

# KIC 002141938

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002141938-01	OBS	No	1.253751	132.495303	21.3	3.887	8.8	9.9	1.76	6718	0.82	8447.64
002141938-02	OBS	No	1.253621	131.966960	20.0	8.303	9.4	12.5	1.76	6718	0.92	8448.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002141938-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_UNCERTAIN
002141938-02	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

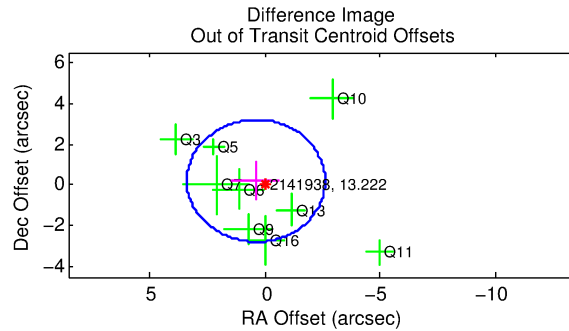
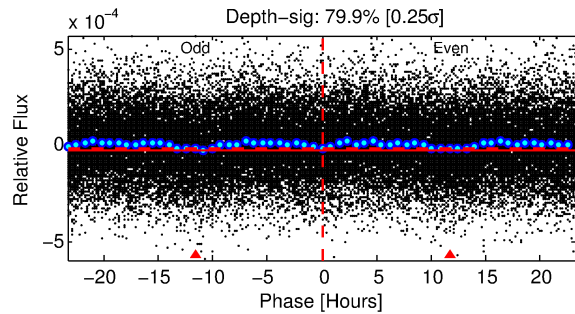
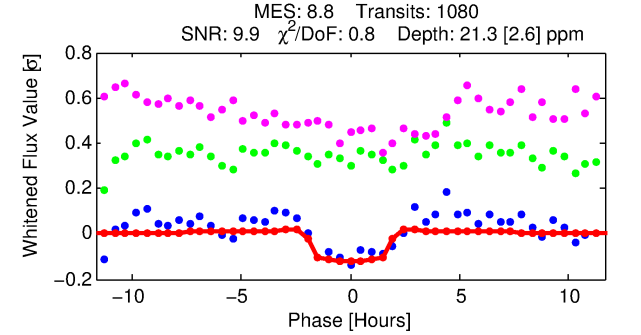
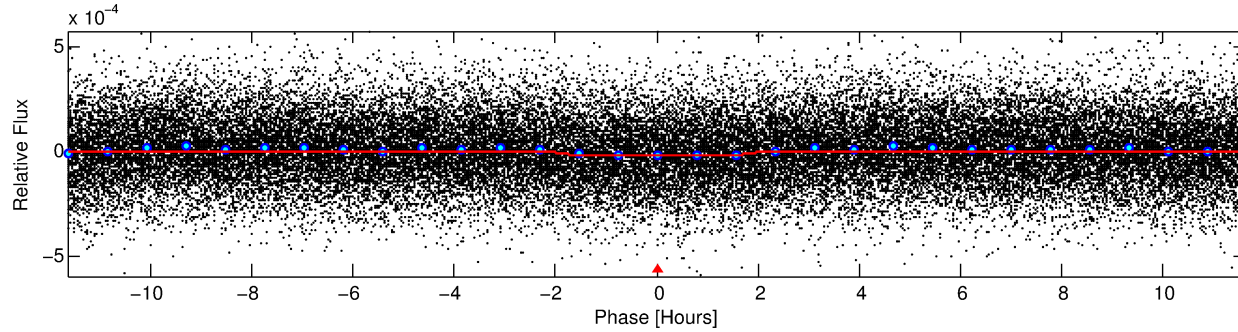
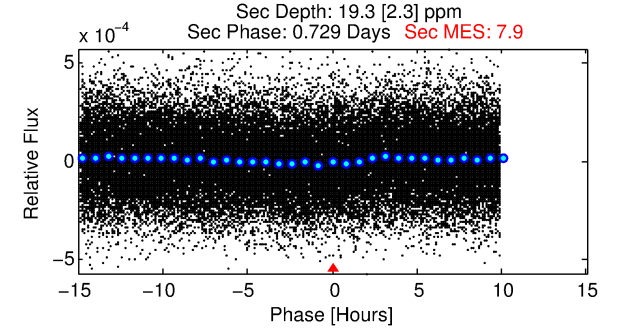
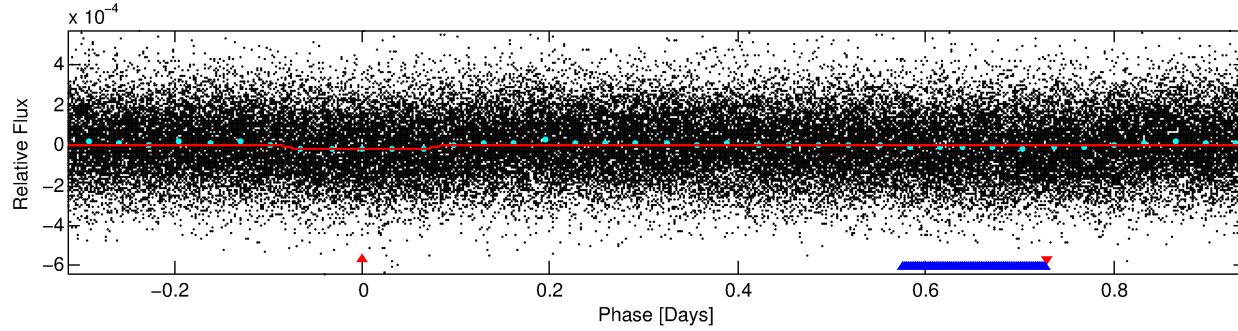
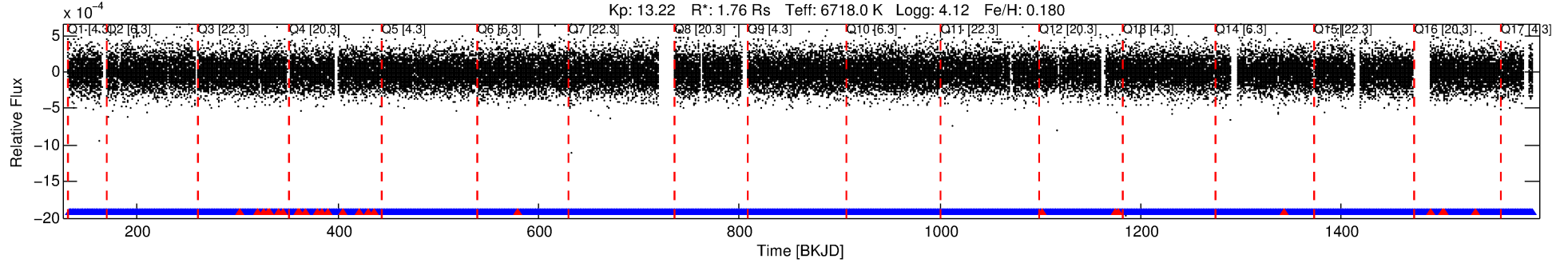
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002141938-01

No Significant Match Found

# DV One-Page Summary

KIC: 2141938 Candidate: 1 of 2 Period: 1.254 d



## DV Fit Results:

Period = 1.25375 [0.00001] d  
Epoch = 132.4953 [0.0045] BKJD  
Rp/R\* = 0.0043 [0.0054]  
a/R\* = 2.54 [14.62]  
b = 0.00 [16381.73]  
Seff = 8447.64 [3423.13]  
Teff = 2445 [248] K  
Rp = 0.82 [1.06] Re  
a = 0.0259 [0.0067] AU  
Ag = 10.64 [27.12] [0.36σ]  
Teffp = 6826 [4314] K [1.01σ]

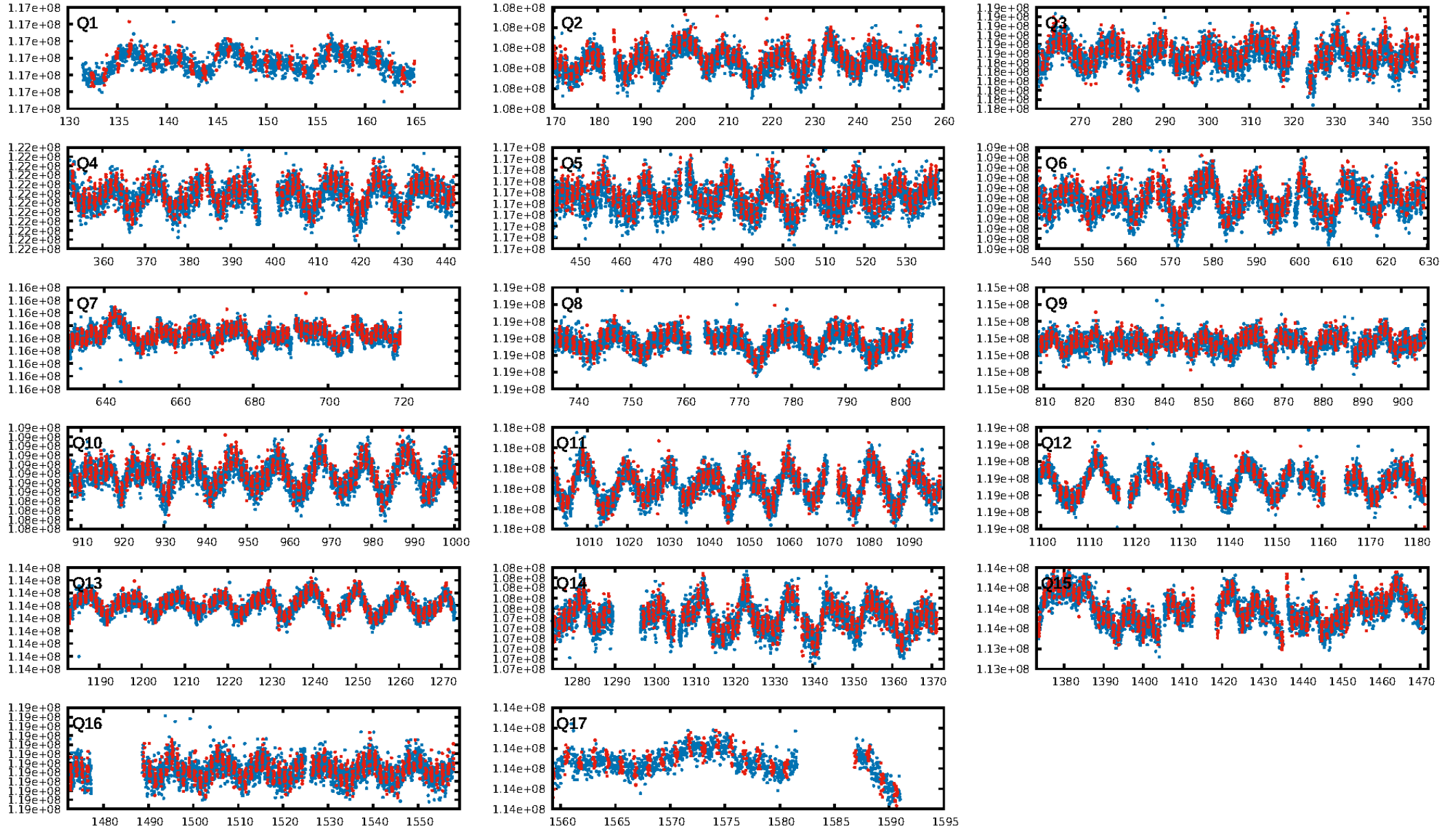
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [1006/1032]  
GhostDiagnostic-chr: -6.654  
Centroid-sig: 6.8%  
Centroid-so: 1.212 arcsec [1.05σ]  
OotOffset-rm: 0.436 arcsec [0.44σ]  
KicOffset-rm: 0.471 arcsec [0.47σ]  
OotOffset-st: 2/3/1/3 [9]  
KicOffset-st: 2/3/1/3 [9]  
DiffImageQuality-fgm: 0.22 [2/9]  
DiffImageOverlap-fno: 0.88 [15/17]

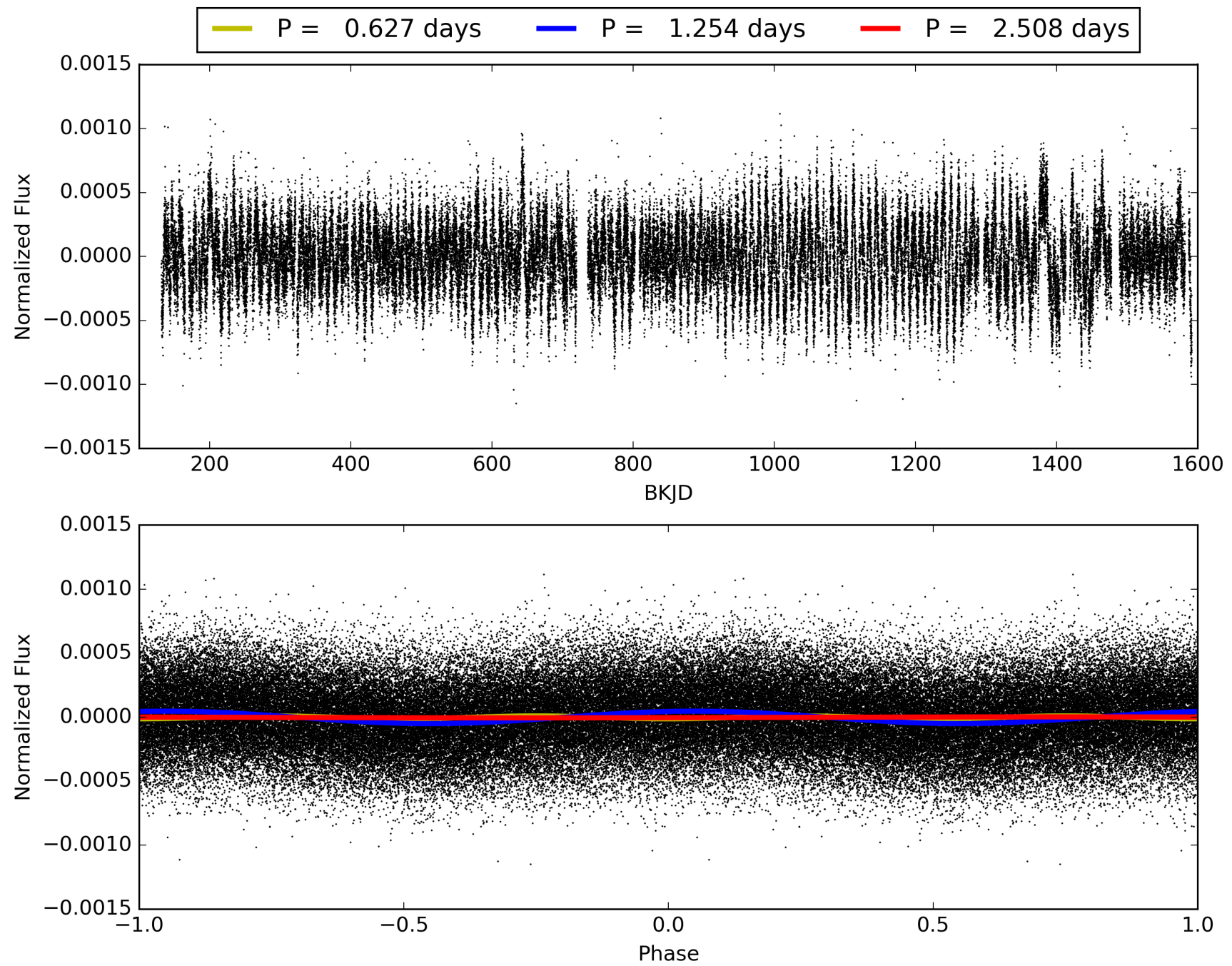
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:30:34 Z

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

# TCE 002141938-01, PDC Light Curves

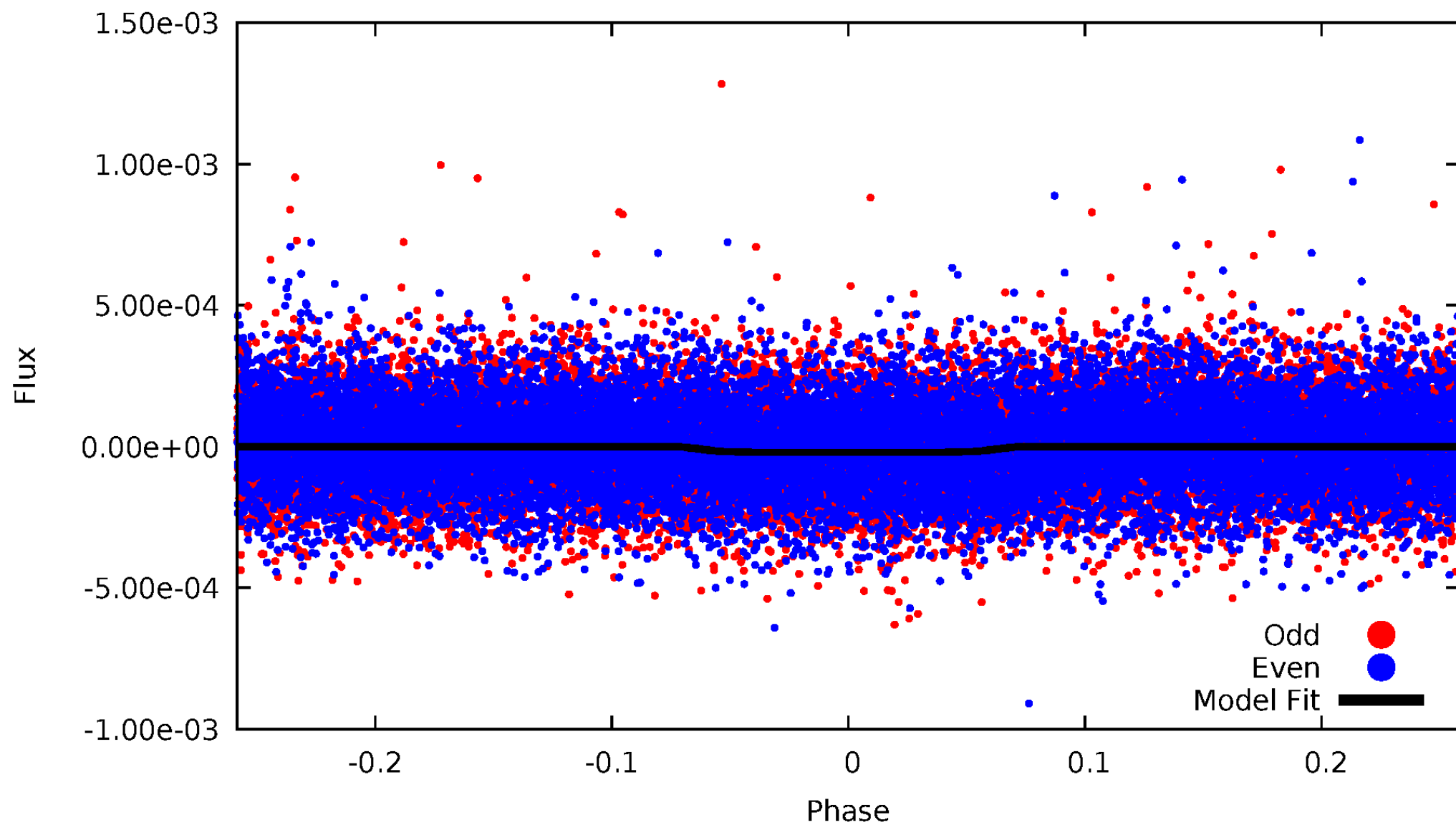


TCE 002141938-01



# DV Odd/Even

TCE 002141938-01





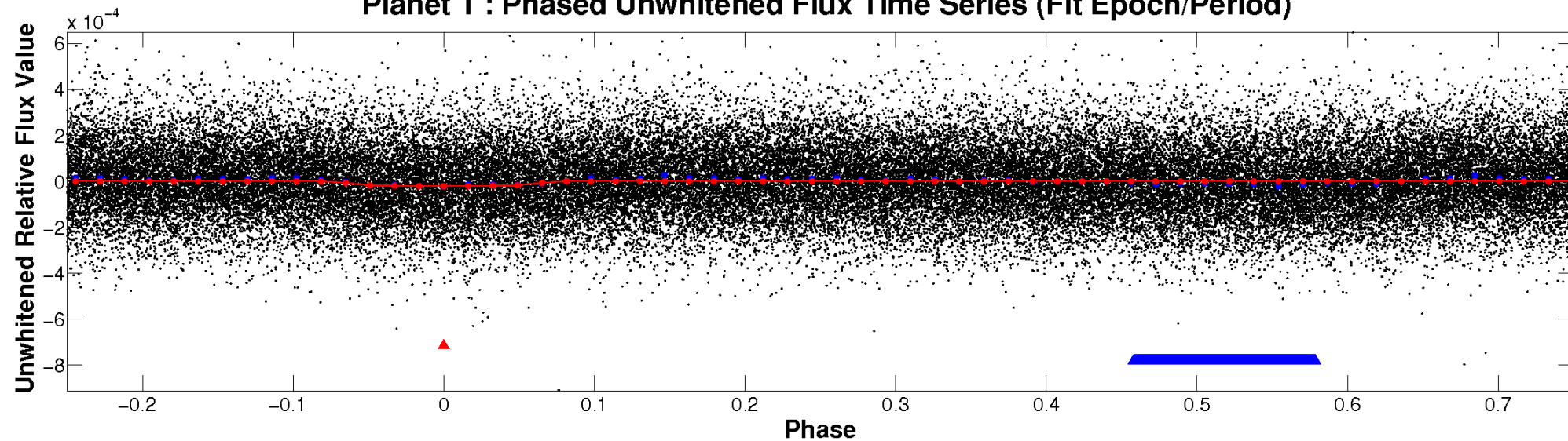
ALT Odd/Even

This plot does not exist for this TCE.

