

# KIC 009243795

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009243795-01	OBS	7150.01	14.443130	139.391009	41386.4	8.273	4029.8	3883.2	2.74	5757	85.91	462.96
009243795-02	OBS	No	14.442645	139.021649	386.5	37.778	12.4	16.6	2.74	5757	10.67	462.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009243795-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
009243795-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—RESIDUAL_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.

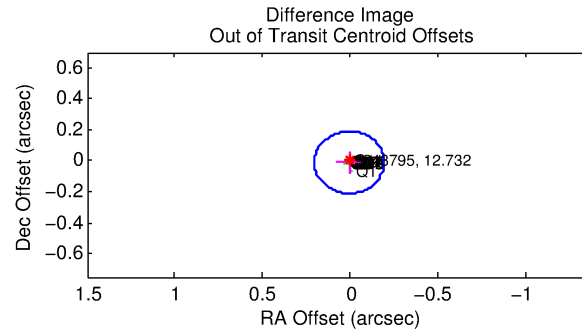
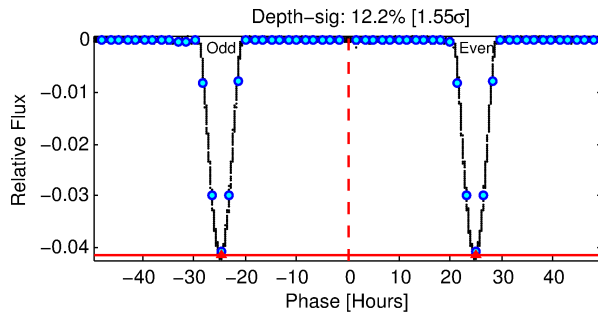
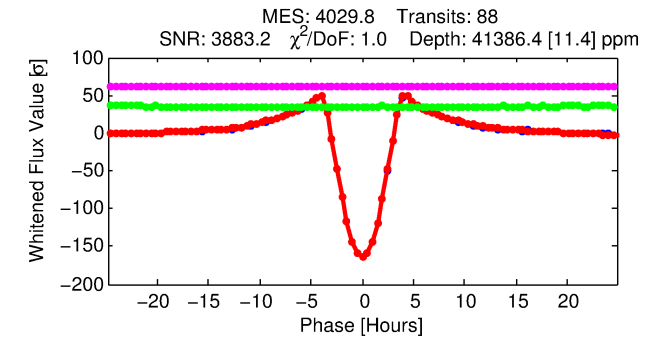
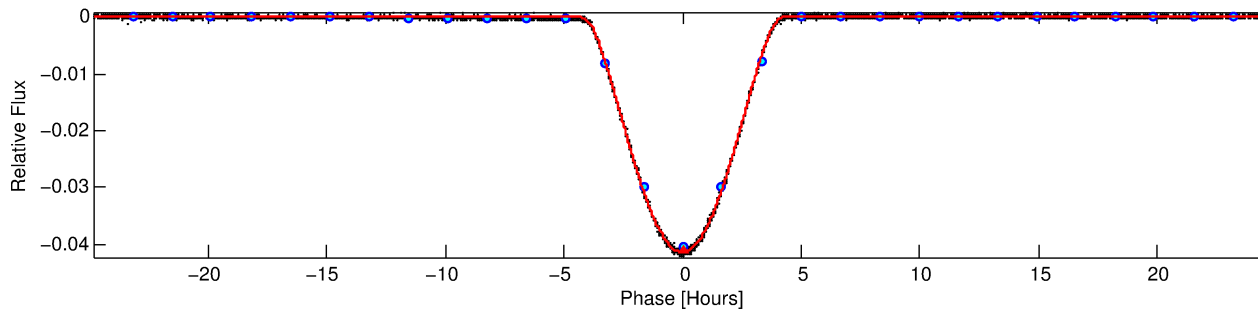
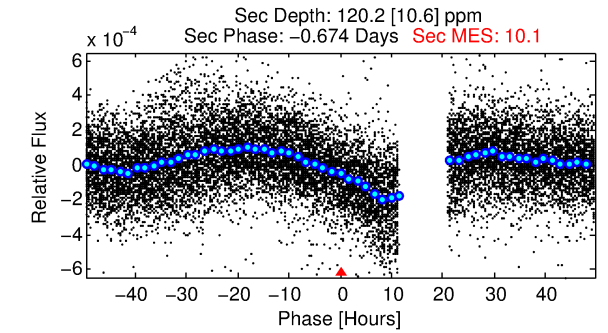
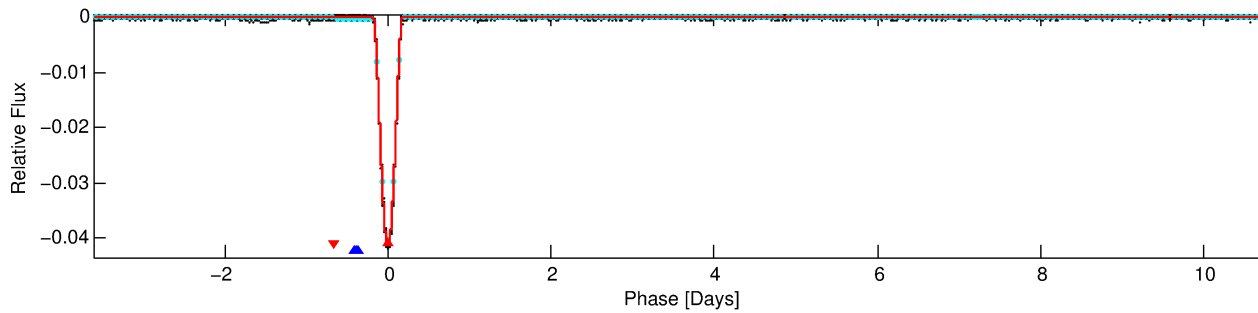
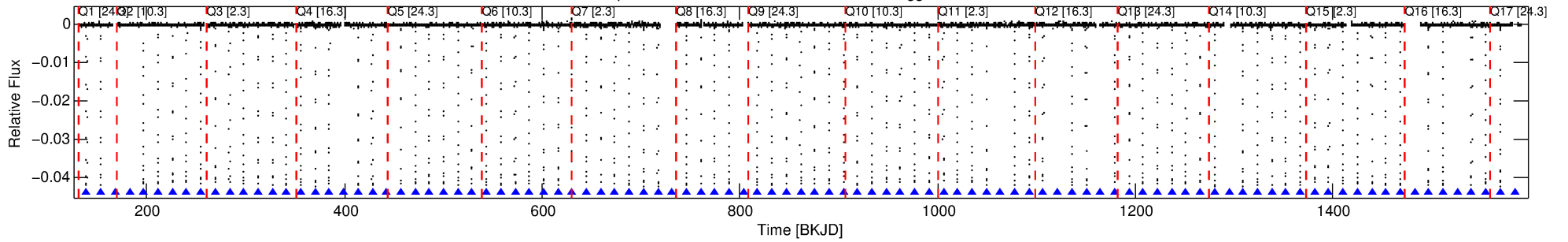
Ephemeris Match Information For 009243795-01

No Significant Match Found

# DV One-Page Summary

KIC: 9243795 Candidate: 1 of 2 Period: 14.443 d  
KOI: K07150.01 Corr: 0.998

Kp: 12.73 R\*: 2.74 Rs Teff: 5757.0 K Logg: 3.67 Fe/H: -0.340



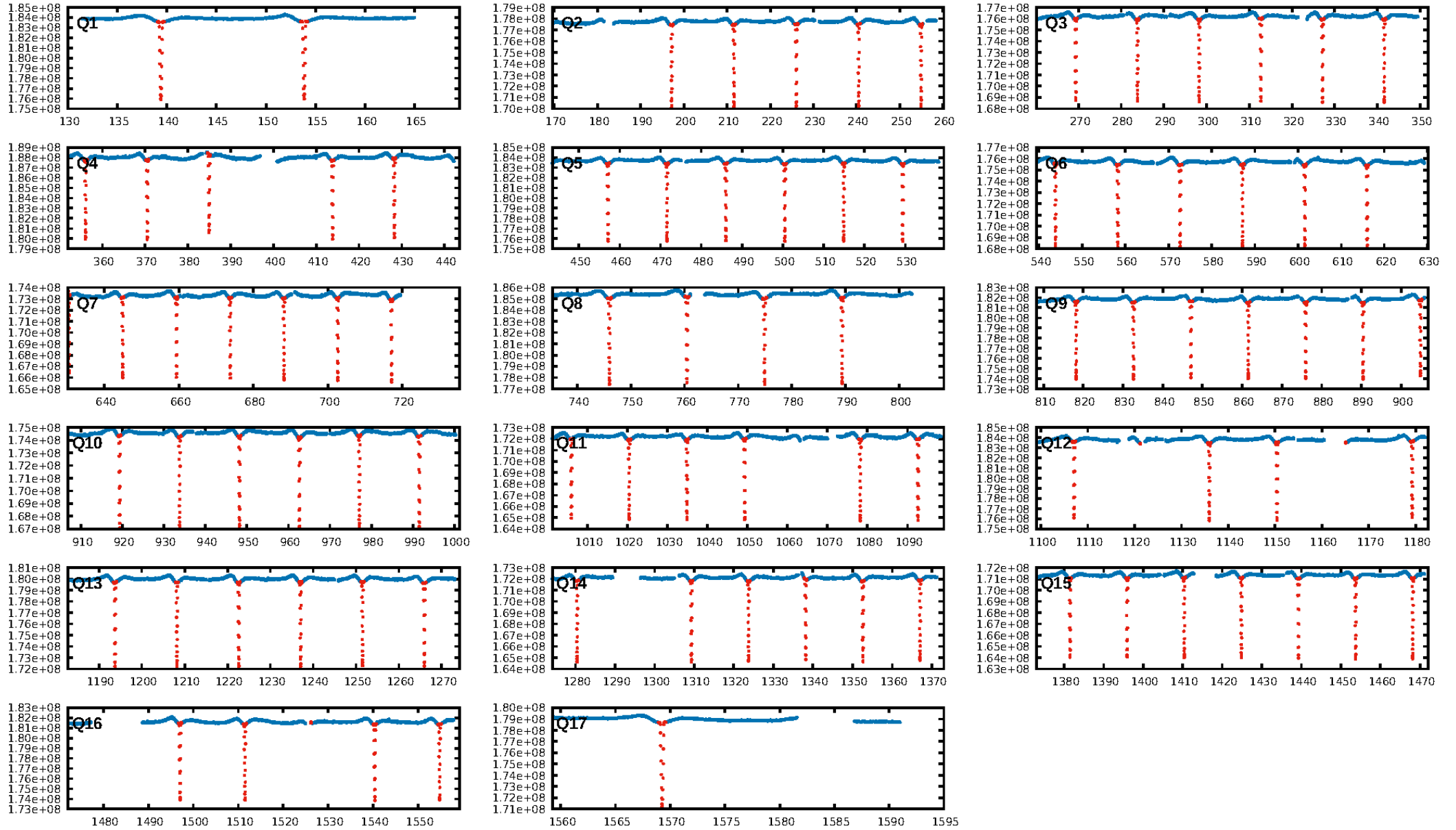
## DV Fit Results:

Period = 14.44313 [0.00000] d  
Epoch = 139.3910 [0.0000] BKJD  
Rp/R\* = 0.2878 [0.0026]  
a/R\* = 11.62 [0.01]  
b = 0.95 [0.00]  
Seff = 462.96 [268.02]  
Teq = 1183 [171] K  
Rp = 85.91 [34.86] Re  
a = 0.1261 [0.0463] AU  
Ag = 0.14 [0.08] [-10.52σ]  
Teffp = 1124 [44] K [-0.33σ]

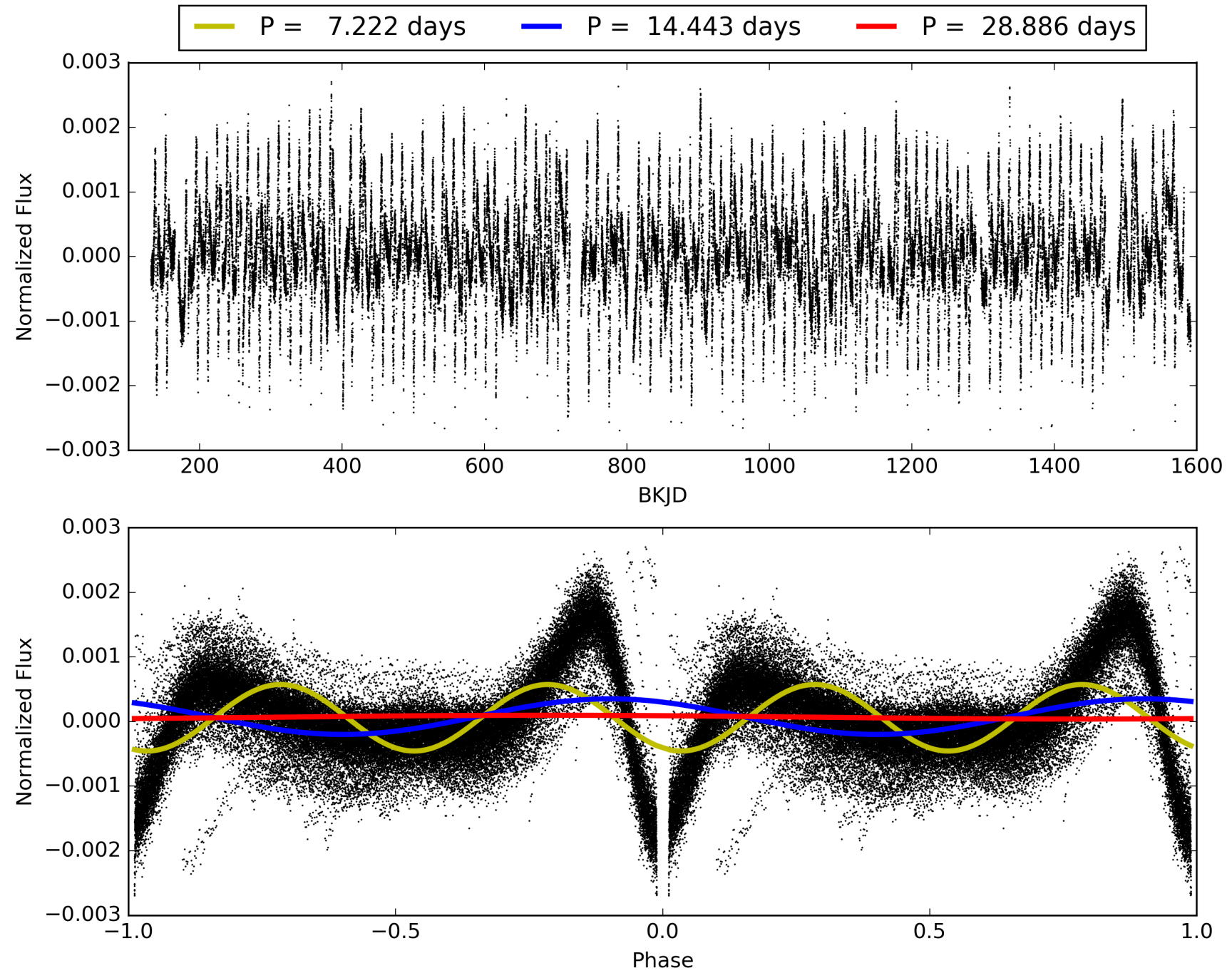
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [85/85]  
GhostDiagnostic-chr: 3.827  
Centroid-sig: 0.0%  
Centroid-so: 0.077 arcsec [42.99σ]  
OotOffset-rm: 0.013 arcsec [0.19σ]  
KicOffset-rm: 0.063 arcsec [0.93σ]  
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]

