

# KIC 009570741

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009570741-01	OBS	0586.01	15.779845	144.407312	532.7	4.205	33.7	34.1	0.91	5941	2.34	61.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009570741-01	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.

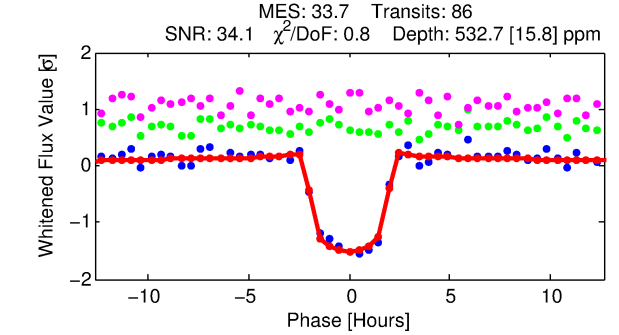
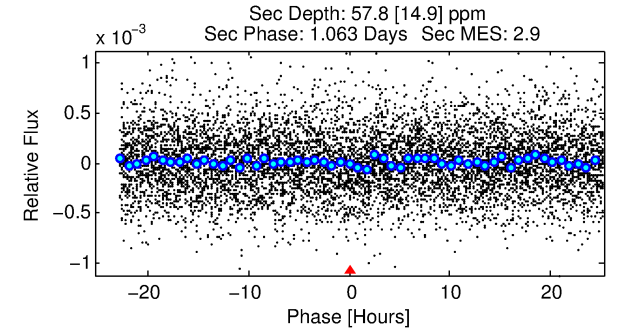
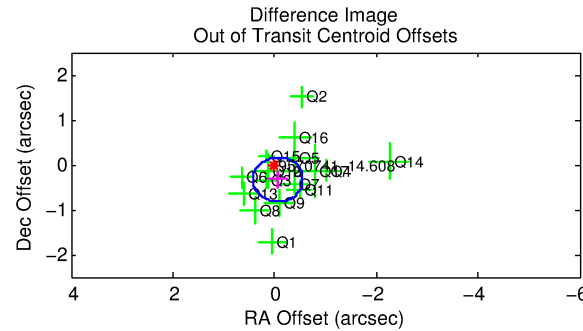
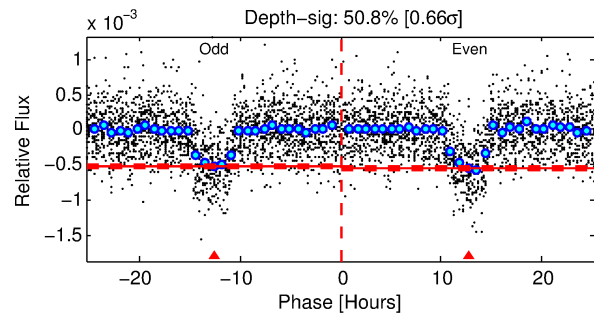
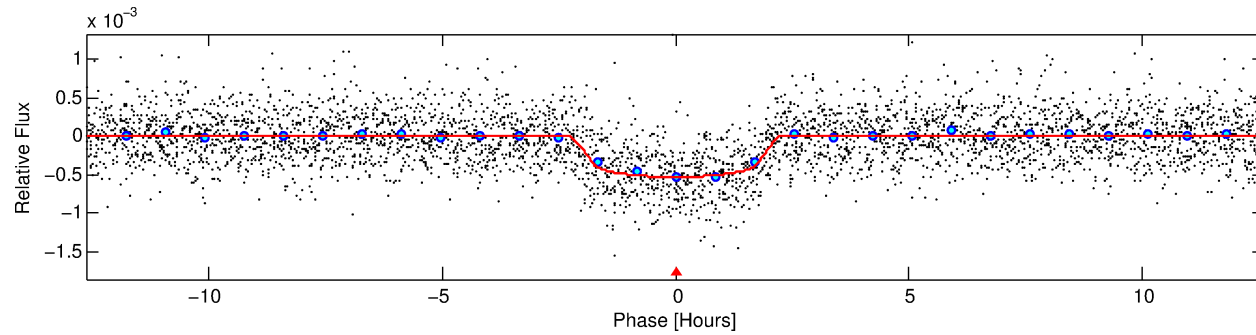
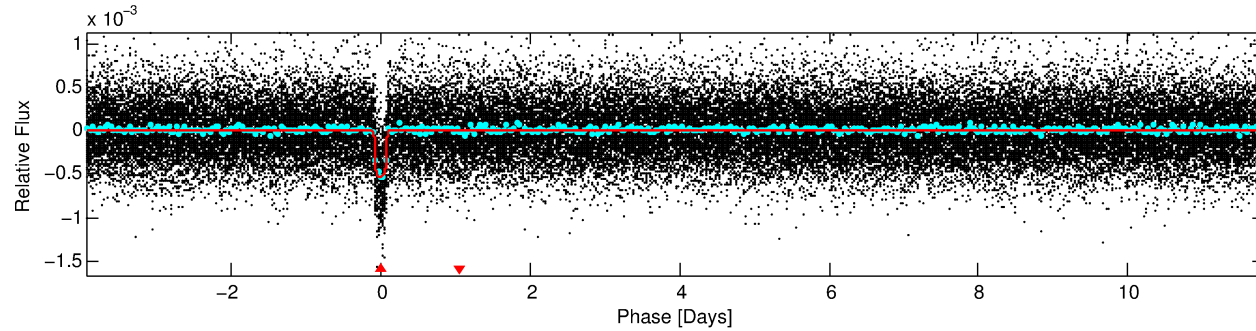
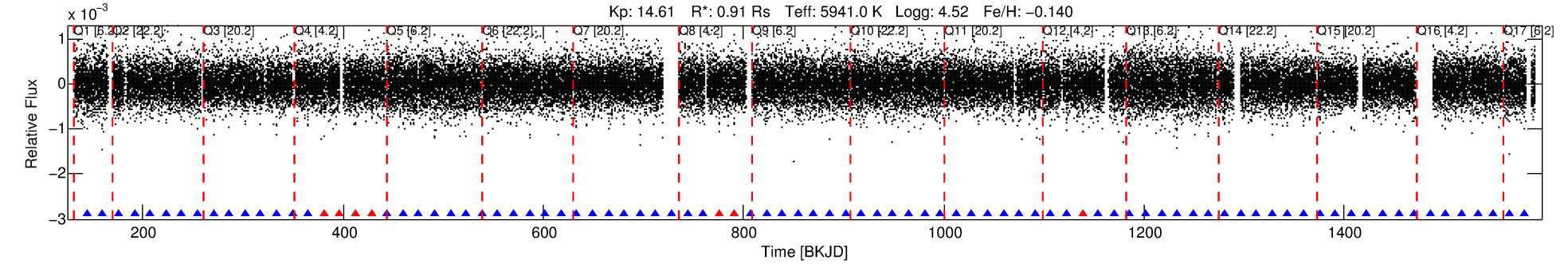
## Ephemeris Match Information For 009570741-01

No Significant Match Found

# DV One-Page Summary

KIC: 9570741 Candidate: 1 of 1 Period: 15.780 d

KOI: K00586.01 Corr: 0.980



## DV Fit Results:

Period = 15.77984 [0.00005] d  
Epoch = 144.4073 [0.0024] BKJD  
Rp/R\* = 0.0235 [0.0035]  
a/R\* = 18.05 [12.56]  
b = 0.81 [0.30]  
Seff = 61.08 [23.68]  
Teff = 713 [69] K  
Rp = 2.34 [0.76] Re  
a = 0.1232 [0.0308] AU  
Ag = 88.16 [47.35] [1.84 $\sigma$ ]  
Teffp = 3377 [345] K [7.57 $\sigma$ ]

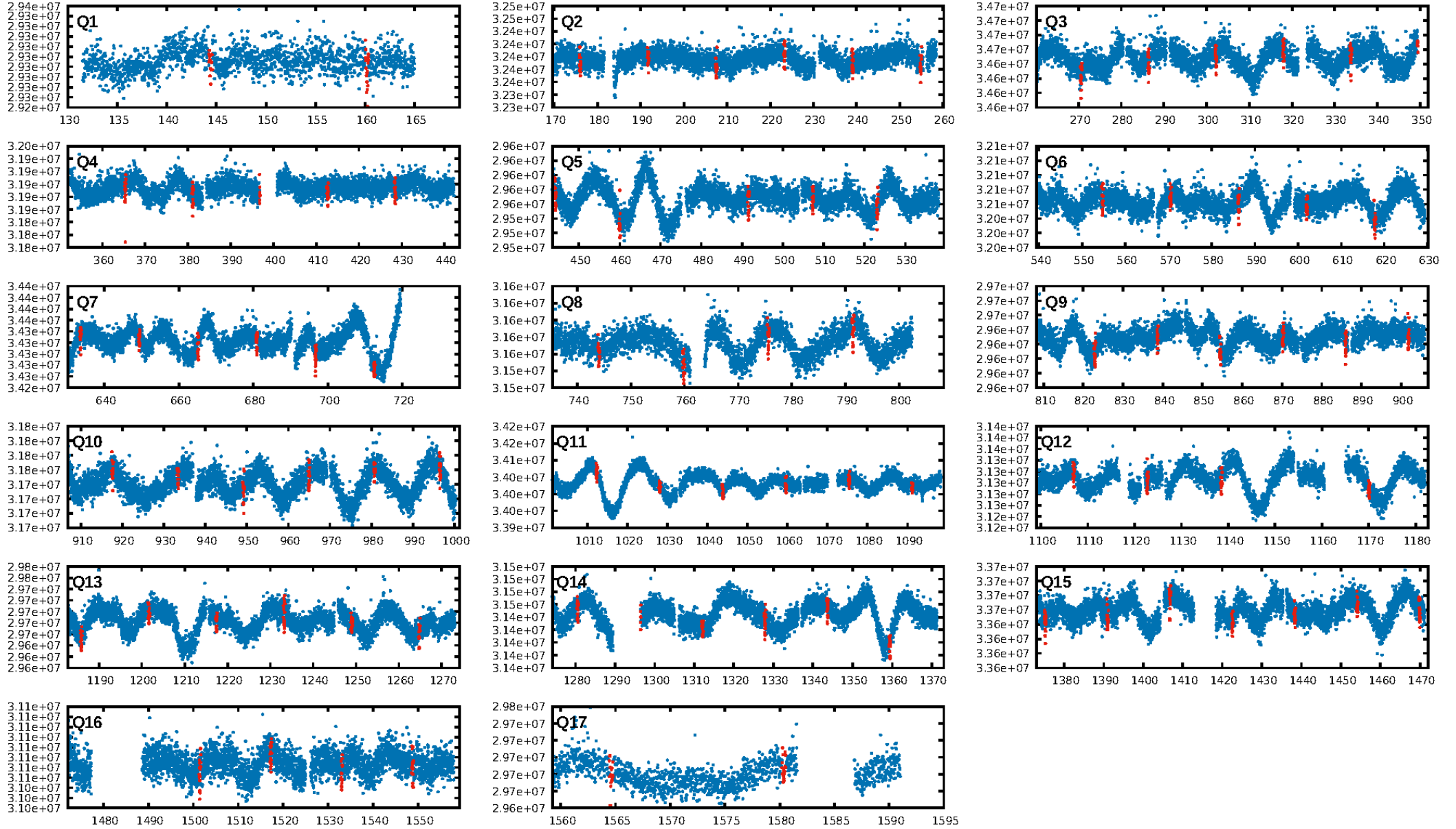
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 89.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.52e-232  
RollingBand-fgt: 0.91 [75/82]  
GhostDiagnostic-chr: 5.845  
Centroid-sig: 34.7%  
Centroid-so: 0.235 arcsec [0.62 $\sigma$ ]  
OotOffset-rm: 0.338 arcsec [2.07 $\sigma$ ]  
KicOffset-rm: 0.354 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: 1.00 [17/17]

