

# KIC 004381429

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004381429-01	OBS	4474.01	16.473587	142.682489	504.6	4.302	9.8	12.7	0.75	5364	1.80	33.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004381429-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT

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

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

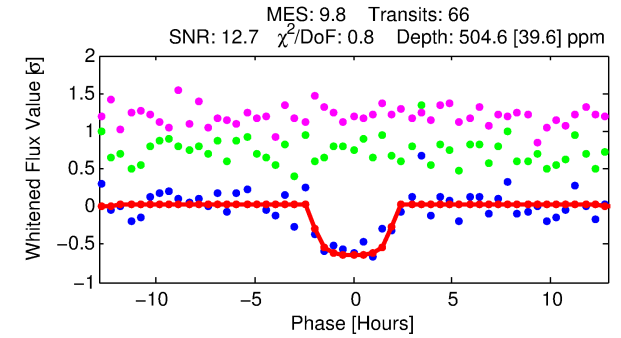
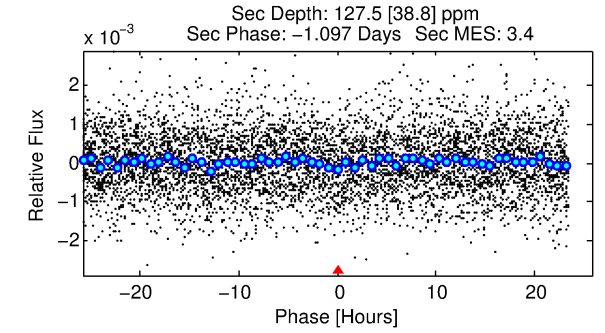
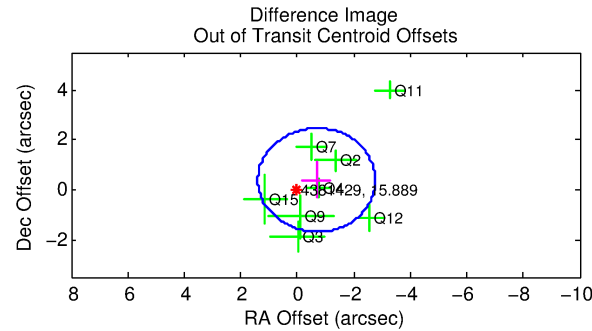
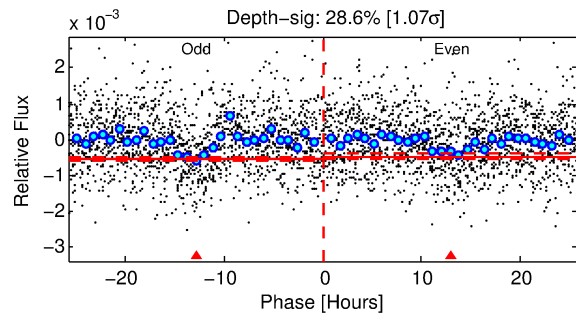
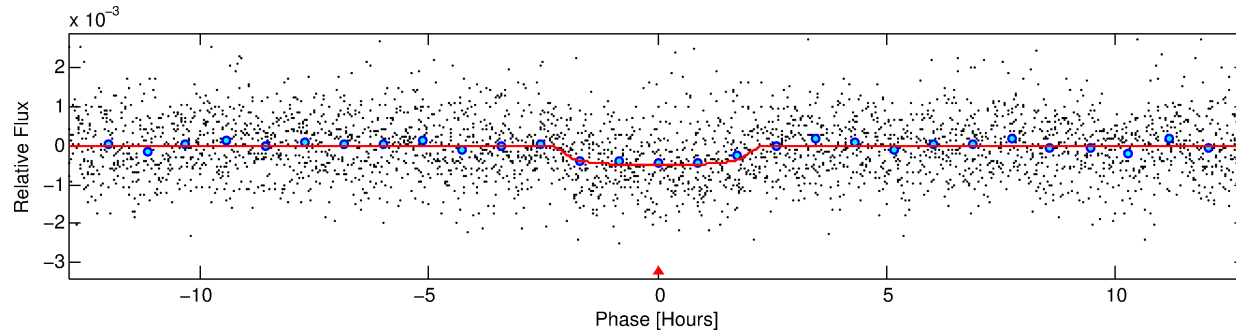
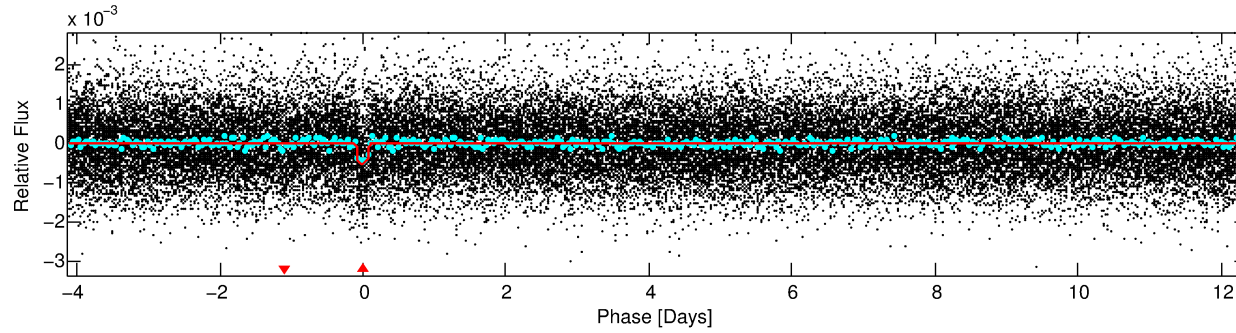
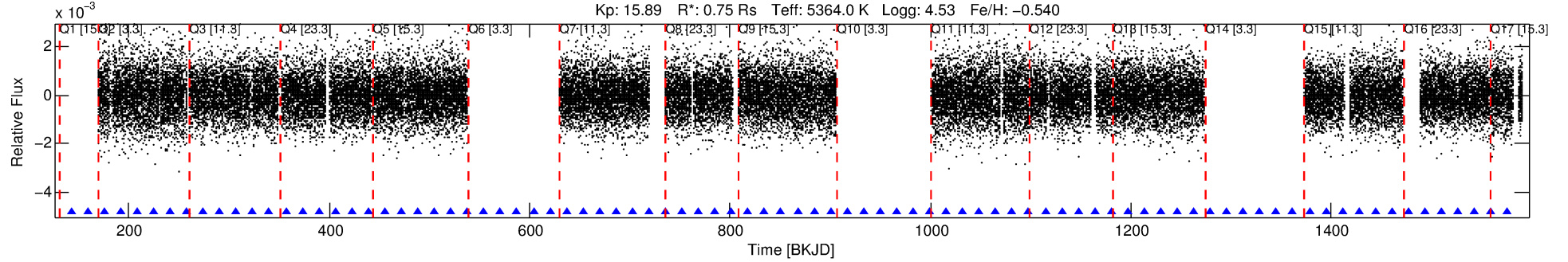
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004381429-01

No Significant Match Found

# DV One-Page Summary

KIC: 4381429 Candidate: 1 of 1 Period: 16.474 d  
KOI: K04474.01 Corr: 0.989



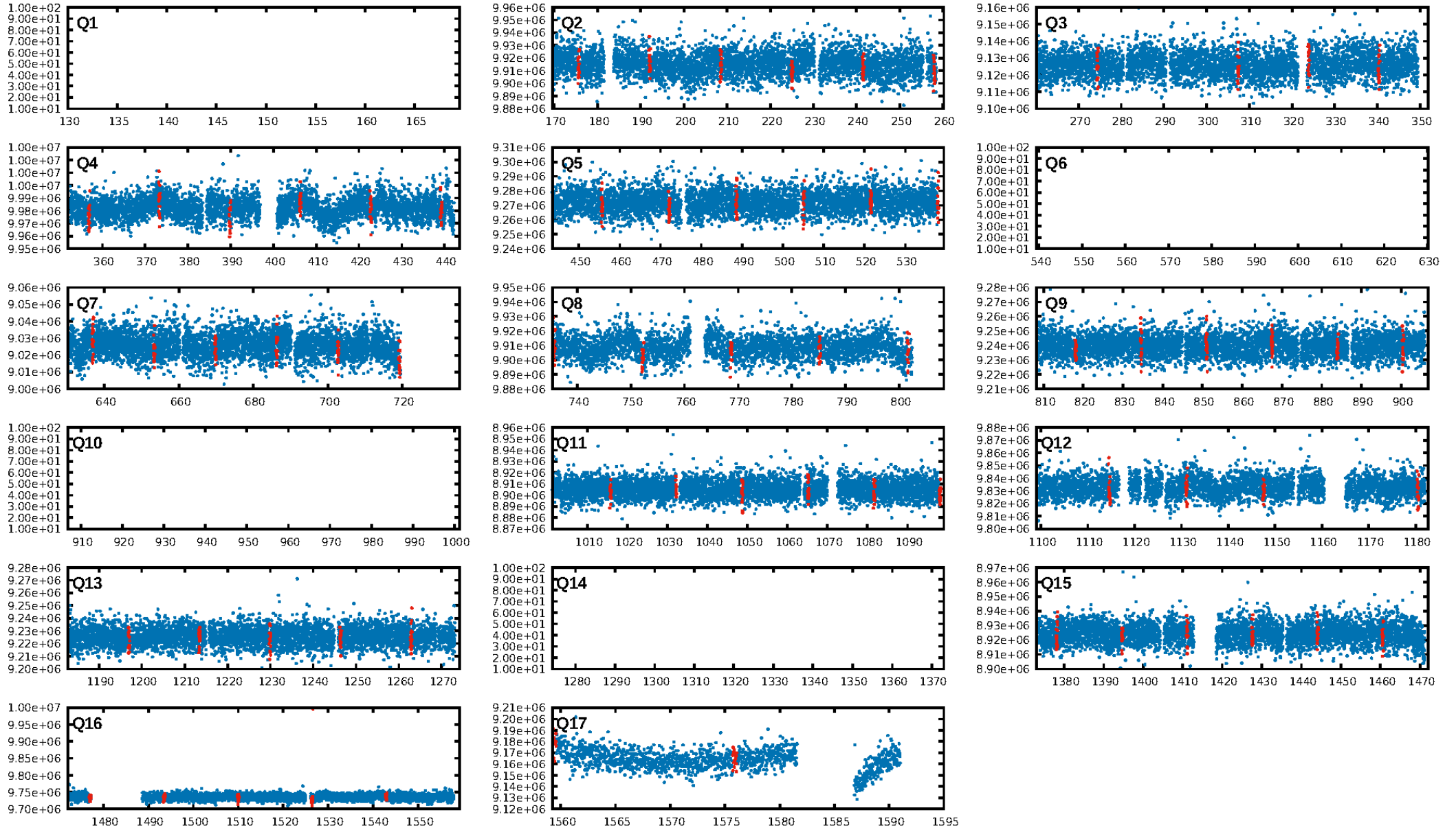
## DV Fit Results:

