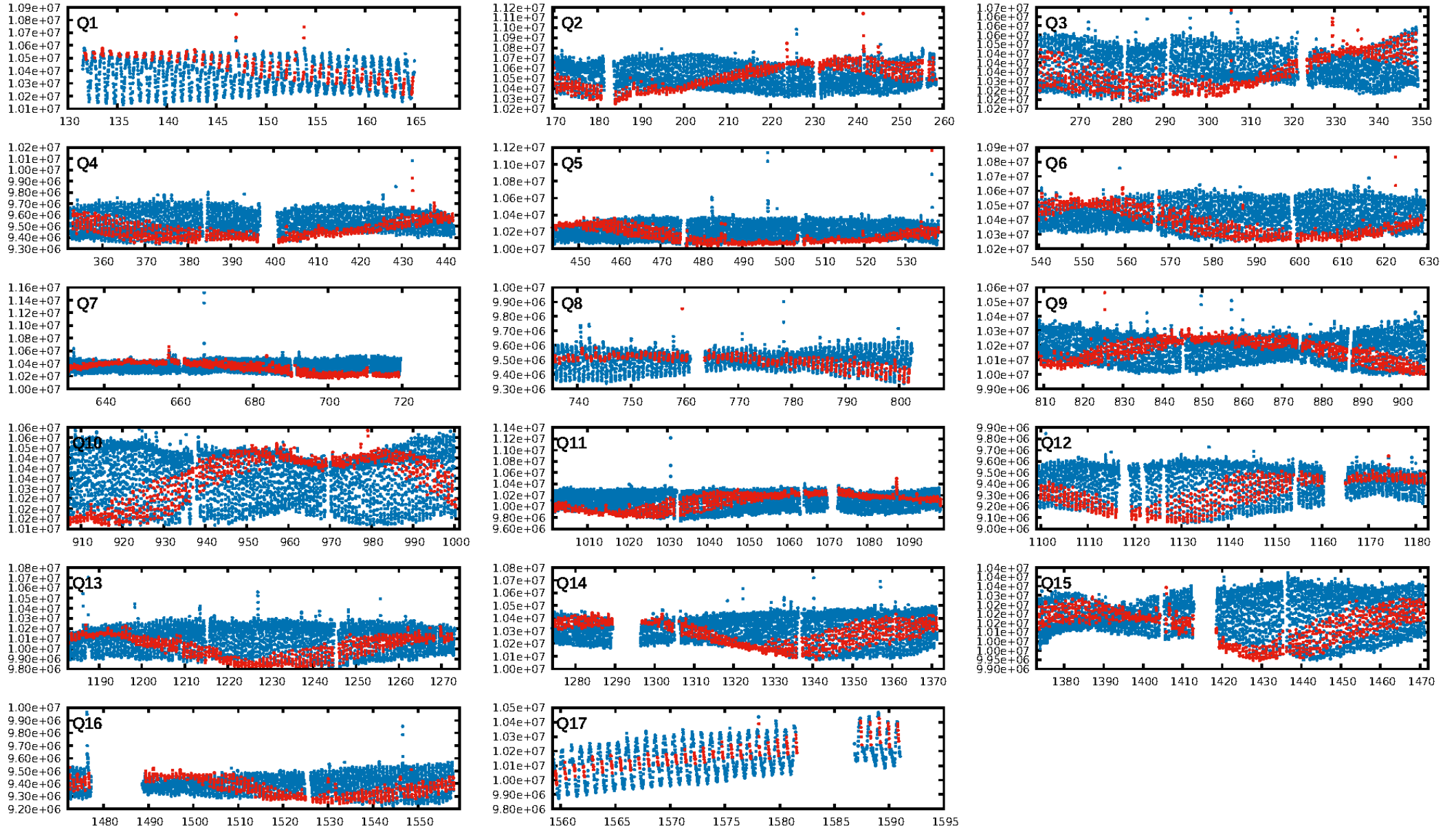
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [228.10σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.33e-38  
RollingBand-fgt: 1.00 [1513/1516]  
GhostDiagnostic-chr: 1.68  
Centroid-sig: 0.0%  
Centroid-so: 12.707 arcsec [3.48σ]  
OotOffset-rm: 0.068 arcsec [0.27σ]  
KicOffset-rm: 0.057 arcsec [0.24σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.88 [14/16]  
DiffImageOverlap-fno: 0.00 [0/17]

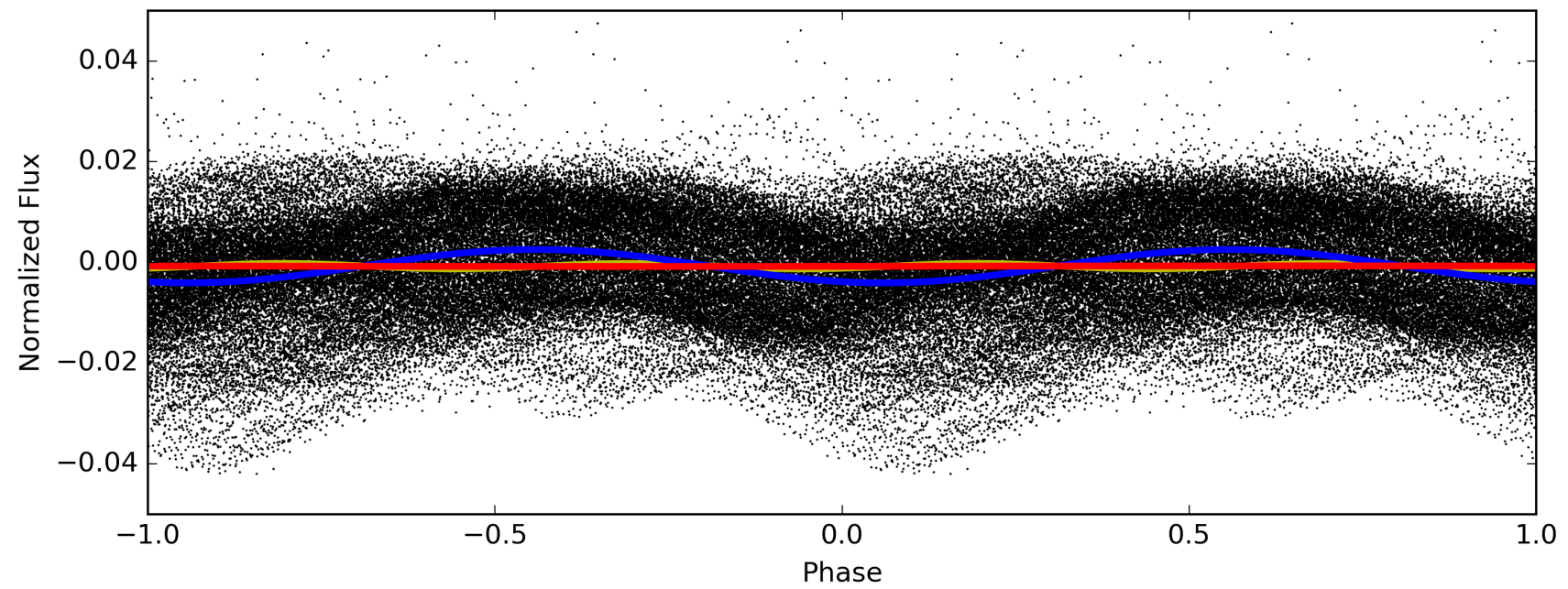
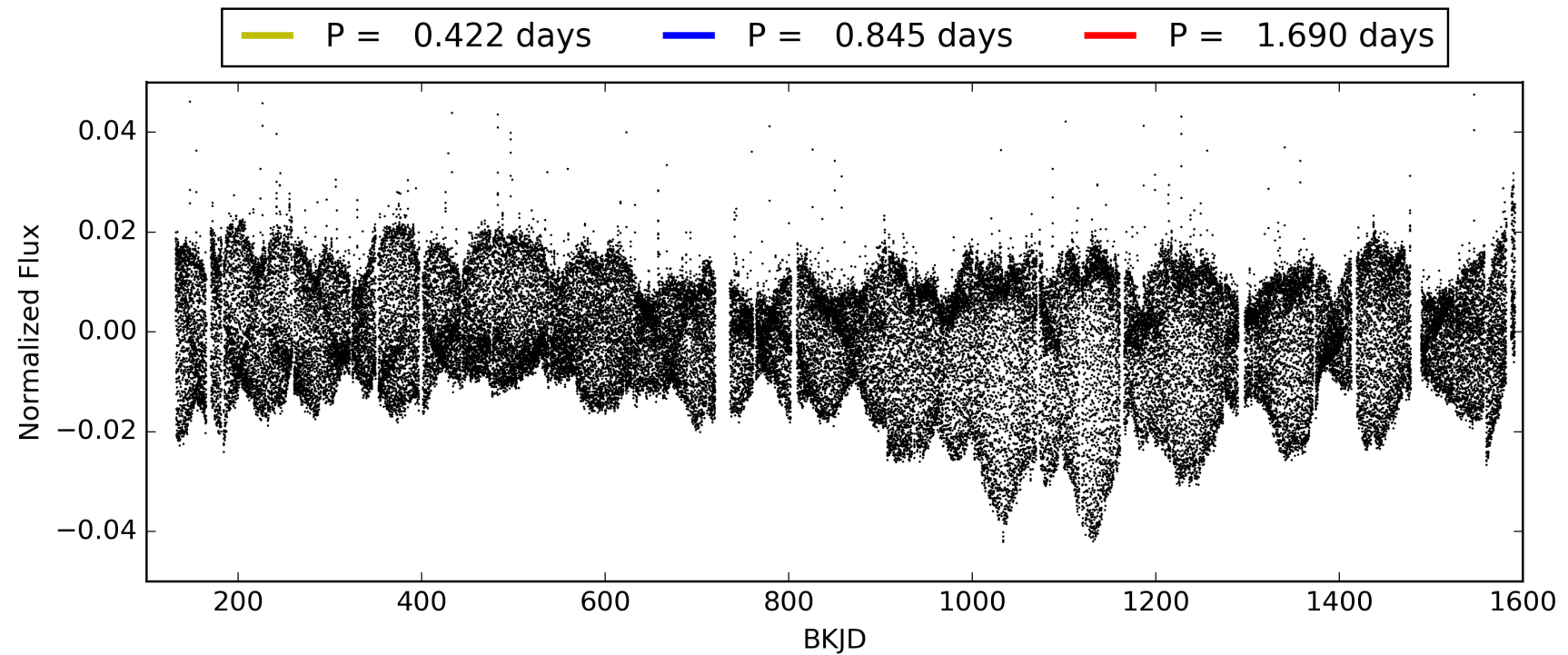
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:49:25 Z

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

# TCE 012365719-01, PDC Light Curves



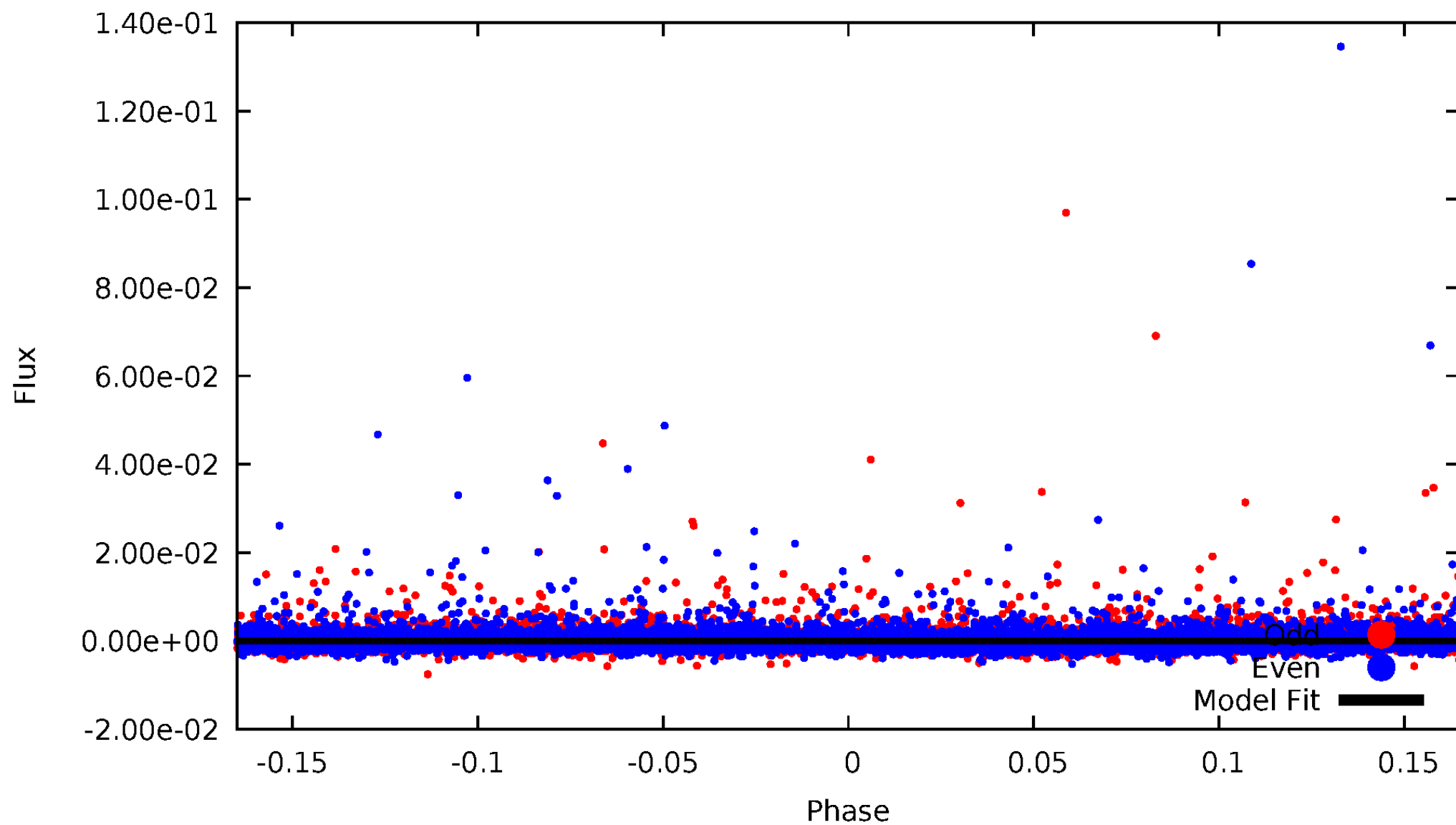
TCE 012365719-01





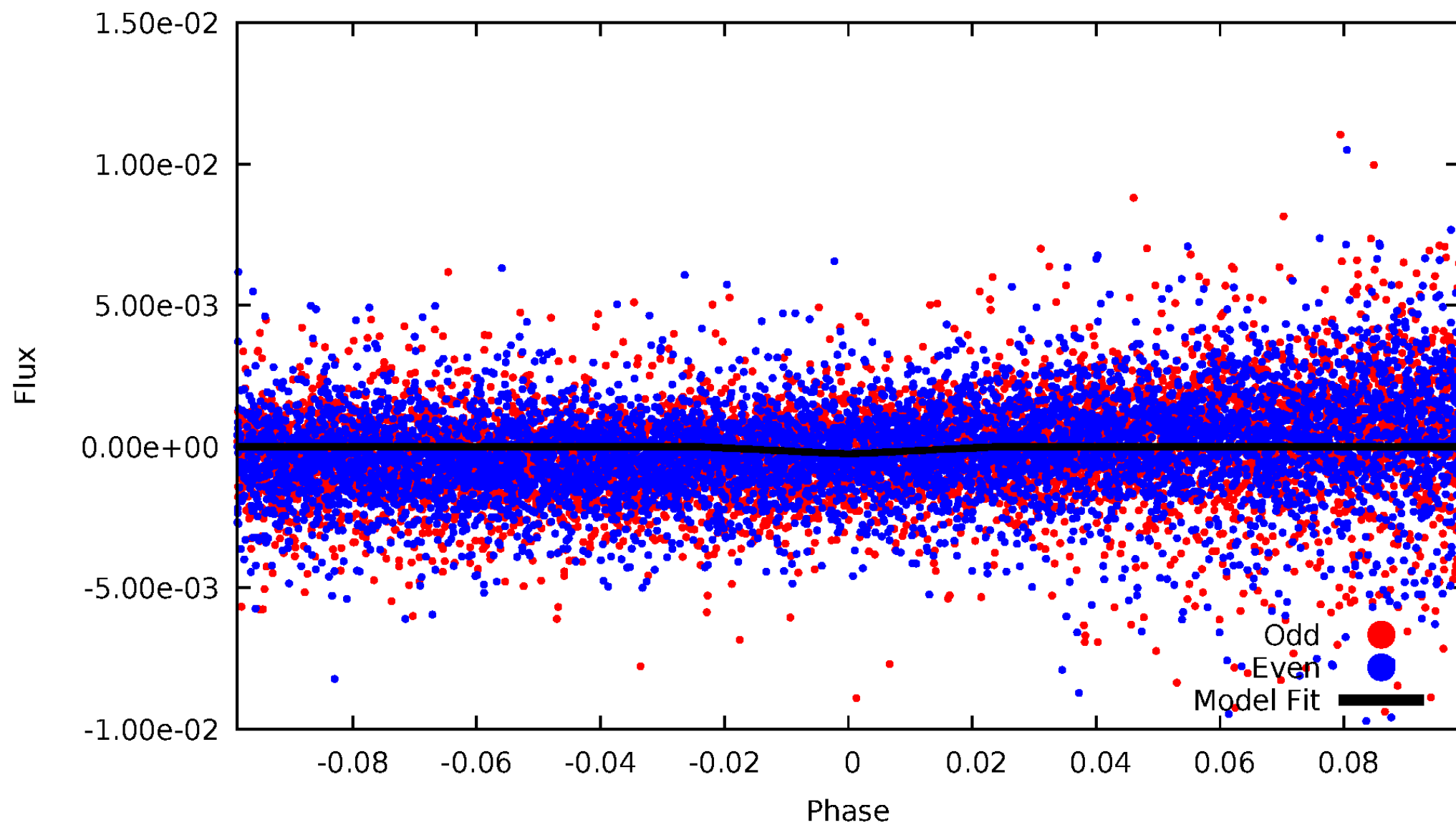
# DV Odd/Even

TCE 012365719-01



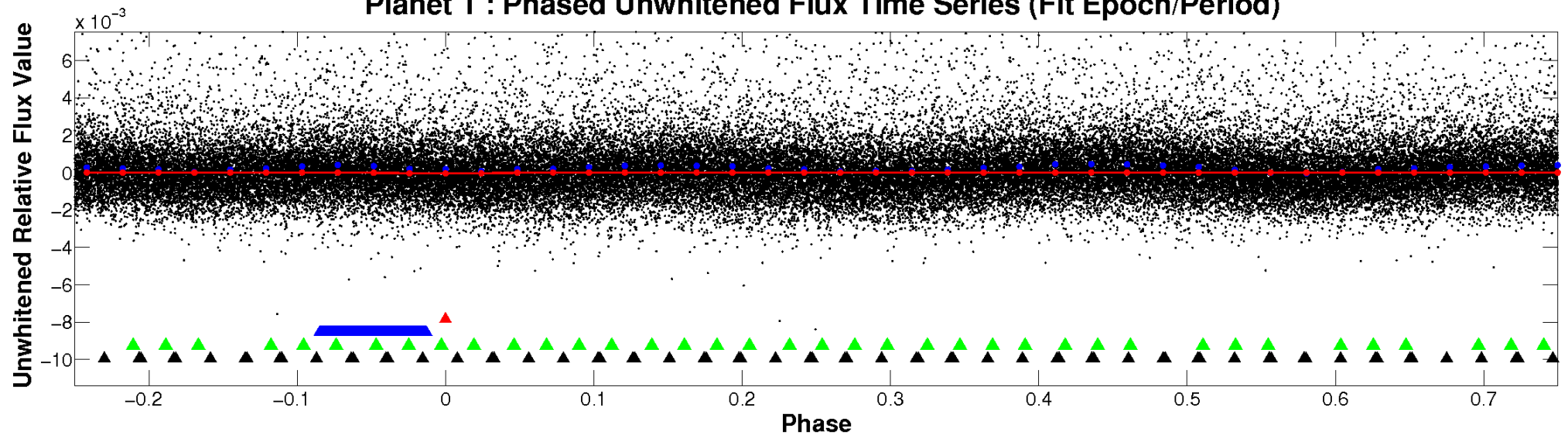
# ALT Odd/Even

TCE 012365719-01

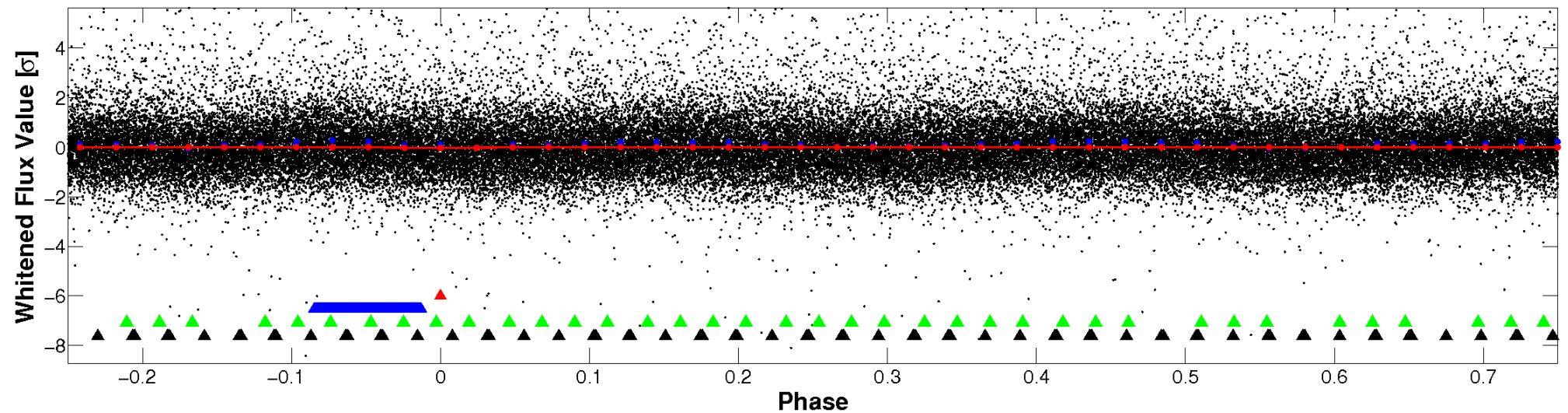


# Non-Whitened Vs. Whitened Light Curve

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

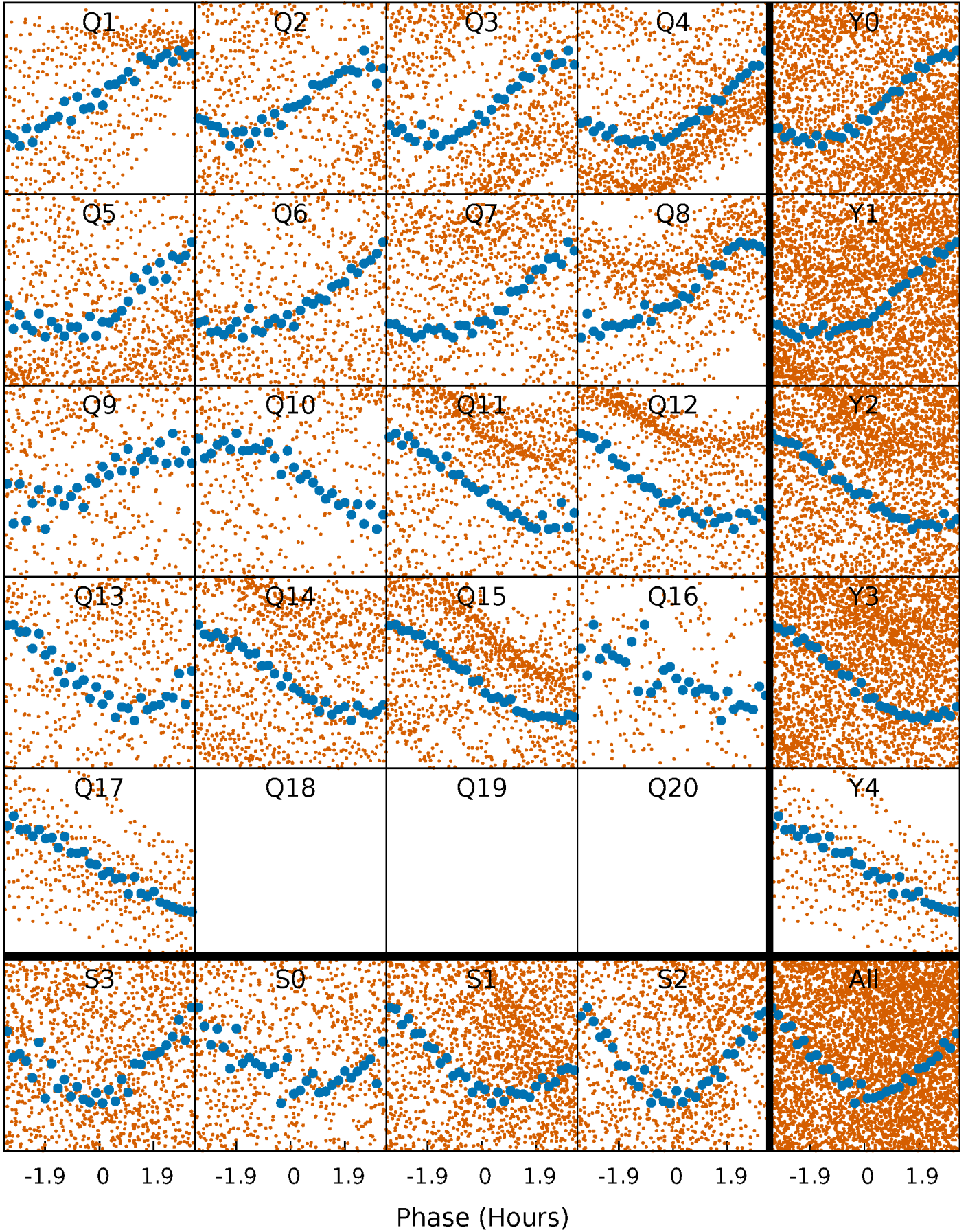


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

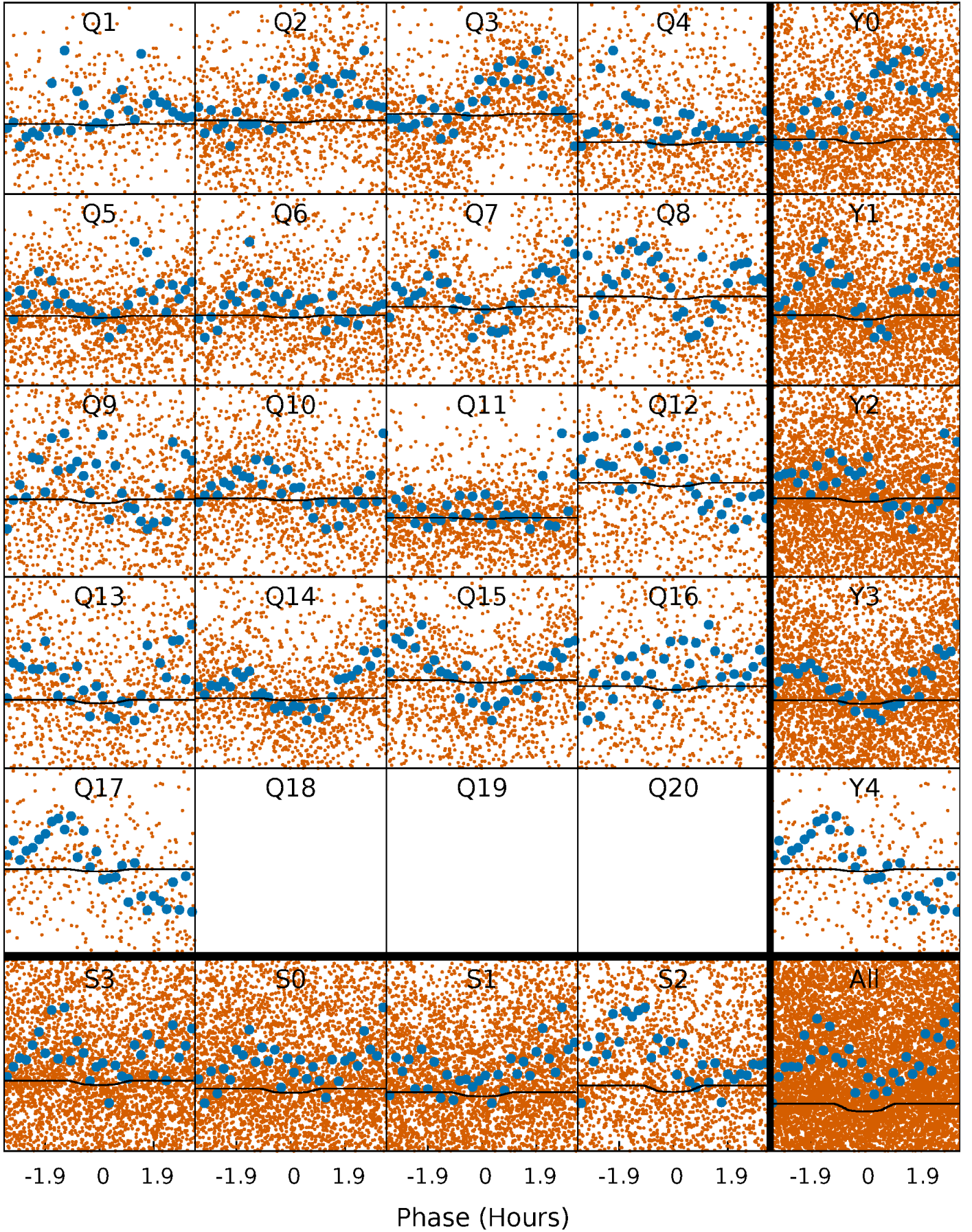
TCE 012365719-01   P= 0.844831 Days    $T_0=131.803355$  (BKJD)





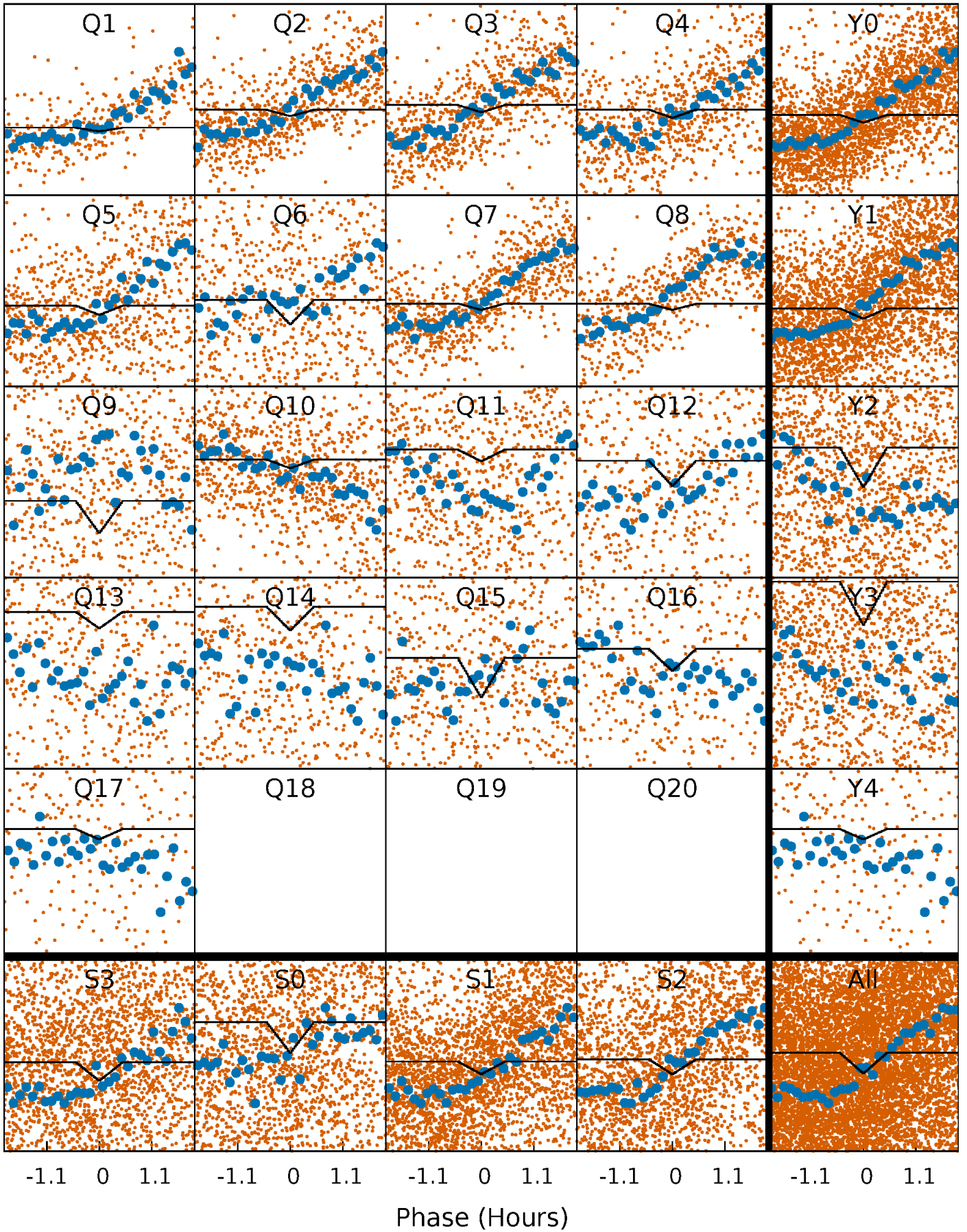
# DV Quarter-Phased Transit Curves

TCE 012365719-01 P= 0.844831 Days  $T_0=131.803355$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

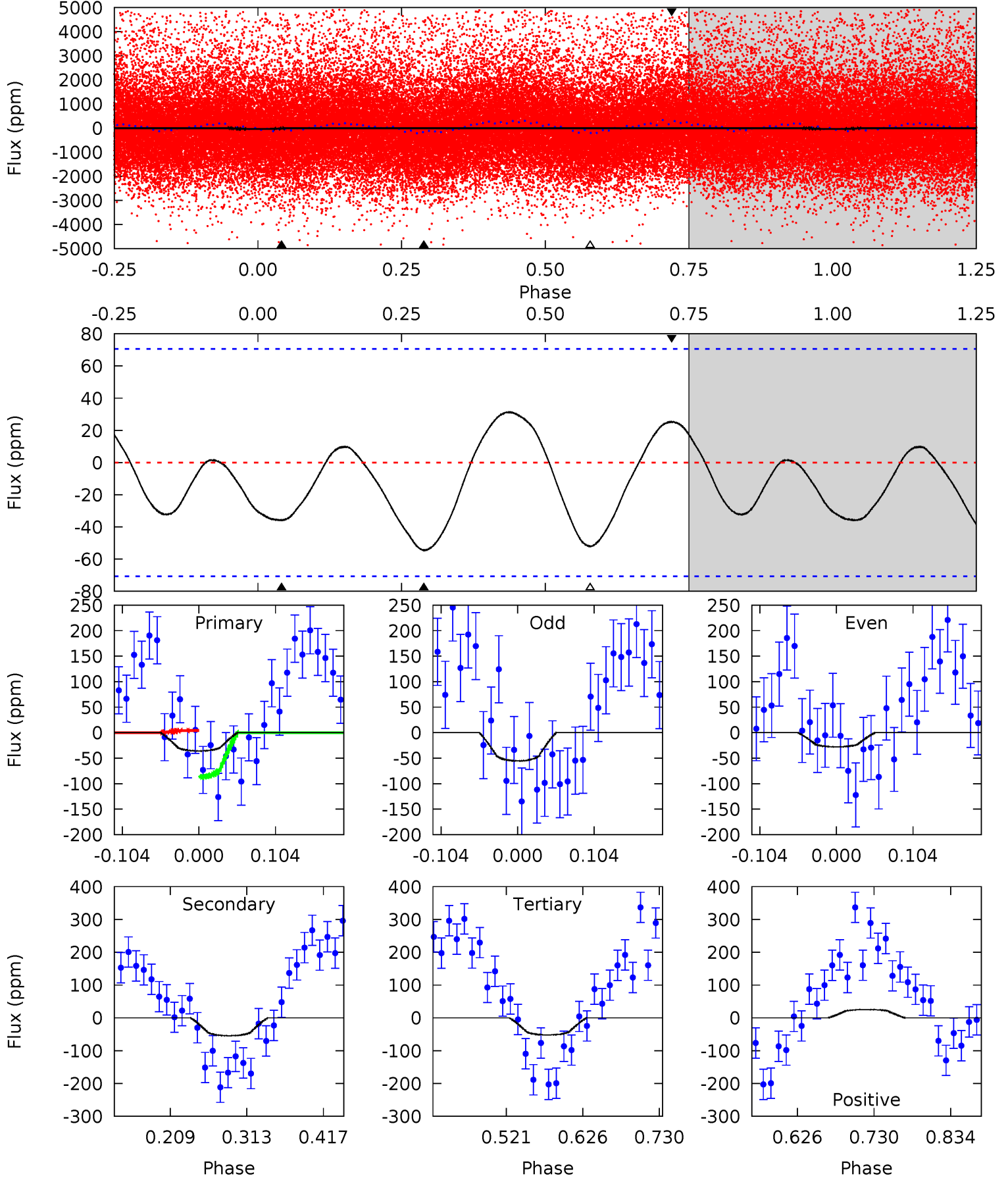
TCE 012365719-01 P= 0.844902 Days  $T_0=131.798431$  (BKJD)



# DV Model-Shift Uniqueness Test

012365719-01, P = 0.844831 Days, E = 130.958524 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
2.31	3.51	3.36	1.63	4.56	1.62	1.58	-1.05	0.68	0.16	1.88	0.88	-2.17	0.37	2.68

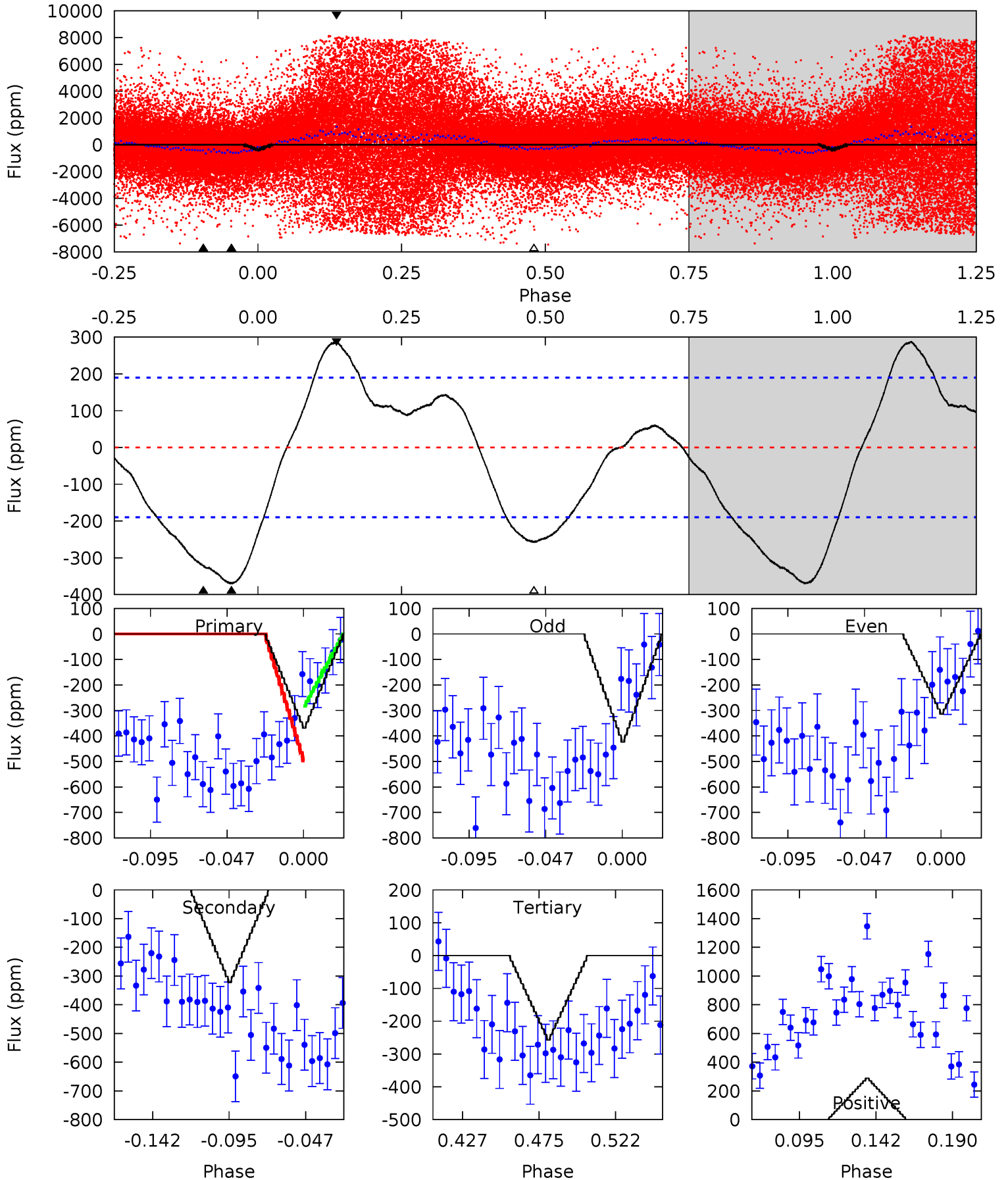




# Alt Model-Shift Uniqueness Test

012365719-01, P = 0.844902 Days, E = 130.953529 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
9.20	8.02	6.40	7.20	4.72	1.98	3.72	2.79	2.00	1.62	0.82	1.39	1.26	0.44	2.29





### Stellar Parameters For KIC 012365719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3557^{+48}_{-59}$	$4.868^{+0.036}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.387^{+0.032}_{-0.036}$	$0.406^{+0.035}_{-0.042}$	$9.864^{+1.985}_{-1.500}$
	+1%/-2%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+20%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 012365719-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-55 \pm 16$	$0.75^{+0.73}_{-0.50}$	$1200^{+27}_{-25}$	$2733^{+1060}_{-459}$	$8.617^{+66.959}_{-6.499}$
Alt.	$-323 \pm 40$	$0.95^{+0.88}_{-0.64}$	$1200^{+28}_{-25}$	$3319^{+1549}_{-592}$	$33^{+262}_{-24}$

