

# KIC 004742414

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004742414-01	OBS	0631.01	15.458057	142.866333	4266.8	8.852	777.1	739.0	1.41	5868	9.24	136.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004742414-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

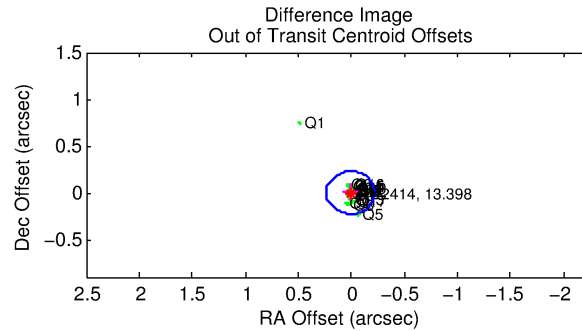
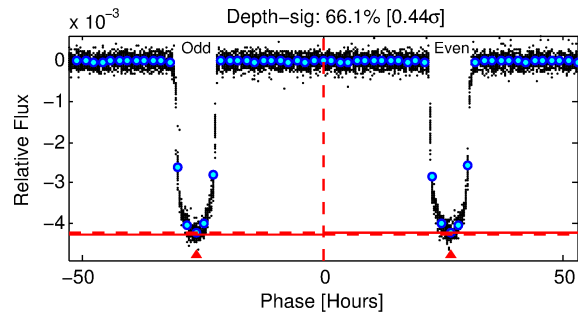
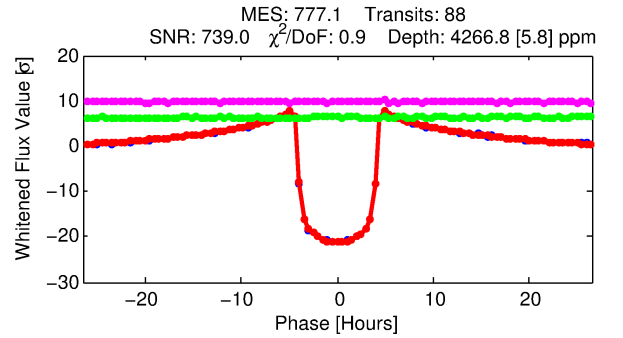
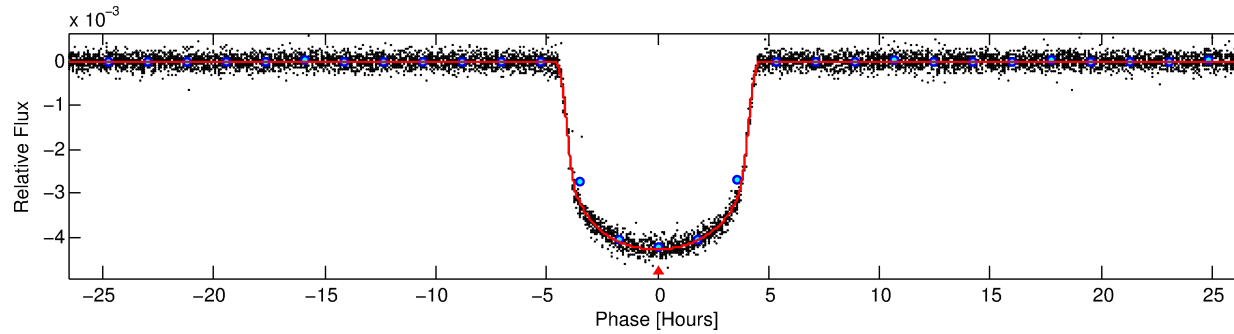
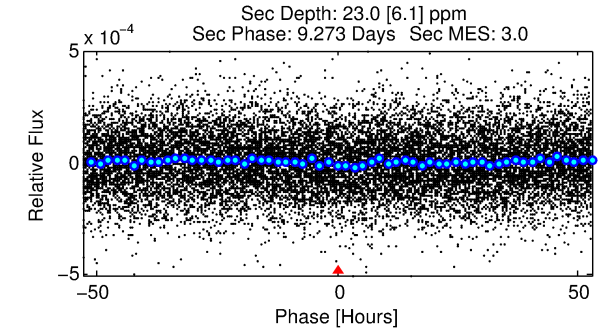
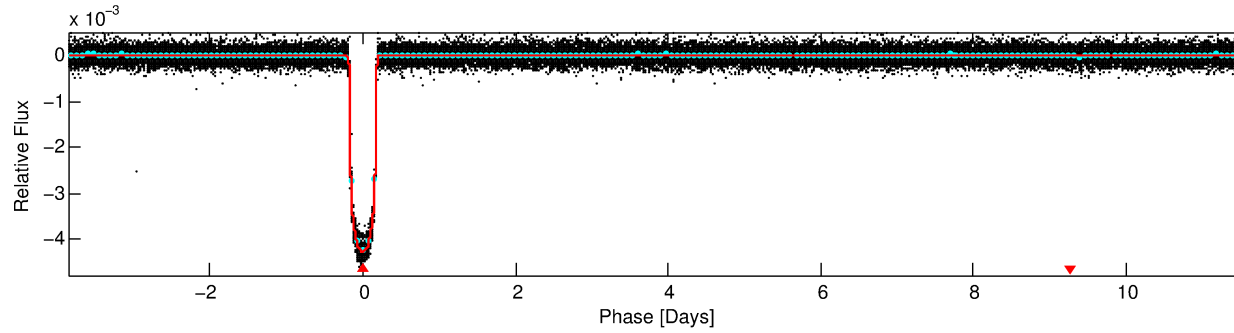
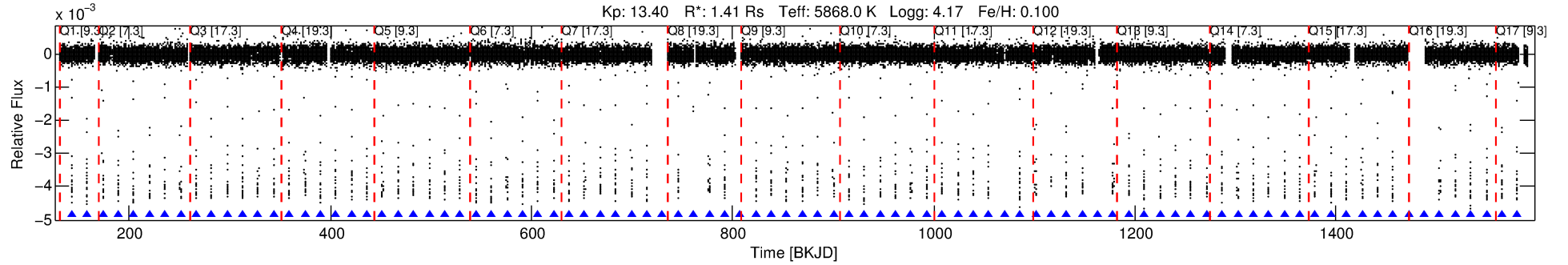
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004742414-01

No Significant Match Found

# DV One-Page Summary

KIC: 4742414 Candidate: 1 of 1 Period: 15.458 d  
KOI: K00631.01 Corr: 0.997



## DV Fit Results:

Period = 15.45806 [0.00000] d  
Epoch = 142.8663 [0.0002] BKJD  
Rp/R\* = 0.0602 [0.0002]  
a/R\* = 13.35 [0.20]  
b = 0.35 [0.04]  
Seff = 136.62 [42.65]  
Teq = 872 [68] K  
Rp = 9.24 [1.87] Re  
a = 0.1241 [0.0237] AU  
Ag = 2.28 [0.92] [1.40σ]  
Teffp = 1656 [115] K [5.87σ]