Period = 16.47359 [0.00014] d  
Epoch = 142.6825 [0.0072] BKJD  
Rp/R\* = 0.0219 [0.0225]  
a/R\* = 22.16 [95.87]  
b = 0.69 [3.39]  
Seff = 33.27 [7.91]  
Teq = 612 [36] K  
Rp = 1.80 [1.87] Re  
a = 0.1126 [0.0138] AU  
Ag = 274.39 [572.82] [0.48 $\sigma$ ]  
Teffp = 3854 [2008] K [1.61 $\sigma$ ]

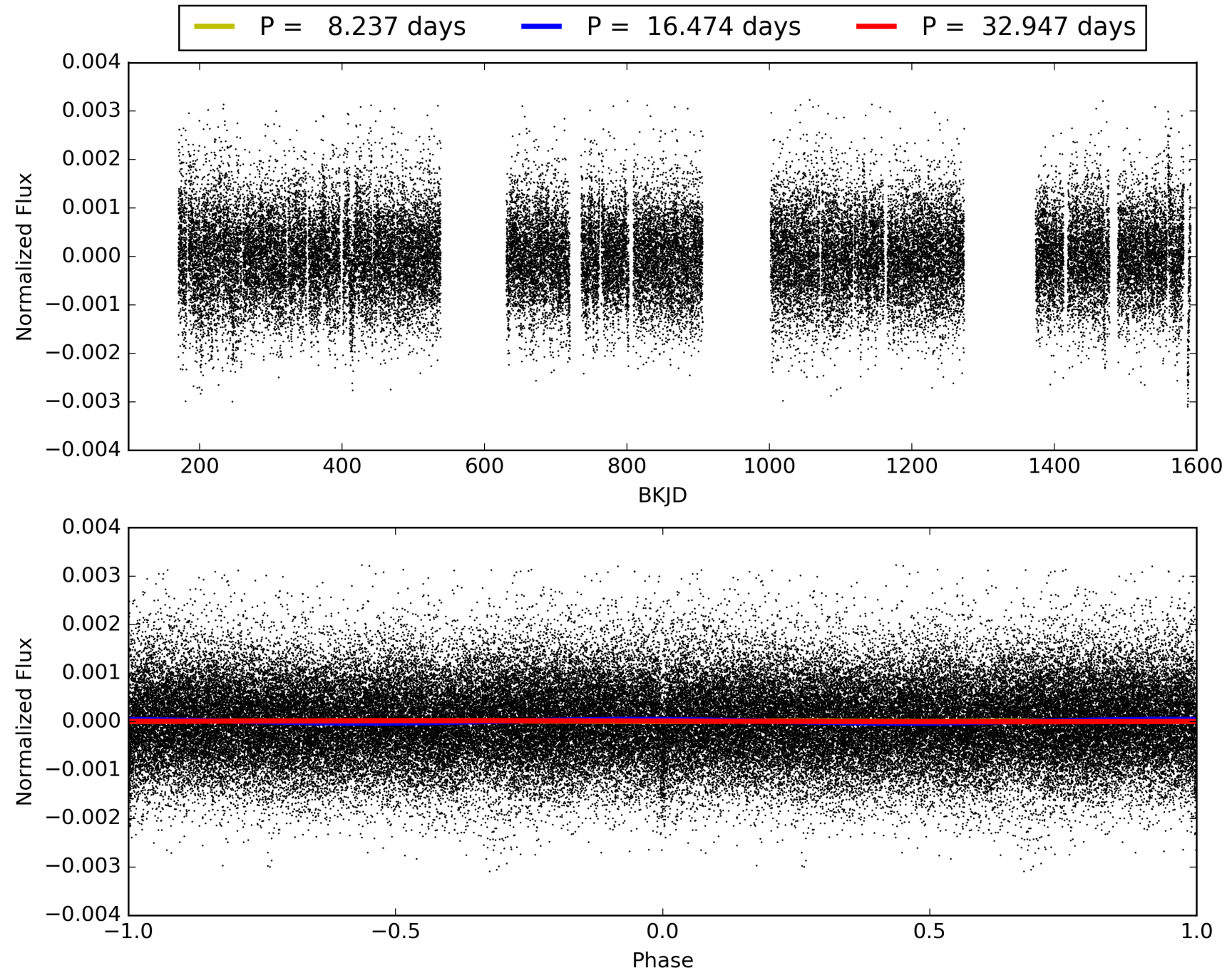
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.58e-24  
RollingBand-fgt: 1.00 [64/64]  
GhostDiagnostic-chr: 1.665  
Centroid-sig: 0.3%  
Centroid-so: 2.411 arcsec [1.98 $\sigma$ ]  
OotOffset-rm: 0.785 arcsec [1.13 $\sigma$ ]  
KicOffset-rm: 0.715 arcsec [1.34 $\sigma$ ]  
OotOffset-st: 1/4/2/1 [8]  
KicOffset-st: 1/4/2/1 [8]  
DiffImageQuality-fgm: 0.50 [4/8]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 004381429-01, PDC Light Curves

