

# KIC 005982378

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005982378-01	OBS	No	0.583978	131.604074	118.4	1.432	9.8	9.6	1.85	7246	2.10	34846.99
005982378-02	OBS	No	0.583974	132.041575	81.1	1.163	9.4	6.5	1.85	7246	1.74	34847.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005982378-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005982378-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

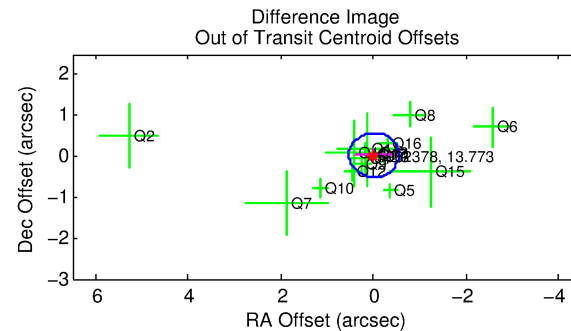
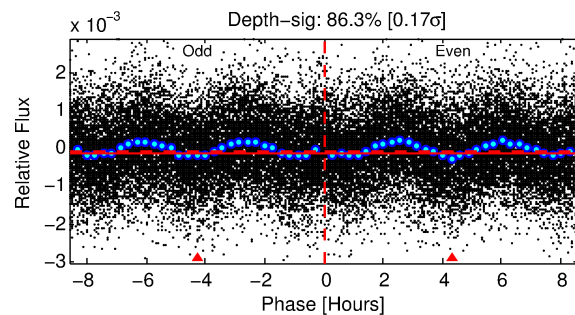
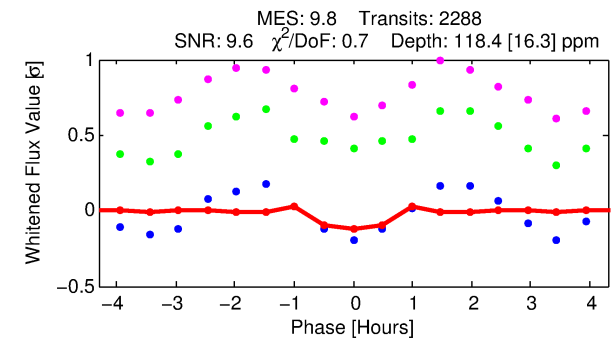
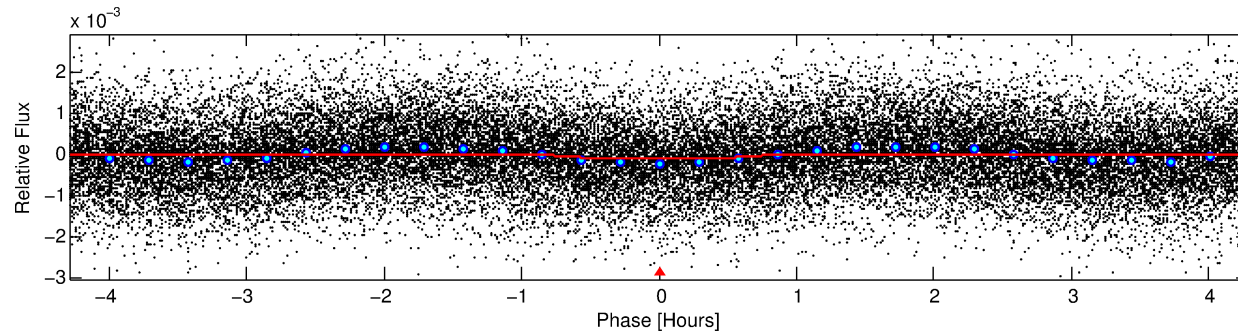
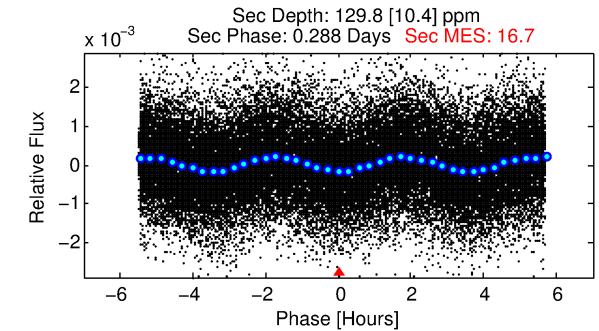
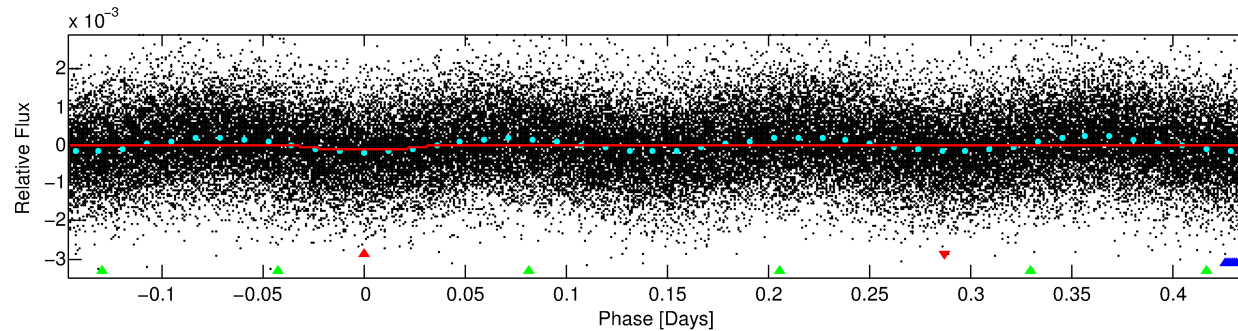
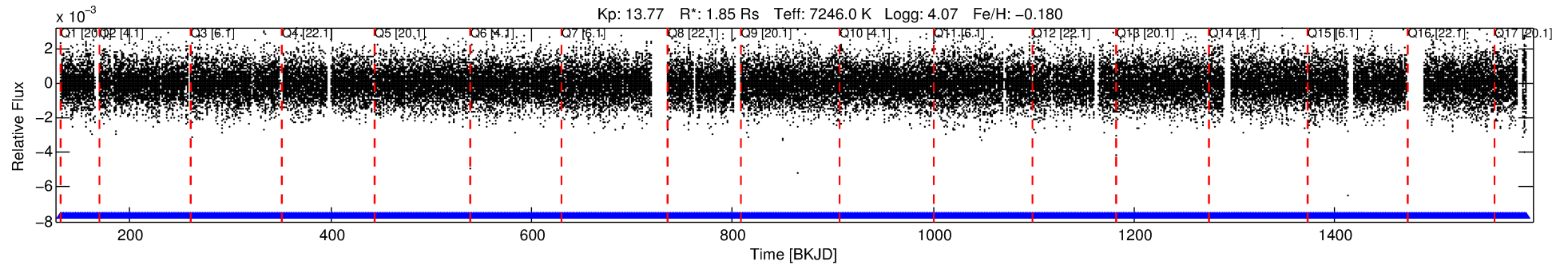
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005982378-01

No Significant Match Found

# DV One-Page Summary

KIC: 5982378 Candidate: 1 of 3 Period: 0.584 d



## DV Fit Results:

Period = 0.58398 [0.00001] d  
Epoch = 131.6041 [0.0014] BKJD  
Rp/R\* = 0.0104 [0.0029]  
a/R\* = 2.85 [4.10]  
b = 0.48 [2.61]  
Seff = 34846.99 [14093.81]  
Teq = 3484 [352] K  
Rp = 2.10 [0.83] Re  
a = 0.0156 [0.0037] AU  
Ag = 3.96 [2.65] [1.12σ]  
Teffp = 7597 [1138] K [3.45σ]

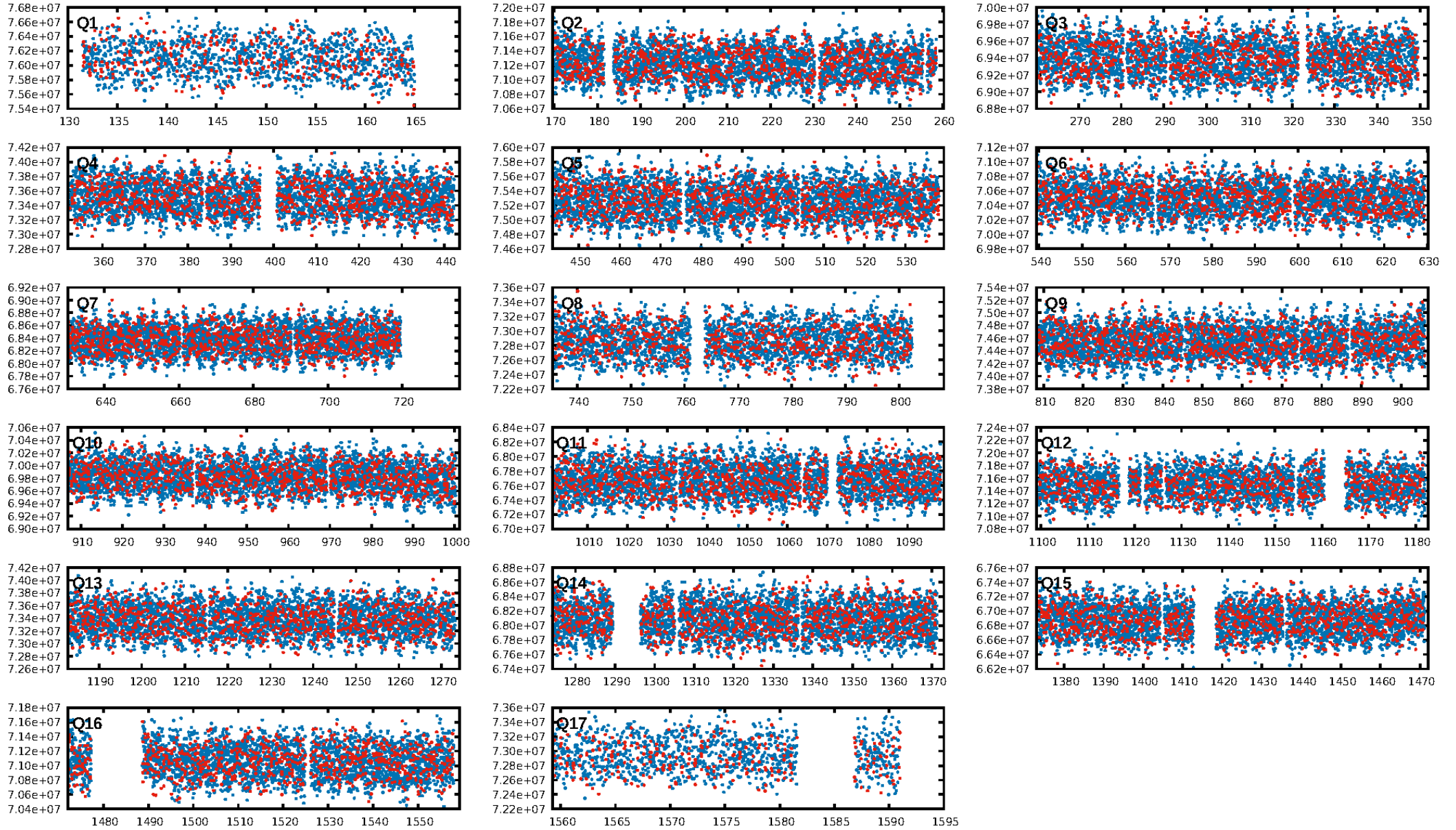
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [3339.68σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.59e-18  
RollingBand-fgt: 1.00 [2183/2183]  
GhostDiagnostic-chr: 1.789  
Centroid-sig: 7.9%  
Centroid-so: 0.335 arcsec [1.18σ]  
OotOffset-rm: 0.035 arcsec [0.19σ]  
KicOffset-rm: 0.058 arcsec [0.15σ]  
OotOffset-st: 4/4/4 [16]  
KicOffset-st: 4/4/4 [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: 31-Jan-2016 15:49:54 Z

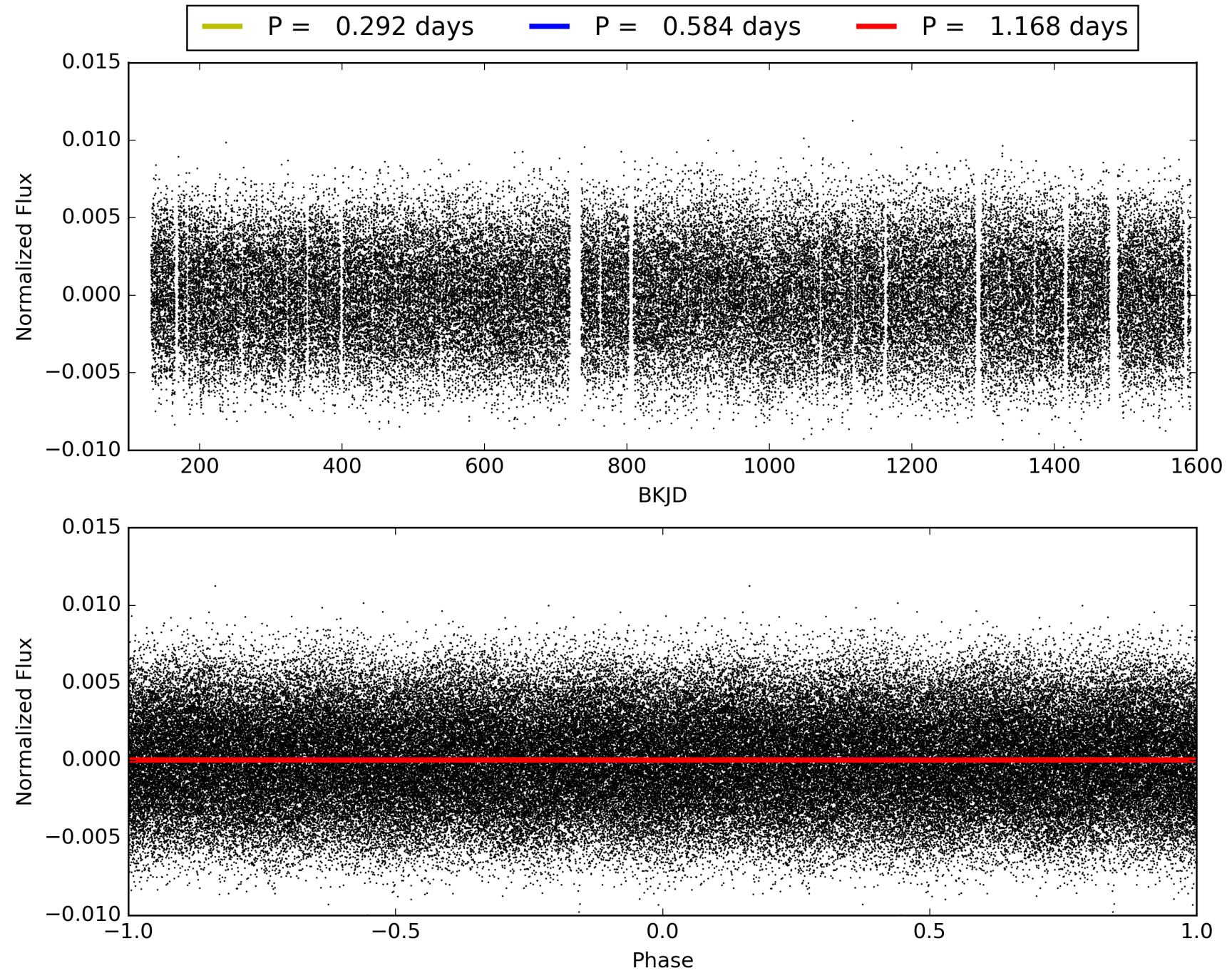
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005982378-01, PDC Light Curves



