

# KIC 010971674

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010971674-01	OBS	1296.01	2.380864	132.944170	32749.4	4.150	5772.0	4099.6	1.13	5821	21.75	1136.85
010971674-02	OBS	No	2.380866	131.749385	1430.2	3.500	141.5	-1.0	1.13	5821	4.24	1136.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010971674-01	OBS	PC	0.56	0	1	0	0	MOD_SEC_DV—PLANET_OCCULT_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE—CENT_KIC_POS
010971674-02	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.

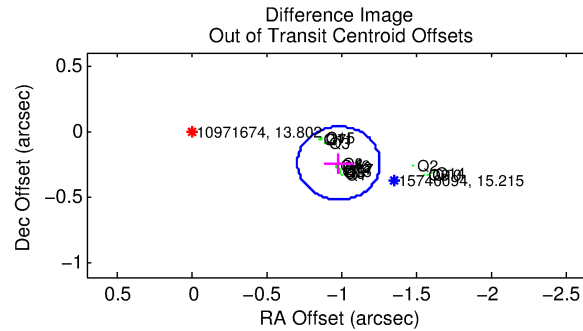
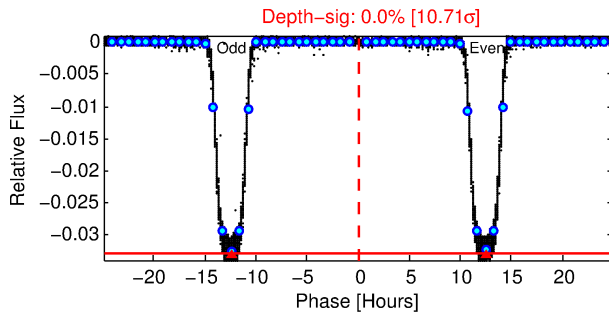
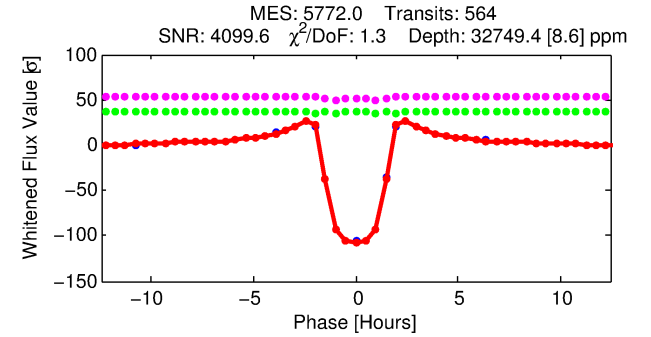
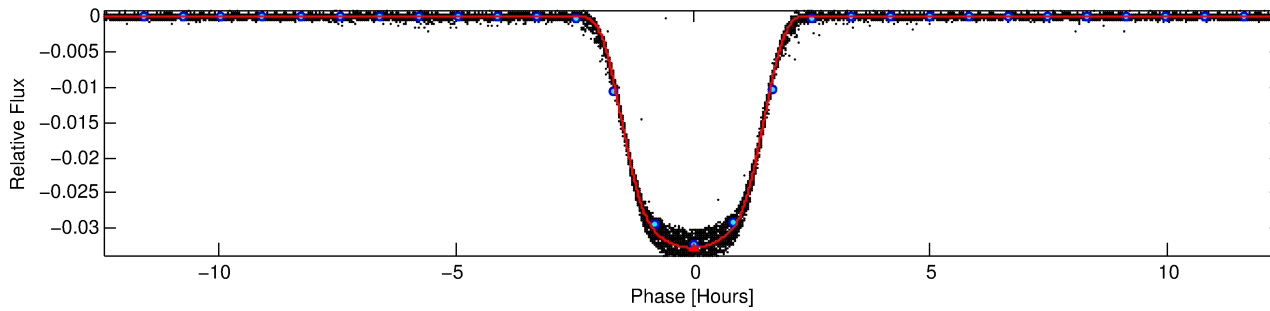
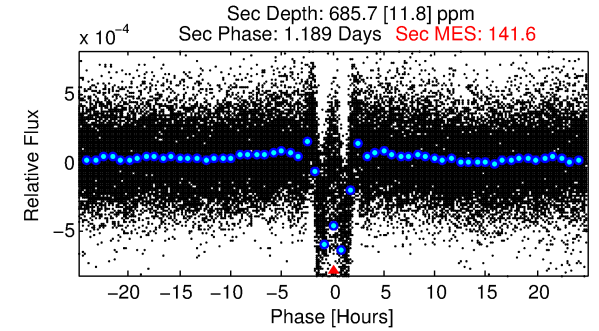
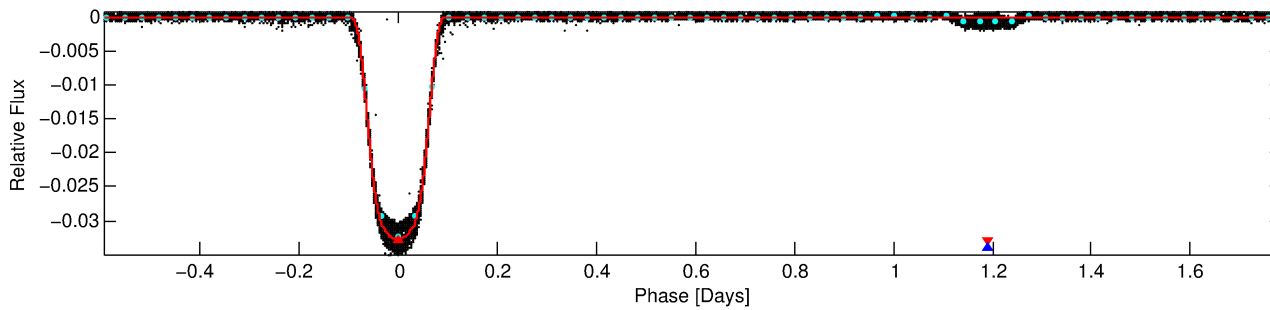
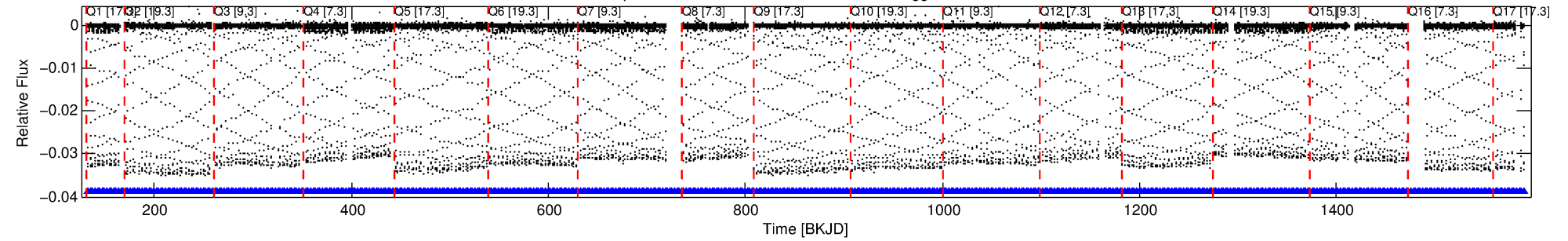
## Ephemeris Match Information For 010971674-01

No Significant Match Found

# DV One-Page Summary

KIC: 10971674 Candidate: 1 of 2 Period: 2.381 d  
KOI: K01296.01 Corr: 0.999

Kp: 13.80 R\*: 1.13 Rs Teff: 5821.0 K Logg: 4.30 Fe/H: -0.160



## DV Fit Results:

Period = 2.38086 [0.00000] d  
Epoch = 132.9442 [0.0000] BKJD  
Rp/R\* = 0.1765 [0.0000]  
a/R\* = 4.34 [0.00]  
b = 0.67 [0.00]  
Seff = 1136.85 [415.93]  
Teq = 1481 [135] K  
Rp = 21.75 [6.03] Re  
a = 0.0340 [0.0080] AU  
Ag = 0.92 [0.32] [-0.25σ]  
Teffp = 2242 [68] K [5.0σ]

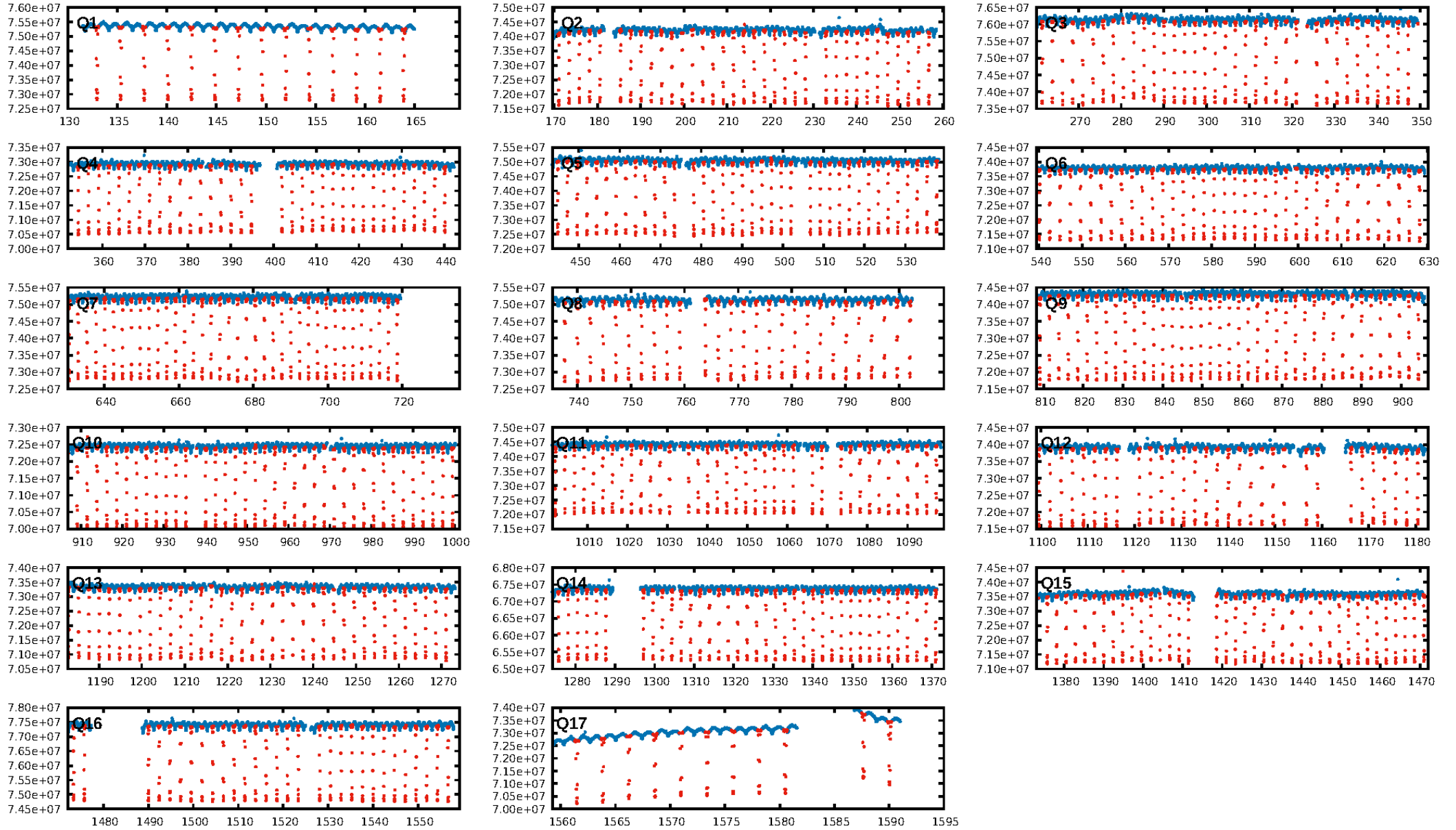
## DV Diagnostic Results:

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 [539/539]  
GhostDiagnostic-chr: 1.931  
Centroid-sig: 0.0%  
Centroid-so: 1.466 arcsec [791.42σ]  
OotOffset-rm: 1.014 arcsec [11.00σ]  
KicOffset-rm: 1.508 arcsec [19.25σ]  
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]

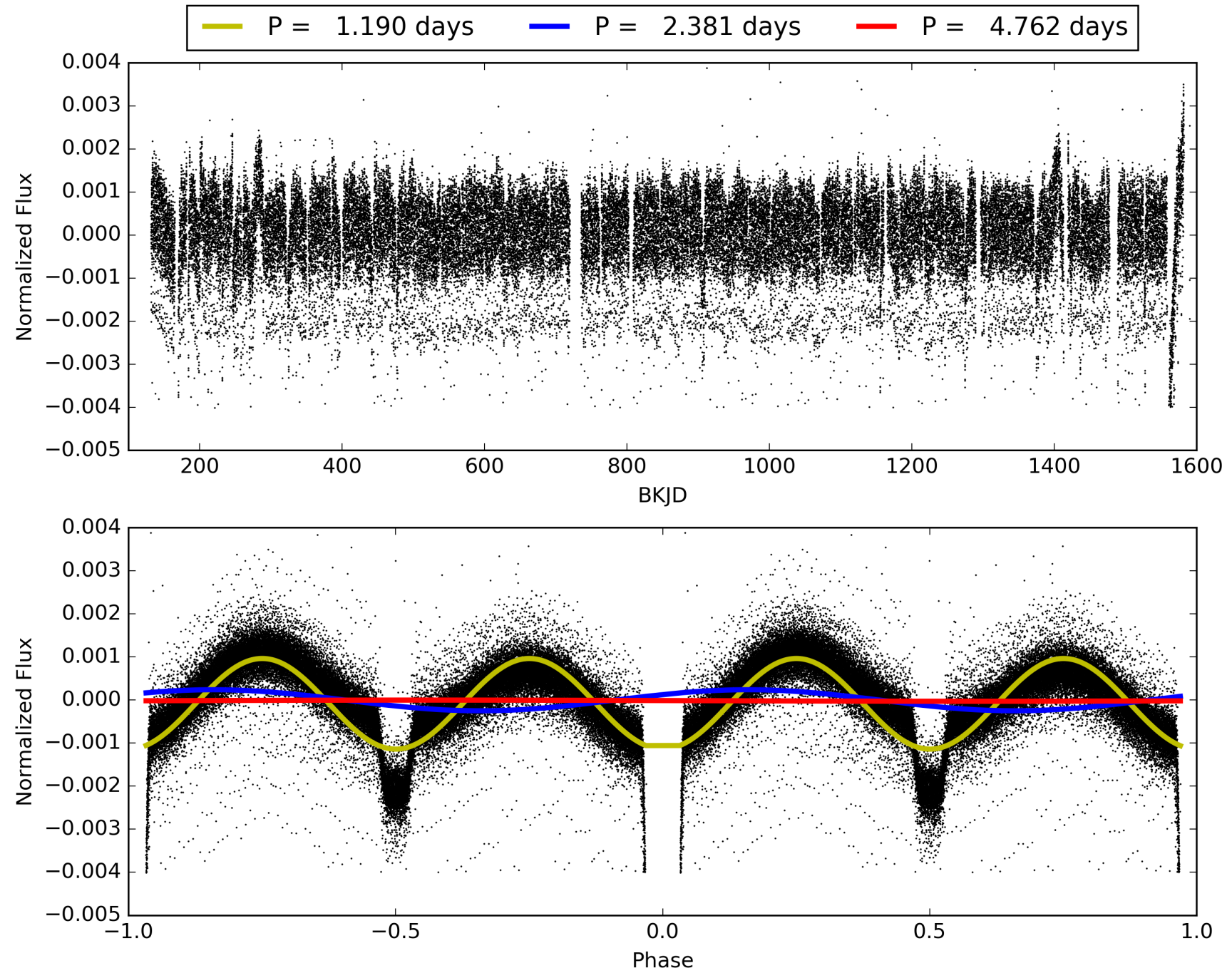
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:31:50 Z

