

# KIC 006042116

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006042116-01	OBS	6650.01	5.407157	136.595717	73562.2	5.808	13887.2	12180.1	2.44	7617	111.61	3671.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006042116-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED

**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.

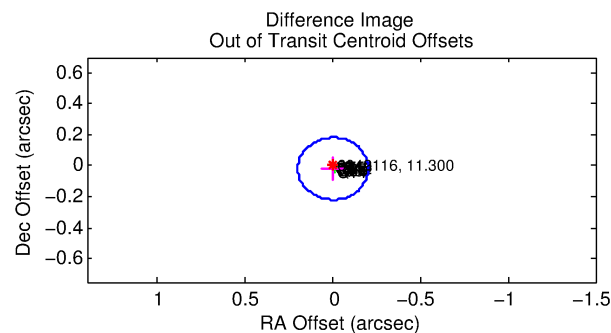
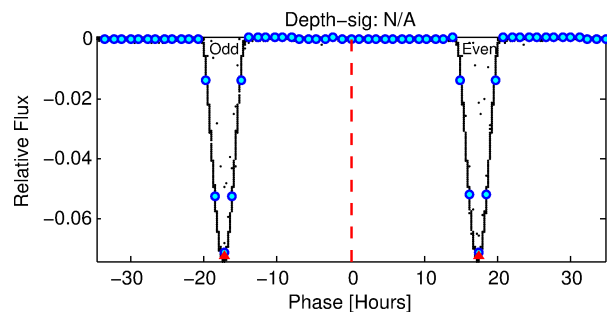
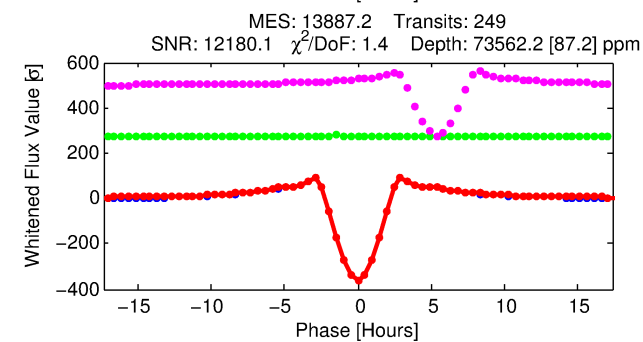
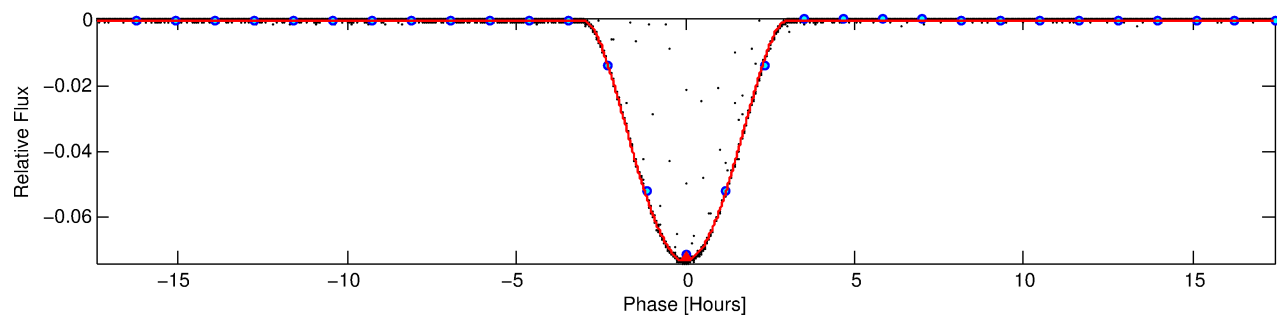
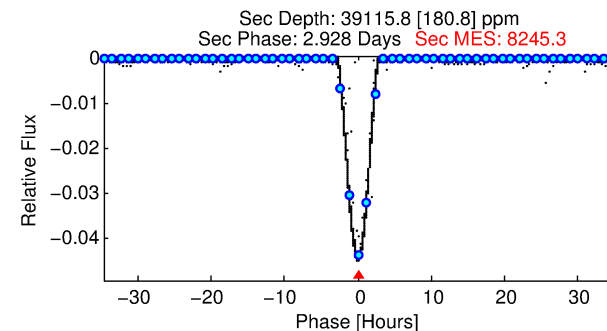
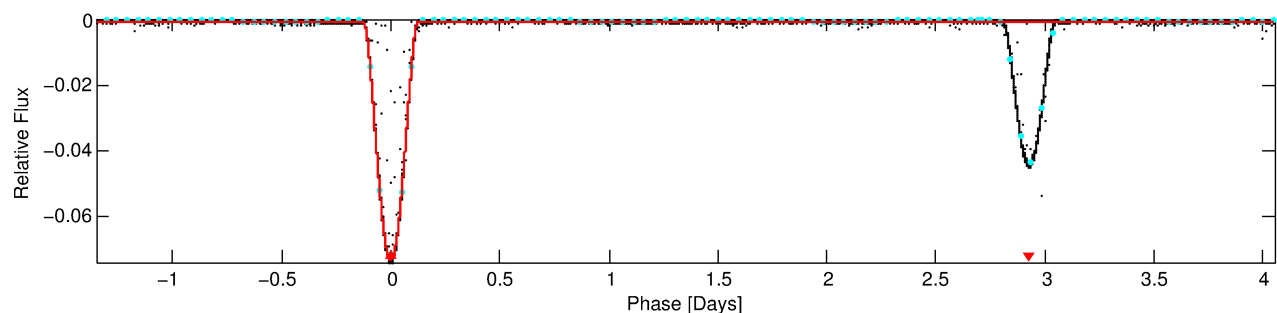
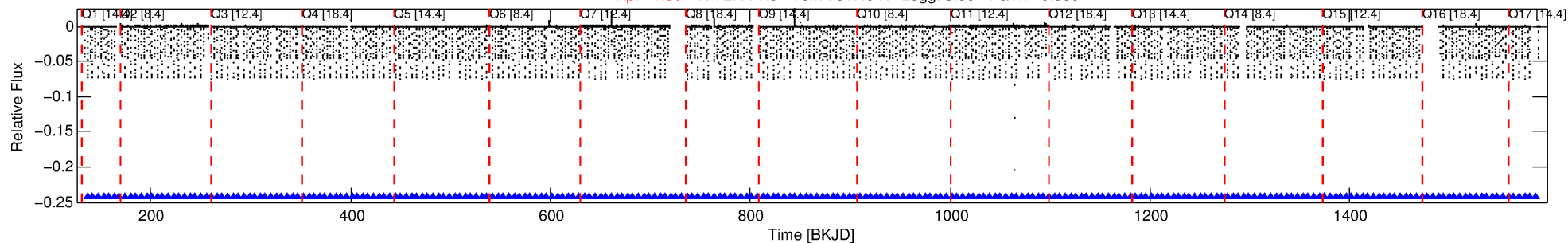
## Ephemeris Match Information For 006042116-01

No Significant Match Found

# DV One-Page Summary

KIC: 6042116 Candidate: 1 of 1 Period: 5.407 d  
KOI: K06650.01 Corr: 0.992

Kp: 11.30 R\*: 2.44 Rs Teff: 7617.0 K Logg: 3.86 Fe/H: -0.500



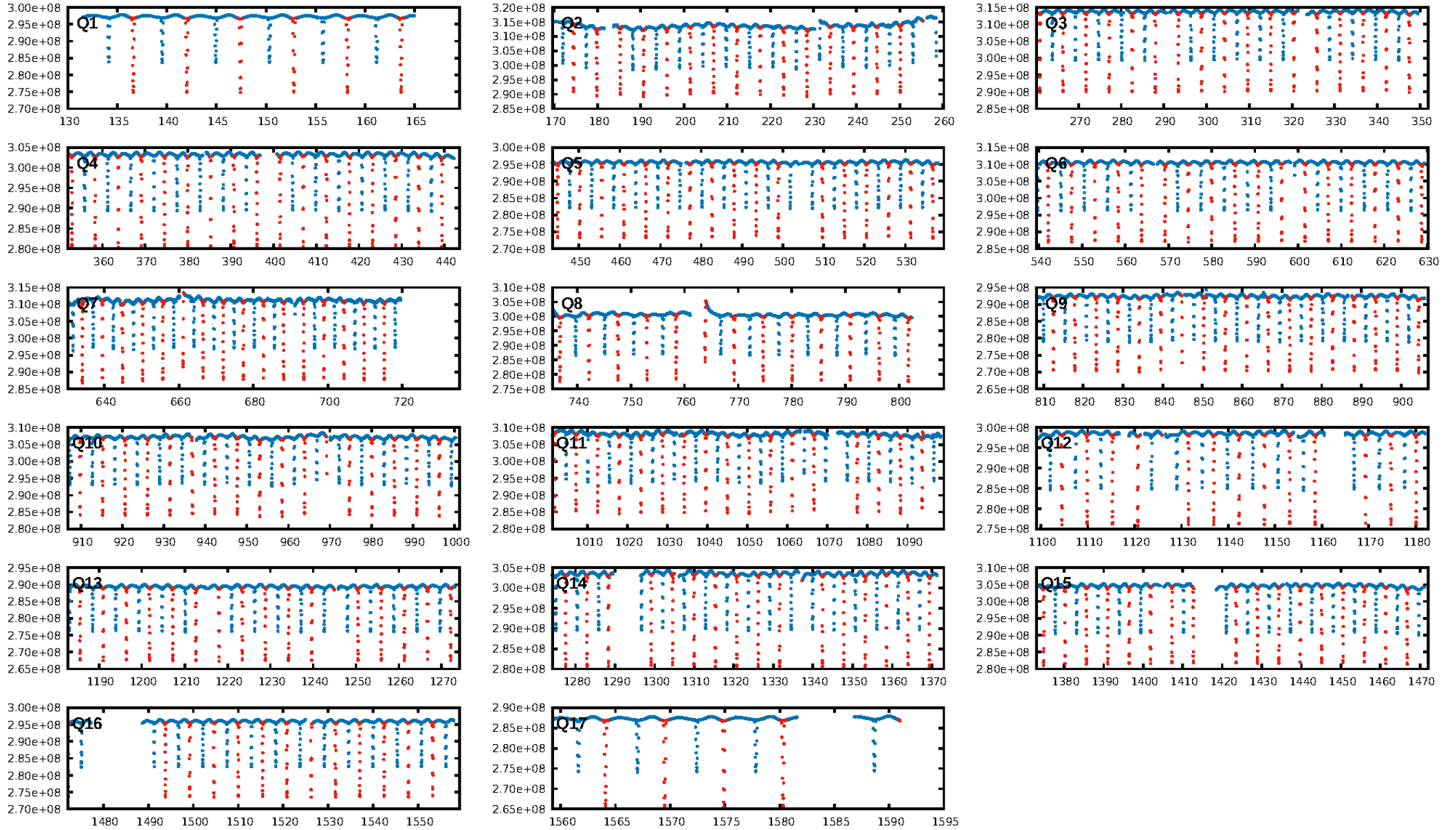
## DV Fit Results:

