

# KIC 004550909

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004550909-01	OBS	No	0.711681	131.861157	19.8	2.622	8.5	1.6	0.55	4748	0.29	821.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004550909-01	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—HALO_GHOST

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

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

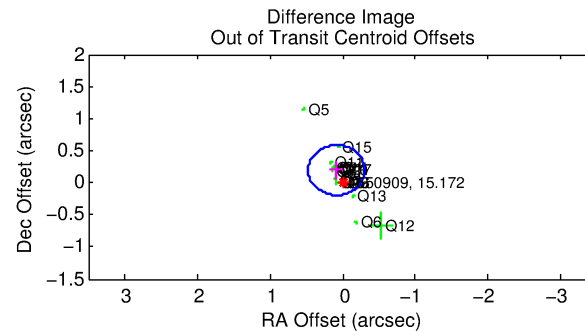
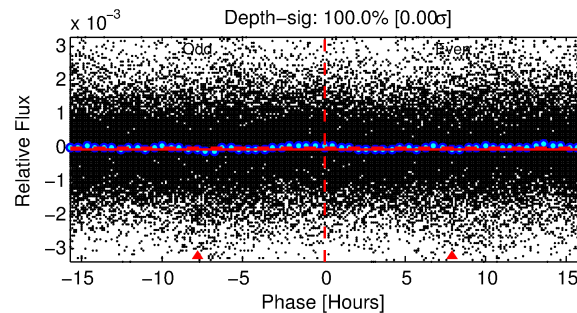
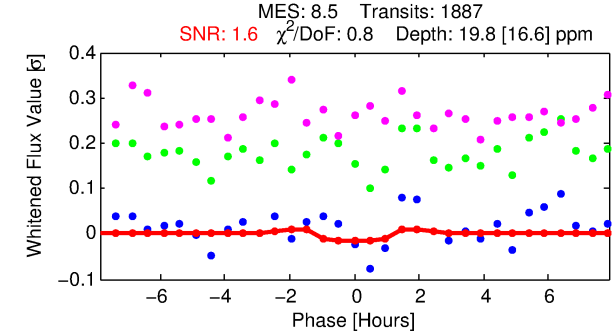
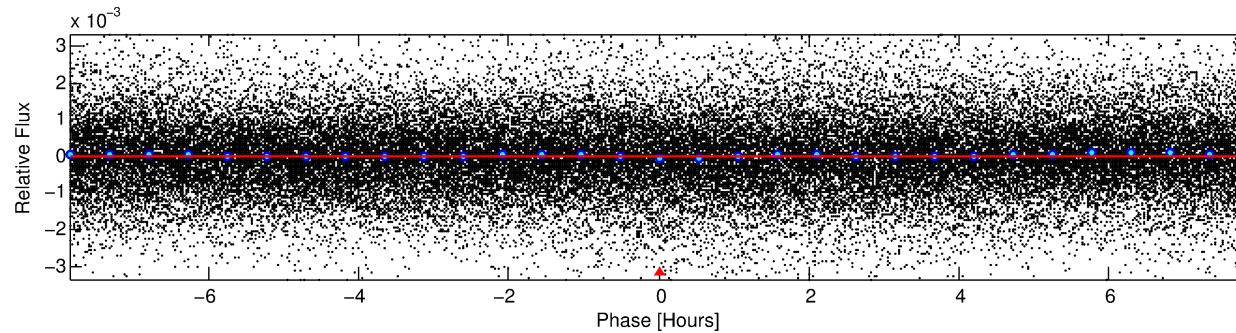
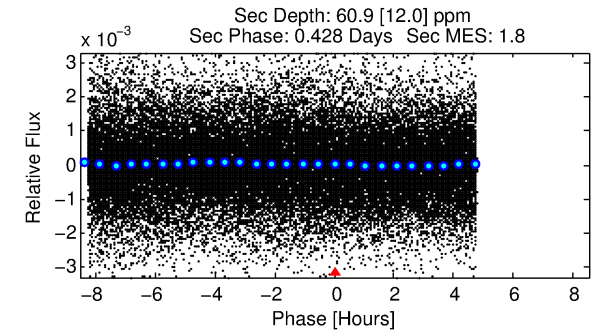
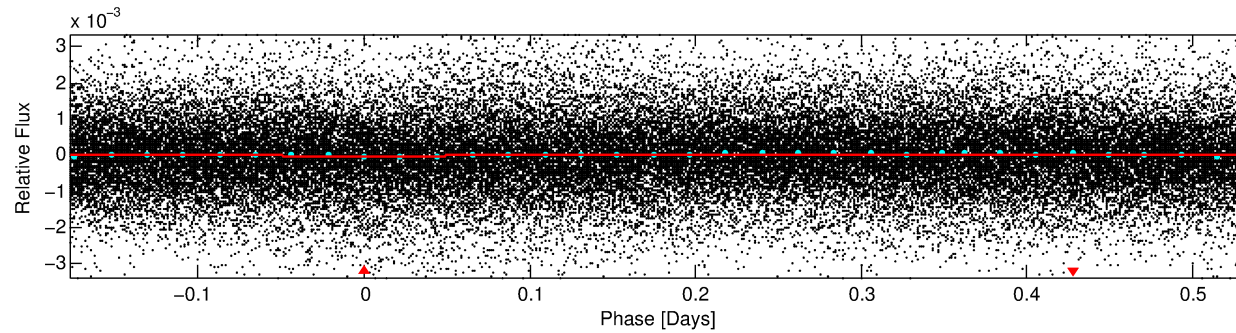
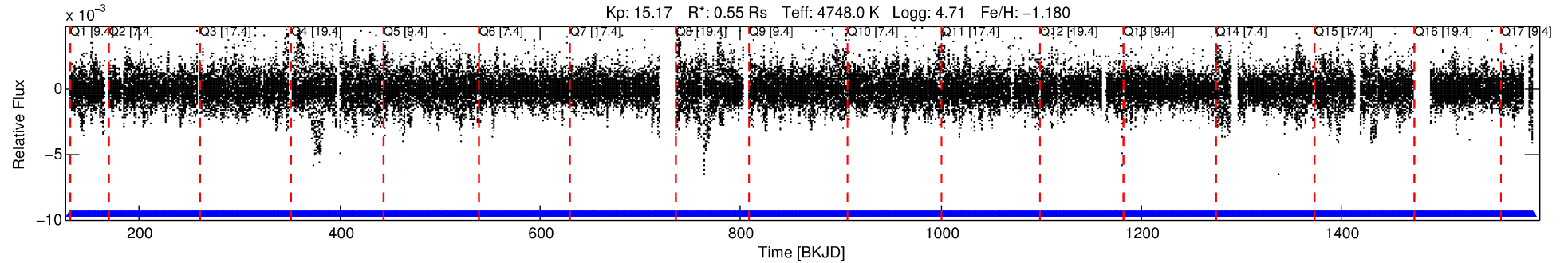
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004550909-01

No Significant Match Found

# DV One-Page Summary

KIC: 4550909 Candidate: 1 of 1 Period: 0.712 d



## DV Fit Results:

Period = 0.71168 [0.00006] d  
Epoch = 131.8612 [0.0107] BKJD  
Rp/R\* = 0.0049 [0.0085]  
a/R\* = 1.32 [4.00]  
b = 0.90 [1.55]  
Seff = 821.90 [116.55]  
Teq = 1365 [48] K  
Rp = 0.29 [0.50] Re  
a = 0.0128 [0.0007] AU  
Ag = 64.47 [222.15] [0.29σ]  
Teffp = 5981 [5155] K [0.90σ]

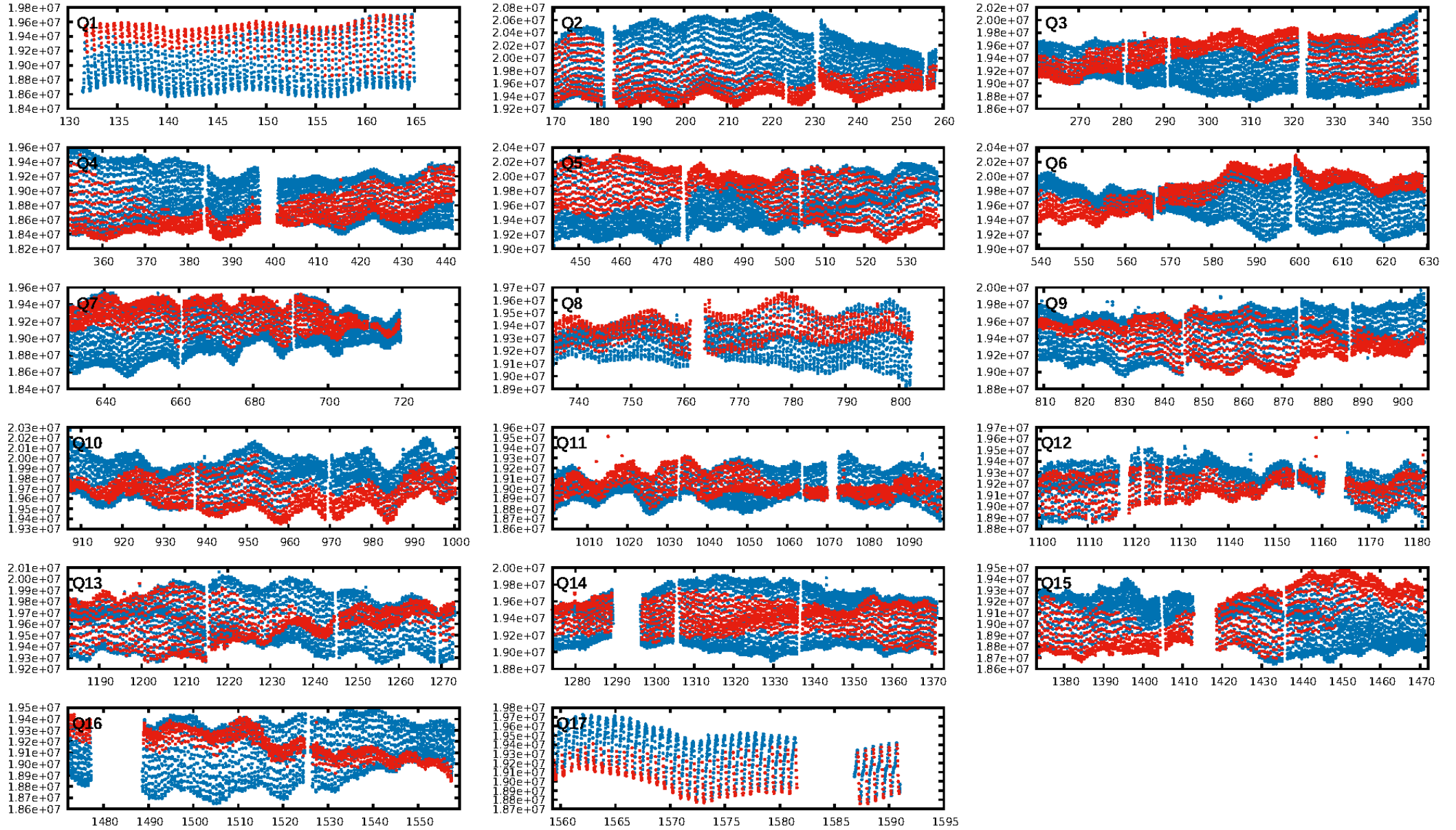
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.44e-17  
RollingBand-fgt: 1.00 [1802/1802]  
GhostDiagnostic-chr: -0.2407  
Centroid-sig: 36.0%  
Centroid-so: 3.356 arcsec [0.98σ]  
OotOffset-rm: 0.214 arcsec [1.65σ]  
KicOffset-rm: 0.129 arcsec [0.98σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.35 [6/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:50:01 Z

