

# KIC 009285568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009285568-01	OBS	4241.01	2.553124	132.455703	159.6	1.977	12.4	13.6	0.91	5970	1.36	702.67

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009285568-01	OBS	PC	0.99	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.

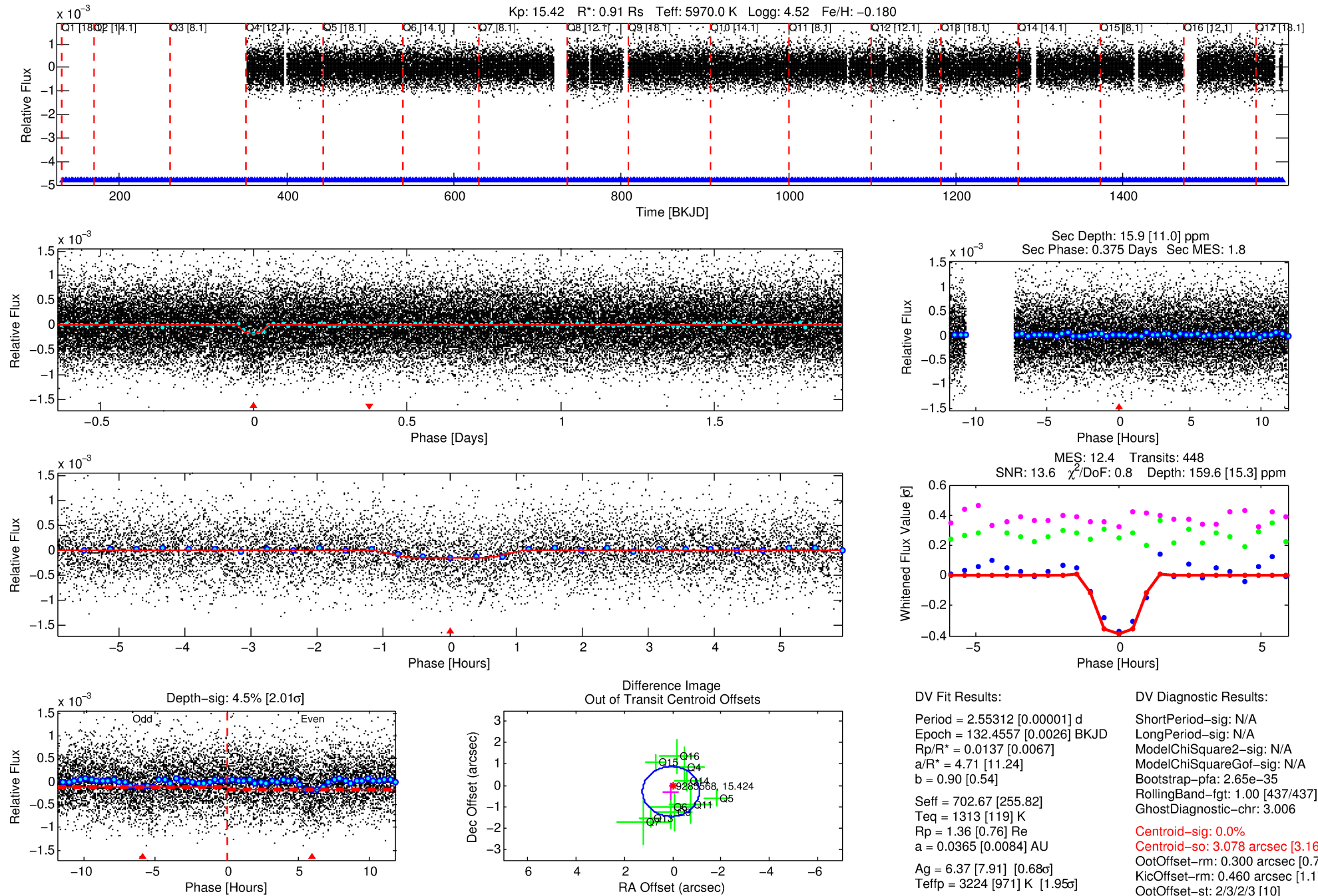
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009285568-01

No Significant Match Found

# DV One-Page Summary

KIC: 9285568 Candidate: 1 of 1 Period: 2.553 d  
KOI: K04241.01 Corr: 0.958



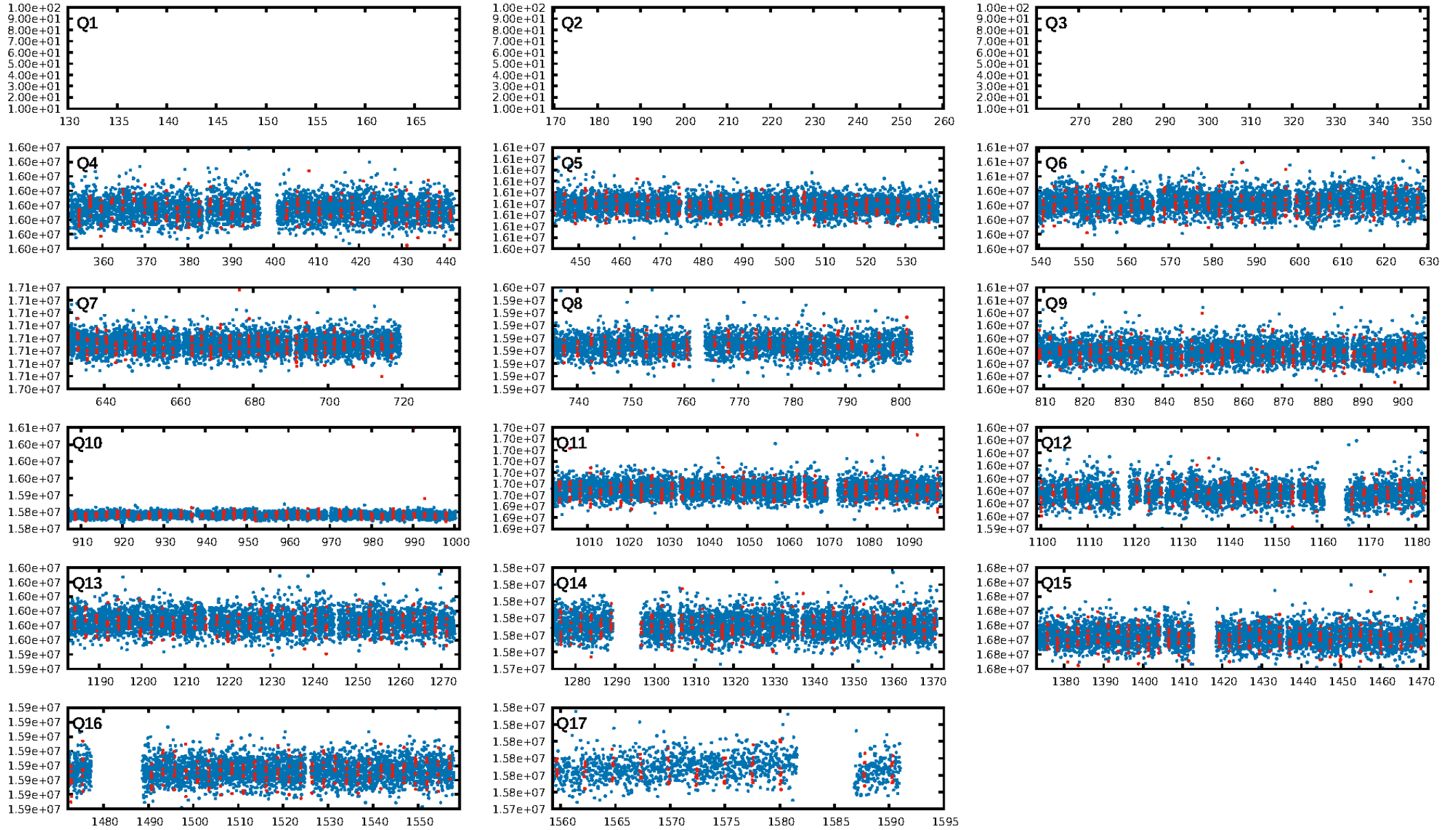
## DV Fit Results:

Period = 2.55312 [0.00001] d  
Epoch = 132.4557 [0.0026] BKJD  
Rp/R\* = 0.0137 [0.0067]  
a/R\* = 4.71 [11.24]  
b = 0.90 [0.54]  
Seff = 702.67 [255.82]  
Teff = 1313 [119] K  
Rp = 1.36 [0.76] Re  
a = 0.0365 [0.0084] AU  
Ag = 6.37 [7.91] [0.68 $\sigma$ ]  
Teffp = 3224 [971] K [1.95 $\sigma$ ]

