

# KIC 009391208

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009391208-01	OBS	1409.01	16.560616	133.496591	700.7	2.618	25.0	27.9	0.85	5818	2.92	57.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009391208-01	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.

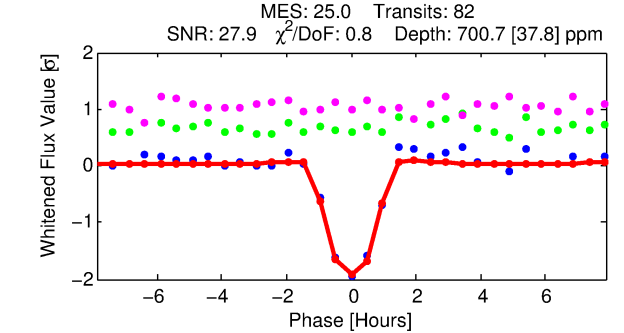
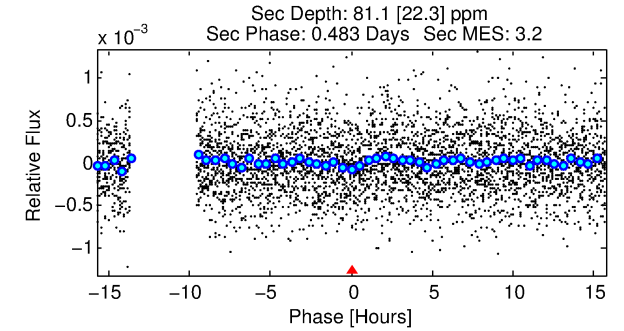
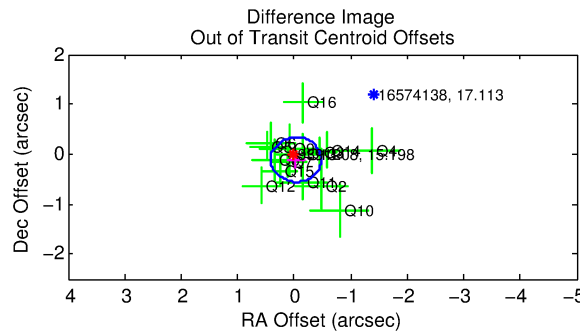
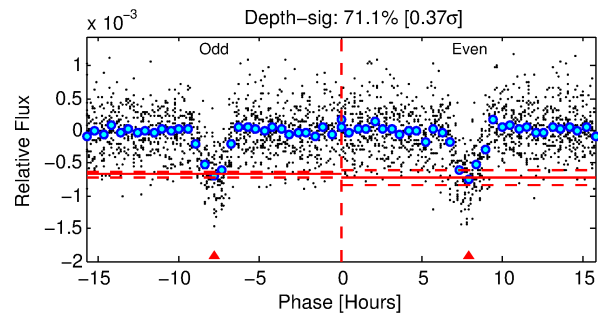
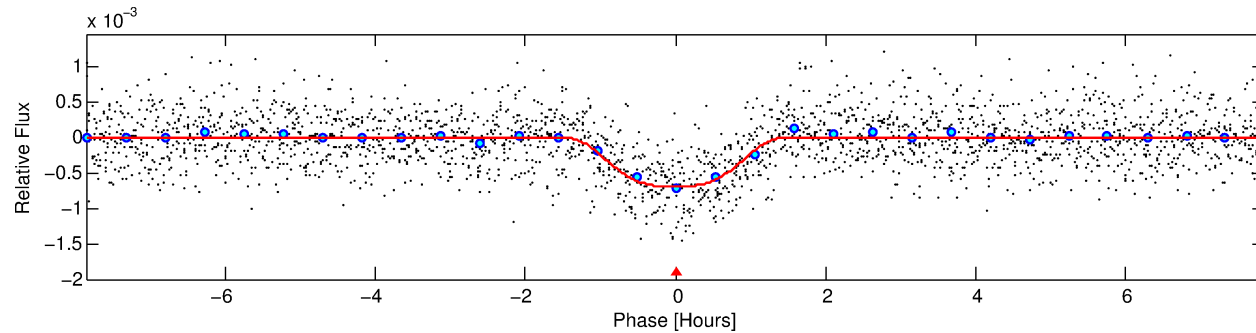
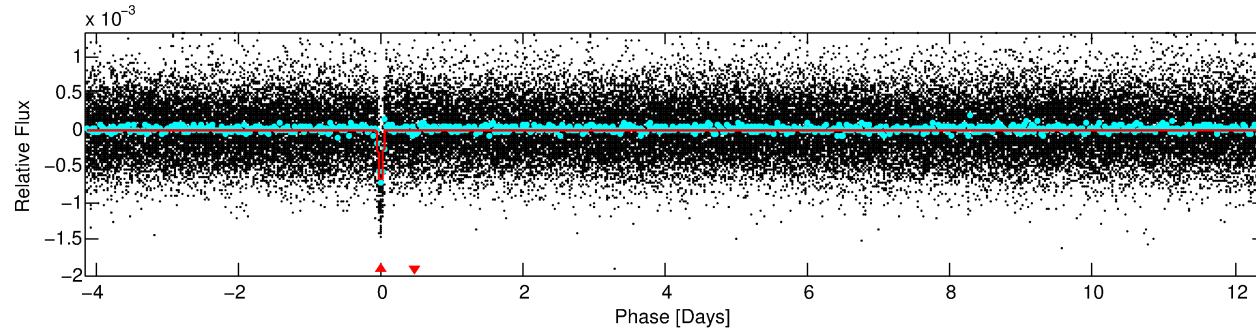
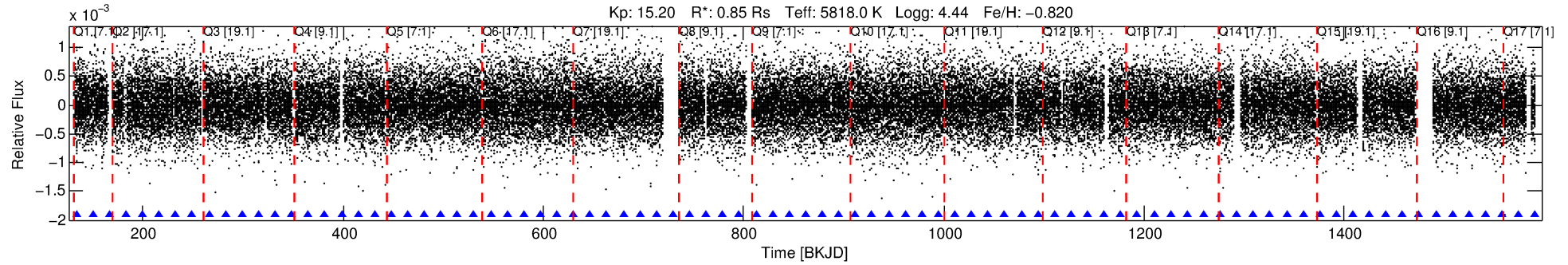
## Ephemeris Match Information For 009391208-01

No Significant Match Found

# DV One-Page Summary

KIC: 9391208 Candidate: 1 of 1 Period: 16.561 d

KOI: K01409.01 Corr: 0.929



## DV Fit Results:

Period = 16.56062 [0.00004] d  
Epoch = 133.4966 [0.0022] BKJD  
Rp/R\* = 0.0313 [0.0014]  
a/R\* = 17.68 [1.69]  
b = 0.96 [0.01]  
Seff = 57.35 [19.53]  
Teq = 702 [60] K  
Rp = 2.92 [0.70] Re  
a = 0.1144 [0.0239] AU  
Ag = 68.30 [29.35] [2.29 $\sigma$ ]  
Teffp = 3119 [244] K [9.64 $\sigma$ ]

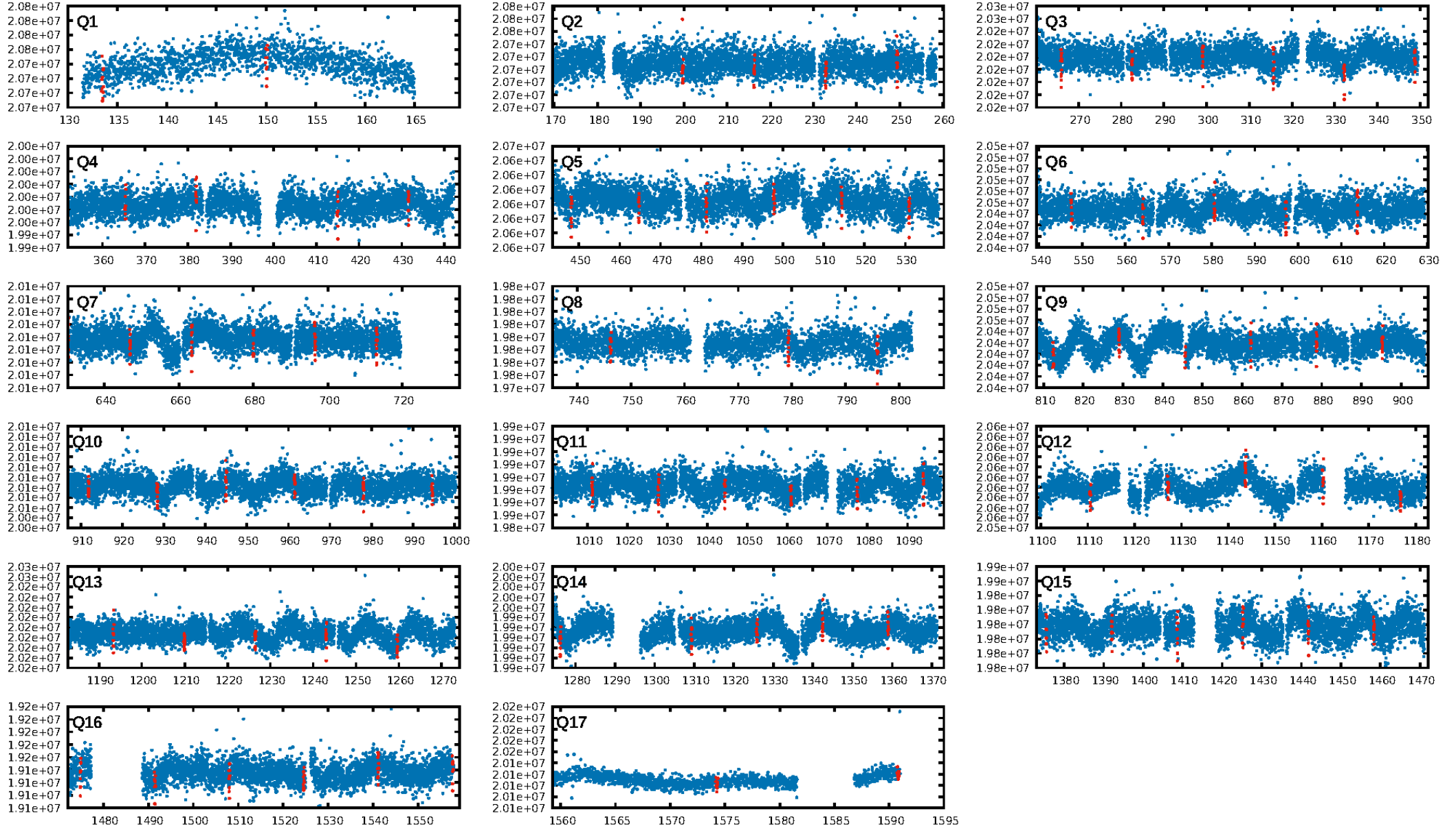
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.52e-135  
RollingBand-fgt: 1.00 [78/78]  
GhostDiagnostic-chr: 6.969  
Centroid-sig: 37.1%  
Centroid-so: 0.389 arcsec [0.84 $\sigma$ ]  
OotOffset-rm: 0.113 arcsec [0.76 $\sigma$ ]  
KicOffset-rm: 0.304 arcsec [2.09 $\sigma$ ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [17/17]

