

# KIC 010743597

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
010743597-01	OBS	0989.02	0.816977	132.043219	193.7	2.896	94.9	22.2	0.87	5619	1.25	2400.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010743597-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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 010743597-01

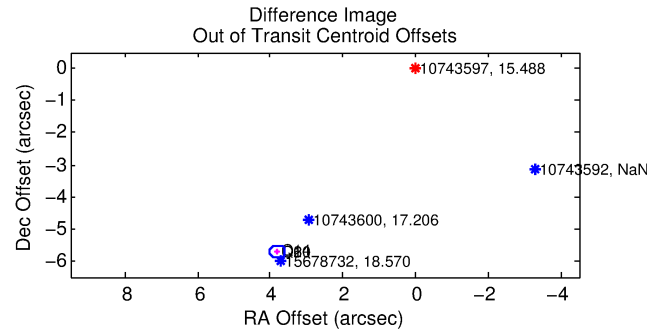
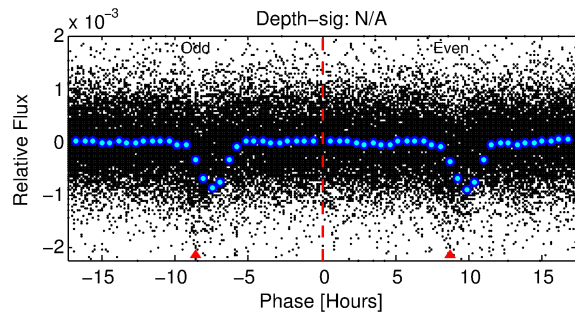
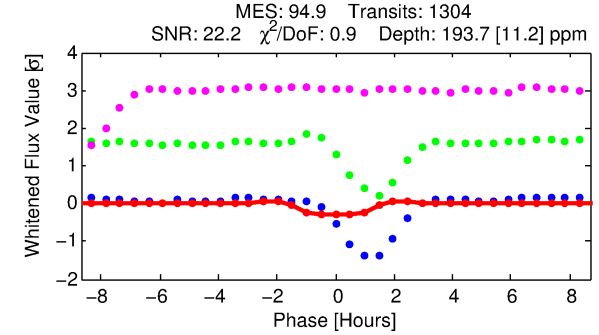
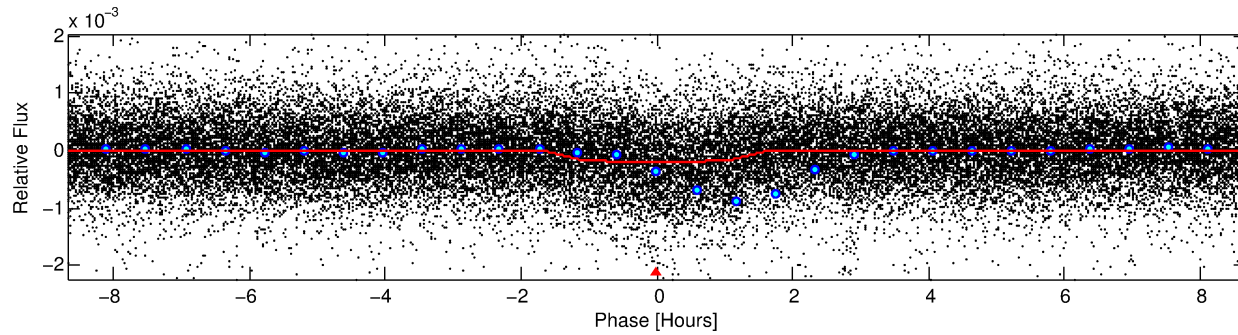
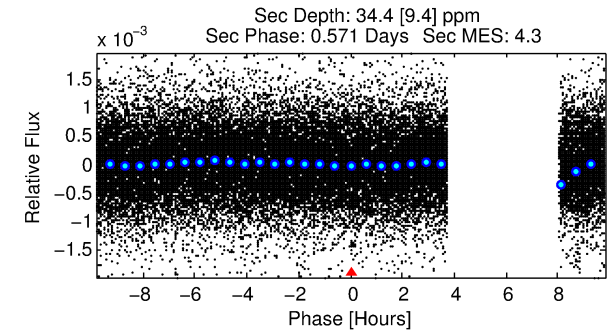
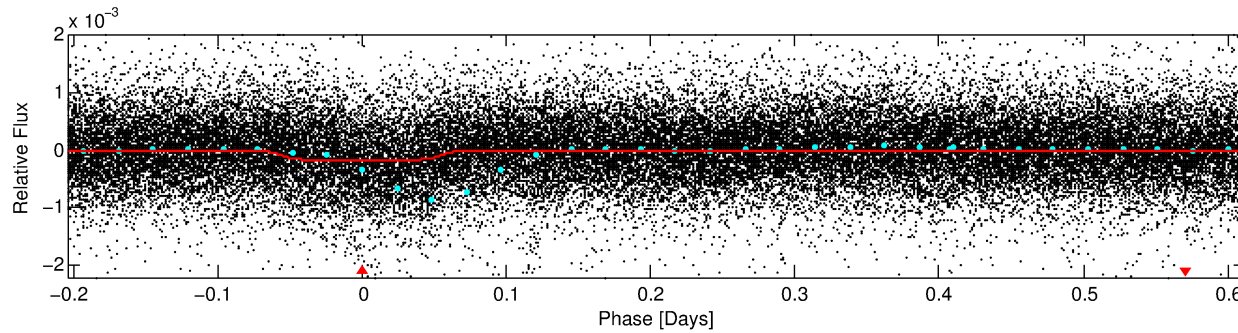
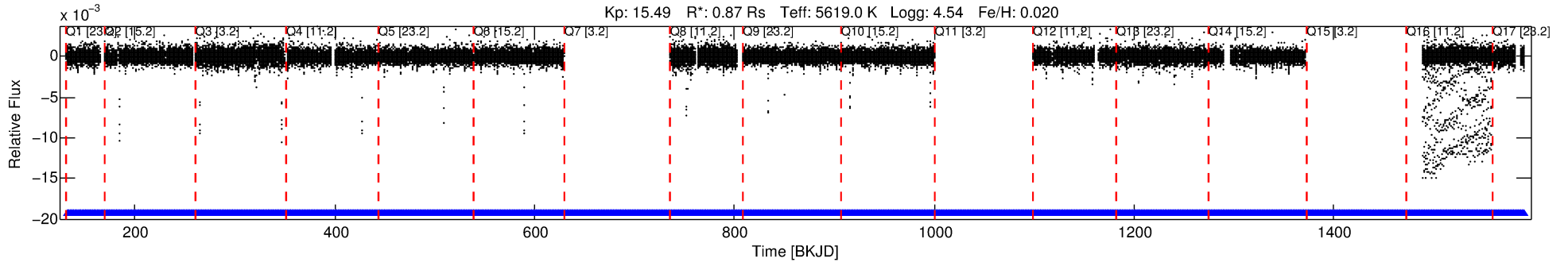
TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
010743597-01	10743597	010743600-01	10743600	1:1	5.6	0	-1	17.21	15.49	708.89	Direct-PRF	0	3.94	0.73

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10743597 Candidate: 1 of 1 Period: 0.817 d  
KOI: K00989.02 Corr: 0.794

Kp: 15.49 R\*: 0.87 Rs Teff: 5619.0 K Logg: 4.54 Fe/H: 0.020



## DV Fit Results:

Period = 0.81698 [0.00000] d  
Epoch = 132.0432 [0.0015] BKJD  
Rp/R\* = 0.0131 [0.0077]  
a/R\* = 2.01 [3.70]  
b = 0.52 [3.47]  
Seff = 2400.26 [900.60]  
Teff = 1785 [167] K  
Rp = 1.24 [0.82] Re  
a = 0.0169 [0.0041] AU  
Ag = 3.47 [4.40] [0.56σ]  
Teffp = 3767 [1150] K [1.71σ]