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

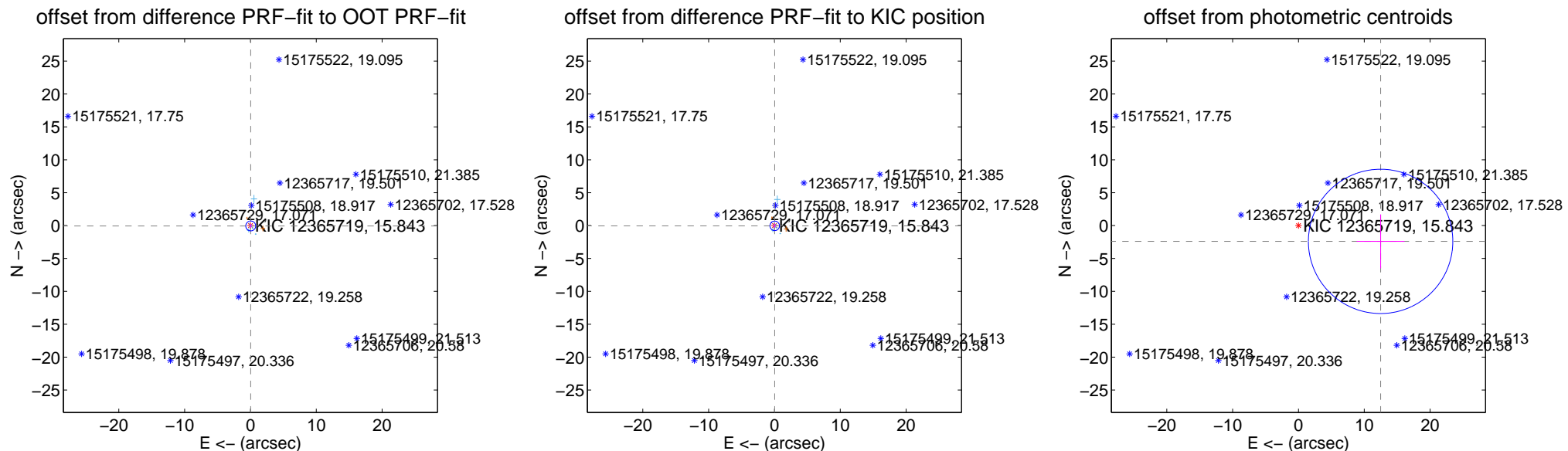
## DV Centroid Data

Supplemental centroid analysis for 012365719-01. Kepler magnitude: 15.84. Transit SNR 1.77

There are 14 quarters with good PRF difference image offsets

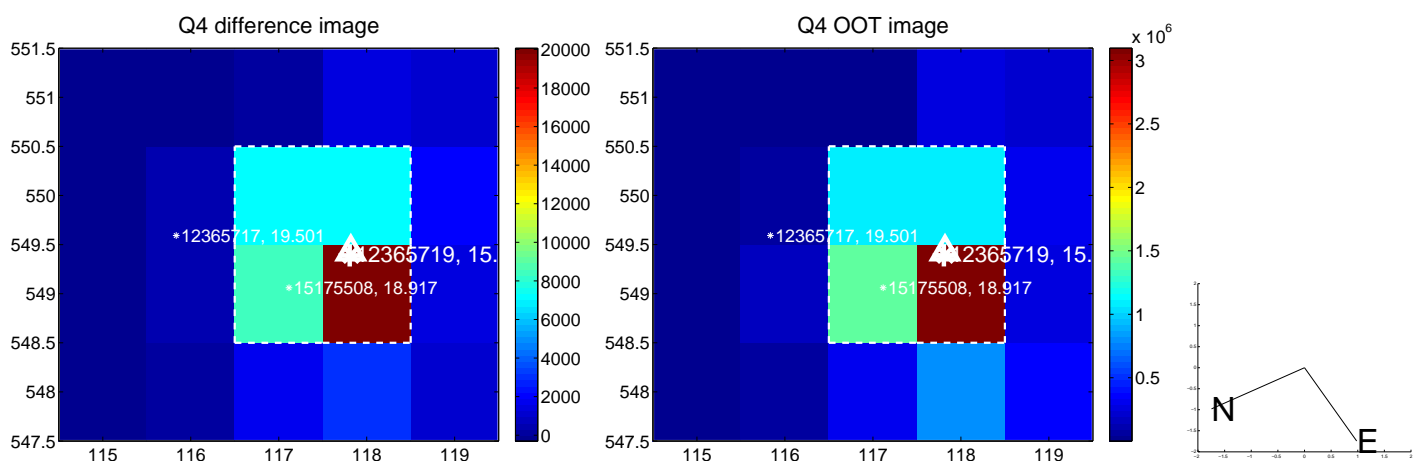
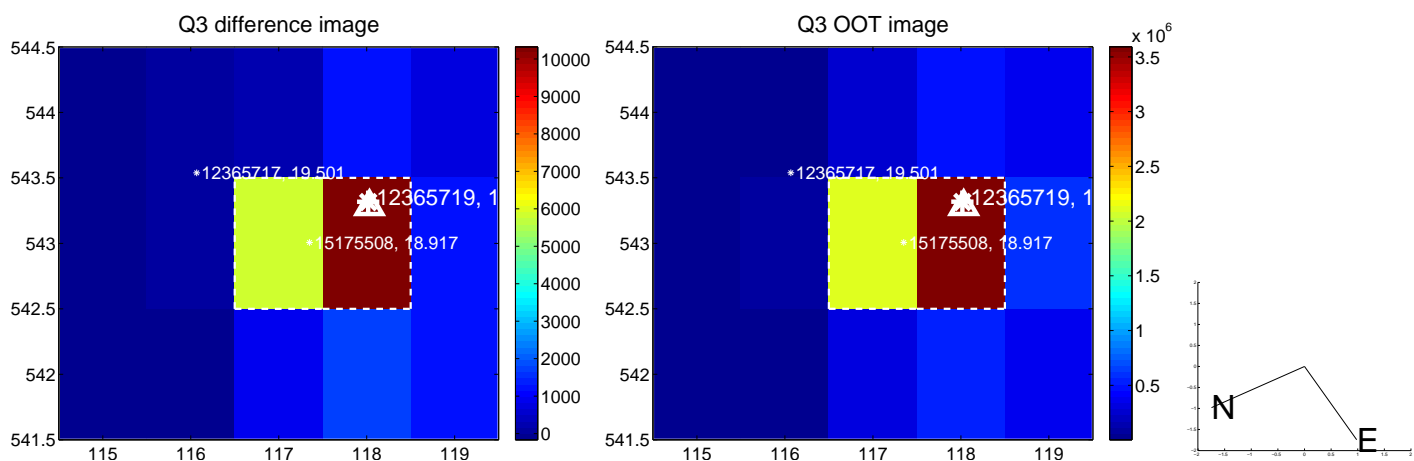
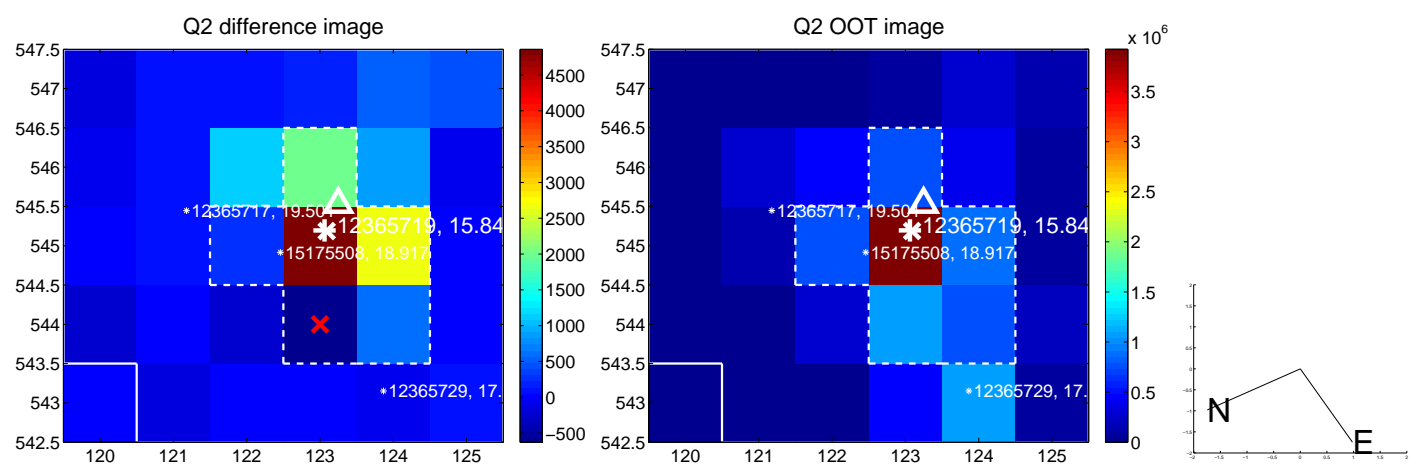
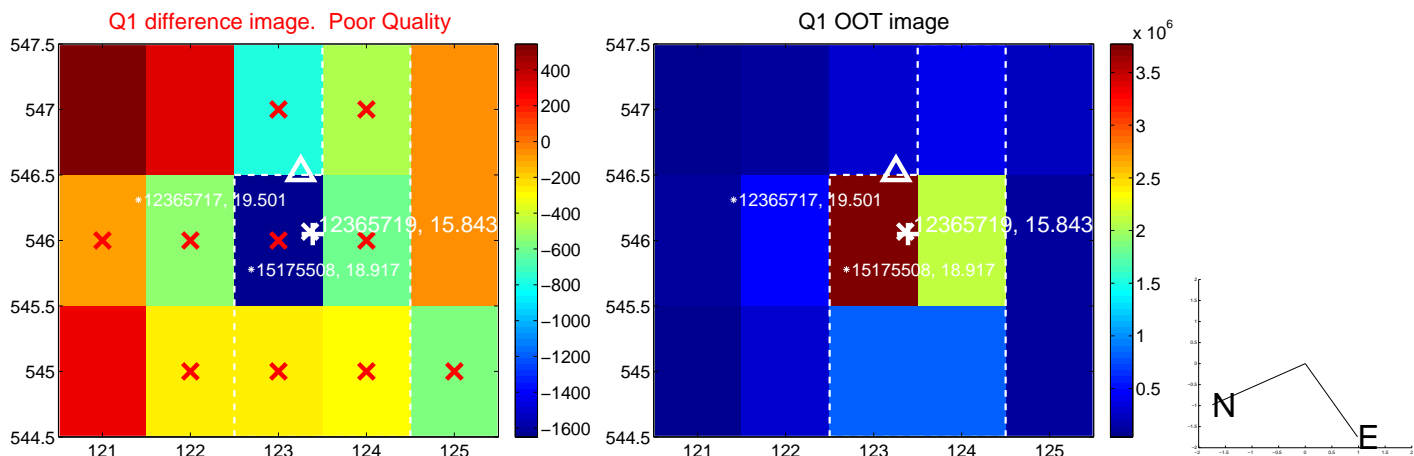
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.068 \pm 0.251$	0.27	$-0.039 \pm 0.149$	$-0.055 \pm 0.288$
PRF-fit source offset from KIC position	$0.057 \pm 0.241$	0.24	$-0.038 \pm 0.147$	$-0.042 \pm 0.293$
photometric centroid source offset	$12.71 \pm 3.66$	3.48	$-12.48 \pm 3.64$	$-2.40 \pm 4.10$

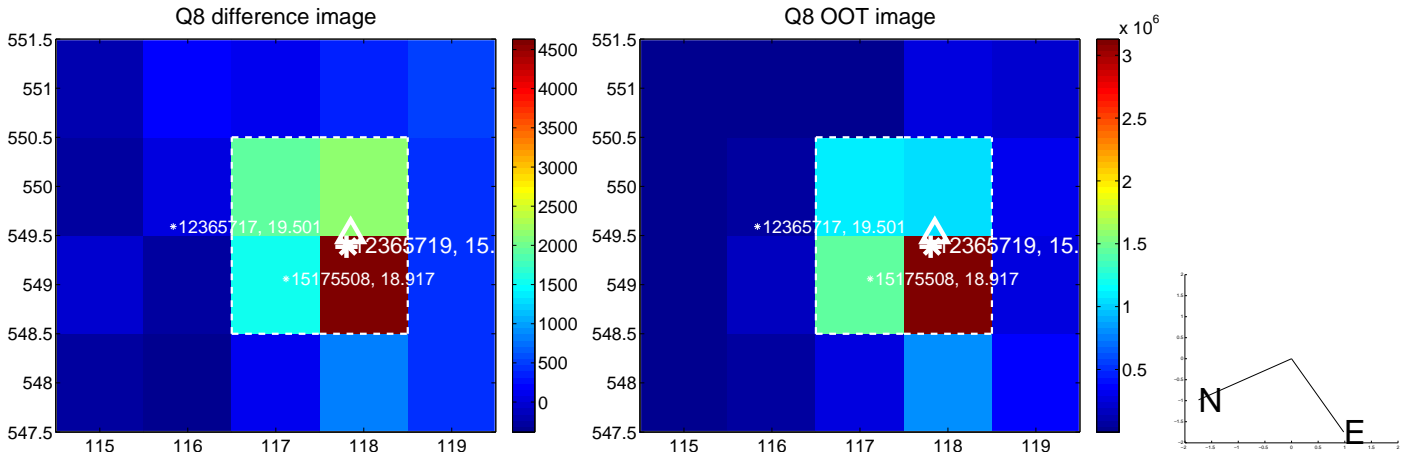
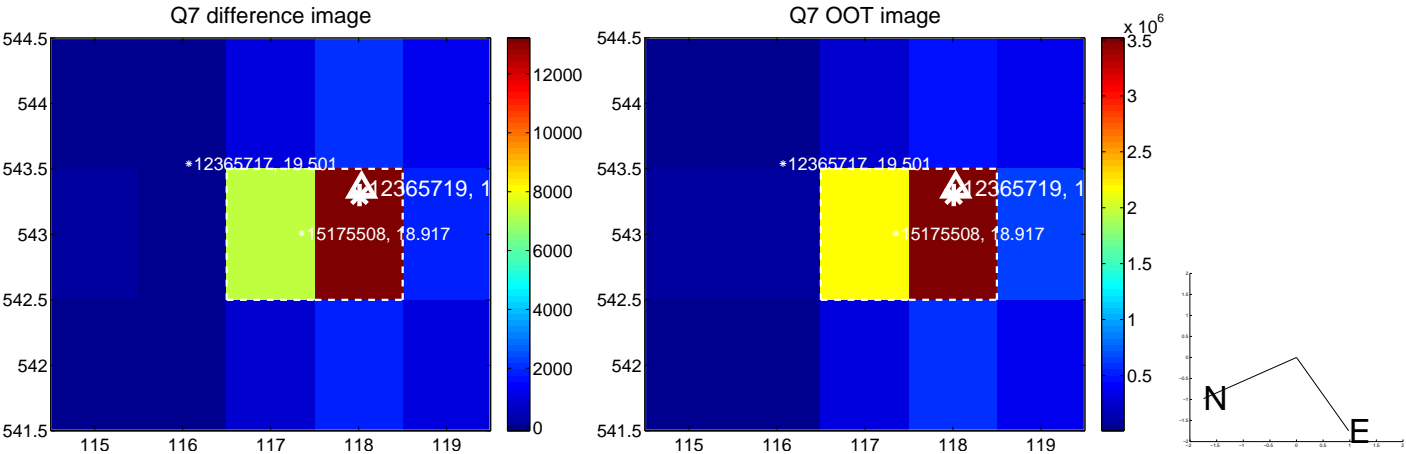
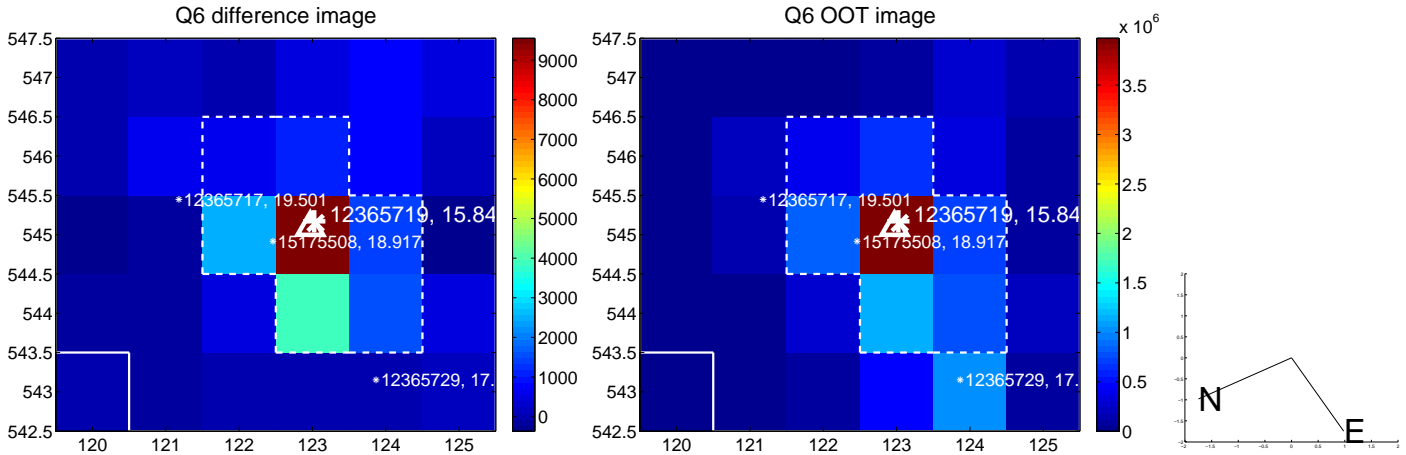
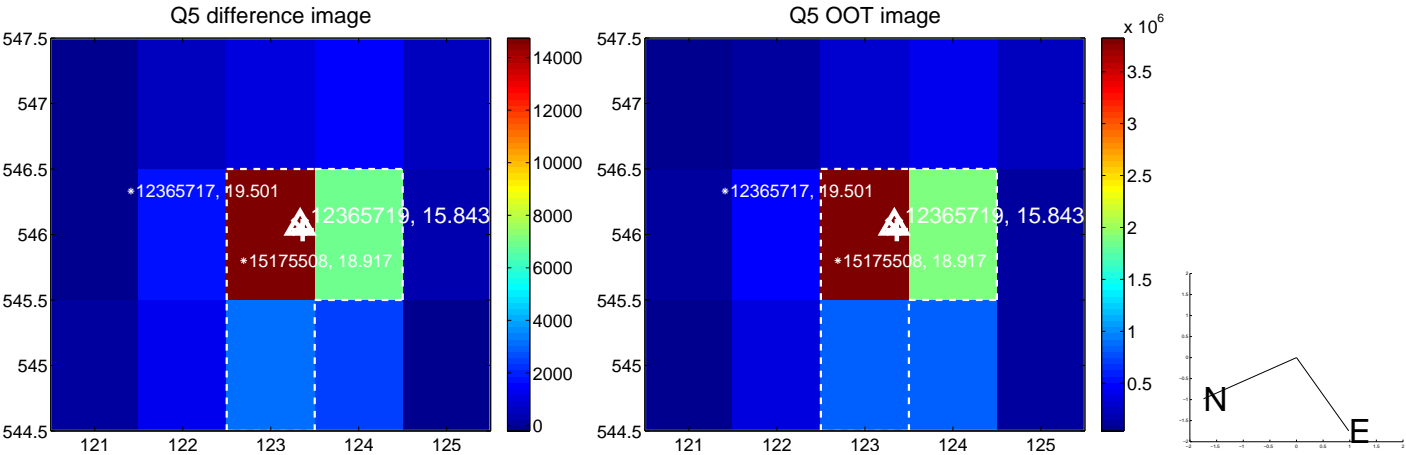


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

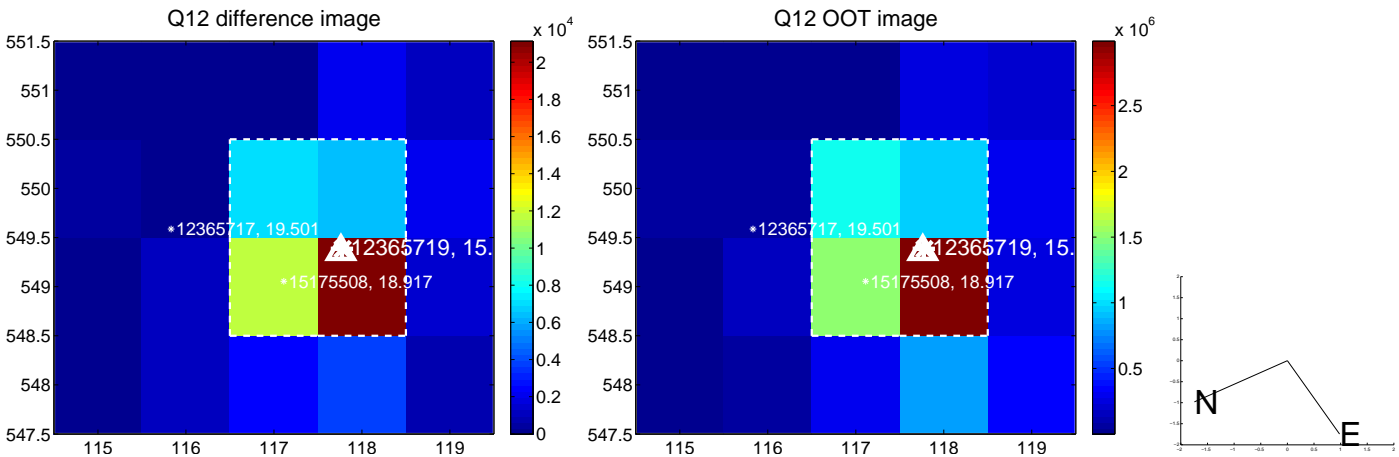
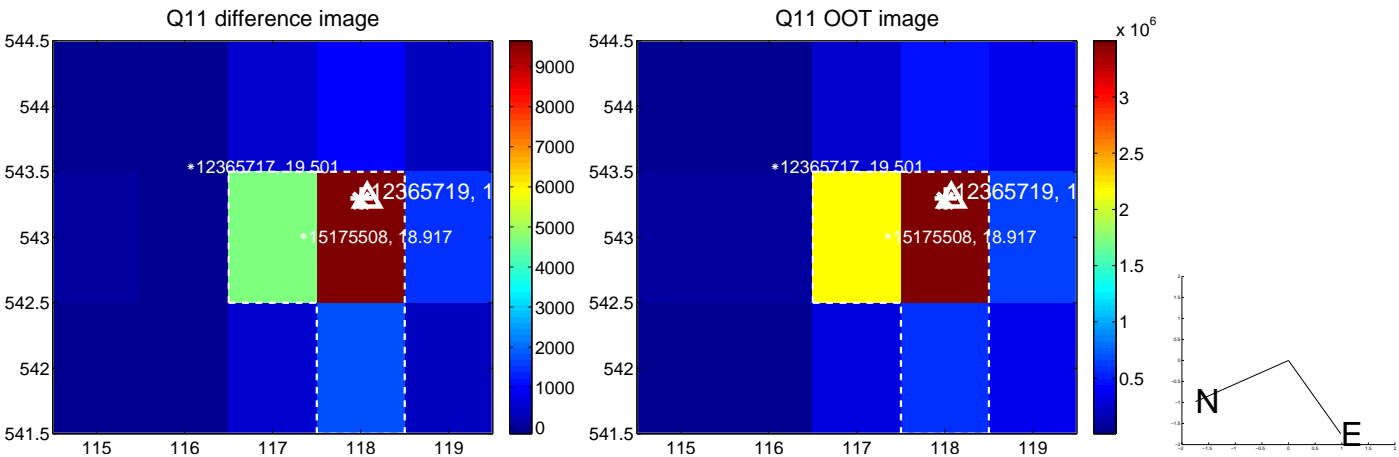
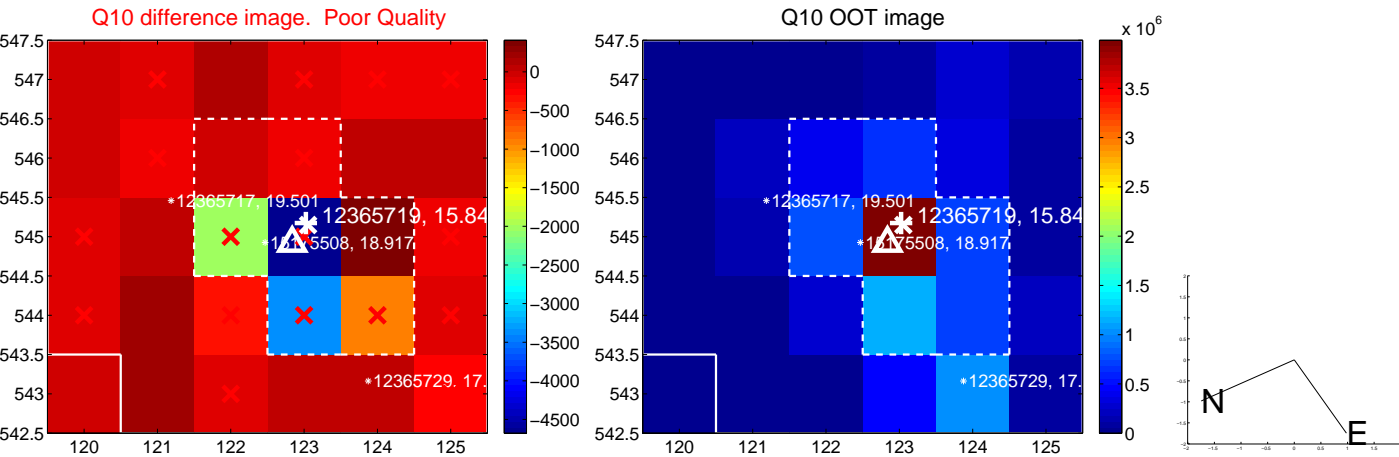
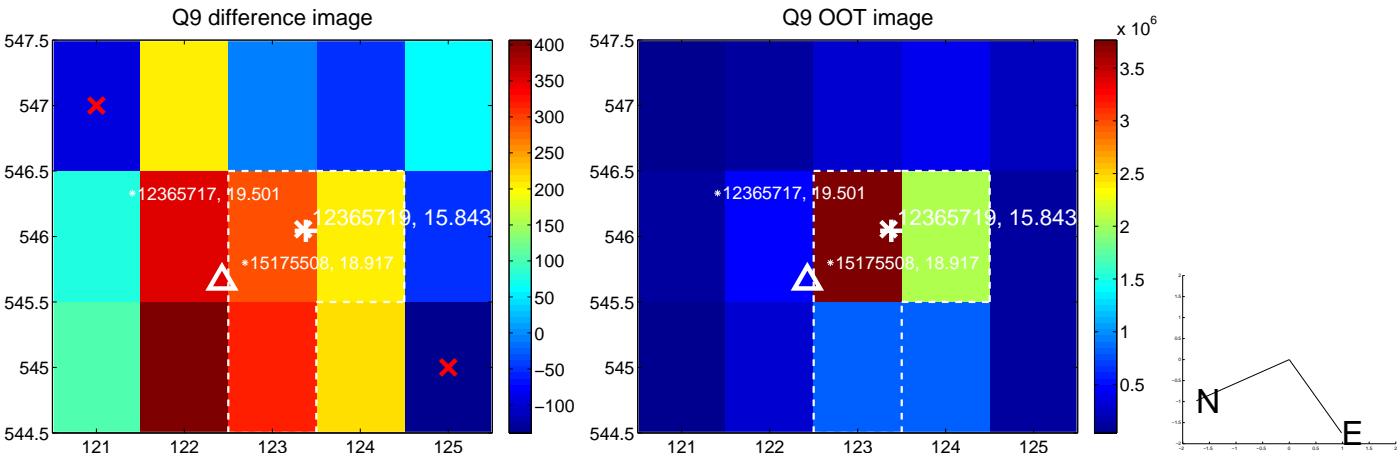


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

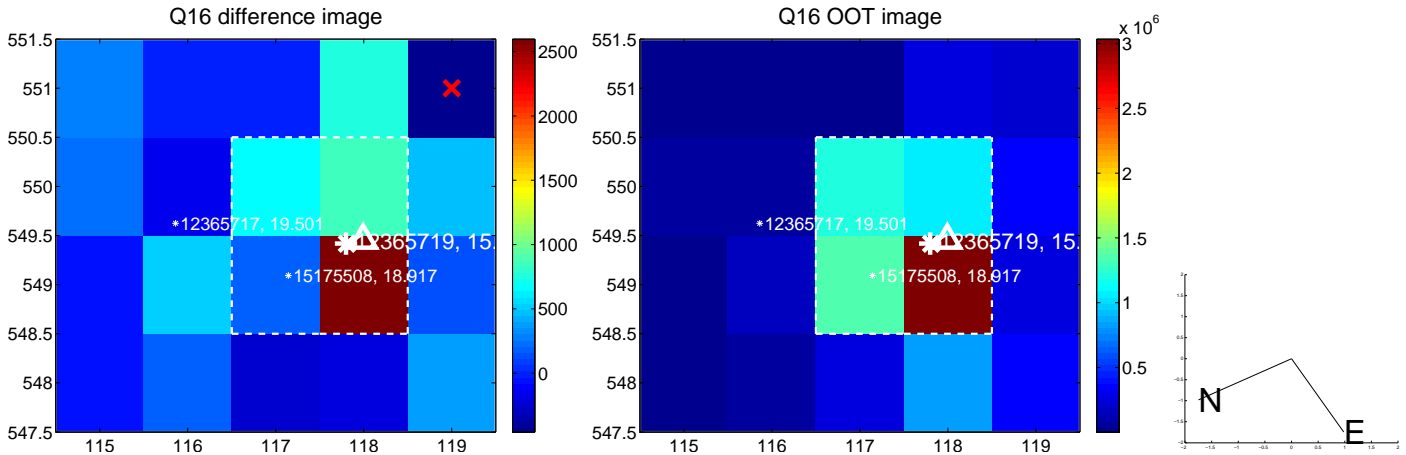
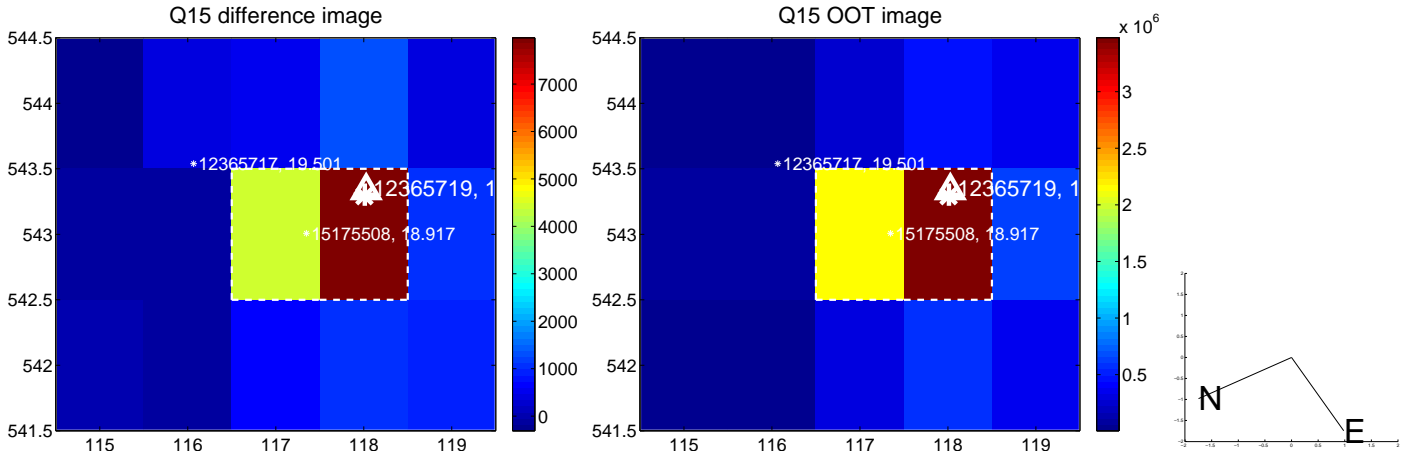
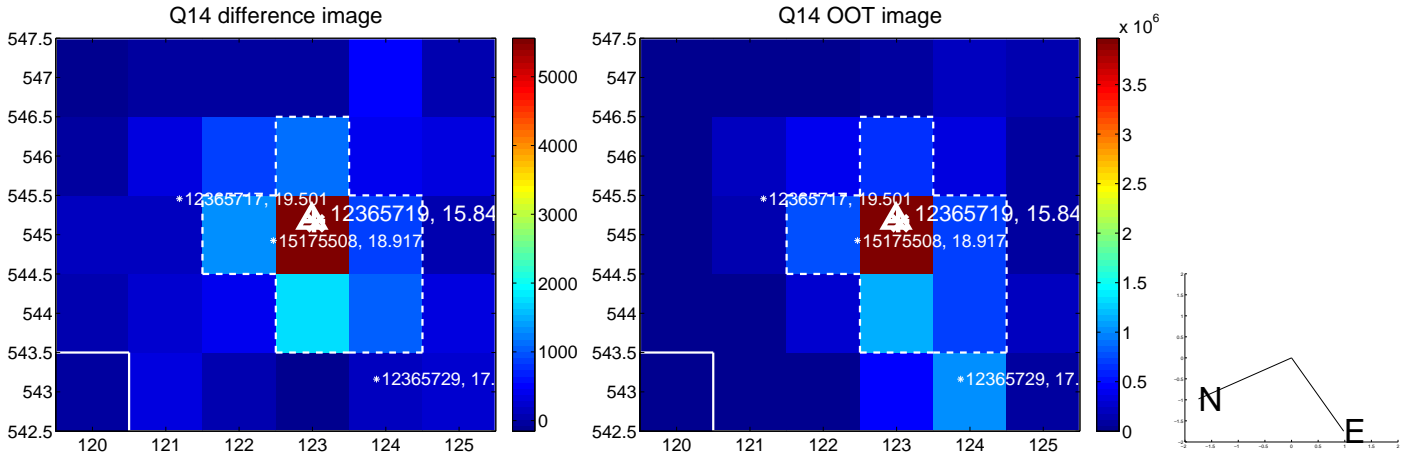
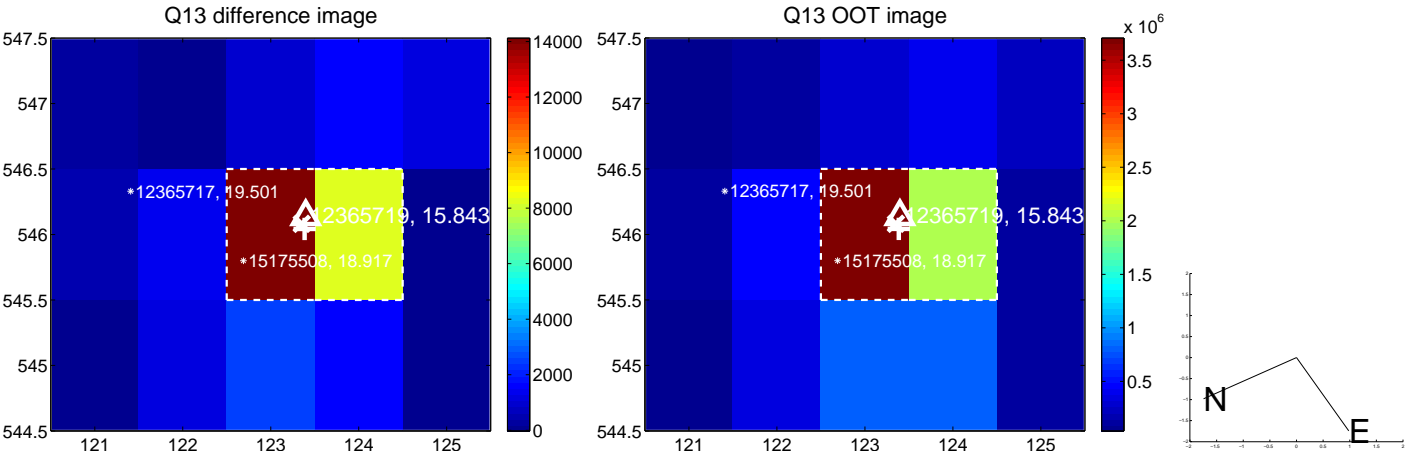




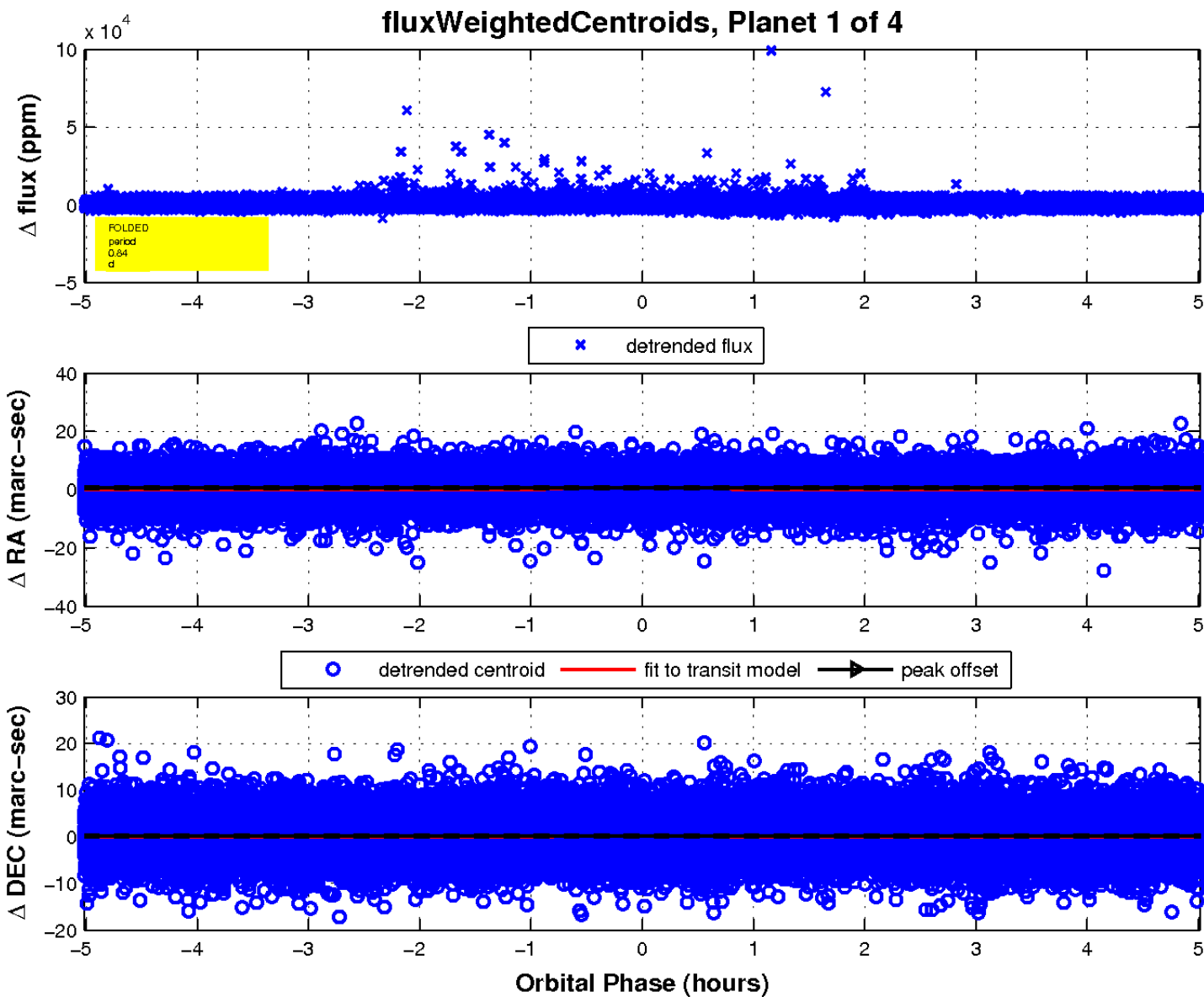
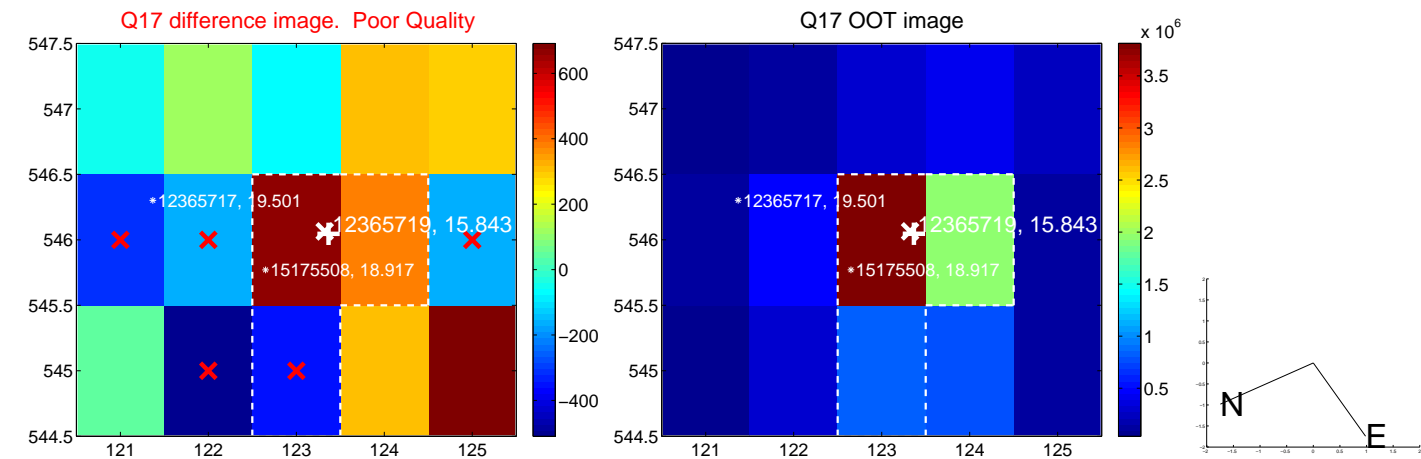
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

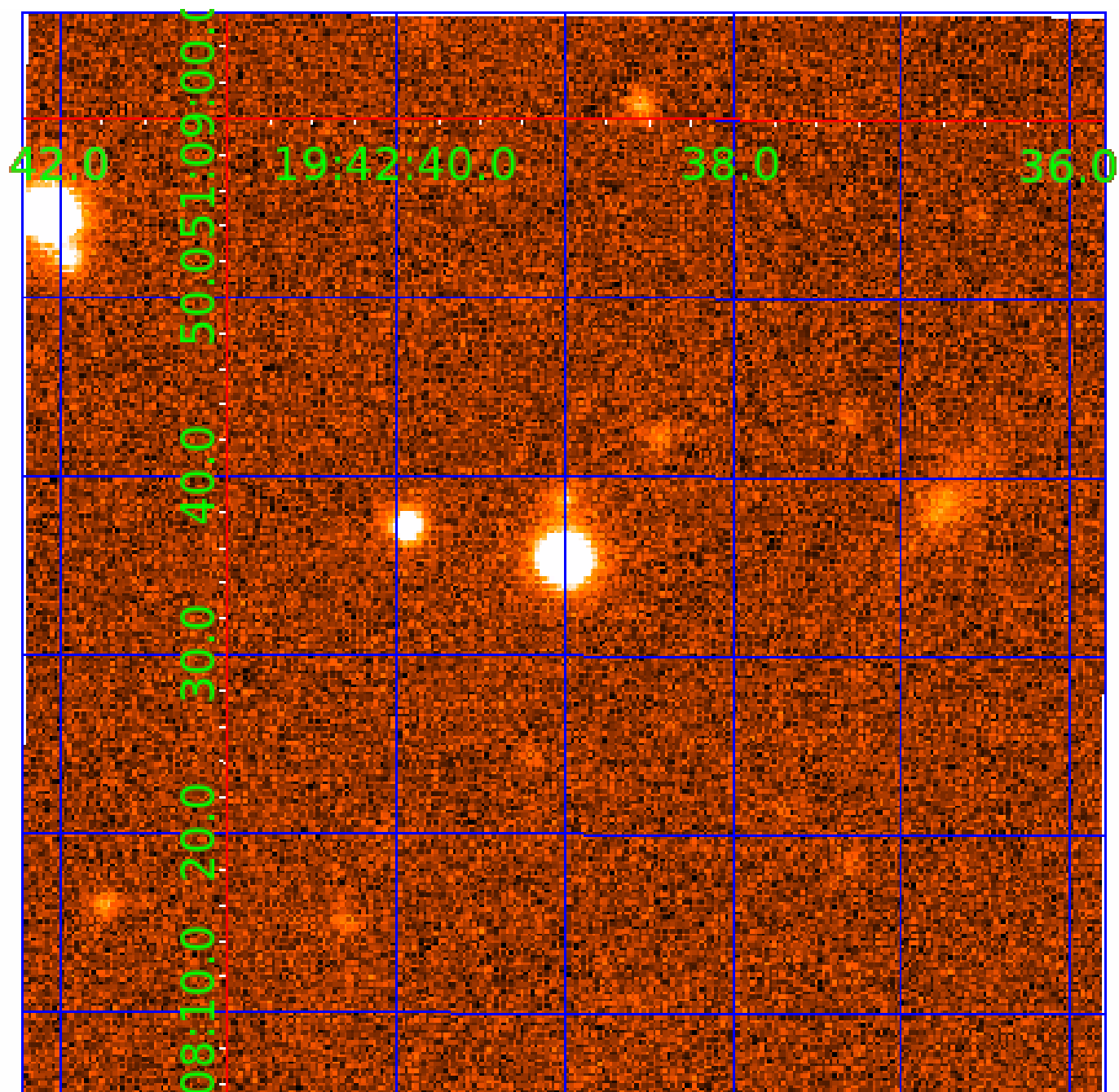


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 012365719

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012365719-01	OBS	No	0.844831	131.803355	45.7	1.672	12.8	1.8	0.39	3557	0.26	128.63
012365719-02	OBS	No	0.844796	131.792445	0.0	5.634	11.0	0.0	0.39	3557	0.00	128.64
012365719-03	OBS	No	38.940722	148.660508	1412.0	6.765	8.3	8.4	0.39	3557	1.47	0.78
012365719-04	OBS	No	22.227078	133.762331	1951.1	1.505	9.0	9.8	0.39	3557	1.84	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012365719-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
012365719-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—SAME_NTL_PERIOD
012365719-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012365719-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV

