

# KIC 009641481

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009641481-01	OBS	2152.01	42.191523	155.313173	488.1	7.887	19.8	22.4	1.08	5520	2.97	18.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009641481-01	OBS	PC	1.00	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.

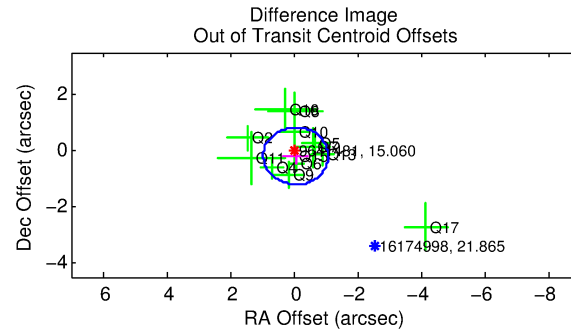
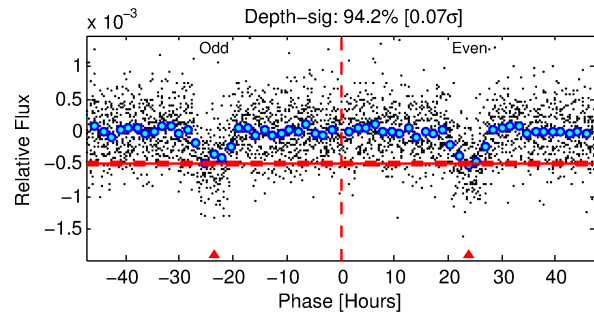
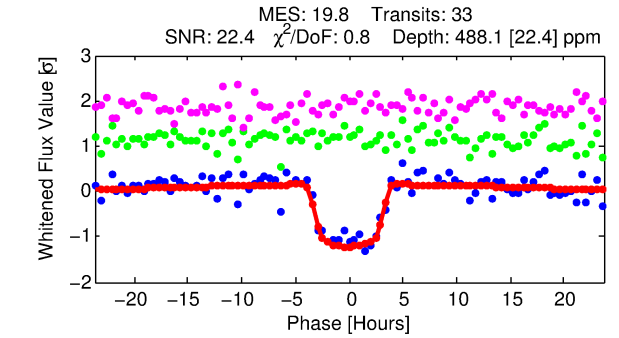
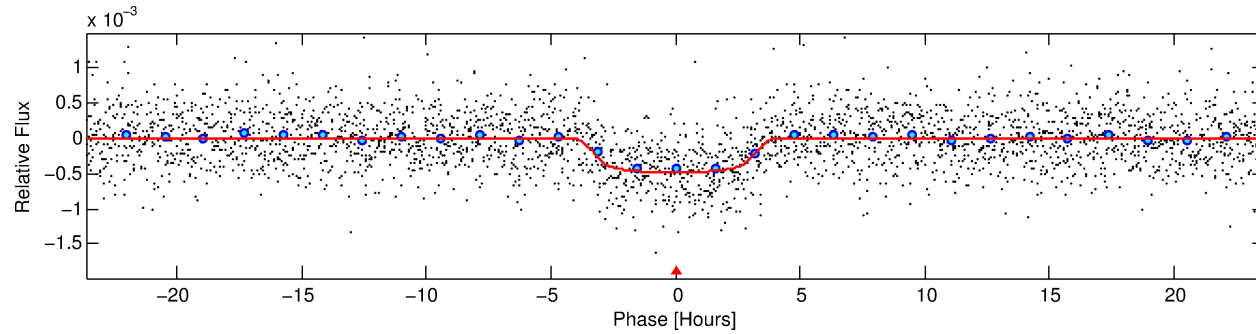
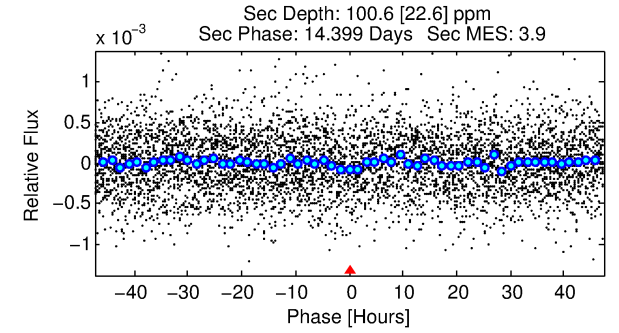
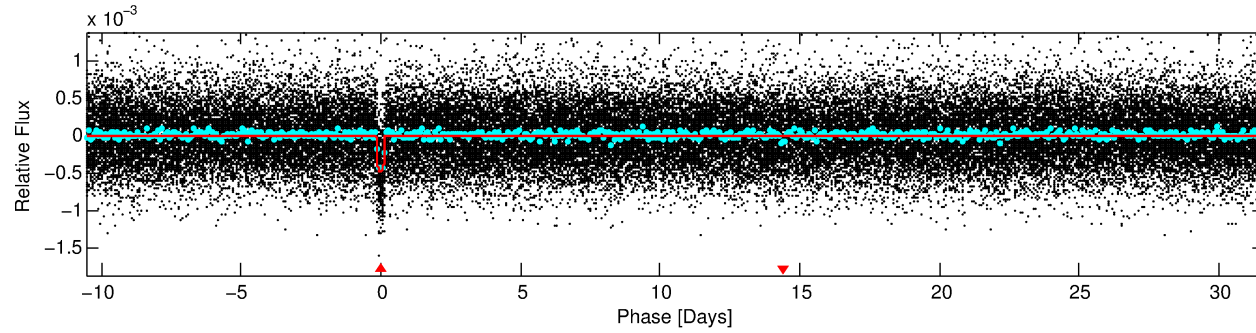
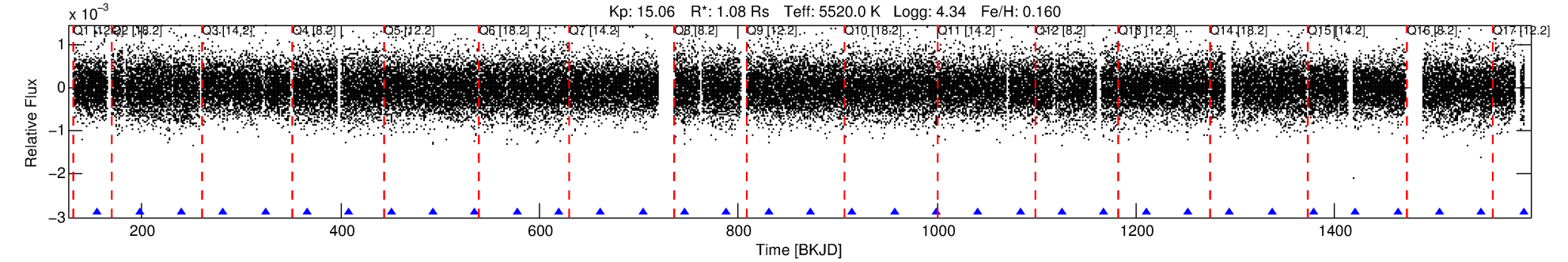
## Ephemeris Match Information For 009641481-01

No Significant Match Found

# DV One-Page Summary

KIC: 9641481 Candidate: 1 of 1 Period: 42.192 d

KOI: K02152.01 Corr: 0.949



## DV Fit Results:

Period = 42.19152 [0.00035] d  
Epoch = 155.3132 [0.0068] BKJD  
Rp/R\* = 0.0252 [0.0013]  
a/R\* = 17.64 [3.41]  
b = 0.93 [0.03]  
Seff = 18.11 [4.30]  
Teq = 526 [31] K  
Rp = 2.97 [0.44] Re  
a = 0.2315 [0.0326] AU  
Ag = 335.13 [113.49] [2.94σ]  
Teffp = 3480 [220] K [13.28σ]

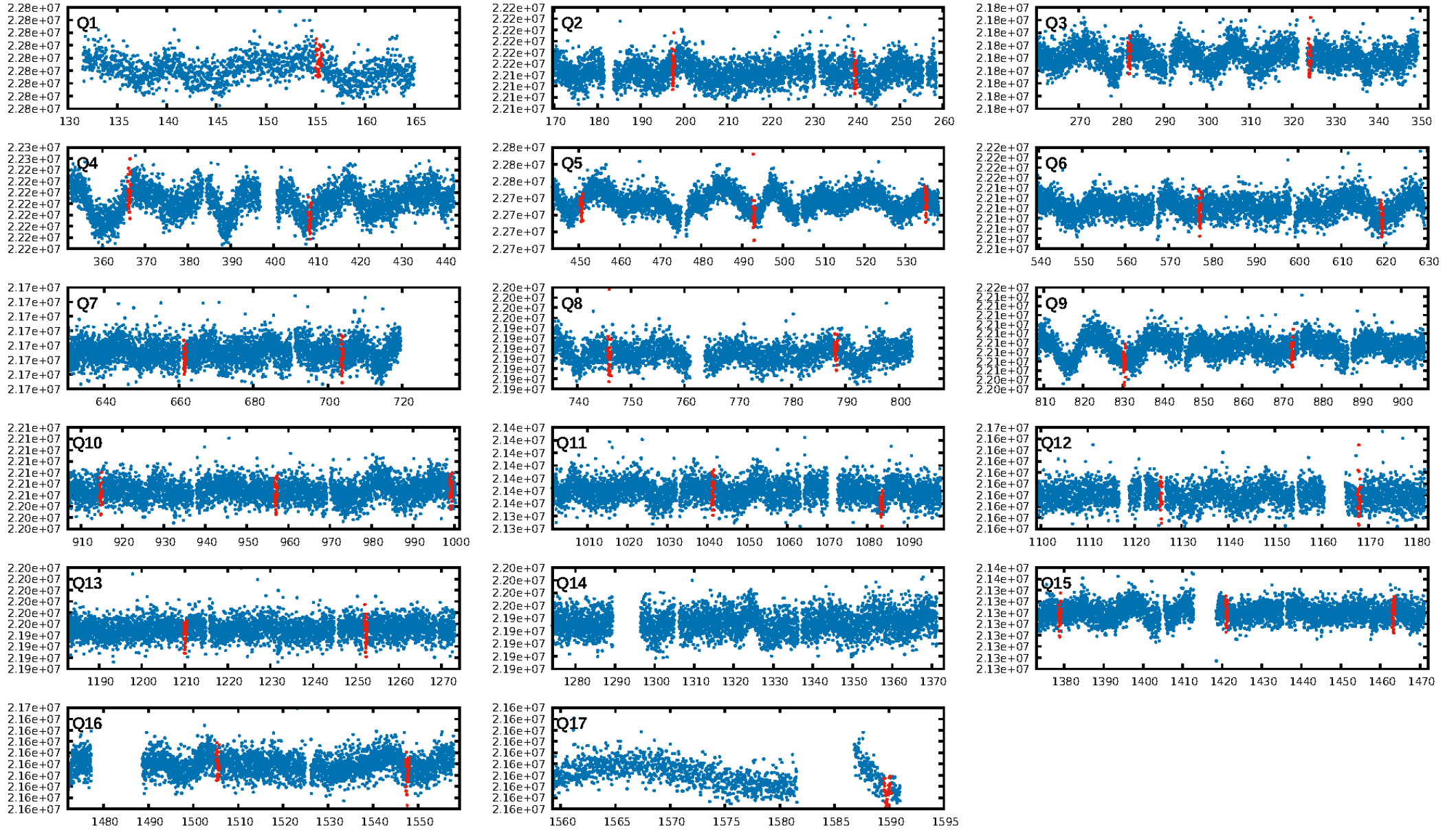
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 94.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.07e-86  
RollingBand-fgt: 1.00 [31/31]  
GhostDiagnostic-chr: 6.923  
Centroid-sig: 55.3%  
Centroid-so: 0.550 arcsec [0.89σ]  
OotOffset-rm: 0.203 arcsec [0.60σ]  
KicOffset-rm: 0.216 arcsec [0.93σ]  
OotOffset-st: 3/3/3/4 [13]  
KicOffset-st: 3/3/3/4 [13]  
DiffImageQuality-fgm: 0.85 [11/13]  
DiffImageOverlap-fno: 1.00 [15/15]