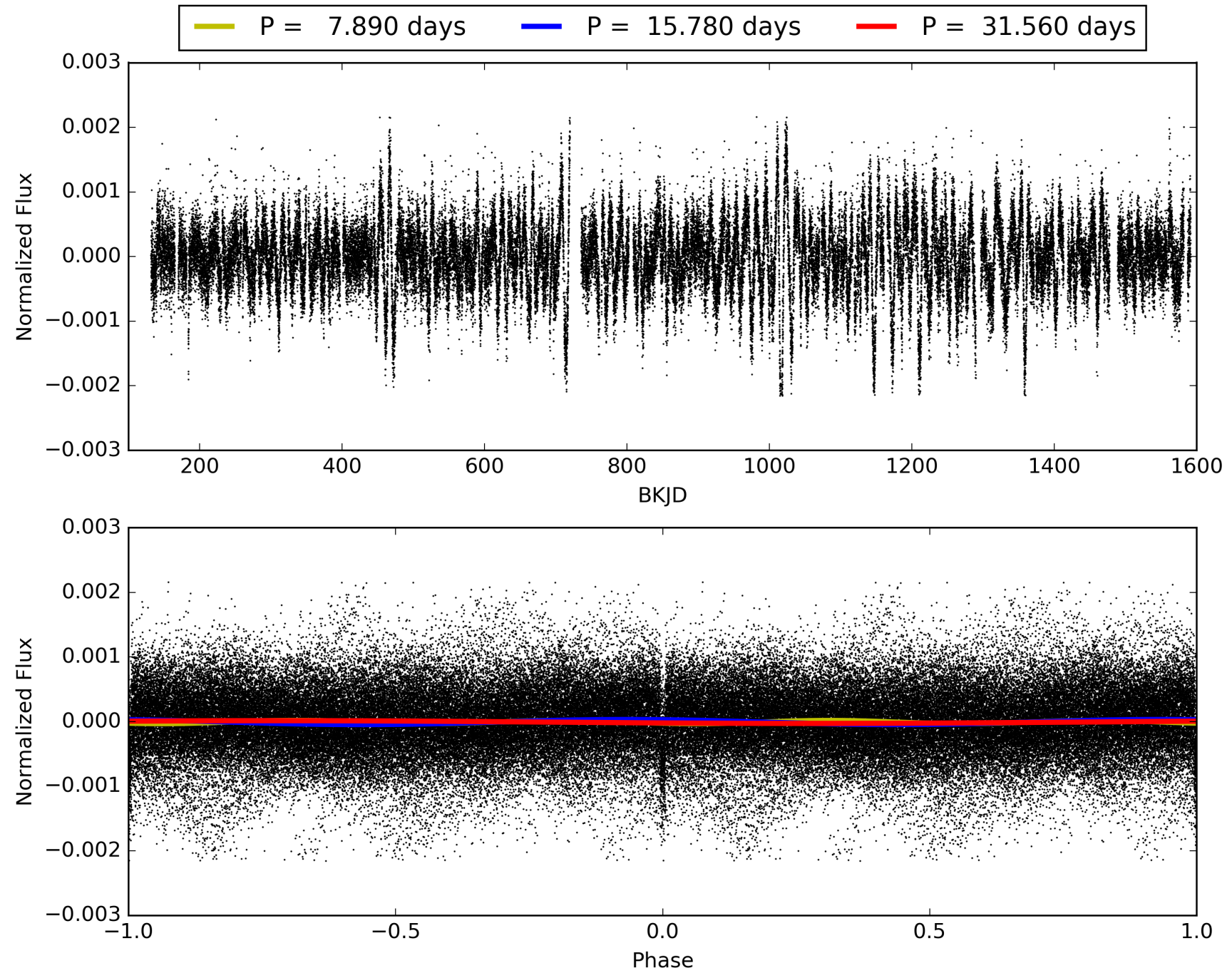
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:39:50 Z