Period = 5.40716 [0.00000] d  
Epoch = 136.5957 [0.0000] BKJD  
Rp/R\* = 0.4194 [0.0049]  
a/R\* = 7.26 [0.00]  
b = 1.00 [0.01]  
Seff = 3671.80 [2514.06]  
Teff = 1985 [340] K  
Rp = 111.61 [46.97] Re  
a = 0.0699 [0.0288] AU  
Ag = 8.44 [5.61] [1.33σ]  
Teffp = 5231 [221] K [8.01σ]

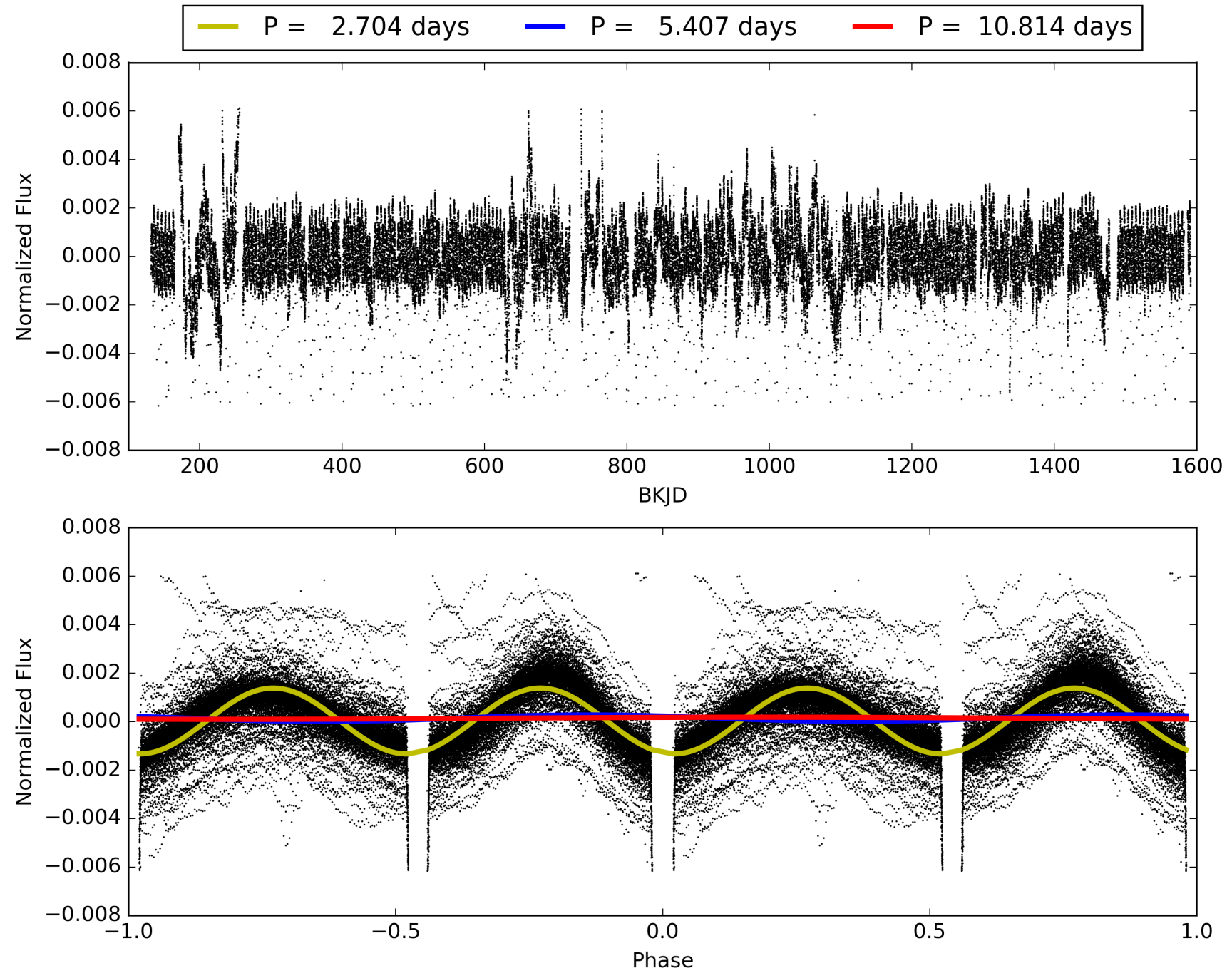
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [238/238]  
GhostDiagnostic-chr: 10.81  
Centroid-sig: 0.0%  
Centroid-so: 0.165 arcsec [344.12σ]  
OotOffset-rm: 0.019 arcsec [0.28σ]  
KicOffset-rm: 0.116 arcsec [1.72σ]  
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 006042116-01, PDC Light Curves

