

# KIC 009697131

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009697131-01	OBS	2706.01	3.097558	131.561899	77.7	4.799	29.3	30.1	1.89	6329	1.95	2386.44

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009697131-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

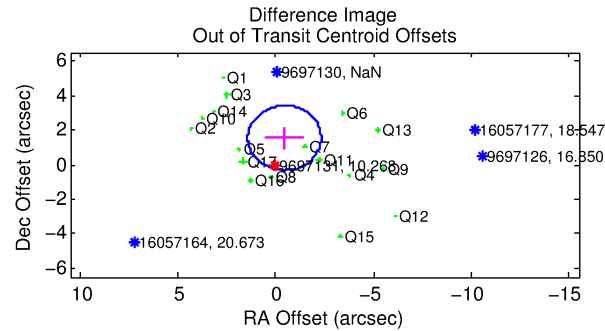
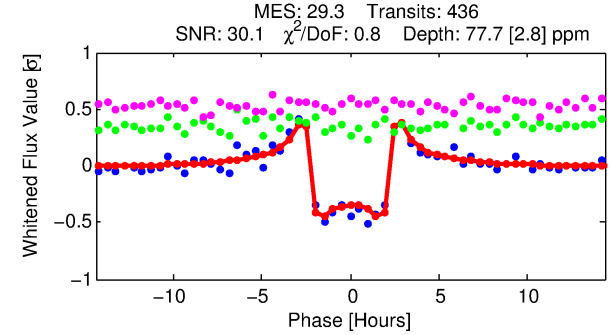
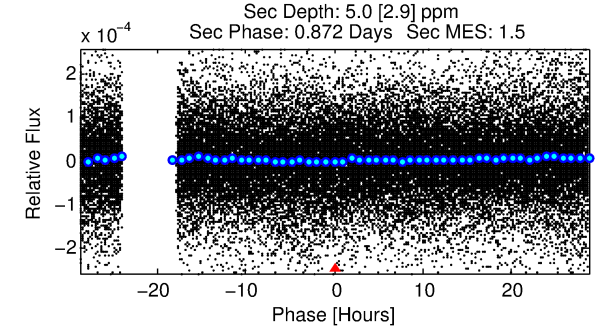
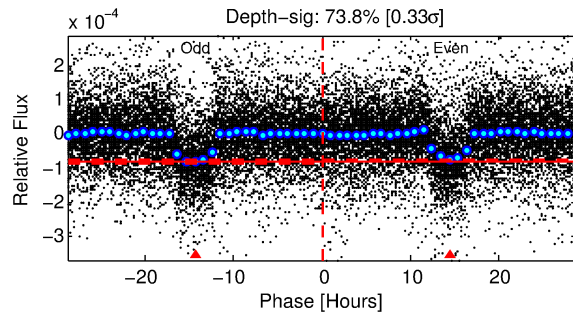
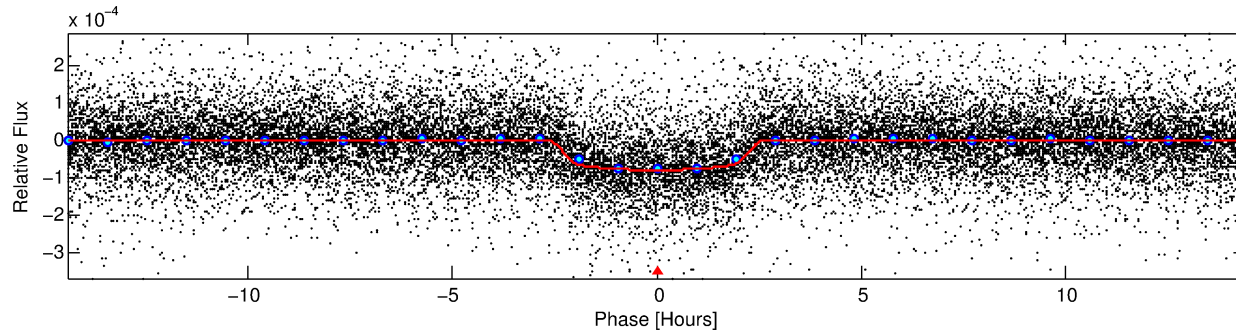
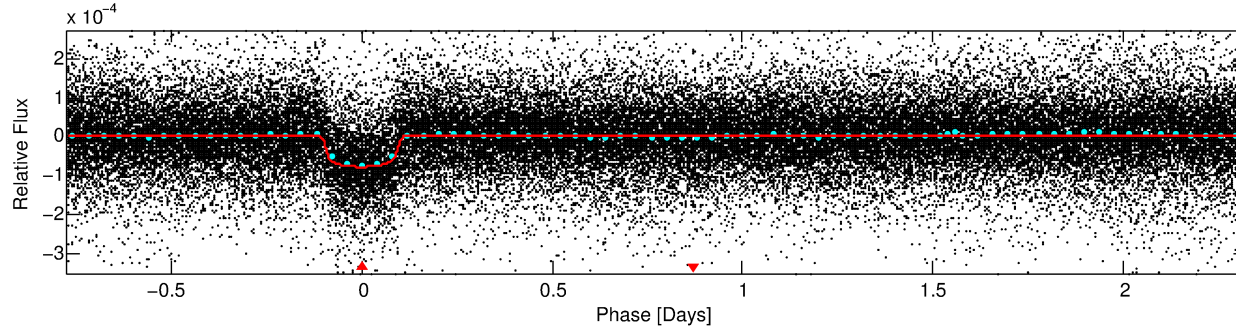
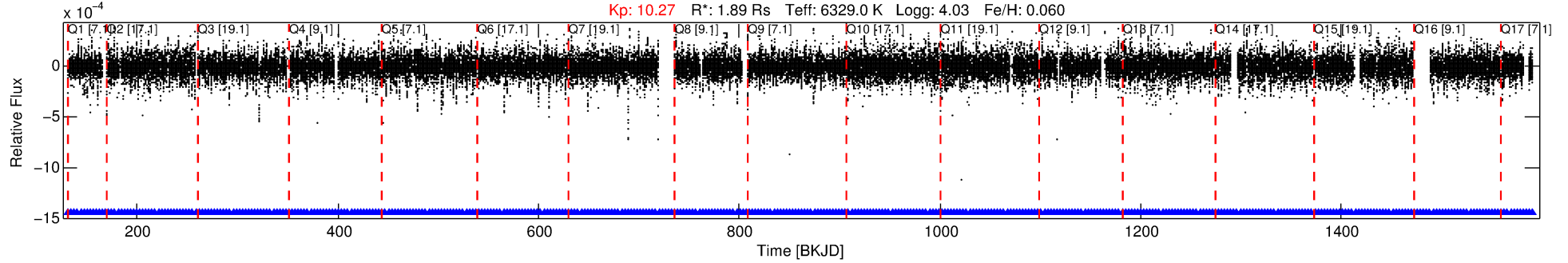
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009697131-01

No Significant Match Found

# DV One-Page Summary

KIC: 9697131 Candidate: 1 of 1 Period: 3.098 d  
KOI: K02706.01 Corr: 0.978



## DV Fit Results:

Period = 3.09756 [0.00000] d  
Epoch = 131.5619 [0.0008] BKJD  
Rp/R\* = 0.0095 [0.0005]  
a/R\* = 2.44 [0.57]  
b = 0.90 [0.06]  
Seff = 2386.44 [160.64]  
Teq = 1782 [30] K  
Rp = 1.95 [0.15] Re  
a = 0.0463 [0.0017] AU  
Ag = 1.54 [0.93] [0.58 $\sigma$ ]  
Teffp = 3070 [464] K [2.77 $\sigma$ ]

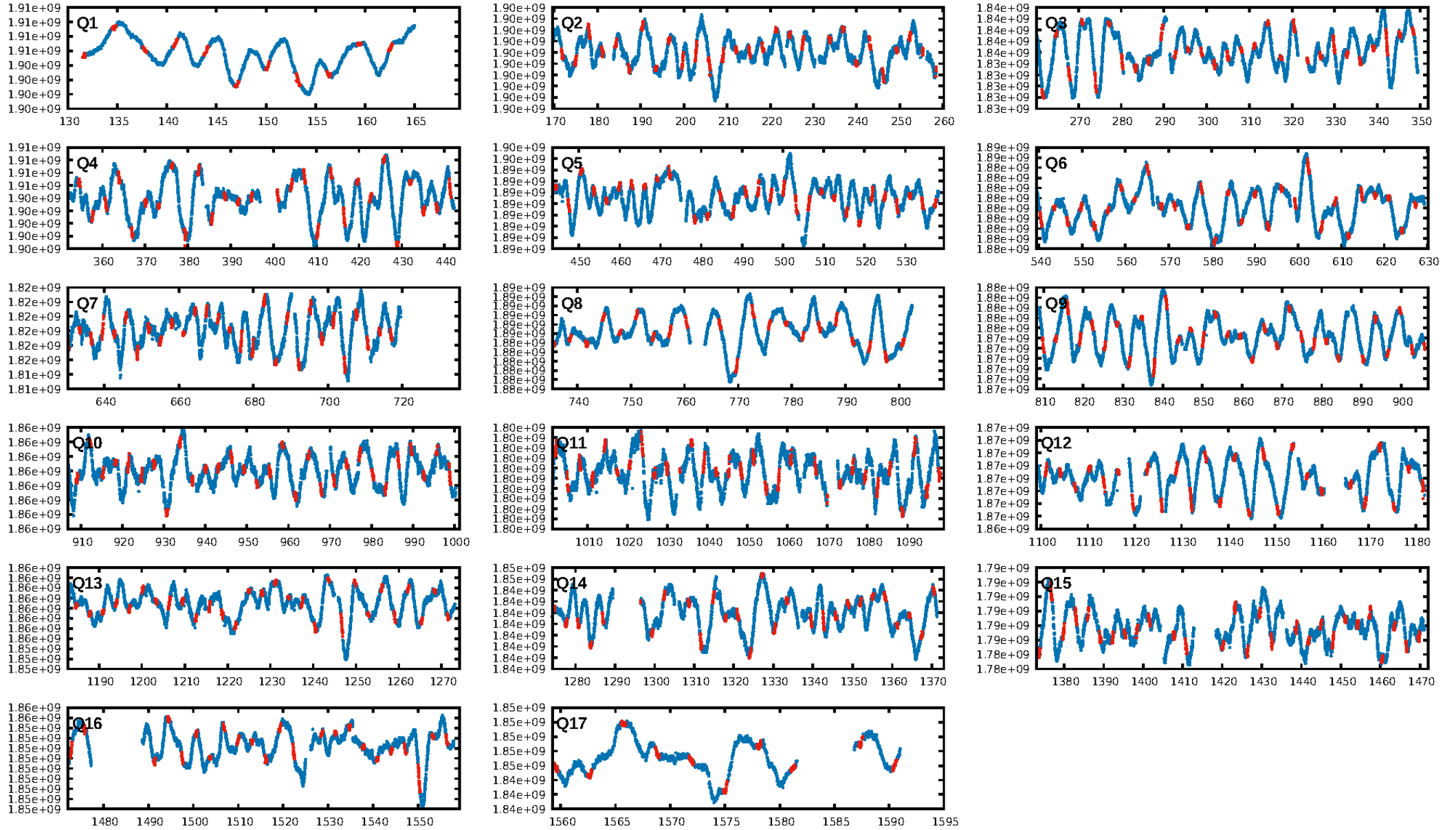
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.62e-160  
RollingBand-fgt: 1.00 [415/415]  
GhostDiagnostic-chr: 2.469  
Centroid-sig: N/A  
Centroid-so: 0.966 arcsec [4.15 $\sigma$ ]  
OotOffset-rm: 1.610 arcsec [2.58 $\sigma$ ]  
KicOffset-rm: 1.732 arcsec [3.06 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.24 [4/17]  
DiffImageOverlap-fno: 1.00 [17/17]

