

# KIC 005201596

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005201596-01	OBS	No	0.507257	131.785208	26.5	3.283	7.8	6.5	0.79	5463	0.41	3538.85

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005201596-01	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—EPHEM_MATCH

**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.

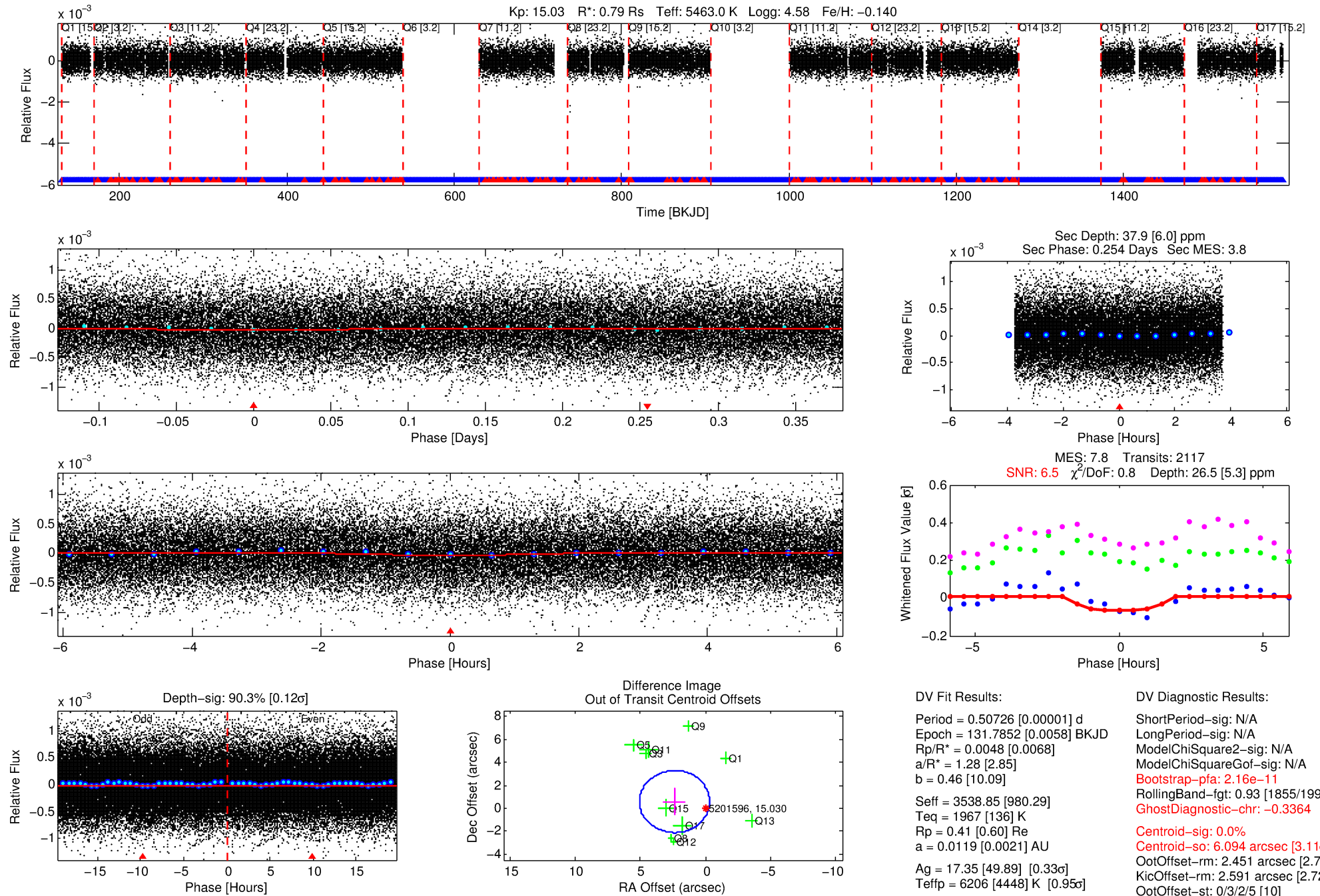
## Ephemeris Match Information For 005201596-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005201596-01	5201596	005201619-pri	5201619	1:1	50.2	8	9	13.05	15.03	14544.00	Direct-PRF	0	4.45	0.98

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 5201596 Candidate: 1 of 1 Period: 0.507 d



## DV Fit Results:

Period = 0.50726 [0.00001] d  
Epoch = 131.7852 [0.0058] BKJD  
Rp/R\* = 0.0048 [0.0068]  
a/R\* = 1.28 [2.85]  
b = 0.46 [10.09]  
Seff = 3538.85 [980.29]  
Teq = 1967 [136] K  
Rp = 0.41 [0.60] Re  
a = 0.0119 [0.0021] AU  
Ag = 17.35 [49.89] [0.33 $\sigma$ ]  
Teffp = 6206 [4448] K [0.95 $\sigma$ ]

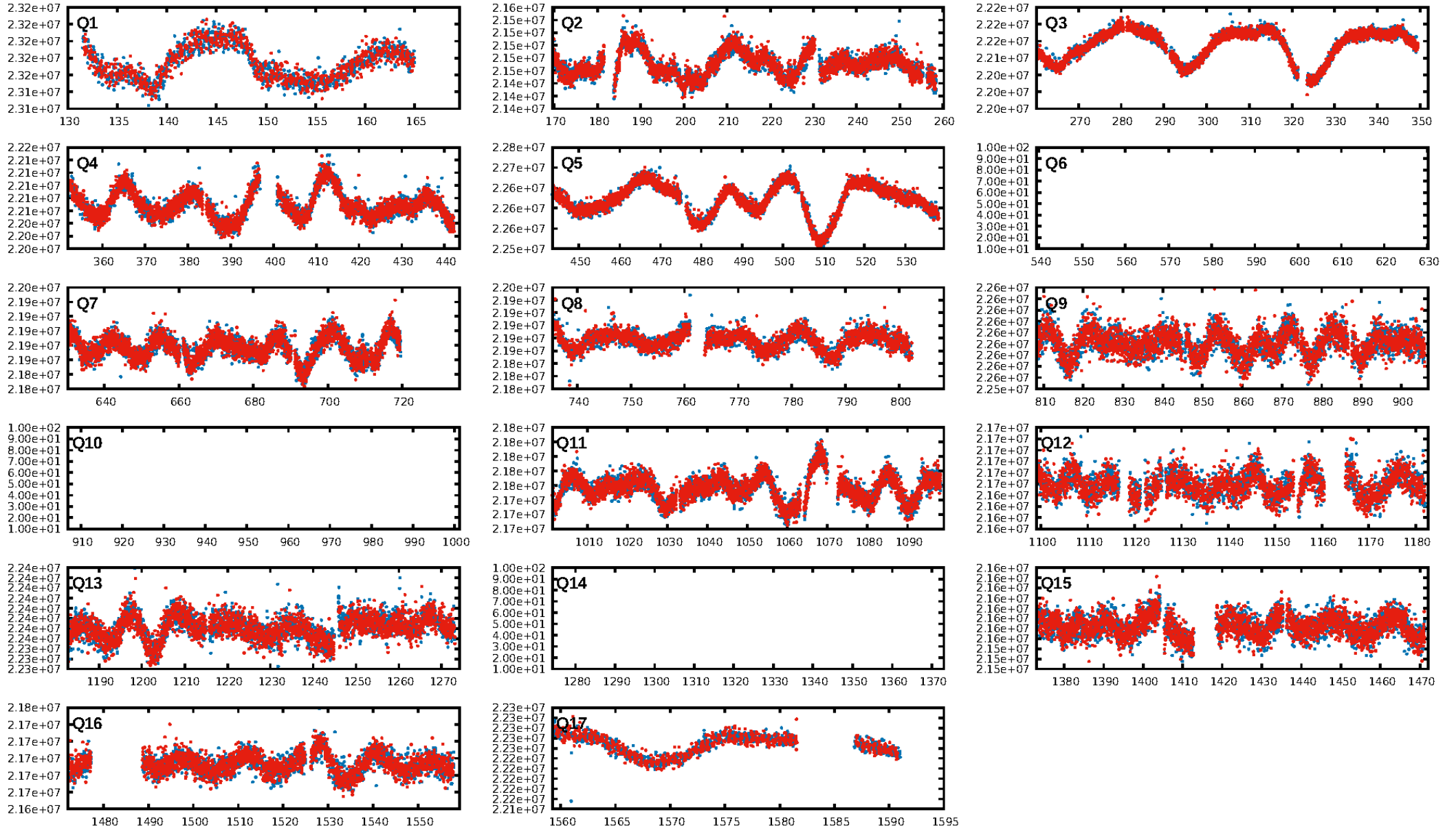
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.16e-11  
RollingBand-fgt: 0.93 [1855/1998]  
GhostDiagnostic-chr: -0.3364  
Centroid-sig: 0.0%  
Centroid-so: 6.094 arcsec [3.11 $\sigma$ ]  
OotOffset-rm: 2.451 arcsec [2.73 $\sigma$ ]  
KicOffset-rm: 2.591 arcsec [2.72 $\sigma$ ]  
OotOffset-st: 0/3/2/5 [10]  
KicOffset-st: 0/3/2/5 [10]  
DiffImageQuality-fgm: 0.10 [1/10]  
DiffImageOverlap-fno: 1.00 [14/14]