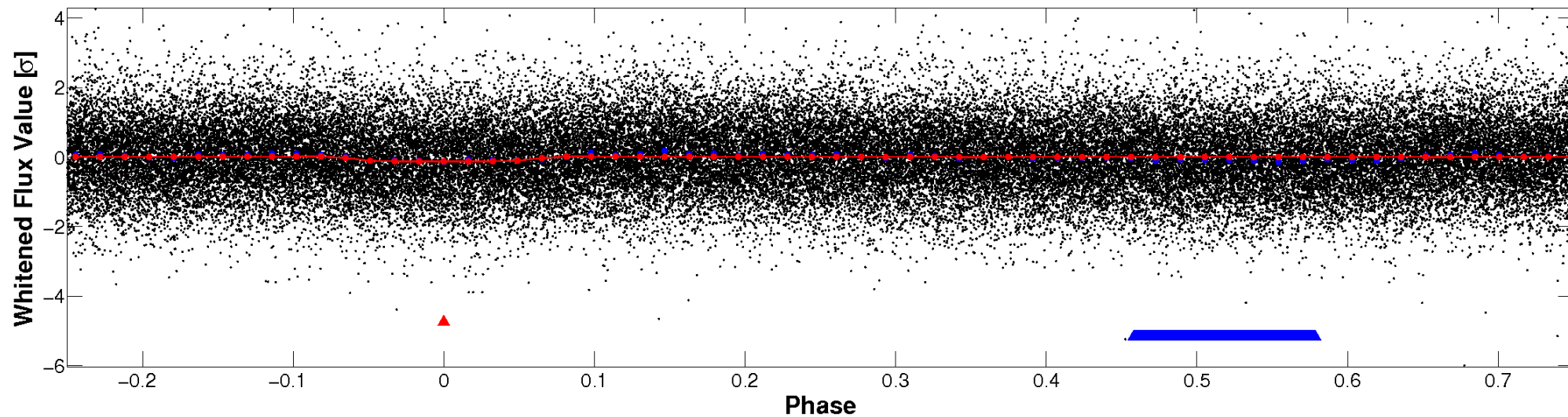


# Non-Whitened Vs. Whitened Light Curve

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



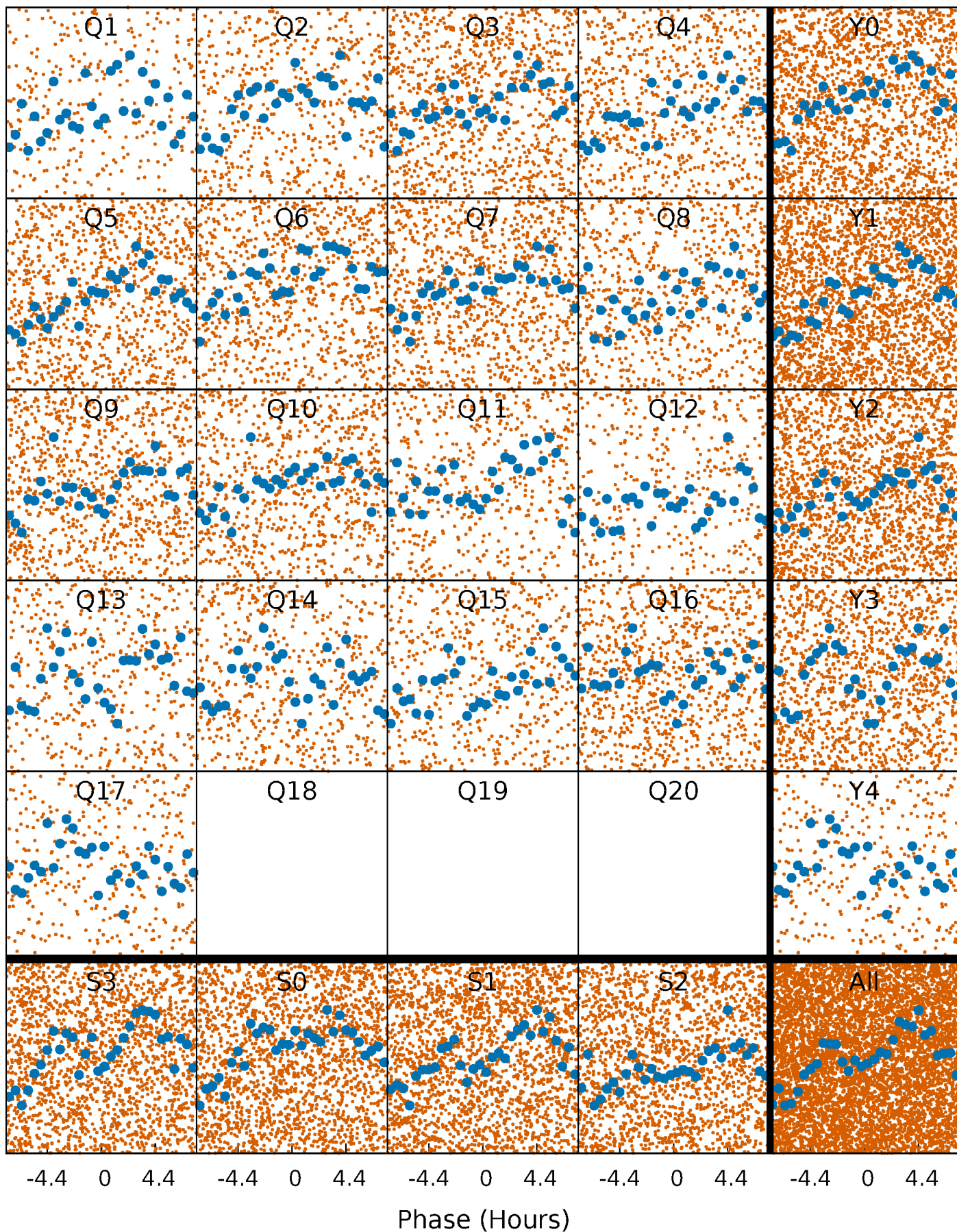
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





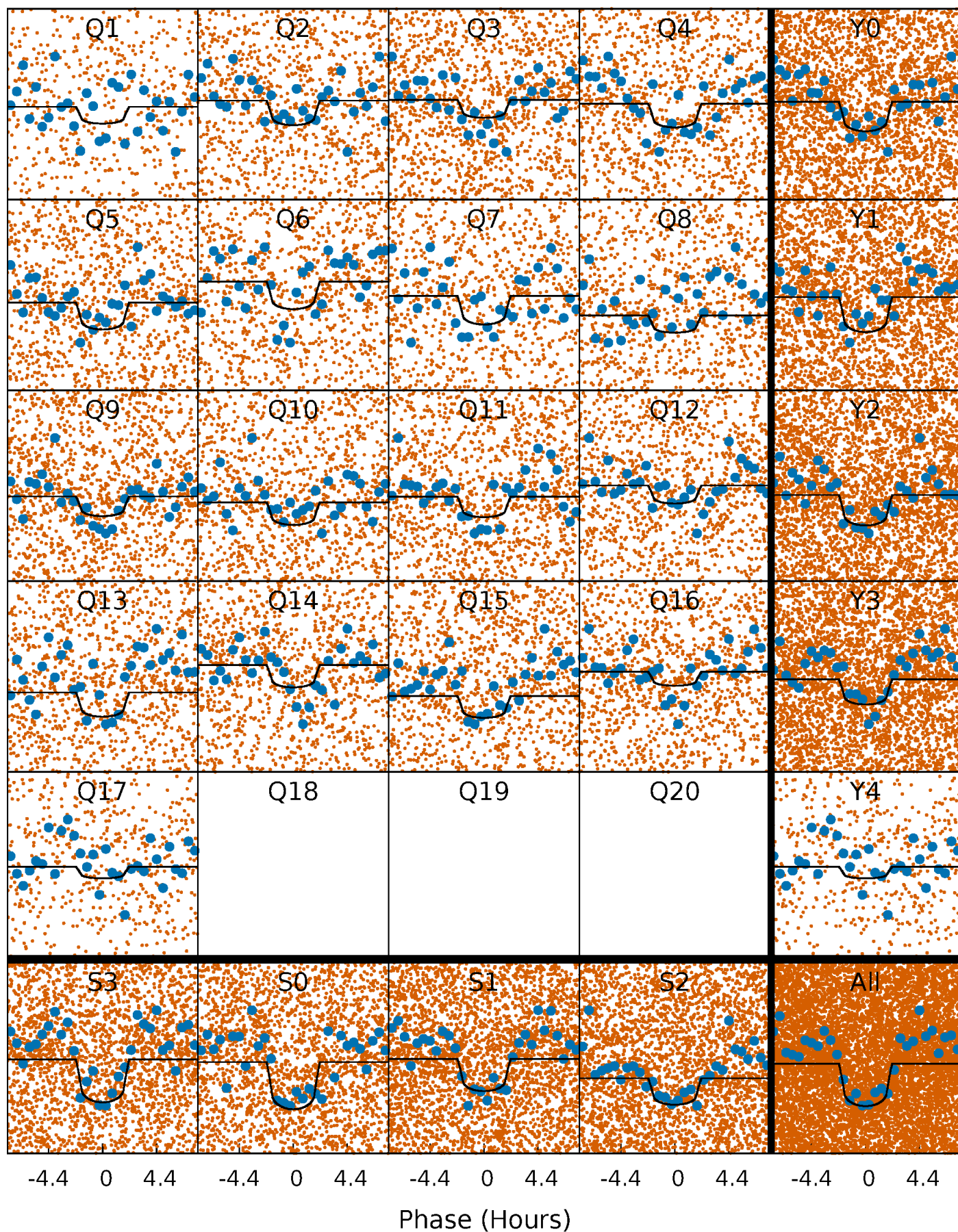
# PDC Quarter-Phased Transit Curves

TCE 002141938-01 P= 1.253751 Days  $T_0=132.495304$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 002141938-01 P= 1.253751 Days  $T_0=132.495304$  (BKJD)



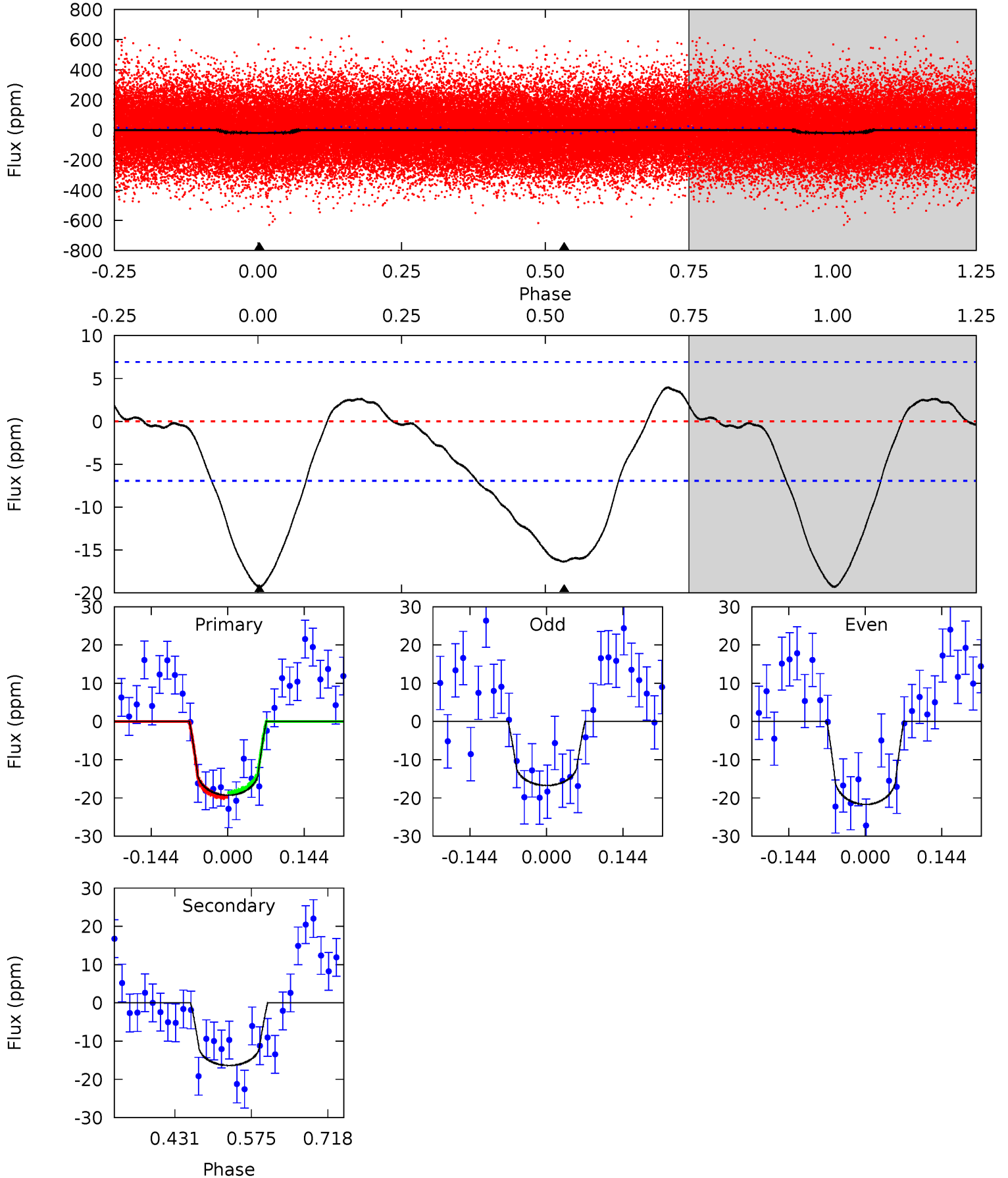
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

002141938-01, P = 1.253751 Days, E = 131.241553 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
12.5	10.6	0	0	4.49	1.46	1.79	12.5	12.5	10.6	10.6	1.61	0.82	0.17	0.40



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 002141938

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6718^{+185}_{-278}$	$4.115^{+0.162}_{-0.198}$	$0.180^{+0.200}_{-0.350}$	$1.765^{+0.558}_{-0.406}$	$1.480^{+0.211}_{-0.258}$	$0.379^{+0.327}_{-0.204}$
	+3%/-4%	+4%/-5%	+111%/-194%	+32%/-23%	+14%/-17%	+86%/-54%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 002141938-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-16 \pm 2$	$1.08^{+0.97}_{-0.70}$	$3408^{+299}_{-234}$	$5591^{+5164}_{-1422}$	$5.321^{+36.766}_{-3.922}$
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  $A_{obs} \gg 1.0$



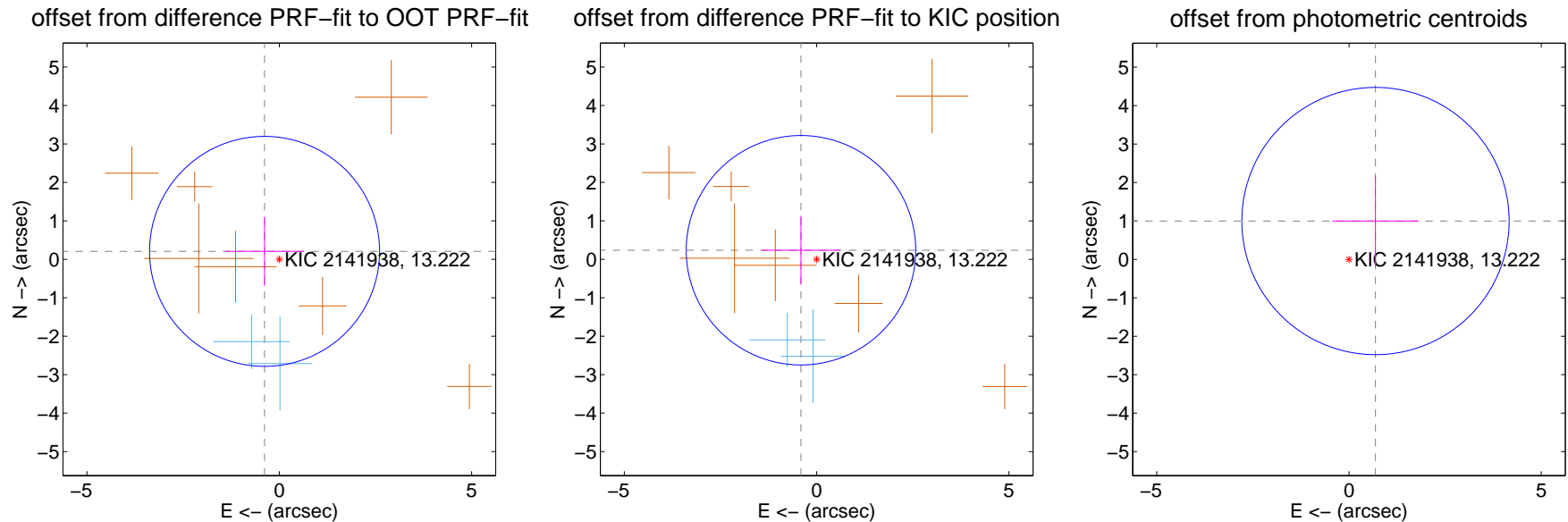
## DV Centroid Data

Supplemental centroid analysis for 002141938-01. Kepler magnitude: 13.22. Transit SNR 9.87

