

# KIC 007624297

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007624297-01	OBS	6040.01	18.019652	148.667383	177813.1	5.098	6030.0	3862.4	0.66	5278	42.06	20.75
007624297-02	OBS	No	18.019657	139.784643	10469.3	5.024	378.4	374.7	0.66	5278	10.85	20.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007624297-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
007624297-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

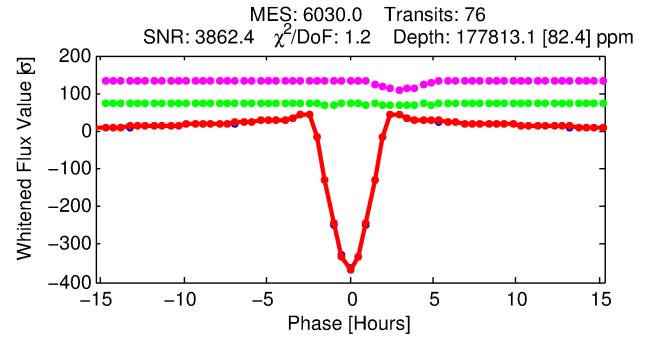
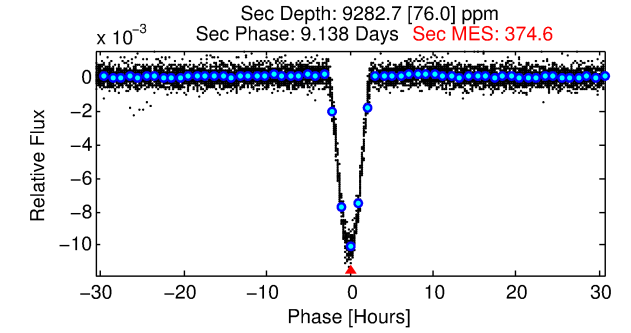
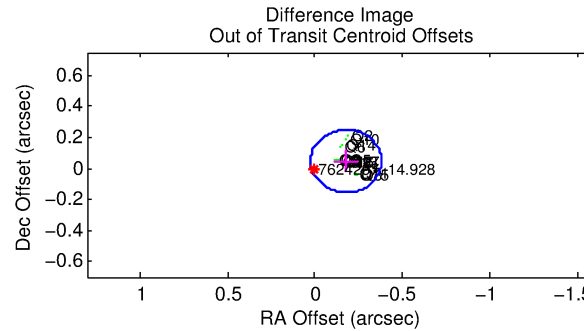
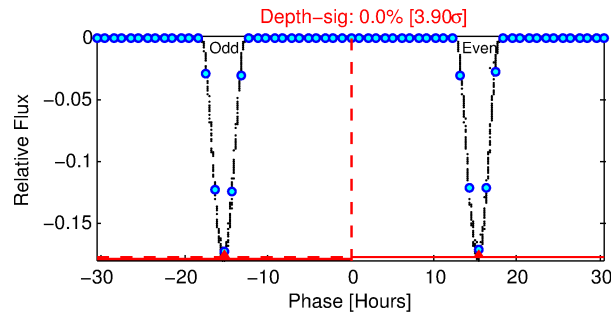
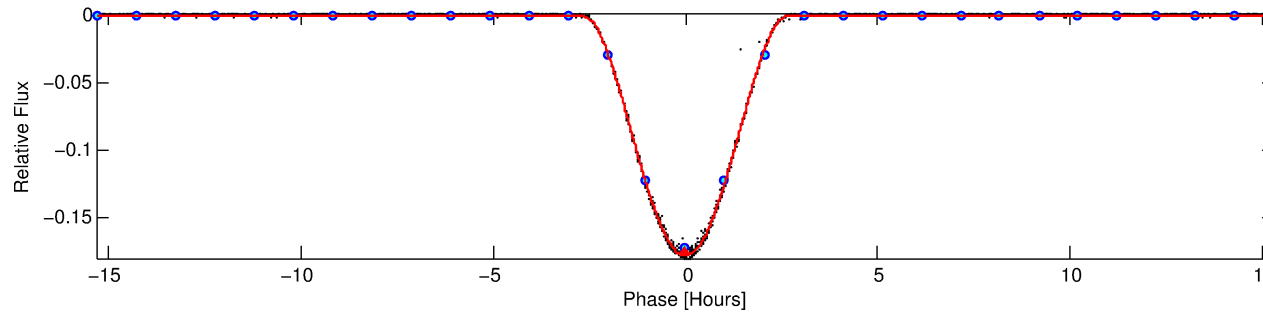
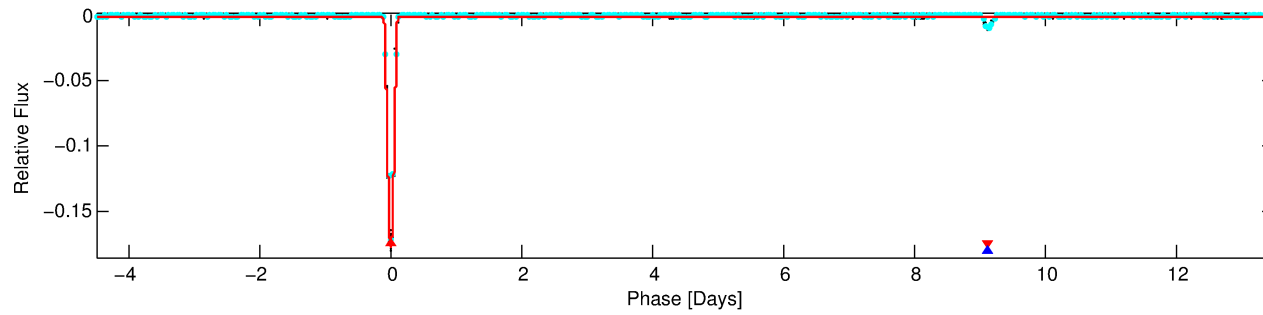
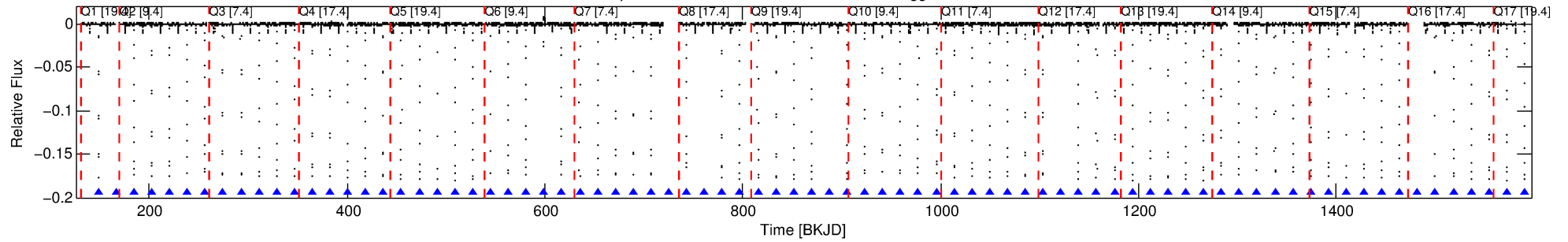
## Ephemeris Match Information For 007624297-01

No Significant Match Found

# DV One-Page Summary

KIC: 7624297 Candidate: 1 of 2 Period: 18.020 d  
KOI: K06040.01 Corr: 1.000

Kp: 14.93 R\*: 0.66 Rs Teff: 5278.0 K Logg: 4.66 Fe/H: -0.620



## DV Fit Results:

Period = 18.01965 [0.00000] d  
Epoch = 148.6674 [0.0000] BKJD  
Rp/R\* = 0.5849 [0.0130]  
a/R\* = 35.17 [0.11]  
b = 0.90 [0.02]  
Seff = 20.75 [4.12]  
Teff = 544 [27] K  
Rp = 42.06 [6.07] Re  
a = 0.1206 [0.0138] AU  
Ag = 42.00 [6.94] [5.90σ]  
Teffp = 2142 [68] K [21.79σ]

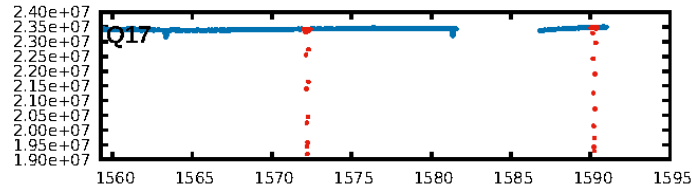
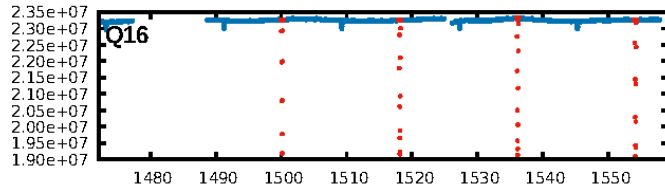
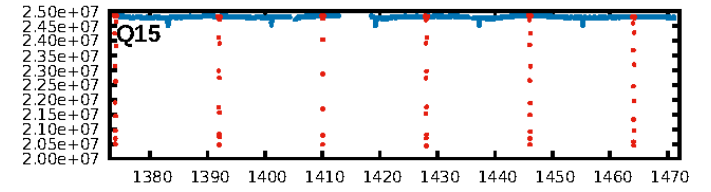
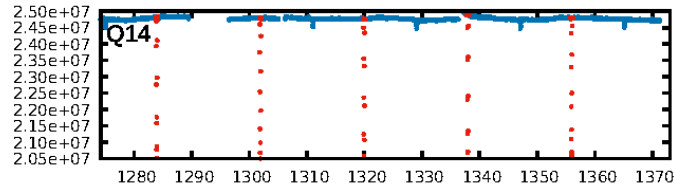
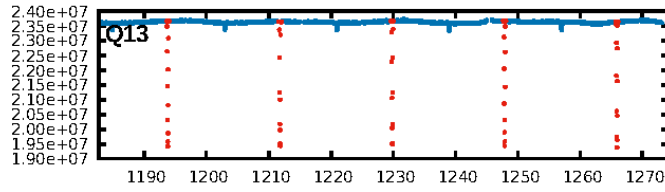
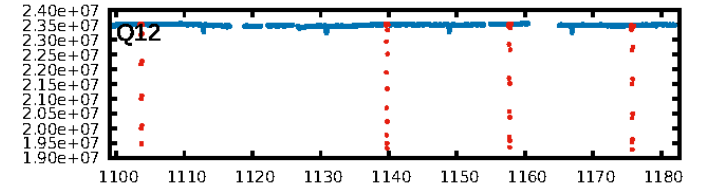
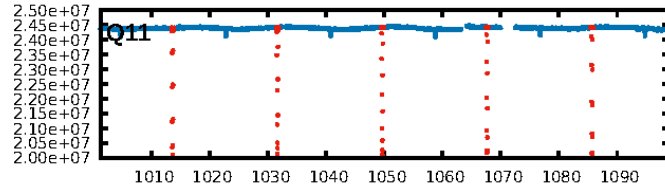
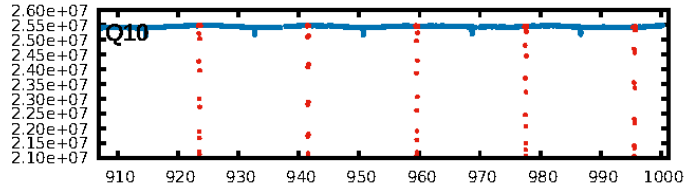
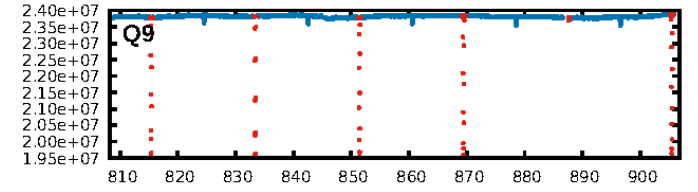
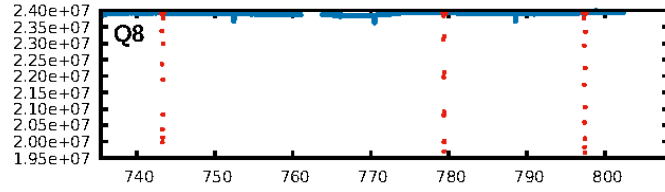
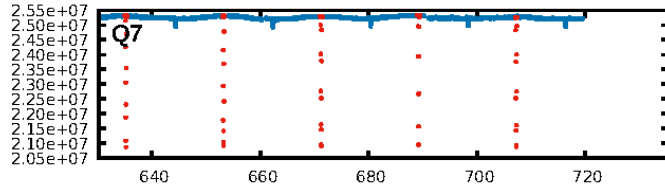
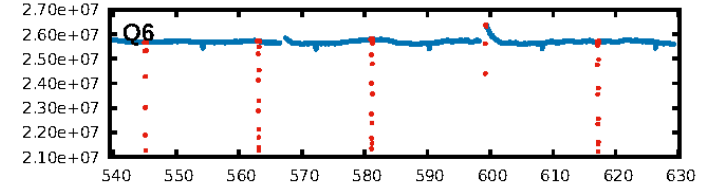
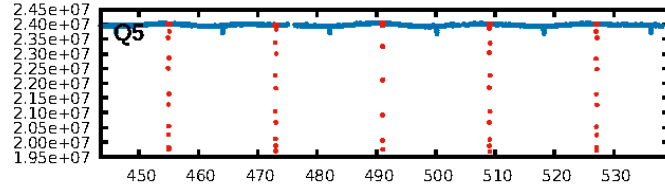
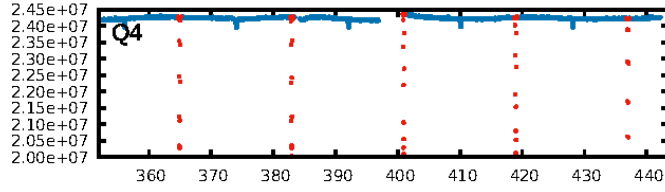
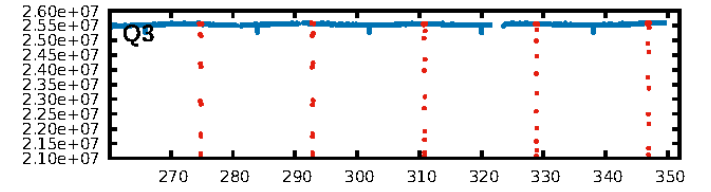
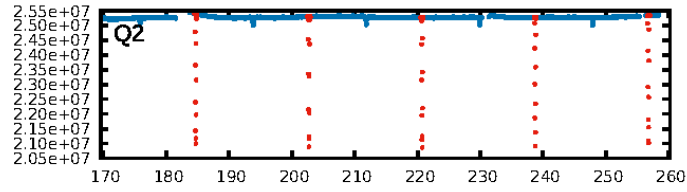
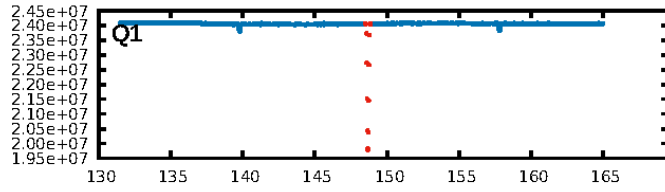
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.5%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [73/73]  
GhostDiagnostic-chr: 4.475  
Centroid-sig: 0.0%  
Centroid-so: 0.194 arcsec [142.32σ]  
OotOffset-rm: 0.183 arcsec [2.71σ]  
KicOffset-rm: 0.141 arcsec [2.01σ]  
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]

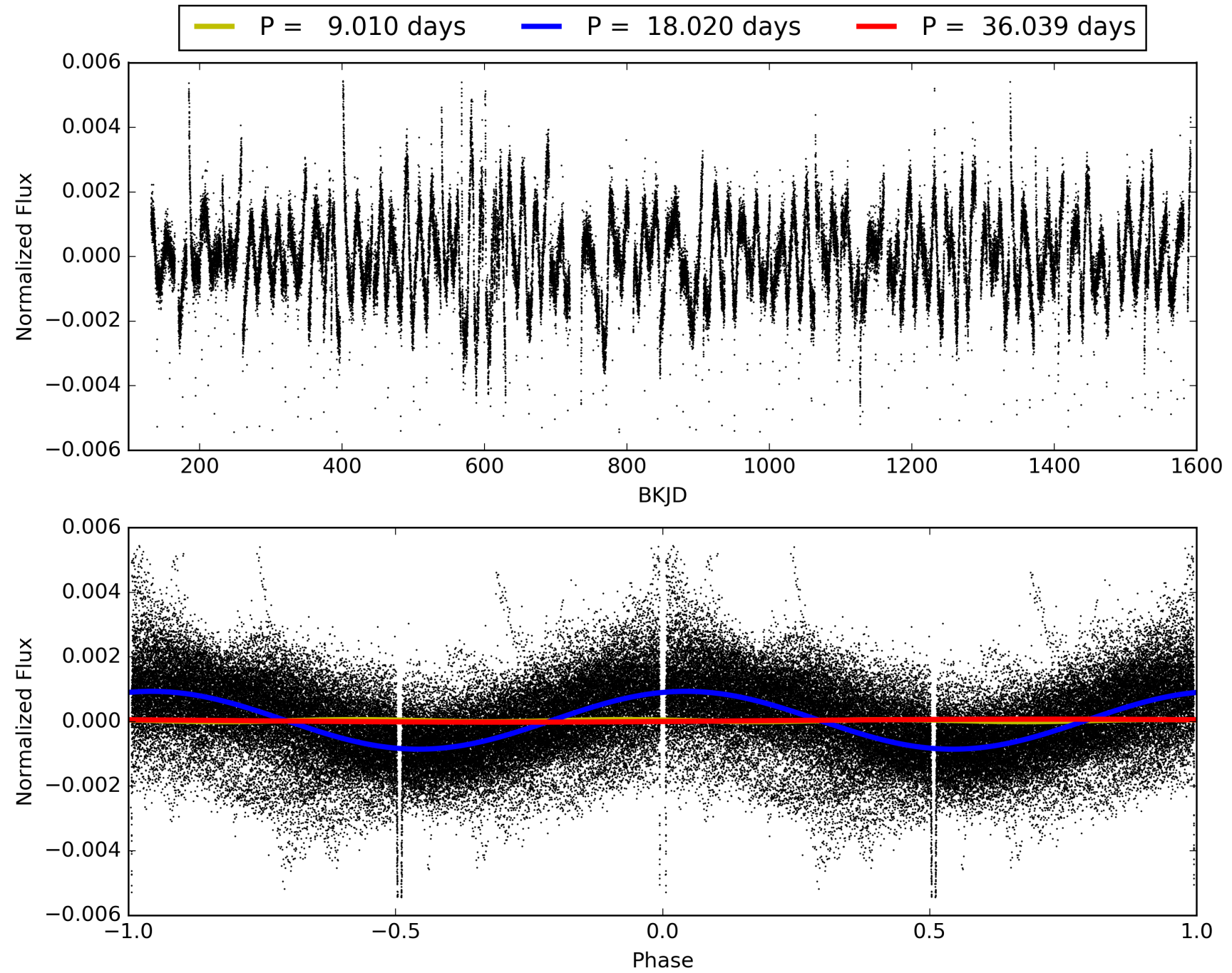
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:10:14 Z