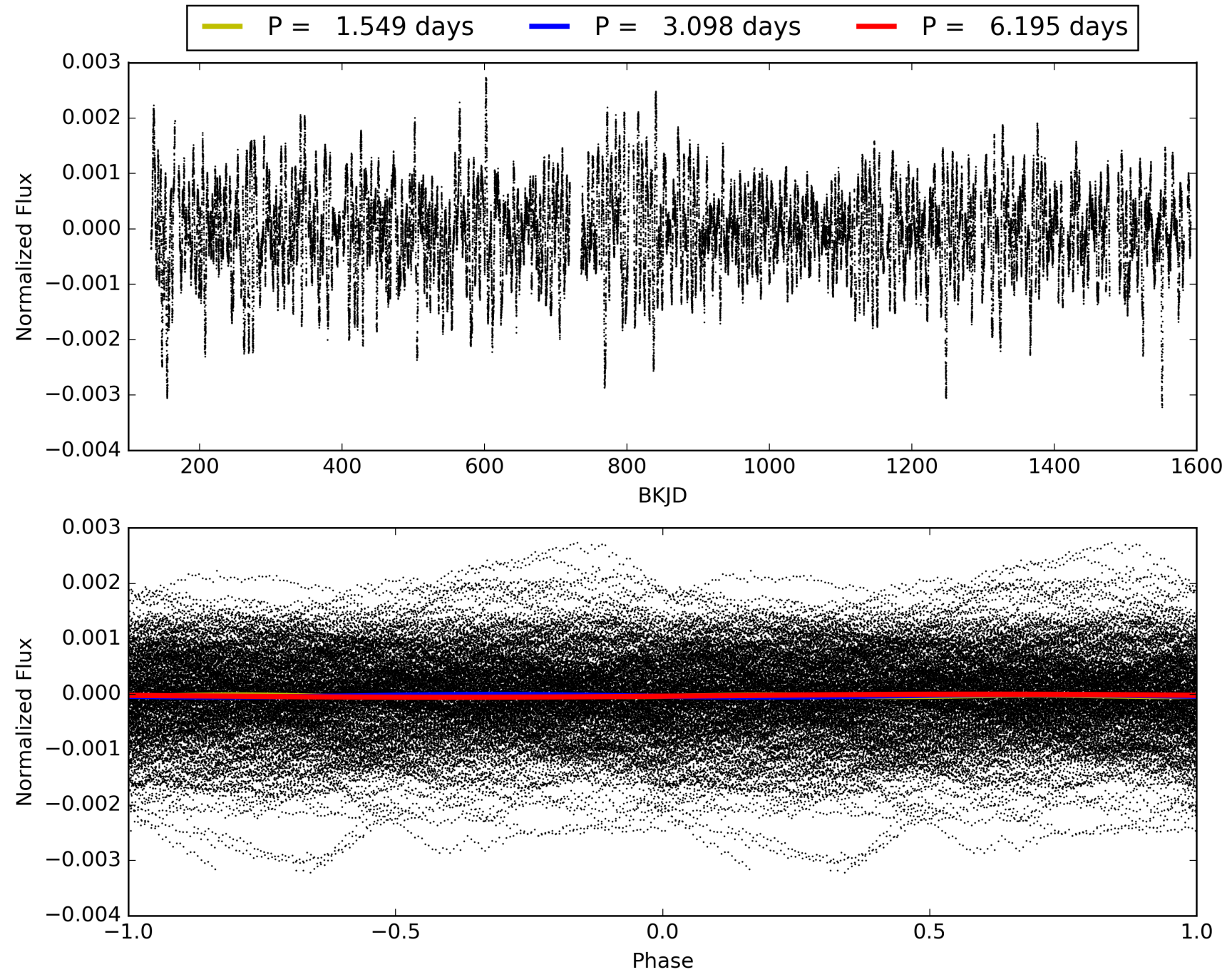
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:01:09 Z

