

# KIC 004739194

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004739194-01	OBS	6442.01	1.246576	132.021411	420204.9	2.500	13455.3	-1.0	1.18	6440	40.61	3727.94
004739194-02	OBS	No	0.623266	132.032869	45500.7	1.500	868.5	-1.0	1.18	6440	25.52	9394.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004739194-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
004739194-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_NOFITS—HALO_GHOST

**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 004739194-01

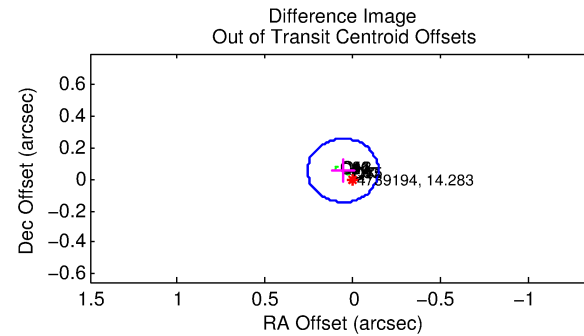
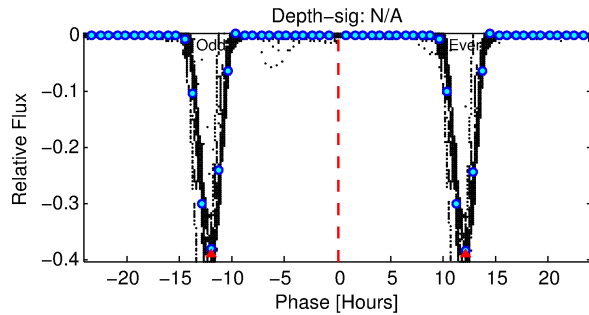
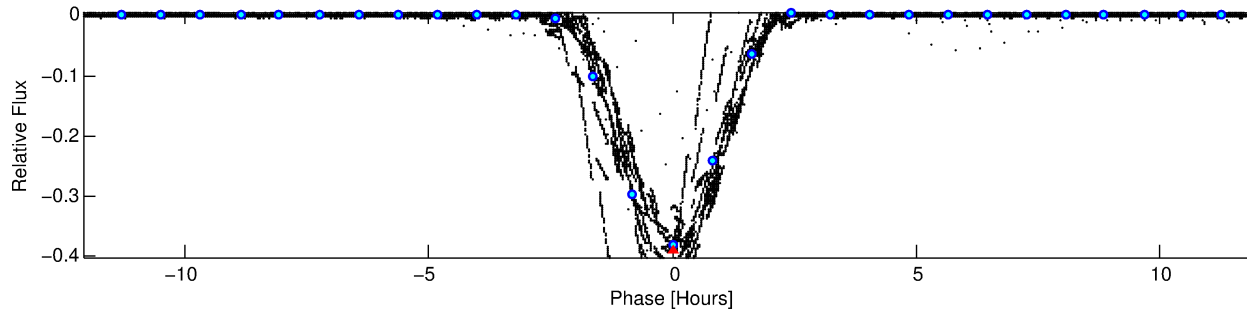
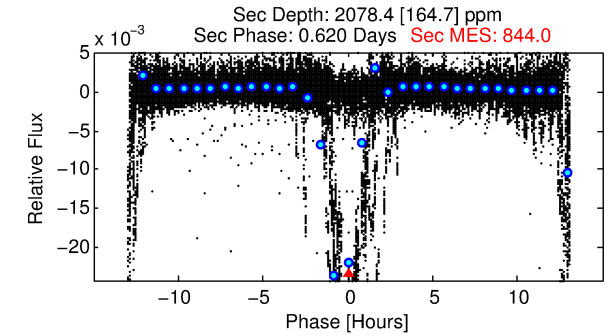
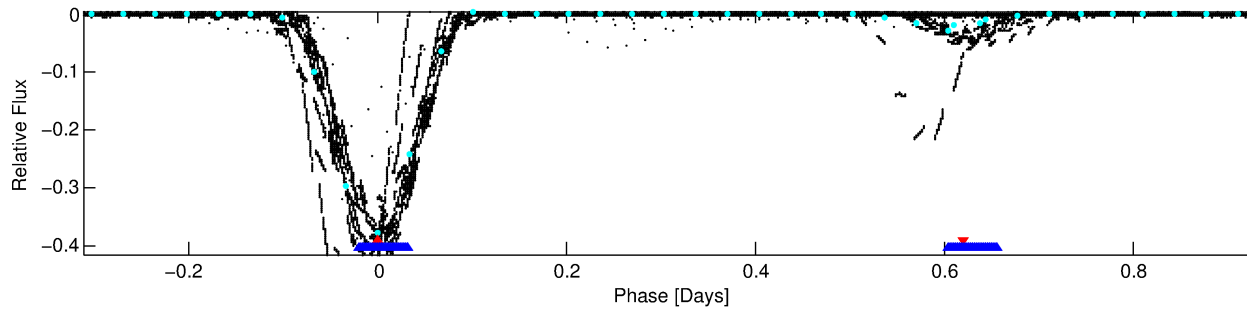
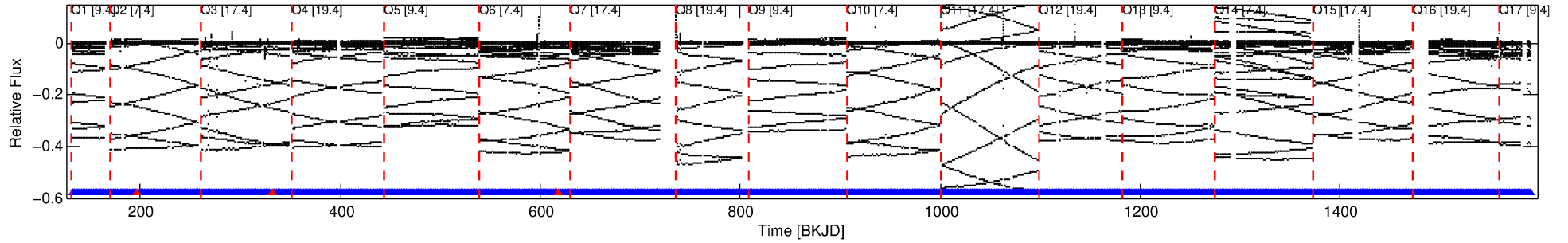
No Significant Match Found

# DV One-Page Summary

KIC: 4739194 Candidate: 1 of 2 Period: 1.247 d

KOI: K06442 Corr: No Ephemeris Match

Kp: 14.28 R\*: 1.18 Rs Teff: 6440.0 K Logg: 4.37 Fe/H: -0.040



TPS TCE Results:

Period = 1.24658 d  
Epoch = 132.0214 BKJD

DV fit results are unavailable

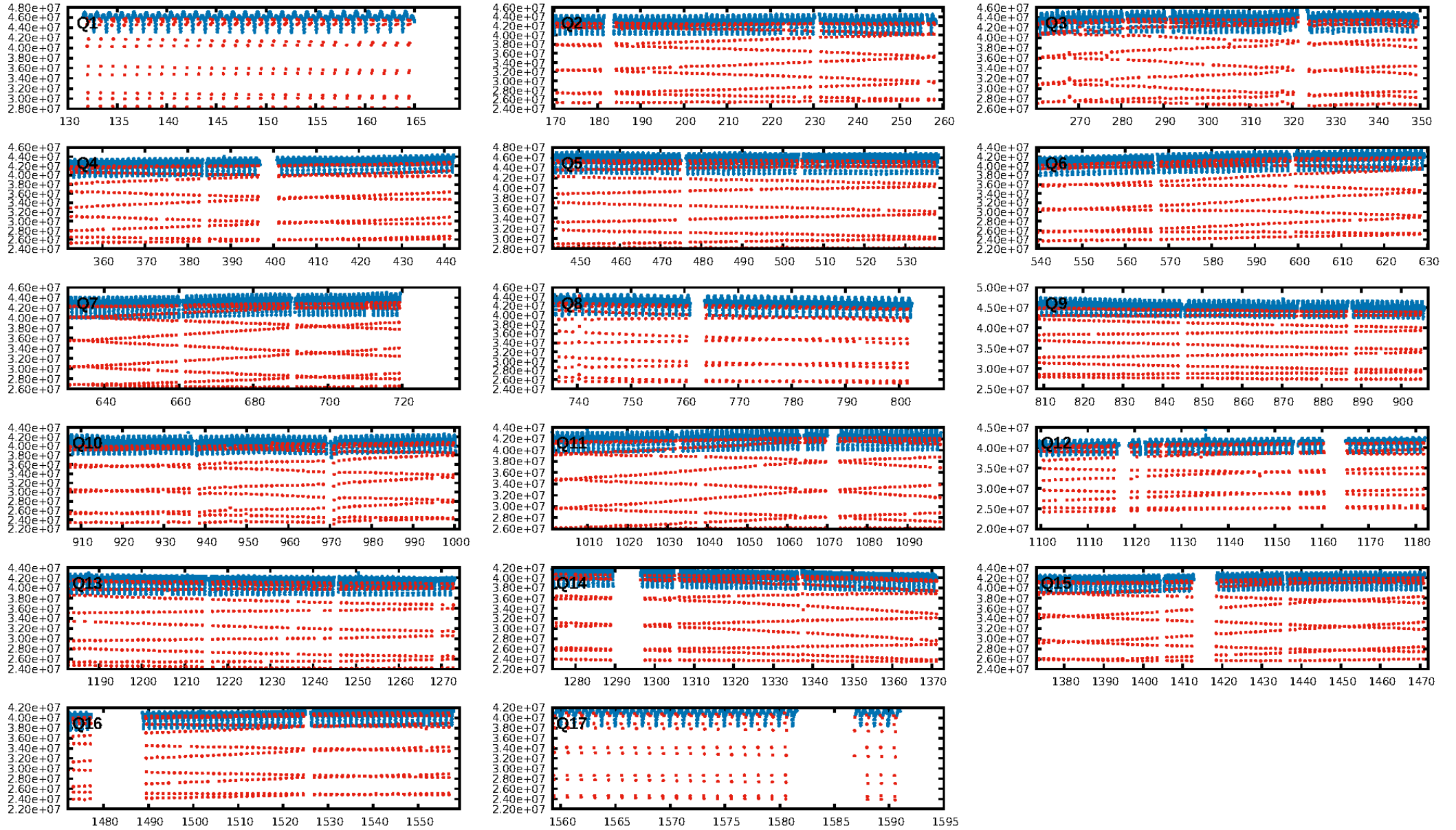
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.13 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1027/1030]  
GhostDiagnostic-chr: 0.9042  
Centroid-sig: N/A  
Centroid-so: 0.165 arcsec [460.51 $\sigma$ ]  
OotOffset-rm: 0.081 arcsec [1.21 $\sigma$ ]  
KicOffset-rm: 0.141 arcsec [2.10 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

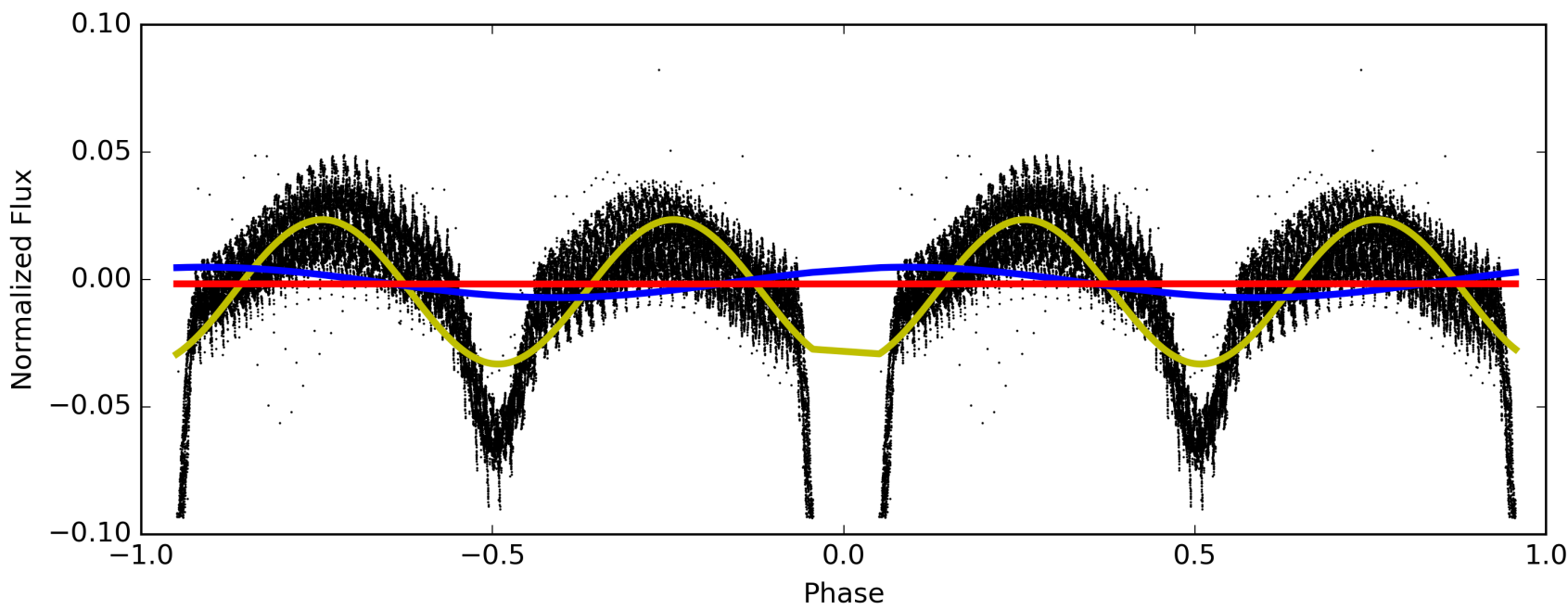
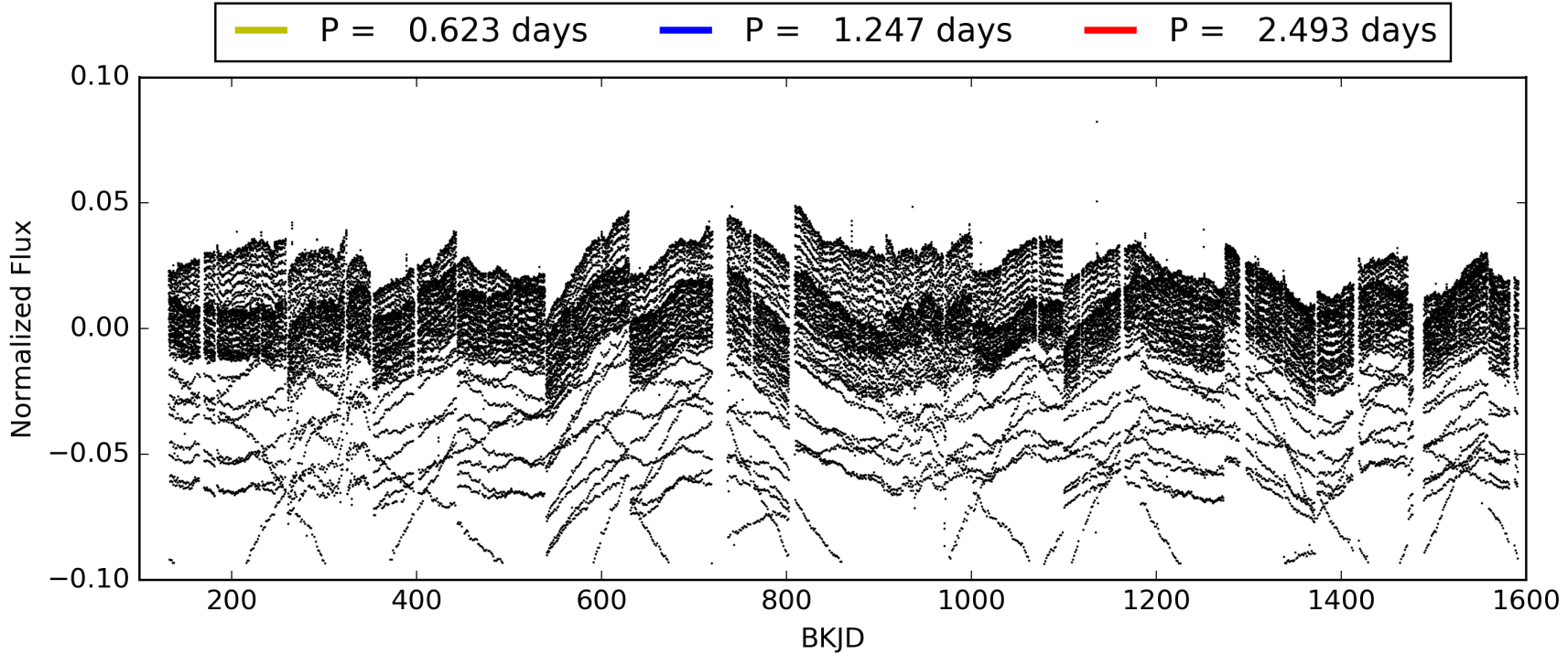
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:19:39 Z