There are 2 quarters with good PRF difference image offsets

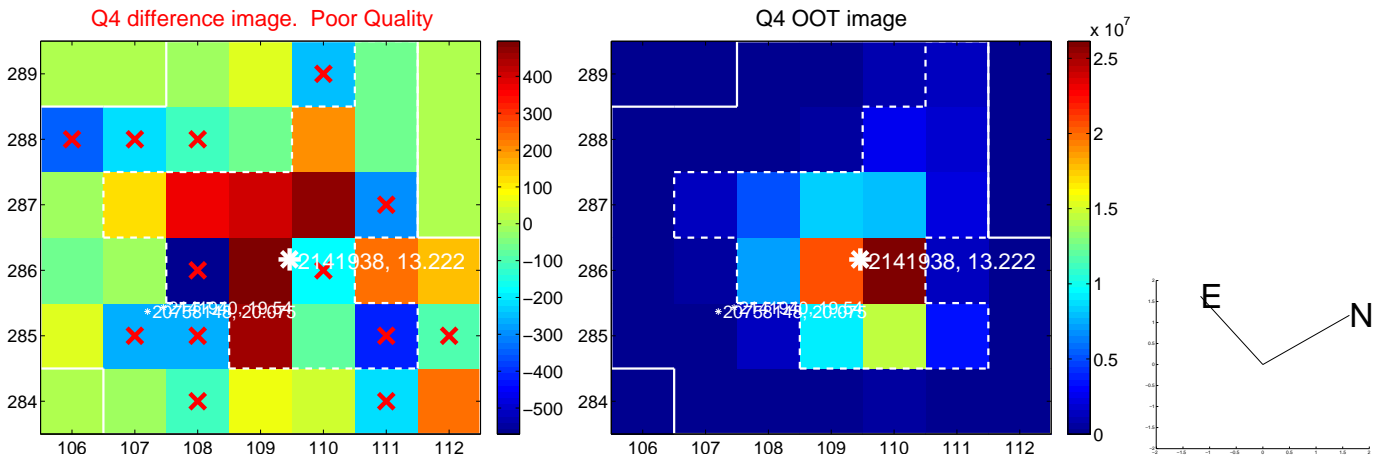
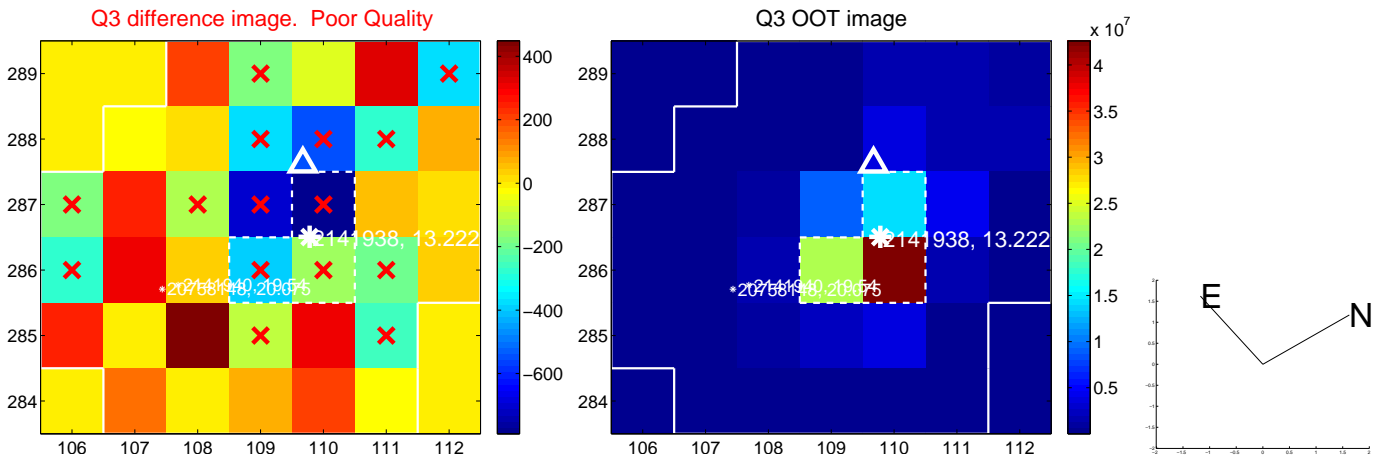
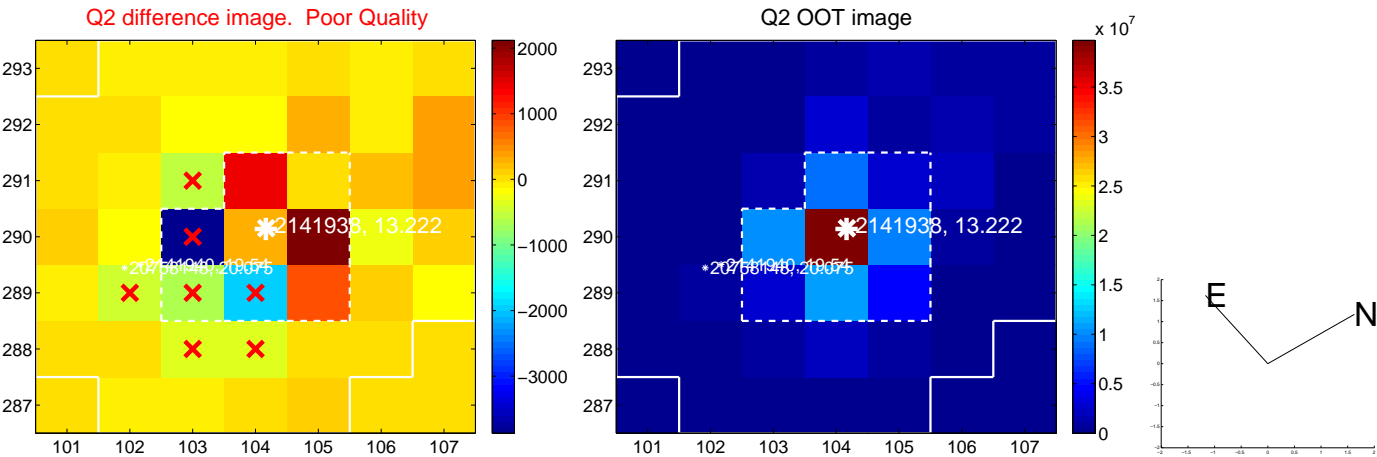
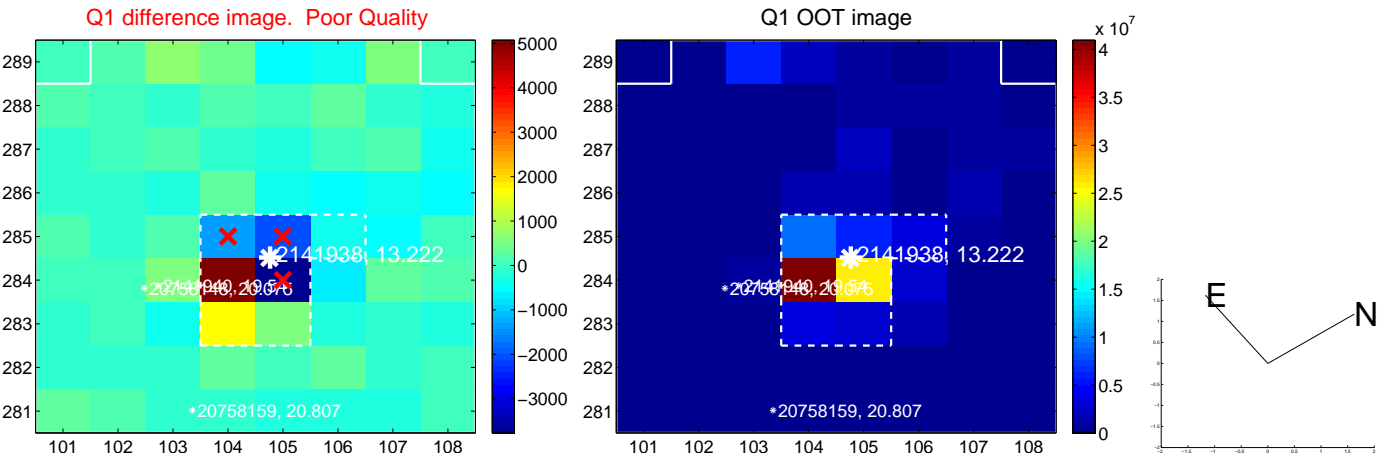
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.436 \pm 0.997$	0.44	$0.384 \pm 1.023$	$0.206 \pm 0.901$
PRF-fit source offset from KIC position	$0.471 \pm 0.994$	0.47	$0.408 \pm 1.026$	$0.236 \pm 0.894$
photometric centroid source offset	$1.21 \pm 1.16$	1.05	$-0.69 \pm 1.12$	$1.00 \pm 1.18$

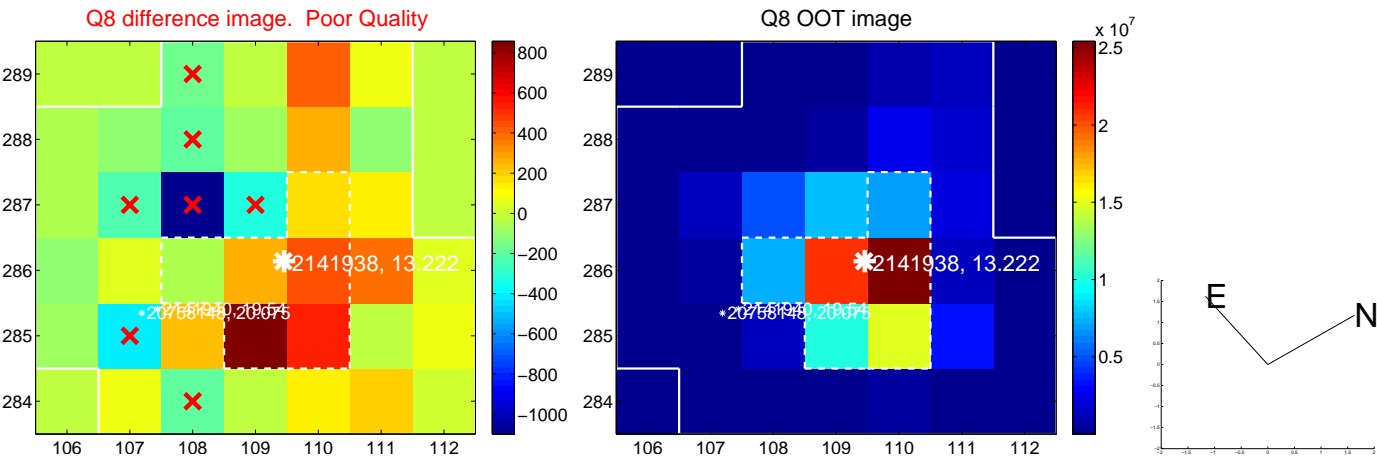
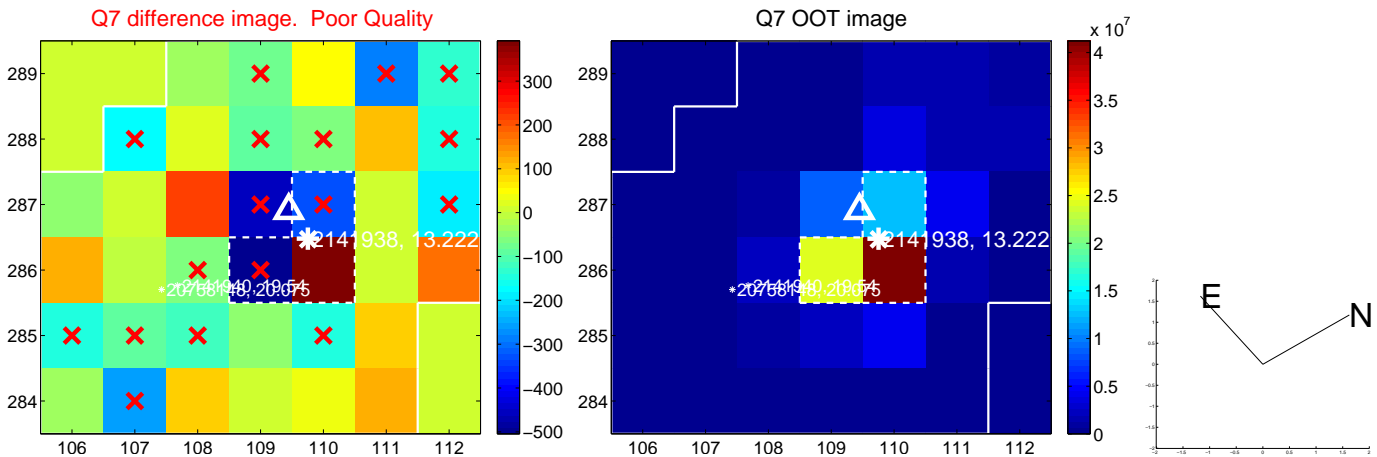
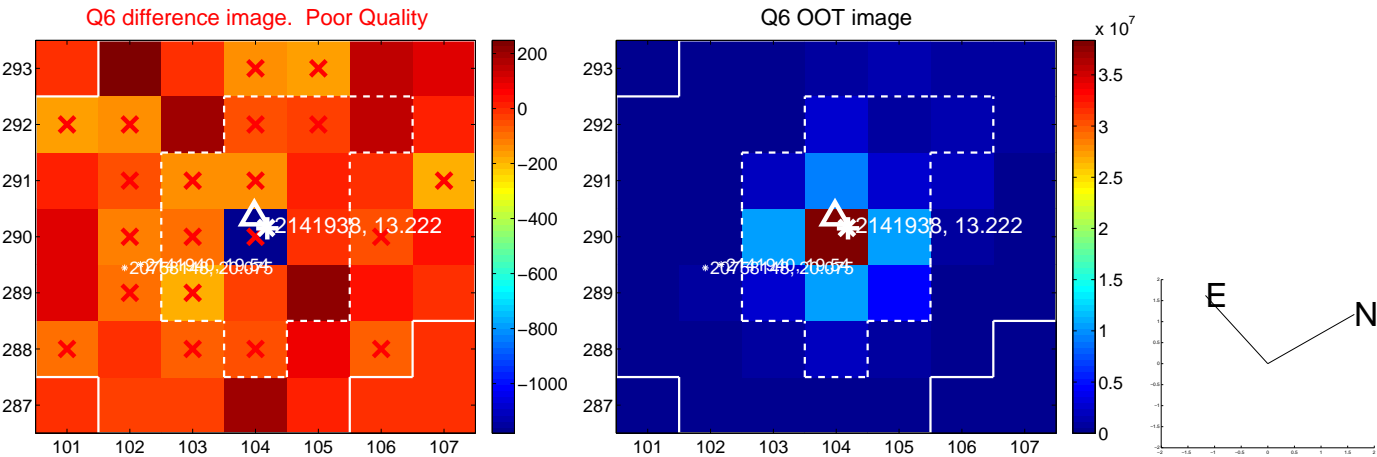
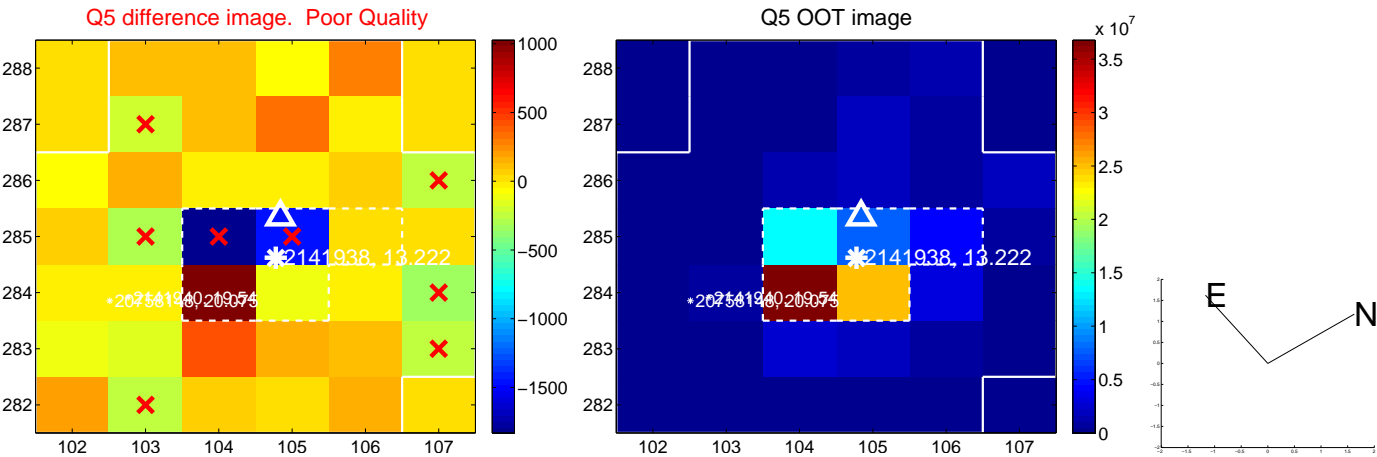


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

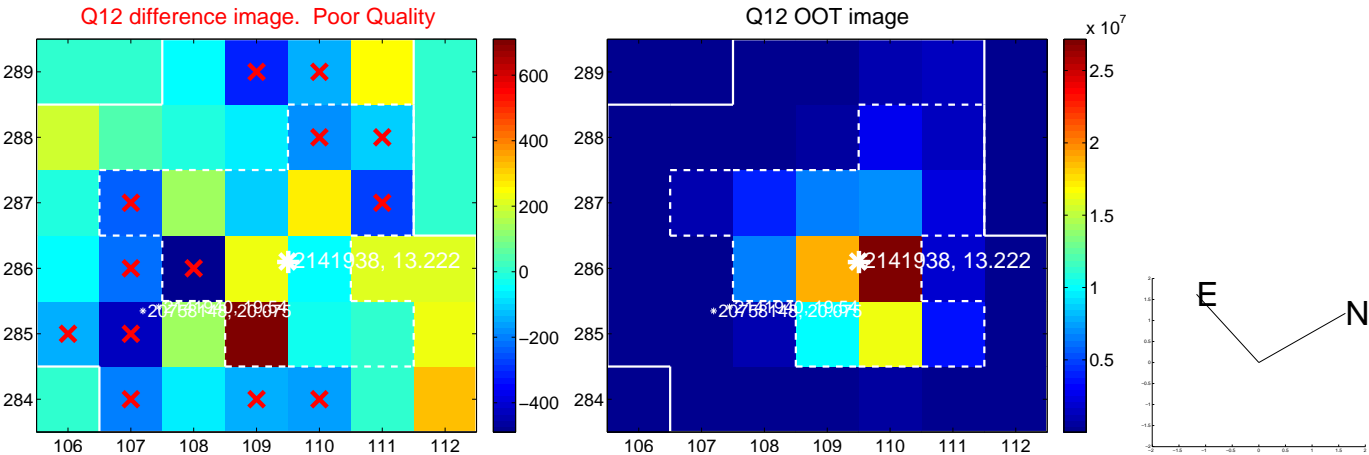
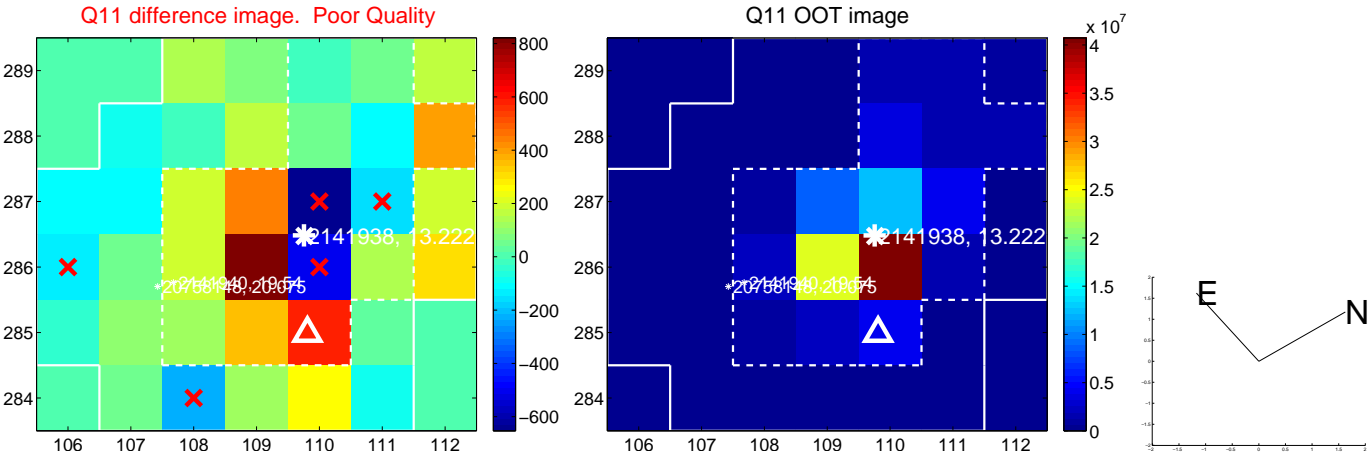
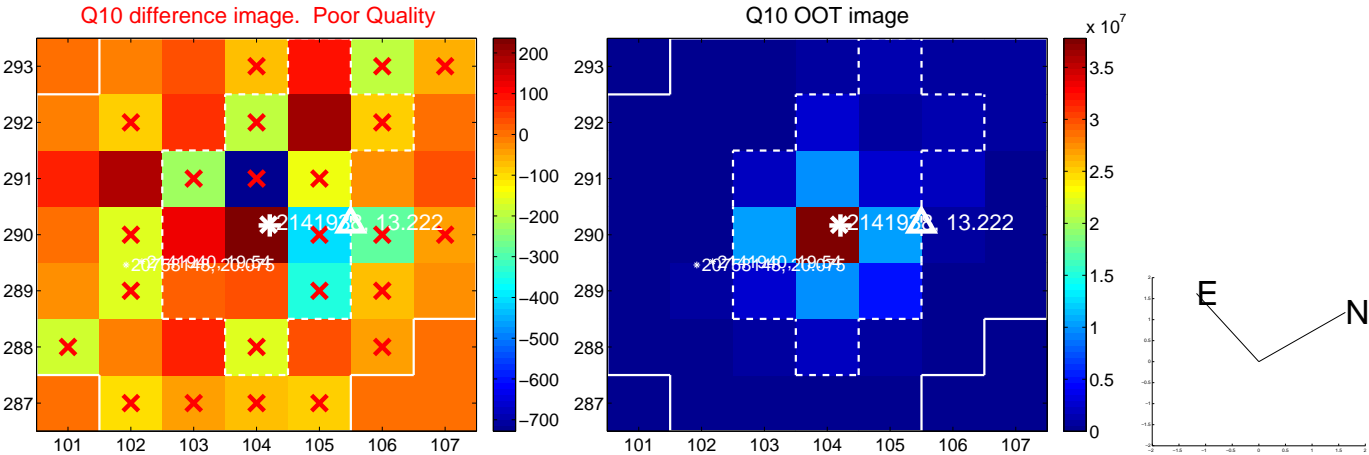
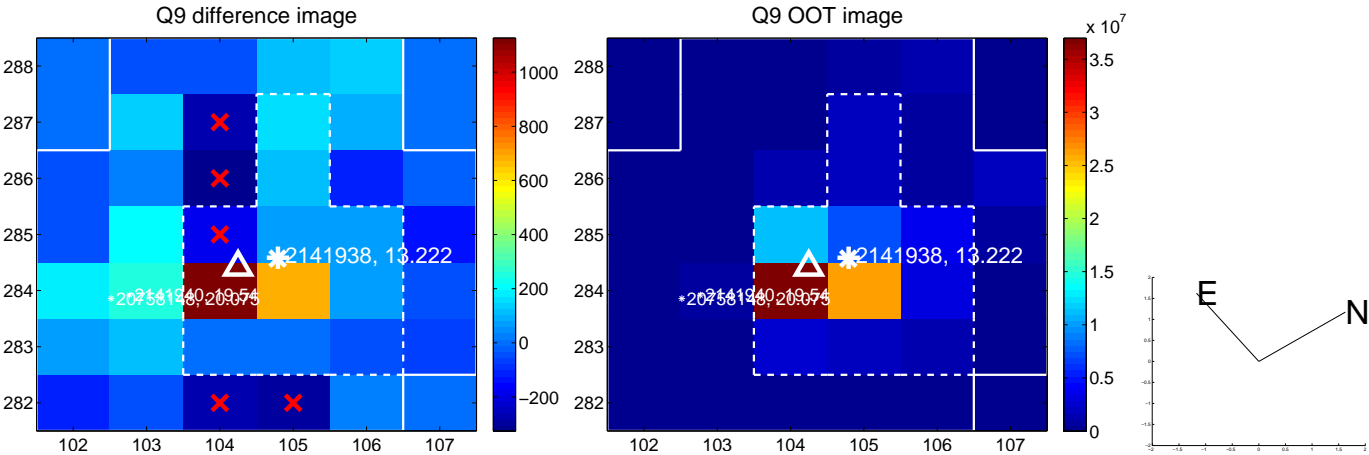
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



