

# KIC 011129738

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011129738-01	OBS	1427.01	2.613008	133.115445	566.5	1.813	26.9	29.6	0.52	3883	1.26	61.24
011129738-02	OBS	1427.02	4.884520	135.242418	233.9	1.838	8.4	8.8	0.52	3883	0.90	26.59

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011129738-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011129738-02	OBS	PC	0.89	0	0	0	0	NO_COMMENT

**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 011129738-01

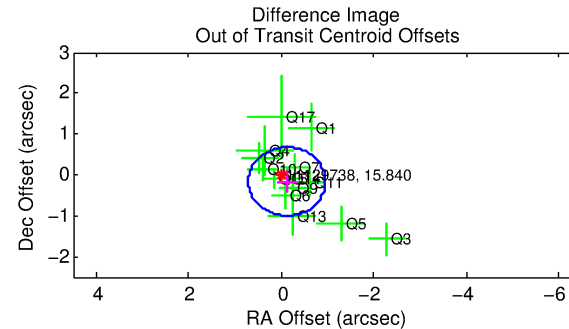
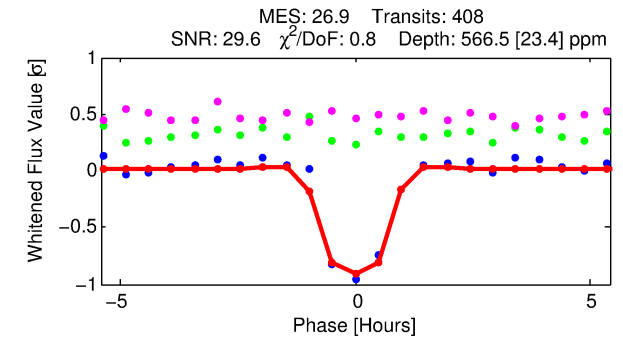
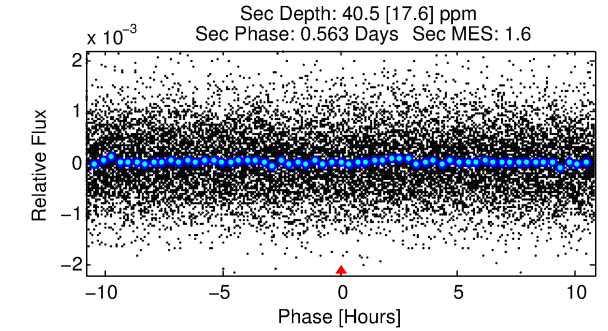
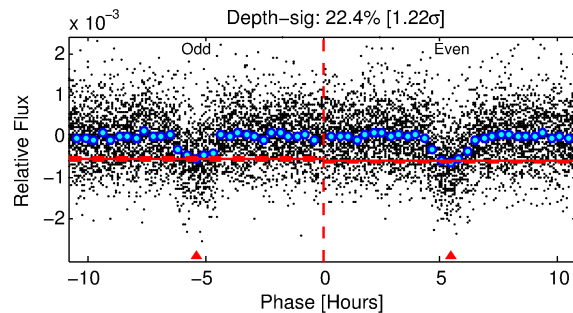
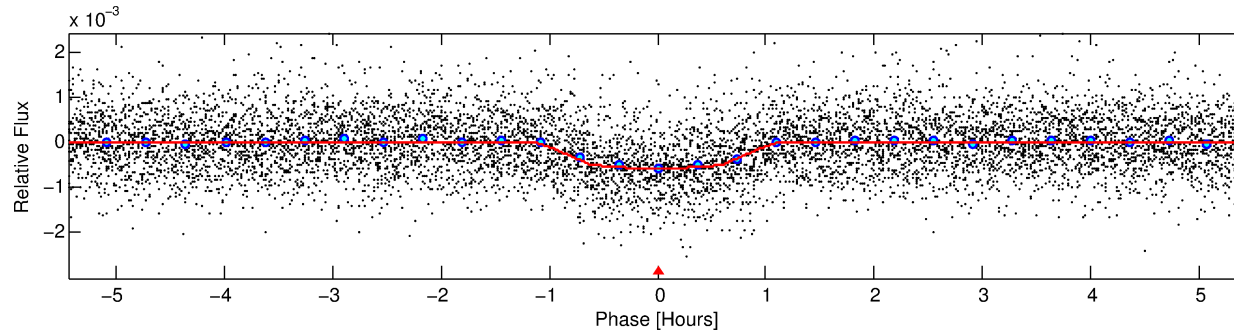
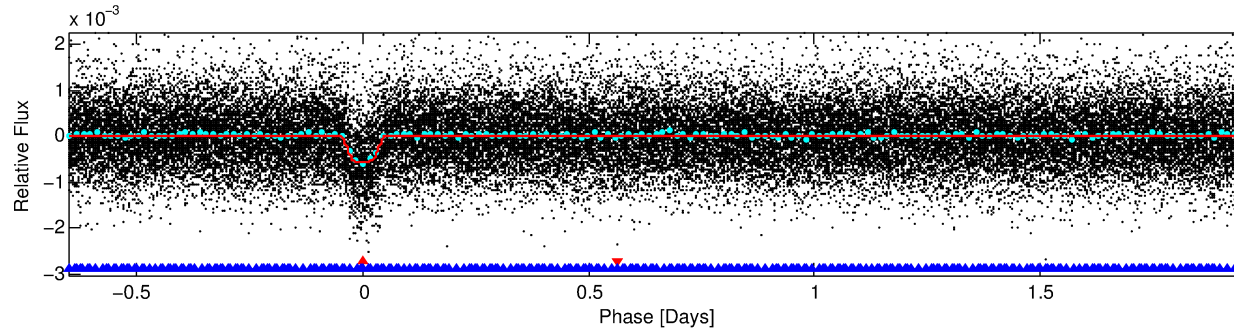
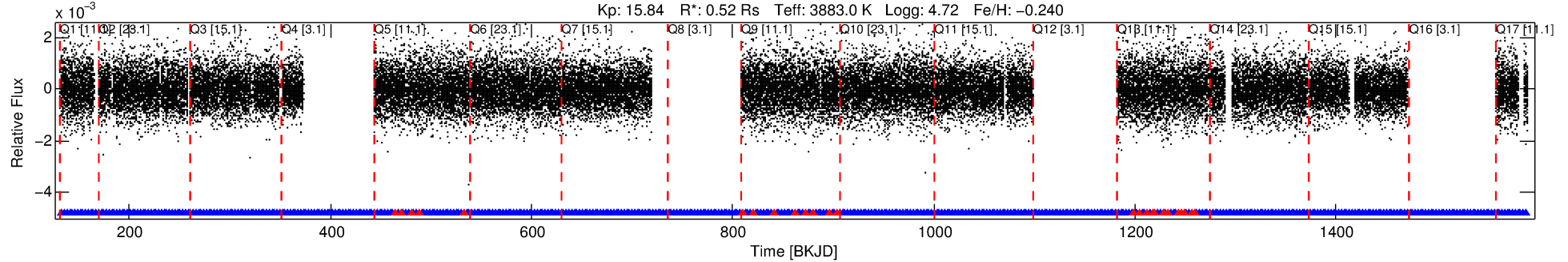
No Significant Match Found

# DV One-Page Summary

KIC: 11129738 Candidate: 1 of 2 Period: 2.613 d

KOI: K01427.01 Corr: 0.967

Kp: 15.84 R\*: 0.52 Rs Teff: 3883.0 K Logg: 4.72 Fe/H: -0.240



## DV Fit Results:

Period = 2.61301 [0.00001] d  
Epoch = 133.1154 [0.0011] BKJD  
Rp/R\* = 0.0224 [0.0096]  
a/R\* = 9.80 [18.98]  
b = 0.51 [2.89]  
Seff = 61.24 [7.91]  
Teq = 713 [23] K  
Rp = 1.26 [0.55] Re  
a = 0.0298 [0.0021] AU  
Ag = 12.41 [11.99] [0.95σ]  
Teffp = 2070 [500] K [2.71σ]

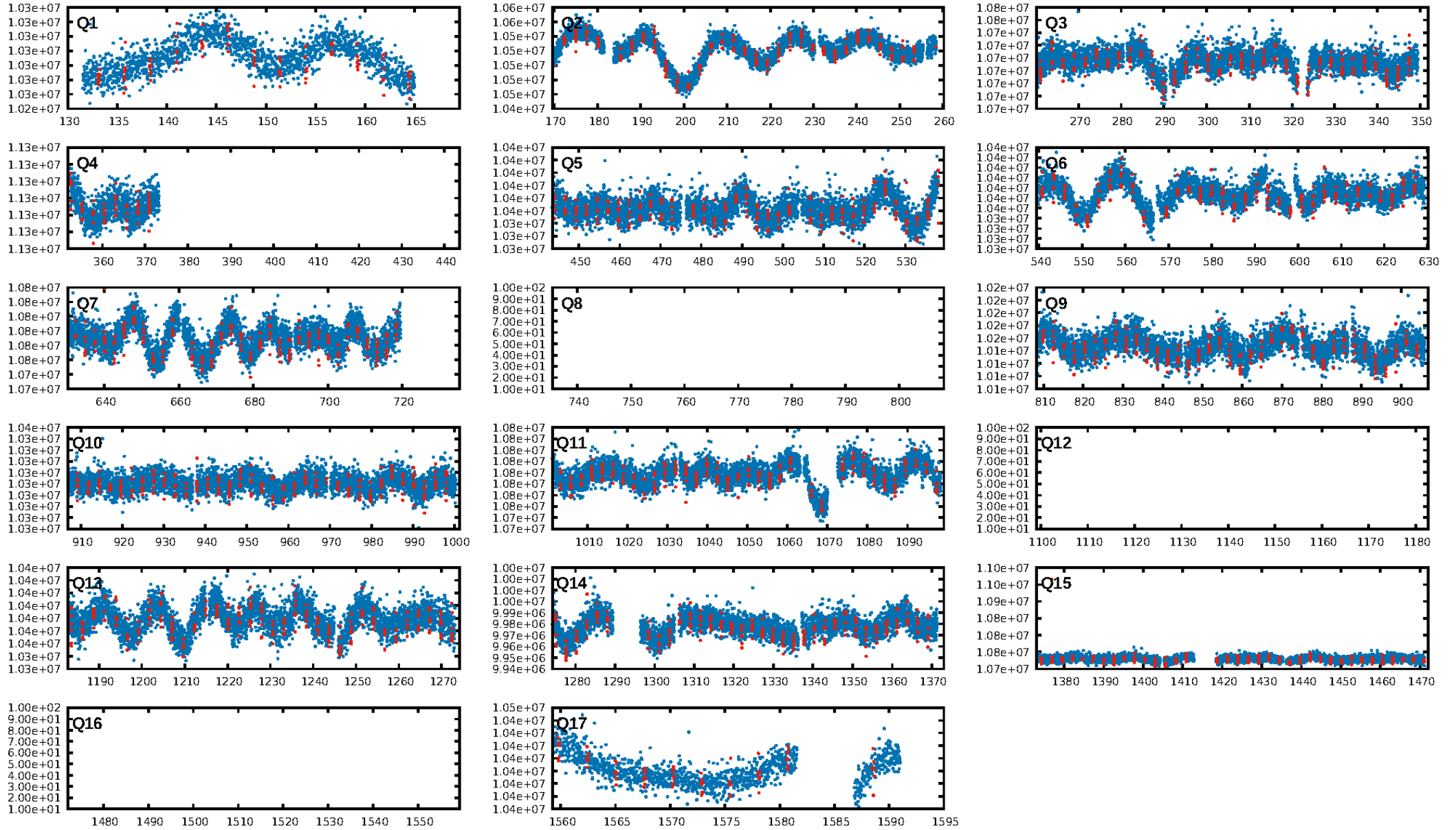
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [21.12σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.08e-155  
RollingBand-fgt: 0.93 [352/377]  
GhostDiagnostic-chr: 3.053  
Centroid-sig: 61.1%  
Centroid-so: 0.484 arcsec [0.96σ]  
OotOffset-rm: 0.203 arcsec [0.73σ]  
KicOffset-rm: 0.495 arcsec [2.19σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 1.00 [14/14]

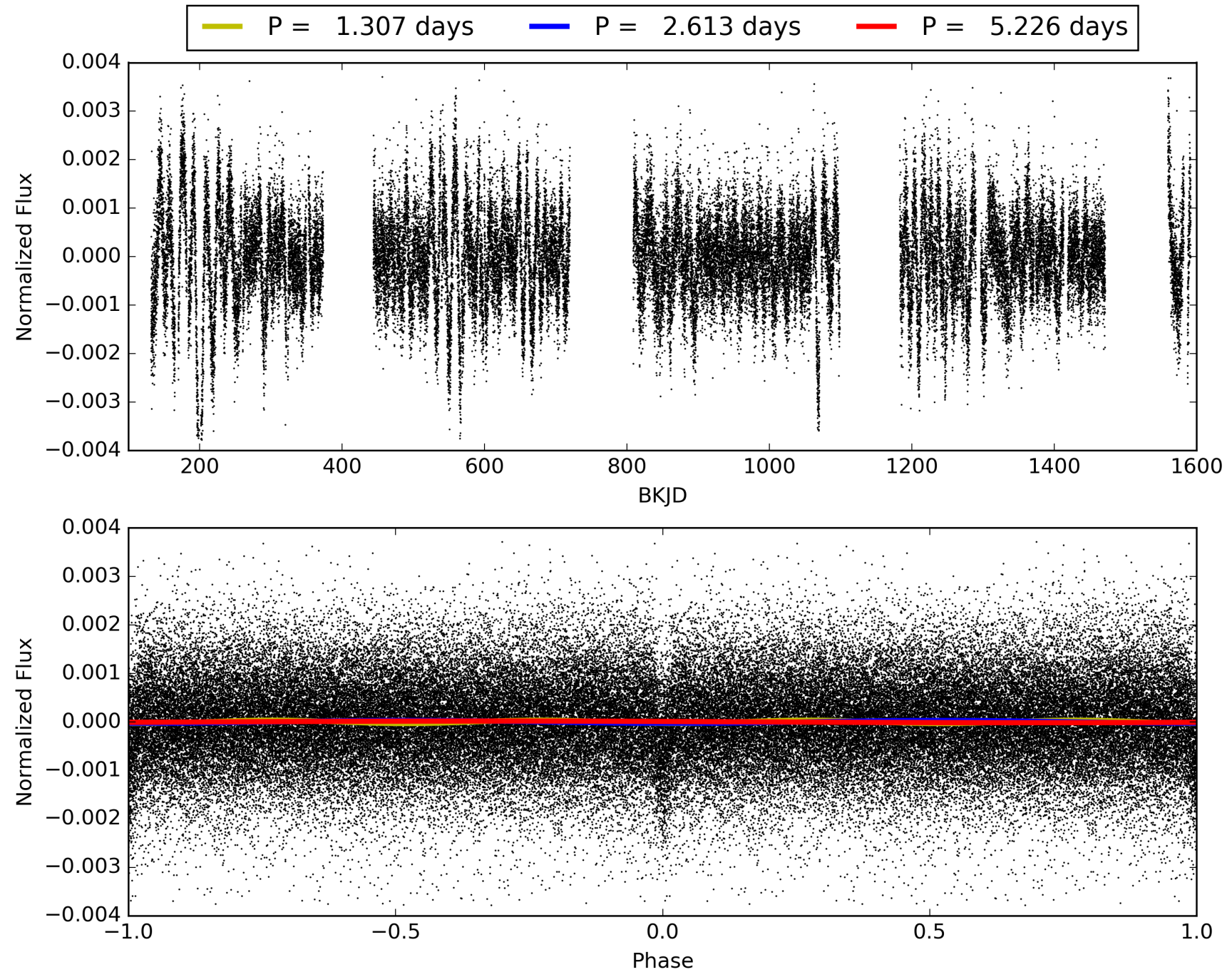
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:05:10 Z

