

# KIC 007778621

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007778621-01	OBS	4725.01	7.281692	137.302969	105.7	1.606	10.9	12.7	1.81	4970	1.80	329.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007778621-01	OBS	PC	1.00	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.

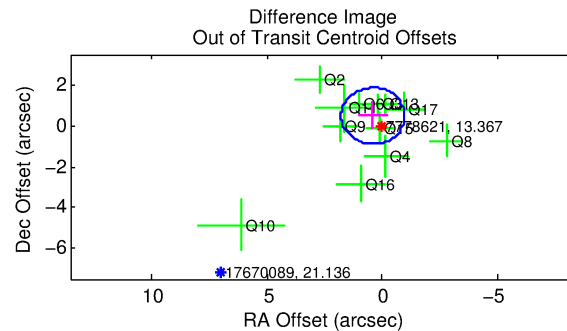
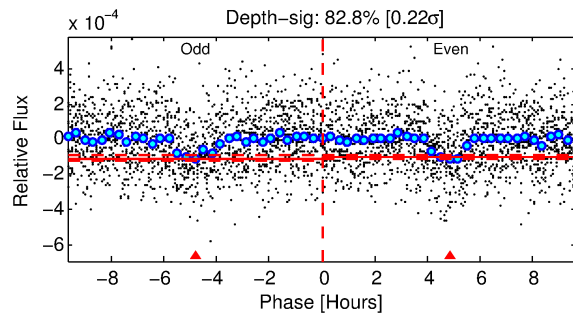
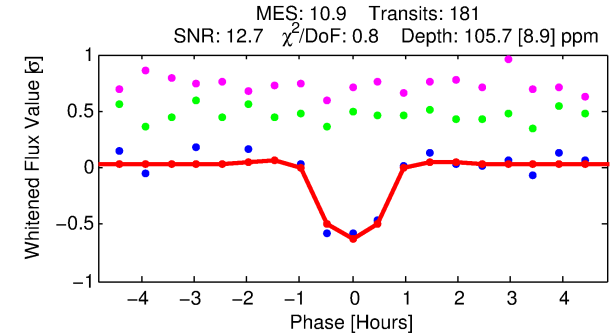
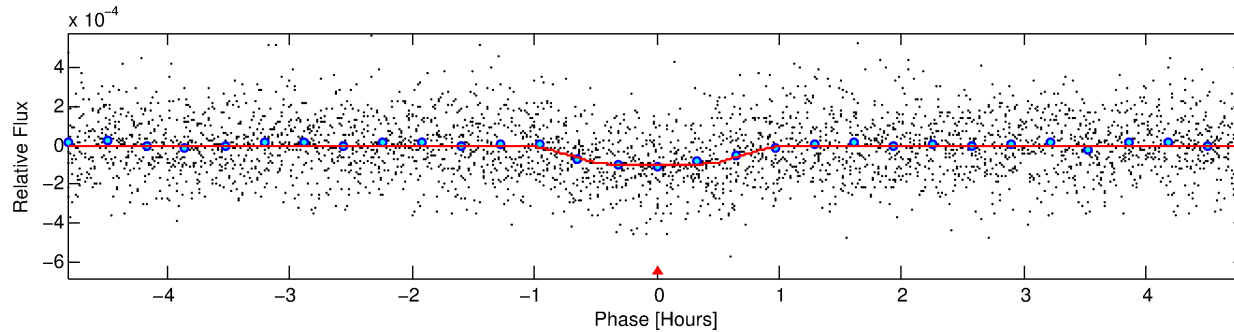
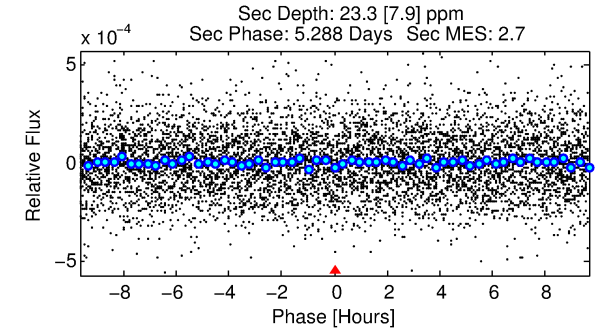
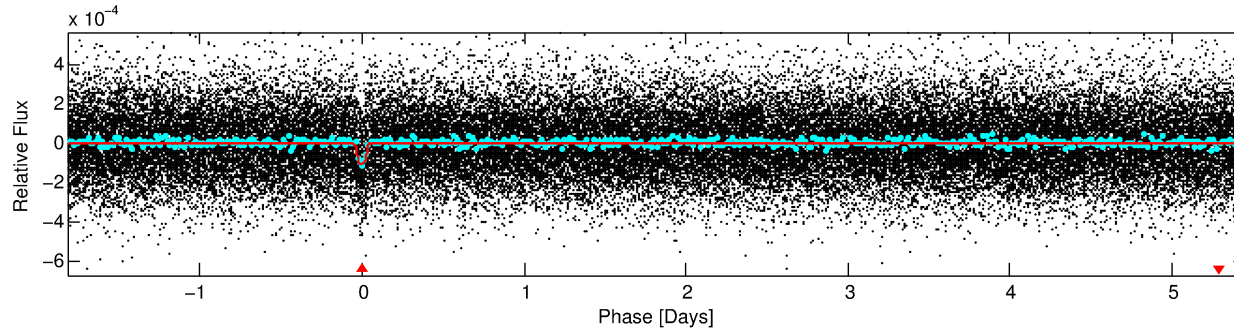
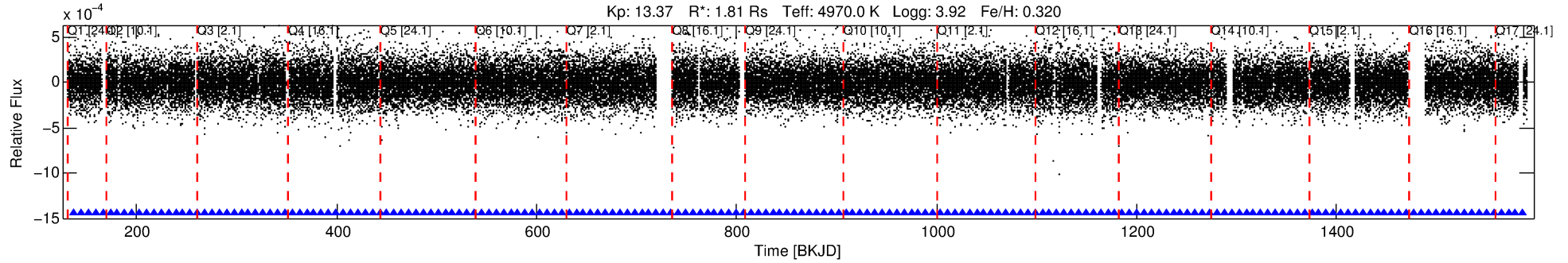
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007778621-01

No Significant Match Found

# DV One-Page Summary

KIC: 7778621 Candidate: 1 of 1 Period: 7.282 d  
KOI: K04725.01 Corr: 0.990



## DV Fit Results:

Period = 7.28169 [0.00003] d  
Epoch = 137.3030 [0.0029] BKJD  
Rp/R\* = 0.0091 [0.0114]  
a/R\* = 34.95 [141.09]  
b = 0.01 [402.04]  
Seff = 329.98 [342.40]  
Teq = 1087 [282] K  
Rp = 1.80 [2.46] Re  
a = 0.0735 [0.0448] AU  
Ag = 21.46 [58.38] [0.35σ]  
Teffp = 3616 [2280] K [1.10σ]

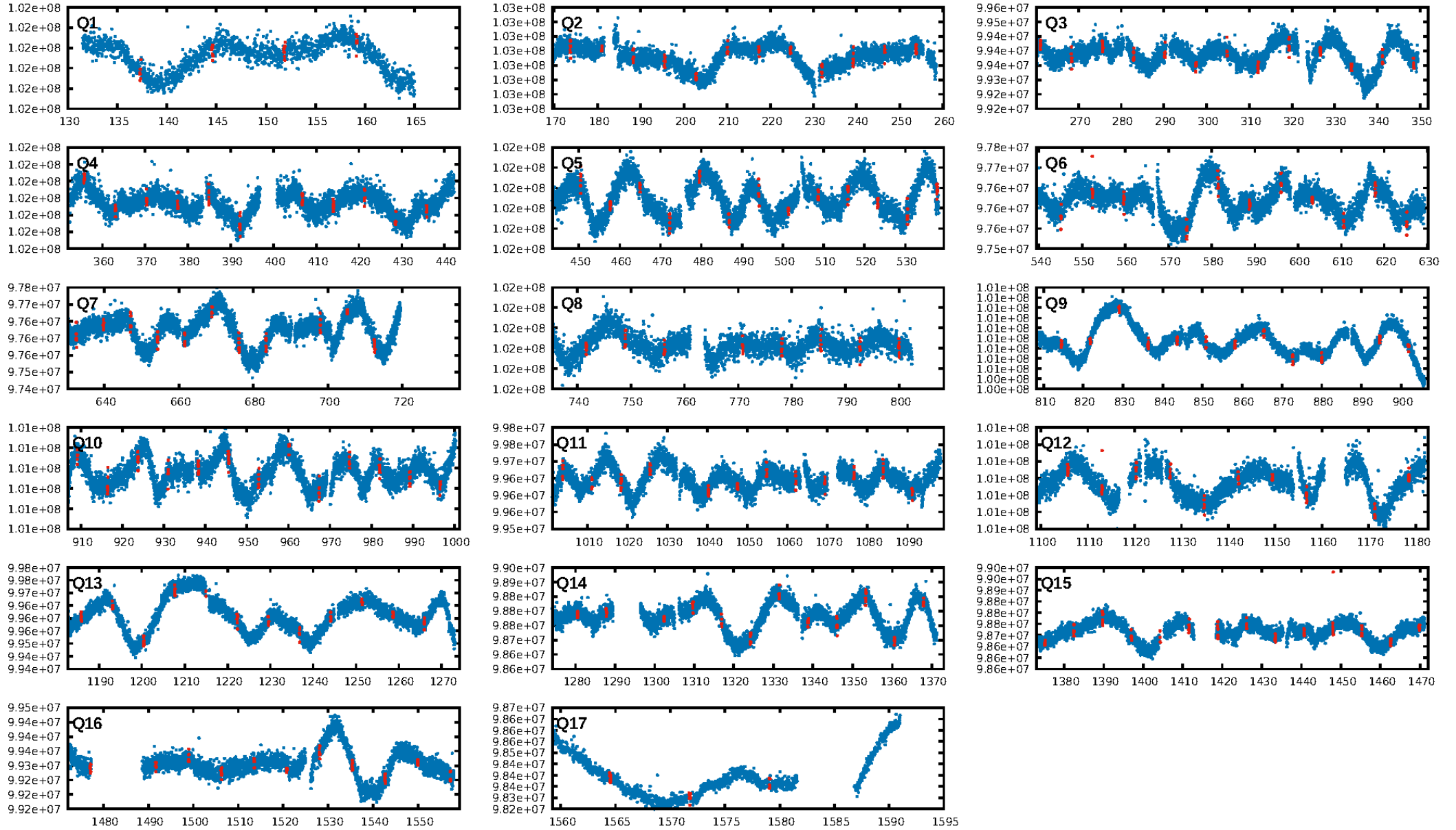
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.74e-26  
RollingBand-fgt: 1.00 [174/174]  
GhostDiagnostic-chr: 3.088  
Centroid-sig: 57.5%  
Centroid-so: 0.851 arcsec [0.81σ]  
OotOffset-rm: 0.640 arcsec [1.39σ]  
KicOffset-rm: 0.163 arcsec [0.36σ]  
OotOffset-st: 3/3/3/3 [12]  
KicOffset-st: 3/3/3/3 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 1.00 [17/17]