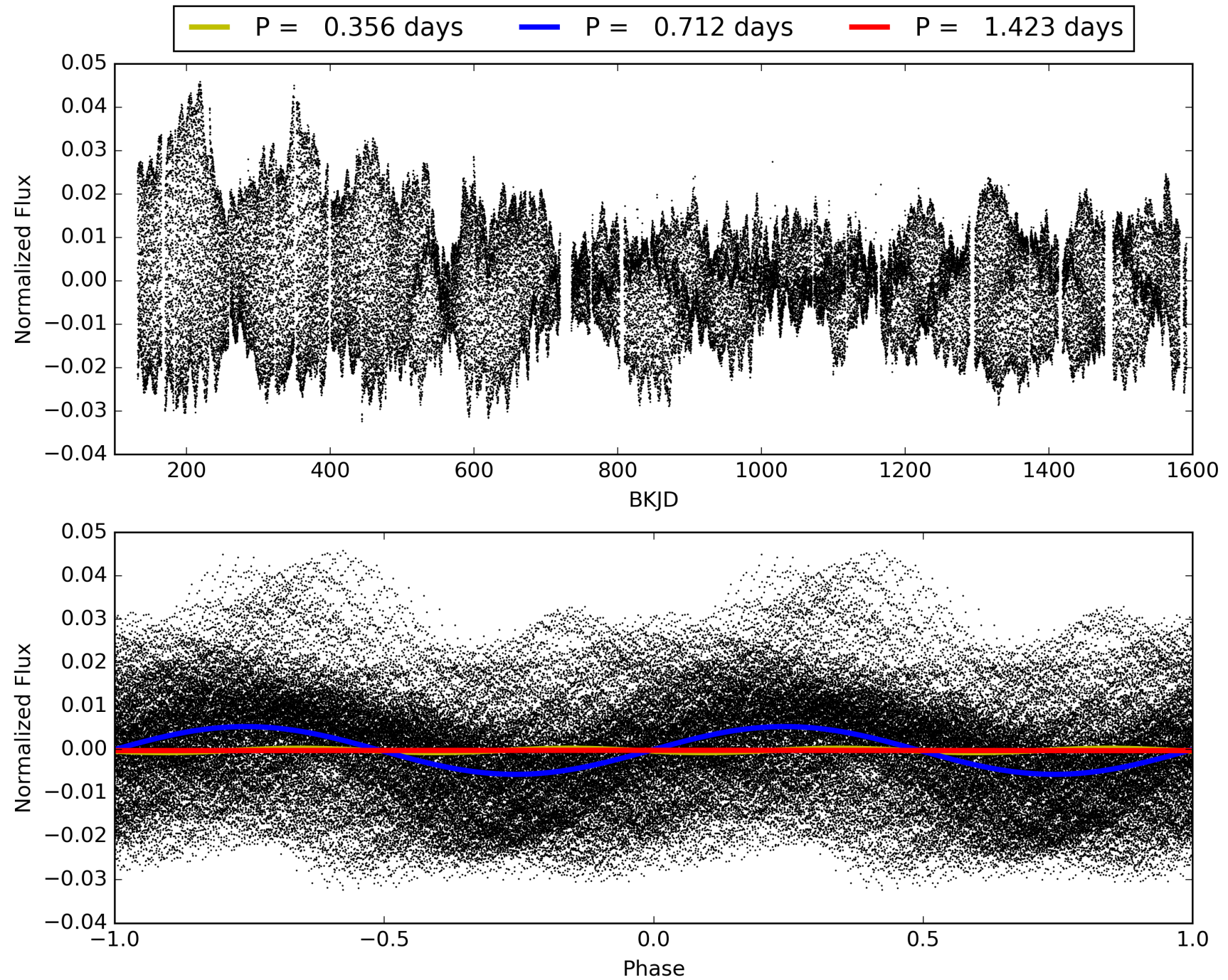
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004550909-01, PDC Light Curves



