

# KIC 008081389

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008081389-01	OBS	6958.01	1.489462	131.993522	414735.1	5.261	19628.6	9315.7	1.62	6962	140.57	6952.39
008081389-02	OBS	No	1.489428	132.750630	72332.8	3.500	6380.4	-1.0	1.62	6962	44.21	6952.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008081389-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008081389-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

**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.

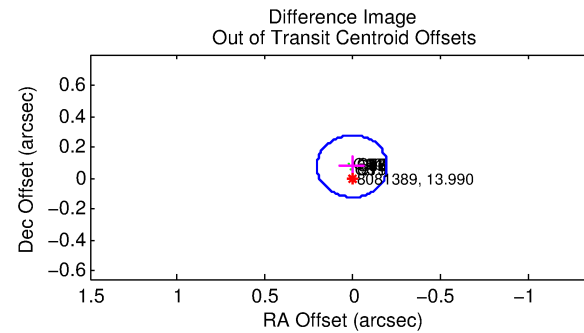
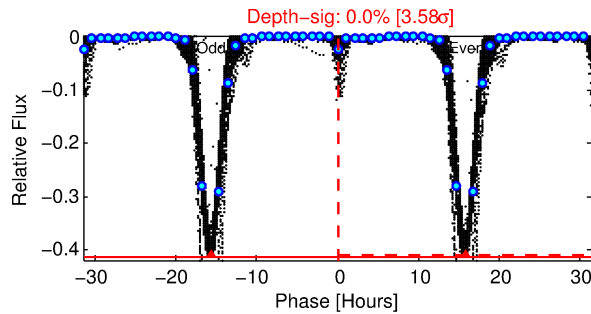
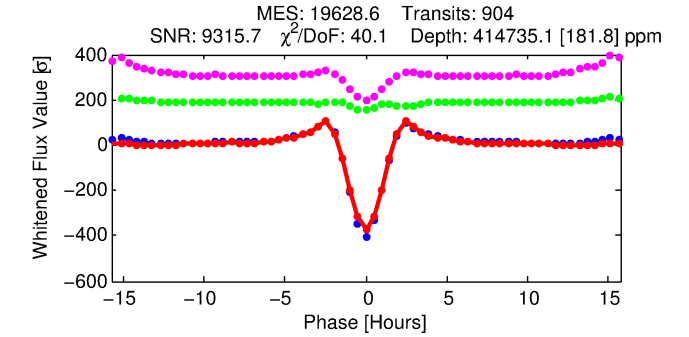
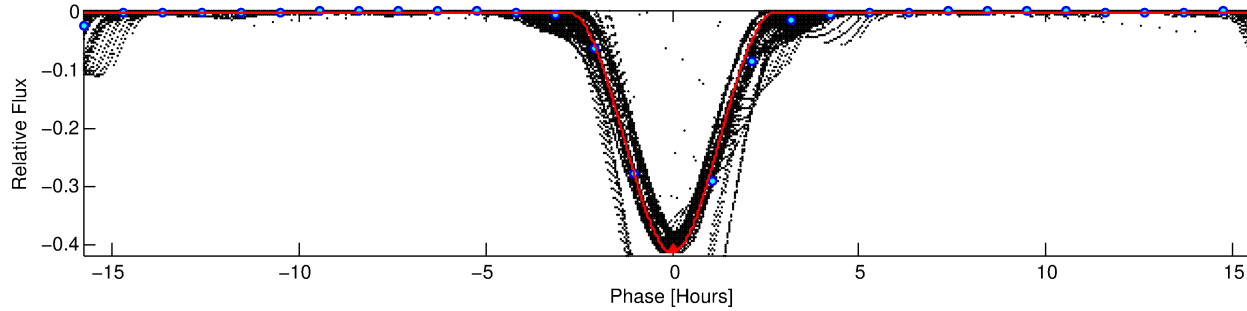
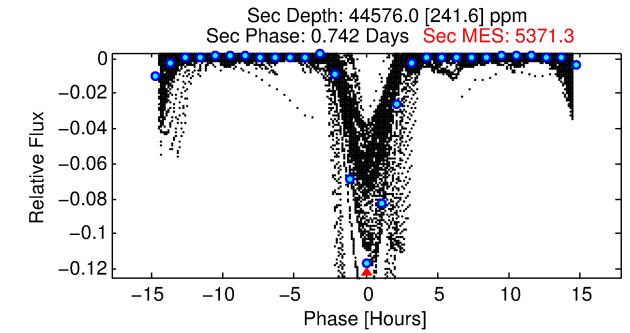
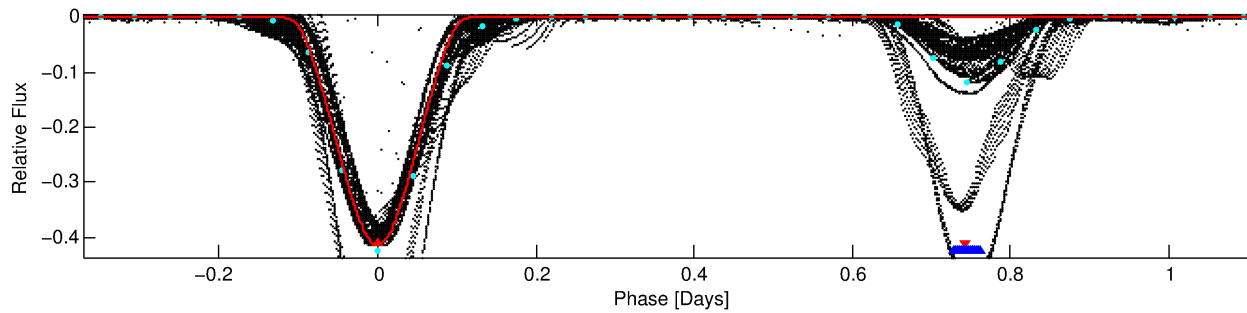
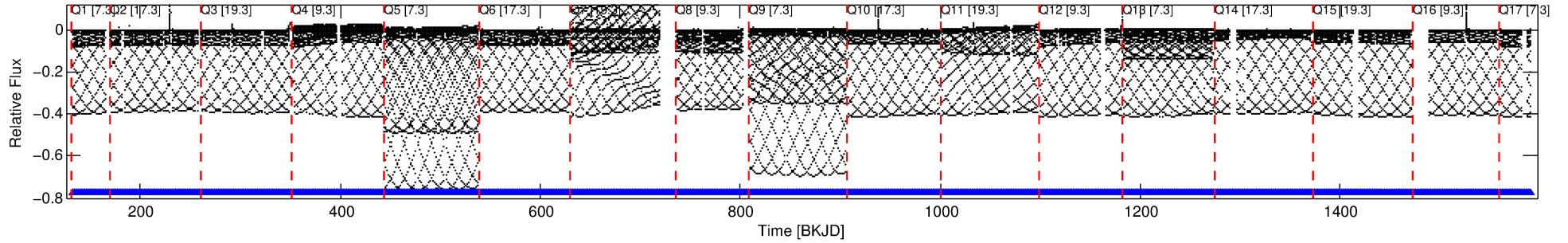
## Ephemeris Match Information For 008081389-01

No Significant Match Found

# DV One-Page Summary

KIC: 8081389 Candidate: 1 of 2 Period: 1.489 d  
KOI: K06958.01 Corr: 0.972

Kp: 13.99 R\*: 1.62 Rs Teff: 6962.0 K Logg: 4.15 Fe/H: -0.240



## DV Fit Results:

Period = 1.48946 [0.00000] d  
Epoch = 131.9935 [0.0000] BKJD  
Rp/R\* = 0.7952 [0.0030]  
a/R\* = 3.77 [0.01]  
b = 0.70 [0.00]  
Seff = 6952.39 [2813.86]  
Teff = 2328 [236] K  
Rp = 140.58 [44.26] Re  
a = 0.0282 [0.0073] AU  
Ag = 0.99 [0.36] [-0.04σ]  
Teffp = 3587 [149] K [4.52σ]

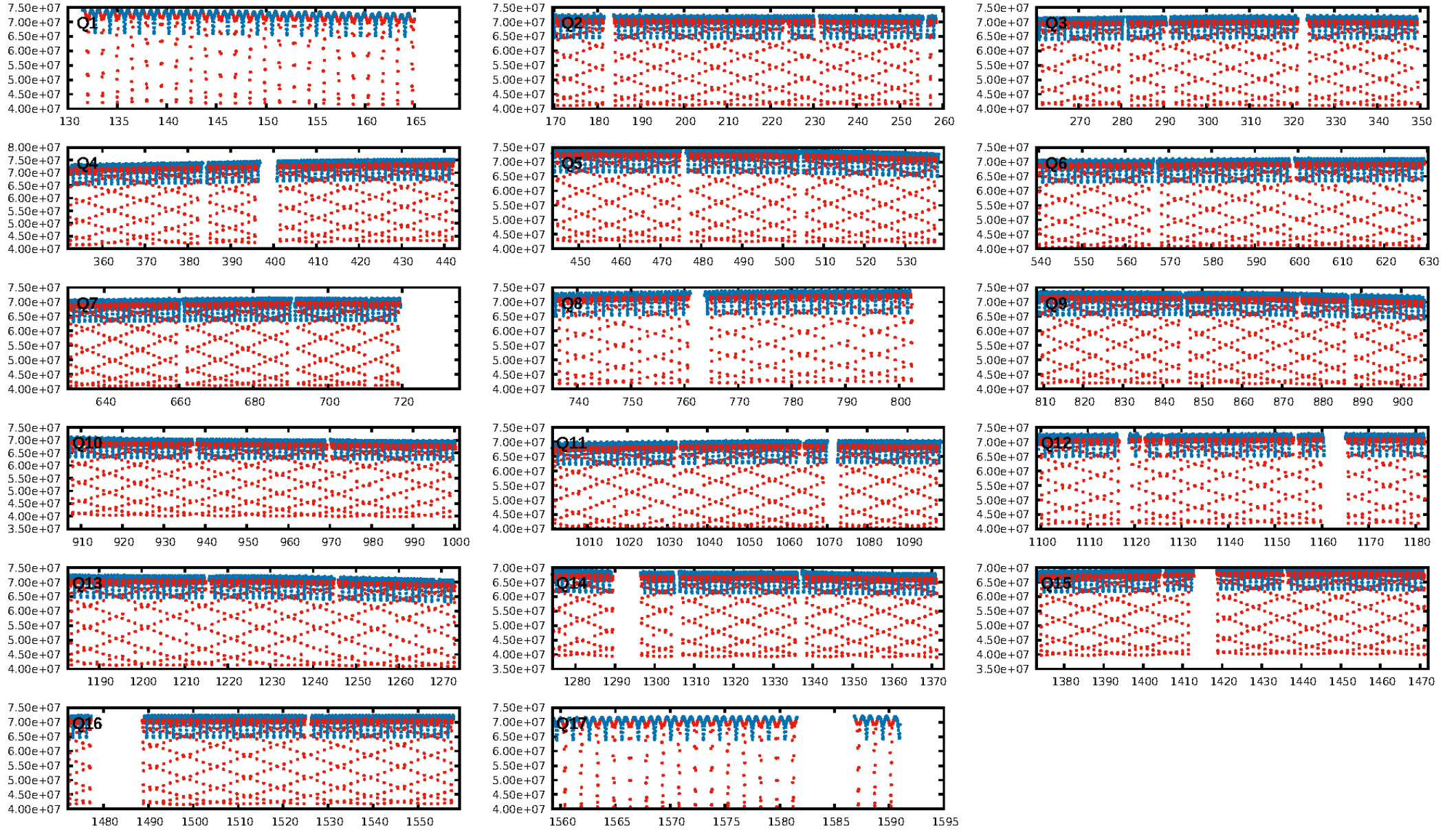
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [863/863]  
GhostDiagnostic-chr: 0.9896  
Centroid-sig: N/A  
Centroid-so: 0.056 arcsec [190.21σ]  
OotOffset-rm: 0.078 arcsec [1.16σ]  
KicOffset-rm: 0.120 arcsec [1.77σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

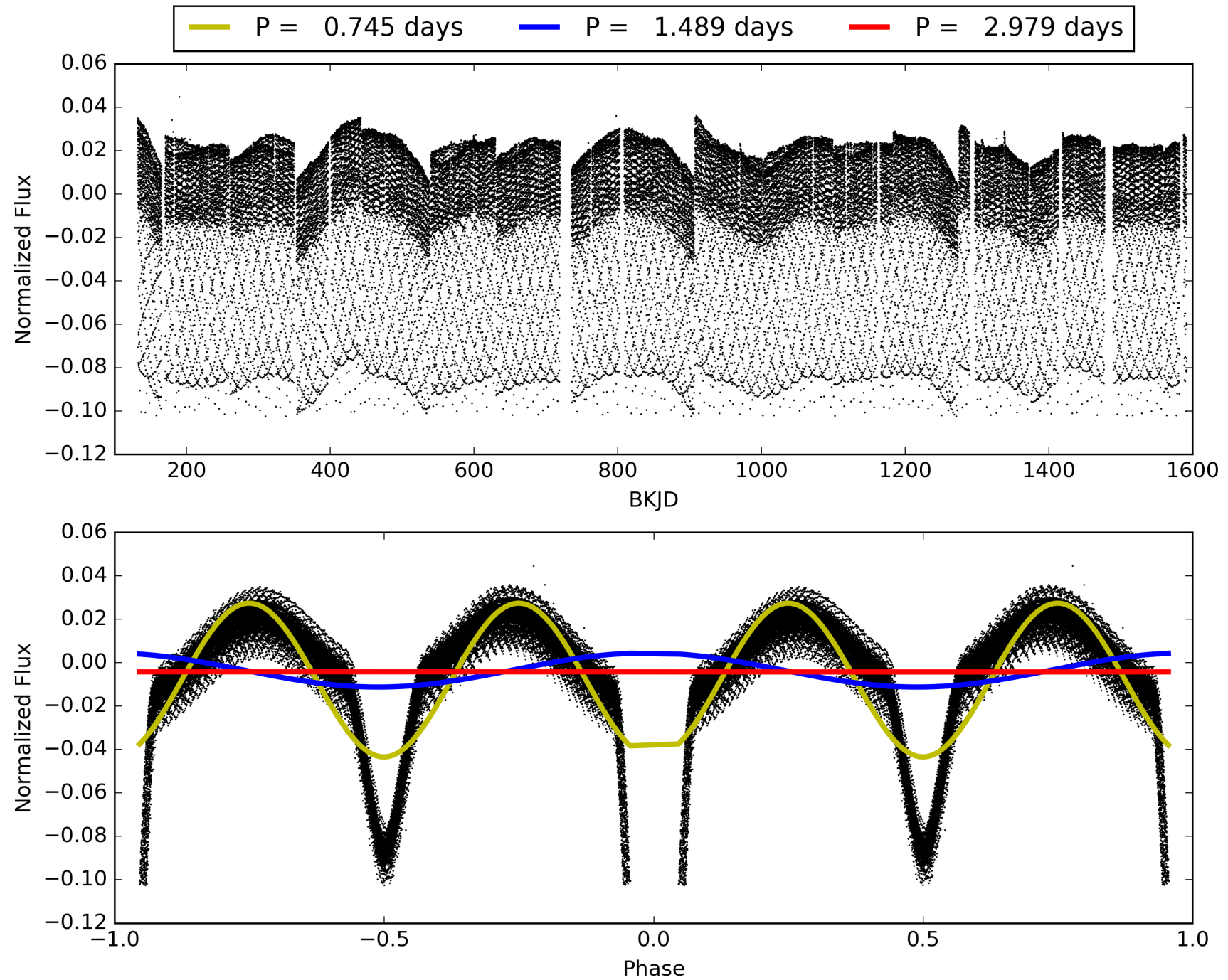
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:07:19 Z