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

# TCE 004739194-01, PDC Light Curves

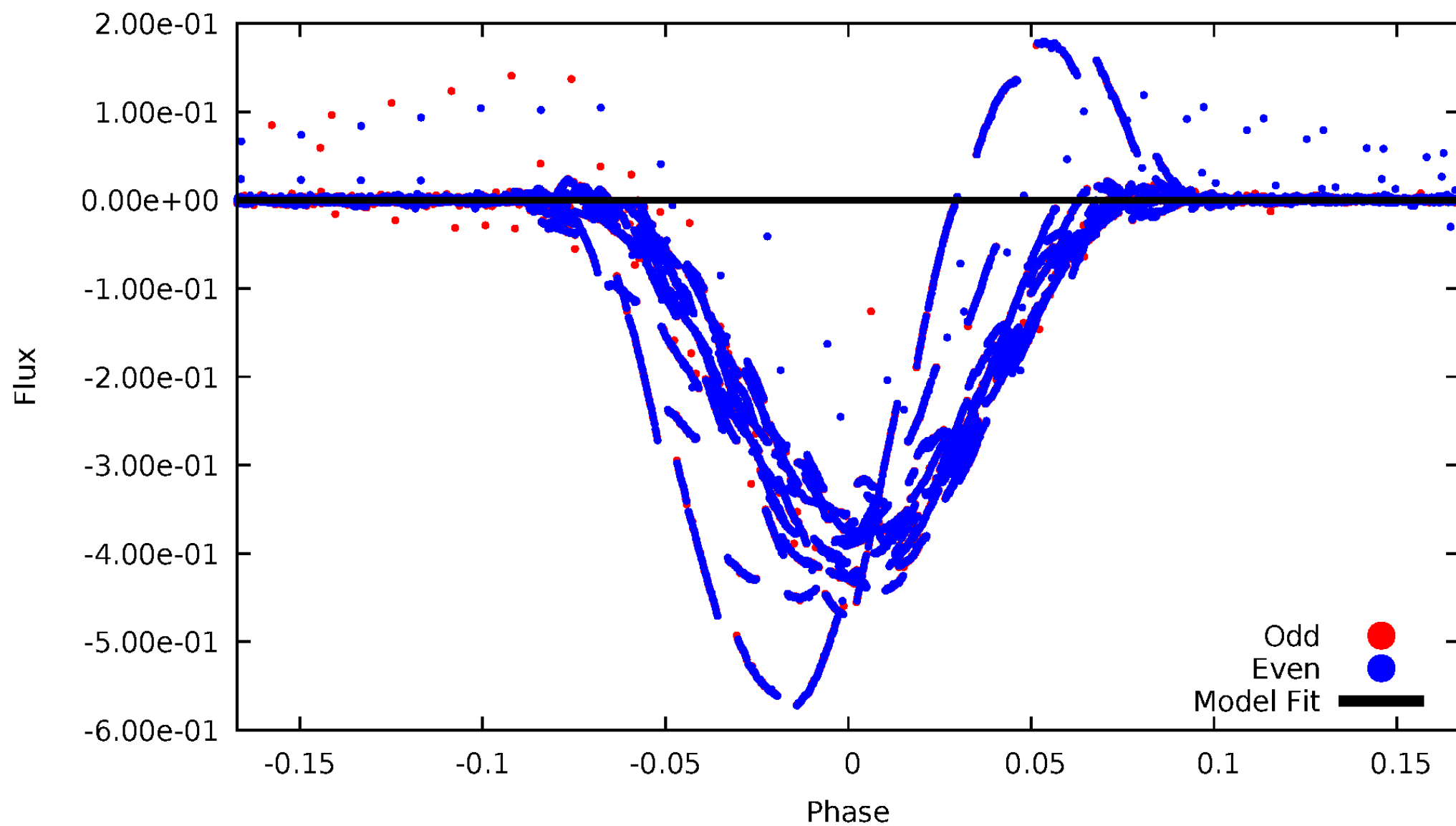


TCE 004739194-01



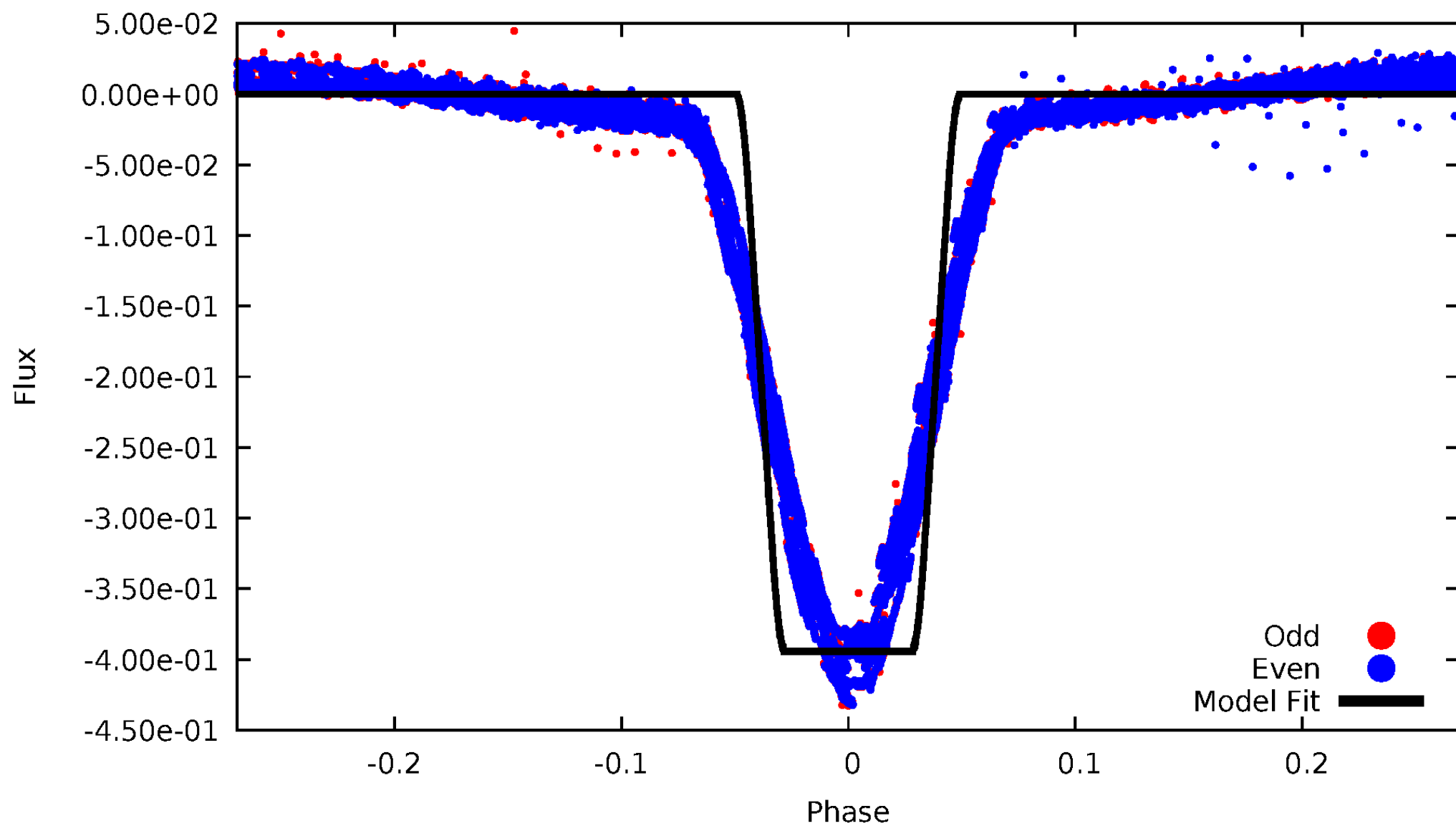
# DV Odd/Even

TCE 004739194-01



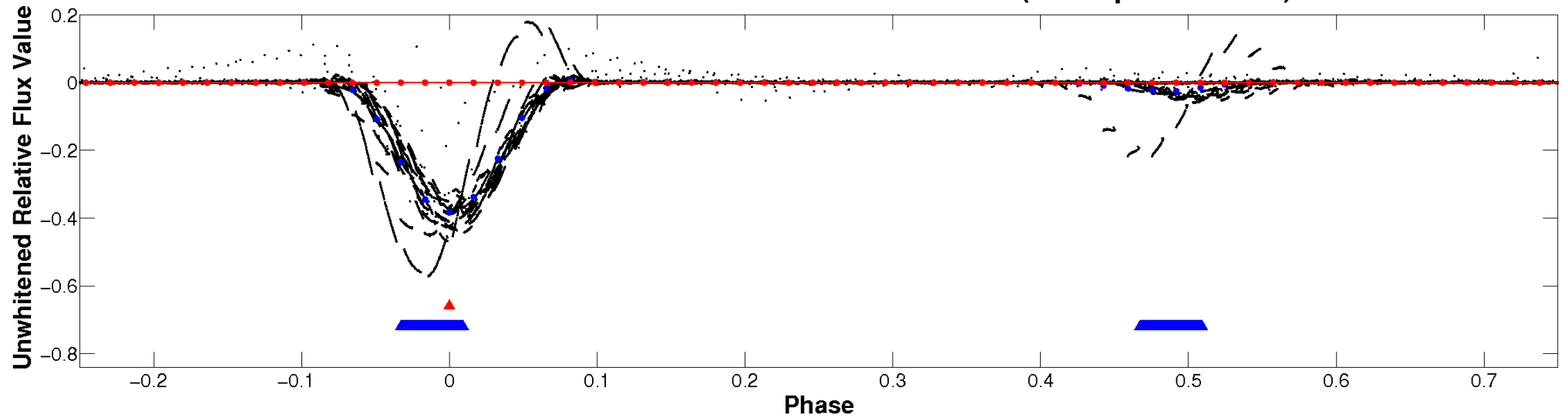
# ALT Odd/Even

TCE 004739194-01



# Non-Whitened Vs. Whitened Light Curve

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

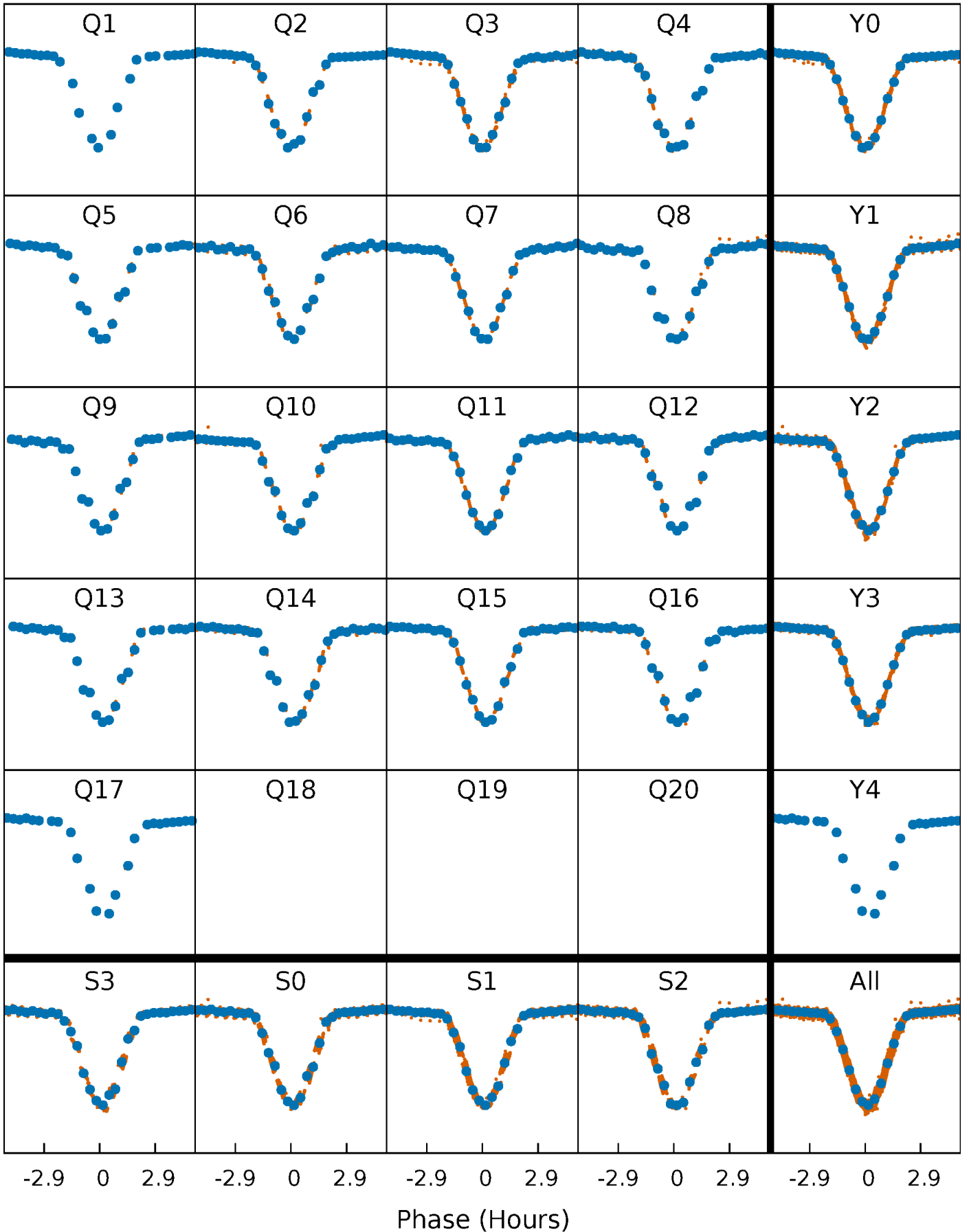


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

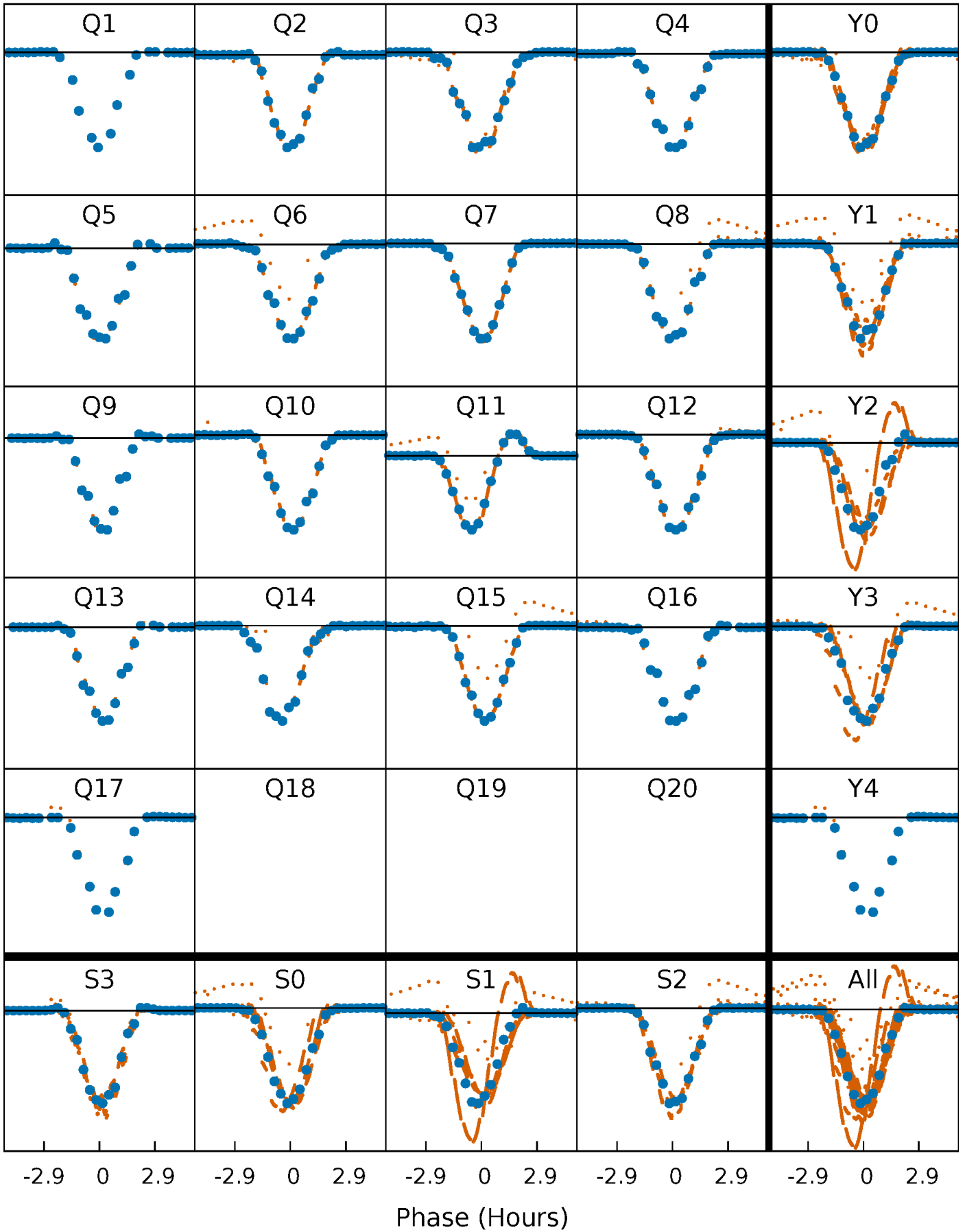
TCE 004739194-01 P= 1.246576 Days  $T_0=132.021411$  (BKJD)





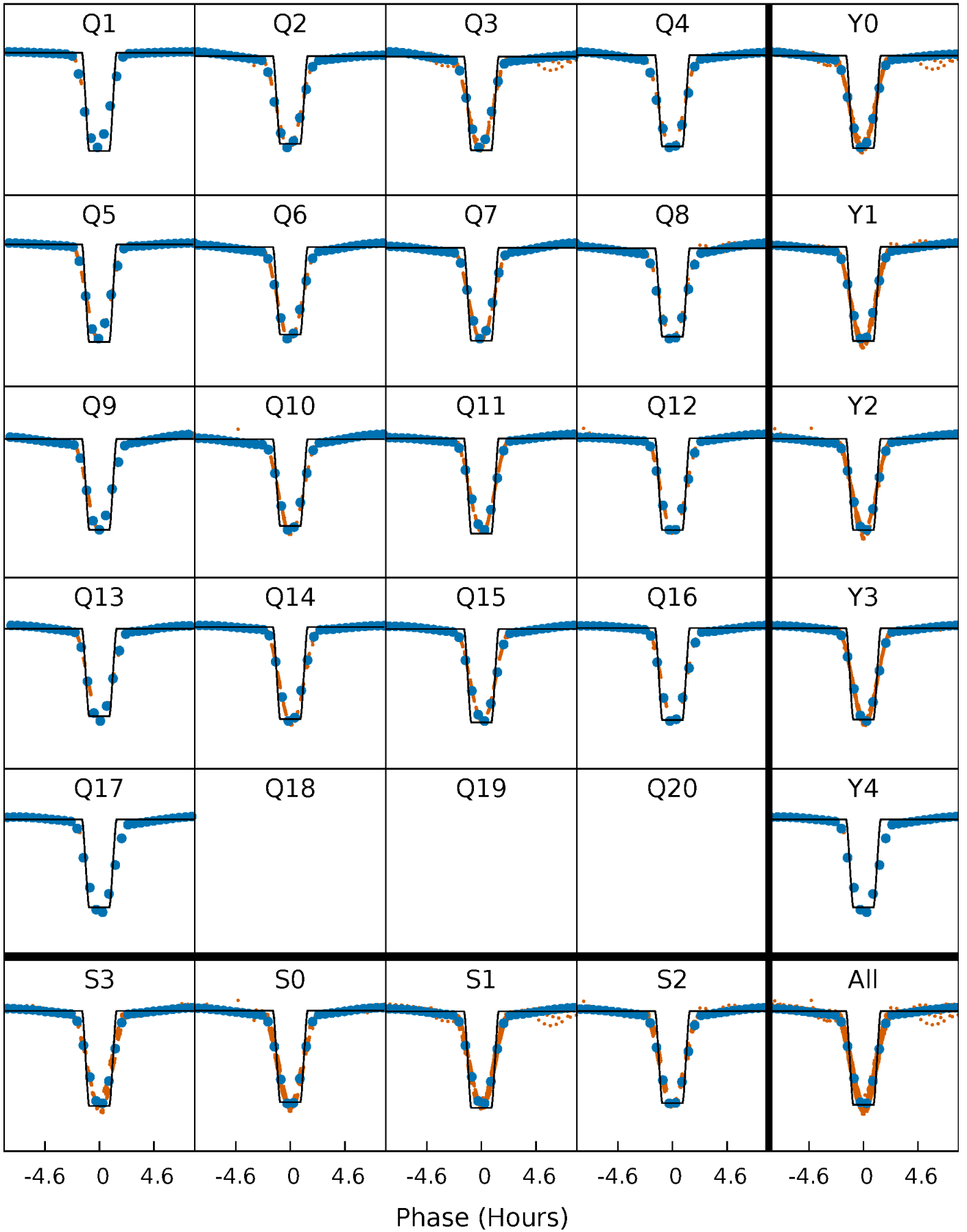
# DV Quarter-Phased Transit Curves

TCE 004739194-01 P= 1.246576 Days  $T_0=132.021411$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