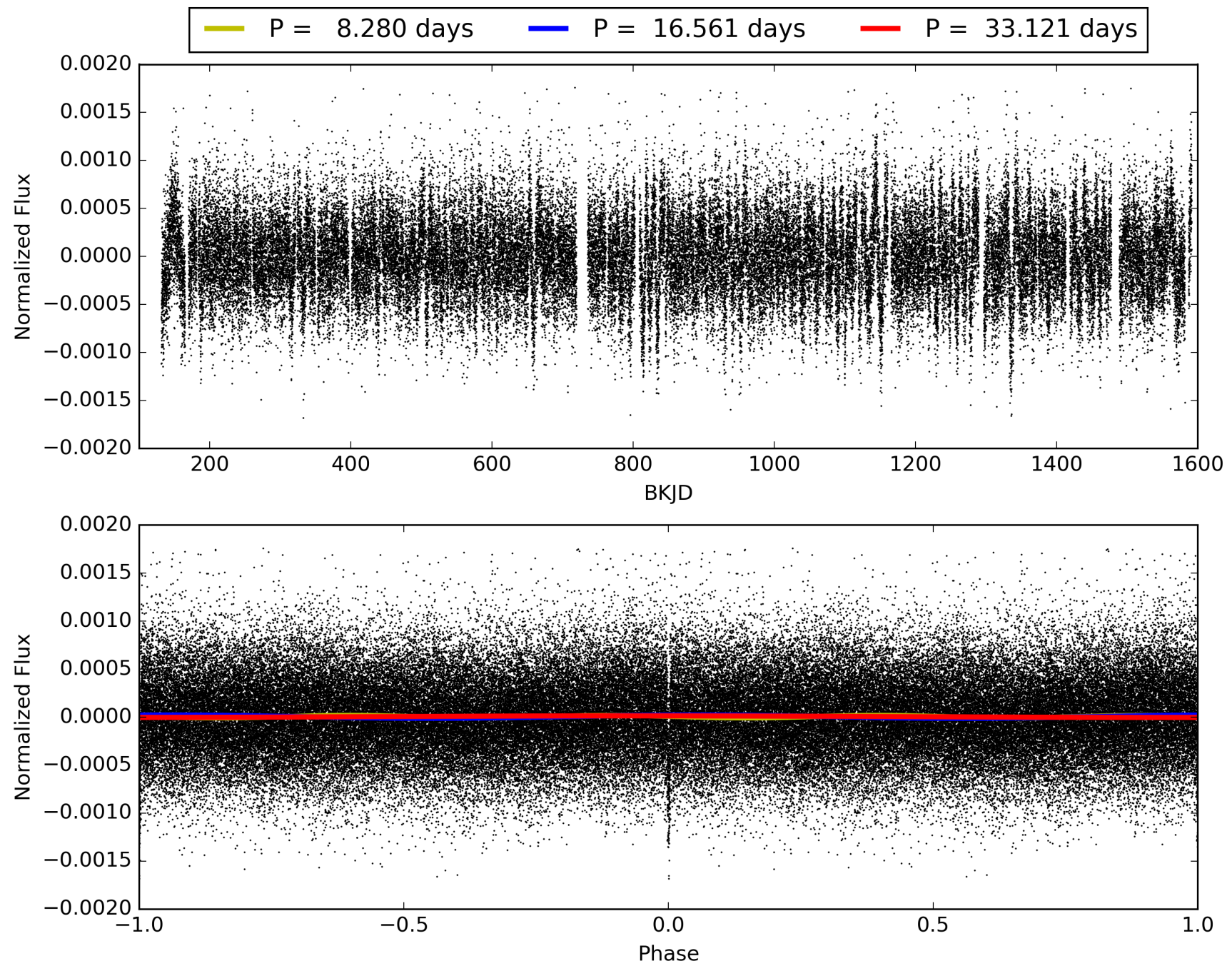
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:16:26 Z