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

# TCE 008081389-01, PDC Light Curves

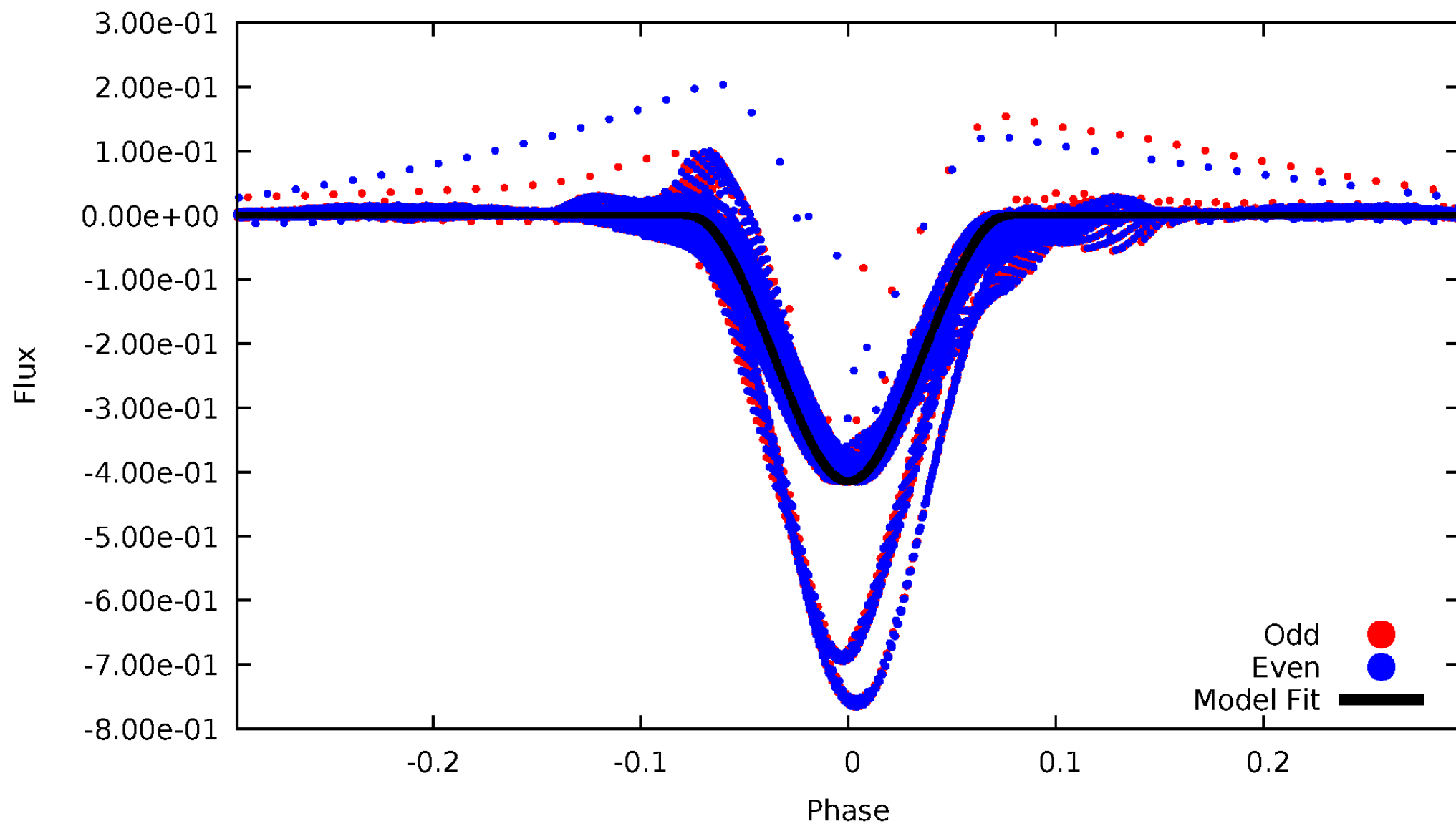


TCE 008081389-01



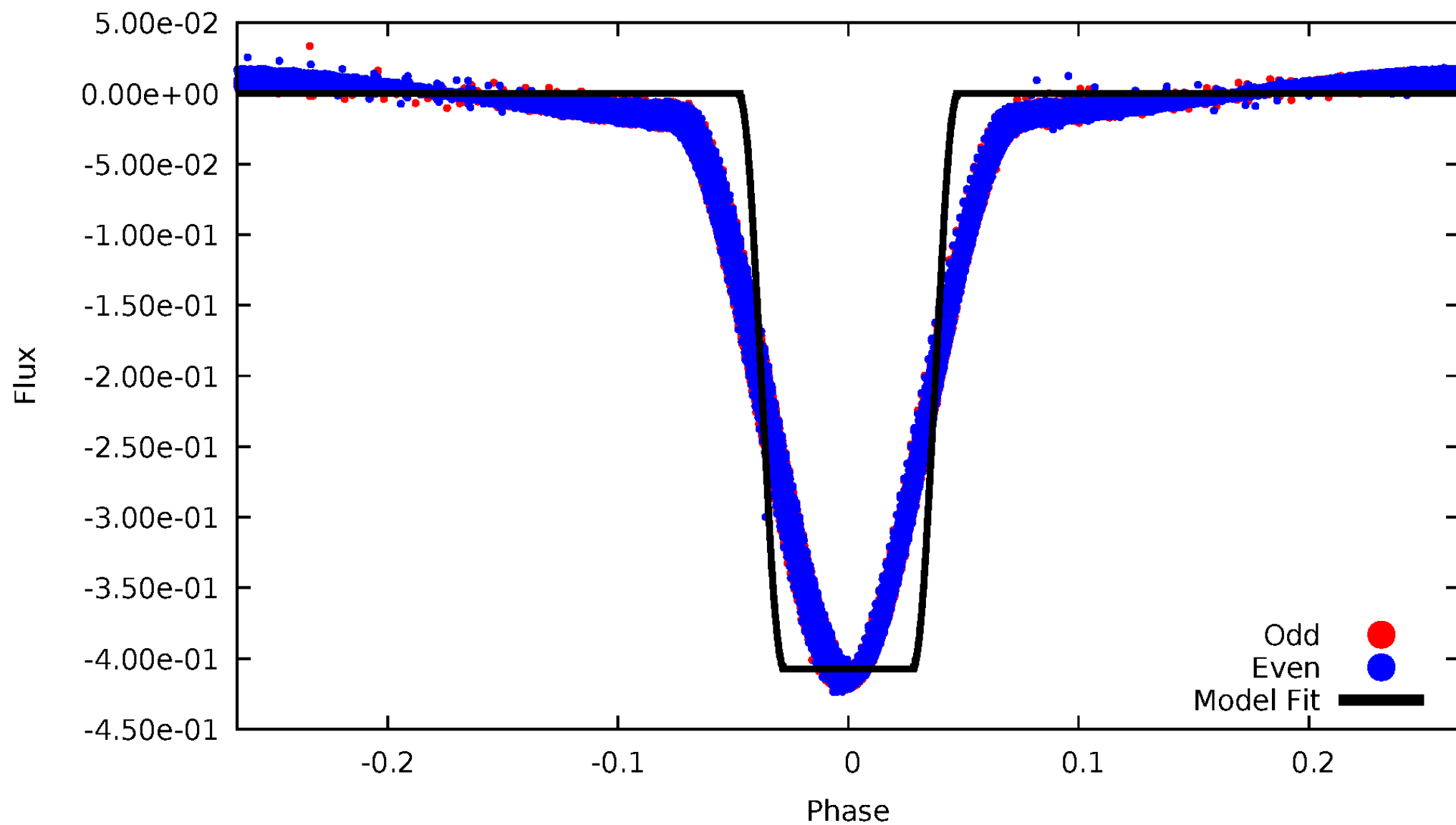
# DV Odd/Even

TCE 008081389-01



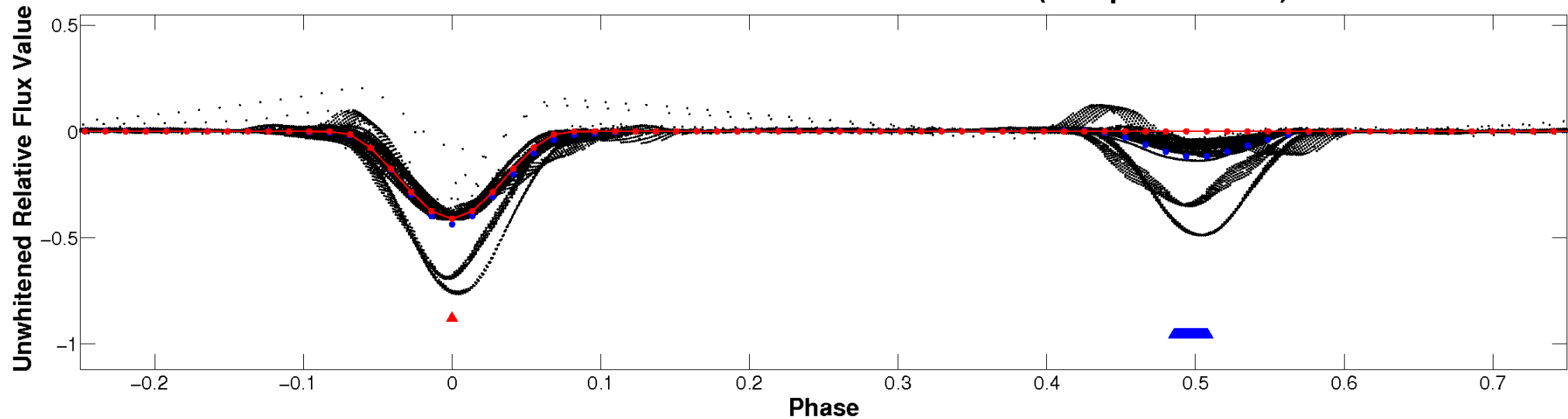
# ALT Odd/Even

TCE 008081389-01

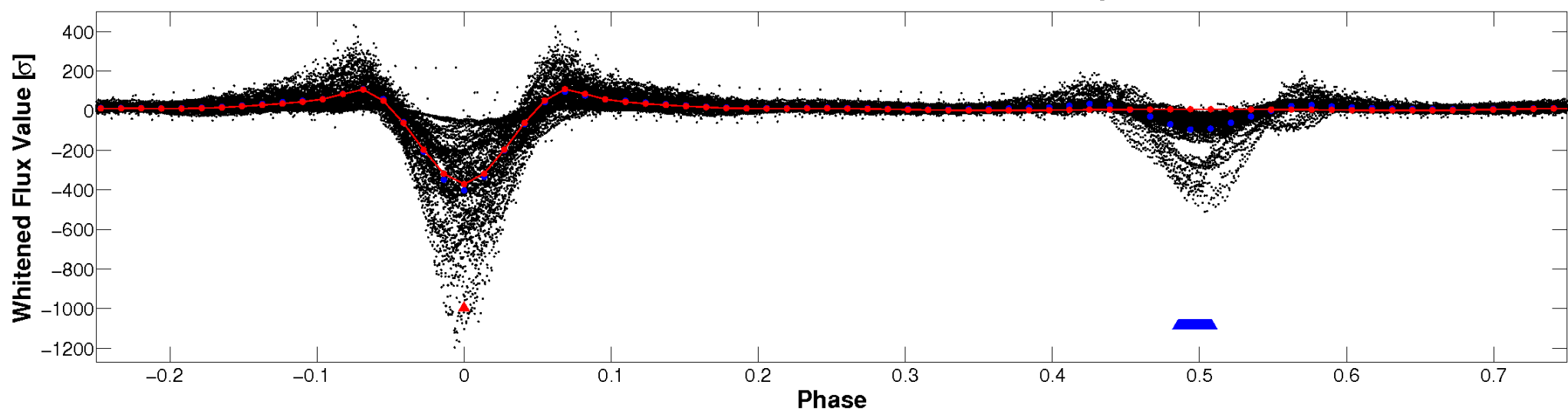


# Non-Whitened Vs. Whitened Light Curve

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



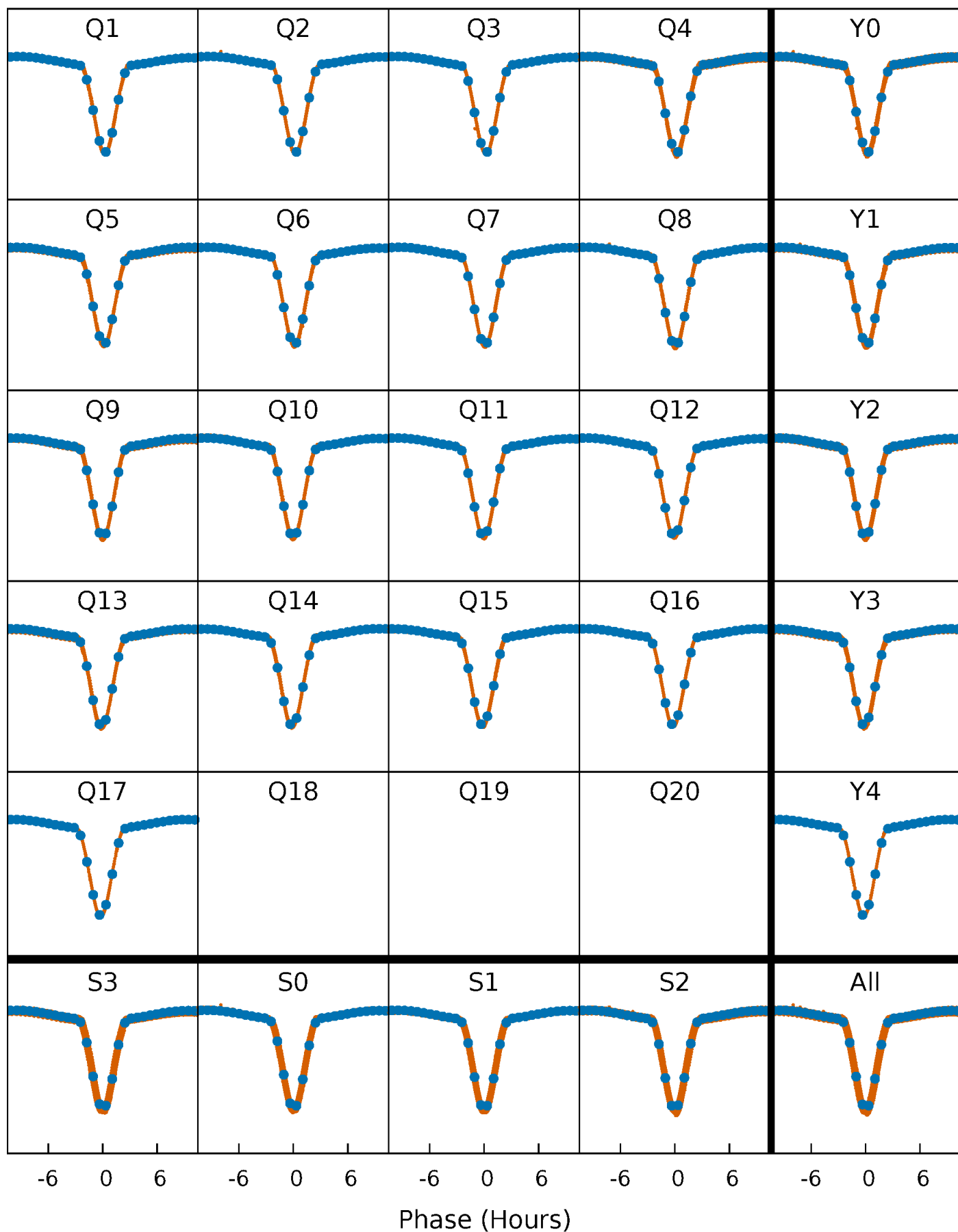
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

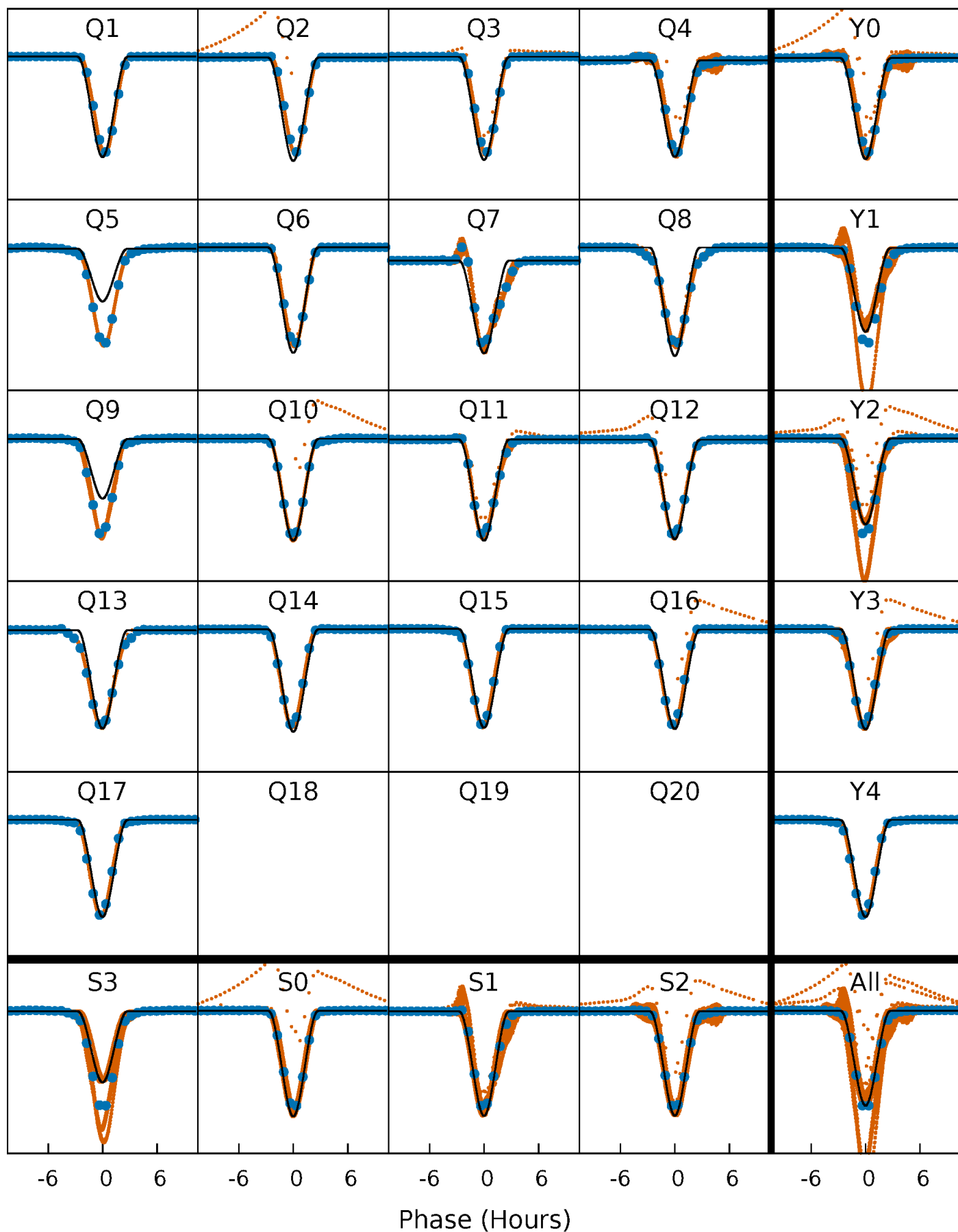
TCE 008081389-01   P= 1.489462 Days    $T_0=131.993522$  (BKJD)





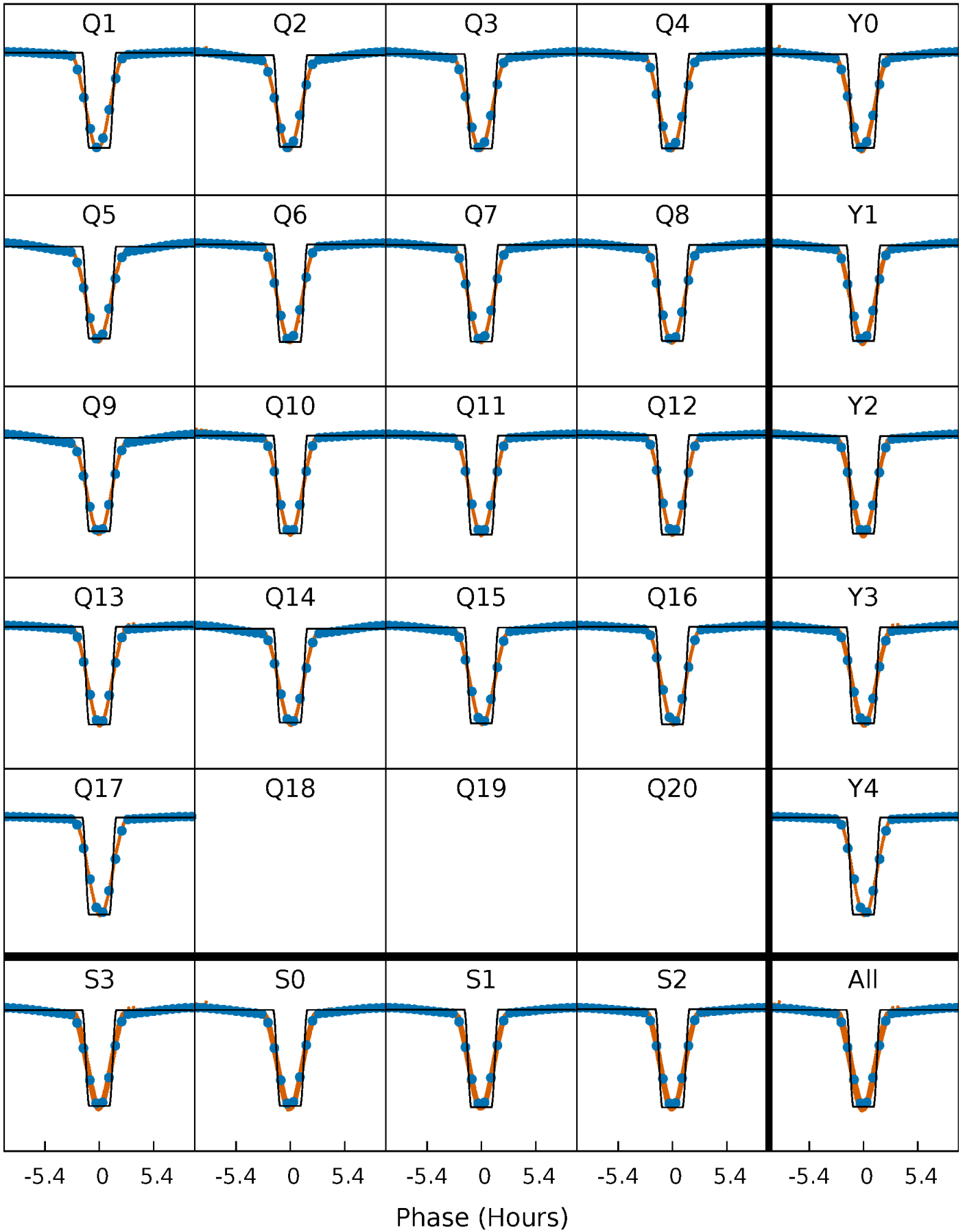
# DV Quarter-Phased Transit Curves

TCE 008081389-01 P= 1.489462 Days  $T_0=131.993522$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

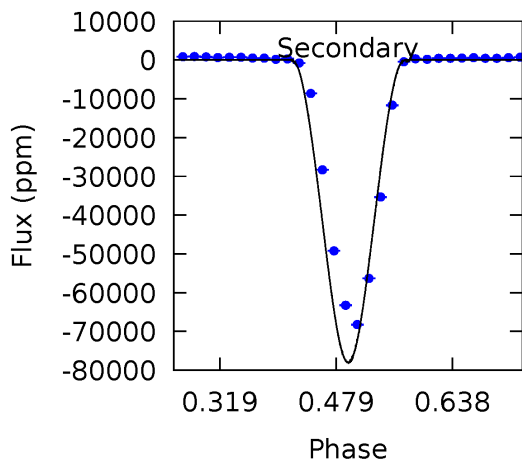
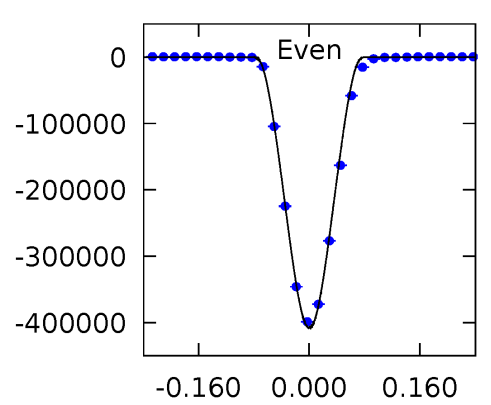
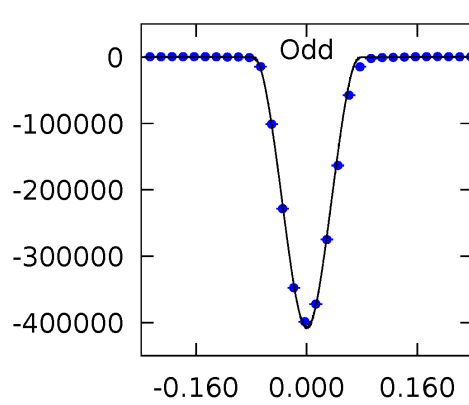
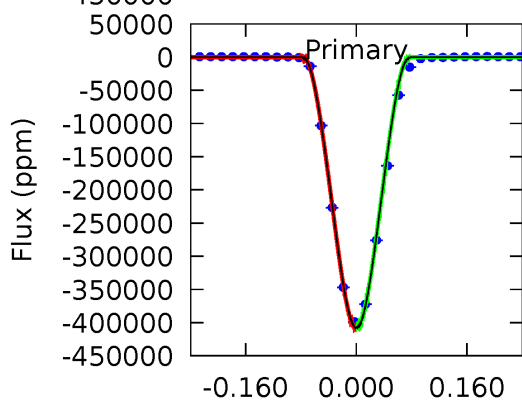
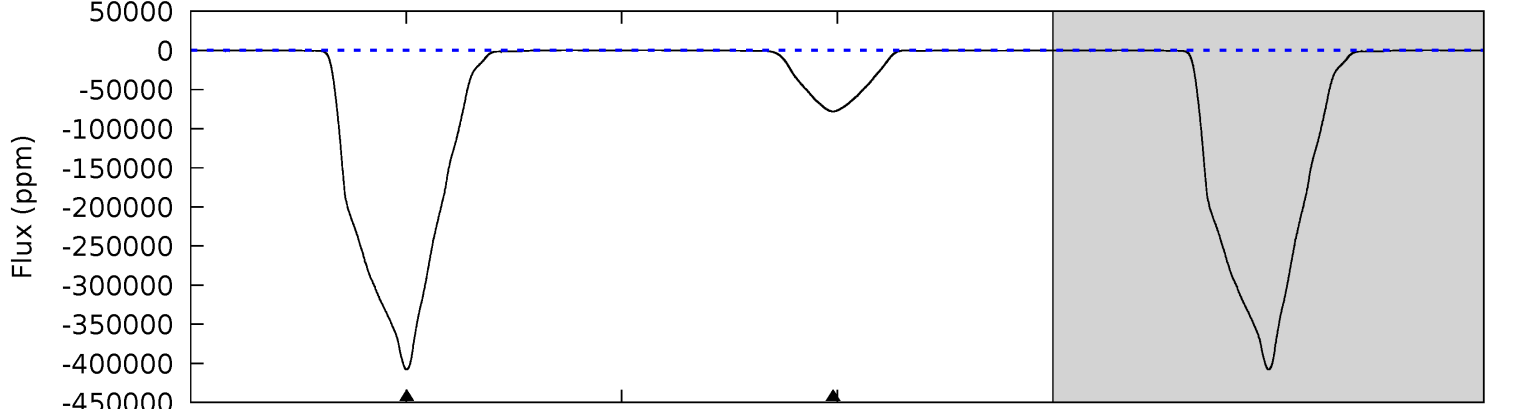
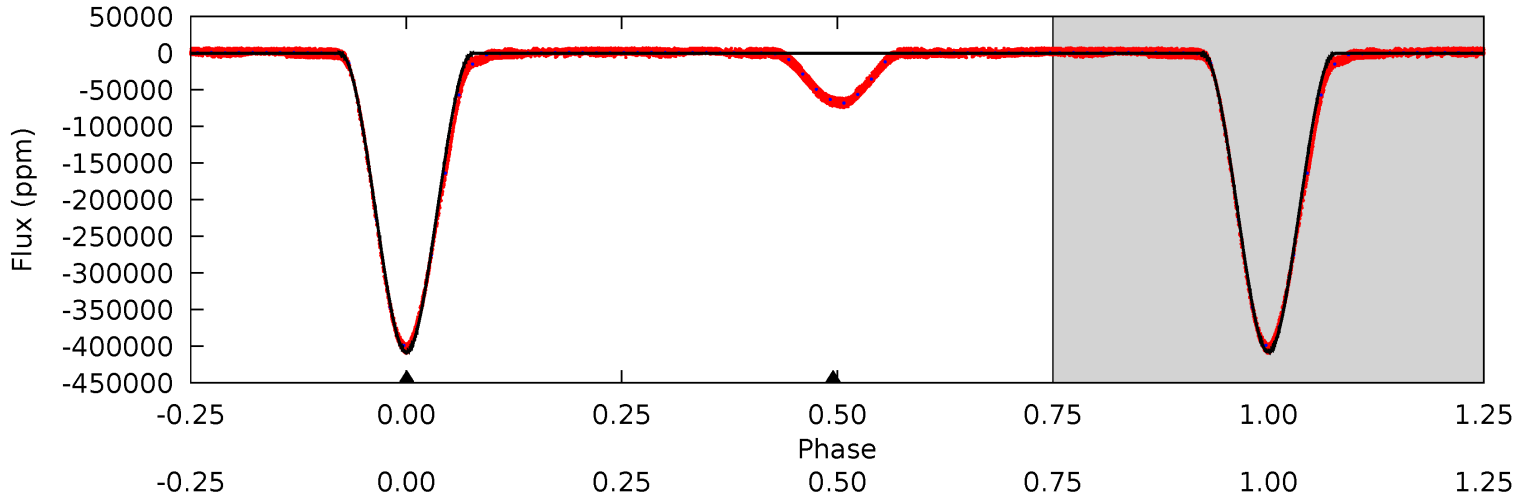
TCE 008081389-01   P= 1.489431 Days    $T_0=132.010423$  (BKJD)