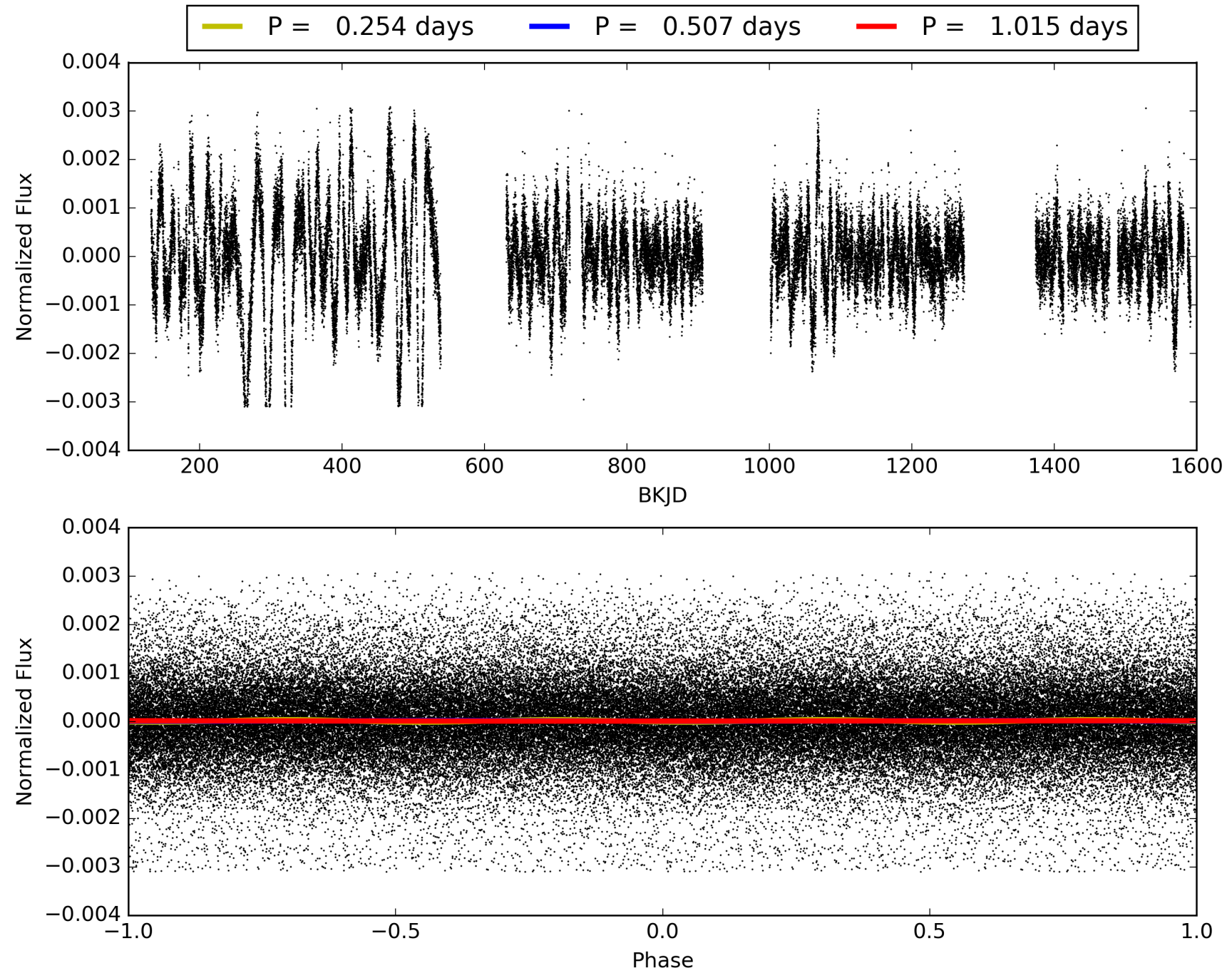
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:23:29 Z