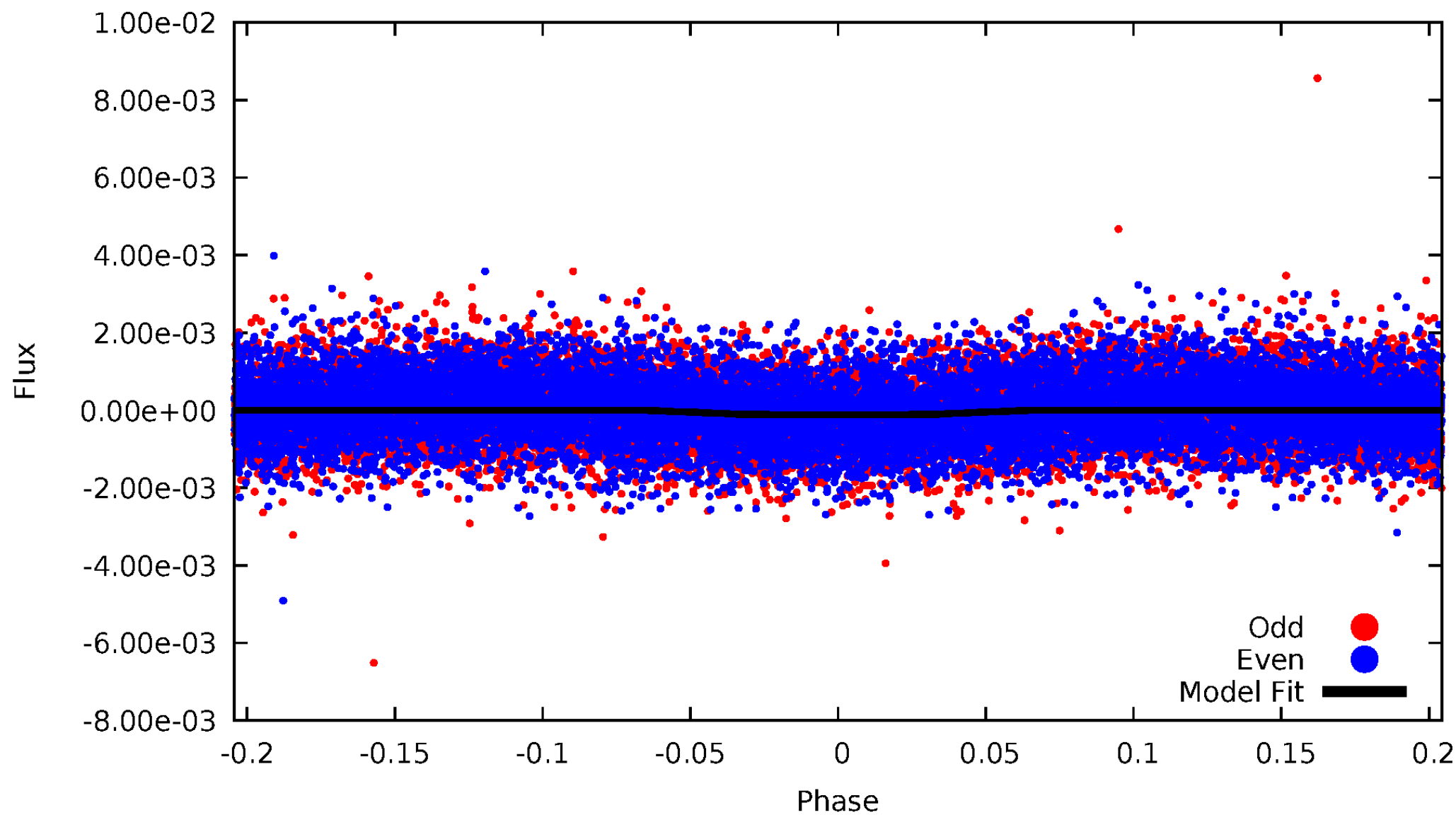


TCE 005982378-01



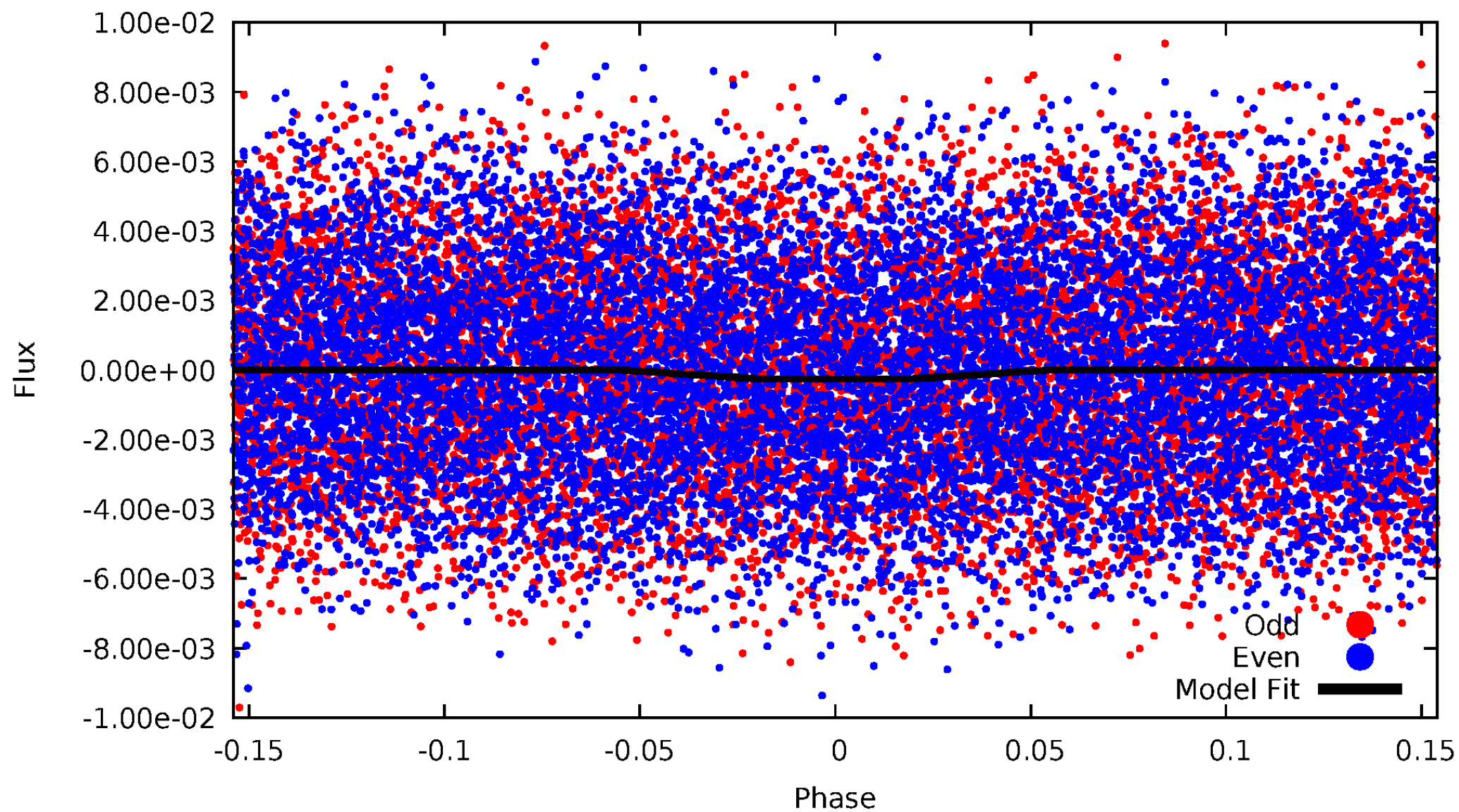
# DV Odd/Even

TCE 005982378-01

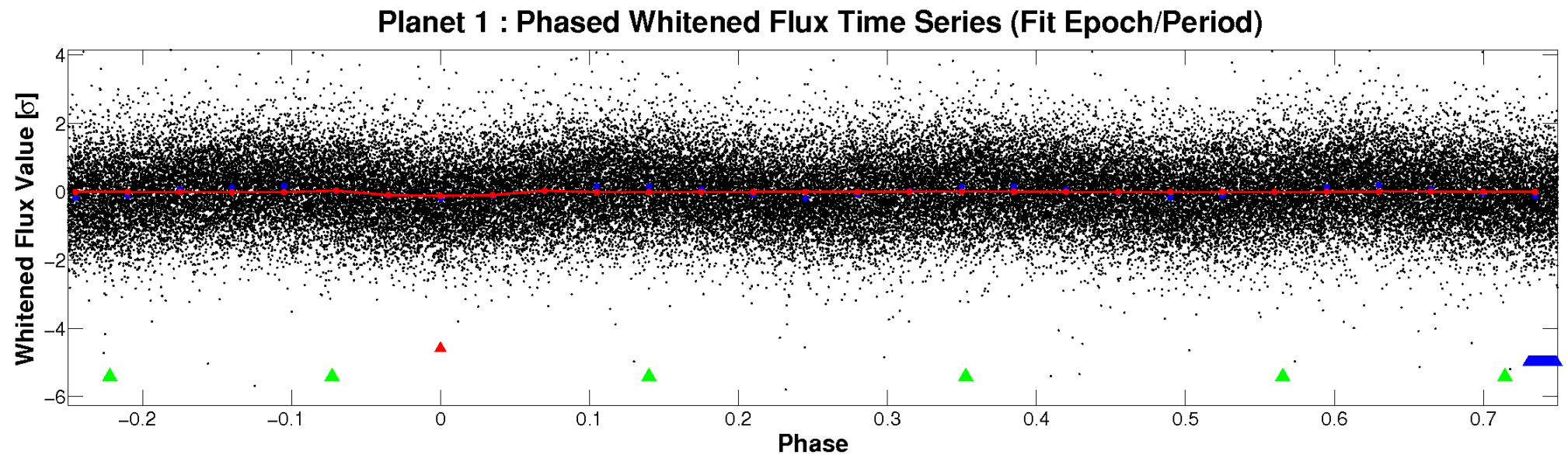
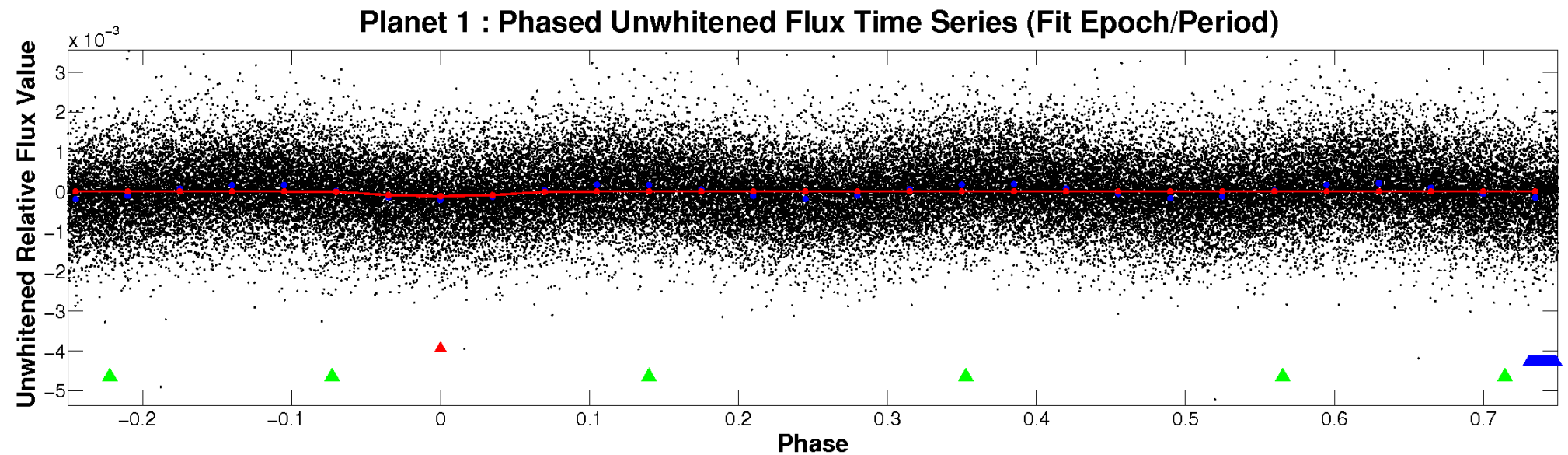


# ALT Odd/Even

TCE 005982378-01



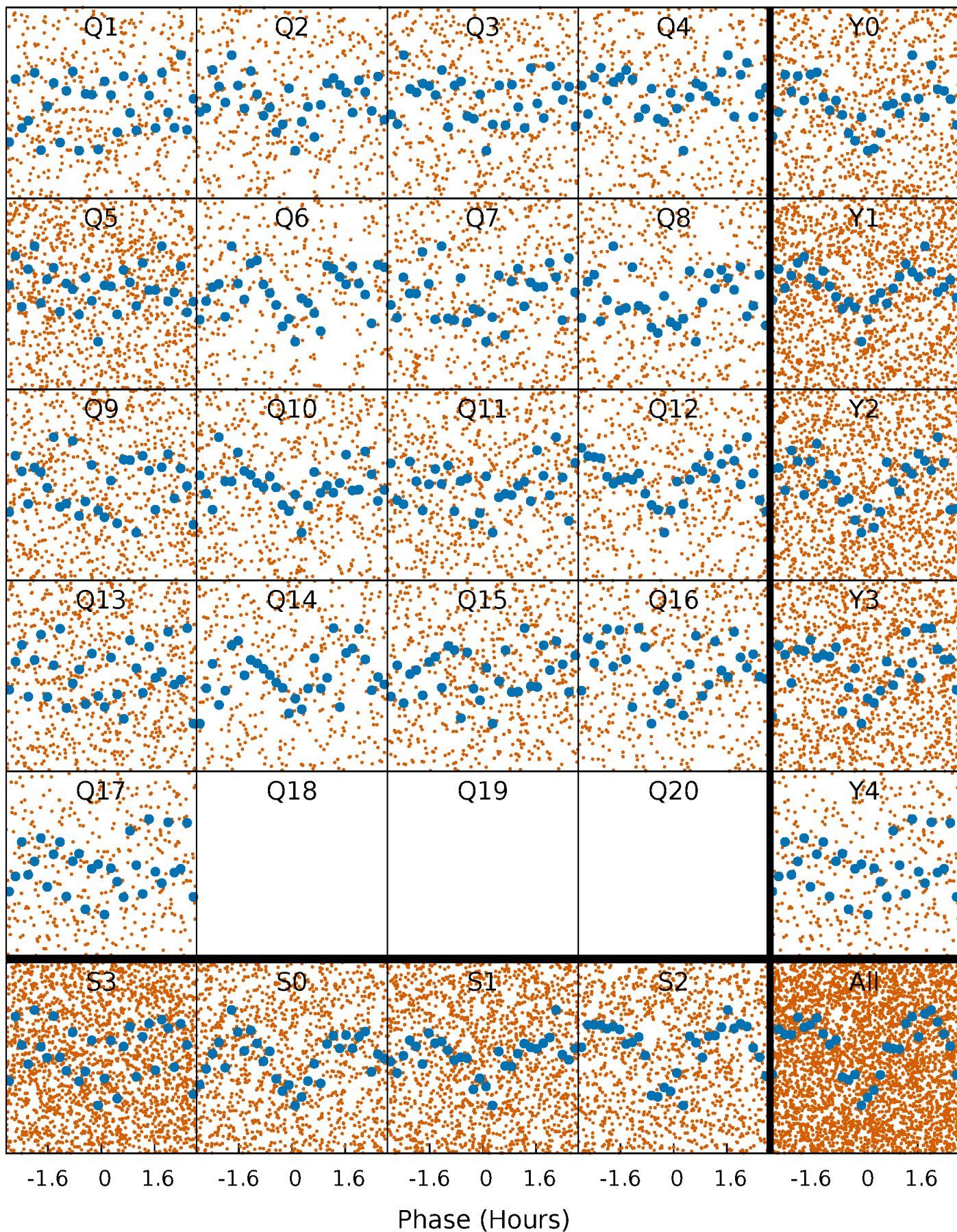
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

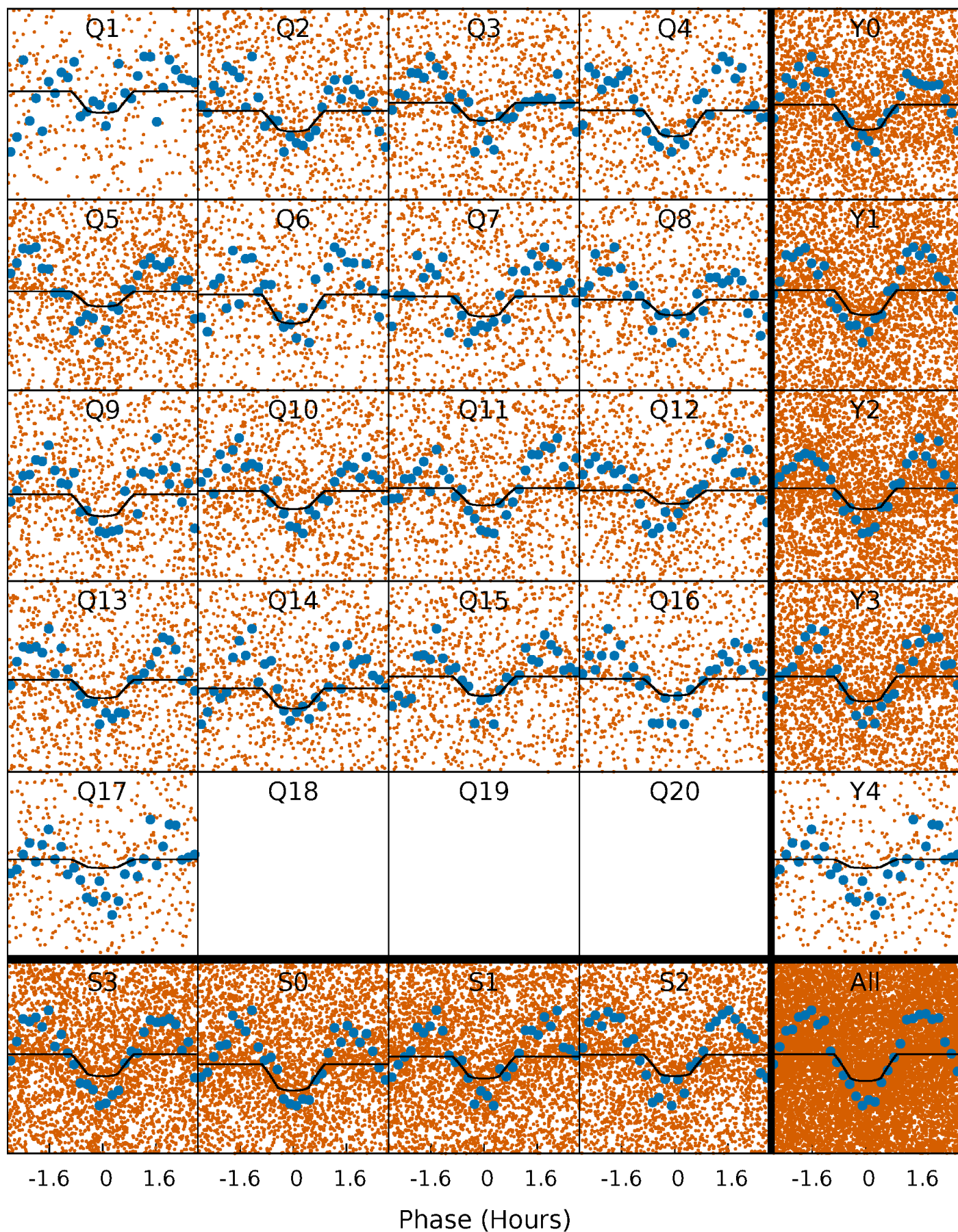
TCE 005982378-01 P= 0.583978 Days  $T_0=131.604074$  (BKJD)





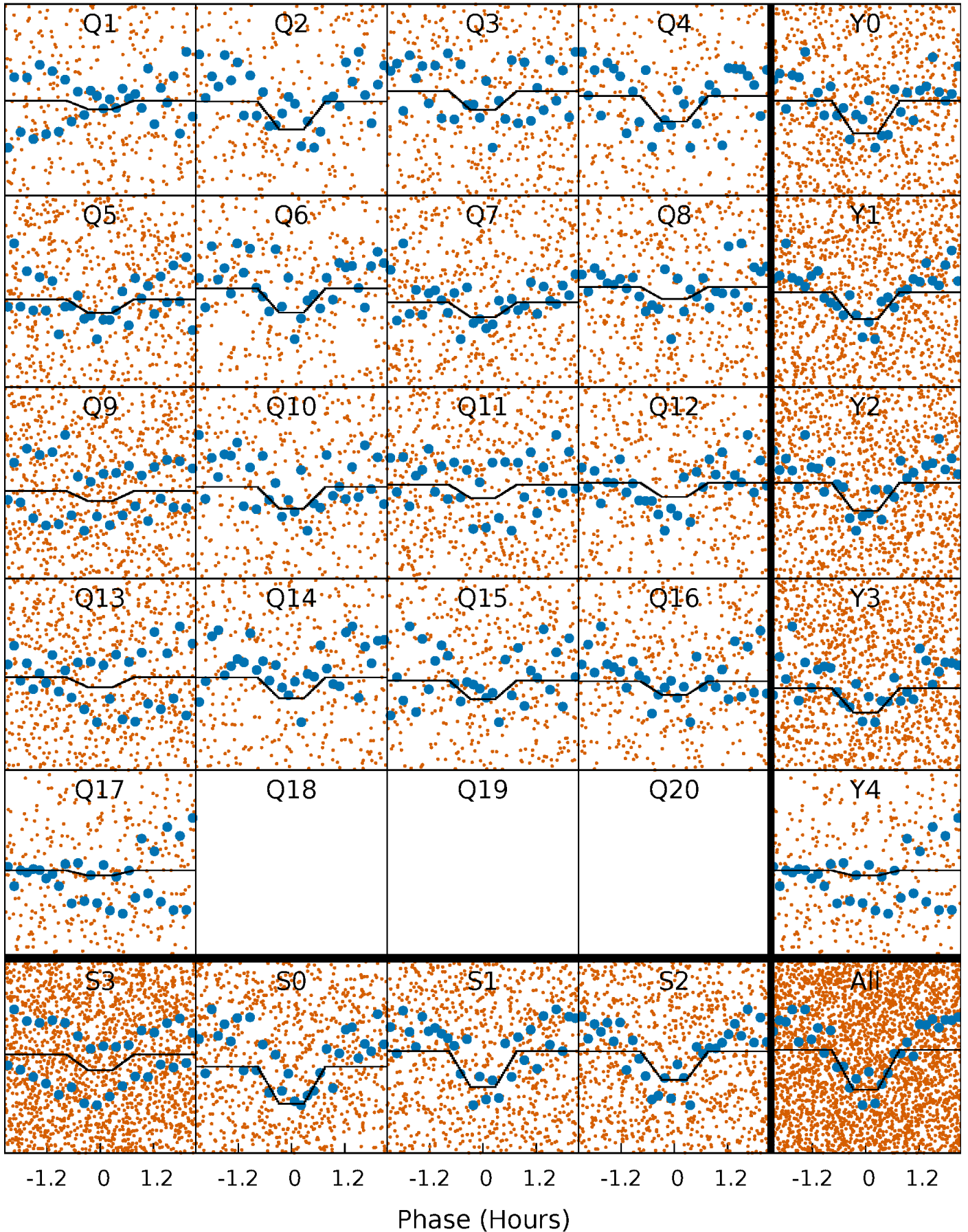
# DV Quarter-Phased Transit Curves

TCE 005982378-01 P= 0.583978 Days  $T_0=131.604074$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

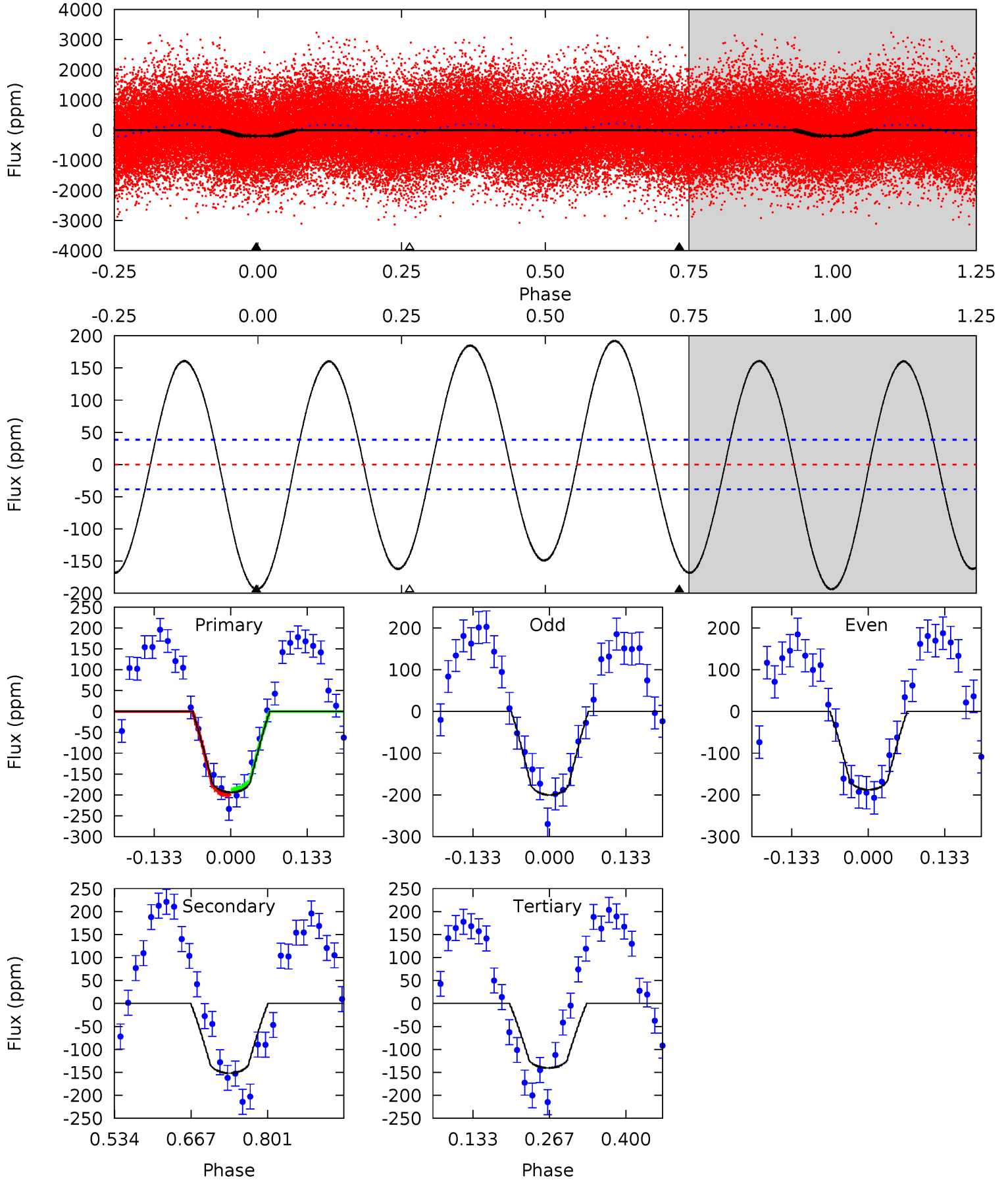
TCE 005982378-01 P= 0.583979 Days  $T_0=131.600653$  (BKJD)



