

# KIC 010686909

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
010686909-01	OBS	8029.01	2.618437	134.038745	19.5	5.070	7.2	7.4	2.68	5657	1.35	3850.25

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010686909-01	OBS	FP	0.00	0	0	1	1	CENT_CROWDED—HALO_GHOST—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.

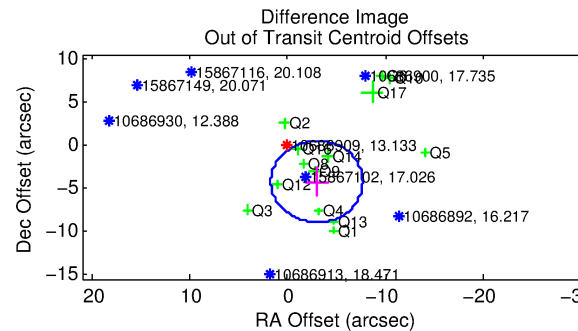
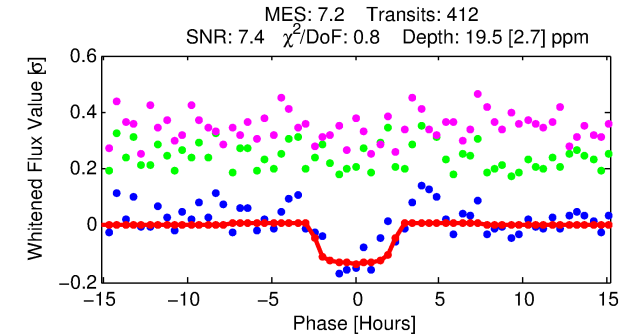
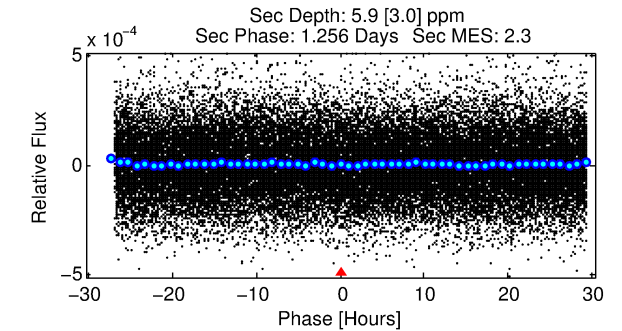
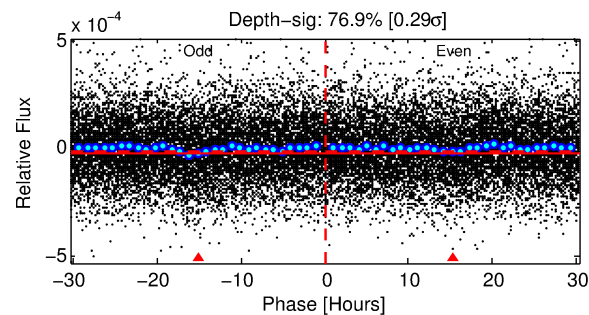
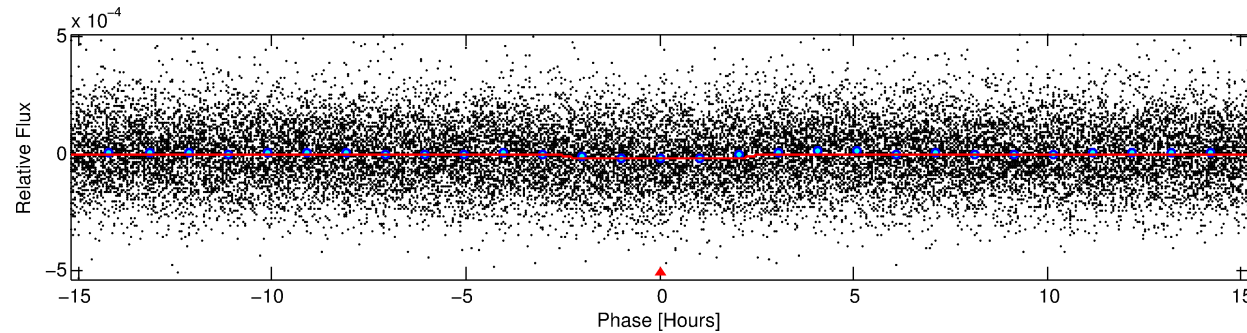
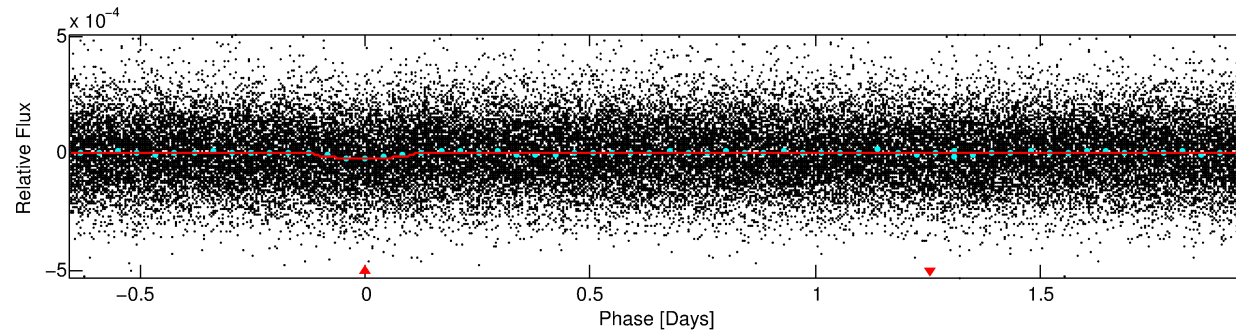
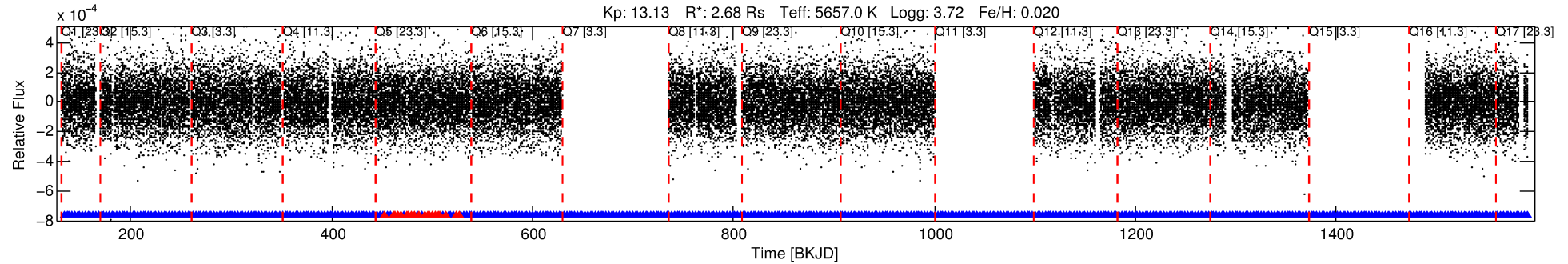
## Ephemeris Match Information For 010686909-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
010686909-01	10686909	7363.01	10686876	1:1	47.1	-10	-6	11.73	13.14	12194.00	Direct-PRF	0	0.56	0.29

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10686909 Candidate: 1 of 1 Period: 2.618 d



## DV Fit Results:

Period = 2.61844 [0.00004] d  
Epoch = 134.0387 [0.0084] BKJD  
Rp/R\* = 0.0046 [0.0019]  
a/R\* = 2.32 [3.62]  
b = 0.85 [0.65]  
Seff = 3850.25 [2246.85]  
Teq = 2009 [293] K  
Rp = 1.35 [0.81] Re  
a = 0.0414 [0.0156] AU  
Ag = 3.03 [3.47] [0.59σ]  
Teffp = 4098 [1025] K [1.96σ]

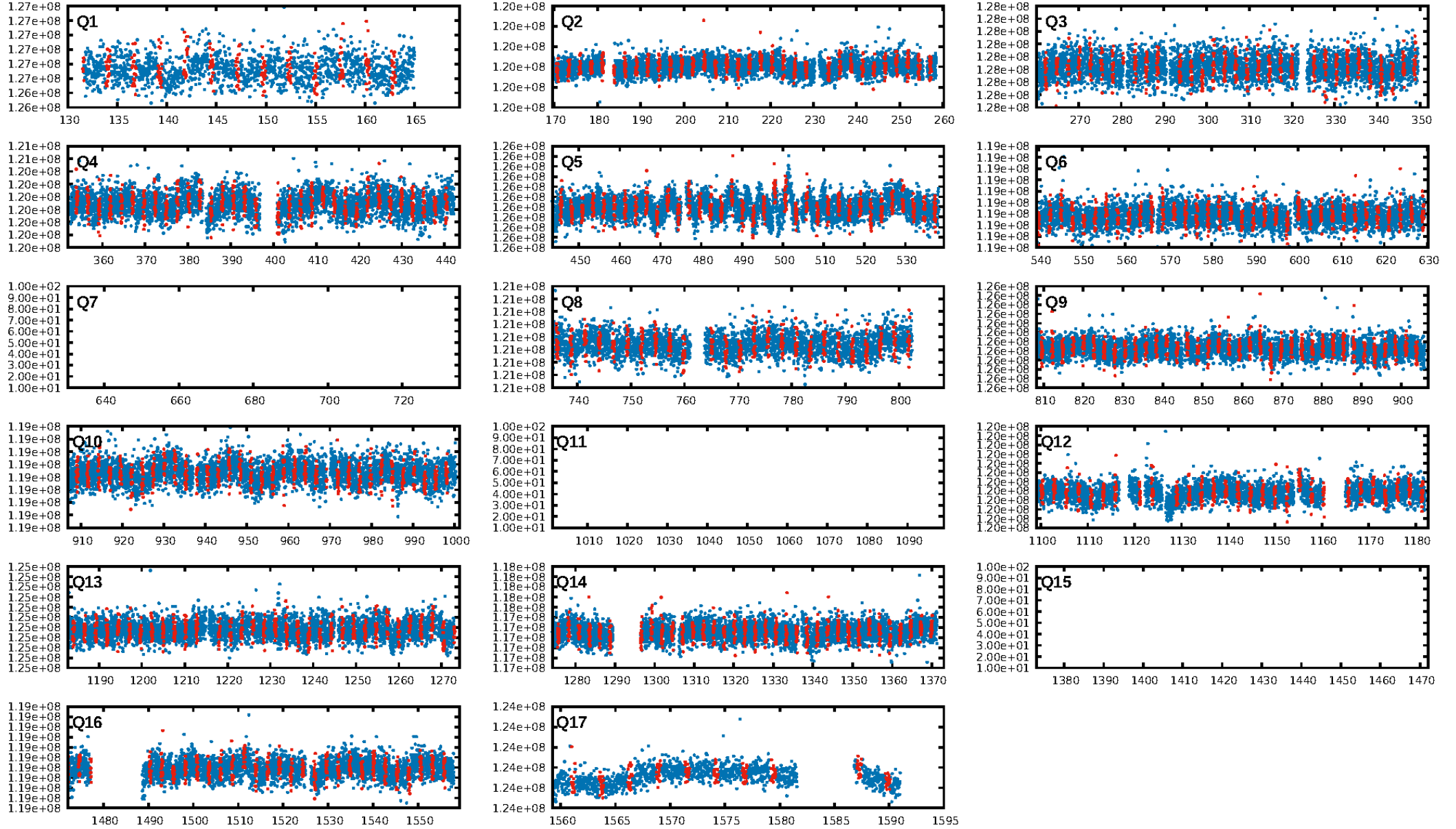
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.65e-13  
RollingBand-fgt: 0.95 [369/389]  
GhostDiagnostic-chr: 0.1084  
Centroid-sig: 0.0%  
Centroid-so: 5.964 arcsec [3.00σ]  
OotOffset-rm: 5.181 arcsec [3.30σ]  
KicOffset-rm: 5.019 arcsec [3.14σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.00 [0/14]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:45:01 Z