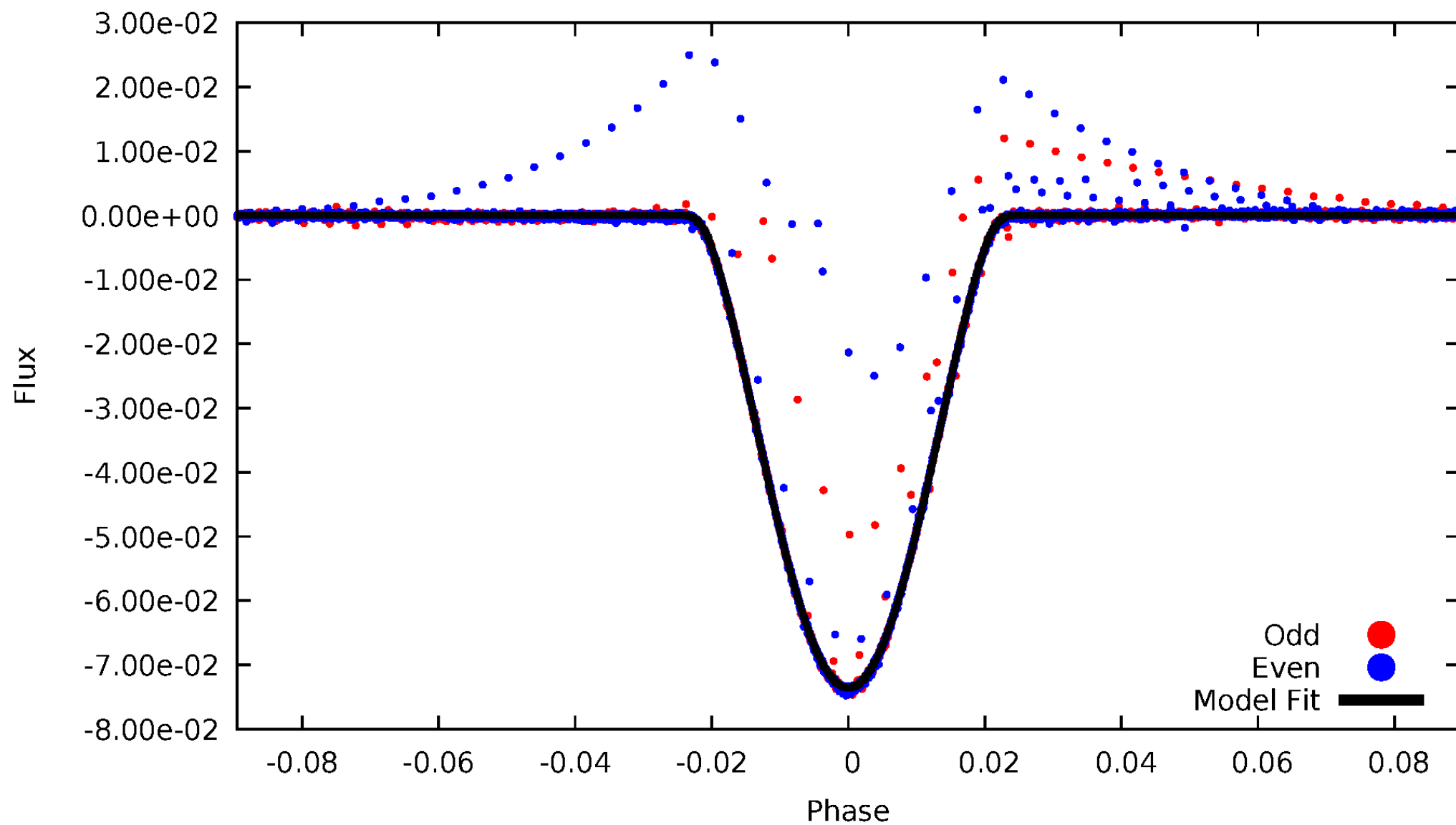


TCE 006042116-01



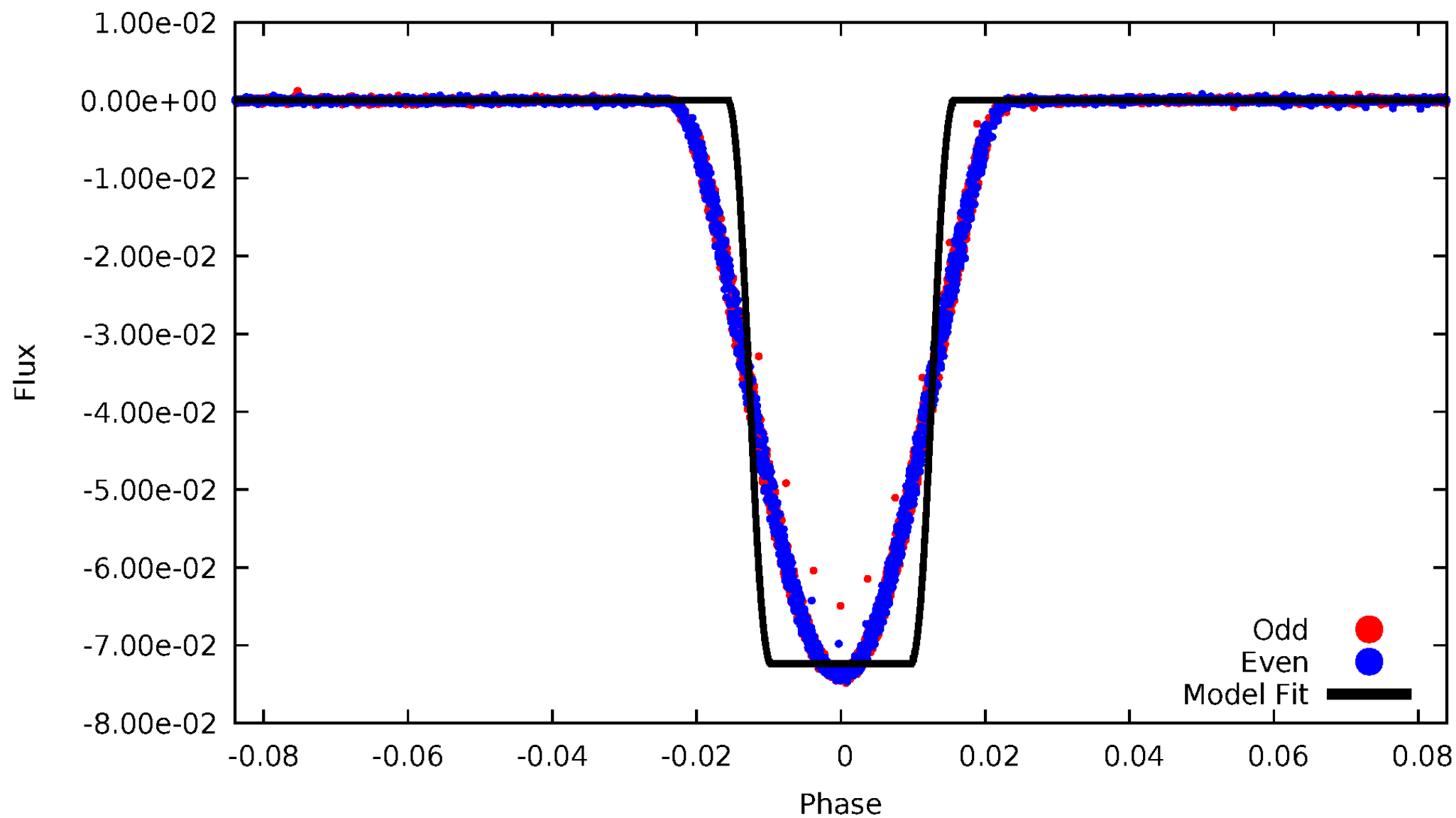
# DV Odd/Even

TCE 006042116-01



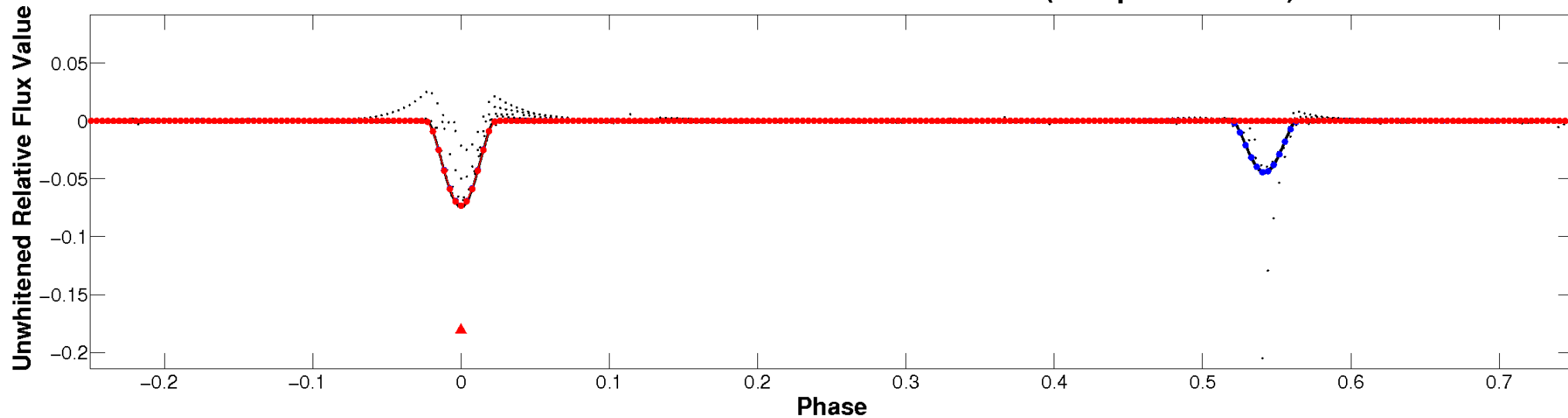
# ALT Odd/Even

TCE 006042116-01

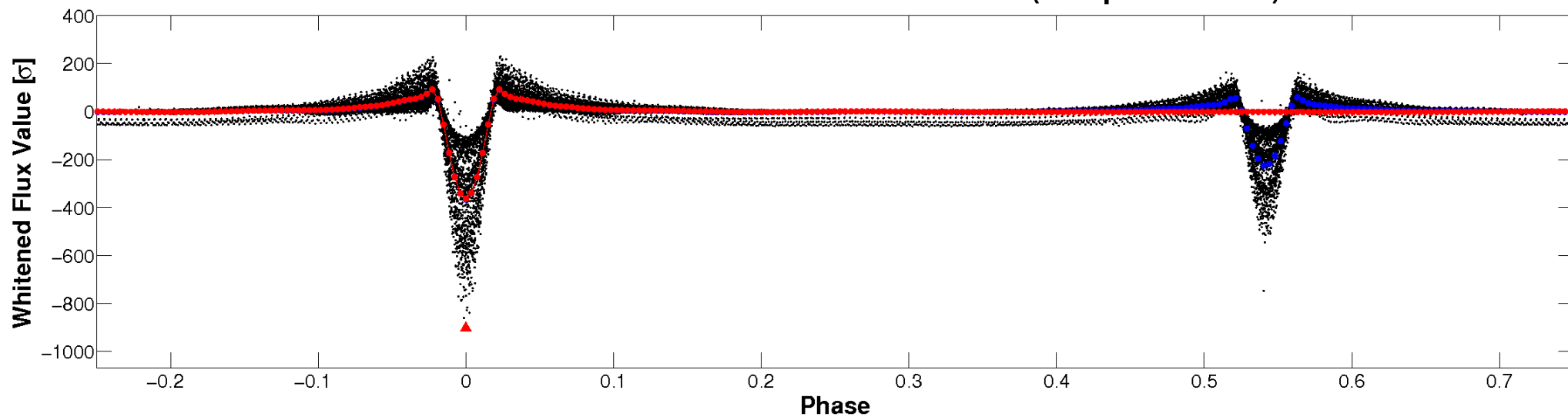


# Non-Whitened Vs. Whitened Light Curve

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

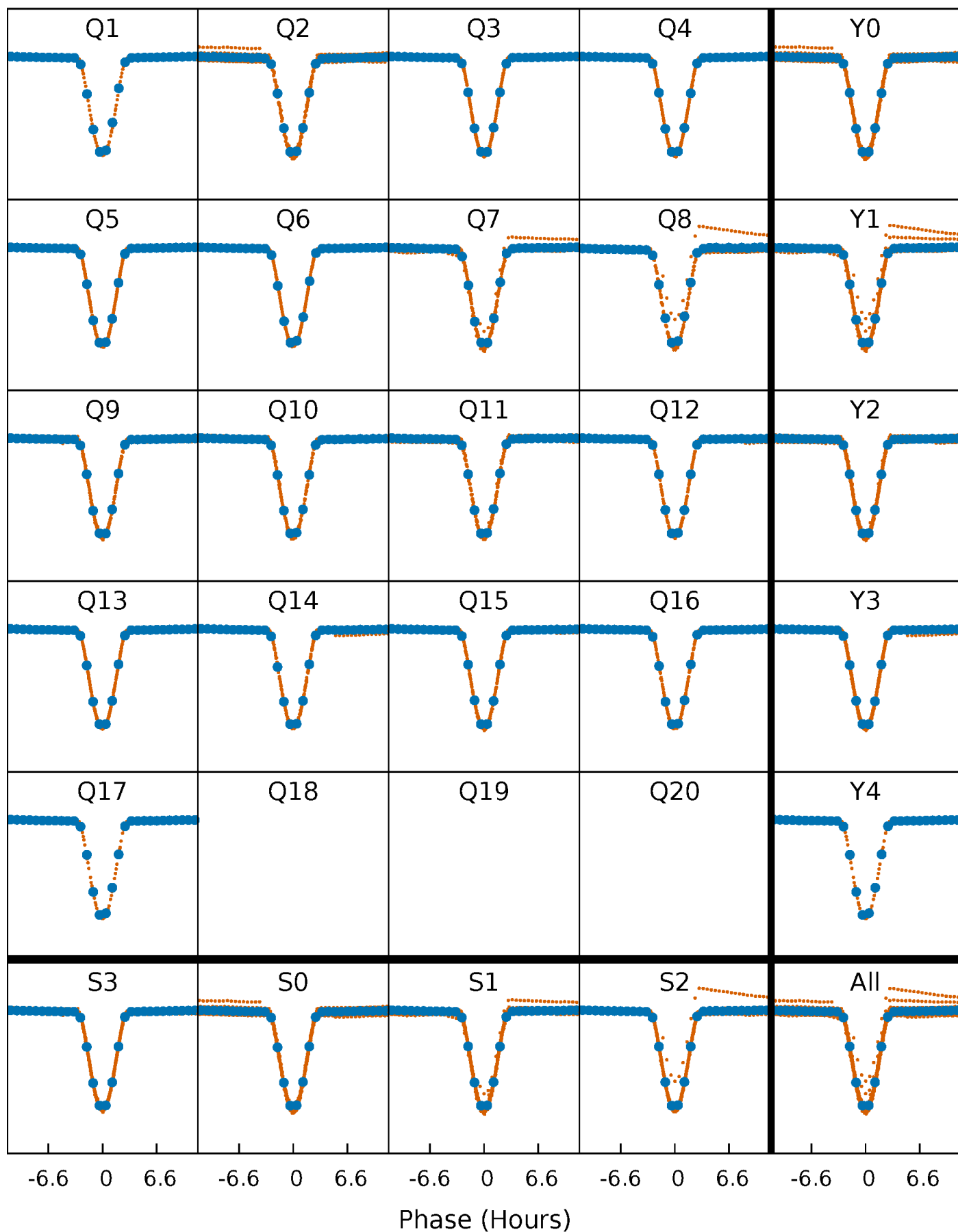