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

# TCE 009391208-01, PDC Light Curves

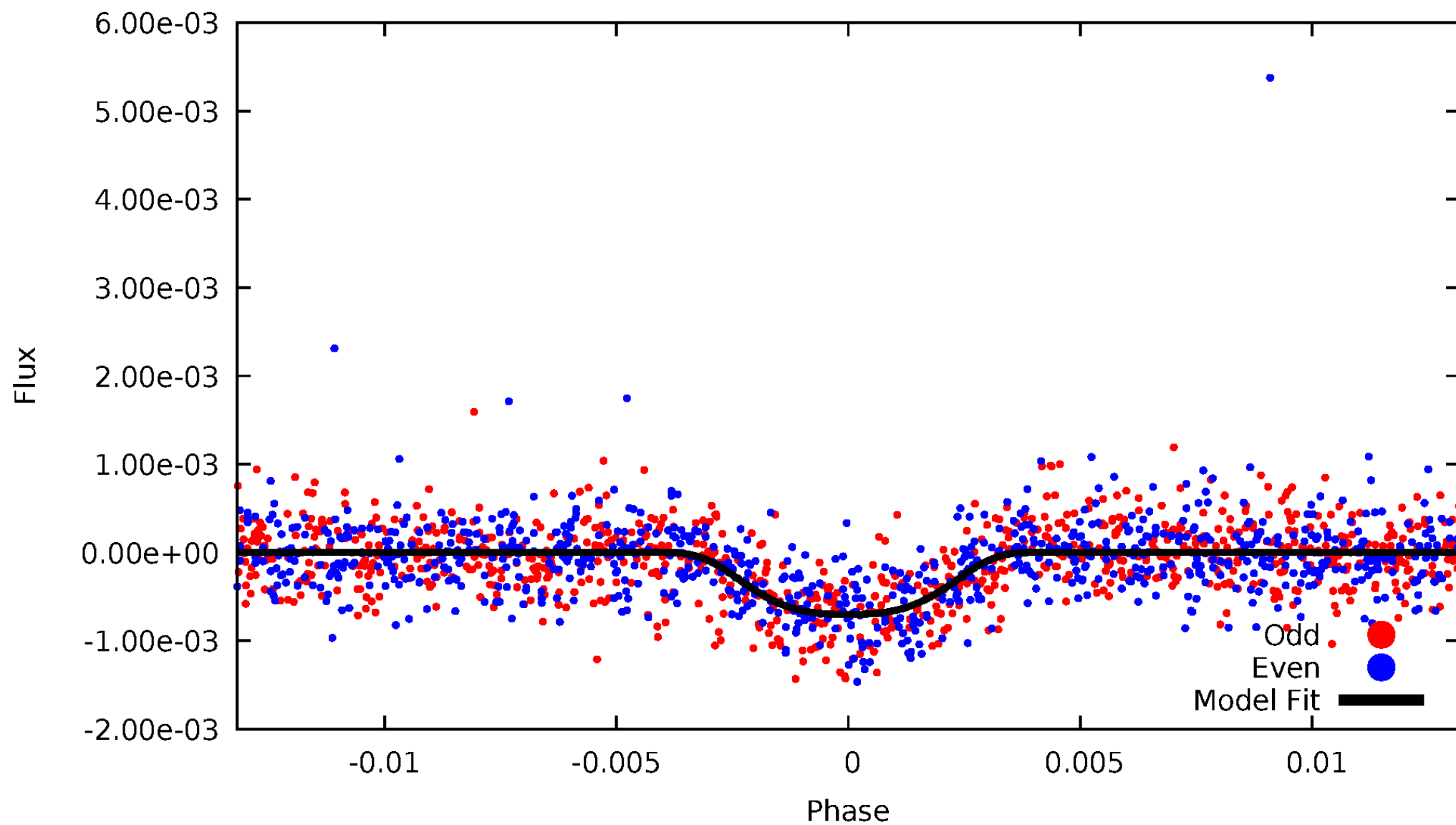


TCE 009391208-01



# DV Odd/Even

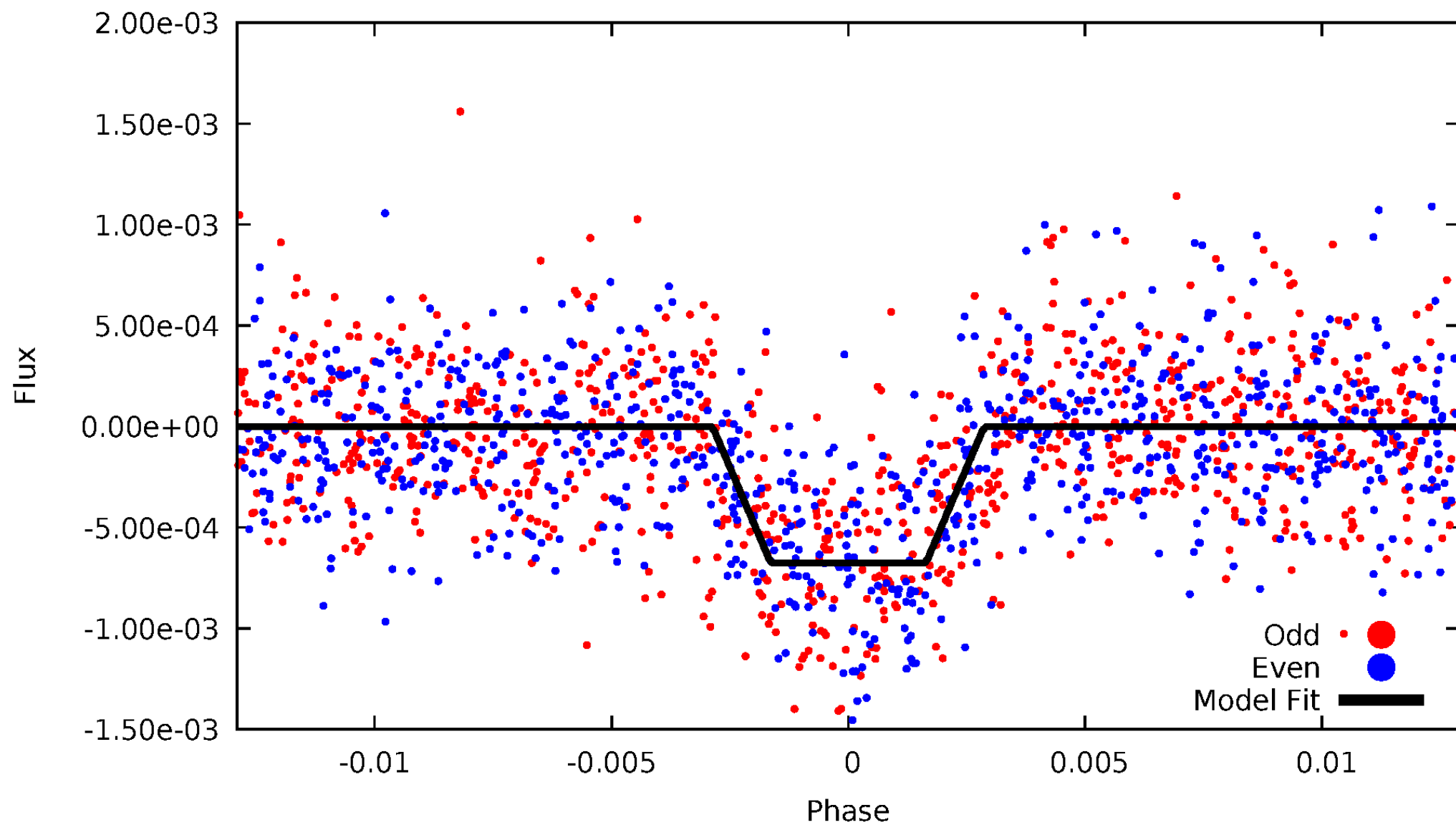
TCE 009391208-01



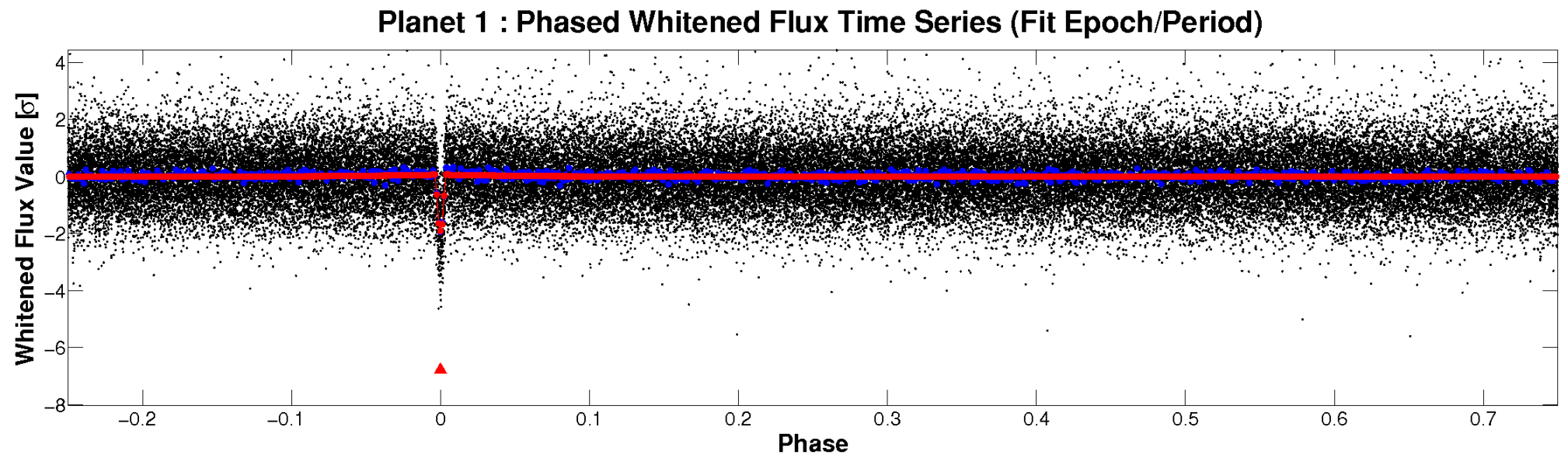
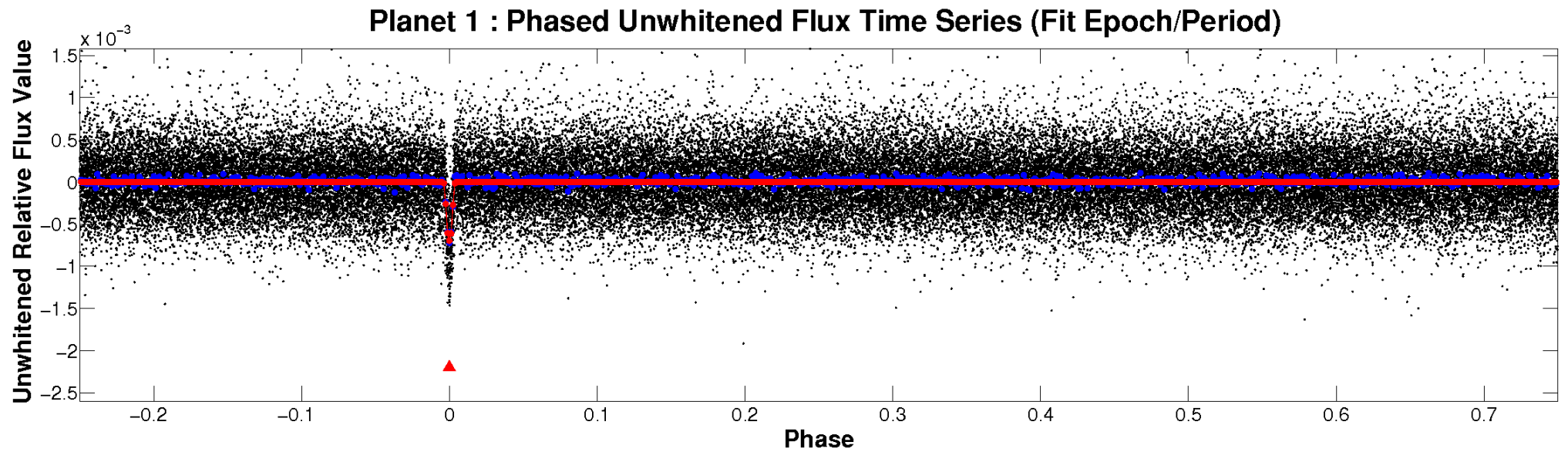


# ALT Odd/Even

TCE 009391208-01

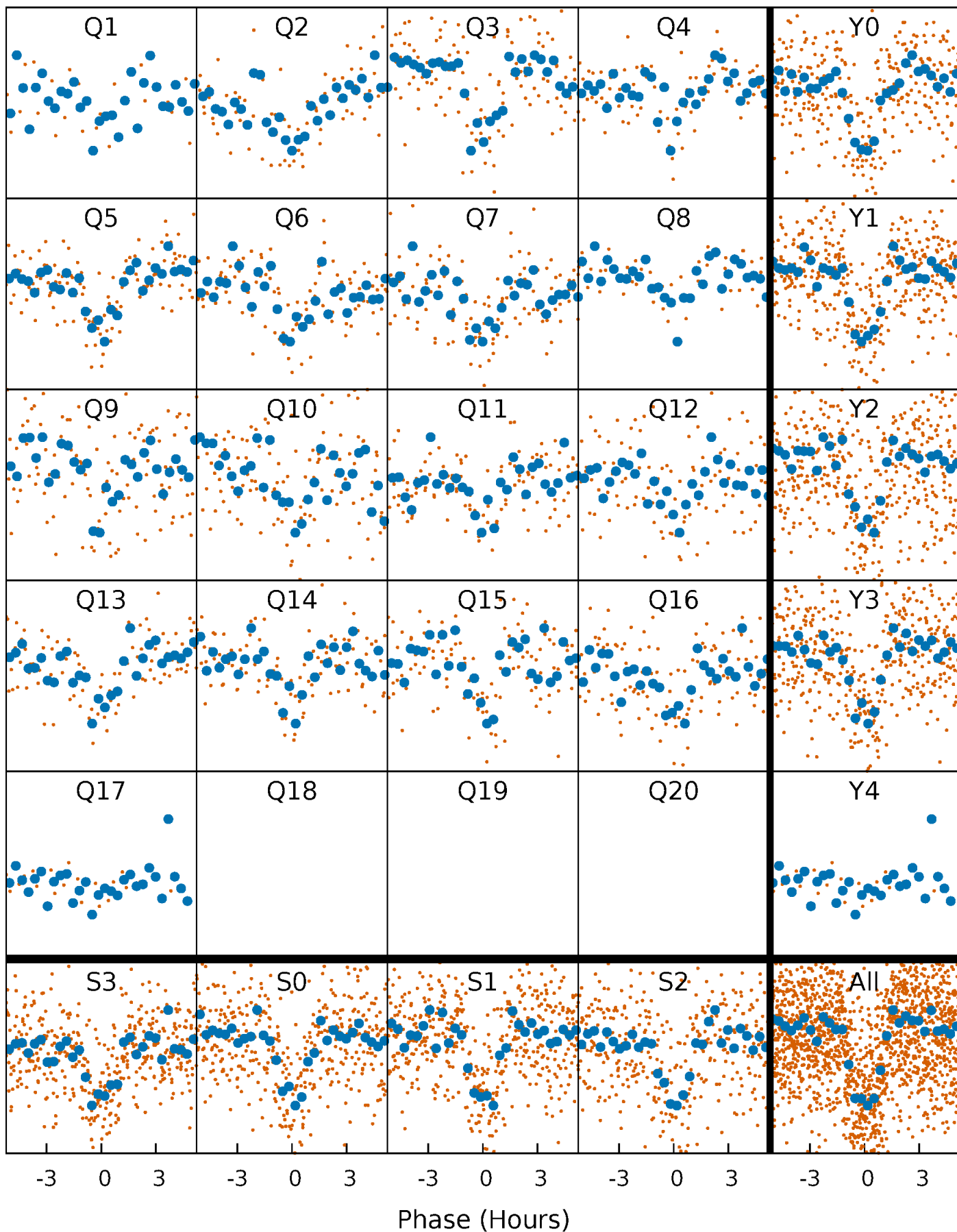


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

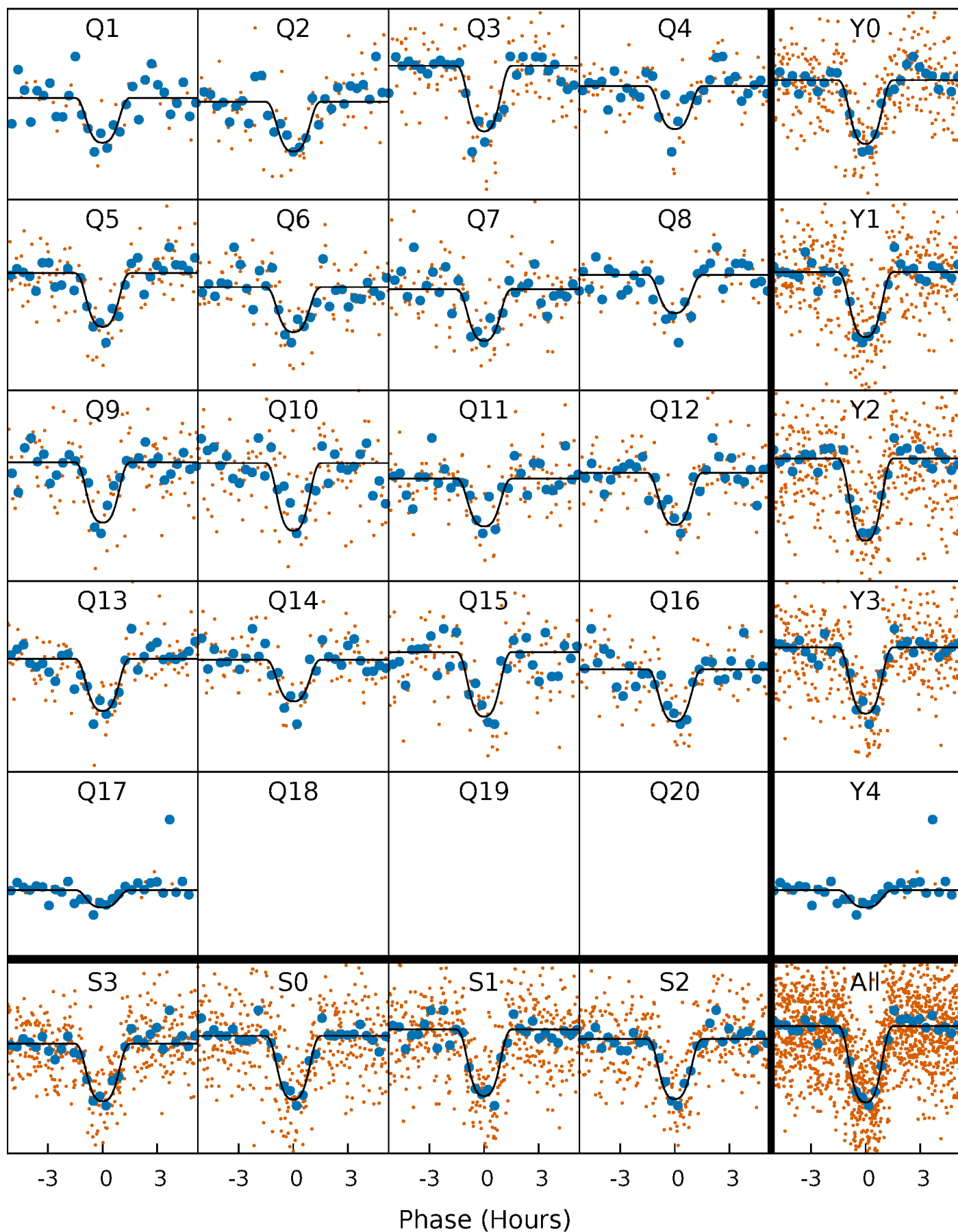
TCE 009391208-01 P= 16.560616 Days  $T_0=133.496591$  (BKJD)