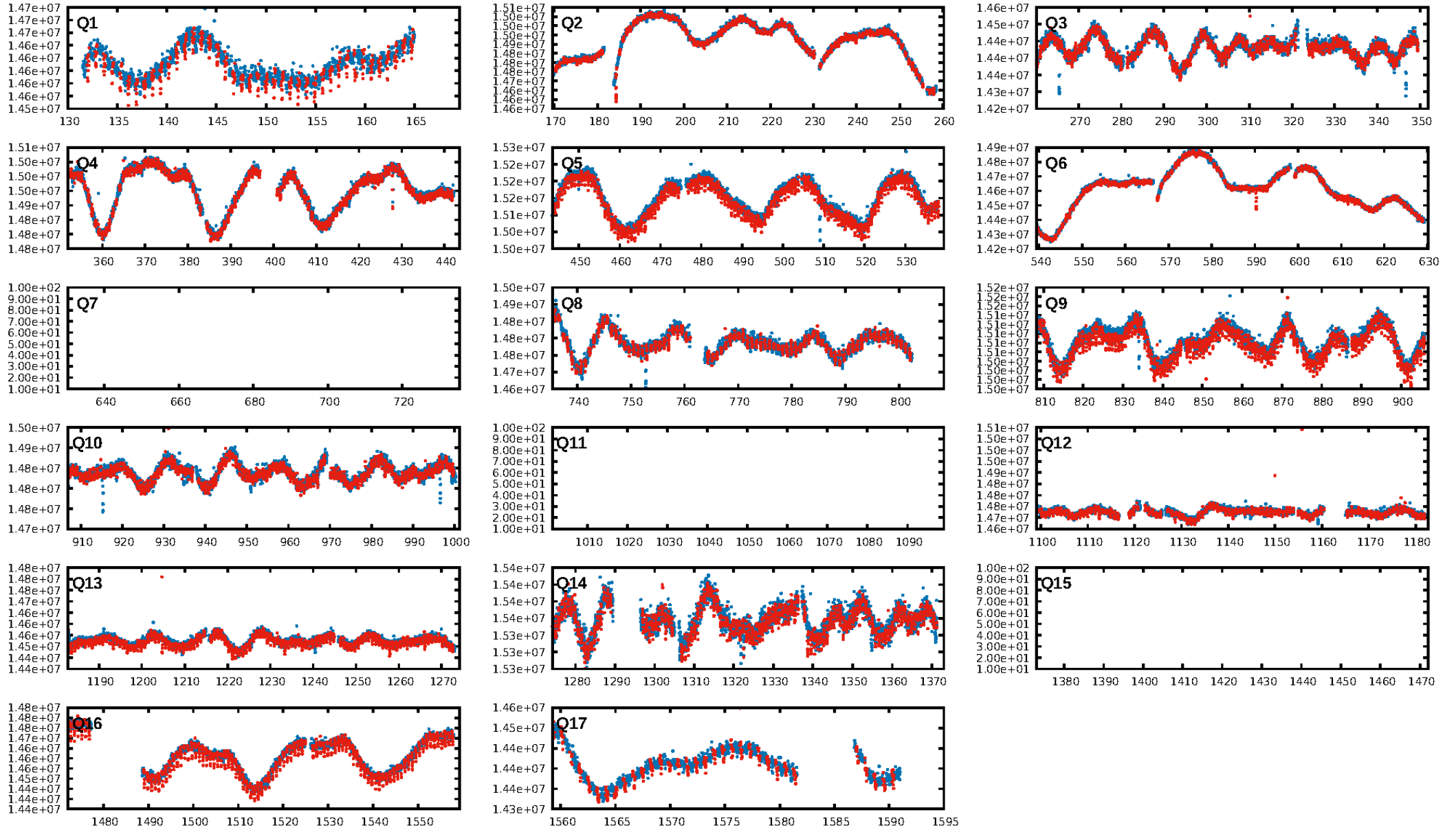
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1230/1230]  
GhostDiagnostic-chr: -0.1222  
Centroid-sig: 0.0%  
Centroid-so: 90.533 arcsec [142.07σ]  
OotOffset-rm: 6.868 arcsec [101.79σ]  
KicOffset-rm: 7.076 arcsec [105.24σ]  
OotOffset-st: 4/0/0/0 [4]  
KicOffset-st: 4/0/0/0 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [14/14]

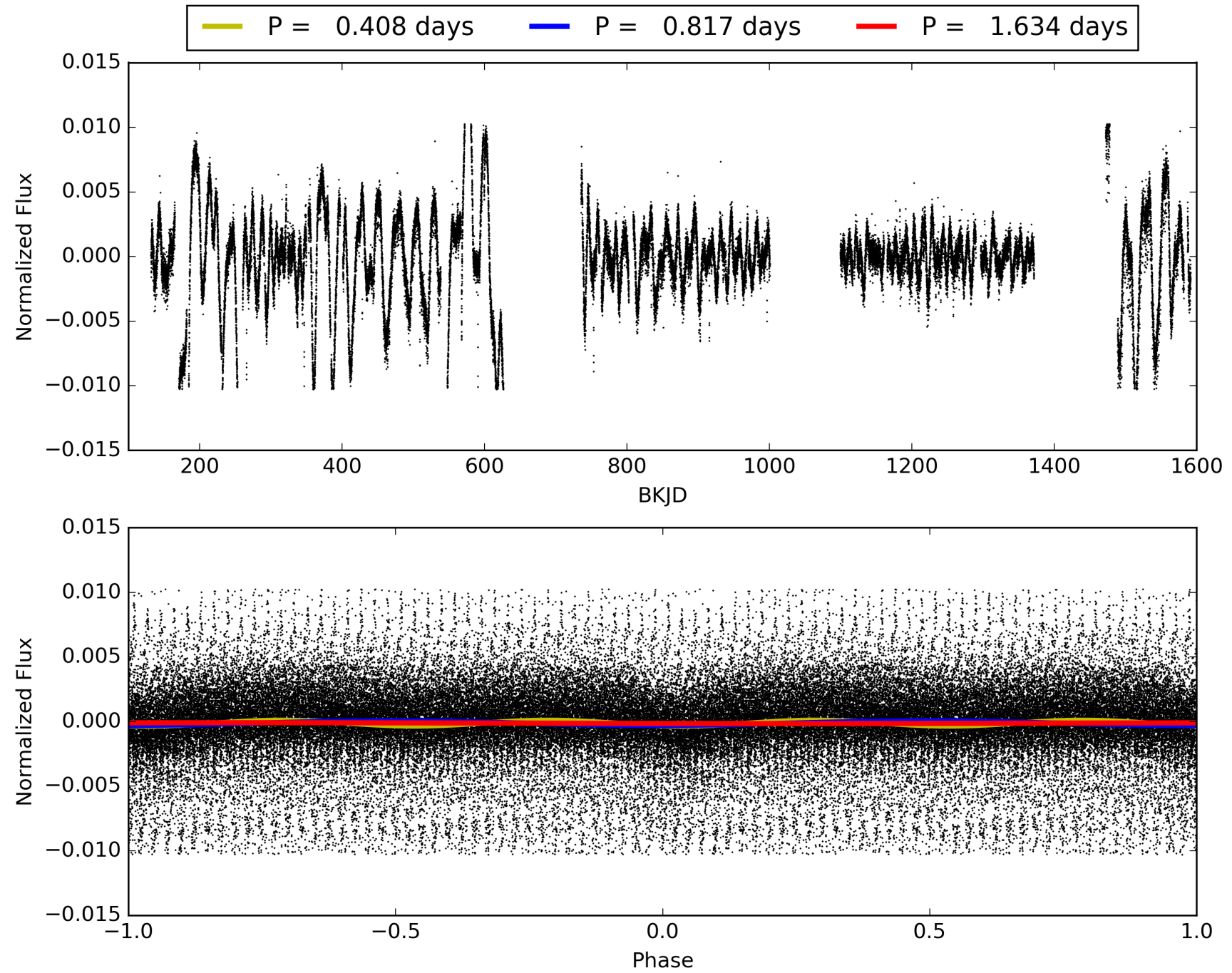
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:04:29 Z