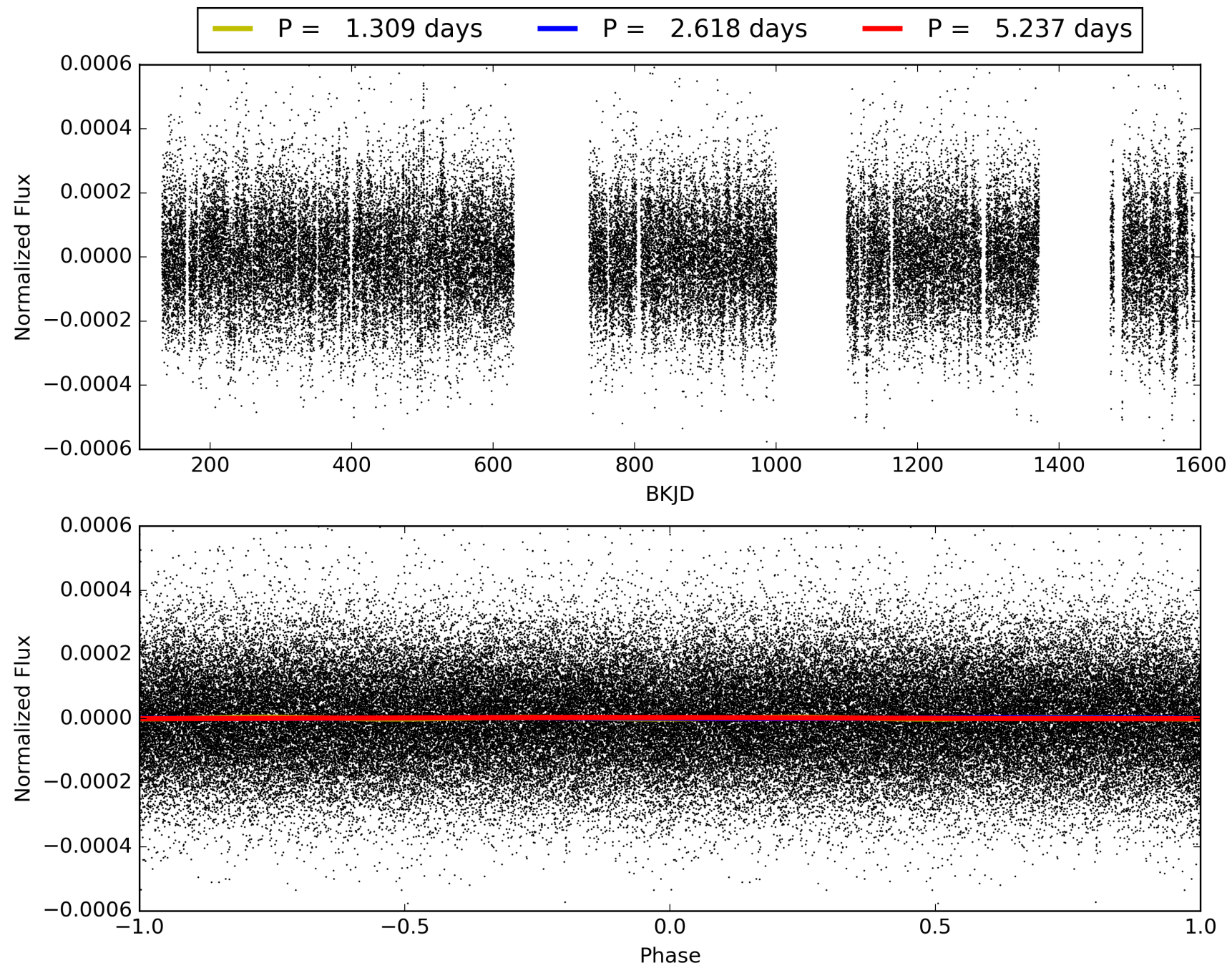
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010686909-01, PDC Light Curves



