

# KIC 008455627

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008455627-01	OBS	No	1.124830	132.534945	26.1	4.888	11.7	11.6	5.14	6480	2.65	58143.36
008455627-02	OBS	No	121.027860	149.965635	150.8	13.919	11.5	6.2	5.14	6480	7.04	113.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008455627-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008455627-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

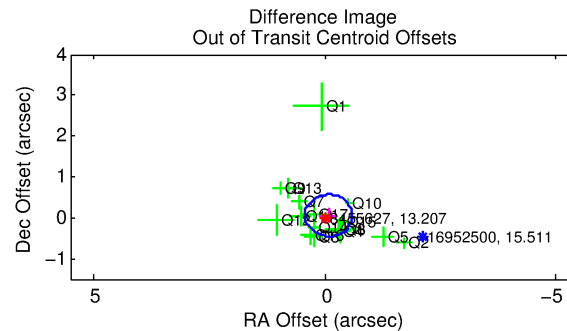
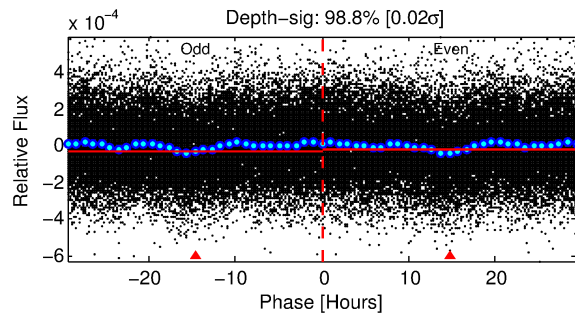
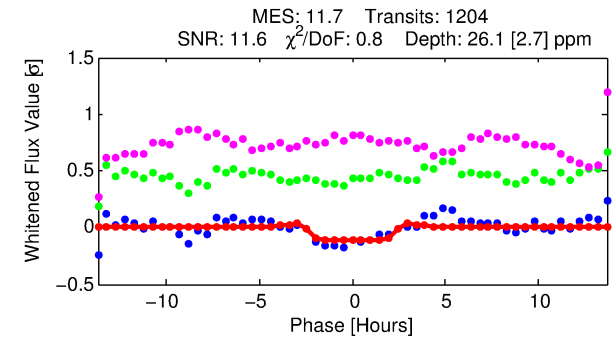
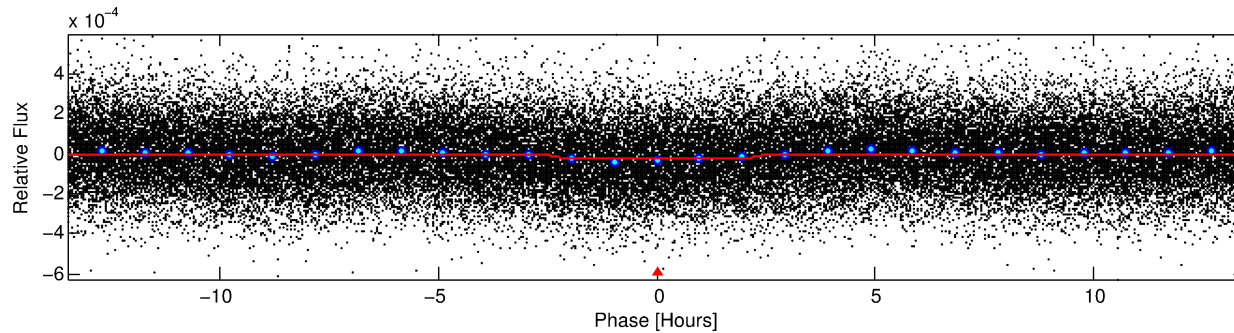
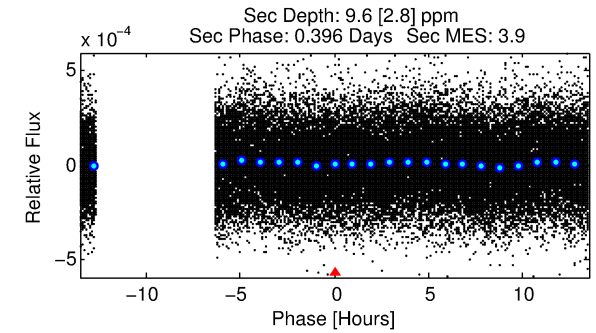
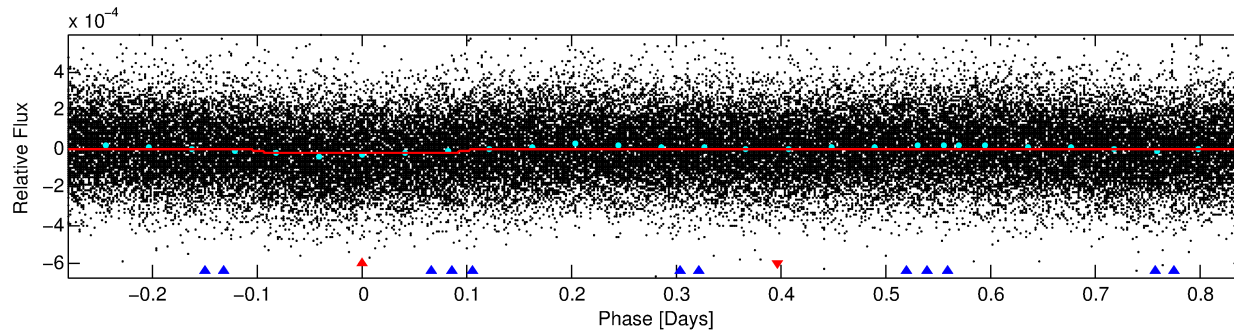
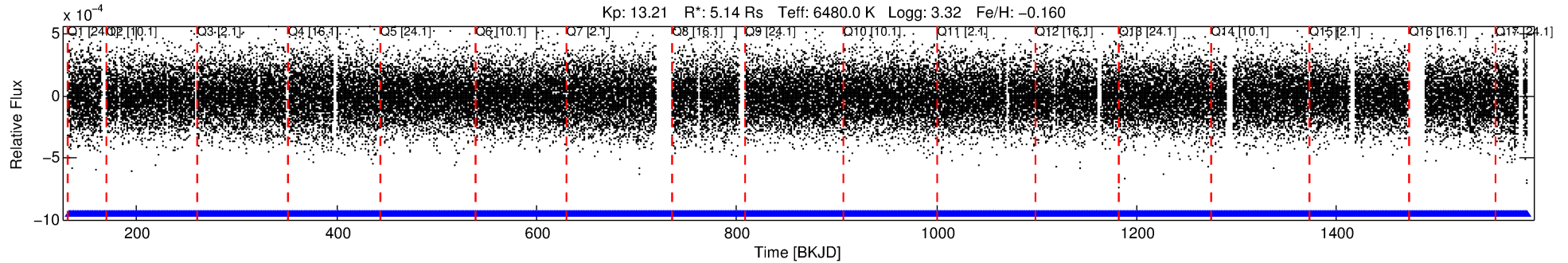
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008455627-01

No Significant Match Found

# DV One-Page Summary

KIC: 8455627 Candidate: 1 of 2 Period: 1.125 d



## DV Fit Results:

Period = 1.12483 [0.00001] d  
Epoch = 132.5349 [0.0035] BKJD  
Rp/R\* = 0.0047 [0.0027]  
a/R\* = 1.83 [3.79]  
b = 0.23 [12.35]  
Seff = 58143.36 [44030.60]  
Teq = 3960 [750] K  
Rp = 2.65 [1.95] Re  
a = 0.0268 [0.0124] AU  
Ag = 0.54 [0.74] [-0.62σ]  
Teffp = 5242 [1528] K [0.75σ]