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

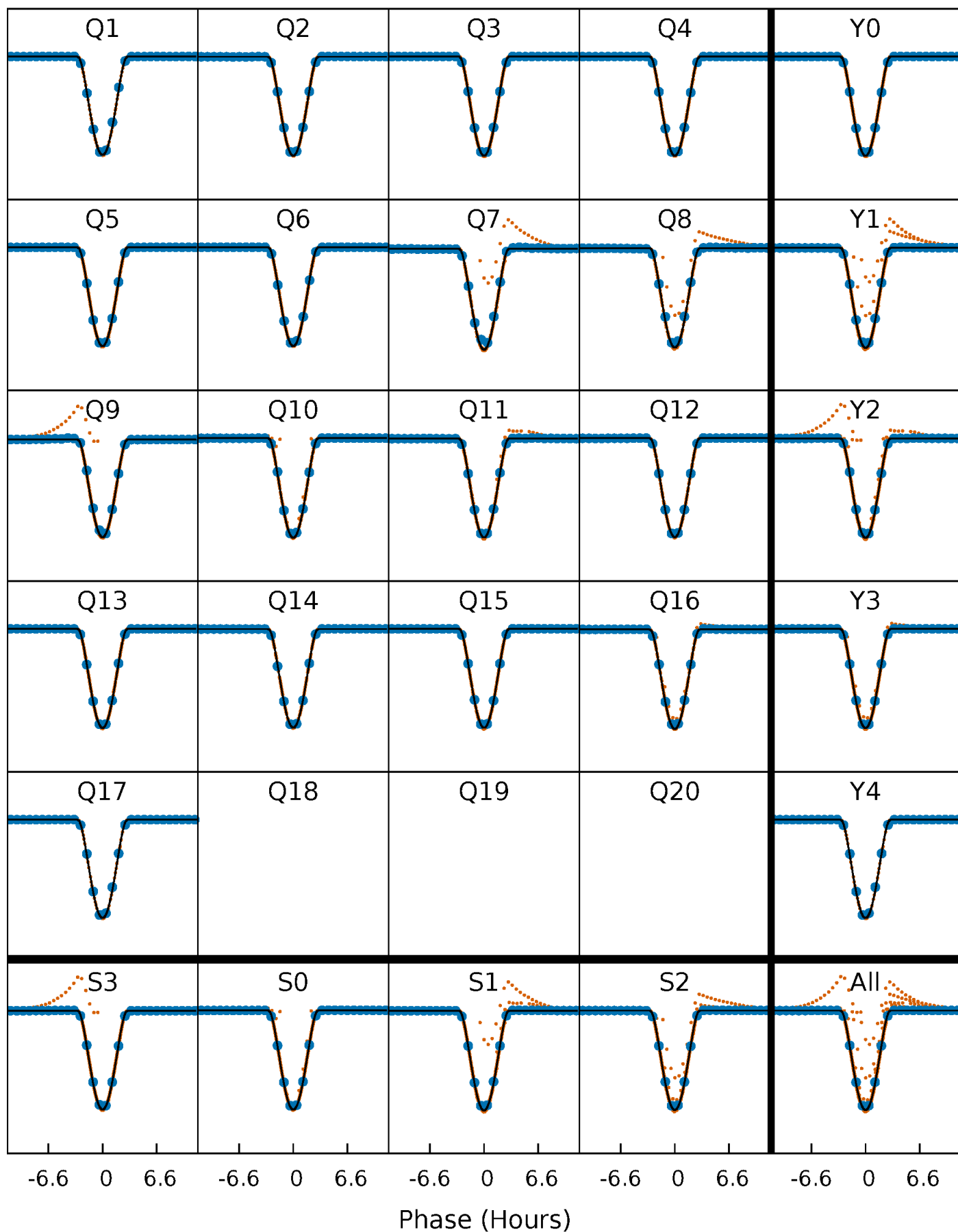
TCE 006042116-01 P= 5.407157 Days  $T_0=136.595717$  (BKJD)





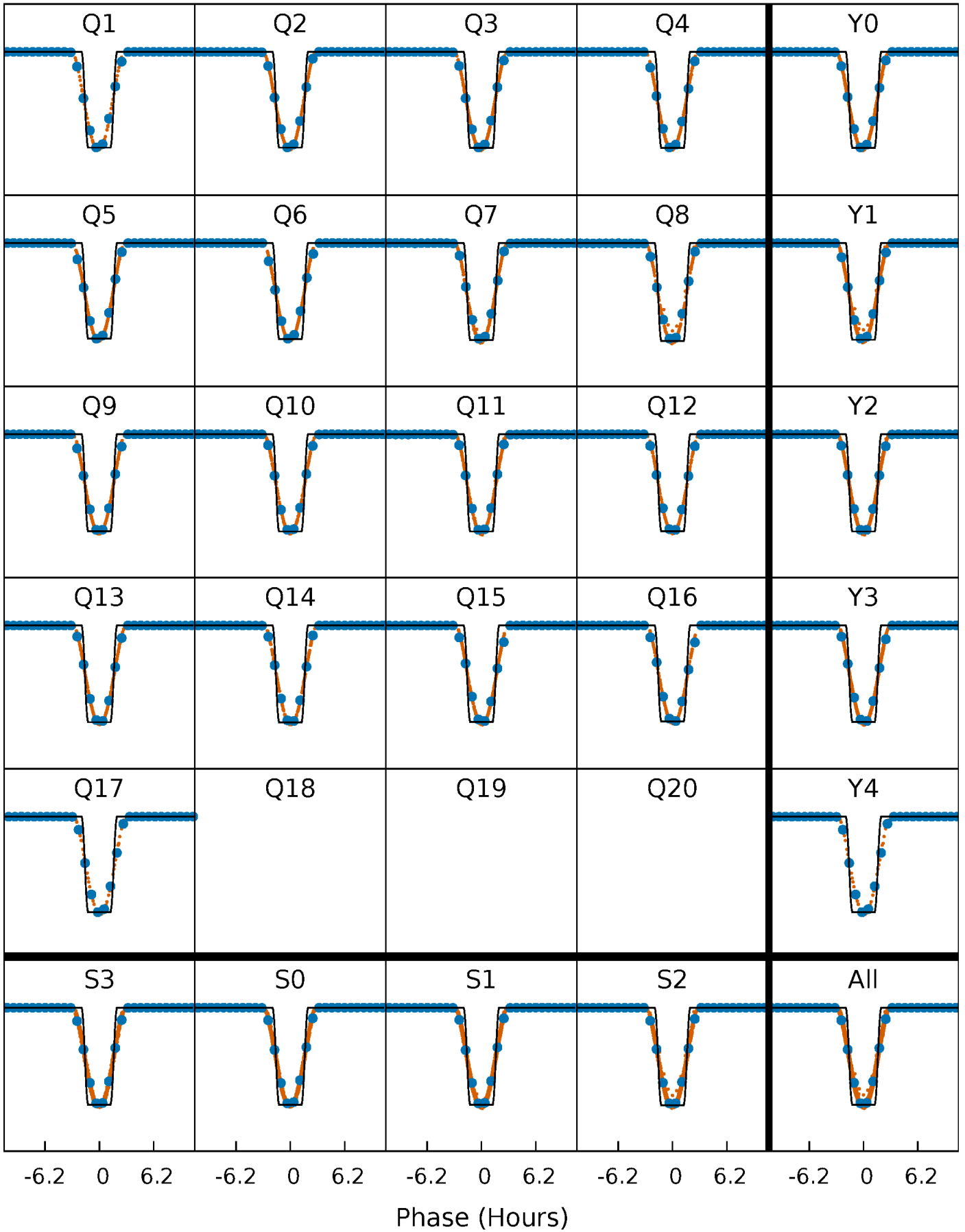
# DV Quarter-Phased Transit Curves

TCE 006042116-01 P= 5.407157 Days  $T_0=136.595717$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

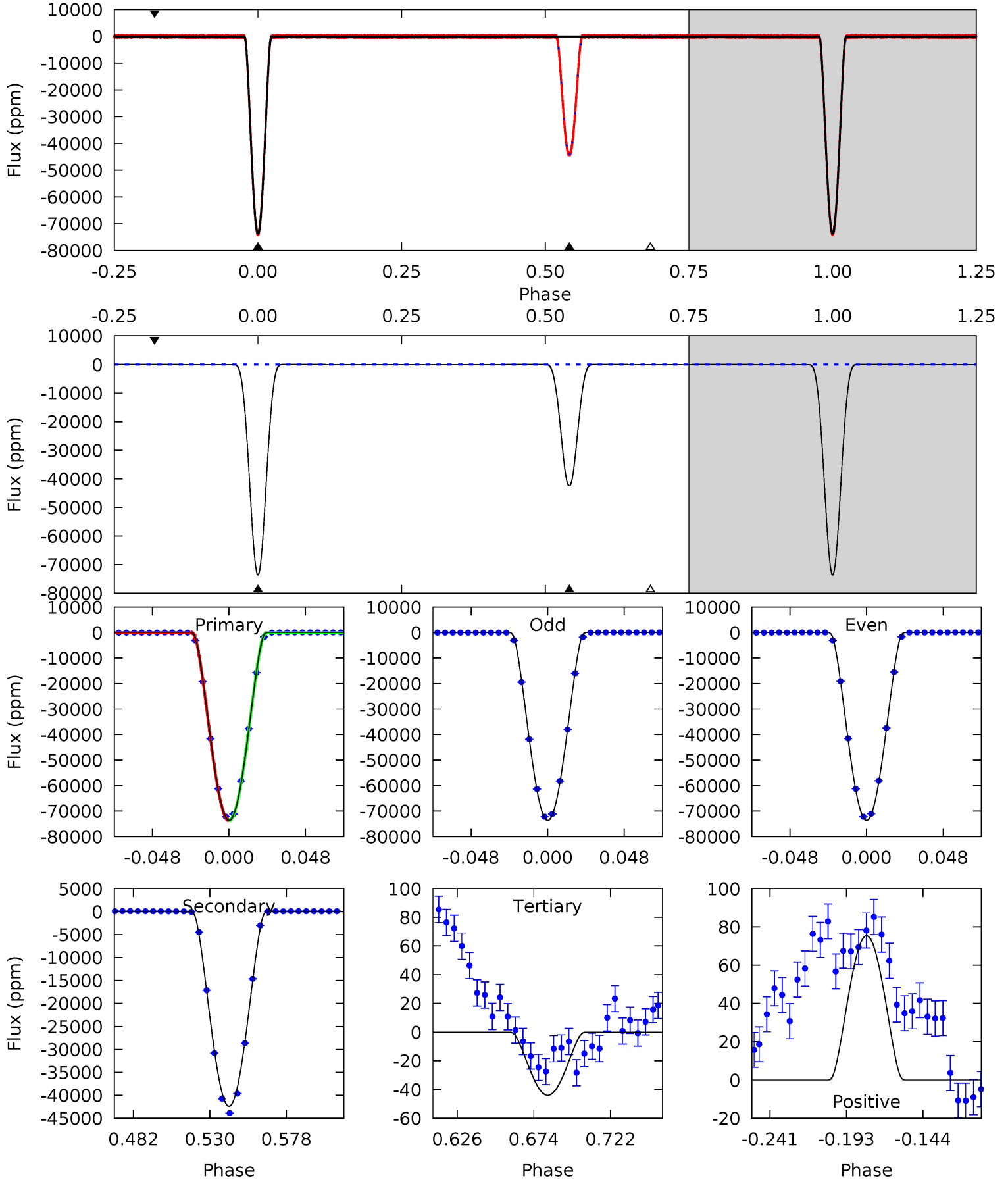
TCE 006042116-01 P= 5.407125 Days  $T_0=136.600475$  (BKJD)