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

# TCE 009697131-01, PDC Light Curves

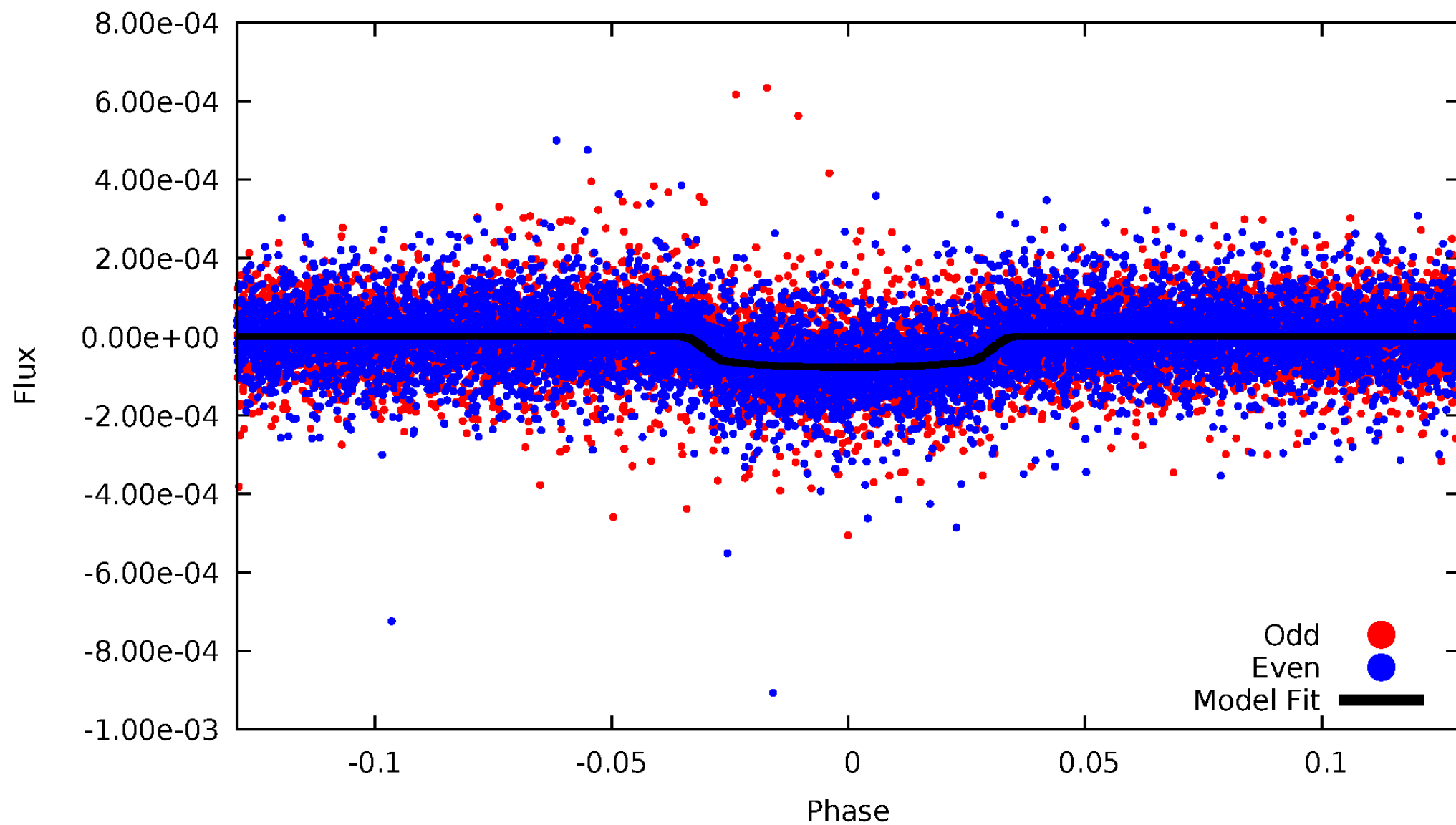


TCE 009697131-01



# DV Odd/Even

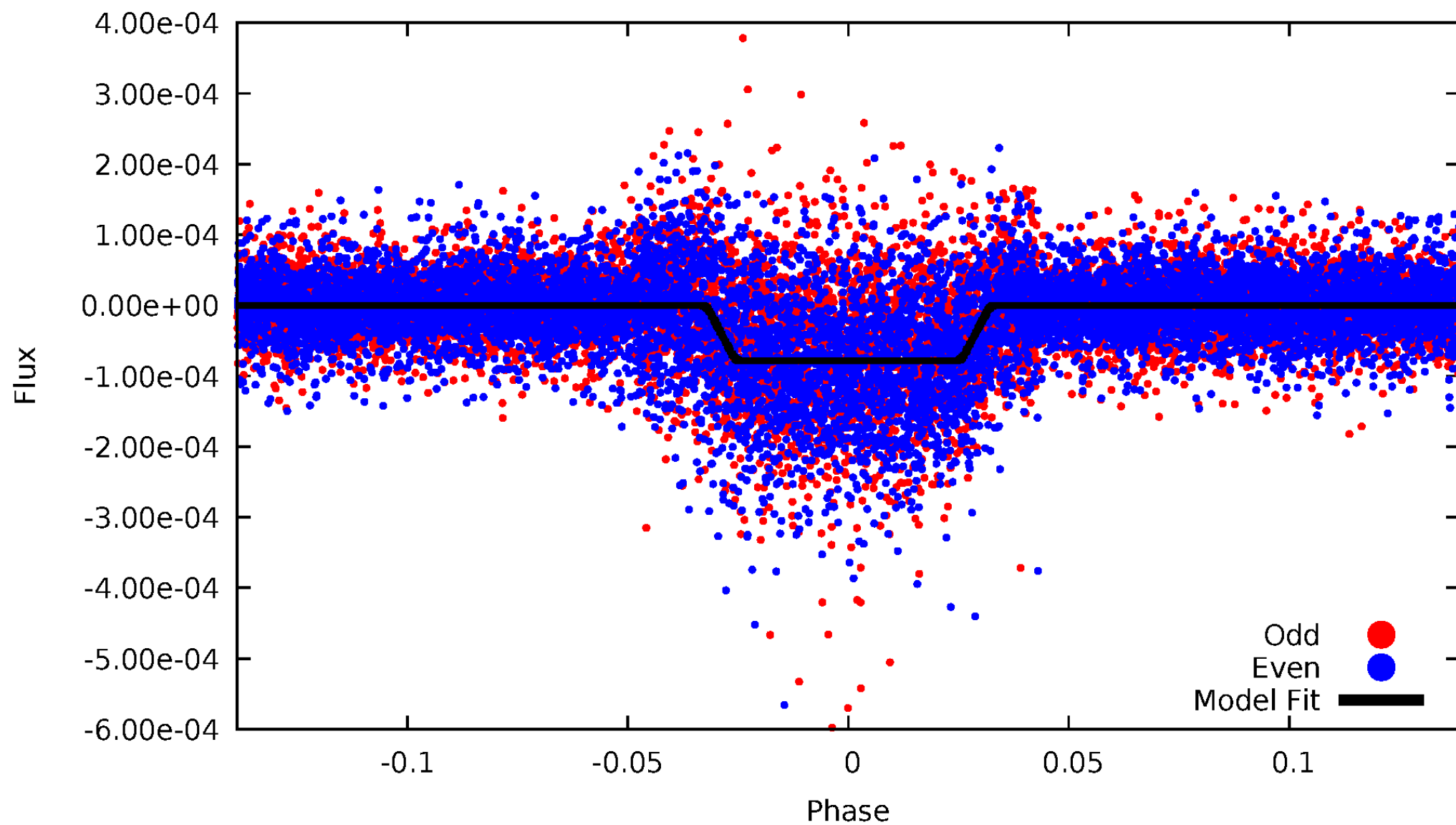
TCE 009697131-01





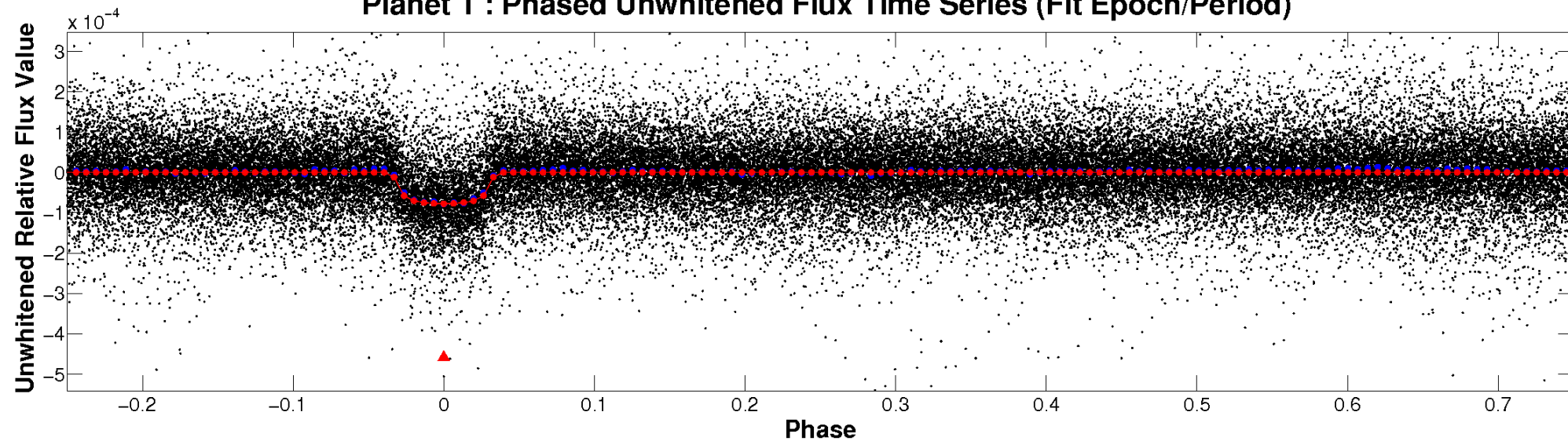
# ALT Odd/Even

TCE 009697131-01

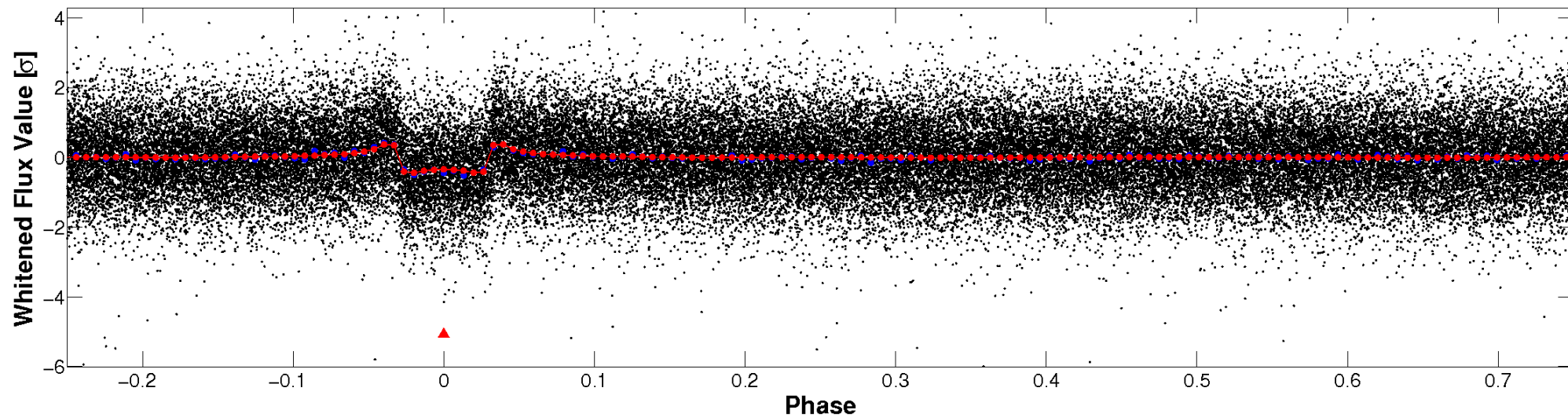


# Non-Whitened Vs. Whitened Light Curve

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

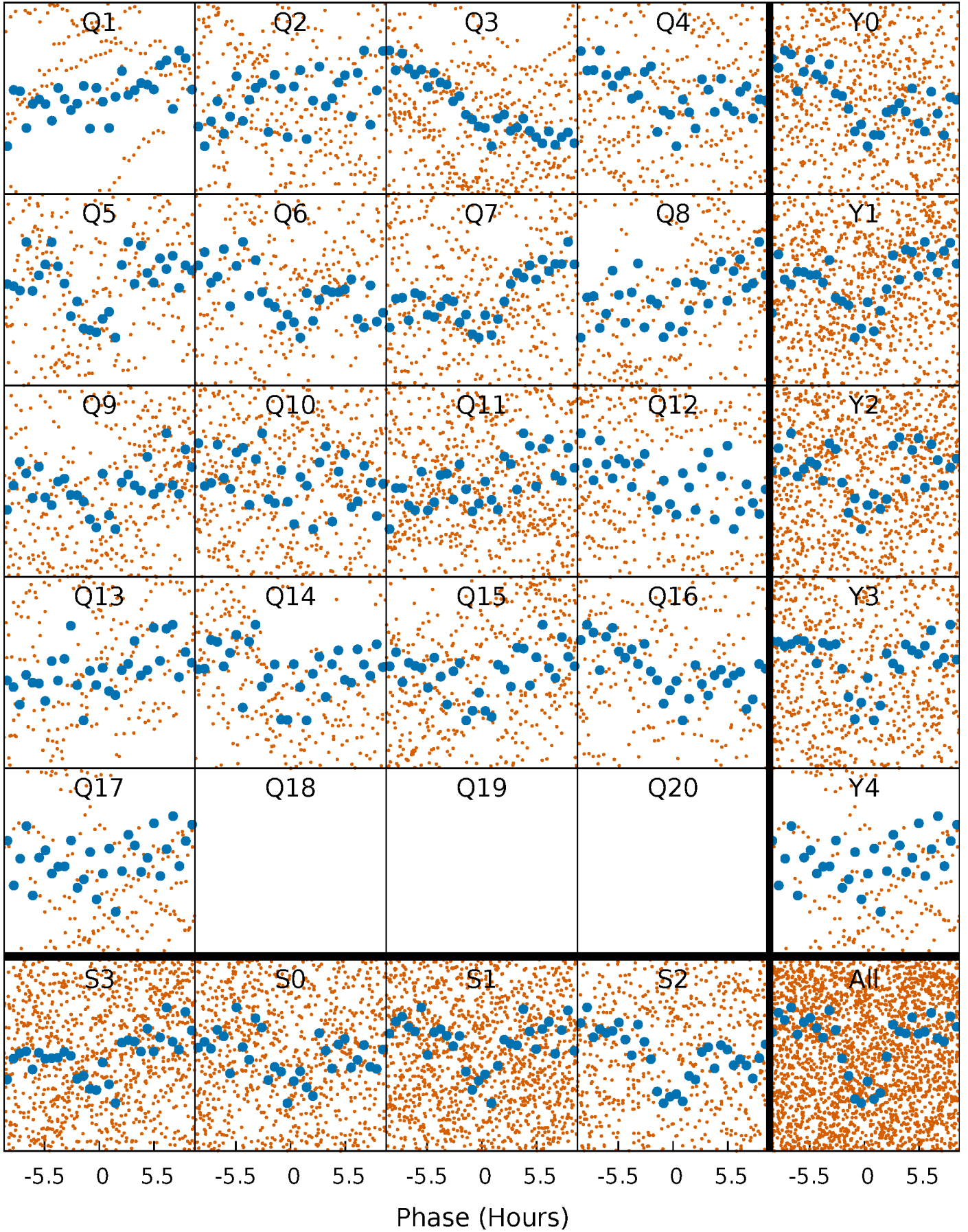