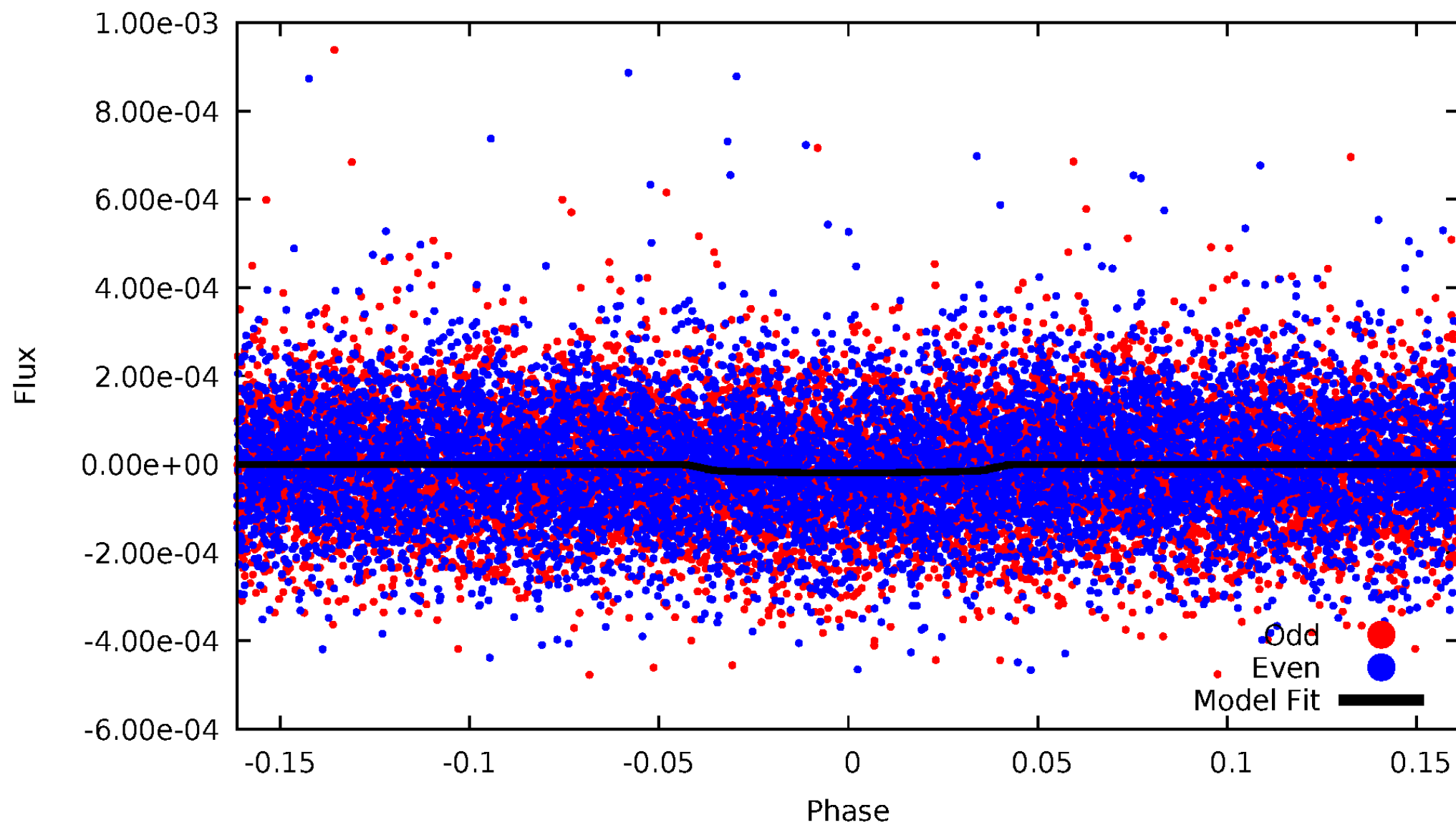


TCE 010686909-01



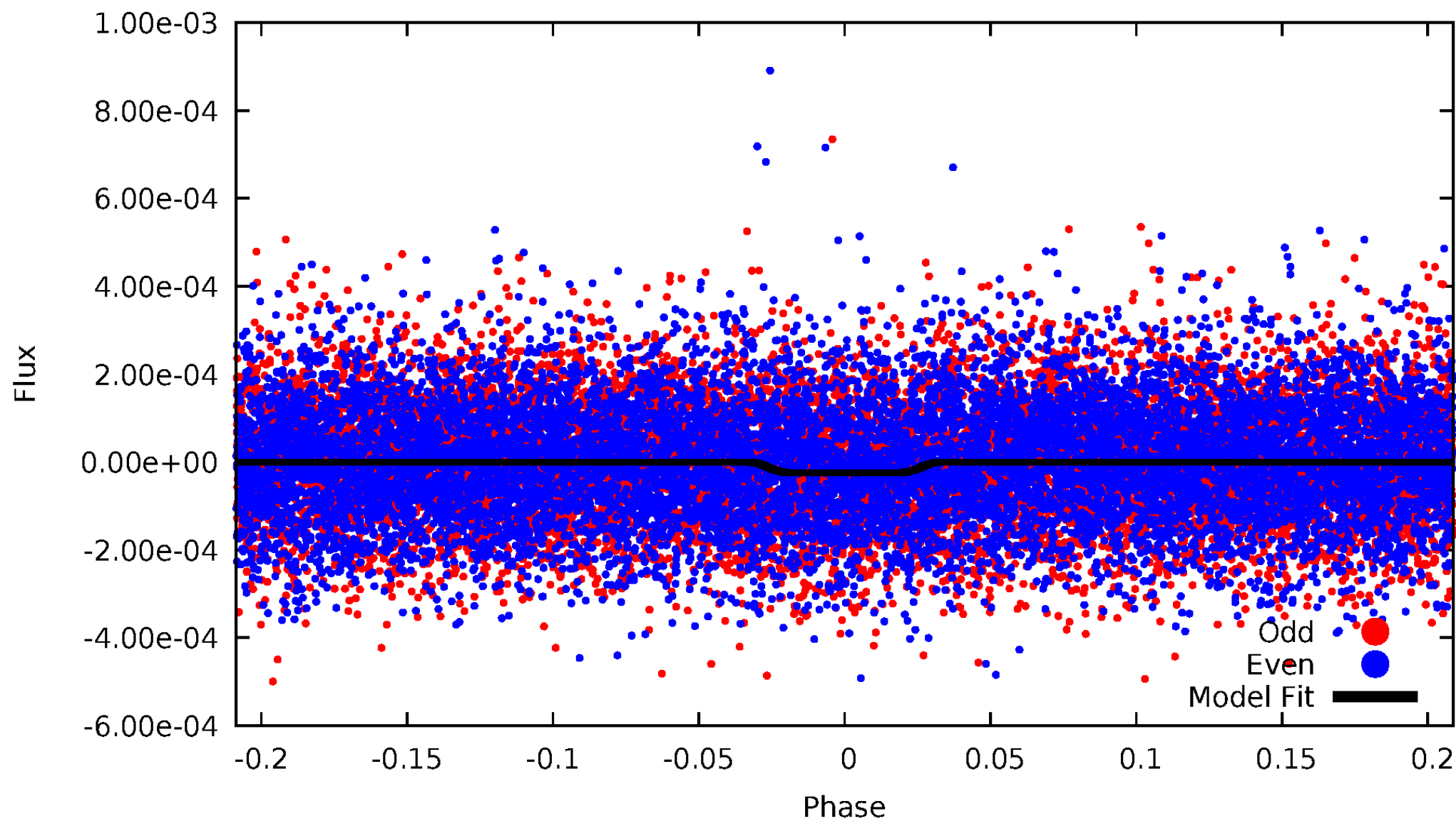
# DV Odd/Even

TCE 010686909-01



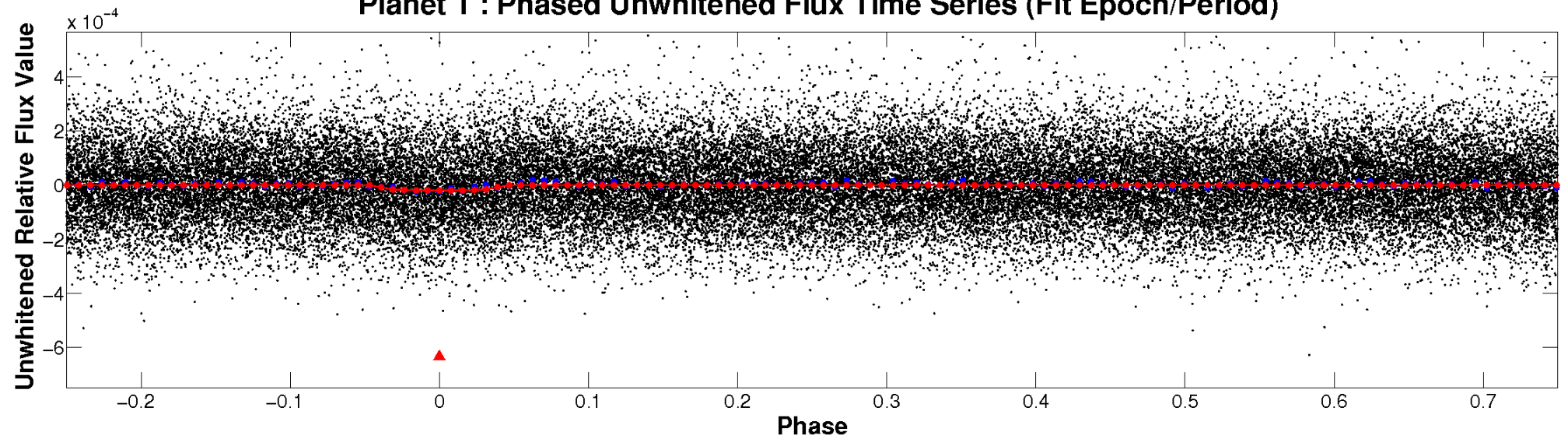
# ALT Odd/Even

TCE 010686909-01

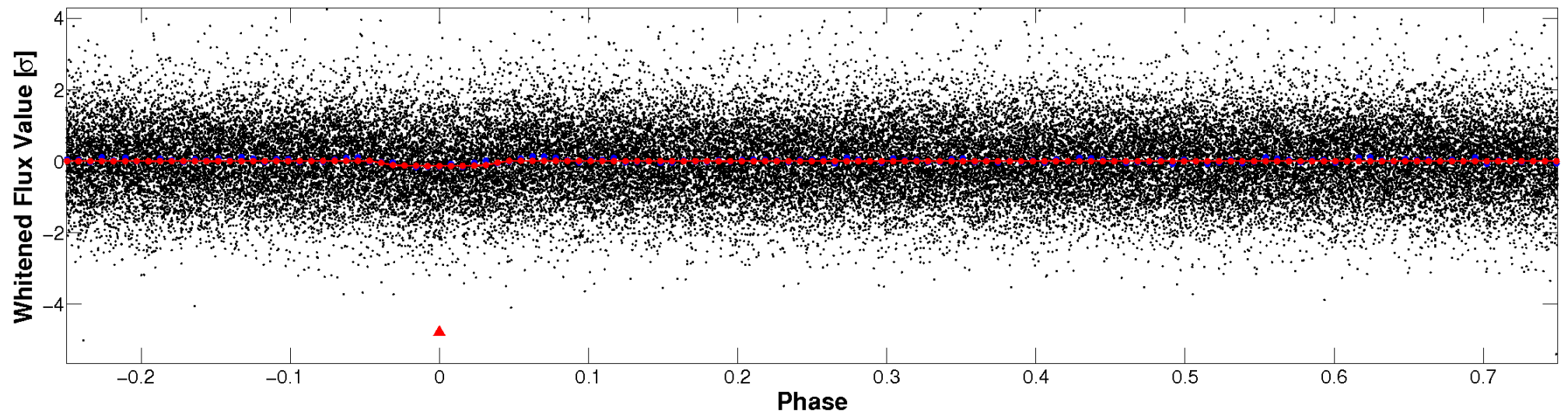


# Non-Whitened Vs. Whitened Light Curve

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



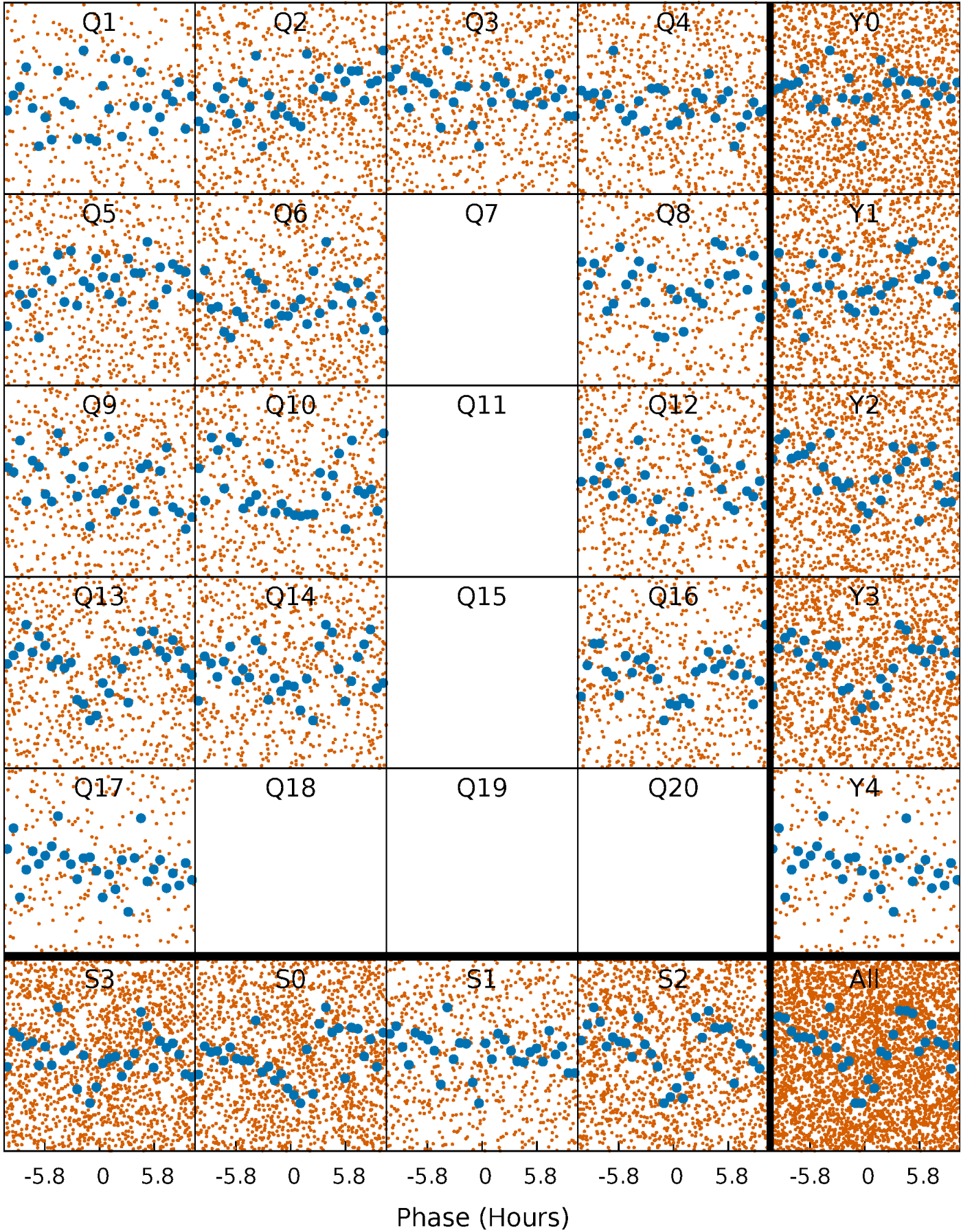
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