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

# TCE 010971674-01, PDC Light Curves

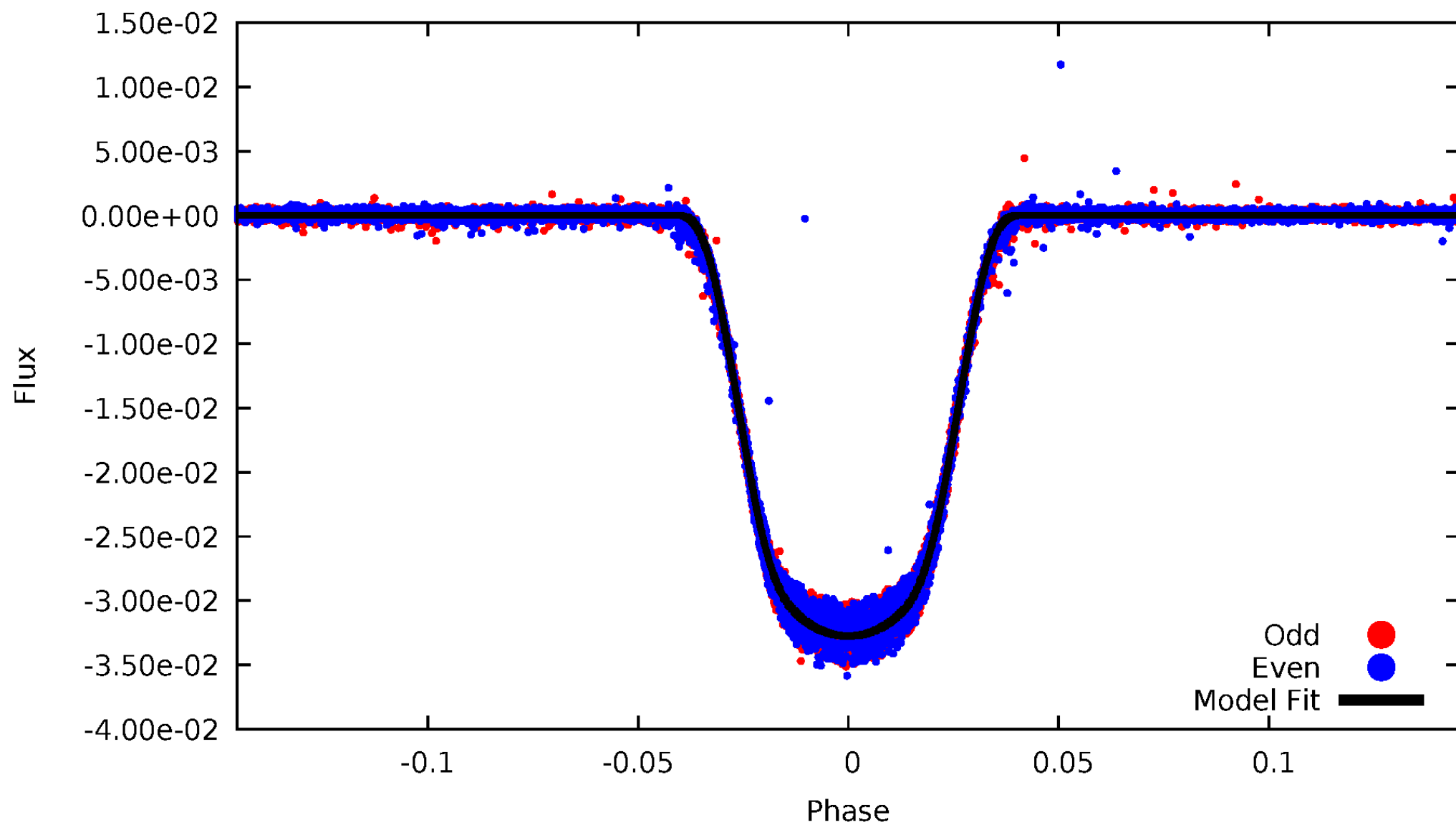


TCE 010971674-01



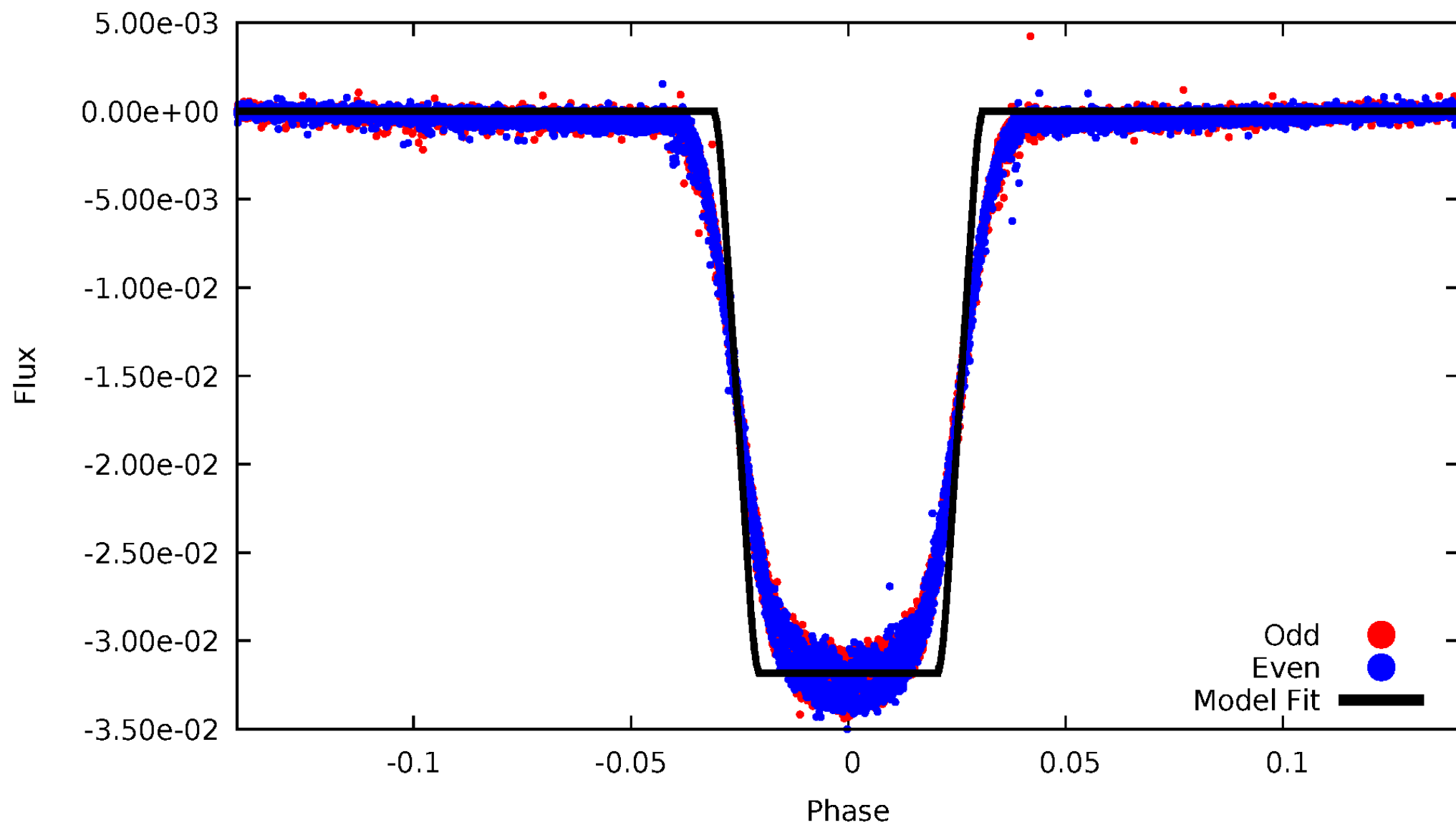
# DV Odd/Even

TCE 010971674-01



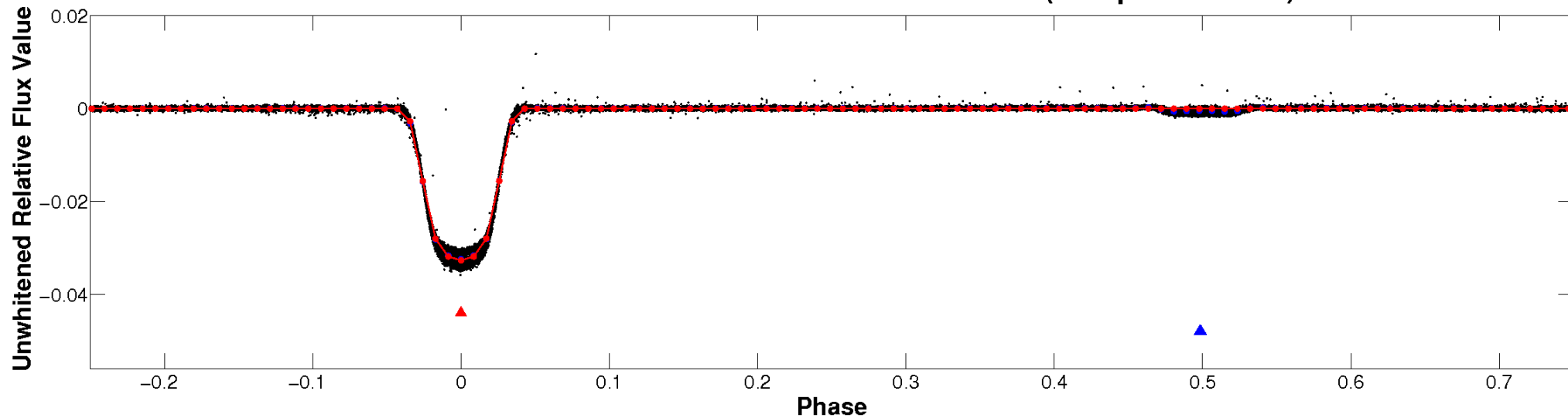
# ALT Odd/Even

TCE 010971674-01

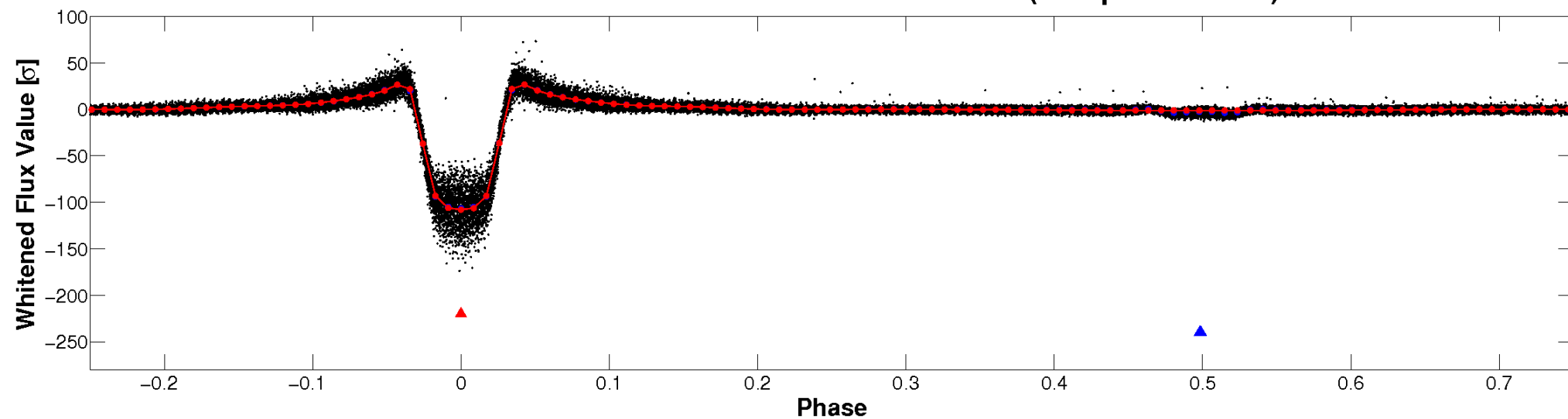


# Non-Whitened Vs. Whitened Light Curve

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

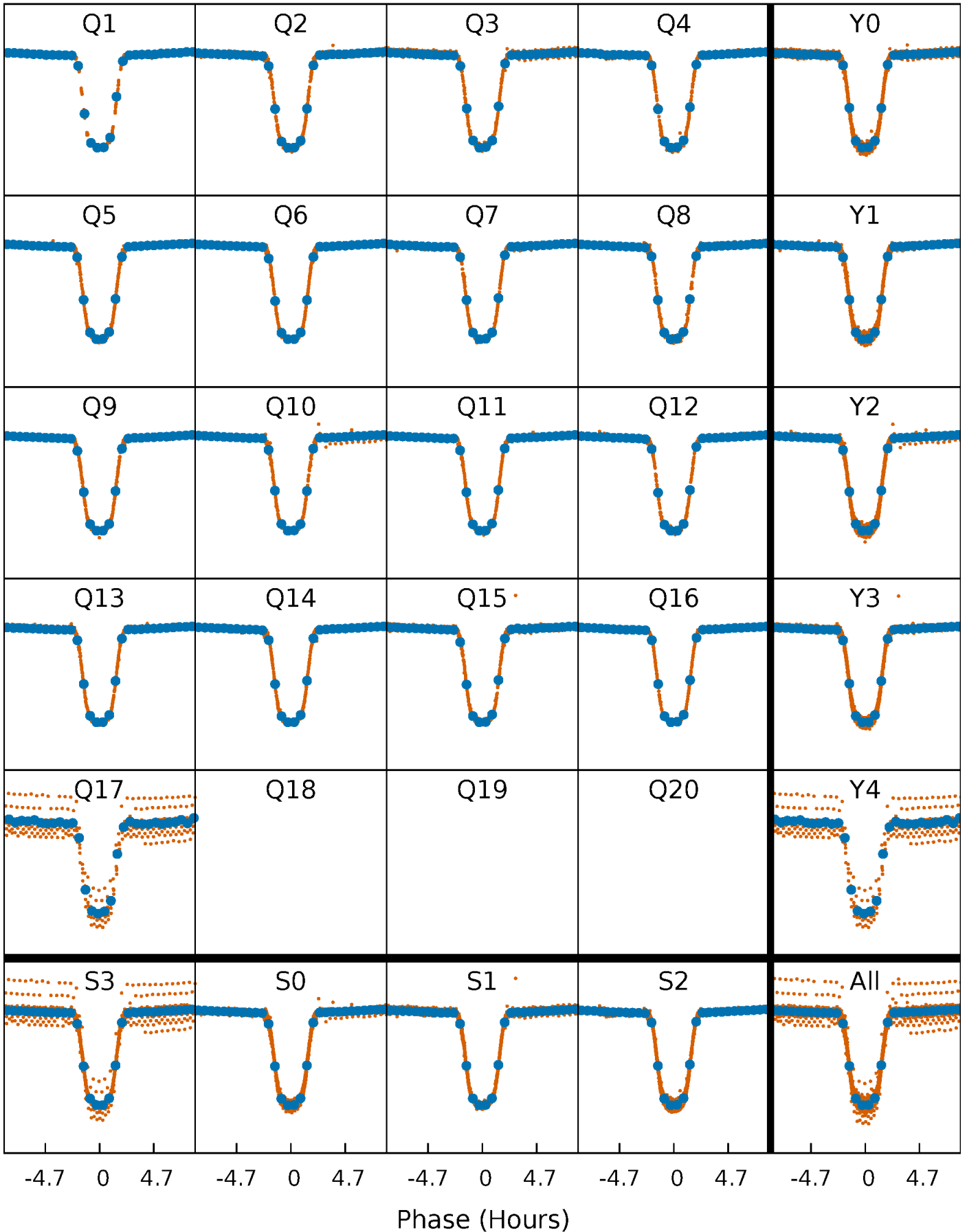


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

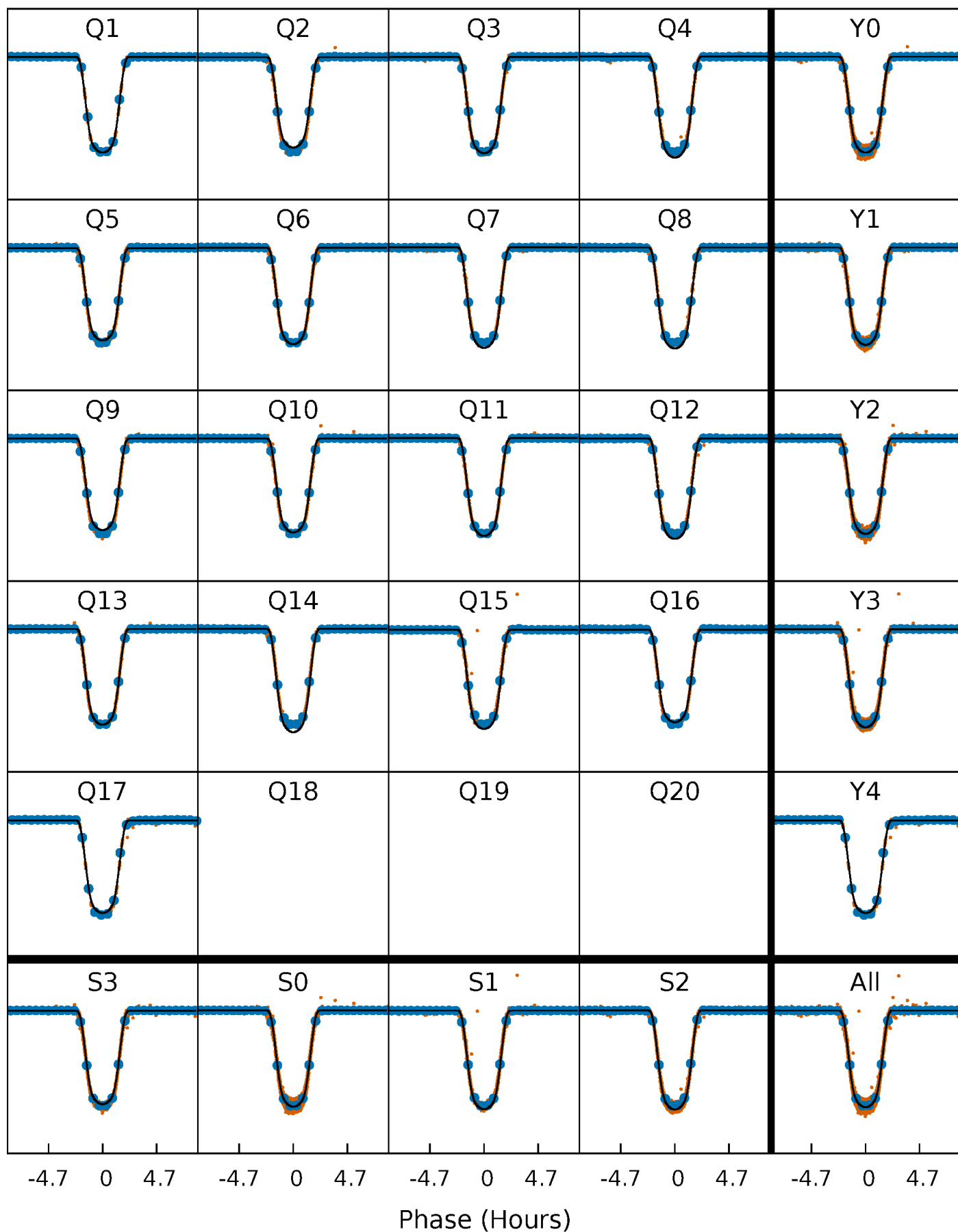
TCE 010971674-01 P= 2.380864 Days  $T_0=132.944170$  (BKJD)





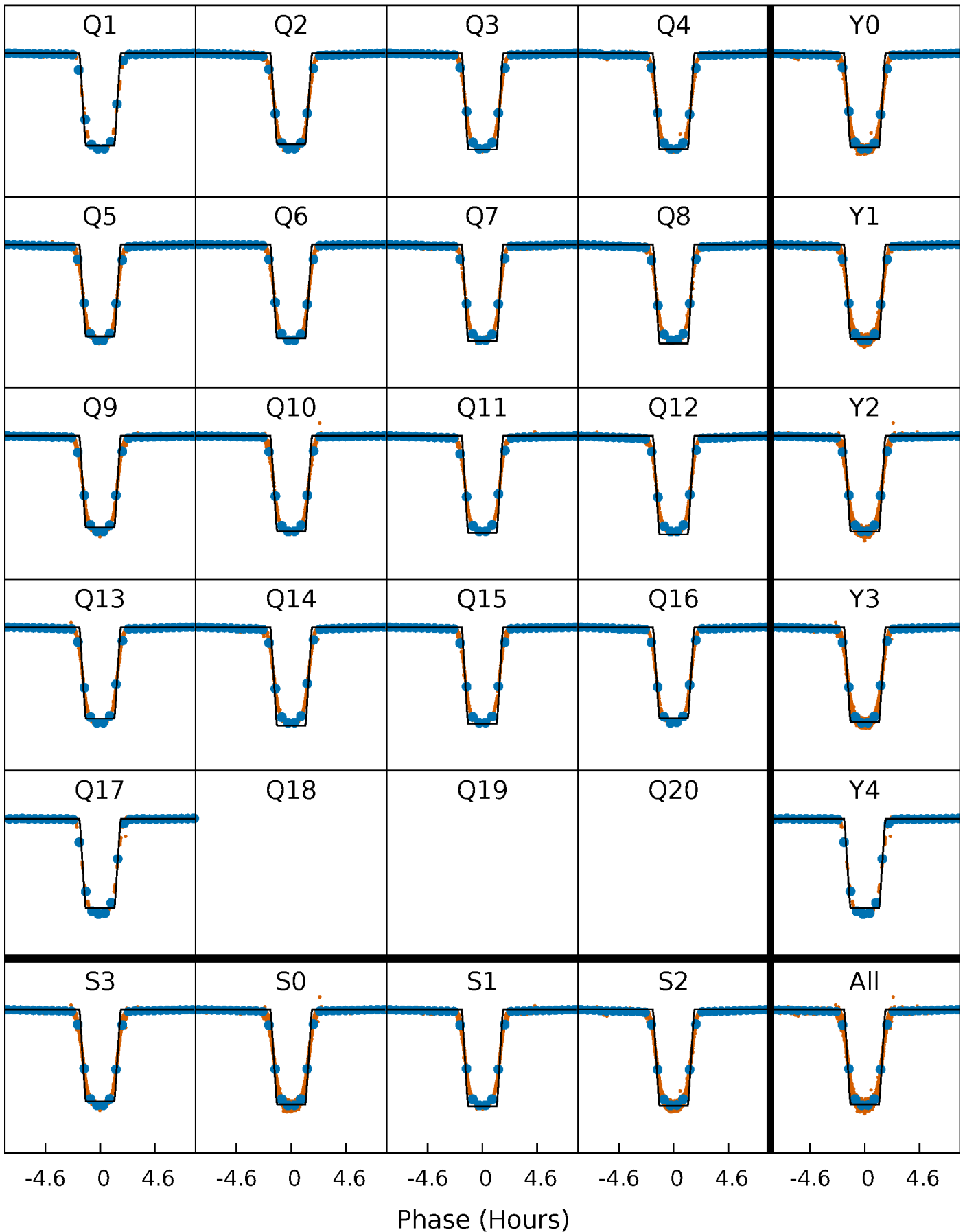
# DV Quarter-Phased Transit Curves

TCE 010971674-01 P= 2.380864 Days  $T_0=132.944170$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