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

# TCE 005201596-01, PDC Light Curves

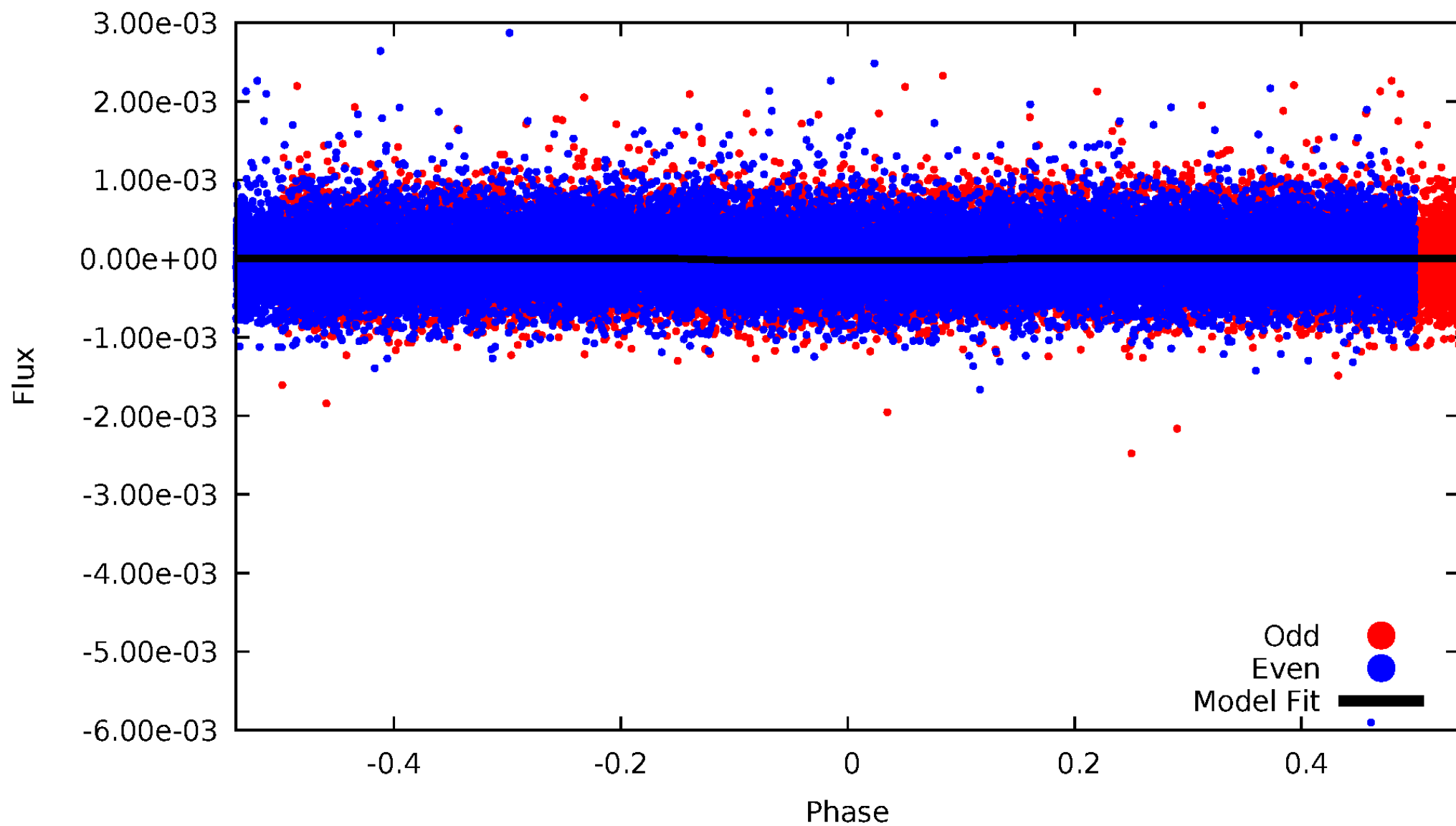


TCE 005201596-01



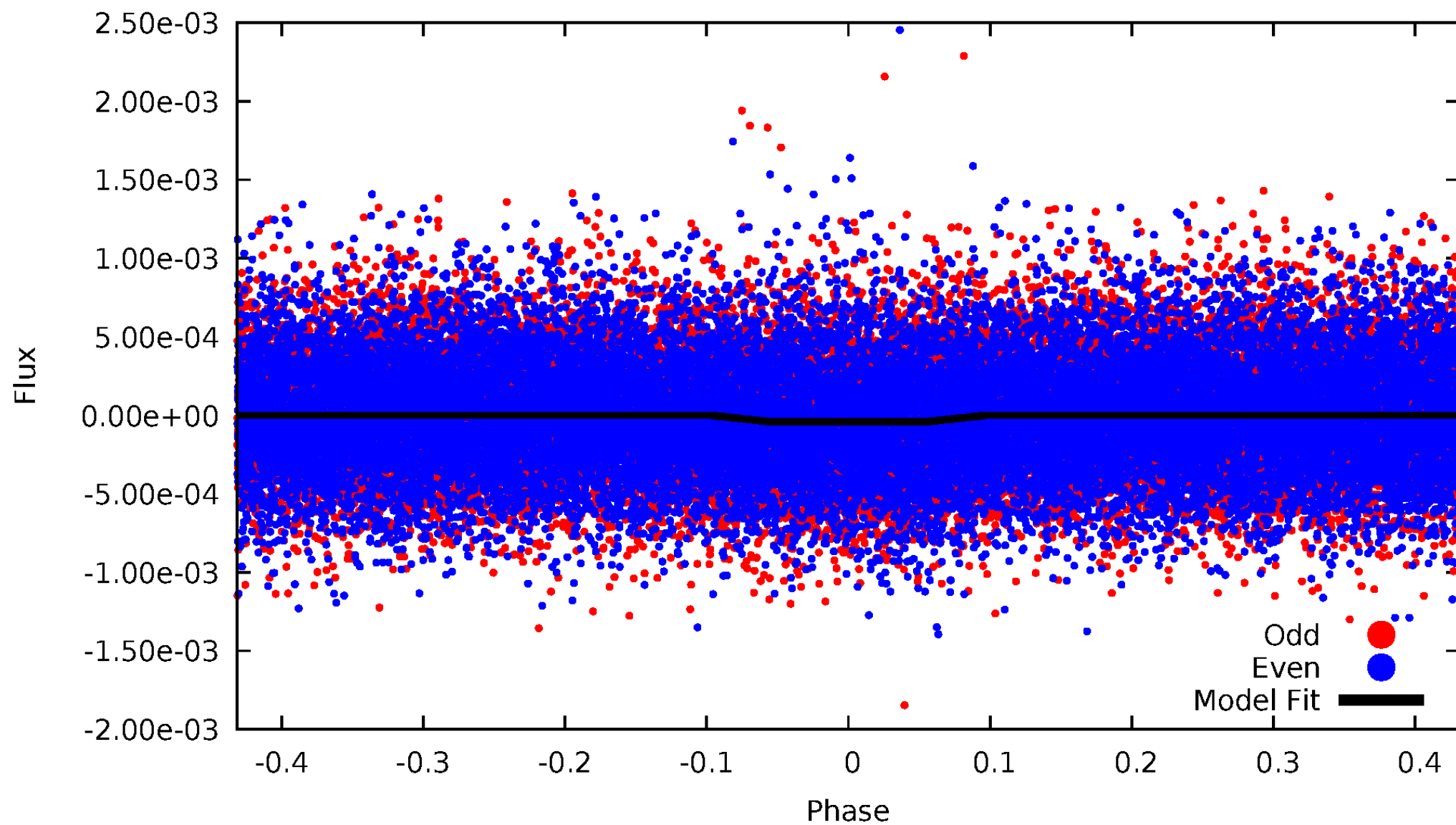
# DV Odd/Even

TCE 005201596-01



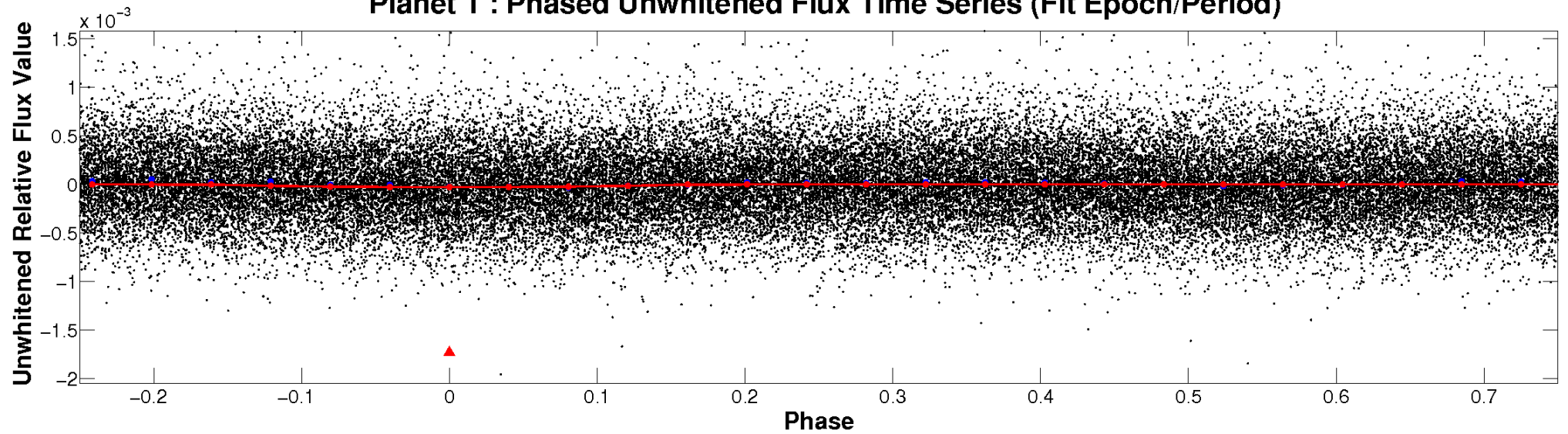
# ALT Odd/Even

TCE 005201596-01

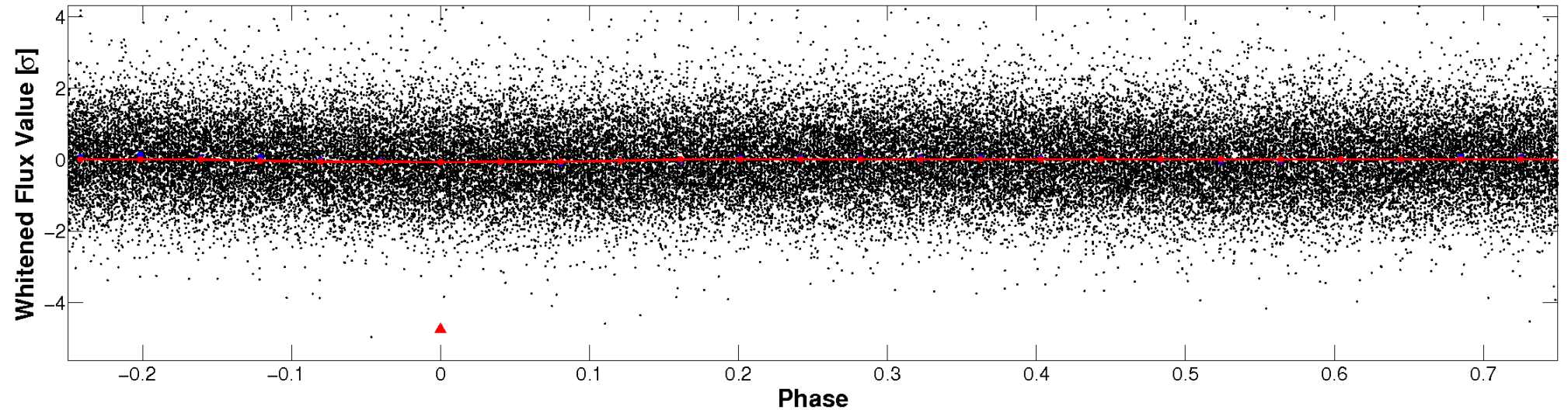


# Non-Whitened Vs. Whitened Light Curve

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

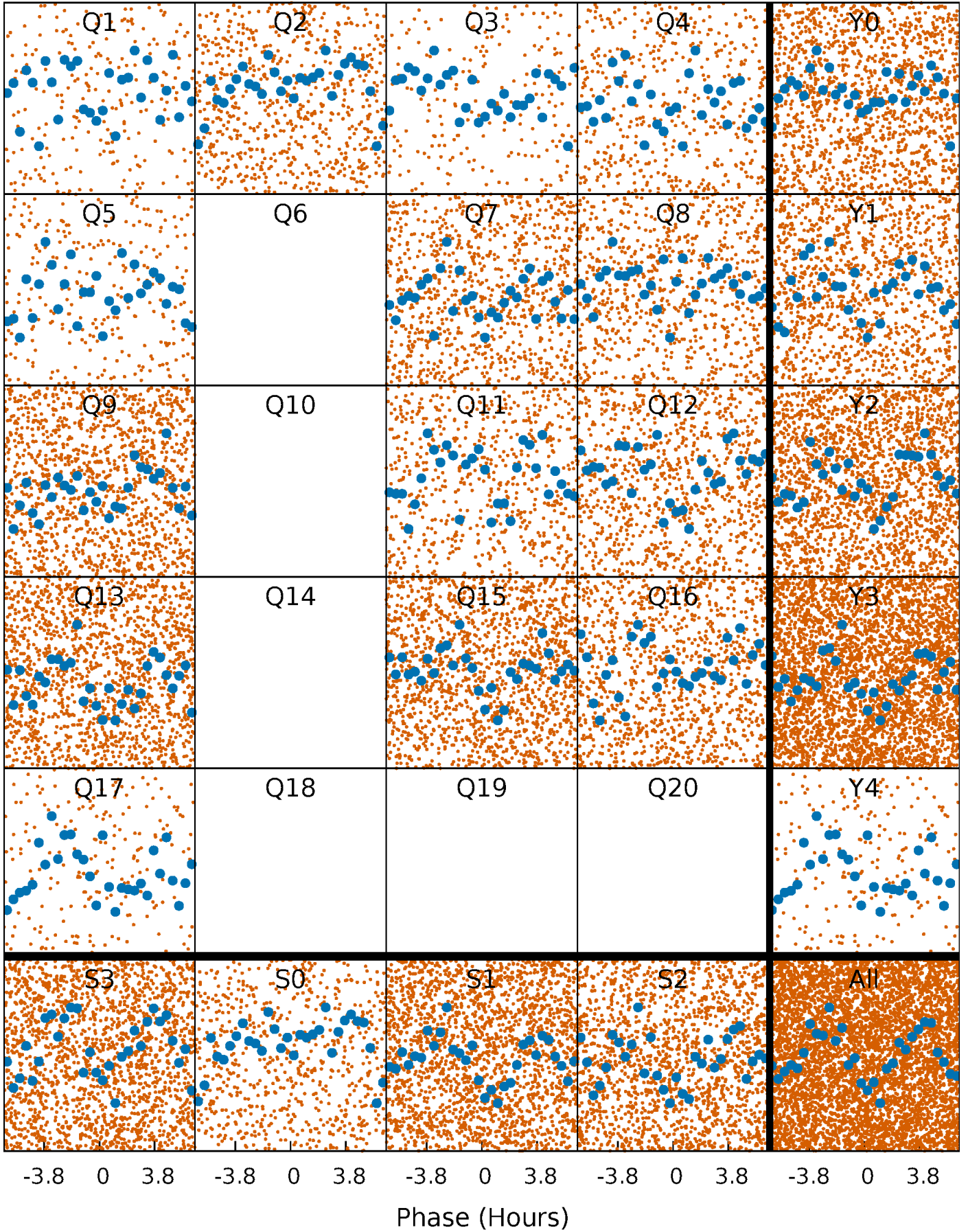


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



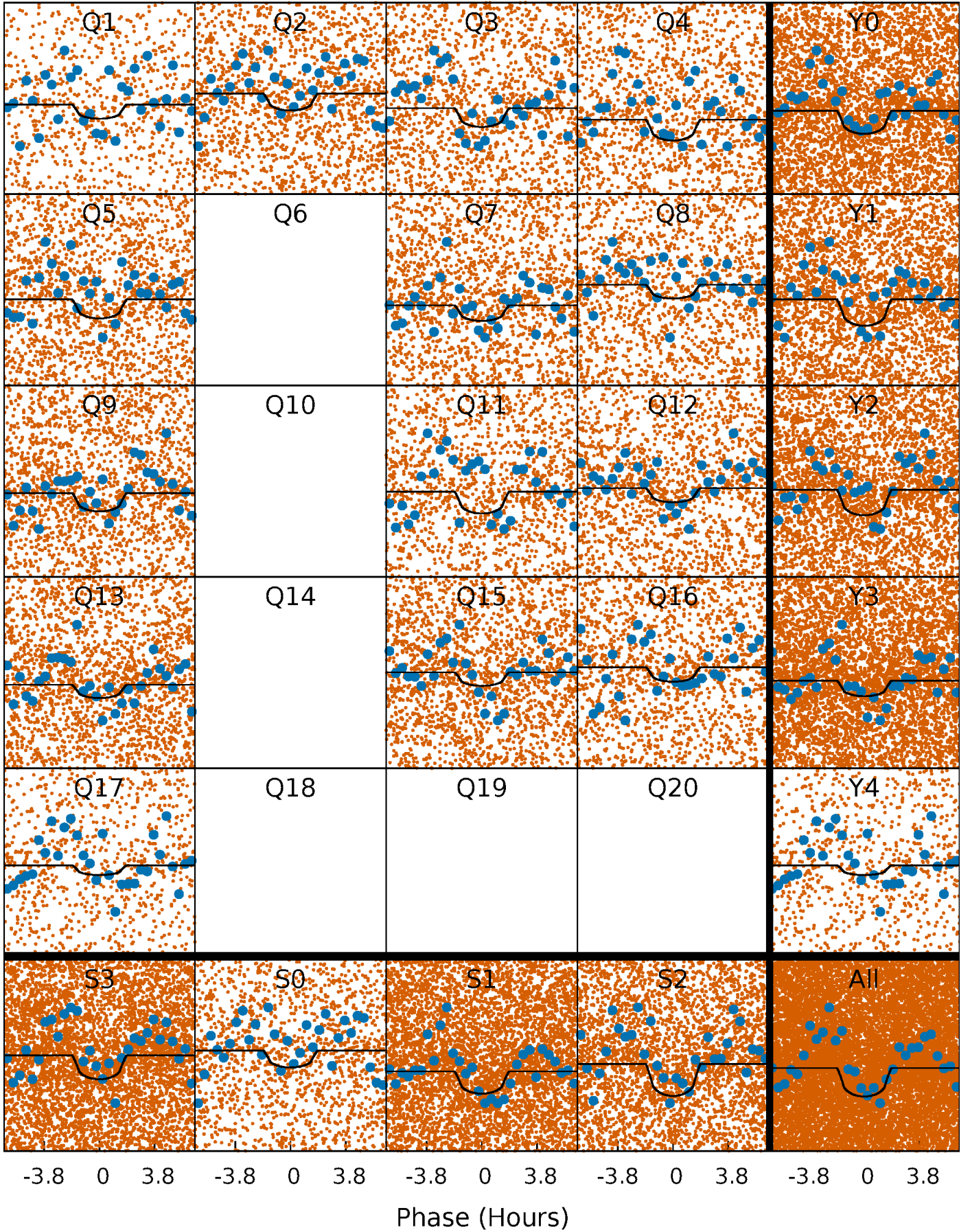
# PDC Quarter-Phased Transit Curves

TCE 005201596-01   P= 0.507257 Days    $T_0=131.785208$  (BKJD)