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

# TCE 007624297-01, PDC Light Curves

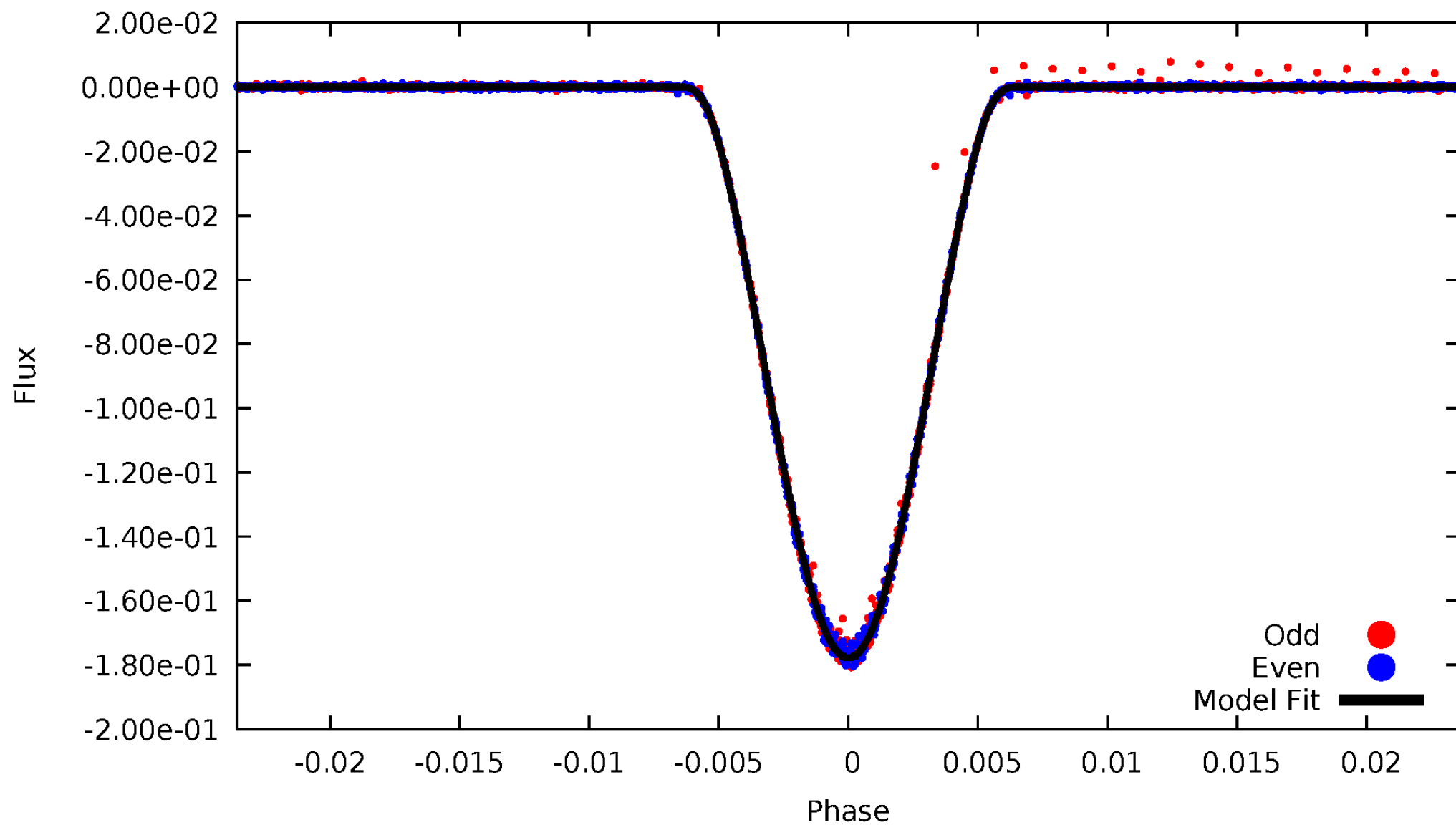


TCE 007624297-01



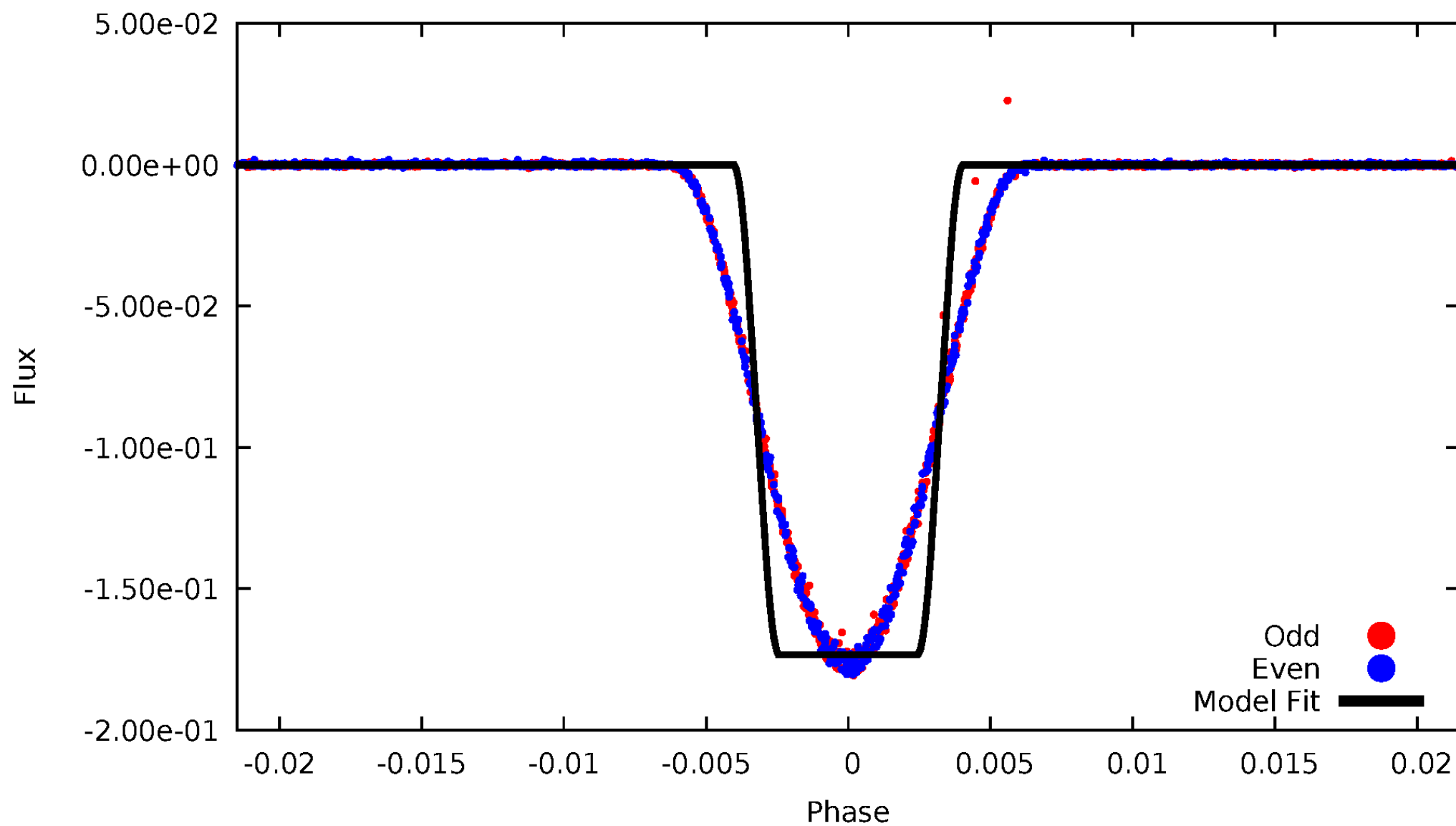
# DV Odd/Even

TCE 007624297-01



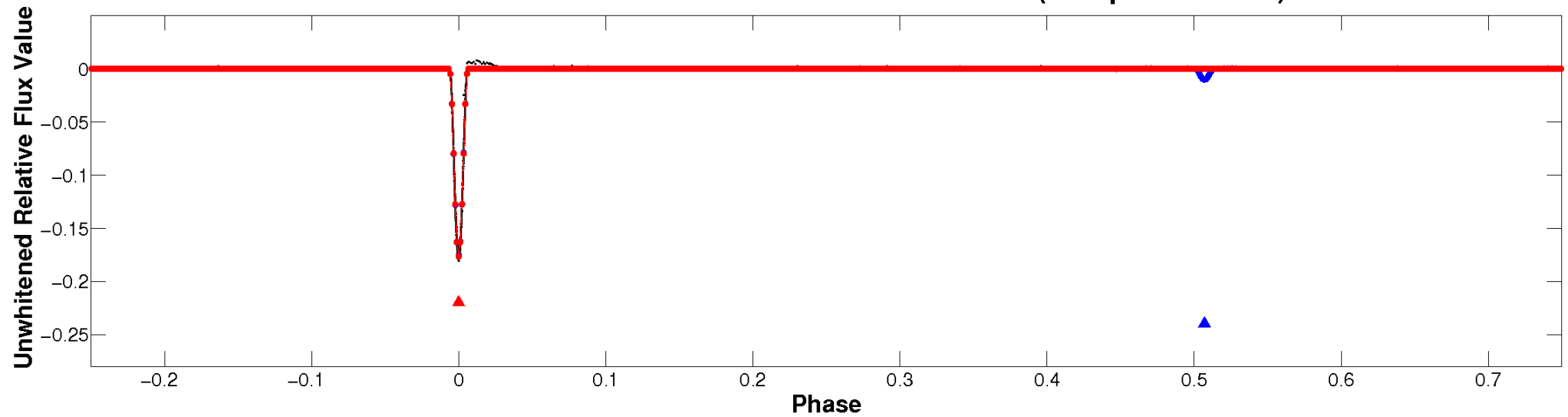
# ALT Odd/Even

TCE 007624297-01

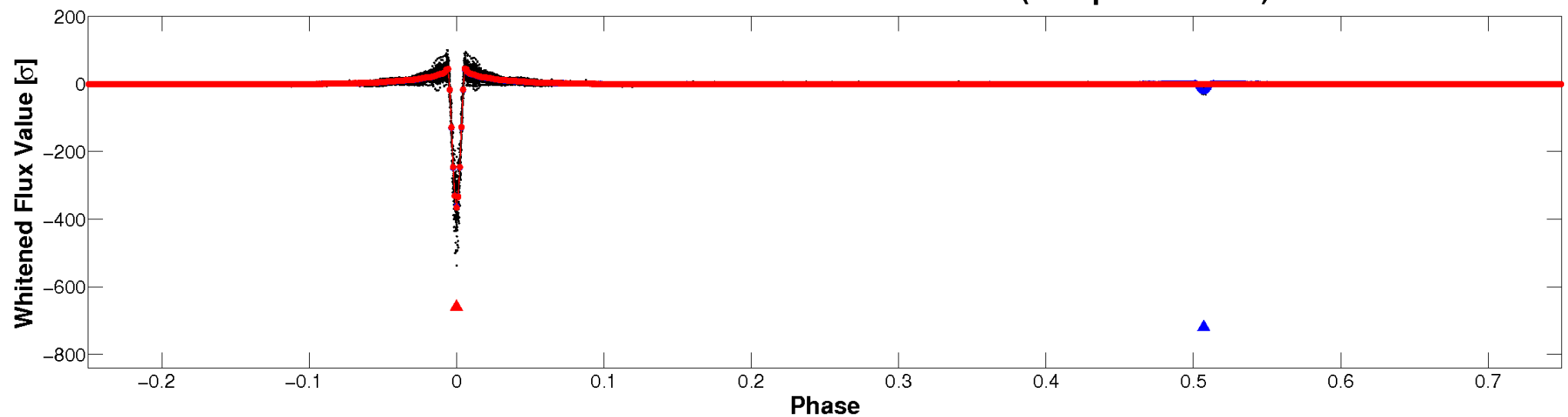


# Non-Whitened Vs. Whitened Light Curve

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

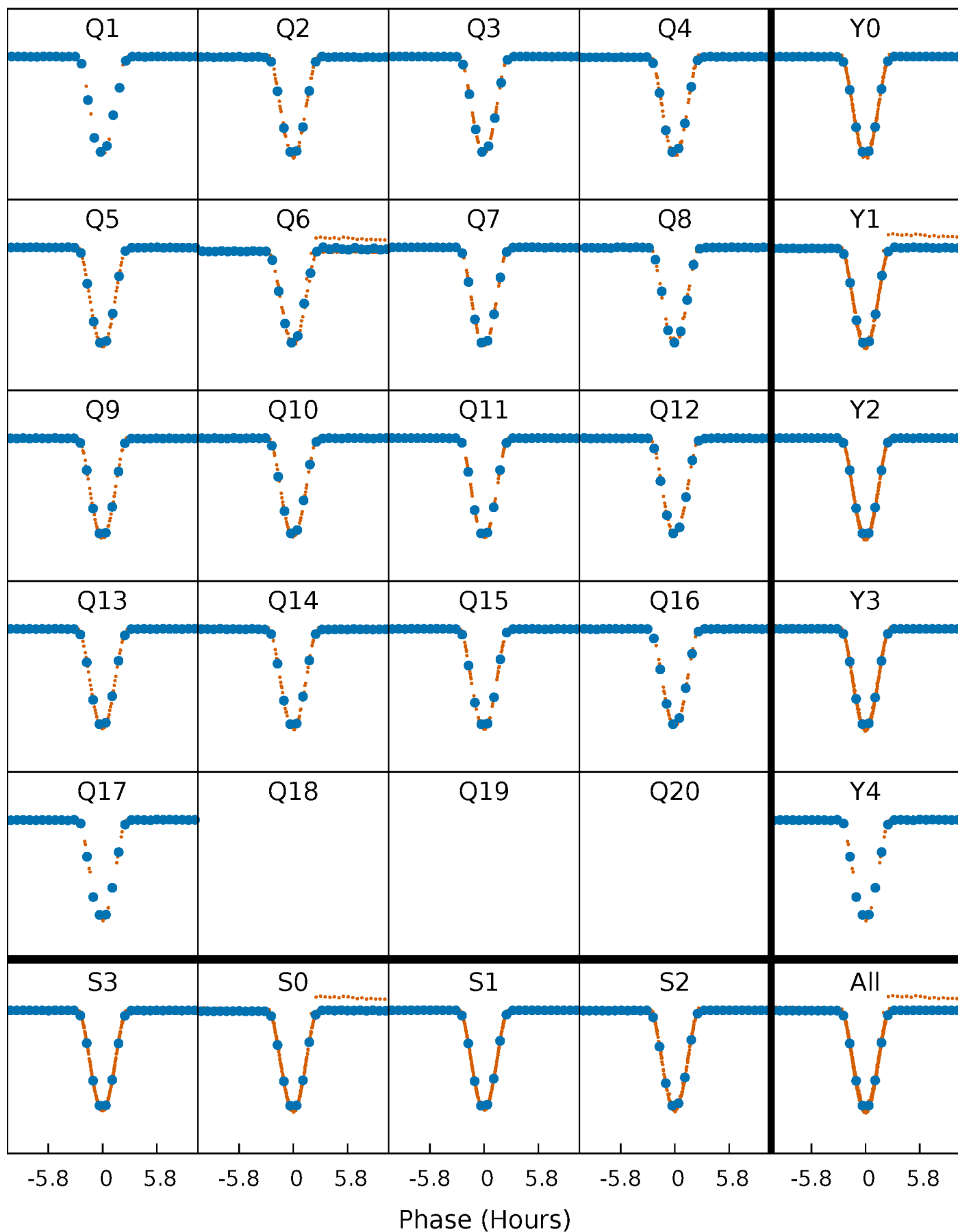


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

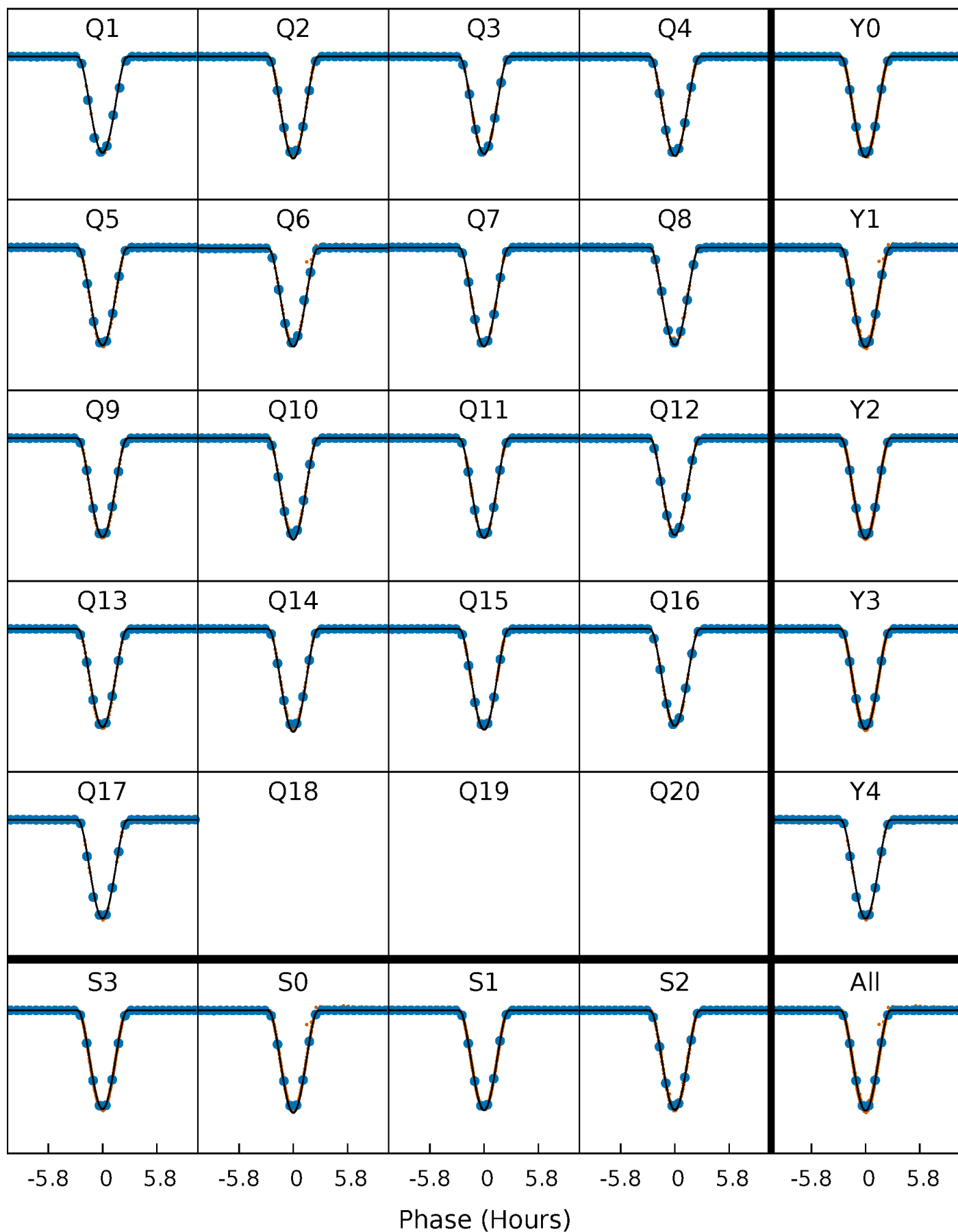
TCE 007624297-01 P= 18.019652 Days  $T_0=148.667383$  (BKJD)