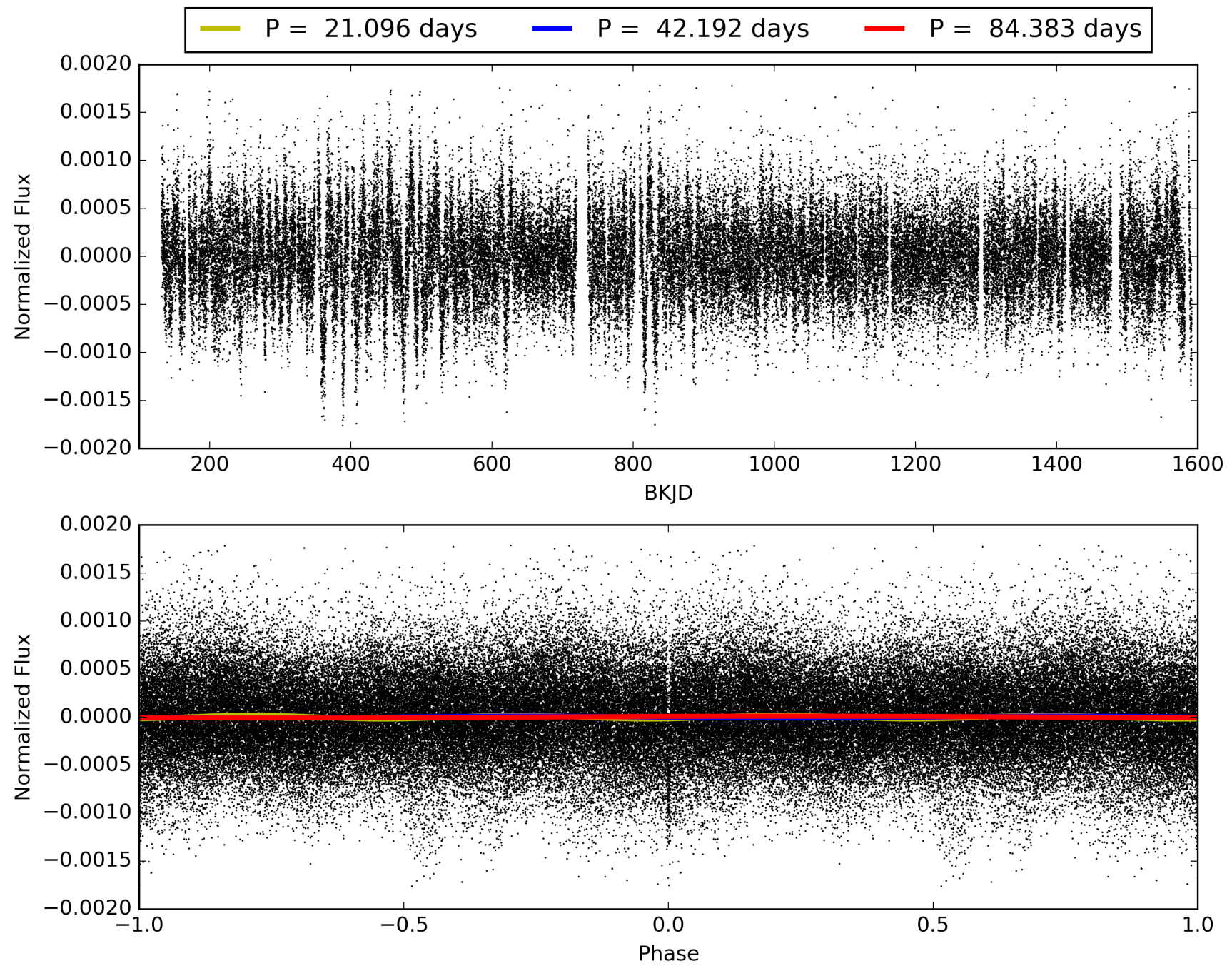
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:47:01 Z