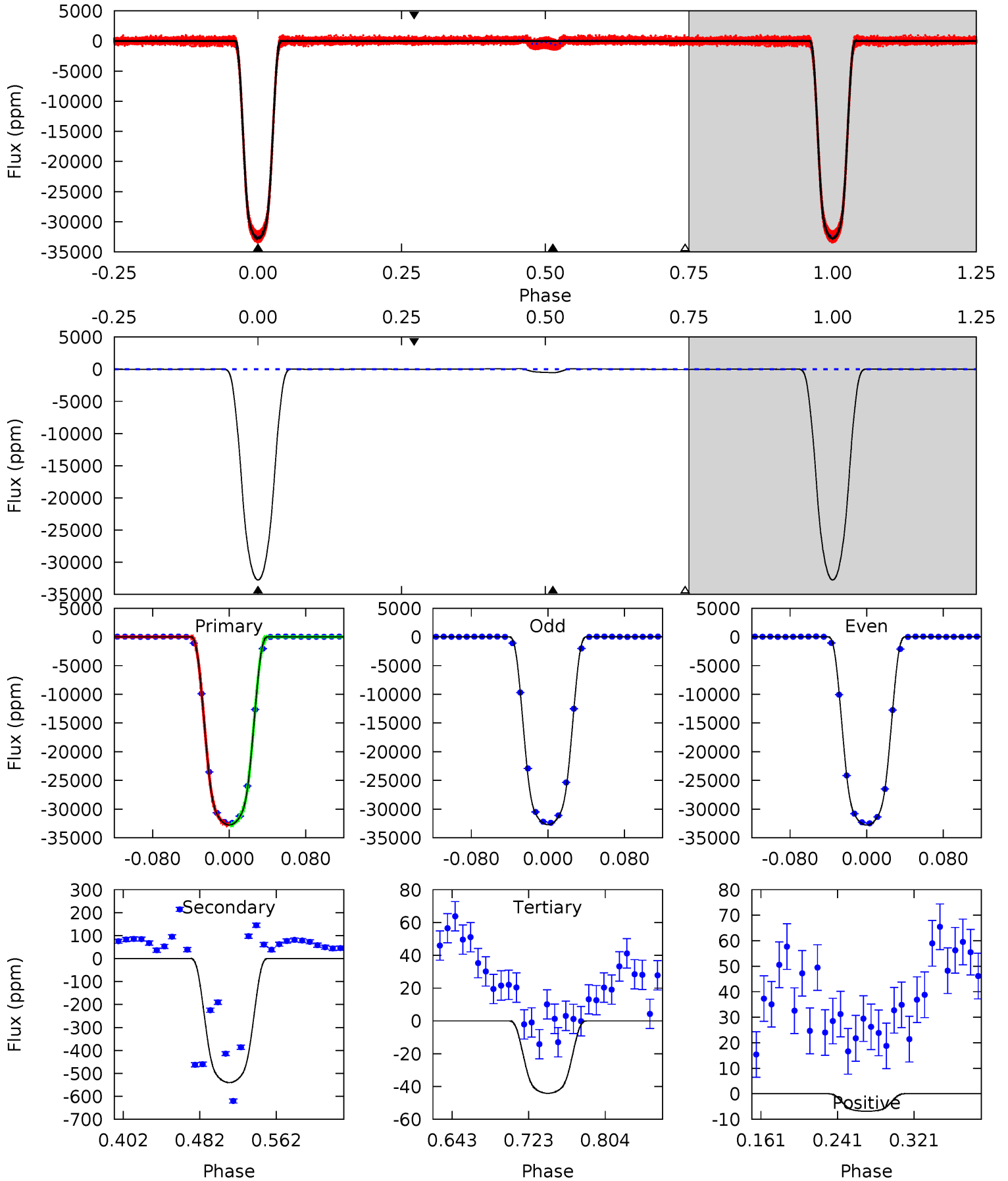
TCE 010971674-01 P= 2.380865 Days  $T_0=132.943771$  (BKJD)



# DV Model-Shift Uniqueness Test

010971674-01, P = 2.380864 Days, E = 130.563306 Days

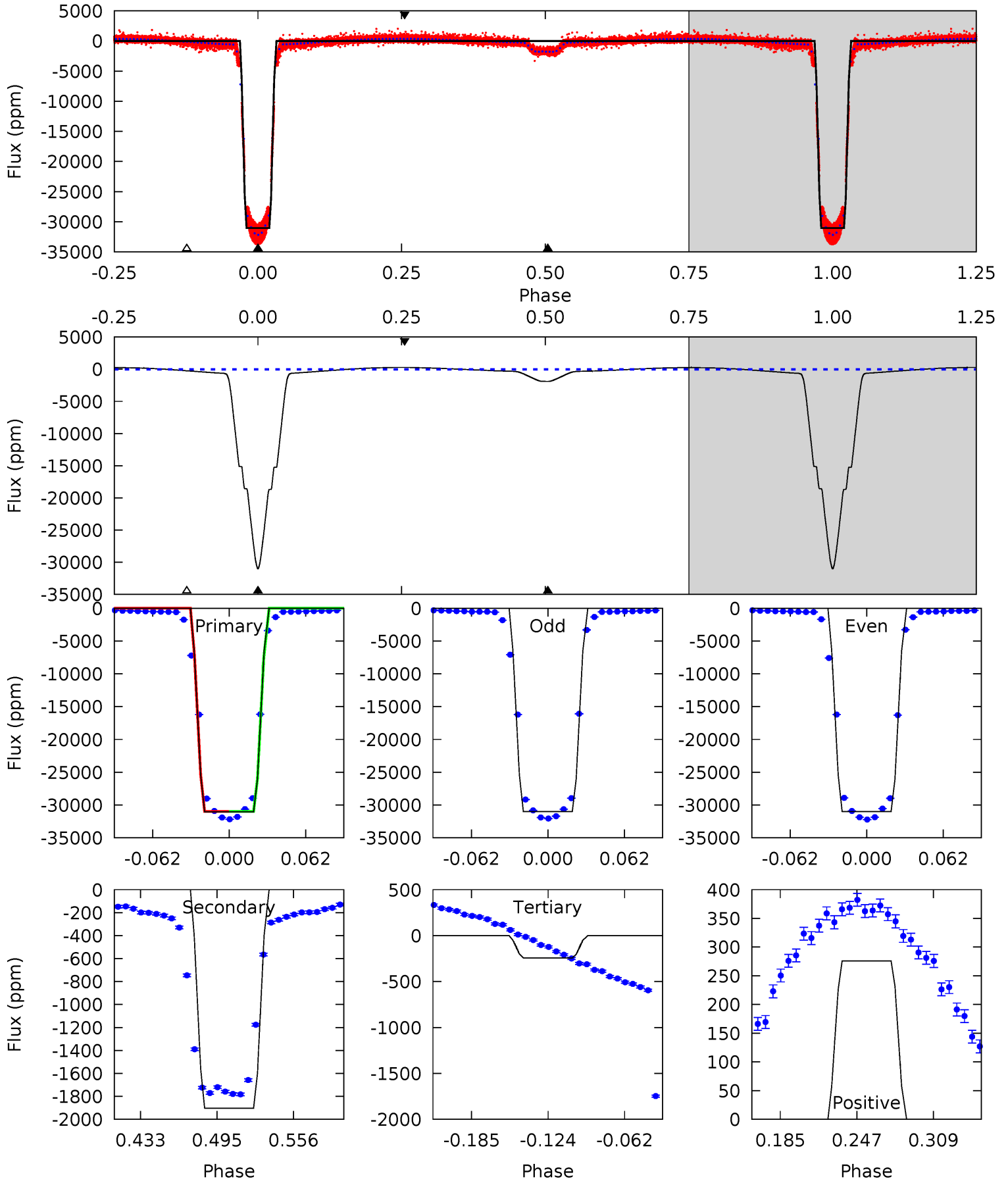
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9371	154.5	12.6	-1.96	4.61	1.75	6.86	9358	9372	141.9	156.5	12.2	1.00	0.00	0



# Alt Model-Shift Uniqueness Test

010971674-01, P = 2.380865 Days, E = 130.562906 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
4945	303.4	38.6	44.0	4.66	1.87	39.3	4906	4901	264.7	259.4	0.43	1.00	0.01	2.29



### Stellar Parameters For KIC 010971674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5821^{+158}_{-176}$	$4.297^{+0.190}_{-0.190}$	$-0.160^{+0.300}_{-0.300}$	$1.129^{+0.313}_{-0.227}$	$0.922^{+0.133}_{-0.096}$	$0.903^{+0.861}_{-0.442}$
	+3%/-3%	+4%/-4%	+188%/-188%	+28%/-20%	+14%/-10%	+95%/-49%
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 010971674-01 / KOI 1296.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-540 \pm 3$	$21.69^{+3.25}_{-2.60}$	$2067^{+143}_{-145}$	$2646^{+65}_{-86}$	$0.727^{+0.214}_{-0.163}$
Alt.	$-1904 \pm 6$	$21.81^{+3.69}_{-2.56}$	$2060^{+163}_{-138}$	$3331^{+62}_{-73}$	$2.535^{+0.737}_{-0.651}$

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

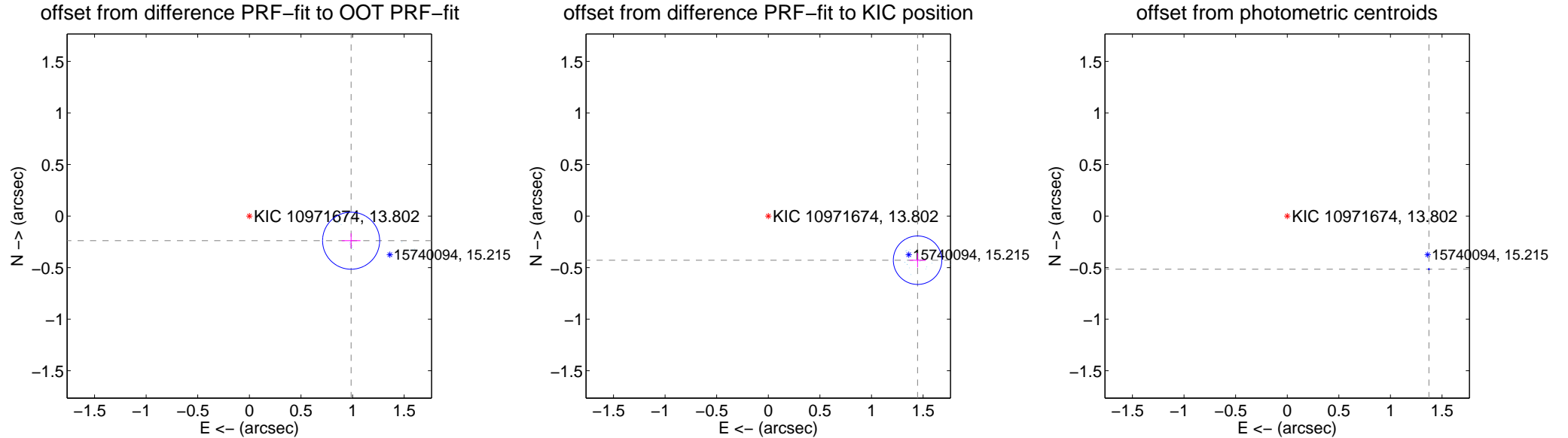
## DV Centroid Data

Supplemental centroid analysis for 010971674-01. Kepler magnitude: 13.80. Transit SNR 4099.59

There are 17 quarters with good PRF difference image offsets

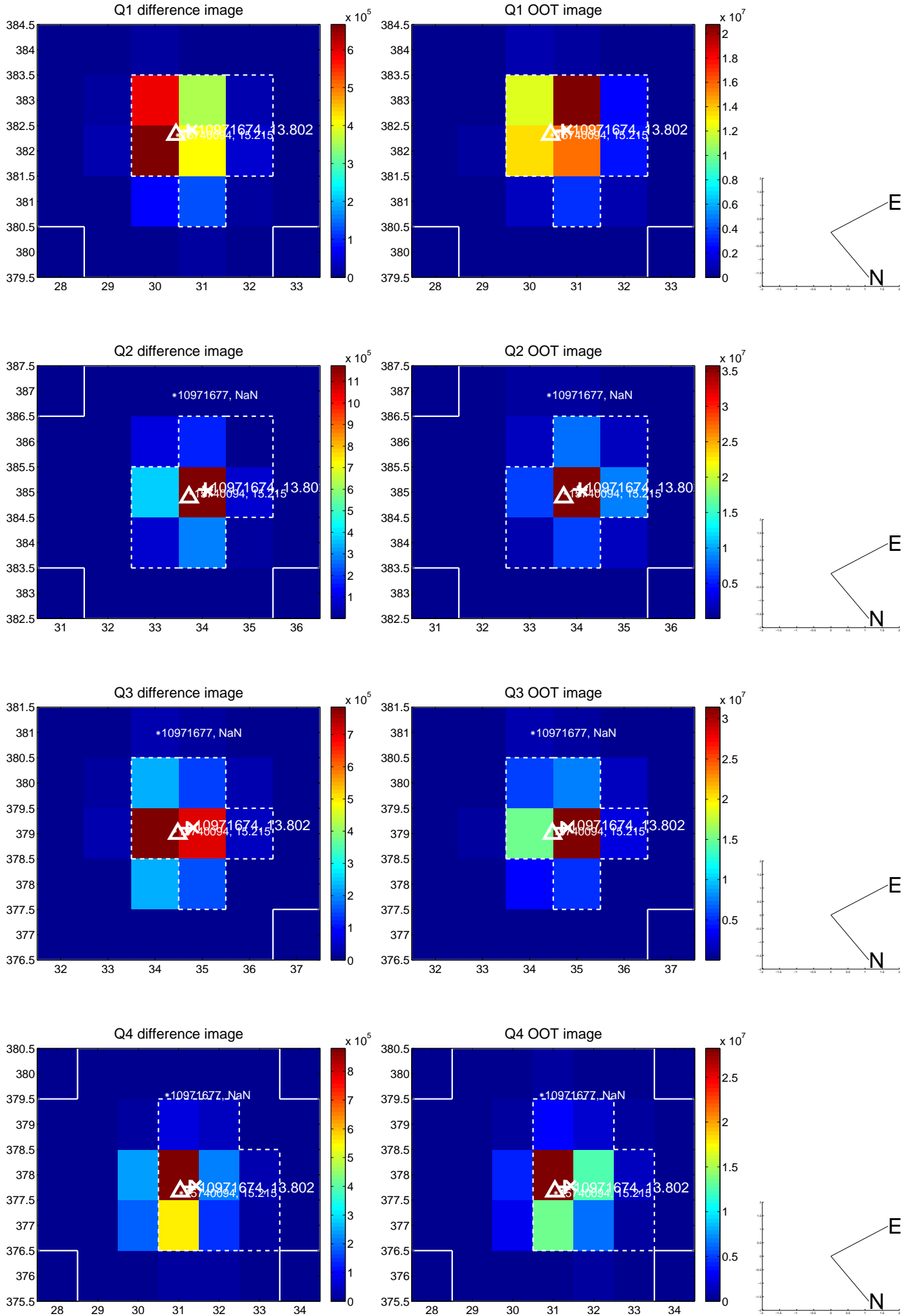
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.014 \pm 0.092$	11.00	$-0.986 \pm 0.091$	$-0.239 \pm 0.072$
PRF-fit source offset from KIC position	$1.508 \pm 0.078$	19.25	$-1.446 \pm 0.079$	$-0.428 \pm 0.069$
photometric centroid source offset	$1.47 \pm 0.00$	791.42	$-1.37 \pm 0.00$	$-0.51 \pm 0.00$