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

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

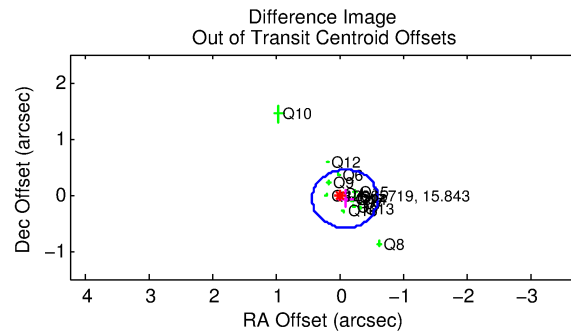
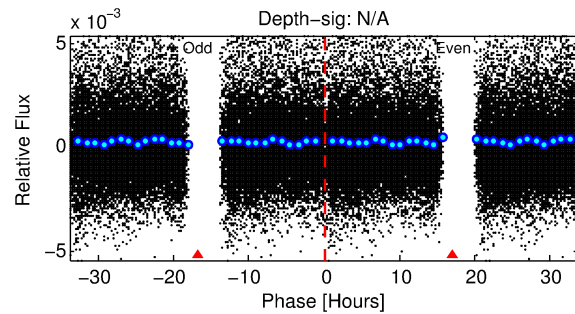
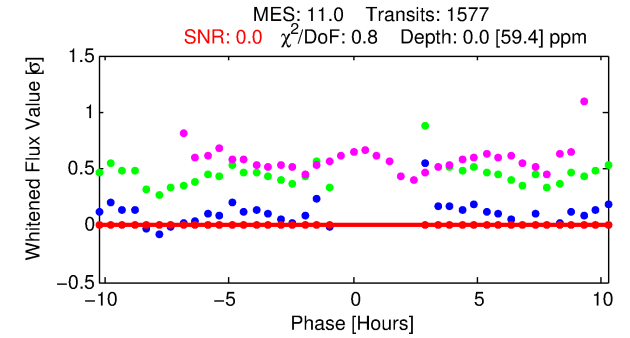
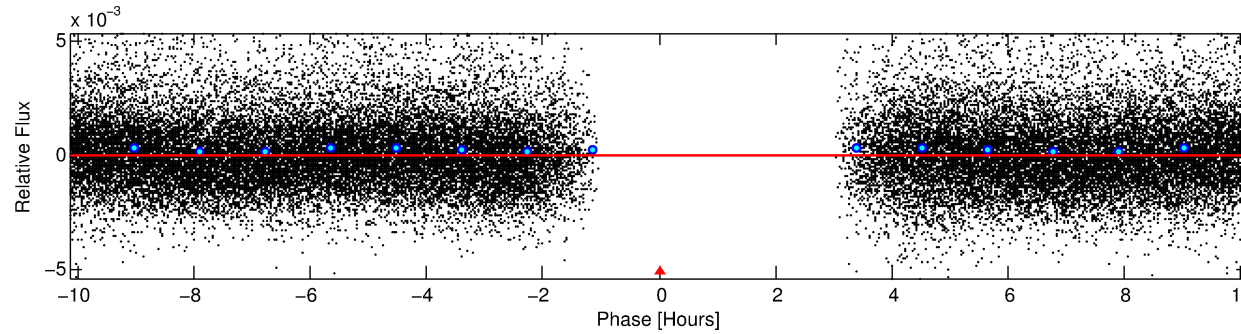
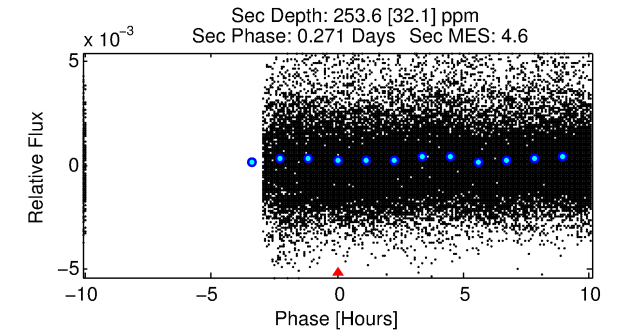
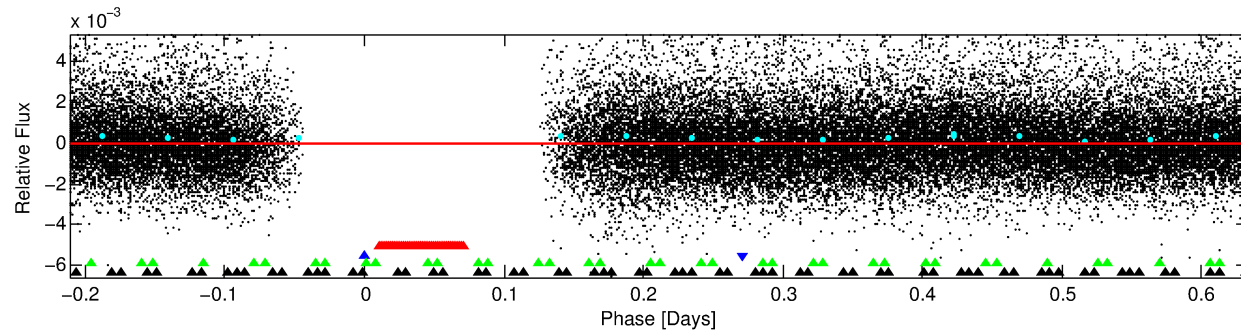
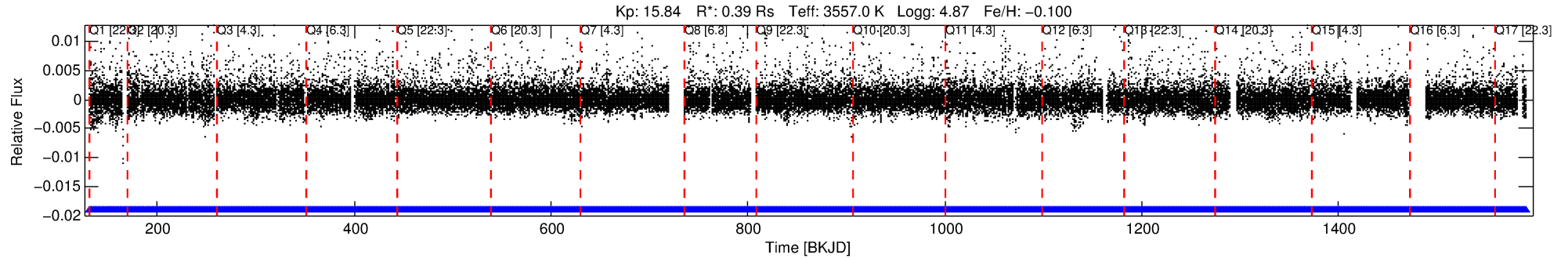
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012365719-02

No Significant Match Found

# DV One-Page Summary

KIC: 12365719 Candidate: 2 of 4 Period: 0.845 d



## DV Fit Results:

Period = 0.84480 [27.00284] d  
Epoch = 131.7924 [7965.7426] BKJD  
Rp/R\* = 0.0000 [3.2315]  
a/R\* = 1.01 [810.65]  
b = 0.99 [2377.46]  
Seff = 128.64 [5482.34]  
Teq = 859 [9150] K  
Rp = 0.00 [136.47] Re  
a = 0.0129 [0.2754] AU  
Ag = 49691838.88 [19806943812301.96110000]  
Teff = 111476 [11109239307] K

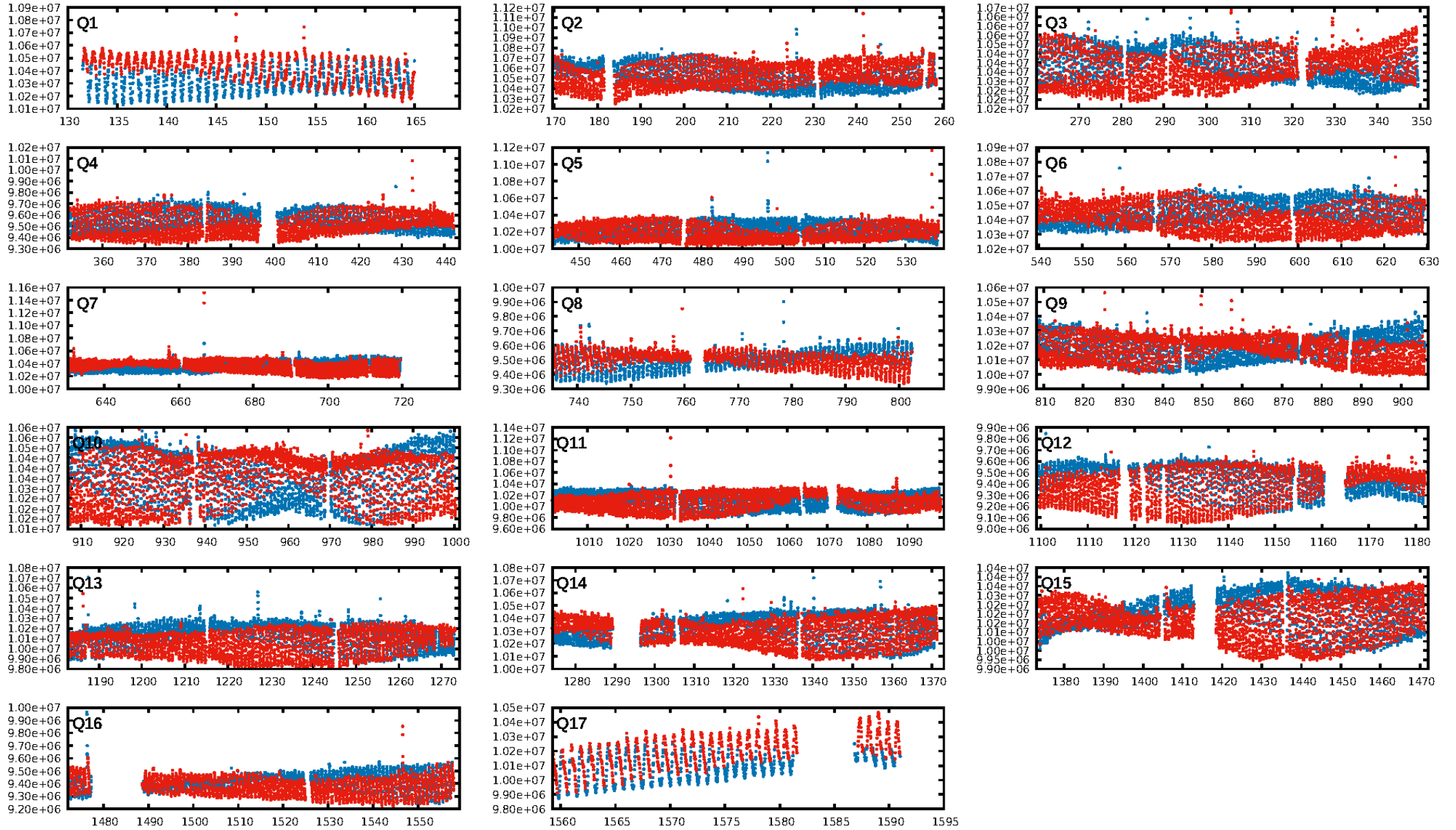
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.61e-32  
RollingBand-fgt: 1.00 [1506/1506]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OutOffset-rm: 0.105 arcsec [0.61σ]  
OutOffset-rm: 0.118 arcsec [0.68σ]  
OutOffset-st: 3/3/4/5 [15]  
KicOffset-st: 3/3/4/5 [15]  
DiffImageQuality-fgm: 0.80 [12/15]  
DiffImageOverlap-fno: 0.00 [0/17]

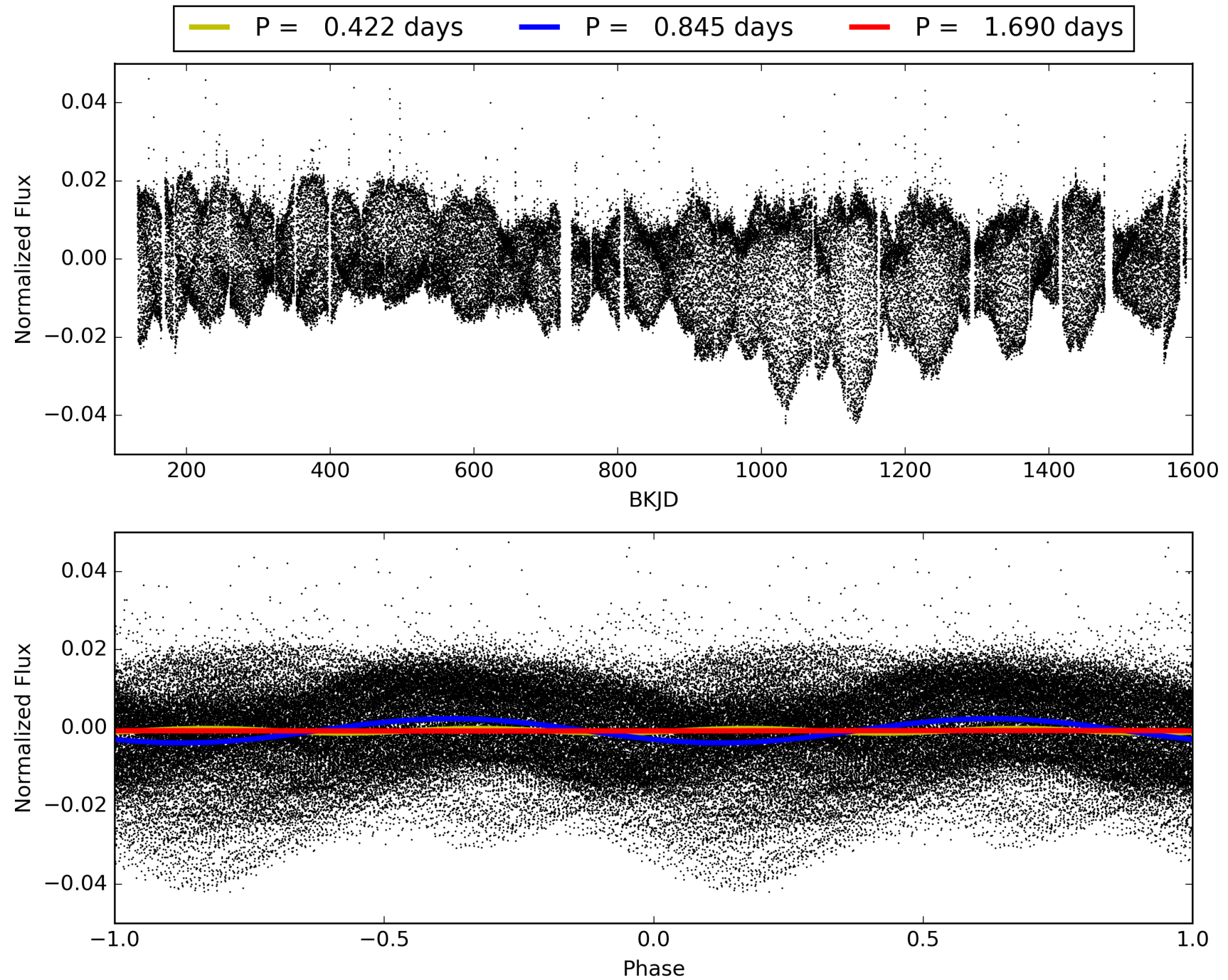
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:49:38 Z

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

# TCE 012365719-02, PDC Light Curves

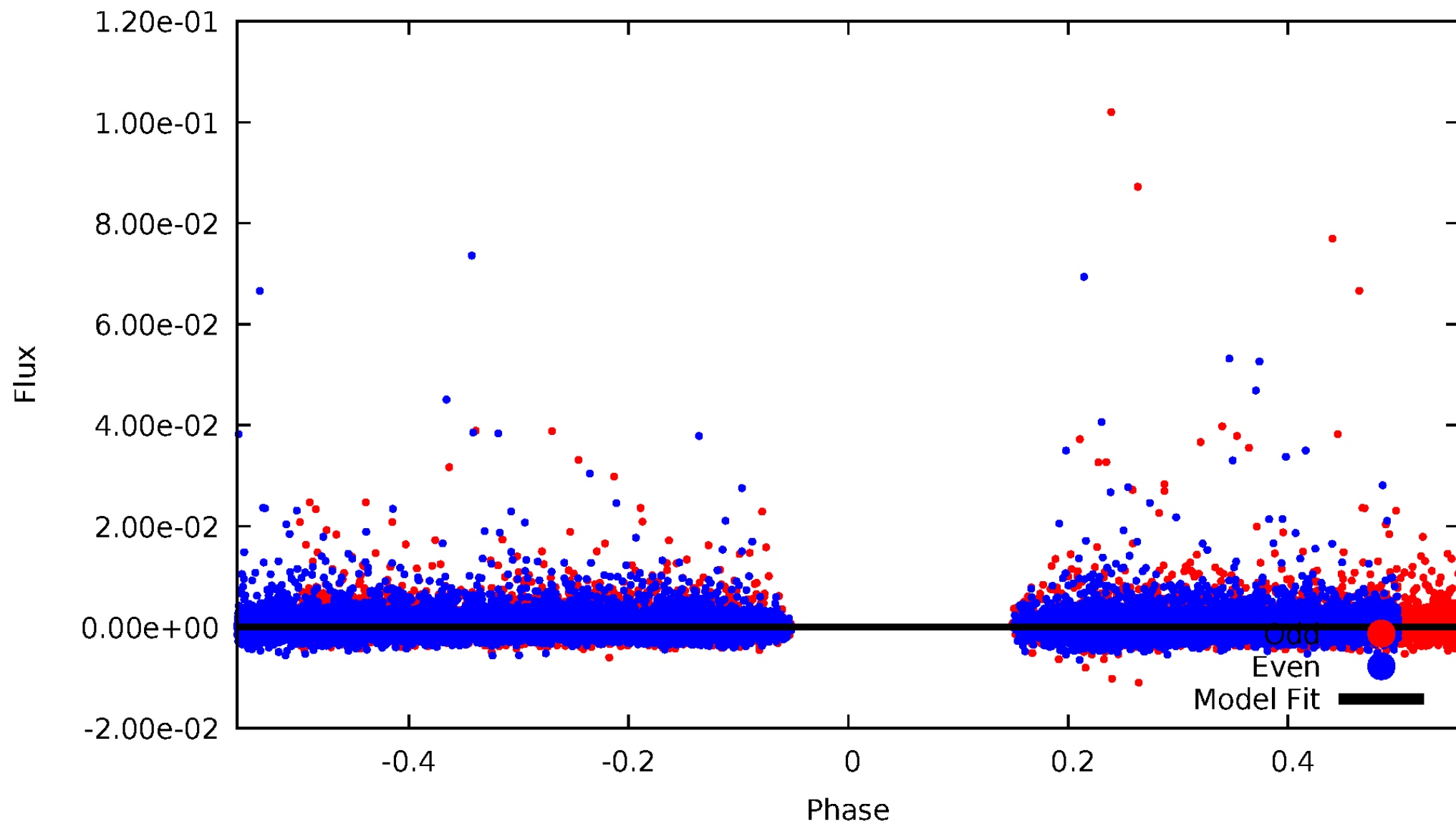


TCE 012365719-02



# DV Odd/Even

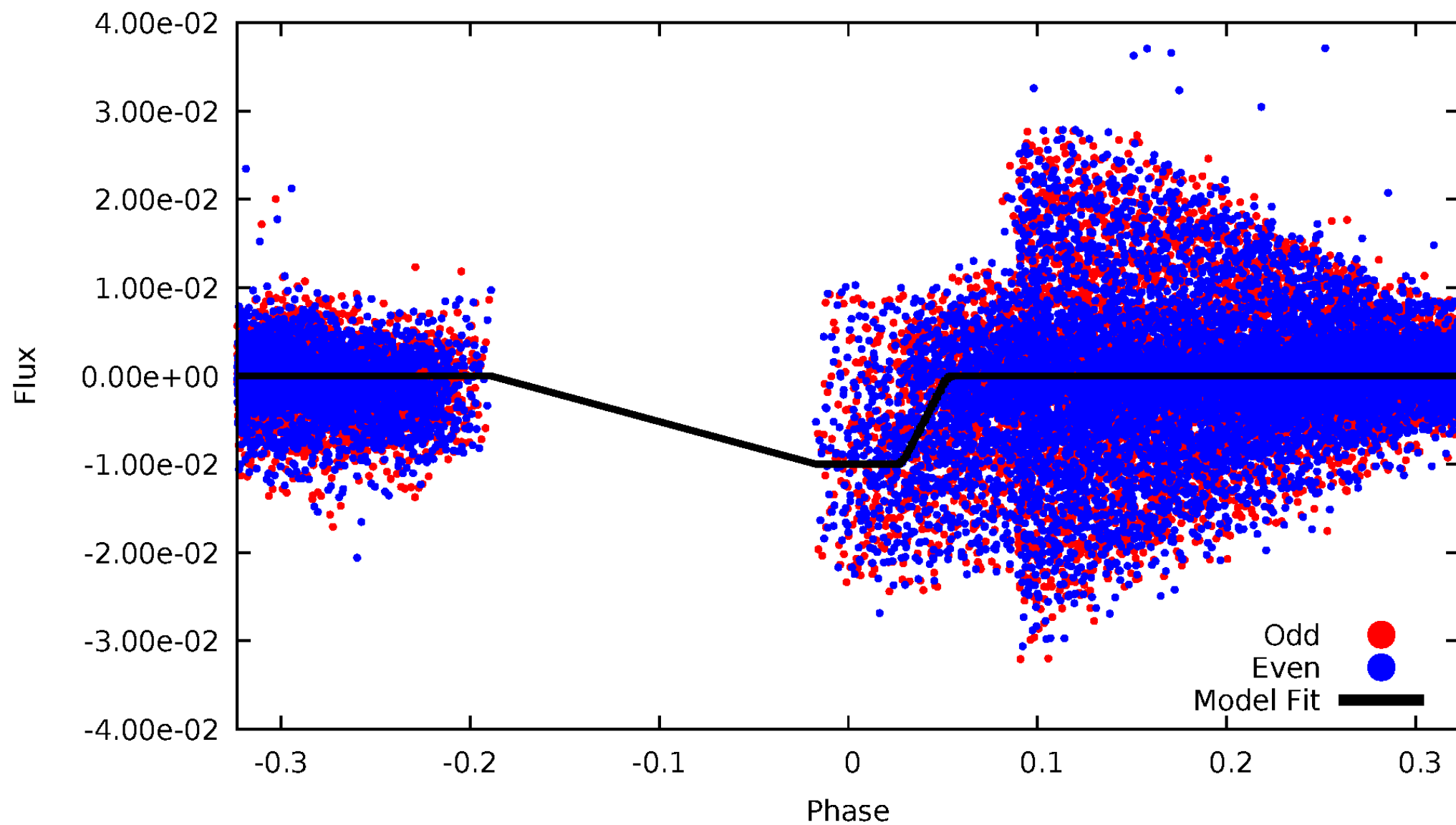
TCE 012365719-02





# ALT Odd/Even

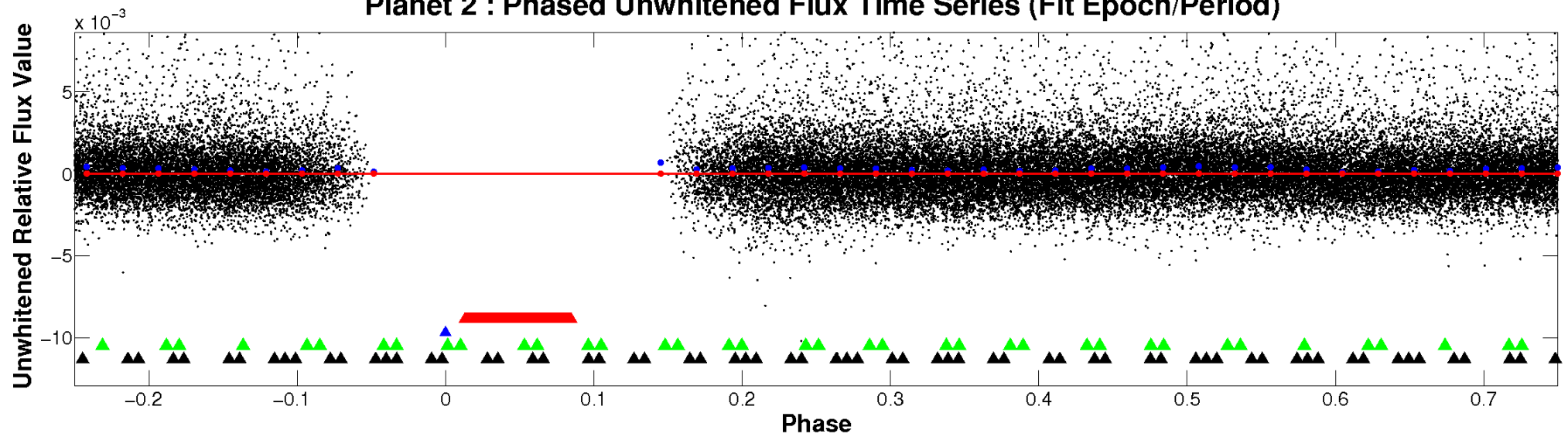
TCE 012365719-02



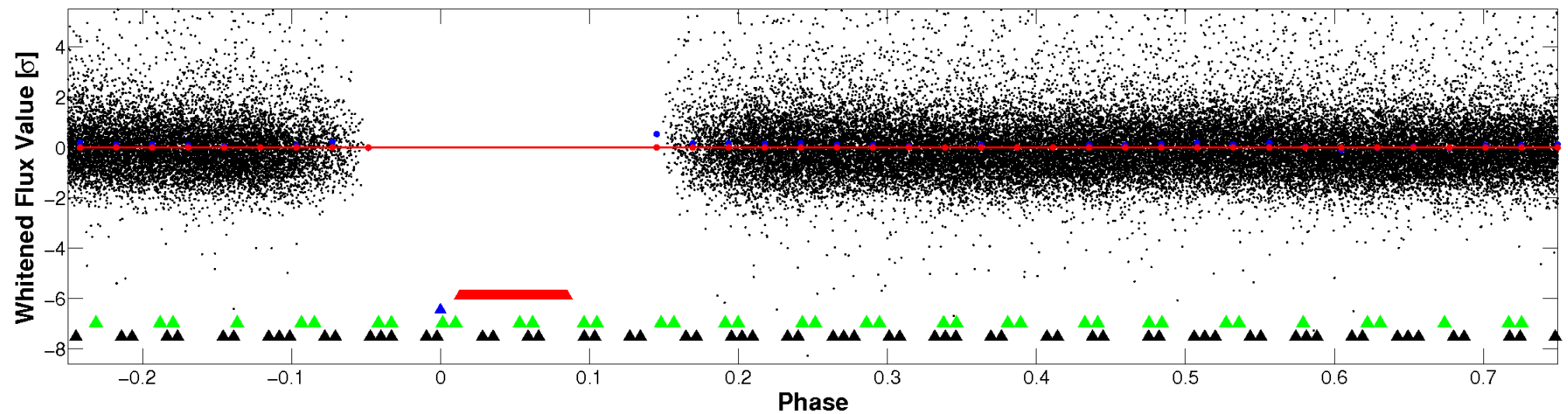


# Non-Whitened Vs. Whitened Light Curve

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

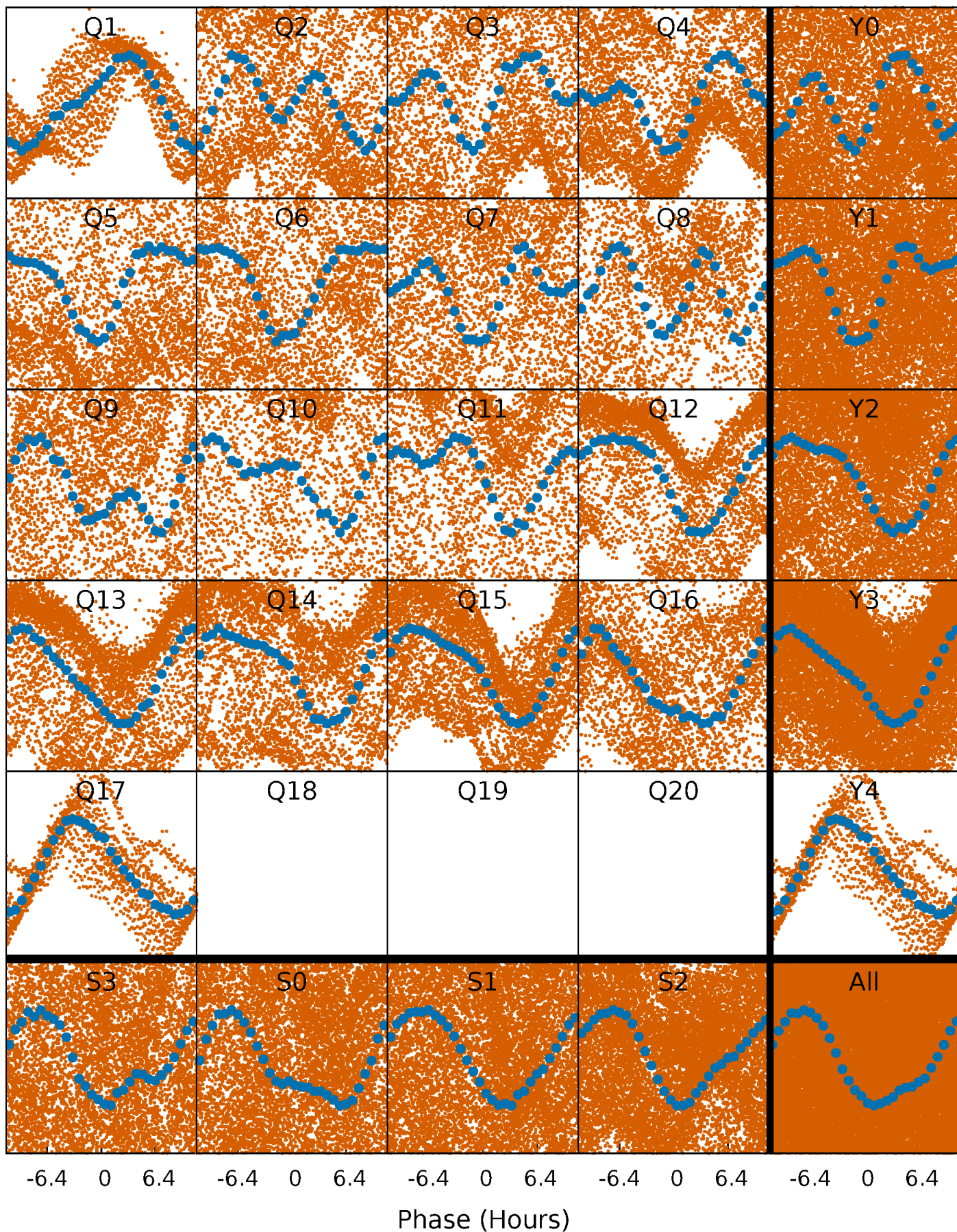


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

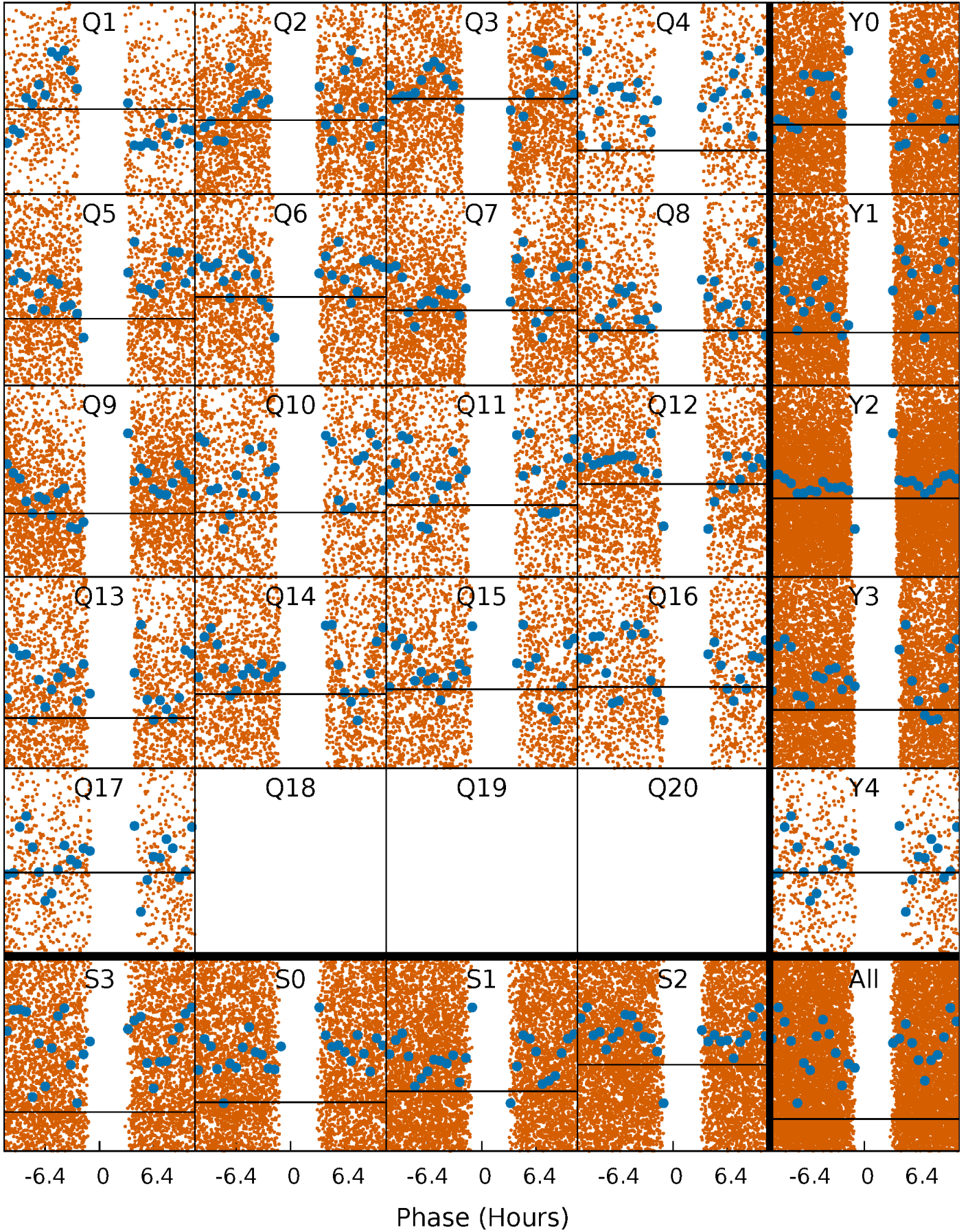
TCE 012365719-02   P= 0.844796 Days    $T_0=131.792445$  (BKJD)





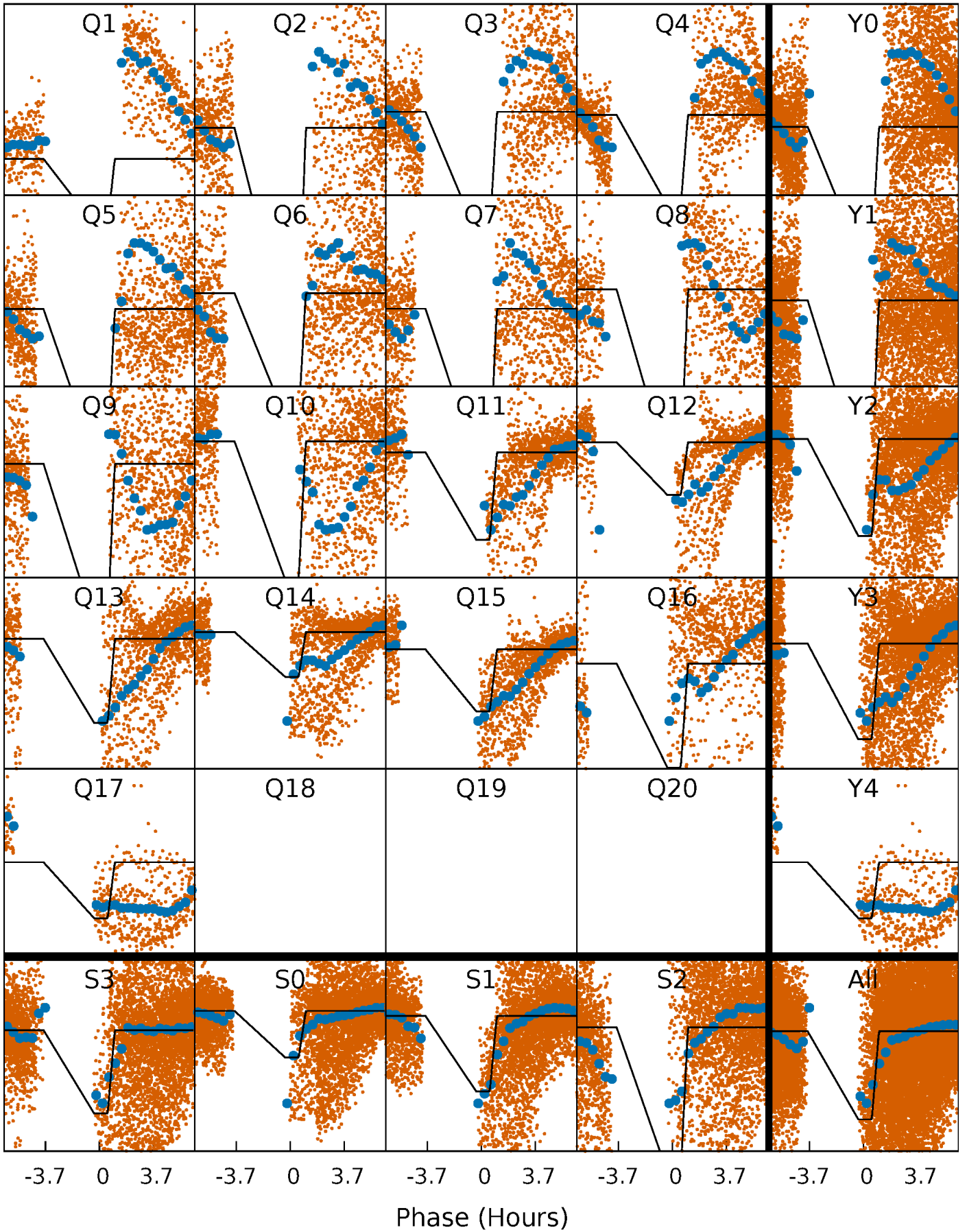
# DV Quarter-Phased Transit Curves

TCE 012365719-02   P= 0.844796 Days    $T_0=131.792445$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

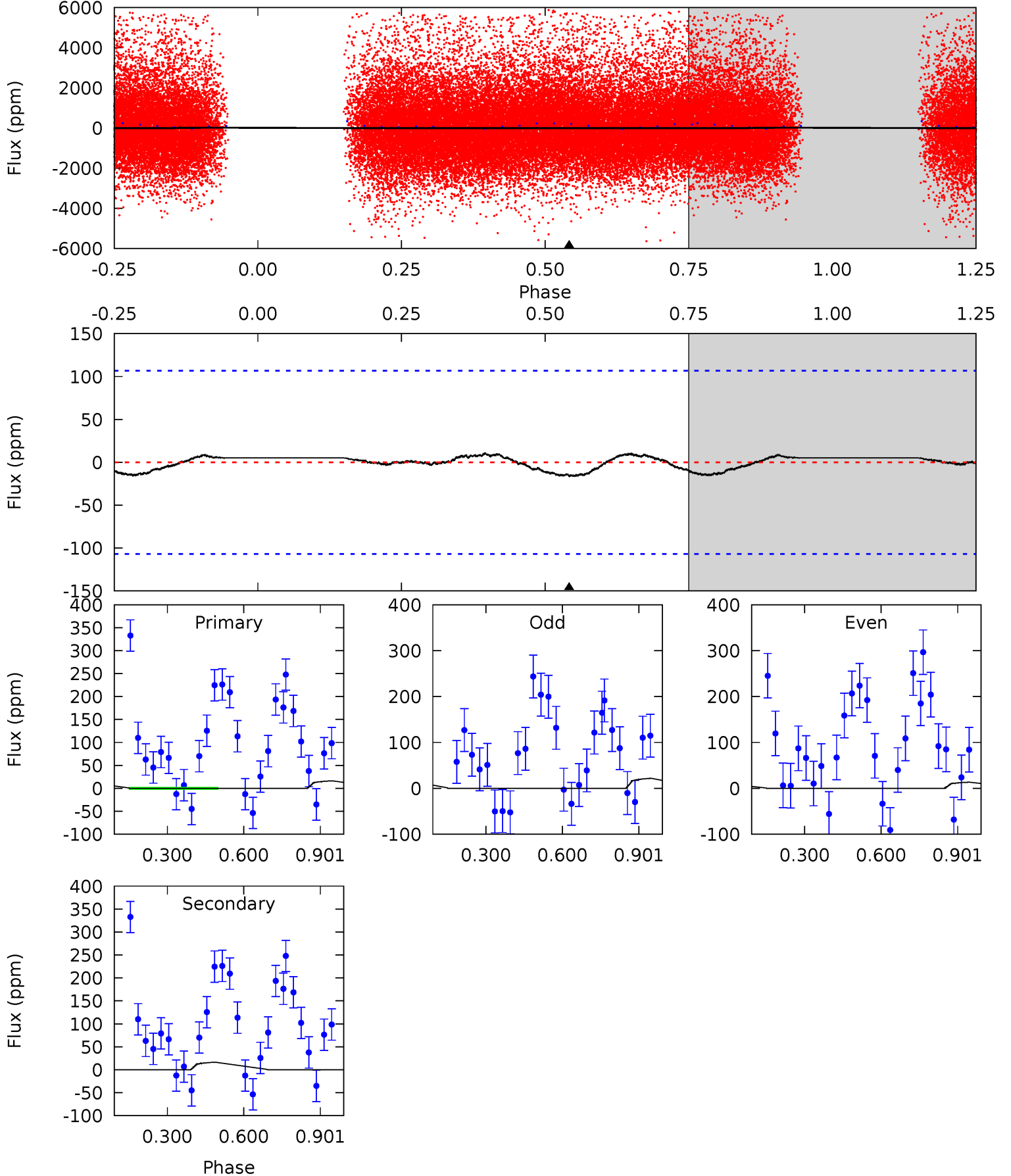
TCE 012365719-02     $P = 0.844881$  Days     $T_0 = 131.848148$  (BKJD)