# DV Model-Shift Uniqueness Test

006042116-01, P = 5.407157 Days, E = 131.188560 Days

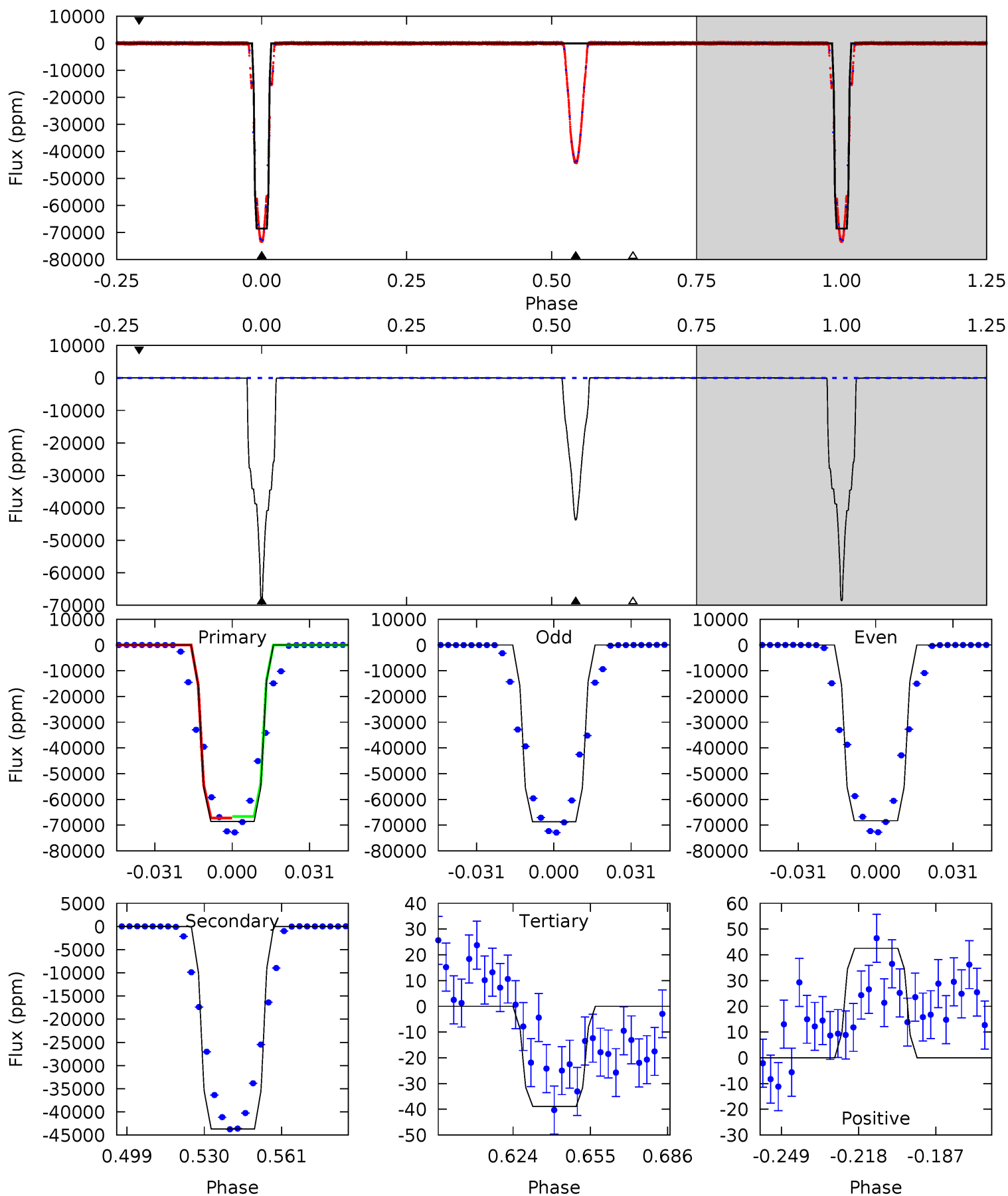
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24216	13941	14.5	24.8	4.72	1.98	13.1	24202	24192	13927	13916	0.00	0.99	0.00	0.10



# Alt Model-Shift Uniqueness Test

006042116-01, P = 5.407125 Days, E = 131.193350 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
9741	6210	5.53	6.04	4.80	2.15	1.95	9736	9735	6204	6204	24.2	1.00	0.00	0



### Stellar Parameters For KIC 006042116

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7617^{+239}_{-319}$	$3.856^{+0.392}_{-0.098}$	$-0.500^{+0.250}_{-0.300}$	$2.439^{+0.440}_{-1.026}$	$1.558^{+0.179}_{-0.332}$	$0.151^{+0.505}_{-0.046}$
	+3%/-4%	+10%/-3%	+50%/-60%	+18%/-42%	+11%/-21%	+334%/-31%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006042116-01 / KOI 6650.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-42381 \pm 3$	$106.56^{+13.84}_{-25.28}$	$2692^{+187}_{-305}$	$5305^{+131}_{-157}$	$10^{+6}_{-2}$
Alt.	$-43708 \pm 7$	$69.83^{+8.44}_{-15.14}$	$2696^{+192}_{-289}$	$6661^{+207}_{-246}$	$26^{+15}_{-5}$

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

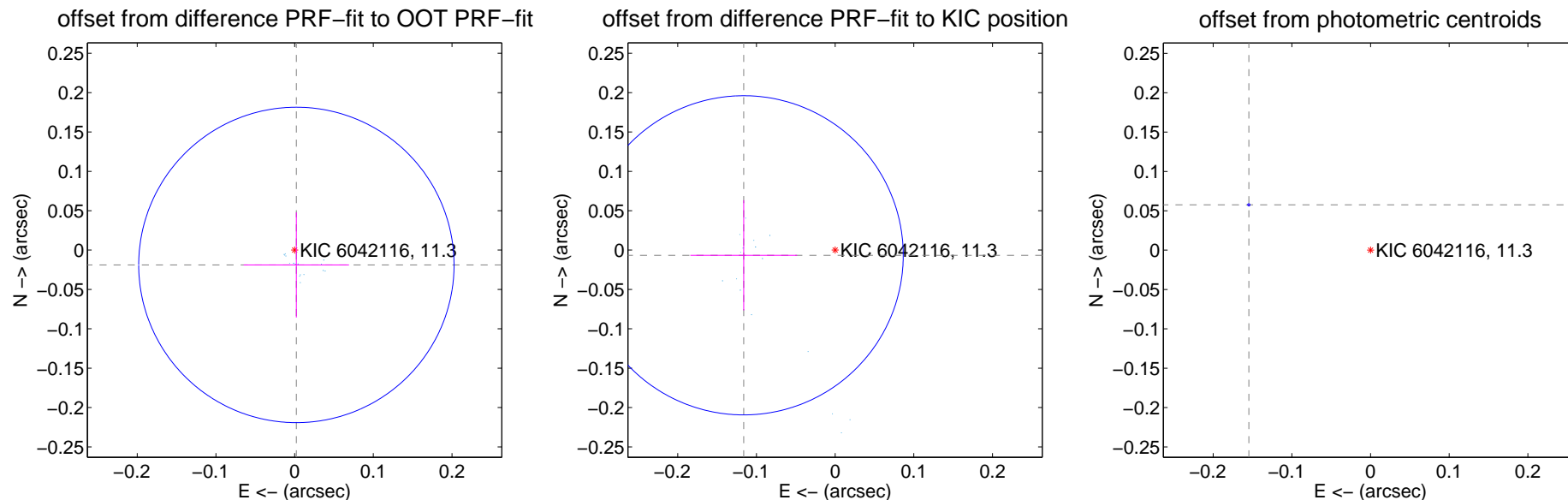
## DV Centroid Data

Supplemental centroid analysis for 006042116-01. **Kepler magnitude: 11.30**. Transit SNR 12180.09

There are 17 quarters with good PRF difference image offsets

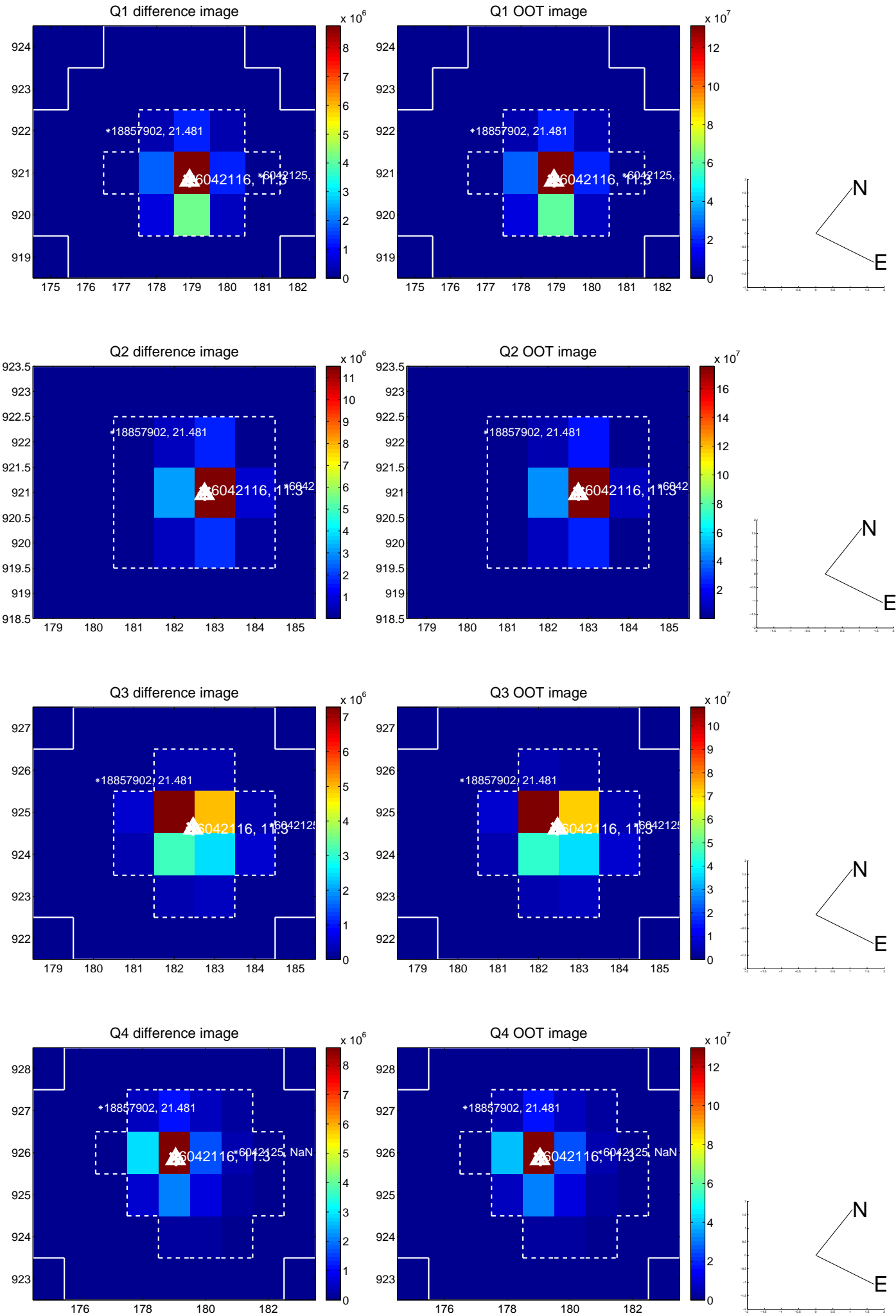
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.019 \pm 0.067$	0.28	$-0.002 \pm 0.067$	$-0.019 \pm 0.067$
PRF-fit source offset from KIC position	$0.116 \pm 0.068$	1.72	$0.116 \pm 0.068$	$-0.007 \pm 0.070$
photometric centroid source offset	<b><math>0.17 \pm 0.00</math></b>	<b>344.12</b>	$0.15 \pm 0.00$	$0.06 \pm 0.00$