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

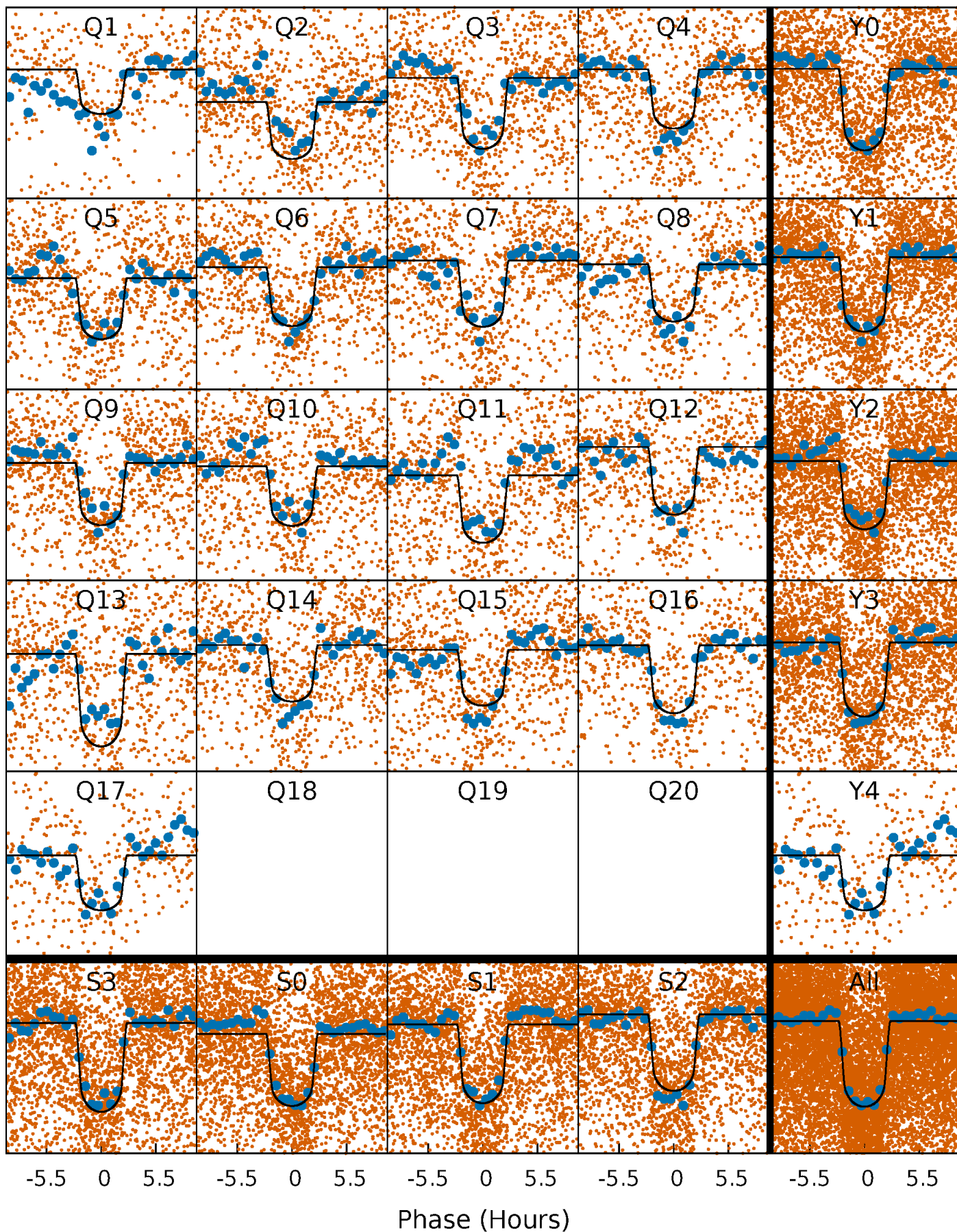
TCE 009697131-01 P= 3.097558 Days  $T_0=131.561900$  (BKJD)





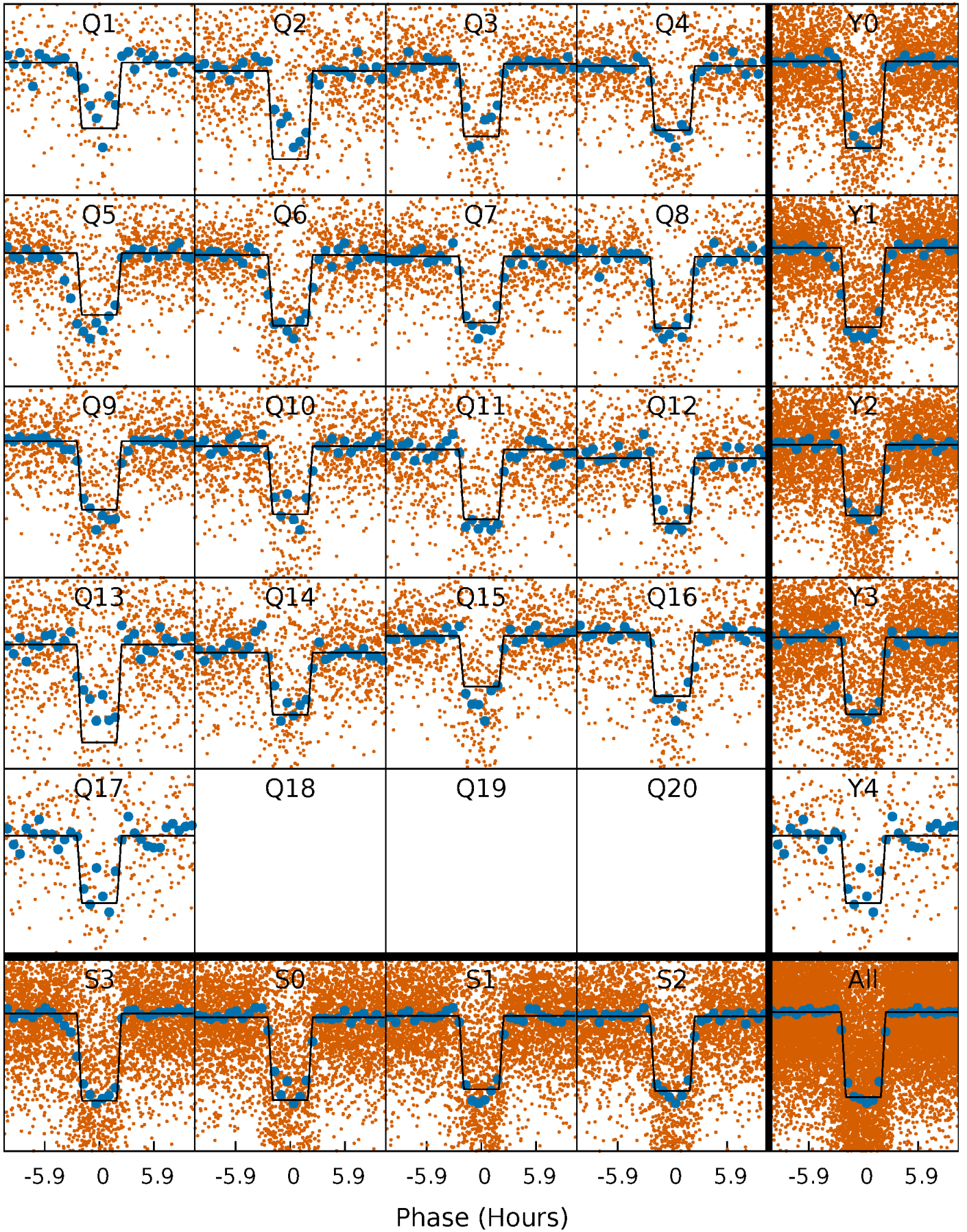
# DV Quarter-Phased Transit Curves

TCE 009697131-01 P= 3.097558 Days  $T_0=131.561900$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

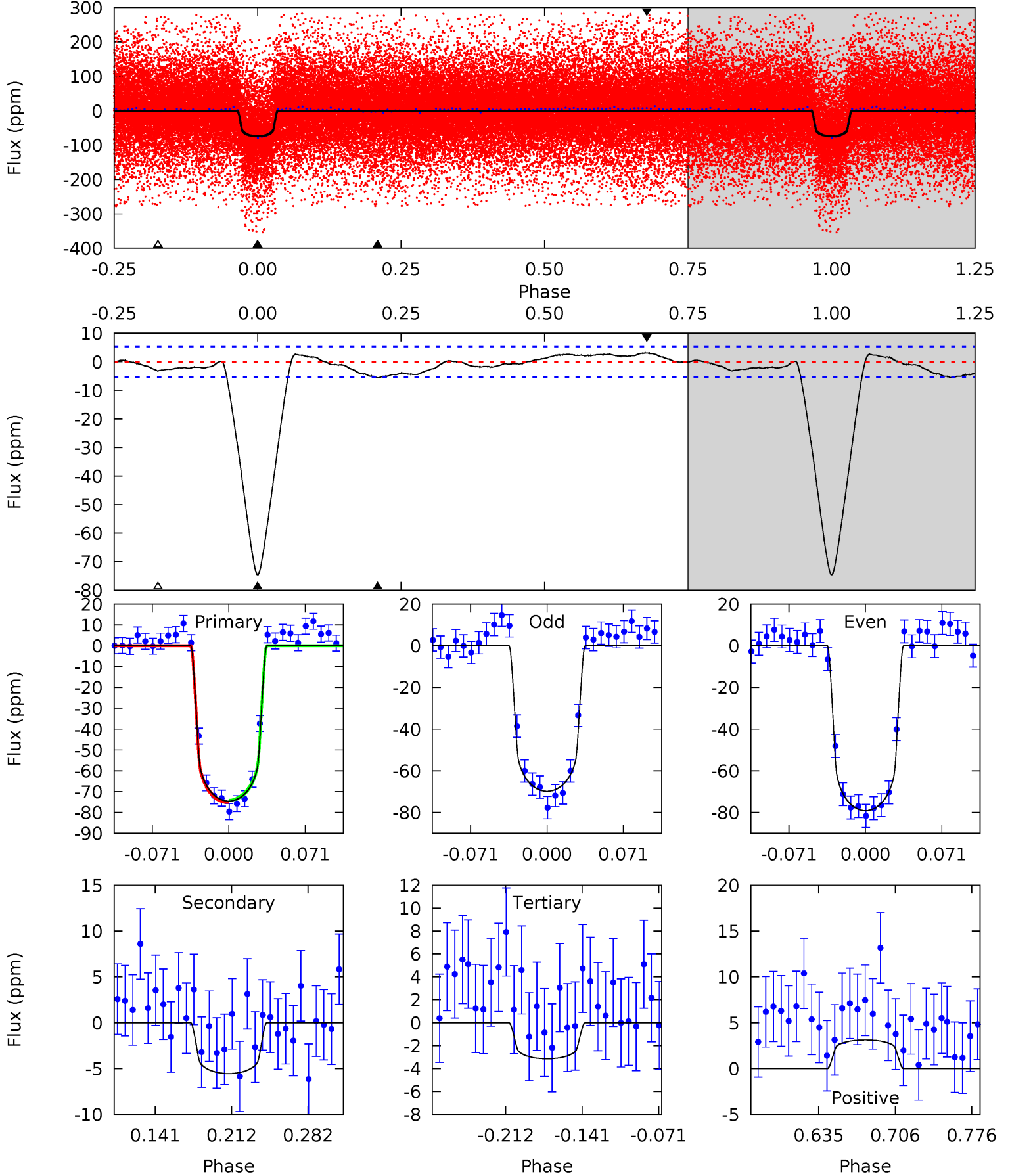
TCE 009697131-01   P= 3.097563 Days    $T_0=131.560522$  (BKJD)