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

# TCE 009641481-01, PDC Light Curves

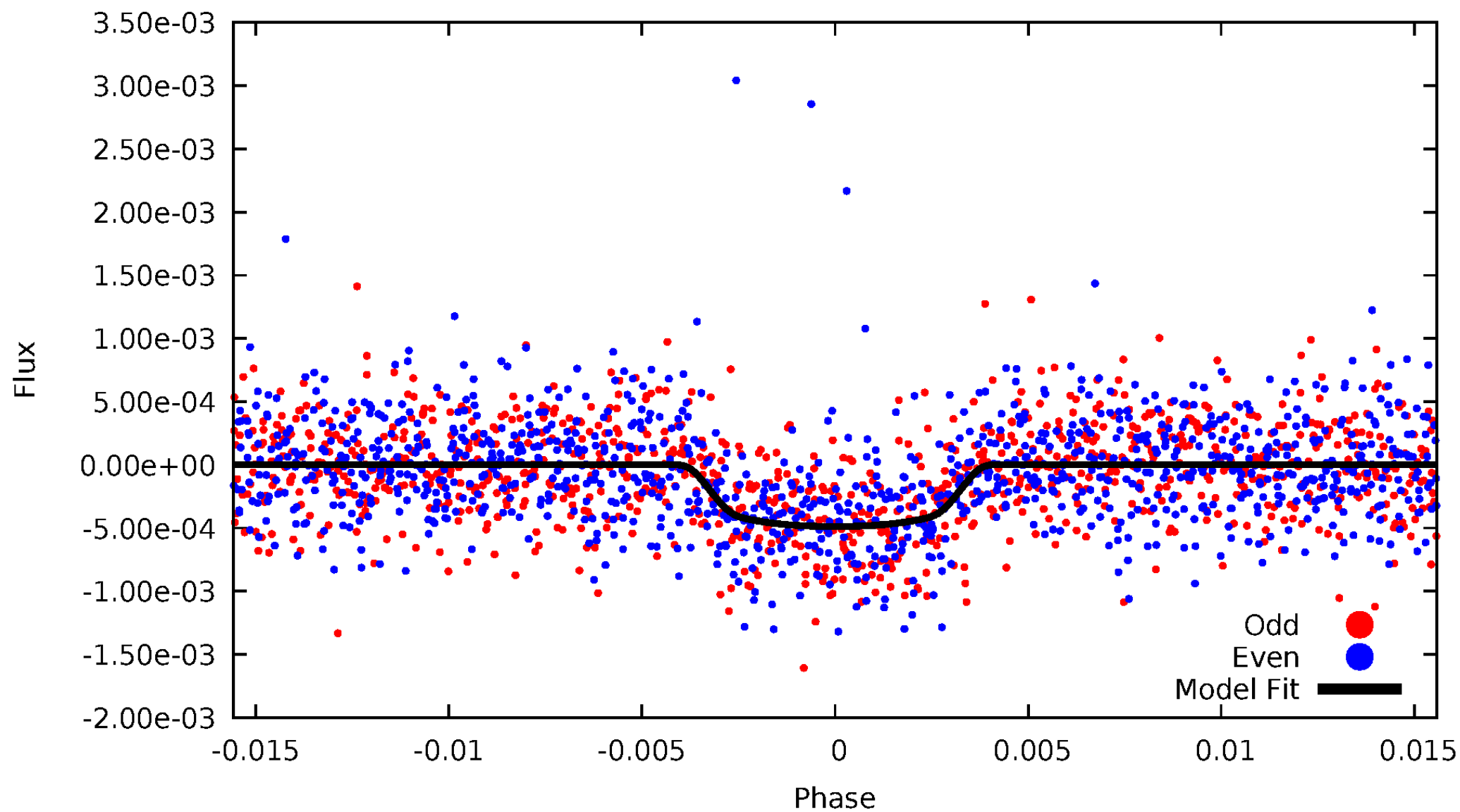


TCE 009641481-01



# DV Odd/Even

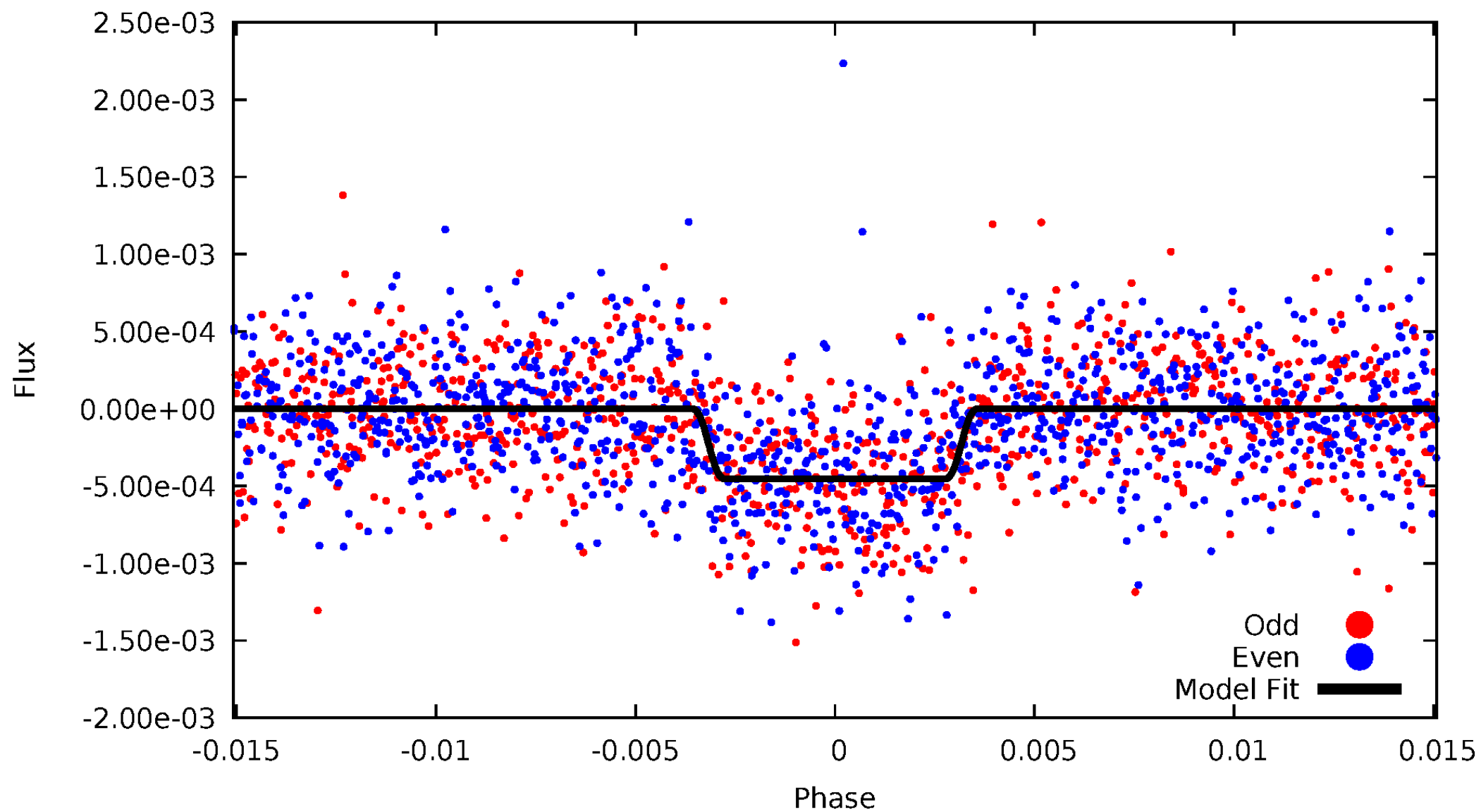
TCE 009641481-01



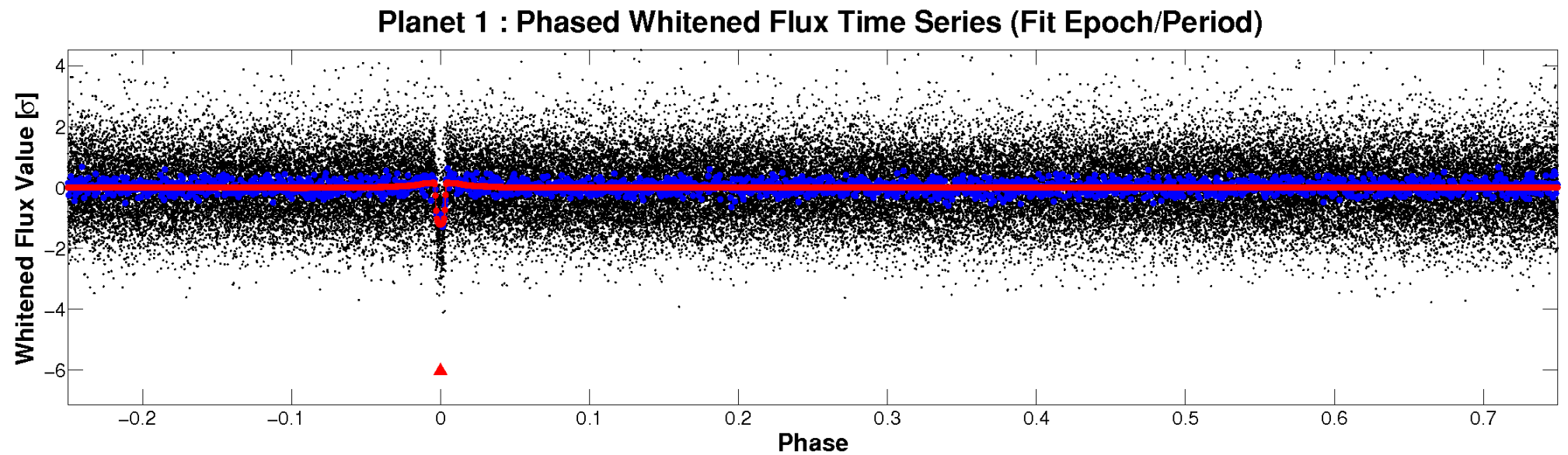
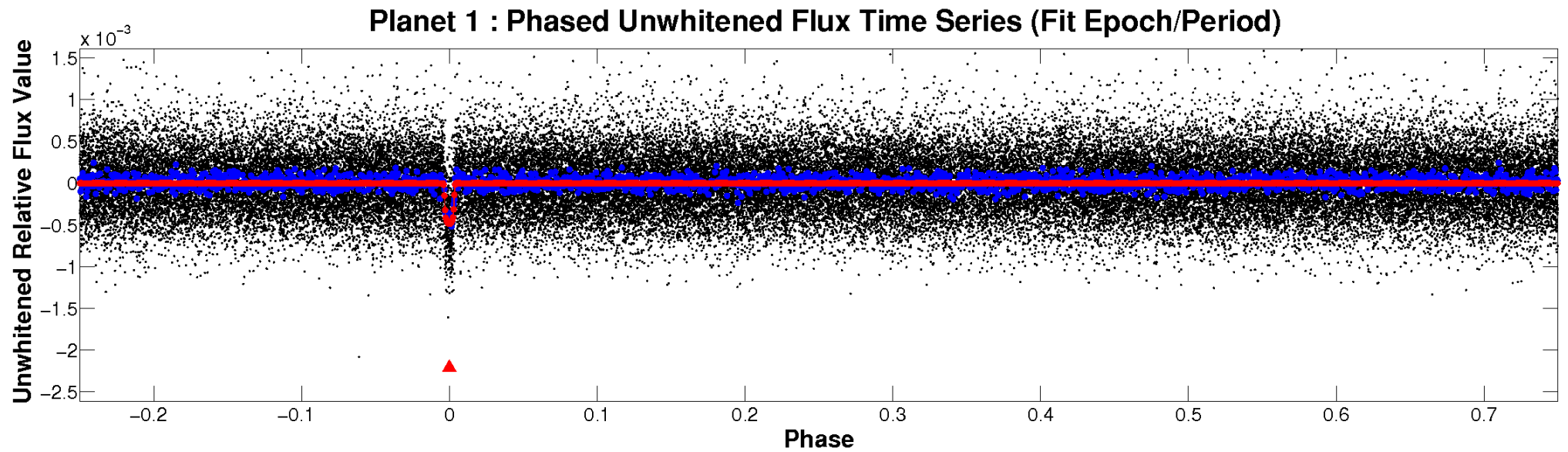


# ALT Odd/Even

TCE 009641481-01

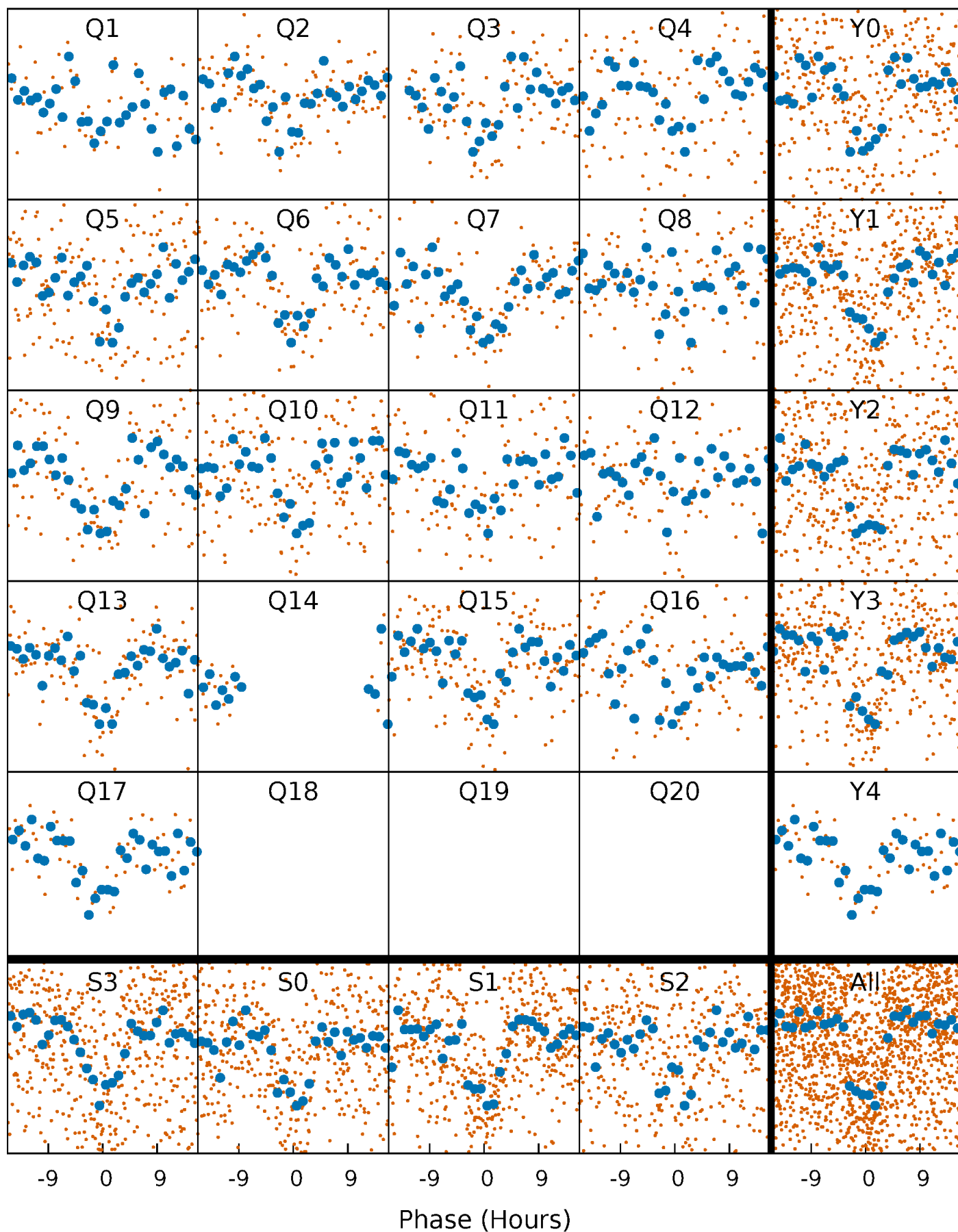


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

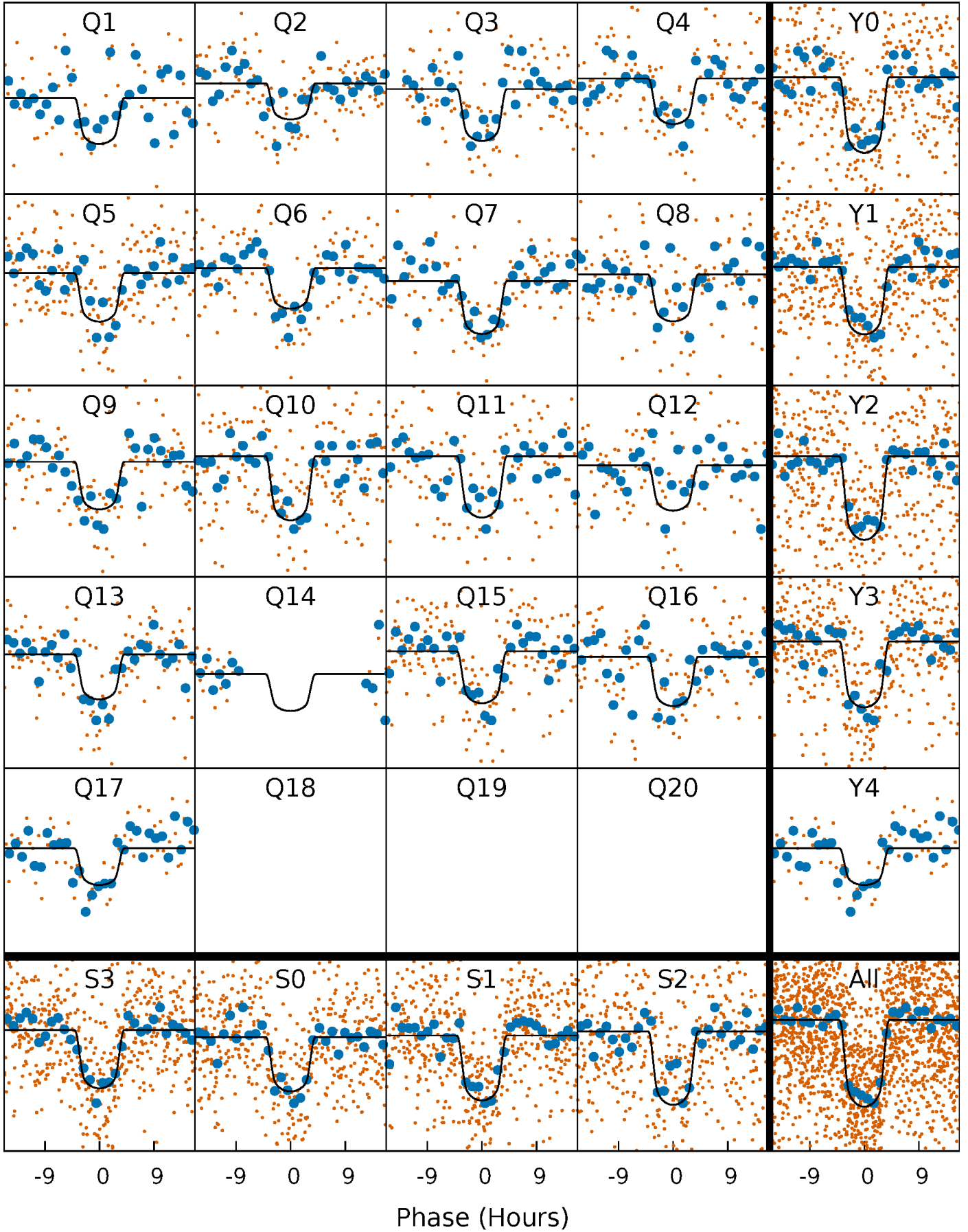
TCE 009641481-01   P= 42.191523 Days    $T_0=155.313173$  (BKJD)





