

# KIC 005384079

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005384079-01	OBS	2011.01	7.056768	132.533020	123.3	2.055	23.8	25.9	1.40	6388	1.83	485.34
005384079-02	OBS	2011.02	17.265492	135.352620	81.1	5.254	12.8	13.4	1.40	6388	1.45	147.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005384079-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
005384079-02	OBS	PC	0.95	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.

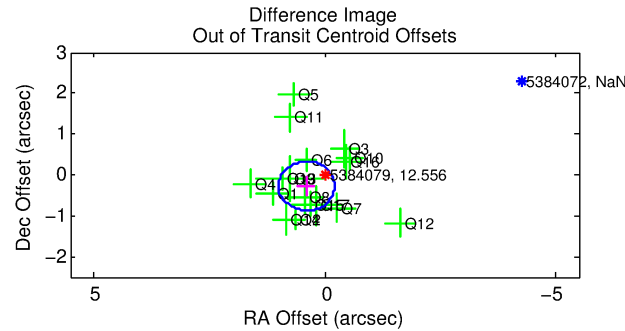
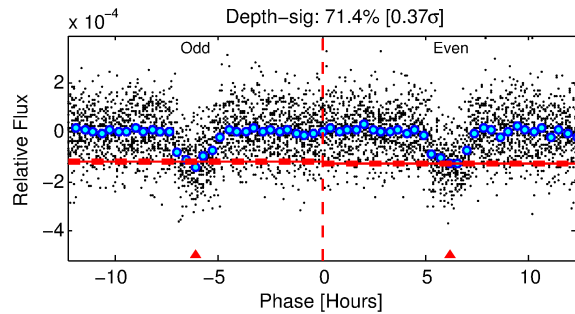
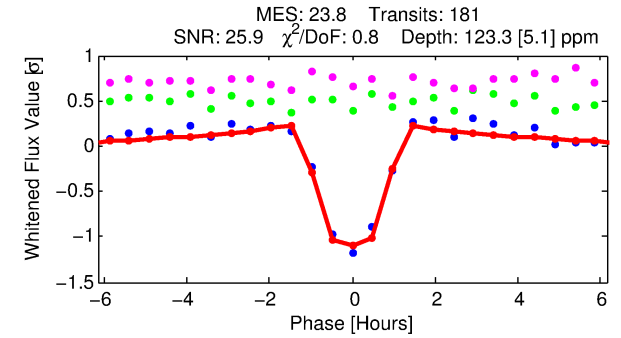
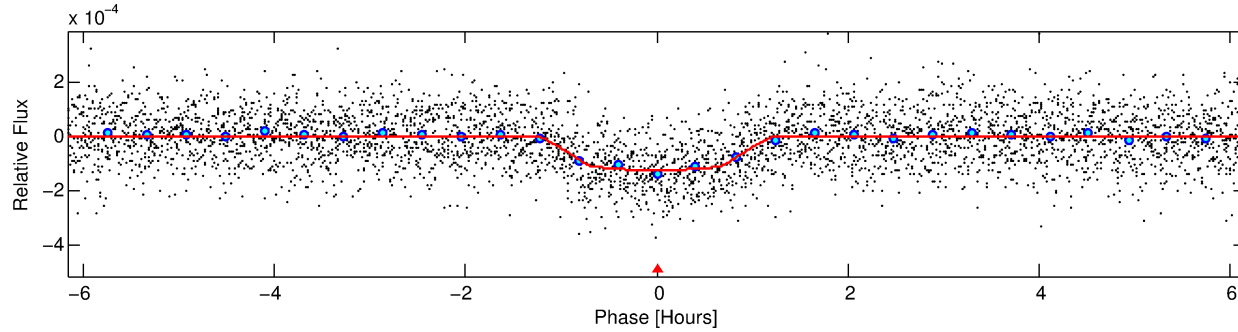
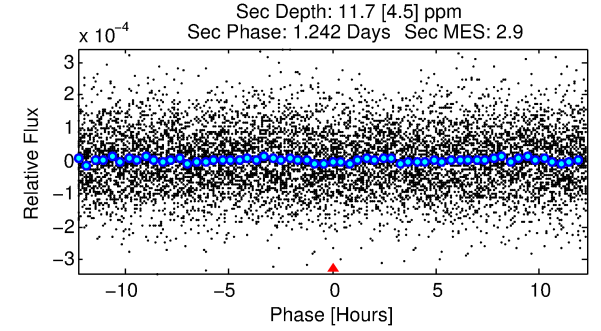
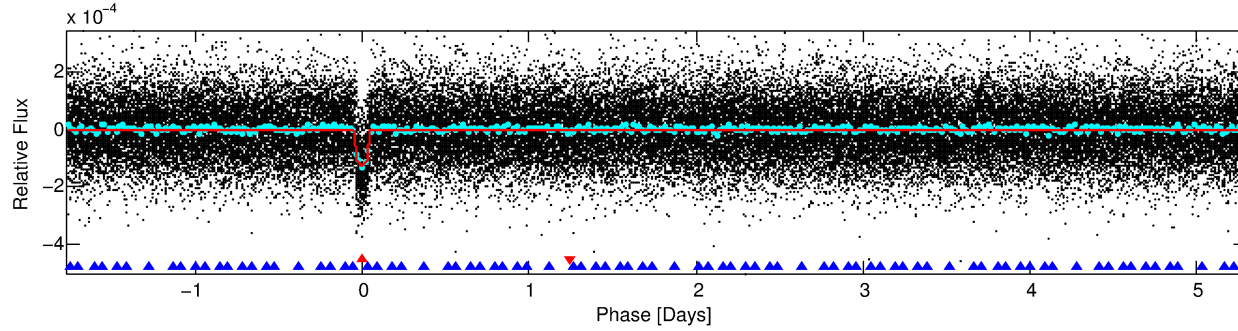
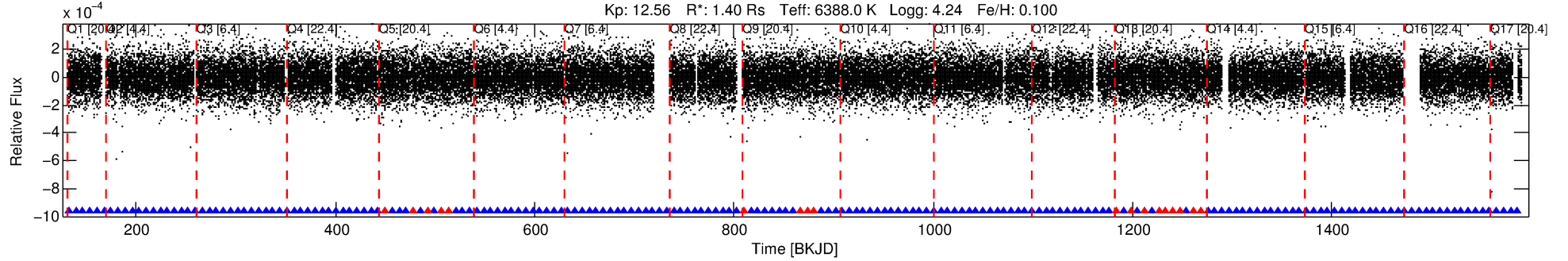
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005384079-01

No Significant Match Found

# DV One-Page Summary

KIC: 5384079 Candidate: 1 of 2 Period: 7.057 d  
KOI: K02011.01 Name: Kepler-348b Corr: 0.967



## DV Fit Results:

Period = 7.05677 [0.00001] d  
Epoch = 132.5330 [0.0015] BKJD  
Rp/R\* = 0.0119 [0.0026]  
a/R\* = 12.18 [14.66]  
b = 0.90 [0.26]  
Seff = 485.34 [117.19]  
Teq = 1197 [72] K  
Rp = 1.83 [0.53] Re  
a = 0.0777 [0.0122] AU  
Ag = 11.63 [7.30] [1.46σ]  
Teffp = 3417 [506] K [4.35σ]

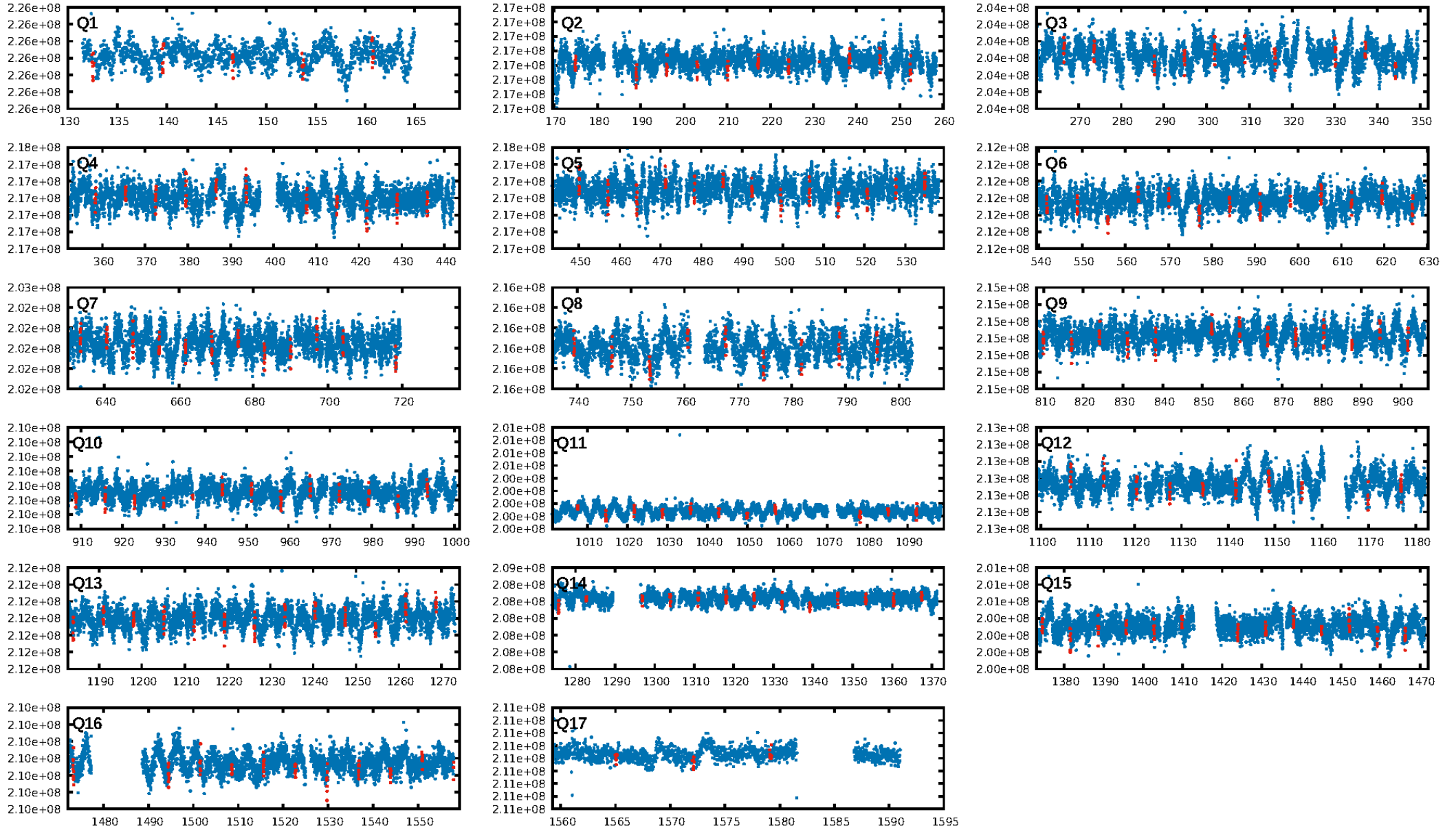
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [43.43σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGo-sig: 100.0%  
Bootstrap-pfa: 1.53e-119  
RollingBand-fgt: 0.90 [155/173]  
GhostDiagnostic-chr: 3.713  
Centroid-sig: 2.4%  
Centroid-so: 1.070 arcsec [2.35σ]  
OotOffset-rm: 0.479 arcsec [2.39σ]  
KicOffset-rm: 0.413 arcsec [2.04σ]  
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]

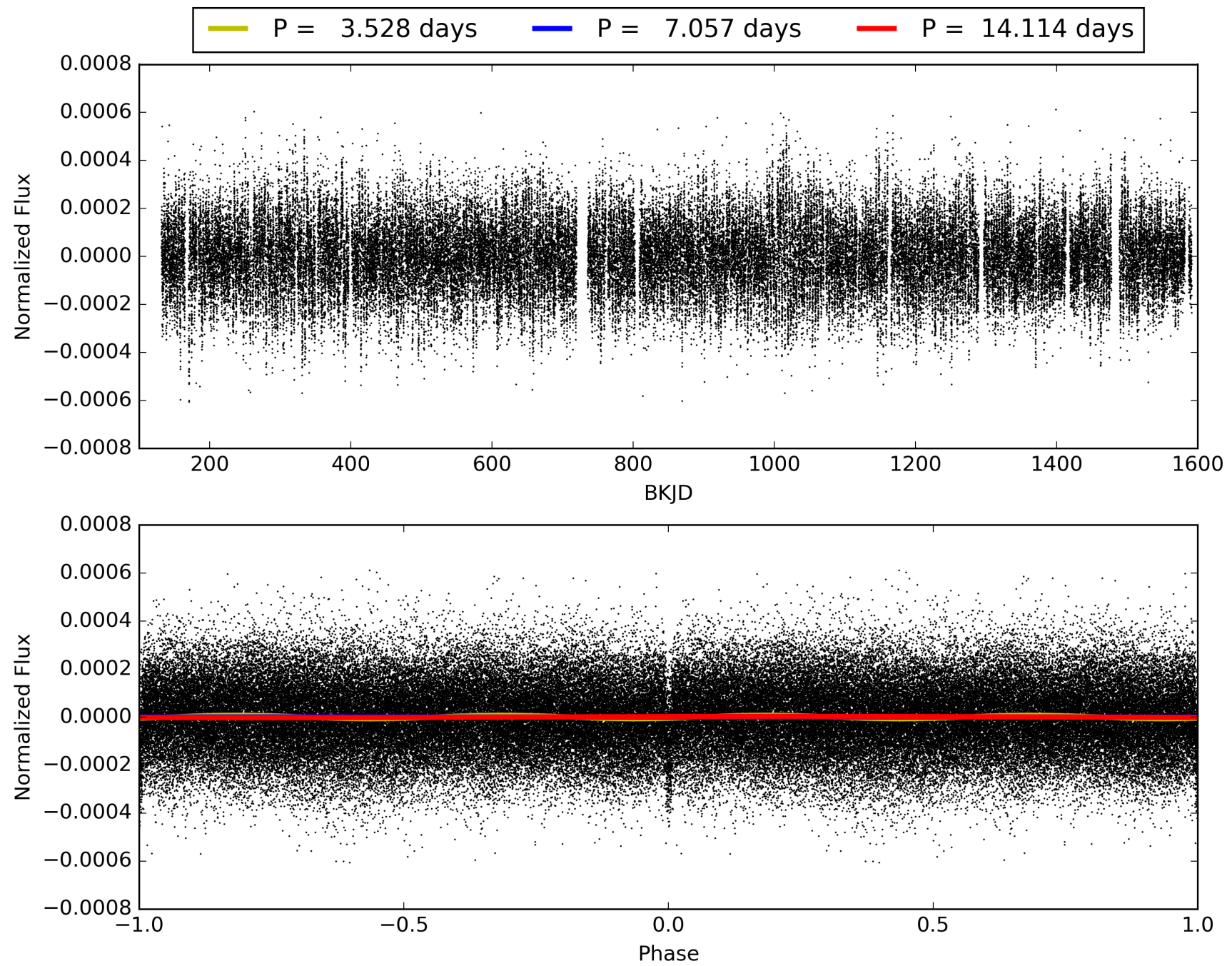
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:55:21 Z