# DV Model-Shift Uniqueness Test

005982378-01, P = 0.583978 Days, E = 131.020096 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
22.7	17.7	16.4	0	4.50	1.50	13.5	6.25	22.7	1.34	17.7	0.73	1.19	0.50	0.62

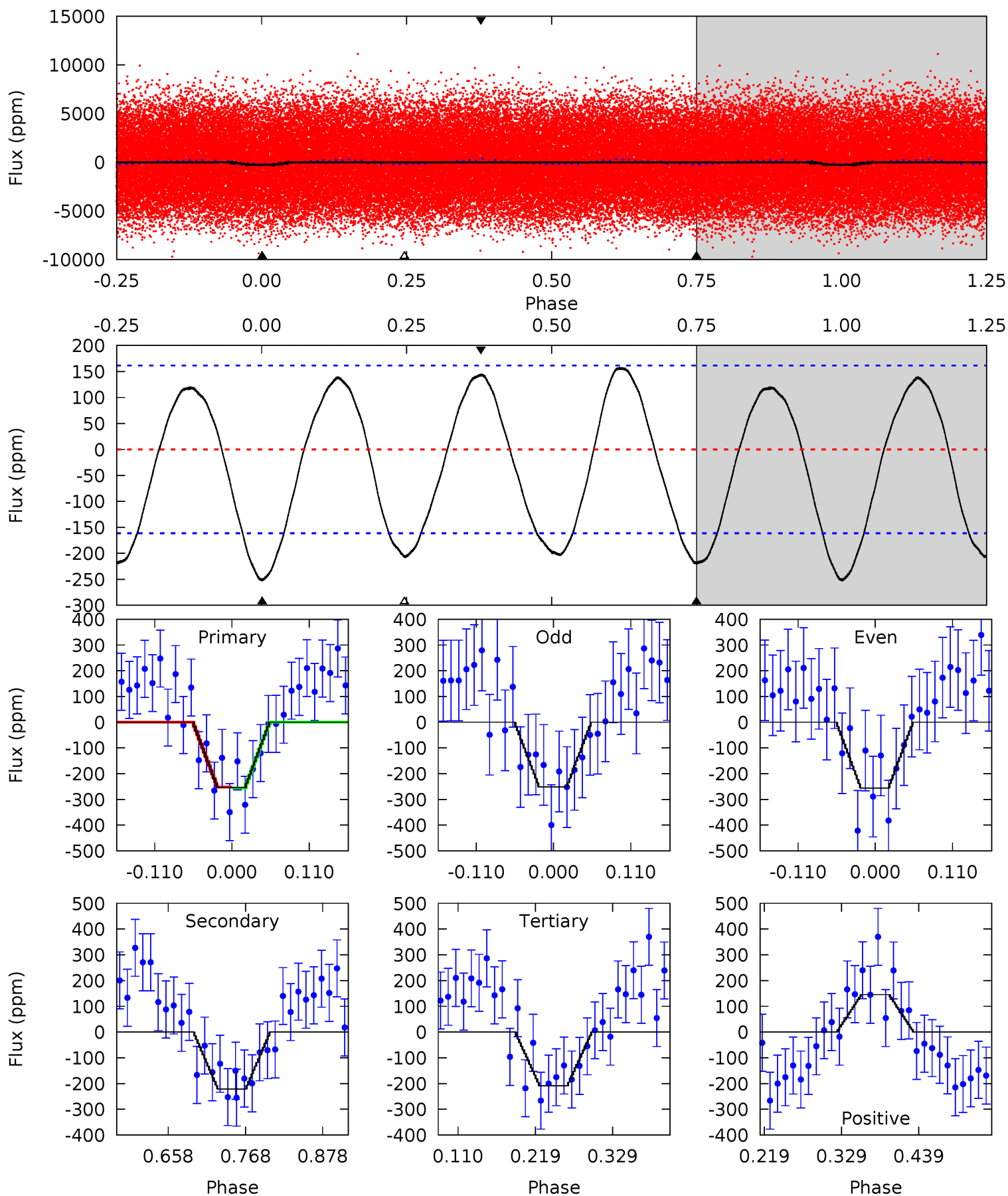




# Alt Model-Shift Uniqueness Test

005982378-01, P = 0.583979 Days, E = 131.016674 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
7.14	6.23	5.88	4.10	4.55	1.60	3.58	1.26	3.04	0.36	2.13	0.06	0.88	0.39	0.05



### Stellar Parameters For KIC 005982378

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7246^{+232}_{-348}$	$4.074^{+0.198}_{-0.162}$	$-0.180^{+0.250}_{-0.350}$	$1.854^{+0.515}_{-0.464}$	$1.487^{+0.211}_{-0.281}$	$0.329^{+0.390}_{-0.157}$
	+3%/-5%	+5%/-4%	+139%/-194%	+28%/-25%	+14%/-19%	+119%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005982378-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-152 \pm 9$	$2.07^{+0.69}_{-0.66}$	$4860^{+346}_{-393}$	$7841^{+2092}_{-1203}$	$4.730^{+5.270}_{-2.128}$
Alt.	$-221 \pm 36$	$3.13^{+0.79}_{-0.69}$	$4814^{+386}_{-377}$	$6727^{+988}_{-788}$	$2.968^{+1.903}_{-1.186}$

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

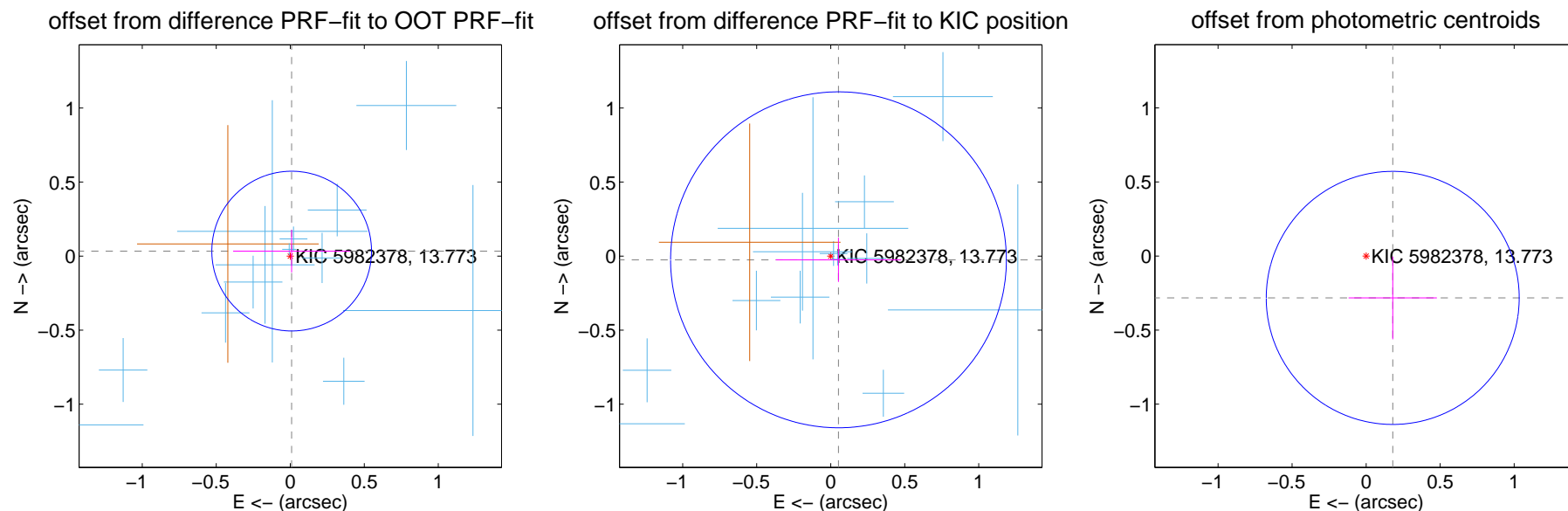
## DV Centroid Data

Supplemental centroid analysis for 005982378-01. Kepler magnitude: 13.77. Transit SNR 9.65

There are 13 quarters with good PRF difference image offsets

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

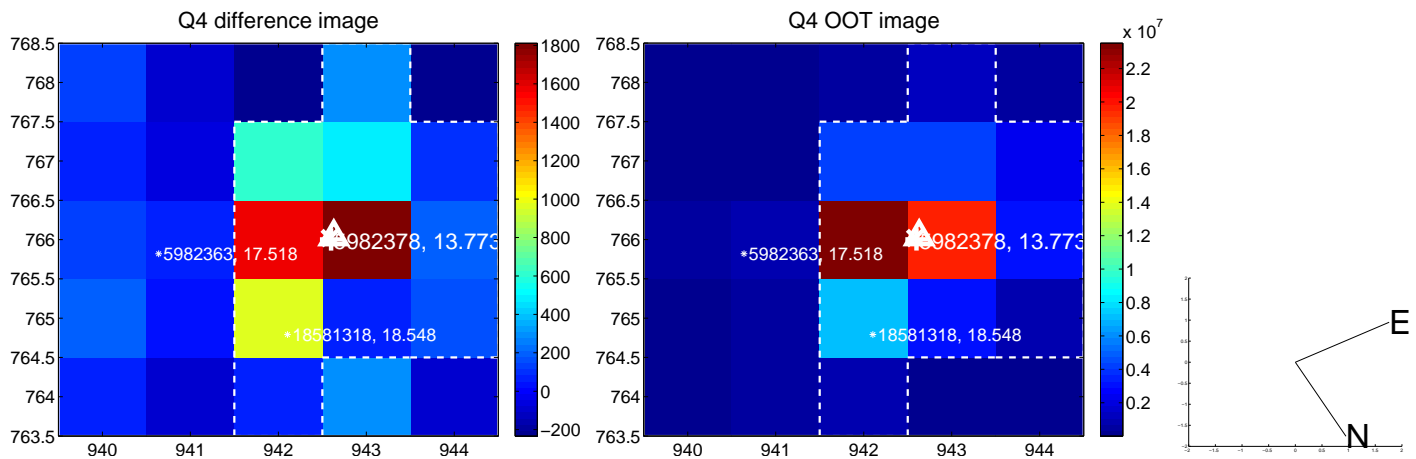
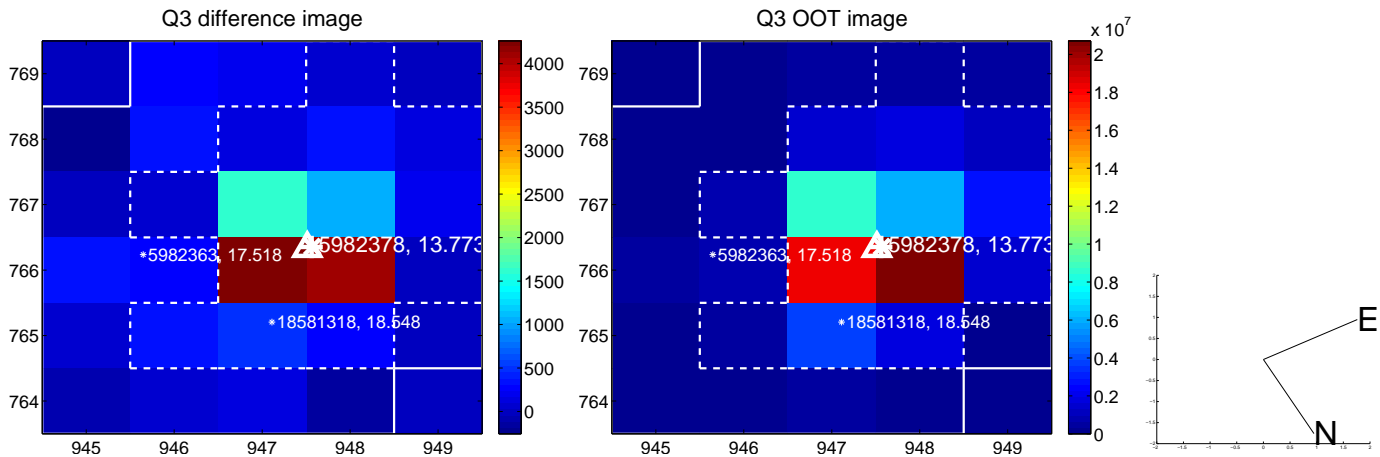
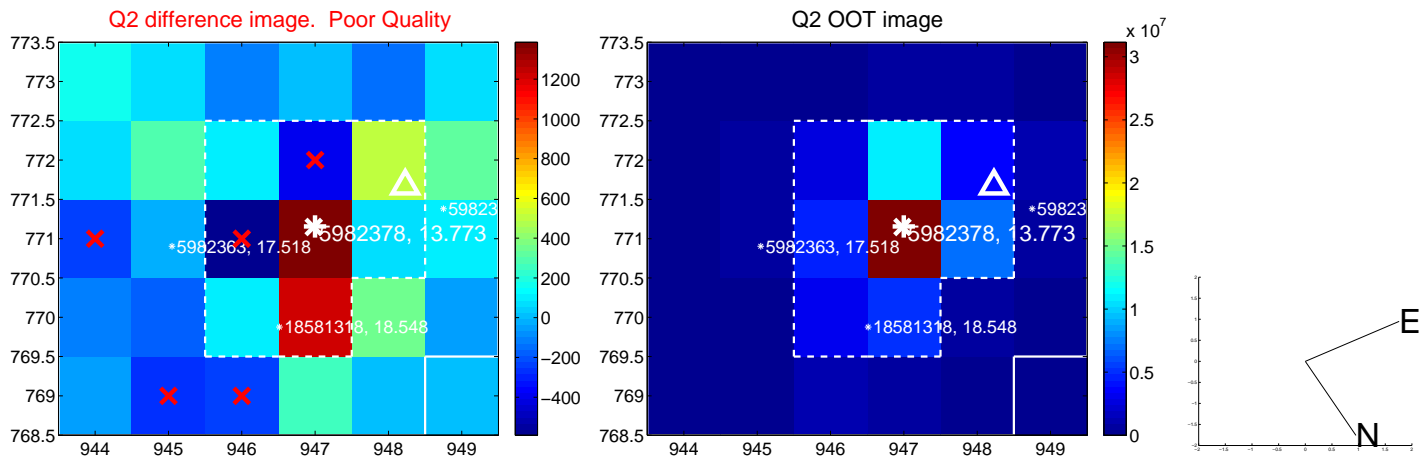
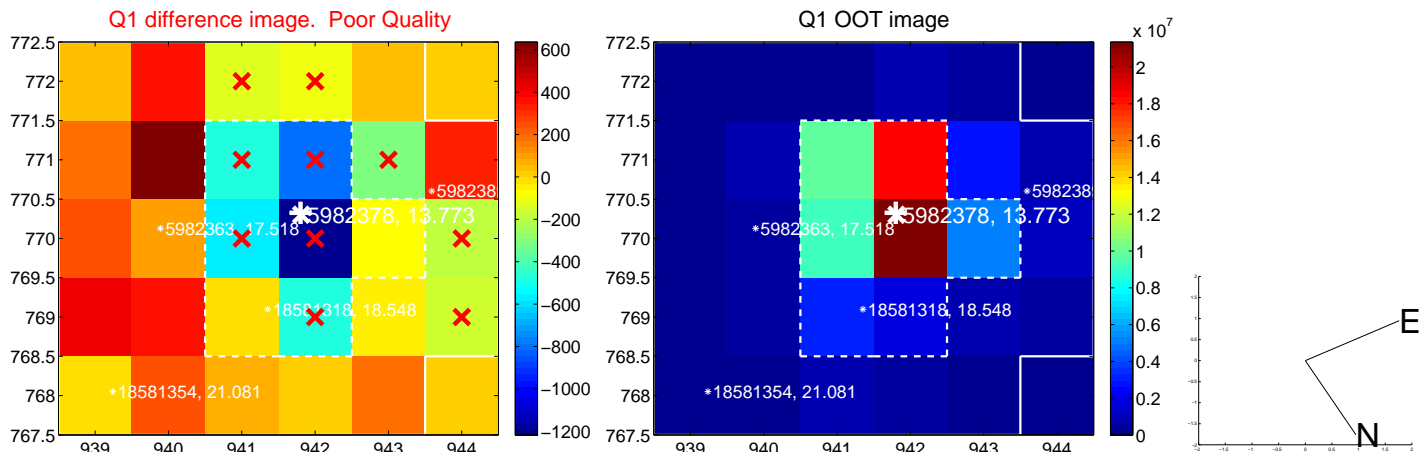
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.035 \pm 0.180$	0.19	$-0.009 \pm 0.396$	$0.034 \pm 0.143$
PRF-fit source offset from KIC position	$0.058 \pm 0.378$	0.15	$-0.052 \pm 0.423$	$-0.025 \pm 0.149$
photometric centroid source offset	$0.34 \pm 0.28$	1.18	$-0.18 \pm 0.30$	$-0.28 \pm 0.28$