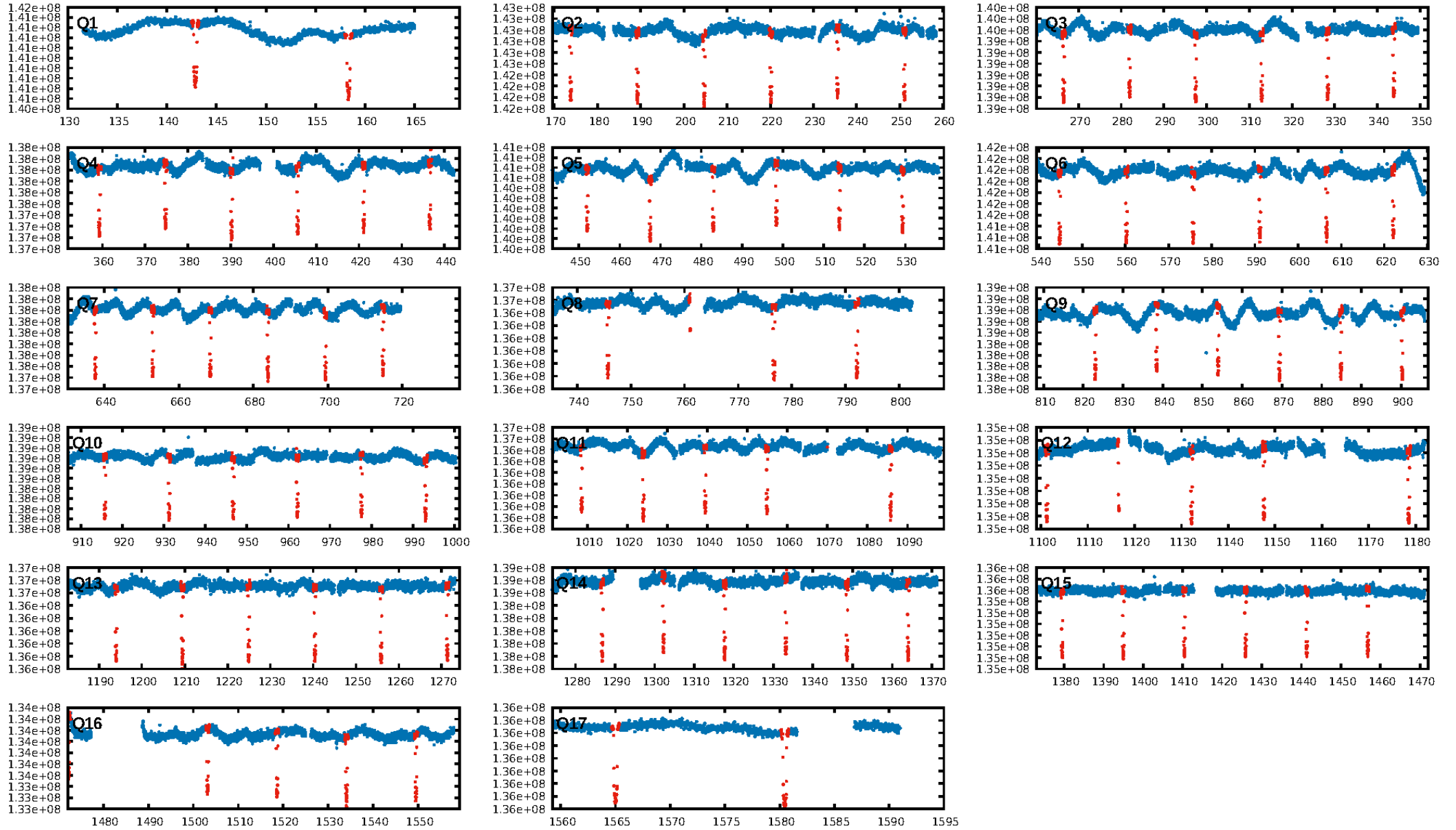
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 94.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [84/84]  
GhostDiagnostic-chr: 6.359  
Centroid-sig: 23.1%  
Centroid-so: 0.076 arcsec [6.79σ]  
OotOffset-rm: 0.006 arcsec [0.08σ]  
KicOffset-rm: 0.103 arcsec [1.24σ]  
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]

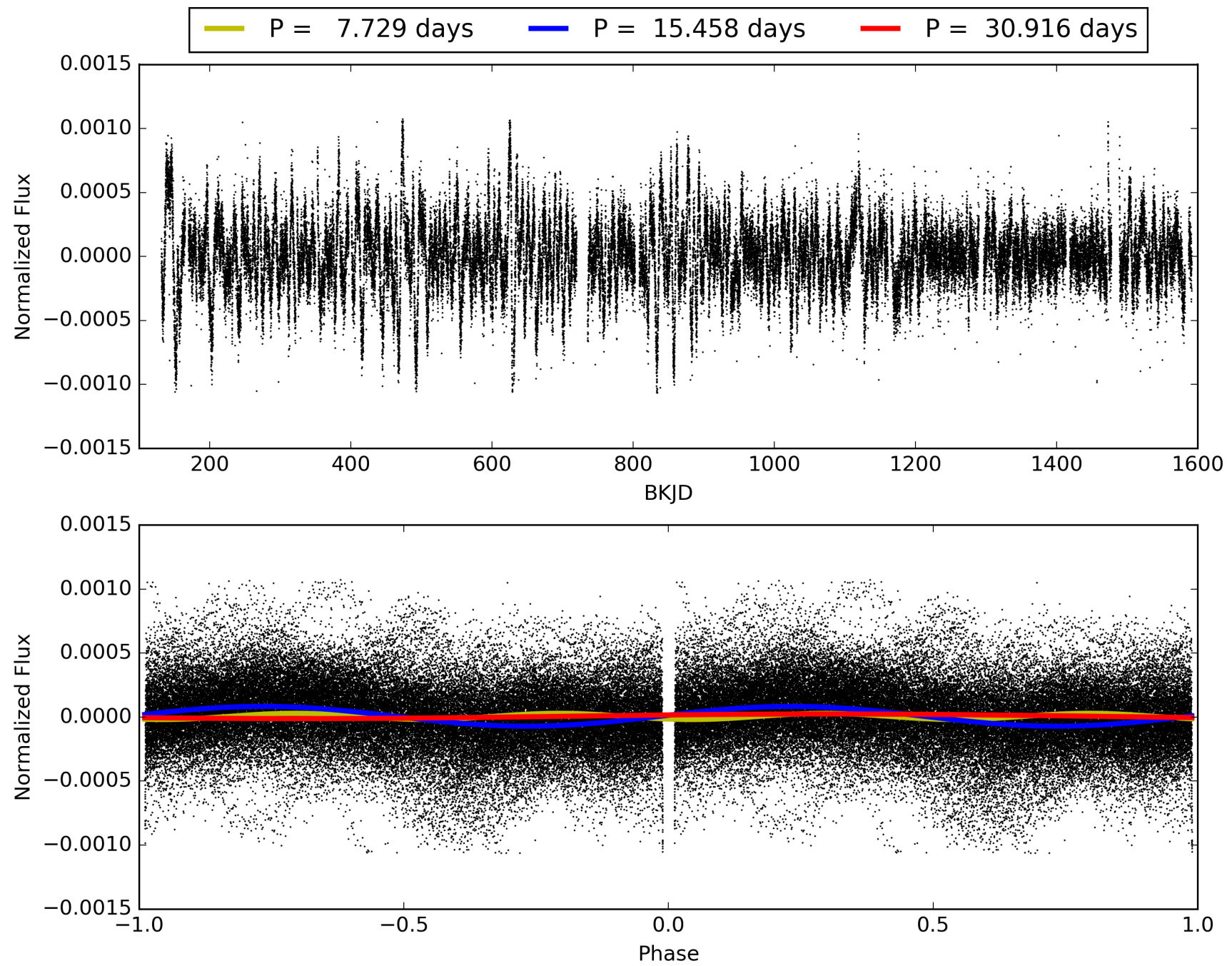
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:54:24 Z