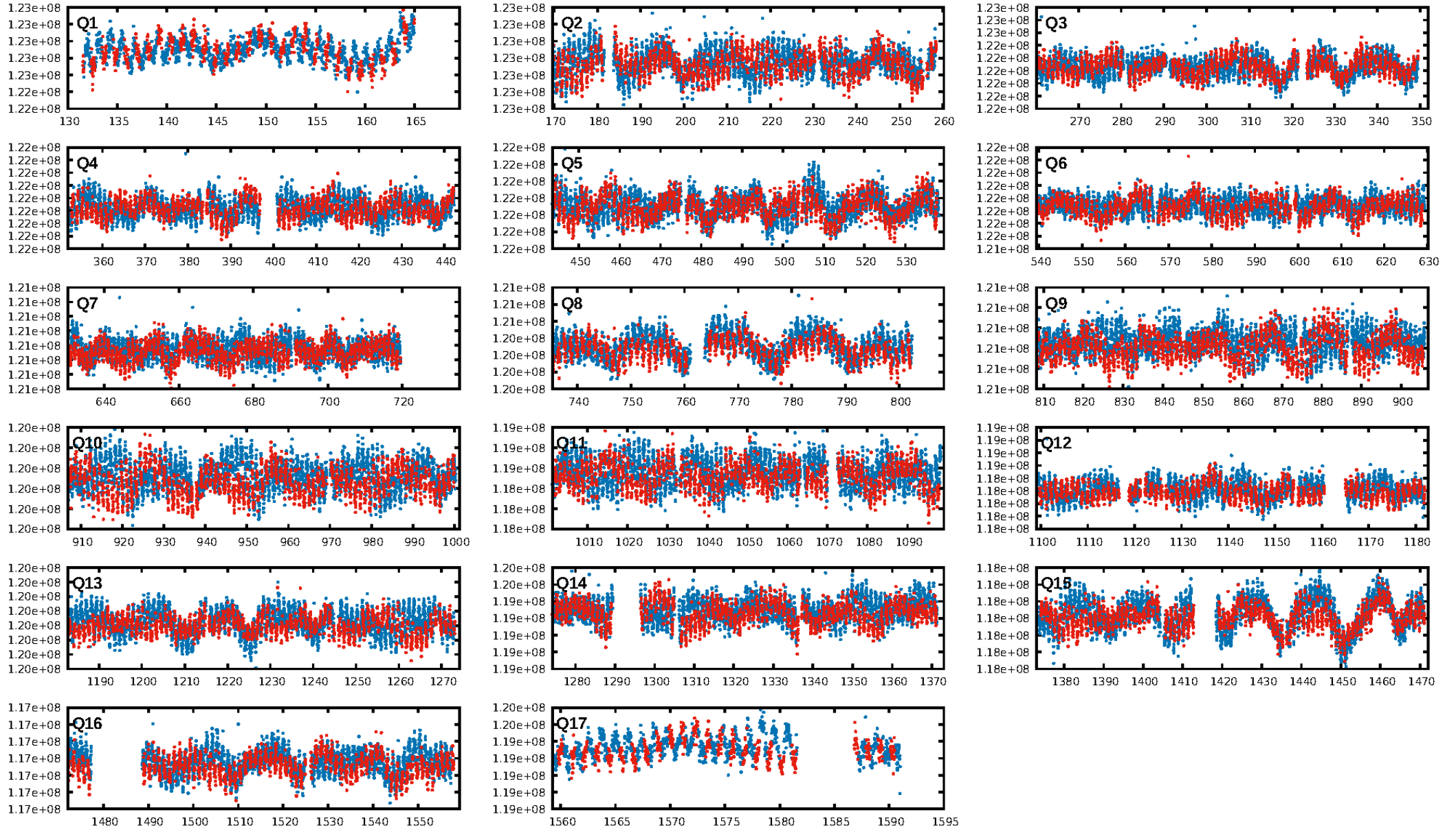
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [195.07σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.31e-24  
RollingBand-fgt: 1.00 [1150/1150]  
GhostDiagnostic-chr: 5.811  
Centroid-sig: 44.0%  
Centroid-so: 0.827 arcsec [1.04σ]  
OotOffset-rm: 0.101 arcsec [0.59σ]  
KicOffset-rm: 0.242 arcsec [1.23σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

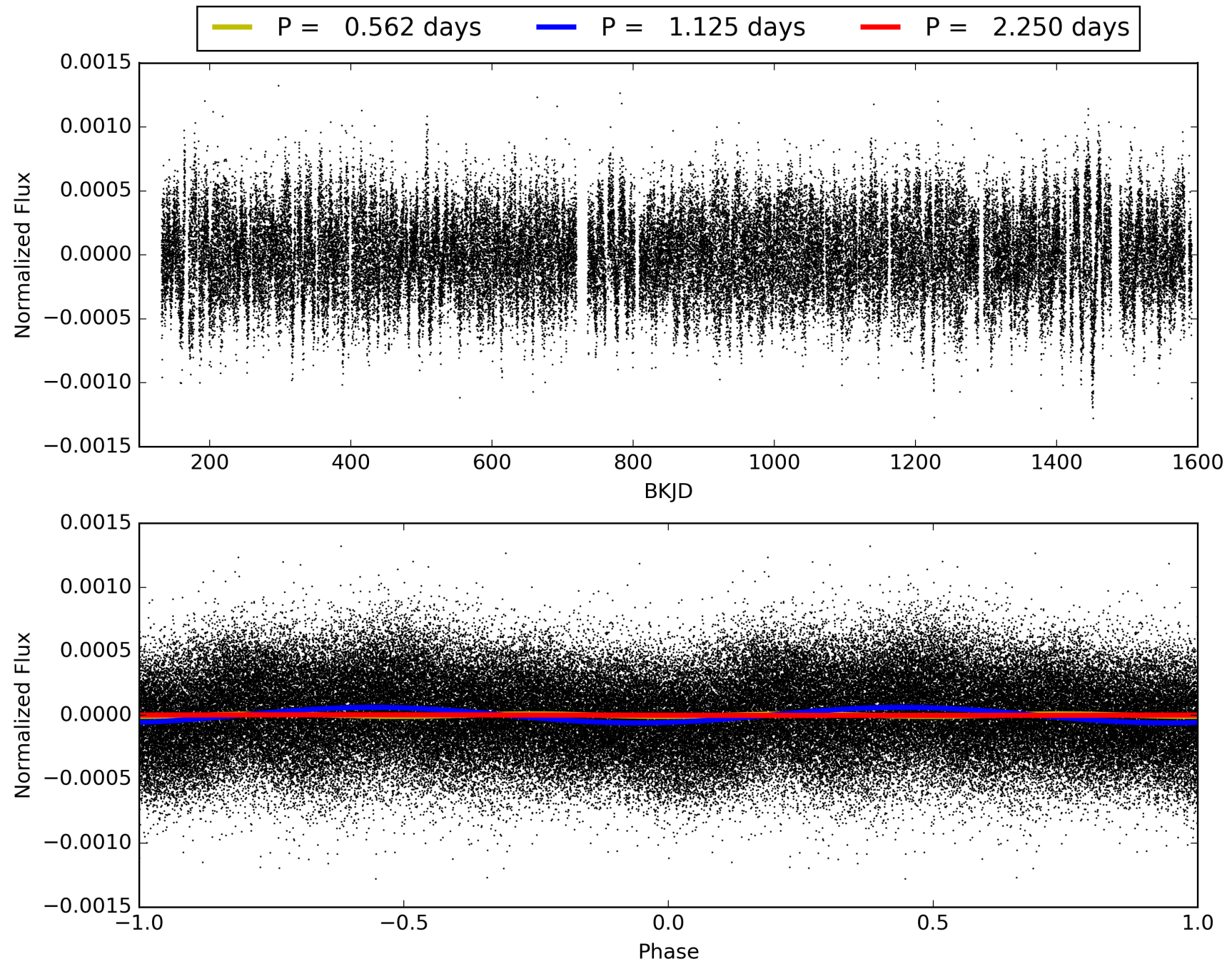
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:21:34 Z