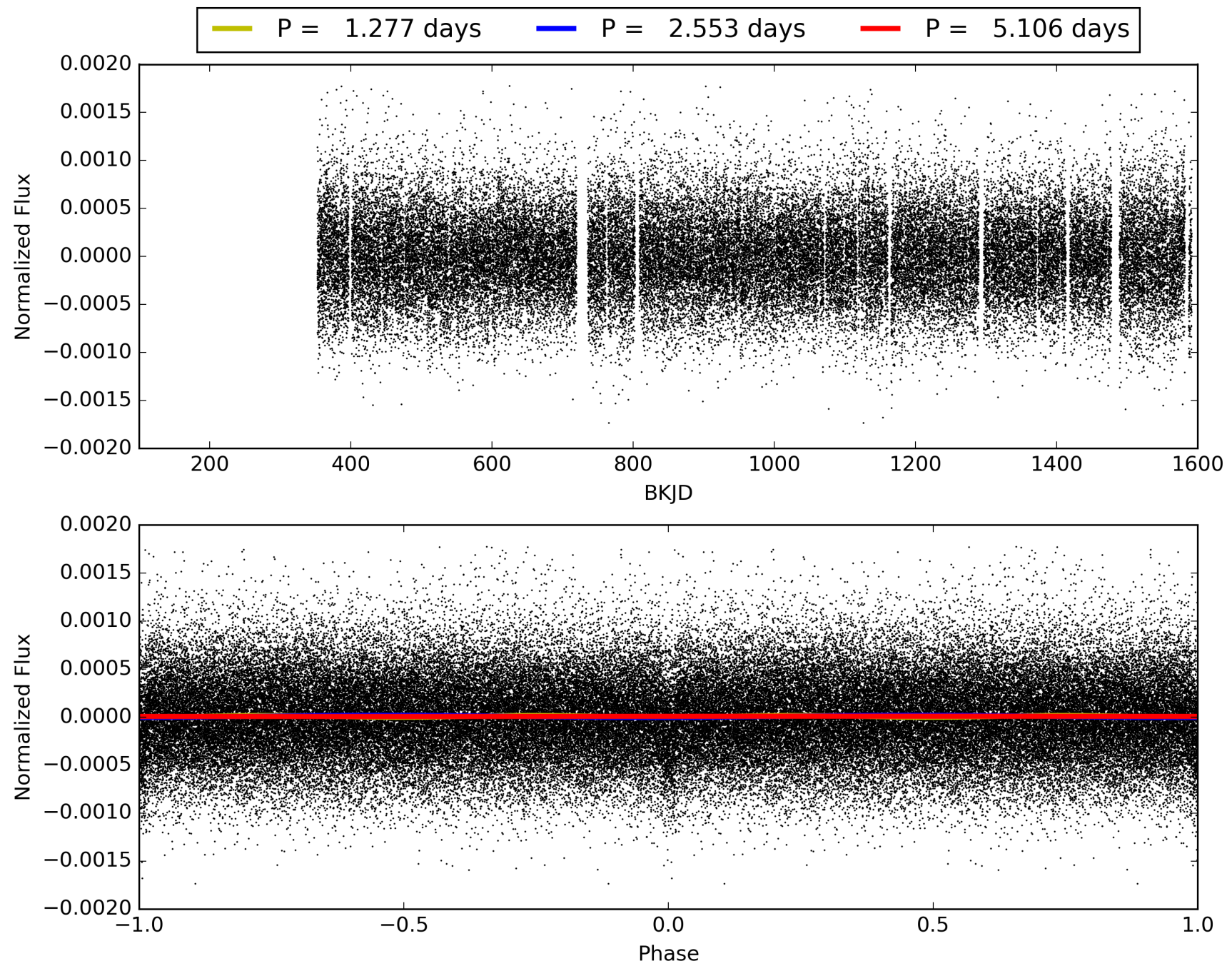
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.65e-35  
RollingBand-fgt: 1.00 [437/437]  
GhostDiagnostic-chr: 3.006  
Centroid-sig: 0.0%  
Centroid-so: 3.078 arcsec [3.16 $\sigma$ ]  
OotOffset-rm: 0.300 arcsec [0.77 $\sigma$ ]  
KicOffset-rm: 0.460 arcsec [1.17 $\sigma$ ]  
OotOffset-st: 2/3/2/3 [10]  
KicOffset-st: 2/3/2/3 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009285568-01, PDC Light Curves