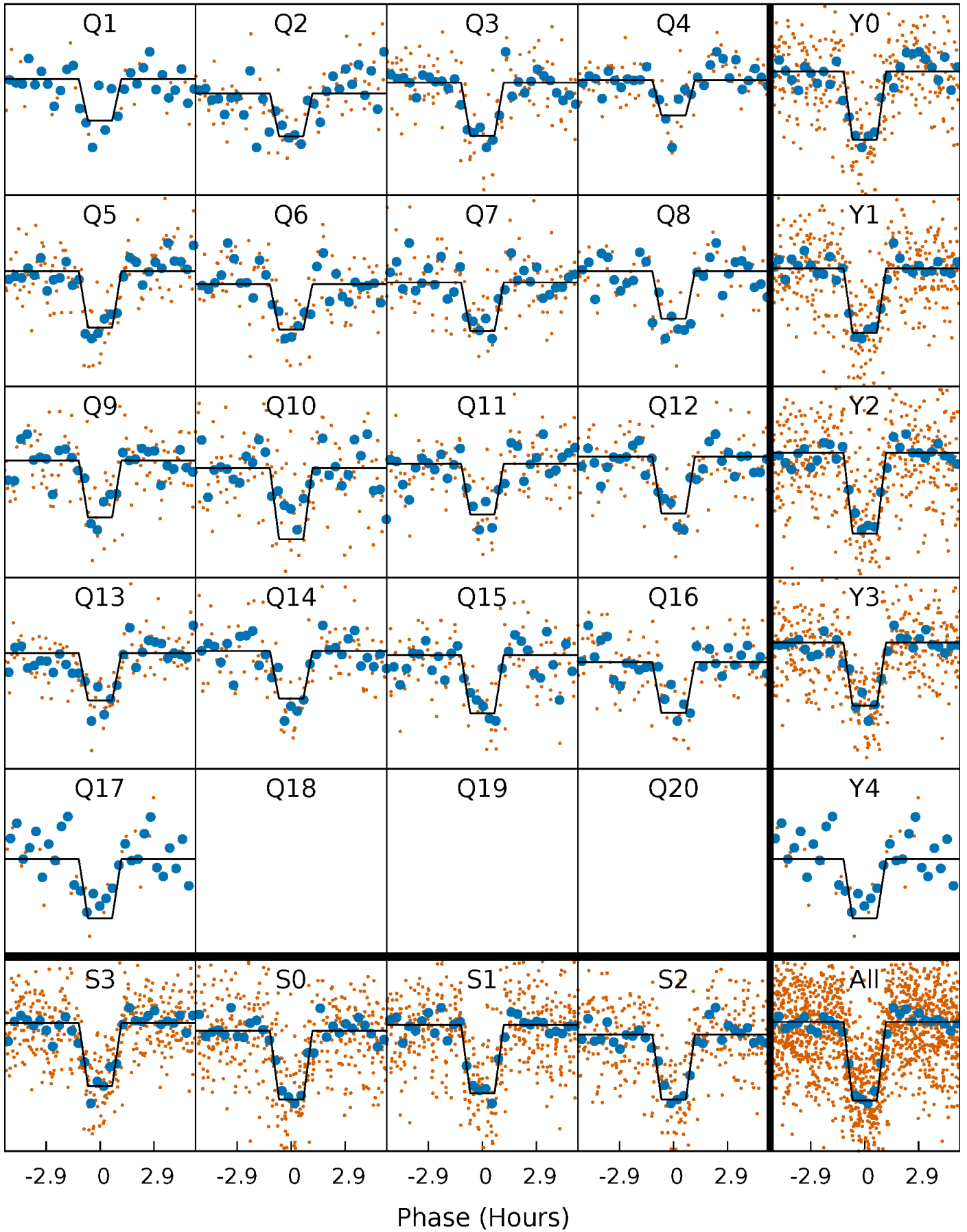
# DV Quarter-Phased Transit Curves

TCE 009391208-01 P= 16.560616 Days  $T_0=133.496591$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

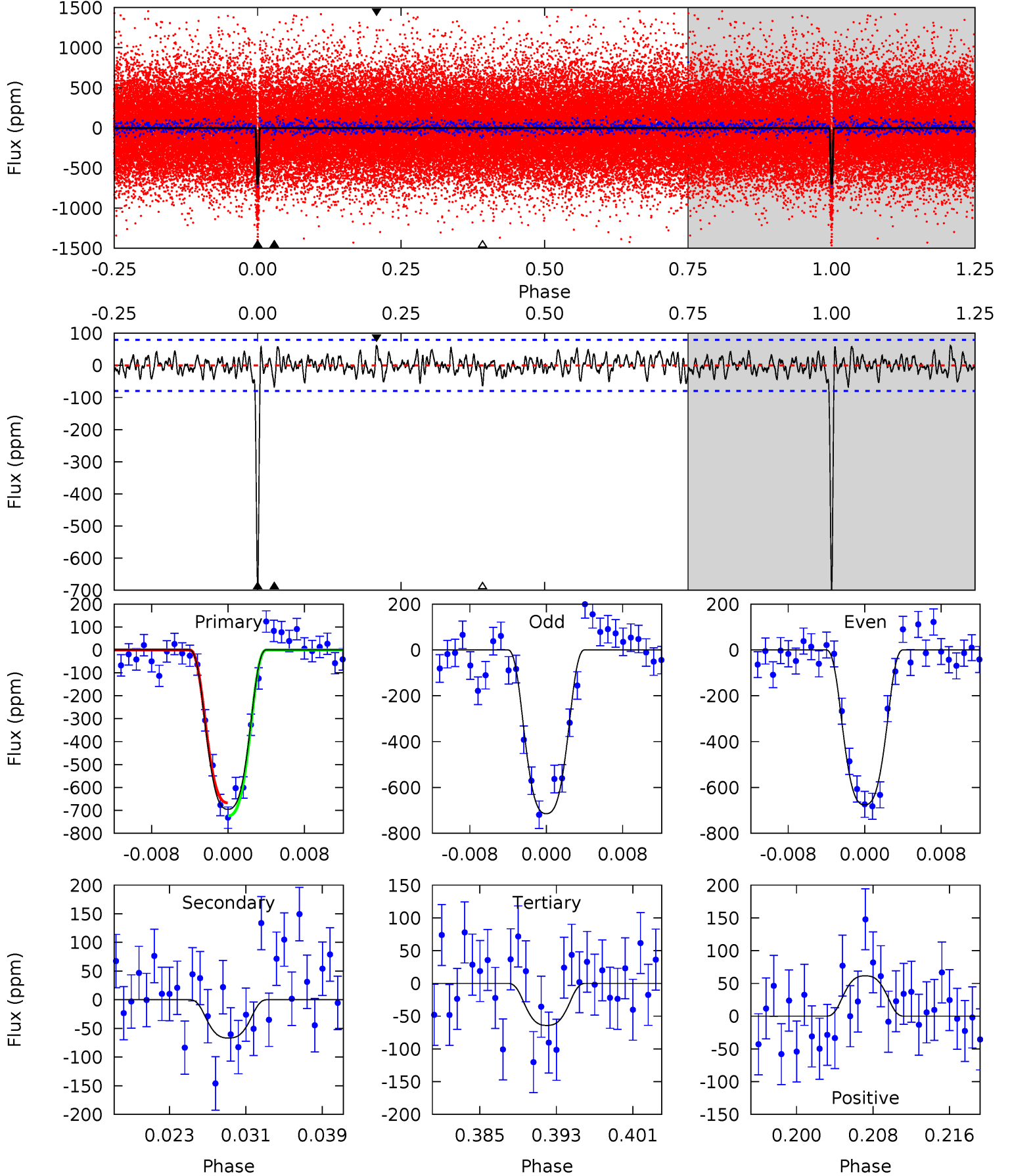
TCE 009391208-01 P= 16.560566 Days  $T_0=133.499812$  (BKJD)



# DV Model-Shift Uniqueness Test

009391208-01, P = 16.560616 Days, E = 116.935975 Days

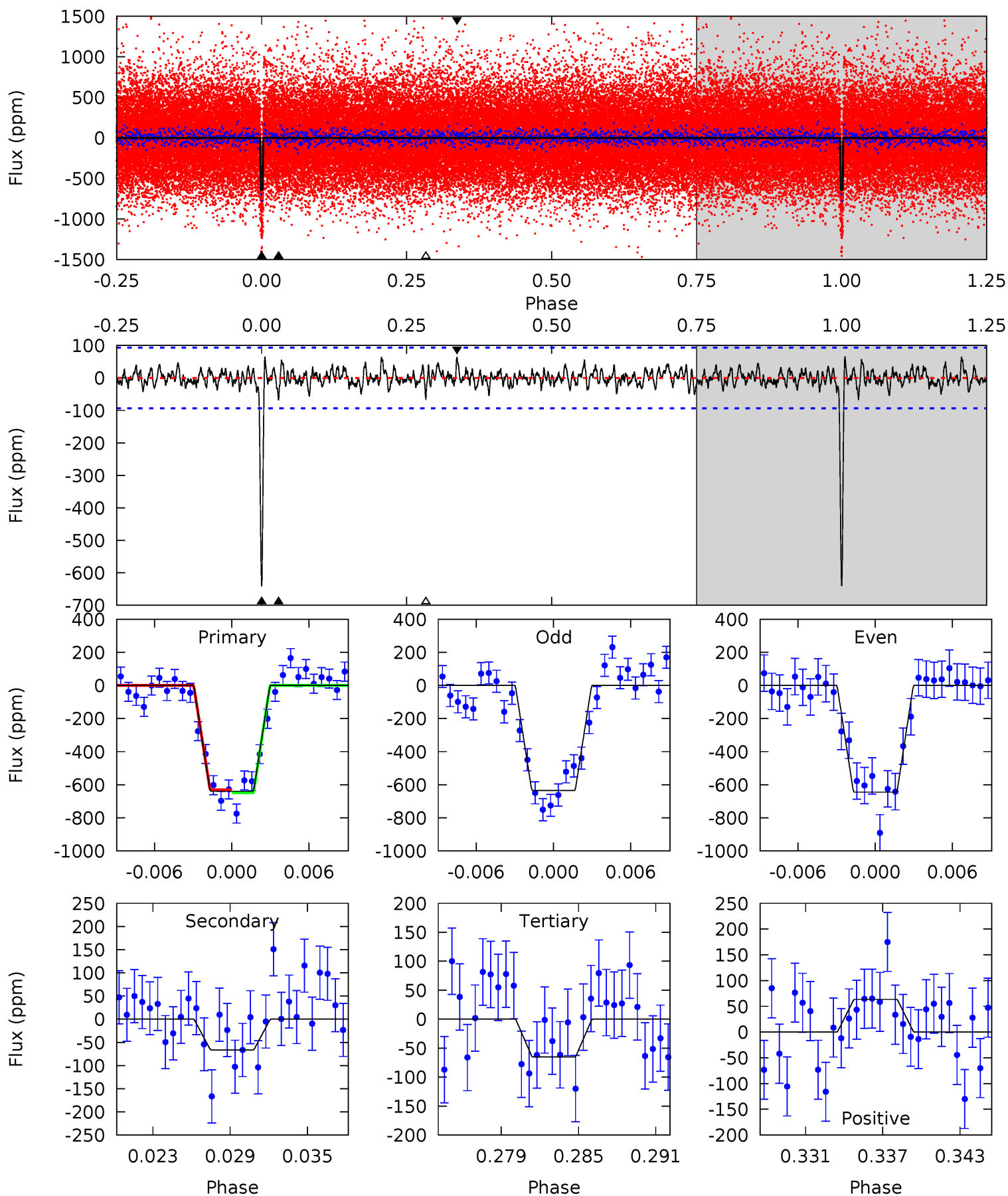
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.4	4.26	4.10	3.93	5.08	2.66	1.33	40.3	40.5	0.17	0.33	1.23	0.98	0.08	1.82