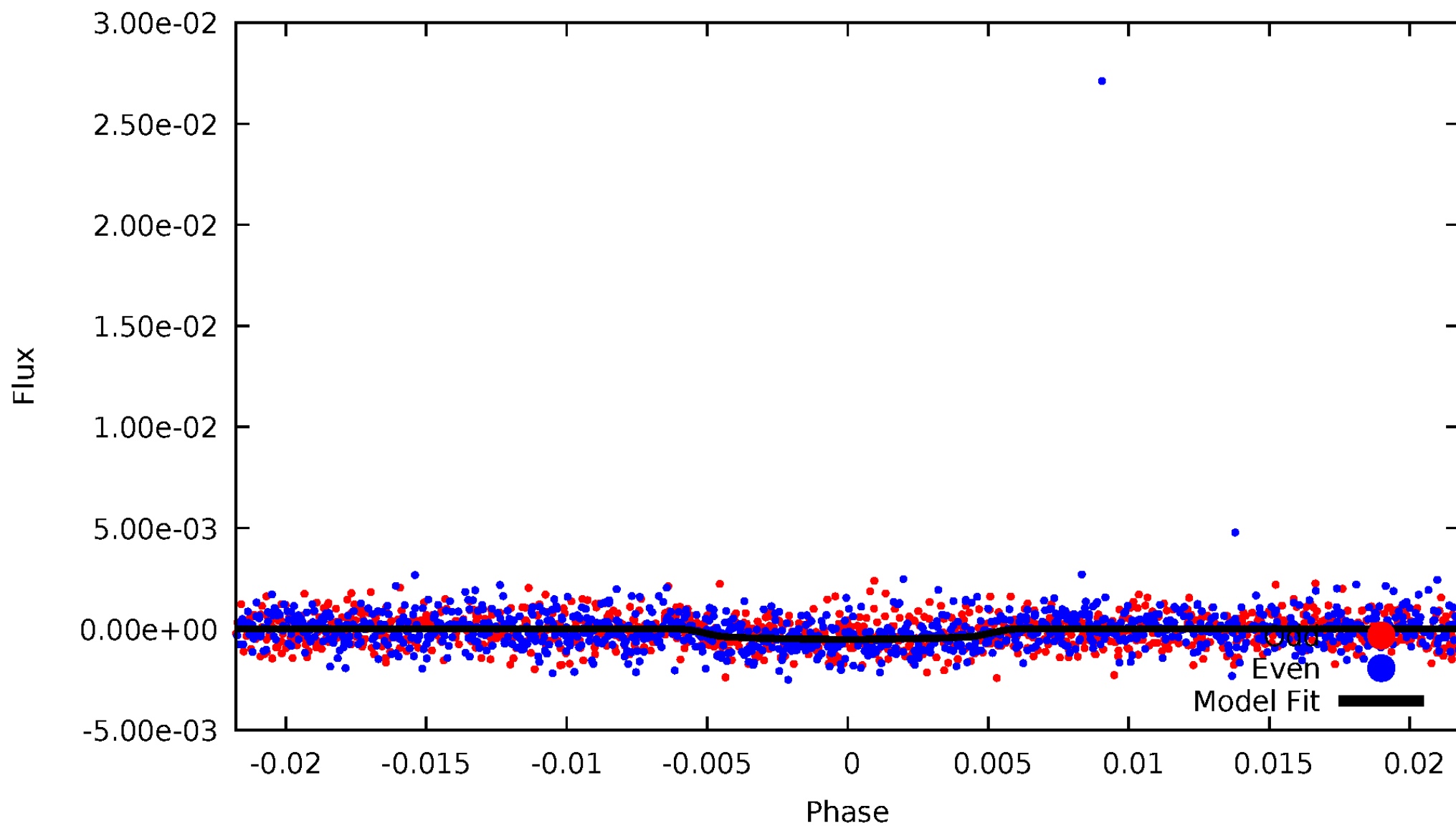


TCE 004381429-01



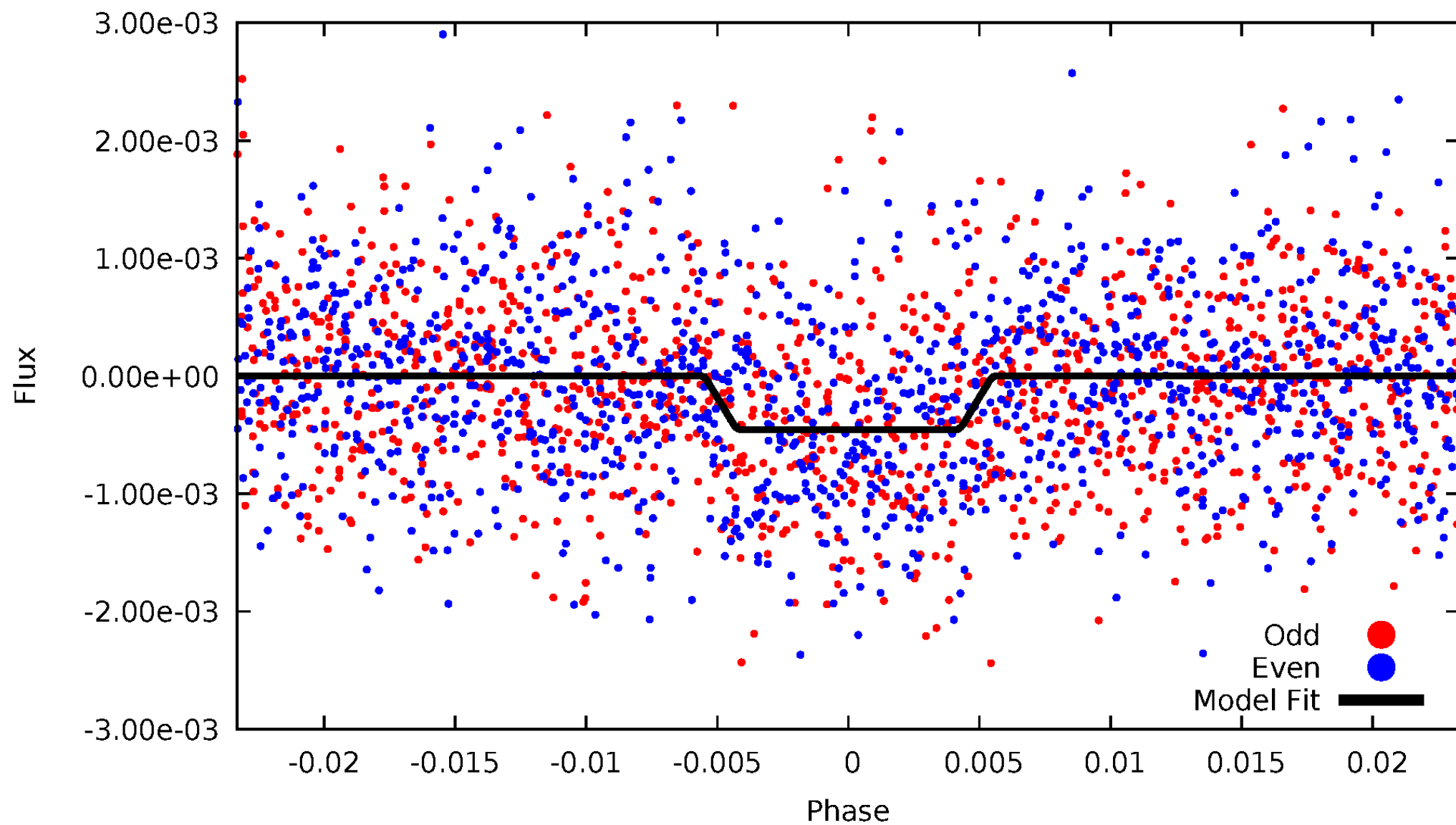
# DV Odd/Even

TCE 004381429-01



# ALT Odd/Even

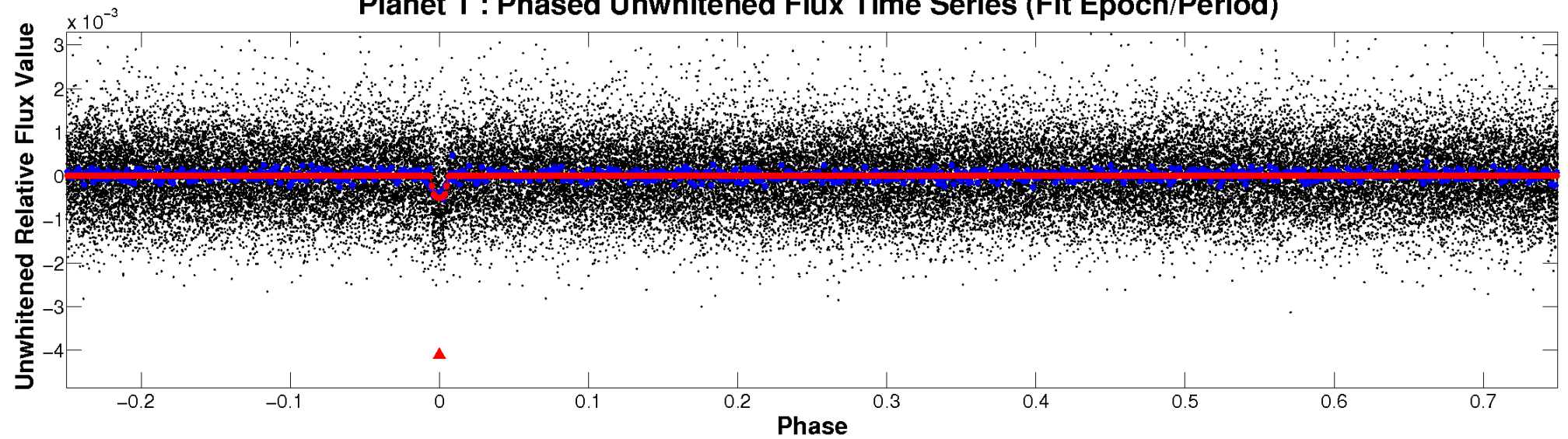
TCE 004381429-01



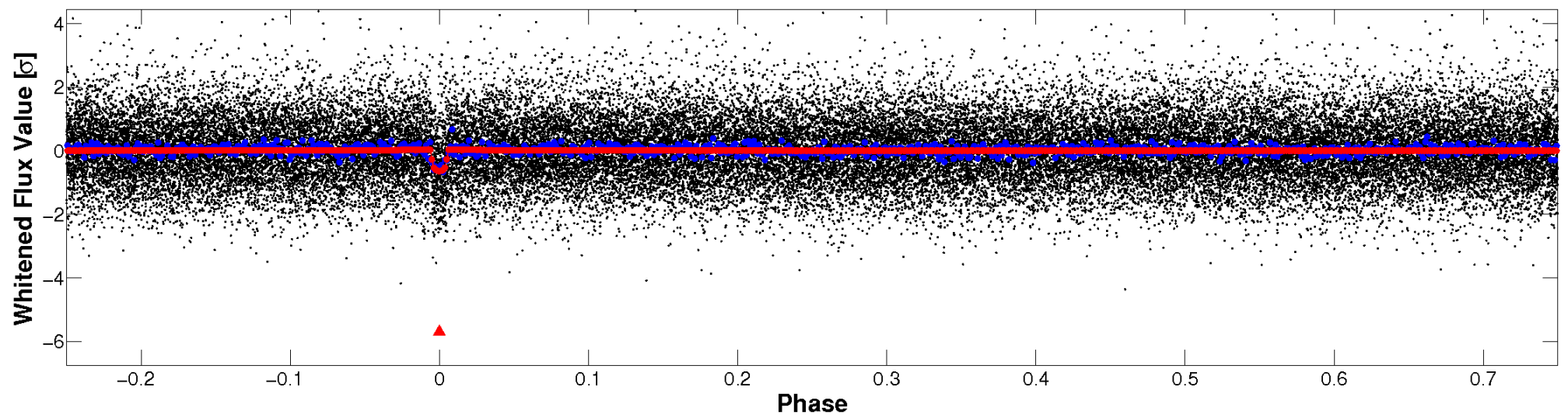


# Non-Whitened Vs. Whitened Light Curve

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

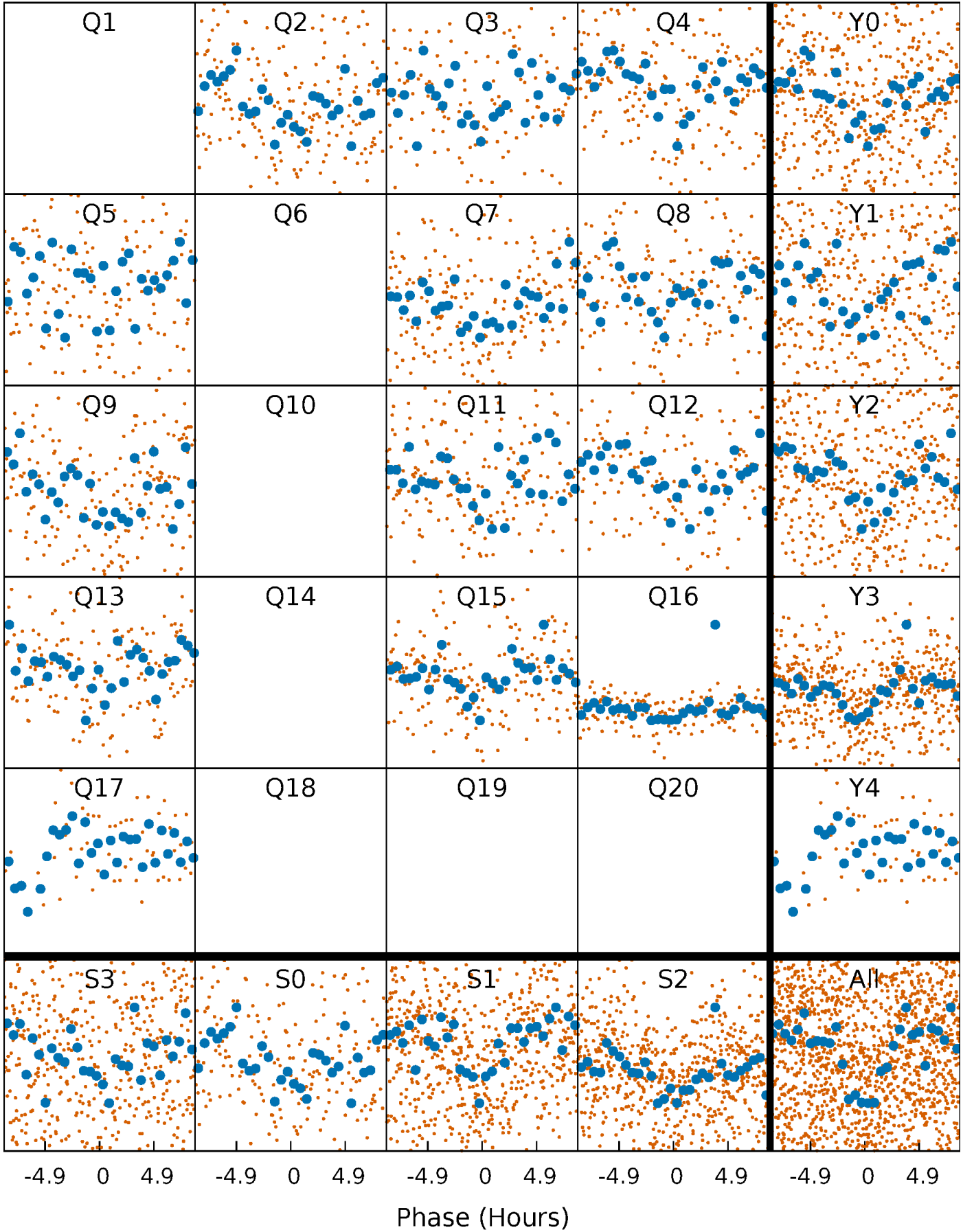


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

