

# KIC 010290666

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010290666-01	OBS	0332.01	5.458496	133.879778	247.2	4.100	53.6	61.8	1.14	5914	2.03	345.40
010290666-02	OBS	0332.02	6.866769	135.363122	41.7	4.911	8.8	10.0	1.14	5914	0.88	254.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010290666-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010290666-02	OBS	PC	0.98	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.

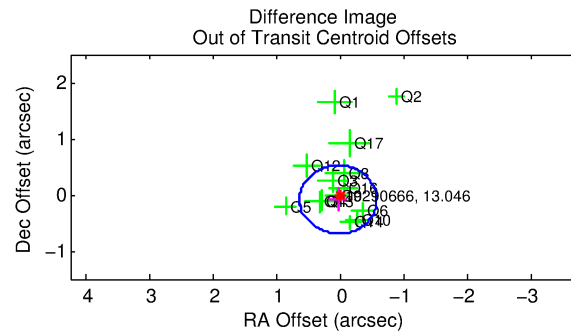
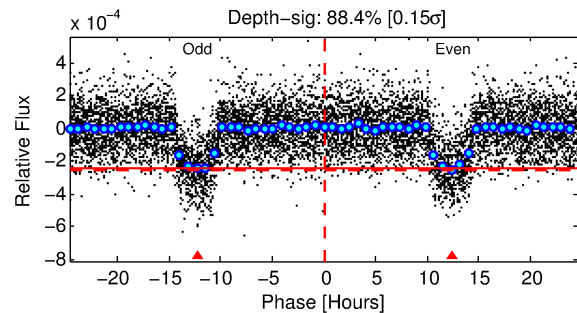
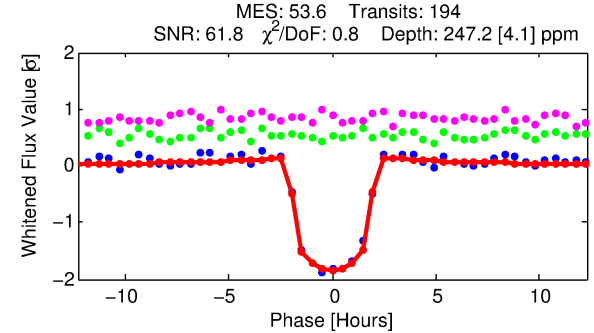
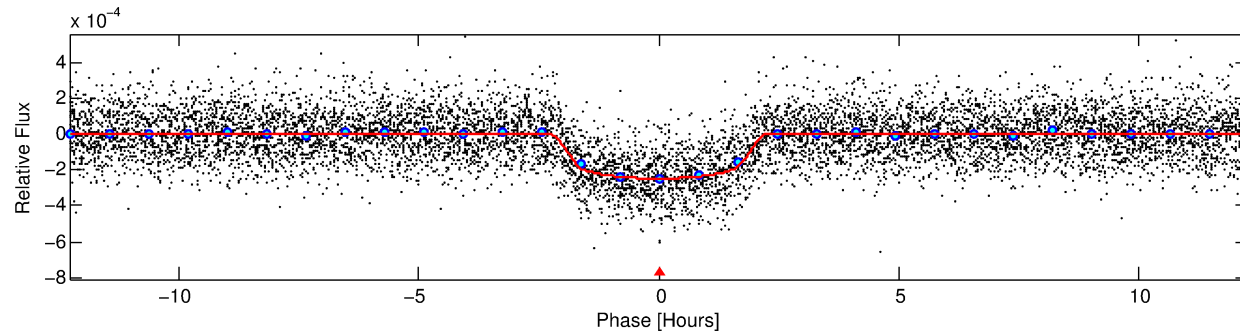
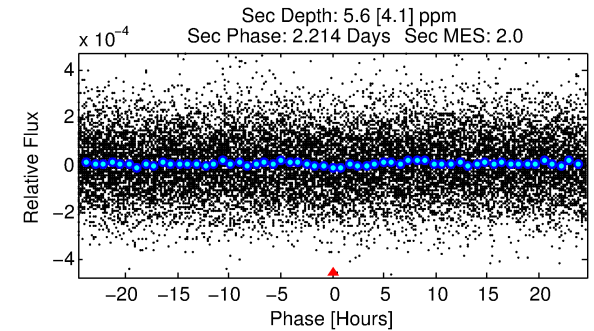
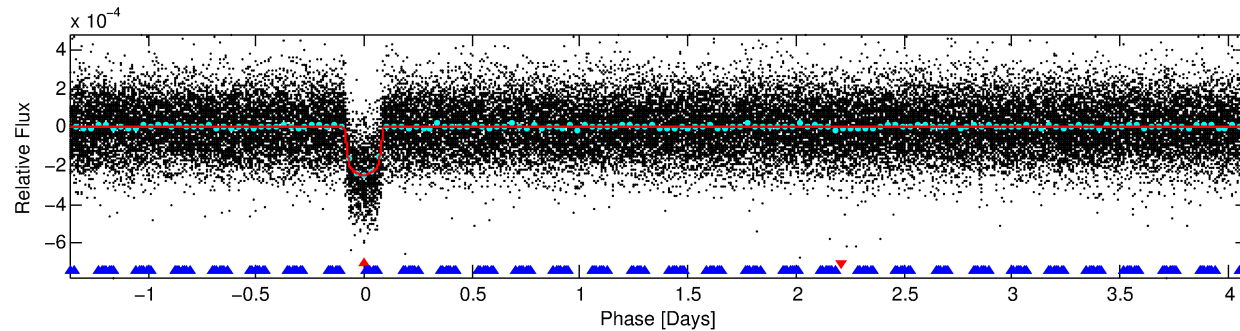
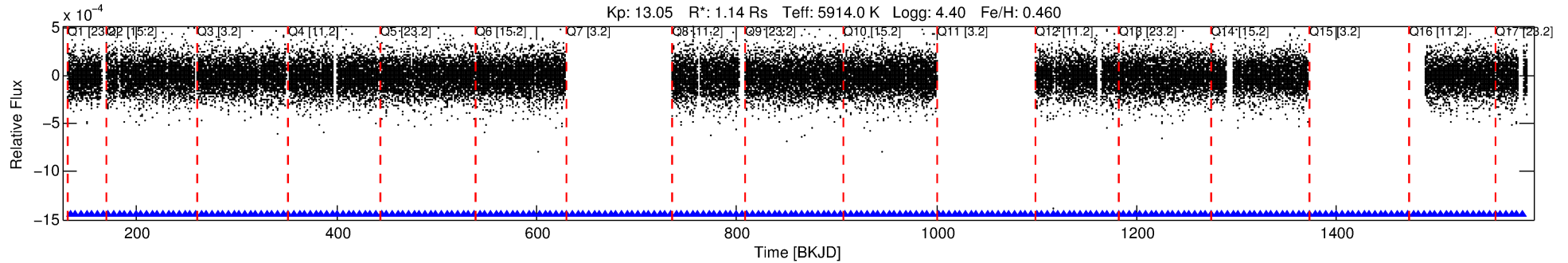
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010290666-01

No Significant Match Found

# DV One-Page Summary

KIC: 10290666 Candidate: 1 of 2 Period: 5.458 d  
KOI: K00332.01 Corr: 0.992



## DV Fit Results:

Period = 5.45850 [0.00001] d  
Epoch = 133.8798 [0.0011] BKJD  
Rp/R\* = 0.0164 [0.0018]  
a/R\* = 5.92 [2.90]  
b = 0.84 [0.18]  
Seff = 345.40 [75.56]  
Teff = 1099 [60] K  
Rp = 2.03 [0.39] Re  
a = 0.0639 [0.0086] AU  
Ag = 3.10 [2.41] [0.87σ]  
Teffp = 2254 [427] K [2.68σ]

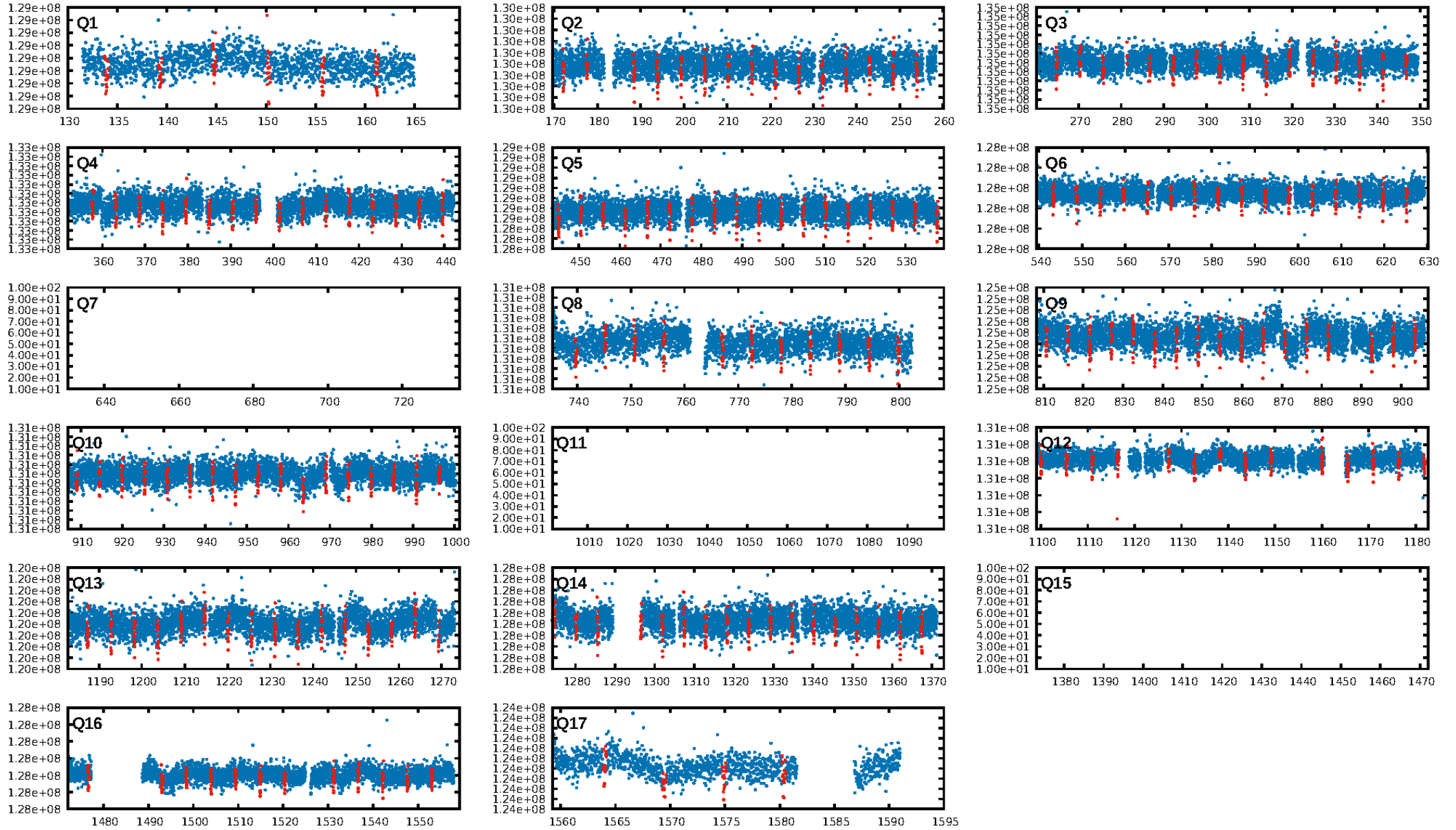
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.28σ]  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [184/184]  
GhostDiagnostic-chr: 4.93  
Centroid-sig: 66.2%  
Centroid-so: 0.518 arcsec [2.77σ]  
OotOffset-rm: 0.095 arcsec [0.47σ]  
KicOffset-rm: 0.232 arcsec [1.23σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

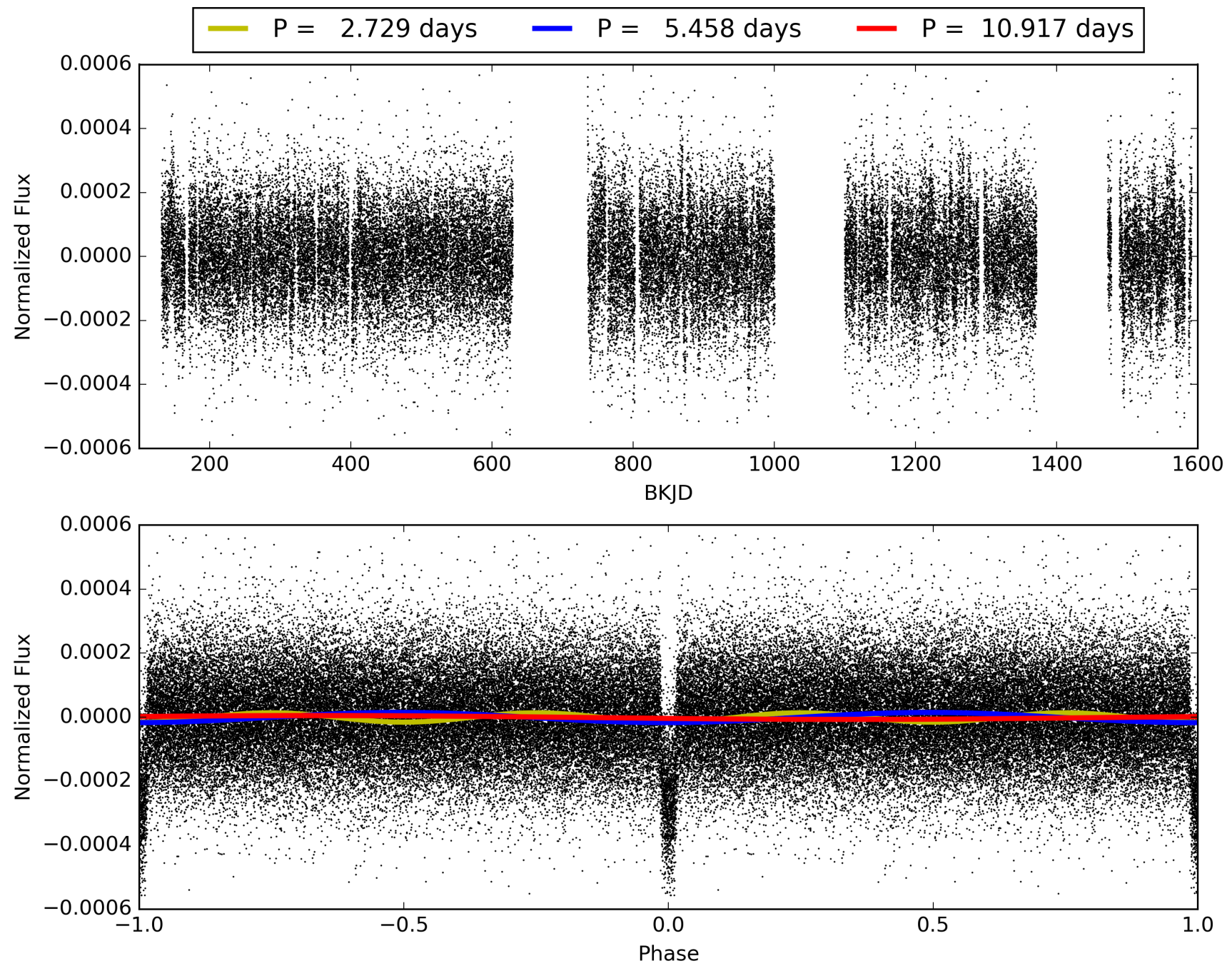
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:44:04 Z