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

# TCE 008455627-01, PDC Light Curves

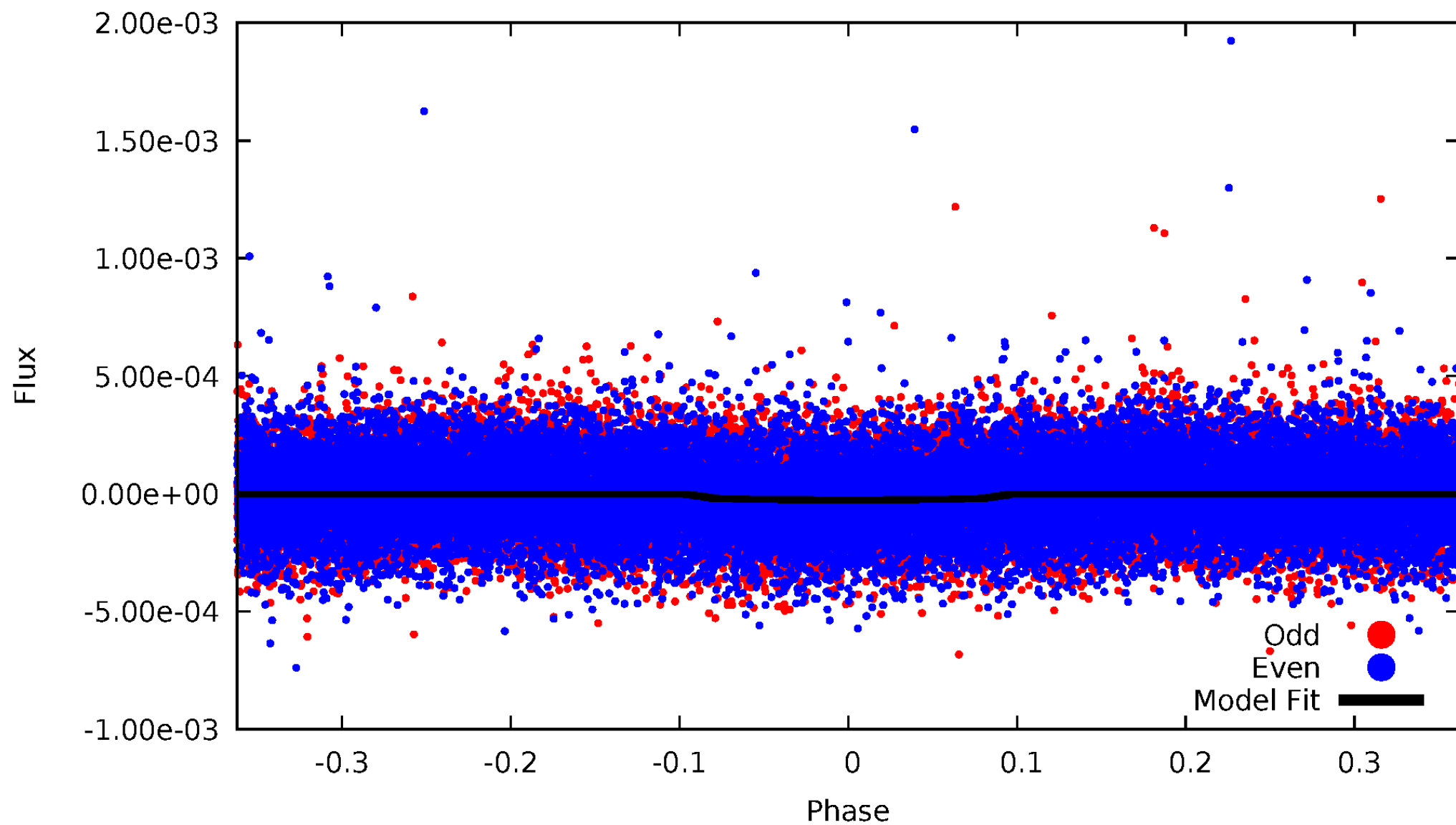


TCE 008455627-01



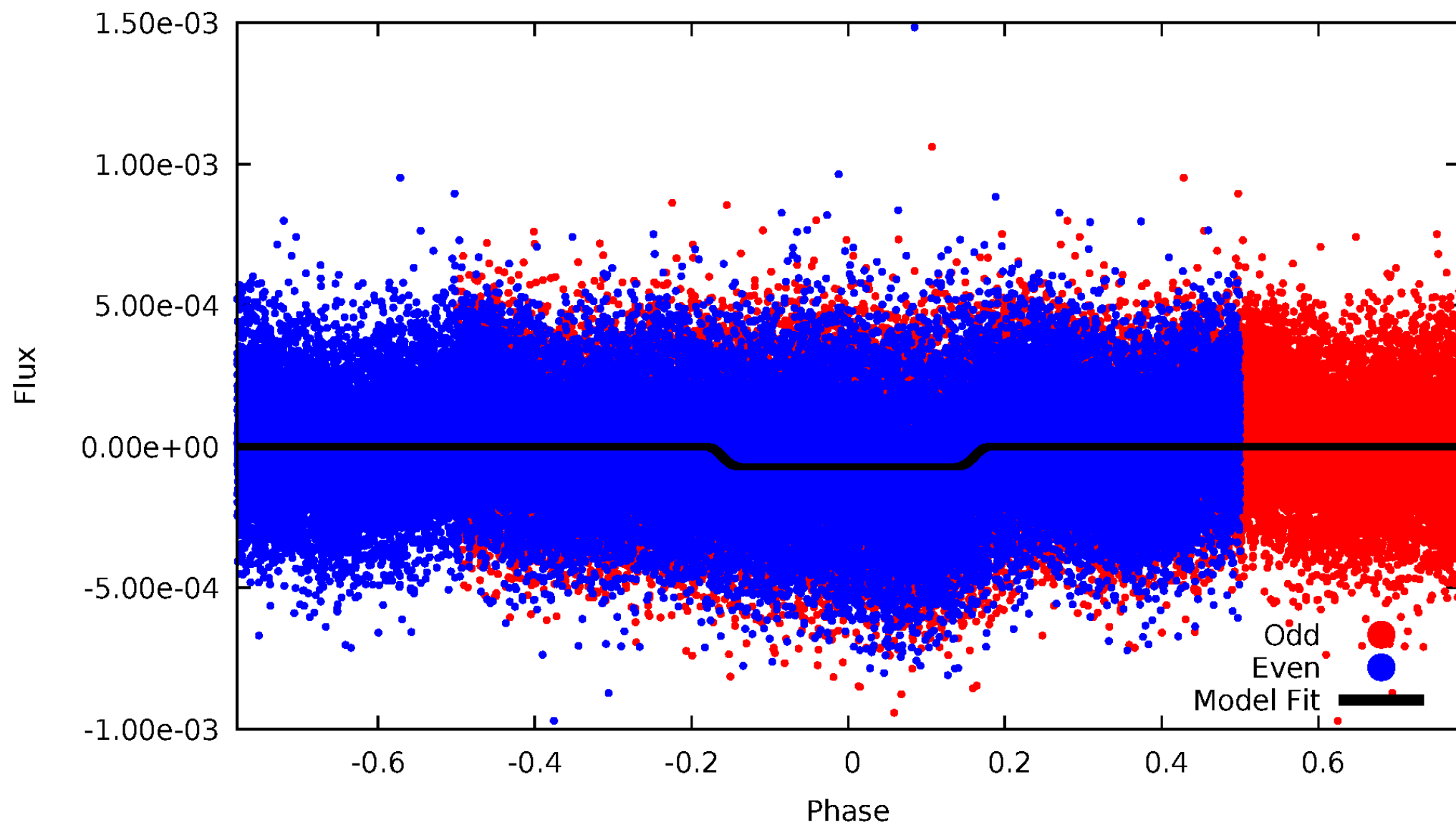
# DV Odd/Even

TCE 008455627-01



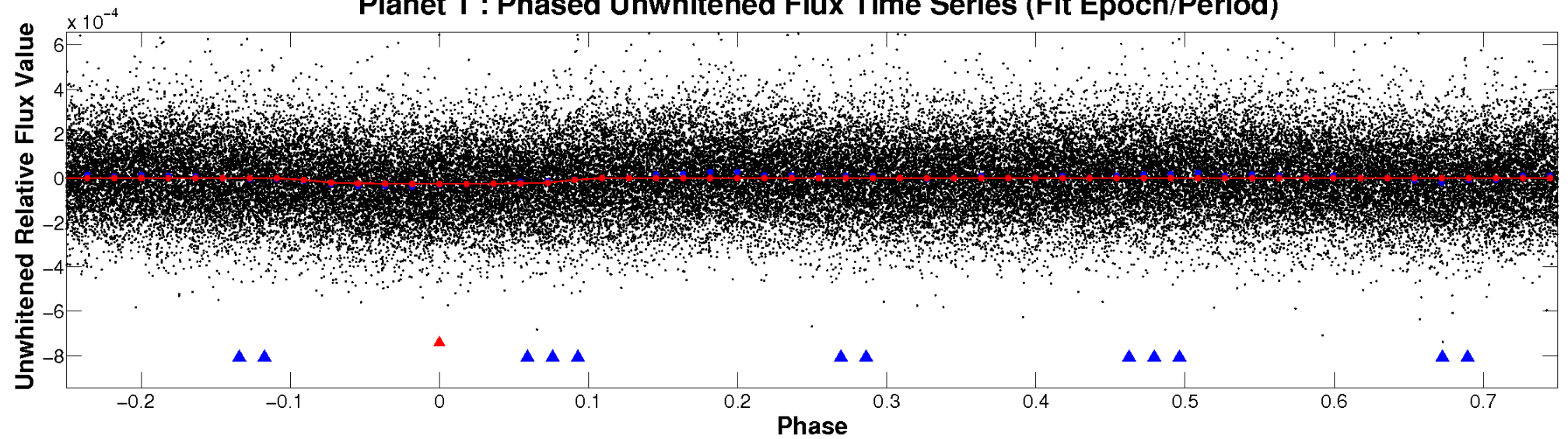
# ALT Odd/Even

TCE 008455627-01

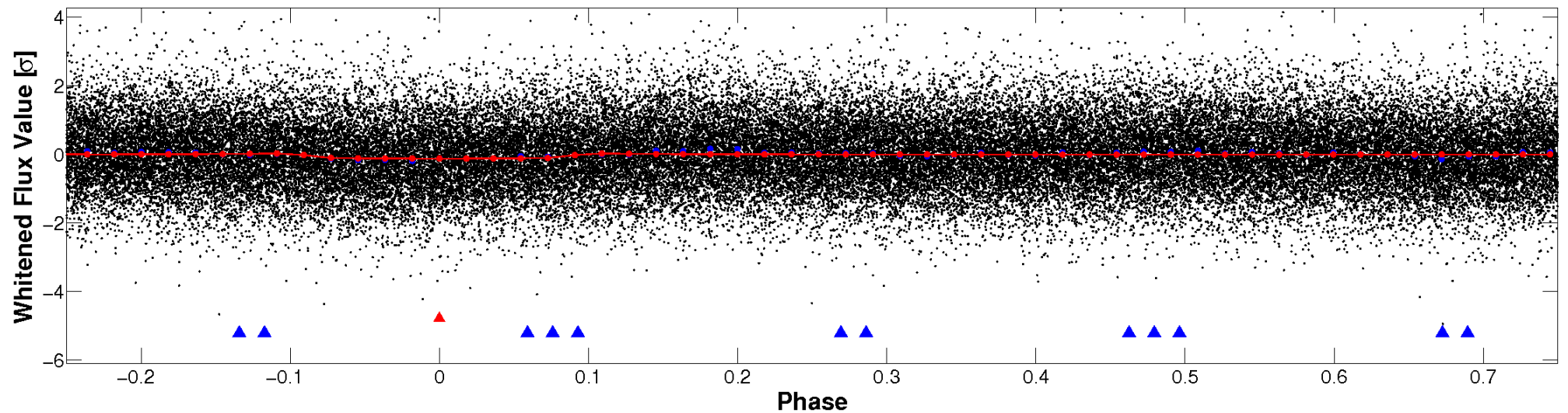