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

# TCE 010743597-01, PDC Light Curves

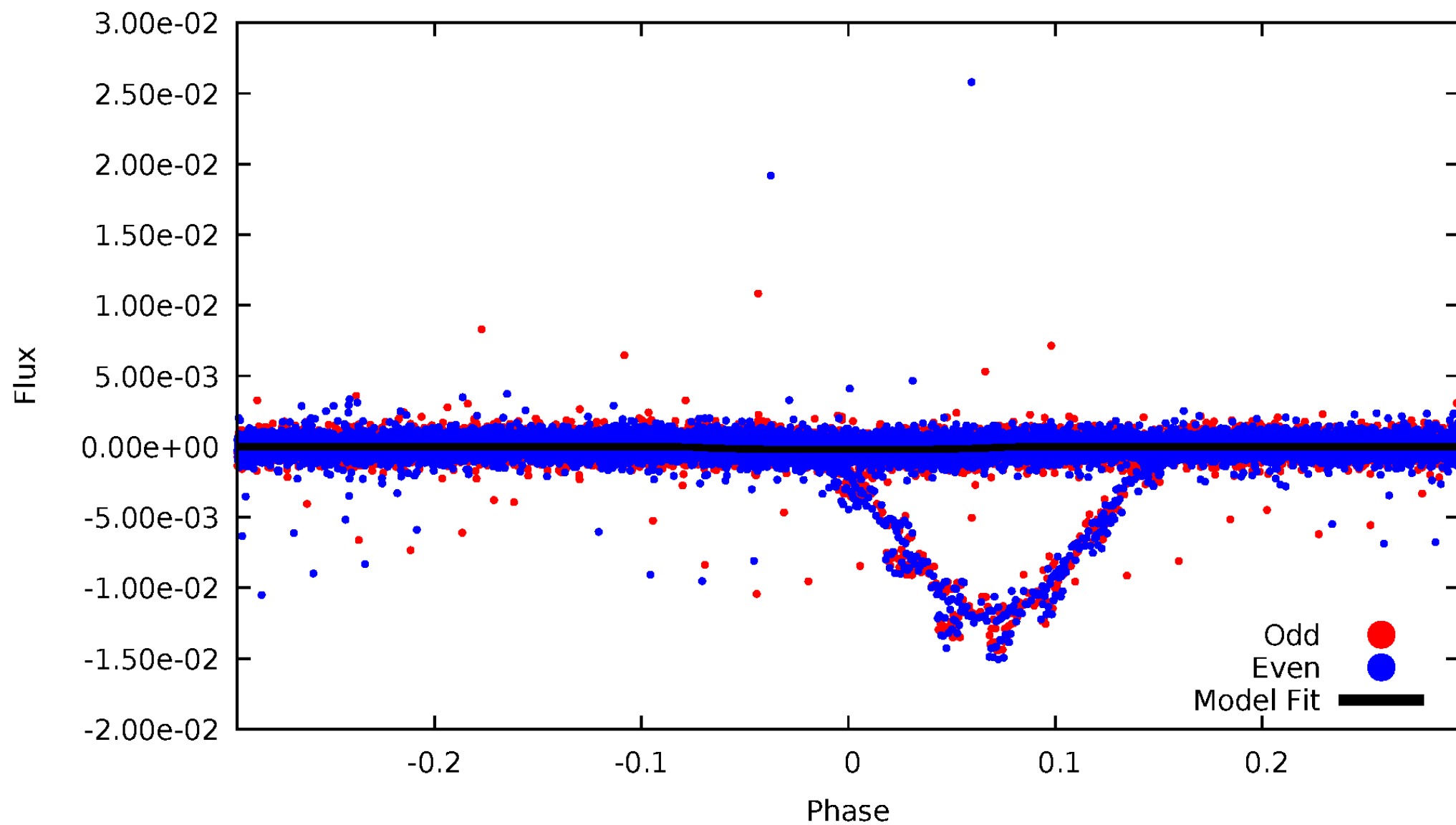


TCE 010743597-01



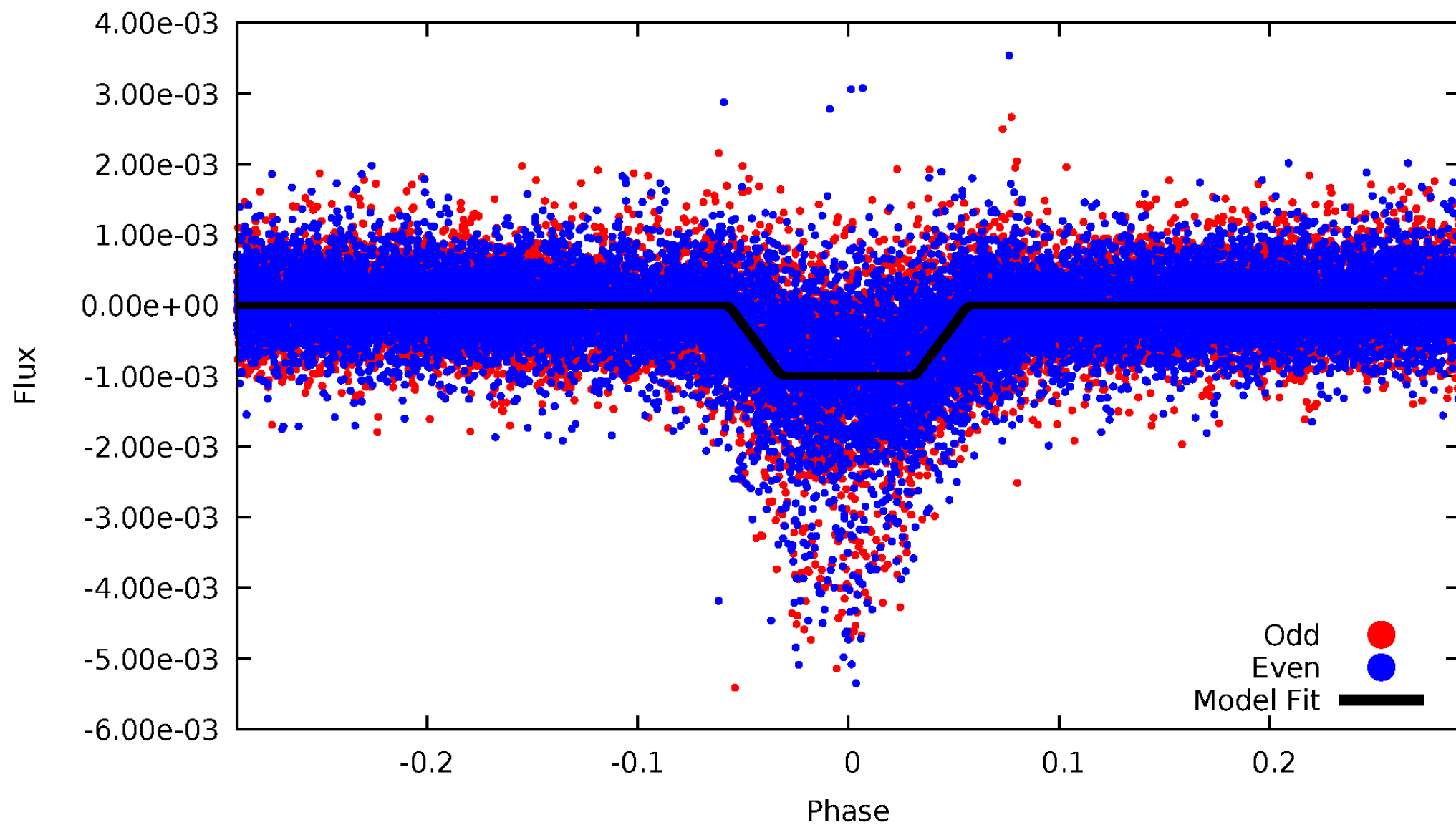
# DV Odd/Even

TCE 010743597-01



# ALT Odd/Even

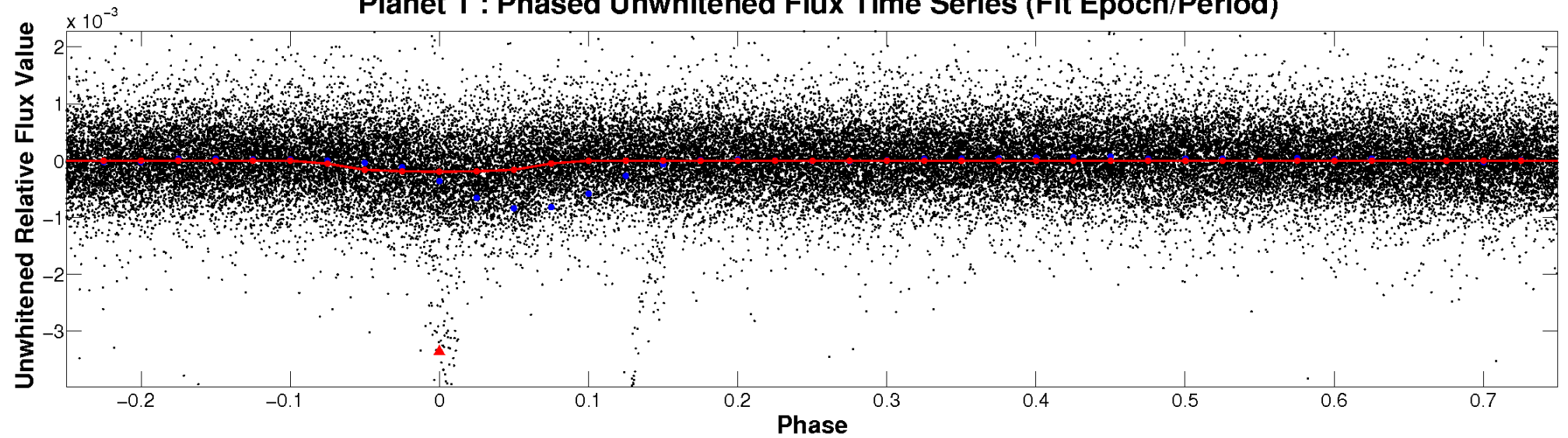
TCE 010743597-01