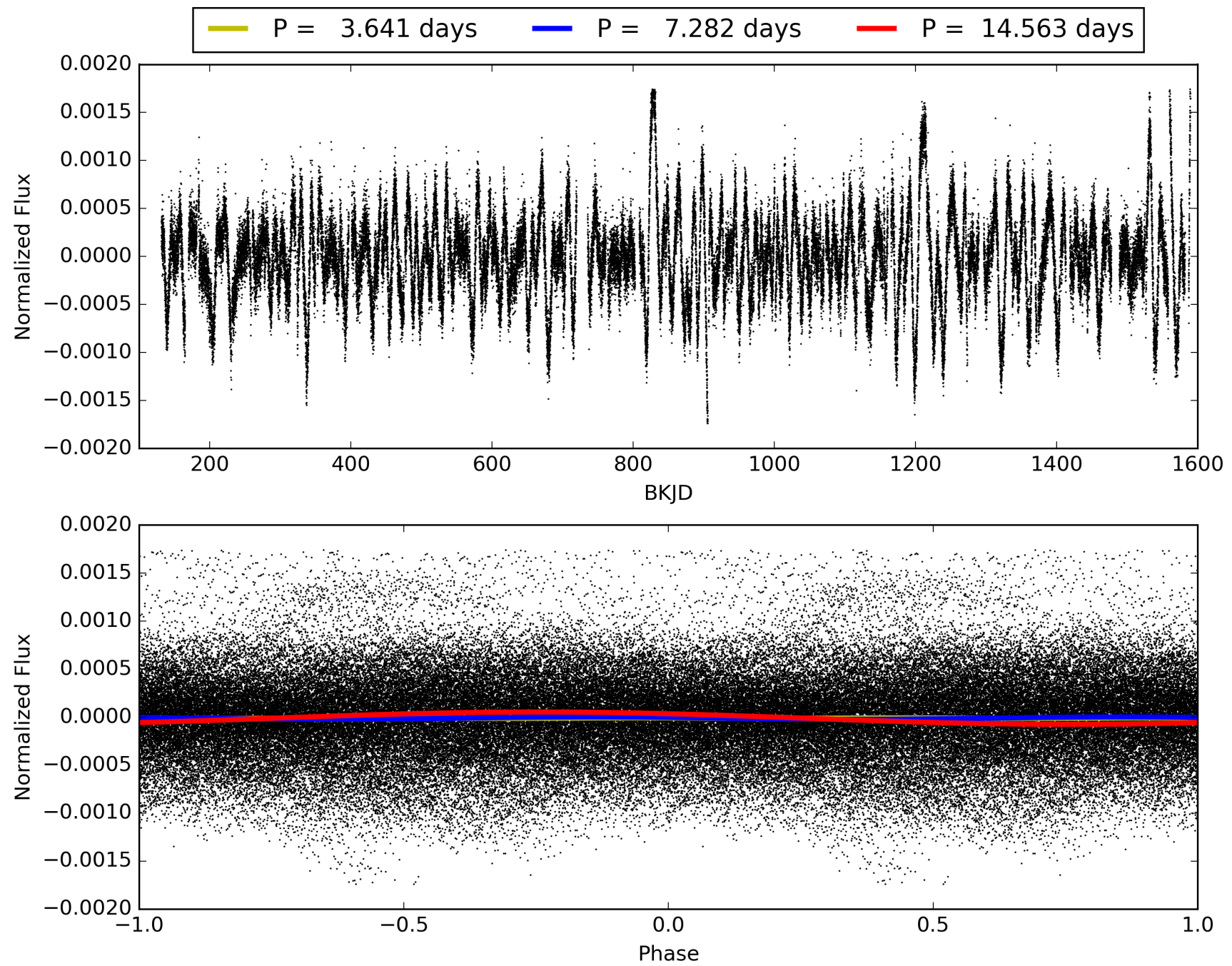
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:55:18 Z