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

# TCE 004742414-01, PDC Light Curves

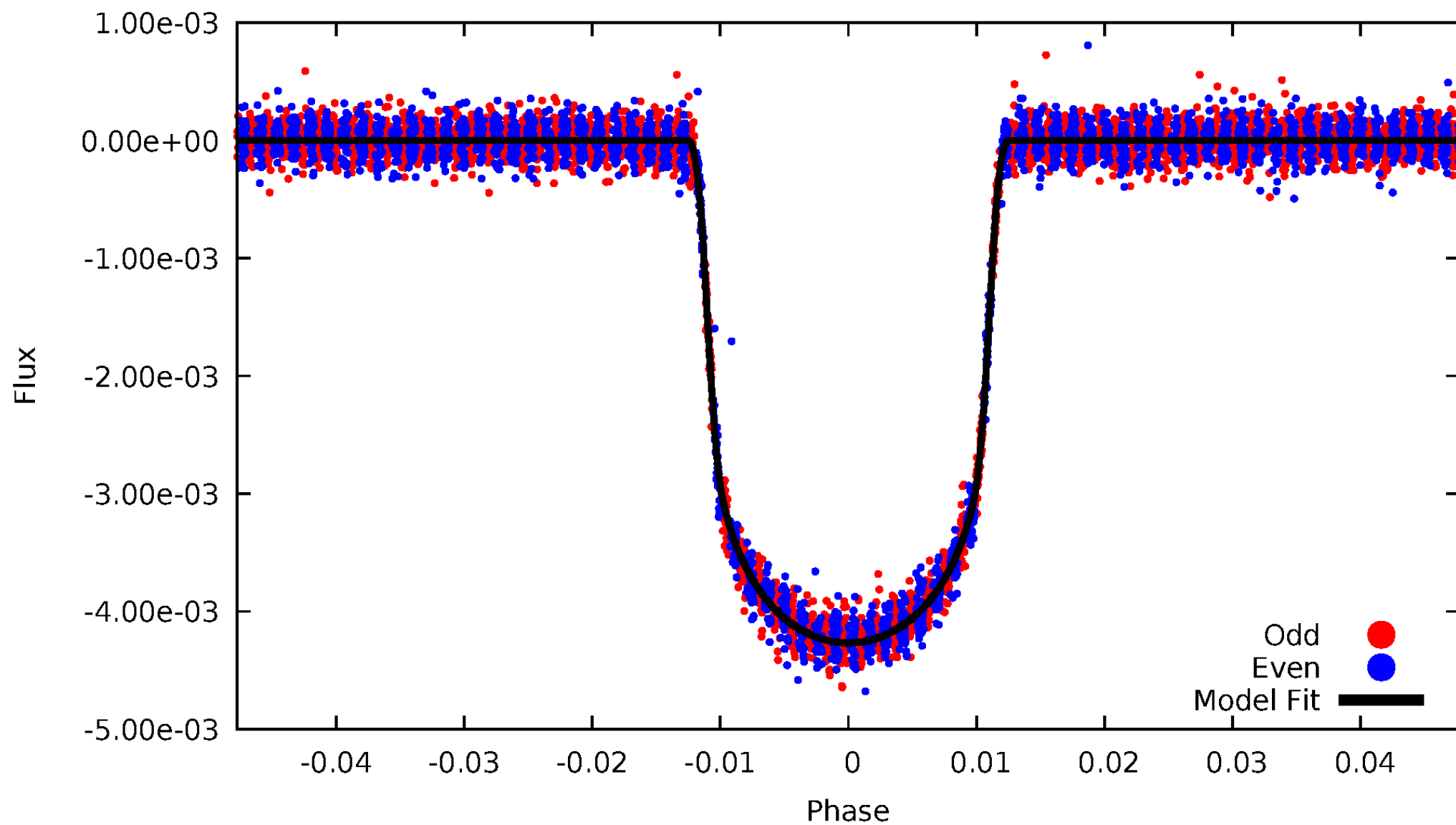


TCE 004742414-01



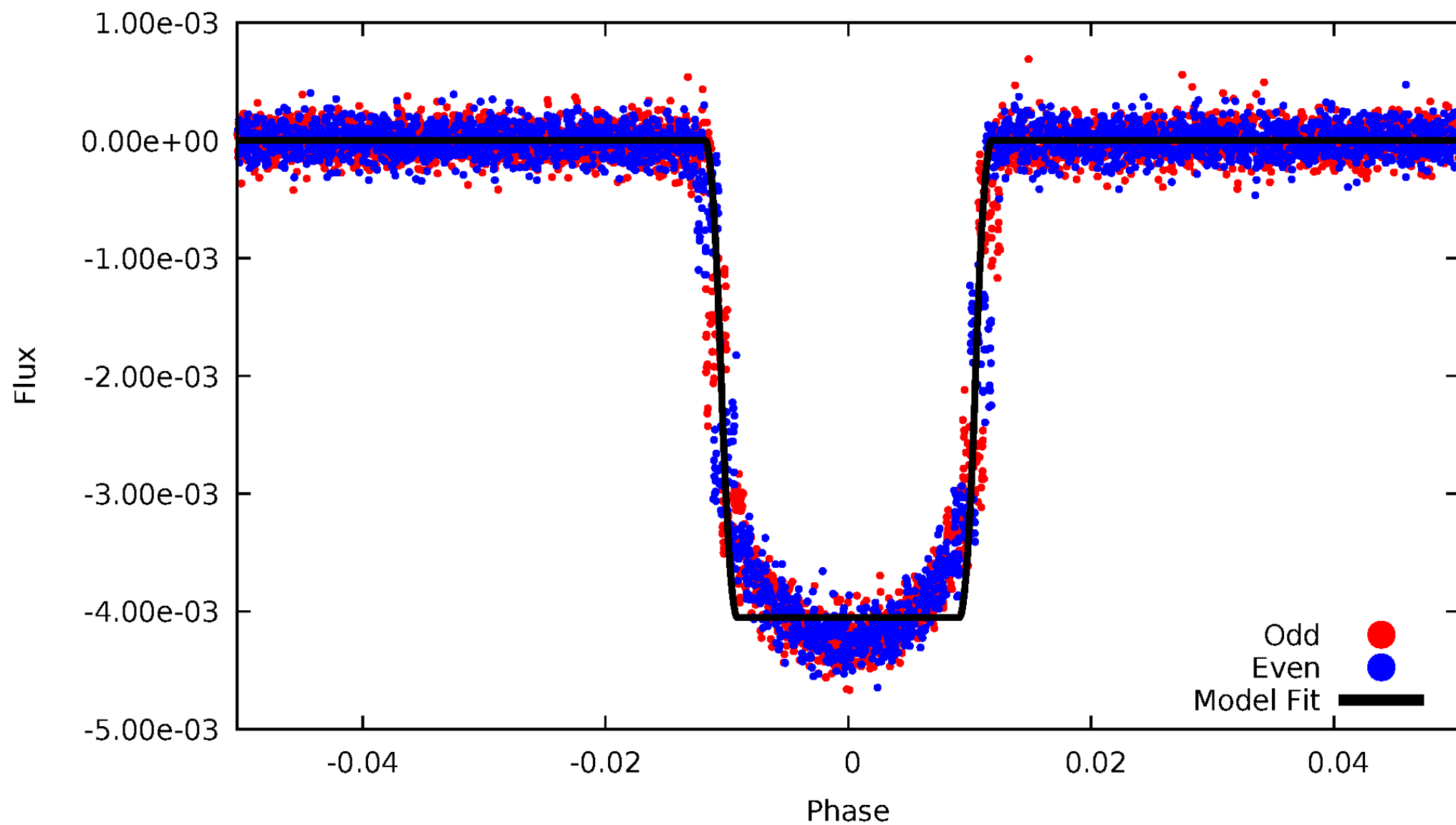
# DV Odd/Even

TCE 004742414-01



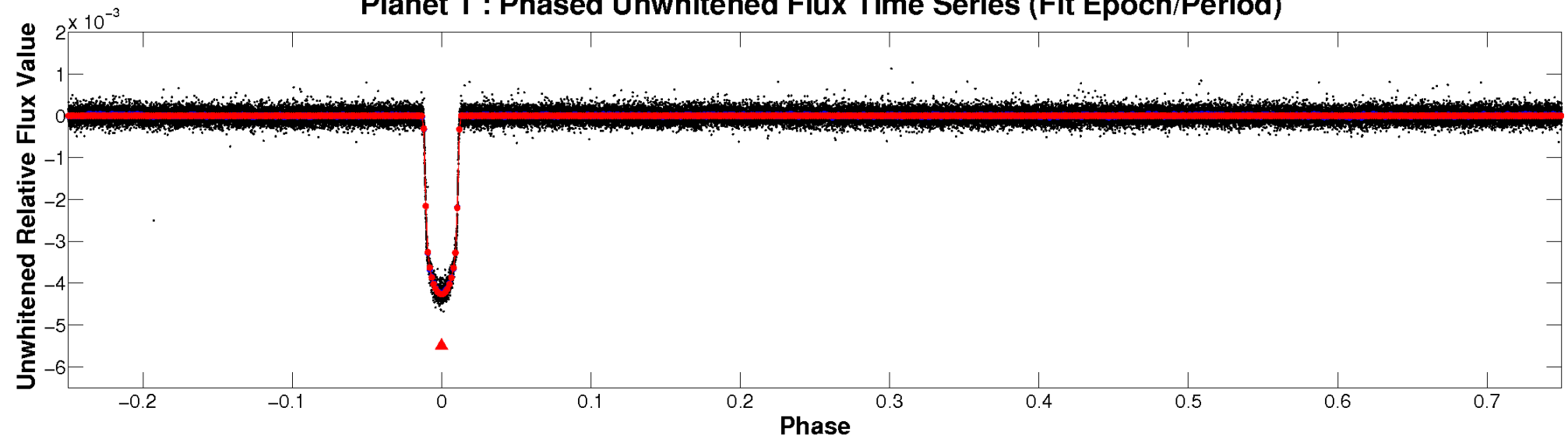
# ALT Odd/Even

TCE 004742414-01

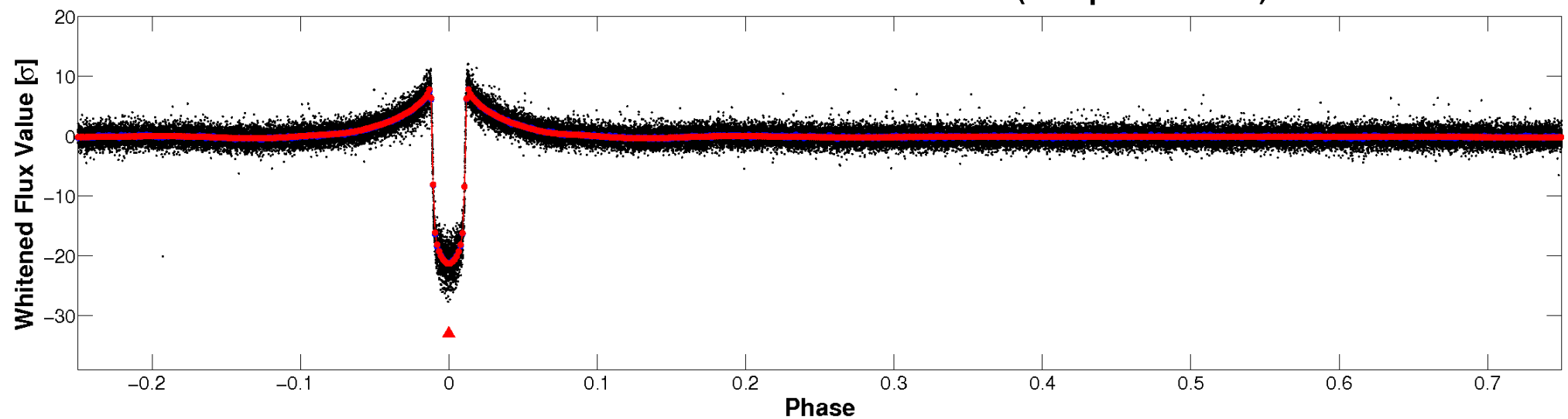


# Non-Whitened Vs. Whitened Light Curve

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