# Non-Whitened Vs. Whitened Light Curve

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

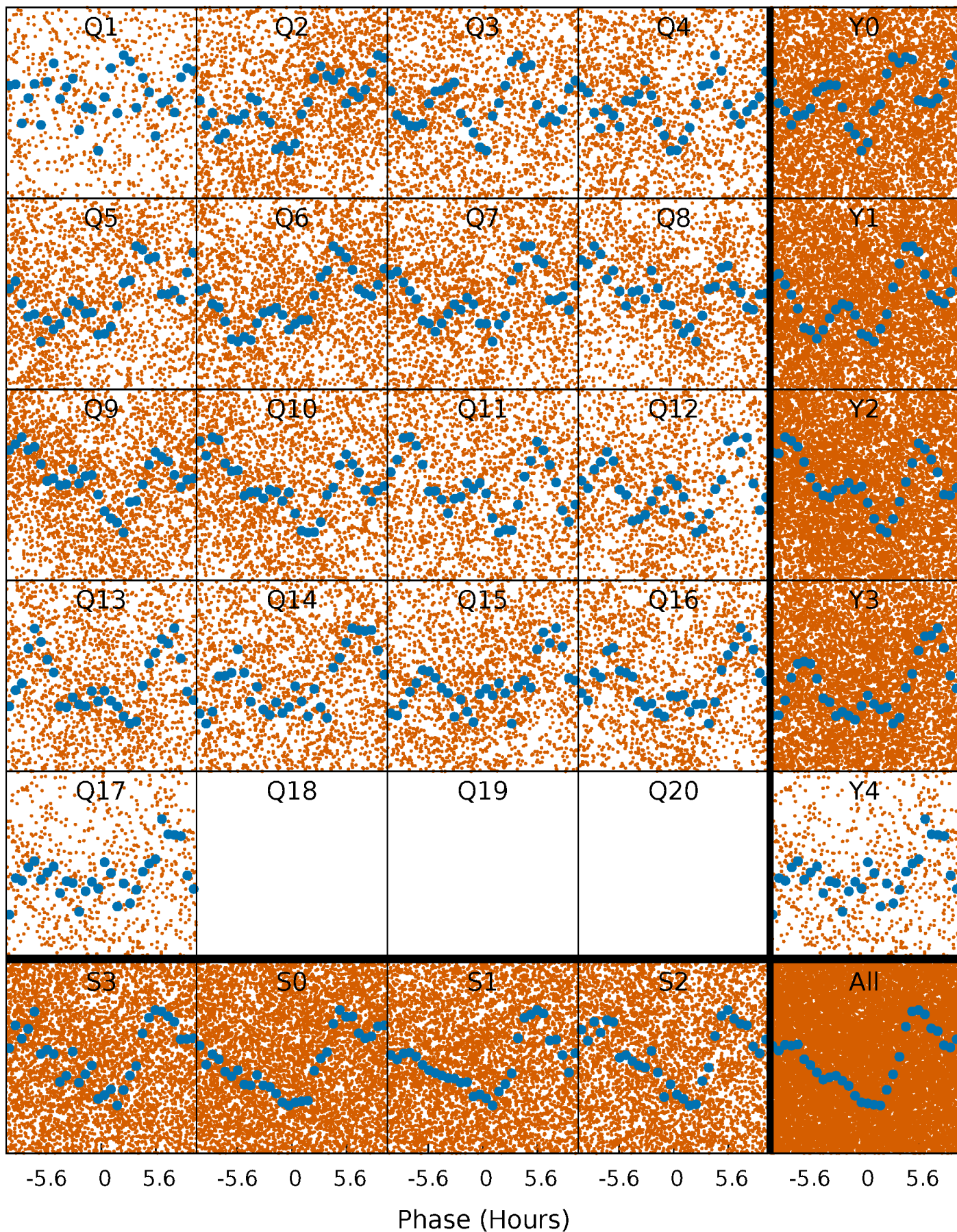


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



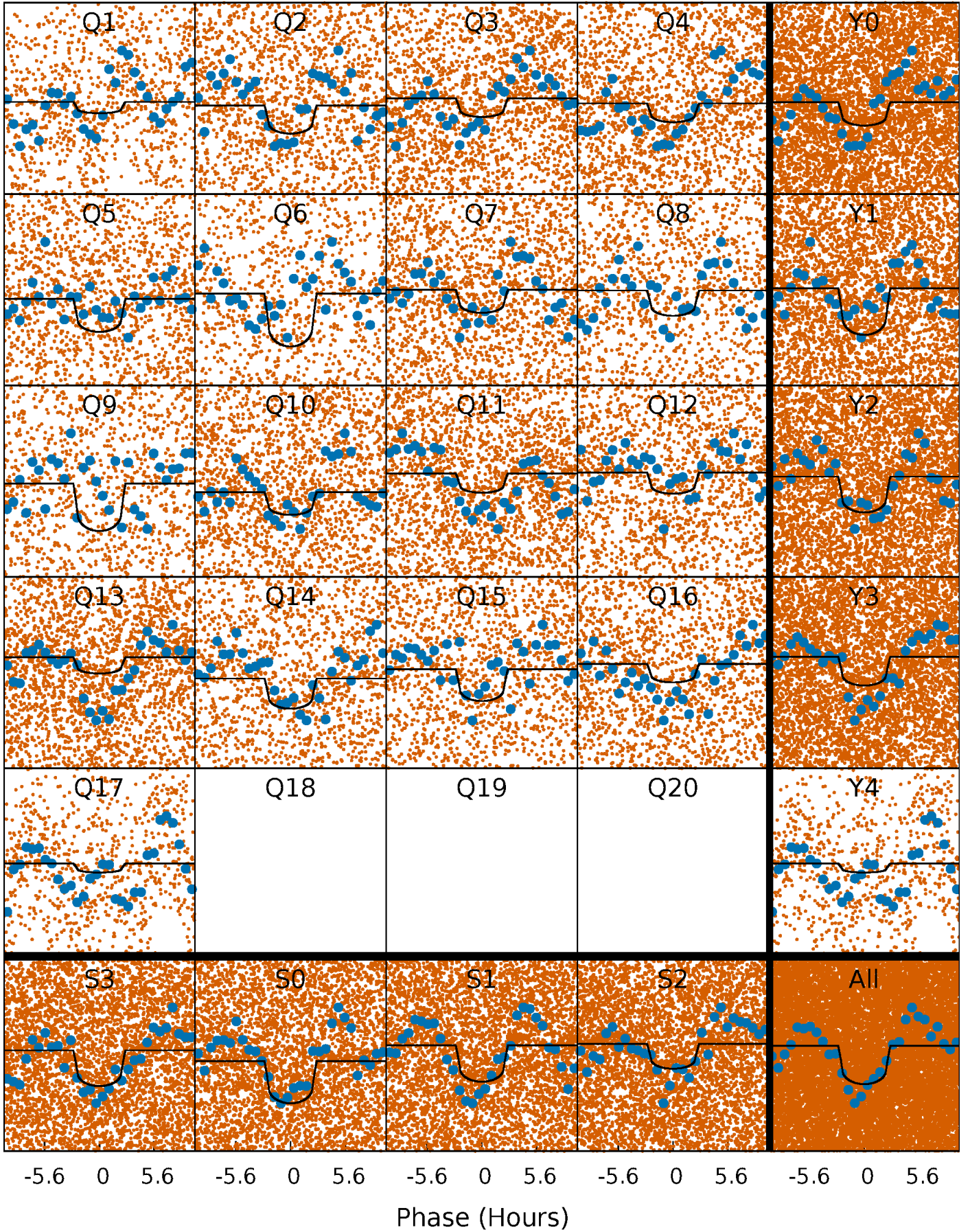
# PDC Quarter-Phased Transit Curves

TCE 008455627-01 P= 1.124830 Days  $T_0=132.534945$  (BKJD)