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

# TCE 005384079-01, PDC Light Curves

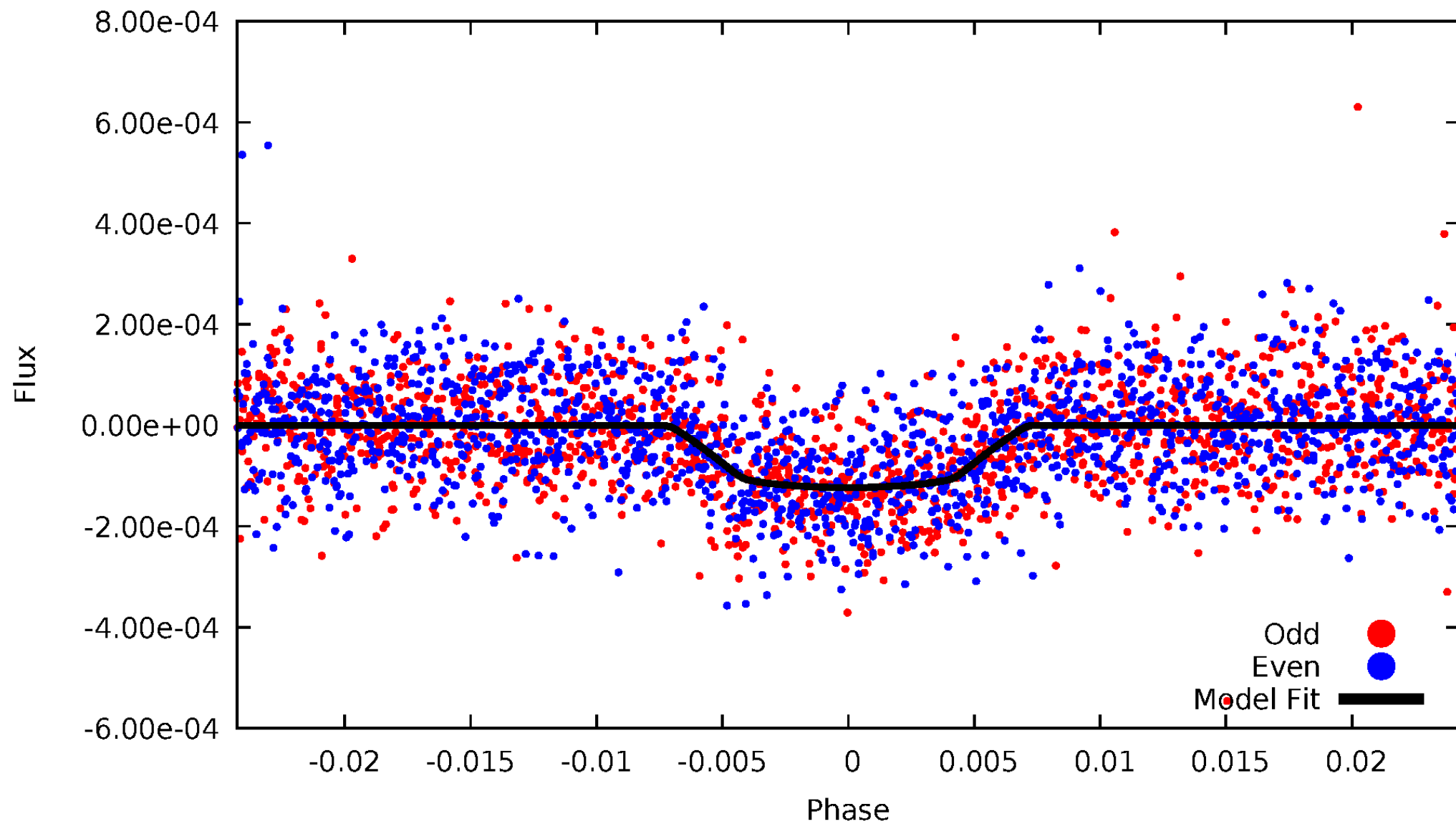


TCE 005384079-01



# DV Odd/Even

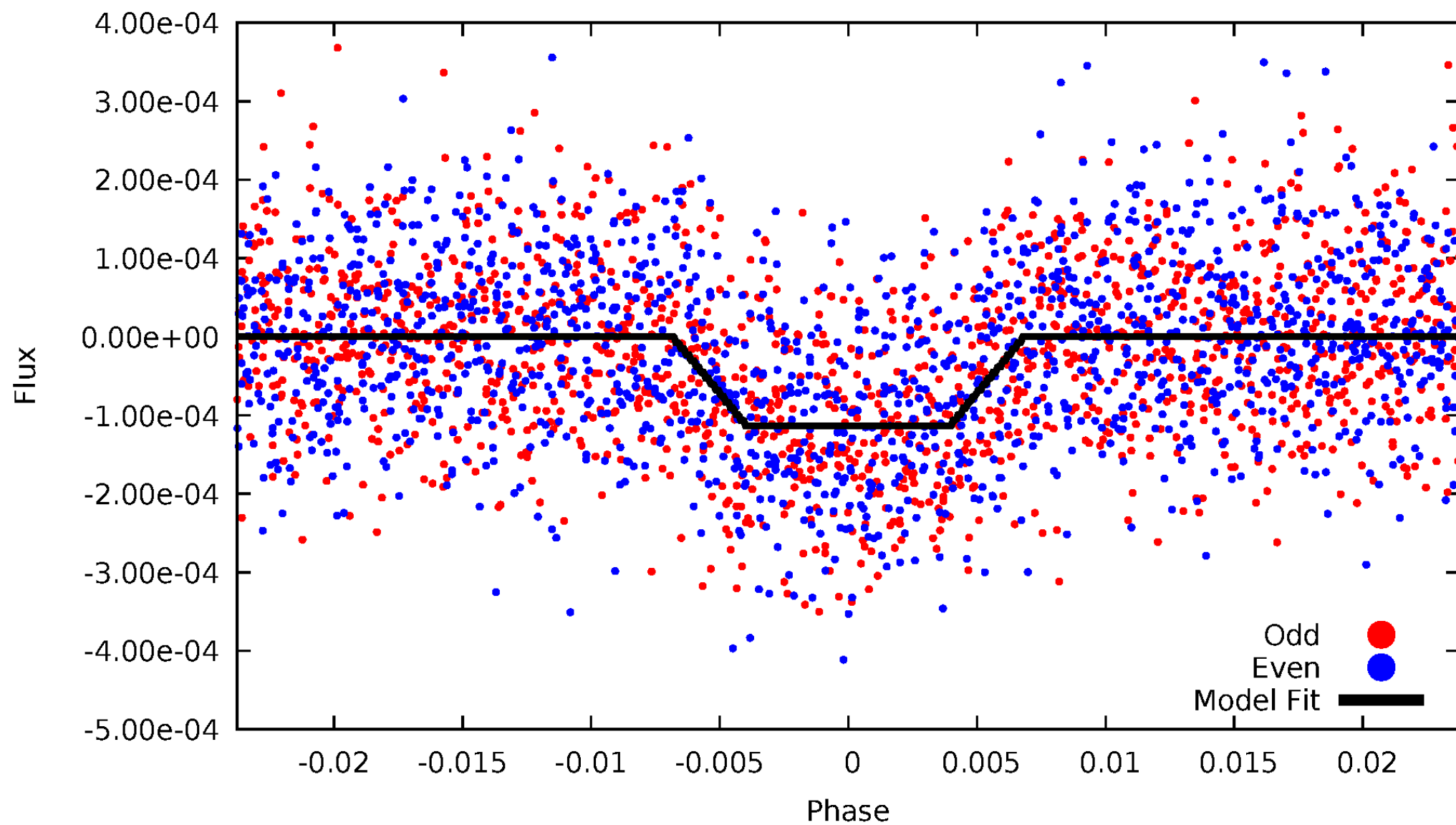
TCE 005384079-01





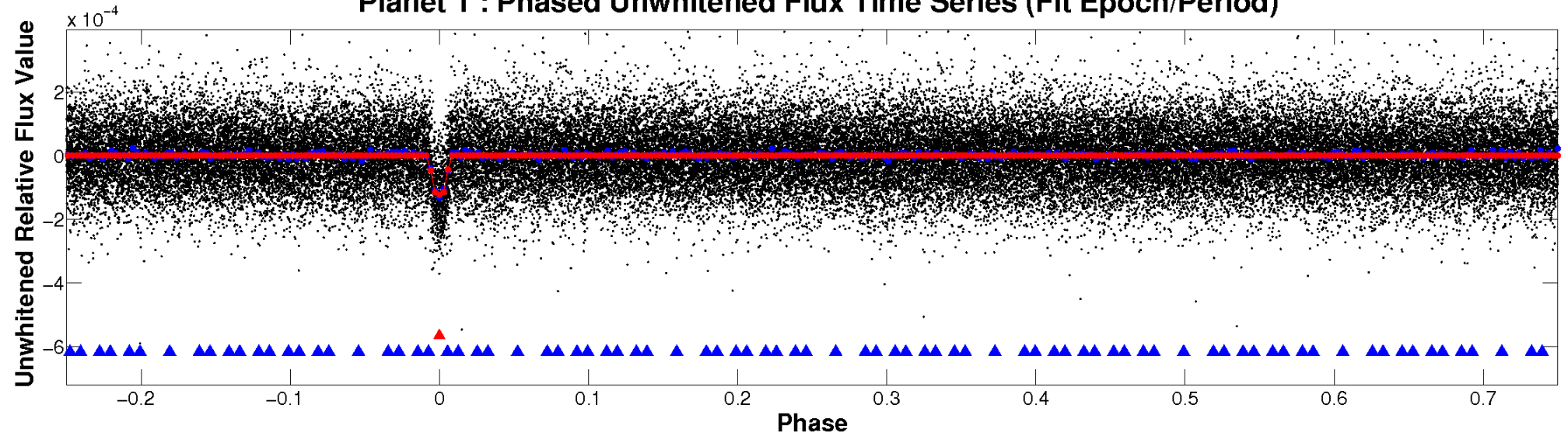
# ALT Odd/Even

TCE 005384079-01

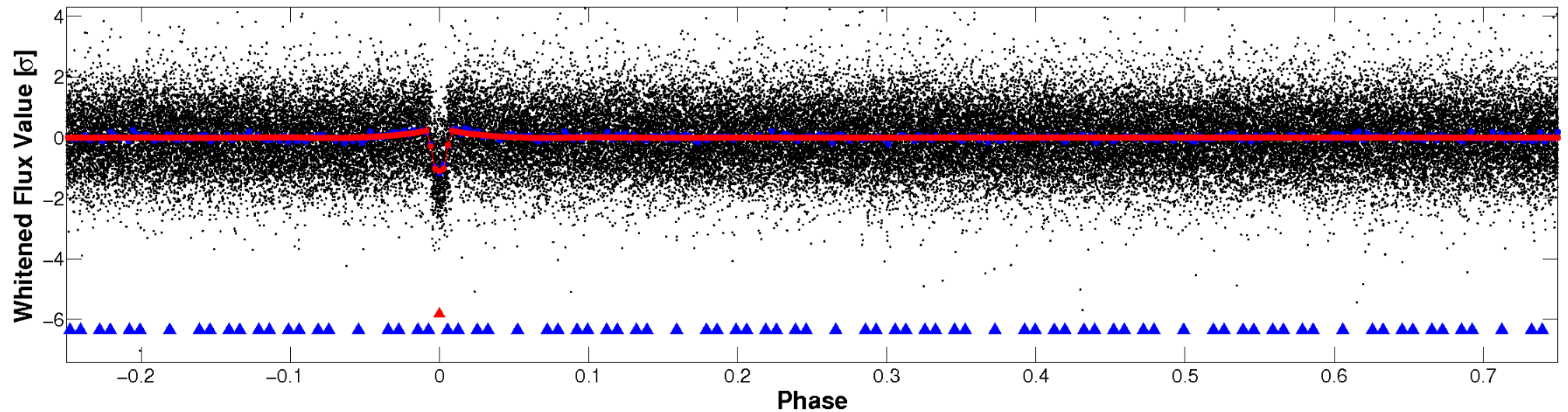


# Non-Whitened Vs. Whitened Light Curve

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

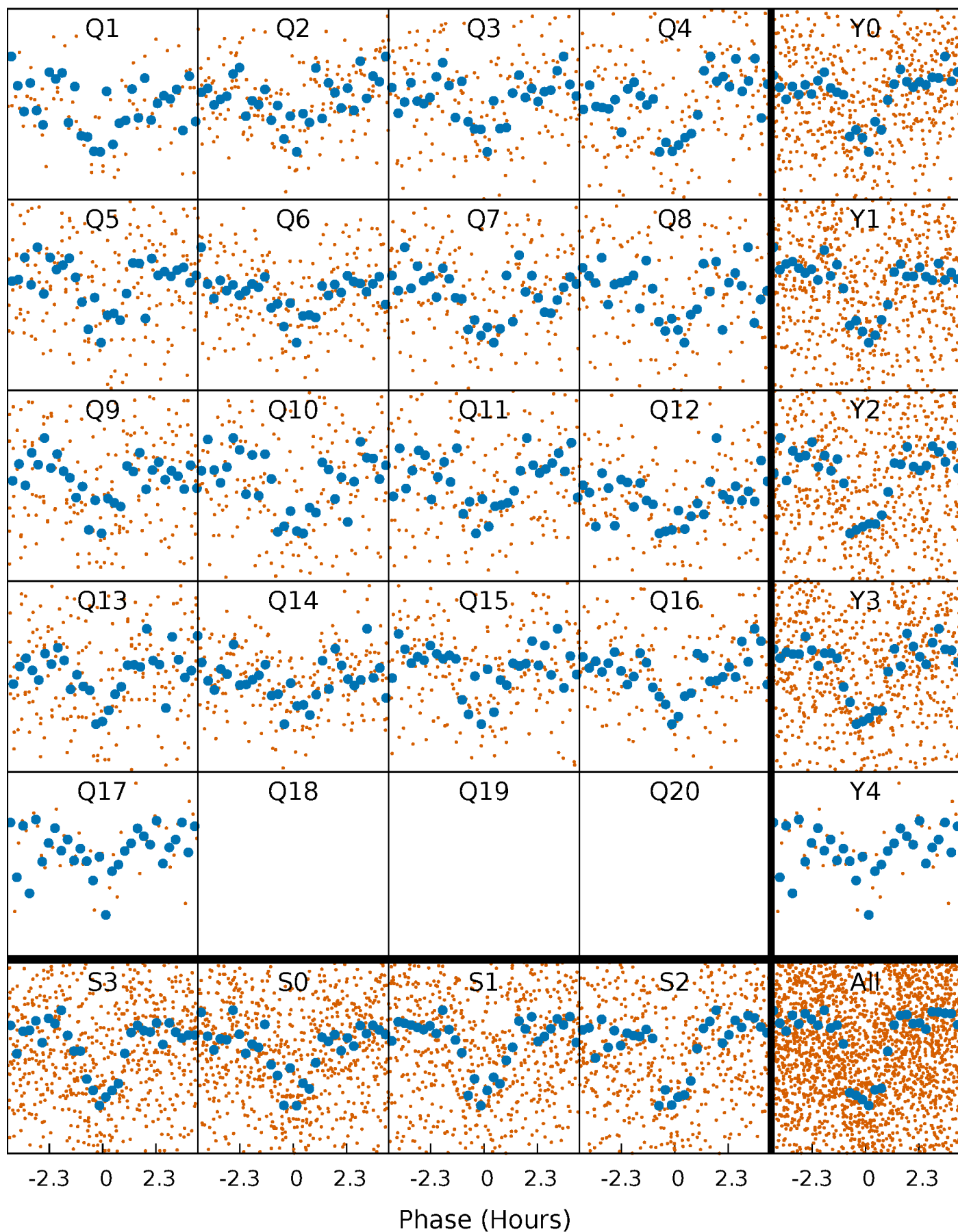


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

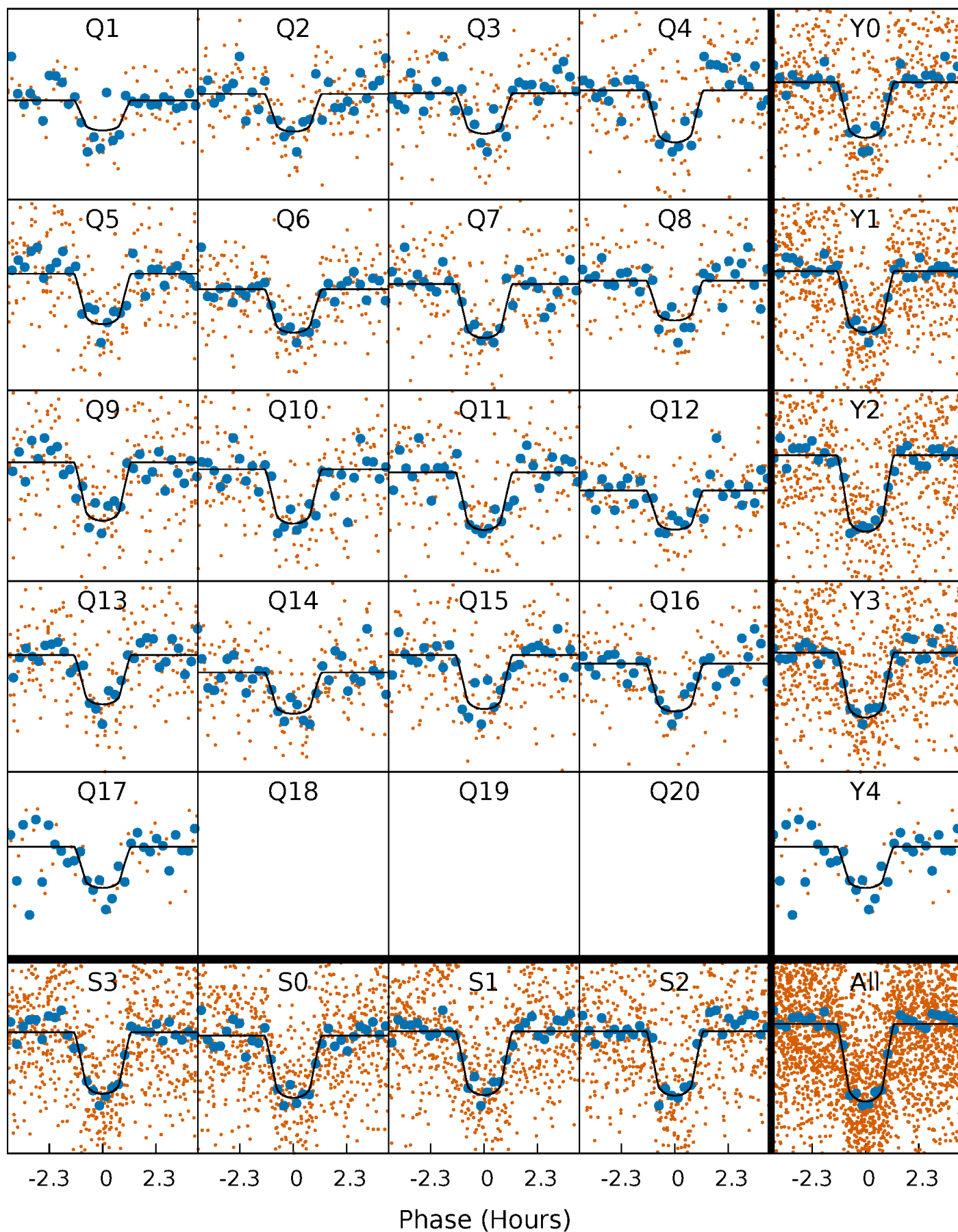
TCE 005384079-01 P= 7.056768 Days  $T_0=132.533019$  (BKJD)





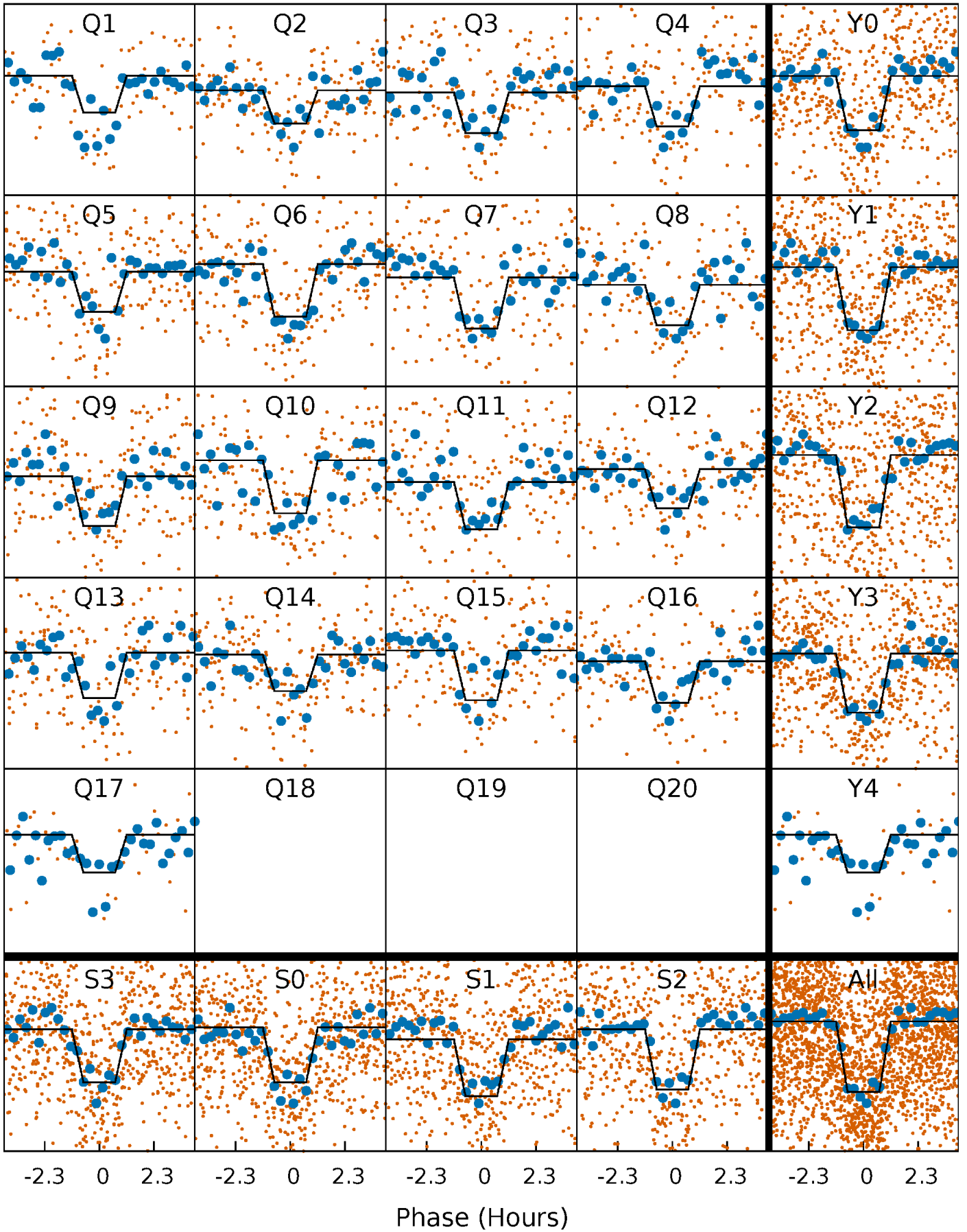
# DV Quarter-Phased Transit Curves

TCE 005384079-01 P= 7.056768 Days  $T_0=132.533019$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

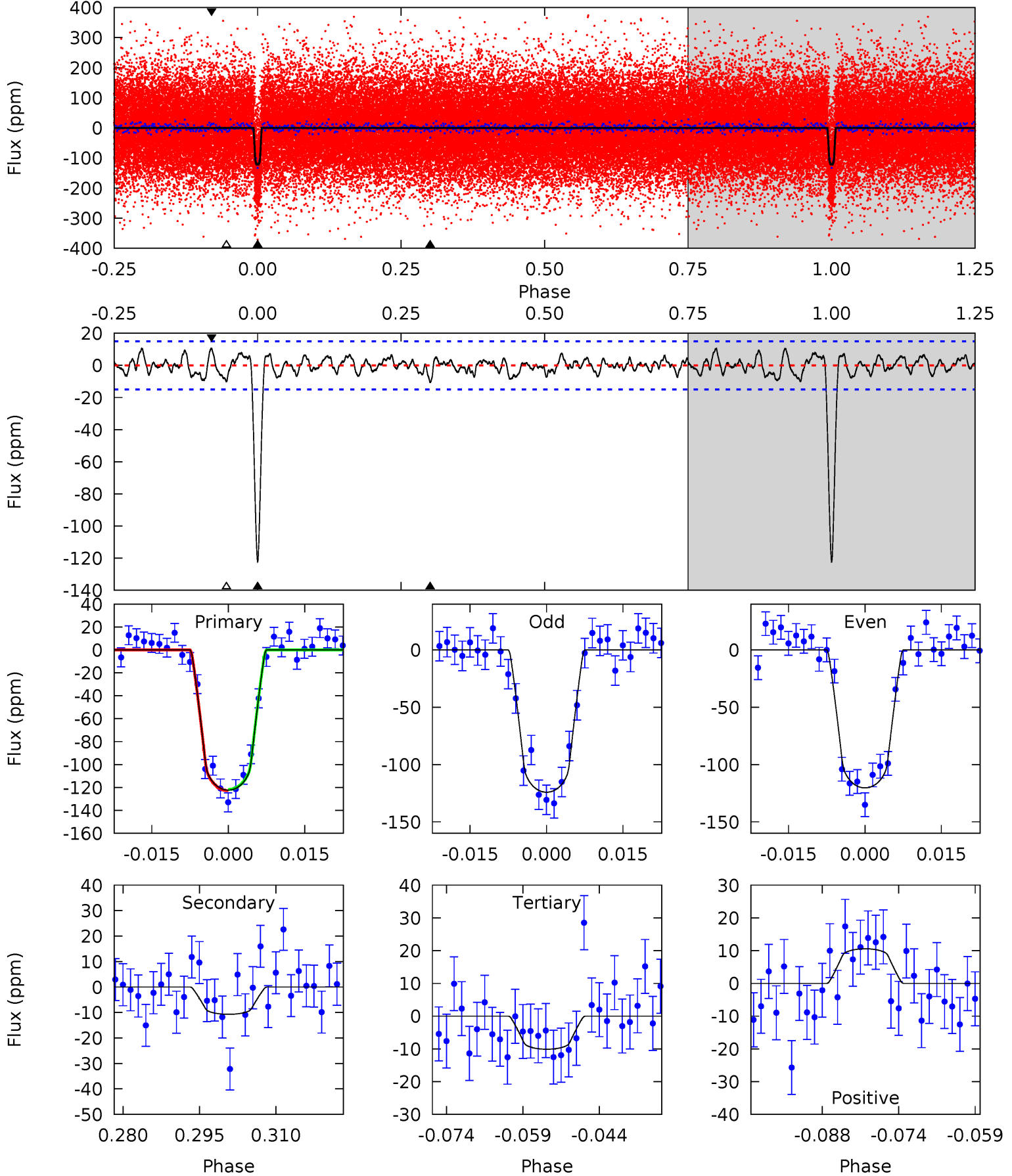
TCE 005384079-01   P= 7.056742 Days    $T_0=132.535951$  (BKJD)