# DV Model-Shift Uniqueness Test

012365719-02, P = 0.844796 Days, E = 130.947649 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
0.66	0.66	0	0	4.33	1.04	0.14	0.66	0.66	0.66	0.66	0.18	-28.4	0.39	0

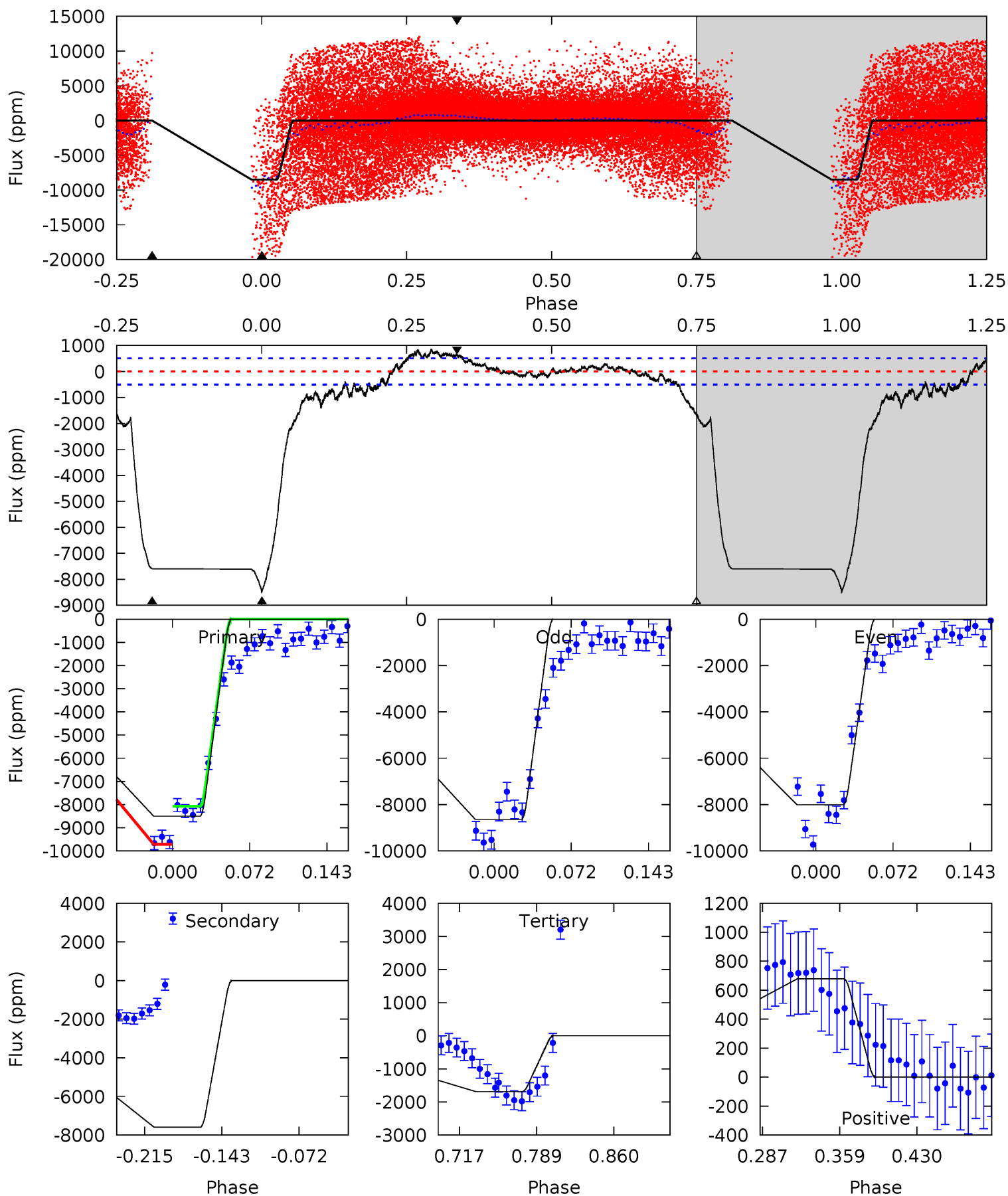




# Alt Model-Shift Uniqueness Test

012365719-02, P = 0.844881 Days, E = 131.003267 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
78.0	69.7	15.5	6.23	4.63	1.80	4.84	62.5	71.7	54.2	63.4	2.92	0.99	0.09	0



### Stellar Parameters For KIC 012365719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$3557^{+48}_{-59}$	$4.868^{+0.036}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.387^{+0.032}_{-0.036}$	$0.406^{+0.035}_{-0.042}$	$9.864^{+1.985}_{-1.500}$
	+1%/-2%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+20%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 012365719-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-16 \pm 25$	$91.80^{+107.35}_{-62.84}$	$427^{+197}_{-94}$	$-1319^{+115}_{-177}$	$0.005^{+0.098}_{-0.009}$
Alt.	$-7594 \pm 109$	$89.57^{+97.26}_{-63.74}$	$430^{+210}_{-96}$	$1662^{+474}_{-283}$	$5.201^{+59.912}_{-4.606}$

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



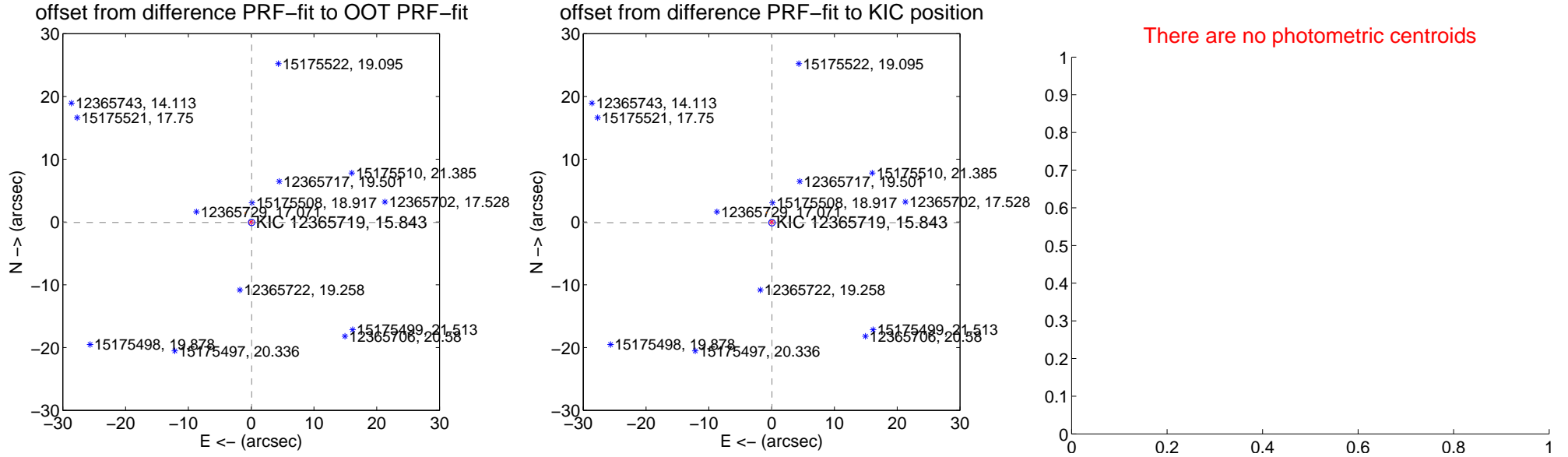
## DV Centroid Data

Supplemental centroid analysis for 012365719-02. Kepler magnitude: 15.84. Transit SNR 0.00

There are 12 quarters with good PRF difference image offsets

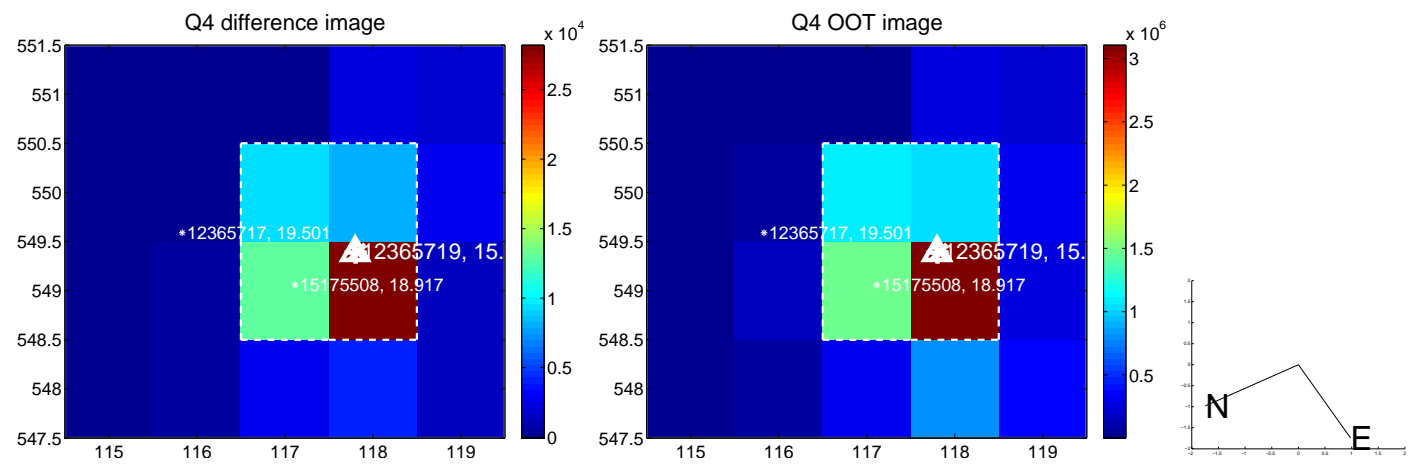
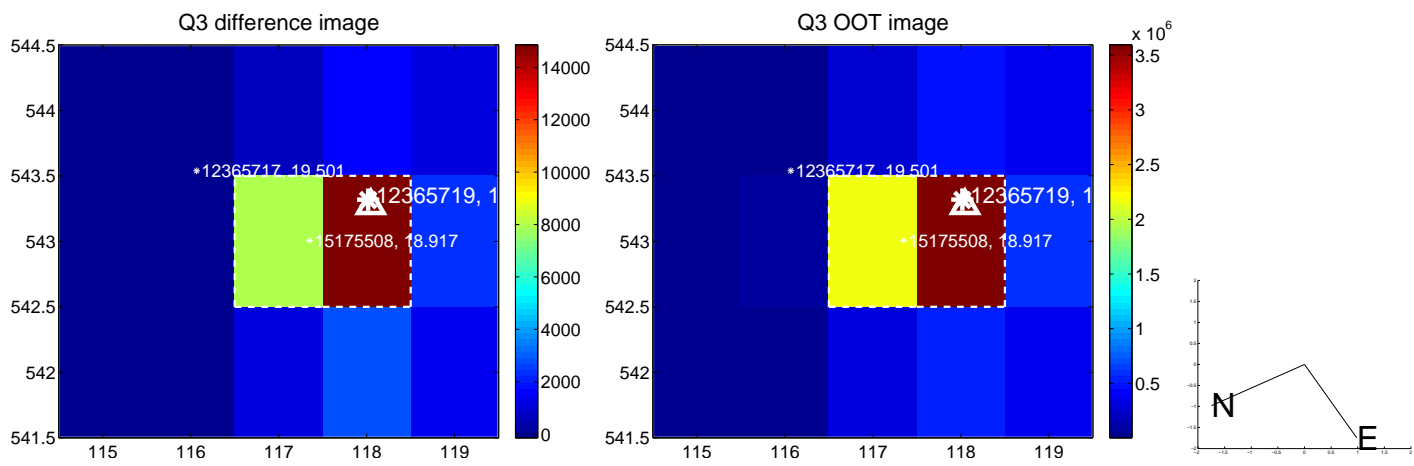
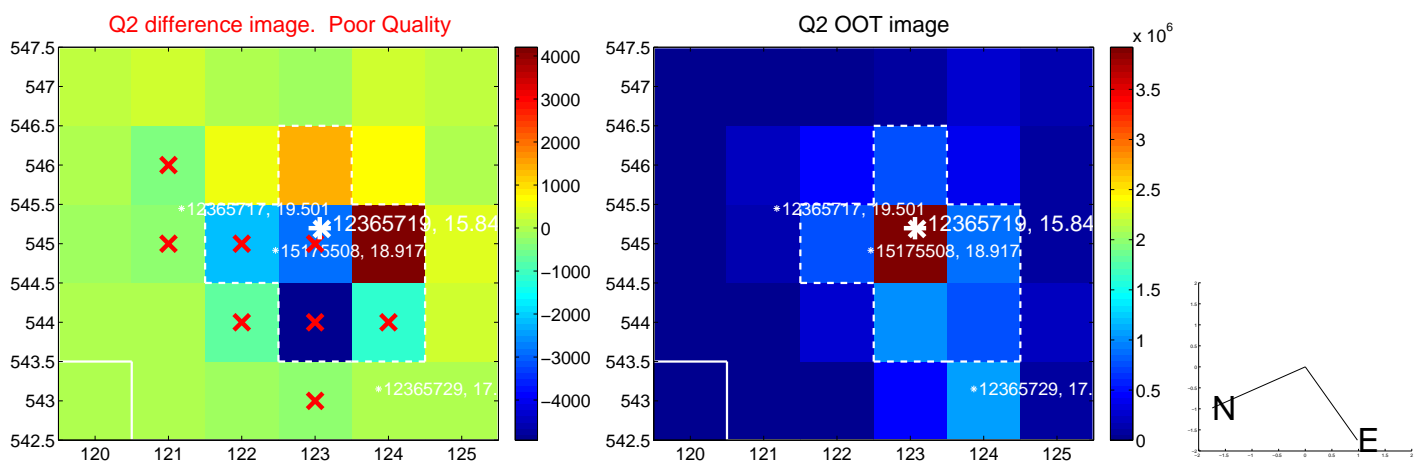
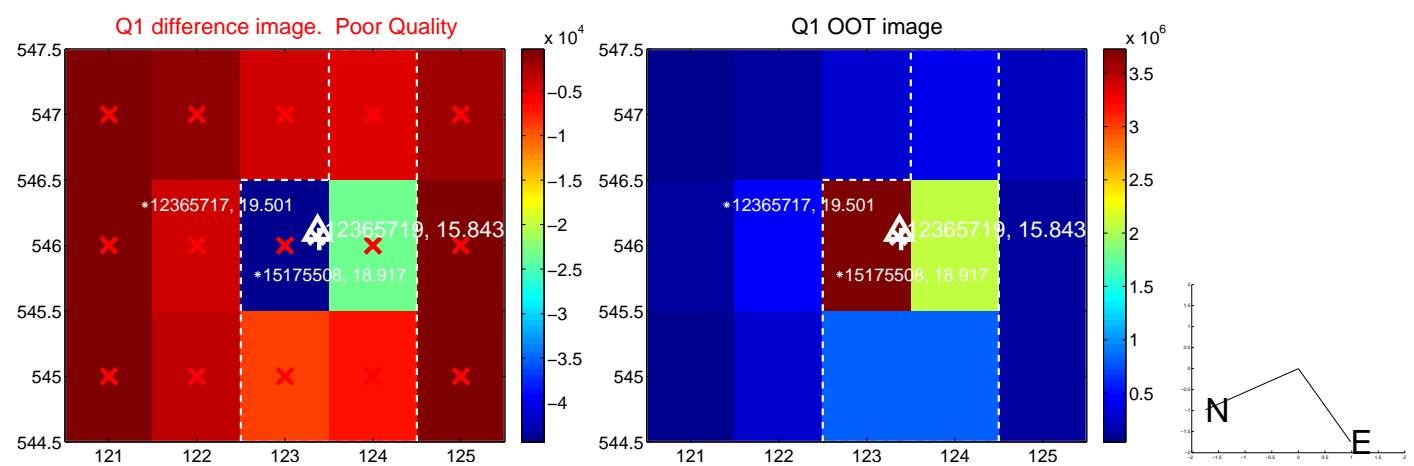
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.105 \pm 0.173$	0.61	$-0.077 \pm 0.119$	$-0.071 \pm 0.147$
PRF-fit source offset from KIC position	$0.118 \pm 0.174$	0.68	$-0.050 \pm 0.109$	$-0.107 \pm 0.156$
photometric centroid source offset	—	—	—	—

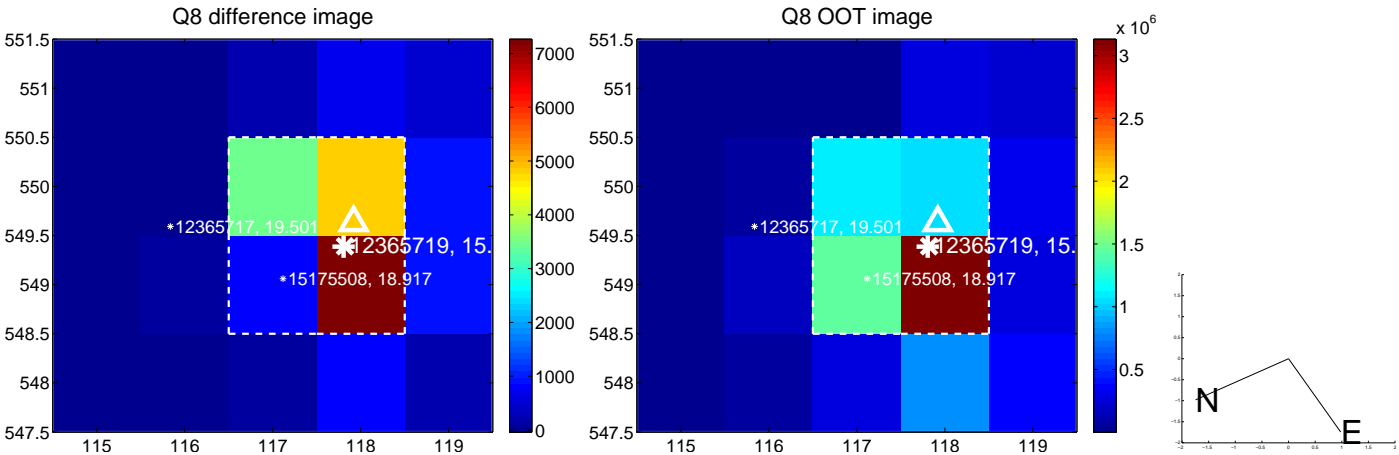
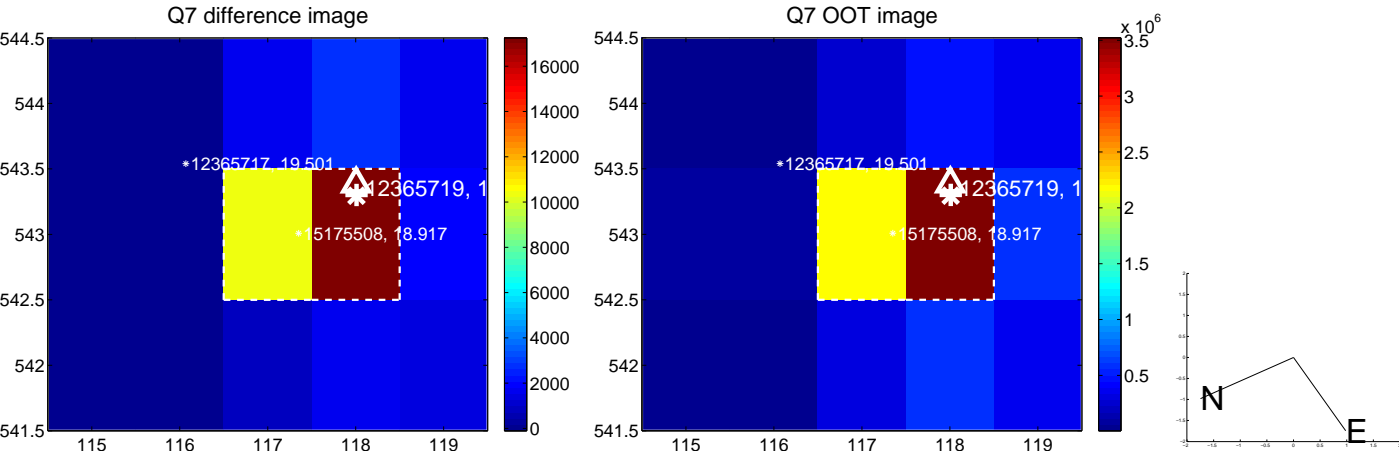
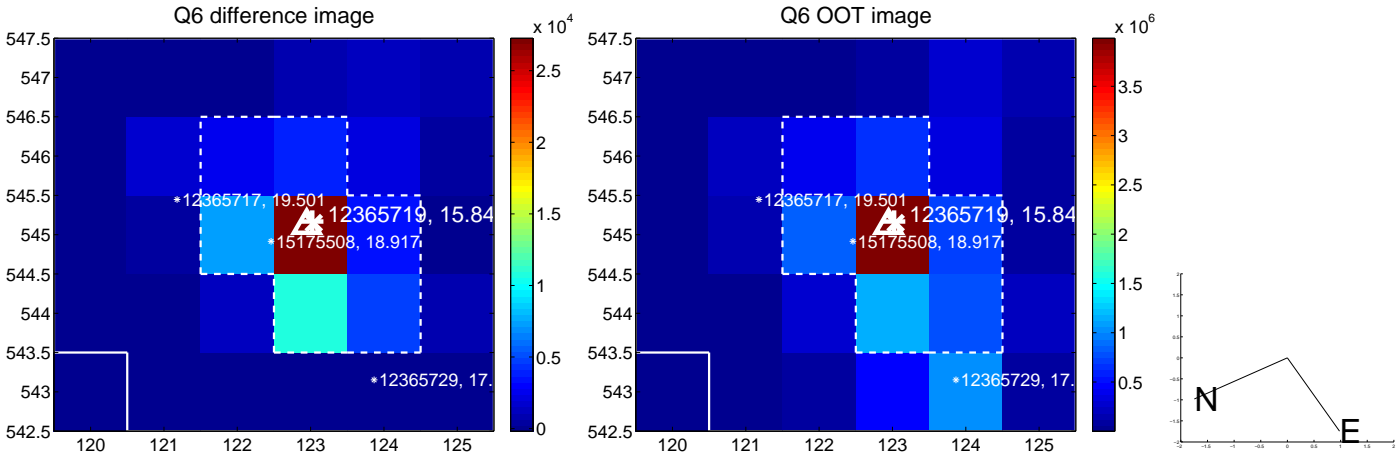
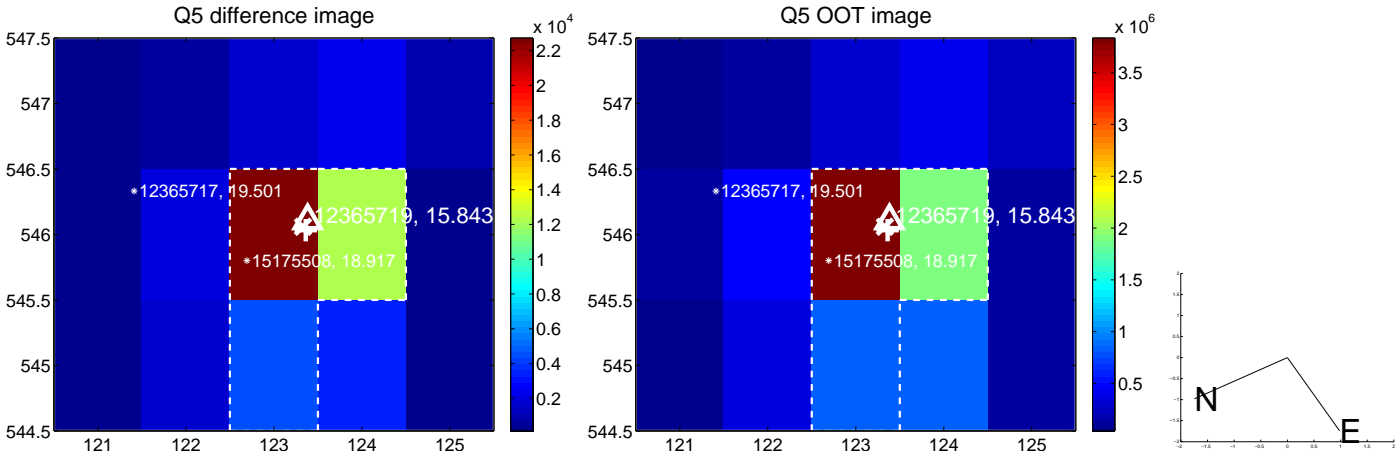


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

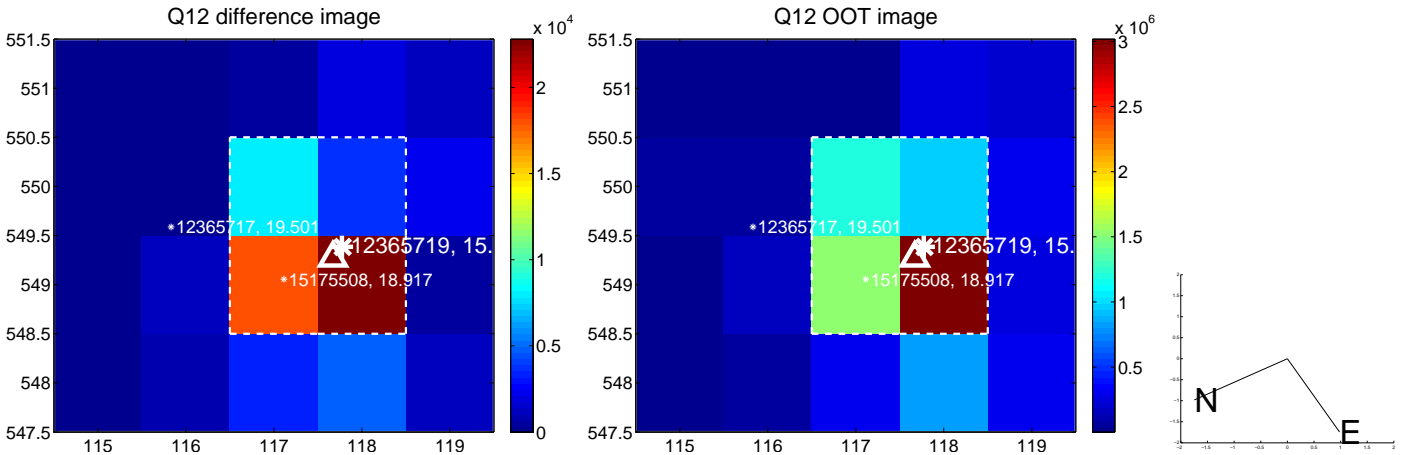
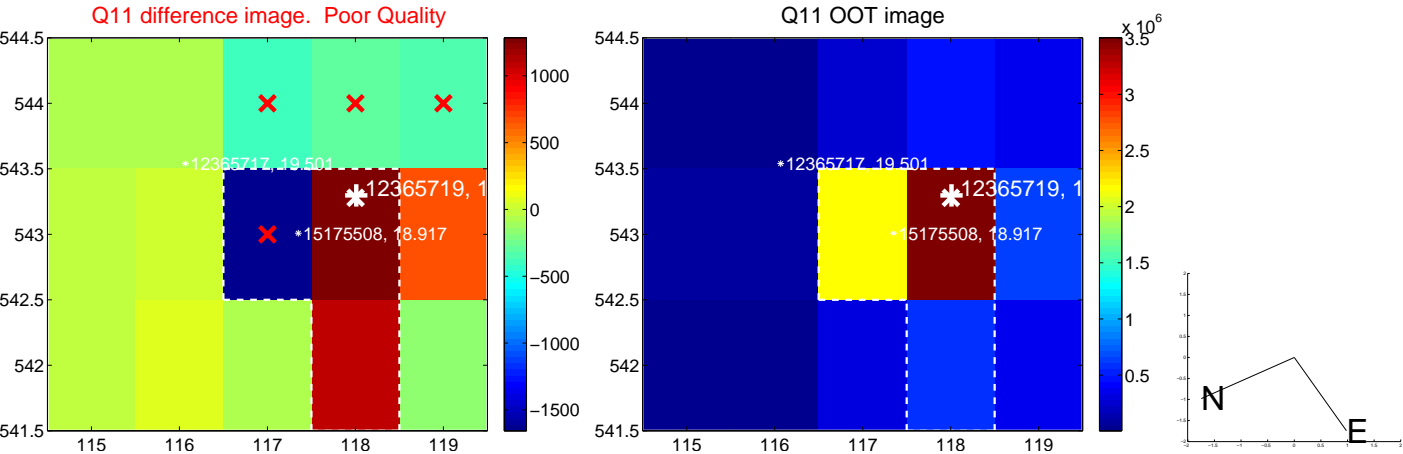
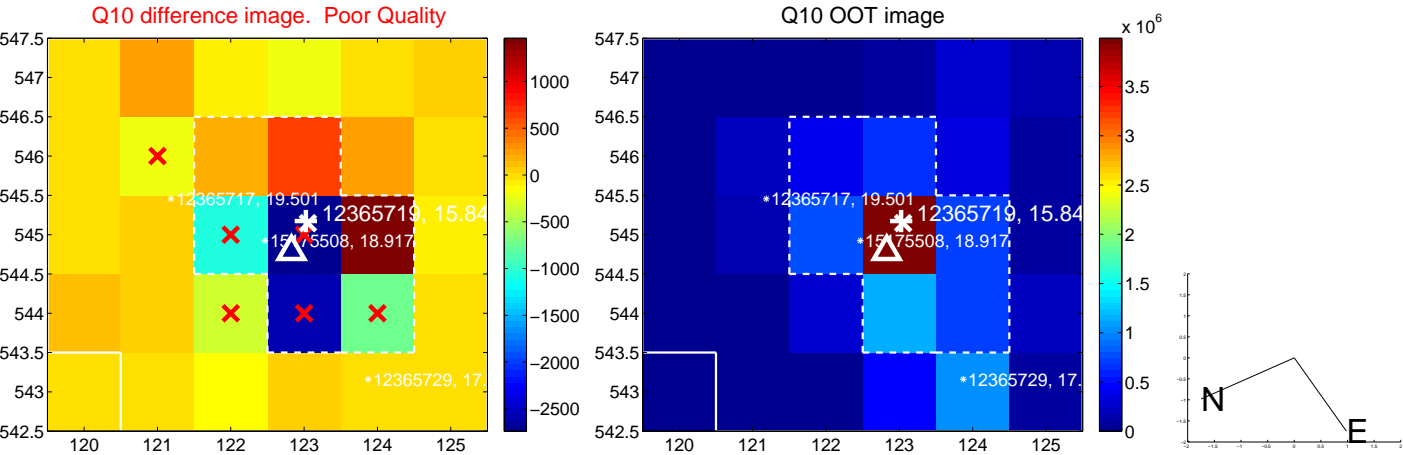
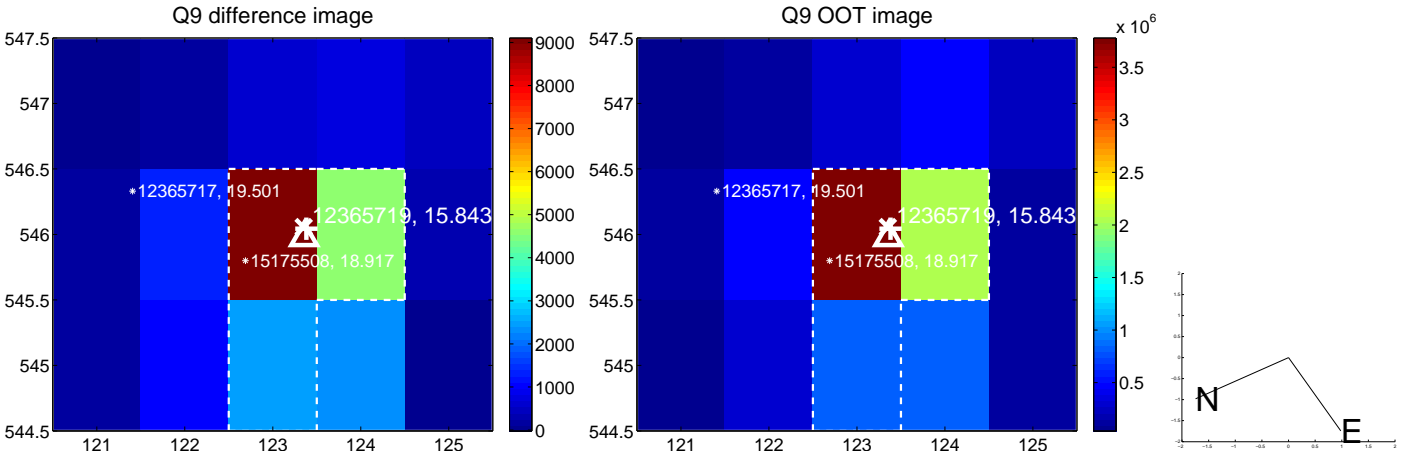
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



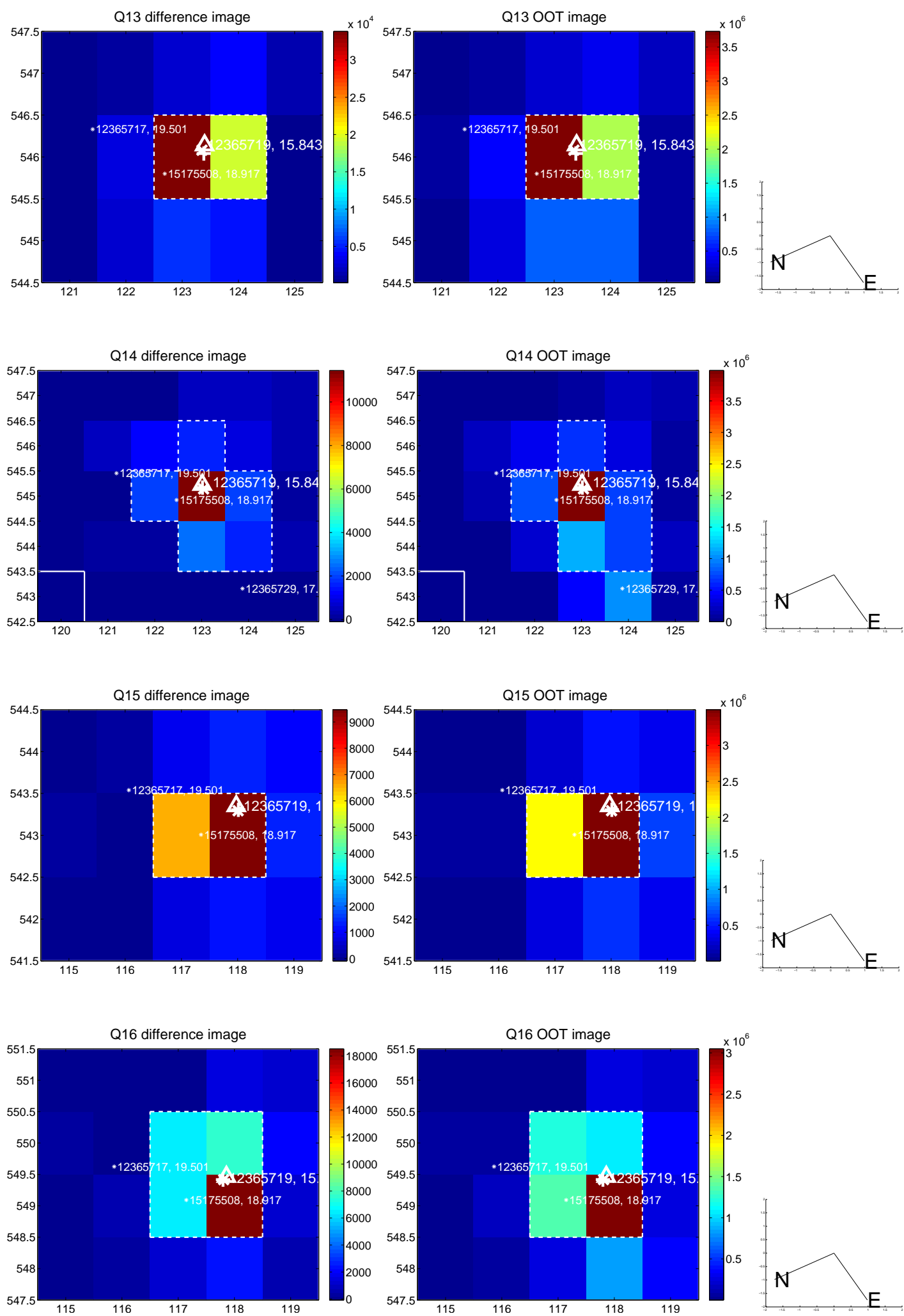
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



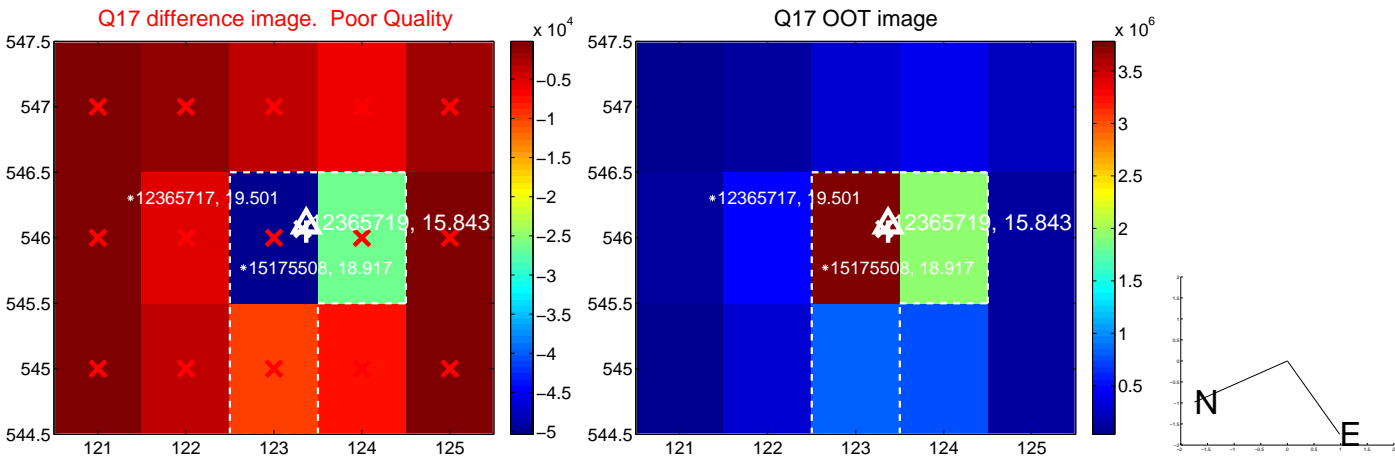
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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

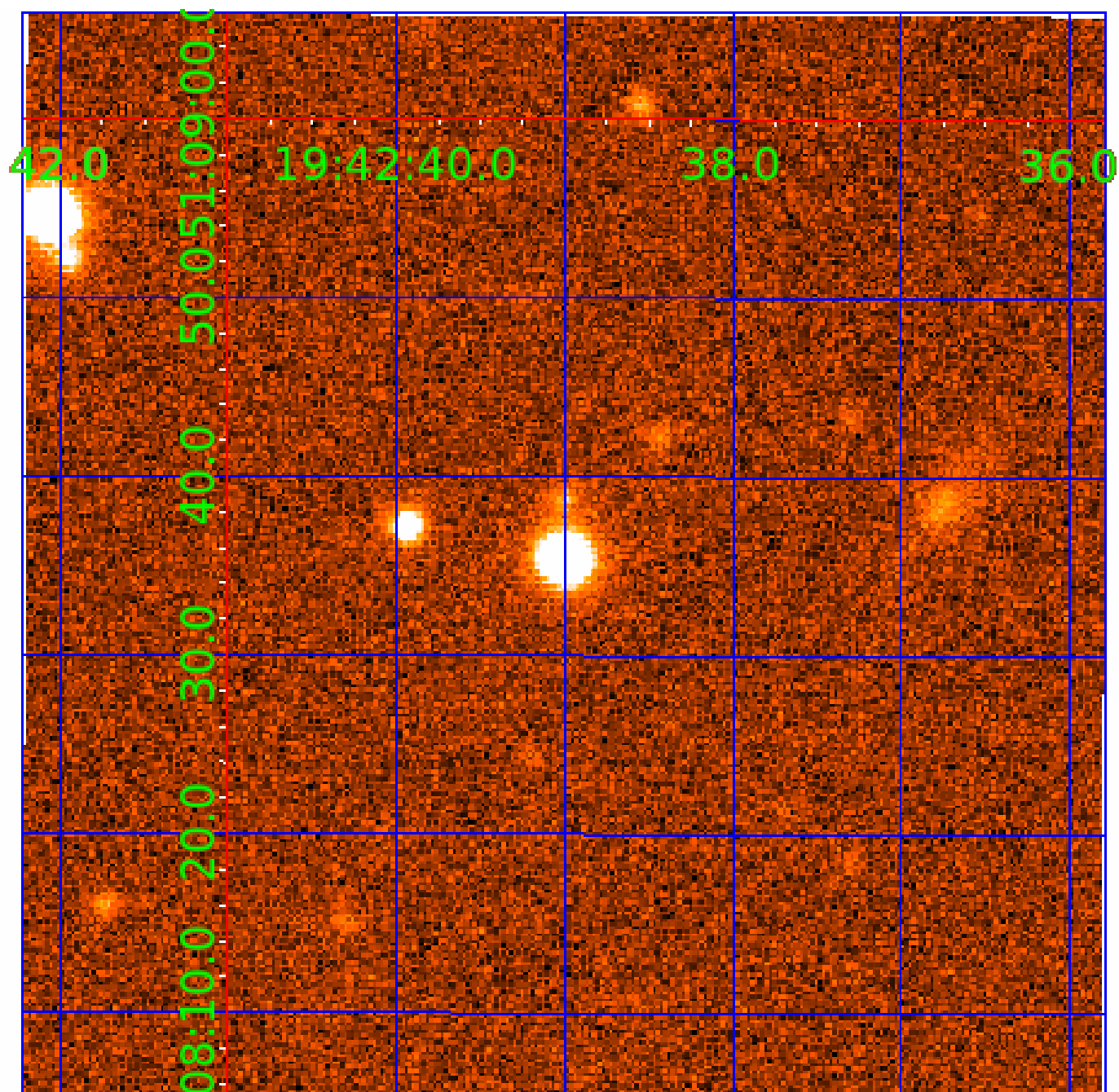


folded centroid time series figure for this object.



