

# KIC 011288051

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011288051-01	OBS	0241.01	13.821397	131.793335	756.2	3.919	64.6	69.0	0.65	4983	2.16	23.22
011288051-02	OBS	0241.02	30.950591	153.847119	304.7	5.586	20.5	21.3	0.65	4983	1.54	7.92
011288051-03	OBS	0241.03	3.410478	131.576496	134.6	2.380	19.2	20.9	0.65	4983	0.92	150.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011288051-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011288051-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
011288051-03	OBS	PC	1.00	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.

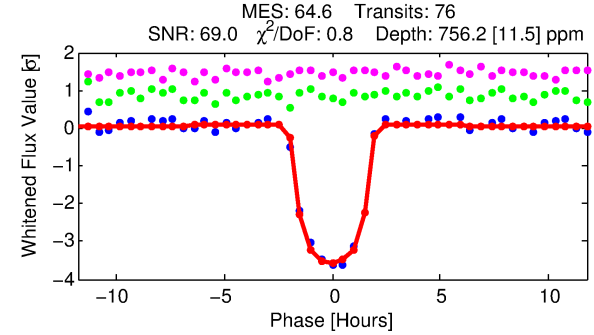
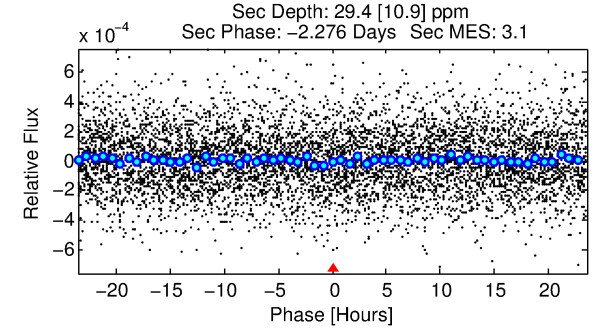
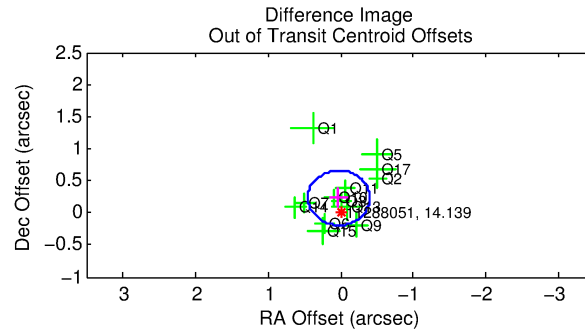
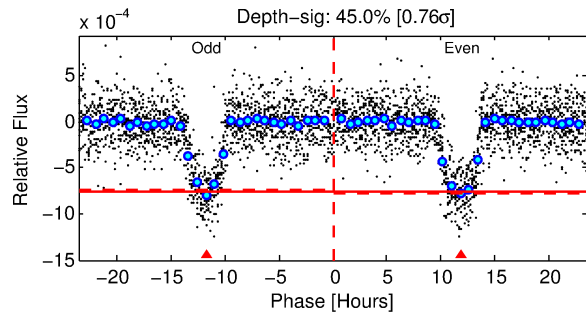
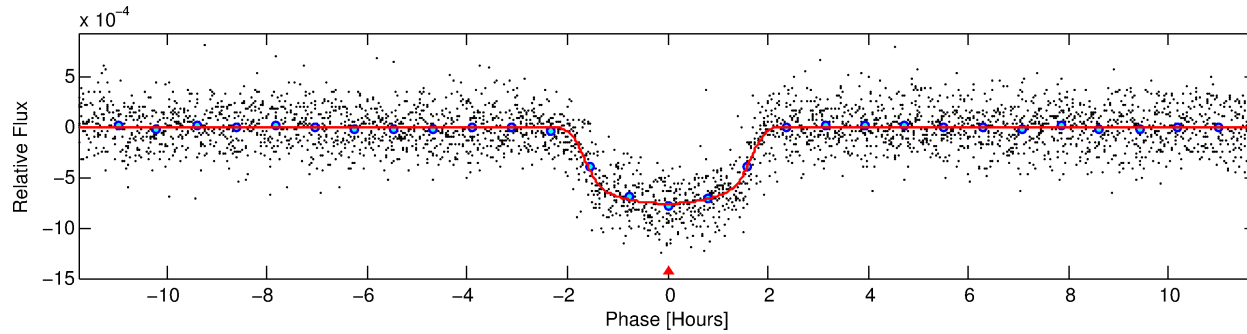
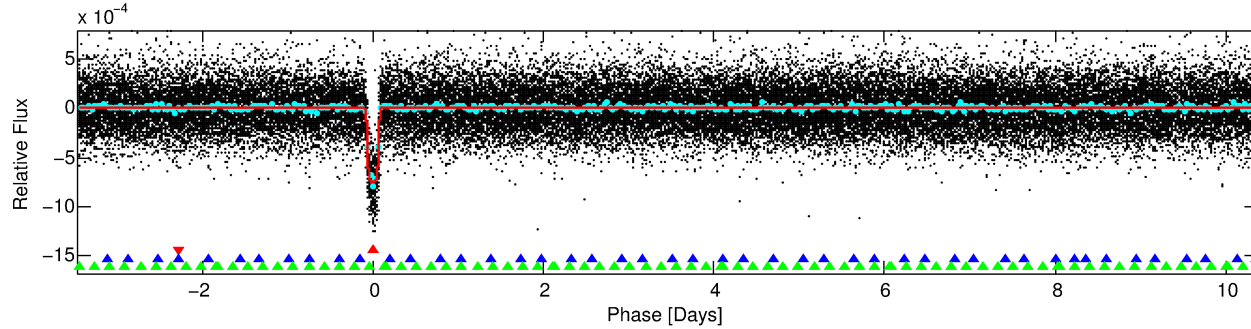
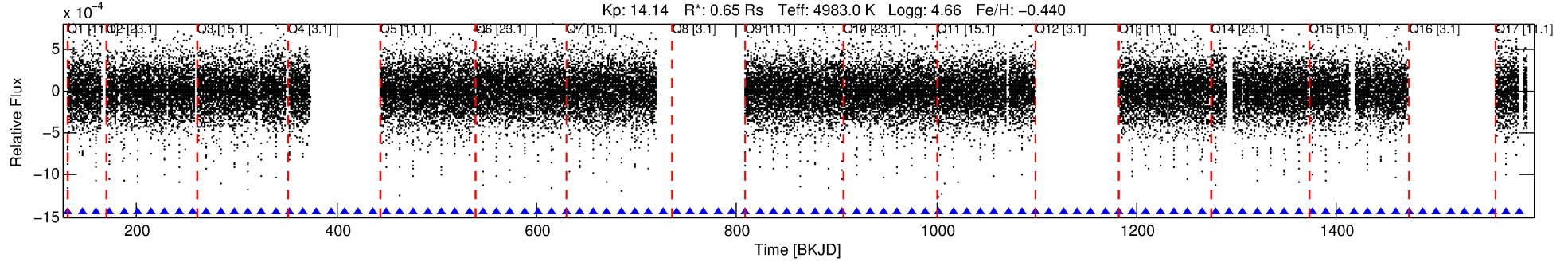
## Ephemeris Match Information For 011288051-01

No Significant Match Found

# DV One-Page Summary

KIC: 11288051 Candidate: 1 of 3 Period: 13.821 d  
KOI: K00241.01 Name: Kepler-124c Corr: 0.979

Kp: 14.14 R\*: 0.65 Rs Teff: 4983.0 K Logg: 4.66 Fe/H: -0.440



## DV Fit Results:

Period = 13.82140 [0.00002] d  
Epoch = 131.7933 [0.0012] BKJD  
Rp/R\* = 0.0304 [0.0011]  
a/R\* = 13.73 [1.78]  
b = 0.90 [0.03]  
Seff = 23.22 [2.83]  
Teq = 560 [17] K  
Rp = 2.16 [0.16] Re  
a = 0.1004 [0.0060] AU  
Ag = 34.87 [13.54] [2.50σ]  
Teffp = 2103 [203] K [7.59σ]

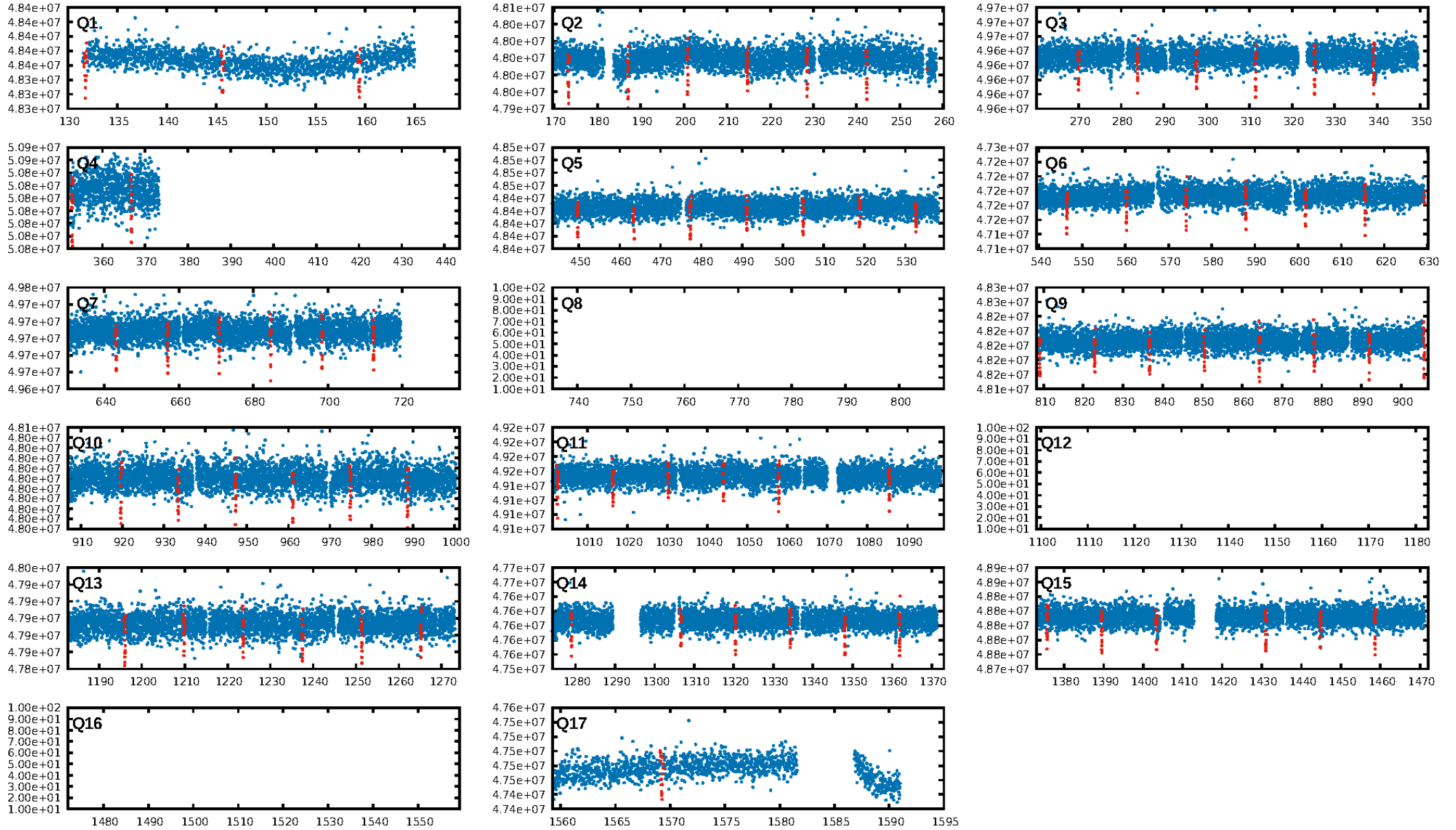
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [54.50σ]  
LongPeriod-sig: 100.0% [60.25σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [70/70]  
GhostDiagnostic-chr: 7.459  
Centroid-sig: 15.7%  
Centroid-so: 0.153 arcsec [0.75σ]  
OotOffset-rm: 0.233 arcsec [1.64σ]  
KicOffset-rm: 0.210 arcsec [1.59σ]  
OotOffset-st: 4/4/0/5 [13]  
KicOffset-st: 4/4/0/5 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

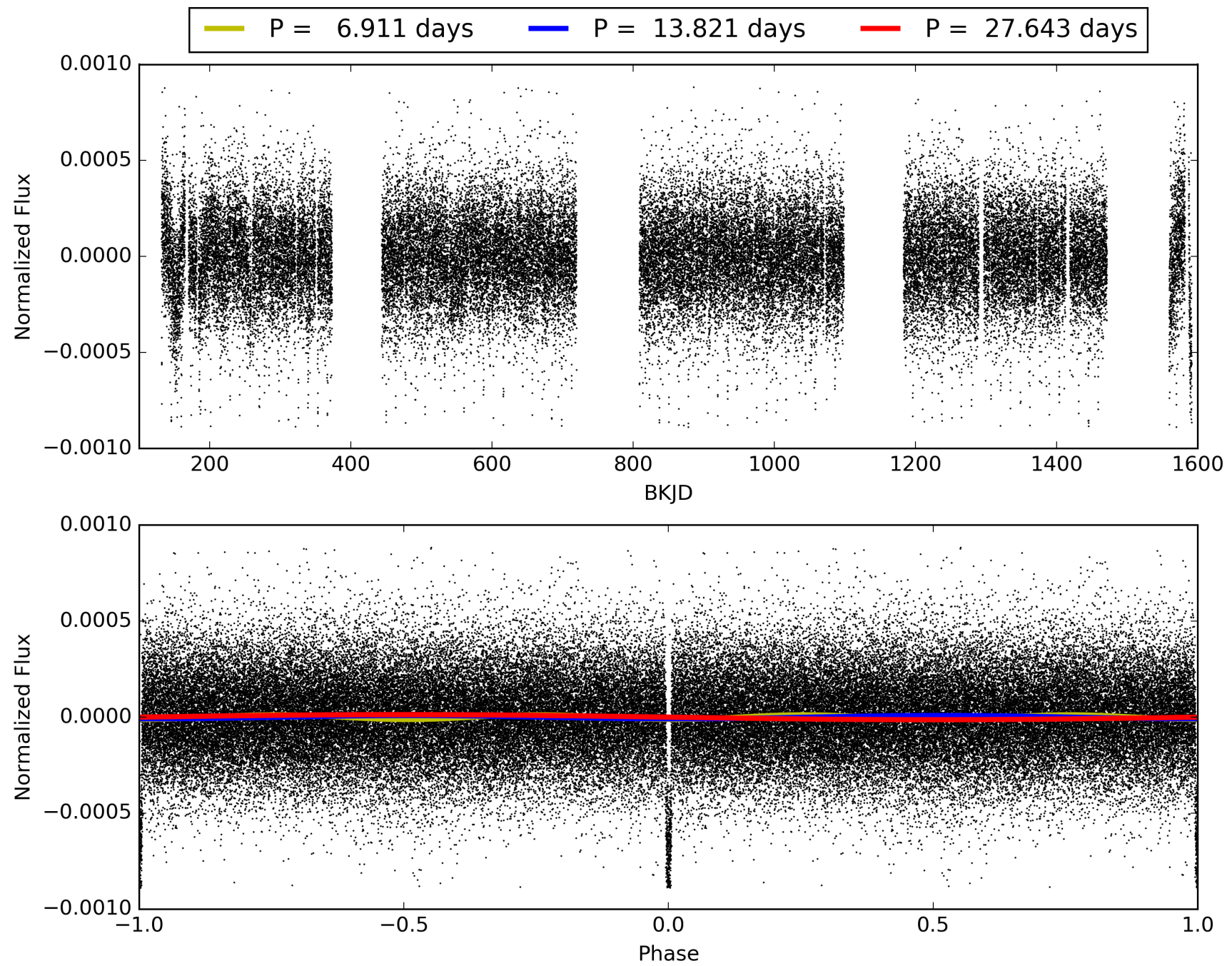
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:50:40 Z

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

# TCE 011288051-01, PDC Light Curves



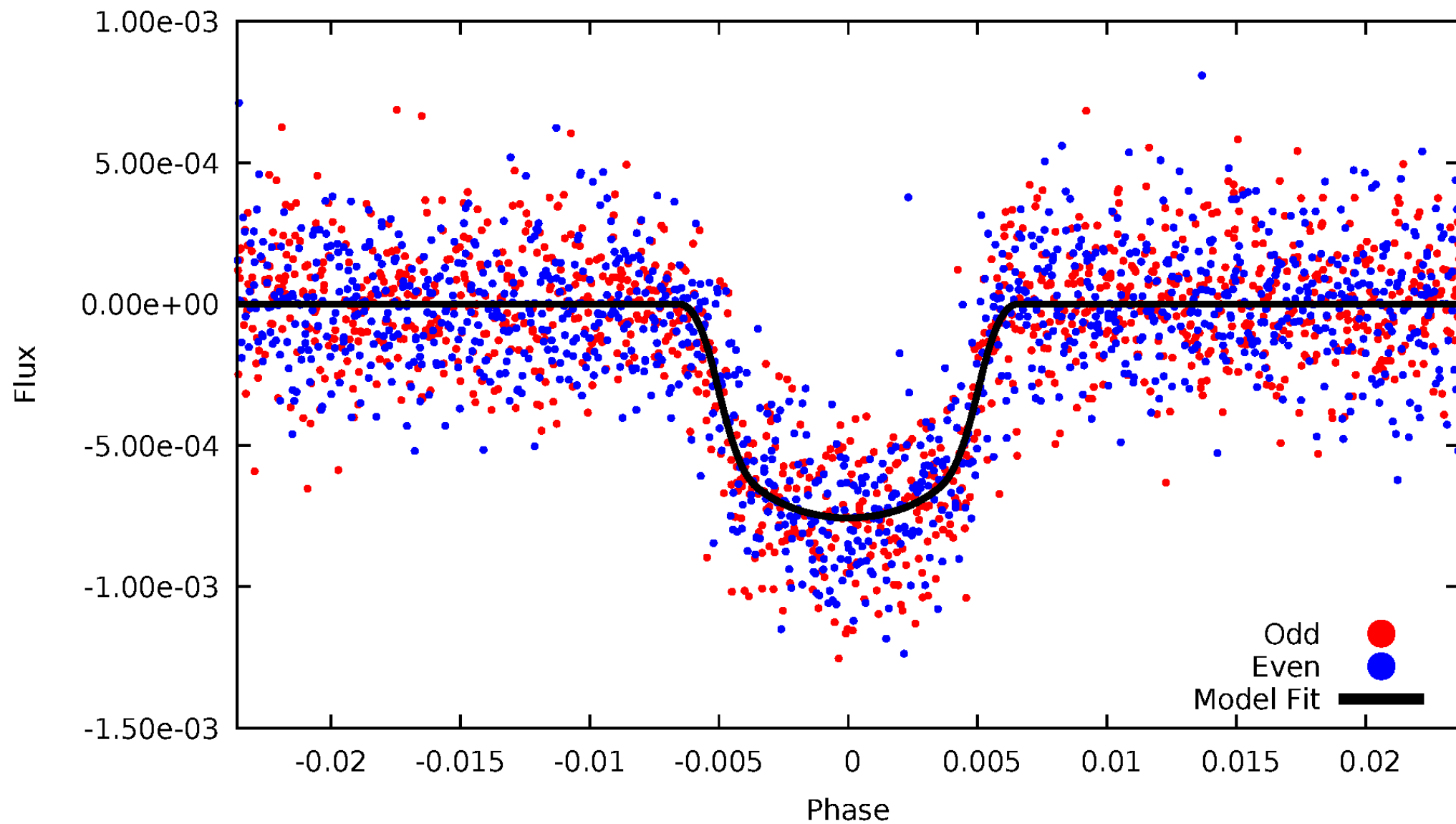
TCE 011288051-01





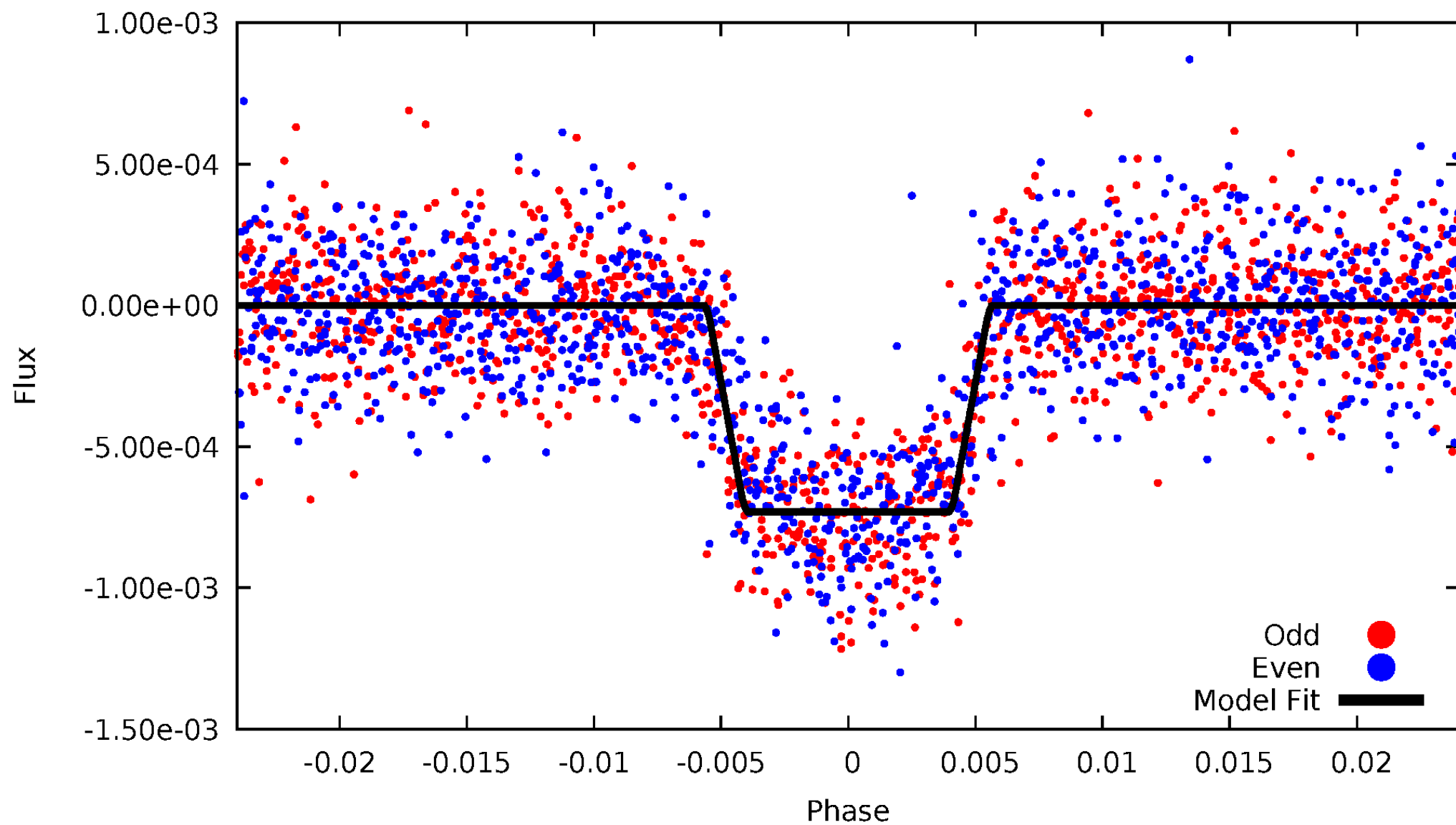
# DV Odd/Even

TCE 011288051-01



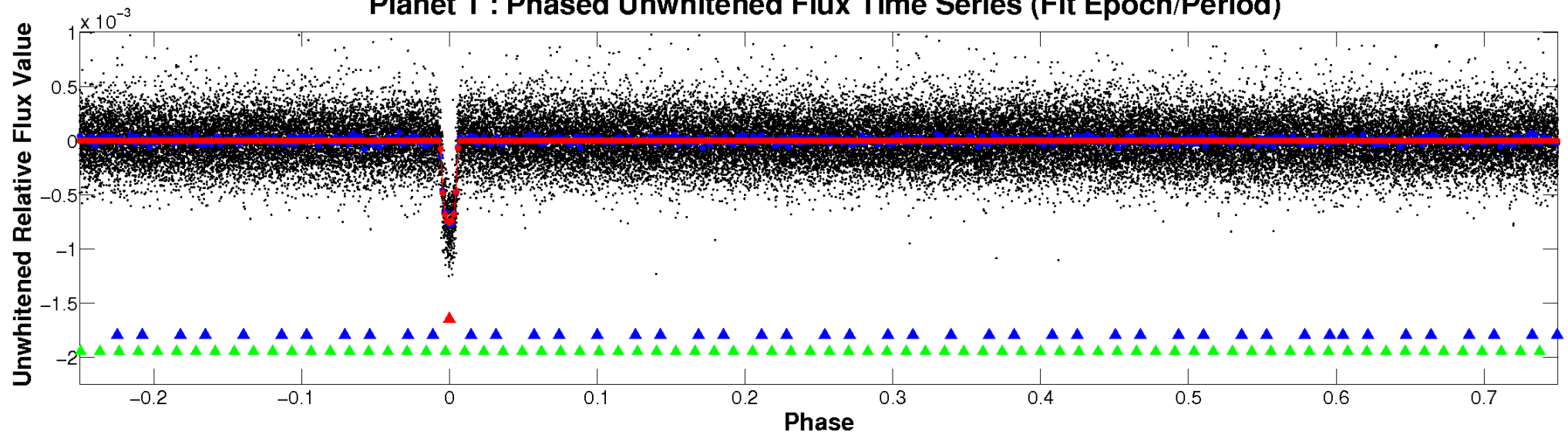
# ALT Odd/Even

TCE 011288051-01

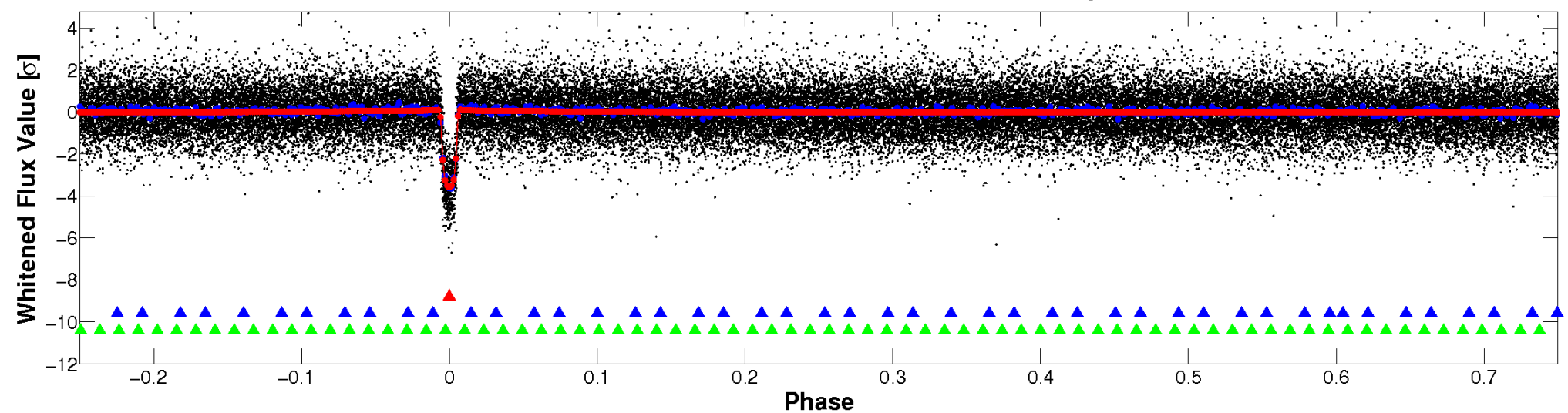


# Non-Whitened Vs. Whitened Light Curve

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

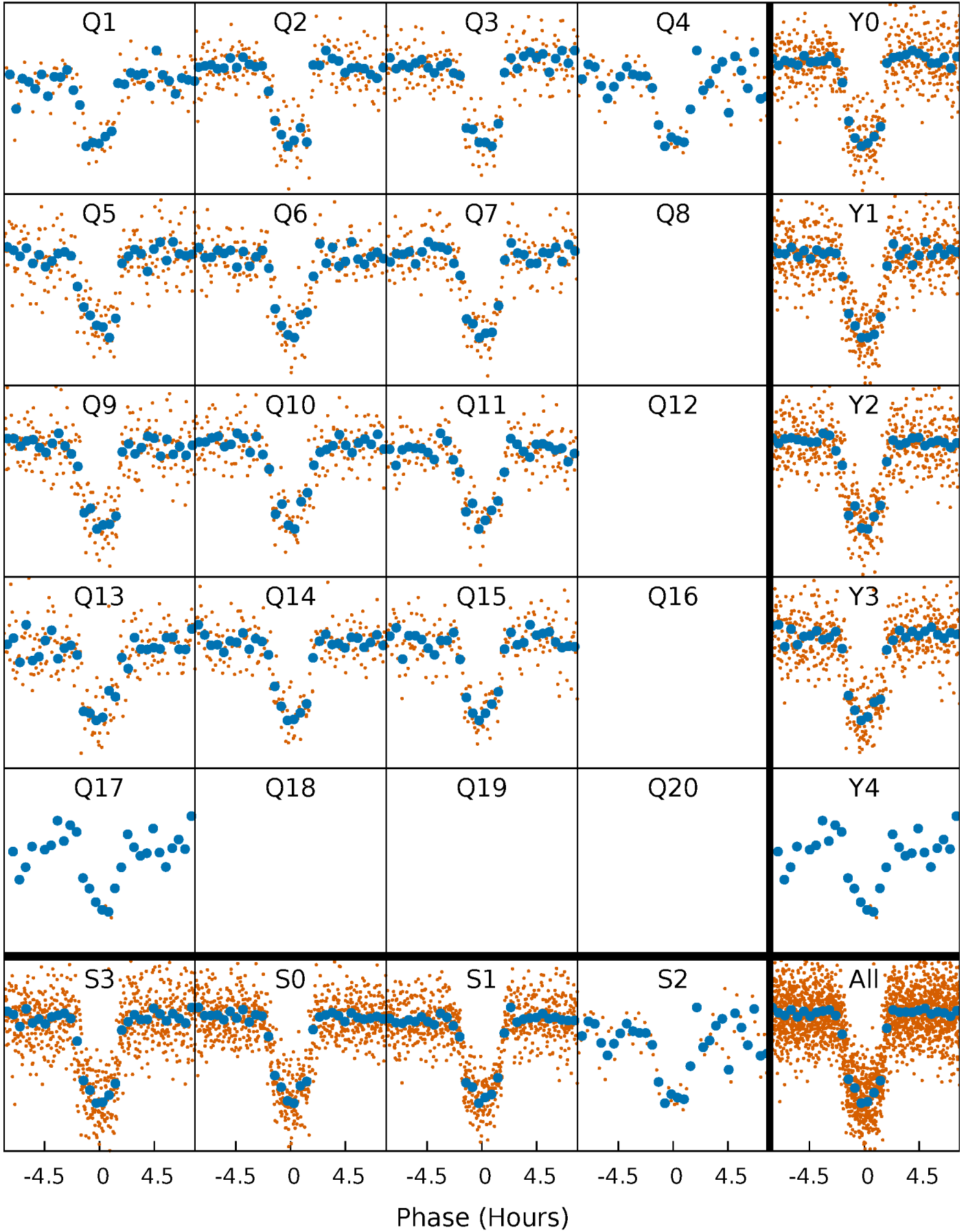


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

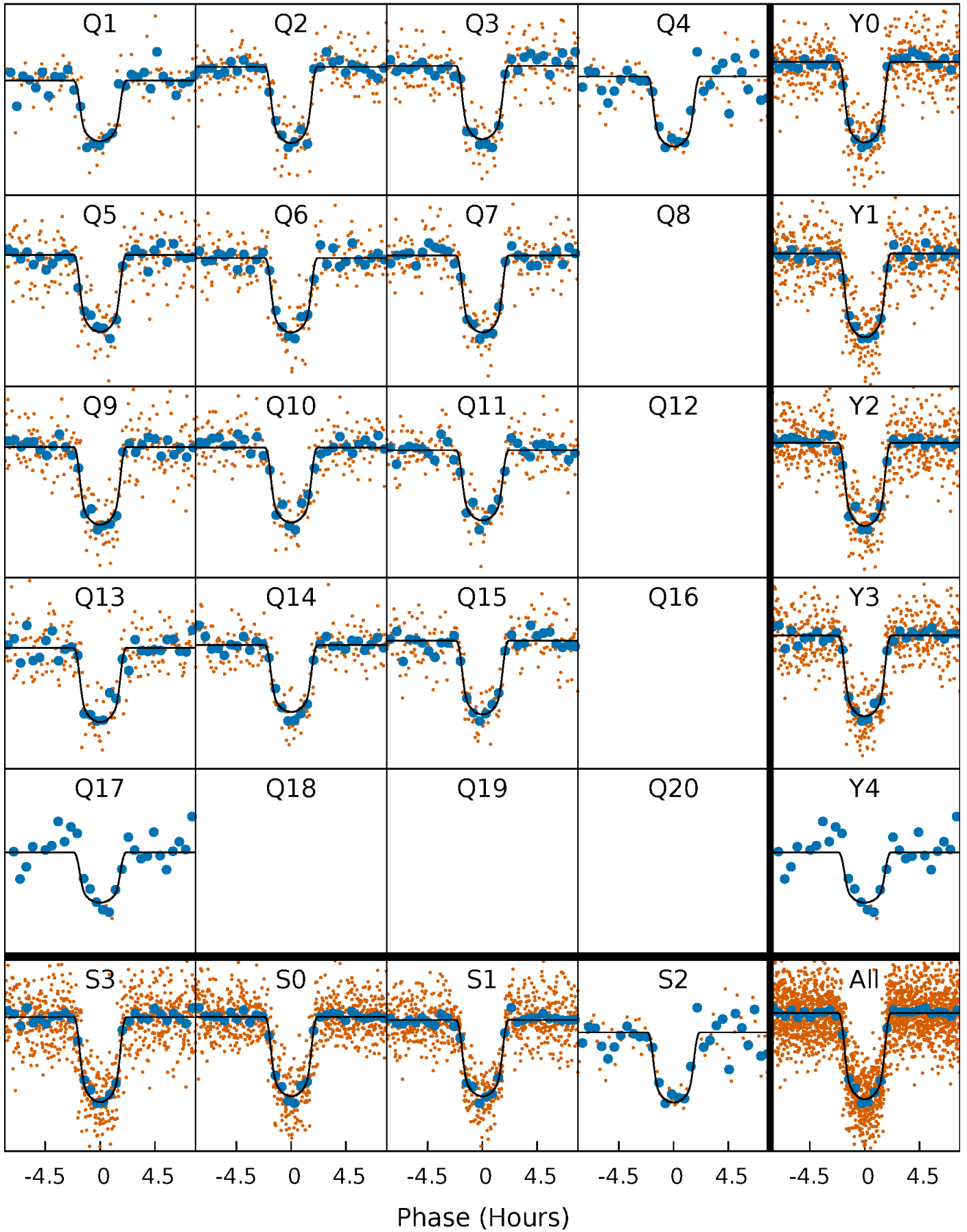
TCE 011288051-01 P= 13.821397 Days  $T_0=131.793335$  (BKJD)