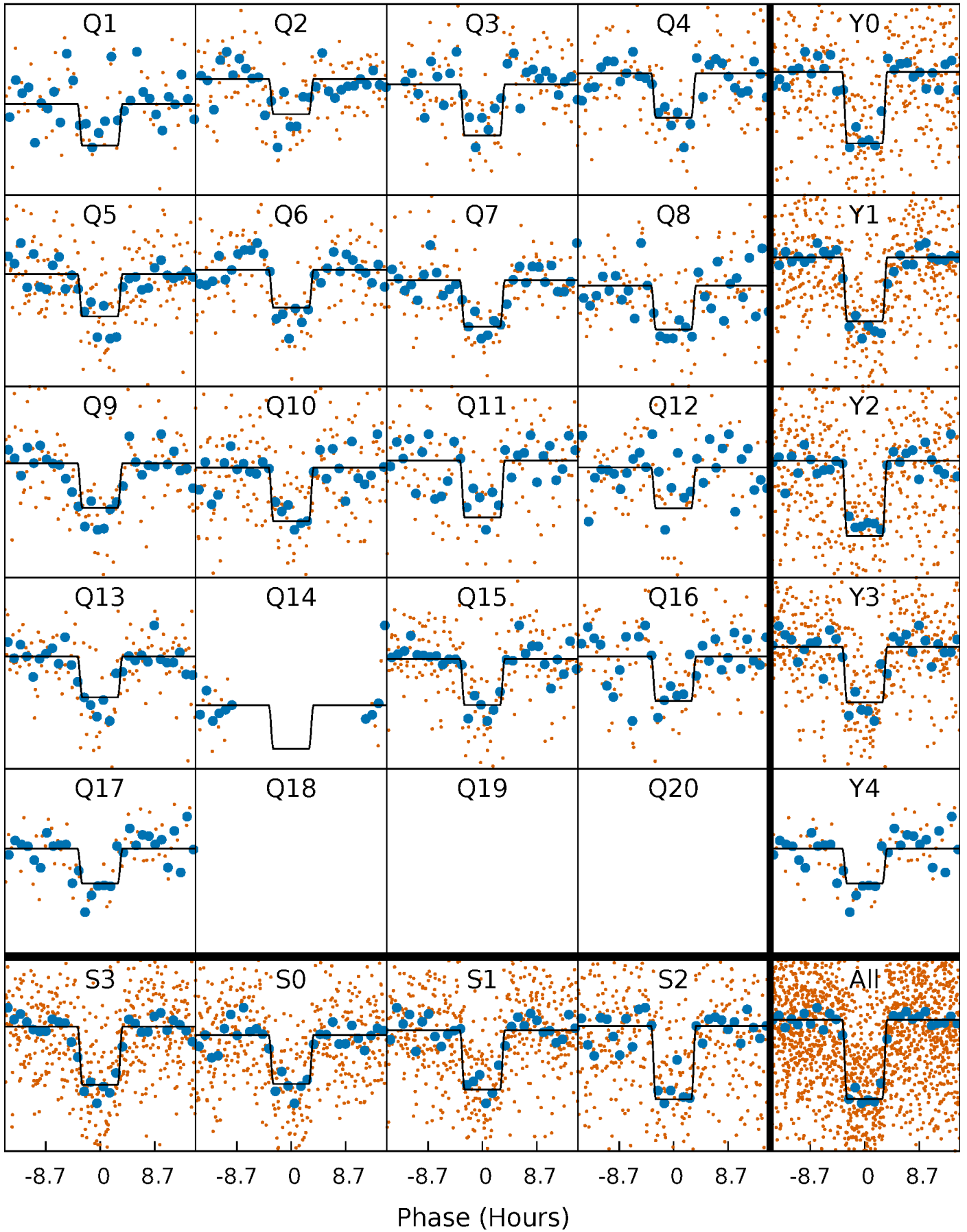
# DV Quarter-Phased Transit Curves

TCE 009641481-01 P= 42.191523 Days  $T_0=155.313173$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

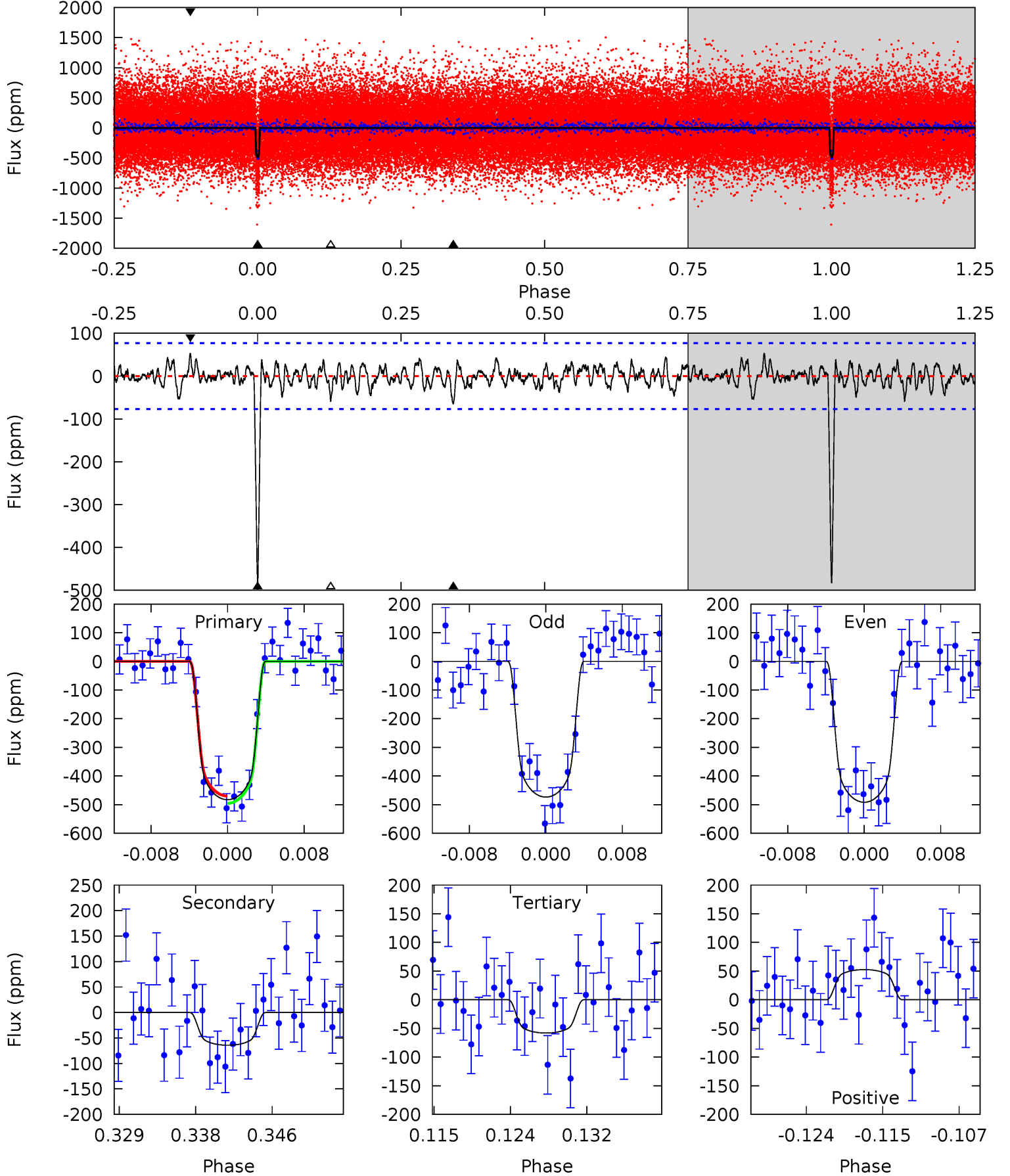
TCE 009641481-01 P= 42.191872 Days  $T_0=155.308781$  (BKJD)