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

# TCE 010290666-01, PDC Light Curves

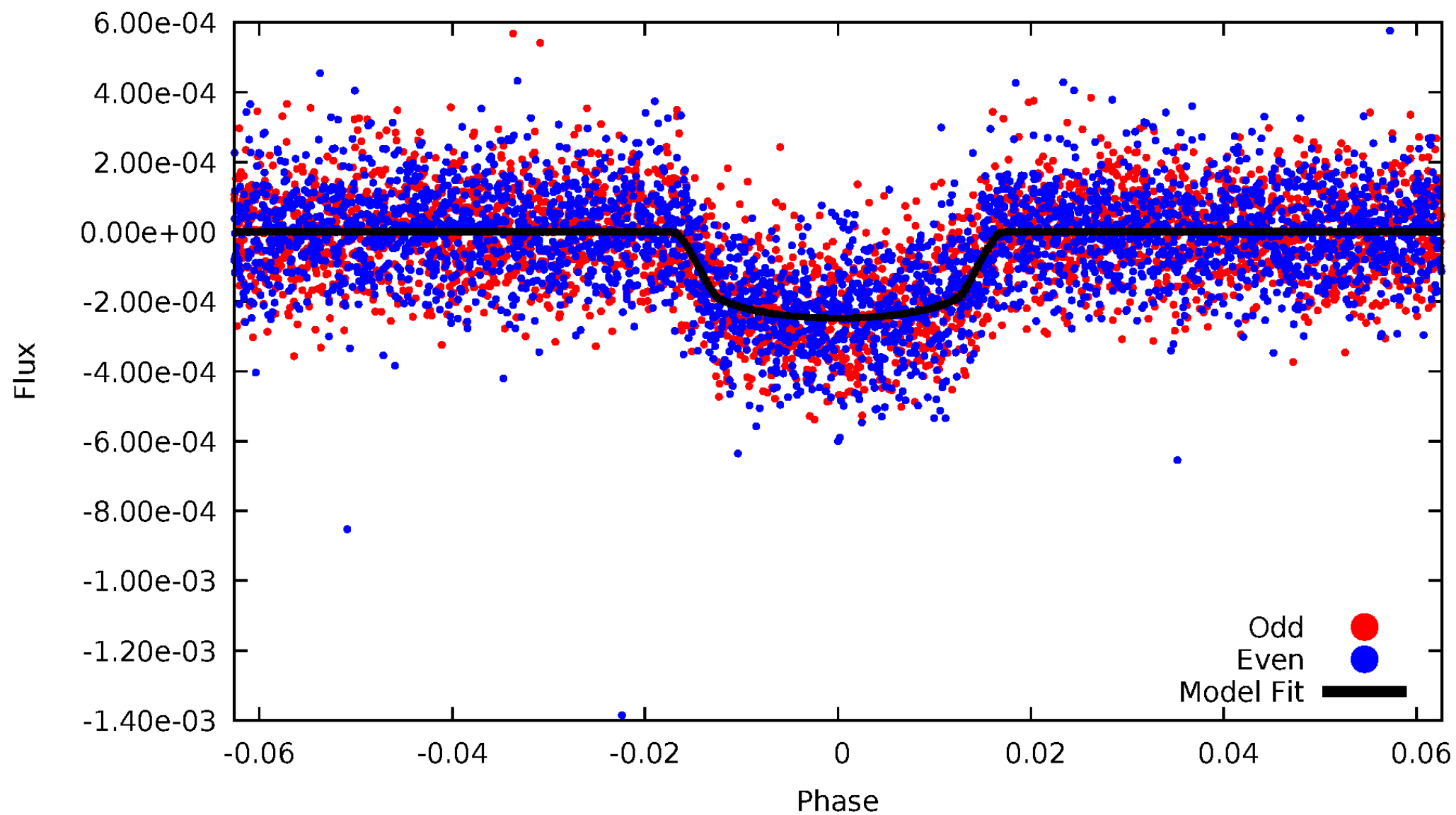


TCE 010290666-01



# DV Odd/Even

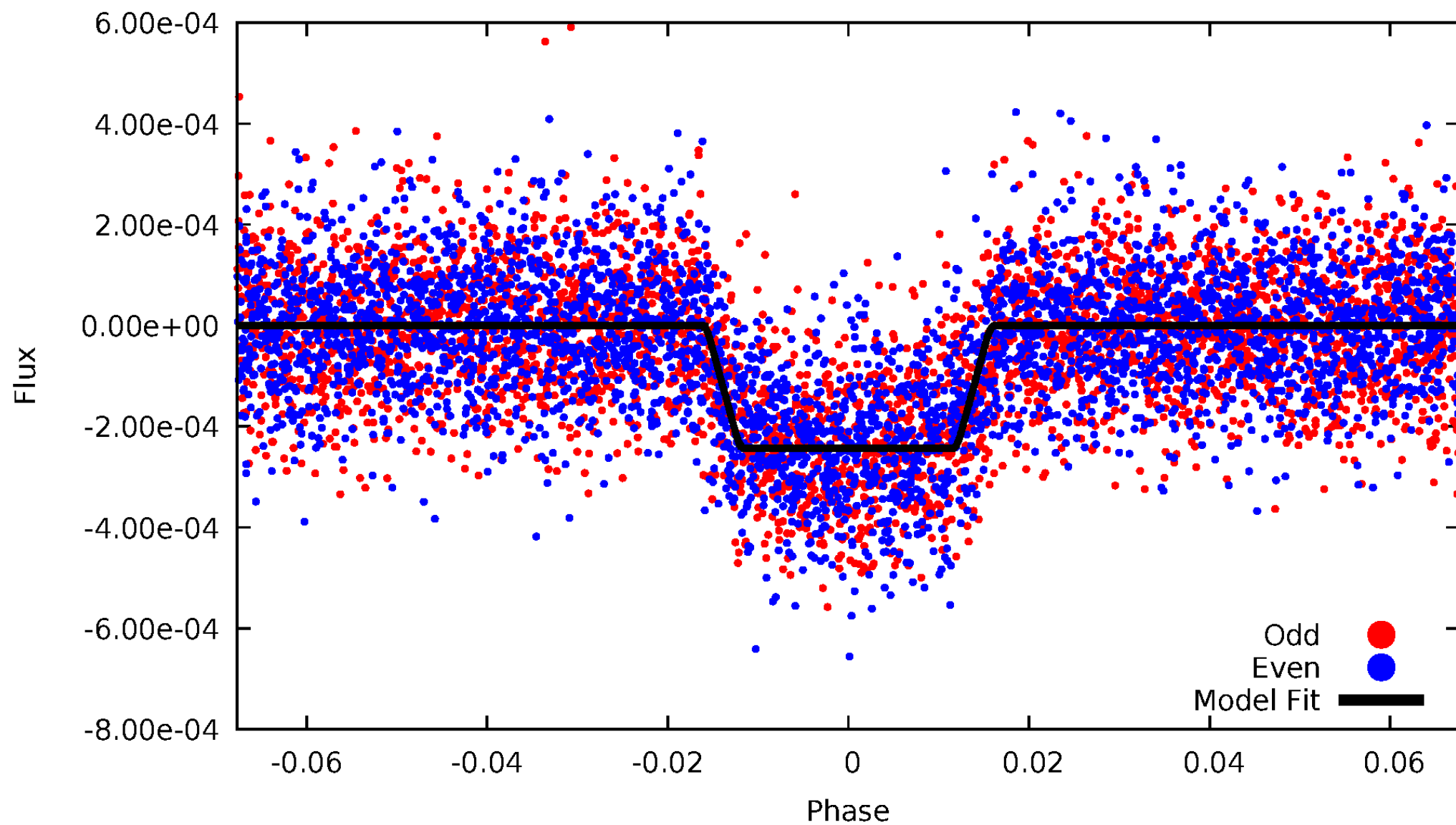
TCE 010290666-01





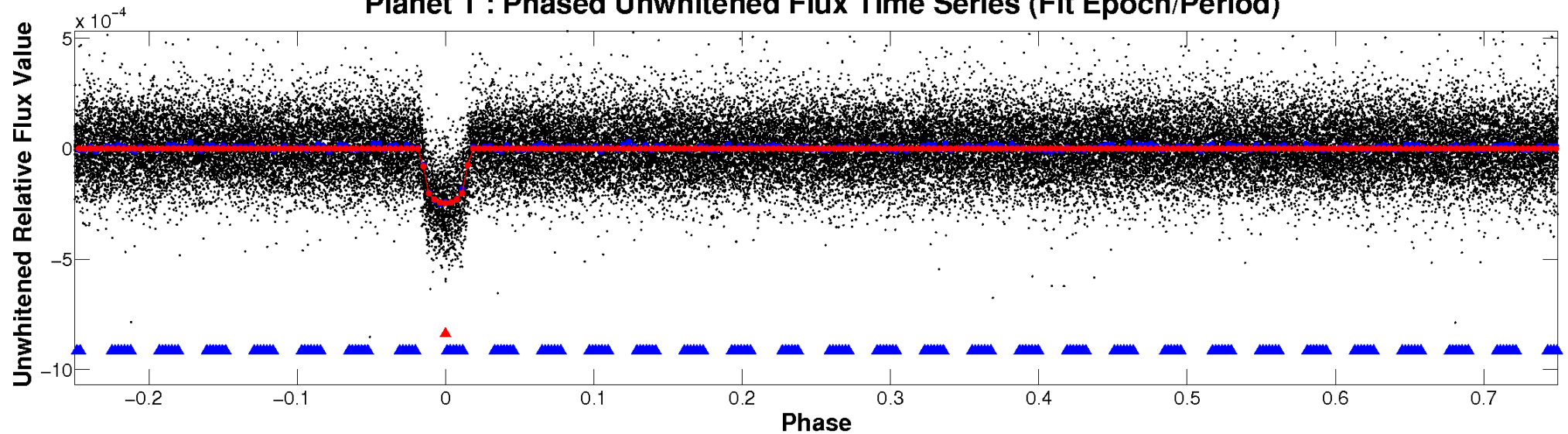
# ALT Odd/Even

TCE 010290666-01

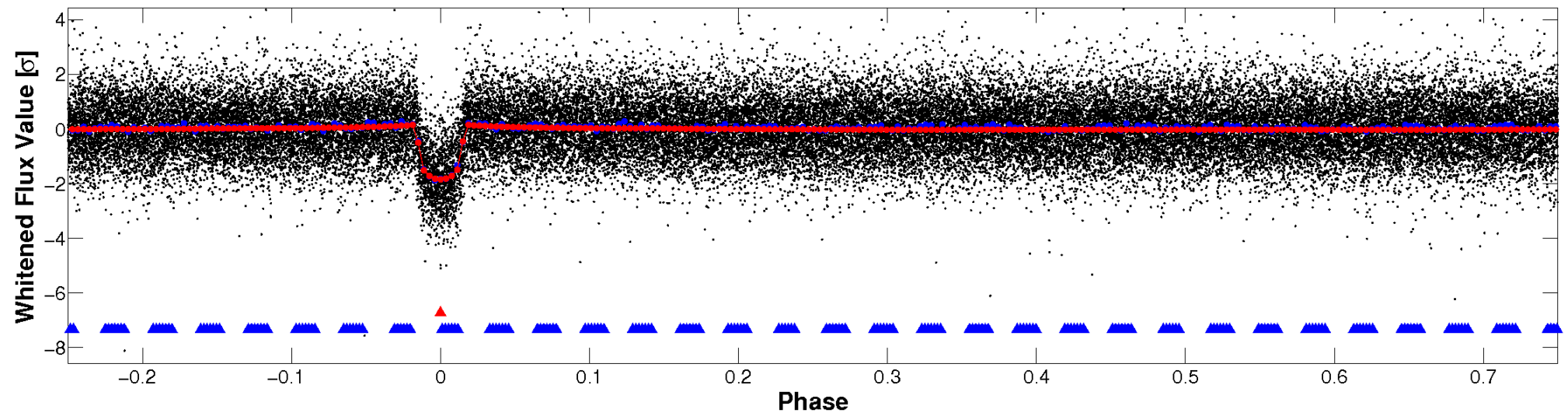


# Non-Whitened Vs. Whitened Light Curve

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

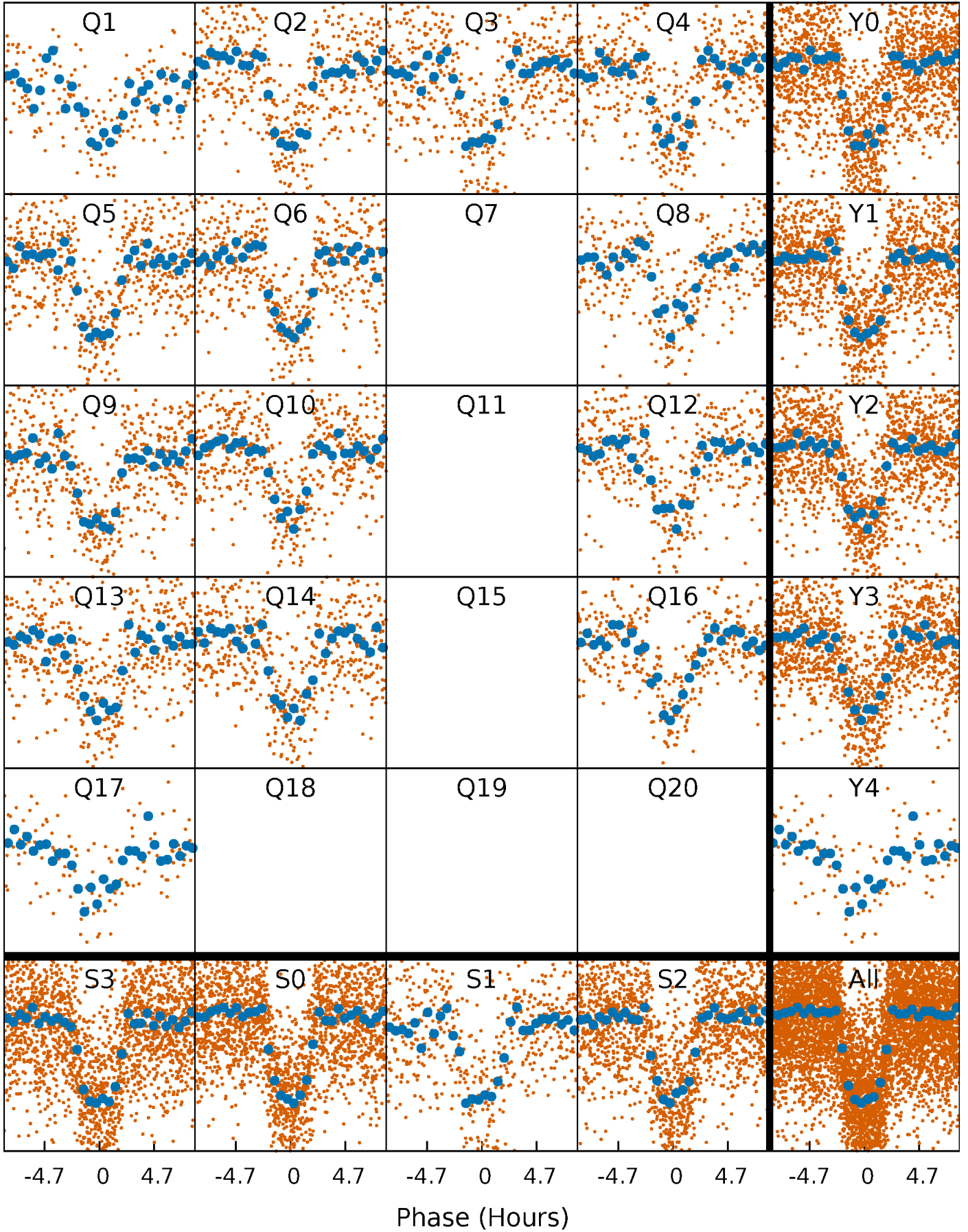


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

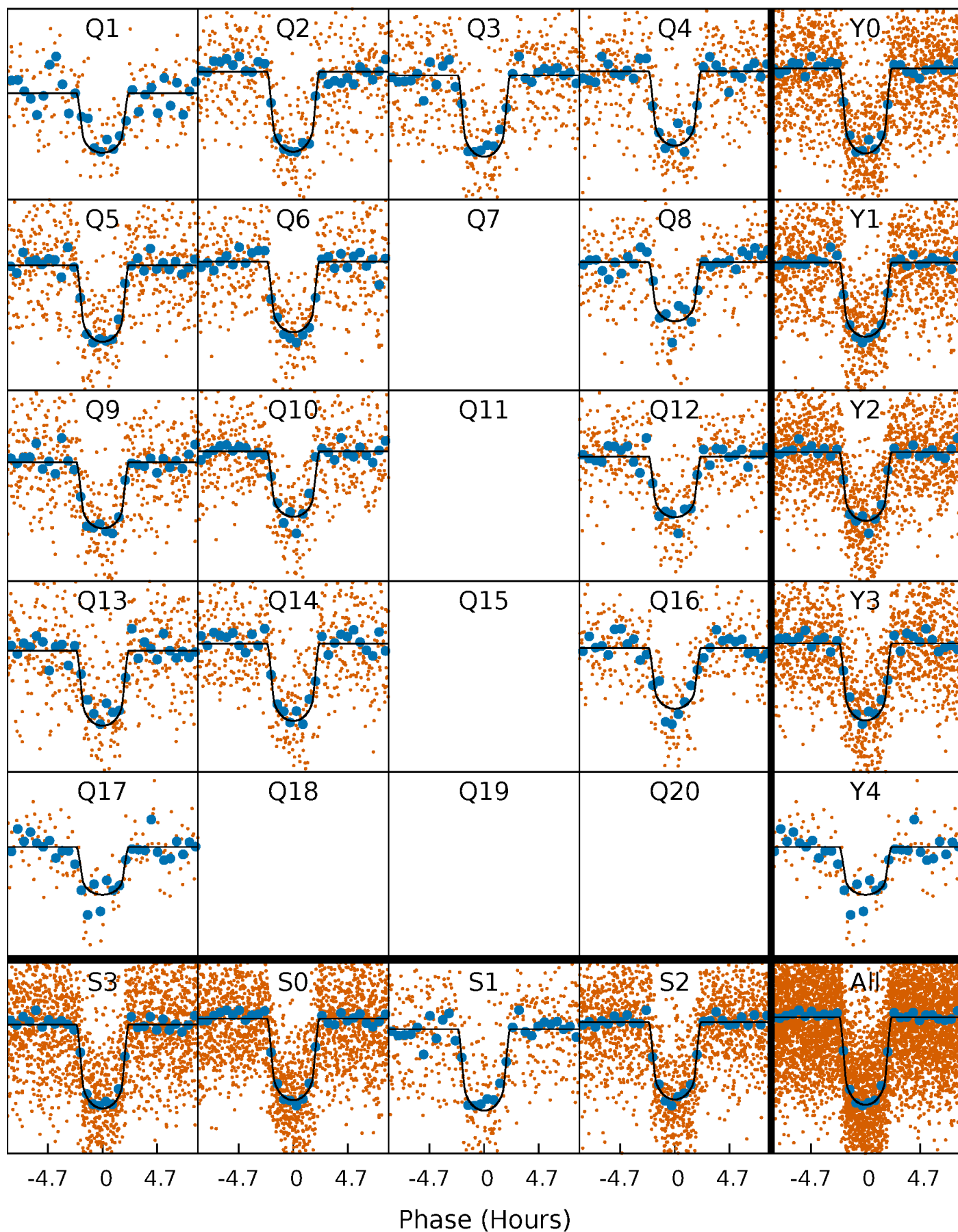
TCE 010290666-01 P= 5.458496 Days  $T_0=133.879778$  (BKJD)





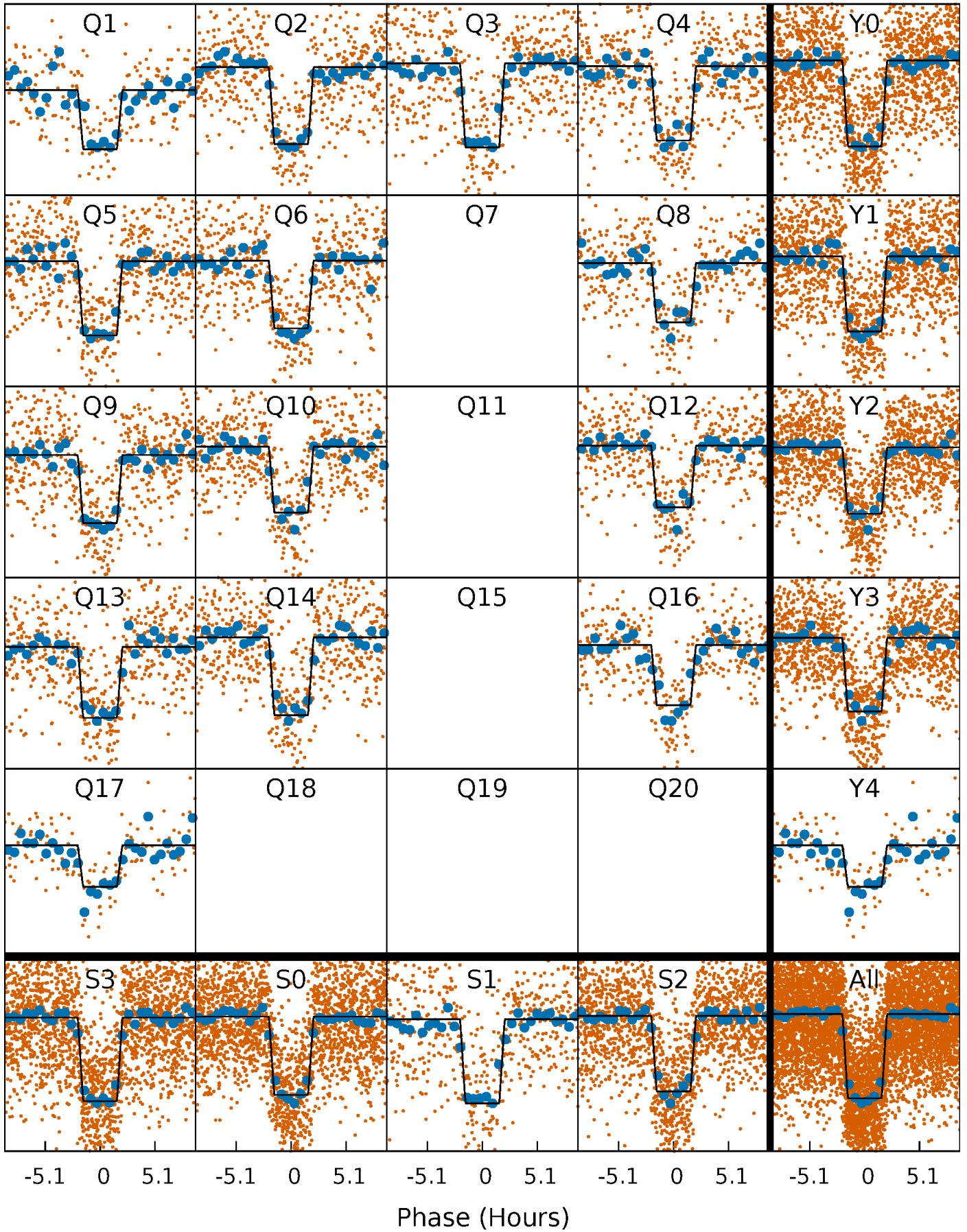
# DV Quarter-Phased Transit Curves

TCE 010290666-01 P= 5.458496 Days  $T_0=133.879778$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

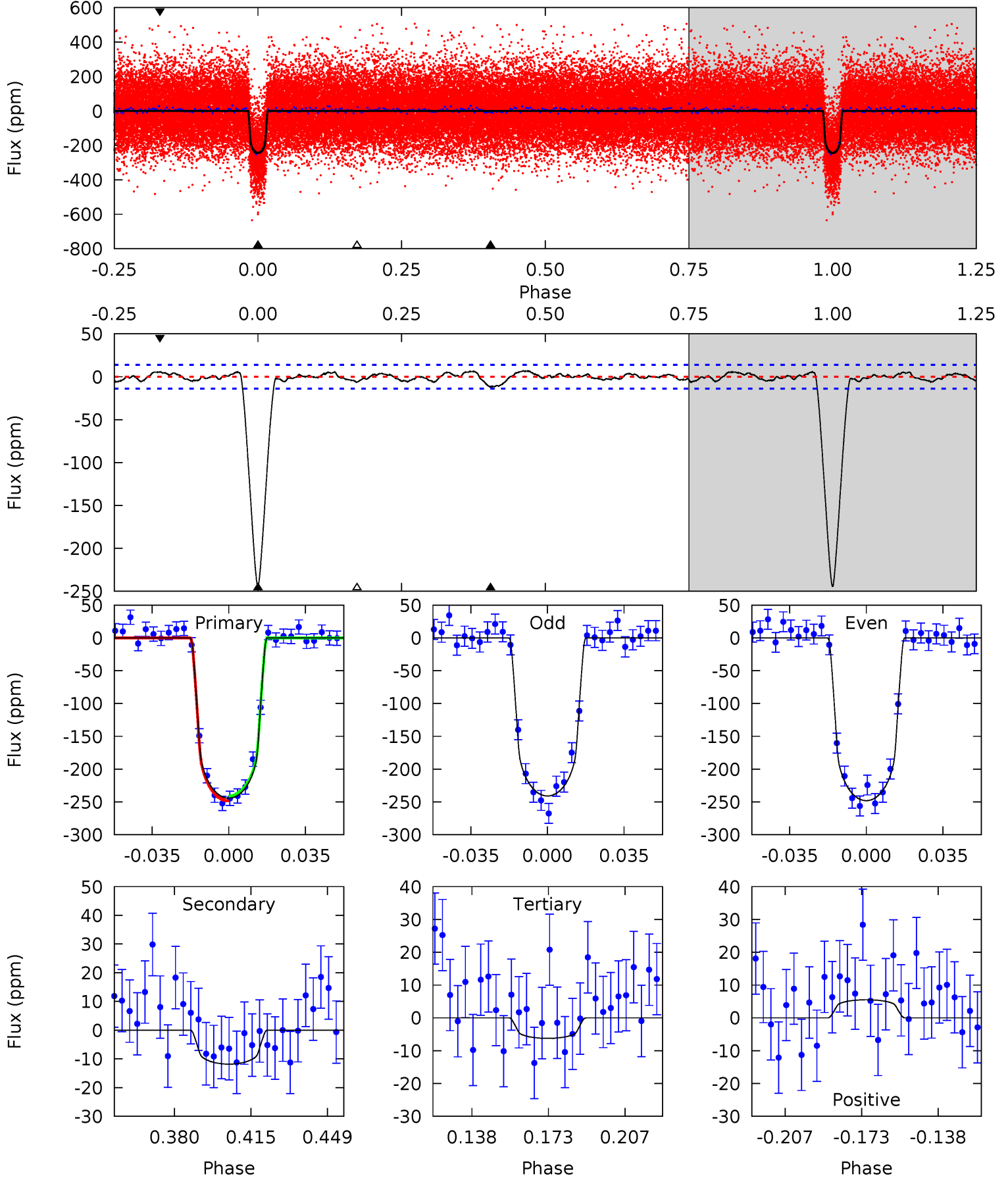
TCE 010290666-01   P= 5.458497 Days    $T_0=133.878990$  (BKJD)