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

# TCE 009570741-01, PDC Light Curves

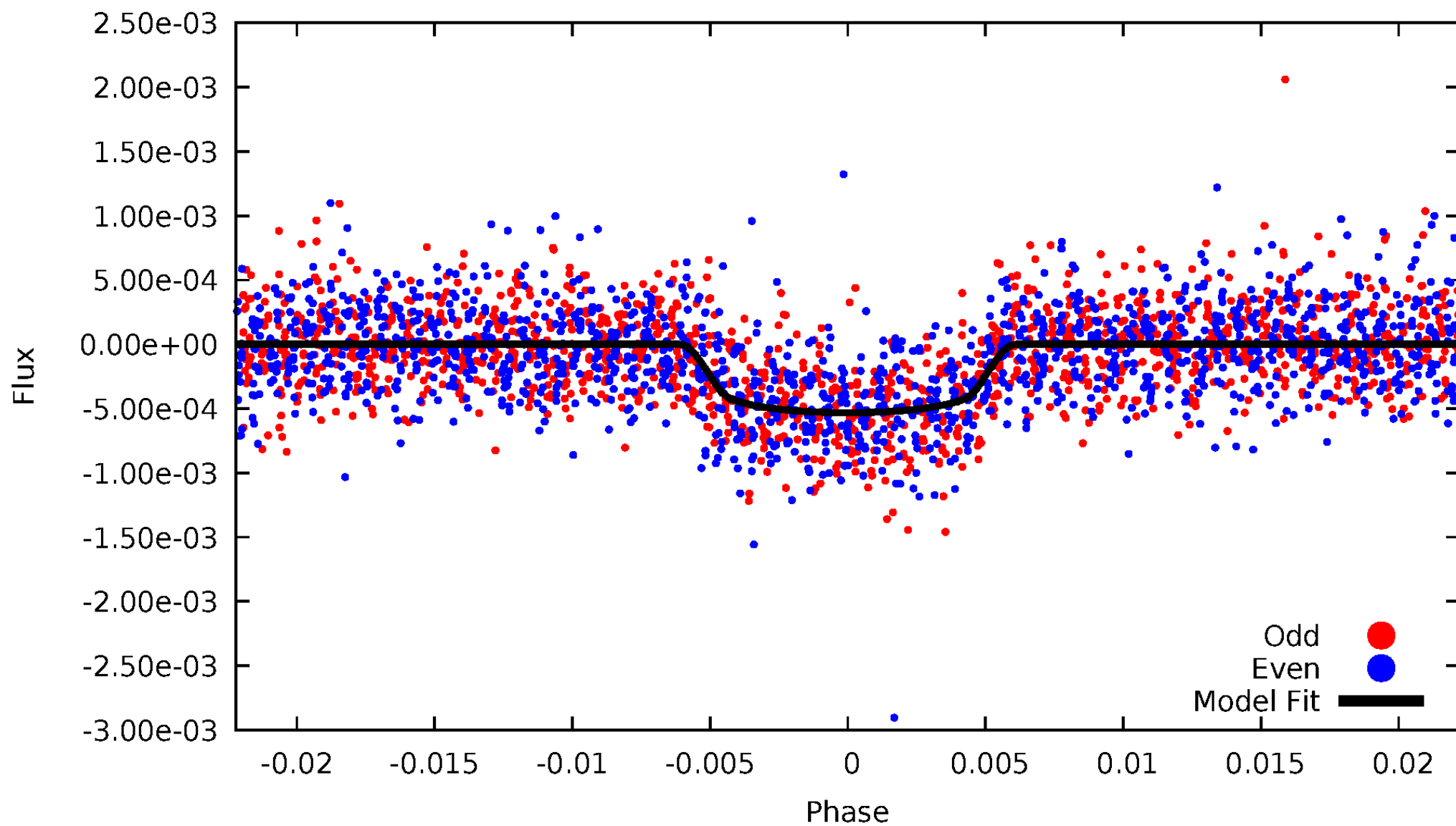


TCE 009570741-01



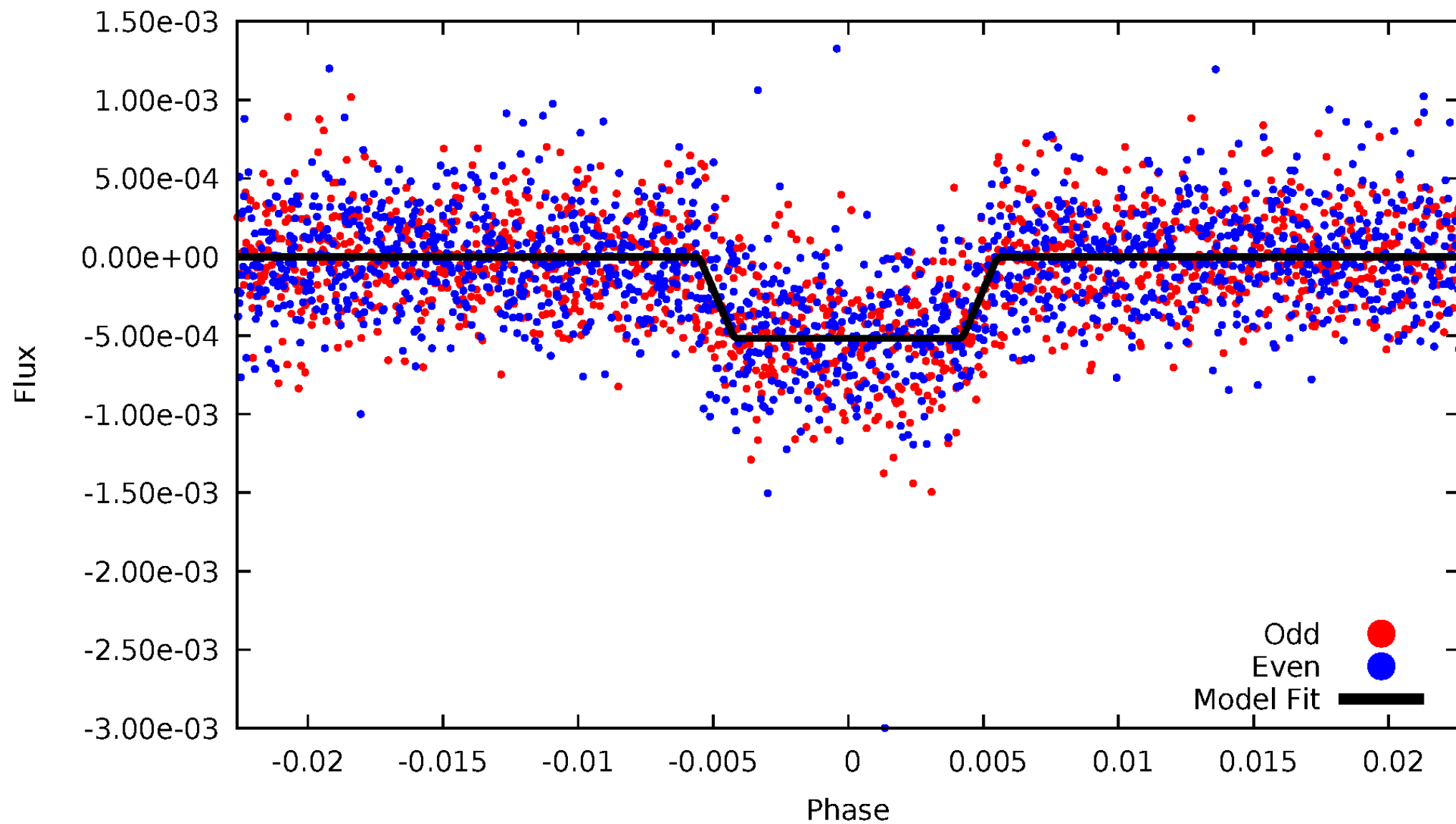
# DV Odd/Even

TCE 009570741-01



# ALT Odd/Even

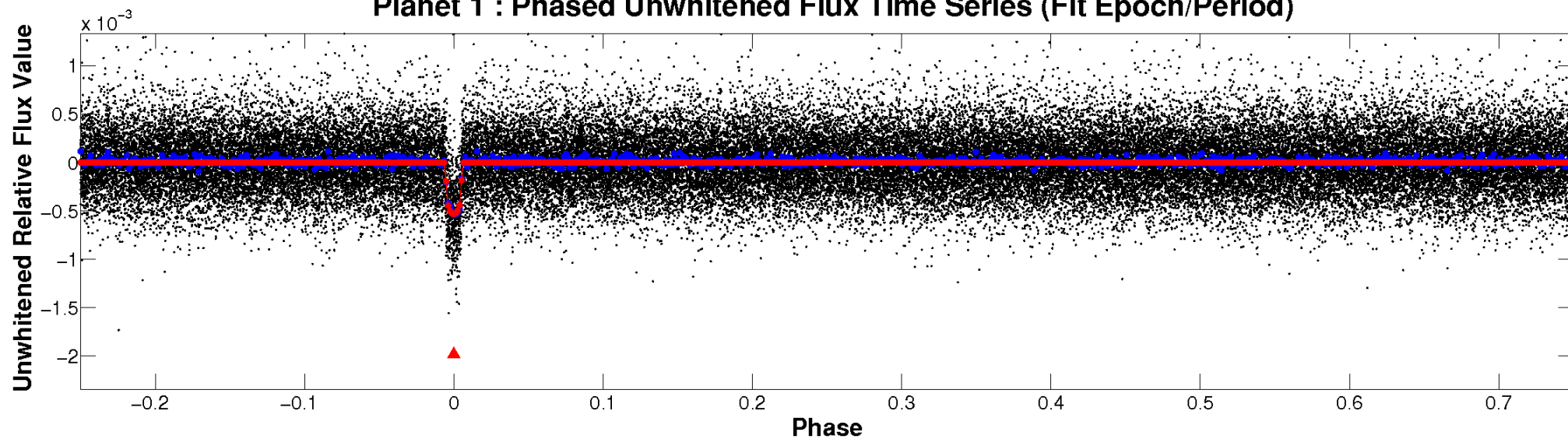
TCE 009570741-01



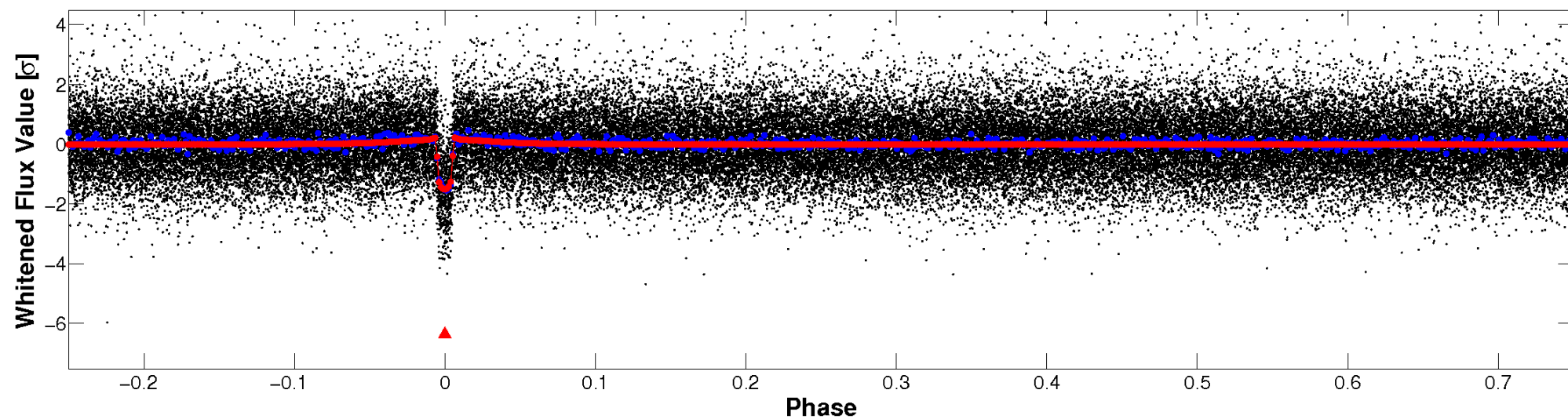


# Non-Whitened Vs. Whitened Light Curve

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

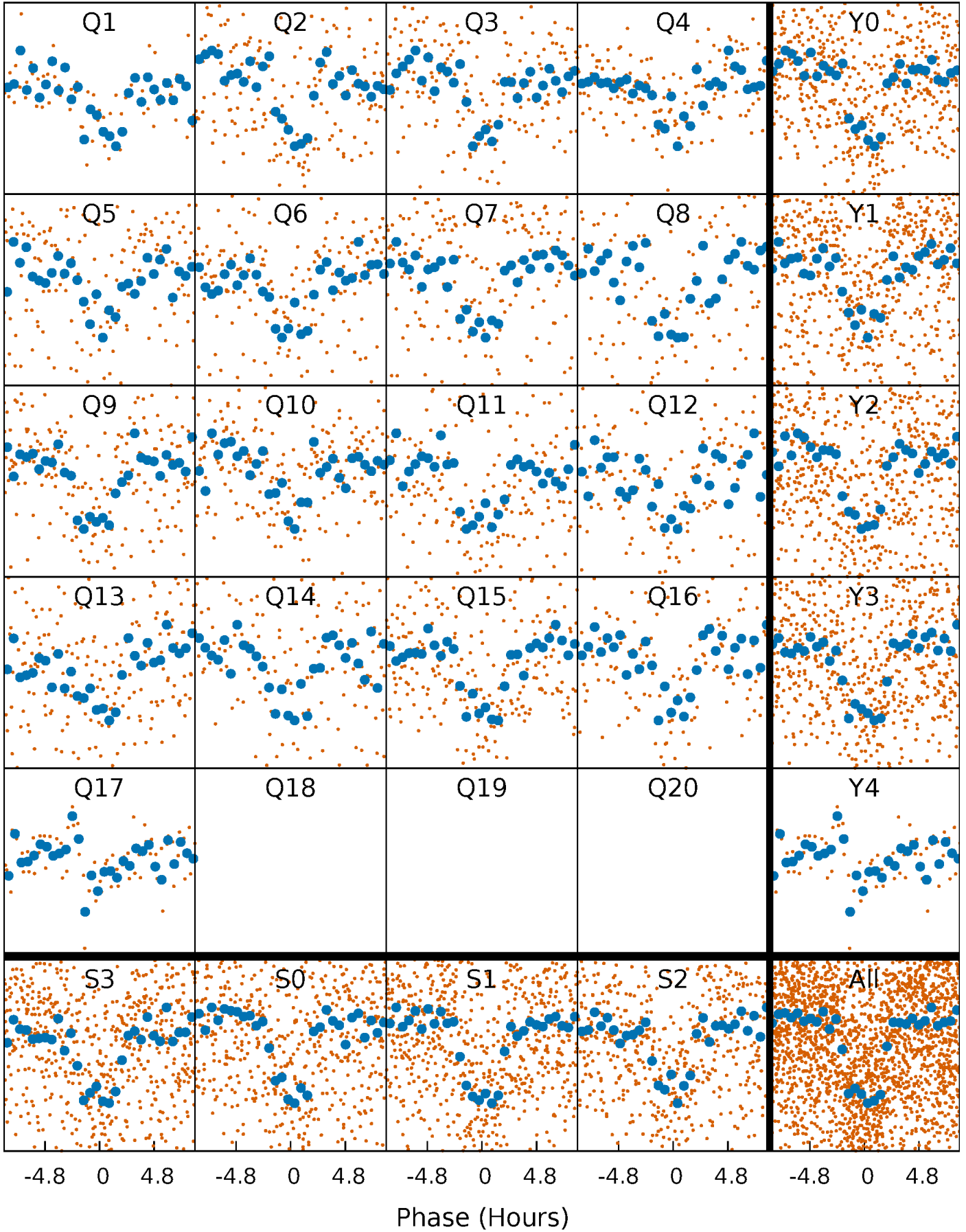


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

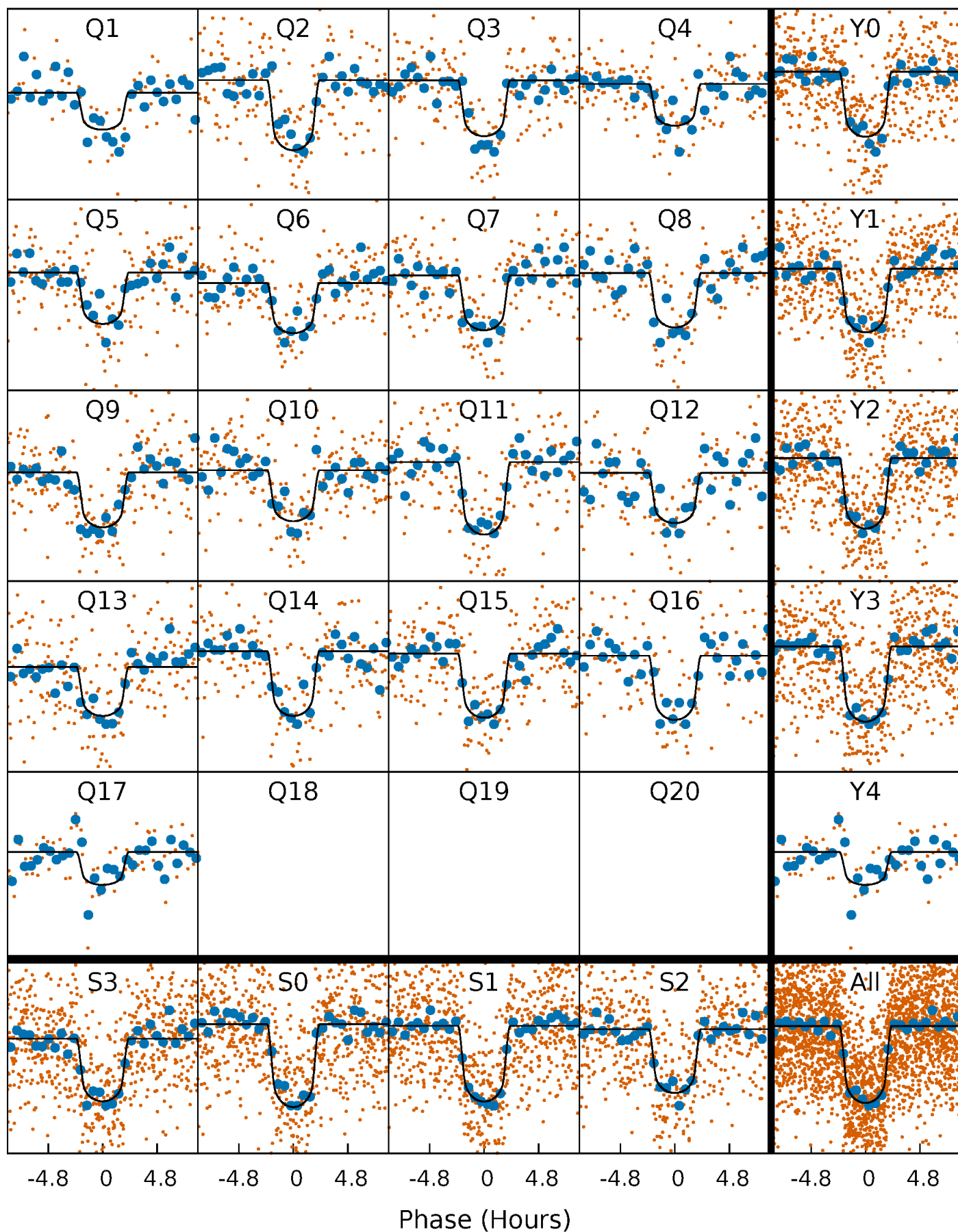
TCE 009570741-01 P= 15.779845 Days  $T_0=144.407312$  (BKJD)