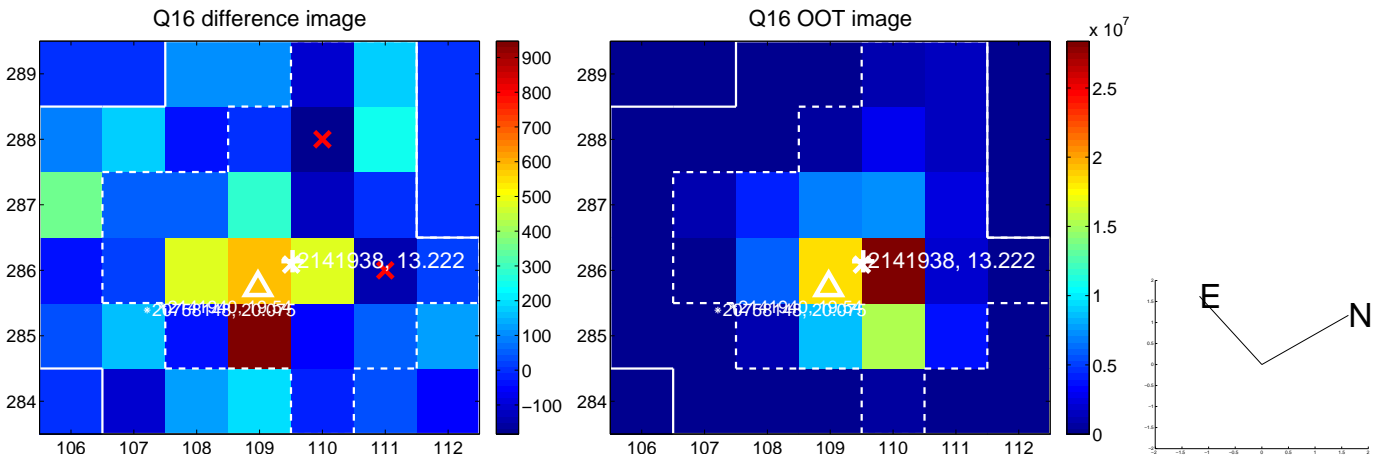
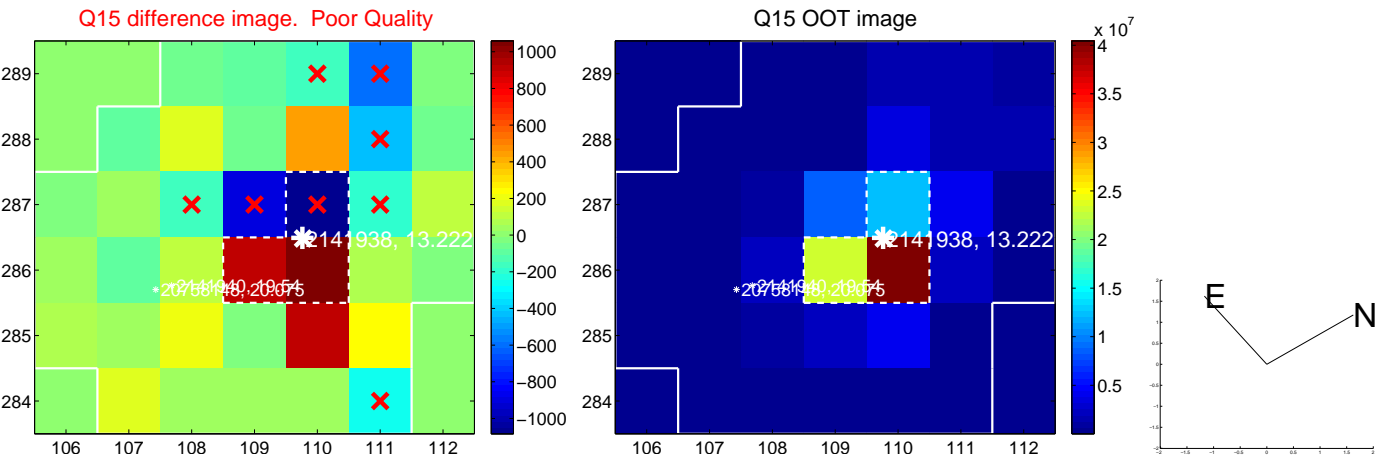
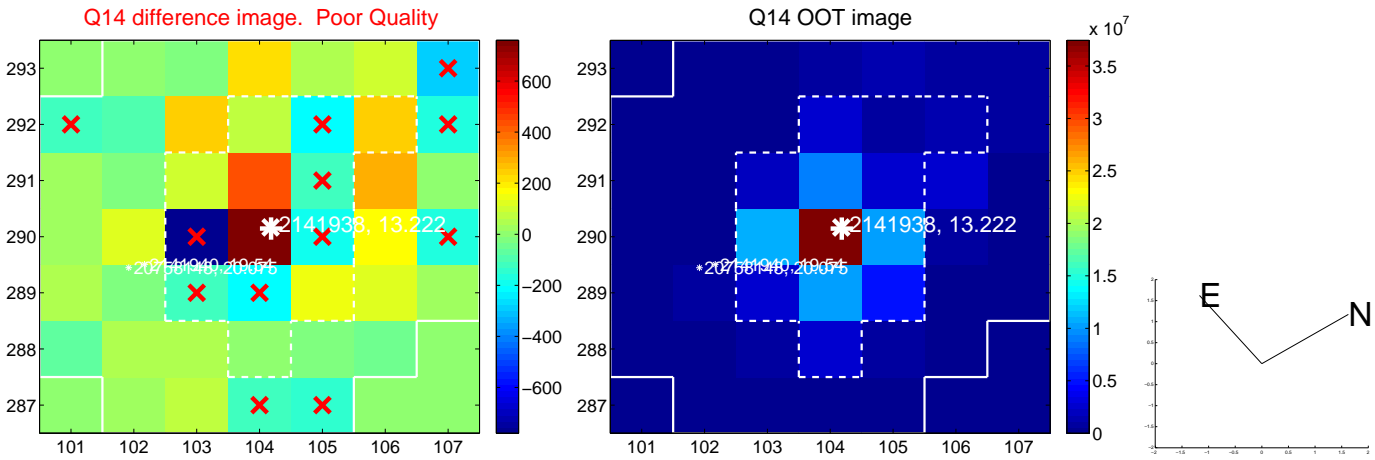
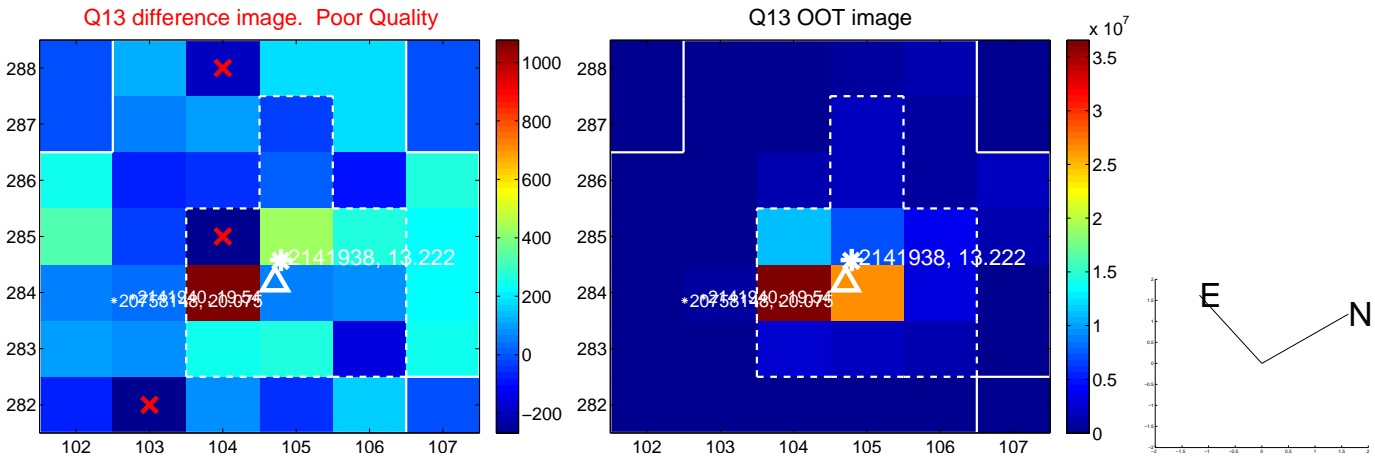
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



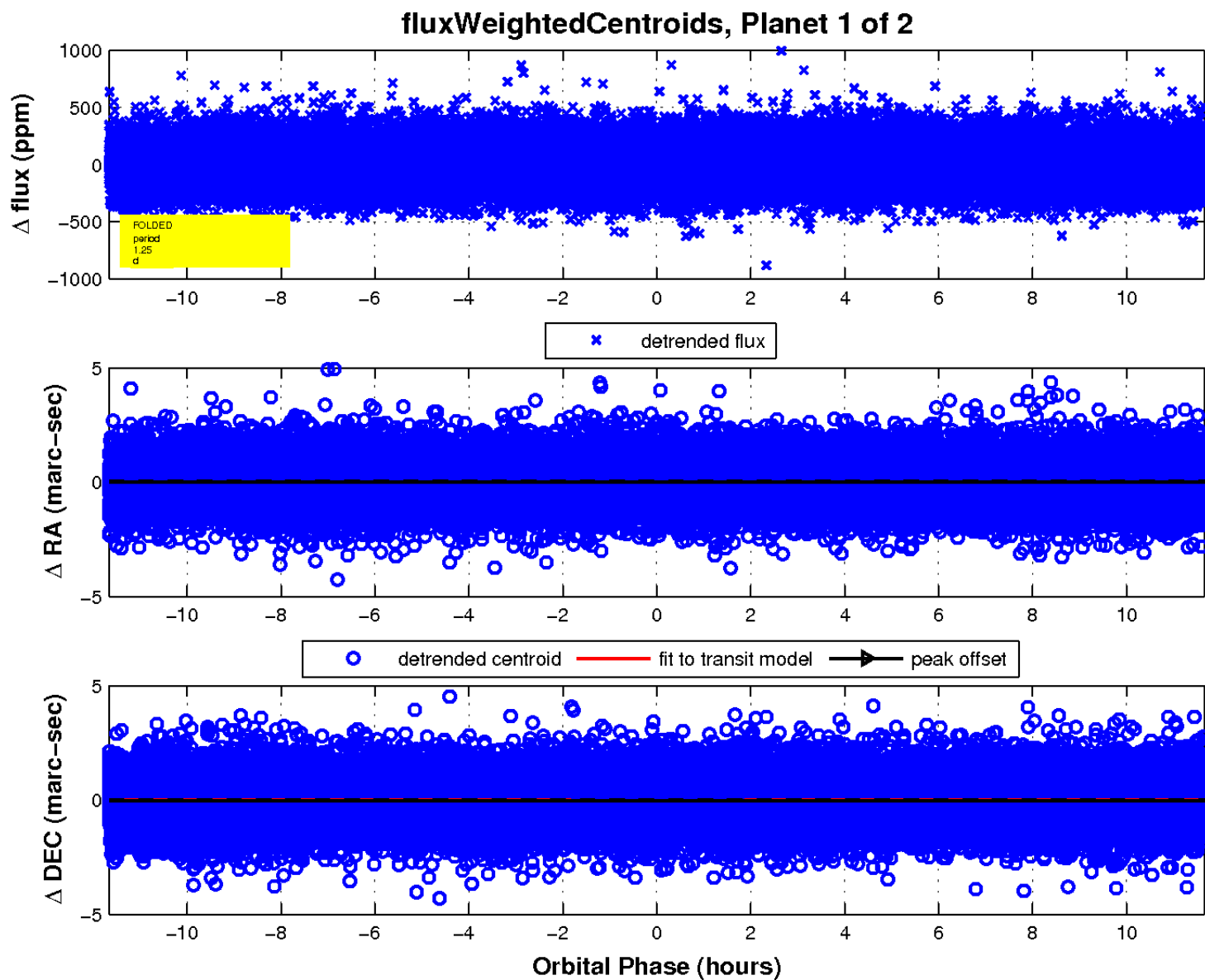
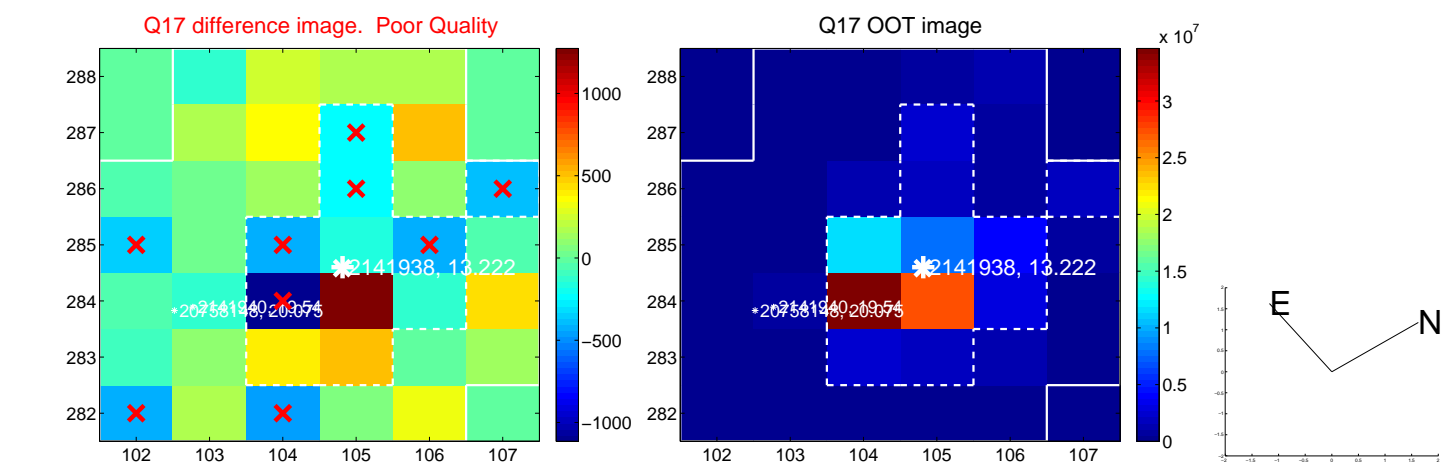
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



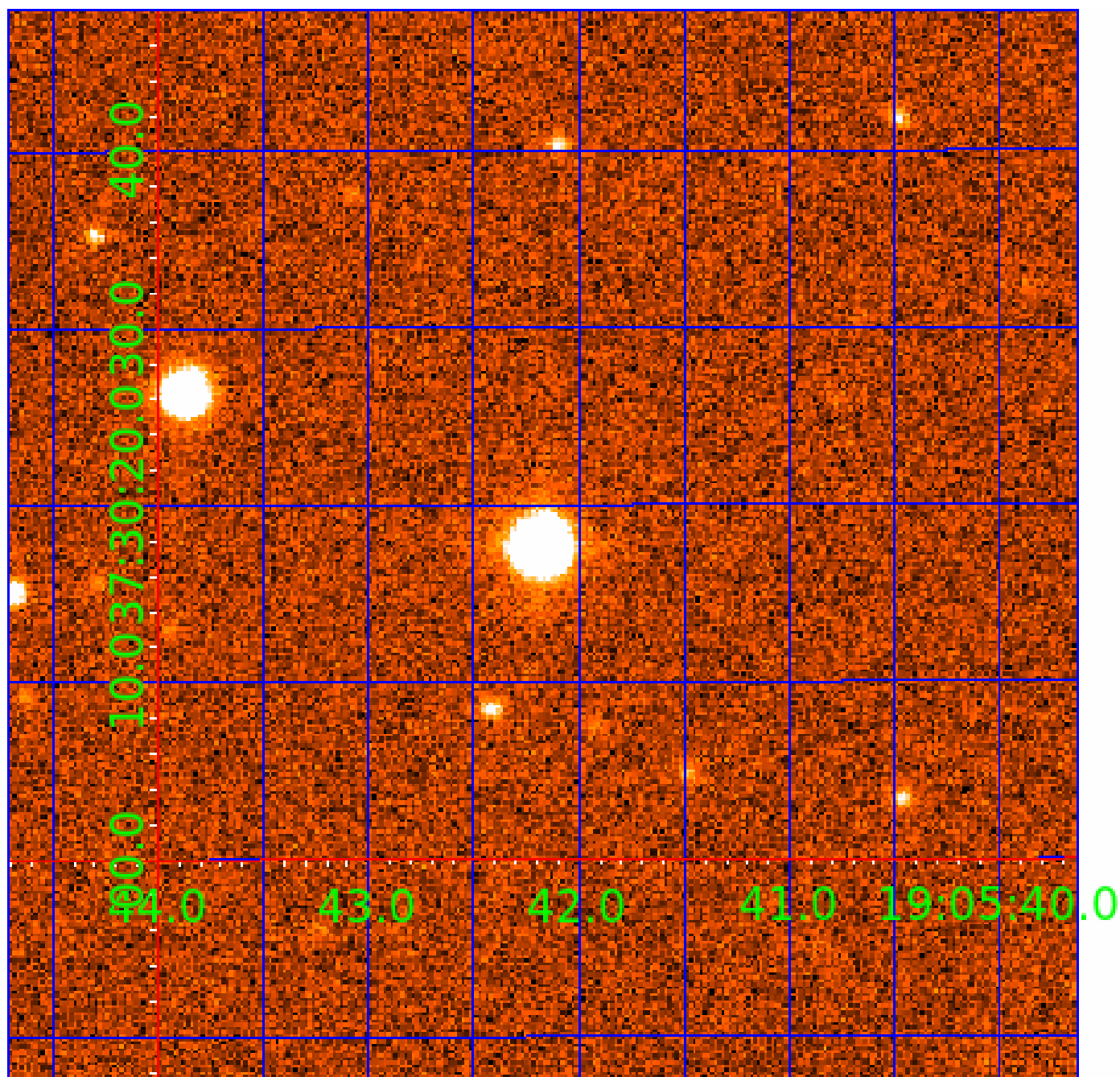
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