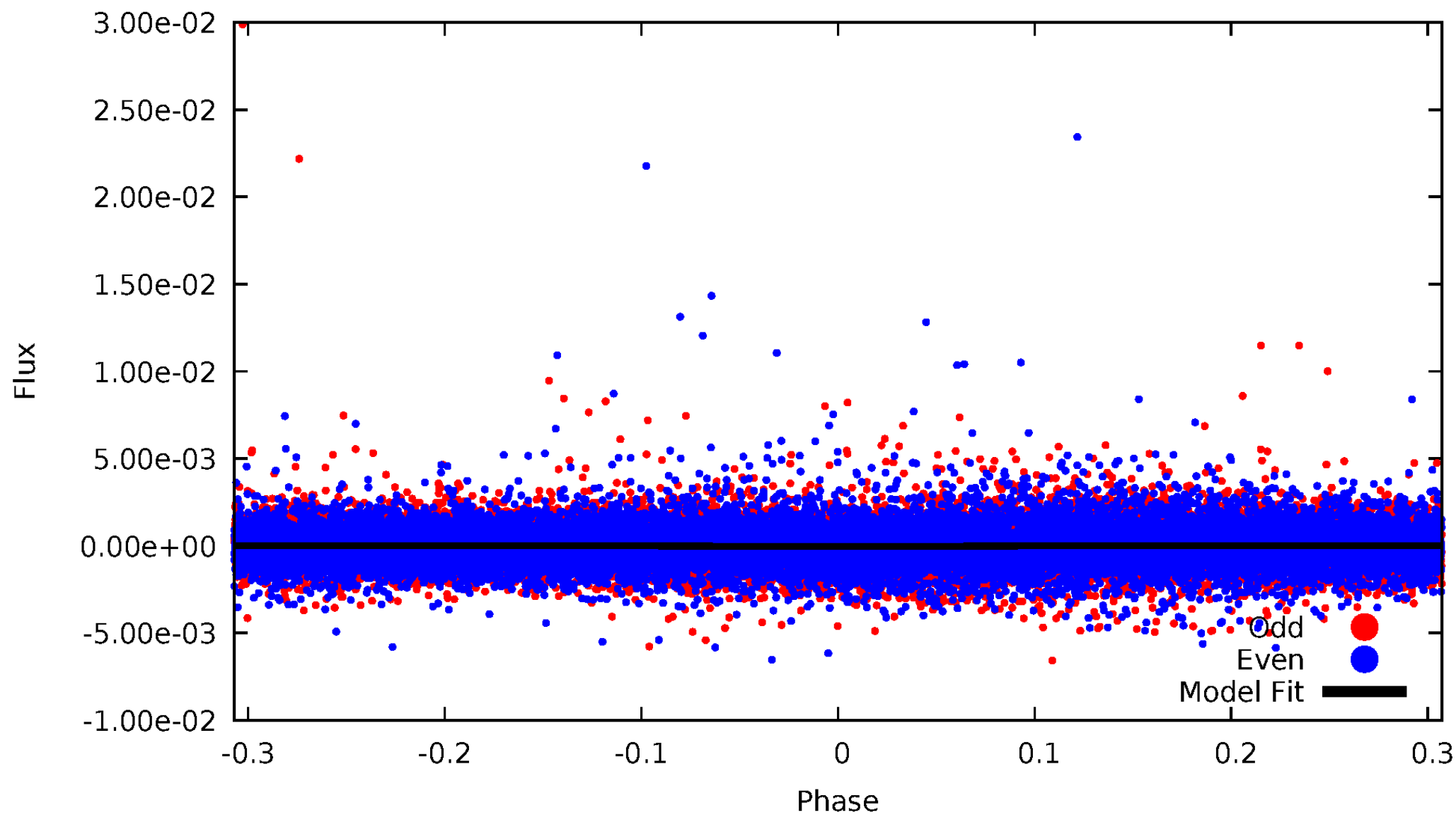


TCE 004550909-01



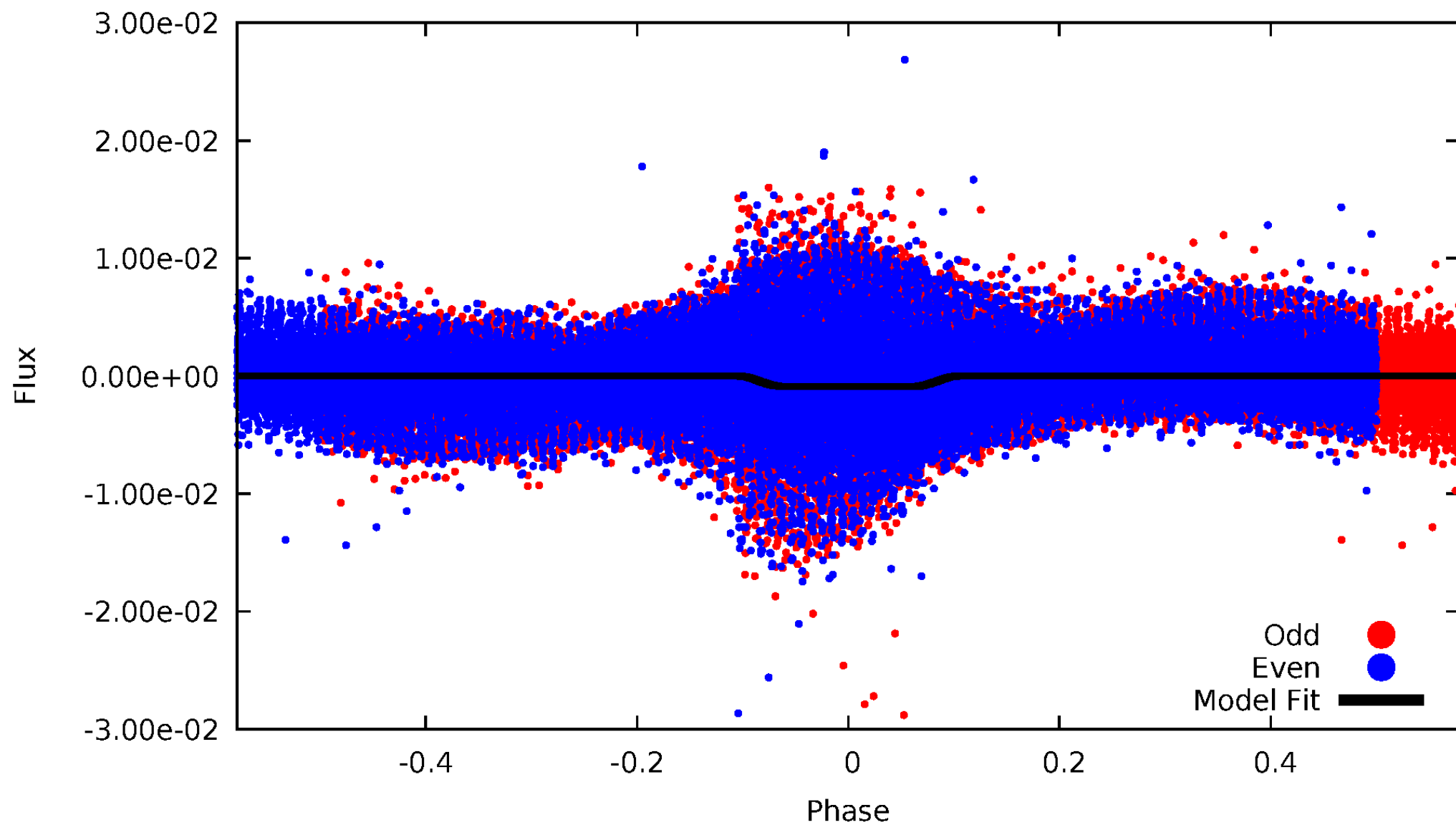
# DV Odd/Even

TCE 004550909-01



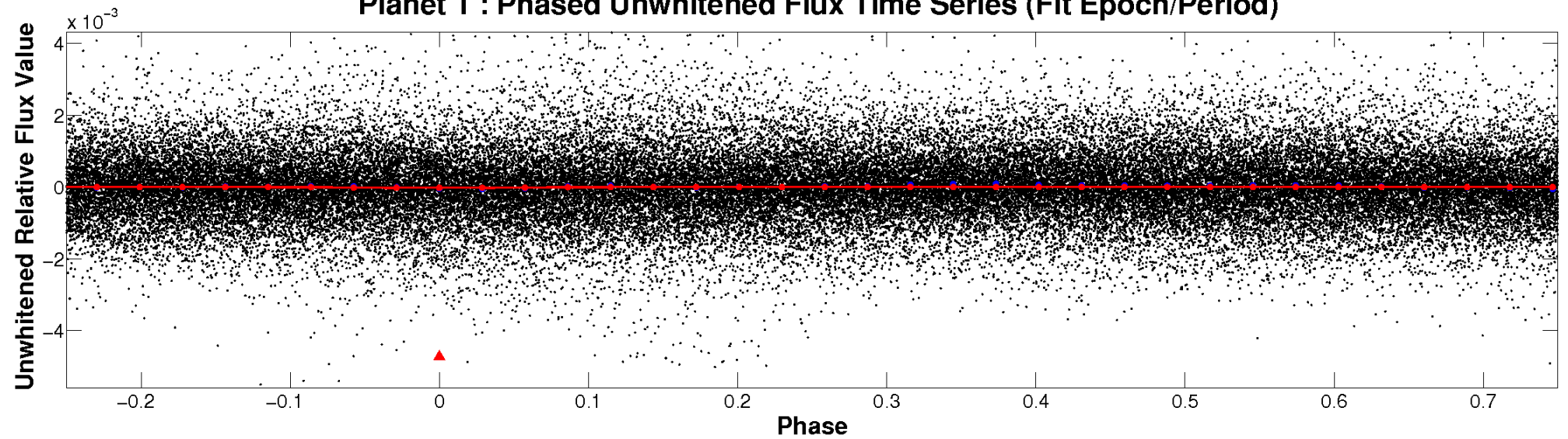
# ALT Odd/Even

TCE 004550909-01

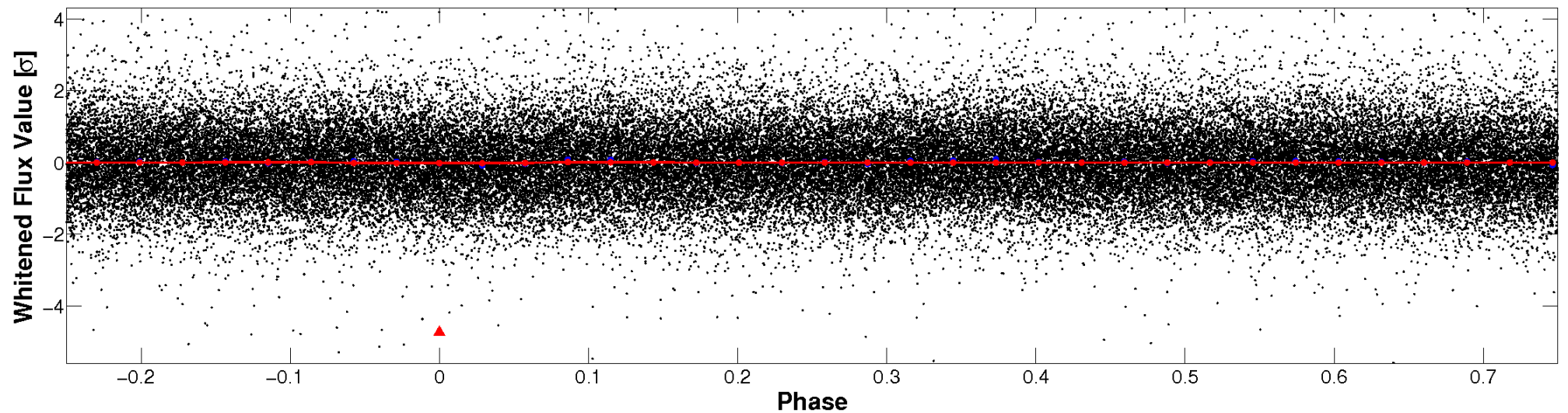


# Non-Whitened Vs. Whitened Light Curve

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



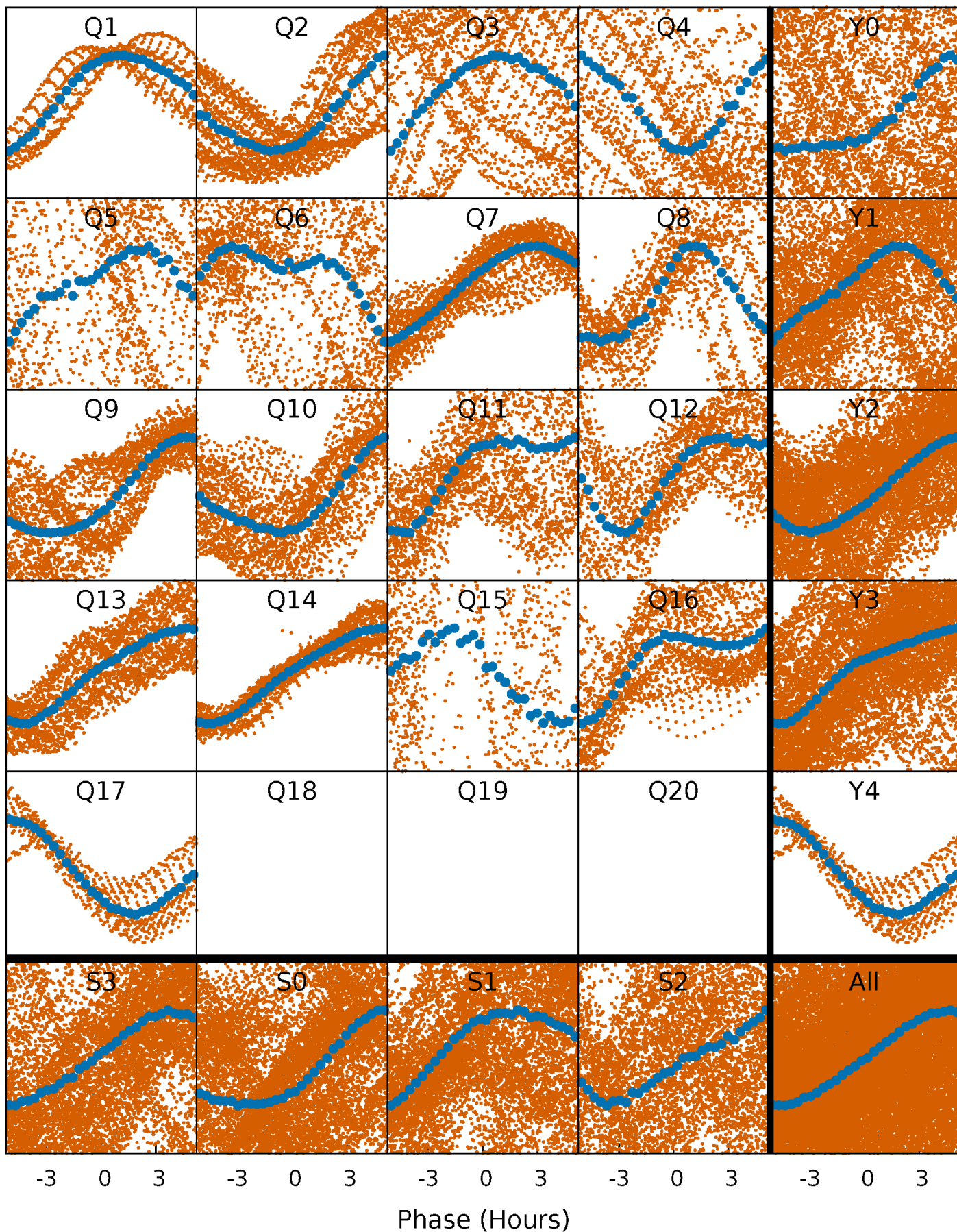
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

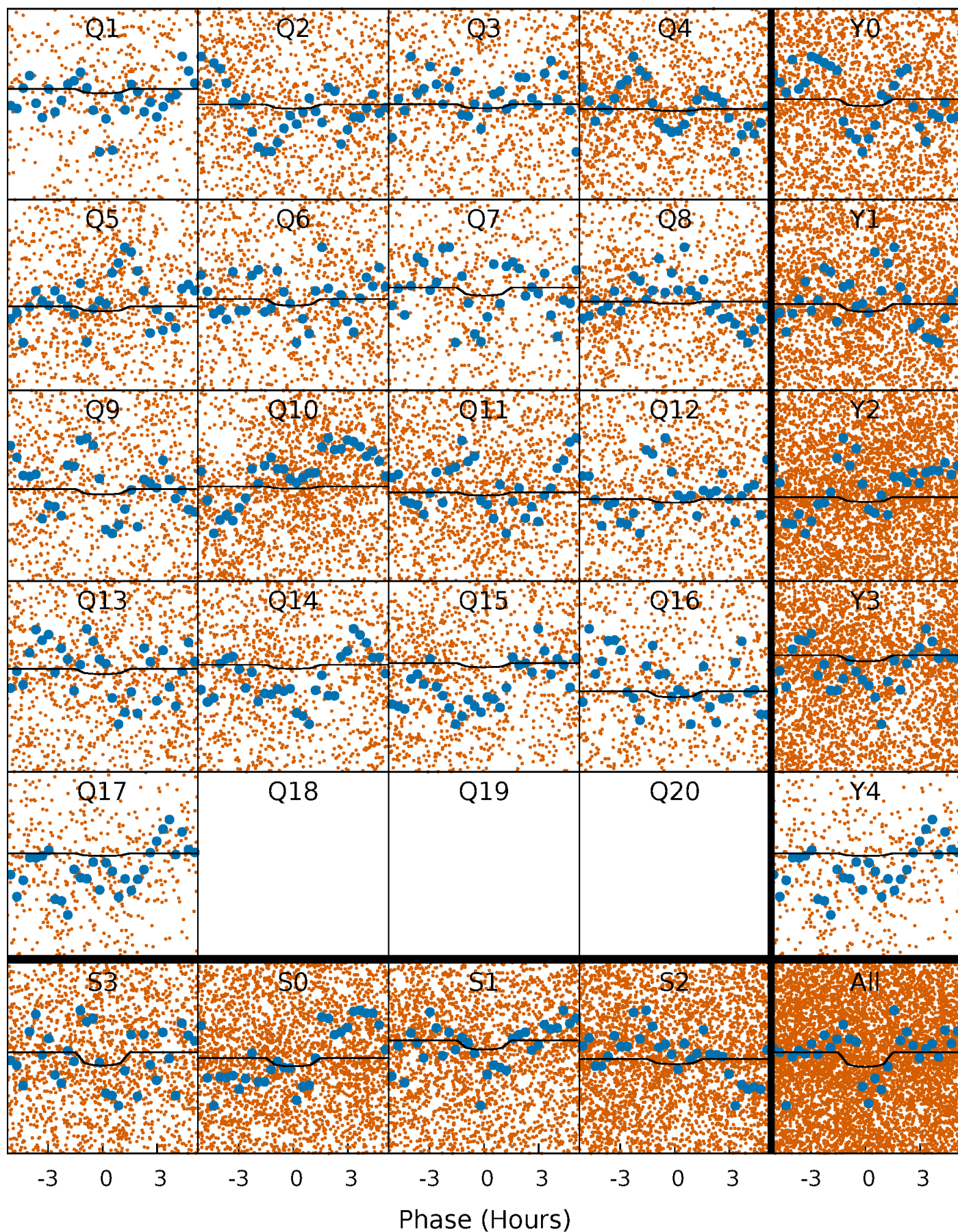
TCE 004550909-01     $P = 0.711681$  Days     $T_0 = 131.861157$  (BKJD)