# DV Model-Shift Uniqueness Test

010290666-01, P = 5.458496 Days, E = 128.421282 Days

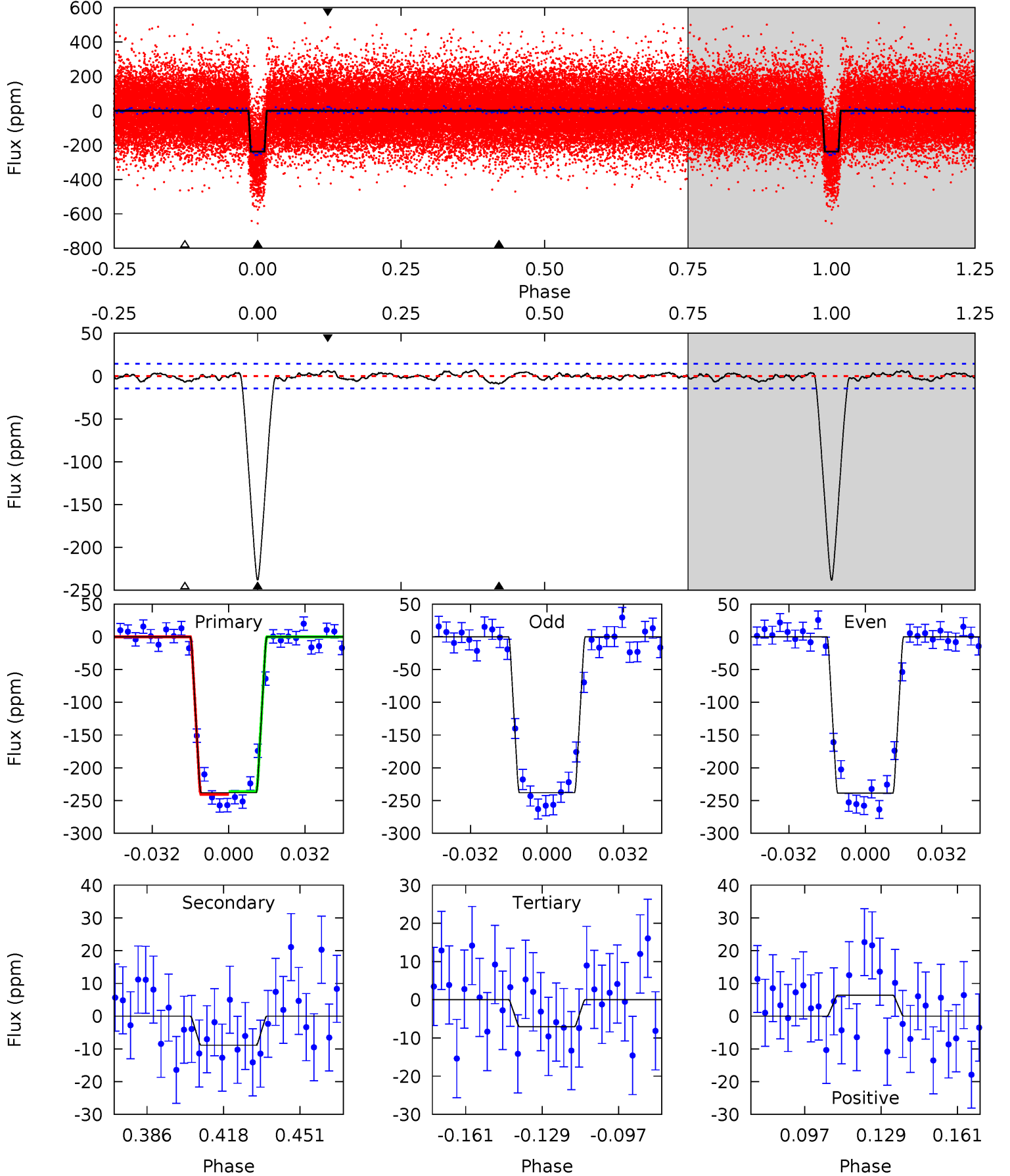
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
84.2	4.08	2.15	1.90	4.78	2.11	1.06	82.1	82.3	1.92	2.17	1.23	0.98	0.03	1.28



# Alt Model-Shift Uniqueness Test

010290666-01, P = 5.458497 Days, E = 128.420493 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
79.3	2.96	2.34	2.13	4.80	2.14	0.96	77.0	77.2	0.63	0.83	0.14	1.00	0.03	0.77



### Stellar Parameters For KIC 010290666

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5914^{+106}_{-130}$	$4.396^{+0.040}_{-0.112}$	$0.460^{+0.050}_{-0.150}$	$1.135^{+0.175}_{-0.075}$	$1.172^{+0.057}_{-0.071}$	$1.127^{+0.203}_{-0.382}$
	+2%/-2%	+1%/-3%	+11%/-33%	+15%/-7%	+5%/-6%	+18%/-34%
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 010290666-01 / KOI 0332.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-12 \pm 3$	$2.07^{+0.27}_{-0.24}$	$1550^{+62}_{-50}$	$3244^{+185}_{-186}$	$6.072^{+2.635}_{-1.936}$
Alt.	$-9 \pm 3$	$1.97^{+0.28}_{-0.27}$	$1550^{+58}_{-47}$	$3158^{+181}_{-230}$	$5.008^{+2.353}_{-1.898}$

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



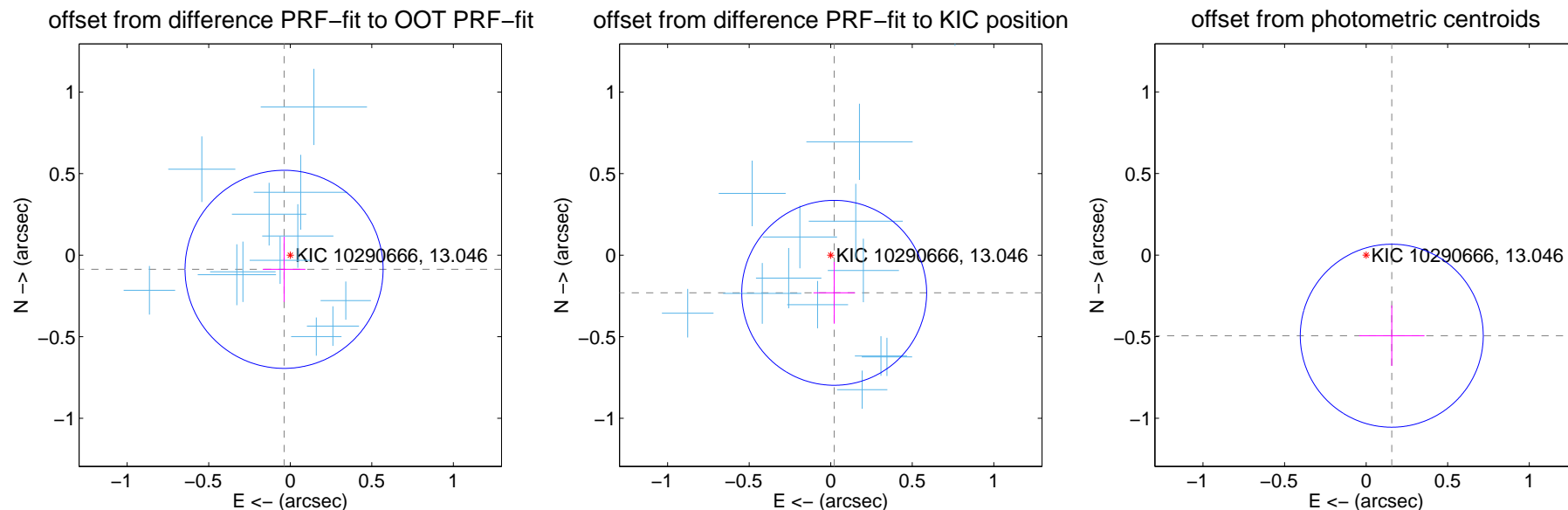
## DV Centroid Data

Supplemental centroid analysis for 010290666-01. Kepler magnitude: 13.05. Transit SNR 61.84

There are 14 quarters with good PRF difference image offsets

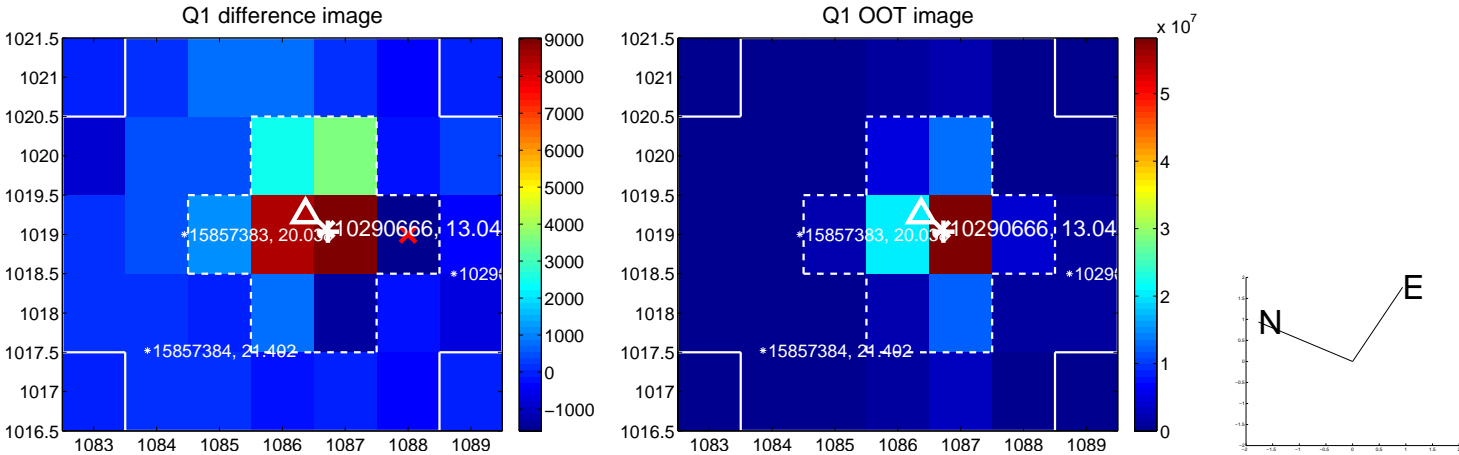
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.095 \pm 0.202$	0.47	$0.038 \pm 0.131$	$-0.087 \pm 0.200$
PRF-fit source offset from KIC position	$0.232 \pm 0.189$	1.23	$-0.021 \pm 0.127$	$-0.231 \pm 0.189$
photometric centroid source offset	$0.52 \pm 0.19$	2.77	$-0.16 \pm 0.20$	$-0.49 \pm 0.19$

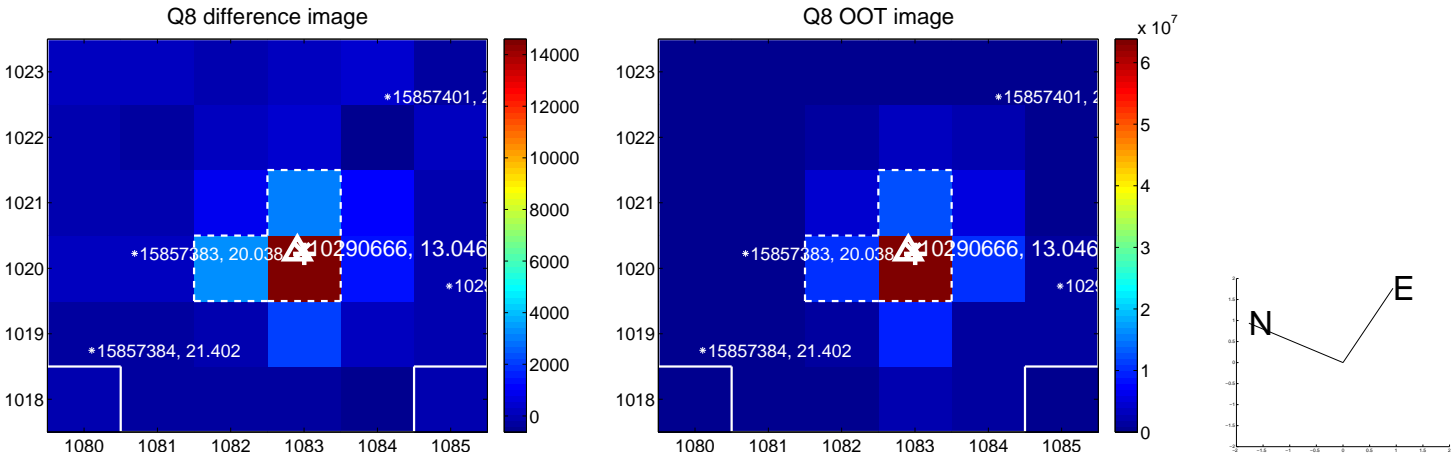
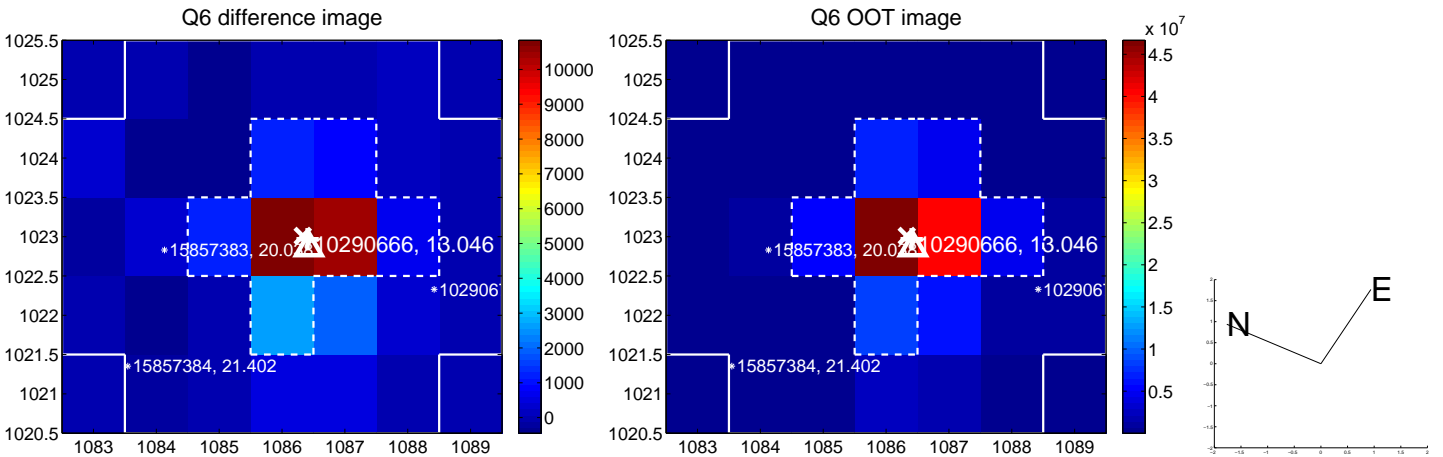
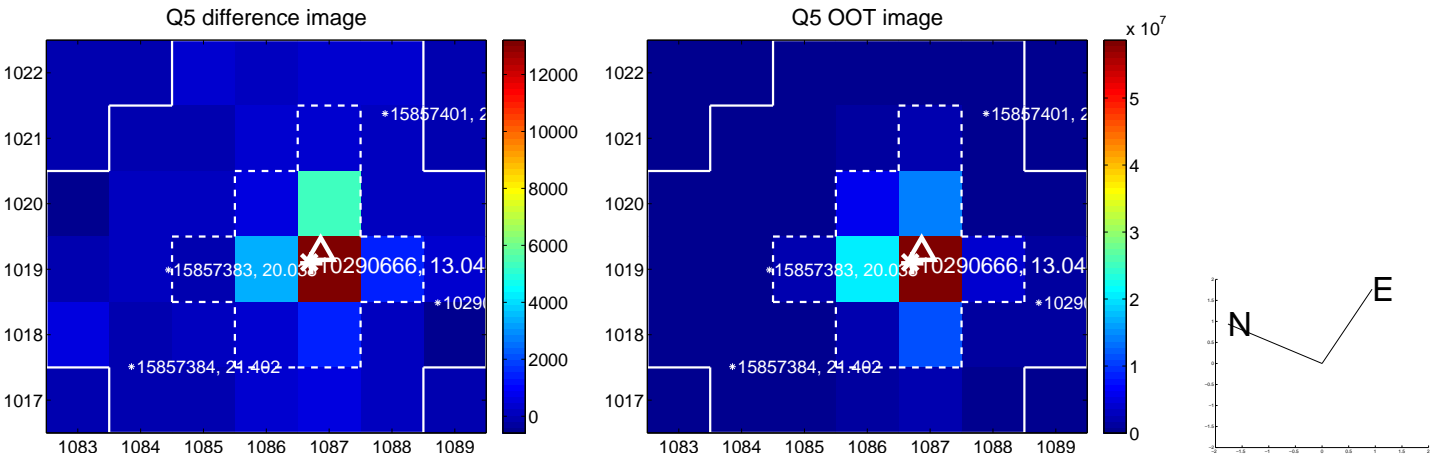


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

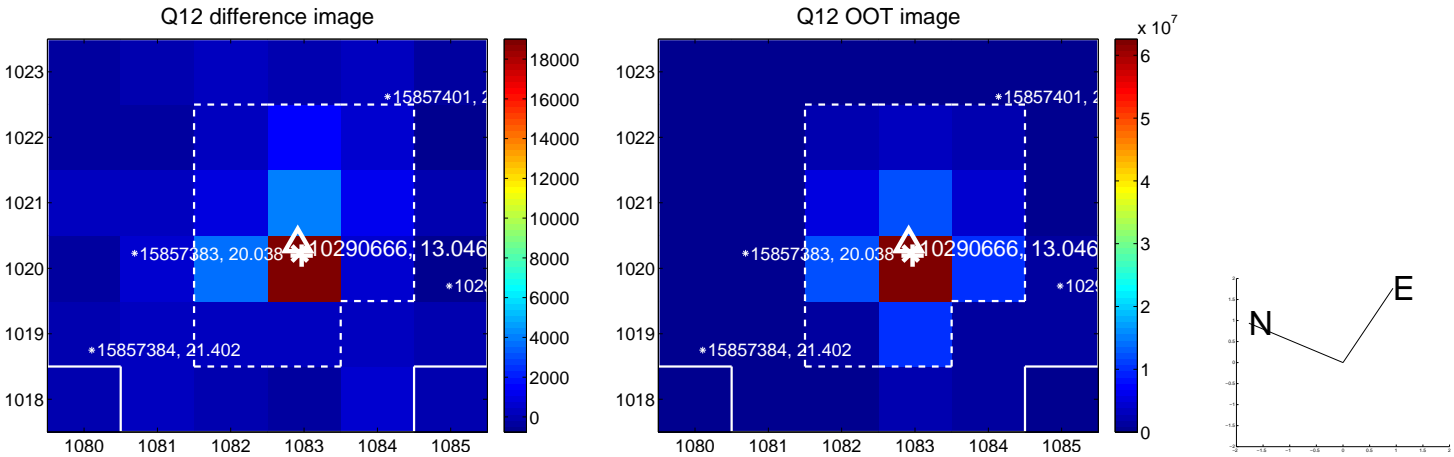
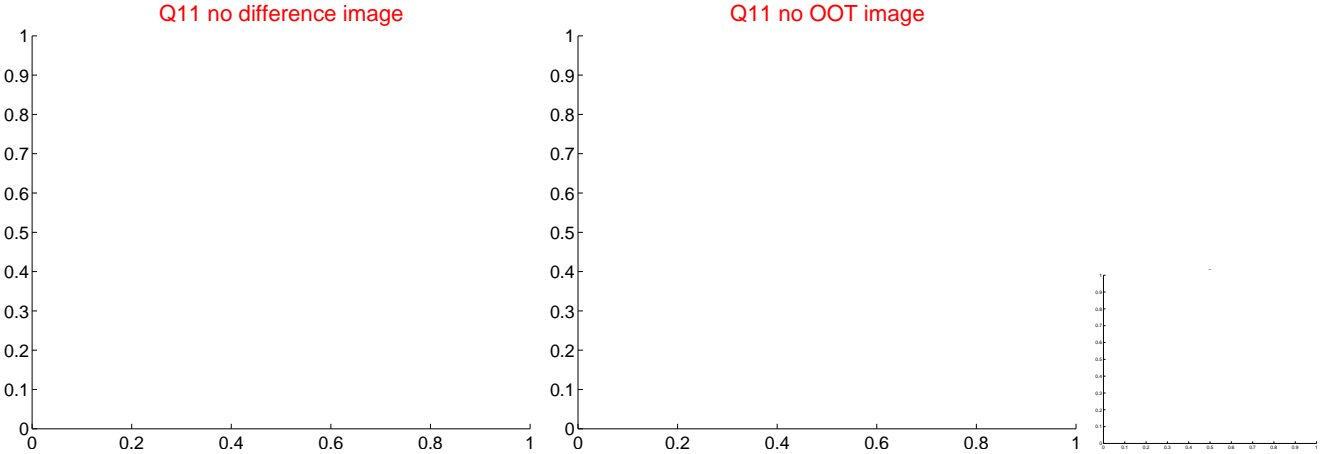
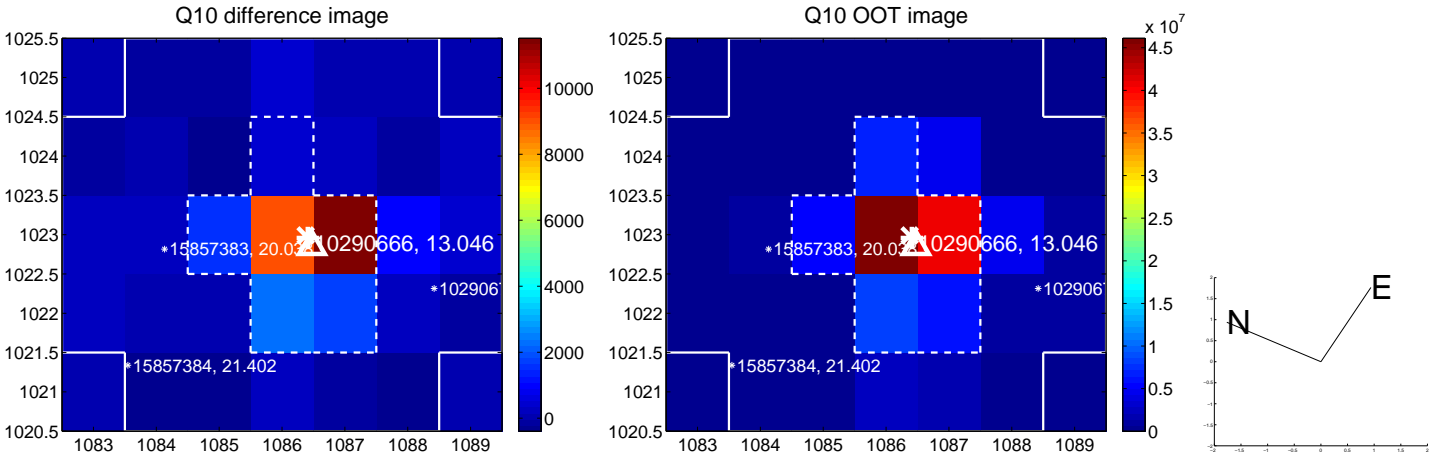
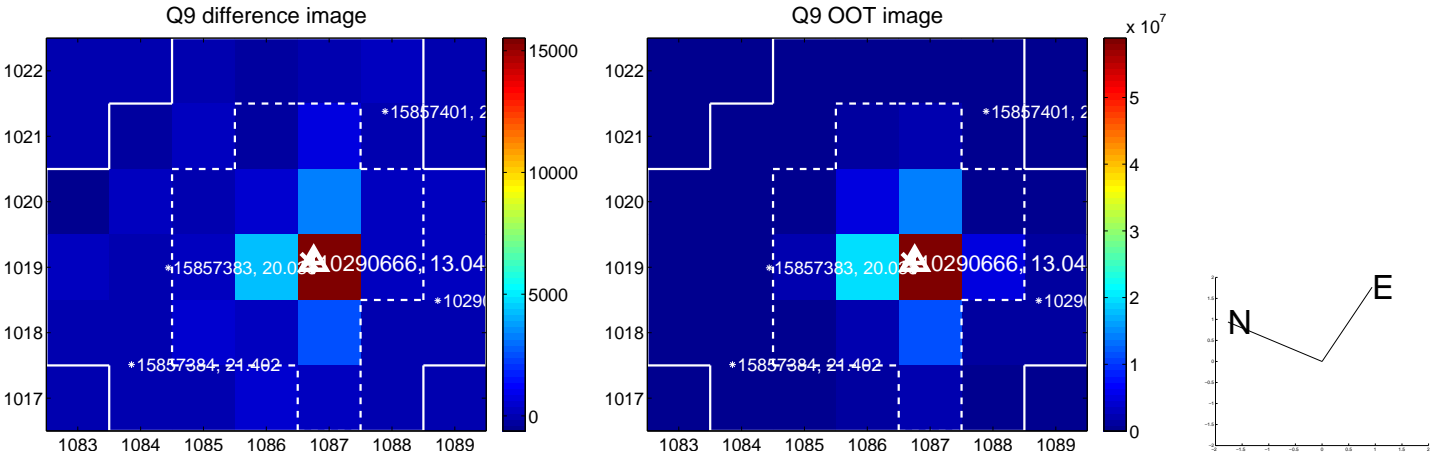
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



