

# KIC 002997459

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002997459-01	OBS	4389.01	16.336991	132.203592	215.9	3.691	10.4	11.1	0.86	5410	1.52	40.31

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002997459-01	OBS	PC	0.57	0	0	0	0	CENT_KIC_POS

**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.

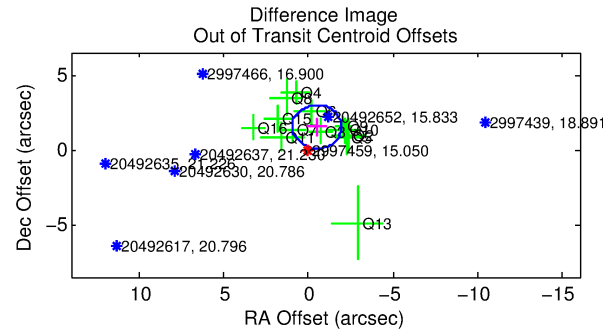
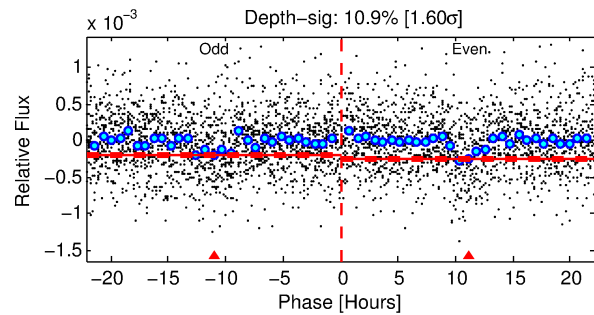
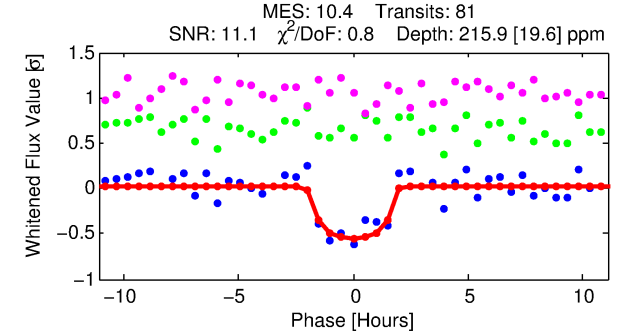
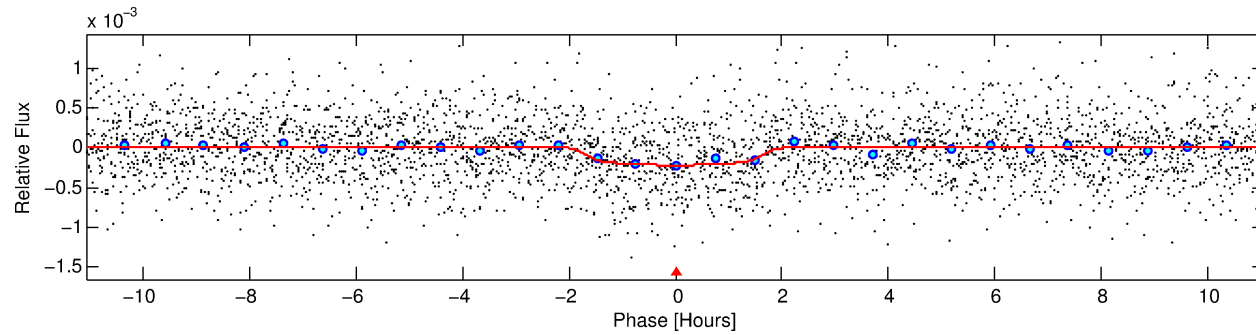
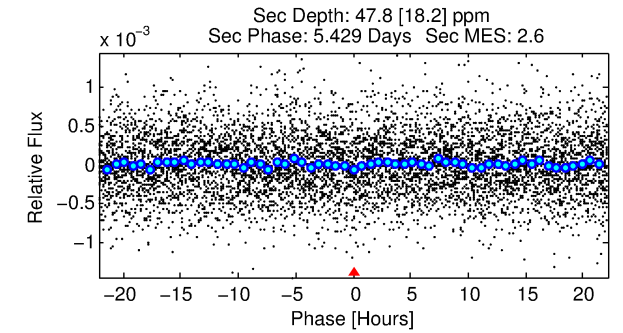
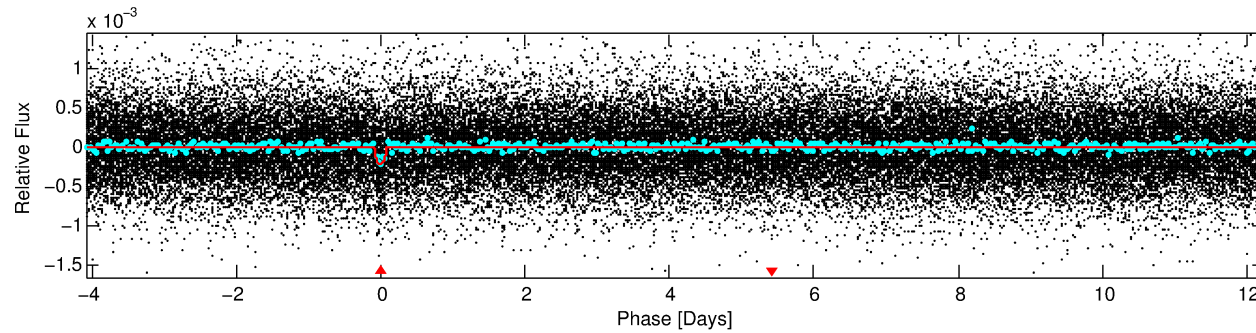
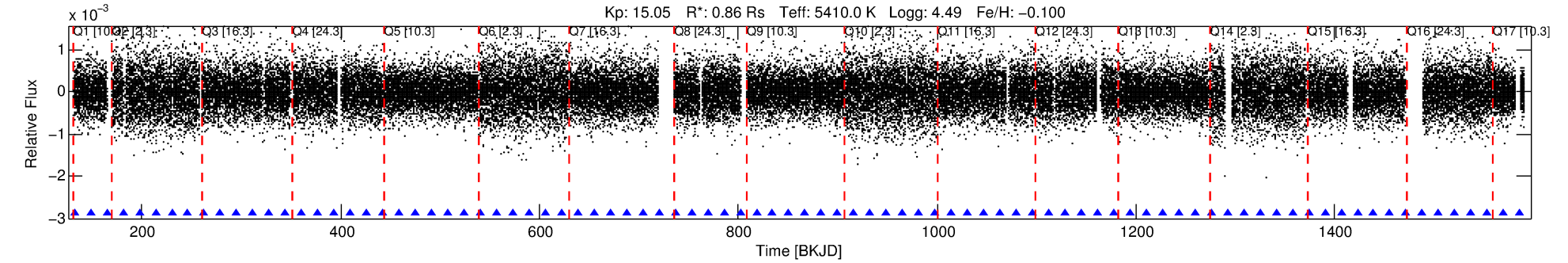
## Ephemeris Match Information For 002997459-01

No Significant Match Found

# DV One-Page Summary

KIC: 2997459 Candidate: 1 of 1 Period: 16.337 d

KOI: K04389.01 Corr: 0.973



## DV Fit Results:

Period = 16.33699 [0.00014] d  
Epoch = 132.2036 [0.0072] BKJD  
Rp/R\* = 0.0162 [0.0065]  
a/R\* = 15.83 [28.00]  
b = 0.90 [0.37]  
Seff = 40.31 [17.14]  
Teff = 643 [68] K  
Rp = 1.52 [0.74] Re  
a = 0.1185 [0.0268] AU  
Ag = 160.10 [151.93] [1.05σ]  
Teffp = 3534 [824] K [3.50σ]

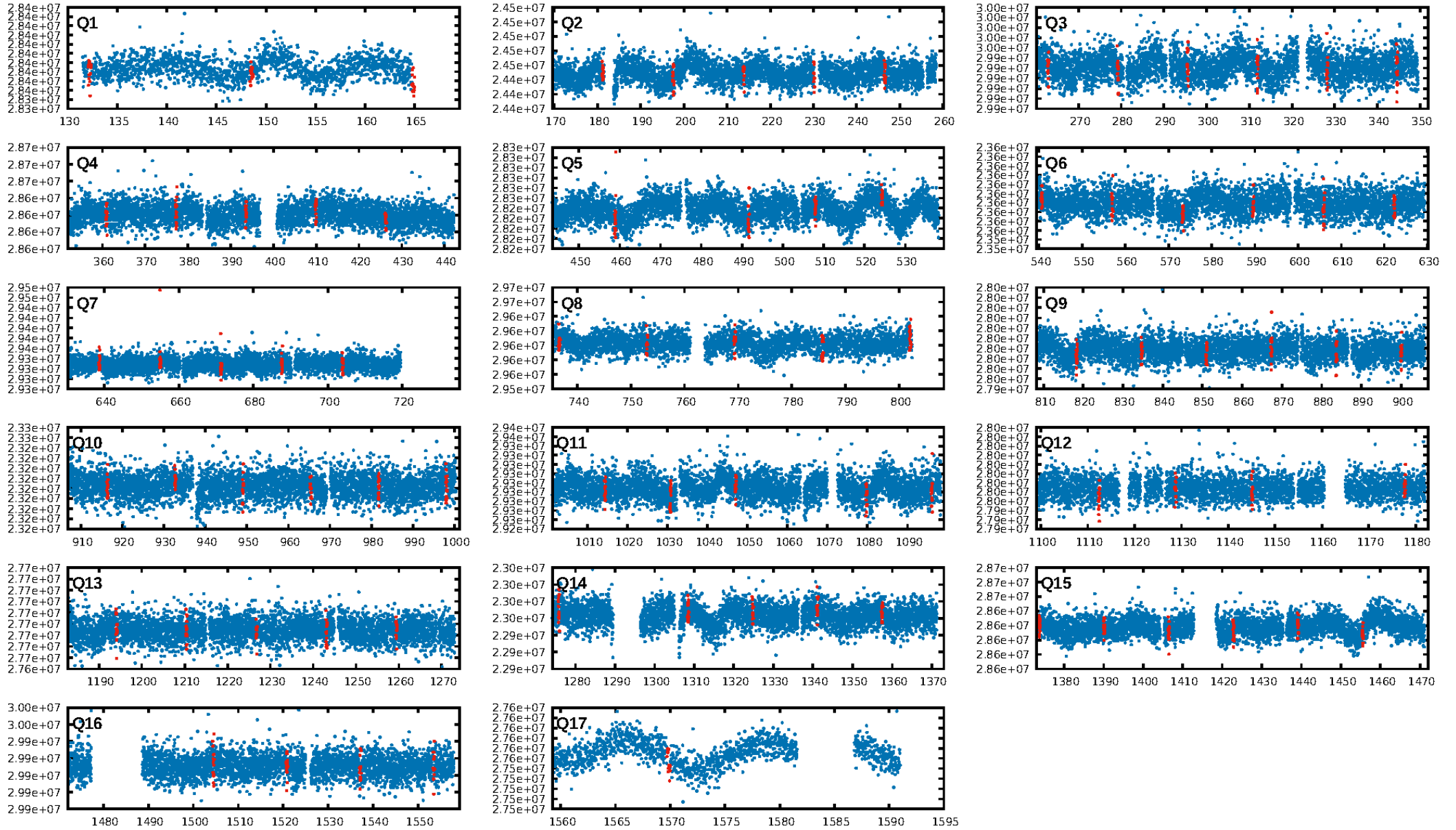
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 86.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.25e-25  
RollingBand-fgt: 1.00 [77/77]  
GhostDiagnostic-chr: 2.853  
Centroid-sig: 0.0%  
Centroid-so: 2.933 arcsec [2.39σ]  
OotOffset-rm: 1.601 arcsec [3.32σ]  
KicOffset-rm: 2.026 arcsec [4.36σ]  
OotOffset-st: 3/4/3/3 [13]  
KicOffset-st: 3/4/3/3 [13]  
DiffImageQuality-fgm: 0.31 [4/13]  
DiffImageOverlap-fno: 1.00 [17/17]