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

# TCE 007778621-01, PDC Light Curves

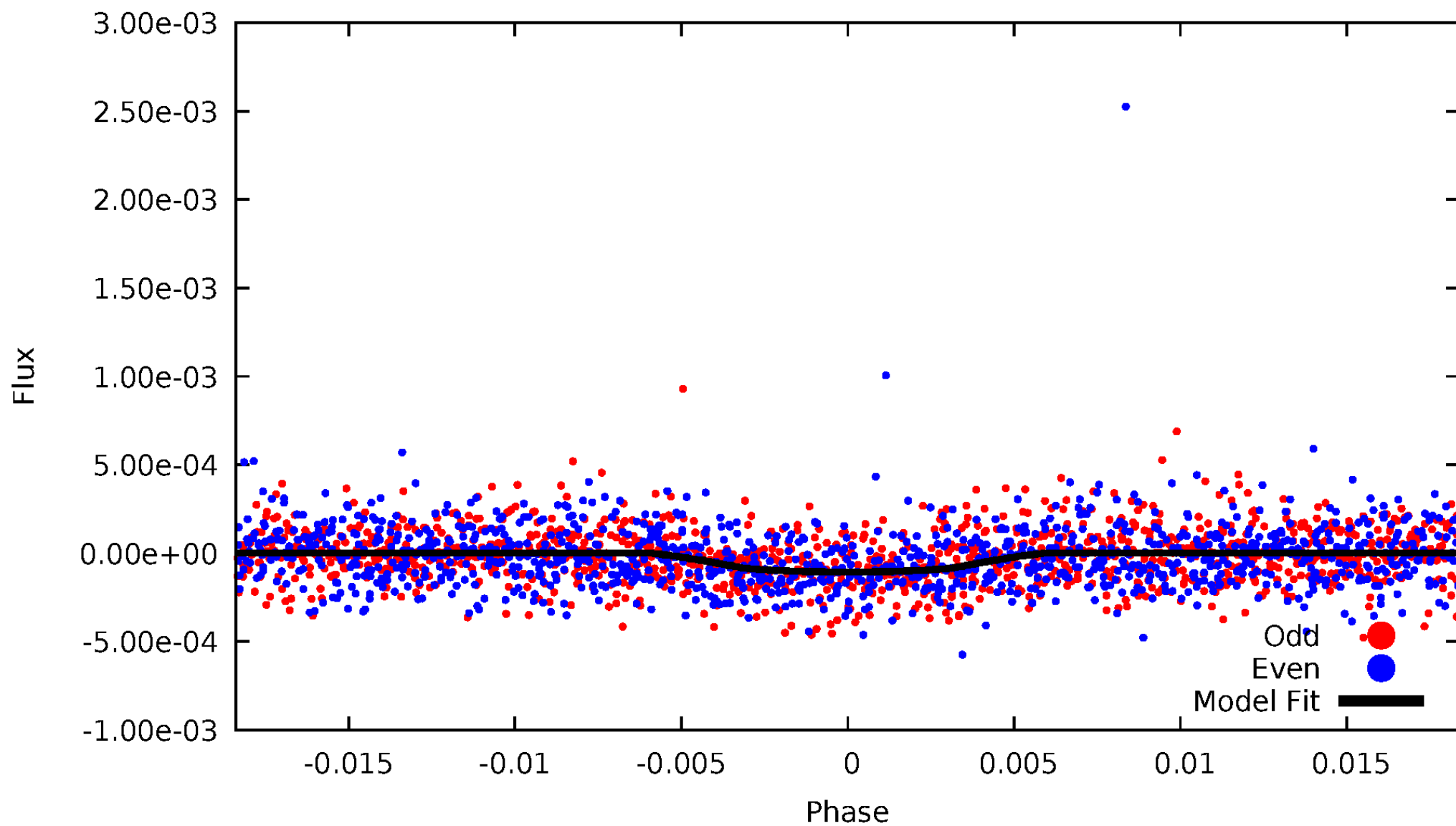


TCE 007778621-01



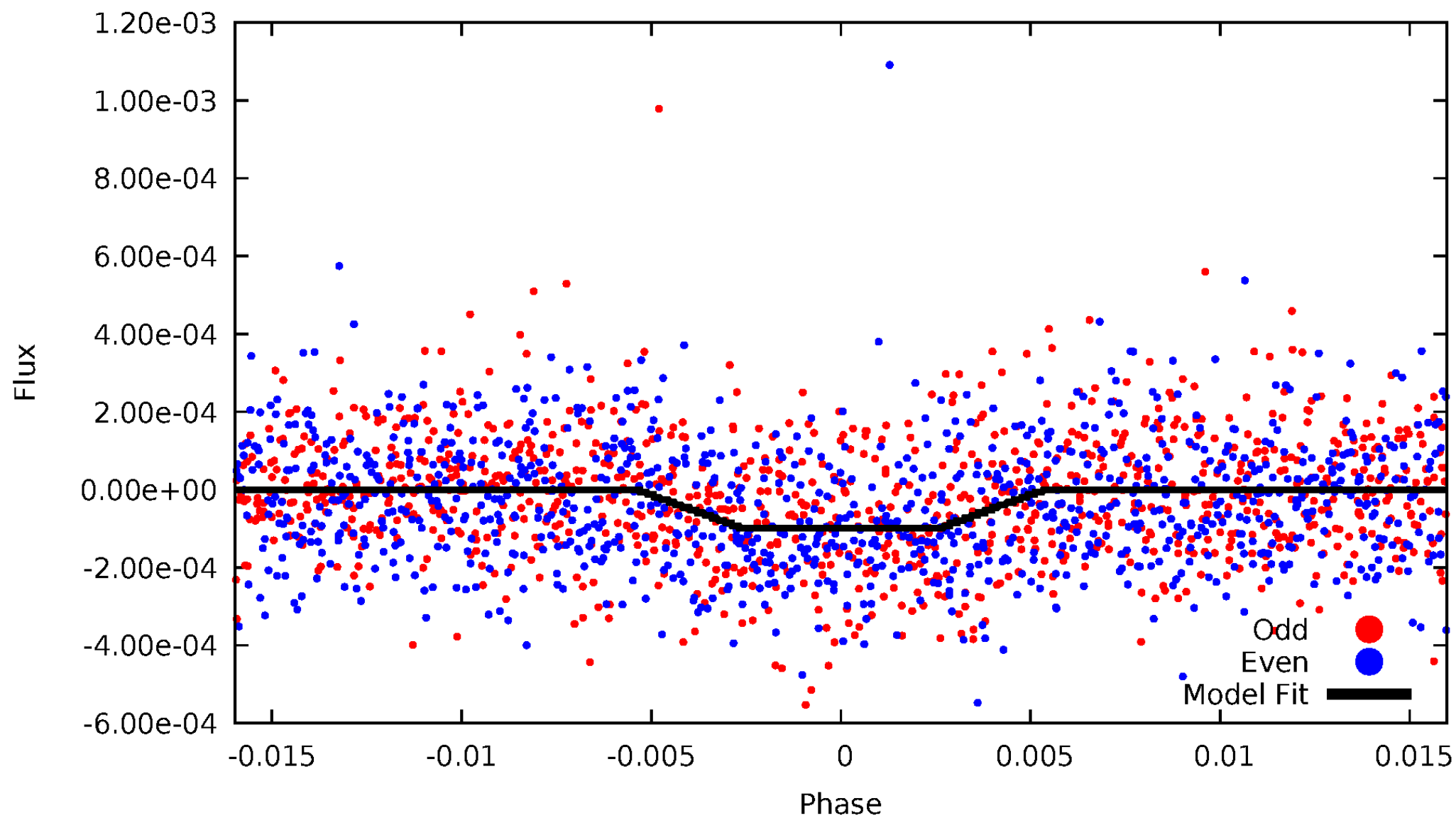
# DV Odd/Even

TCE 007778621-01



# ALT Odd/Even

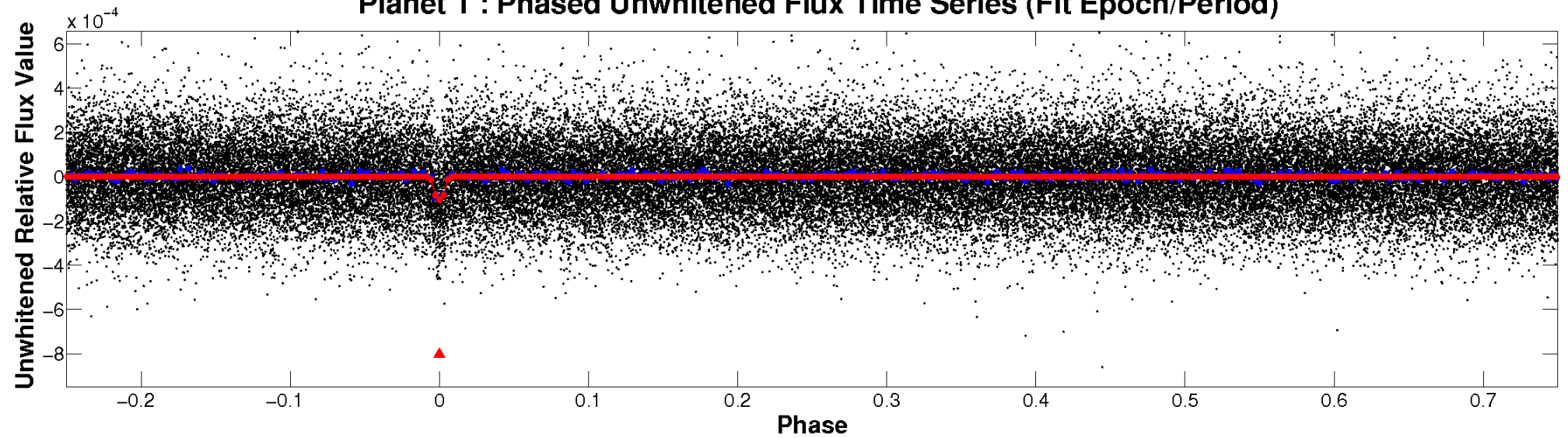
TCE 007778621-01



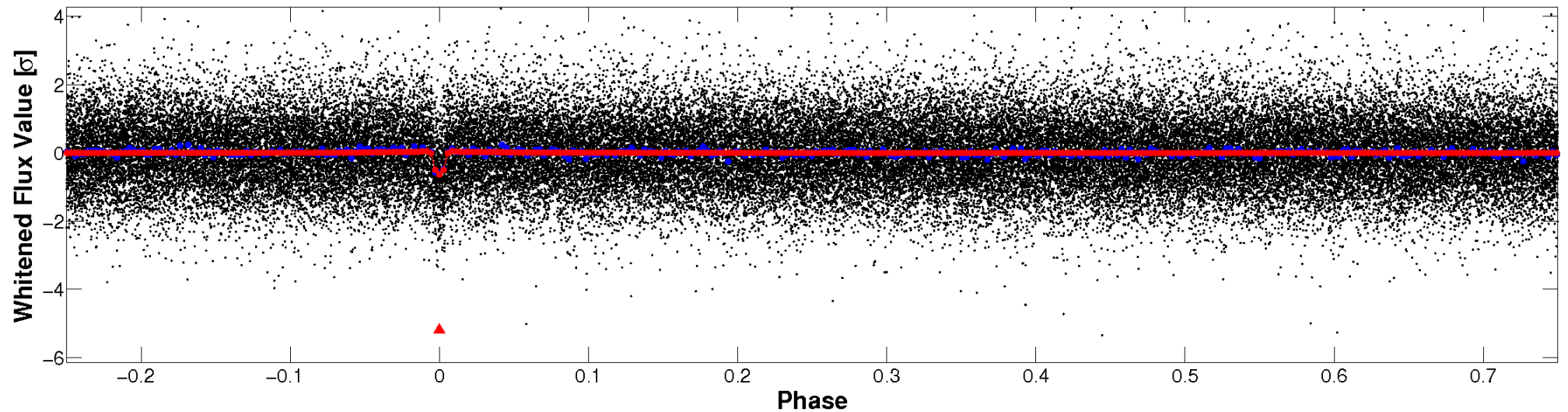


# Non-Whitened Vs. Whitened Light Curve

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