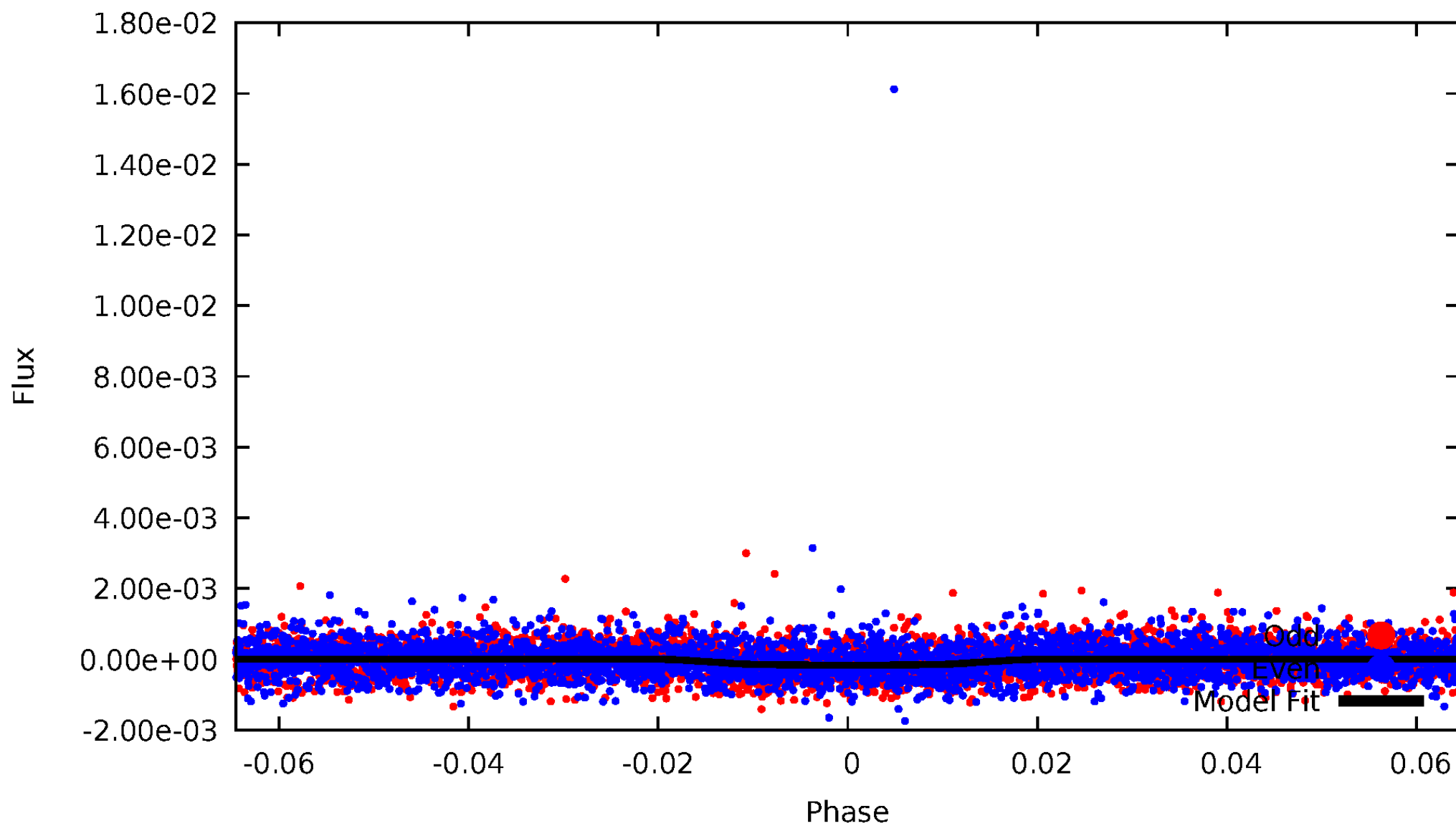


TCE 009285568-01



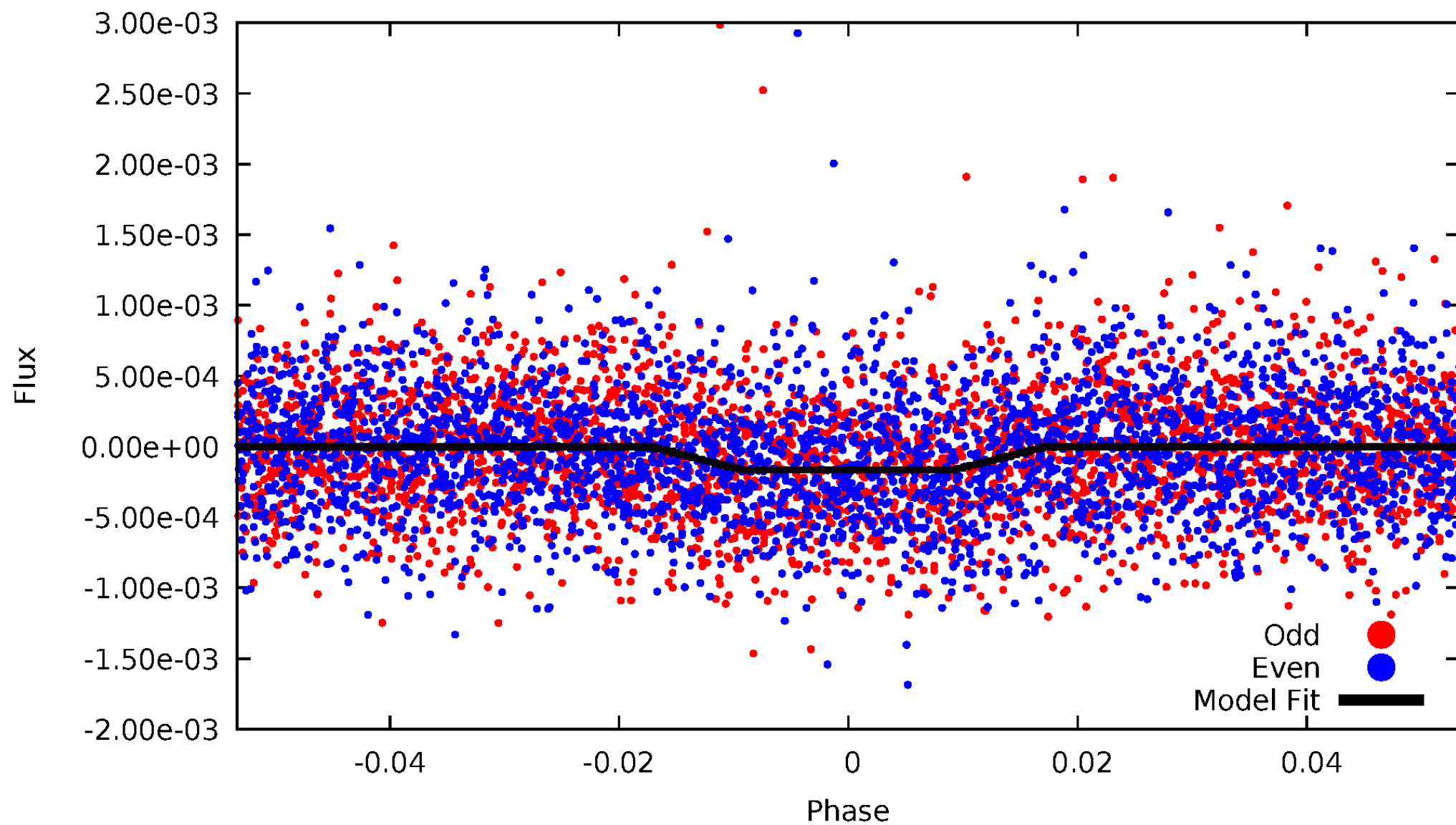
# DV Odd/Even

TCE 009285568-01



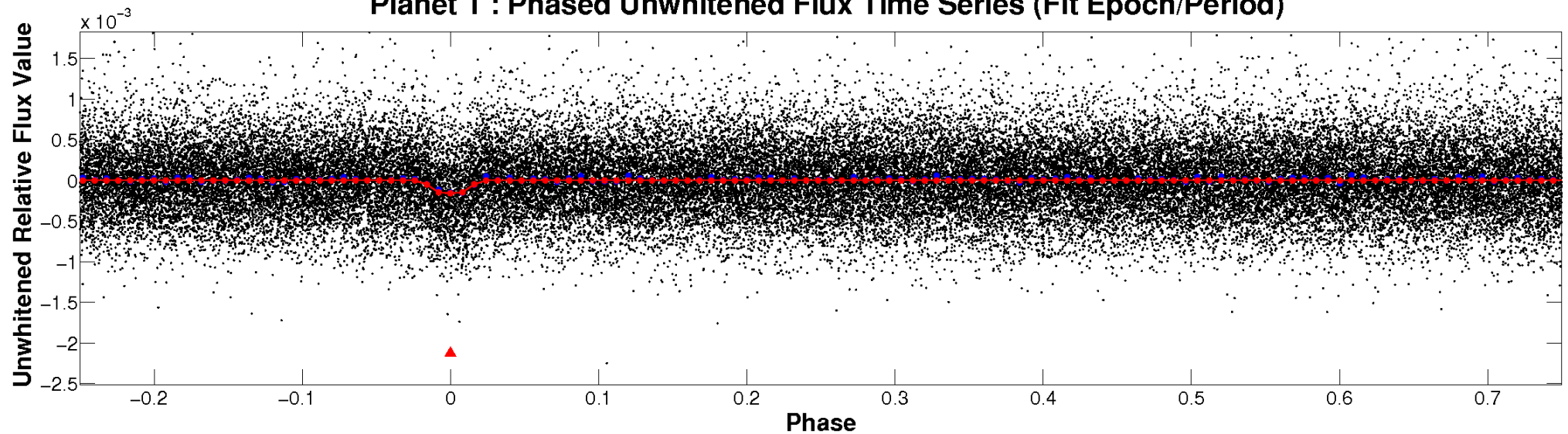
# ALT Odd/Even

TCE 009285568-01

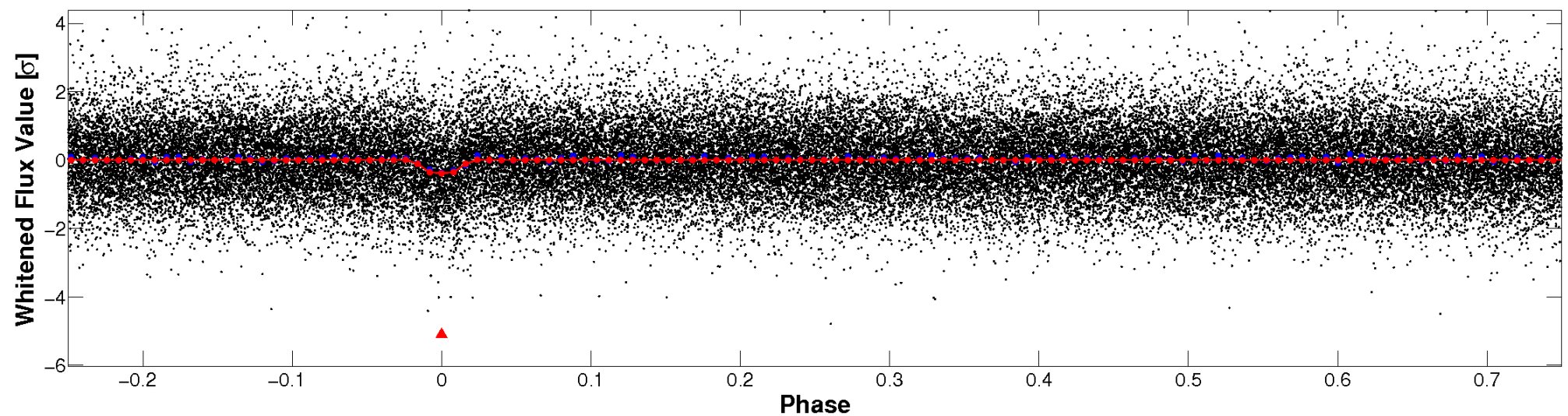


# Non-Whitened Vs. Whitened Light Curve

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

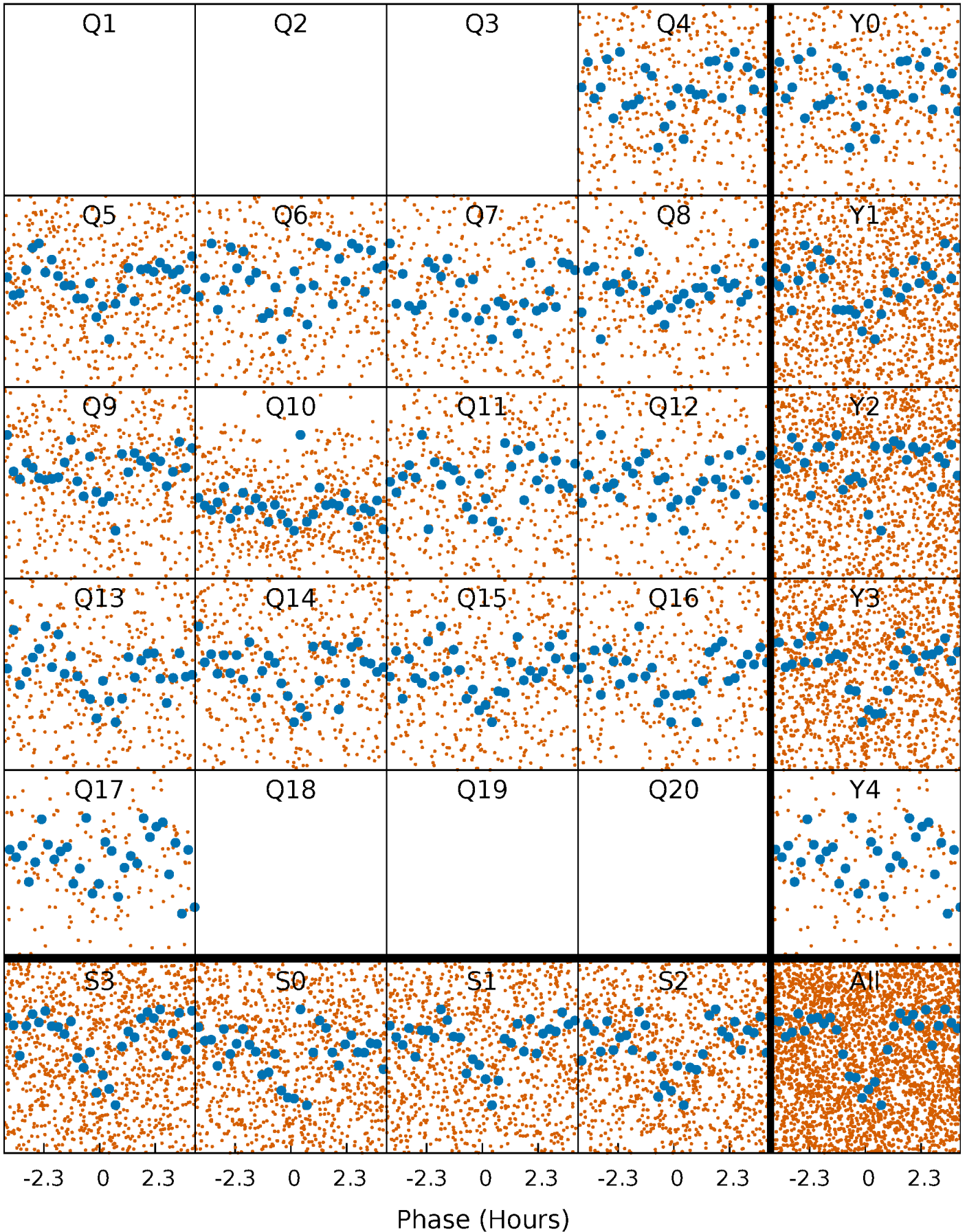