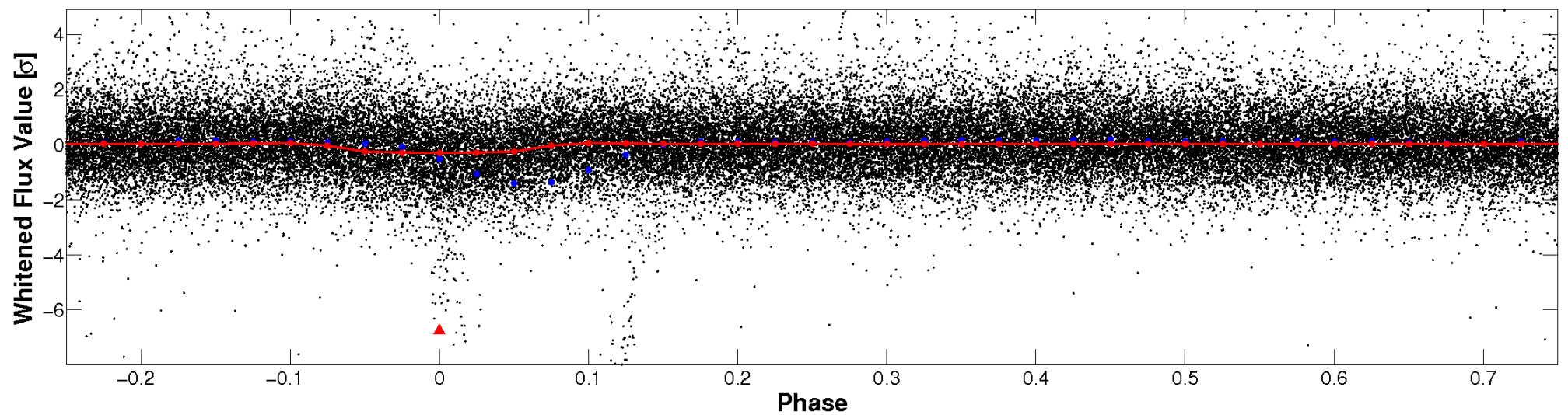


# Non-Whitened Vs. Whitened Light Curve

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

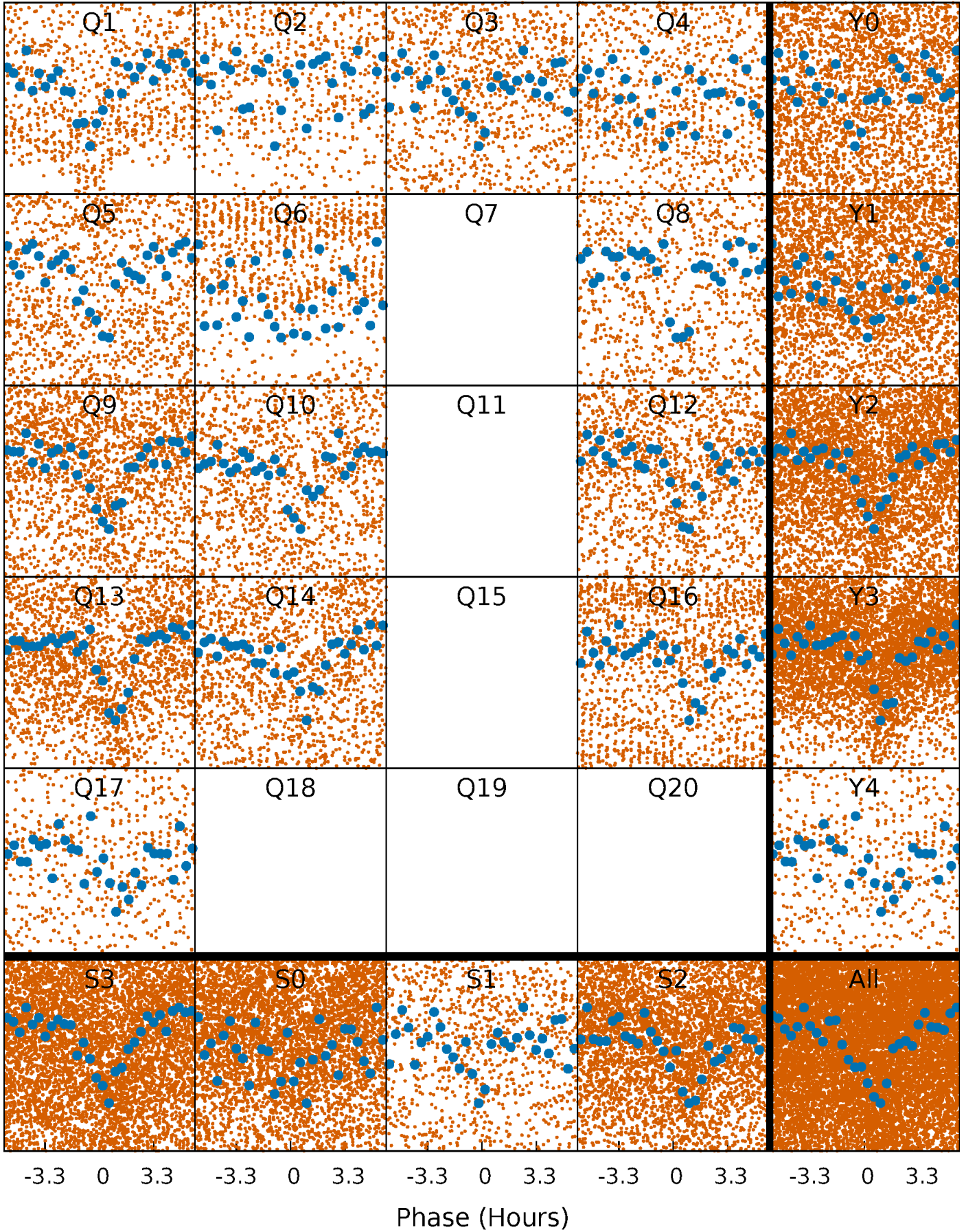


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

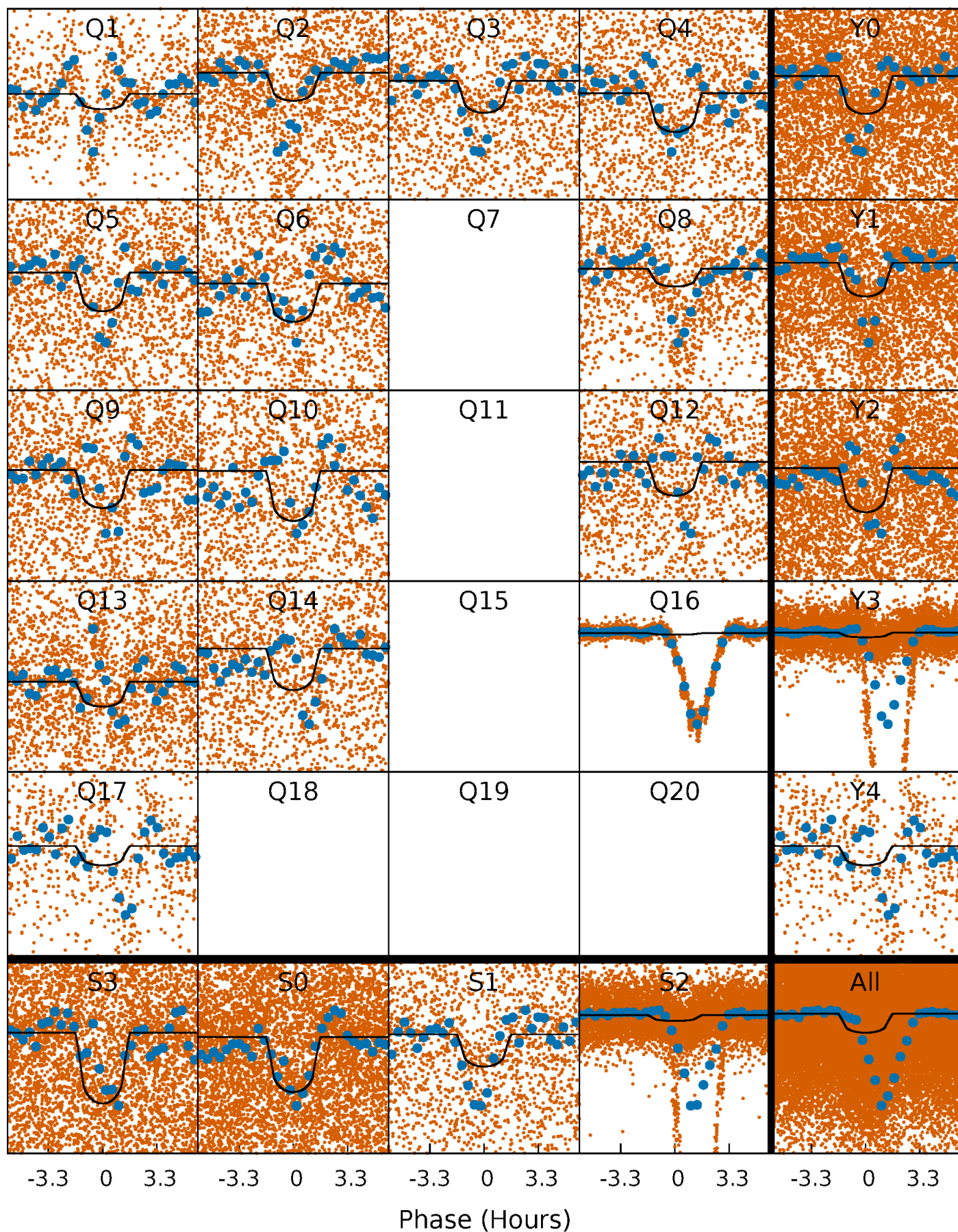
TCE 010743597-01 P= 0.816977 Days  $T_0=132.043219$  (BKJD)