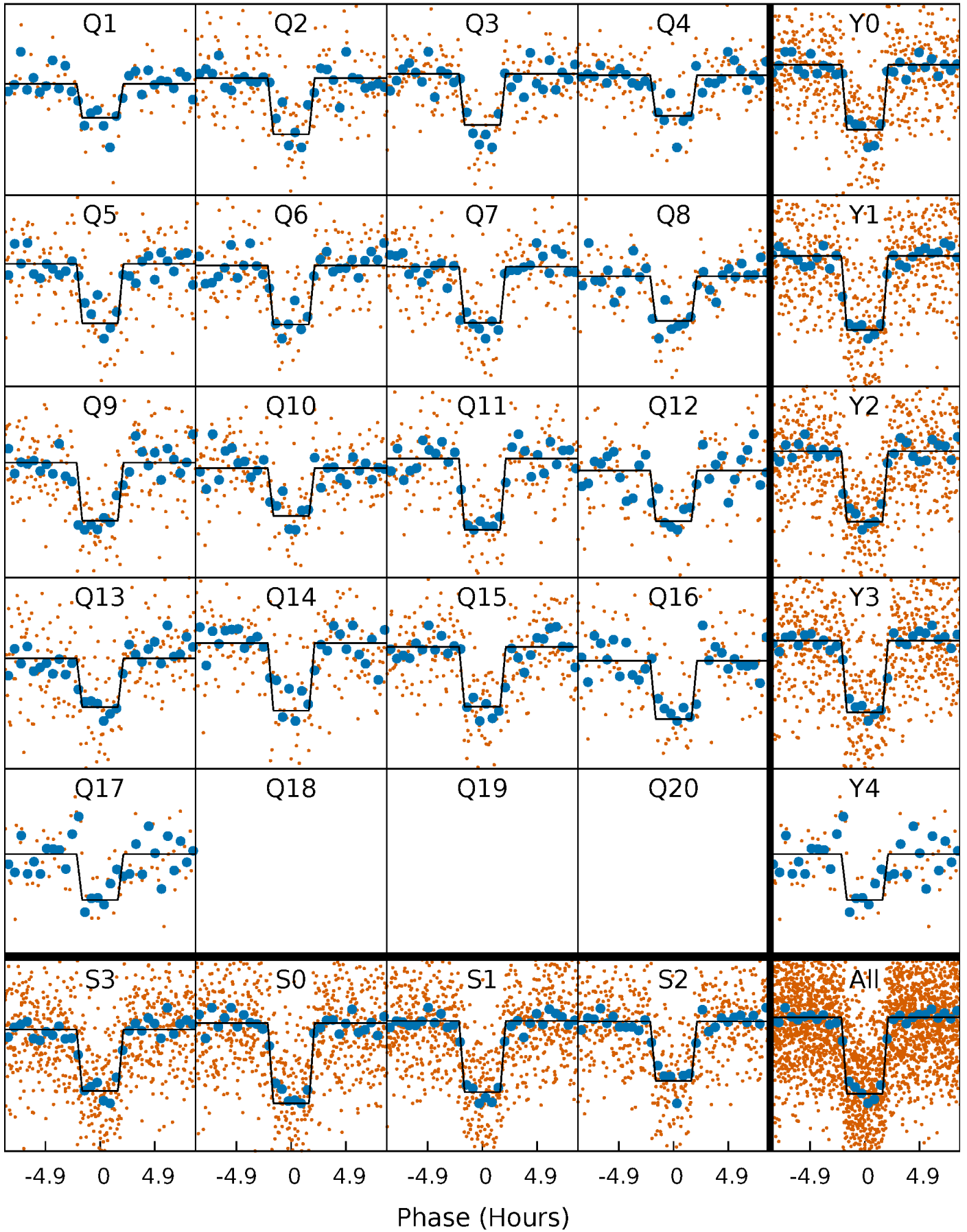
# DV Quarter-Phased Transit Curves

TCE 009570741-01 P= 15.779845 Days  $T_0=144.407312$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

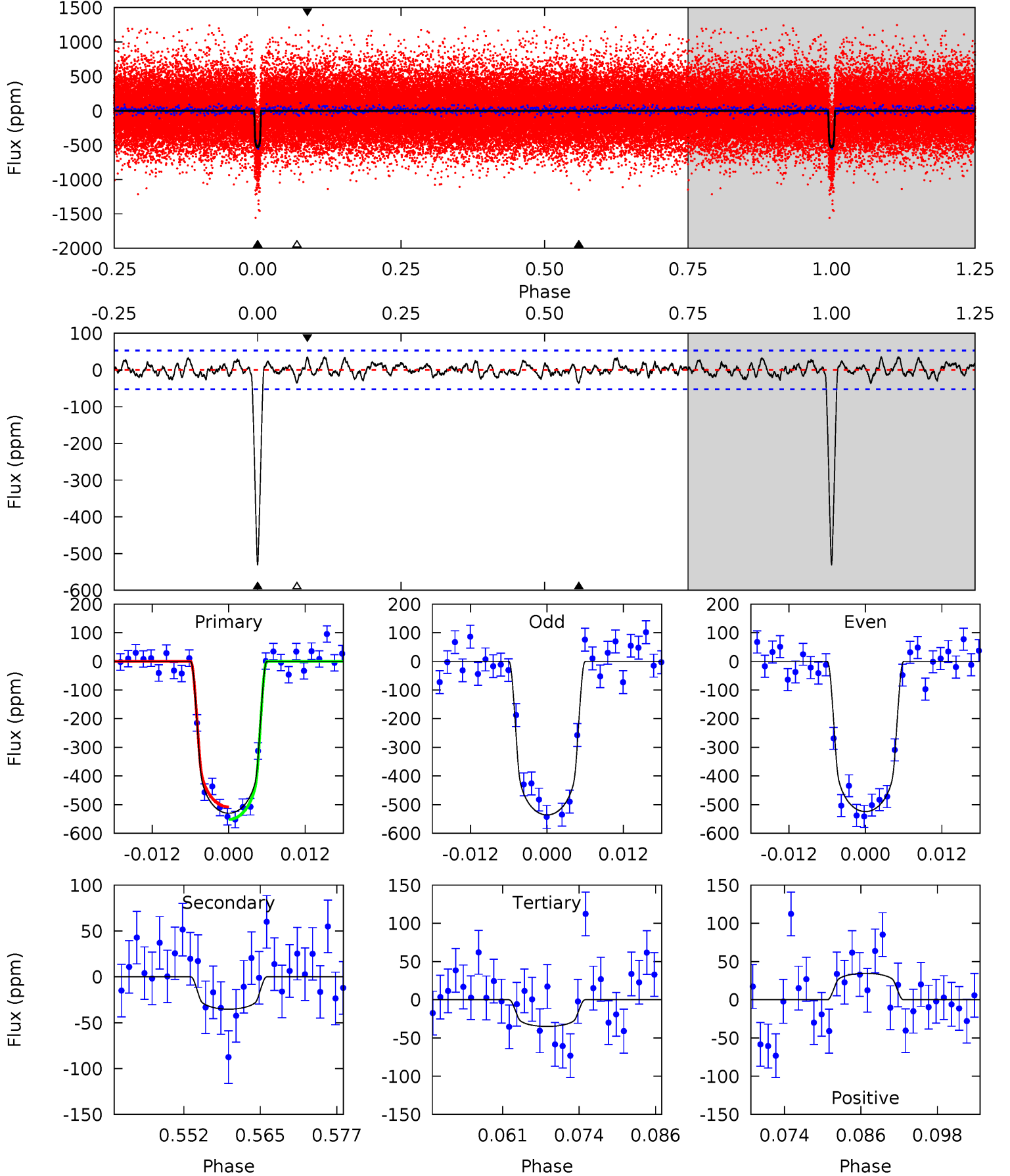
TCE 009570741-01 P= 15.779686 Days  $T_0=144.414854$  (BKJD)



# DV Model-Shift Uniqueness Test

009570741-01,  $P = 15.779845$  Days,  $E = 128.627467$  Days

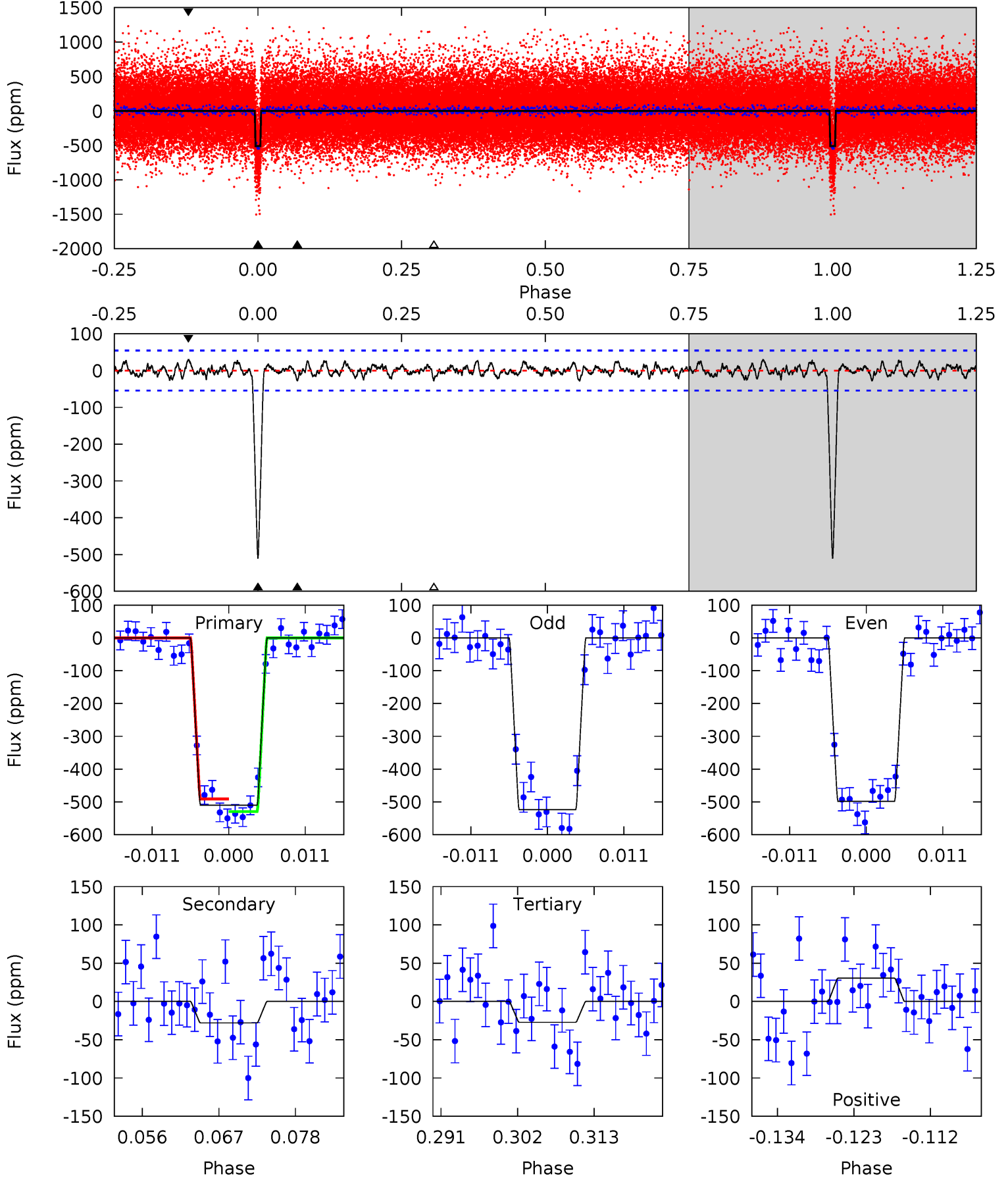
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.2	3.34	3.31	3.27	4.99	2.50	1.16	46.9	46.9	0.03	0.07	0.56	1.04	0.06	2.09