# DV Model-Shift Uniqueness Test

009641481-01,  $P = 42.191523$  Days,  $E = 113.121650$  Days

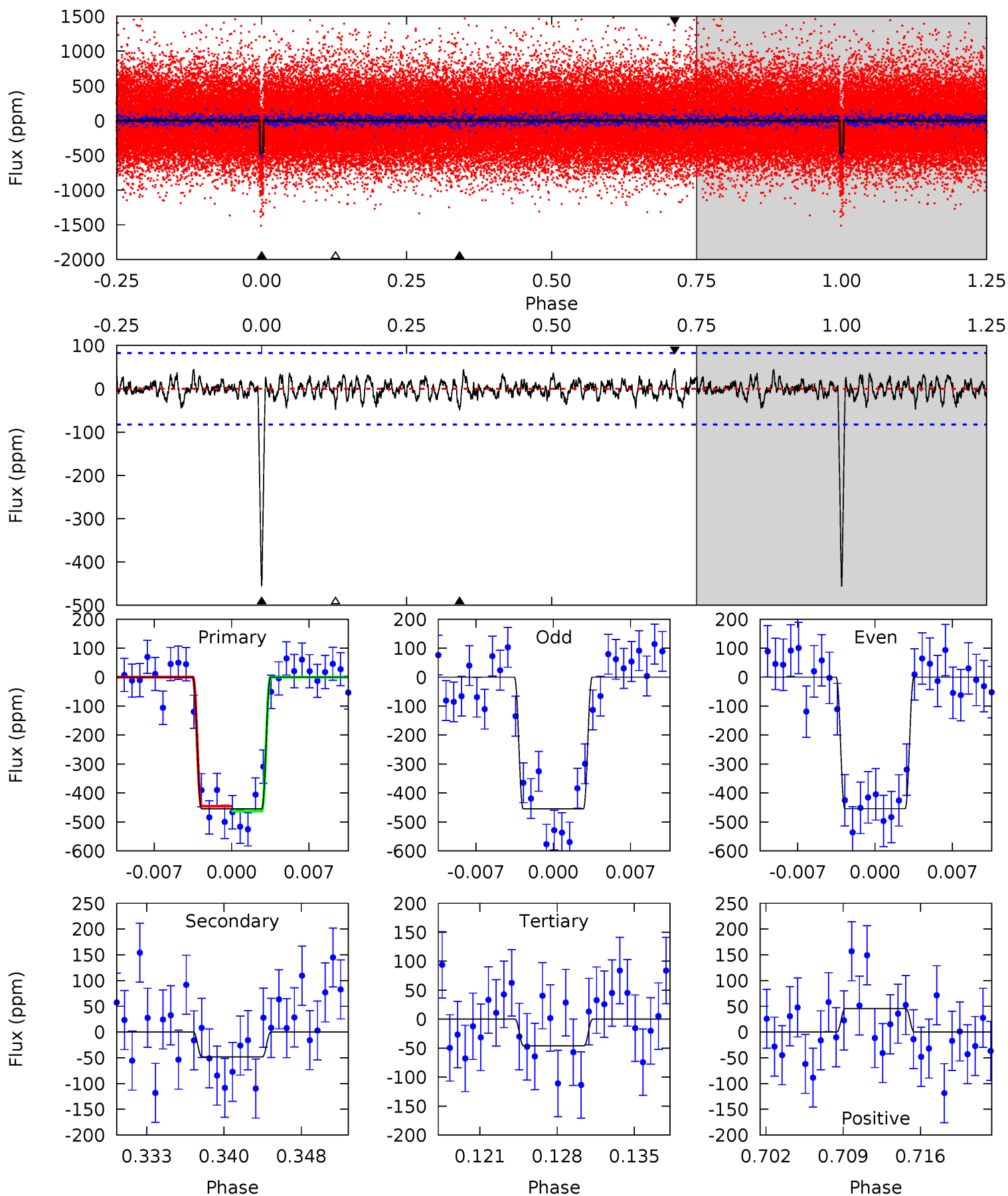
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.8	4.23	3.82	3.46	5.06	2.64	1.19	28.0	28.3	0.41	0.77	0.59	0.95	0.10	0.83



# Alt Model-Shift Uniqueness Test

009641481-01,  $P = 42.191872$  Days,  $E = 113.116909$  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
28.0	2.98	2.84	2.82	5.09	2.69	0.93	25.2	25.2	0.14	0.16	0.01	0.95	0.09	0.51



### Stellar Parameters For KIC 009641481

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5520^{+74}_{-74}$	$4.339^{+0.138}_{-0.103}$	$0.160^{+0.150}_{-0.150}$	$1.080^{+0.150}_{-0.150}$	$0.928^{+0.062}_{-0.043}$	$1.039^{+0.611}_{-0.330}$
	+1%/-1%	+3%/-2%	+94%/-94%	+14%/-14%	+7%/-5%	+59%/-32%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 009641481-01 / KOI 2152.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-64 \pm 15$	$2.97^{+0.28}_{-0.28}$	$731^{+30}_{-31}$	$3549^{+147}_{-154}$	$212^{+77}_{-58}$
Alt.	$-48 \pm 16$	$2.50^{+0.28}_{-0.27}$	$731^{+29}_{-34}$	$3575^{+199}_{-233}$	$223^{+97}_{-82}$

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



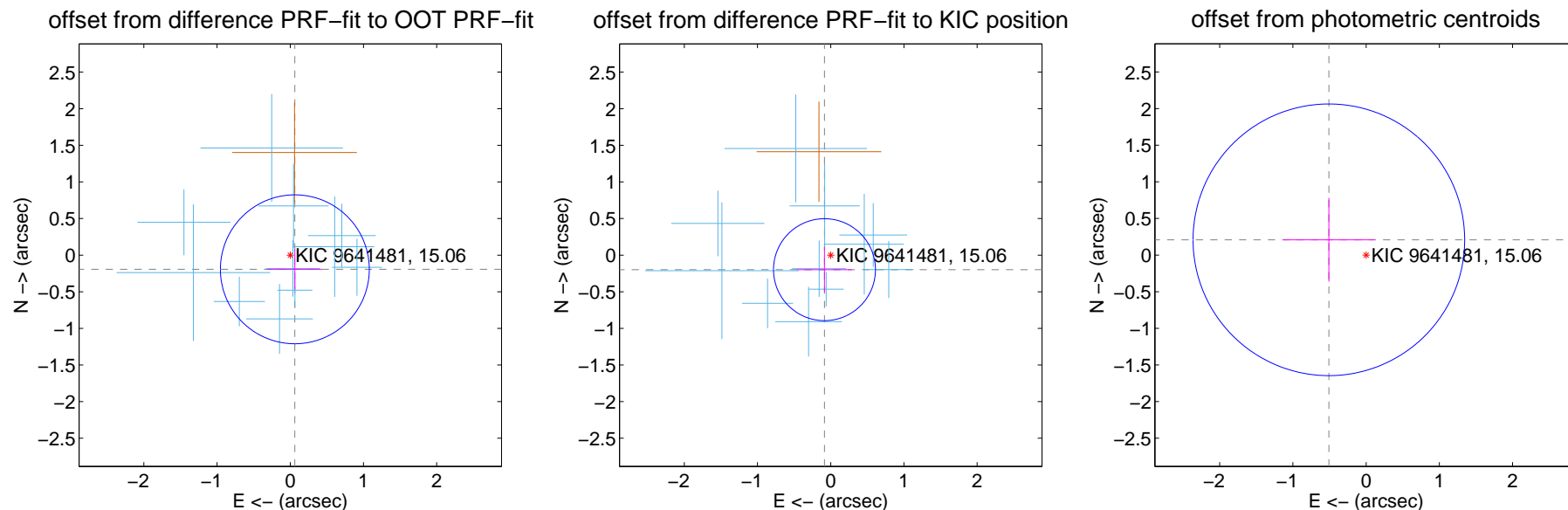
## DV Centroid Data

Supplemental centroid analysis for 009641481-01. Kepler magnitude: 15.06. Transit SNR 22.38

There are 11 quarters with good PRF difference image offsets

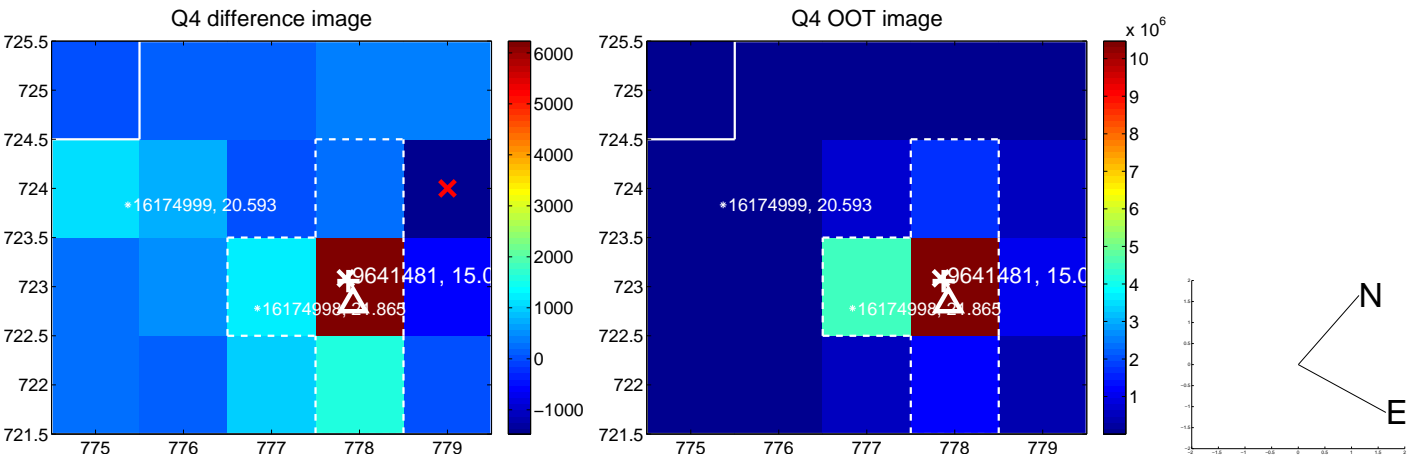
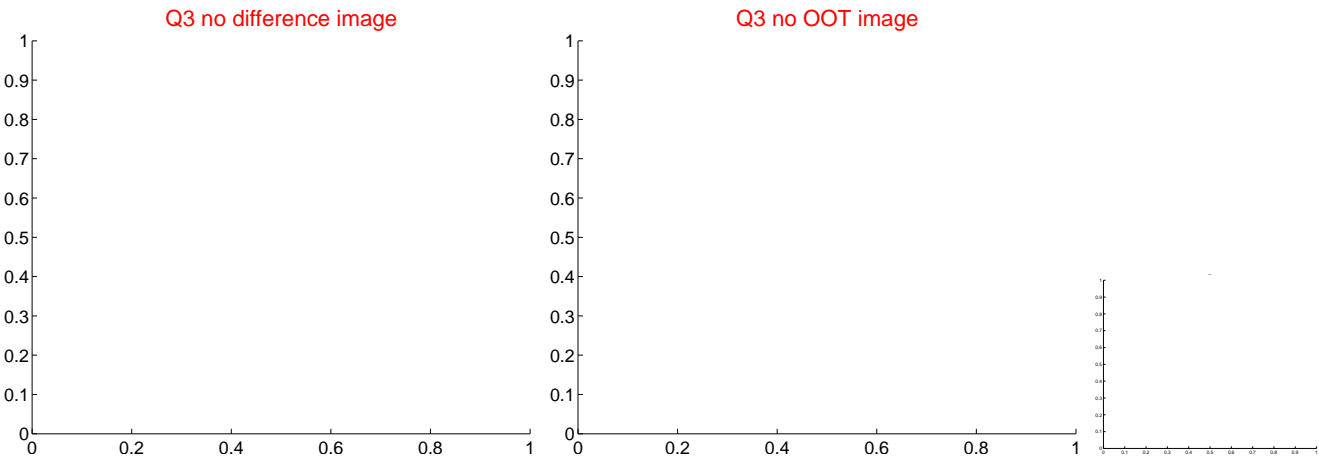
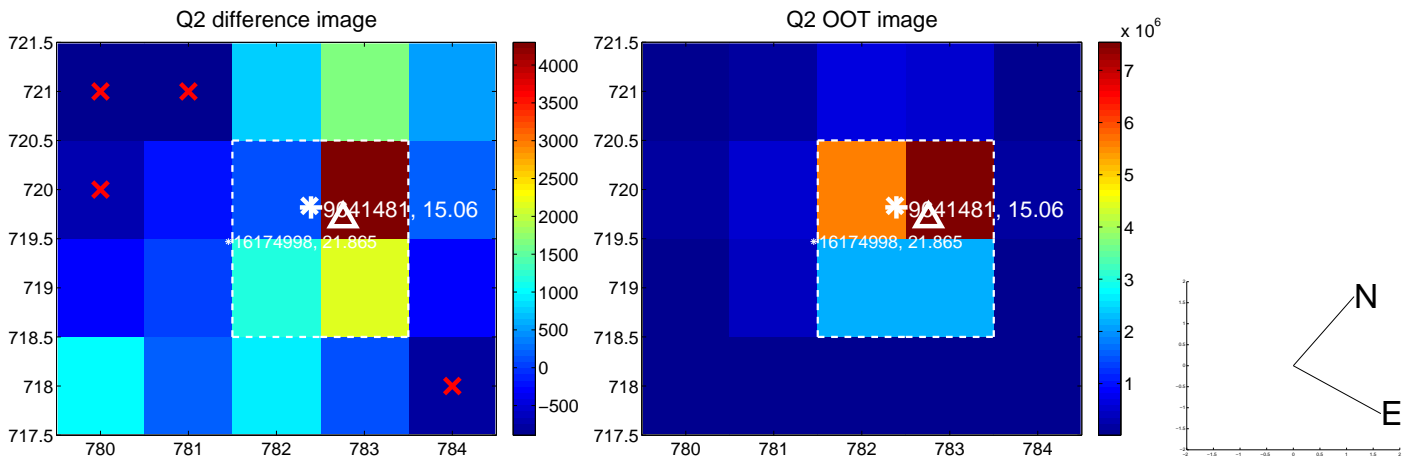
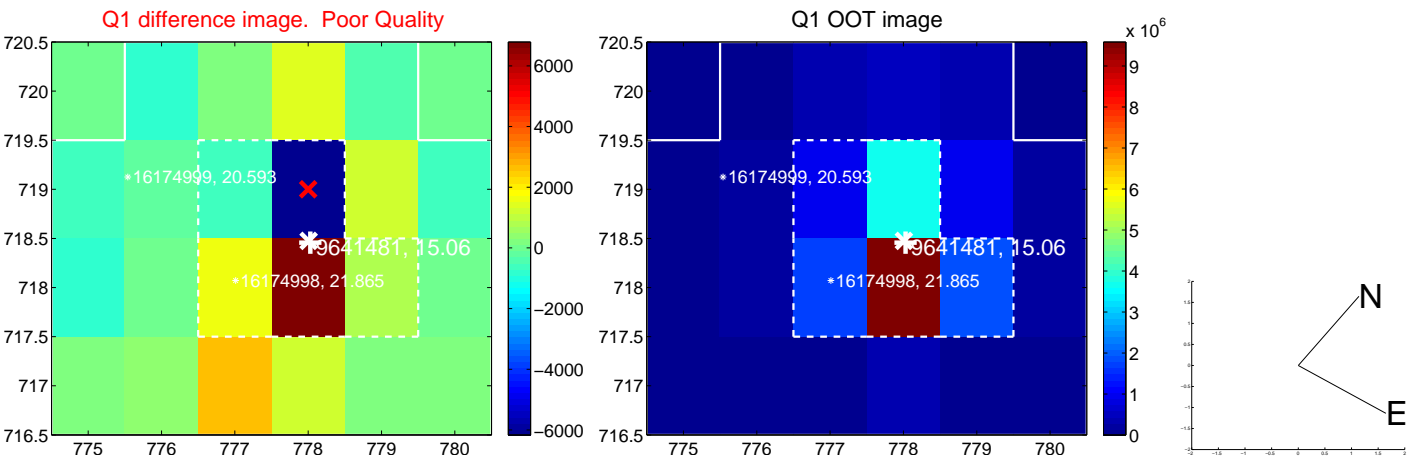
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.203 \pm 0.339$	0.60	$-0.063 \pm 0.369$	$-0.193 \pm 0.273$
PRF-fit source offset from KIC position	$0.216 \pm 0.232$	0.93	$0.085 \pm 0.375$	$-0.198 \pm 0.308$
photometric centroid source offset	$0.55 \pm 0.62$	0.89	$0.51 \pm 0.63$	$0.21 \pm 0.57$