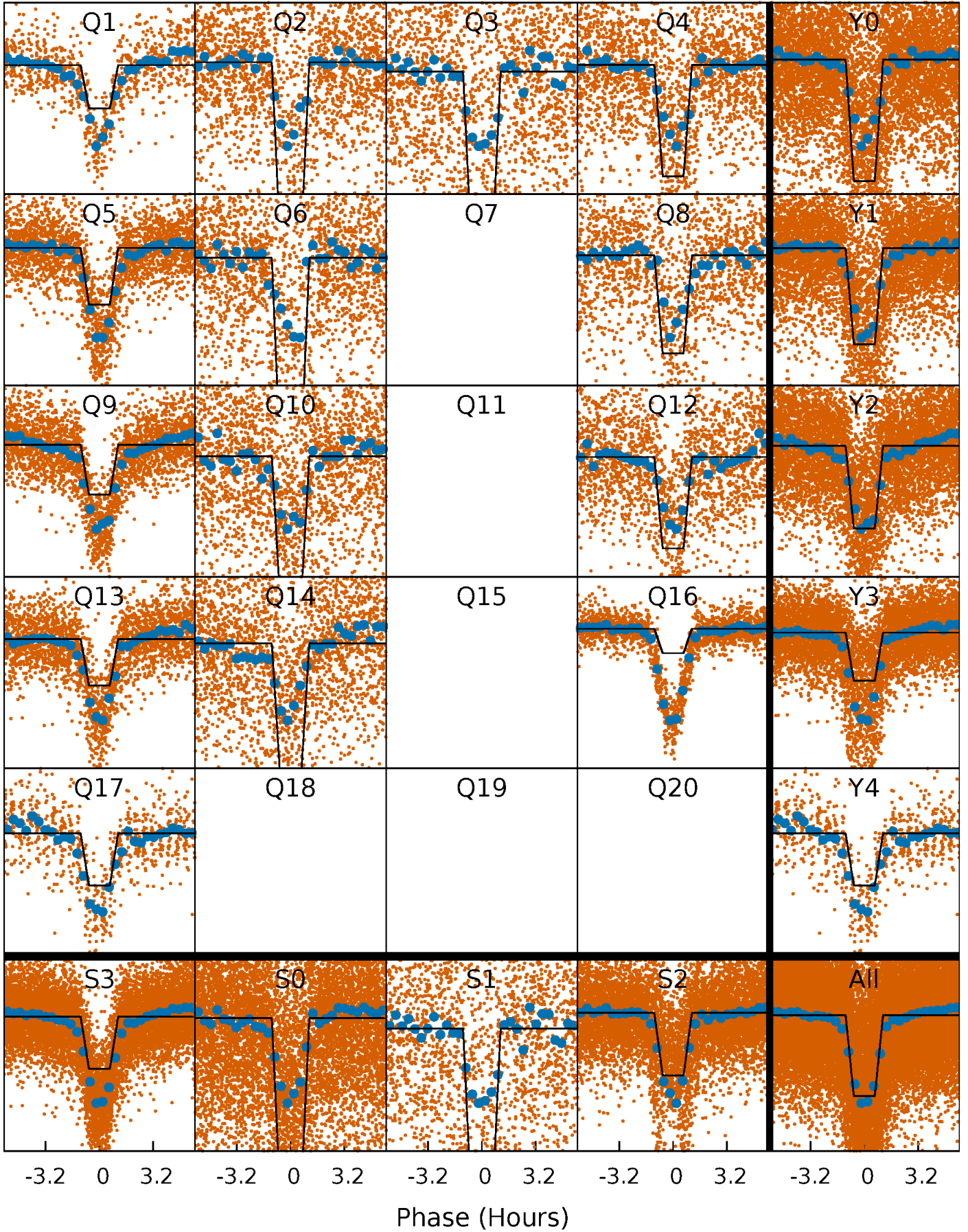
# DV Quarter-Phased Transit Curves

TCE 010743597-01 P= 0.816977 Days  $T_0=132.043219$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

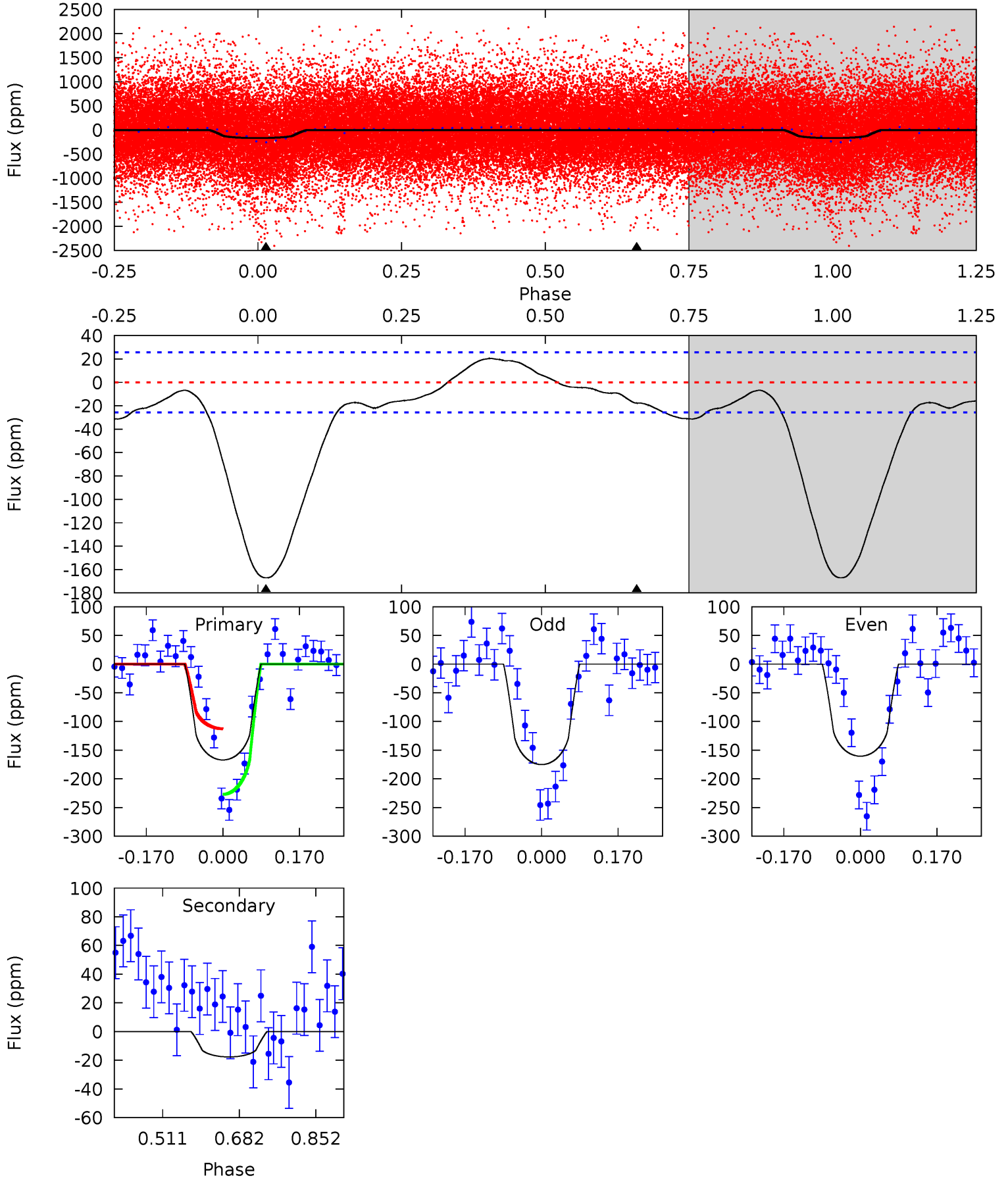
TCE 010743597-01 P= 0.817027 Days  $T_0=132.017730$  (BKJD)



# DV Model-Shift Uniqueness Test

010743597-01, P = 0.816977 Days, E = 131.226242 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
28.9	3.06	0	0	4.45	1.37	2.66	28.9	28.9	3.06	3.06	1.27	2.73	0.11	9.93