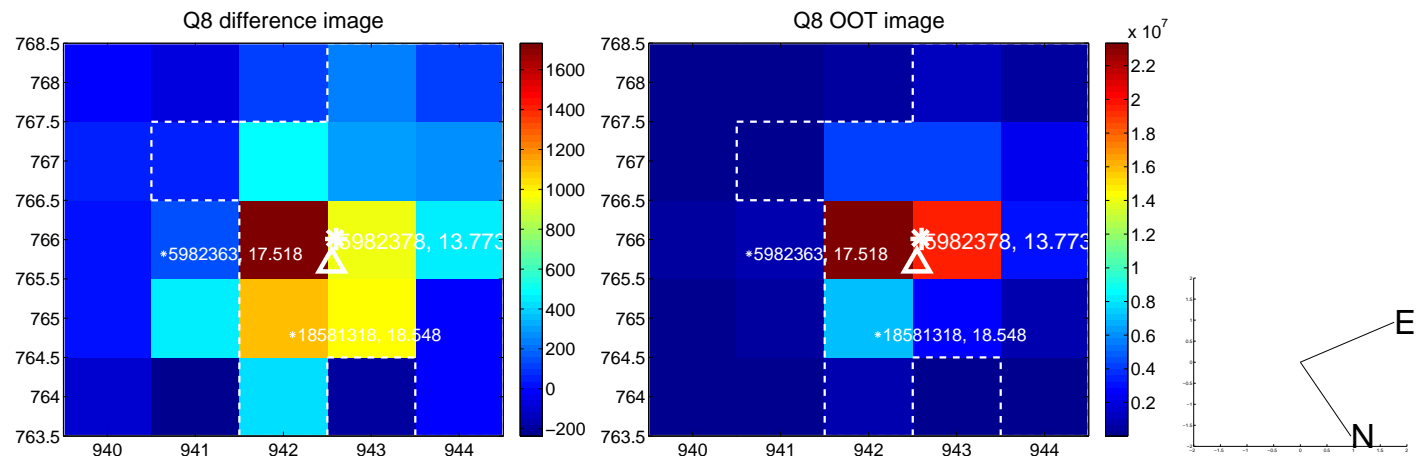
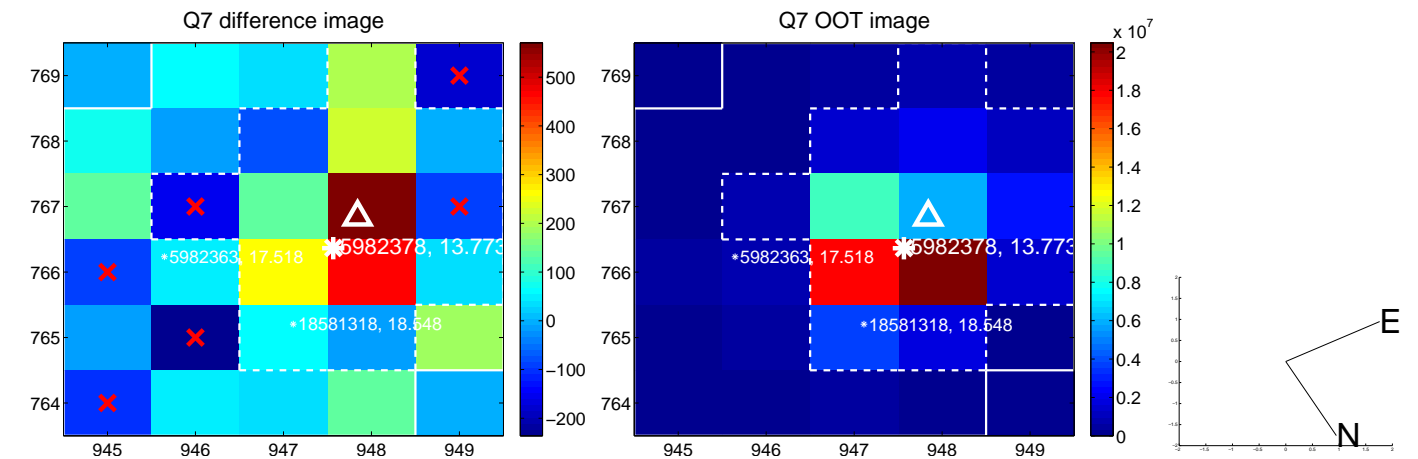
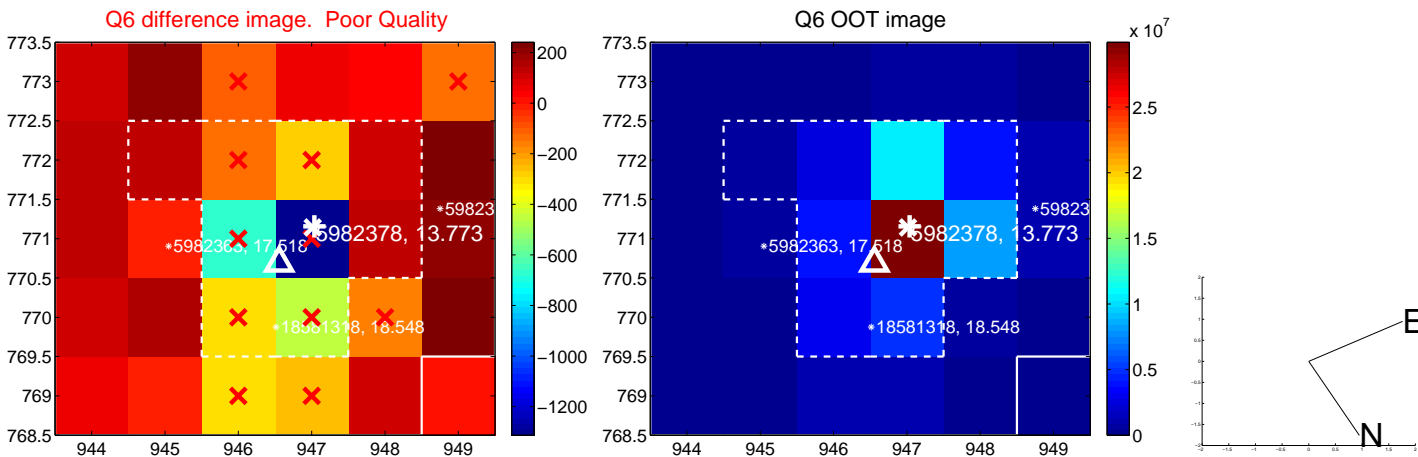
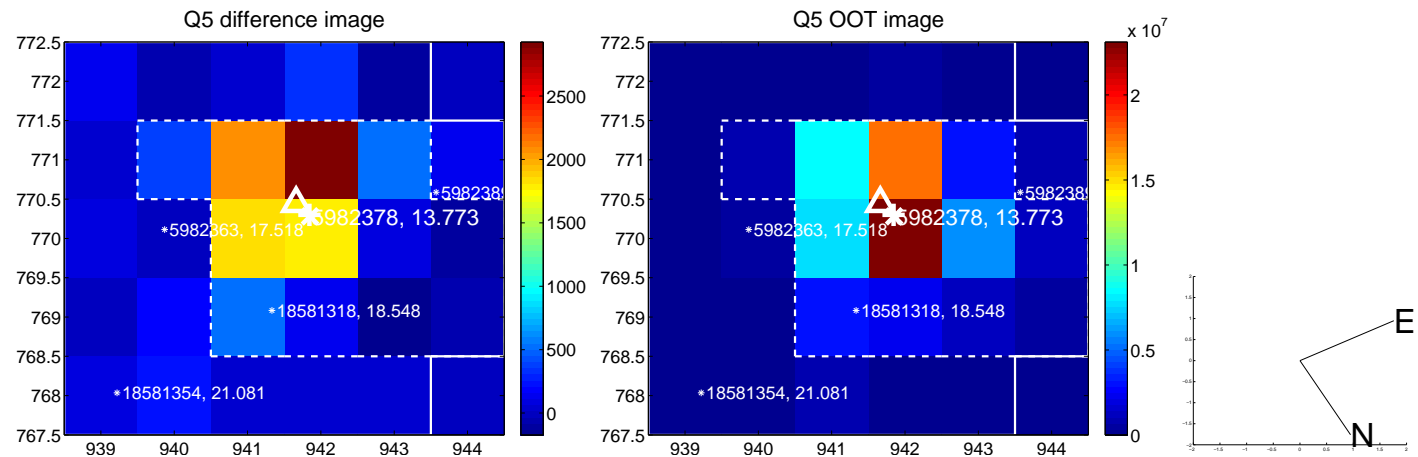
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

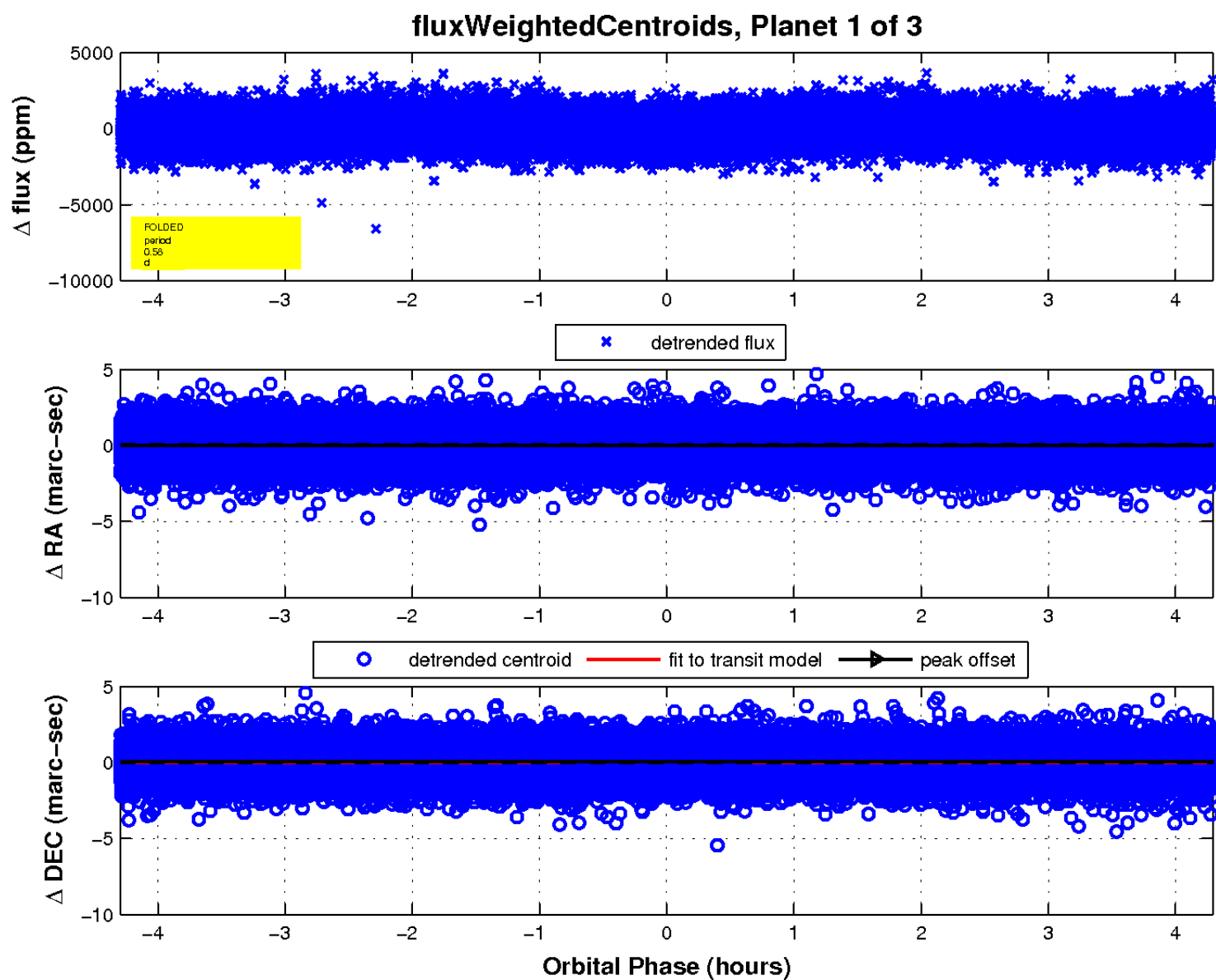
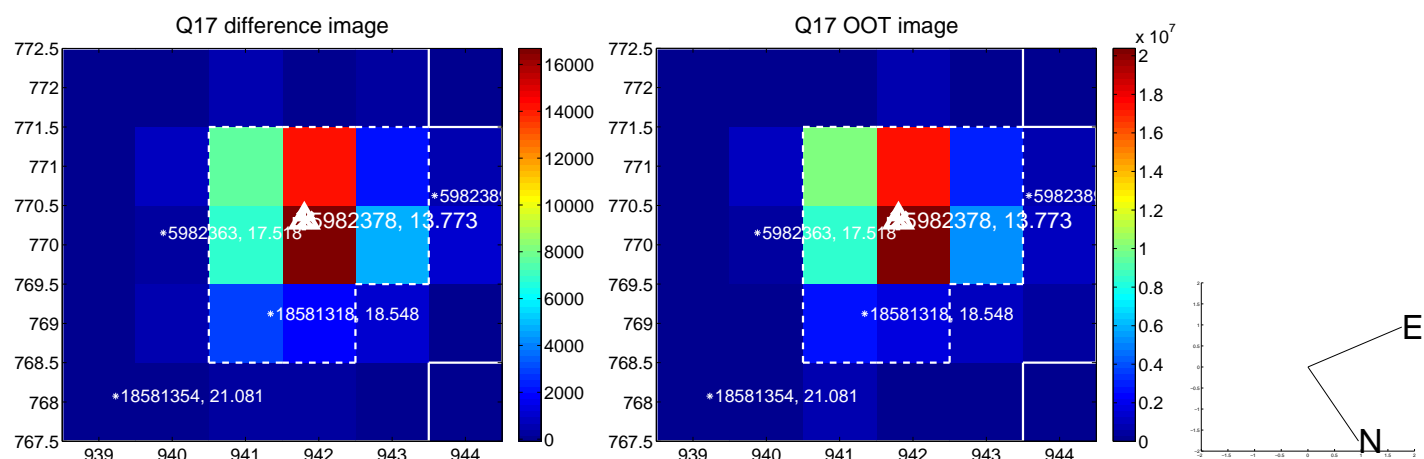






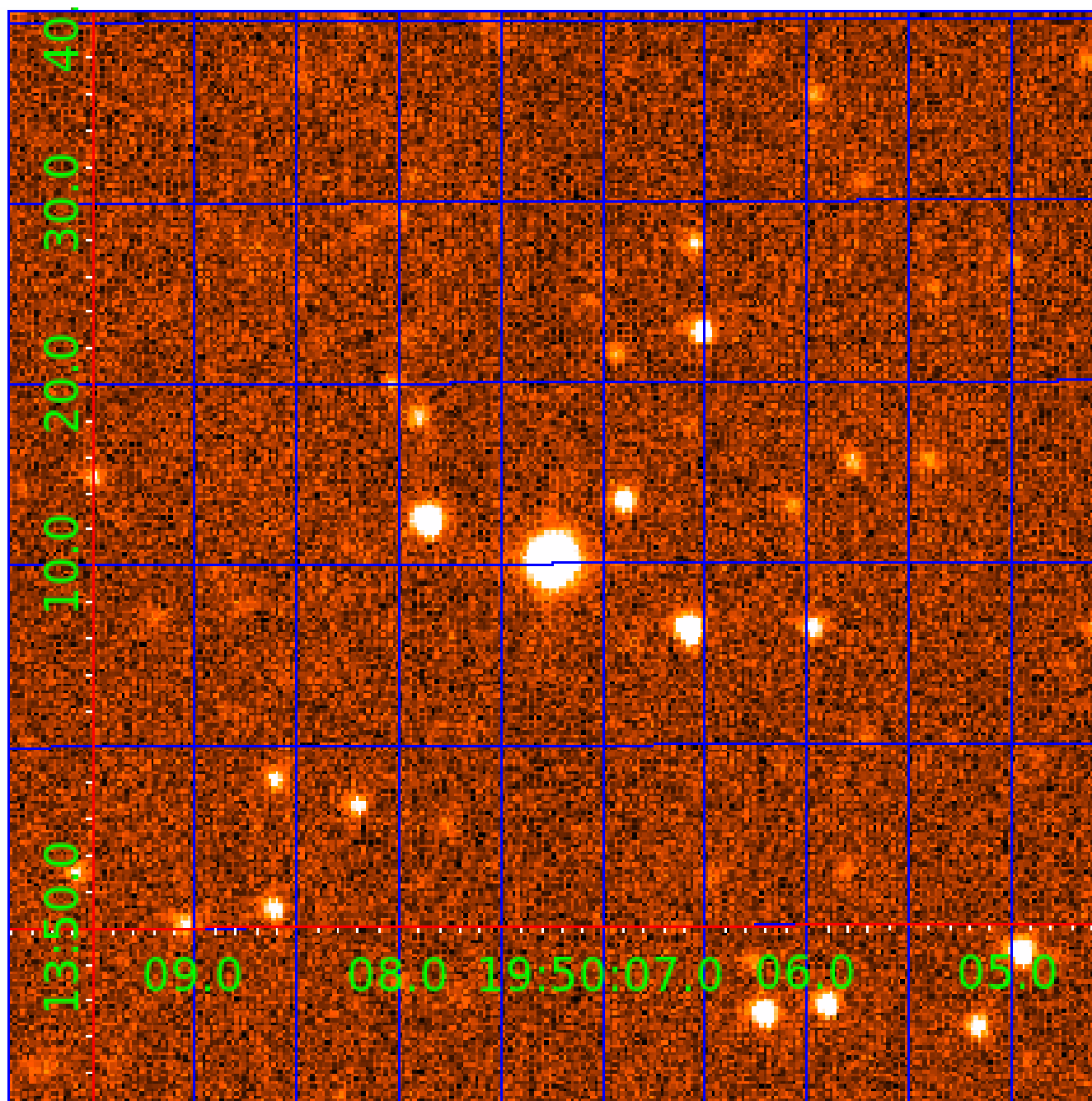


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 005982378

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005982378-01	OBS	No	0.583978	131.604074	118.4	1.432	9.8	9.6	1.85	7246	2.10	34846.99
005982378-02	OBS	No	0.583974	132.041575	81.1	1.163	9.4	6.5	1.85	7246	1.74	34847.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005982378-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005982378-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

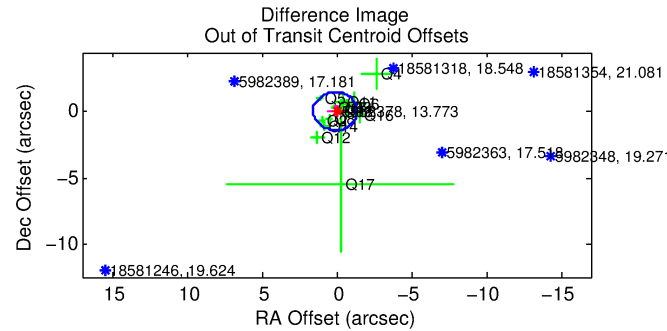
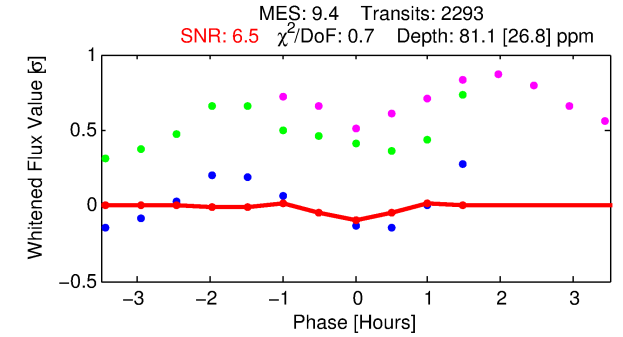
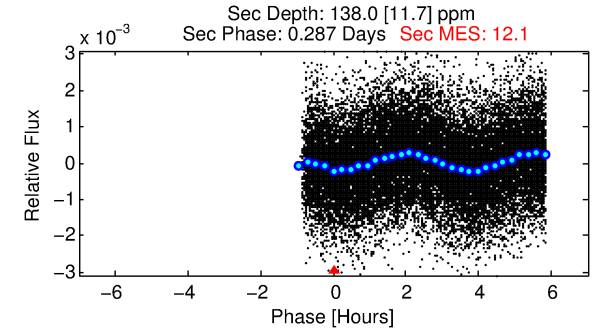
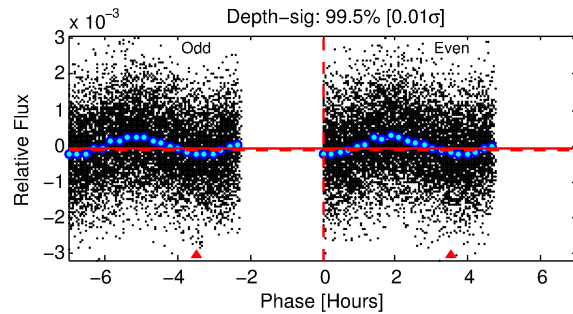
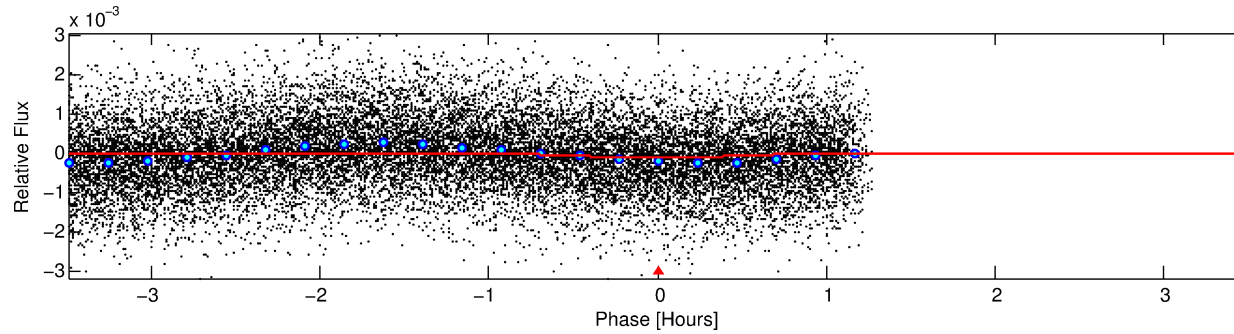
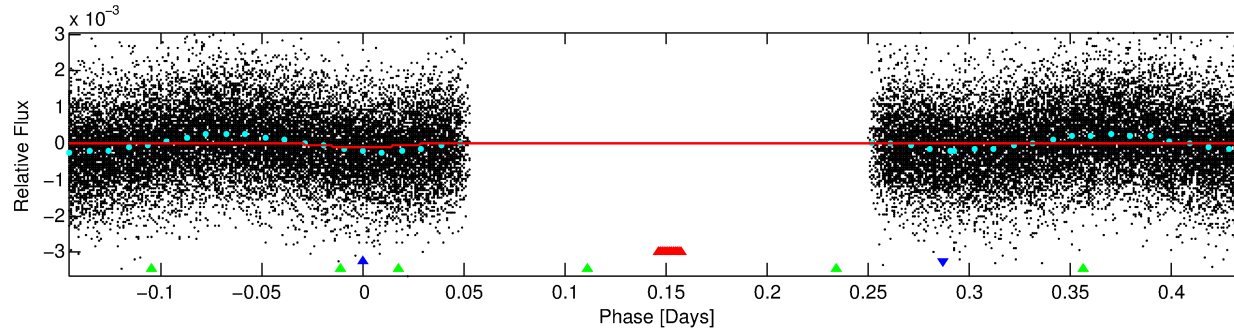
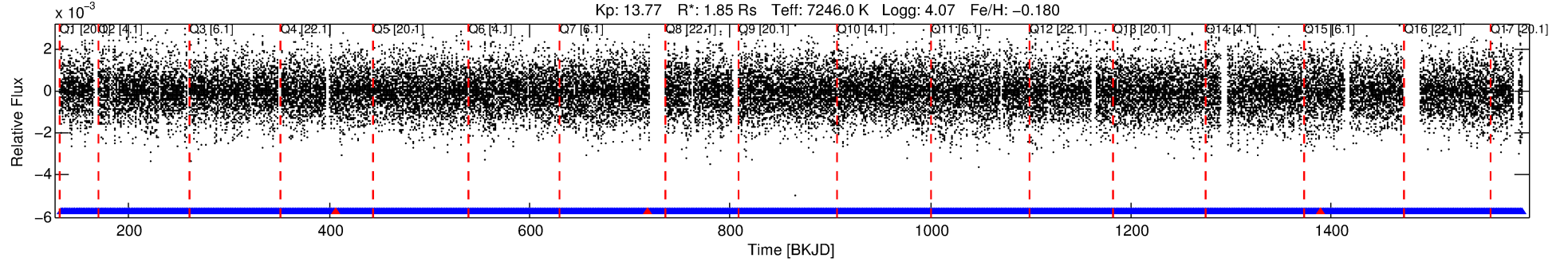
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005982378-02