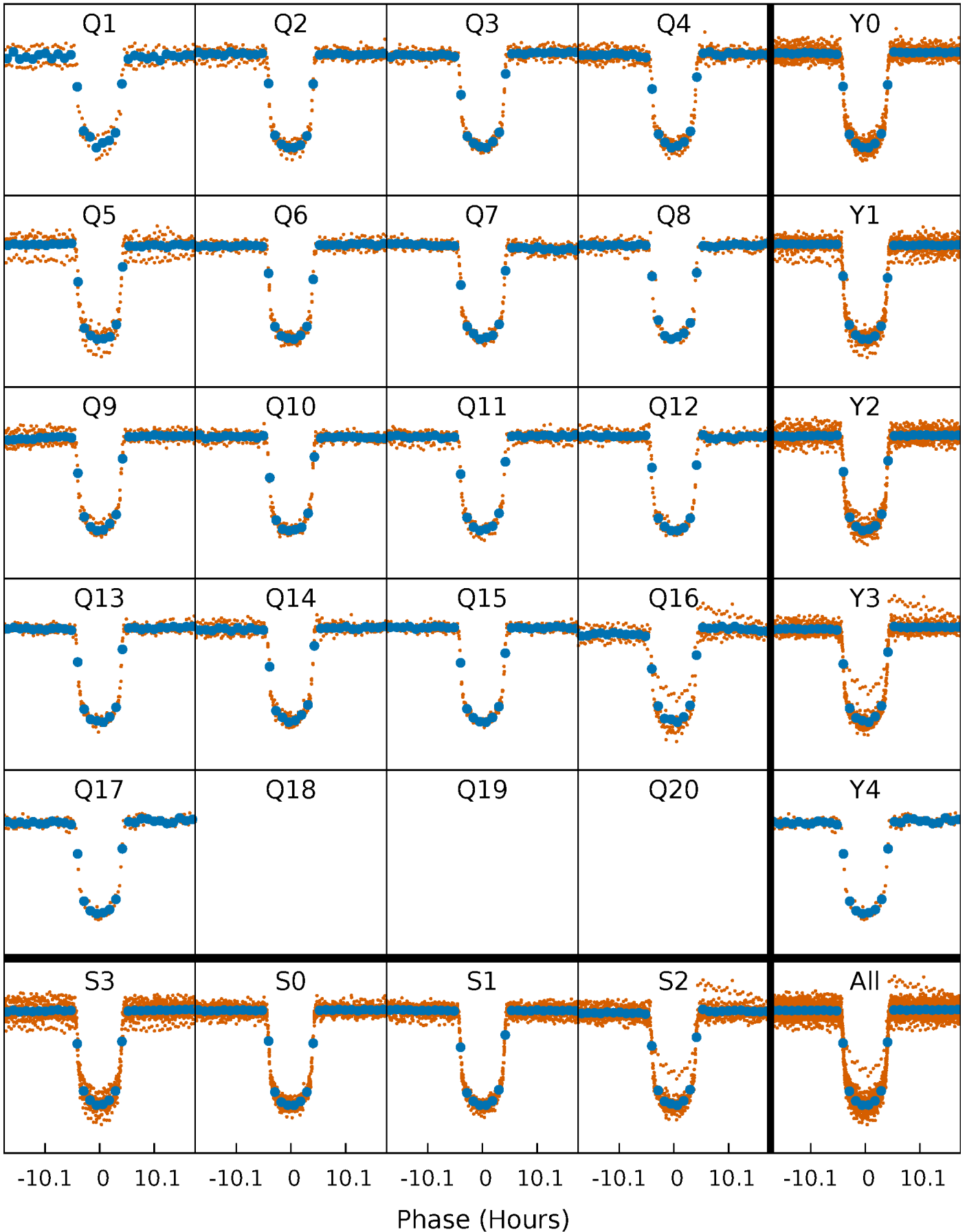


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

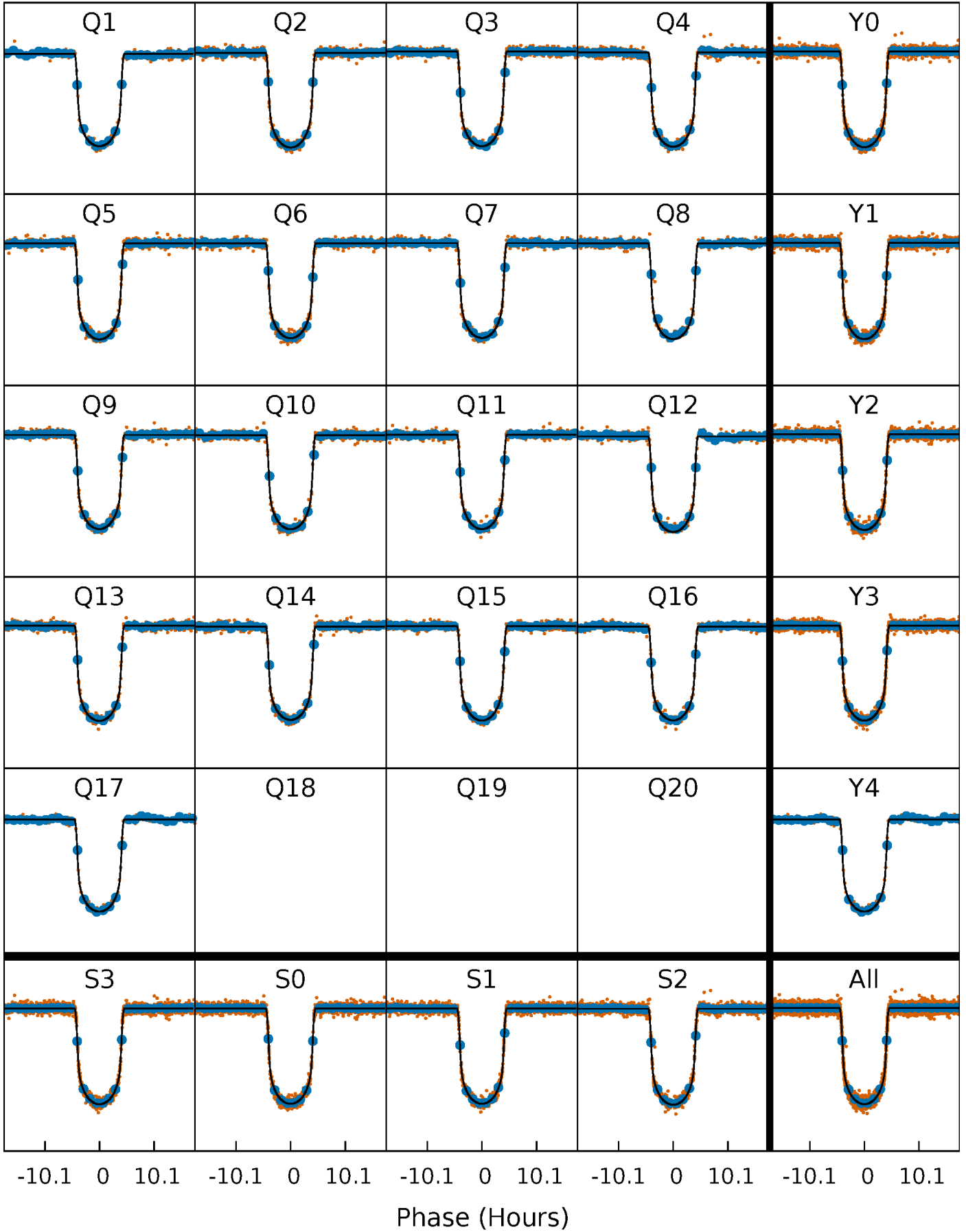
TCE 004742414-01 P= 15.458057 Days  $T_0=142.866333$  (BKJD)





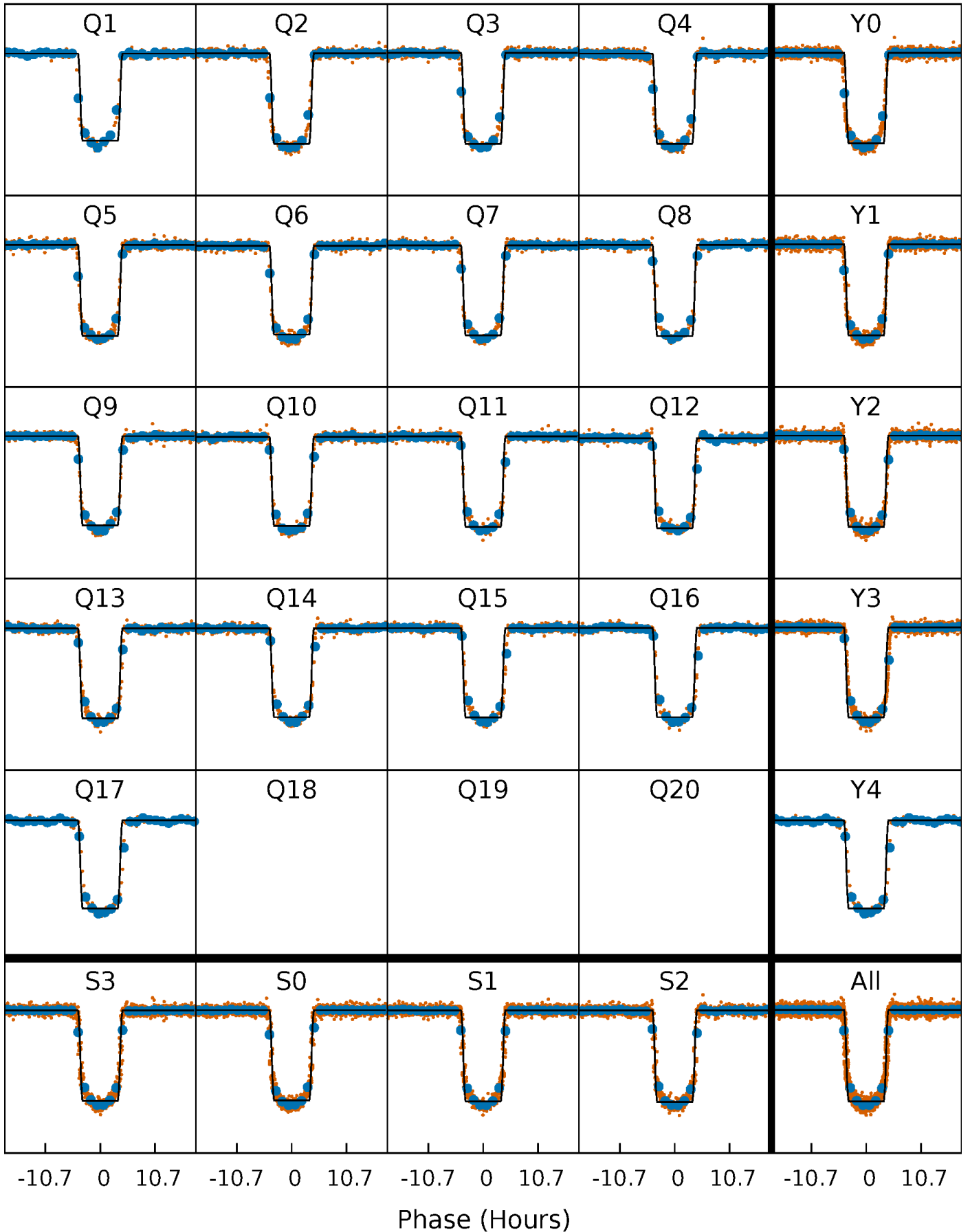
# DV Quarter-Phased Transit Curves

TCE 004742414-01 P= 15.458057 Days  $T_0=142.866333$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

