

# KIC 009716301

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009716301-01	OBS	No	5.984656	134.067140	9.0	14.865	8.4	6.7	3.86	8048	1.34	7633.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009716301-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

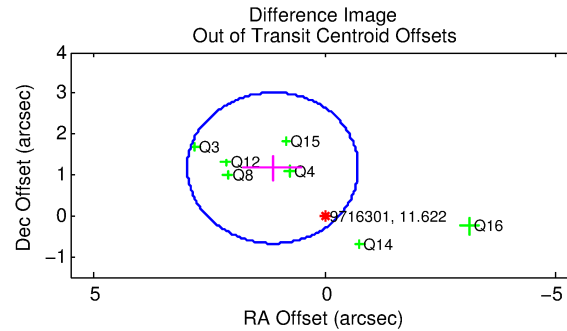
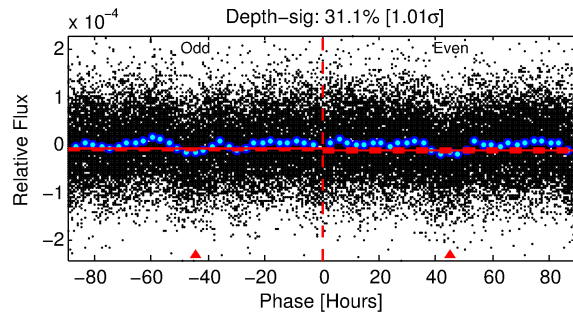
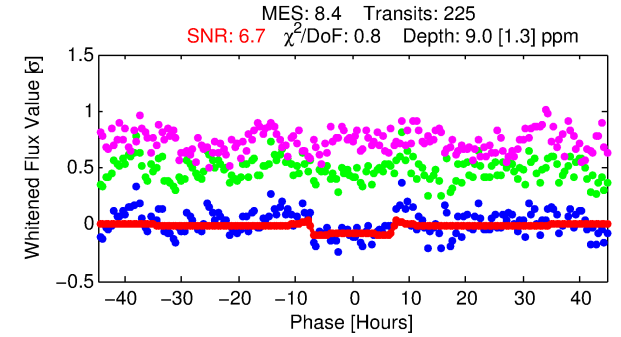
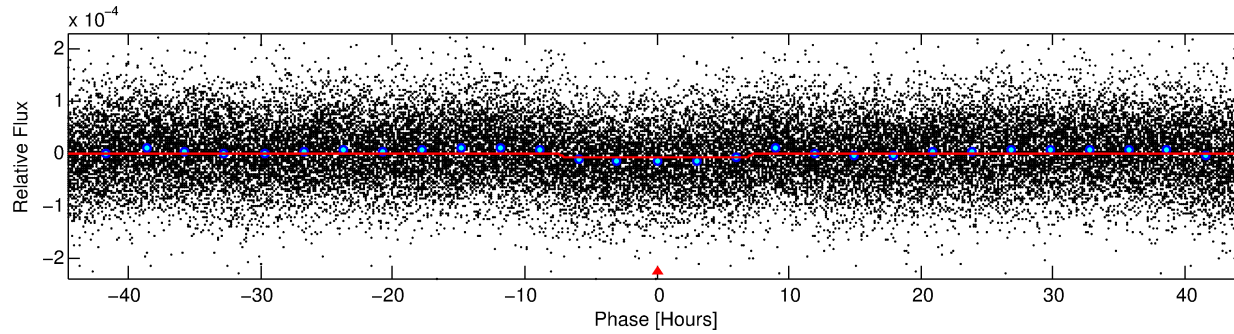
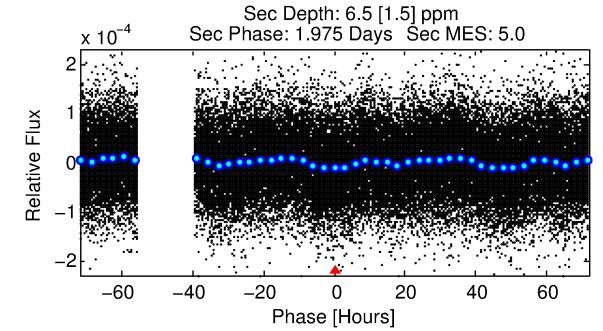
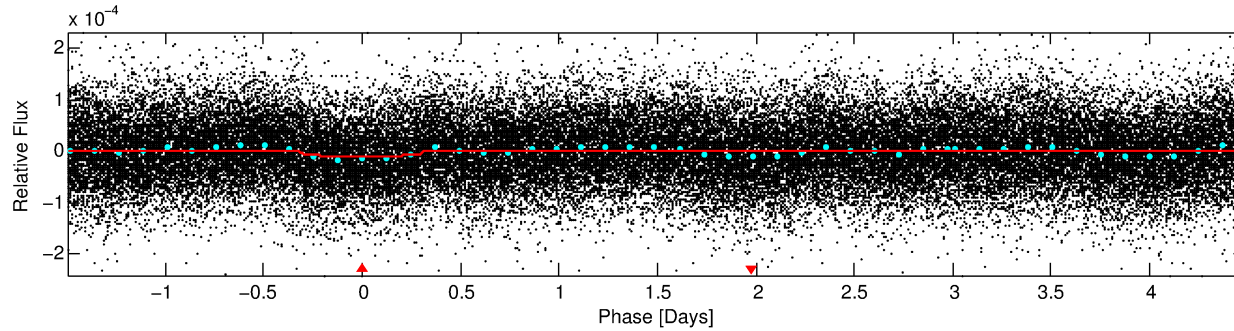
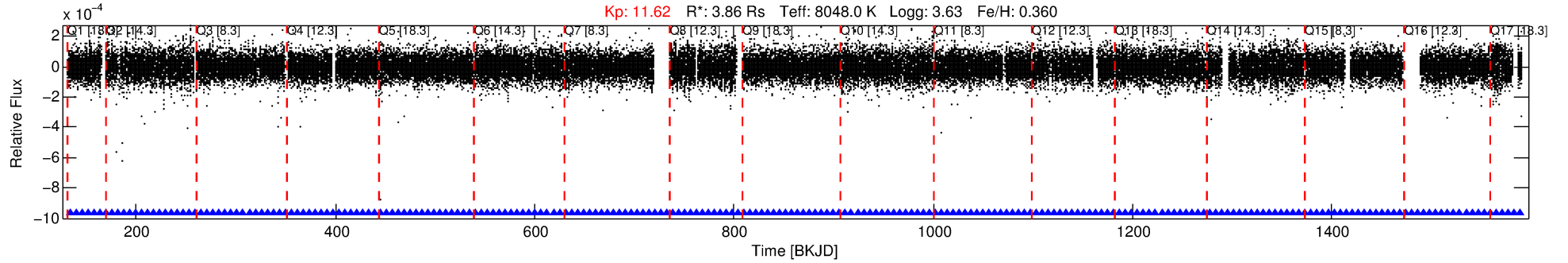
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009716301-01

No Significant Match Found

# DV One-Page Summary

KIC: 9716301 Candidate: 1 of 1 Period: 5.985 d



## DV Fit Results:

Period = 5.98466 [0.00011] d  
Epoch = 134.0671 [0.0137] BKJD  
Rp/R\* = 0.0032 [0.0005]  
a/R\* = 1.66 [0.86]  
b = 0.90 [0.18]  
Seff = 7633.56 [5888.95]  
Teq = 2383 [460] K  
Rp = 1.34 [0.64] Re  
a = 0.0857 [0.0391] AU  
Ag = 14.64 [12.29] [1.11σ]  
Teffp = 7208 [751] K [5.48σ]