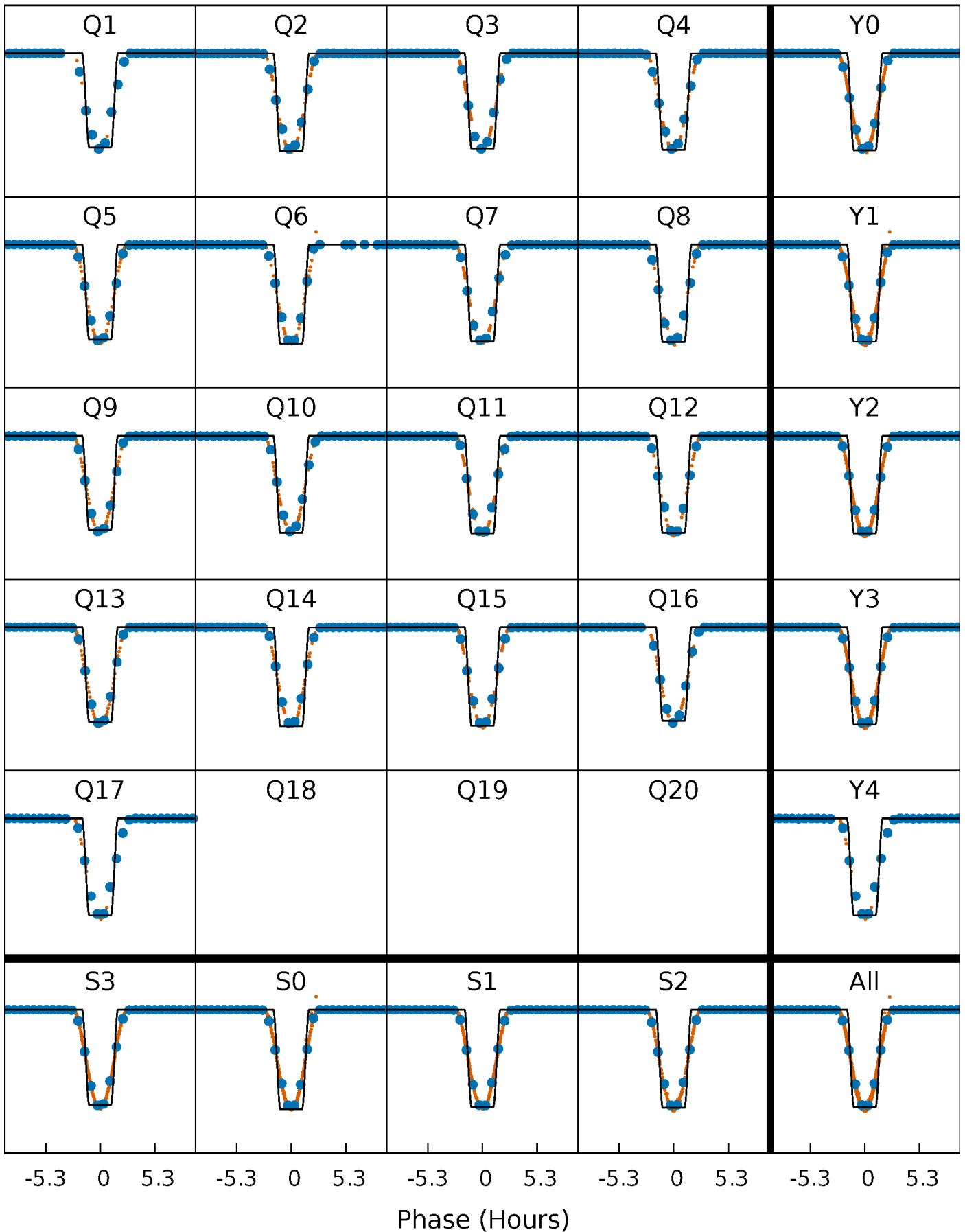
# DV Quarter-Phased Transit Curves

TCE 007624297-01 P= 18.019652 Days  $T_0=148.667383$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

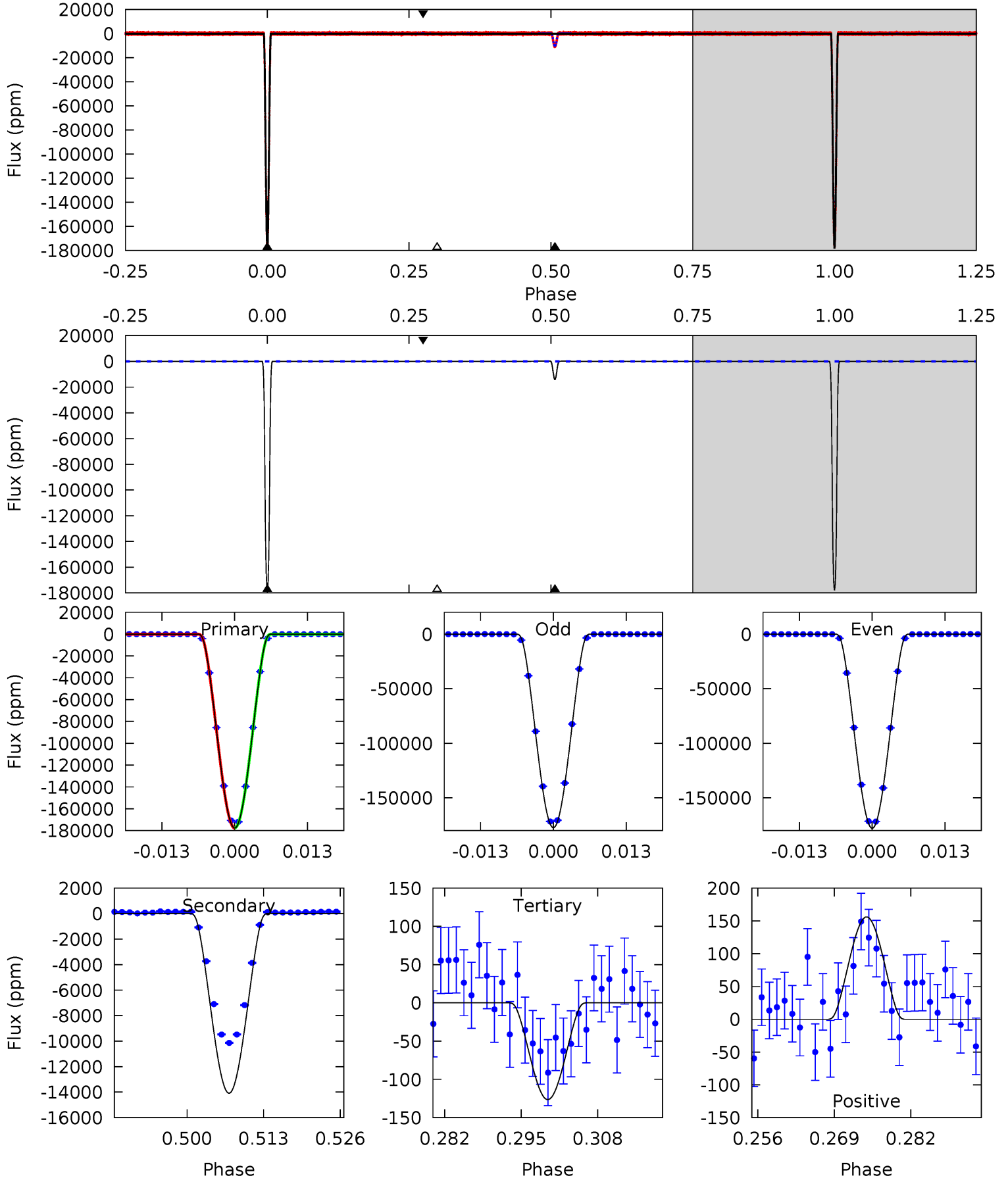
TCE 007624297-01   P= 18.019621 Days    $T_0=148.668530$  (BKJD)



# DV Model-Shift Uniqueness Test

007624297-01, P = 18.019652 Days, E = 130.647731 Days

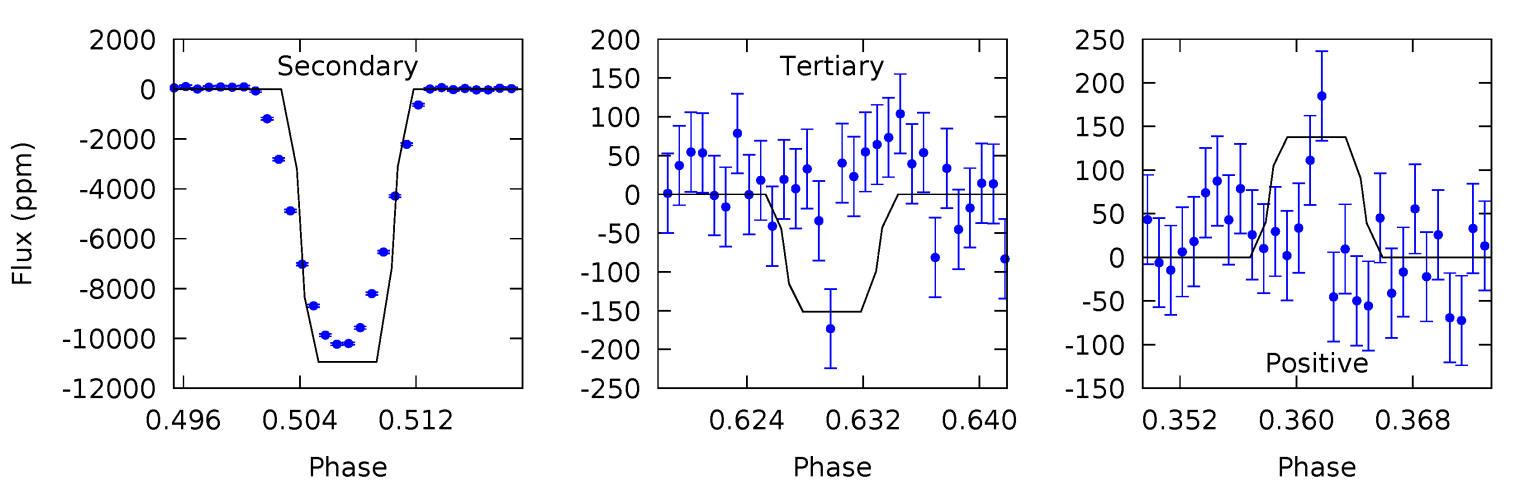
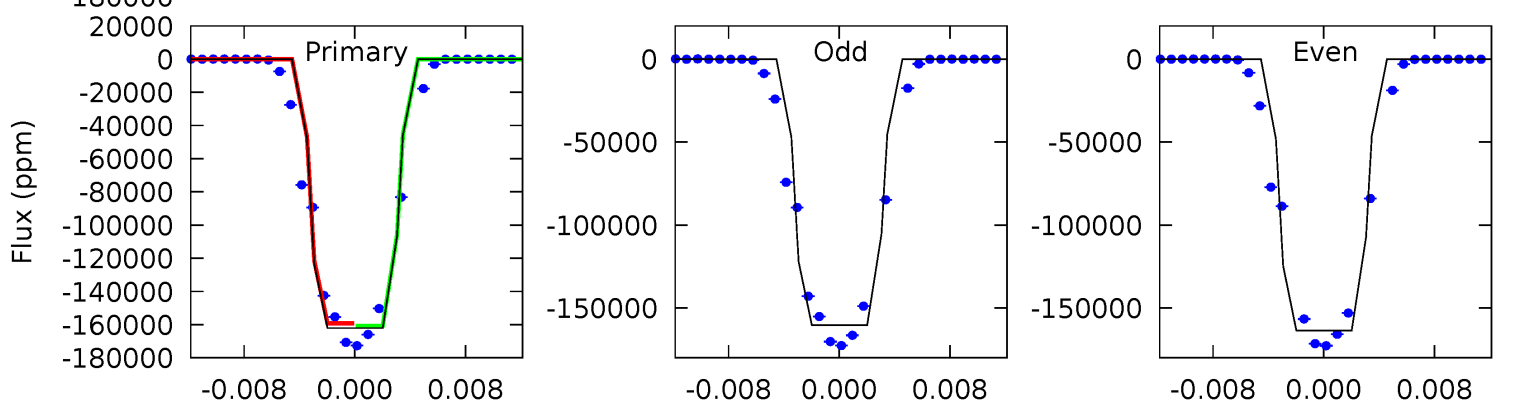
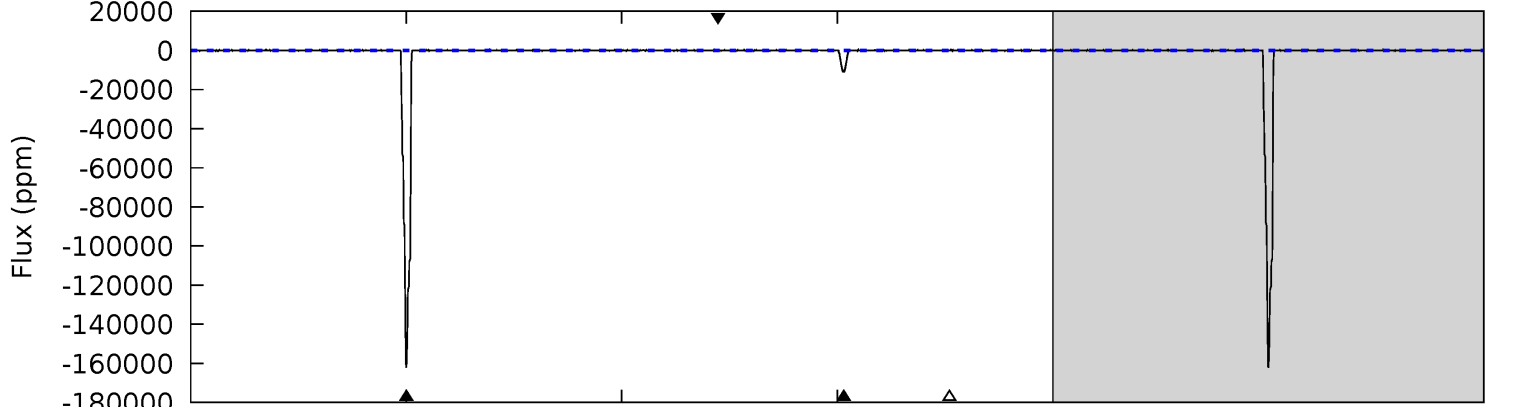
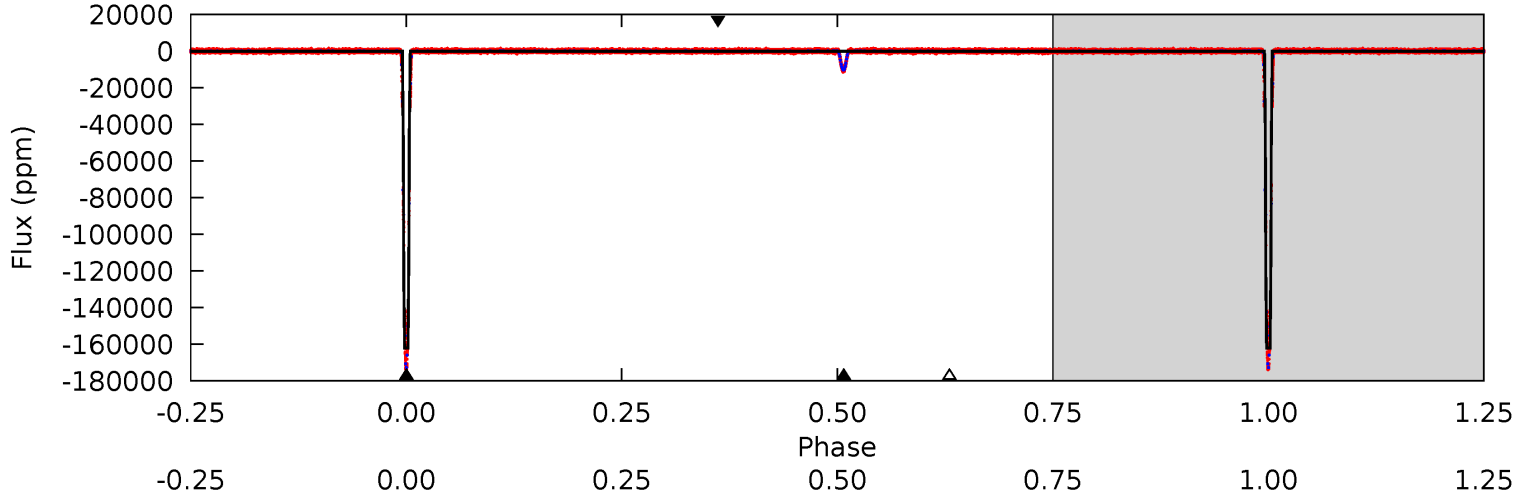
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11697	927.5	8.32	10.3	4.98	2.49	3.21	11689	11687	919.1	917.2	17.8	0.99	0.00	3.49



# Alt Model-Shift Uniqueness Test

007624297-01, P = 18.019621 Days, E = 130.648909 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
4973	335.7	4.64	4.23	5.07	2.65	1.21	4968	4969	331.0	331.5	50.9	1.00	0.00	0



### Stellar Parameters For KIC 007624297

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5278^{+157}_{-141}$	$4.658^{+0.033}_{-0.083}$	$-0.620^{+0.300}_{-0.300}$	$0.659^{+0.094}_{-0.040}$	$0.723^{+0.069}_{-0.063}$	$3.556^{+0.532}_{-0.990}$
	+3%/-3%	+1%/-2%	+48%/-48%	+14%/-6%	+10%/-9%	+15%/-28%
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 007624297-01 / KOI 6040.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-14083 \pm 15$	$42.49^{+2.90}_{-2.07}$	$767^{+31}_{-25}$	$3025^{+59}_{-52}$	$63^{+6}_{-6}$
Alt.	$-10941 \pm 33$	$30.15^{+2.26}_{-1.67}$	$766^{+29}_{-25}$	$3217^{+71}_{-62}$	$96^{+10}_{-10}$

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

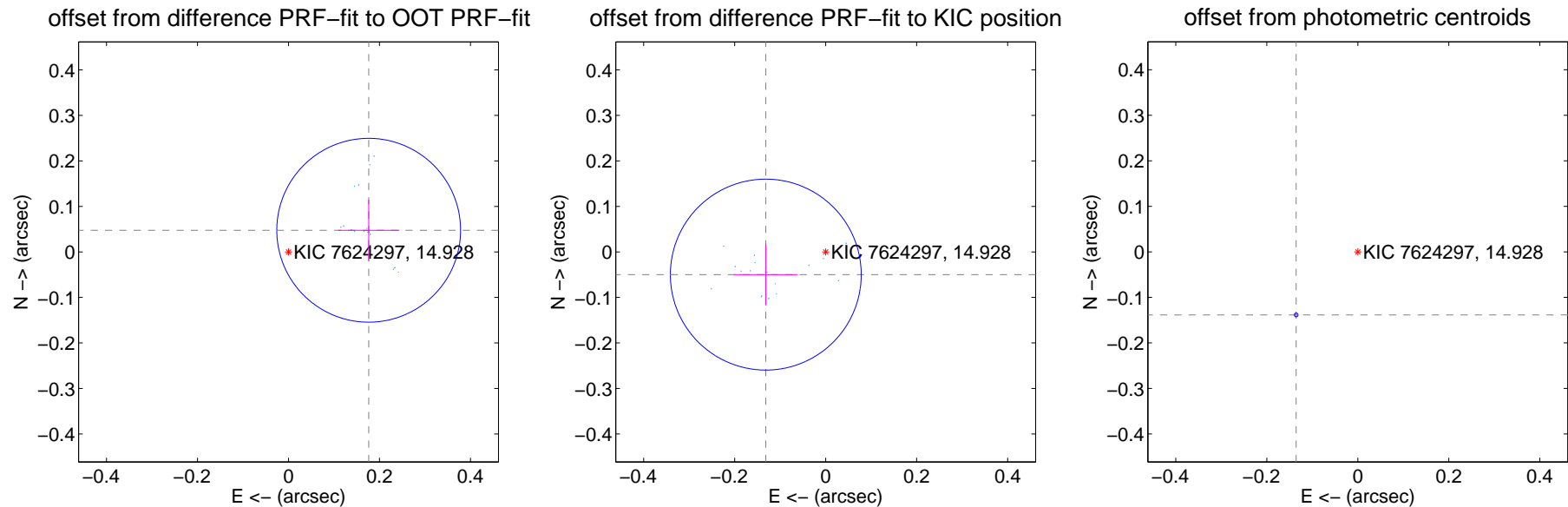
## DV Centroid Data

Supplemental centroid analysis for 007624297-01. Kepler magnitude: 14.93. Transit SNR 3862.35