No Significant Match Found

# DV One-Page Summary

KIC: 5982378 Candidate: 2 of 3 Period: 0.584 d



## DV Fit Results:

Period = 0.58397 [0.00003] d  
Epoch = 132.0416 [0.0021] BKJD  
Rp/R\* = 0.0086 [0.0040]  
a/R\* = 3.43 [8.19]  
b = 0.50 [3.93]  
Seff = 34847.34 [14093.95]  
Teq = 3484 [352] K  
Rp = 1.74 [0.94] Re  
a = 0.0156 [0.0037] AU  
Ag = 6.09 [6.09] [0.84σ]  
Teffp = 8463 [2016] K [2.43σ]

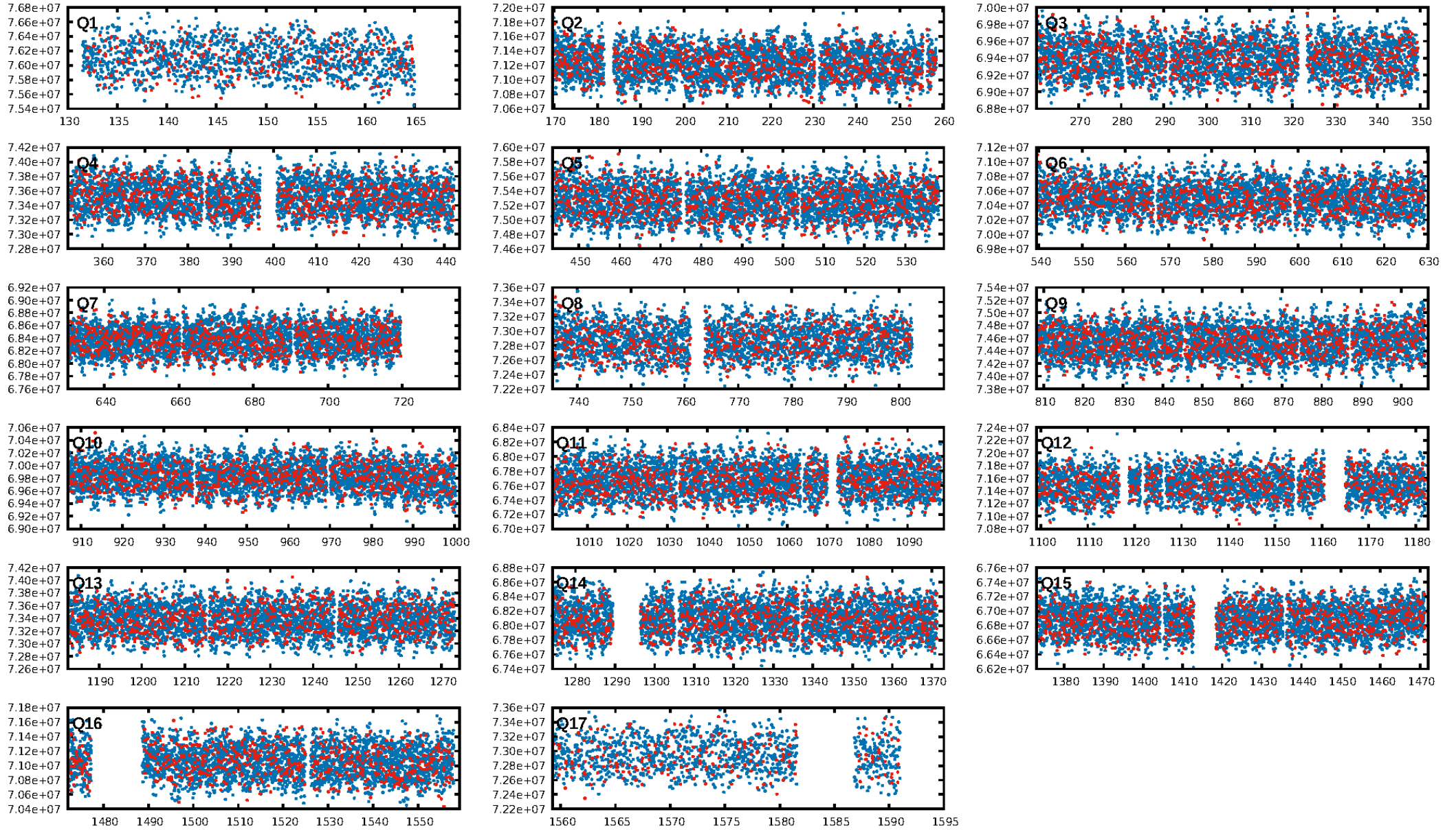
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.62e-17  
RollingBand-fgt: 1.00 [2187/2190]  
GhostDiagnostic-chr: 0.8145  
Centroid-sig: 50.1%  
Centroid-so: 0.243 arcsec [0.54σ]  
OotOffset-rm: 0.112 arcsec [0.23σ]  
OotOffset-st: 3/3/4/5 [15]  
KicOffset-rm: 0.107 arcsec [0.21σ]  
KicOffset-st: 3/3/4/5 [15]  
DiffImageQuality-fgm: 0.60 [9/15]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:50:04 Z

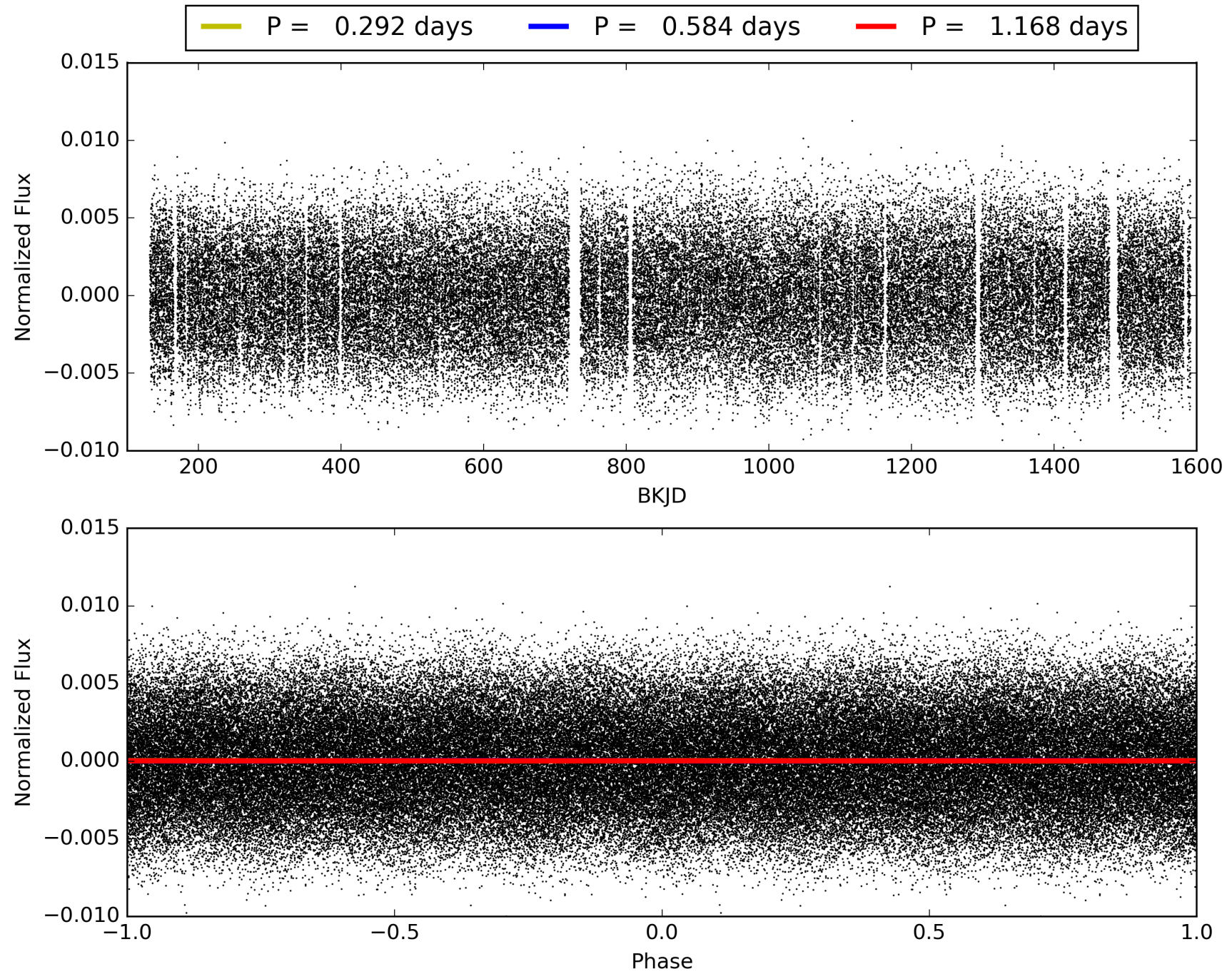
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005982378-02, PDC Light Curves