# Alt Model-Shift Uniqueness Test

009570741-01,  $P = 15.779686$  Days,  $E = 128.635168$  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
46.9	2.58	2.50	2.78	5.00	2.54	0.98	44.4	44.1	0.08	-0.21	1.18	0.99	0.06	1.76



### Stellar Parameters For KIC 009570741

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5941^{+160}_{-178}$	$4.519^{+0.048}_{-0.204}$	$-0.140^{+0.300}_{-0.300}$	$0.911^{+0.266}_{-0.089}$	$1.001^{+0.122}_{-0.122}$	$1.865^{+0.372}_{-0.959}$
	+3%/-3%	+1%/-5%	+214%/-214%	+29%/-10%	+12%/-12%	+20%/-51%
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 009570741-01 / KOI 0586.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-35 \pm 11$	$2.42^{+0.49}_{-0.40}$	$1010^{+75}_{-39}$	$3471^{+245}_{-231}$	$49^{+26}_{-19}$
Alt.	$-28 \pm 11$	$2.36^{+0.50}_{-0.40}$	$1019^{+68}_{-48}$	$3385^{+302}_{-287}$	$41^{+28}_{-19}$

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



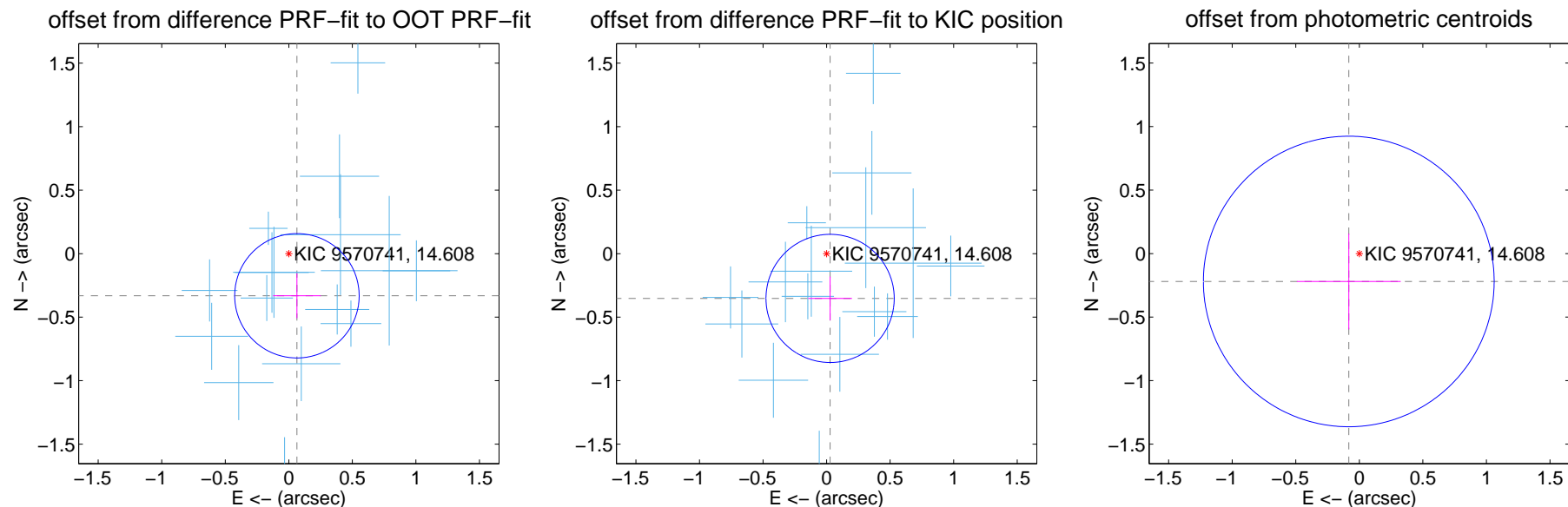
## DV Centroid Data

Supplemental centroid analysis for 009570741-01. Kepler magnitude: 14.61. Transit SNR 34.11

There are 17 quarters with good PRF difference image offsets

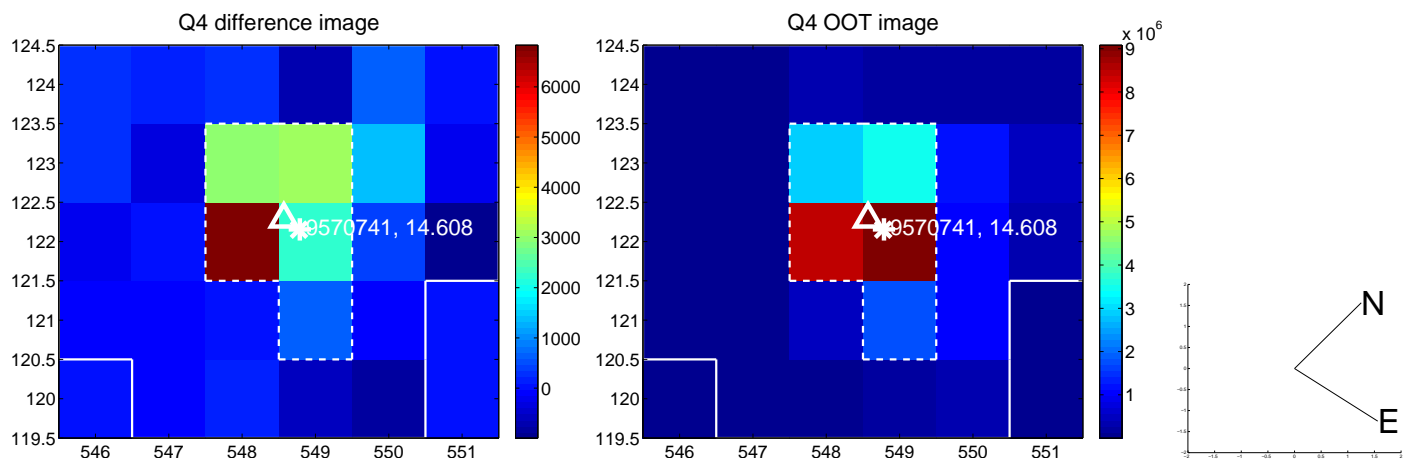
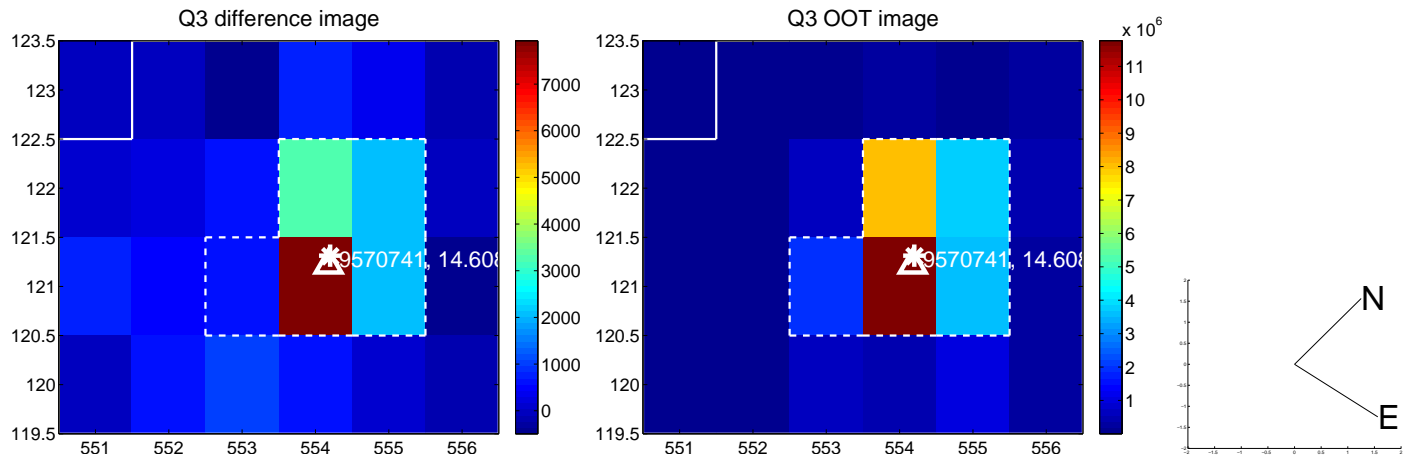
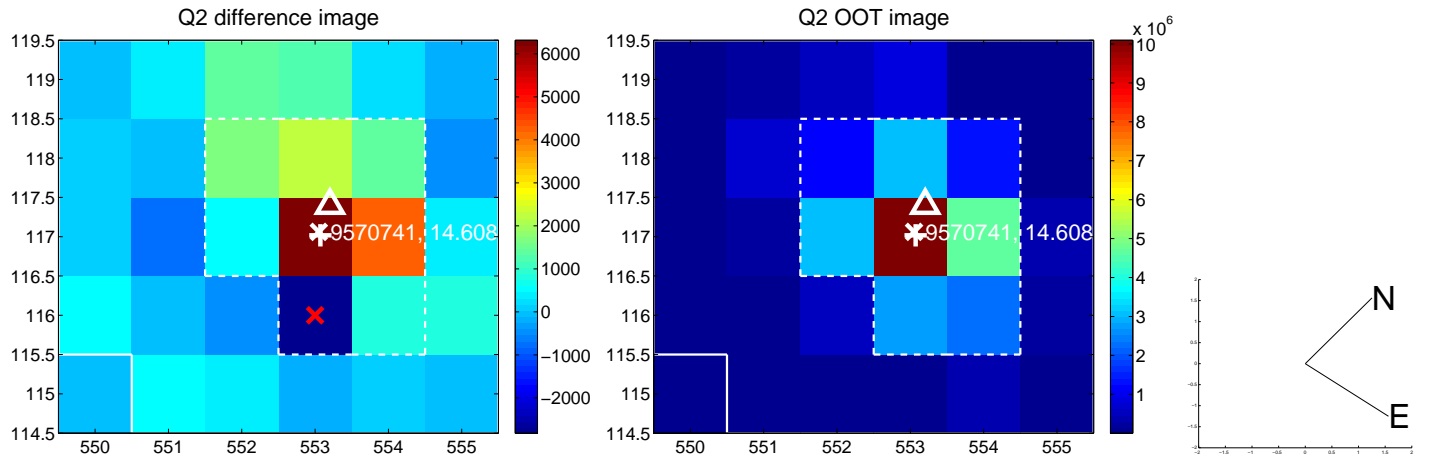
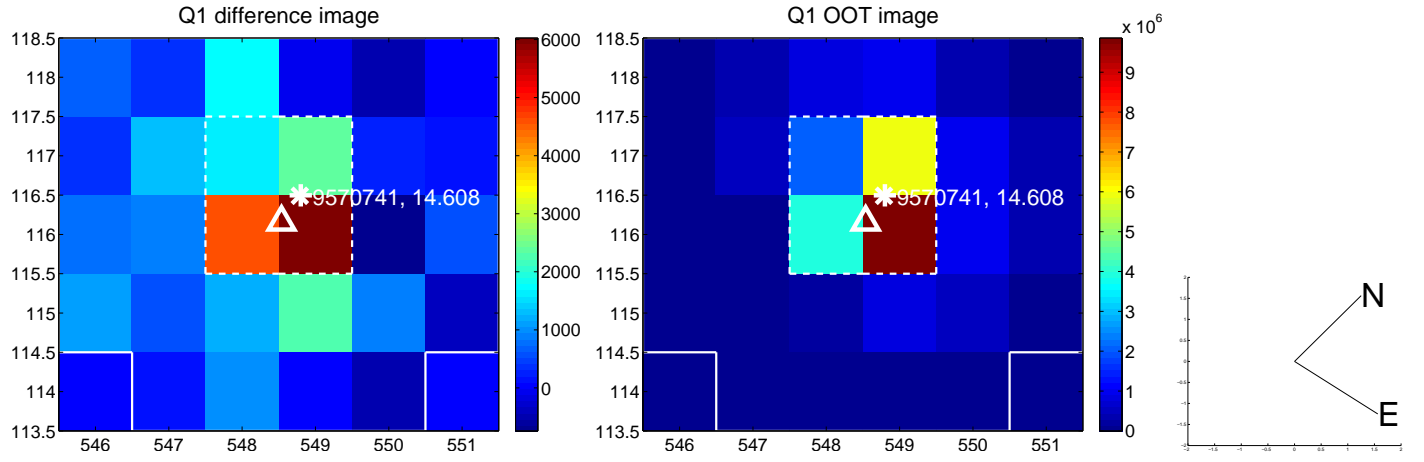
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.338 \pm 0.163$	2.07	$-0.064 \pm 0.188$	$-0.332 \pm 0.177$
PRF-fit source offset from KIC position	$0.354 \pm 0.168$	2.10	$-0.028 \pm 0.172$	$-0.352 \pm 0.172$
photometric centroid source offset	$0.23 \pm 0.38$	0.62	$0.08 \pm 0.41$	$-0.22 \pm 0.38$