# DV Model-Shift Uniqueness Test

009697131-01, P = 3.097558 Days, E = 128.464342 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
64.3	4.78	2.71	2.69	4.64	1.81	1.60	61.6	61.6	2.07	2.09	4.04	0.95	0.04	0.47

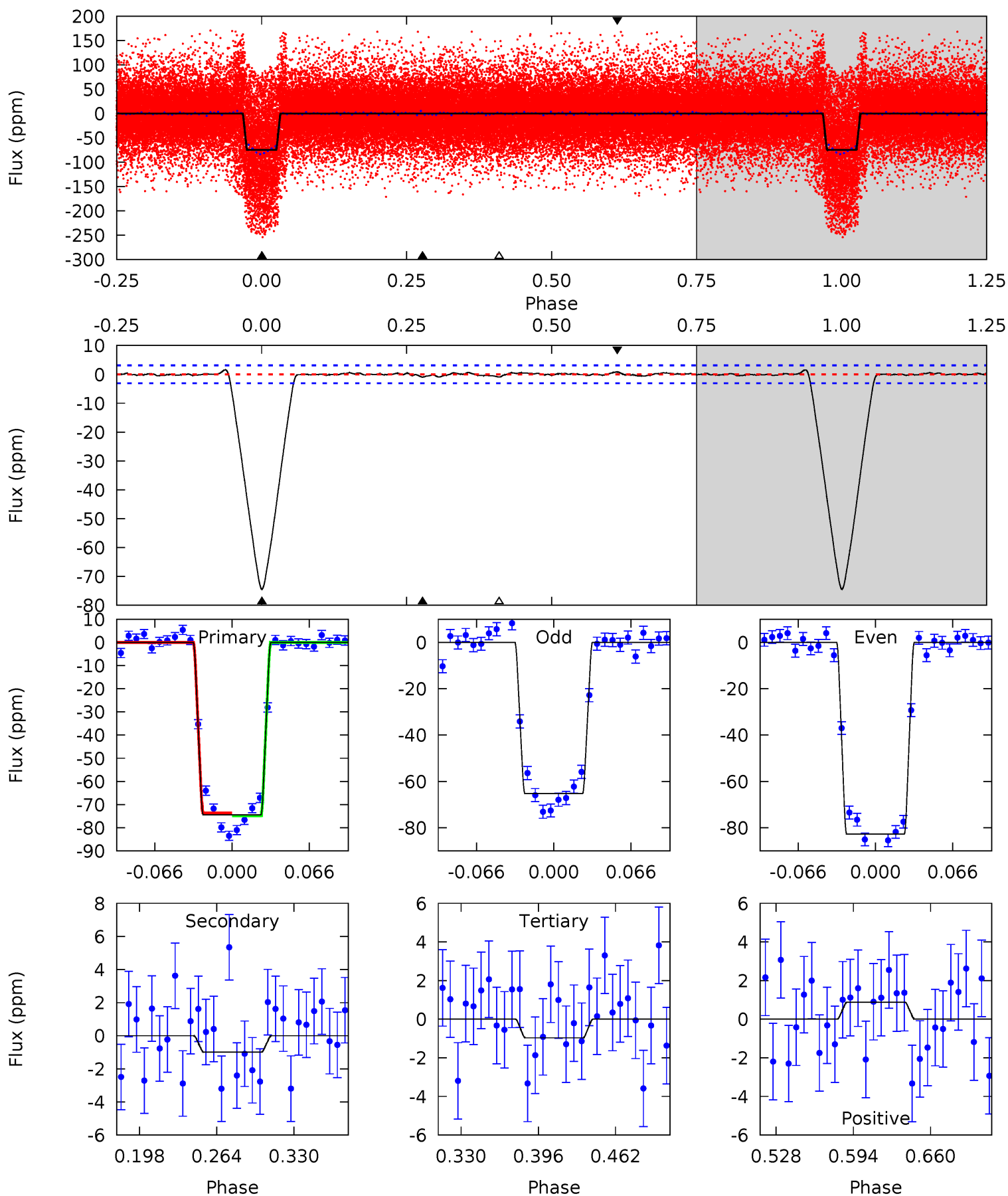




# Alt Model-Shift Uniqueness Test

009697131-01, P = 3.097563 Days, E = 128.462959 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
112.4	1.49	1.46	1.33	4.65	1.84	0.47	110.9	111.0	0.03	0.16	13.2	1.04	0.02	0.90



### Stellar Parameters For KIC 009697131

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6329^{+82}_{-76}$	$4.026^{+0.016}_{-0.018}$	$0.060^{+0.150}_{-0.150}$	$1.885^{+0.075}_{-0.093}$	$1.374^{+0.076}_{-0.131}$	$0.289^{+0.023}_{-0.019}$
	+1%/-1%	+0%/-0%	+250%/-250%	+4%/-5%	+6%/-10%	+8%/-7%
Source	SPE72	AST10	SPE72	DSEP		

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

### Secondary Eclipse Parameters for KIC 009697131-01 / KOI 2706.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-6 \pm 1$	$1.96^{+0.13}_{-0.14}$	$2492^{+39}_{-35}$	$3488^{+155}_{-167}$	$1.698^{+0.429}_{-0.388}$
Alt.	$-1 \pm 1$	$1.83^{+0.12}_{-0.12}$	$2492^{+37}_{-35}$	$2302^{+512}_{-4885}$	$0.362^{+0.255}_{-0.226}$

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



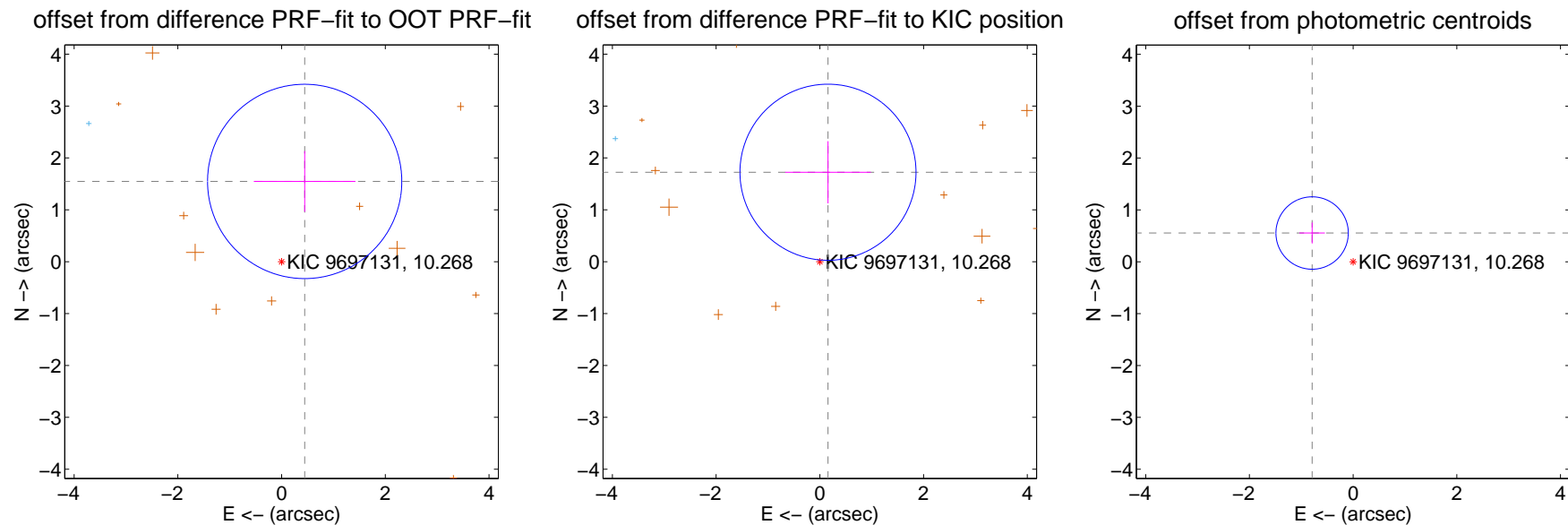
## DV Centroid Data

Supplemental centroid analysis for 009697131-01. **Kepler magnitude: 10.27.** Transit SNR 30.10