# DV Model-Shift Uniqueness Test

005384079-01, P = 7.056768 Days, E = 125.476251 Days

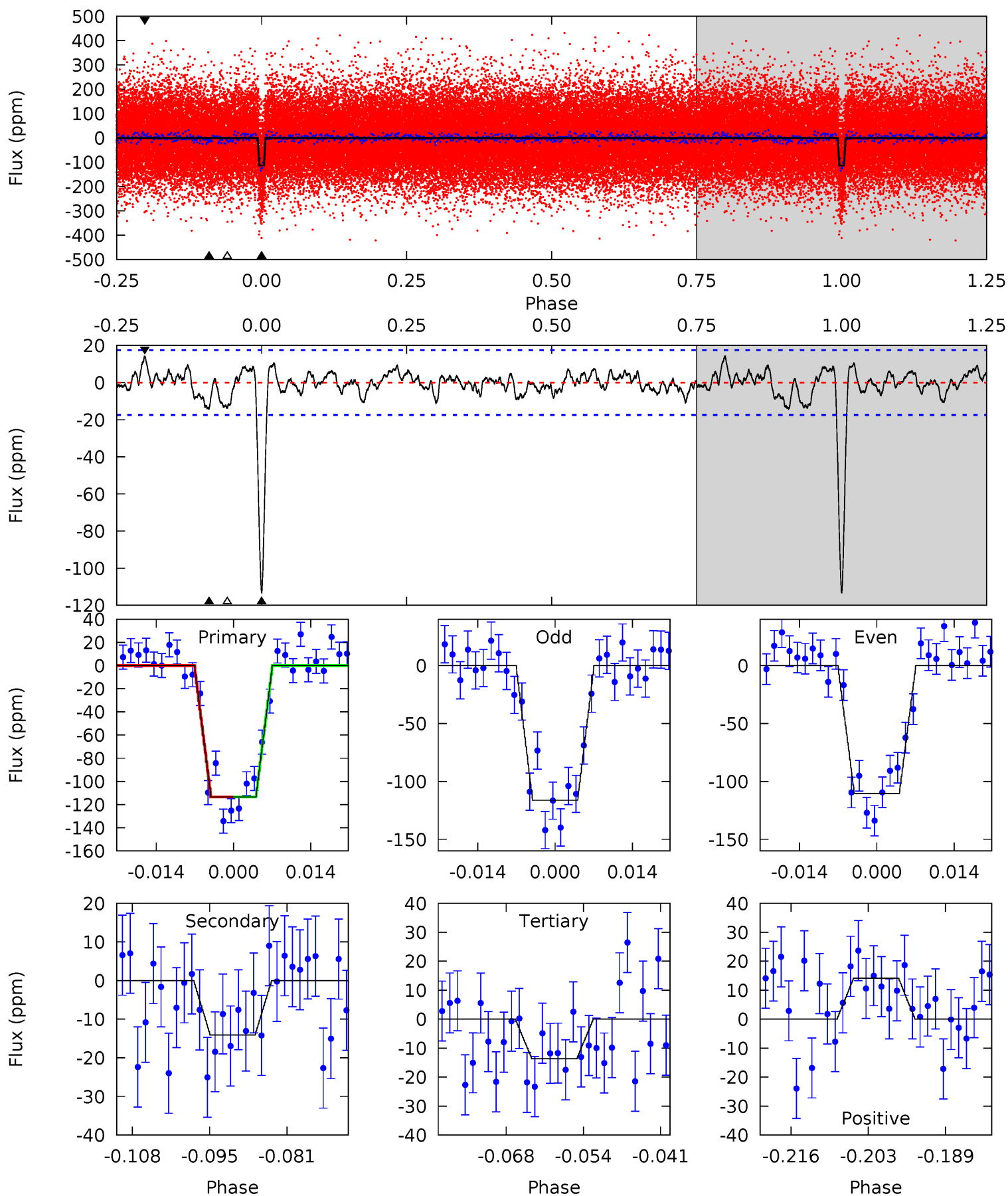
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.3	3.53	3.33	3.49	4.95	2.44	1.25	37.0	36.9	0.20	0.05	0.63	1.00	0.08	0.17



# Alt Model-Shift Uniqueness Test

005384079-01, P = 7.056742 Days, E = 125.479209 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
32.3	4.01	3.89	4.03	4.97	2.47	1.32	28.4	28.3	0.12	-0.02	0.82	1.01	0.11	0.00



### Stellar Parameters For KIC 005384079

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6388^{+115}_{-140}$	$4.244^{+0.088}_{-0.121}$	$0.100^{+0.150}_{-0.200}$	$1.402^{+0.267}_{-0.178}$	$1.259^{+0.103}_{-0.113}$	$0.643^{+0.276}_{-0.226}$
	+2%/-2%	+2%/-3%	+150%/-200%	+19%/-13%	+8%/-9%	+43%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 005384079-01 / KOI 2011.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-11 \pm 3$	$1.80^{+0.43}_{-0.42}$	$1675^{+70}_{-63}$	$3756^{+399}_{-324}$	$11^{+8}_{-5}$
Alt.	$-14 \pm 4$	$1.68^{+0.45}_{-0.45}$	$1679^{+83}_{-73}$	$4036^{+519}_{-371}$	$16^{+15}_{-7}$

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



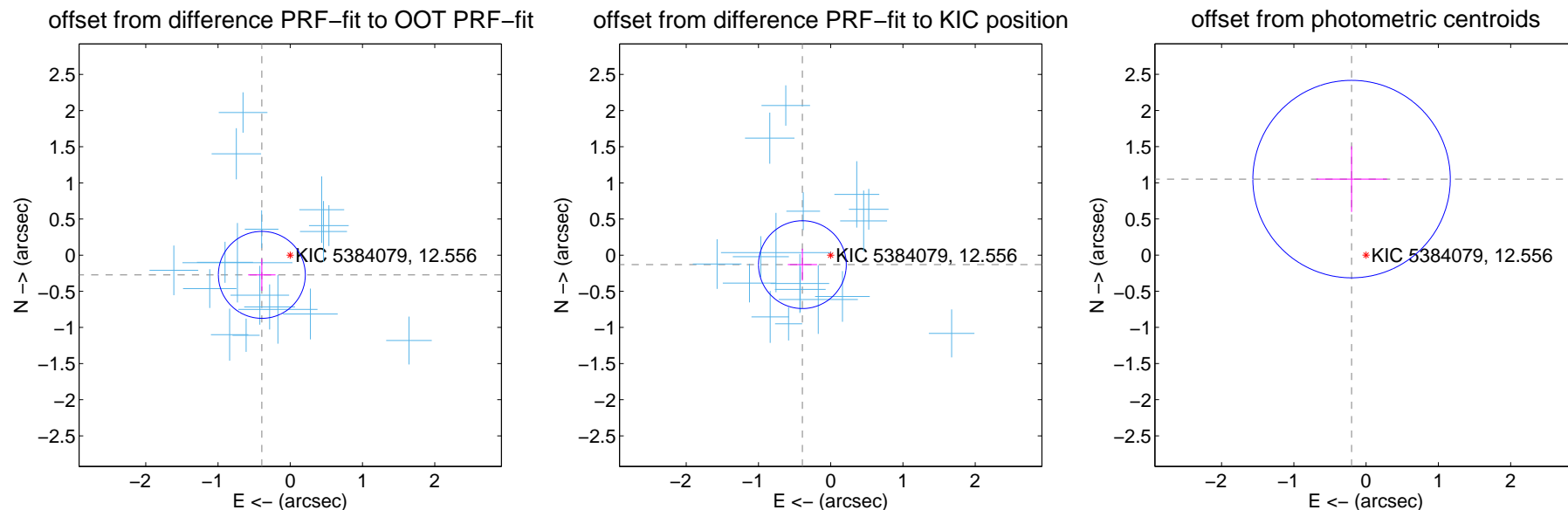
## DV Centroid Data

Supplemental centroid analysis for 005384079-01. Kepler magnitude: 12.56. Transit SNR 25.93

There are 17 quarters with good PRF difference image offsets

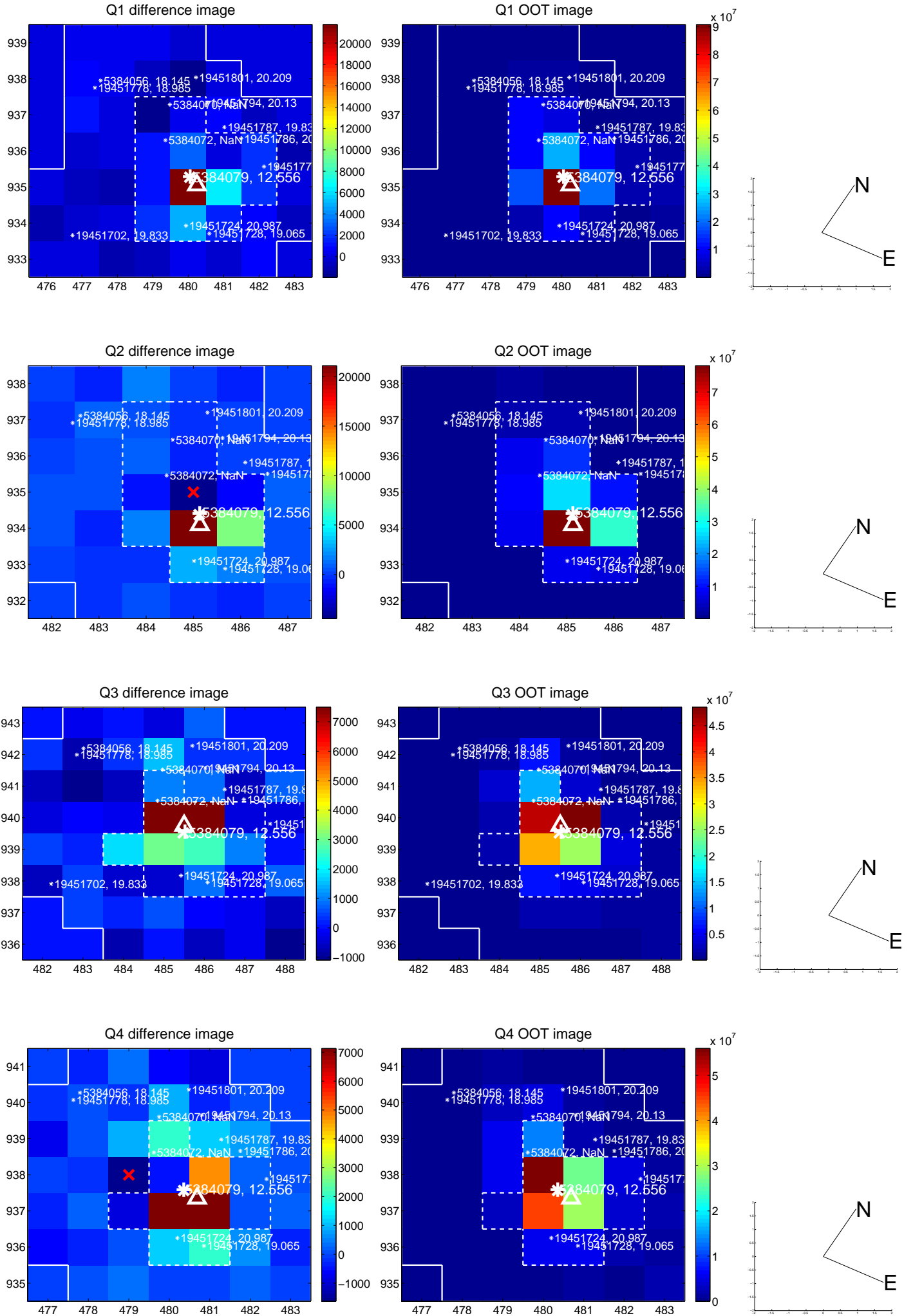
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.479 \pm 0.200$	2.39	$0.393 \pm 0.190$	$-0.273 \pm 0.221$
PRF-fit source offset from KIC position	$0.413 \pm 0.202$	2.04	$0.392 \pm 0.203$	$-0.131 \pm 0.221$
photometric centroid source offset	$1.07 \pm 0.46$	2.35	$0.20 \pm 0.49$	$1.05 \pm 0.45$

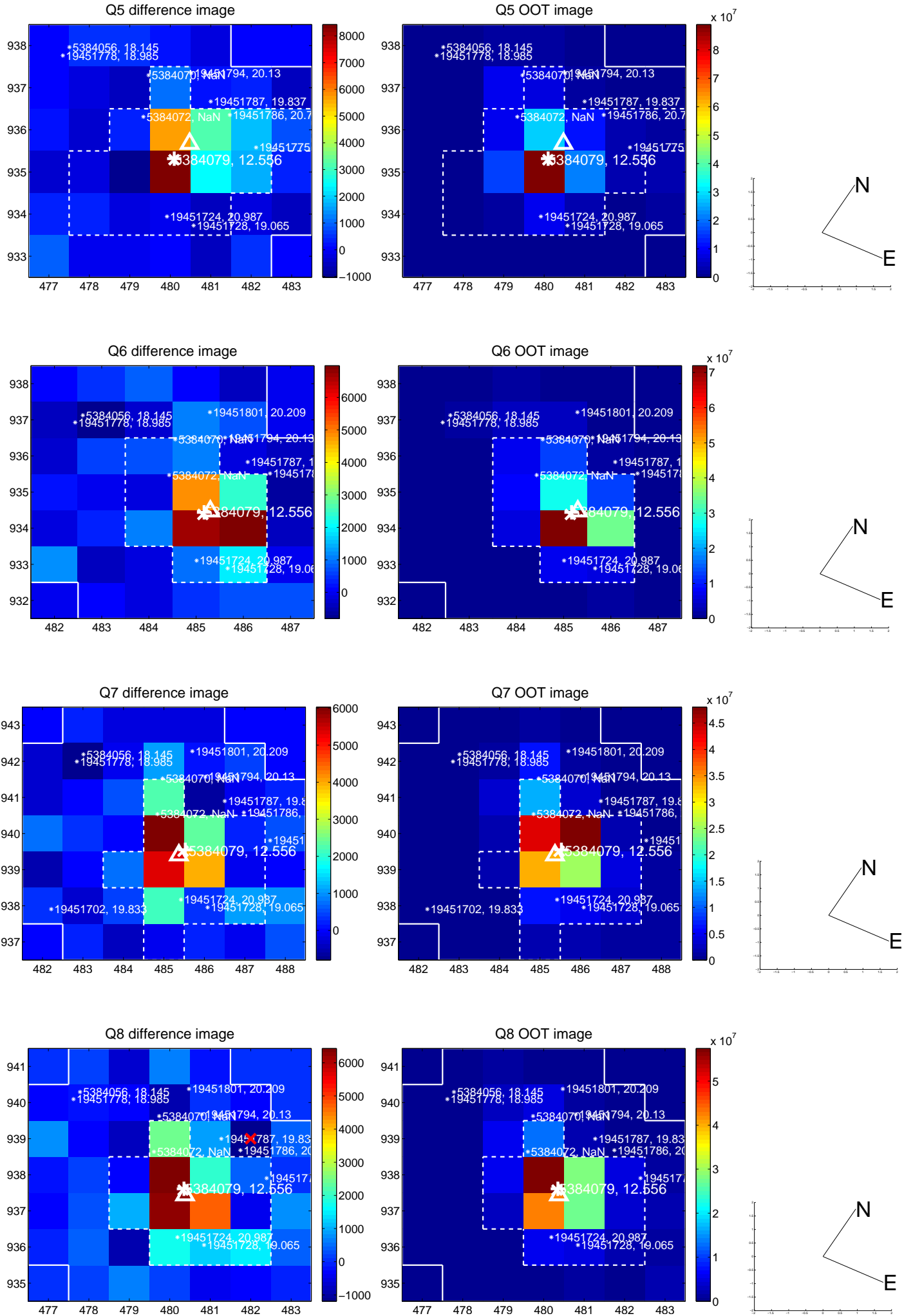


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

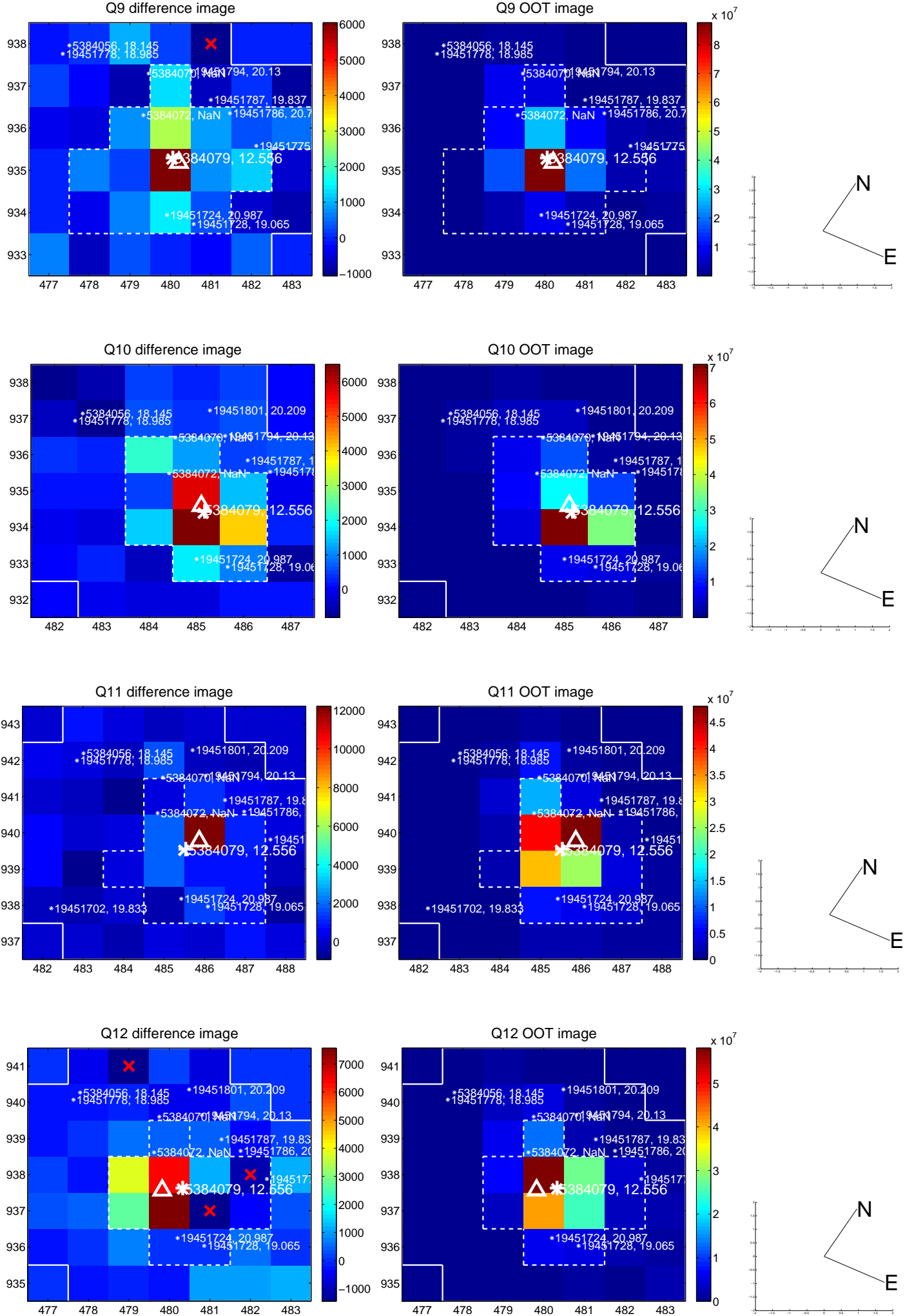
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