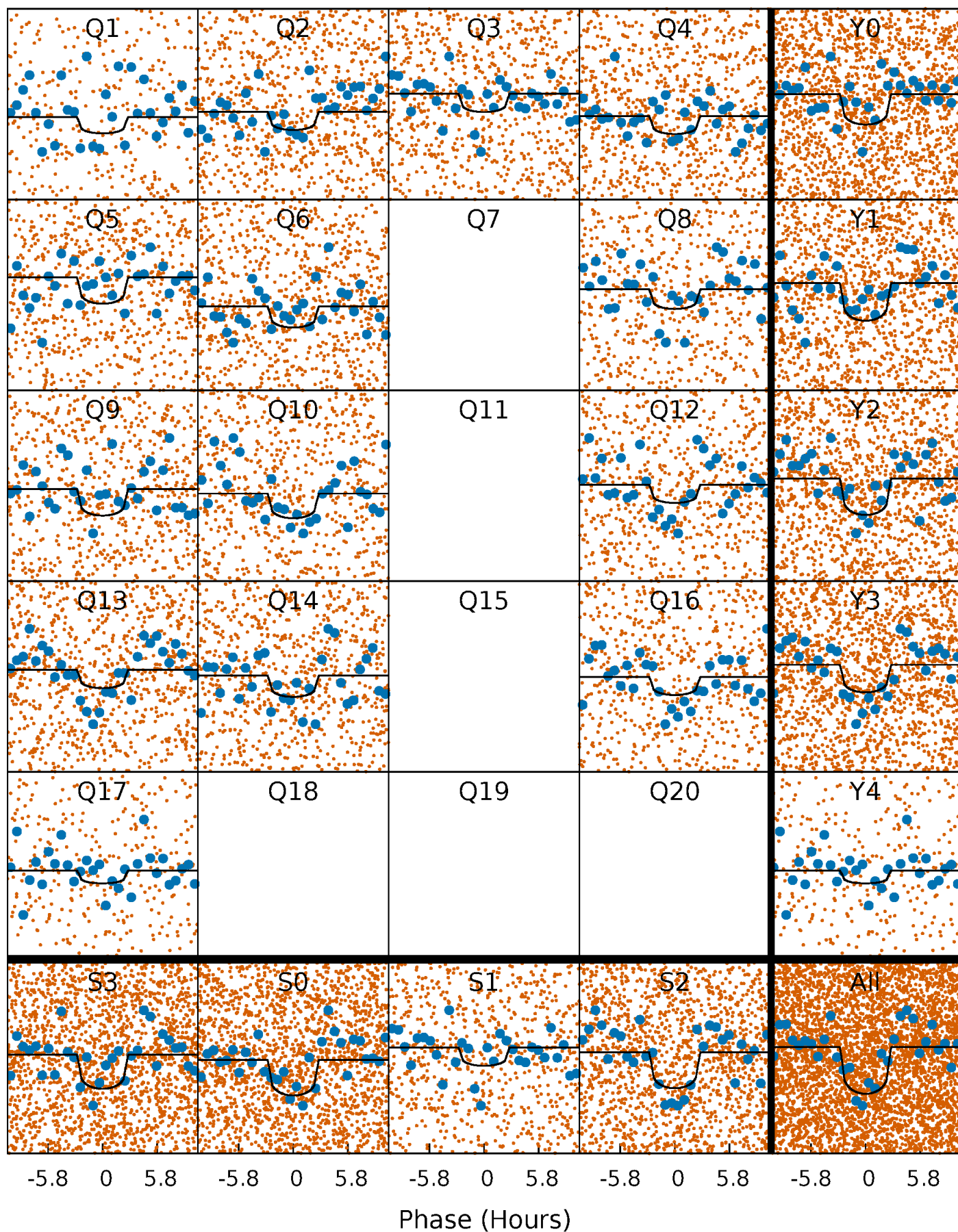
TCE 010686909-01   P= 2.618437 Days    $T_0=134.038745$  (BKJD)





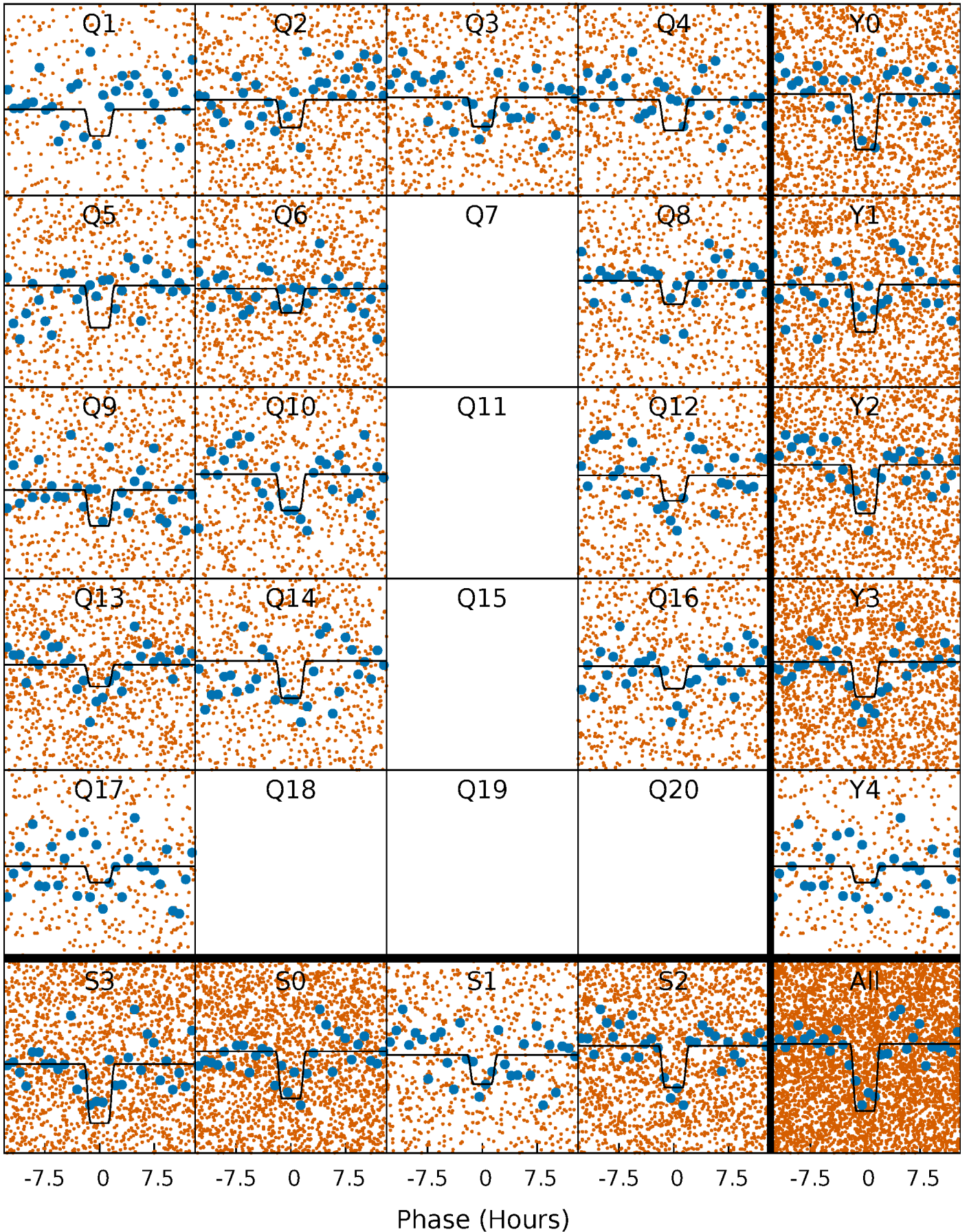
# DV Quarter-Phased Transit Curves

TCE 010686909-01 P= 2.618437 Days  $T_0=134.038745$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

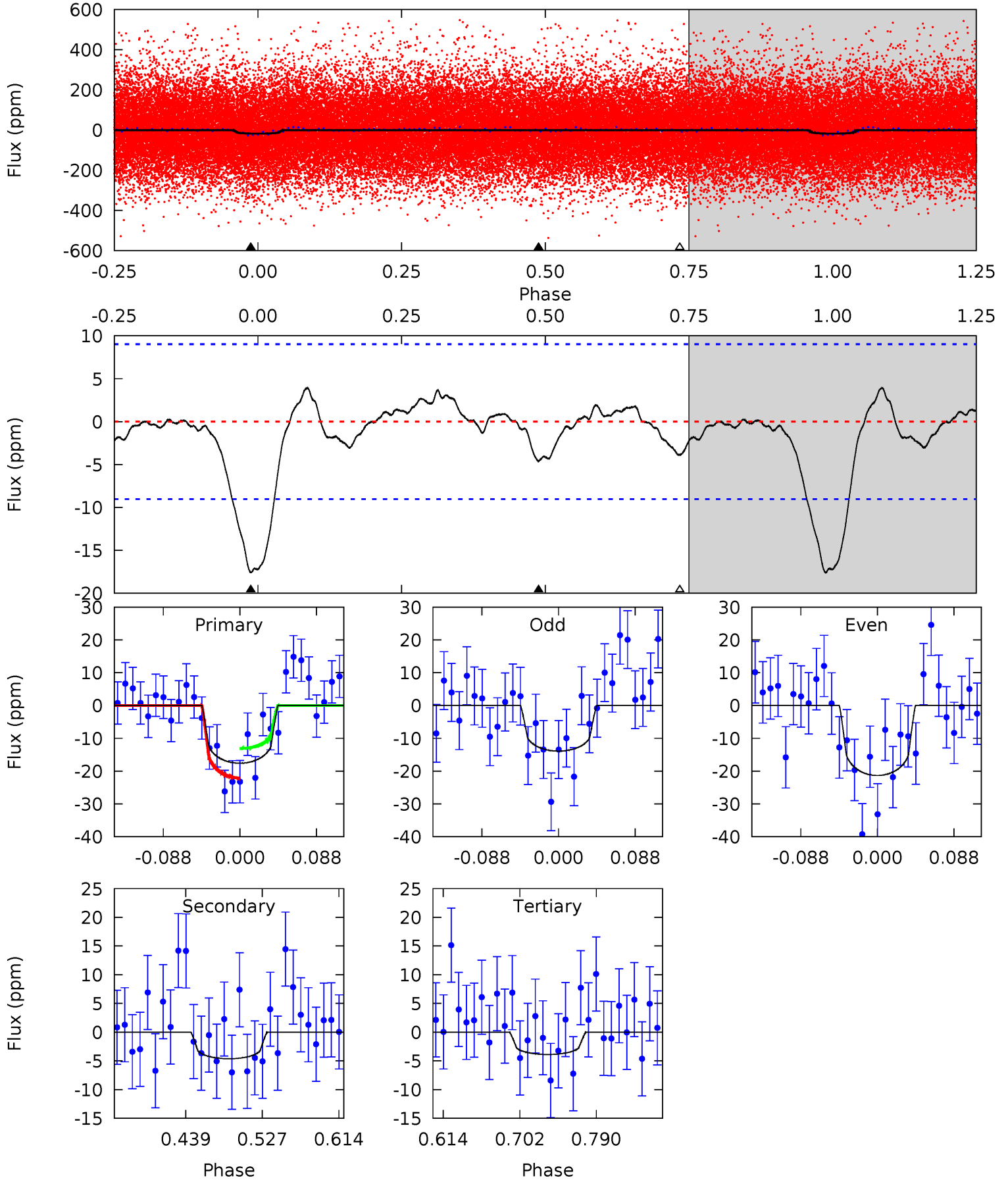
TCE 010686909-01 P= 2.618457 Days  $T_0=134.022882$  (BKJD)