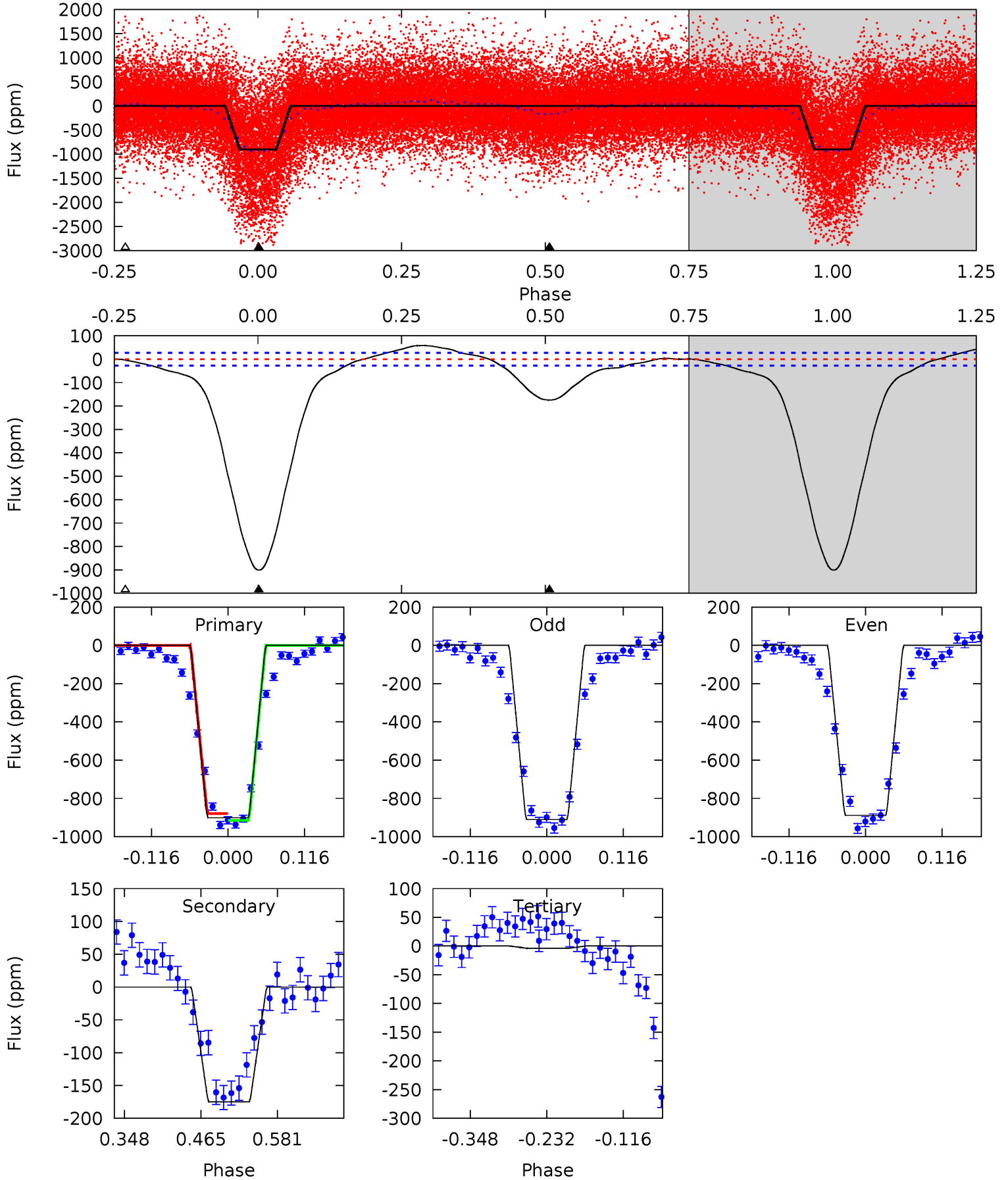




# Alt Model-Shift Uniqueness Test

010743597-01, P = 0.817027 Days, E = 131.200703 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
147.7	28.6	0.64	0	4.53	1.57	5.80	147.0	147.7	28.0	28.6	1.81	1.21	0.06	2.91



### Stellar Parameters For KIC 010743597

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5619^{+169}_{-169}$	$4.536^{+0.035}_{-0.196}$	$0.020^{+0.250}_{-0.300}$	$0.874^{+0.248}_{-0.078}$	$0.956^{+0.095}_{-0.104}$	$2.018^{+0.379}_{-1.007}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+28%/-9%	+10%/-11%	+19%/-50%
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 010743597-01 / KOI 0989.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-18 \pm 6$	$1.40^{+0.73}_{-0.72}$	$2558^{+164}_{-121}$	$3410^{+1102}_{-708}$	$1.365^{+4.133}_{-0.856}$
Alt.	$-175 \pm 6$	$3.15^{+0.95}_{-0.83}$	$2551^{+179}_{-112}$	$3887^{+446}_{-332}$	$2.686^{+2.262}_{-1.065}$

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



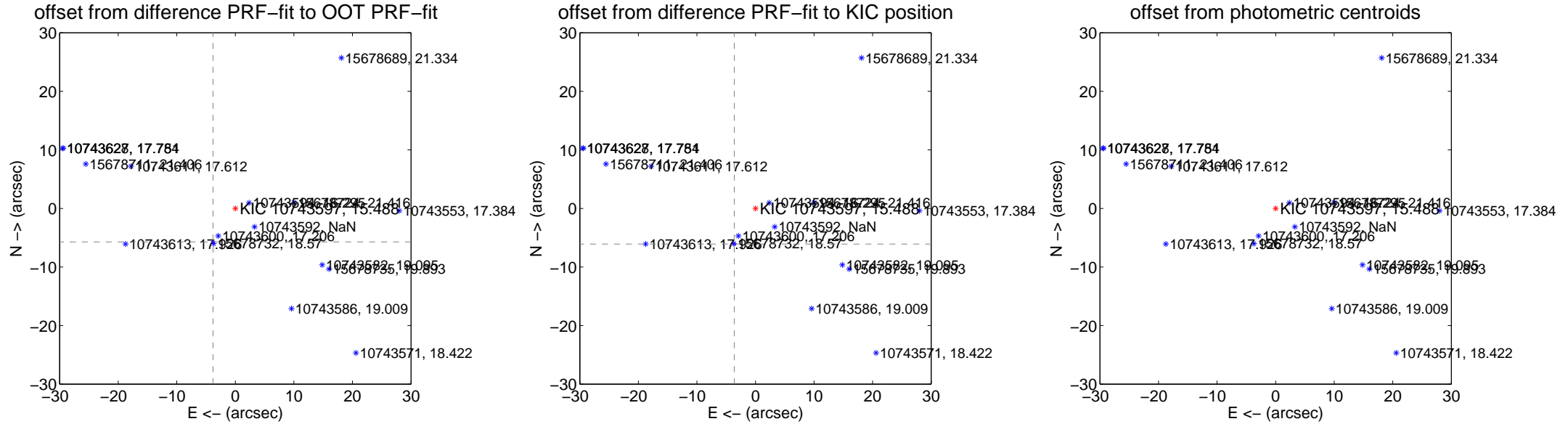
## DV Centroid Data

Supplemental centroid analysis for 010743597-01. Kepler magnitude: 15.49. Transit SNR 22.22

There are 4 quarters with good PRF difference image offsets

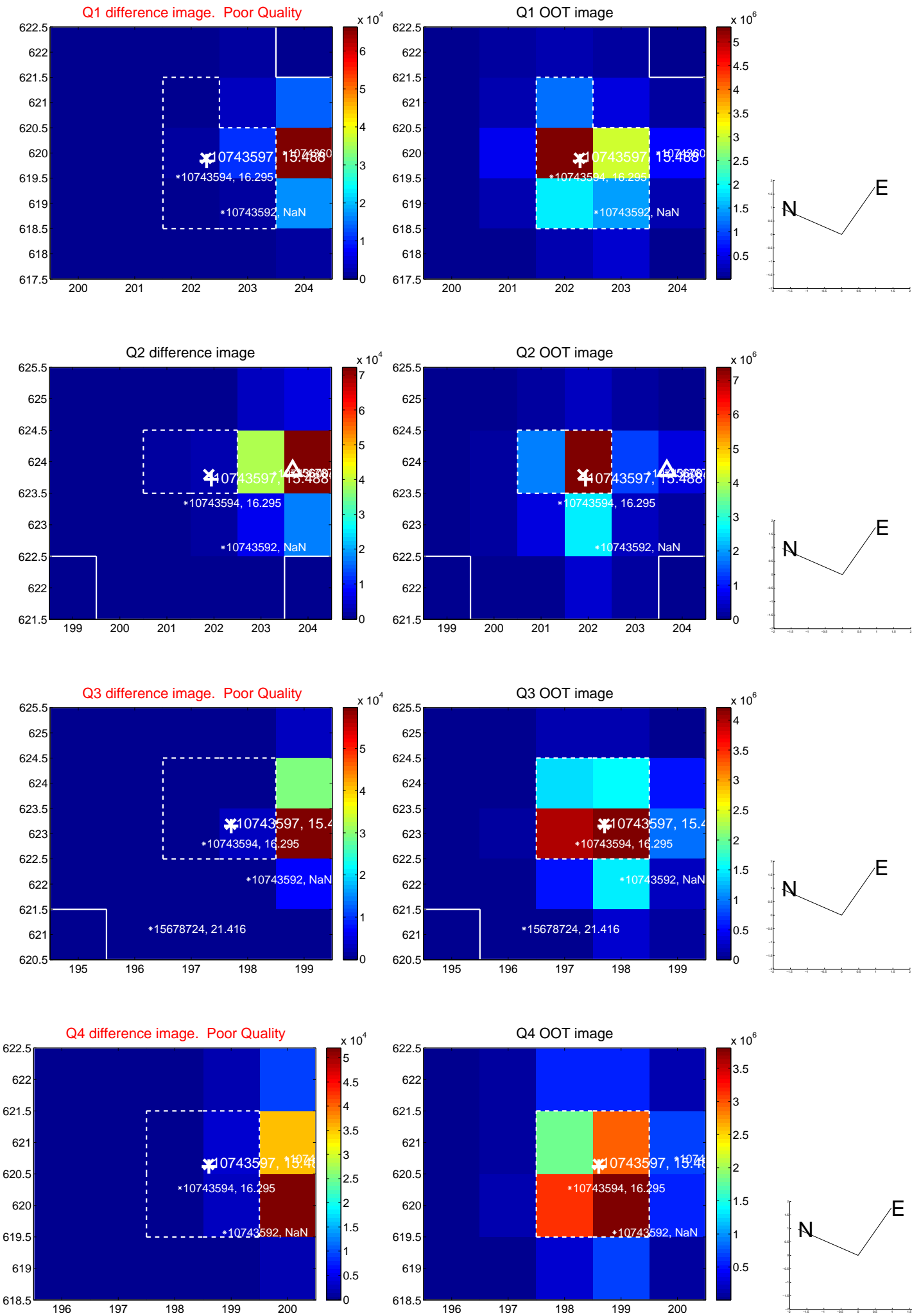
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>6.868 <math>\pm</math> 0.067</b>	<b>101.79</b>	$3.812 \pm 0.067$	$-5.713 \pm 0.068$
PRF-fit source offset from KIC position	<b>7.076 <math>\pm</math> 0.067</b>	<b>105.24</b>	$3.621 \pm 0.069$	$-6.079 \pm 0.067$
photometric centroid source offset	<b>90.54 <math>\pm</math> 0.64</b>	<b>142.08</b>	$47.38 \pm 0.59$	$-77.16 \pm 0.65$