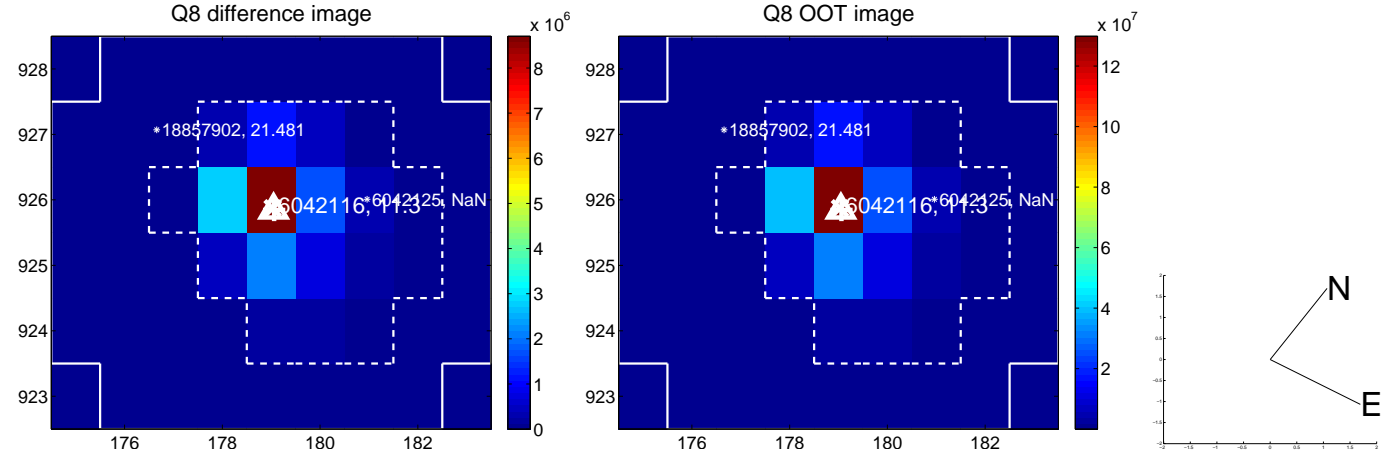
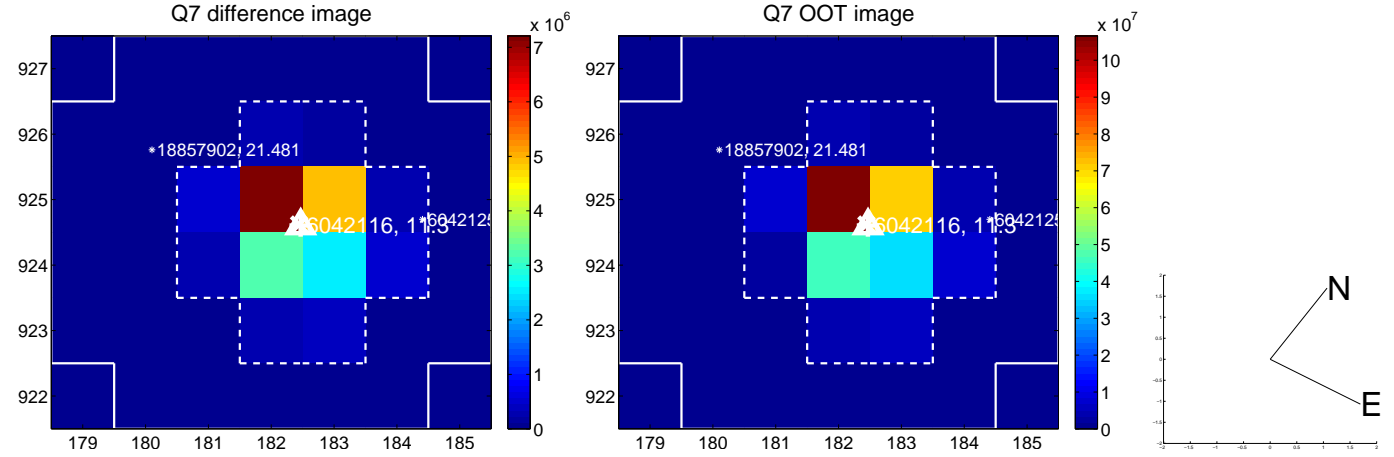
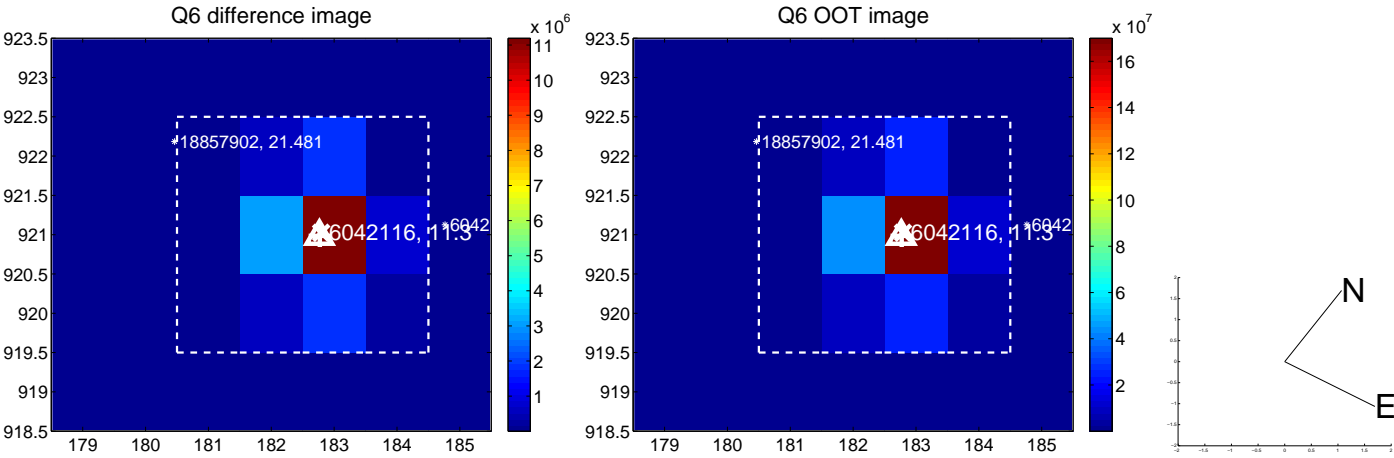
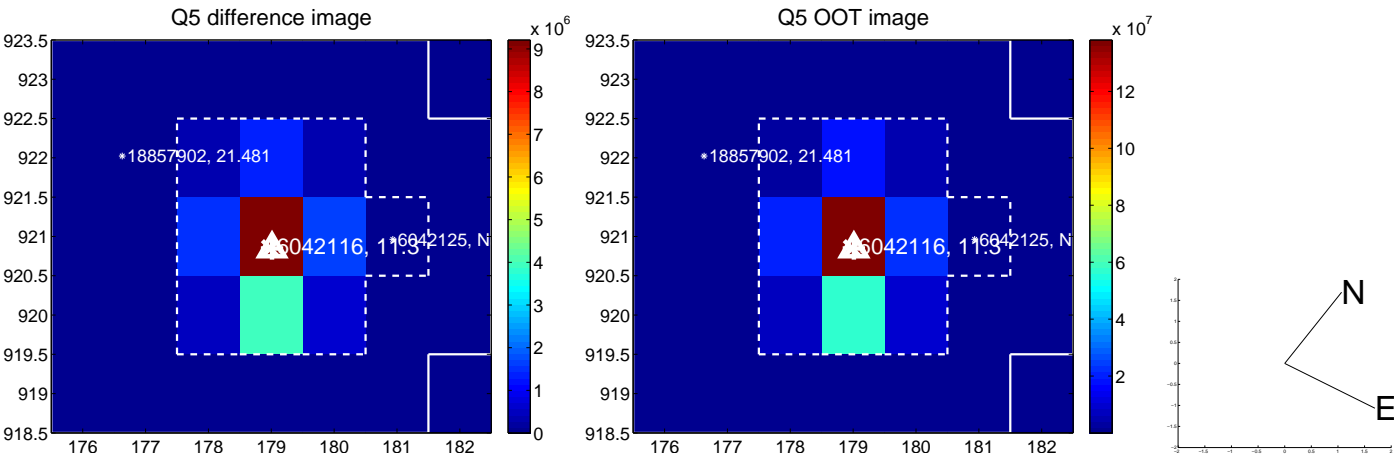