There are 17 quarters with good PRF difference image offsets

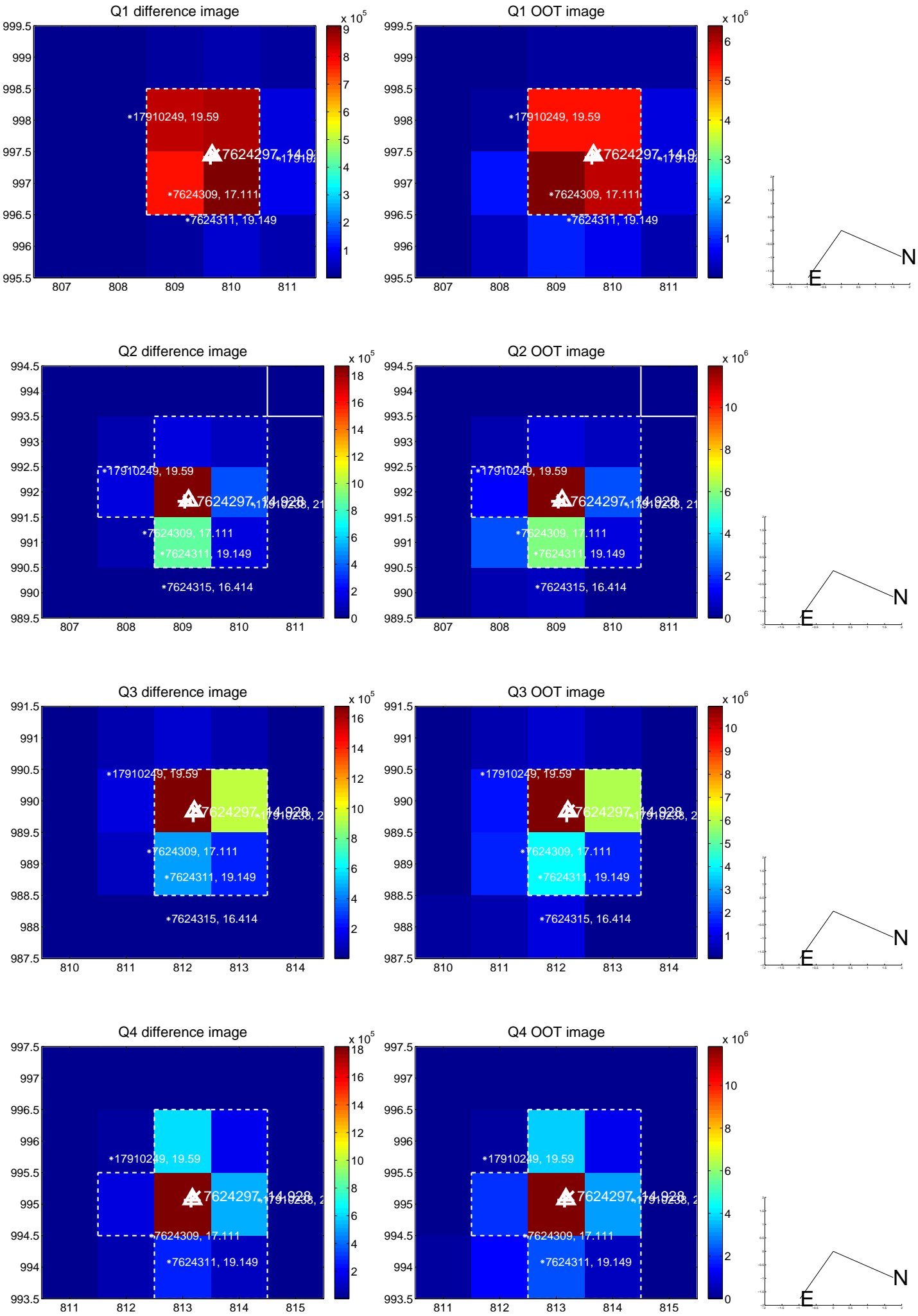
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.183 \pm 0.067$	2.71	$-0.176 \pm 0.067$	$0.048 \pm 0.067$
PRF-fit source offset from KIC position	$0.141 \pm 0.070$	2.01	$0.132 \pm 0.070$	$-0.050 \pm 0.067$
photometric centroid source offset	$0.19 \pm 0.00$	<b>142.32</b>	$0.14 \pm 0.00$	$-0.14 \pm 0.00$

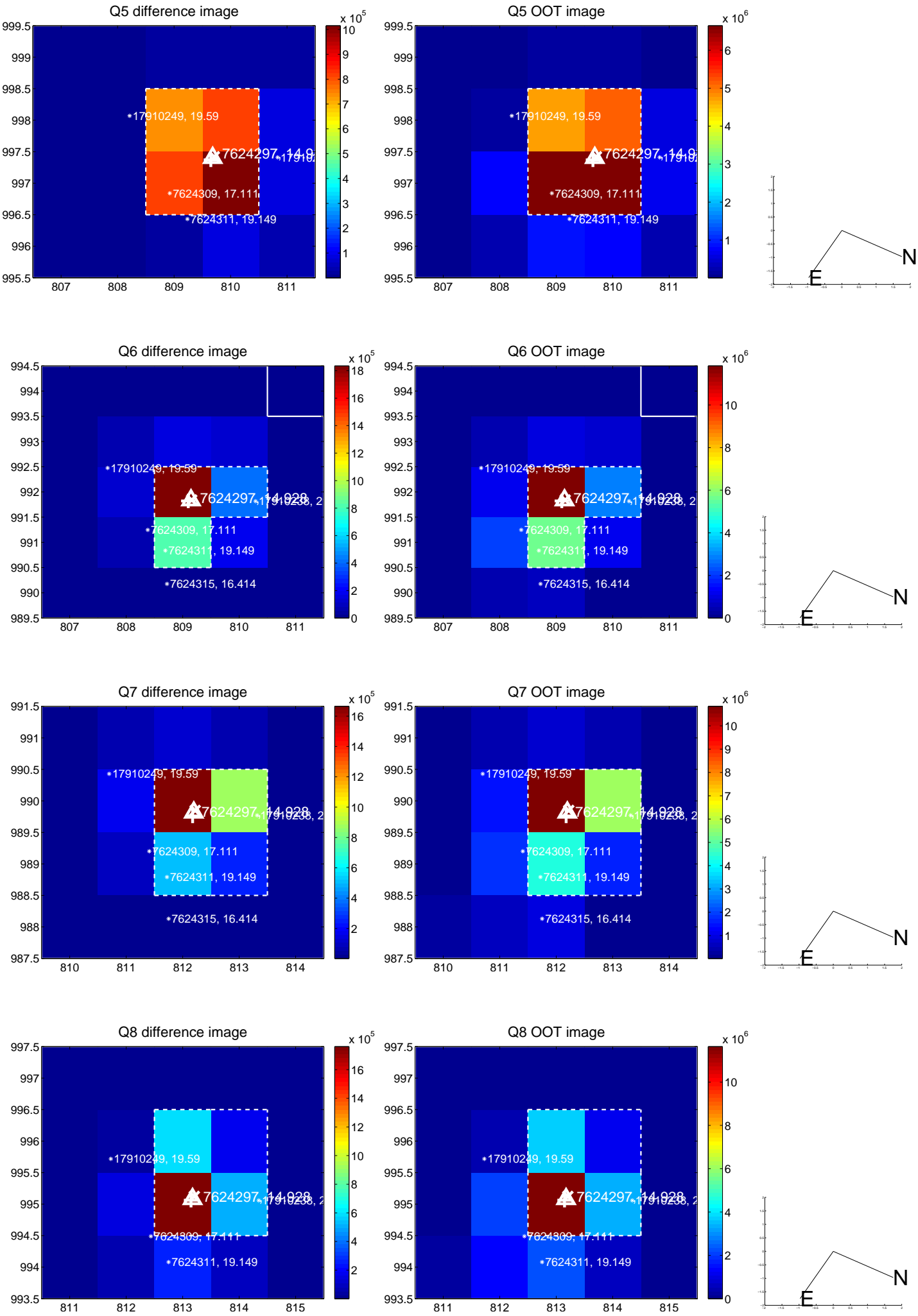


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

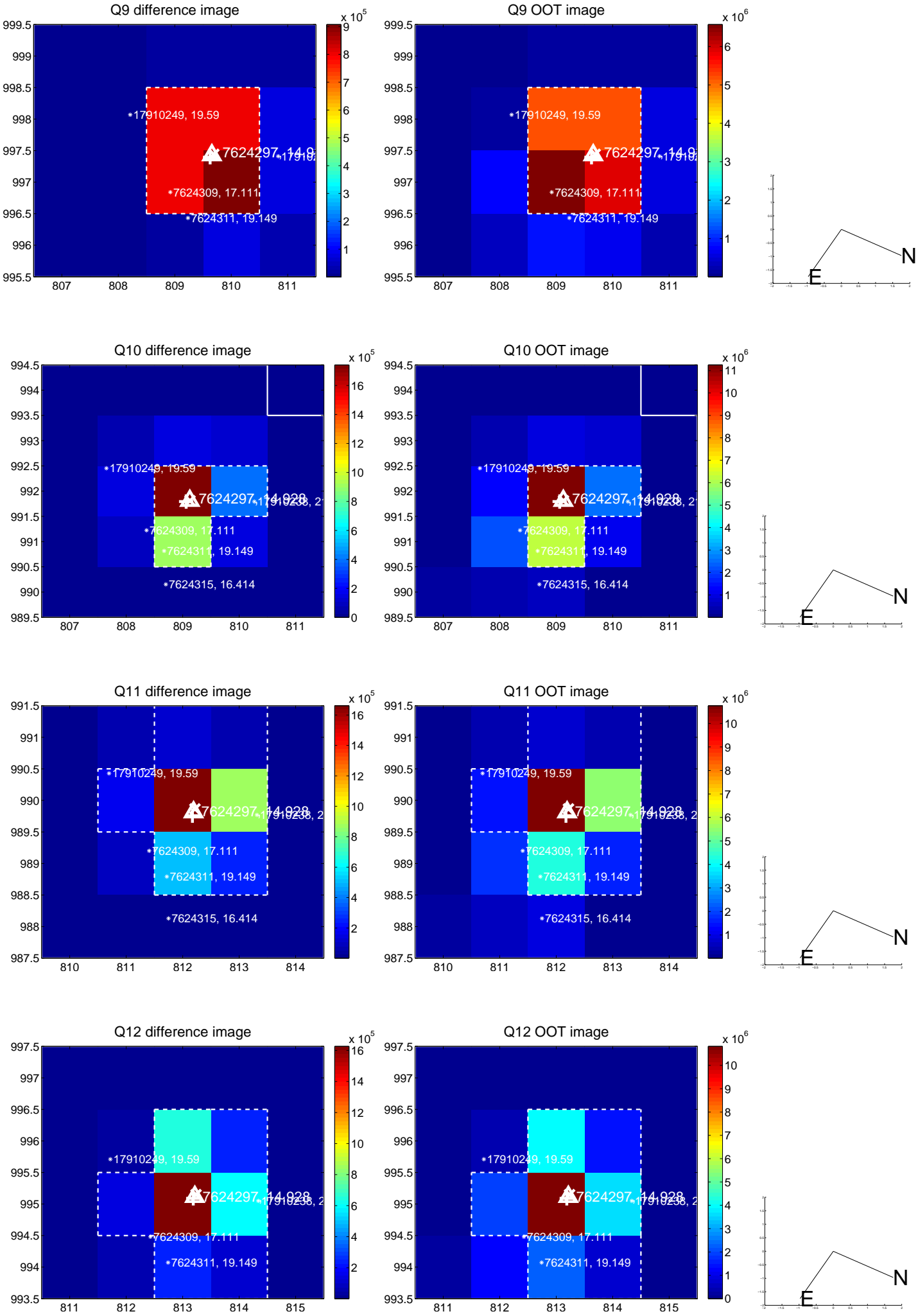


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

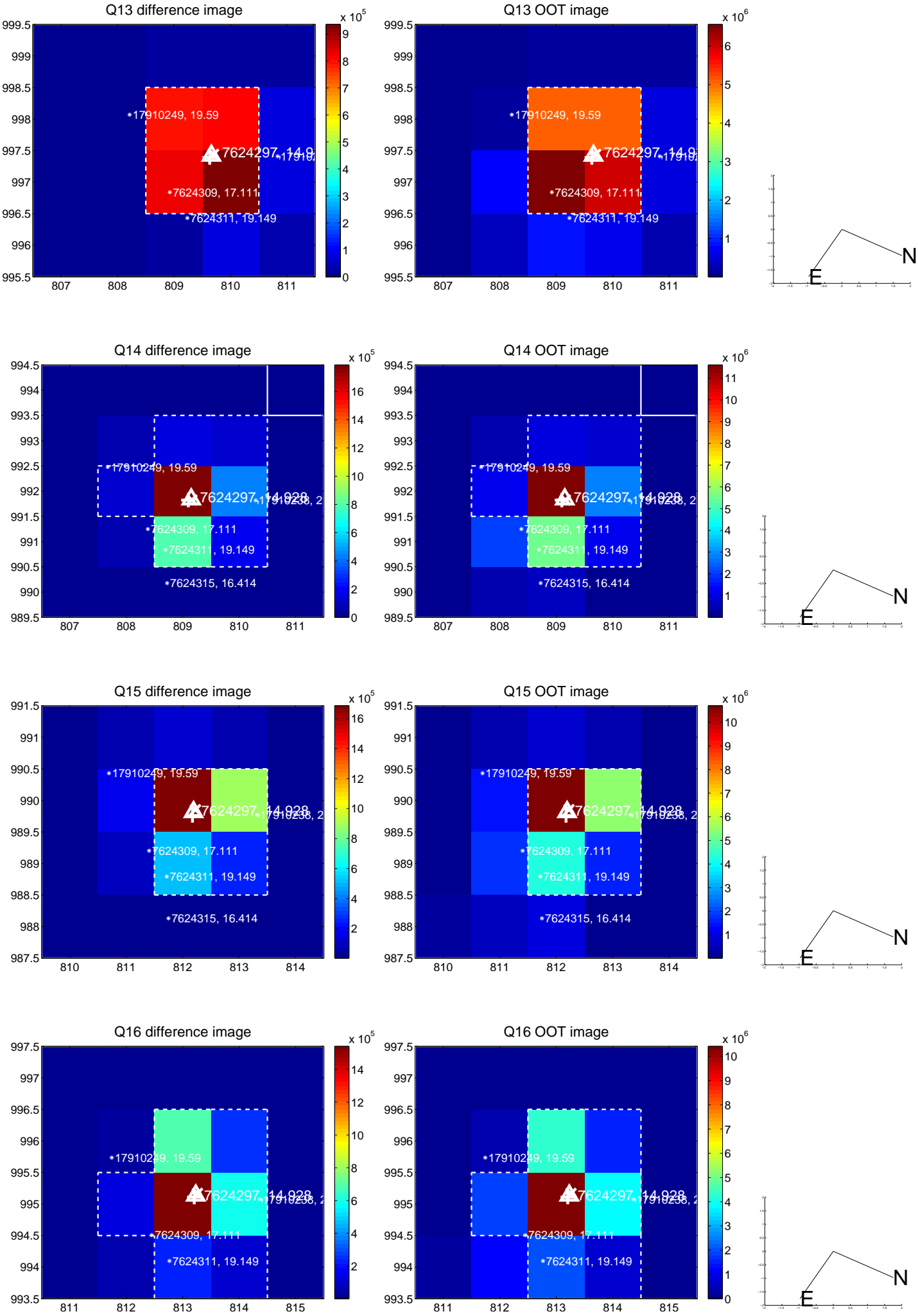




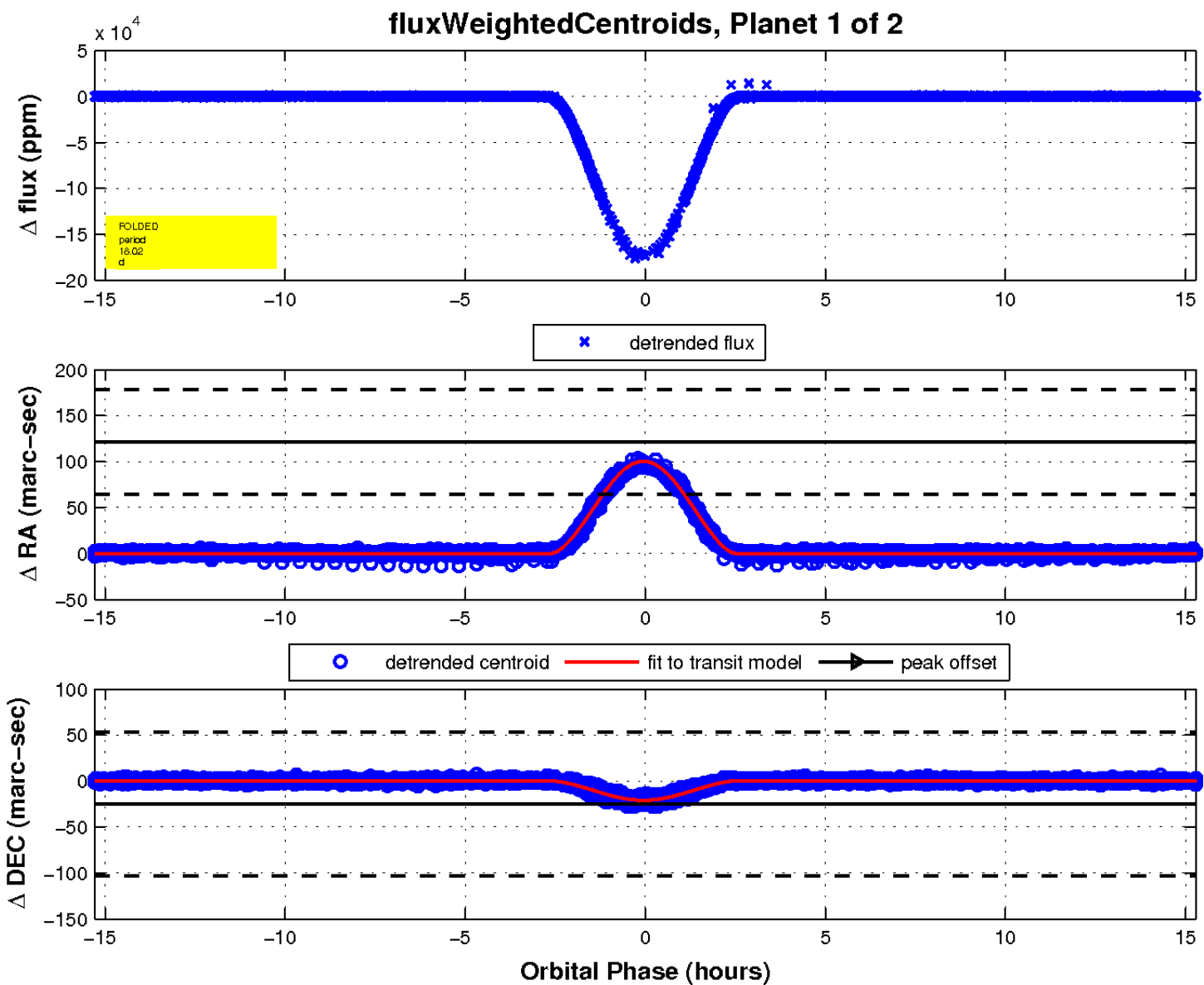
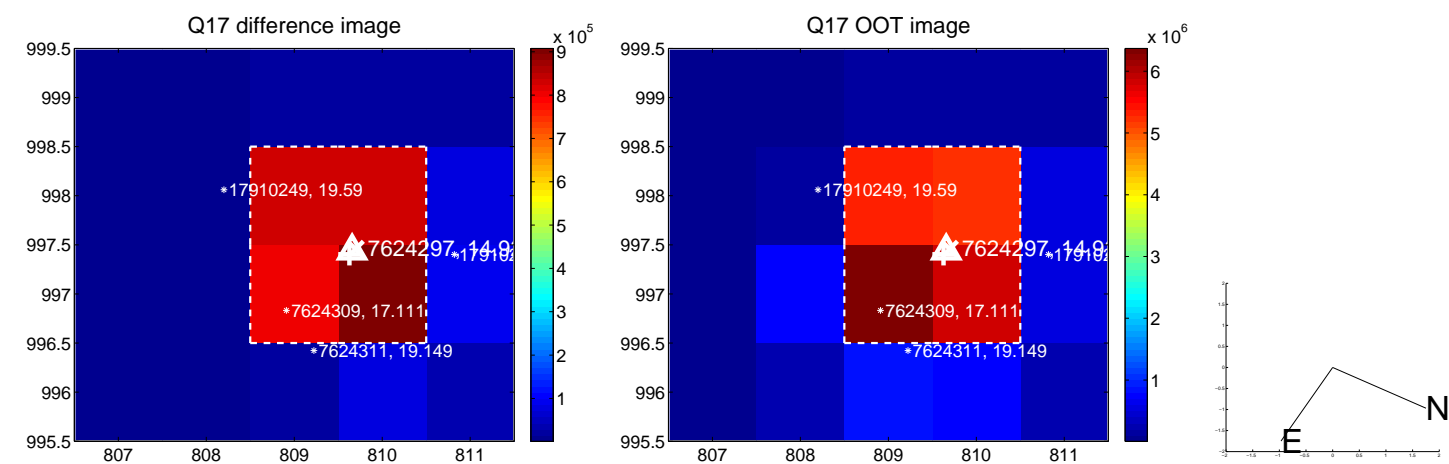
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