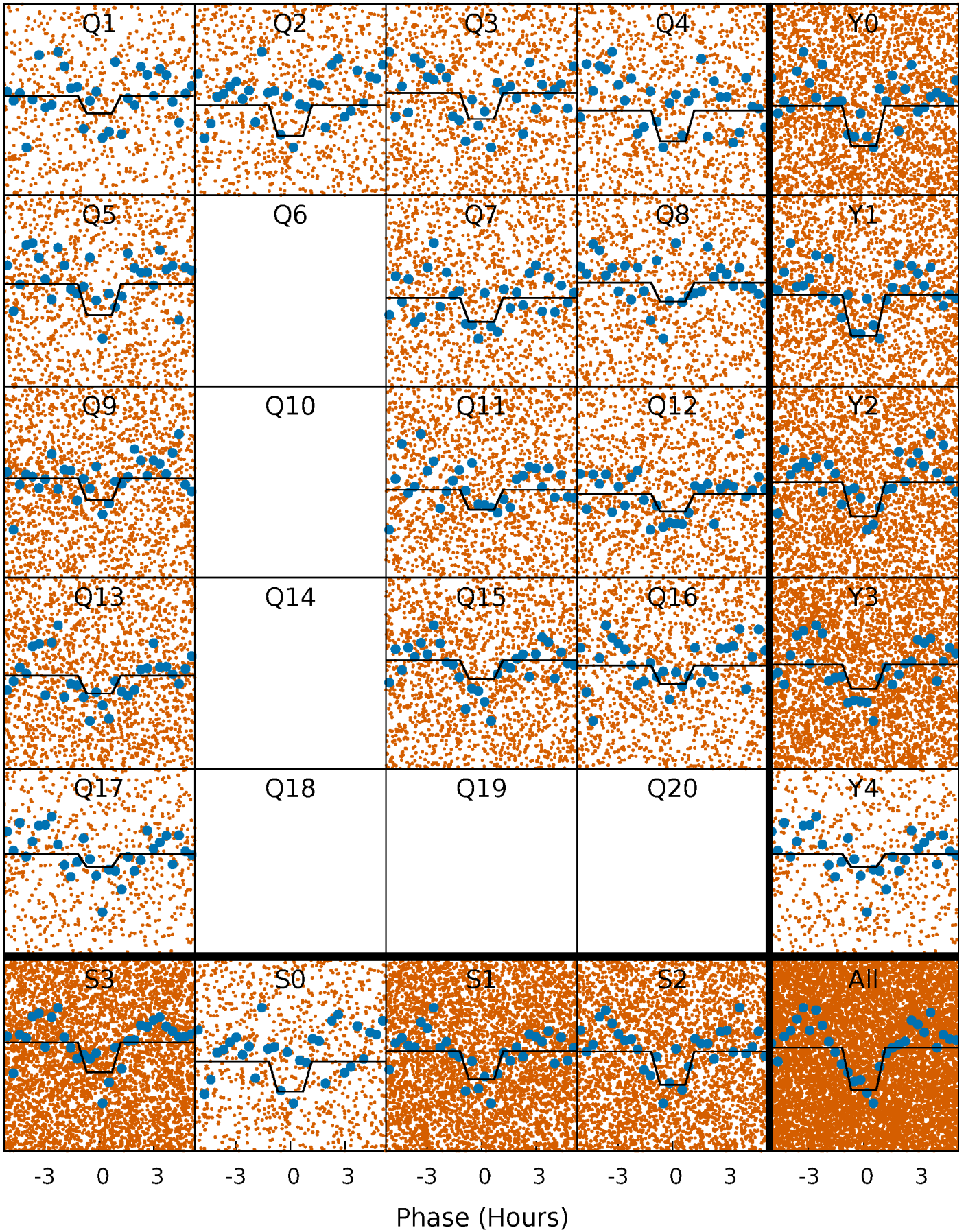
# DV Quarter-Phased Transit Curves

TCE 005201596-01   P= 0.507257 Days    $T_0=131.785208$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

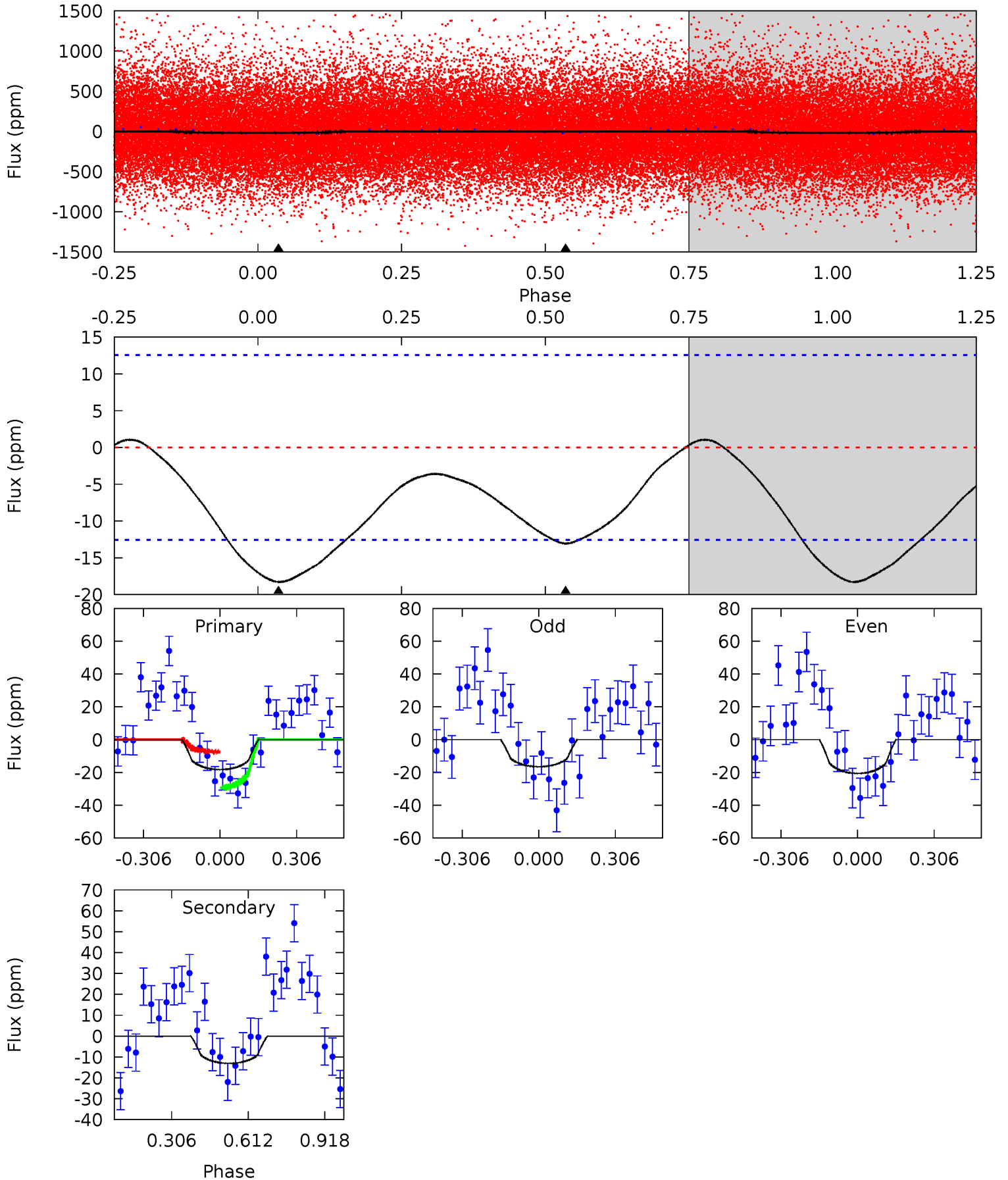
TCE 005201596-01   P= 0.507275 Days    $T_0=131.775950$  (BKJD)



# DV Model-Shift Uniqueness Test

005201596-01, P = 0.507257 Days, E = 131.277951 Days

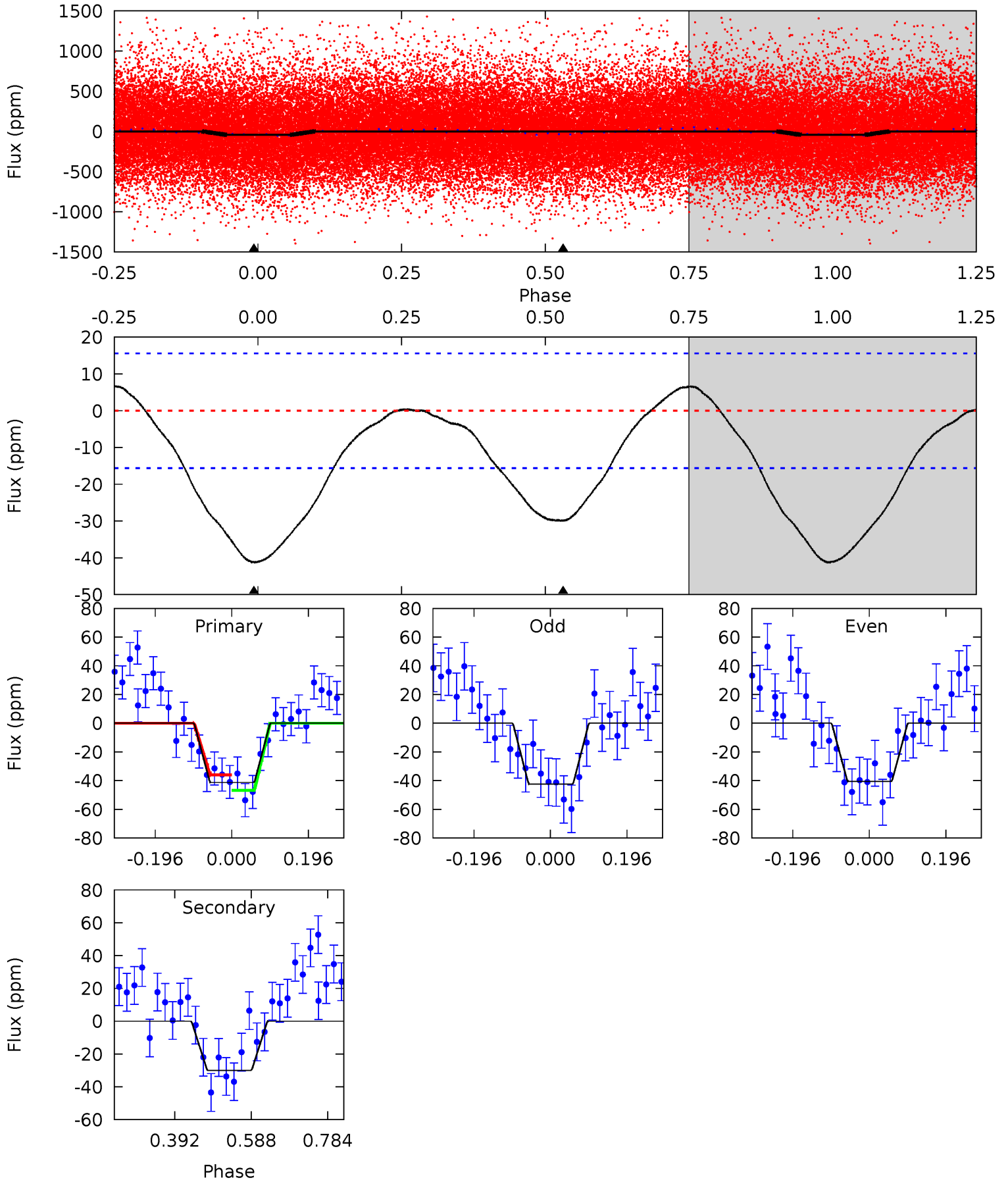
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.30	4.50	0	0	4.32	1.02	0.82	6.30	6.30	4.50	4.50	0.70	0.93	0.05	3.84