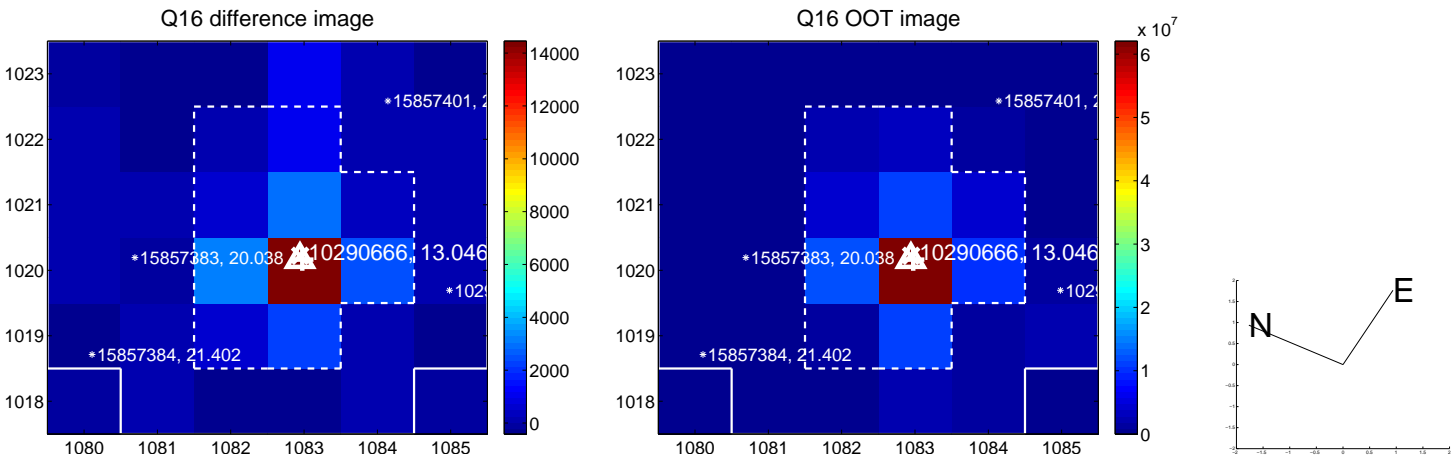
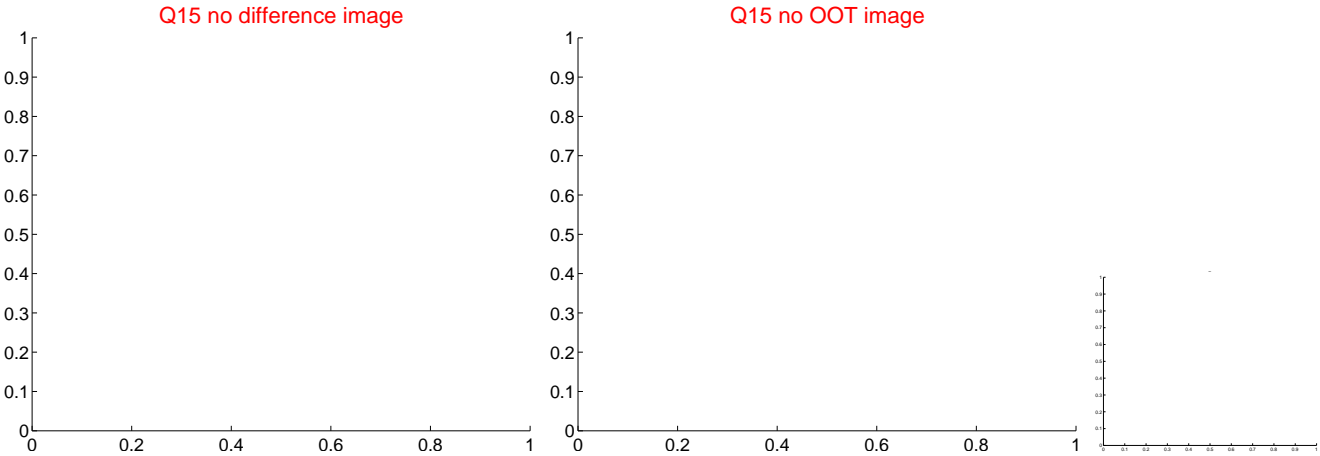
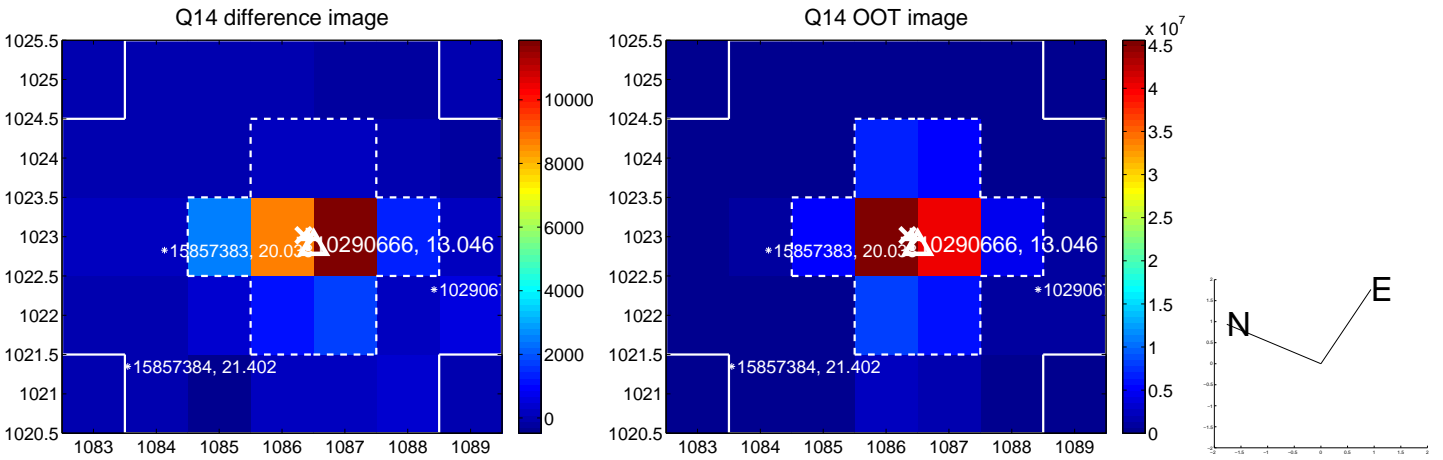
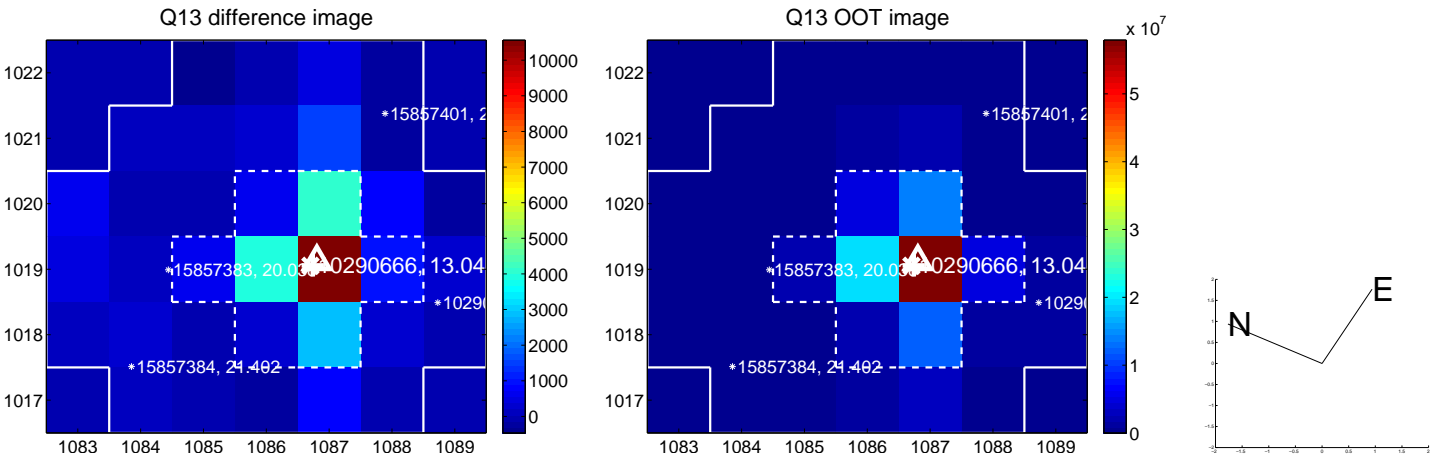
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

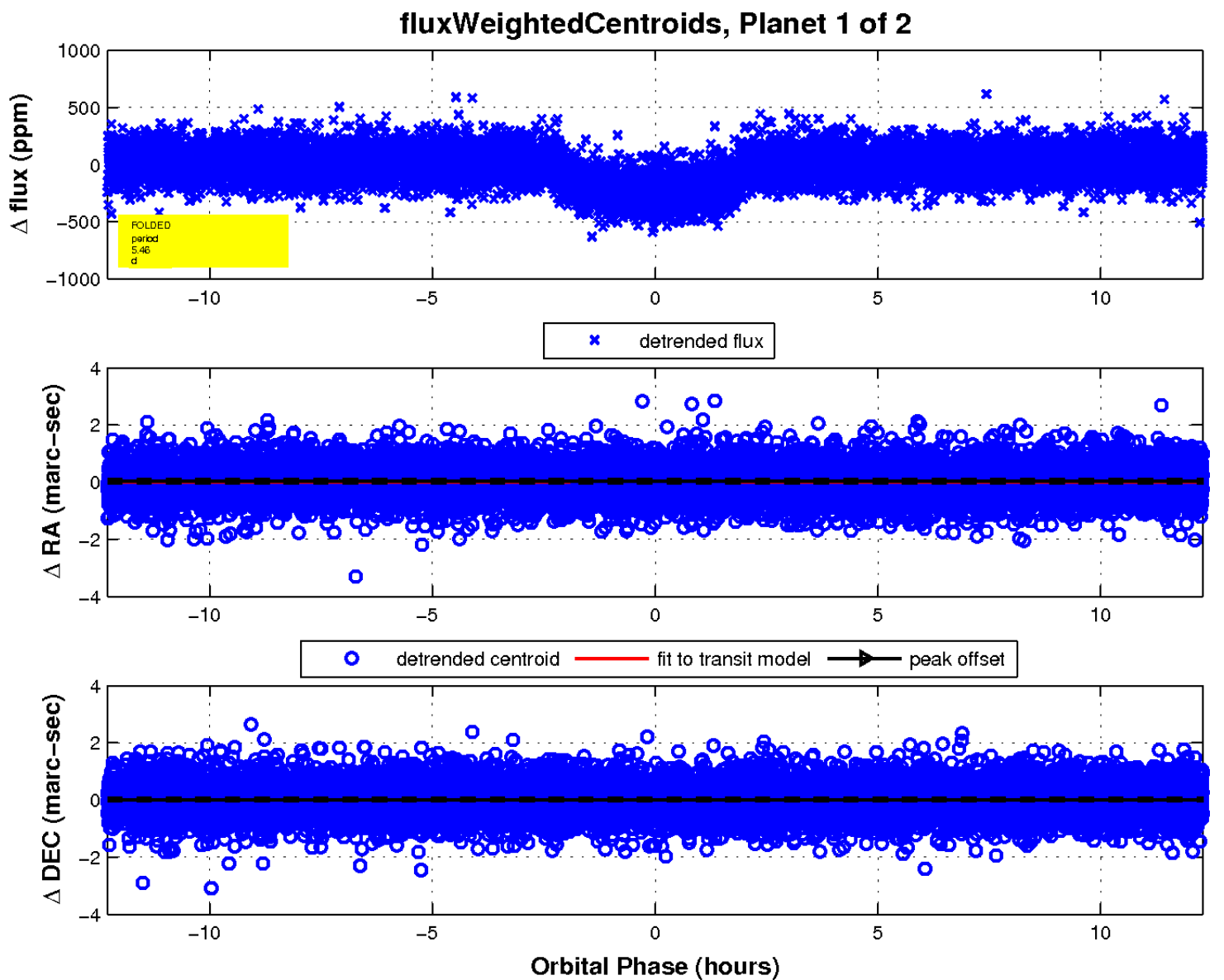
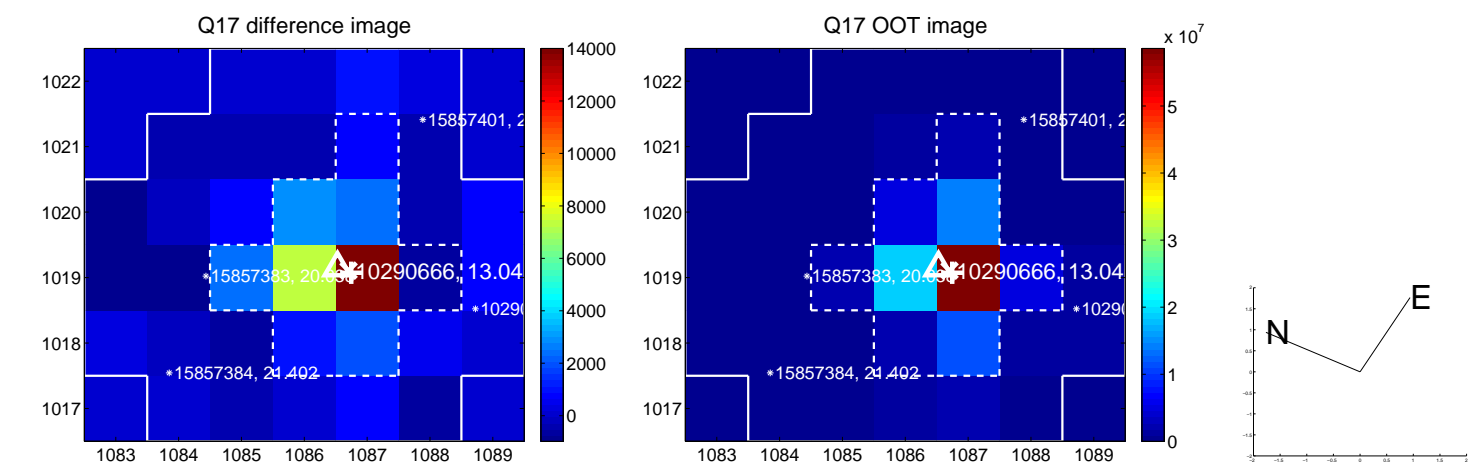


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



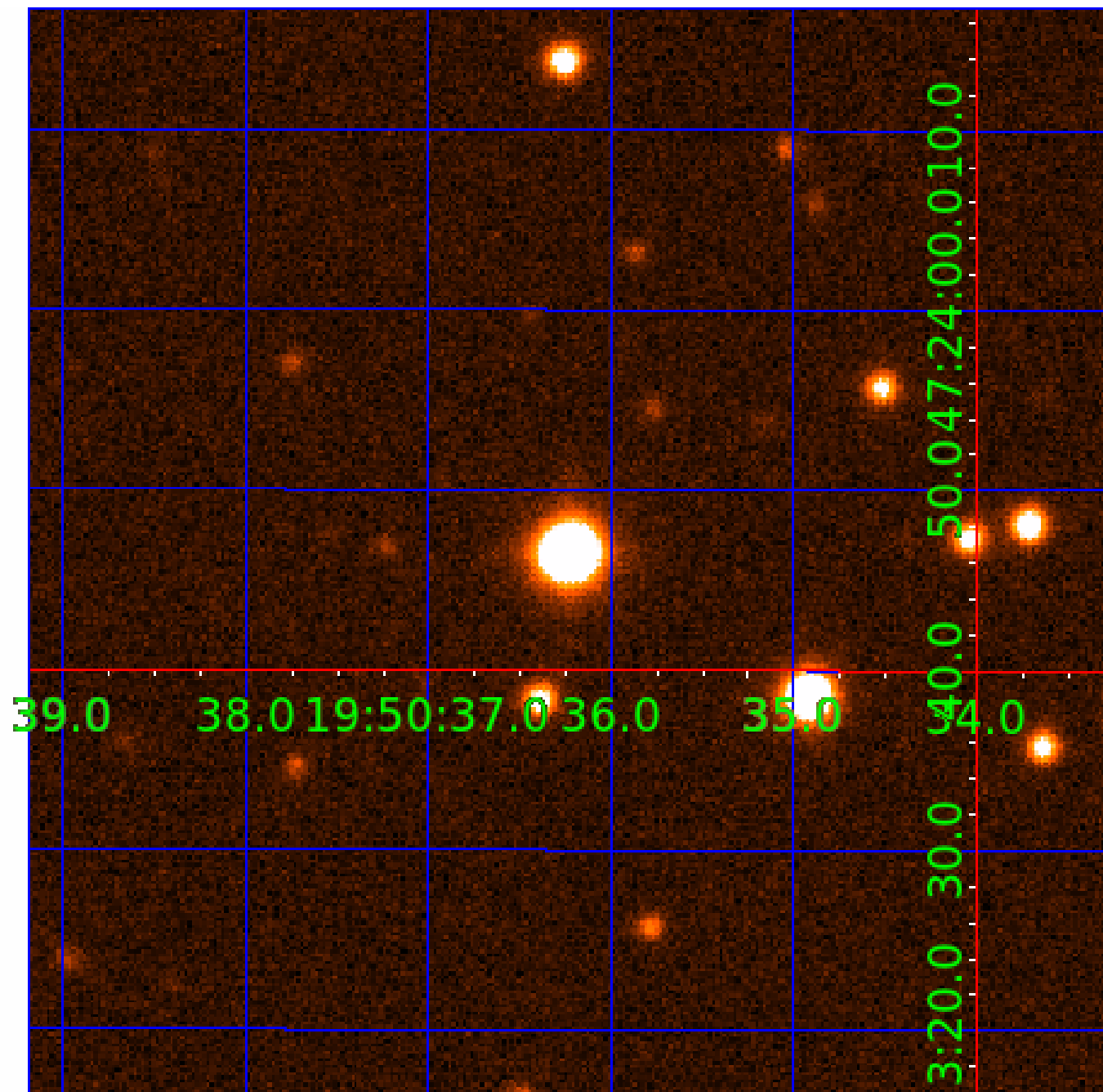


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010290666

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010290666-01	OBS	0332.01	5.458496	133.879778	247.2	4.100	53.6	61.8	1.14	5914	2.03	345.40
010290666-02	OBS	0332.02	6.866769	135.363122	41.7	4.911	8.8	10.0	1.14	5914	0.88	254.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010290666-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010290666-02	OBS	PC	0.98	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.