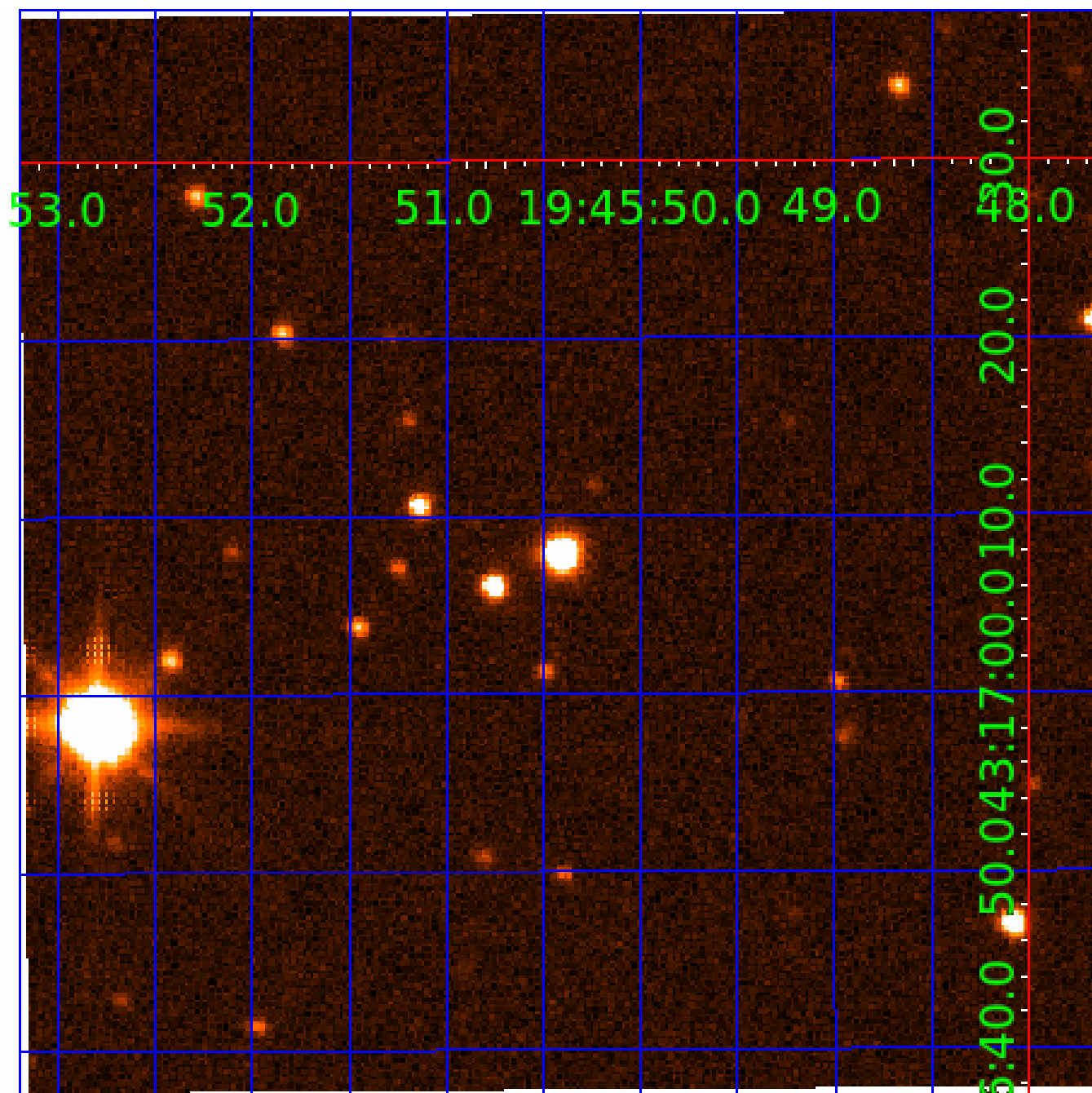


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007624297

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007624297-01	OBS	6040.01	18.019652	148.667383	177813.1	5.098	6030.0	3862.4	0.66	5278	42.06	20.75
007624297-02	OBS	No	18.019657	139.784643	10469.3	5.024	378.4	374.7	0.66	5278	10.85	20.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007624297-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
007624297-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

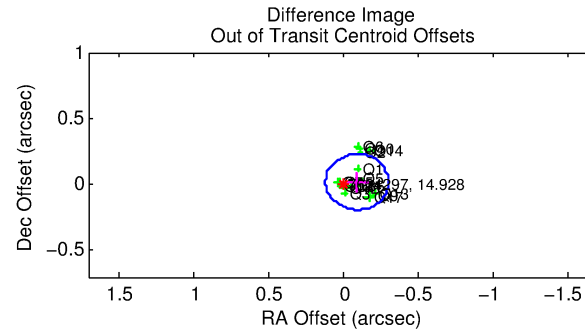
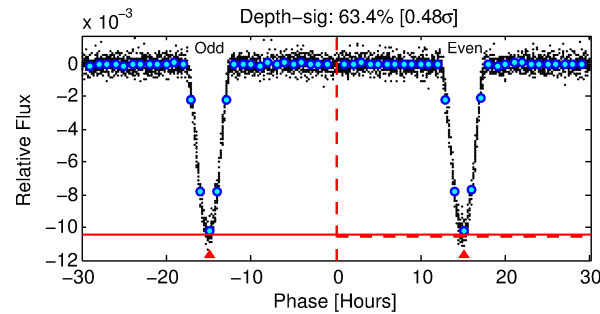
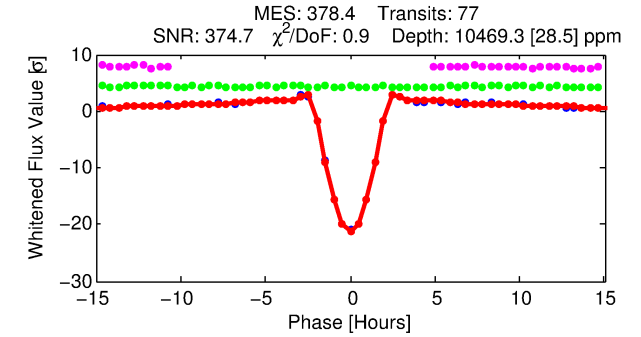
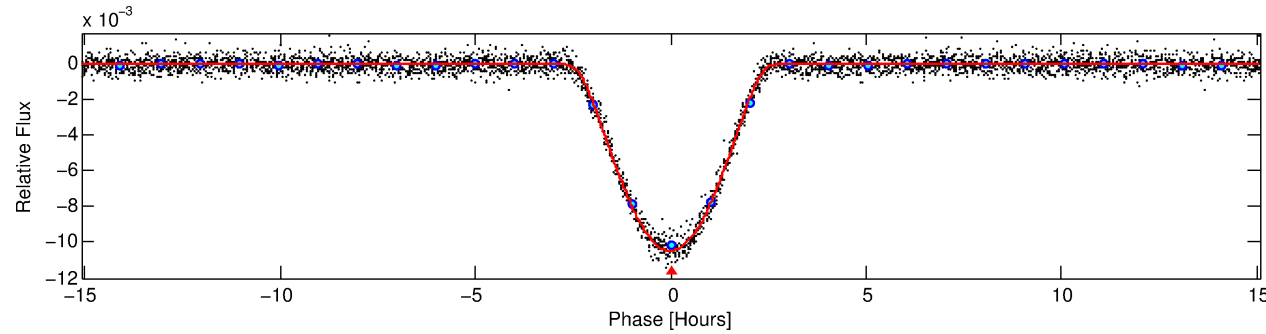
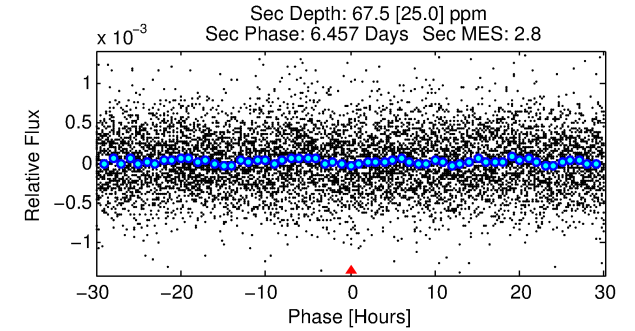
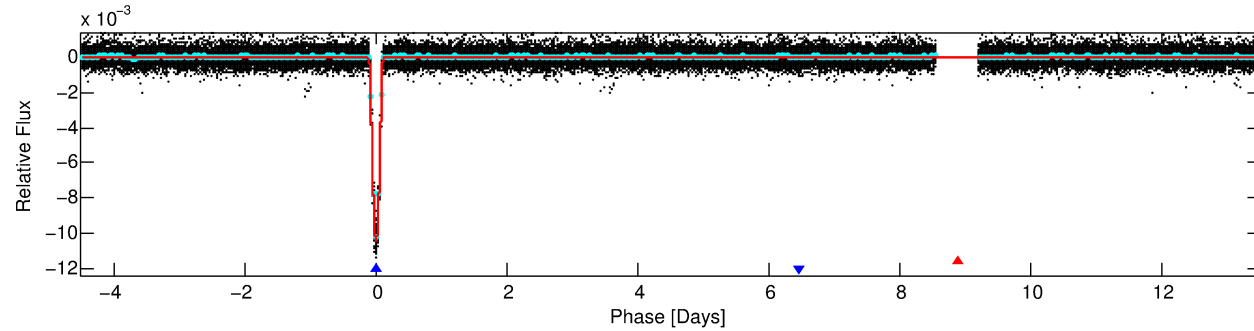
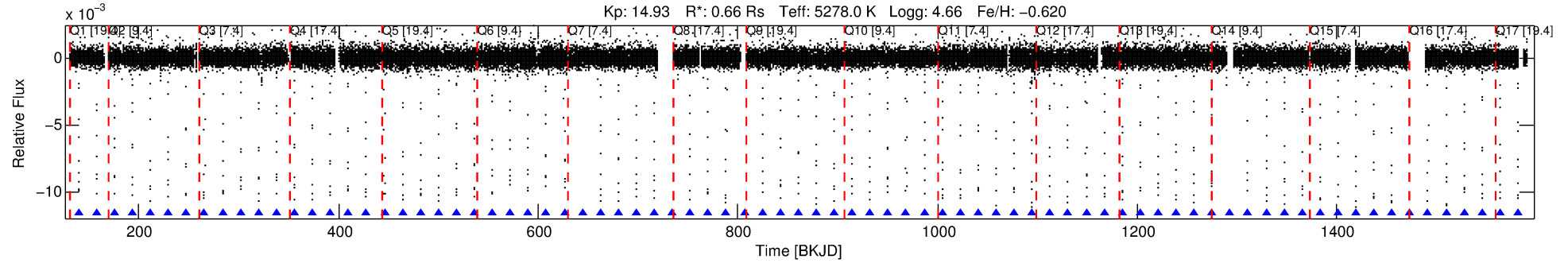
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007624297-02

No Significant Match Found

# DV One-Page Summary

KIC: 7624297 Candidate: 2 of 2 Period: 18.020 d  
KOI: K06040 Corr: No Ephemeris Match



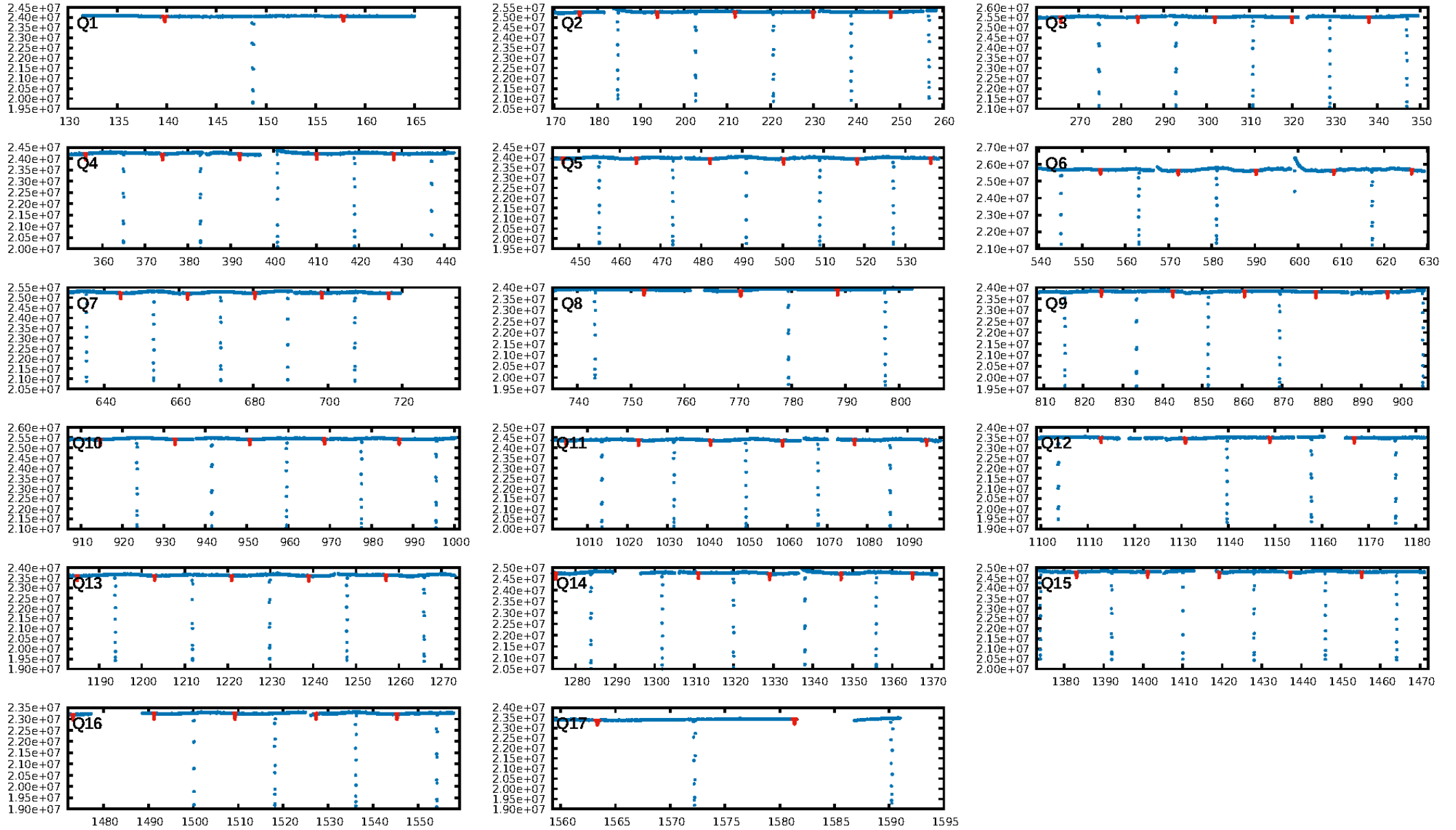
## DV Fit Results:

Period = 18.01966 [0.00001] d  
Epoch = 139.7846 [0.0003] BKJD  
Rp/R\* = 0.1509 [0.0100]  
a/R\* = 16.97 [0.21]  
b = 0.97 [0.02]  
Seff = 20.75 [4.12]  
Teq = 544 [27] K  
Rp = 10.85 [1.71] Re  
a = 0.1206 [0.0138] AU  
Ag = 4.59 [1.95] [1.85 $\sigma$ ]  
Teffp = 1232 [126] K [5.32 $\sigma$ ]