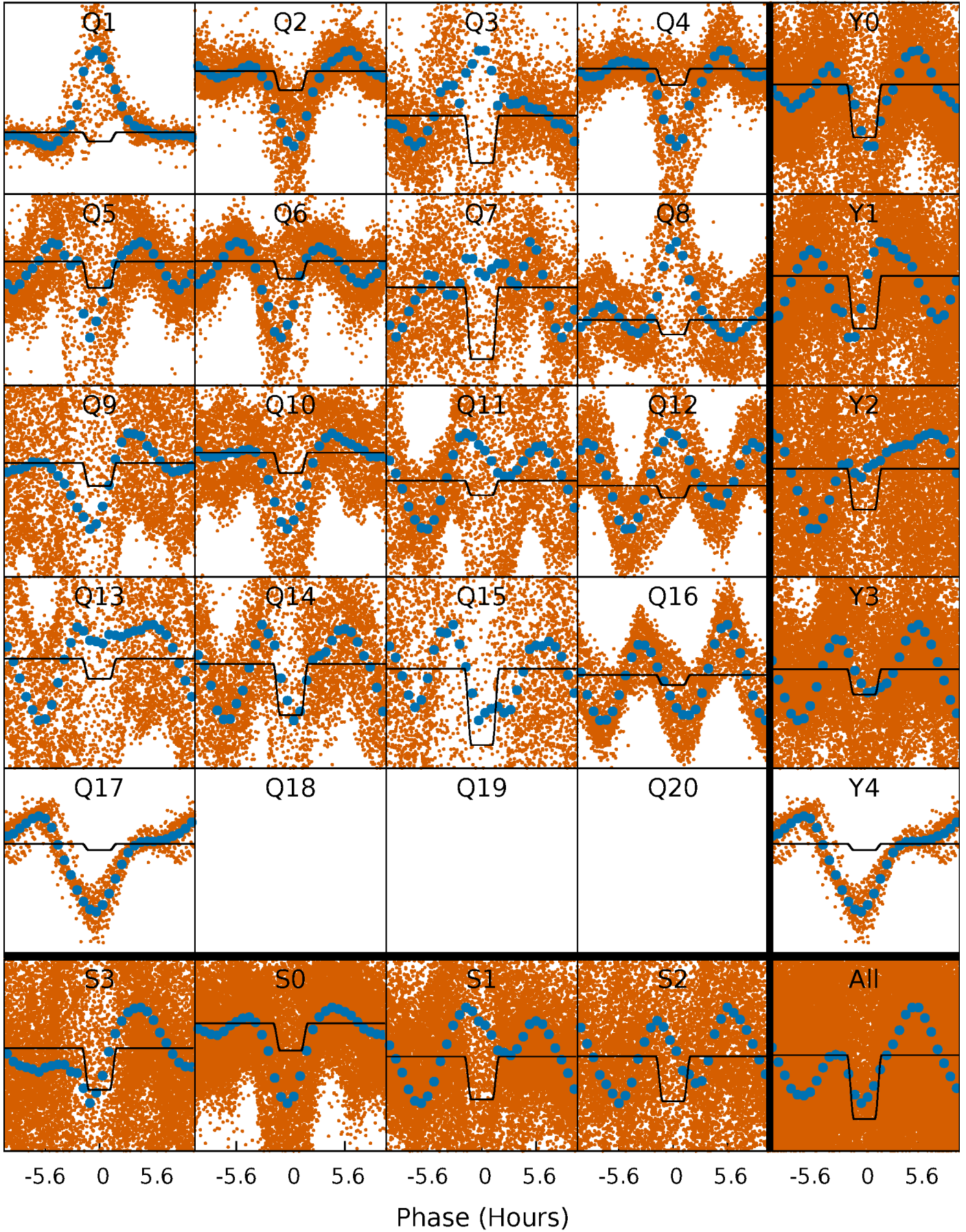
# DV Quarter-Phased Transit Curves

TCE 004550909-01 P= 0.711681 Days  $T_0=131.861157$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

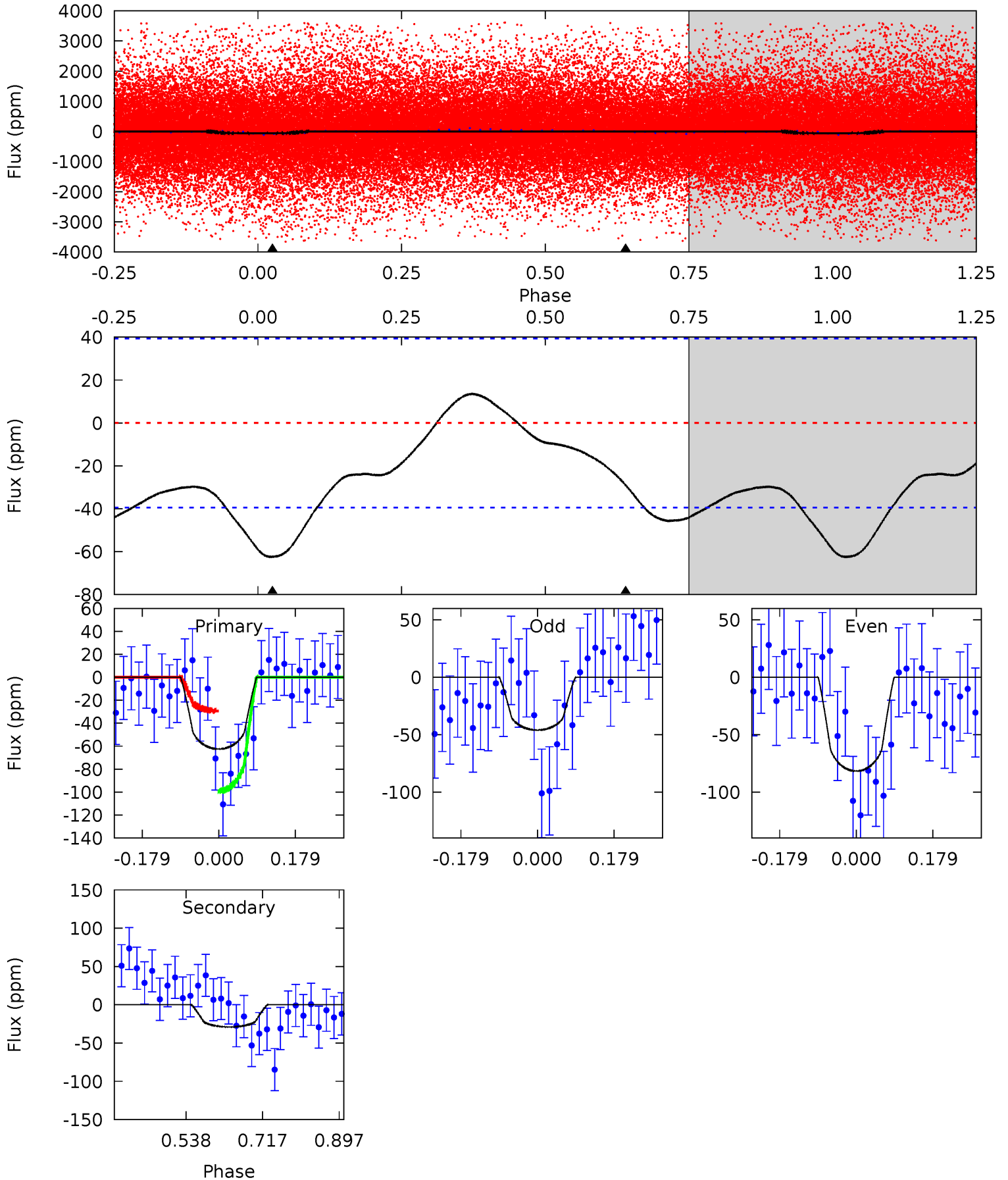
TCE 004550909-01 P= 0.711727 Days  $T_0=131.852496$  (BKJD)



# DV Model-Shift Uniqueness Test

004550909-01, P = 0.711681 Days, E = 131.149476 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
7.04	3.27	0	0	4.44	1.34	1.72	7.04	7.04	3.27	3.27	1.97	6.20	0.18	3.81

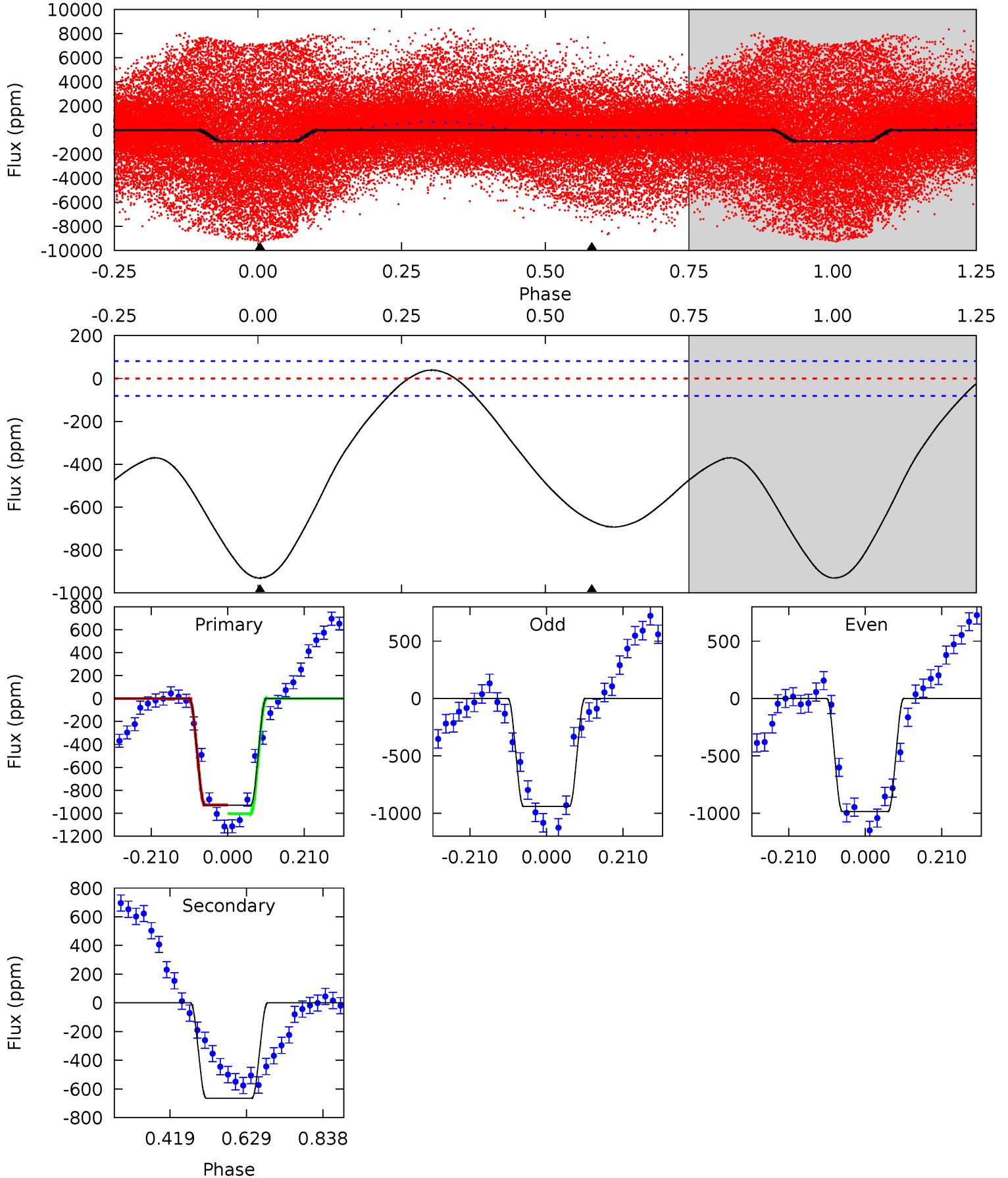




# Alt Model-Shift Uniqueness Test

004550909-01, P = 0.711727 Days, E = 131.140769 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
50.8	36.2	0	0	4.41	1.25	3.90	50.8	50.8	36.2	36.2	1.17	0.58	0.04	2.18