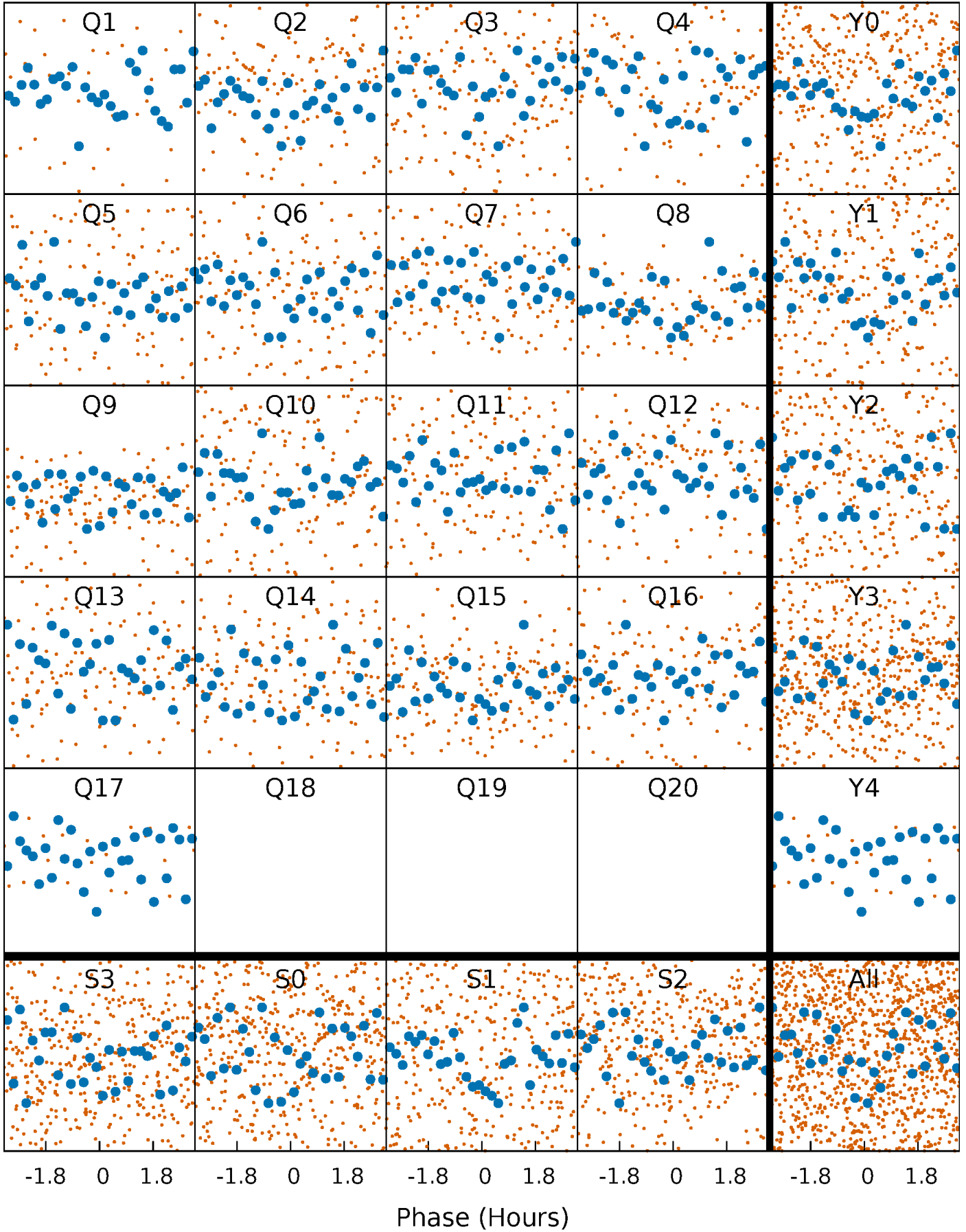


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

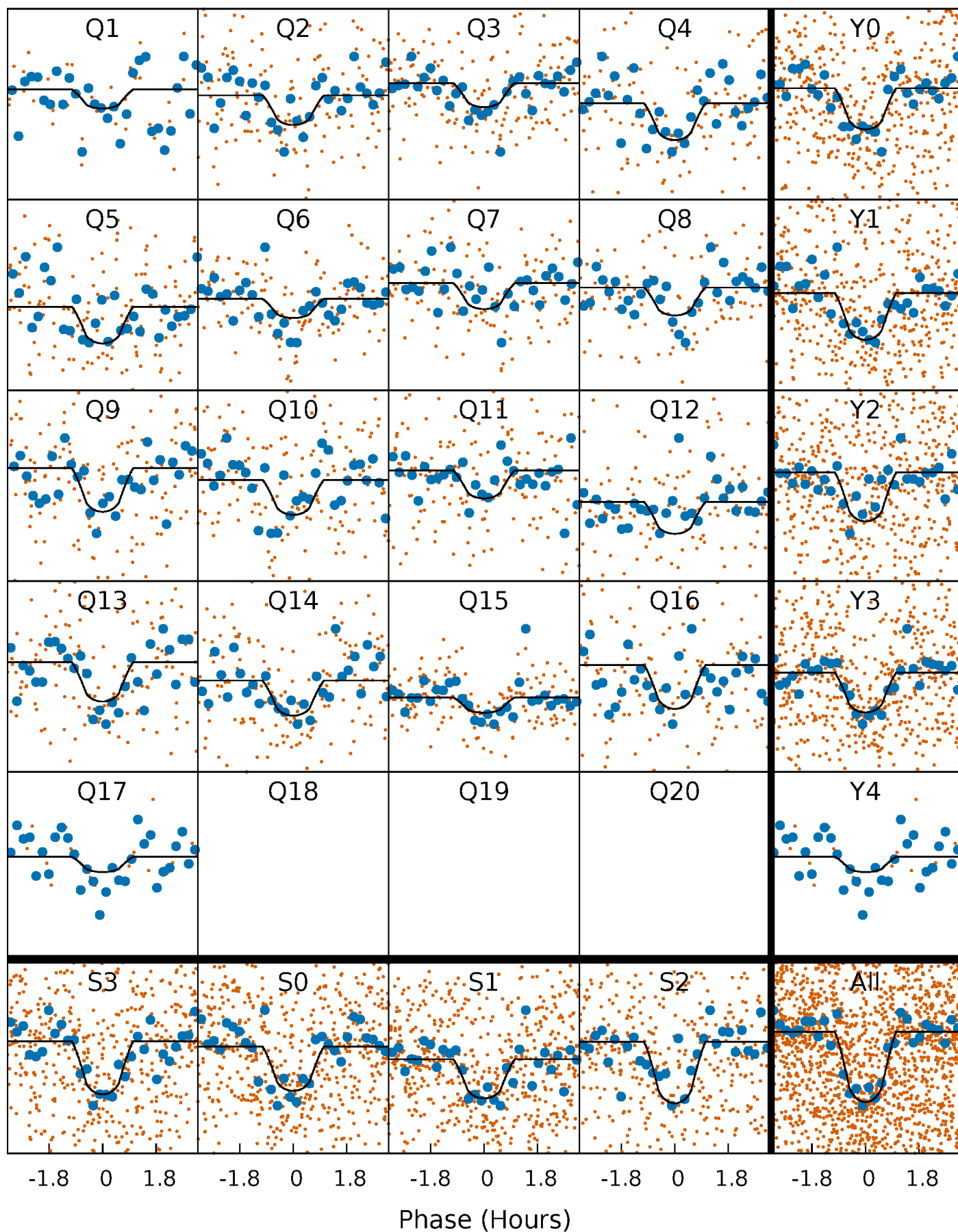
TCE 007778621-01 P= 7.281692 Days  $T_0=137.302969$  (BKJD)





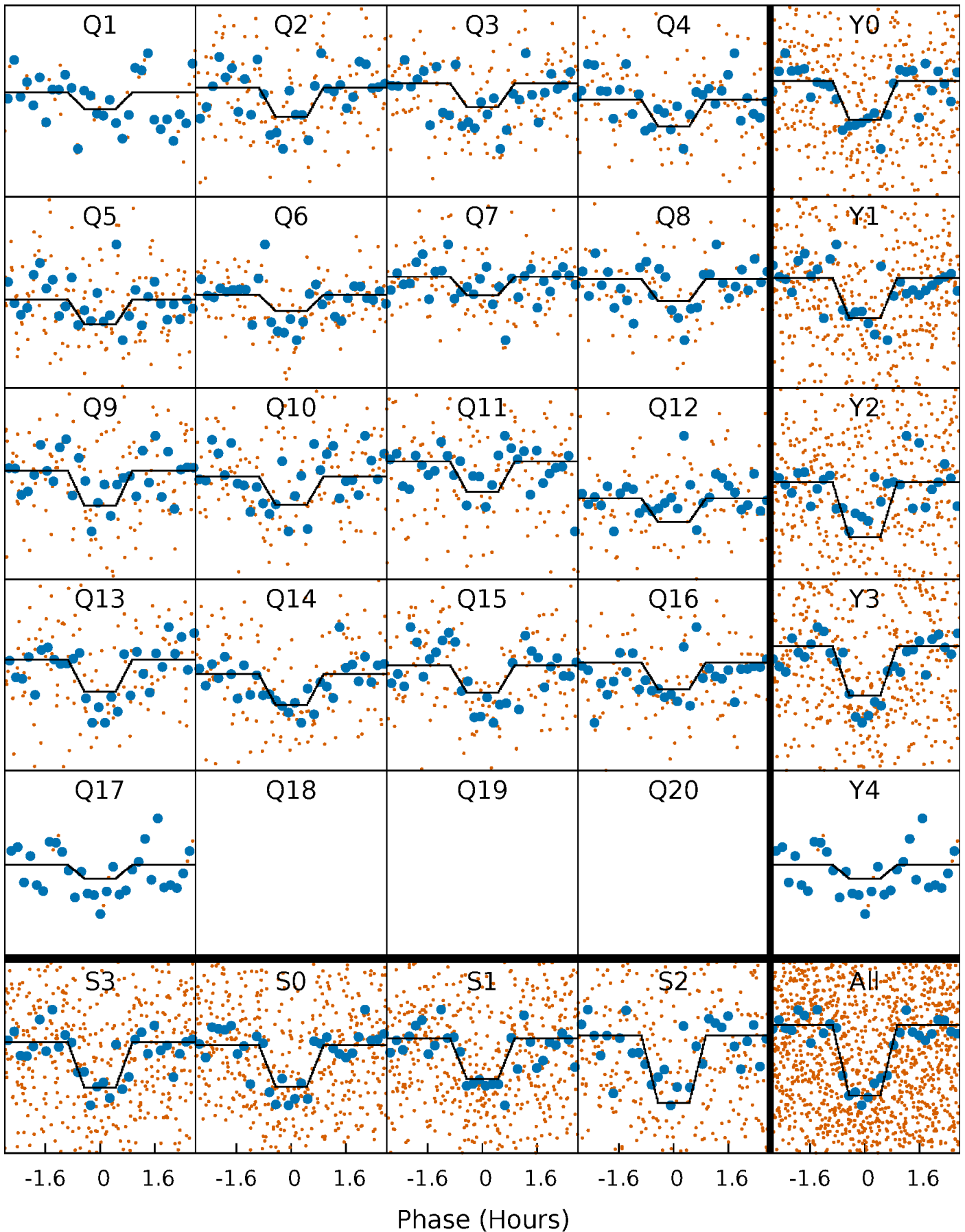
# DV Quarter-Phased Transit Curves

TCE 007778621-01 P= 7.281692 Days  $T_0=137.302969$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