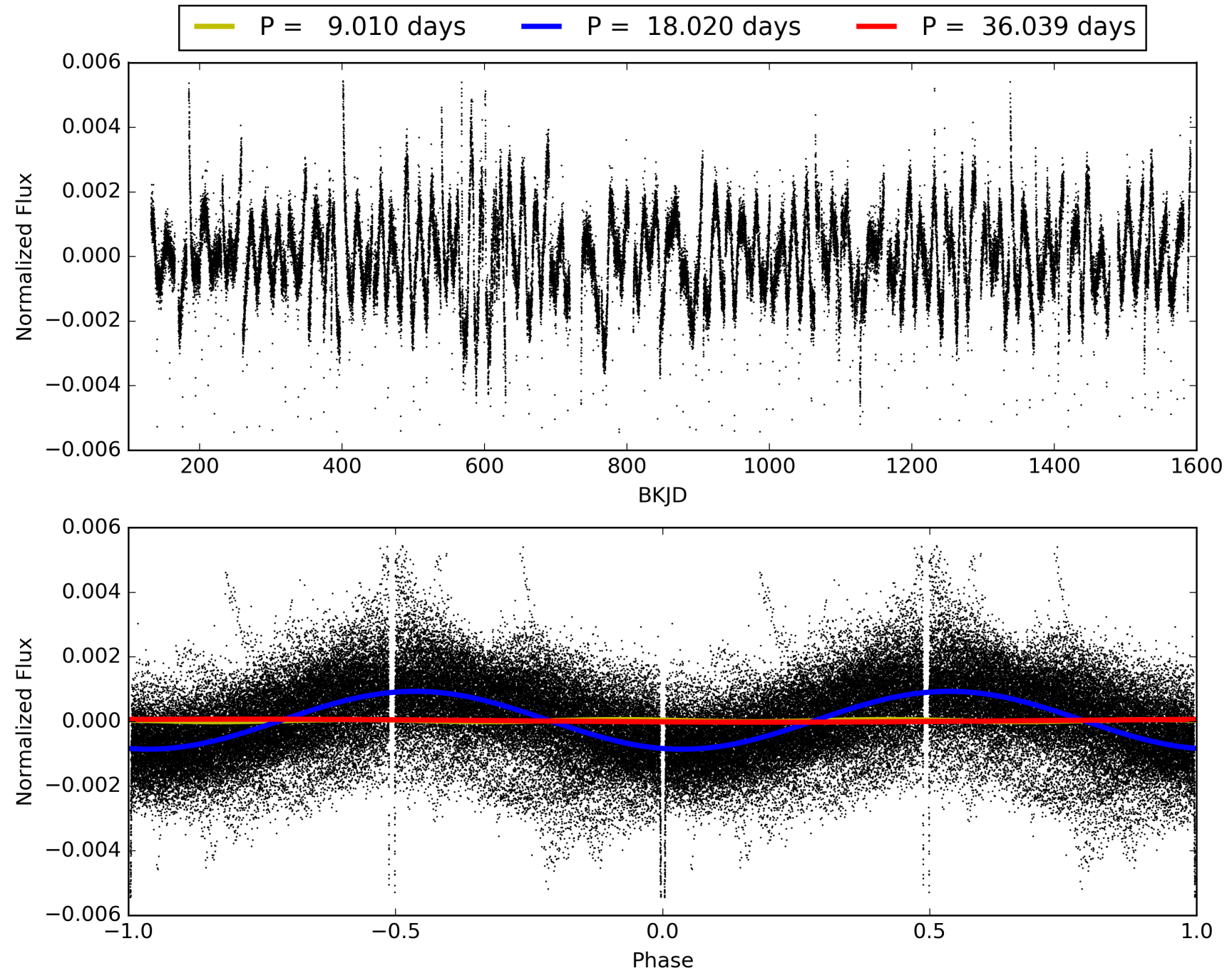
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 10.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [73/73]  
GhostDiagnostic-chr: 5.865  
Centroid-sig: 0.0%  
Centroid-so: 0.278 arcsec [12.99 $\sigma$ ]  
OotOffset-rm: 0.098 arcsec [1.40 $\sigma$ ]  
KicOffset-rm: 0.194 arcsec [2.52 $\sigma$ ]  
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]

# TCE 007624297-02, PDC Light Curves



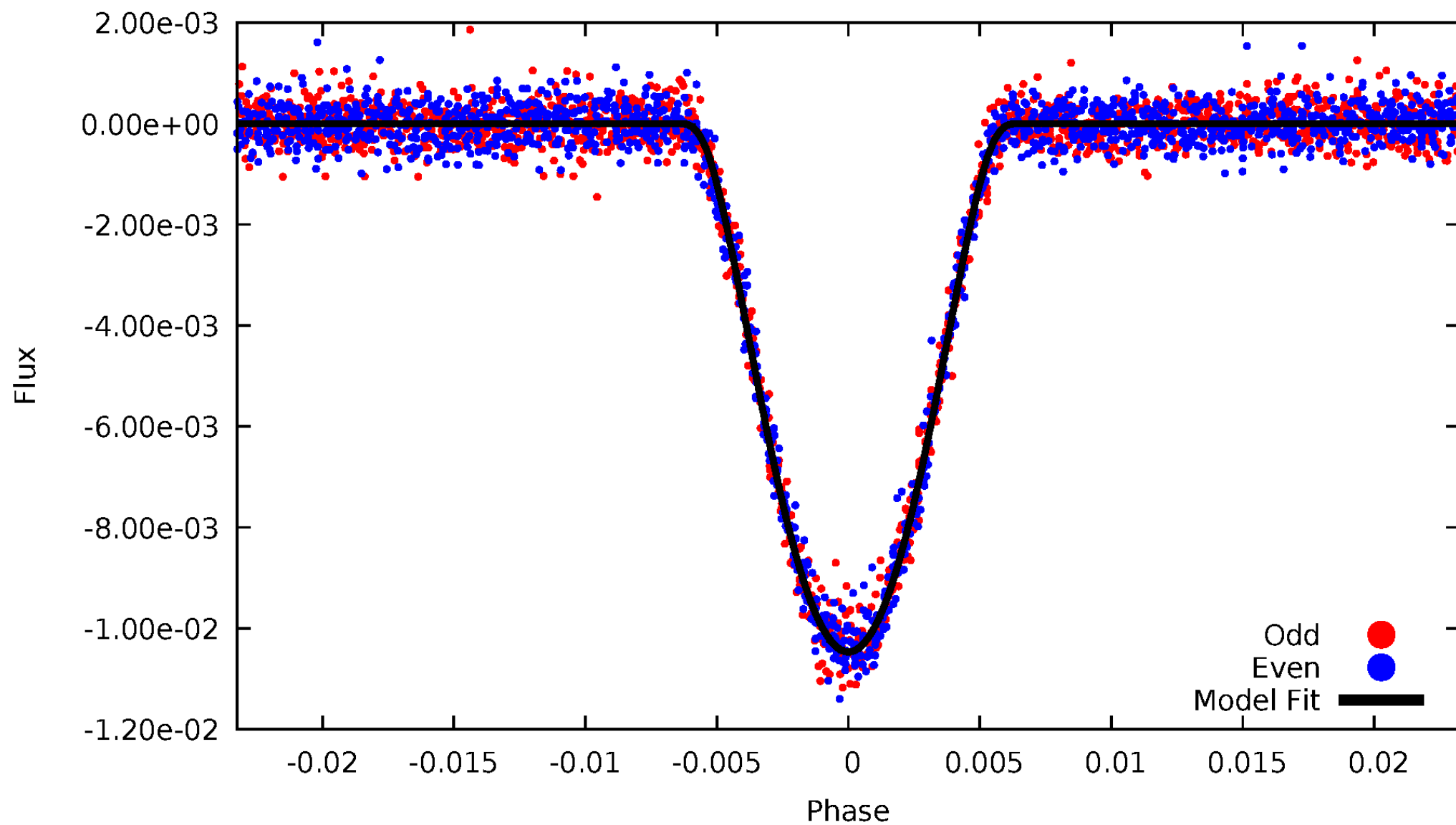
TCE 007624297-02





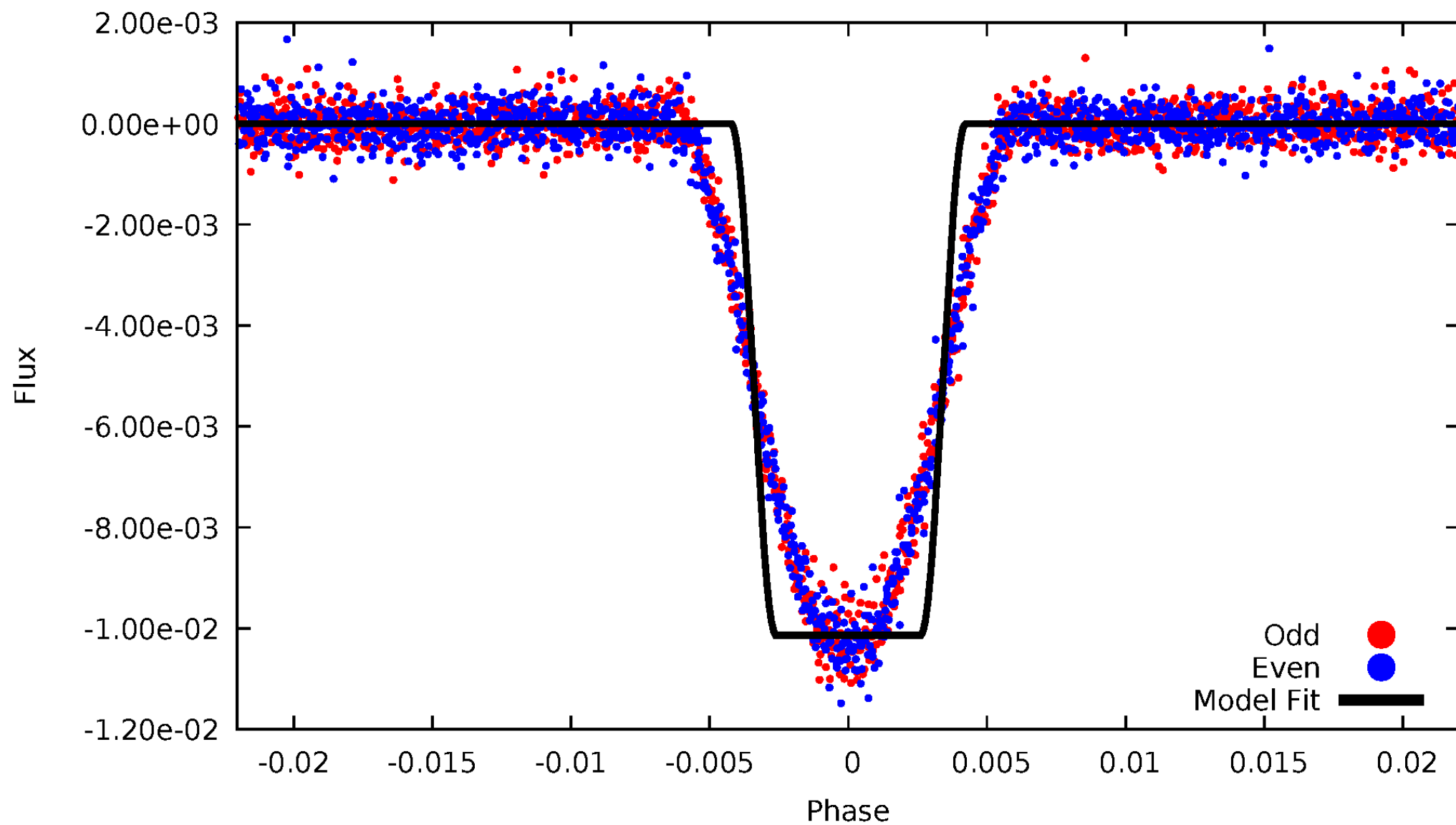
# DV Odd/Even

TCE 007624297-02



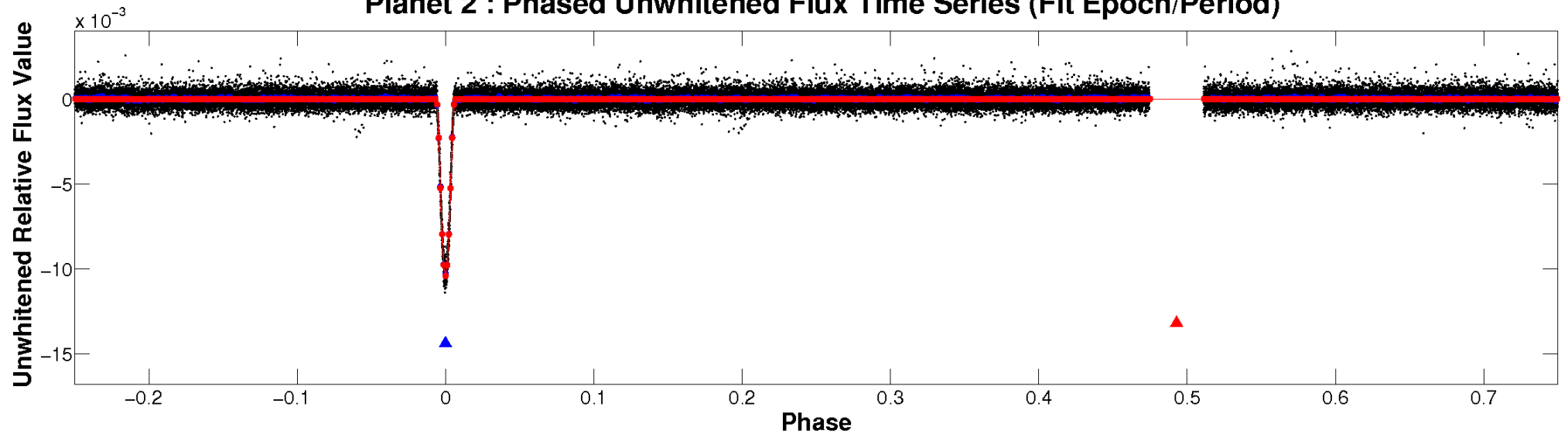
# ALT Odd/Even

TCE 007624297-02

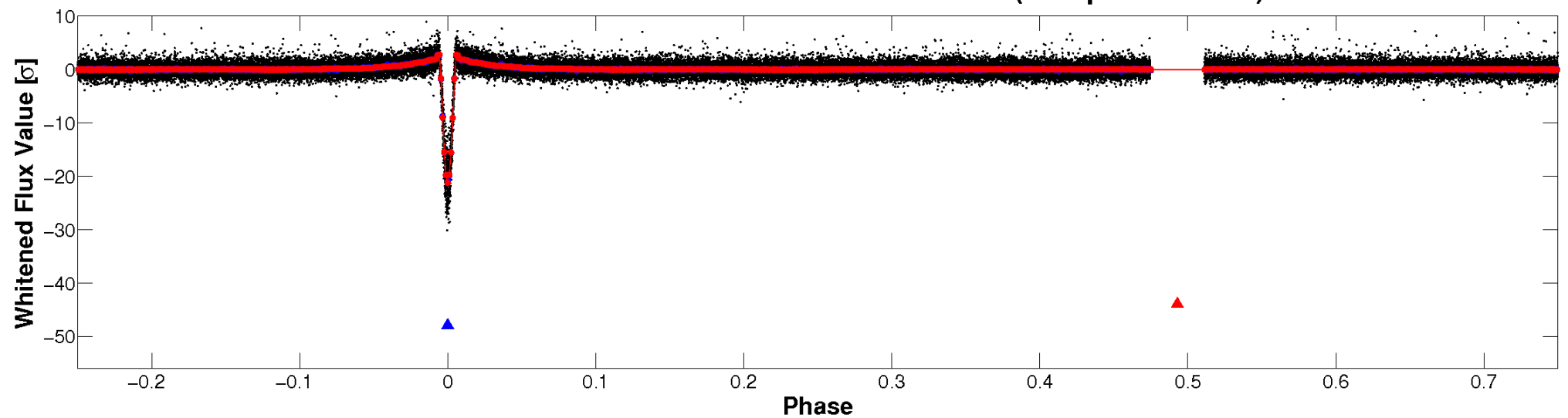


# Non-Whitened Vs. Whitened Light Curve

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

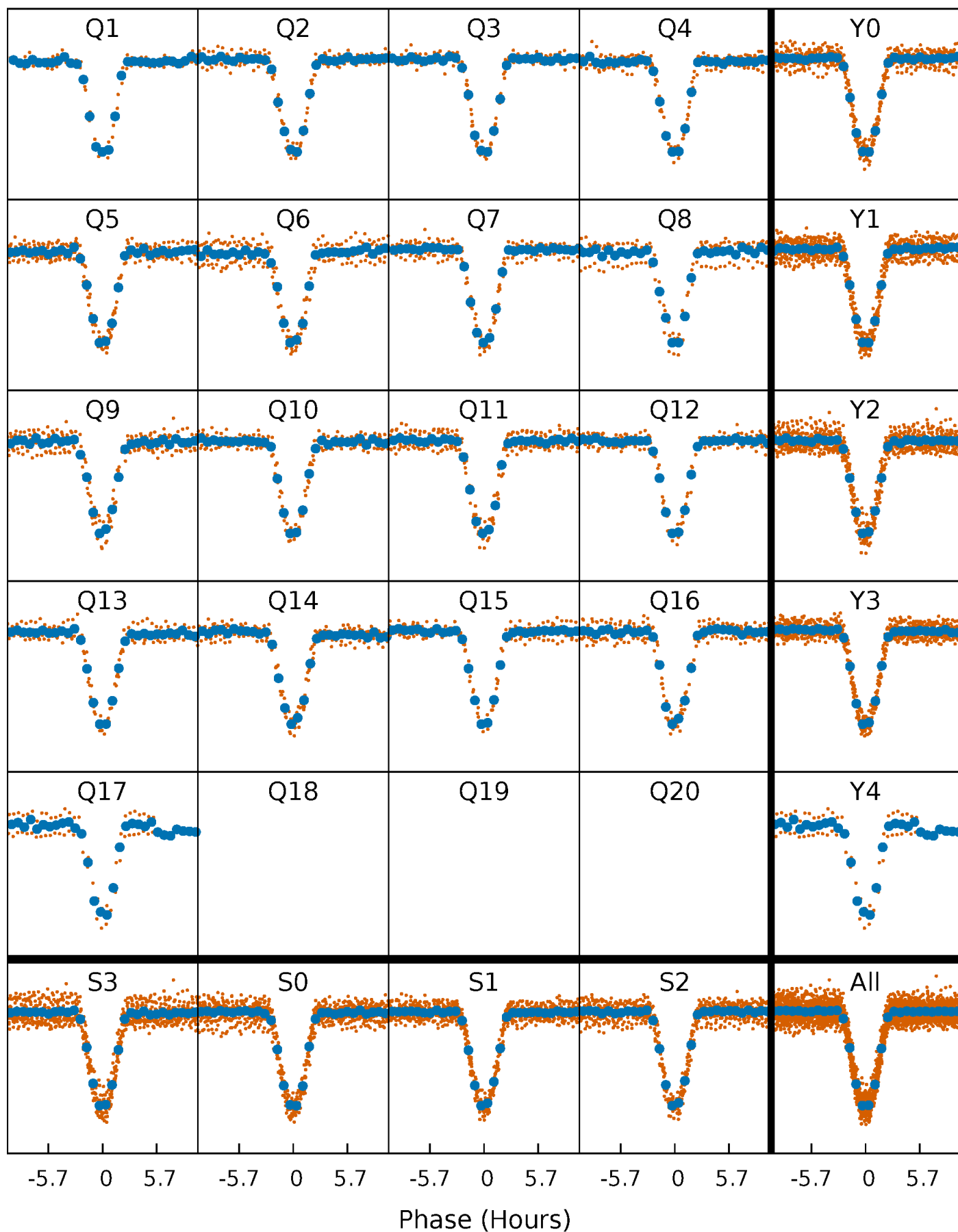


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



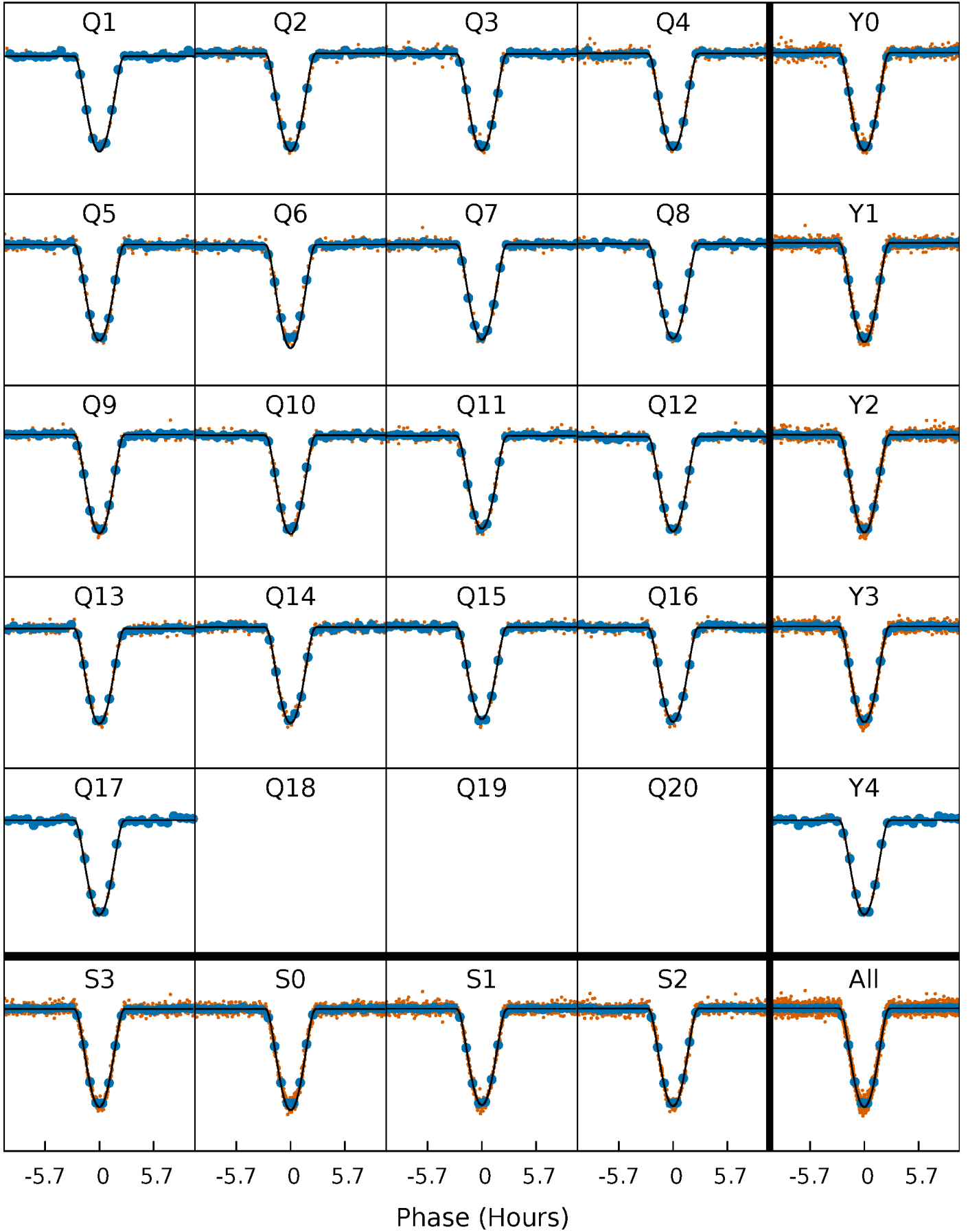
# PDC Quarter-Phased Transit Curves

TCE 007624297-02 P= 18.019657 Days  $T_0=139.784643$  (BKJD)