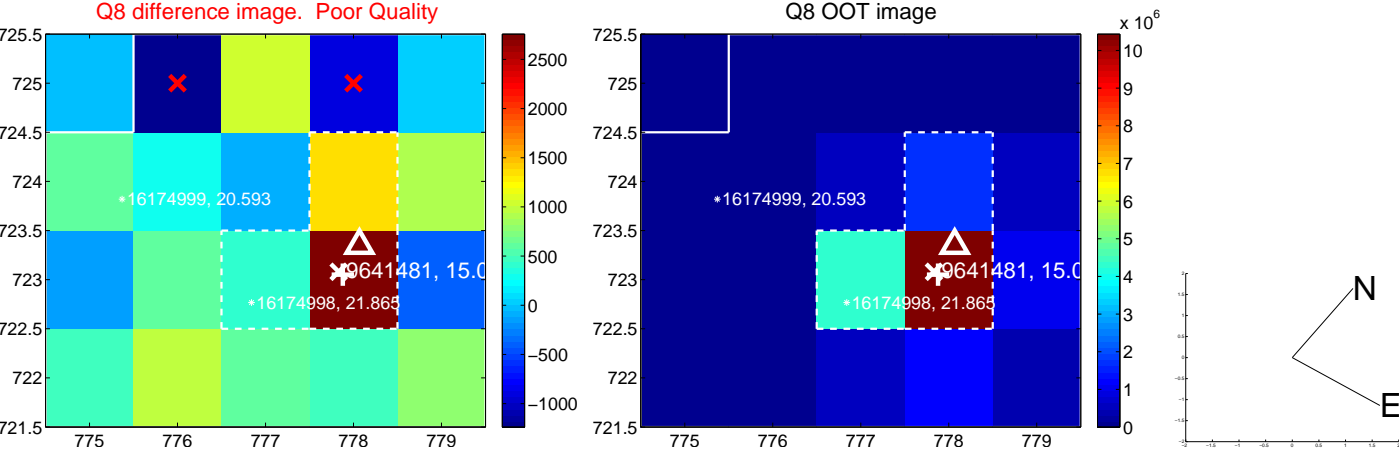
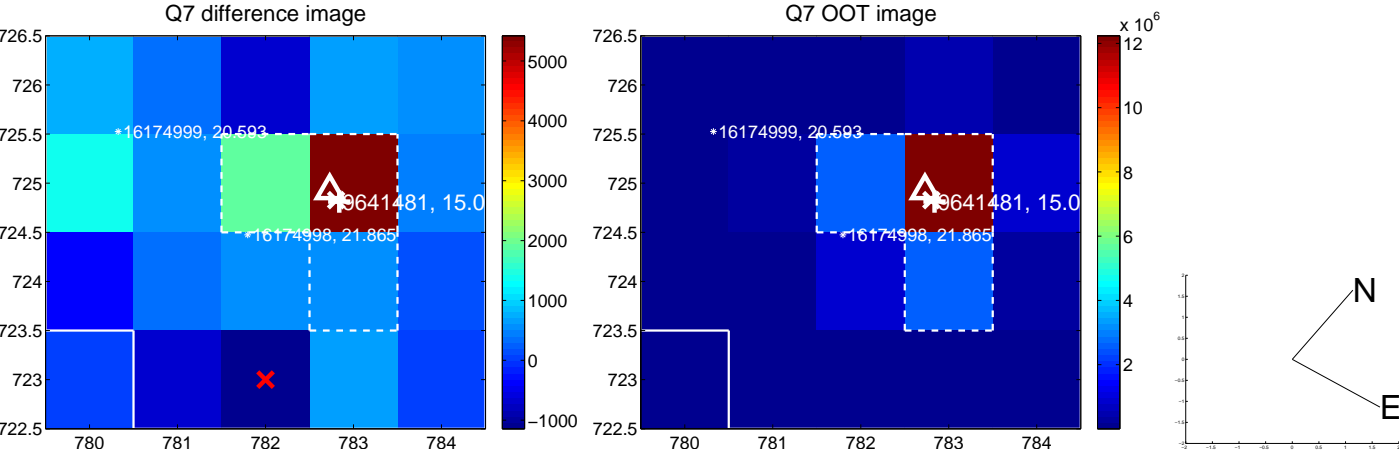
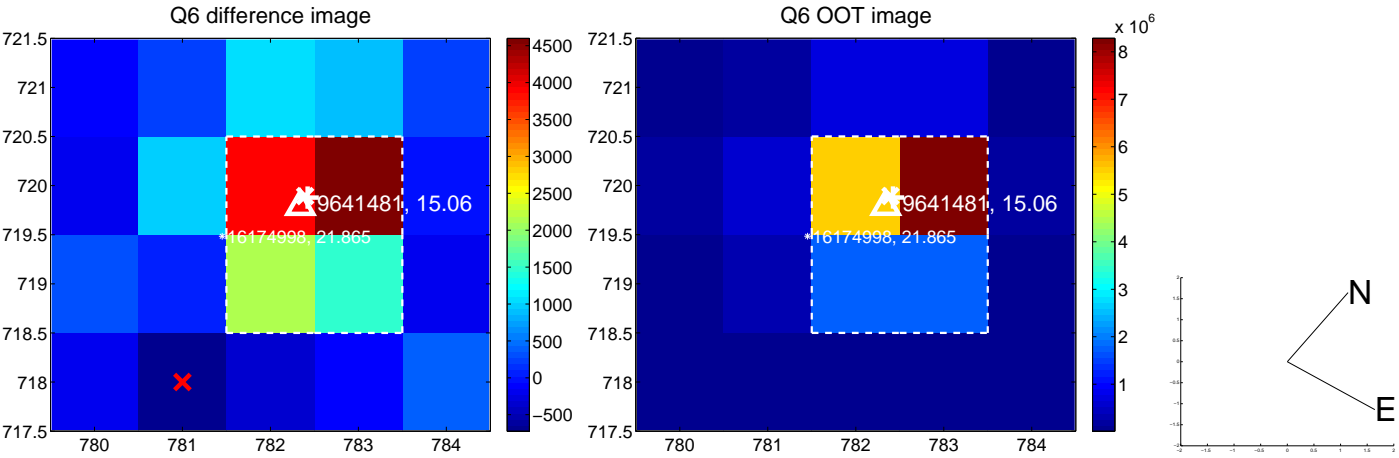
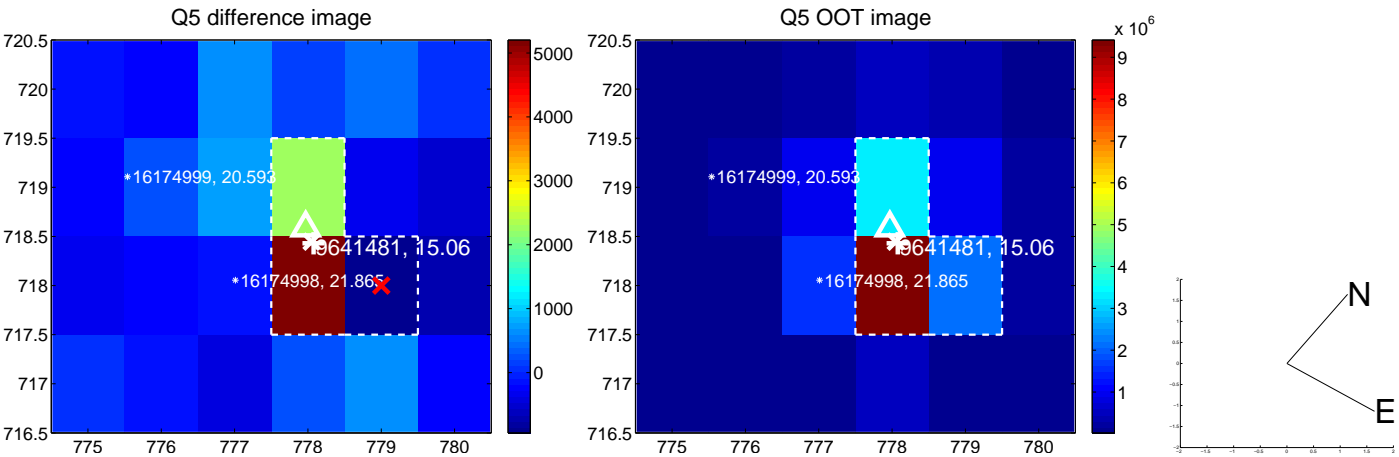