### Stellar Parameters For KIC 004550909

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4748^{+139}_{-139}$	$4.710^{+0.044}_{-0.032}$	$-1.180^{+0.300}_{-0.300}$	$0.545^{+0.035}_{-0.035}$	$0.555^{+0.036}_{-0.025}$	$4.838^{+0.867}_{-0.562}$
	+3%/-3%	+1%/-1%	+25%/-25%	+6%/-6%	+6%/-5%	+18%/-12%
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 004550909-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-29 \pm 9$	$0.46^{+0.44}_{-0.31}$	$1901^{+62}_{-56}$	$4081^{+2587}_{-858}$	$12^{+101}_{-9}$
Alt.	$-664 \pm 18$	$1.77^{+0.48}_{-0.48}$	$1903^{+65}_{-59}$	$4479^{+644}_{-411}$	$20^{+17}_{-8}$

$T_{\text{max}}$  = 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

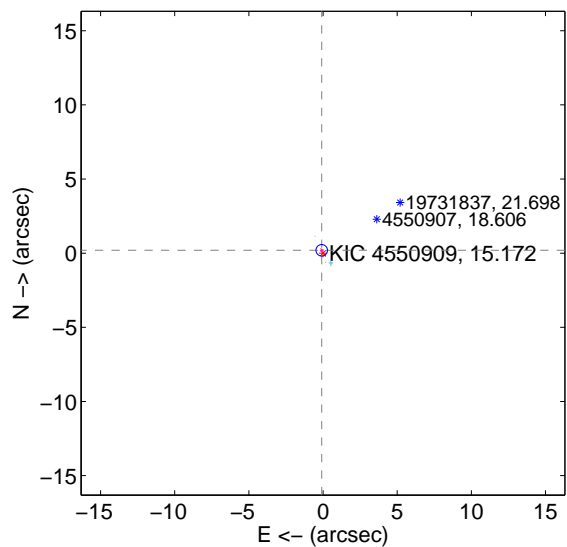
Supplemental centroid analysis for 004550909-01. Kepler magnitude: 15.17. Transit SNR 1.58

There are 6 quarters with good PRF difference image offsets

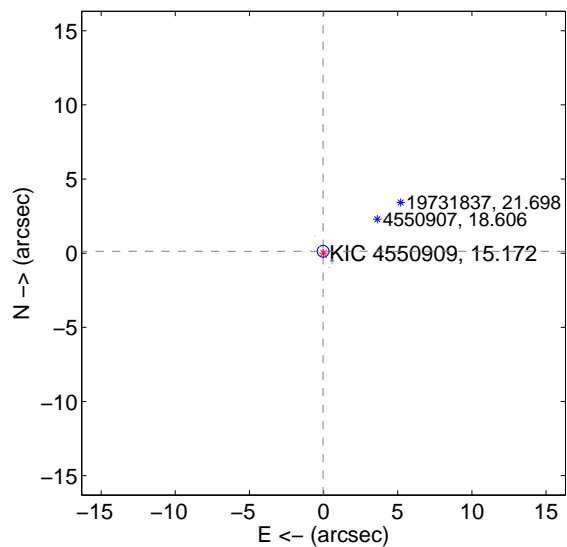
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.214 \pm 0.129$	1.65	$0.089 \pm 0.084$	$0.194 \pm 0.120$
PRF-fit source offset from KIC position	$0.129 \pm 0.132$	0.98	$0.031 \pm 0.087$	$0.126 \pm 0.125$
photometric centroid source offset	$3.36 \pm 3.41$	0.98	$3.36 \pm 3.41$	$0.02 \pm 3.50$

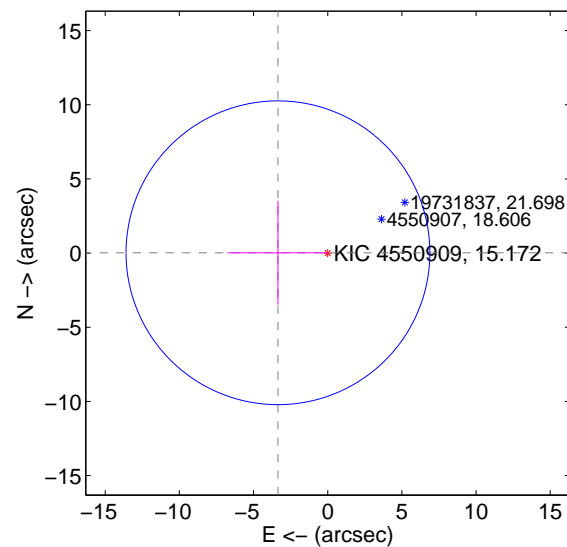
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

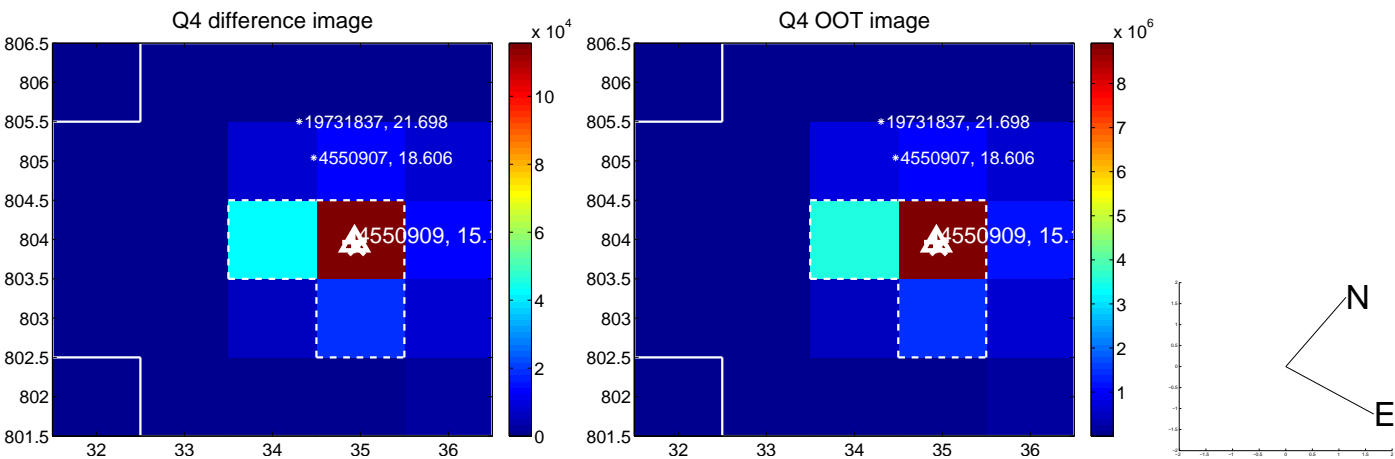
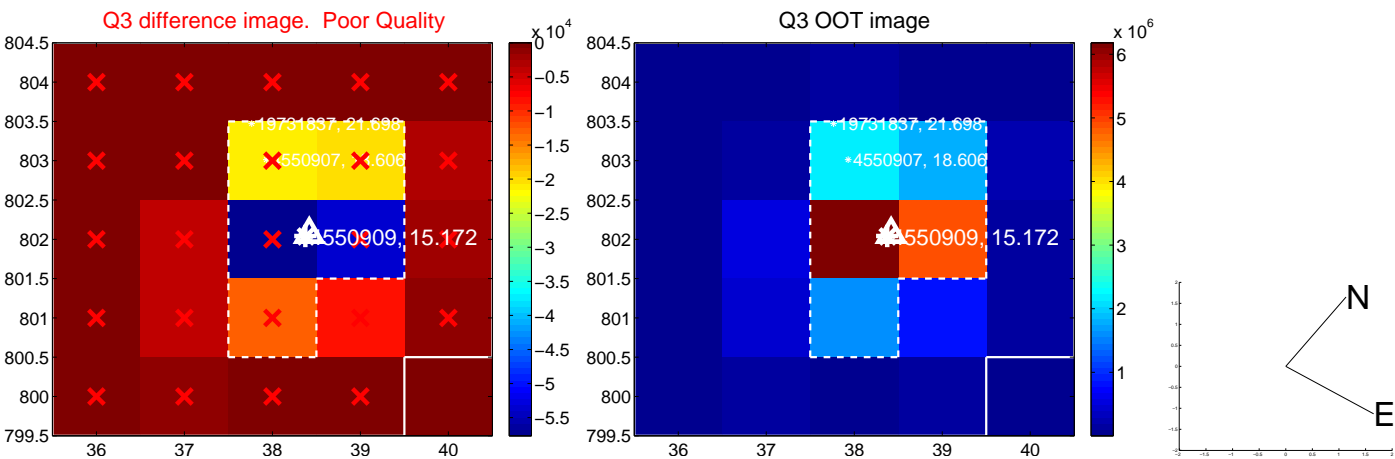
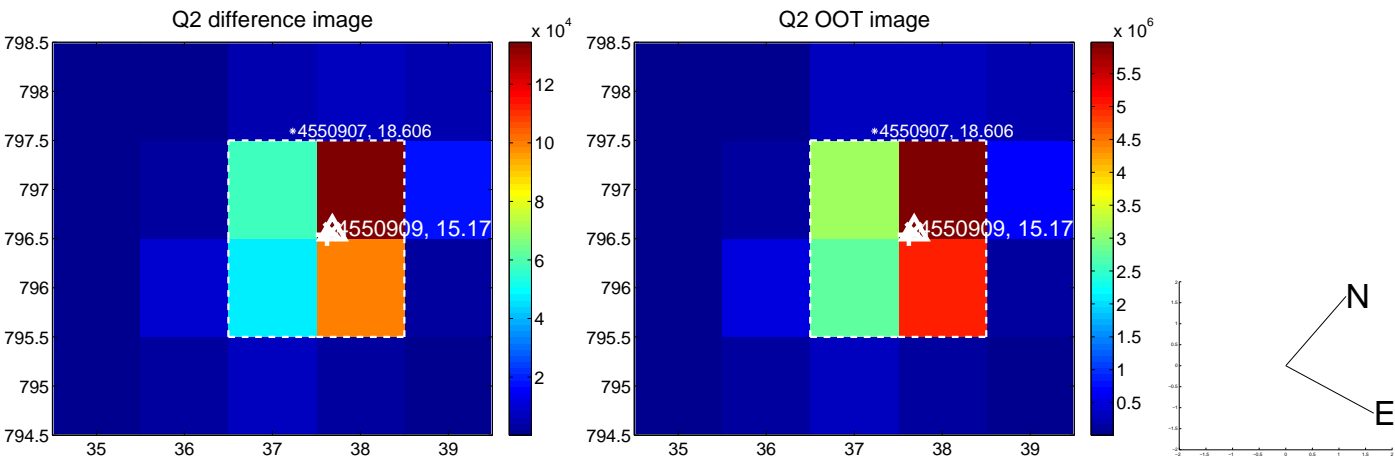
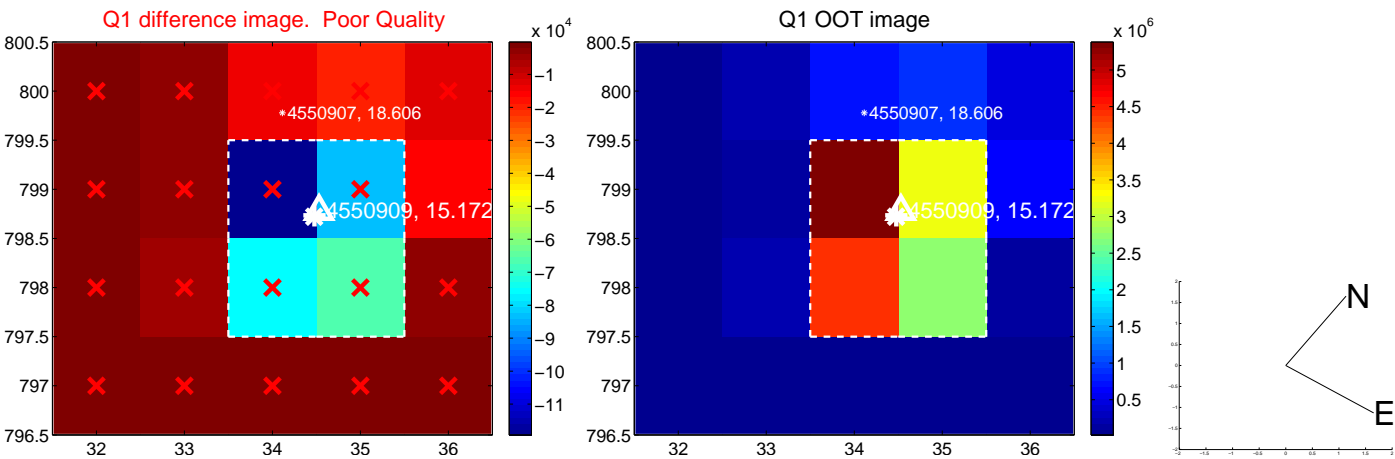