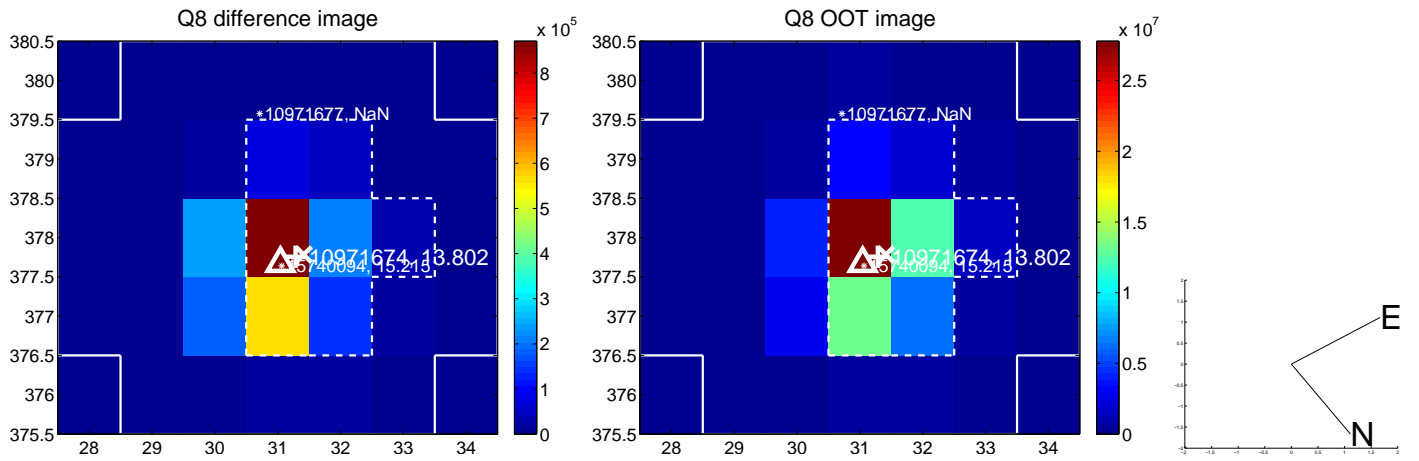
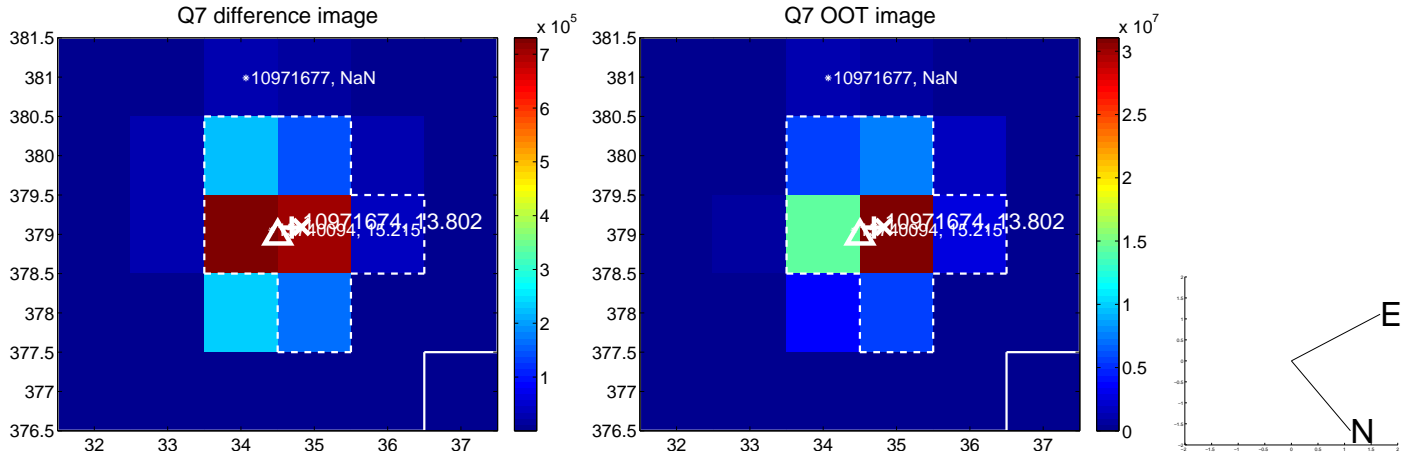
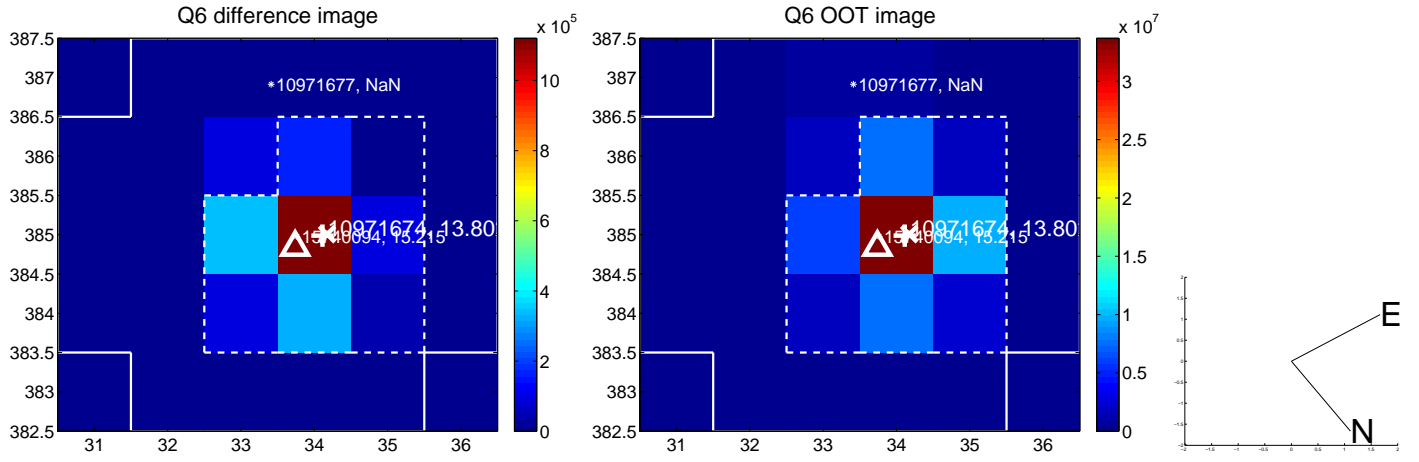
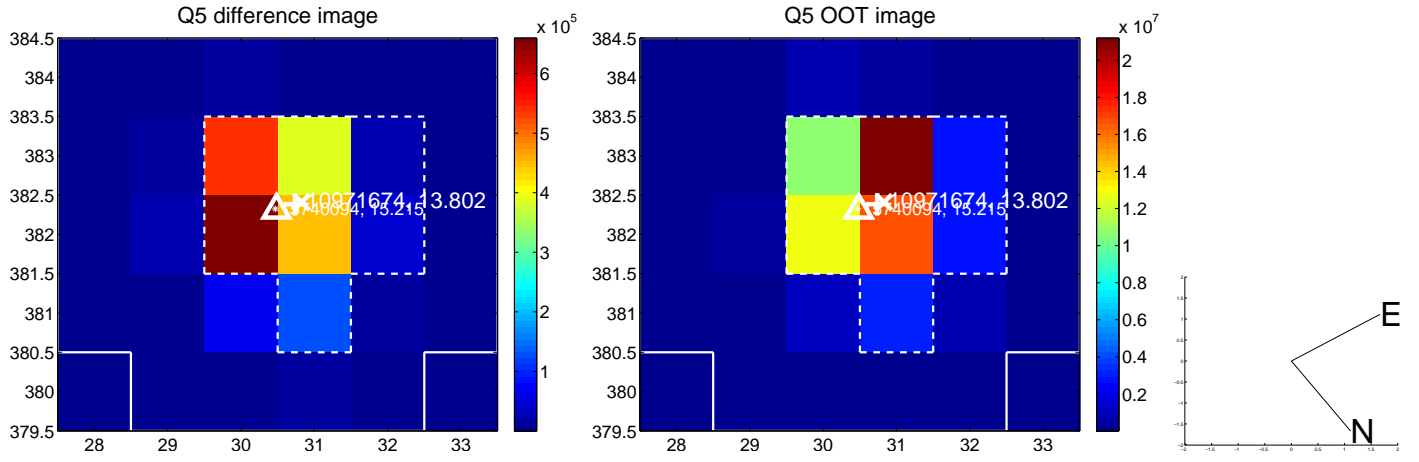


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

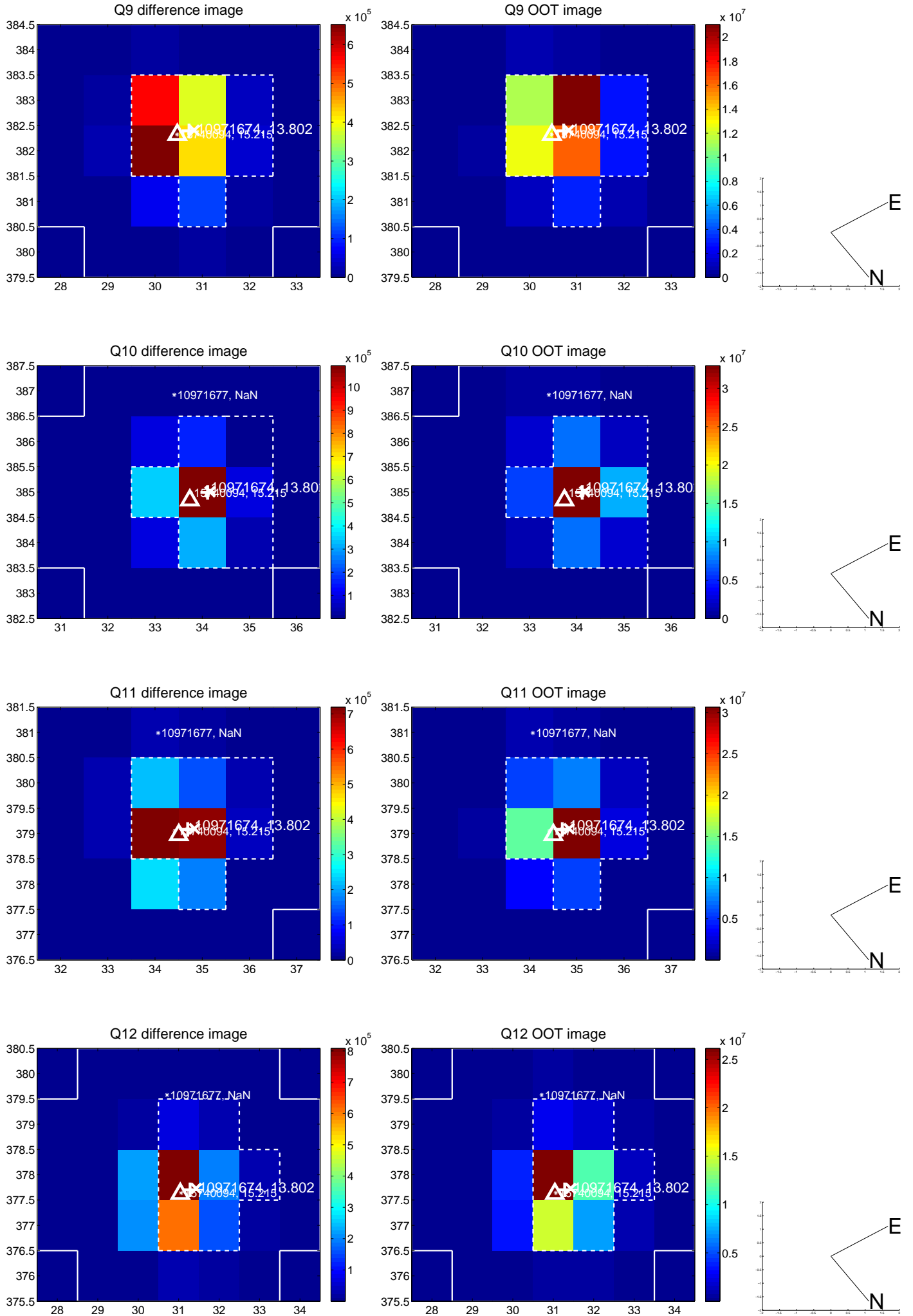


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

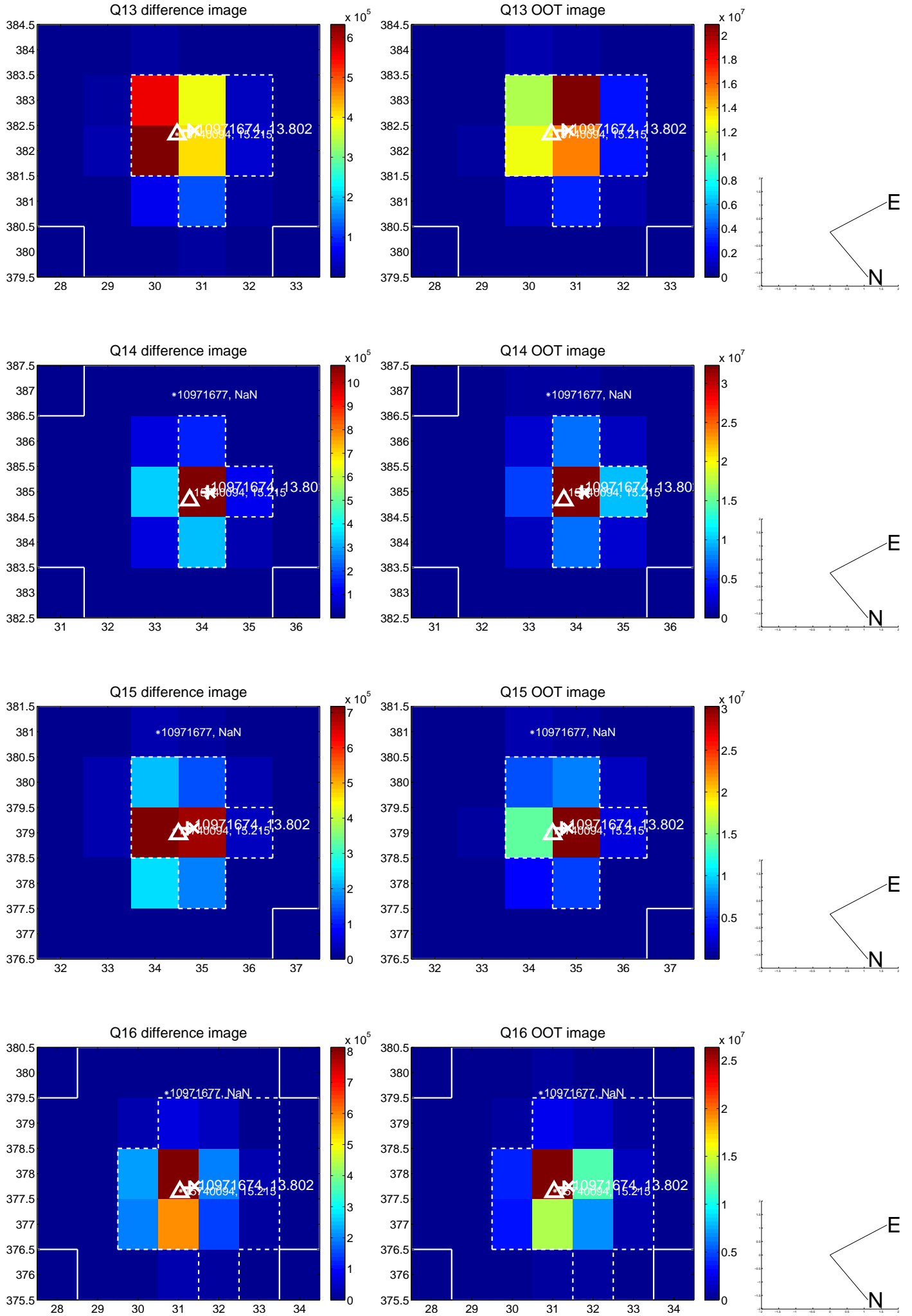




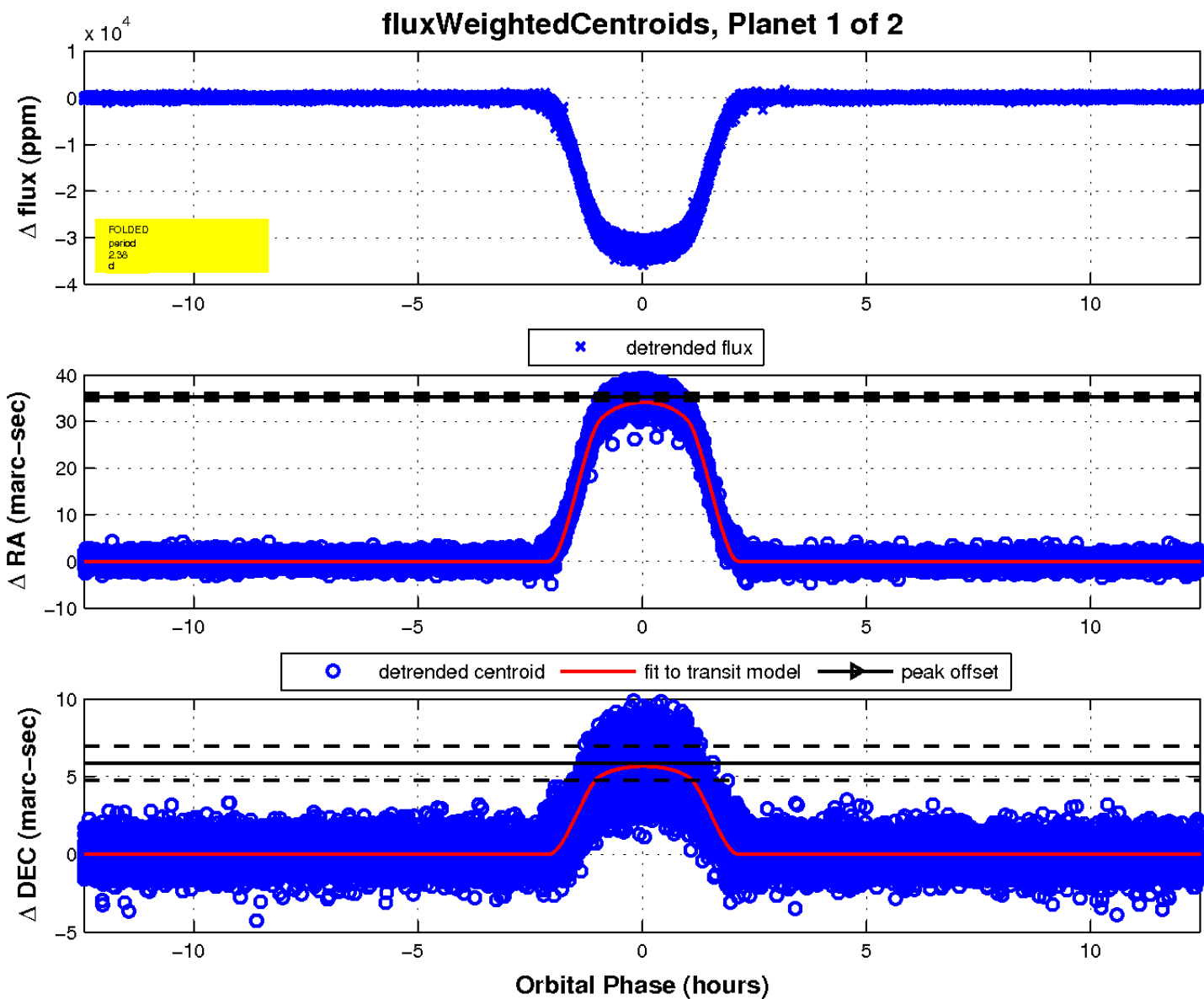
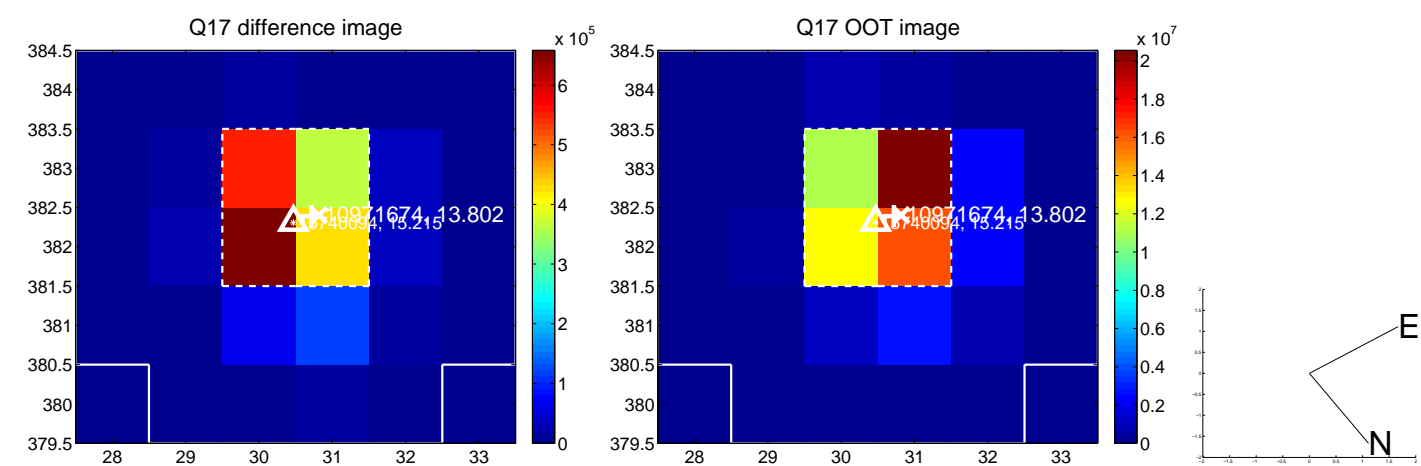
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