# Alt Model-Shift Uniqueness Test

009391208-01, P = 16.560566 Days, E = 116.939246 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
35.2	3.64	3.59	3.49	5.13	2.76	1.05	31.6	31.7	0.05	0.15	0.29	1.01	0.09	0.47



### Stellar Parameters For KIC 009391208

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5818^{+175}_{-175}$	$4.436^{+0.165}_{-0.181}$	$-0.820^{+0.300}_{-0.300}$	$0.855^{+0.200}_{-0.133}$	$0.727^{+0.094}_{-0.037}$	$1.637^{+1.118}_{-0.721}$
	+3%/-3%	+4%/-4%	+37%/-37%	+23%/-16%	+13%/-5%	+68%/-44%
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 009391208-01 / KOI 1409.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-67 \pm 16$	$2.98^{+0.41}_{-0.35}$	$986^{+66}_{-60}$	$3449^{+161}_{-154}$	$53^{+22}_{-16}$
Alt.	$-66 \pm 18$	$2.45^{+0.37}_{-0.31}$	$979^{+68}_{-61}$	$3665^{+193}_{-205}$	$80^{+36}_{-28}$

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



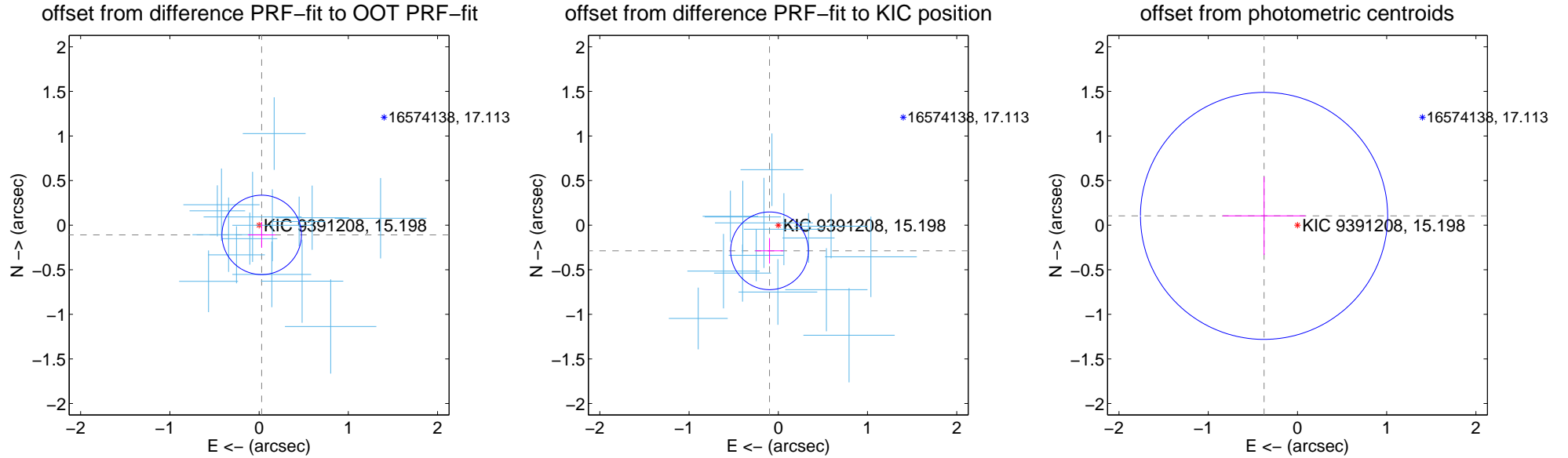
## DV Centroid Data

Supplemental centroid analysis for 009391208-01. Kepler magnitude: 15.20. Transit SNR 27.95

There are 15 quarters with good PRF difference image offsets

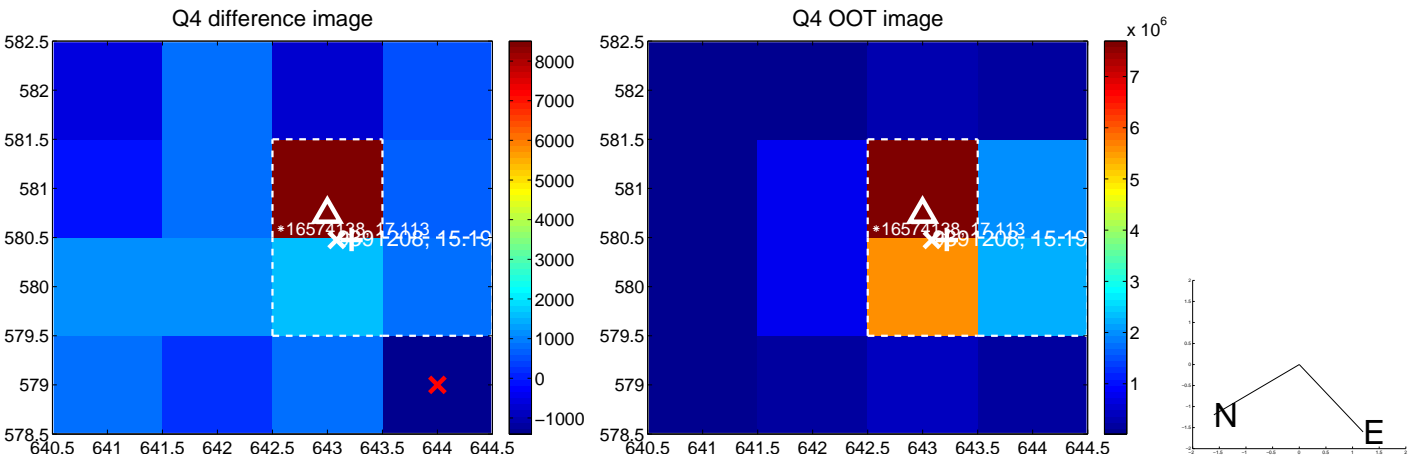
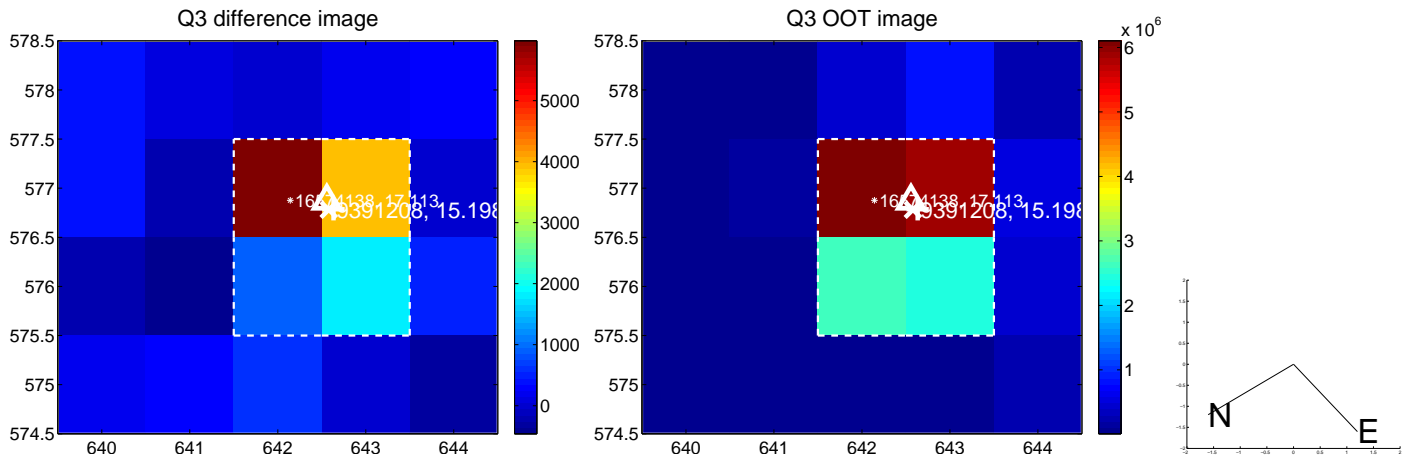
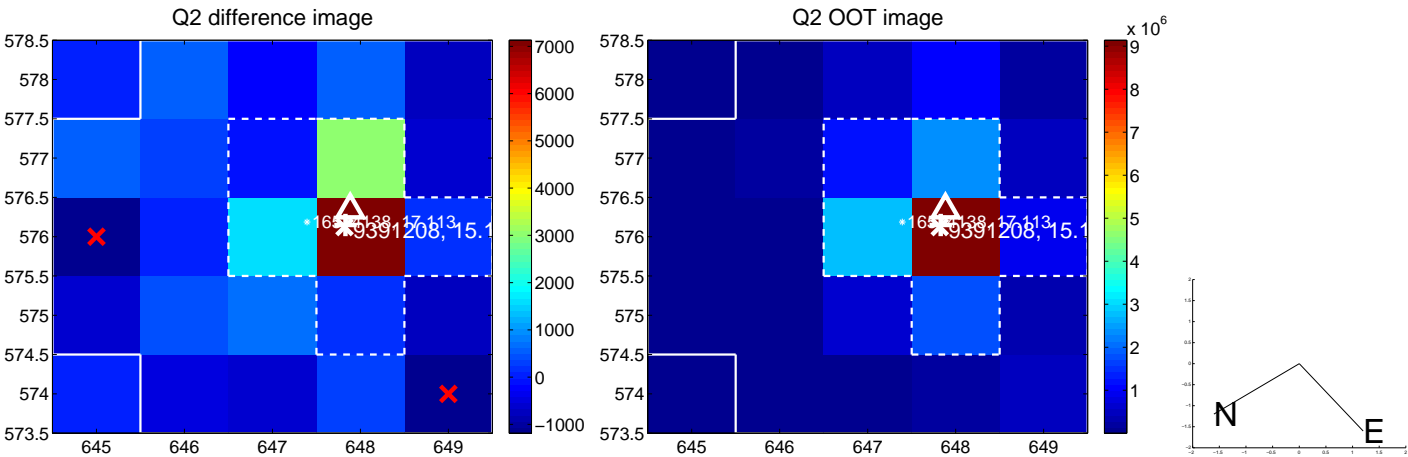
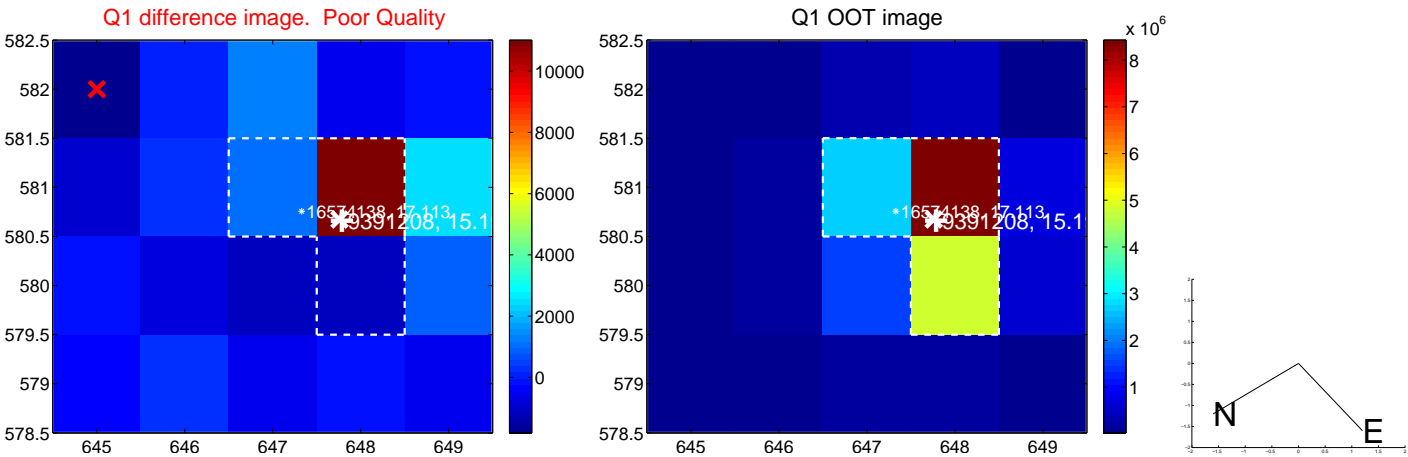
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.113 \pm 0.148$	0.76	$-0.029 \pm 0.154$	$-0.109 \pm 0.145$
PRF-fit source offset from KIC position	$0.304 \pm 0.145$	2.09	$0.098 \pm 0.158$	$-0.288 \pm 0.144$
photometric centroid source offset	$0.39 \pm 0.46$	0.84	$0.37 \pm 0.46$	$0.10 \pm 0.44$