# DV Model-Shift Uniqueness Test

010686909-01, P = 2.618437 Days, E = 131.420308 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
8.95	2.35	1.98	0	4.59	1.71	0.88	6.97	8.95	0.38	2.35	1.91	0.97	0.18	2.29

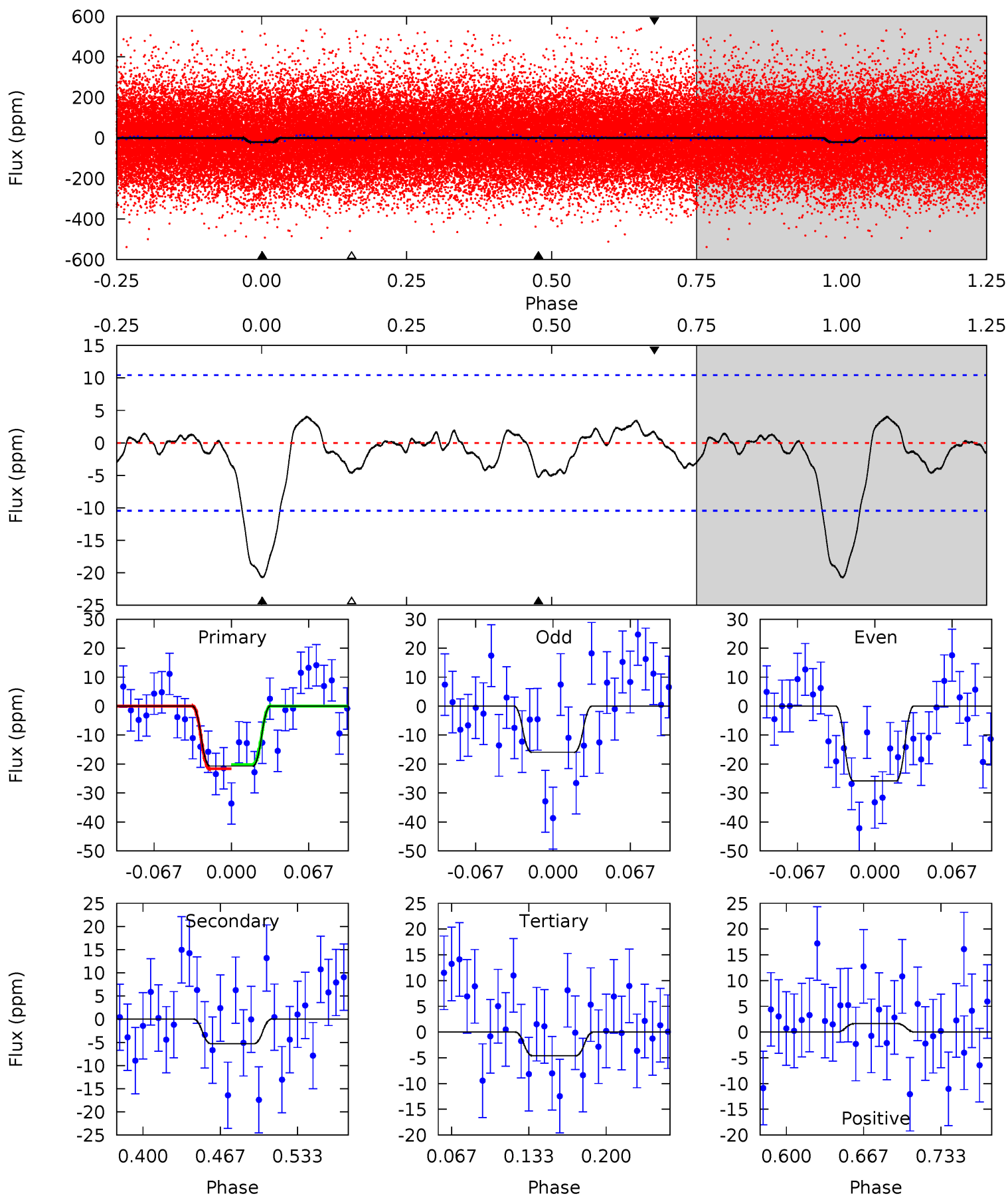




# Alt Model-Shift Uniqueness Test

010686909-01, P = 2.618457 Days, E = 131.404425 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
9.22	2.35	2.05	0.72	4.65	1.83	0.85	7.17	8.49	0.30	1.63	2.22	0.89	0.16	0.32





### Stellar Parameters For KIC 010686909

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5657^{+172}_{-154}$	$3.721^{+0.322}_{-0.115}$	$0.020^{+0.300}_{-0.300}$	$2.682^{+0.492}_{-1.148}$	$1.380^{+0.148}_{-0.345}$	$0.101^{+0.271}_{-0.036}$
	+3%/-3%	+9%/-3%	+1500%/-1500%	+18%/-43%	+11%/-25%	+269%/-36%
Source	PHO1	FLK73	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 010686909-01 / KOI 8029.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-5 \pm 2$	$1.27^{+0.62}_{-0.54}$	$2781^{+186}_{-269}$	$3994^{+1017}_{-673}$	$2.483^{+5.364}_{-1.508}$
Alt.	$-5 \pm 2$	$1.37^{+0.64}_{-0.59}$	$2762^{+194}_{-266}$	$4001^{+1005}_{-651}$	$2.593^{+5.741}_{-1.552}$

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

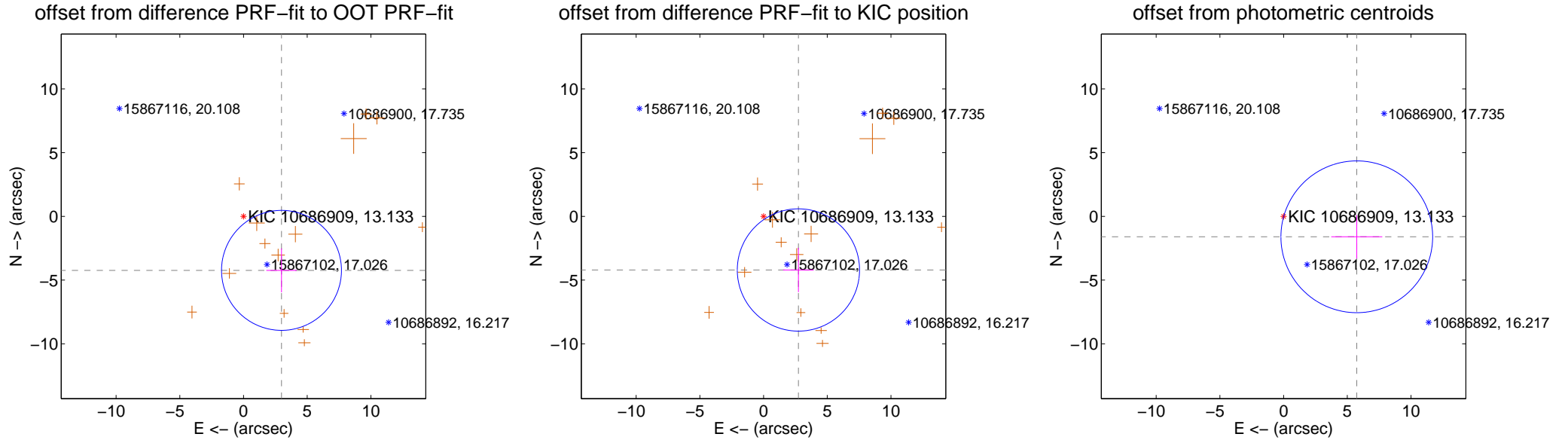
## DV Centroid Data

Supplemental centroid analysis for 010686909-01. Kepler magnitude: 13.13. Transit SNR 7.45

There are 0 quarters with good PRF difference image offsets

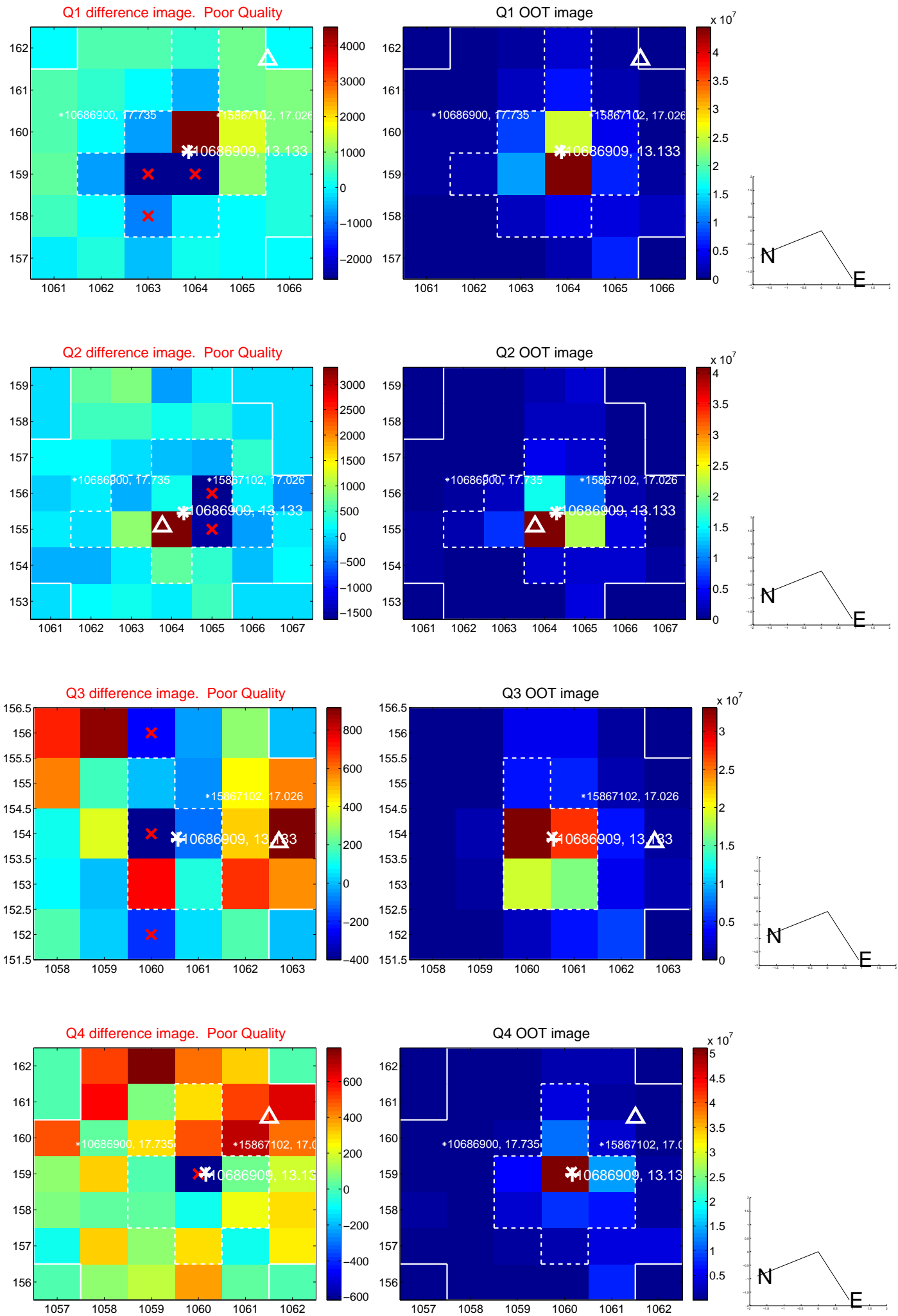
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.181 \pm 1.569$	3.30	$-2.981 \pm 1.192$	$-4.238 \pm 1.725$
PRF-fit source offset from KIC position	$5.019 \pm 1.599$	3.14	$-2.736 \pm 1.197$	$-4.207 \pm 1.742$
photometric centroid source offset	$5.96 \pm 1.98$	3.00	$-5.74 \pm 2.01$	$-1.60 \pm 1.70$