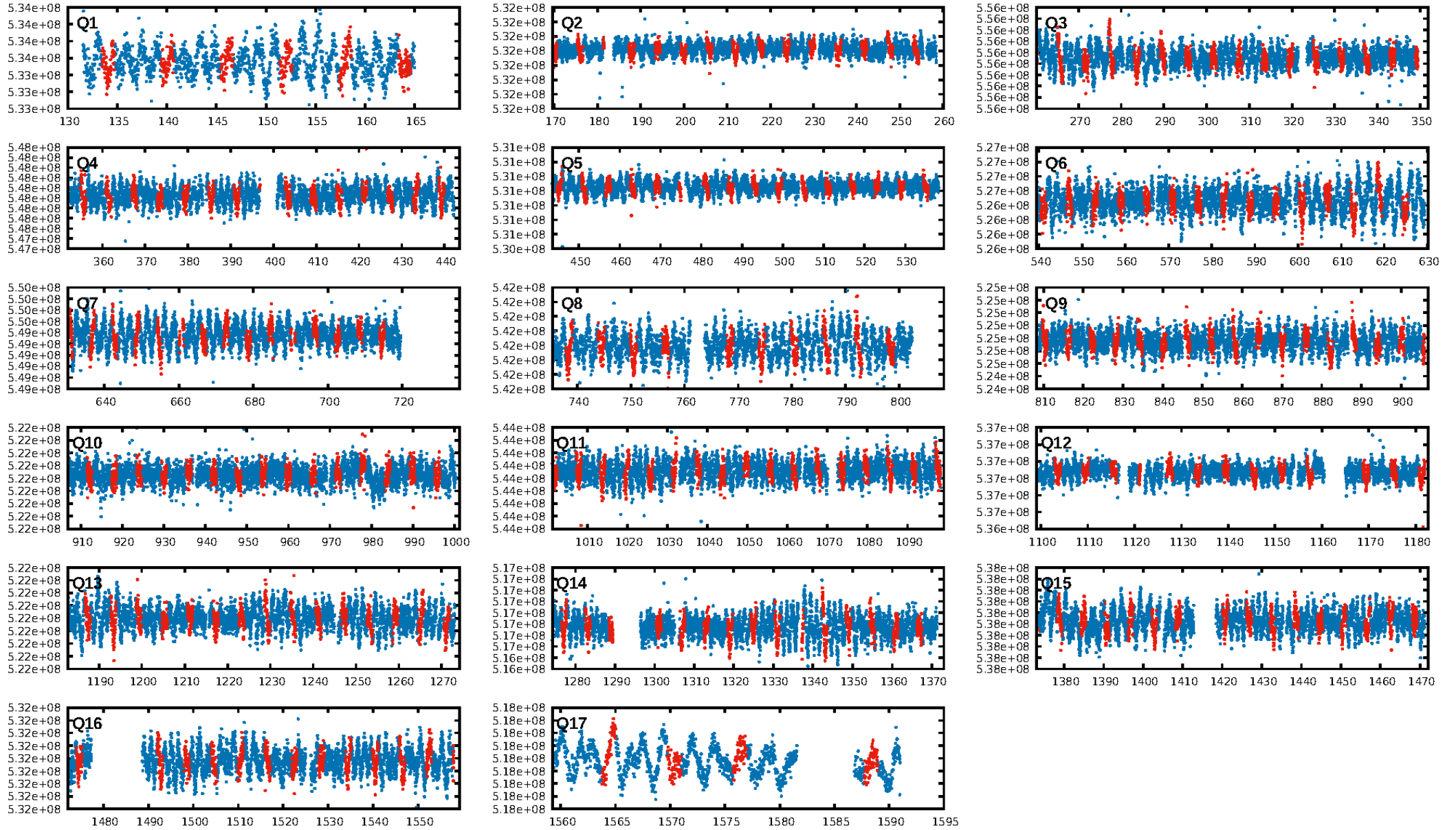
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.12e-12**  
RollingBand-fgt: 1.00 [215/215]  
GhostDiagnostic-chr: 2.797  
Centroid-sig: 76.8%  
Centroid-so: 0.667 arcsec [0.46σ]  
OotOffset-rm: 1.618 arcsec [2.63σ]  
KicOffset-rm: 1.589 arcsec [2.19σ]  
OotOffset-st: 1/2/4/0 [7]  
KicOffset-st: 1/2/4/0 [7]  
DiffImageQuality-fgm: 0.71 [5/7]  
DiffImageOverlap-fno: 1.00 [17/17]

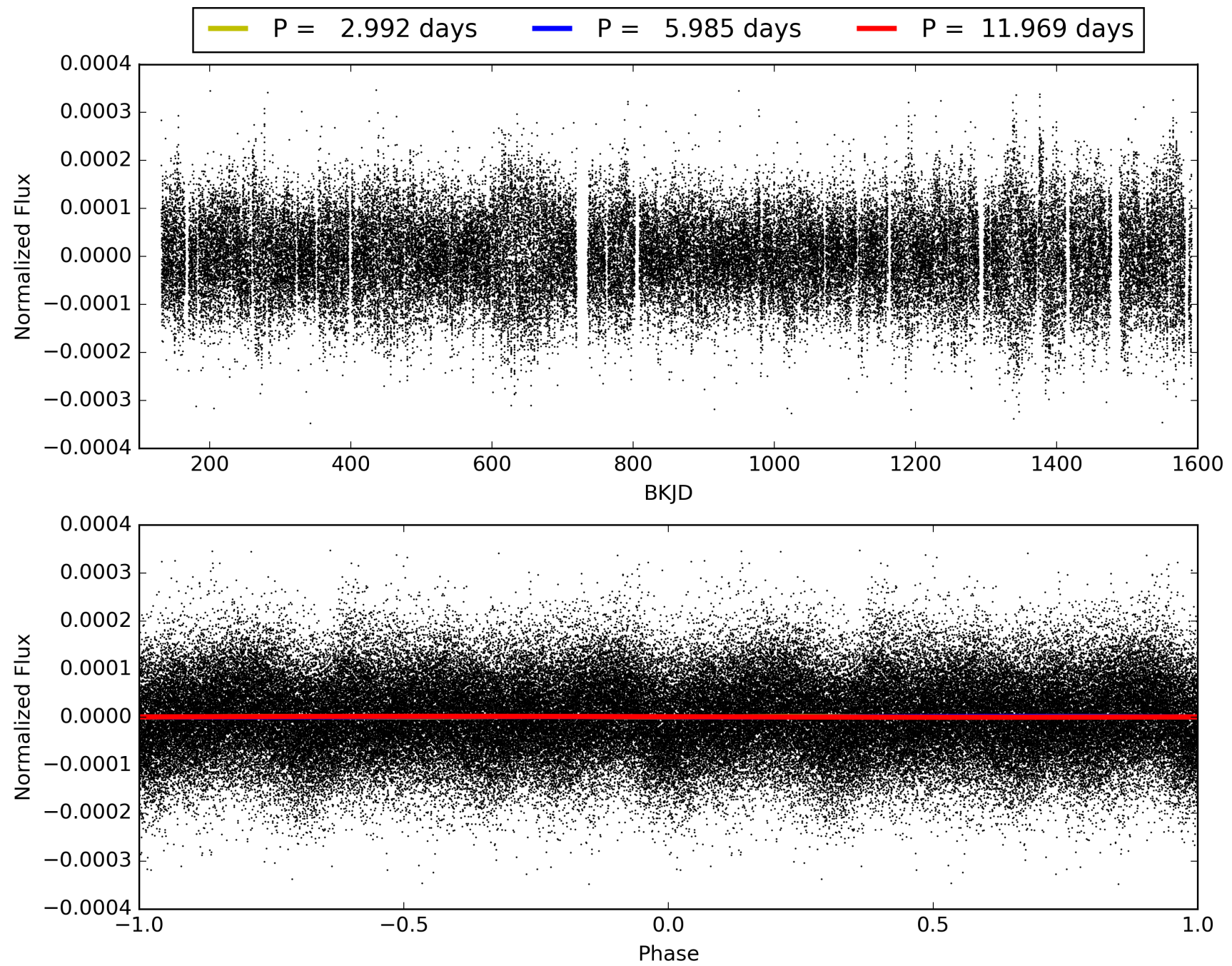
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:42:39 Z