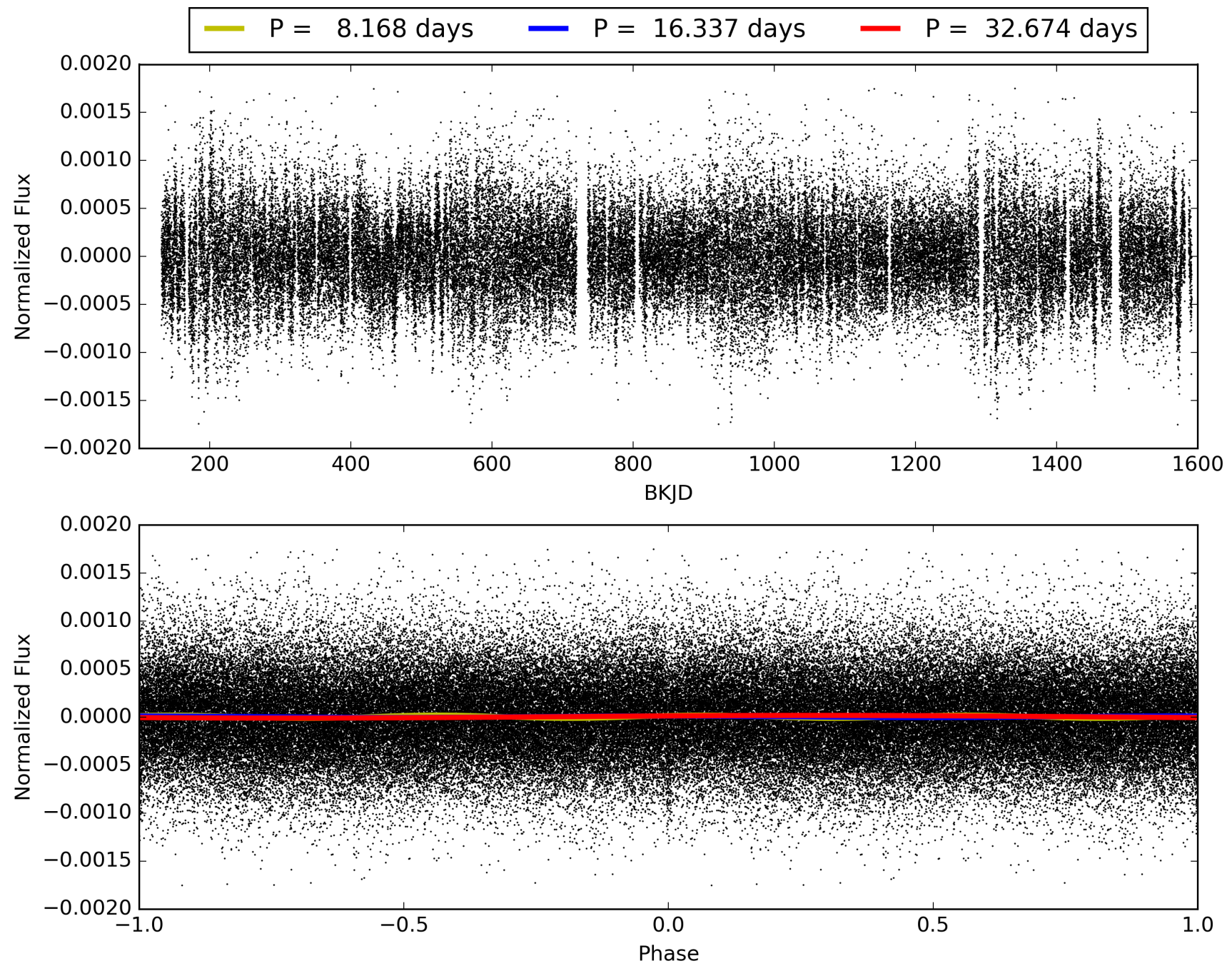
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:57:57 Z