# TCE 009243795-01, PDC Light Curves

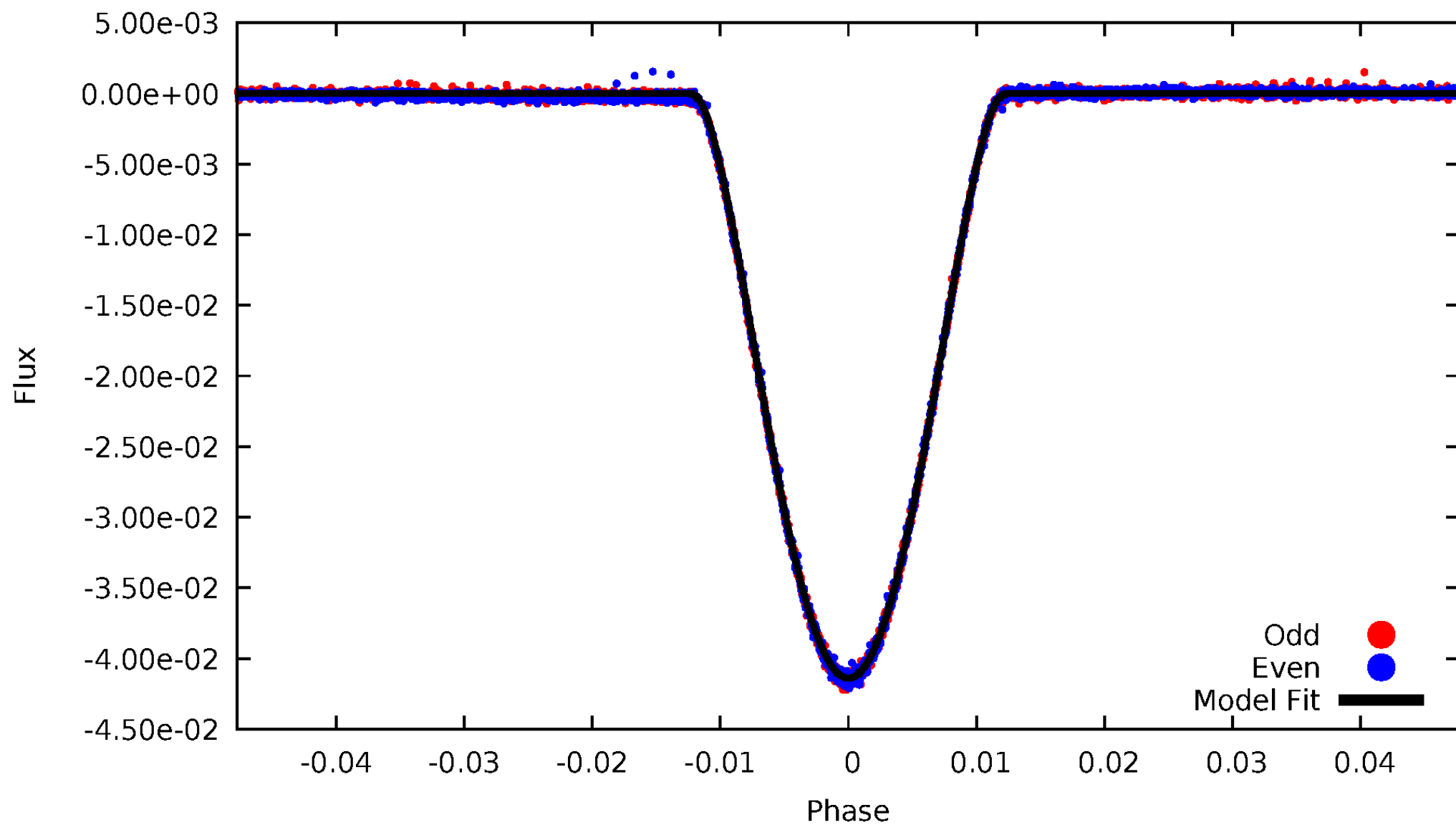


TCE 009243795-01



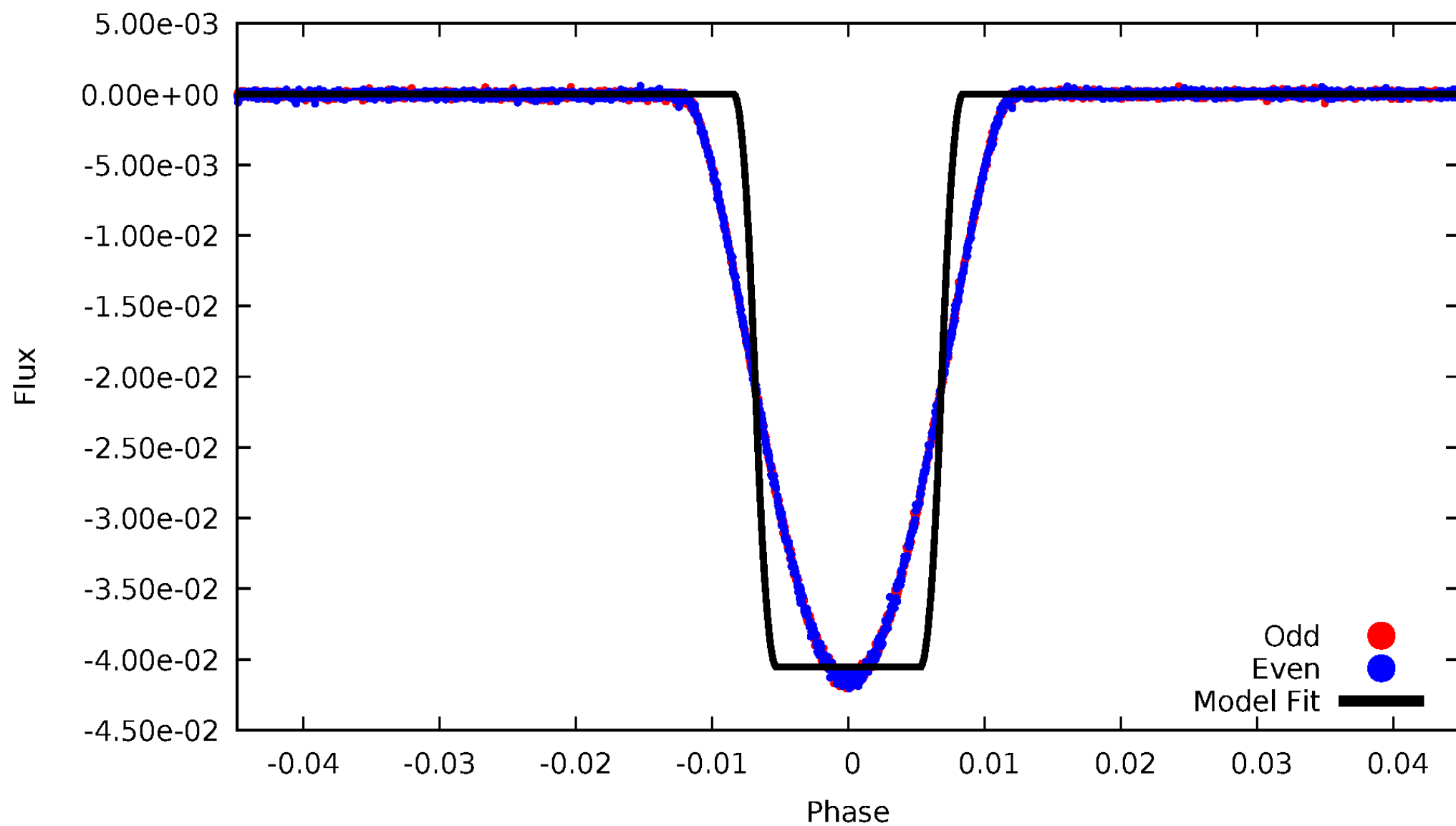
# DV Odd/Even

TCE 009243795-01



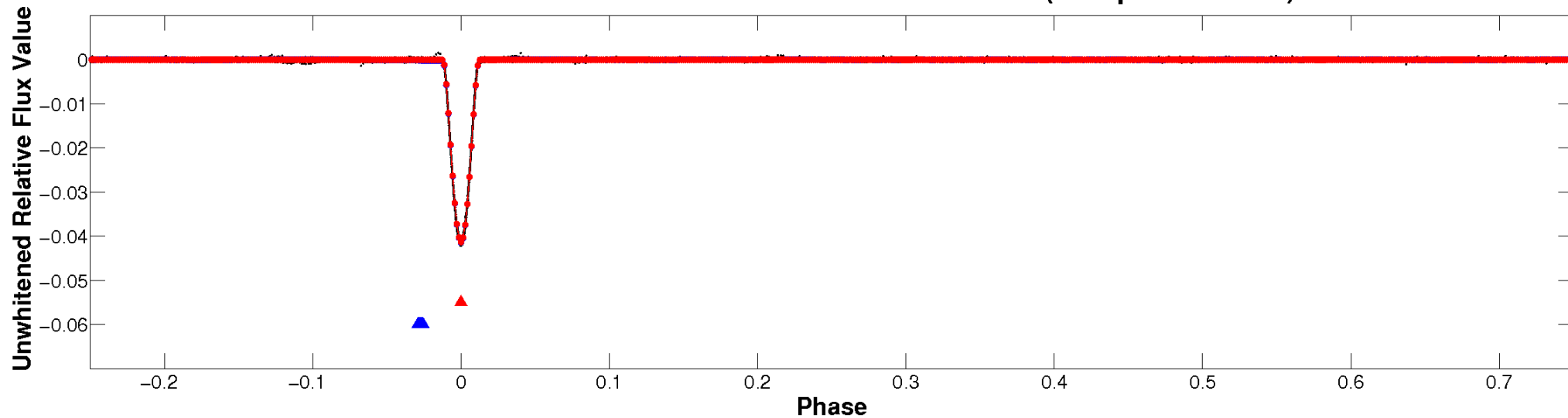
# ALT Odd/Even

TCE 009243795-01

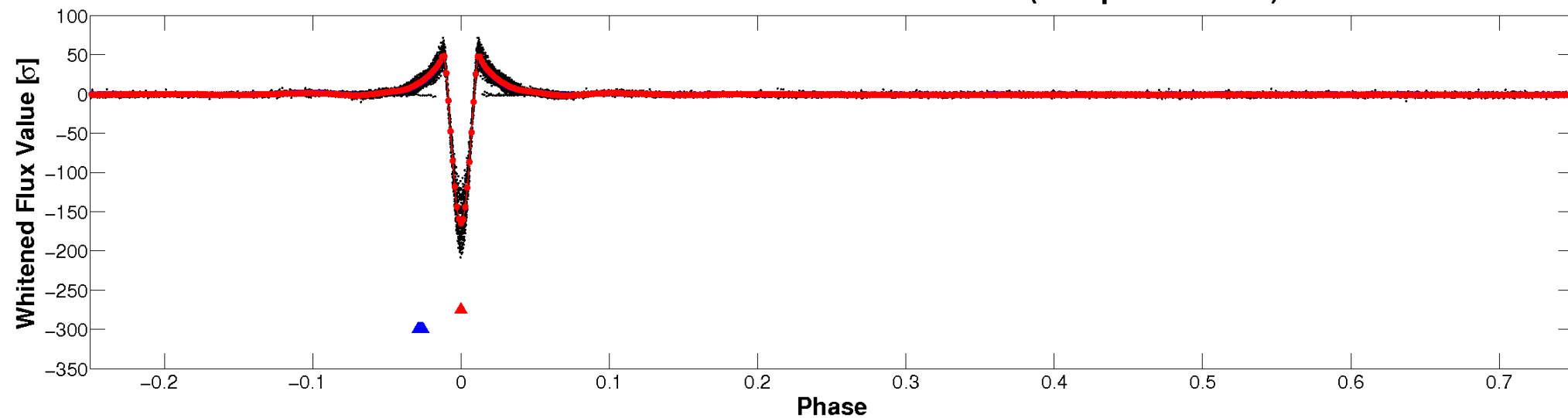


# Non-Whitened Vs. Whitened Light Curve

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

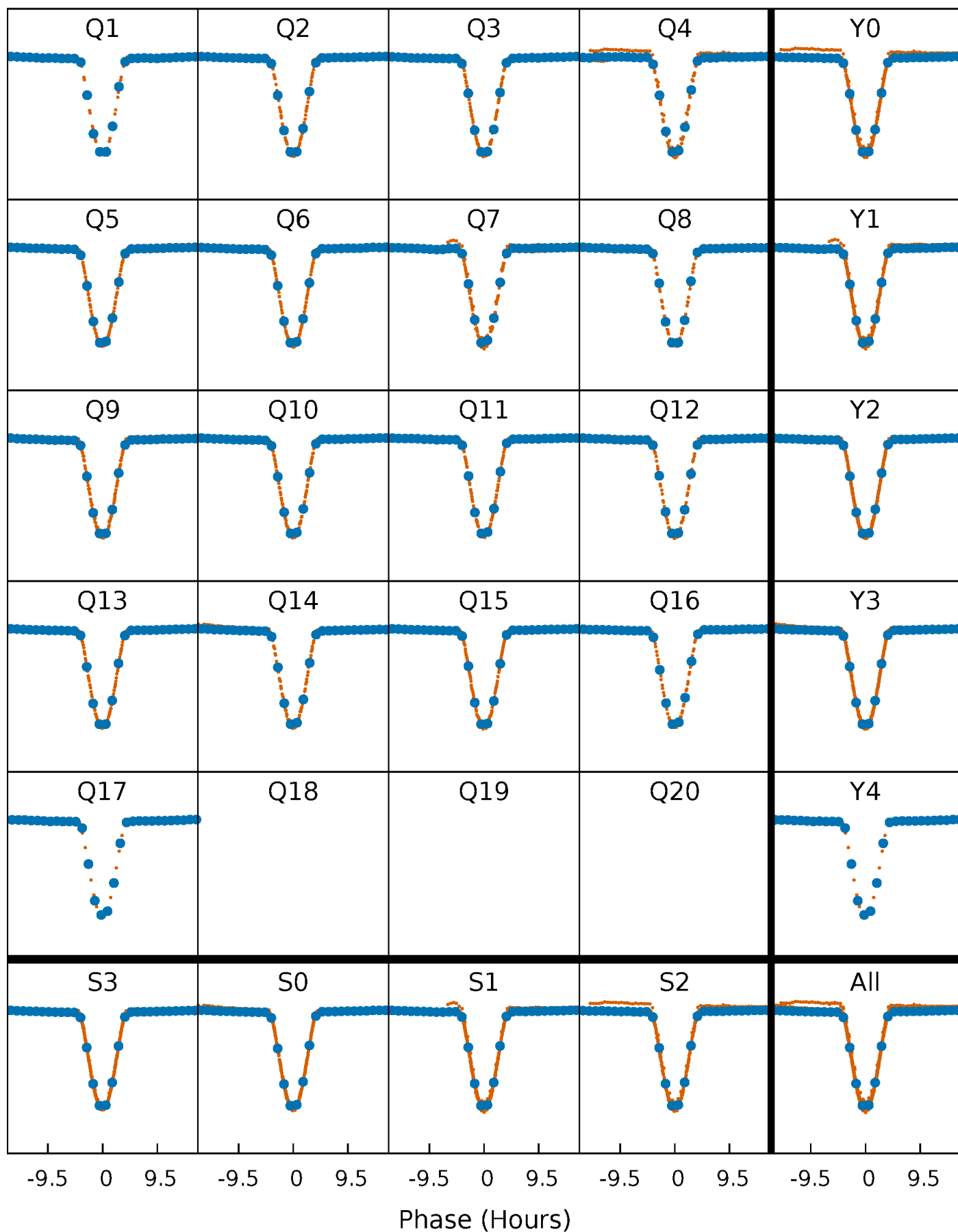


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

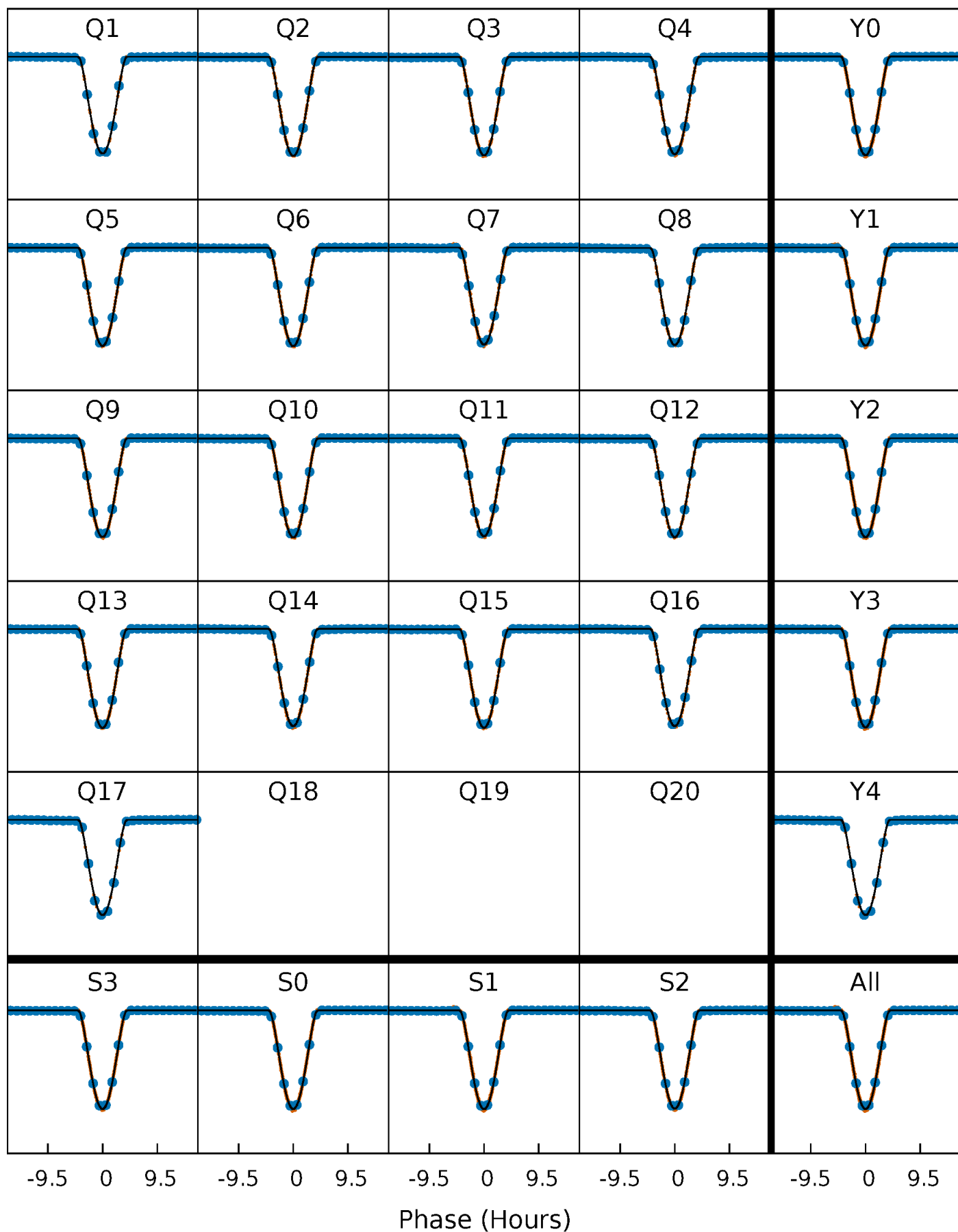
TCE 009243795-01 P= 14.443130 Days  $T_0=139.391009$  (BKJD)





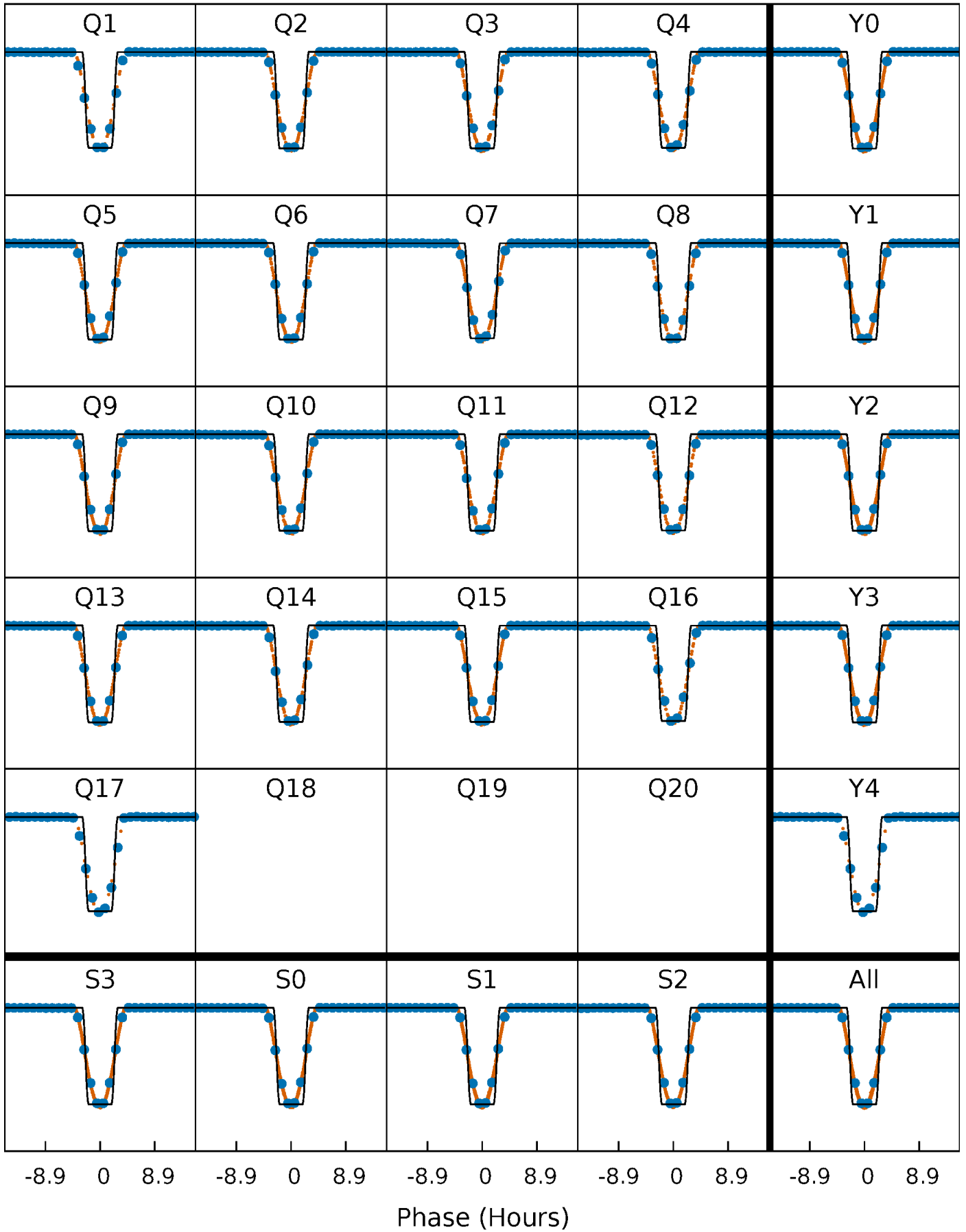
# DV Quarter-Phased Transit Curves

TCE 009243795-01 P= 14.443130 Days  $T_0=139.391009$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

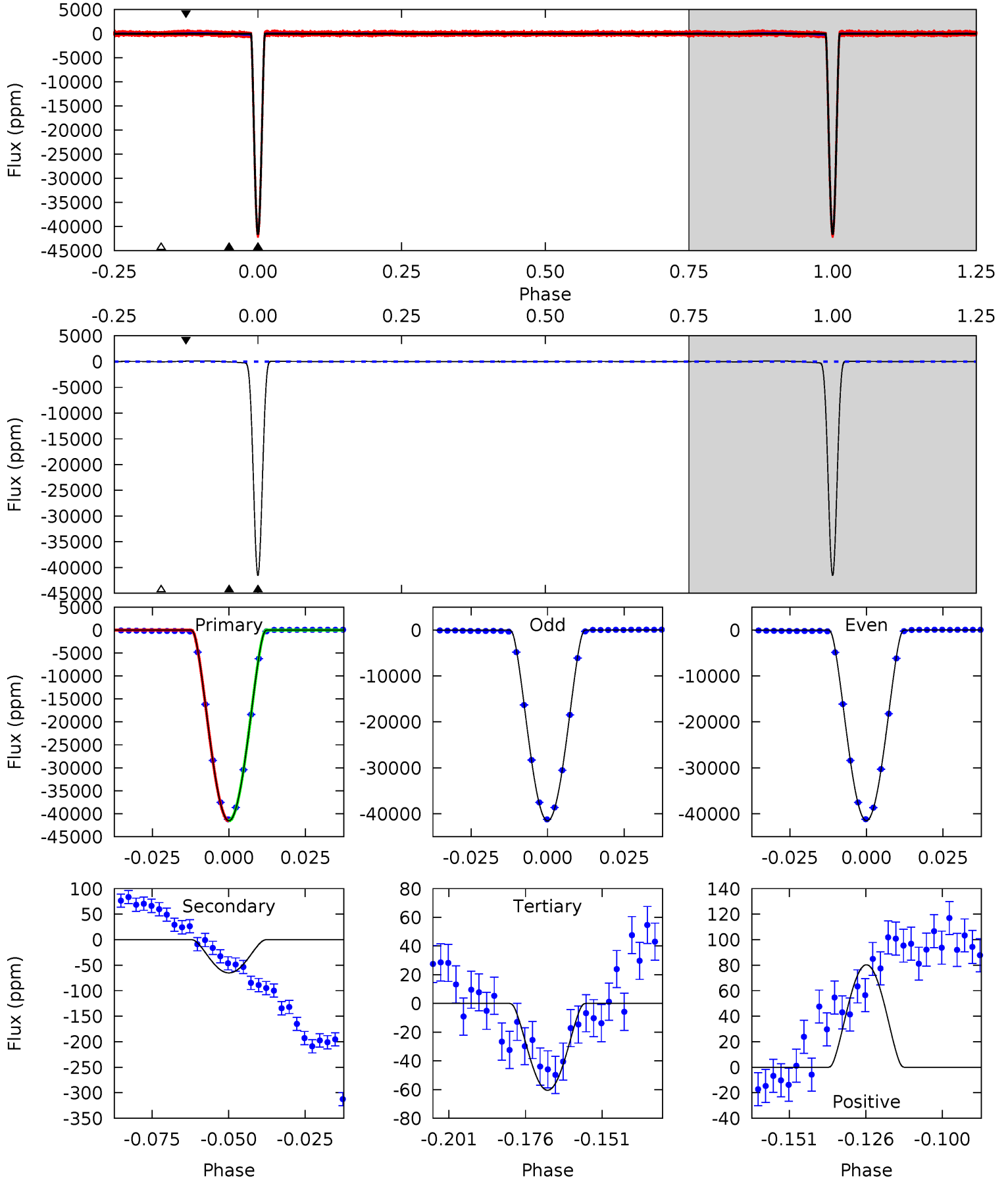
TCE 009243795-01 P= 14.443131 Days  $T_0=139.390931$  (BKJD)



# DV Model-Shift Uniqueness Test

009243795-01, P = 14.443130 Days, E = 124.947879 Days

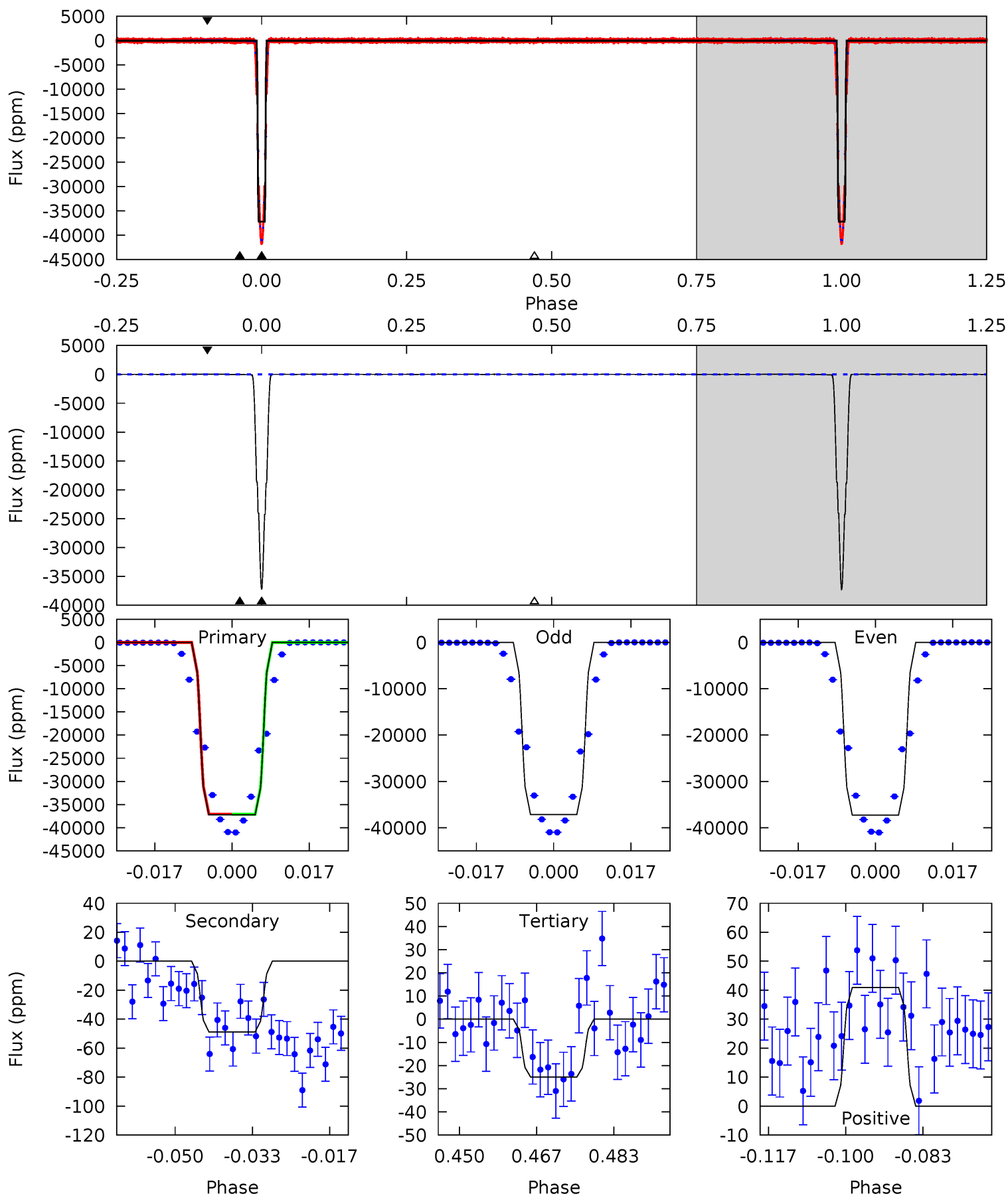
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10691	16.8	15.6	20.7	4.85	2.24	8.35	10676	10671	1.22	-3.89	5.67	1.00	0.00	4.72