# Alt Model-Shift Uniqueness Test

005201596-01, P = 0.507275 Days, E = 131.268675 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
11.7	8.49	0	0	4.42	1.29	0.97	11.7	11.7	8.49	8.49	0.27	0.95	0.14	1.54



### Stellar Parameters For KIC 005201596

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5463^{+164}_{-147}$	$4.582^{+0.034}_{-0.136}$	$-0.140^{+0.300}_{-0.300}$	$0.794^{+0.163}_{-0.070}$	$0.883^{+0.082}_{-0.099}$	$2.488^{+0.453}_{-0.983}$
	+3%/-3%	+1%/-3%	+214%/-214%	+21%/-9%	+9%/-11%	+18%/-40%
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 005201596-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-13 \pm 3$	$0.61^{+0.55}_{-0.41}$	$2803^{+129}_{-112}$	$4120^{+2726}_{-1020}$	$2.598^{+22.392}_{-1.910}$
Alt.	$-30 \pm 4$	$0.69^{+0.53}_{-0.45}$	$2797^{+150}_{-105}$	$4677^{+3157}_{-980}$	$4.799^{+34.312}_{-3.263}$

$T_{\text{max}}$  = 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

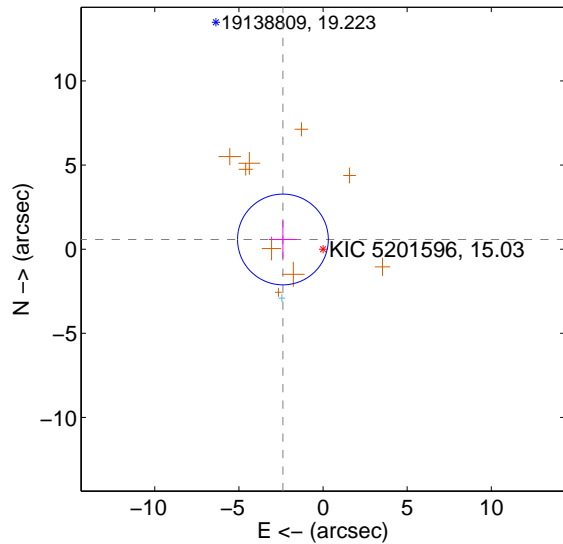
Supplemental centroid analysis for 005201596-01. Kepler magnitude: 15.03. Transit SNR 6.53

There are 1 quarters with good PRF difference image offsets

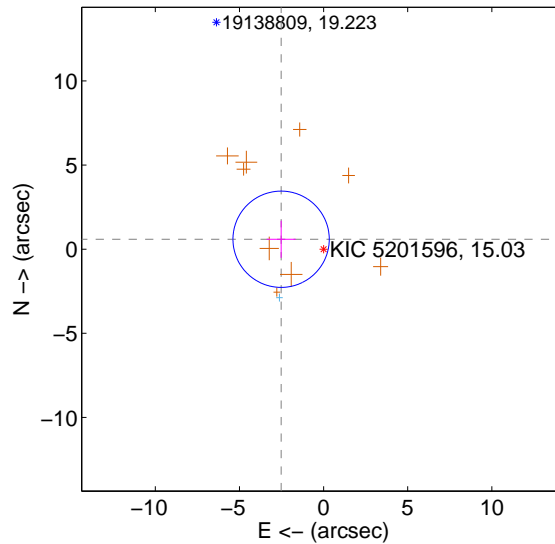
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.451 \pm 0.899$	2.73	$2.382 \pm 0.830$	$0.577 \pm 1.122$
PRF-fit source offset from KIC position	$2.591 \pm 0.954$	2.72	$2.523 \pm 0.865$	$0.589 \pm 1.102$
photometric centroid source offset	$6.09 \pm 1.96$	3.11	$-0.45 \pm 2.16$	$6.08 \pm 1.96$

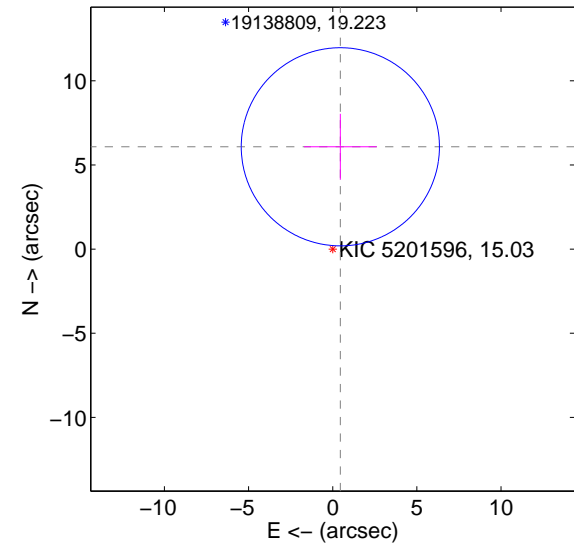
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

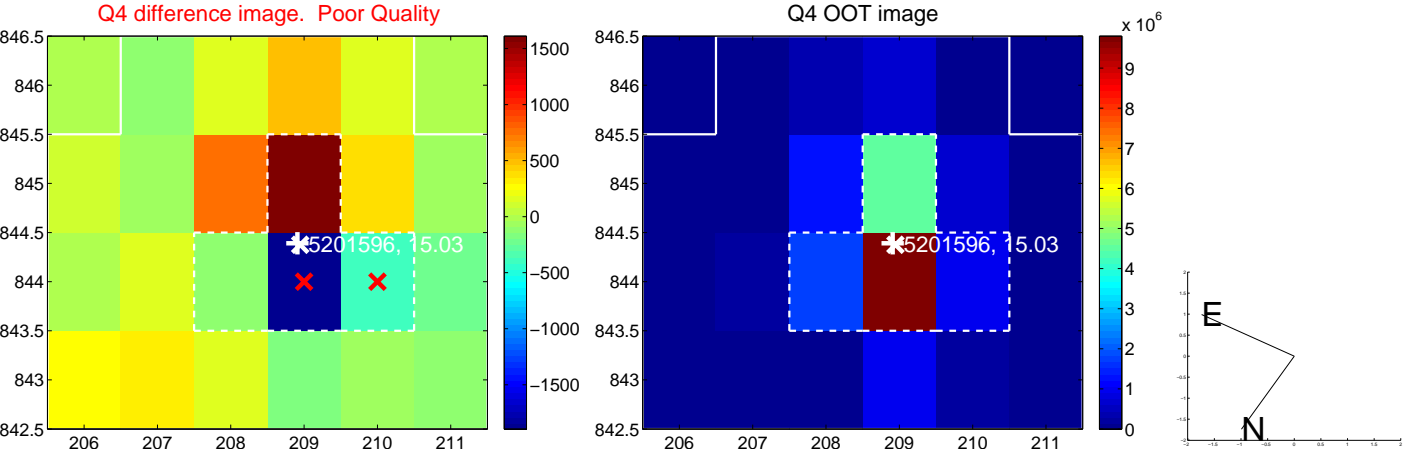
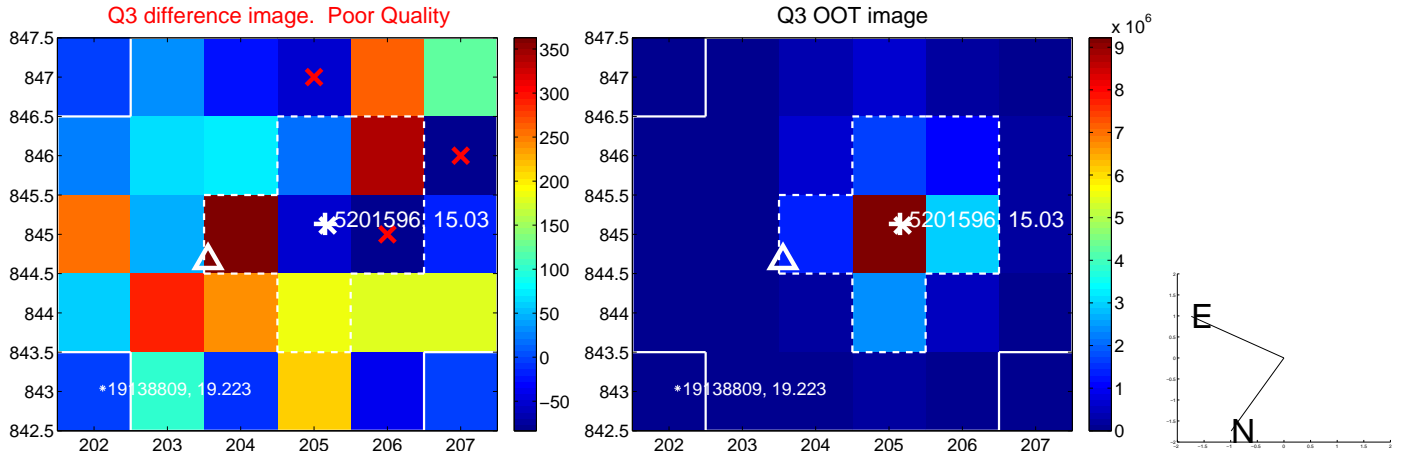
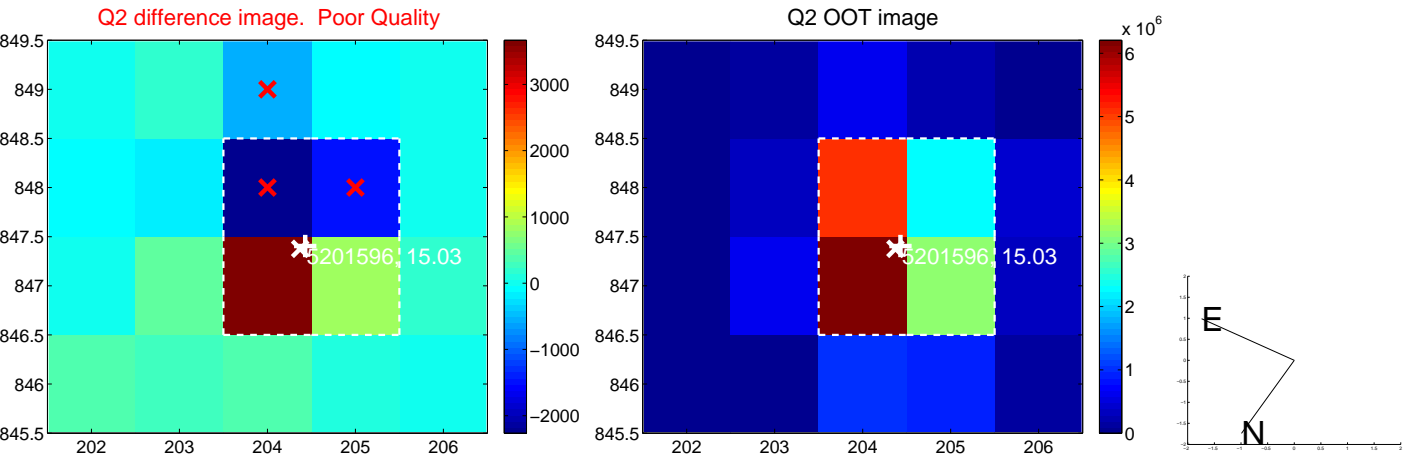
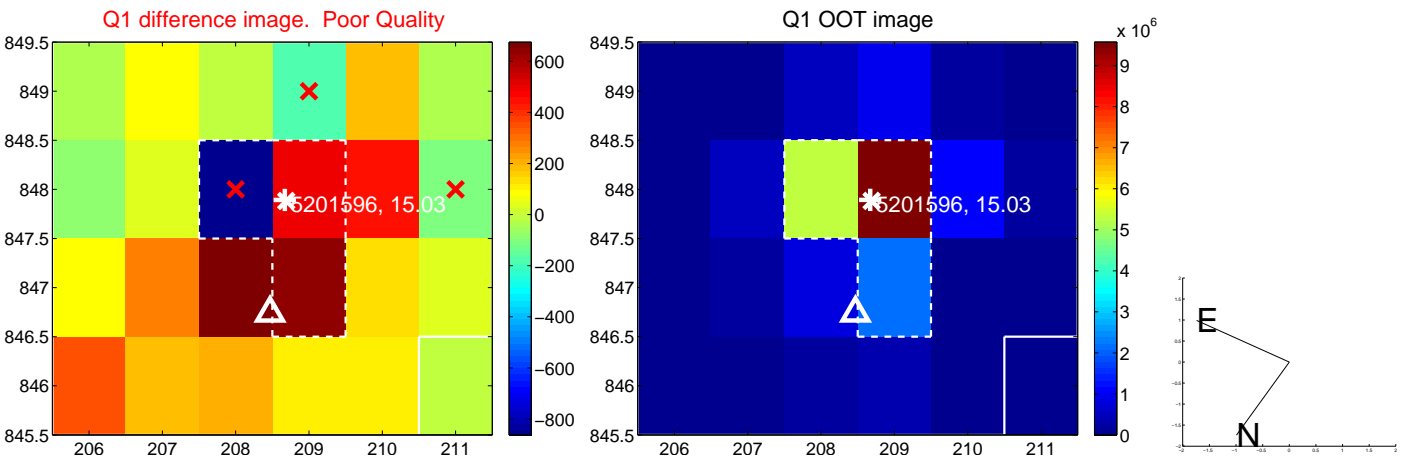