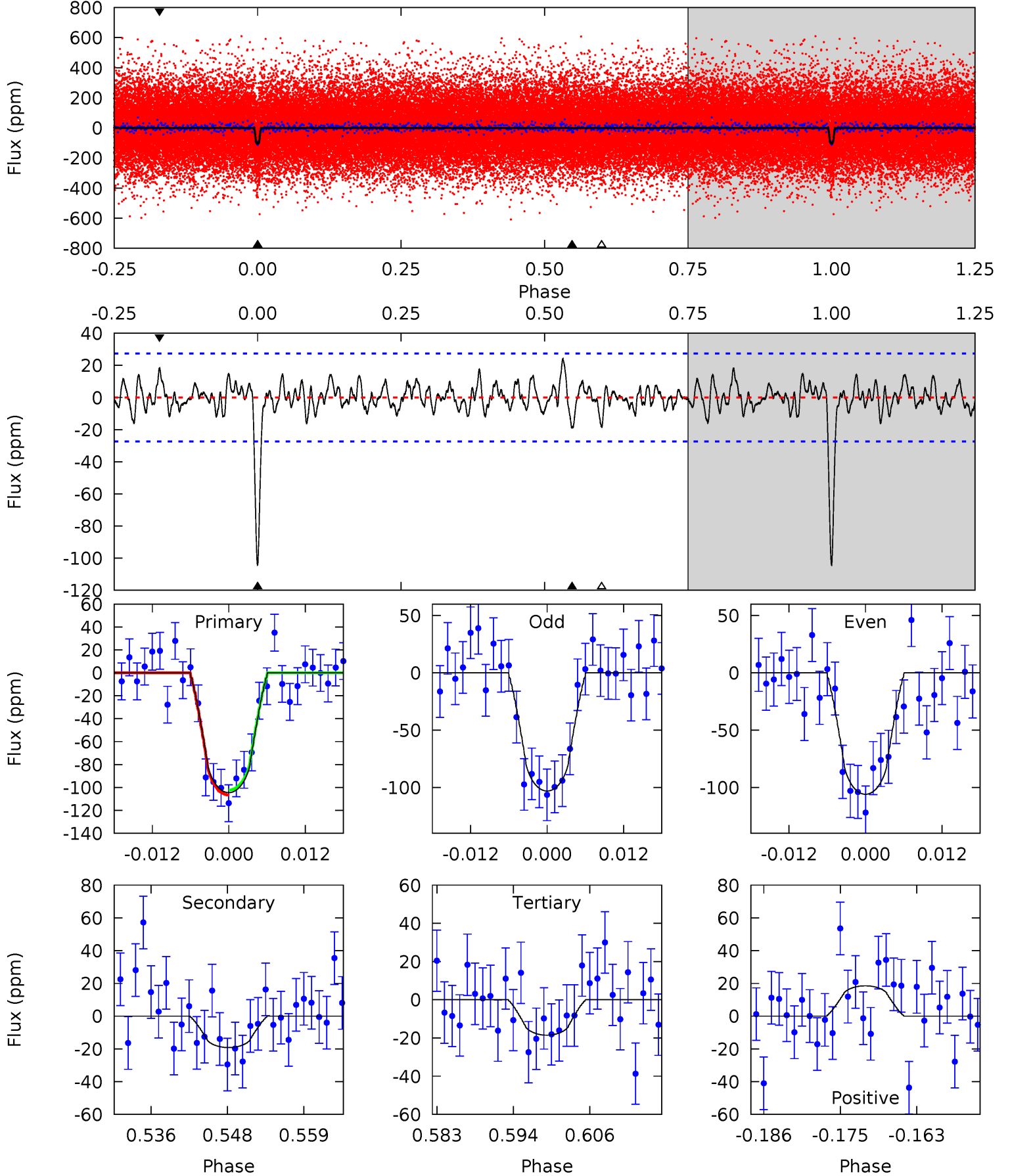
TCE 007778621-01 P= 7.281693 Days  $T_0=137.301792$  (BKJD)



# DV Model-Shift Uniqueness Test

007778621-01, P = 7.281692 Days, E = 130.021277 Days

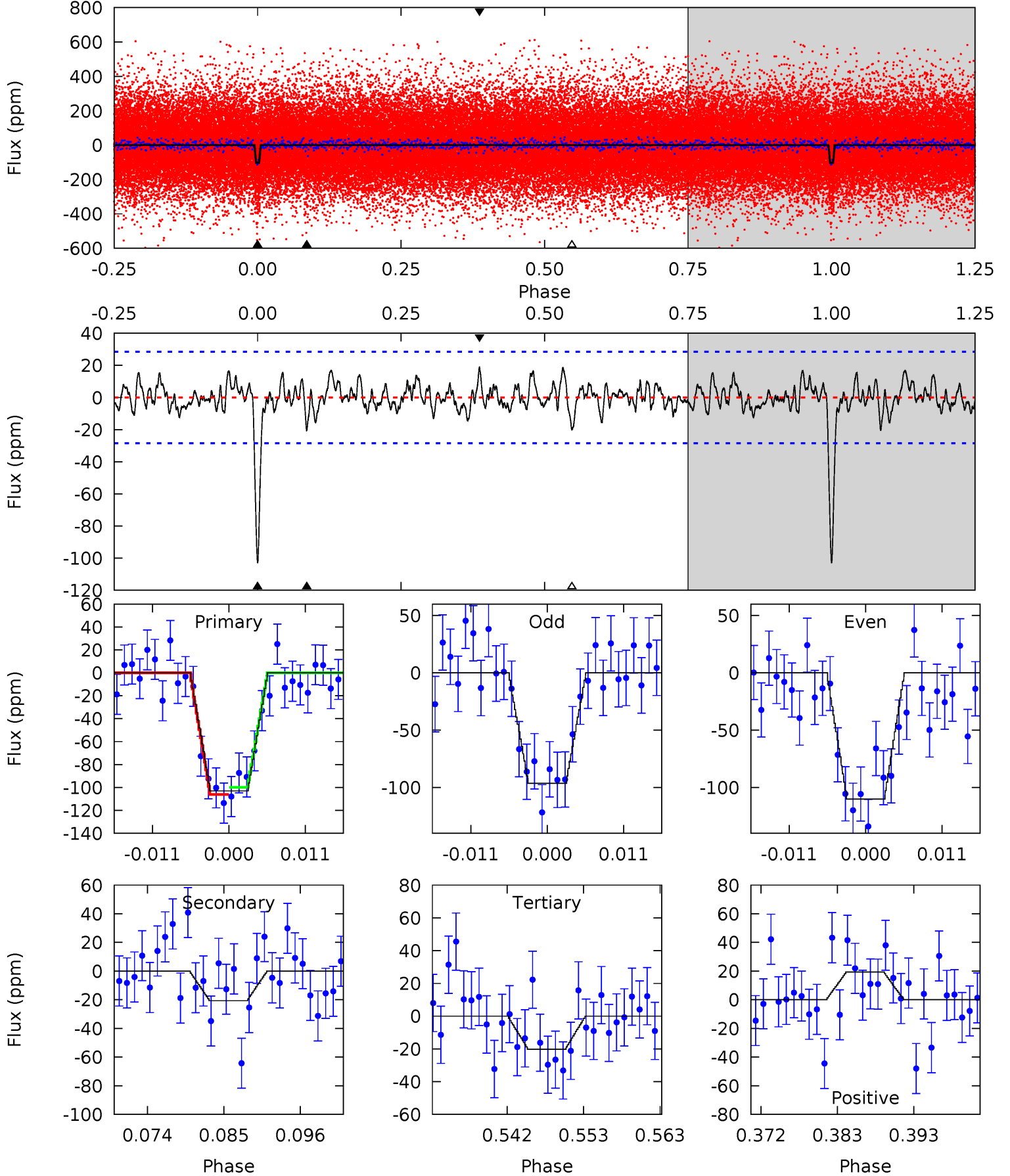
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	3.51	3.39	3.38	5.00	2.52	1.18	15.7	15.7	0.12	0.12	0.26	0.91	0.19	0.39



# Alt Model-Shift Uniqueness Test

007778621-01, P = 7.281693 Days, E = 130.020099 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
18.1	3.64	3.55	3.41	5.01	2.55	1.14	14.6	14.7	0.09	0.23	1.21	0.86	0.16	0.55



### Stellar Parameters For KIC 007778621

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4970^{+164}_{-134}$	$3.924^{+0.624}_{-0.336}$	$0.320^{+0.100}_{-0.300}$	$1.806^{+1.020}_{-1.020}$	$0.996^{+0.213}_{-0.174}$	$0.238^{+1.982}_{-0.163}$
	+3%/-3%	+16%/-9%	+31%/-94%	+56%/-56%	+21%/-17%	+831%/-68%
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 007778621-01 / KOI 4725.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-19 \pm 5$	$2.40^{+2.34}_{-1.55}$	$1501^{+235}_{-250}$	$3343^{+1403}_{-558}$	$9.801^{+68.615}_{-7.338}$
Alt.	$-21 \pm 6$	$2.38^{+2.29}_{-1.60}$	$1513^{+229}_{-245}$	$3400^{+1603}_{-585}$	$10^{+94}_{-7}$