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

# TCE 011129738-01, PDC Light Curves

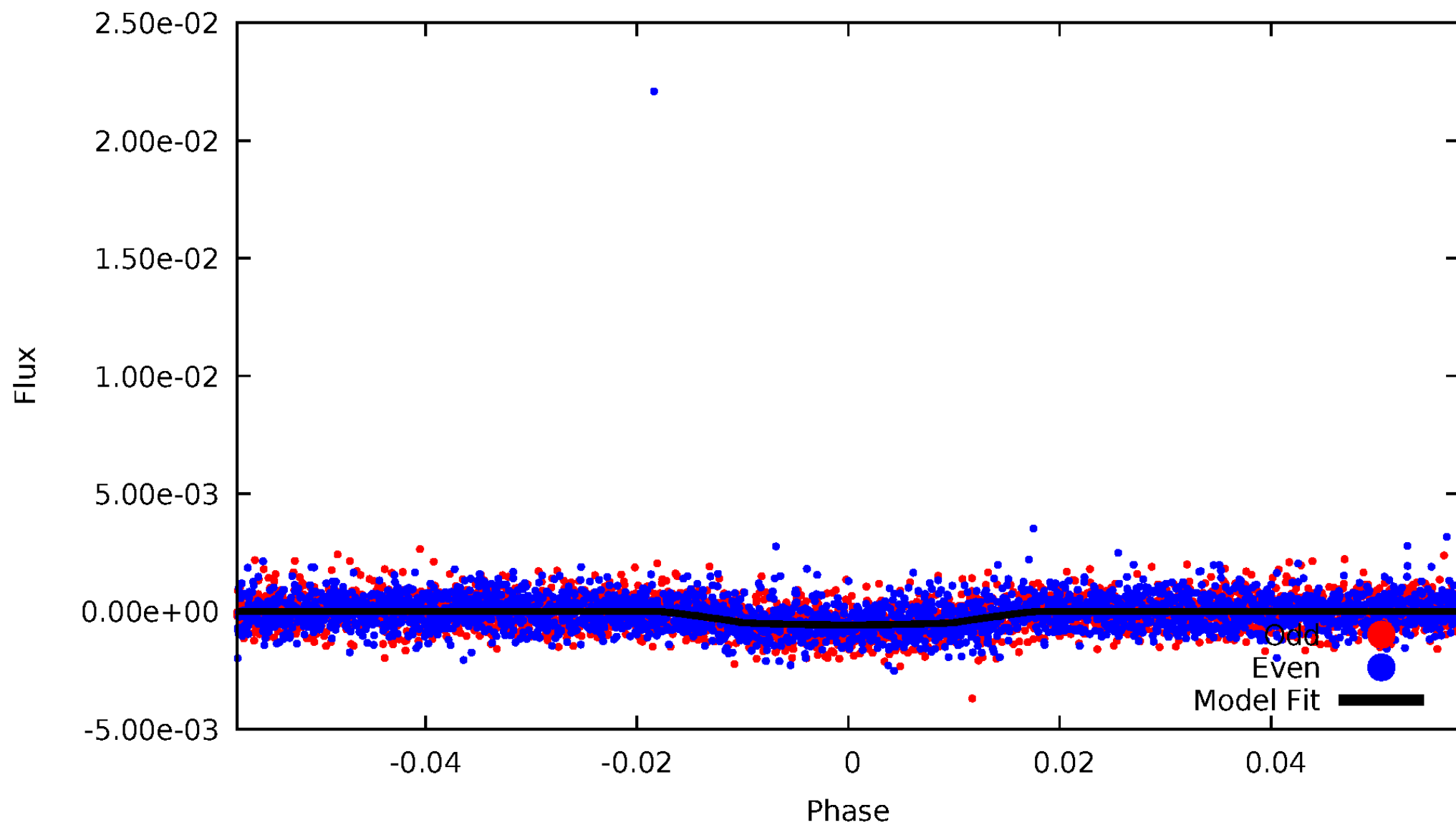


# TCE 011129738-01



# DV Odd/Even

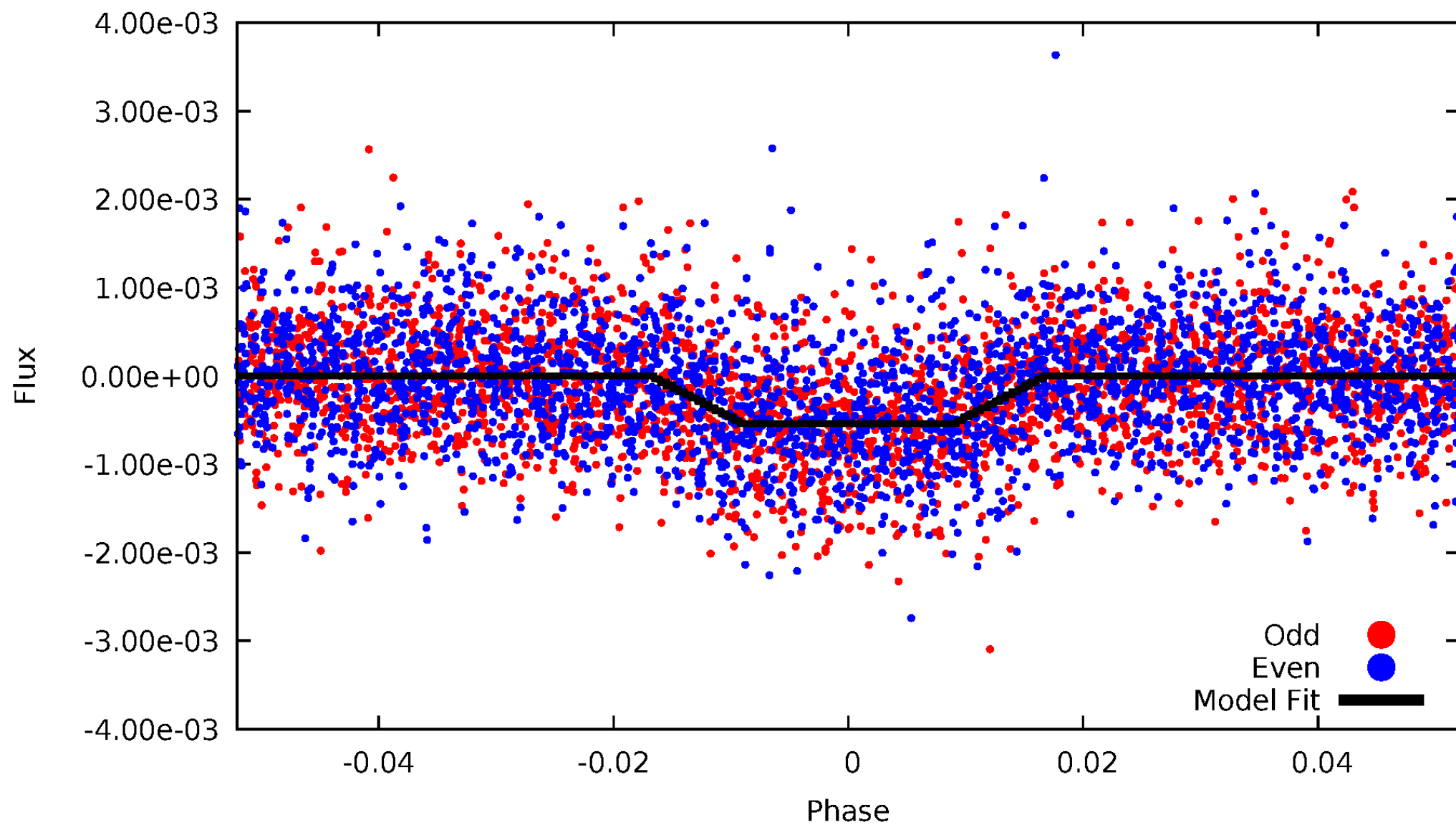
TCE 011129738-01





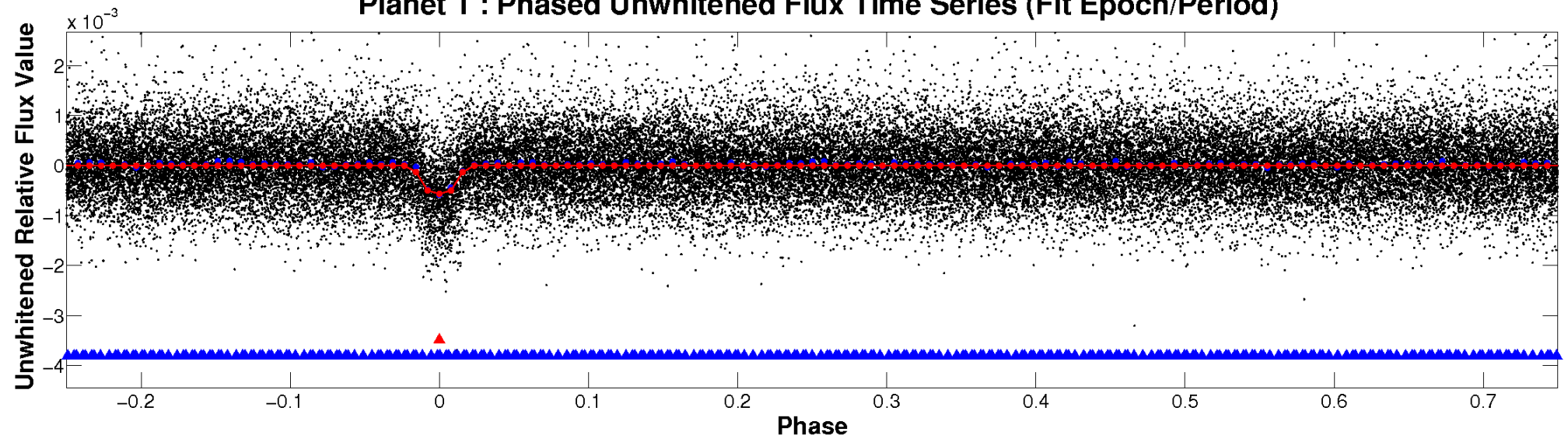
# ALT Odd/Even

TCE 011129738-01

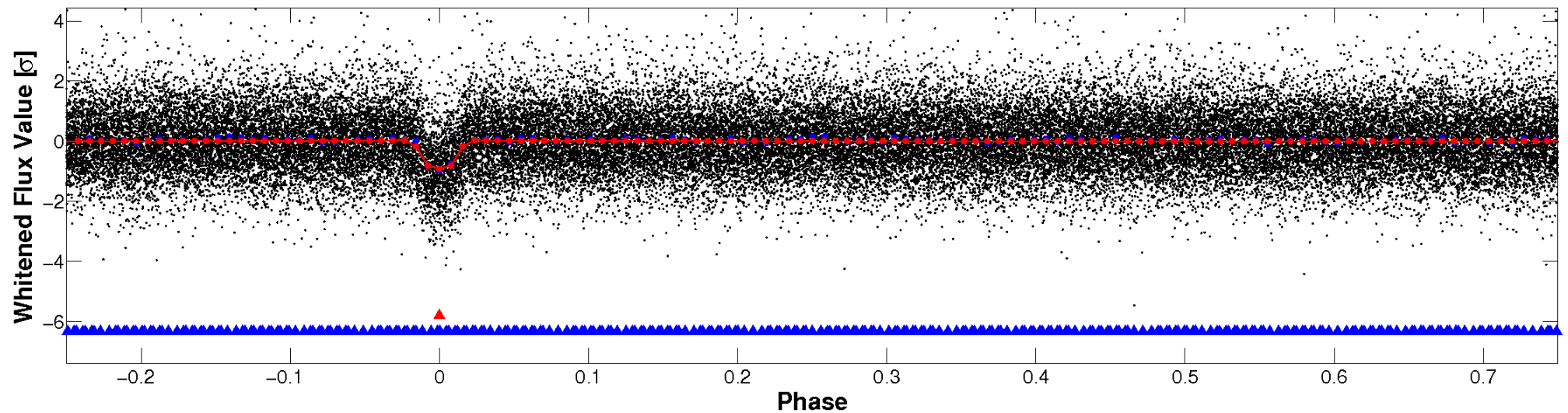


# Non-Whitened Vs. Whitened Light Curve

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

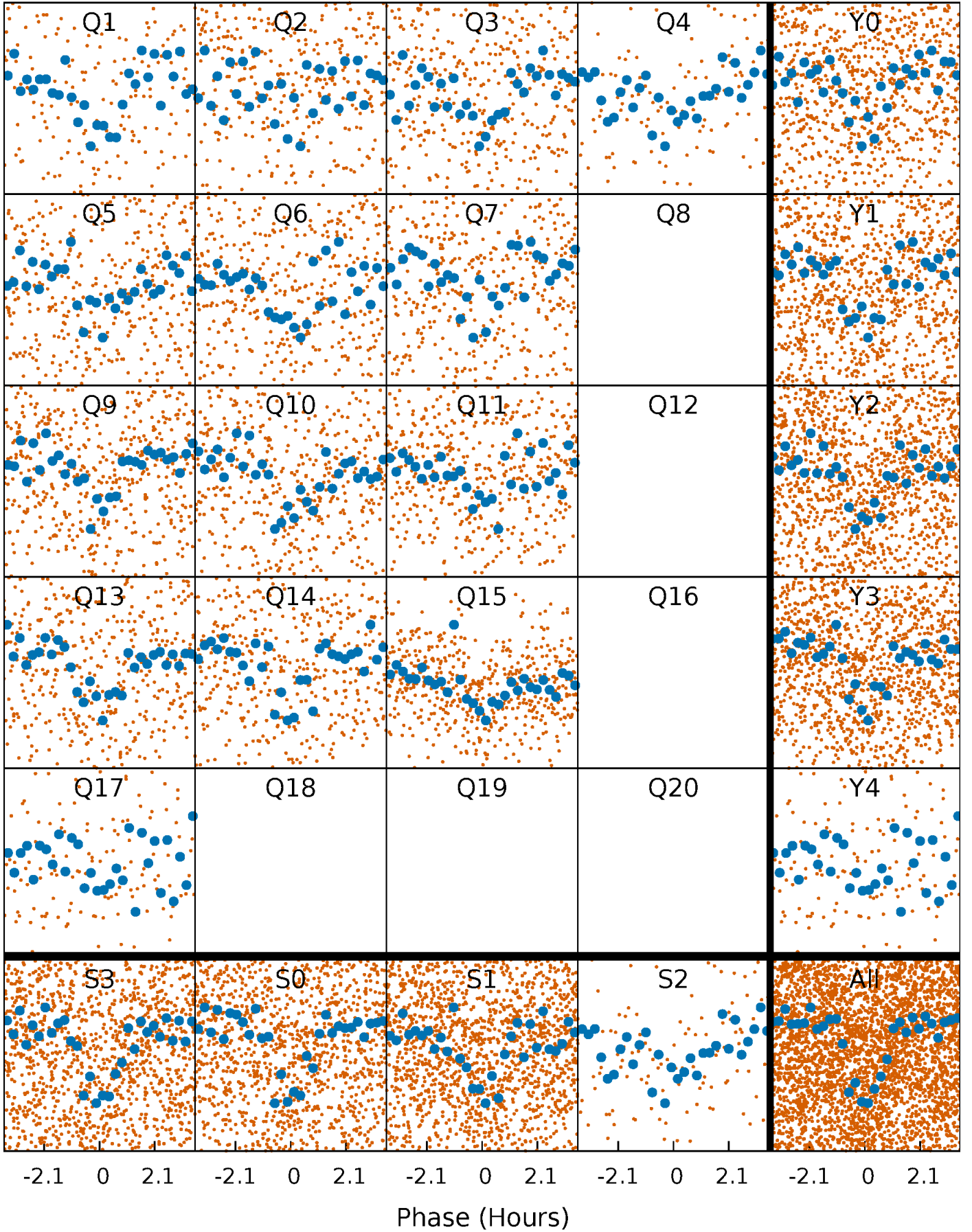


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

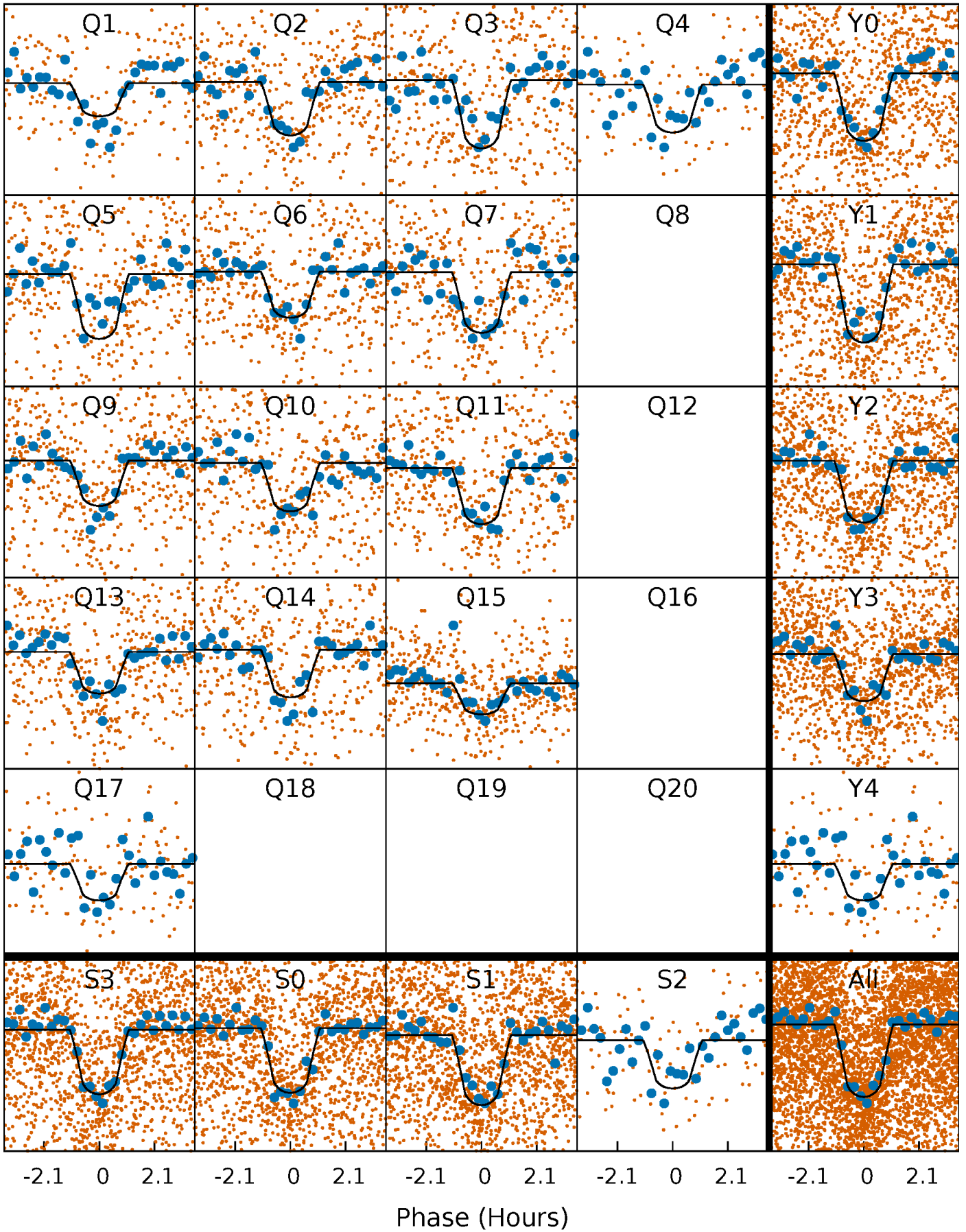
TCE 011129738-01 P= 2.613008 Days  $T_0=133.115445$  (BKJD)





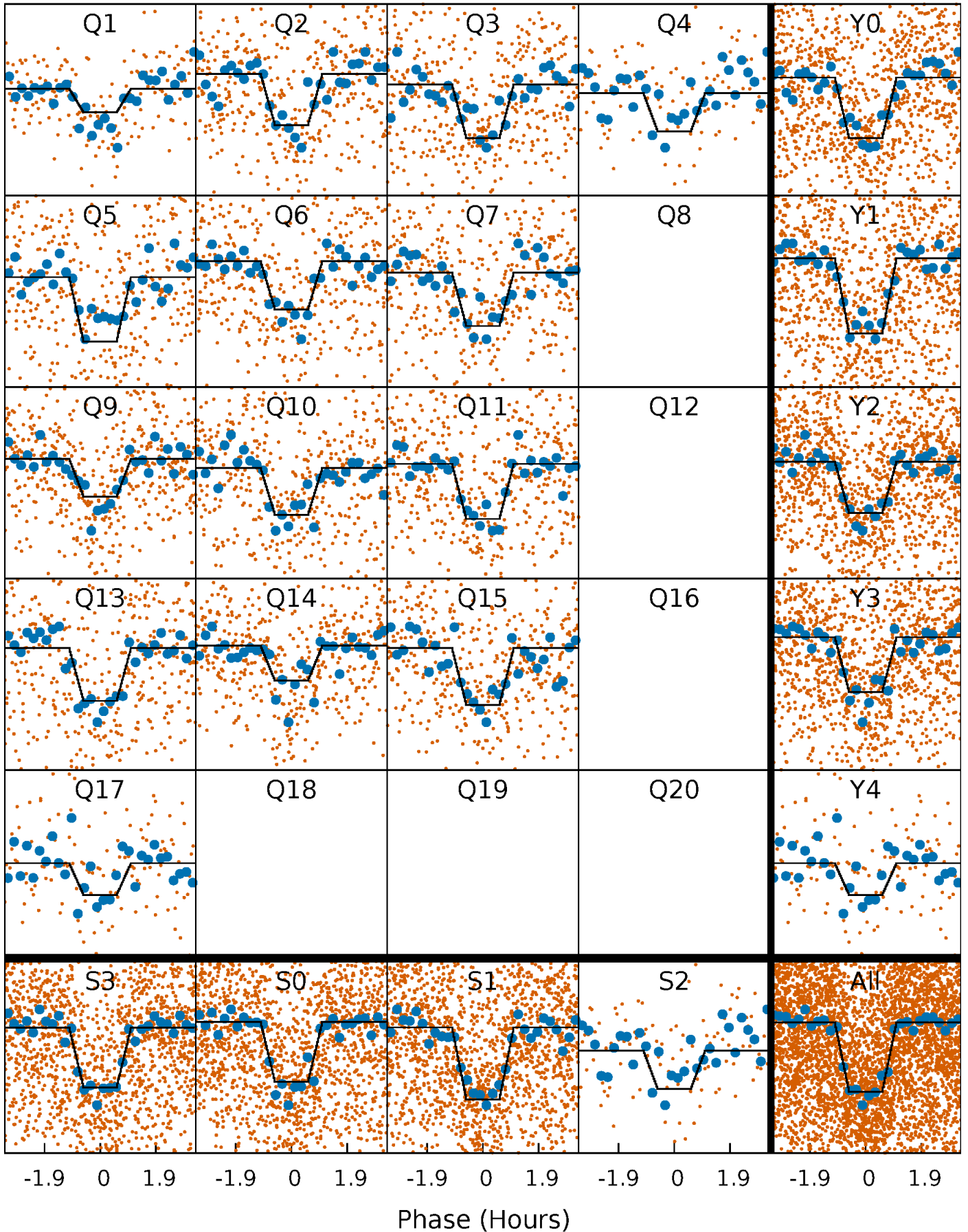
# DV Quarter-Phased Transit Curves

TCE 011129738-01 P= 2.613008 Days  $T_0=133.115445$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

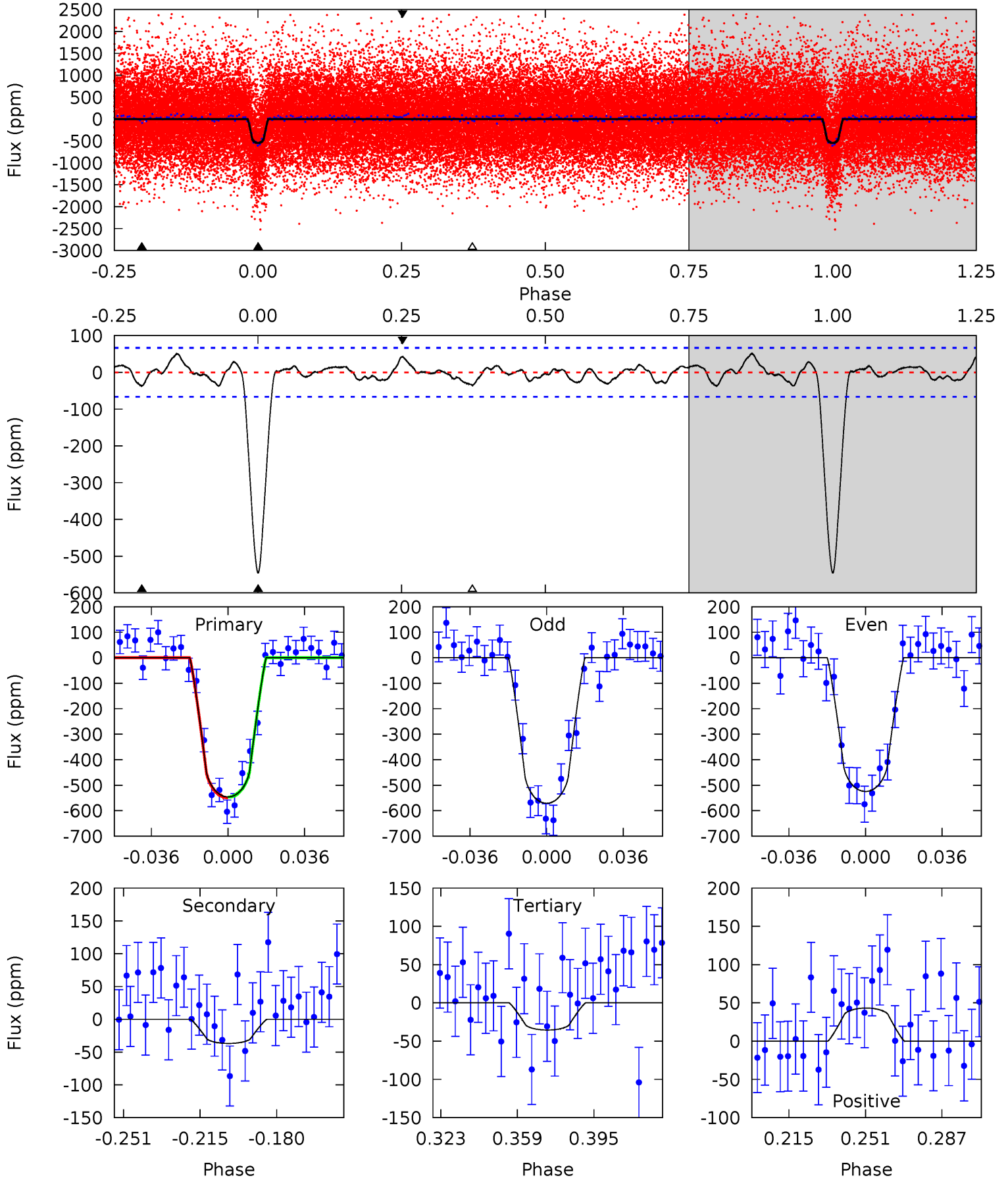
TCE 011129738-01 P= 2.613021 Days  $T_0=133.112503$  (BKJD)