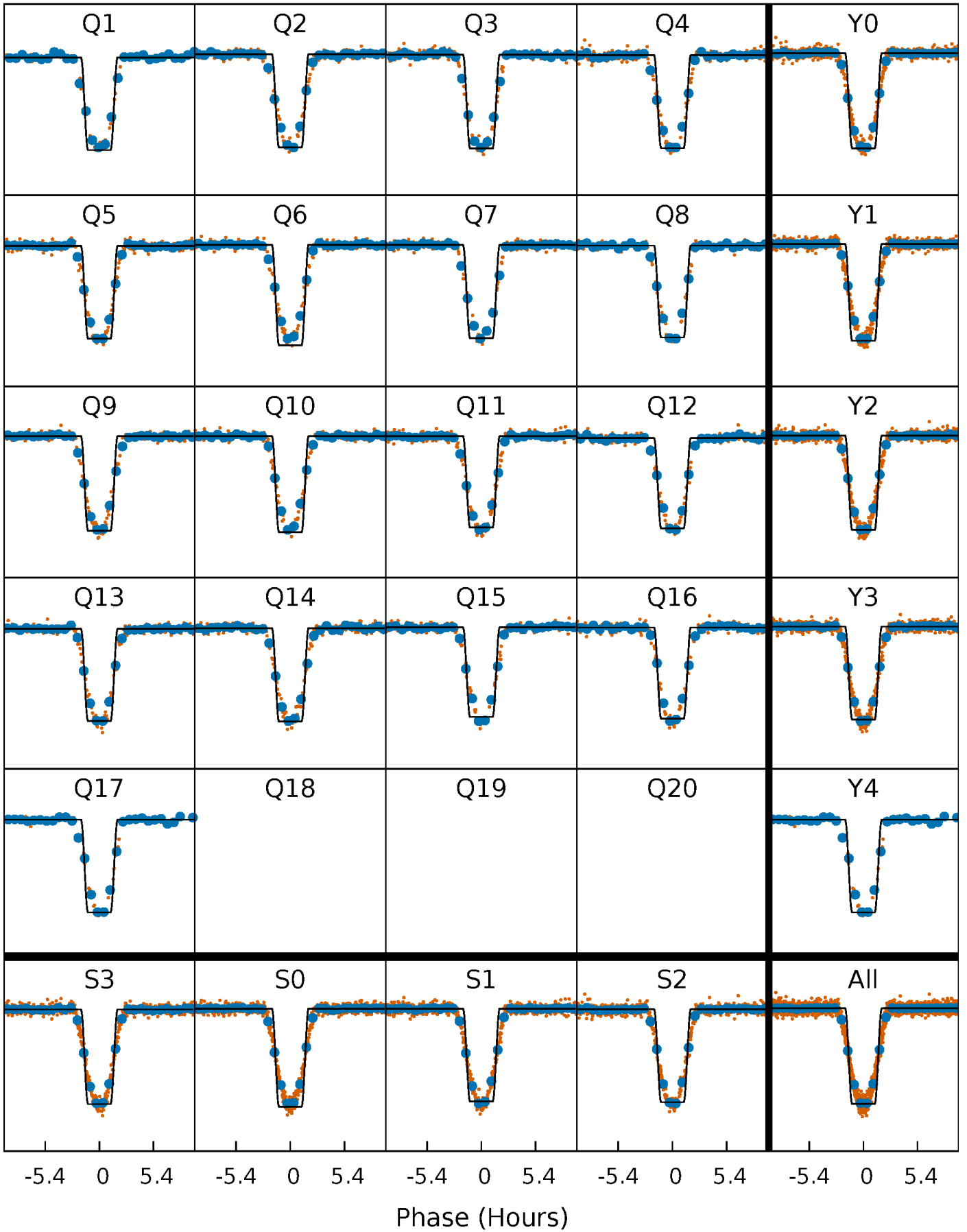
# DV Quarter-Phased Transit Curves

TCE 007624297-02 P= 18.019657 Days  $T_0=139.784643$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

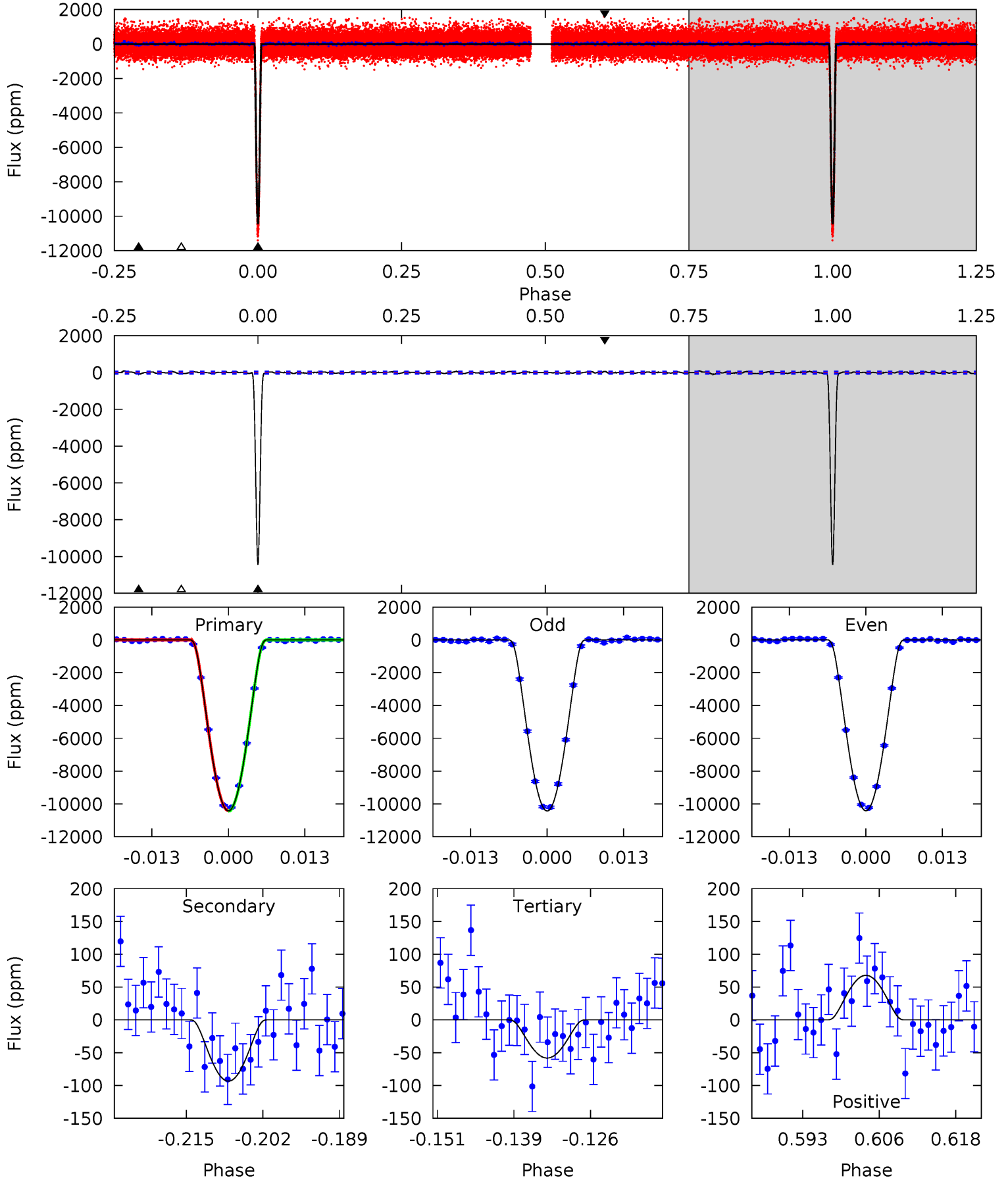
TCE 007624297-02   P= 18.019621 Days    $T_0=139.786035$  (BKJD)



# DV Model-Shift Uniqueness Test

007624297-02, P = 18.019657 Days, E = 121.764986 Days

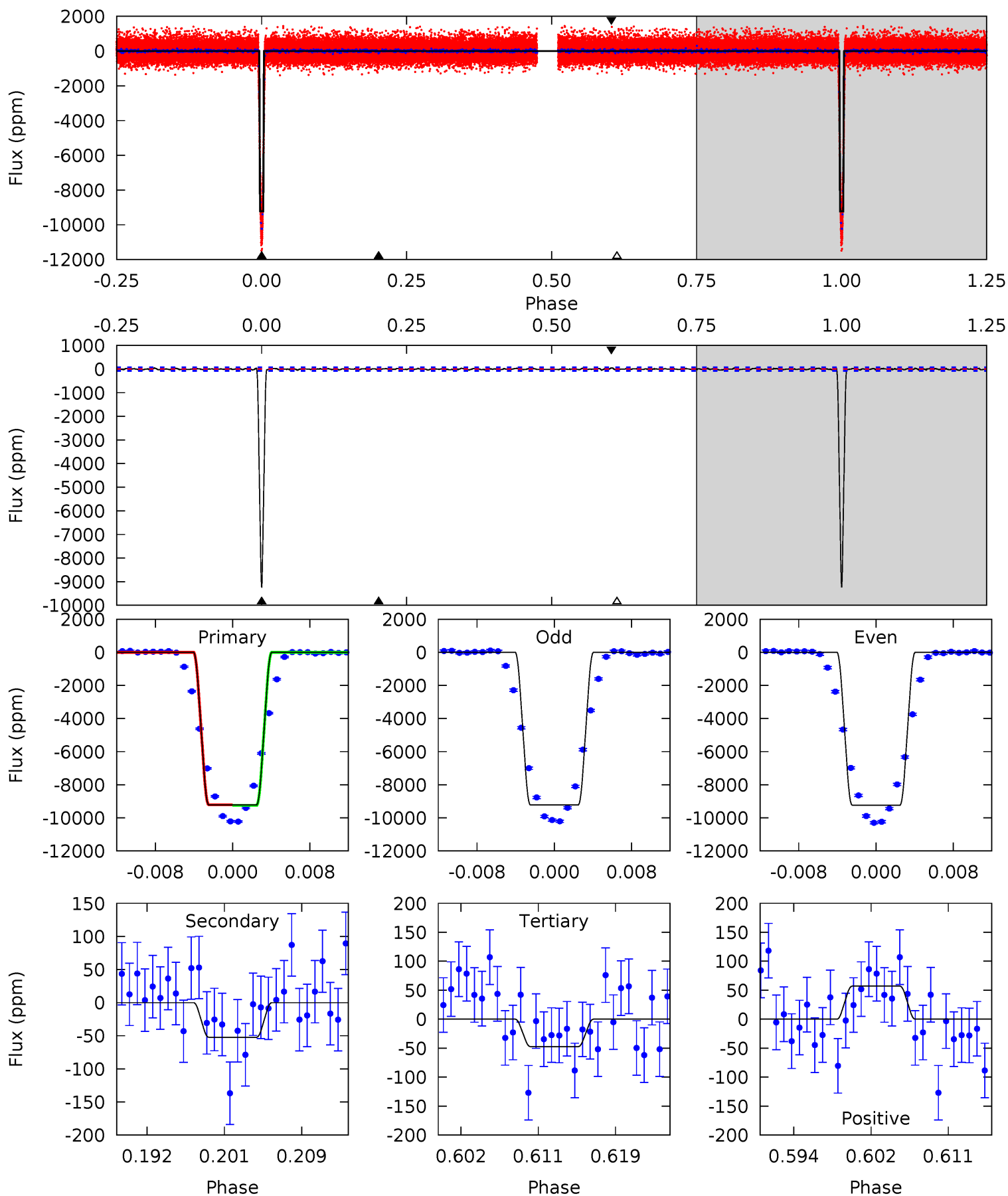
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
821.1	7.36	4.58	5.34	4.98	2.49	2.07	816.5	815.7	2.77	2.01	0.48	1.00	0.01	1.05



# Alt Model-Shift Uniqueness Test

007624297-02, P = 18.019621 Days, E = 121.766414 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
617.8	3.50	3.17	3.82	5.06	2.64	1.14	614.6	614.0	0.33	-0.31	0.37	1.00	0.01	0.89





### Stellar Parameters For KIC 007624297

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5278^{+157}_{-141}$	$4.658^{+0.033}_{-0.083}$	$-0.620^{+0.300}_{-0.300}$	$0.659^{+0.094}_{-0.040}$	$0.723^{+0.069}_{-0.063}$	$3.556^{+0.532}_{-0.990}$
	+3%/-3%	+1%/-2%	+48%/-48%	+14%/-6%	+10%/-9%	+15%/-28%
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 007624297-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-93 \pm 13$	$10.92^{+1.13}_{-0.88}$	$767^{+29}_{-26}$	$2244^{+63}_{-55}$	$6.113^{+1.445}_{-1.185}$
Alt.	$-52 \pm 15$	$7.33^{+0.90}_{-0.79}$	$769^{+31}_{-28}$	$2309^{+102}_{-104}$	$7.533^{+3.295}_{-2.333}$

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

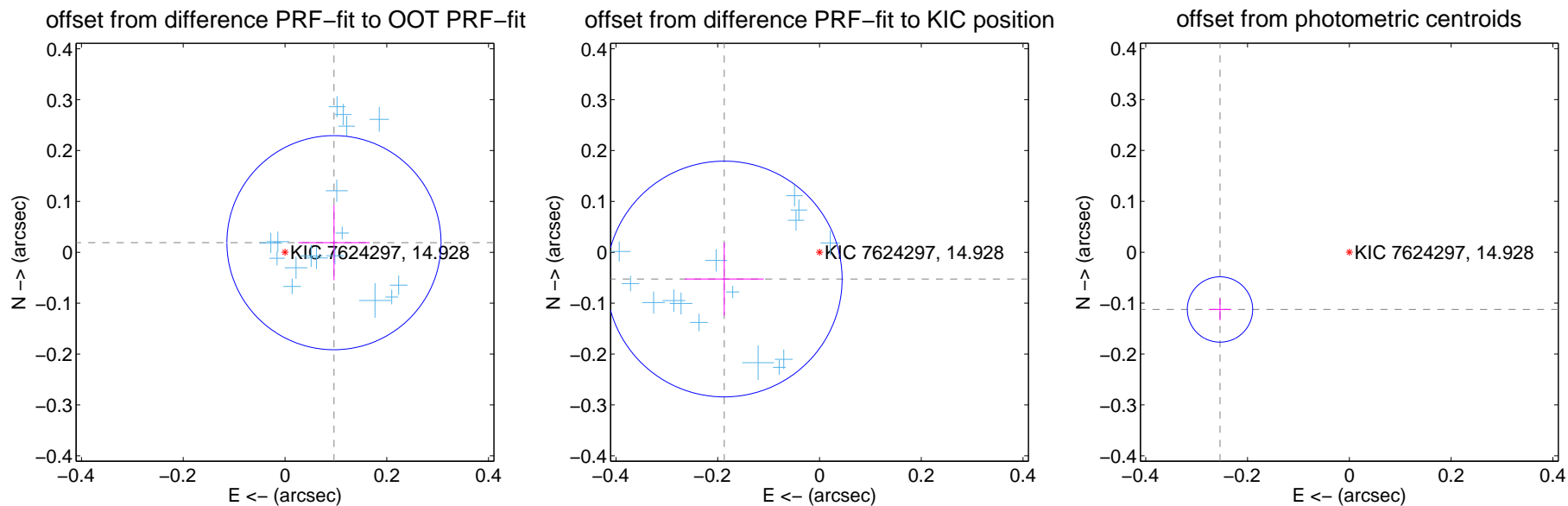
## DV Centroid Data

Supplemental centroid analysis for 007624297-02. Kepler magnitude: 14.93. Transit SNR 374.69