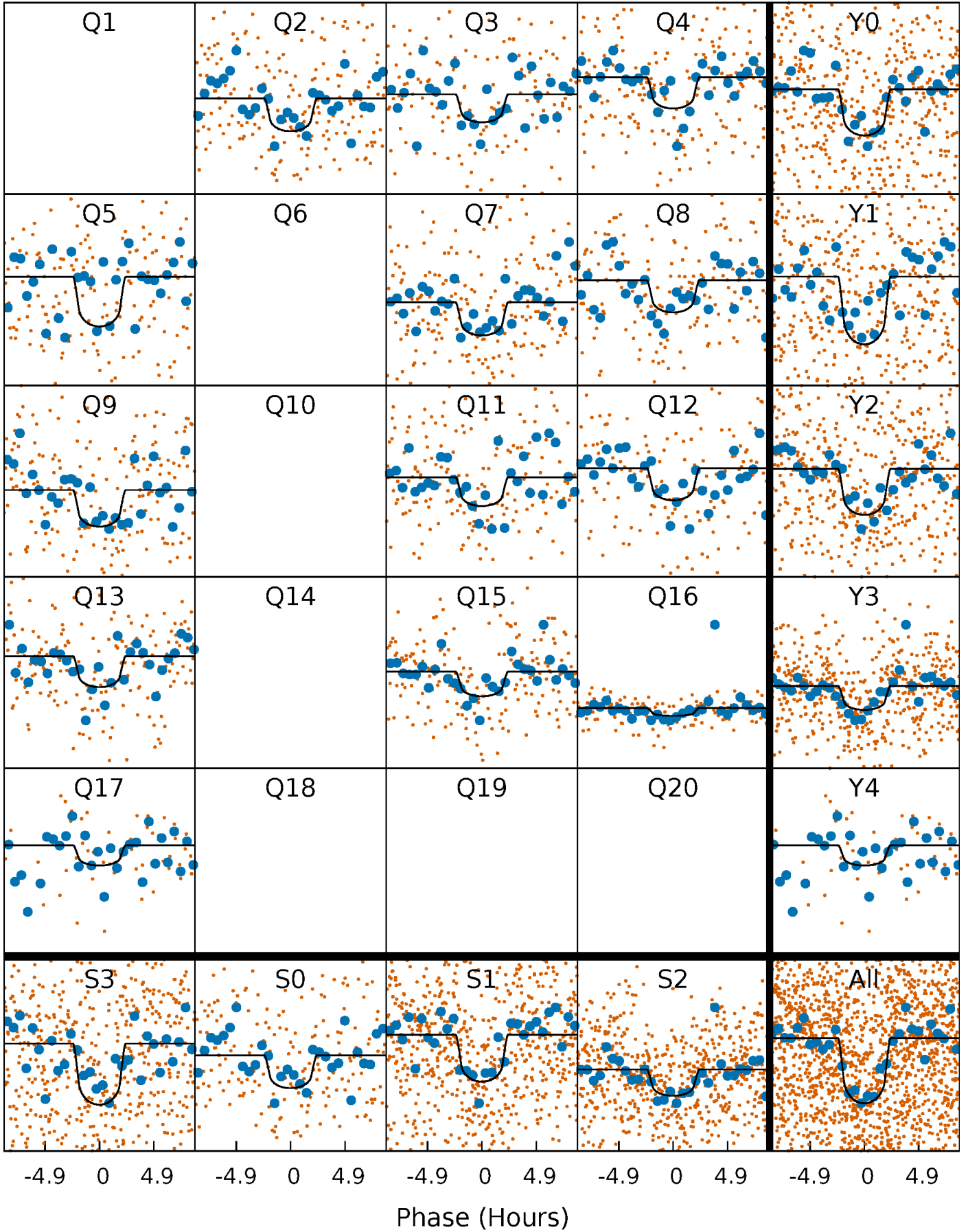
TCE 004381429-01   P= 16.473587 Days    $T_0=142.682489$  (BKJD)





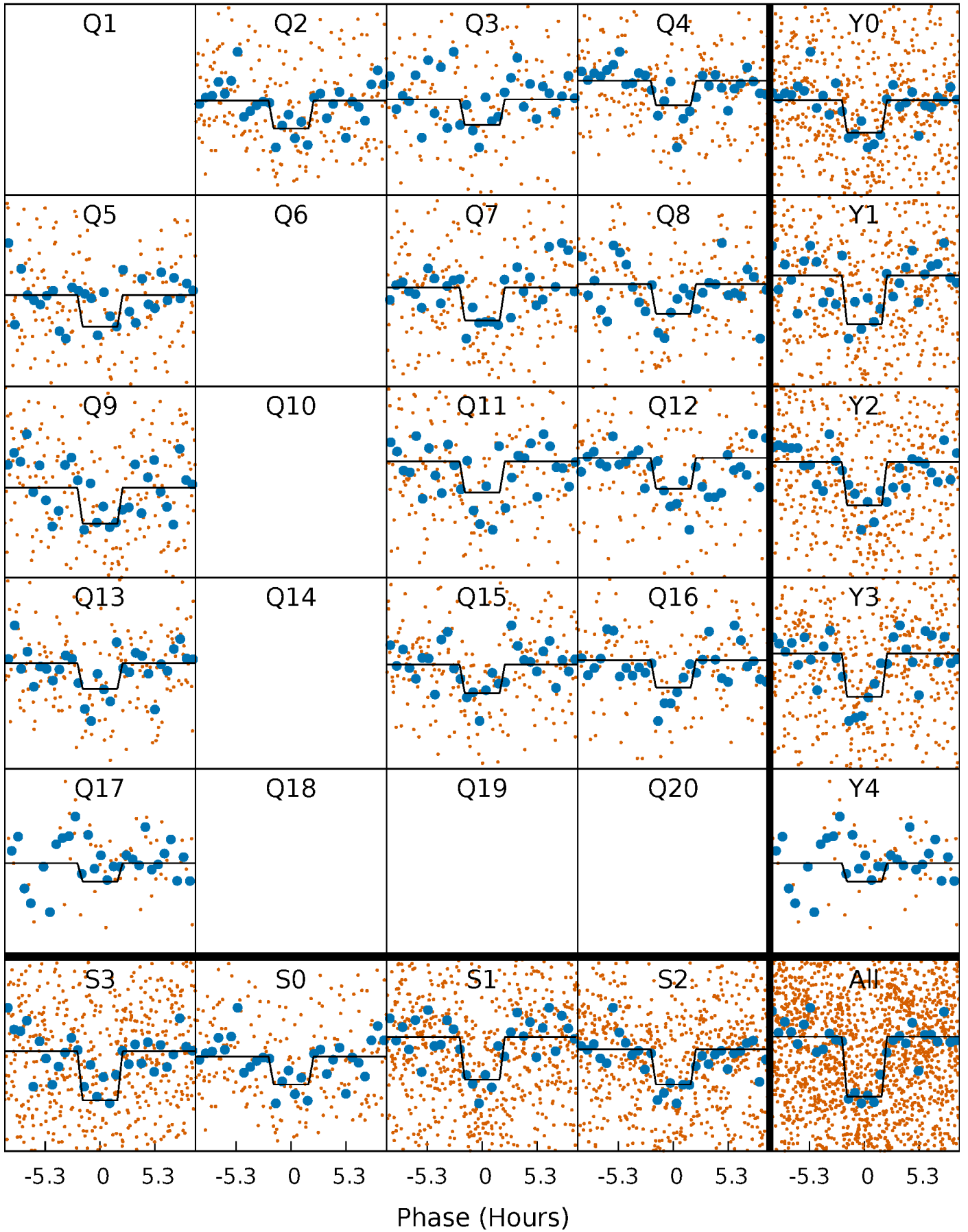
# DV Quarter-Phased Transit Curves

TCE 004381429-01   P= 16.473587 Days    $T_0=142.682489$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

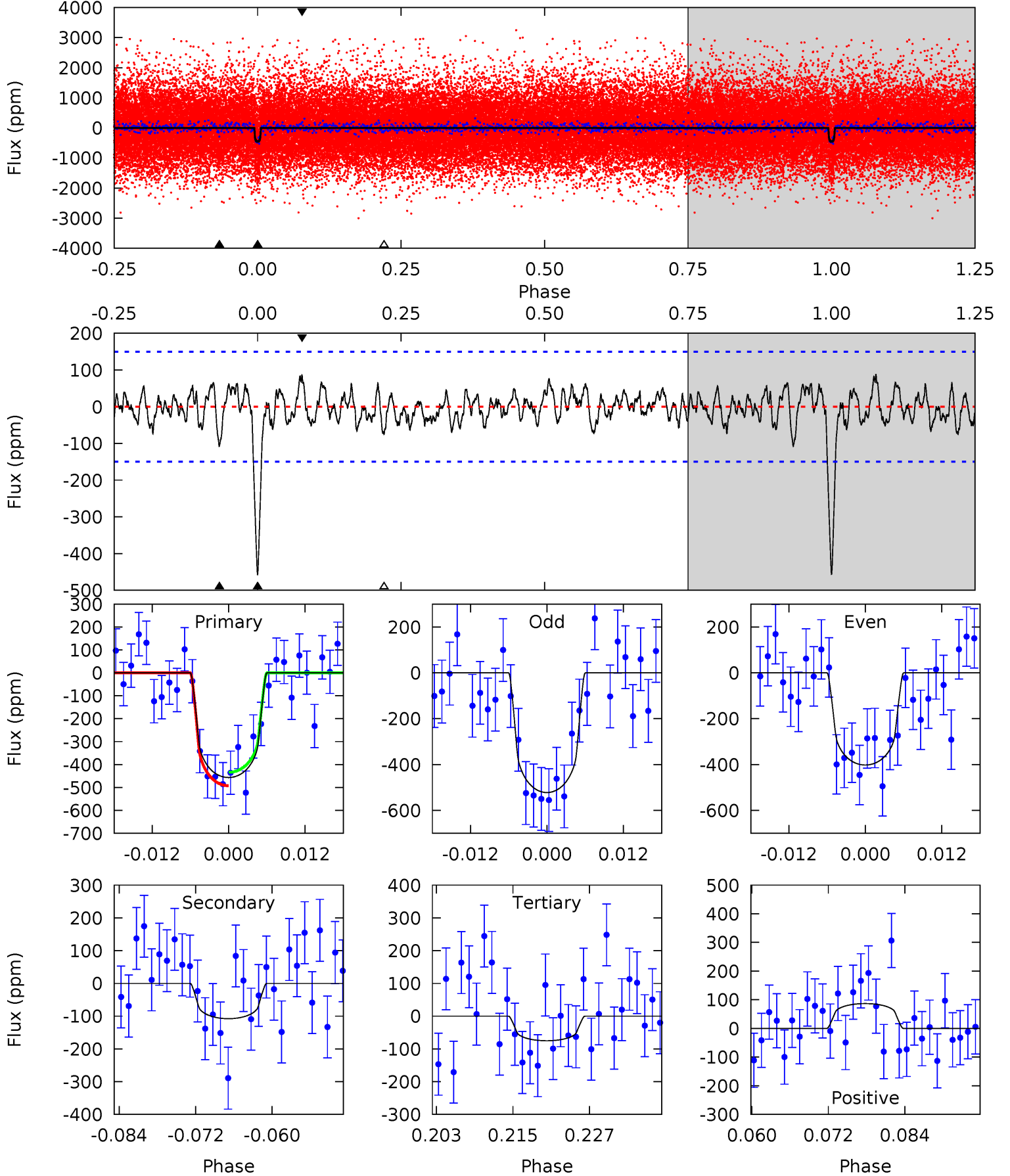
TCE 004381429-01 P= 16.473500 Days  $T_0=142.685104$  (BKJD)