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

# TCE 009716301-01, PDC Light Curves

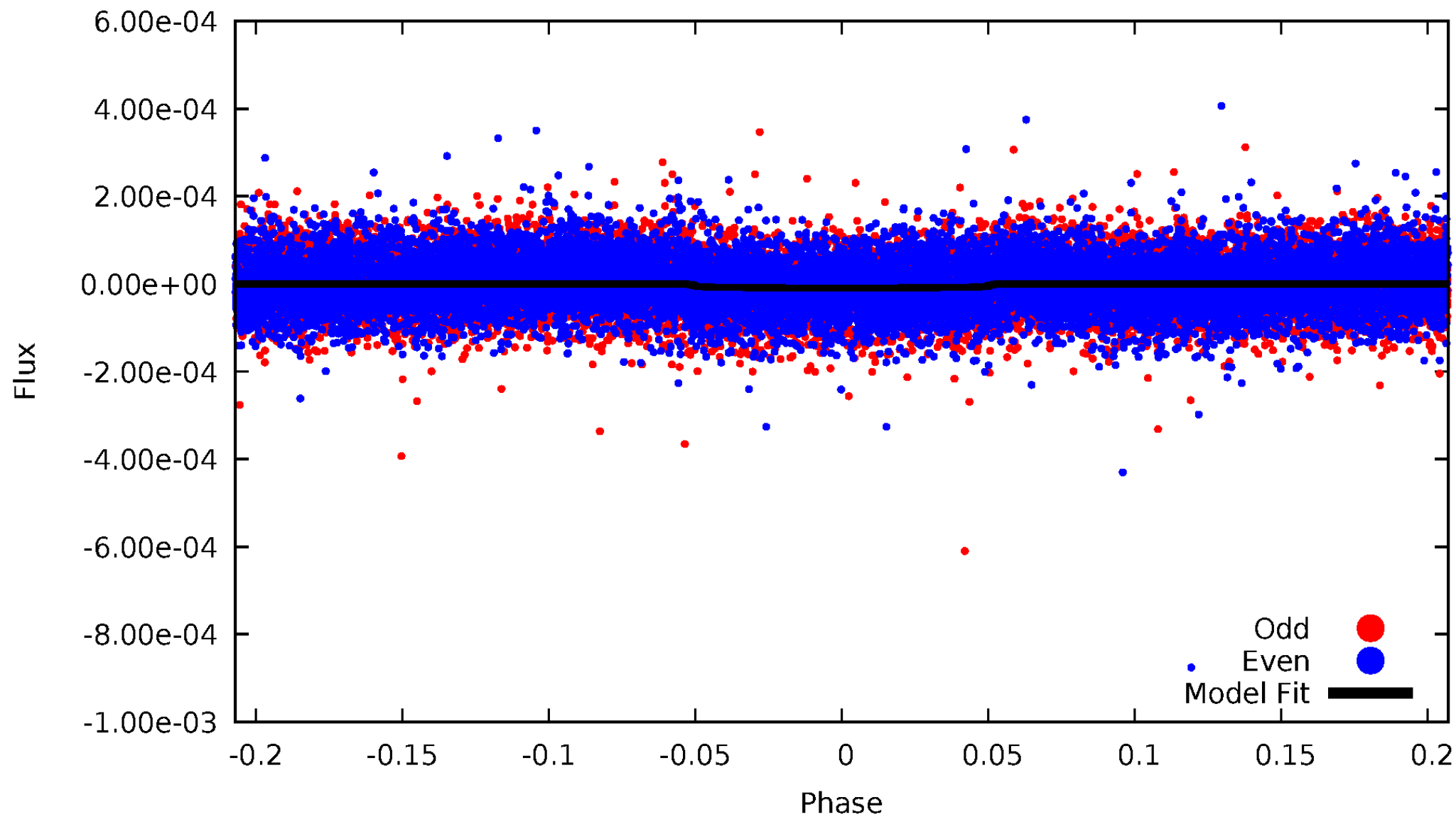


TCE 009716301-01



# DV Odd/Even

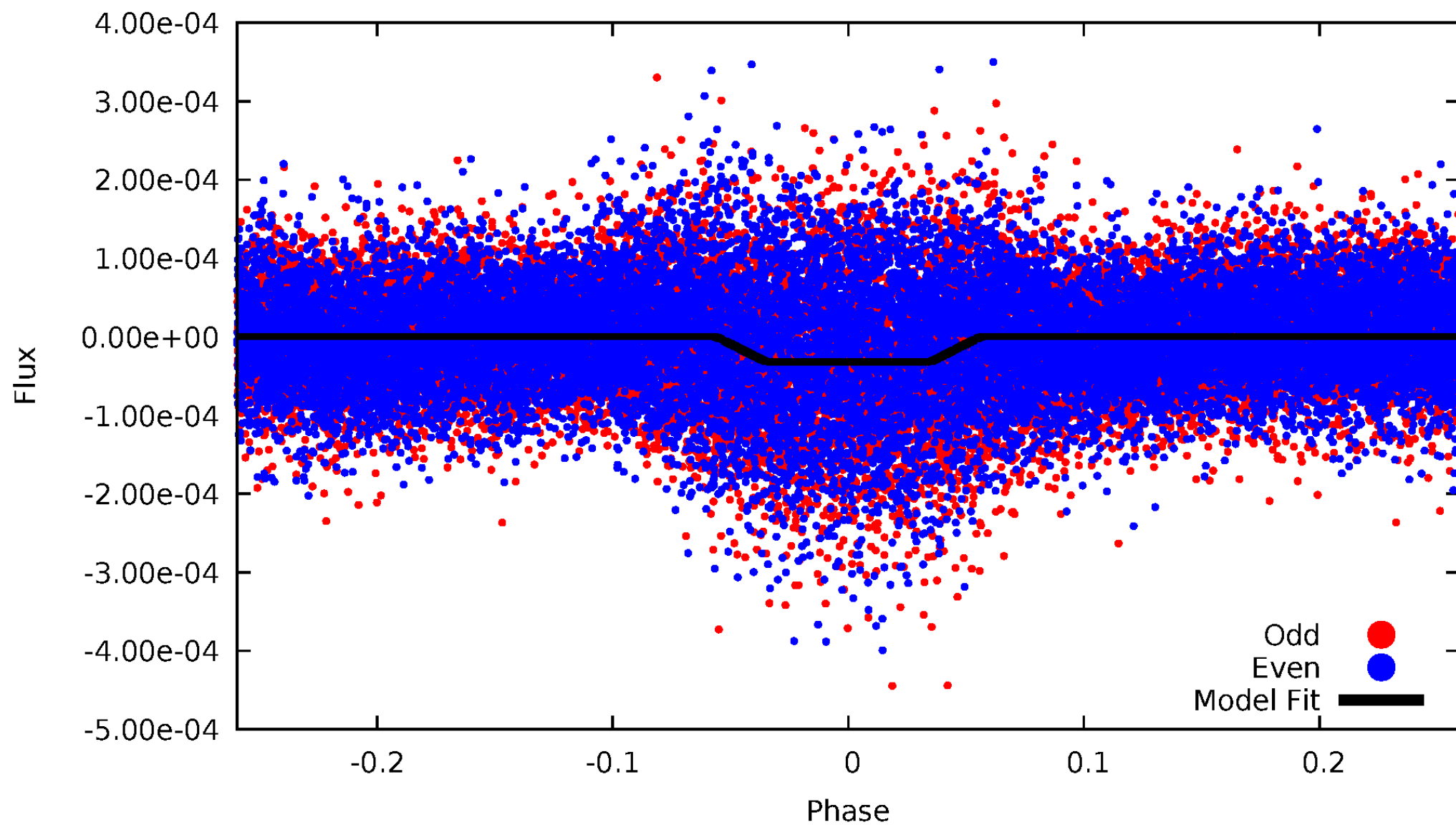
TCE 009716301-01





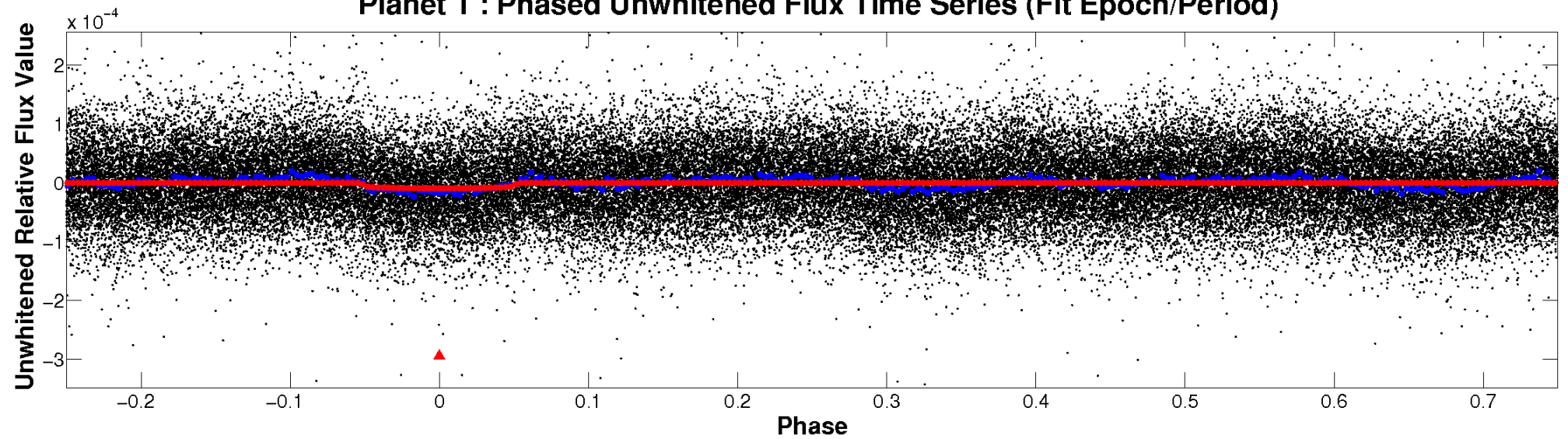
# ALT Odd/Even

TCE 009716301-01