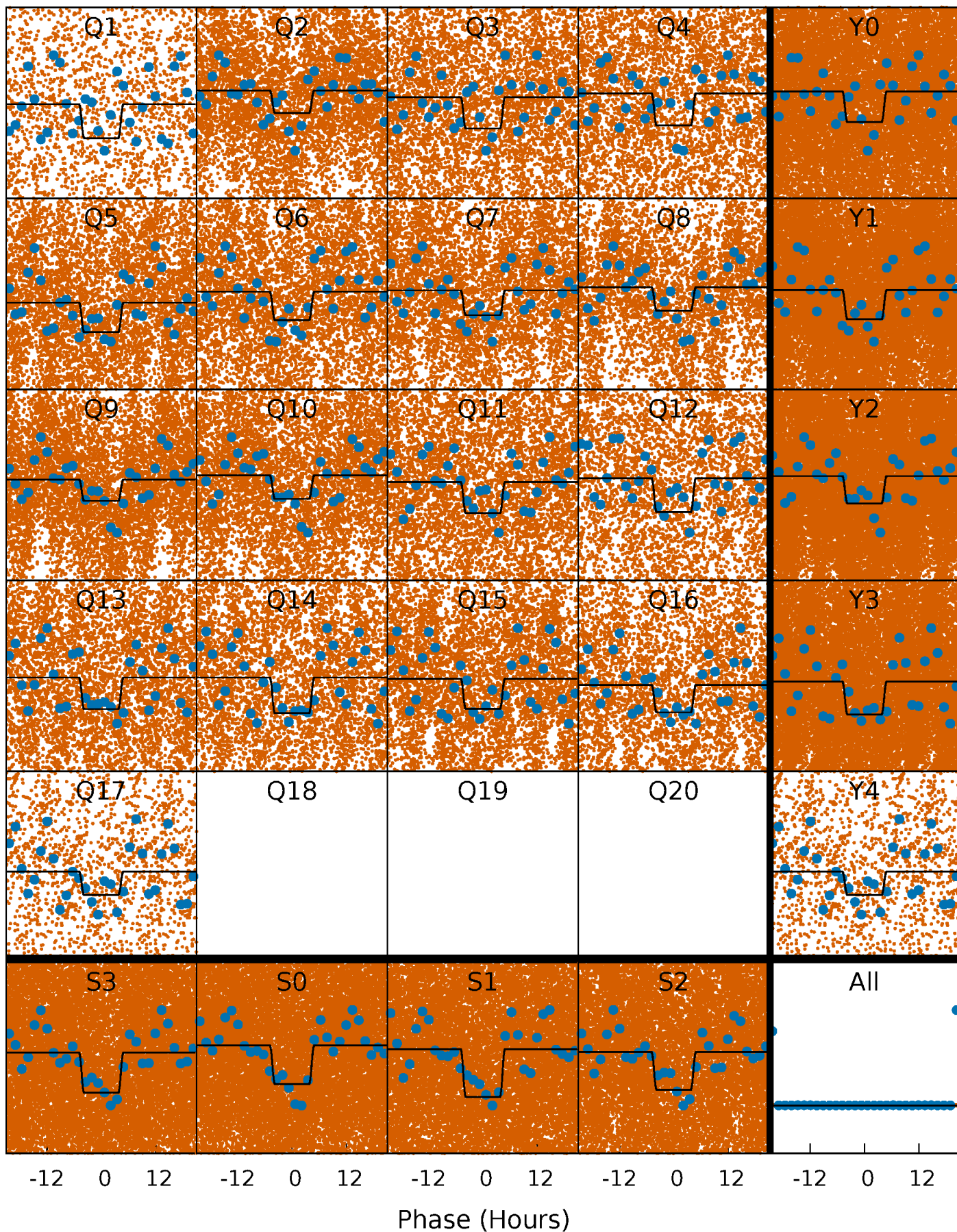
# DV Quarter-Phased Transit Curves

TCE 008455627-01 P= 1.124830 Days  $T_0=132.534945$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

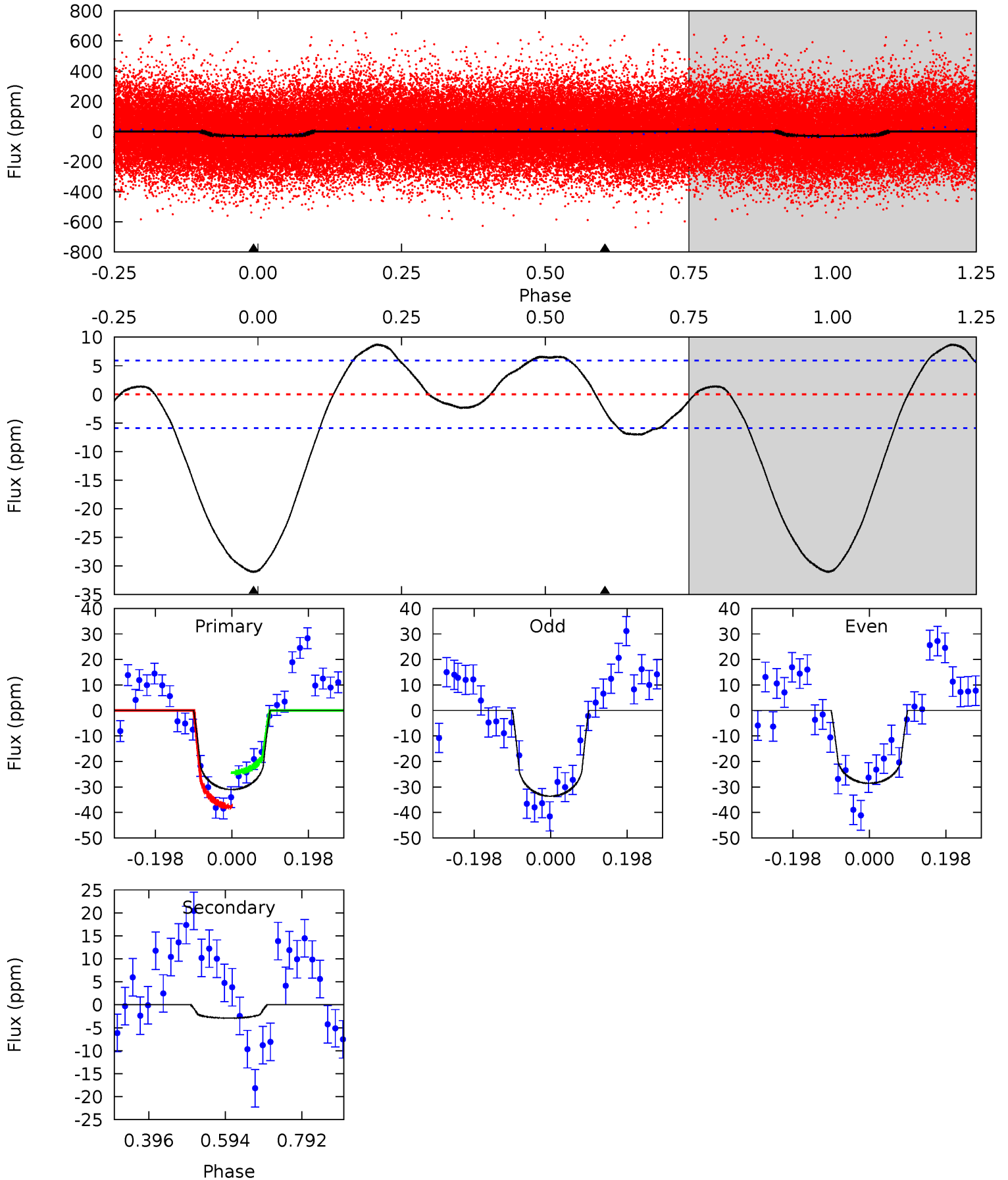
TCE 008455627-01 P= 1.124846 Days  $T_0=132.477830$  (BKJD)



# DV Model-Shift Uniqueness Test

008455627-01, P = 1.124830 Days, E = 131.410115 Days

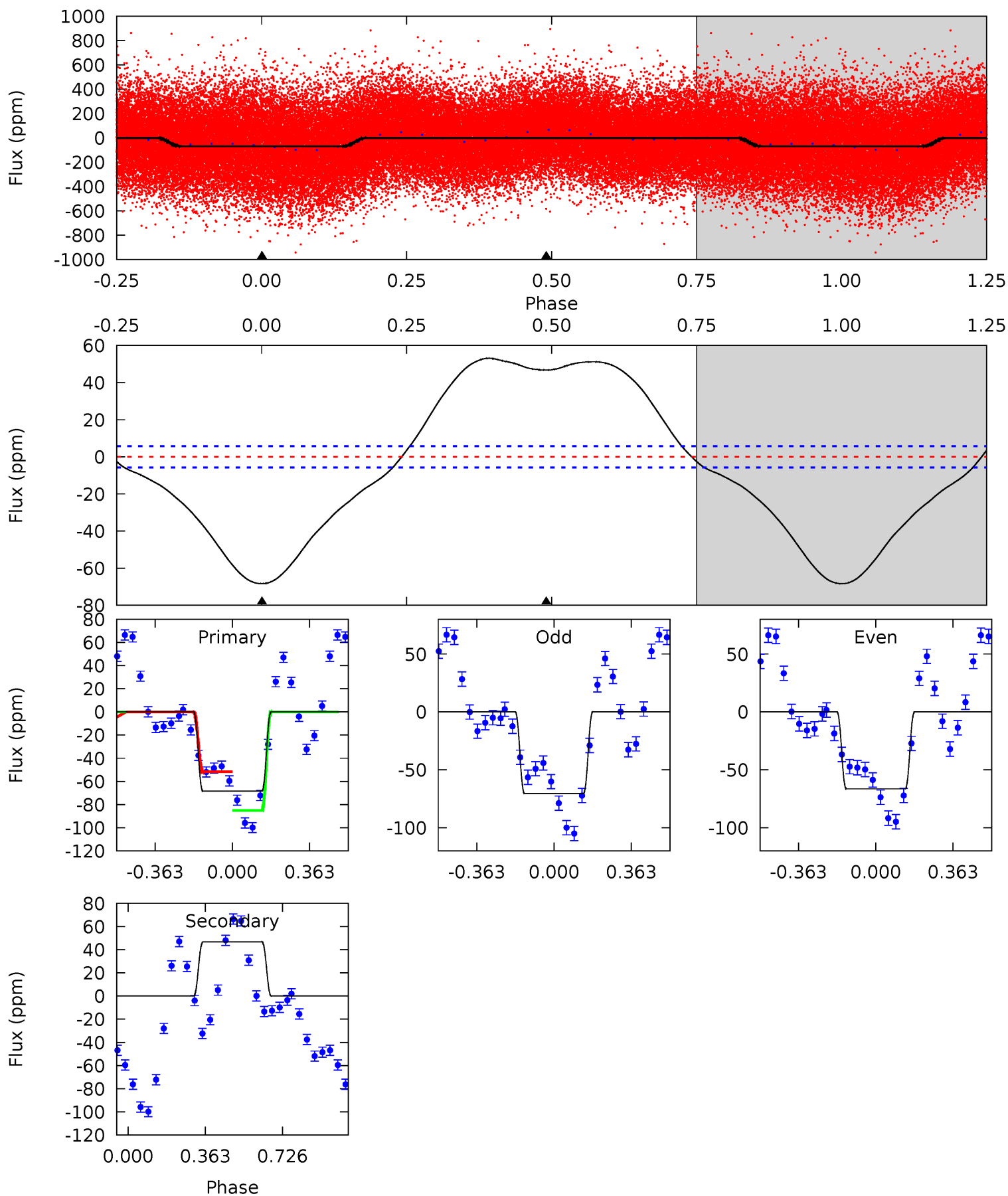
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.2	2.17	0	0	4.42	1.29	3.07	23.2	23.2	2.17	2.17	1.89	0.97	0.22	5.03