# DV Model-Shift Uniqueness Test

011129738-01, P = 2.613008 Days, E = 130.502437 Days

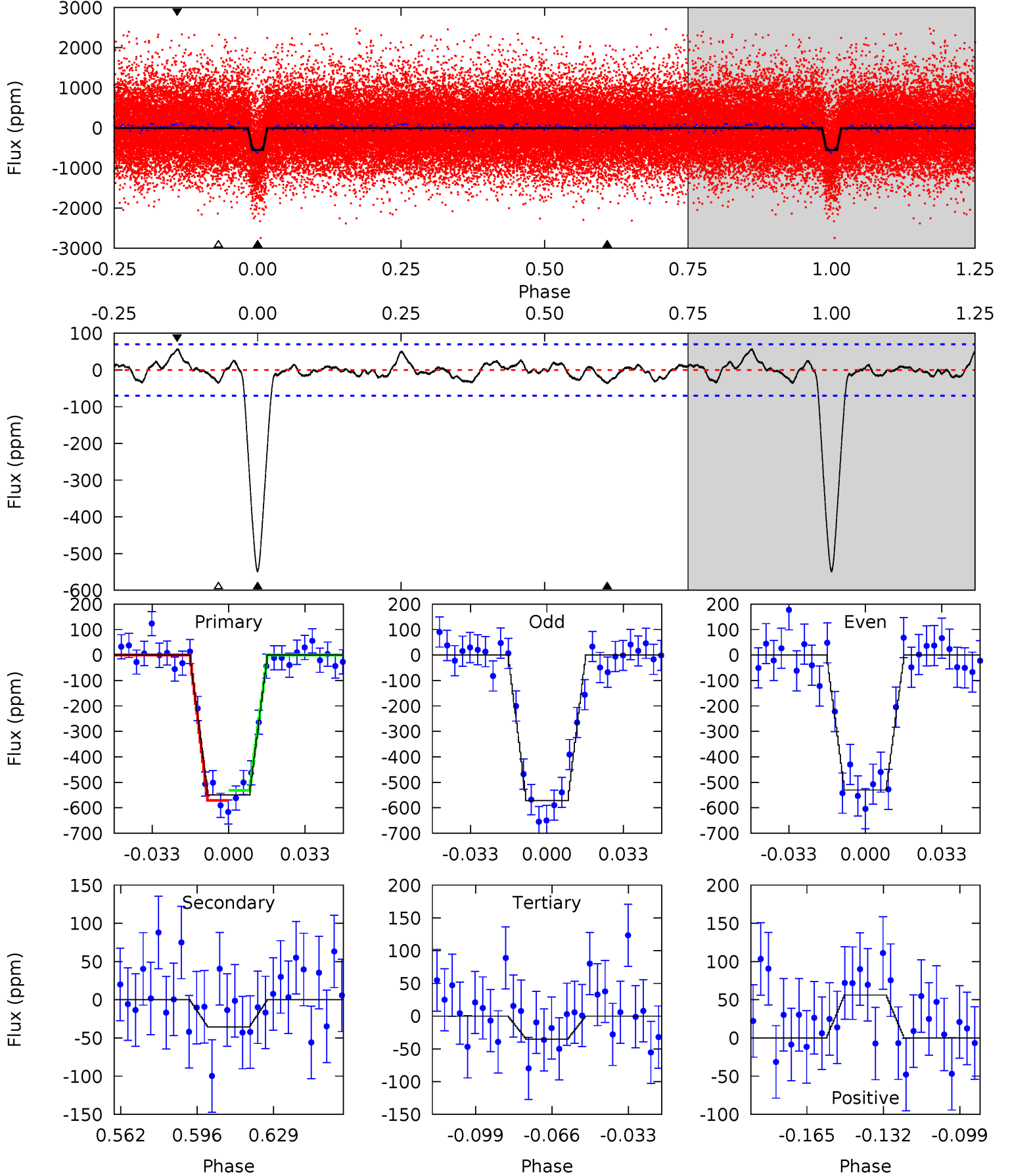
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.1	2.64	2.55	3.10	4.78	2.10	1.22	36.6	36.0	0.10	-0.46	1.66	1.01	0.09	0.08



# Alt Model-Shift Uniqueness Test

011129738-01, P = 2.613021 Days, E = 130.499482 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
37.6	2.44	2.40	3.85	4.79	2.13	1.16	35.2	33.8	0.03	-1.41	1.41	0.99	0.09	1.37



### Stellar Parameters For KIC 011129738

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3883^{+70}_{-85}$	$4.725^{+0.049}_{-0.025}$	$-0.240^{+0.150}_{-0.150}$	$0.517^{+0.029}_{-0.045}$	$0.516^{+0.035}_{-0.039}$	$5.277^{+1.220}_{-0.483}$
	+2%/-2%	+1%/-1%	+62%/-62%	+6%/-9%	+7%/-8%	+23%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 011129738-01 / KOI 1427.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-37 \pm 14$	$1.25^{+0.55}_{-0.52}$	$990^{+25}_{-26}$	$2609^{+423}_{-266}$	$11^{+21}_{-6}$
Alt.	$-36 \pm 15$	$1.31^{+0.56}_{-0.52}$	$990^{+25}_{-26}$	$2545^{+417}_{-236}$	$8.942^{+18.080}_{-4.865}$

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



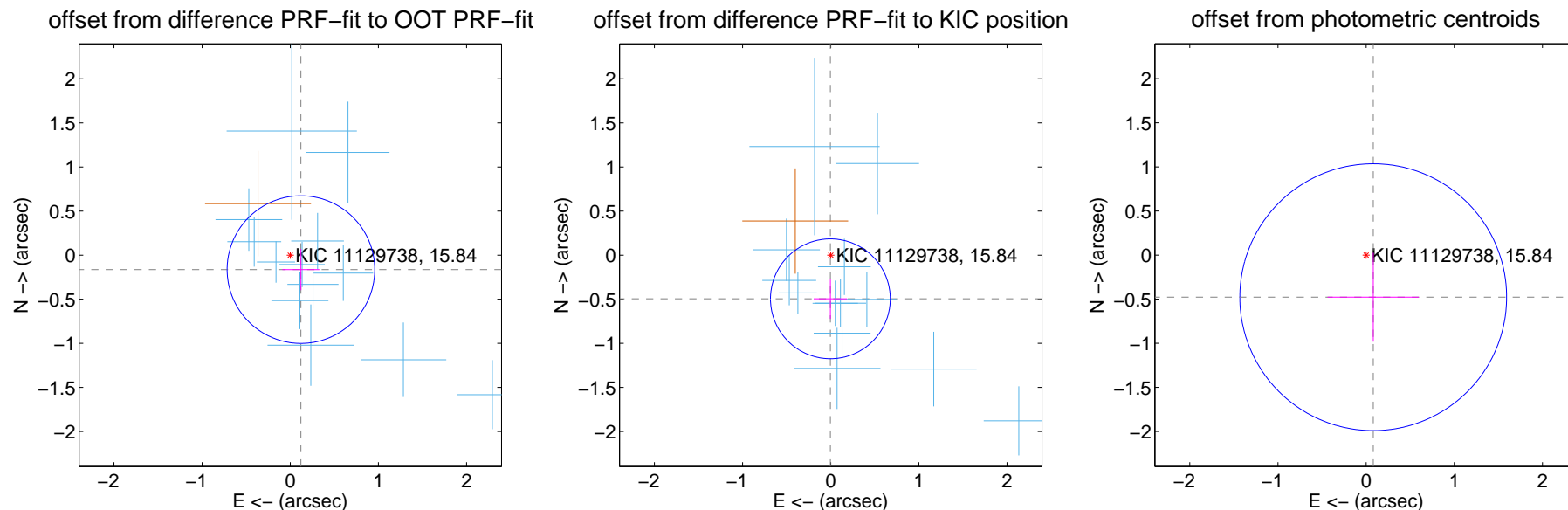
## DV Centroid Data

Supplemental centroid analysis for 011129738-01. Kepler magnitude: 15.84. Transit SNR 29.58

There are 13 quarters with good PRF difference image offsets

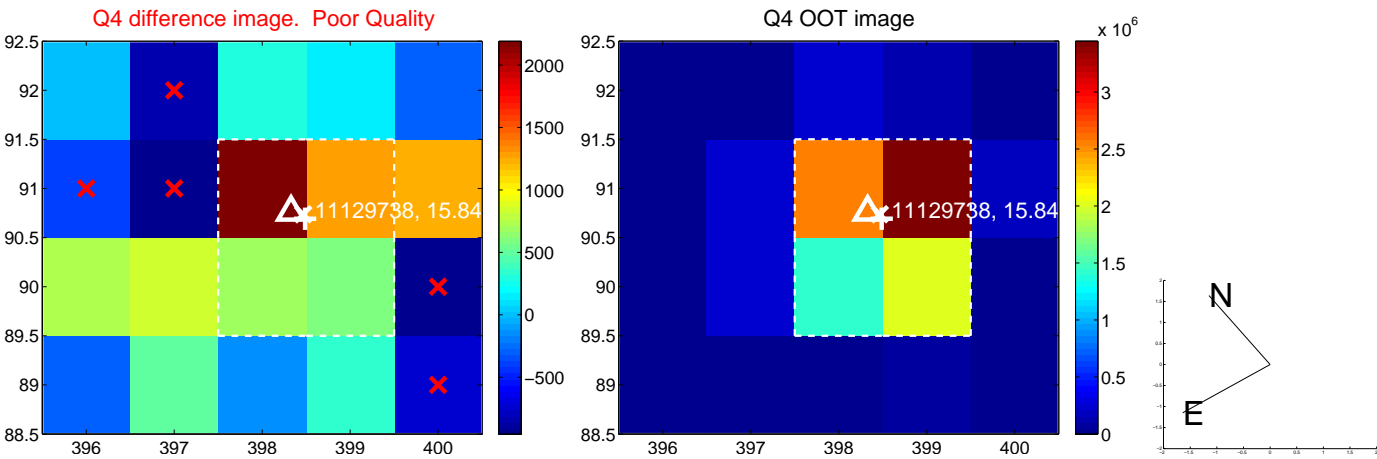
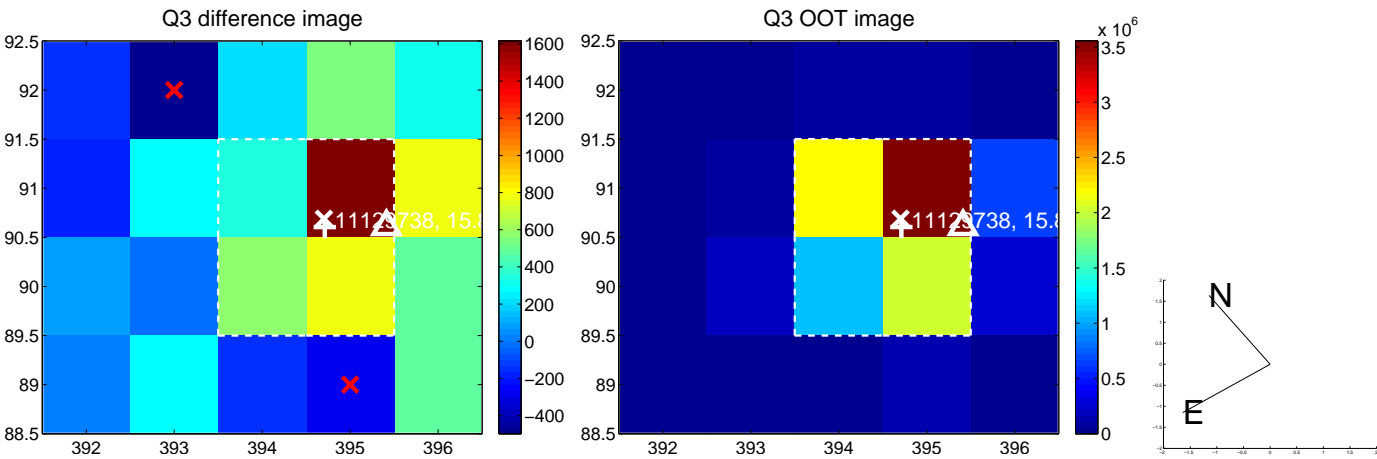
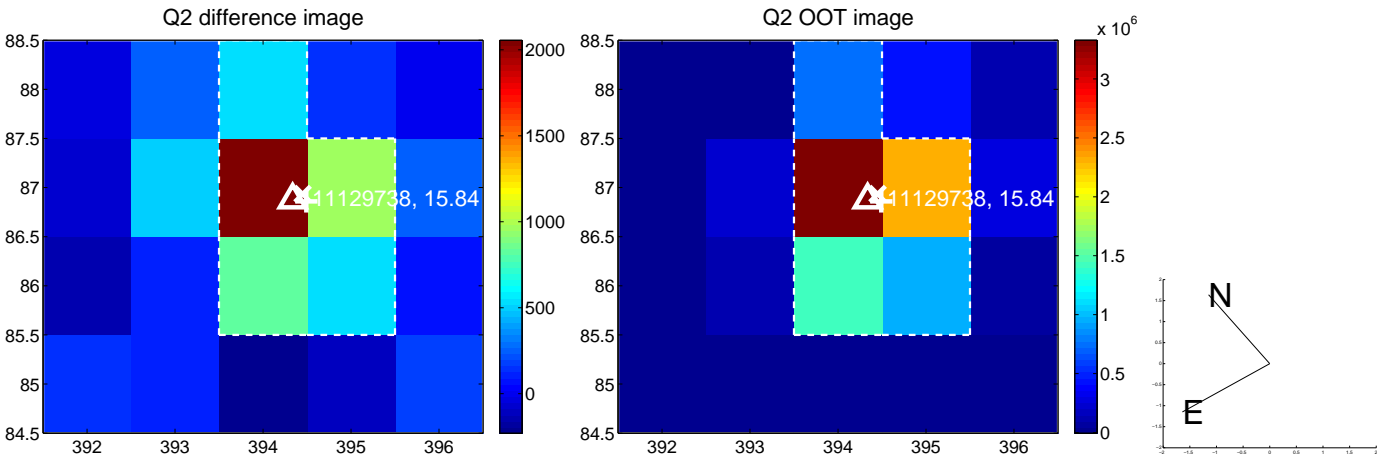
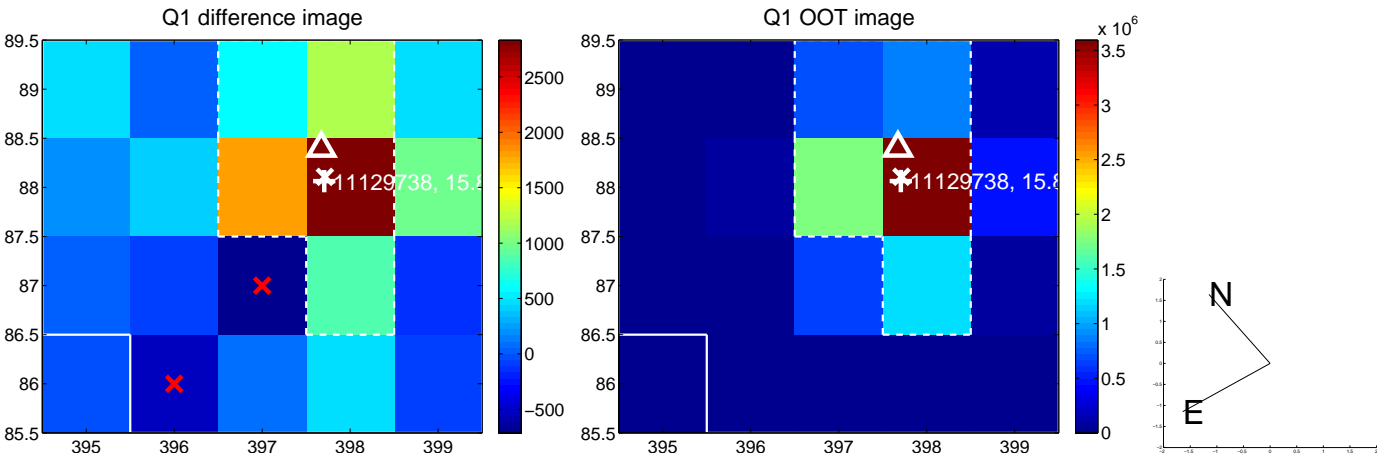
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.203 \pm 0.279$	0.73	$-0.121 \pm 0.210$	$-0.163 \pm 0.233$
PRF-fit source offset from KIC position	$0.495 \pm 0.226$	2.19	$0.004 \pm 0.190$	$-0.495 \pm 0.227$
photometric centroid source offset	$0.48 \pm 0.50$	0.96	$-0.08 \pm 0.52$	$-0.48 \pm 0.50$

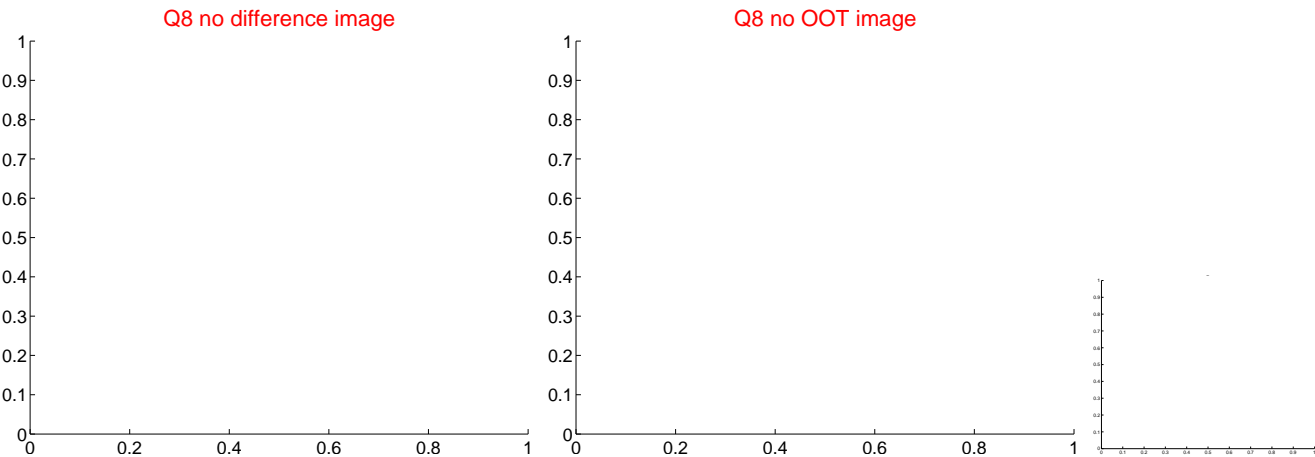
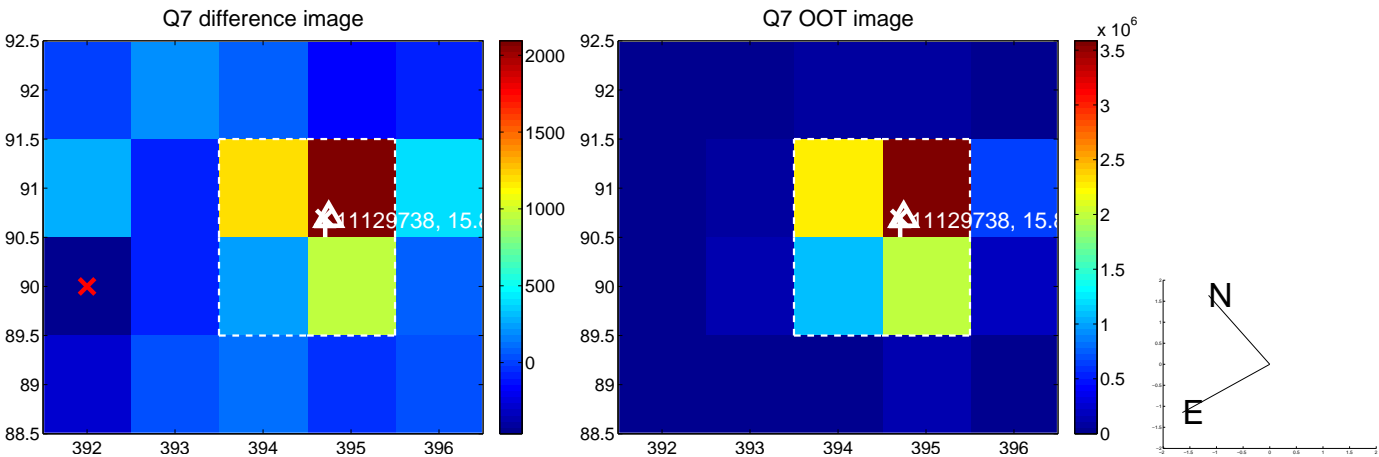
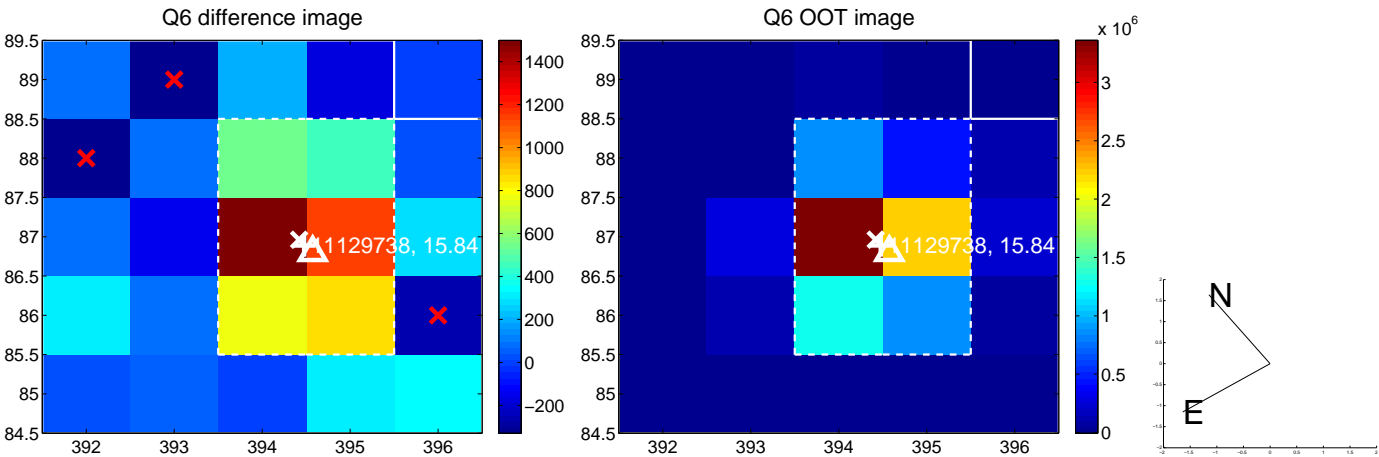
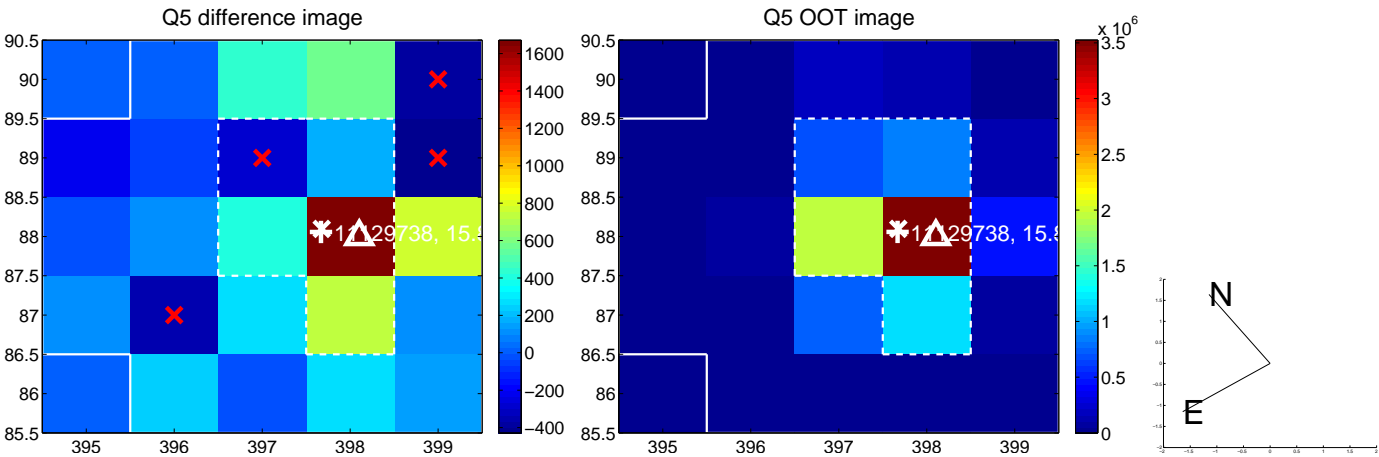