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



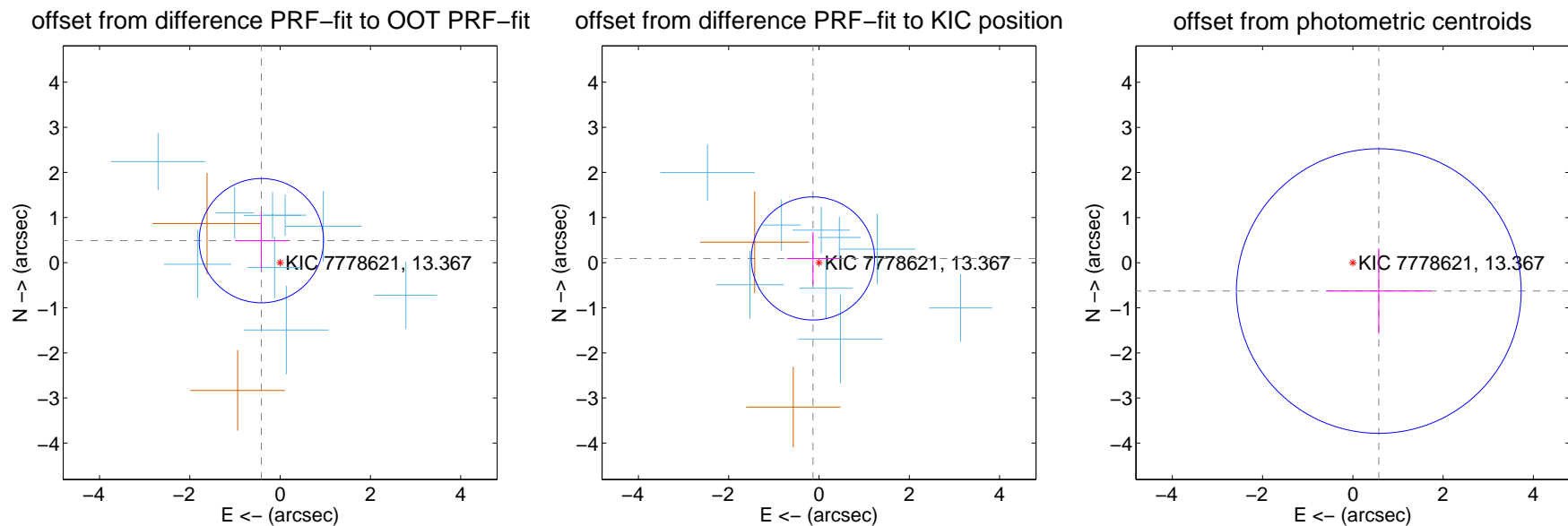
## DV Centroid Data

Supplemental centroid analysis for 007778621-01. Kepler magnitude: 13.37. Transit SNR 12.67

There are 9 quarters with good PRF difference image offsets

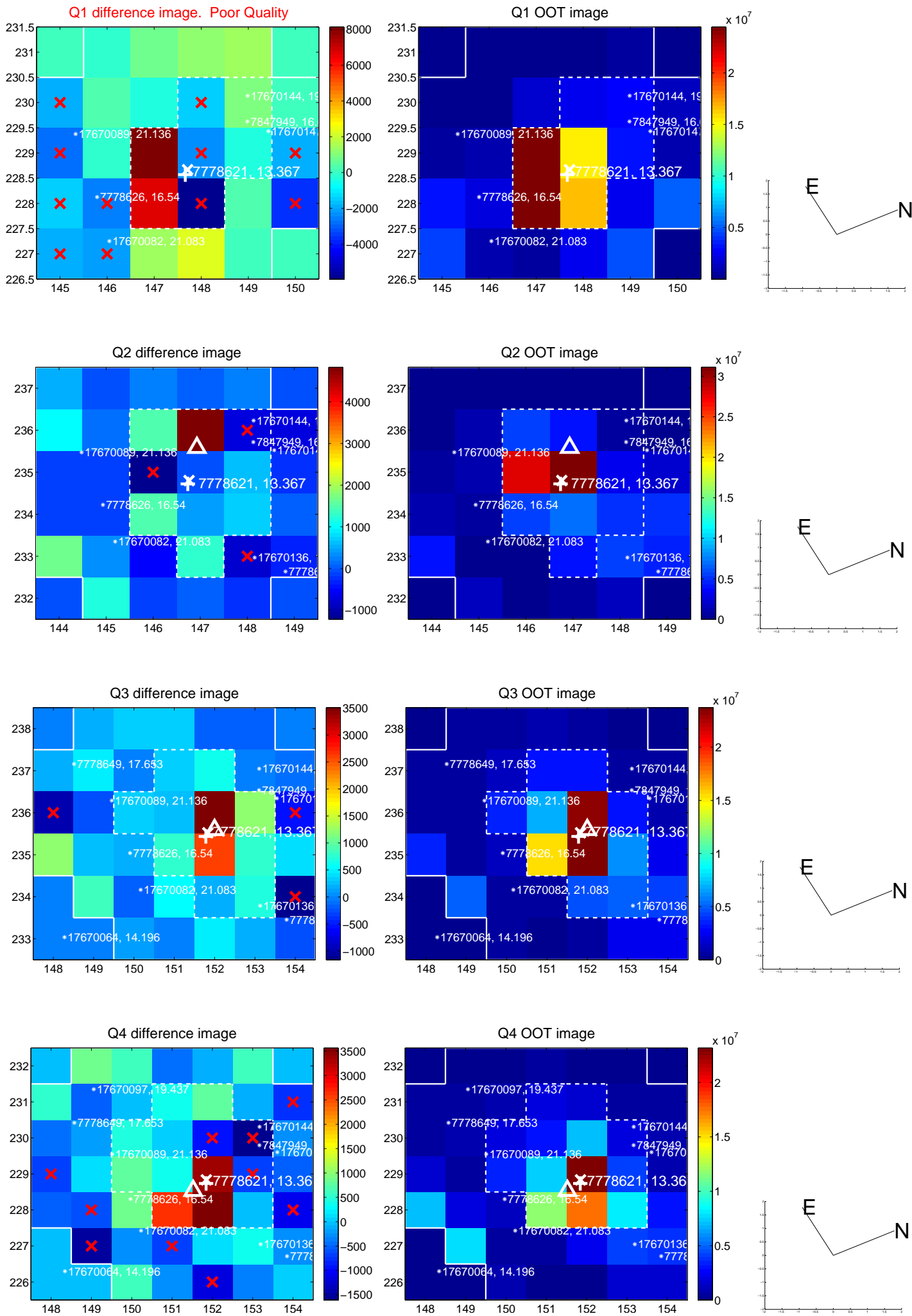
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.640 \pm 0.459$	1.39	$0.415 \pm 0.586$	$0.487 \pm 0.636$
PRF-fit source offset from KIC position	$0.163 \pm 0.455$	0.36	$0.134 \pm 0.575$	$0.093 \pm 0.587$
photometric centroid source offset	$0.85 \pm 1.05$	0.81	$-0.57 \pm 1.16$	$-0.63 \pm 0.95$