# UKIRT Image

Declination



# KIC 002141938

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002141938-01	OBS	No	1.253751	132.495303	21.3	3.887	8.8	9.9	1.76	6718	0.82	8447.64
002141938-02	OBS	No	1.253621	131.966960	20.0	8.303	9.4	12.5	1.76	6718	0.92	8448.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002141938-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_UNCERTAIN
002141938-02	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

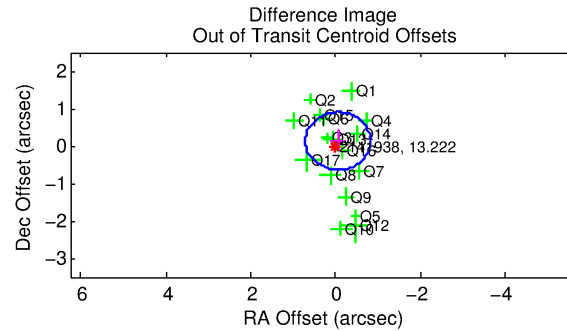
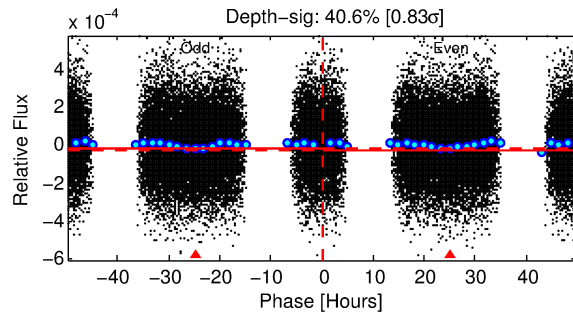
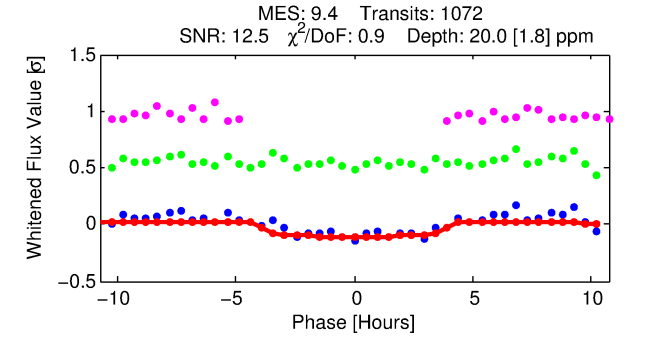
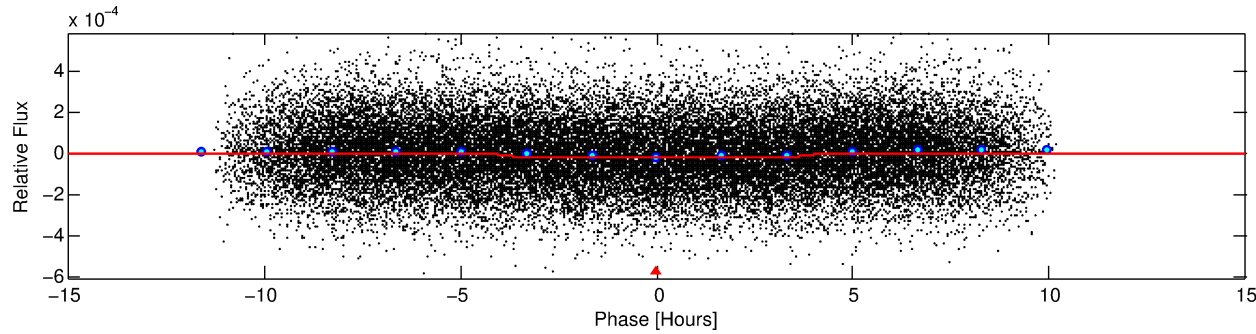
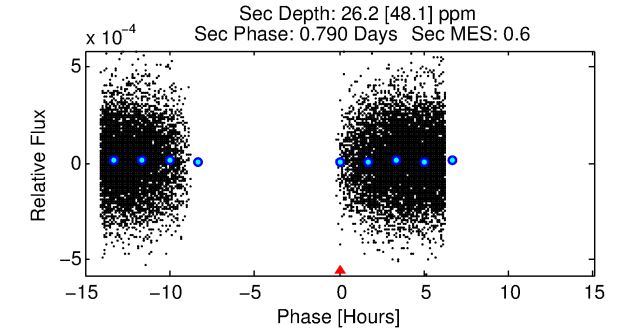
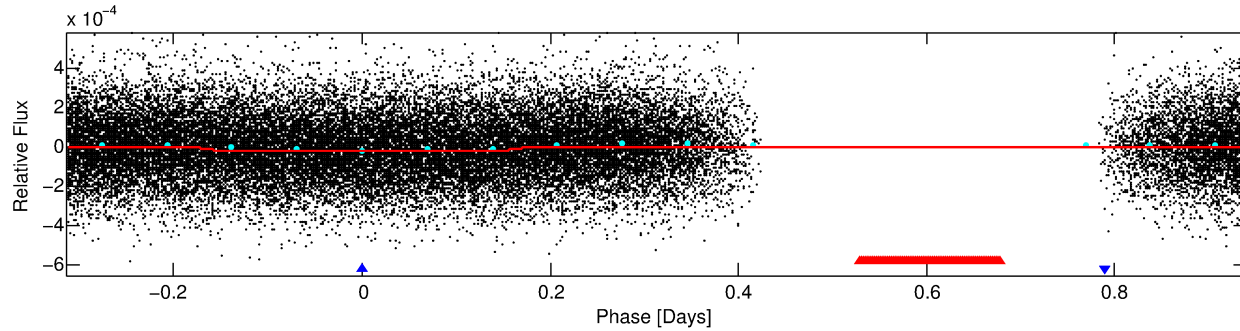
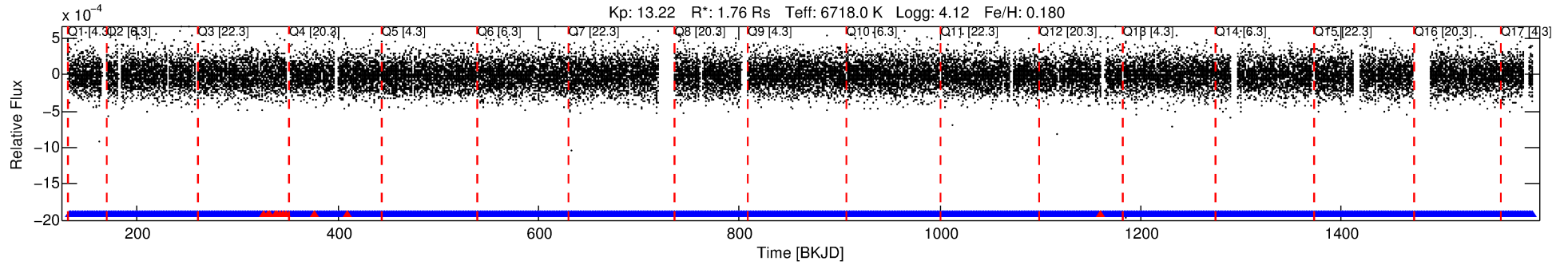
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002141938-02

No Significant Match Found

# DV One-Page Summary

KIC: 2141938 Candidate: 2 of 2 Period: 1.254 d



## DV Fit Results:

Period = 1.25362 [0.00002] d  
Epoch = 131.9670 [0.0057] BKJD  
Rp/R\* = 0.0048 [0.0017]  
a/R\* = 1.08 [0.30]  
b = 0.90 [0.46]  
Seff = 8448.81 [3423.60]  
Teff = 2445 [248] K  
Rp = 0.92 [0.43] Re  
a = 0.0259 [0.0067] AU  
Ag = 11.47 [22.96] [0.46σ]  
Teffp = 6956 [3434] K [1.31σ]

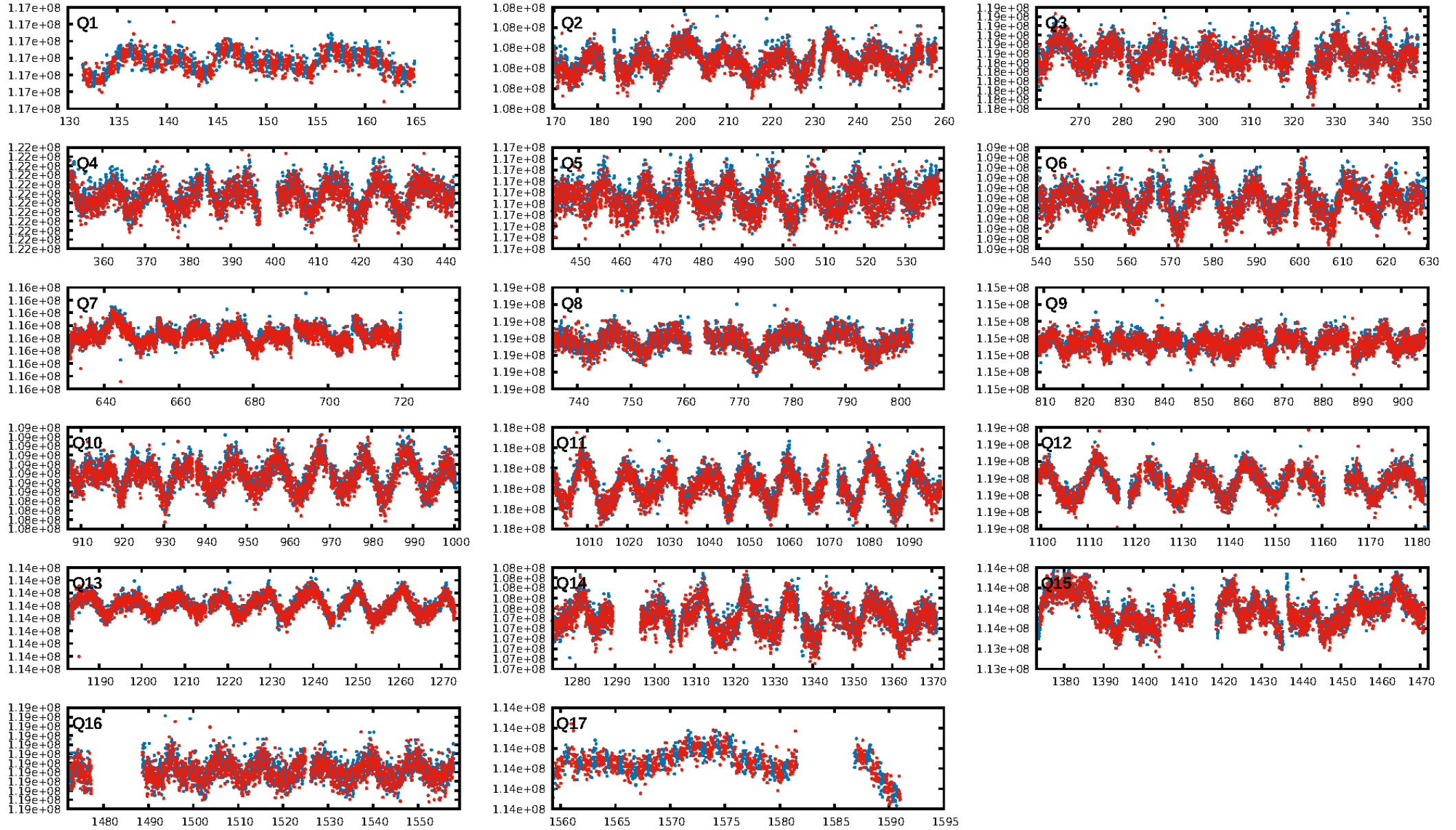
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [1012/1023]  
GhostDiagnostic-chr: 1.431  
Centroid-sig: 1.1%  
Centroid-so: 2.140 arcsec [2.48σ]  
OotOffset-rm: 0.148 arcsec [0.58σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.186 arcsec [0.69σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

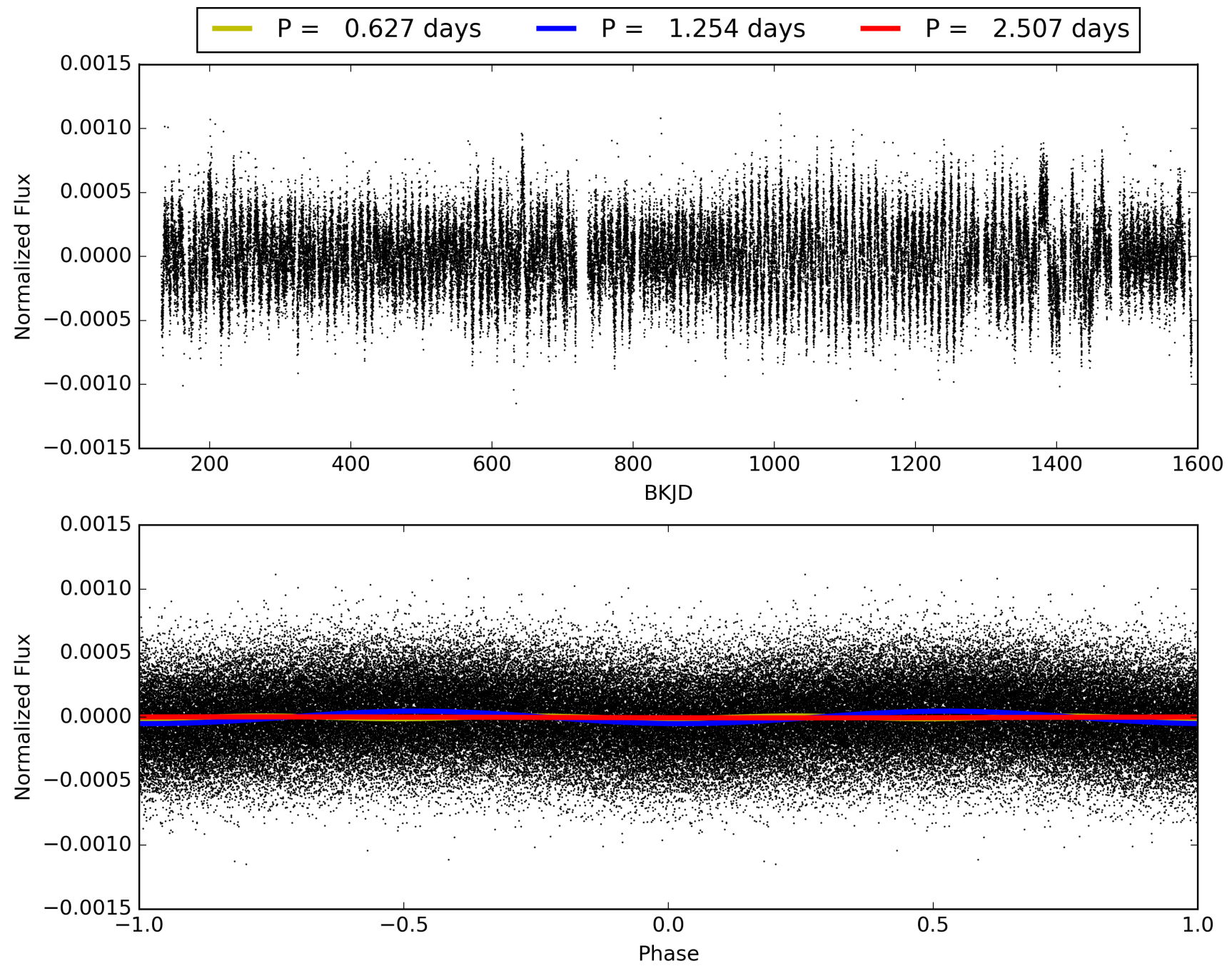
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 03:30:49 Z