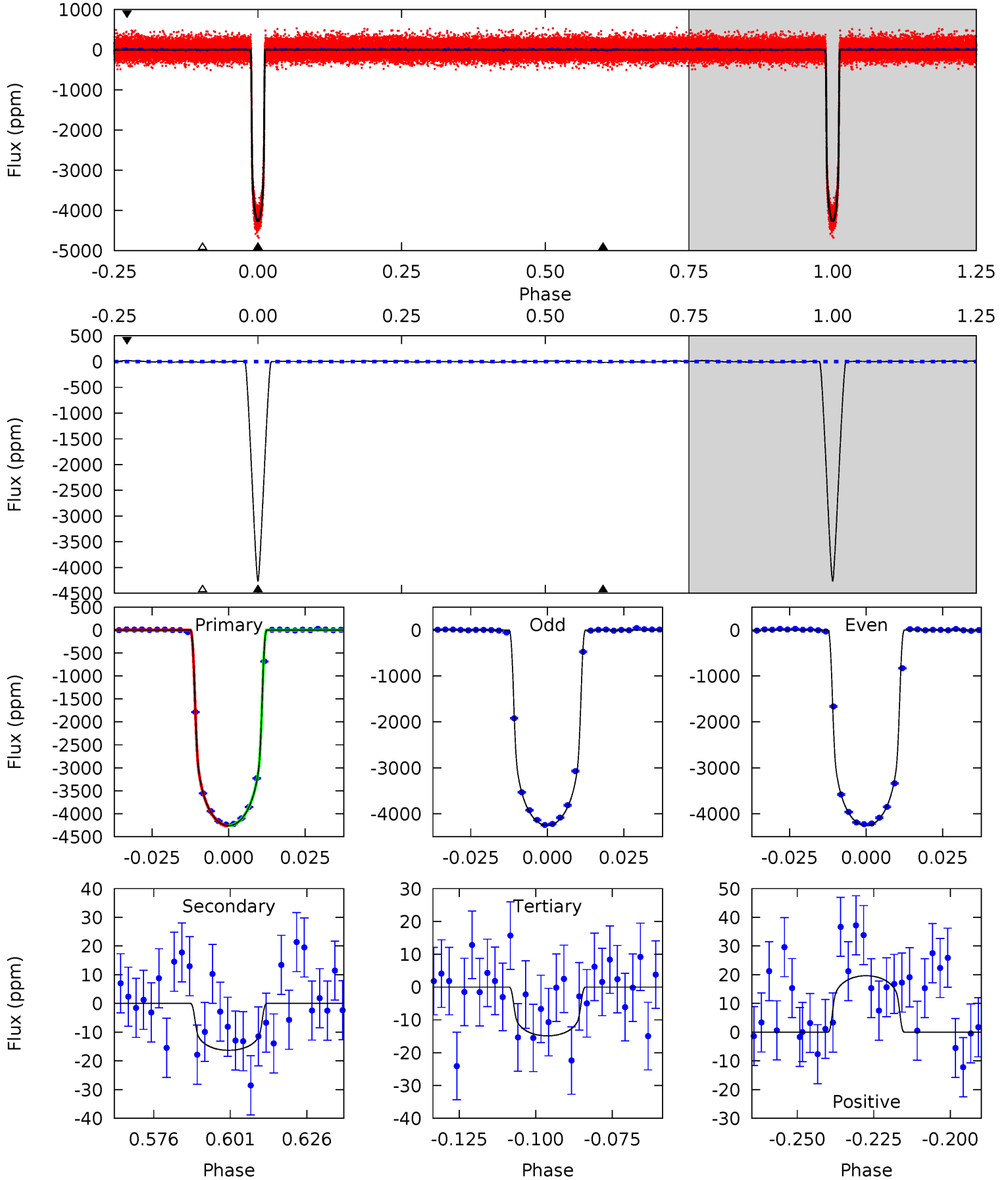
TCE 004742414-01 P= 15.457693 Days  $T_0=142.882537$  (BKJD)



# DV Model-Shift Uniqueness Test

004742414-01, P = 15.458057 Days, E = 127.408276 Days

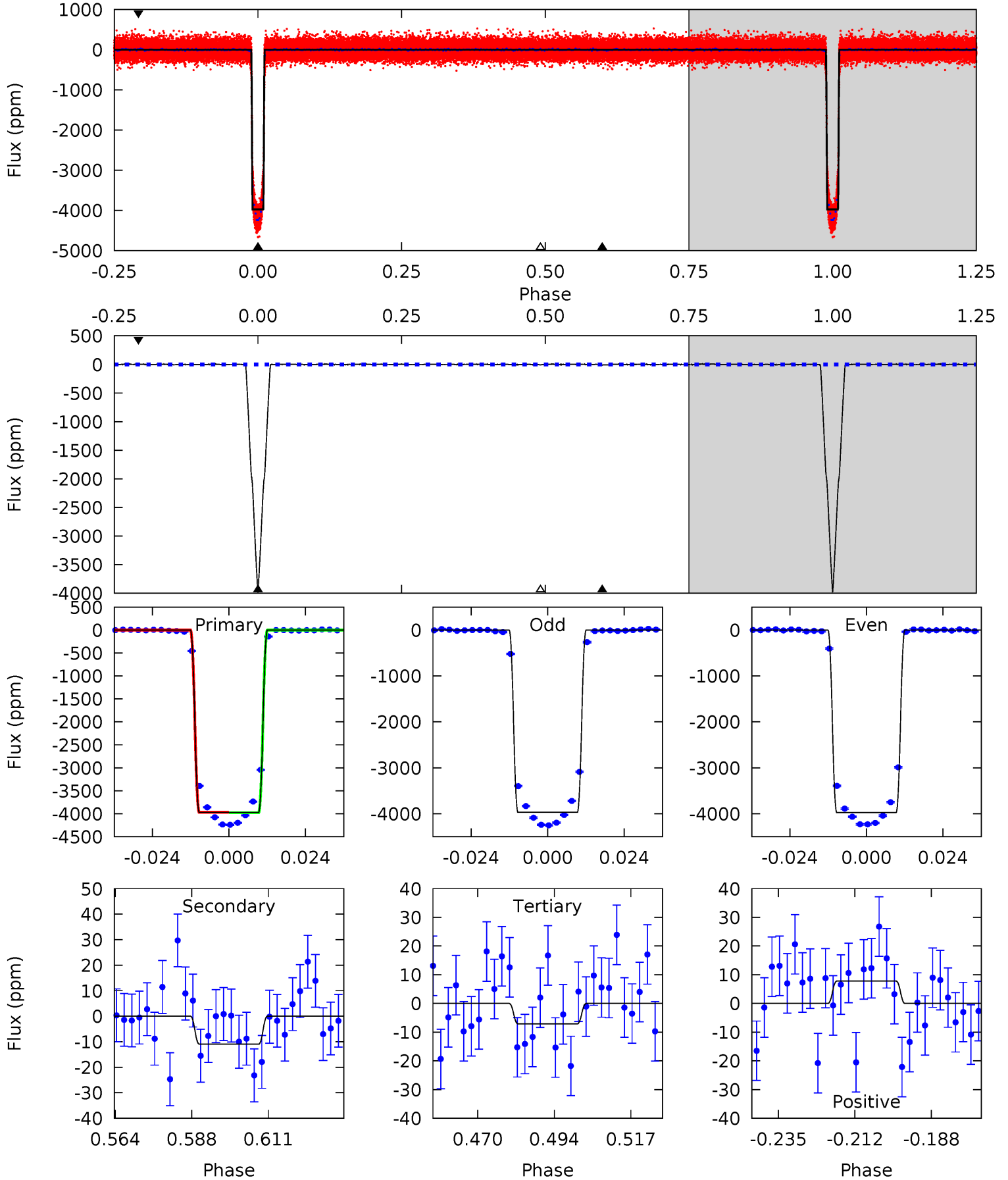
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1352	5.18	4.72	6.24	4.85	2.24	2.01	1347	1345	0.46	-1.06	0.93	1.00	0.00	1.06



# Alt Model-Shift Uniqueness Test

004742414-01, P = 15.457693 Days, E = 127.424844 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
1200	3.31	2.14	2.35	4.86	2.27	0.84	1198	1198	1.16	0.96	0.74	1.00	0.00	1.21



### Stellar Parameters For KIC 004742414

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5868^{+105}_{-117}$	$4.169^{+0.176}_{-0.108}$	$0.100^{+0.150}_{-0.150}$	$1.407^{+0.233}_{-0.284}$	$1.066^{+0.100}_{-0.090}$	$0.539^{+0.451}_{-0.179}$
	+2%/-2%	+4%/-3%	+150%/-150%	+17%/-20%	+9%/-8%	+84%/-33%
Source	SPE18	SPE18	SPE18	DSEP		