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



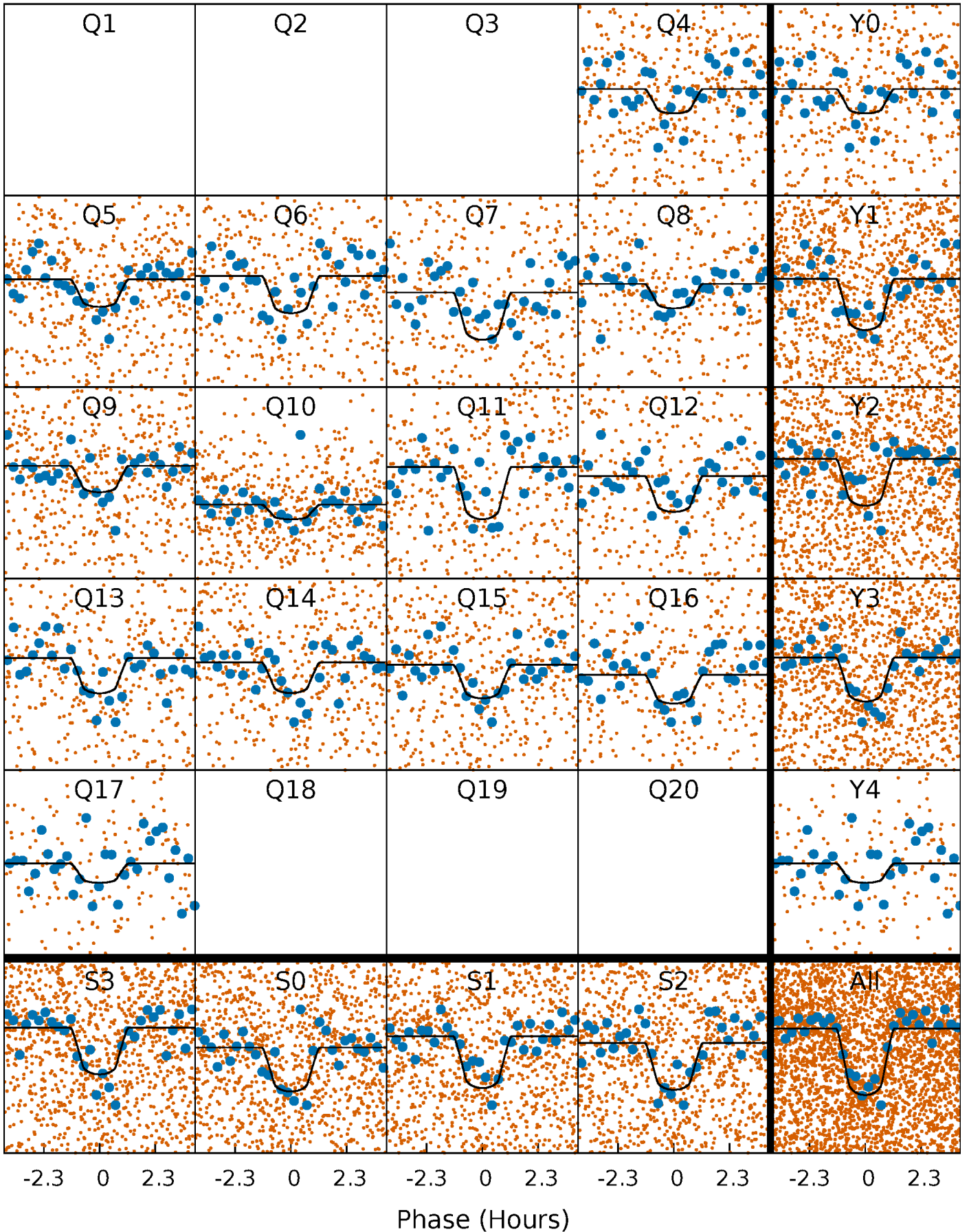
# PDC Quarter-Phased Transit Curves

TCE 009285568-01   P= 2.553124 Days    $T_0=132.455703$  (BKJD)



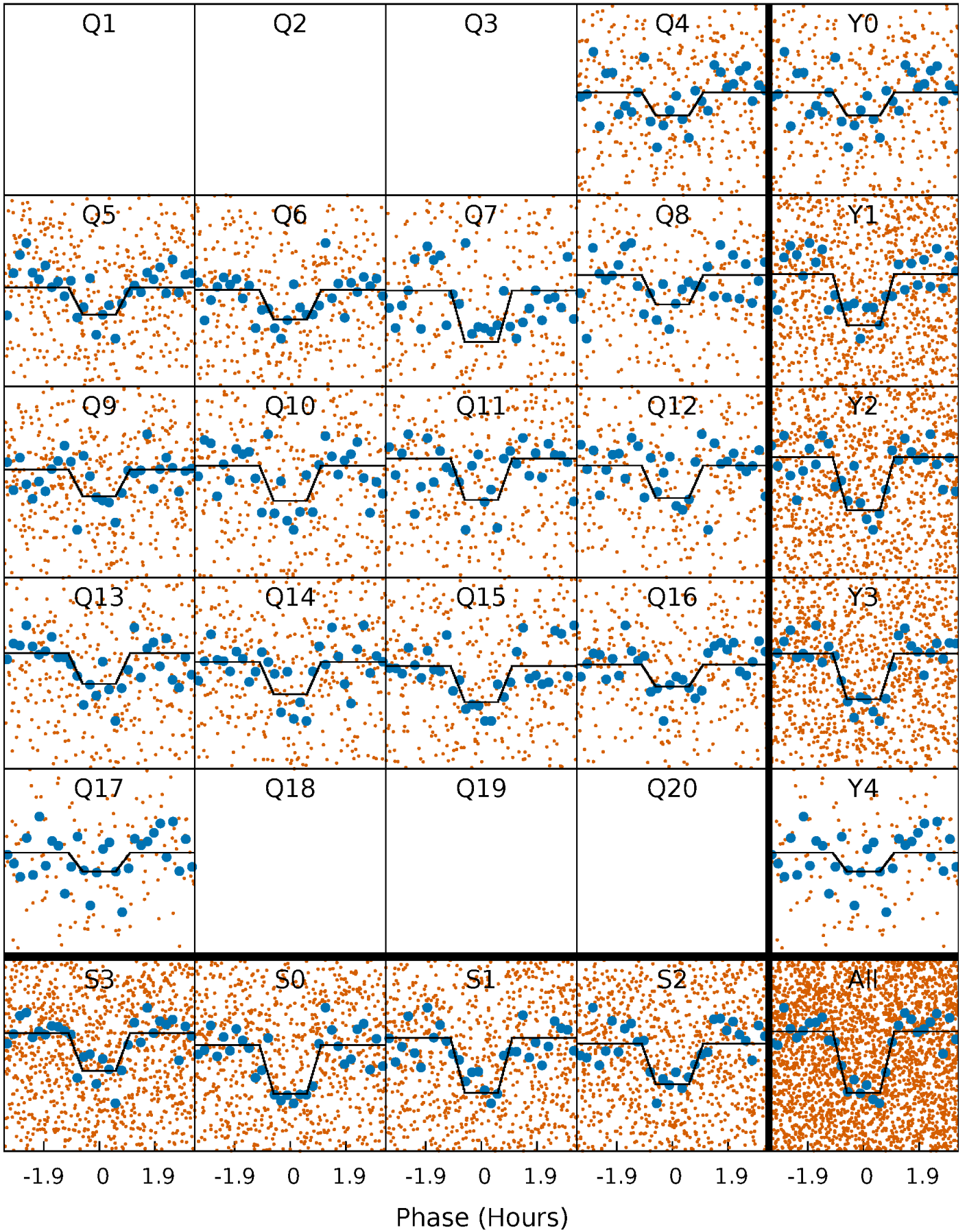
# DV Quarter-Phased Transit Curves

TCE 009285568-01 P= 2.553124 Days  $T_0=132.455703$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