offset from photometric centroids

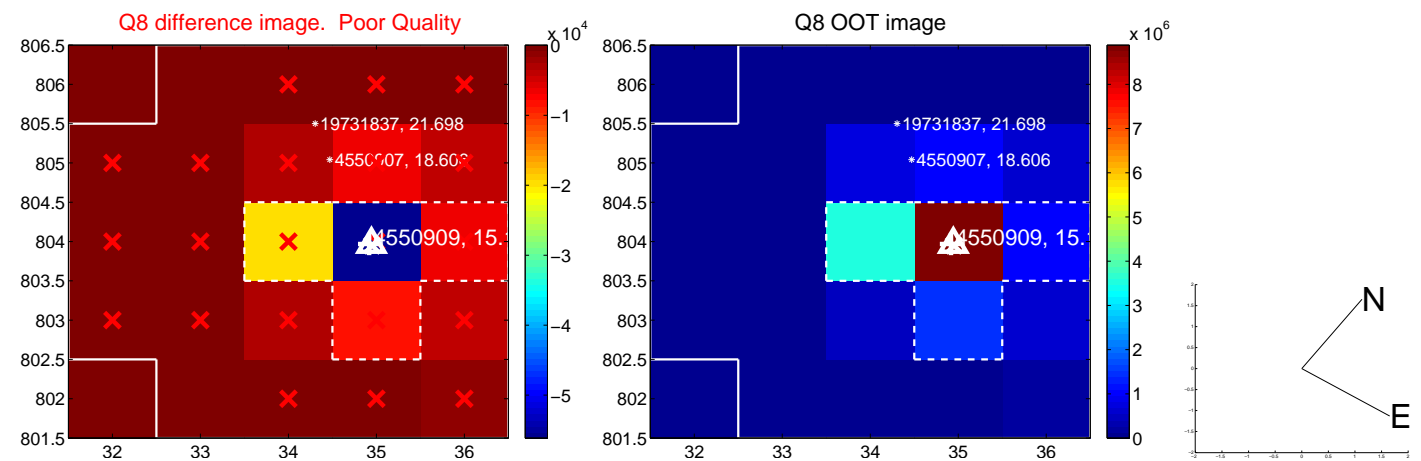
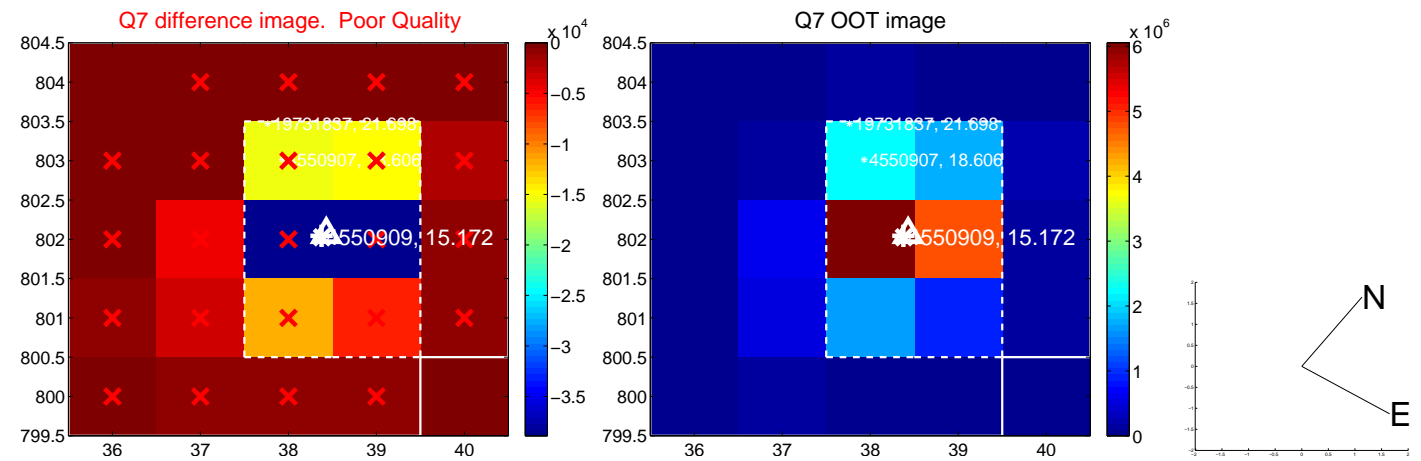
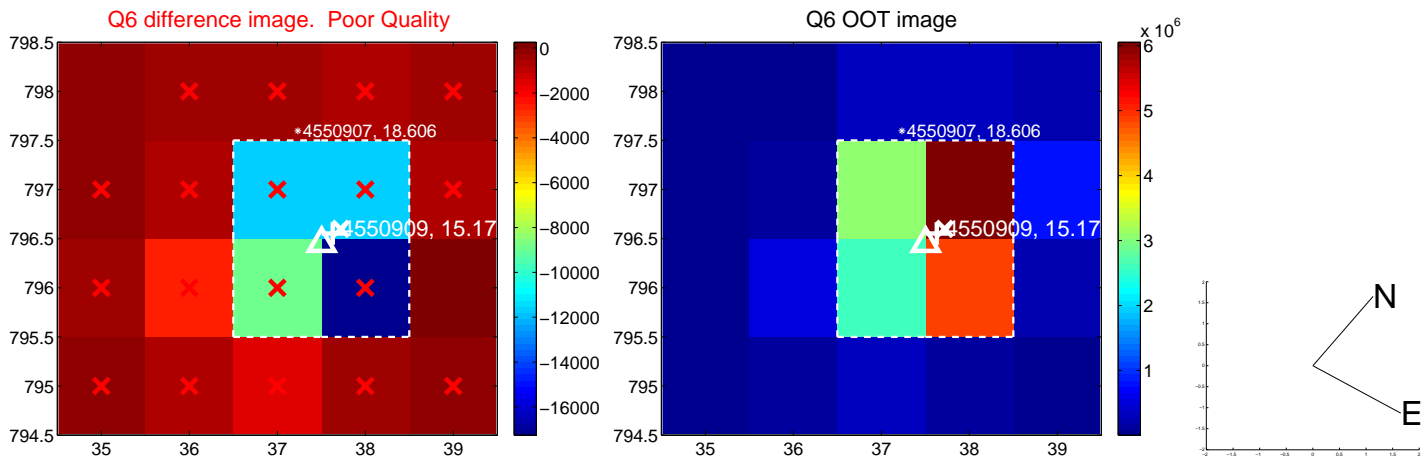
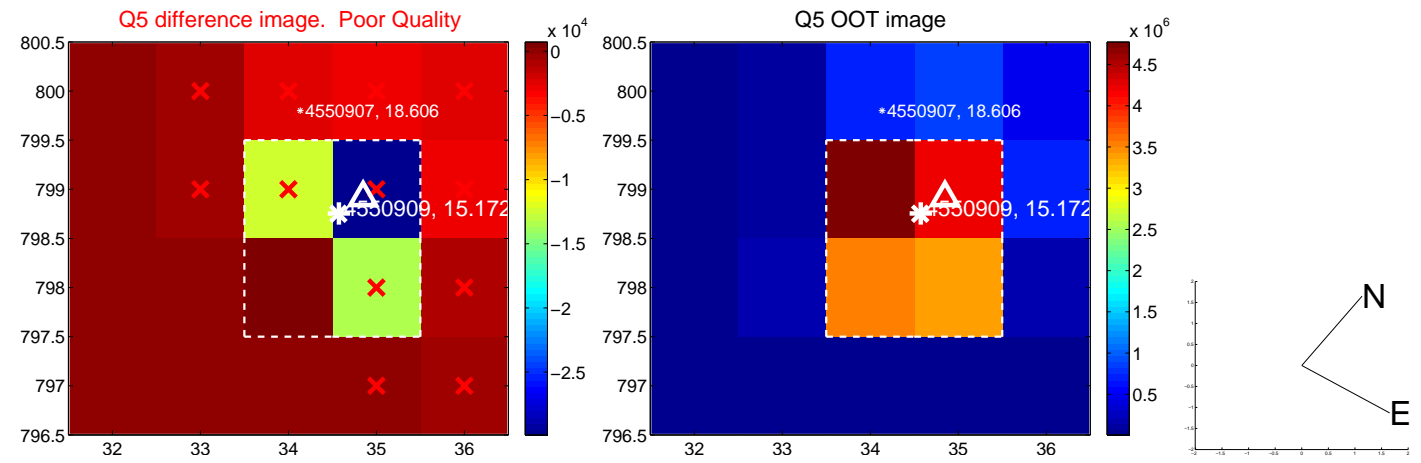