There are 4 quarters with good PRF difference image offsets

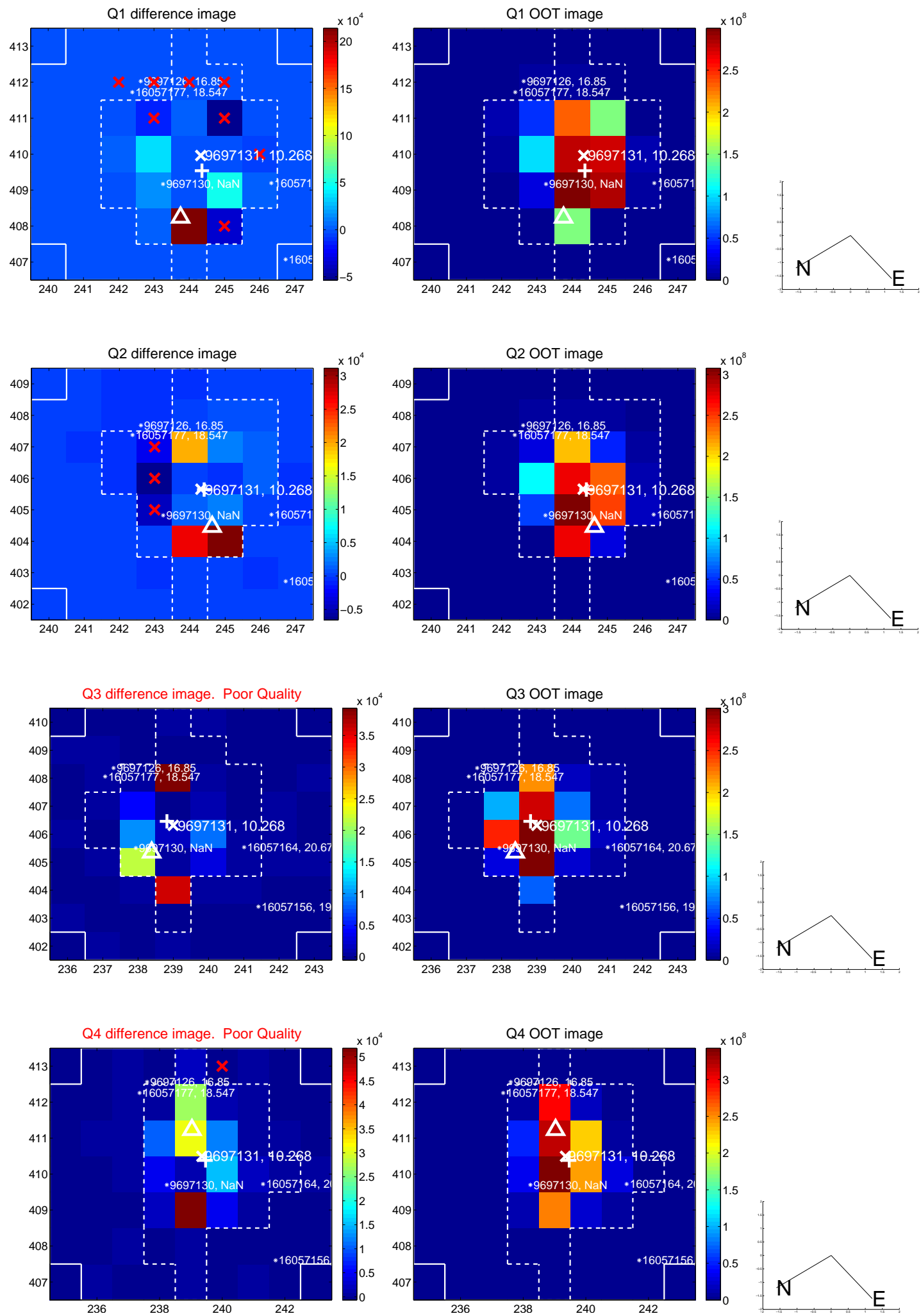
The direct PRF centroid is offset from the target star catalog position by about 1.52 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.610 \pm 0.624$	2.58	$-0.445 \pm 0.980$	$1.547 \pm 0.585$
PRF-fit source offset from KIC position	<b><math>1.732 \pm 0.566</math></b>	<b>3.06</b>	$-0.157 \pm 0.827$	$1.725 \pm 0.599$
photometric centroid source offset	<b><math>0.97 \pm 0.23</math></b>	<b>4.15</b>	$0.79 \pm 0.25$	$0.55 \pm 0.20$

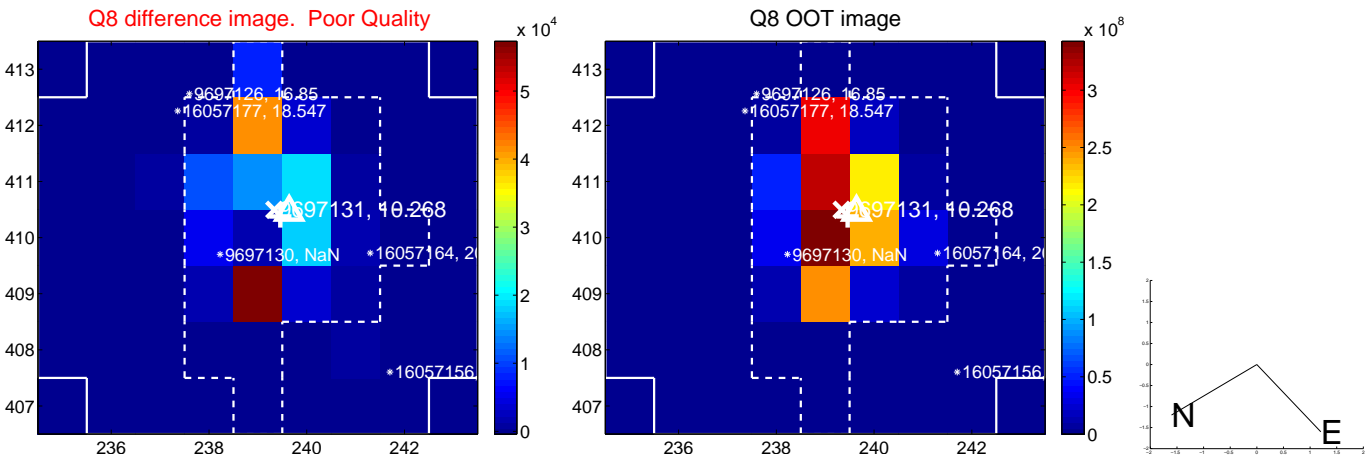
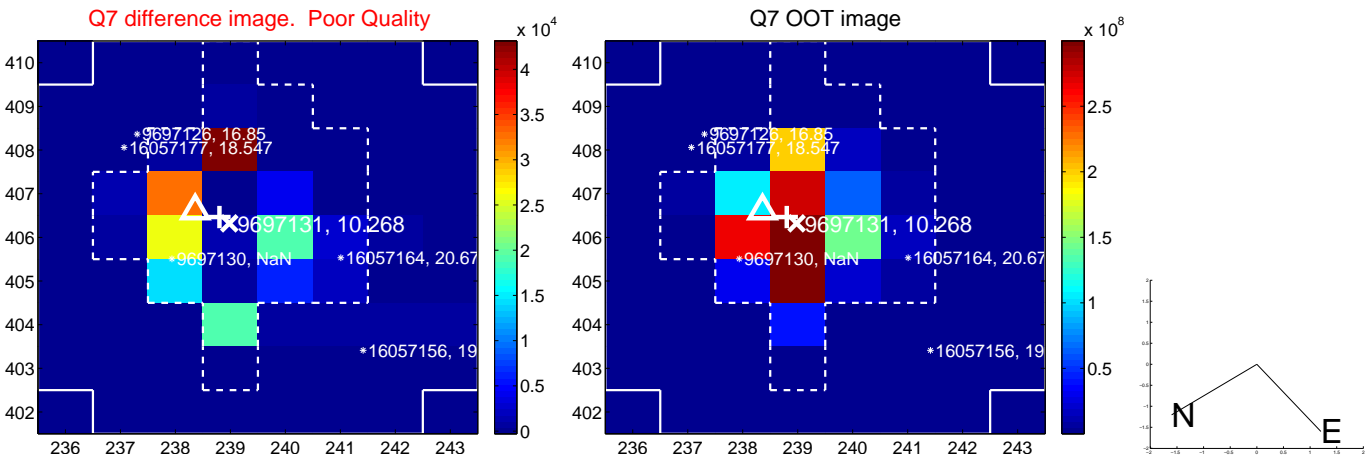
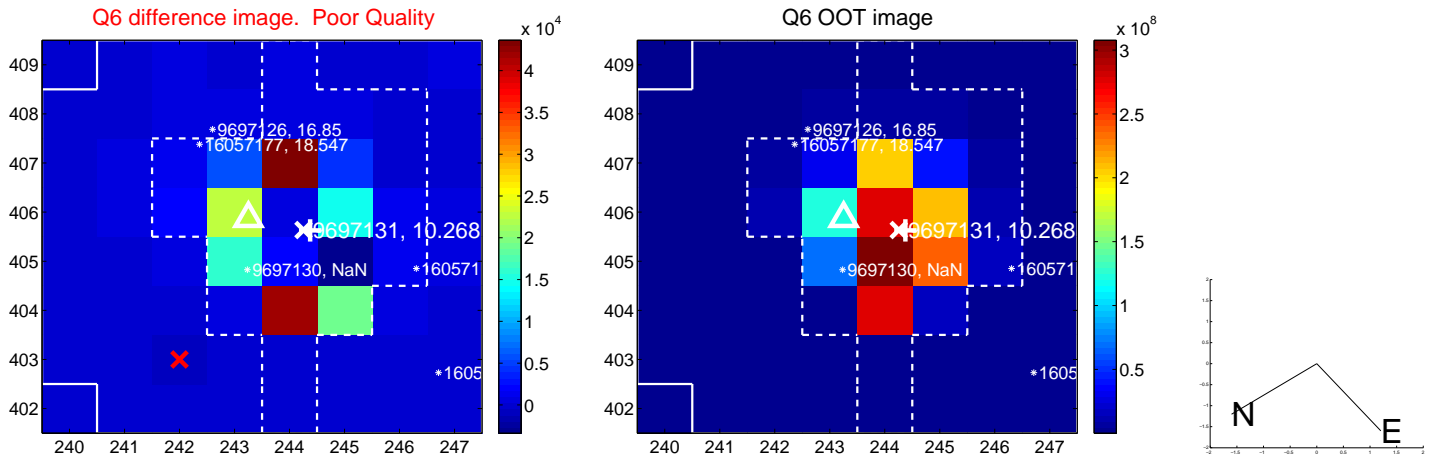
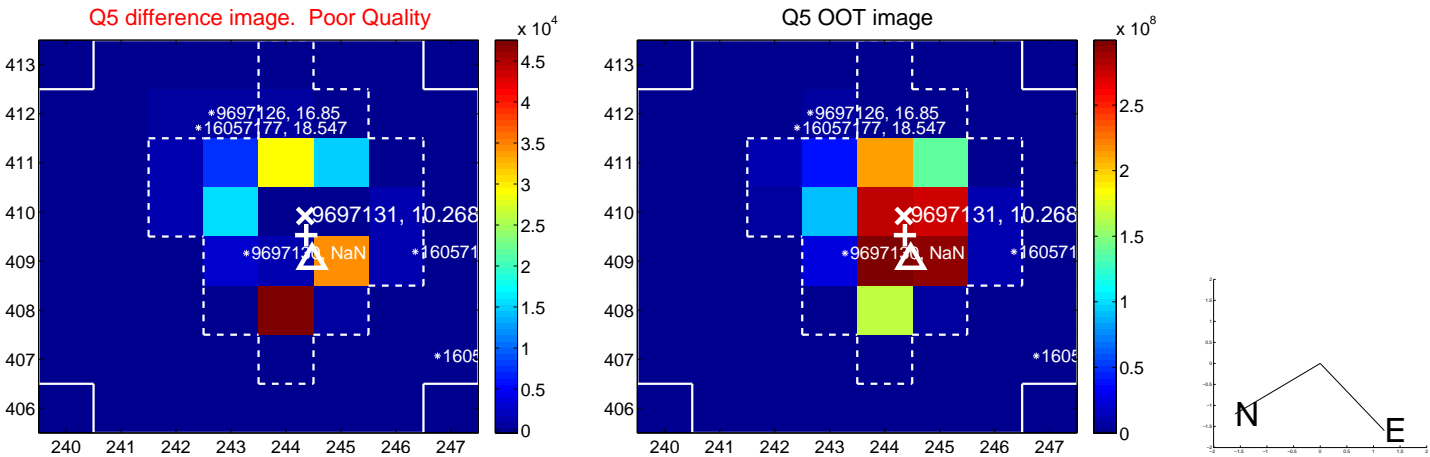