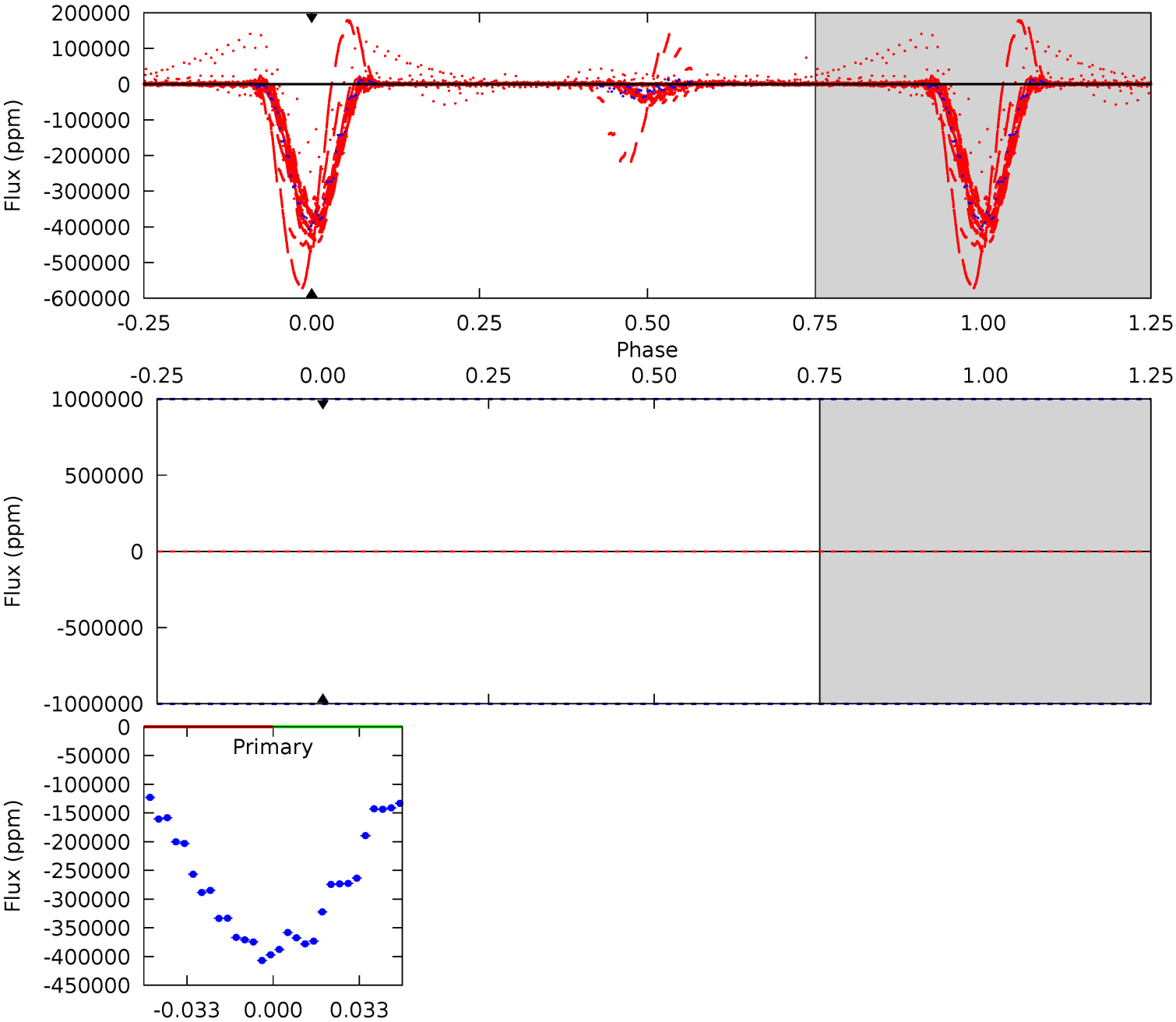
TCE 004739194-01   P= 1.246576 Days    $T_0=132.025096$  (BKJD)



# DV Model-Shift Uniqueness Test

004739194-01, P = 1.246576 Days, E = 130.774835 Days

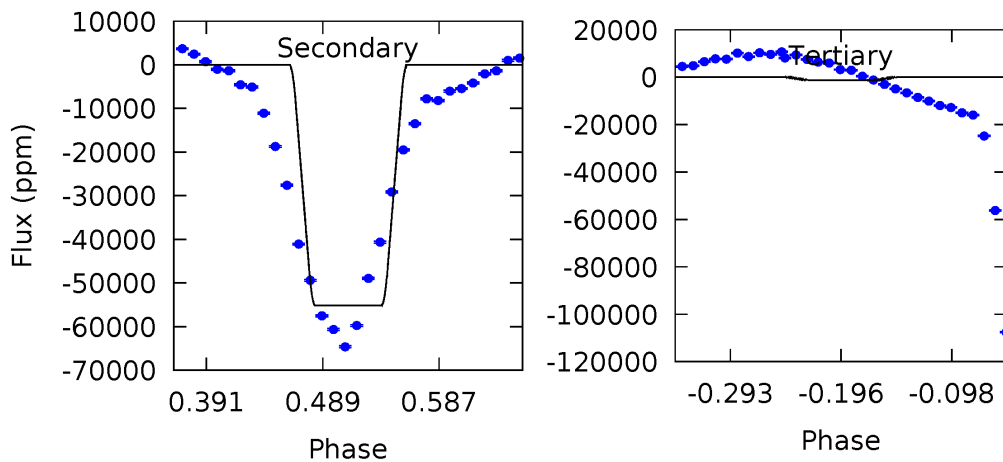
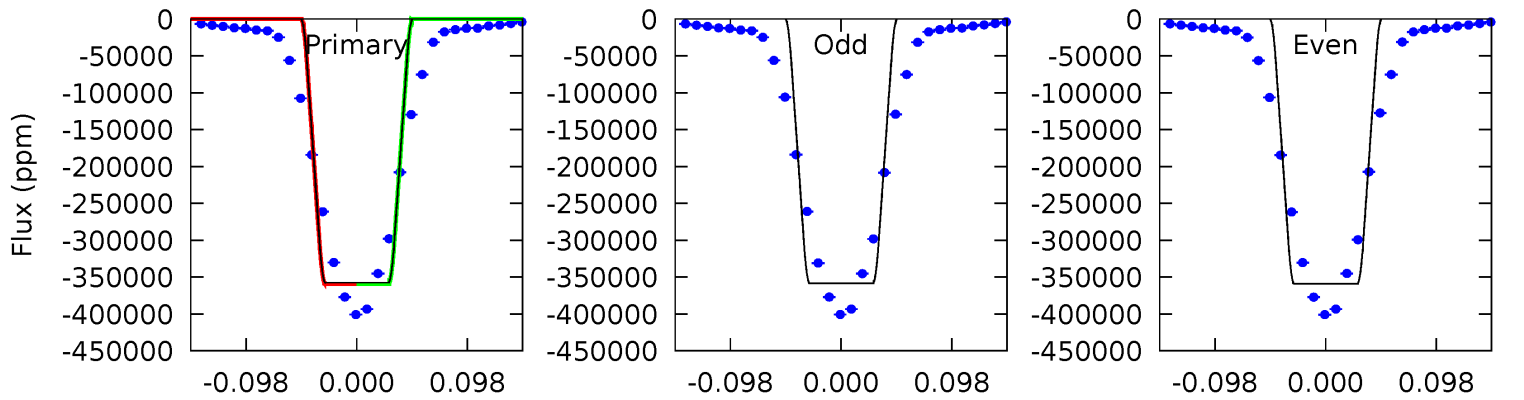
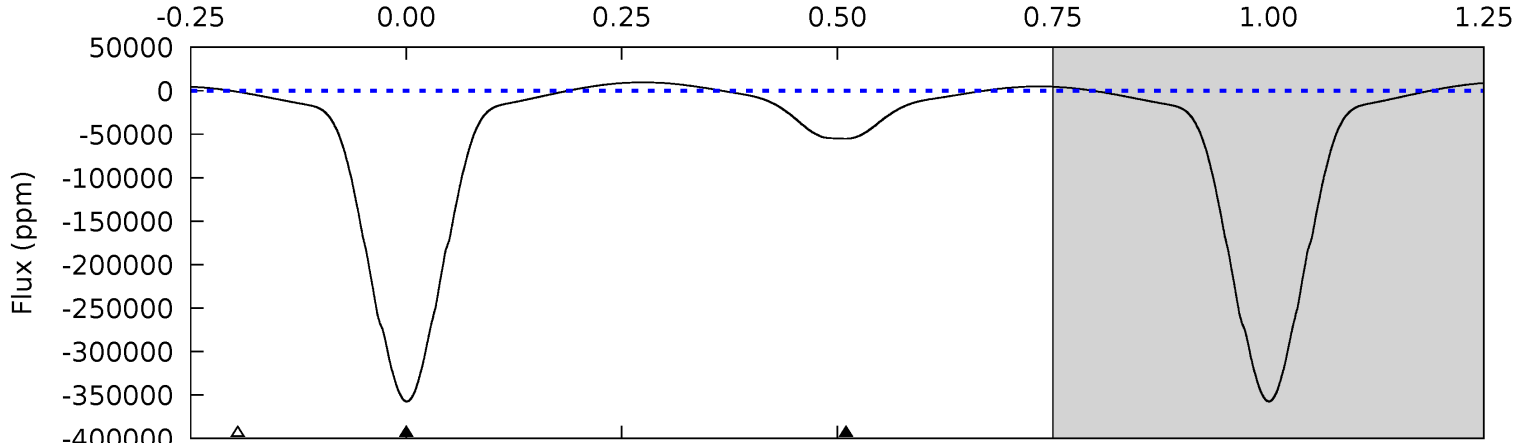
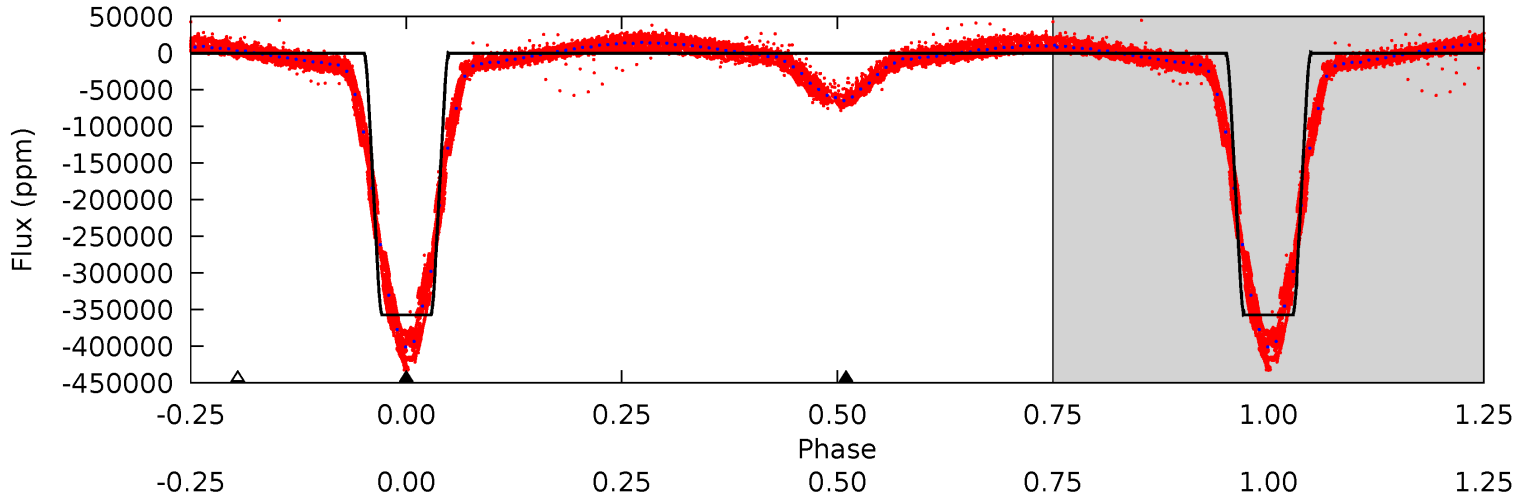
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004739194-01, P = 1.246576 Days, E = 130.778520 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
2746	423.8	9.46	0	4.57	1.66	59.5	2737	2746	414.4	423.8	1.61	0.99	0.03	0.46



### Stellar Parameters For KIC 004739194

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6440^{+77}_{-77}$	$4.369^{+0.035}_{-0.119}$	$-0.040^{+0.150}_{-0.200}$	$1.183^{+0.200}_{-0.067}$	$1.194^{+0.084}_{-0.084}$	$1.015^{+0.149}_{-0.341}$
	+1%/-1%	+1%/-3%	+375%/-500%	+17%/-6%	+7%/-7%	+15%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 004739194-01 / KOI 6442.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$42.16^{+14.32}_{-13.66}$	$2806^{+108}_{-68}$	$3517^{+3380}_{-9883}$	$1.232^{+22.808}_{-18.568}$
Alt.	$-55167 \pm 130$	$83.50^{+14.16}_{-13.66}$	$2806^{+118}_{-64}$	$4149^{+305}_{-249}$	$2.651^{+1.115}_{-0.711}$

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

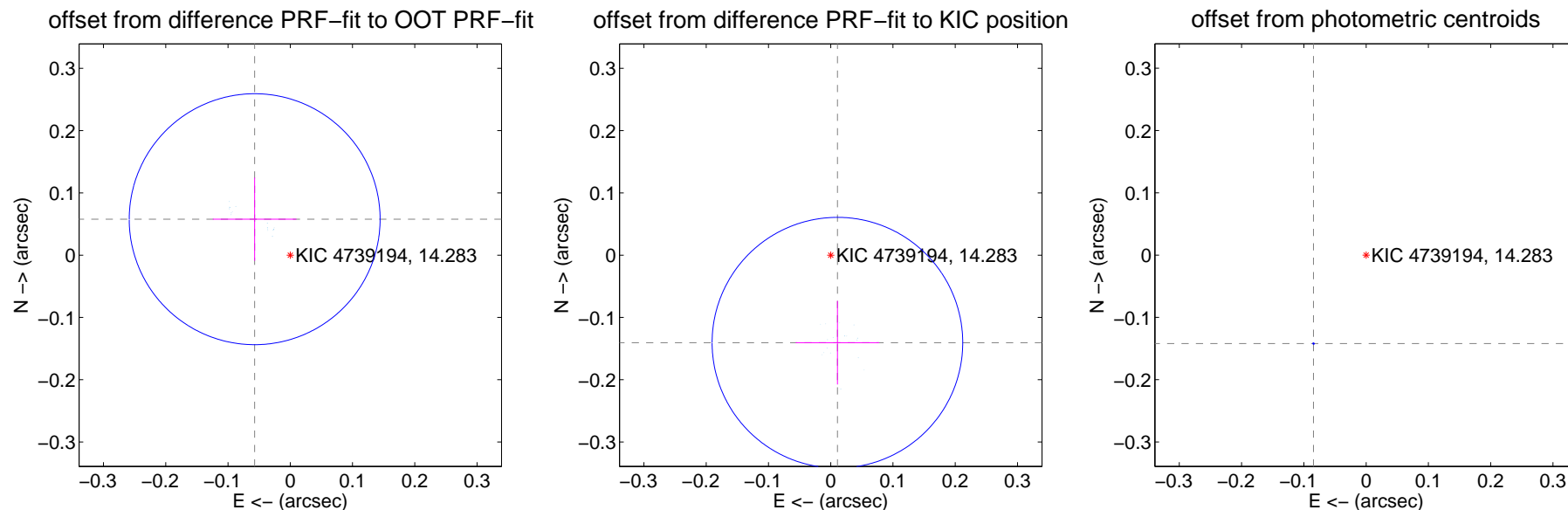
## DV Centroid Data

Supplemental centroid analysis for 004739194-01. Kepler magnitude: 14.28. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