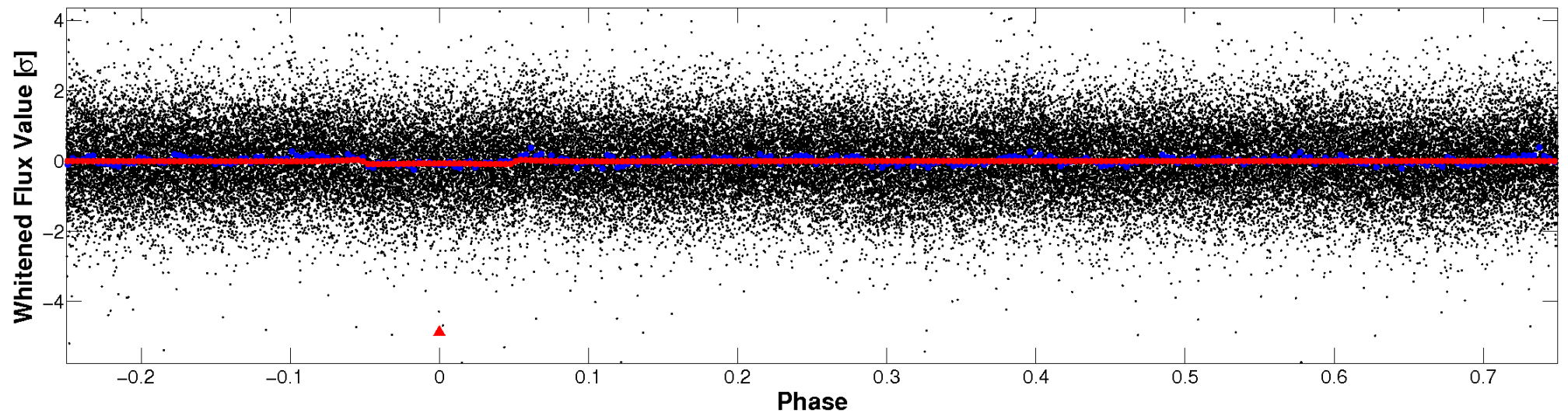


# Non-Whitened Vs. Whitened Light Curve

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

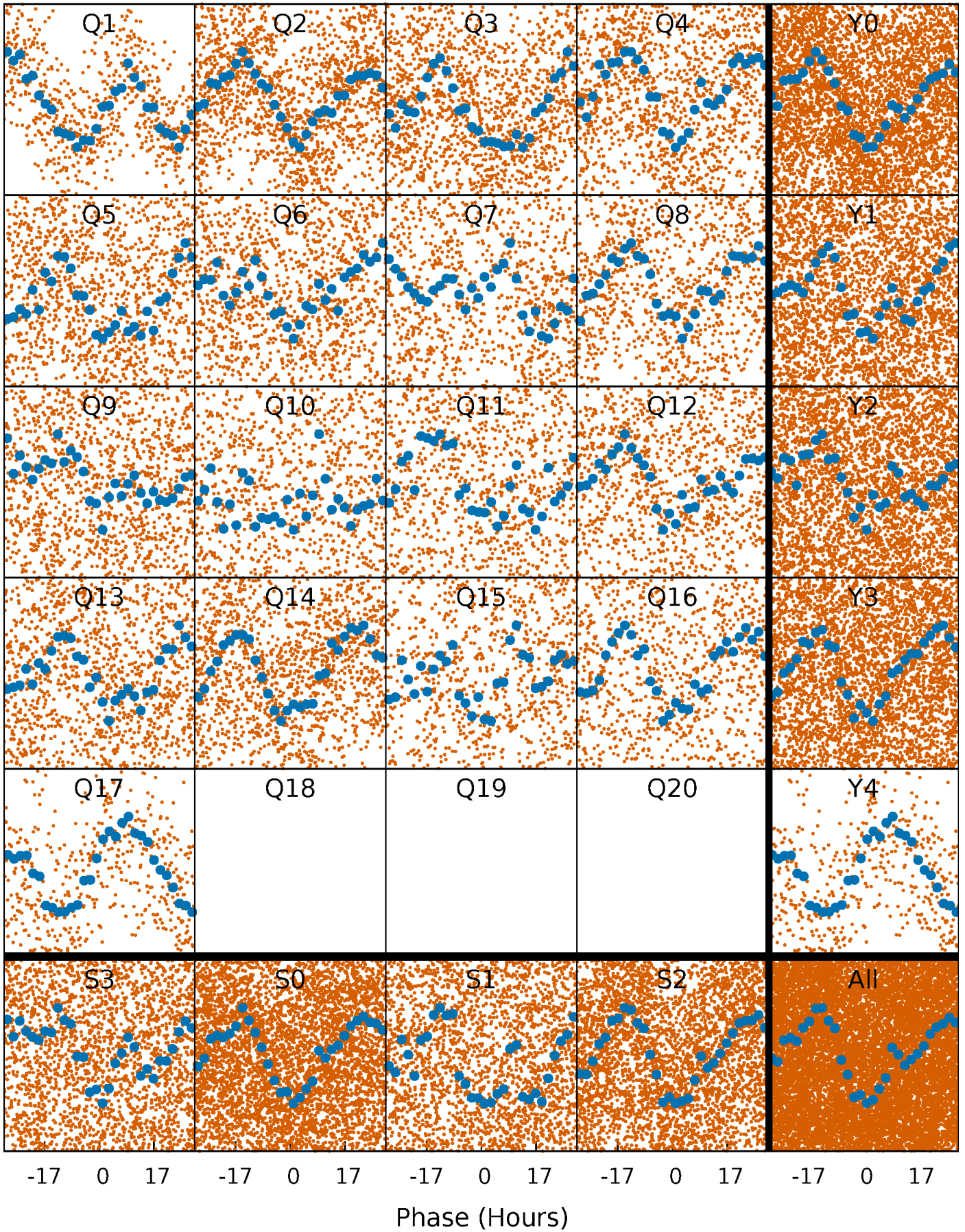


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

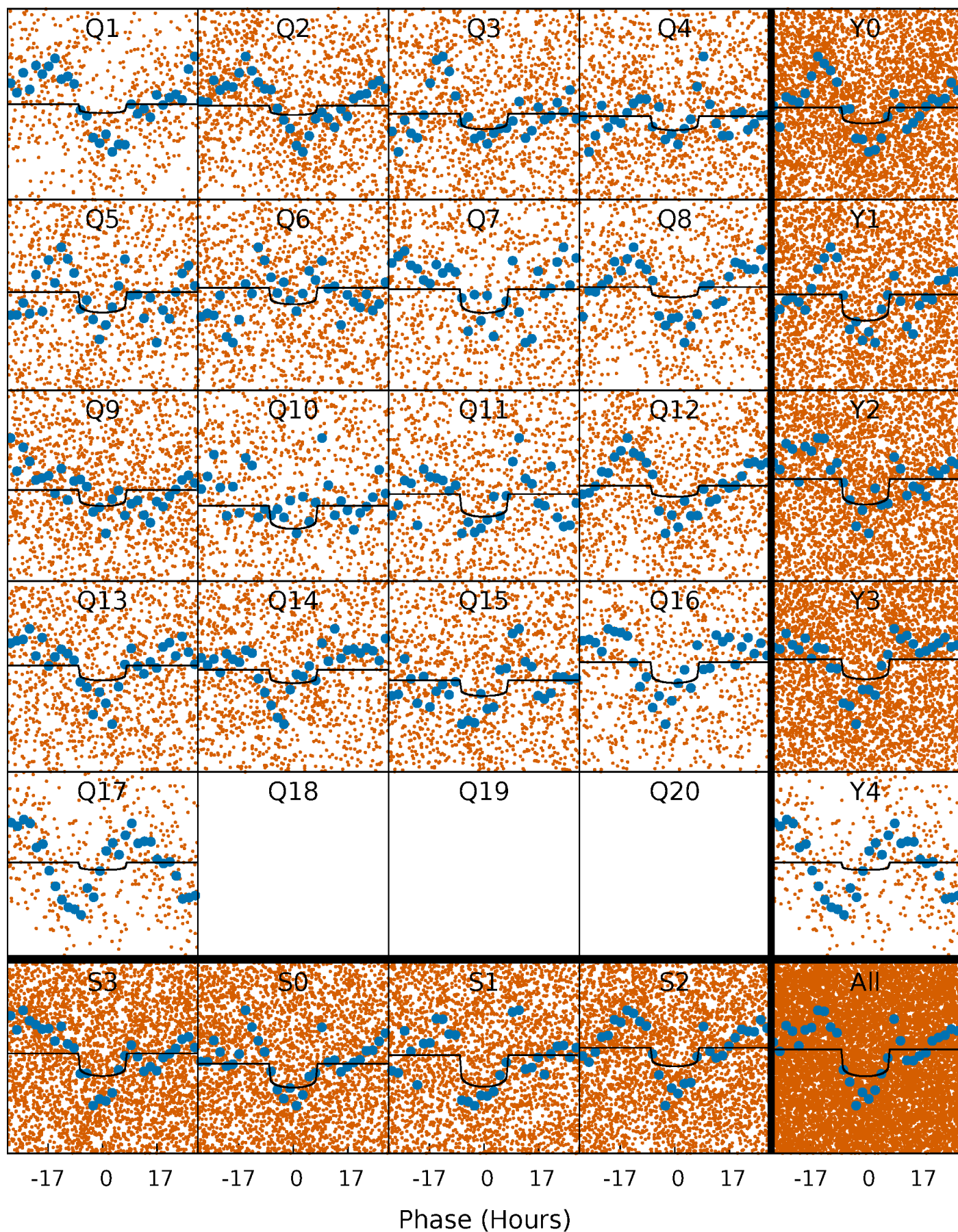
TCE 009716301-01 P= 5.984656 Days  $T_0=134.067140$  (BKJD)