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

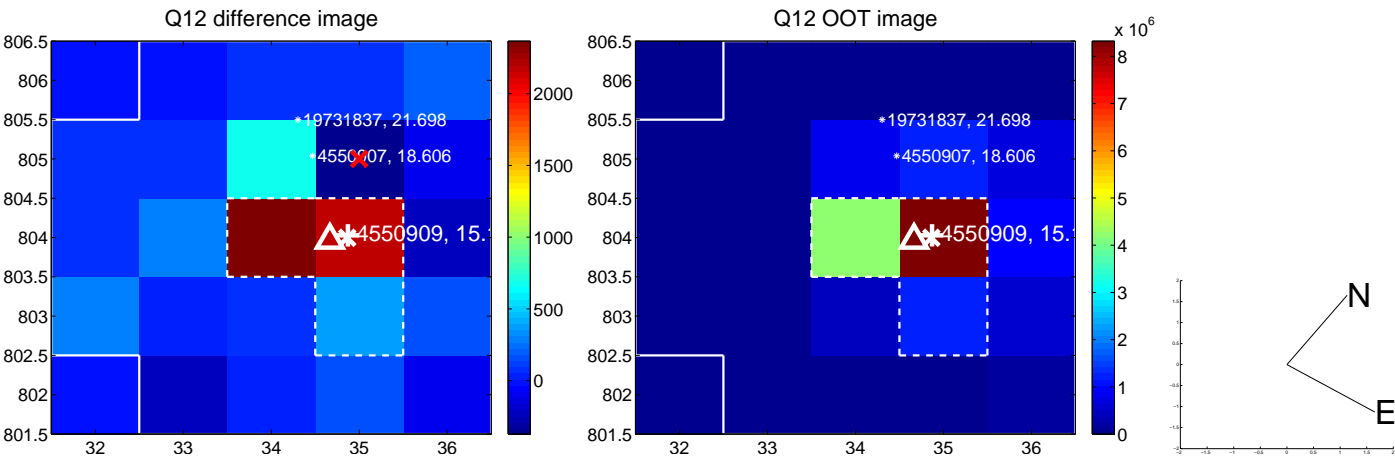
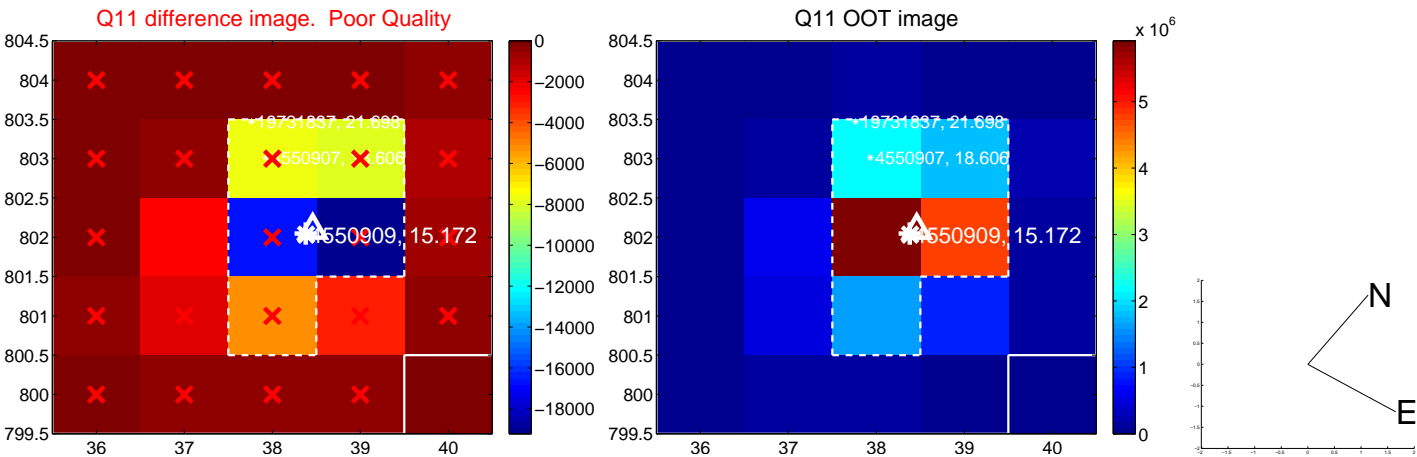
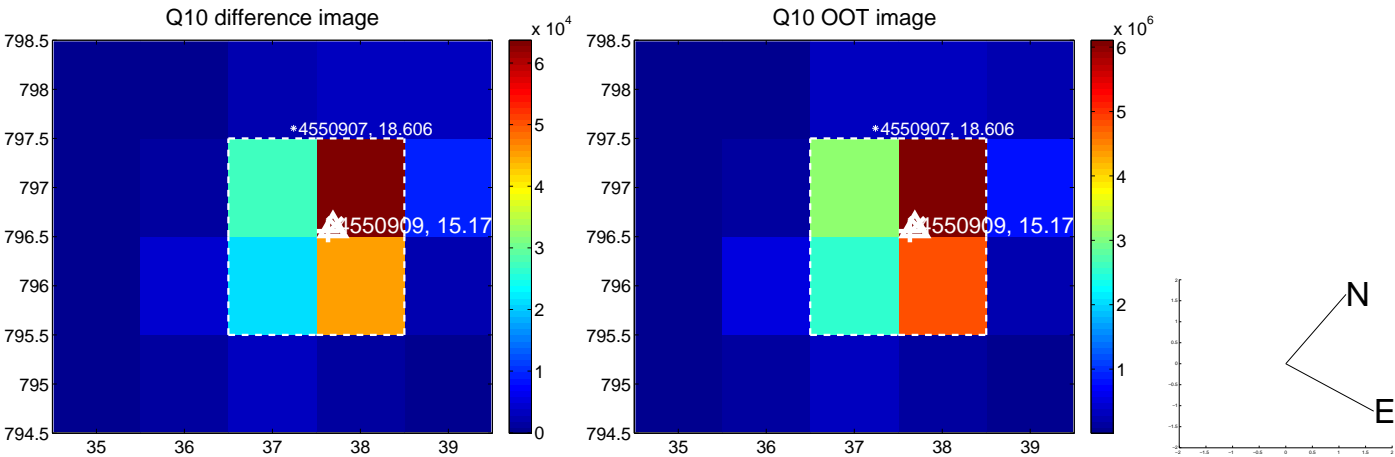
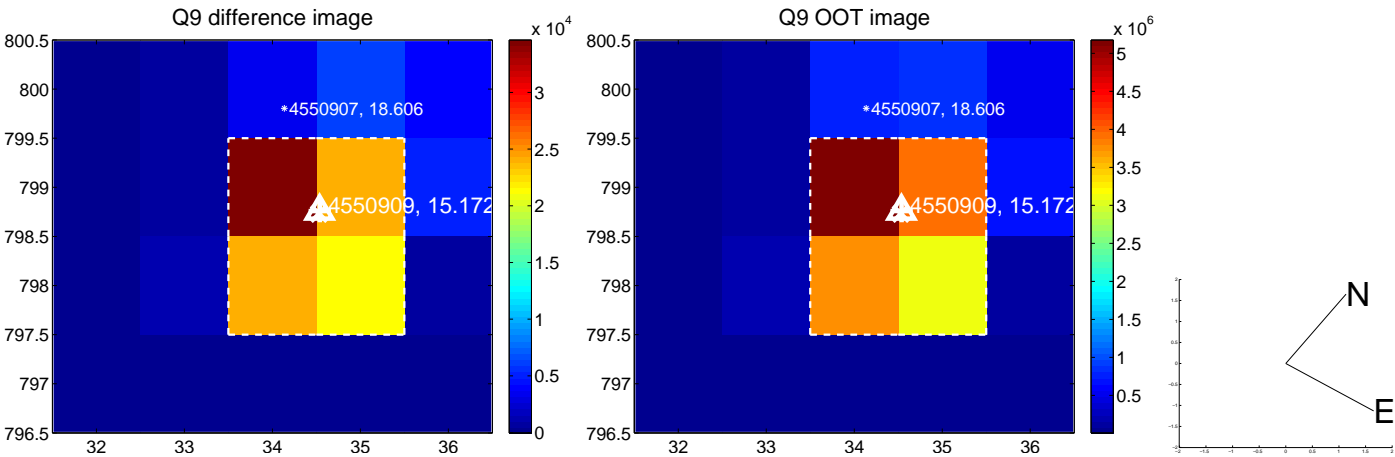