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

# TCE 002997459-01, PDC Light Curves

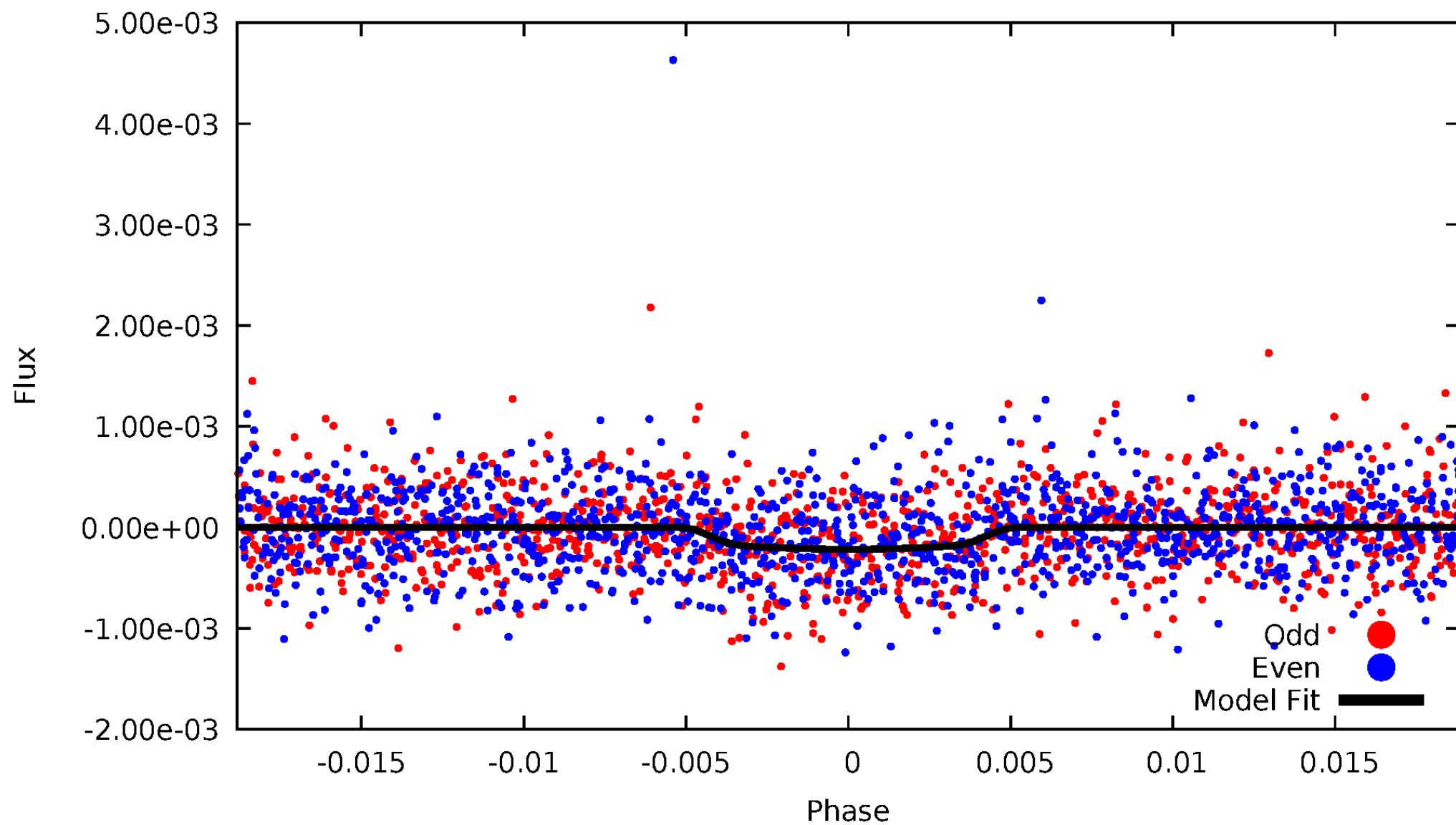


TCE 002997459-01



# DV Odd/Even

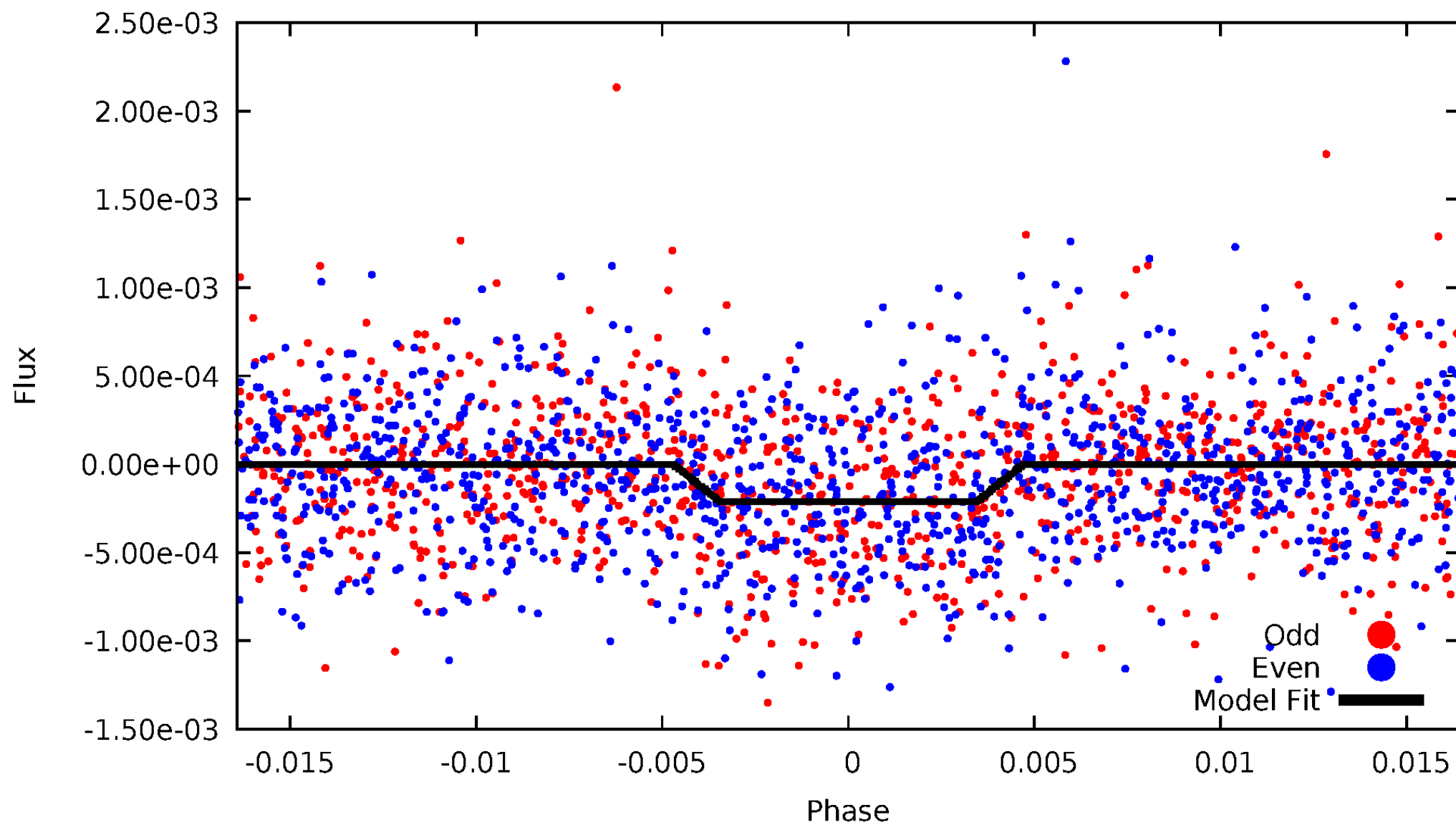
TCE 002997459-01





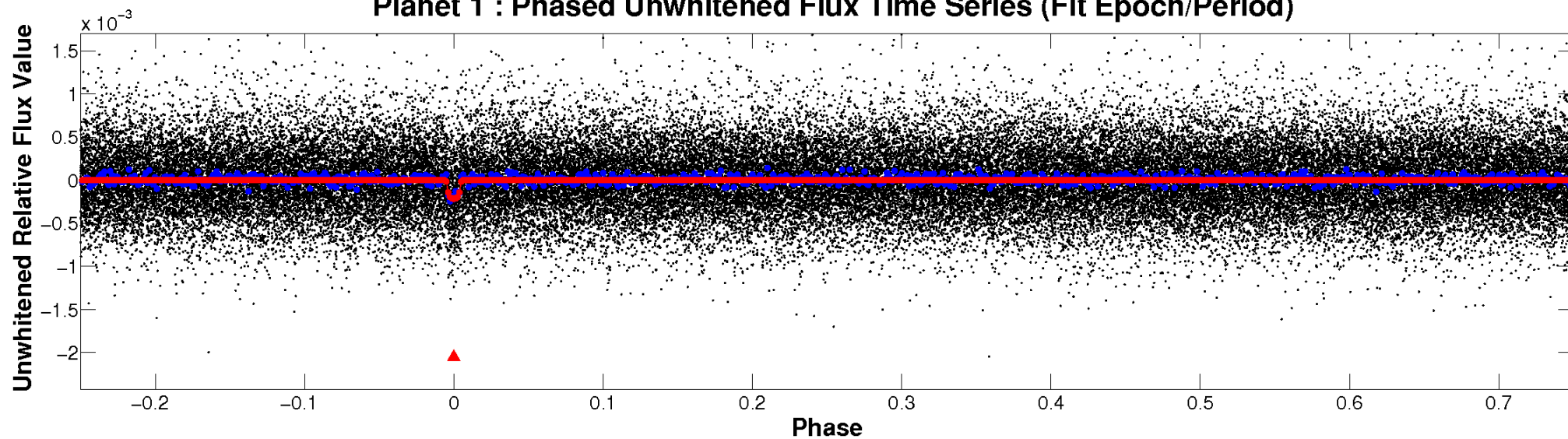
# ALT Odd/Even

TCE 002997459-01

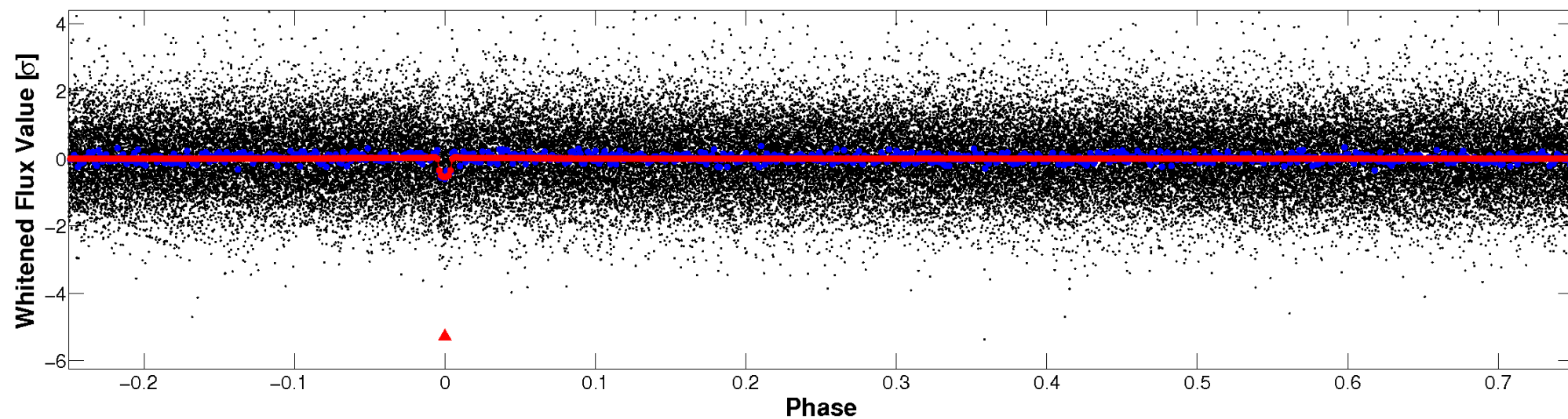


# Non-Whitened Vs. Whitened Light Curve

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

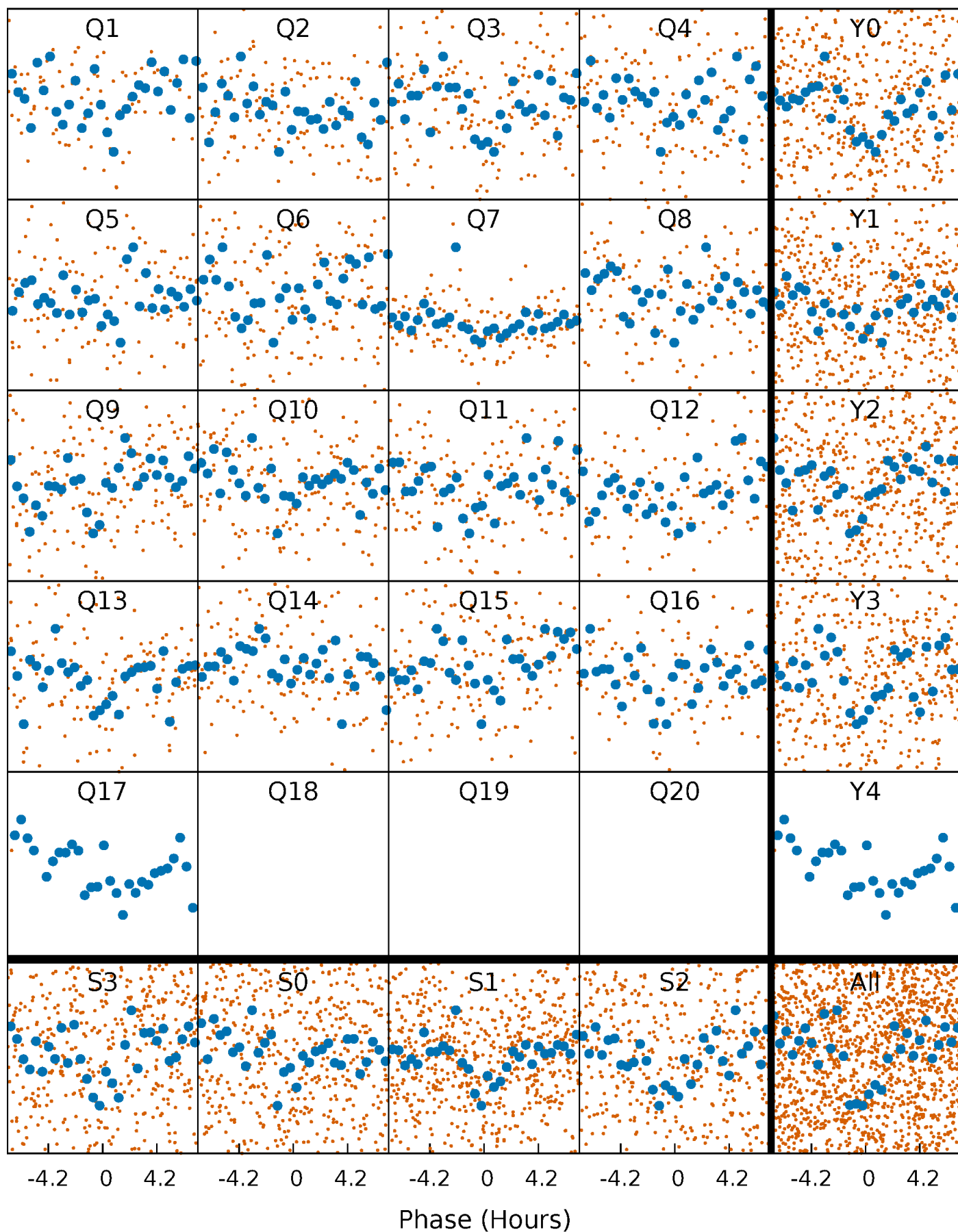