offset from photometric centroids

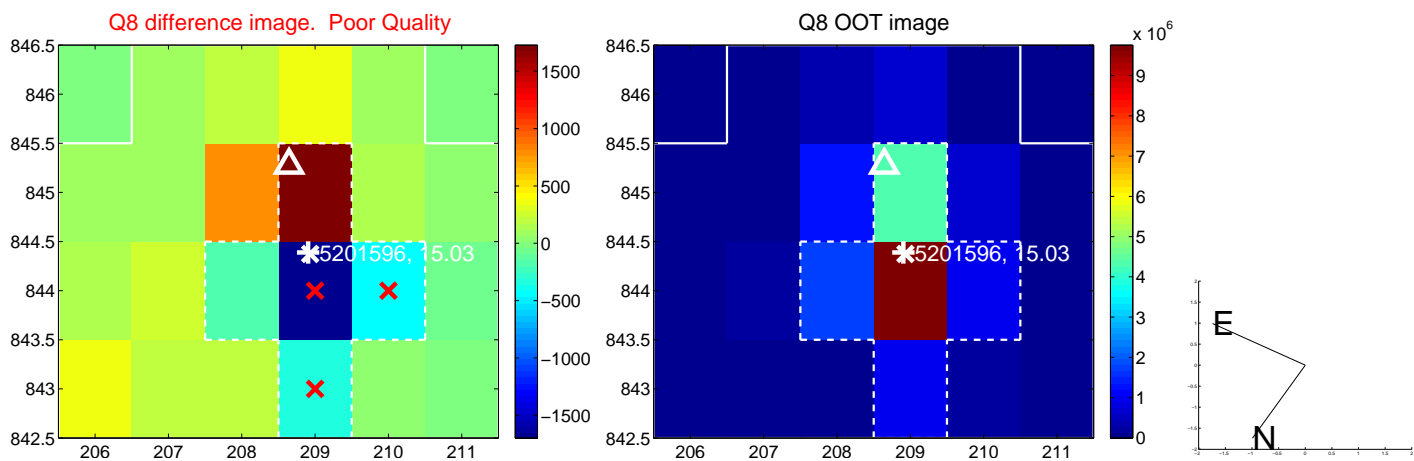
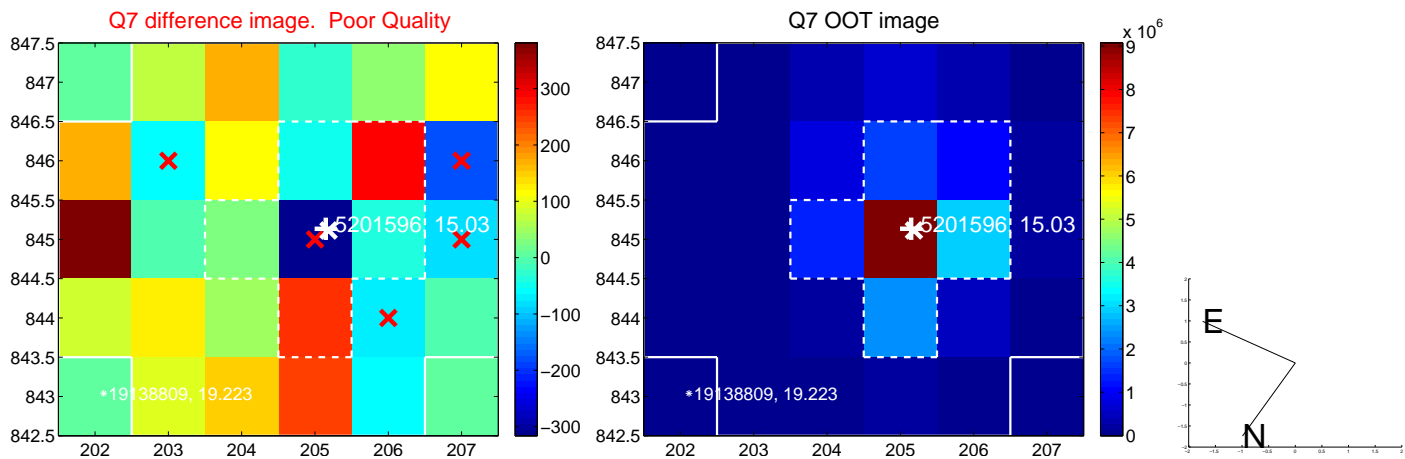
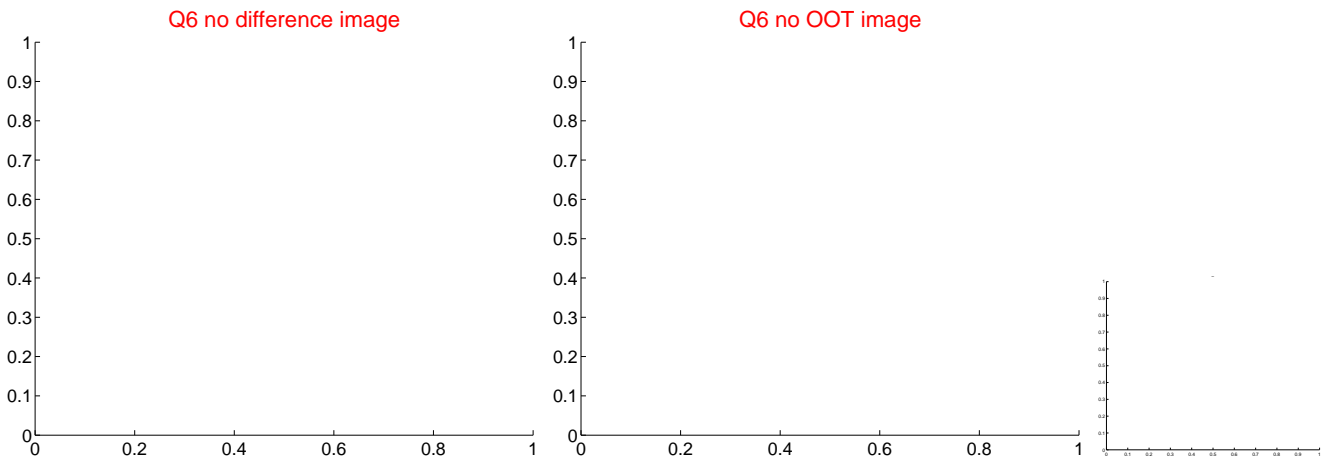
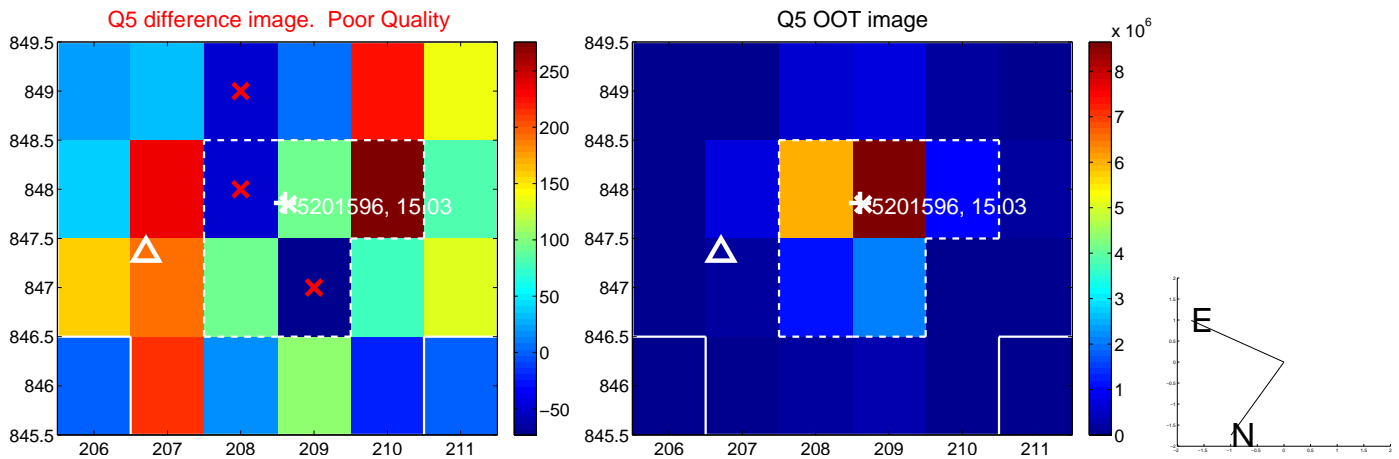