# DV Model-Shift Uniqueness Test

008081389-01, P = 1.489462 Days, E = 130.504060 Days

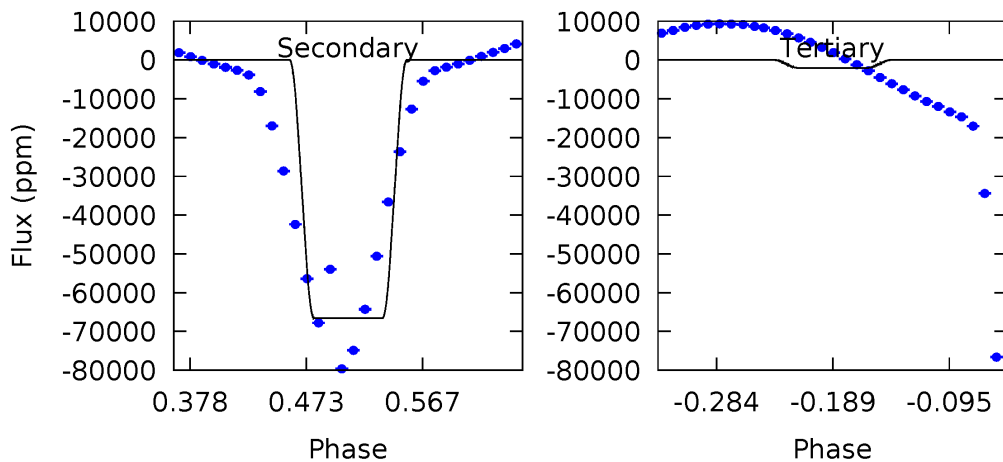
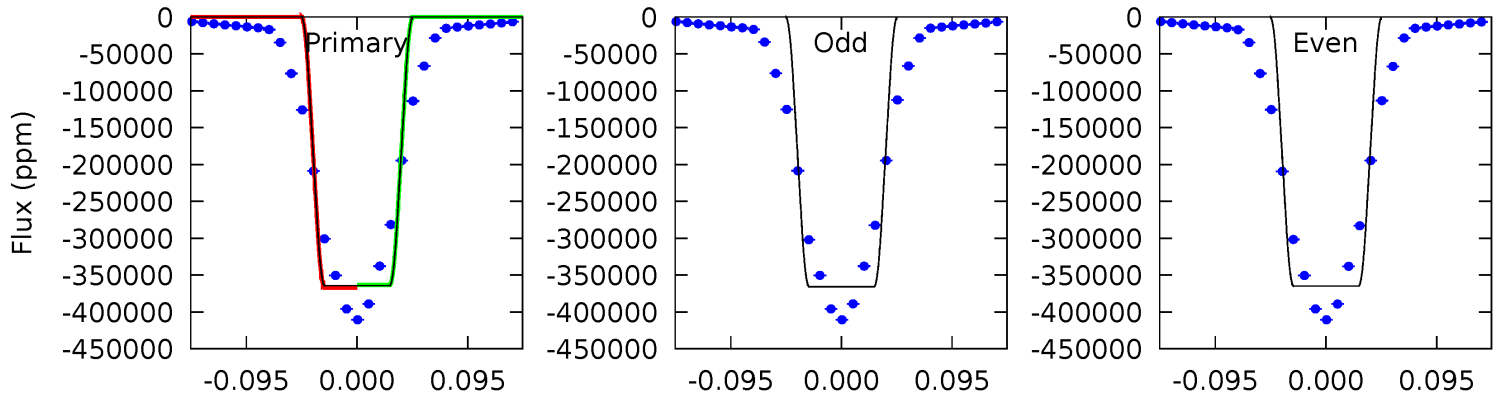
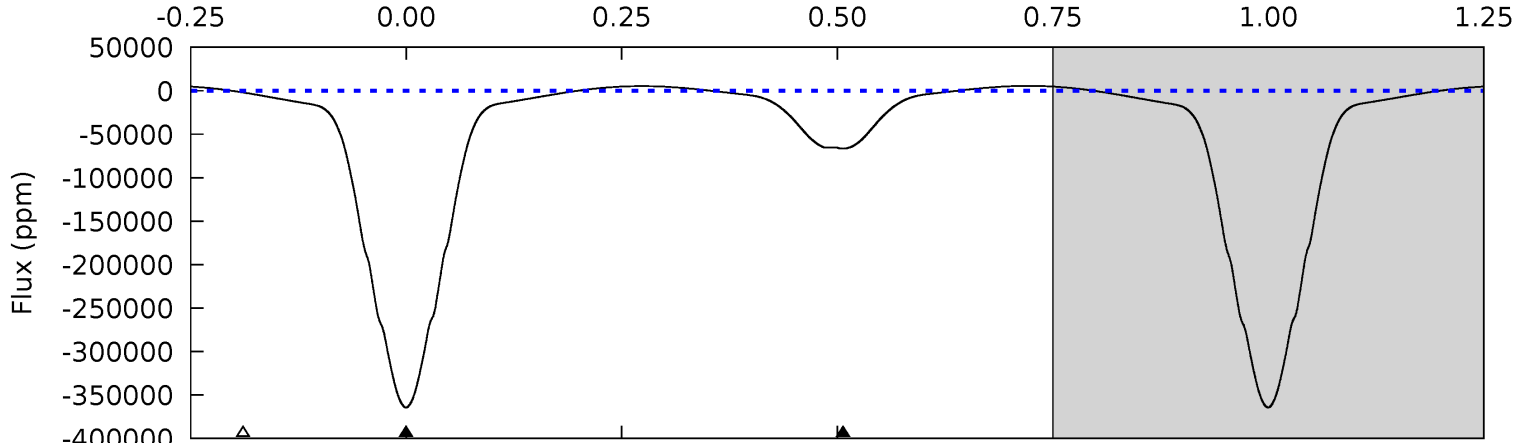
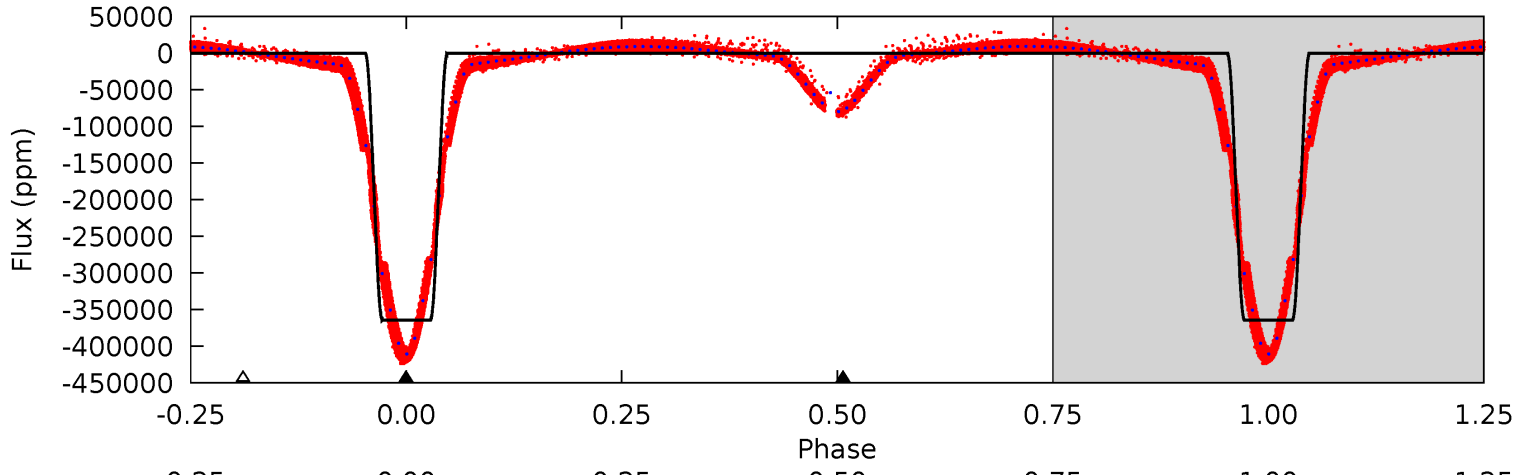
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11750	2247	0	0	4.47	1.41	4.32	11750	11750	2247	2247	5.83	1.10	0.00	0



# Alt Model-Shift Uniqueness Test

008081389-01, P = 1.489431 Days, E = 130.520992 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
3586	655.3	20.0	0	4.58	1.67	64.8	3566	3586	635.3	655.3	3.57	1.00	0.02	18.5



### Stellar Parameters For KIC 008081389

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6962^{+192}_{-288}$	$4.148^{+0.162}_{-0.198}$	$-0.240^{+0.250}_{-0.300}$	$1.620^{+0.510}_{-0.382}$	$1.352^{+0.202}_{-0.224}$	$0.448^{+0.411}_{-0.211}$
	+3%/-4%	+4%/-5%	+104%/-125%	+31%/-24%	+15%/-17%	+92%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008081389-01 / KOI 6958.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-78000 \pm 35$	$143.50^{+21.29}_{-18.40}$	$3276^{+243}_{-240}$	$4235^{+100}_{-127}$	$1.800^{+0.520}_{-0.434}$
Alt.	$-66579 \pm 102$	$113.83^{+19.47}_{-14.13}$	$3249^{+250}_{-222}$	$4503^{+97}_{-152}$	$2.393^{+0.681}_{-0.591}$

$T_{max}$  = 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

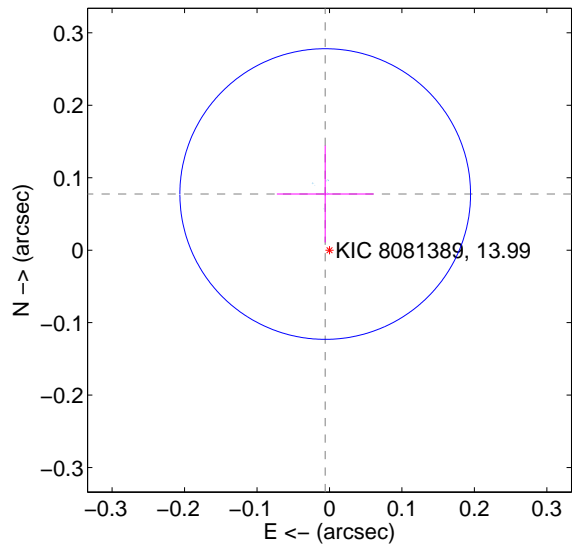
Supplemental centroid analysis for 008081389-01. Kepler magnitude: 13.99. Transit SNR 9315.71

There are 17 quarters with good PRF difference image offsets

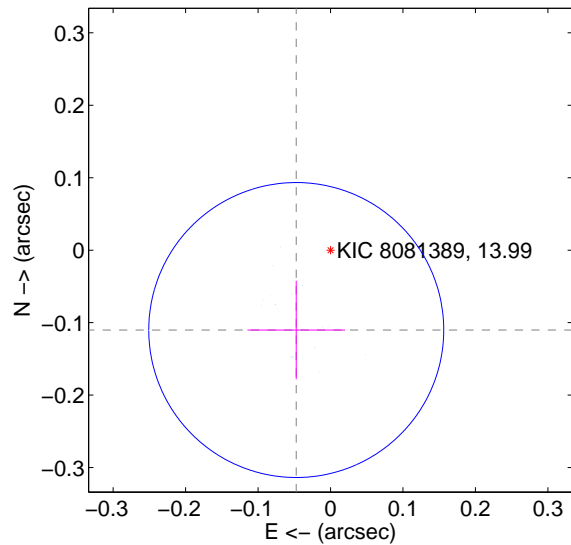
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.078 \pm 0.067$	1.16	$0.006 \pm 0.067$	$0.077 \pm 0.067$
PRF-fit source offset from KIC position	$0.120 \pm 0.068$	1.77	$0.047 \pm 0.067$	$-0.110 \pm 0.068$
photometric centroid source offset	$0.06 \pm 0.00$	190.21	$0.01 \pm 0.00$	$-0.06 \pm 0.00$

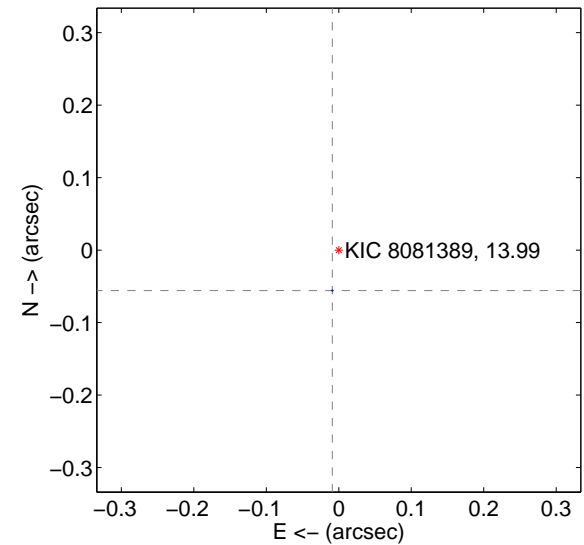
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

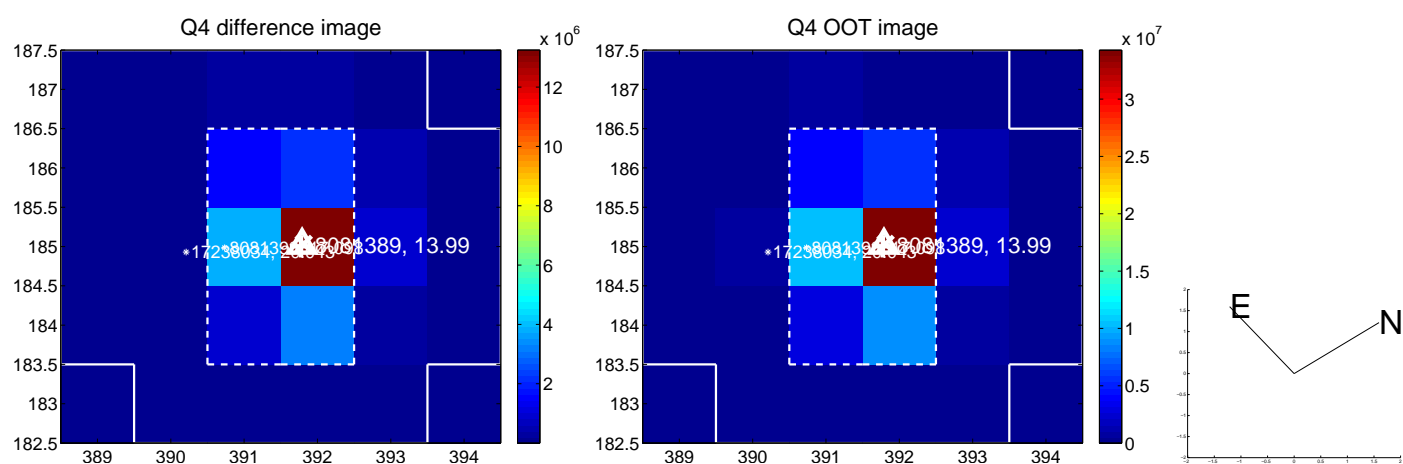
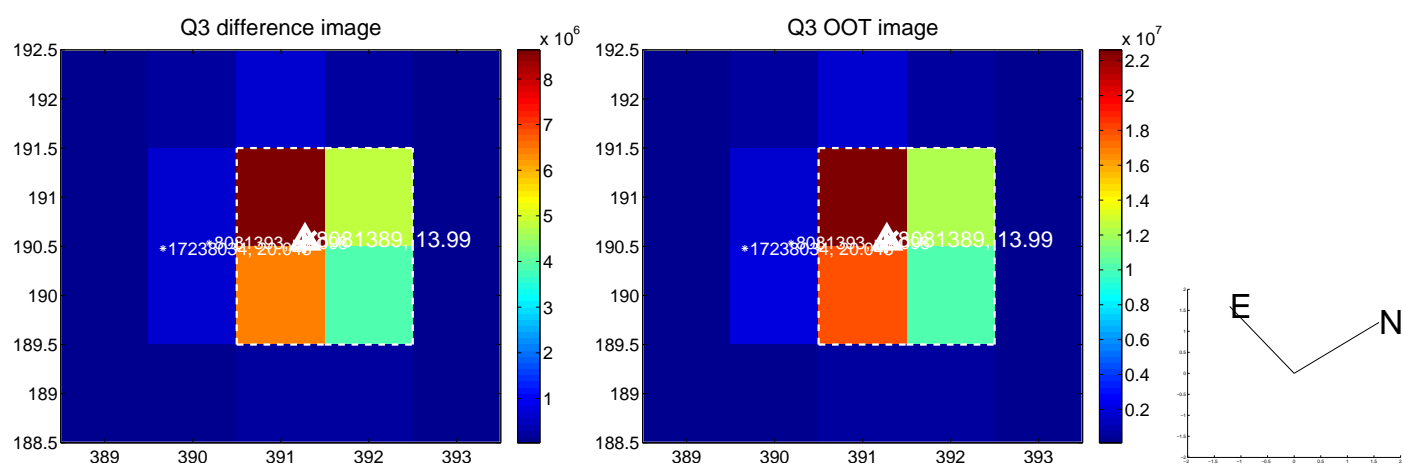
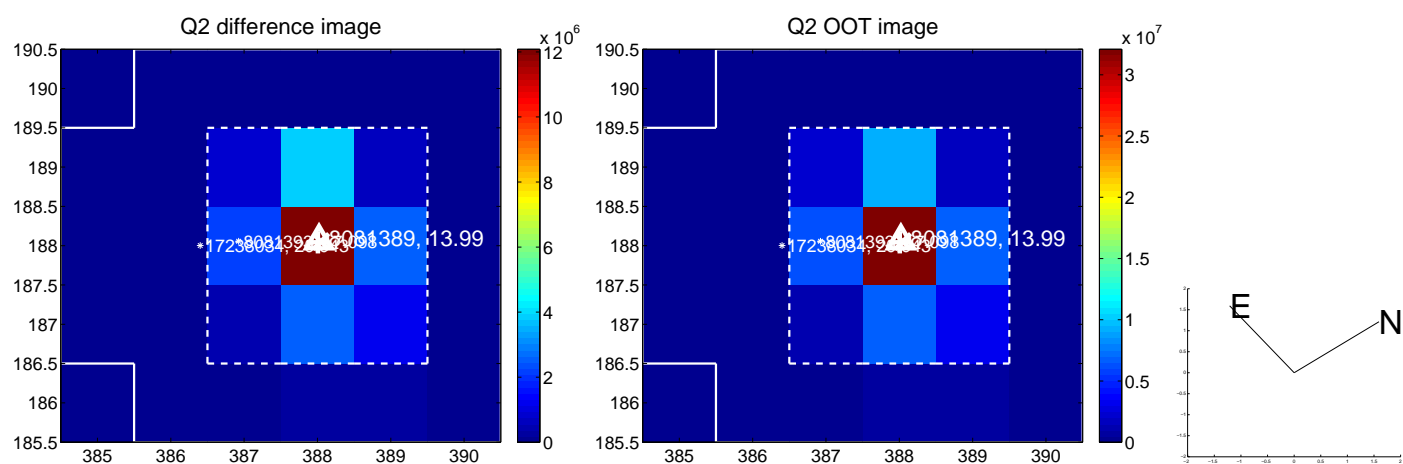
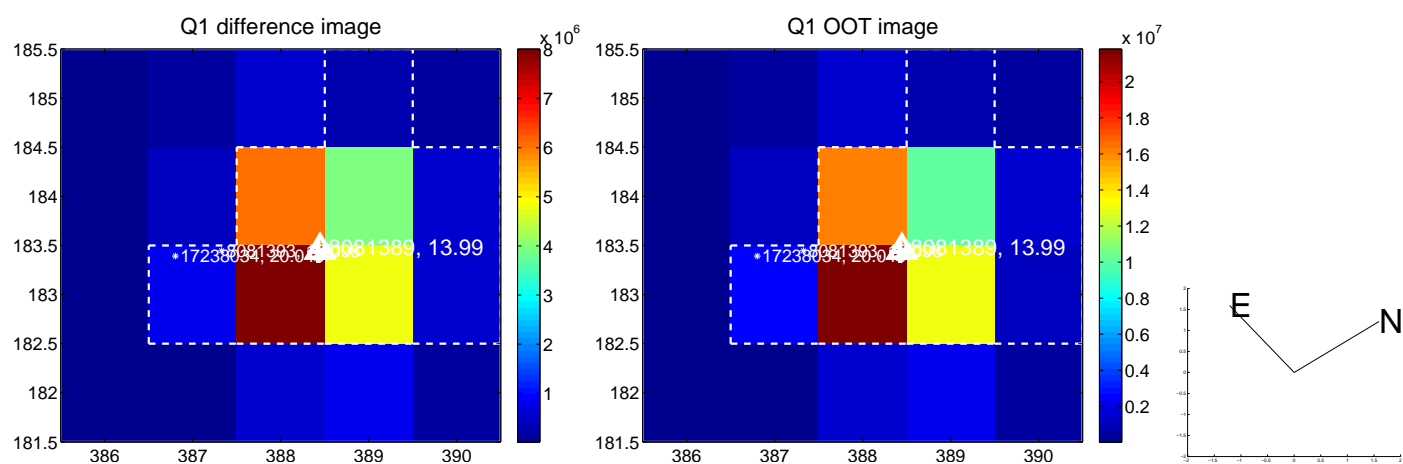


offset from photometric centroids



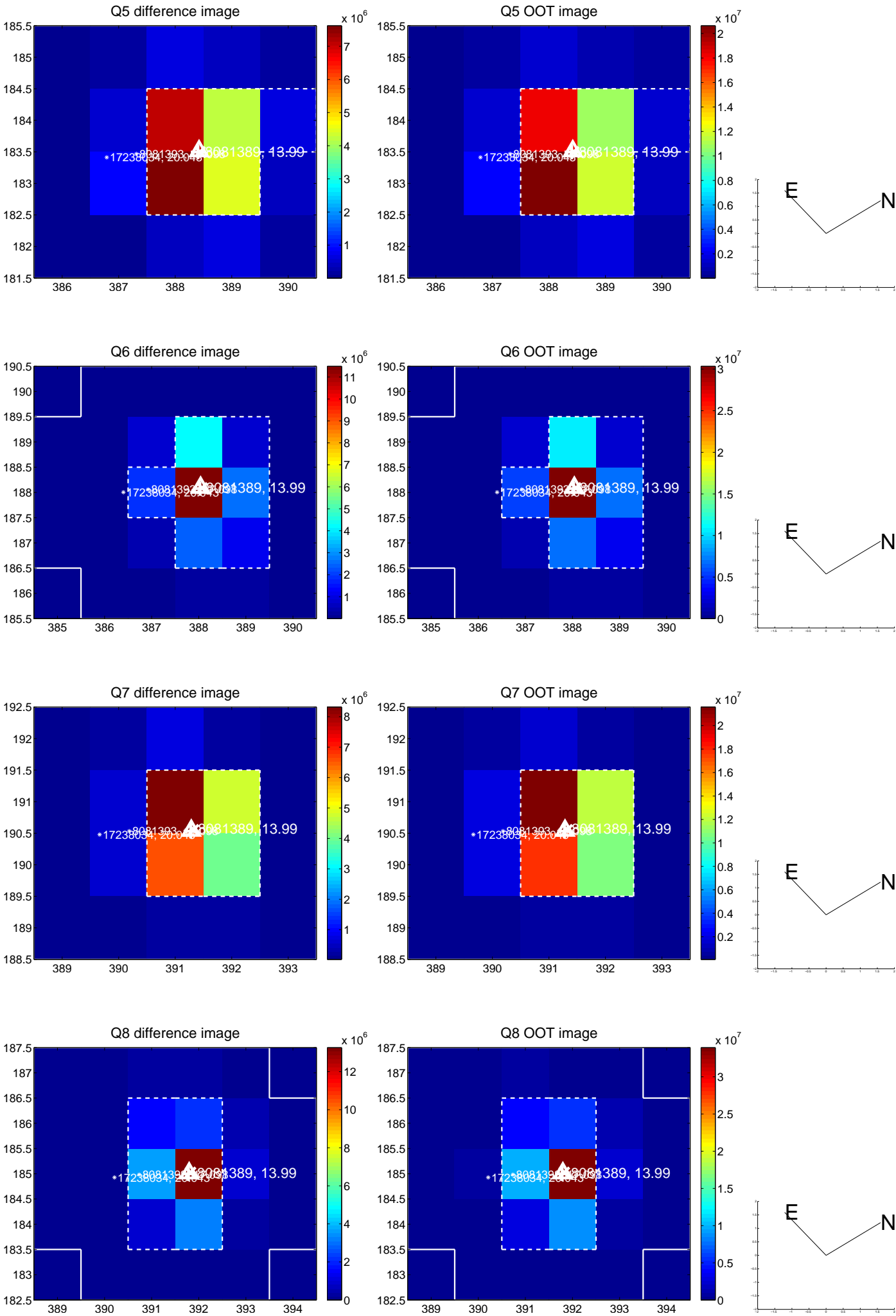
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