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

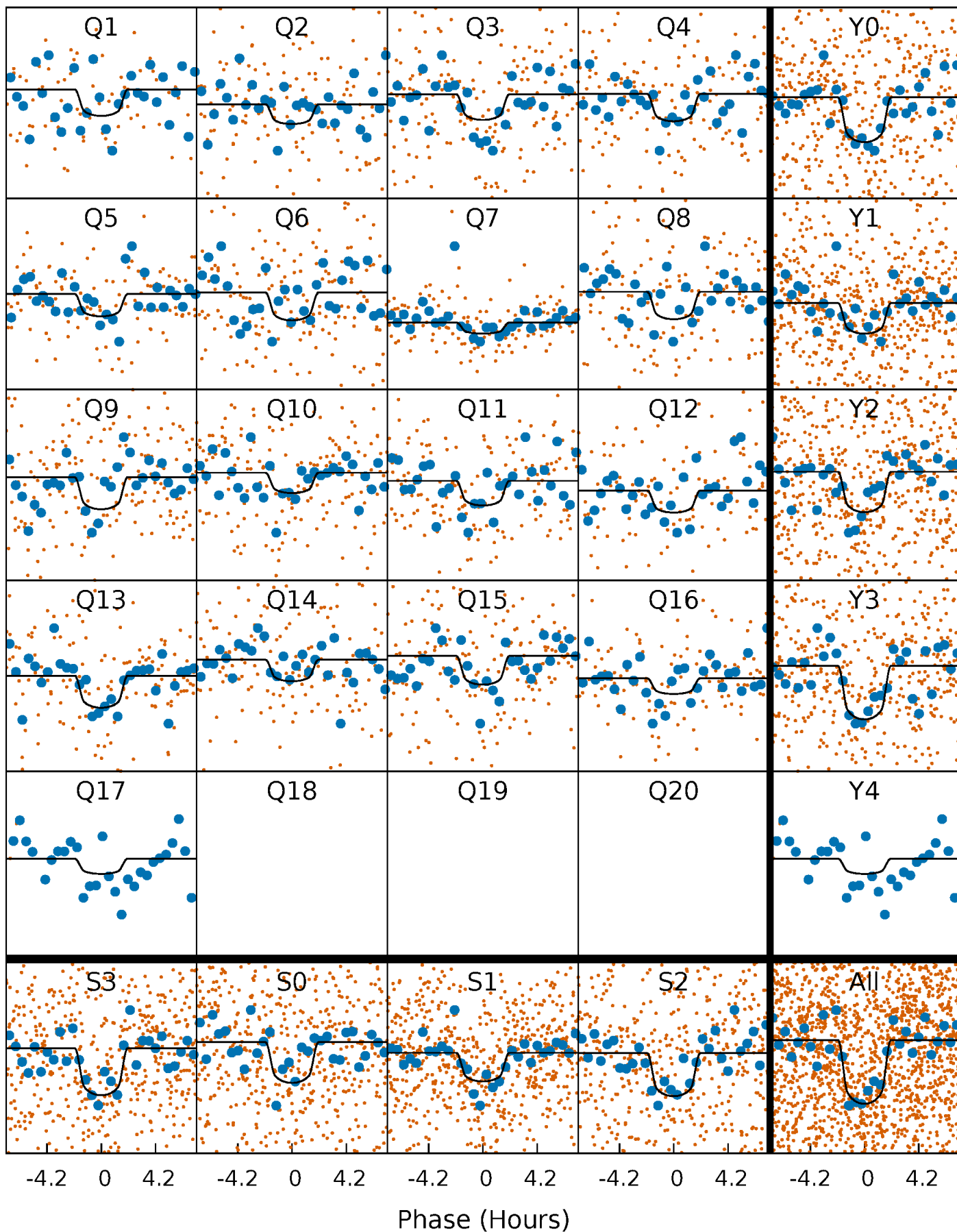
TCE 002997459-01 P= 16.336991 Days  $T_0=132.203592$  (BKJD)





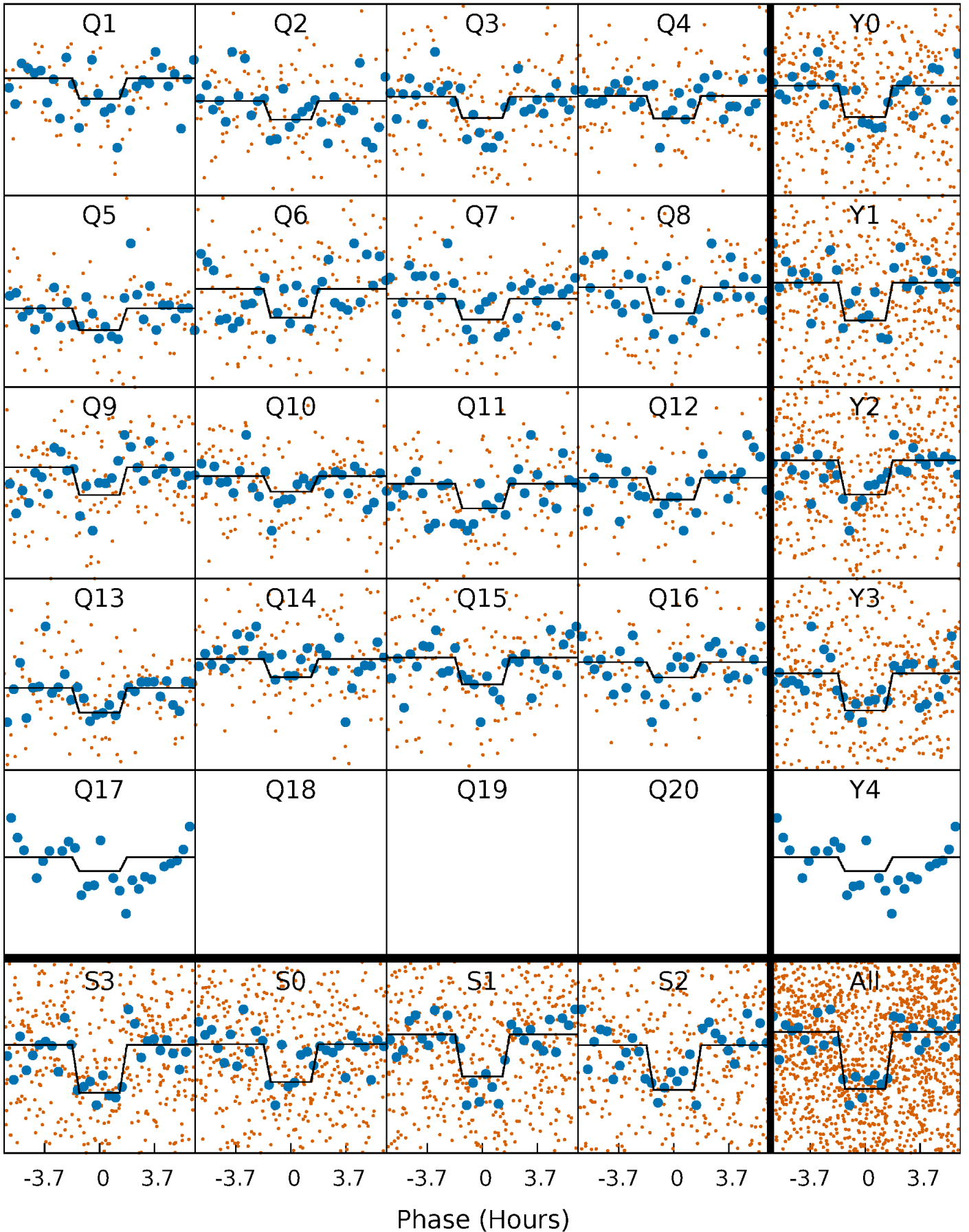
# DV Quarter-Phased Transit Curves

TCE 002997459-01 P= 16.336991 Days  $T_0=132.203592$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

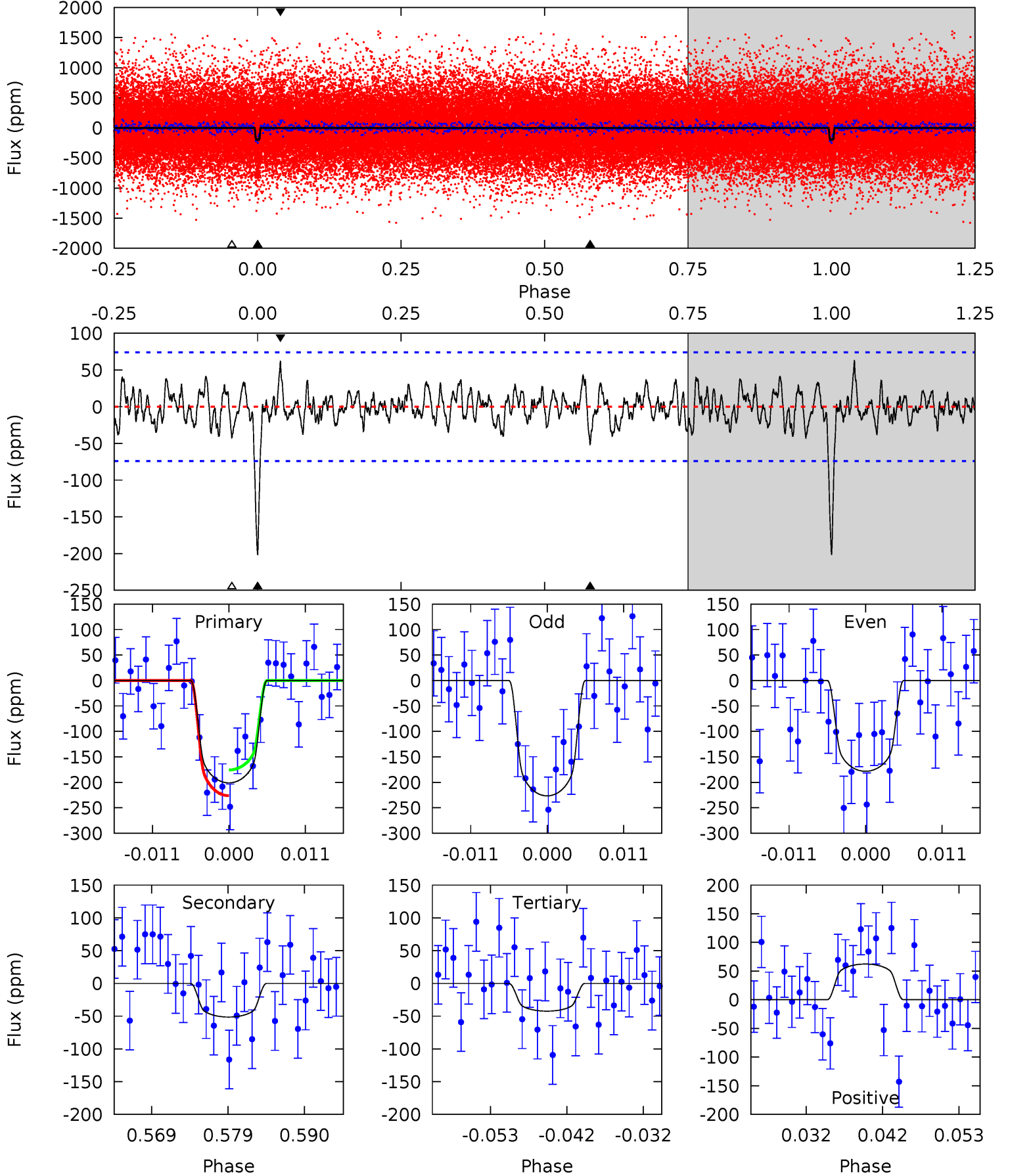
TCE 002997459-01 P= 16.337026 Days  $T_0=132.204556$  (BKJD)