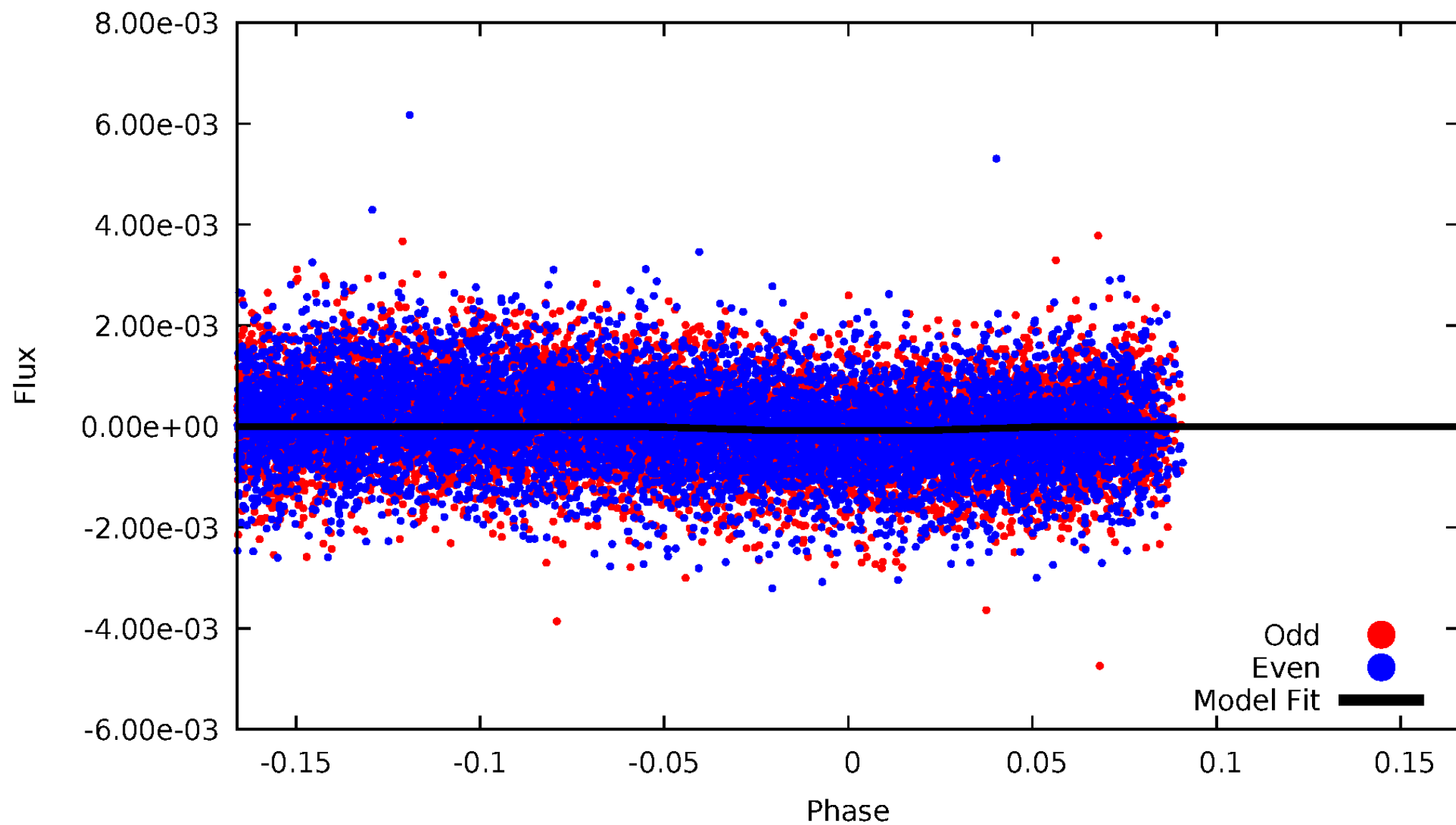


TCE 005982378-02



# DV Odd/Even

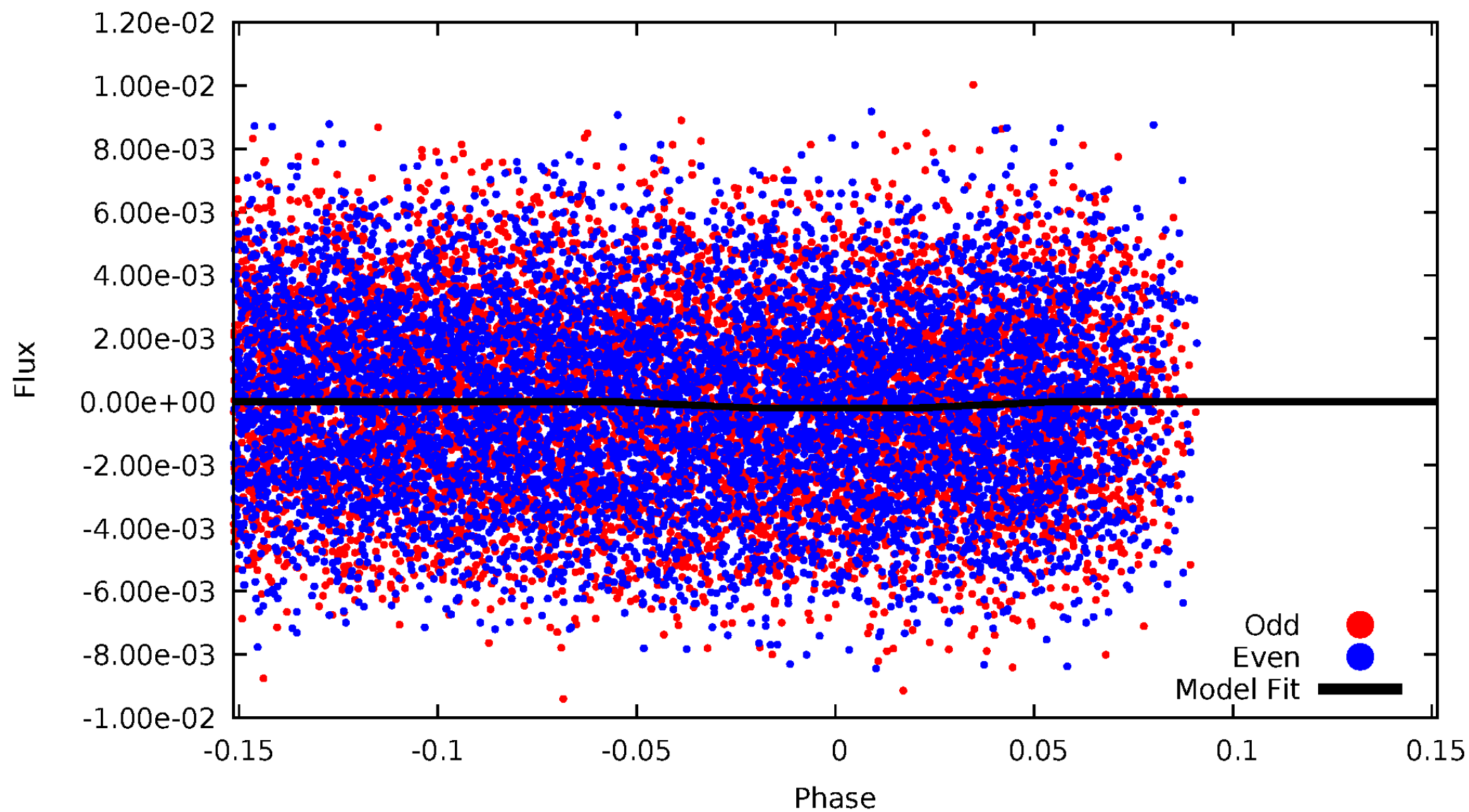
TCE 005982378-02





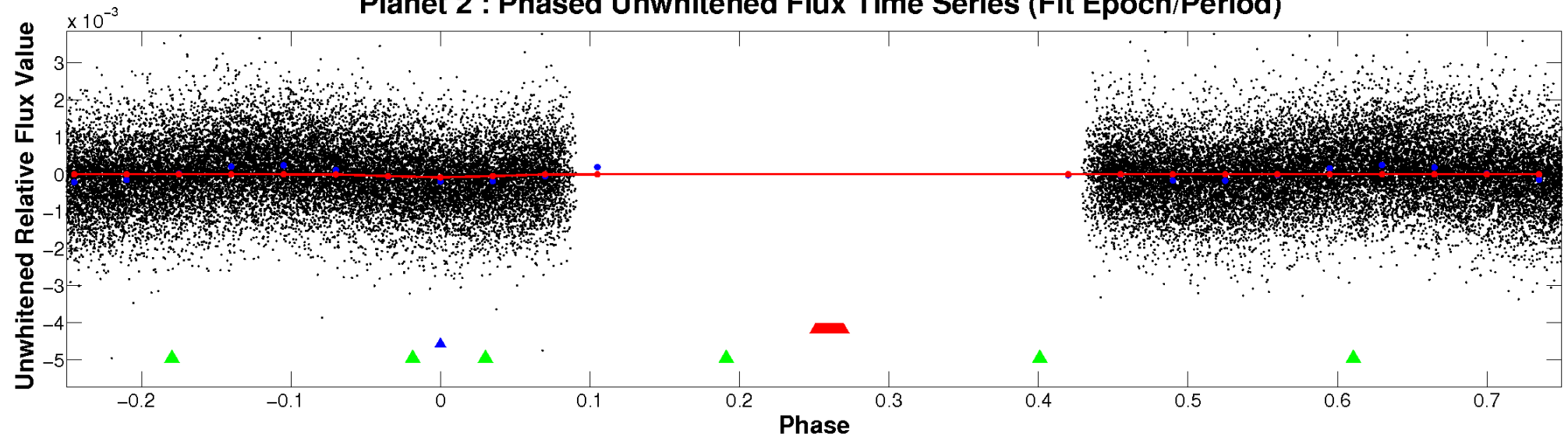
# ALT Odd/Even

TCE 005982378-02

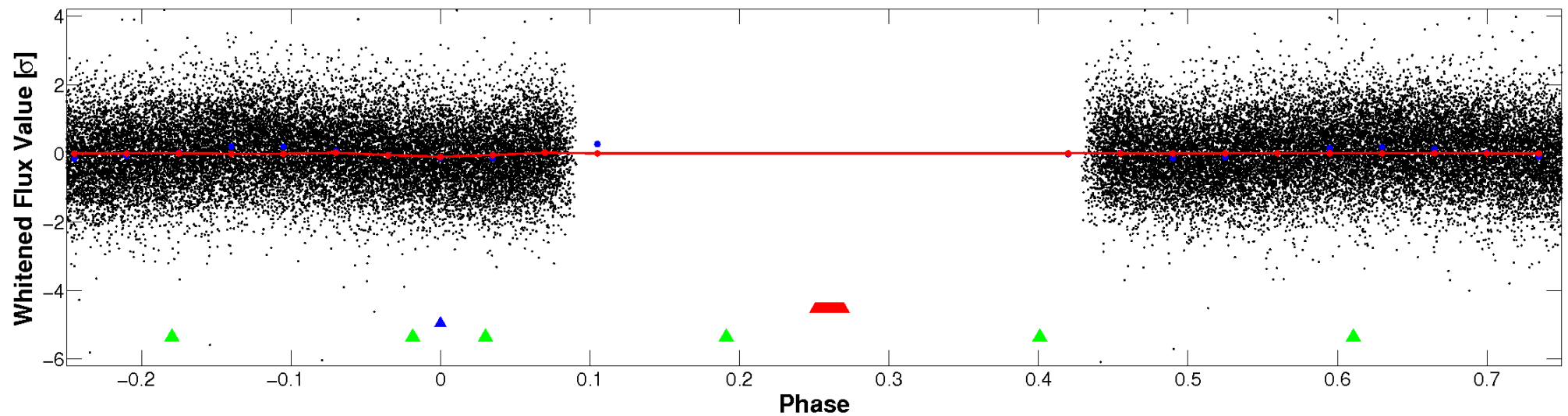


# Non-Whitened Vs. Whitened Light Curve

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

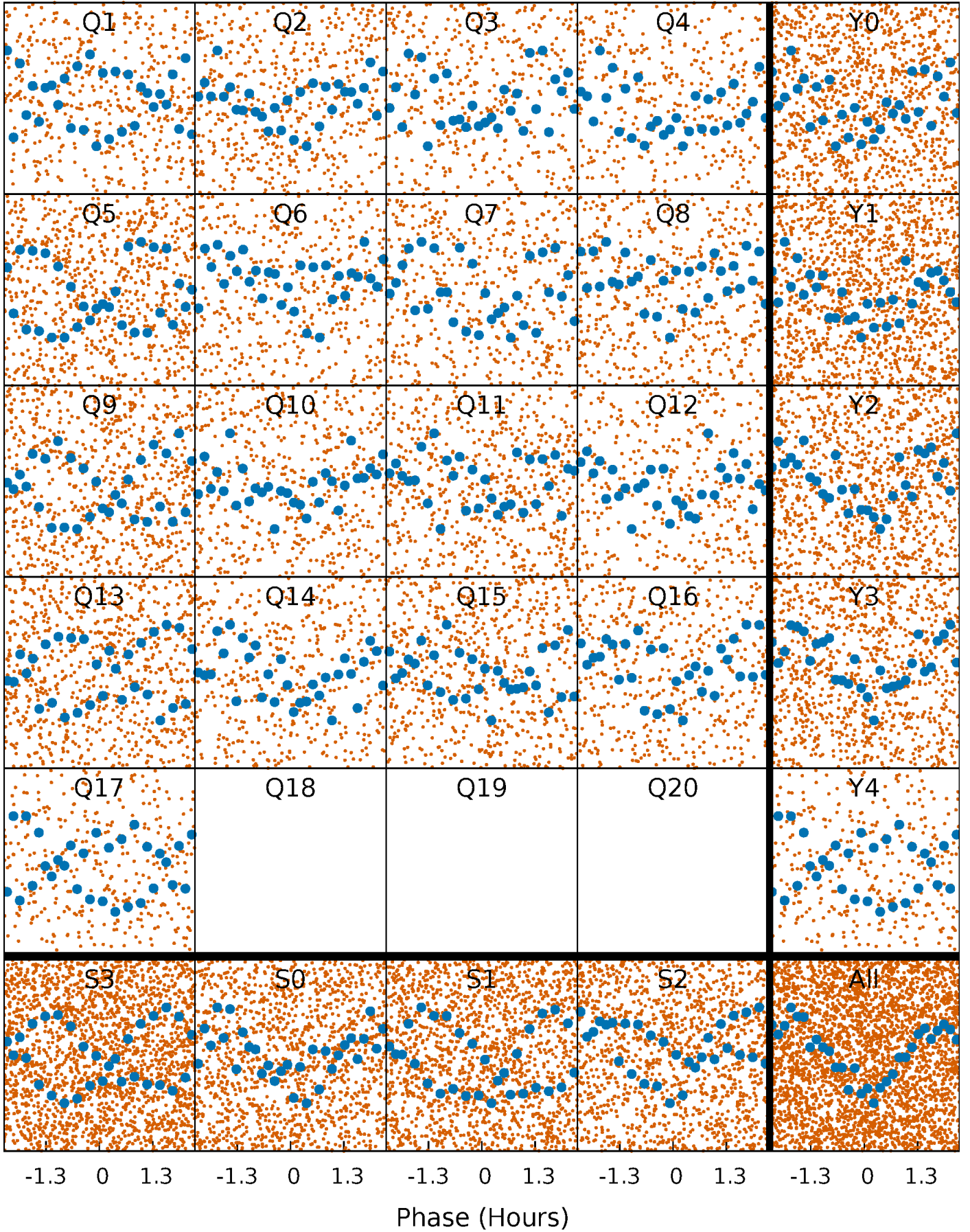


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

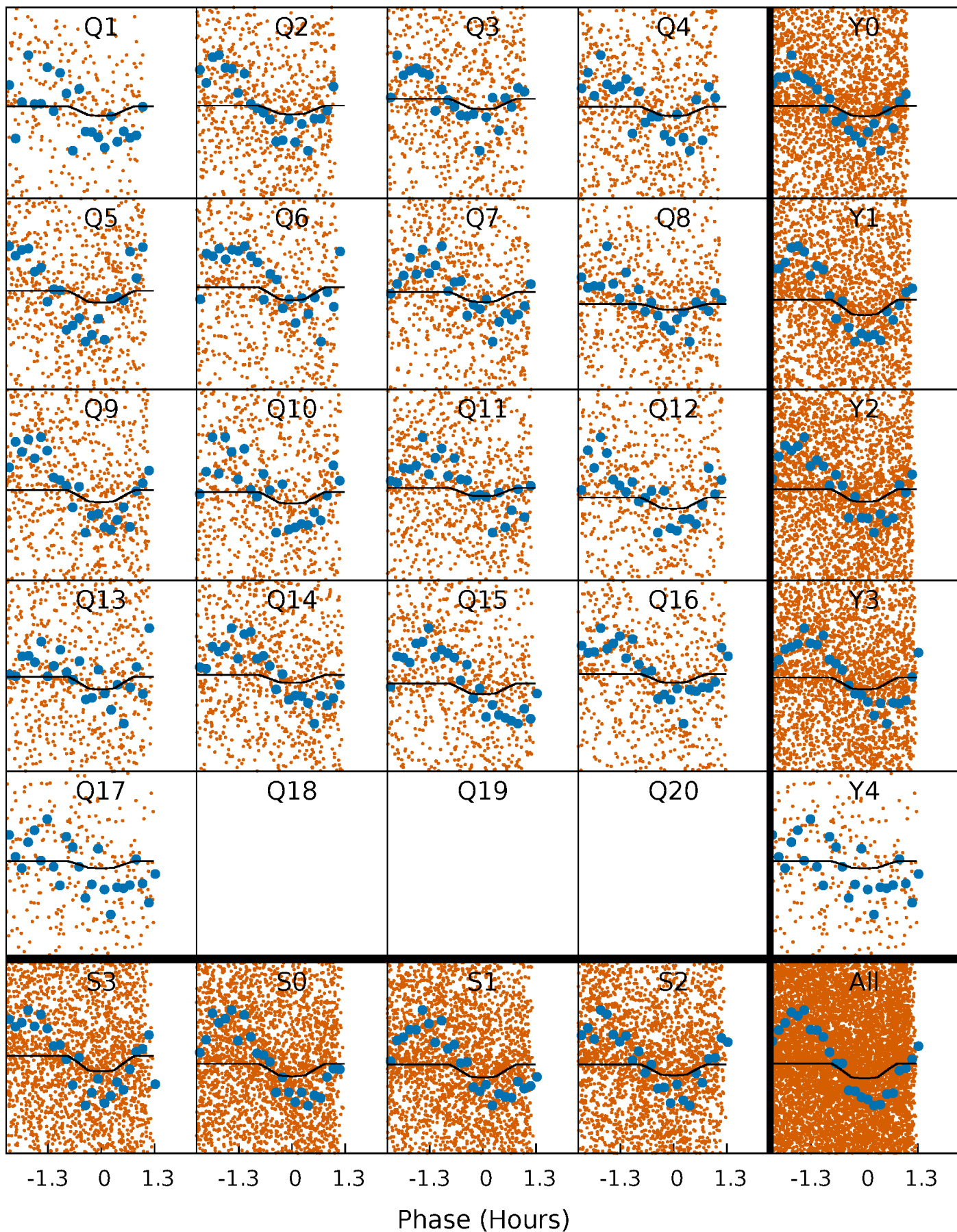
TCE 005982378-02   P= 0.583974 Days    $T_0=132.041575$  (BKJD)





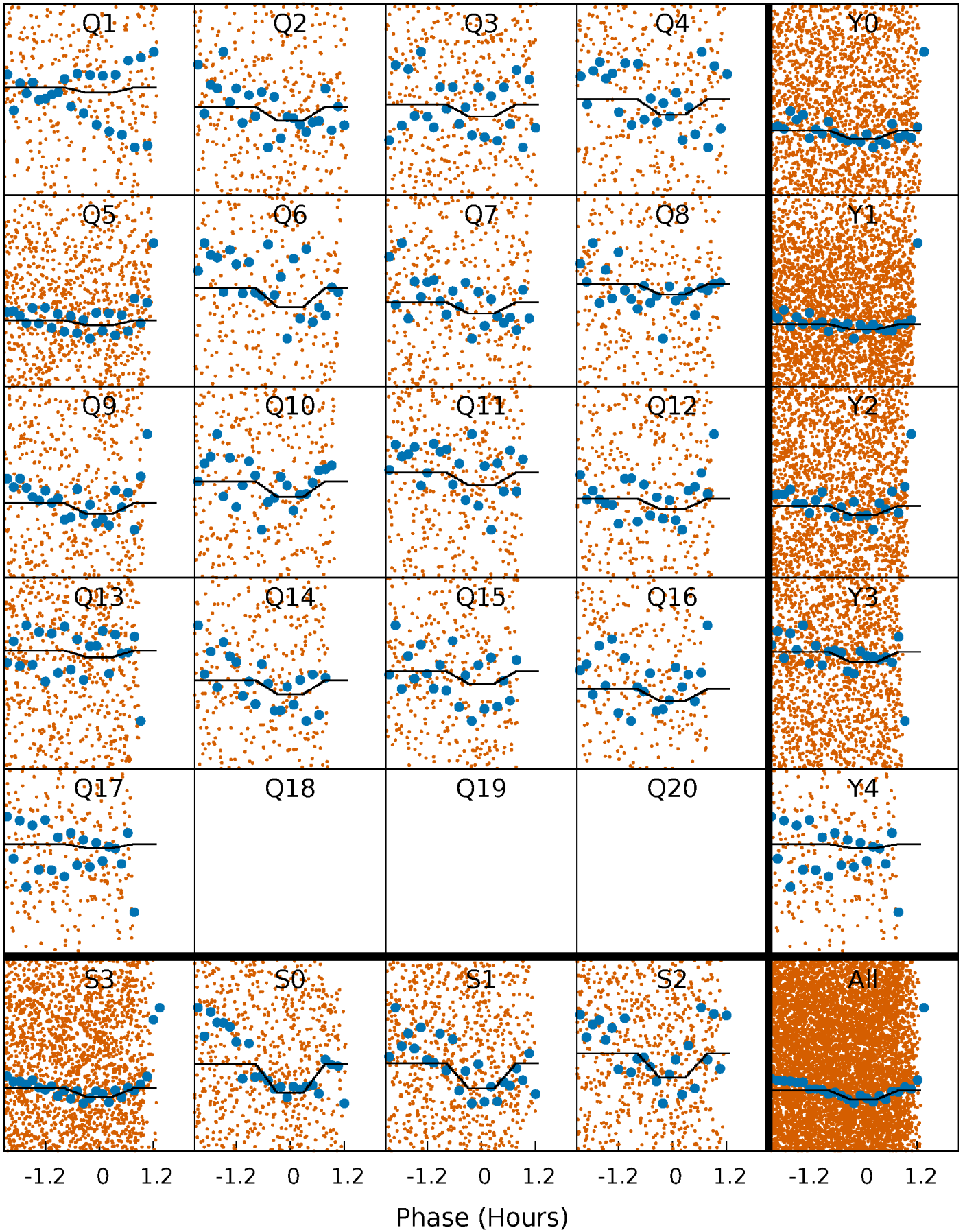
# DV Quarter-Phased Transit Curves

TCE 005982378-02   P= 0.583974 Days    $T_0=132.041575$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005982378-02   P= 0.583987 Days    $T_0=132.030460$  (BKJD)

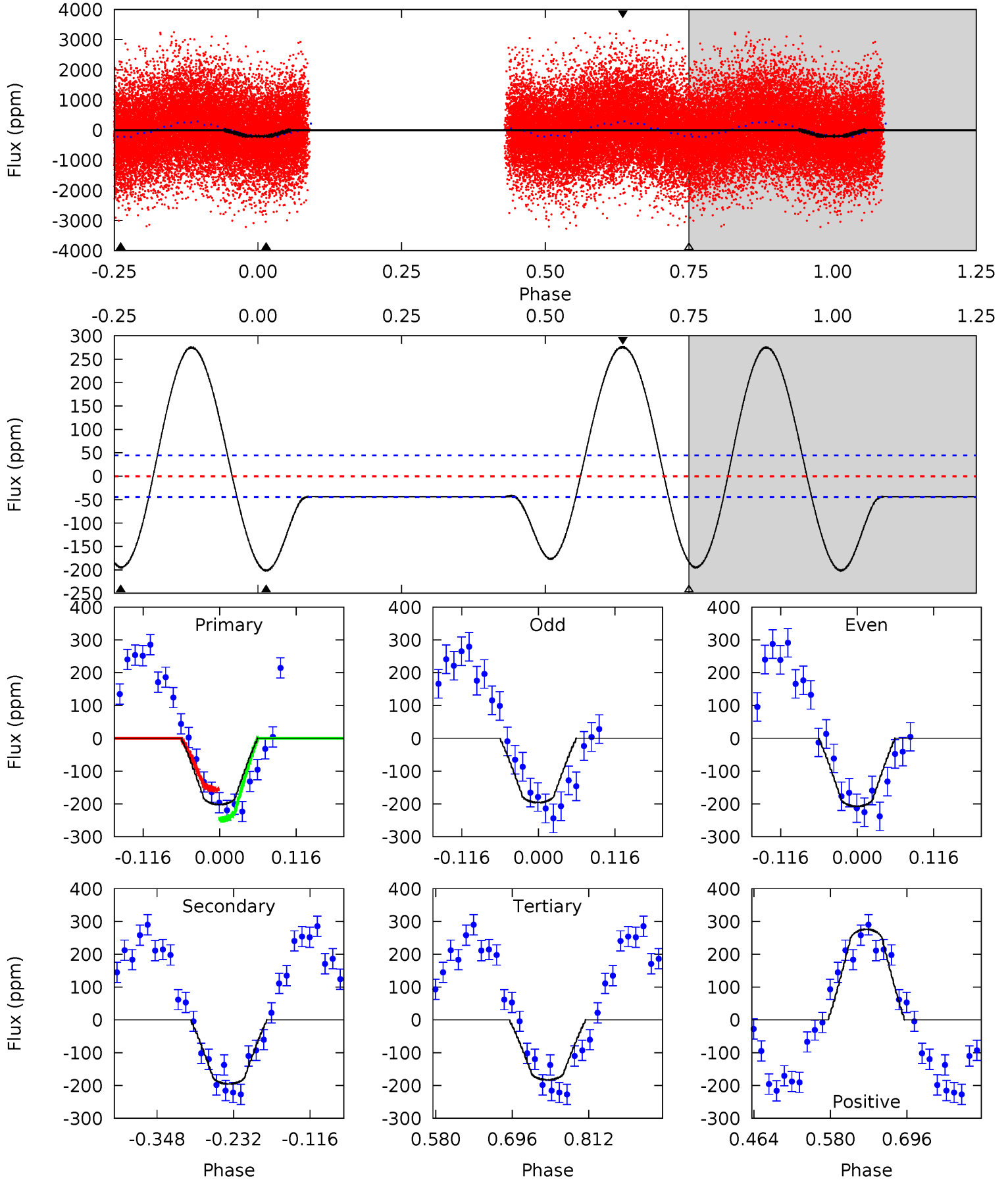




# DV Model-Shift Uniqueness Test

005982378-02, P = 0.583974 Days, E = 131.457601 Days

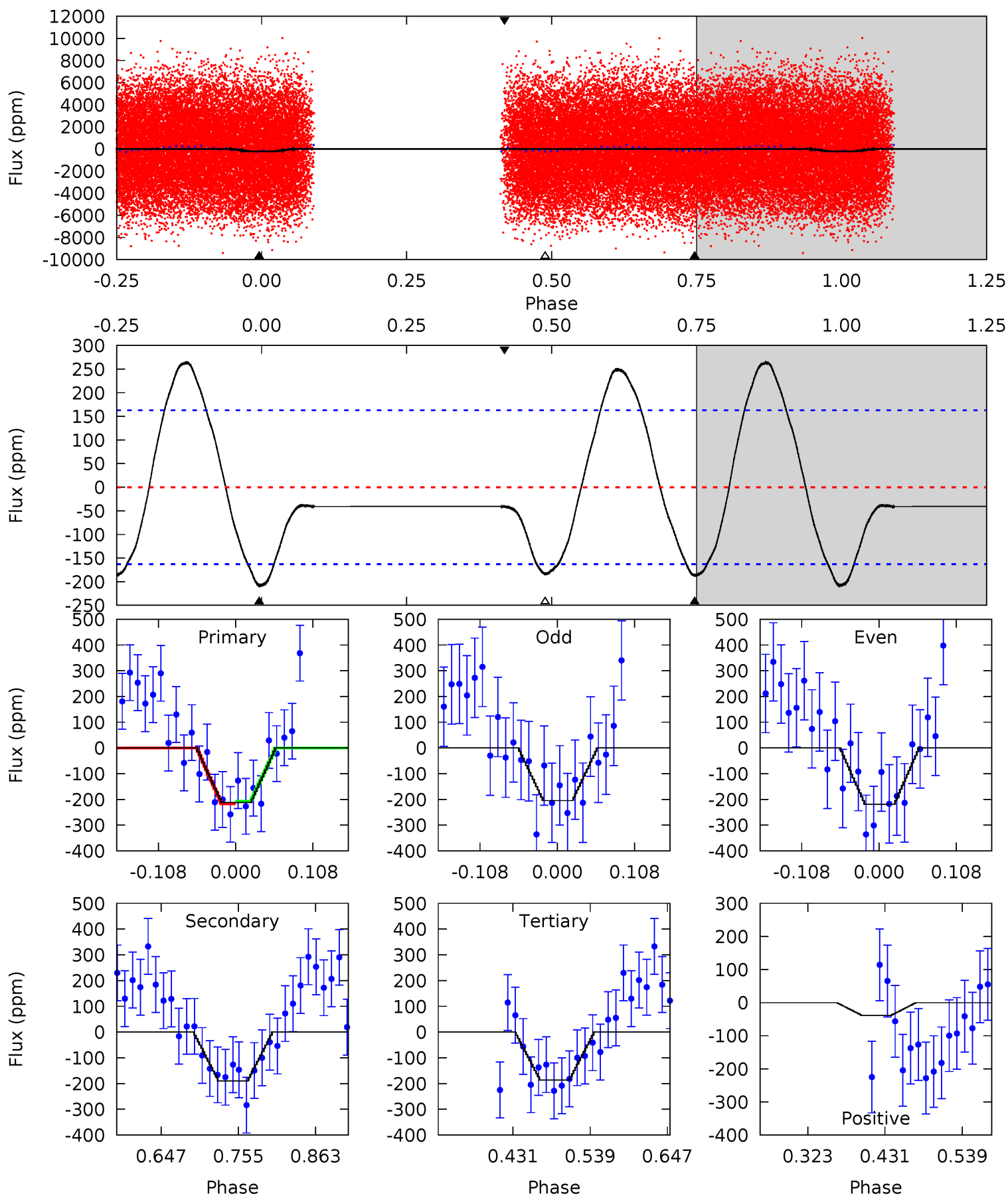
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	19.9	18.6	28.1	4.53	1.57	16.6	1.93	-7.56	1.26	-8.23	0.59	1.11	0.58	4.82



# Alt Model-Shift Uniqueness Test

005982378-02, P = 0.583987 Days, E = 131.446473 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
5.91	5.29	5.20	-1.08	4.55	1.61	4.72	0.70	6.99	0.08	6.36	0.20	0.96	0.56	0.15



### Stellar Parameters For KIC 005982378

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7246^{+232}_{-348}$	$4.074^{+0.198}_{-0.162}$	$-0.180^{+0.250}_{-0.350}$	$1.854^{+0.515}_{-0.464}$	$1.487^{+0.211}_{-0.281}$	$0.329^{+0.390}_{-0.157}$
	+3%/-5%	+5%/-4%	+139%/-194%	+28%/-25%	+14%/-19%	+119%/-48%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005982378-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-195 \pm 10$	$1.73^{+0.92}_{-0.76}$	$4831^{+369}_{-384}$	$9492^{+6261}_{-2077}$	$8.646^{+18.647}_{-4.977}$
Alt.	$-189 \pm 36$	$2.82^{+0.95}_{-0.82}$	$4820^{+399}_{-367}$	$6807^{+1652}_{-978}$	$3.007^{+3.463}_{-1.293}$