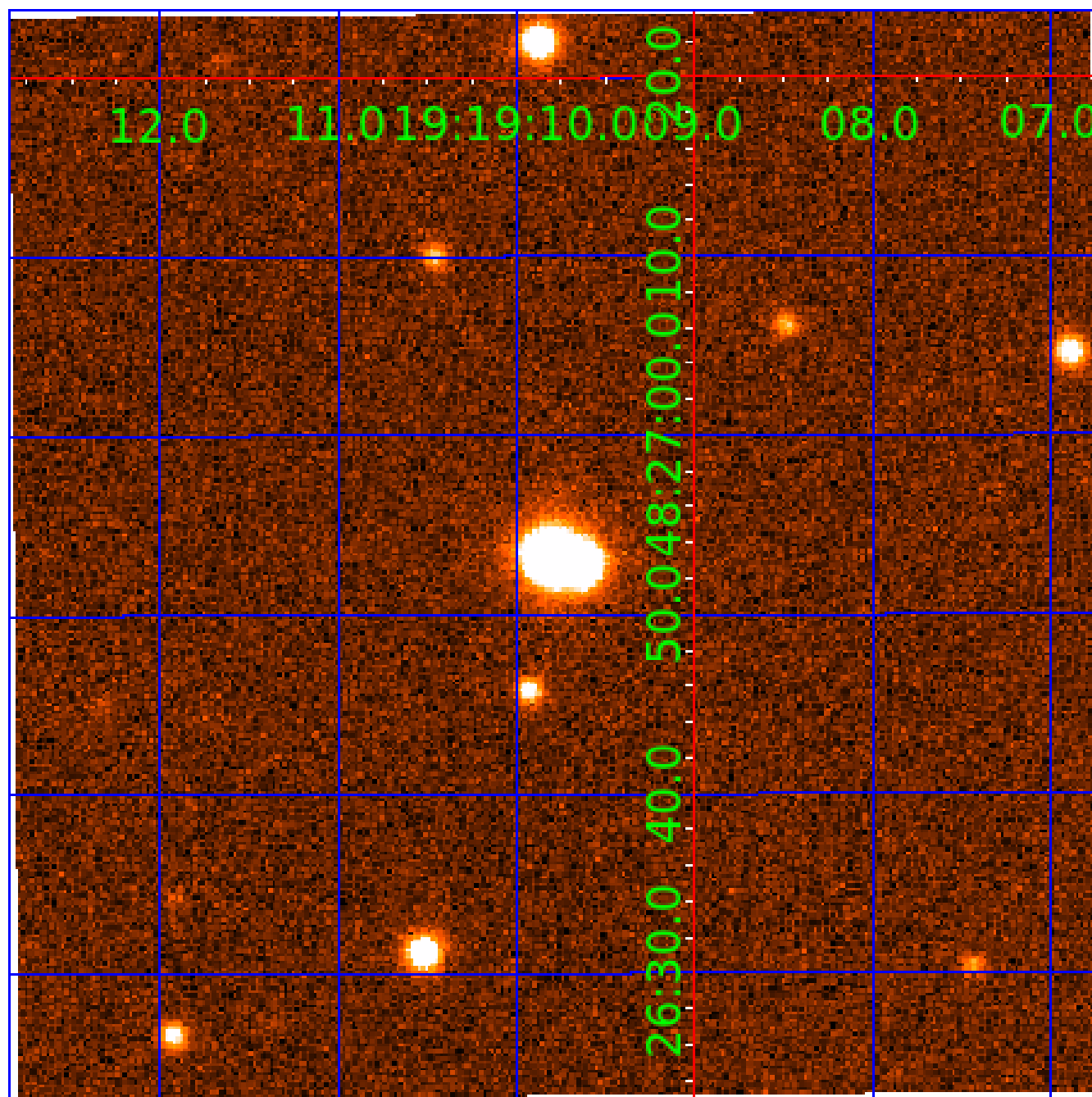


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010971674

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010971674-01	OBS	1296.01	2.380864	132.944170	32749.4	4.150	5772.0	4099.6	1.13	5821	21.75	1136.85
010971674-02	OBS	No	2.380866	131.749385	1430.2	3.500	141.5	-1.0	1.13	5821	4.24	1136.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010971674-01	OBS	PC	0.56	0	1	0	0	MOD_SEC_DV—PLANET_OCCULT_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—HAS_SEC_TCE—CENT_KIC_POS
010971674-02	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.

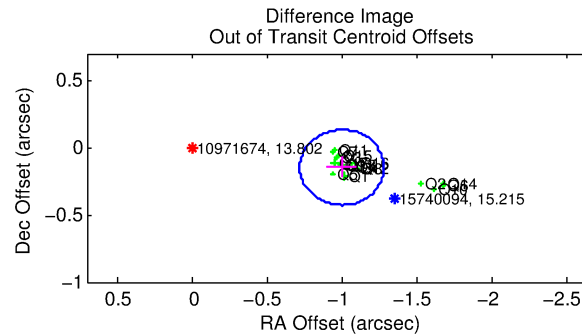
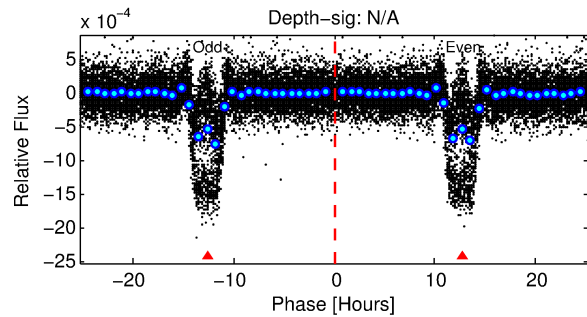
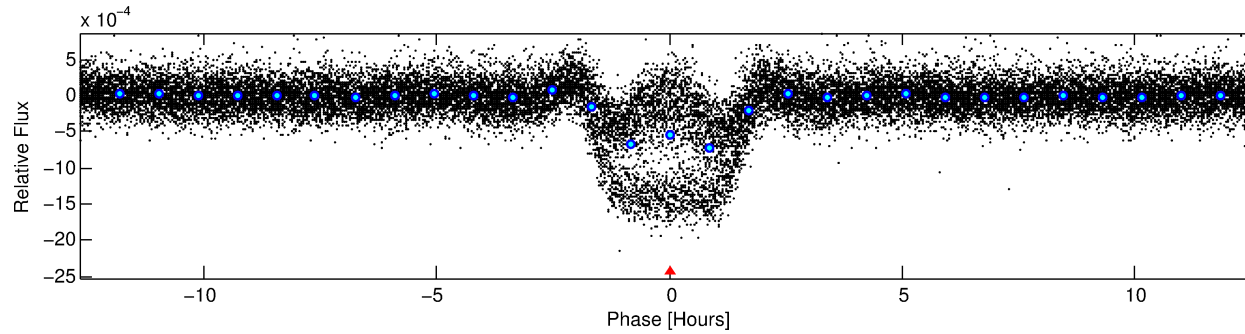
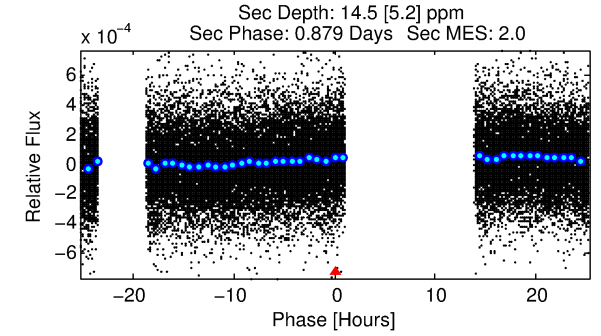
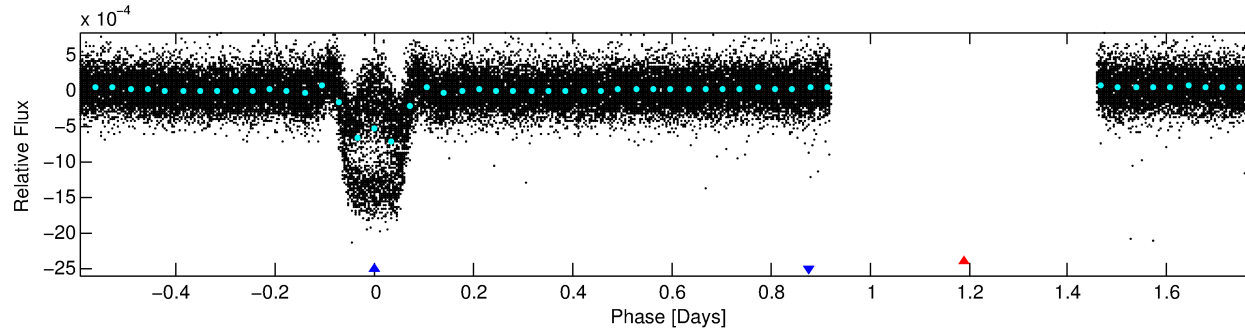
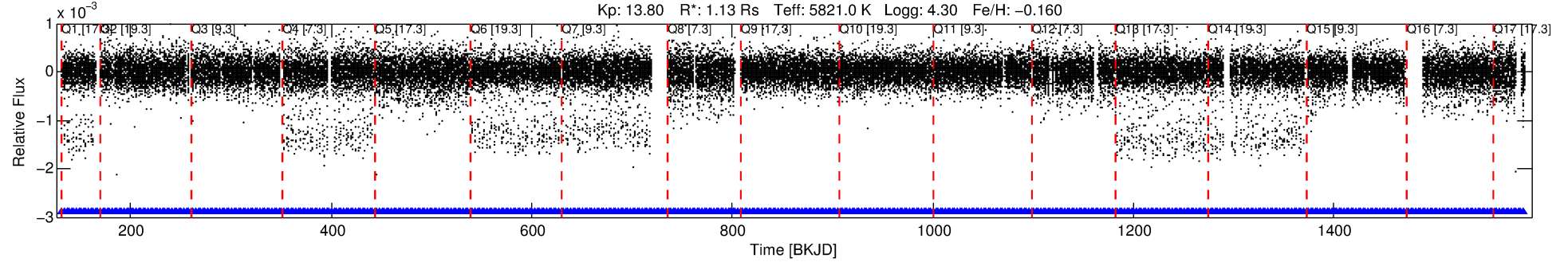
## Ephemeris Match Information For 010971674-02

No Significant Match Found

# DV One-Page Summary

KIC: 10971674 Candidate: 2 of 2 Period: 2.381 d  
KOI: K01296 Corr: No Ephemeris Match

Kp: 13.80 R\*: 1.13 Rs Teff: 5821.0 K Logg: 4.30 Fe/H: -0.160



TPS TCE Results:

Period = 2.38087 d  
Epoch = 131.7494 BKJD

DV fit results are unavailable

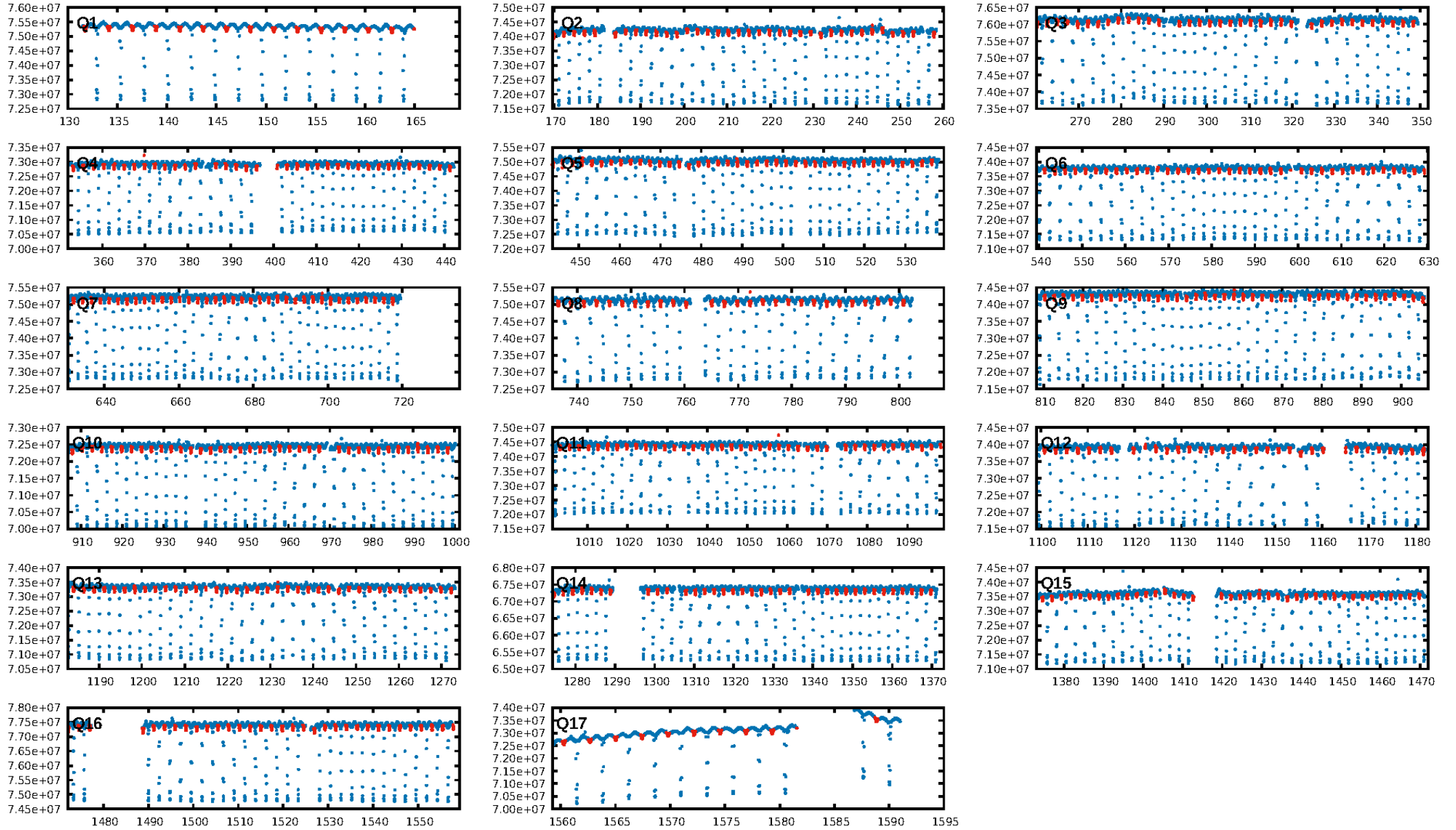
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [542/542]  
GhostDiagnostic-chr: 1.824  
Centroid-sig: 0.0%  
Centroid-so: 0.852 arcsec [27.45 $\sigma$ ]  
OotOffset-rm: 1.013 arcsec [10.82 $\sigma$ ]  
KicOffset-rm: 1.560 arcsec [19.01 $\sigma$ ]  
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: 30-Jan-2016 06:31:58 Z