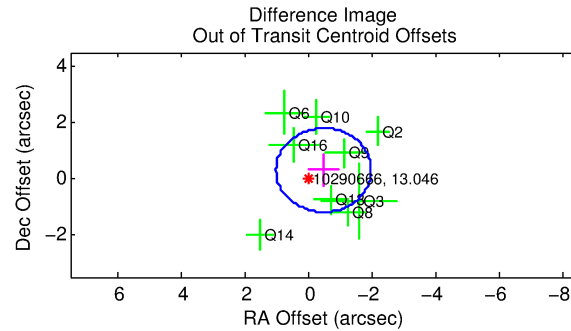
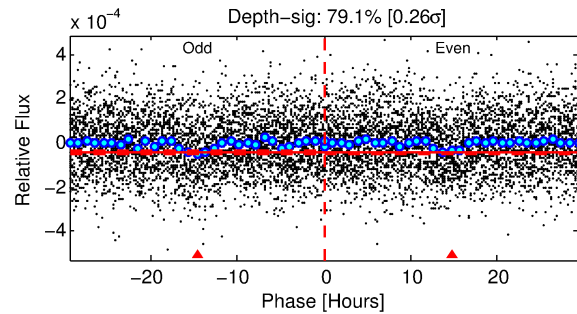
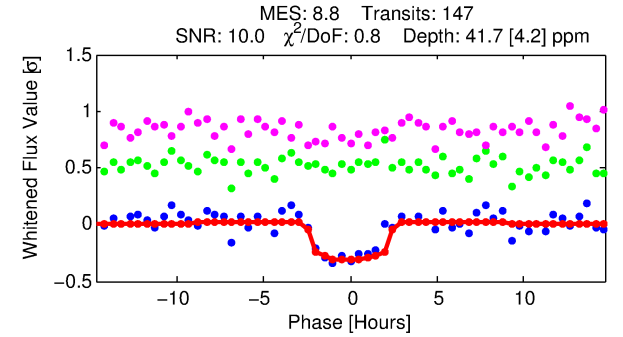
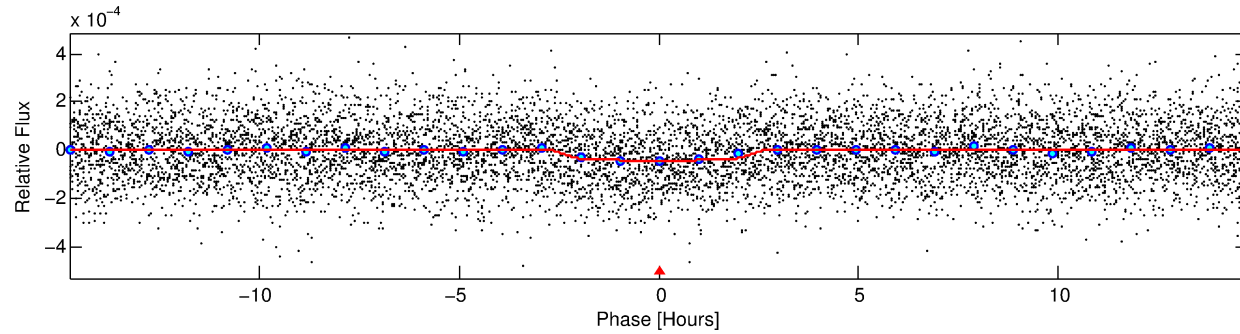
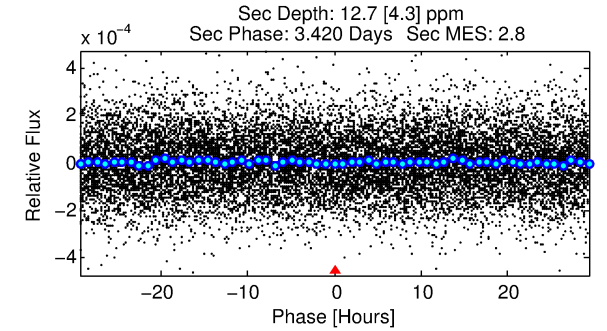
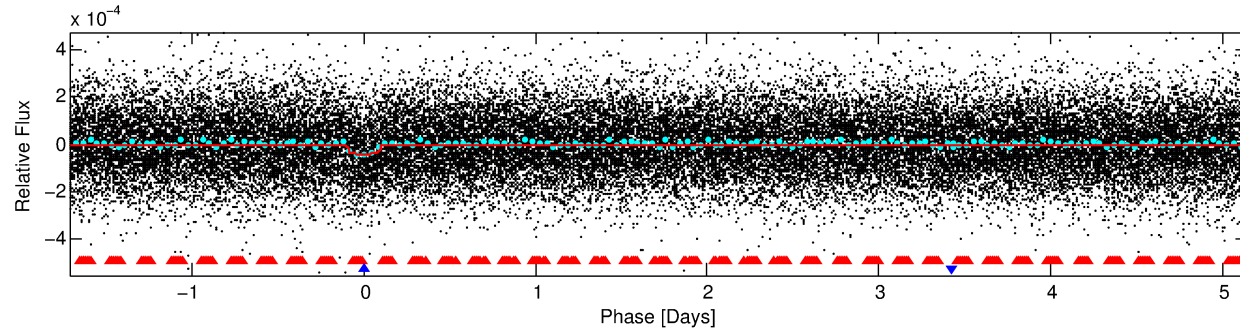
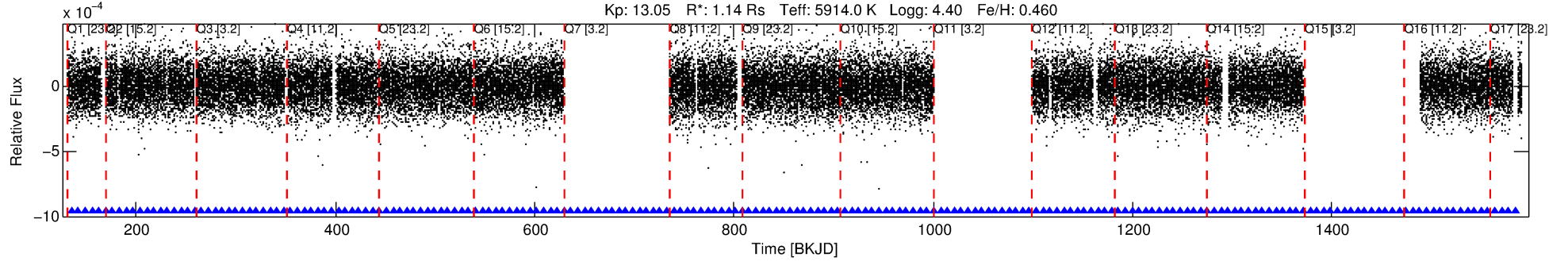
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010290666-02

No Significant Match Found

# DV One-Page Summary

KIC: 10290666 Candidate: 2 of 2 Period: 6.867 d  
KOI: K00332.02 Corr: 0.914



## DV Fit Results:

Period = 6.86677 [0.00007] d  
Epoch = 135.3631 [0.0079] BKJD  
Rp/R\* = 0.0071 [0.0036]  
a/R\* = 4.73 [10.92]  
b = 0.91 [0.47]  
Seff = 254.34 [55.64]  
Teq = 1018 [56] K  
Rp = 0.88 [0.46] Re  
a = 0.0745 [0.0100] AU  
Ag = 49.92 [53.82] [0.91σ]  
Teffp = 4185 [1112] K [2.84σ]

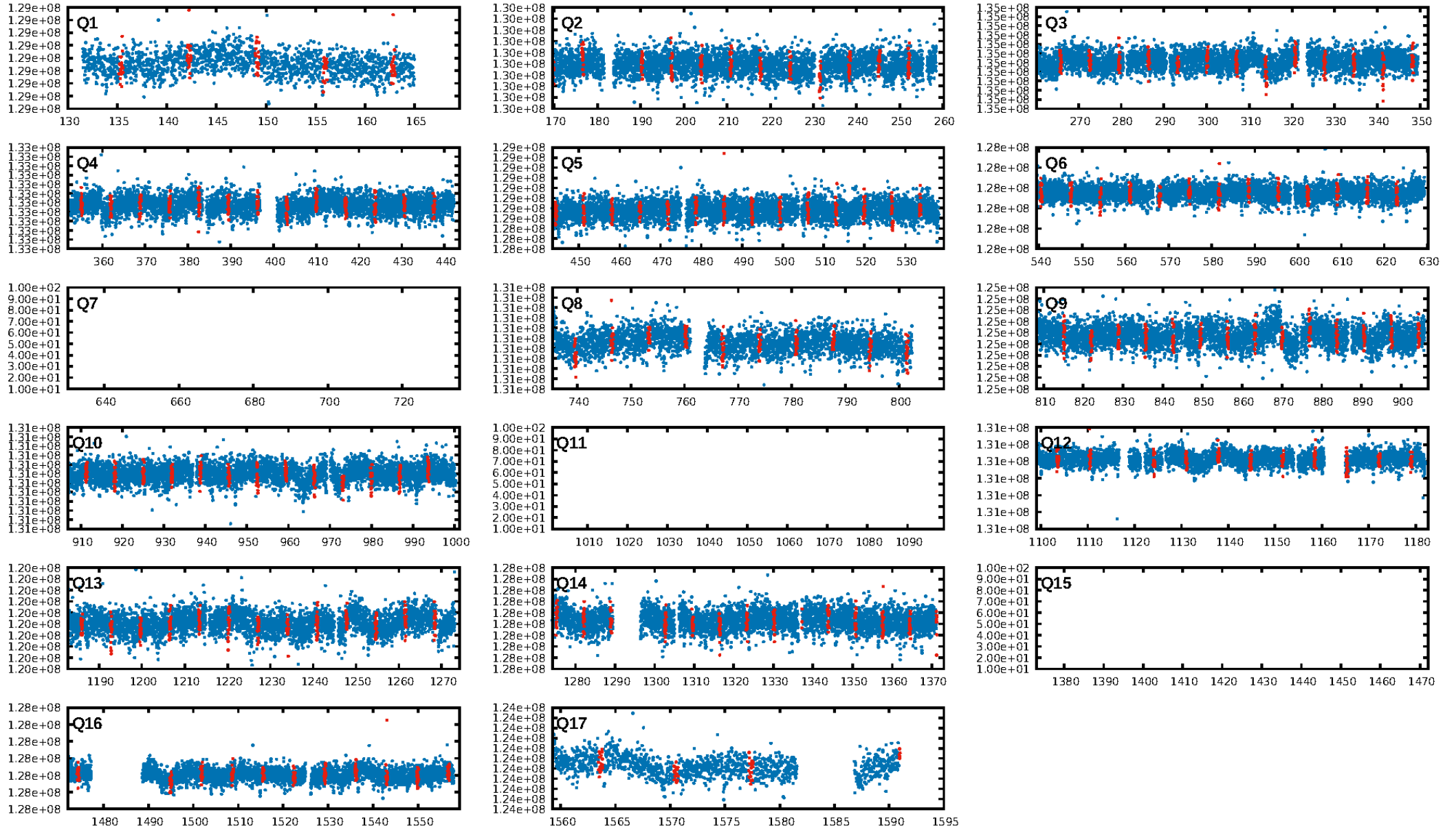
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.28σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.55e-18  
RollingBand-fgt: 1.00 [139/139]  
GhostDiagnostic-chr: 3.663  
Centroid-sig: 65.2%  
Centroid-so: 1.006 arcsec [0.88σ]  
OotOffset-rm: 0.554 arcsec [1.11σ]  
OotOffset-st: 4/1/2/2 [9]  
KicOffset-rm: 0.530 arcsec [1.18σ]  
KicOffset-st: 4/1/2/2 [9]  
DiffImageQuality-fgm: 0.78 [7/9]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:44:11 Z

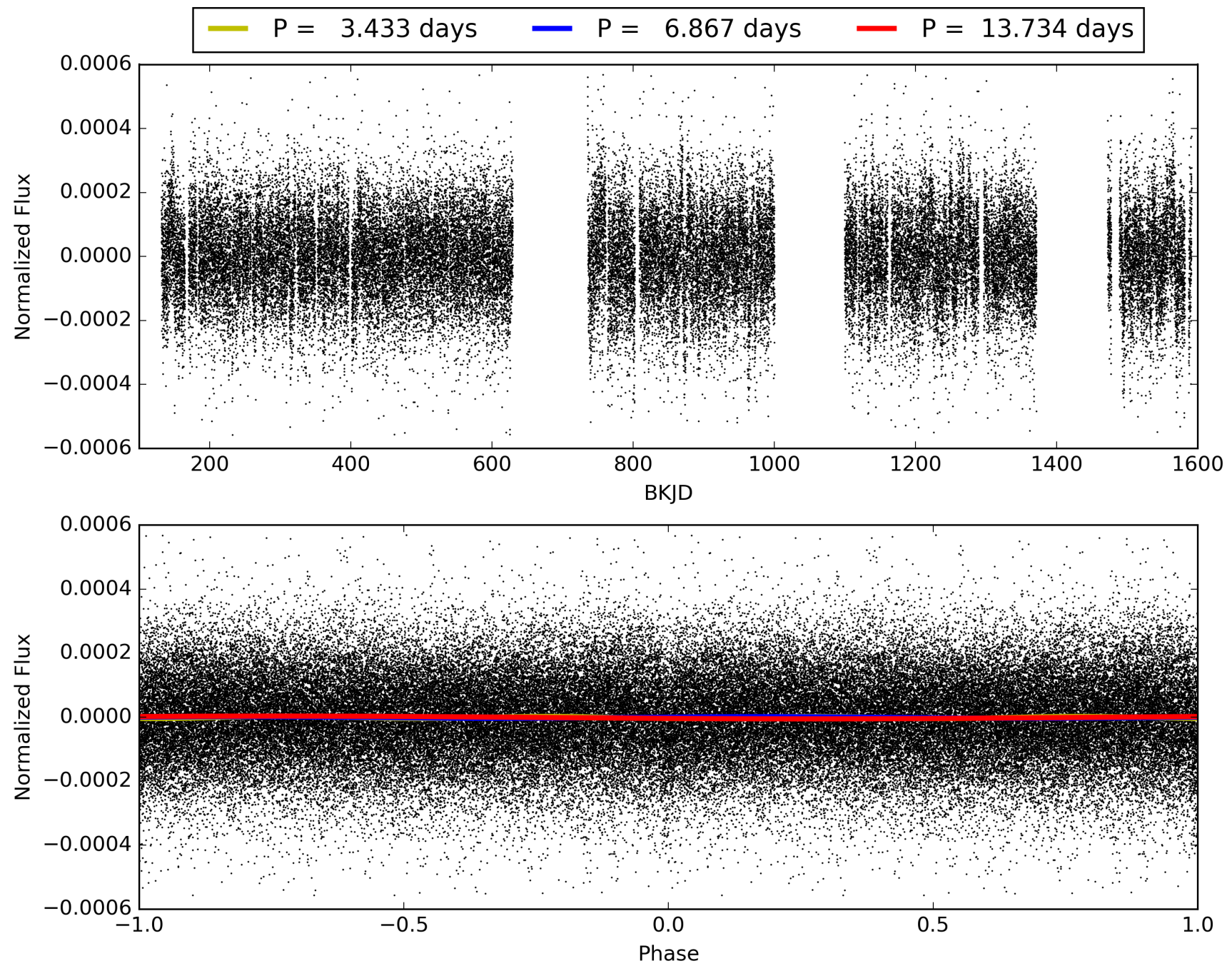
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010290666-02, PDC Light Curves