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

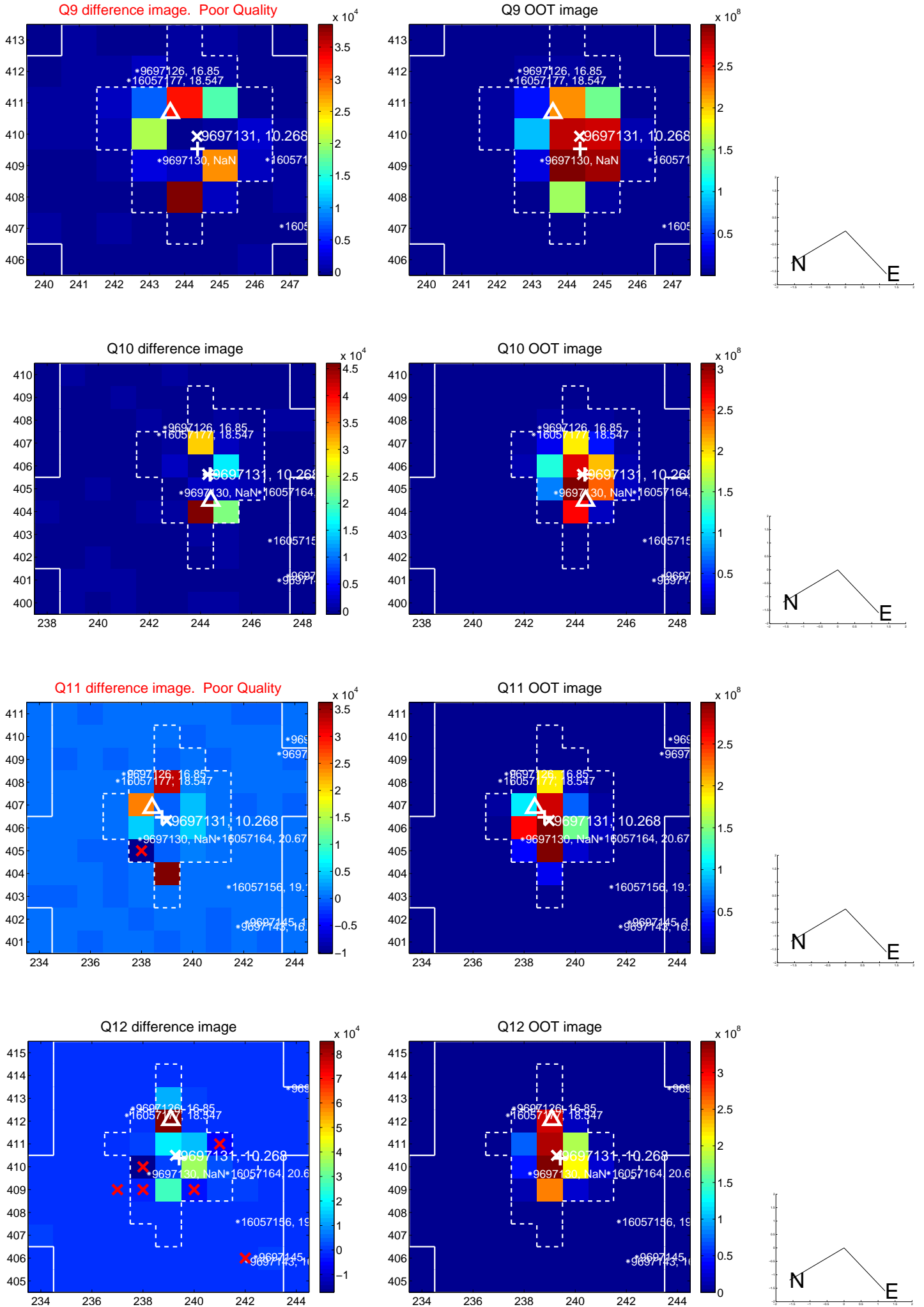
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



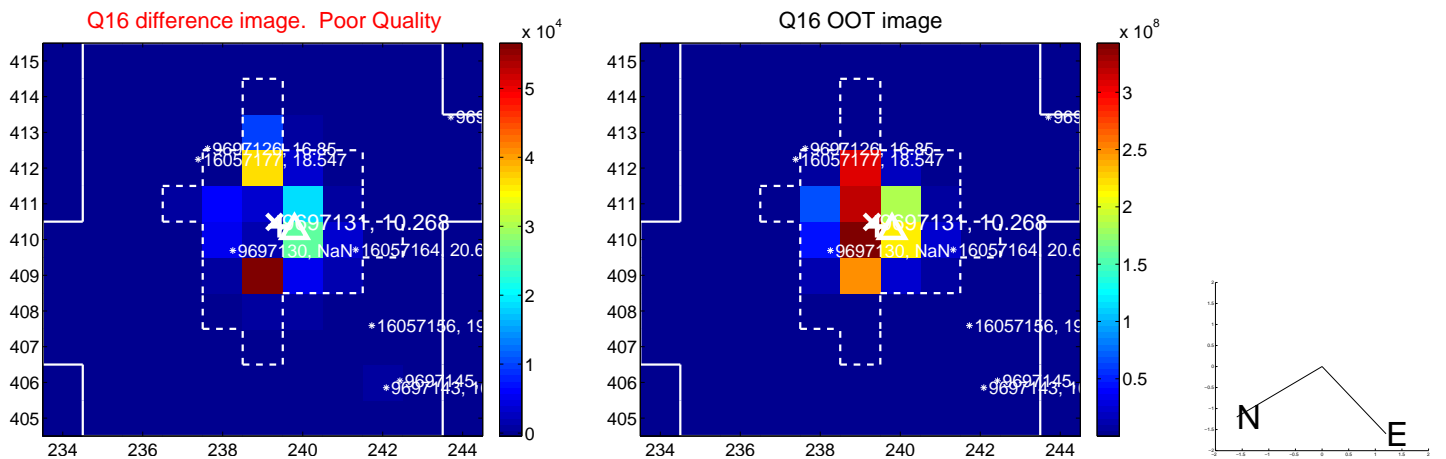
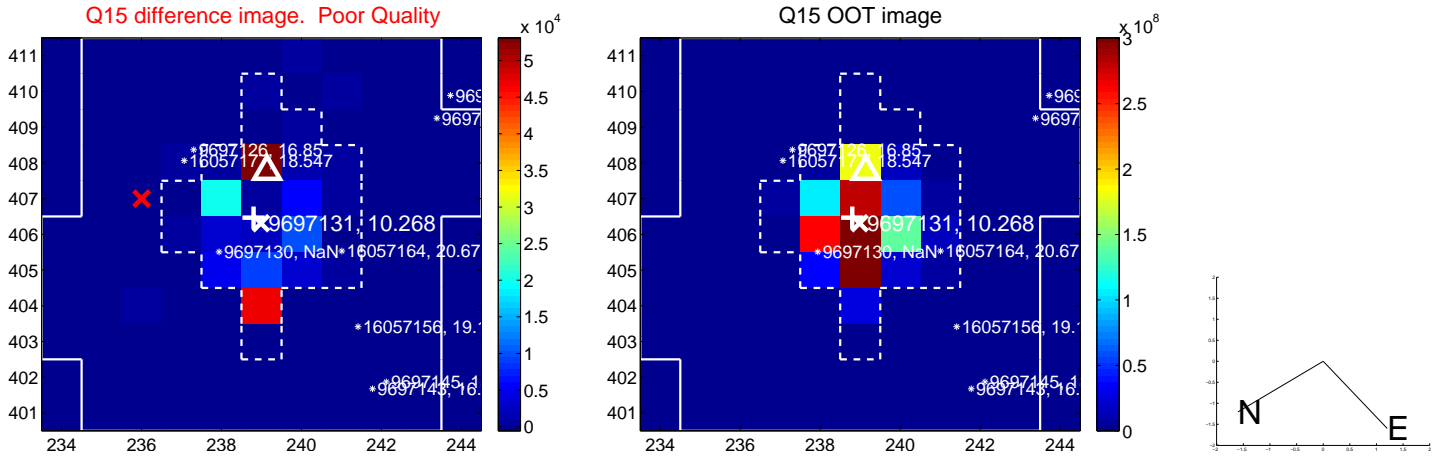
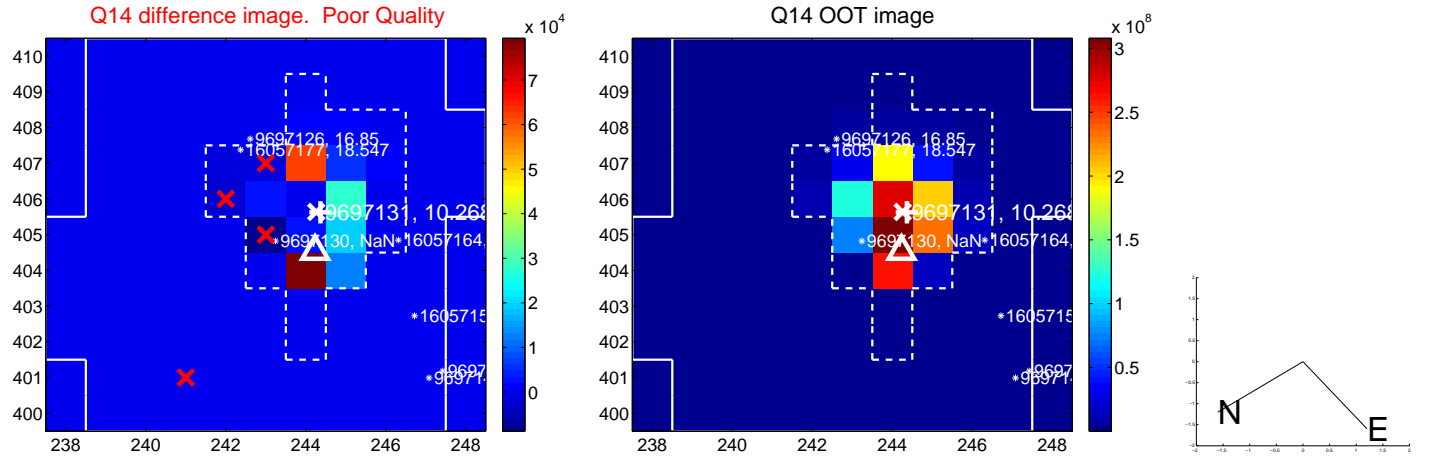
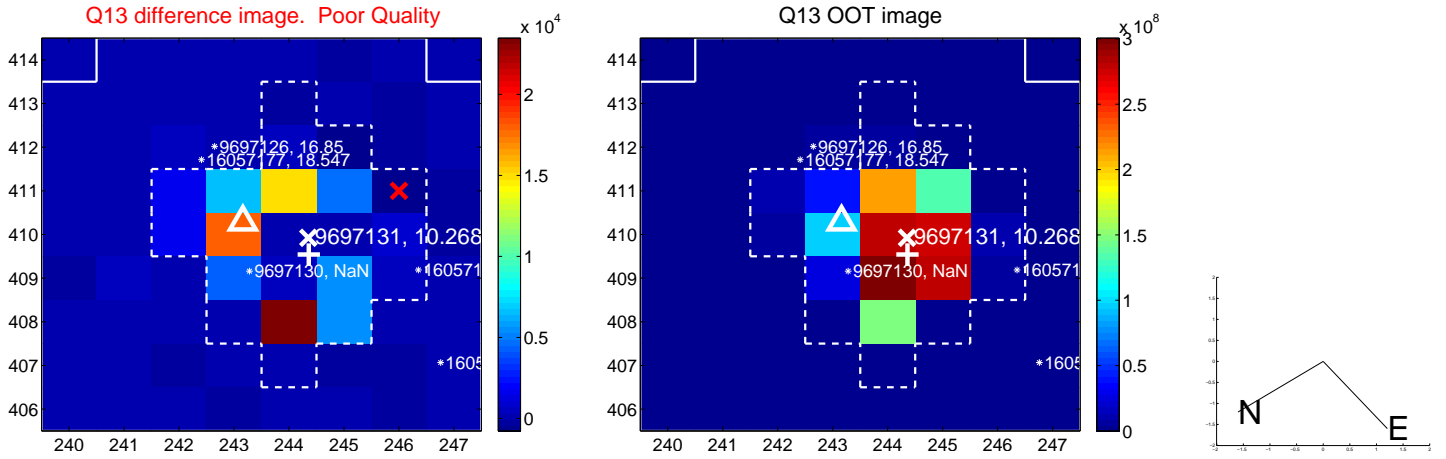
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