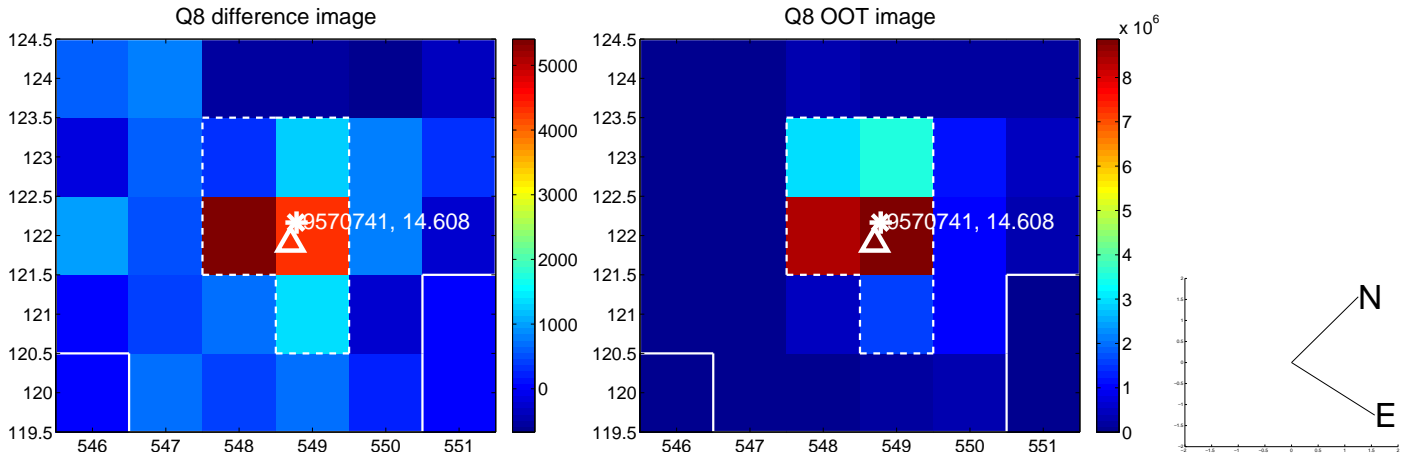
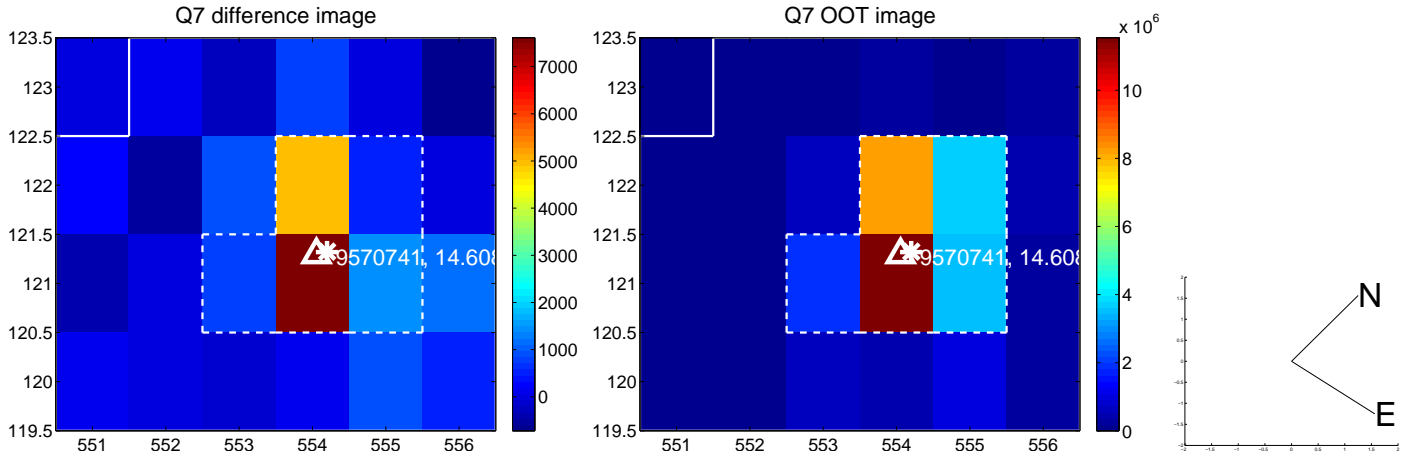
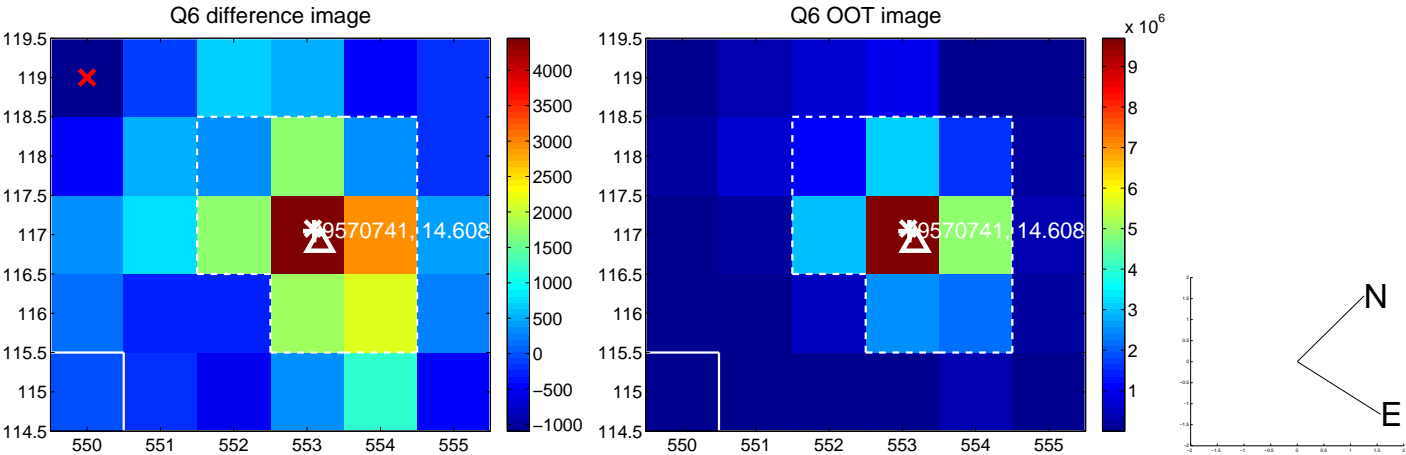
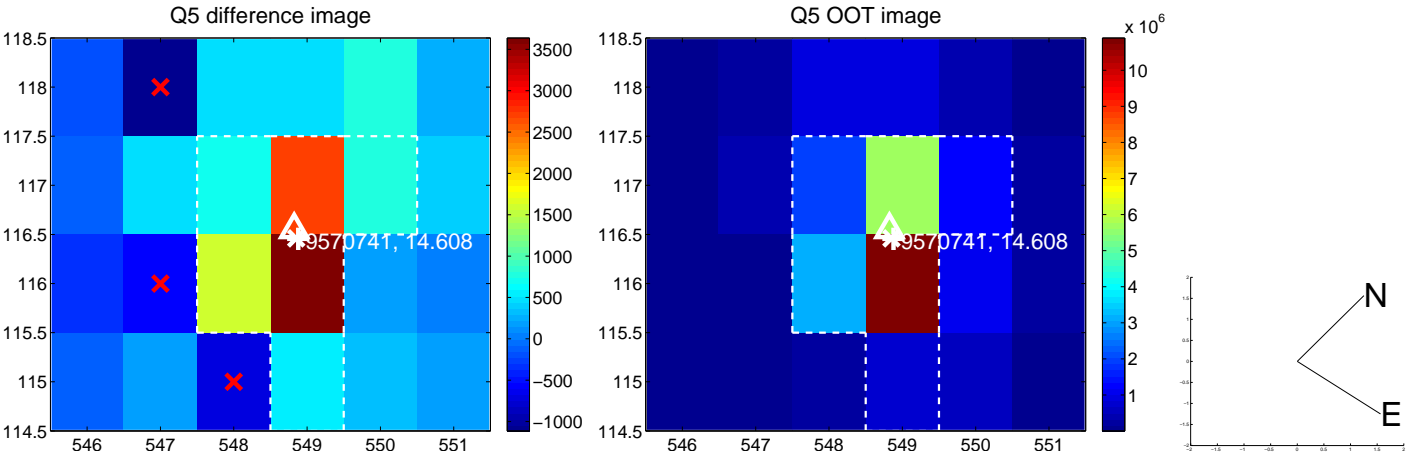