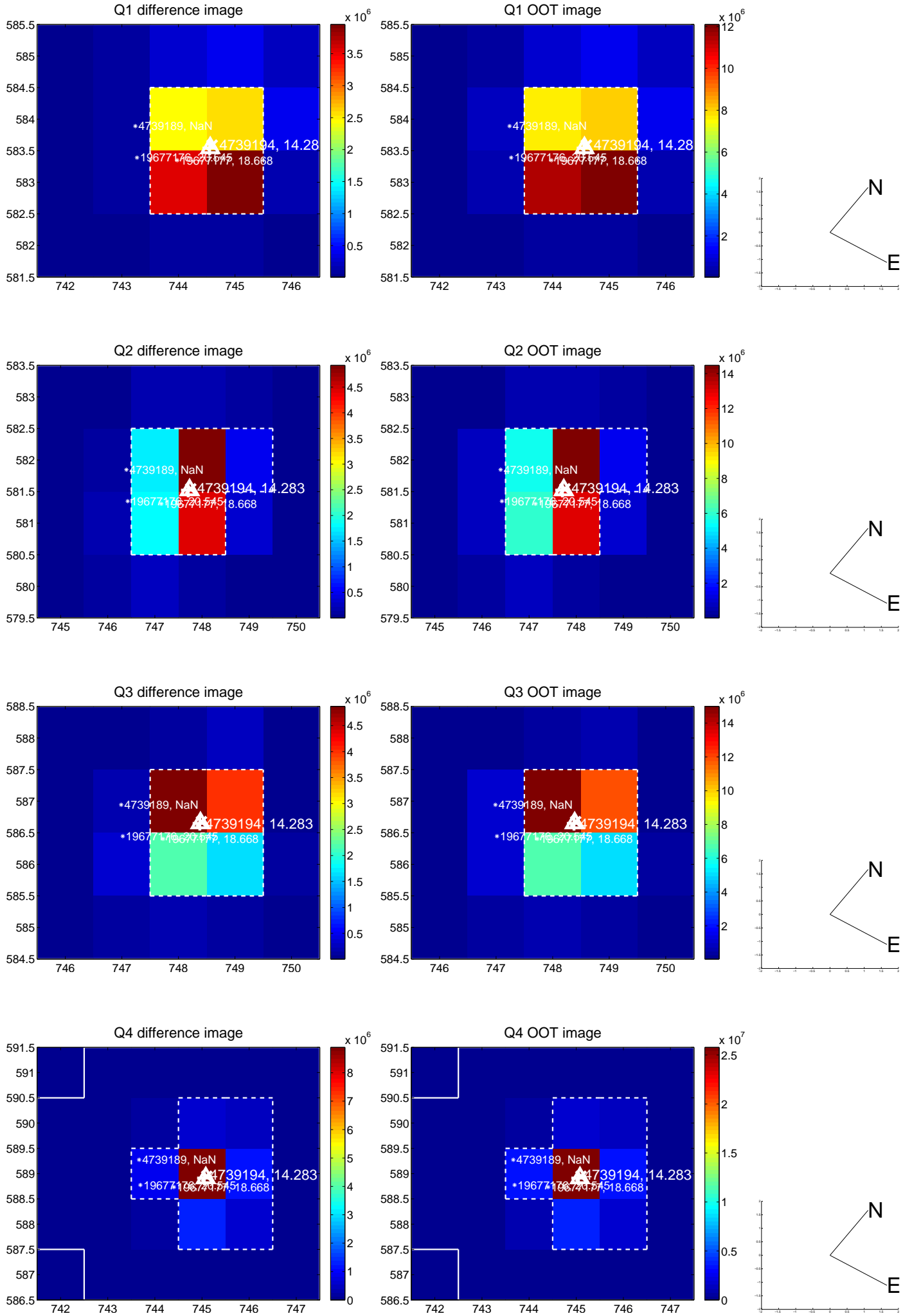
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.081 \pm 0.067$	1.21	$0.057 \pm 0.067$	$0.058 \pm 0.067$
PRF-fit source offset from KIC position	$0.141 \pm 0.067$	2.10	$-0.011 \pm 0.067$	$-0.141 \pm 0.067$
photometric centroid source offset	$0.17 \pm 0.00$	460.51	$0.08 \pm 0.00$	$-0.14 \pm 0.00$

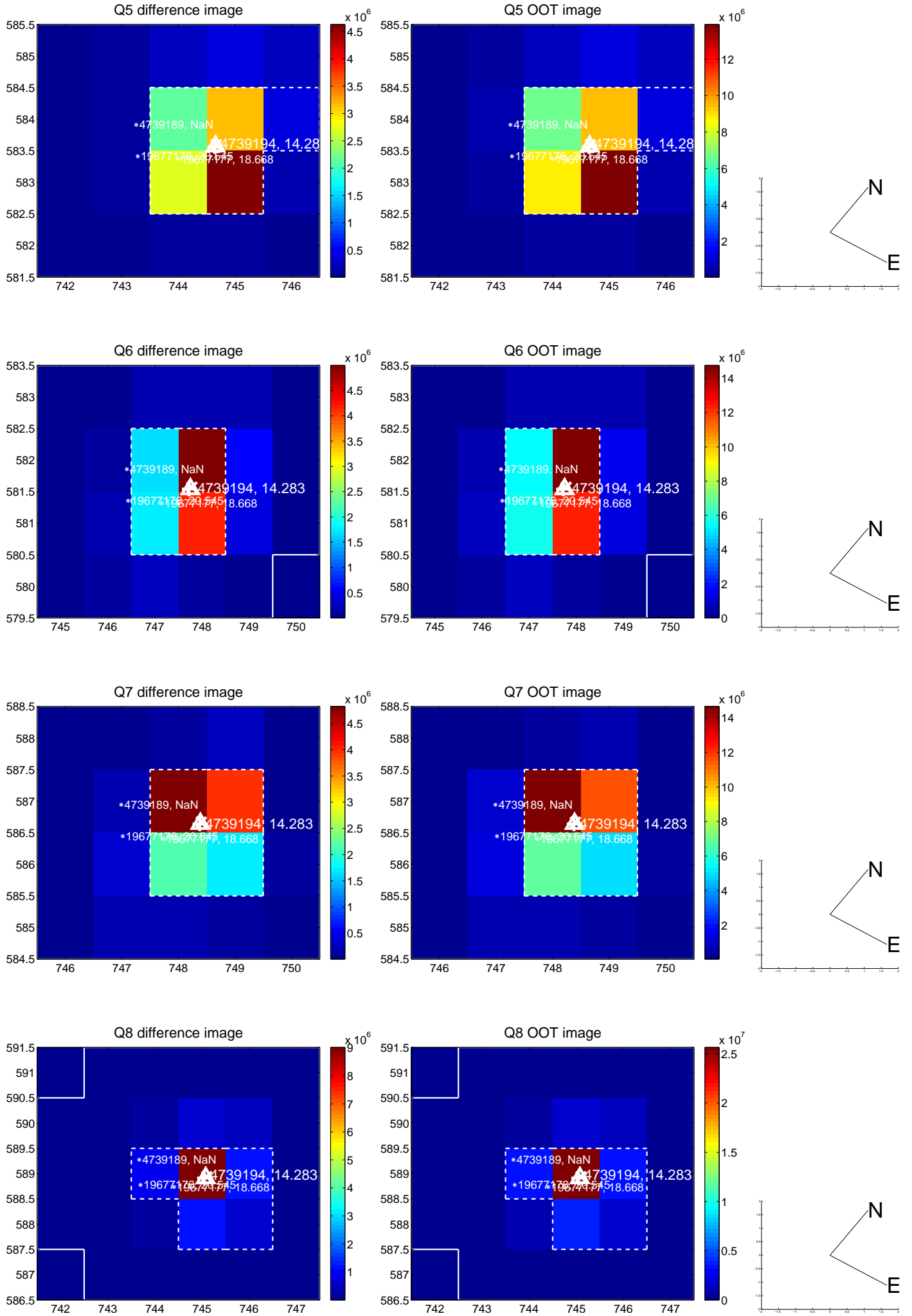


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

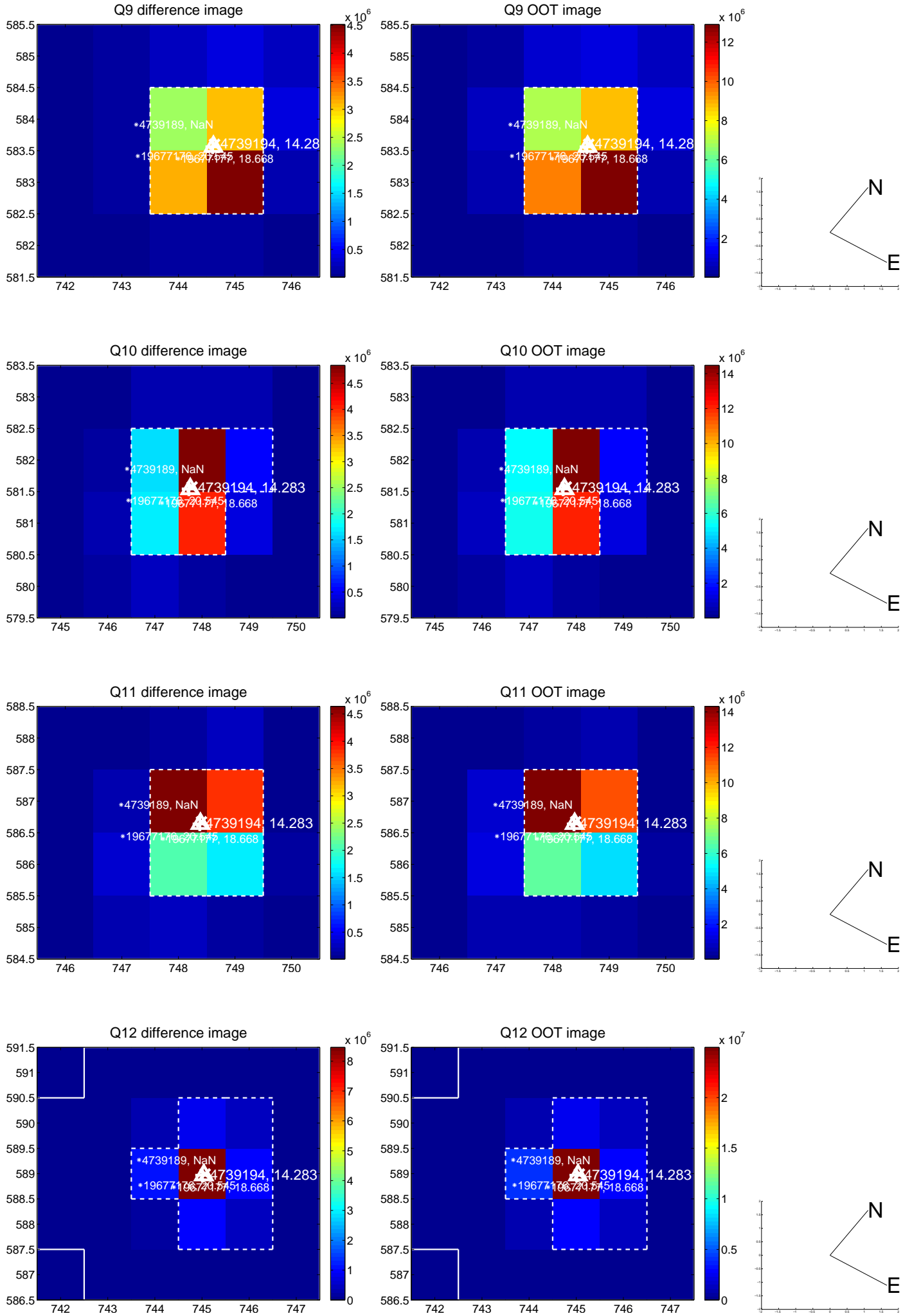


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

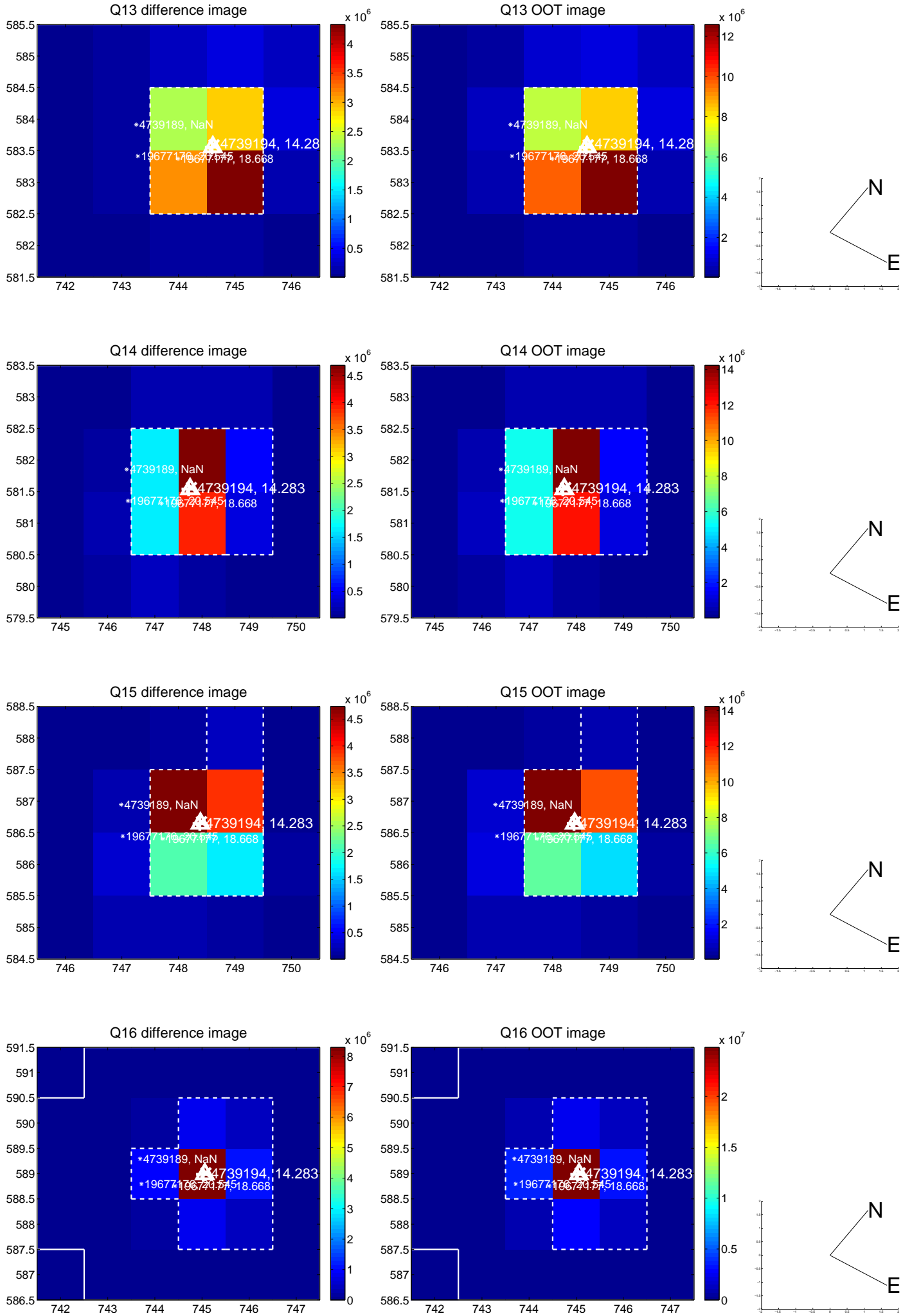




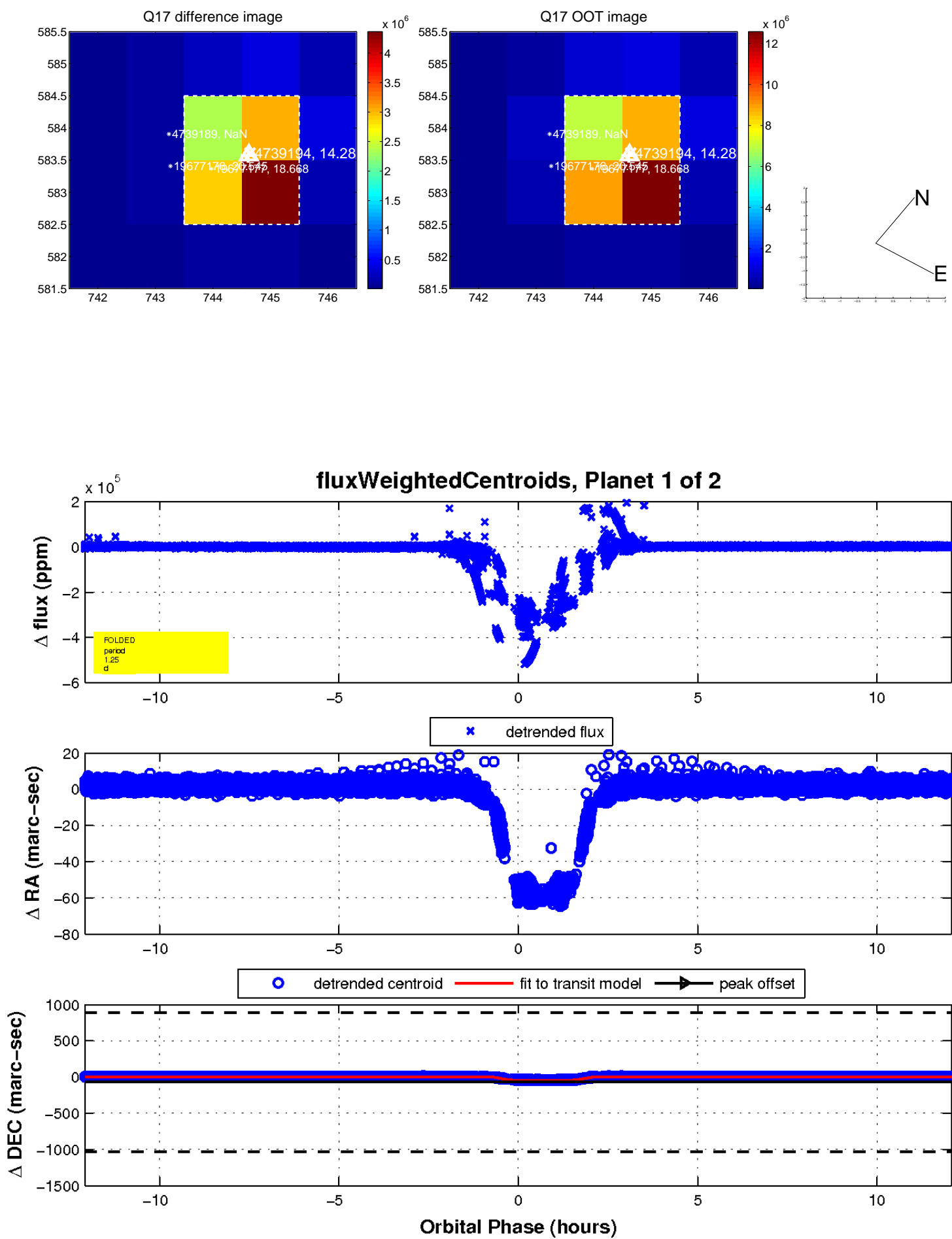
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