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

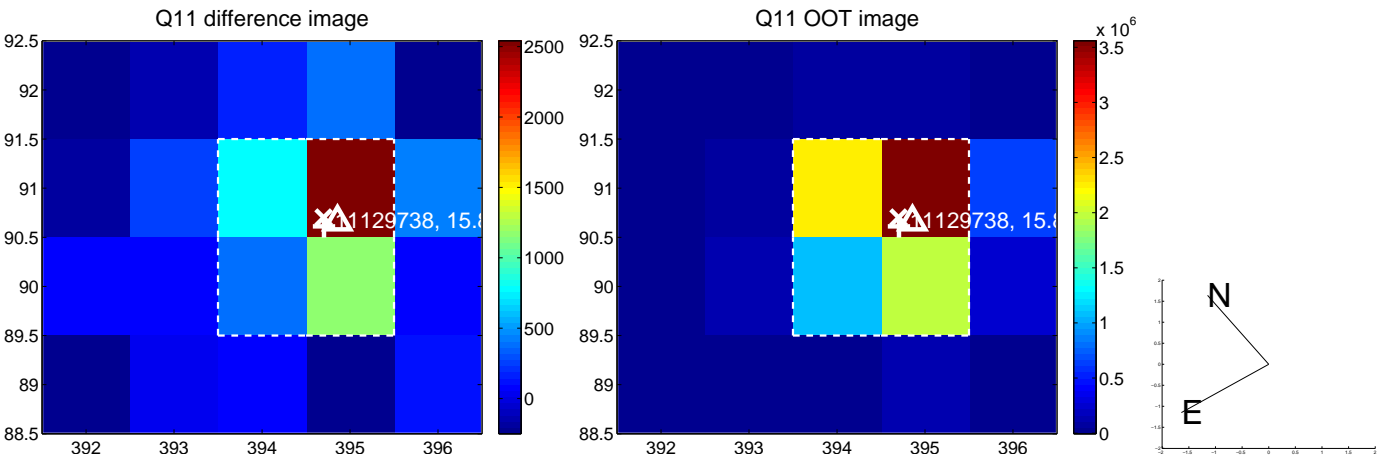
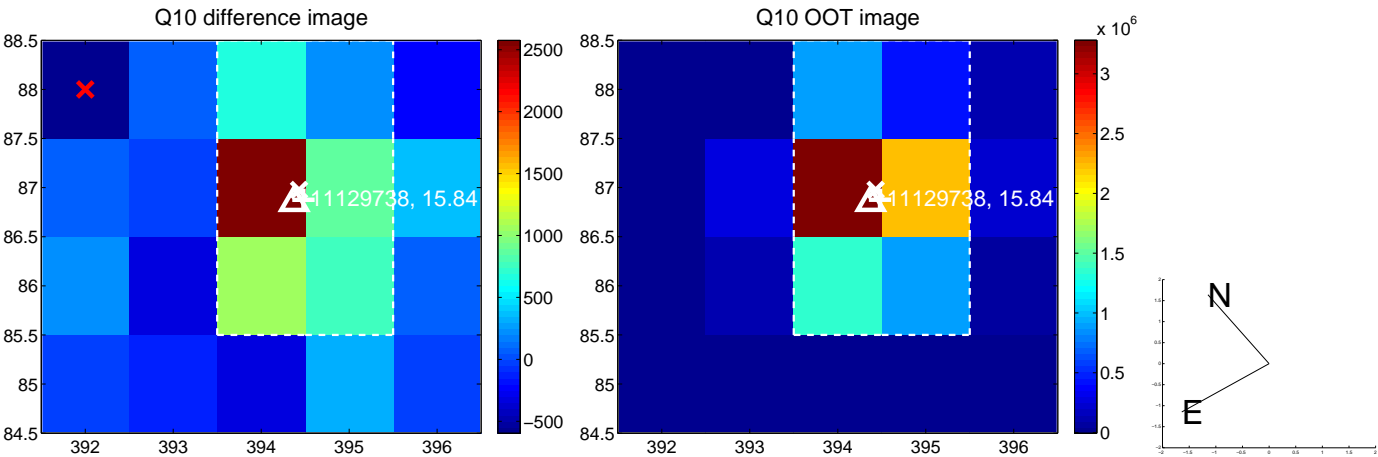
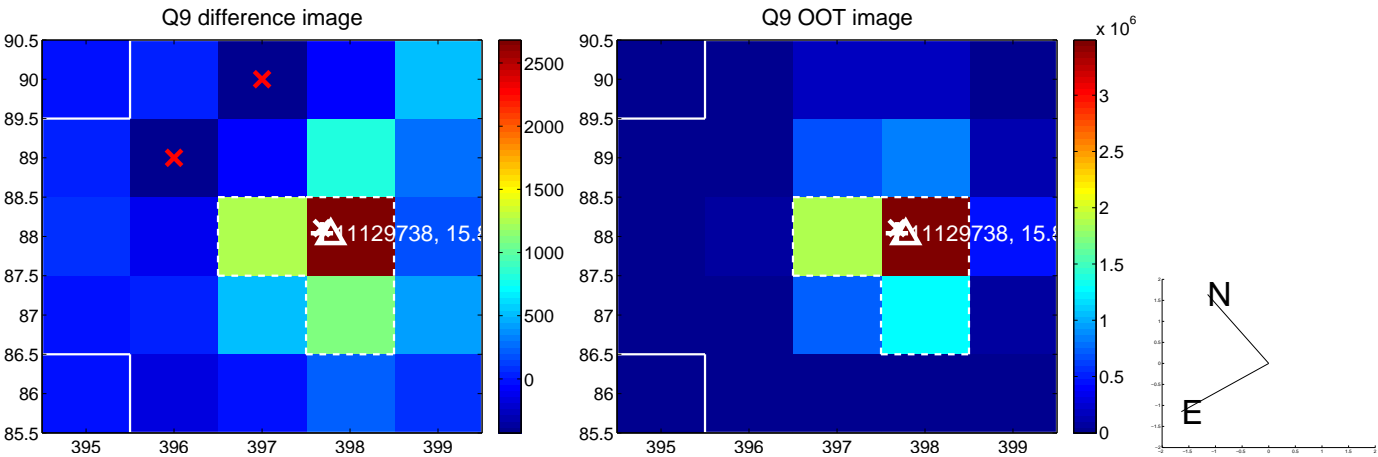
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



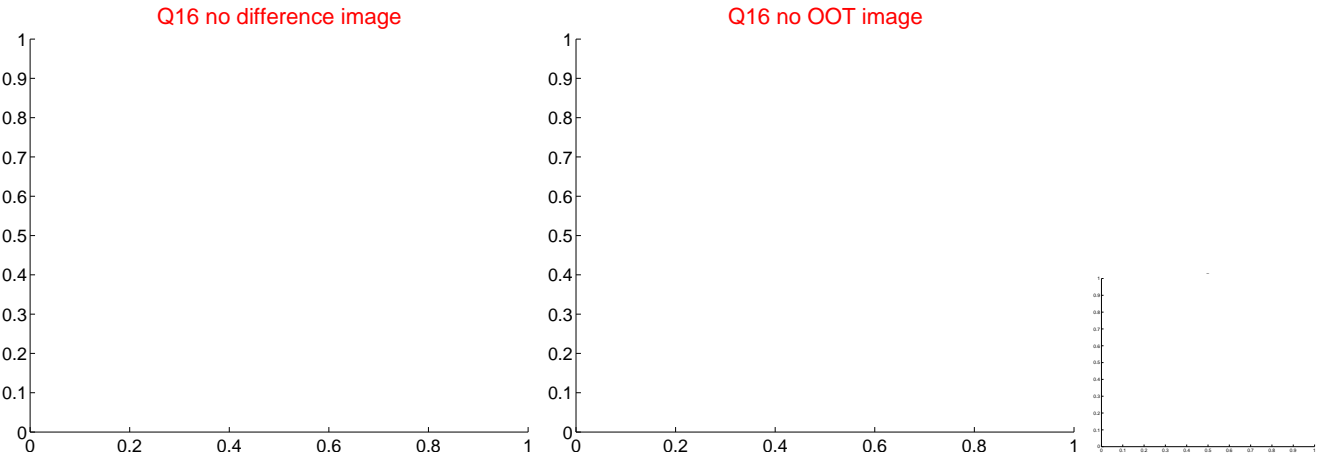
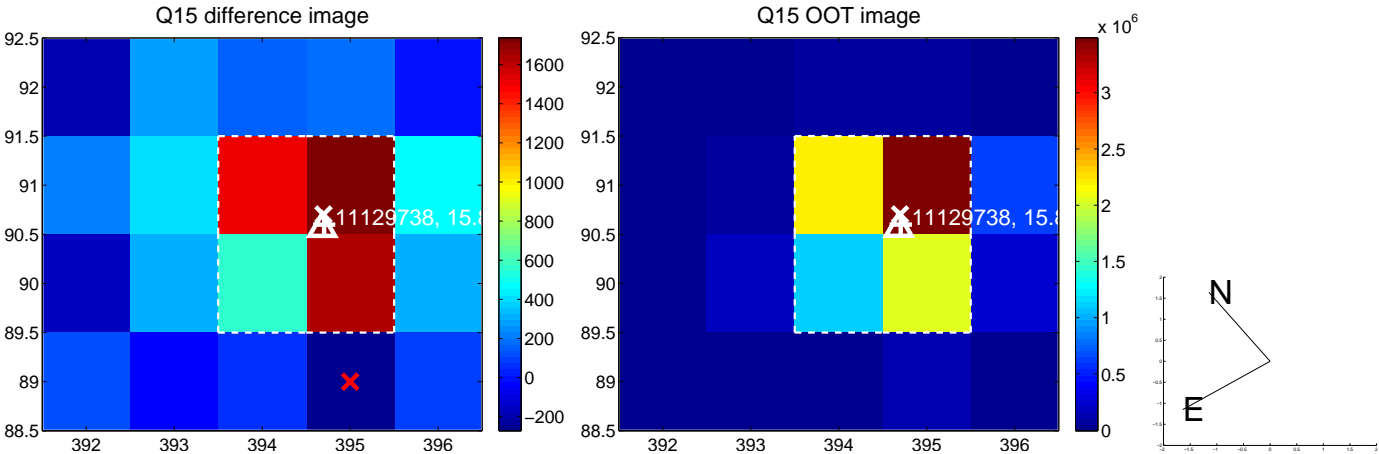
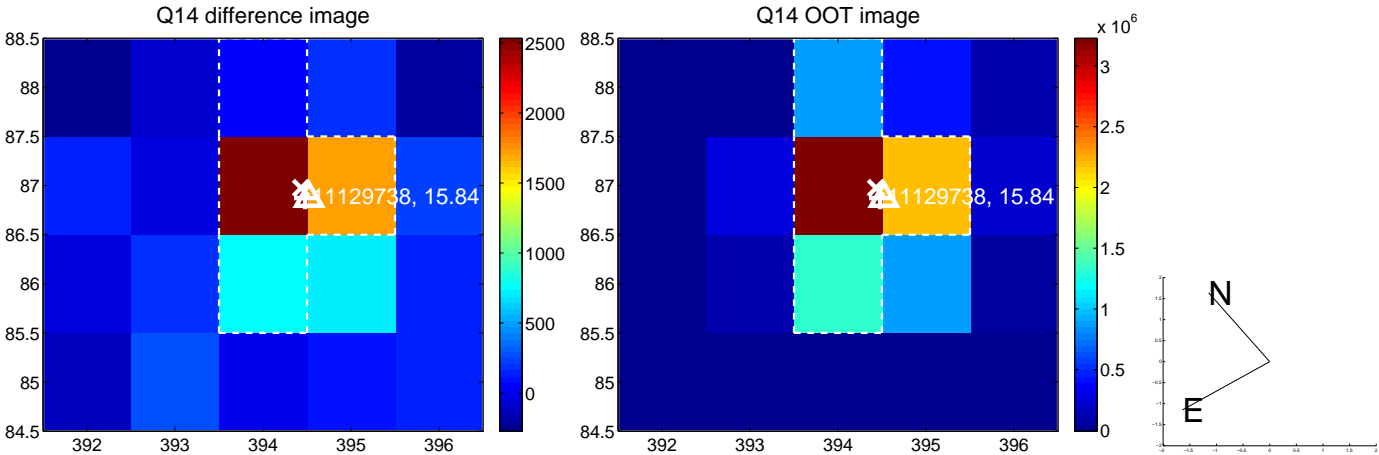
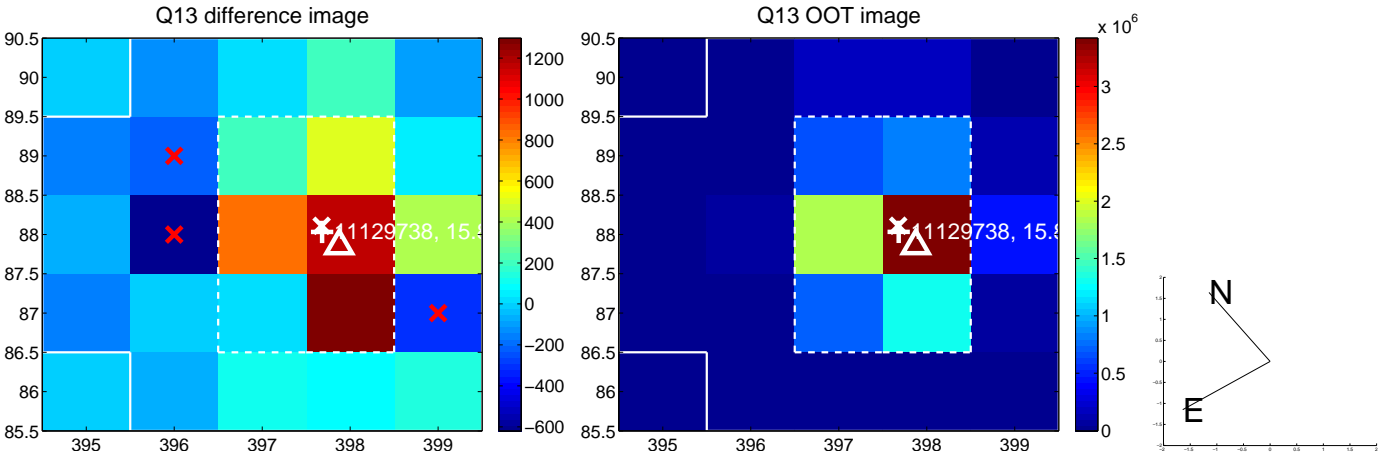
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

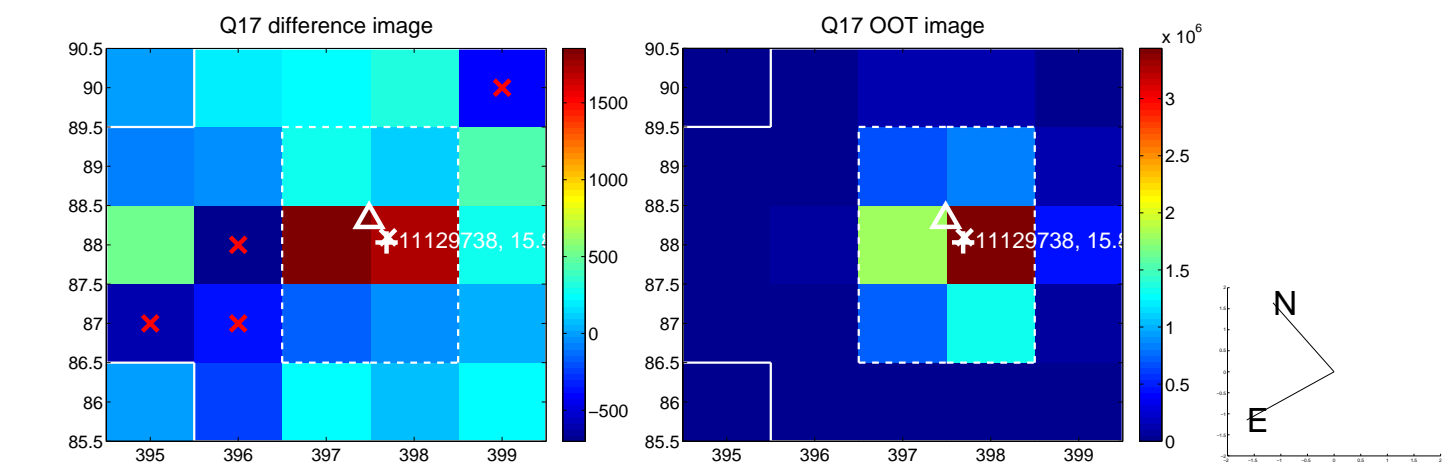


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

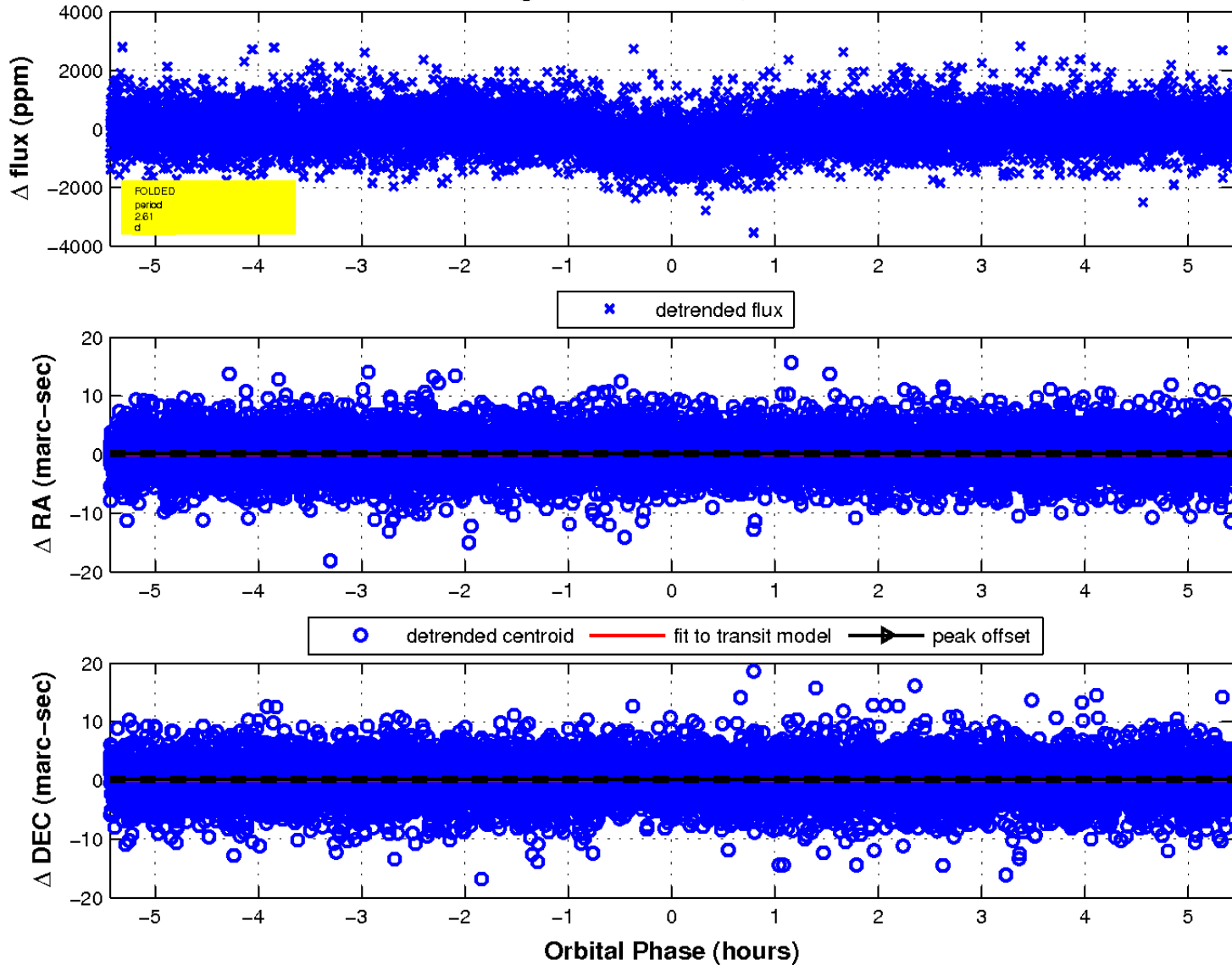




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.