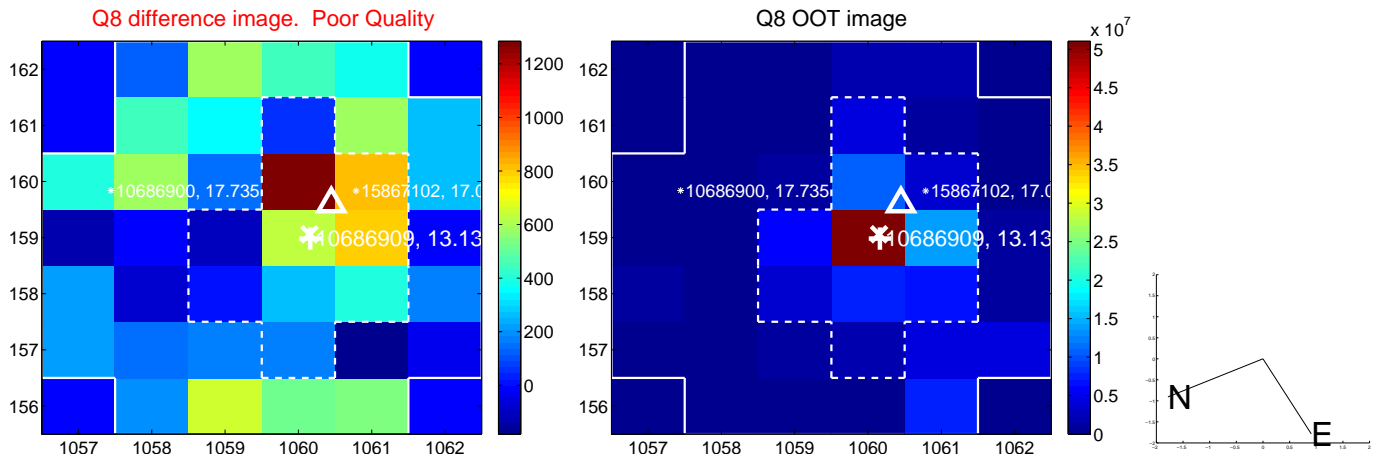
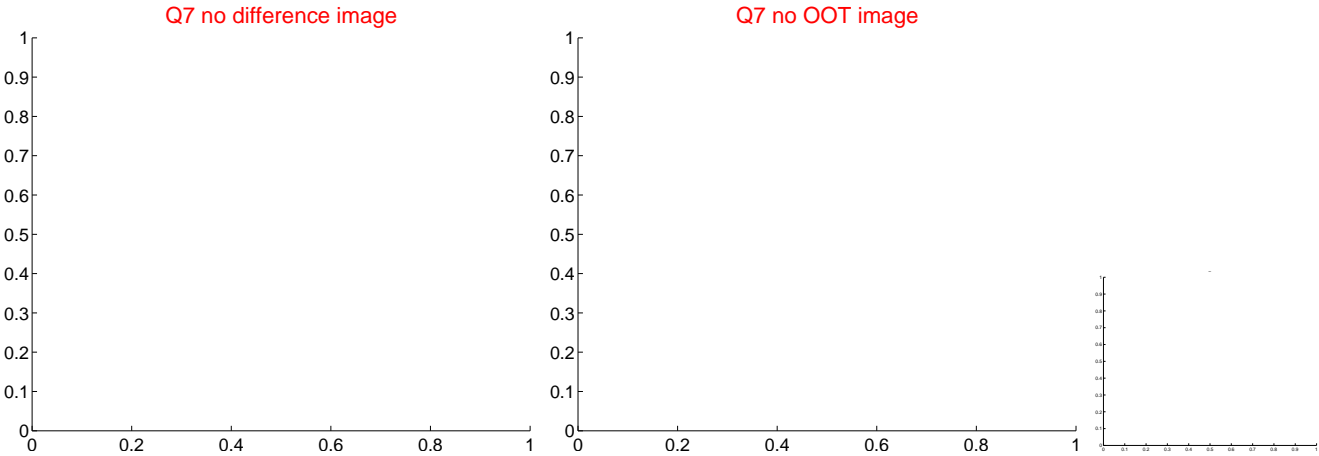
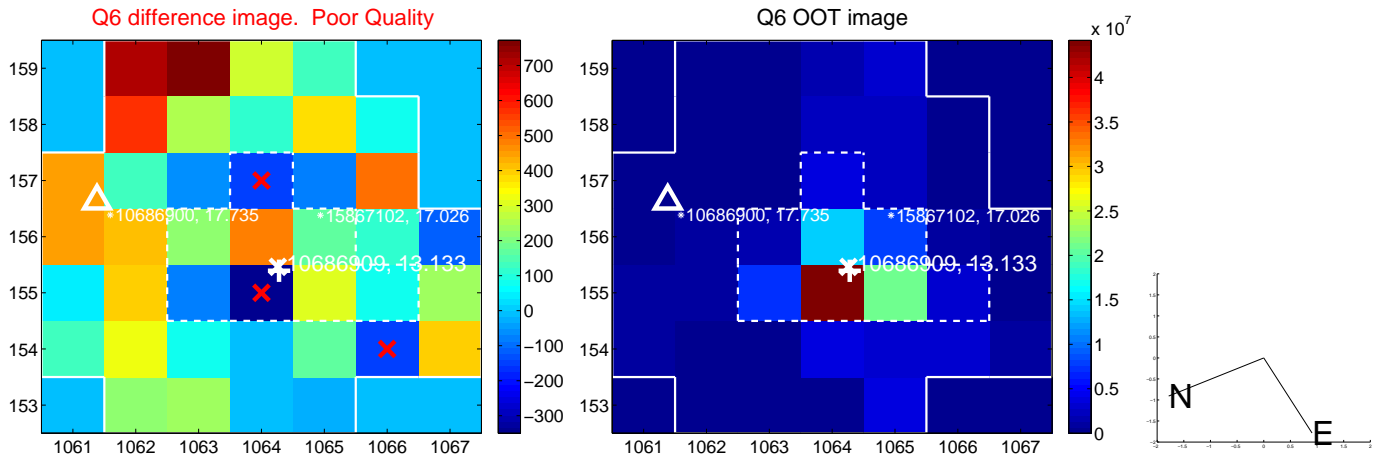
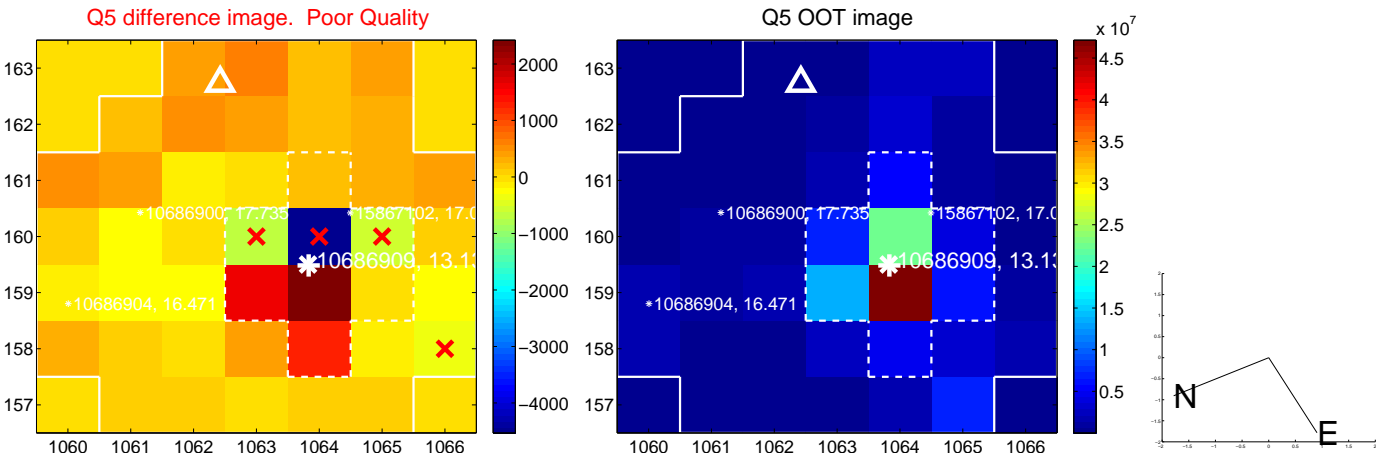