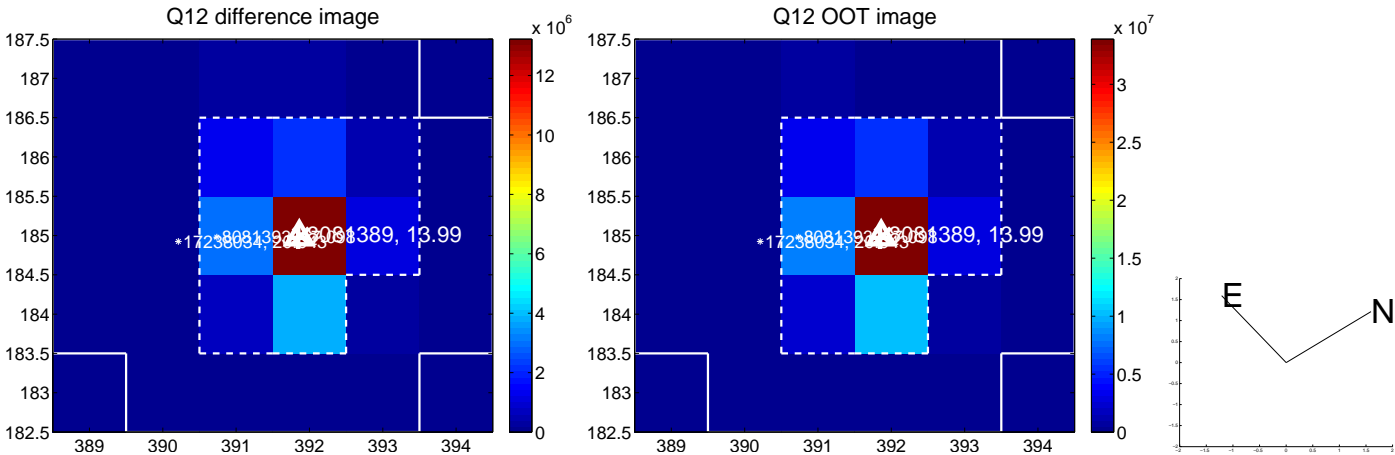
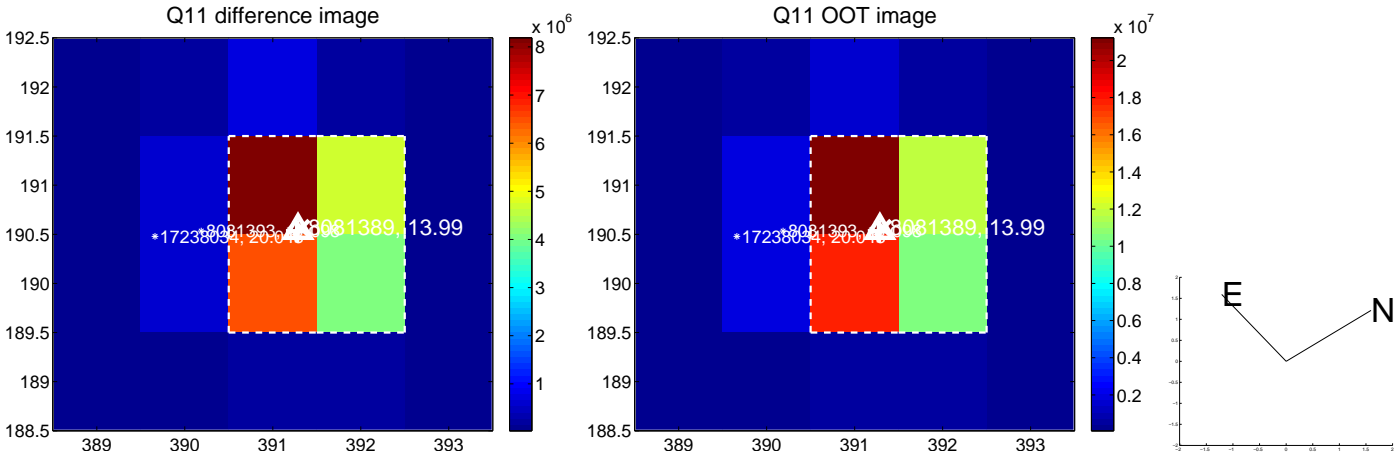
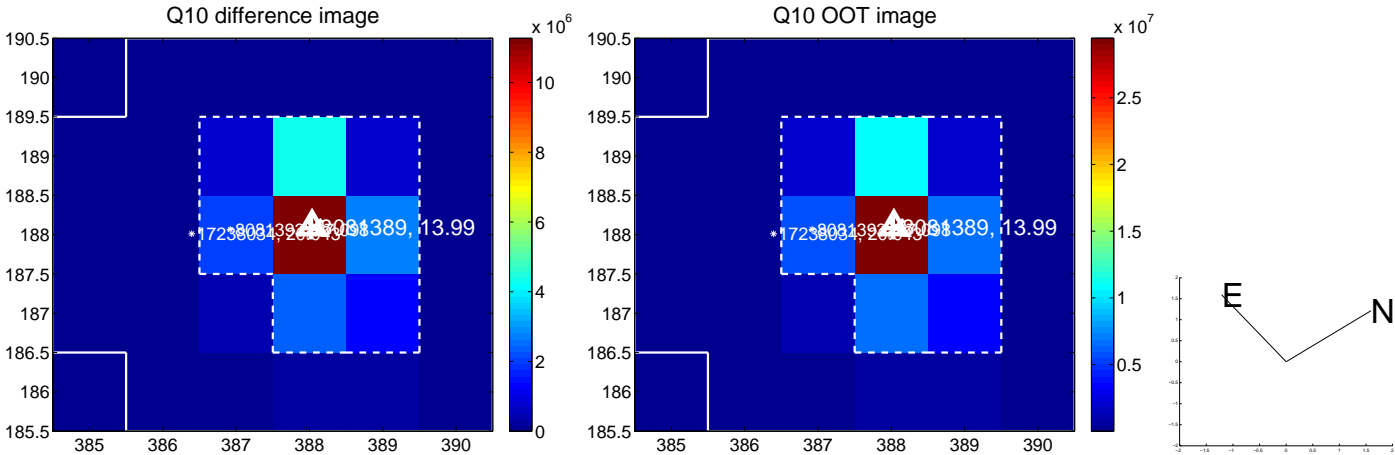
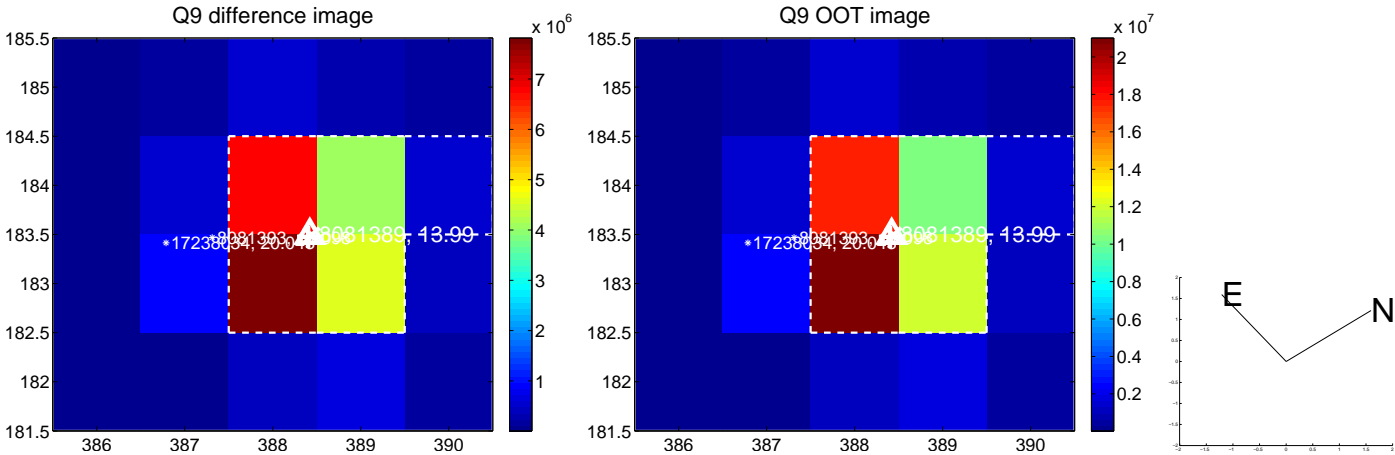




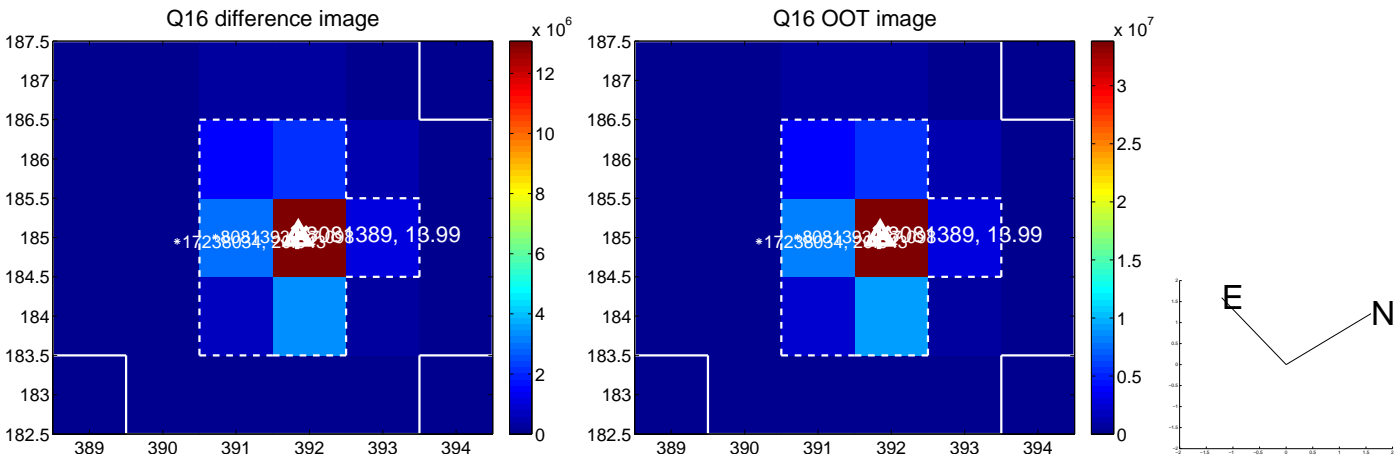
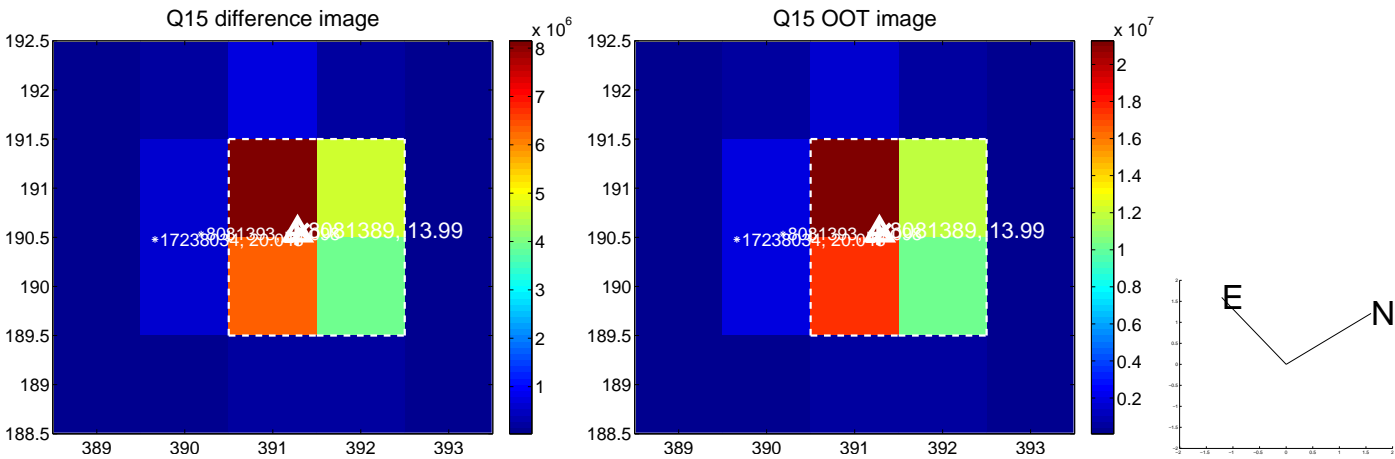
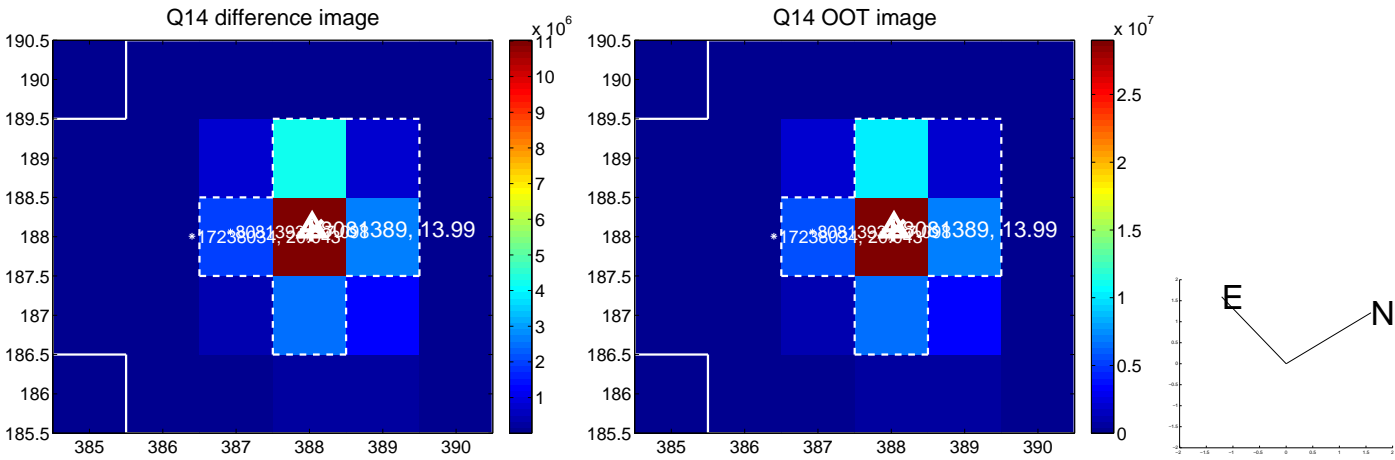
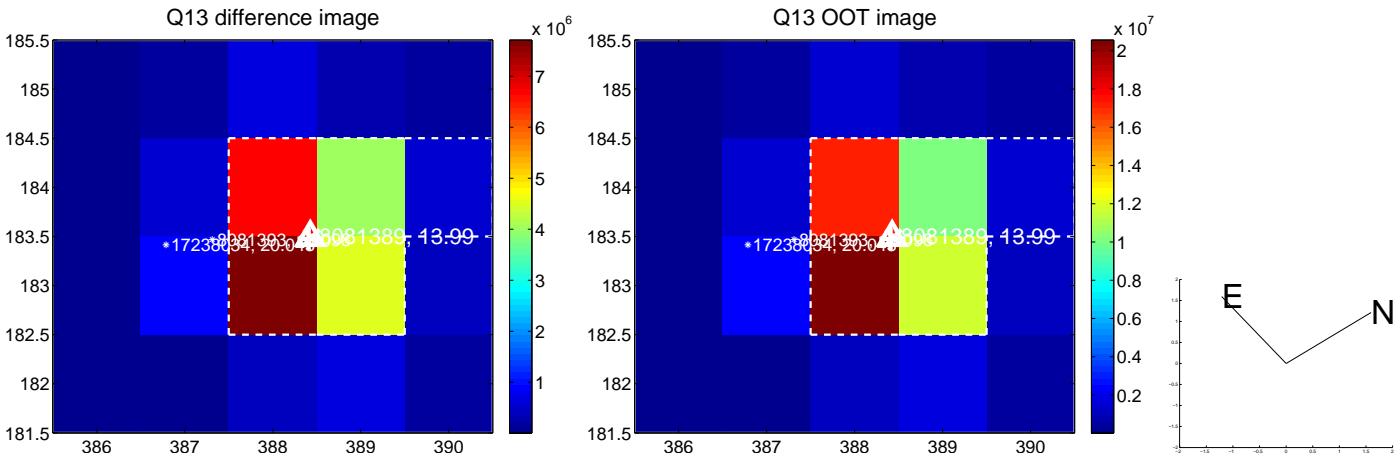
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



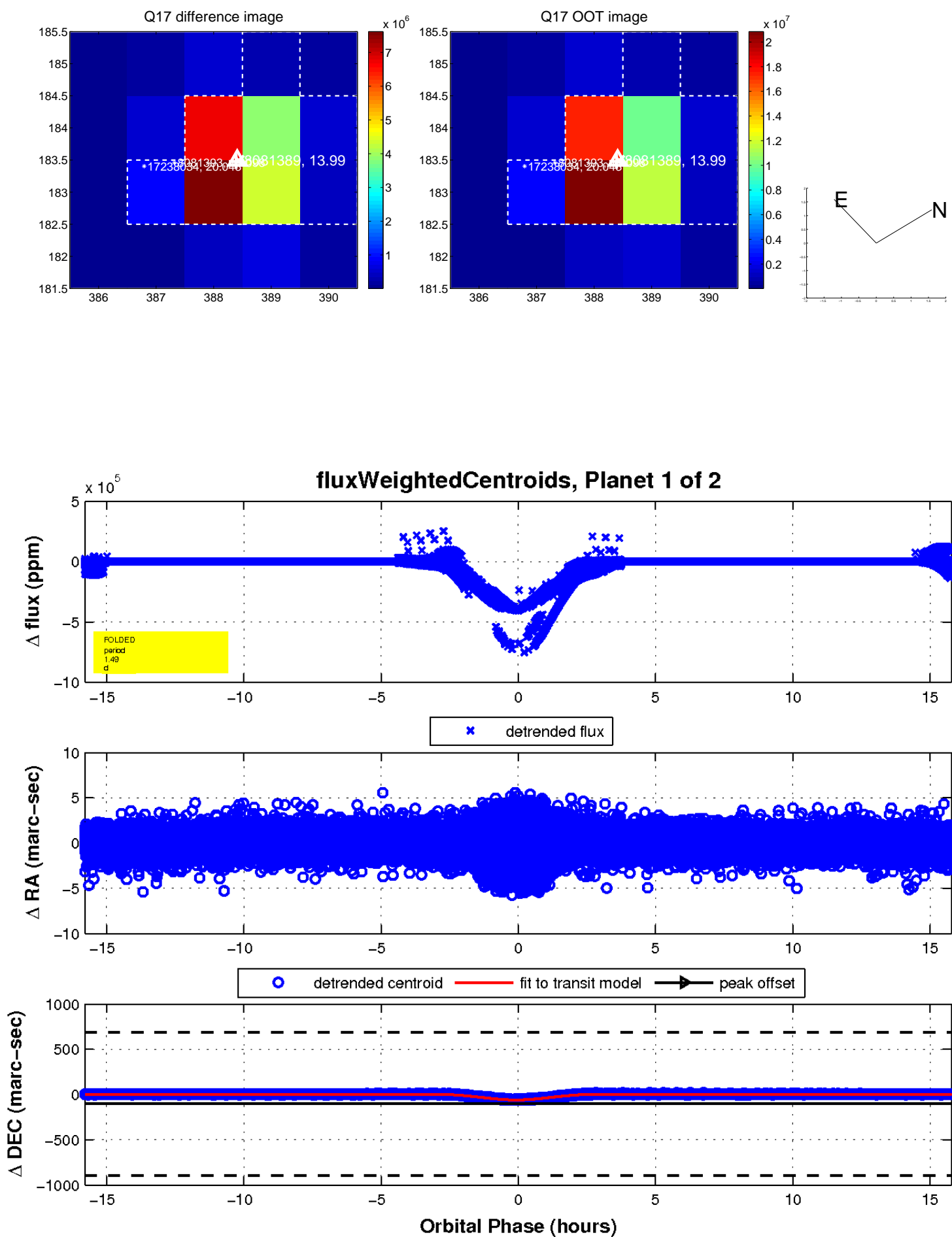
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

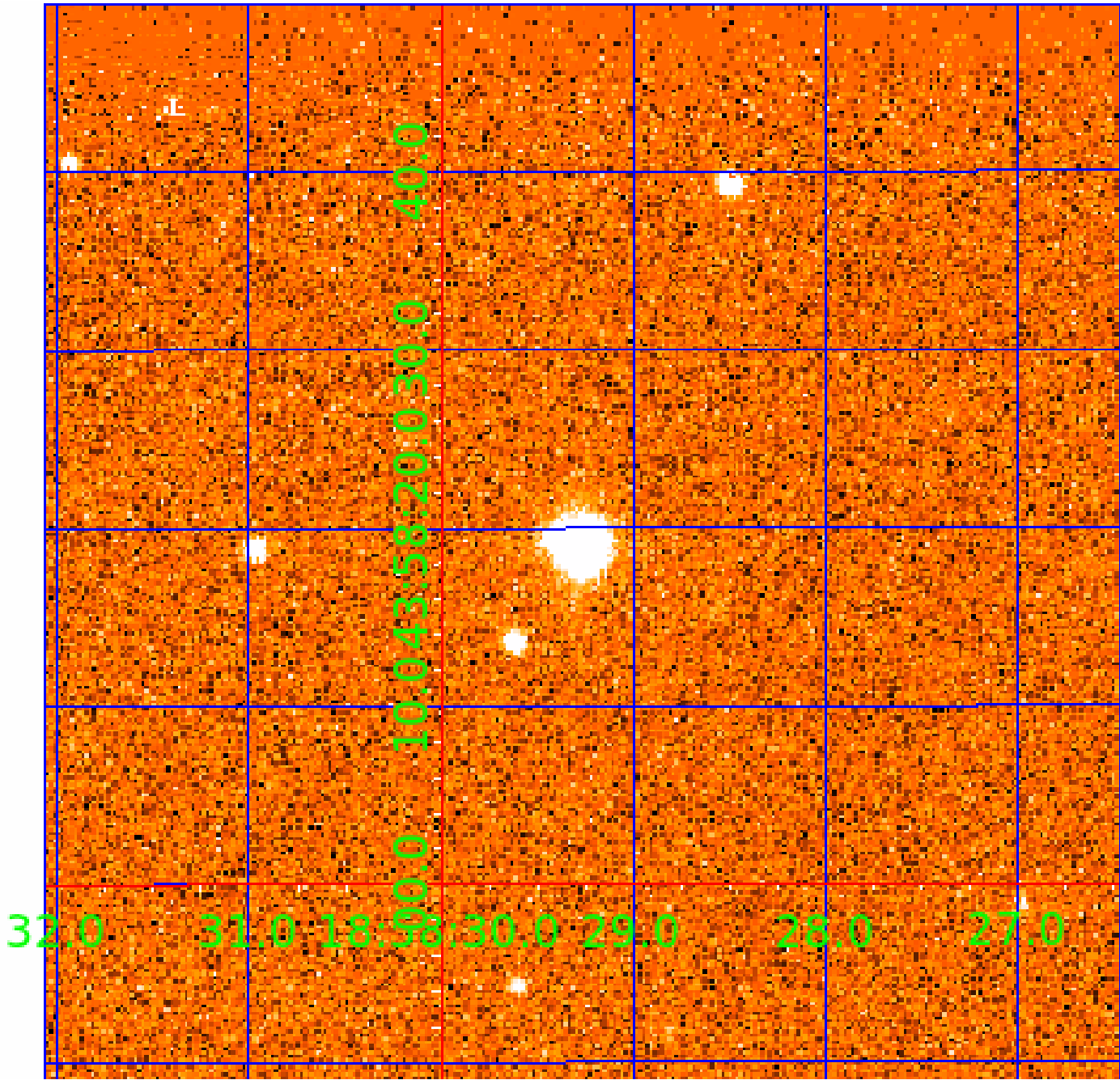


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008081389

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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008081389-02	OBS	No	1.489428	132.750630	72332.8	3.500	6380.4	-1.0	1.62	6962	44.21	6952.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008081389-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008081389-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