# Alt Model-Shift Uniqueness Test

009243795-01, P = 14.443131 Days, E = 124.947800 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
7647	10.0	5.12	8.41	4.93	2.39	2.21	7642	7639	4.90	1.62	11.7	1.00	0.00	3.97



### Stellar Parameters For KIC 009243795

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5757^{+183}_{-183}$	$3.672^{+0.323}_{-0.108}$	$-0.340^{+0.350}_{-0.300}$	$2.736^{+0.476}_{-1.110}$	$1.283^{+0.176}_{-0.327}$	$0.088^{+0.215}_{-0.029}$
	+3%/-3%	+9%/-3%	+103%/-88%	+17%/-41%	+14%/-25%	+244%/-33%
Source	PHO1	FLK73	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 009243795-01 / KOI 7150.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-65 \pm 4$	$84.93^{+9.91}_{-19.37}$	$1621^{+114}_{-159}$	$-2181^{+141}_{-84}$	$0.082^{+0.042}_{-0.017}$
Alt.	$-49 \pm 5$	$59.75^{+6.30}_{-13.73}$	$1614^{+113}_{-141}$	$-2129^{+160}_{-88}$	$0.125^{+0.059}_{-0.026}$

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

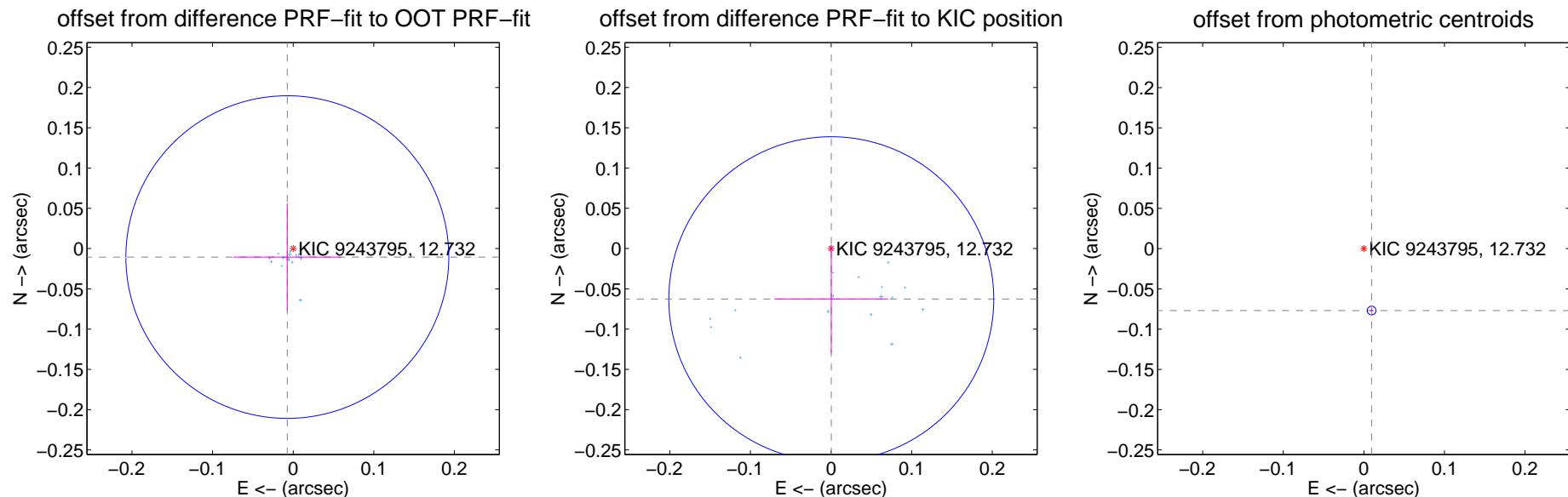
## DV Centroid Data

Supplemental centroid analysis for 009243795-01. Kepler magnitude: 12.73. Transit SNR 3883.18

There are 17 quarters with good PRF difference image offsets

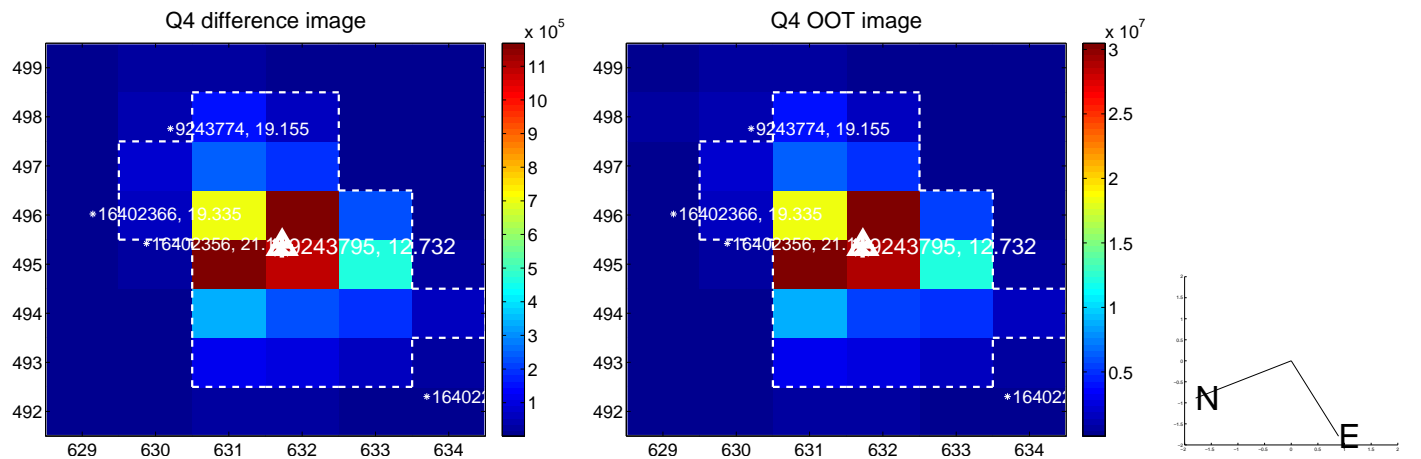
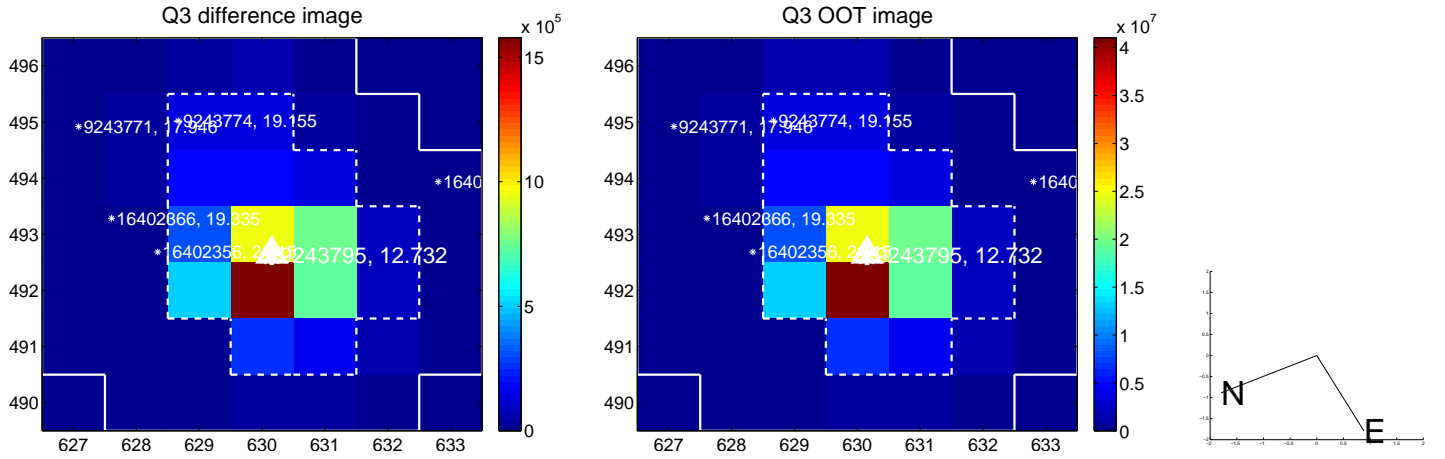
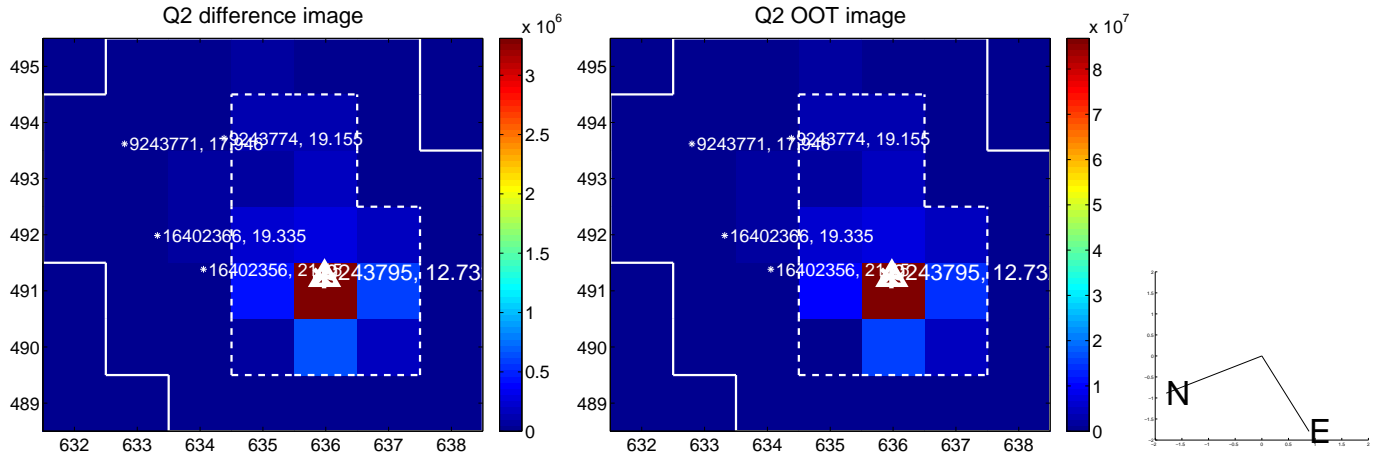
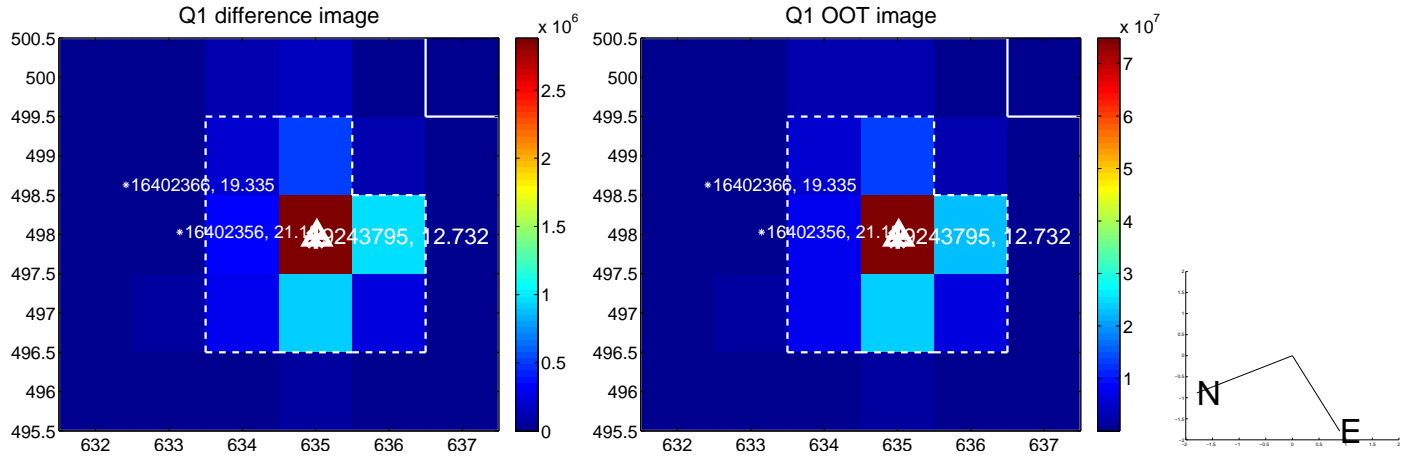
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.013 \pm 0.067$	0.19	$0.007 \pm 0.067$	$-0.011 \pm 0.067$
PRF-fit source offset from KIC position	$0.063 \pm 0.067$	0.93	$-0.000 \pm 0.071$	$-0.063 \pm 0.067$
photometric centroid source offset	$0.08 \pm 0.00$	42.99	$-0.01 \pm 0.00$	$-0.08 \pm 0.00$

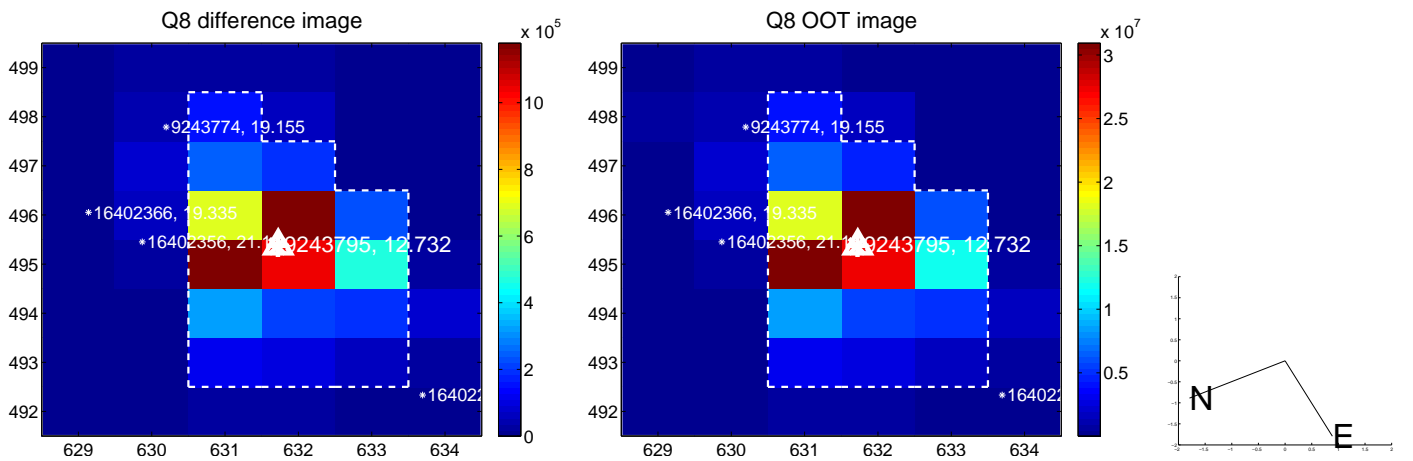
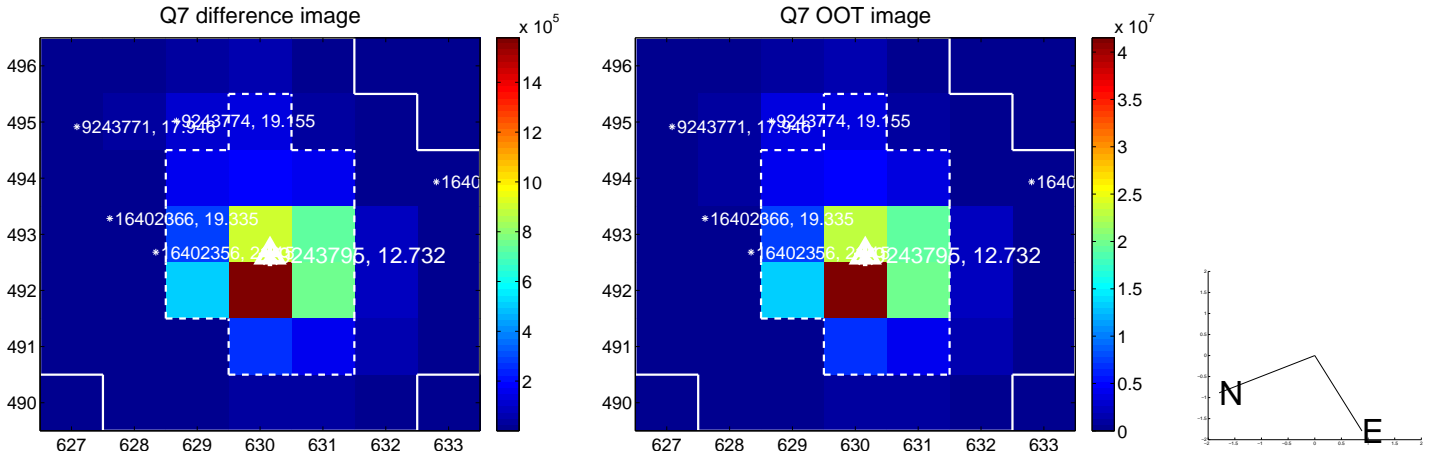
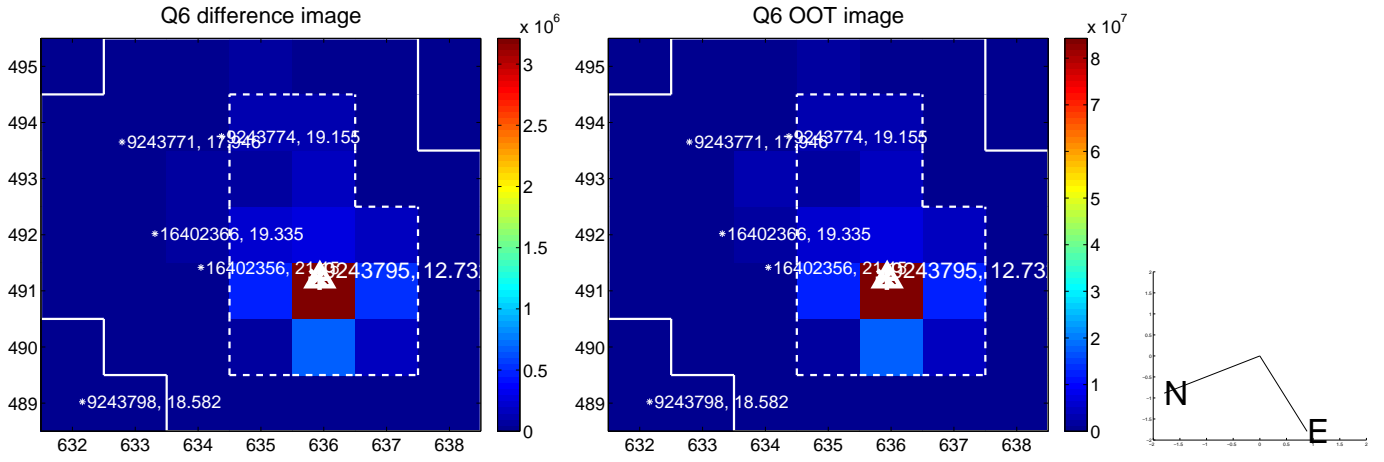
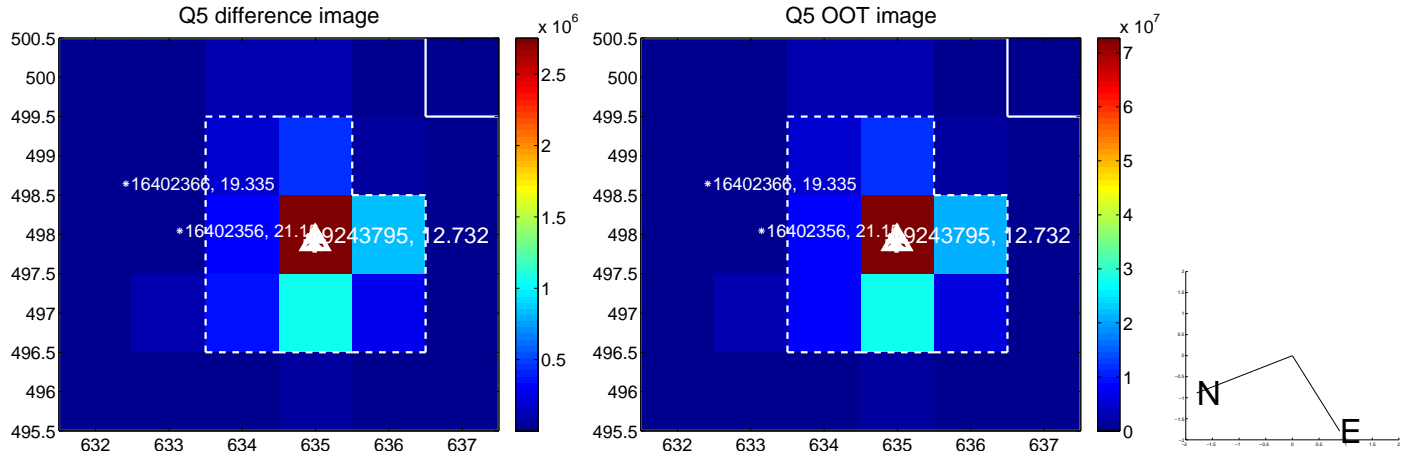