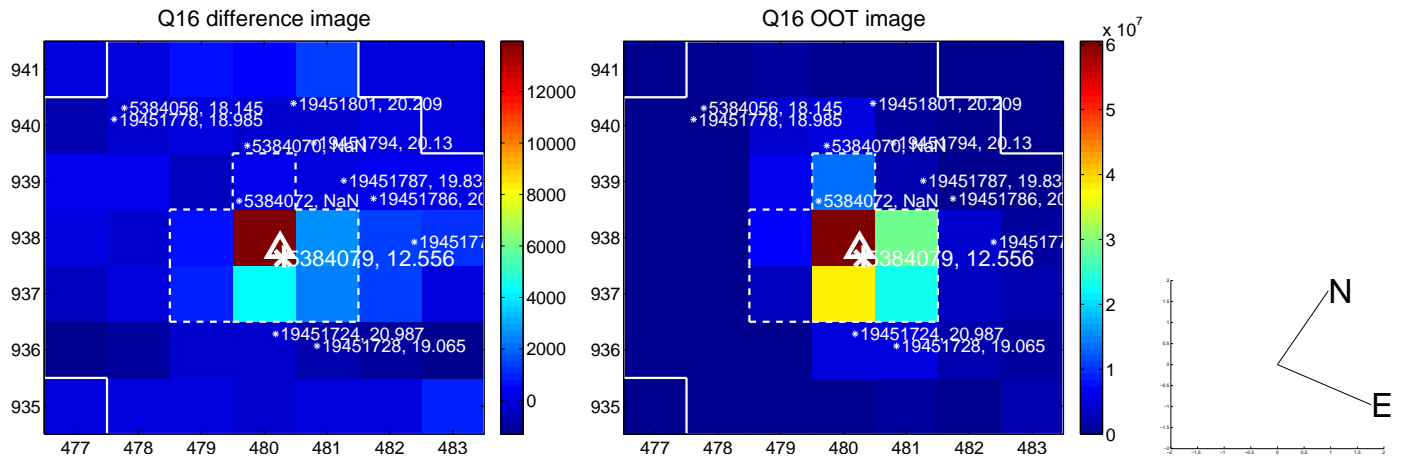
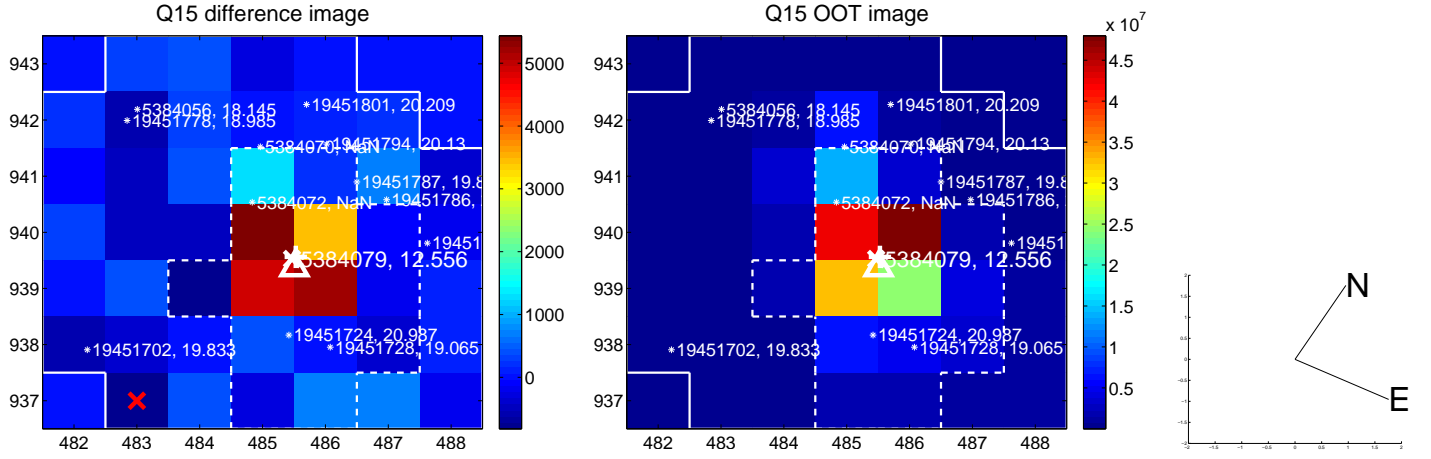
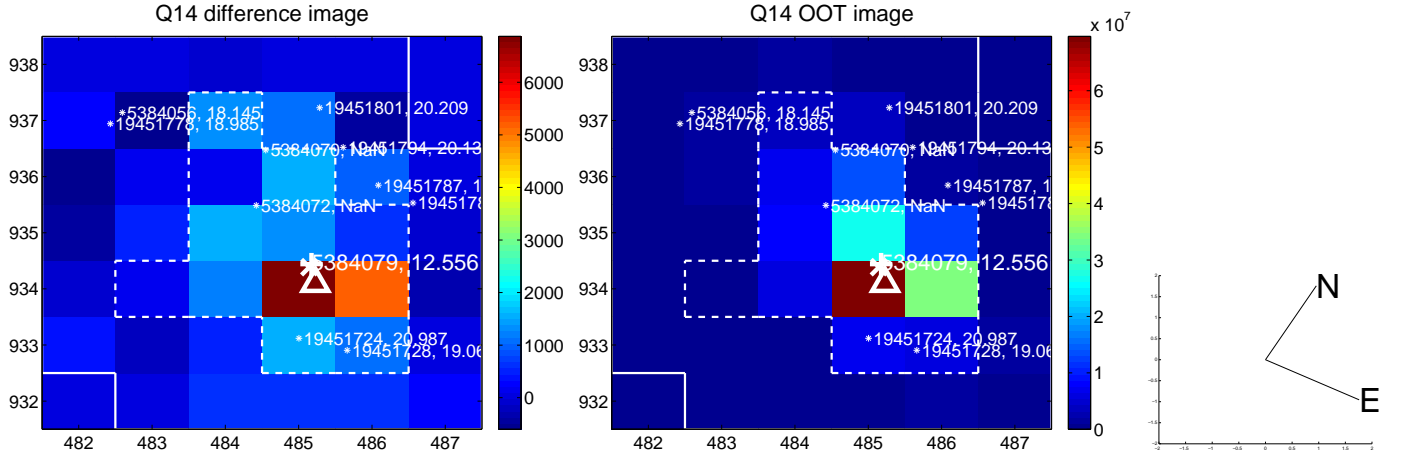
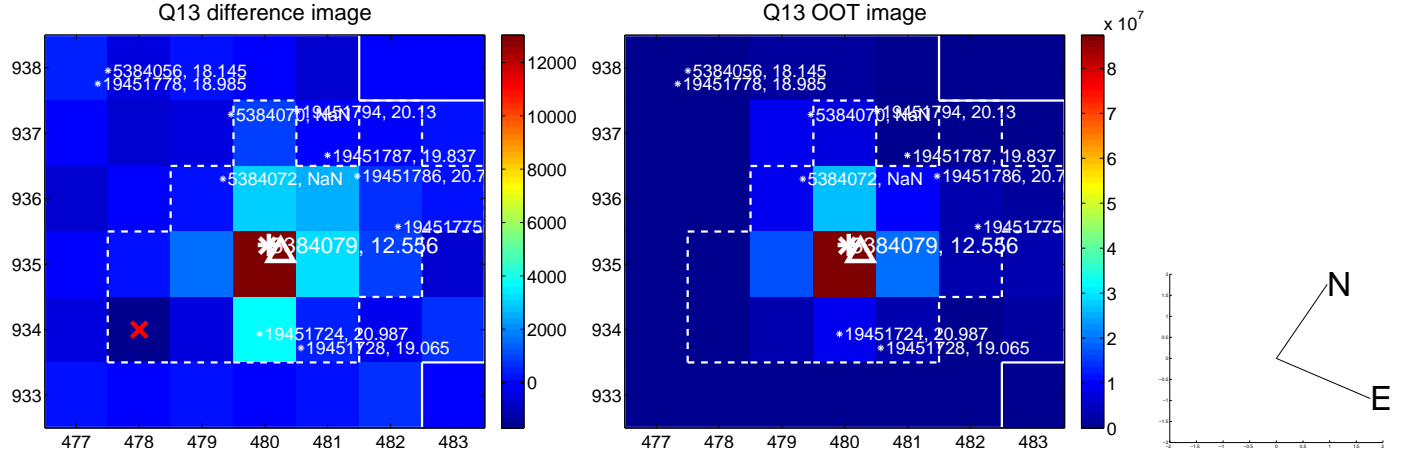
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

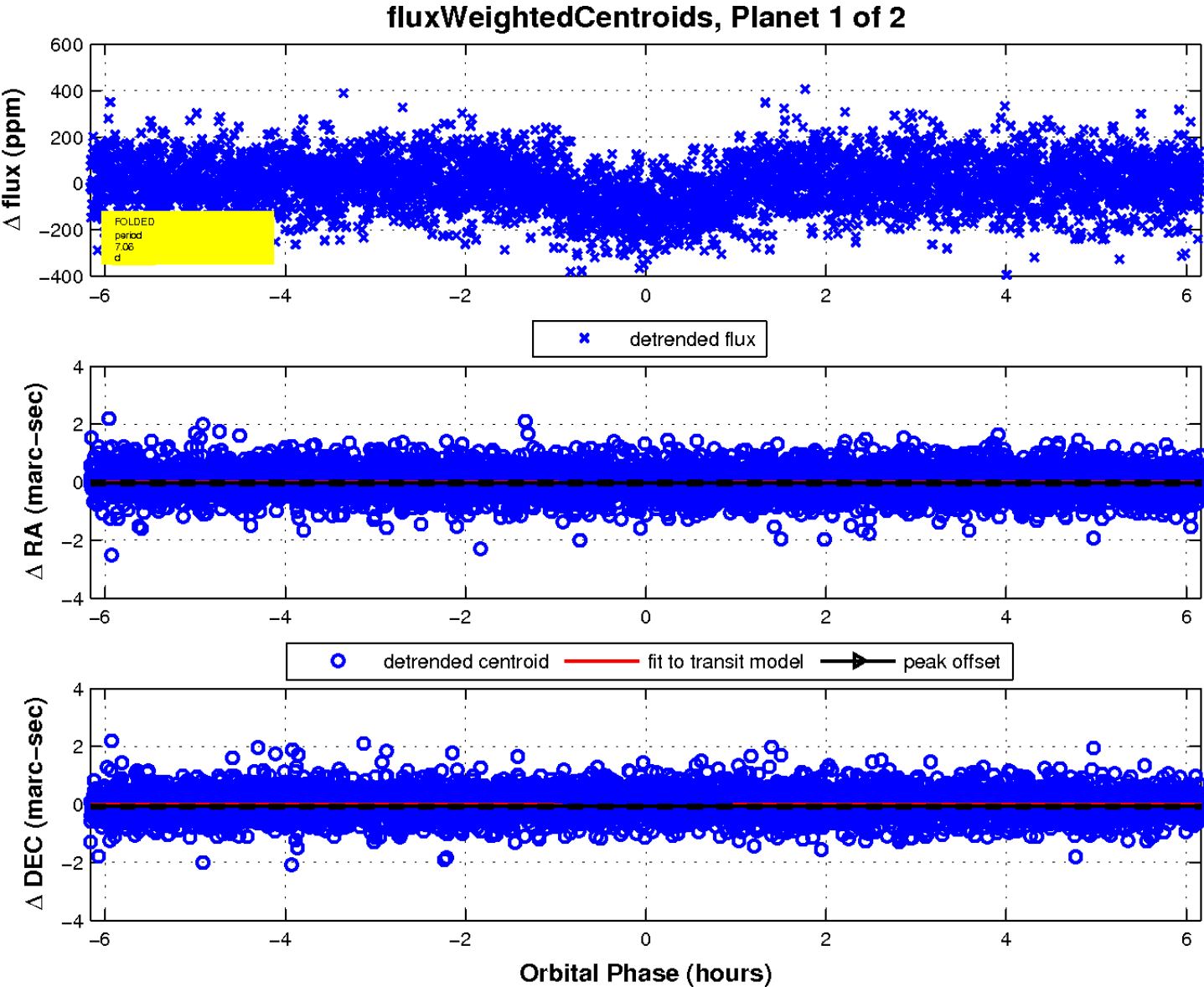
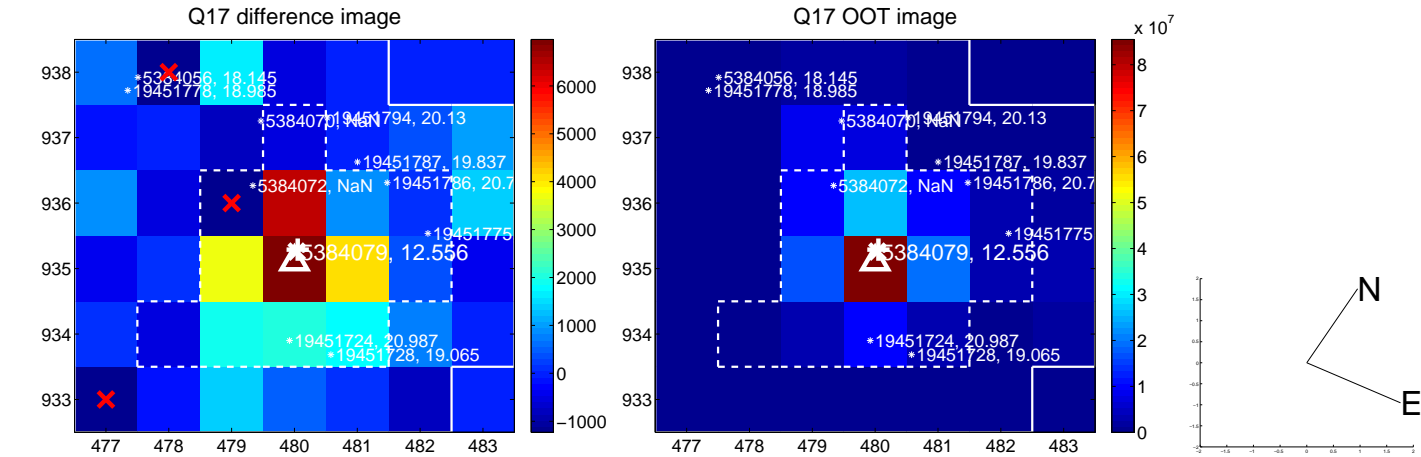


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



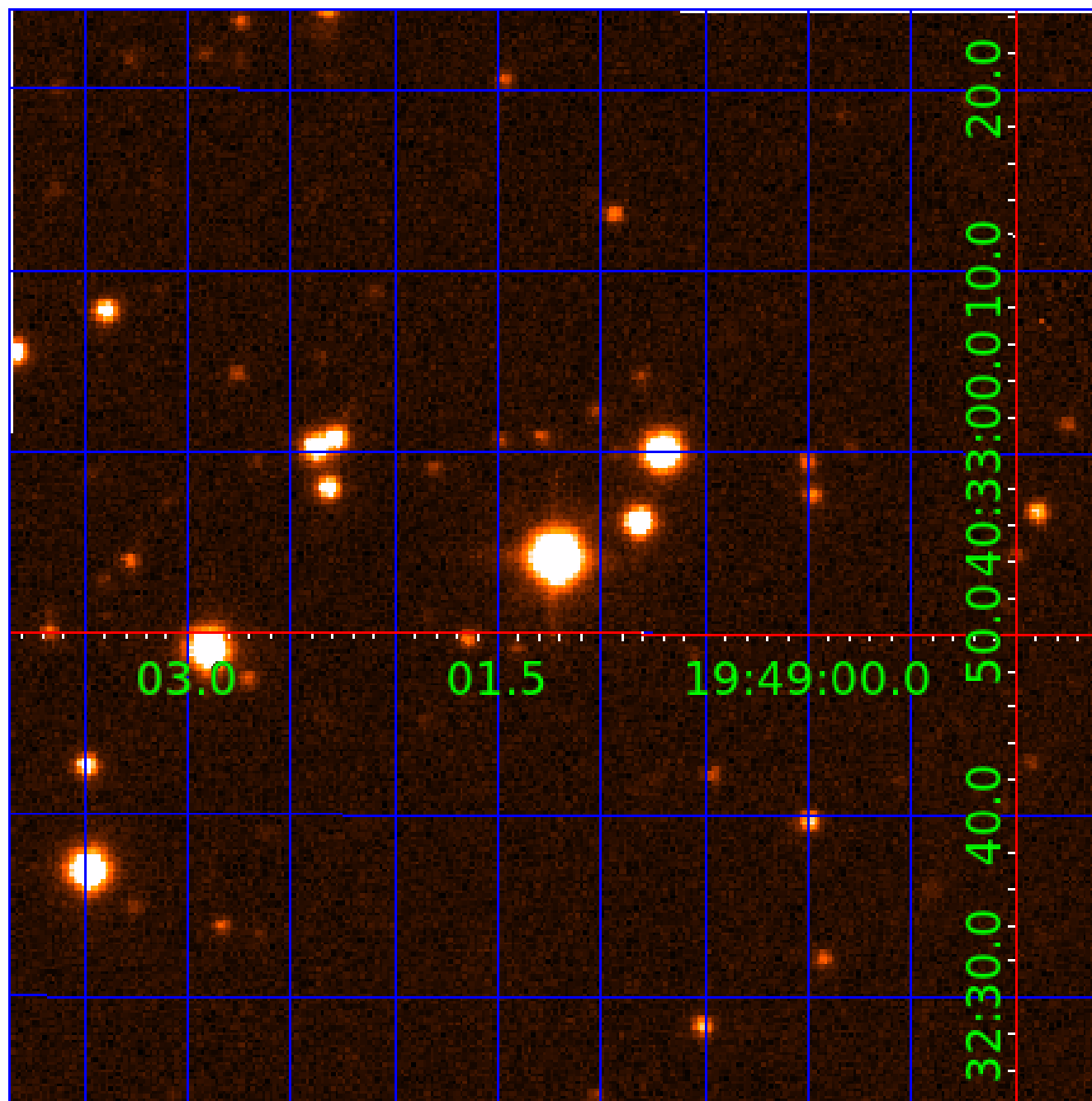


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005384079

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005384079-01	OBS	2011.01	7.056768	132.533020	123.3	2.055	23.8	25.9	1.40	6388	1.83	485.34
005384079-02	OBS	2011.02	17.265492	135.352620	81.1	5.254	12.8	13.4	1.40	6388	1.45	147.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005384079-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
005384079-02	OBS	PC	0.95	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.