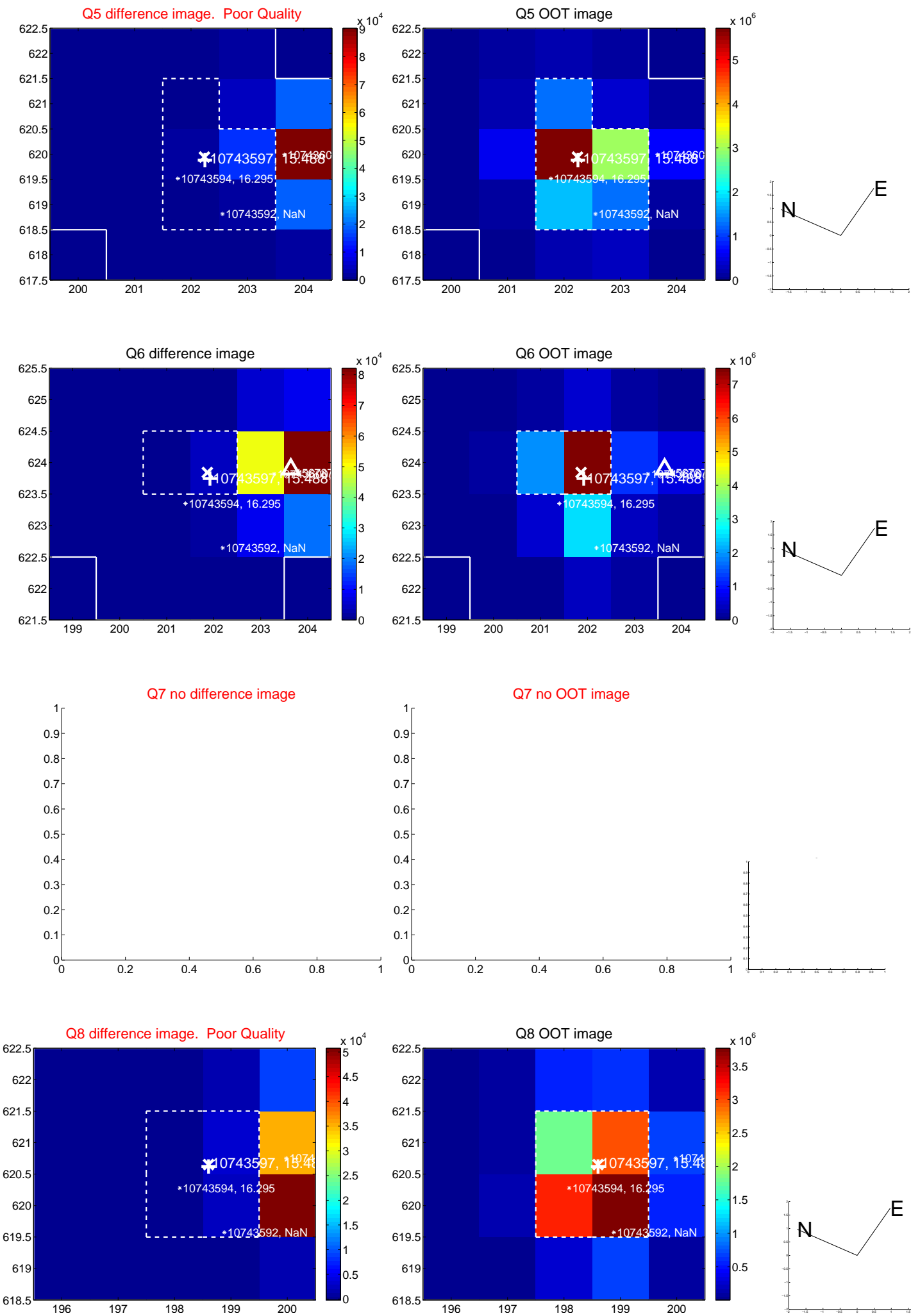


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

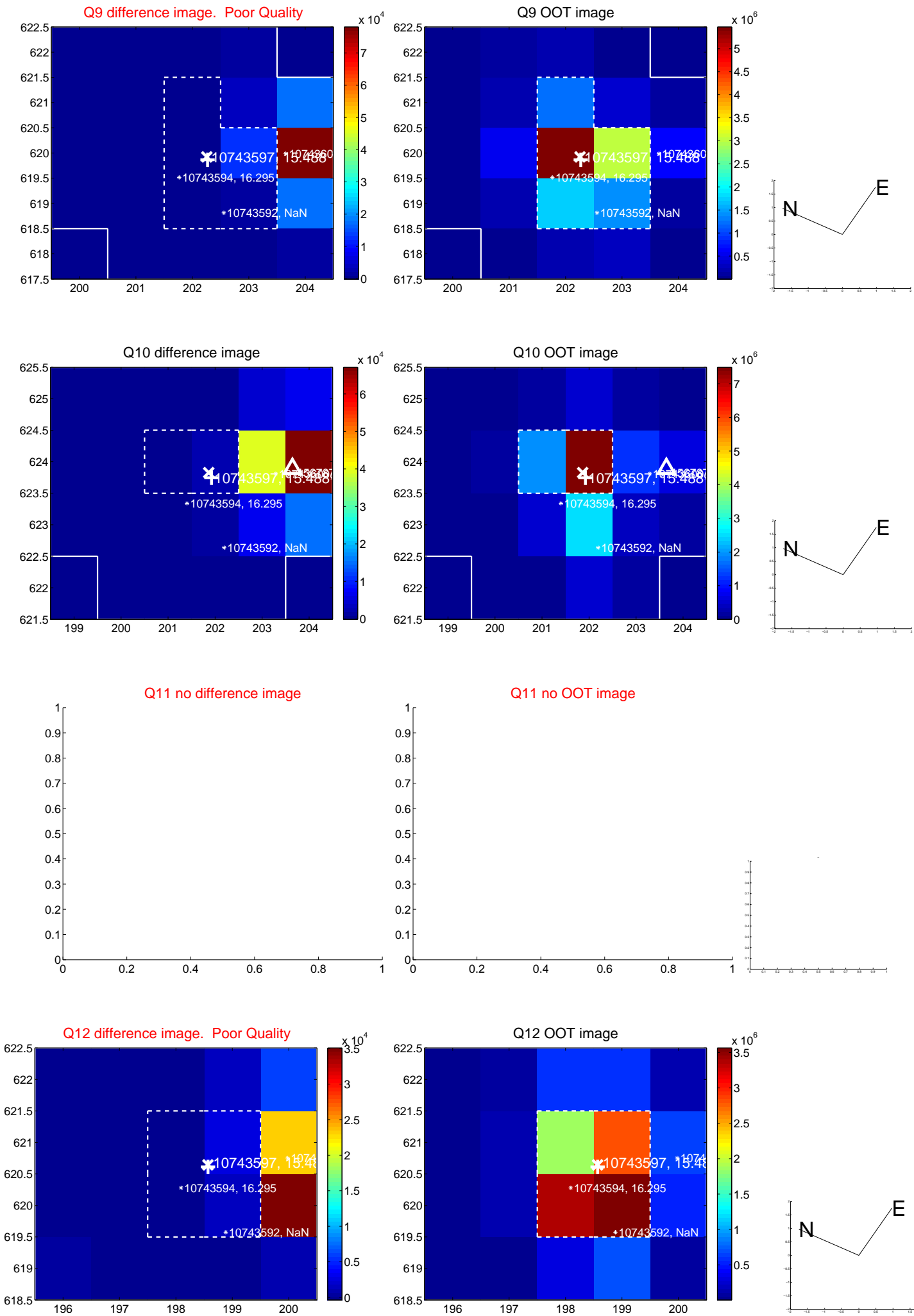
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