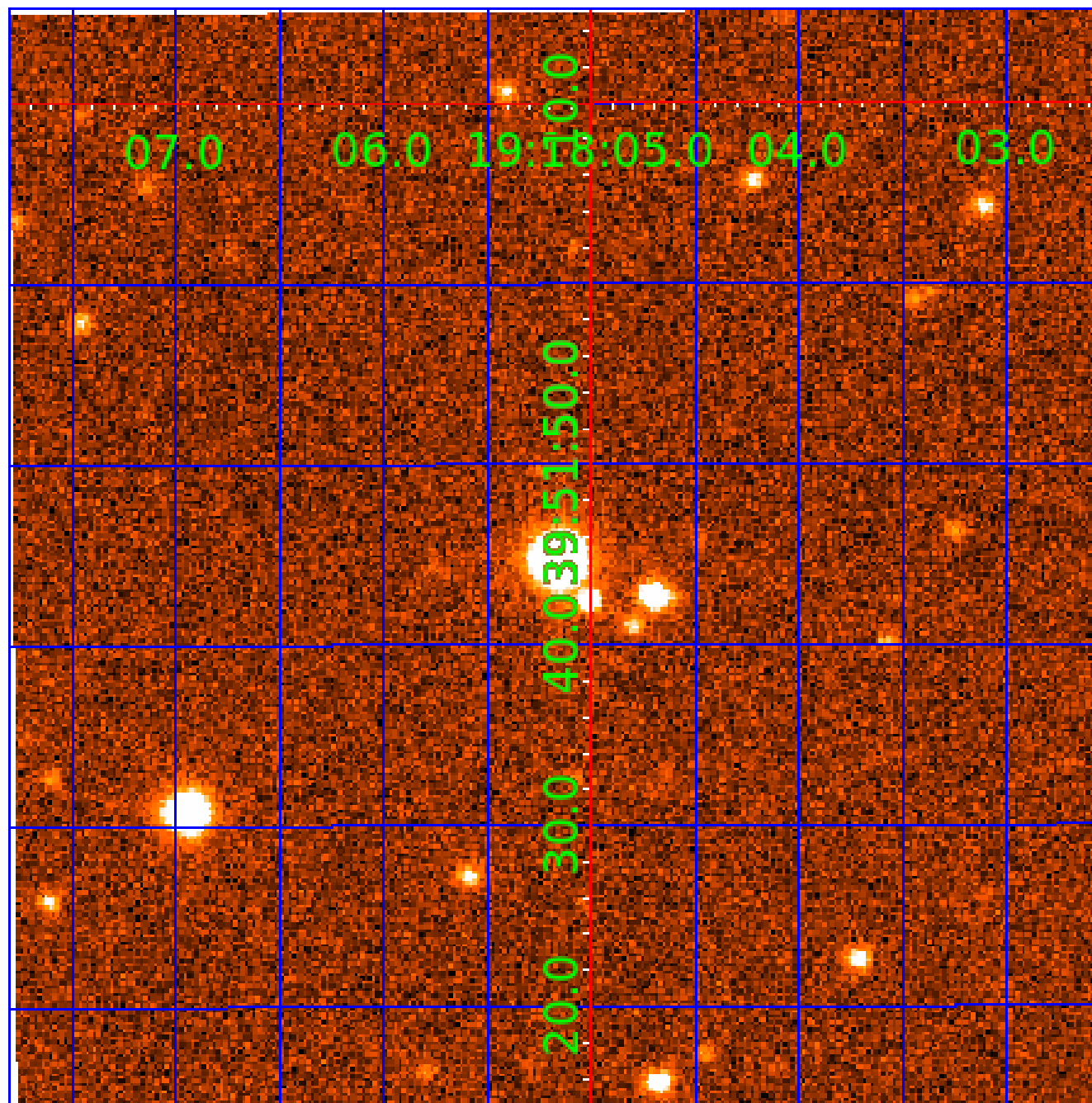


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004739194

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004739194-01	OBS	6442.01	1.246576	132.021411	420204.9	2.500	13455.3	-1.0	1.18	6440	40.61	3727.94
004739194-02	OBS	No	0.623266	132.032869	45500.7	1.500	868.5	-1.0	1.18	6440	25.52	9394.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004739194-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
004739194-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_NOFITS—HALO_GHOST

**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.

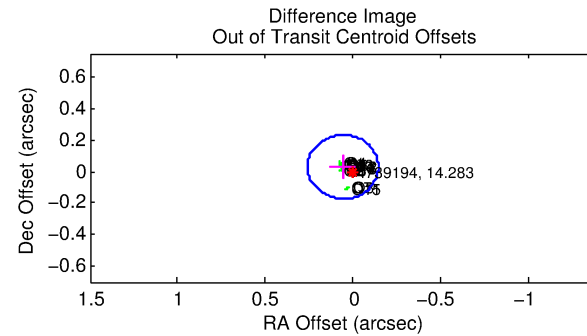
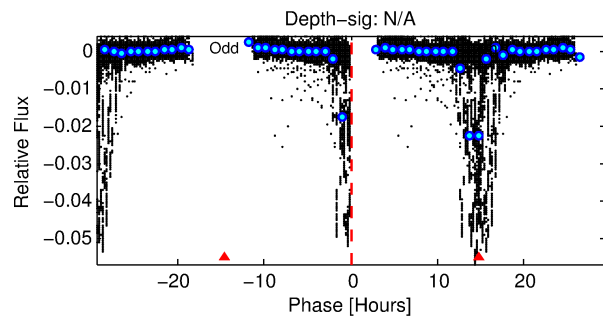
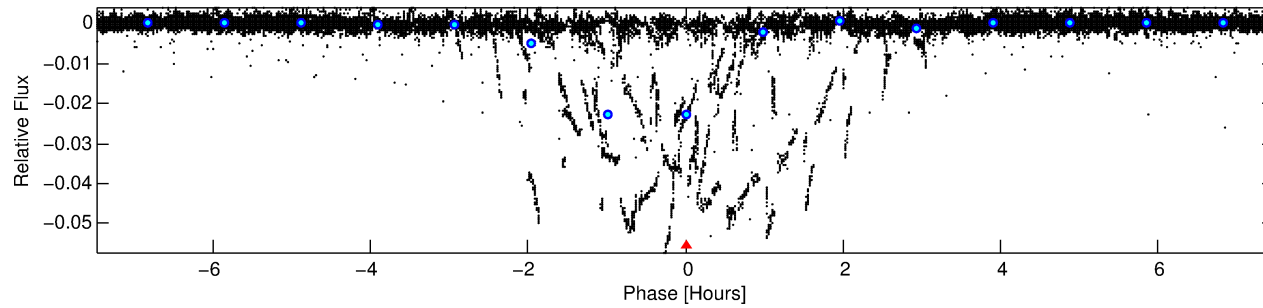
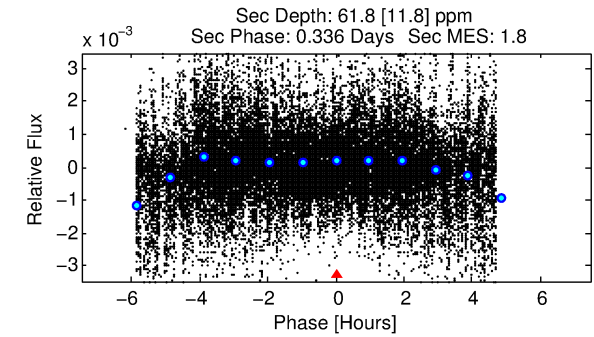
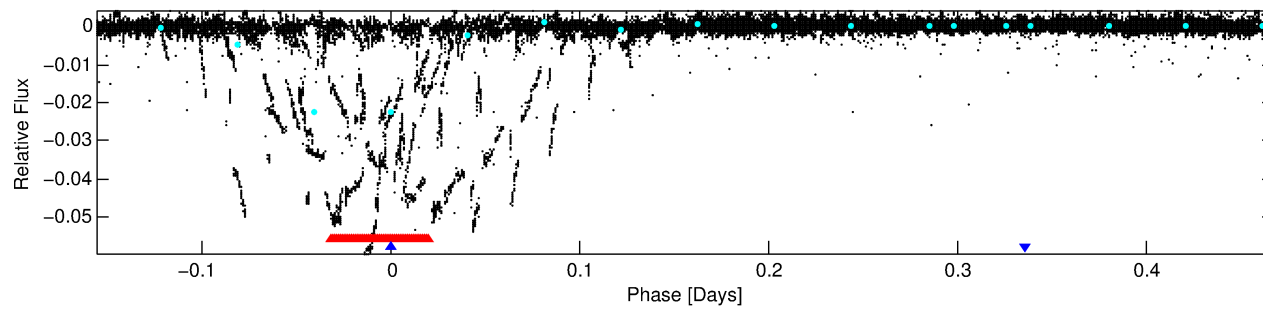
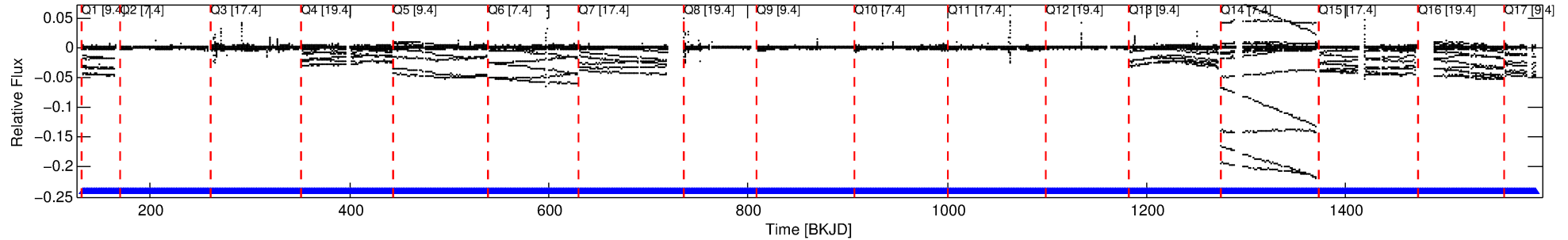
## Ephemeris Match Information For 004739194-02

No Significant Match Found

# DV One-Page Summary

KIC: 4739194 Candidate: 2 of 2 Period: 0.623 d  
KOI: K06442 Corr: No Ephemeris Match

Kp: 14.28 R\*: 1.18 Rs Teff: 6440.0 K Logg: 4.37 Fe/H: -0.040



## TPS TCE Results:

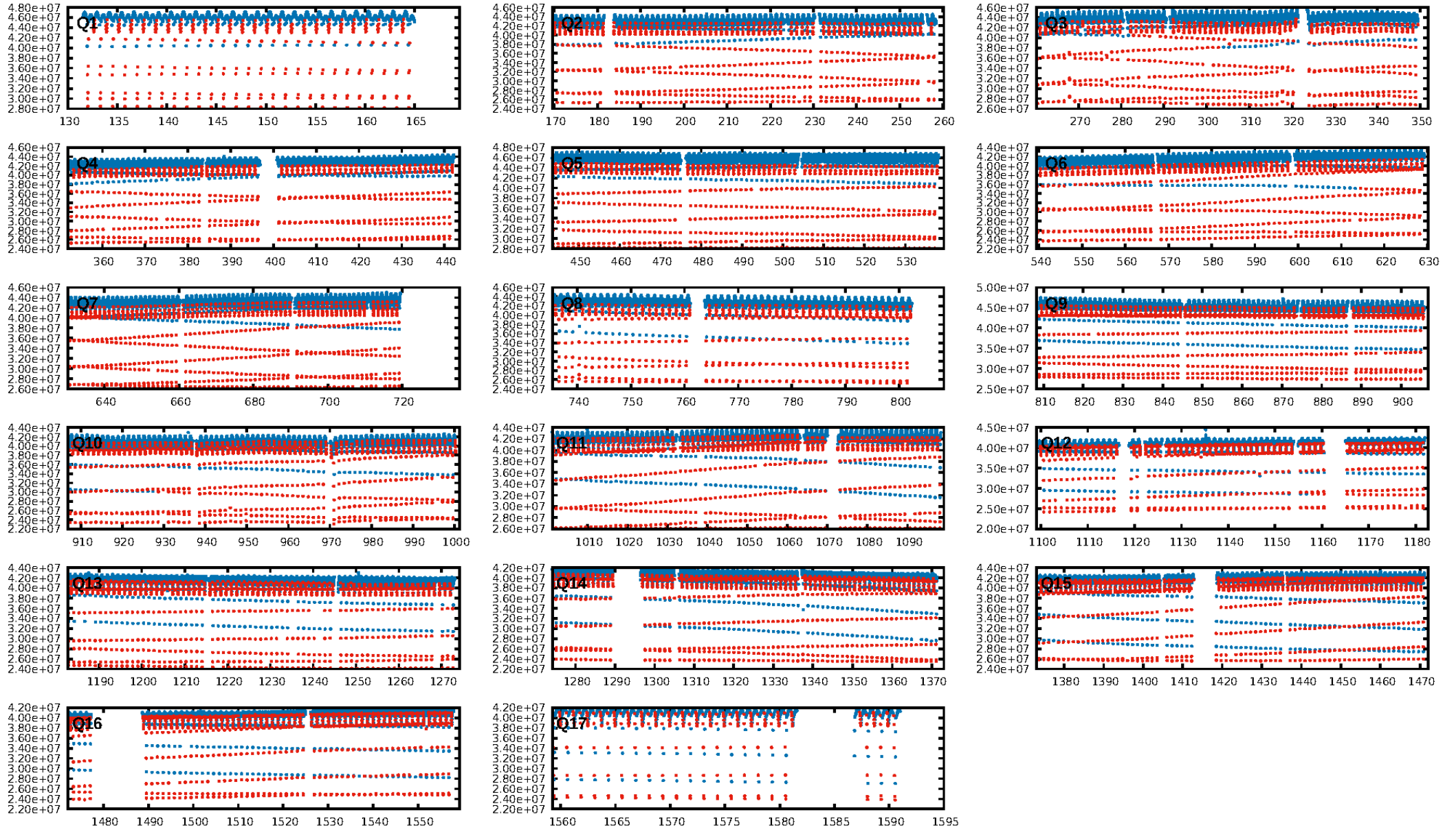
Period = 0.62327 d  
Epoch = 132.0329 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

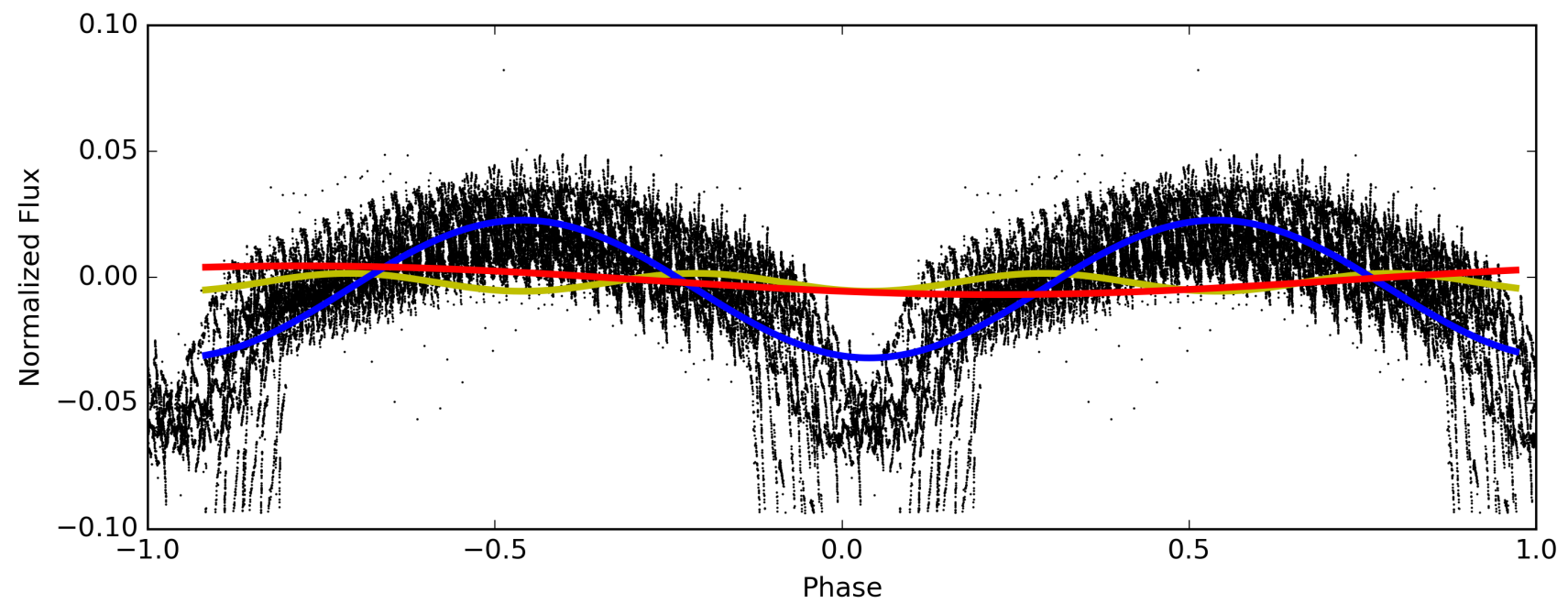
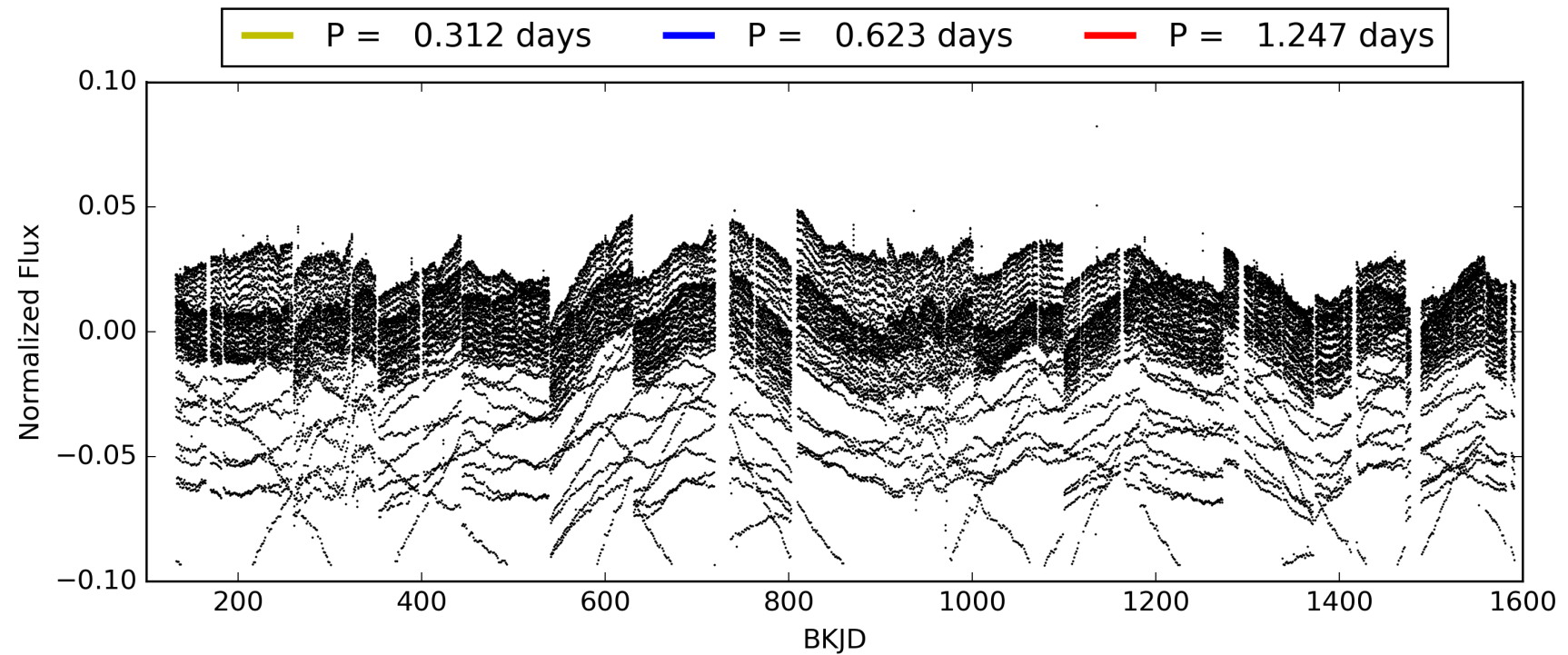
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.13σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1026/1026]  
GhostDiagnostic-chr: 0.1241  
Centroid-sig: N/A  
Centroid-so: 0.257 arcsec [311.58σ]  
OotOffset-rm: 0.066 arcsec [0.98σ]  
KicOffset-rm: 0.193 arcsec [2.85σ]  
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 004739194-02, PDC Light Curves