**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.

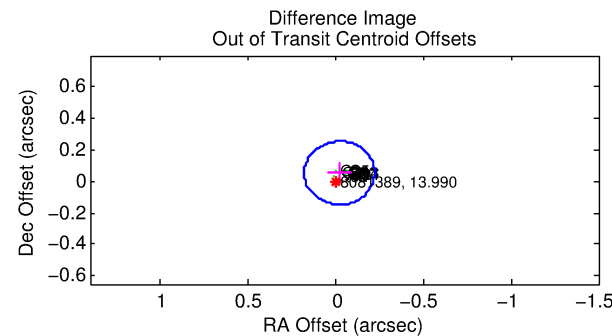
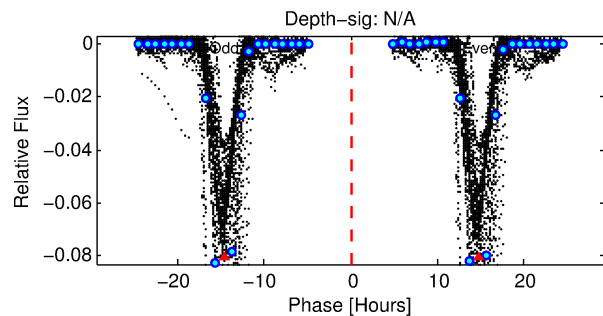
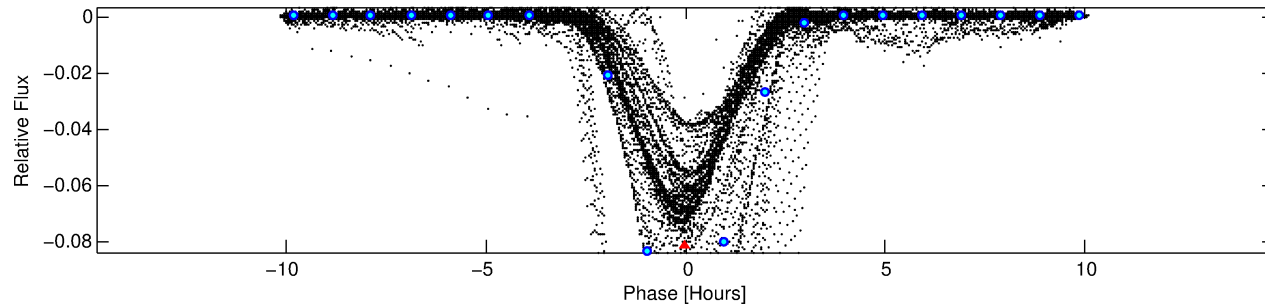
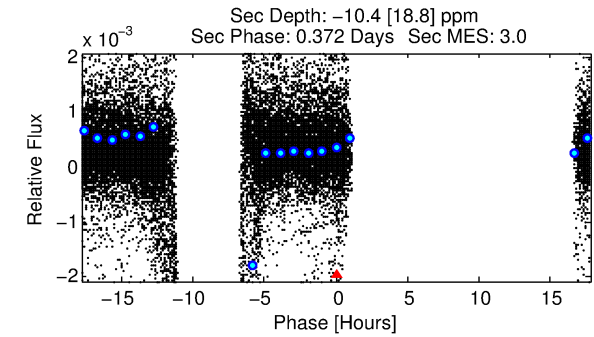
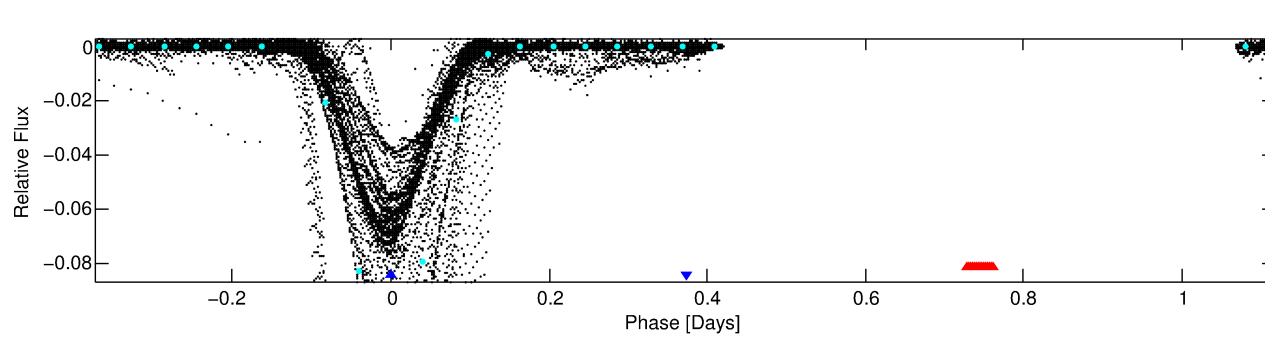
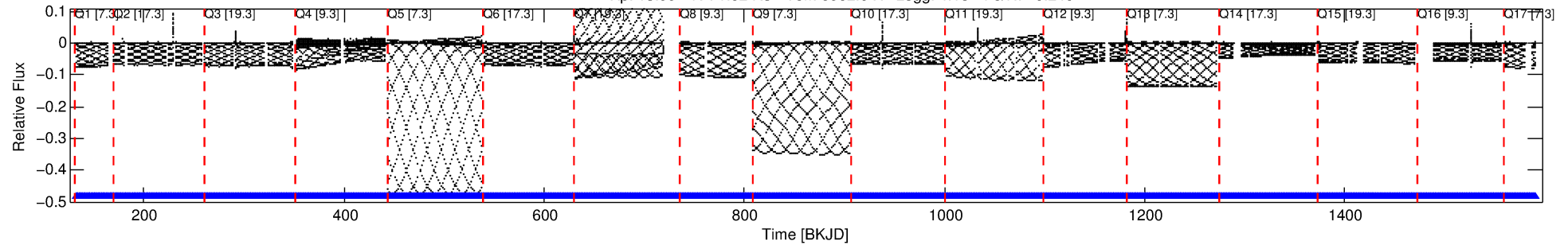
## Ephemeris Match Information For 008081389-02

No Significant Match Found

# DV One-Page Summary

KIC: 8081389 Candidate: 2 of 2 Period: 1.489 d  
KOI: K06958 Corr: No Ephemeris Match

Kp: 13.99 R\*: 1.62 Rs Teff: 6962.0 K Logg: 4.15 Fe/H: -0.240



## TPS TCE Results:

Period = 1.48943 d  
Epoch = 132.7506 BKJD

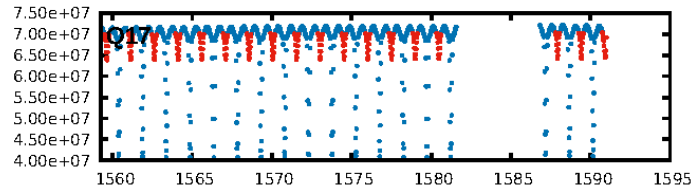
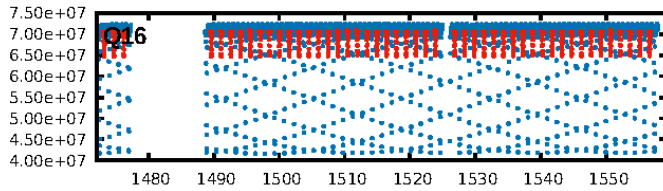
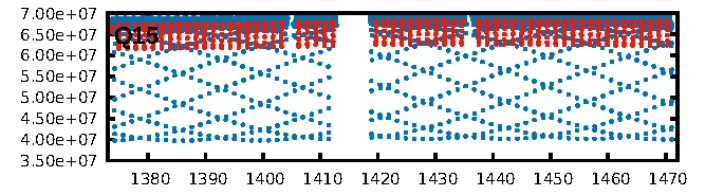
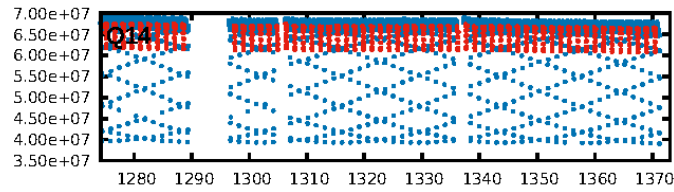
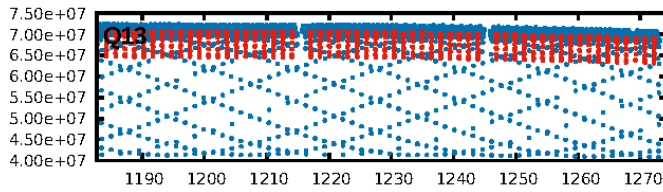
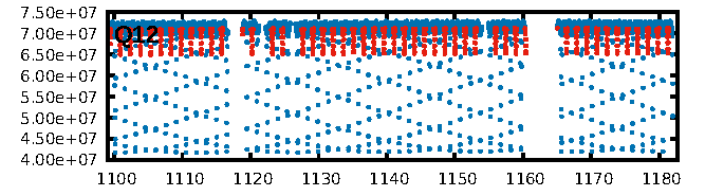
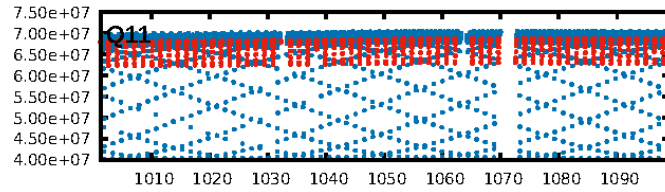
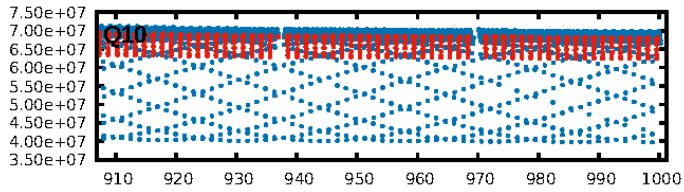
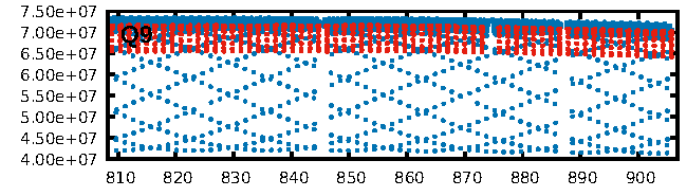
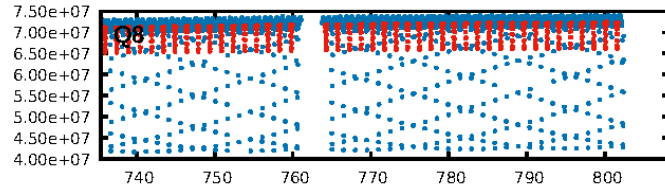
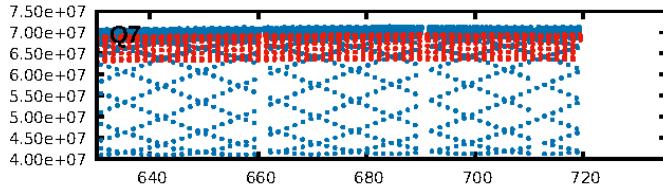
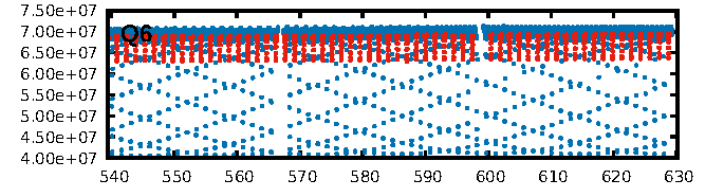
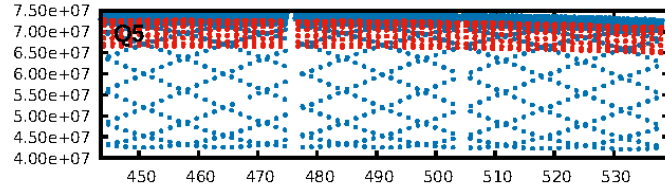
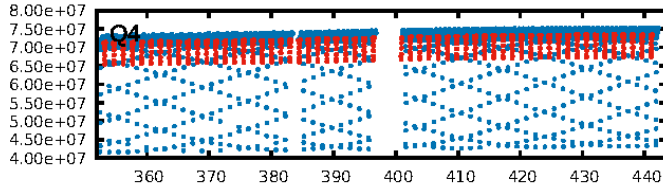
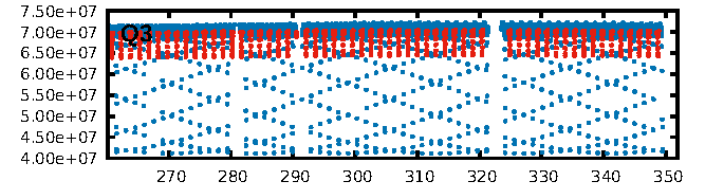
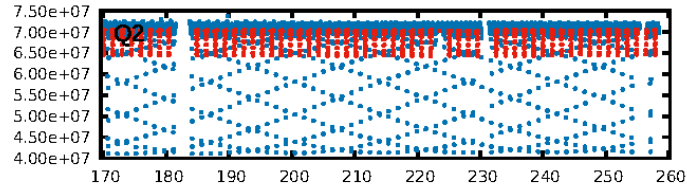
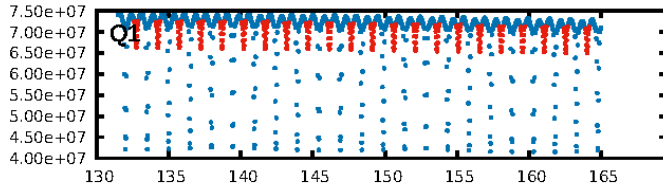
DV fit results are unavailable

## DV Diagnostic Results:

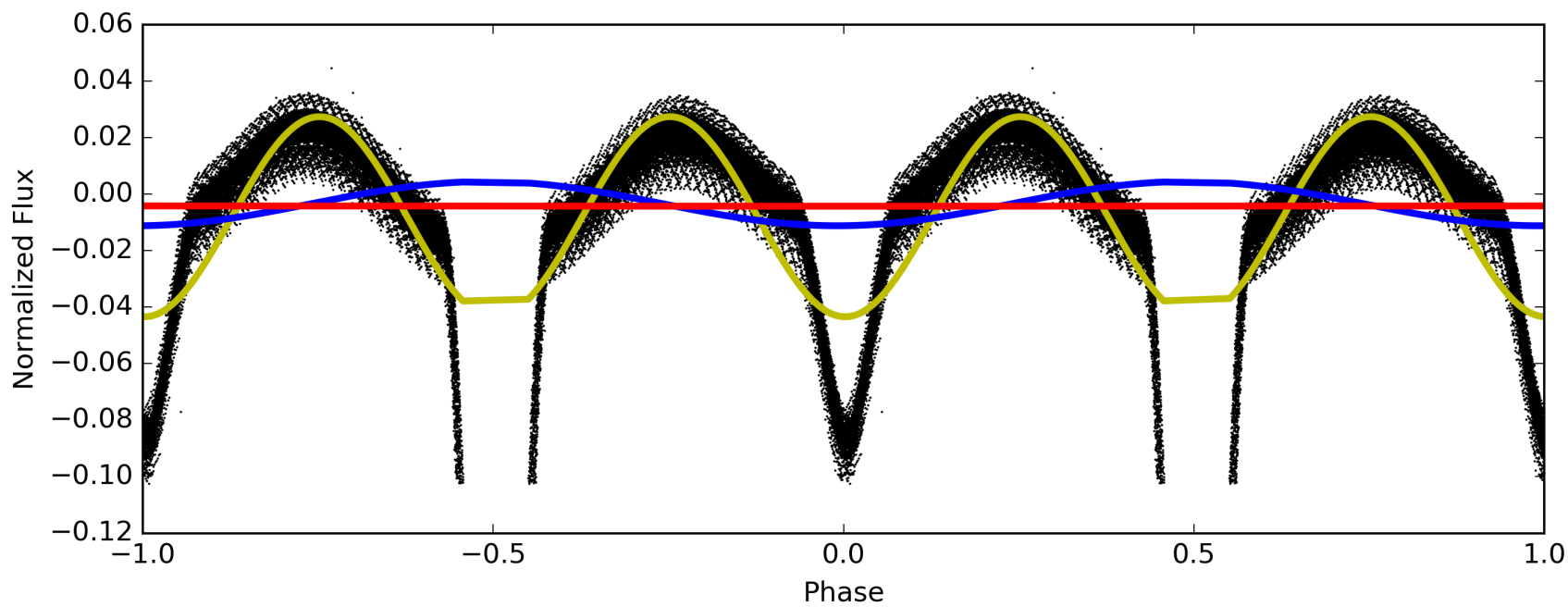
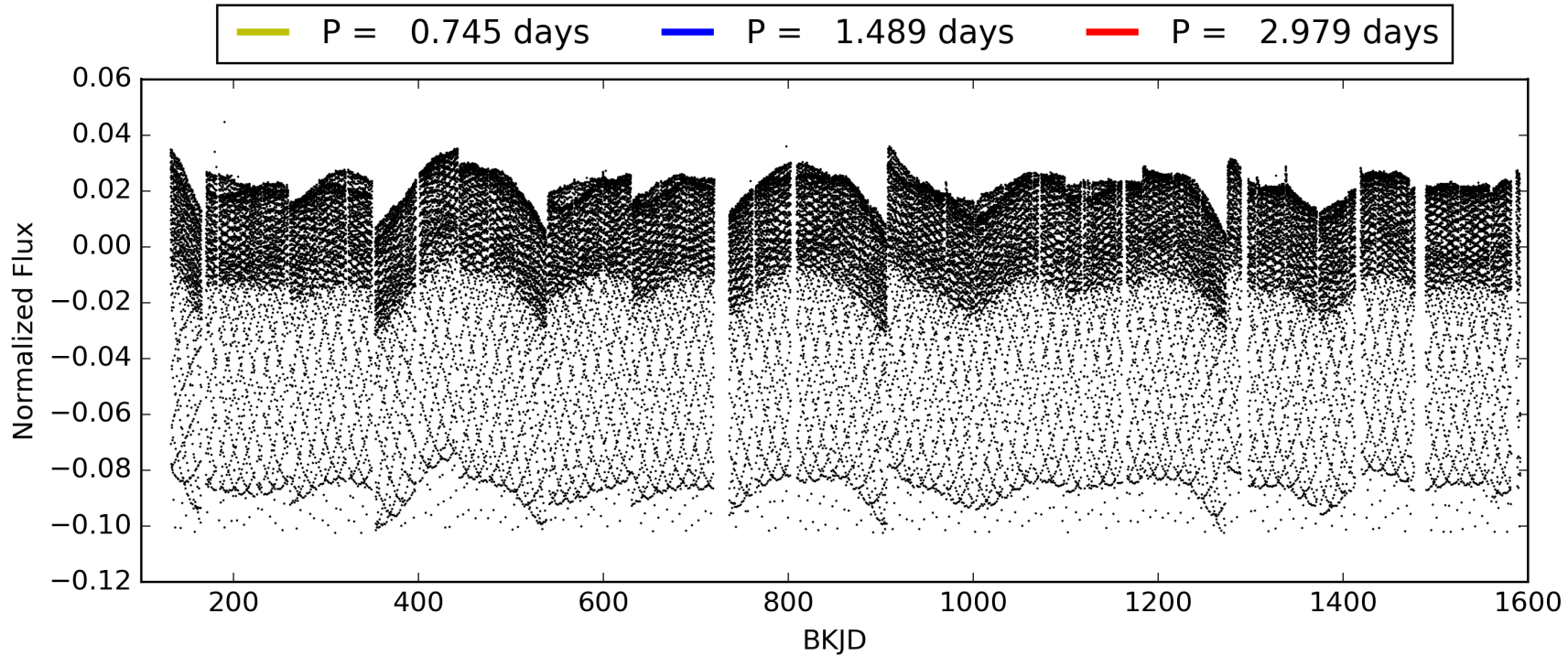
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [861/861]  
GhostDiagnostic-chr: 0.9171  
Centroid-sig: N/A  
Centroid-so: 0.143 arcsec [235.19σ]  
OotOffset-rm: 0.059 arcsec [0.89σ]  
KicOffset-rm: 0.133 arcsec [1.97σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]