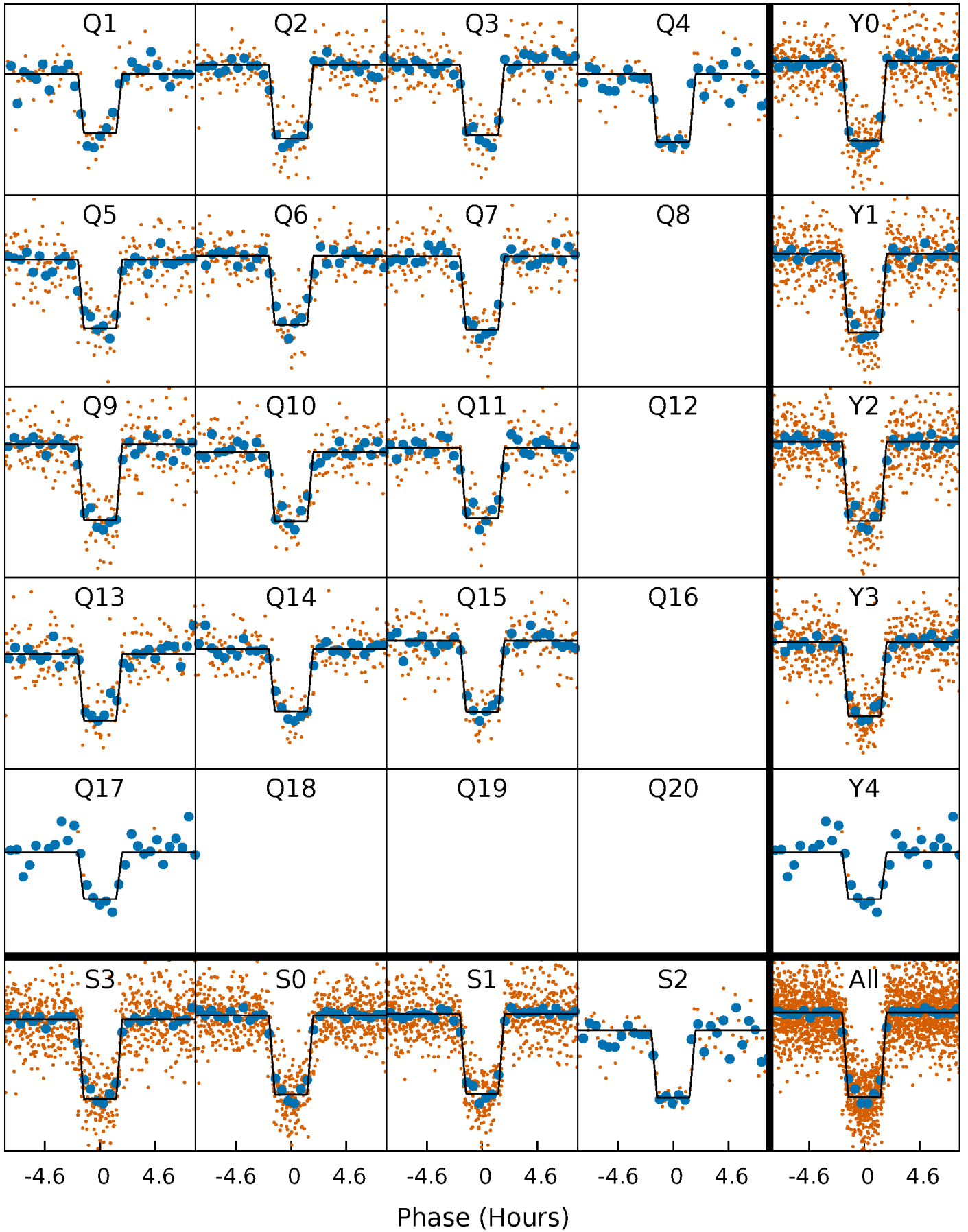
# DV Quarter-Phased Transit Curves

TCE 011288051-01 P= 13.821397 Days  $T_0=131.793335$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

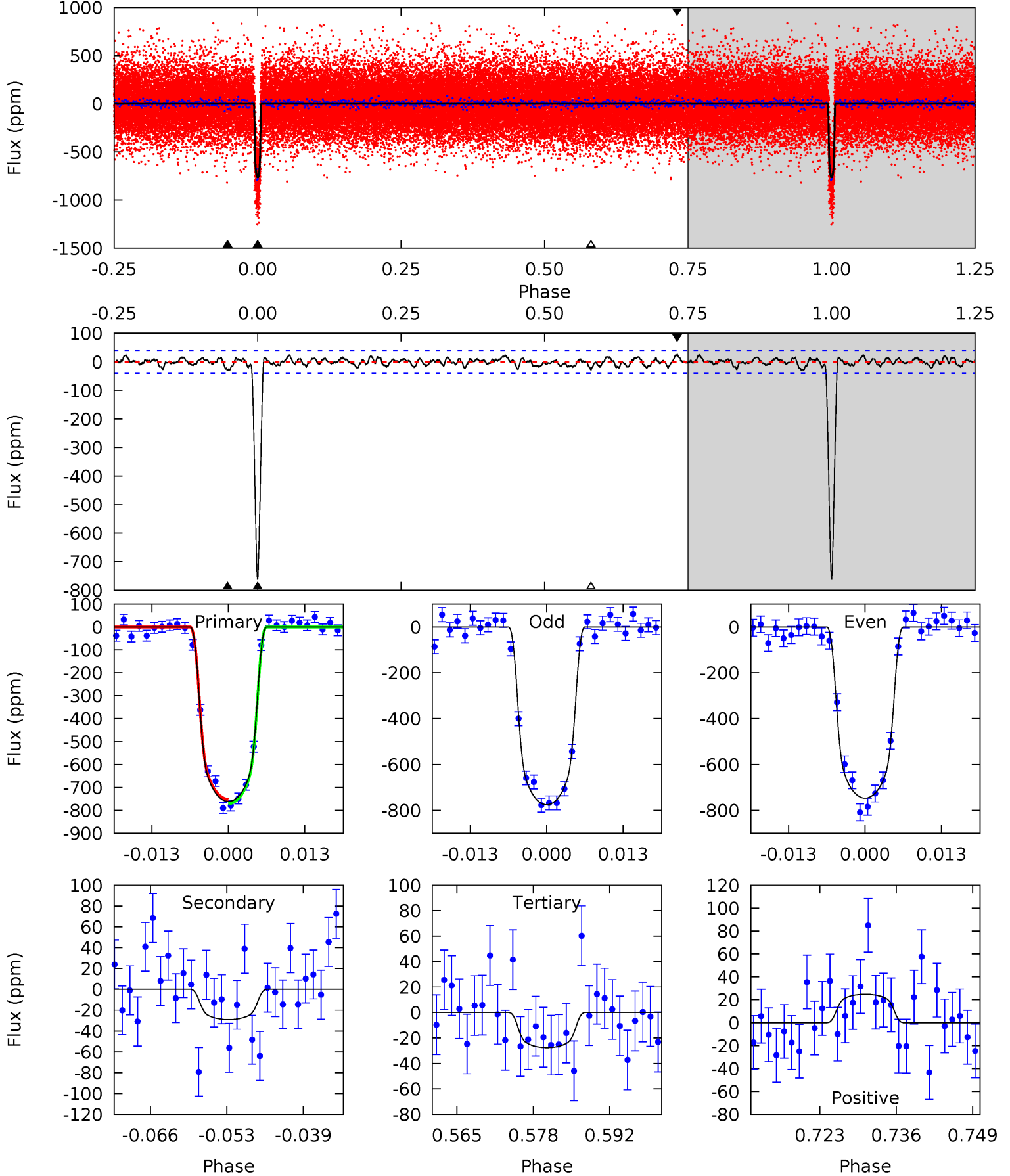
TCE 011288051-01 P= 13.821320 Days  $T_0=131.796861$  (BKJD)



# DV Model-Shift Uniqueness Test

011288051-01, P = 13.821397 Days, E = 117.971938 Days

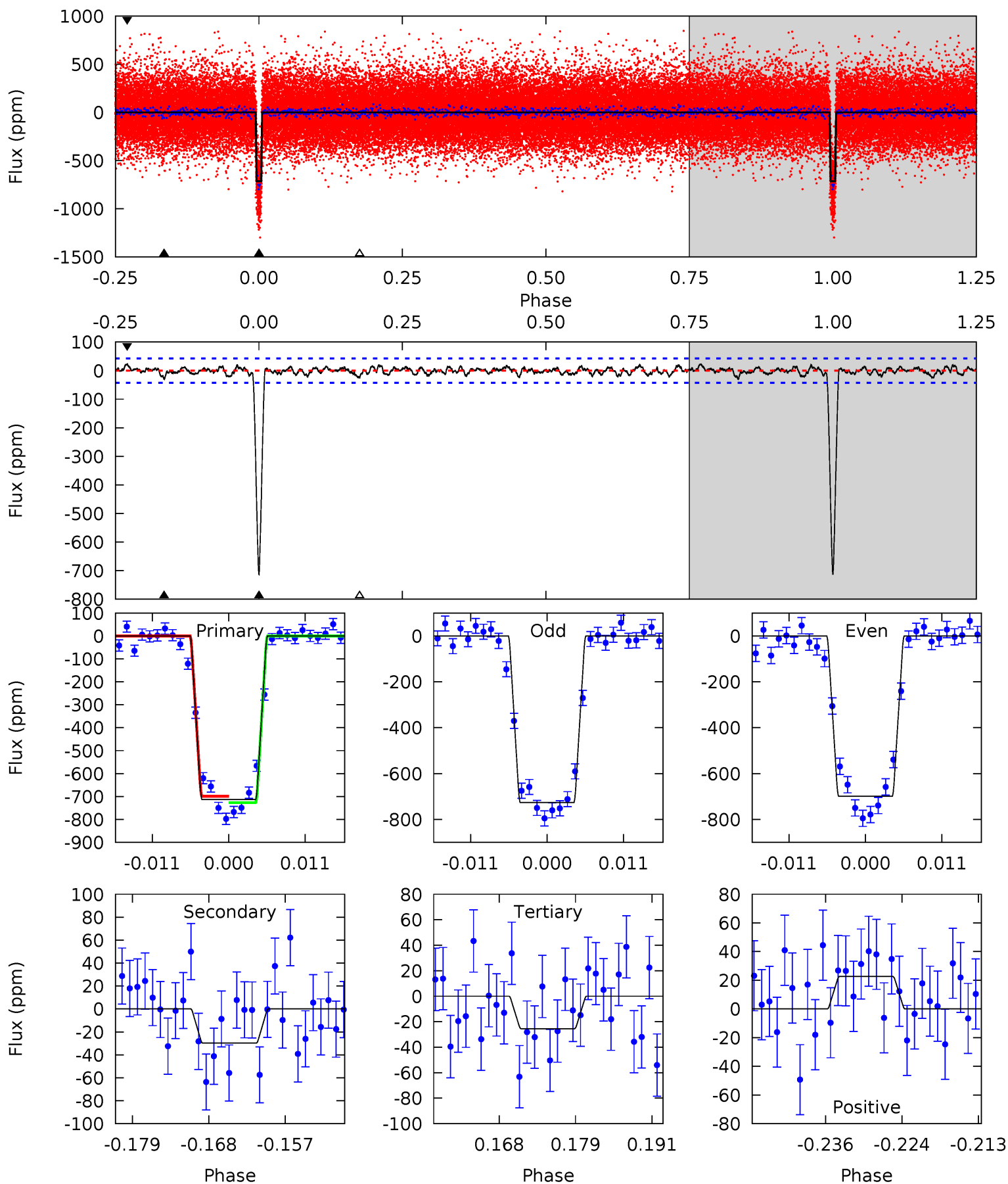
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
96.1	3.66	3.49	3.13	4.97	2.48	1.25	92.6	92.9	0.18	0.53	1.81	0.98	0.03	1.19



# Alt Model-Shift Uniqueness Test

011288051-01,  $P = 13.821320$  Days,  $E = 117.975541$  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
83.6	3.49	2.99	2.65	5.00	2.54	1.04	80.6	80.9	0.51	0.84	1.62	0.99	0.03	1.63





### Stellar Parameters For KIC 011288051

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4983^{+100}_{-100}$	$4.660^{+0.017}_{-0.052}$	$-0.440^{+0.150}_{-0.150}$	$0.651^{+0.044}_{-0.024}$	$0.715^{+0.031}_{-0.052}$	$3.648^{+0.287}_{-0.590}$
	+2%/-2%	+0%/-1%	+34%/-34%	+7%/-4%	+4%/-7%	+8%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 011288051-01 / KOI 0241.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-29 \pm 8$	$2.20^{+0.12}_{-0.11}$	$786^{+19}_{-17}$	$2798^{+106}_{-123}$	$33^{+10}_{-9}$
Alt.	$-30 \pm 9$	$1.95^{+0.11}_{-0.11}$	$788^{+20}_{-18}$	$2903^{+112}_{-141}$	$43^{+14}_{-12}$

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

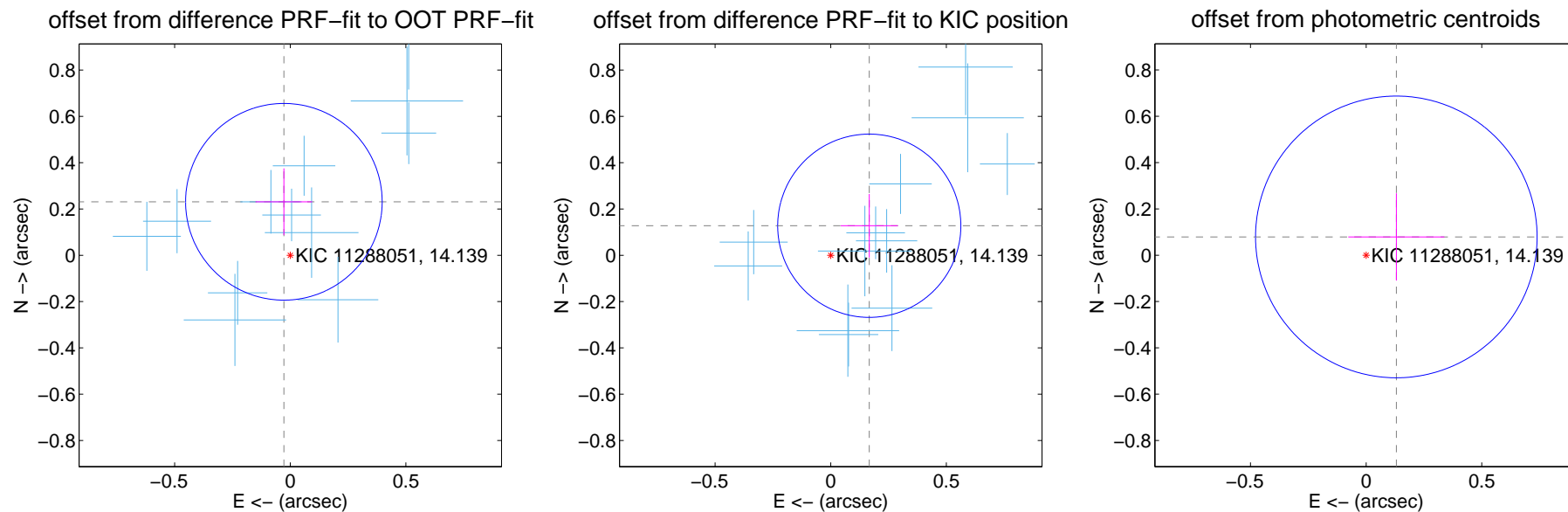
## DV Centroid Data

Supplemental centroid analysis for 011288051-01. Kepler magnitude: 14.14. Transit SNR 69.05

There are 13 quarters with good PRF difference image offsets

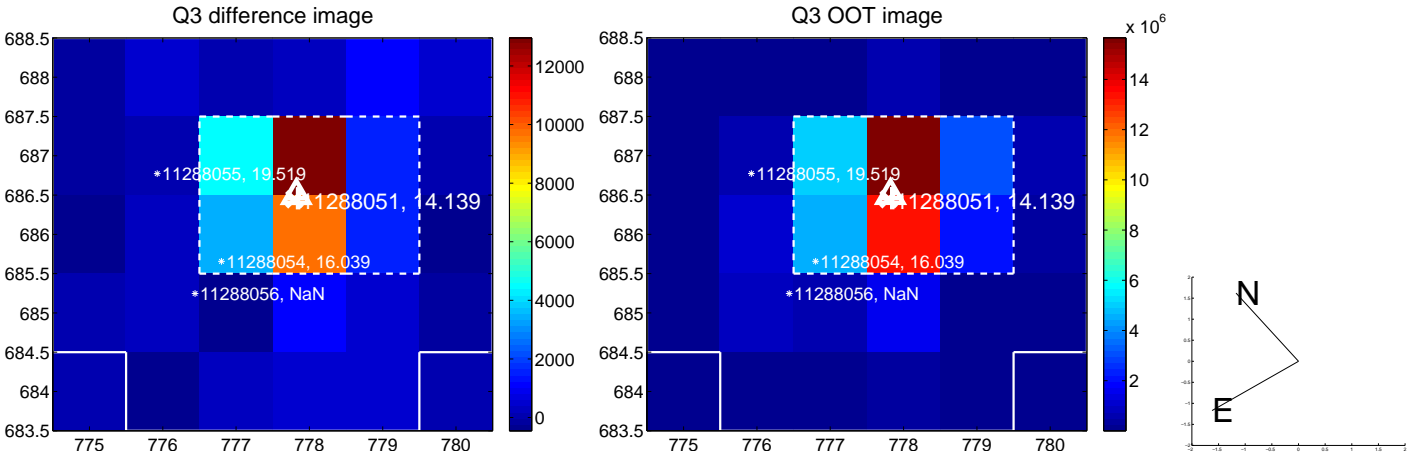
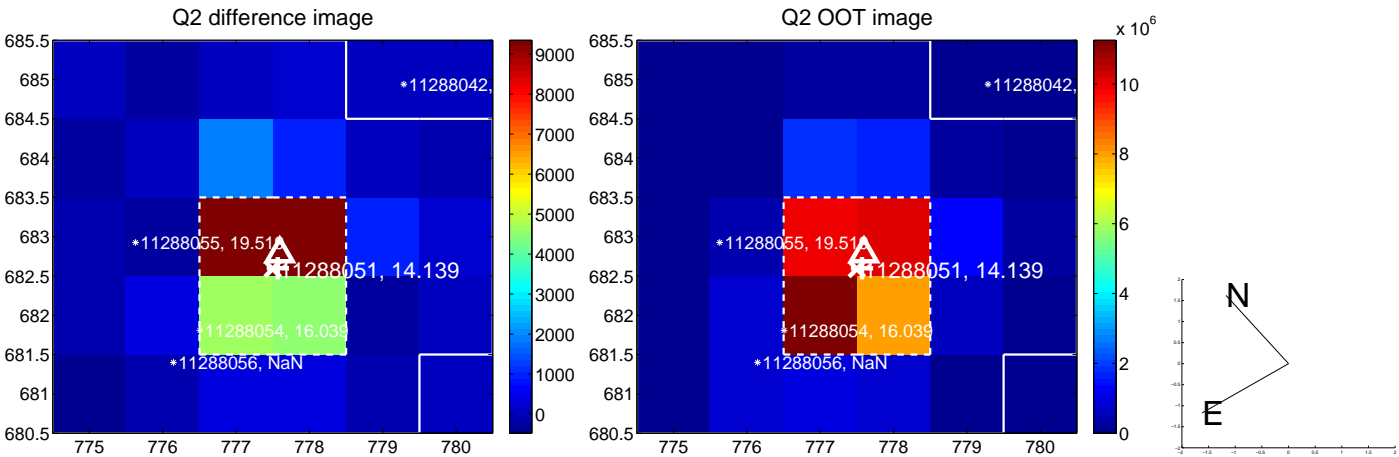
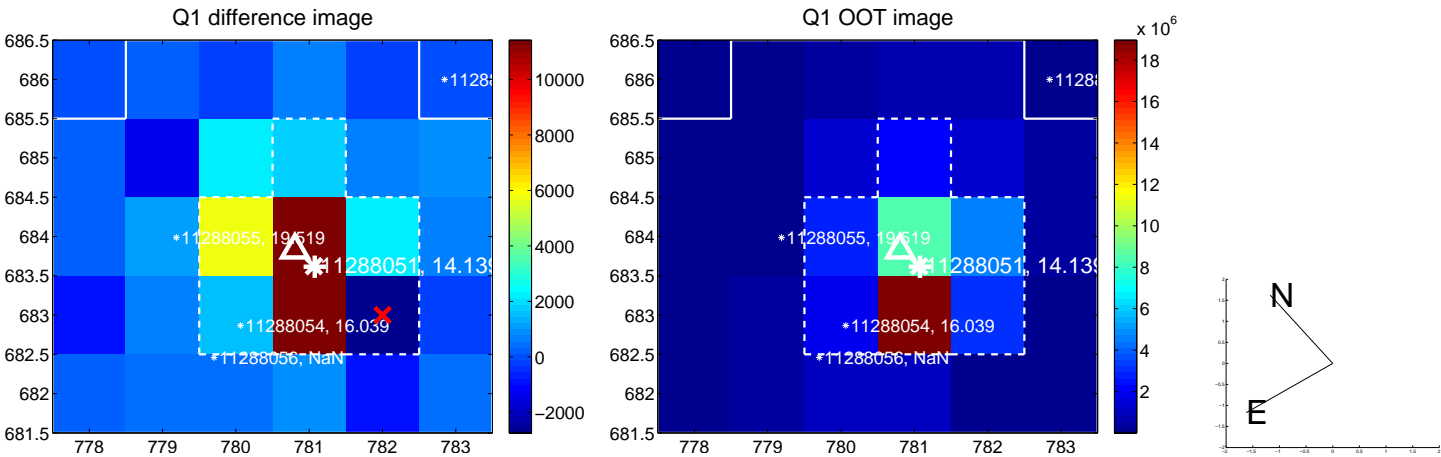
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.233 \pm 0.142$	1.64	$0.028 \pm 0.123$	$0.231 \pm 0.144$
PRF-fit source offset from KIC position	$0.210 \pm 0.132$	1.59	$-0.167 \pm 0.124$	$0.128 \pm 0.137$
photometric centroid source offset	$0.15 \pm 0.20$	0.75	$-0.13 \pm 0.21$	$0.08 \pm 0.19$

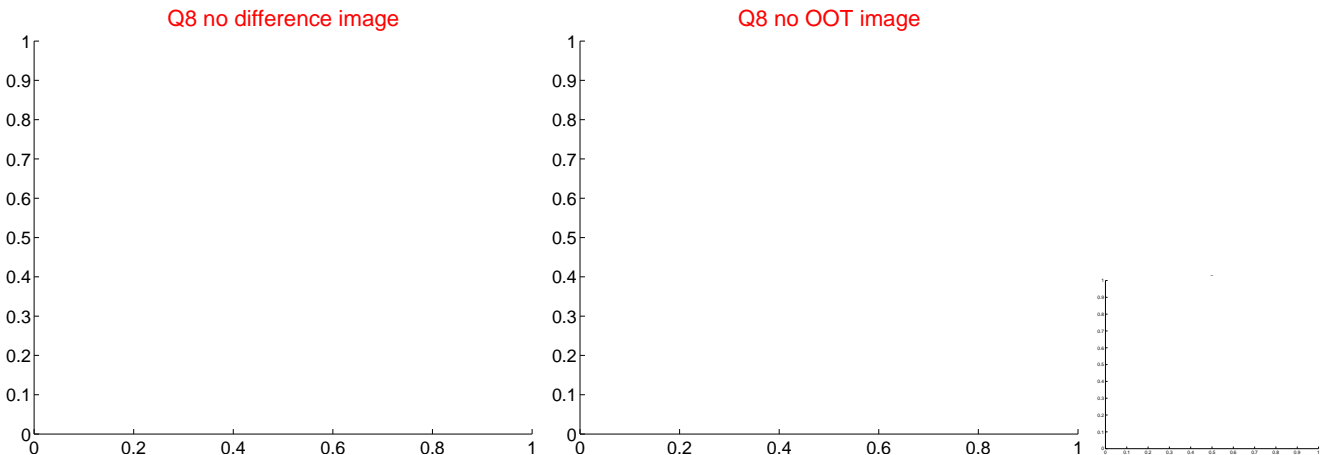
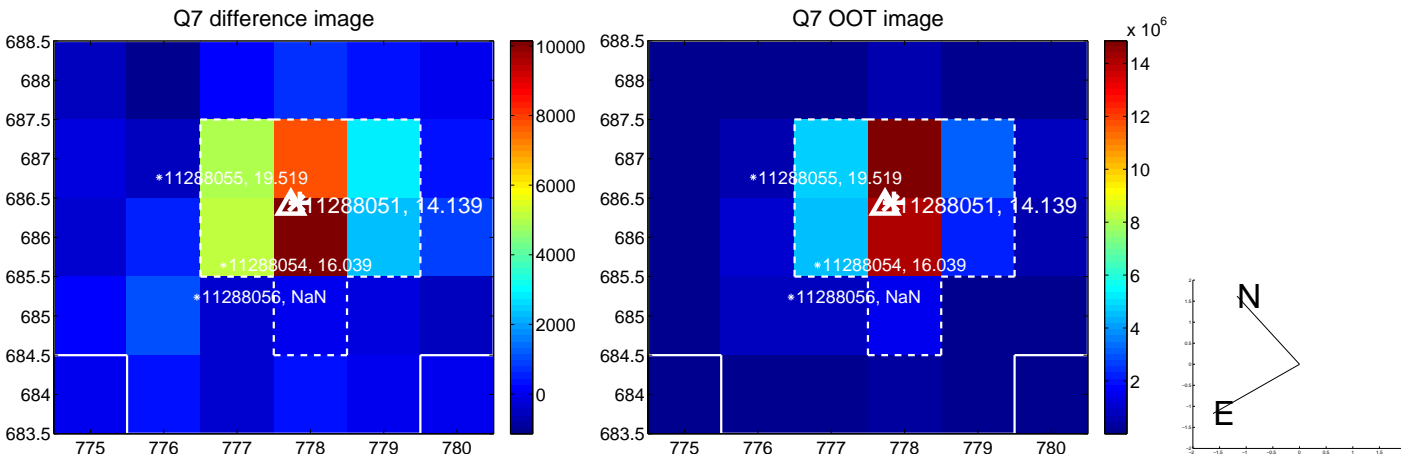
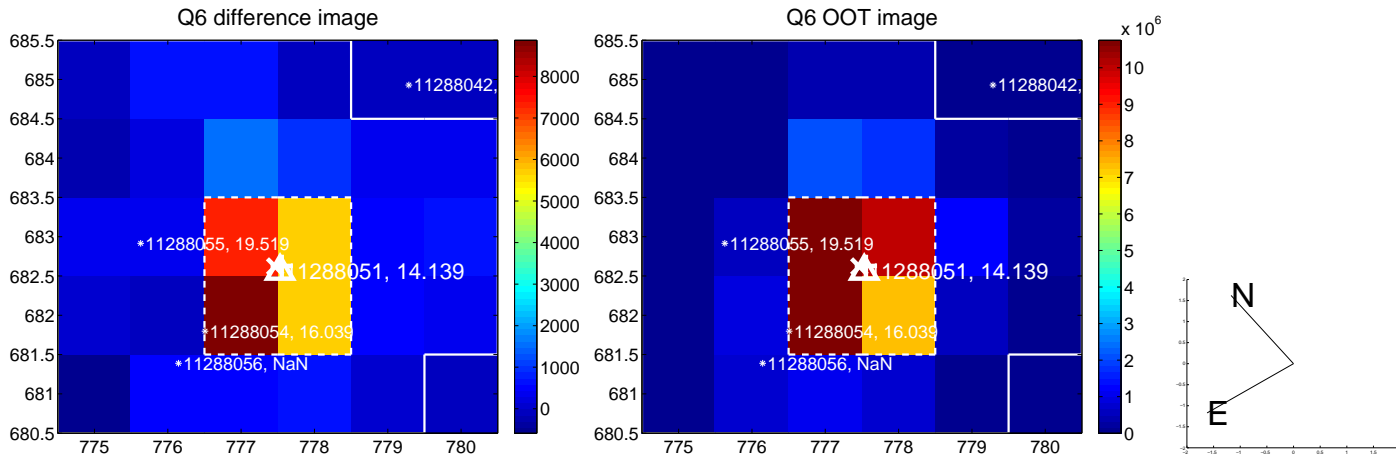
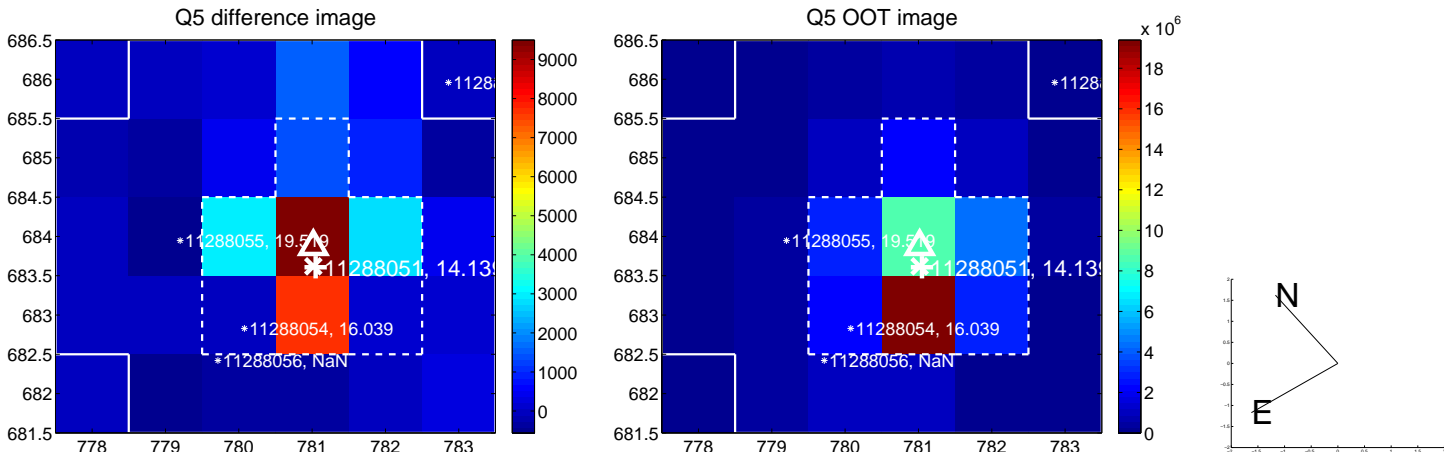