UKIRT Image

Declination



# KIC 012365719

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012365719-01	OBS	No	0.844831	131.803355	45.7	1.672	12.8	1.8	0.39	3557	0.26	128.63
012365719-02	OBS	No	0.844796	131.792445	0.0	5.634	11.0	0.0	0.39	3557	0.00	128.64
012365719-03	OBS	No	38.940722	148.660508	1412.0	6.765	8.3	8.4	0.39	3557	1.47	0.78
012365719-04	OBS	No	22.227078	133.762331	1951.1	1.505	9.0	9.8	0.39	3557	1.84	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012365719-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
012365719-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—SAME_NTL_PERIOD
012365719-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012365719-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV

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

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

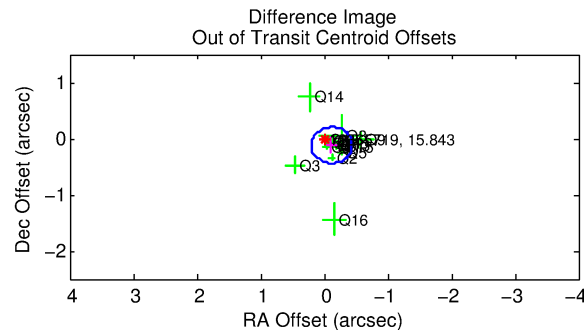
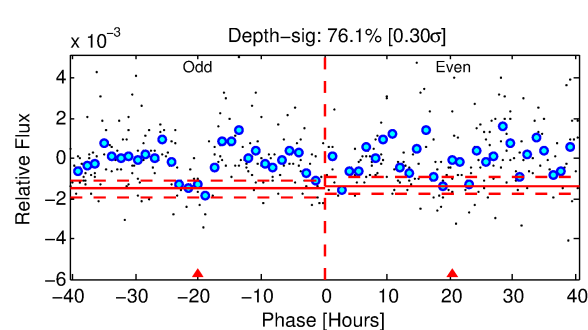
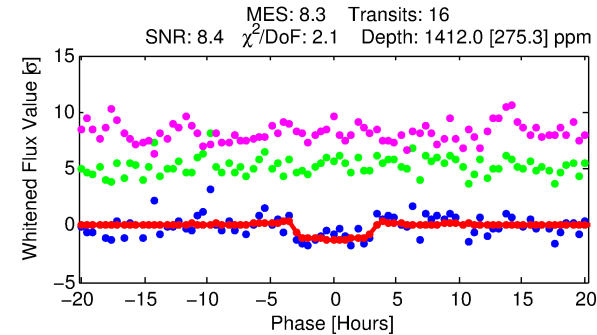
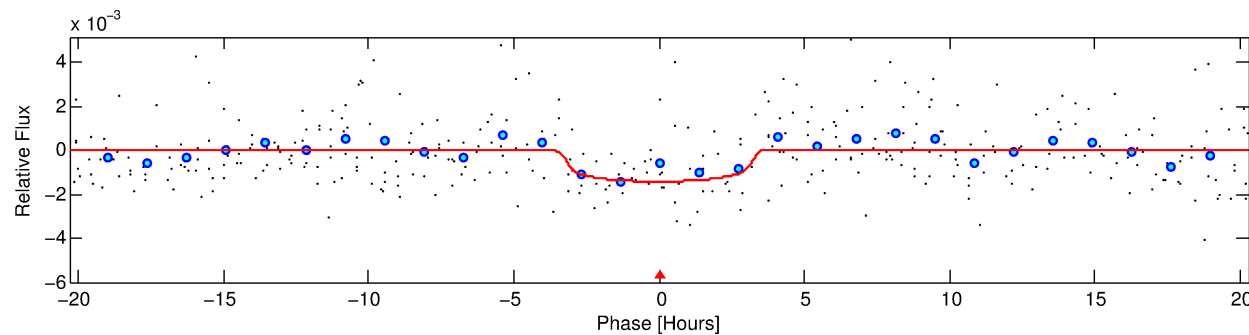
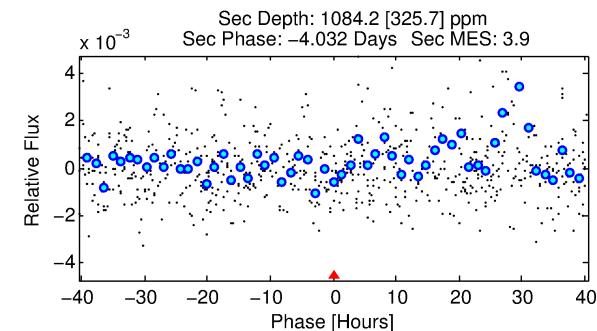
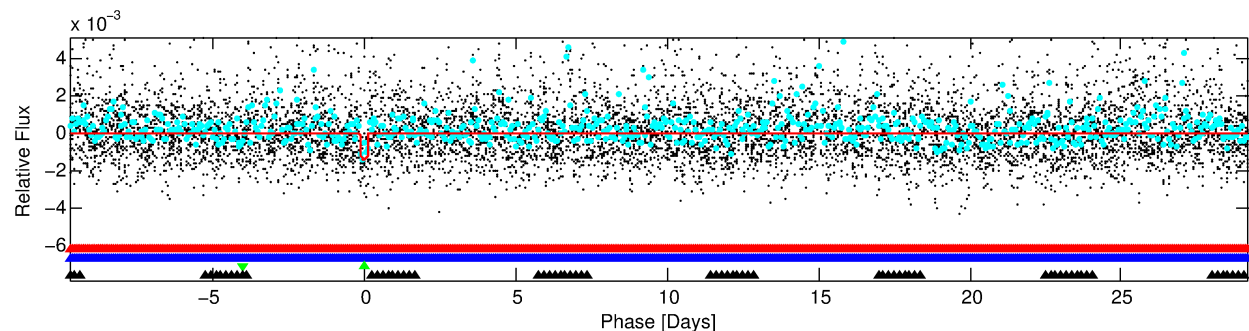
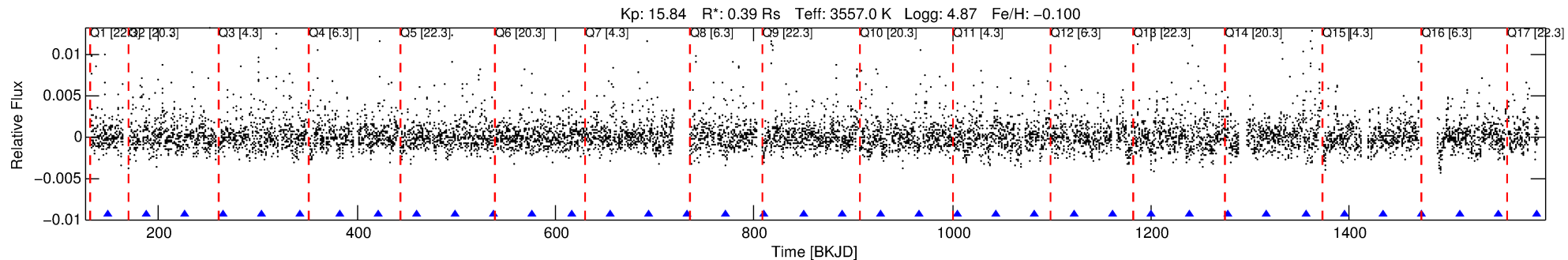
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012365719-03

No Significant Match Found

# DV One-Page Summary

KIC: 12365719 Candidate: 3 of 4 Period: 38.941 d



## DV Fit Results:

Period = 38.94072 [0.00086] d  
Epoch = 148.6605 [0.0199] BKJD  
Rp/R\* = 0.0349 [0.0393]  
a/R\* = 40.86 [198.79]  
b = 0.46 [8.49]  
Seff = 0.78 [0.08]  
Teq = 240 [6] K  
Rp = 1.47 [1.67] Re  
a = 0.1661 [0.0113] AU  
Ag = 7577.57 [17242.23] [0.44σ]  
Teffp = 3455 [1965] K [1.64σ]

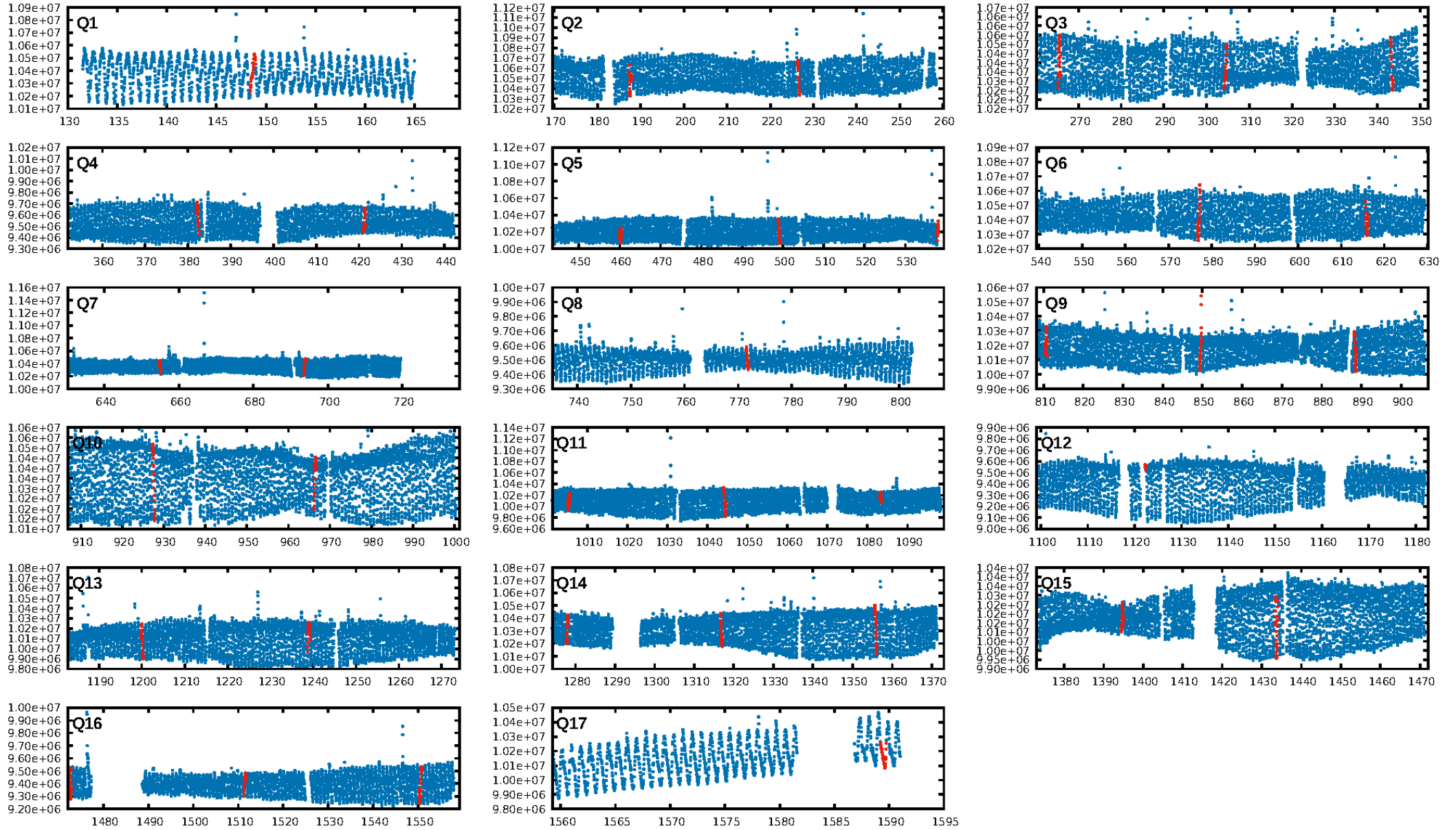
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.88σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.4%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 7.48e-11**  
RollingBand-fgt: 1.00 [15/15]  
**GhostDiagnostic-chr: -0.5287**  
Centroid-sig: 13.4%  
Centroid-so: 0.768 arcsec [1.69σ]  
OotOffset-rm: 0.166 arcsec [1.55σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-rm: 0.201 arcsec [1.74σ]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.50 [8/16]  
DiffImageOverlap-fno: 0.00 [0/16]

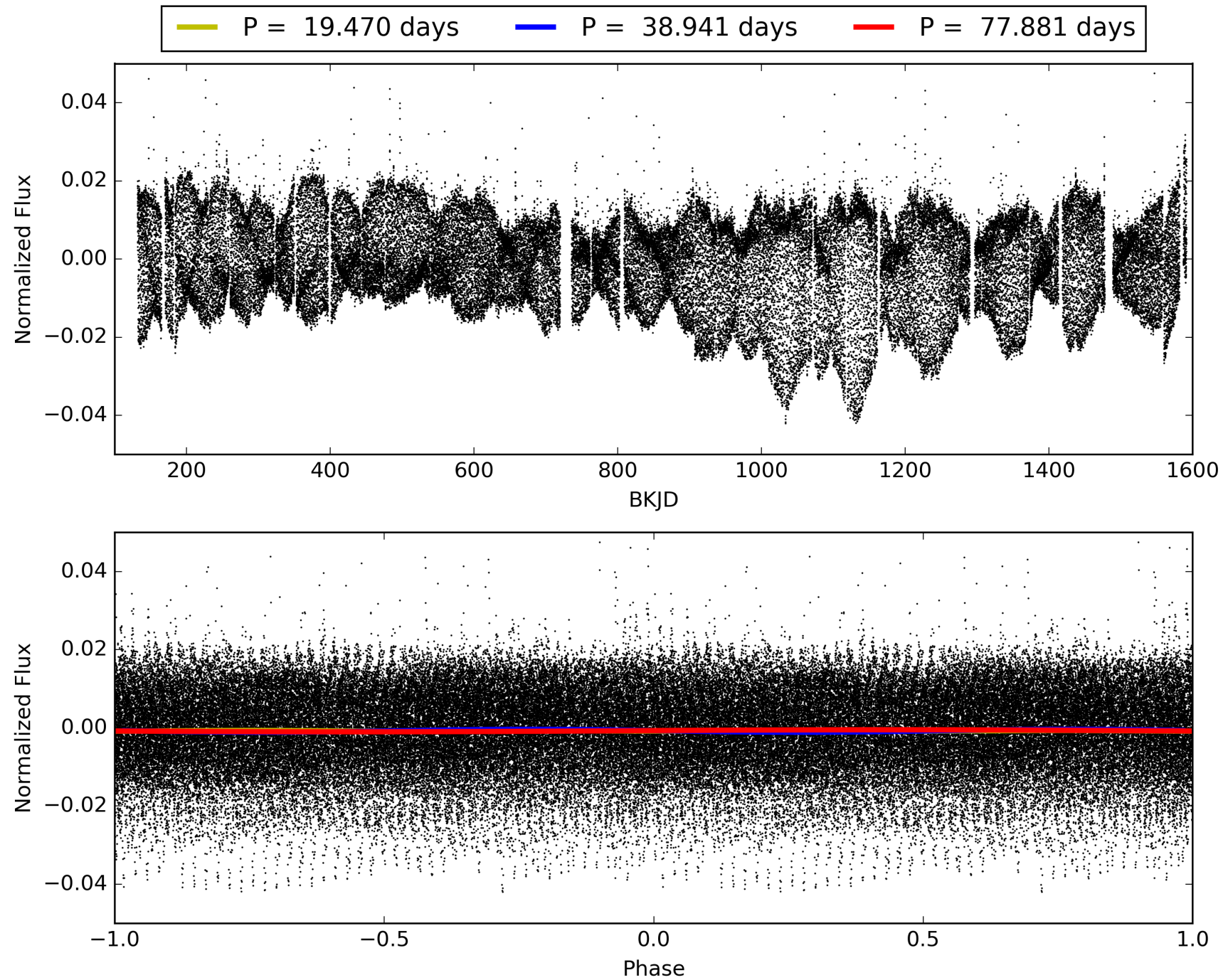
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:49:47 Z

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

# TCE 012365719-03, PDC Light Curves



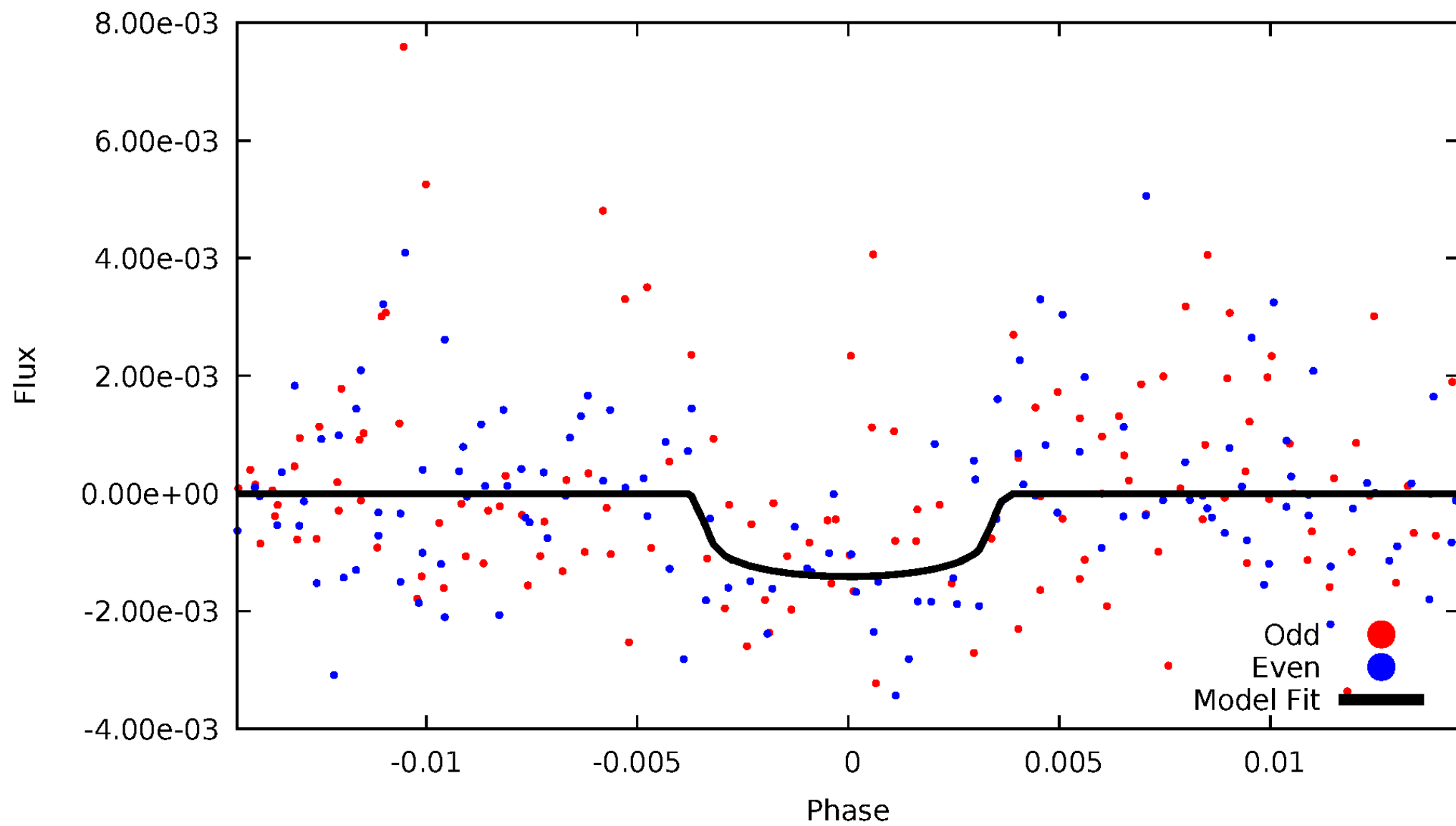
TCE 012365719-03





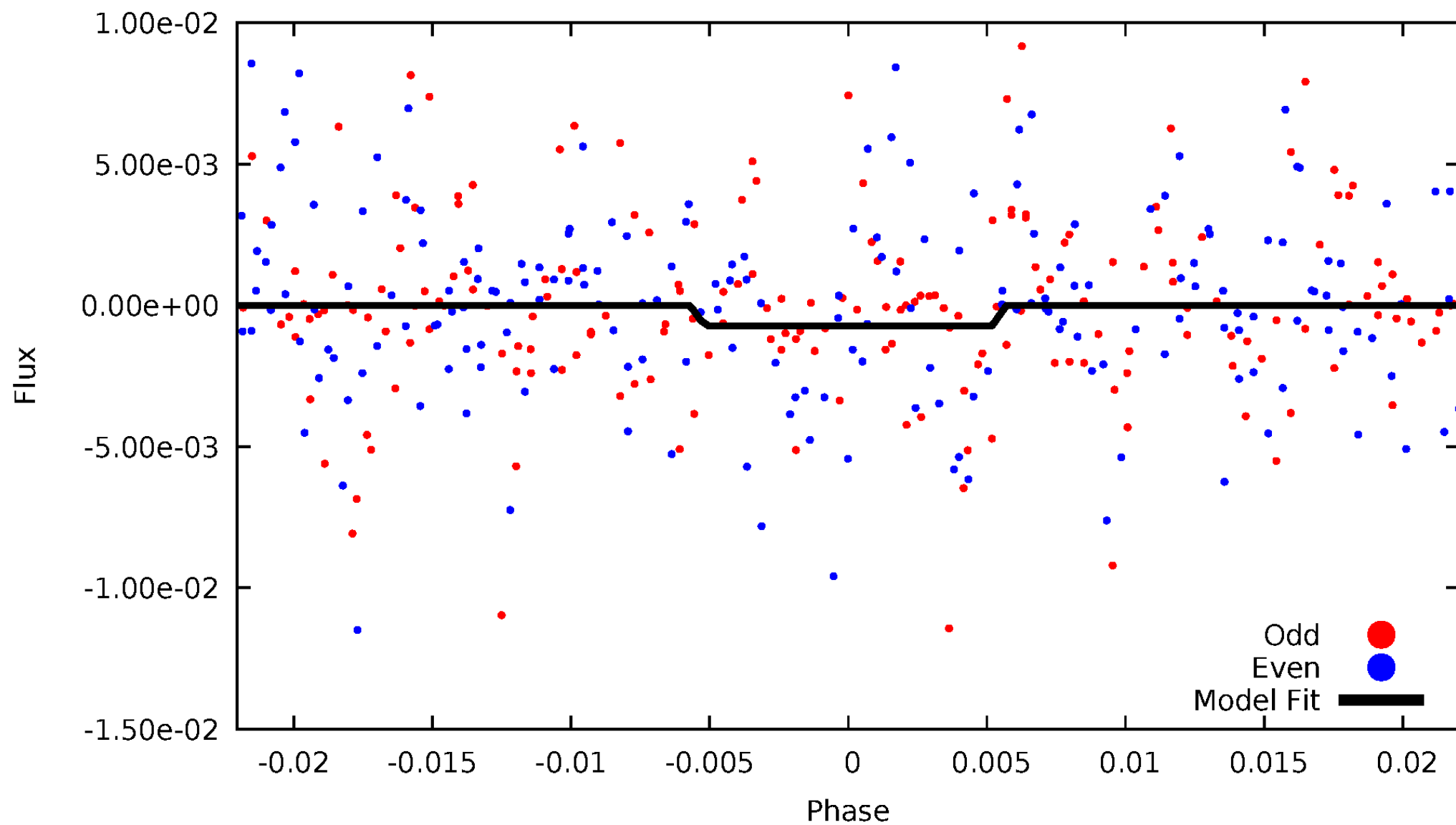
# DV Odd/Even

TCE 012365719-03



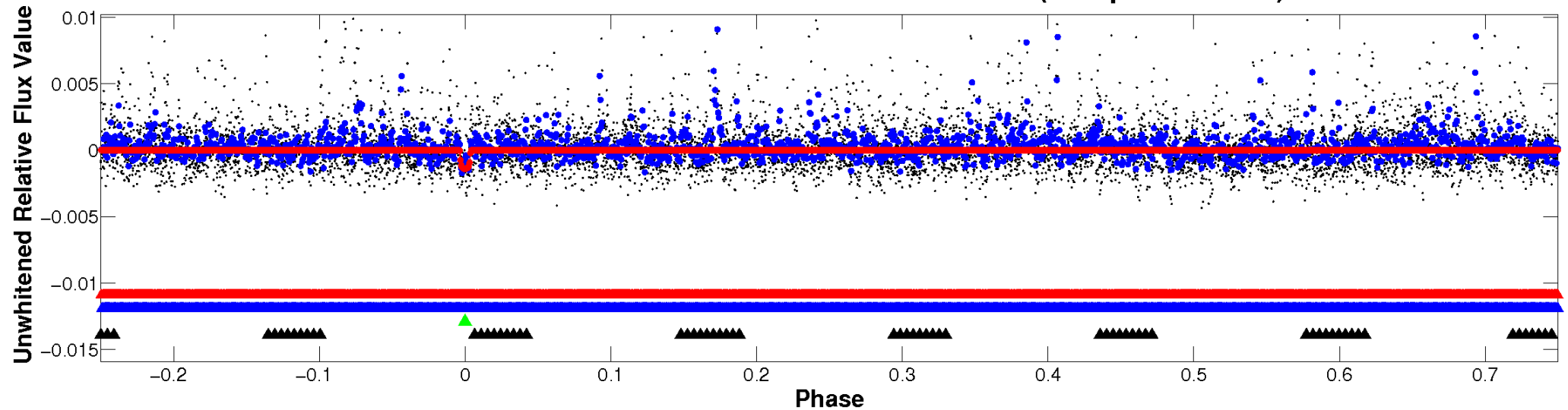
# ALT Odd/Even

TCE 012365719-03

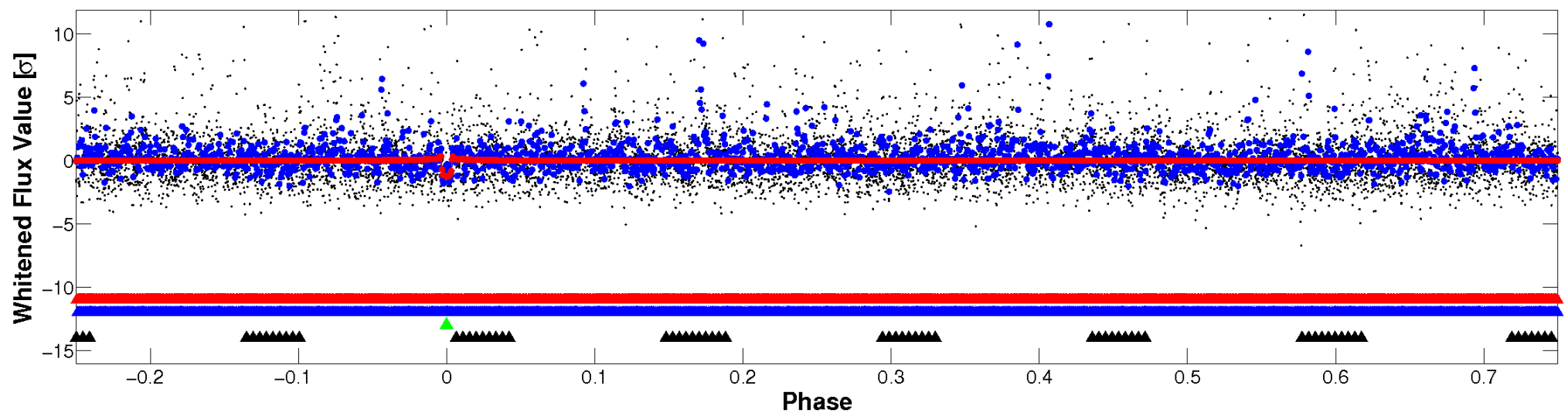


# Non-Whitened Vs. Whitened Light Curve

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

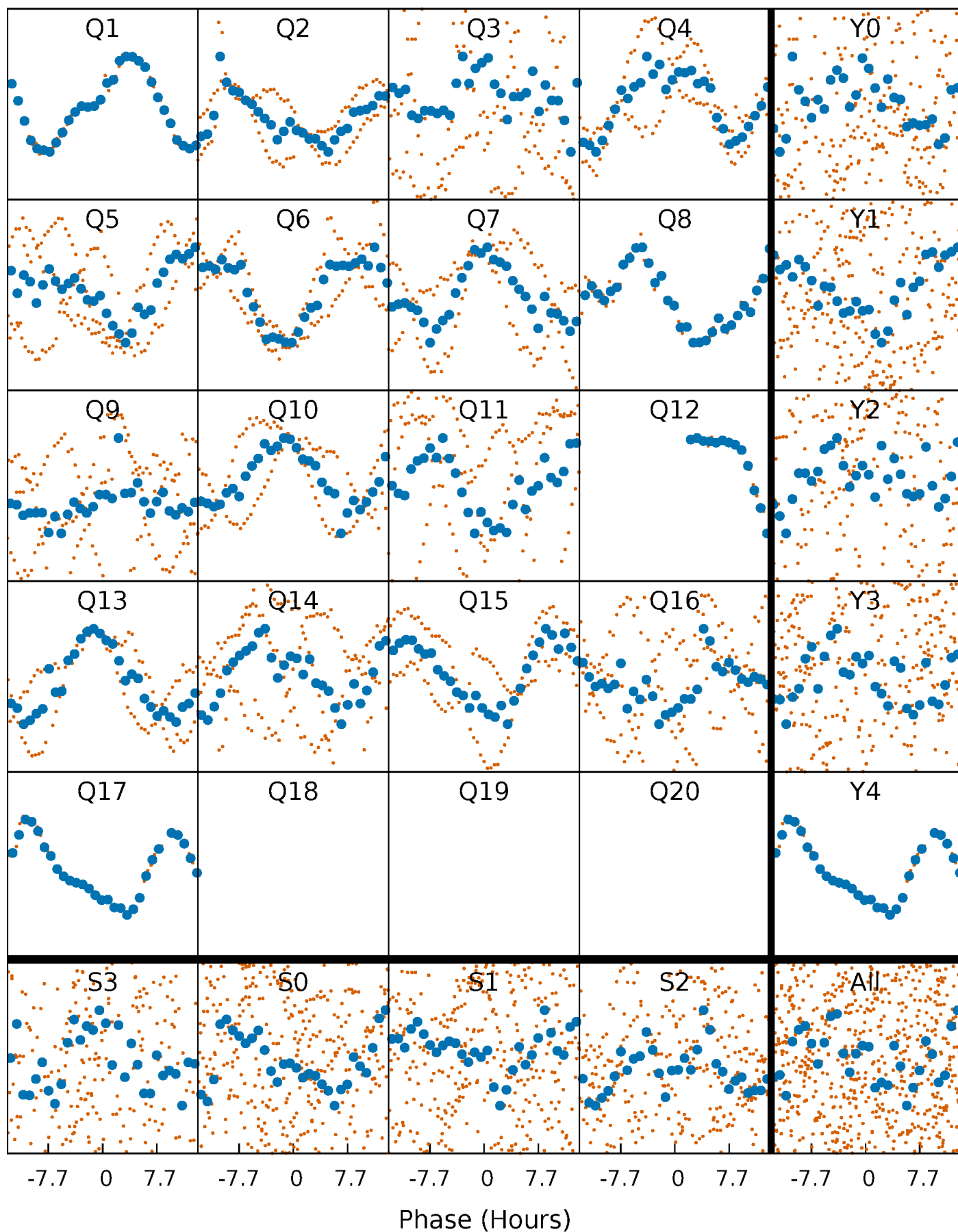


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



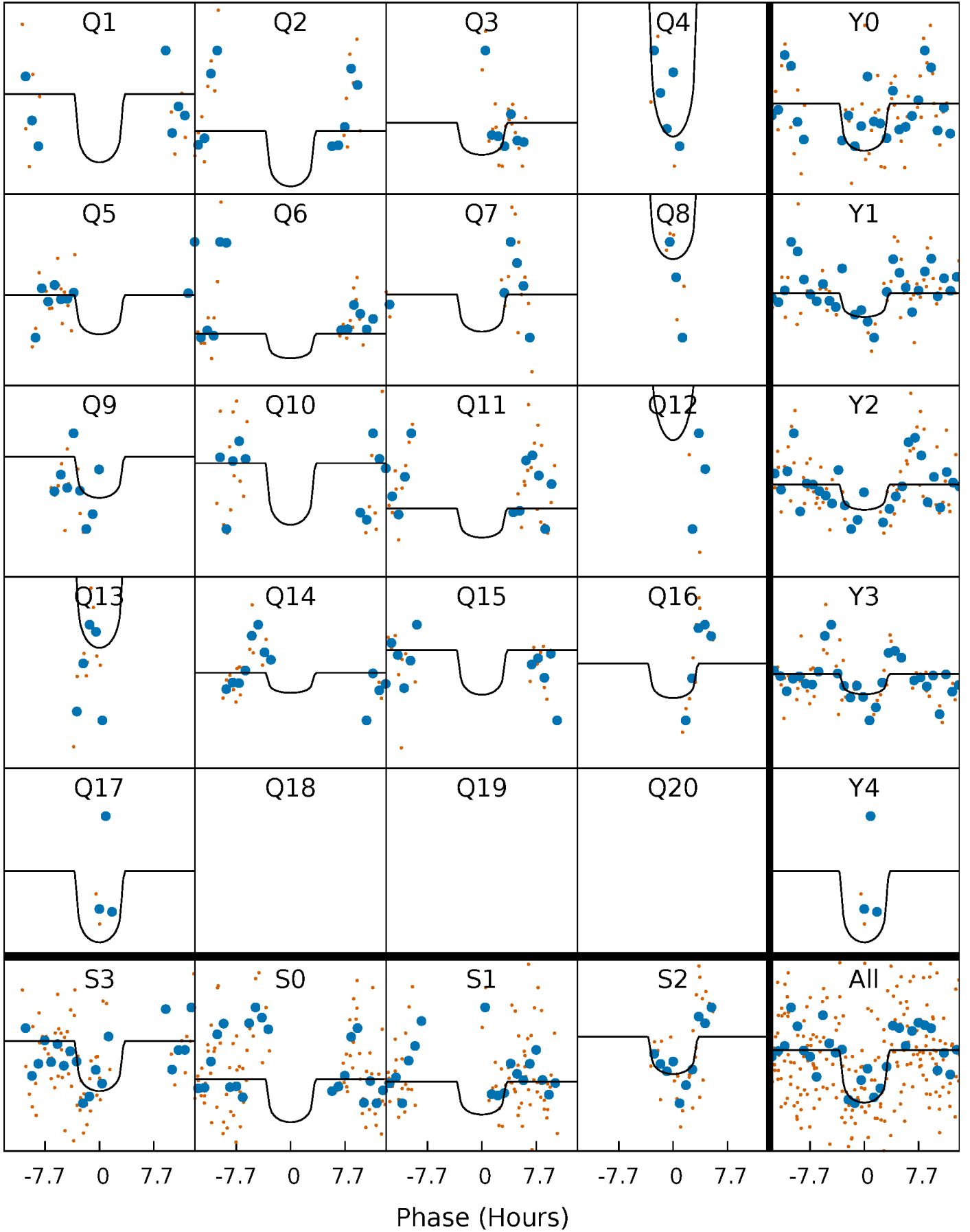
# PDC Quarter-Phased Transit Curves

TCE 012365719-03 P= 38.940722 Days  $T_0=148.660508$  (BKJD)



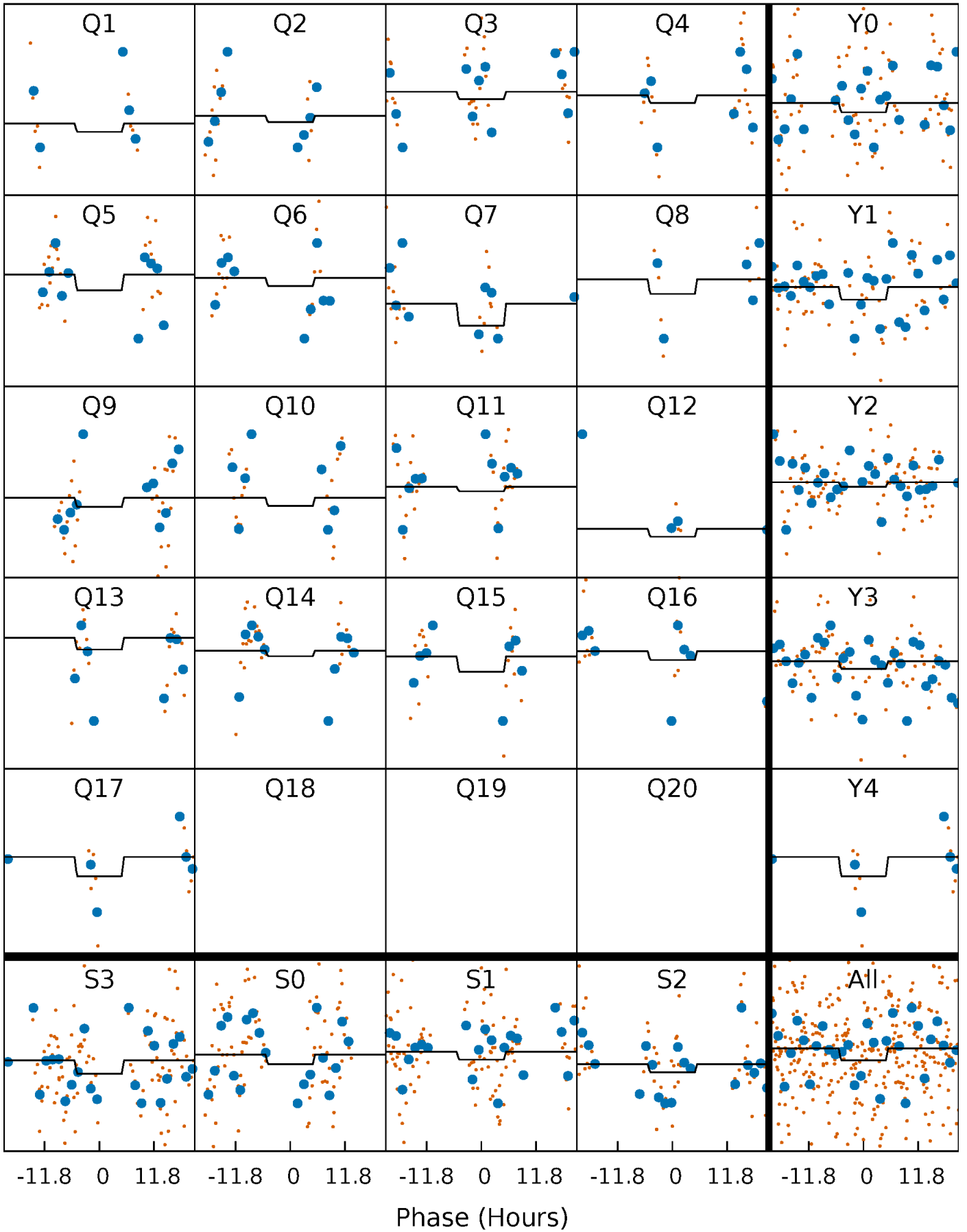
# DV Quarter-Phased Transit Curves

TCE 012365719-03     $P = 38.940722$  Days     $T_0 = 148.660508$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 012365719-03   P= 38.938307 Days    $T_0=148.824507$  (BKJD)

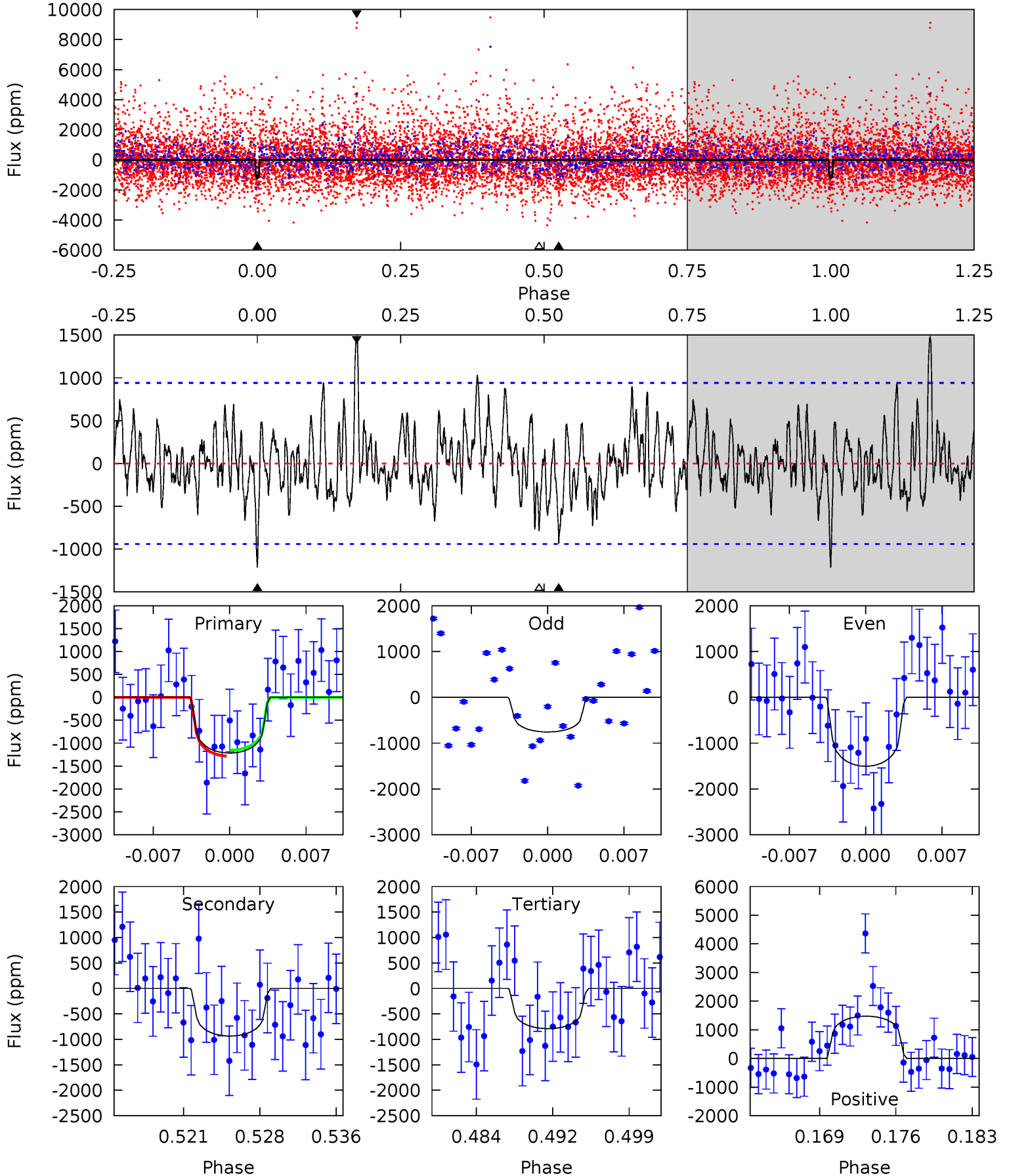




# DV Model-Shift Uniqueness Test

012365719-03, P = 38.940722 Days, E = 109.719786 Days

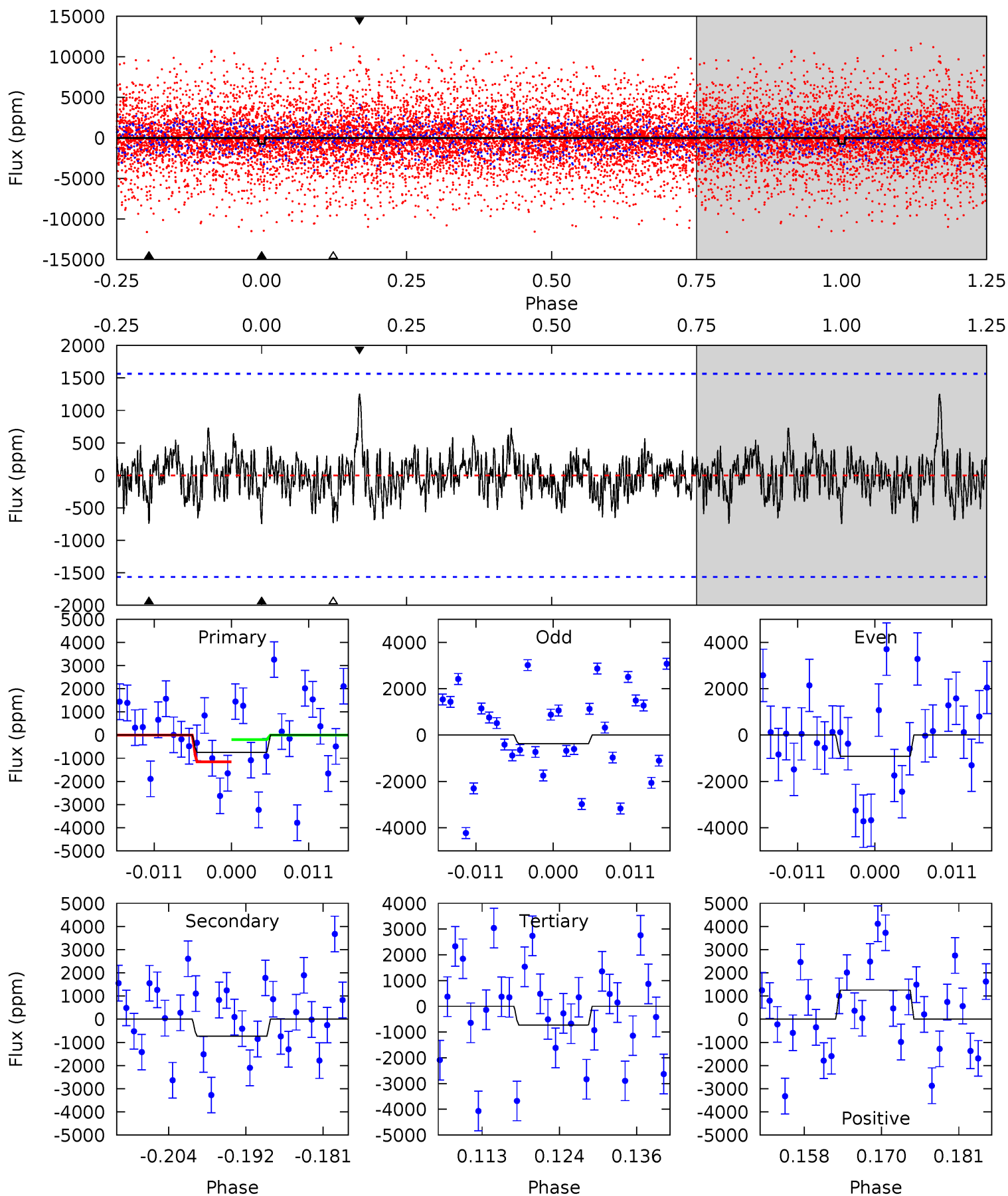
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.57	5.05	4.26	7.97	5.09	2.68	1.75	2.31	-1.40	0.79	-2.92	1.91	0.69	0.55	0.35