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

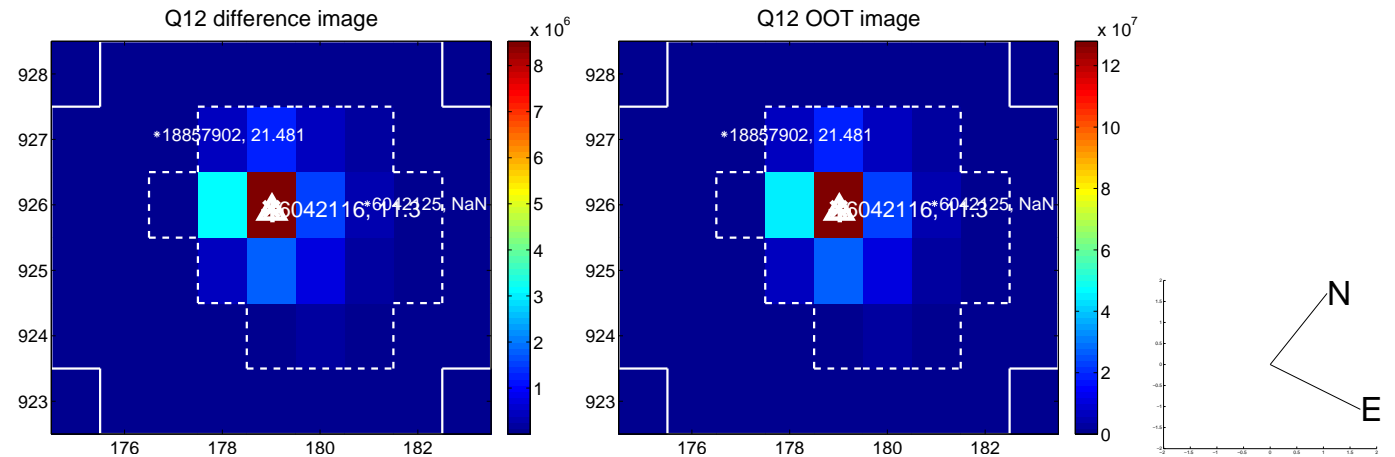
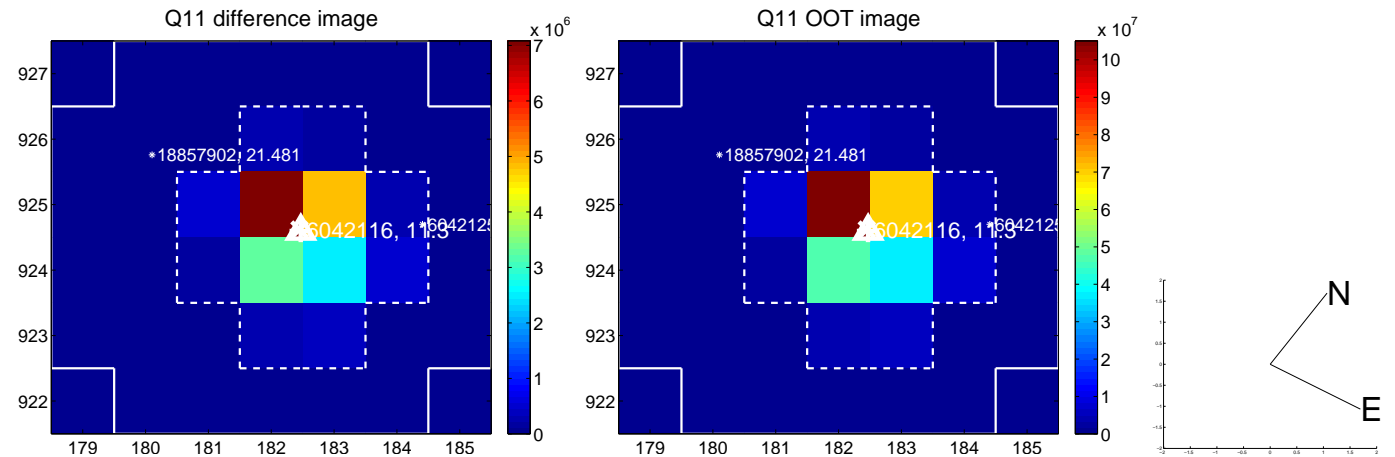
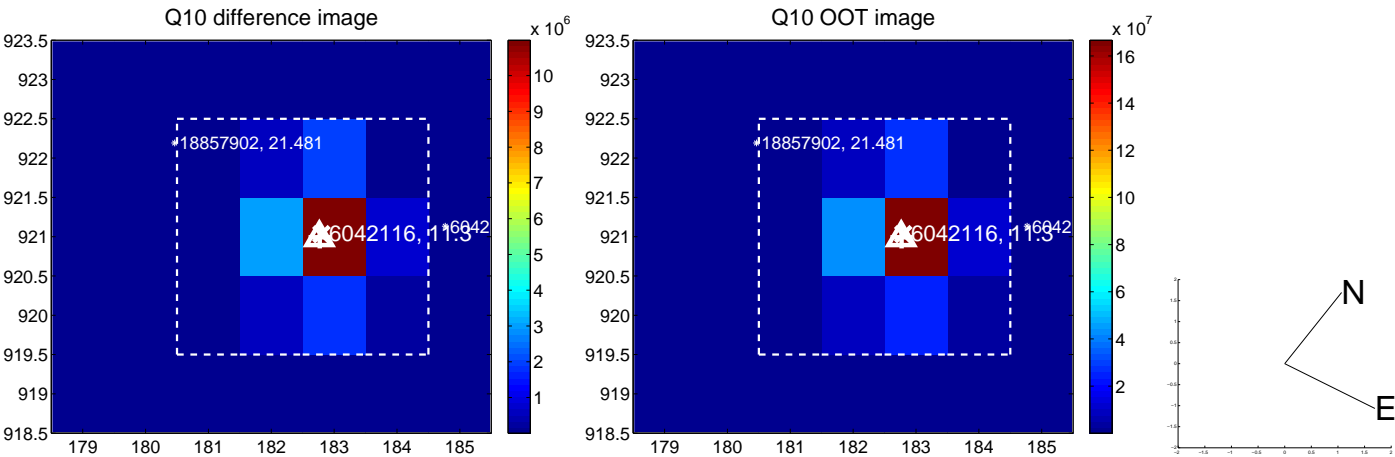
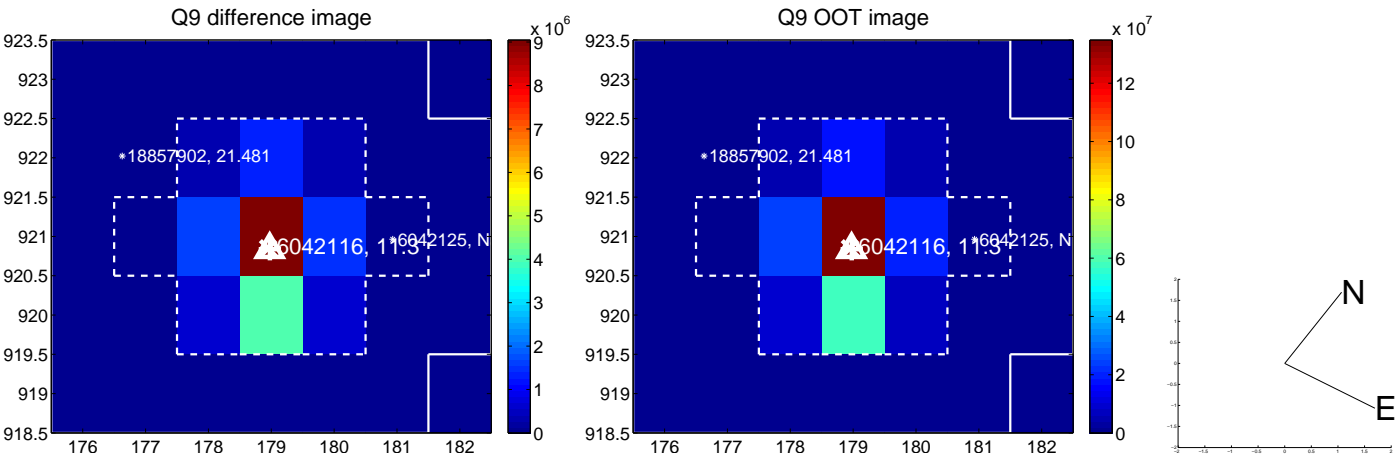