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

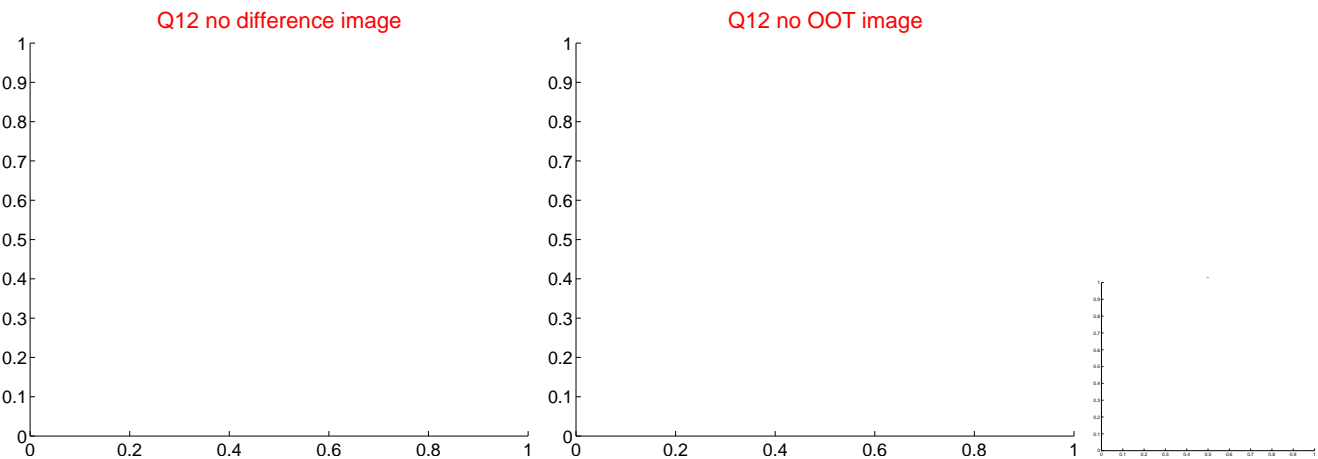
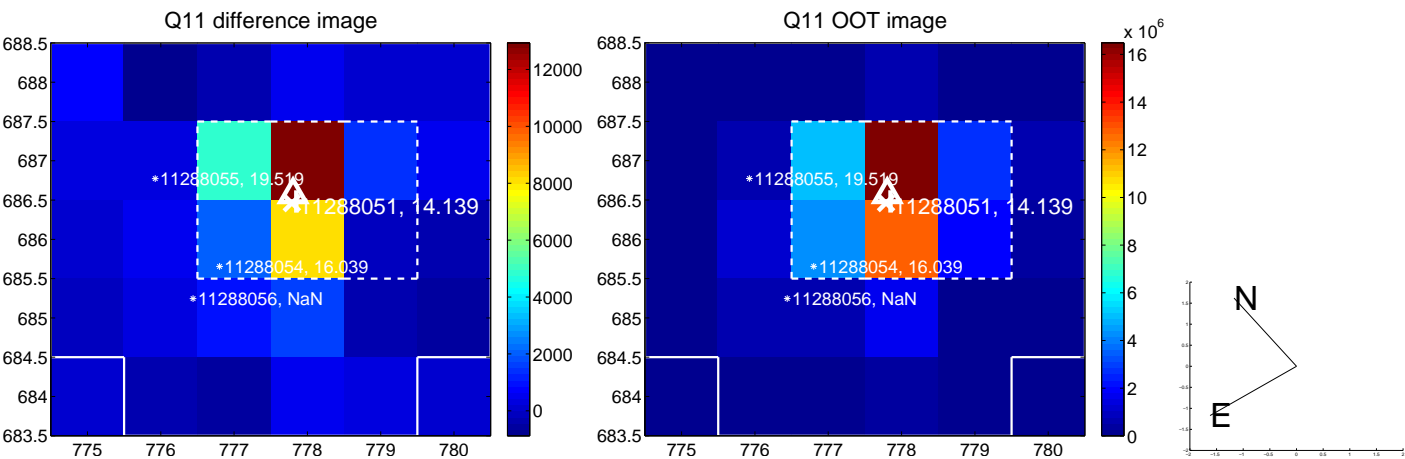
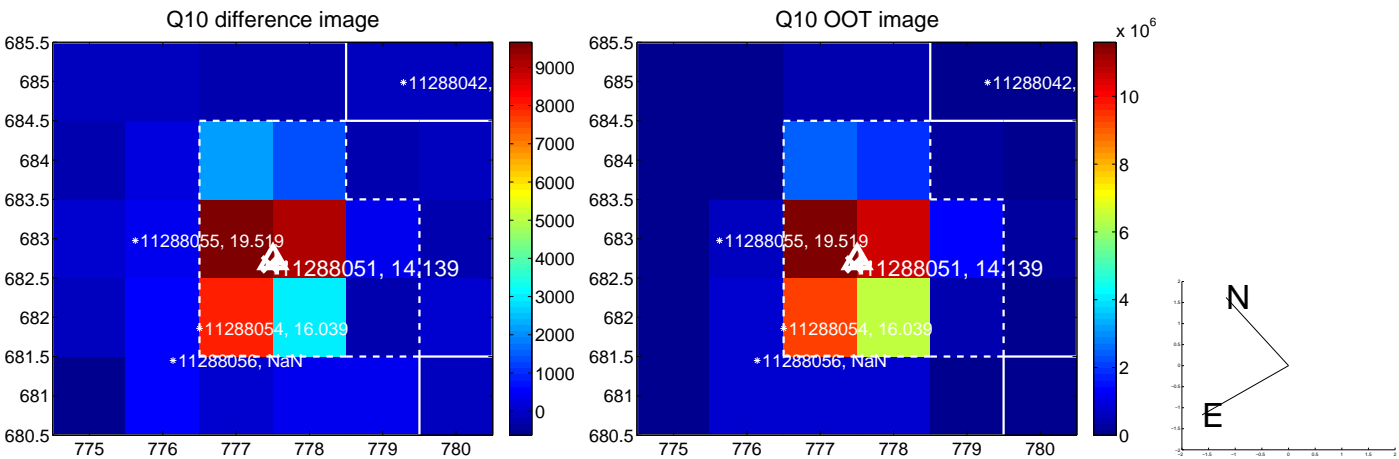
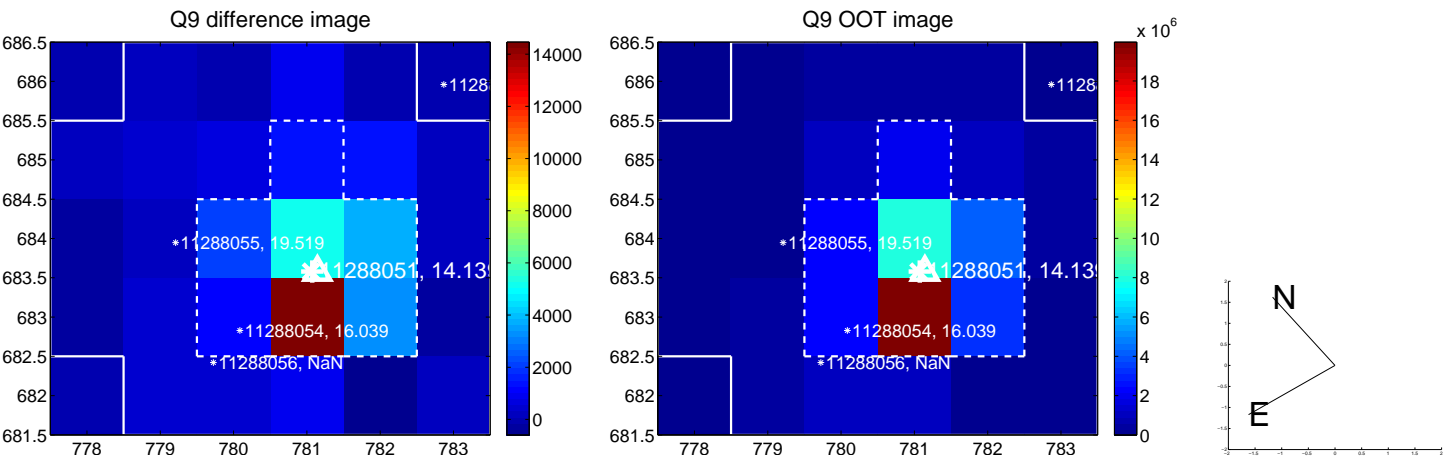


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

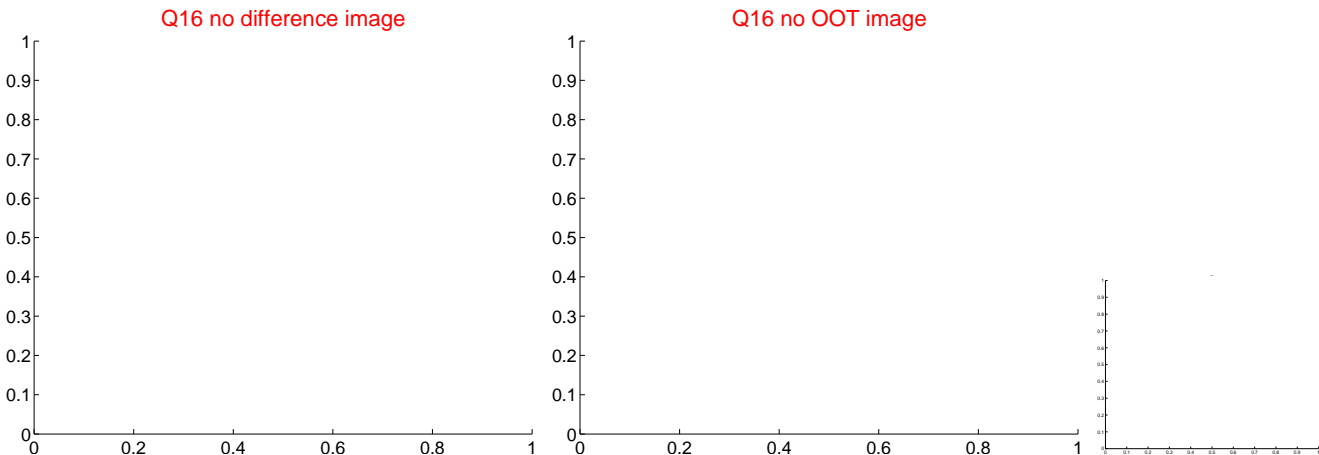
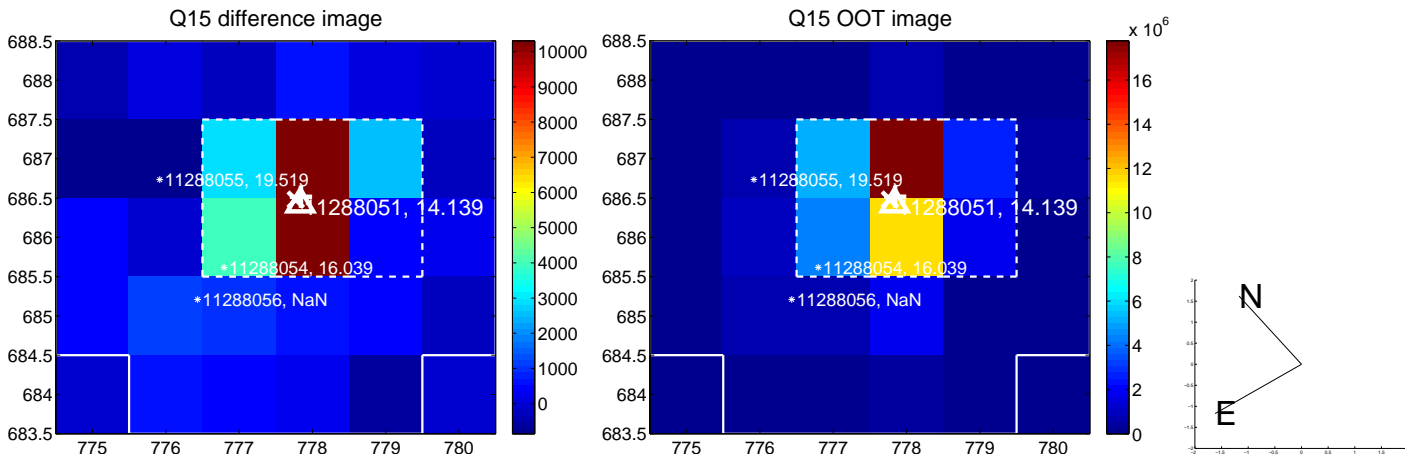
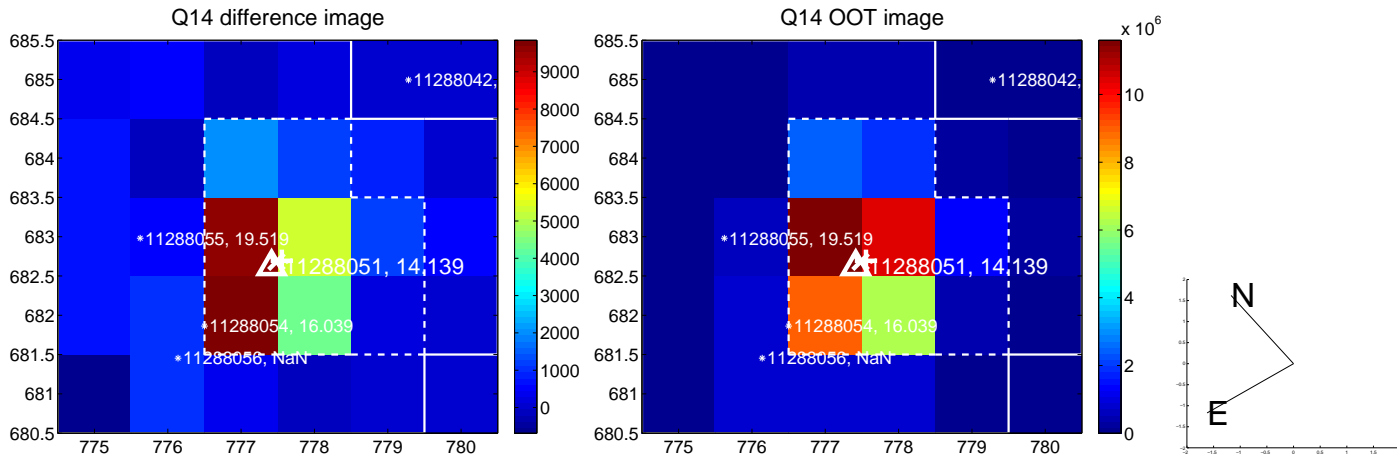
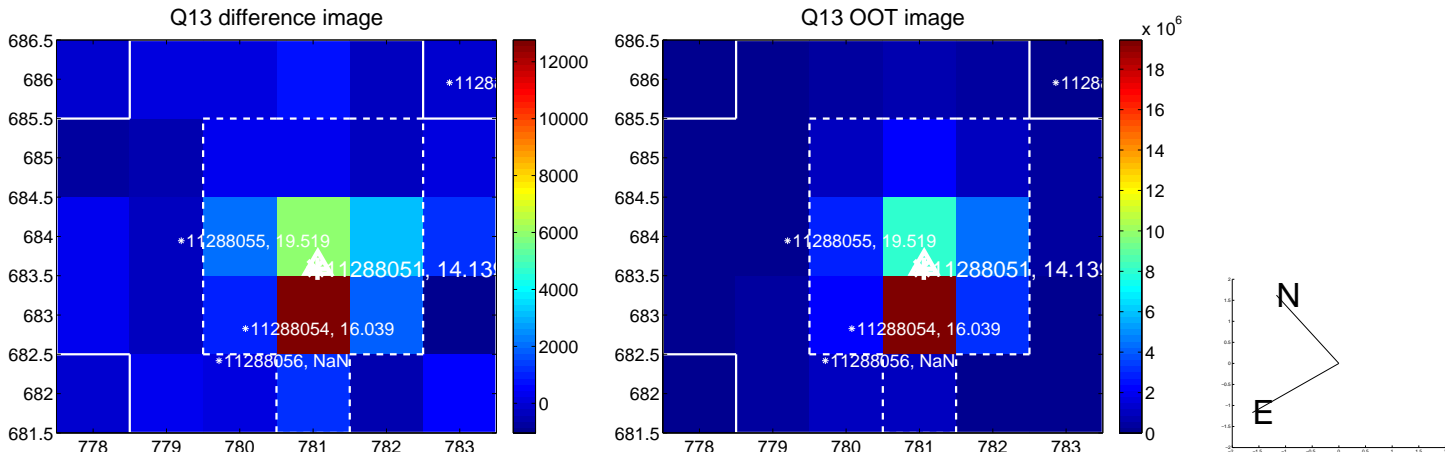




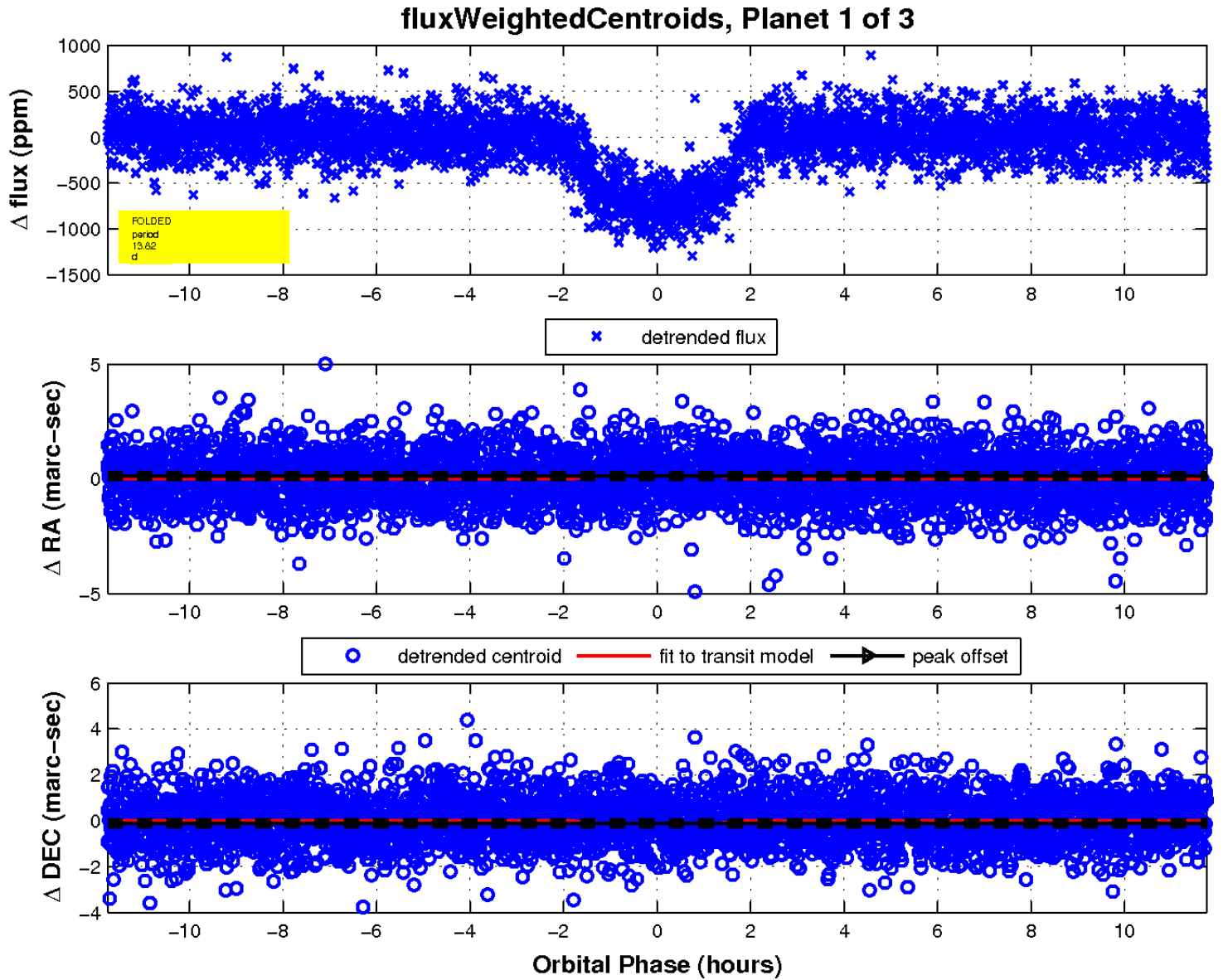
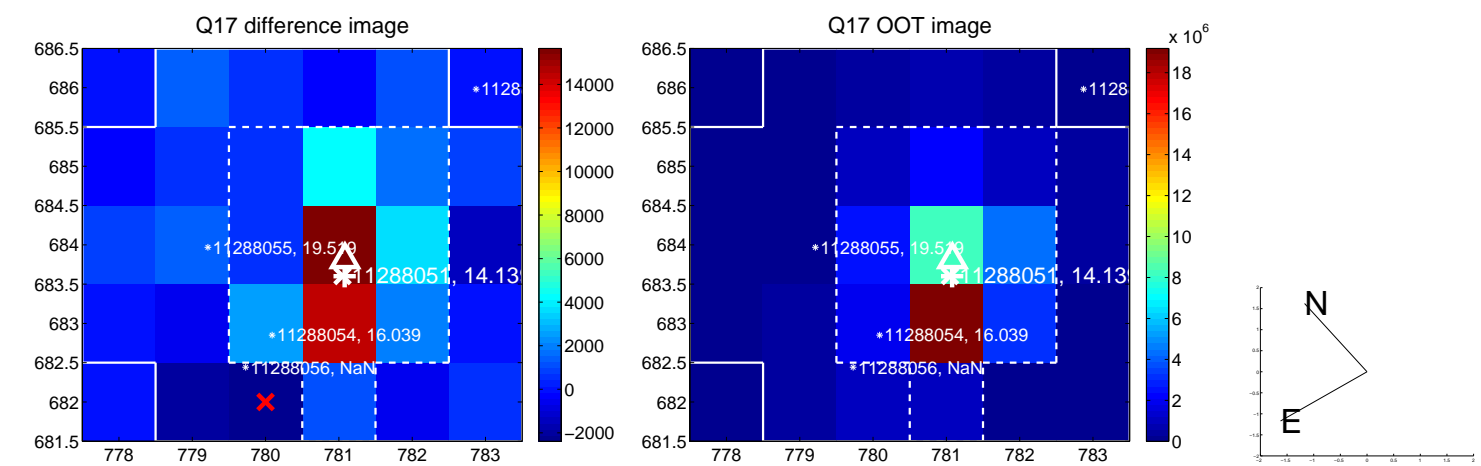
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

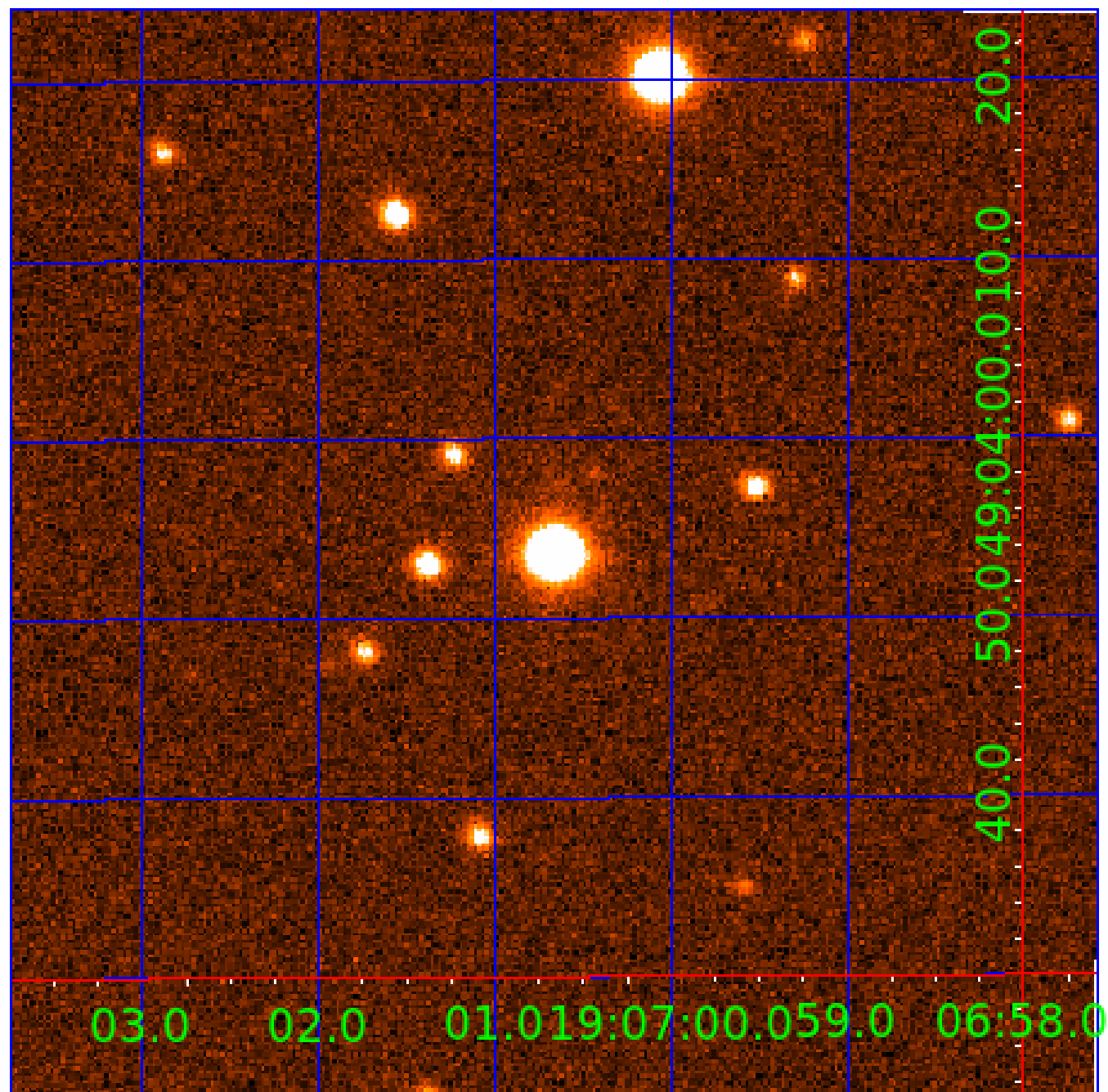


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011288051

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011288051-01	OBS	0241.01	13.821397	131.793335	756.2	3.919	64.6	69.0	0.65	4983	2.16	23.22
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011288051-03	OBS	0241.03	3.410478	131.576496	134.6	2.380	19.2	20.9	0.65	4983	0.92	150.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011288051-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011288051-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
011288051-03	OBS	PC	1.00	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.

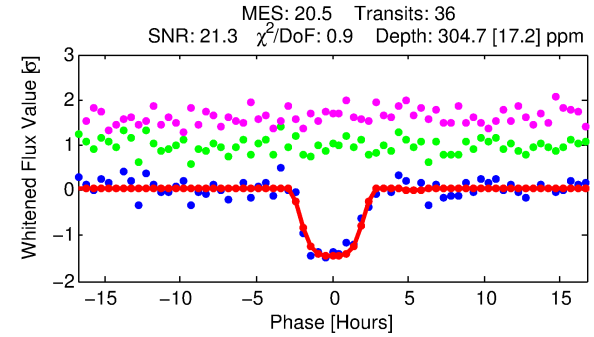
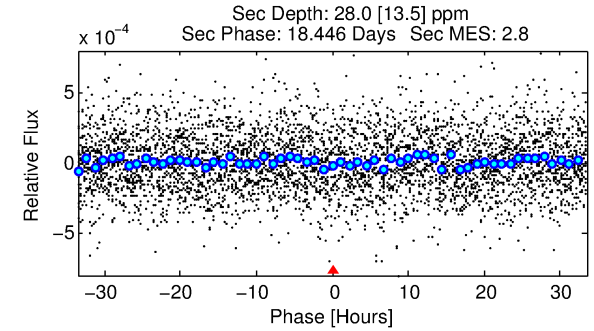
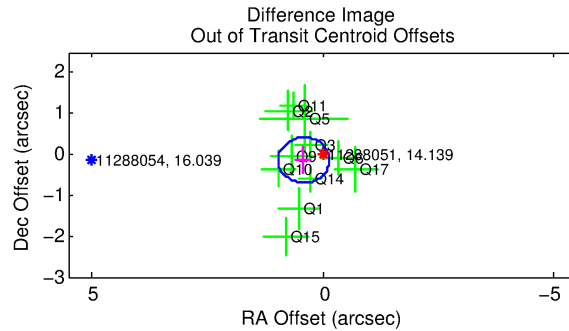
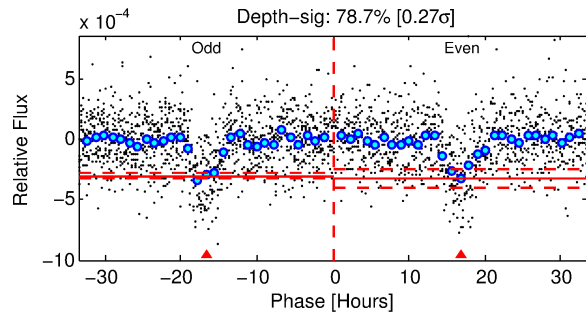
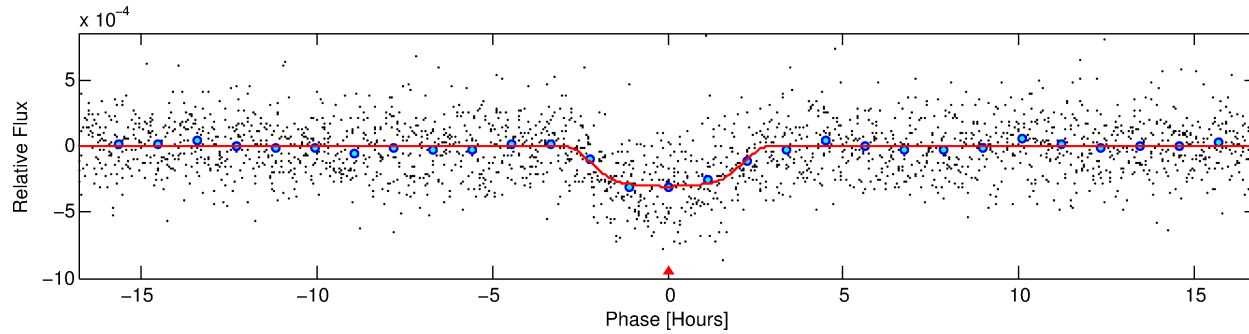
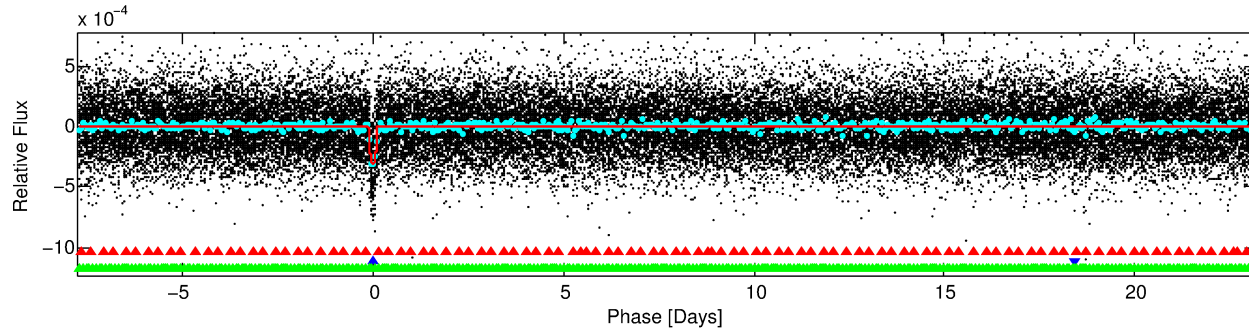
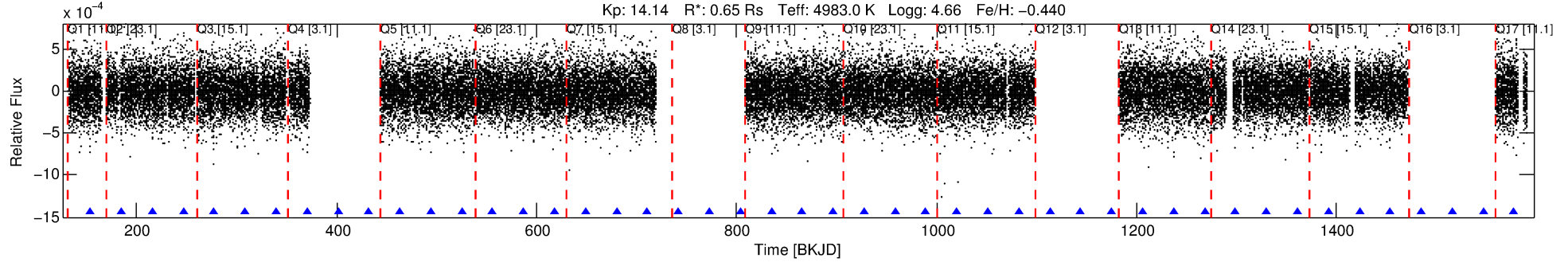
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011288051-02

No Significant Match Found

# DV One-Page Summary

KIC: 11288051 Candidate: 2 of 3 Period: 30.951 d  
KOI: K00241.02 Name: Kepler-124d Corr: 0.864