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

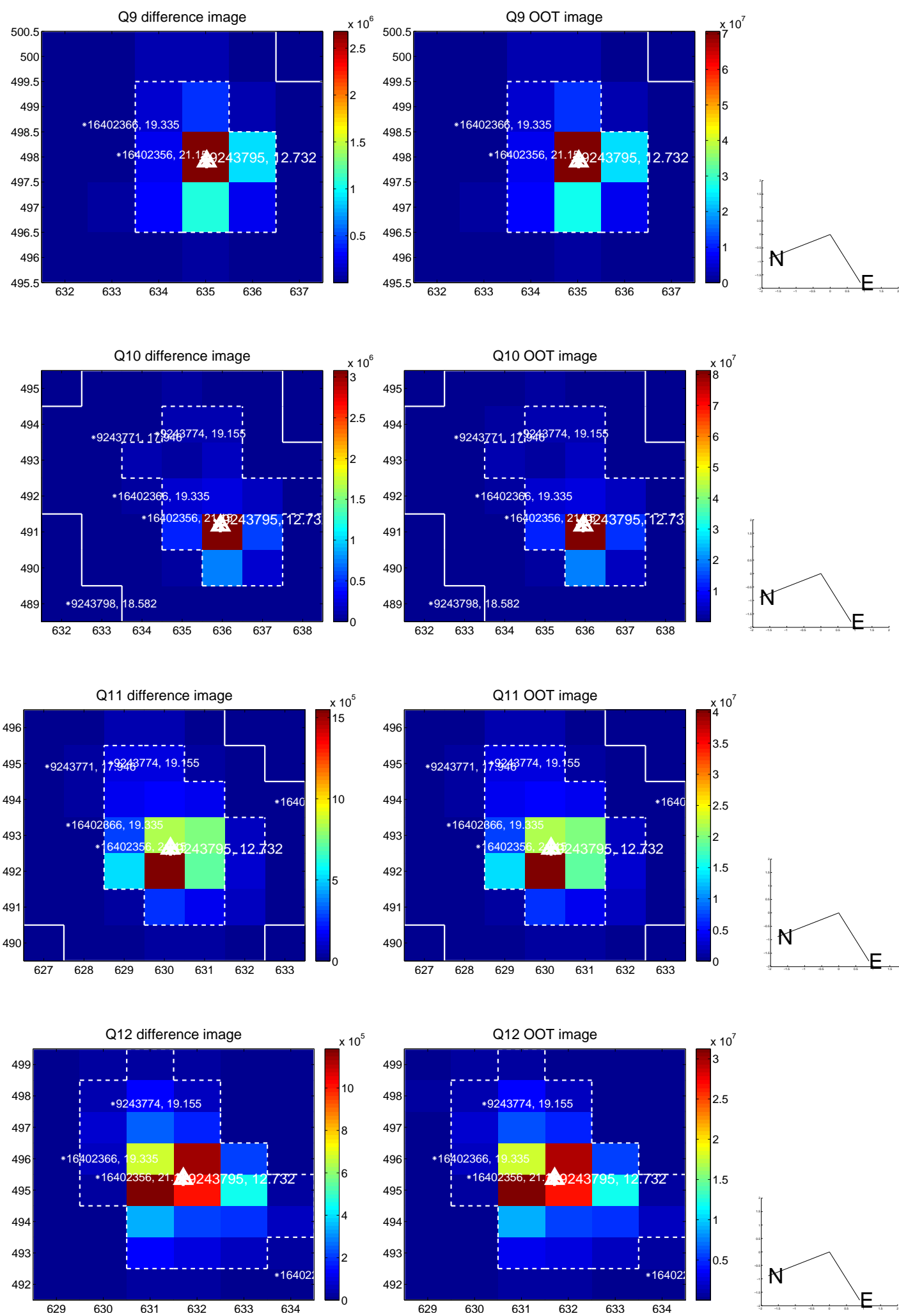


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

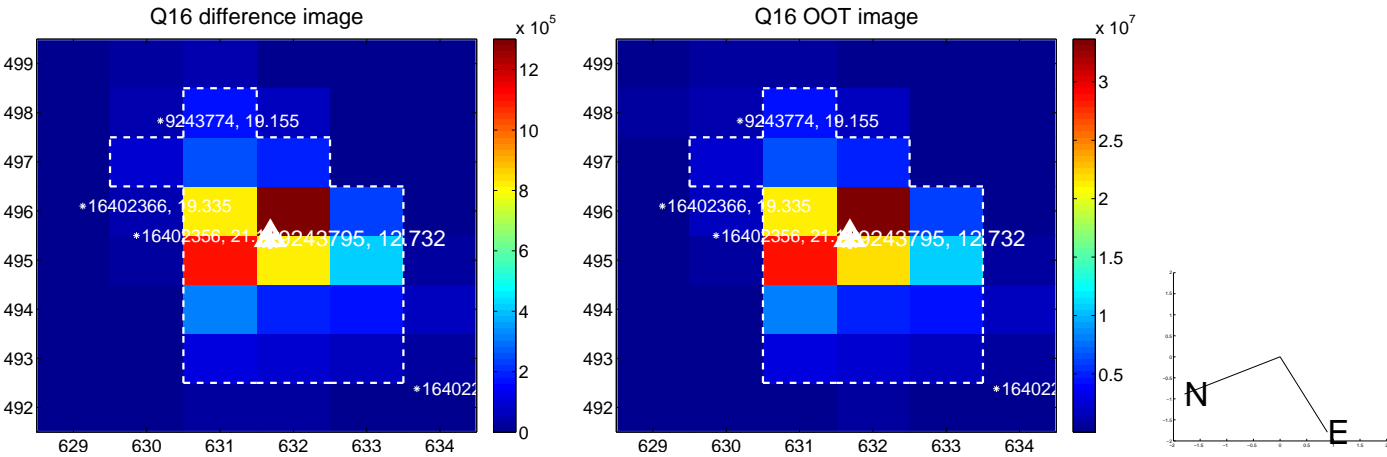
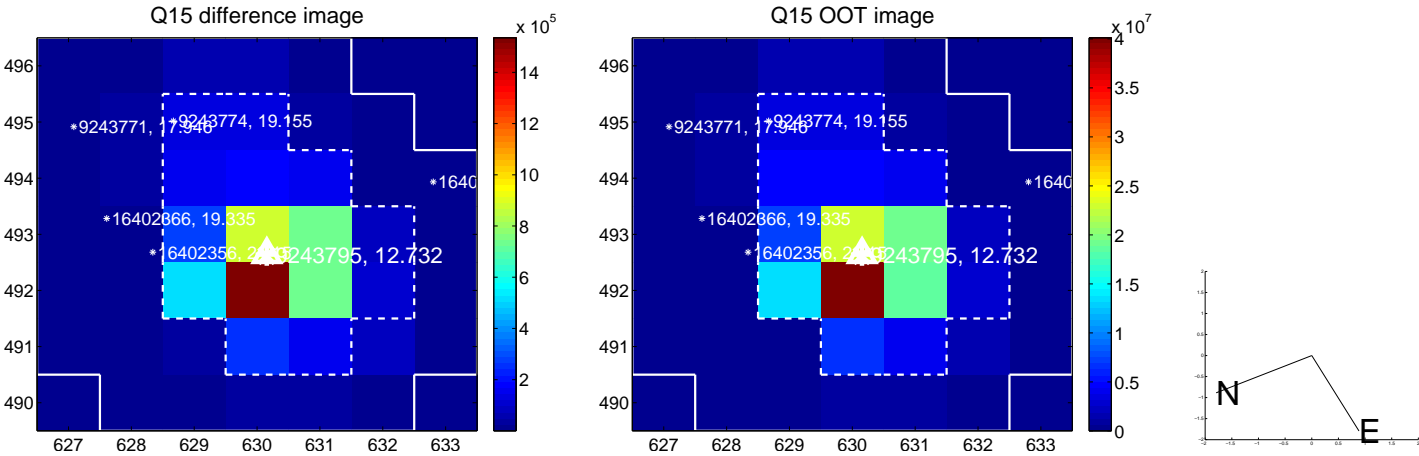
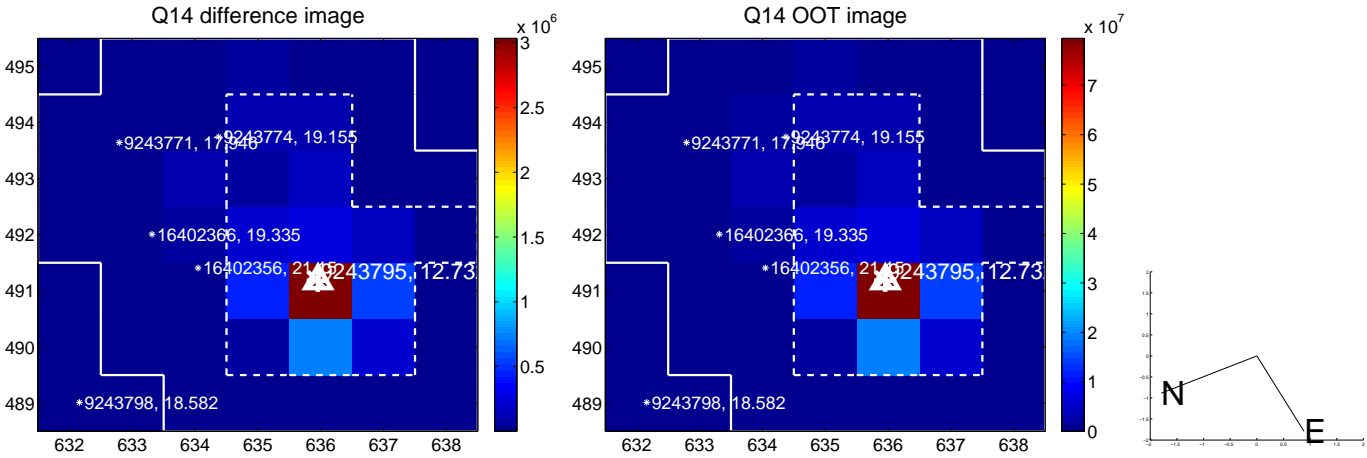
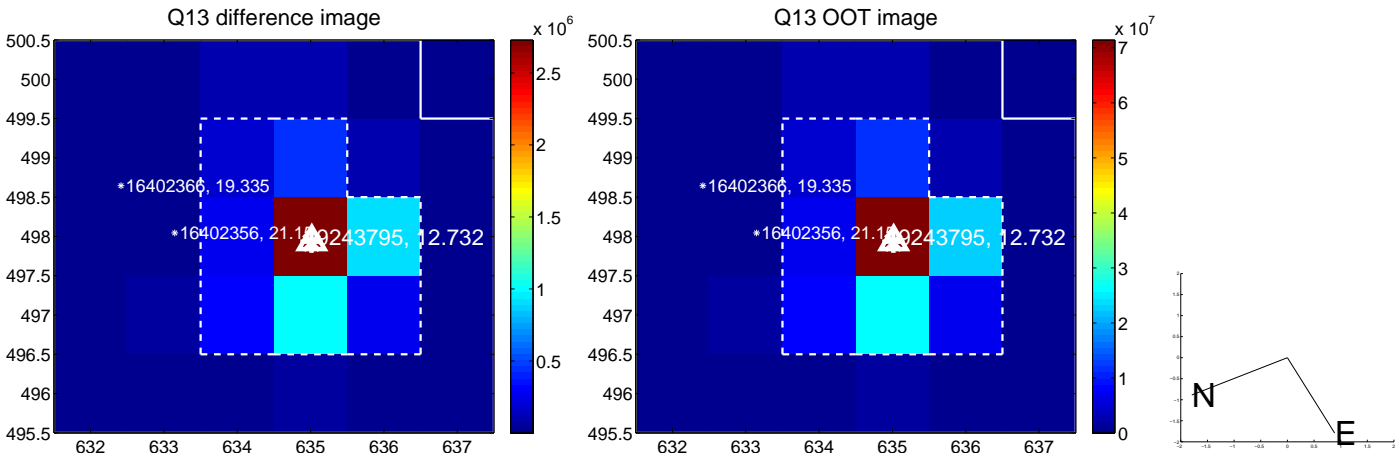




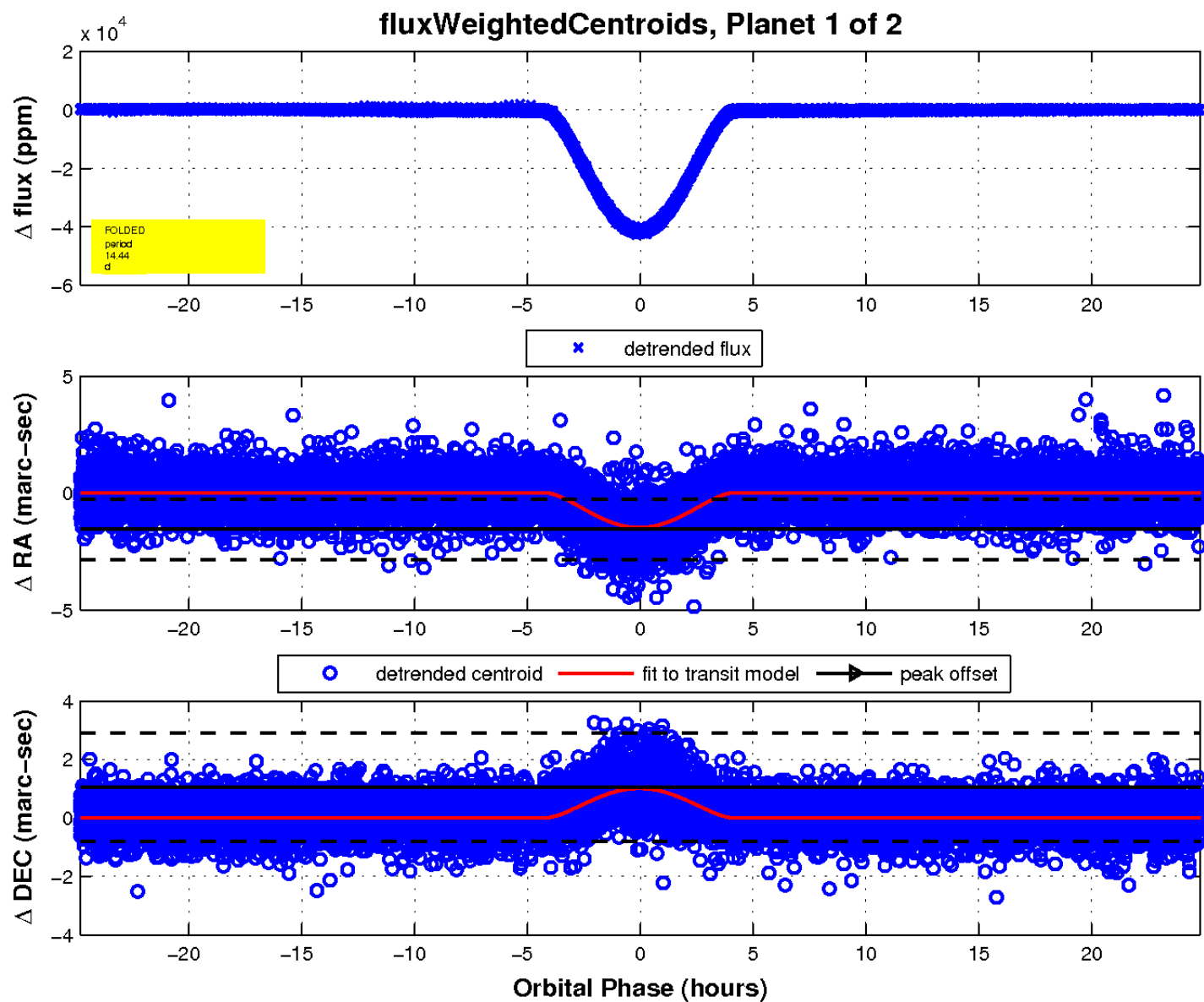
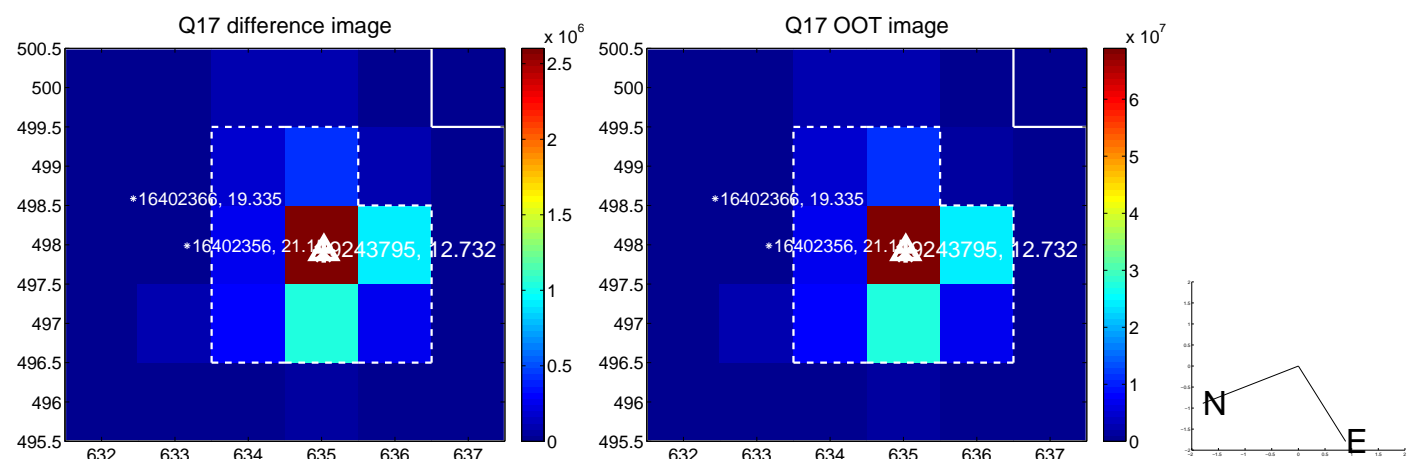
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

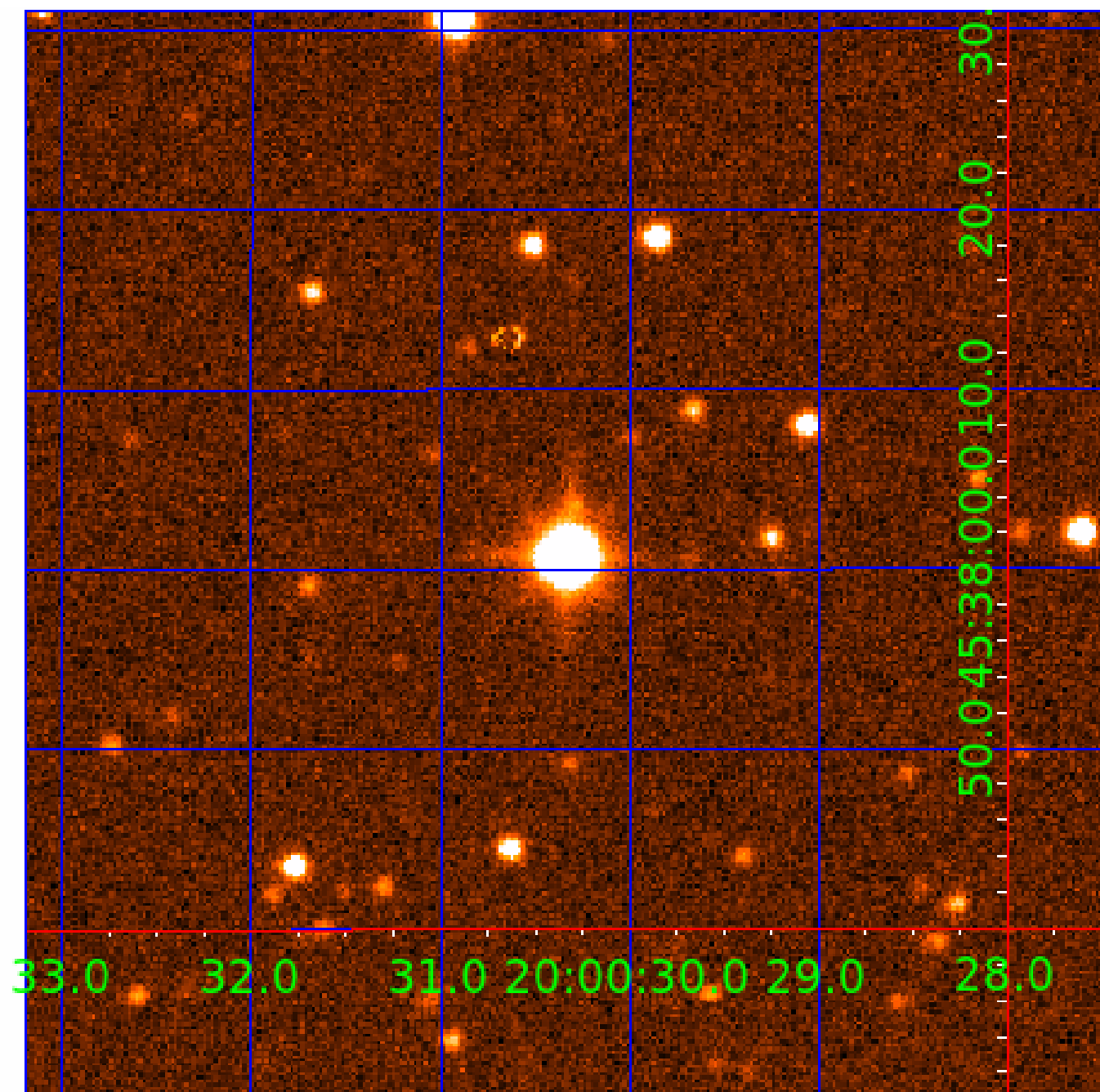


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009243795

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009243795-01	OBS	7150.01	14.443130	139.391009	41386.4	8.273	4029.8	3883.2	2.74	5757	85.91	462.96
009243795-02	OBS	No	14.442645	139.021649	386.5	37.778	12.4	16.6	2.74	5757	10.67	462.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009243795-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED
009243795-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—RESIDUAL_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.