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

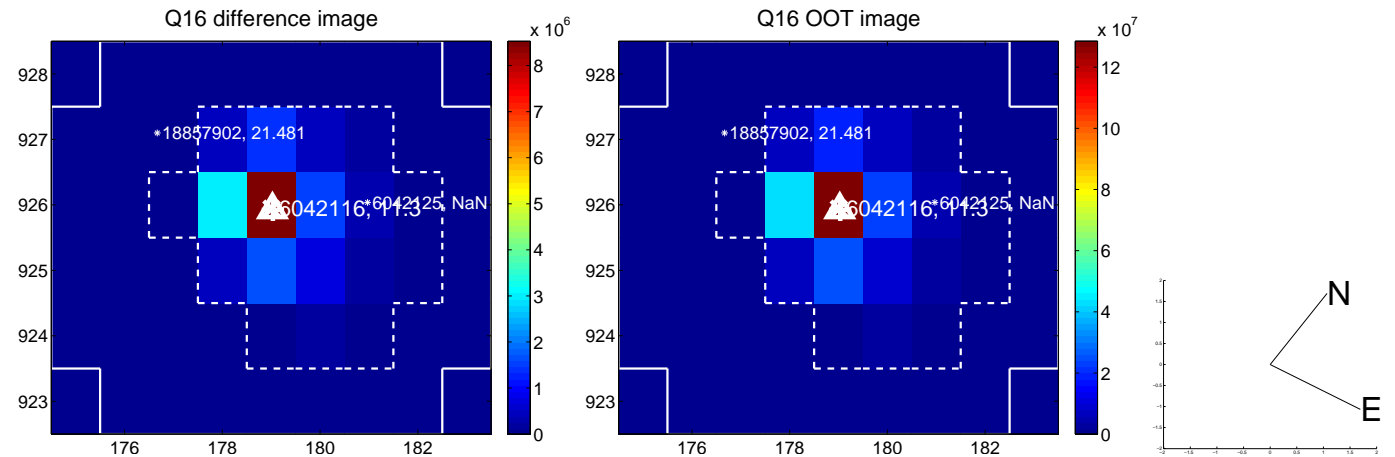
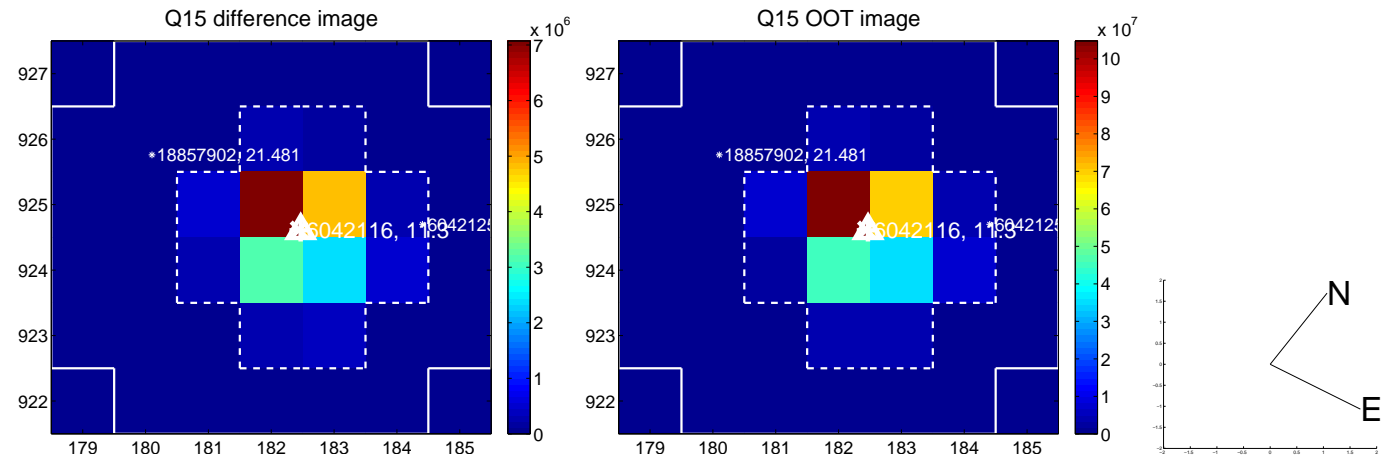
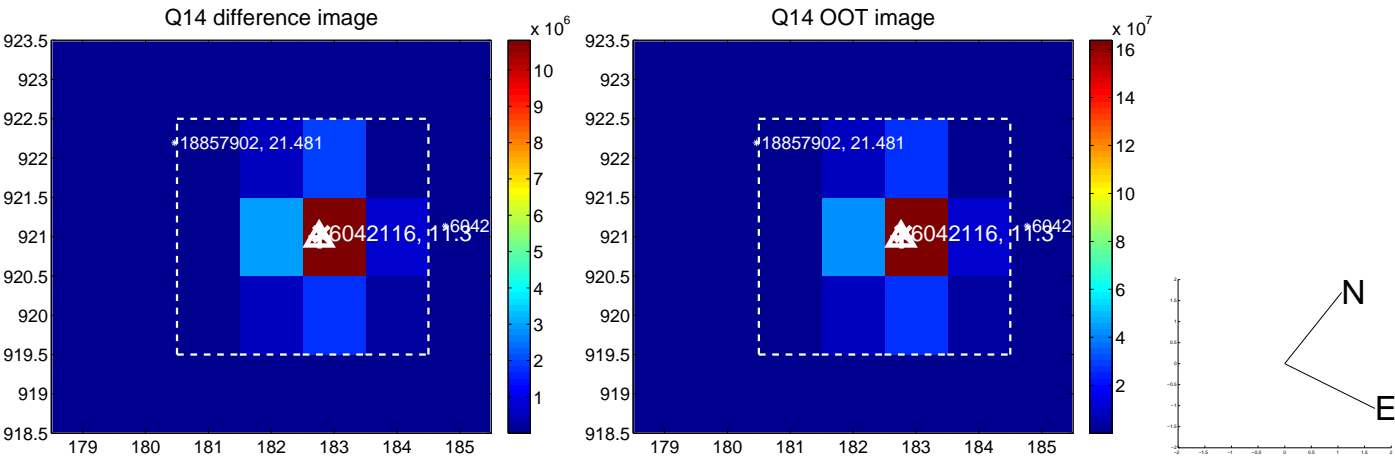
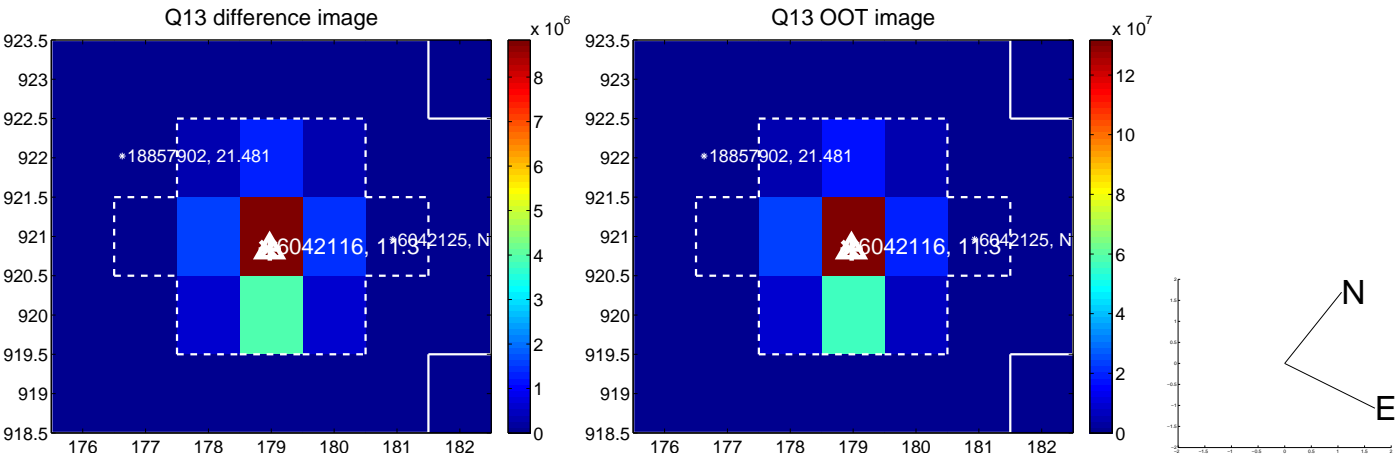




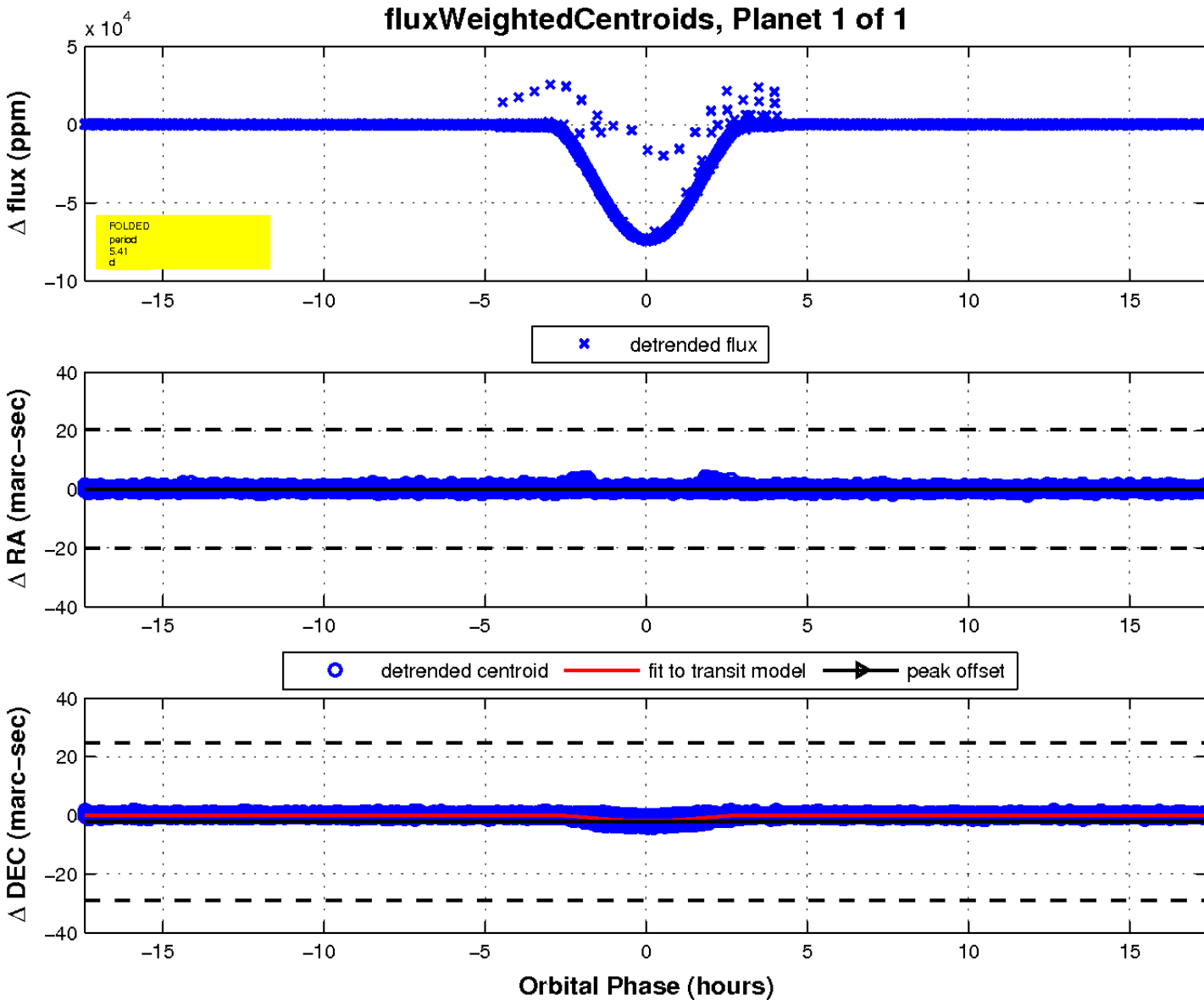
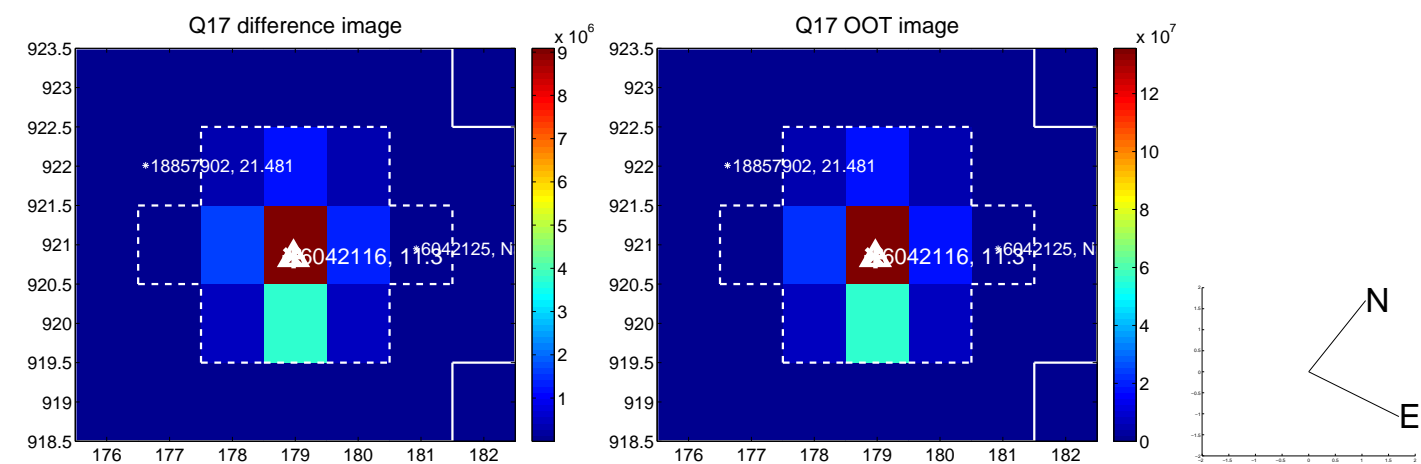
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