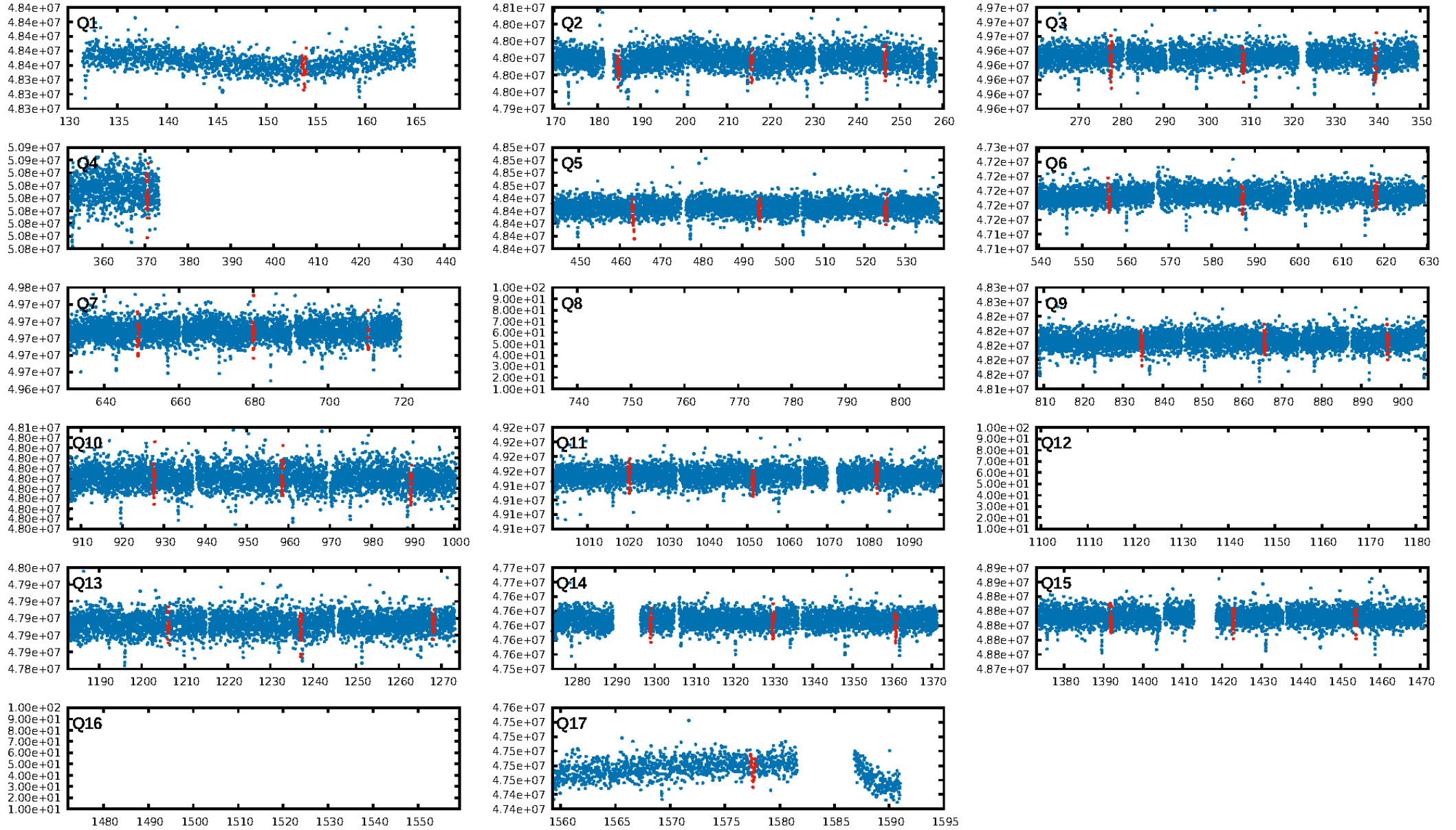
## DV Fit Results:

Period = 30.95059 [0.00023] d  
Epoch = 153.8471 [0.0061] BKJD  
Rp/R\* = 0.0217 [0.0011]  
a/R\* = 14.32 [2.16]  
b = 0.96 [0.01]  
Seff = 7.93 [0.97]  
Teq = 428 [13] K  
Rp = 1.54 [0.13] Re  
a = 0.1719 [0.0103] AU  
Ag = 191.70 [96.06] [1.99 $\sigma$ ]  
Teffp = 2461 [307] K [6.61 $\sigma$ ]

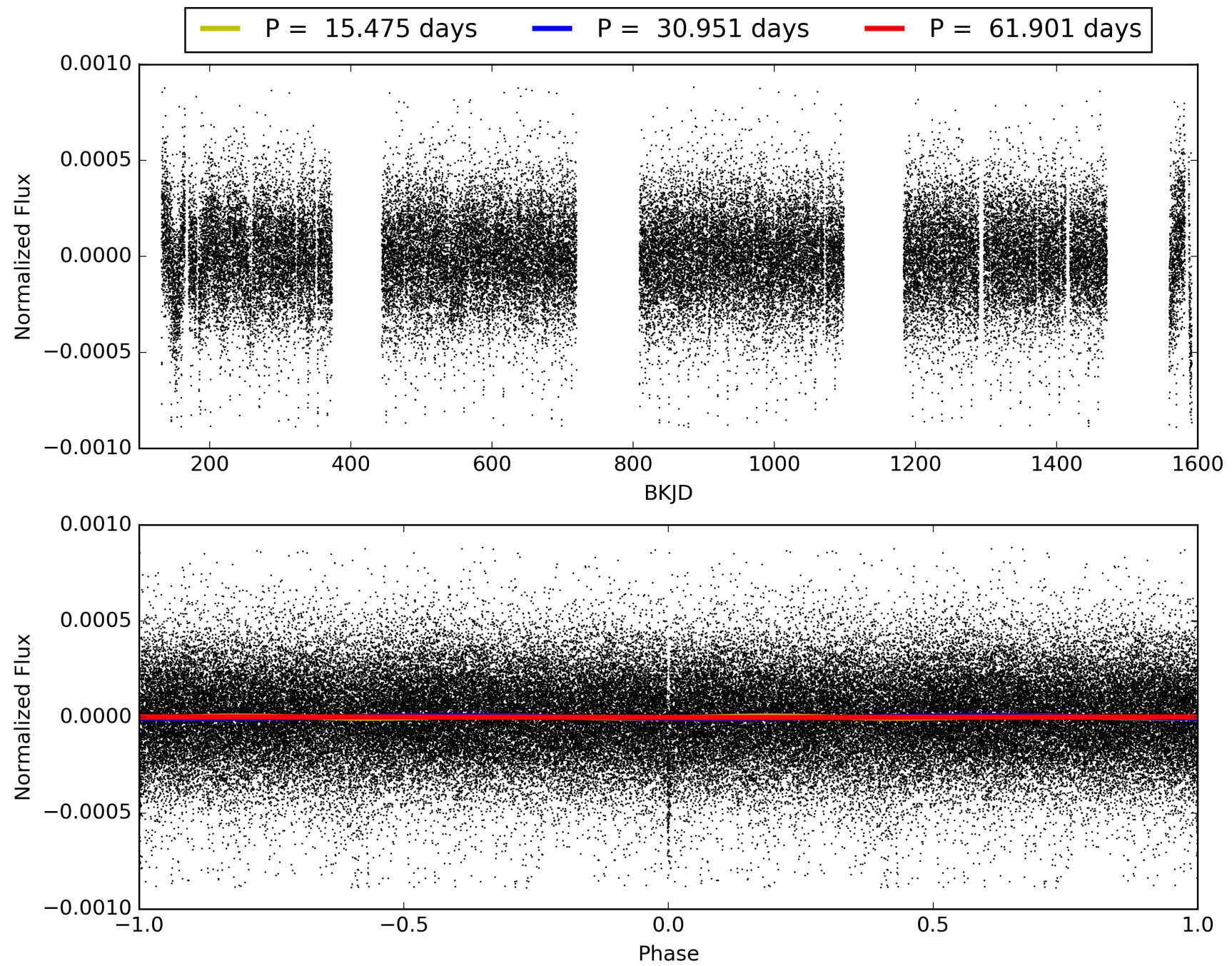
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.25 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 60.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.24e-93  
RollingBand-fgt: 1.00 [33/33]  
GhostDiagnostic-chr: 4.427  
Centroid-sig: 2.3%  
Centroid-so: 1.419 arcsec [2.17 $\sigma$ ]  
OotOffset-rm: 0.435 arcsec [2.35 $\sigma$ ]  
KicOffset-rm: 0.302 arcsec [1.11 $\sigma$ ]  
OotOffset-st: 4/3/0/4 [11]  
KicOffset-st: 4/3/0/4 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 0.92 [12/13]

# TCE 011288051-02, PDC Light Curves

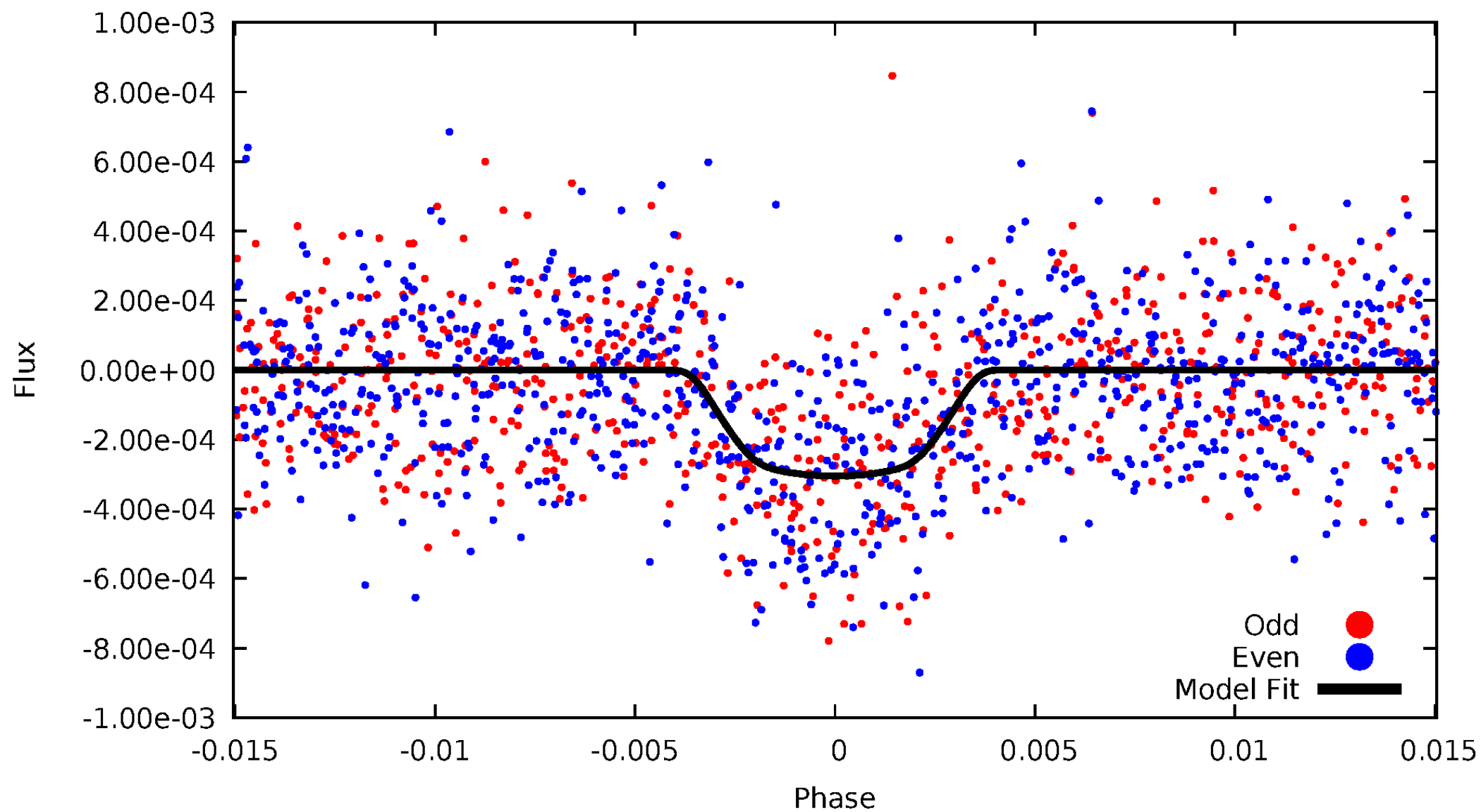


TCE 011288051-02



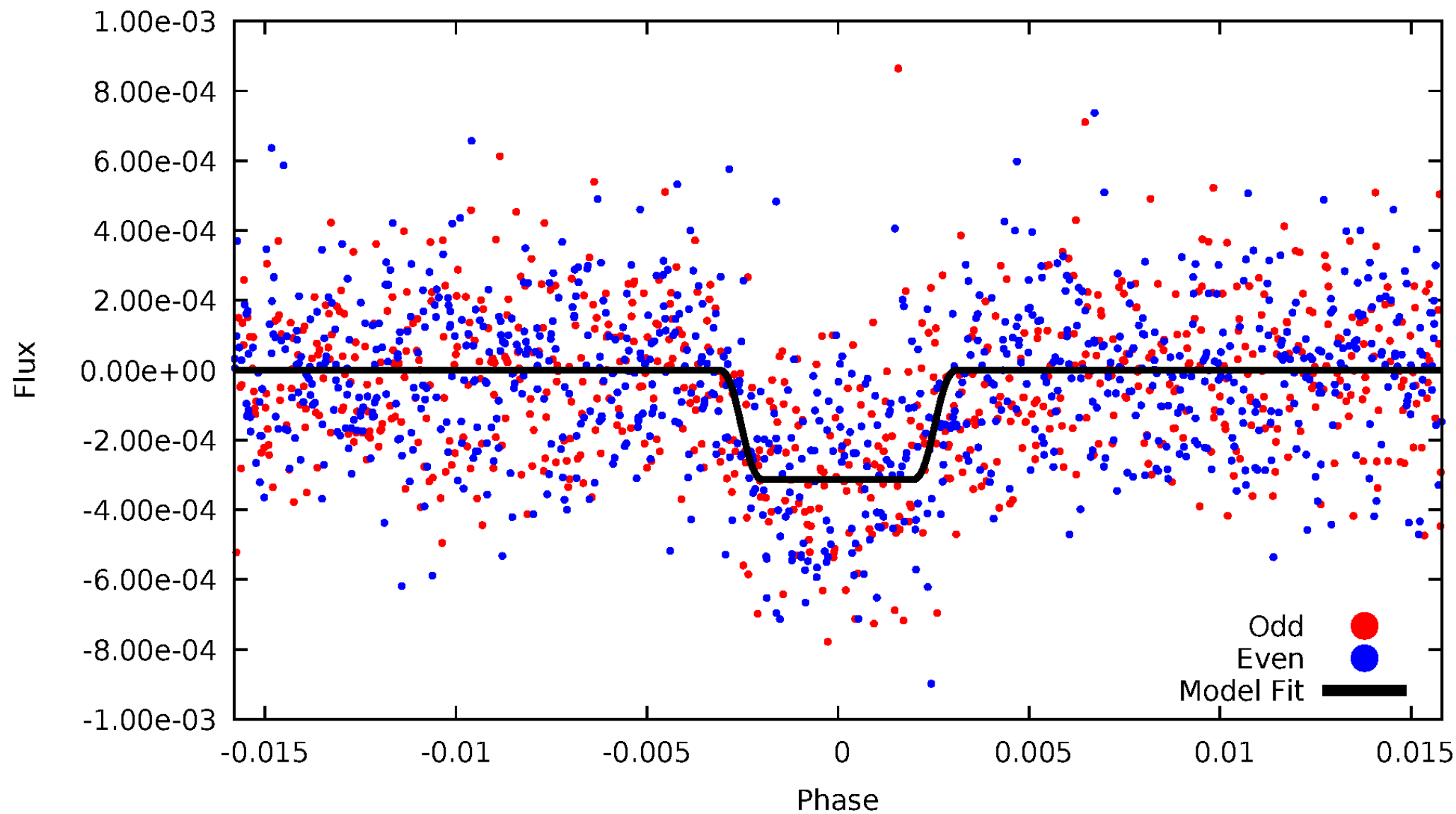
# DV Odd/Even

TCE 011288051-02



# ALT Odd/Even

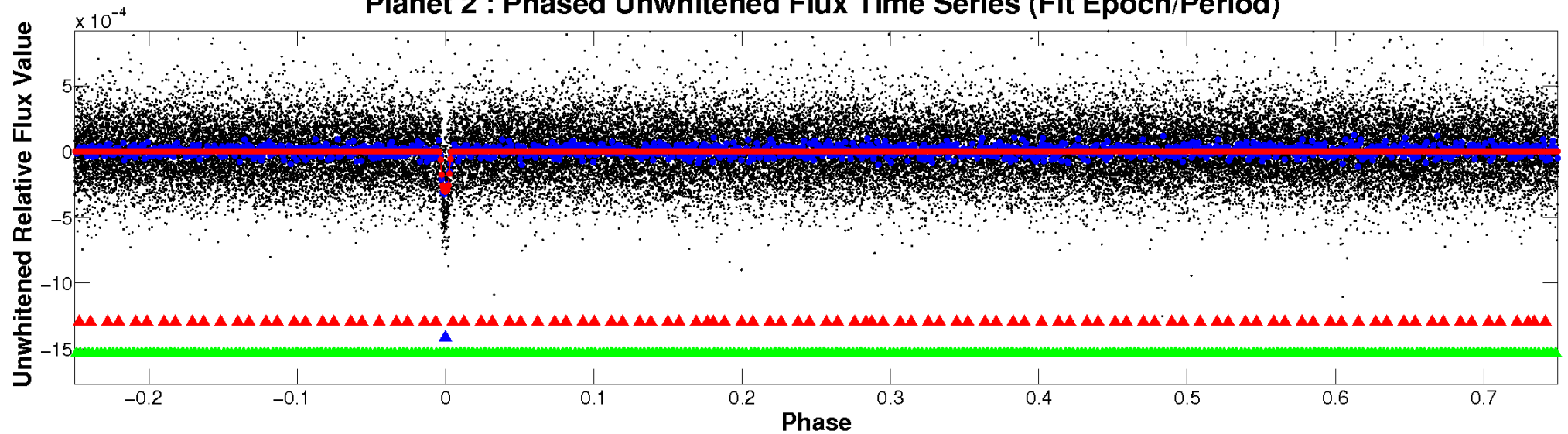
TCE 011288051-02



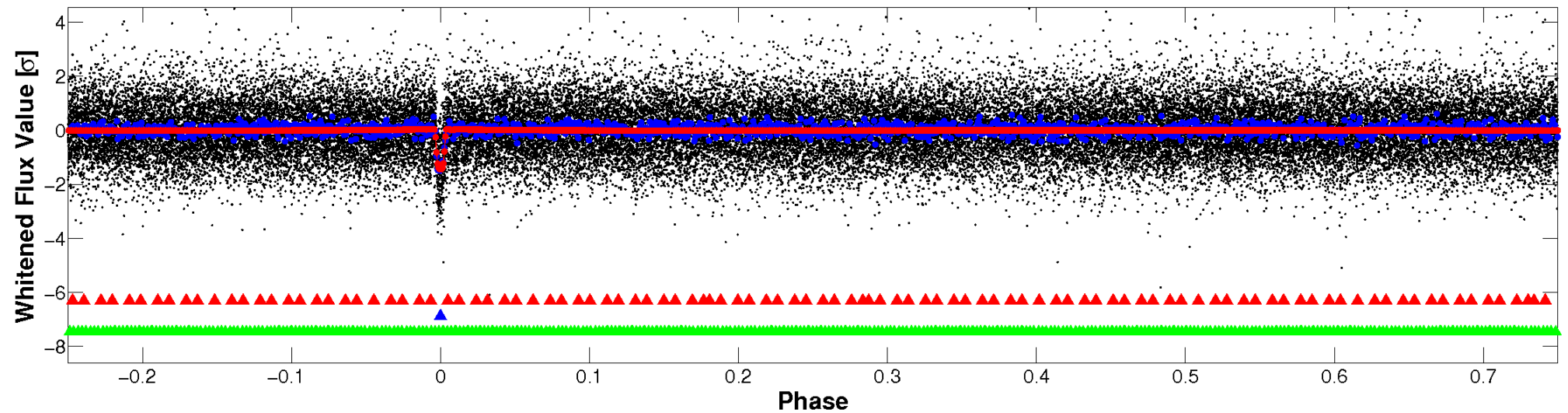


# Non-Whitened Vs. Whitened Light Curve

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



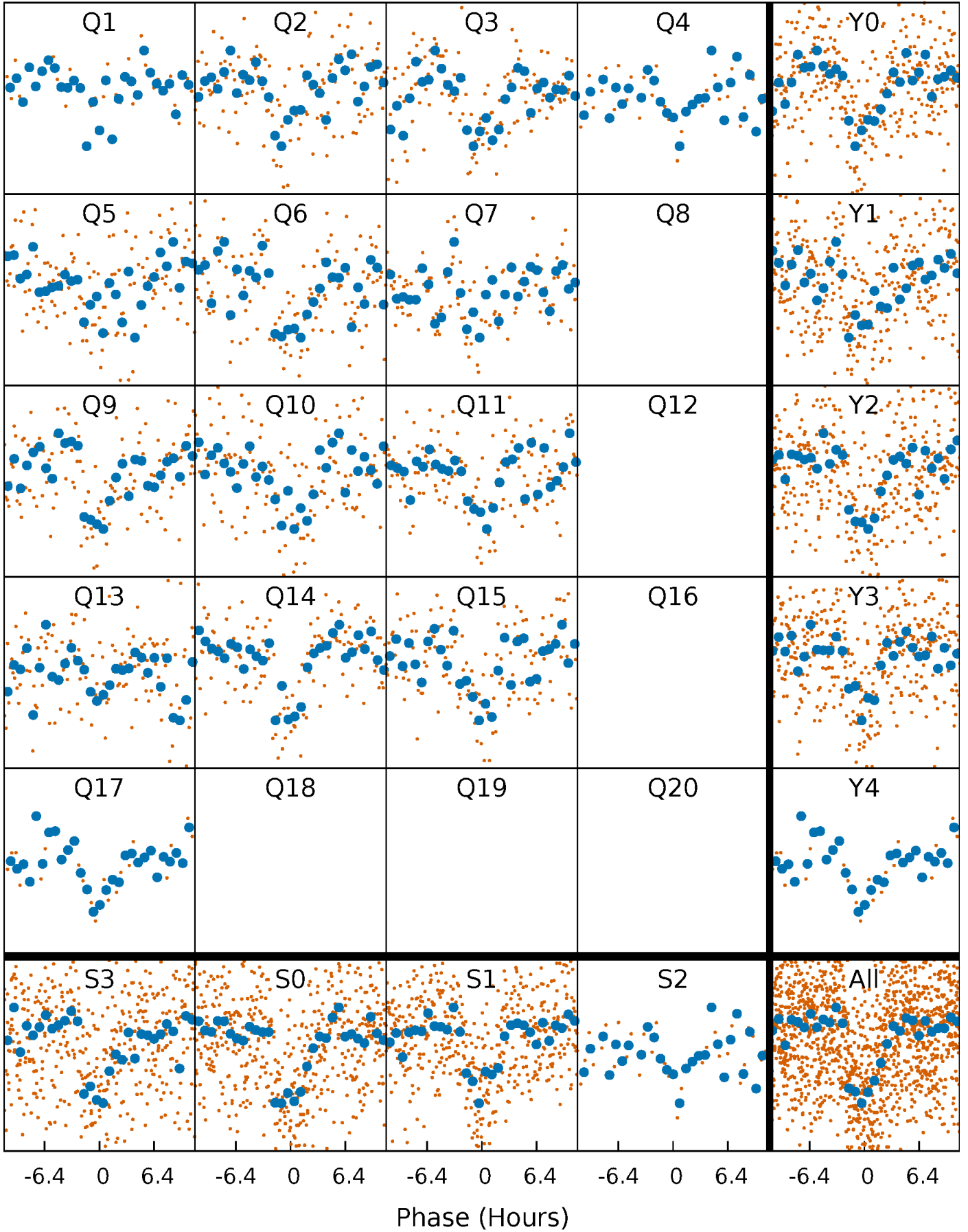
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





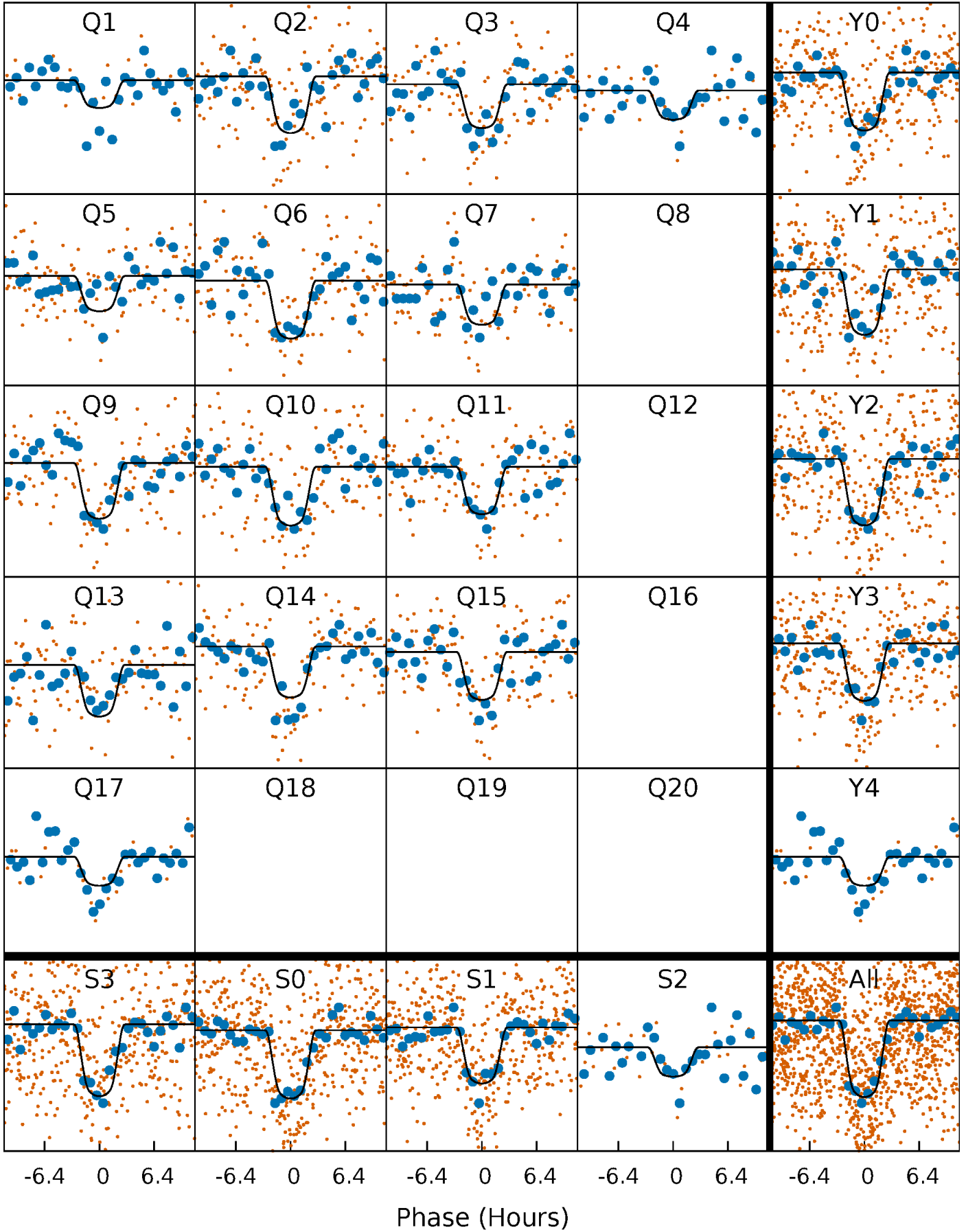
# PDC Quarter-Phased Transit Curves

TCE 011288051-02 P= 30.950591 Days  $T_0=153.847119$  (BKJD)



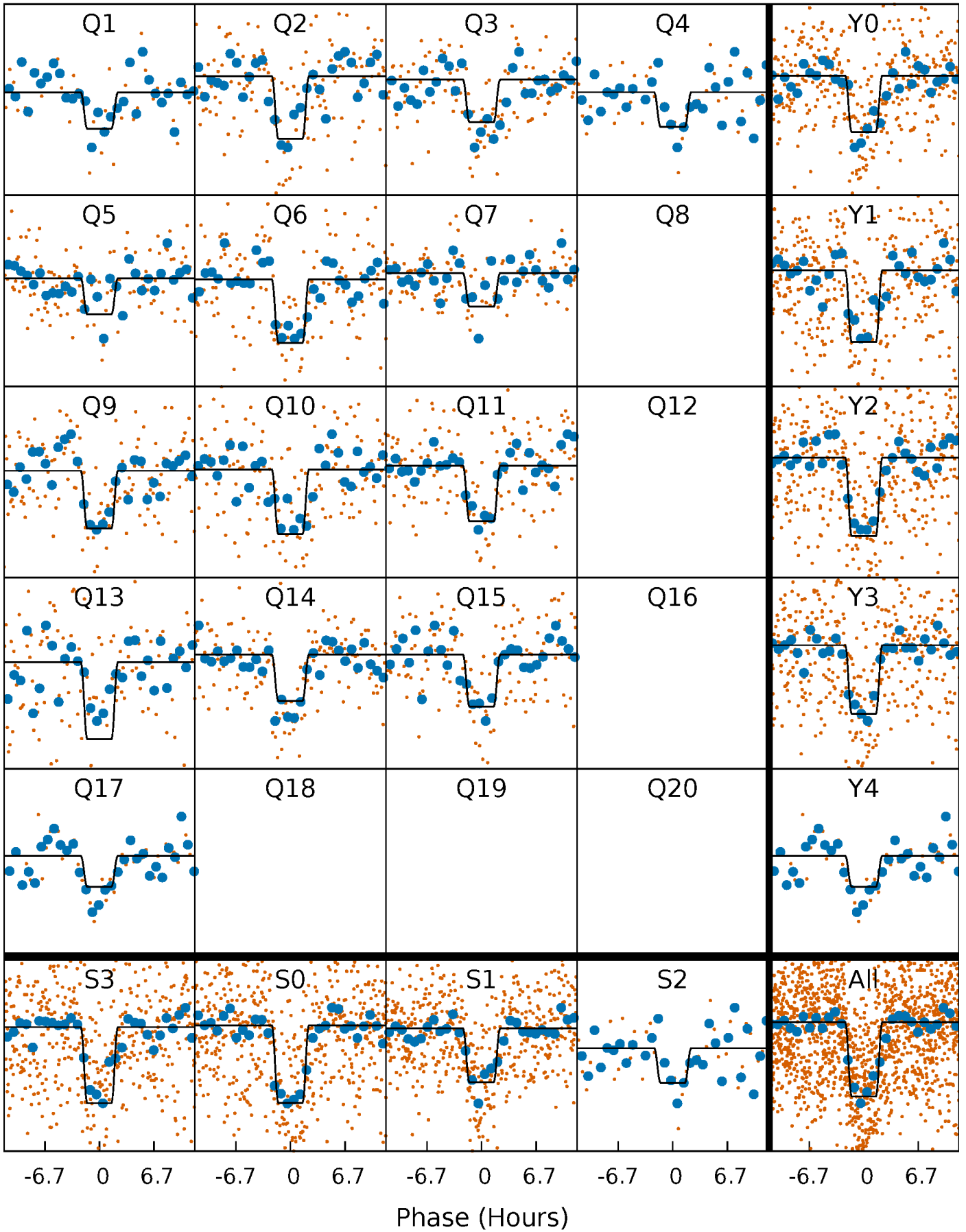
# DV Quarter-Phased Transit Curves

TCE 011288051-02 P= 30.950591 Days  $T_0=153.847119$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

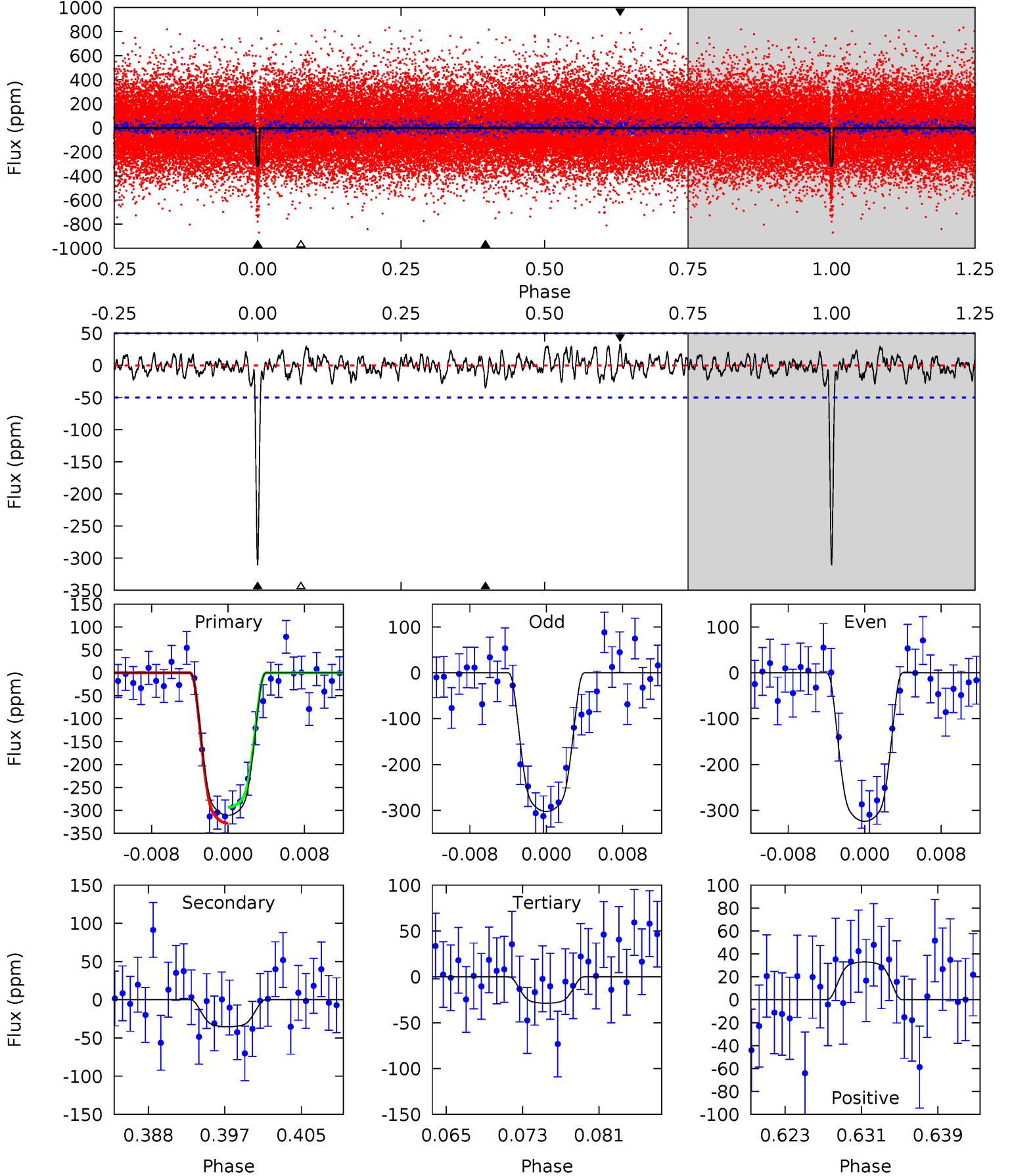
TCE 011288051-02   P= 30.951017 Days    $T_0=153.835438$  (BKJD)