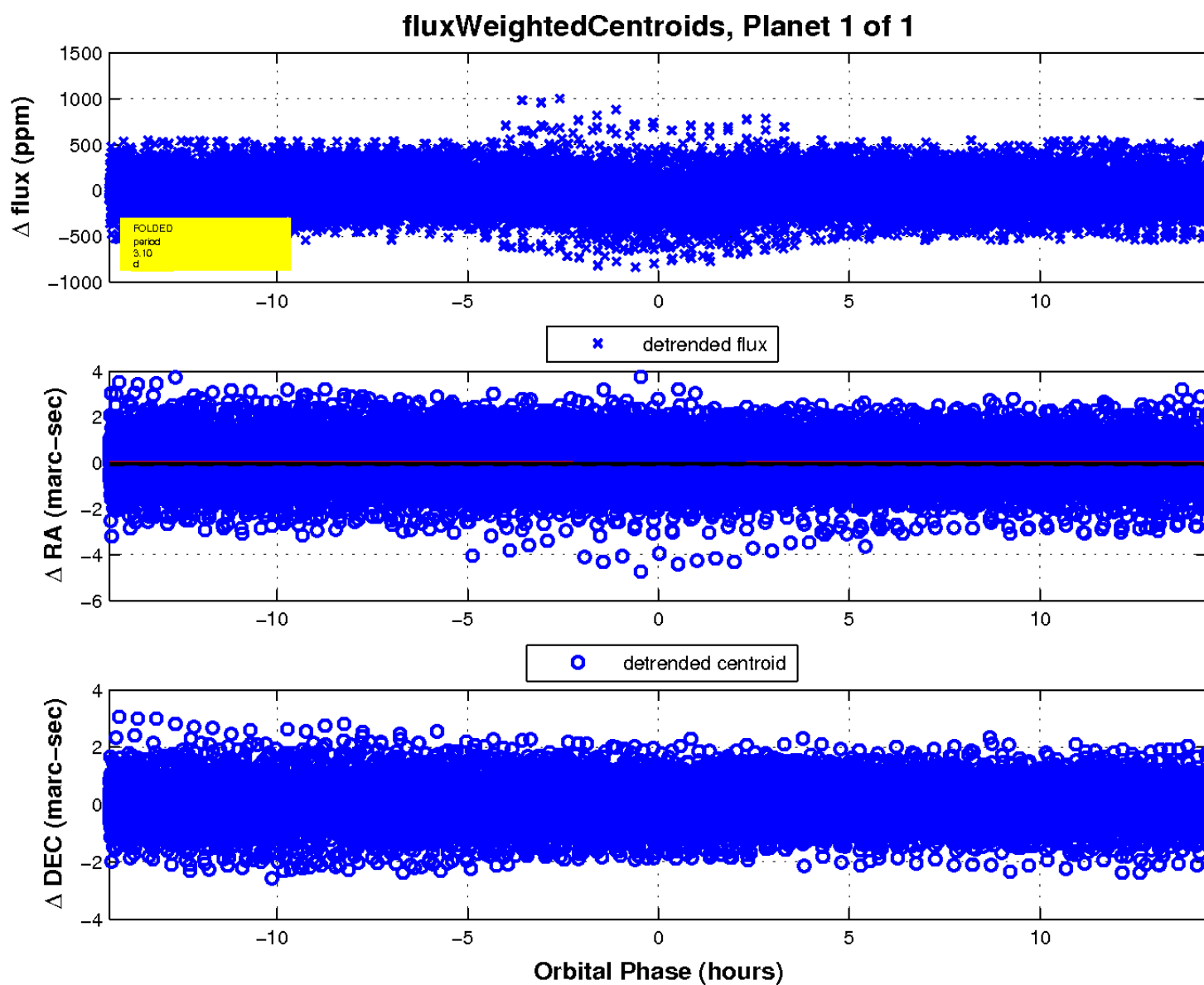
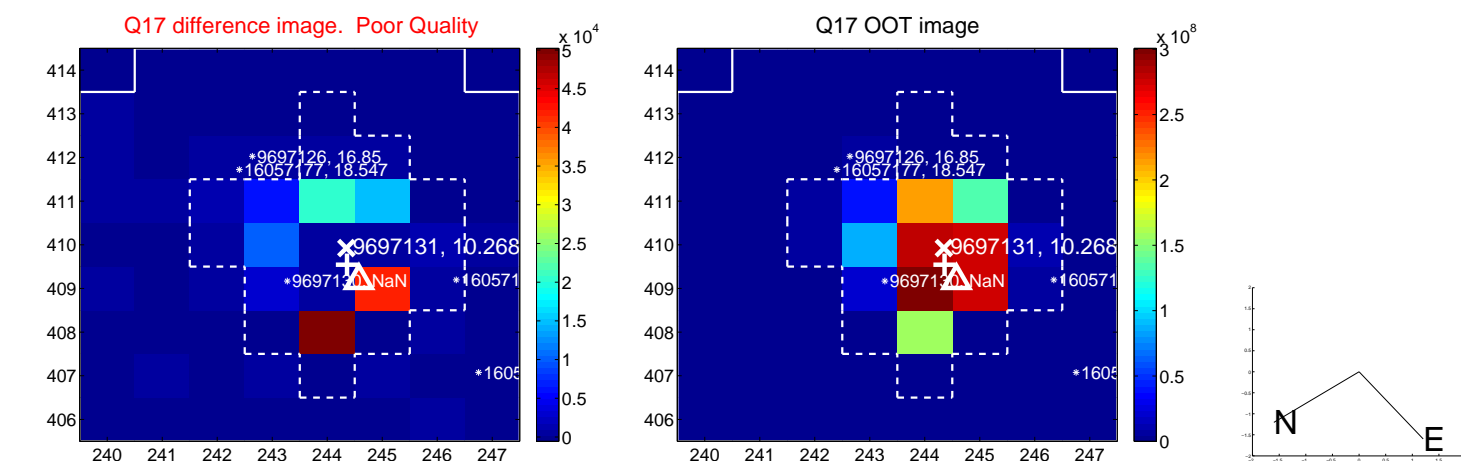


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