# DV Model-Shift Uniqueness Test

002997459-01, P = 16.336991 Days, E = 115.866601 Days

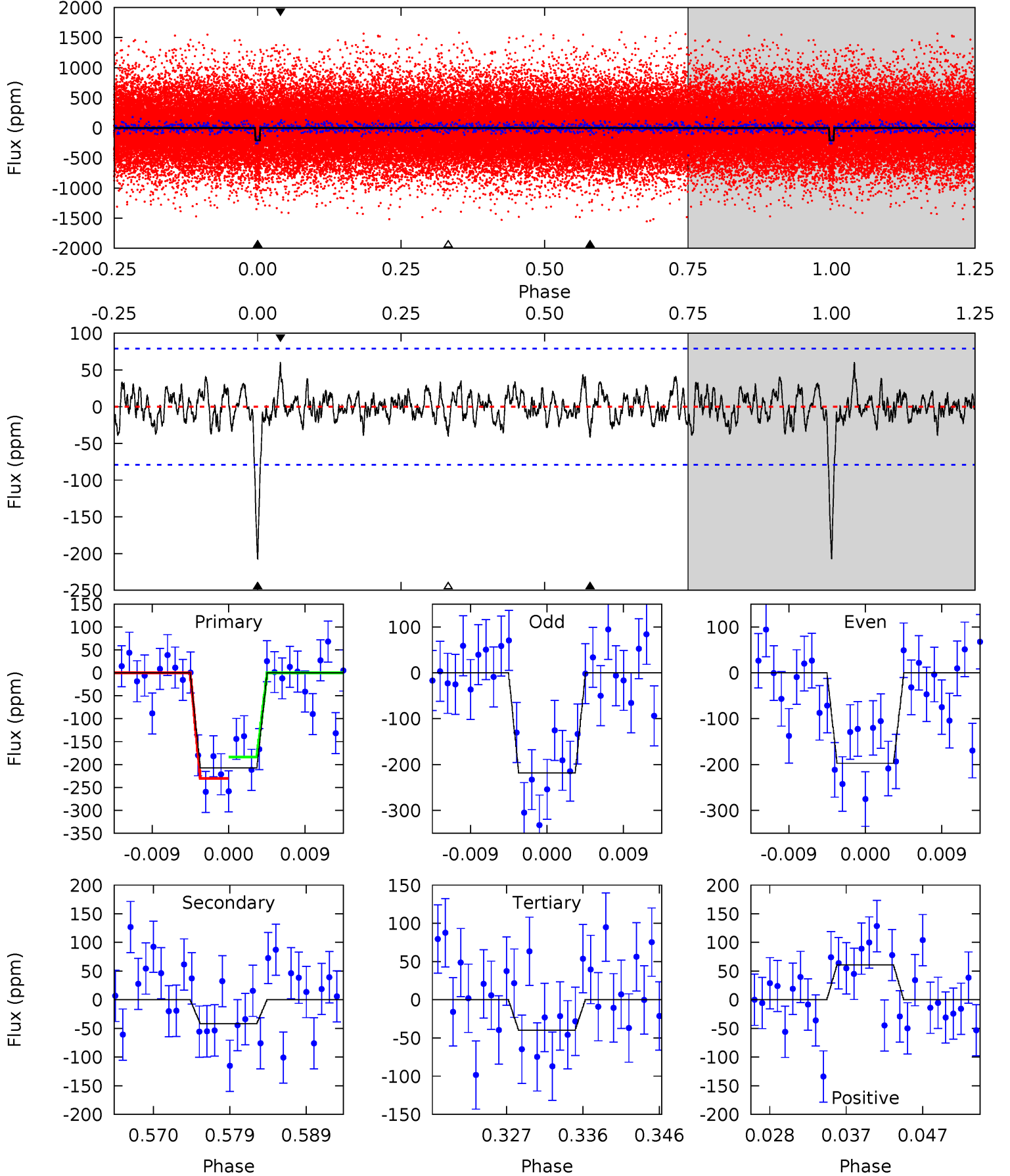
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	3.48	2.87	4.22	5.02	2.56	1.16	10.7	9.39	0.61	-0.74	1.64	1.05	0.24	1.72



# Alt Model-Shift Uniqueness Test

002997459-01, P = 16.337026 Days, E = 115.867530 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
13.2	2.66	2.55	3.87	5.04	2.60	1.03	10.7	9.33	0.11	-1.21	0.67	1.02	0.23	1.50



### Stellar Parameters For KIC 002997459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5410^{+334}_{-371}$	$4.490^{+0.094}_{-0.175}$	$-0.100^{+0.300}_{-0.300}$	$0.859^{+0.235}_{-0.126}$	$0.834^{+0.136}_{-0.094}$	$1.851^{+0.778}_{-0.891}$
	+6%/-7%	+2%/-4%	+300%/-300%	+27%/-15%	+16%/-11%	+42%/-48%
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 002997459-01 / KOI 4389.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-51 \pm 15$	$1.56^{+0.67}_{-0.59}$	$909^{+79}_{-72}$	$3916^{+804}_{-527}$	$167^{+275}_{-95}$
Alt.	$-42 \pm 16$	$1.40^{+0.67}_{-0.64}$	$908^{+82}_{-75}$	$3849^{+1023}_{-541}$	$148^{+371}_{-87}$

$T_{\text{max}}$  = 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

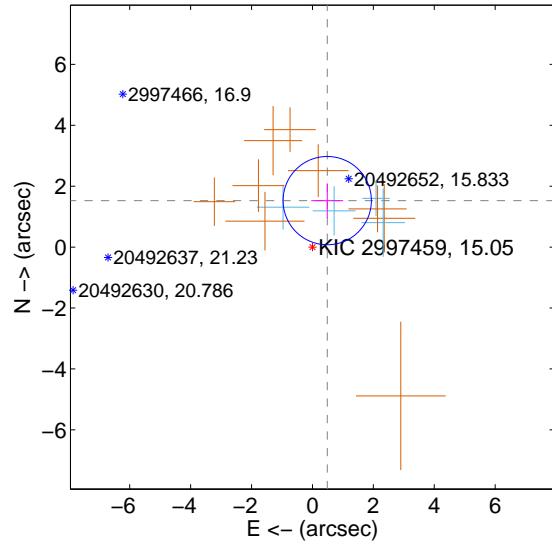
Supplemental centroid analysis for 002997459-01. Kepler magnitude: 15.05. Transit SNR 11.13

There are 4 quarters with good PRF difference image offsets

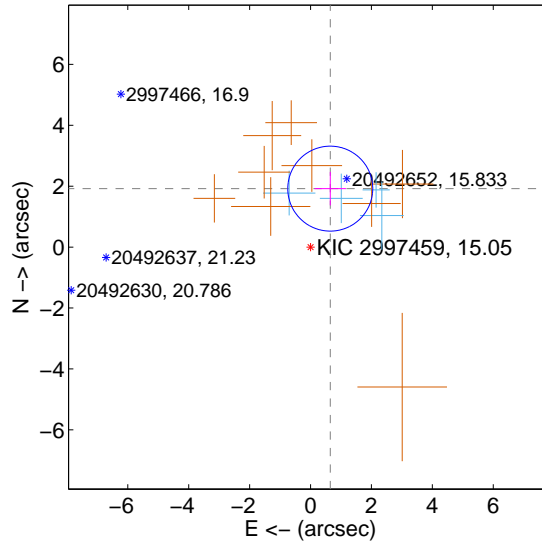
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.601 <math>\pm</math> 0.483</b>	<b>3.32</b>	-0.485 $\pm$ 0.524	1.526 $\pm$ 0.567
PRF-fit source offset from KIC position	<b>2.026 <math>\pm</math> 0.465</b>	<b>4.36</b>	-0.648 $\pm$ 0.516	1.919 $\pm$ 0.548
photometric centroid source offset	2.93 $\pm$ 1.23	2.39	0.10 $\pm$ 1.31	2.93 $\pm$ 1.23

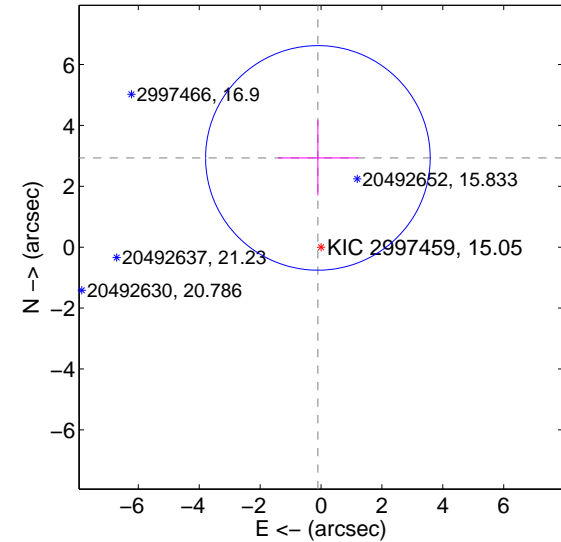
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