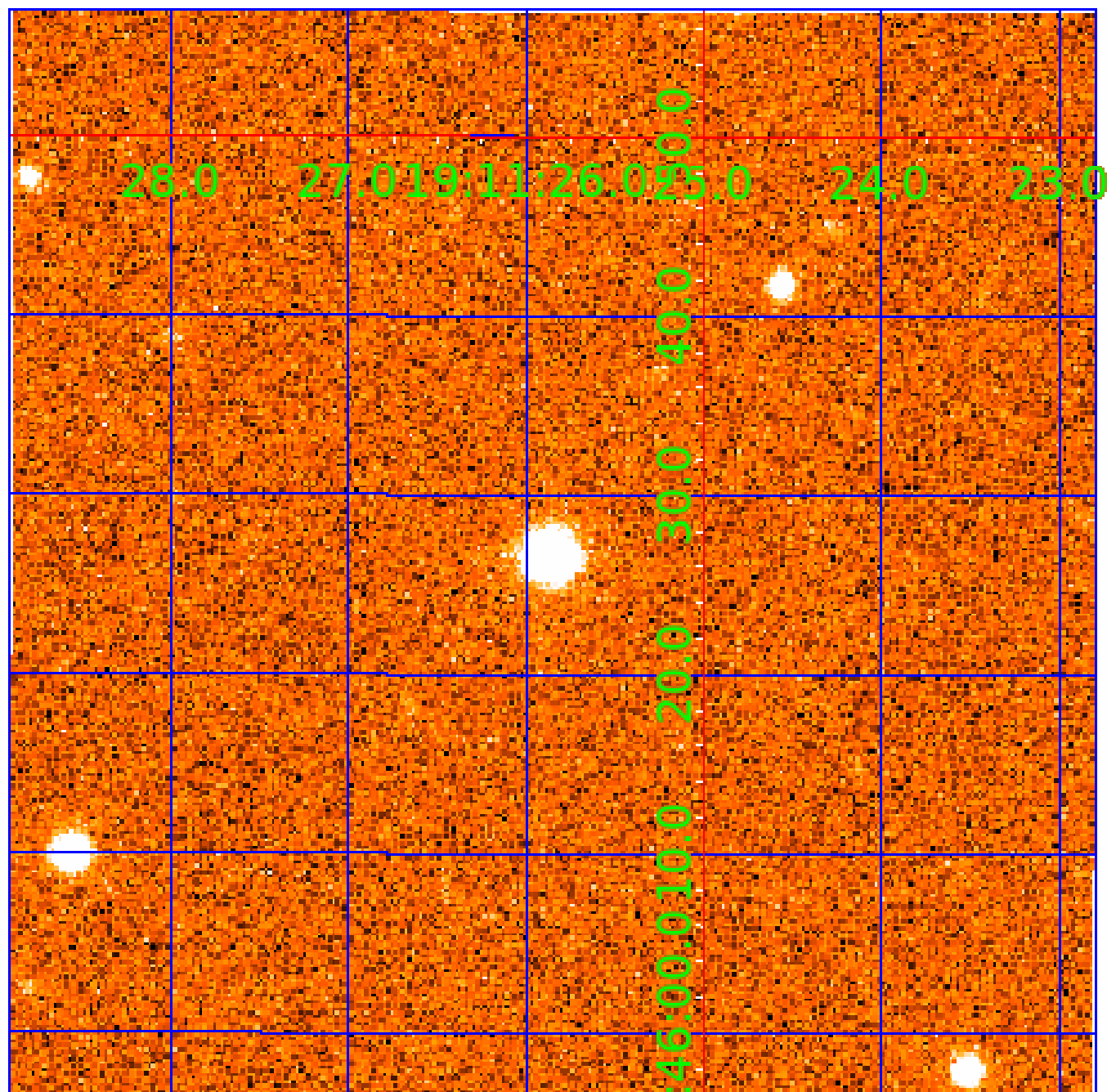


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 011129738

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011129738-01	OBS	1427.01	2.613008	133.115445	566.5	1.813	26.9	29.6	0.52	3883	1.26	61.24
011129738-02	OBS	1427.02	4.884520	135.242418	233.9	1.838	8.4	8.8	0.52	3883	0.90	26.59

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011129738-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011129738-02	OBS	PC	0.89	0	0	0	0	NO_COMMENT

**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 011129738-02

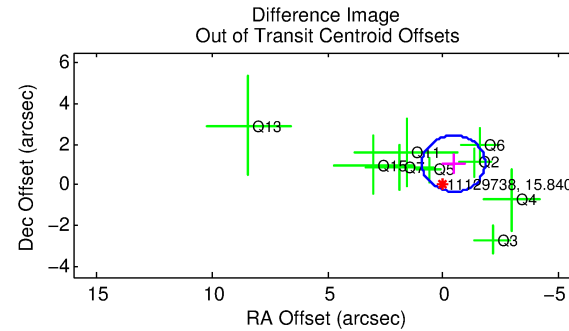
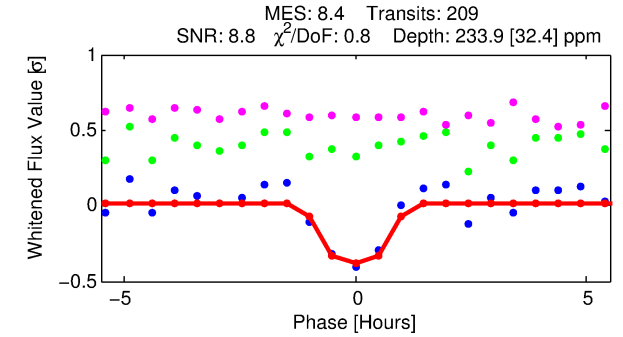
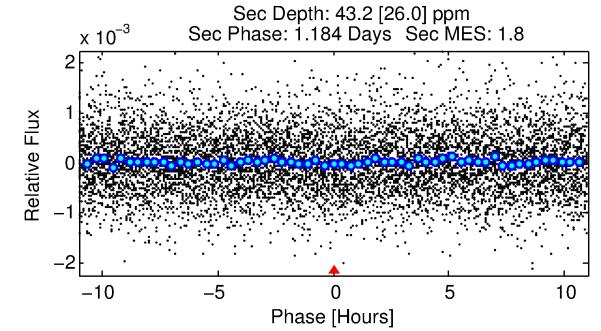
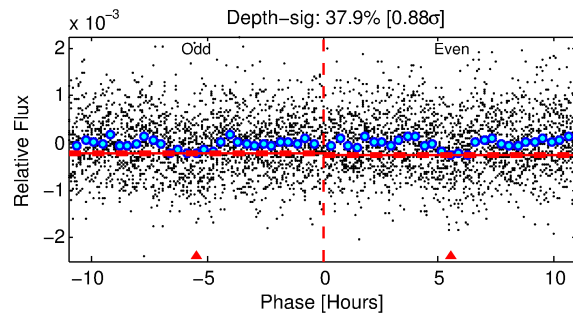
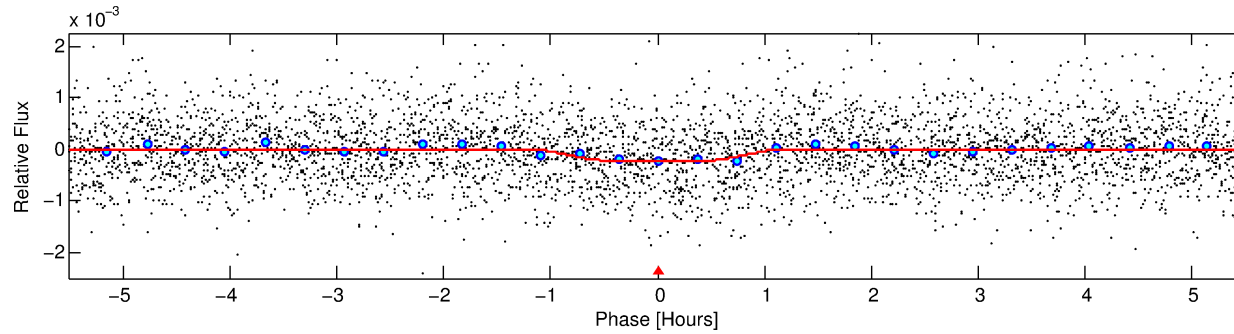
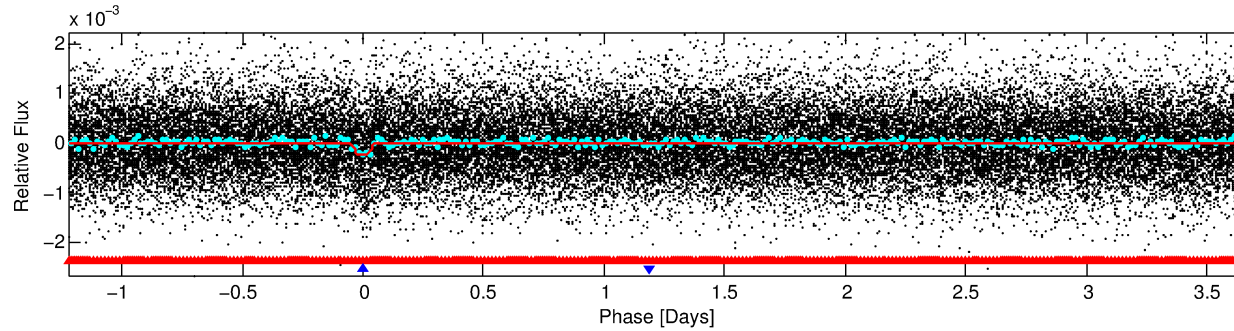
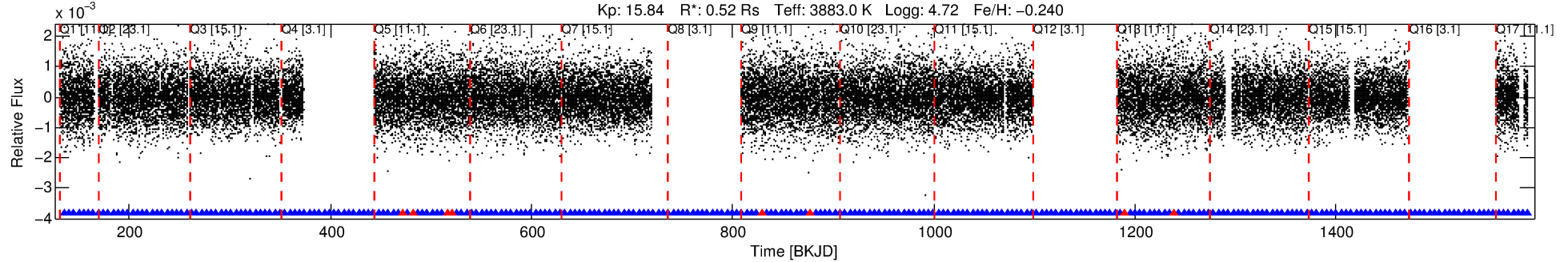
No Significant Match Found

# DV One-Page Summary

KIC: 11129738 Candidate: 2 of 2 Period: 4.885 d

KOI: K01427.02 Corr: 0.917

Kp: 15.84 R\*: 0.52 Rs Teff: 3883.0 K Logg: 4.72 Fe/H: -0.240



## DV Fit Results:

Period = 4.88452 [0.00003] d  
Epoch = 135.2424 [0.0043] BKJD  
Rp/R\* = 0.0160 [0.0186]  
a/R\* = 11.43 [62.50]  
b = 0.85 [1.86]  
Seff = 26.59 [3.44]  
Teq = 579 [19] K  
Rp = 0.90 [1.05] Re  
a = 0.0452 [0.0031] AU  
Ag = 59.97 [144.67] [0.41σ]  
Teffp = 2491 [1502] K [1.27σ]

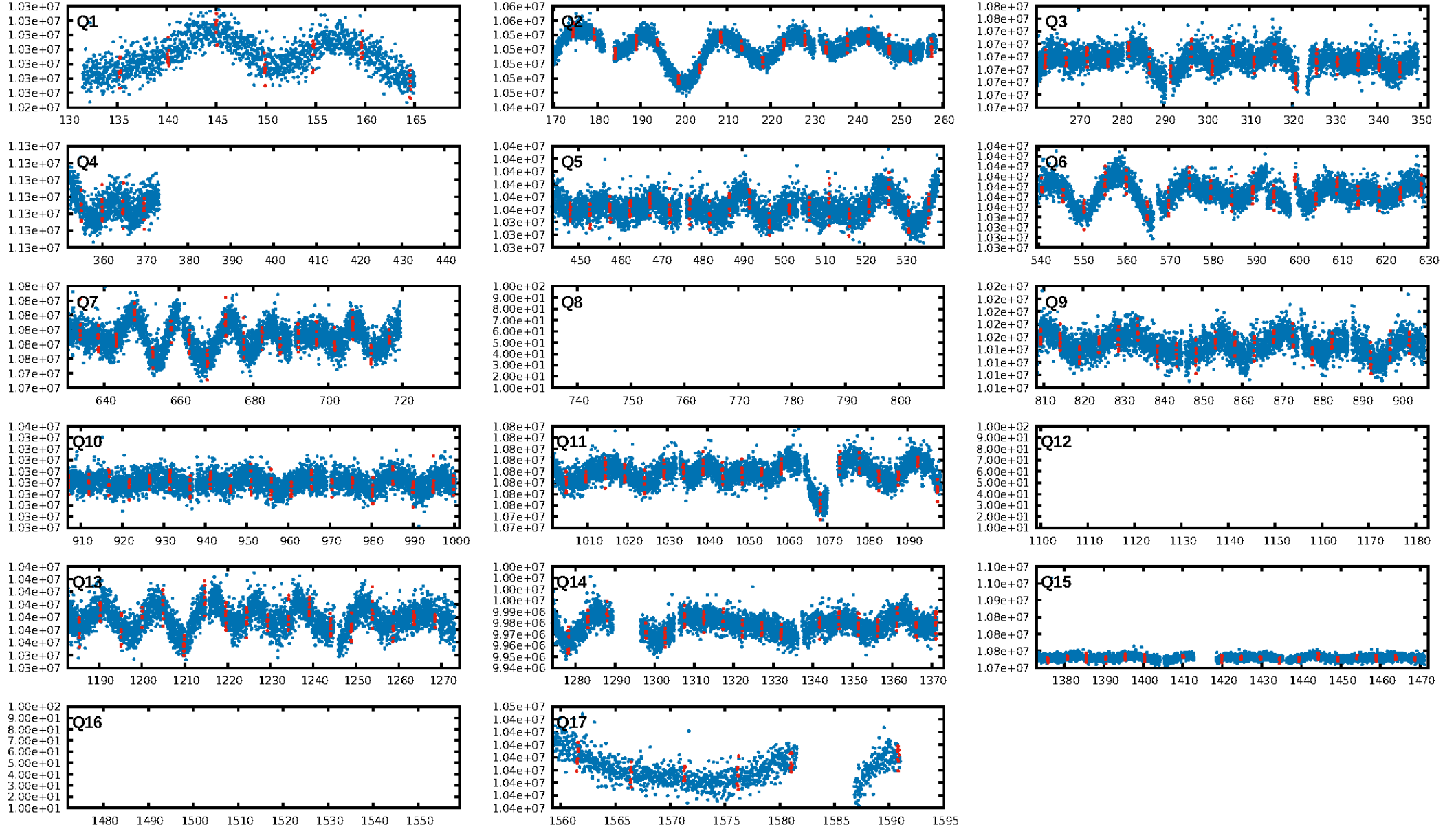
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.12σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.66e-17  
RollingBand-fgt: 0.96 [184/192]  
GhostDiagnostic-chr: 3.044  
Centroid-sig: 1.2%  
Centroid-so: 2.716 arcsec [1.63σ]  
OotOffset-rm: 1.141 arcsec [2.50σ]  
OotOffset-st: 2/4/1/2 [9]  
KicOffset-rm: 0.880 arcsec [1.93σ]  
KicOffset-st: 2/4/1/2 [9]  
DiffImageQuality-fgm: 0.44 [4/9]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 04:05:16 Z

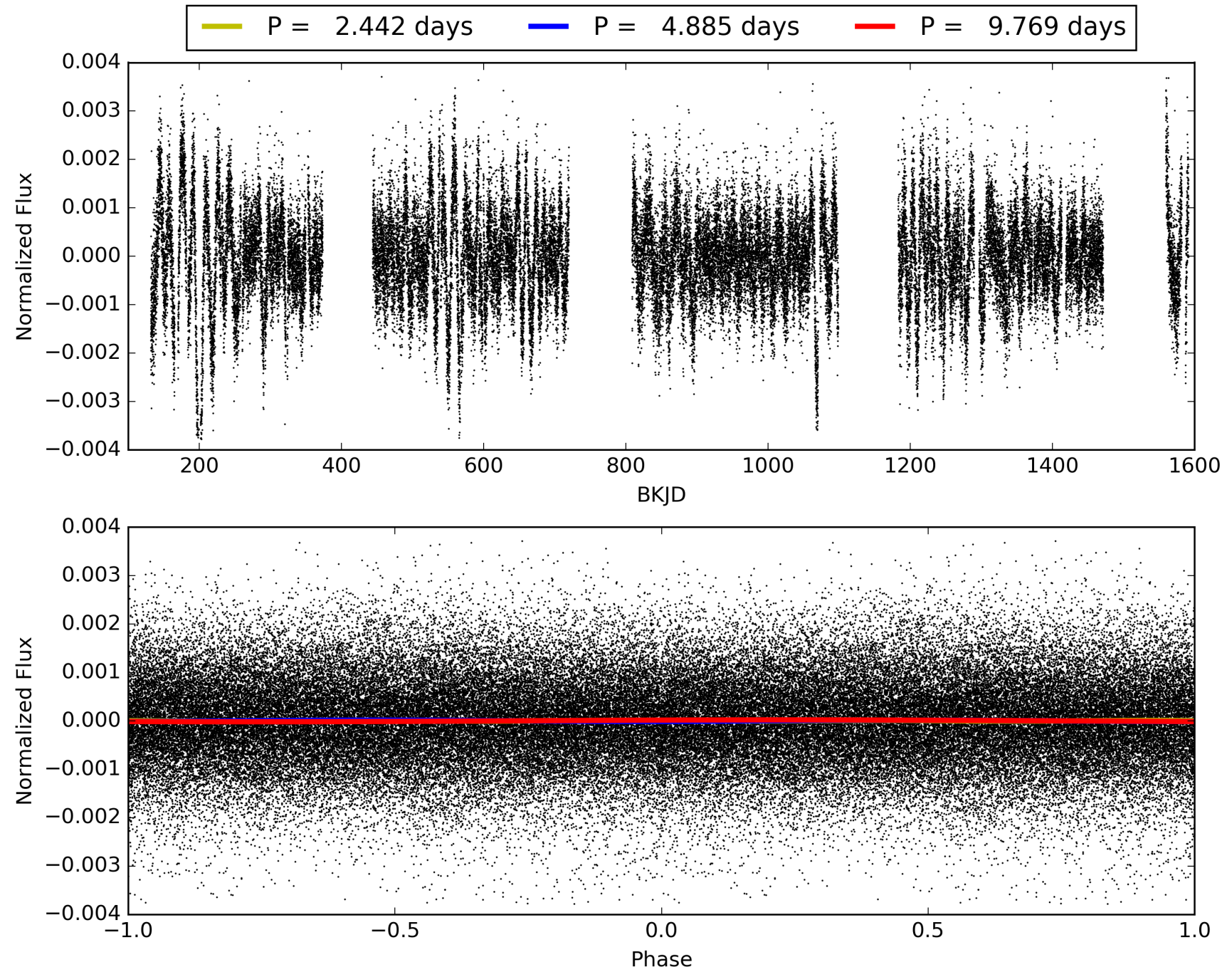
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011129738-02, PDC Light Curves