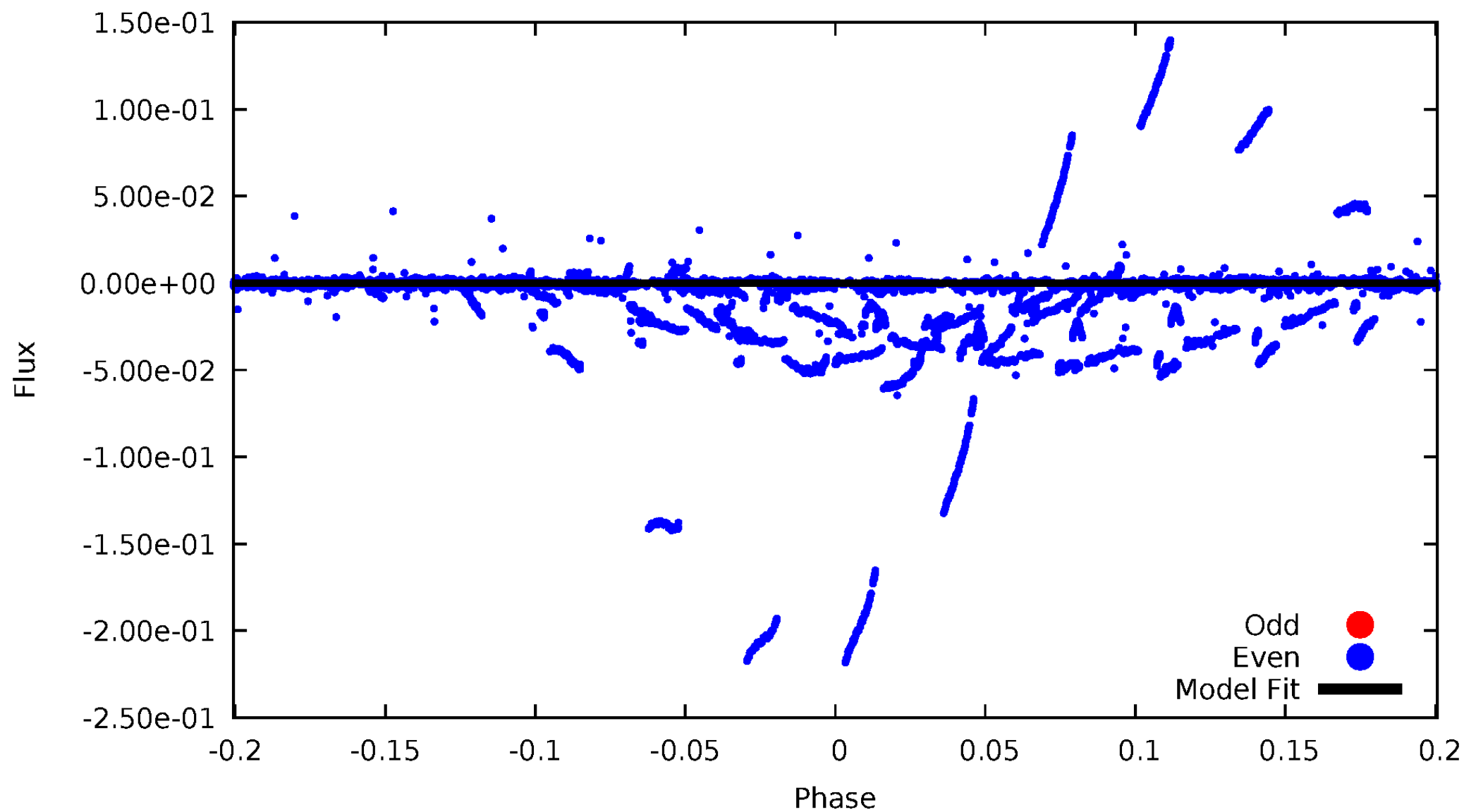
TCE 004739194-02





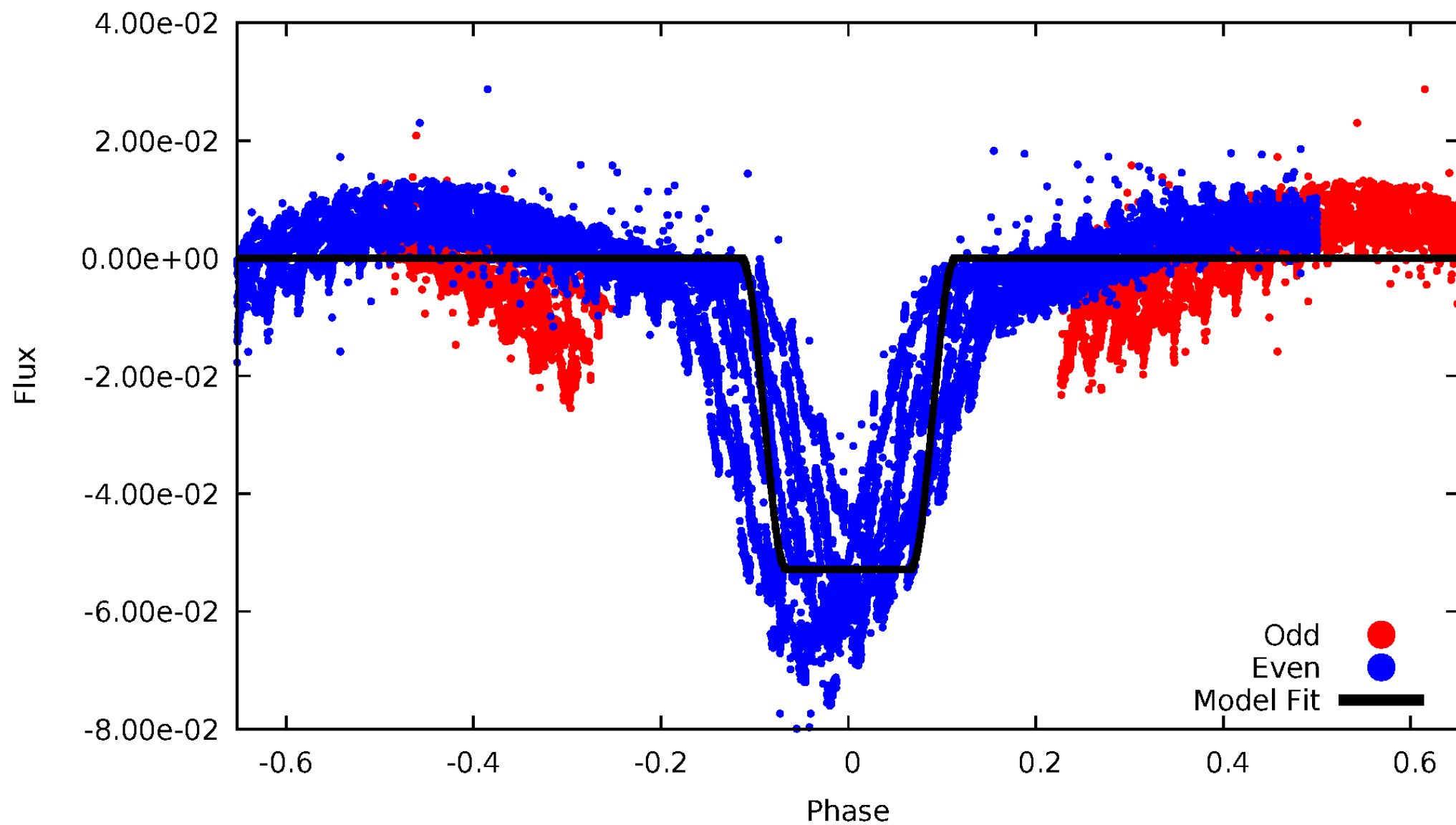
# DV Odd/Even

TCE 004739194-02



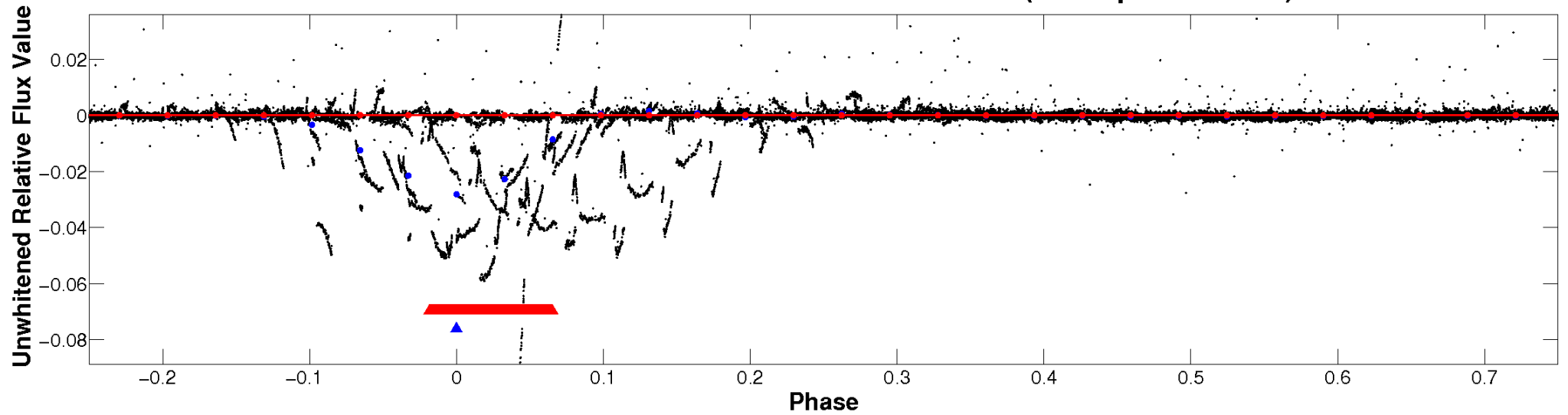
# ALT Odd/Even

TCE 004739194-02



# Non-Whitened Vs. Whitened Light Curve

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

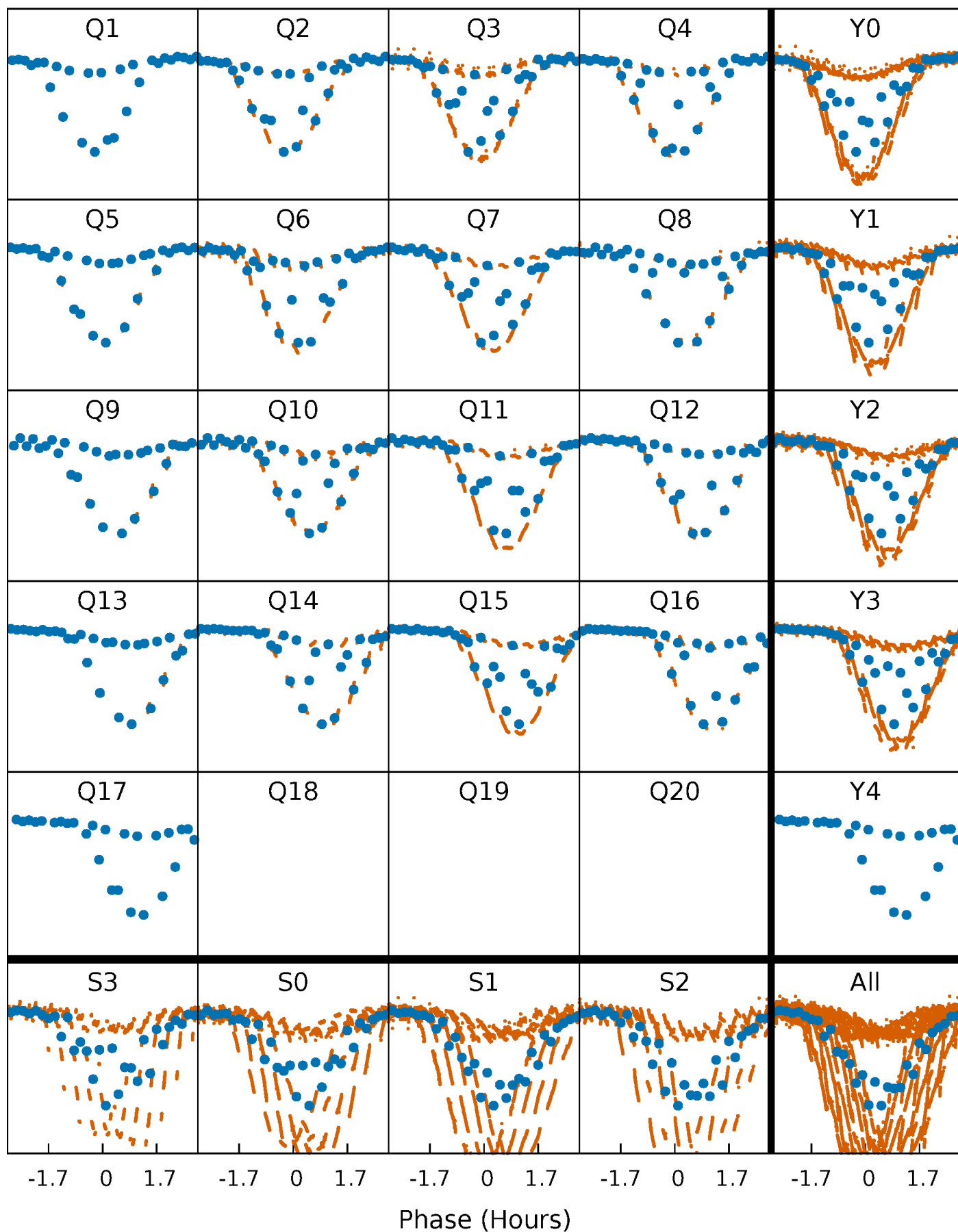


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



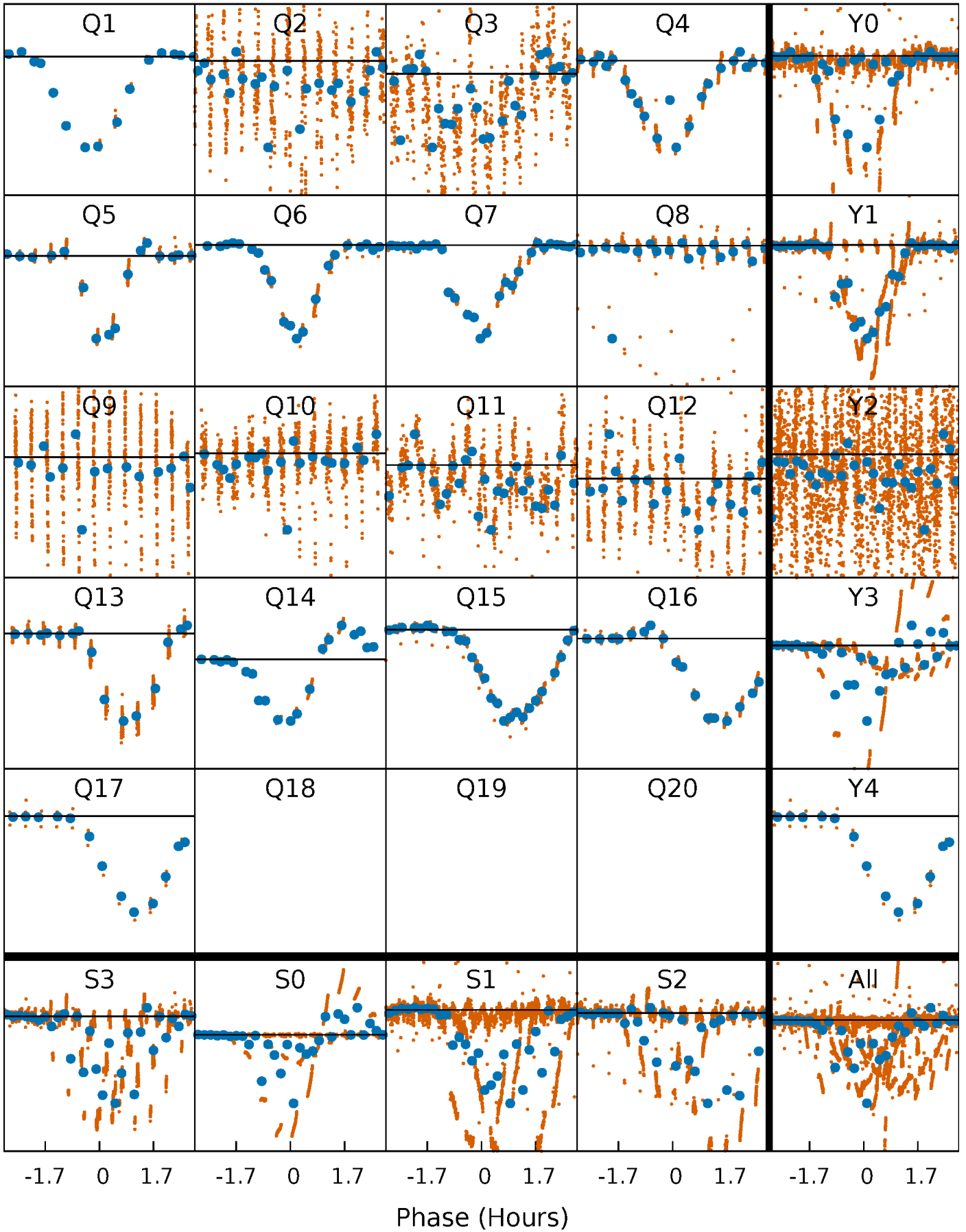
# PDC Quarter-Phased Transit Curves

TCE 004739194-02   P= 0.623266 Days    $T_0=132.032869$  (BKJD)