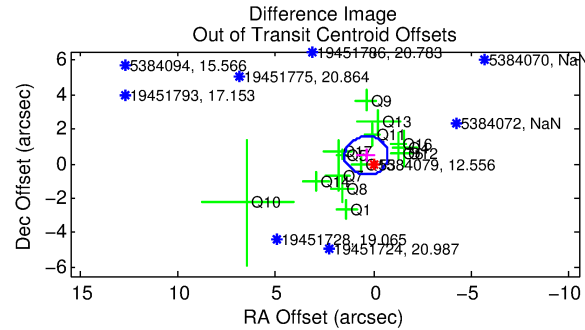
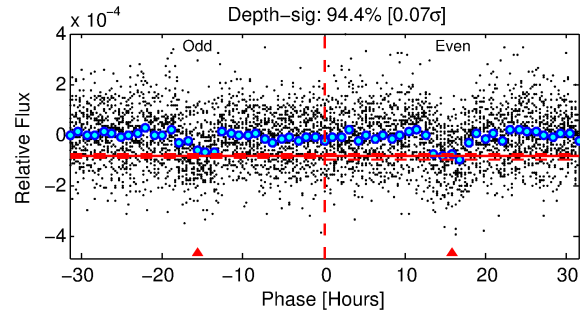
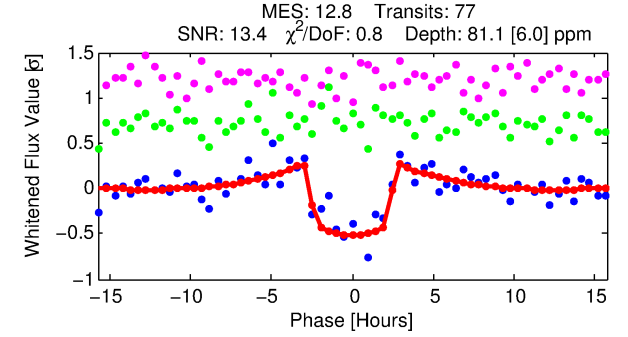
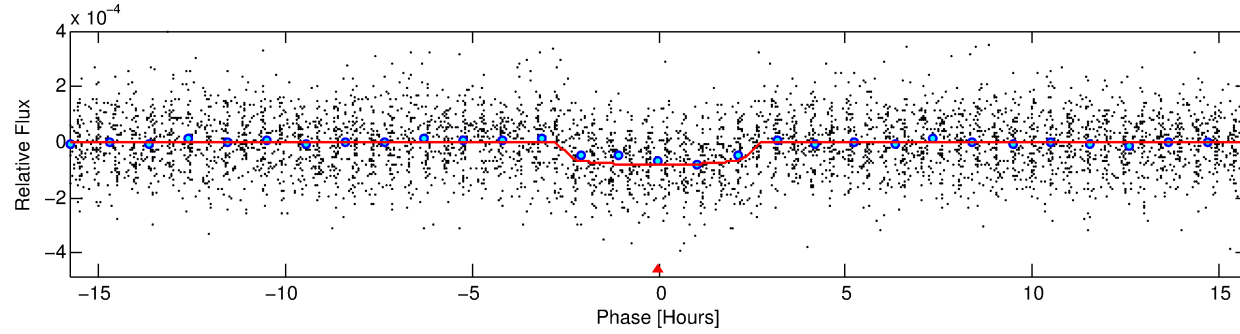
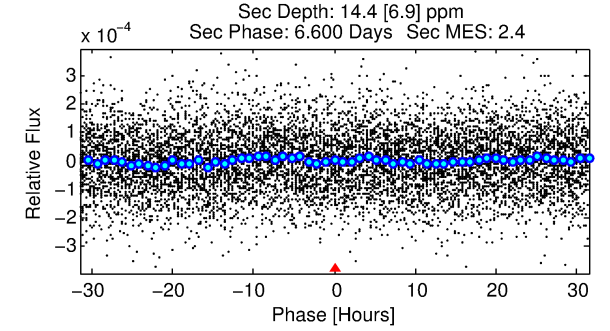
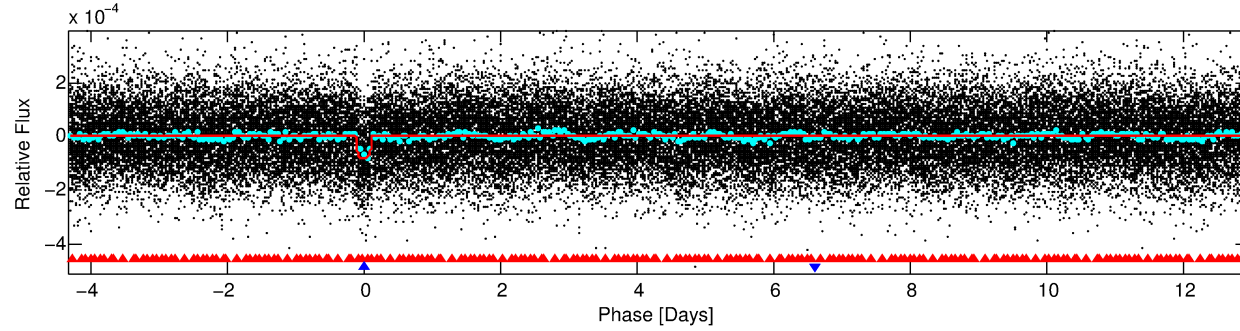
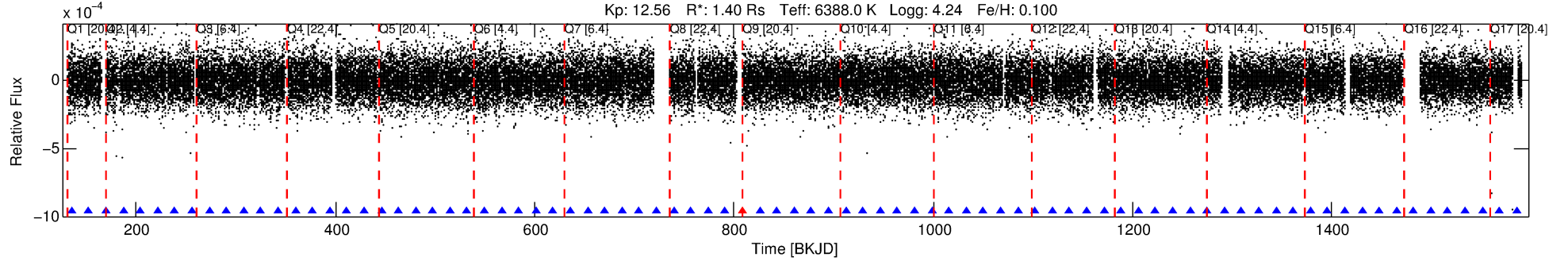
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005384079-02

No Significant Match Found

# DV One-Page Summary

KIC: 5384079 Candidate: 2 of 2 Period: 17.265 d  
KOI: K02011.02 Name: Kepler-348c Corr: 0.990



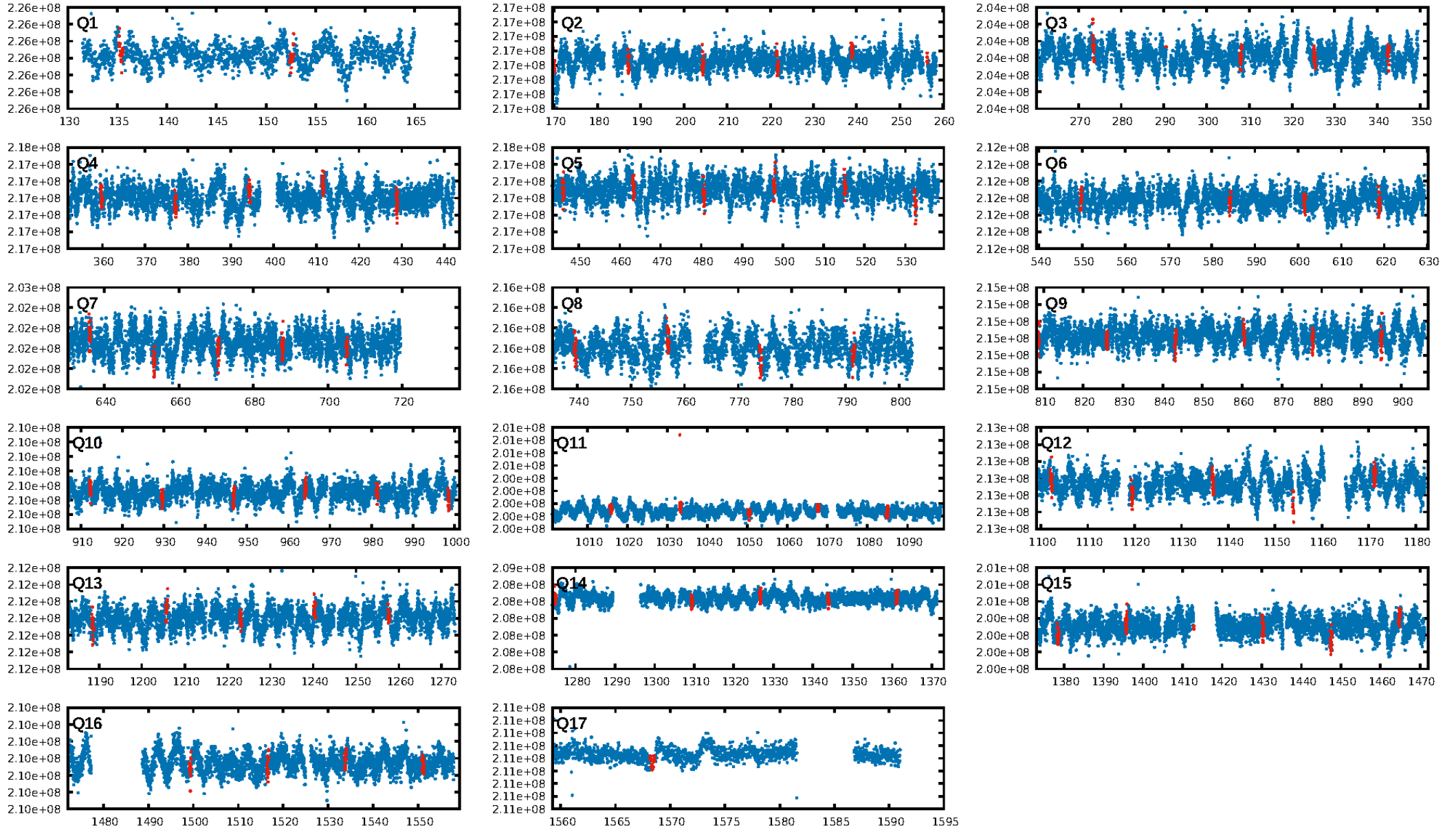
## DV Fit Results:

Period = 17.26549 [0.00011] d  
Epoch = 135.3526 [0.0054] BKJD  
Rp/R\* = 0.0095 [0.0021]  
a/R\* = 12.64 [14.67]  
b = 0.88 [0.31]  
Seff = 147.21 [35.55]  
Teq = 888 [54] K  
Rp = 1.45 [0.42] Re  
a = 0.1411 [0.0222] AU  
Ag = 74.72 [51.55] [1.43σ]  
Teffp = 4037 [664] K [4.73σ]

## DV Diagnostic Results:

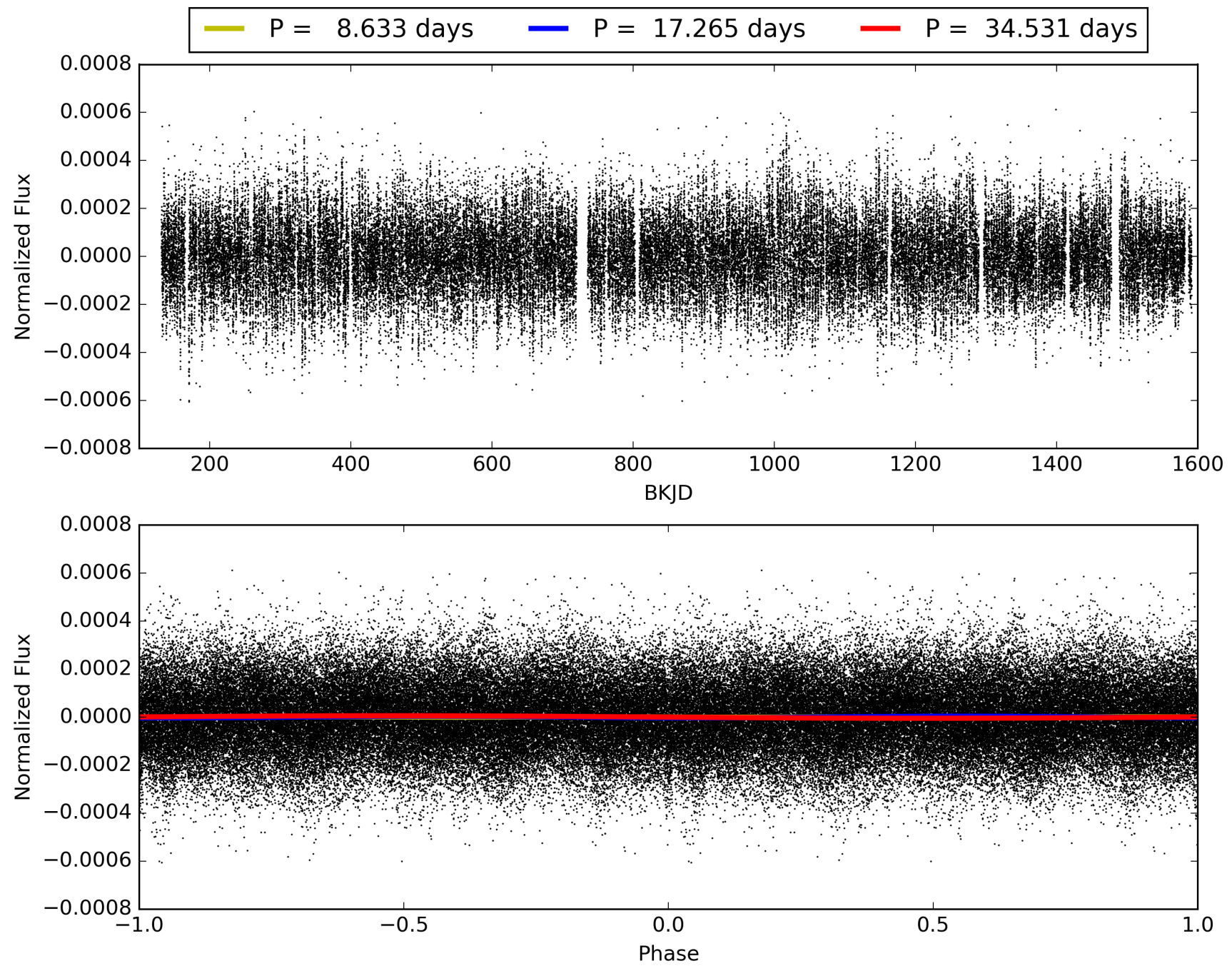
ShortPeriod-sig: 100.0% [43.43σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.47e-36  
RollingBand-fgt: 0.99 [73/74]  
GhostDiagnostic-chr: 3.712  
Centroid-sig: 44.6%  
Centroid-so: 0.340 arcsec [0.45σ]  
OotOffset-rm: 0.588 arcsec [1.59σ]  
KicOffset-rm: 0.738 arcsec [2.07σ]  
OotOffset-st: 3/3/4/5 [15]  
KicOffset-st: 3/3/4/5 [15]  
DiffImageQuality-fgm: 0.67 [10/15]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005384079-02, PDC Light Curves