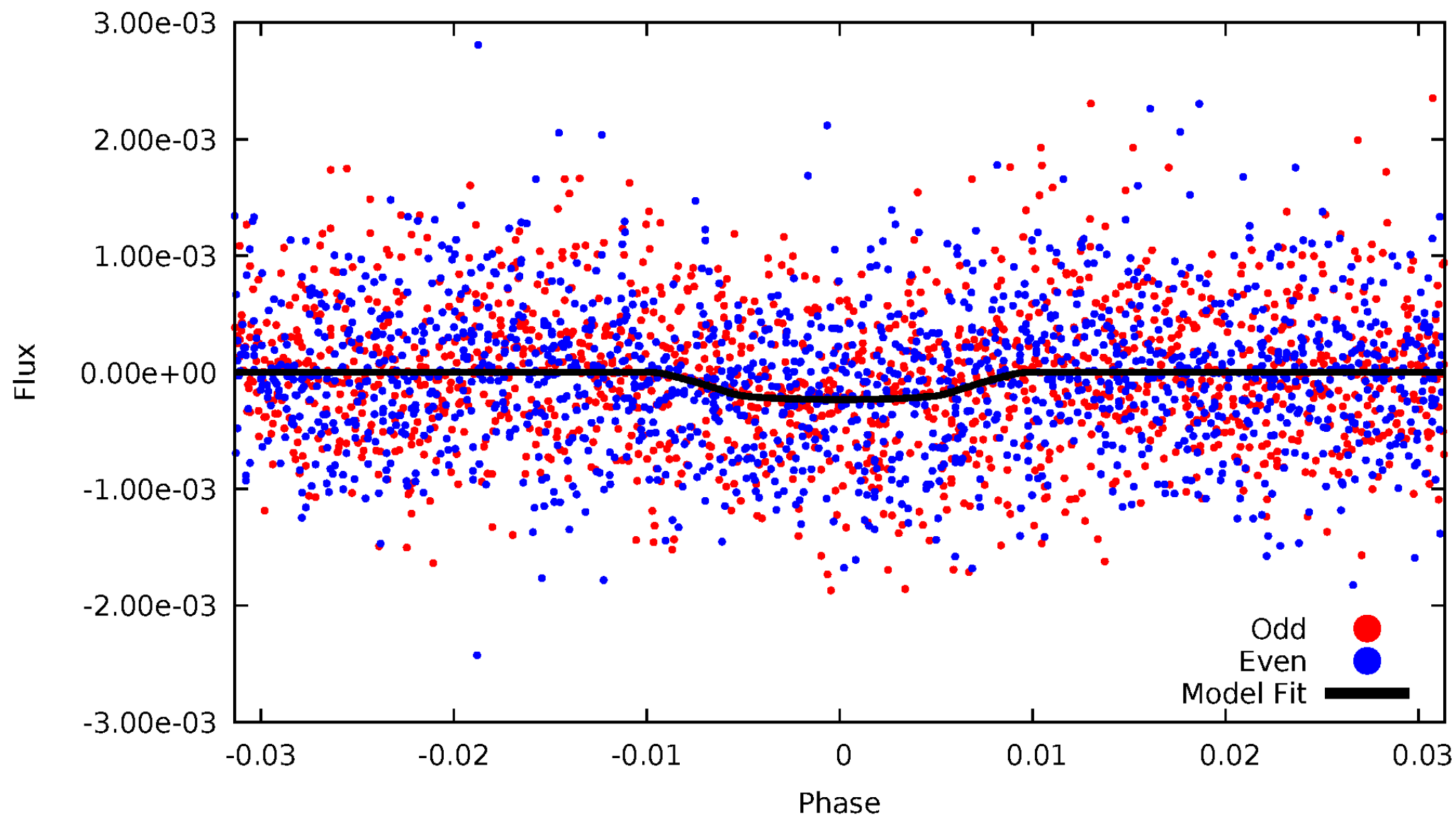


# TCE 011129738-02



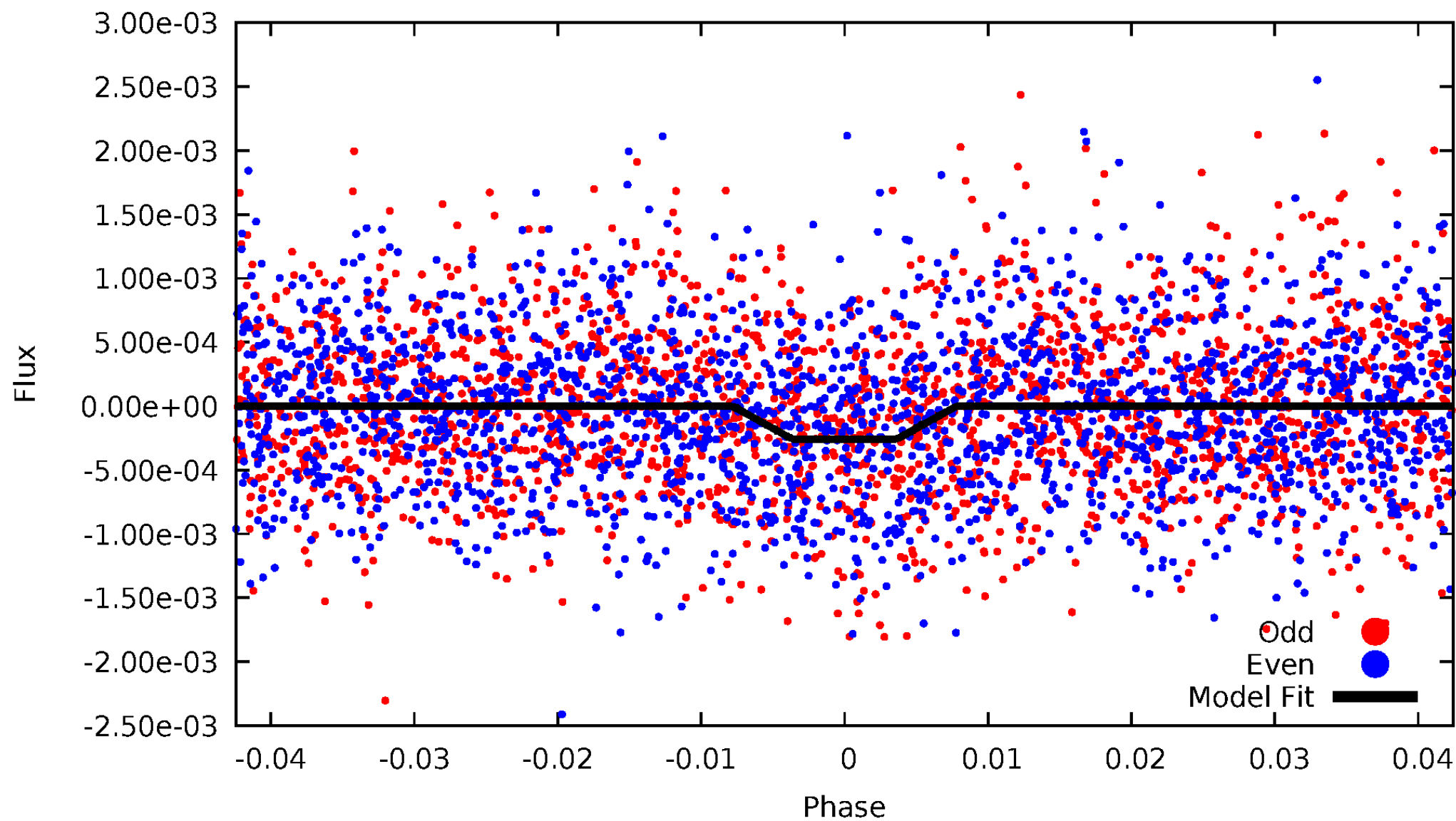
DV Odd/Even

TCE 011129738-02



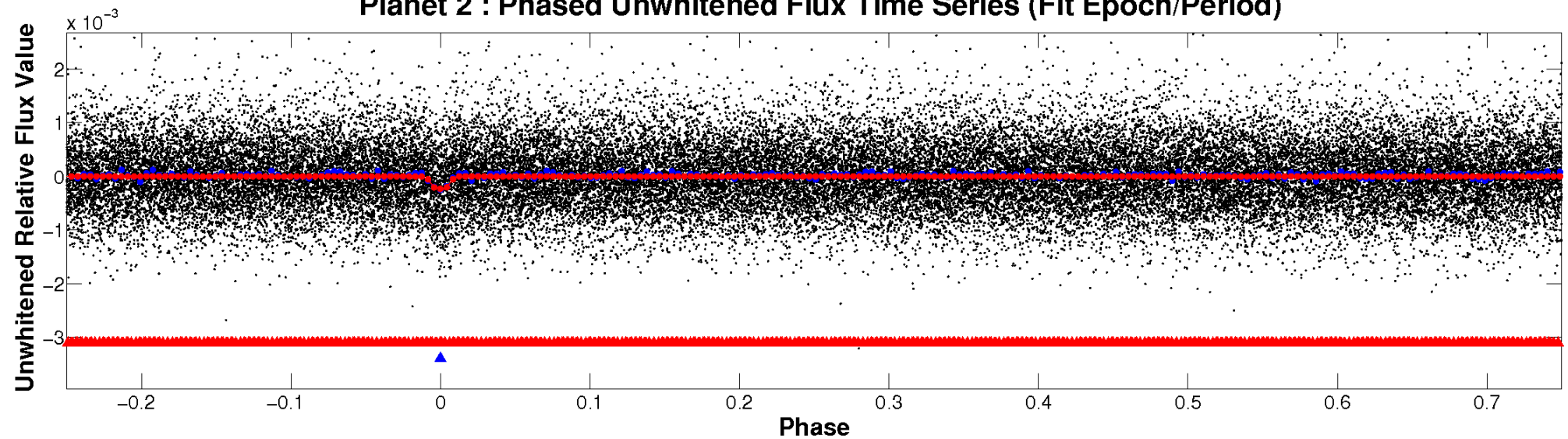
# ALT Odd/Even

TCE 011129738-02

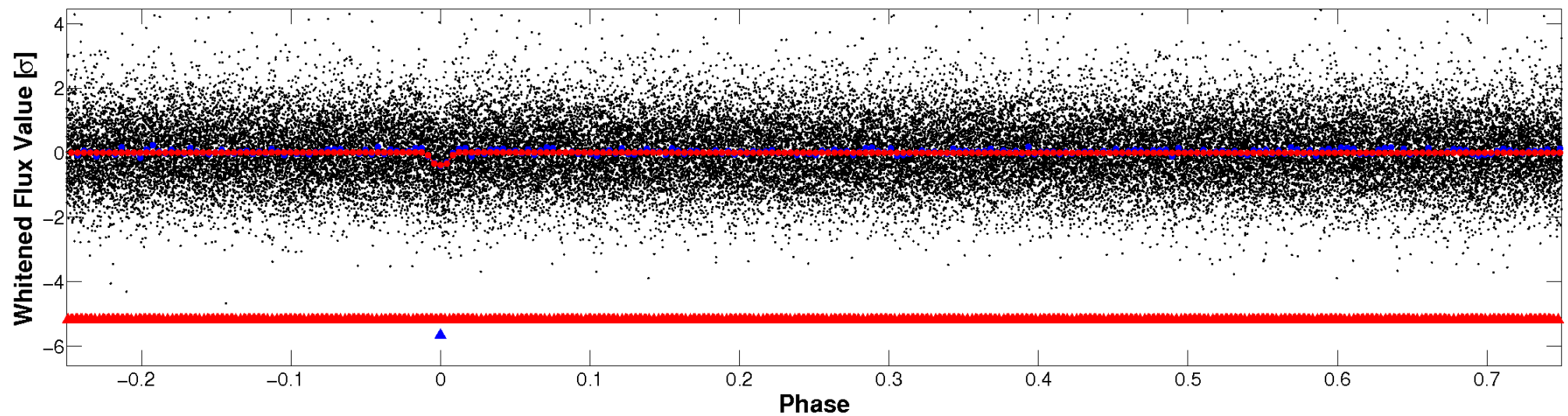


# Non-Whitened Vs. Whitened Light Curve

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



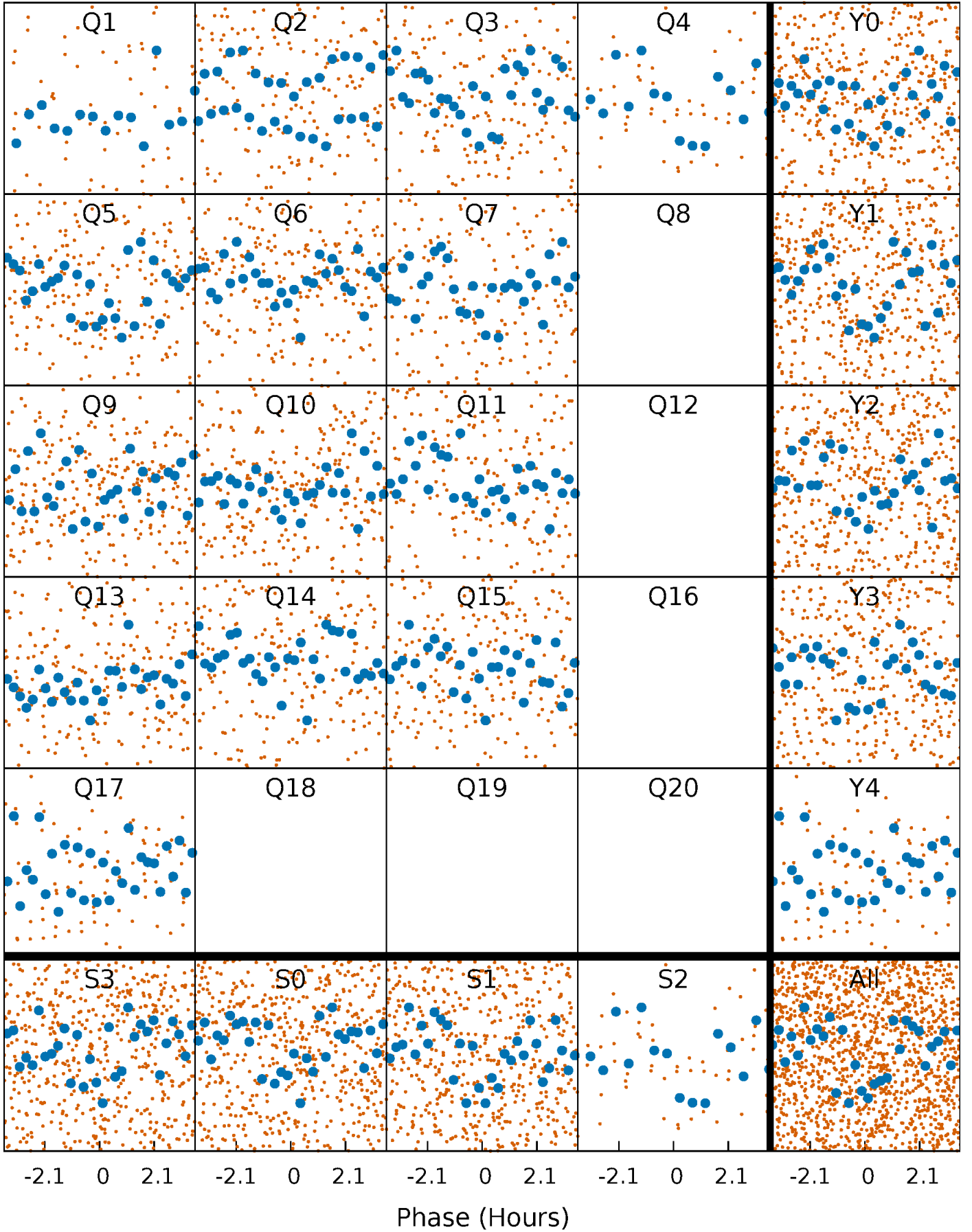
**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

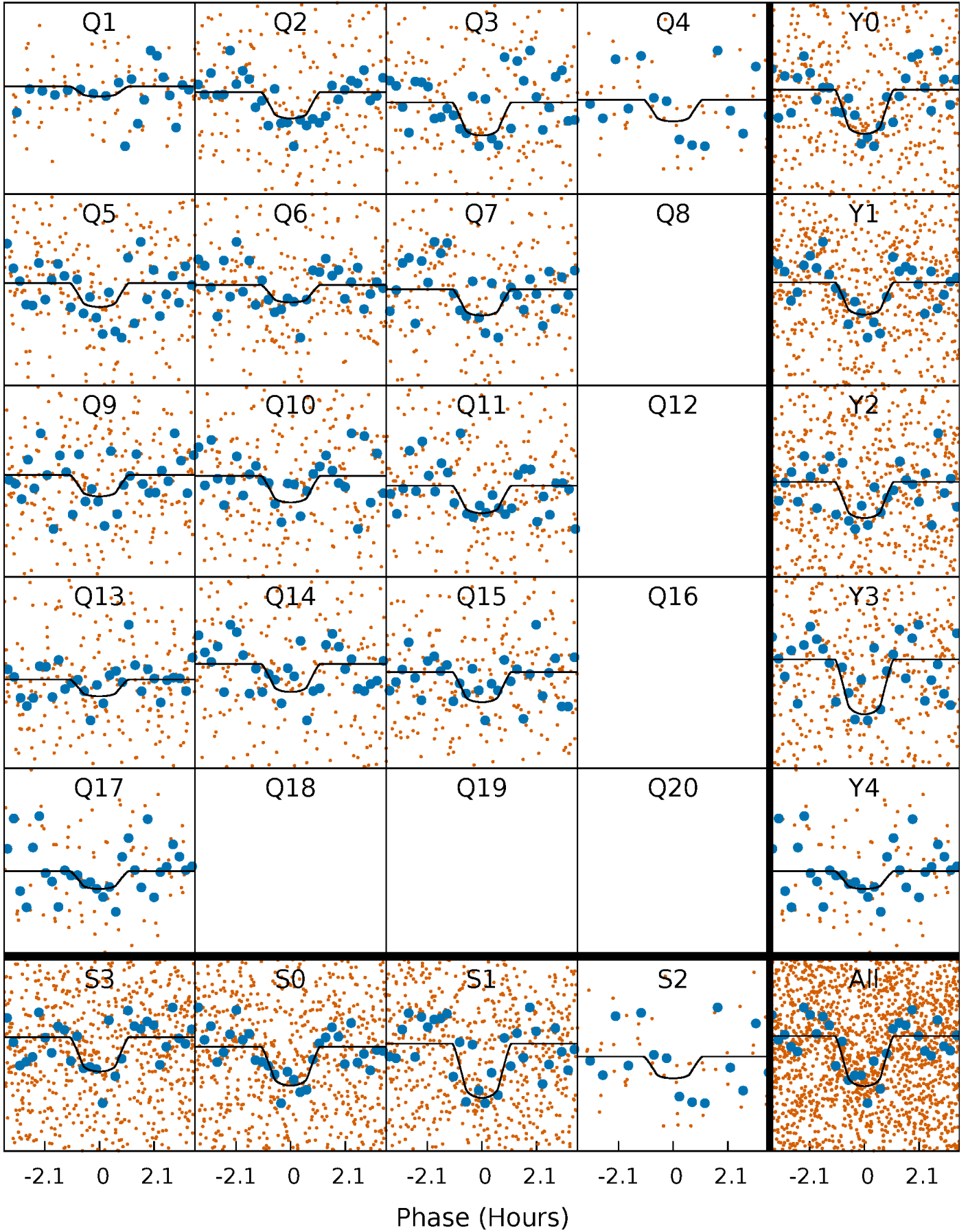
TCE 011129738-02   P= 4.884520 Days    $T_0=135.242418$  (BKJD)





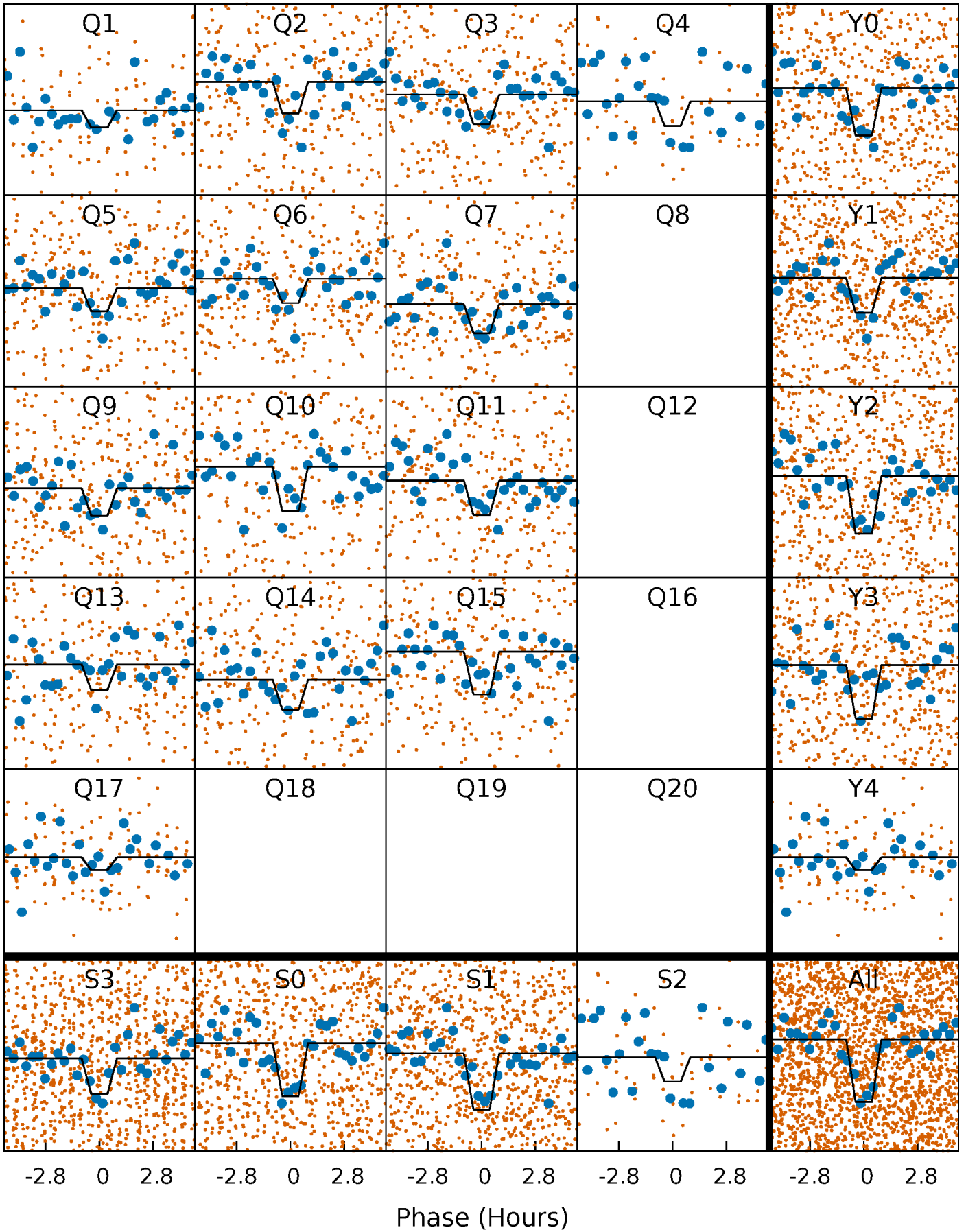
# DV Quarter-Phased Transit Curves

TCE 011129738-02   P= 4.884520 Days    $T_0=135.242418$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

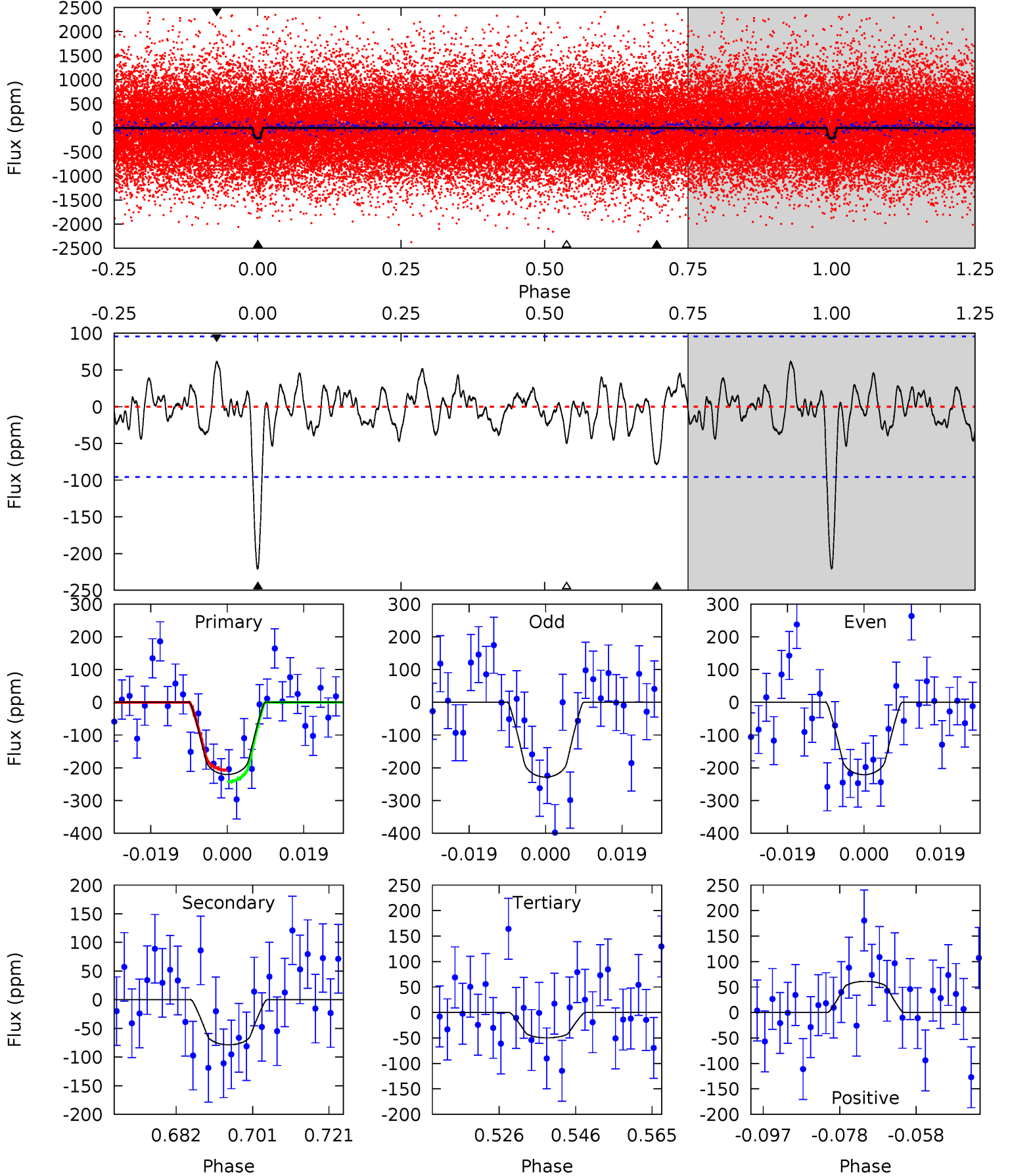
TCE 011129738-02 P= 4.884442 Days  $T_0=135.252005$  (BKJD)