# DV Model-Shift Uniqueness Test

004381429-01, P = 16.473587 Days, E = 142.682489 Days

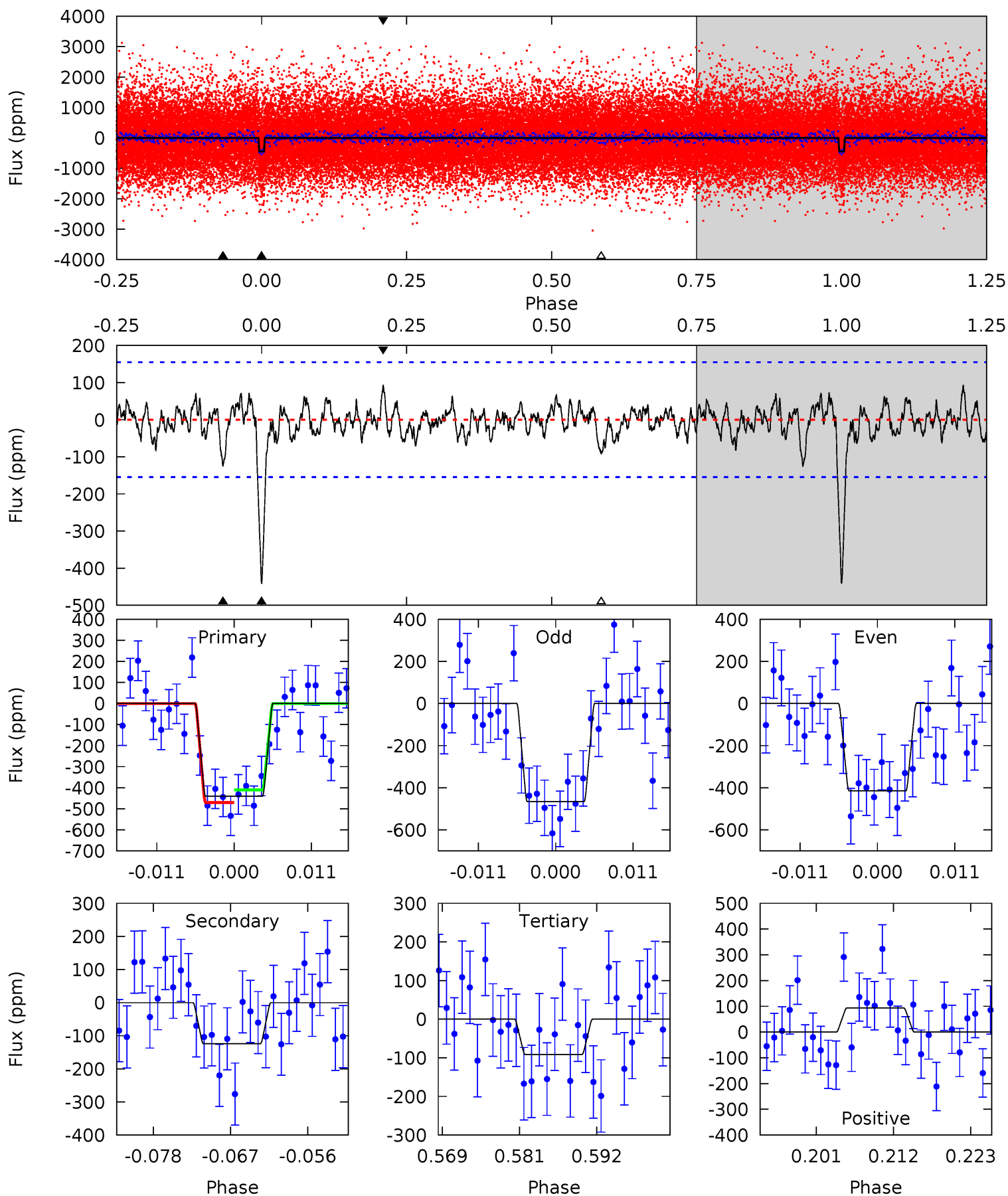
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	3.59	2.50	2.89	4.99	2.51	1.06	12.7	12.3	1.09	0.70	2.01	0.89	0.16	0.98



# Alt Model-Shift Uniqueness Test

004381429-01, P = 16.473500 Days, E = 142.685104 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
14.2	4.02	2.96	3.02	5.01	2.54	0.98	11.3	11.2	1.07	1.00	0.83	1.02	0.17	0.97



### Stellar Parameters For KIC 004381429

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5364^{+194}_{-162}$	$4.529^{+0.108}_{-0.081}$	$-0.540^{+0.350}_{-0.300}$	$0.754^{+0.102}_{-0.092}$	$0.702^{+0.101}_{-0.040}$	$2.302^{+0.987}_{-0.584}$
	+4%/-3%	+2%/-2%	+65%/-56%	+14%/-12%	+14%/-6%	+43%/-25%
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 004381429-01 / KOI 4474.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-108 \pm 30$	$2.15^{+1.63}_{-1.32}$	$857^{+37}_{-40}$	$3727^{+1709}_{-630}$	$157^{+951}_{-107}$
Alt.	$-124 \pm 31$	$2.16^{+1.80}_{-1.41}$	$851^{+41}_{-37}$	$3854^{+1886}_{-709}$	$192^{+1230}_{-137}$

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



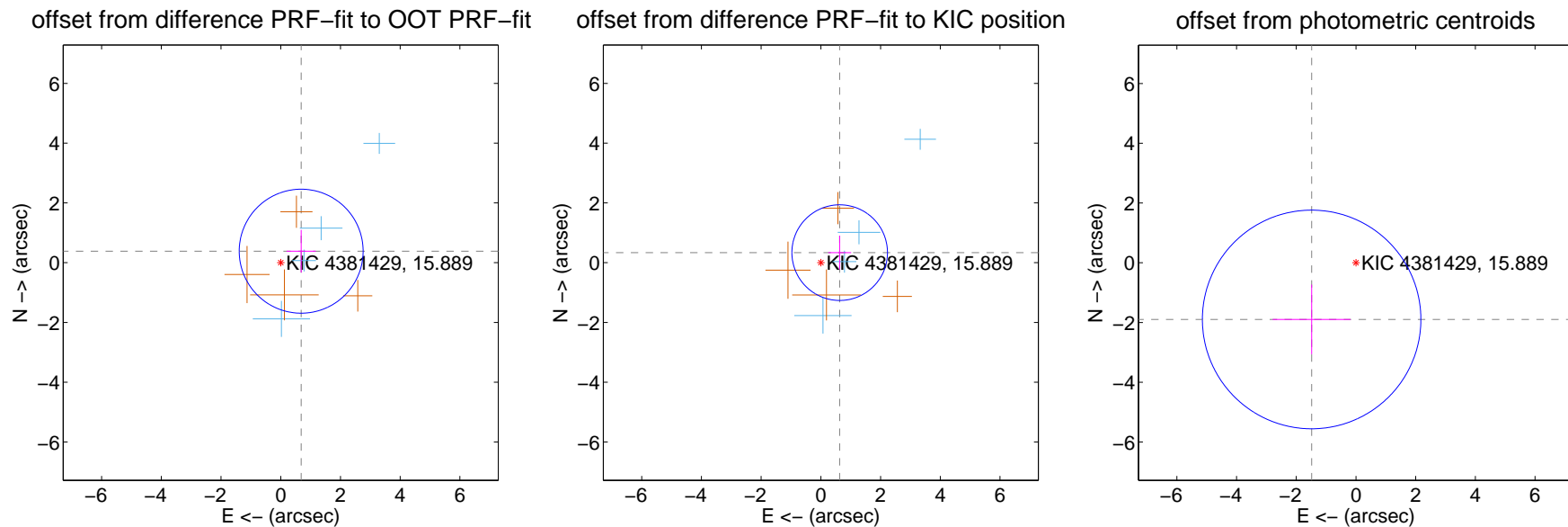
## DV Centroid Data

Supplemental centroid analysis for 004381429-01. Kepler magnitude: 15.89. Transit SNR 12.71

There are 4 quarters with good PRF difference image offsets

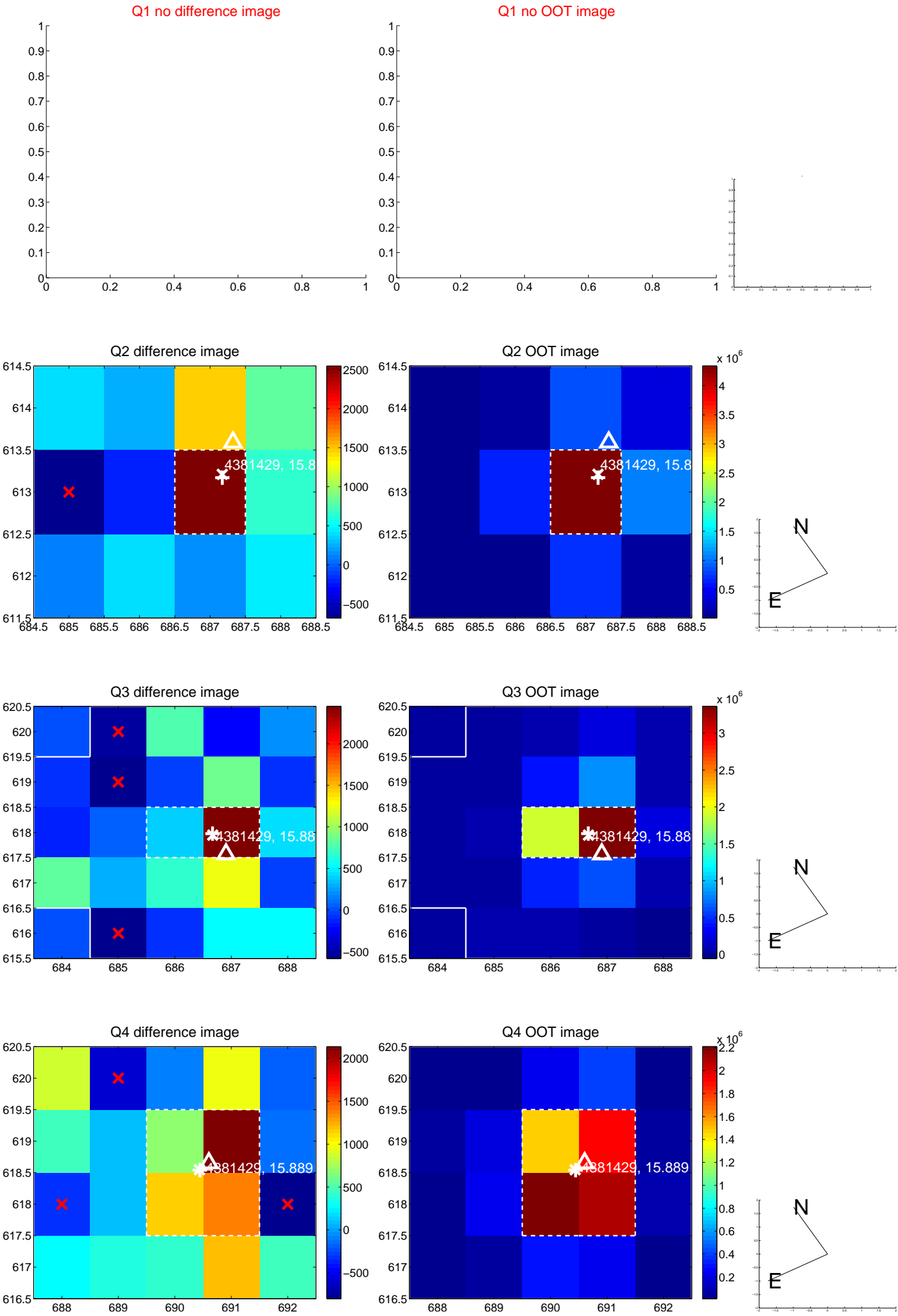
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.785 \pm 0.692$	1.13	$-0.684 \pm 0.489$	$0.385 \pm 0.713$
PRF-fit source offset from KIC position	$0.715 \pm 0.534$	1.34	$-0.631 \pm 0.386$	$0.337 \pm 0.570$
photometric centroid source offset	$2.41 \pm 1.22$	1.98	$1.49 \pm 1.30$	$-1.90 \pm 1.17$