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

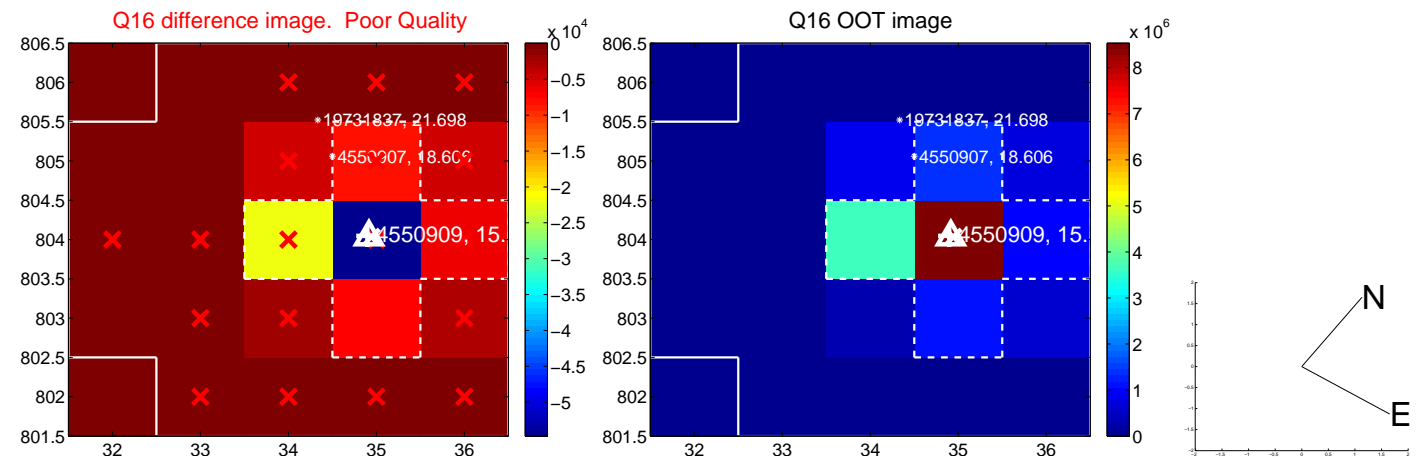
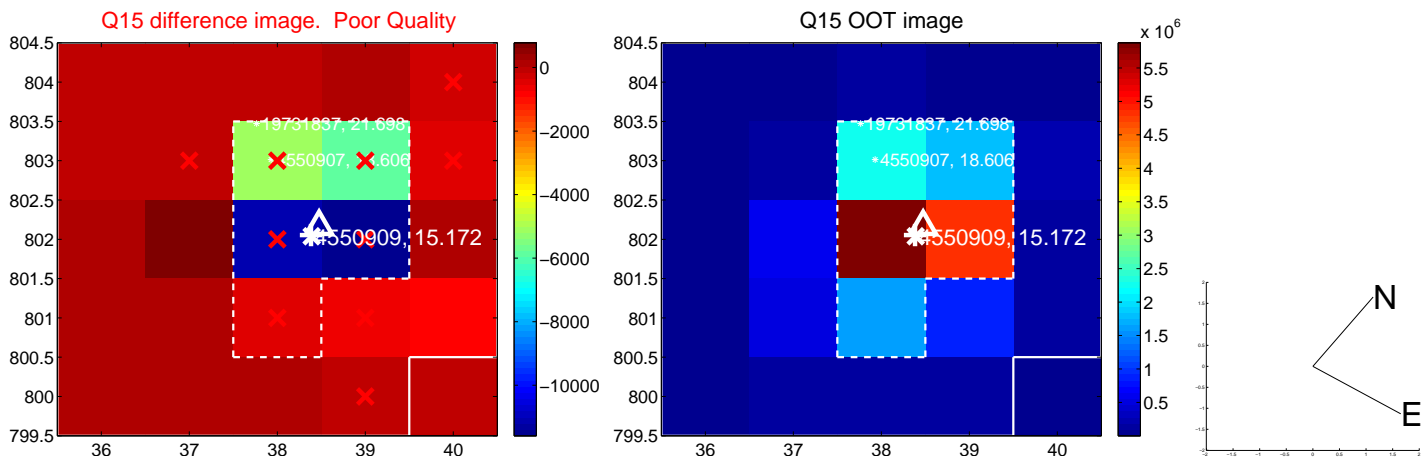
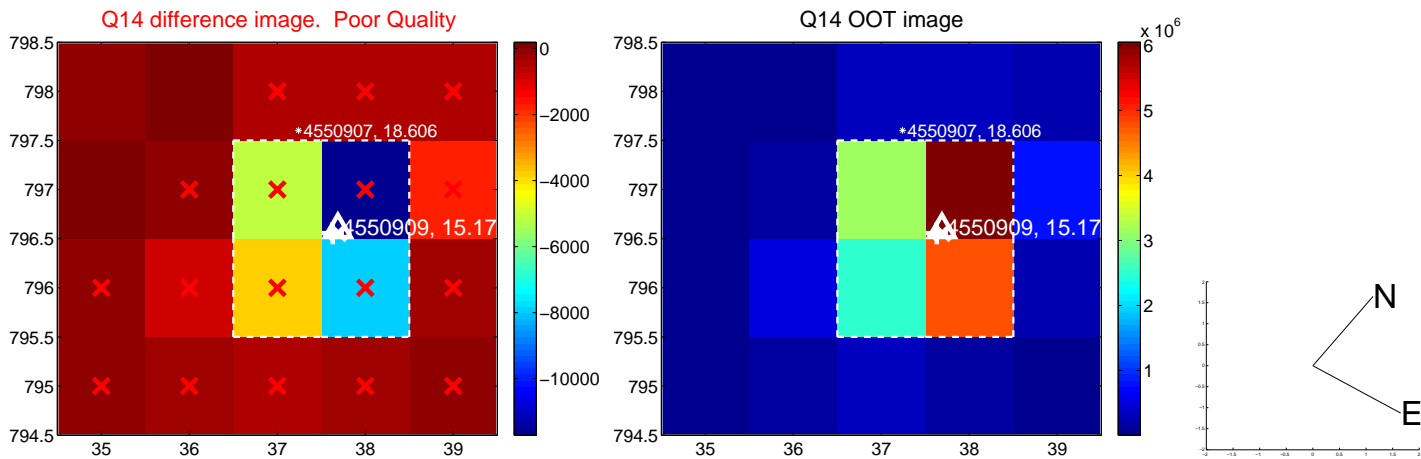
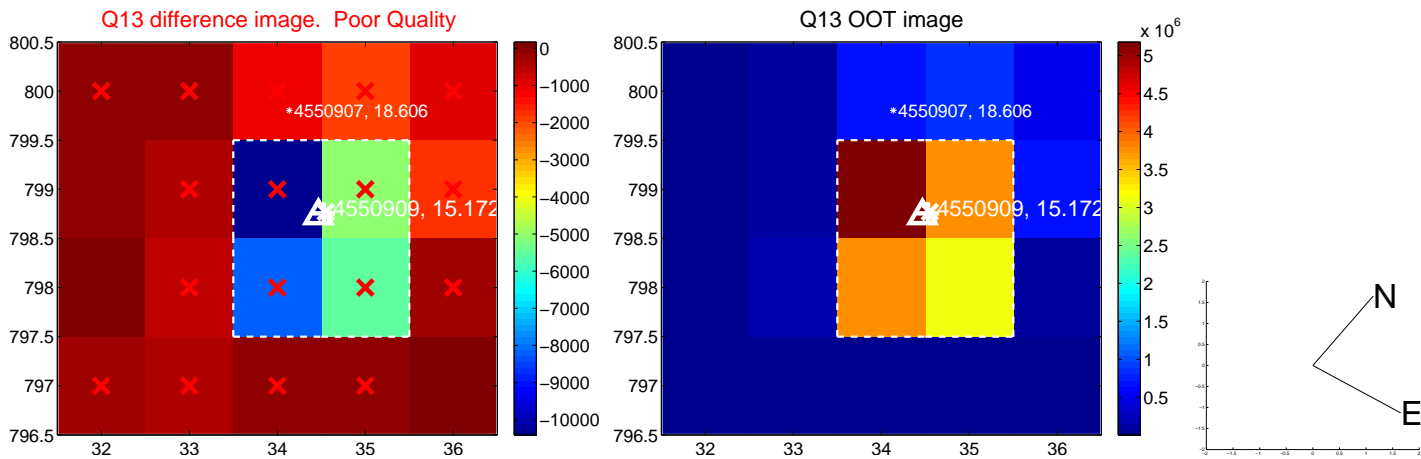




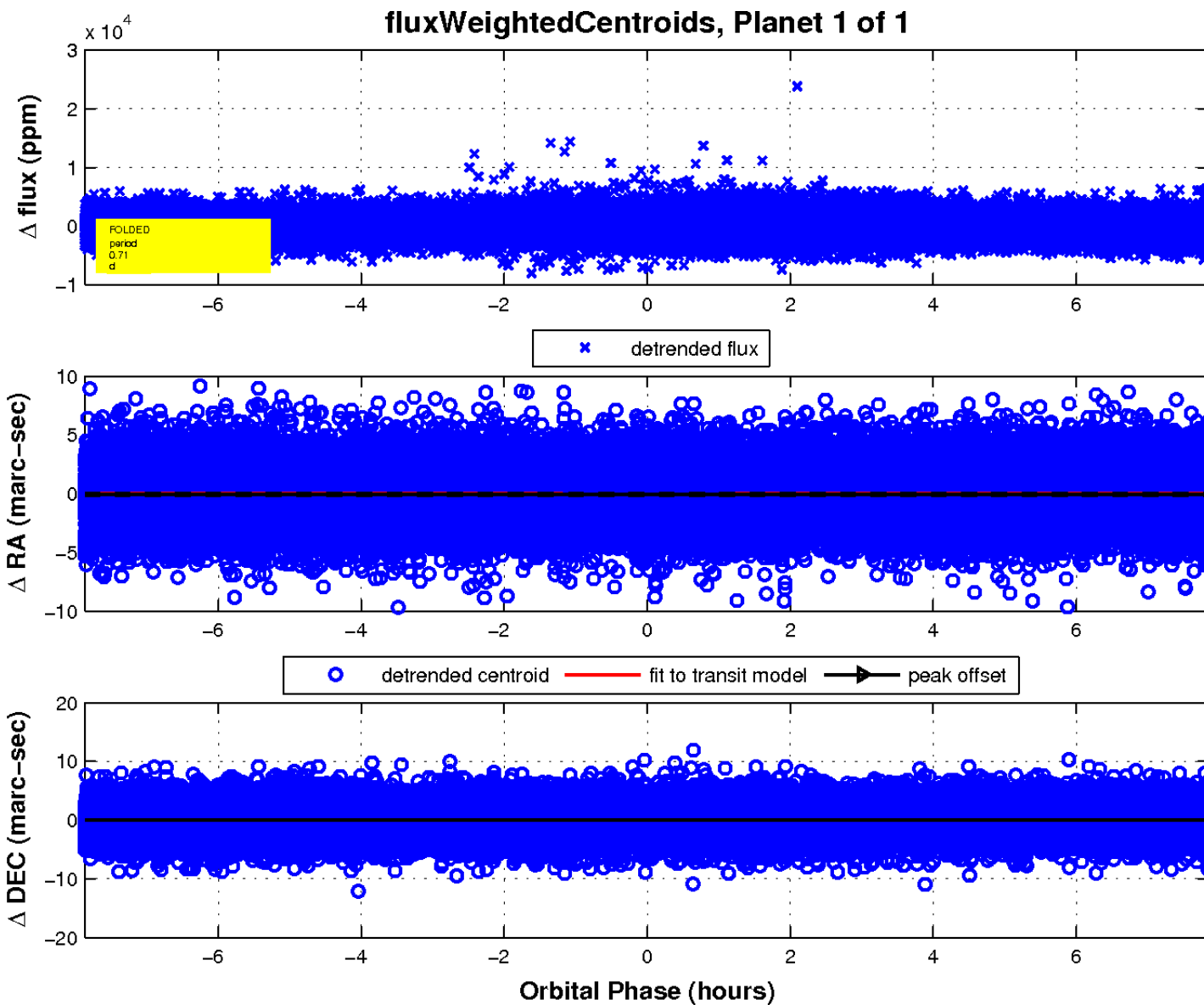
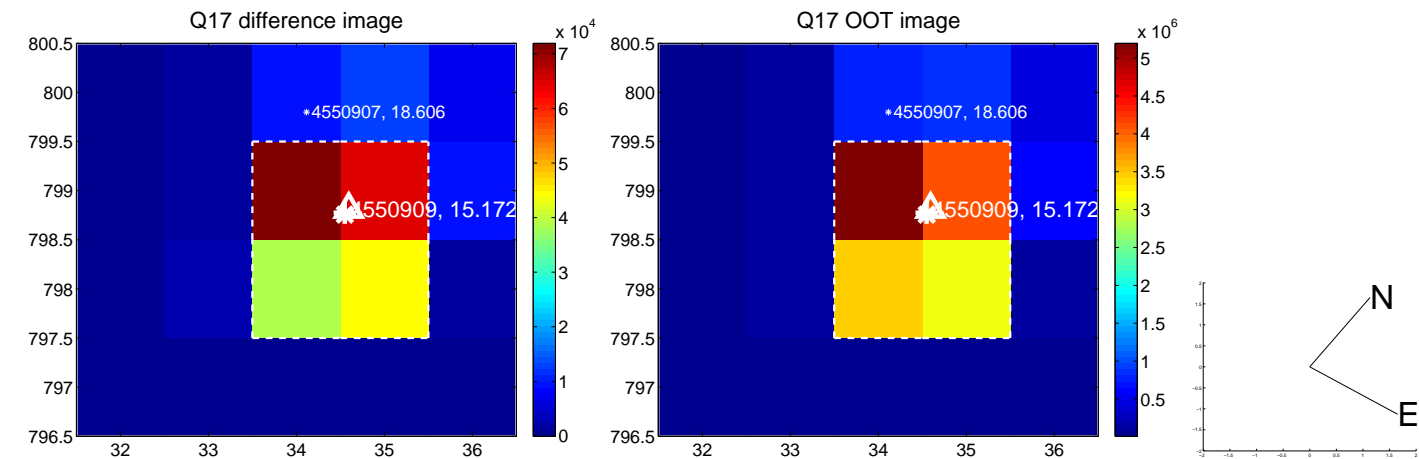
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