# Alt Model-Shift Uniqueness Test

012365719-03, P = 38.938307 Days, E = 109.886200 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
2.38	2.36	2.33	4.01	5.00	2.53	0.82	0.06	-1.63	0.03	-1.65	0.86	2.03	0.63	1.55



### Stellar Parameters For KIC 012365719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$3557^{+48}_{-59}$	$4.868^{+0.036}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.387^{+0.032}_{-0.036}$	$0.406^{+0.035}_{-0.042}$	$9.864^{+1.985}_{-1.500}$
	+1%/-2%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+20%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 012365719-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-934 \pm 185$	$1.86^{+1.56}_{-1.16}$	$335^{+7}_{-7}$	$3169^{+1283}_{-477}$	$4062^{+26072}_{-2850}$
Alt.	$-738 \pm 313$	$1.67^{+1.48}_{-1.11}$	$334^{+7}_{-7}$	$3183^{+1417}_{-587}$	$4048^{+33783}_{-3124}$

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

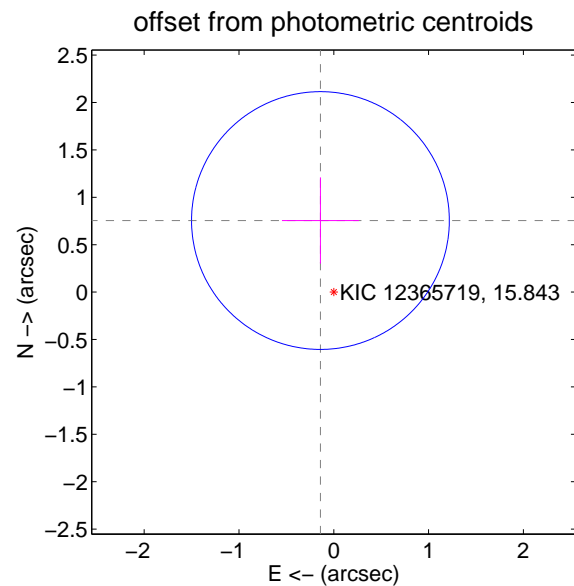
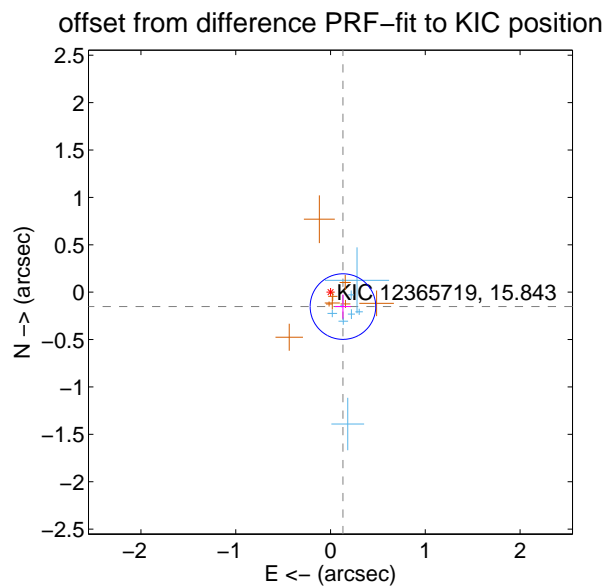
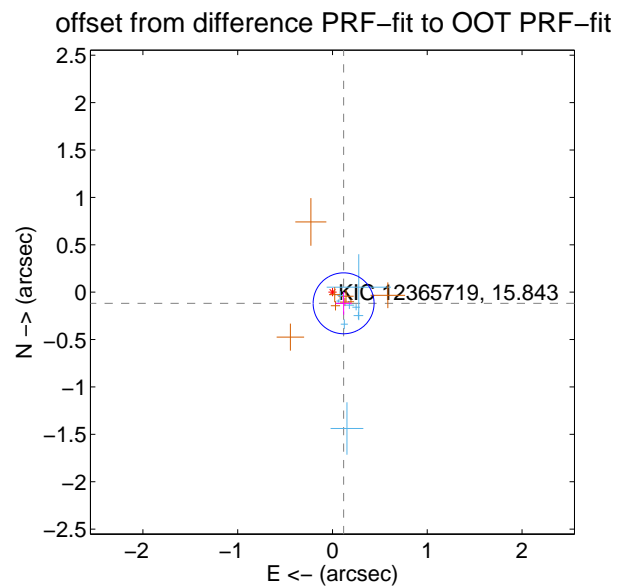
## DV Centroid Data

Supplemental centroid analysis for 012365719-03. Kepler magnitude: 15.84. Transit SNR 8.42

There are 8 quarters with good PRF difference image offsets

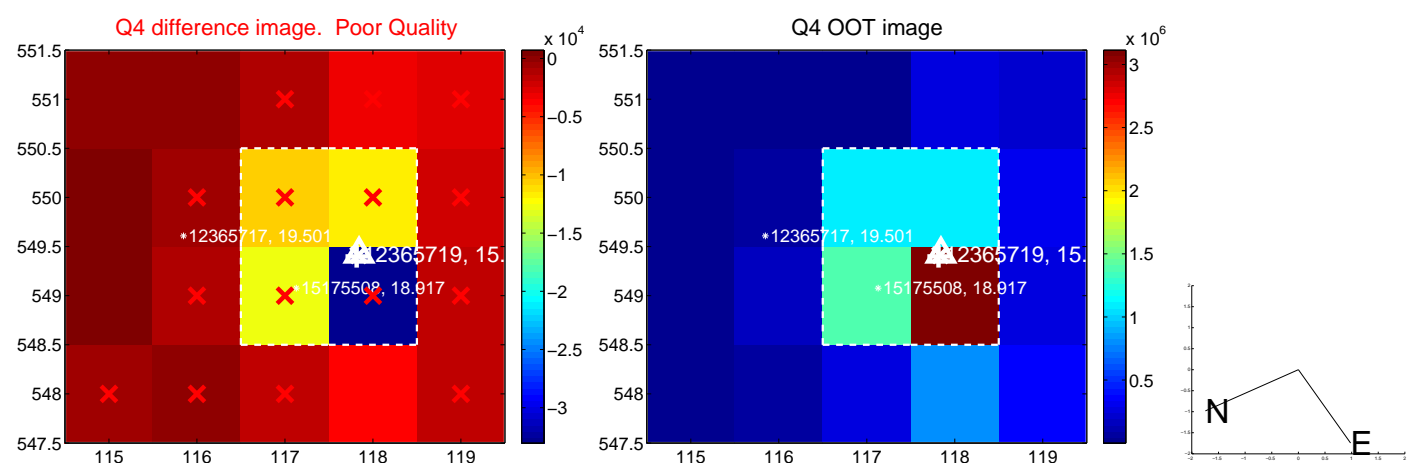
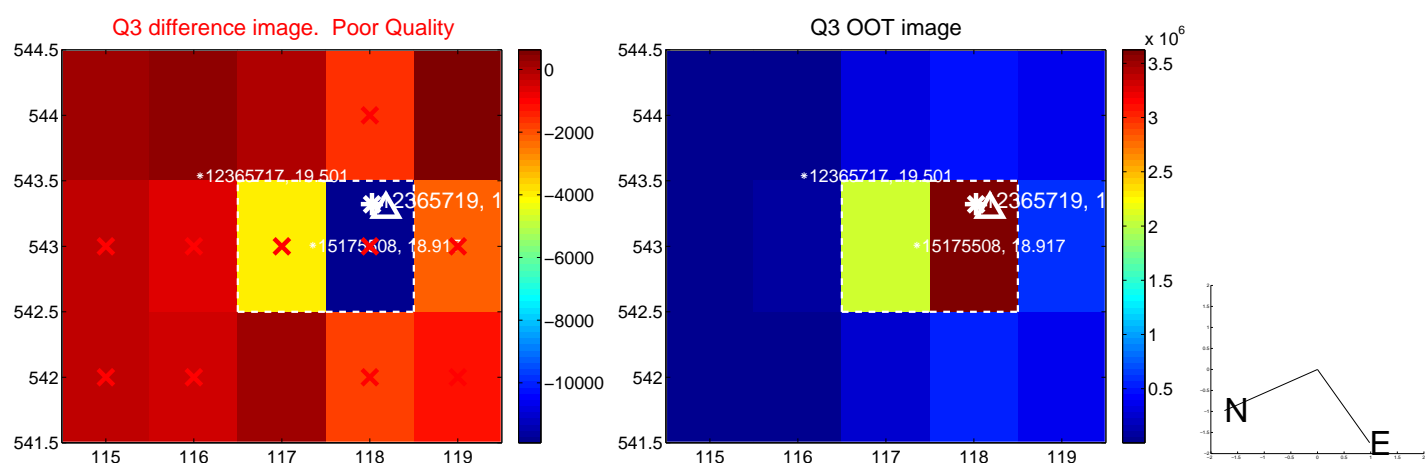
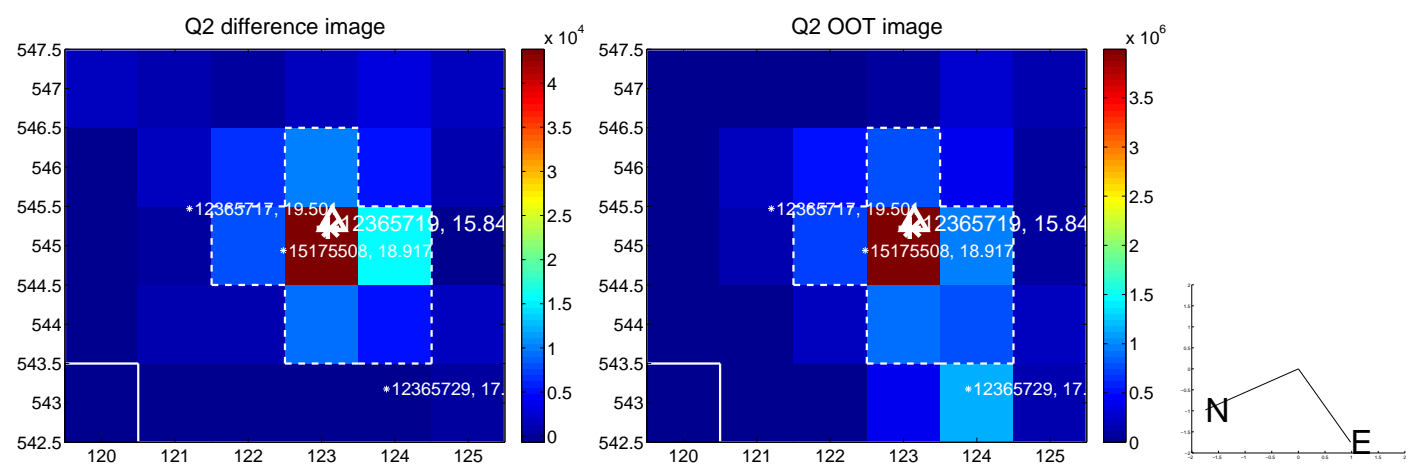
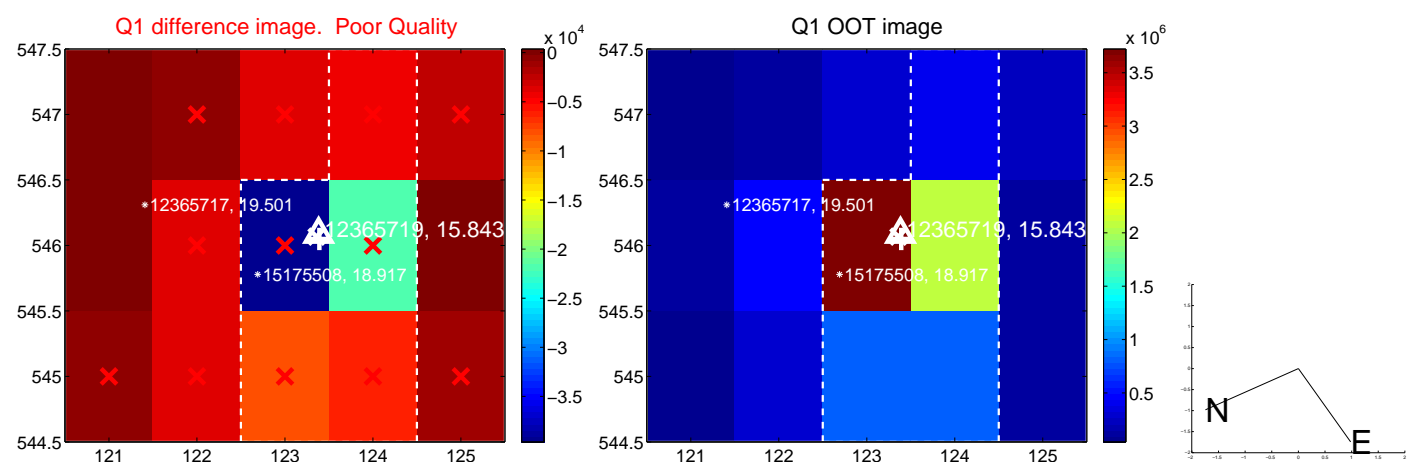
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.166 \pm 0.107$	1.55	$-0.118 \pm 0.086$	$-0.117 \pm 0.120$
PRF-fit source offset from KIC position	$0.201 \pm 0.115$	1.74	$-0.131 \pm 0.085$	$-0.152 \pm 0.128$
photometric centroid source offset	$0.77 \pm 0.45$	1.69	$0.14 \pm 0.41$	$0.75 \pm 0.45$

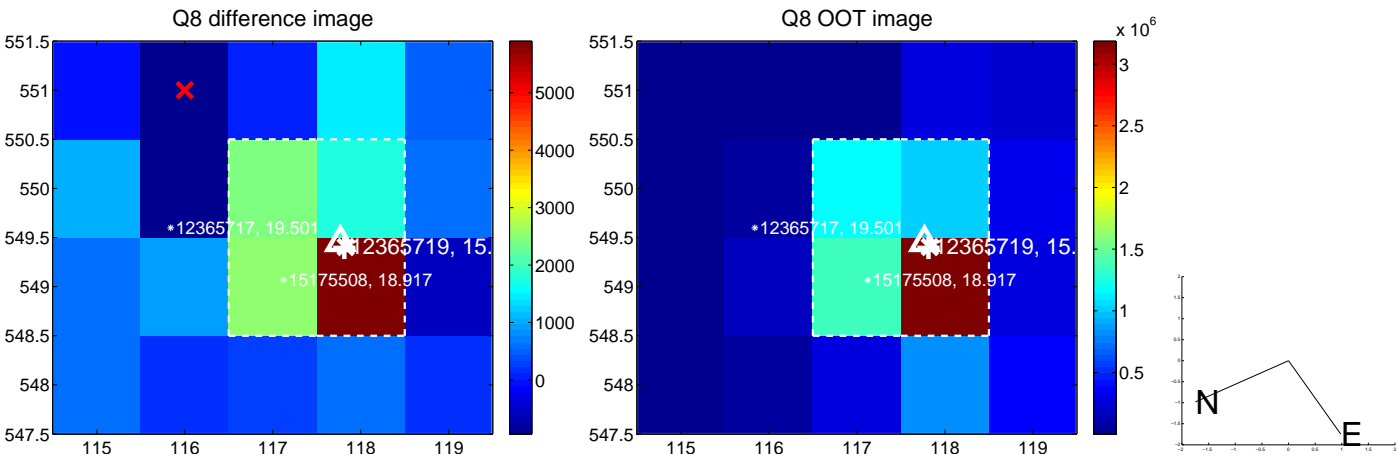
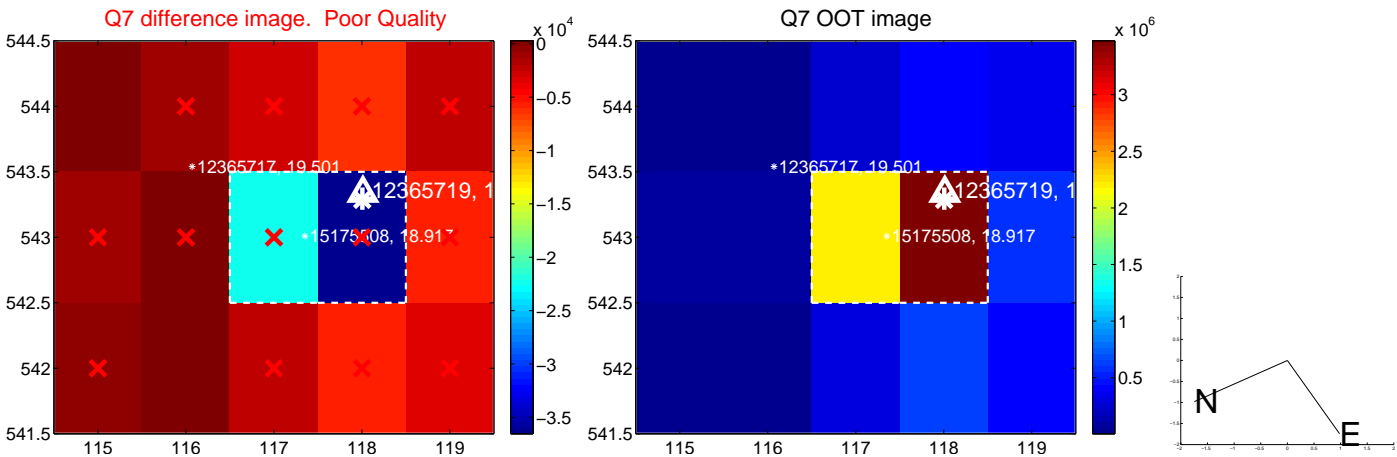
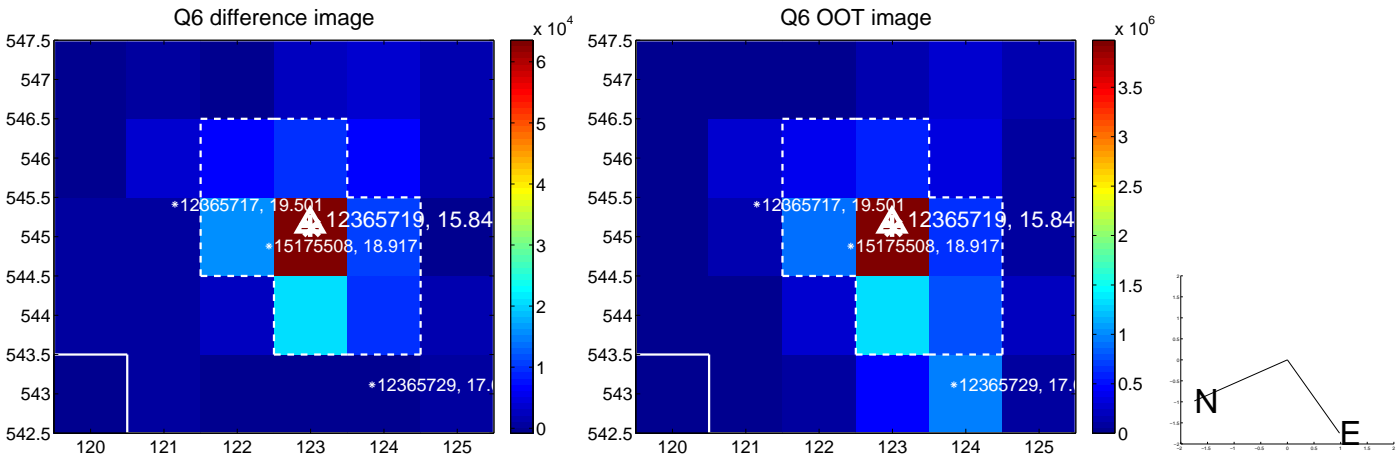
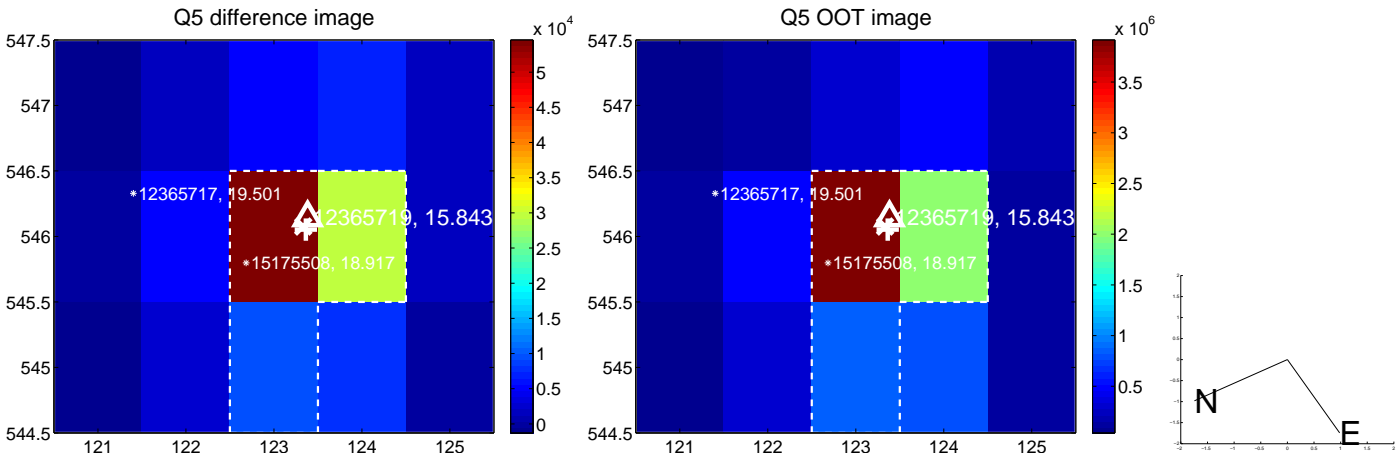


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

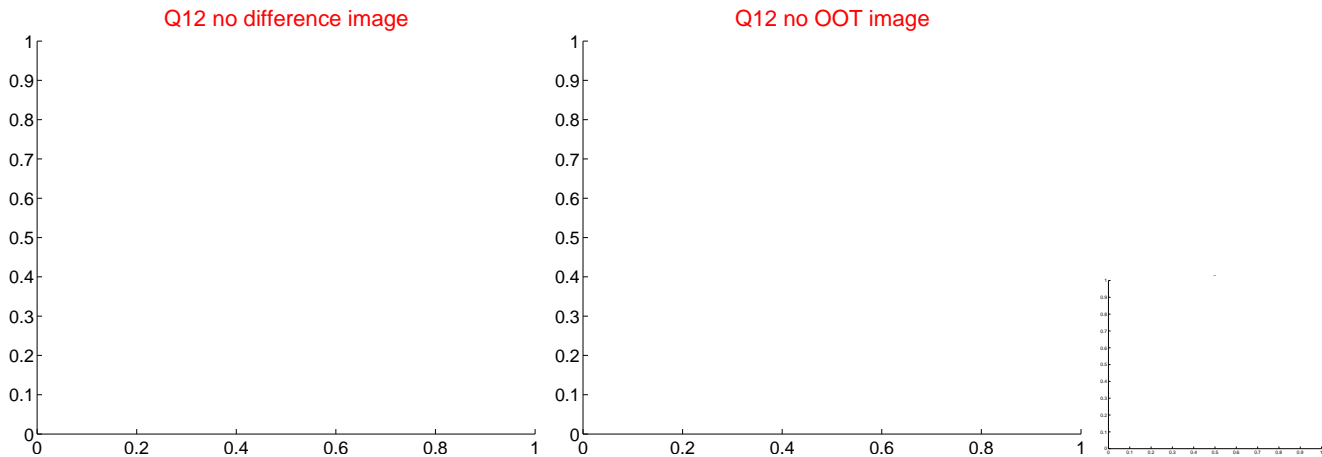
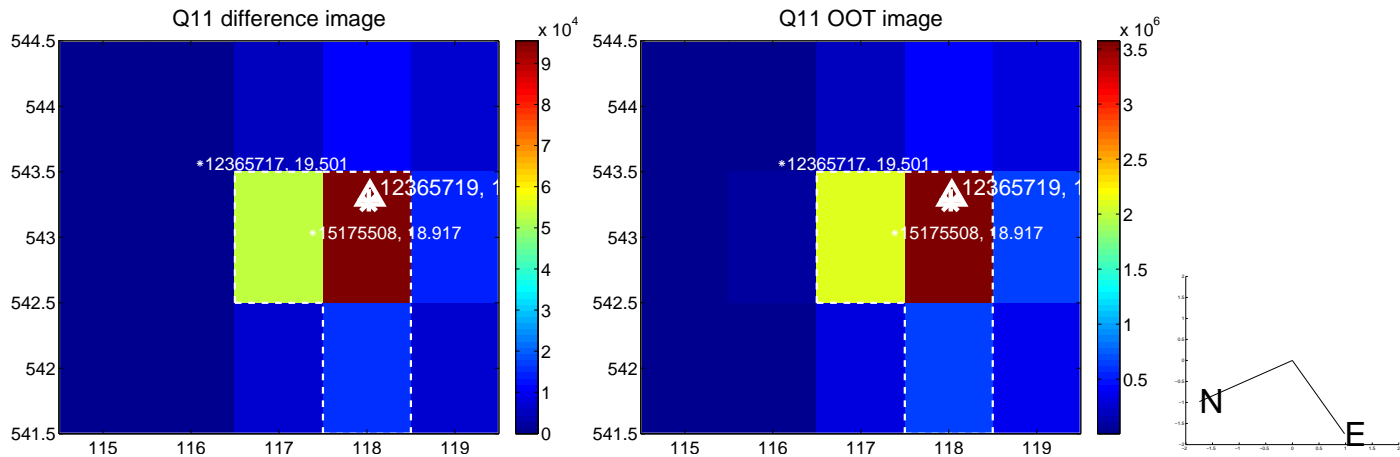
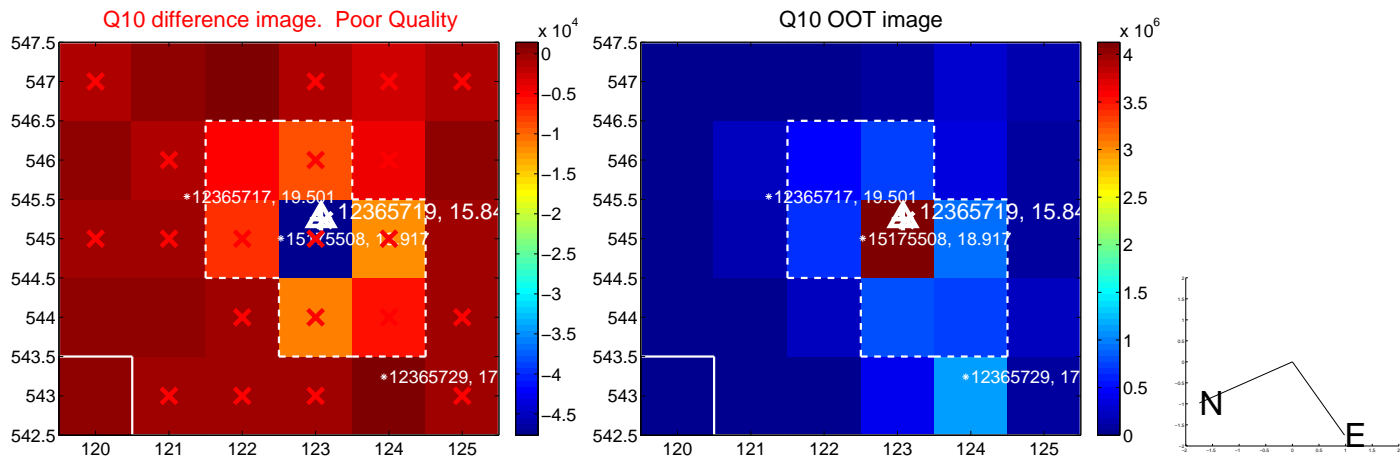
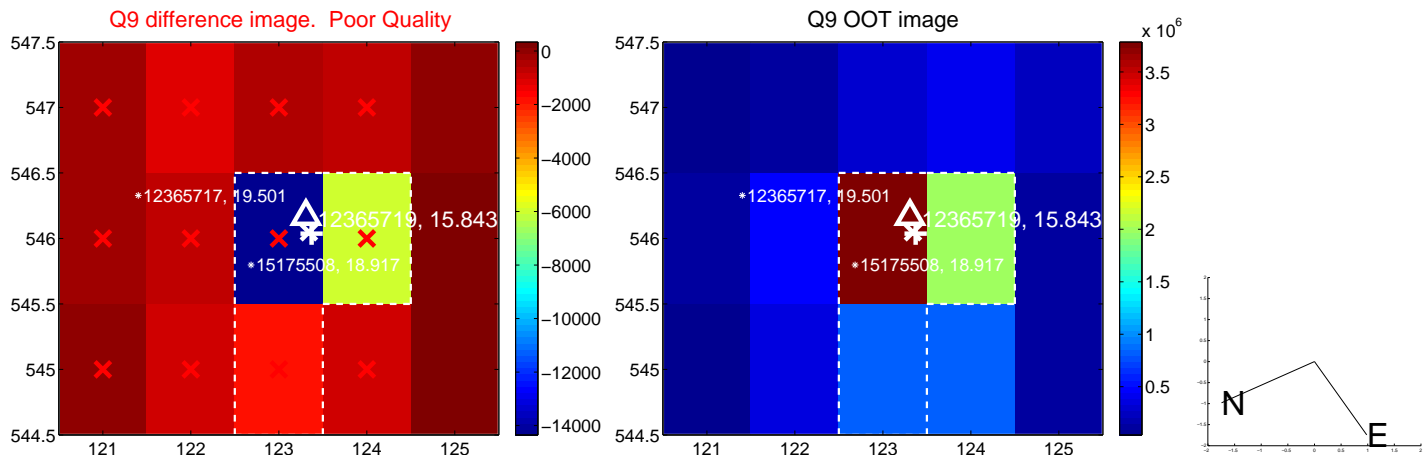


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

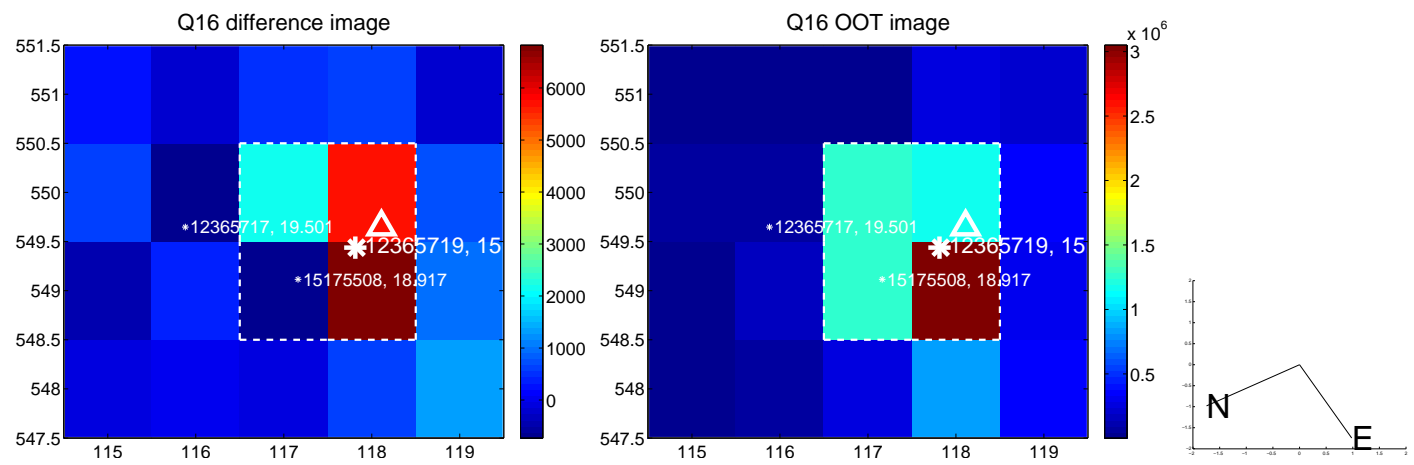
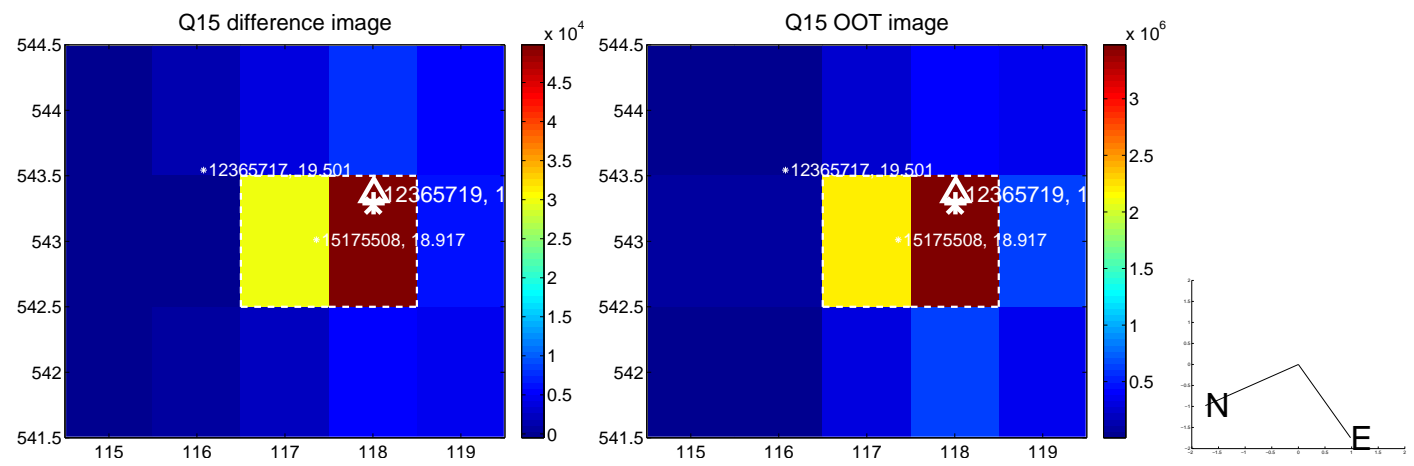
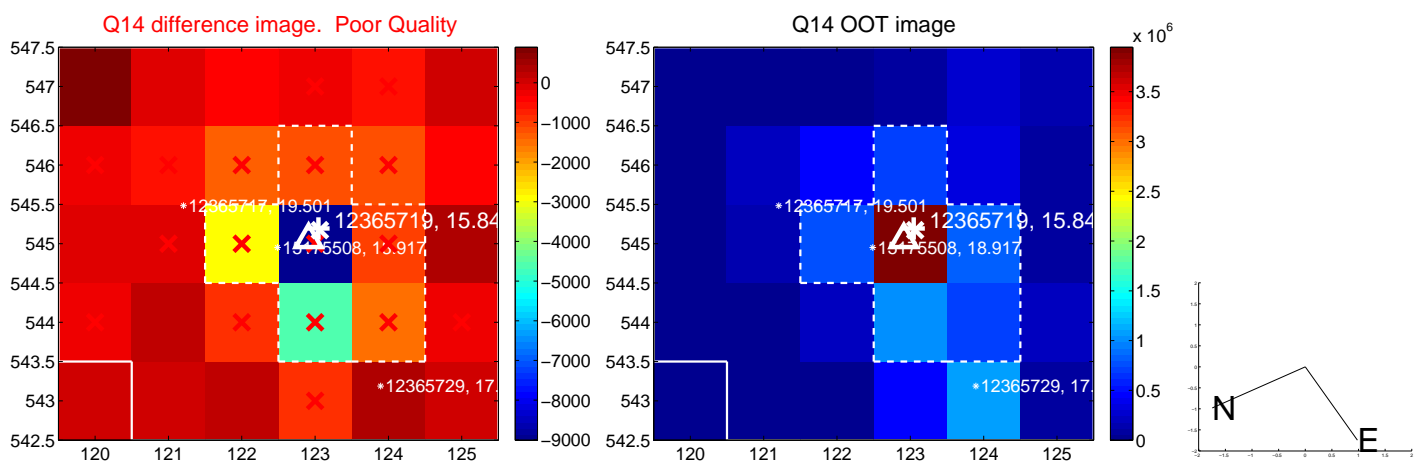
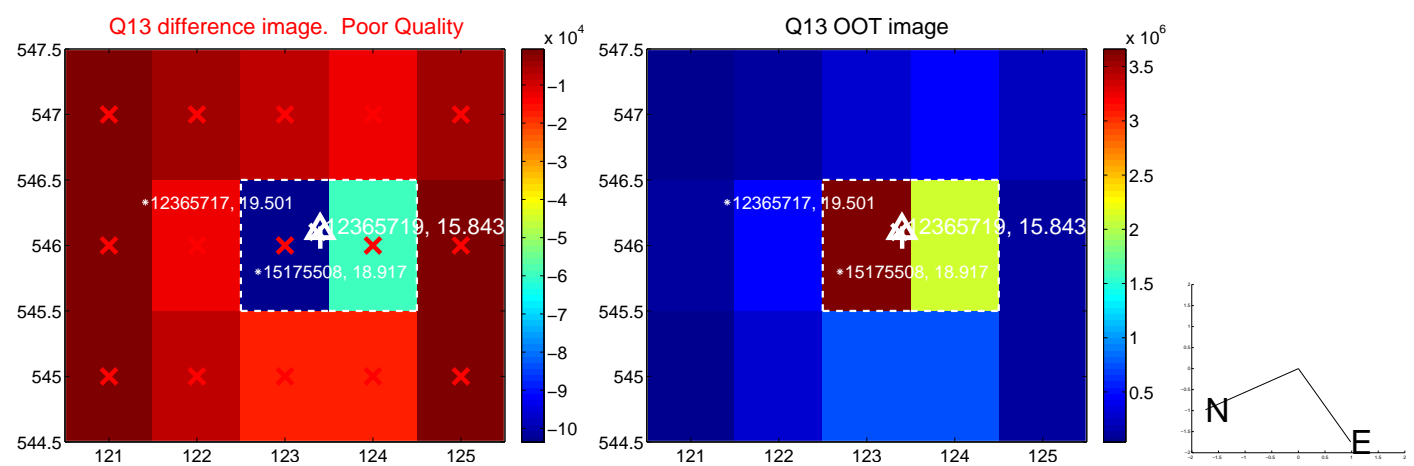