# TCE 008081389-02, PDC Light Curves

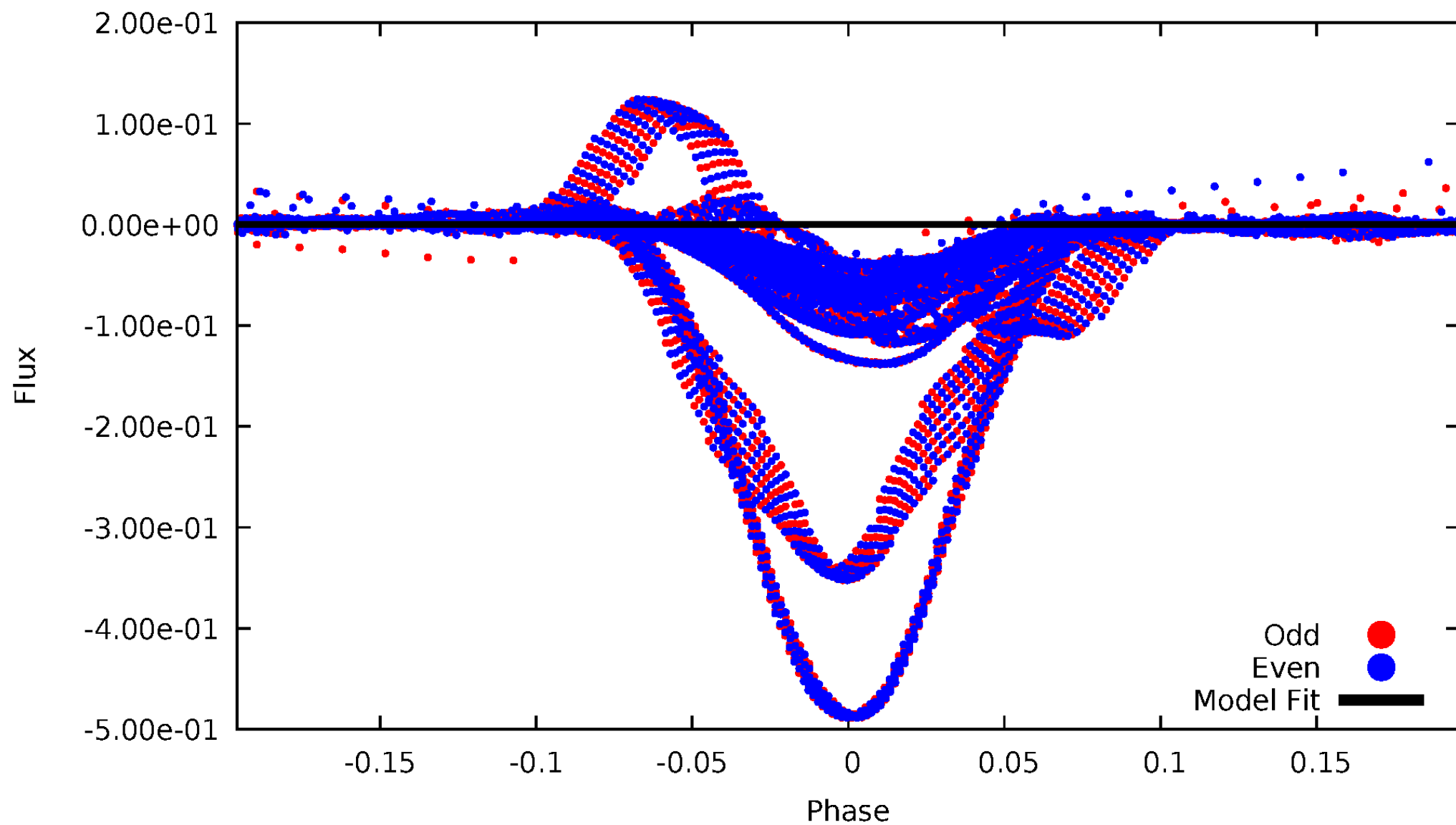


TCE 008081389-02



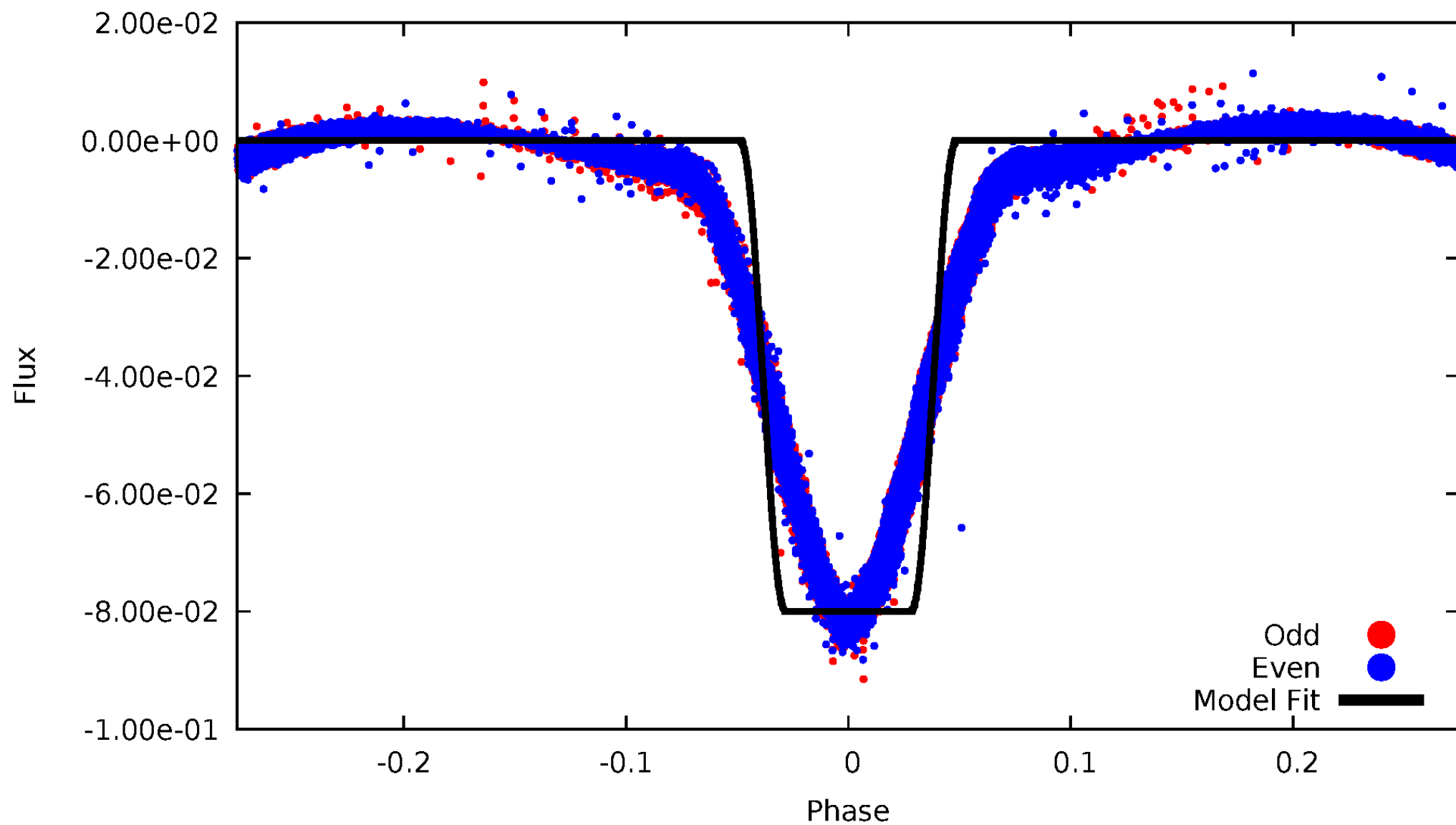
# DV Odd/Even

TCE 008081389-02



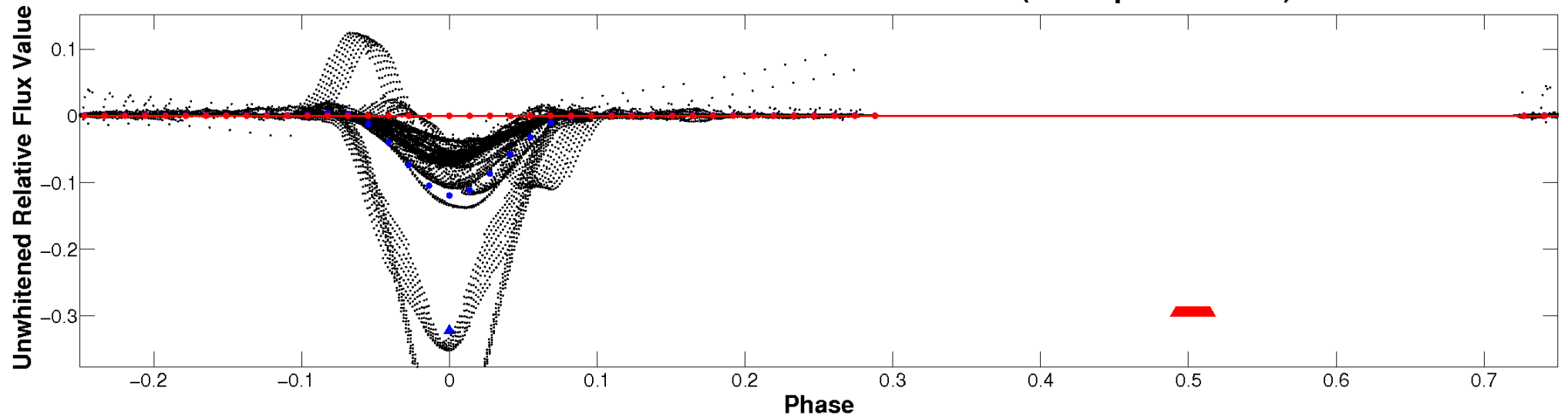
# ALT Odd/Even

TCE 008081389-02

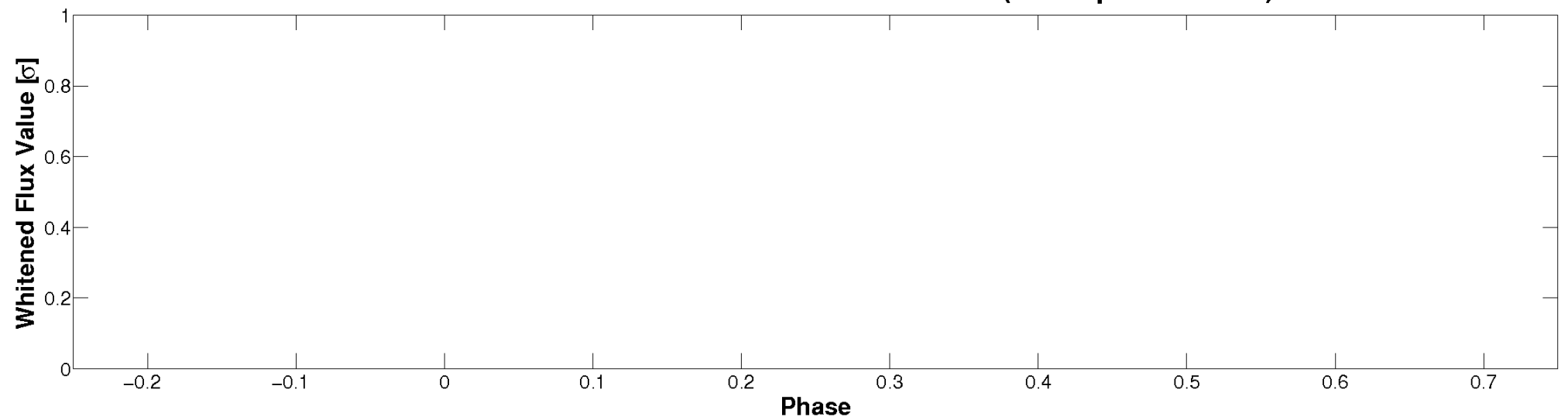


# Non-Whitened Vs. Whitened Light Curve

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

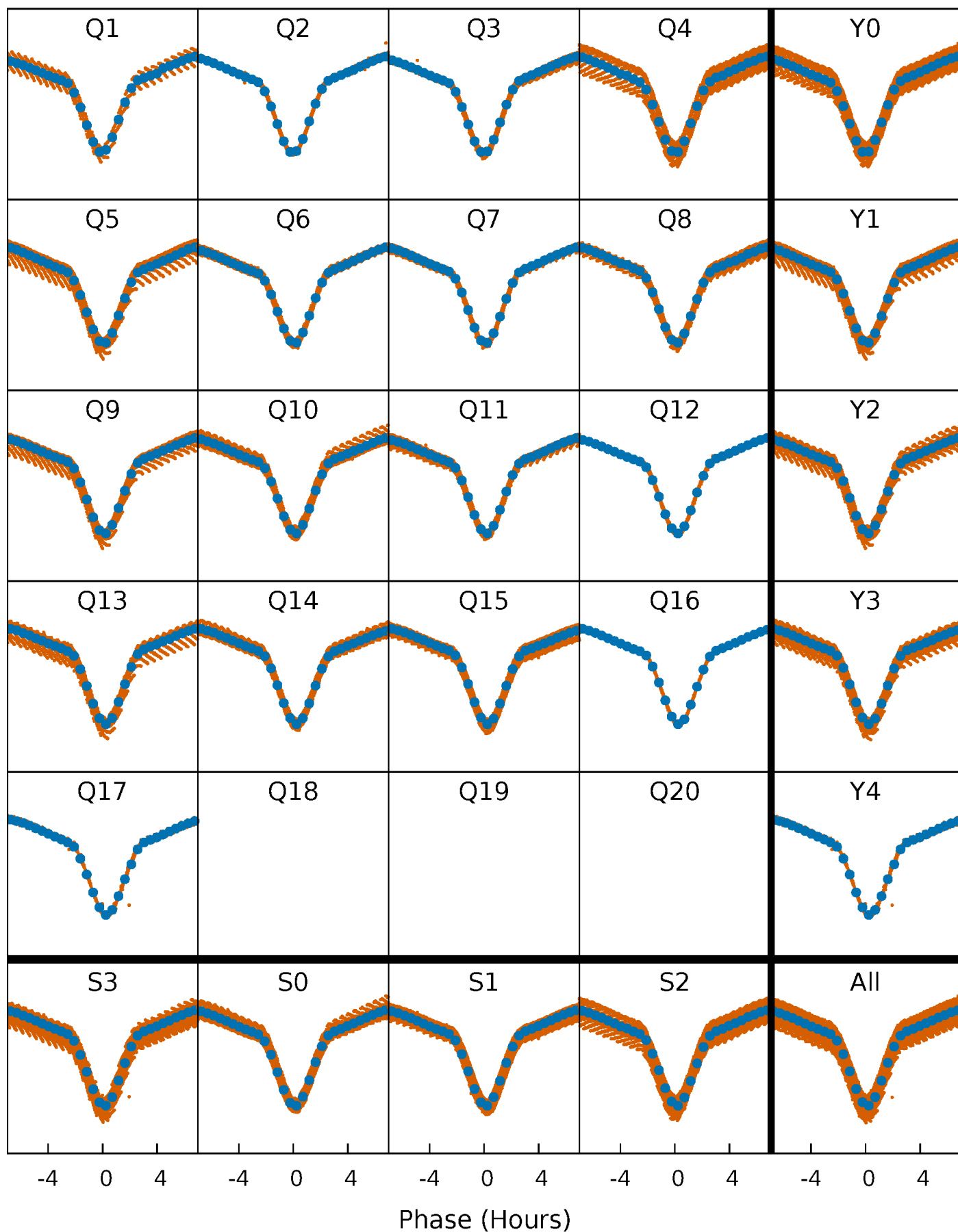


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



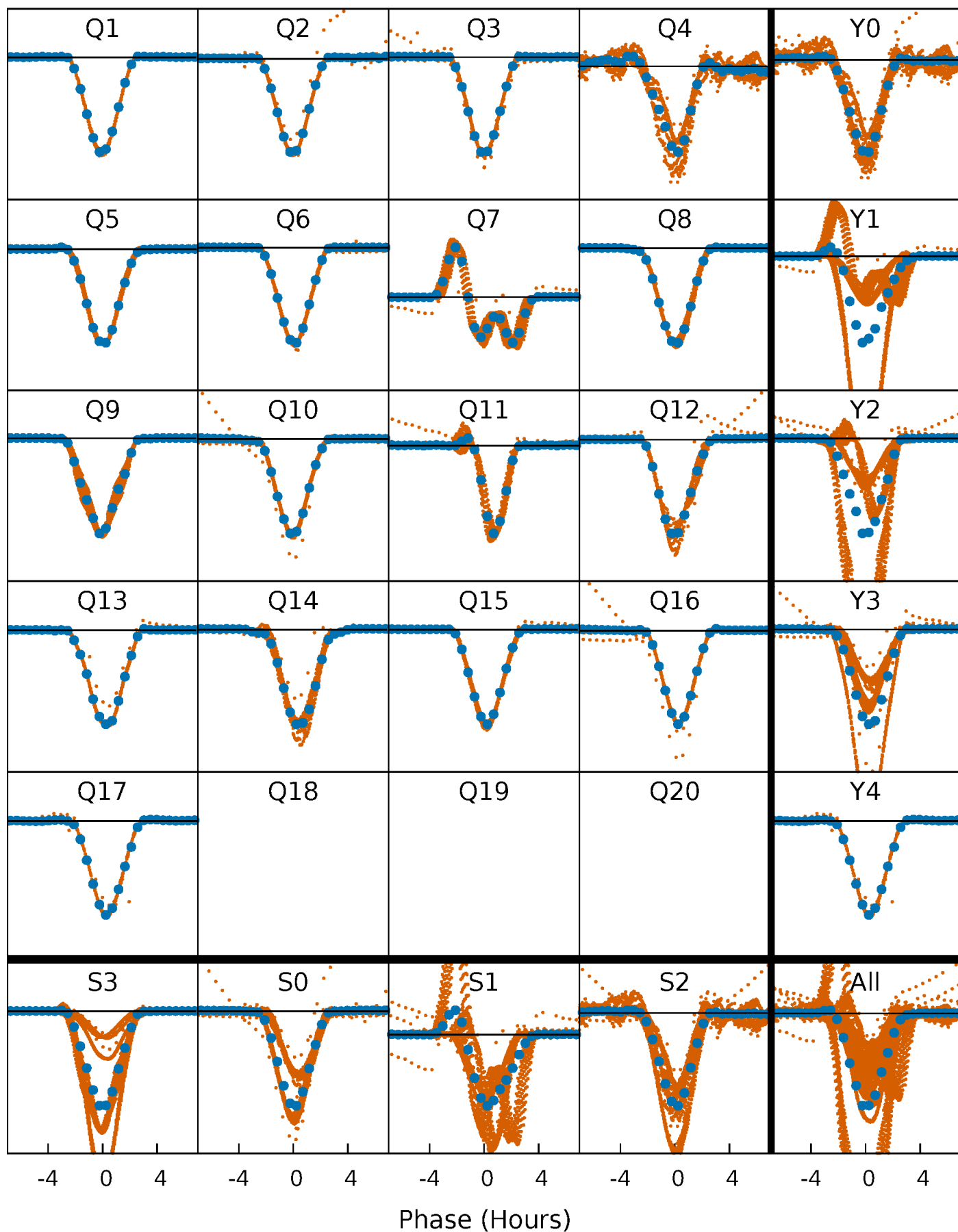
# PDC Quarter-Phased Transit Curves

TCE 008081389-02   P= 1.489428 Days    $T_0=132.750630$  (BKJD)



# DV Quarter-Phased Transit Curves

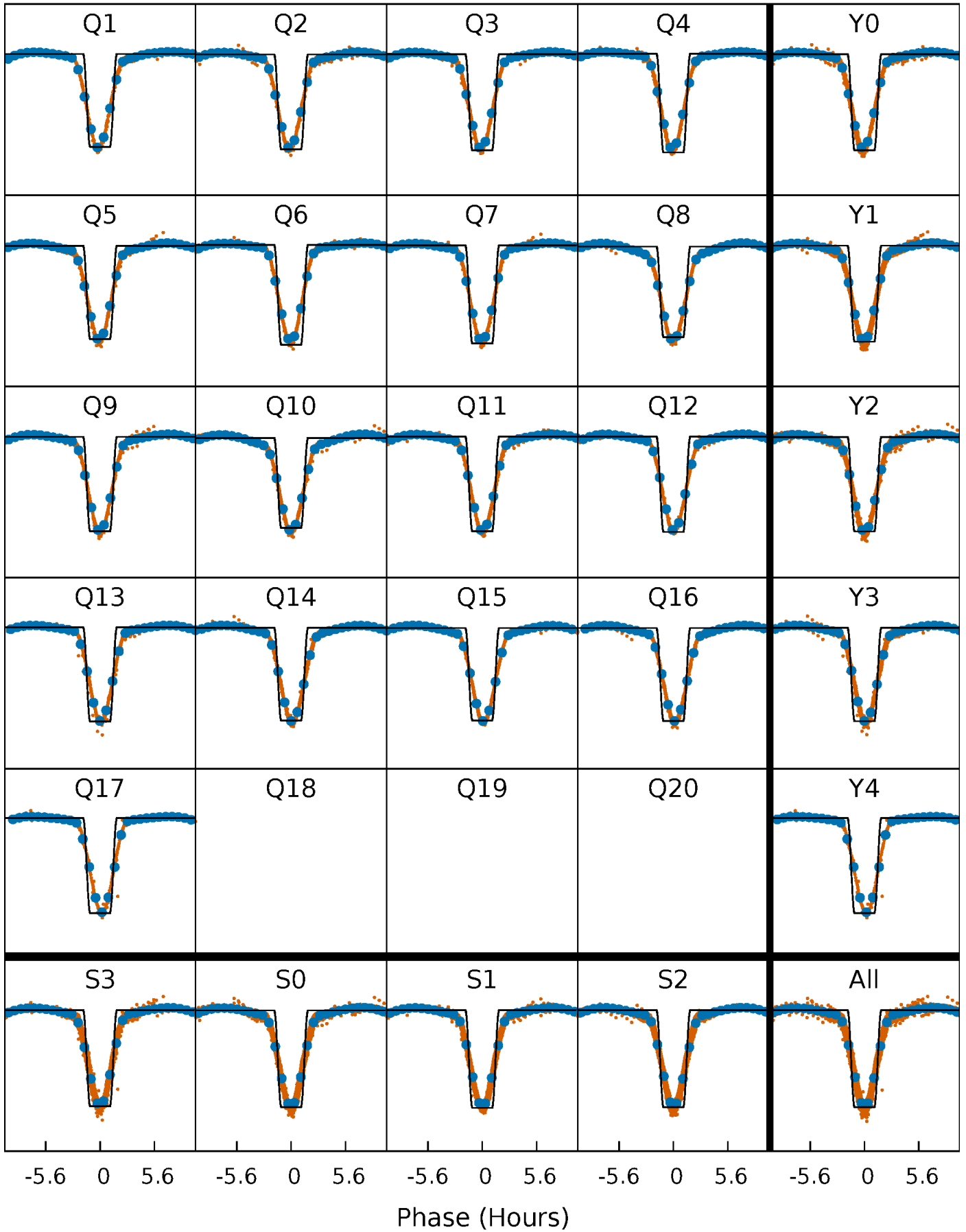
TCE 008081389-02 P= 1.489428 Days  $T_0=132.750630$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

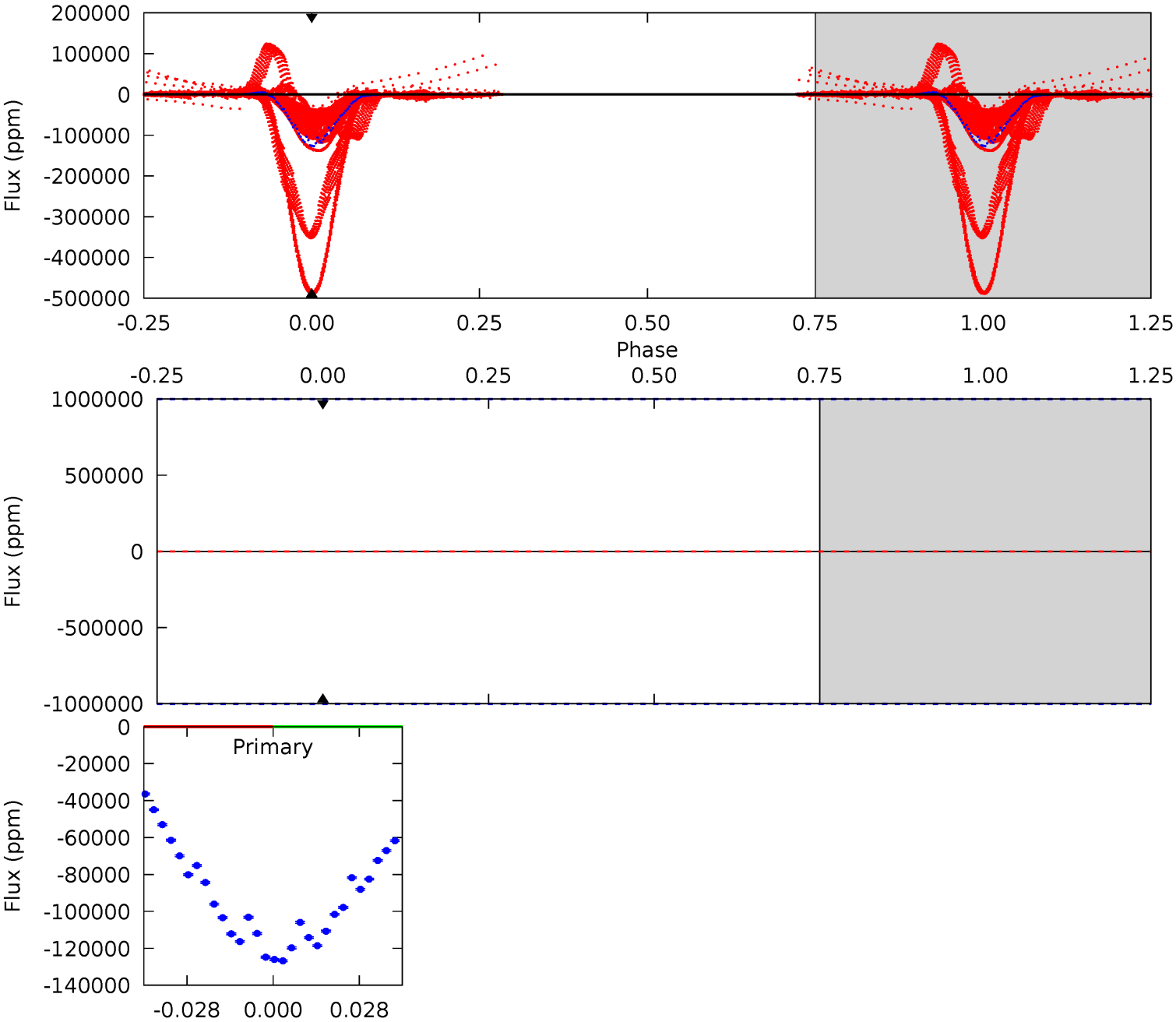
TCE 008081389-02   P= 1.489428 Days    $T_0=132.755926$  (BKJD)