There are 17 quarters with good PRF difference image offsets

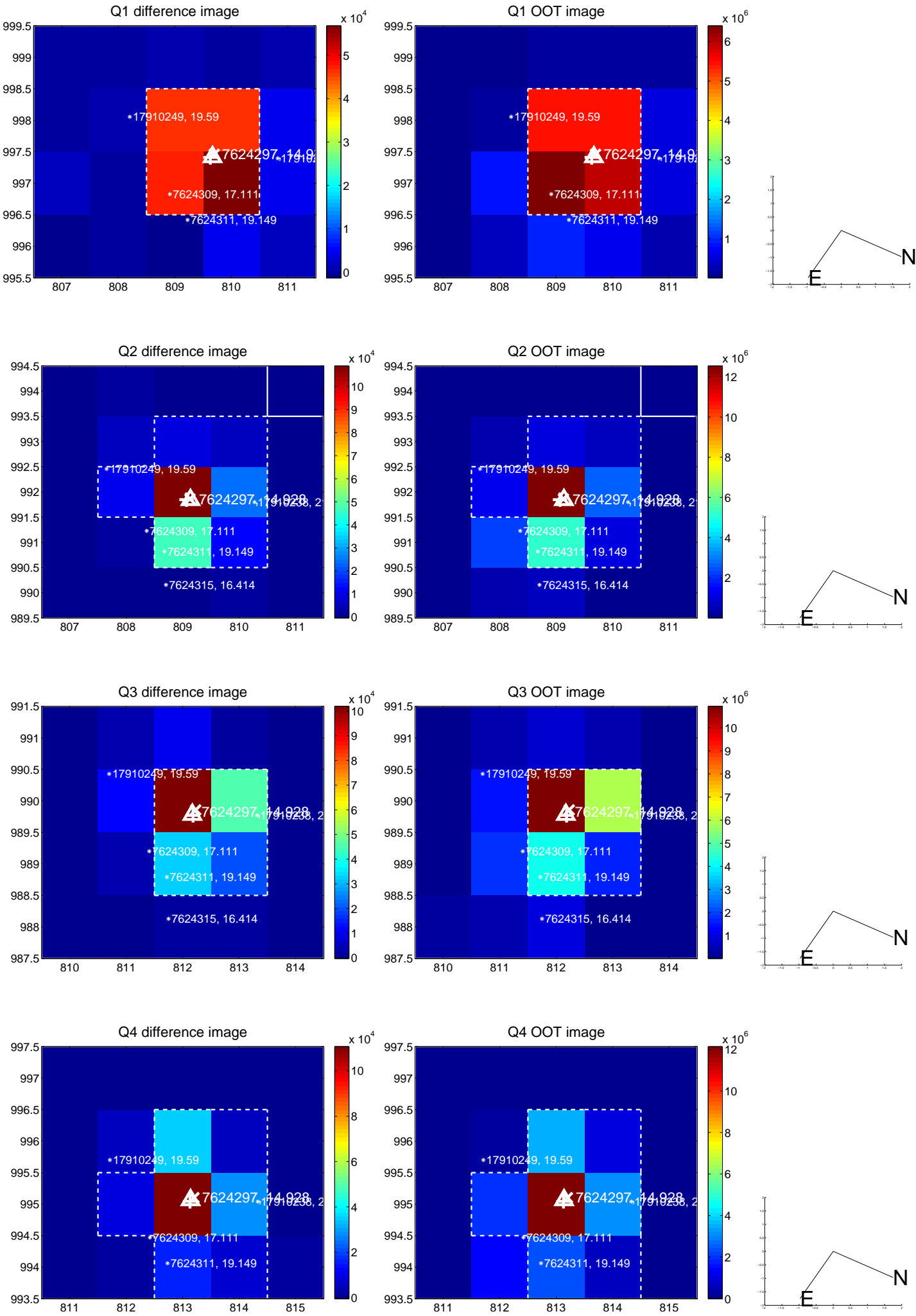
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.098 \pm 0.070$	1.40	$-0.096 \pm 0.070$	$0.019 \pm 0.074$
PRF-fit source offset from KIC position	$0.194 \pm 0.077$	2.52	$0.187 \pm 0.078$	$-0.053 \pm 0.072$
photometric centroid source offset	$0.28 \pm 0.02$	12.99	$0.25 \pm 0.02$	$-0.11 \pm 0.02$

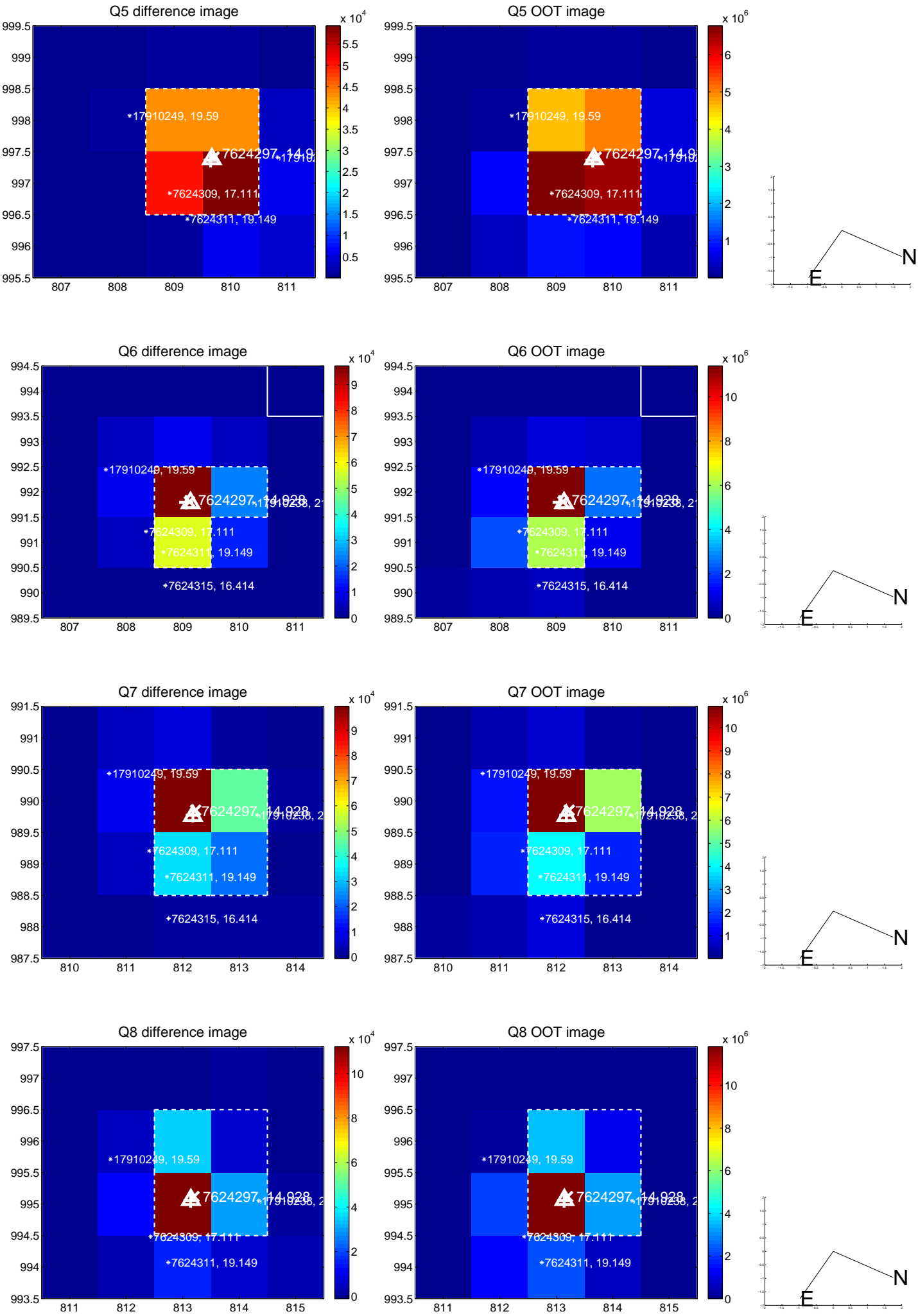


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

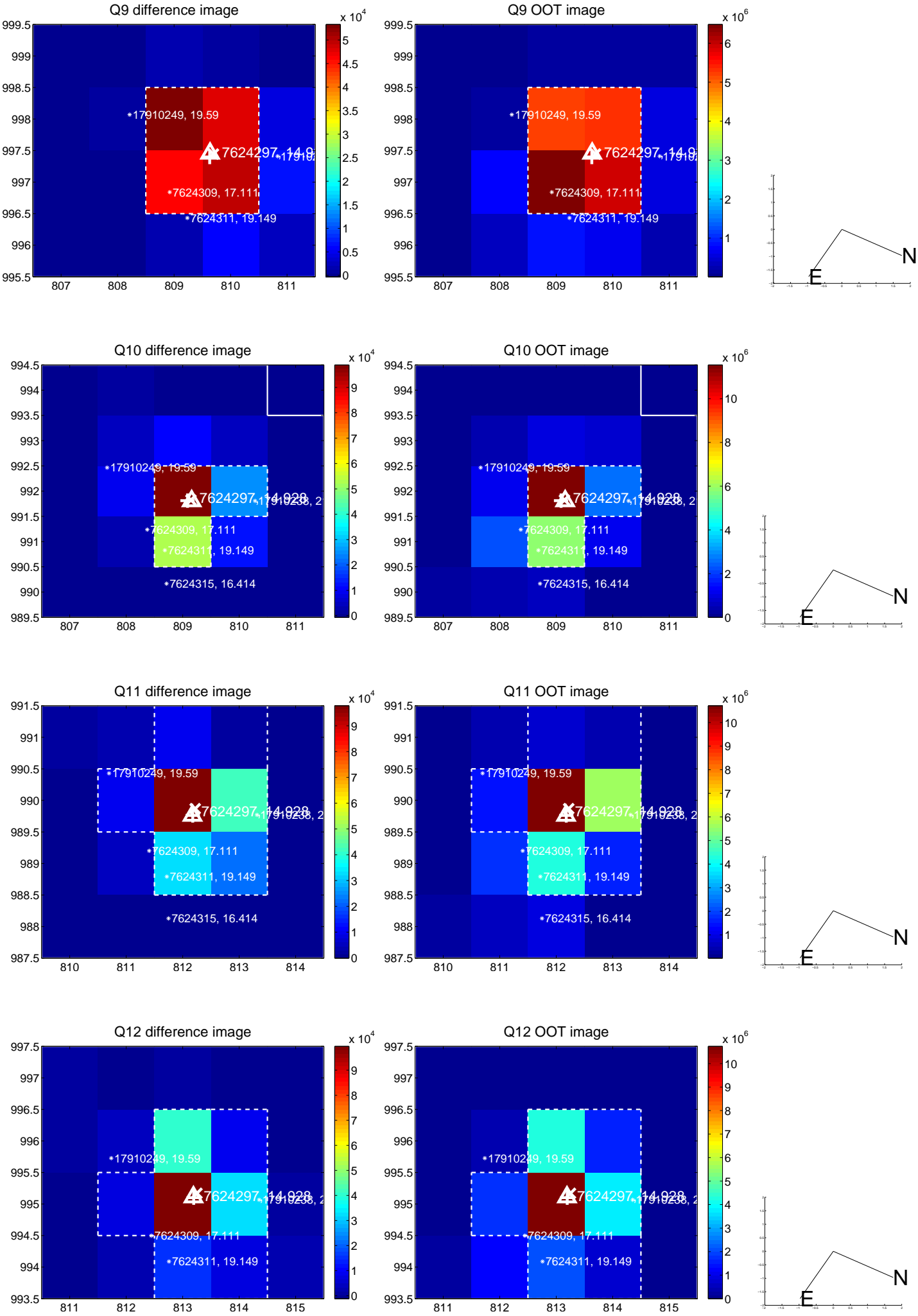
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



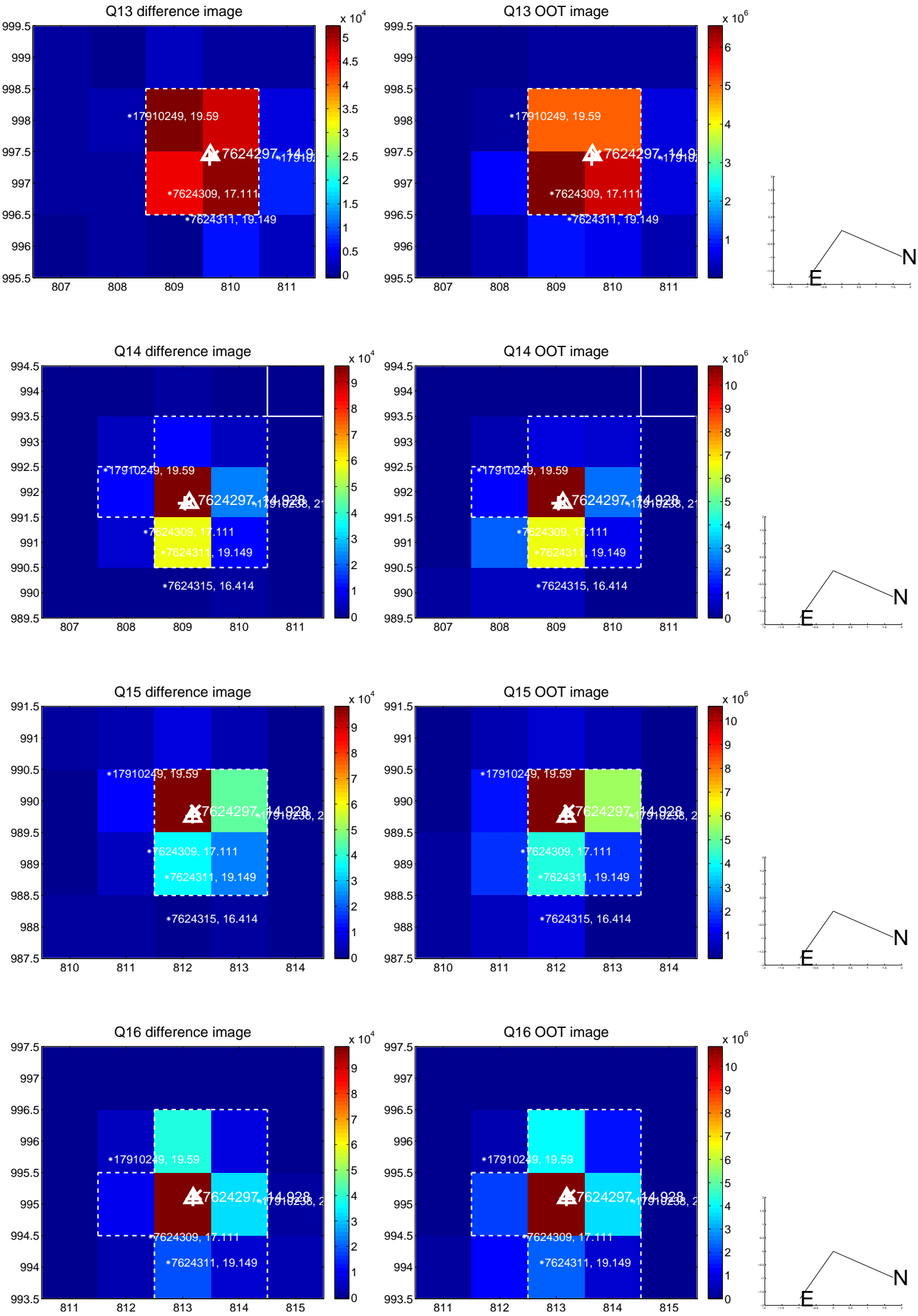
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



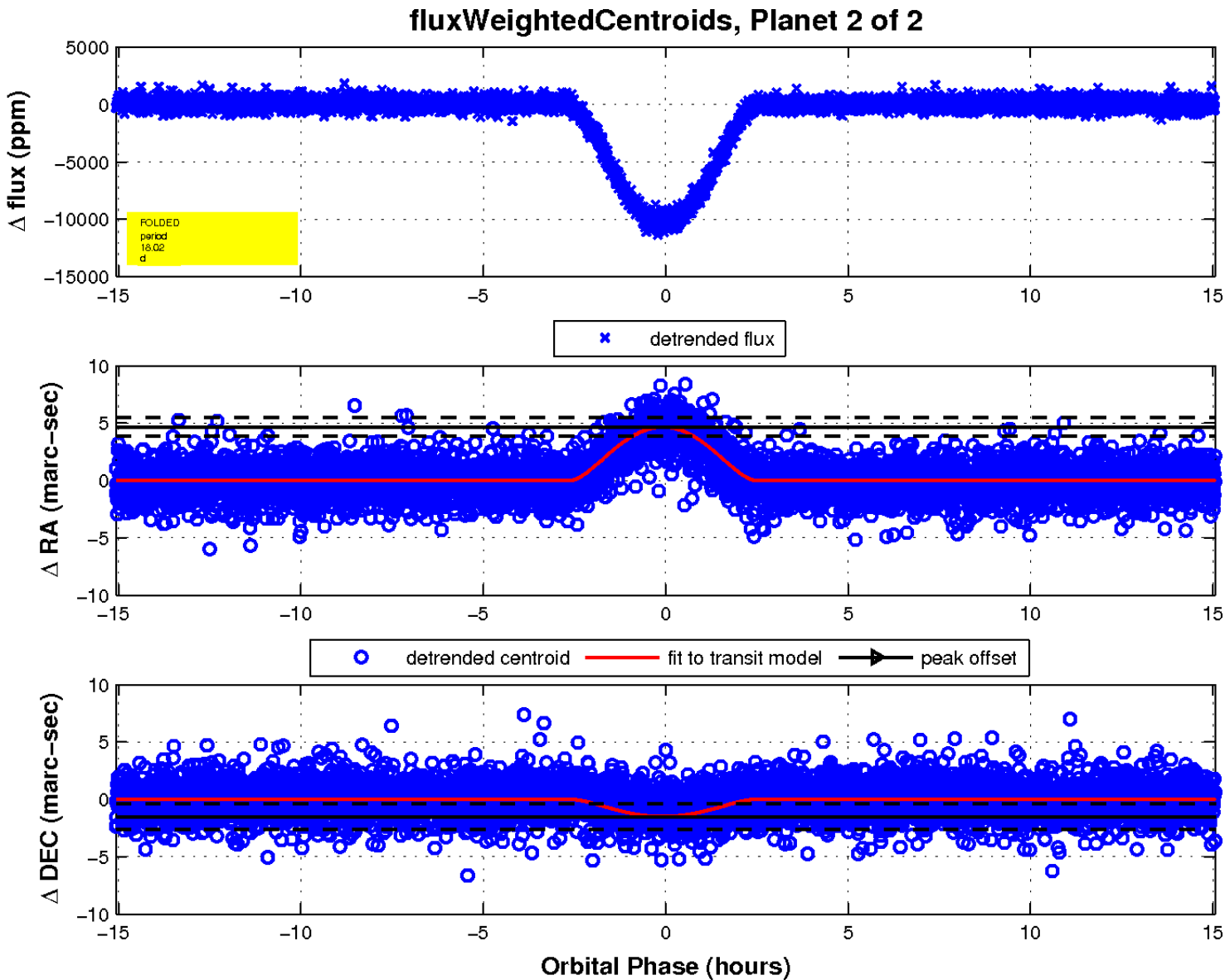
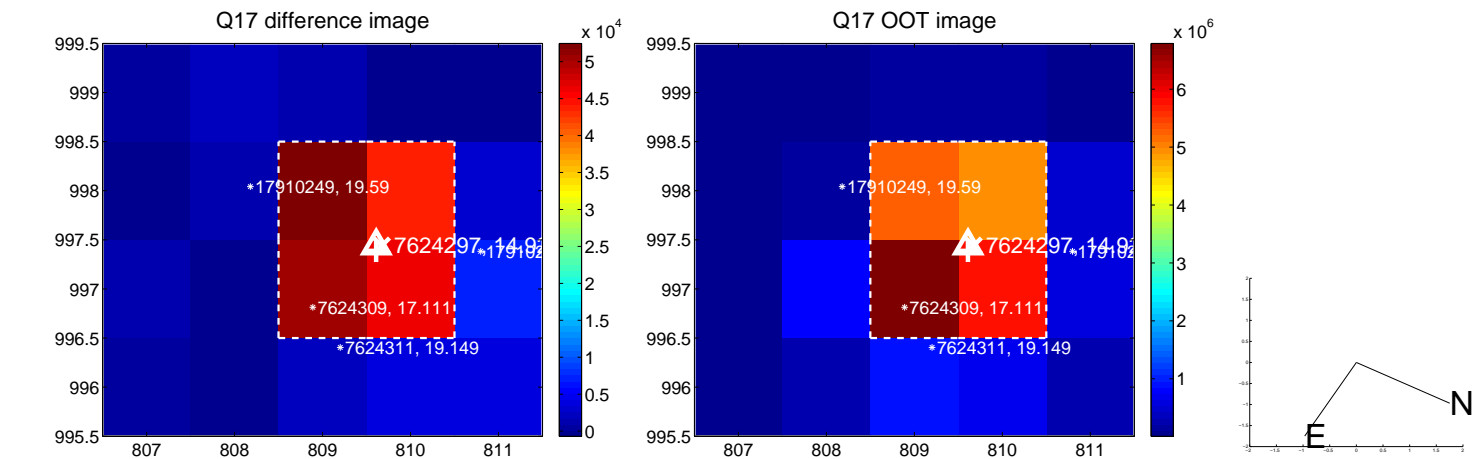
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