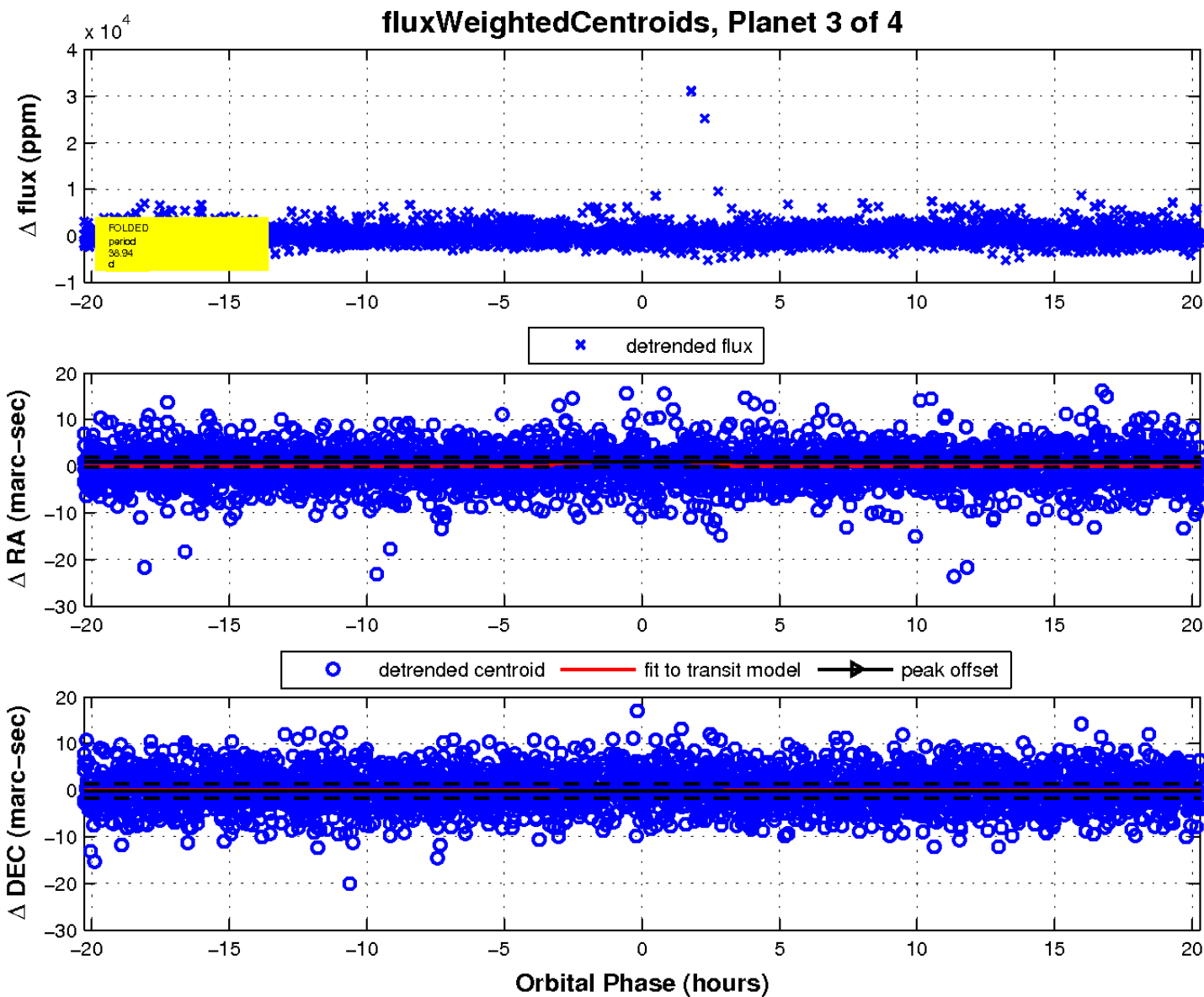
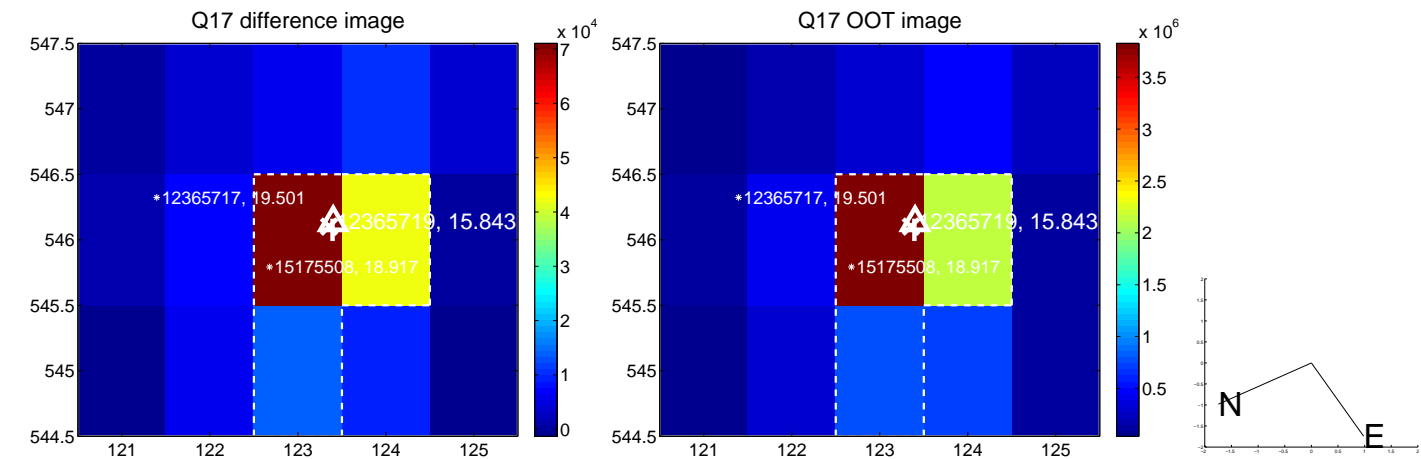
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

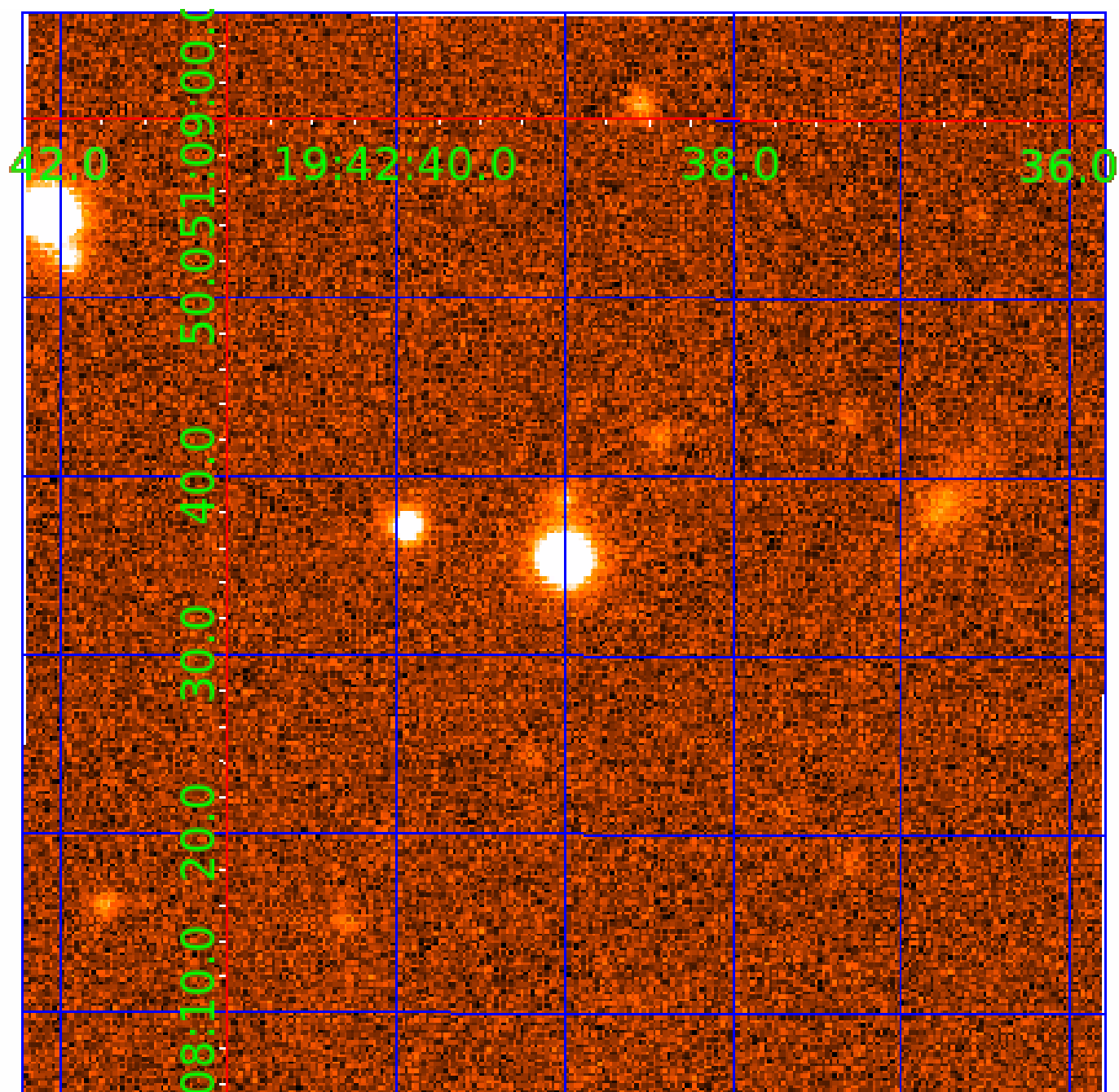


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 012365719

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012365719-01	OBS	No	0.844831	131.803355	45.7	1.672	12.8	1.8	0.39	3557	0.26	128.63
012365719-02	OBS	No	0.844796	131.792445	0.0	5.634	11.0	0.0	0.39	3557	0.00	128.64
012365719-03	OBS	No	38.940722	148.660508	1412.0	6.765	8.3	8.4	0.39	3557	1.47	0.78
012365719-04	OBS	No	22.227078	133.762331	1951.1	1.505	9.0	9.8	0.39	3557	1.84	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012365719-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT
012365719-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—SAME_NTL_PERIOD
012365719-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012365719-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV

**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.

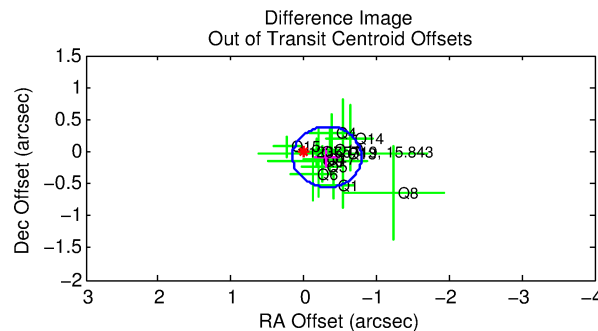
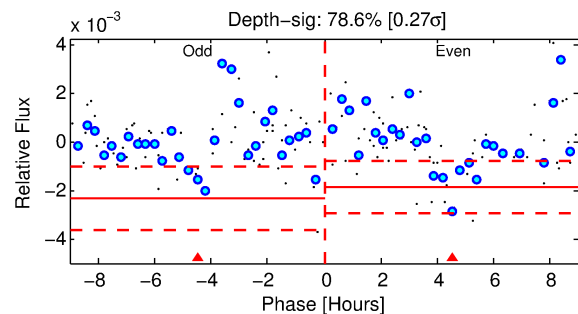
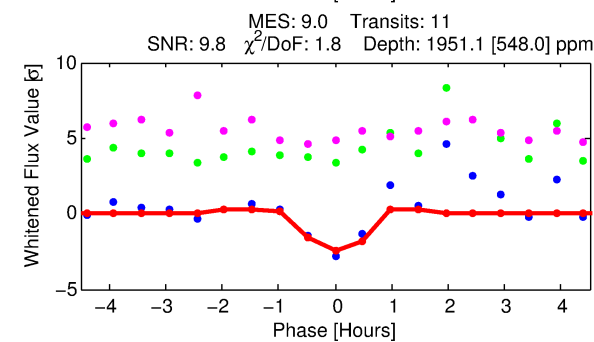
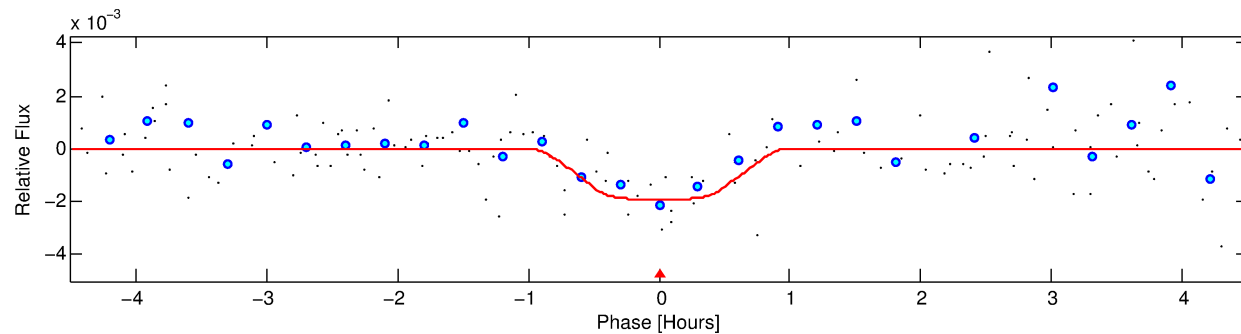
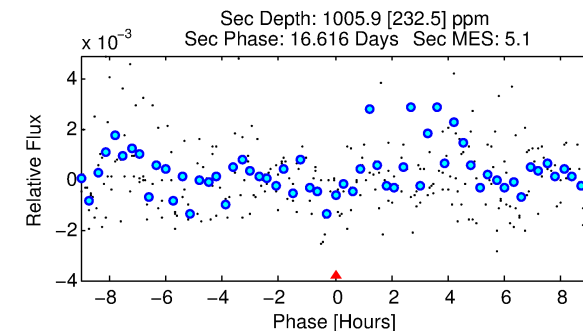
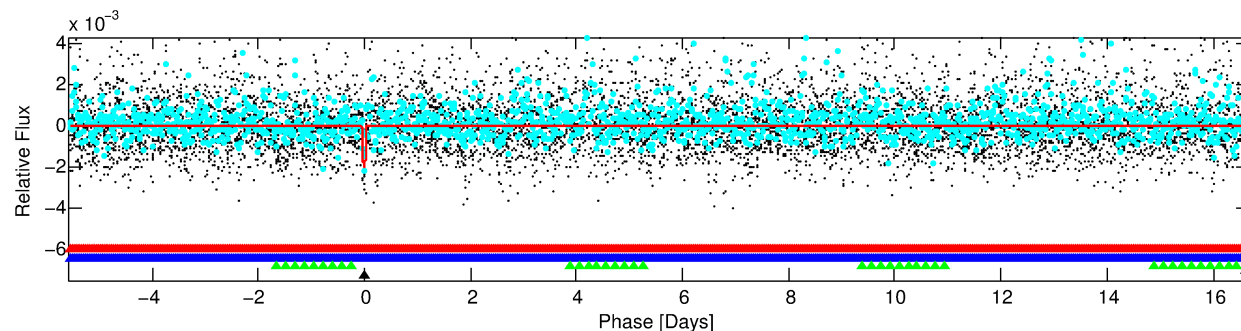
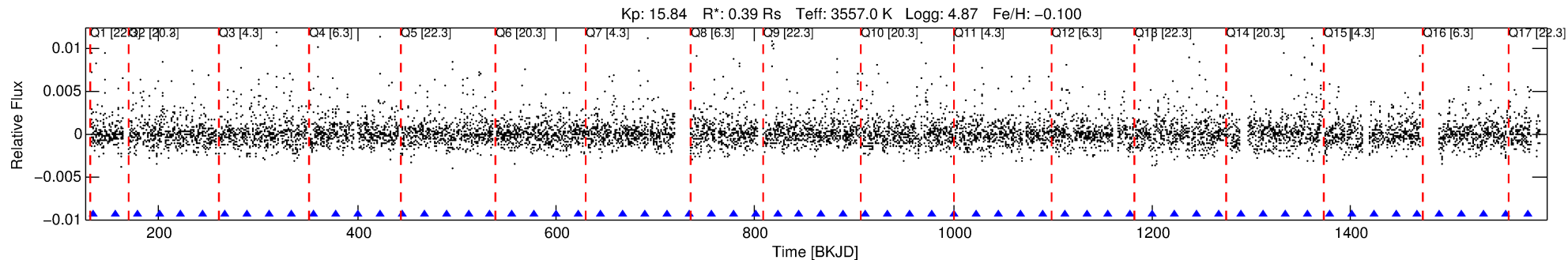
Ephemeris Match Information For 012365719-04

No Significant Match Found



# DV One-Page Summary

KIC: 12365719 Candidate: 4 of 4 Period: 22.227 d



## DV Fit Results:

Period = 22.22708 [0.00026] d  
Epoch = 133.7623 [0.0089] BKJD  
Rp/R\* = 0.0435 [0.1775]  
a/R\* = 86.02 [1512.22]  
b = 0.71 [12.27]  
Seff = 1.64 [0.17]  
Teq = 289 [8] K  
Rp = 1.84 [7.50] Re  
a = 0.1143 [0.0078] AU  
Ag = 2142.78 [17496.49] [0.12σ]  
Teffp = 3037 [6200] K [0.44σ]

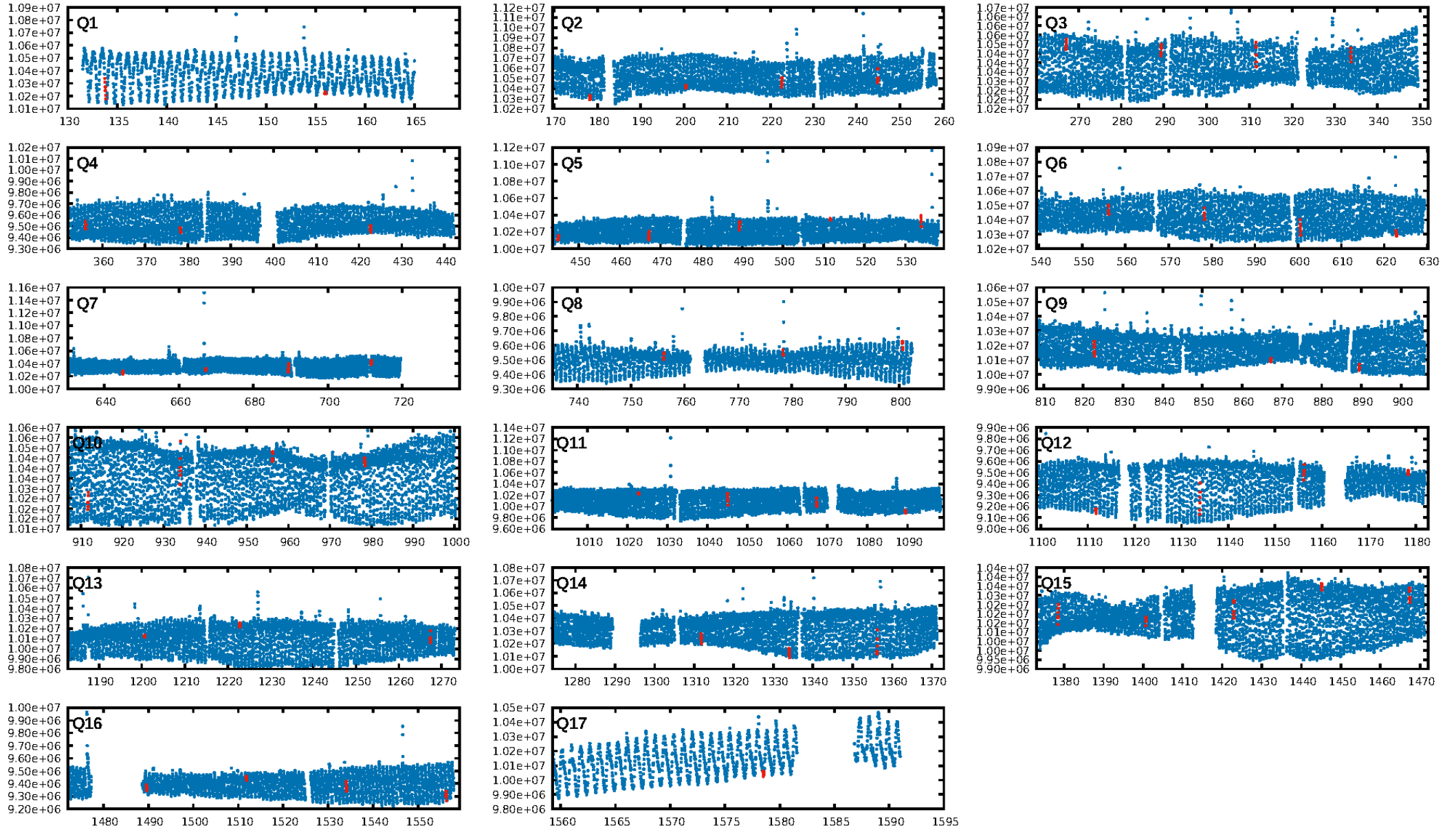
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [228.10σ]  
LongPeriod-sig: 100.0% [57.88σ]  
ModelChiSquare2-sig: 14.1%  
ModelChiSquareGof-sig: 76.1%  
**Bootstrap-pfa: 6.36e-10**  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 2.27  
Centroid-sig: 83.1%  
Centroid-so: 1.140 arcsec [2.29σ]  
OotOffset-rm: 0.330 arcsec [2.09σ]  
KicOffset-rm: 0.311 arcsec [1.98σ]  
OotOffset-st: 3/2/2/5 [12]  
KicOffset-st: 3/2/2/5 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 0.59 [10/17]

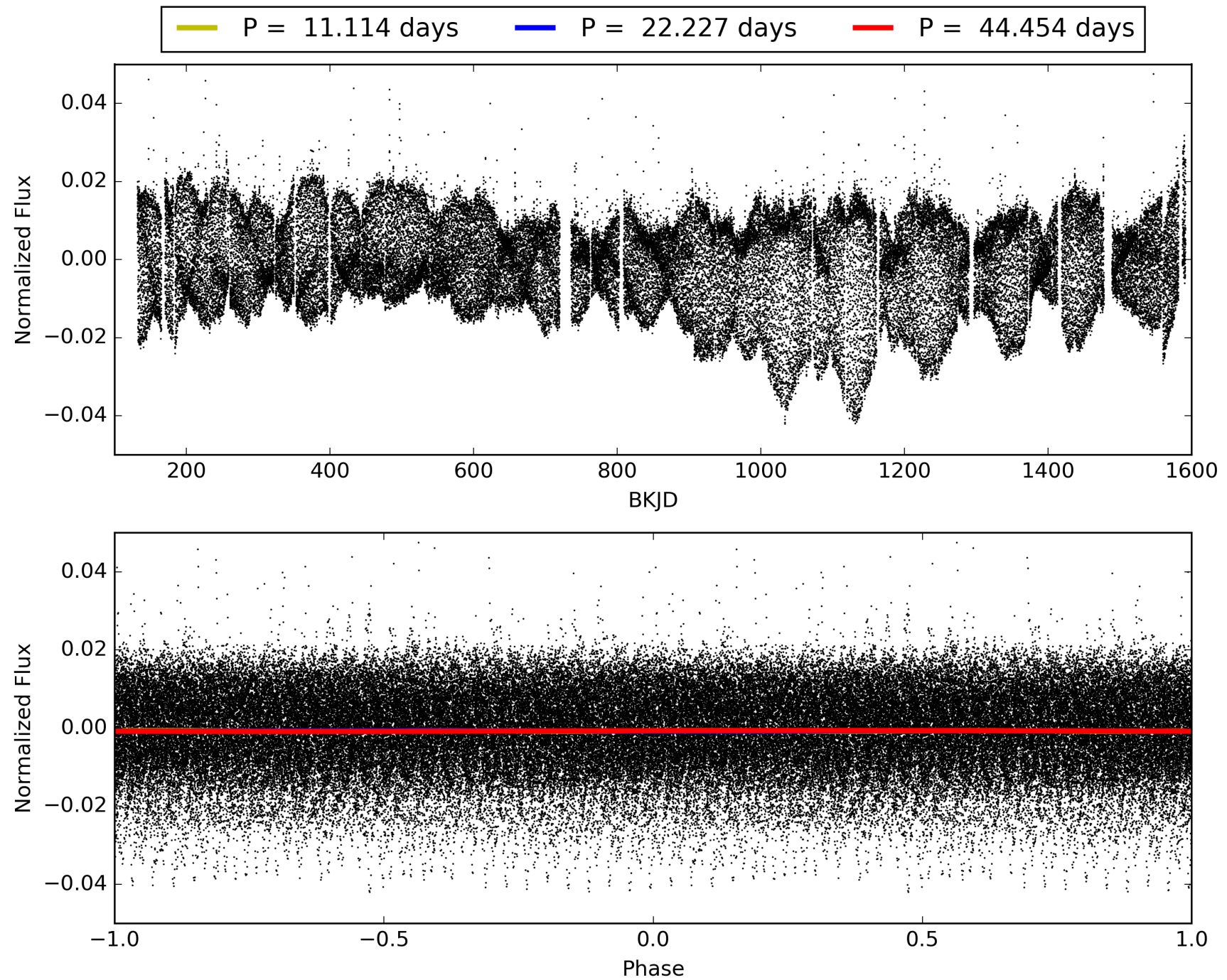
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:49:50 Z

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

# TCE 012365719-04, PDC Light Curves

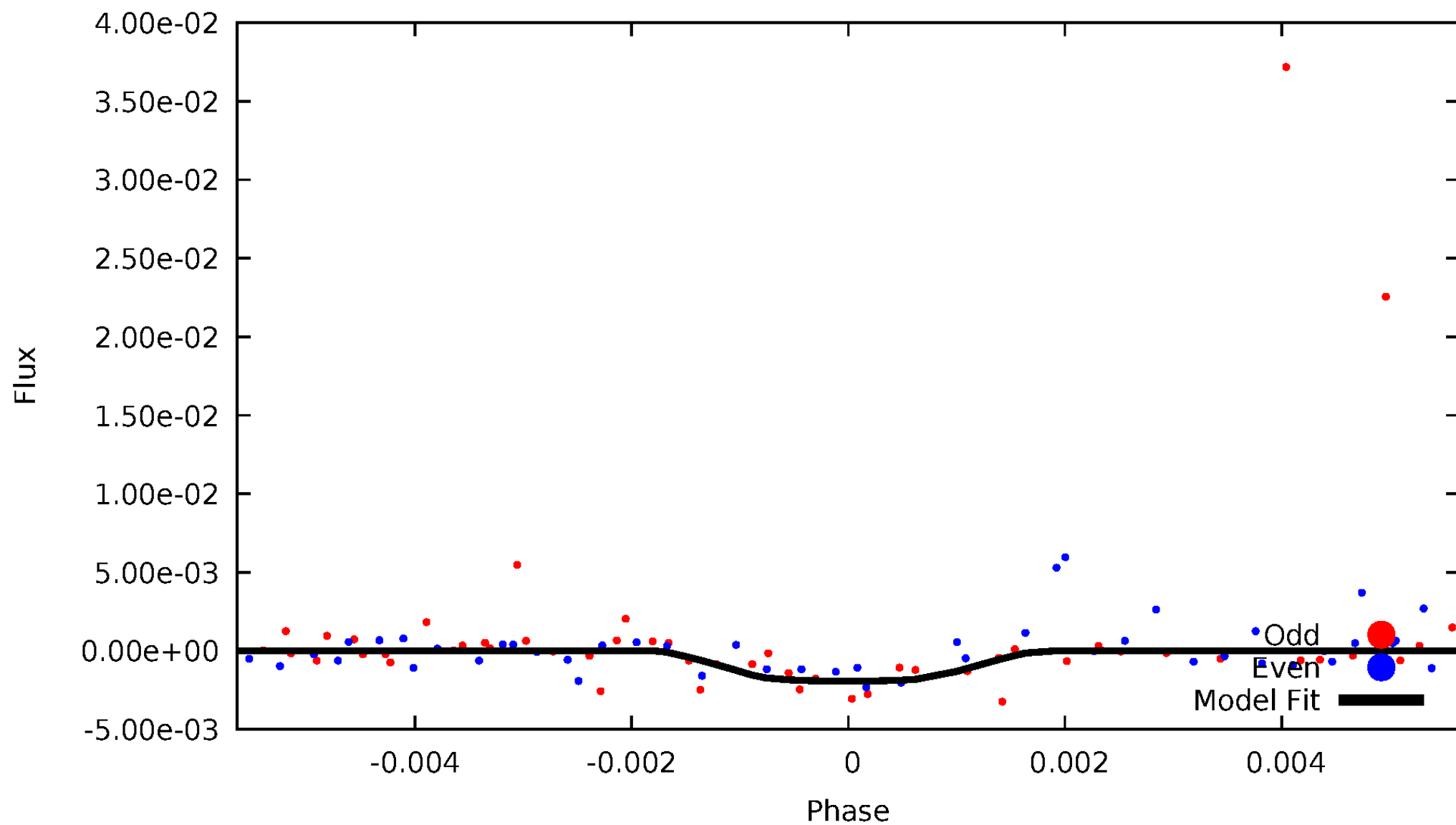


TCE 012365719-04



# DV Odd/Even

TCE 012365719-04





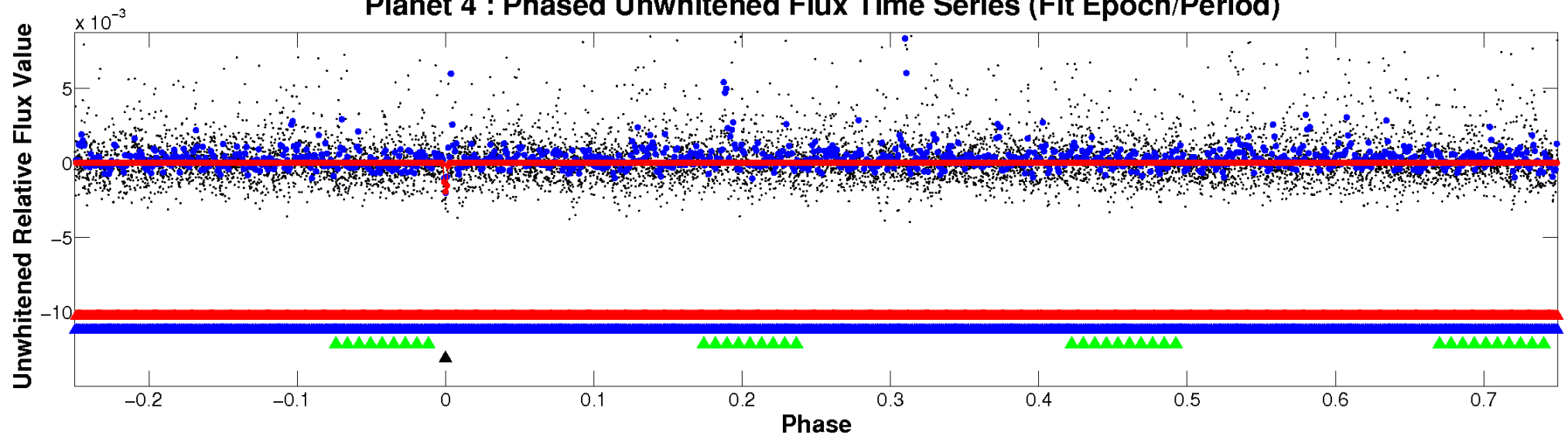


ALT Odd/Even

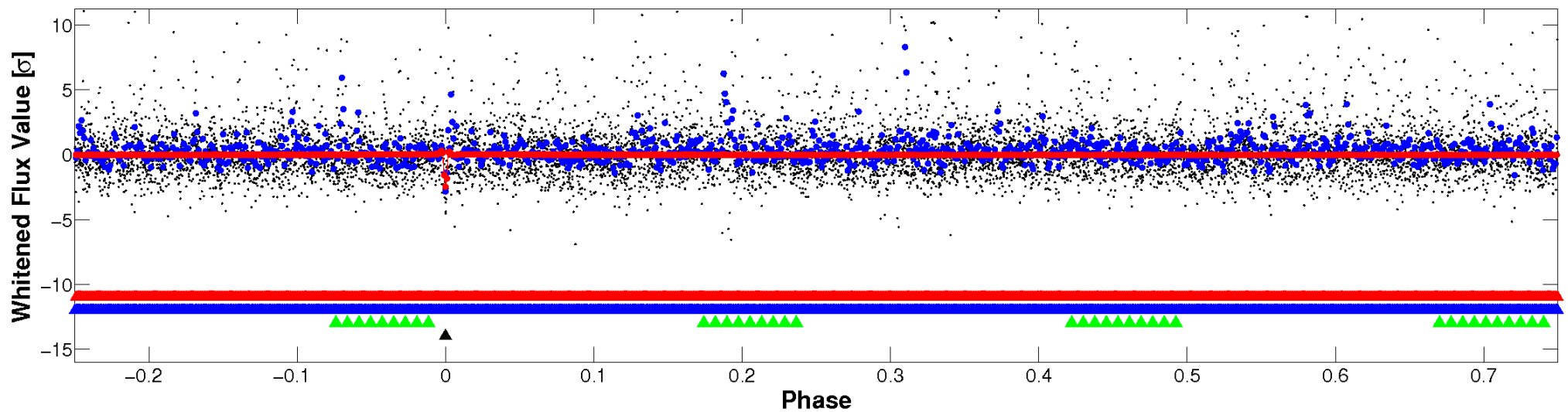
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

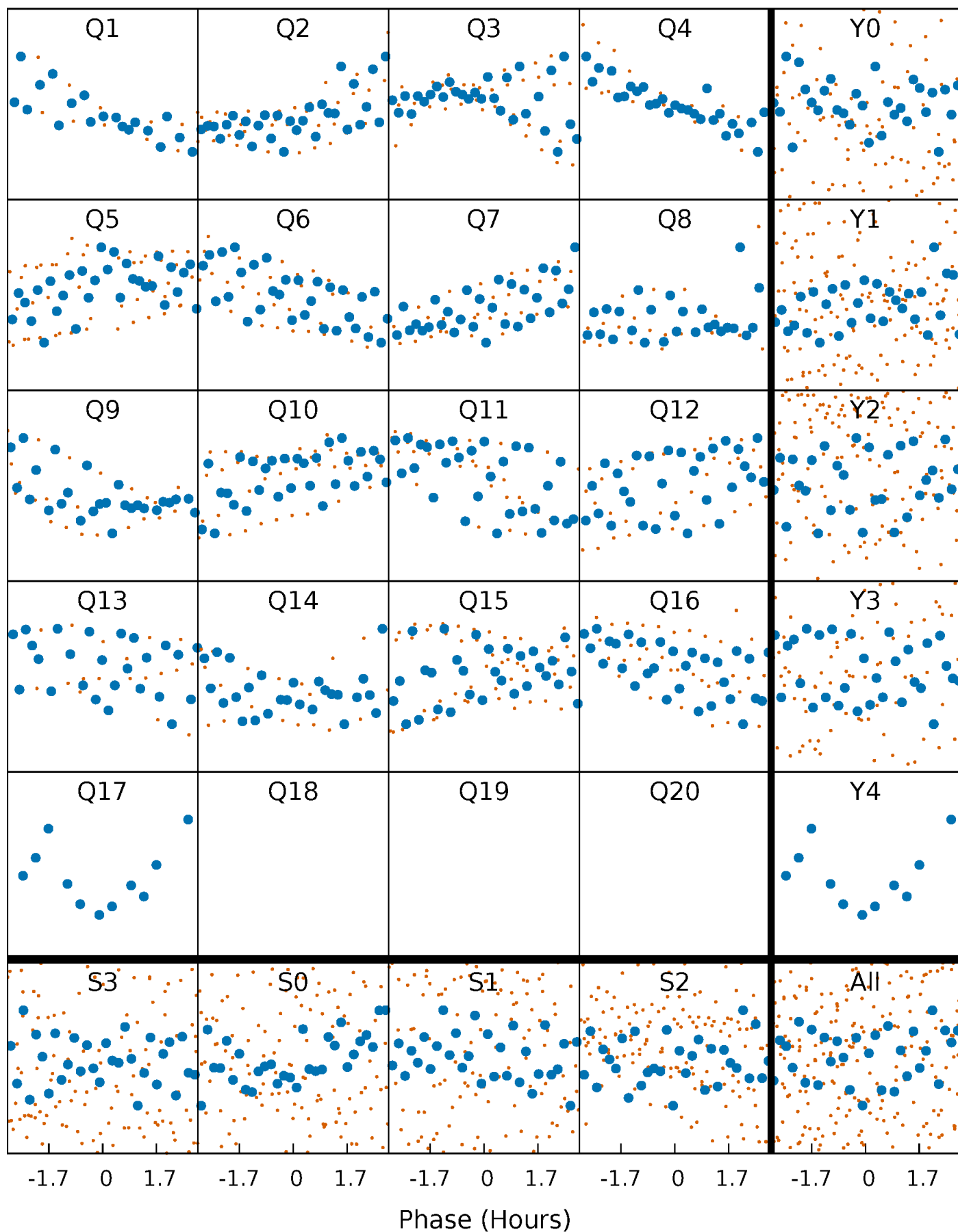


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



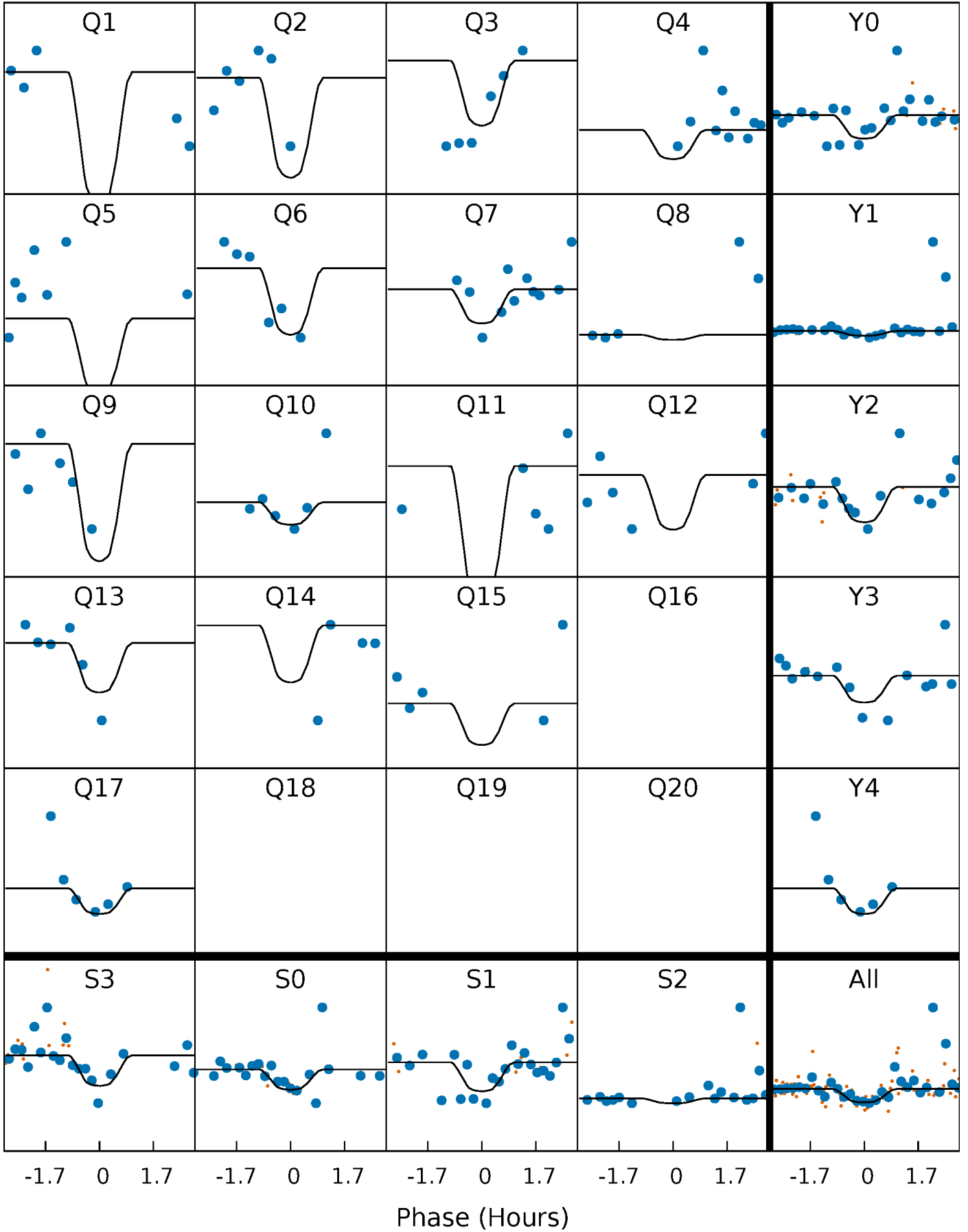
# PDC Quarter-Phased Transit Curves

TCE 012365719-04 P= 22.227078 Days  $T_0=133.762331$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 012365719-04     $P = 22.227078$  Days     $T_0 = 133.762331$  (BKJD)

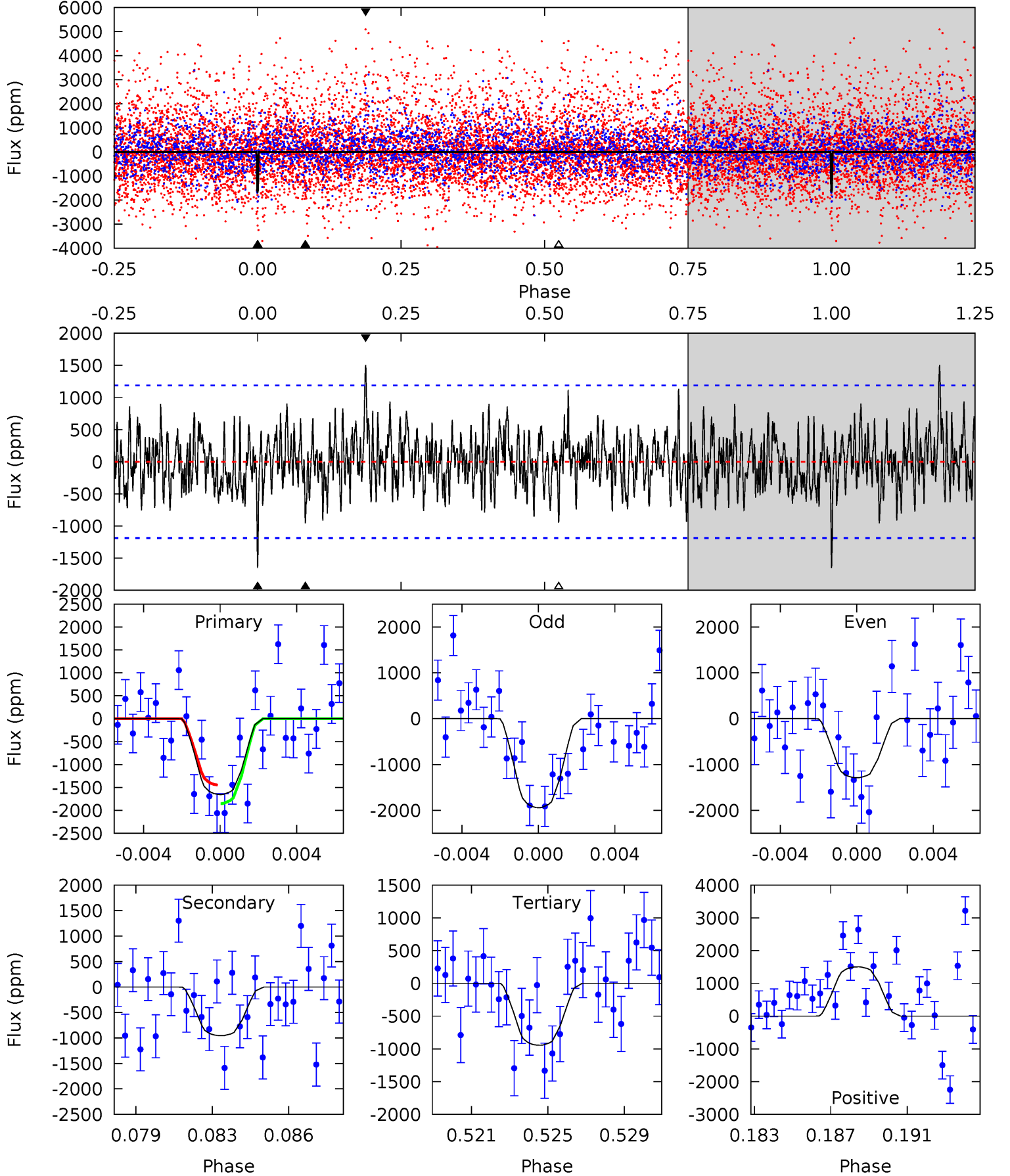


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

012365719-04, P = 22.227078 Days, E = 111.535253 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
7.28	4.20	4.15	6.62	5.22	2.91	1.54	3.12	0.66	0.05	-2.42	1.40	0.92	0.48	0.90