# DV Model-Shift Uniqueness Test

011288051-02, P = 30.950591 Days, E = 122.896528 Days

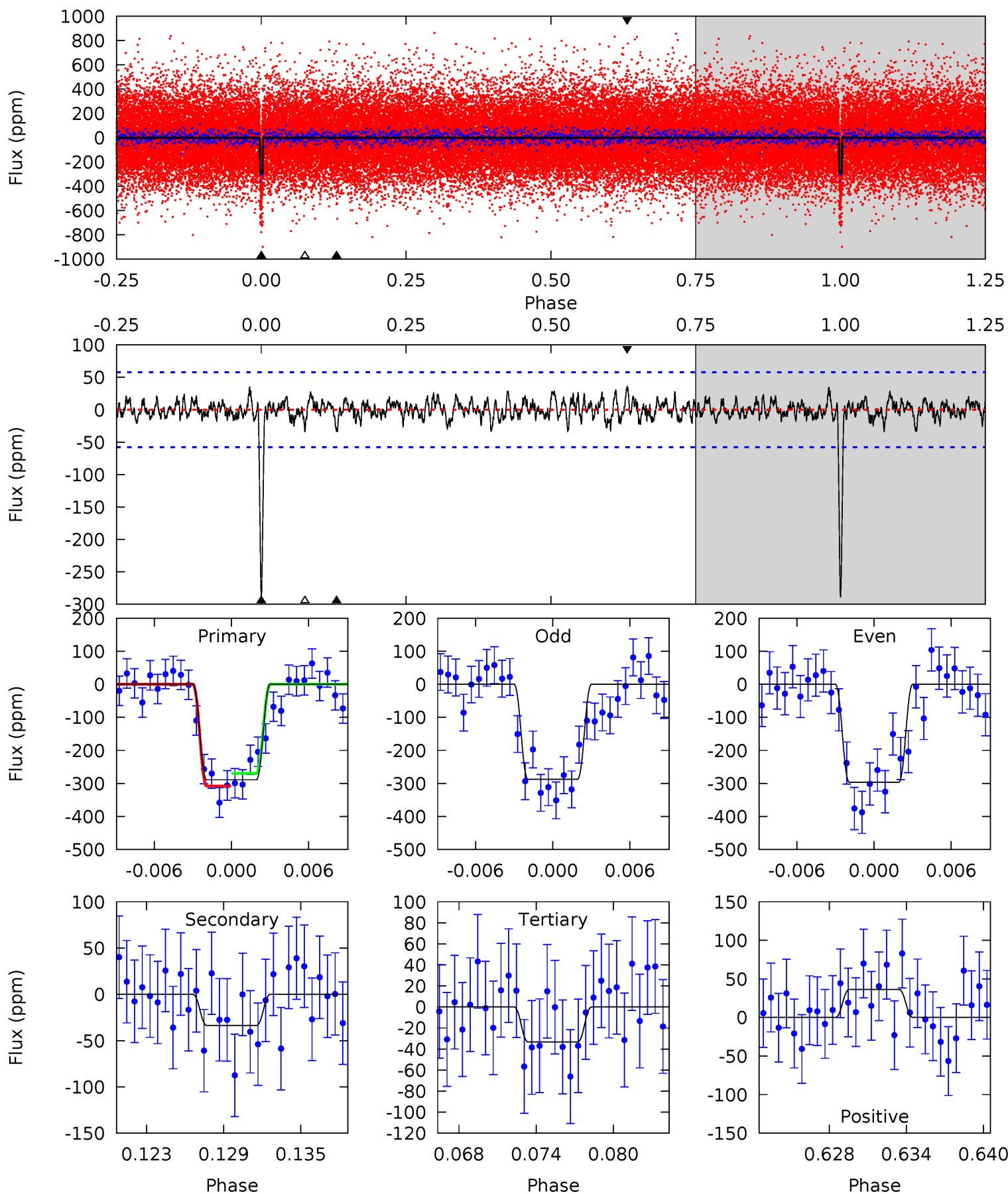
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.5	3.59	2.93	3.35	5.07	2.65	1.18	28.6	28.2	0.66	0.24	1.09	0.85	0.10	1.76



# Alt Model-Shift Uniqueness Test

011288051-02, P = 30.951017 Days, E = 122.884421 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
25.6	2.97	2.94	3.22	5.12	2.74	1.01	22.6	22.3	0.03	-0.25	0.38	1.00	0.11	1.71



### Stellar Parameters For KIC 011288051

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4983^{+100}_{-100}$	$4.660^{+0.017}_{-0.052}$	$-0.440^{+0.150}_{-0.150}$	$0.651^{+0.044}_{-0.024}$	$0.715^{+0.031}_{-0.052}$	$3.648^{+0.287}_{-0.590}$
	+2%/-2%	+0%/-1%	+34%/-34%	+7%/-4%	+4%/-7%	+8%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 011288051-02 / KOI 0241.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-35 \pm 10$	$1.56^{+0.10}_{-0.10}$	$602^{+16}_{-13}$	$3163^{+143}_{-158}$	$231^{+74}_{-69}$
Alt.	$-34 \pm 11$	$1.27^{+0.09}_{-0.08}$	$602^{+15}_{-14}$	$3337^{+186}_{-215}$	$334^{+130}_{-120}$

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

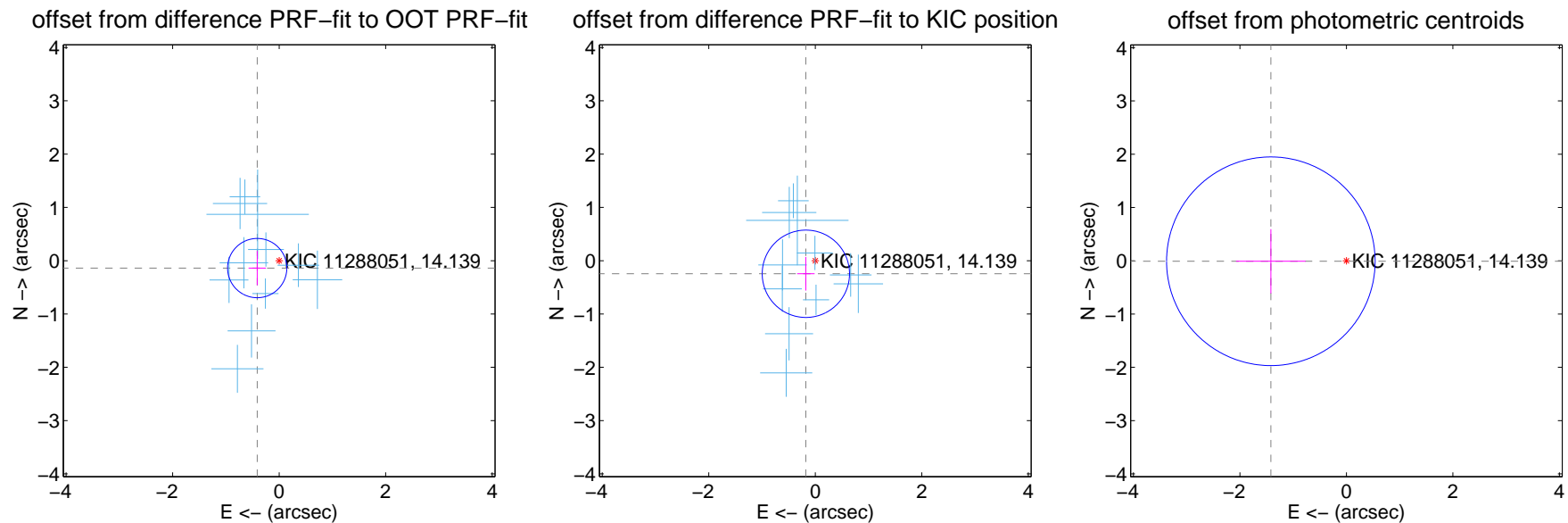
## DV Centroid Data

Supplemental centroid analysis for 011288051-02. Kepler magnitude: 14.14. Transit SNR 21.30

There are 11 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

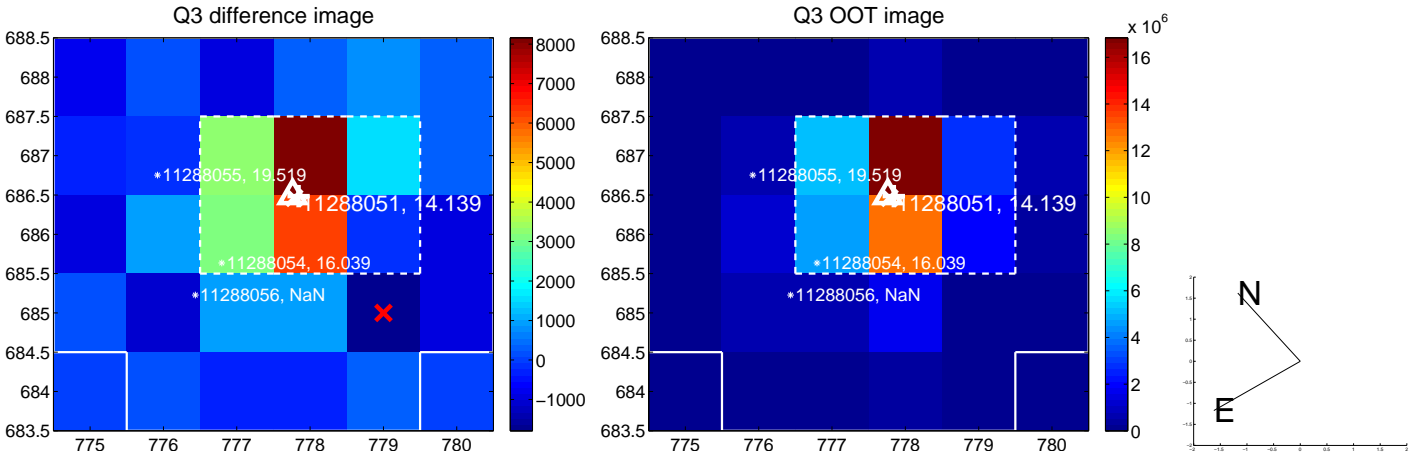
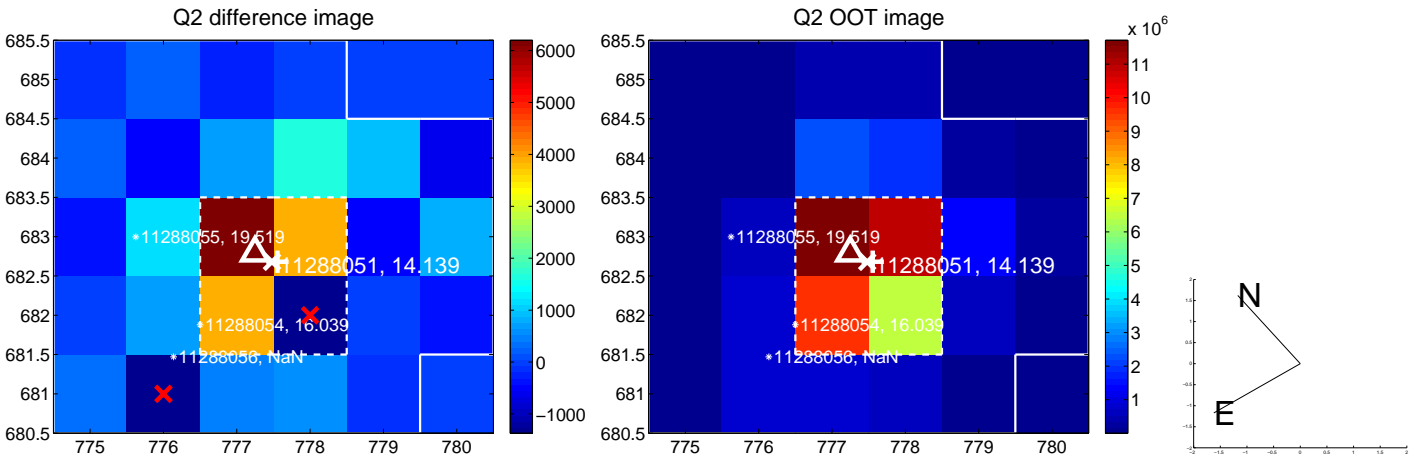
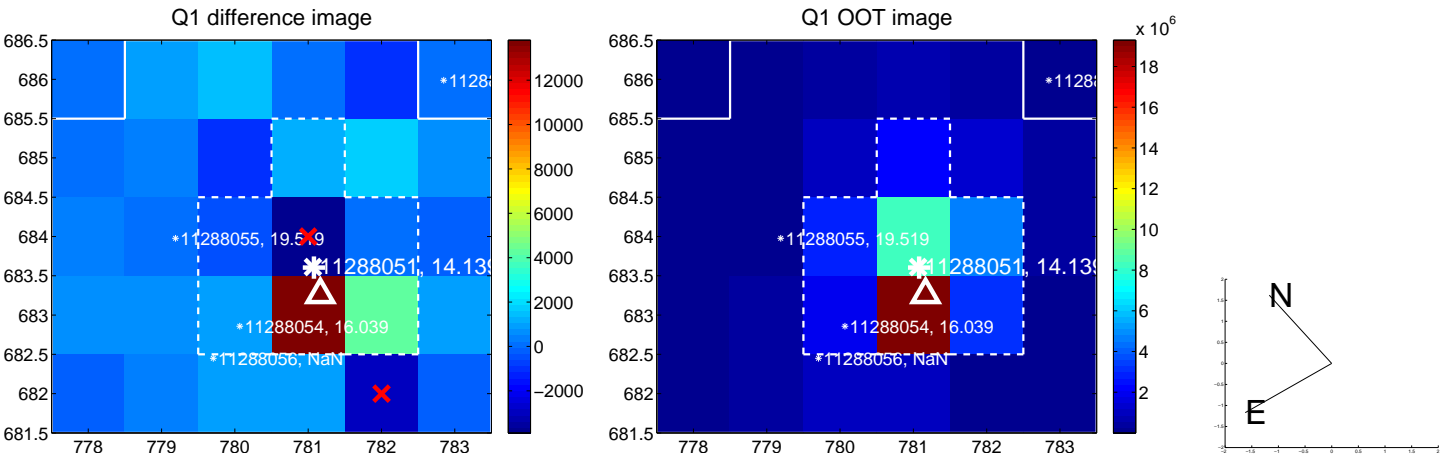
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.435 \pm 0.185$	2.35	$0.412 \pm 0.163$	$-0.139 \pm 0.322$
PRF-fit source offset from KIC position	$0.302 \pm 0.273$	1.11	$0.176 \pm 0.165$	$-0.245 \pm 0.315$
photometric centroid source offset	$1.42 \pm 0.65$	2.17	$1.42 \pm 0.65$	$-0.01 \pm 0.60$



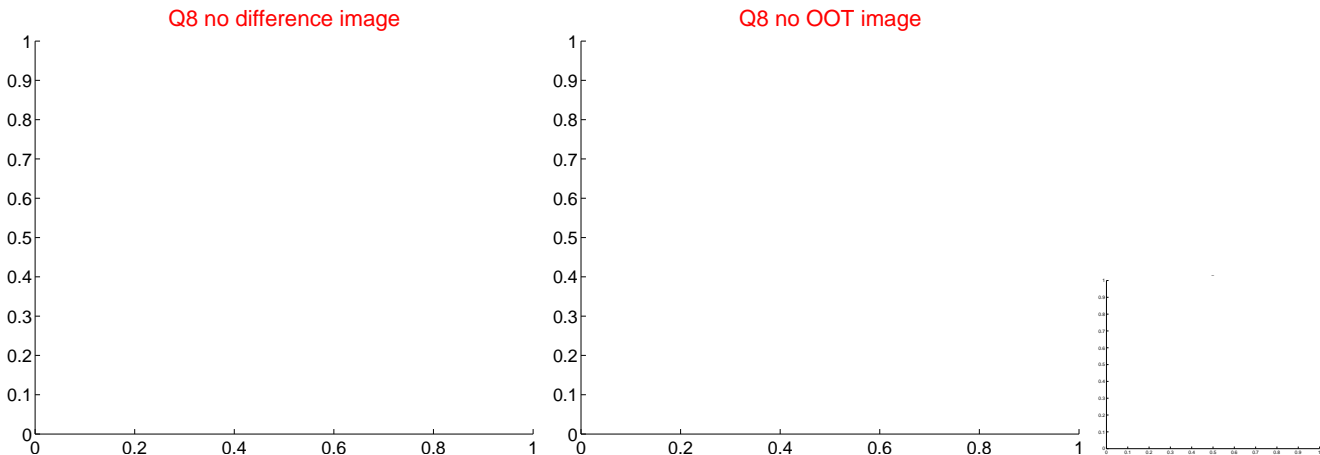
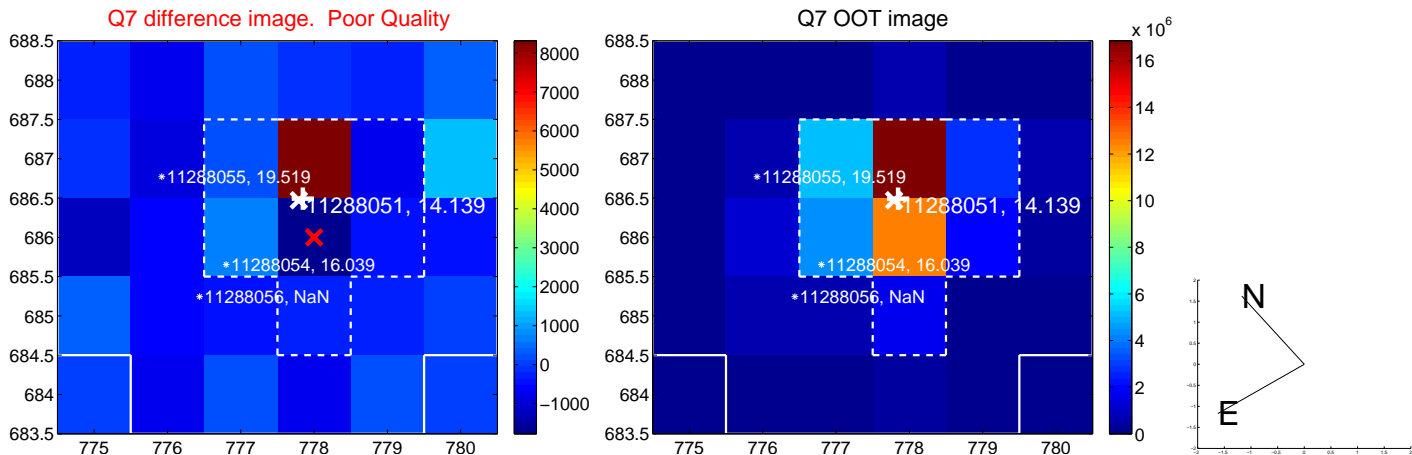
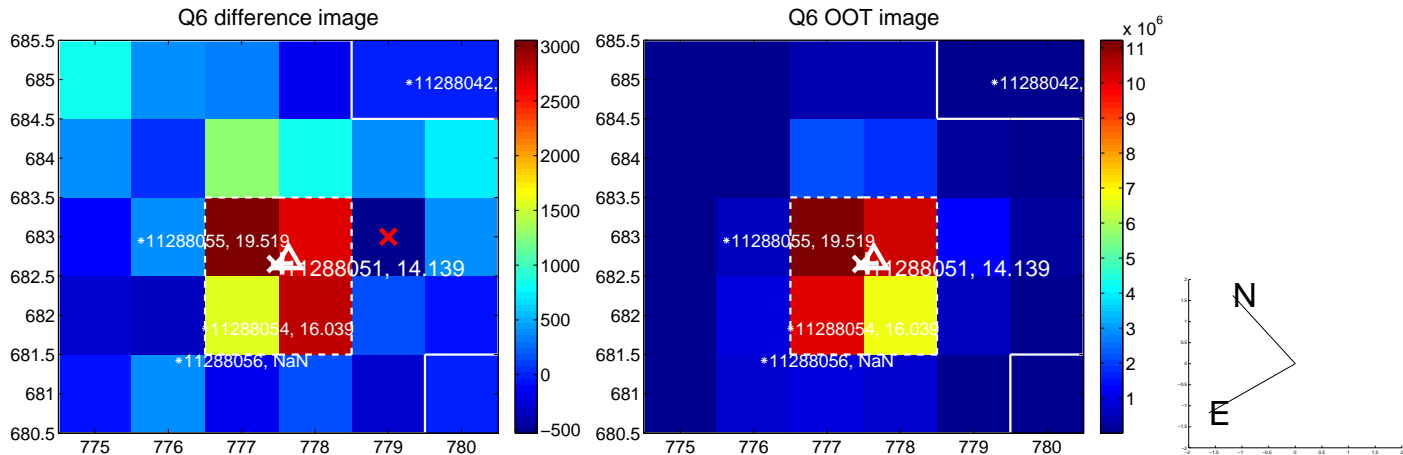
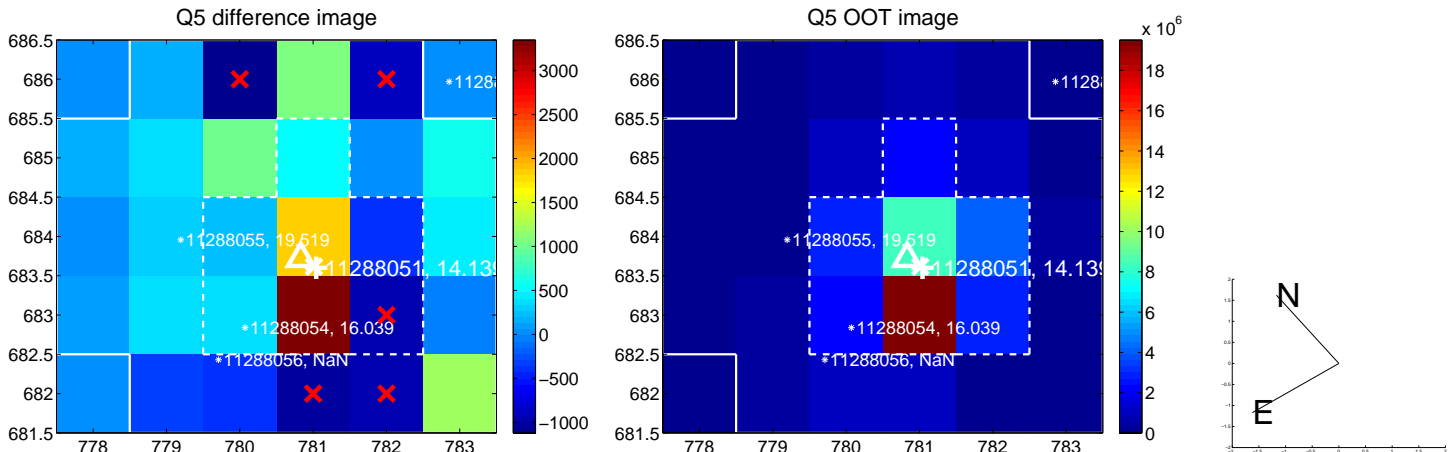
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



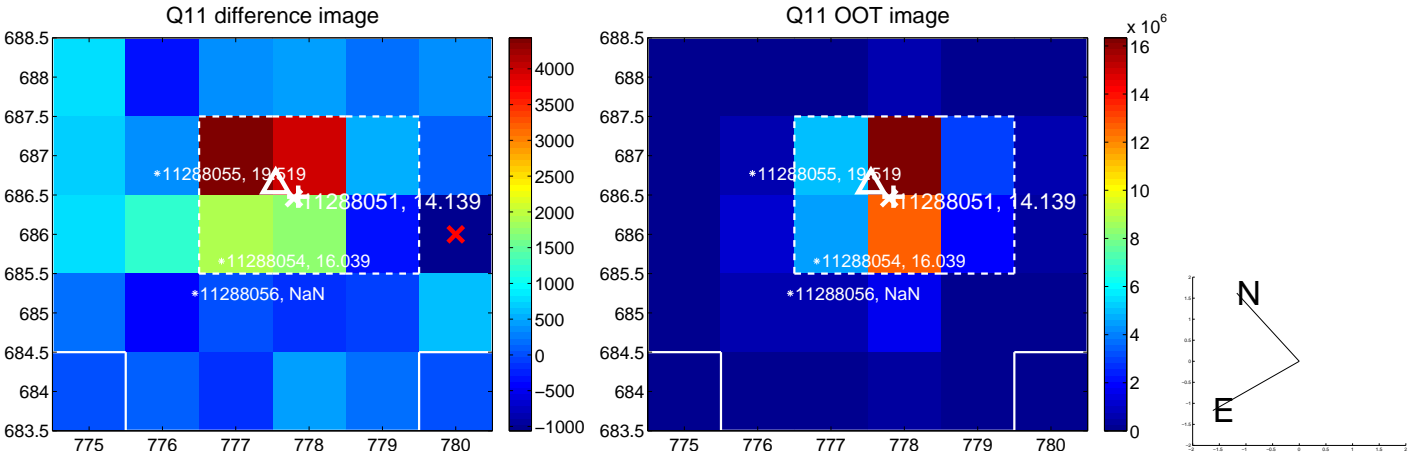
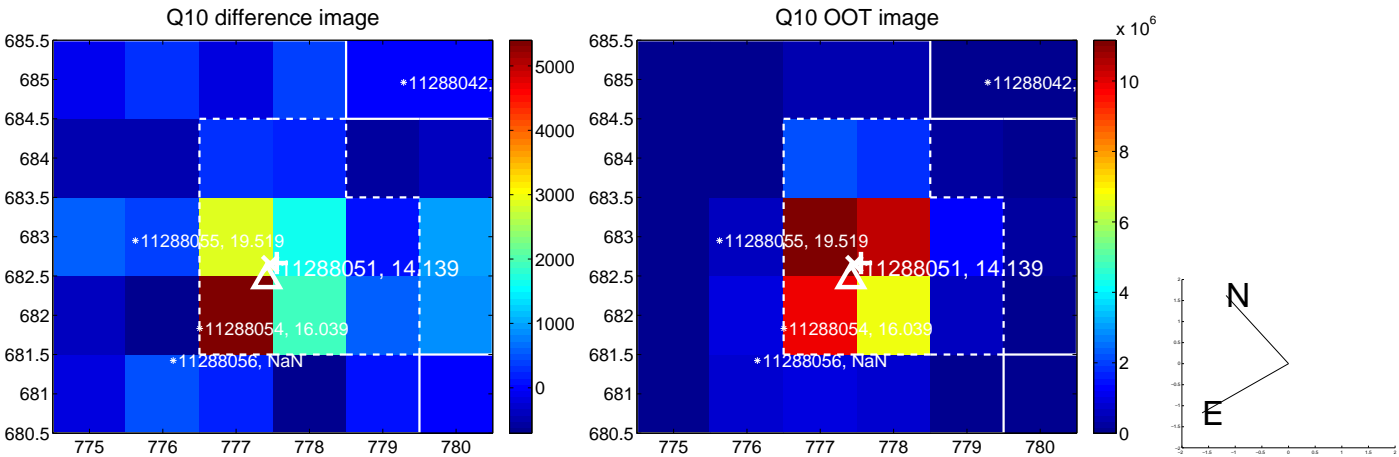
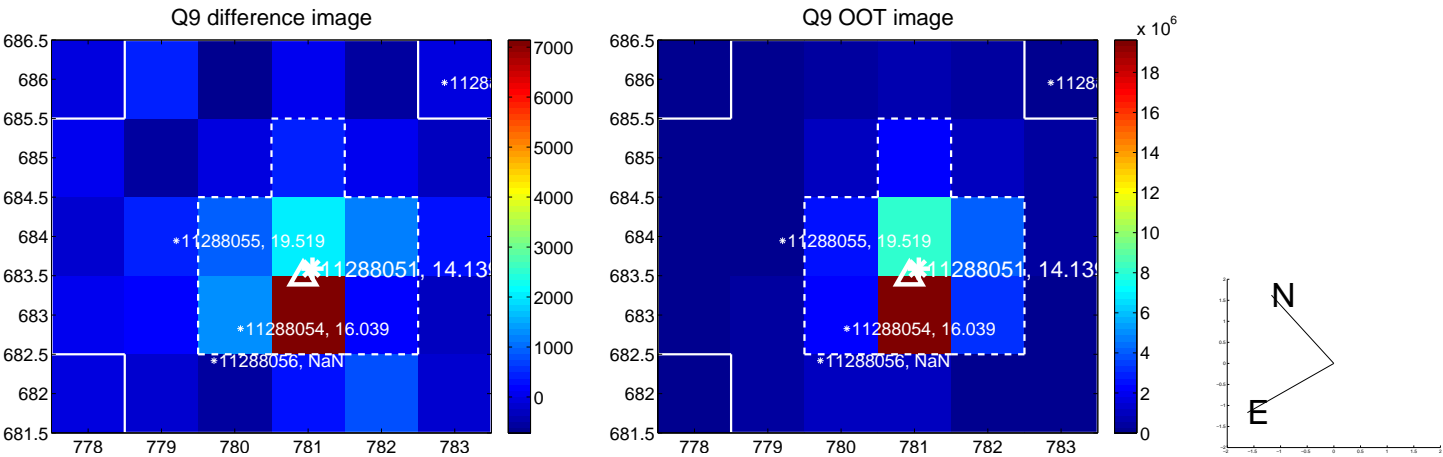
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