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

# TCE 002141938-02, PDC Light Curves

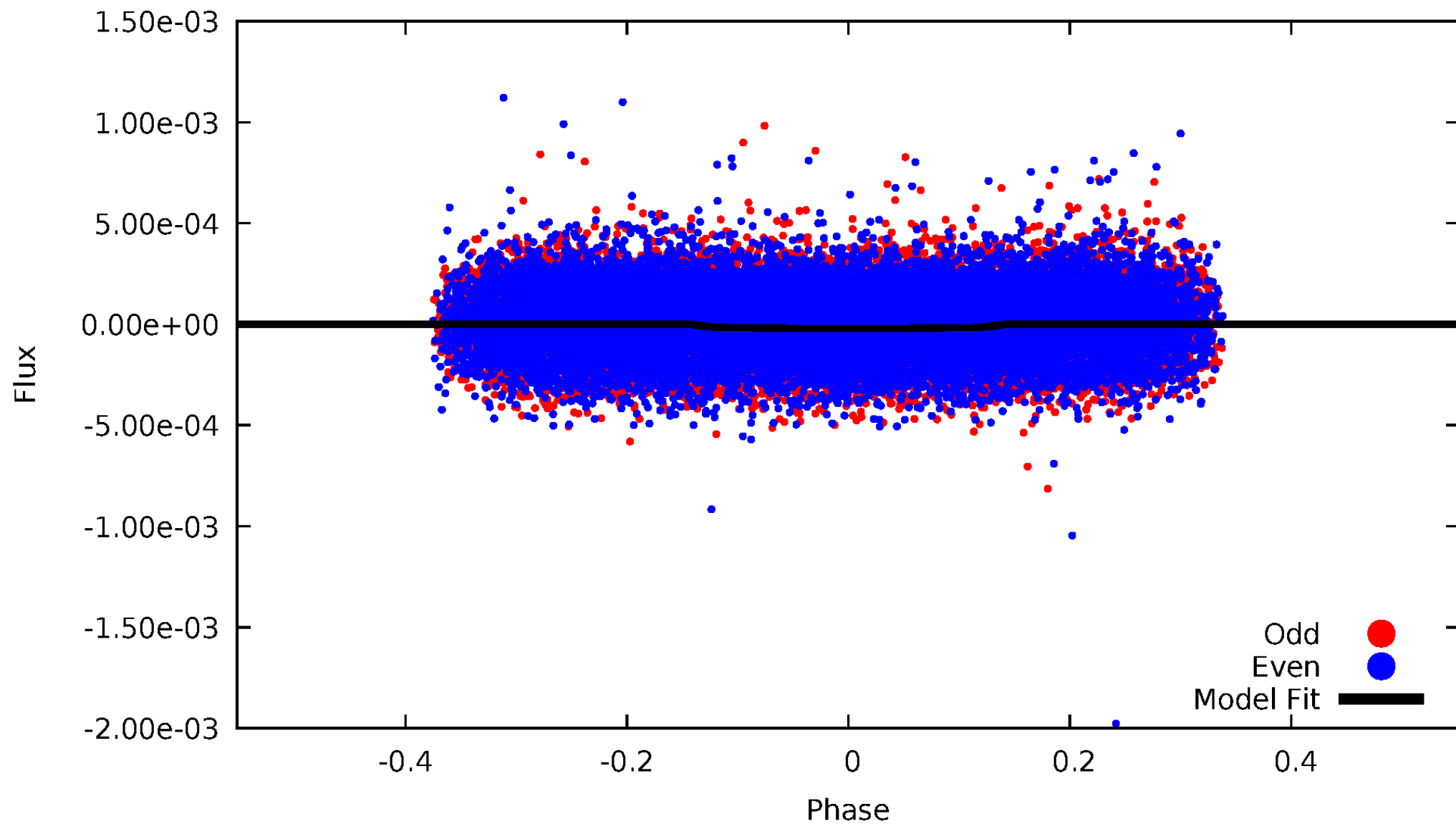


TCE 002141938-02



# DV Odd/Even

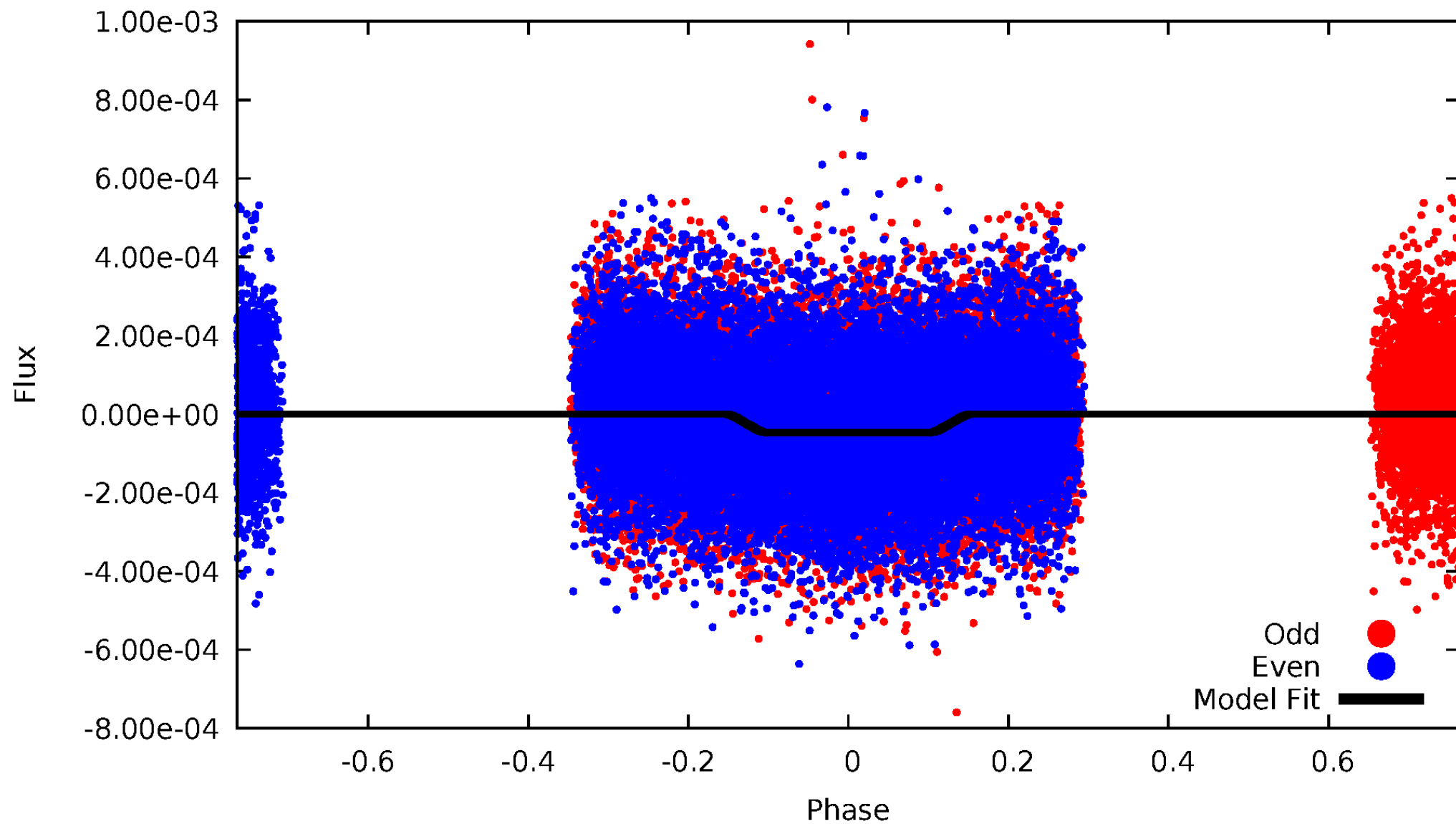
TCE 002141938-02





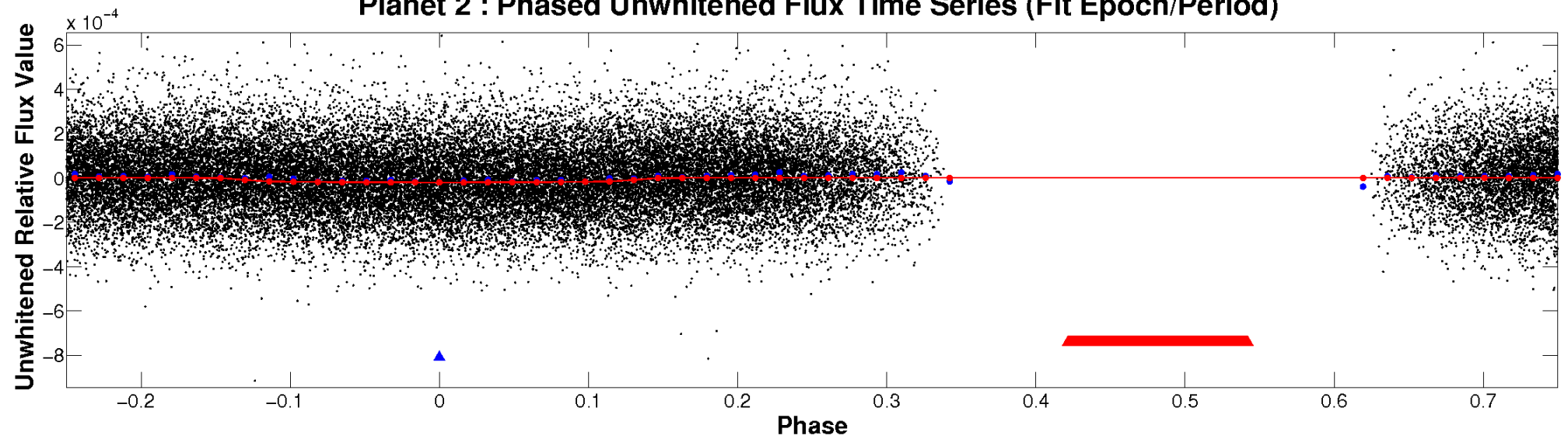
# ALT Odd/Even

TCE 002141938-02

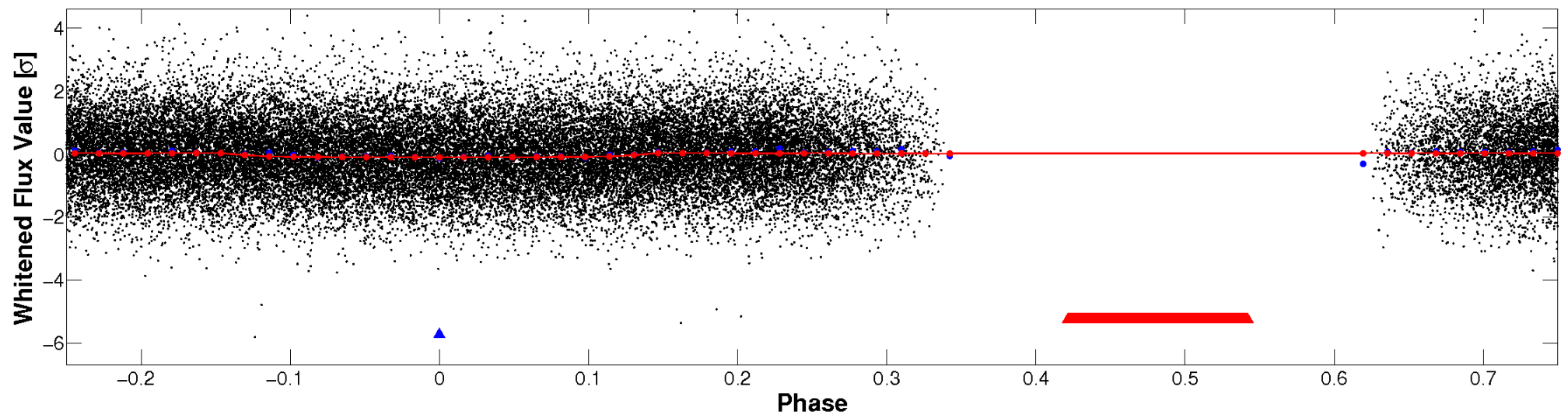


# Non-Whitened Vs. Whitened Light Curve

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

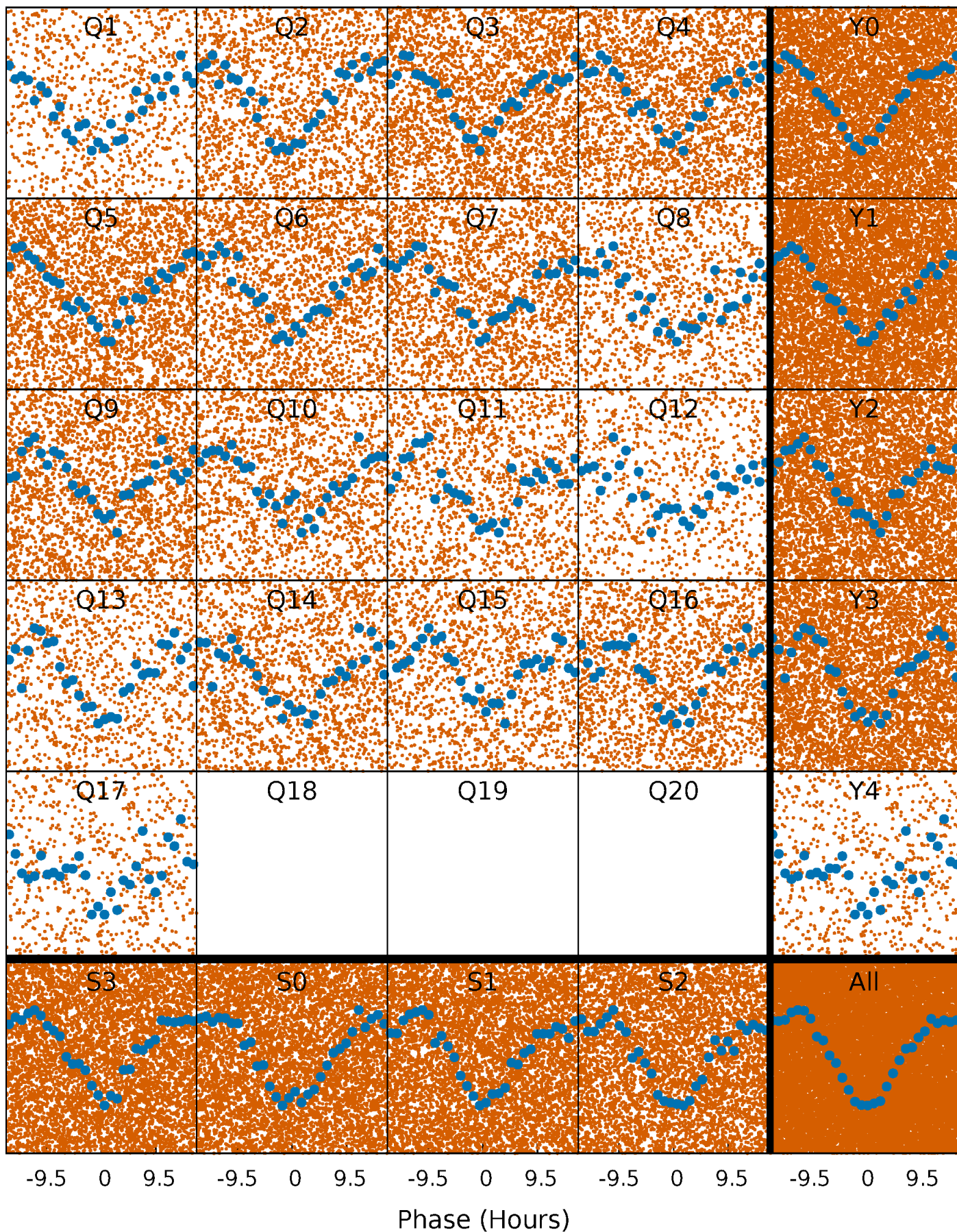


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

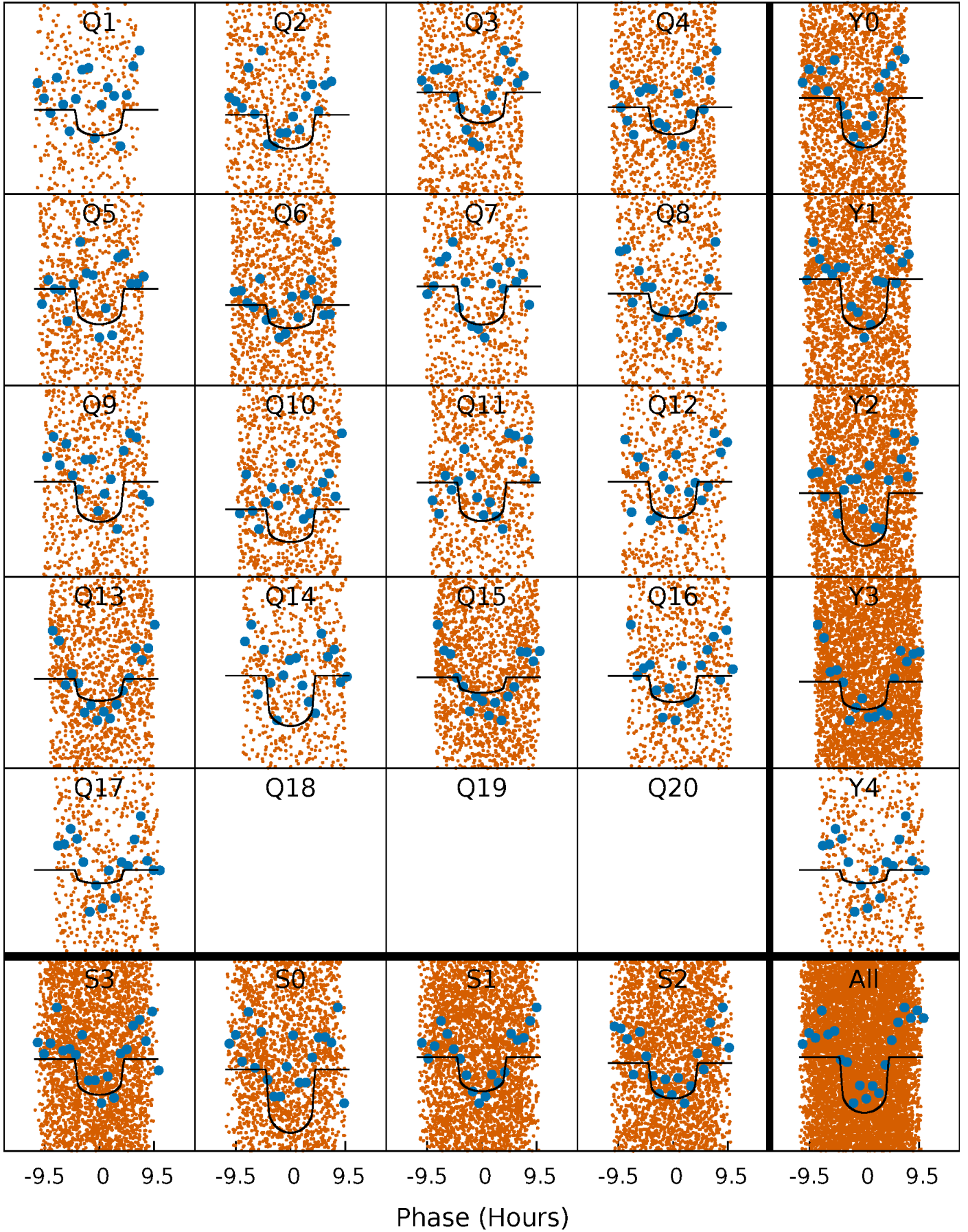
TCE 002141938-02   P= 1.253621 Days    $T_0=131.966960$  (BKJD)





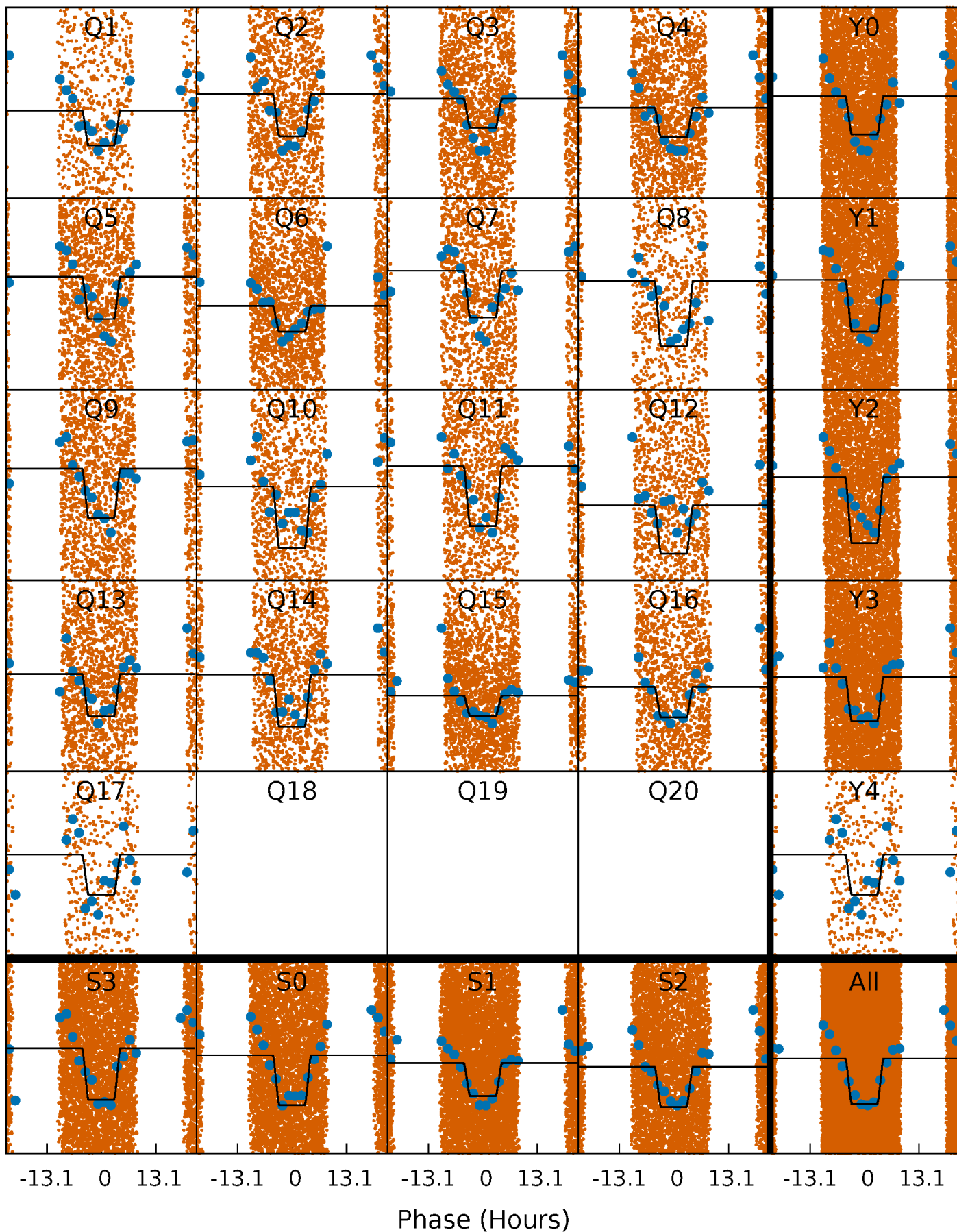
# DV Quarter-Phased Transit Curves

TCE 002141938-02   P= 1.253621 Days    $T_0=131.966960$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