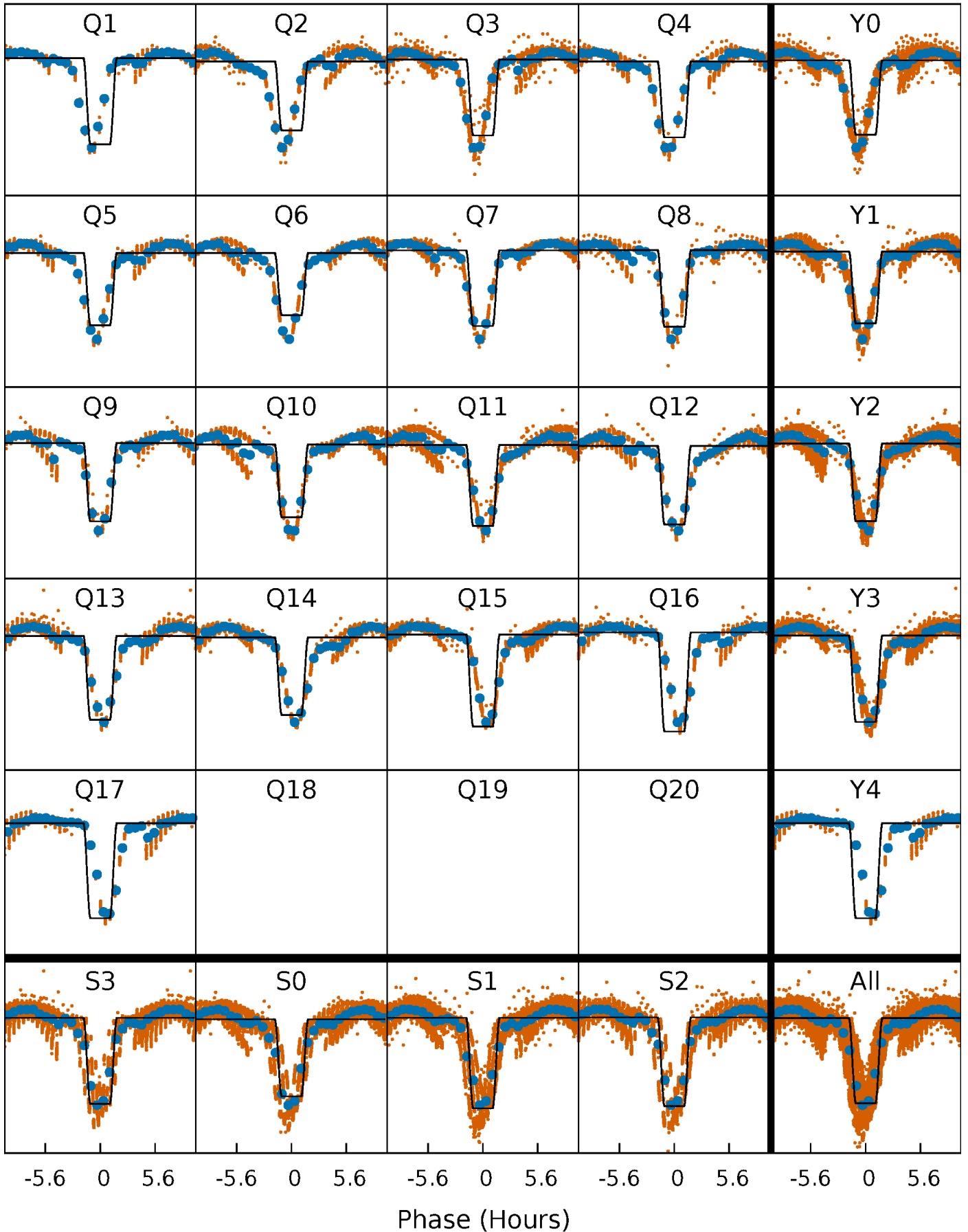
# DV Quarter-Phased Transit Curves

TCE 004739194-02     $P = 0.623266$  Days     $T_0 = 132.032869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

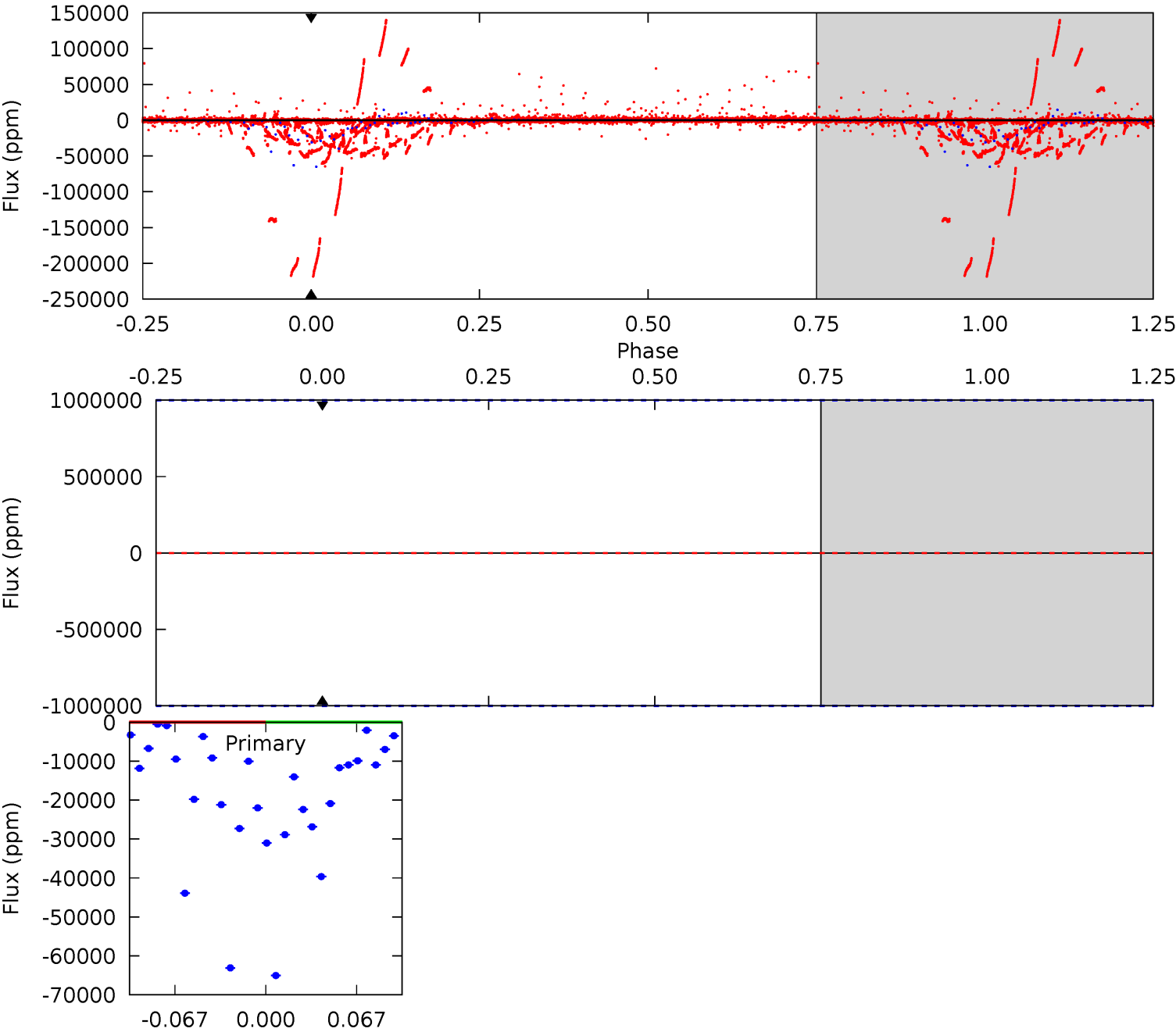
TCE 004739194-02     $P = 0.623266$  Days     $T_0 = 132.057063$  (BKJD)



# DV Model-Shift Uniqueness Test

004739194-02, P = 0.623266 Days, E = 131.409603 Days

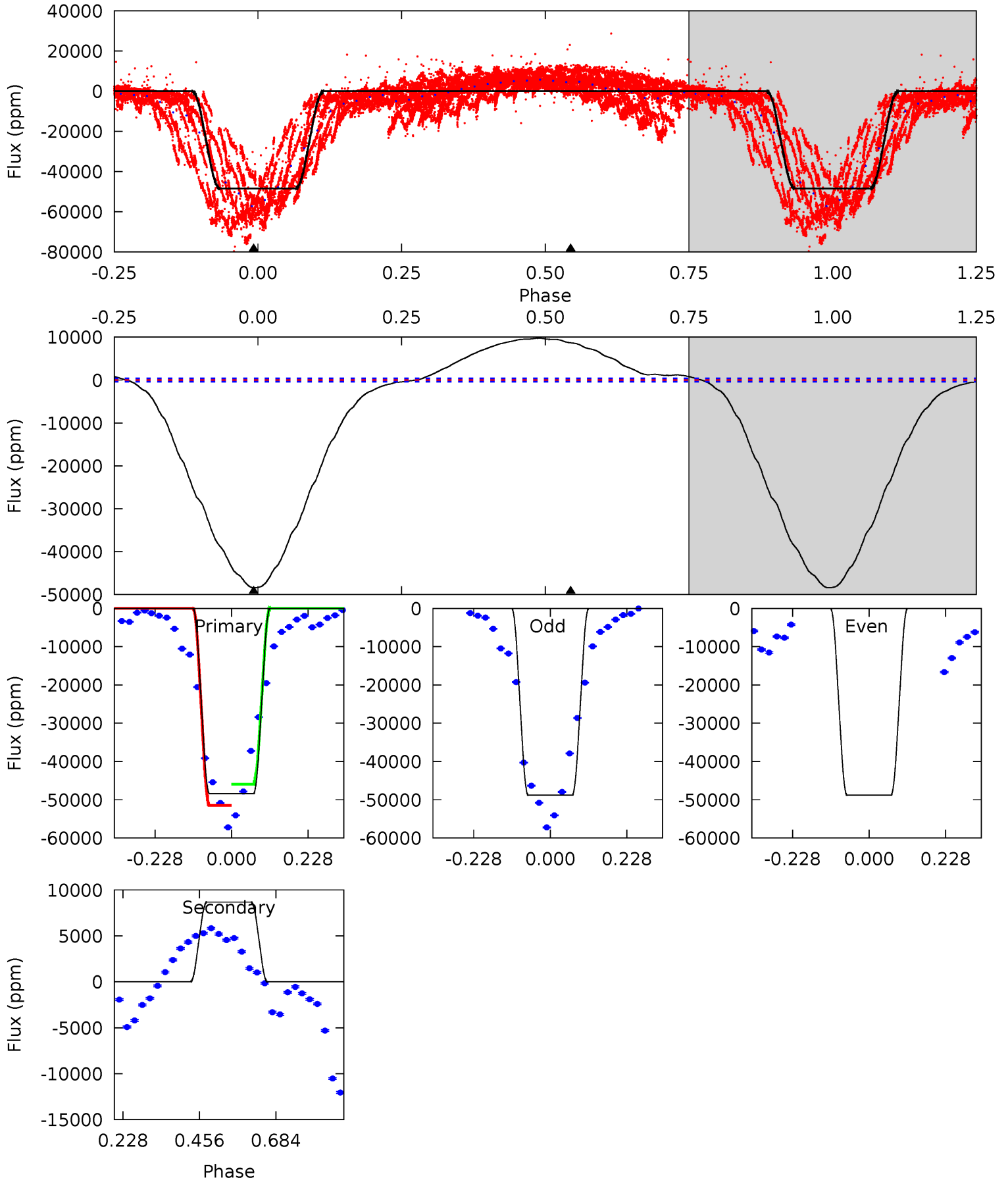
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004739194-02, P = 0.623266 Days, E = 131.433797 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
584.3	-104.8	0	0	4.39	1.21	10.5	584.3	584.3	-104.8	-104.8	0	0.99	0.17	39.3





### Stellar Parameters For KIC 004739194

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6440^{+77}_{-77}$	$4.369^{+0.035}_{-0.119}$	$-0.040^{+0.150}_{-0.200}$	$1.183^{+0.200}_{-0.067}$	$1.194^{+0.084}_{-0.084}$	$1.015^{+0.149}_{-0.341}$
	+1%/-1%	+1%/-3%	+375%/-500%	+17%/-6%	+7%/-7%	+15%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 004739194-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$26.19^{+12.85}_{-12.53}$	$3541^{+132}_{-90}$	$-3217^{+12627}_{-5382}$	$0.130^{+26.525}_{-18.485}$
Alt.	$8680 \pm 83$	$30.70^{+13.84}_{-13.04}$	$3543^{+135}_{-86}$	$-4513^{+436}_{-1005}$	$-1.153^{+0.607}_{-2.187}$

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

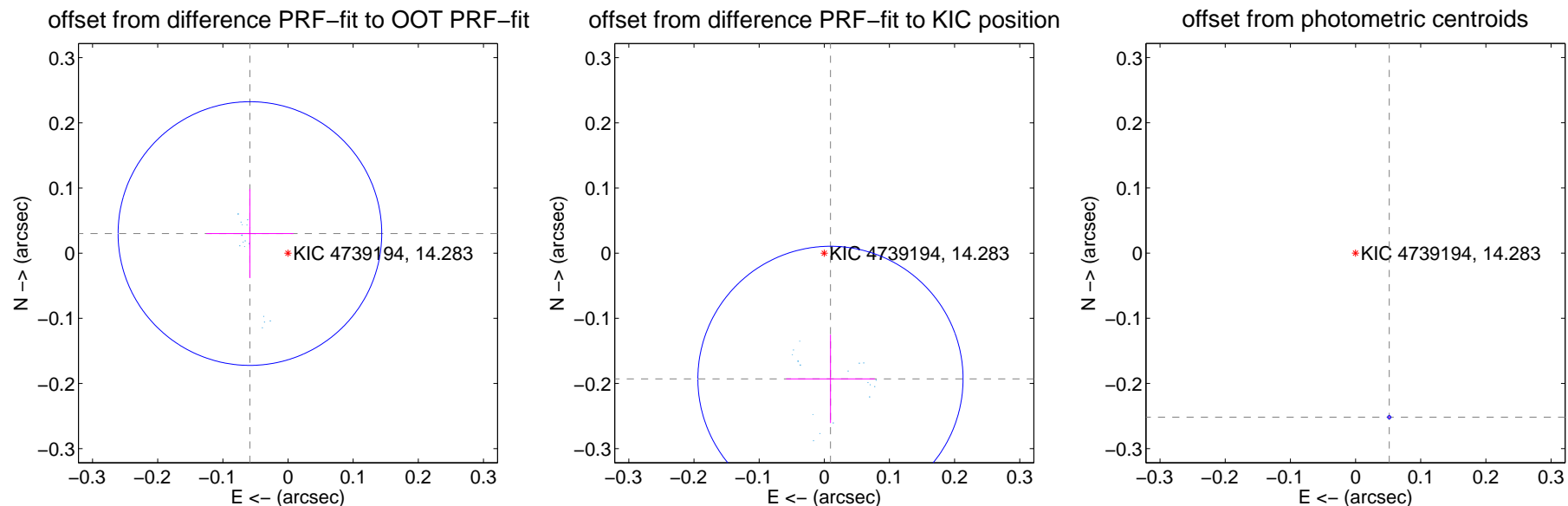
## DV Centroid Data

Supplemental centroid analysis for 004739194-02. Kepler magnitude: 14.28. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

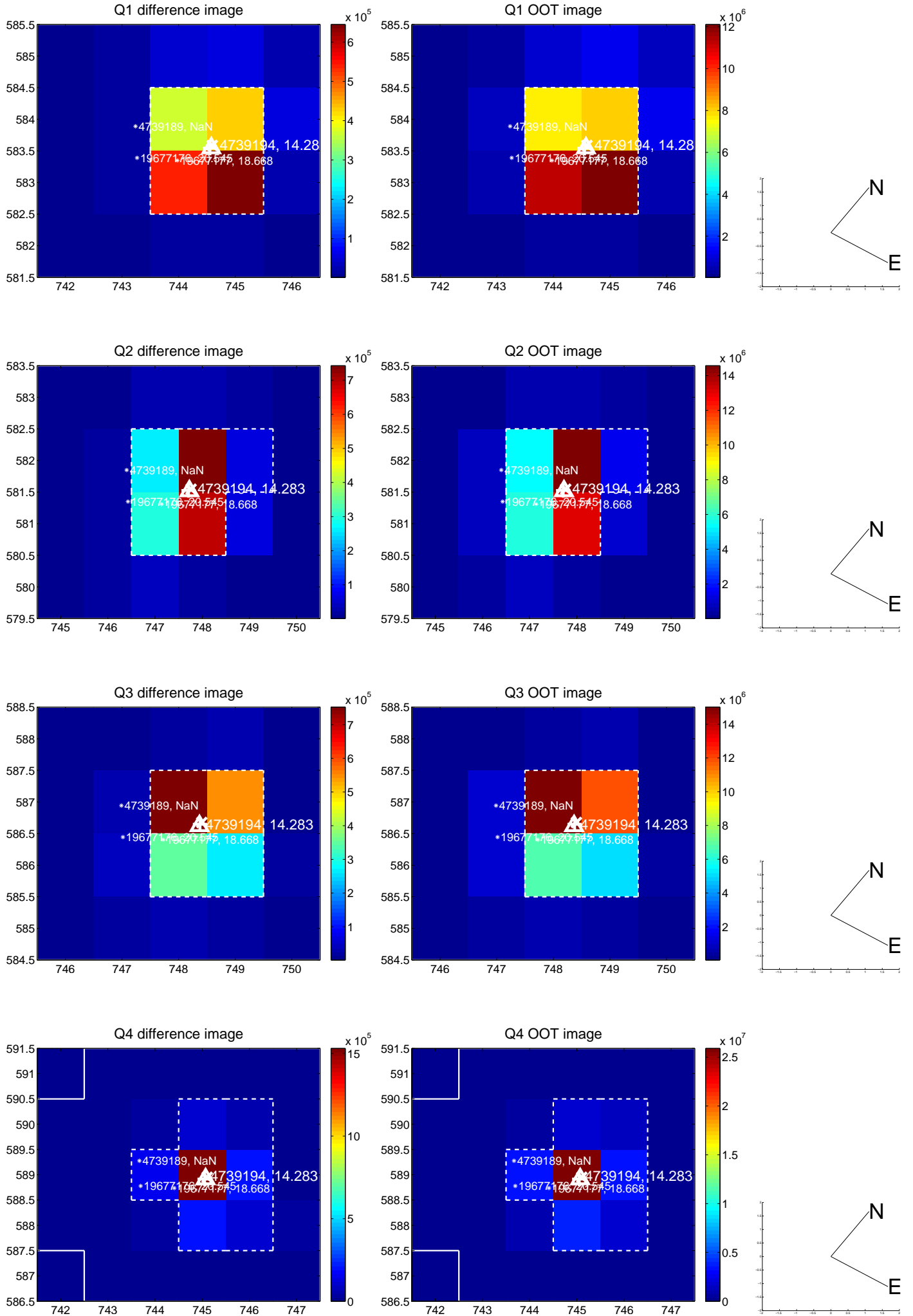
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.066 \pm 0.067$	0.98	$0.058 \pm 0.067$	$0.030 \pm 0.068$
PRF-fit source offset from KIC position	$0.193 \pm 0.068$	2.85	$-0.009 \pm 0.068$	$-0.193 \pm 0.068$
photometric centroid source offset	$0.26 \pm 0.00$	311.58	$-0.05 \pm 0.00$	$-0.25 \pm 0.00$