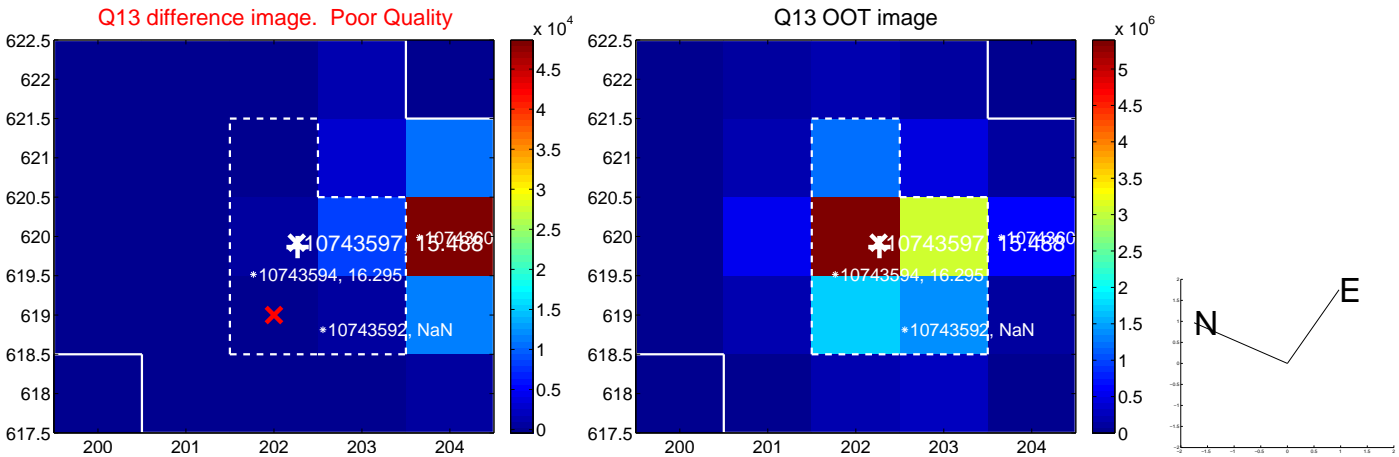
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

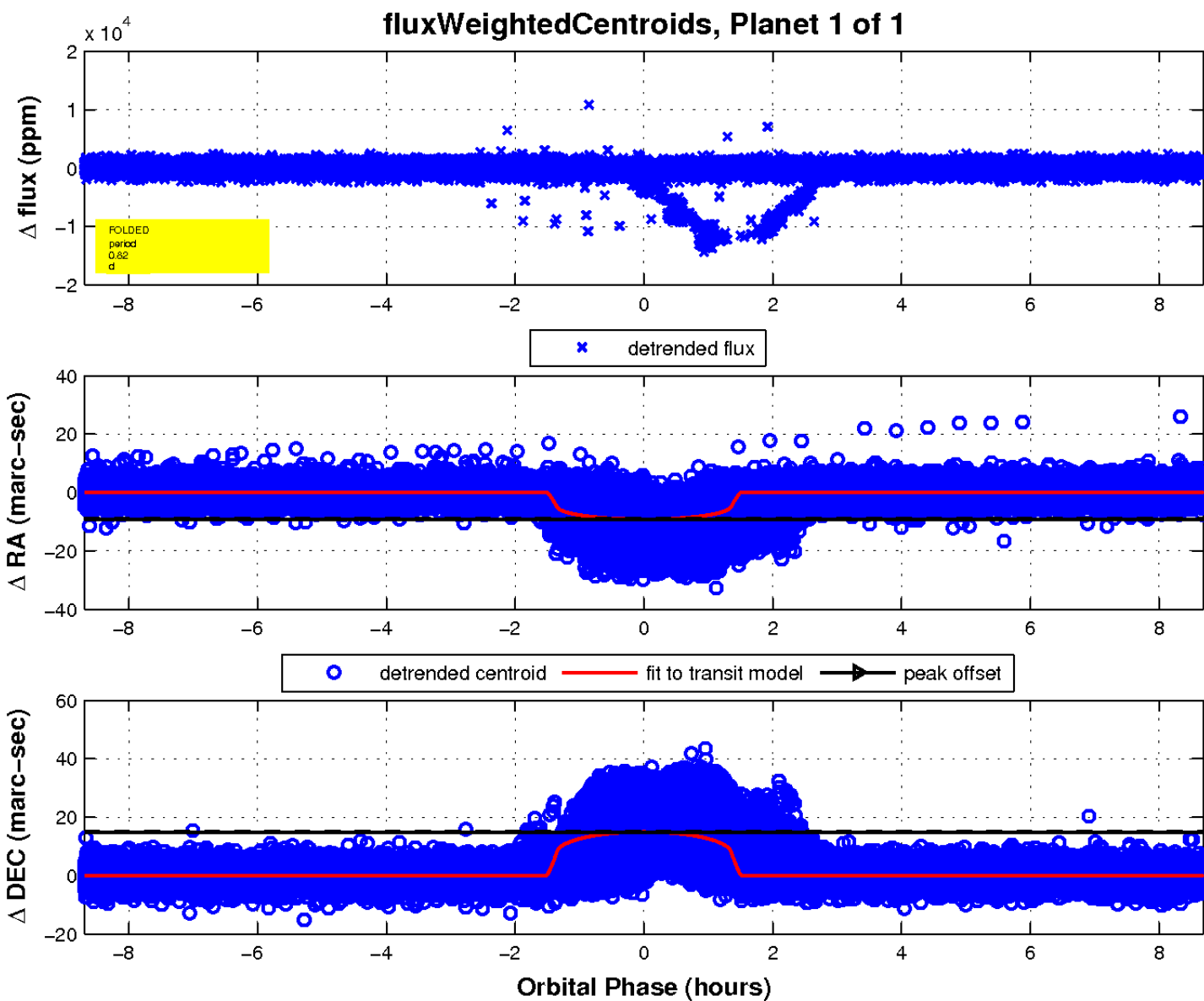
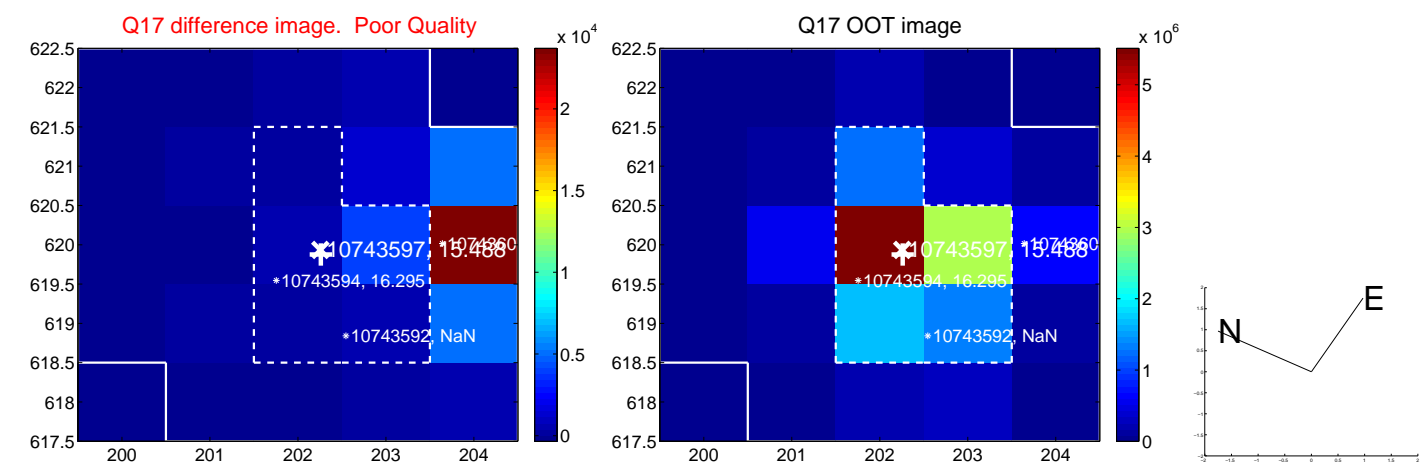


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