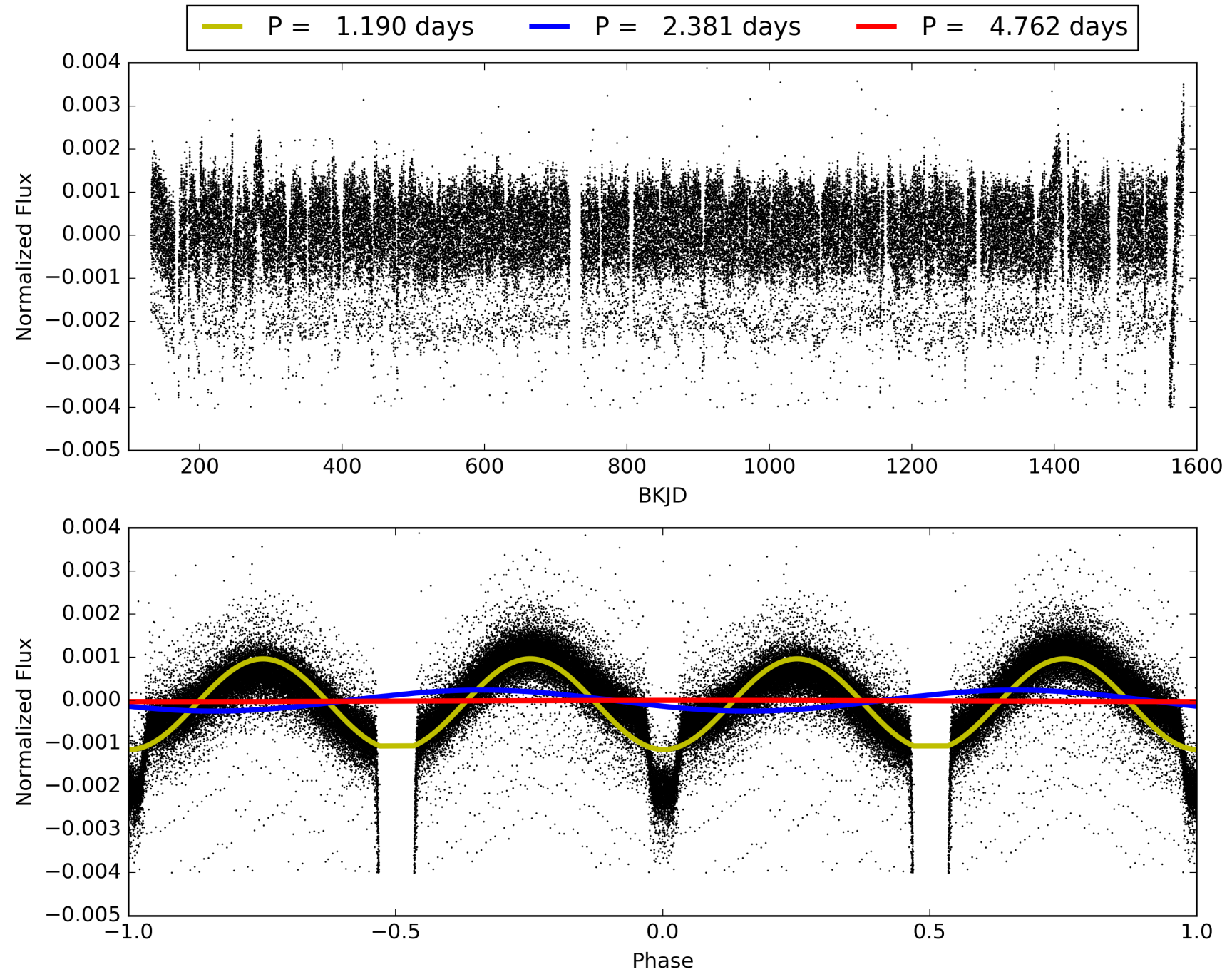
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010971674-02, PDC Light Curves





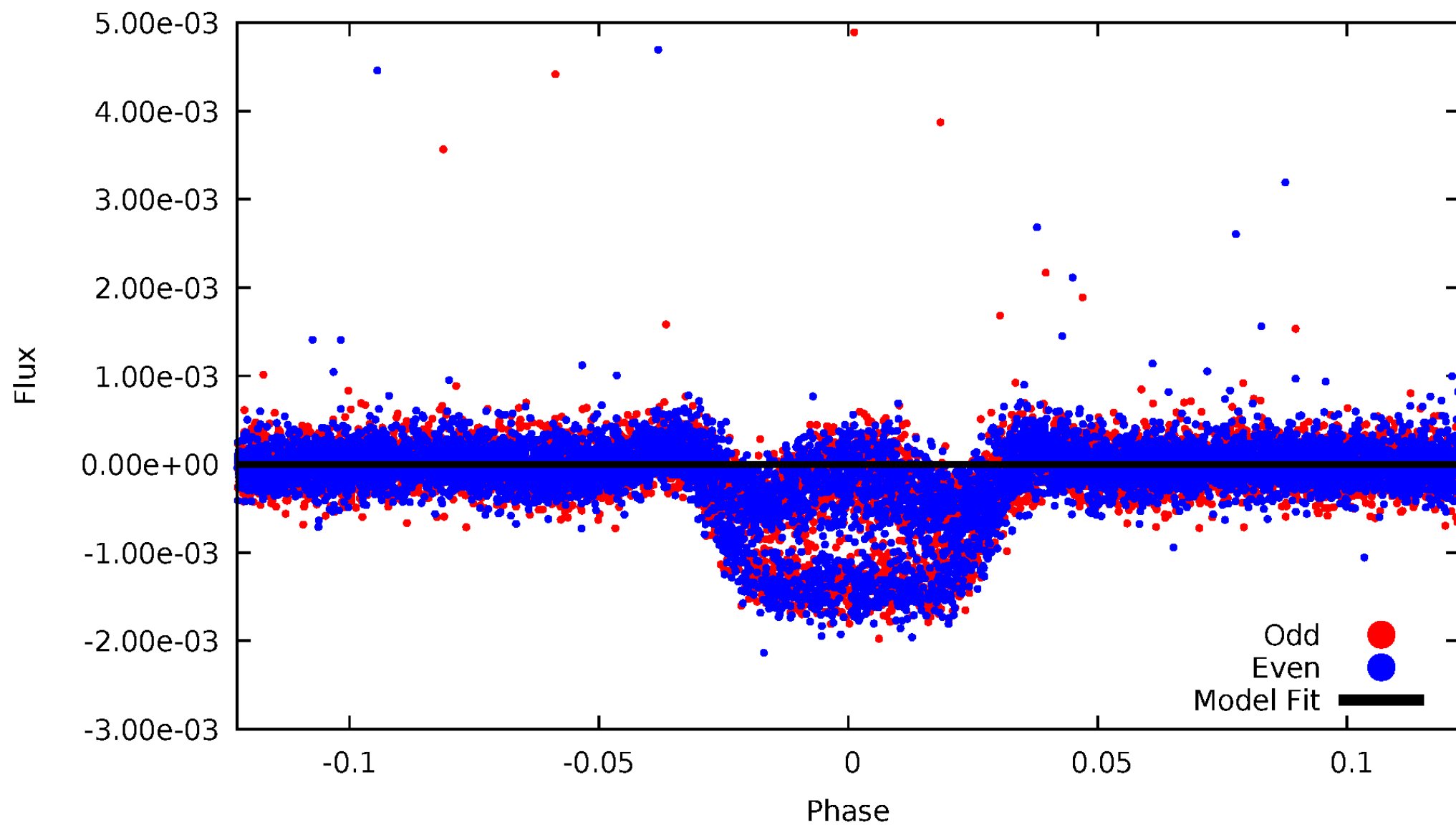
TCE 010971674-02





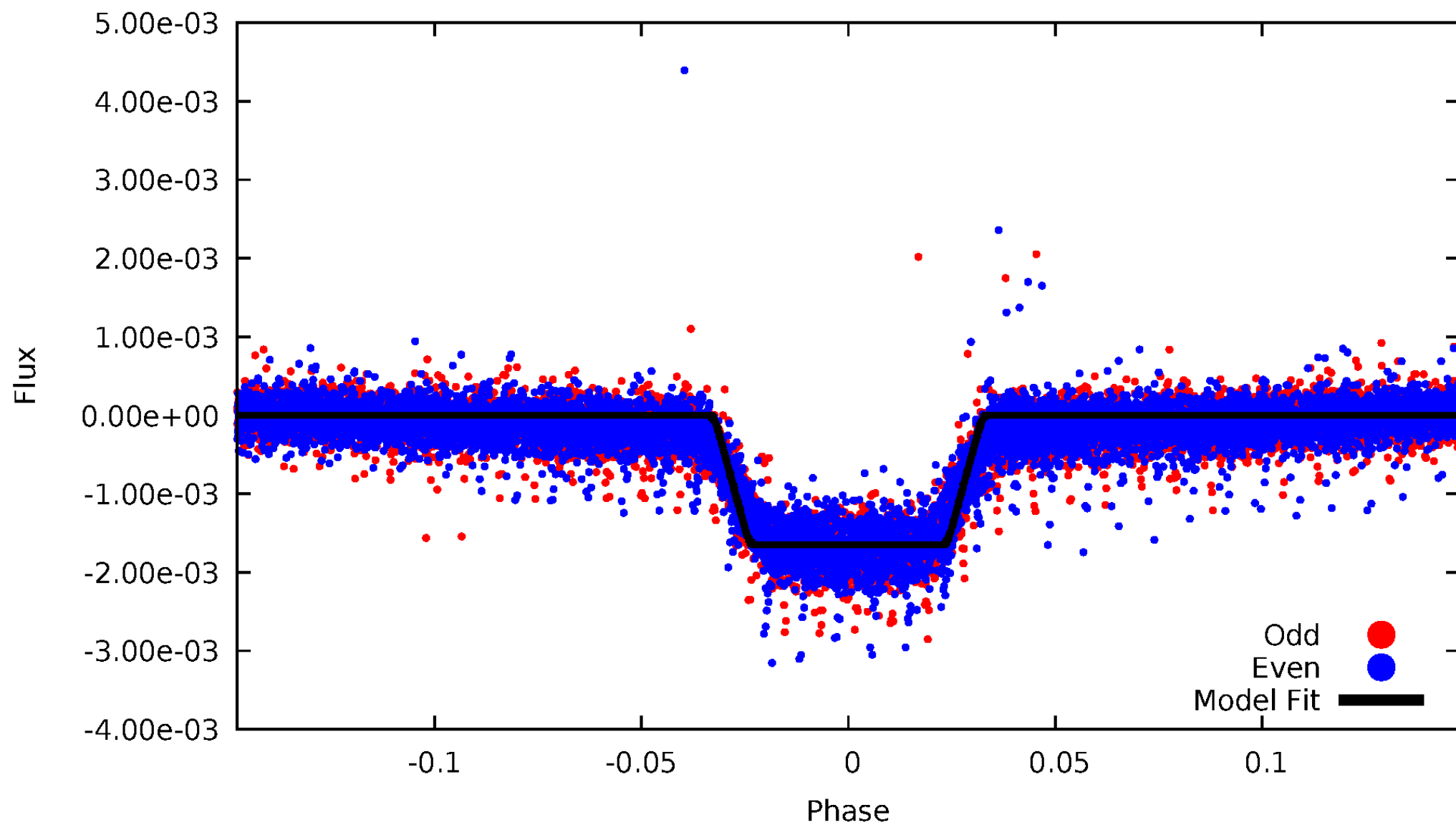
# DV Odd/Even

TCE 010971674-02



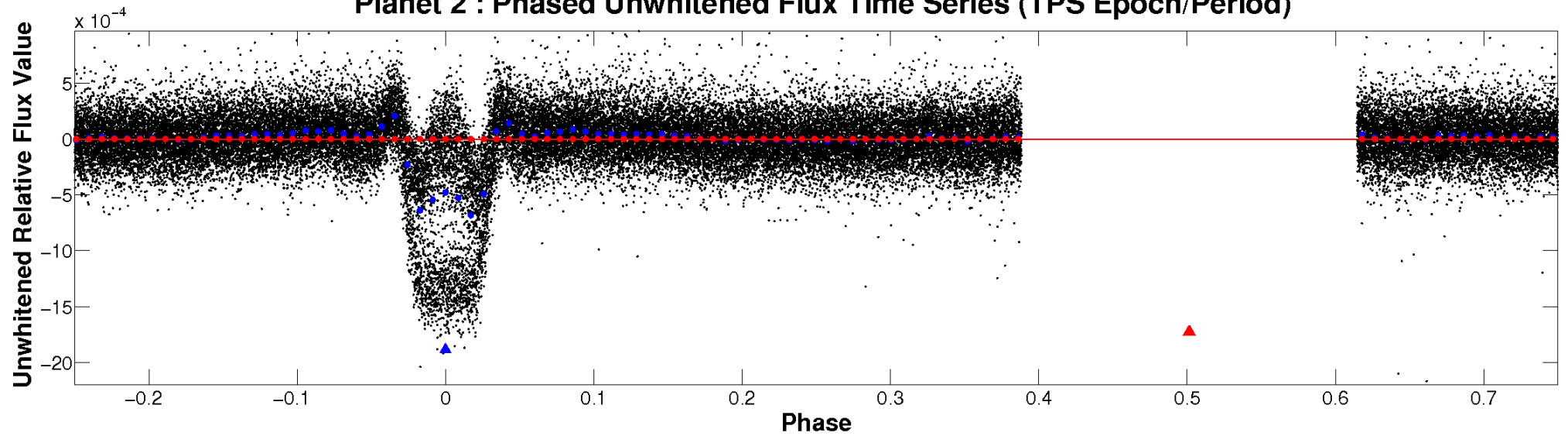
# ALT Odd/Even

TCE 010971674-02



# Non-Whitened Vs. Whitened Light Curve

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

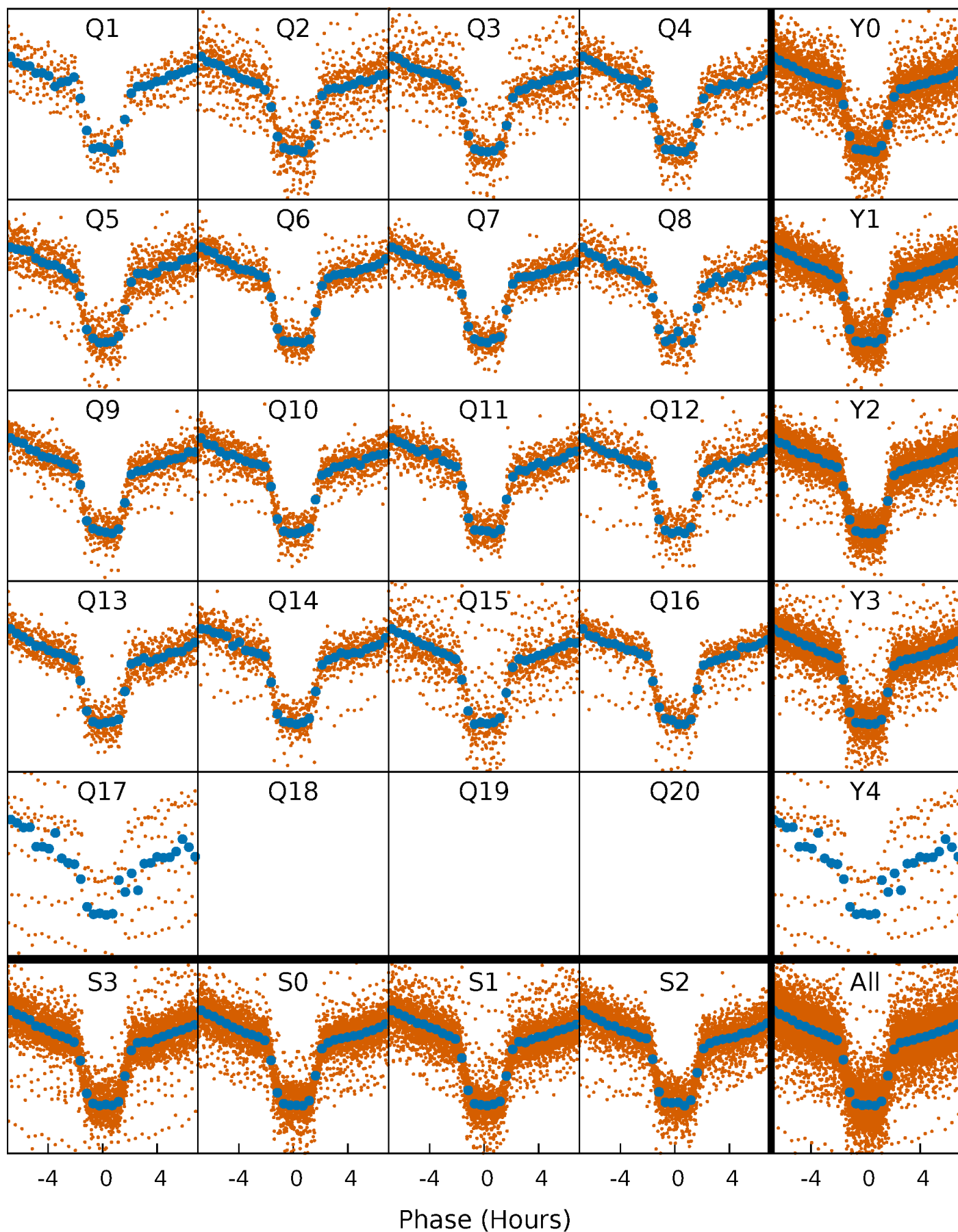


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



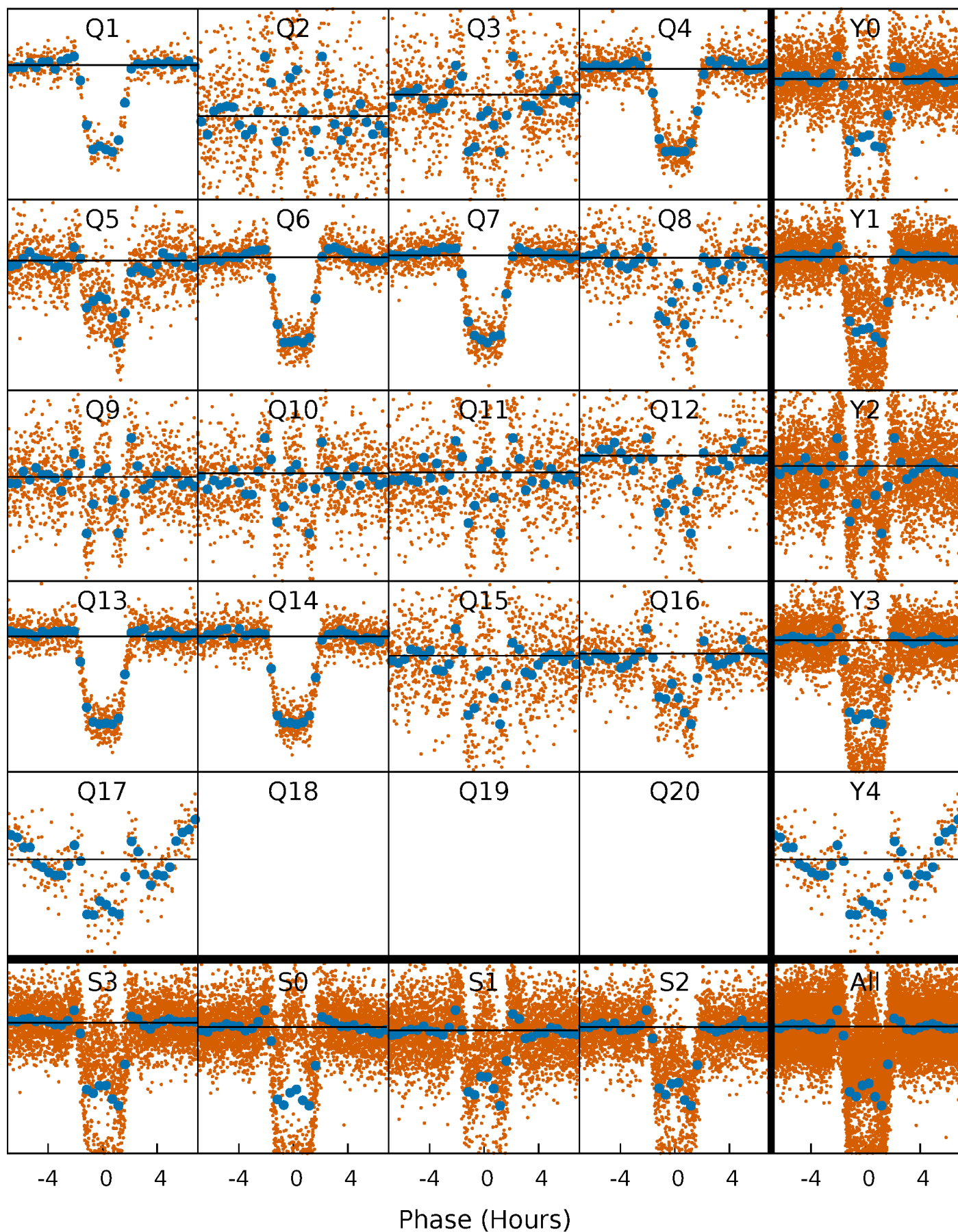
# PDC Quarter-Phased Transit Curves

TCE 010971674-02   P= 2.380866 Days    $T_0=131.749385$  (BKJD)