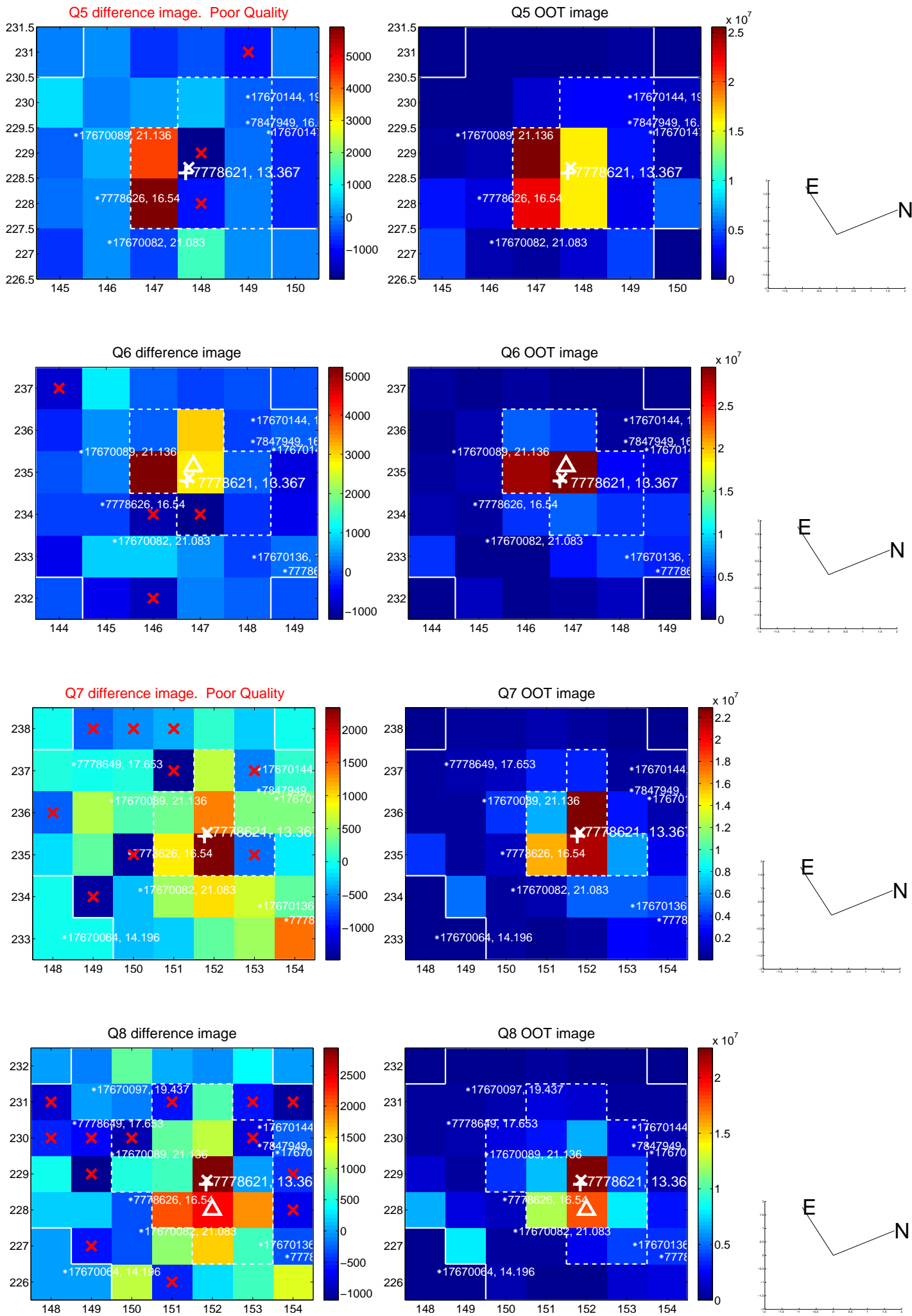


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

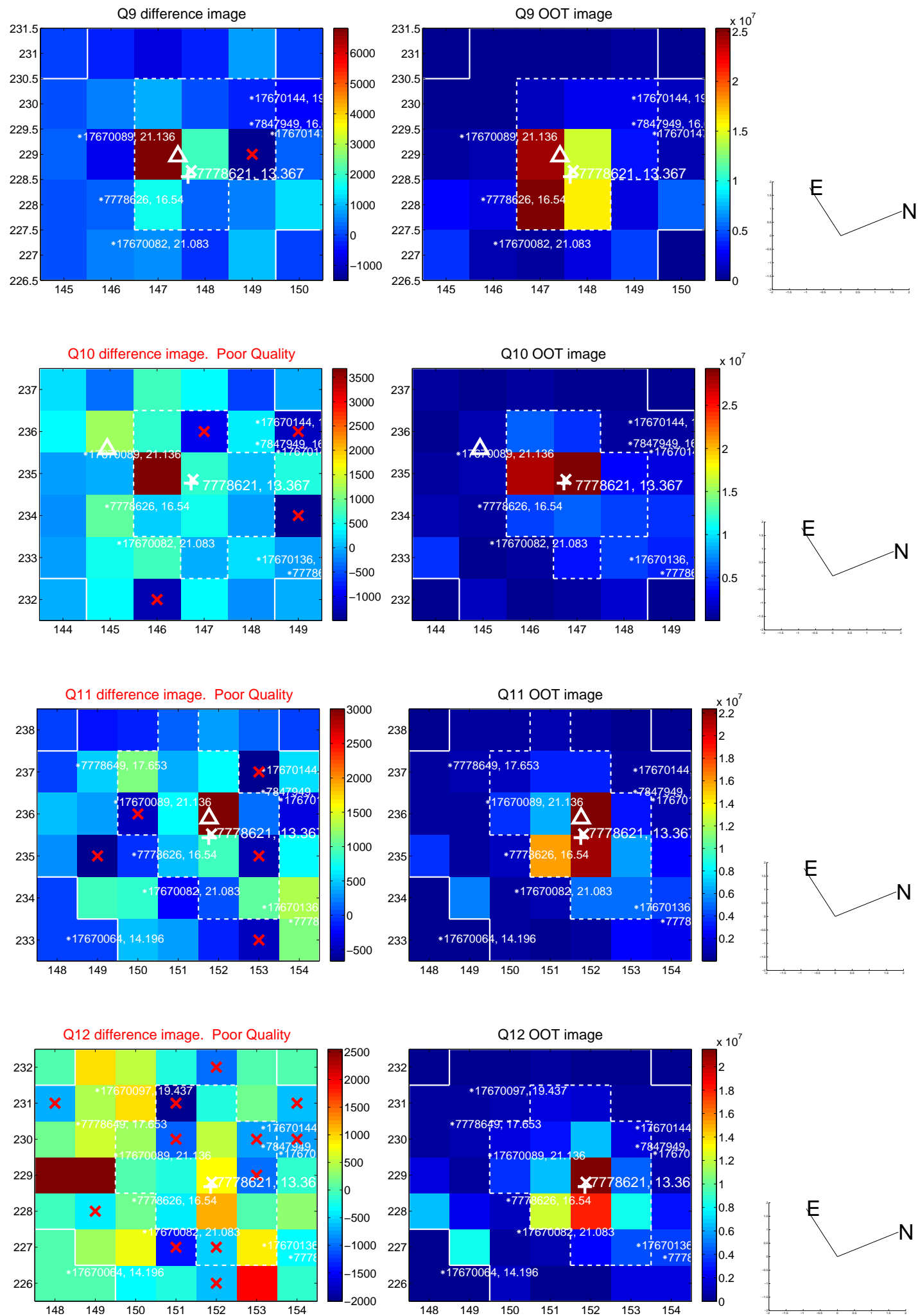
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