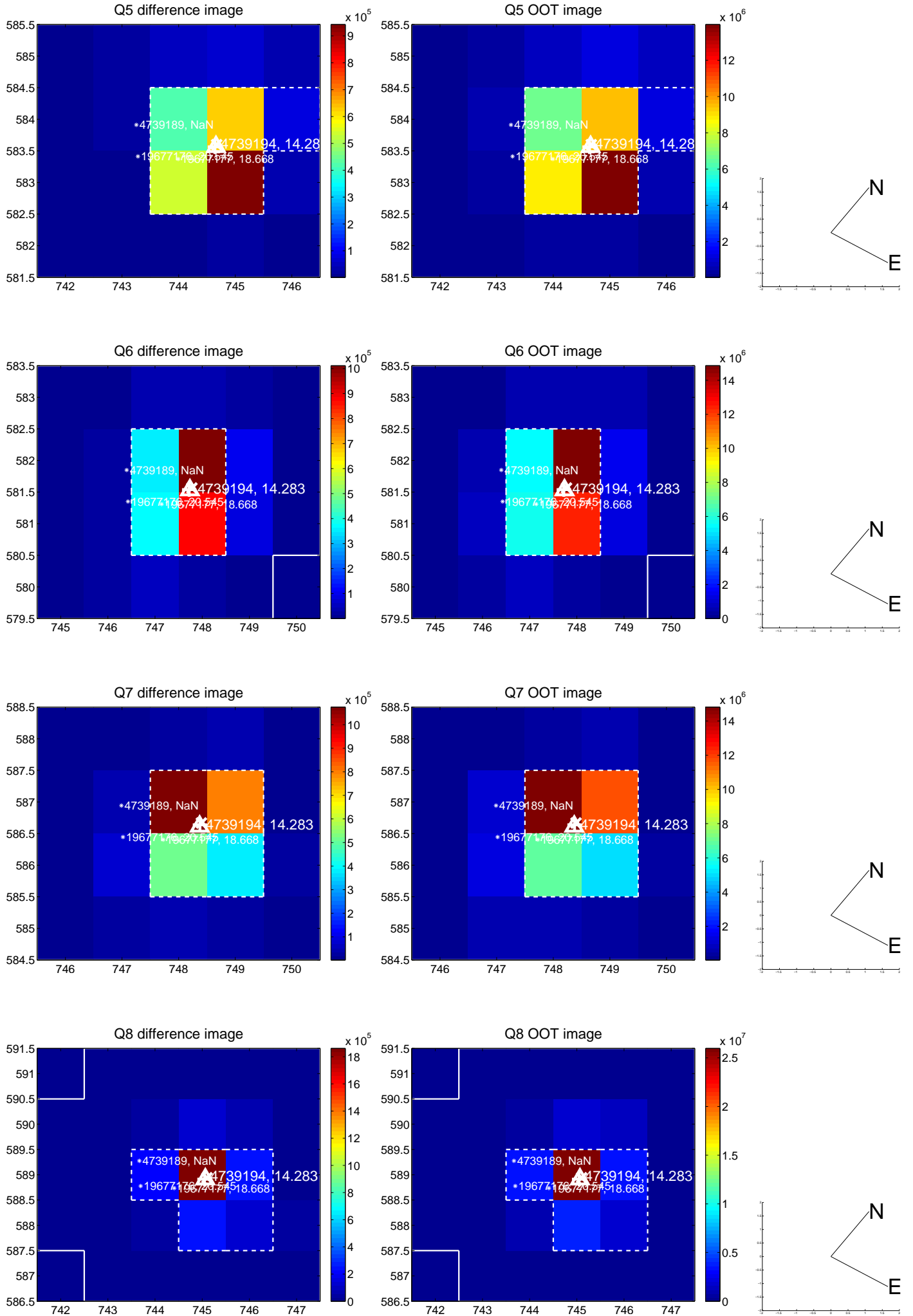


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

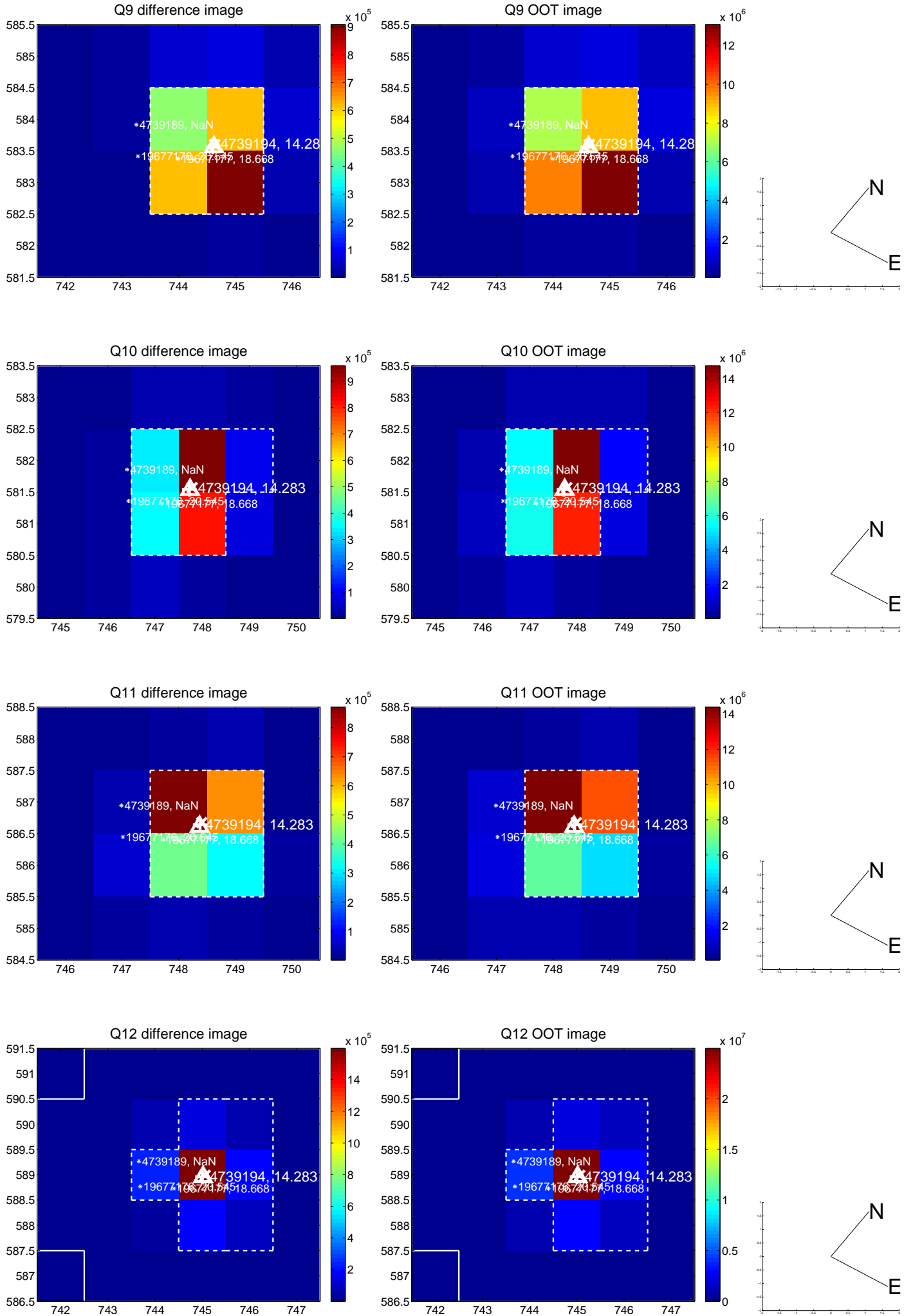
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



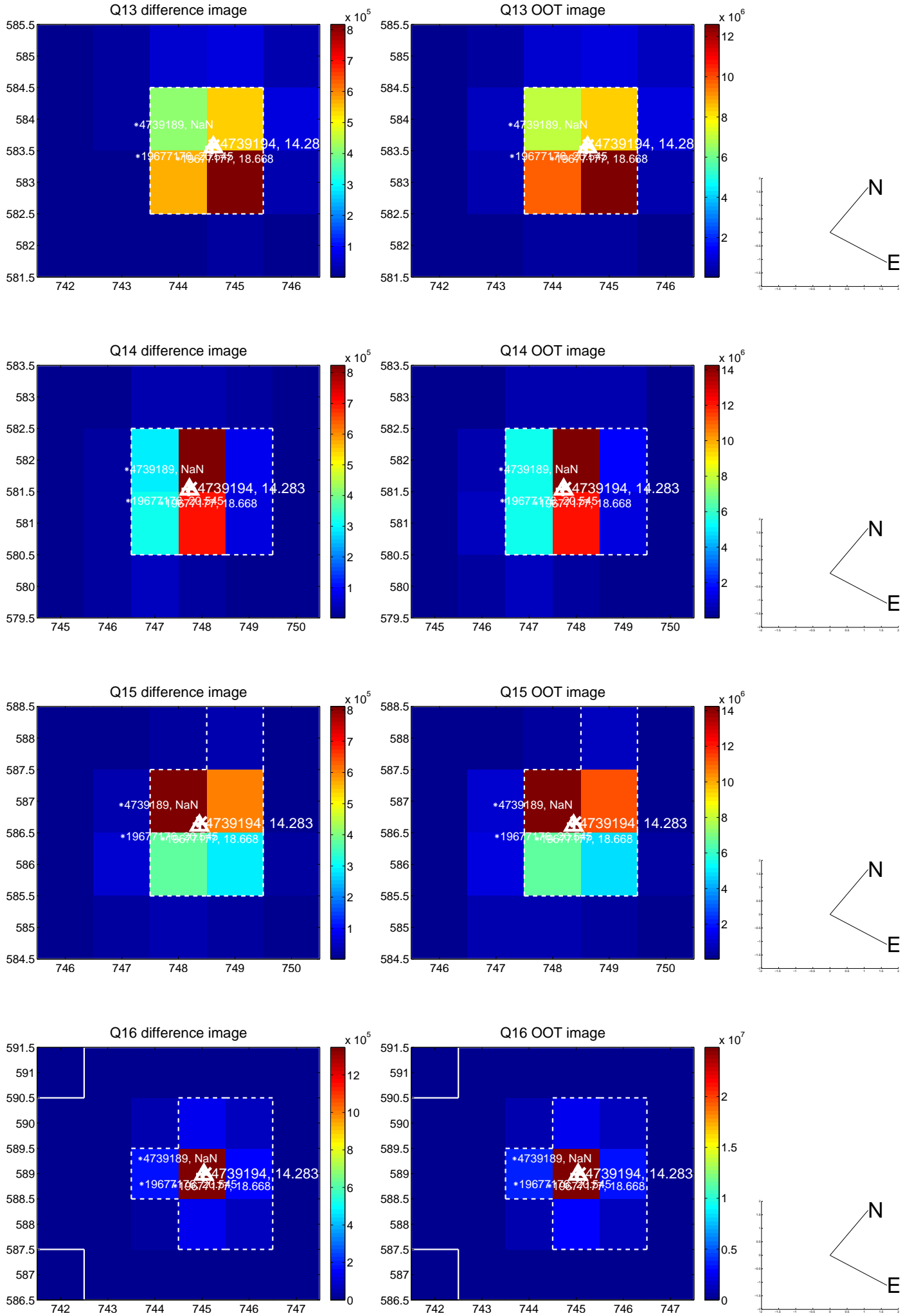
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



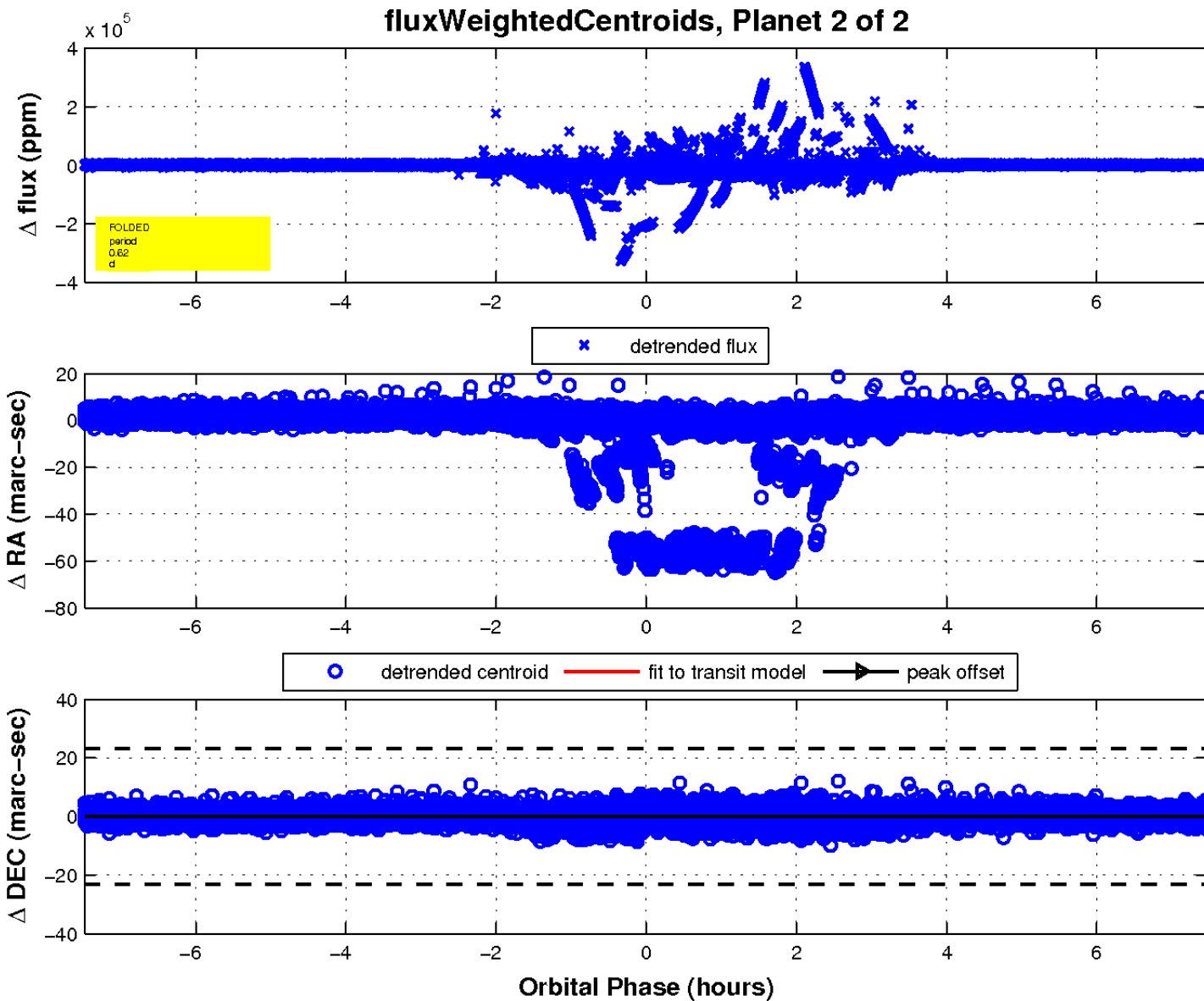
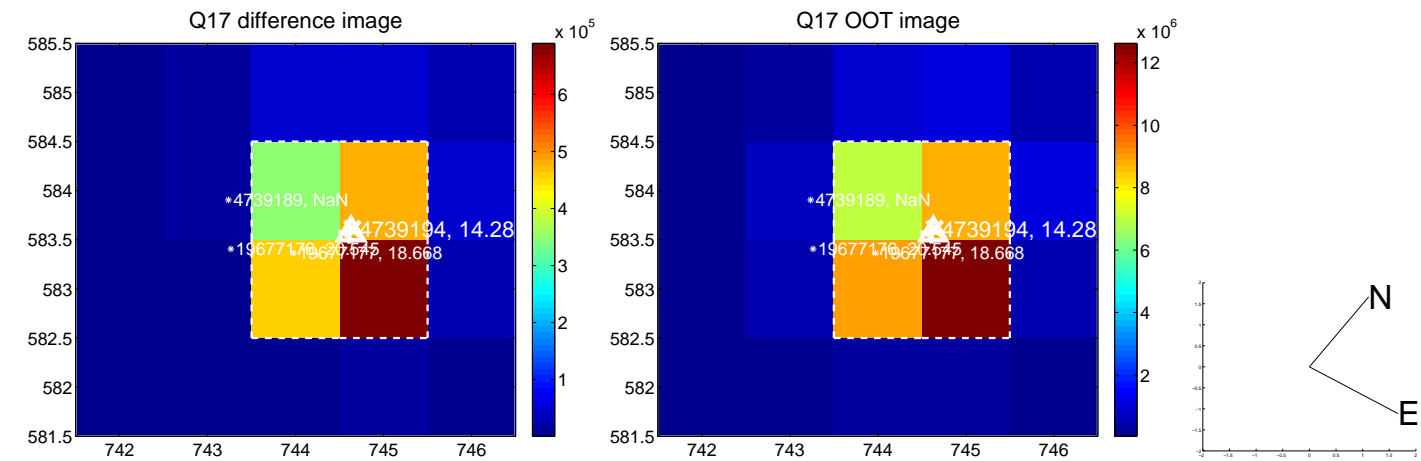
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