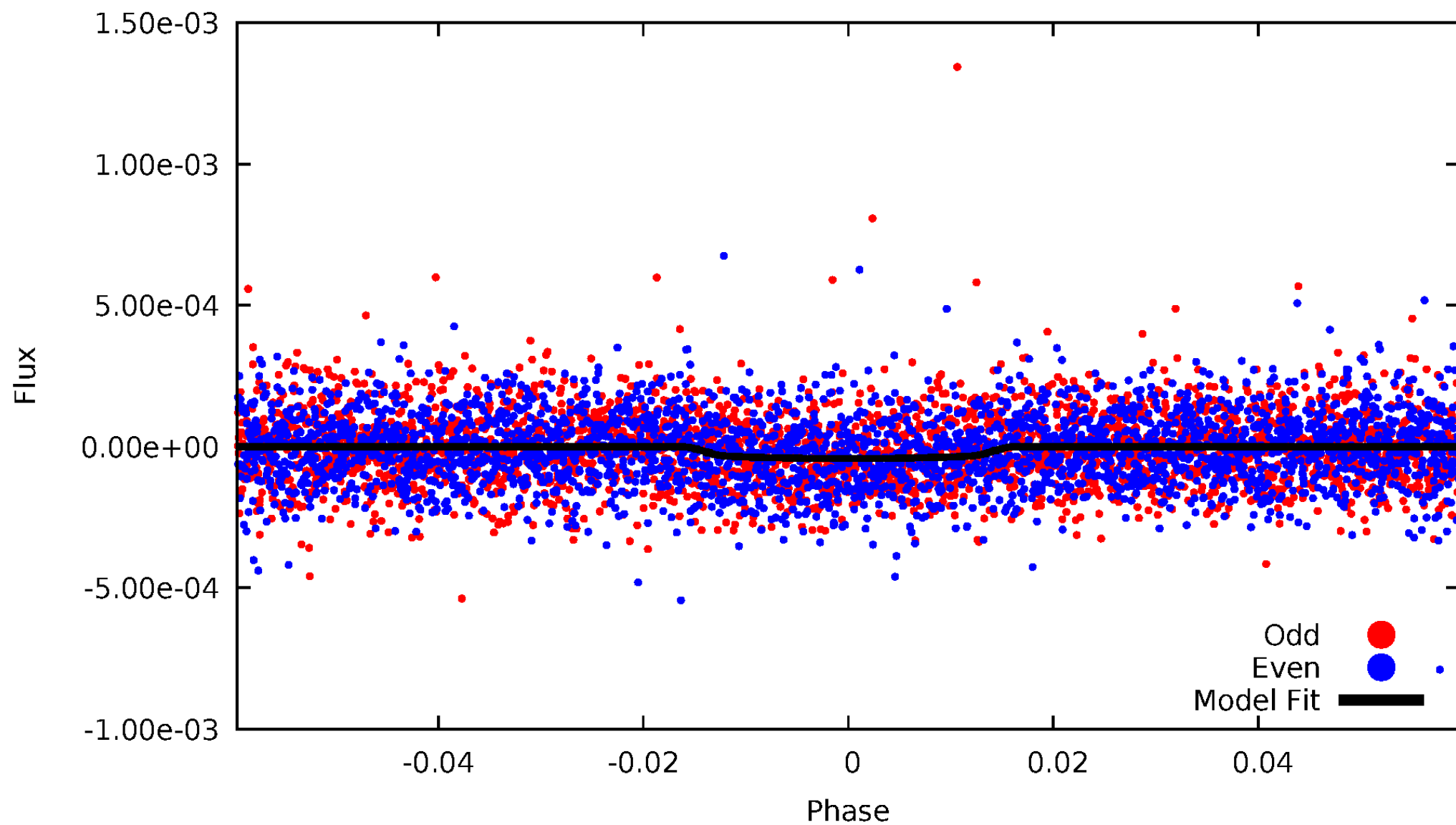


TCE 010290666-02



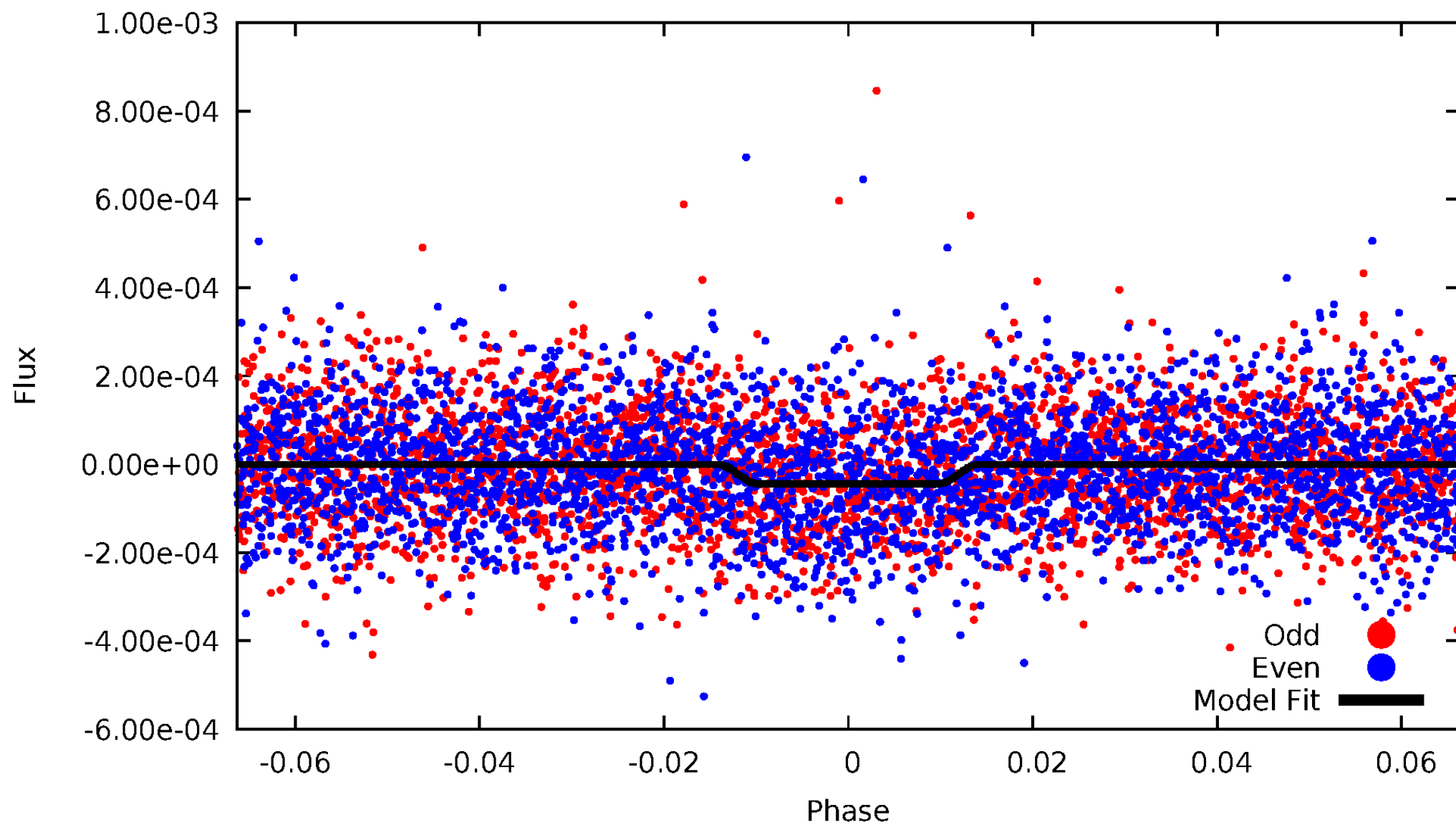
# DV Odd/Even

TCE 010290666-02



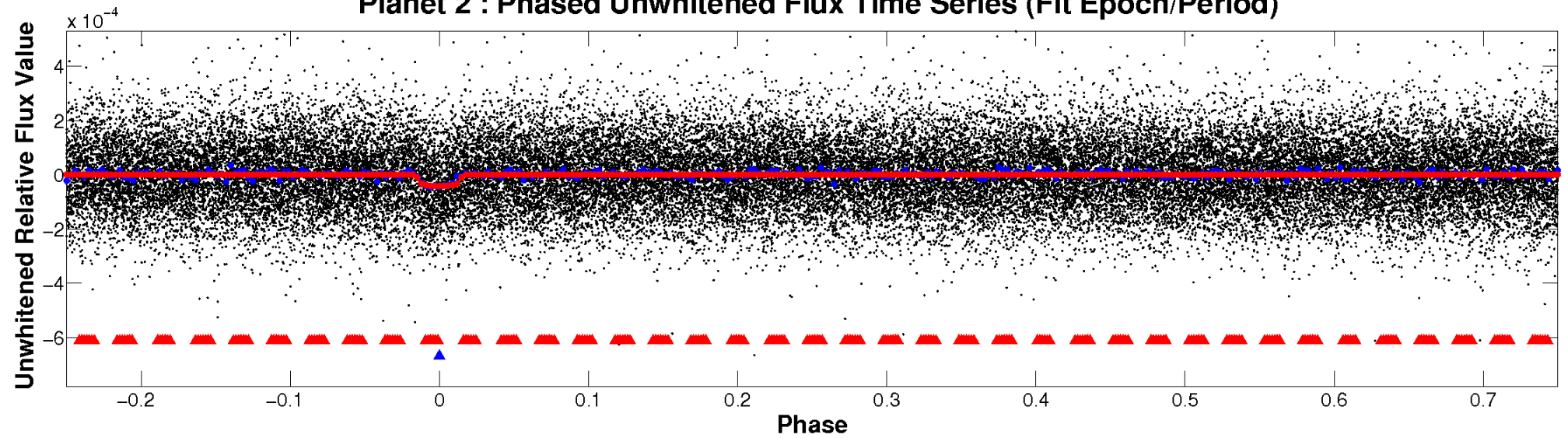
# ALT Odd/Even

TCE 010290666-02

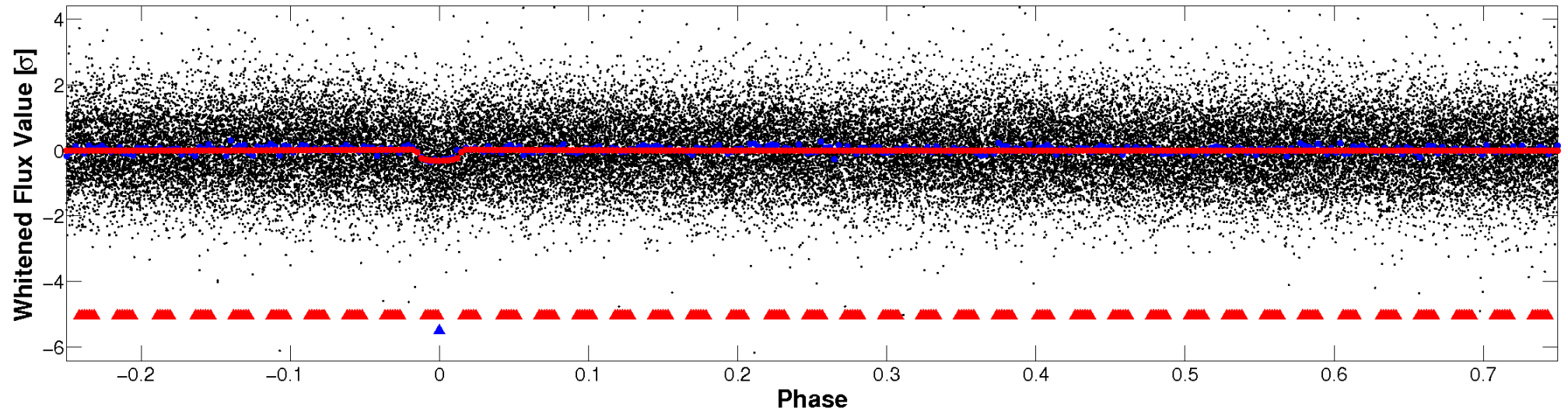


# Non-Whitened Vs. Whitened Light Curve

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



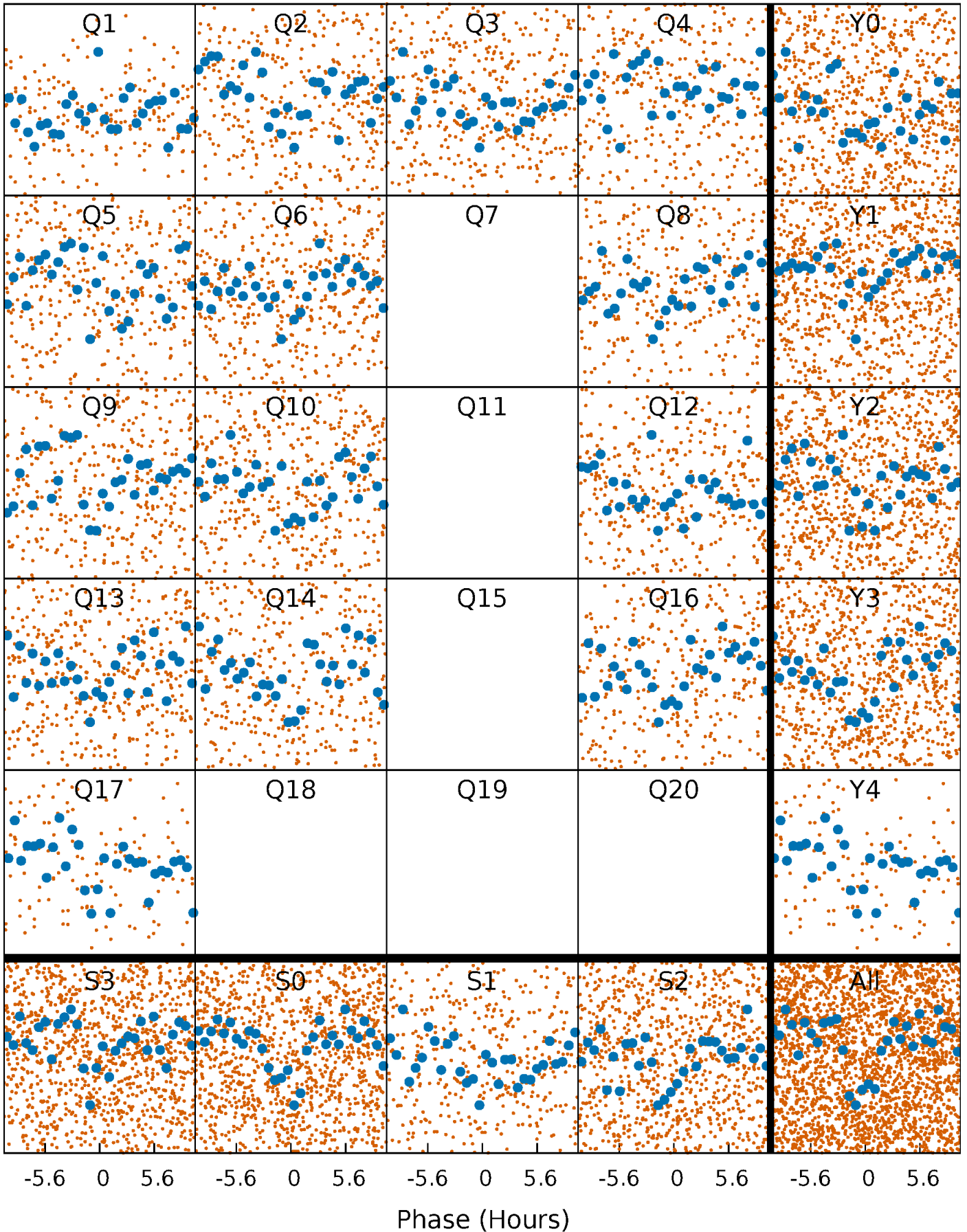
**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

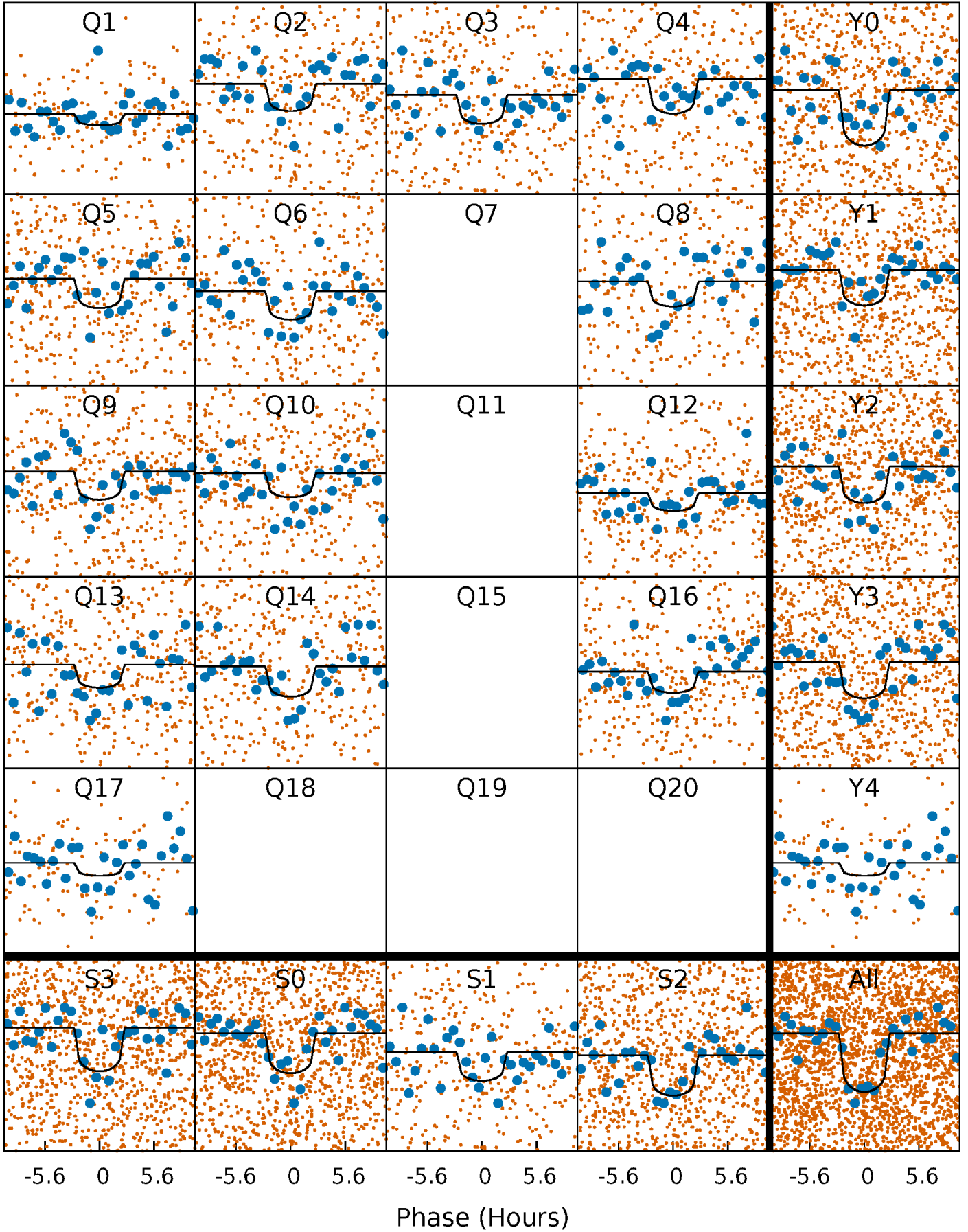
TCE 010290666-02   P= 6.866769 Days    $T_0=135.363122$  (BKJD)





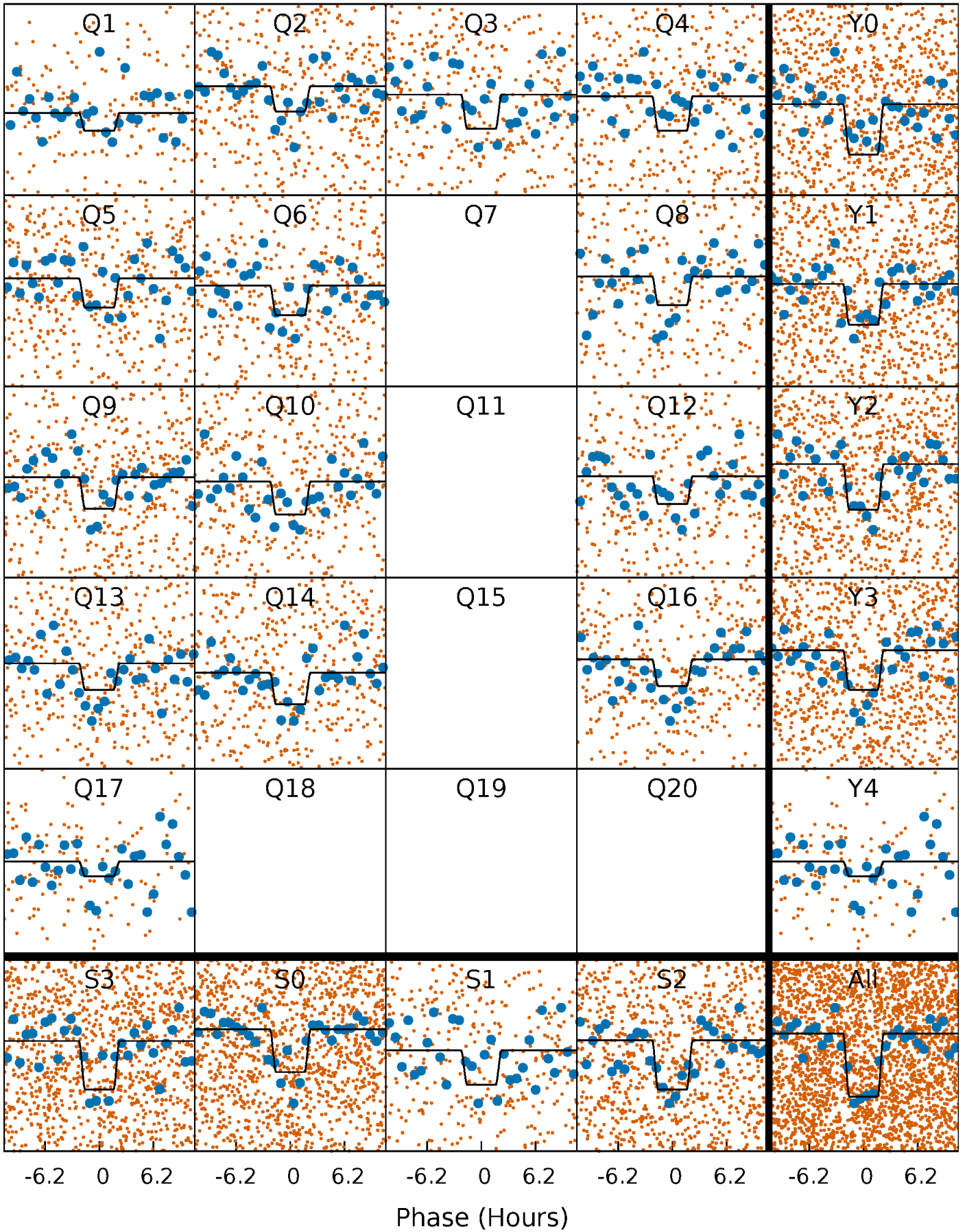
# DV Quarter-Phased Transit Curves

TCE 010290666-02   P= 6.866769 Days    $T_0=135.363122$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

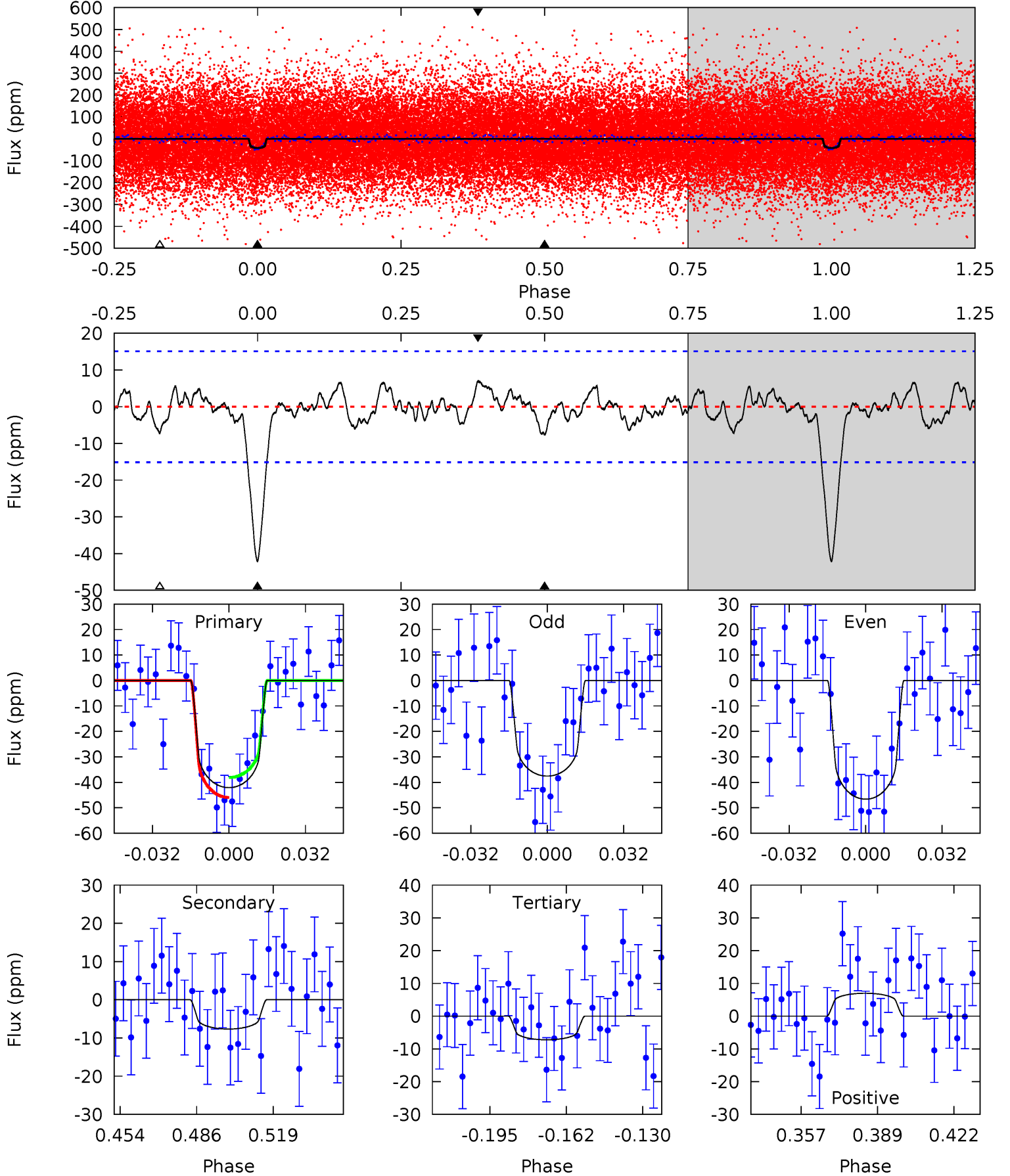
TCE 010290666-02 P= 6.866745 Days  $T_0=135.359491$  (BKJD)



# DV Model-Shift Uniqueness Test

010290666-02, P = 6.866769 Days, E = 128.496353 Days

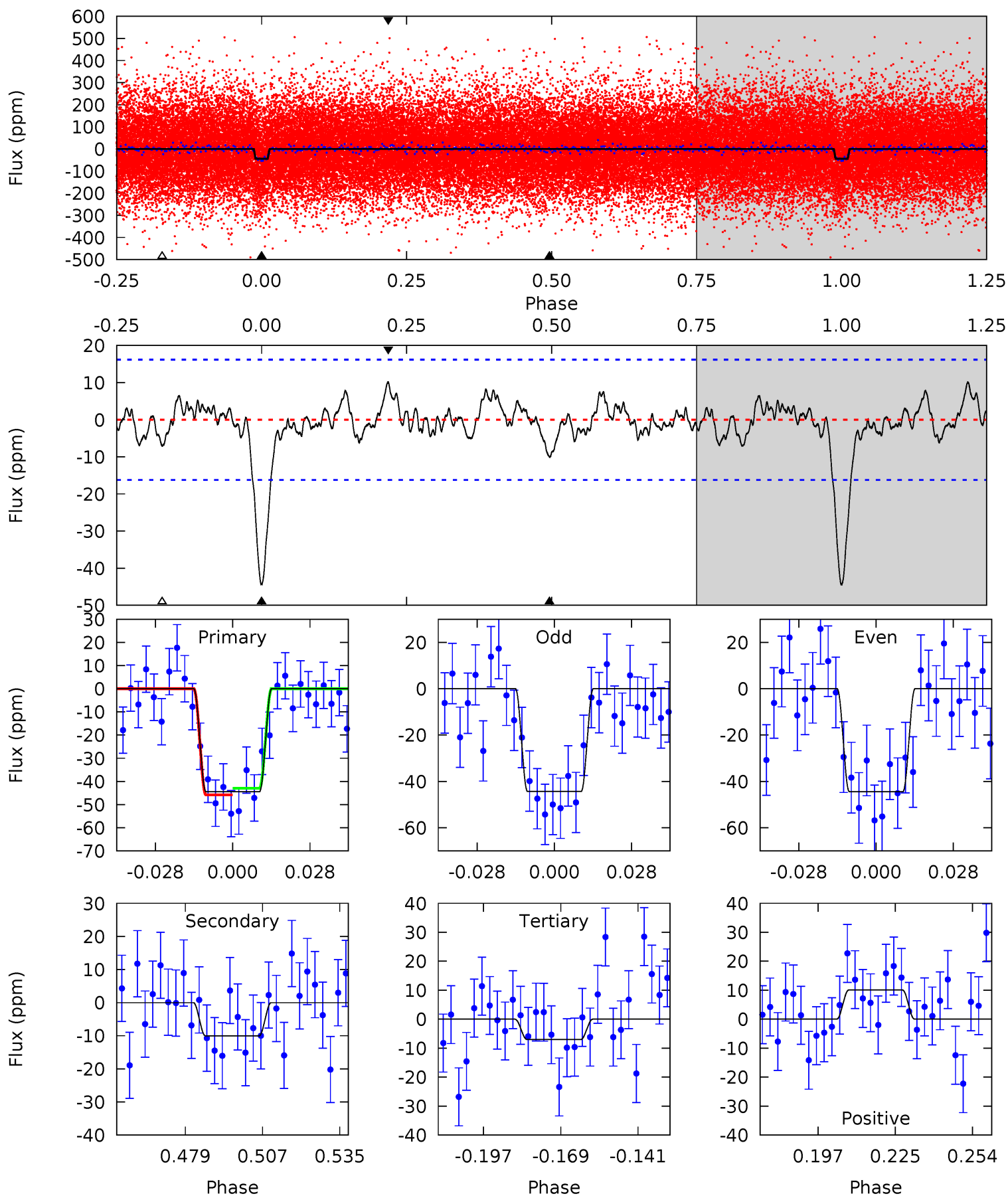
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	2.43	2.29	2.22	4.80	2.14	0.94	11.1	11.1	0.14	0.22	1.44	0.94	0.14	1.25