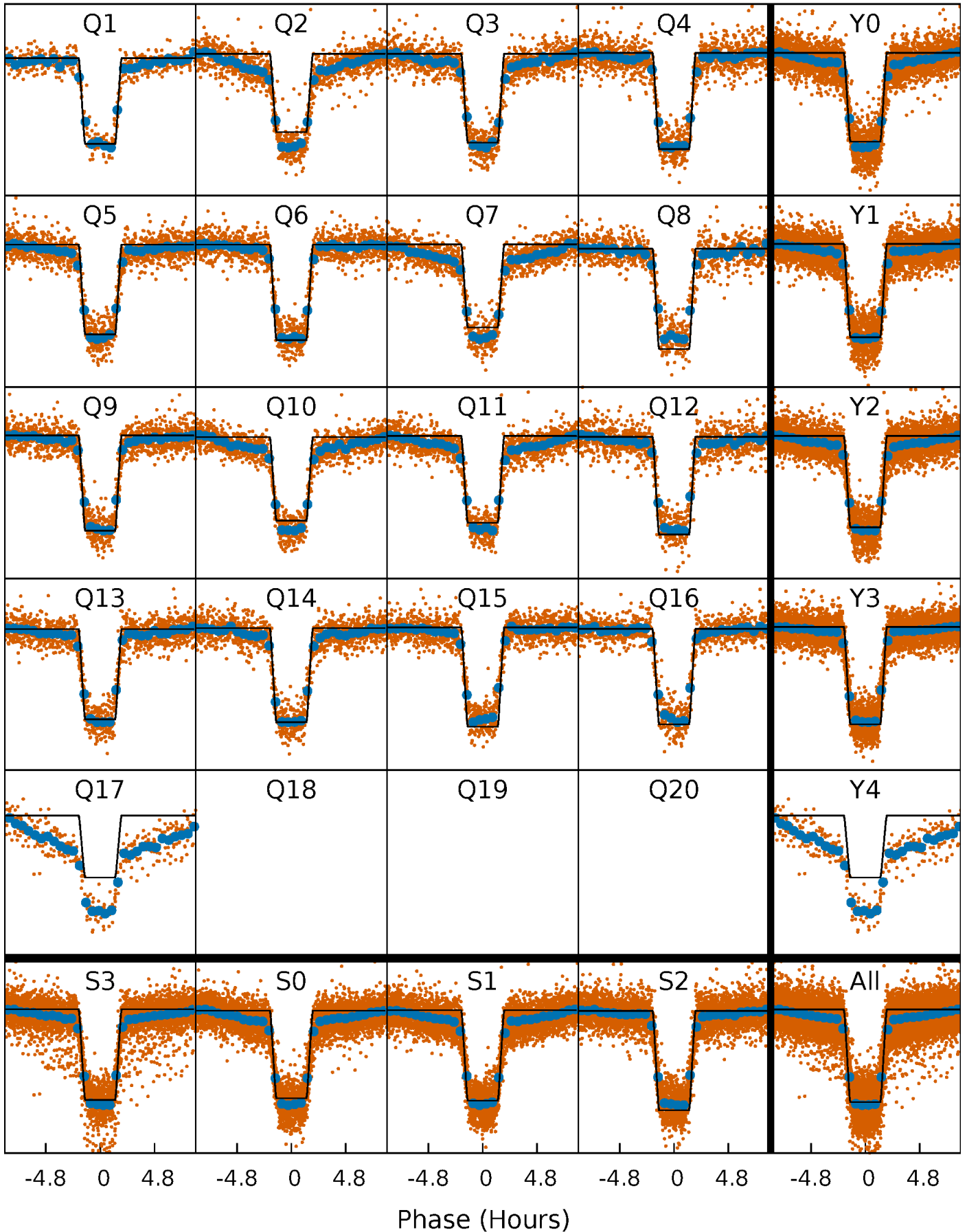
# DV Quarter-Phased Transit Curves

TCE 010971674-02     $P = 2.380866$  Days     $T_0 = 131.749385$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

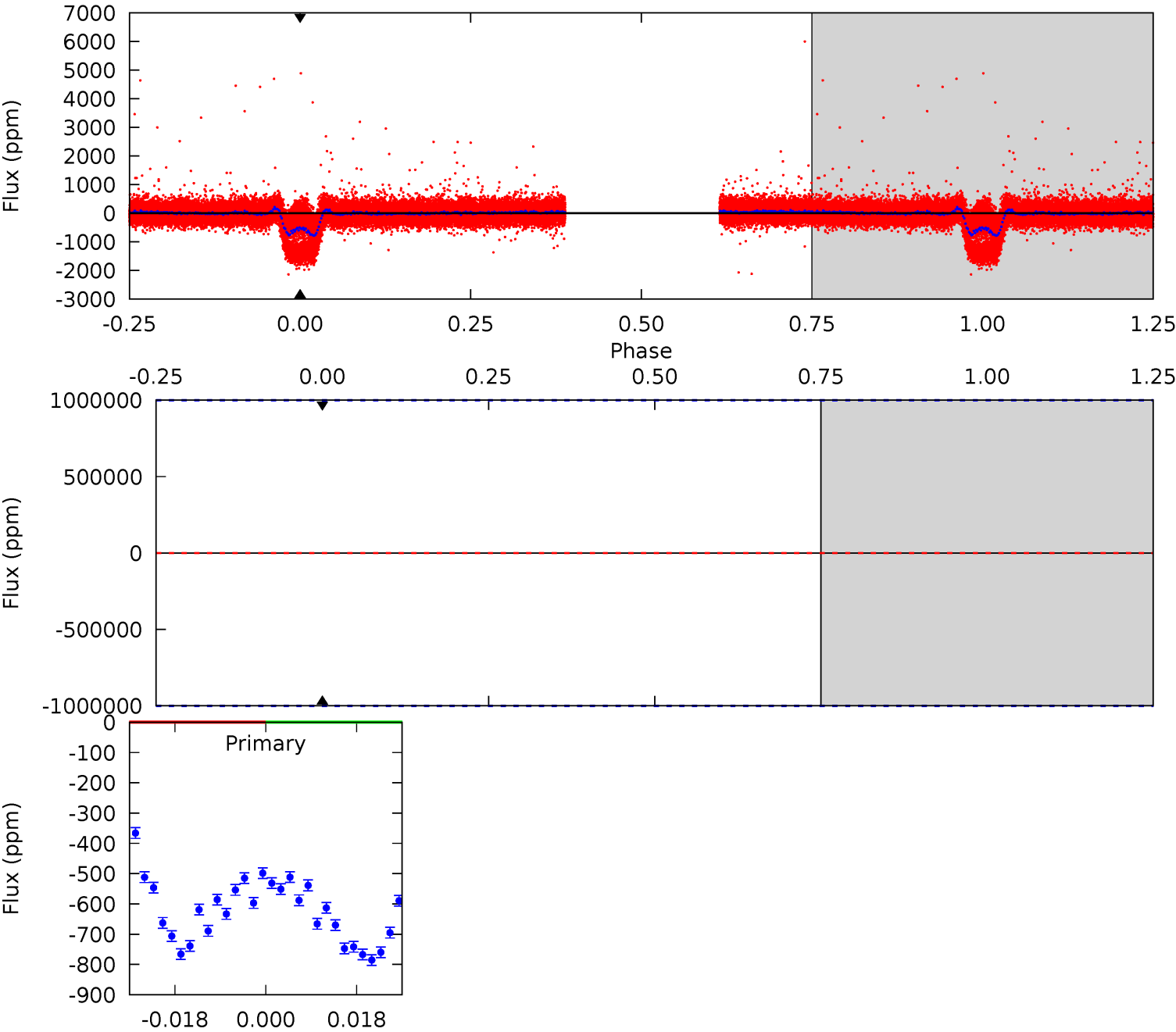
TCE 010971674-02     $P = 2.380866$  Days     $T_0 = 131.753011$  (BKJD)



DV Model-Shift Uniqueness Test

010971674-02, P = 2.380866 Days, E = 129.368519 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

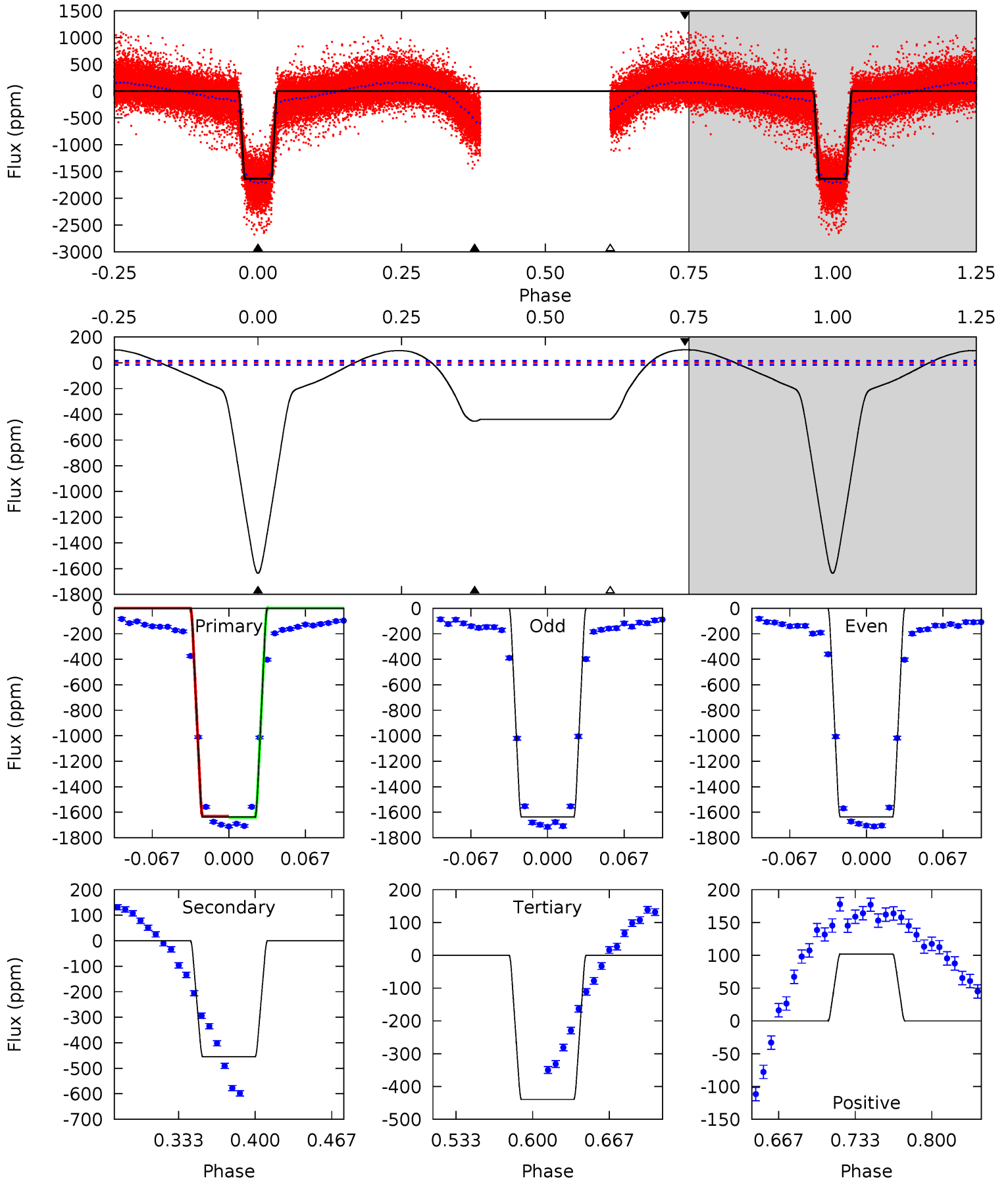




# Alt Model-Shift Uniqueness Test

010971674-02, P = 2.380866 Days, E = 129.372145 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
461.5	128.3	124.0	28.8	4.65	1.83	34.0	337.5	432.7	4.24	99.5	0.04	1.01	0.06	1.22





### Stellar Parameters For KIC 010971674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5821^{+158}_{-176}$	$4.297^{+0.190}_{-0.190}$	$-0.160^{+0.300}_{-0.300}$	$1.129^{+0.313}_{-0.227}$	$0.922^{+0.133}_{-0.096}$	$0.903^{+0.861}_{-0.442}$
	+3%/-3%	+4%/-4%	+188%/-188%	+28%/-20%	+14%/-10%	+95%/-49%
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 010971674-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$9.68^{+9.82}_{-6.32}$	$2069^{+160}_{-149}$	$-3426^{+23966}_{-14345}$	$-2.475^{+1201.156}_{-999.321}$
Alt.	$-455 \pm 4$	$10.26^{+9.58}_{-7.15}$	$2068^{+146}_{-144}$	$3366^{+2022}_{-695}$	$2.775^{+27.591}_{-2.026}$

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

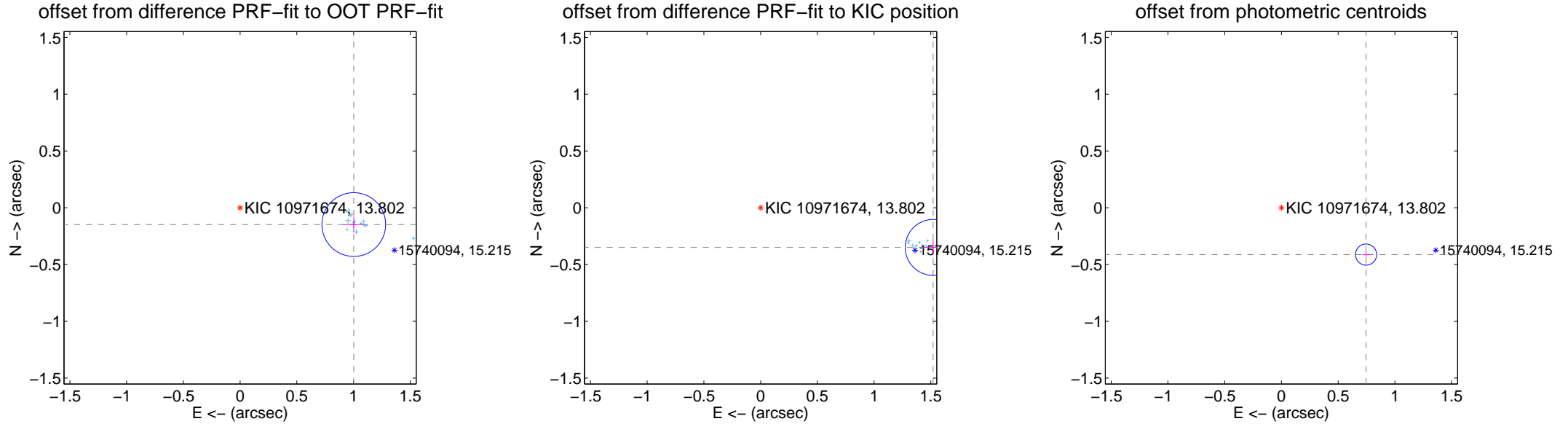
## DV Centroid Data

Supplemental centroid analysis for 010971674-02. Kepler magnitude: 13.80. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

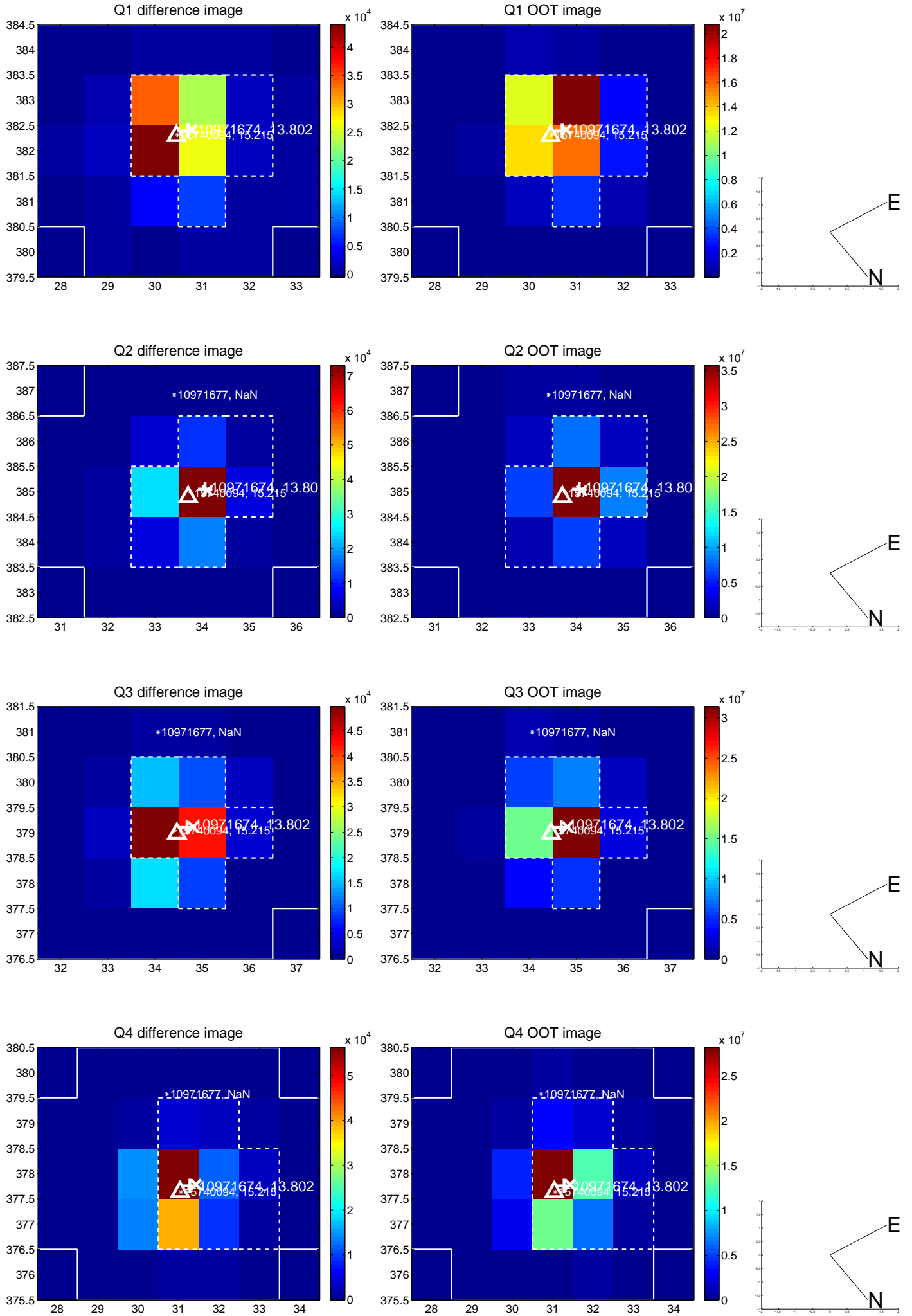
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.013 \pm 0.094$	10.82	$-1.002 \pm 0.092$	$-0.148 \pm 0.070$
PRF-fit source offset from KIC position	$1.560 \pm 0.082$	19.01	$-1.520 \pm 0.083$	$-0.349 \pm 0.068$
photometric centroid source offset	$0.85 \pm 0.03$	27.45	$-0.75 \pm 0.03$	$-0.41 \pm 0.03$