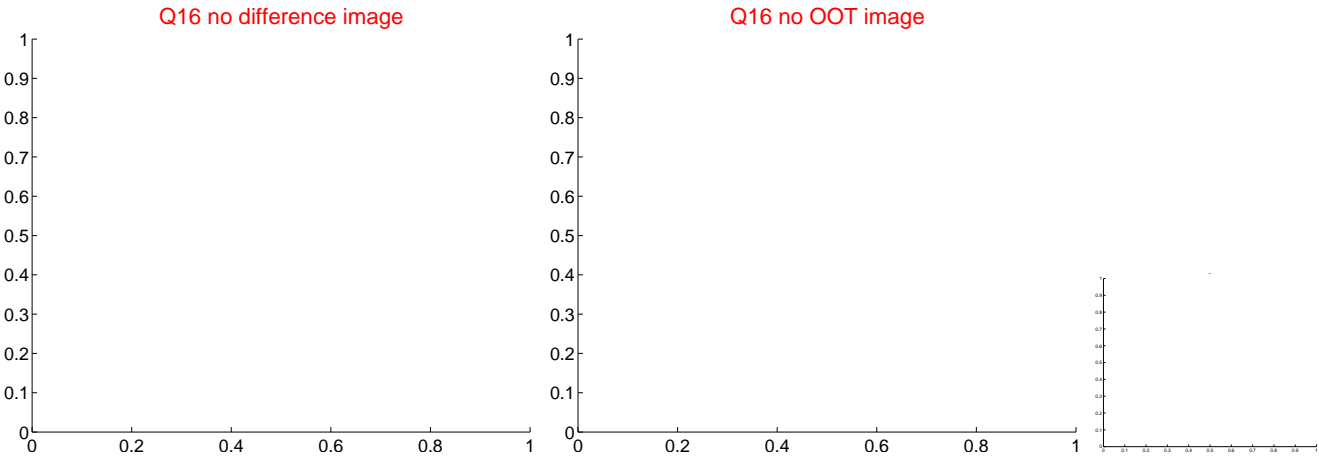
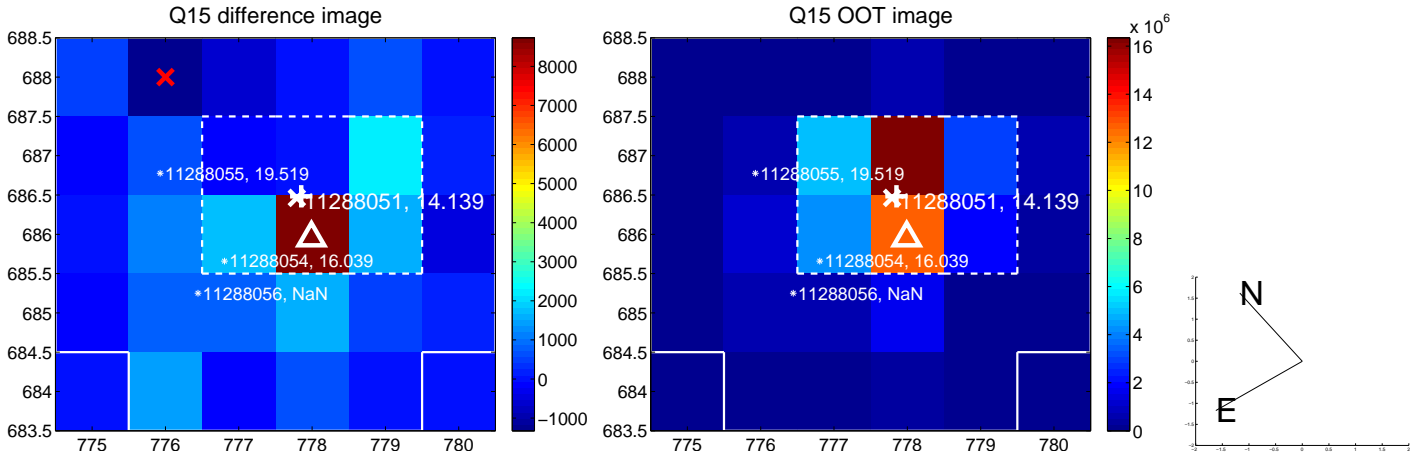
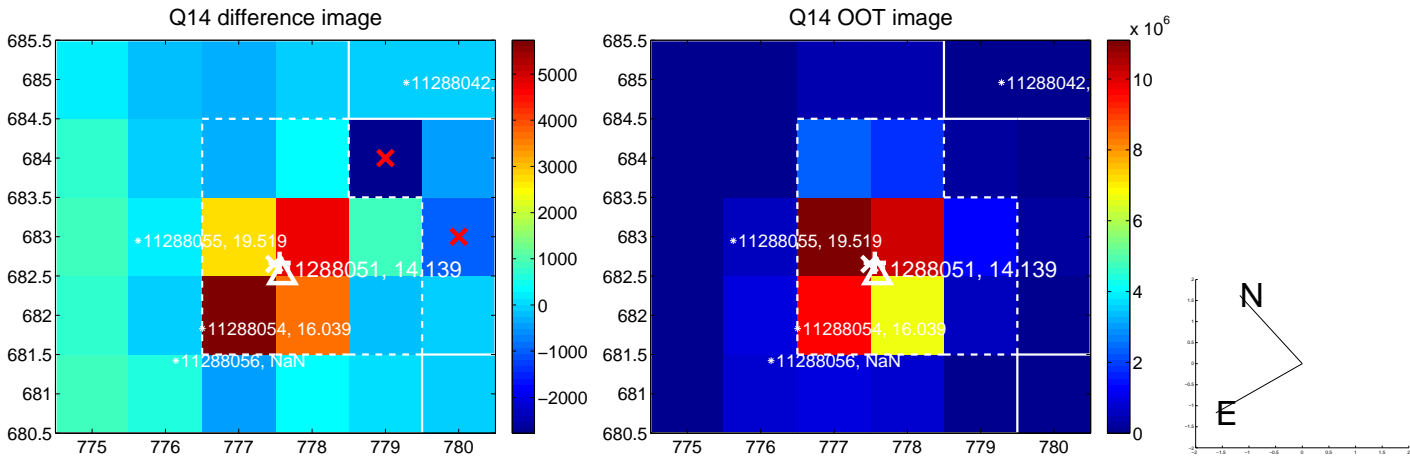
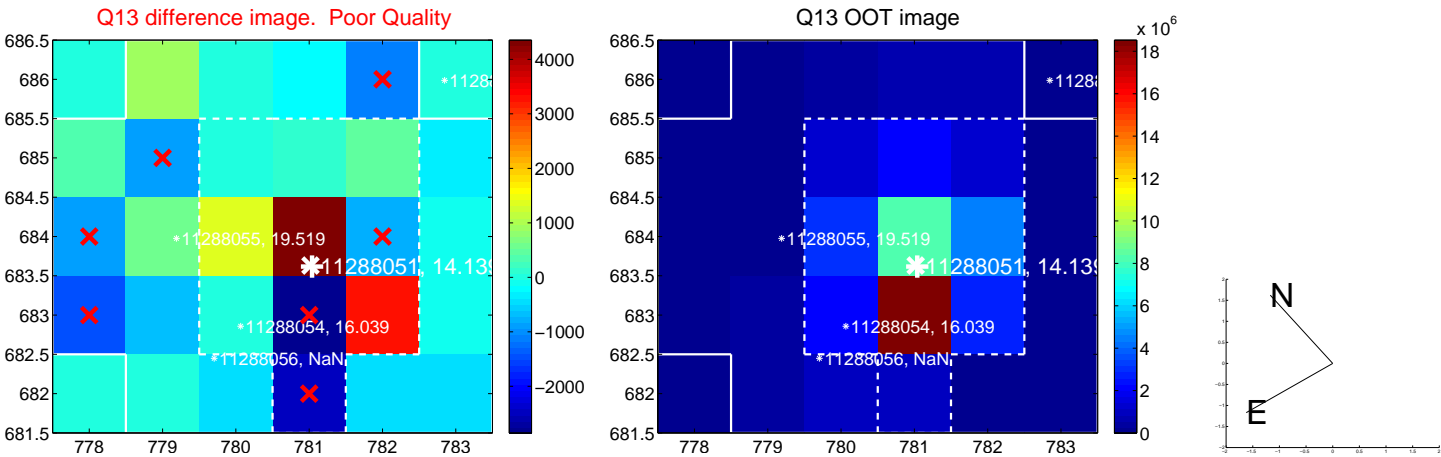
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



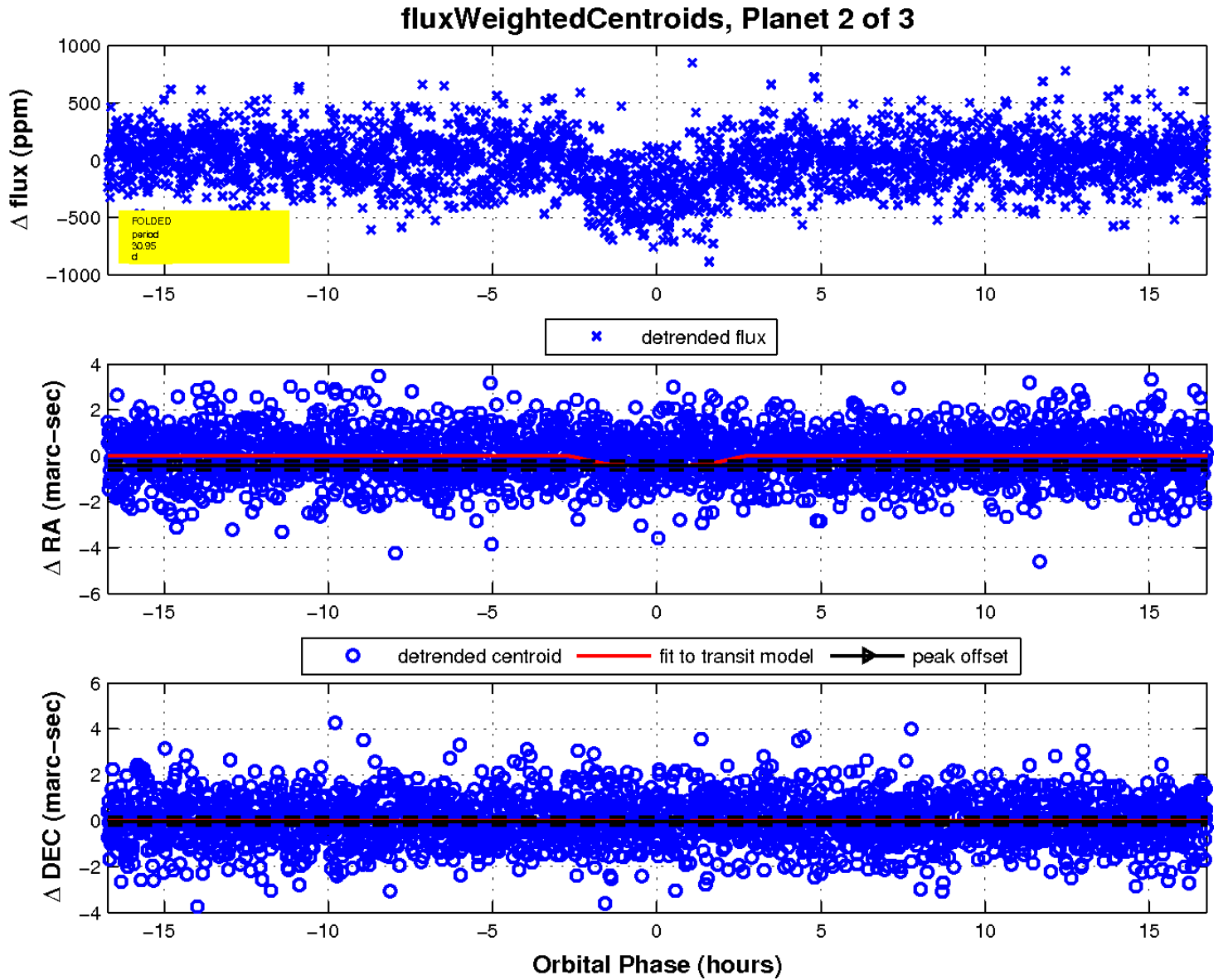
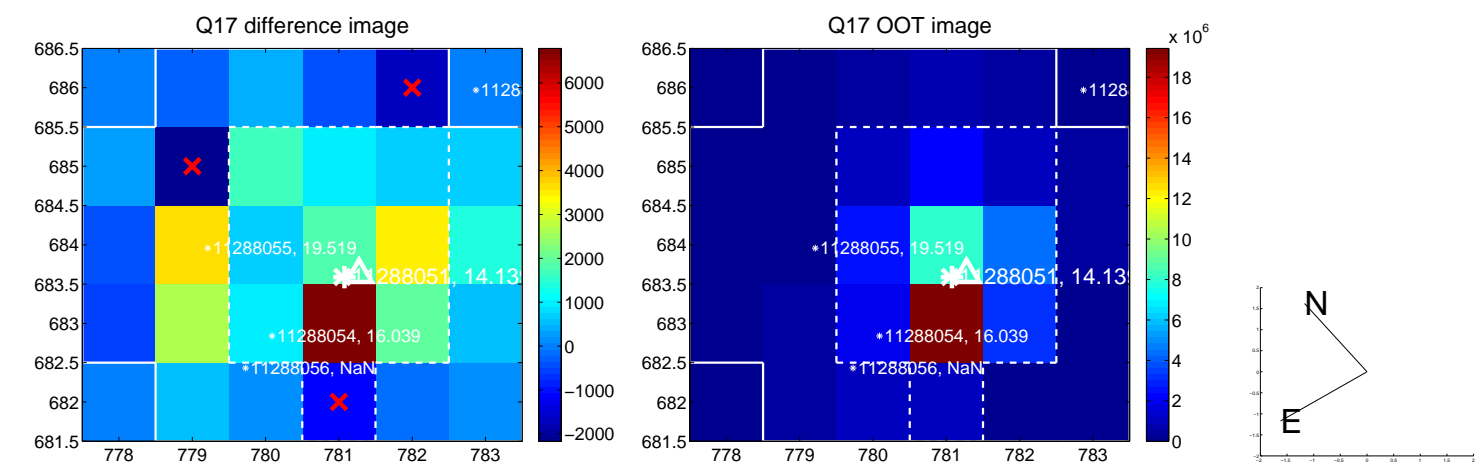
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

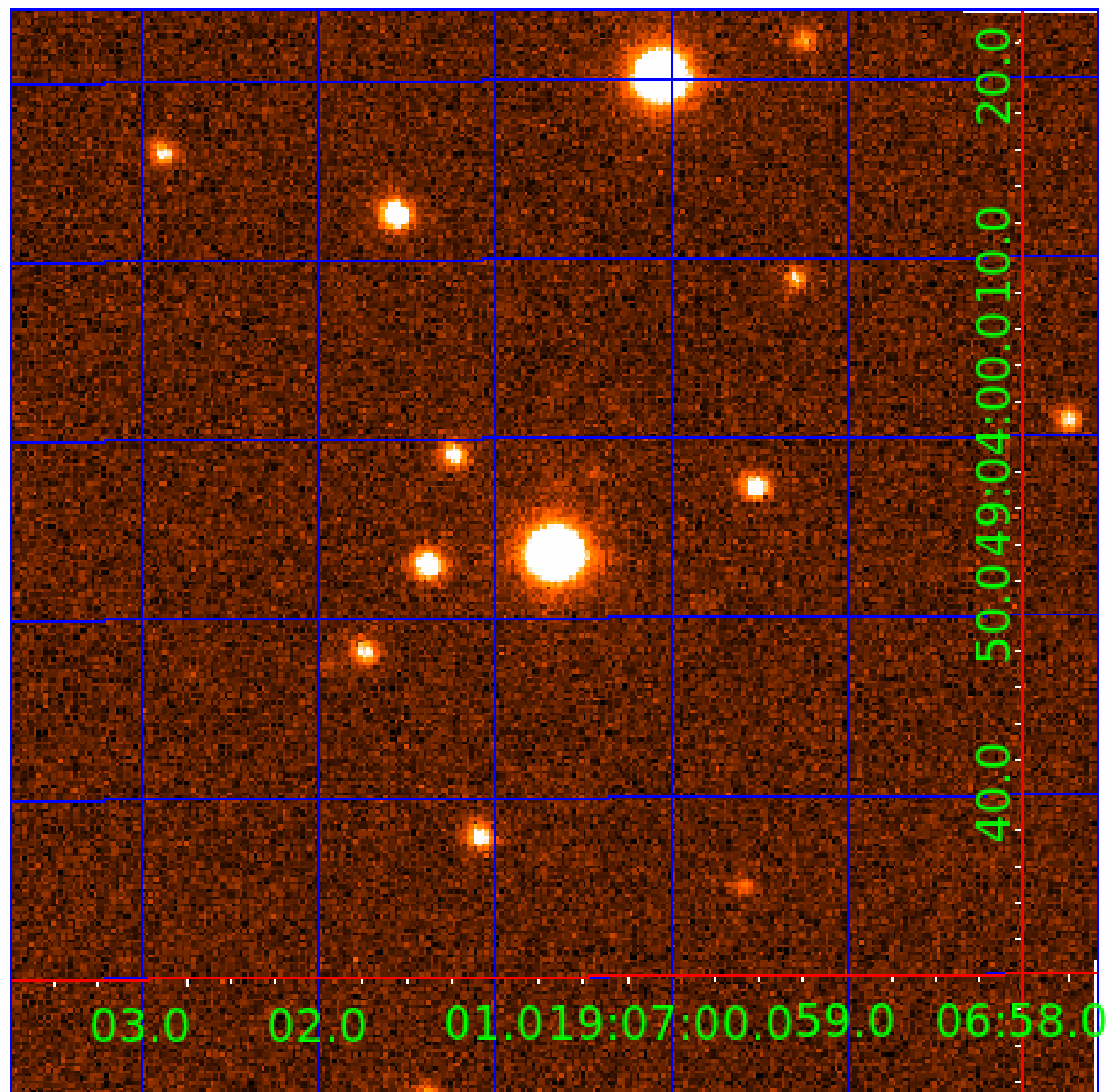


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011288051

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011288051-01	OBS	0241.01	13.821397	131.793335	756.2	3.919	64.6	69.0	0.65	4983	2.16	23.22
011288051-02	OBS	0241.02	30.950591	153.847119	304.7	5.586	20.5	21.3	0.65	4983	1.54	7.92
011288051-03	OBS	0241.03	3.410478	131.576496	134.6	2.380	19.2	20.9	0.65	4983	0.92	150.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011288051-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011288051-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
011288051-03	OBS	PC	1.00	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.

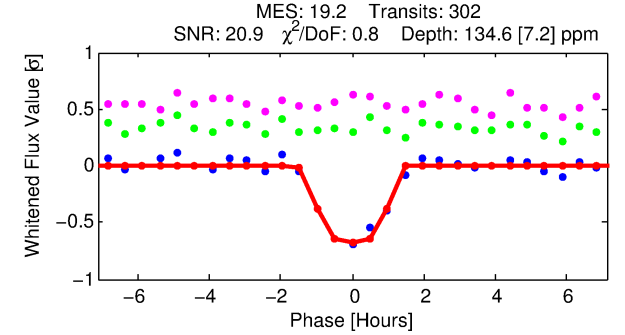
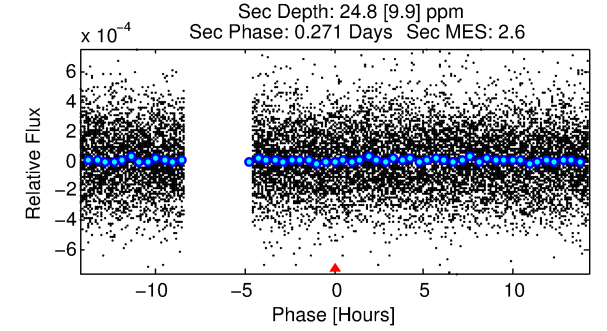
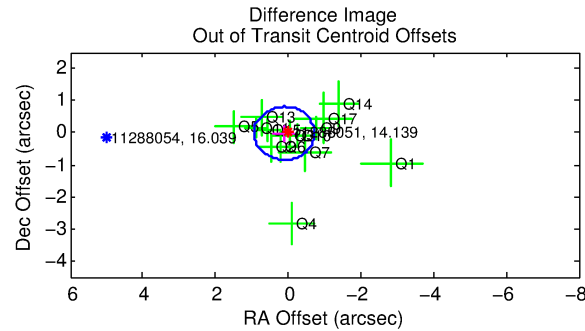
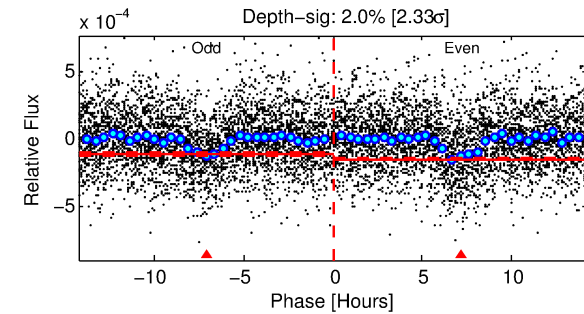
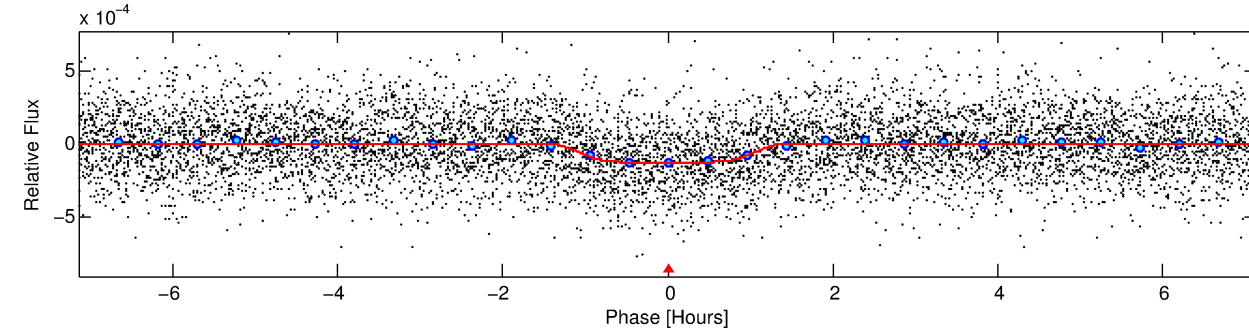
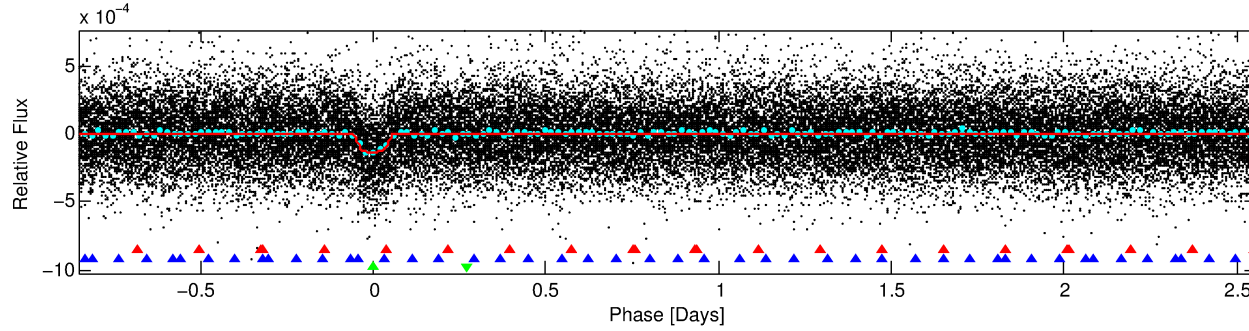
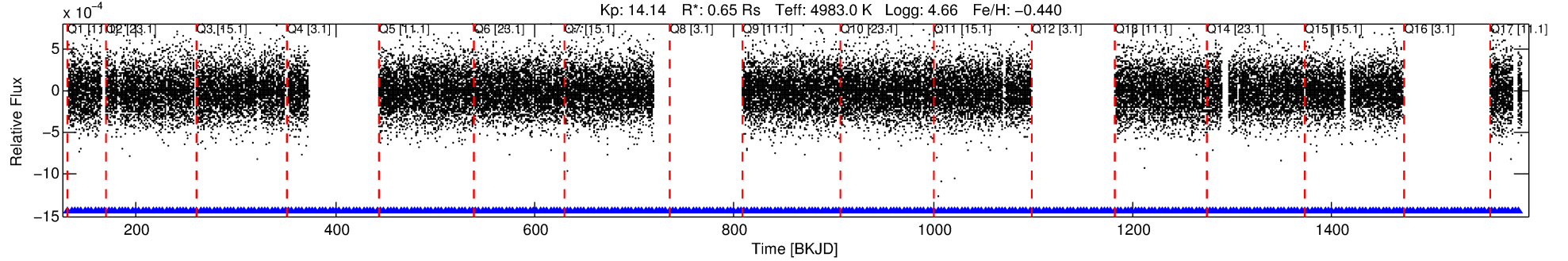
## Ephemeris Match Information For 011288051-03

No Significant Match Found



# DV One-Page Summary

KIC: 11288051 Candidate: 3 of 3 Period: 3.410 d  
KOI: K00241.03 Name: Kepler-124b Corr: 0.973



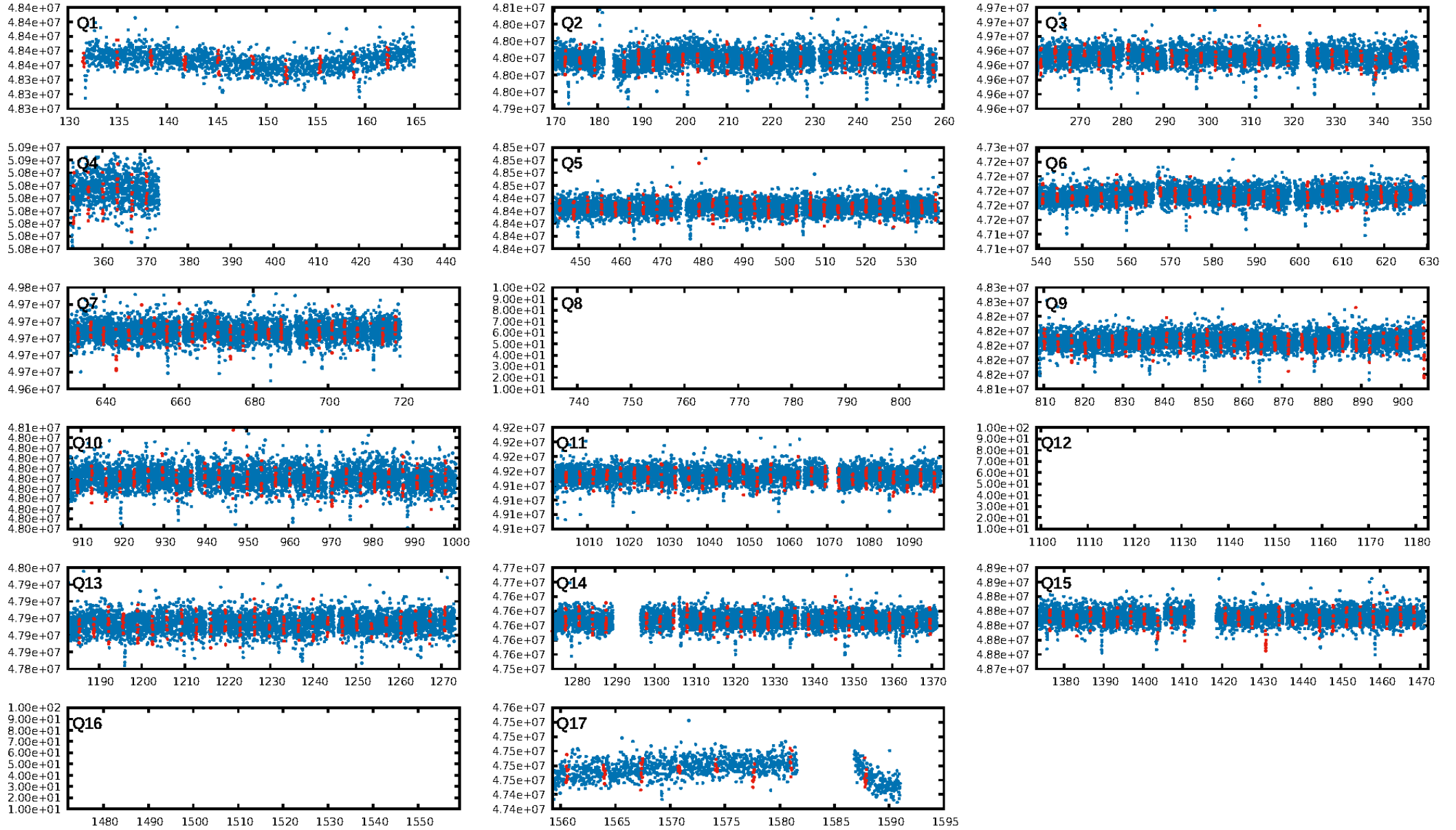
## DV Fit Results:

Period = 3.41048 [0.00001] d  
Epoch = 131.5765 [0.0020] BKJD  
Rp/R\* = 0.0129 [0.0057]  
a/R\* = 5.16 [9.06]  
b = 0.90 [0.39]  
Seff = 150.02 [18.28]  
Teq = 892 [27] K  
Rp = 0.92 [0.41] Re  
a = 0.0395 [0.0024] AU  
Ag = 25.31 [24.73] [0.98σ]  
Teffp = 3095 [755] K [2.91σ]

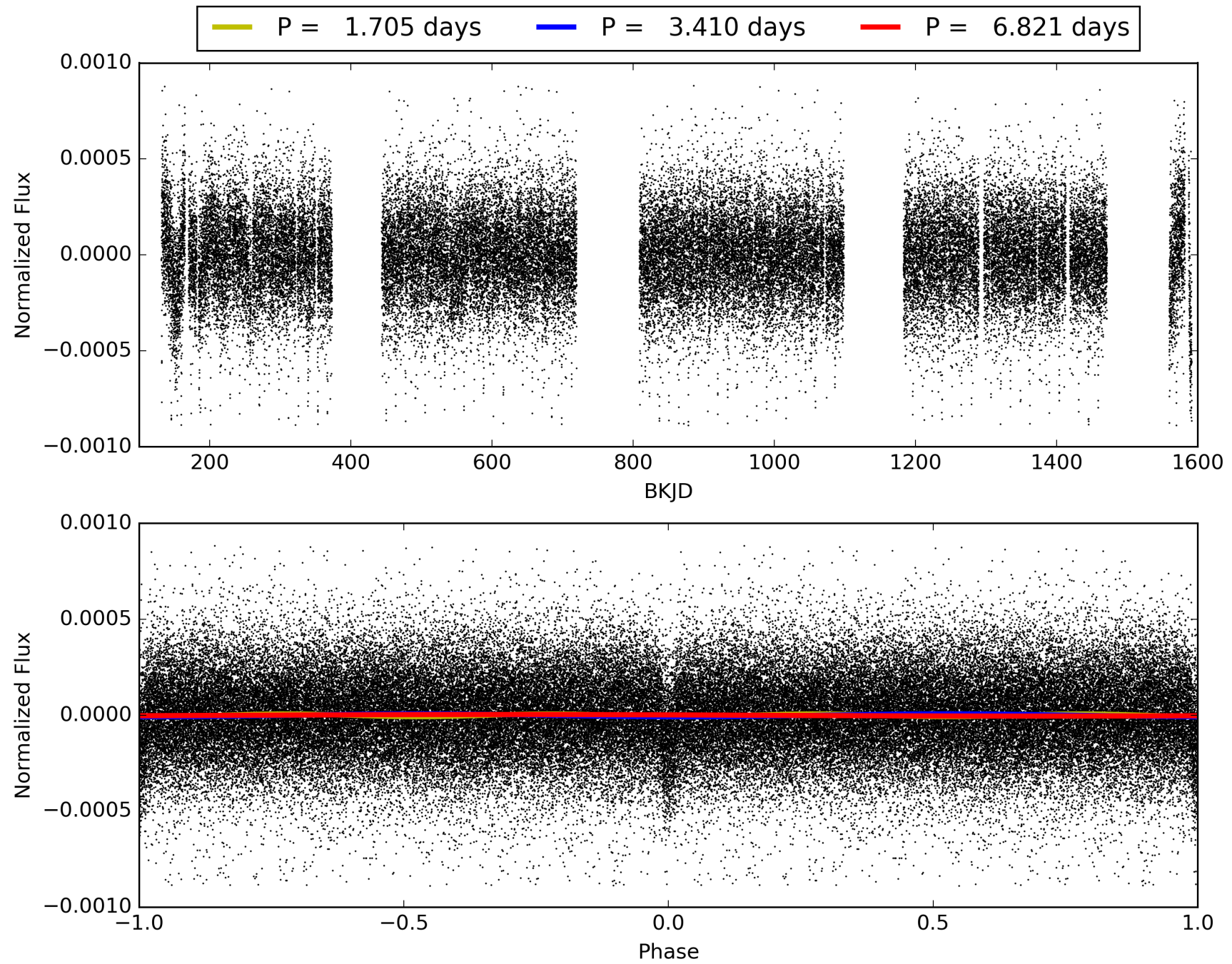
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [54.50σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.53e-81  
RollingBand-fgt: 1.00 [281/281]  
GhostDiagnostic-chr: 3.463  
Centroid-sig: 29.8%  
Centroid-so: 0.818 arcsec [1.15σ]  
OotOffset-rm: 0.117 arcsec [0.42σ]  
KicOffset-rm: 0.162 arcsec [0.64σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.86 [12/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 011288051-03, PDC Light Curves