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

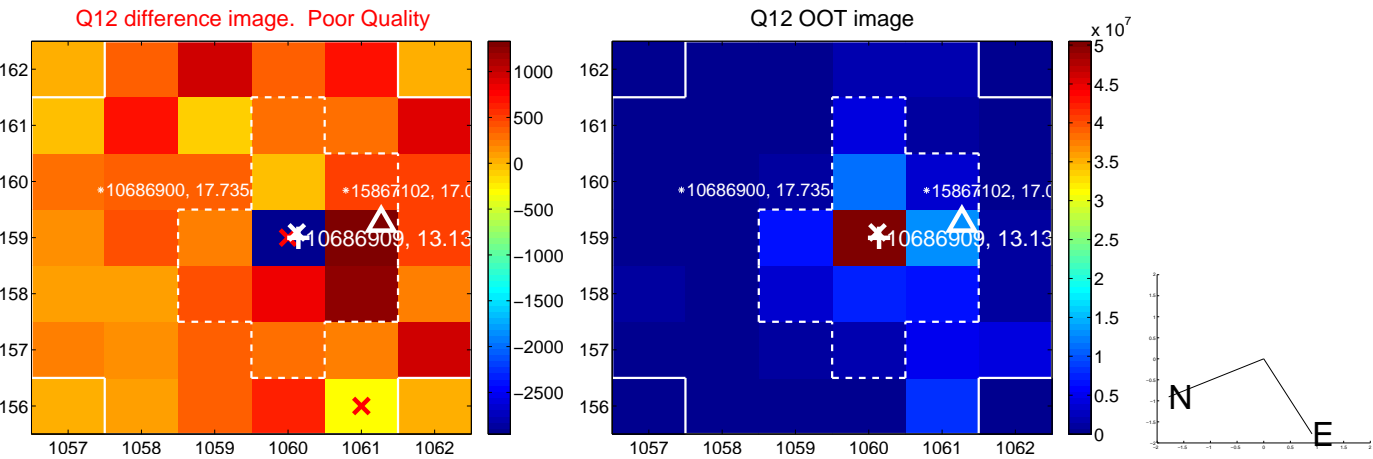
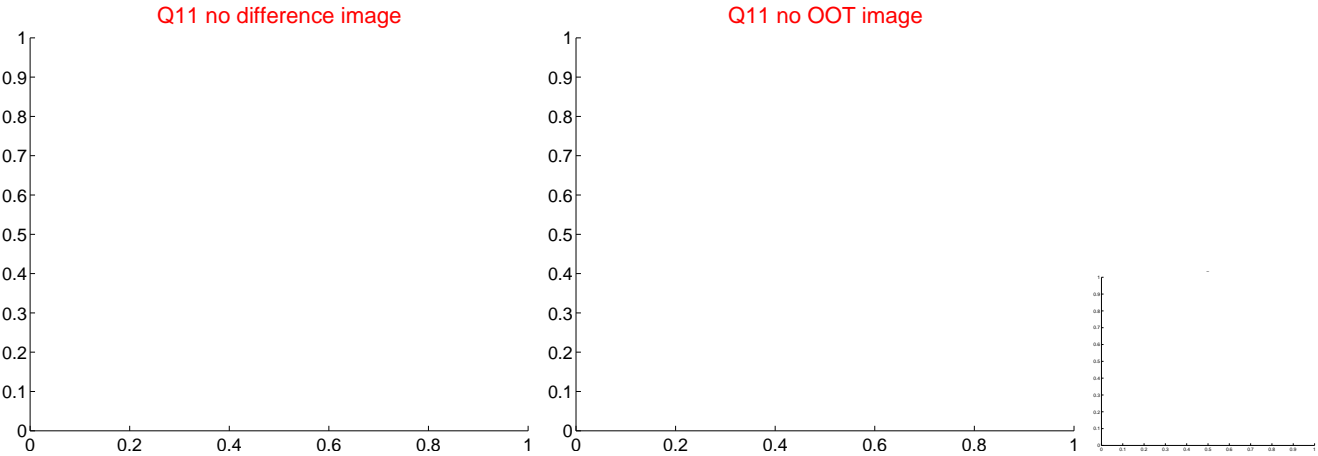
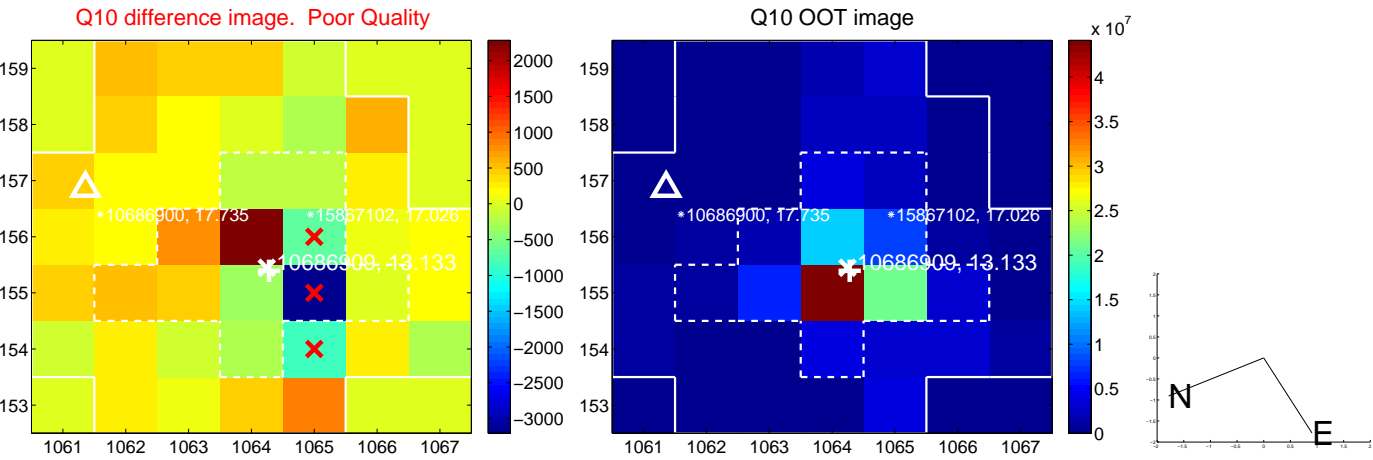
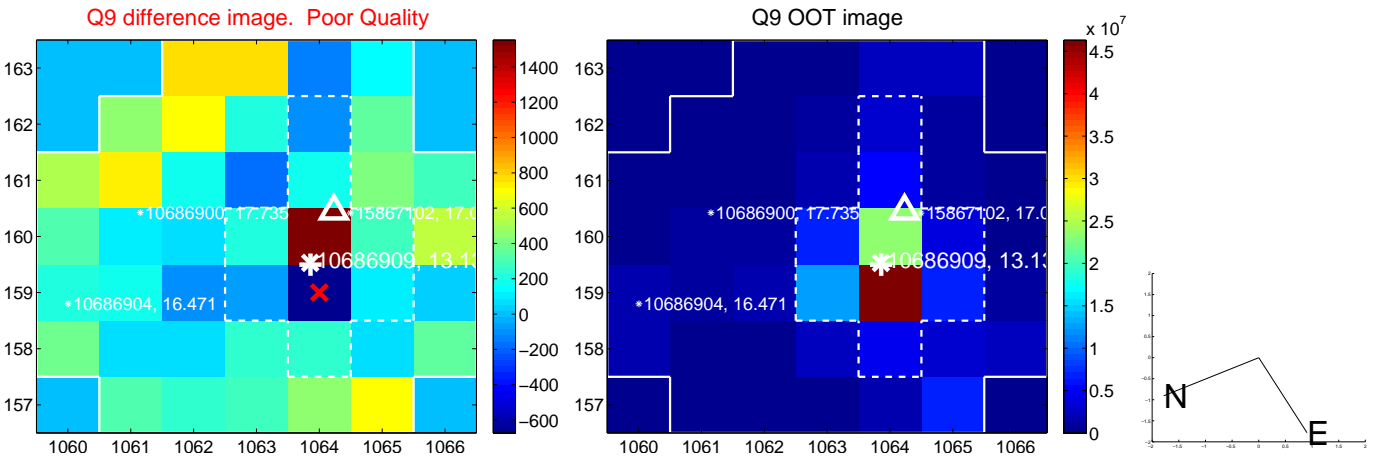