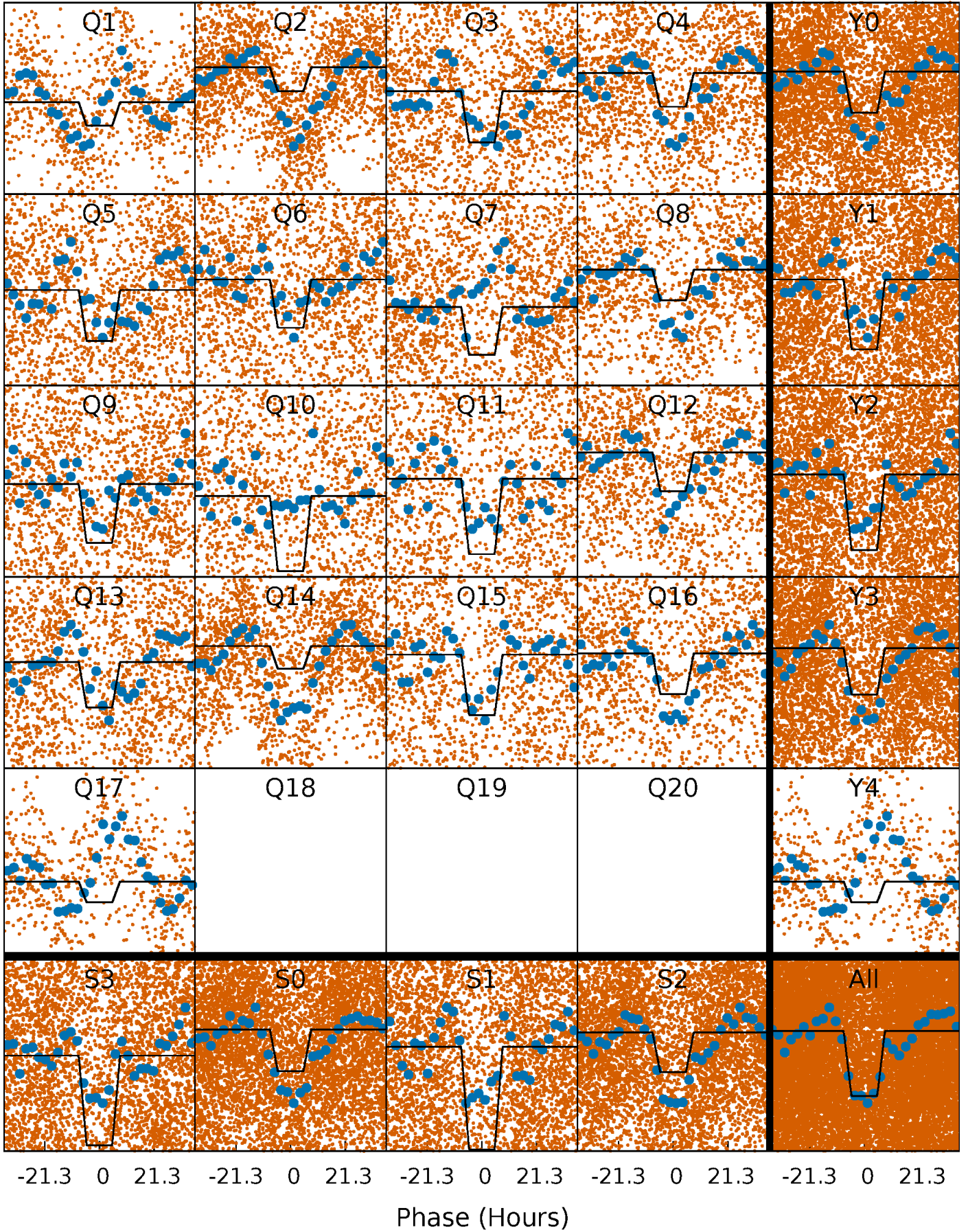
# DV Quarter-Phased Transit Curves

TCE 009716301-01 P= 5.984656 Days  $T_0=134.067140$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009716301-01 P= 5.984765 Days  $T_0=134.069902$  (BKJD)