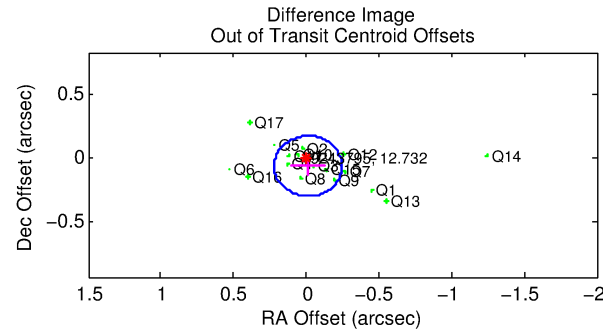
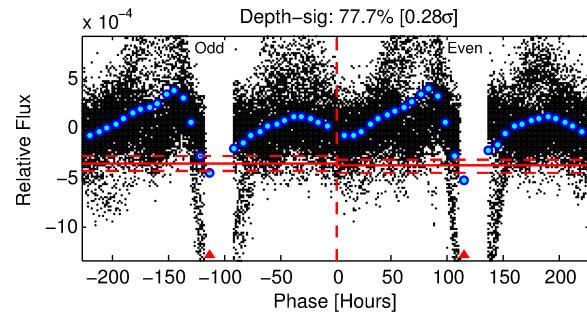
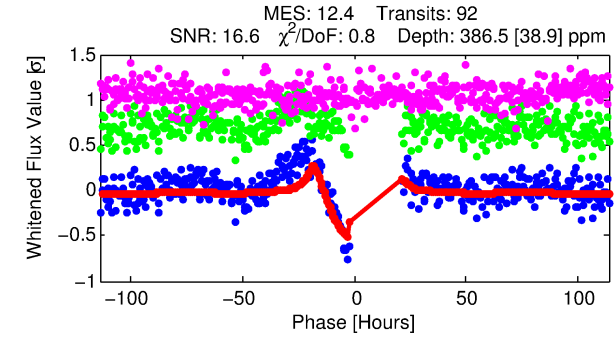
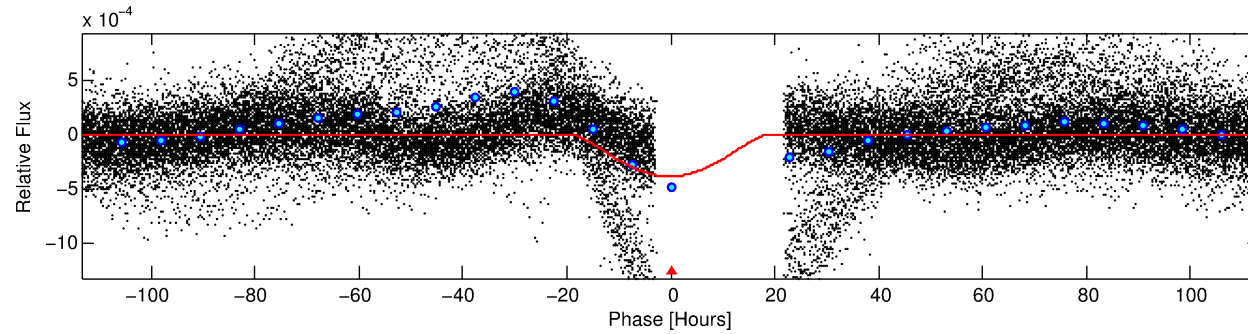
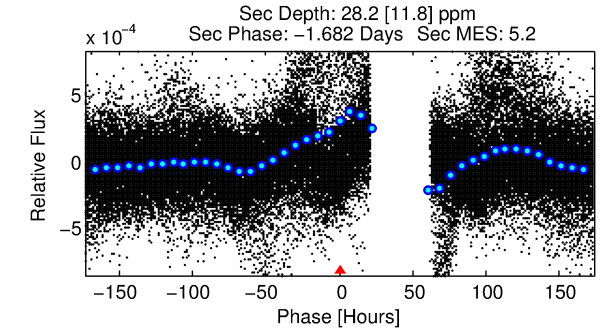
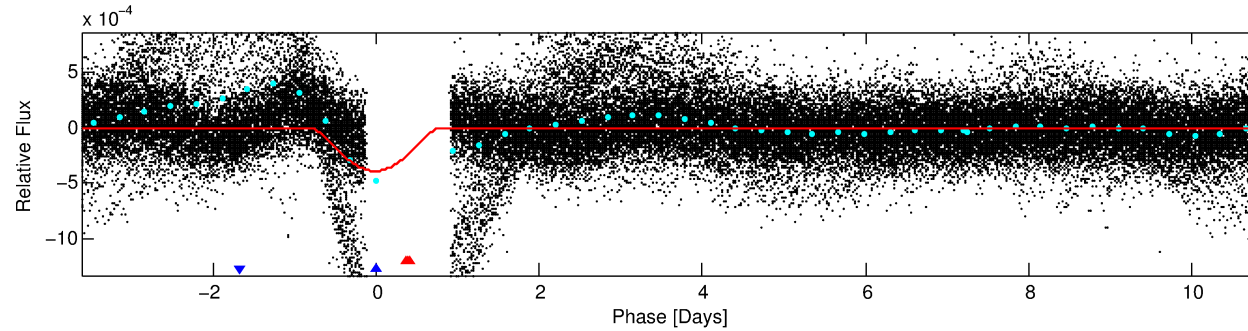
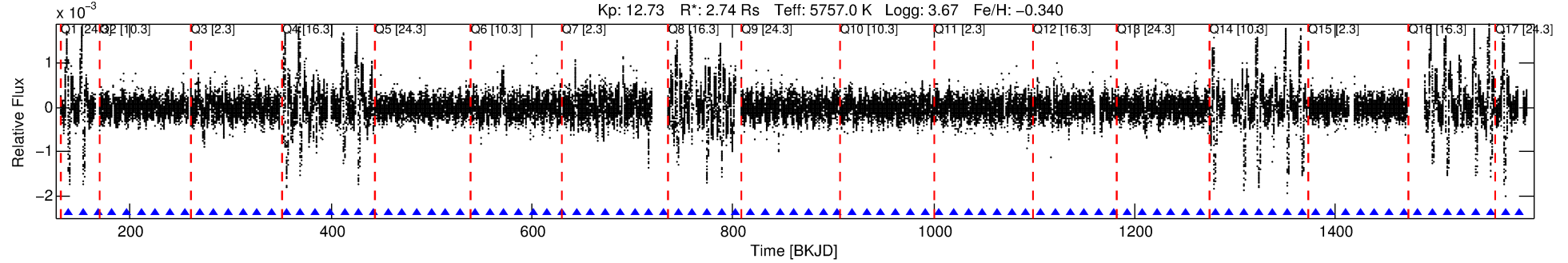
## Ephemeris Match Information For 009243795-02

No Significant Match Found

# DV One-Page Summary

KIC: 9243795 Candidate: 2 of 2 Period: 14.443 d  
KOI: K07150 Corr: No Ephemeris Match

Kp: 12.73 R\*: 2.74 Rs Teff: 5757.0 K Logg: 3.67 Fe/H: -0.340



## DV Fit Results:

Period = 14.44264 [0.00046] d  
Epoch = 139.0216 [0.0373] BKJD  
Rp/R\* = 0.0357 [0.0270]  
a/R\* = 1.28 [0.06]  
b = 1.00 [0.04]  
Seff = 462.98 [268.03]  
Teq = 1183 [171] K  
Rp = 10.67 [9.15] Re  
a = 0.1261 [0.0463] AU  
Ag = 2.17 [3.61] [0.32σ]  
Teffp = 2219 [873] K [1.17σ]

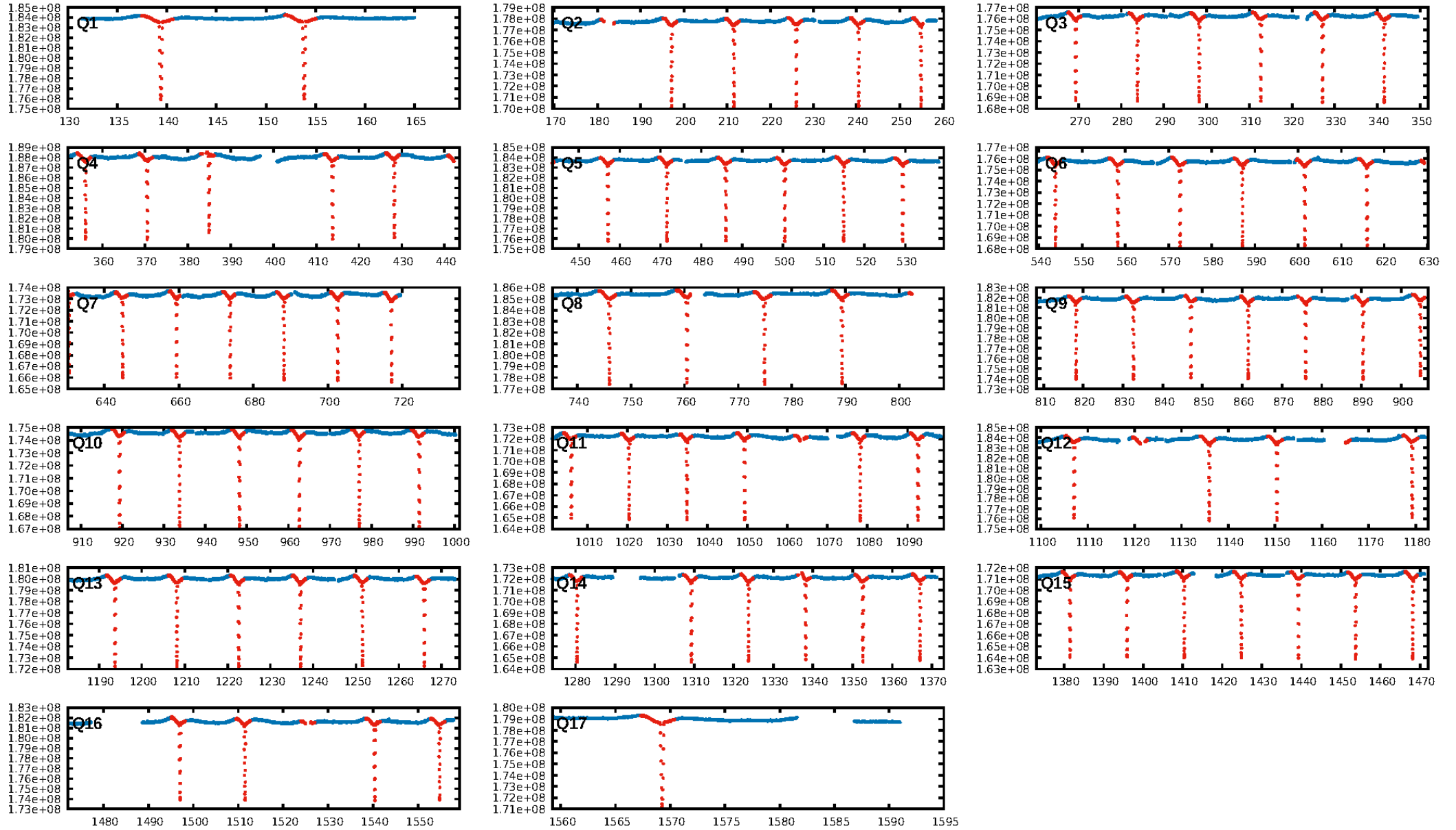
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquare2-sig: 100.0%  
Bootstrap-pfa: 1.59e-34  
RollingBand-fgt: 1.00 [89/89]  
GhostDiagnostic-chr: 0.6166  
Centroid-sig: 0.0%  
Centroid-so: 0.503 arcsec [3.39σ]  
OotOffset-rm: 0.062 arcsec [0.79σ]  
KicOffset-rm: 0.129 arcsec [1.61σ]  
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: 01-Feb-2016 02:01:28 Z

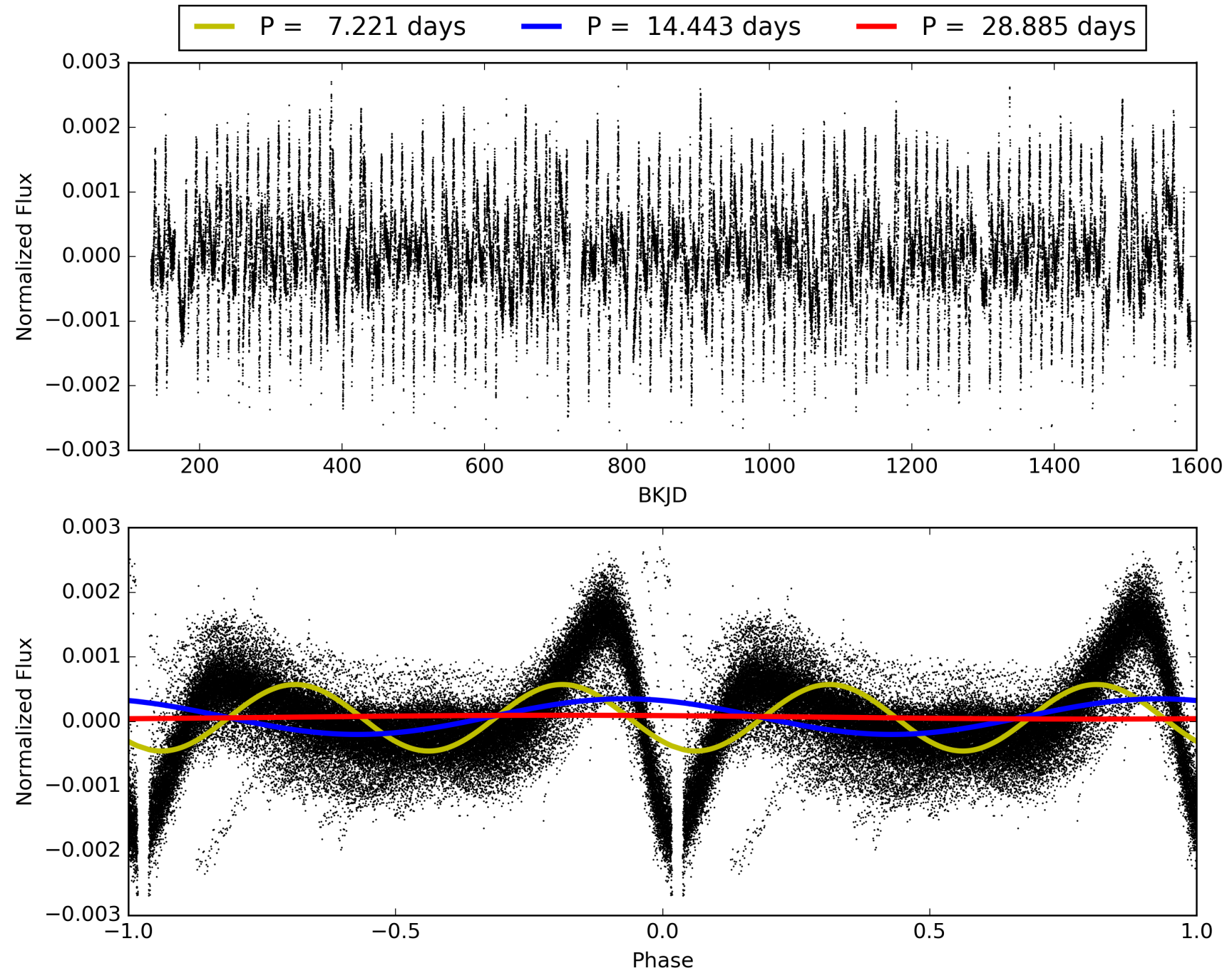
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009243795-02, PDC Light Curves