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

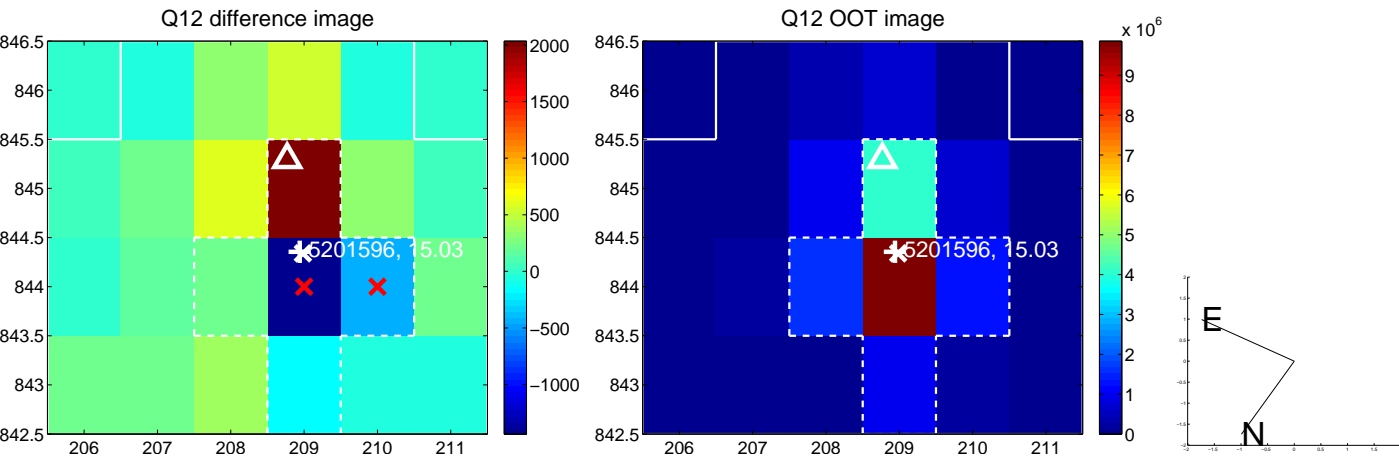
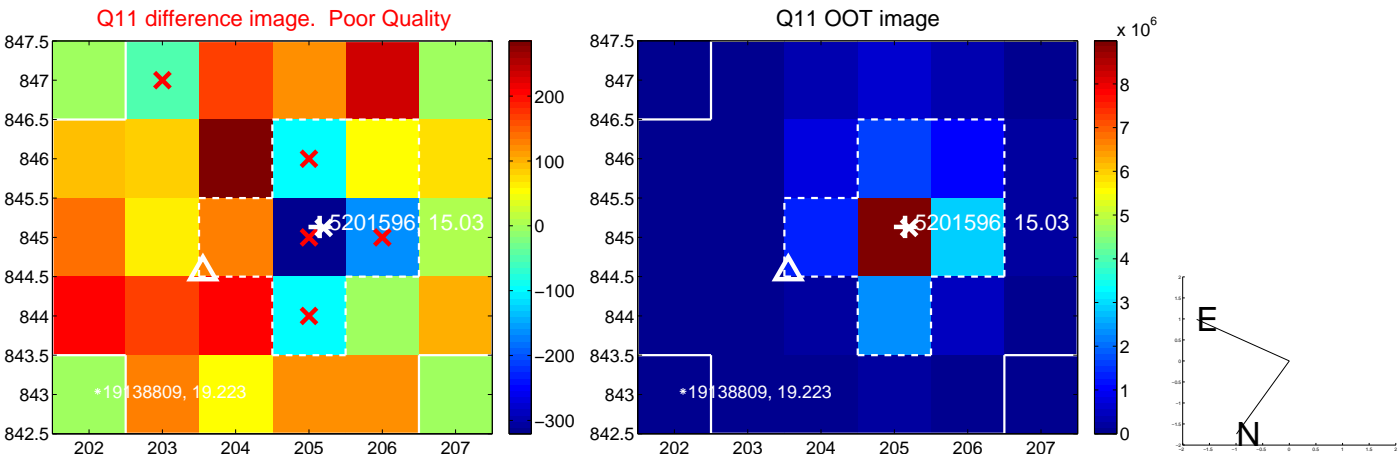
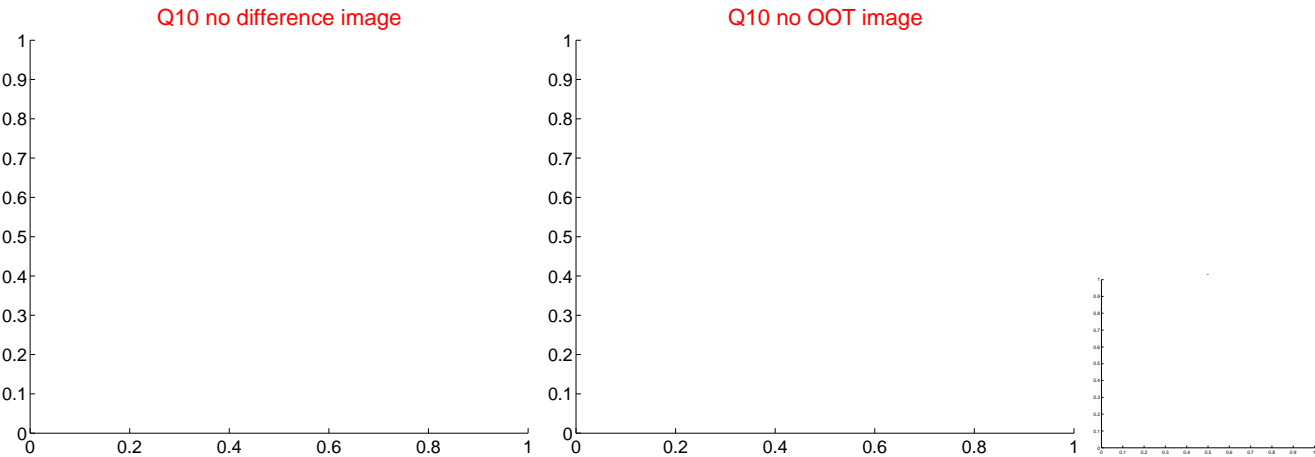
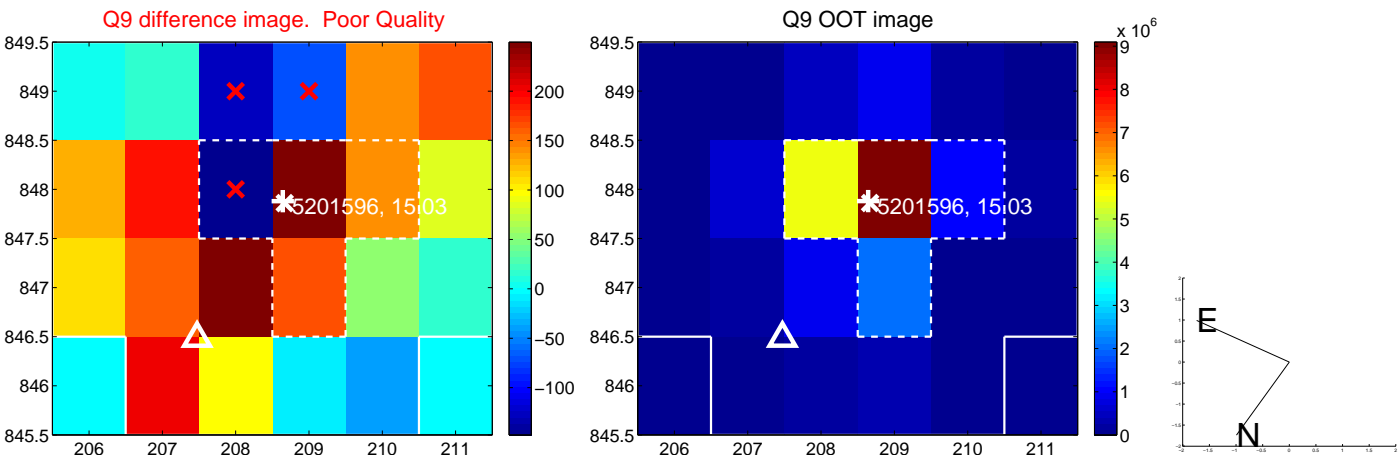
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