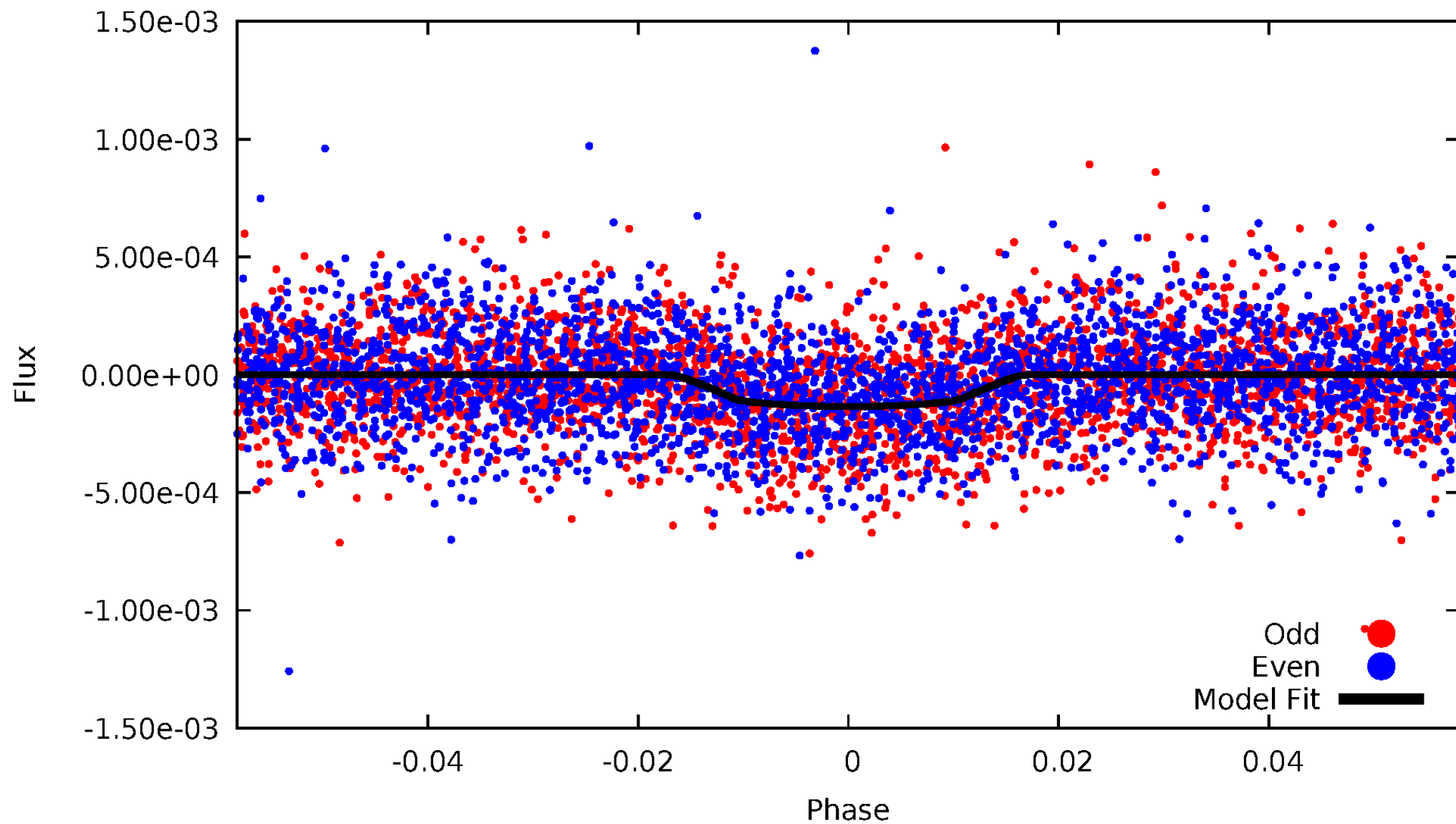


TCE 011288051-03



# DV Odd/Even

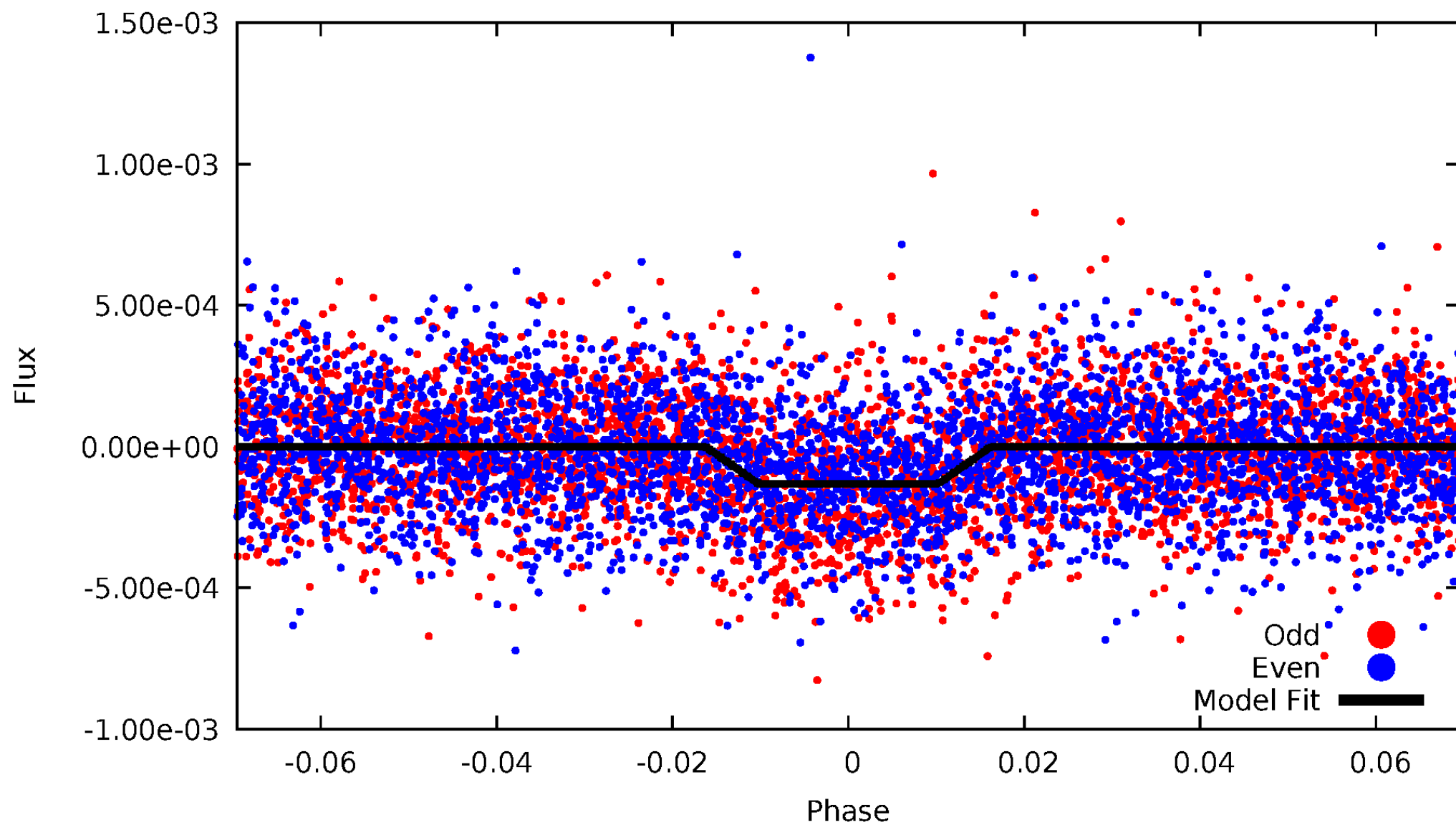
TCE 011288051-03





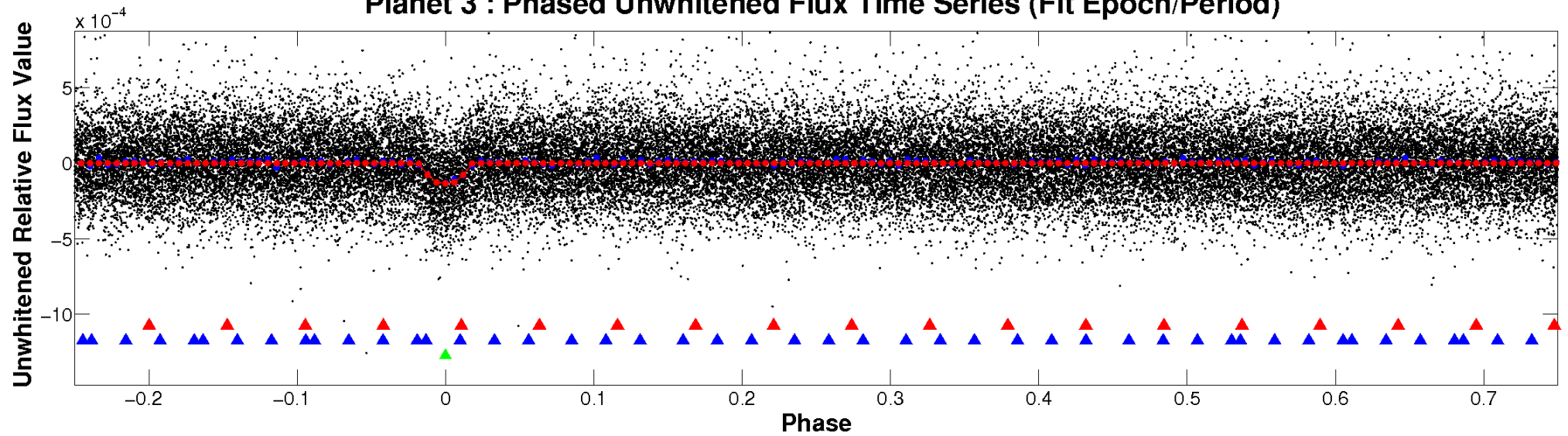
# ALT Odd/Even

TCE 011288051-03

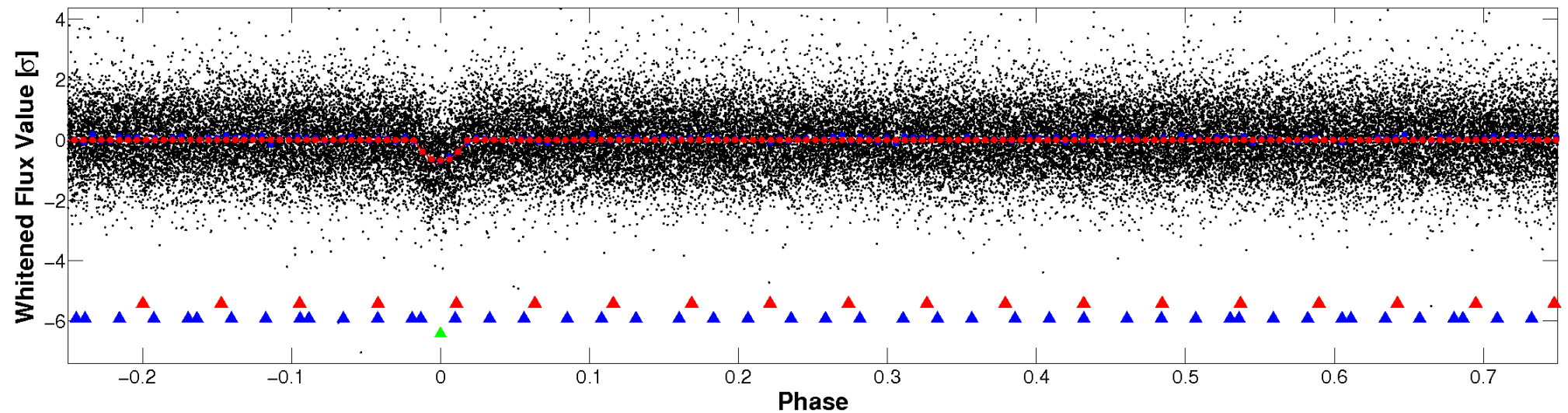


# Non-Whitened Vs. Whitened Light Curve

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

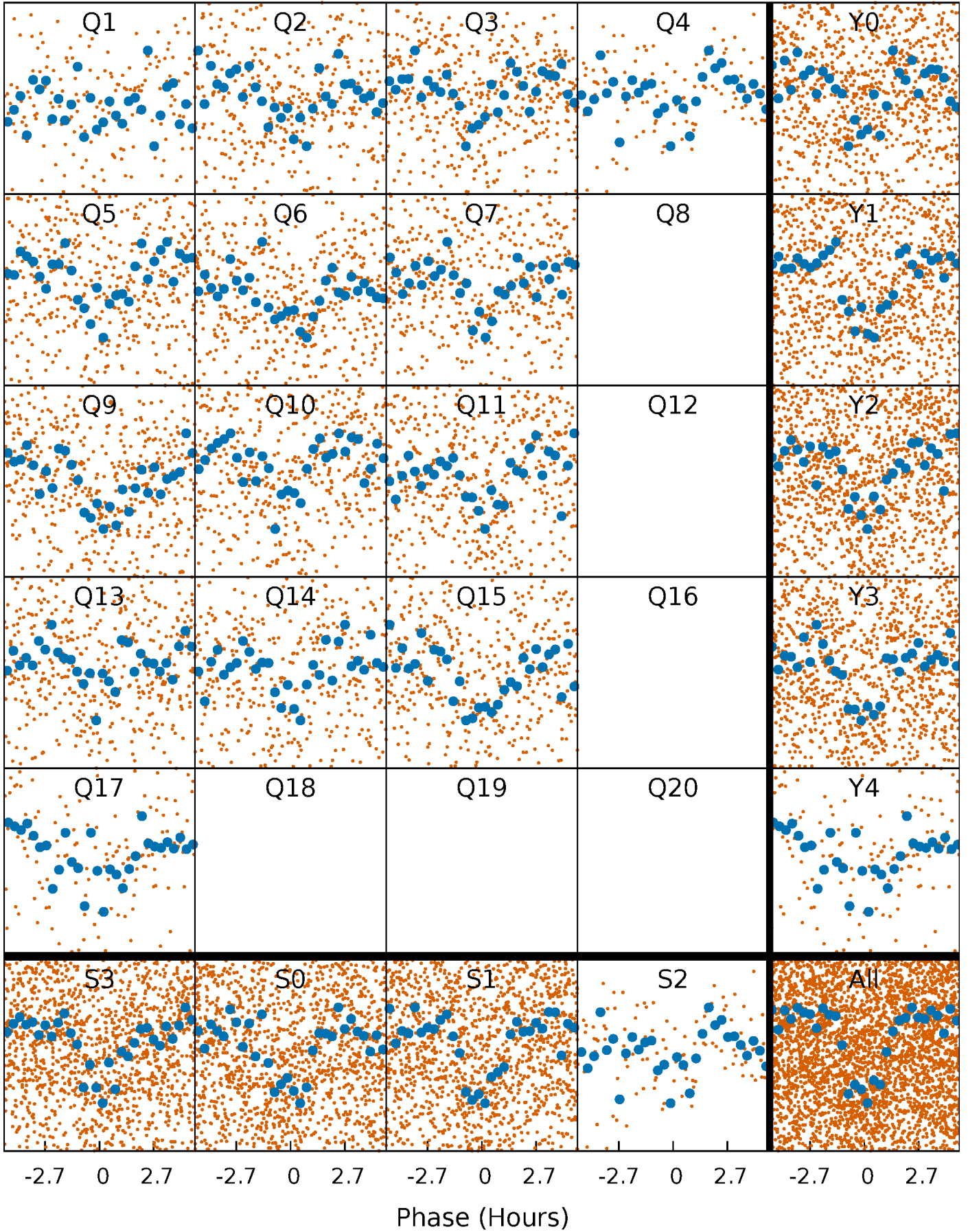


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

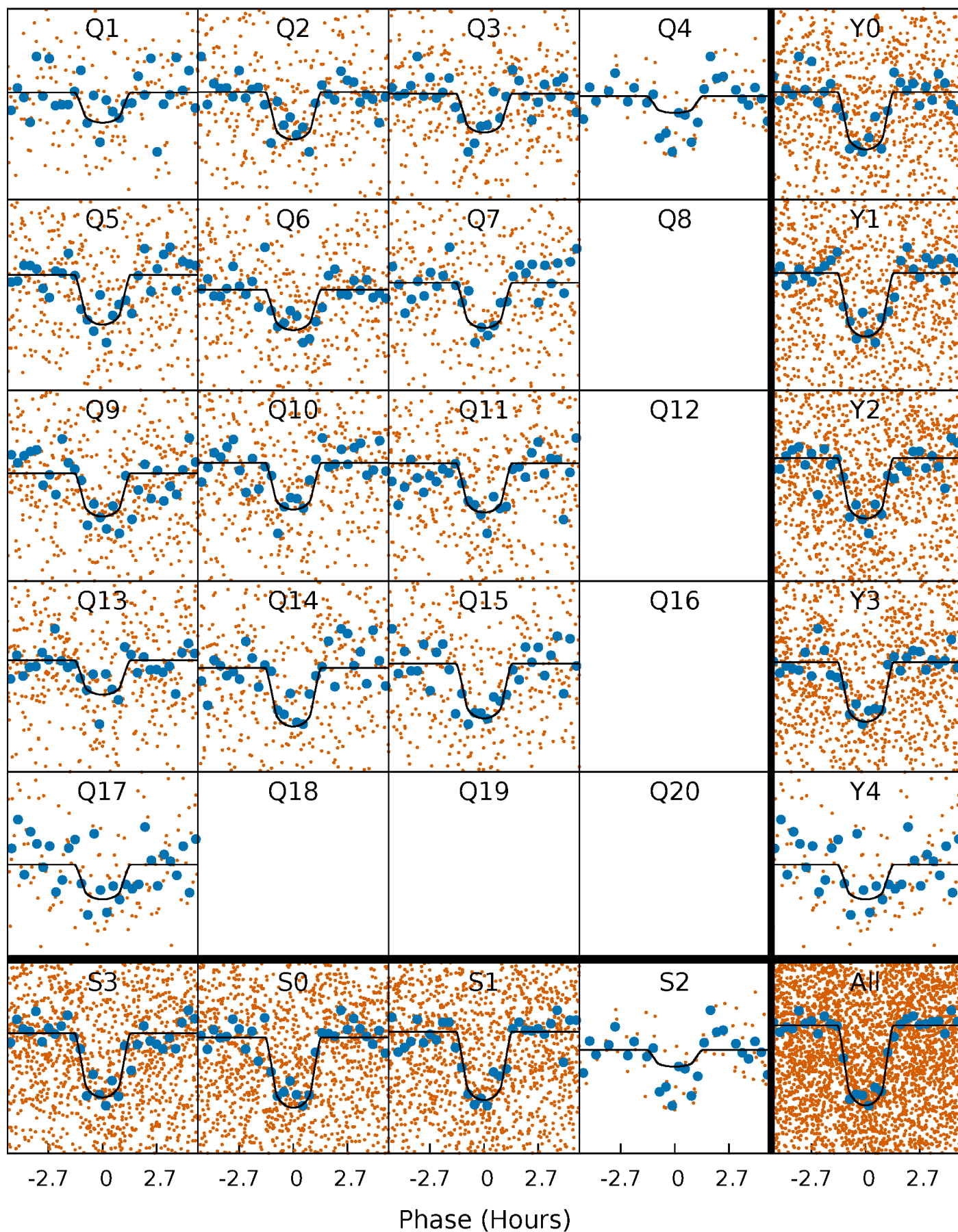
TCE 011288051-03   P= 3.410478 Days    $T_0=131.576496$  (BKJD)





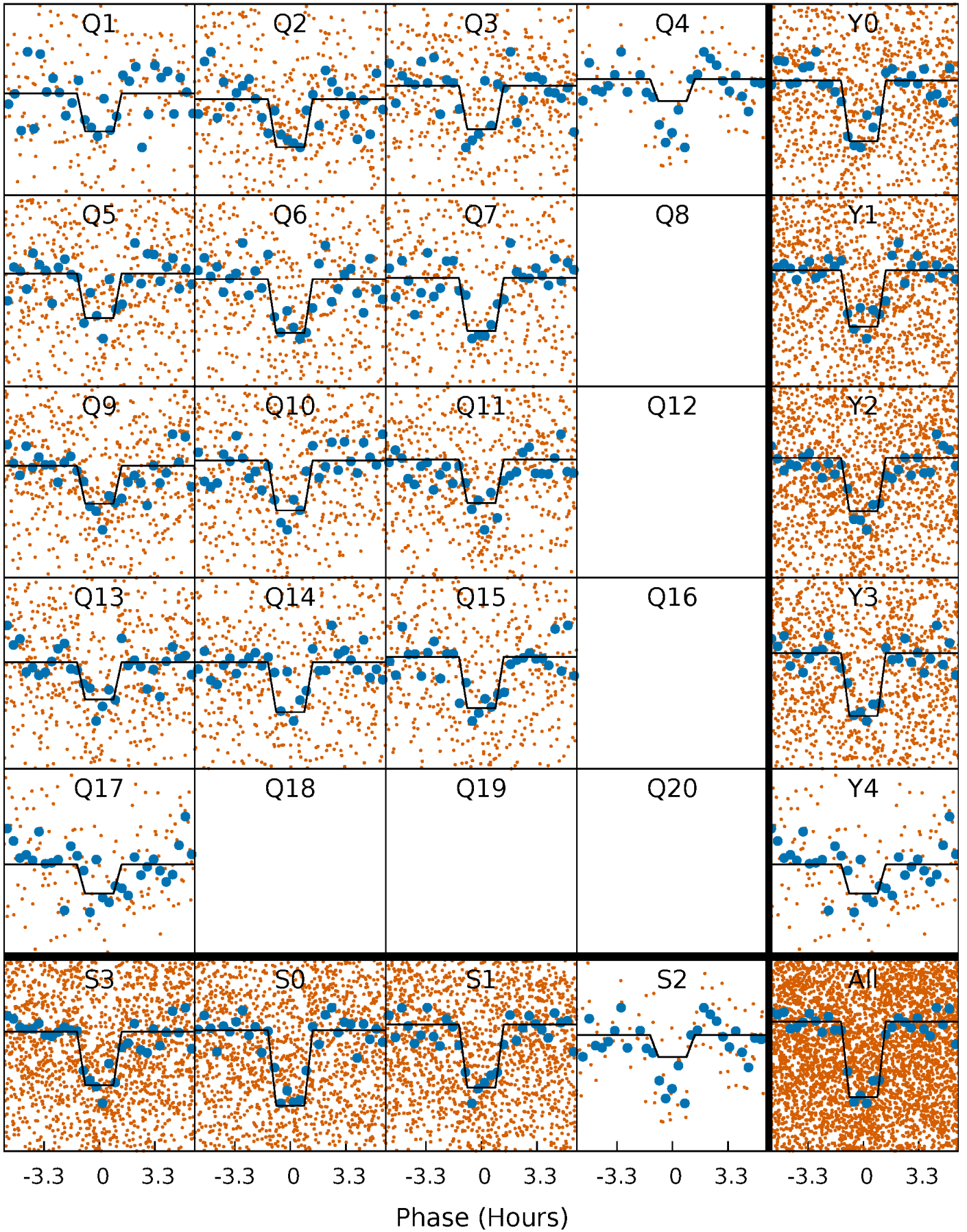
# DV Quarter-Phased Transit Curves

TCE 011288051-03 P= 3.410478 Days  $T_0=131.576496$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

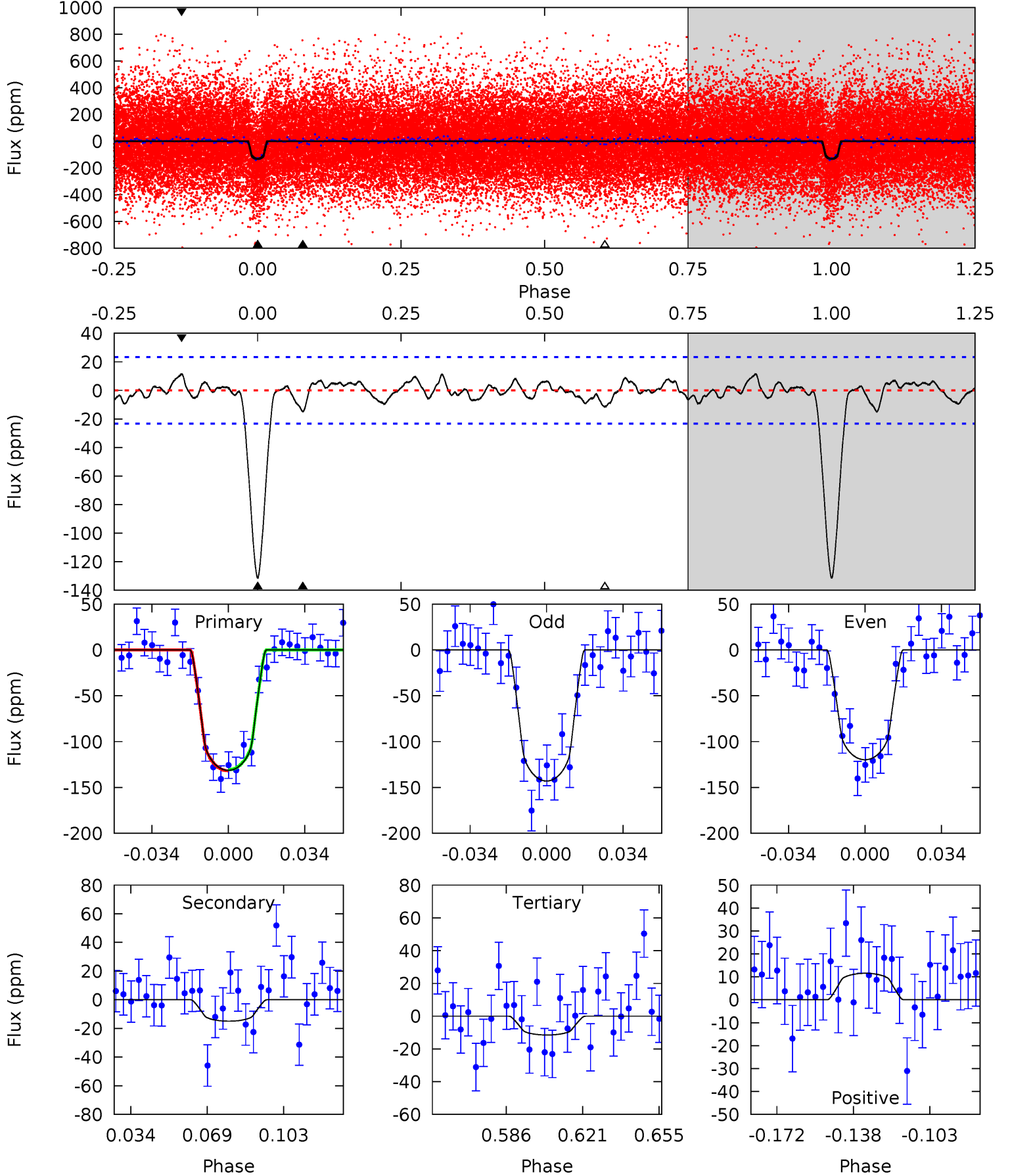
TCE 011288051-03 P= 3.410439 Days  $T_0=131.584341$  (BKJD)



# DV Model-Shift Uniqueness Test

011288051-03, P = 3.410478 Days, E = 128.166018 Days

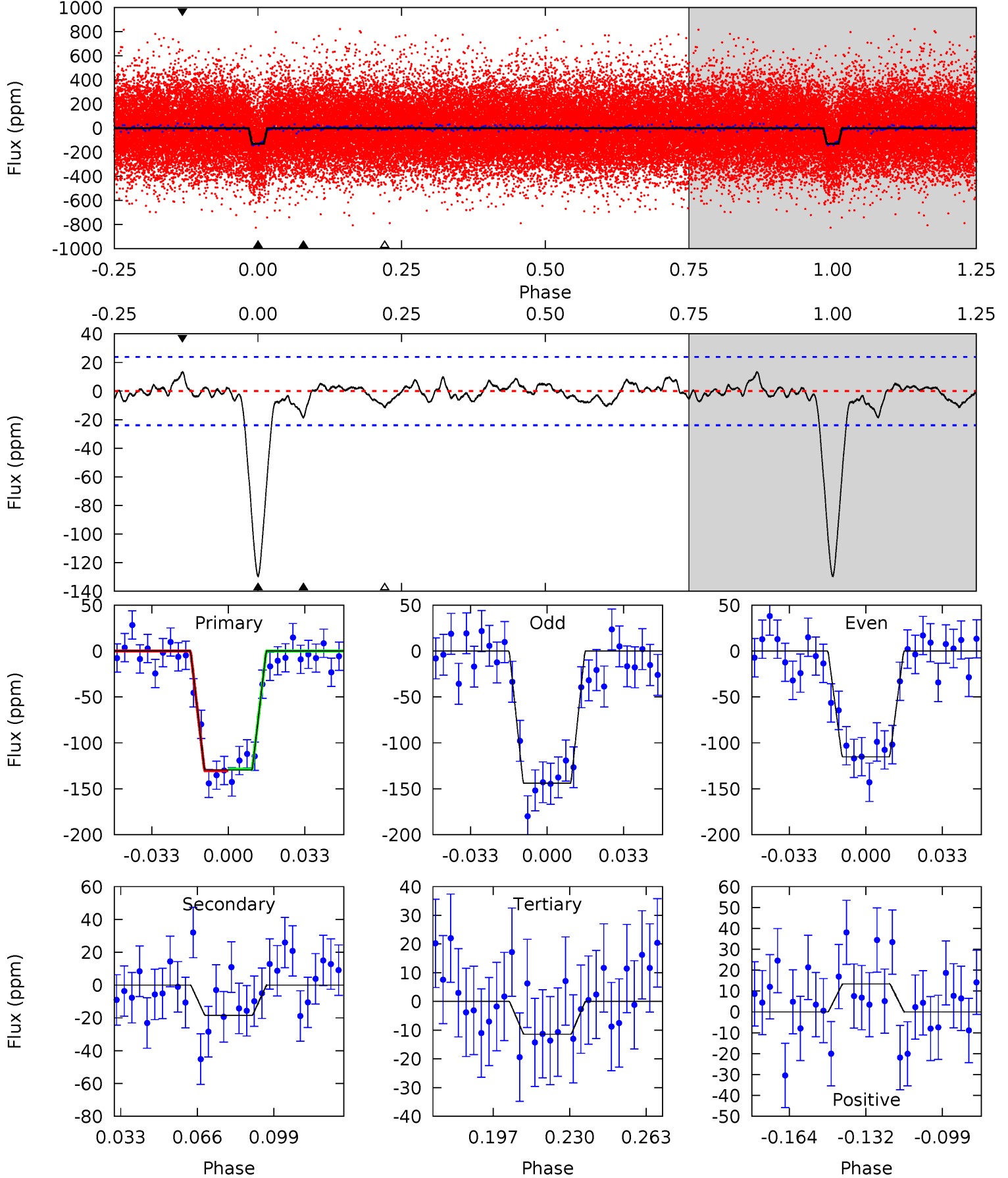
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	3.07	2.37	2.37	4.78	2.11	0.97	24.6	24.6	0.71	0.70	2.39	1.00	0.08	0.12



# Alt Model-Shift Uniqueness Test

011288051-03, P = 3.410439 Days, E = 128.173902 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
26.0	3.70	2.29	2.69	4.79	2.13	0.94	23.7	23.3	1.41	1.02	2.89	1.05	0.09	0.17



### Stellar Parameters For KIC 011288051

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4983^{+100}_{-100}$	$4.660^{+0.017}_{-0.052}$	$-0.440^{+0.150}_{-0.150}$	$0.651^{+0.044}_{-0.024}$	$0.715^{+0.031}_{-0.052}$	$3.648^{+0.287}_{-0.590}$
	+2%/-2%	+0%/-1%	+34%/-34%	+7%/-4%	+4%/-7%	+8%/-16%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 011288051-03 / KOI 0241.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-15 \pm 5$	$0.96^{+0.42}_{-0.44}$	$1256^{+30}_{-30}$	$3229^{+693}_{-383}$	$14^{+32}_{-8}$
Alt.	$-18 \pm 5$	$0.83^{+0.42}_{-0.39}$	$1257^{+31}_{-29}$	$3494^{+842}_{-470}$	$23^{+57}_{-14}$

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

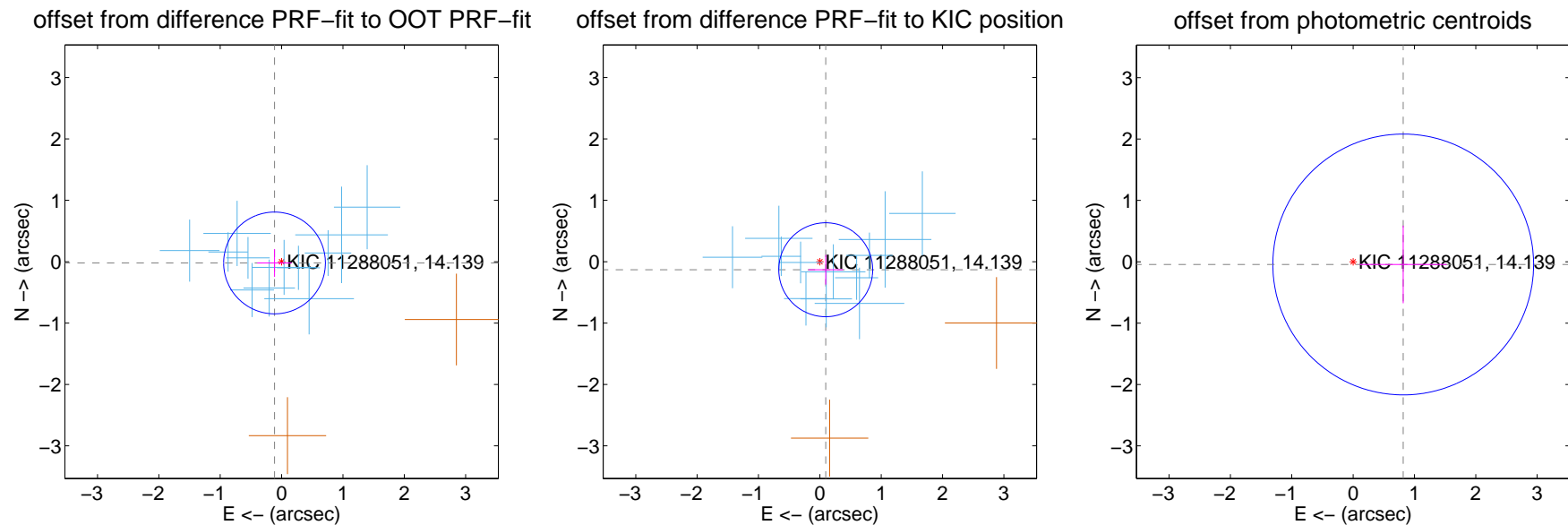
## DV Centroid Data

Supplemental centroid analysis for 011288051-03. Kepler magnitude: 14.14. Transit SNR 20.93