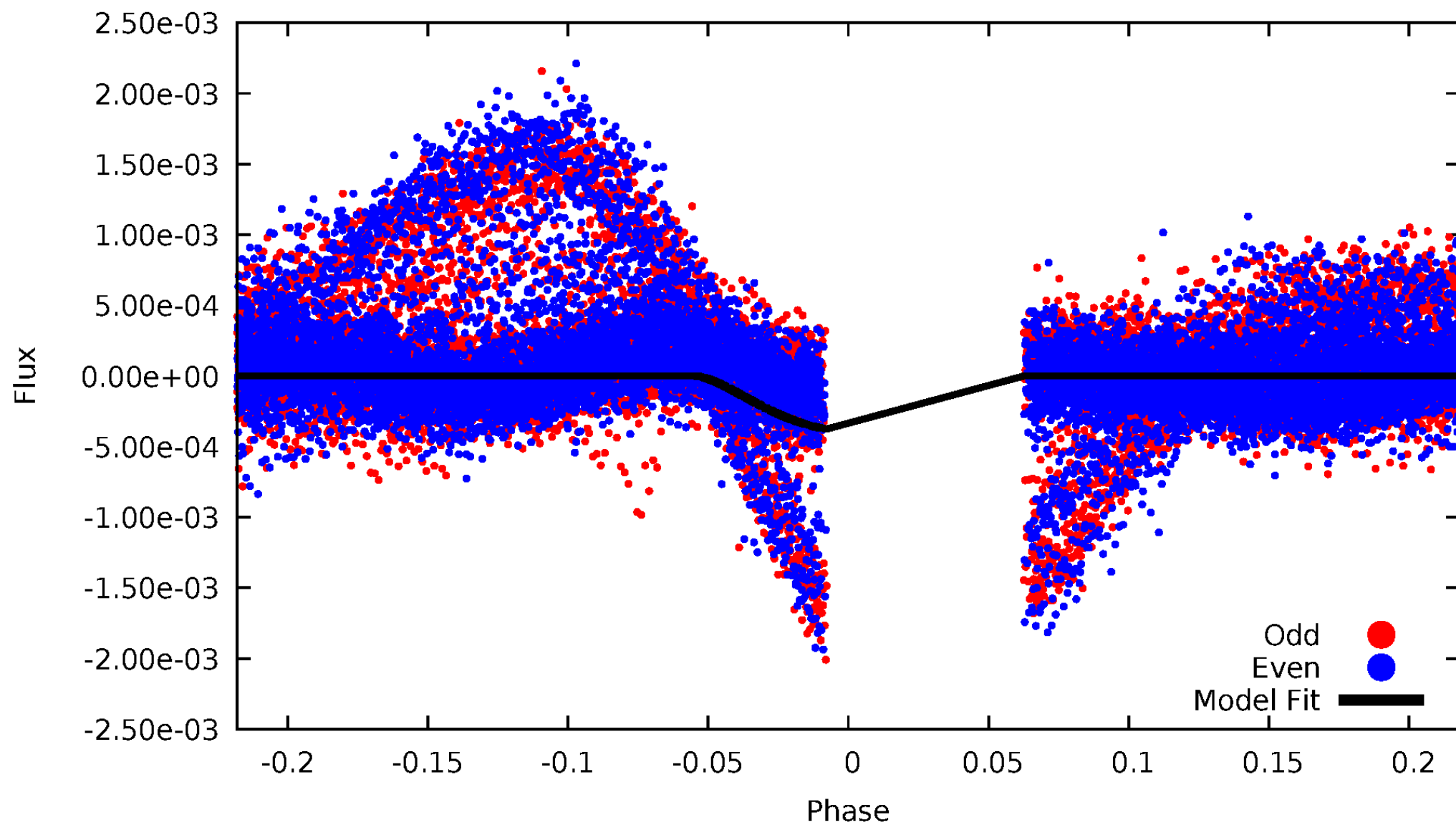
TCE 009243795-02





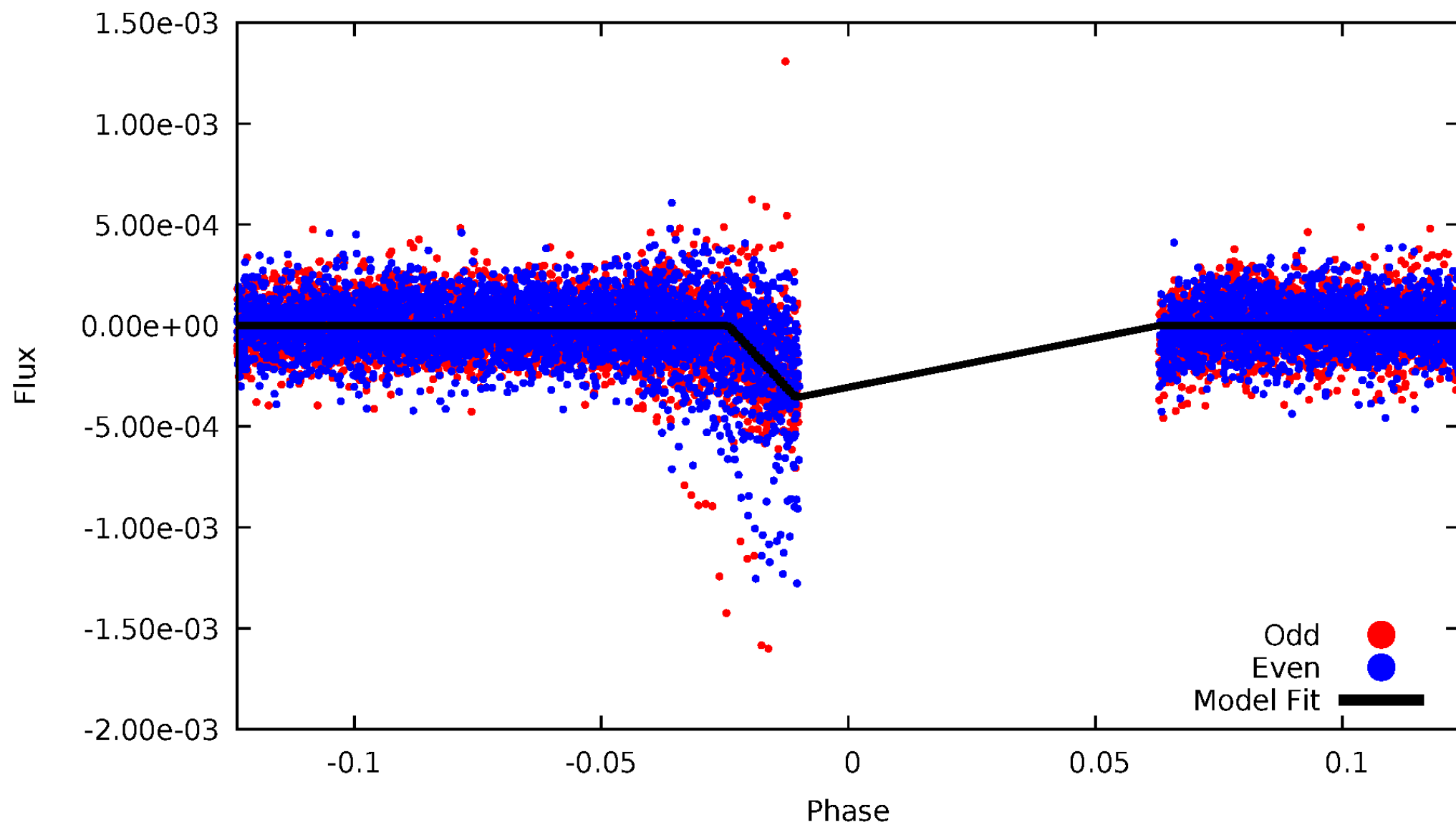
DV Odd/Even

TCE 009243795-02



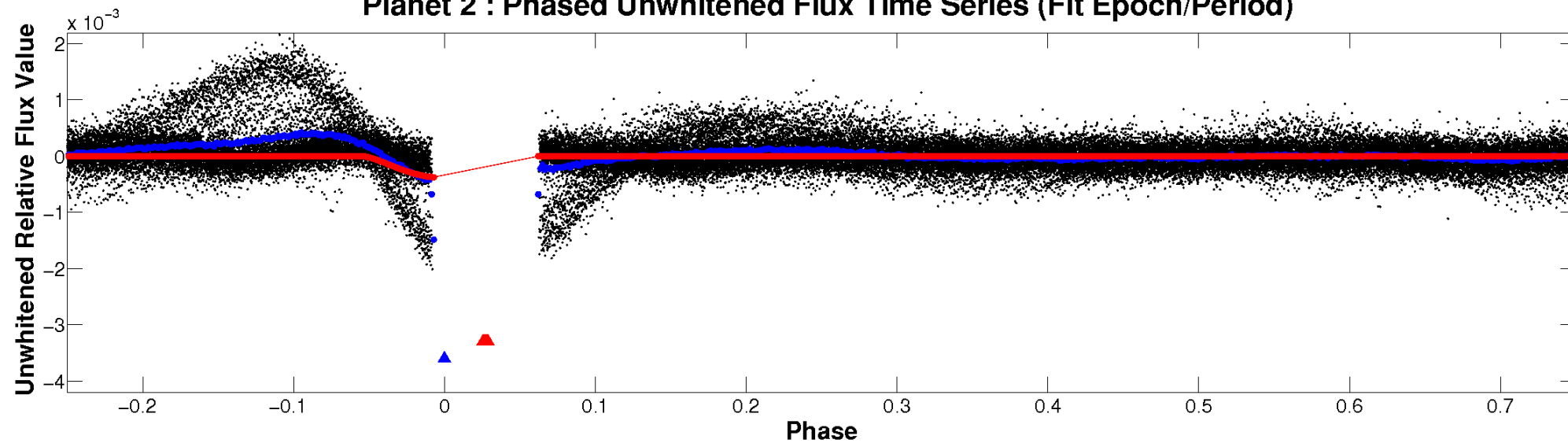
# ALT Odd/Even

TCE 009243795-02

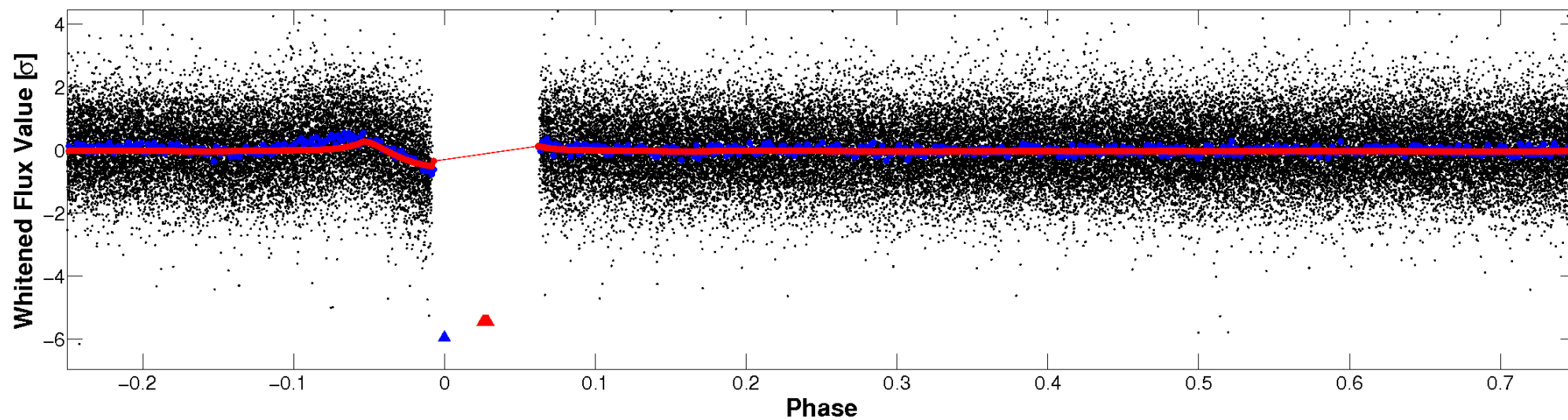


# Non-Whitened Vs. Whitened Light Curve

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

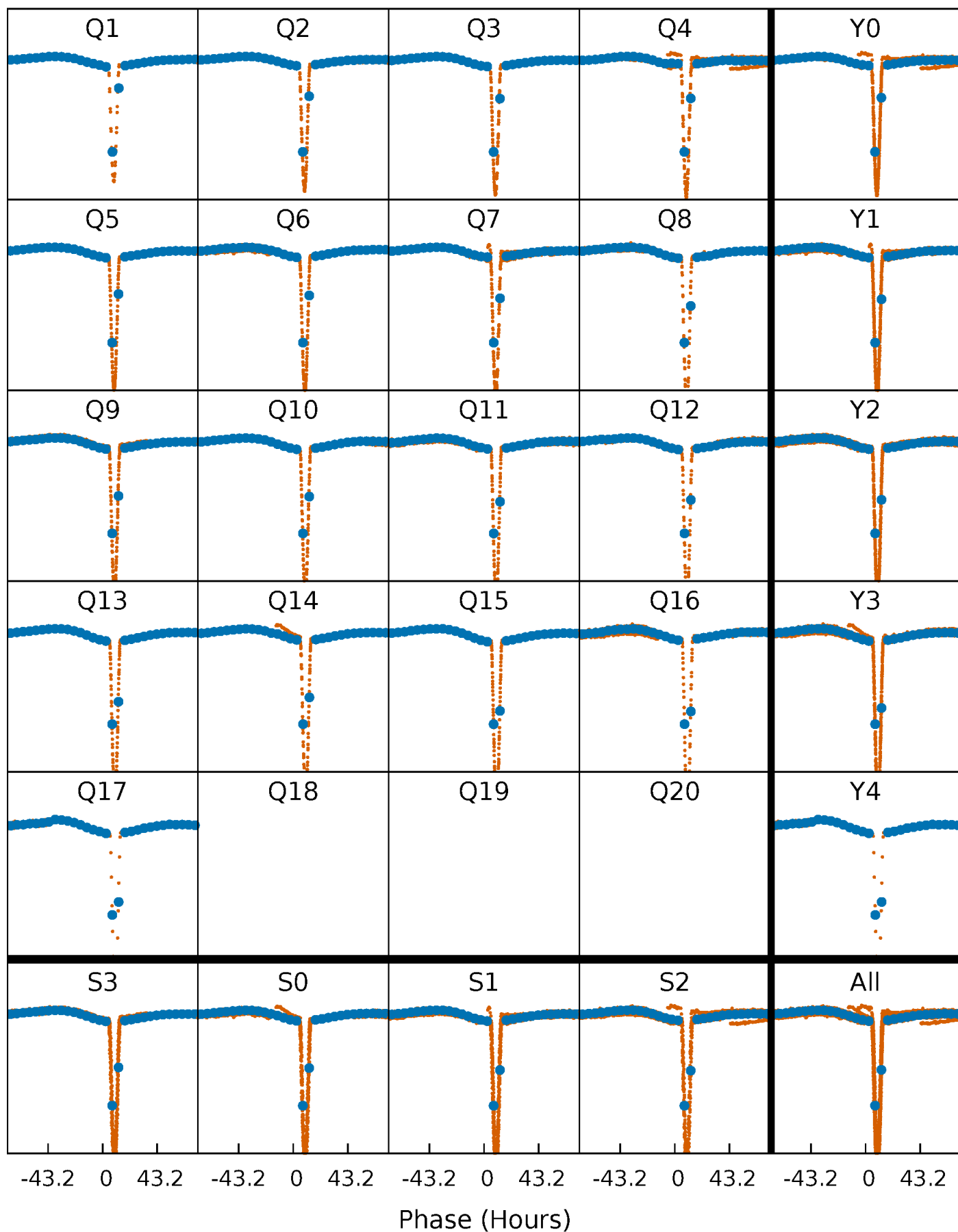


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



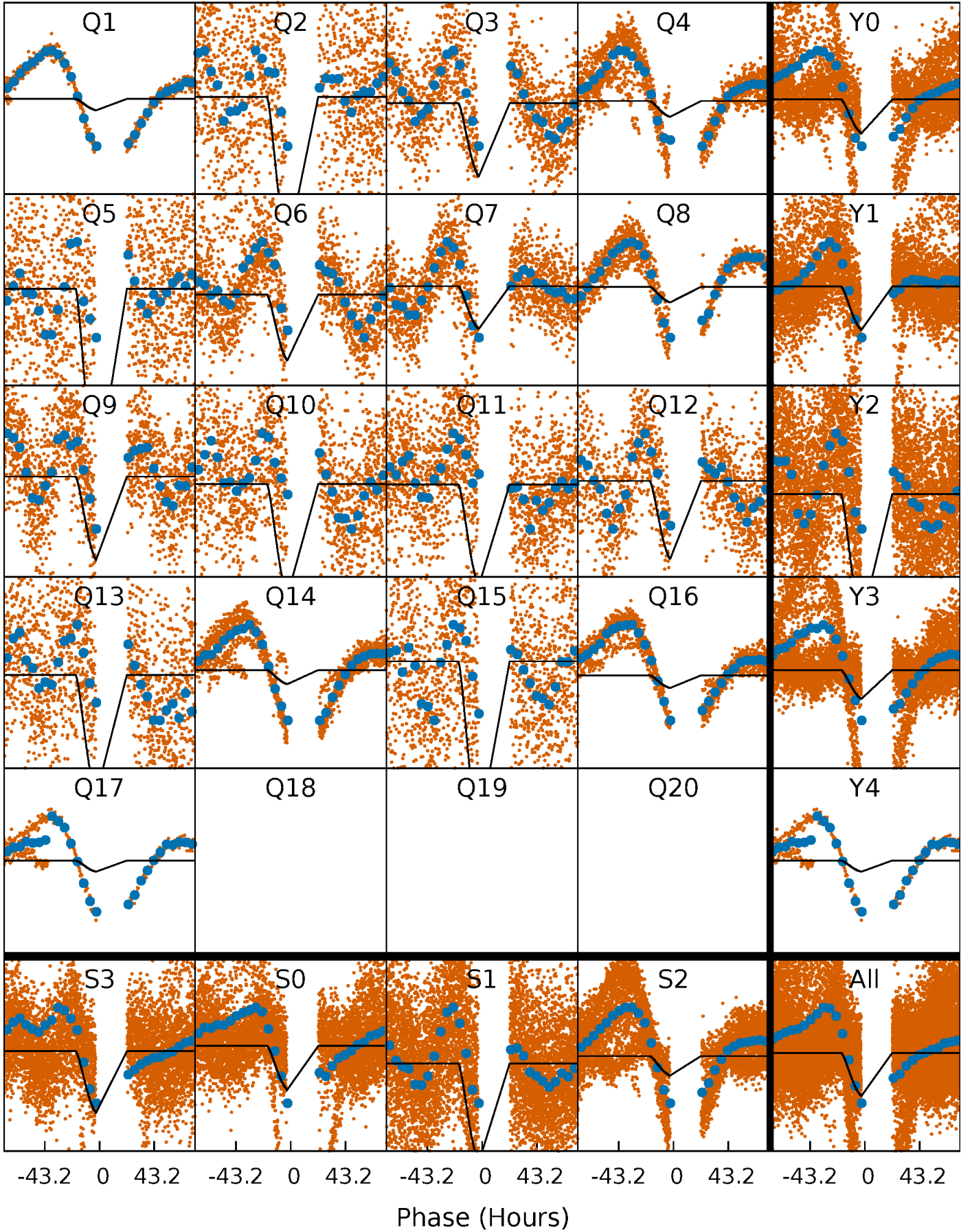
# PDC Quarter-Phased Transit Curves

TCE 009243795-02     $P = 14.442645$  Days     $T_0 = 139.021649$  (BKJD)



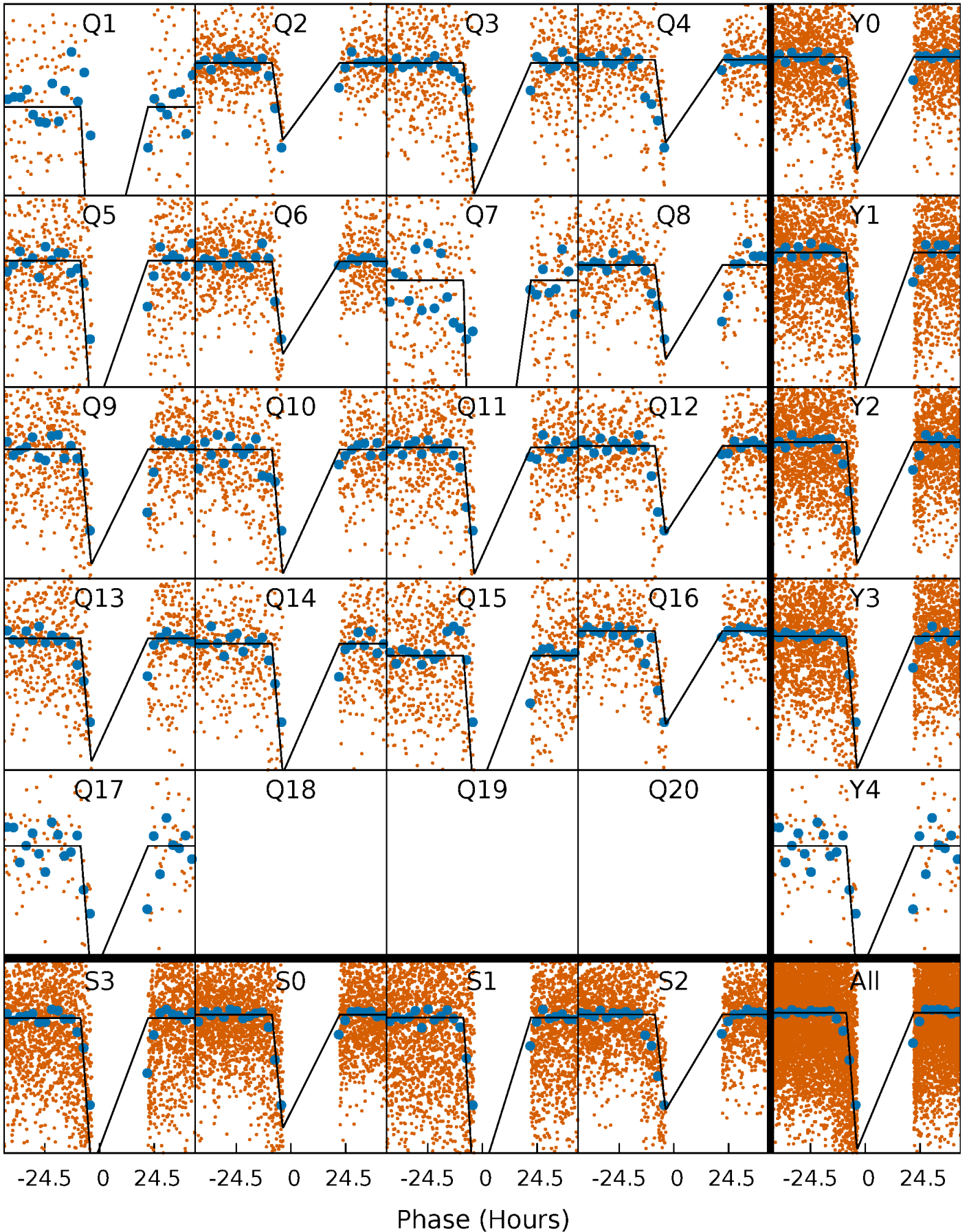
# DV Quarter-Phased Transit Curves

TCE 009243795-02   P= 14.442645 Days    $T_0=139.021649$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009243795-02 P= 14.443191 Days  $T_0=139.006462$  (BKJD)

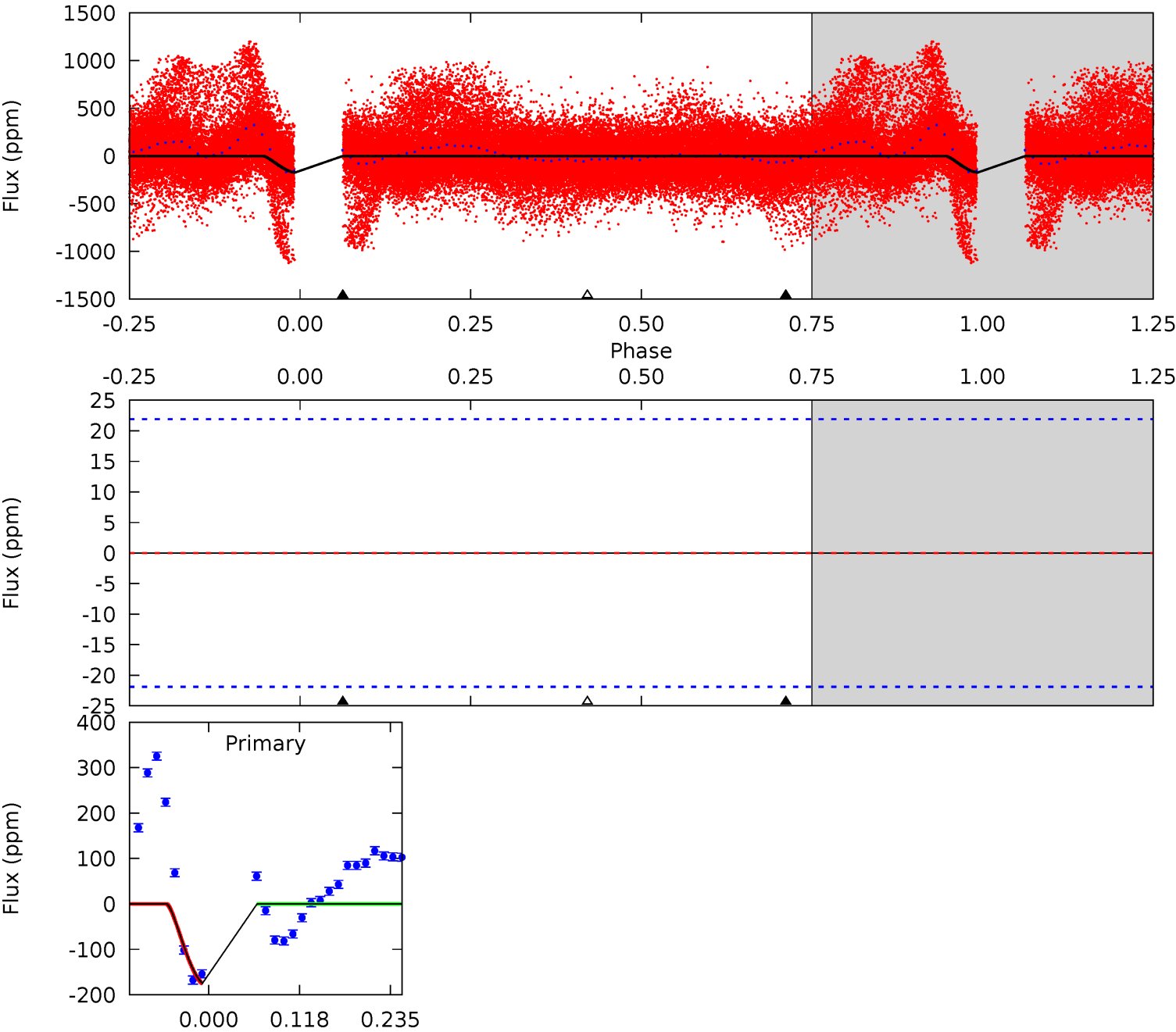




DV Model-Shift Uniqueness Test

009243795-02, P = 14.442645 Days, E = 124.579004 Days

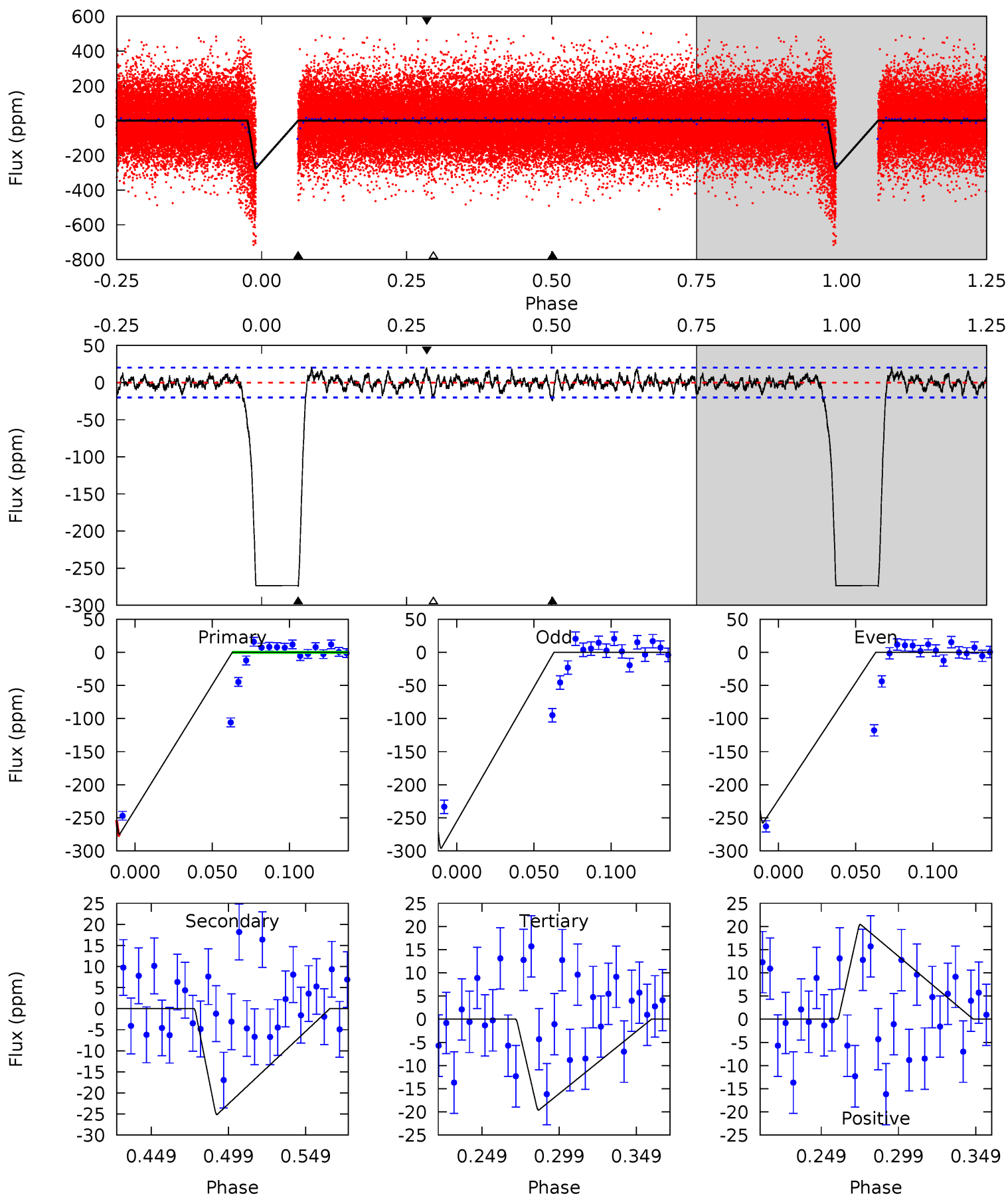
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	4.53	1.56	0	0	0	0	0	0.77	0	0	0