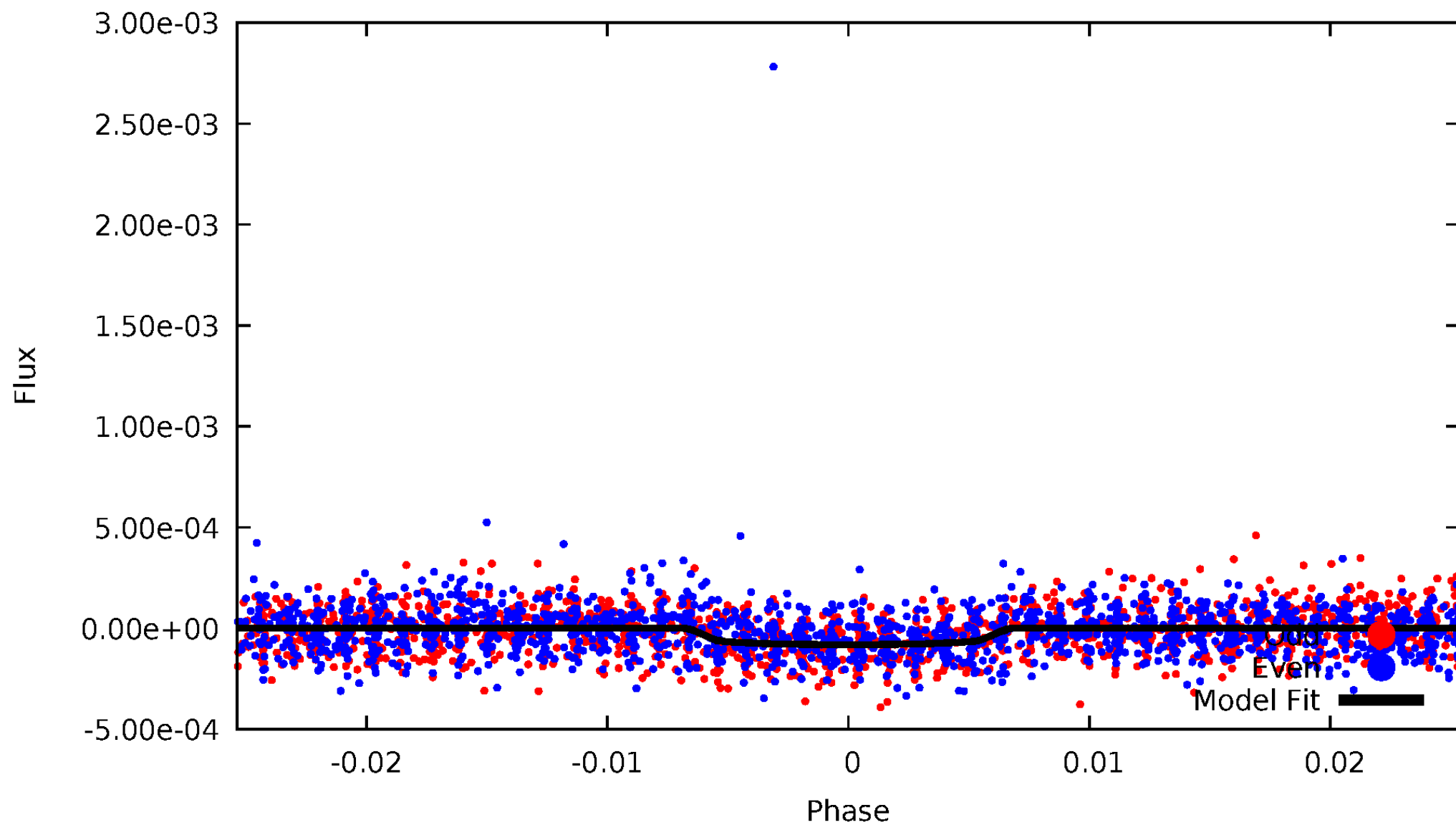


TCE 005384079-02



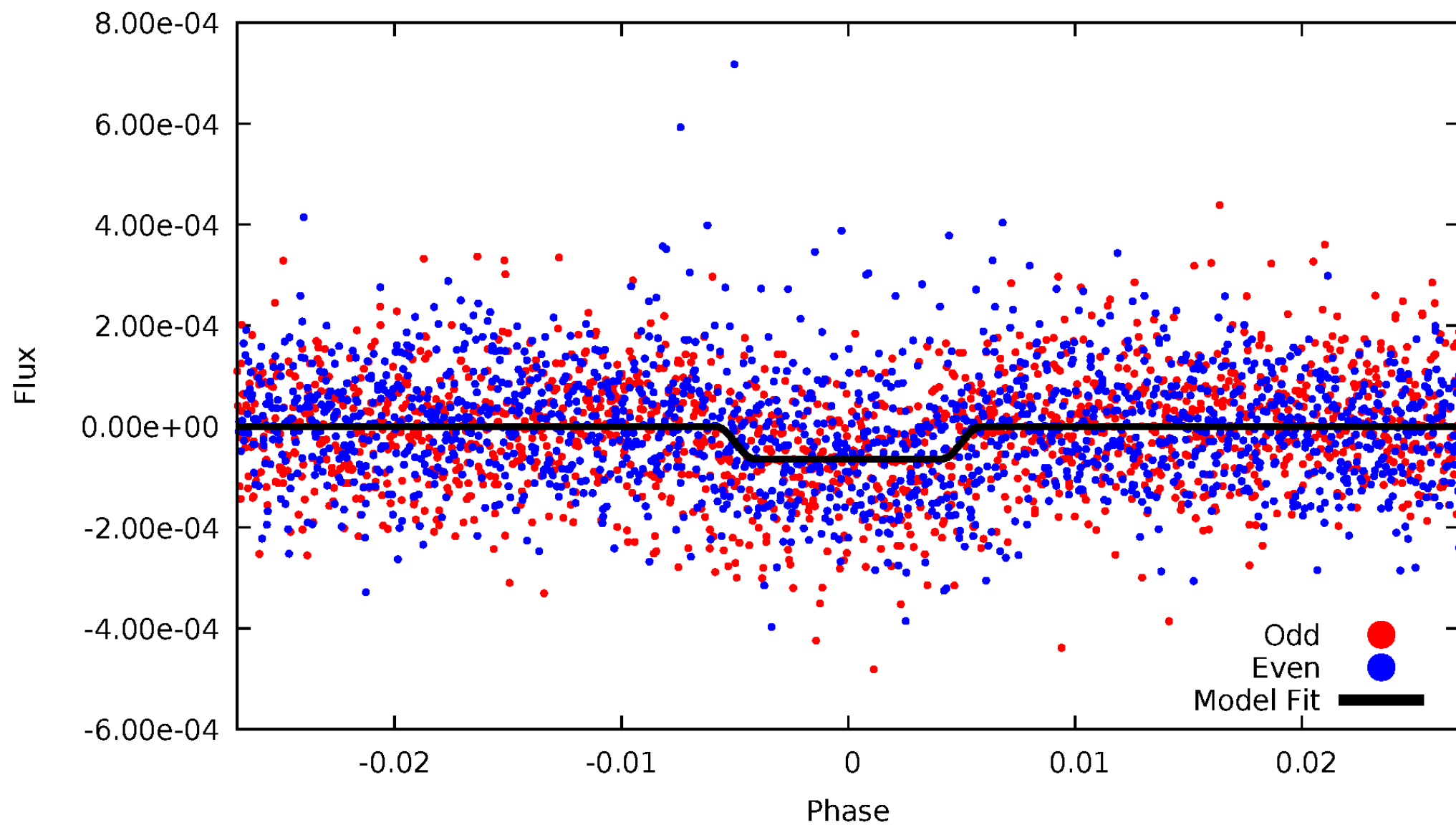
# DV Odd/Even

TCE 005384079-02



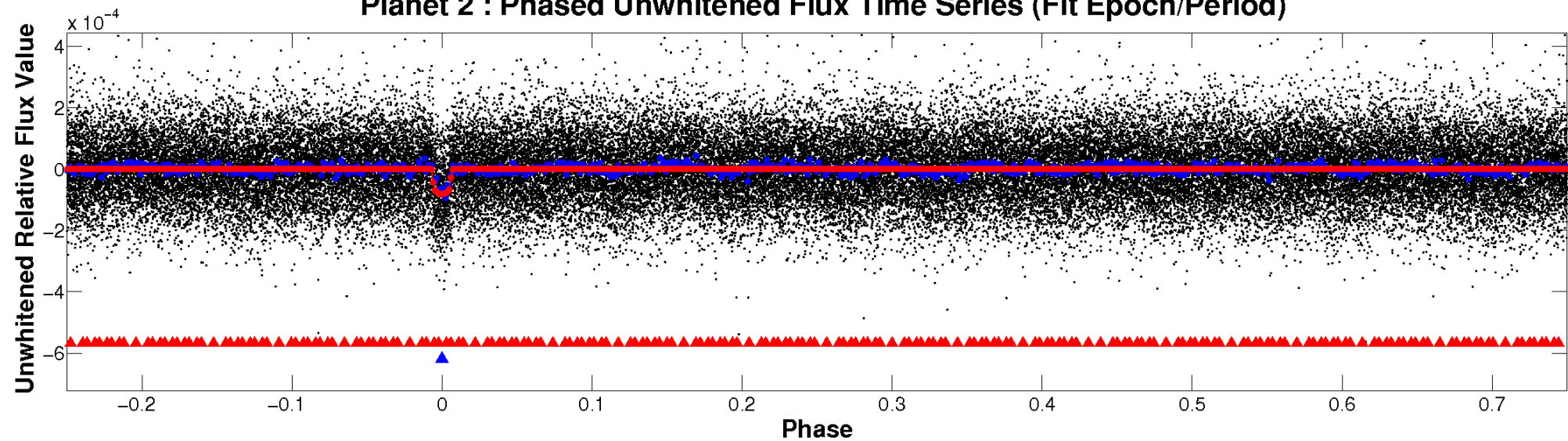
# ALT Odd/Even

TCE 005384079-02

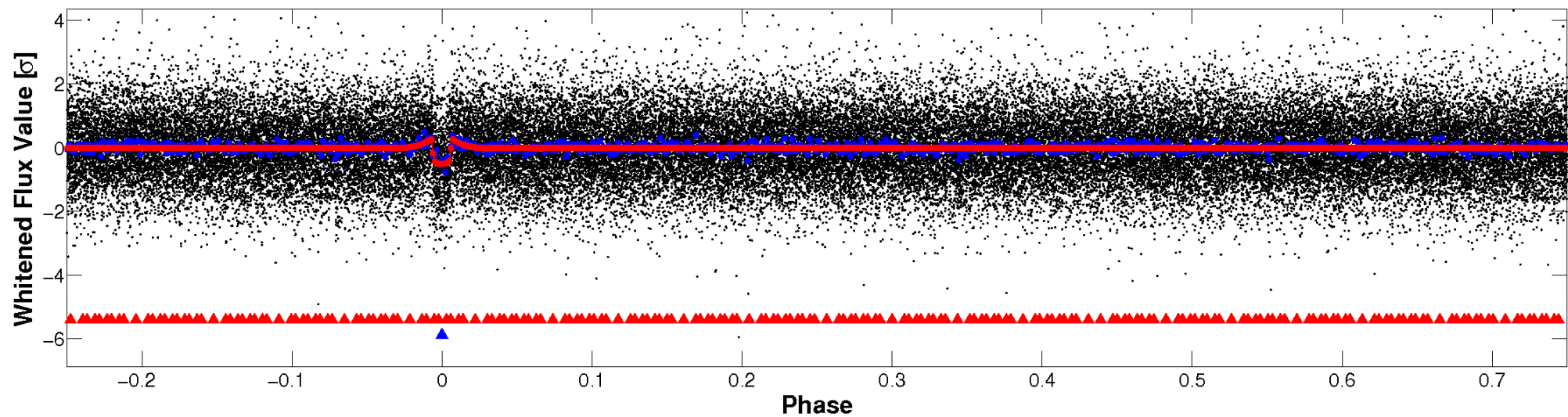


# Non-Whitened Vs. Whitened Light Curve

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

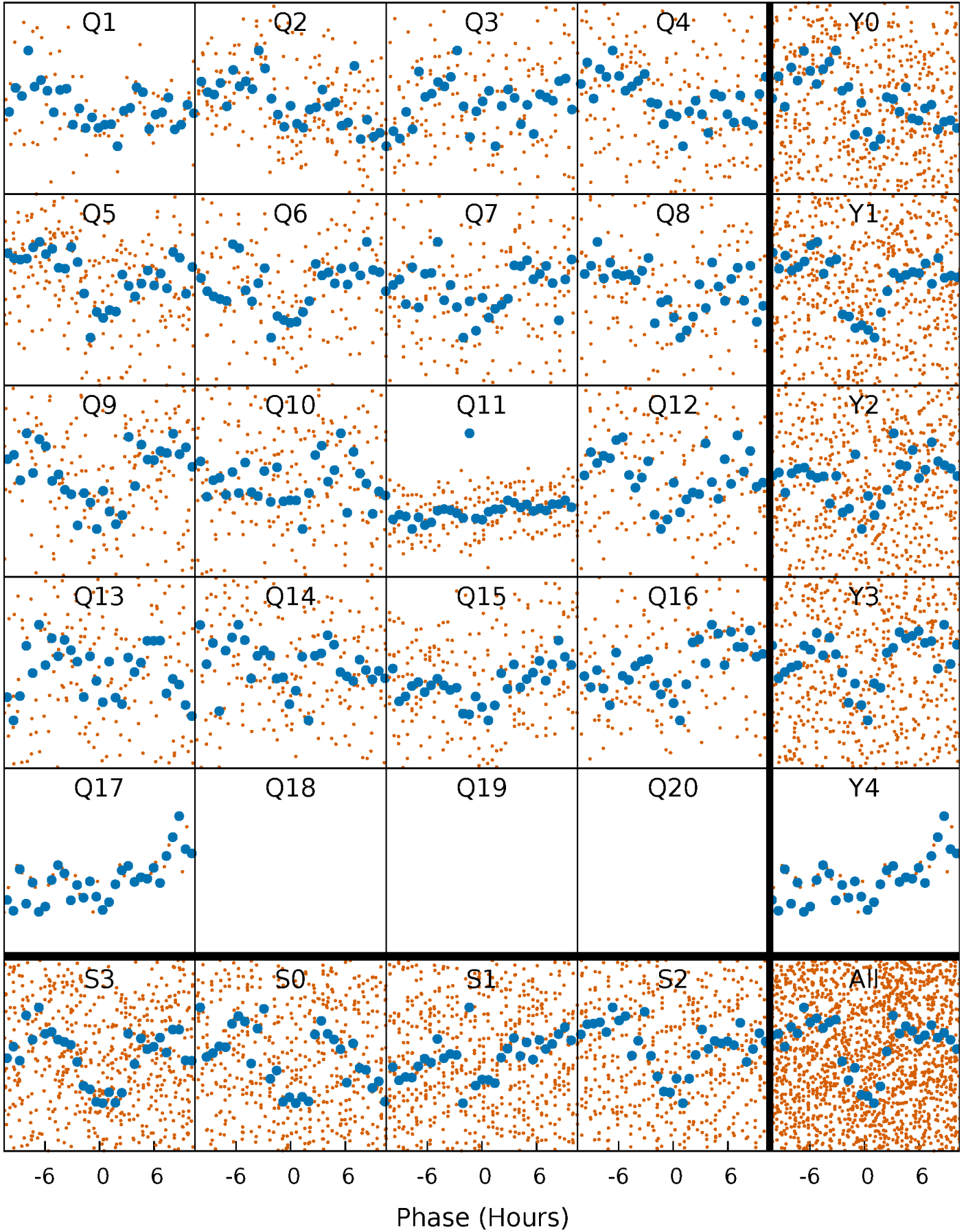


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

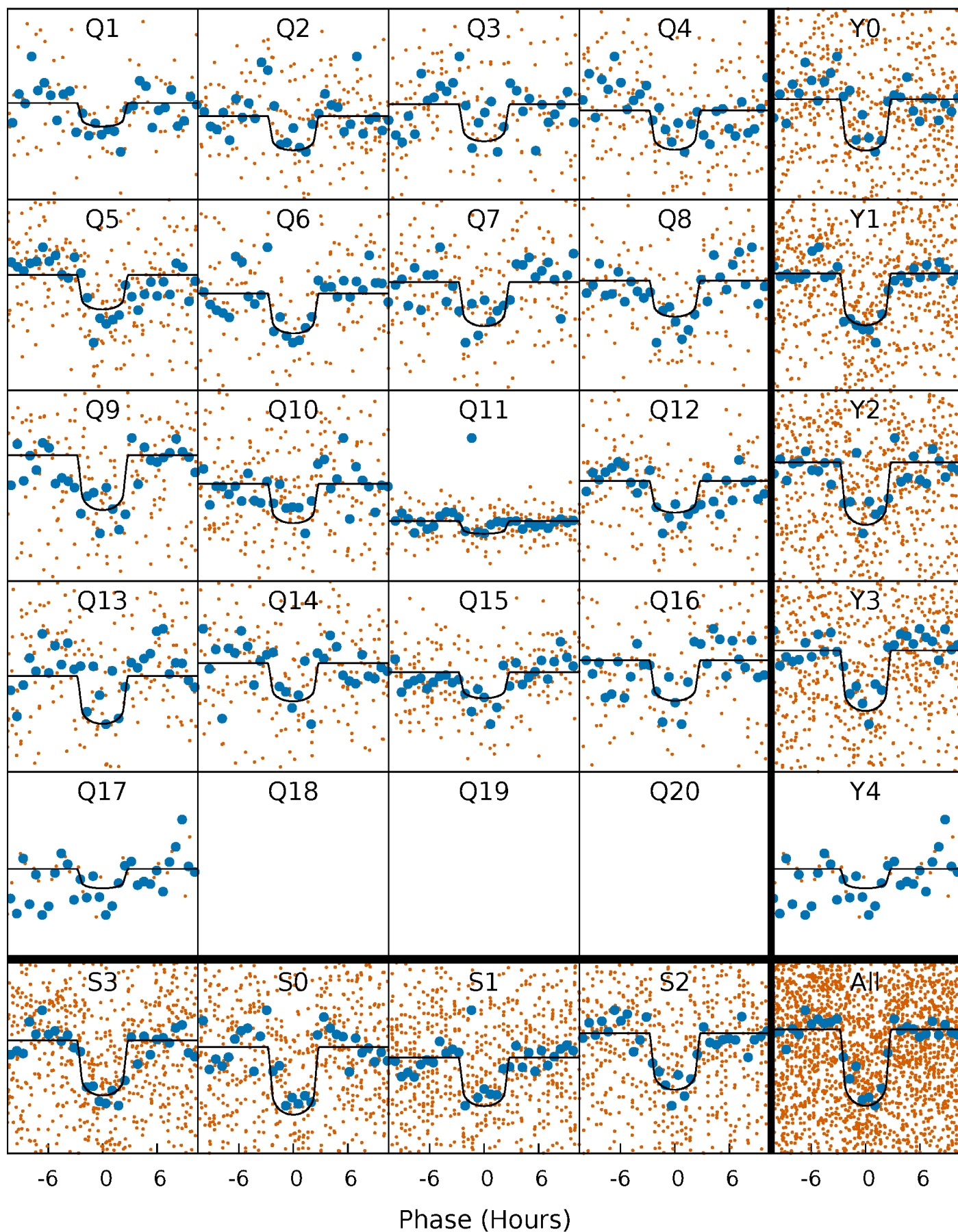
TCE 005384079-02 P= 17.265492 Days  $T_0=135.352621$  (BKJD)





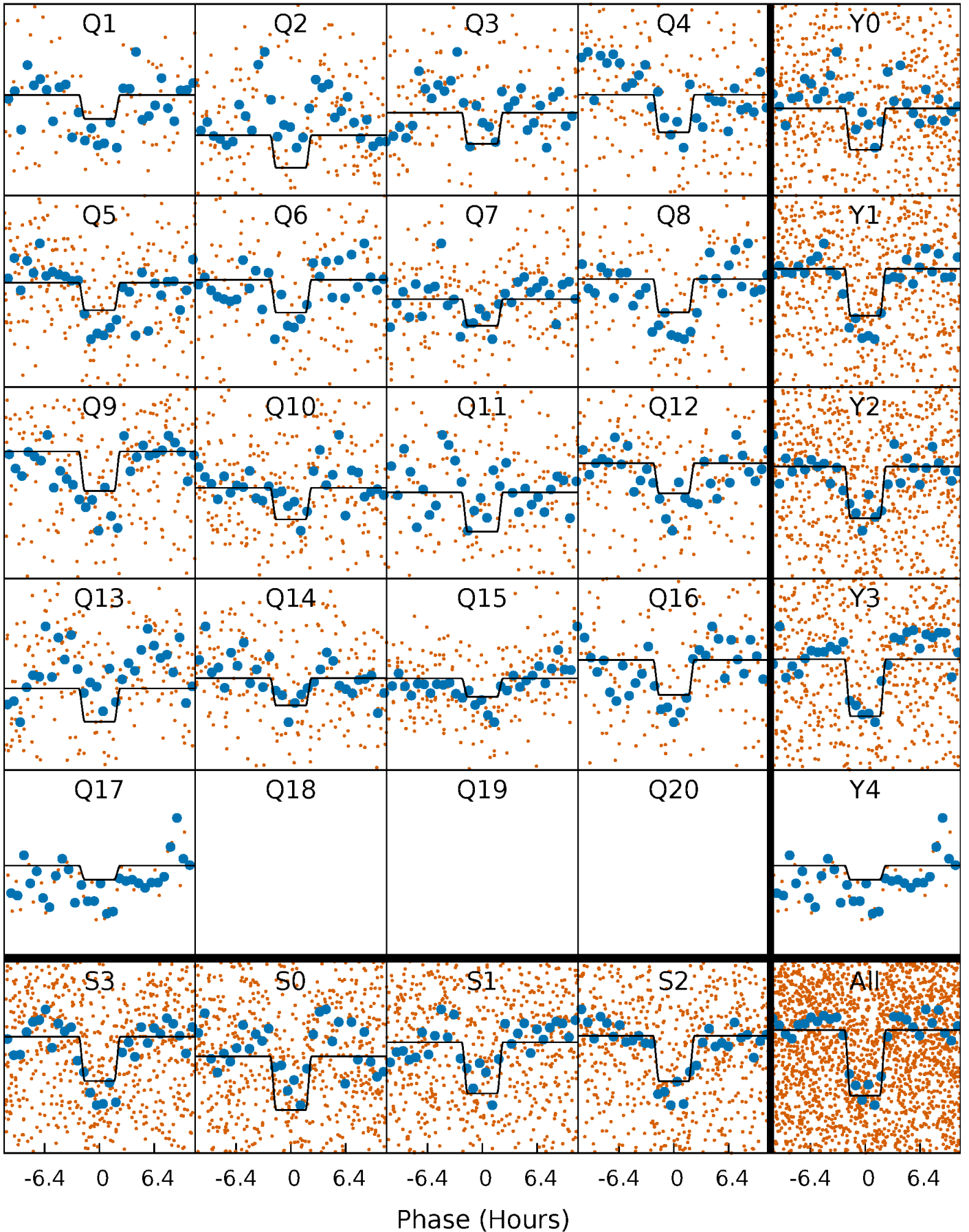
# DV Quarter-Phased Transit Curves

TCE 005384079-02 P= 17.265492 Days  $T_0=135.352621$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

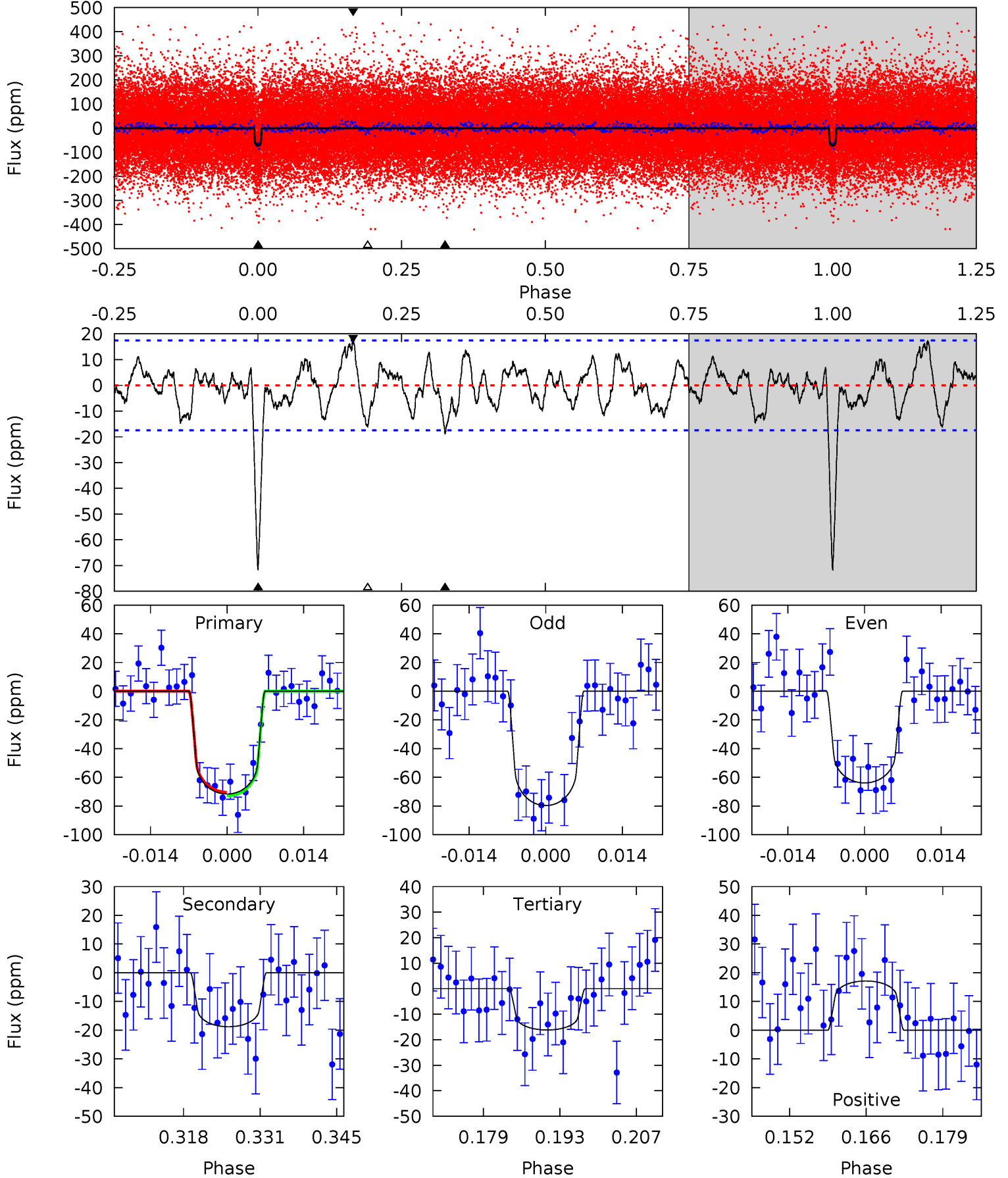
TCE 005384079-02 P= 17.265216 Days  $T_0=135.362694$  (BKJD)