# DV Model-Shift Uniqueness Test

011129738-02, P = 4.884520 Days, E = 130.357898 Days

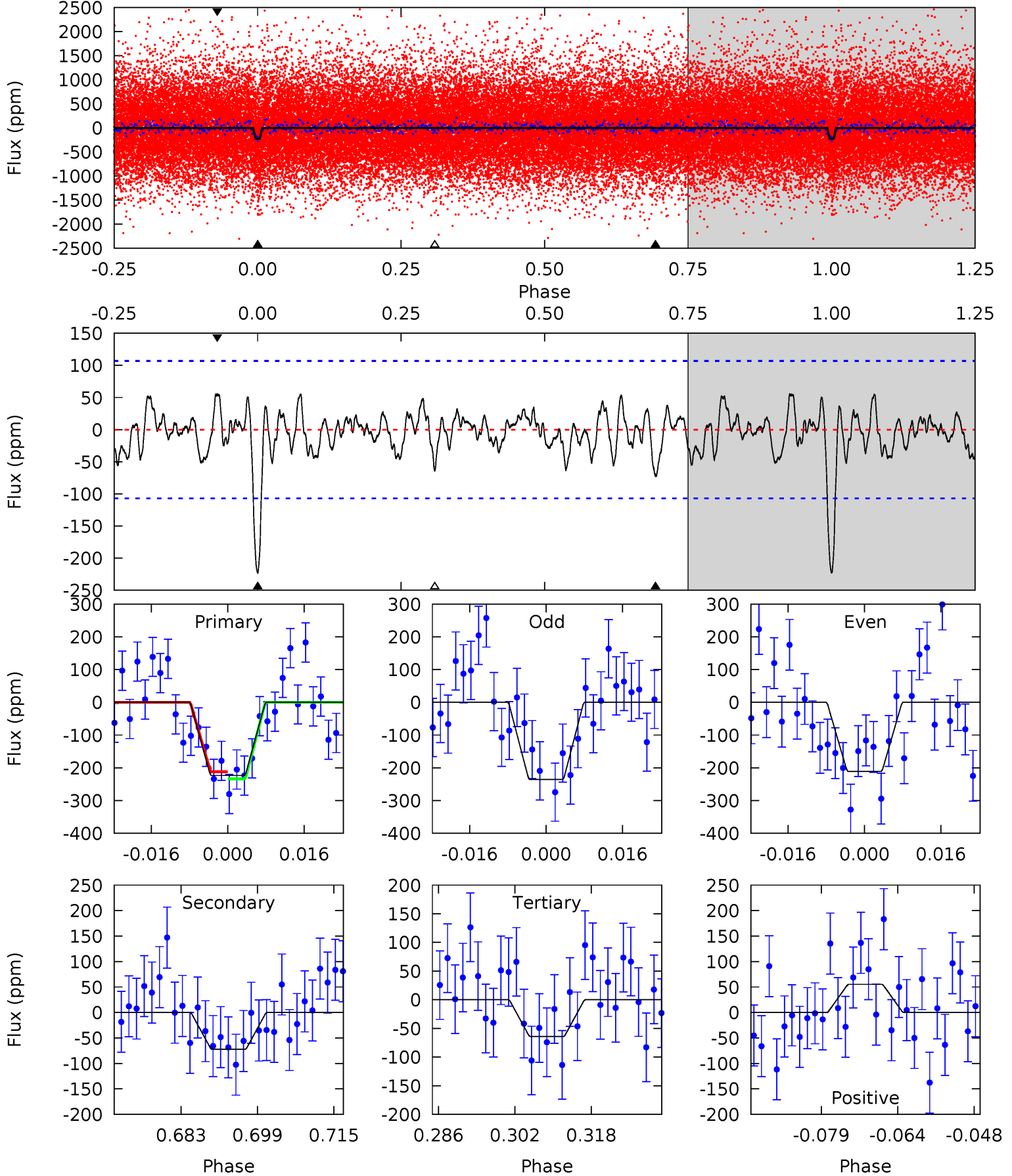
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	4.02	2.54	3.13	4.90	2.34	1.10	8.74	8.16	1.47	0.89	0.19	1.03	0.22	0.91



# Alt Model-Shift Uniqueness Test

011129738-02, P = 4.884442 Days, E = 130.367563 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
10.3	3.34	2.97	2.55	4.94	2.41	1.11	7.34	7.76	0.37	0.79	0.56	0.92	0.20	0.51



### Stellar Parameters For KIC 011129738

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3883^{+70}_{-85}$	$4.725^{+0.049}_{-0.025}$	$-0.240^{+0.150}_{-0.150}$	$0.517^{+0.029}_{-0.045}$	$0.516^{+0.035}_{-0.039}$	$5.277^{+1.220}_{-0.483}$
	+2%/-2%	+1%/-1%	+62%/-62%	+6%/-9%	+7%/-8%	+23%/-9%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 011129738-02 / KOI 1427.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-79 \pm 20$	$1.09^{+0.95}_{-0.70}$	$804^{+19}_{-22}$	$3019^{+1153}_{-480}$	$75^{+476}_{-55}$
Alt.	$-72 \pm 22$	$1.13^{+0.90}_{-0.73}$	$804^{+19}_{-21}$	$2944^{+1103}_{-461}$	$61^{+406}_{-44}$

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

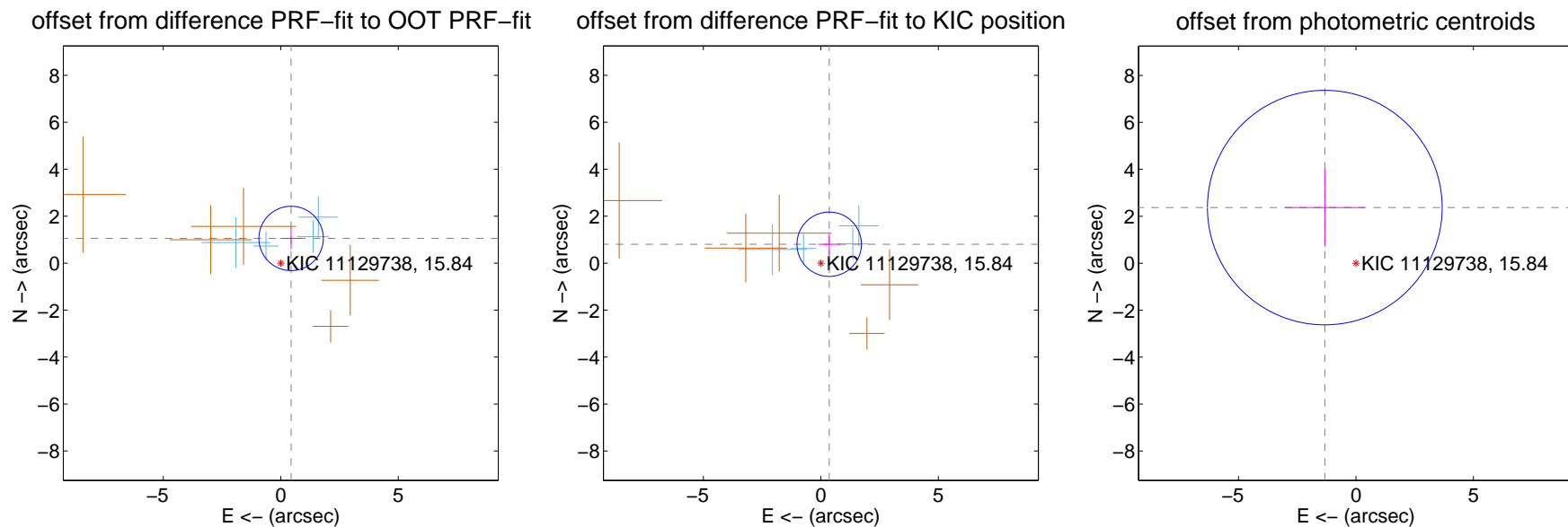
## DV Centroid Data

Supplemental centroid analysis for 011129738-02. Kepler magnitude: 15.84. Transit SNR 8.80

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

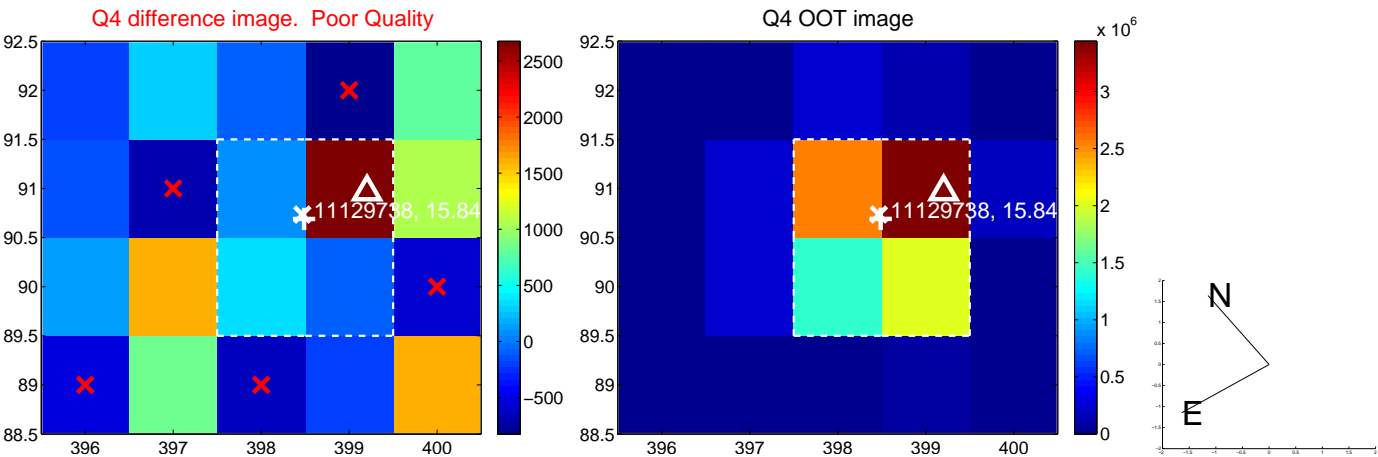
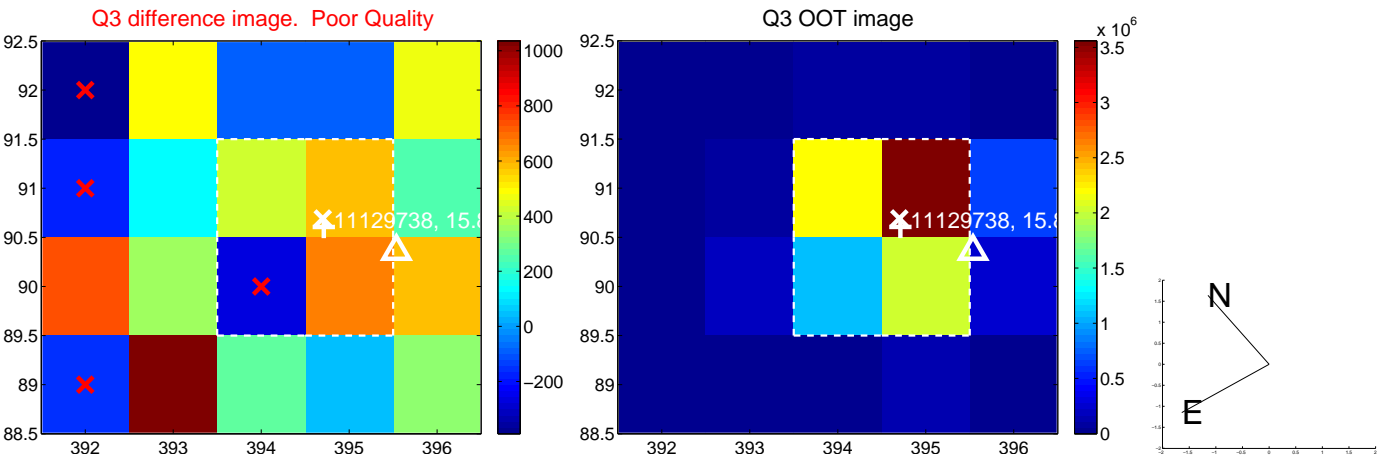
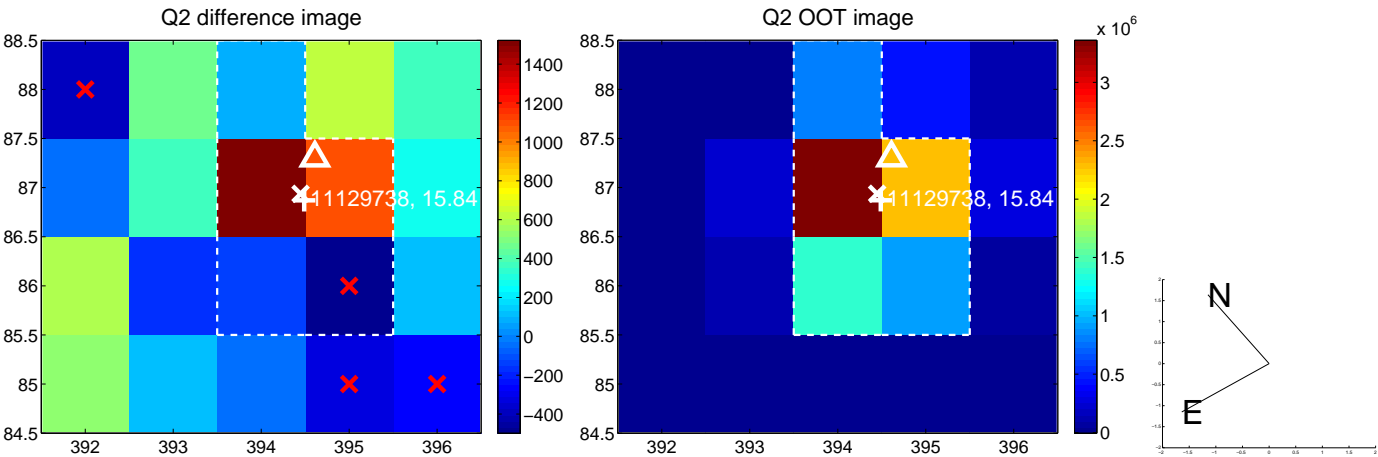
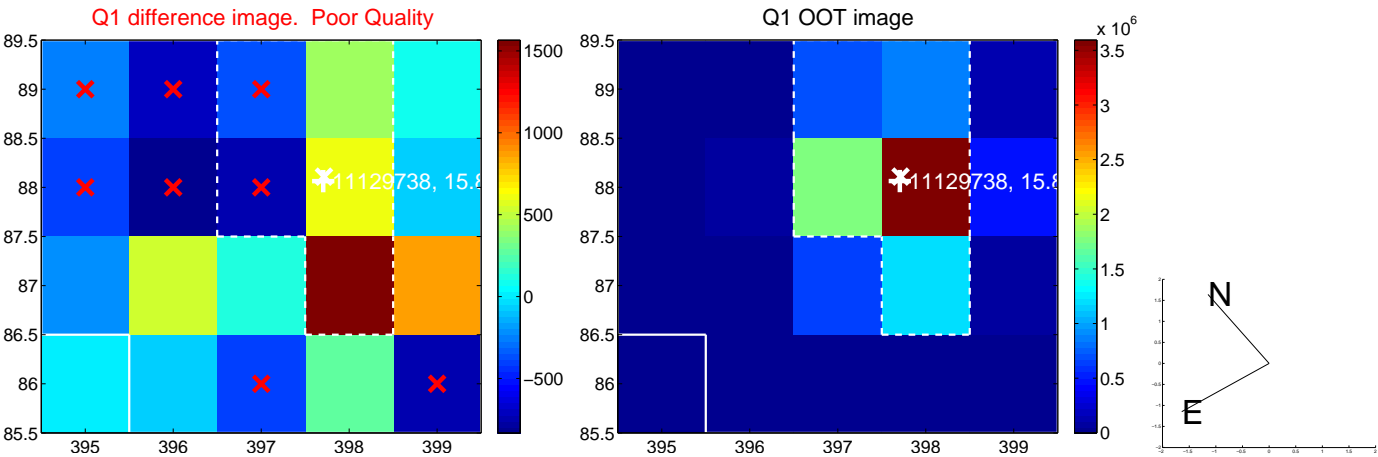
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.141 \pm 0.457$	2.50	$-0.441 \pm 0.464$	$1.052 \pm 0.456$
PRF-fit source offset from KIC position	$0.880 \pm 0.457$	1.93	$-0.355 \pm 0.464$	$0.805 \pm 0.456$
photometric centroid source offset	$2.72 \pm 1.66$	1.63	$1.33 \pm 1.70$	$2.37 \pm 1.65$



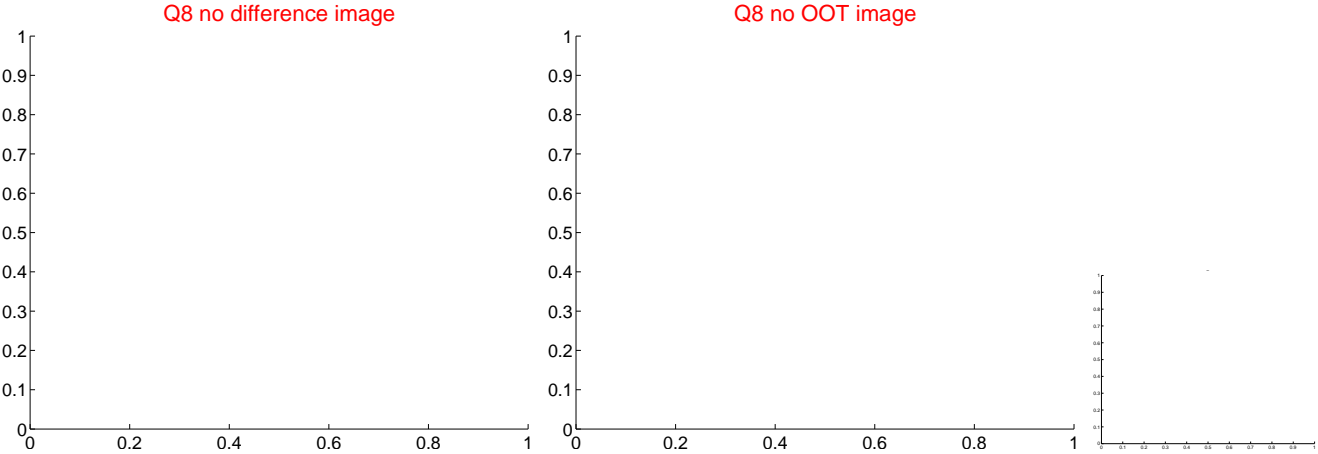
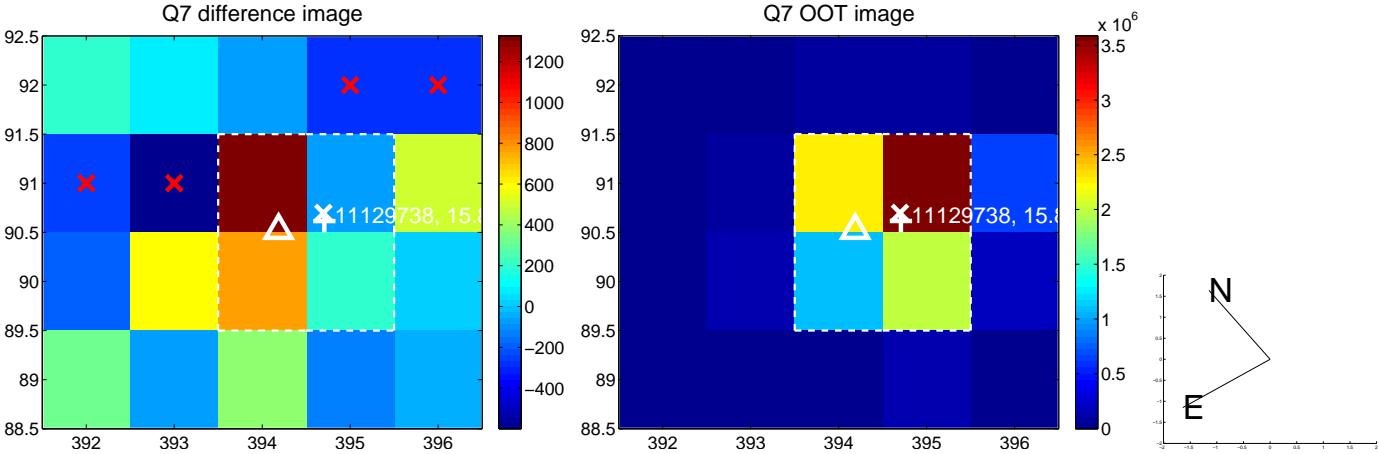
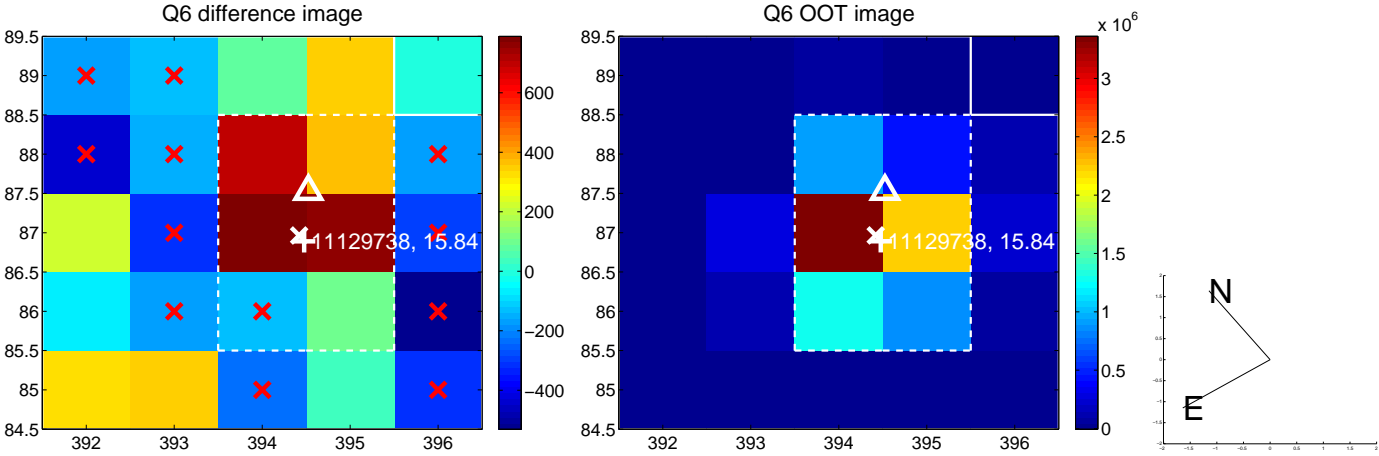
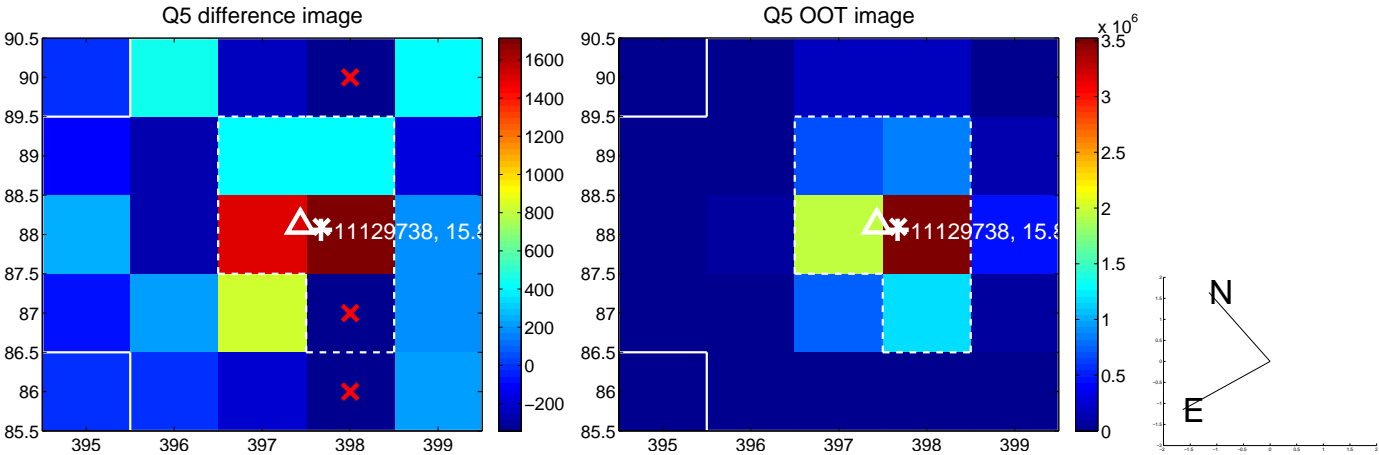
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