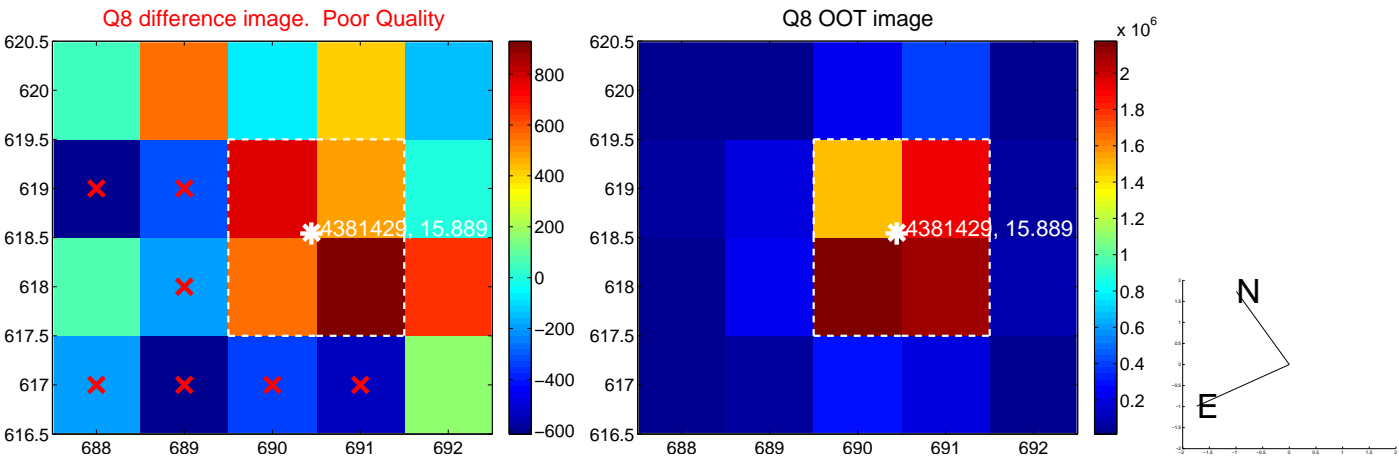
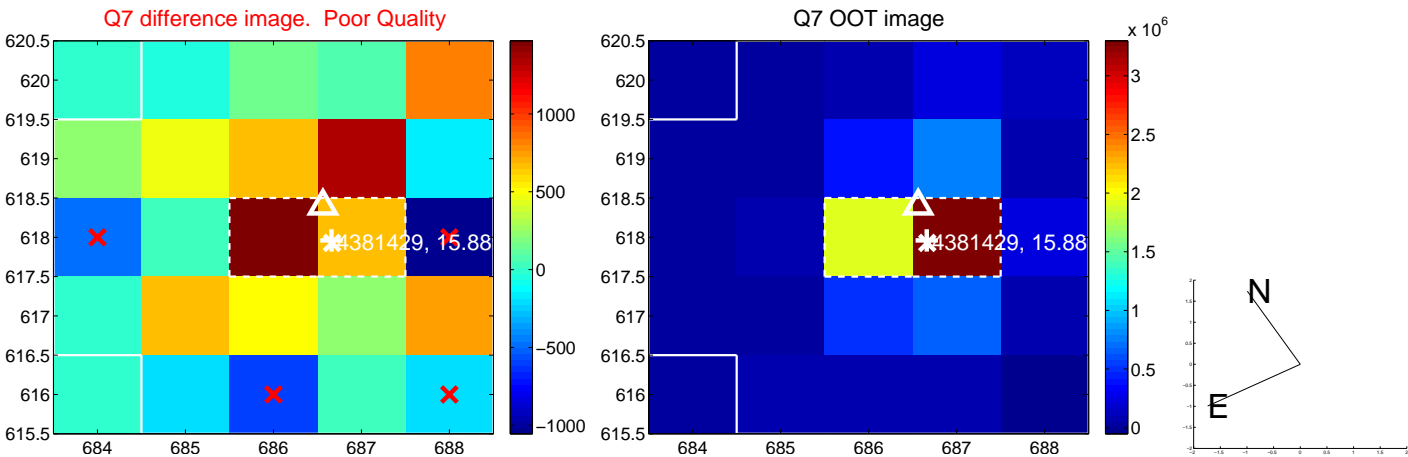
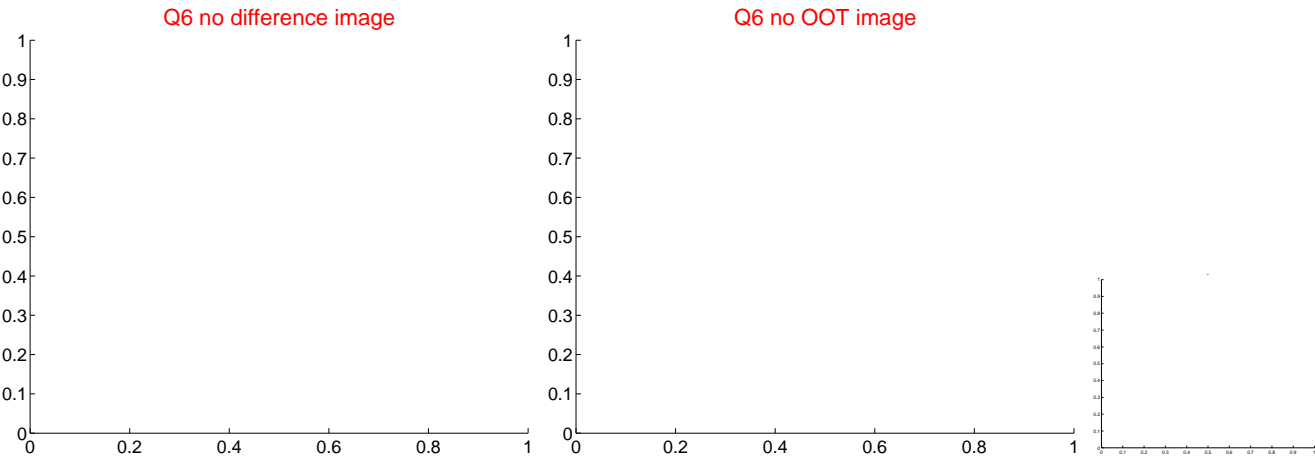
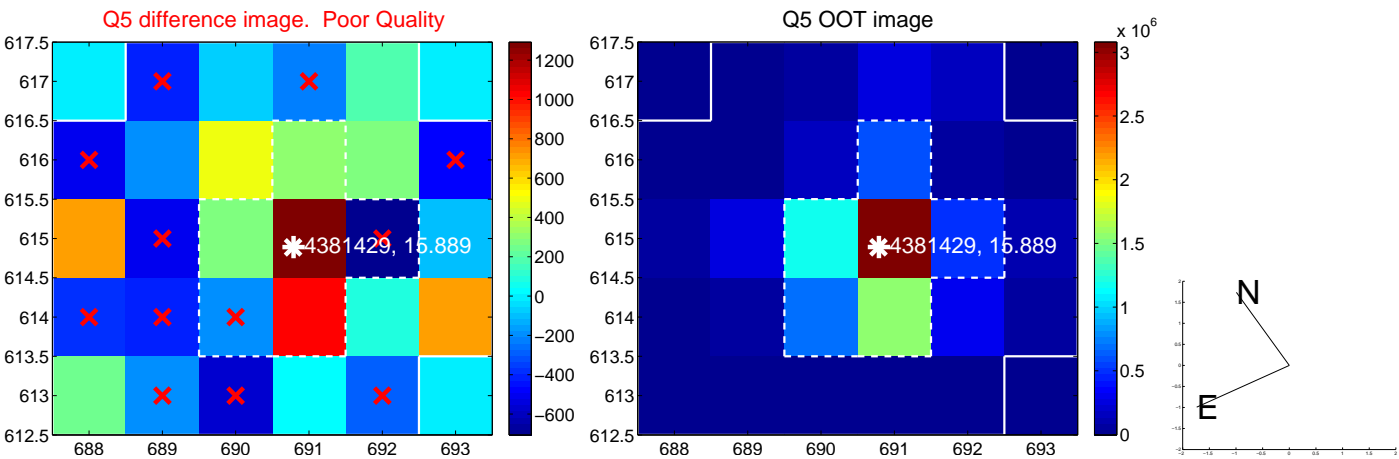