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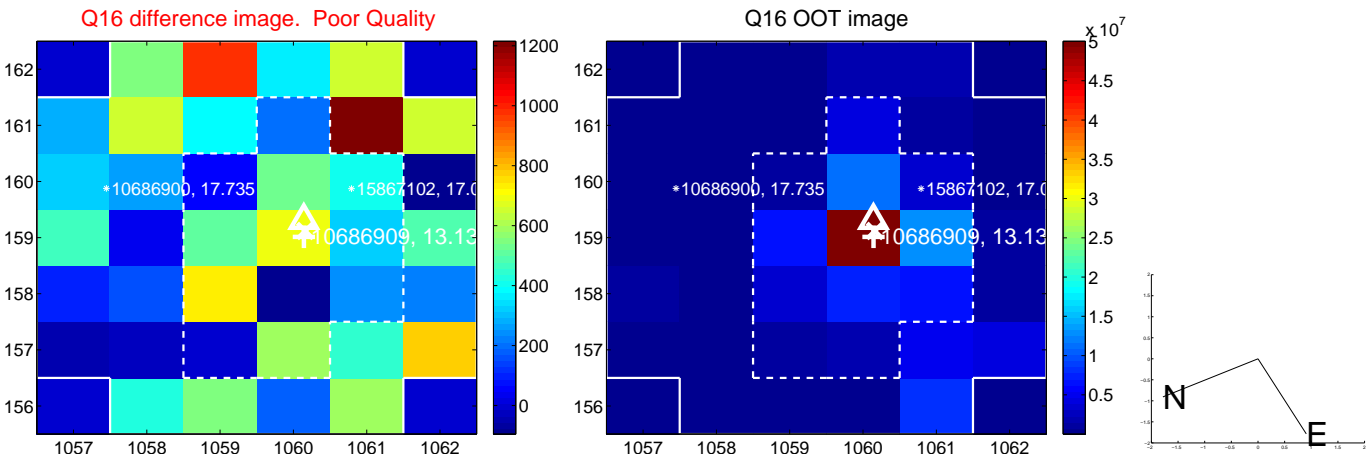
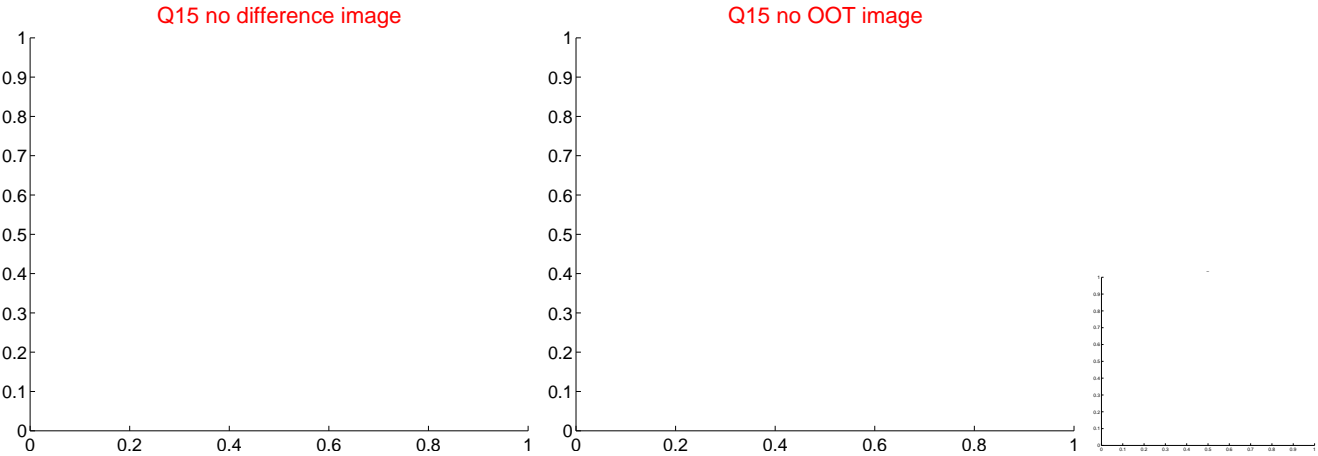
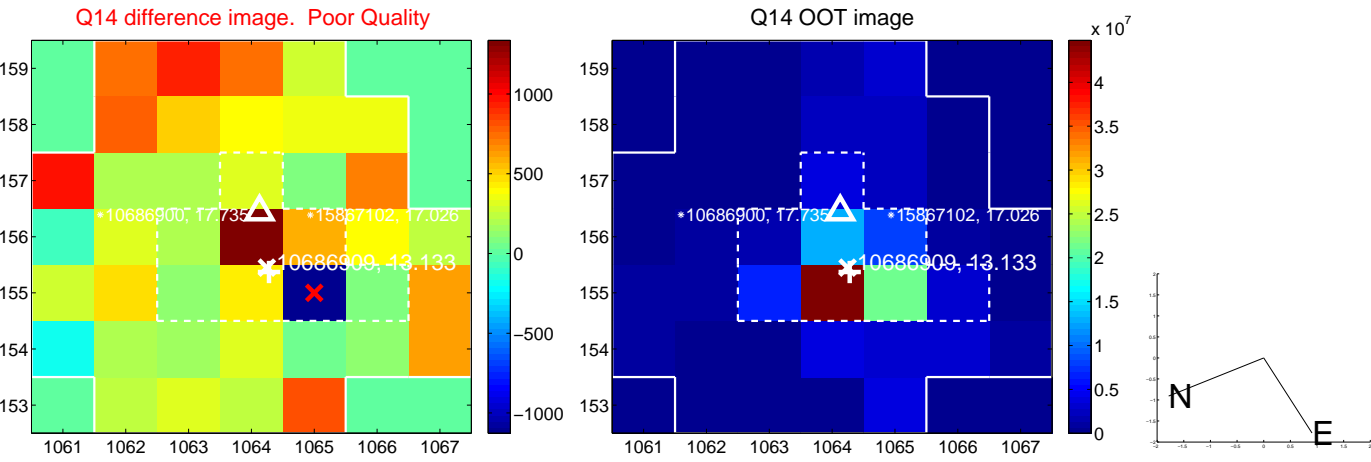
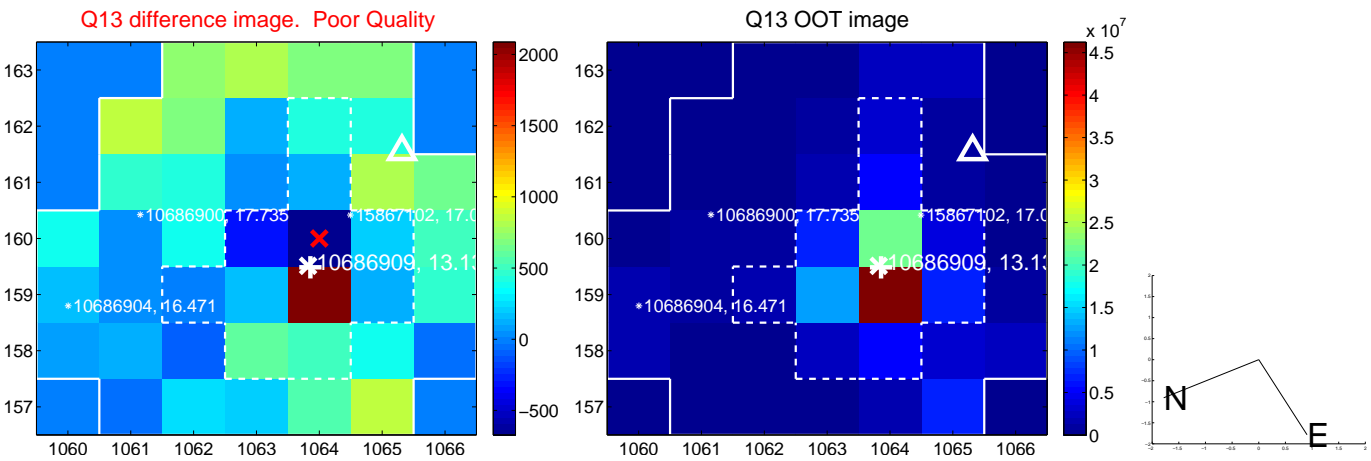




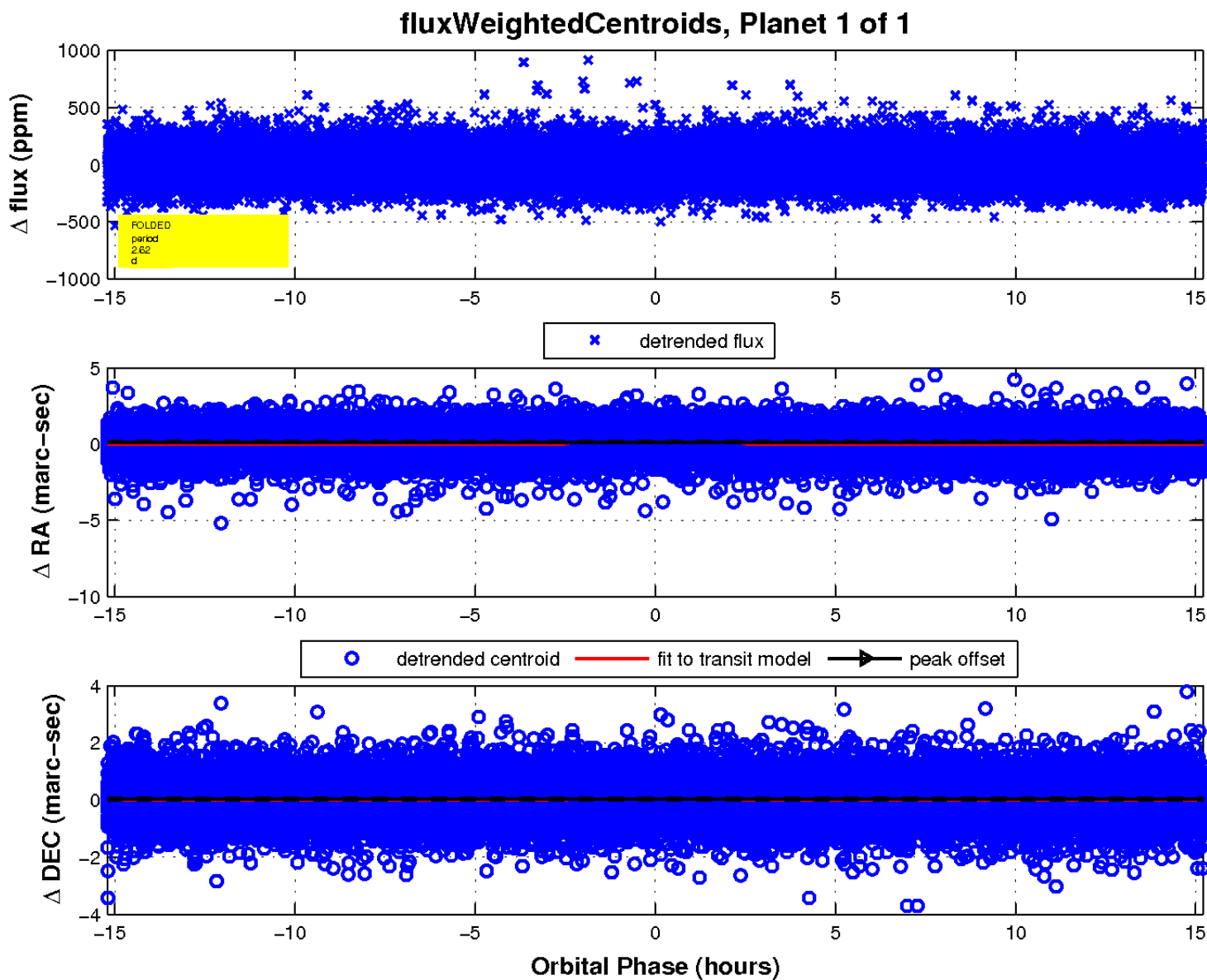
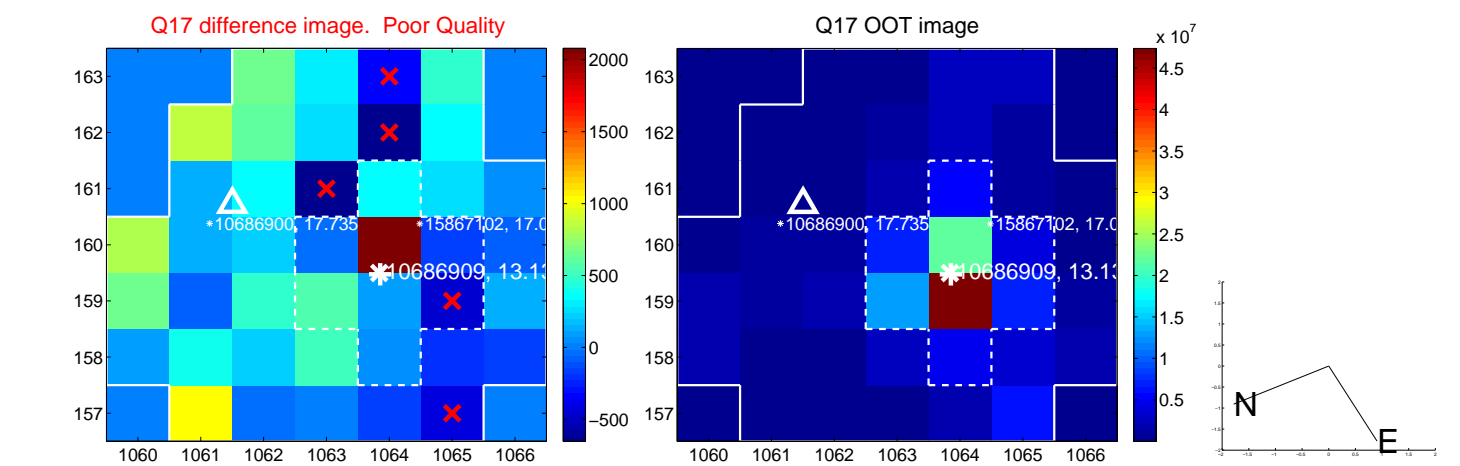
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