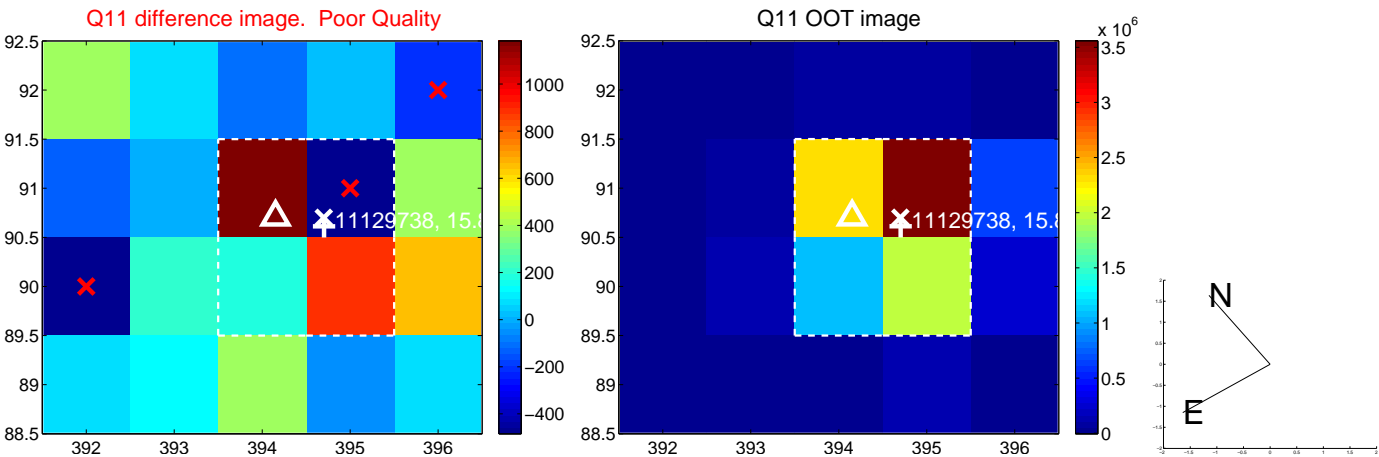
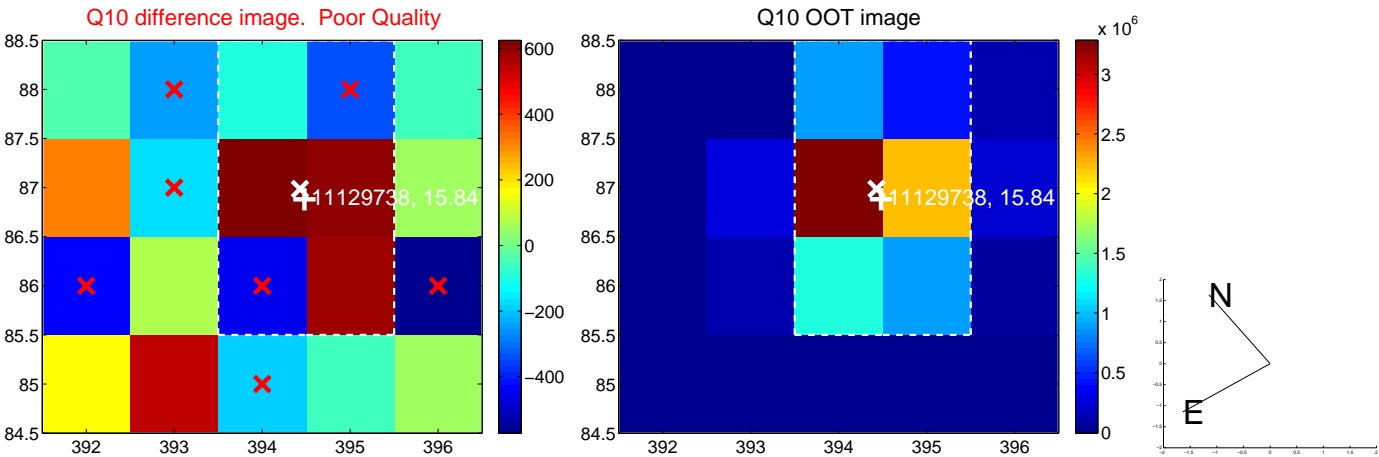
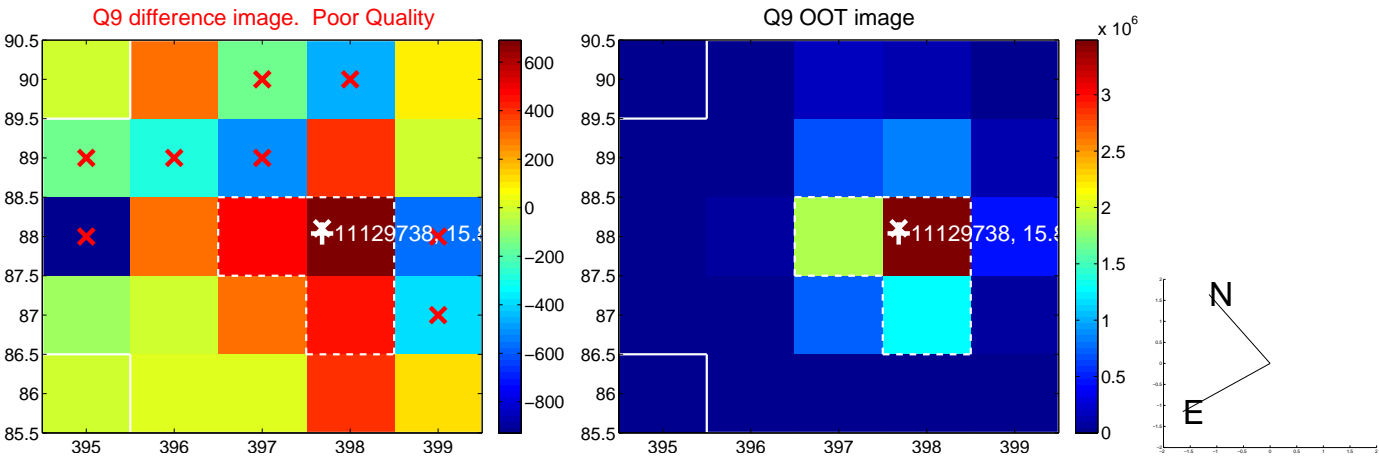
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



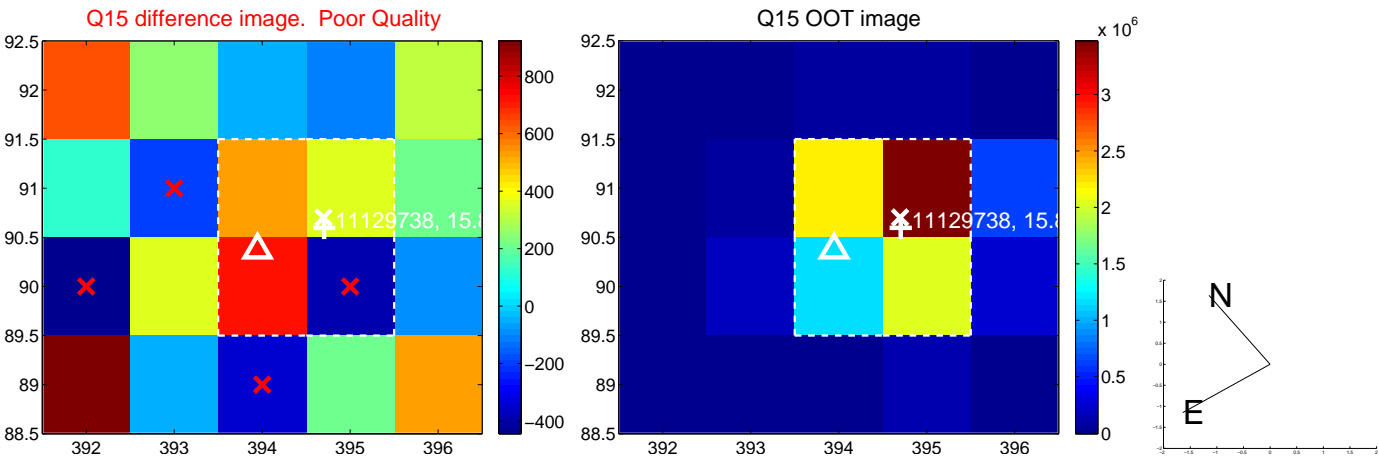
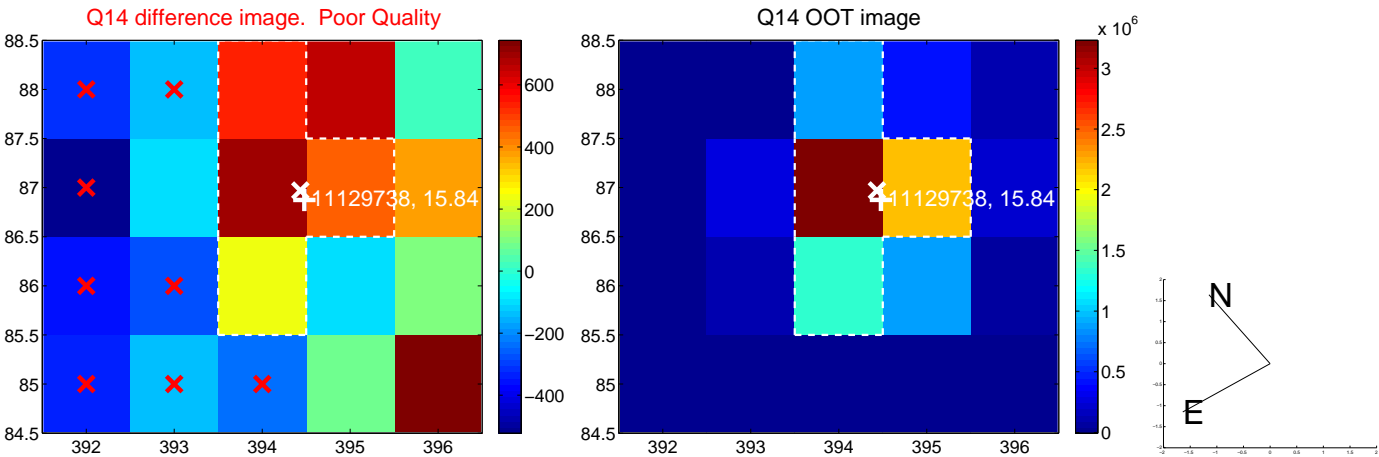
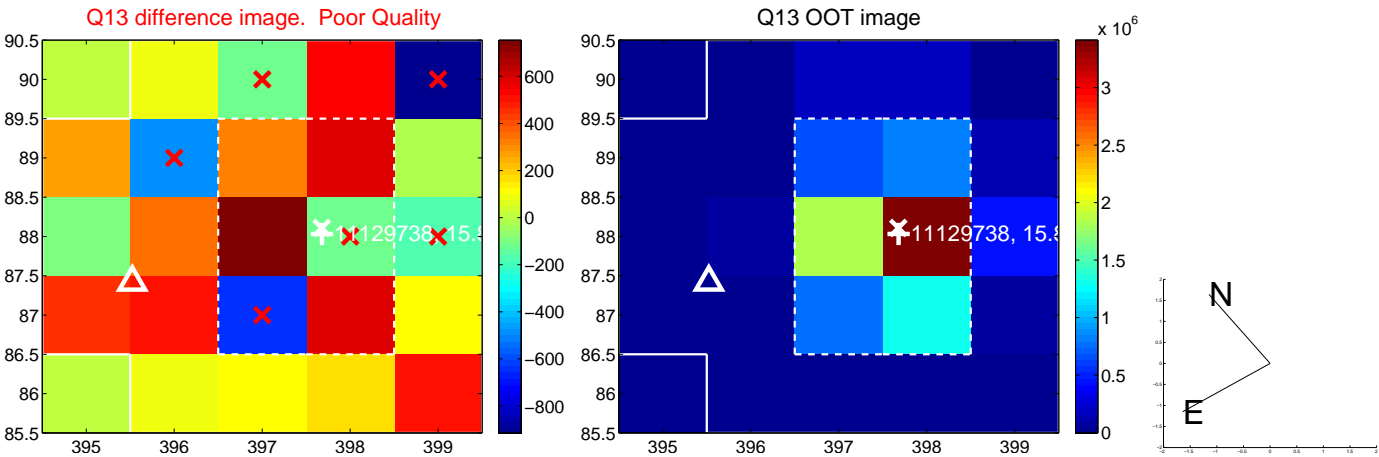
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



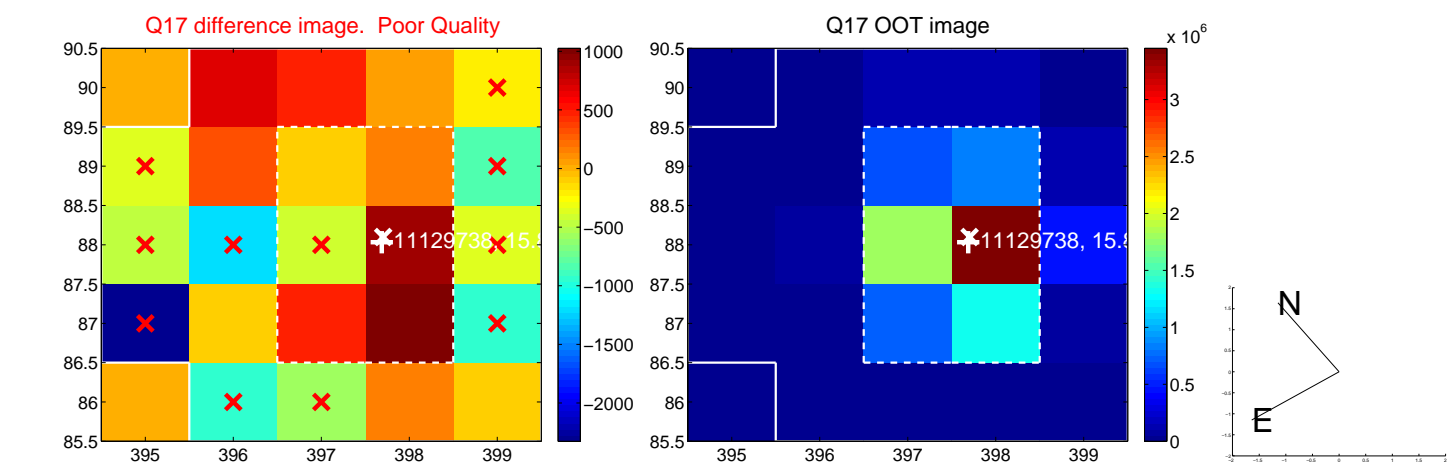
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



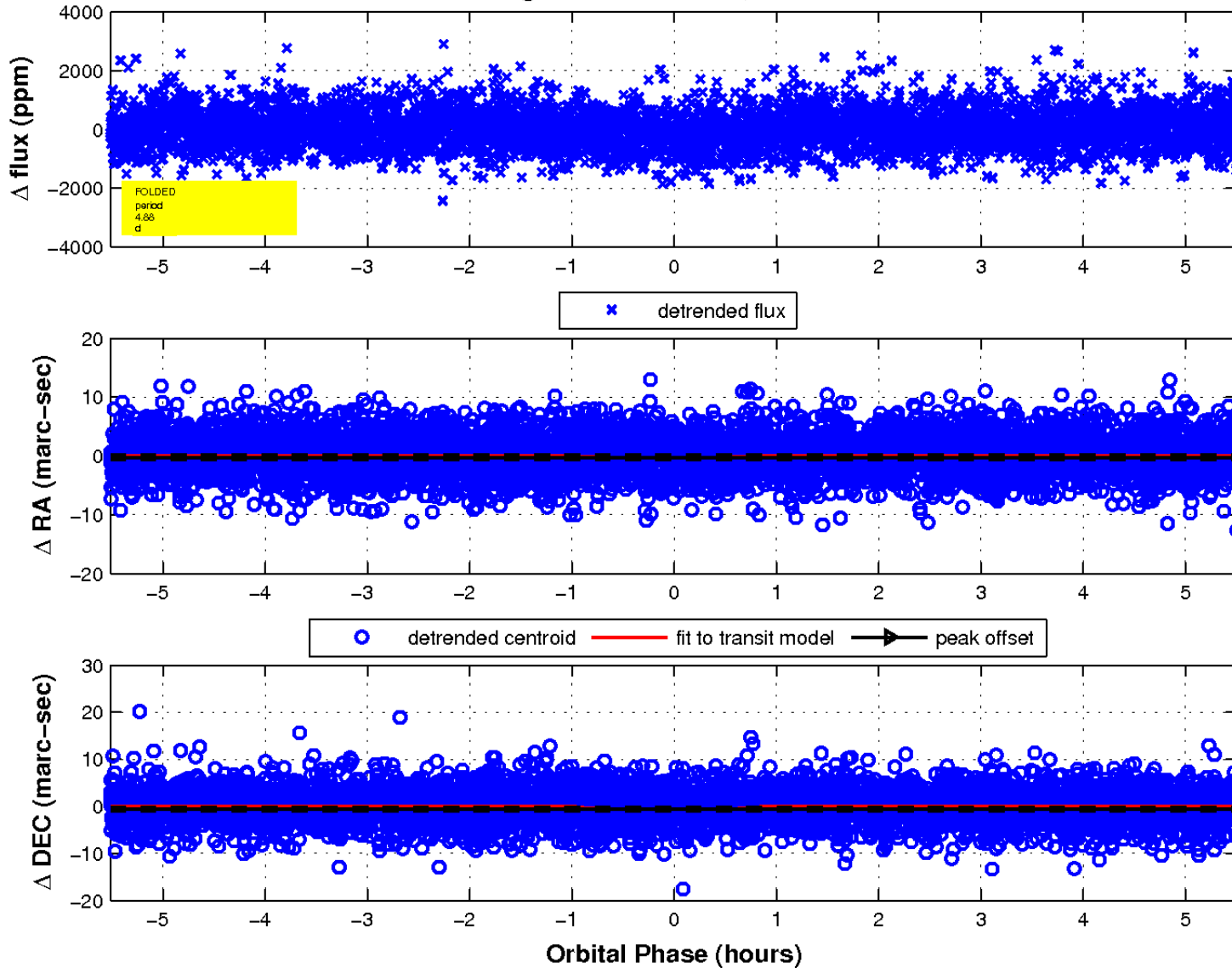
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