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

### Secondary Eclipse Parameters for KIC 004742414-01 / KOI 0631.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-16 \pm 3$	$9.18^{+0.85}_{-1.07}$	$1208^{+62}_{-71}$	$2352^{+67}_{-78}$	$1.669^{+0.567}_{-0.421}$
Alt.	$-11 \pm 3$	$9.76^{+0.89}_{-1.08}$	$1213^{+58}_{-70}$	$2180^{+91}_{-140}$	$0.969^{+0.439}_{-0.315}$

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

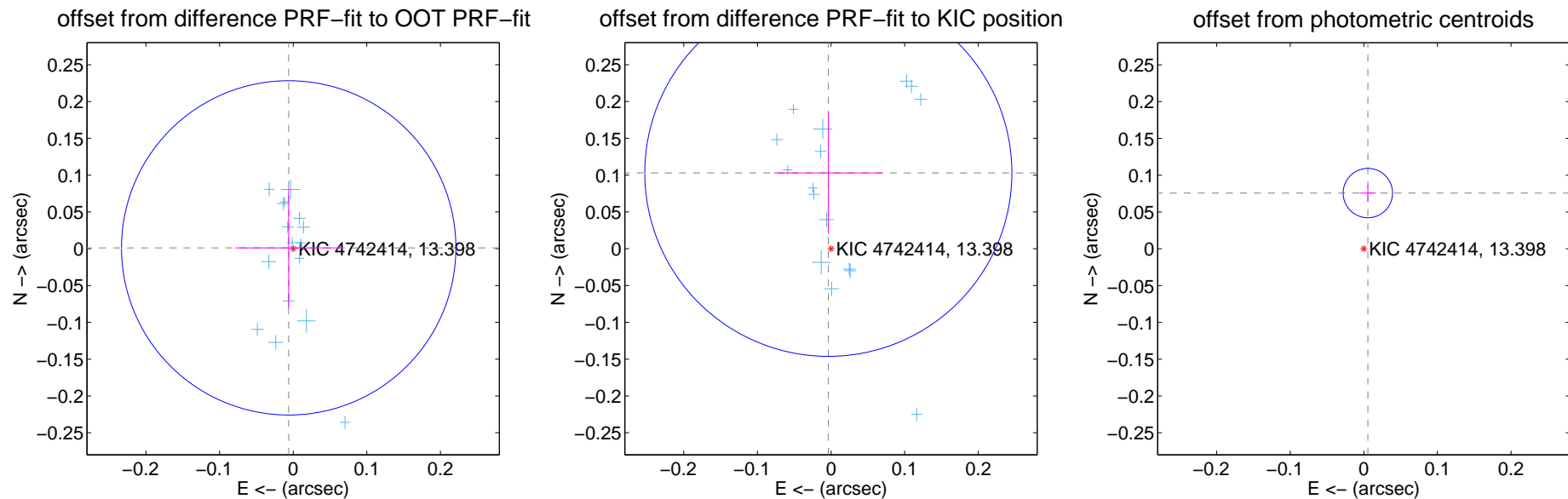
## DV Centroid Data

Supplemental centroid analysis for 004742414-01. Kepler magnitude: 13.40. Transit SNR 739.05

There are 17 quarters with good PRF difference image offsets

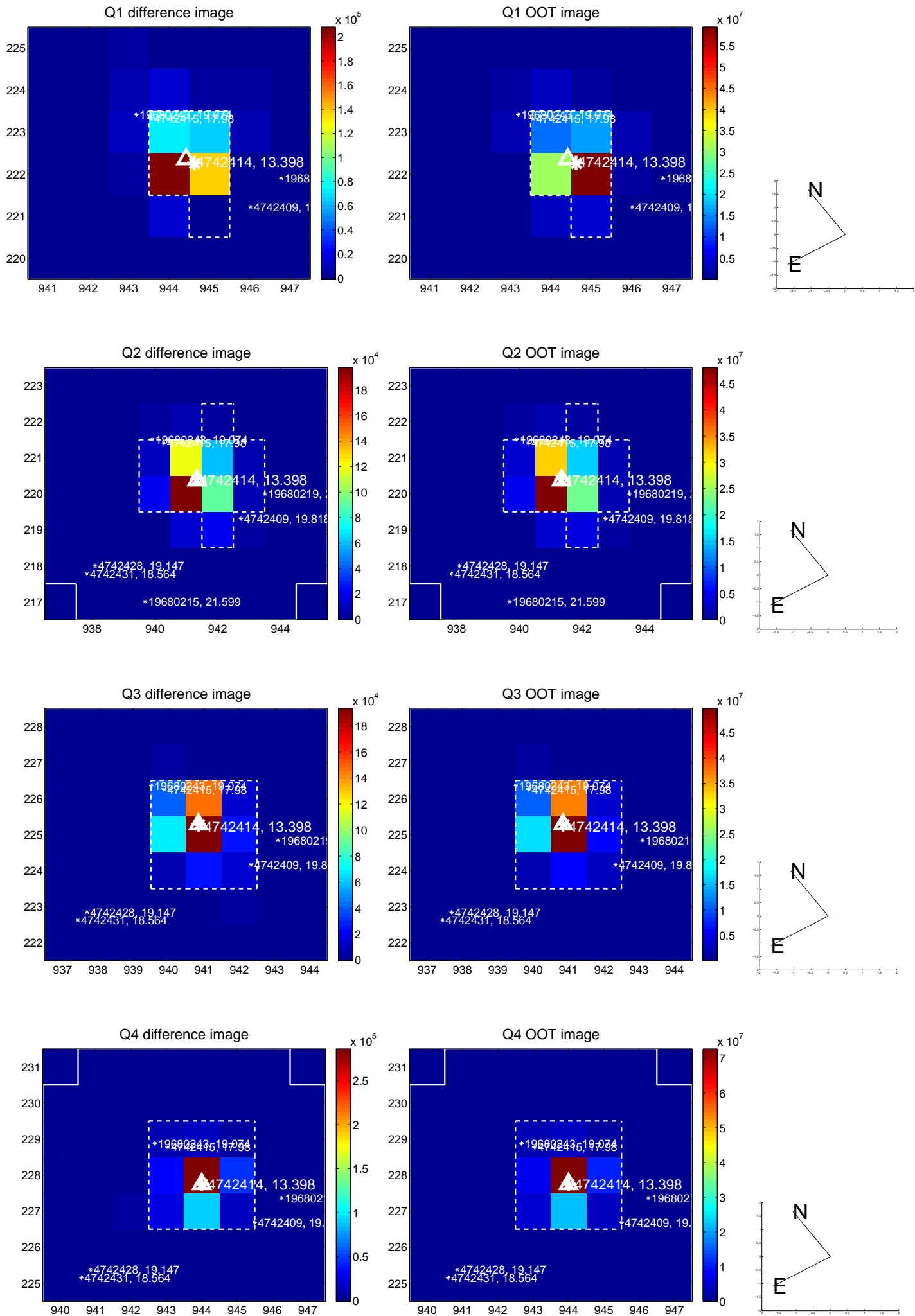
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.006 \pm 0.076$	0.08	$0.006 \pm 0.072$	$0.001 \pm 0.081$
PRF-fit source offset from KIC position	$0.103 \pm 0.083$	1.24	$0.004 \pm 0.074$	$0.103 \pm 0.083$
photometric centroid source offset	$0.08 \pm 0.01$	6.79	$-0.01 \pm 0.01$	$0.08 \pm 0.01$