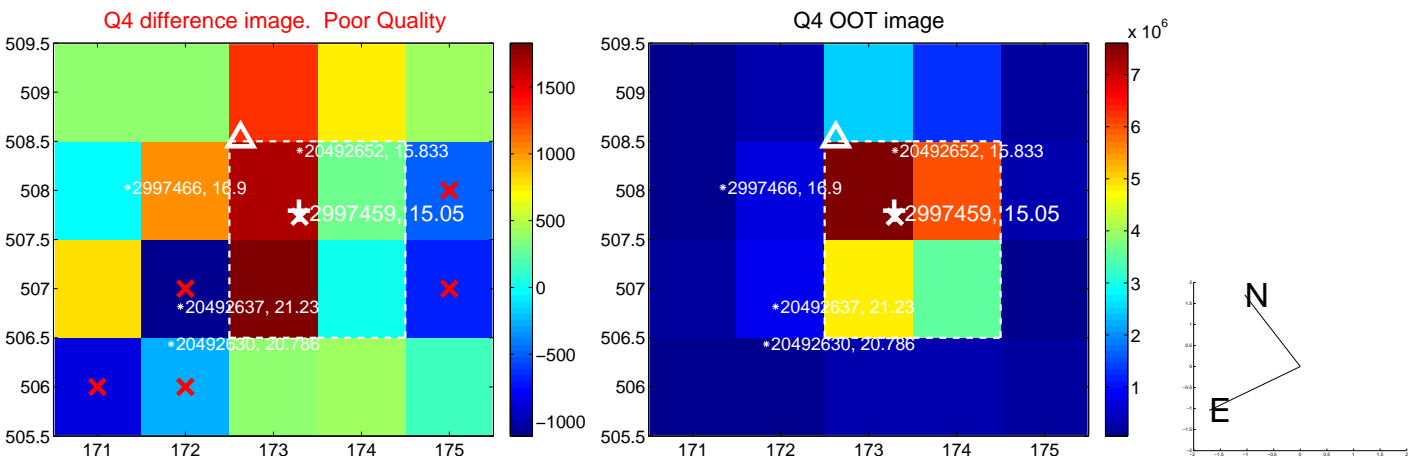
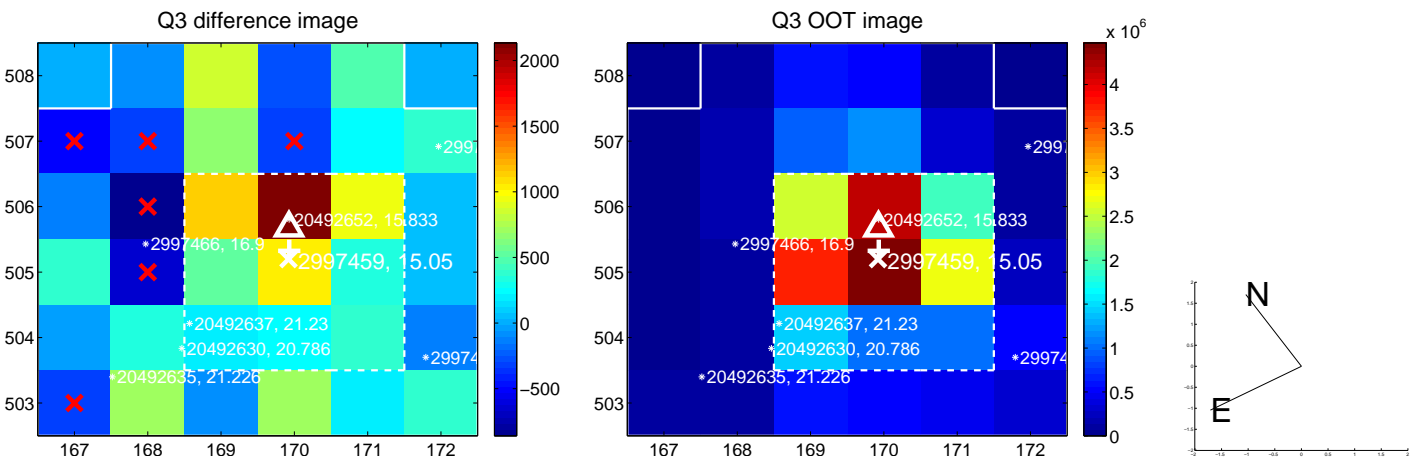
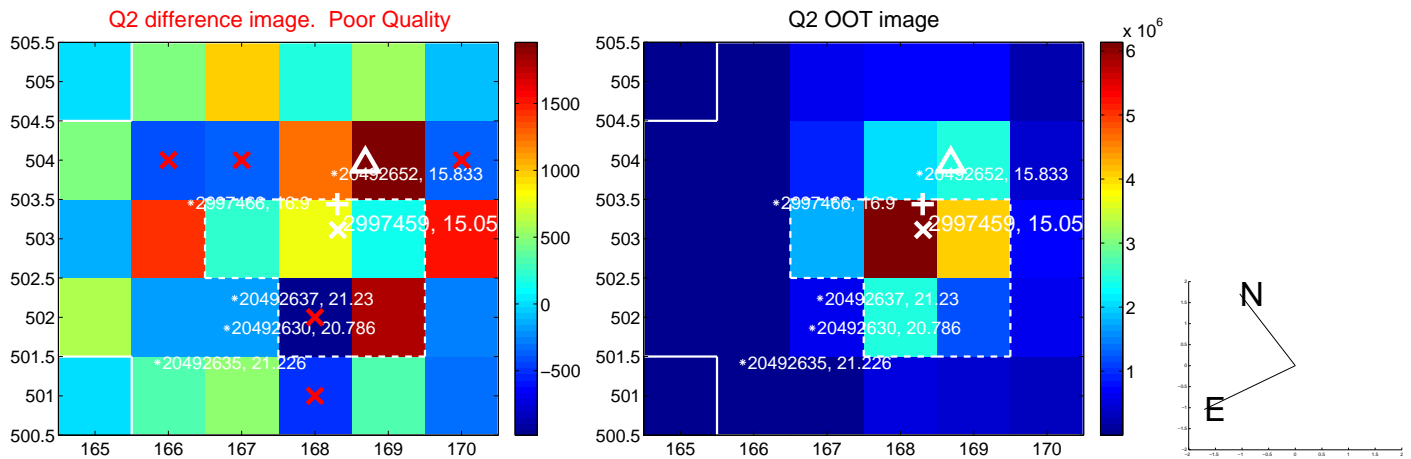
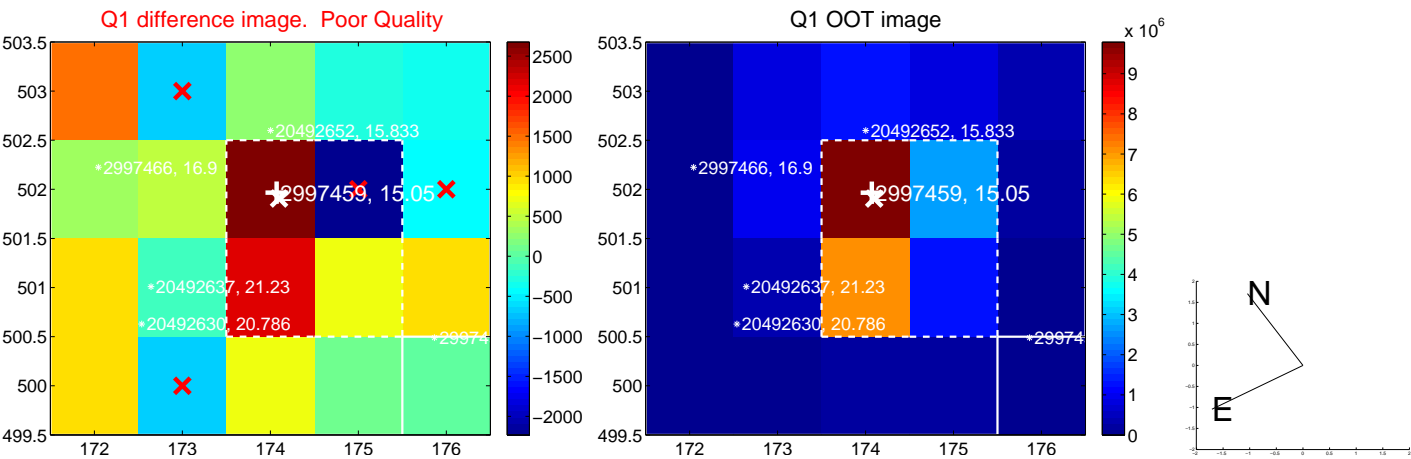