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 012365719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} \text{ (g}\cdot\text{cm}^{-3}\text{)}$
	$3557^{+48}_{-59}$	$4.868^{+0.036}_{-0.036}$	$-0.100^{+0.100}_{-0.100}$	$0.387^{+0.032}_{-0.036}$	$0.406^{+0.035}_{-0.042}$	$9.864^{+1.985}_{-1.500}$
	+1%/-2%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+20%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 012365719-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-955 \pm 227$	$6.16^{+6.00}_{-4.23}$	$403^{+9}_{-9}$	$2331^{+837}_{-321}$	$176^{+1701}_{-129}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = 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

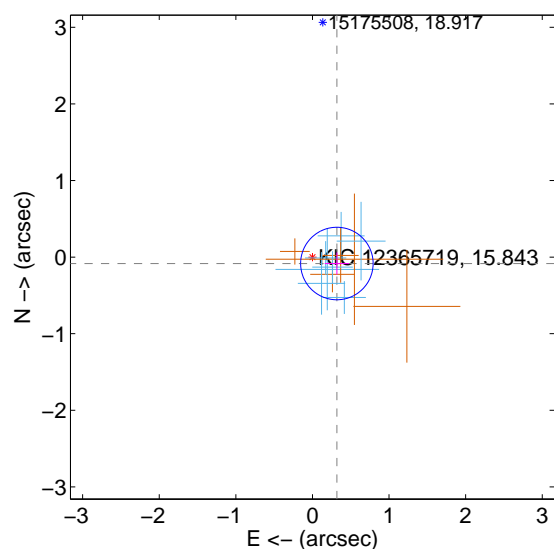
Supplemental centroid analysis for 012365719-04. Kepler magnitude: 15.84. Transit SNR 9.75

There are 7 quarters with good PRF difference image offsets

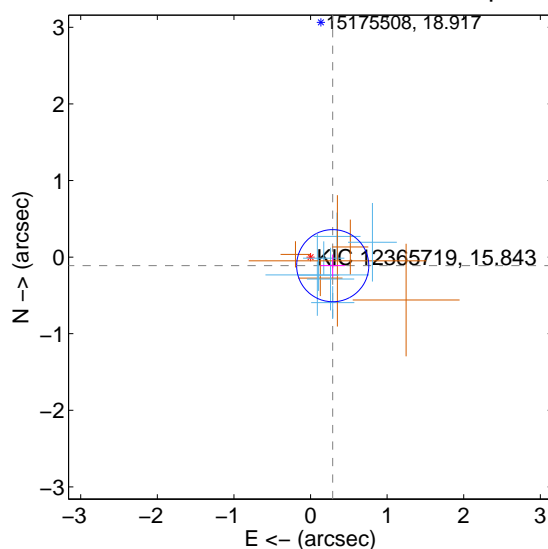
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.330 \pm 0.158$	2.09	$-0.319 \pm 0.158$	$-0.084 \pm 0.146$
PRF-fit source offset from KIC position	$0.311 \pm 0.157$	1.98	$-0.290 \pm 0.158$	$-0.112 \pm 0.146$
photometric centroid source offset	$1.14 \pm 0.50$	2.29	$1.00 \pm 0.48$	$0.55 \pm 0.54$

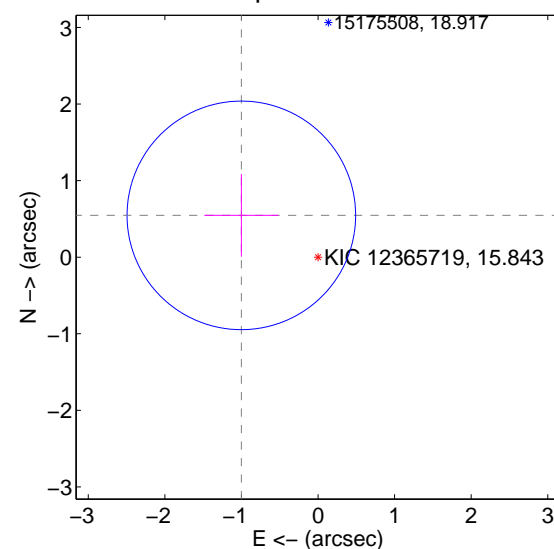
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

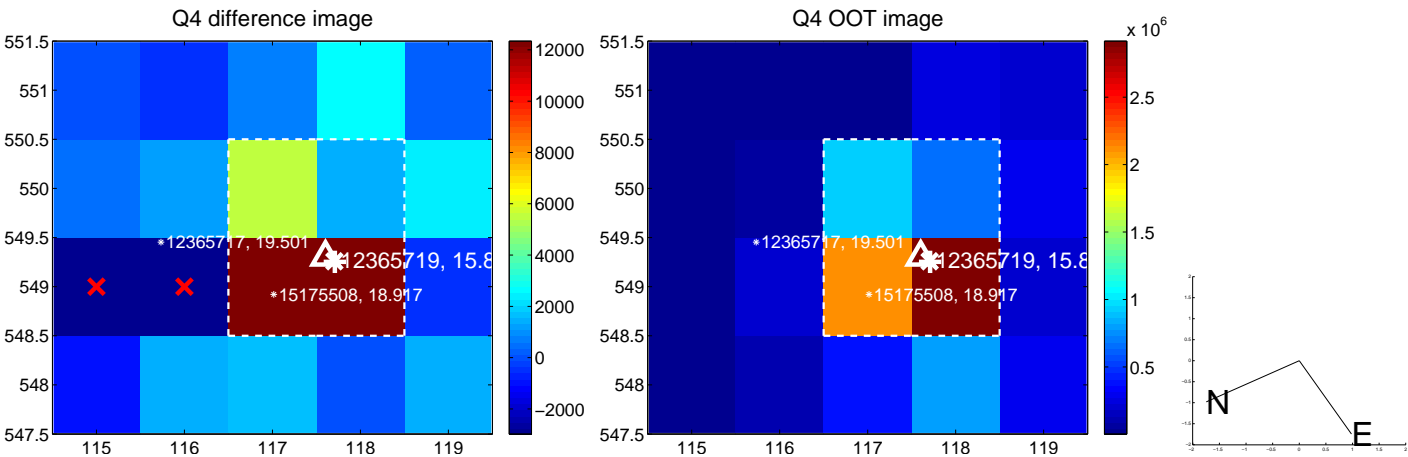
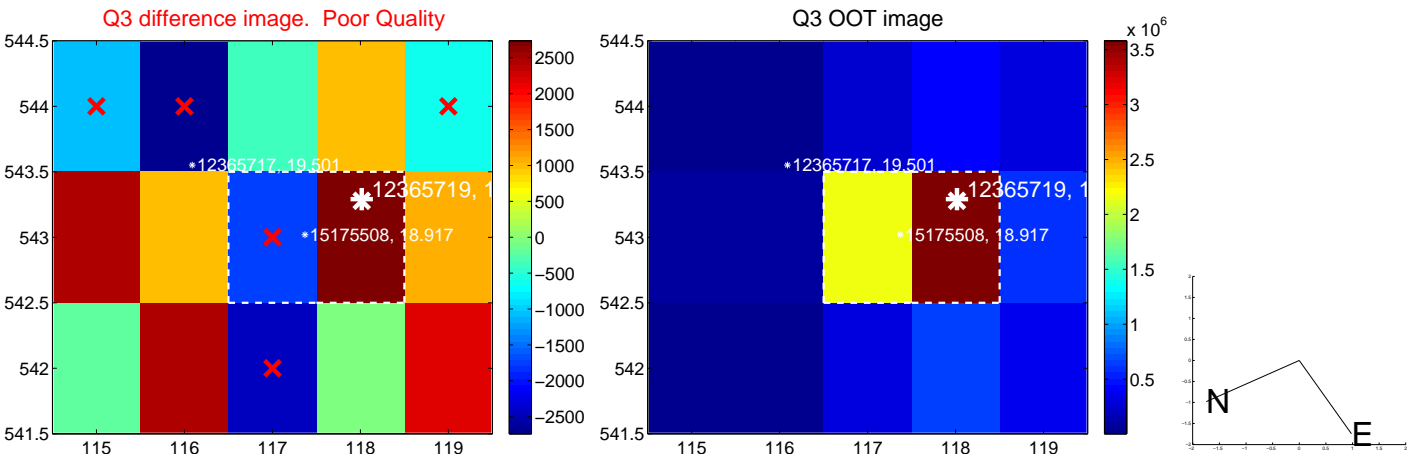
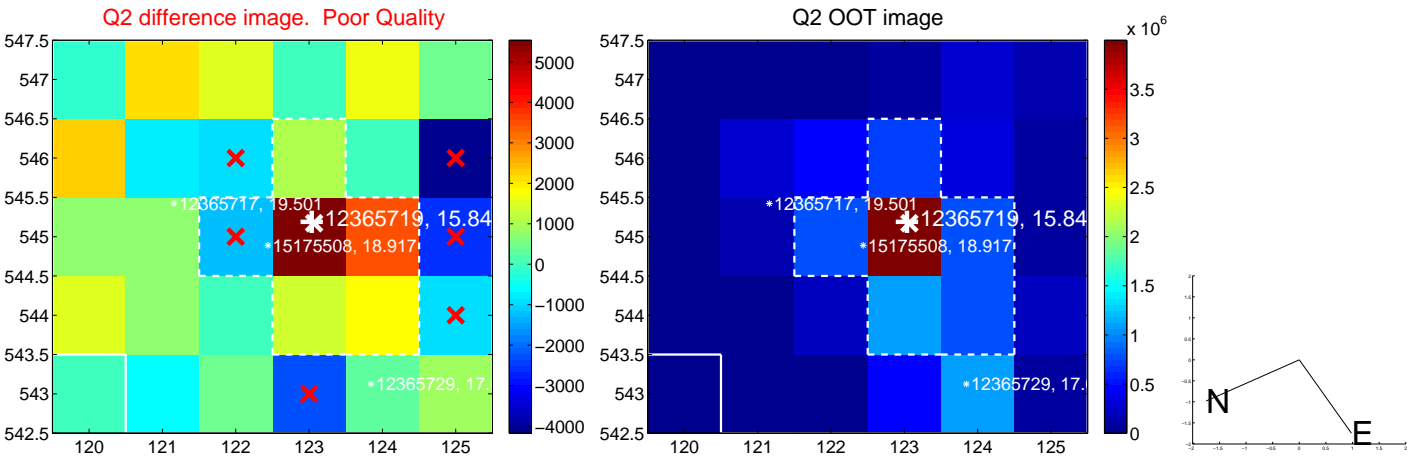
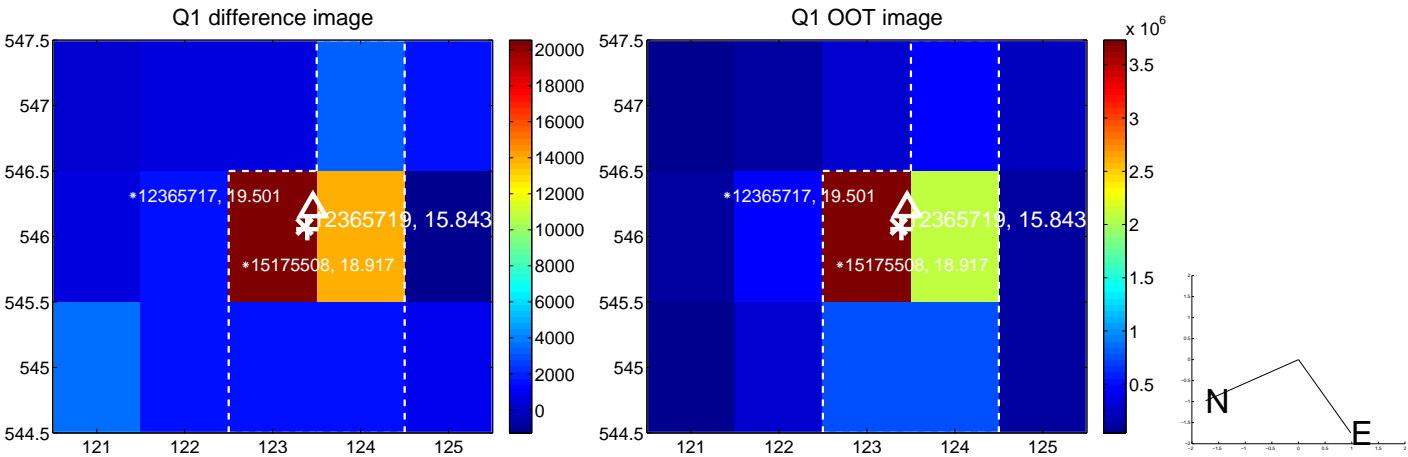


offset from photometric centroids

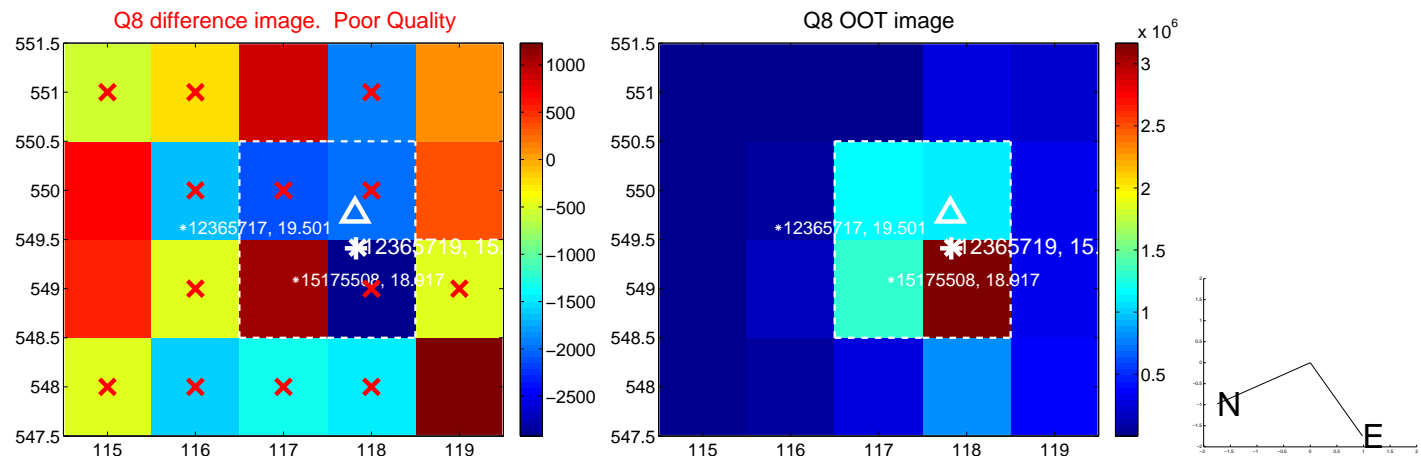
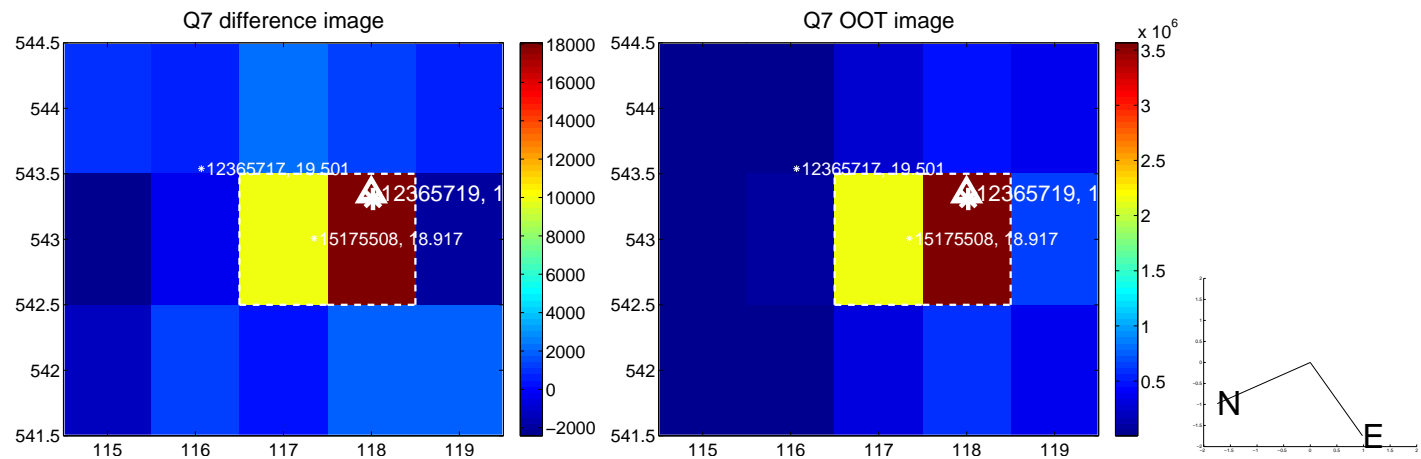
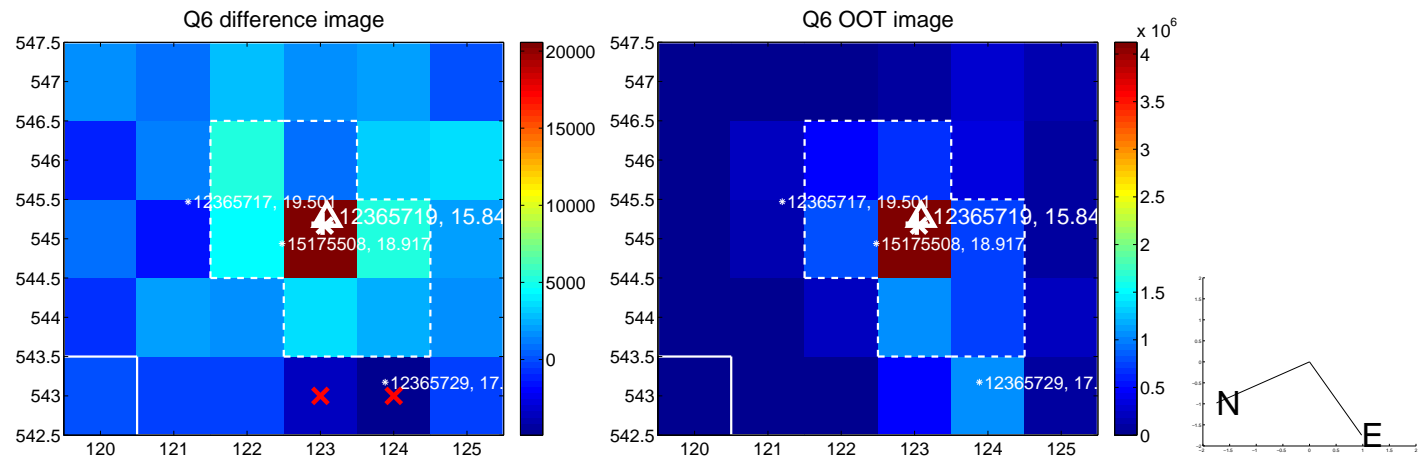
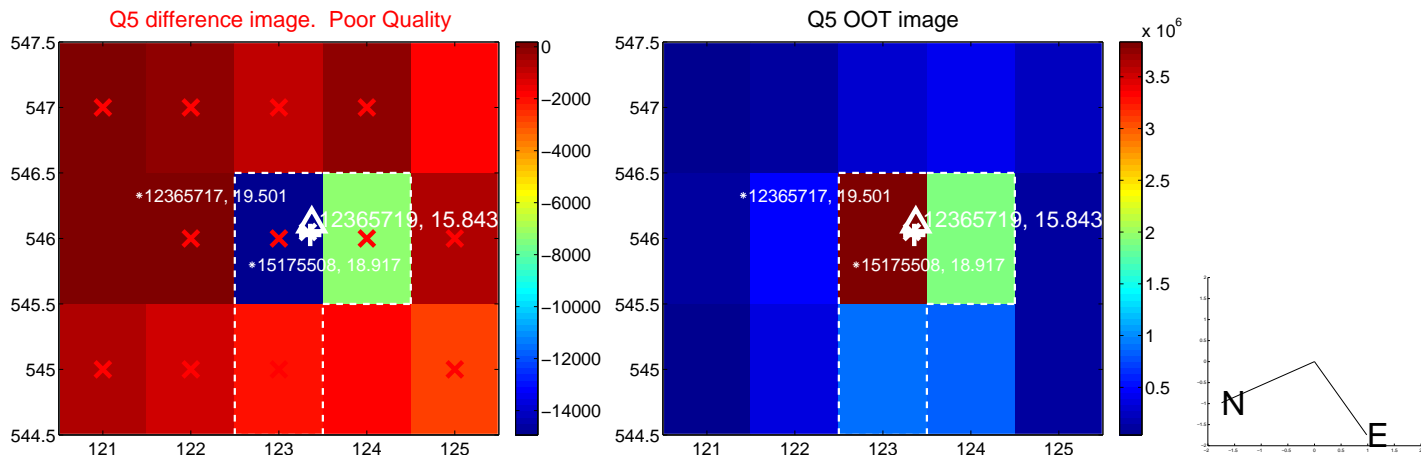


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

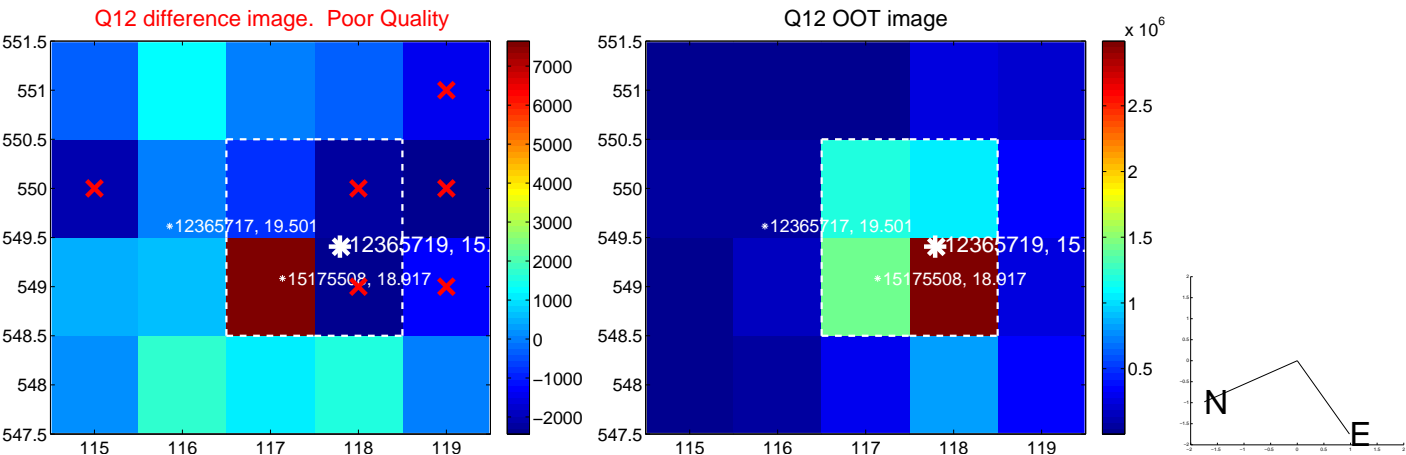
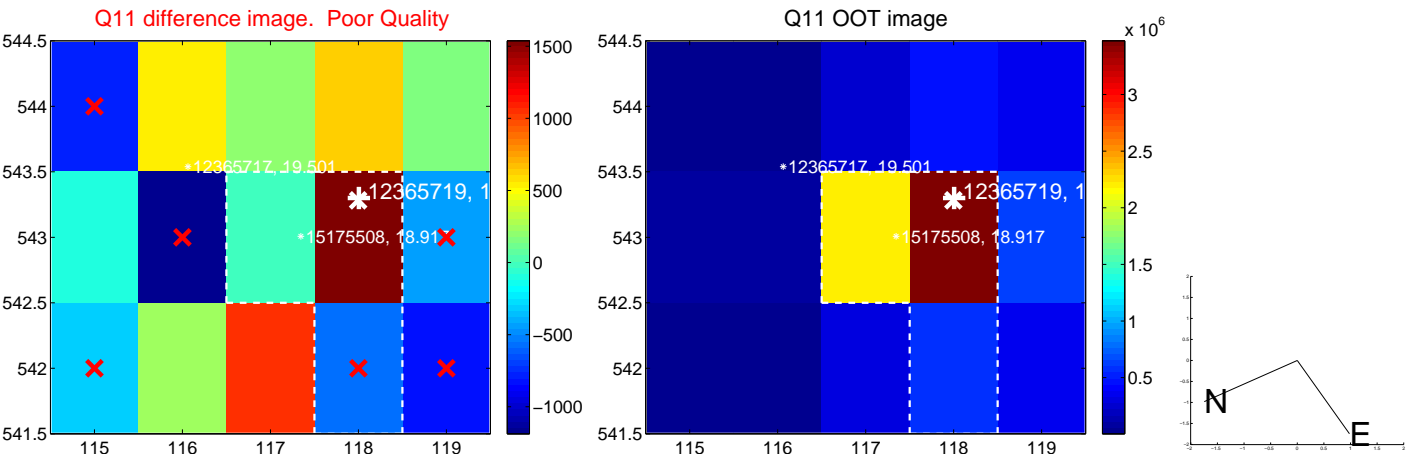
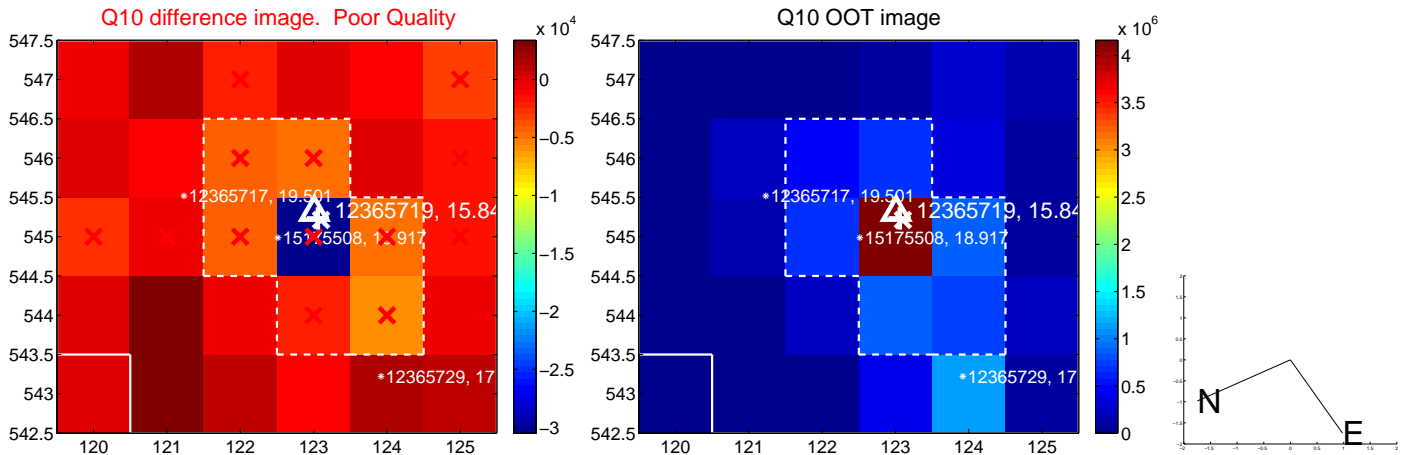
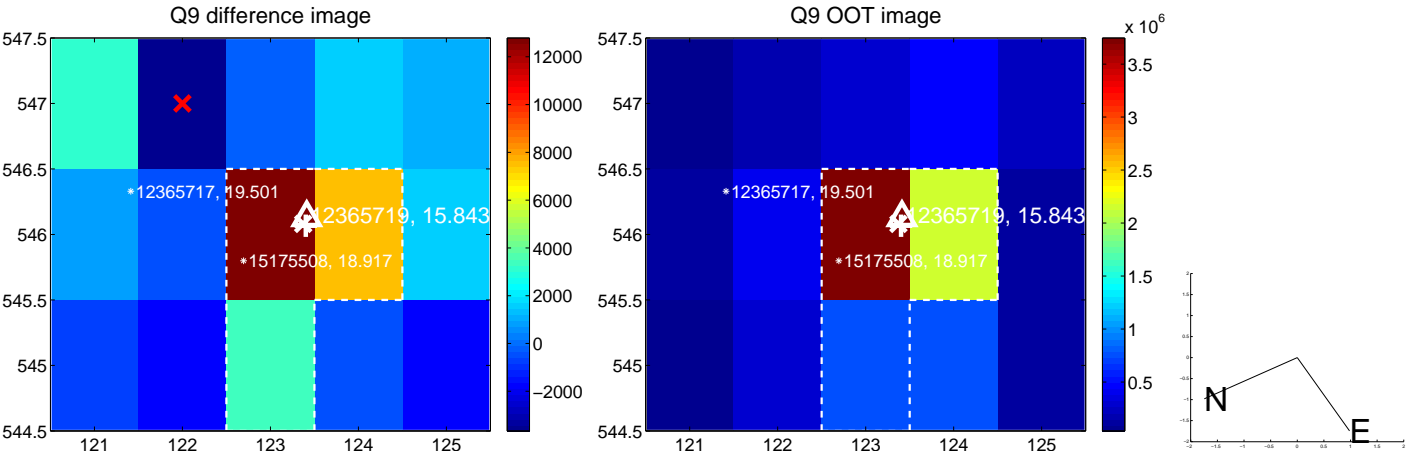
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

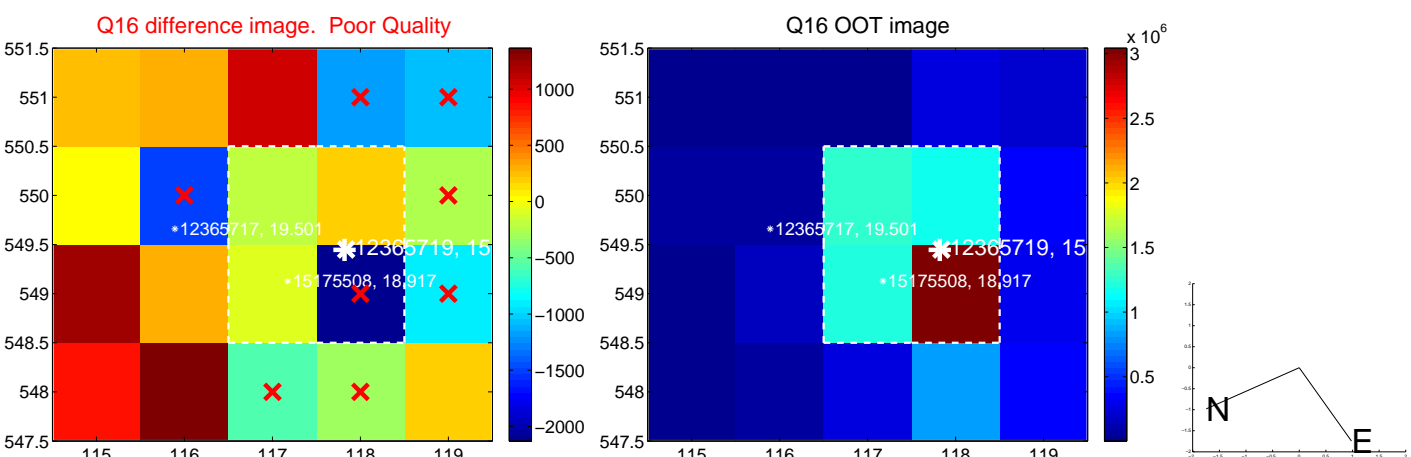
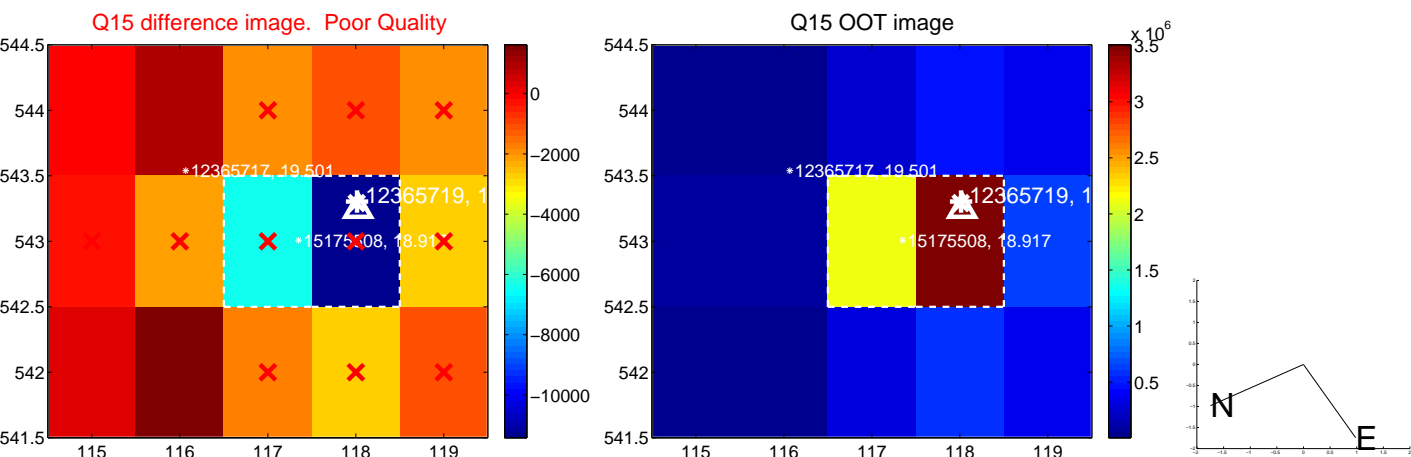
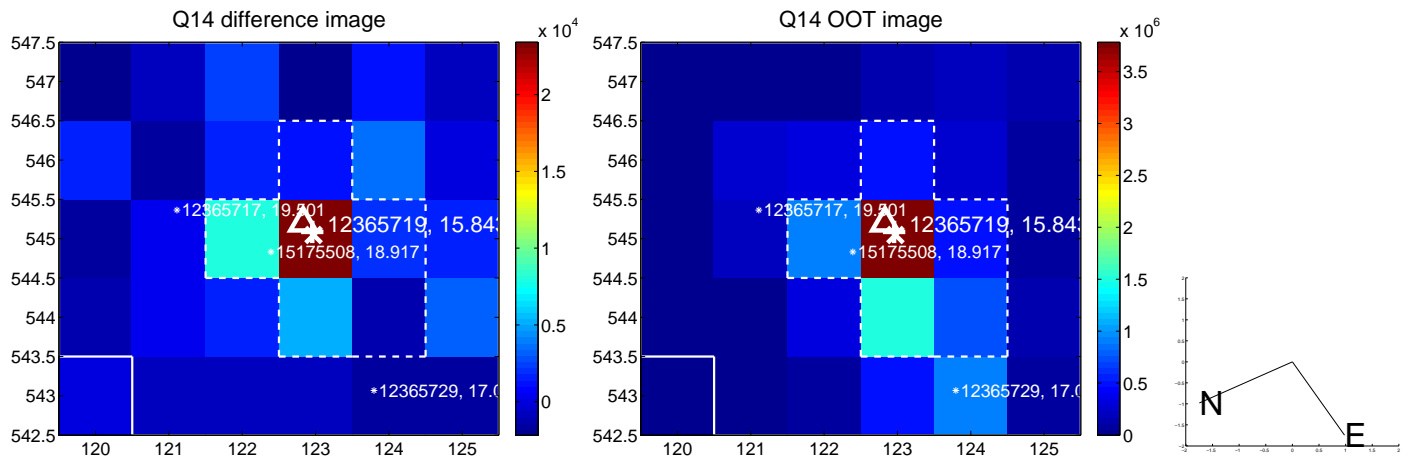
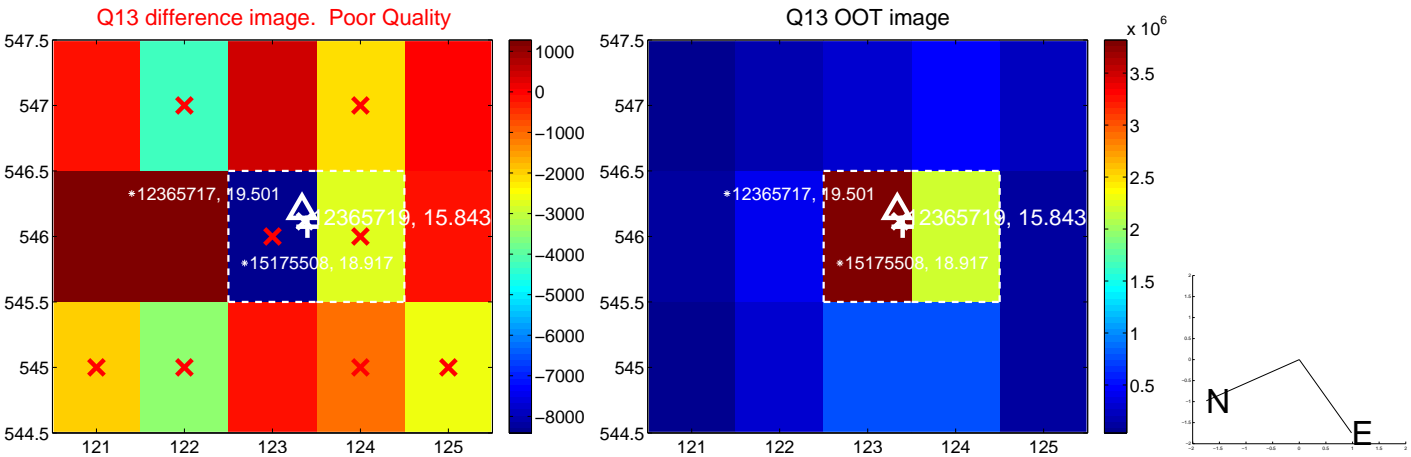


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

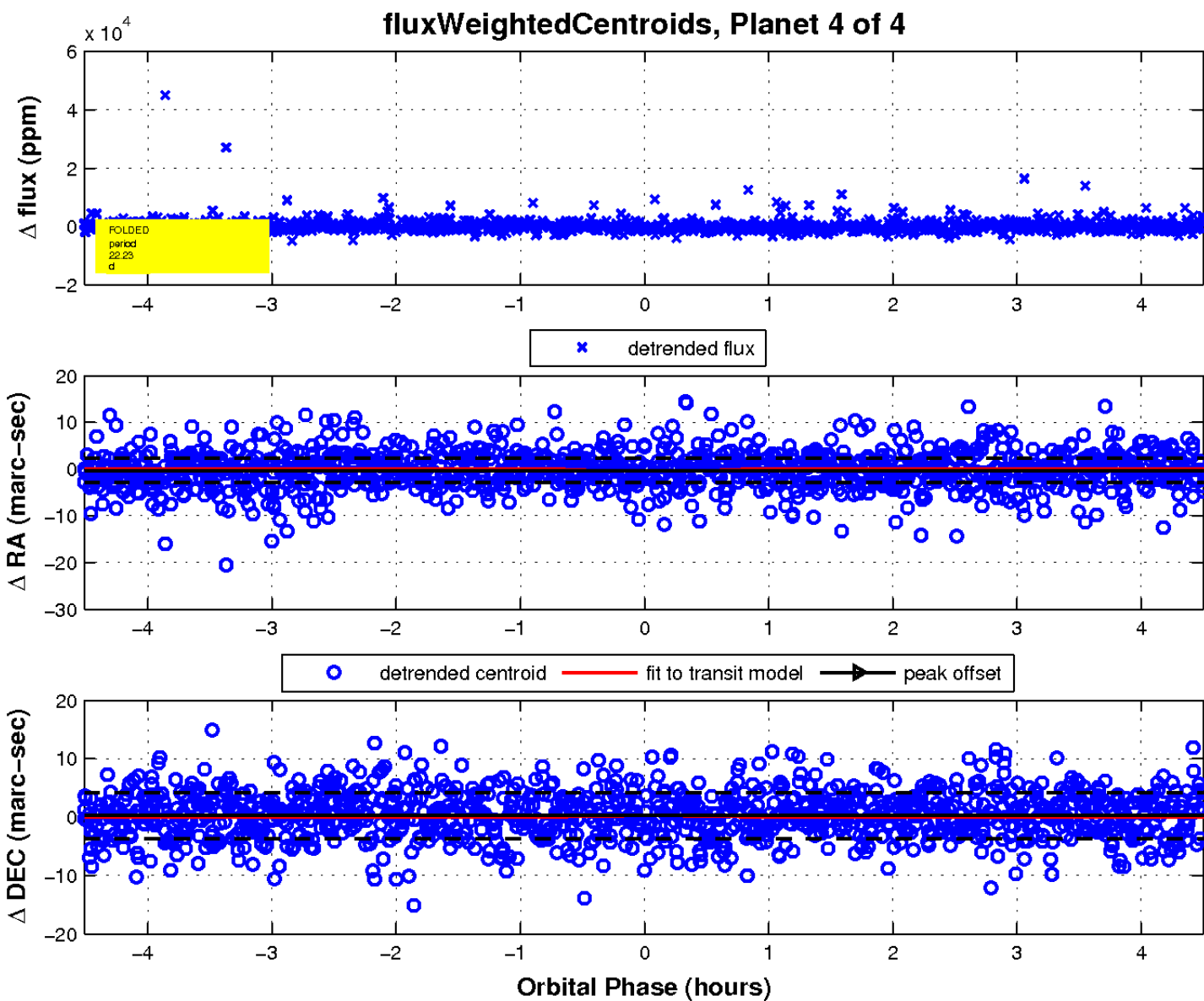
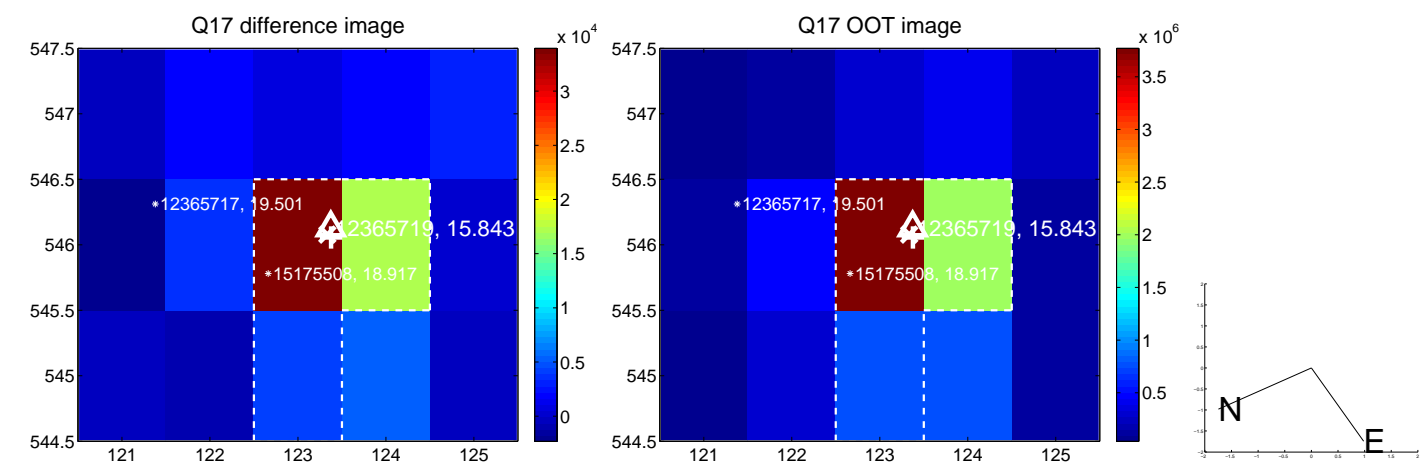




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