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

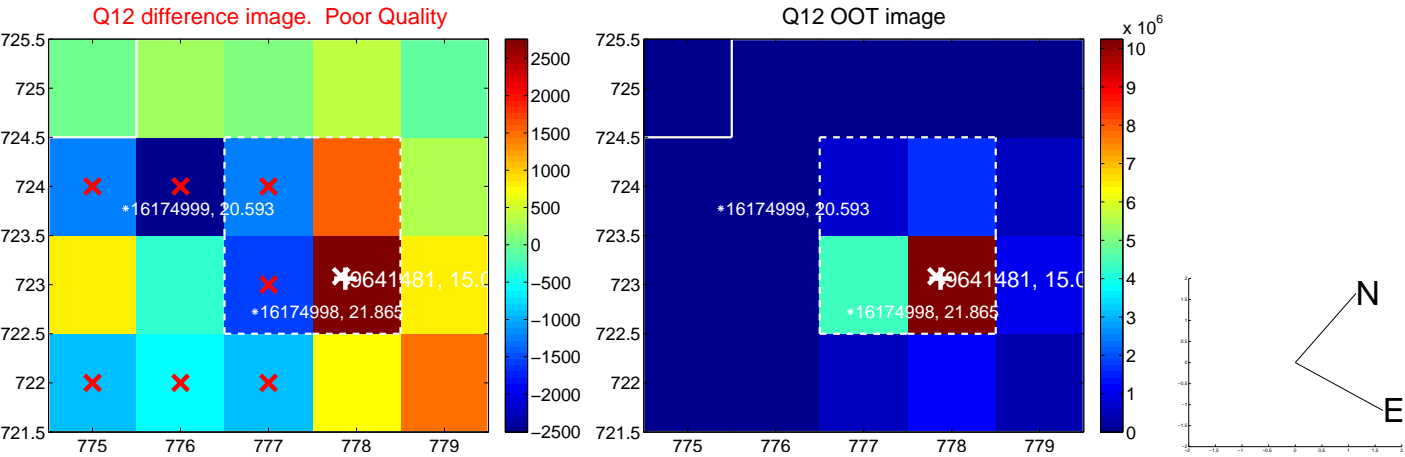
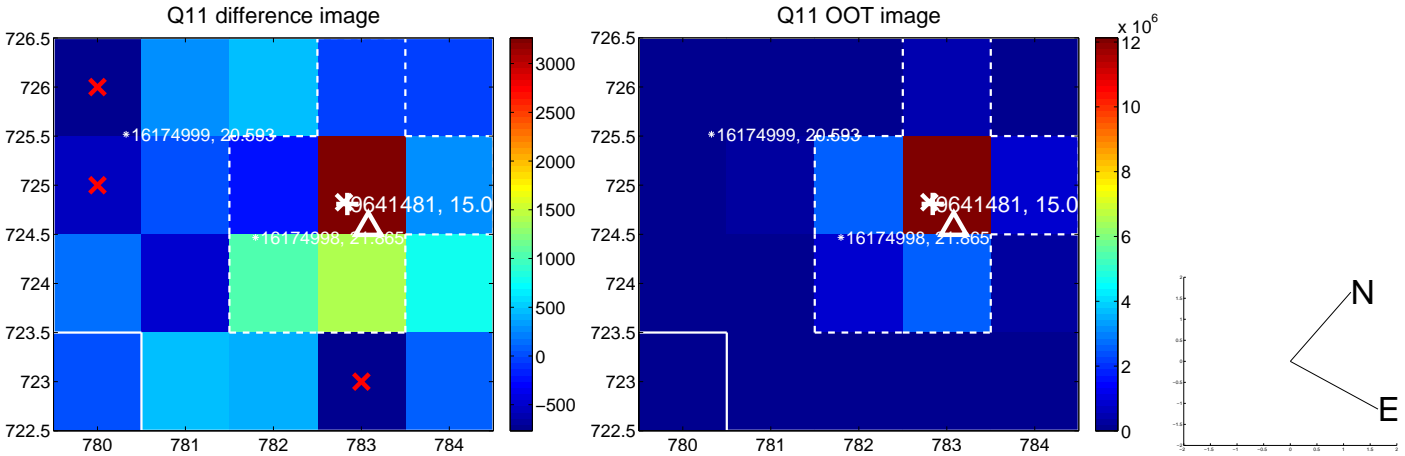
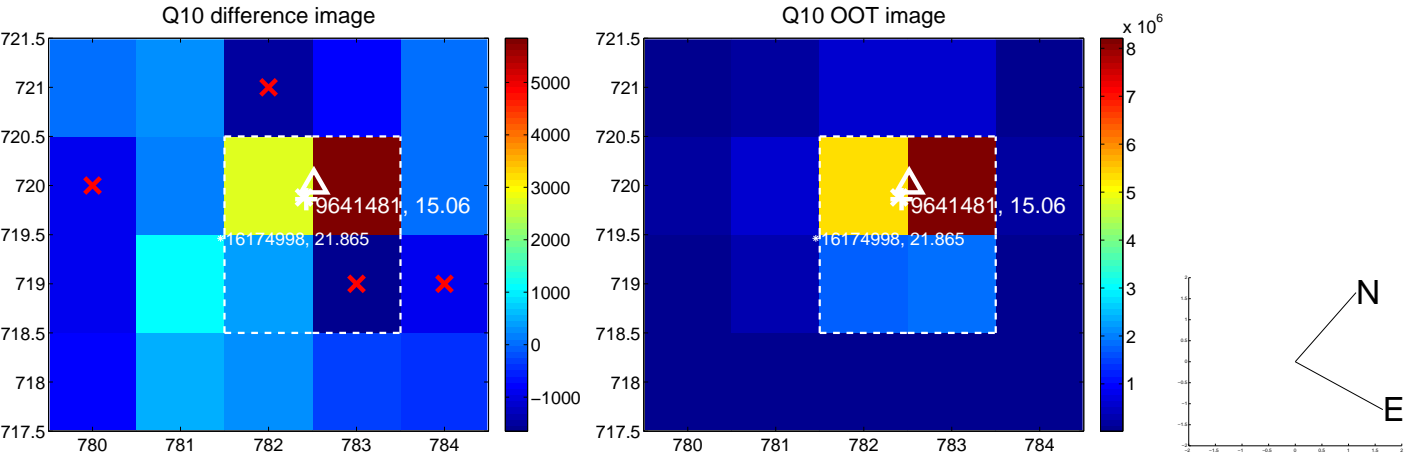
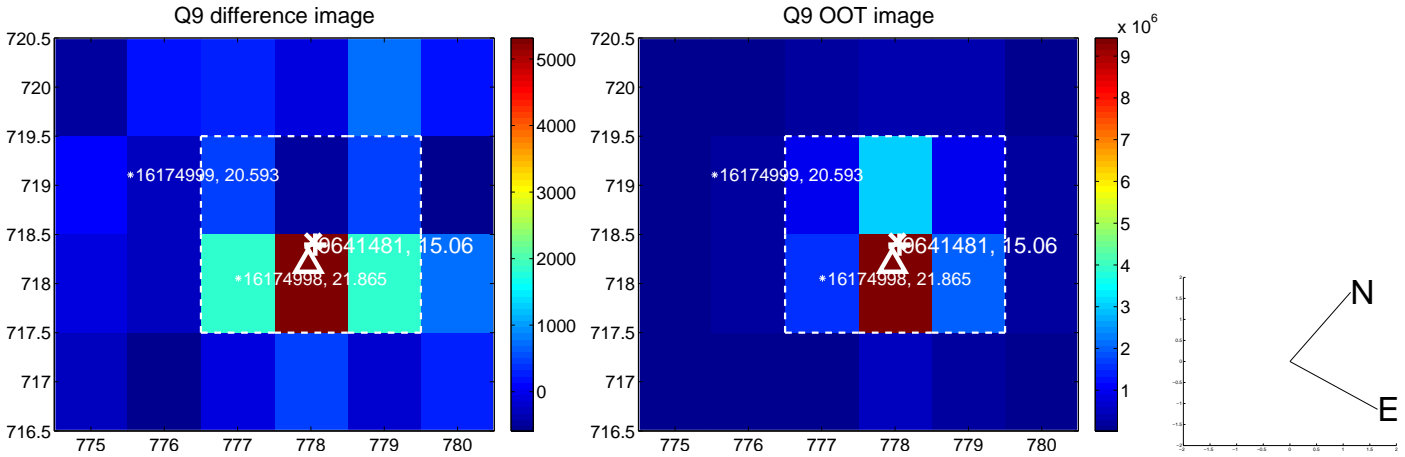
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