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

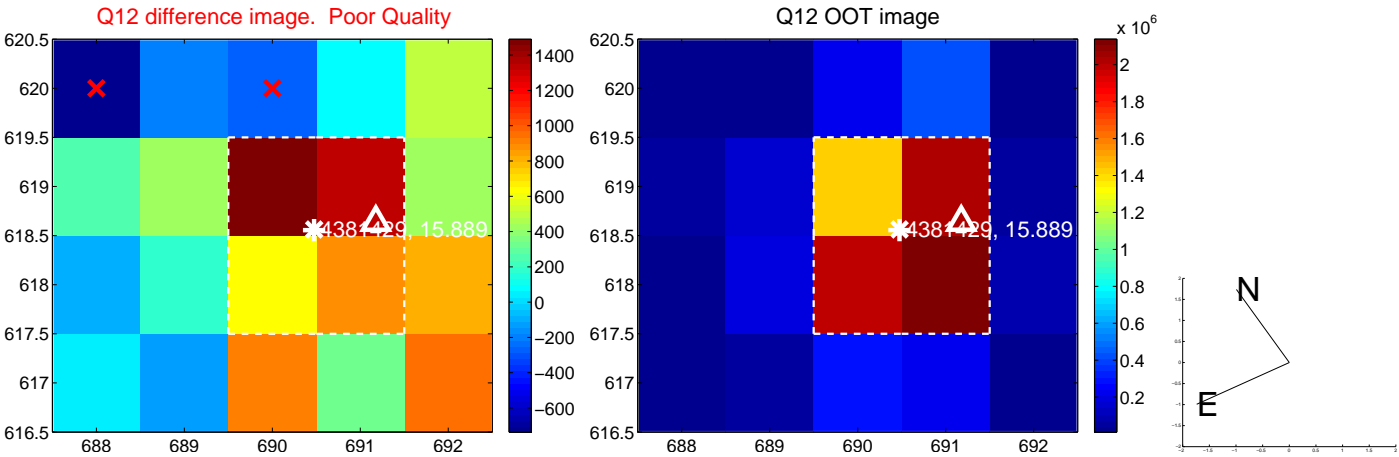
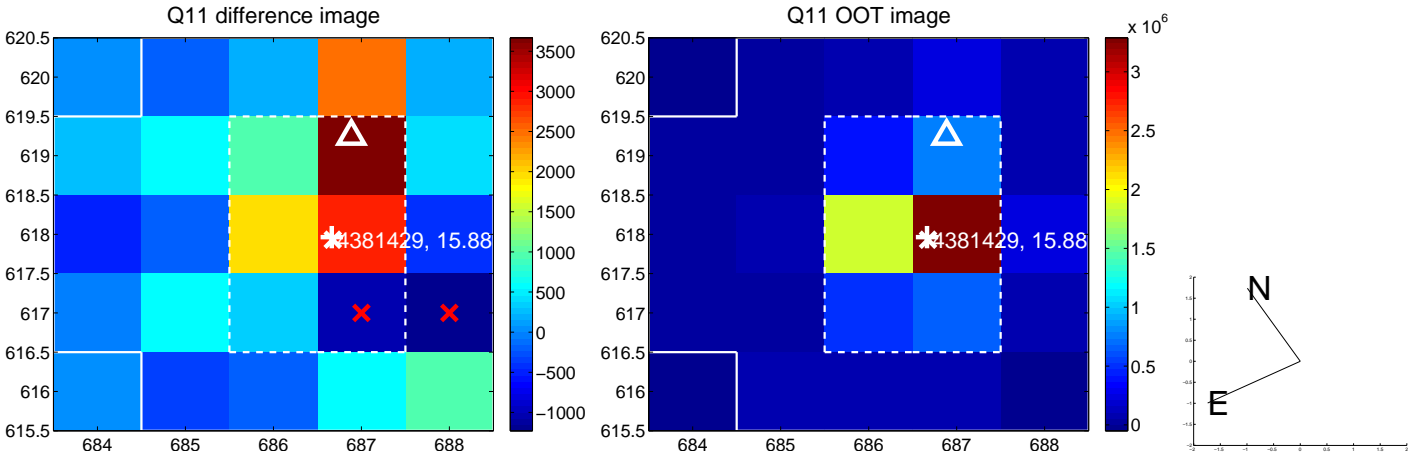
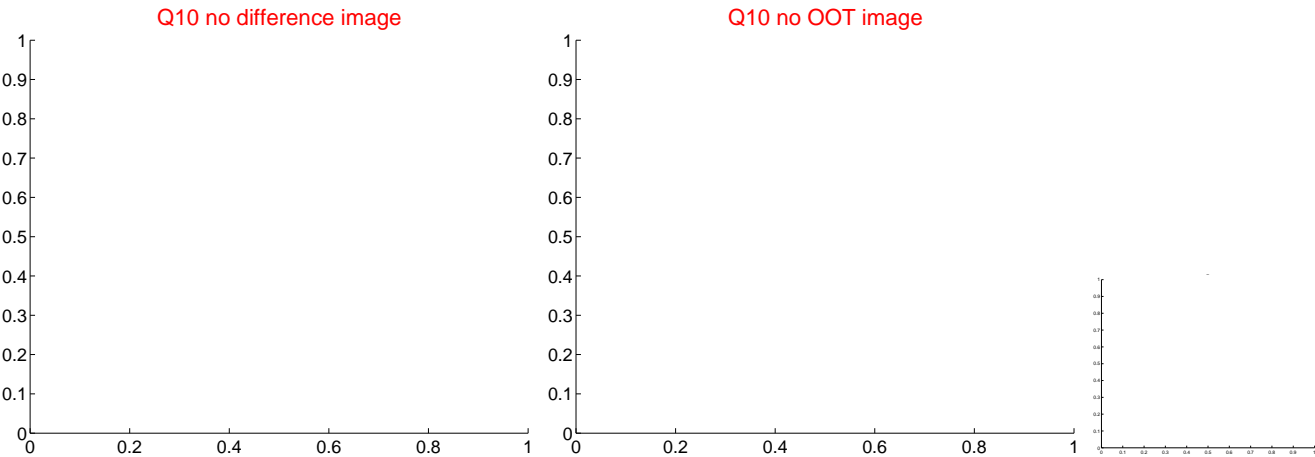
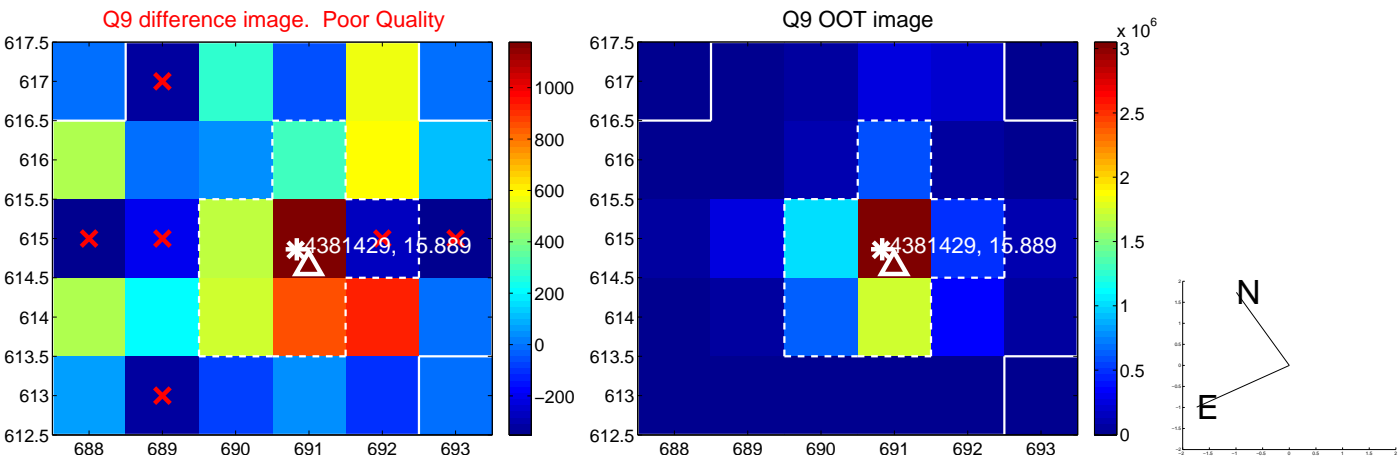
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