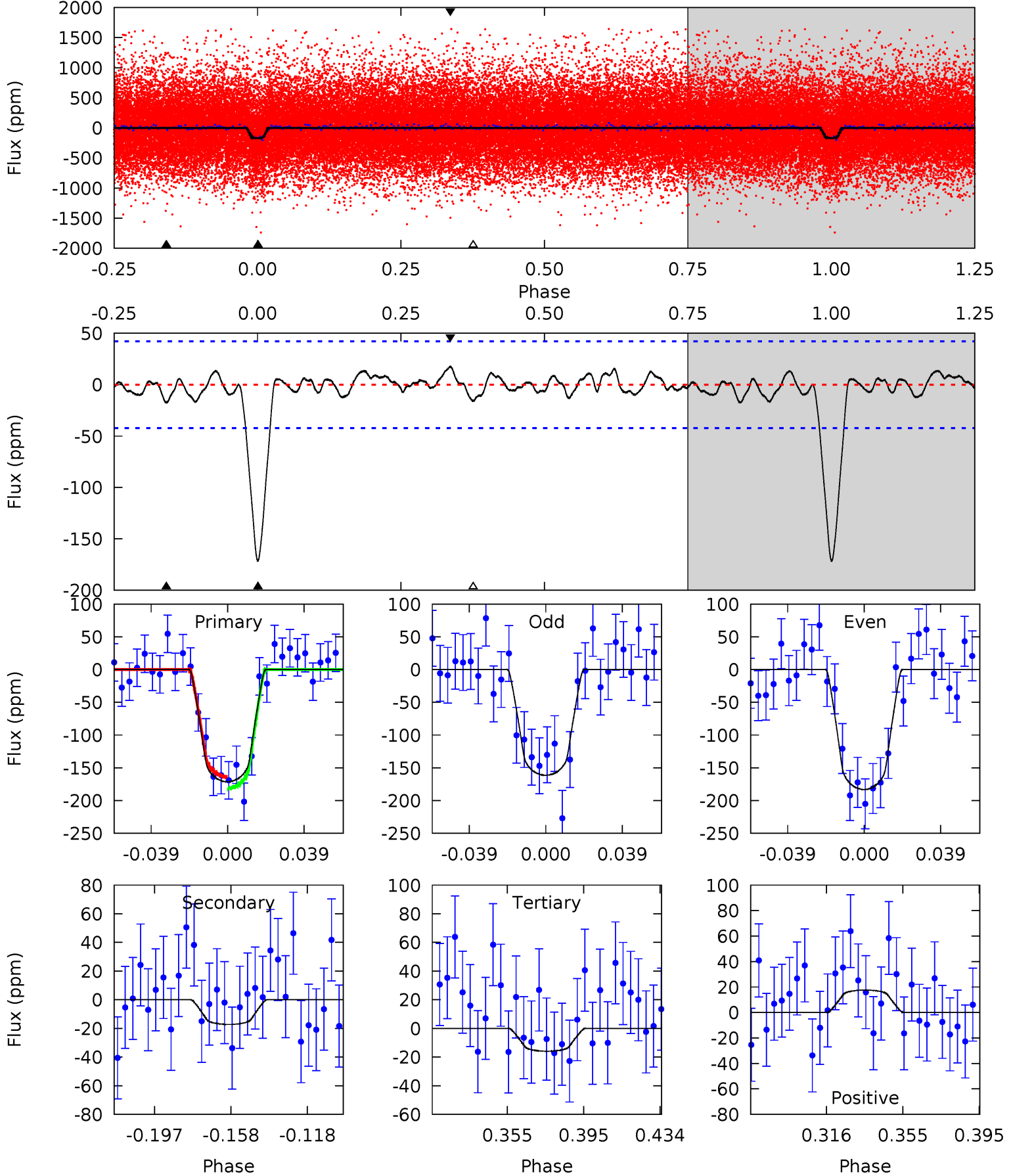
TCE 009285568-01 P= 2.553139 Days  $T_0=132.451810$  (BKJD)



# DV Model-Shift Uniqueness Test

009285568-01, P = 2.553124 Days, E = 132.455703 Days

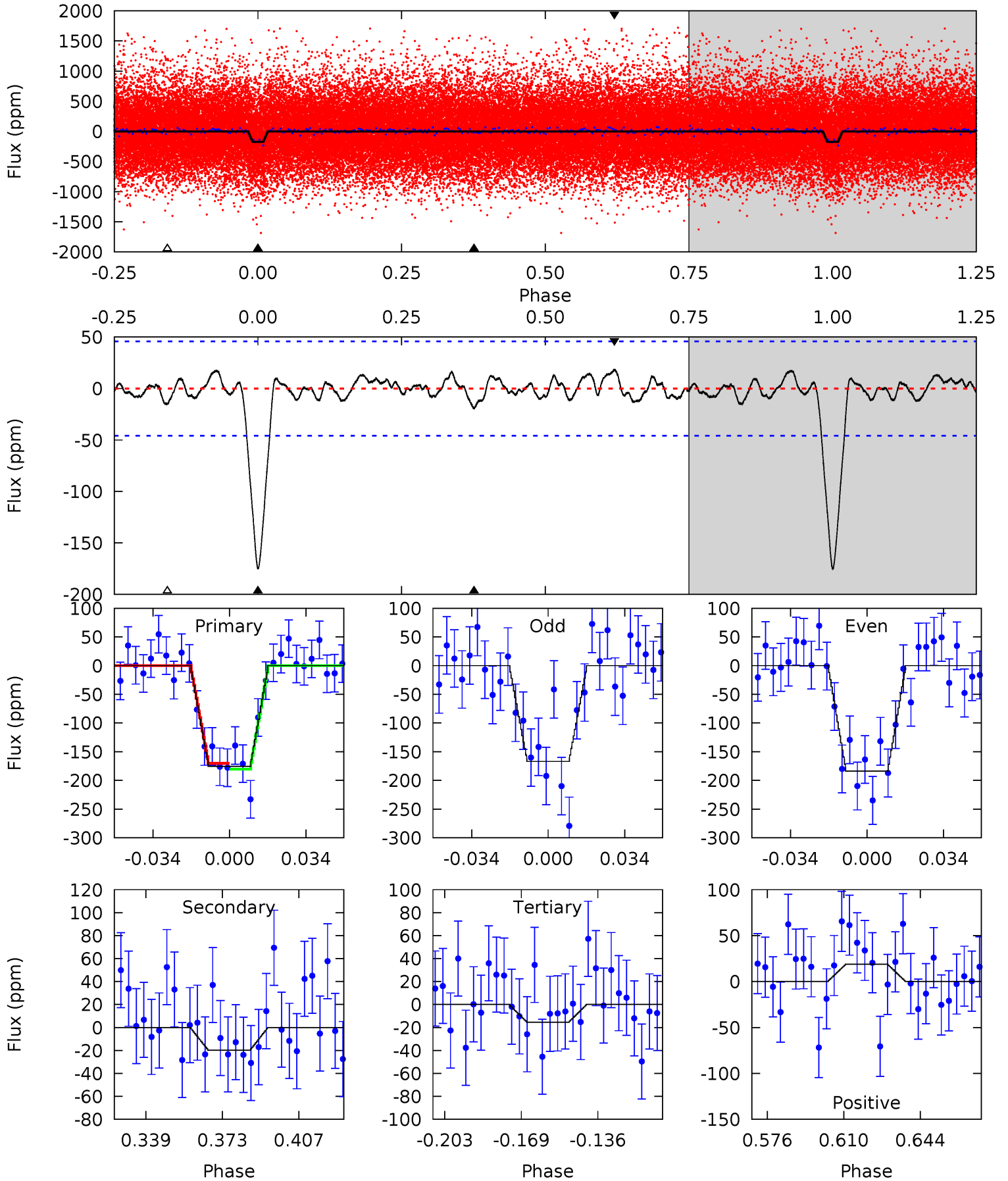
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	1.95	1.80	1.99	4.76	2.06	0.83	17.5	17.4	0.15	-0.04	1.23	0.82	0.09	1.02



# Alt Model-Shift Uniqueness Test

009285568-01, P = 2.553139 Days, E = 132.451810 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
18.3	2.08	1.62	1.97	4.79	2.12	0.77	16.7	16.3	0.46	0.10	0.89	0.90	0.10	0.54



### Stellar Parameters For KIC 009285568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5970^{+188}_{-209}$	$4.521^{+0.046}_{-0.184}$	$-0.180^{+0.300}_{-0.300}$	$0.908^{+0.248}_{-0.088}$	$0.996^{+0.121}_{-0.121}$	$1.877^{+0.461}_{-0.908}$
	+3%/-4%	+1%/-4%	+167%/-167%	+27%/-10%	+12%/-12%	+25%/-48%
Source	KIC0	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 009285568-01 / KOI 4241.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-17 \pm 9$	$1.43^{+0.73}_{-0.65}$	$1875^{+121}_{-91}$	$3619^{+990}_{-595}$	$5.730^{+15.565}_{-3.921}$
Alt.	$-20 \pm 10$	$1.33^{+0.75}_{-0.67}$	$1871^{+119}_{-97}$	$3801^{+1304}_{-643}$	$7.704^{+27.936}_{-5.014}$

$T_{\text{max}}$  = 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

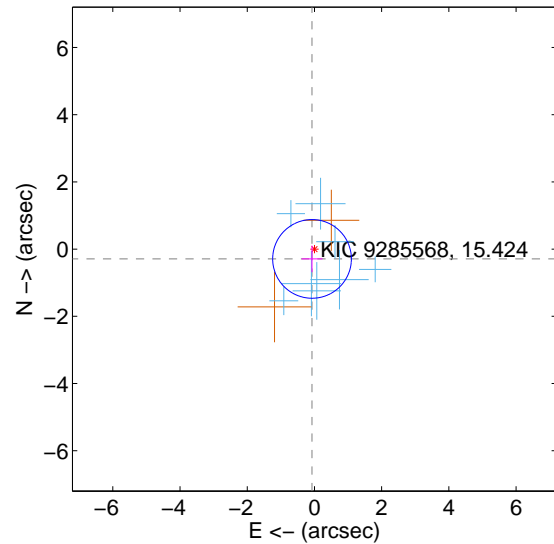
Supplemental centroid analysis for 009285568-01. Kepler magnitude: 15.42. Transit SNR 13.59

There are 8 quarters with good PRF difference image offsets

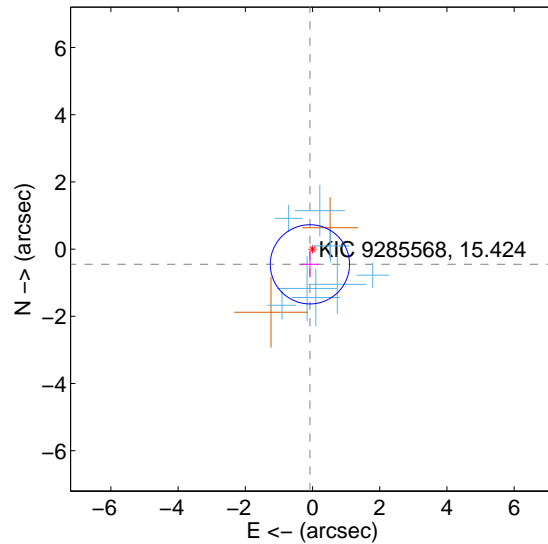
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.300 \pm 0.390$	0.77	$0.072 \pm 0.312$	$-0.292 \pm 0.395$
PRF-fit source offset from KIC position	$0.460 \pm 0.393$	1.17	$0.078 \pm 0.275$	$-0.453 \pm 0.388$
photometric centroid source offset	$3.08 \pm 0.97$	3.16	$1.27 \pm 0.97$	$-2.80 \pm 0.98$