# Alt Model-Shift Uniqueness Test

008455627-01, P = 1.124846 Days, E = 131.352984 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
51.2	-35.0	0	0	4.29	0.91	3.97	51.2	51.2	-35.0	-35.0	1.48	1.02	0.44	11.6



### Stellar Parameters For KIC 008455627

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6480^{+197}_{-197}$	$3.323^{+0.441}_{-0.049}$	$-0.160^{+0.350}_{-0.300}$	$5.142^{+0.272}_{-2.444}$	$2.028^{+0.124}_{-0.496}$	$0.021^{+0.092}_{-0.004}$
	+3%/-3%	+13%/-1%	+219%/-188%	+5%/-48%	+6%/-24%	+436%/-17%
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 008455627-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3 \pm 1$	$2.46^{+1.49}_{-1.27}$	$5390^{+289}_{-611}$	$-3734^{+8692}_{-708}$	$0.183^{+0.624}_{-0.125}$
Alt.	$47 \pm 1$	$4.34^{+1.69}_{-1.65}$	$5413^{+266}_{-582}$	$-6202^{+585}_{-1137}$	$-0.988^{+0.481}_{-1.452}$

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

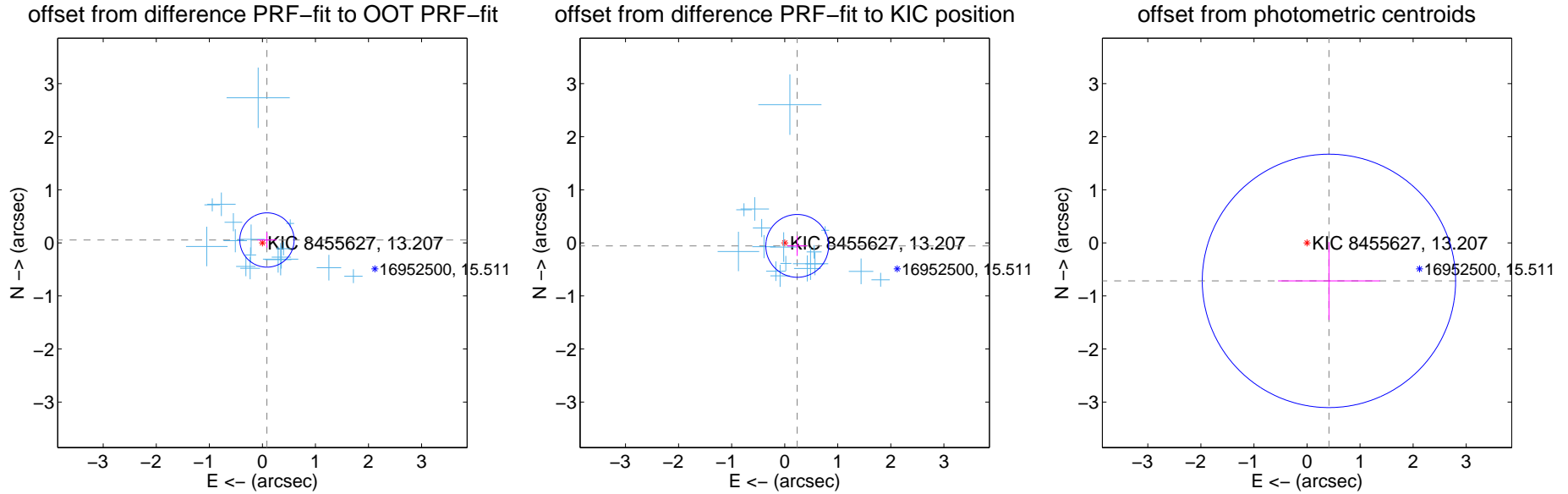
## DV Centroid Data

Supplemental centroid analysis for 008455627-01. Kepler magnitude: 13.21. Transit SNR 11.59

There are 17 quarters with good PRF difference image offsets

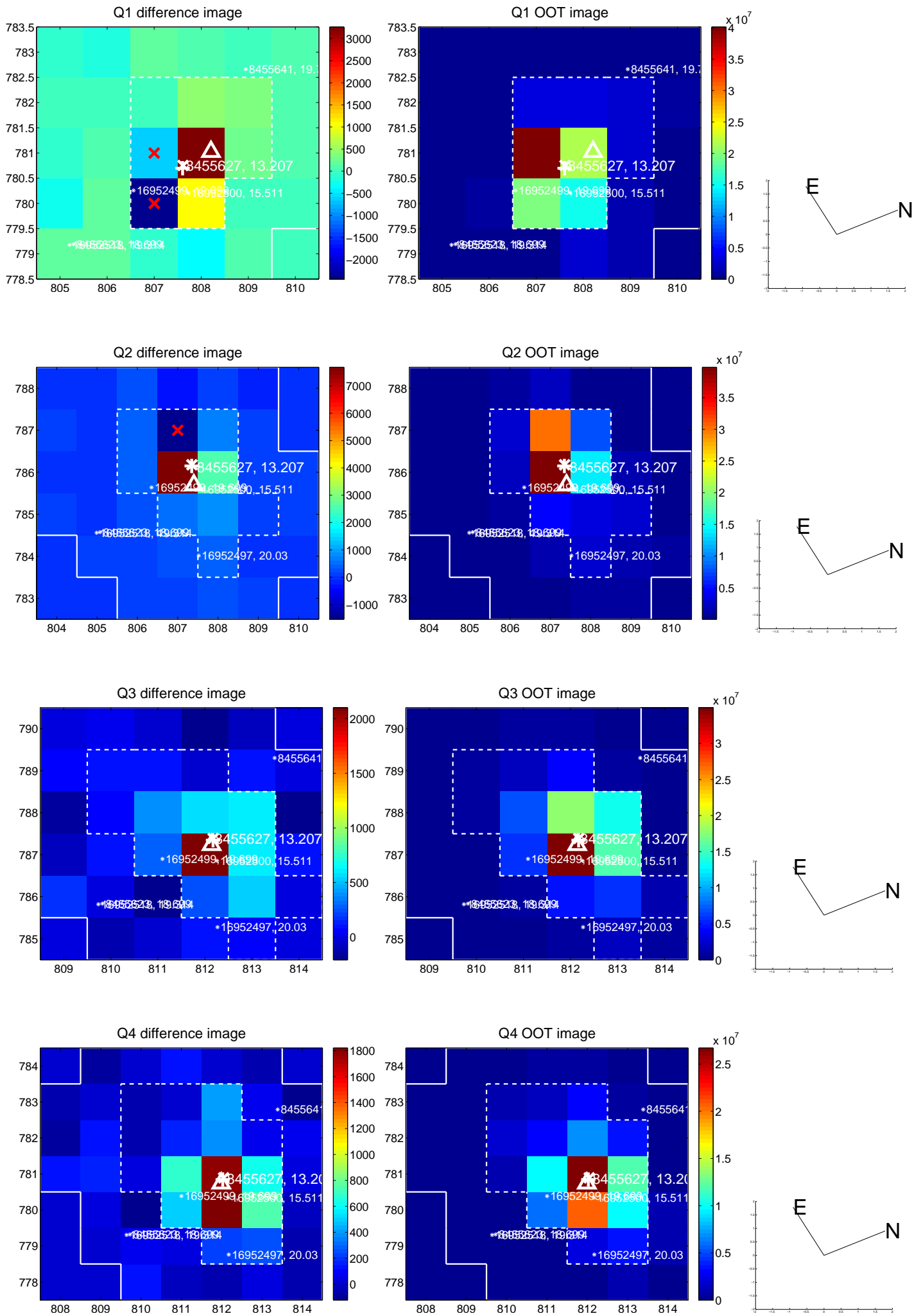
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.101 \pm 0.171$	0.59	$-0.086 \pm 0.180$	$0.054 \pm 0.145$
PRF-fit source offset from KIC position	$0.242 \pm 0.197$	1.23	$-0.235 \pm 0.186$	$-0.057 \pm 0.190$
photometric centroid source offset	$0.83 \pm 0.80$	1.04	$-0.41 \pm 0.96$	$-0.72 \pm 0.73$