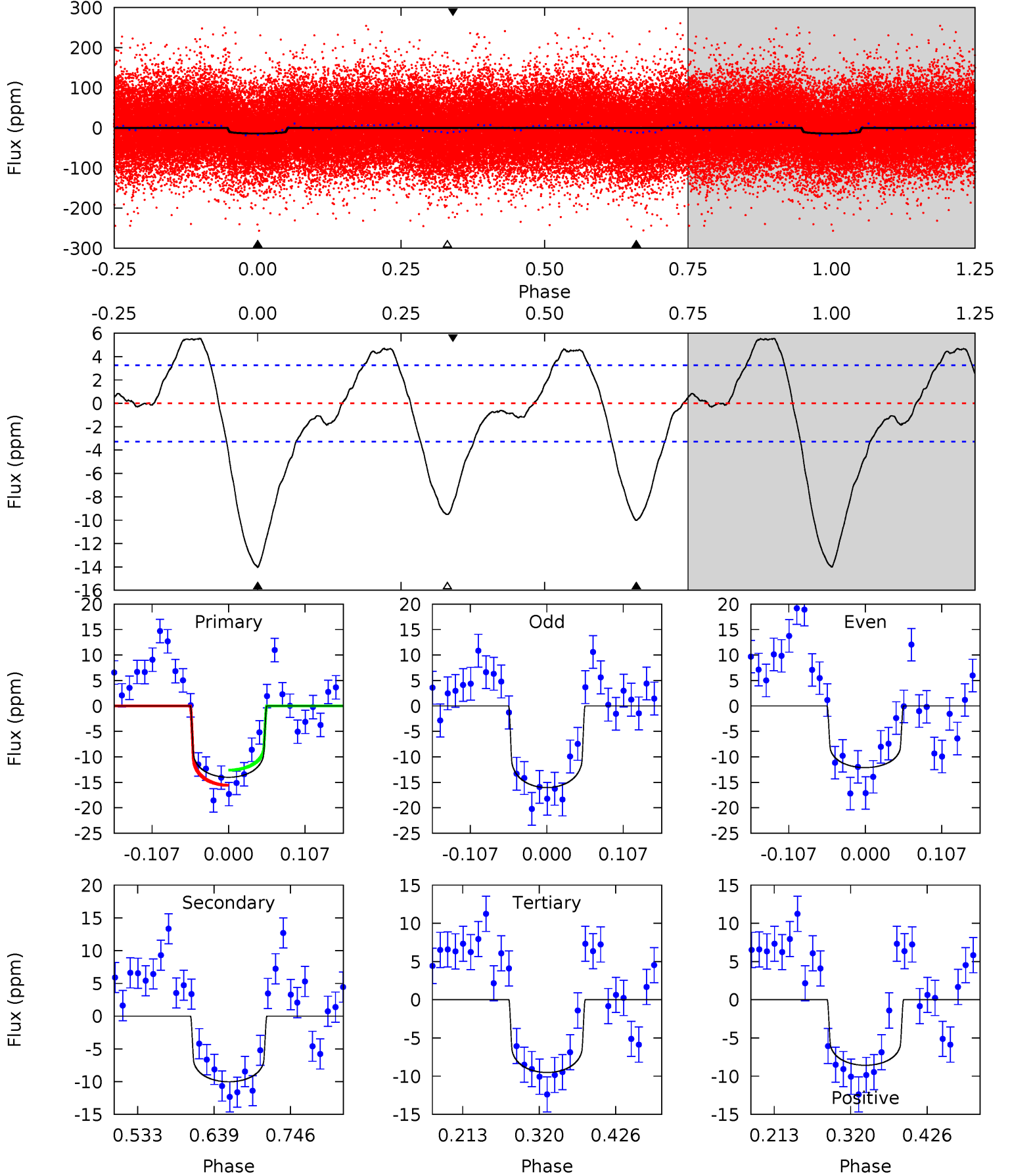




# DV Model-Shift Uniqueness Test

009716301-01, P = 5.984656 Days, E = 128.082484 Days

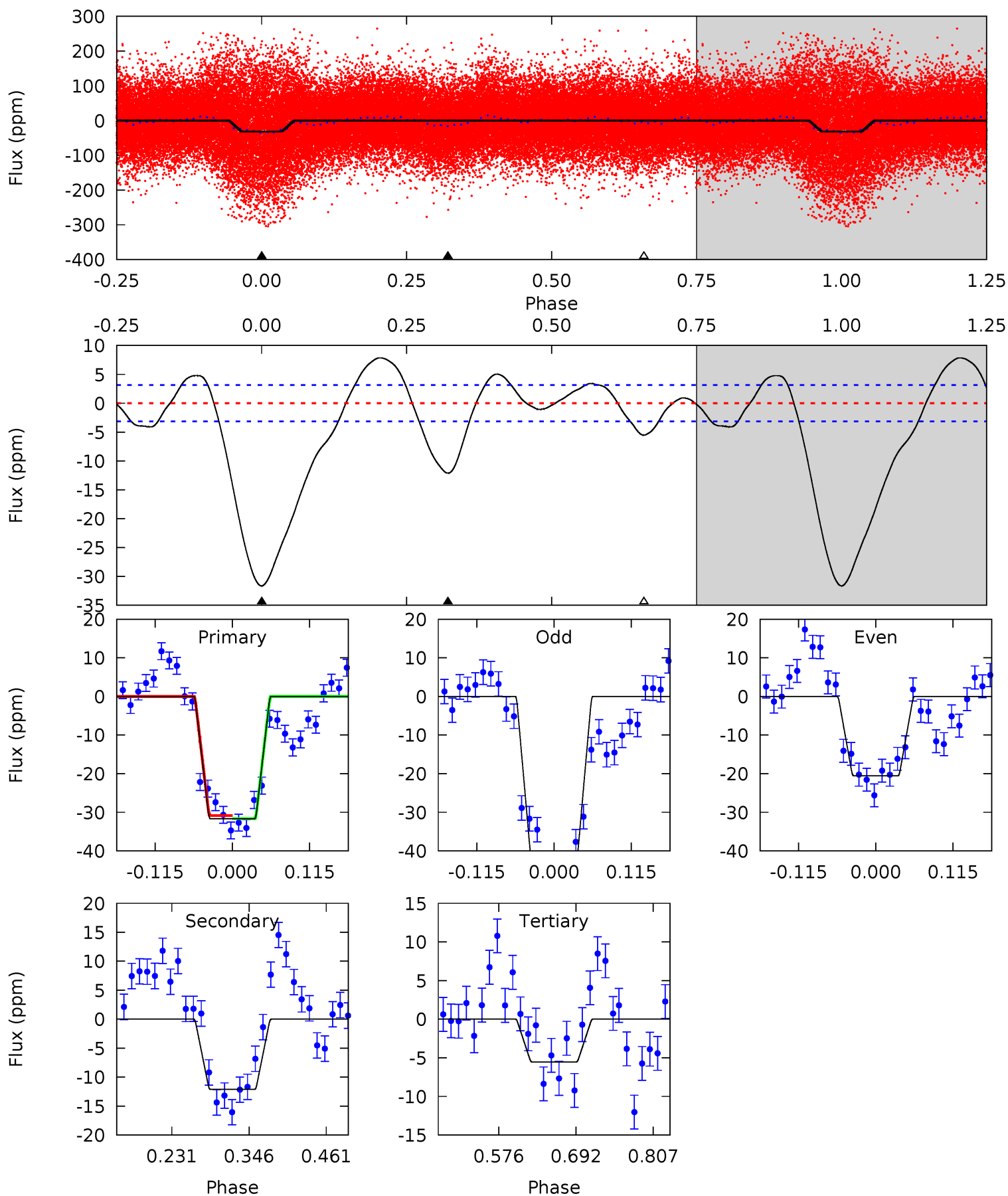
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	14.0	13.3	-11.9	4.55	1.61	5.28	6.26	31.5	0.70	25.9	2.74	1.02	0.28	2.06



# Alt Model-Shift Uniqueness Test

009716301-01, P = 5.984765 Days, E = 128.085137 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
45.6	17.5	7.98	0	4.53	1.57	4.62	37.7	45.6	9.49	17.5	15.2	1.12	0.20	0.54





### Stellar Parameters For KIC 009716301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8048^{+228}_{-359}$	$3.634^{+0.448}_{-0.112}$	$0.360^{+0.050}_{-0.500}$	$3.861^{+0.804}_{-1.741}$	$2.342^{+0.321}_{-0.595}$	$0.057^{+0.238}_{-0.021}$
	+3%/-4%	+12%/-3%	+14%/-139%	+21%/-45%	+14%/-25%	+415%/-36%
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 009716301-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-10 \pm 1$	$1.22^{+0.31}_{-0.32}$	$3200^{+256}_{-382}$	$7959^{+948}_{-717}$	$27^{+21}_{-9}$
Alt.	$-12 \pm 1$	$2.25^{+0.42}_{-0.58}$	$3217^{+246}_{-410}$	$6063^{+354}_{-325}$	$9.660^{+6.880}_{-2.660}$

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

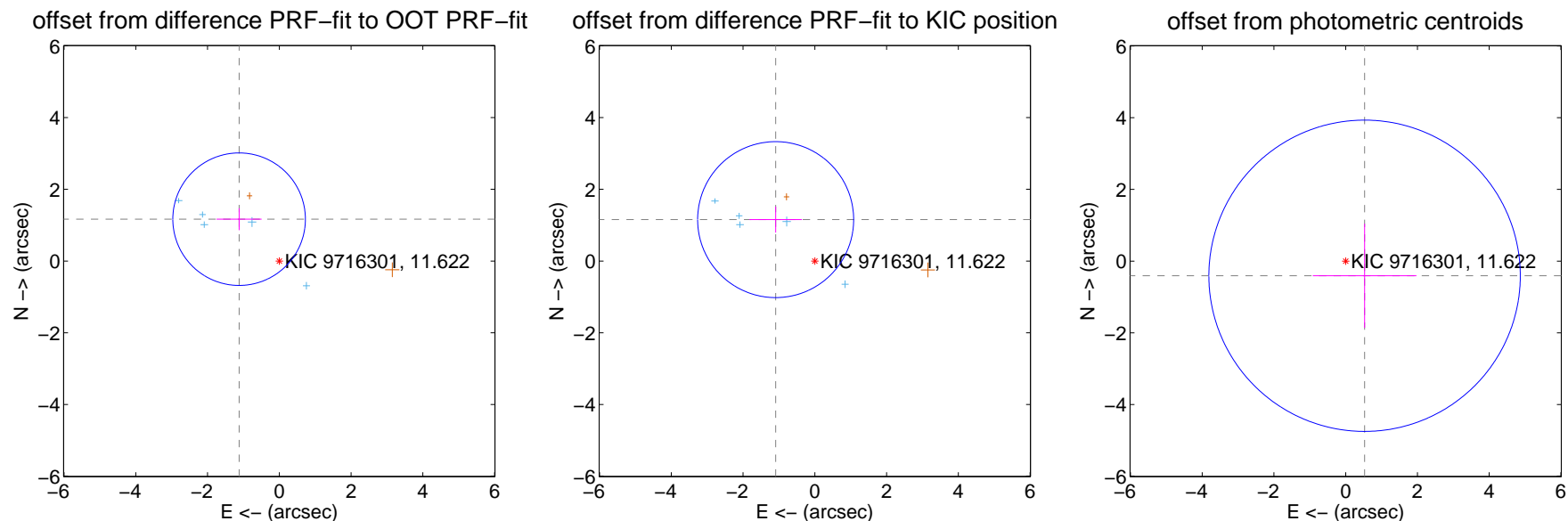
## DV Centroid Data

Supplemental centroid analysis for 009716301-01. **Kepler magnitude: 11.62.** Transit SNR 6.68

There are 5 quarters with good PRF difference image offsets

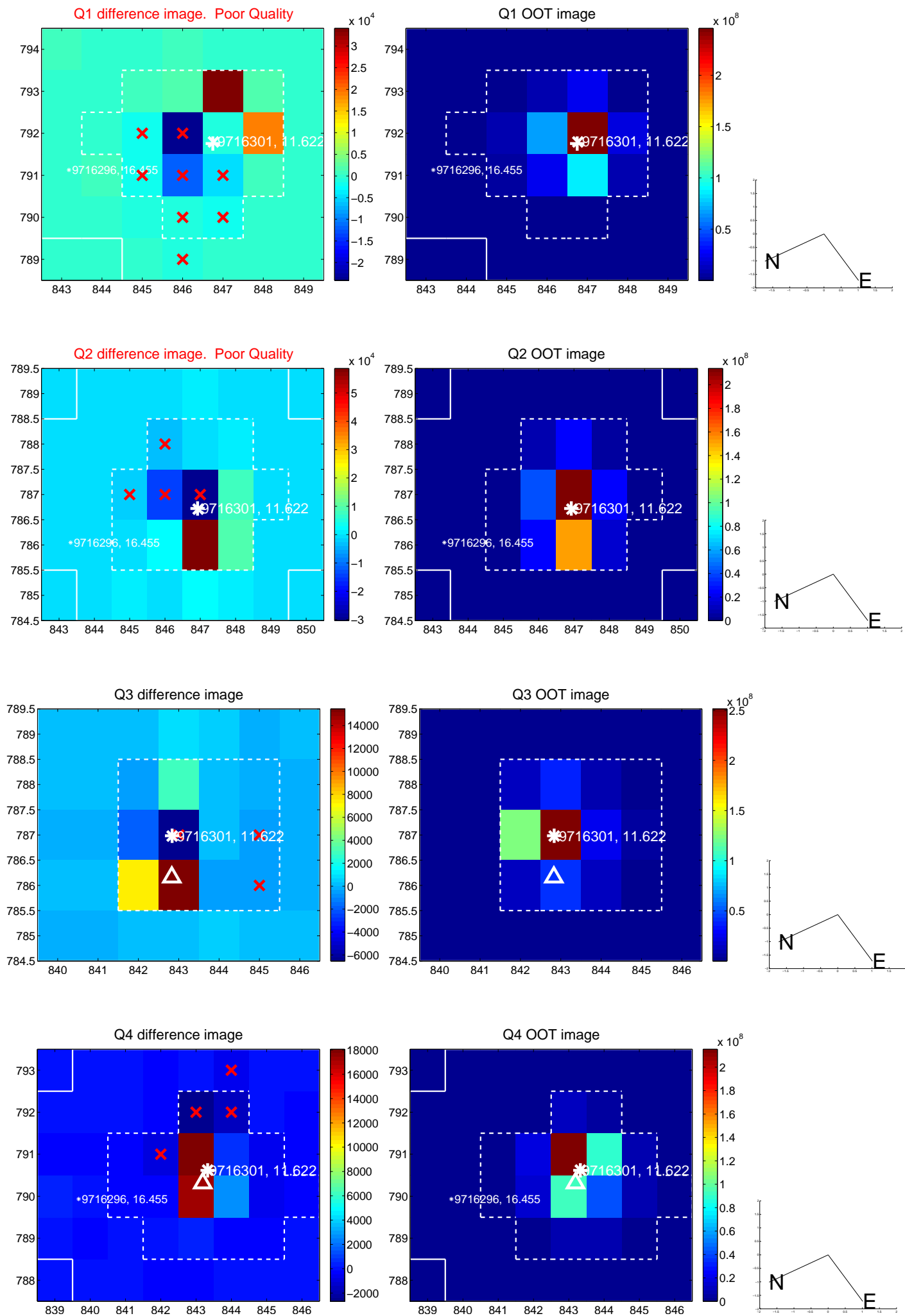
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.618 \pm 0.616$	2.63	$1.121 \pm 0.627$	$1.167 \pm 0.306$
PRF-fit source offset from KIC position	$1.589 \pm 0.725$	2.19	$1.092 \pm 0.731$	$1.155 \pm 0.362$
photometric centroid source offset	$0.67 \pm 1.45$	0.46	$-0.53 \pm 1.44$	$-0.41 \pm 1.45$