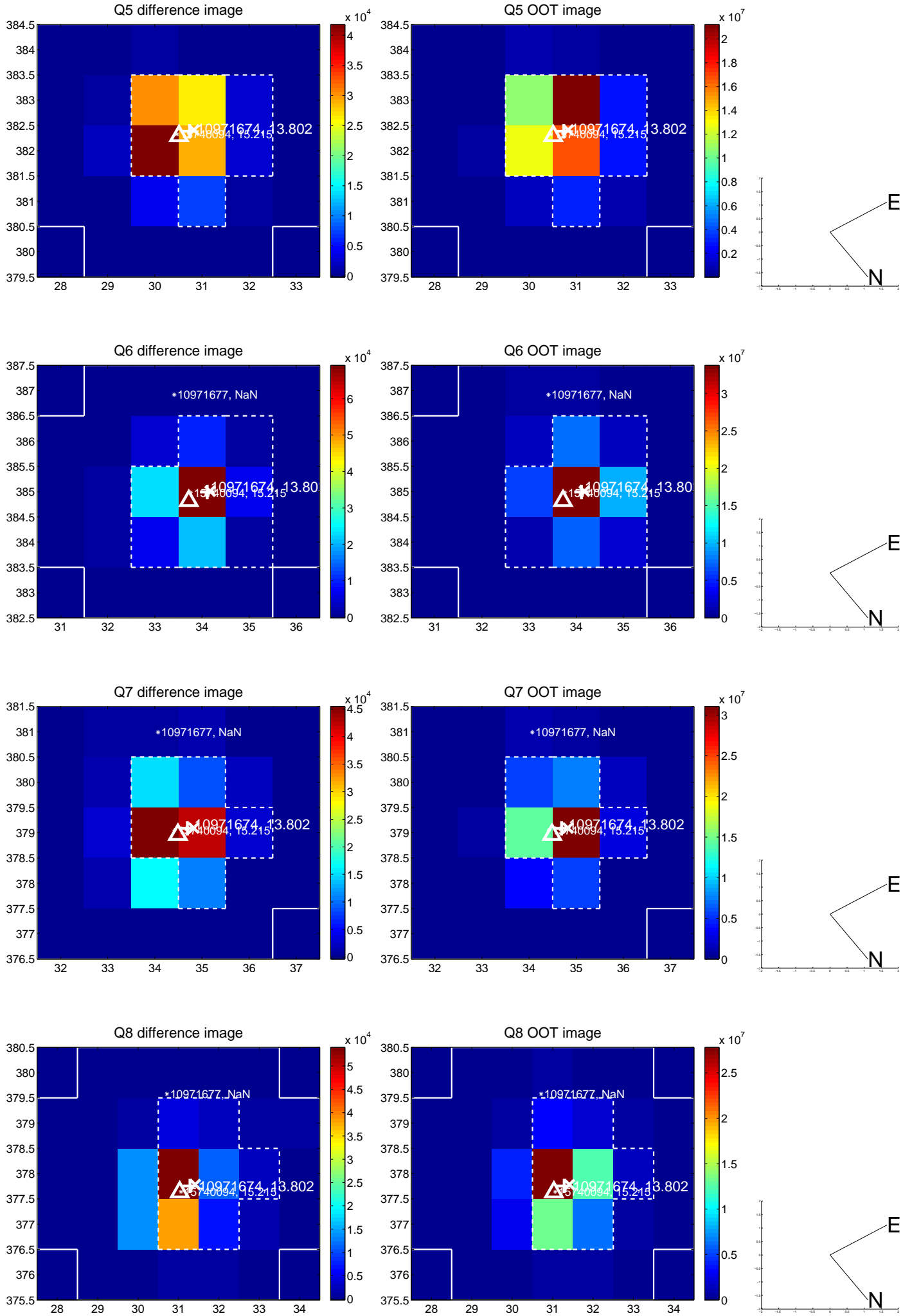


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

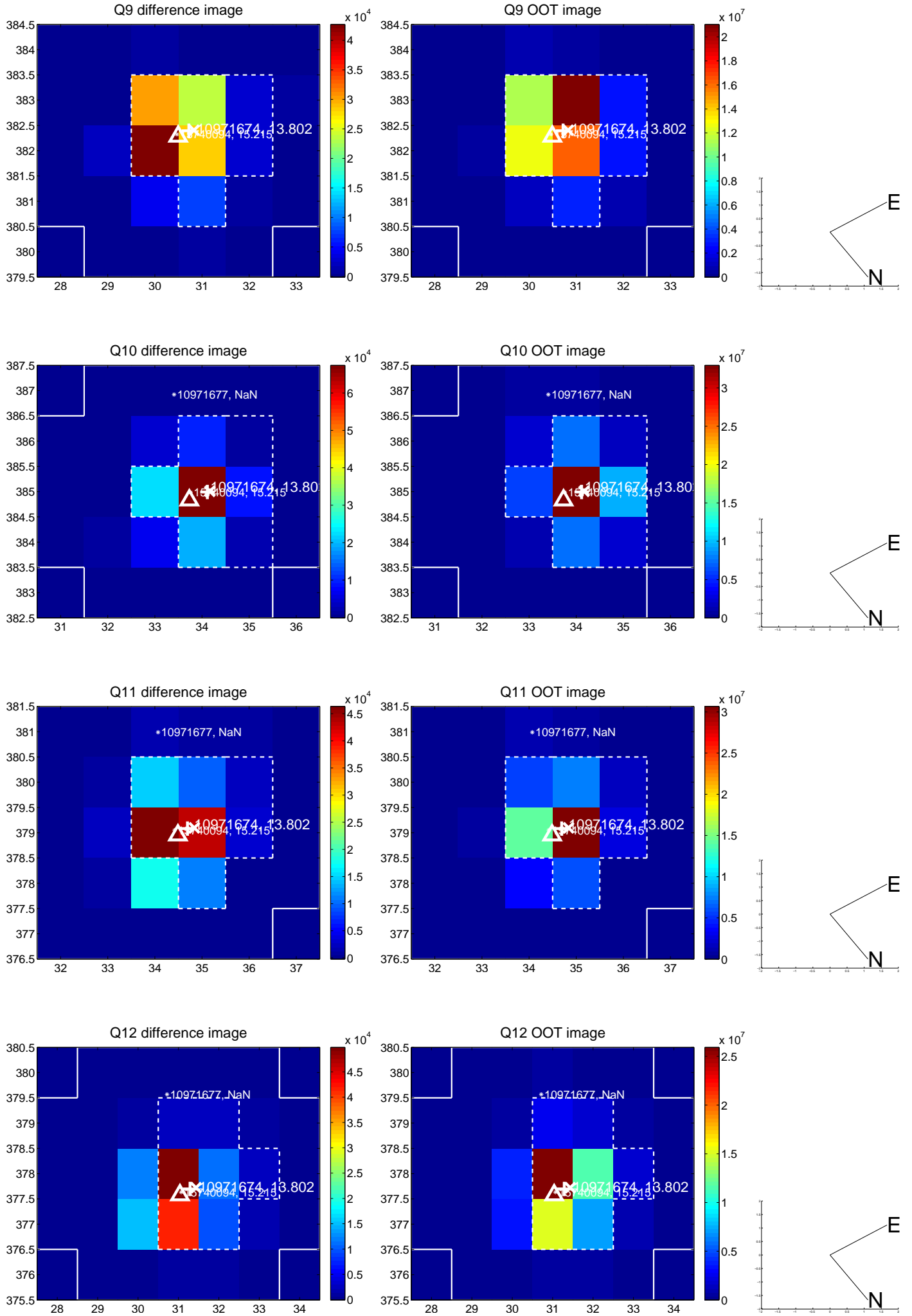
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



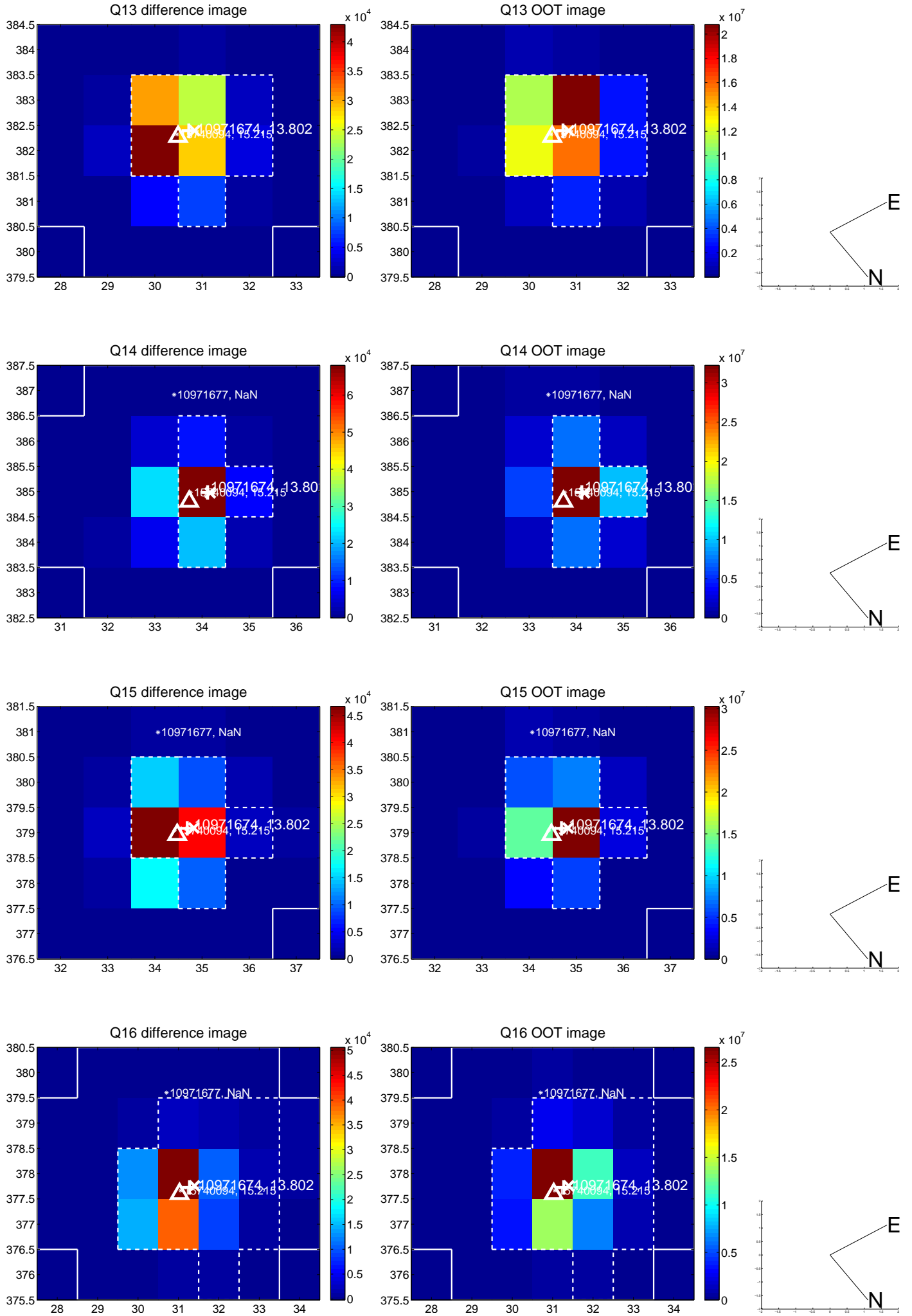
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



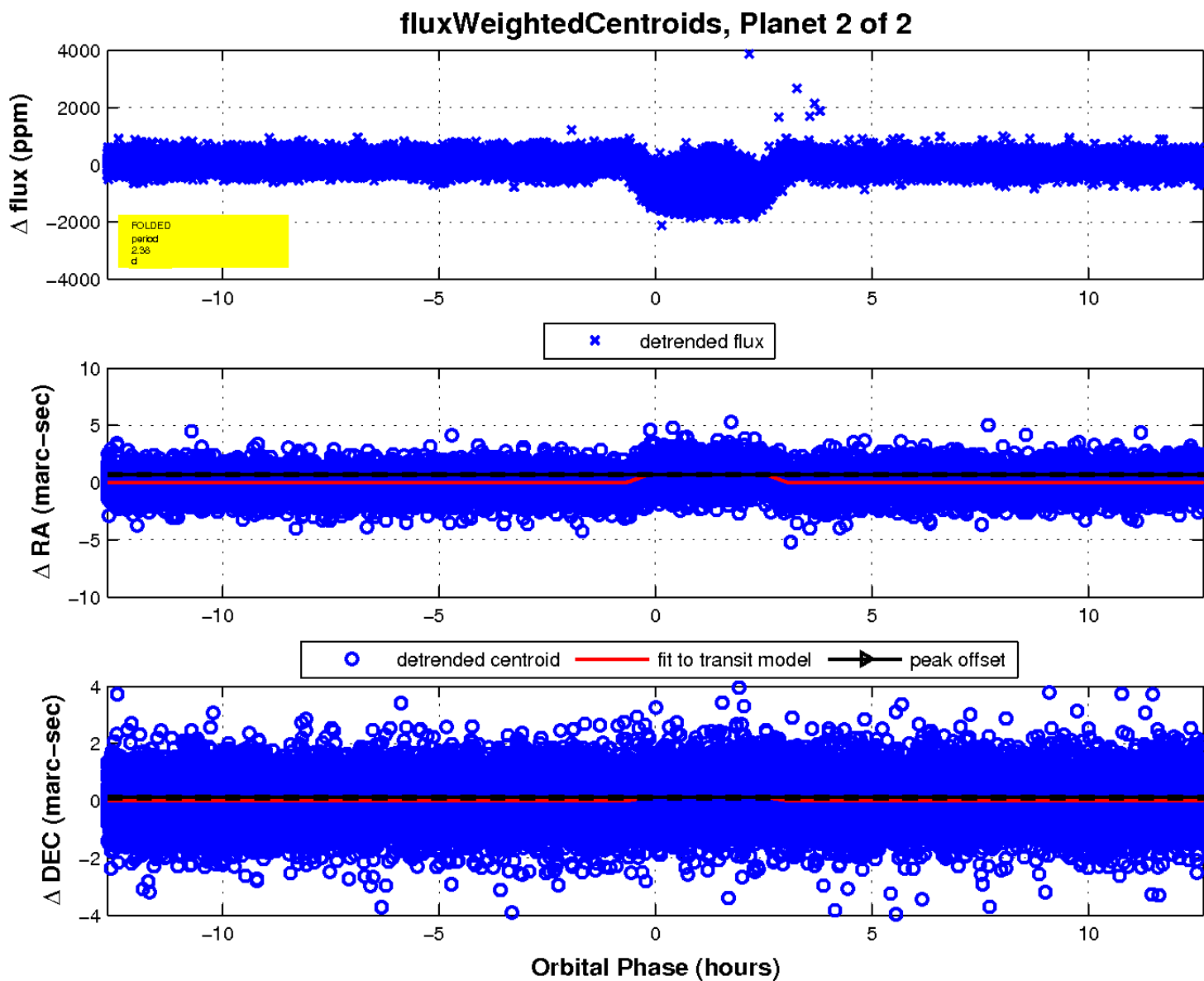
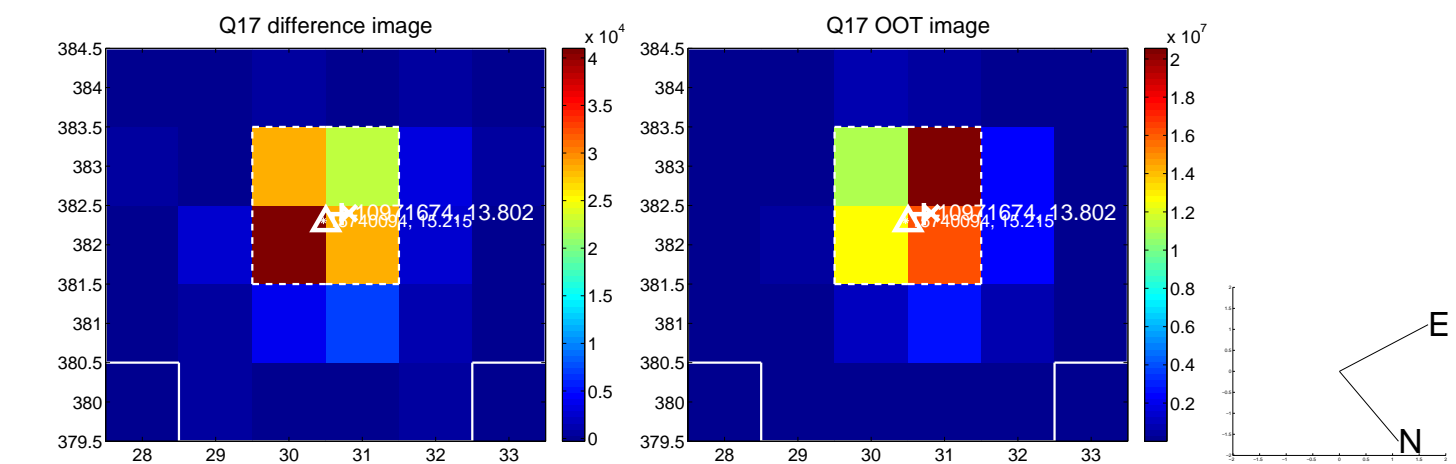
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