There are 12 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

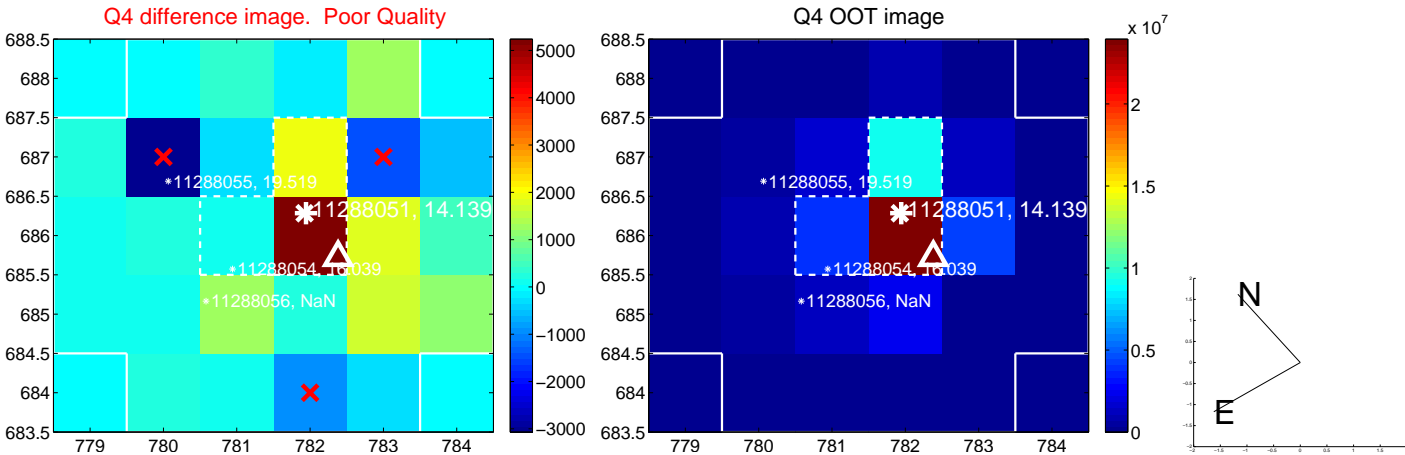
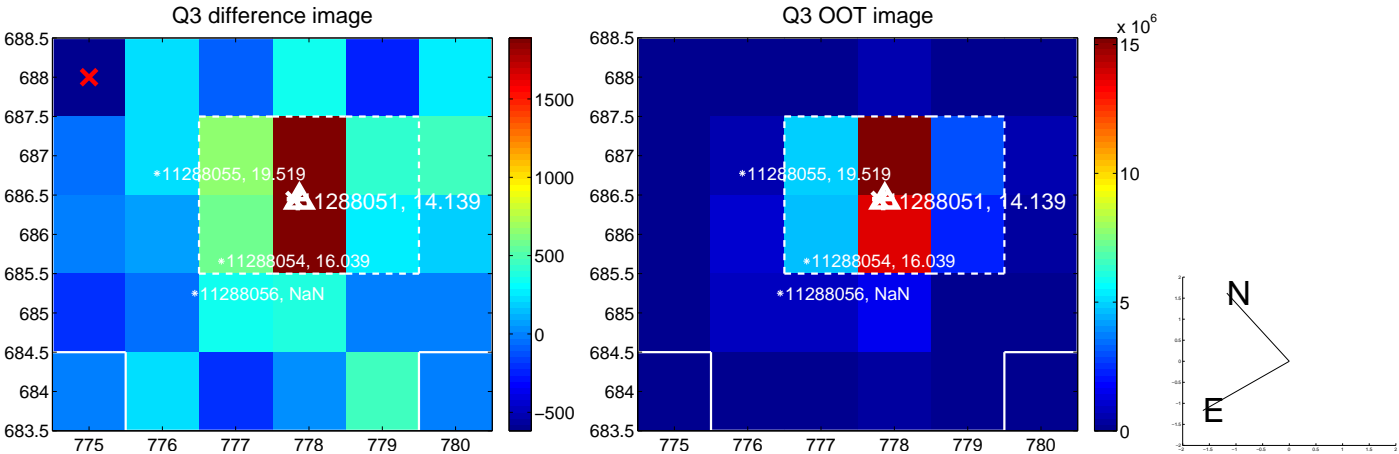
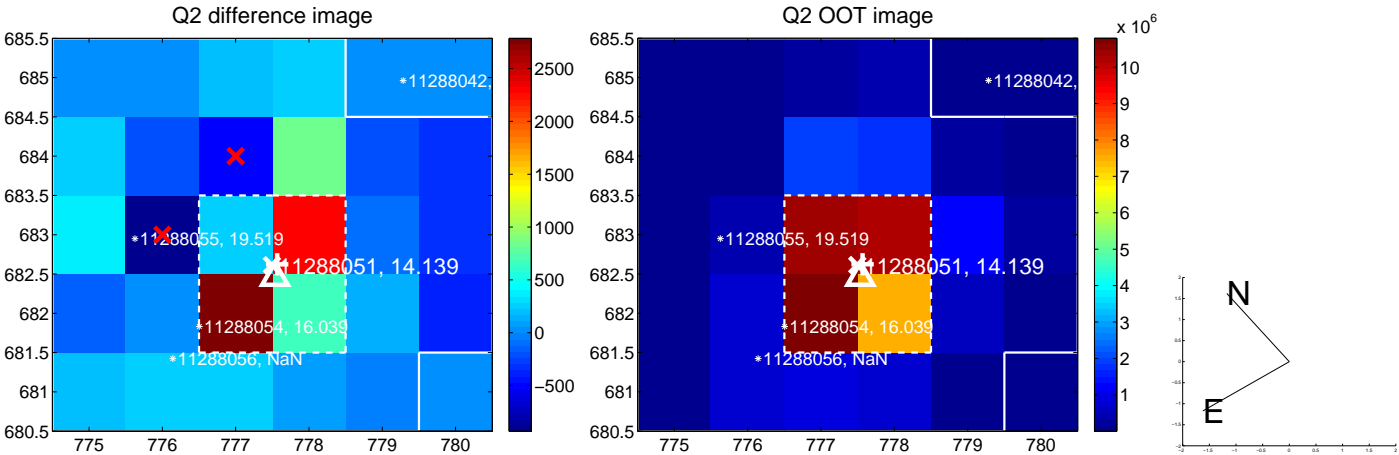
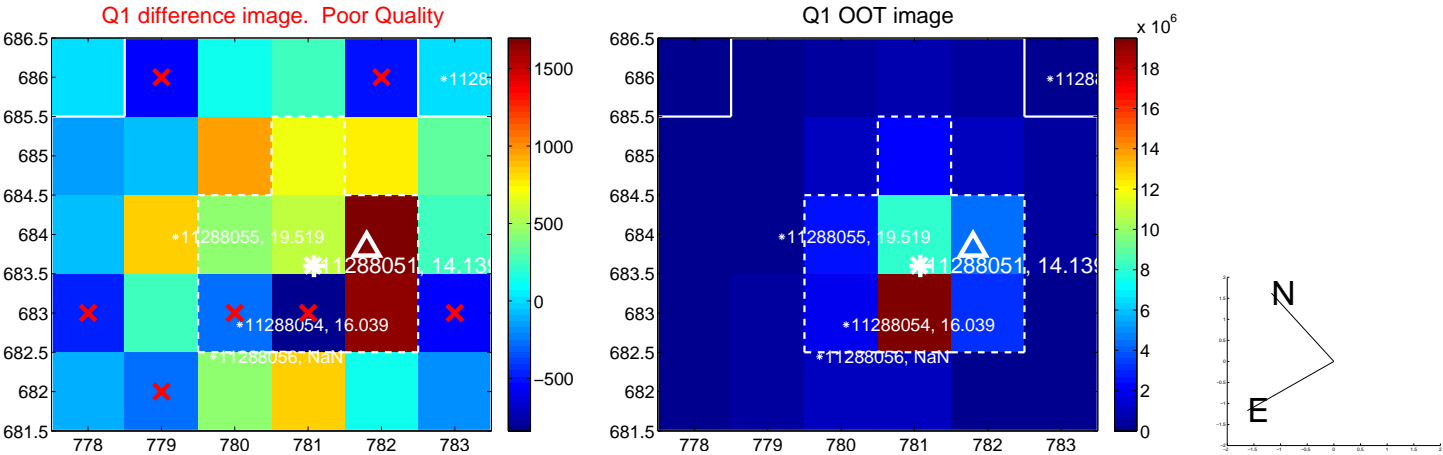
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.117 \pm 0.276$	0.42	$0.115 \pm 0.280$	$-0.021 \pm 0.225$
PRF-fit source offset from KIC position	$0.162 \pm 0.255$	0.64	$-0.096 \pm 0.282$	$-0.131 \pm 0.243$
photometric centroid source offset	$0.82 \pm 0.71$	1.15	$-0.82 \pm 0.71$	$-0.04 \pm 0.63$



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.

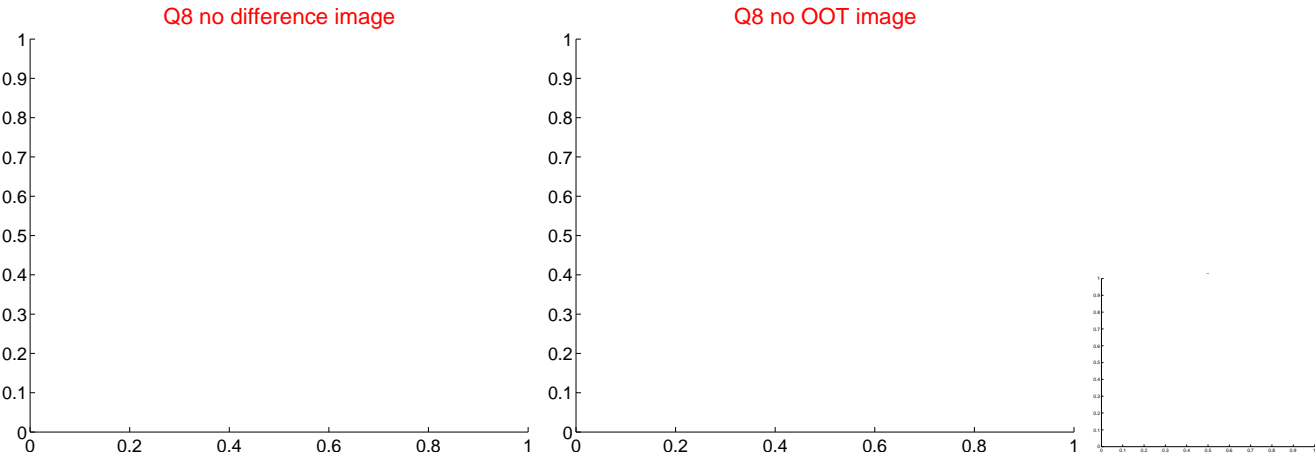
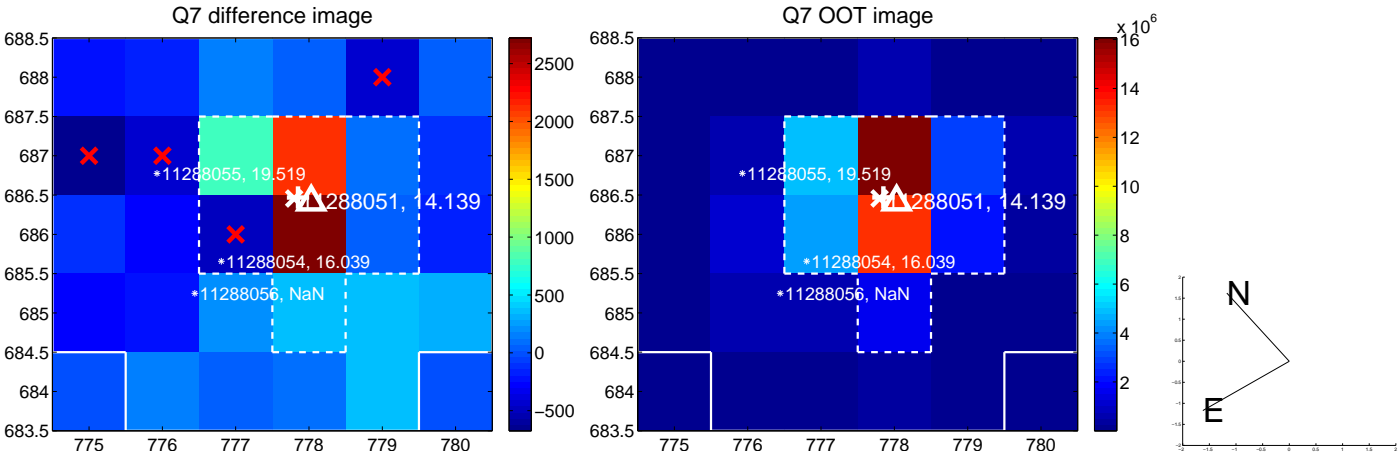
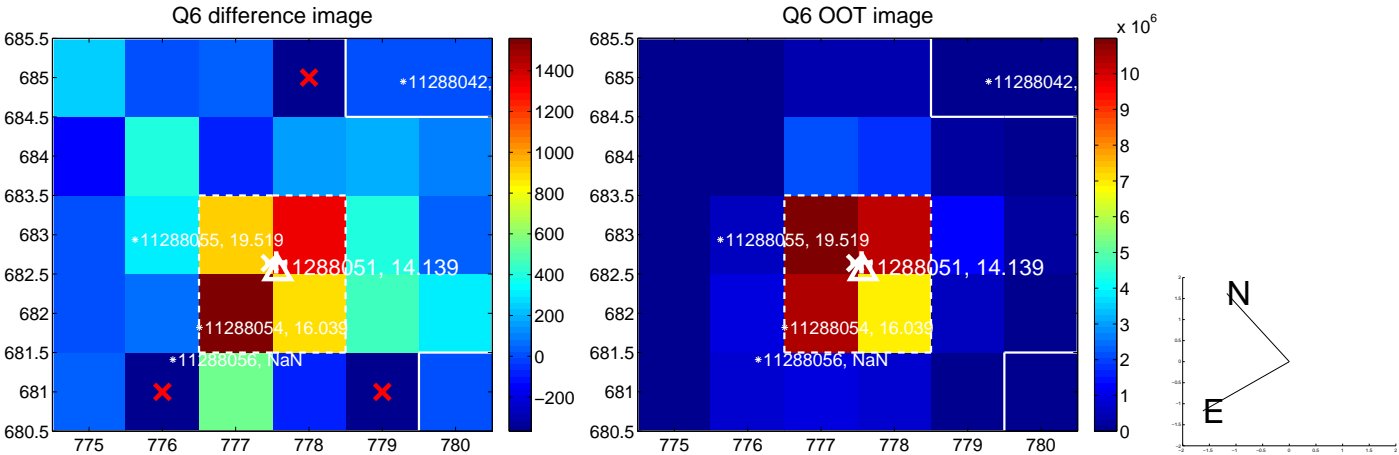
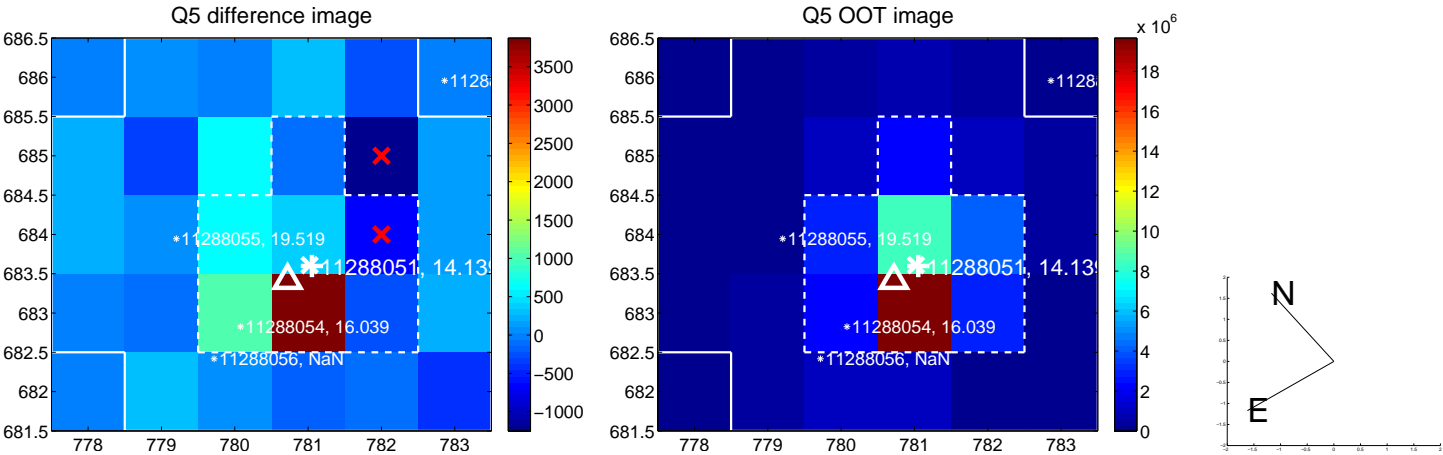


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

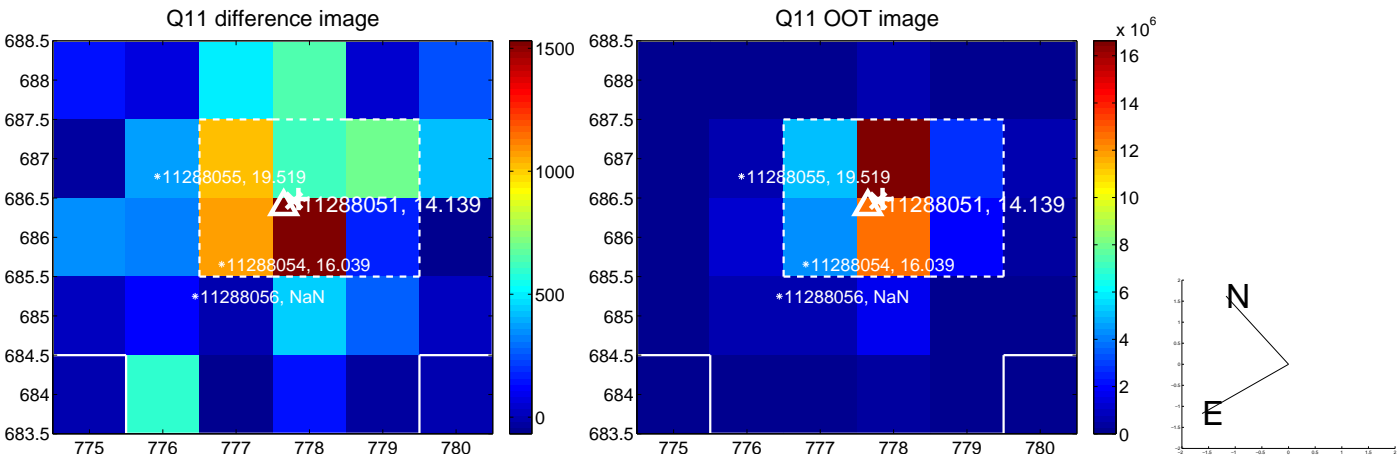
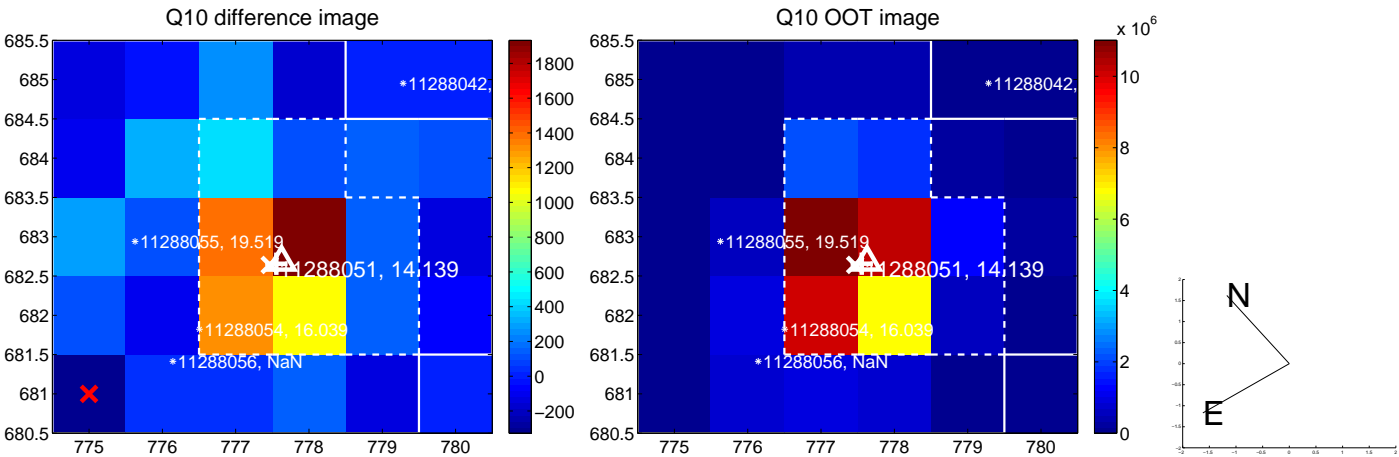
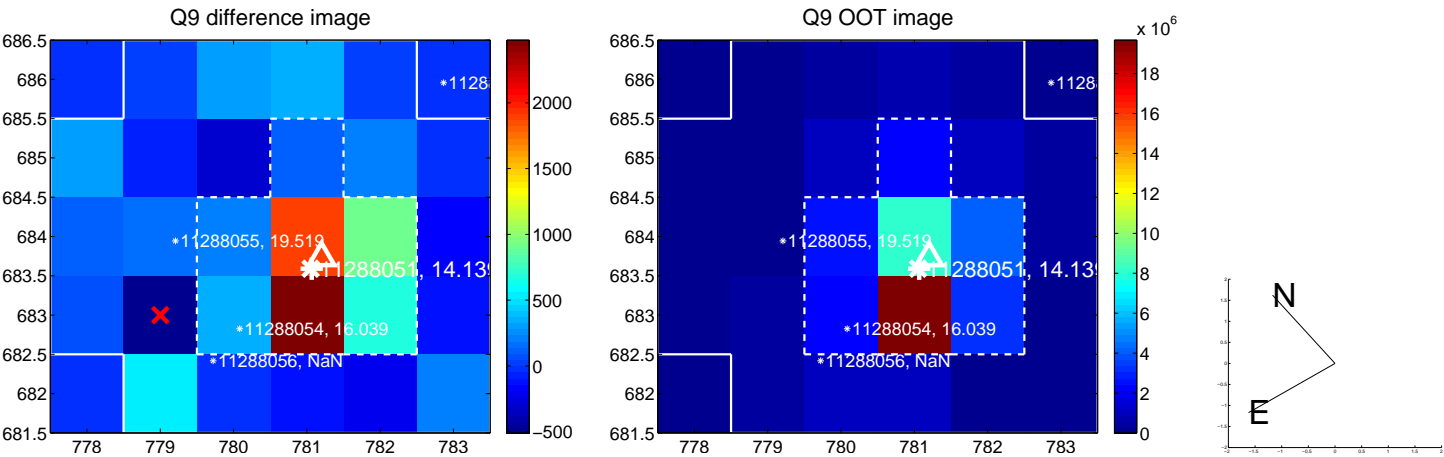




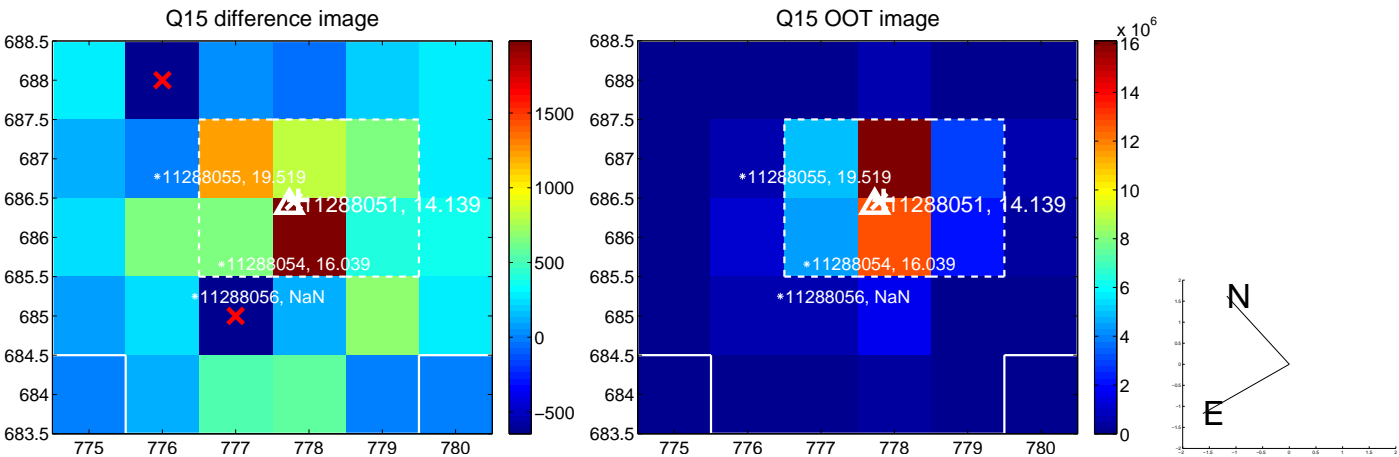
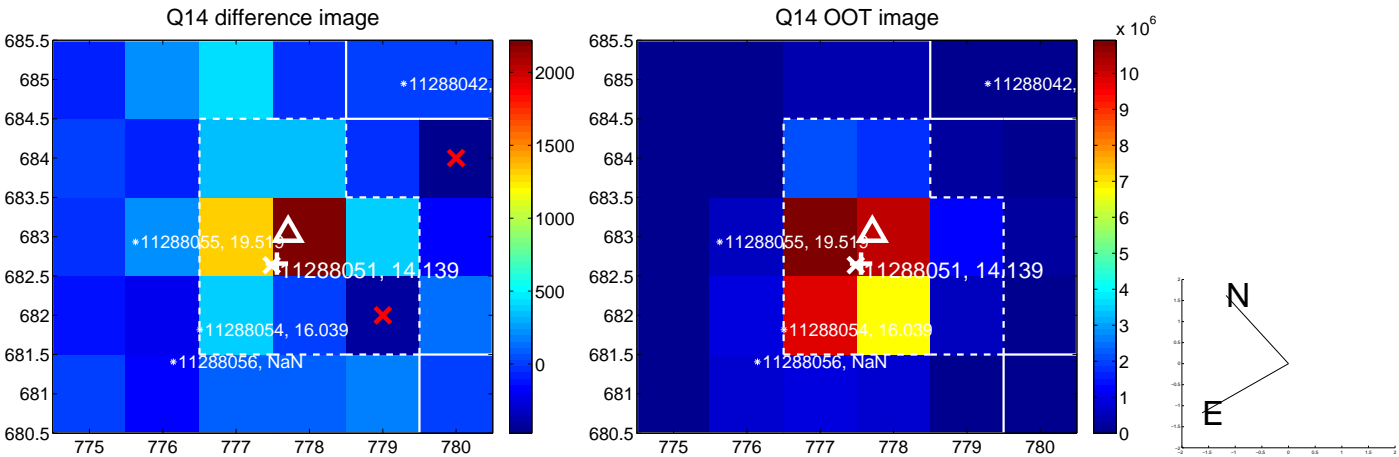
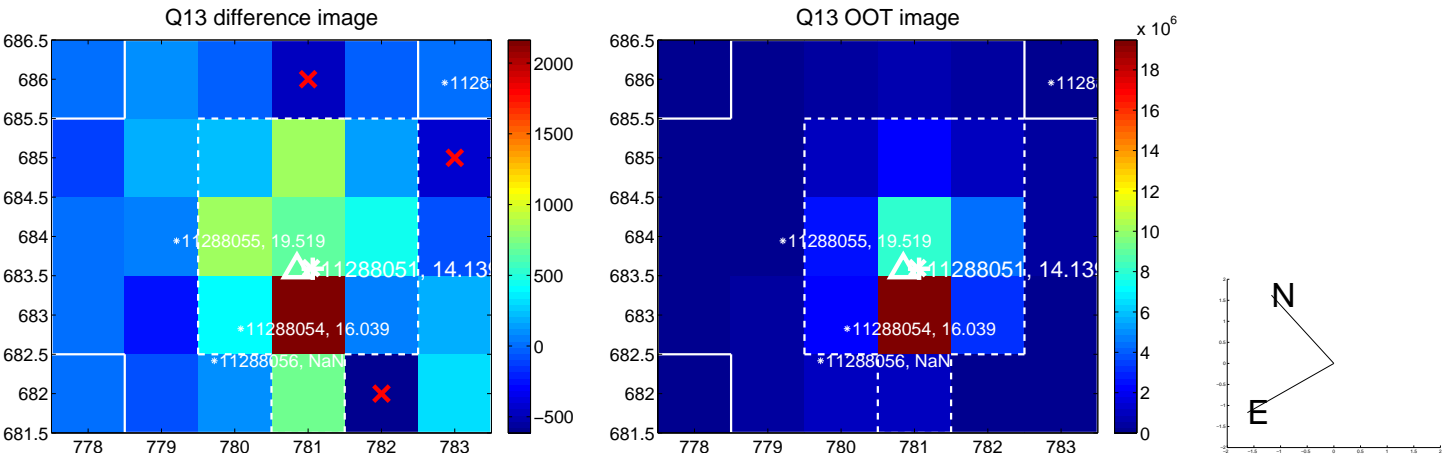
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



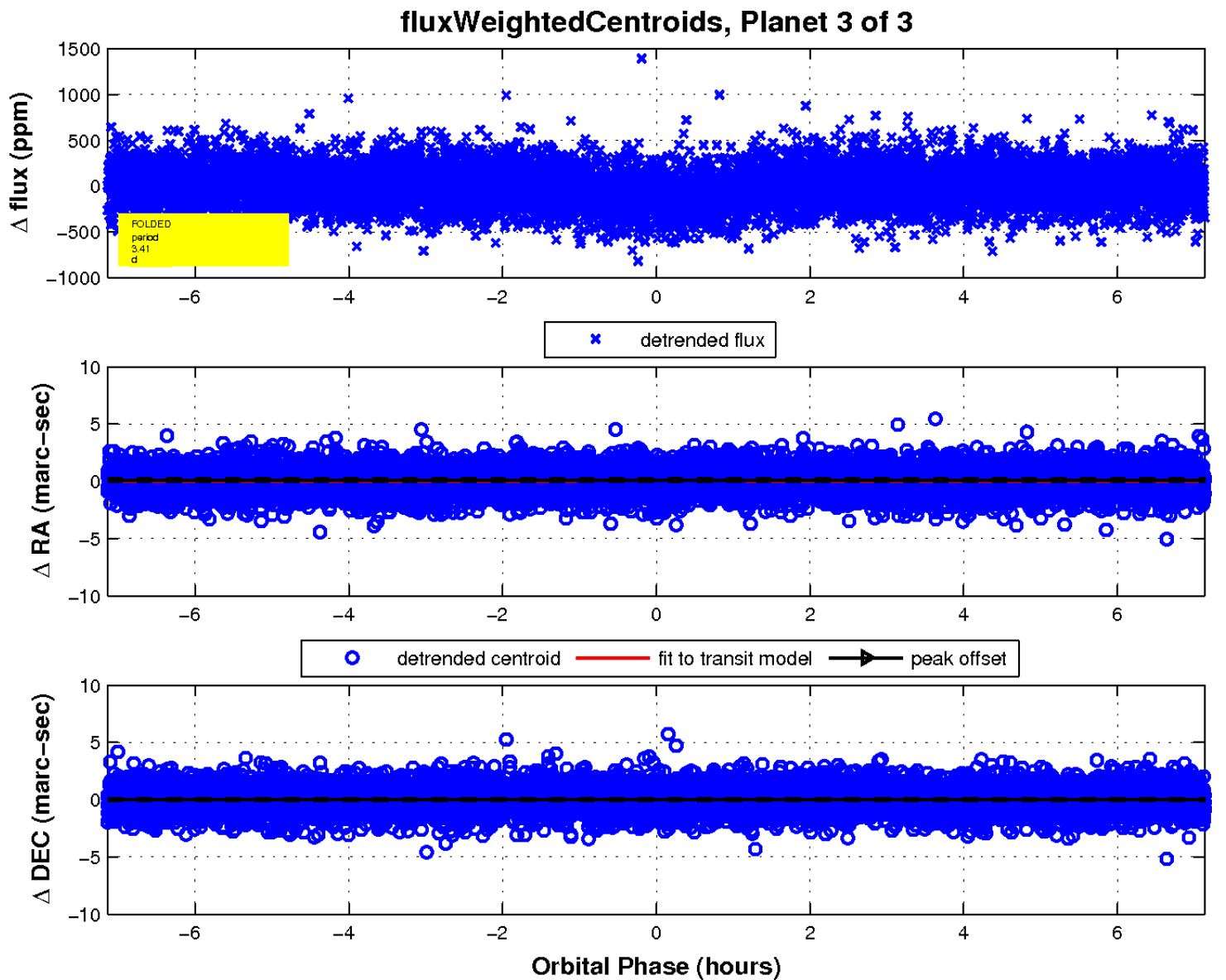
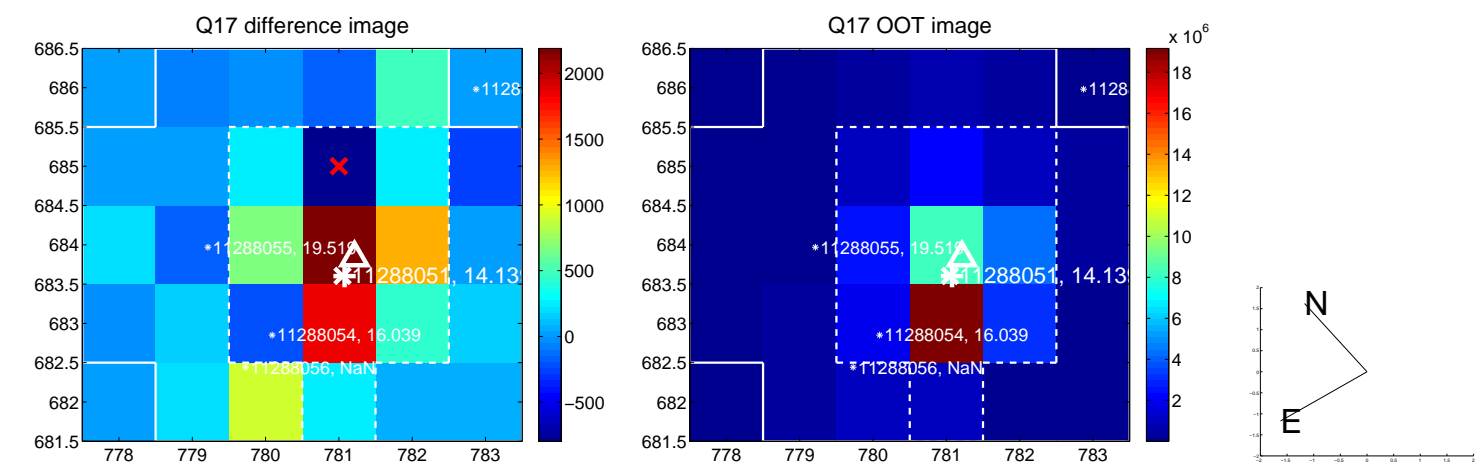
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