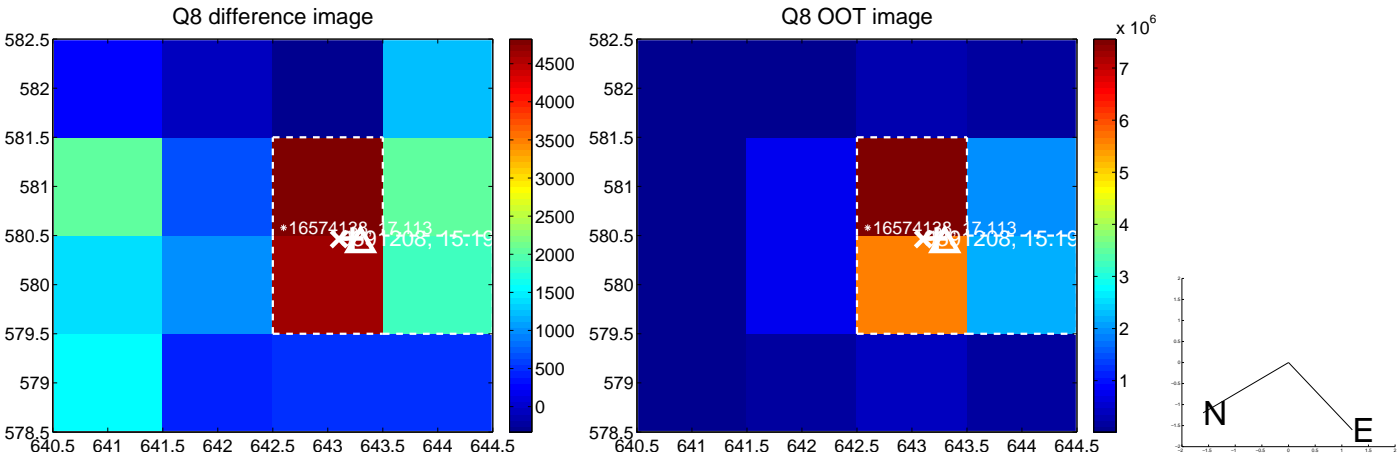
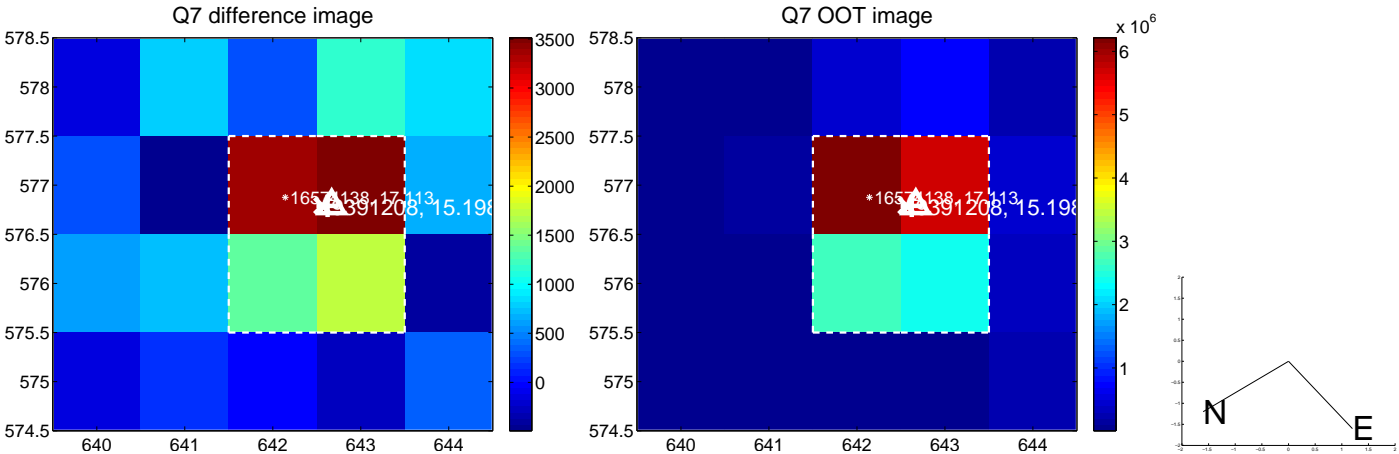
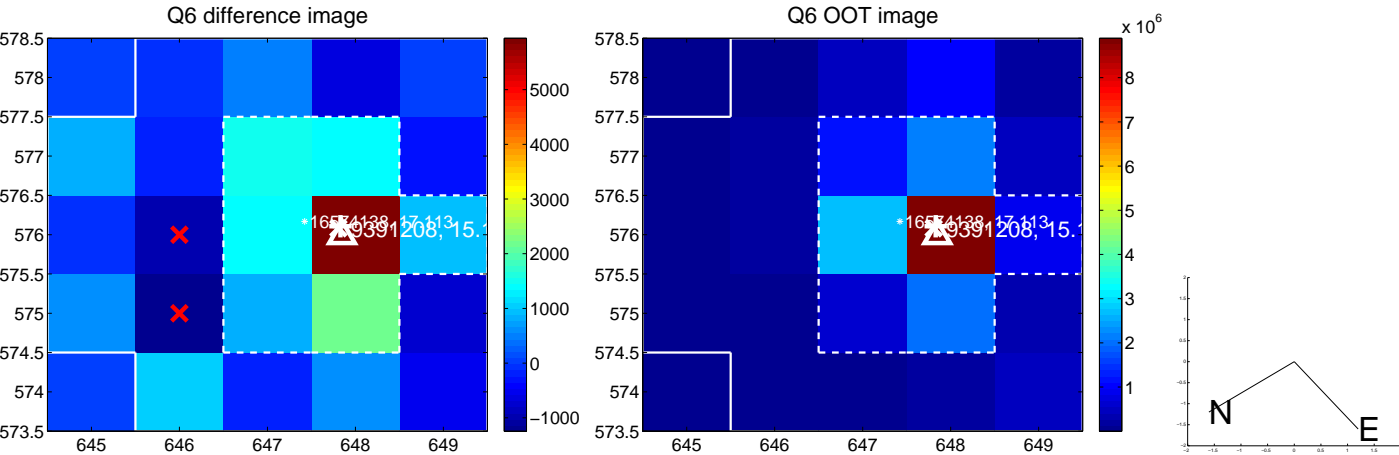
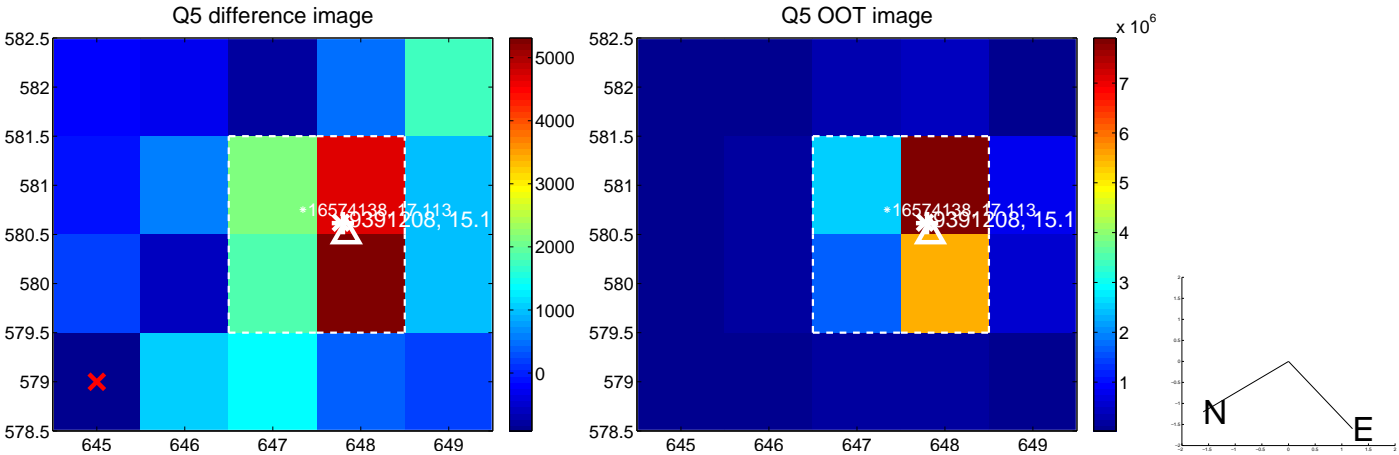