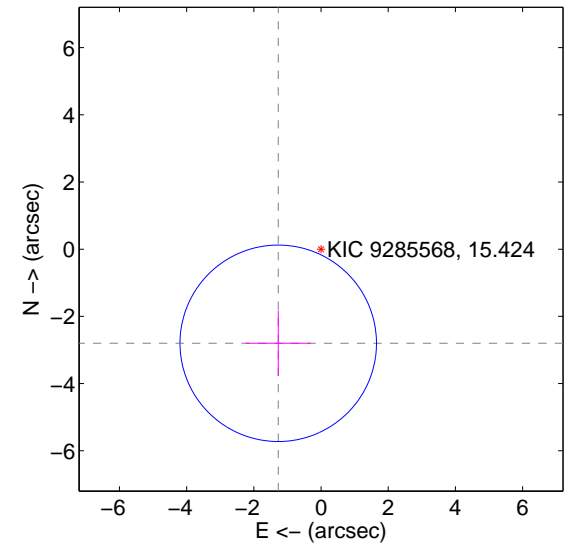
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

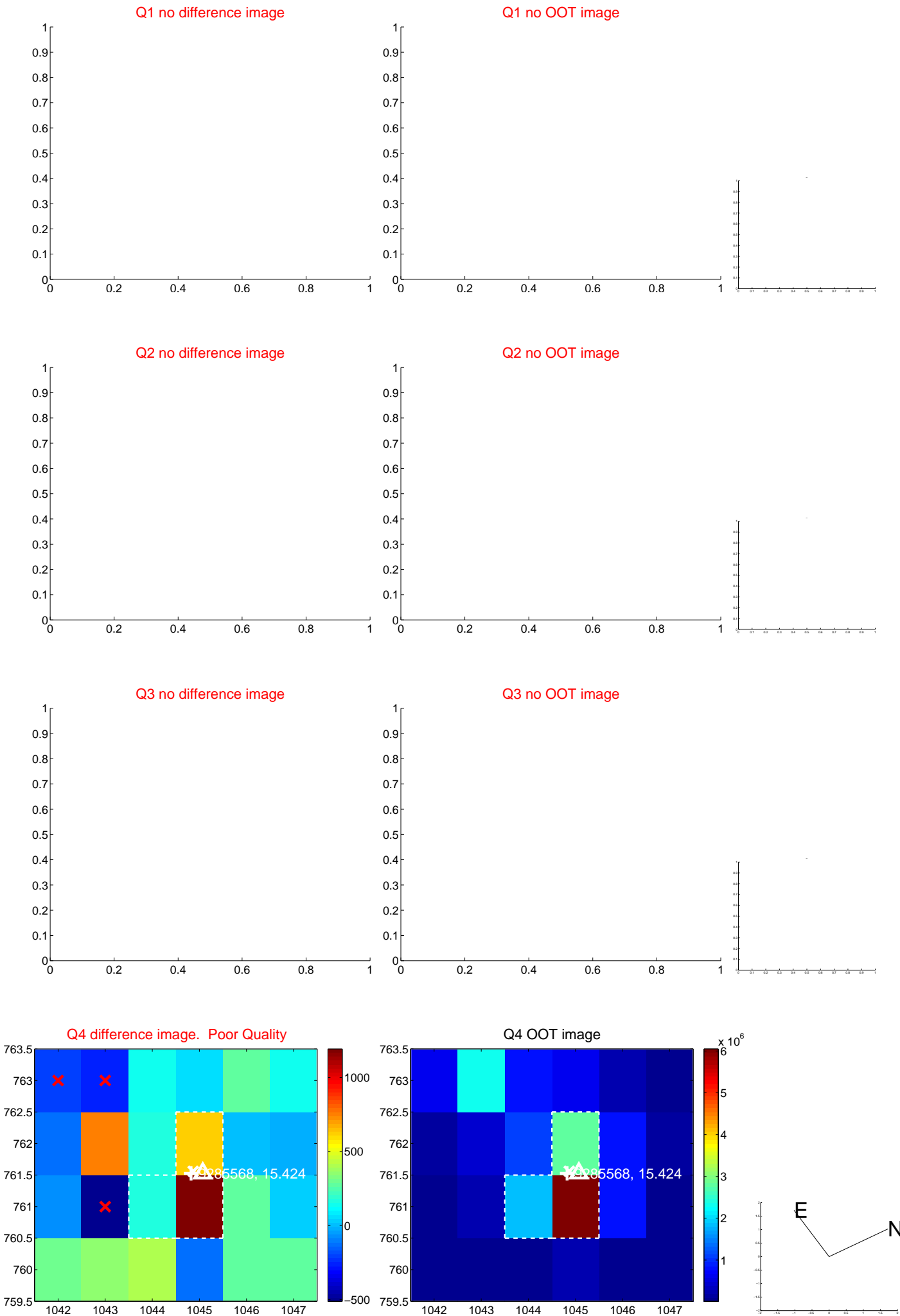


offset from photometric centroids

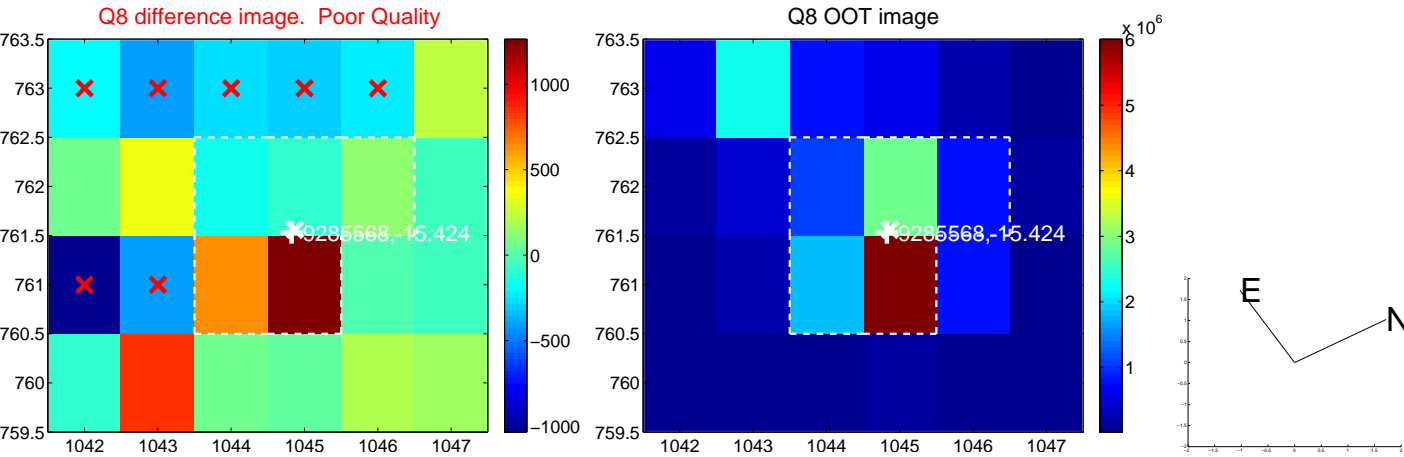
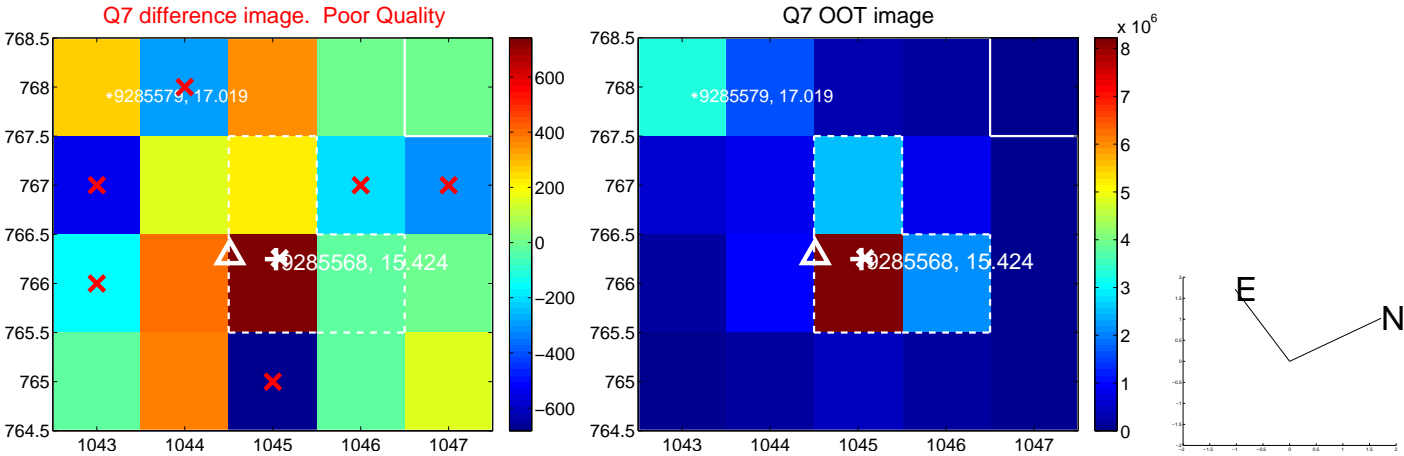
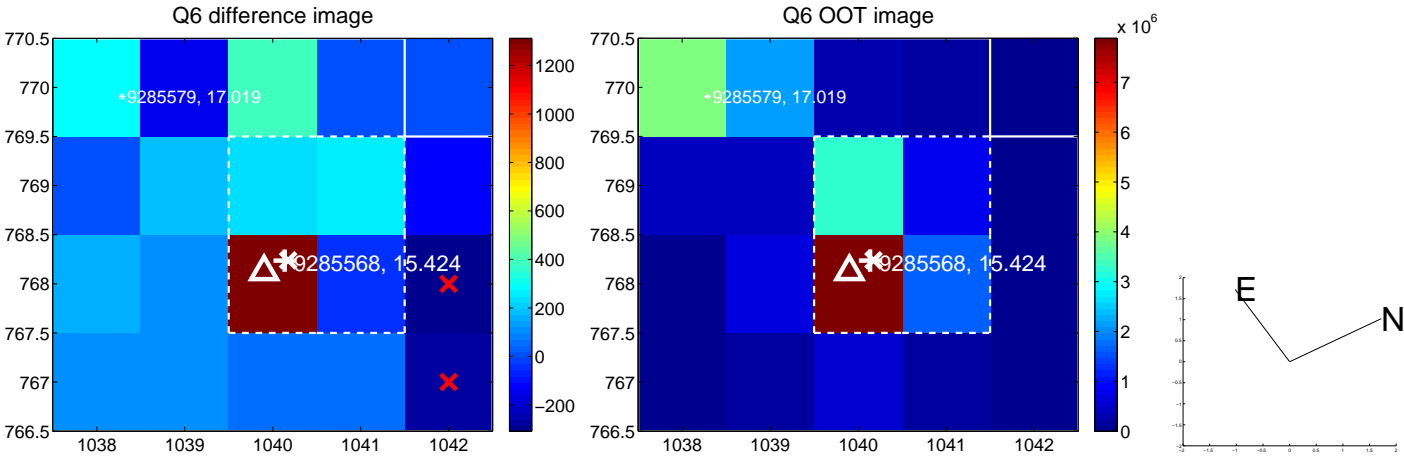