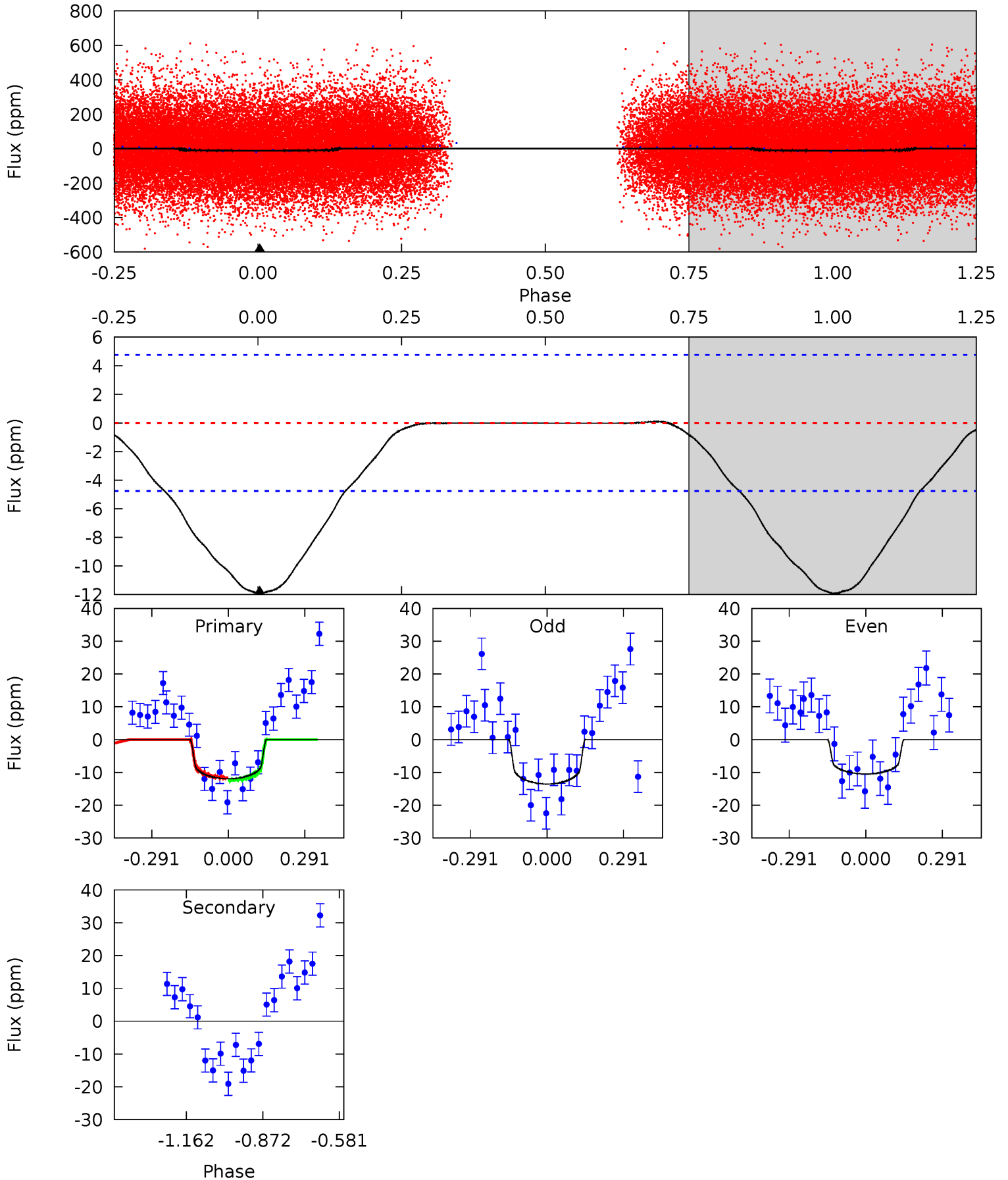
TCE 002141938-02     $P = 1.253700$  Days     $T_0 = 131.931671$  (BKJD)



# DV Model-Shift Uniqueness Test

002141938-02, P = 1.253621 Days, E = 130.713339 Days

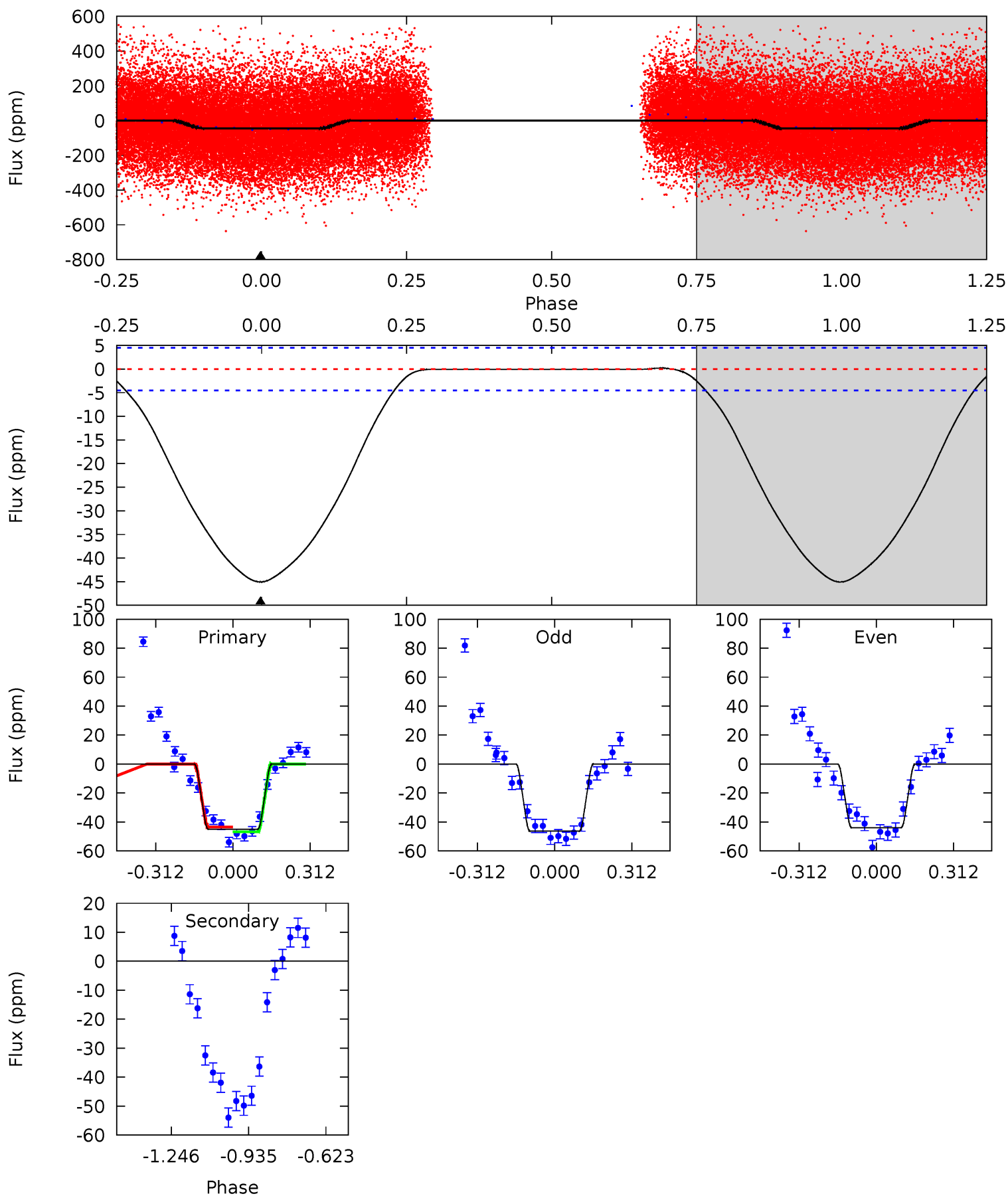
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	0	0	0	4.34	1.06	0.07	10.9	10.9	0	0	1.39	0.88	0.01	0.35



# Alt Model-Shift Uniqueness Test

002141938-02, P = 1.253700 Days, E = 130.677971 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
43.3	0	0	0	4.32	1.01	0.24	43.3	43.3	0	0	1.12	1.00	0.01	1.51





### Stellar Parameters For KIC 002141938

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6718^{+185}_{-278}$	$4.115^{+0.162}_{-0.198}$	$0.180^{+0.200}_{-0.350}$	$1.765^{+0.558}_{-0.406}$	$1.480^{+0.211}_{-0.258}$	$0.379^{+0.327}_{-0.204}$
	+3%/-4%	+4%/-5%	+111%/-194%	+32%/-23%	+14%/-17%	+86%/-54%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 002141938-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1$	$0.93^{+0.36}_{-0.34}$	$3413^{+268}_{-220}$	$-3281^{+6487}_{-689}$	$0.046^{+0.482}_{-0.558}$
Alt.	$0 \pm 1$	$1.32^{+0.37}_{-0.35}$	$3420^{+286}_{-229}$	$-3342^{+666}_{-383}$	$-0.002^{+0.237}_{-0.246}$

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

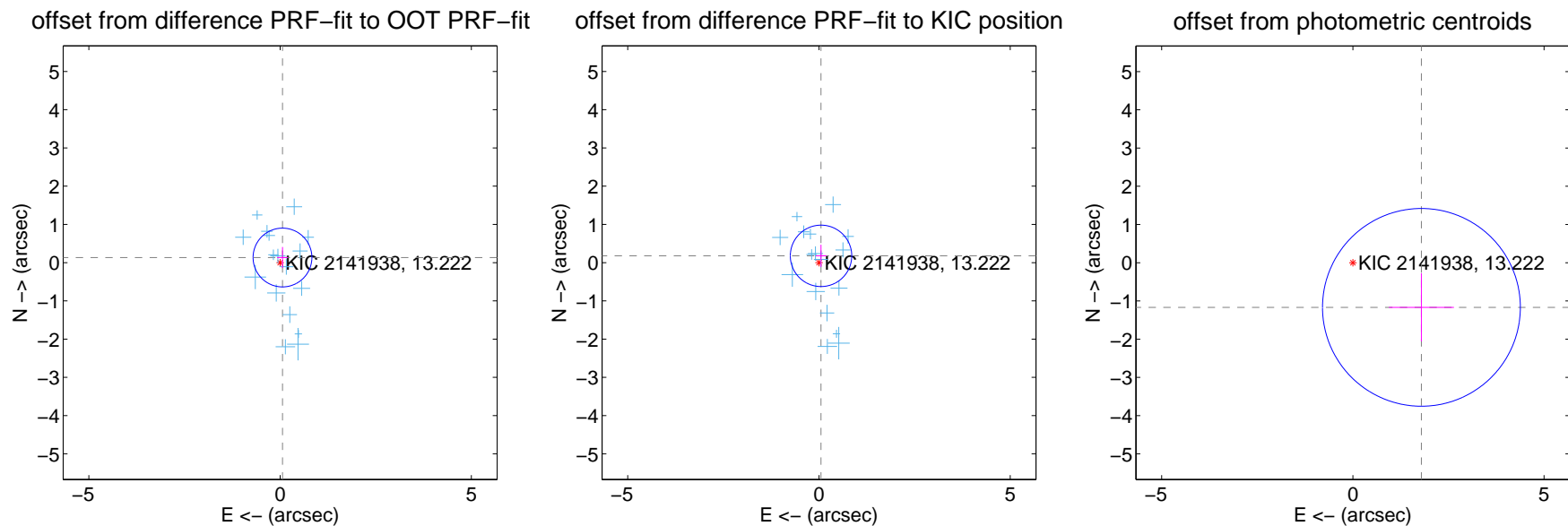
## DV Centroid Data

Supplemental centroid analysis for 002141938-02. Kepler magnitude: 13.22. Transit SNR 12.53

There are 17 quarters with good PRF difference image offsets

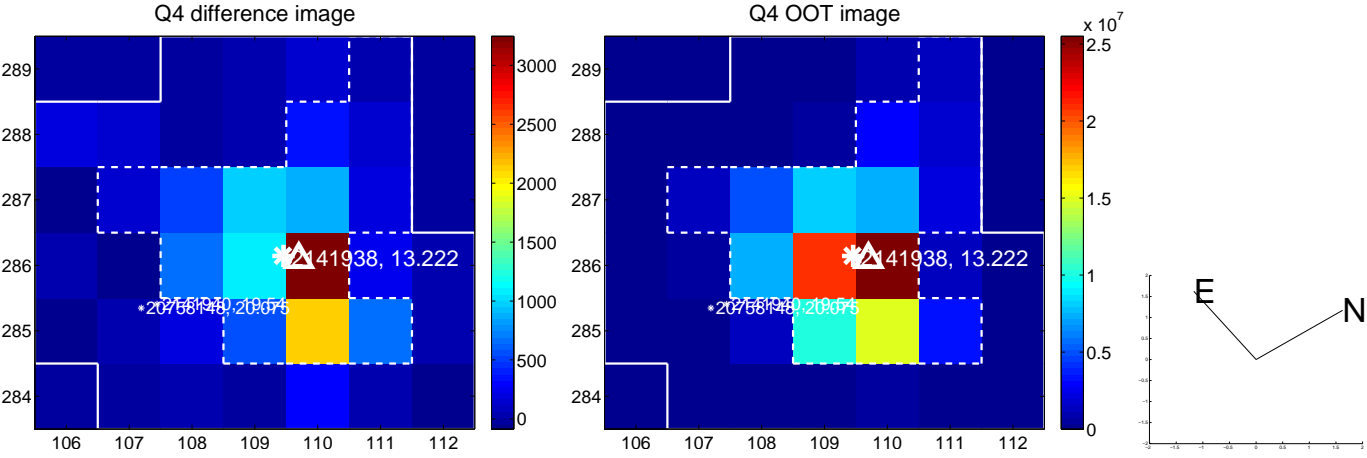
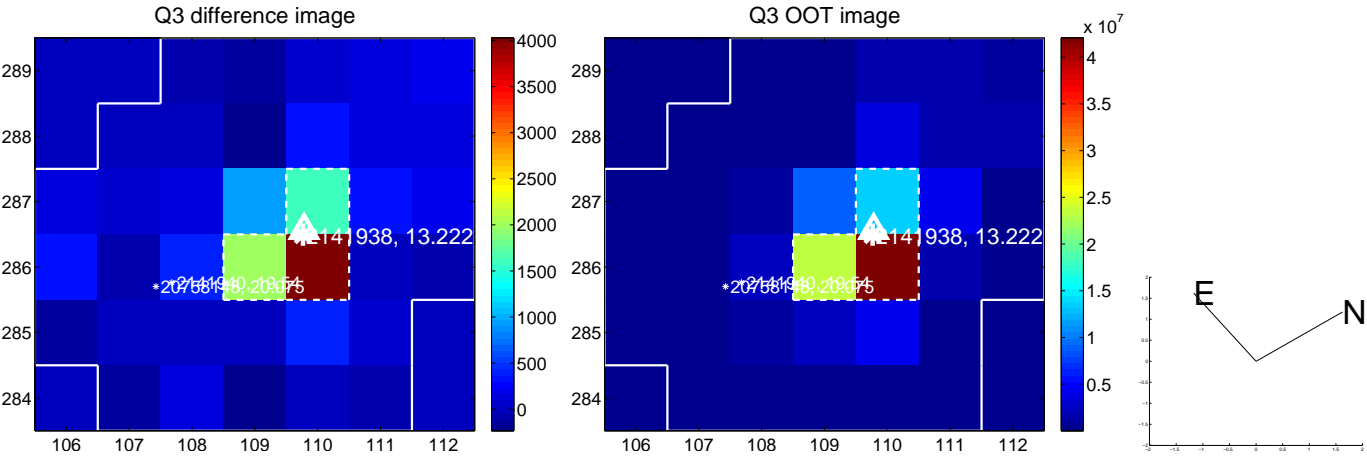
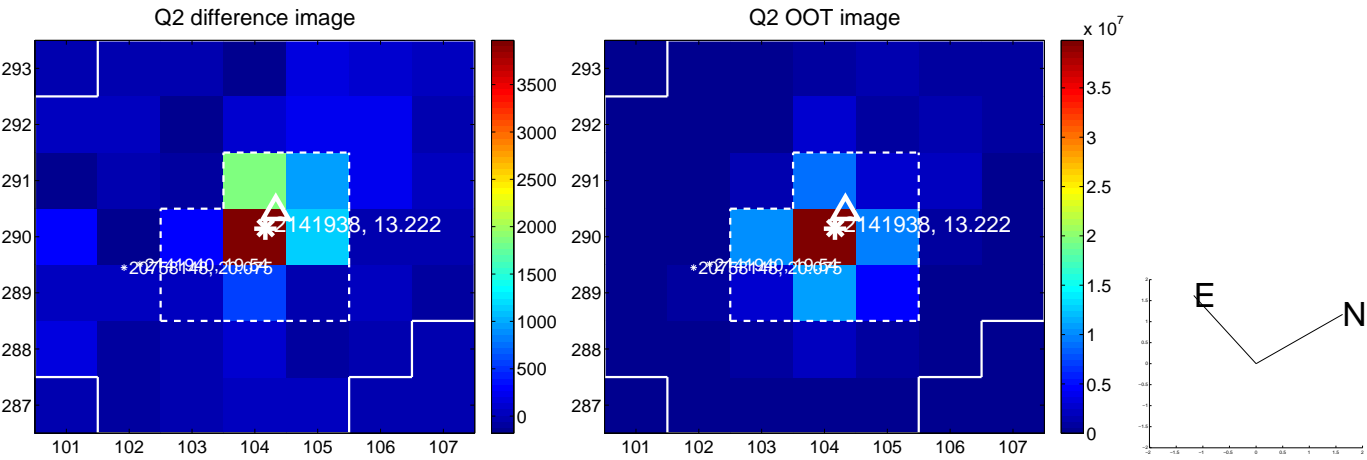
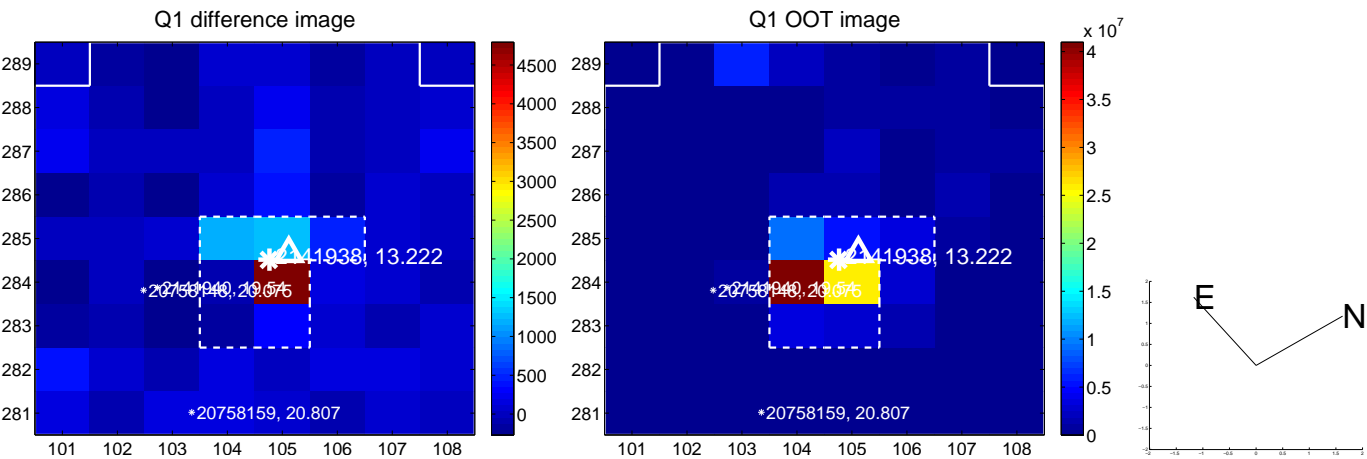
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.148 \pm 0.256$	0.58	$-0.062 \pm 0.140$	$0.134 \pm 0.275$
PRF-fit source offset from KIC position	$0.186 \pm 0.268$	0.69	$-0.053 \pm 0.139$	$0.178 \pm 0.291$
photometric centroid source offset	$2.14 \pm 0.86$	2.48	$-1.79 \pm 0.85$	$-1.17 \pm 0.89$