DV Model-Shift Uniqueness Test

008081389-02, P = 1.489428 Days, E = 131.261202 Days

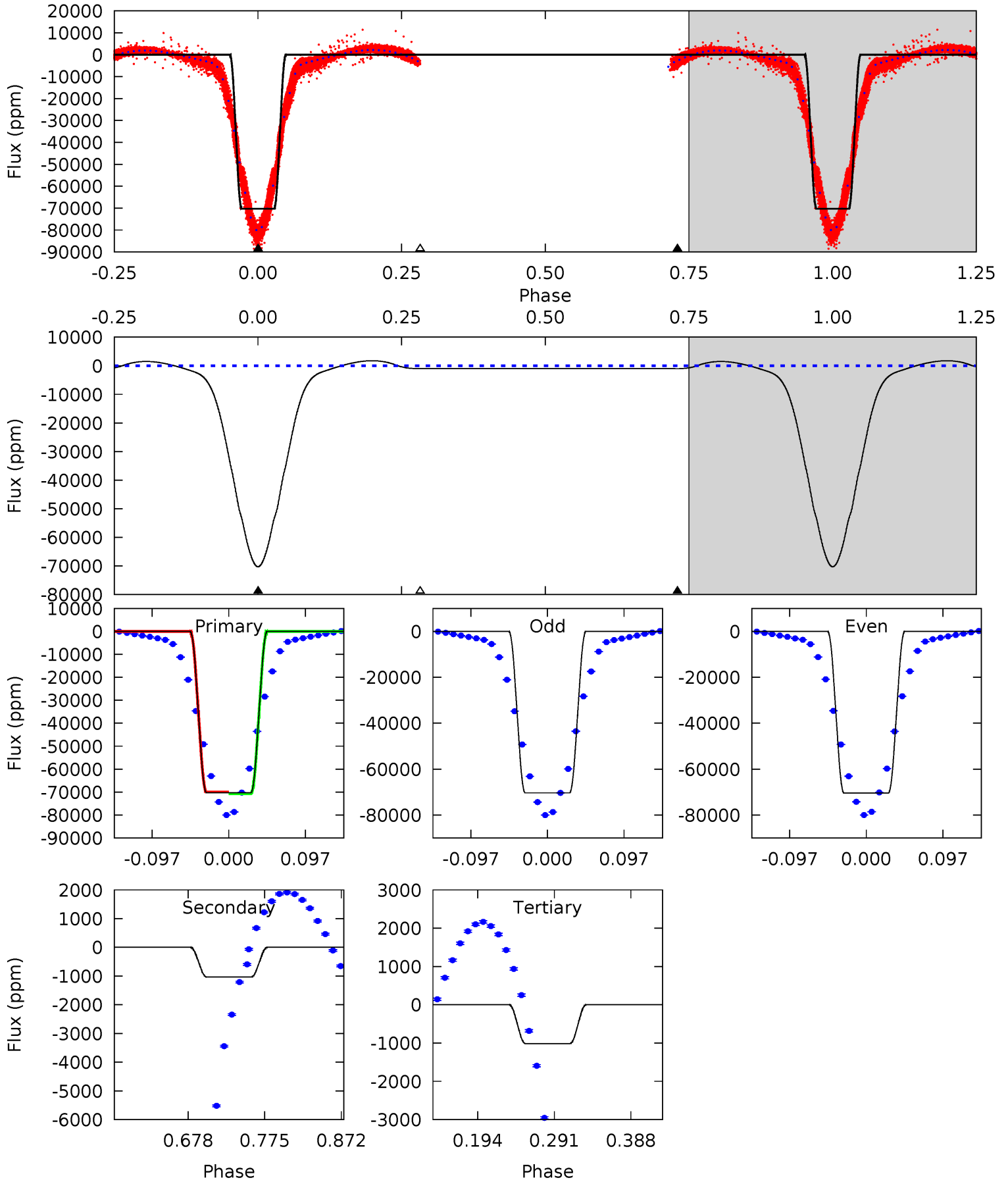
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008081389-02, P = 1.489428 Days, E = 131.266498 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
3210	47.2	46.3	0	4.57	1.66	65.3	3163	3210	0.95	47.2	1.57	1.00	0.02	16.7



### Stellar Parameters For KIC 008081389

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6962^{+192}_{-288}$	$4.148^{+0.162}_{-0.198}$	$-0.240^{+0.250}_{-0.300}$	$1.620^{+0.510}_{-0.382}$	$1.352^{+0.202}_{-0.224}$	$0.448^{+0.411}_{-0.211}$
	+3%/-4%	+4%/-5%	+104%/-125%	+31%/-24%	+15%/-17%	+92%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008081389-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$44.24^{+19.92}_{-17.02}$	$3270^{+246}_{-256}$	$3809^{+5130}_{-11780}$	$1.140^{+31.290}_{-23.344}$
Alt.	$-1033 \pm 22$	$50.05^{+21.56}_{-18.44}$	$3270^{+260}_{-243}$	$-2819^{+5746}_{-323}$	$0.176^{+0.284}_{-0.086}$

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

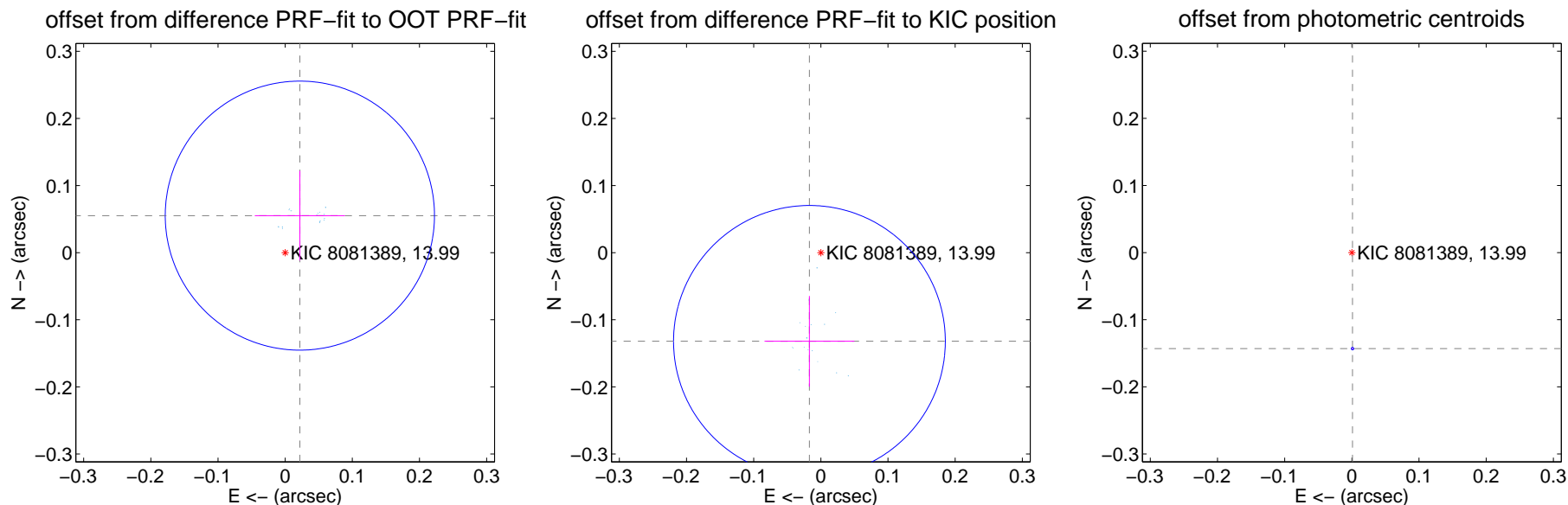
## DV Centroid Data

Supplemental centroid analysis for 008081389-02. Kepler magnitude: 13.99. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

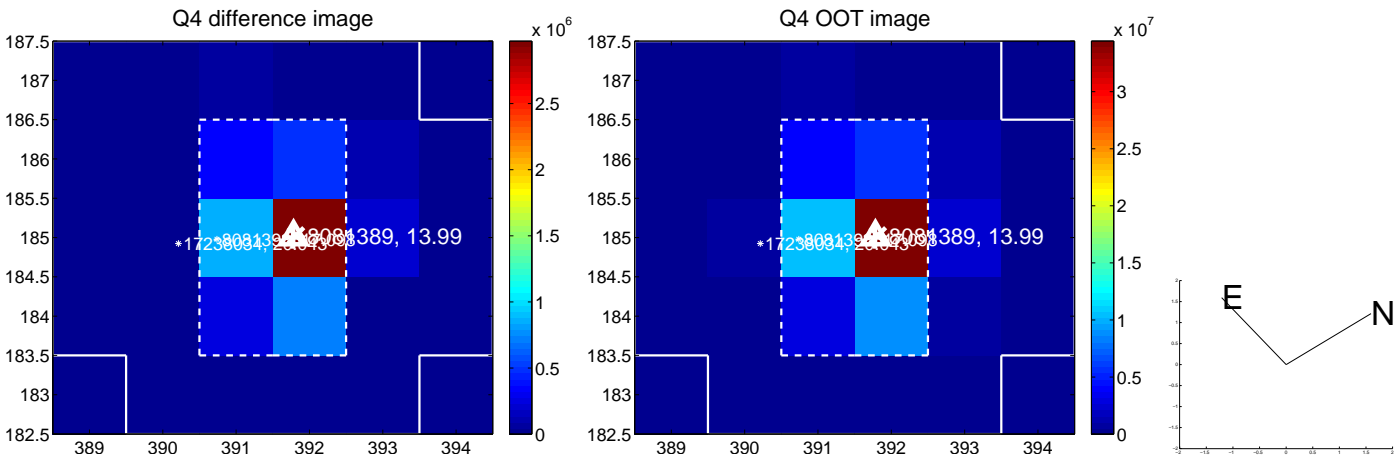
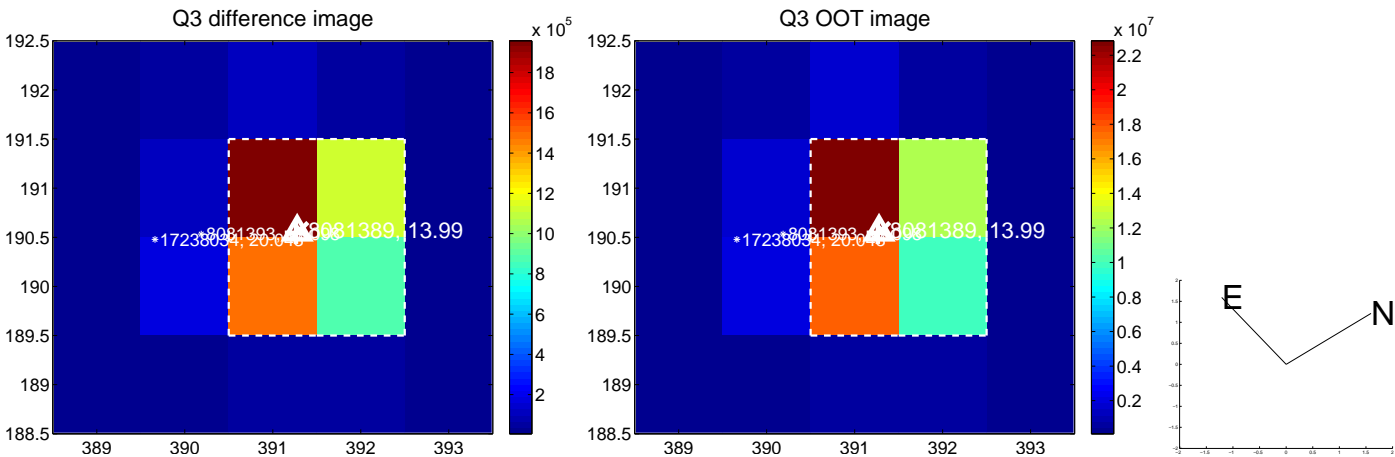
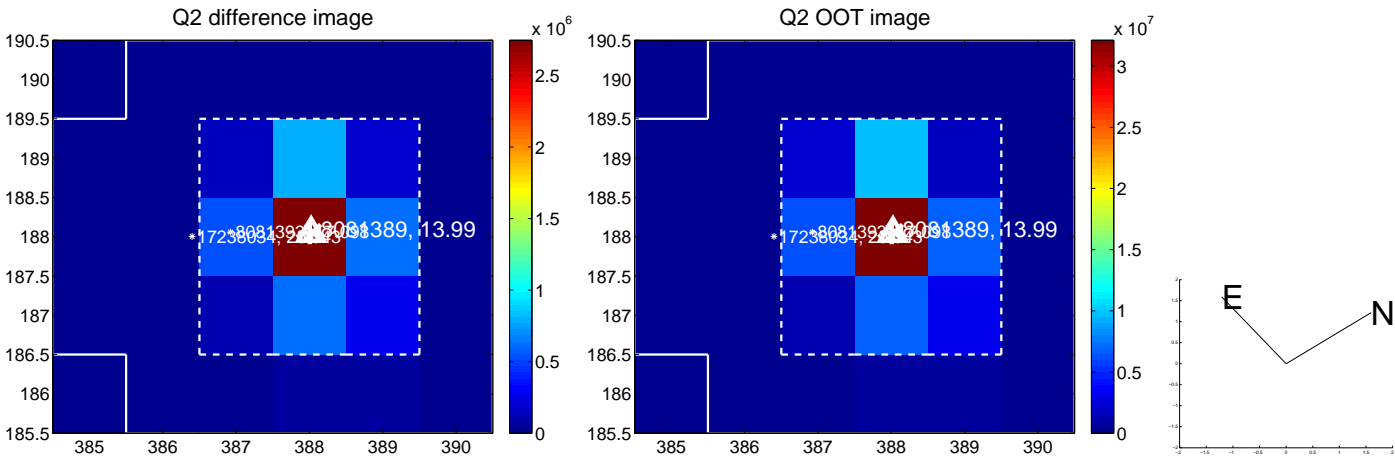
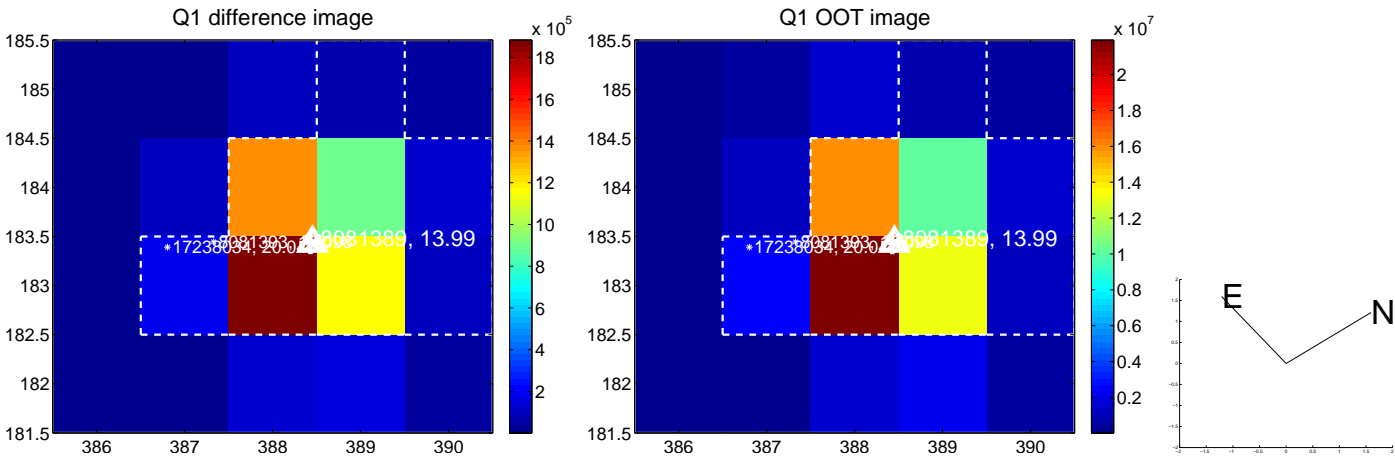
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.059 \pm 0.067$	0.89	$-0.022 \pm 0.067$	$0.055 \pm 0.067$
PRF-fit source offset from KIC position	$0.133 \pm 0.067$	1.97	$0.017 \pm 0.067$	$-0.132 \pm 0.067$
photometric centroid source offset	$0.14 \pm 0.00$	<b>235.19</b>	$-0.00 \pm 0.00$	$-0.14 \pm 0.00$

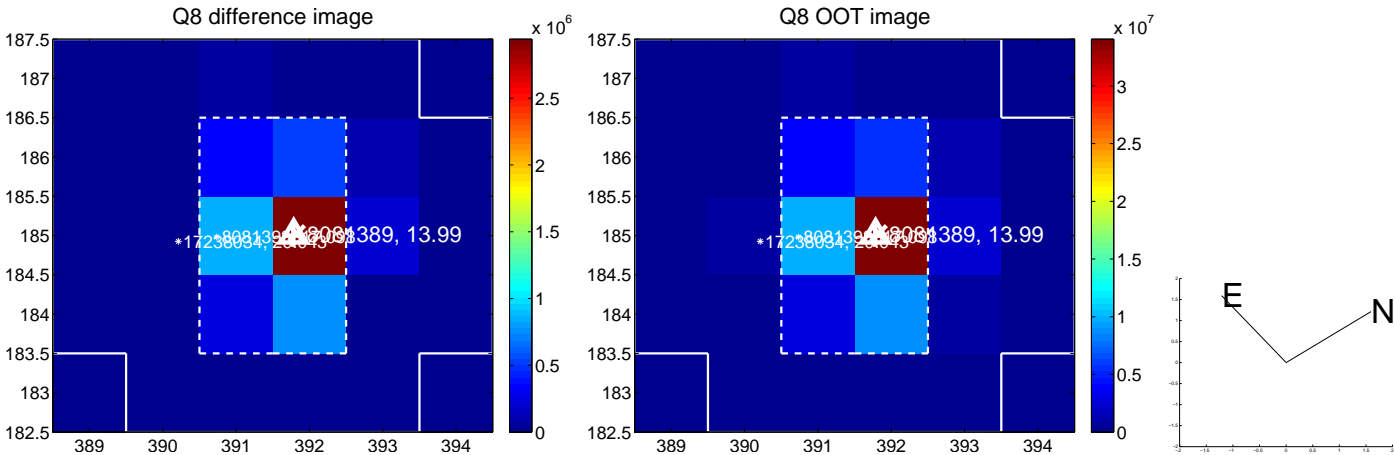
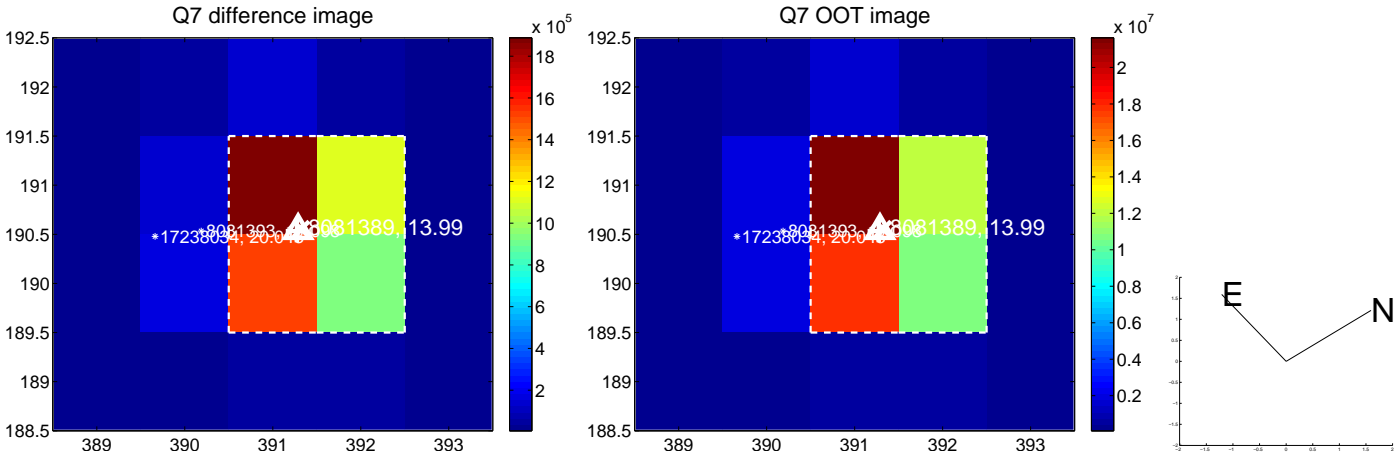
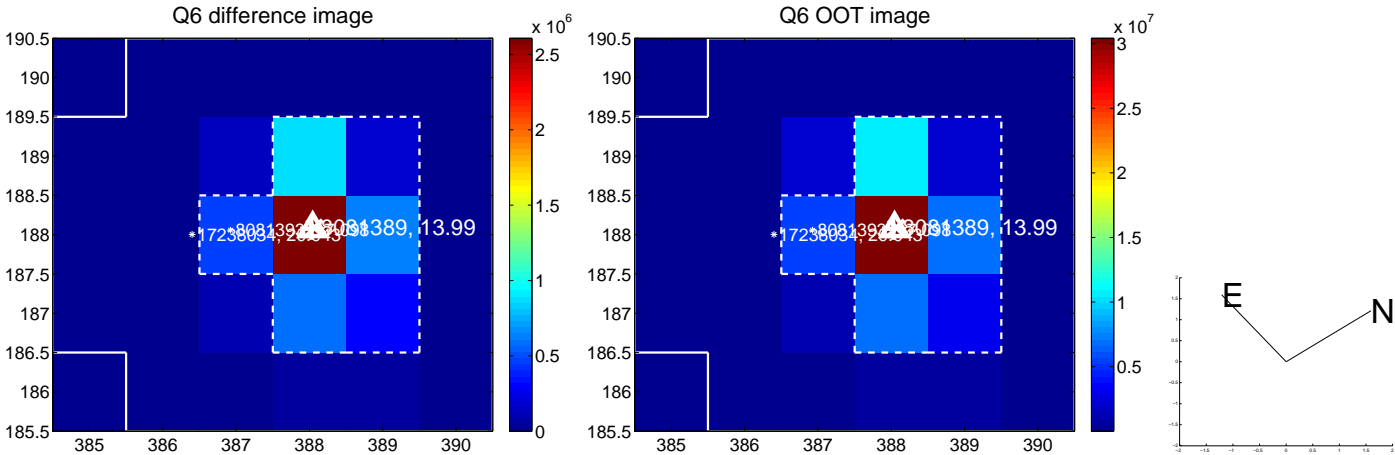
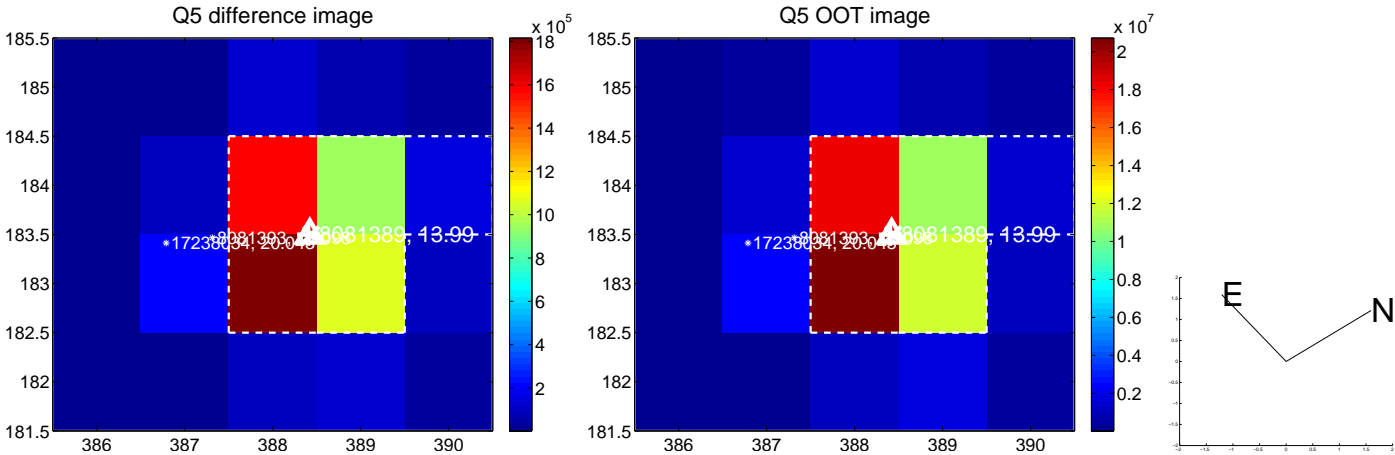