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

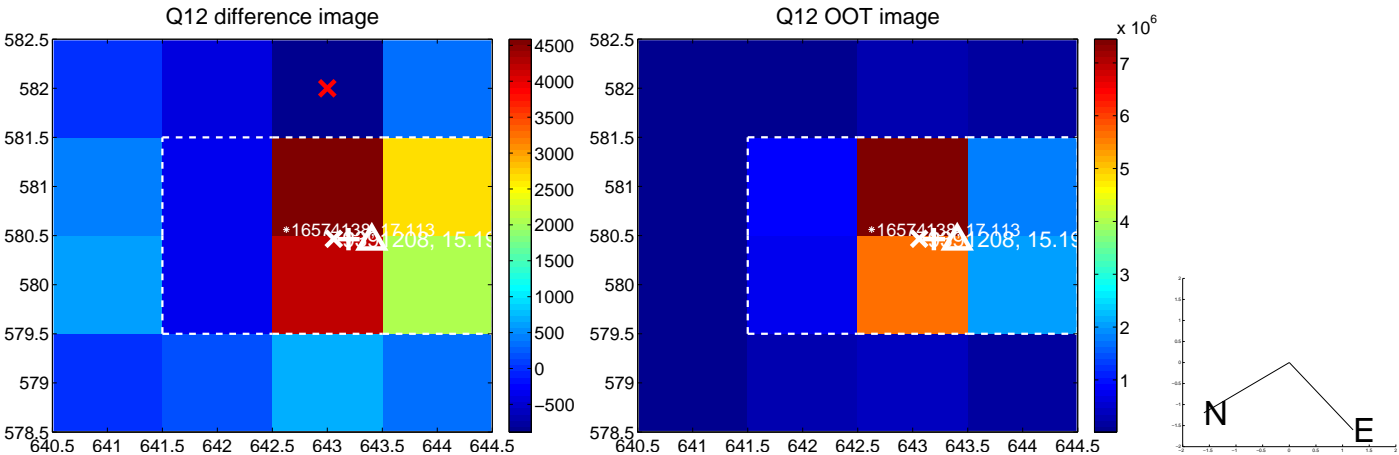
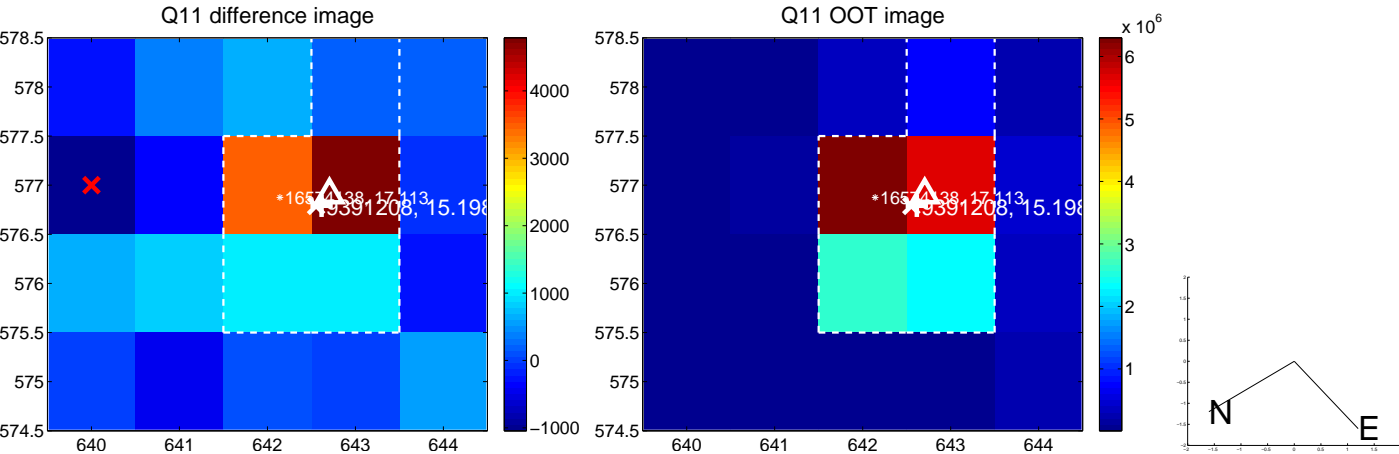
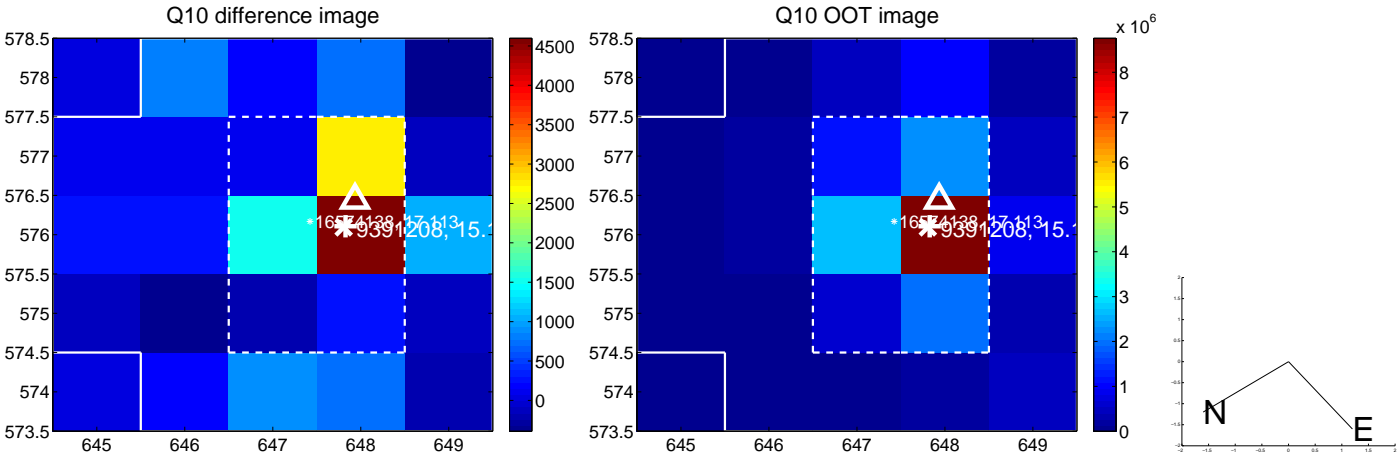
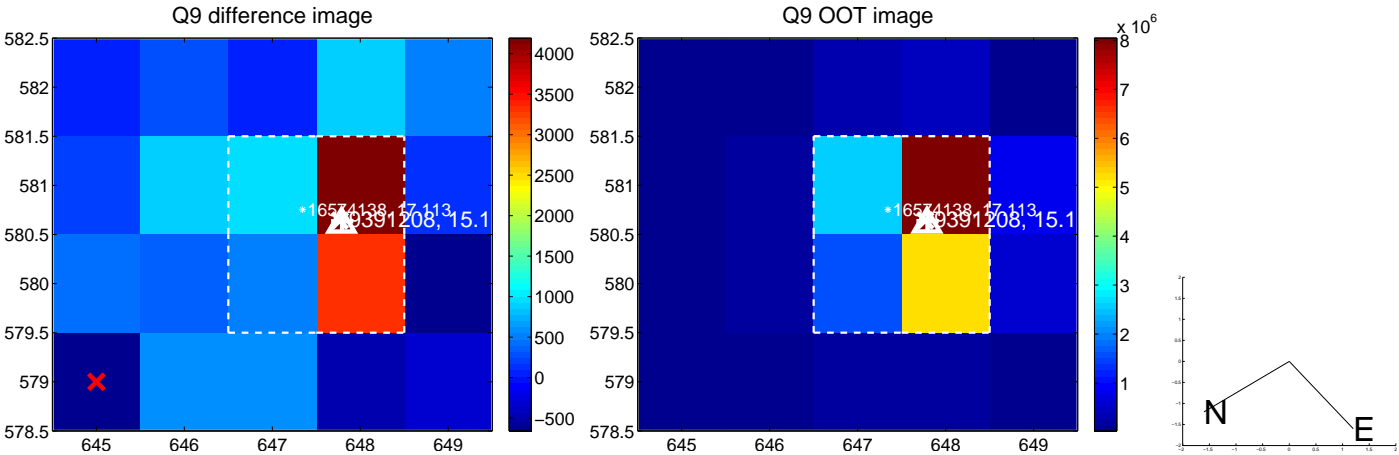
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