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

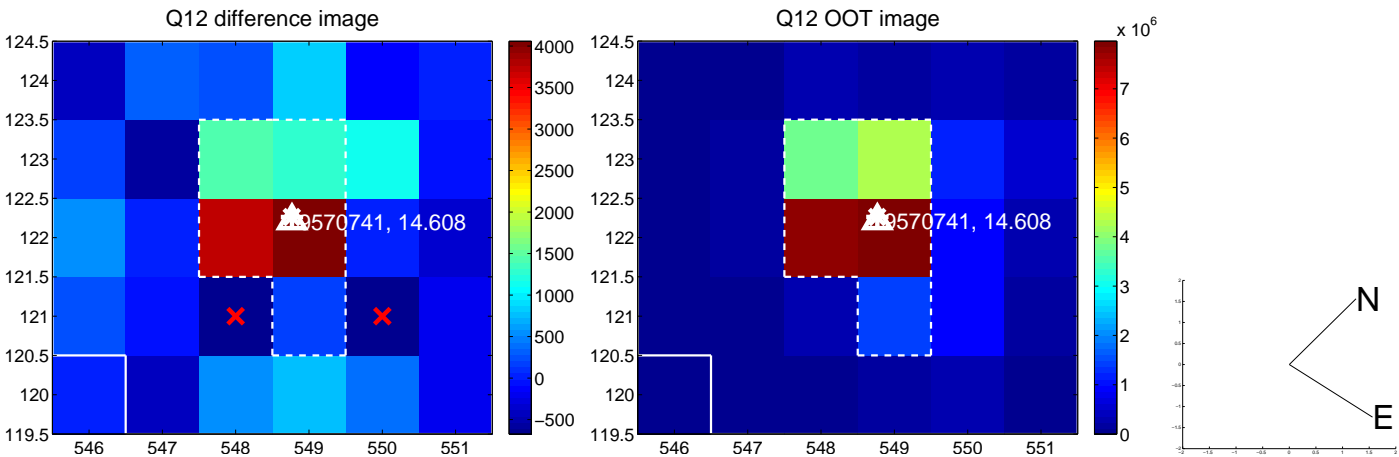
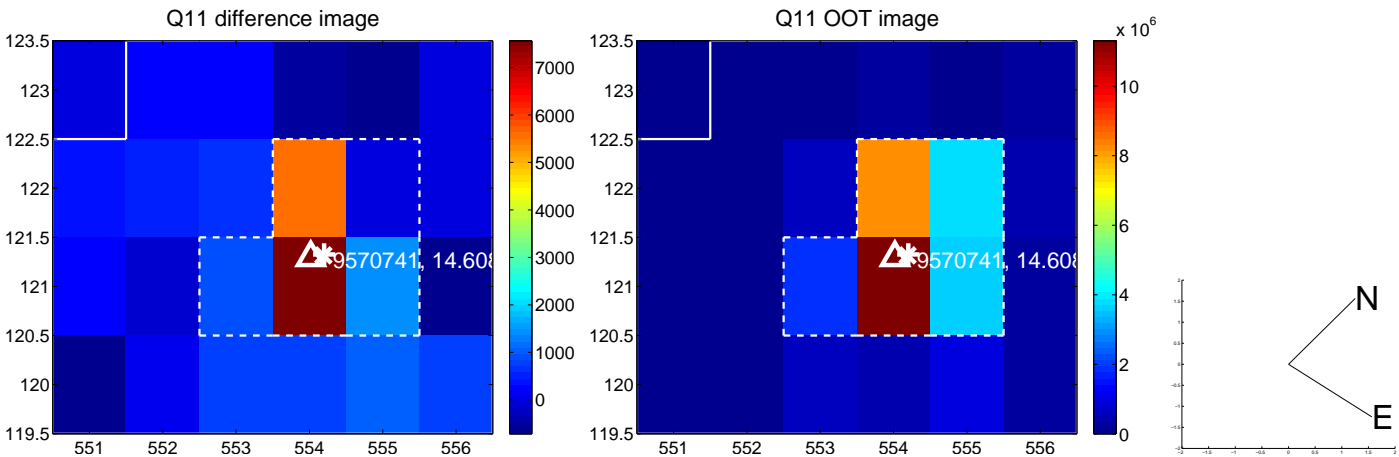
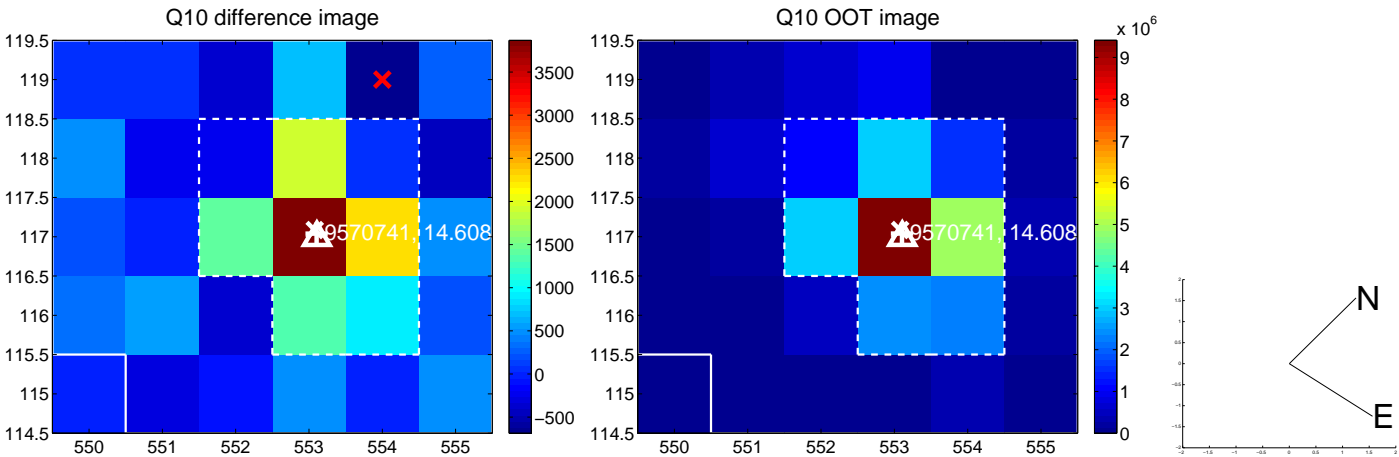
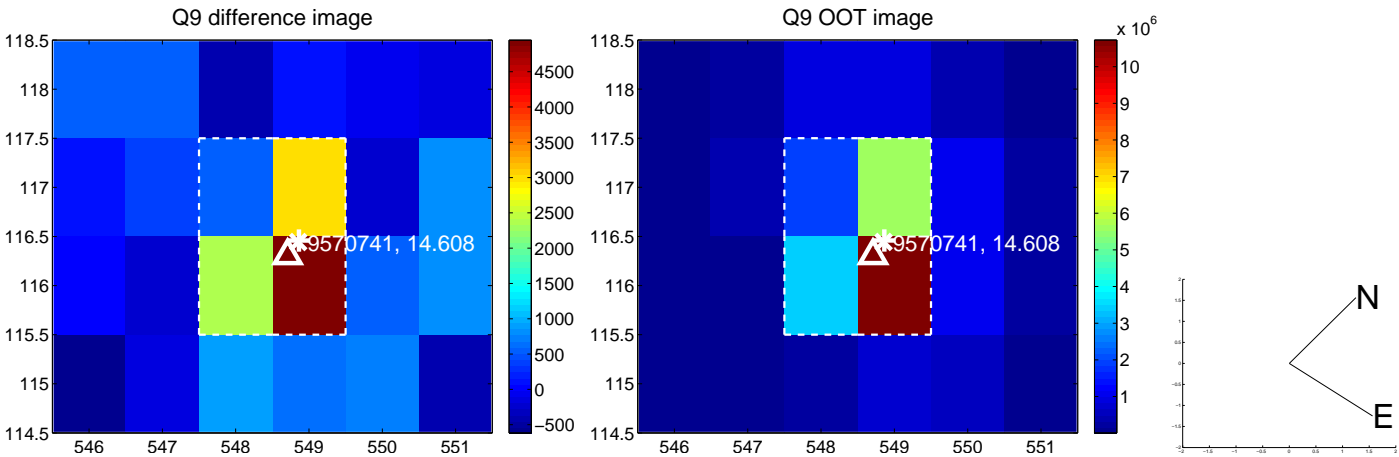
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