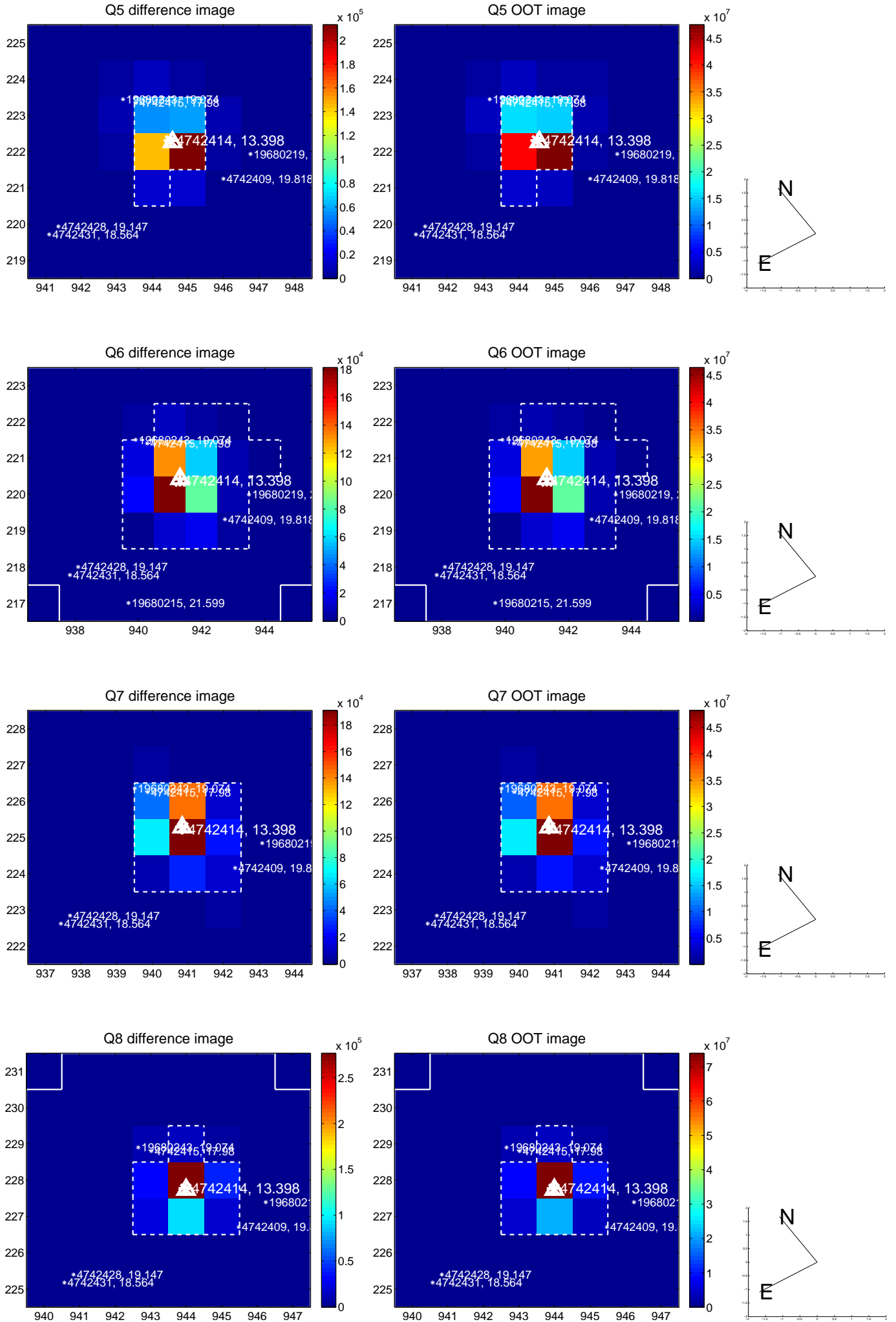


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

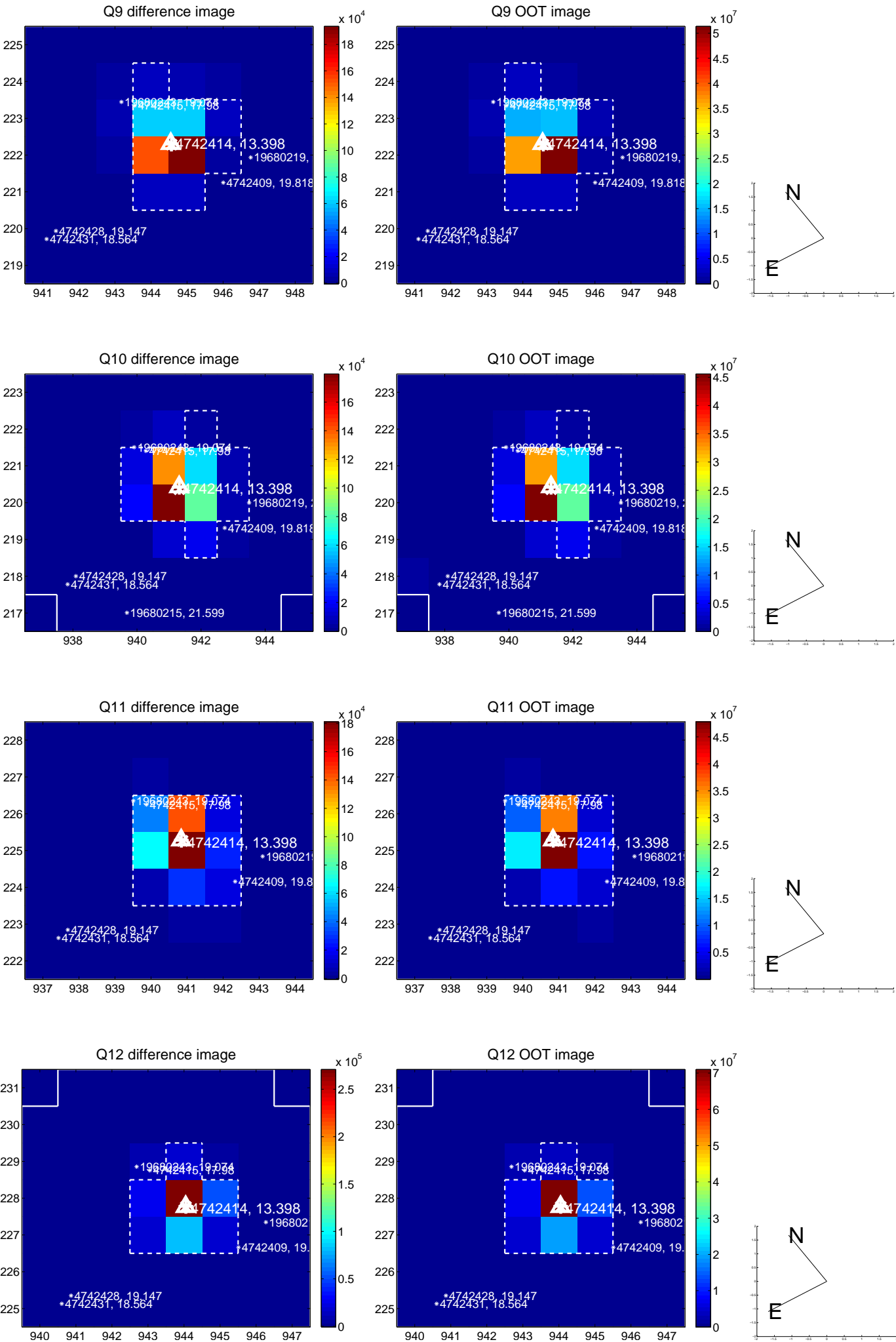


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

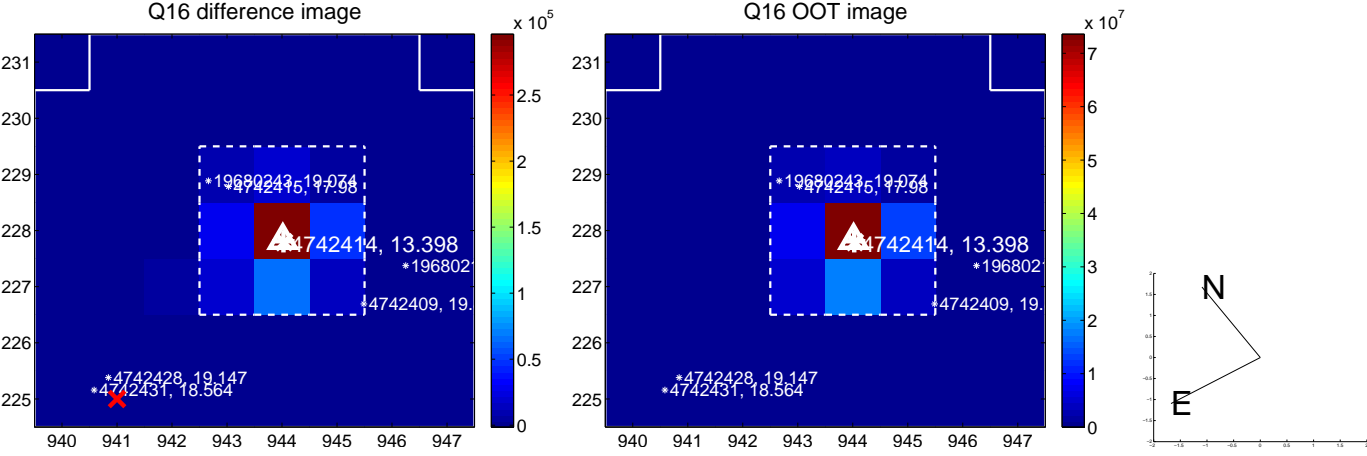
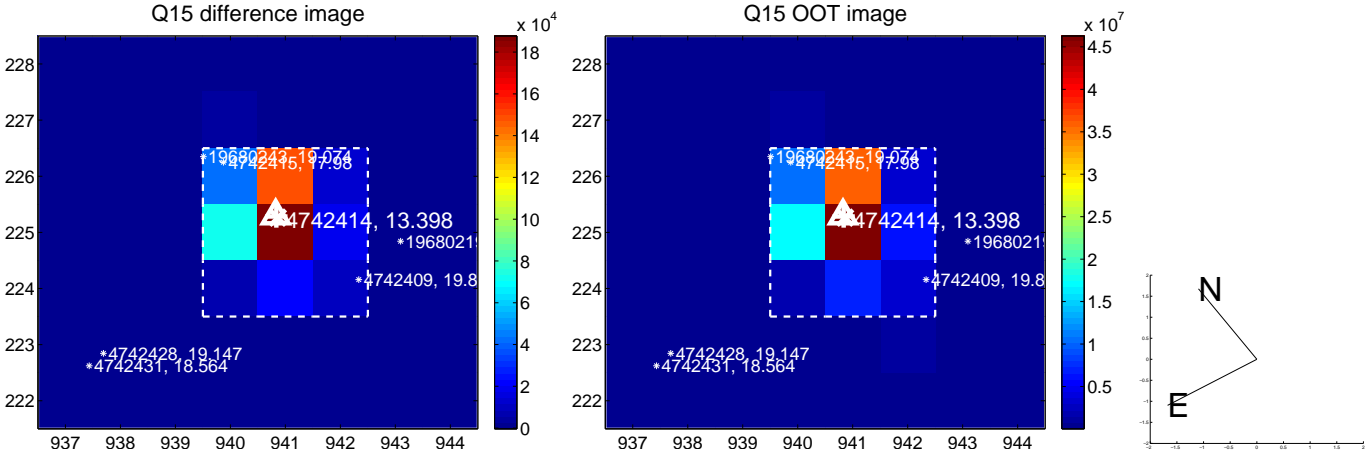
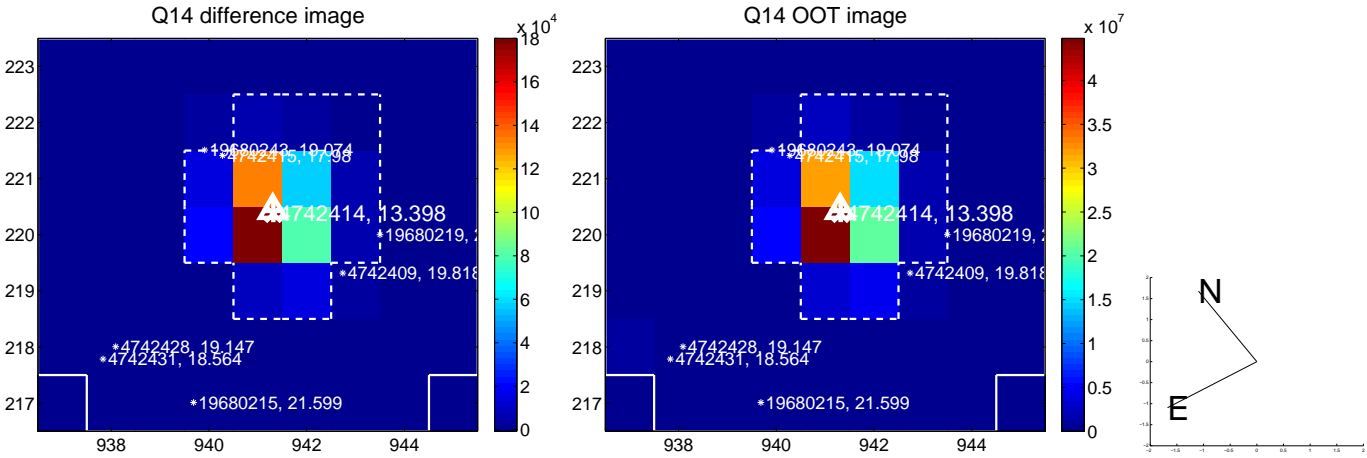
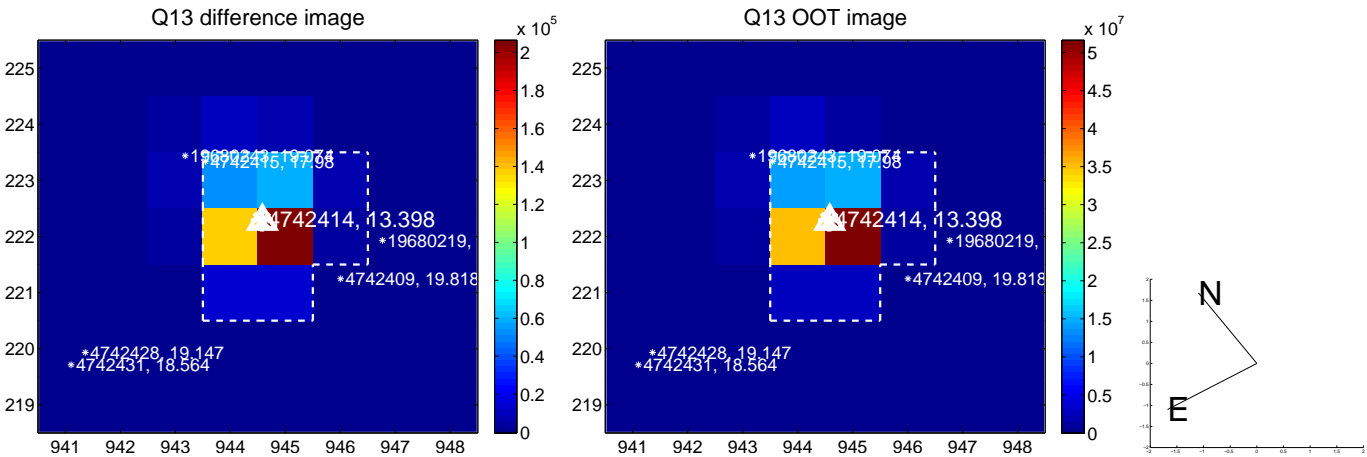