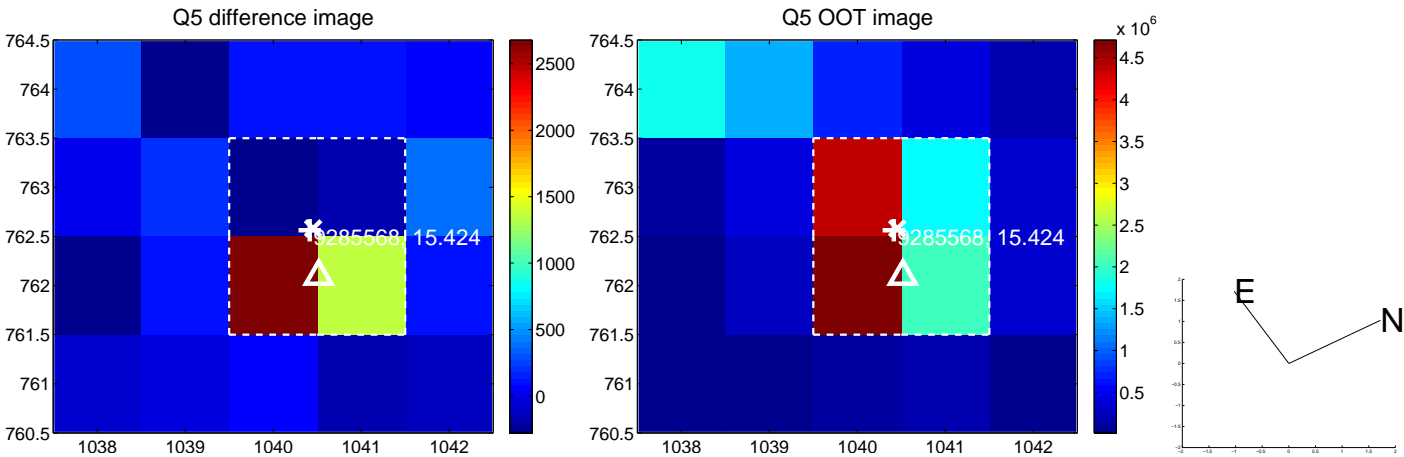


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

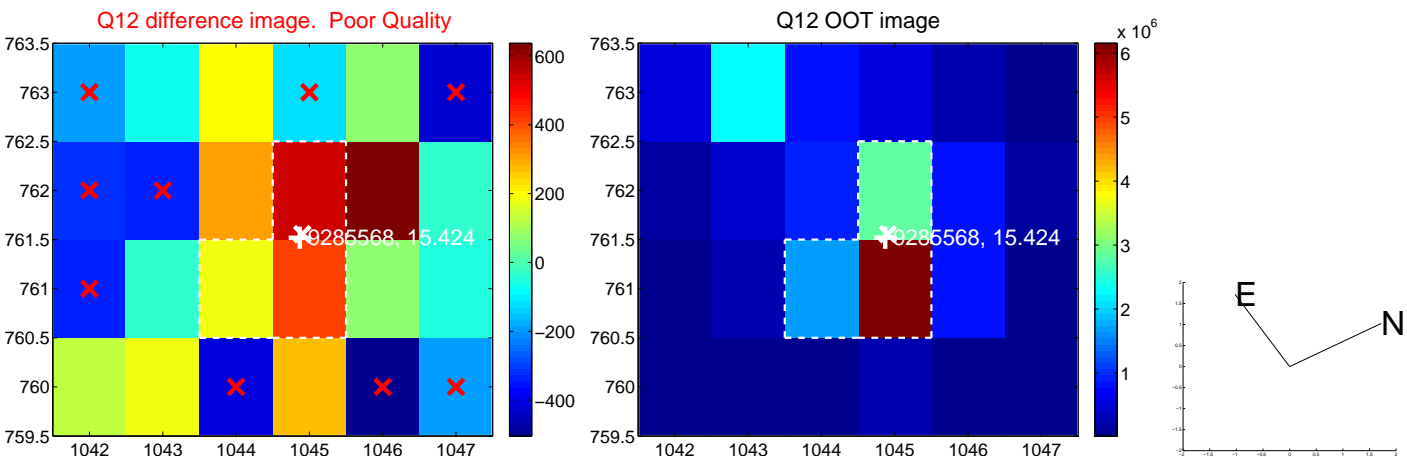
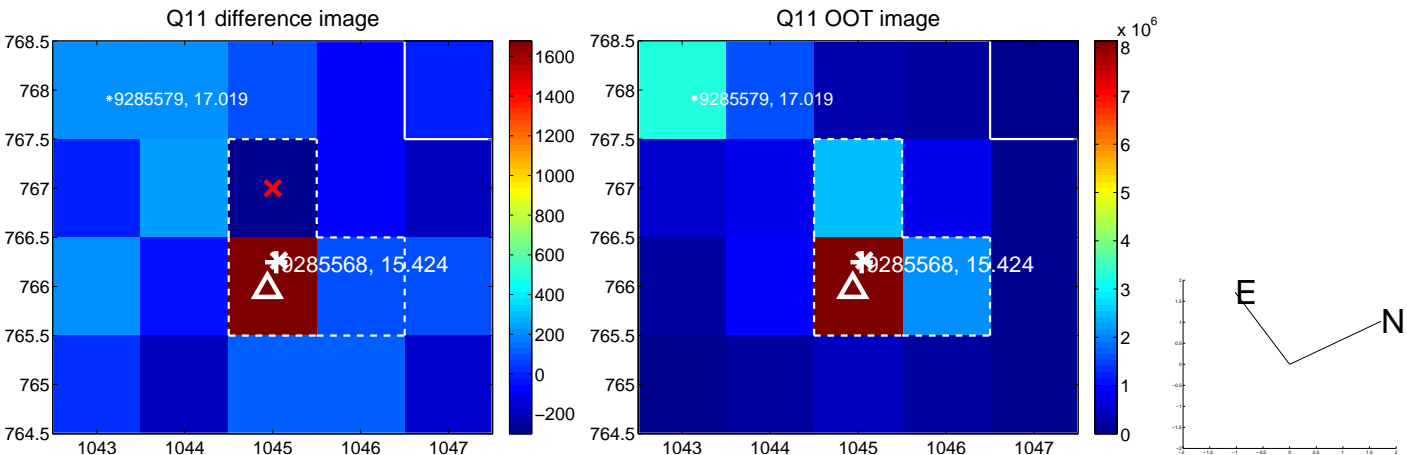
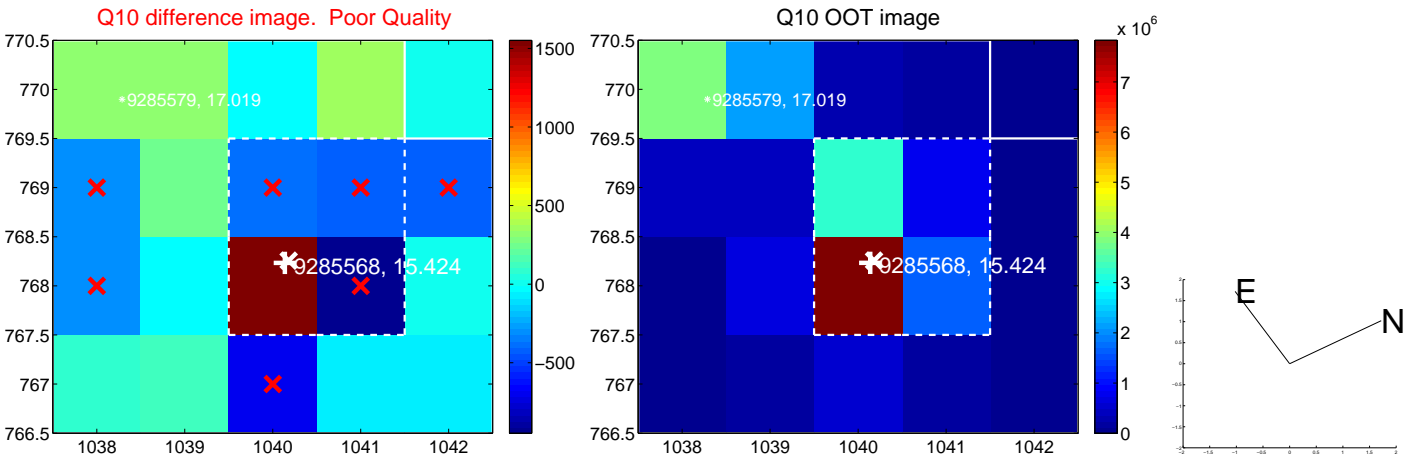
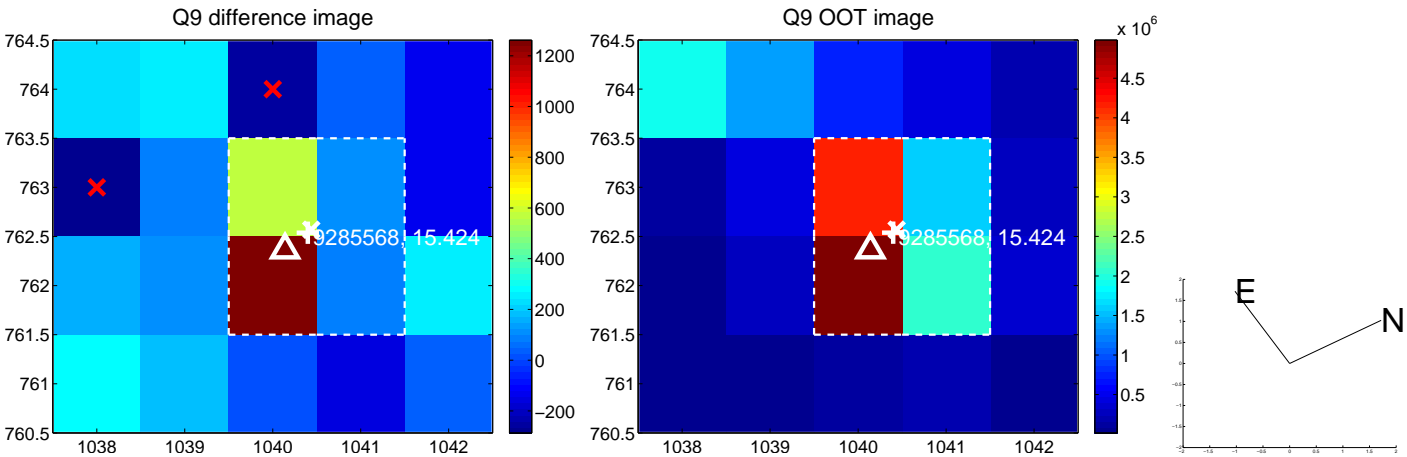
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