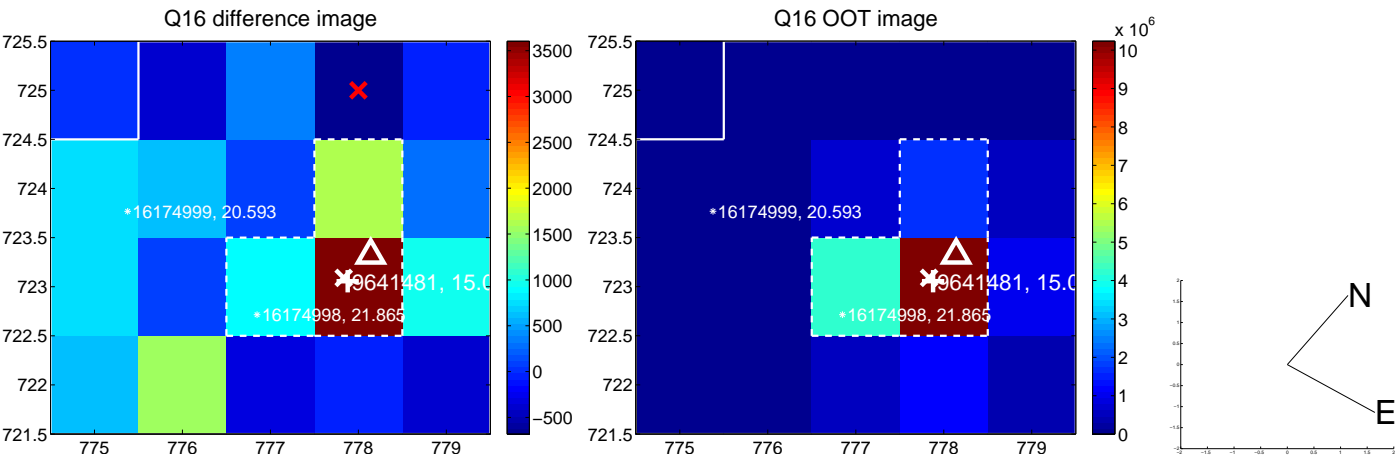
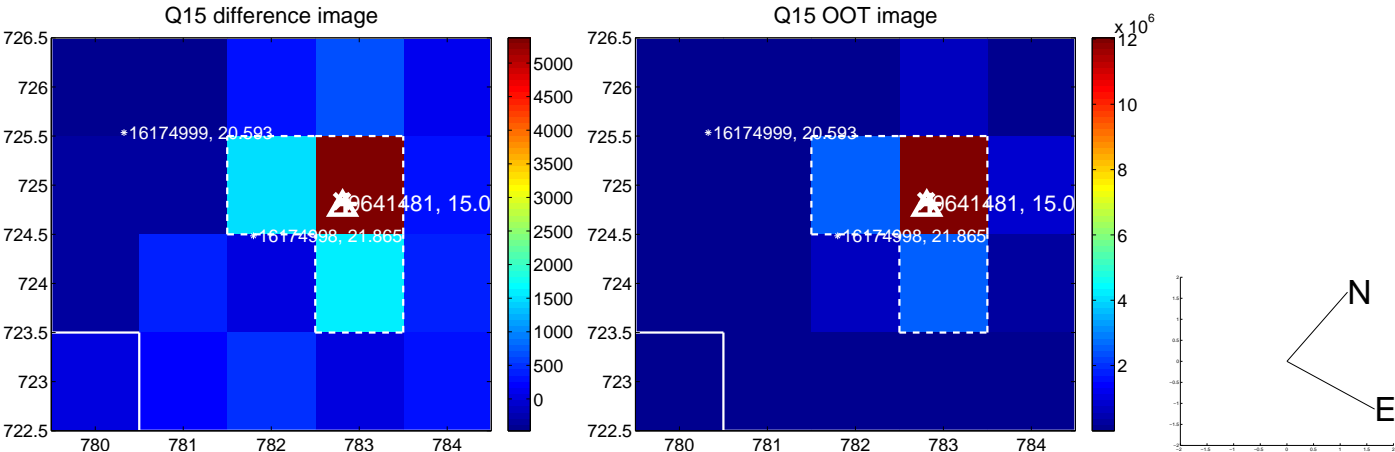
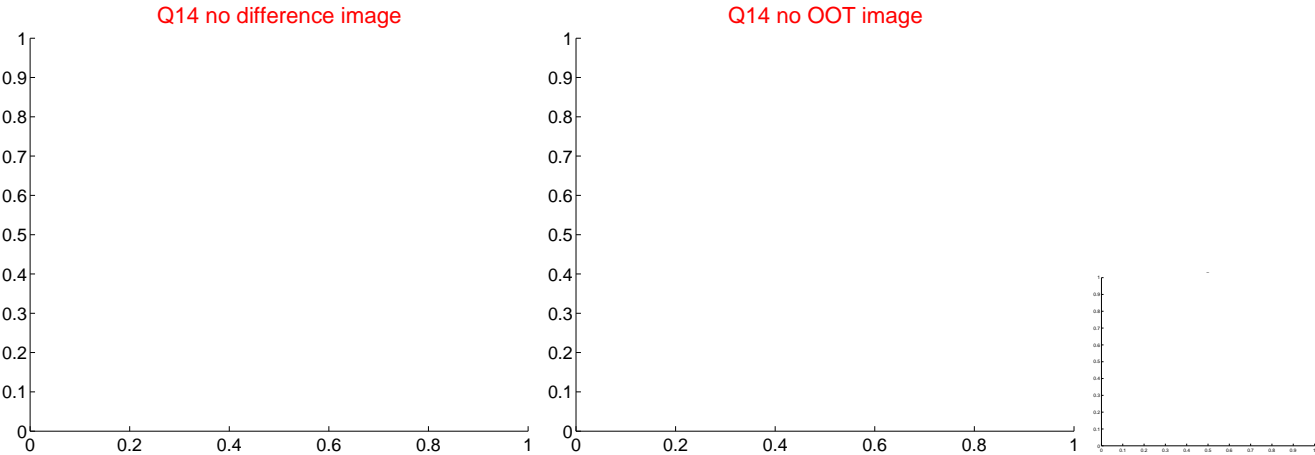
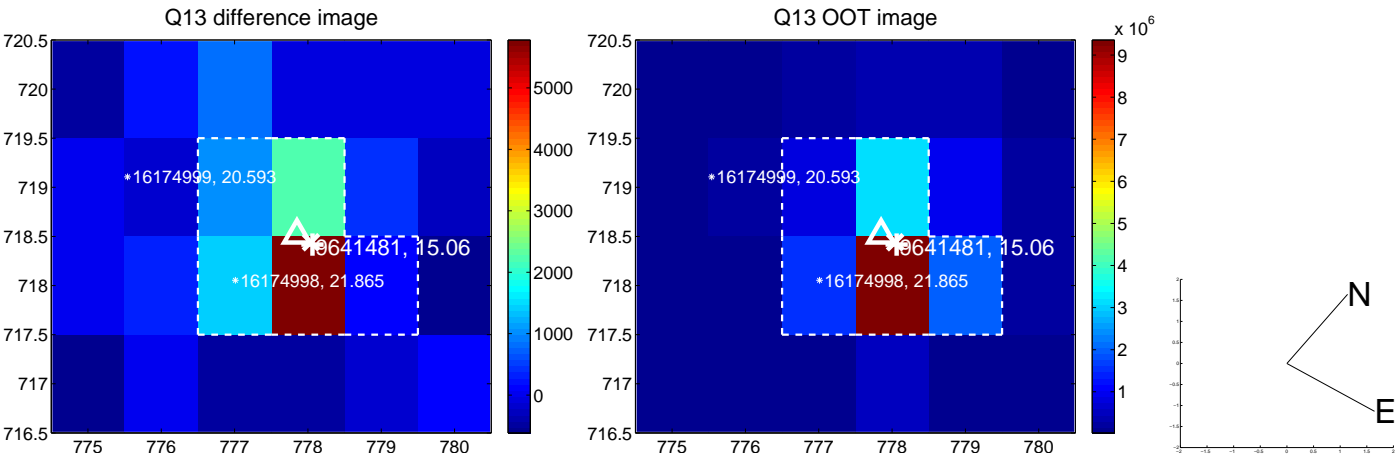
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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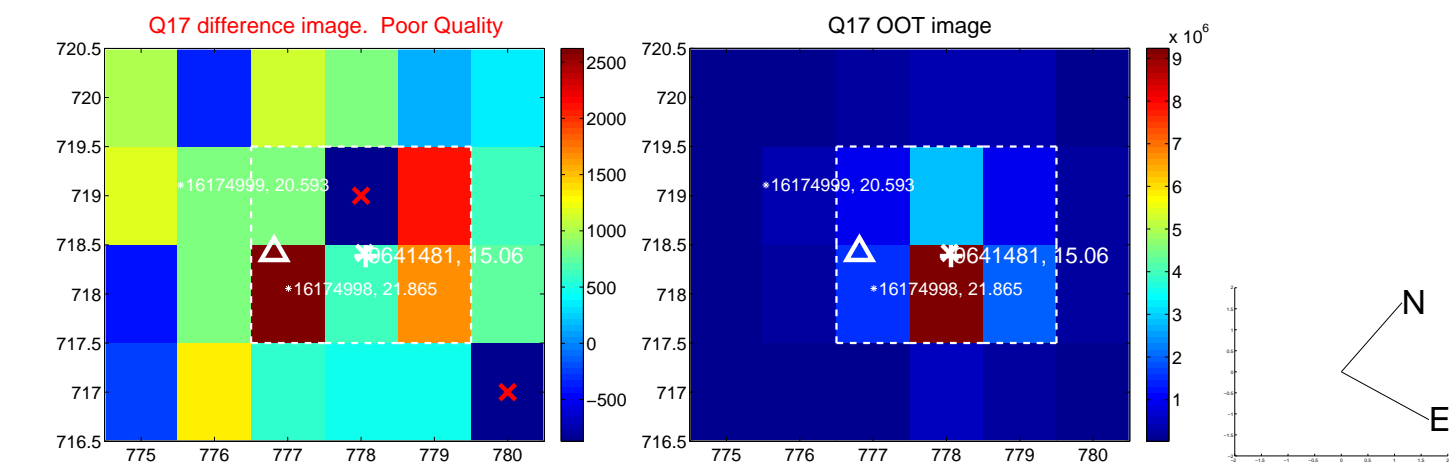


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

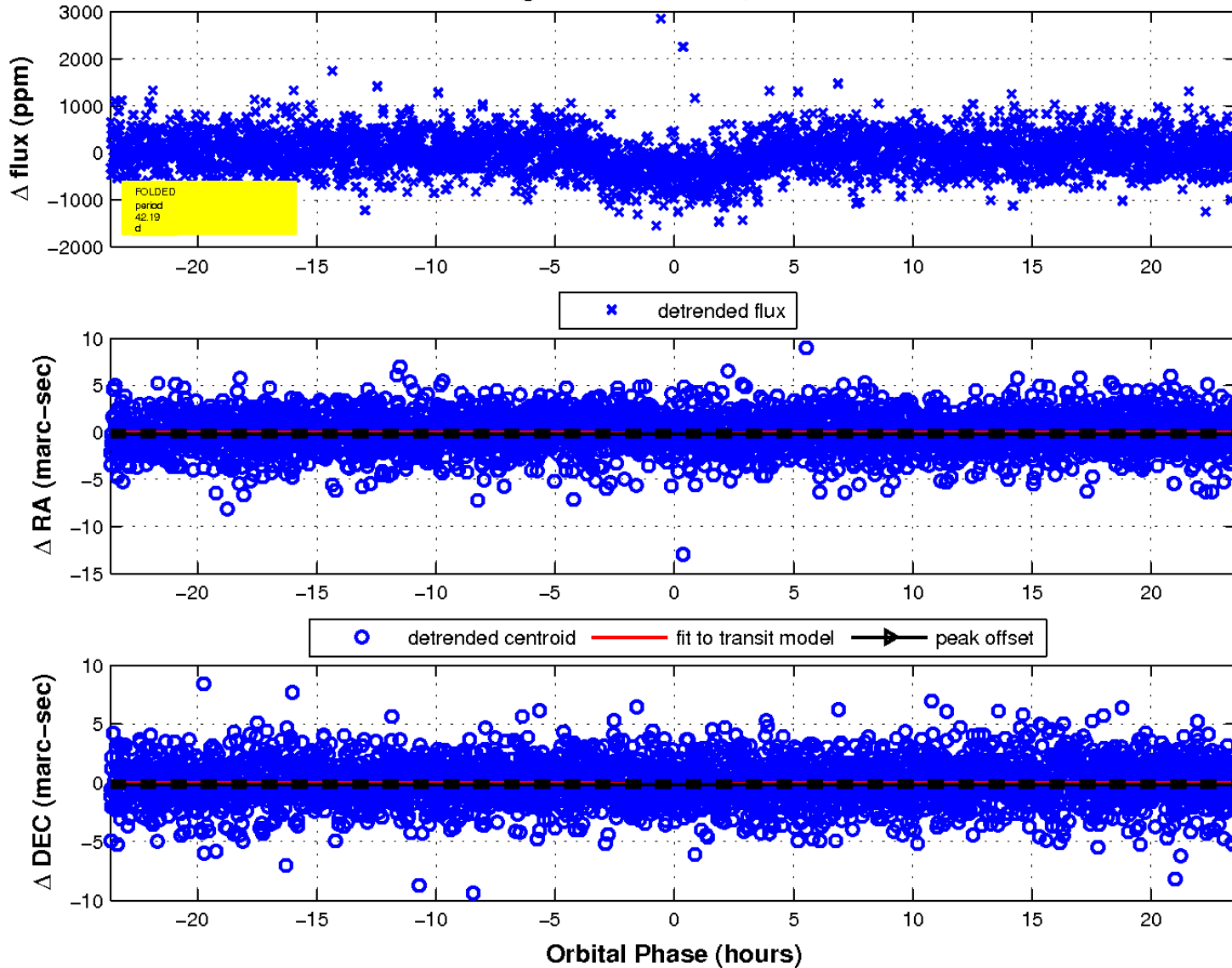




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