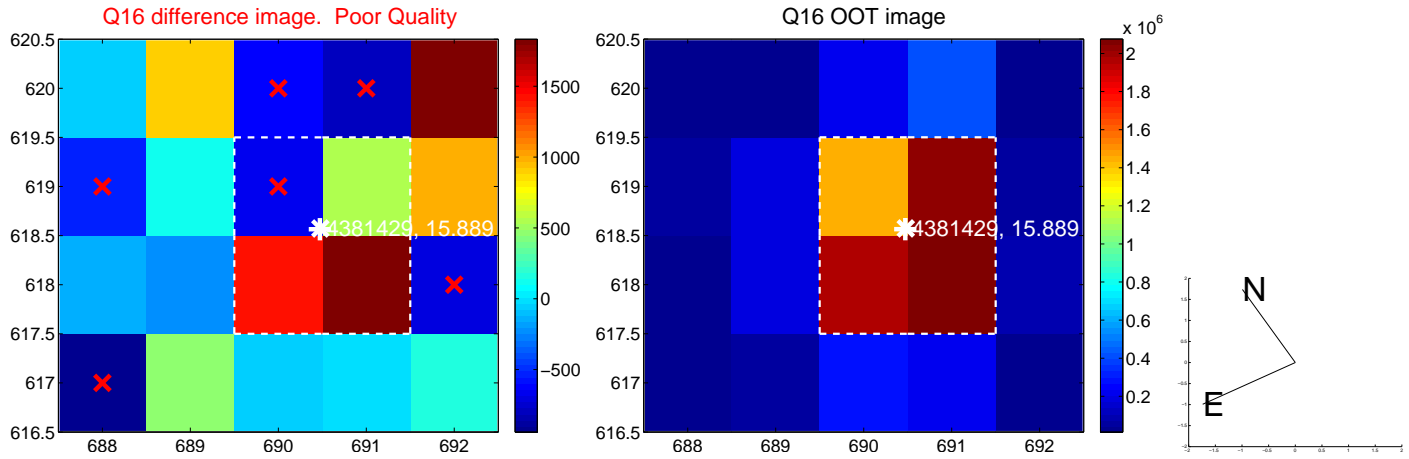
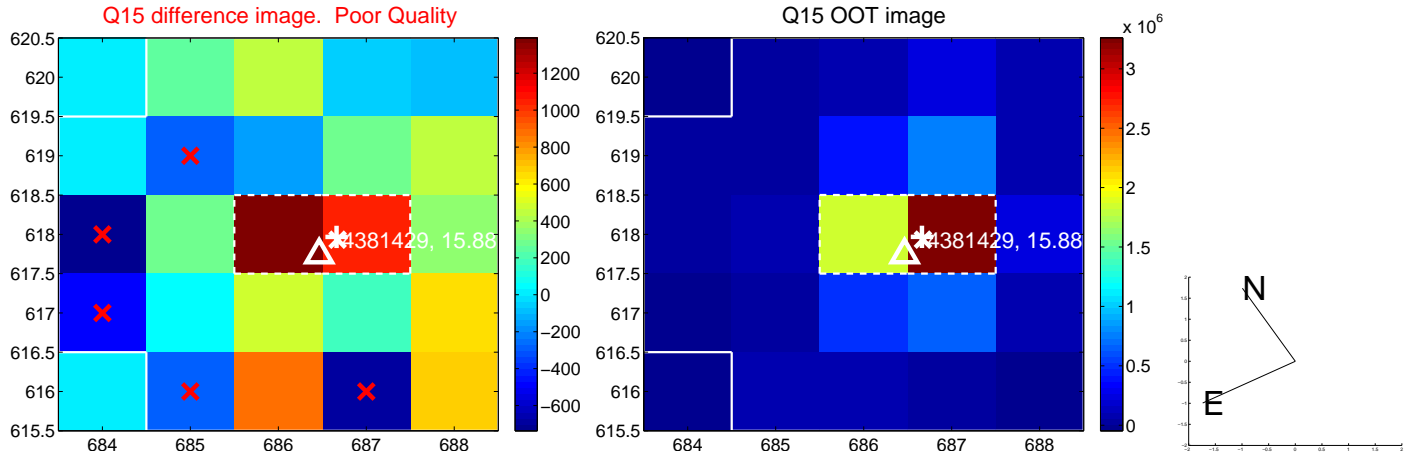
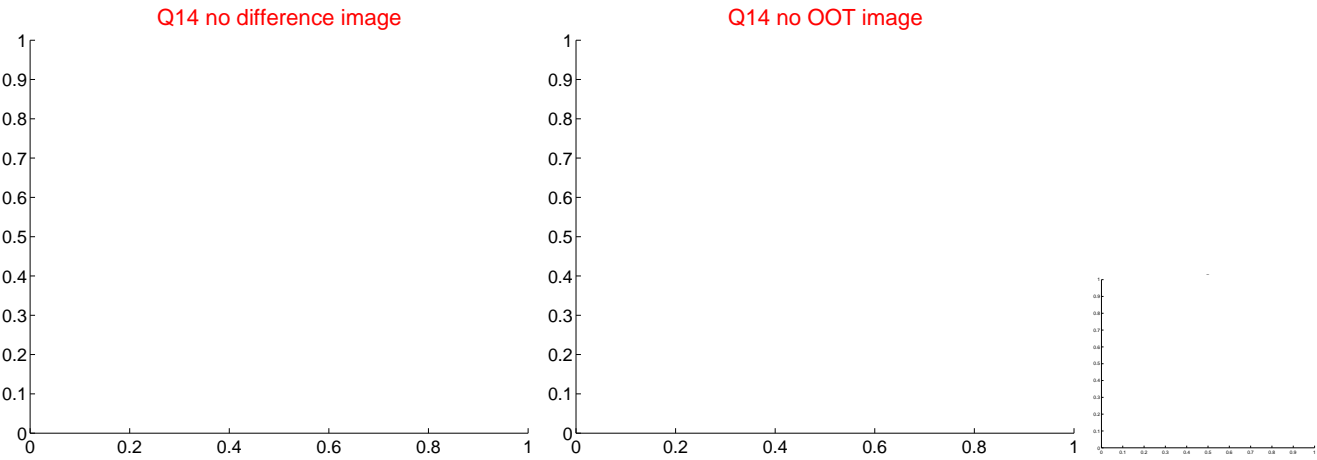
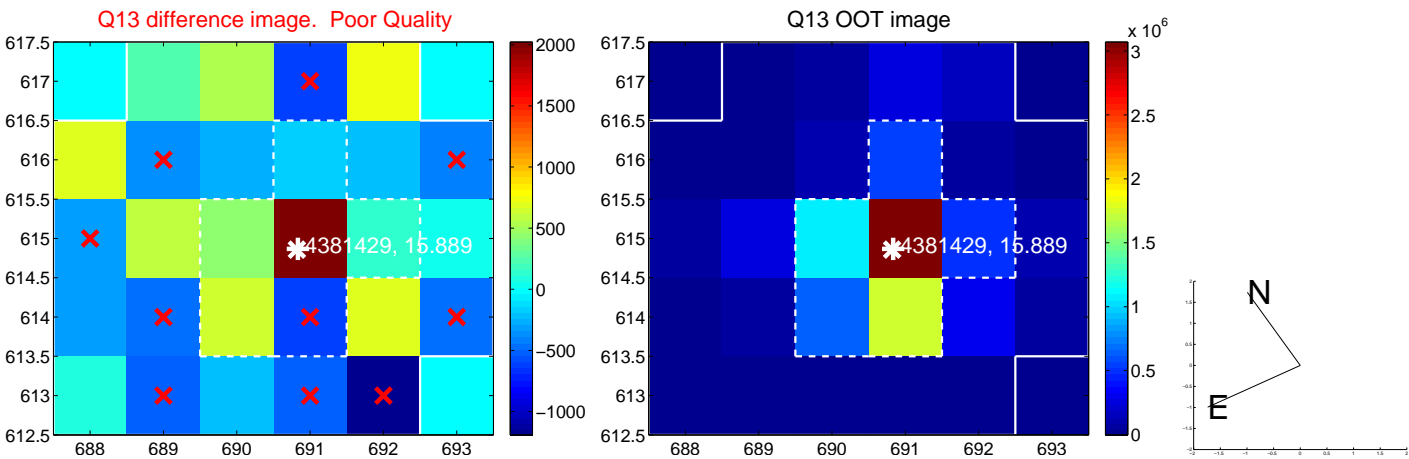
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

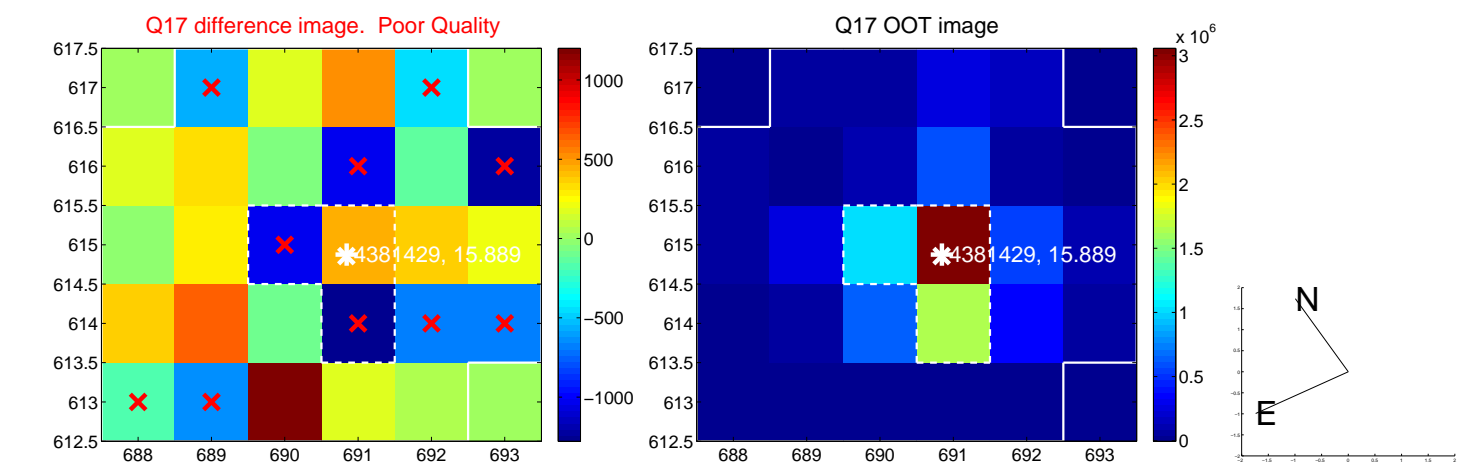


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

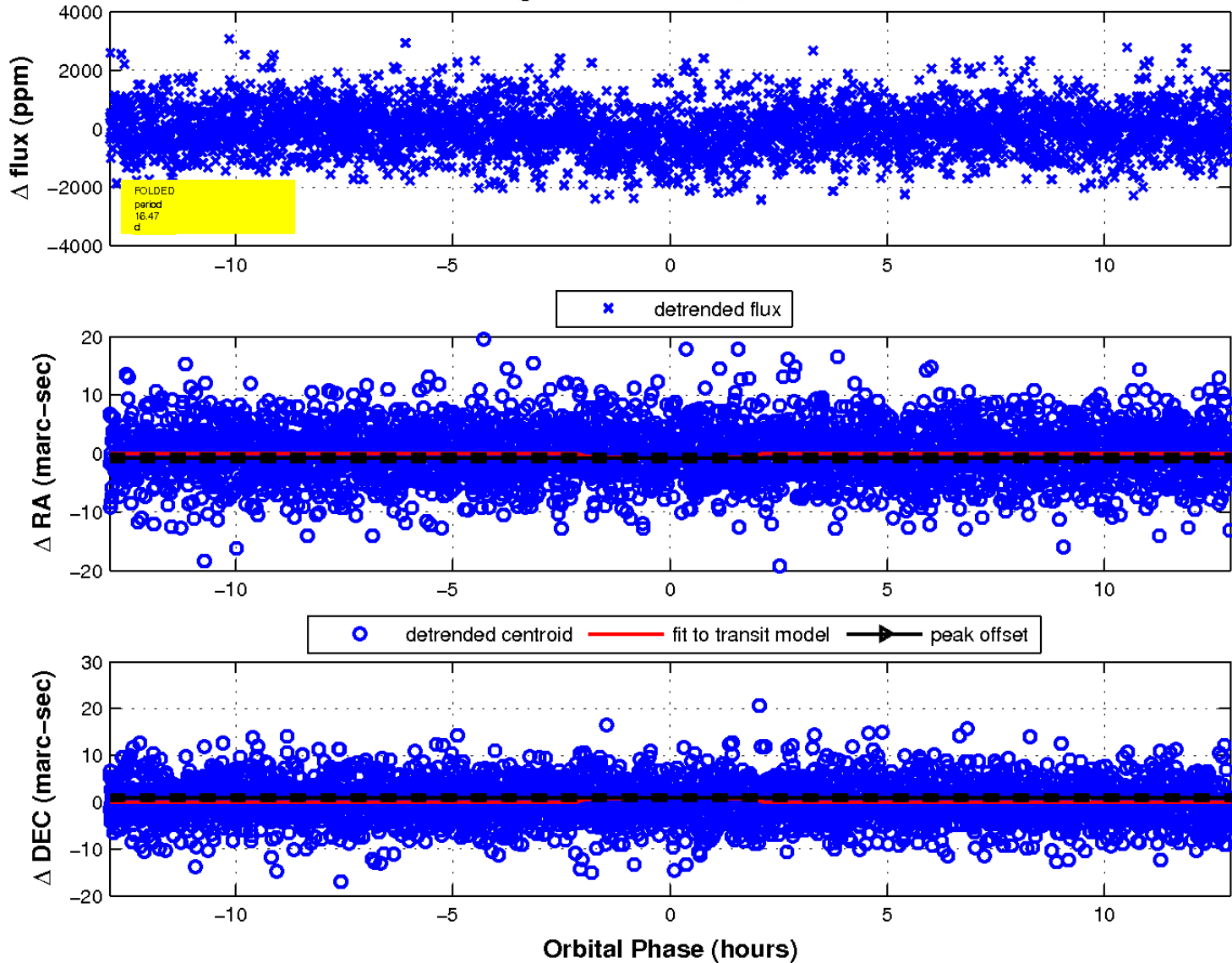




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