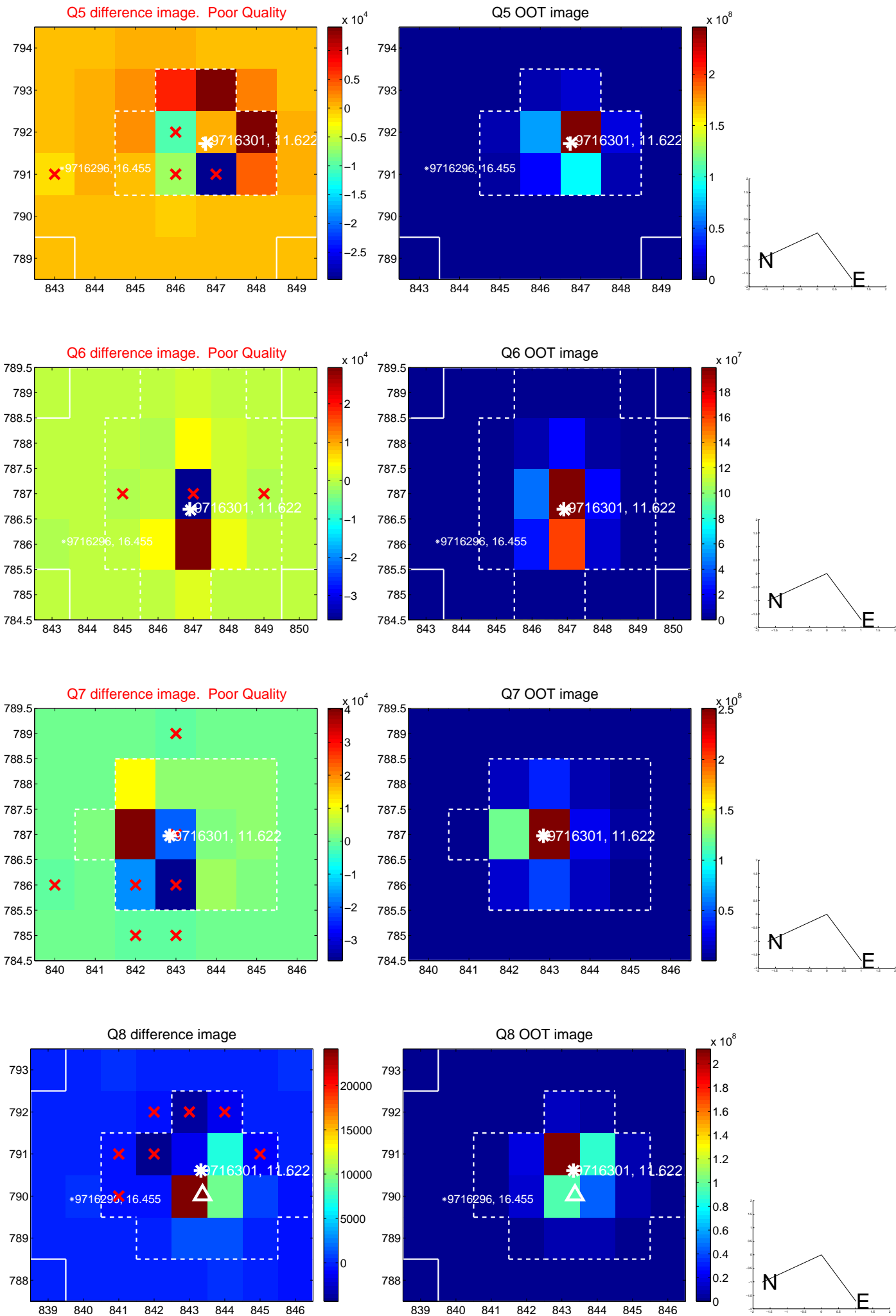


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

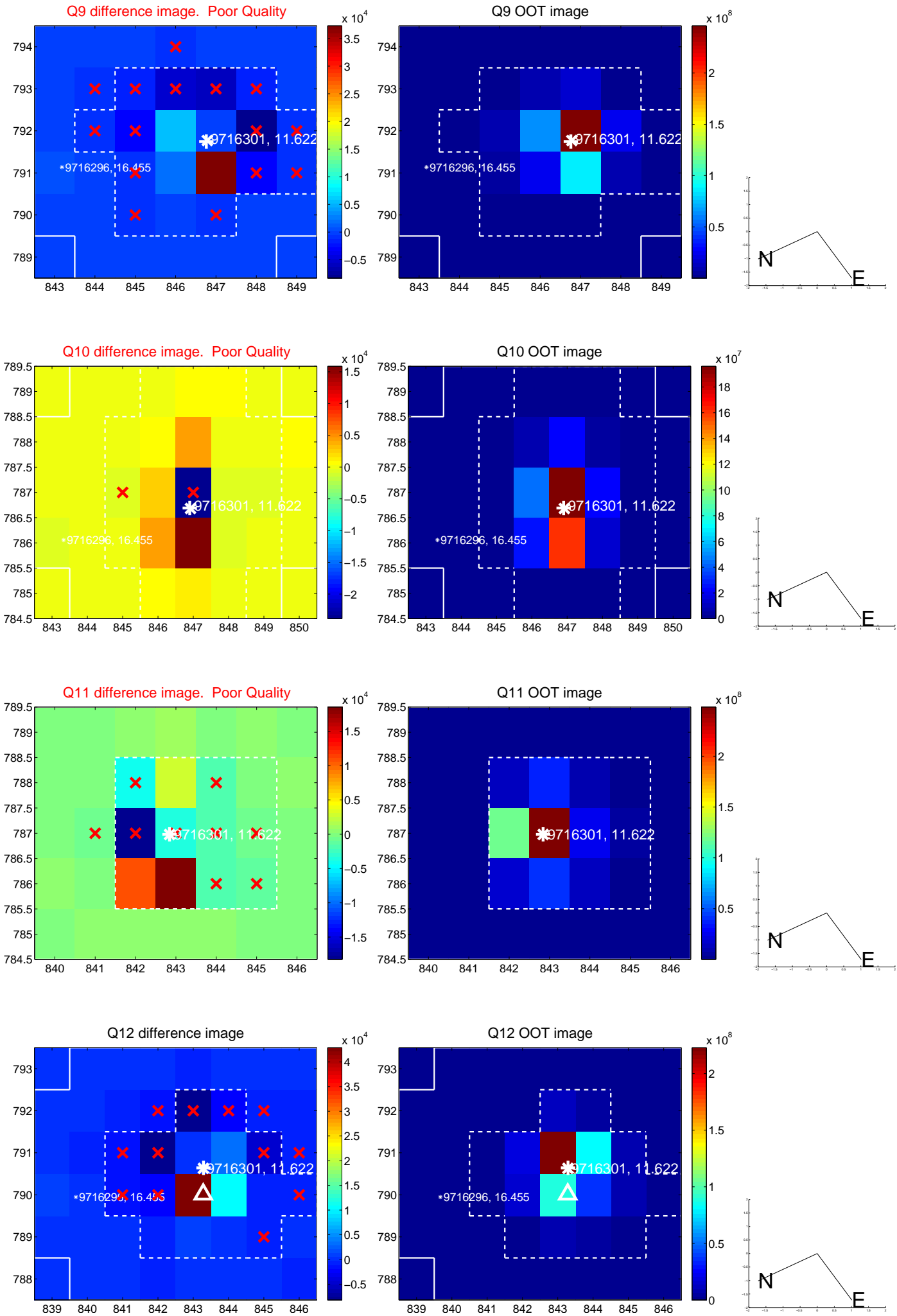


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