# Alt Model-Shift Uniqueness Test

010290666-02, P = 6.866745 Days, E = 128.492746 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
13.2	2.99	2.09	3.00	4.82	2.19	0.99	11.1	10.2	0.89	-0.01	0.01	0.91	0.18	0.42



### Stellar Parameters For KIC 010290666

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5914^{+106}_{-130}$	$4.396^{+0.040}_{-0.112}$	$0.460^{+0.050}_{-0.150}$	$1.135^{+0.175}_{-0.075}$	$1.172^{+0.057}_{-0.071}$	$1.127^{+0.203}_{-0.382}$
	+2%/-2%	+1%/-3%	+11%/-33%	+15%/-7%	+5%/-6%	+18%/-34%
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 010290666-02 / KOI 0332.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-8 \pm 3$	$0.88^{+0.48}_{-0.41}$	$1433^{+54}_{-47}$	$4005^{+1184}_{-589}$	$29^{+80}_{-19}$
Alt.	$-10 \pm 3$	$0.86^{+0.43}_{-0.43}$	$1436^{+60}_{-43}$	$4258^{+1347}_{-639}$	$40^{+107}_{-25}$

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

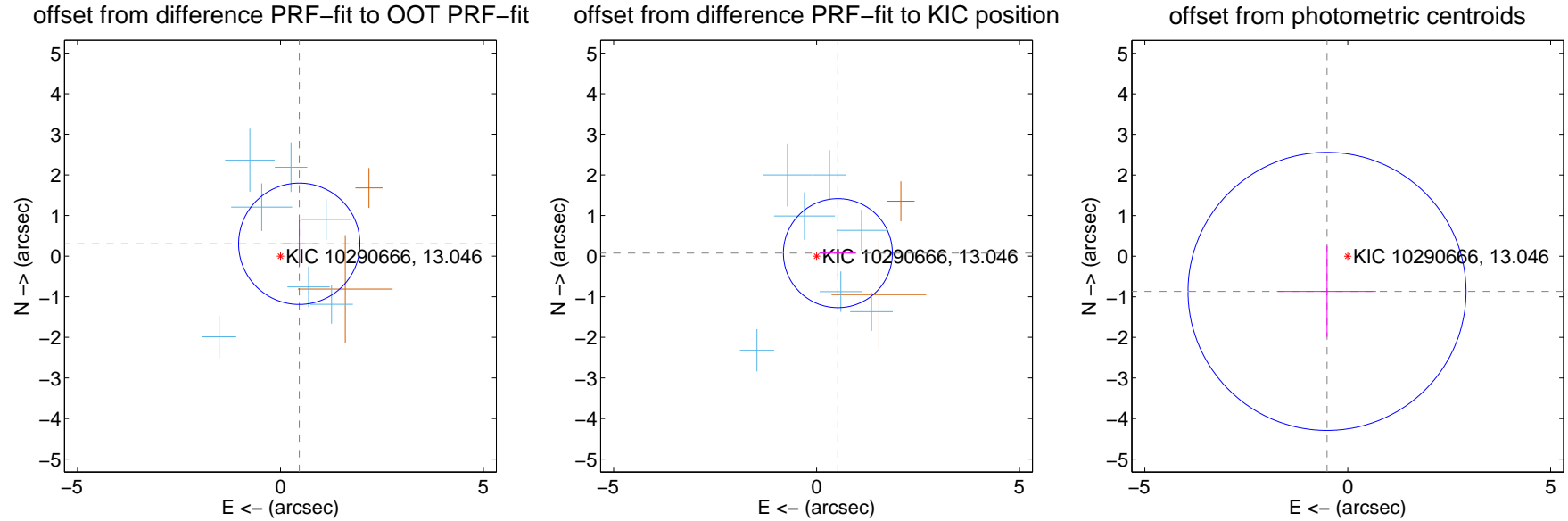
## DV Centroid Data

Supplemental centroid analysis for 010290666-02. Kepler magnitude: 13.05. Transit SNR 9.98

There are 7 quarters with good PRF difference image offsets

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

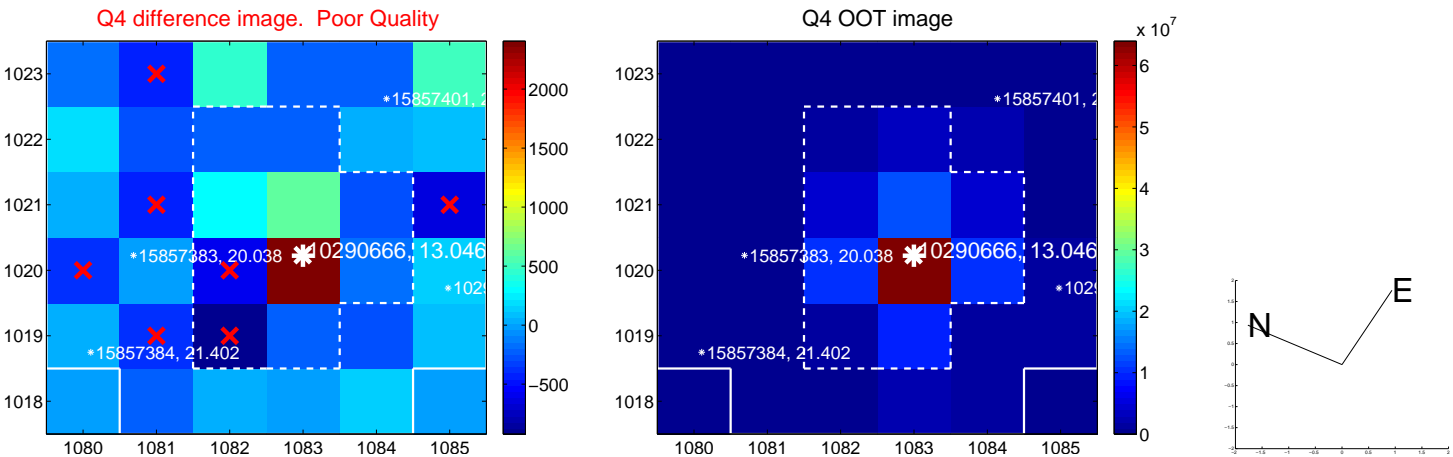
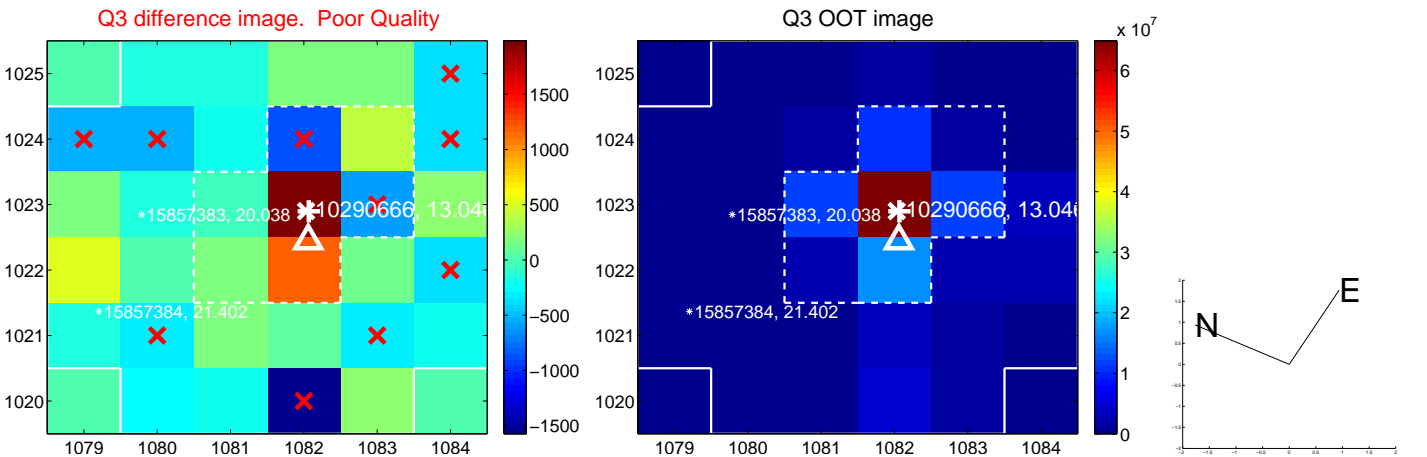
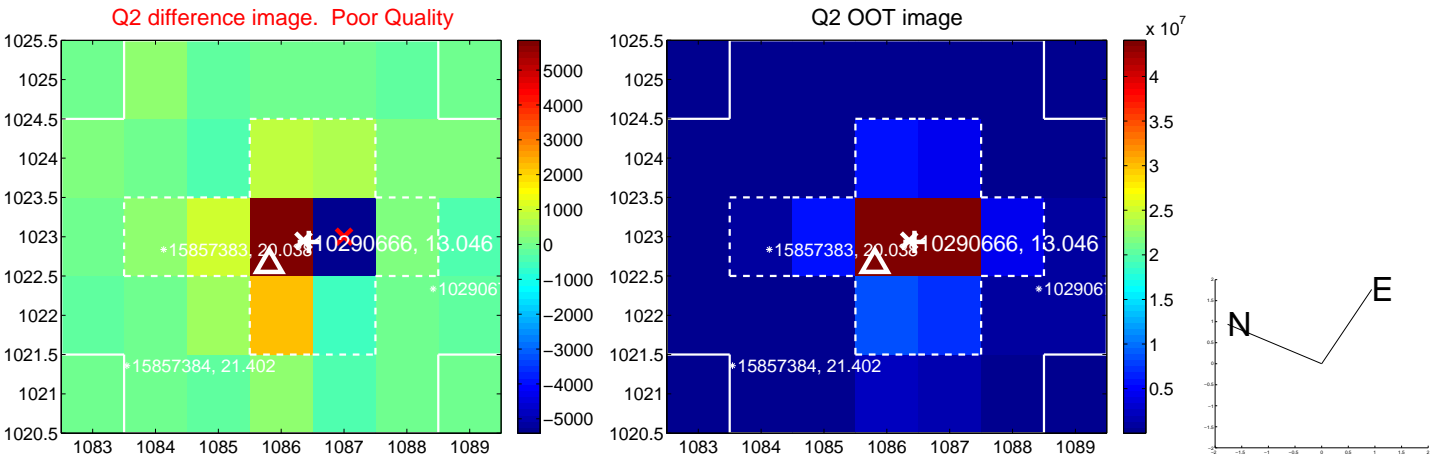
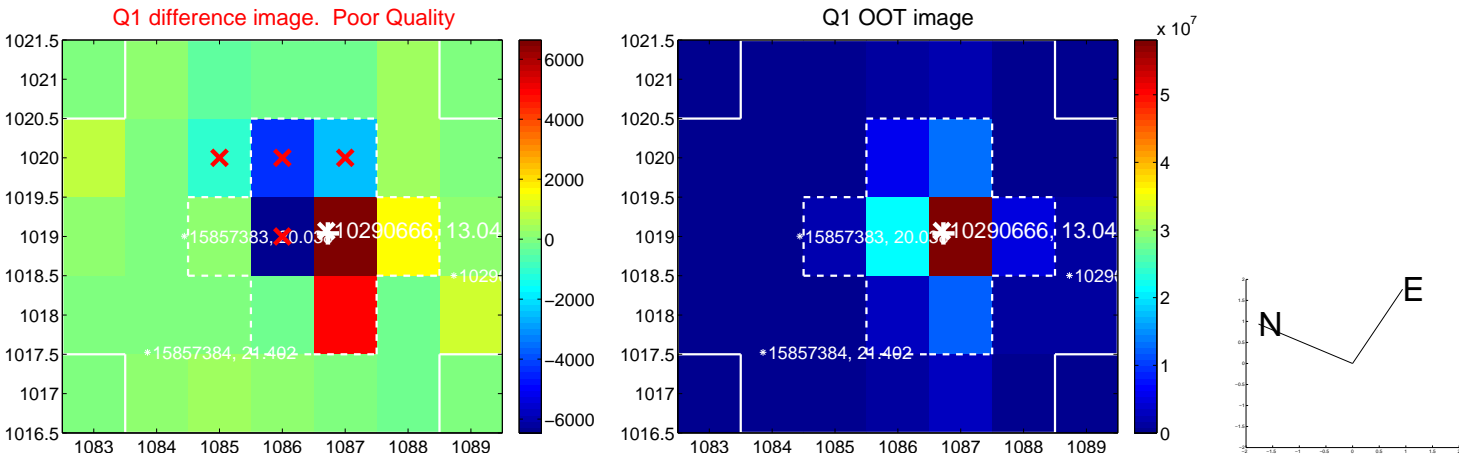
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.554 \pm 0.498$	1.11	$-0.463 \pm 0.460$	$0.304 \pm 0.577$
PRF-fit source offset from KIC position	$0.530 \pm 0.448$	1.18	$-0.525 \pm 0.445$	$0.073 \pm 0.571$
photometric centroid source offset	$1.01 \pm 1.14$	0.88	$0.51 \pm 1.21$	$-0.87 \pm 1.12$



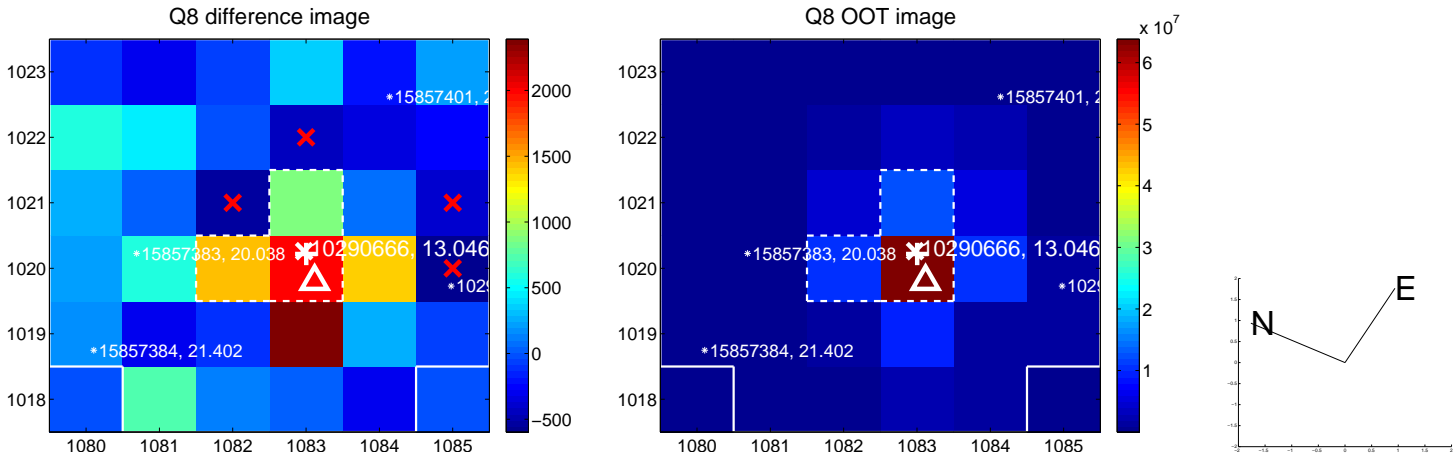
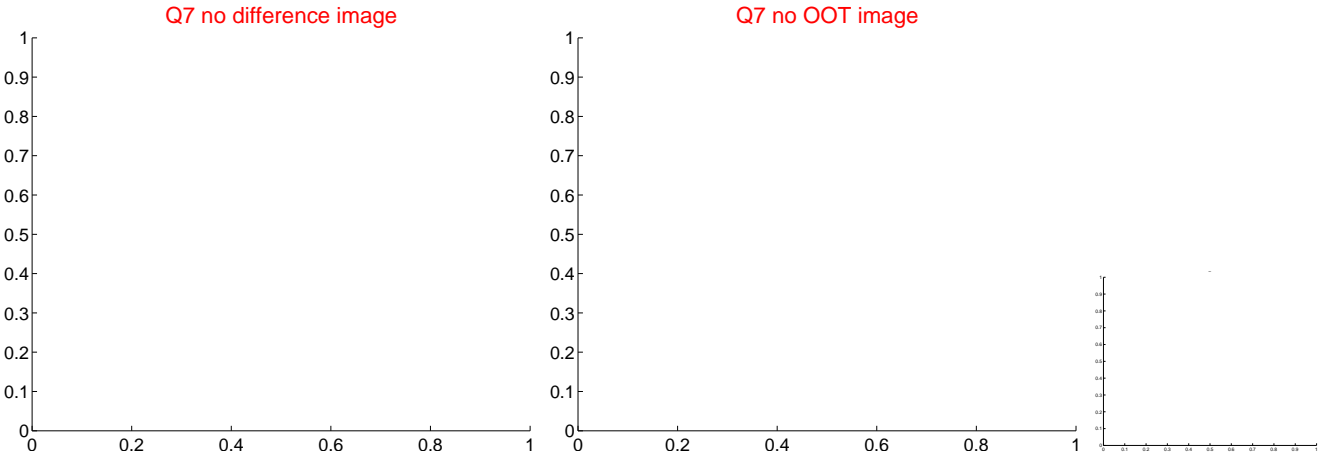
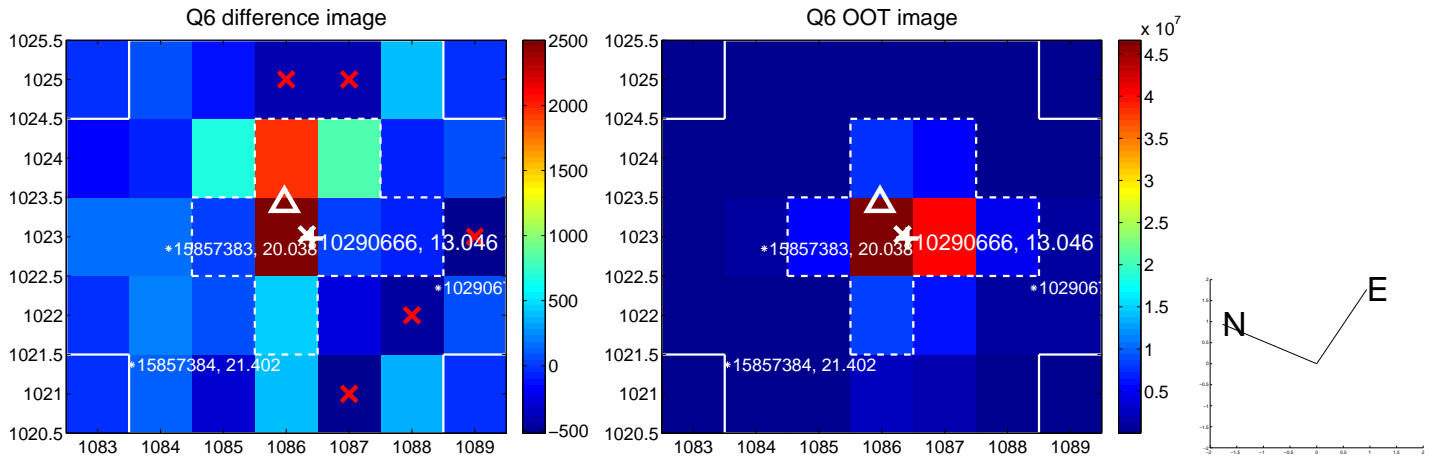
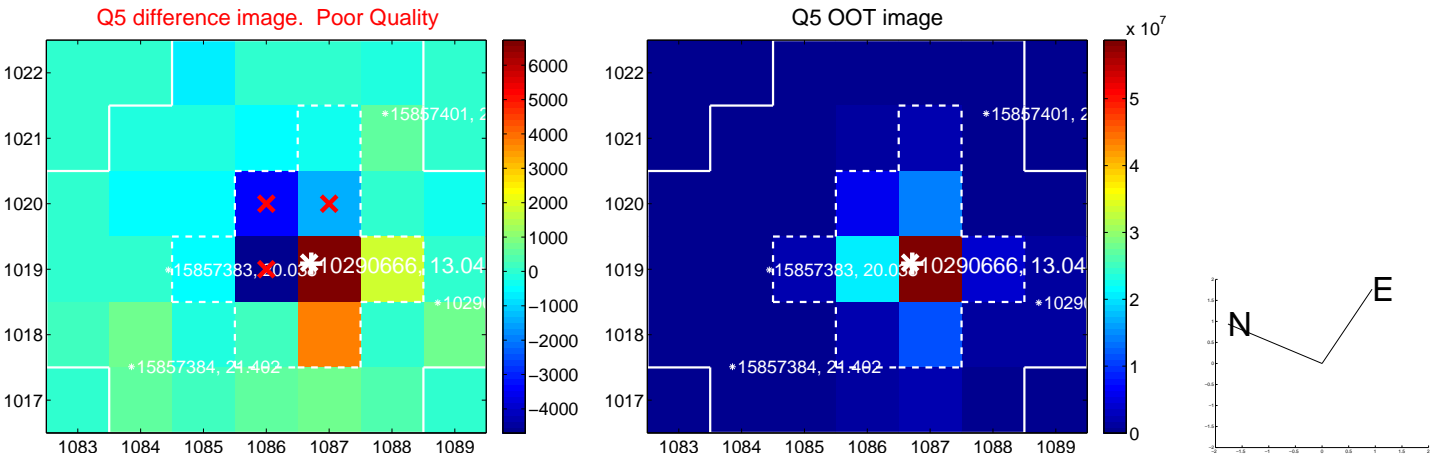
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