# Alt Model-Shift Uniqueness Test

009243795-02, P = 14.443191 Days, E = 124.563271 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
64.4	5.89	4.60	4.79	4.71	1.96	4.77	59.8	59.6	1.29	1.10	4.48	0	0.07	0





### Stellar Parameters For KIC 009243795

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5757^{+183}_{-183}$	$3.672^{+0.323}_{-0.108}$	$-0.340^{+0.350}_{-0.300}$	$2.736^{+0.476}_{-1.110}$	$1.283^{+0.176}_{-0.327}$	$0.088^{+0.215}_{-0.029}$
	+3%/-3%	+9%/-3%	+103%/-88%	+17%/-41%	+14%/-25%	+244%/-33%
Source	PHO1	FLK73	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 009243795-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-0 \pm 5$	$10.97^{+7.37}_{-6.66}$	$1625^{+100}_{-148}$	$-2267^{+4358}_{-311}$	$-0.014^{+0.482}_{-0.586}$
Alt.	$-25 \pm 4$	$7.55^{+7.31}_{-4.73}$	$1629^{+106}_{-160}$	$3066^{+1245}_{-568}$	$3.856^{+24.106}_{-2.890}$

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

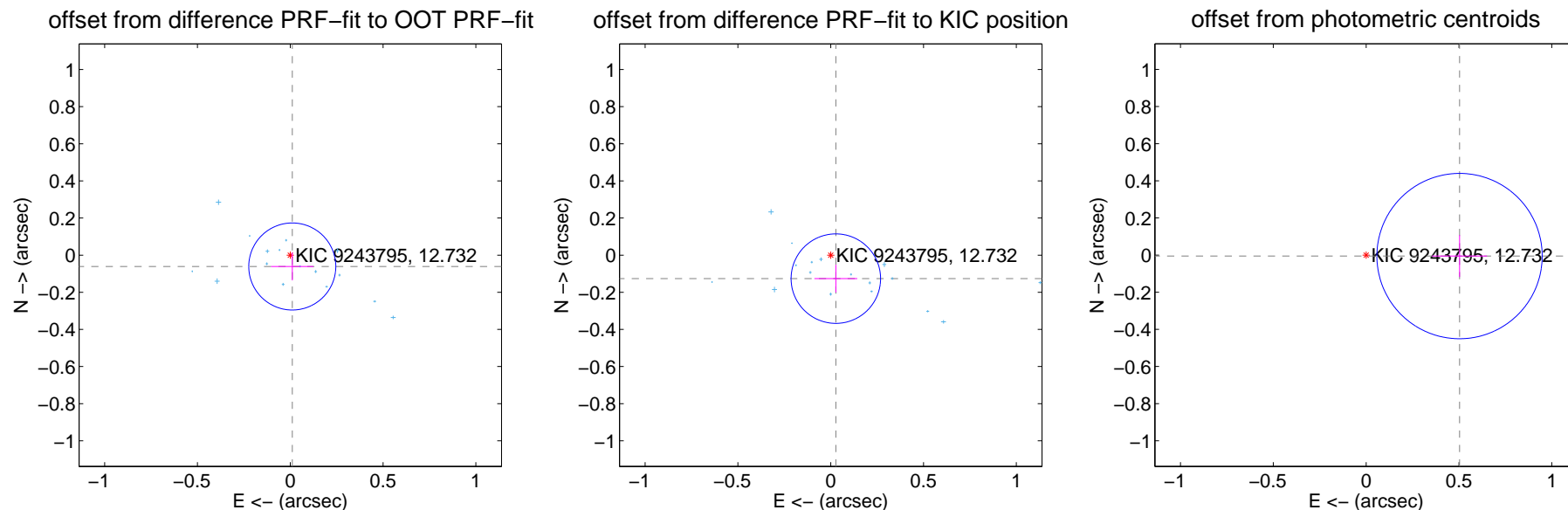
## DV Centroid Data

Supplemental centroid analysis for 009243795-02. Kepler magnitude: 12.73. Transit SNR 16.57

There are 17 quarters with good PRF difference image offsets

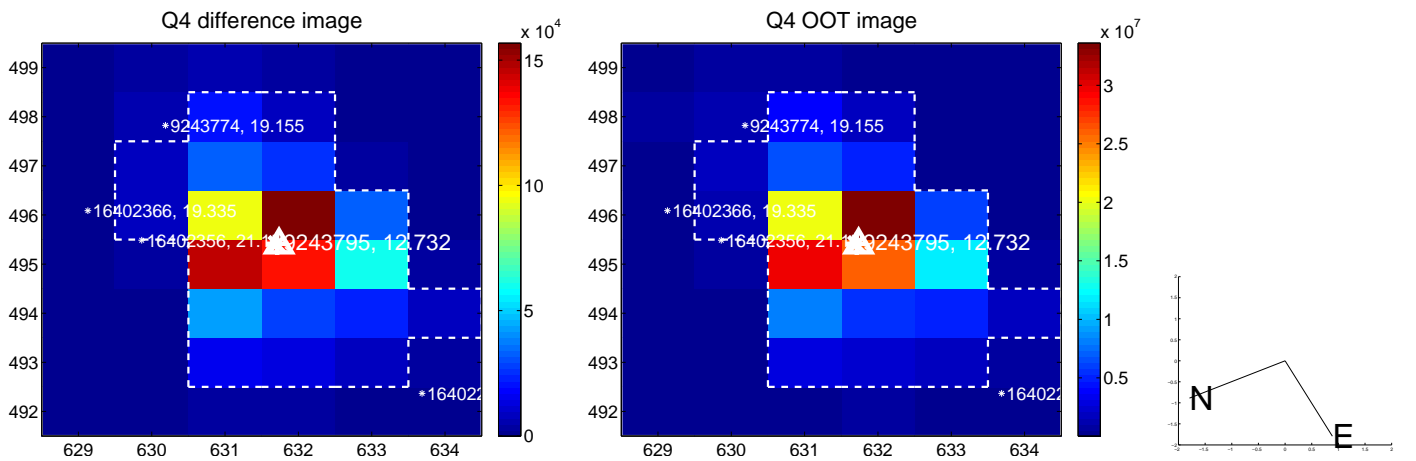
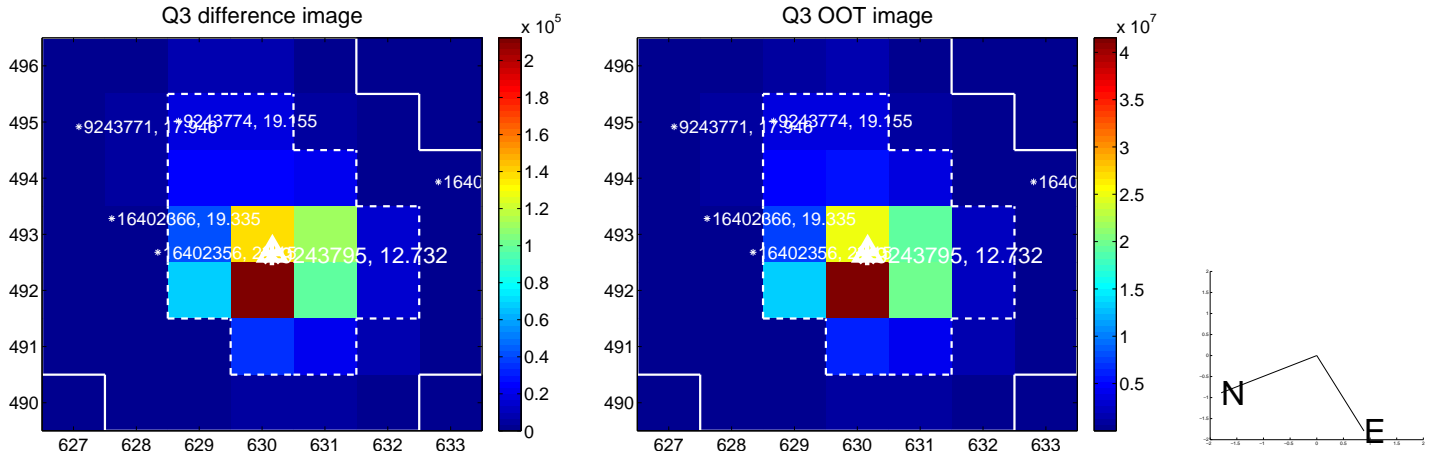
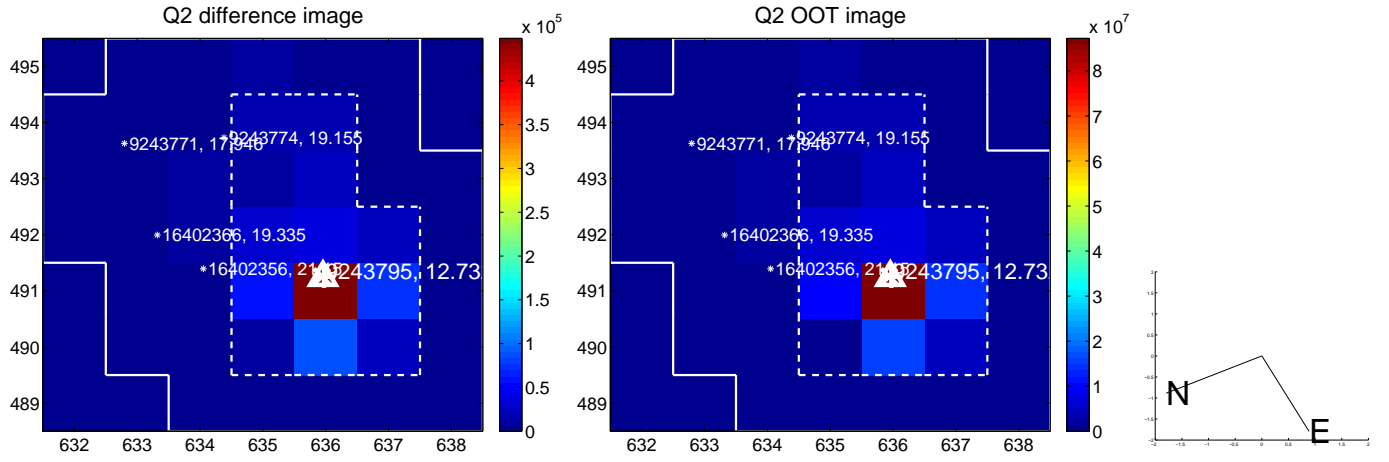
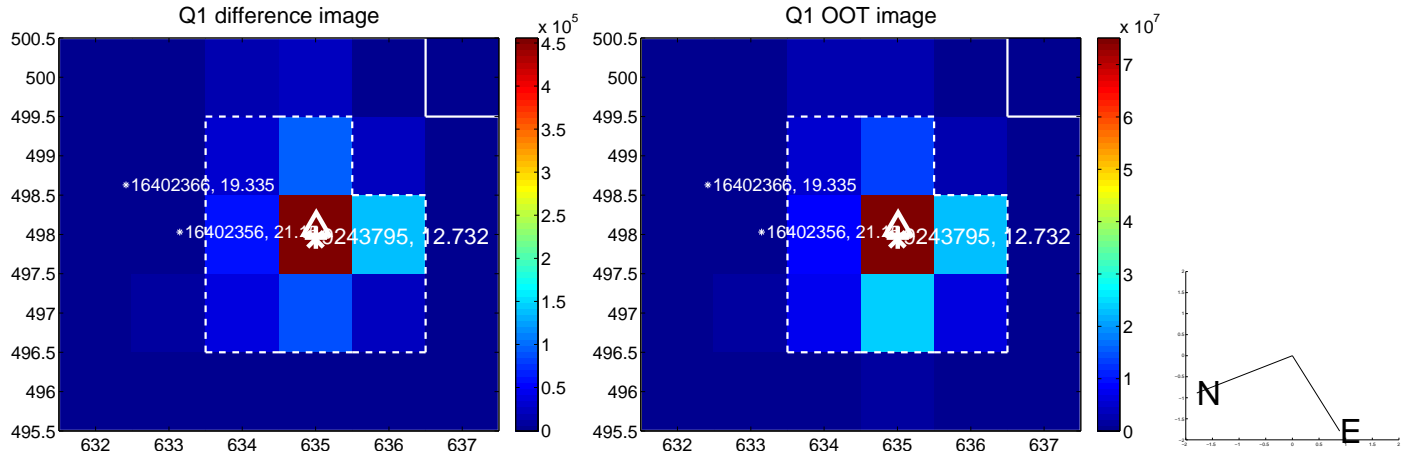
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.062 \pm 0.078$	0.79	$-0.011 \pm 0.114$	$-0.061 \pm 0.075$
PRF-fit source offset from KIC position	$0.129 \pm 0.080$	1.61	$-0.028 \pm 0.116$	$-0.126 \pm 0.074$
photometric centroid source offset	$0.50 \pm 0.15$	3.39	$-0.50 \pm 0.15$	$-0.01 \pm 0.11$

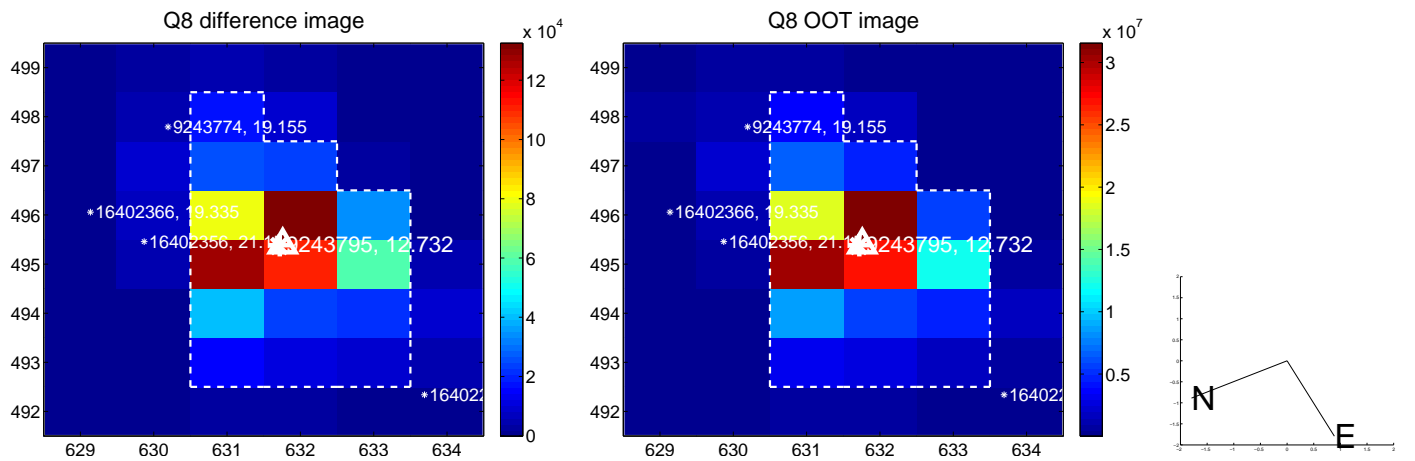
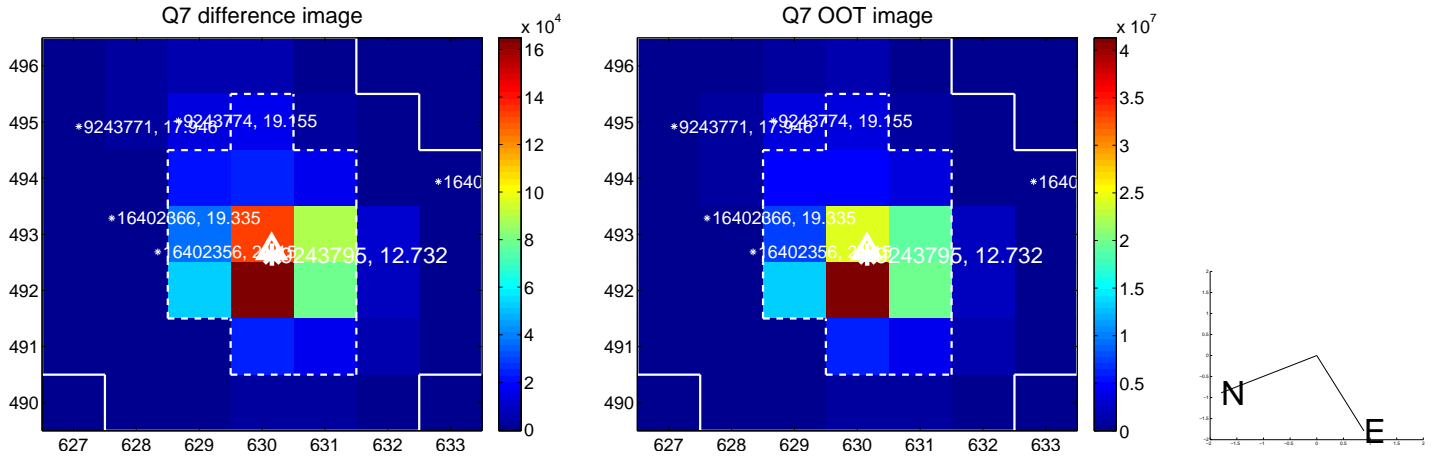
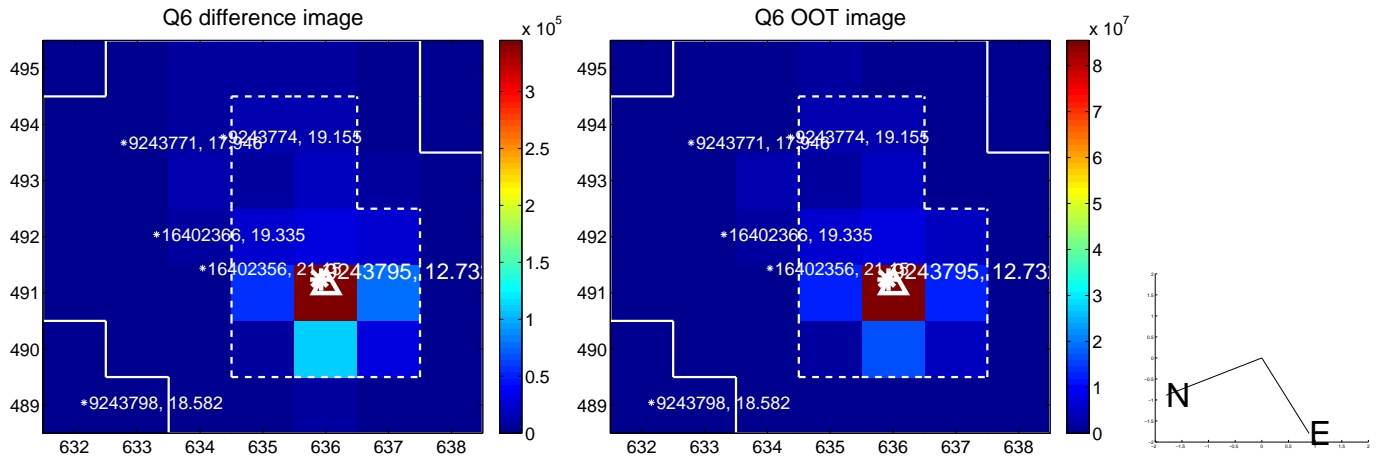
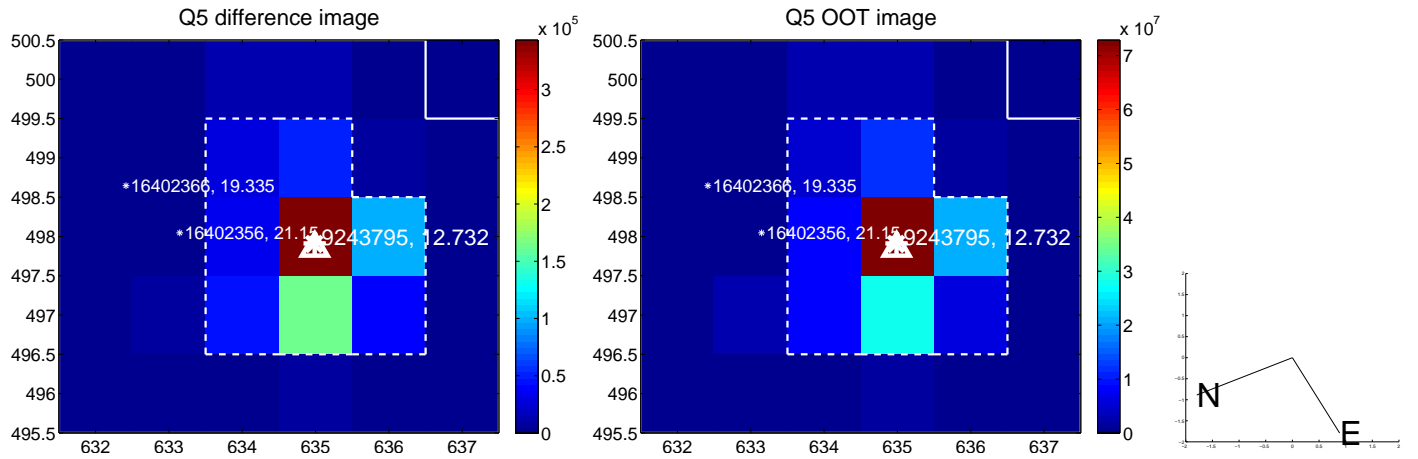