offset from photometric centroids

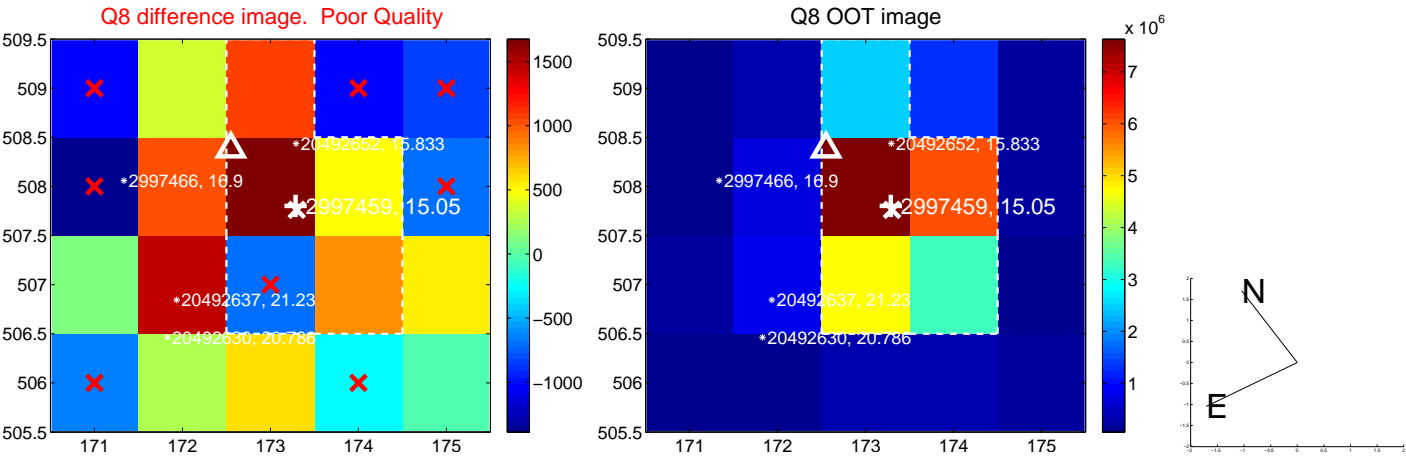
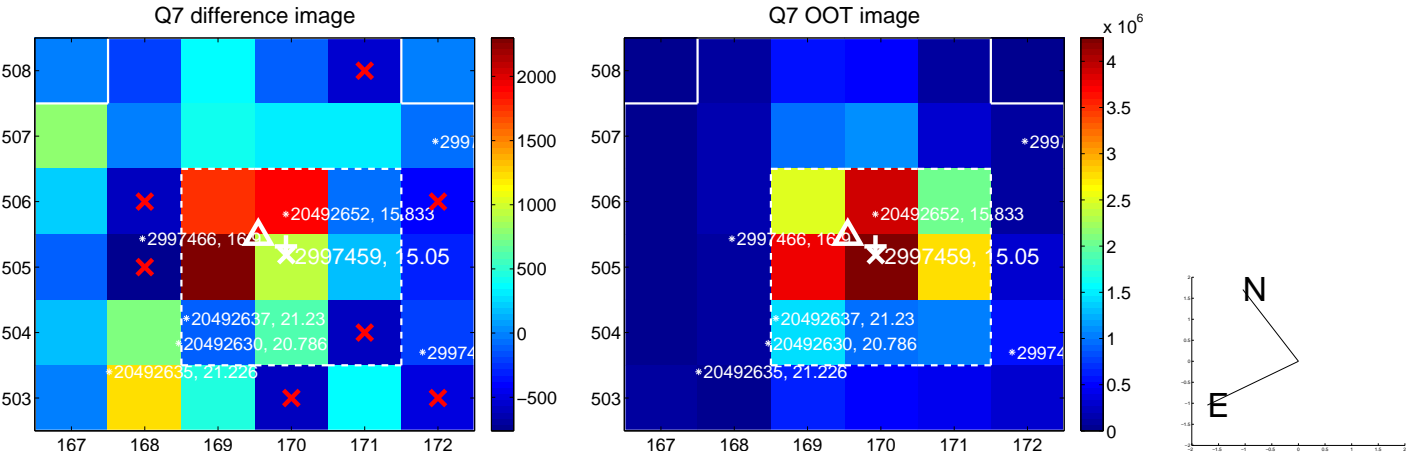
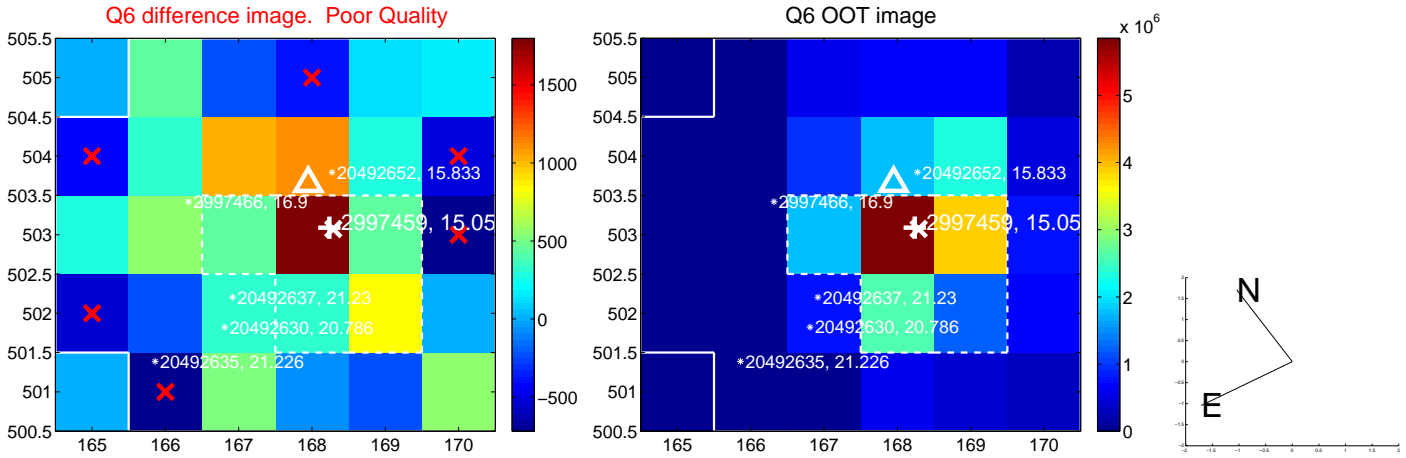
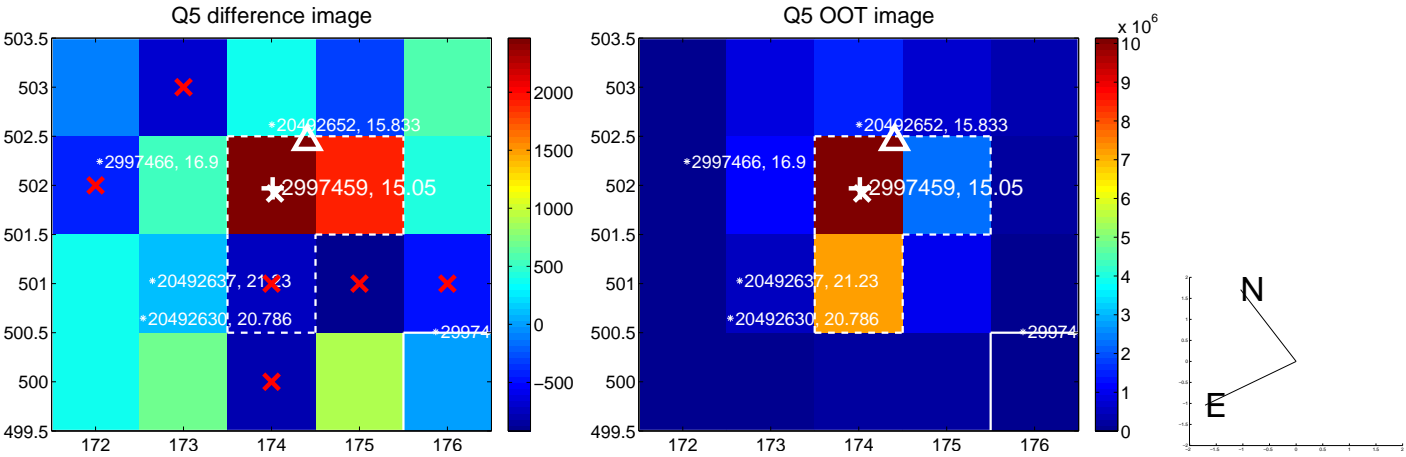


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

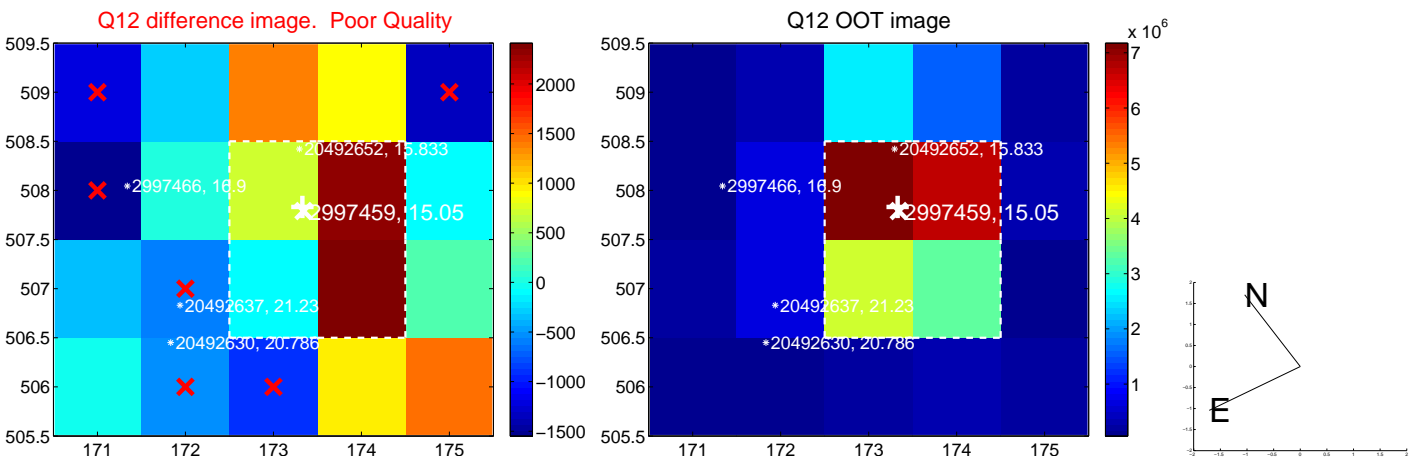
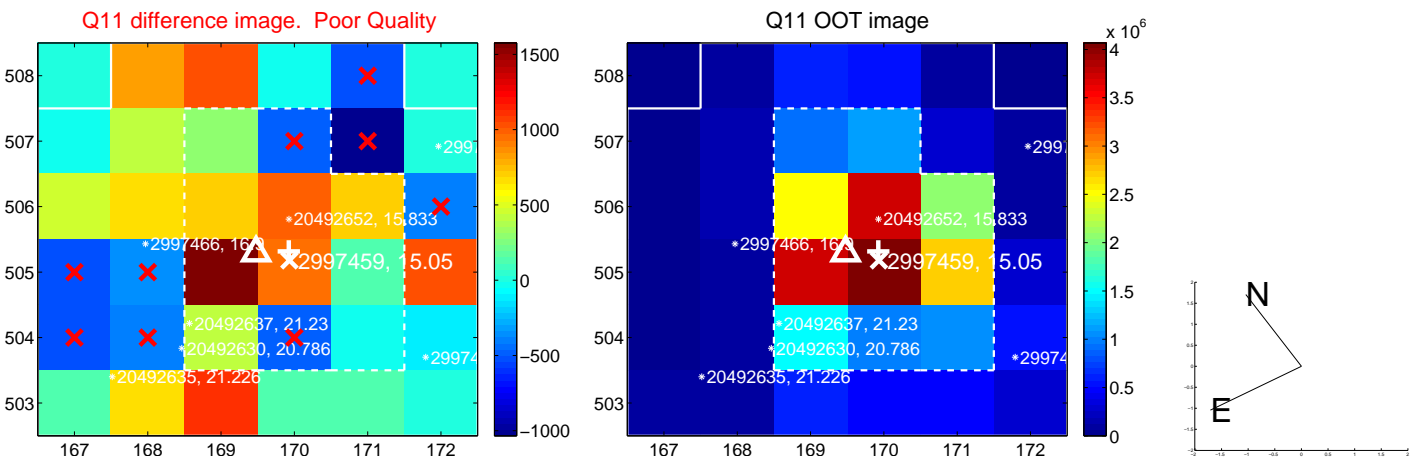
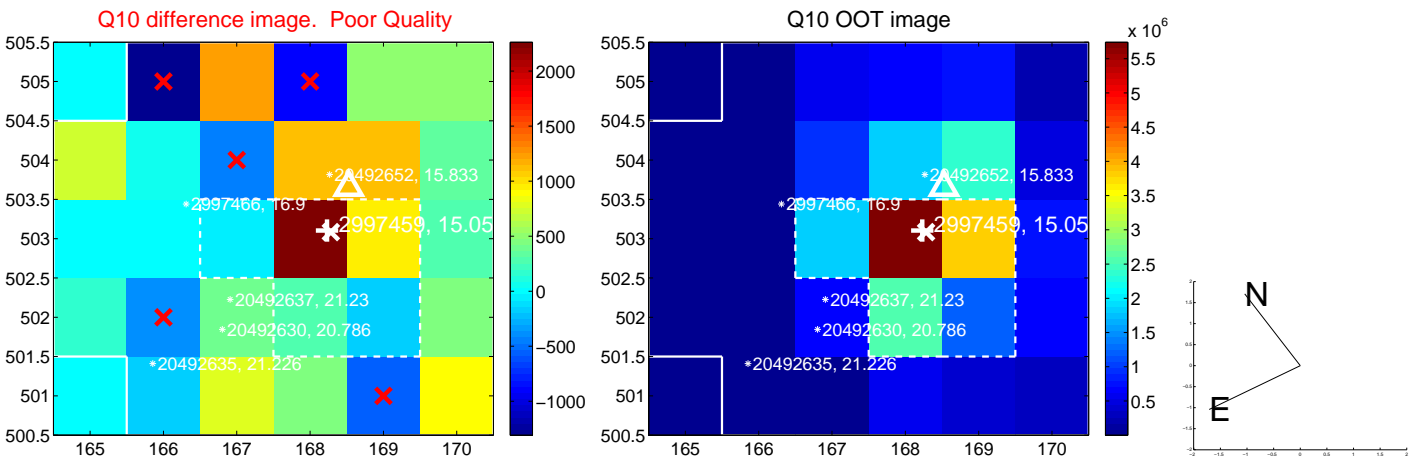
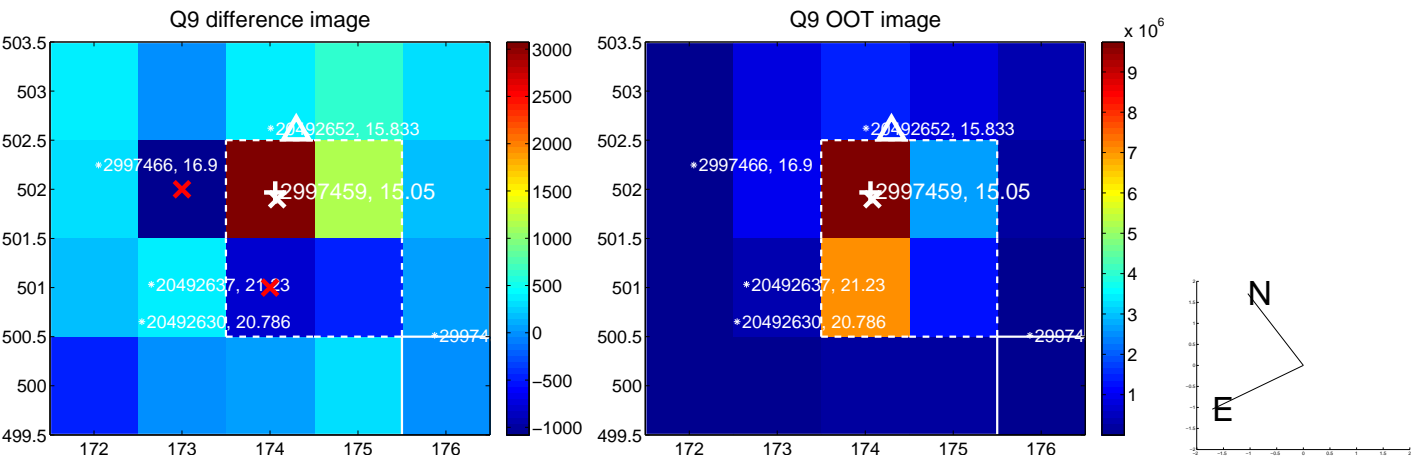
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