# DV Model-Shift Uniqueness Test

005384079-02, P = 17.265492 Days, E = 118.087129 Days

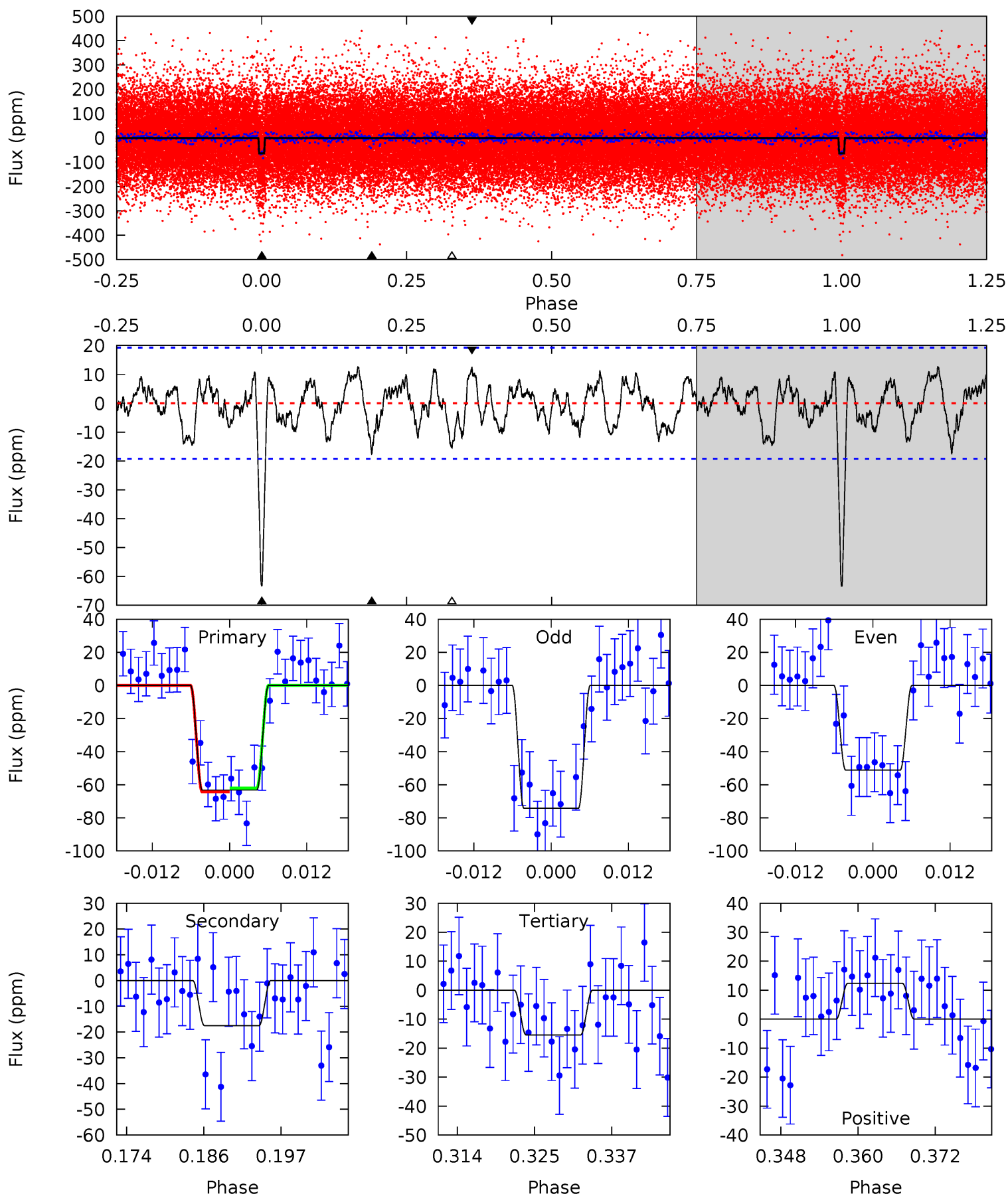
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	5.34	4.59	4.87	4.96	2.46	1.86	15.8	15.5	0.75	0.48	2.24	0.95	0.19	0.35



# Alt Model-Shift Uniqueness Test

005384079-02,  $P = 17.265216$  Days,  $E = 118.097478$  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
16.4	4.54	4.00	3.21	5.00	2.52	1.59	12.4	13.2	0.54	1.33	2.99	0.92	0.16	0.31



### Stellar Parameters For KIC 005384079

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6388^{+115}_{-140}$	$4.244^{+0.088}_{-0.121}$	$0.100^{+0.150}_{-0.200}$	$1.402^{+0.267}_{-0.178}$	$1.259^{+0.103}_{-0.113}$	$0.643^{+0.276}_{-0.226}$
	+2%/-2%	+2%/-3%	+150%/-200%	+19%/-13%	+8%/-9%	+43%/-35%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 005384079-02 / KOI 2011.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-19 \pm 4$	$1.46^{+0.37}_{-0.35}$	$1242^{+56}_{-48}$	$4496^{+530}_{-393}$	$95^{+73}_{-38}$
Alt.	$-18 \pm 4$	$1.25^{+0.31}_{-0.35}$	$1245^{+58}_{-51}$	$4724^{+666}_{-443}$	$123^{+120}_{-51}$

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

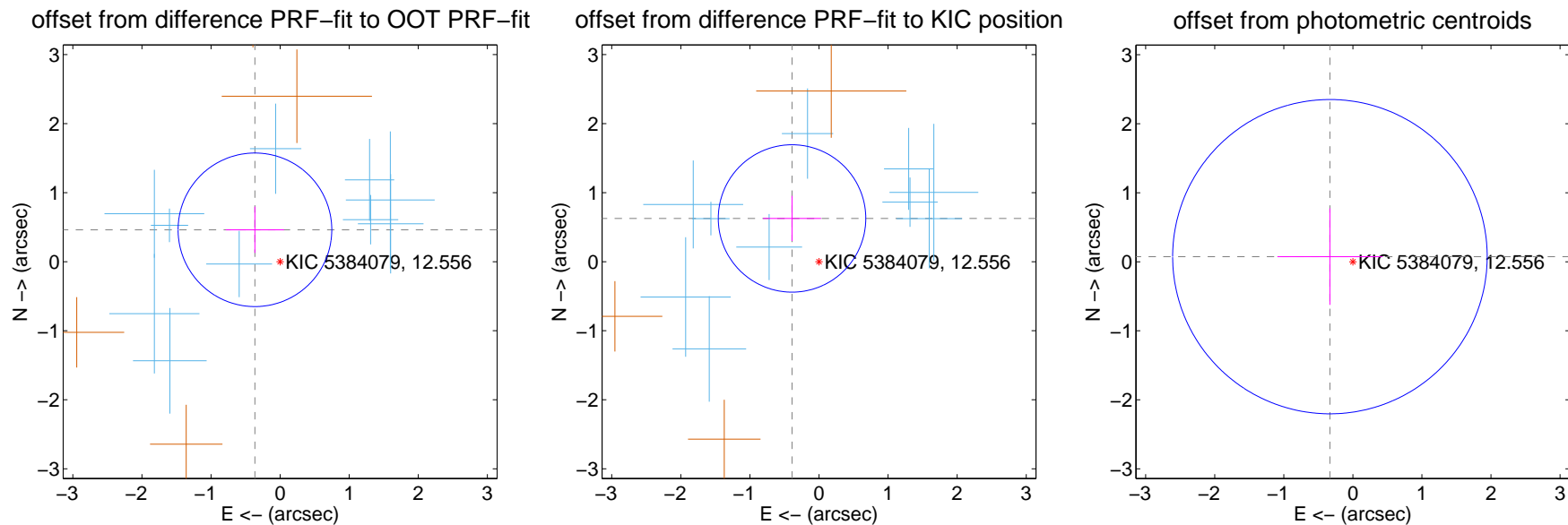
## DV Centroid Data

Supplemental centroid analysis for 005384079-02. Kepler magnitude: 12.56. Transit SNR 13.39

There are 10 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

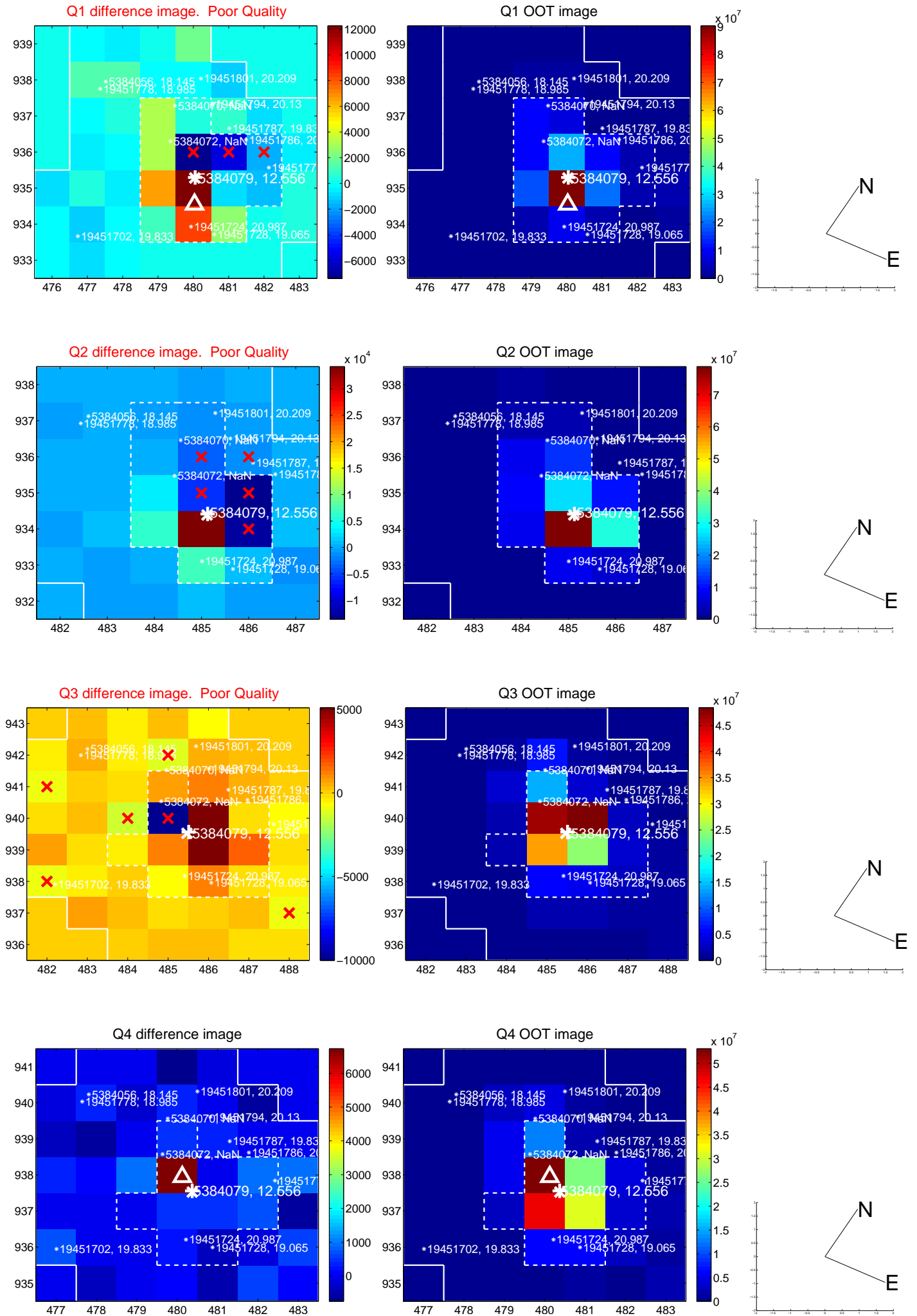
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.588 \pm 0.371$	1.59	$0.364 \pm 0.421$	$0.462 \pm 0.336$
PRF-fit source offset from KIC position	$0.738 \pm 0.356$	2.07	$0.390 \pm 0.421$	$0.627 \pm 0.327$
photometric centroid source offset	$0.34 \pm 0.76$	0.45	$0.33 \pm 0.76$	$0.07 \pm 0.70$



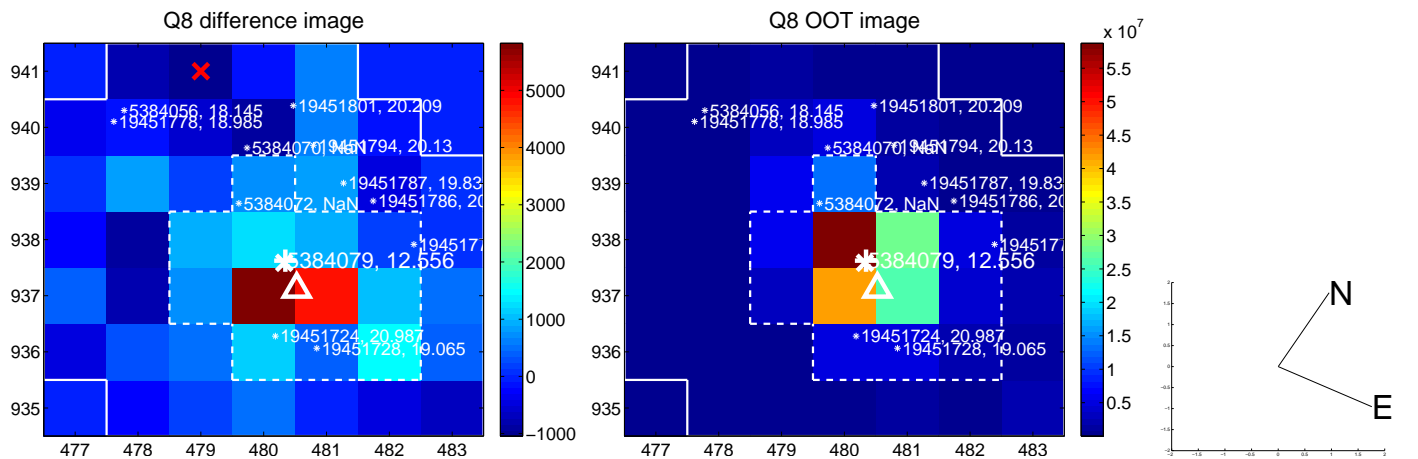
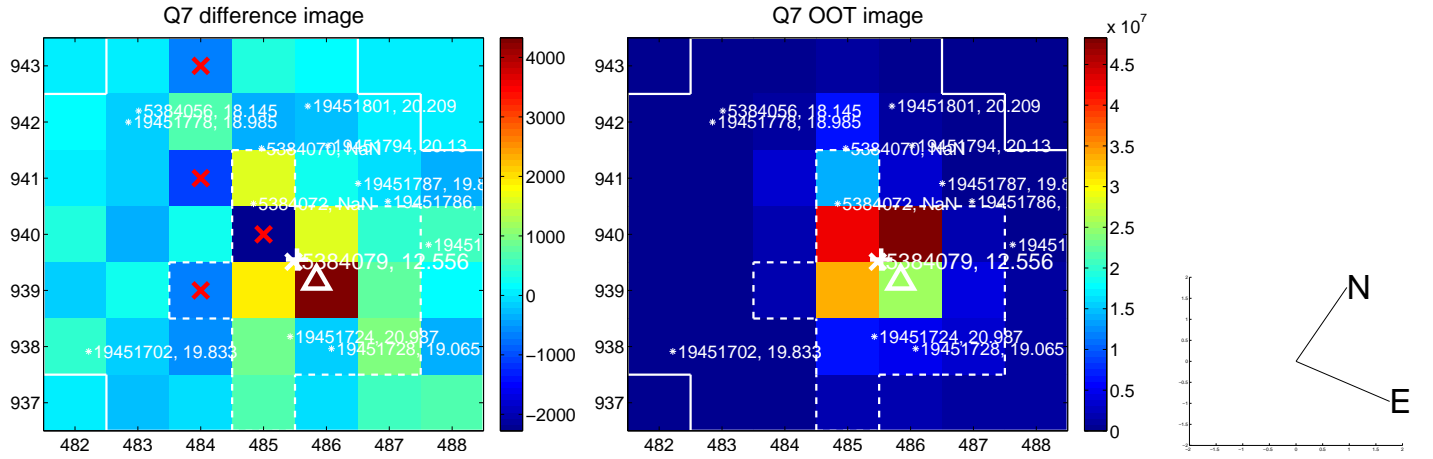
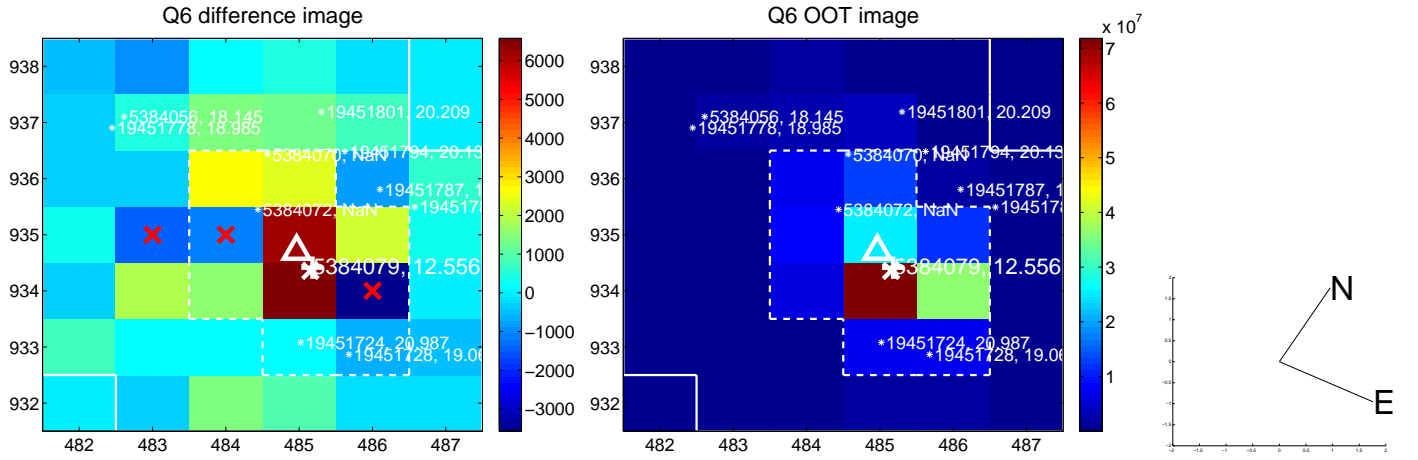
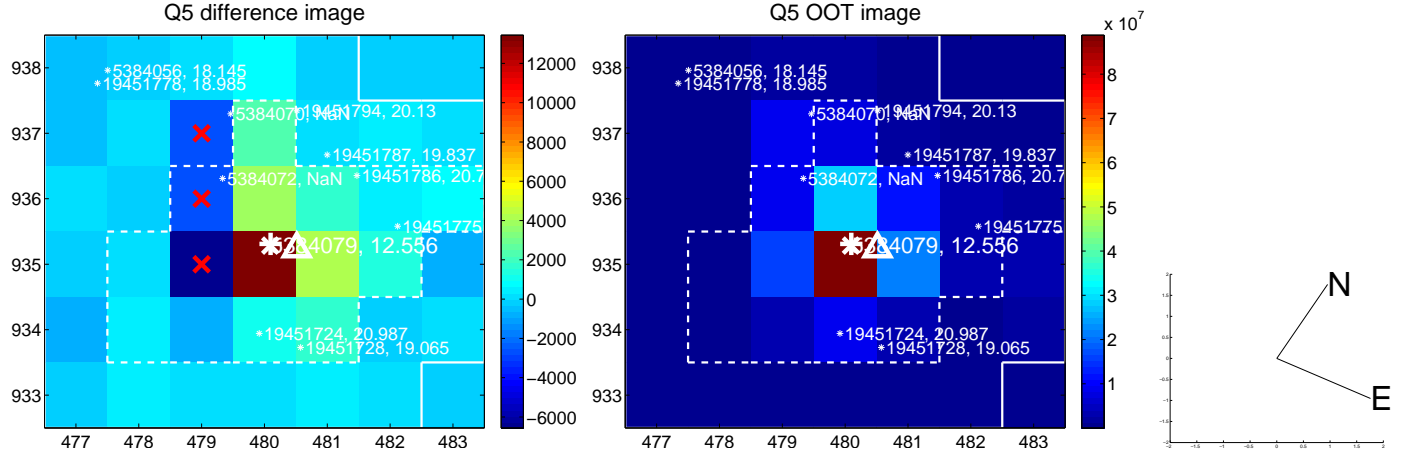
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