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

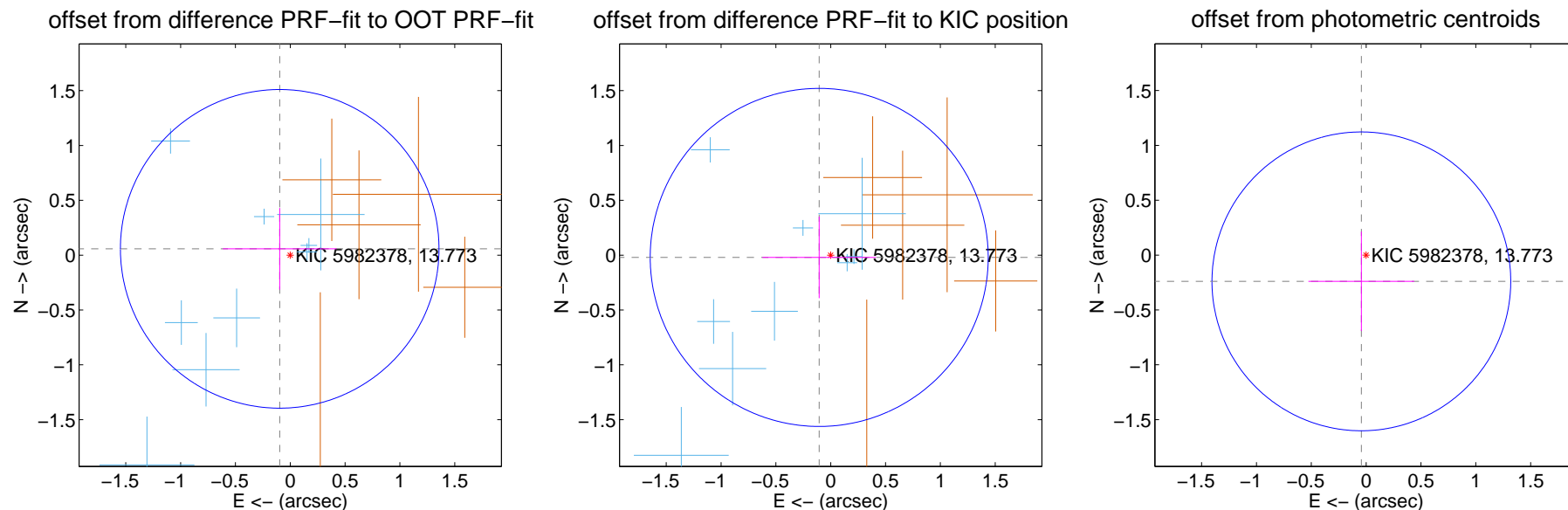
## DV Centroid Data

Supplemental centroid analysis for 005982378-02. Kepler magnitude: 13.77. Transit SNR 6.46

There are 9 quarters with good PRF difference image offsets

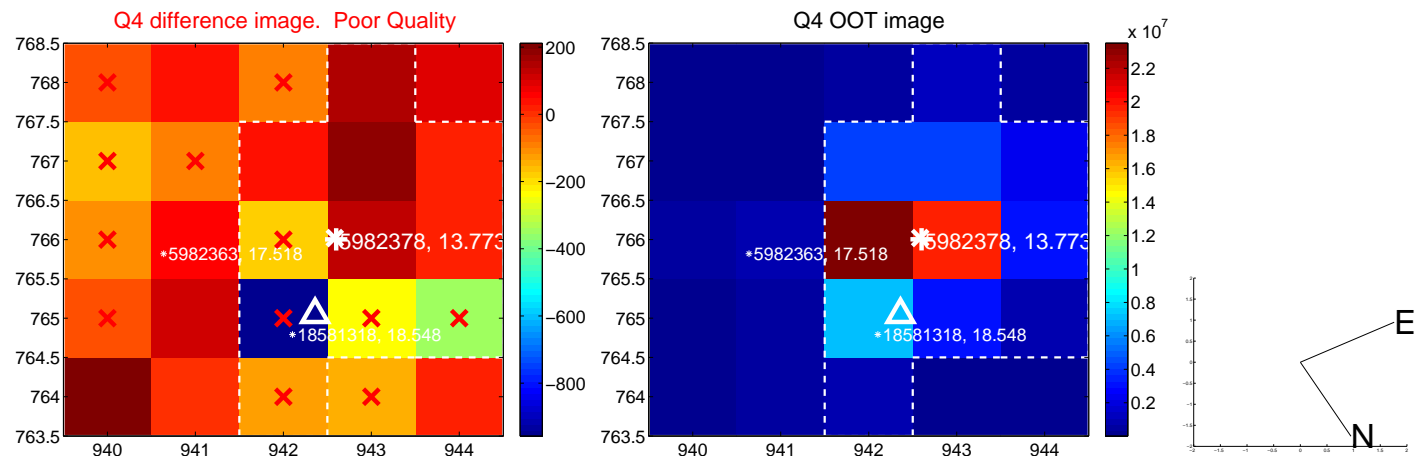
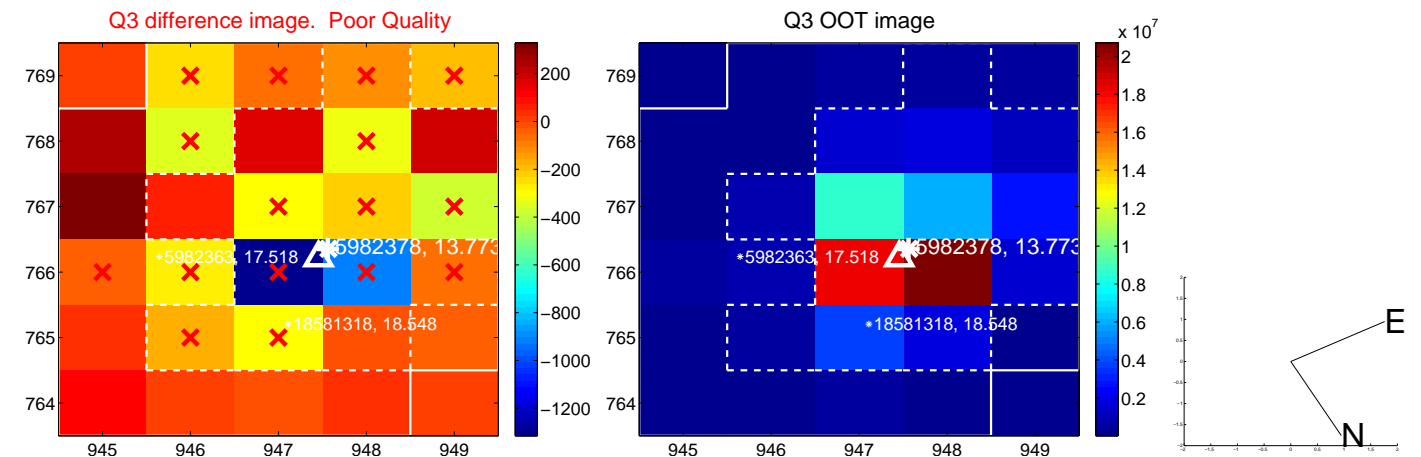
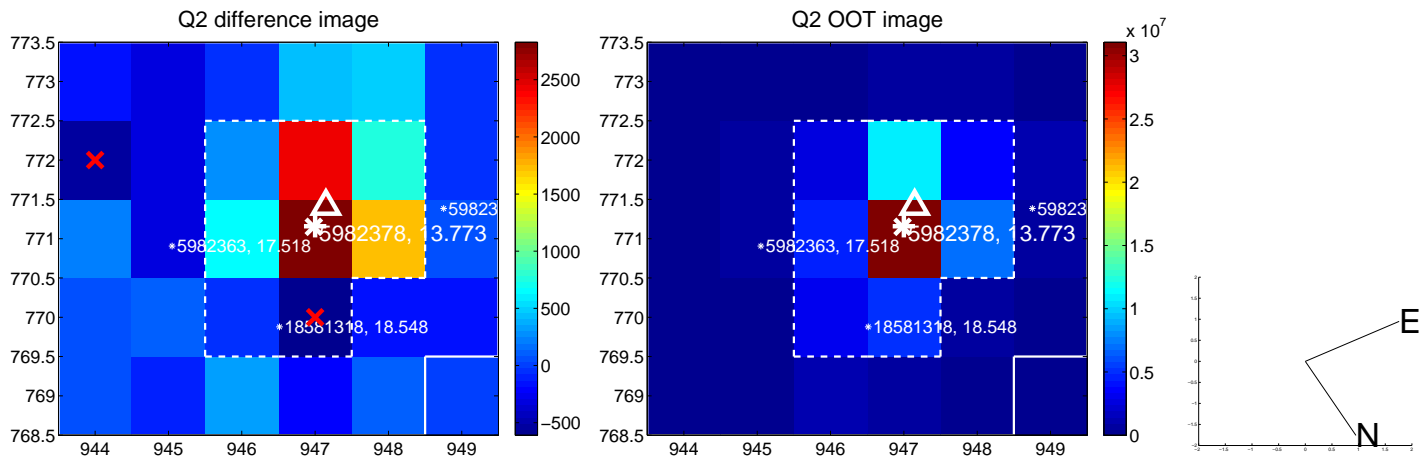
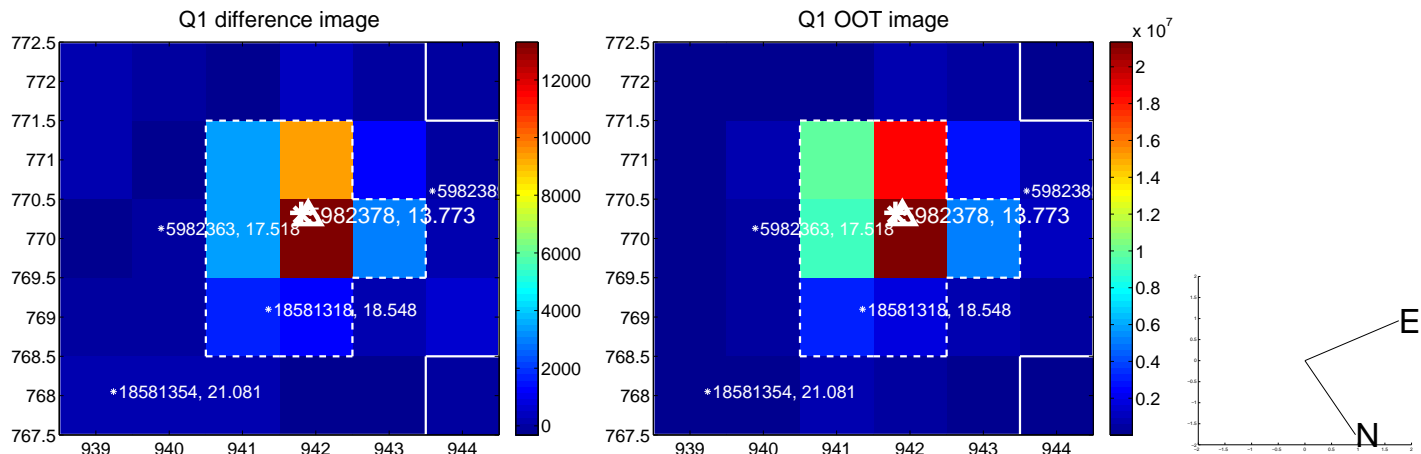
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.112 \pm 0.484$	0.23	$0.096 \pm 0.518$	$0.058 \pm 0.372$
PRF-fit source offset from KIC position	$0.107 \pm 0.514$	0.21	$0.105 \pm 0.518$	$-0.021 \pm 0.372$
photometric centroid source offset	$0.24 \pm 0.45$	0.54	$0.04 \pm 0.48$	$-0.24 \pm 0.45$



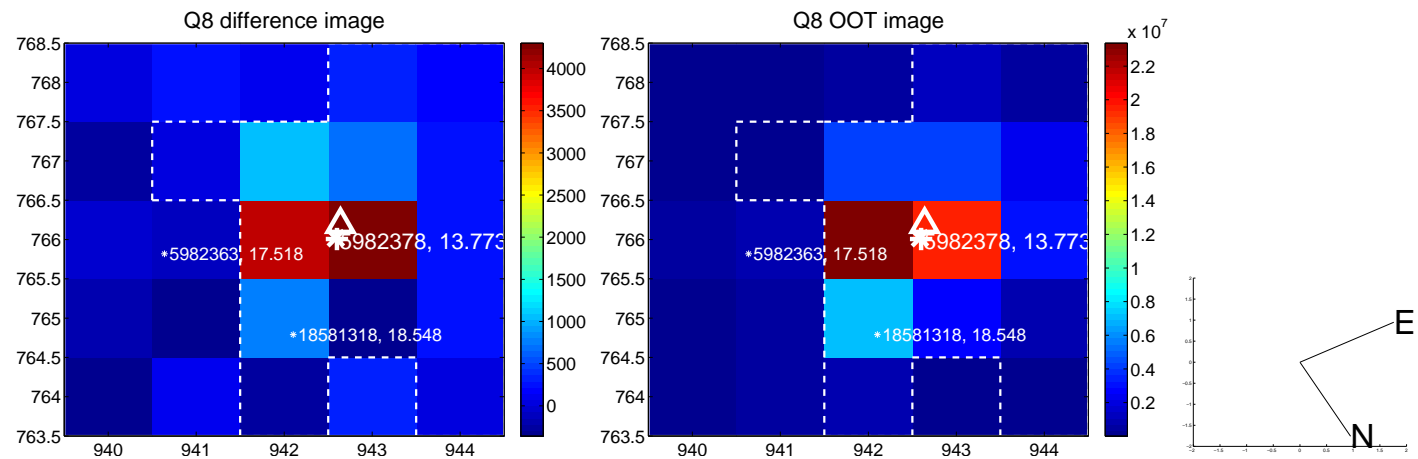
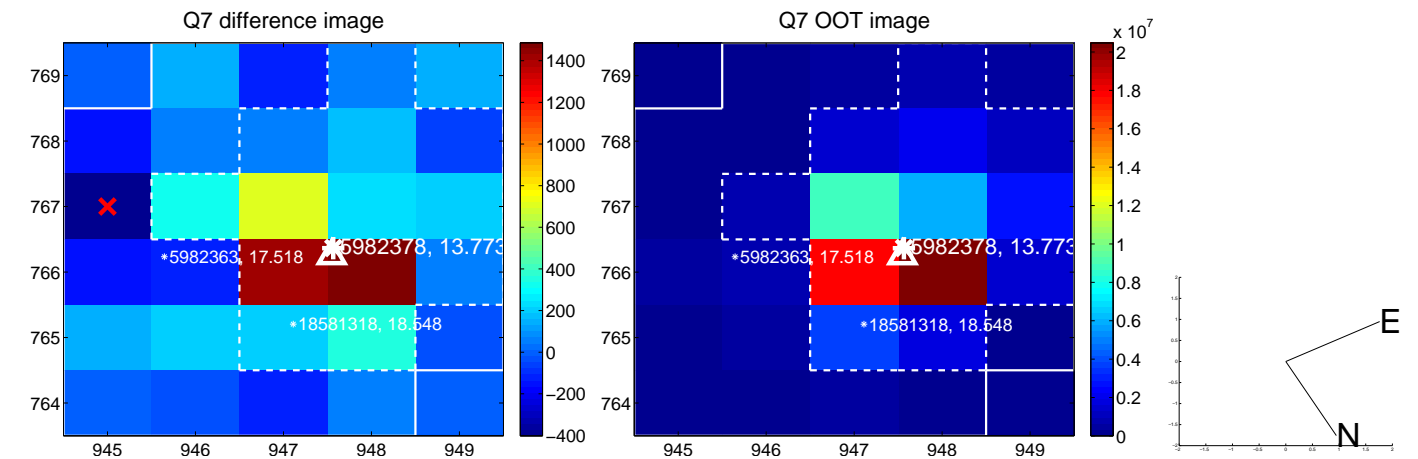
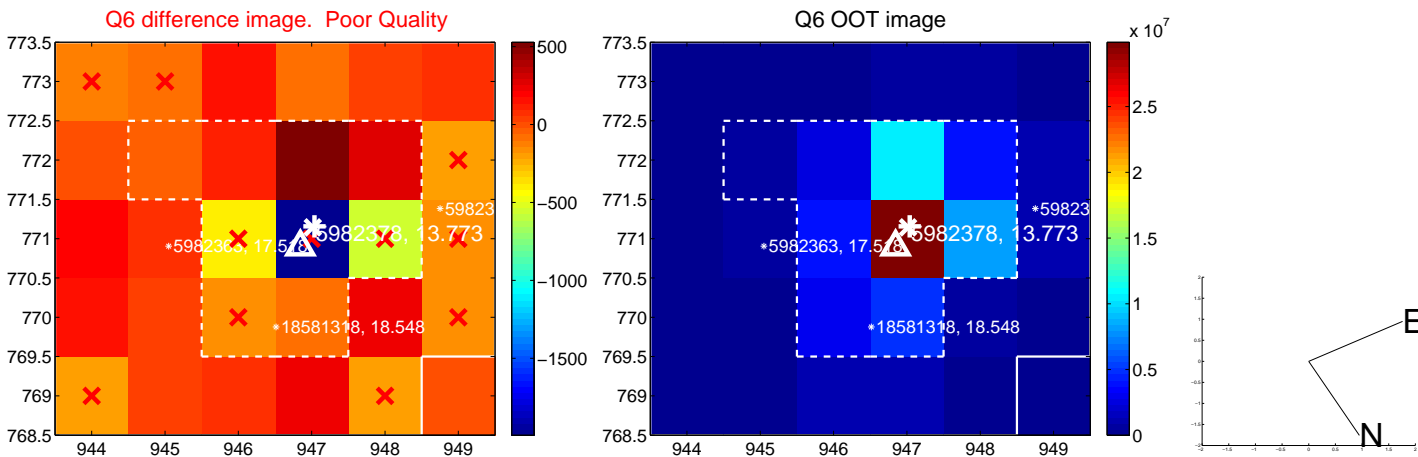
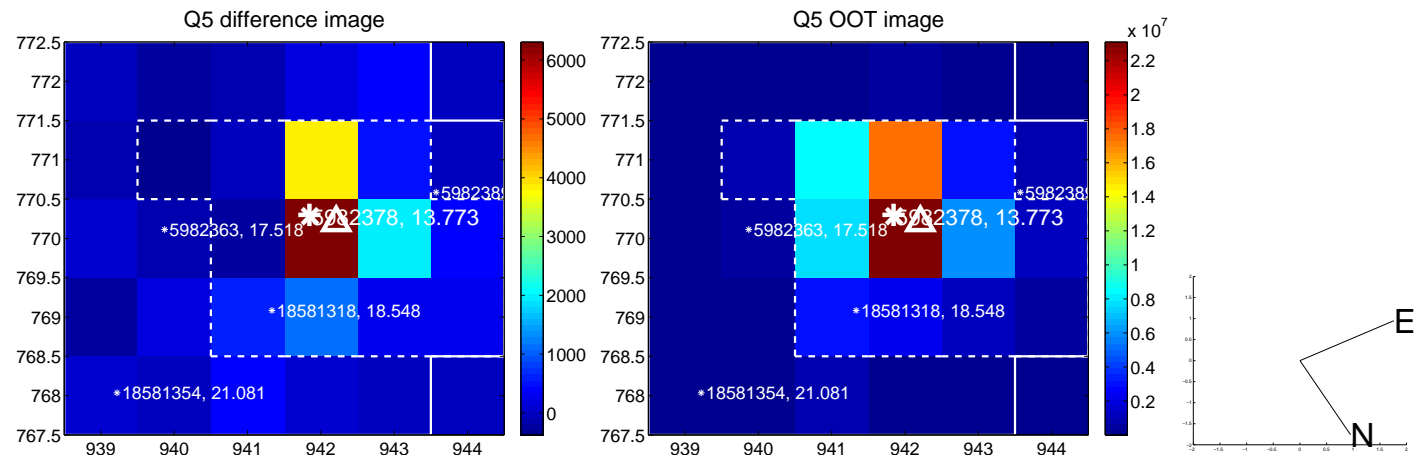
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