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

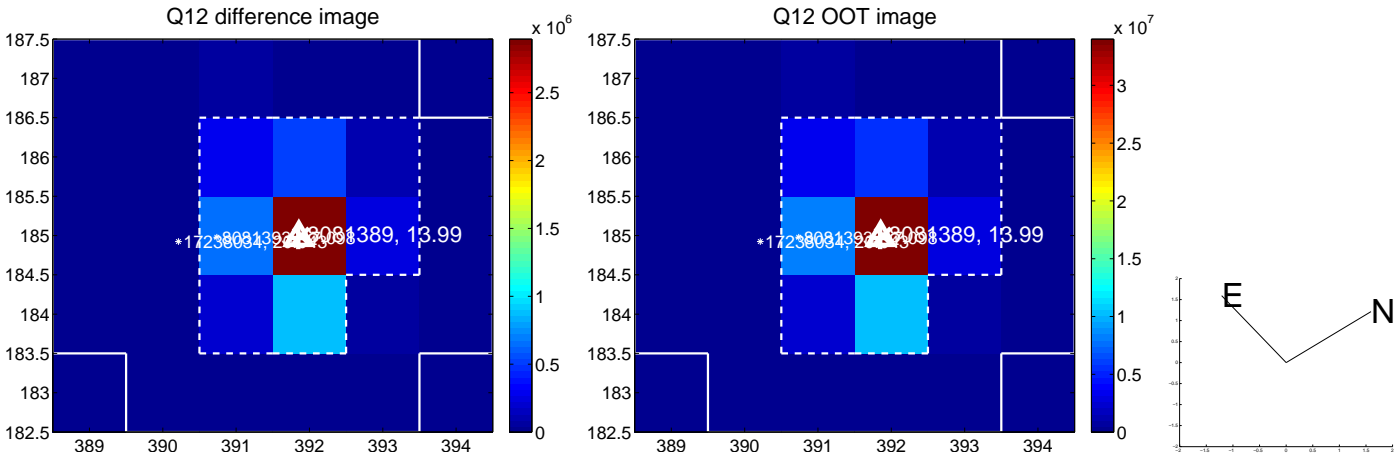
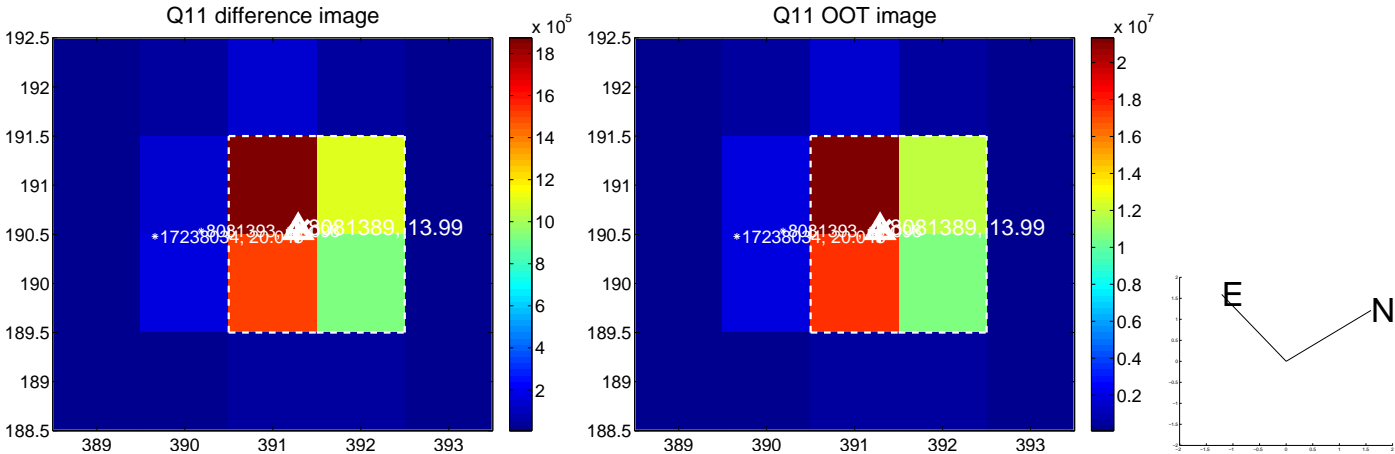
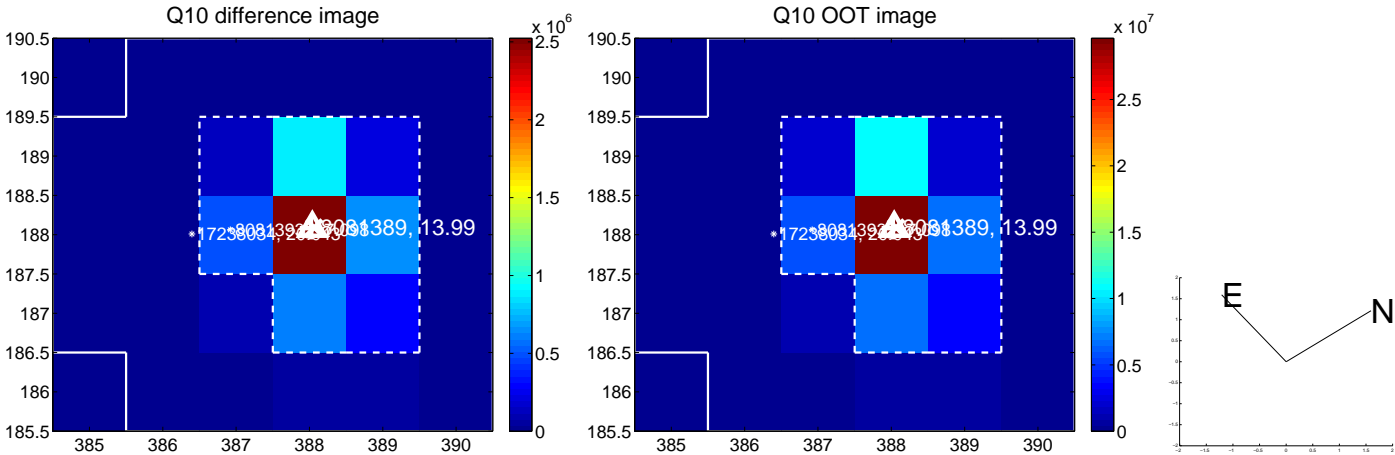
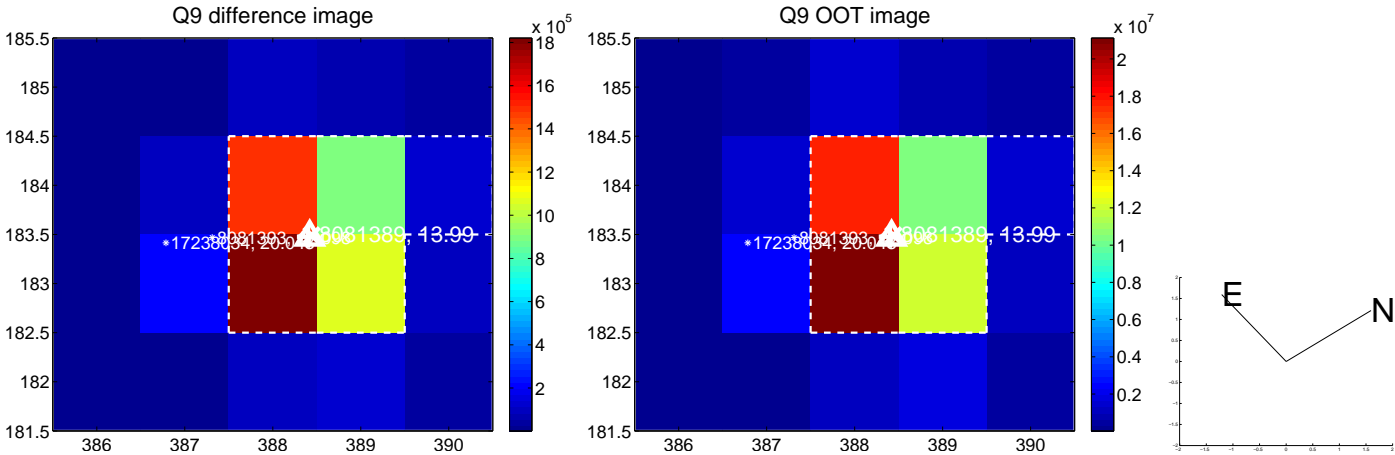


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

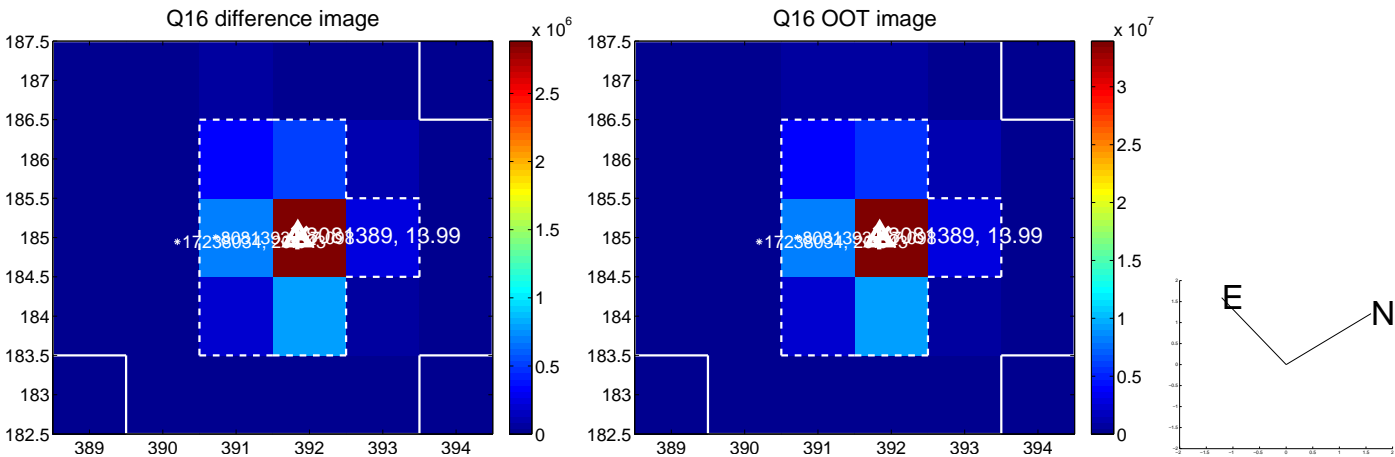
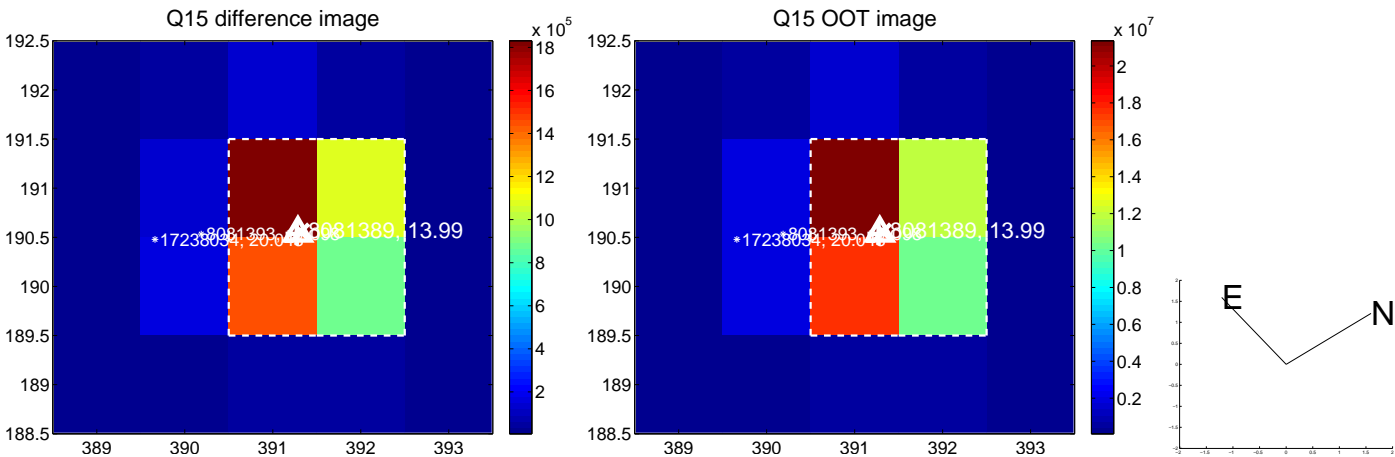
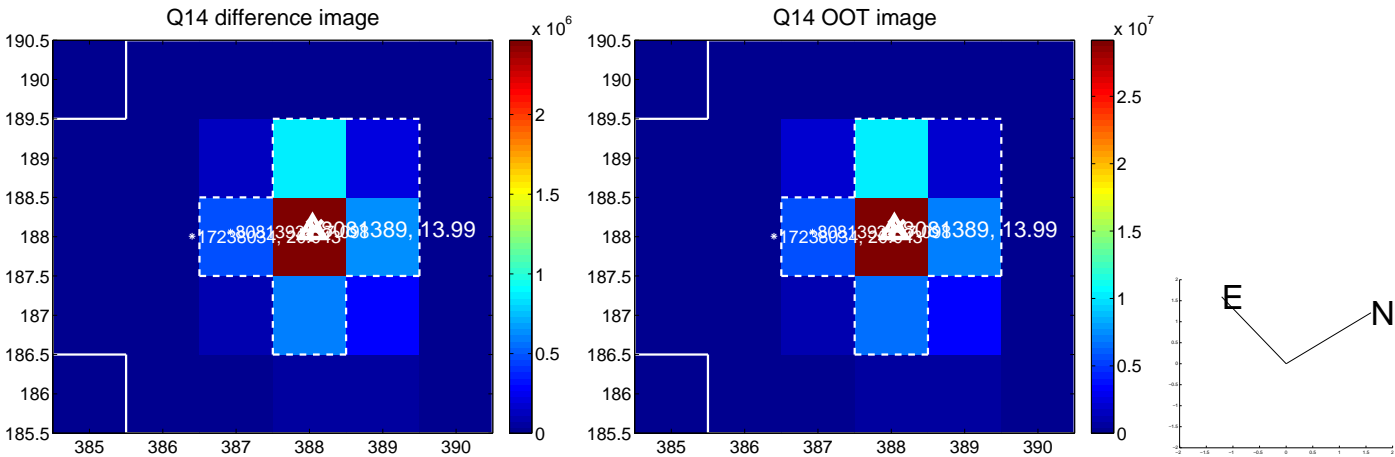
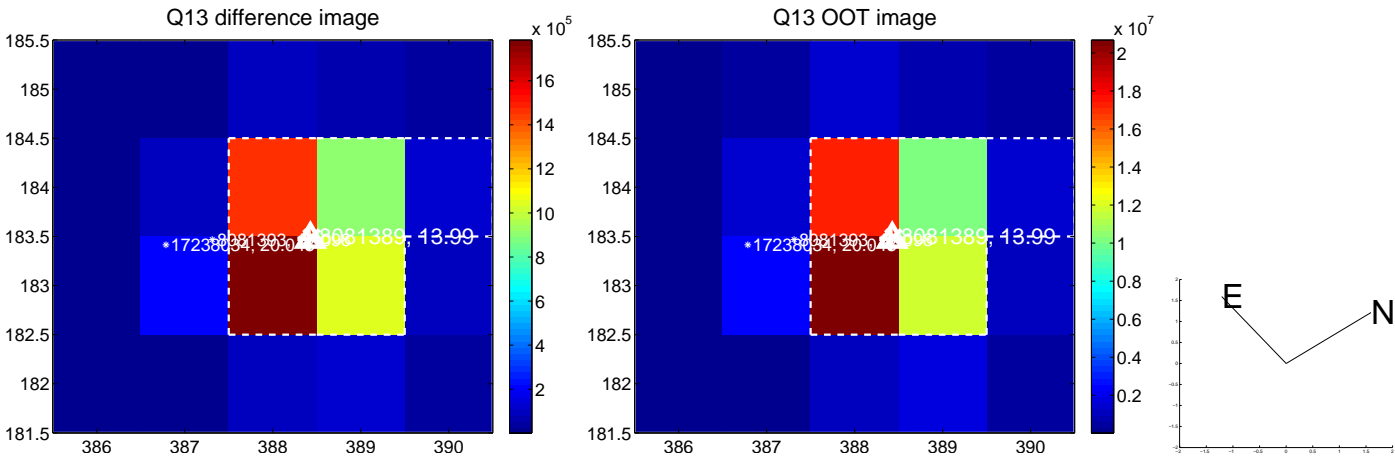




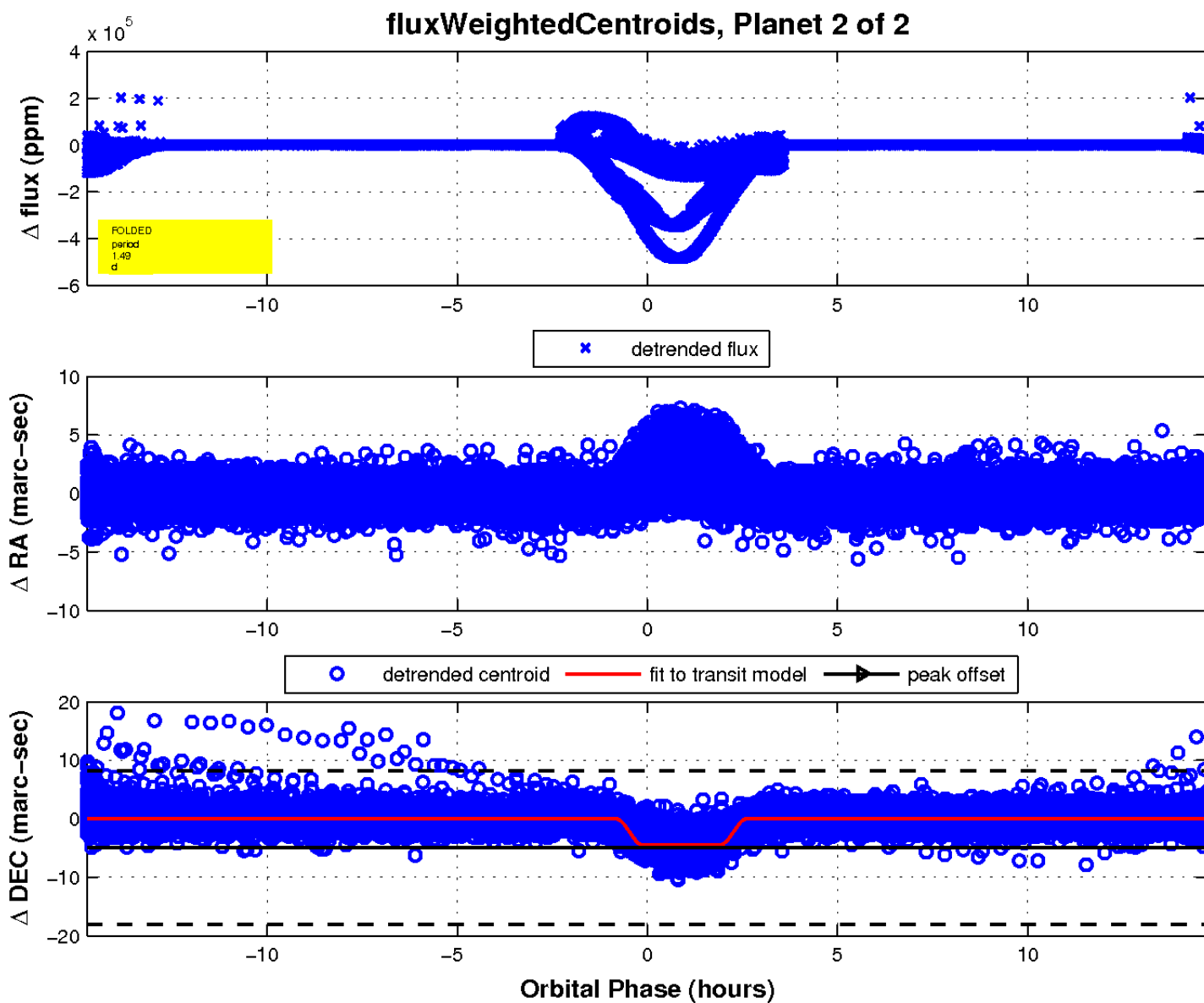
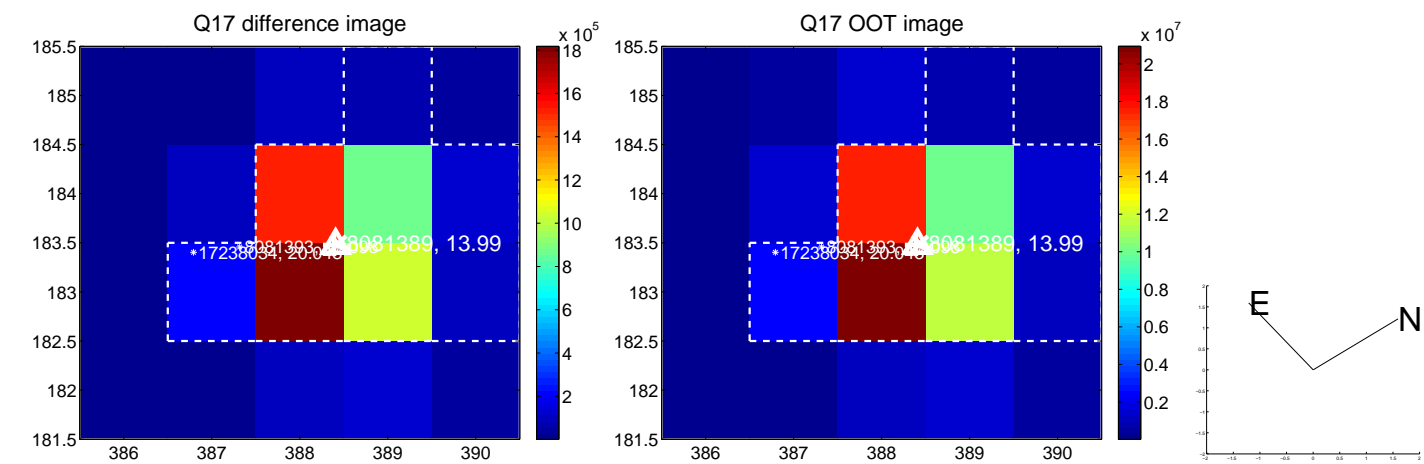
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