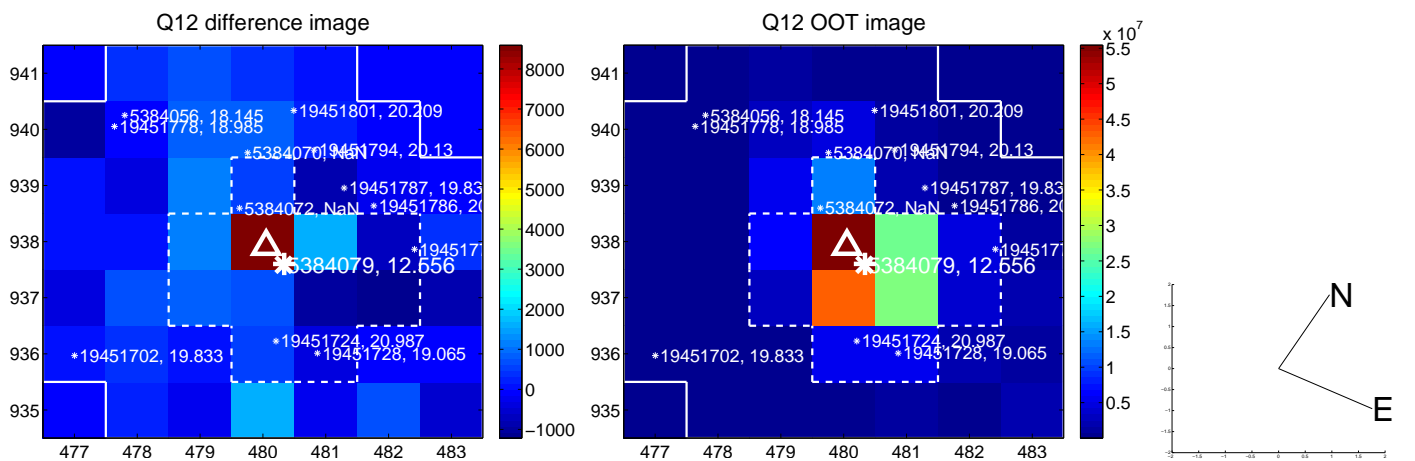
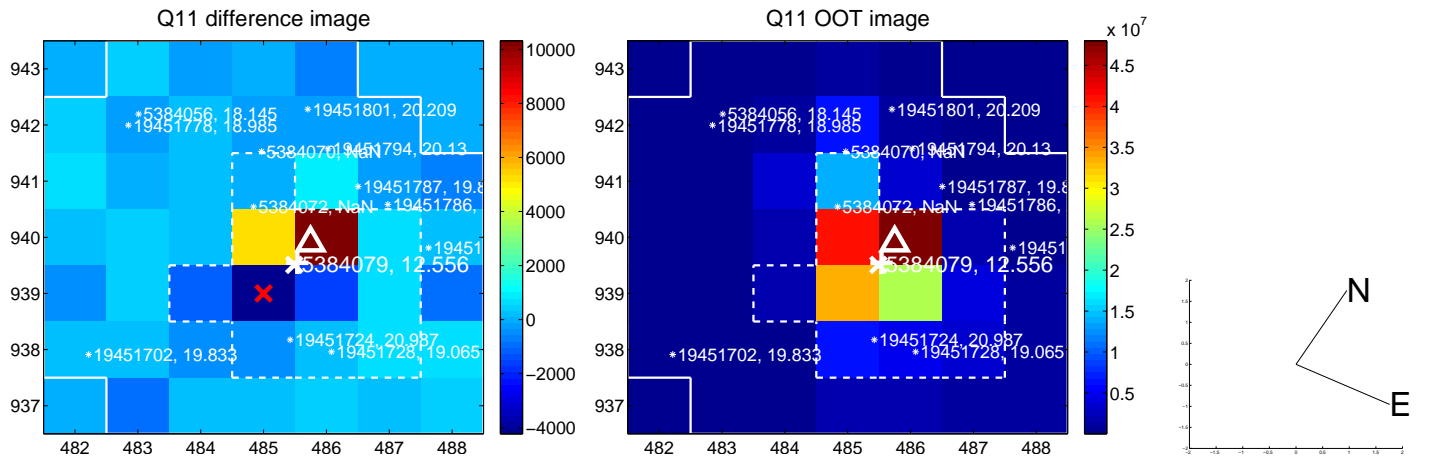
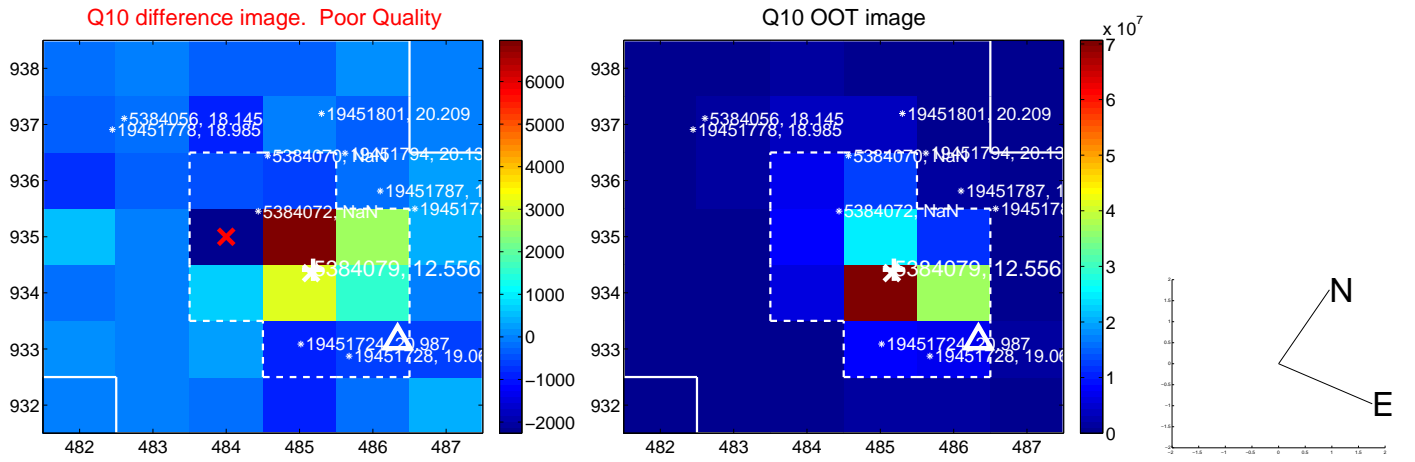
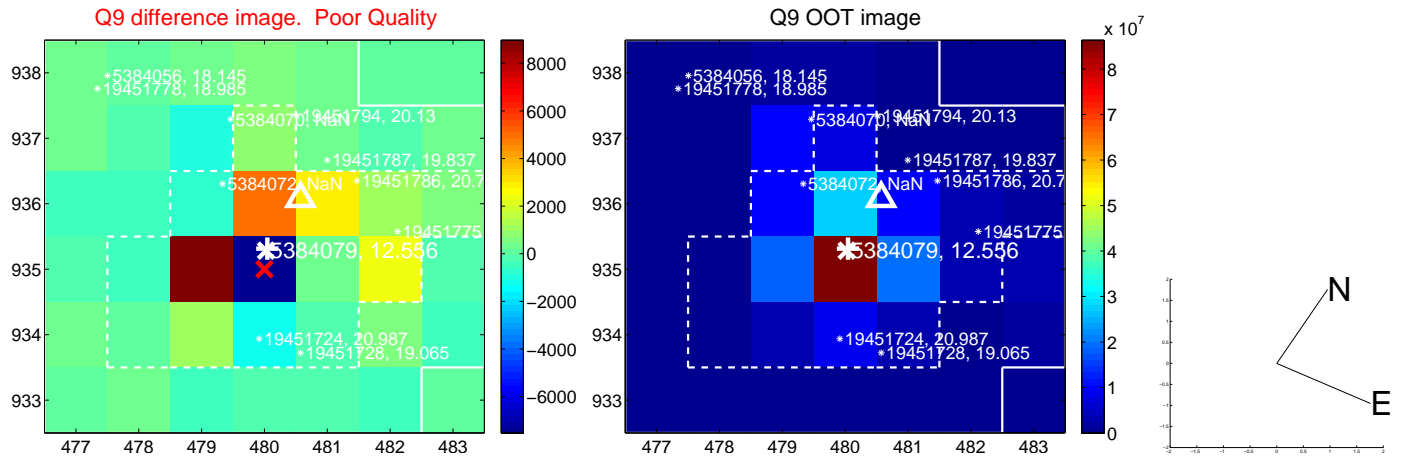
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



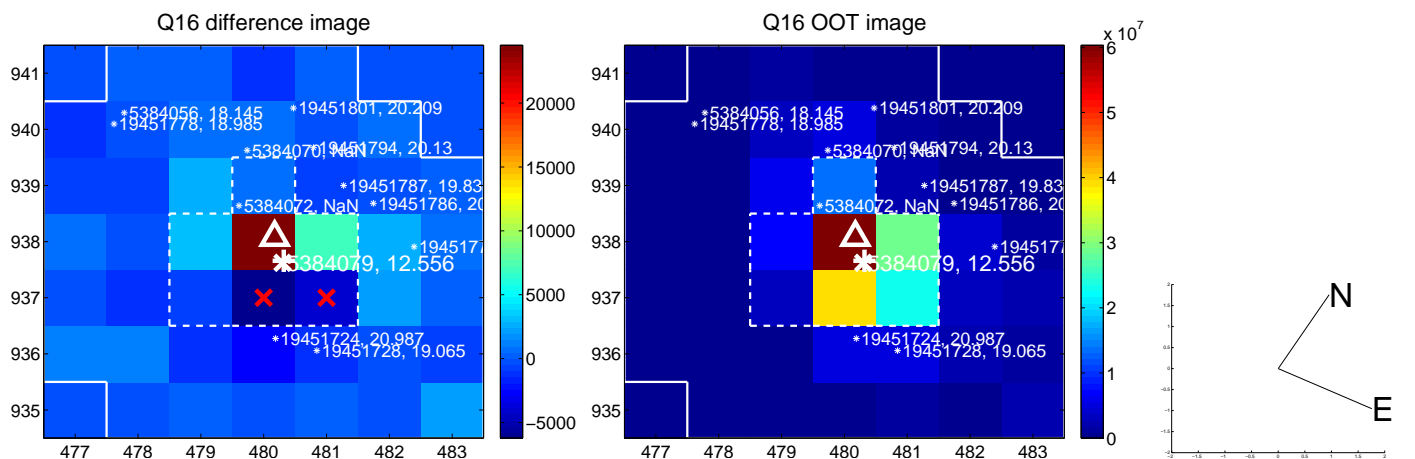
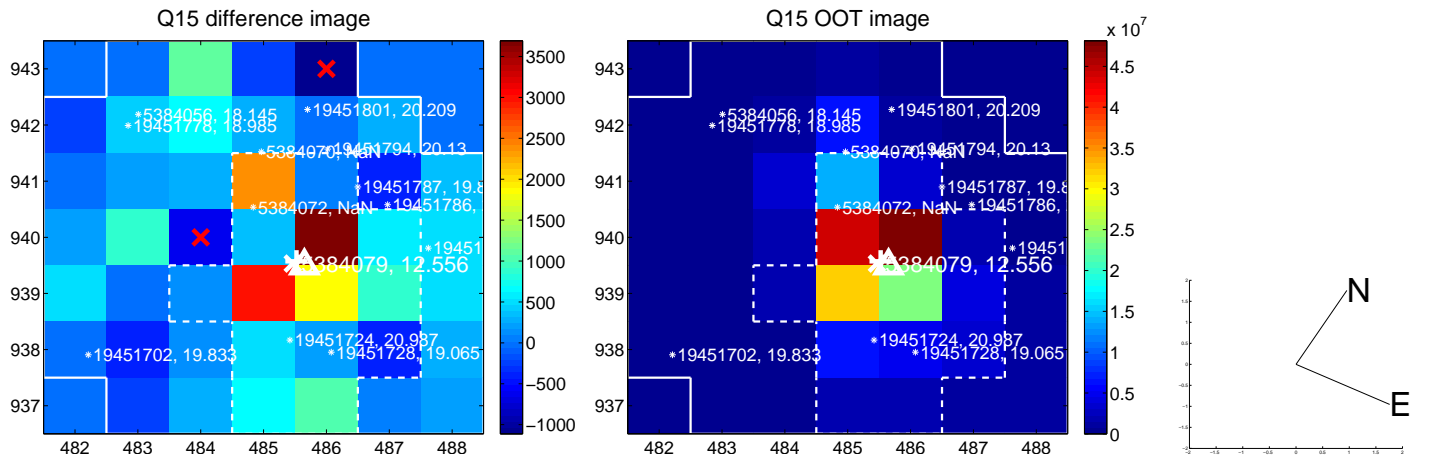
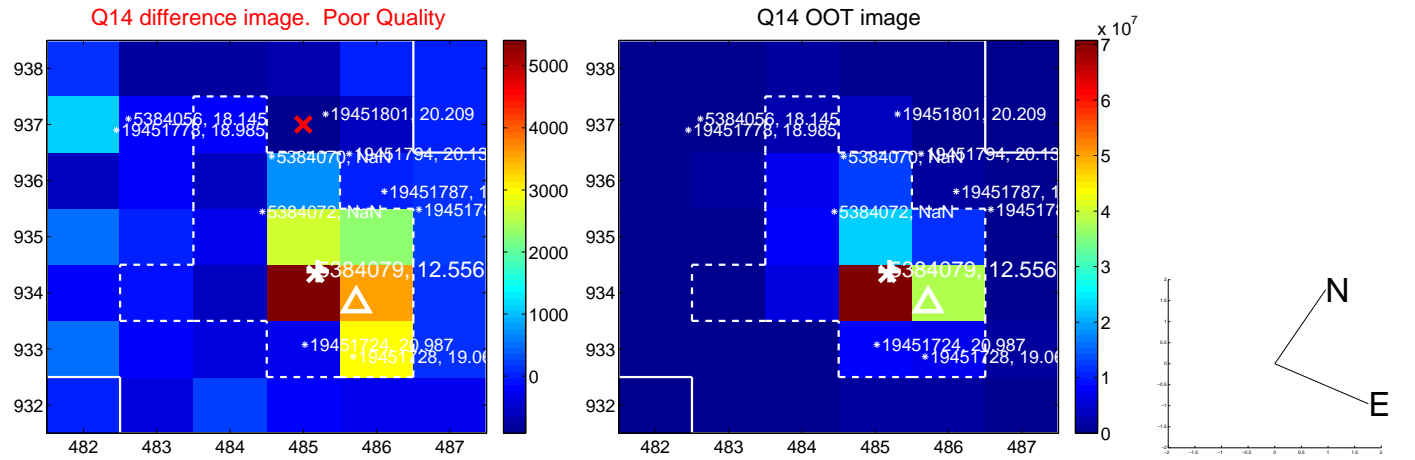
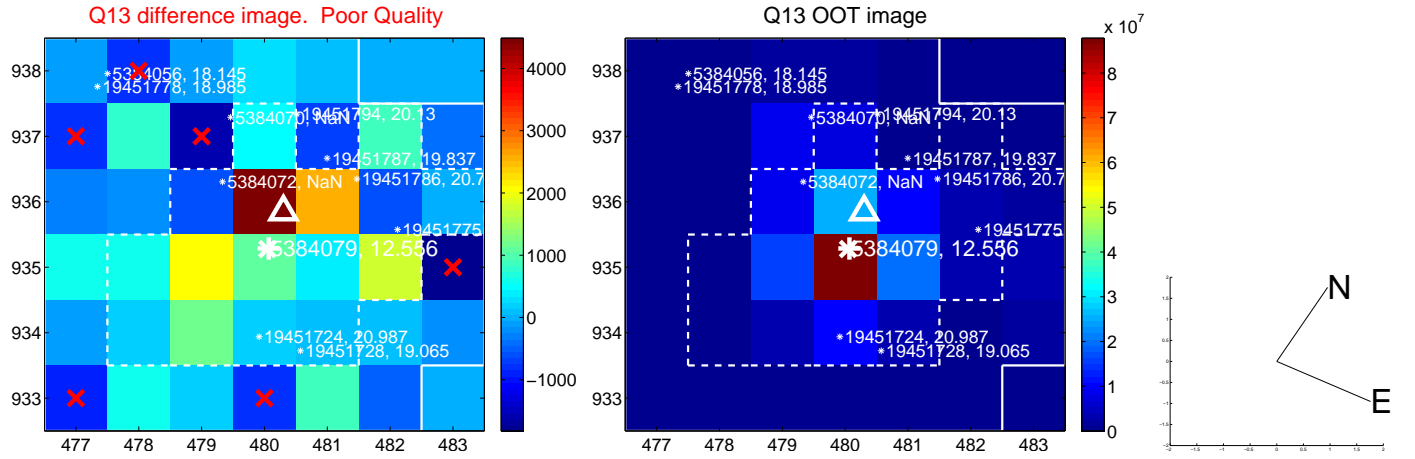
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



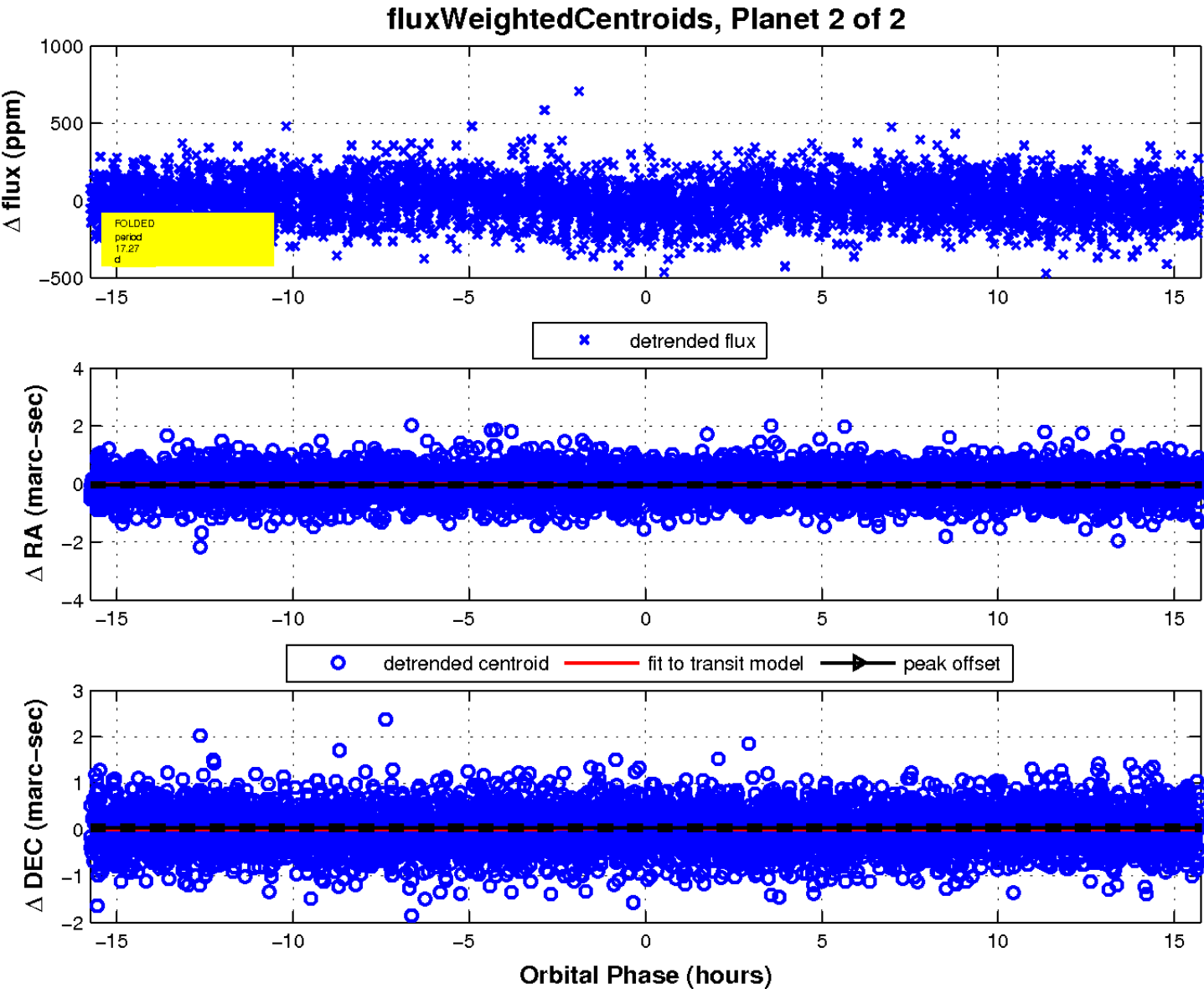
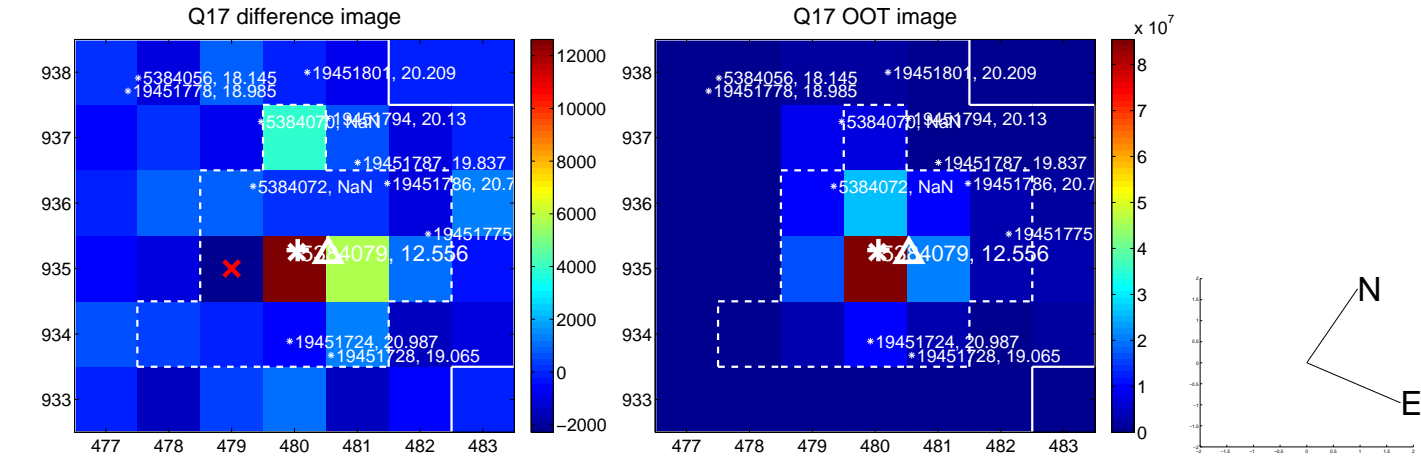
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