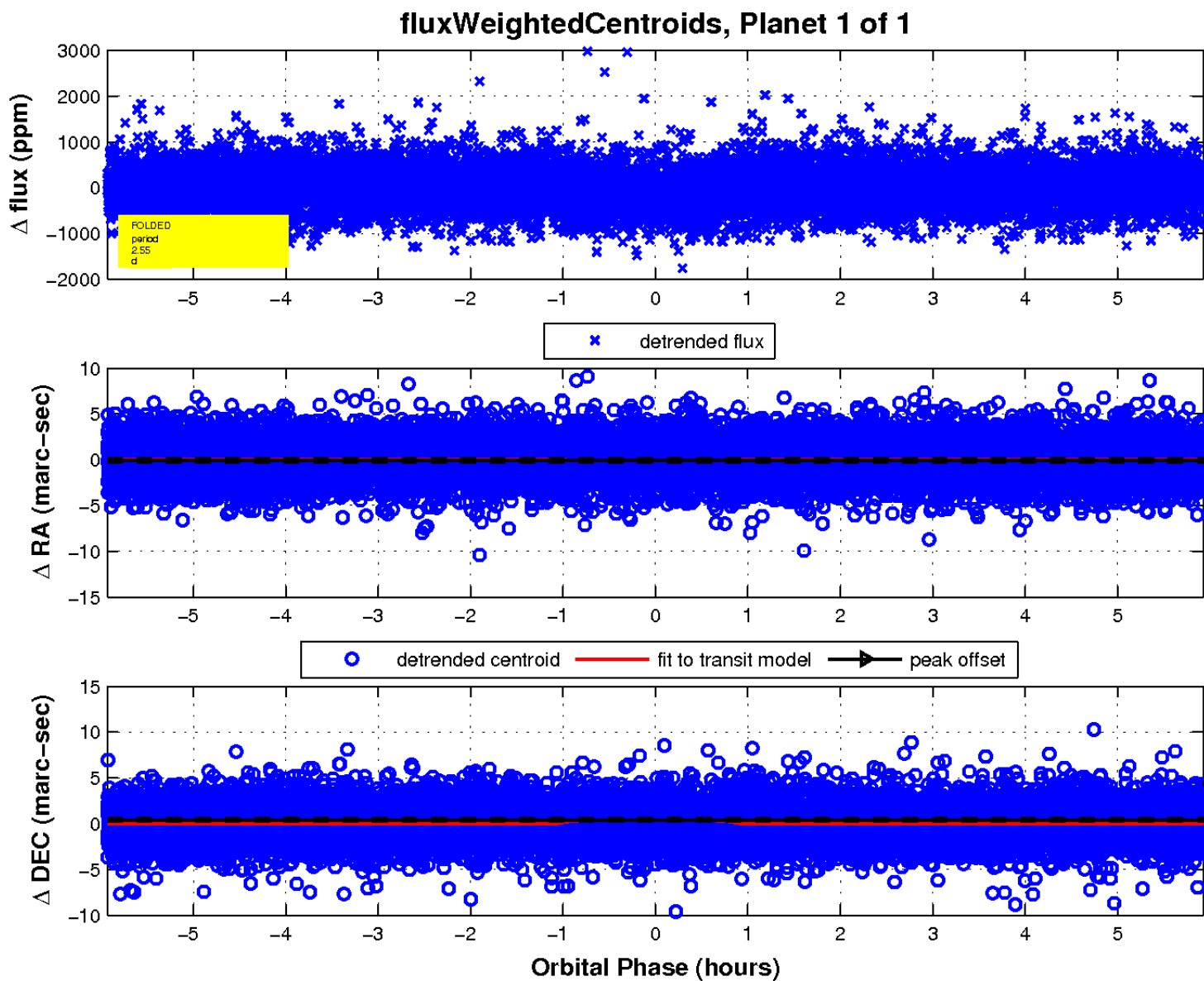
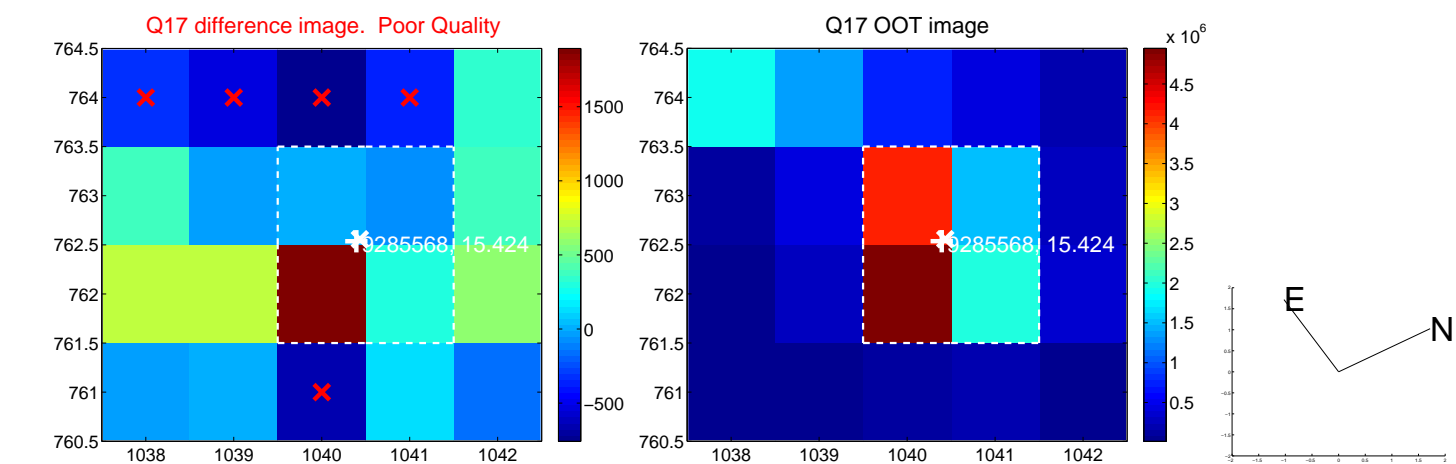


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