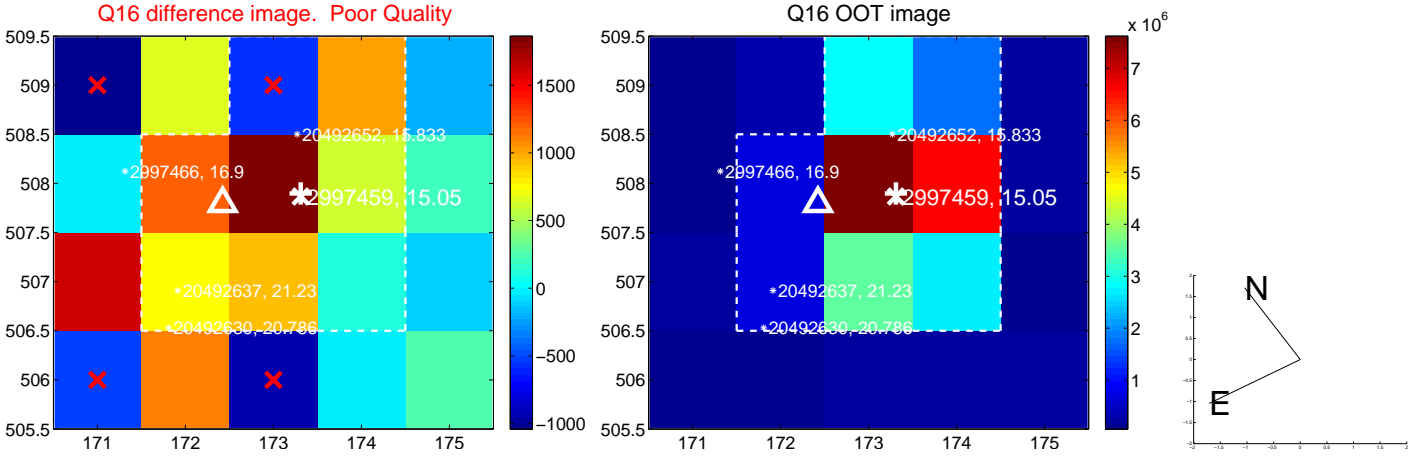
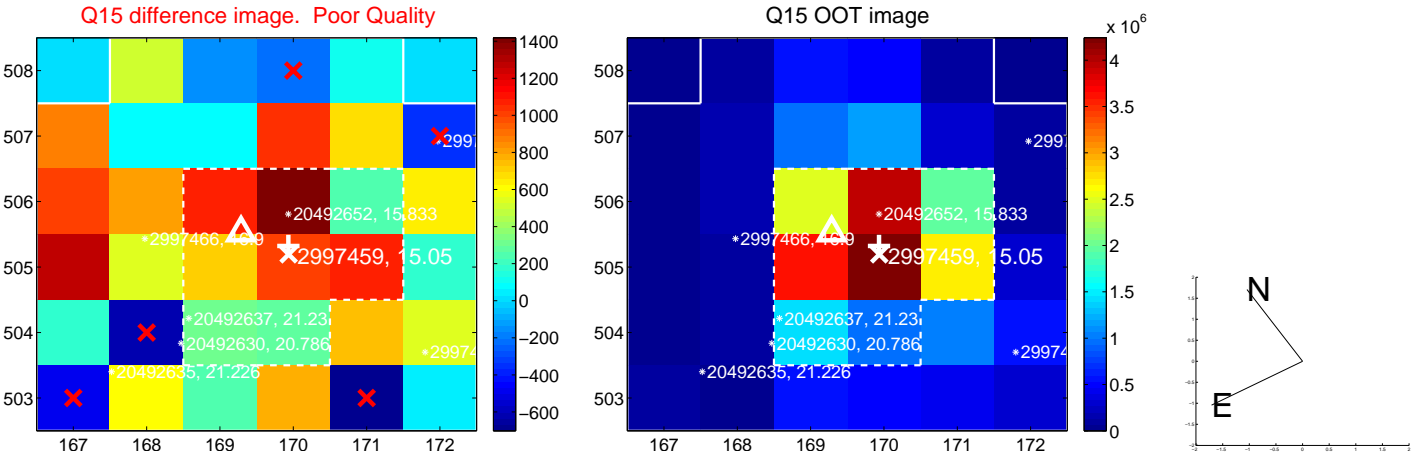
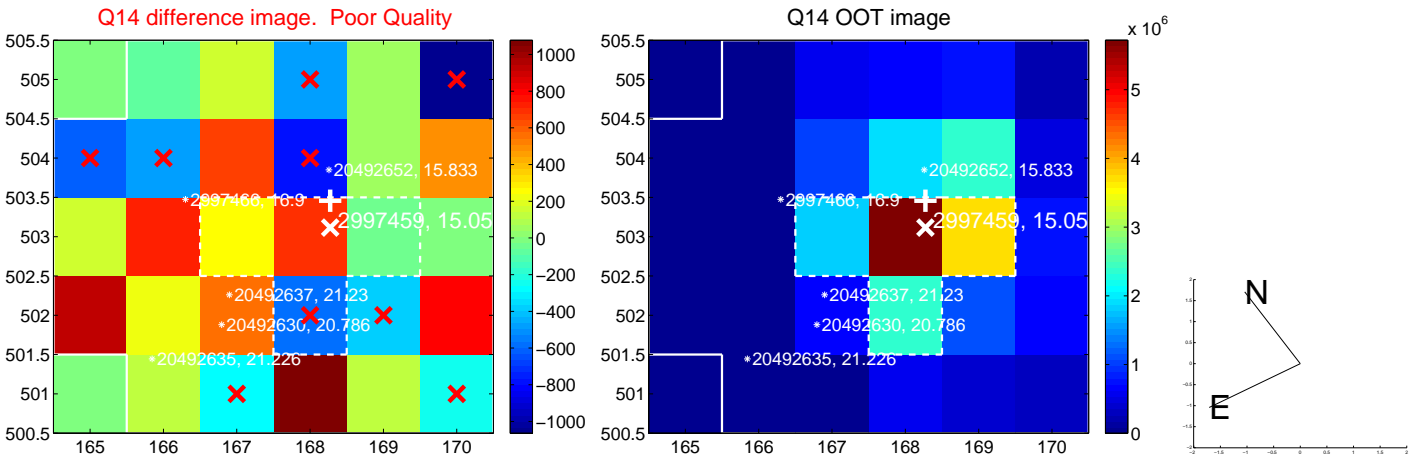
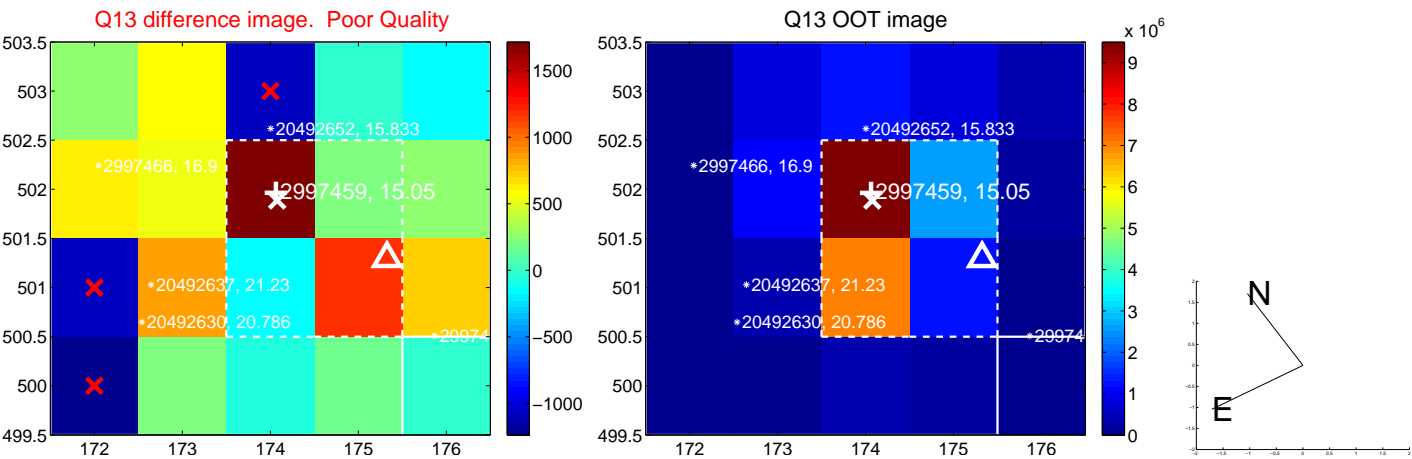
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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







UKIRT Image