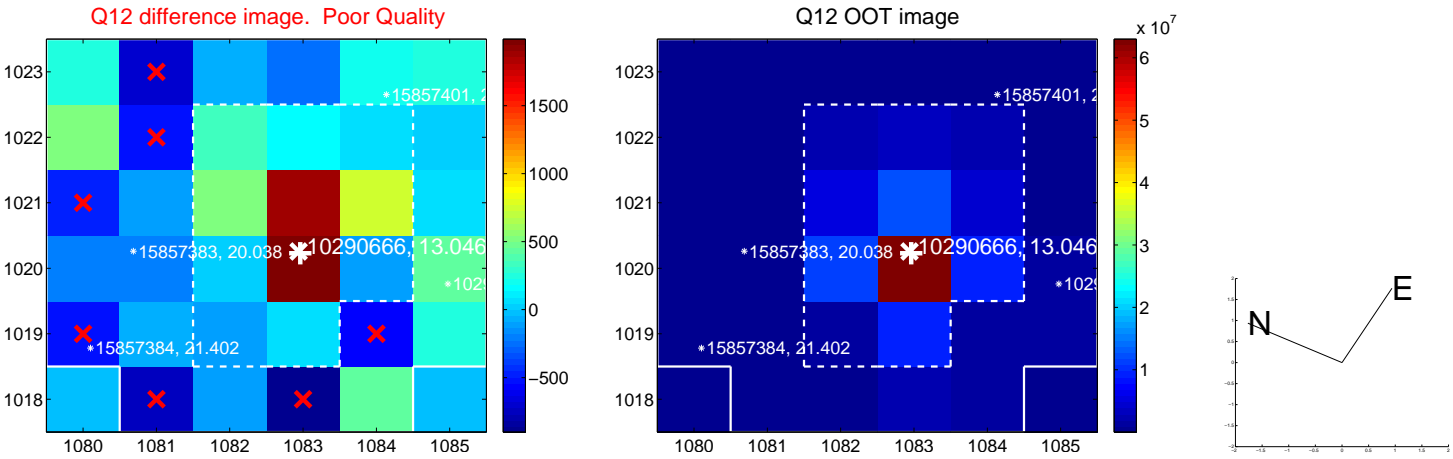
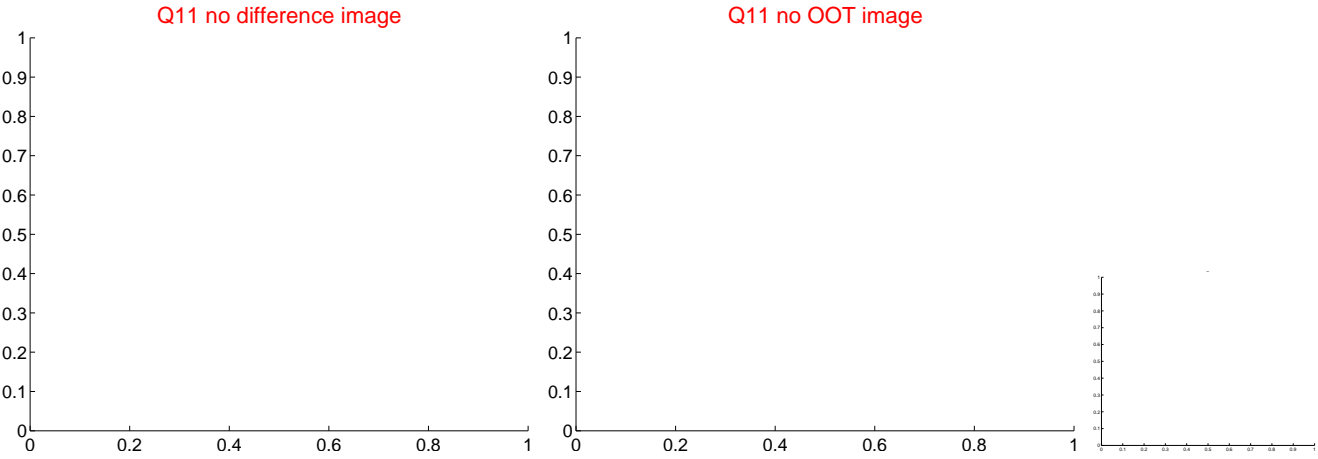
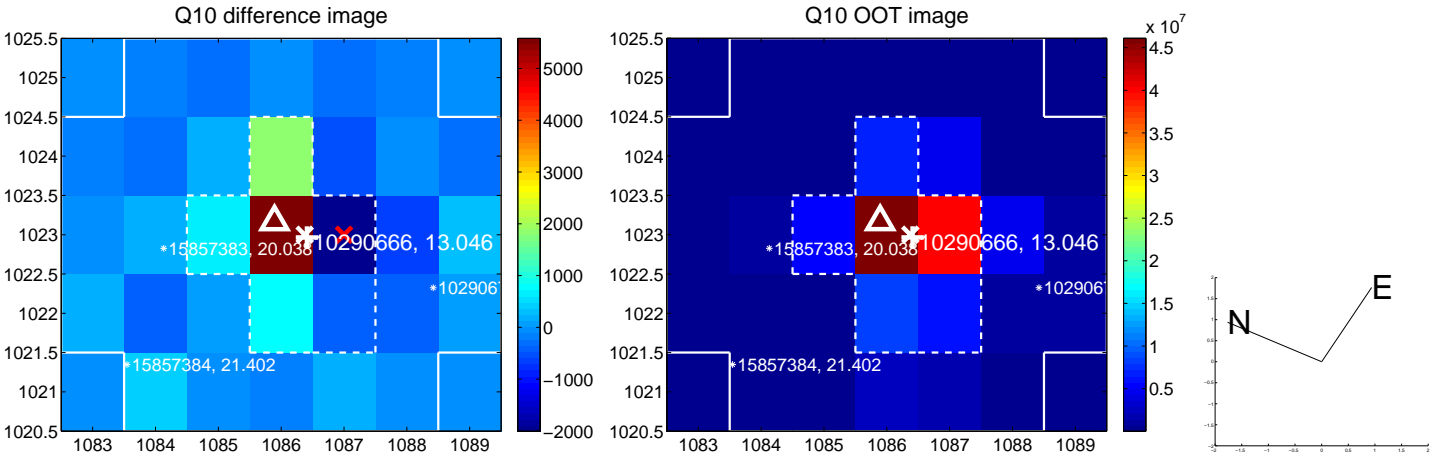
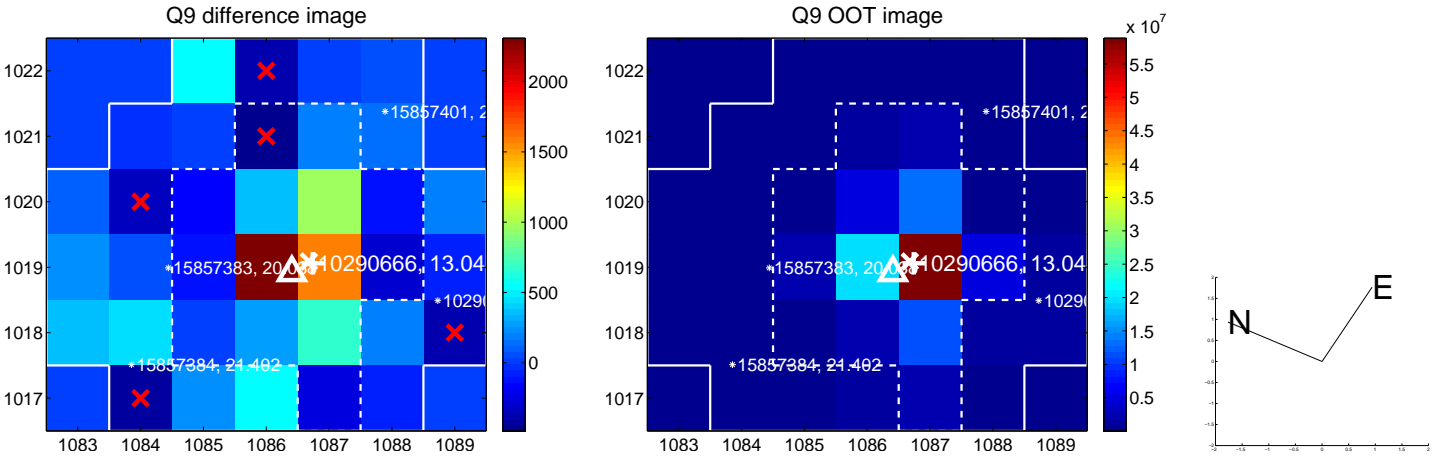
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



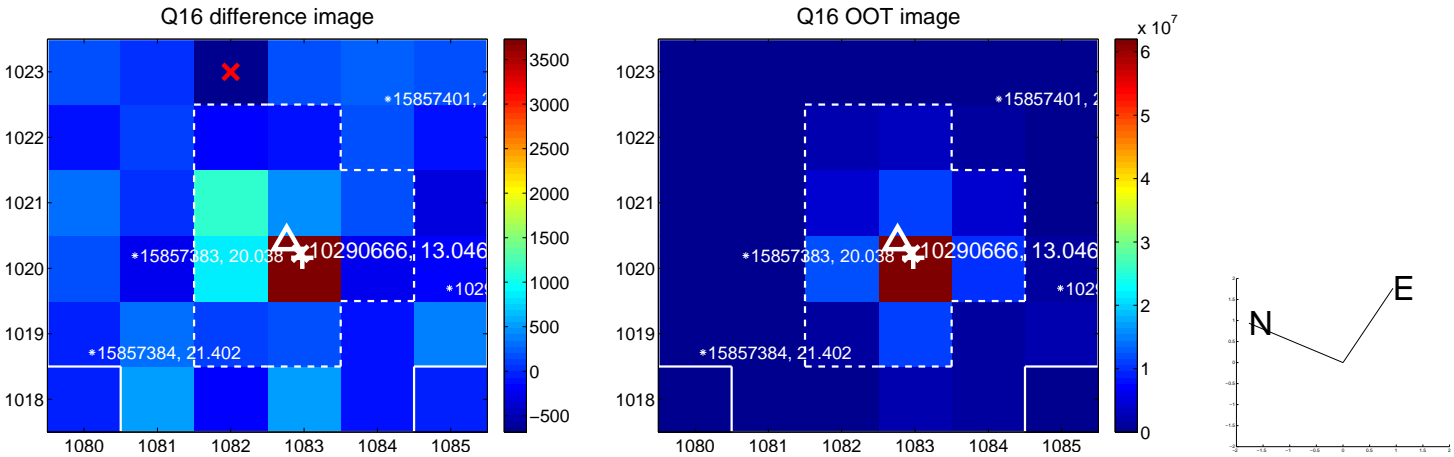
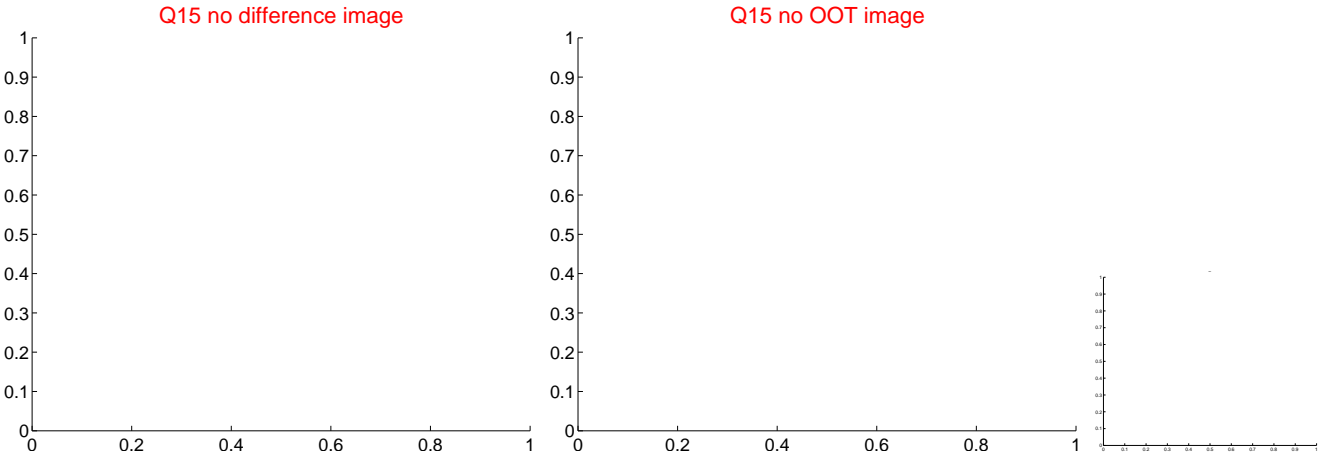
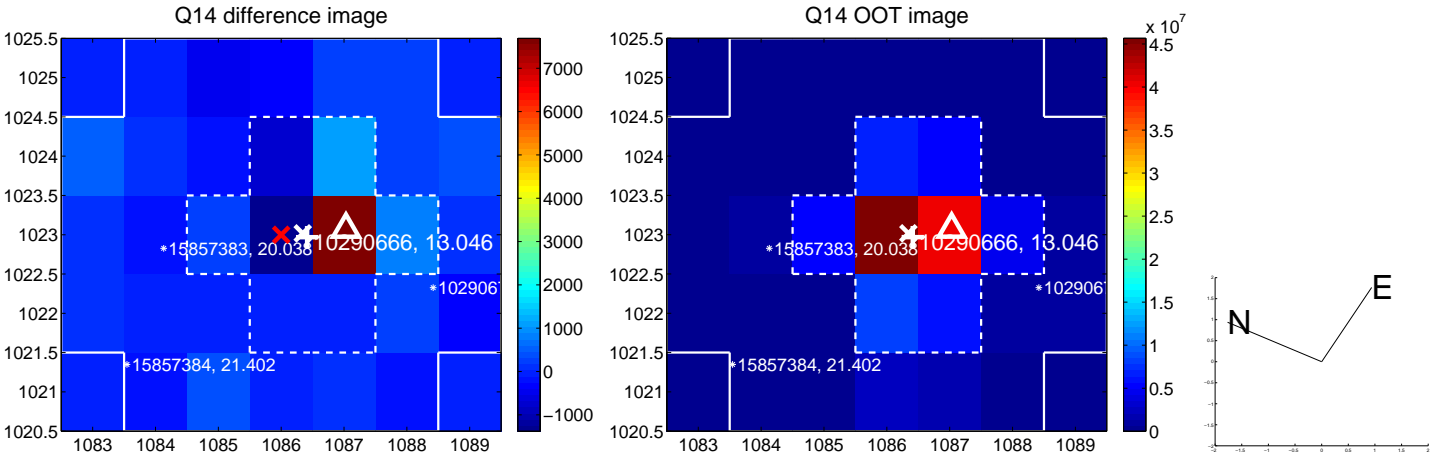
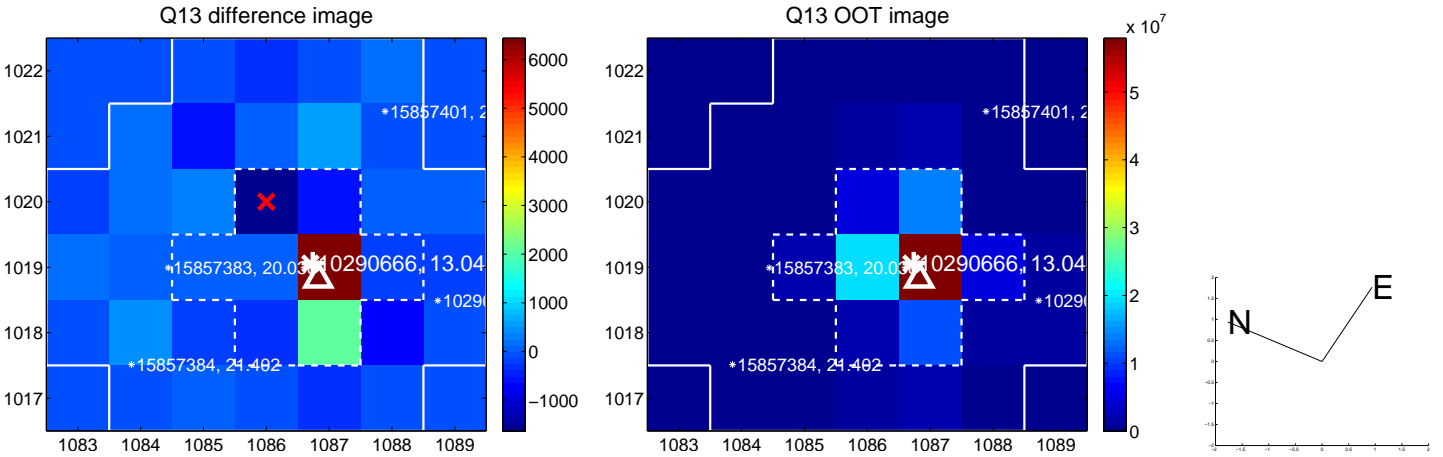
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



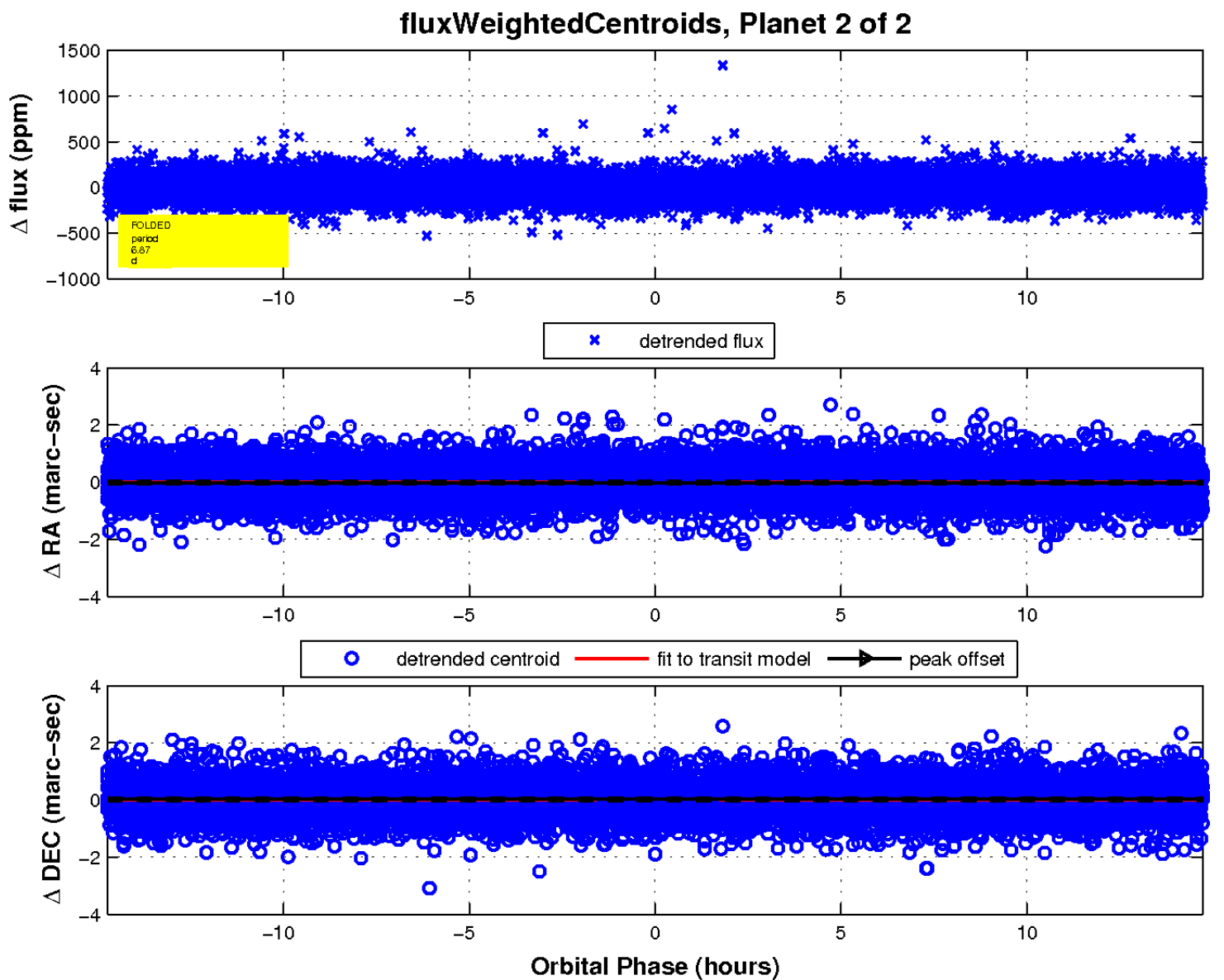
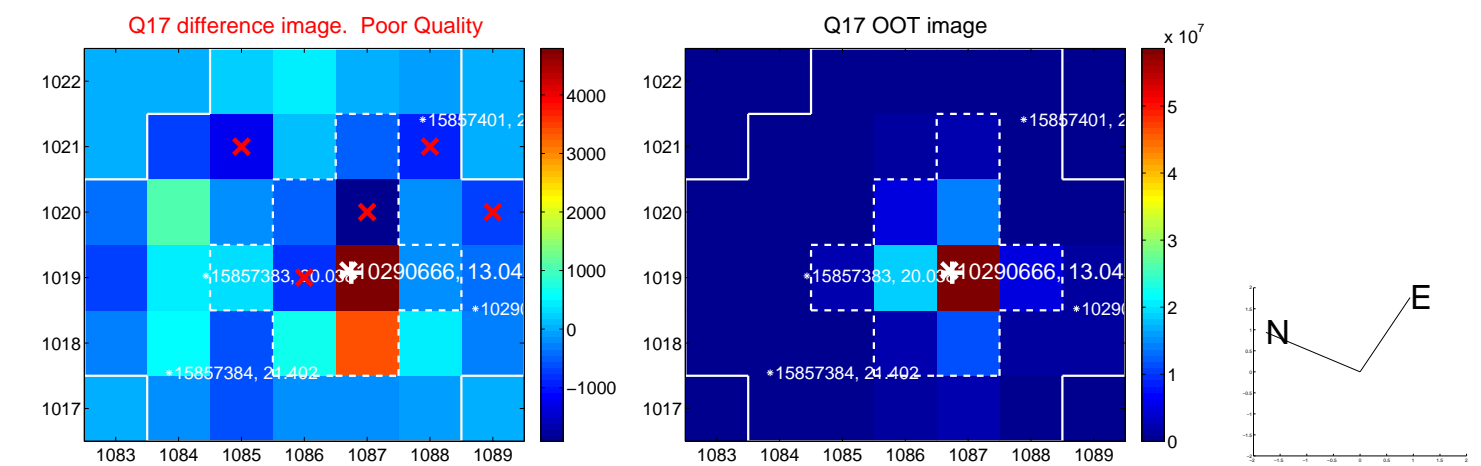
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