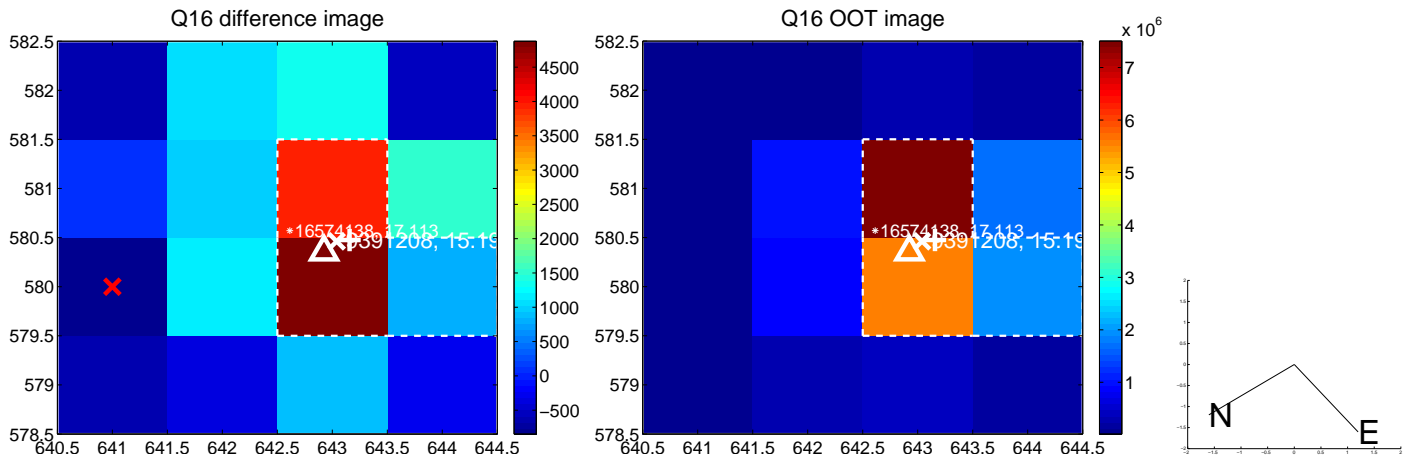
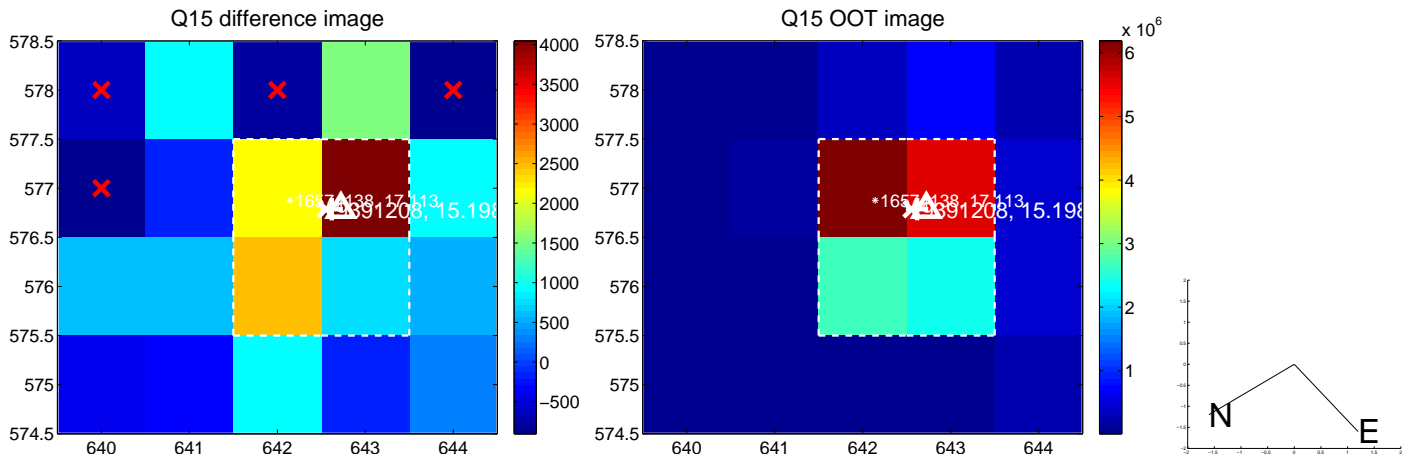
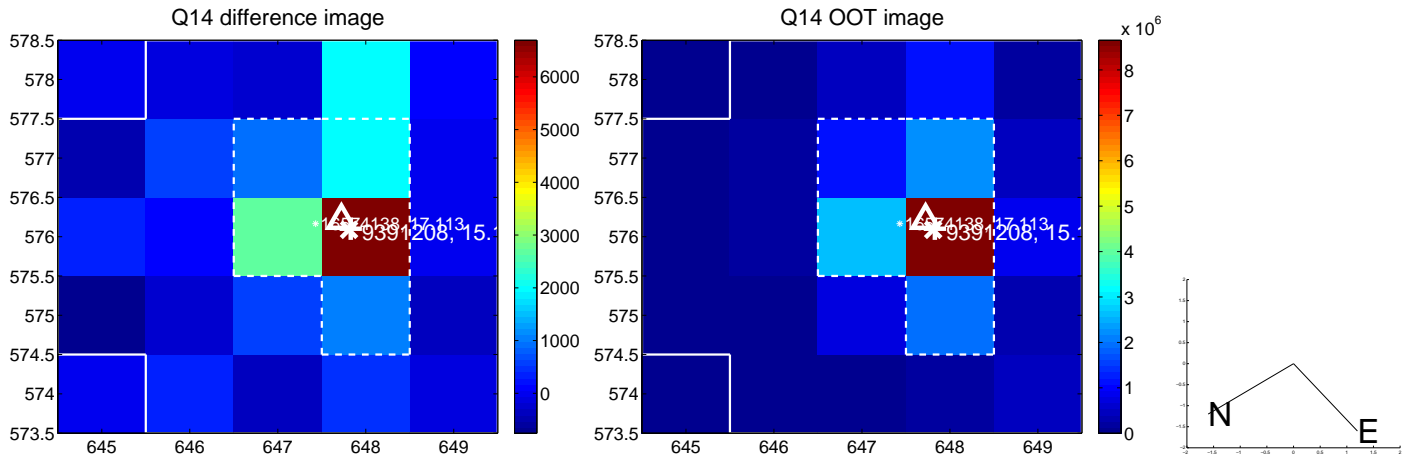
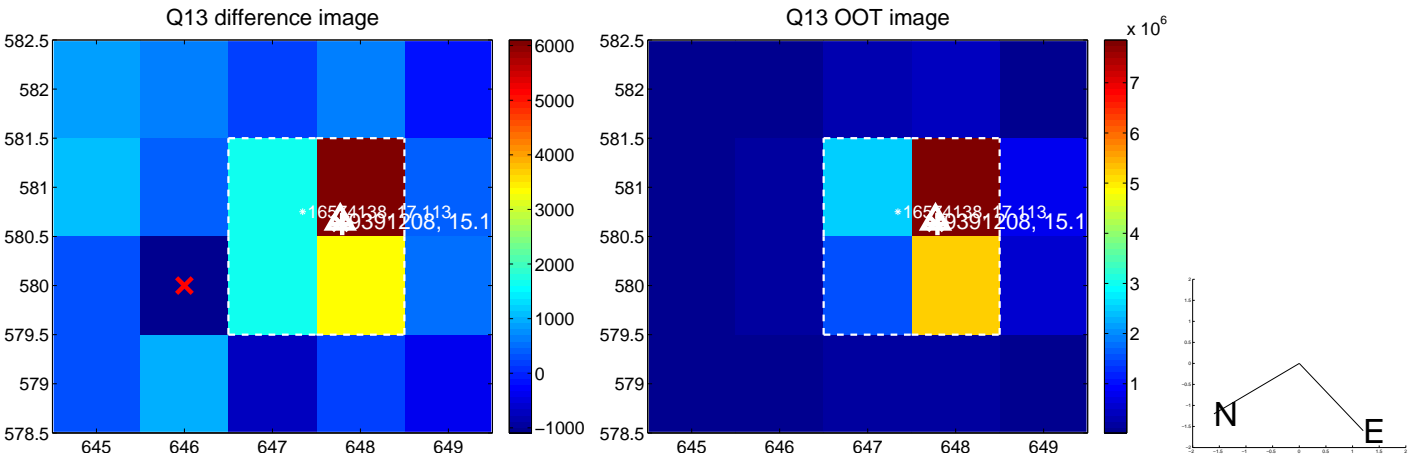
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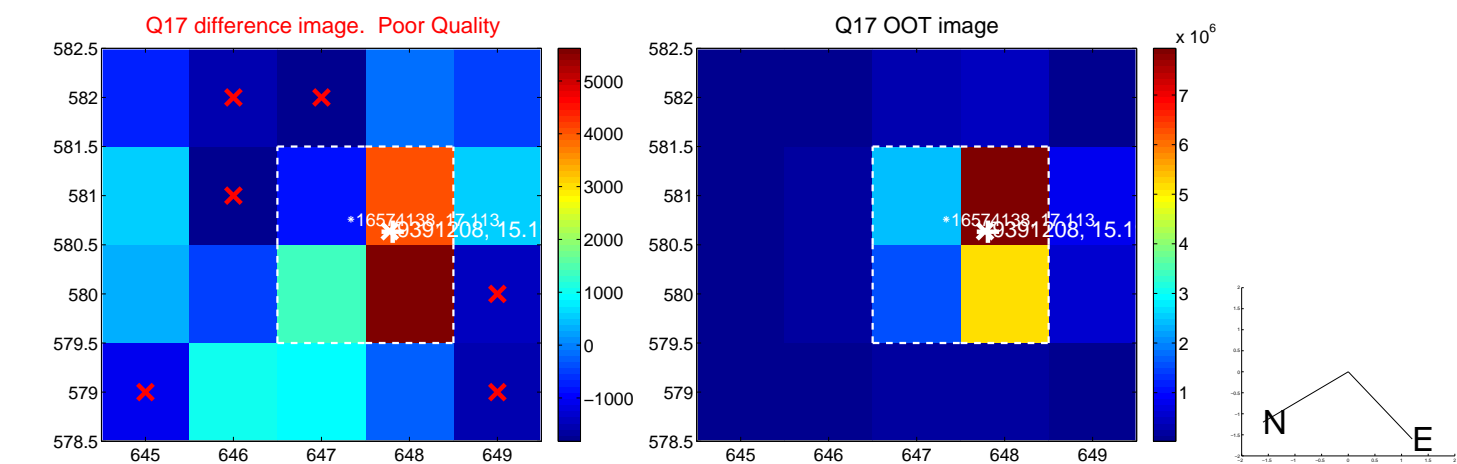


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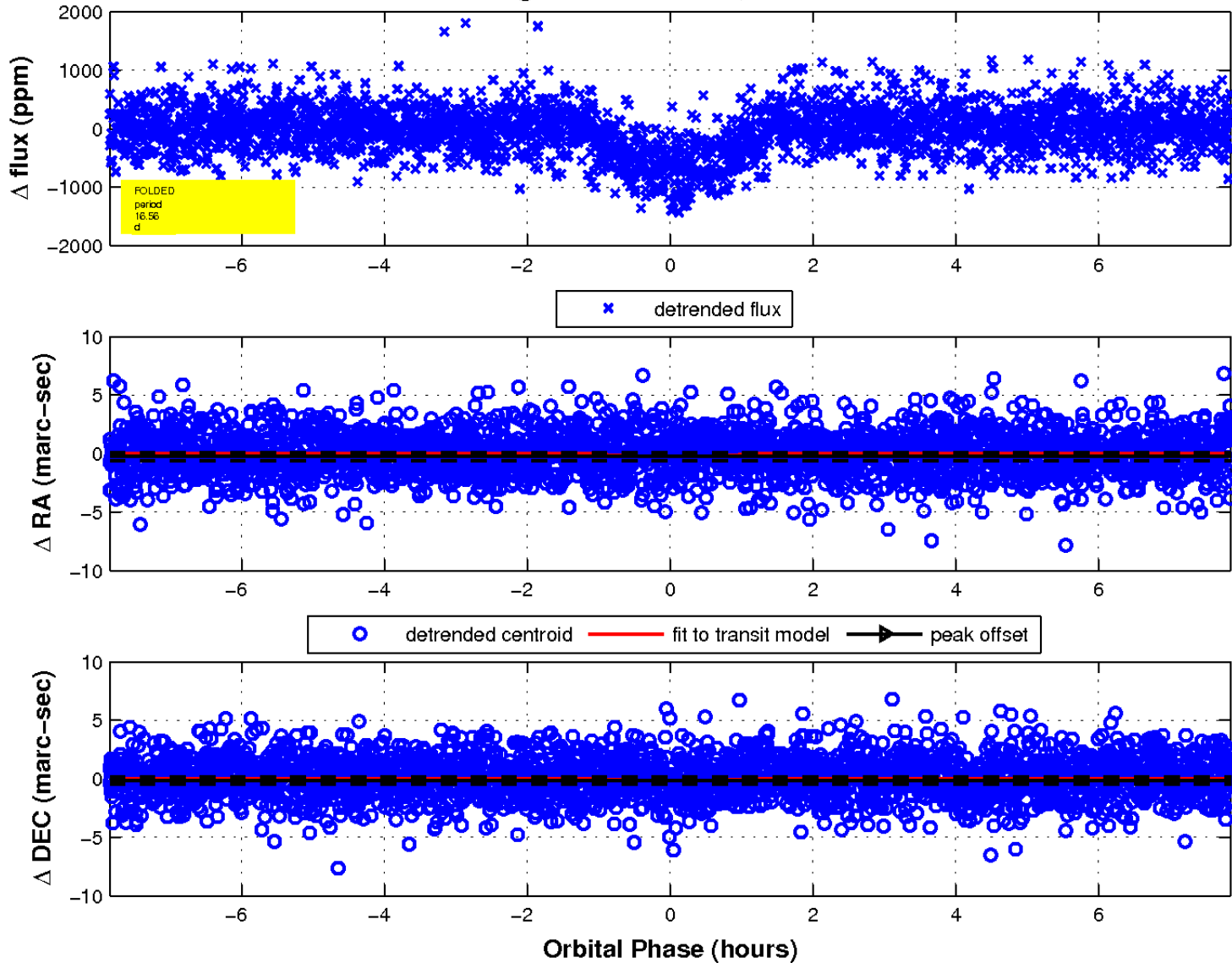




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