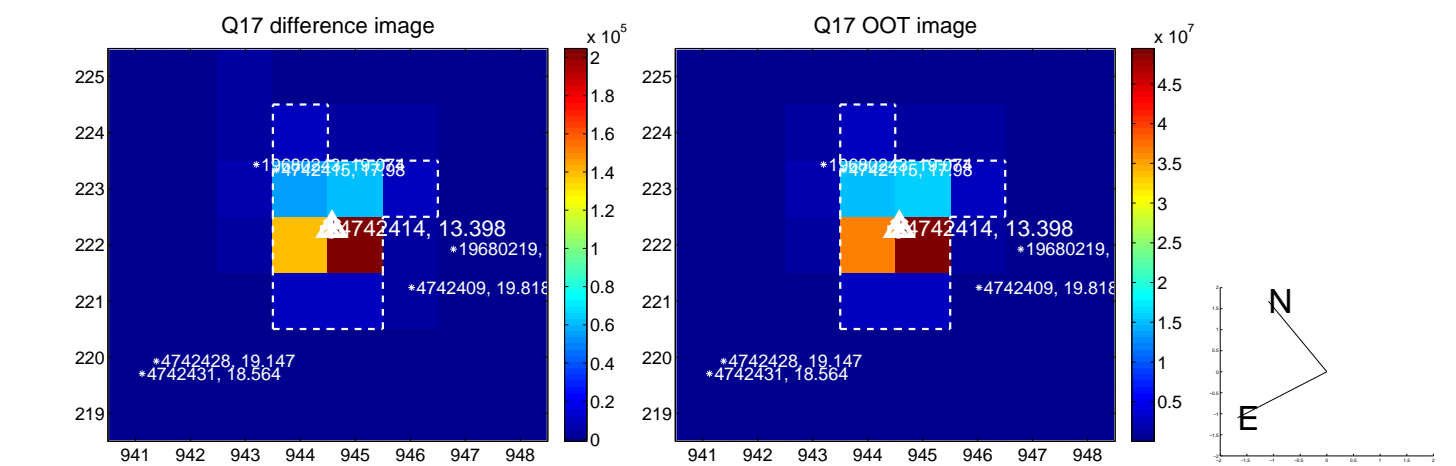
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



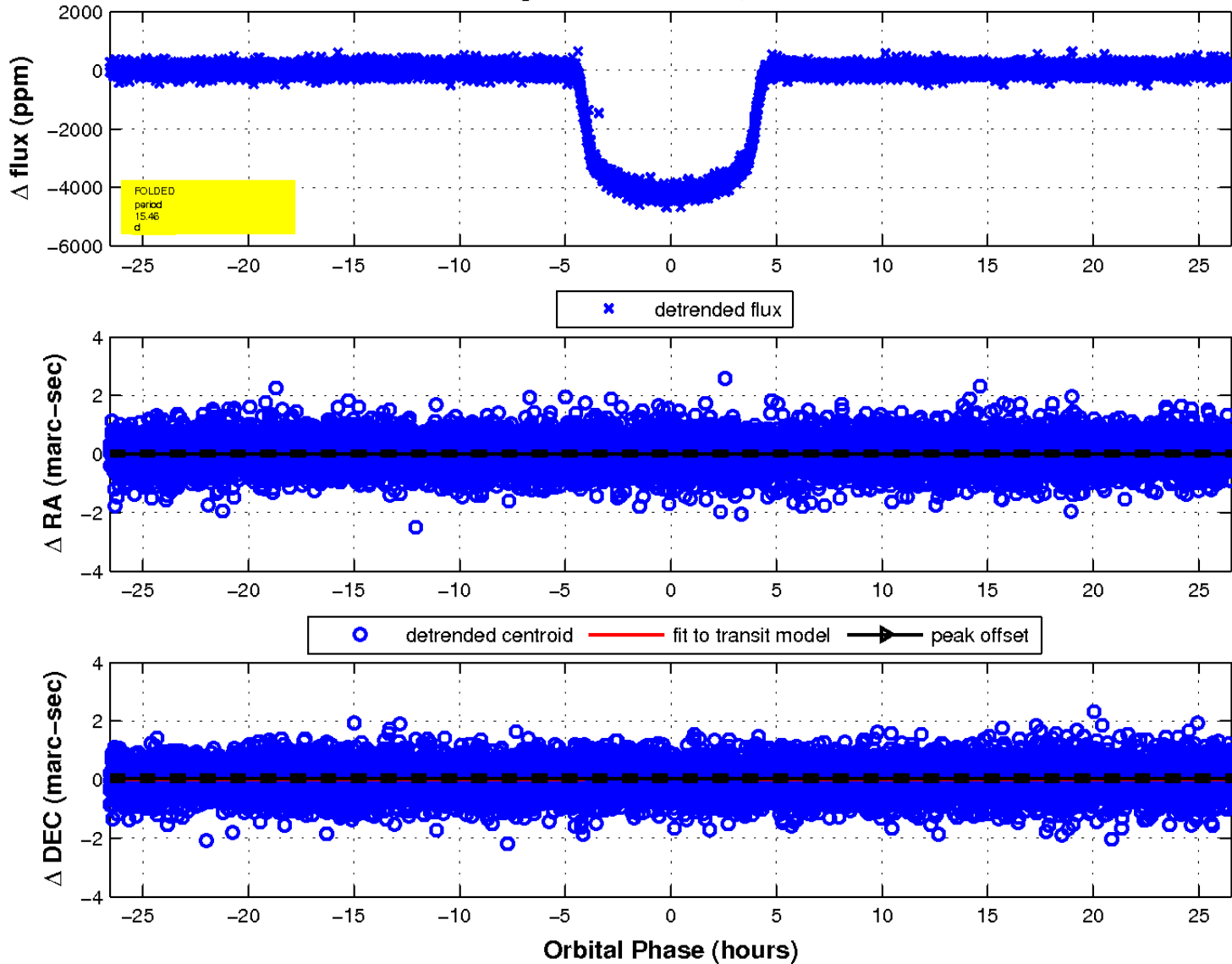
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