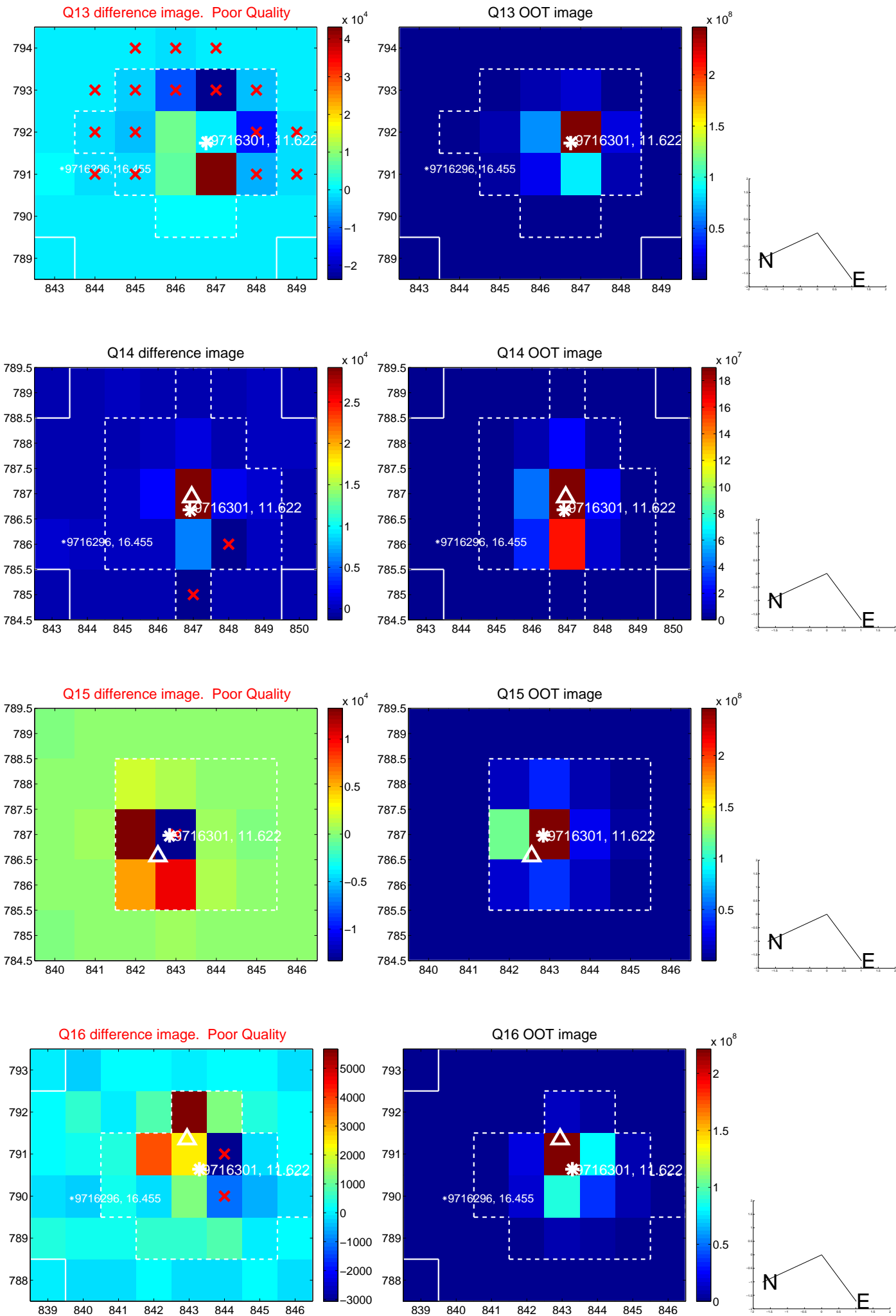




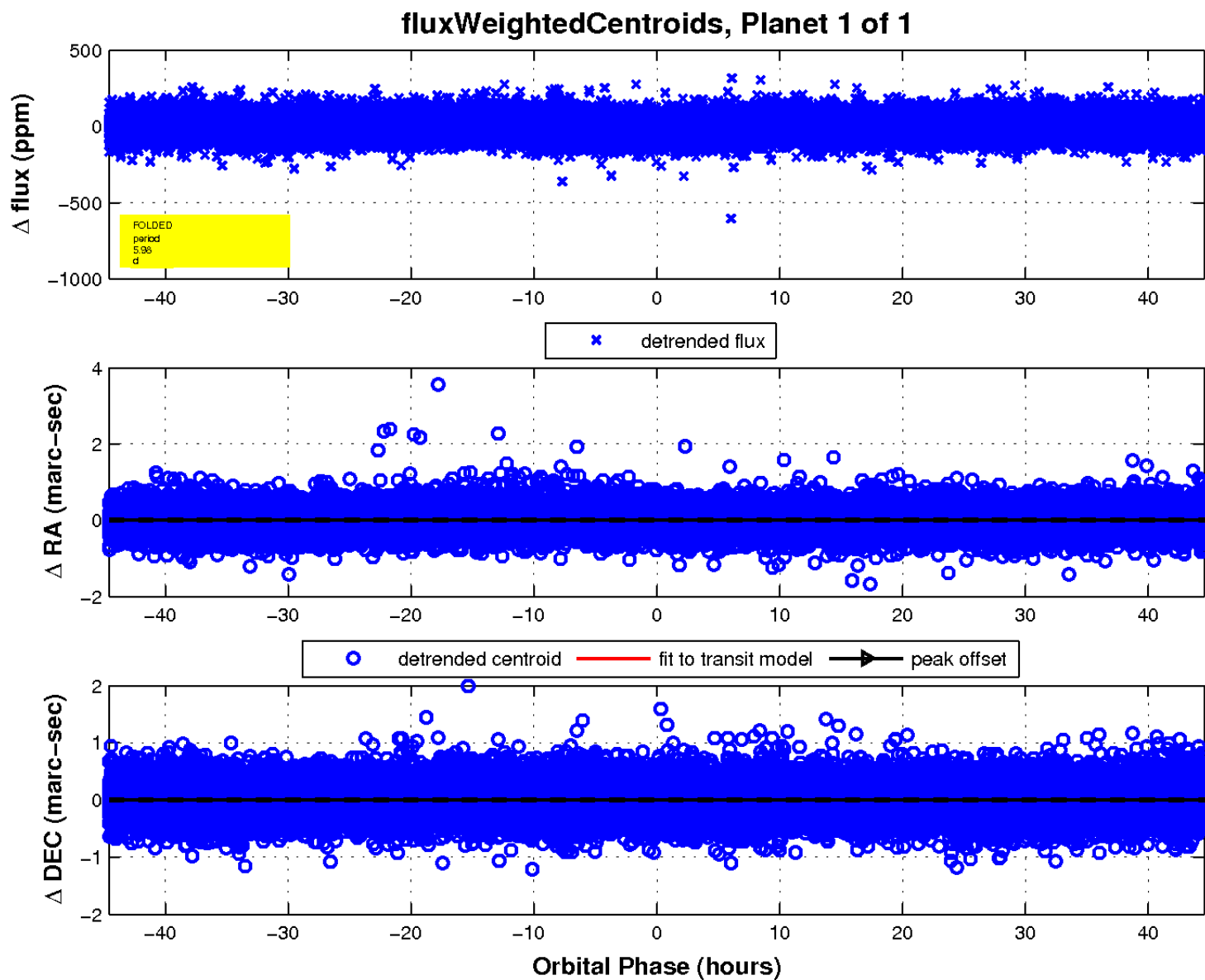
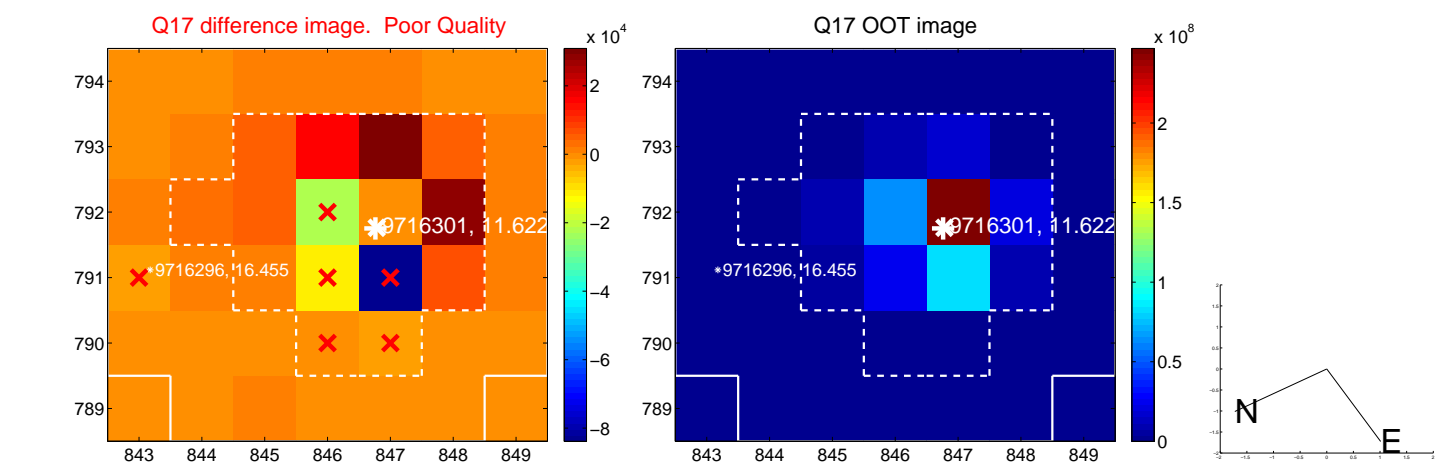
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