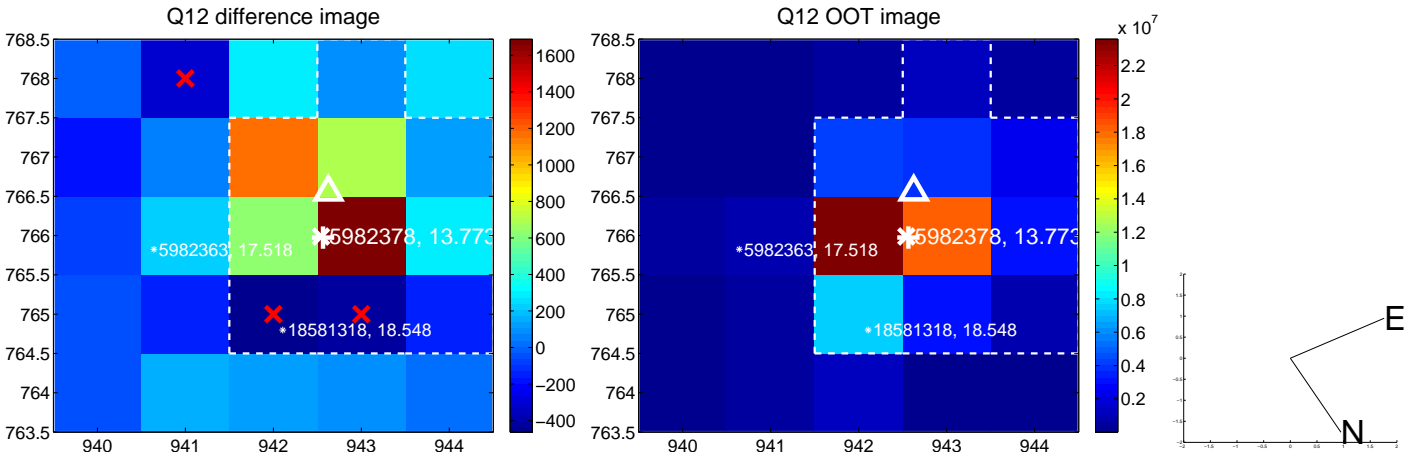
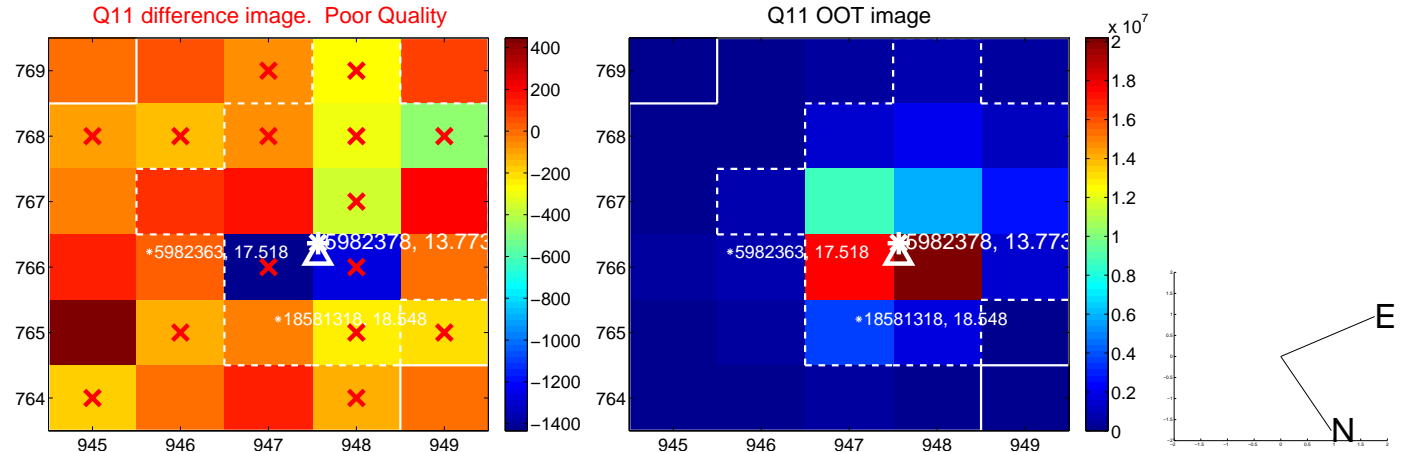
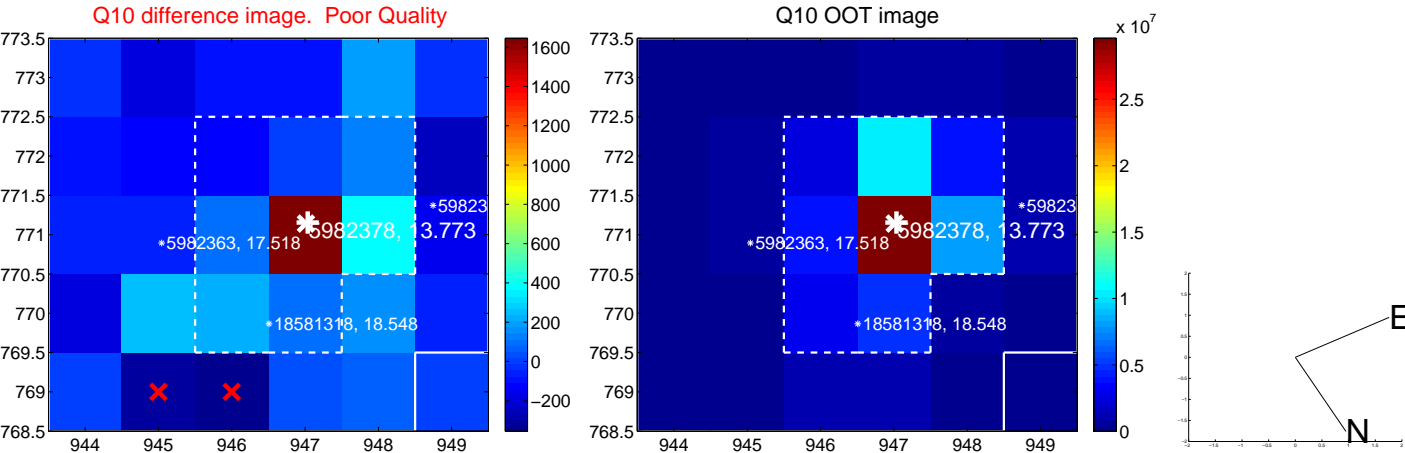
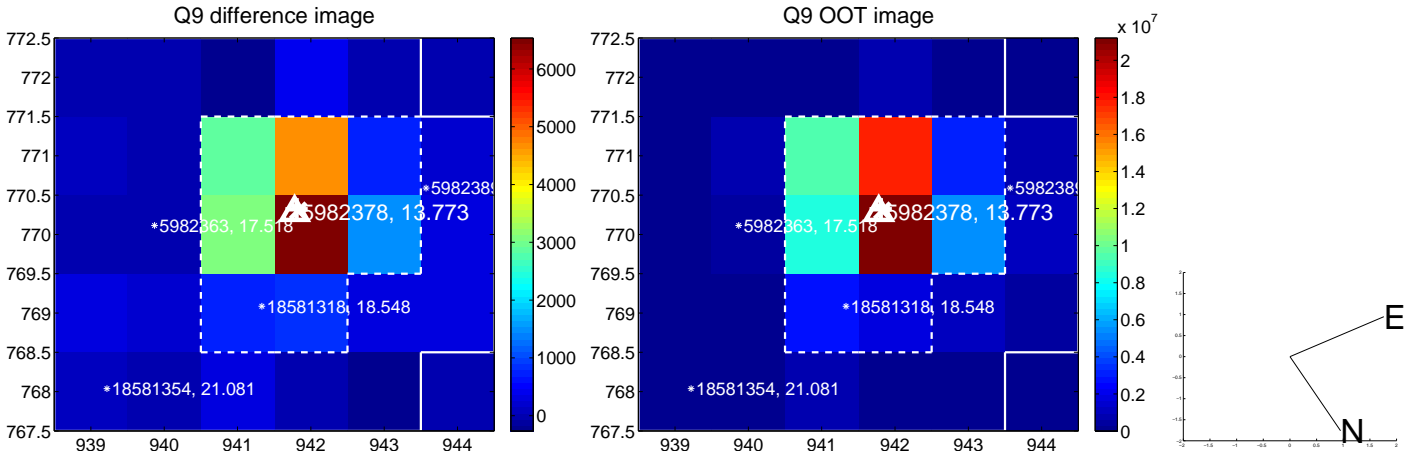




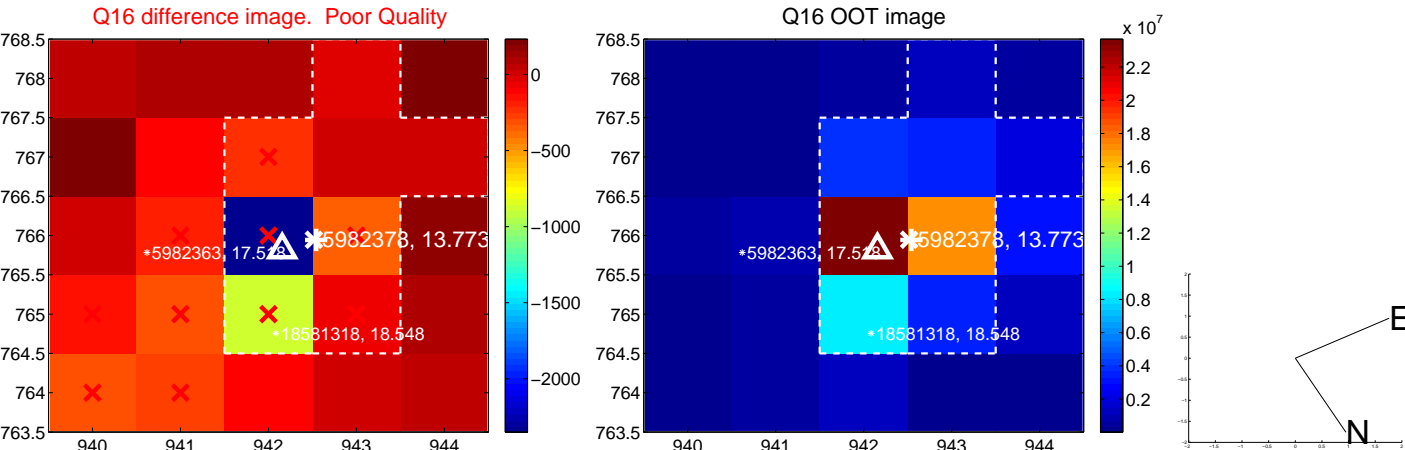
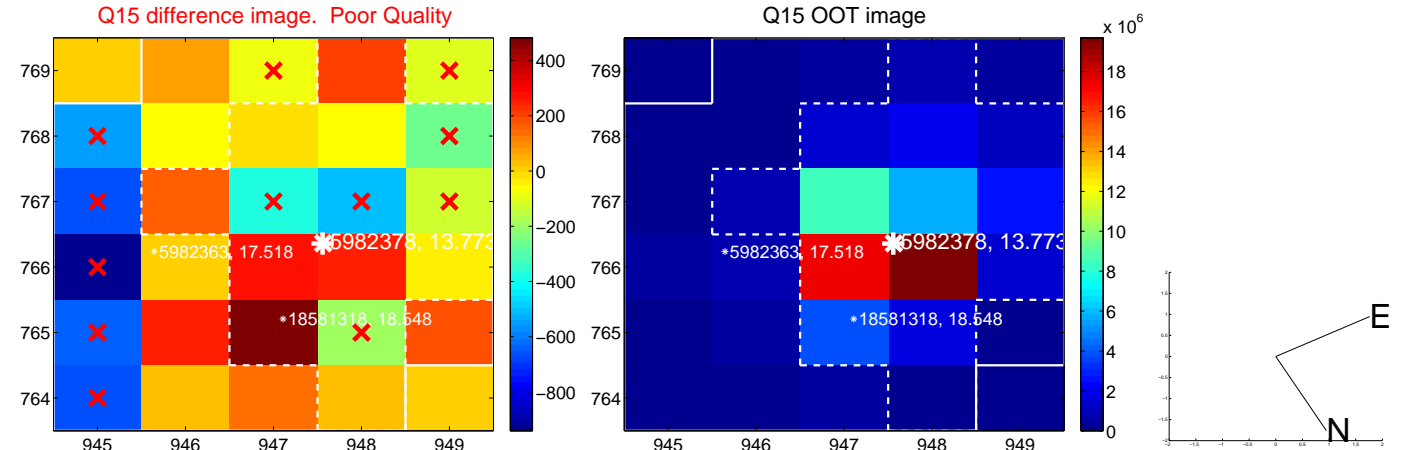
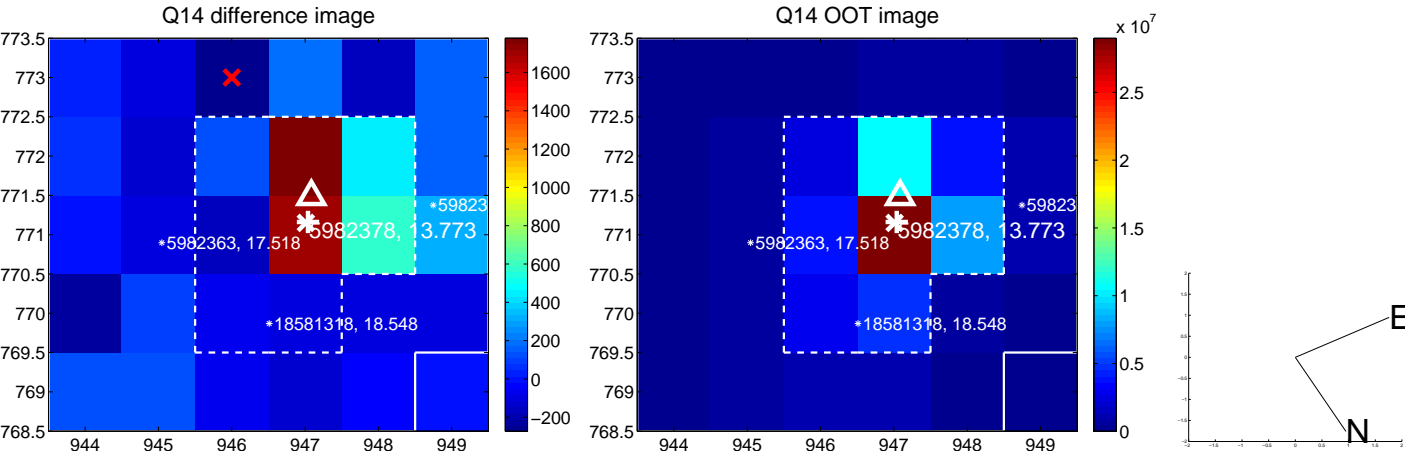
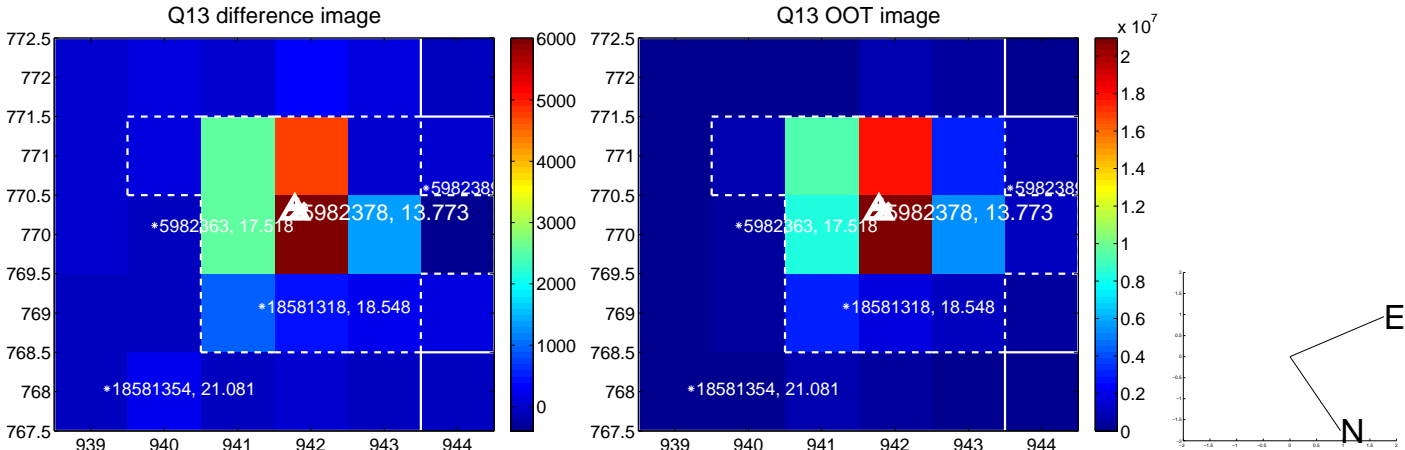
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



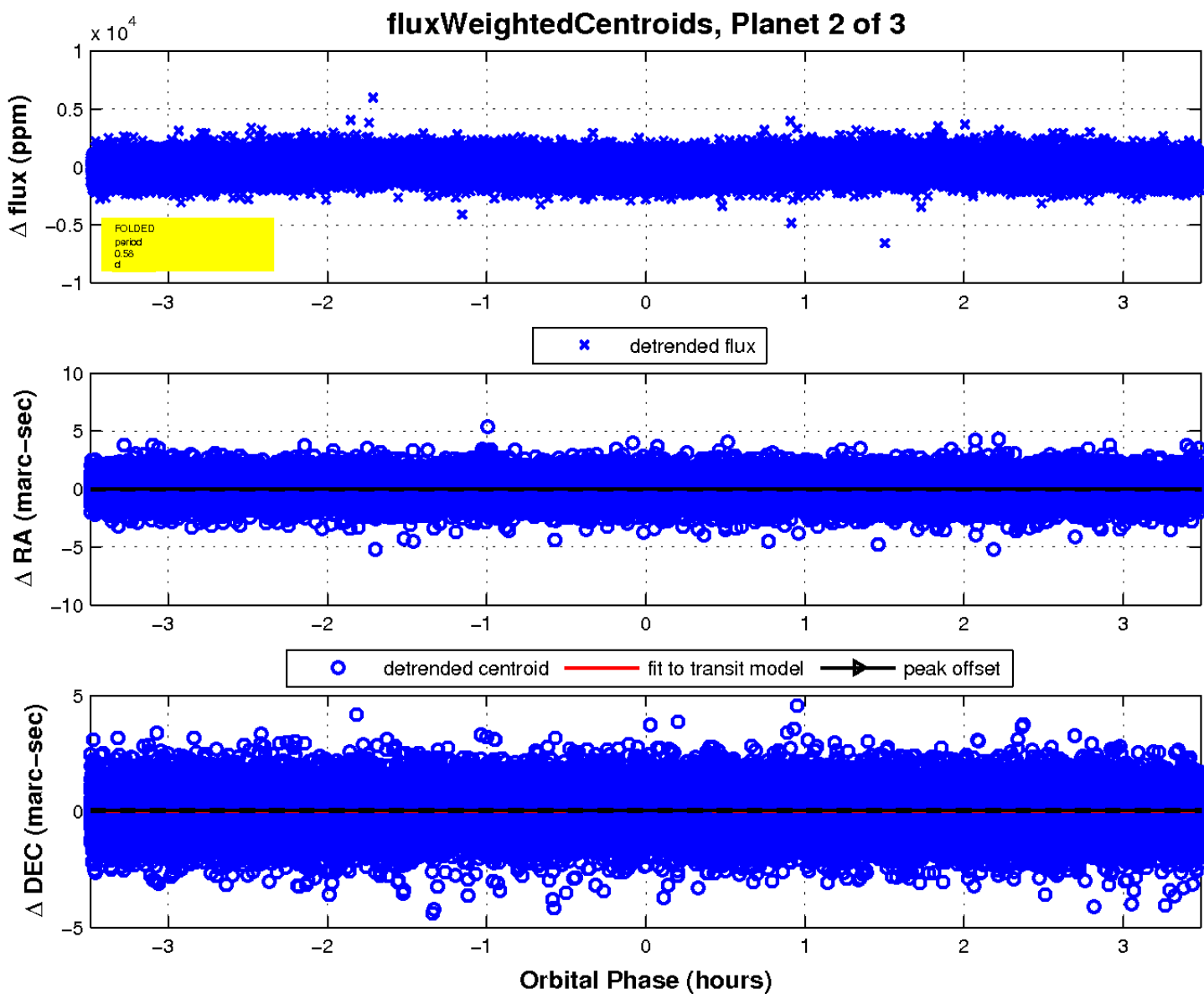
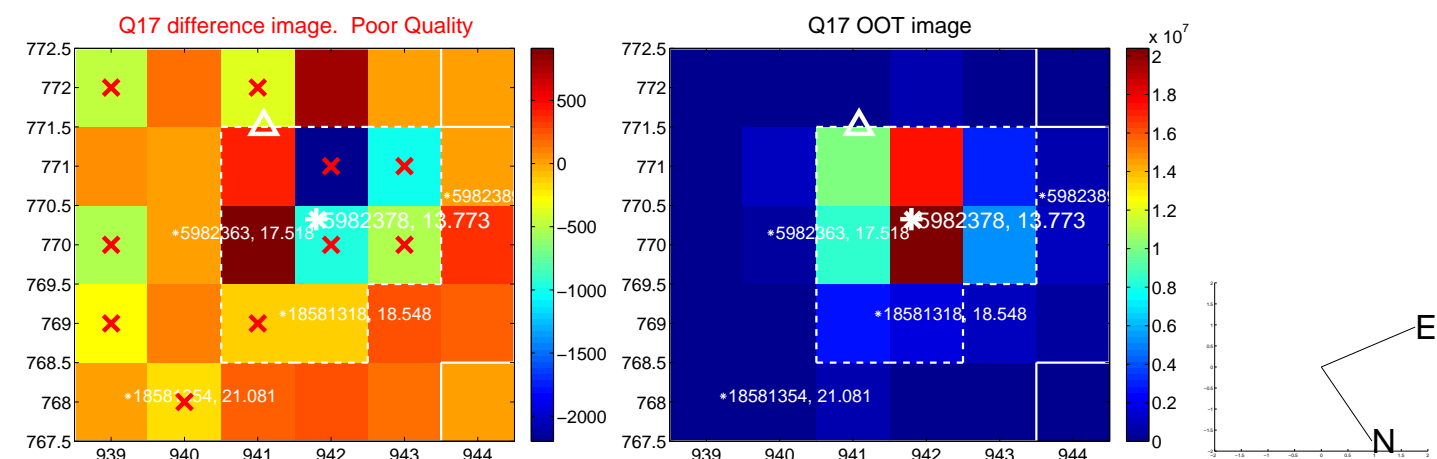
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