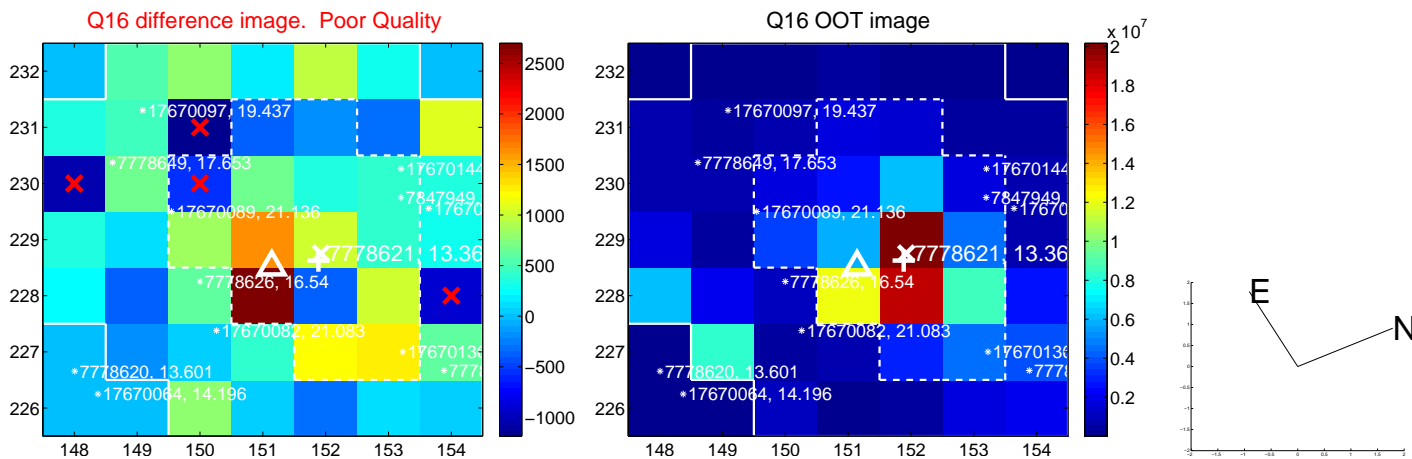
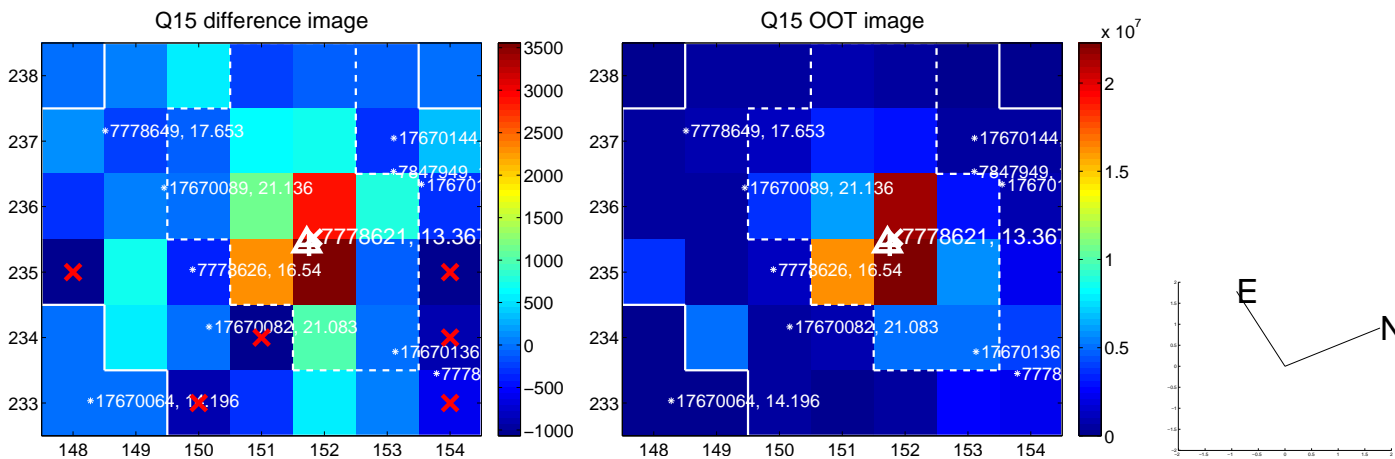
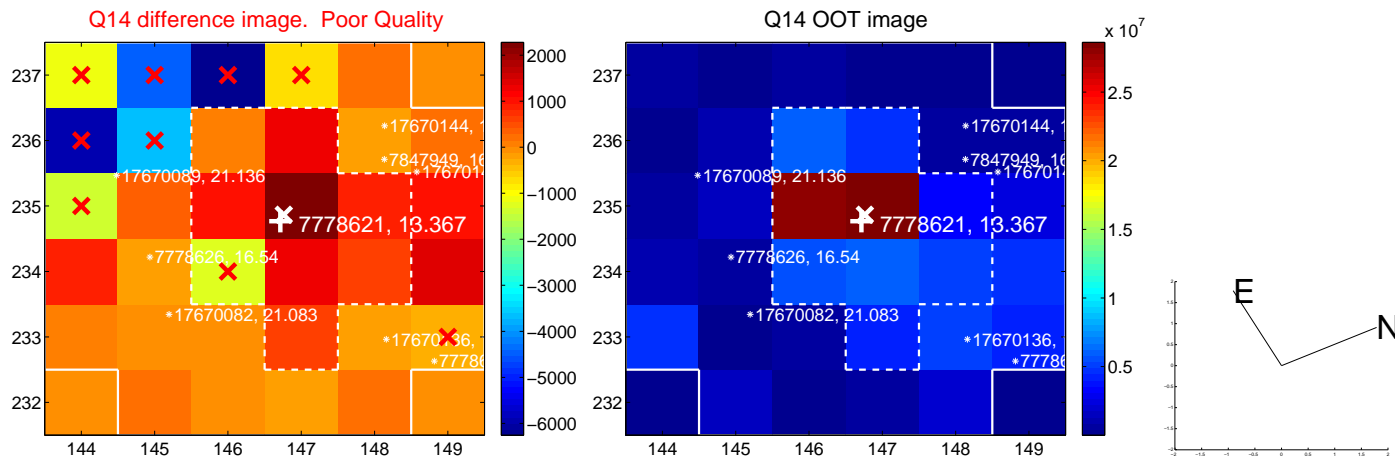
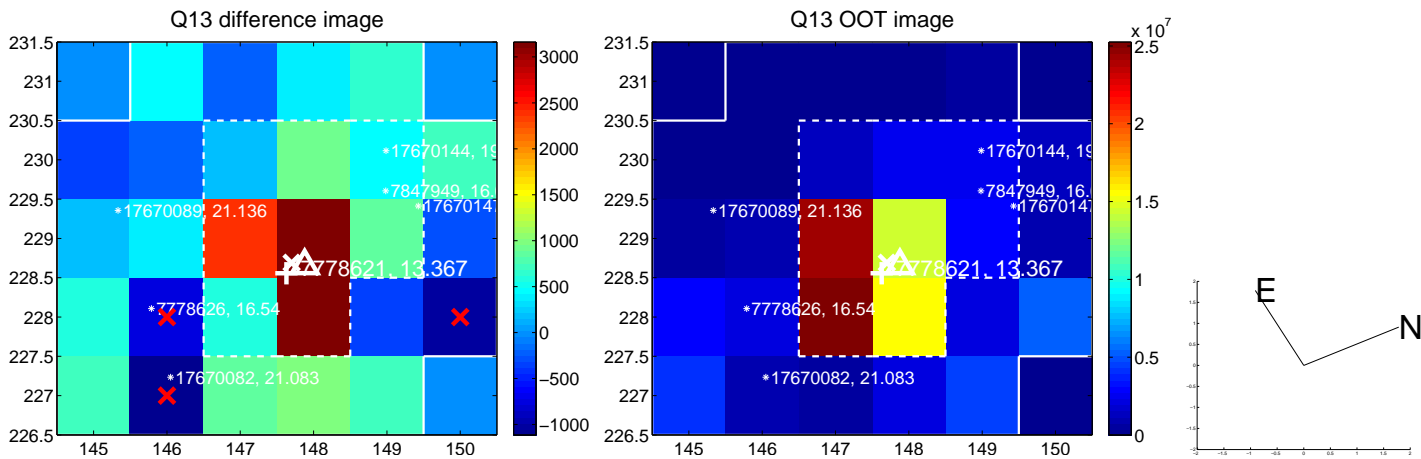
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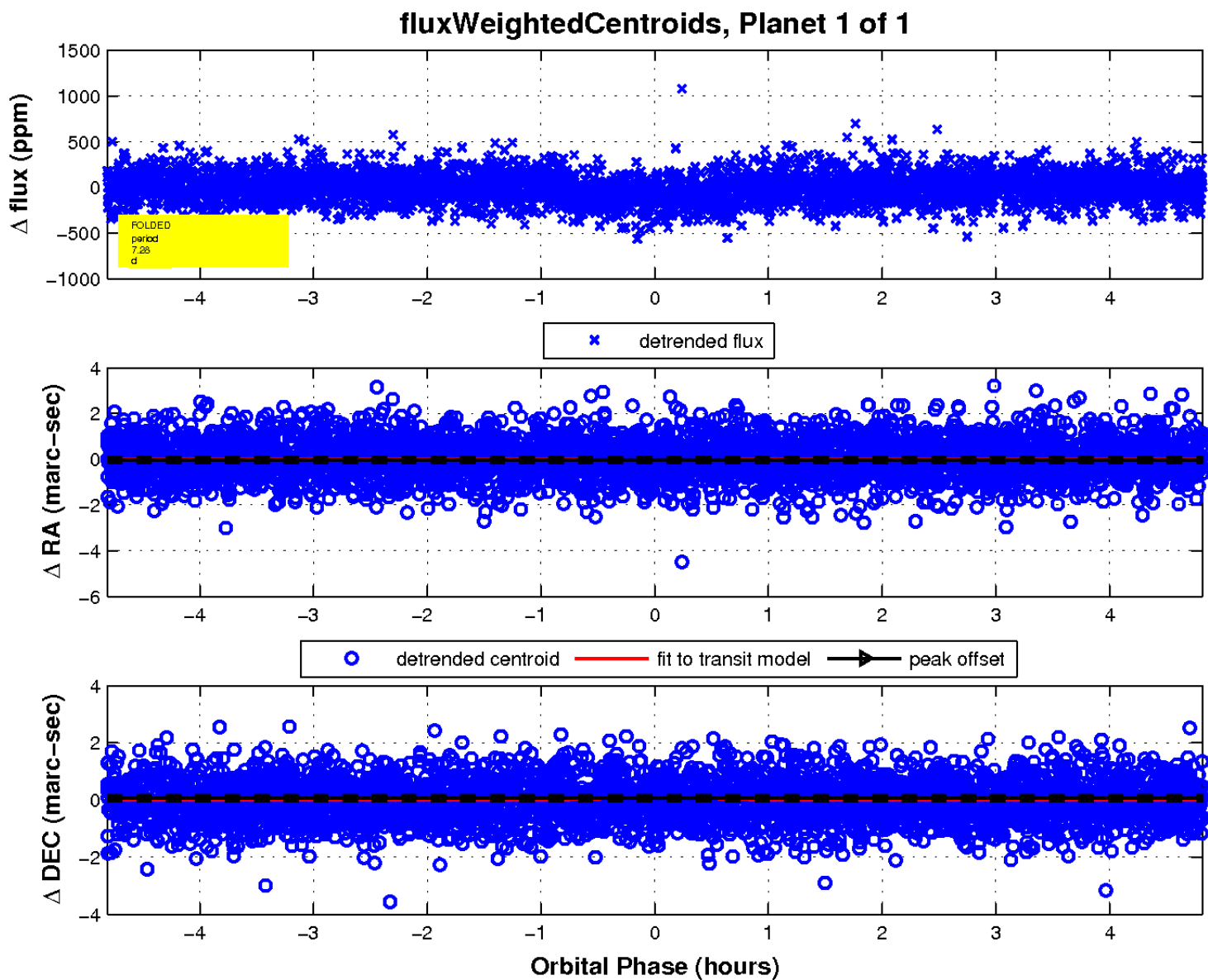
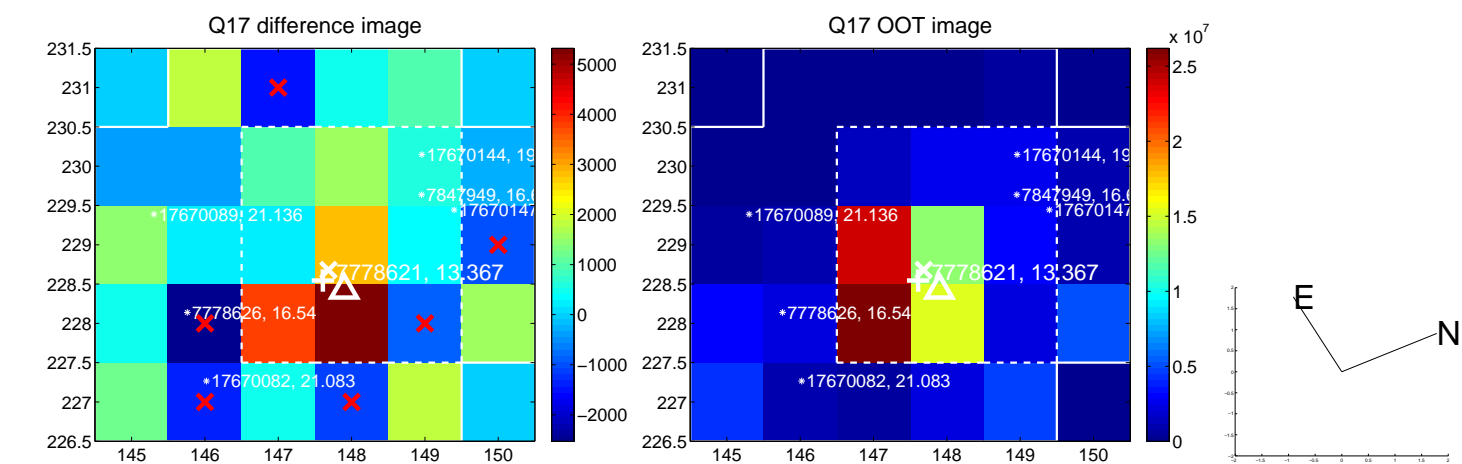


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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