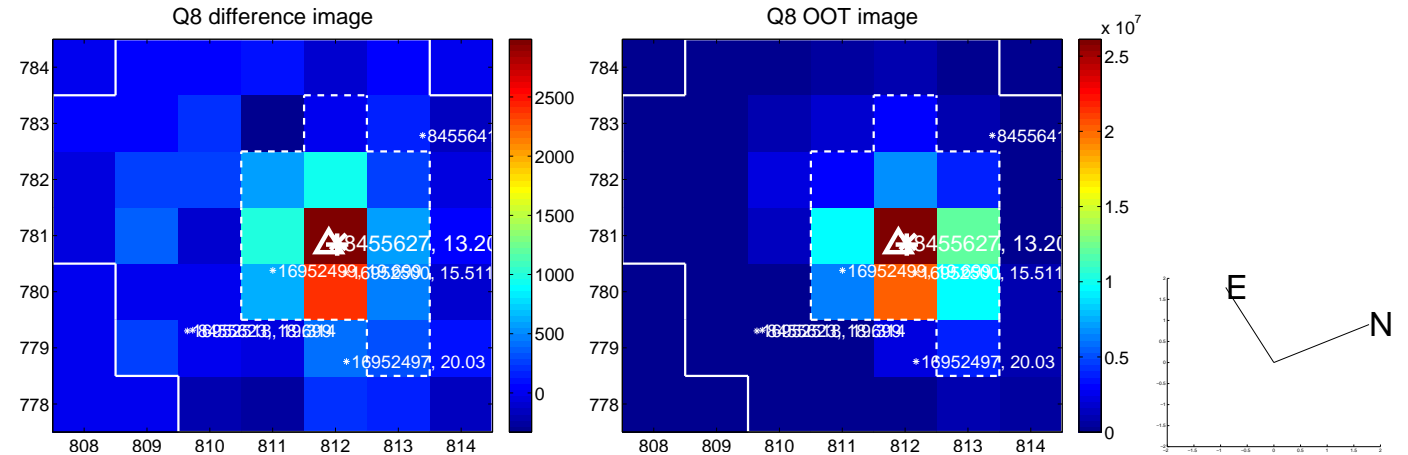
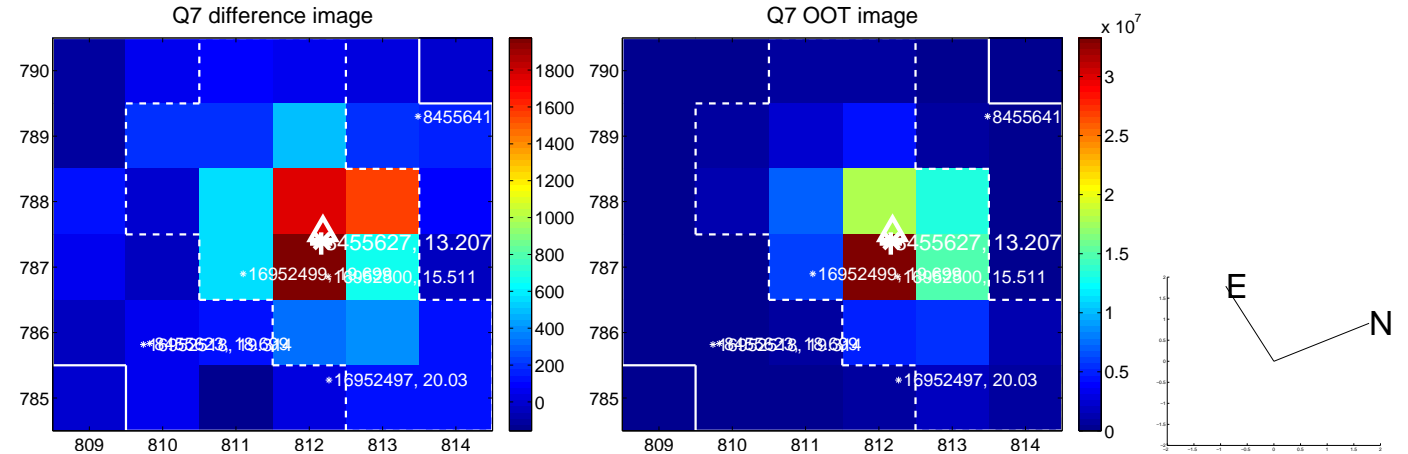
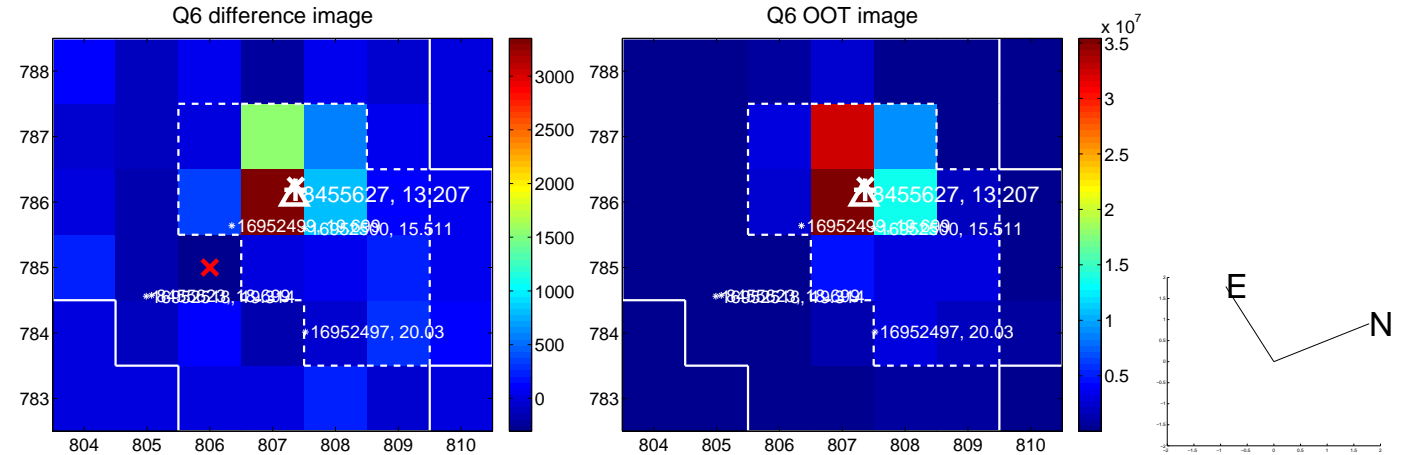
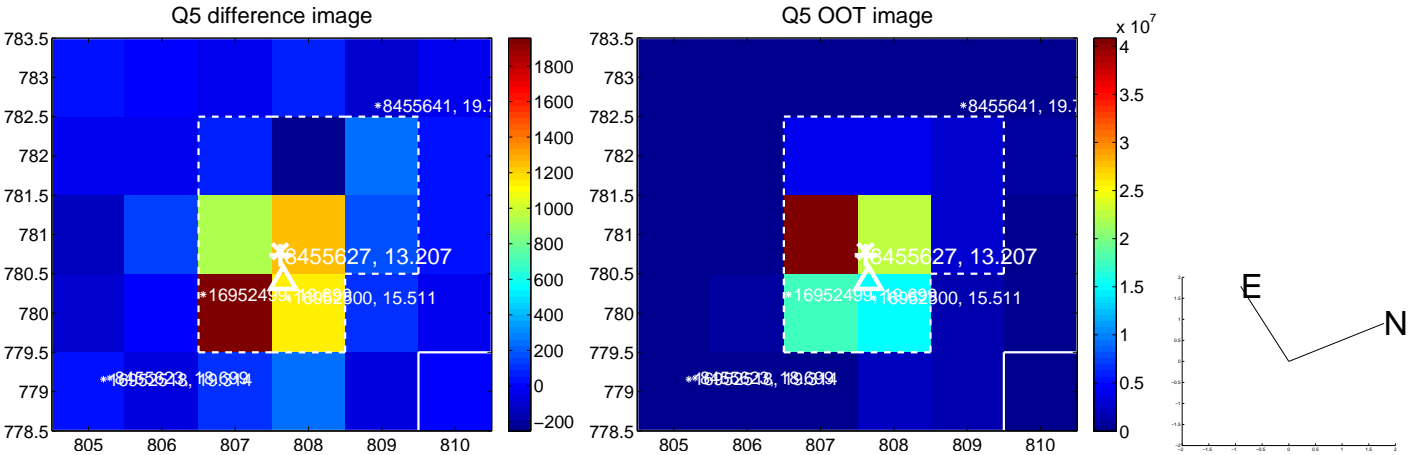