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

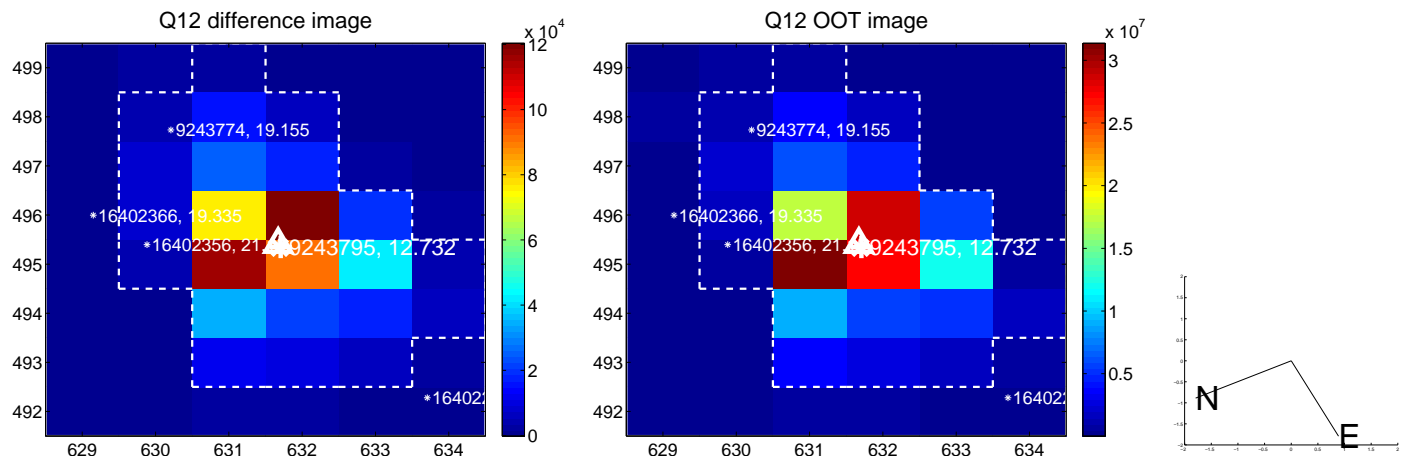
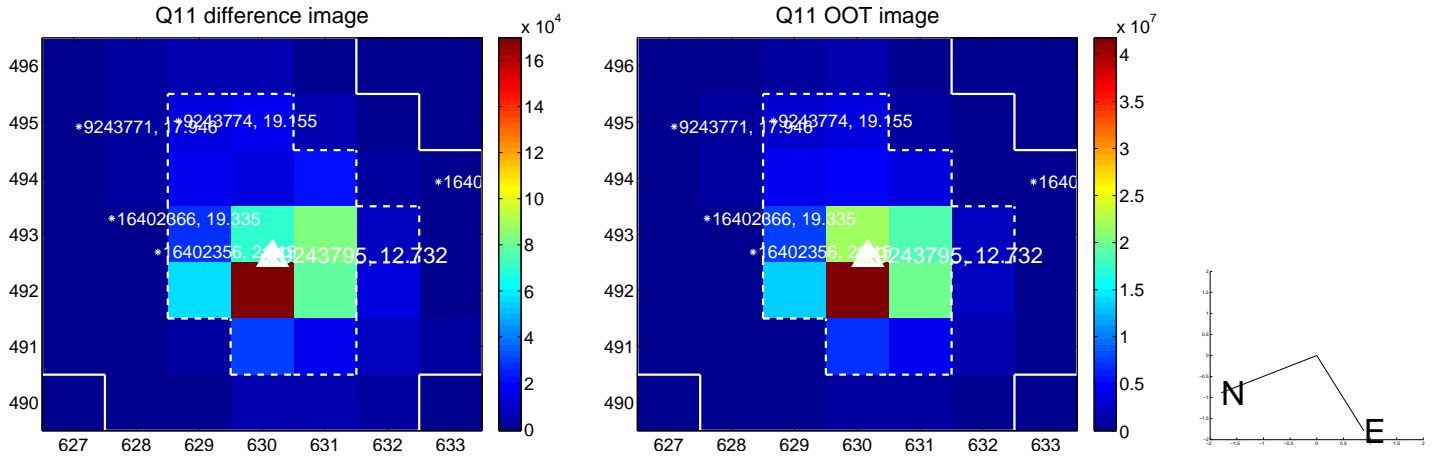
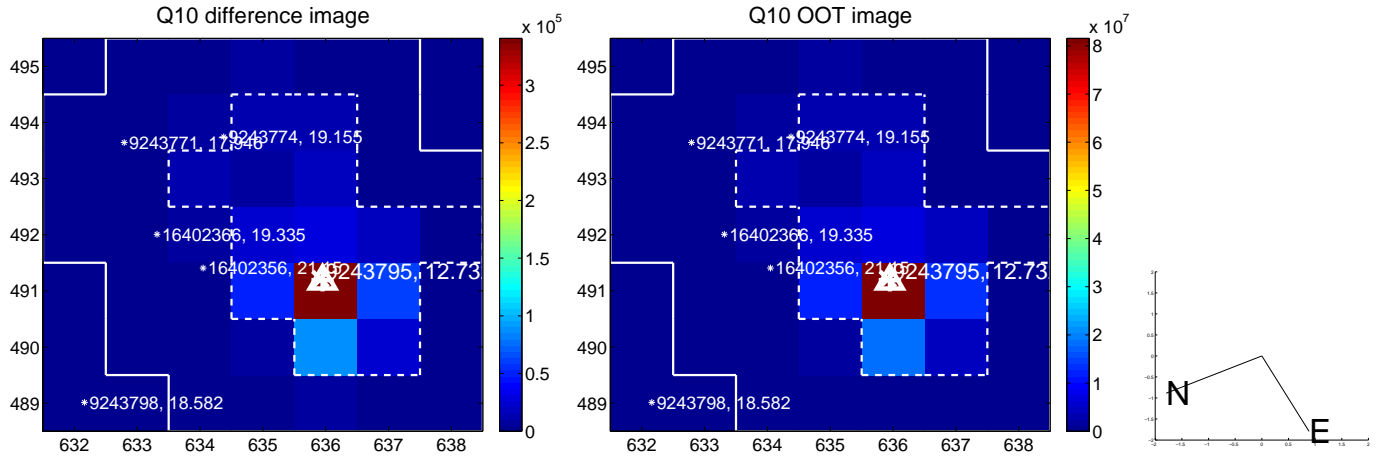
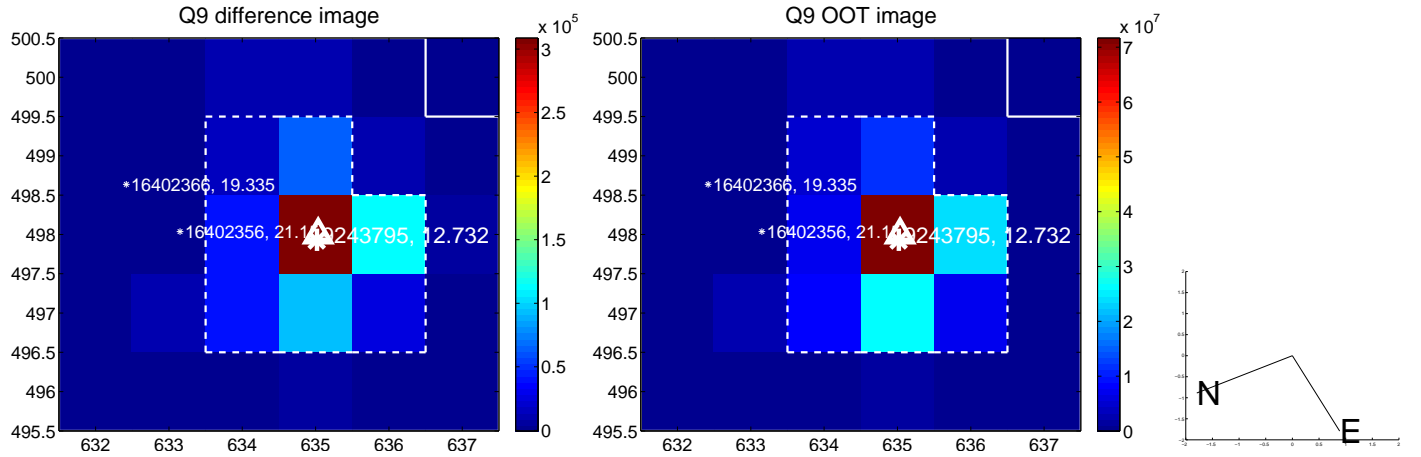
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



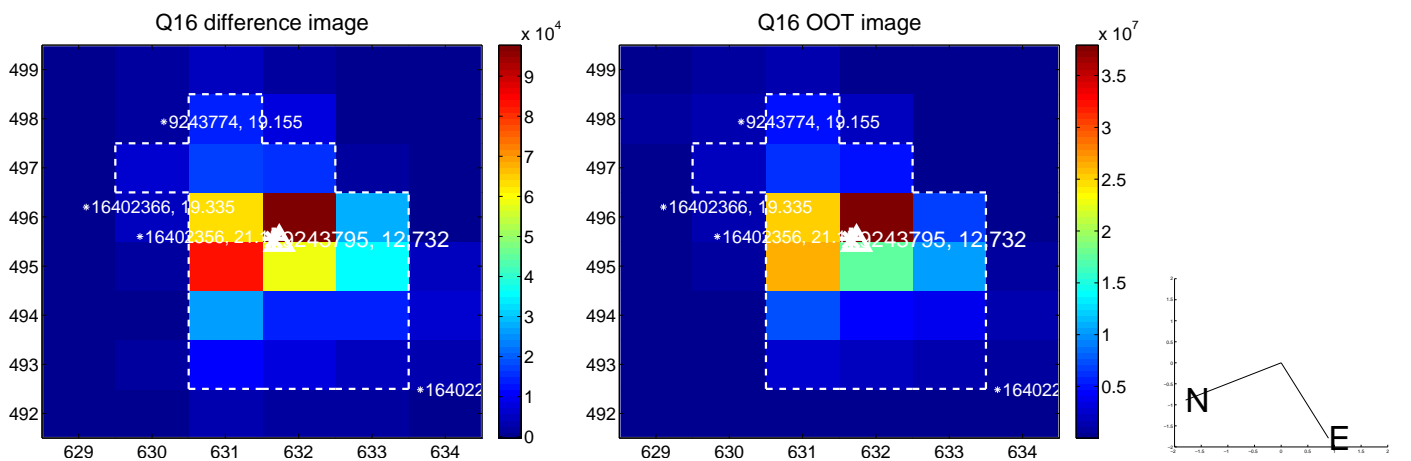
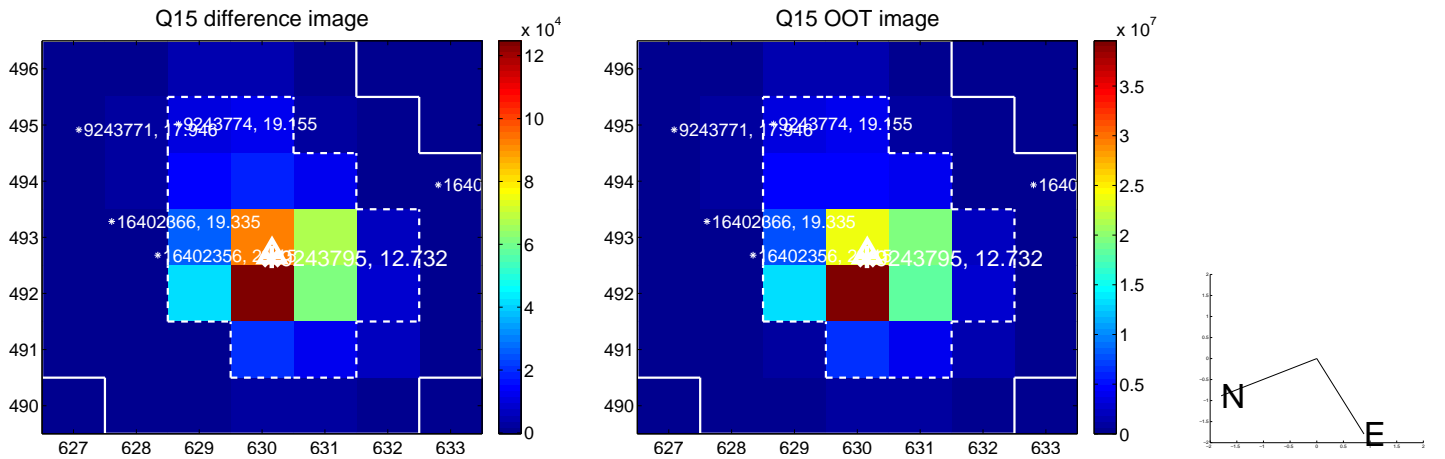
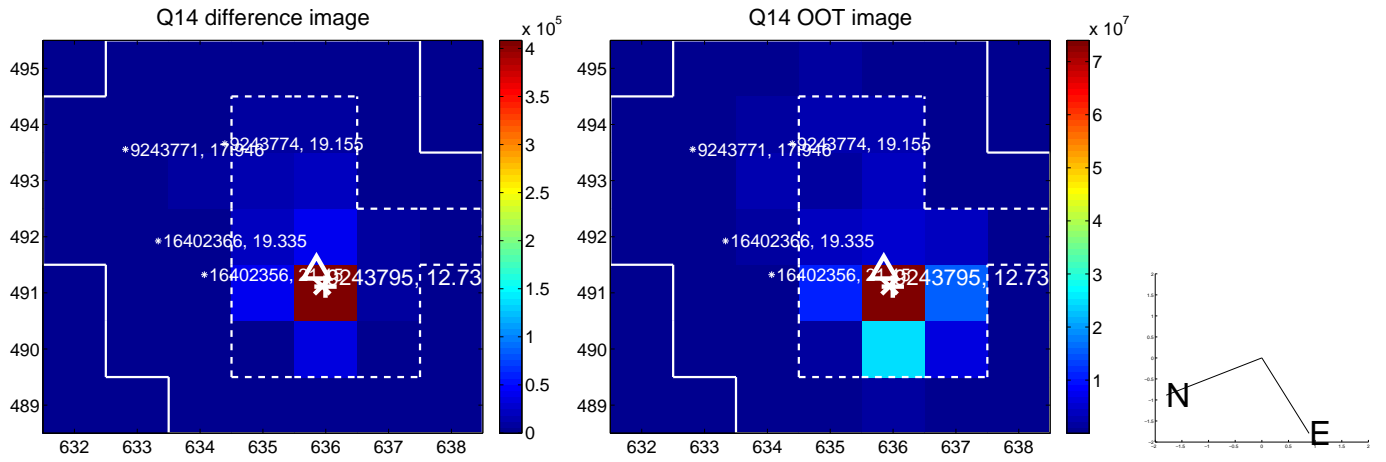
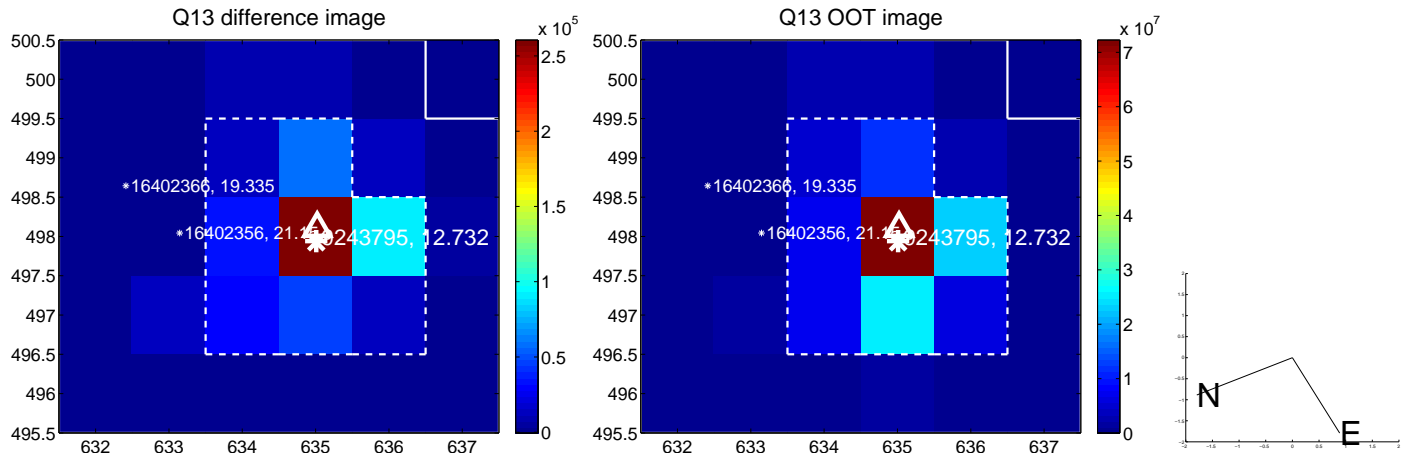
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



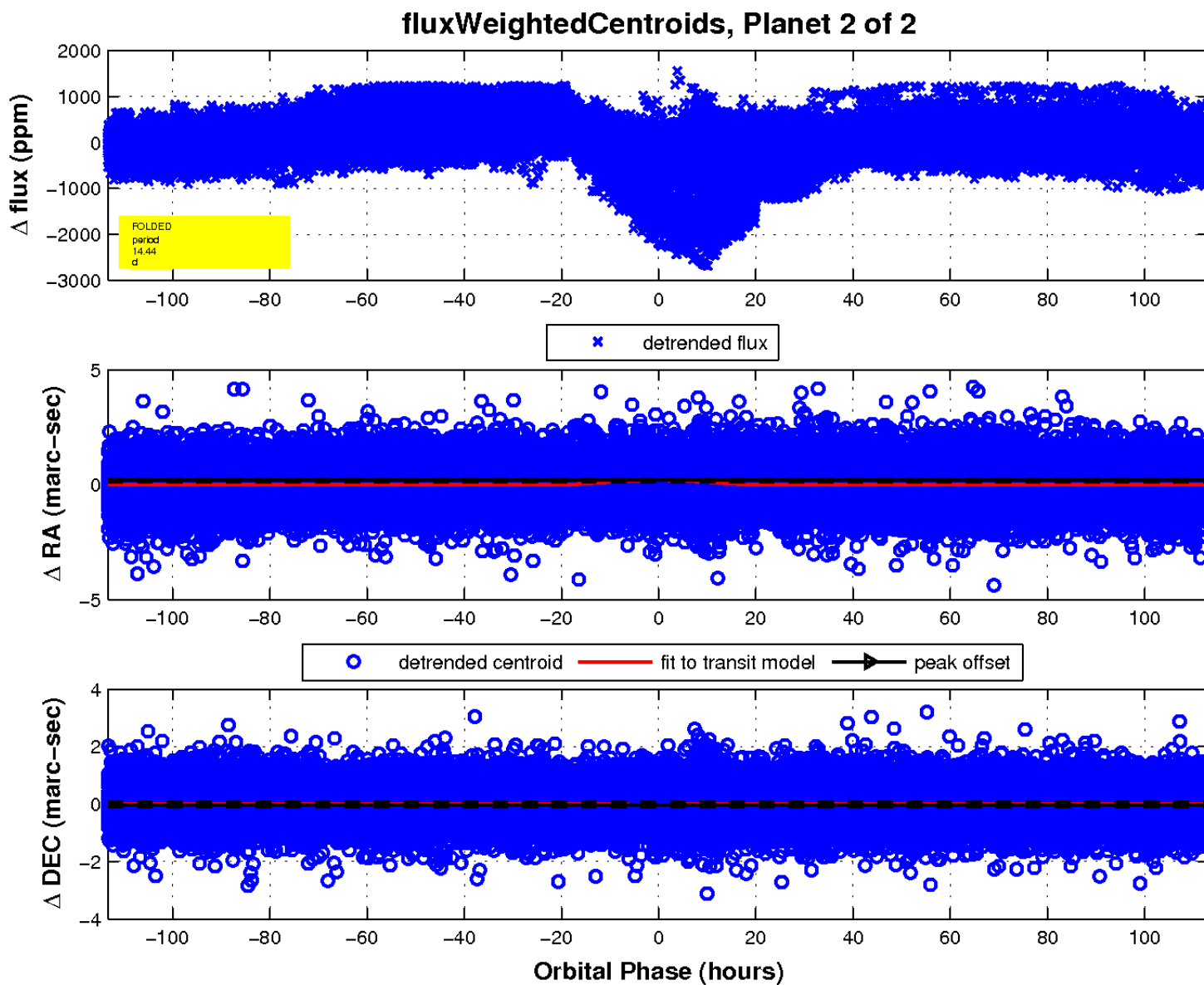
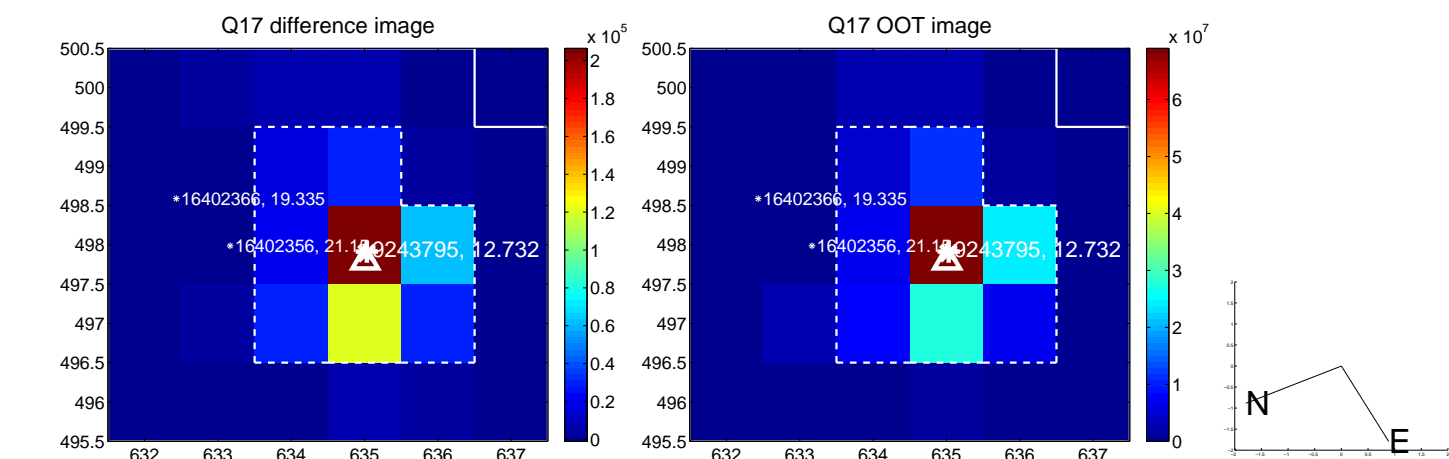
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