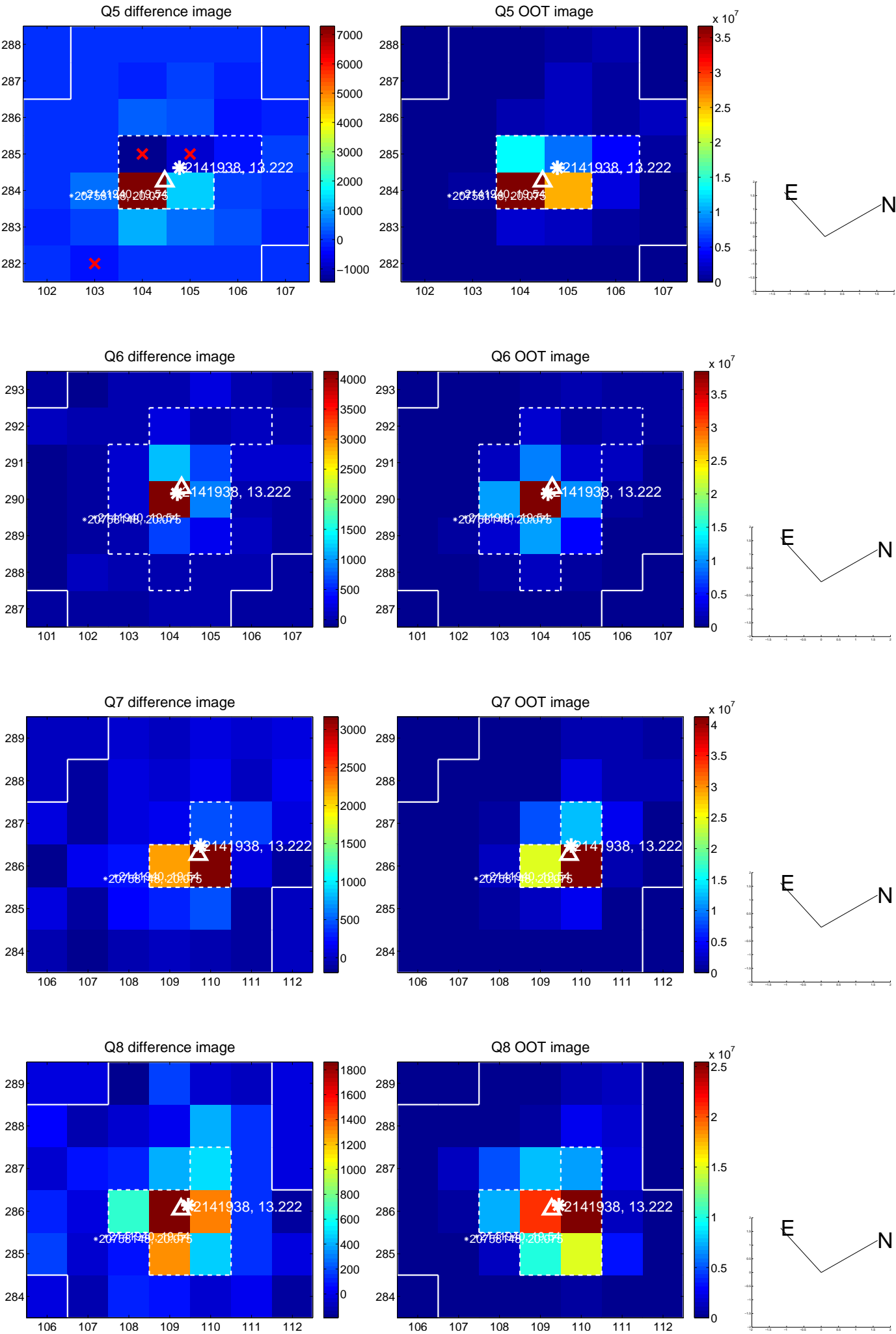


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

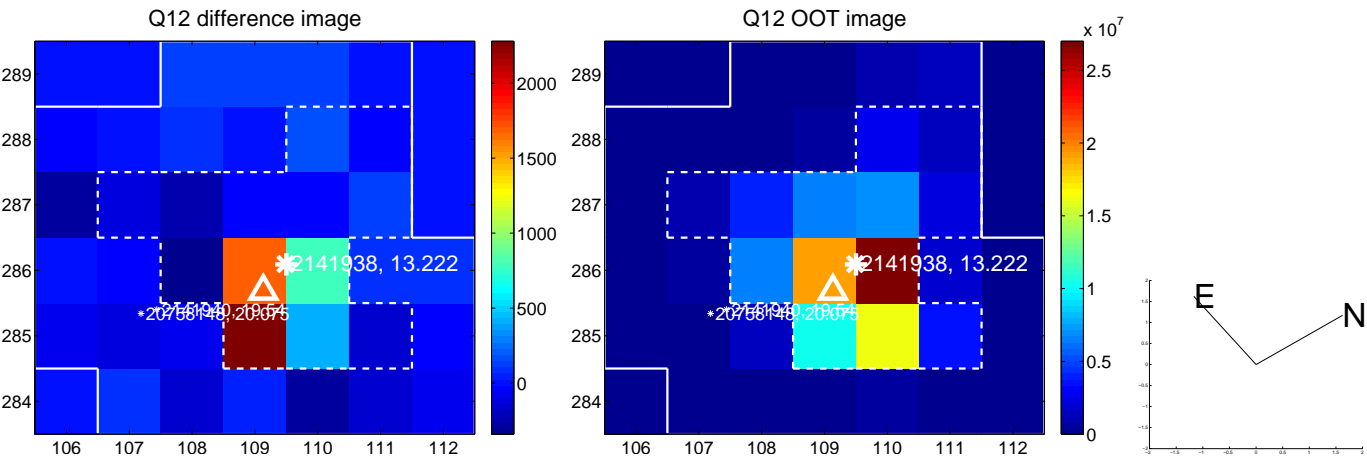
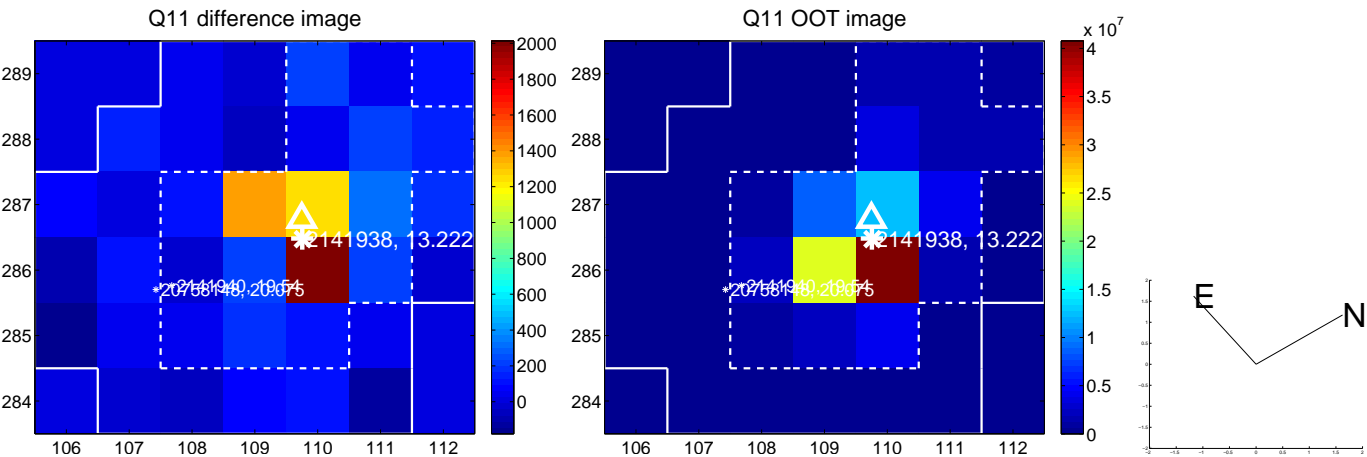
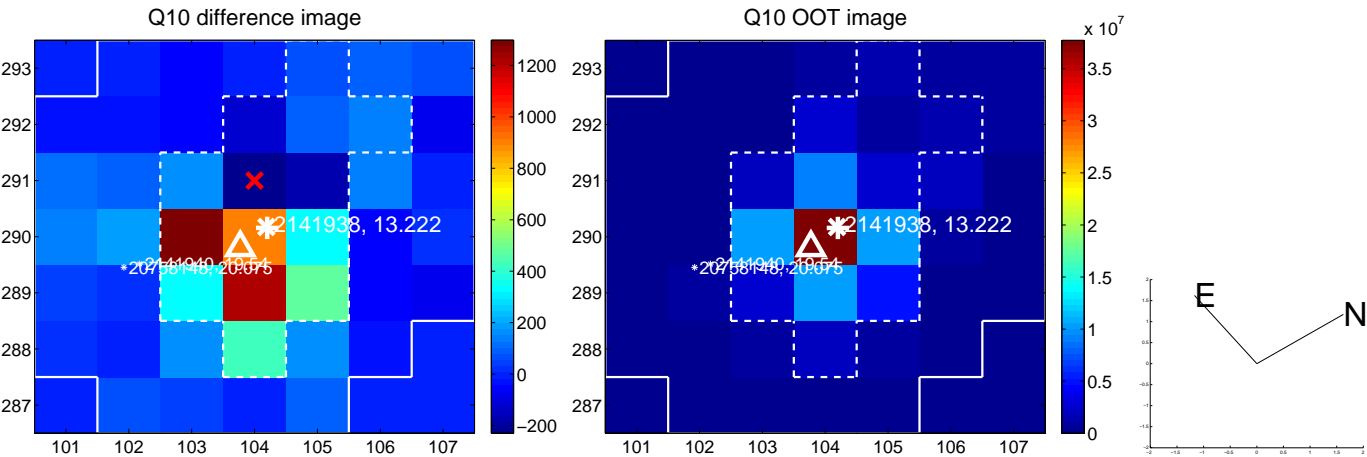
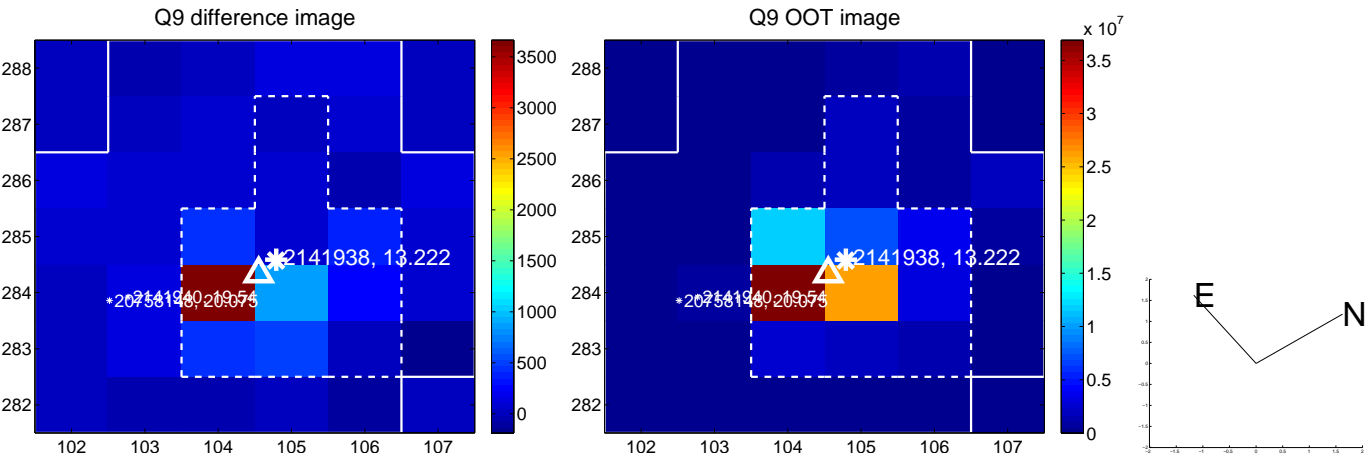
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



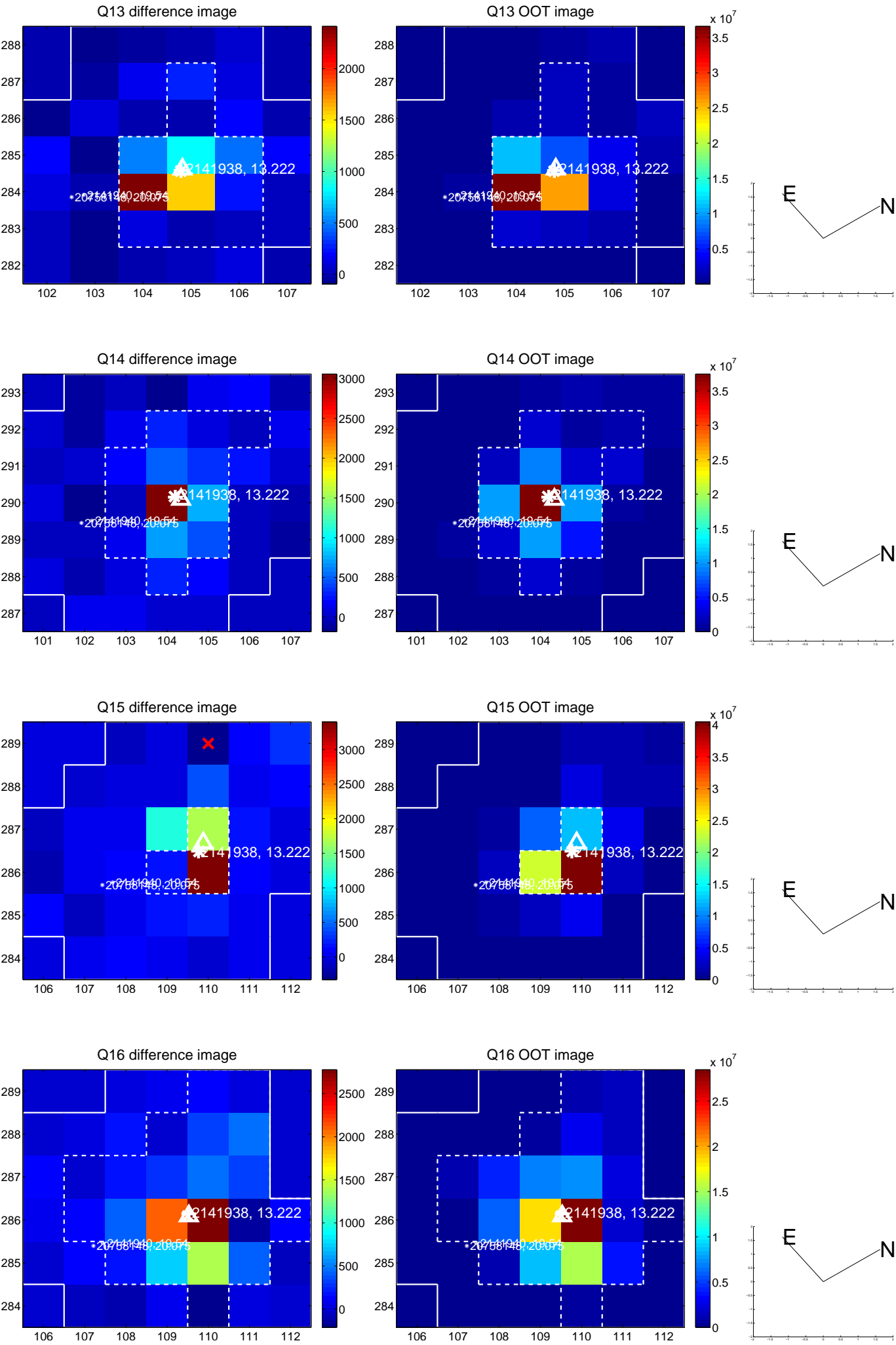
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

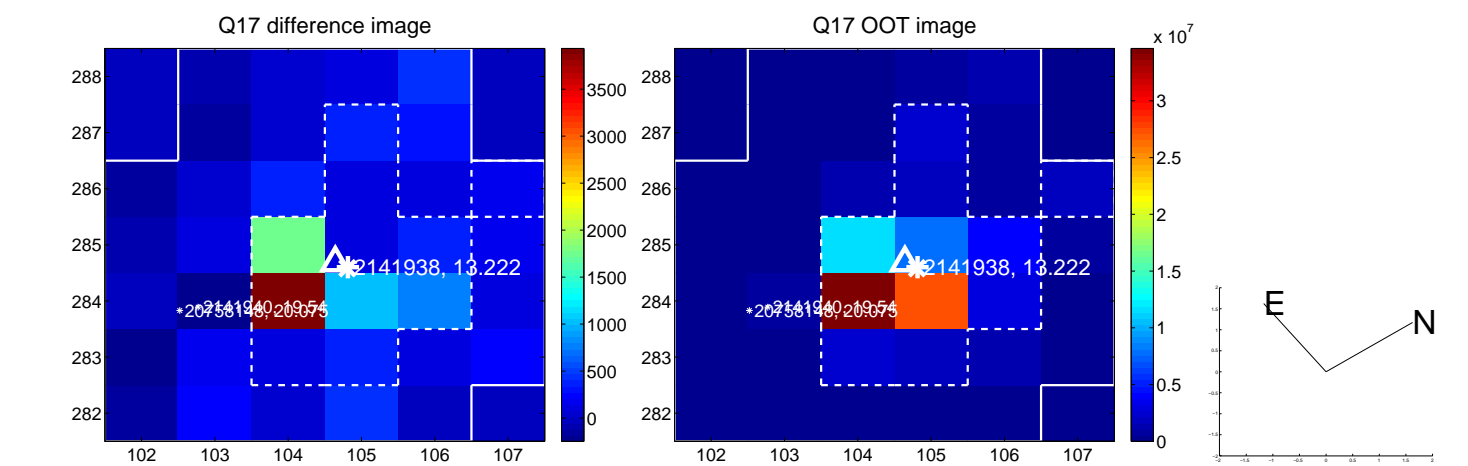


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

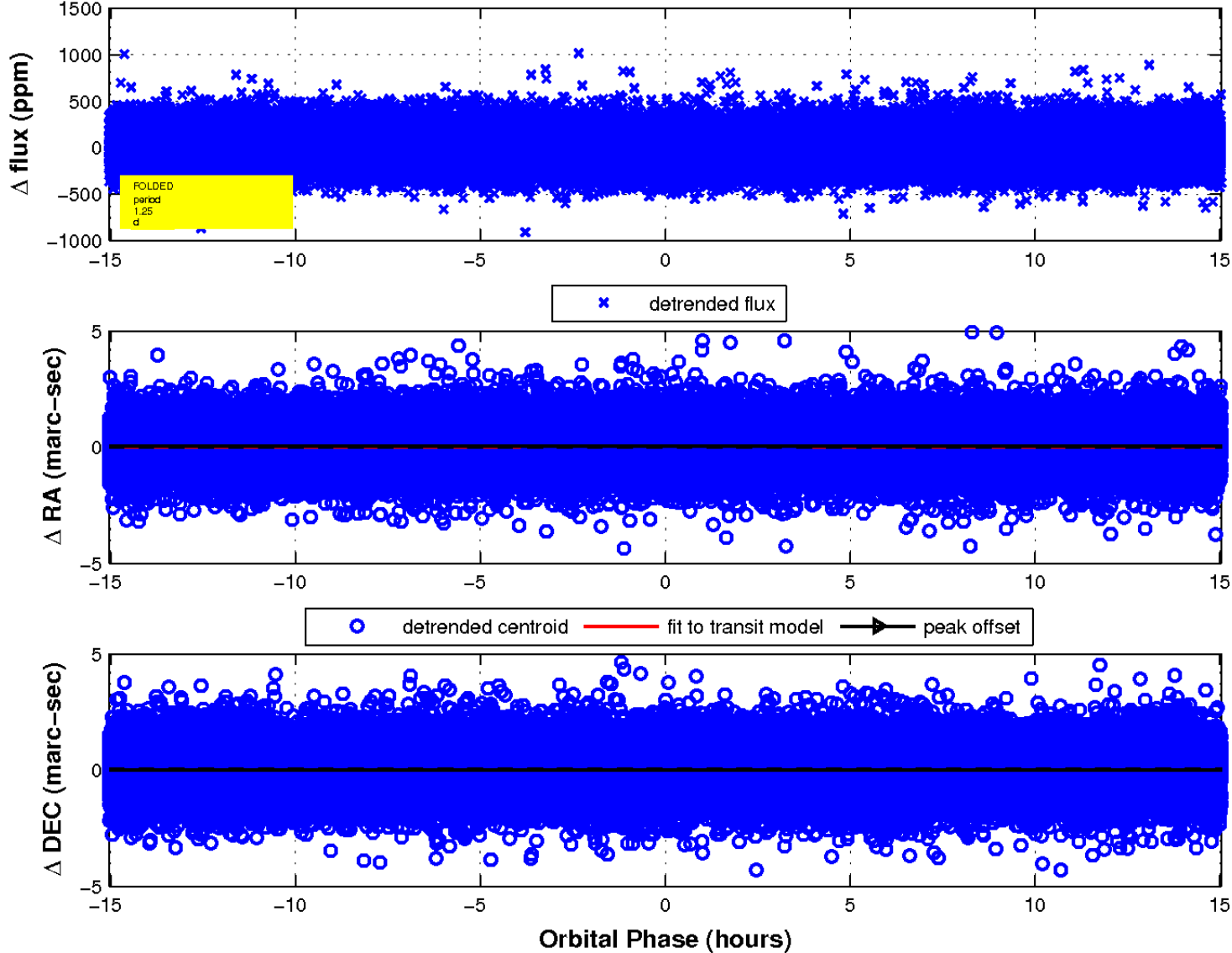




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