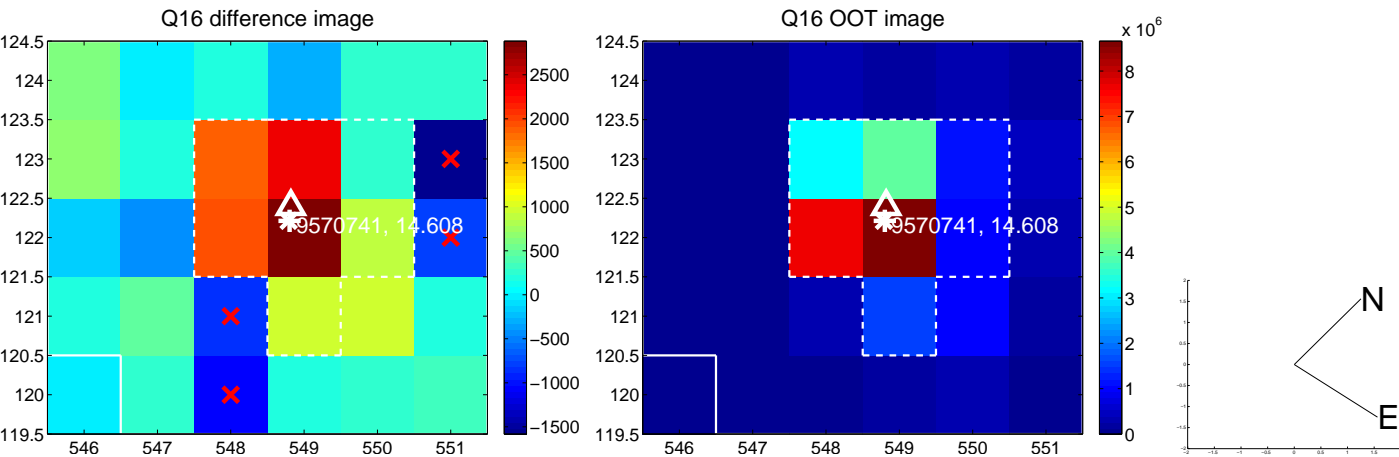
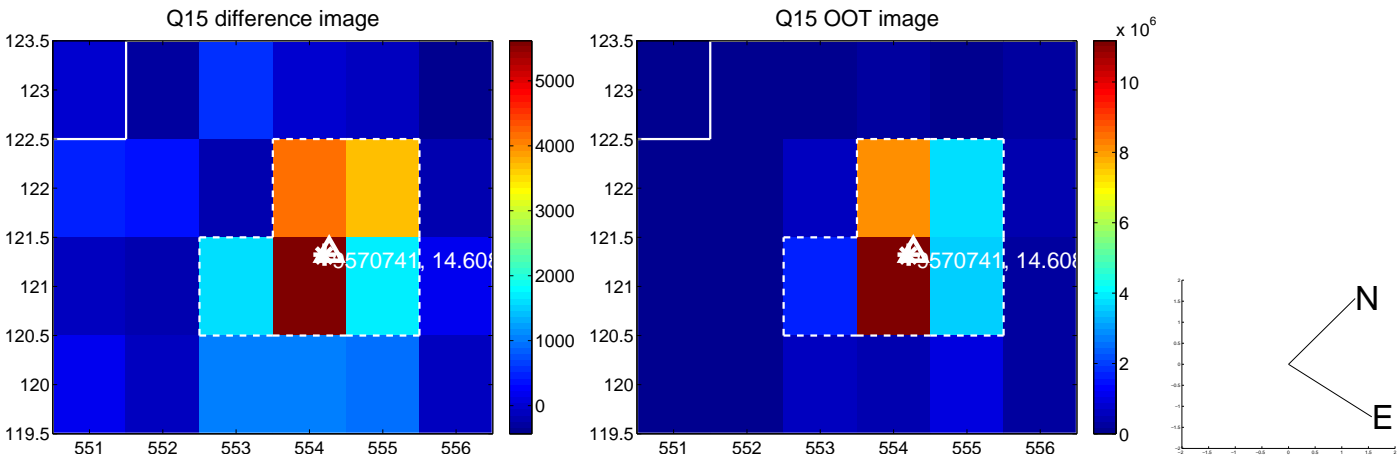
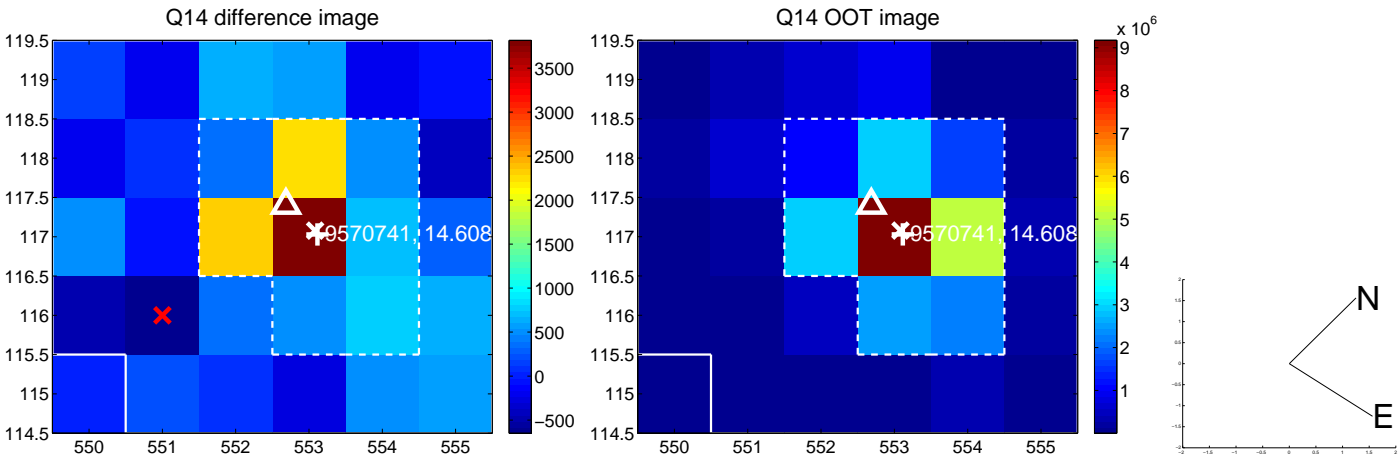
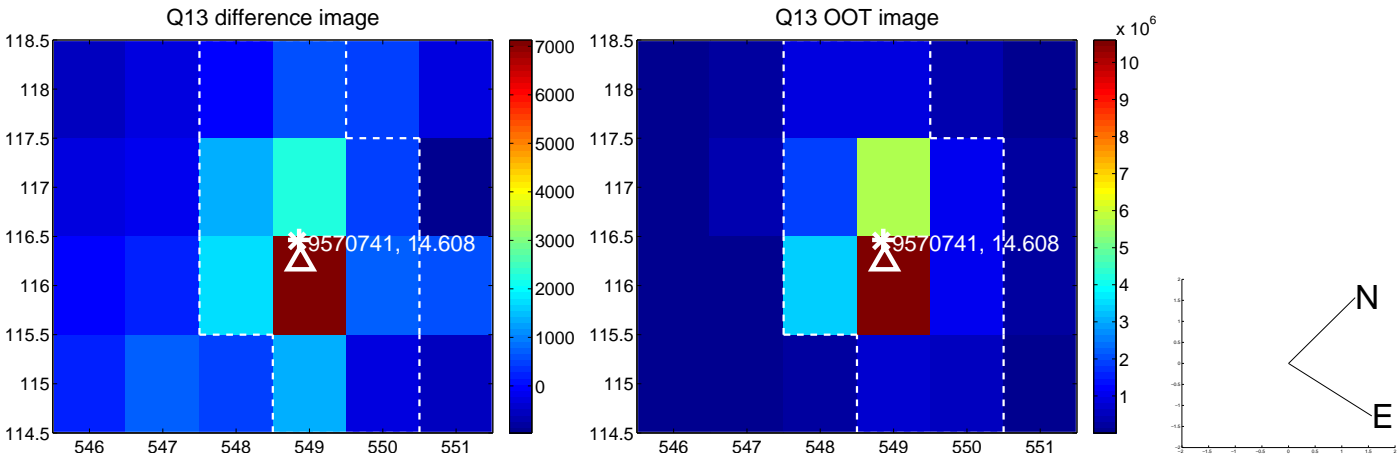
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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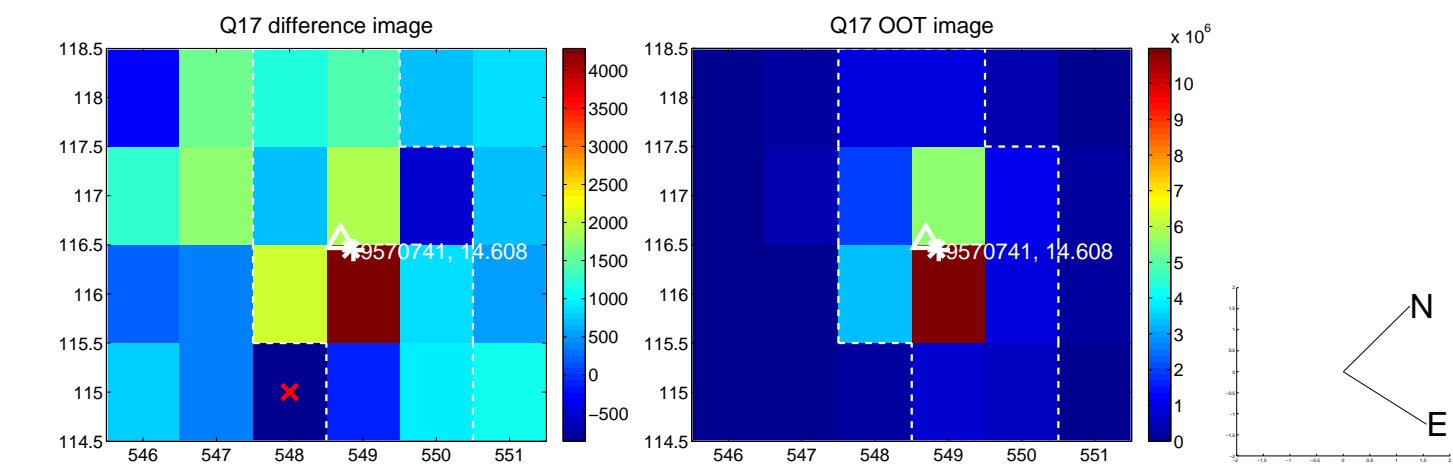


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

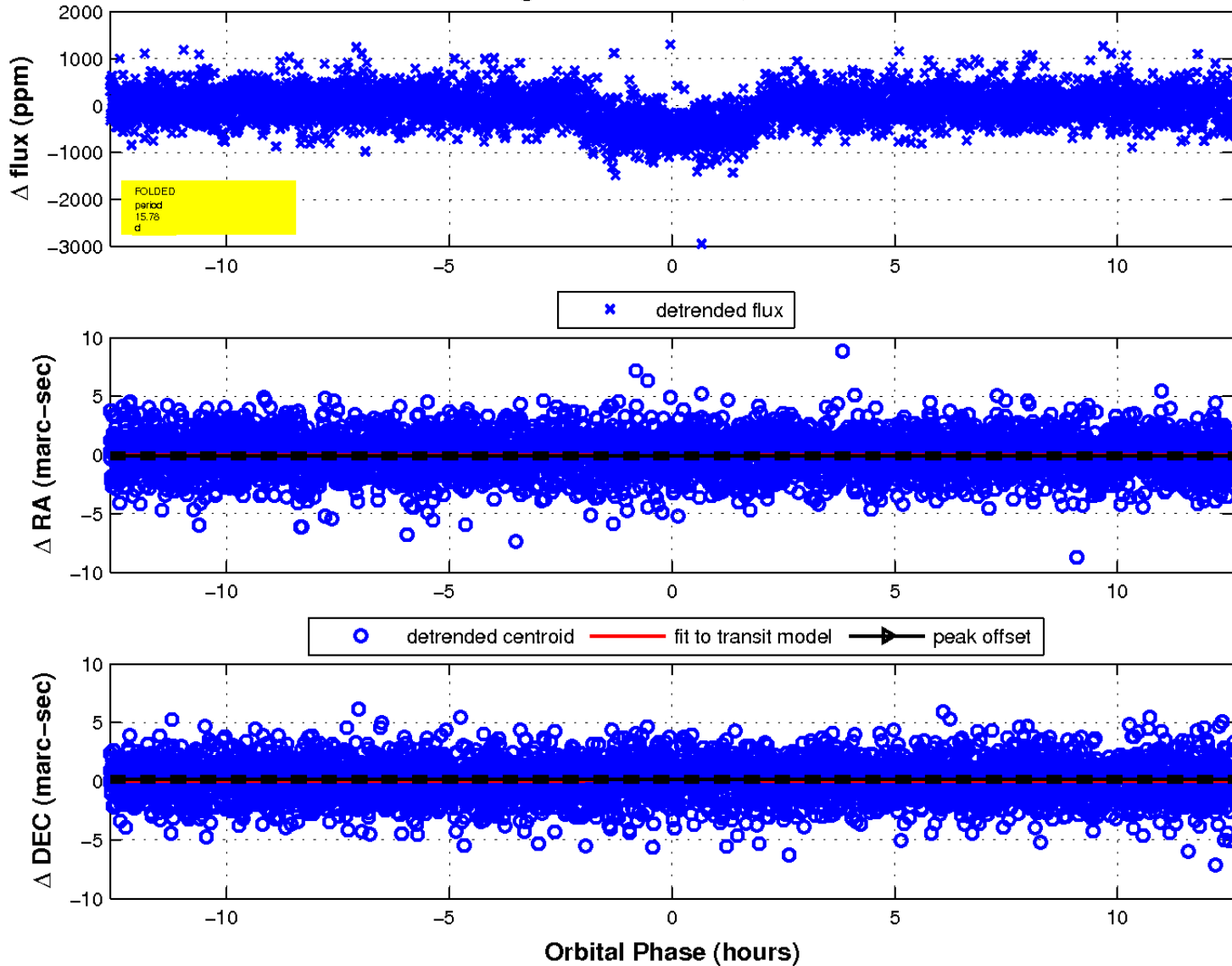




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