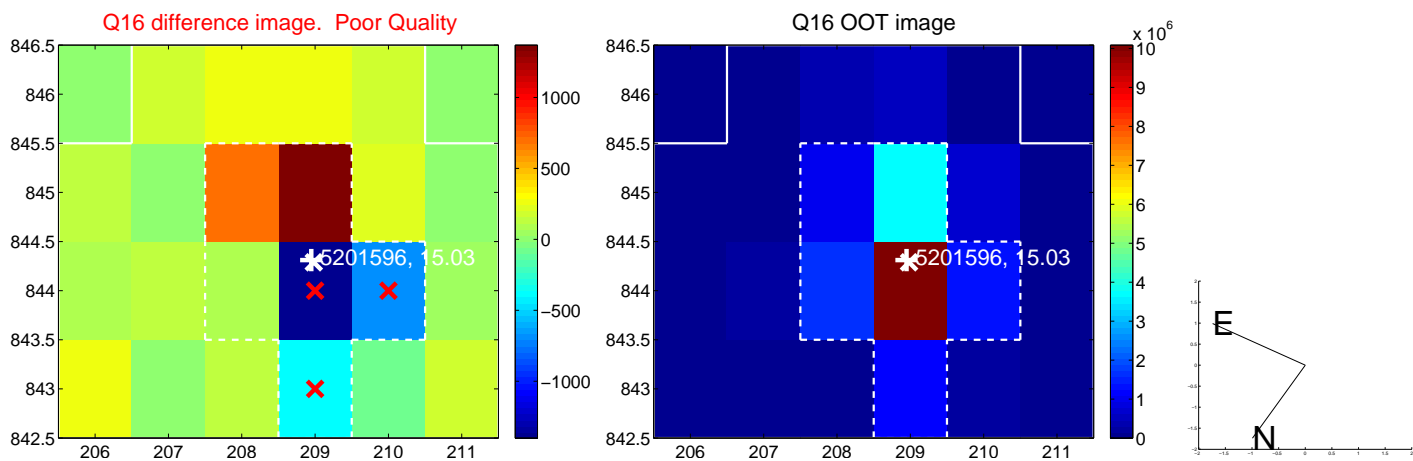
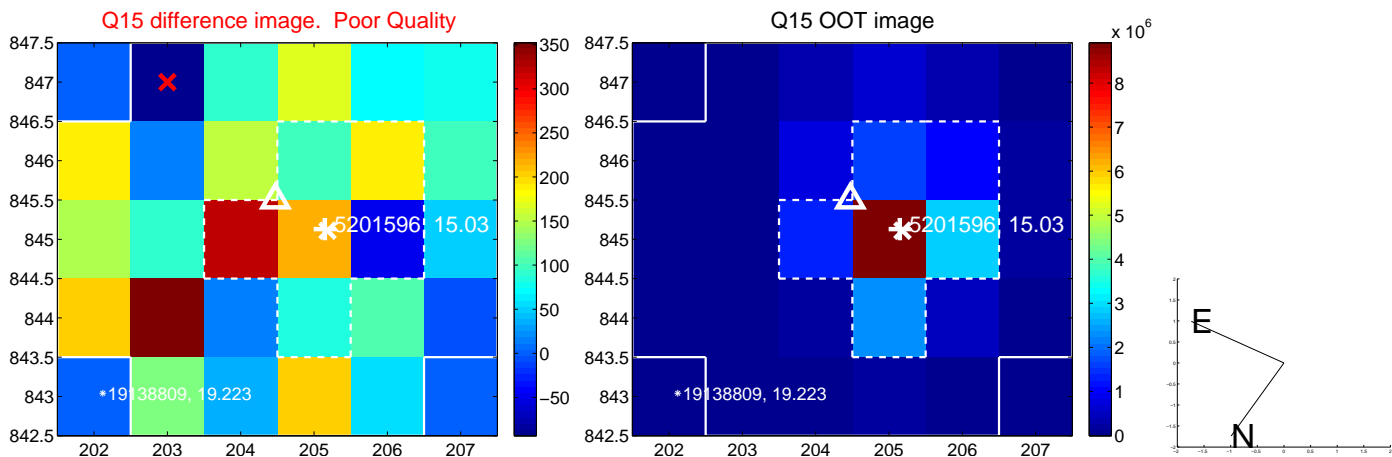
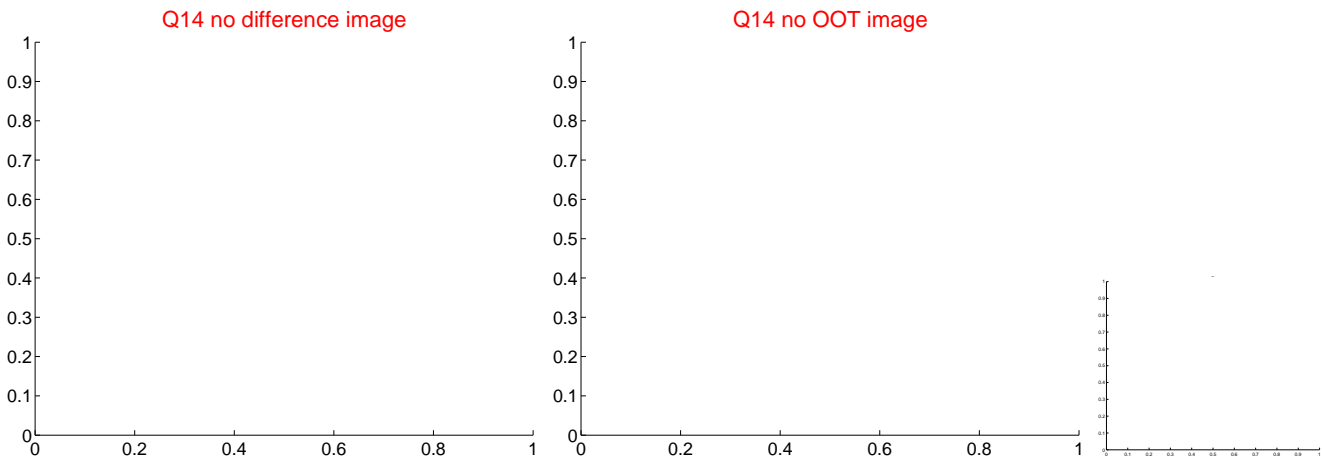
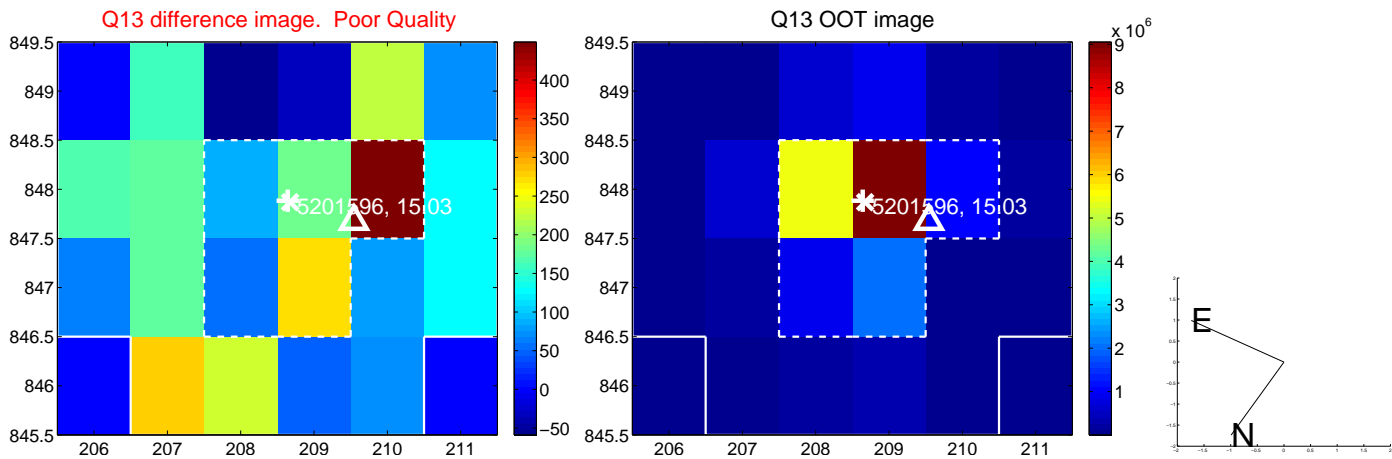
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



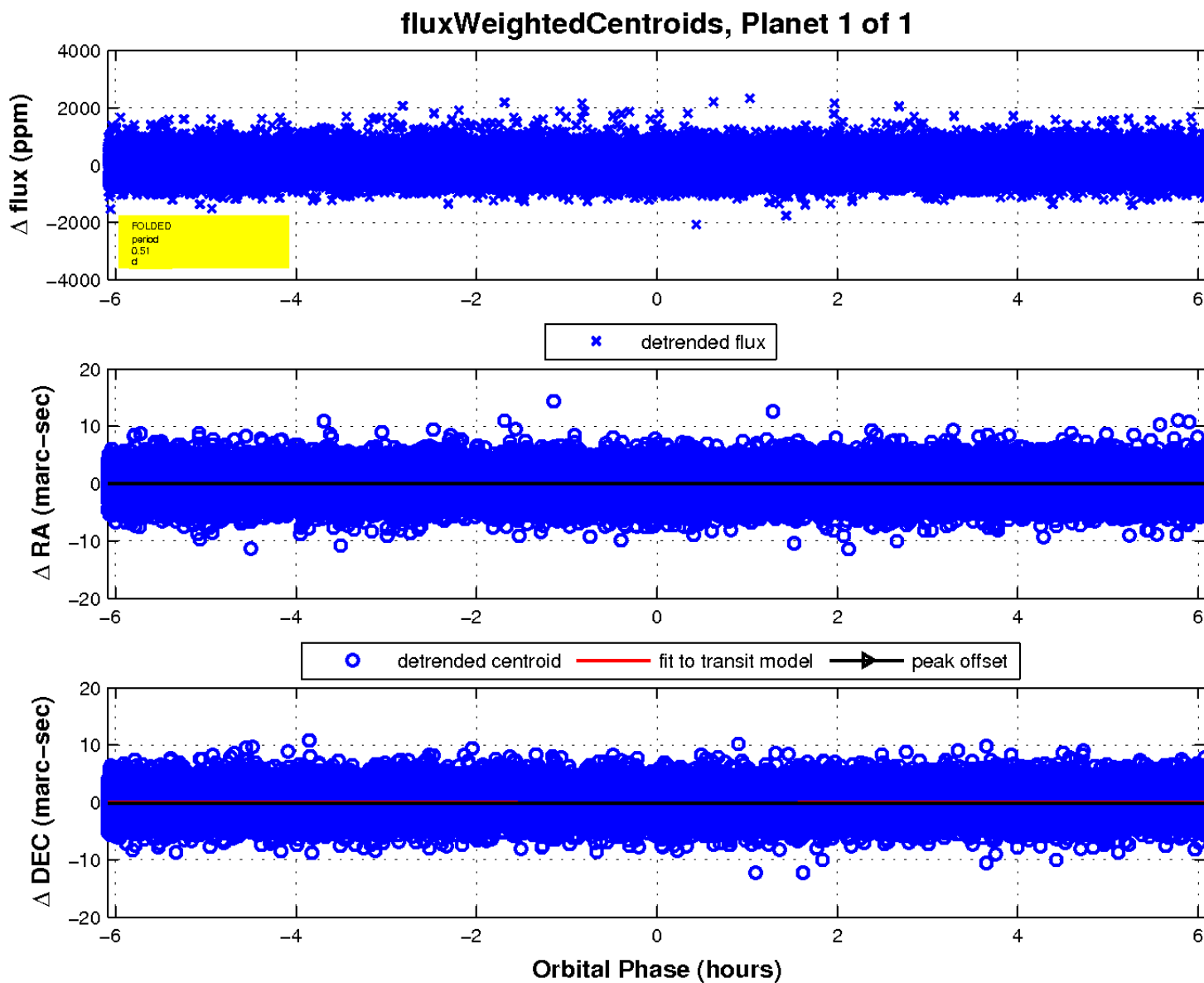
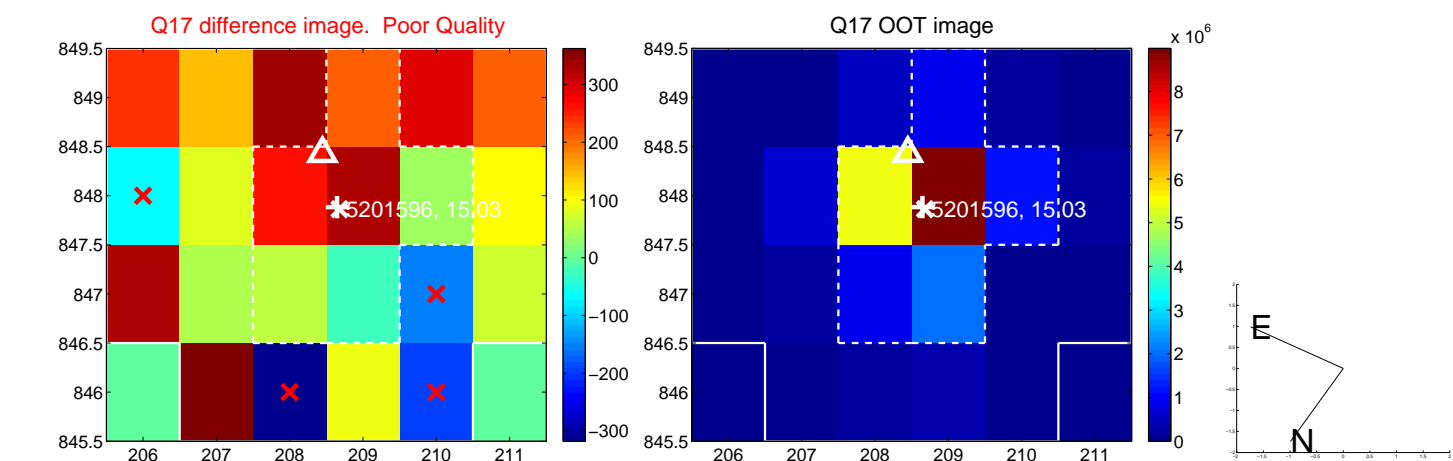
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