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

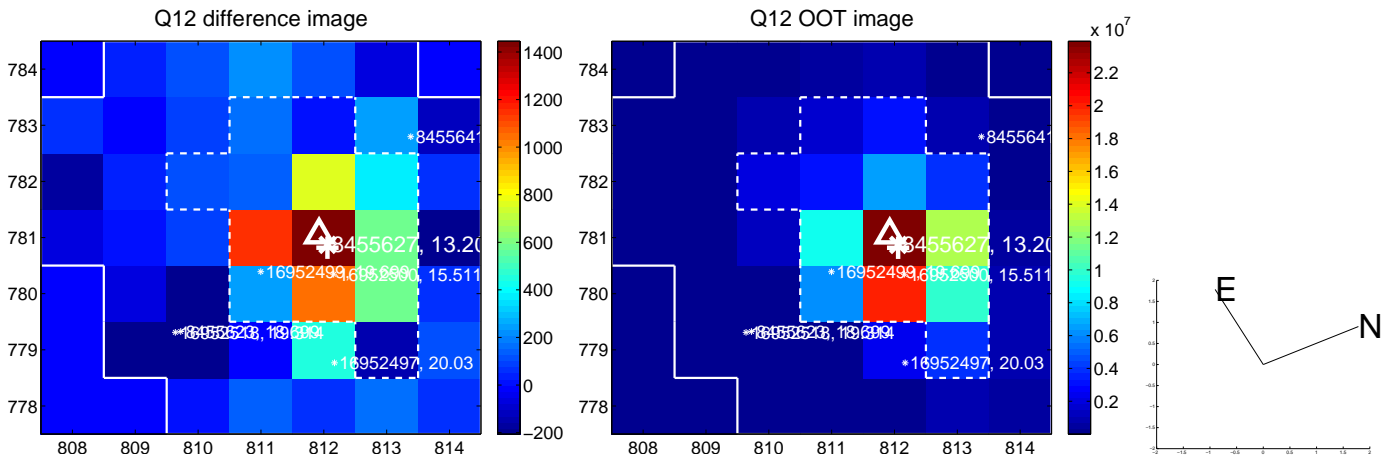
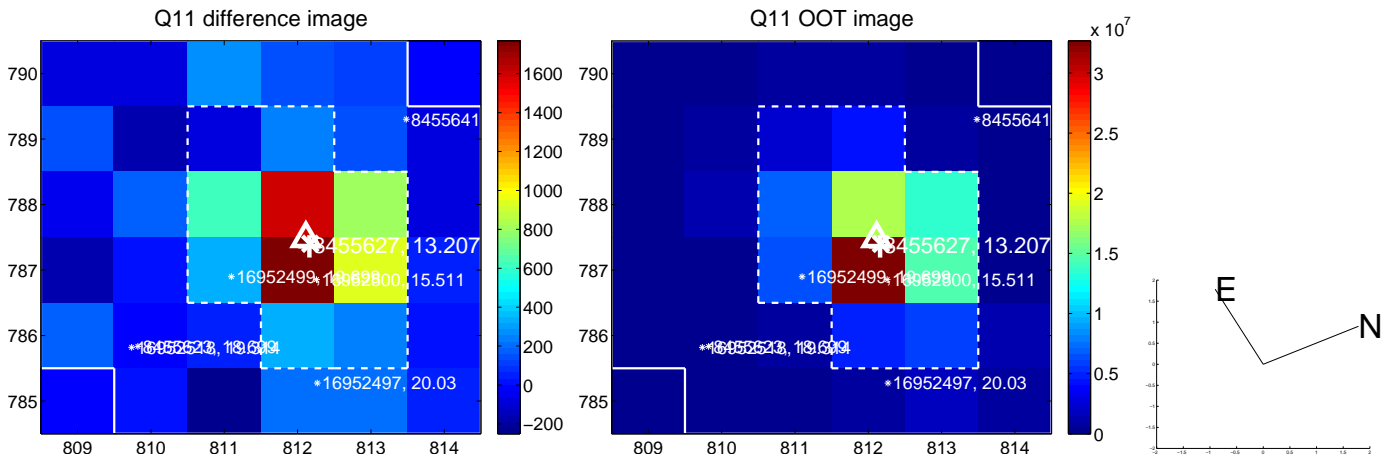
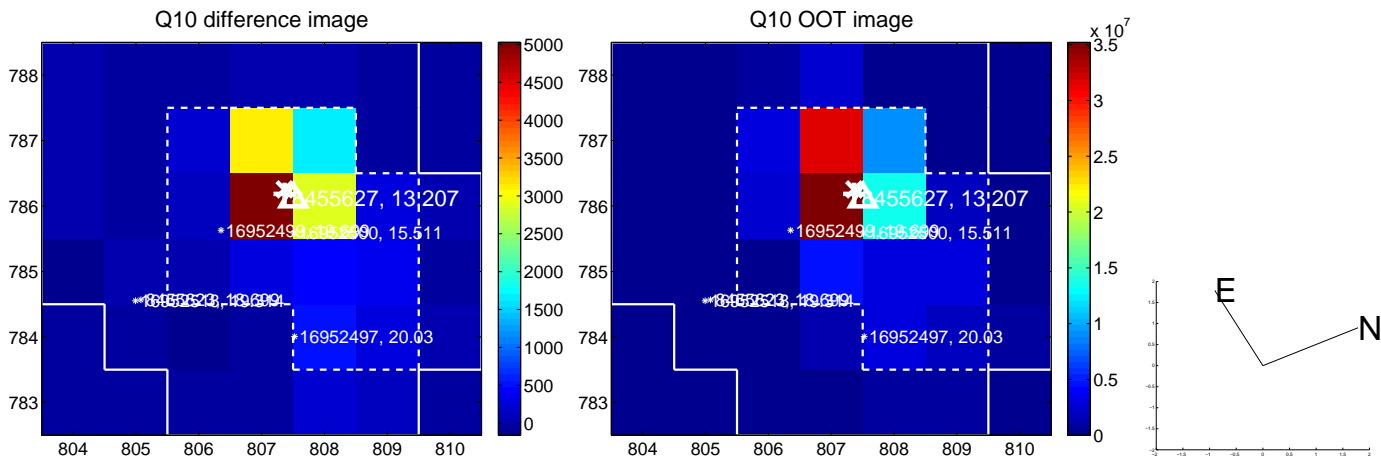
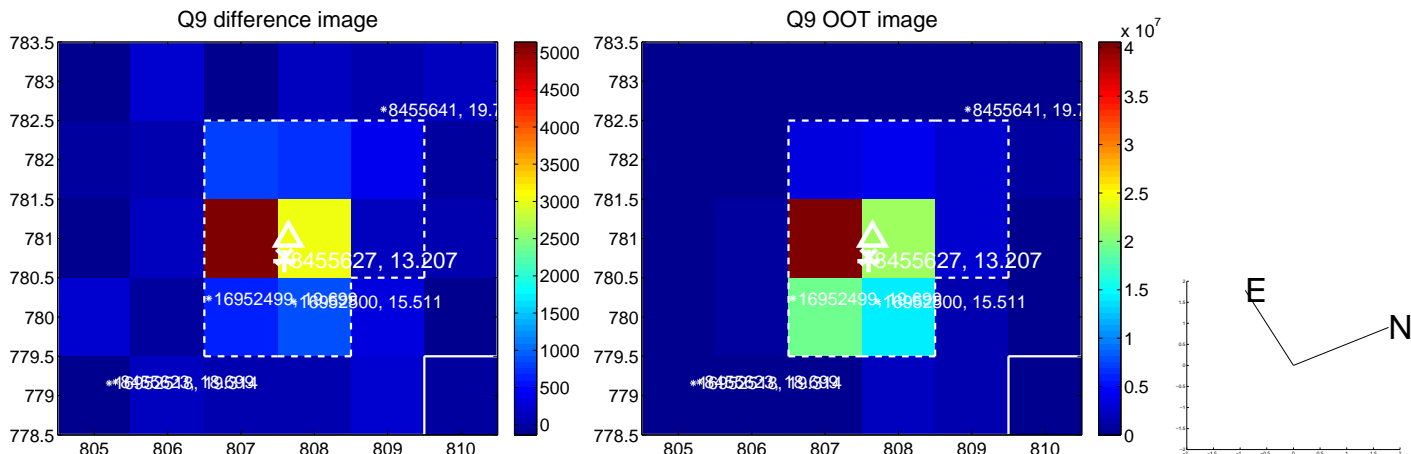
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



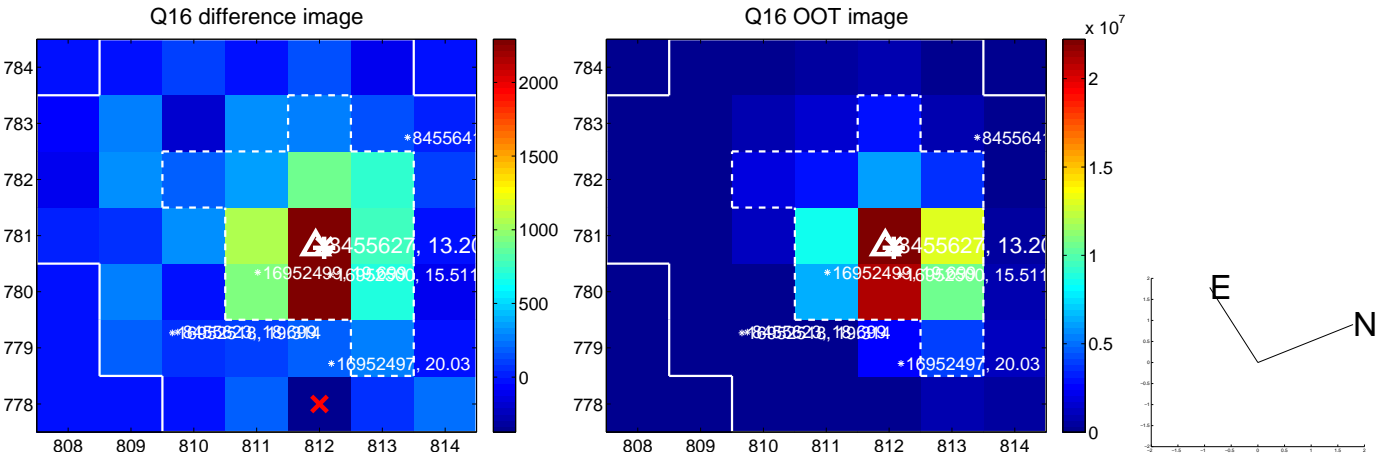
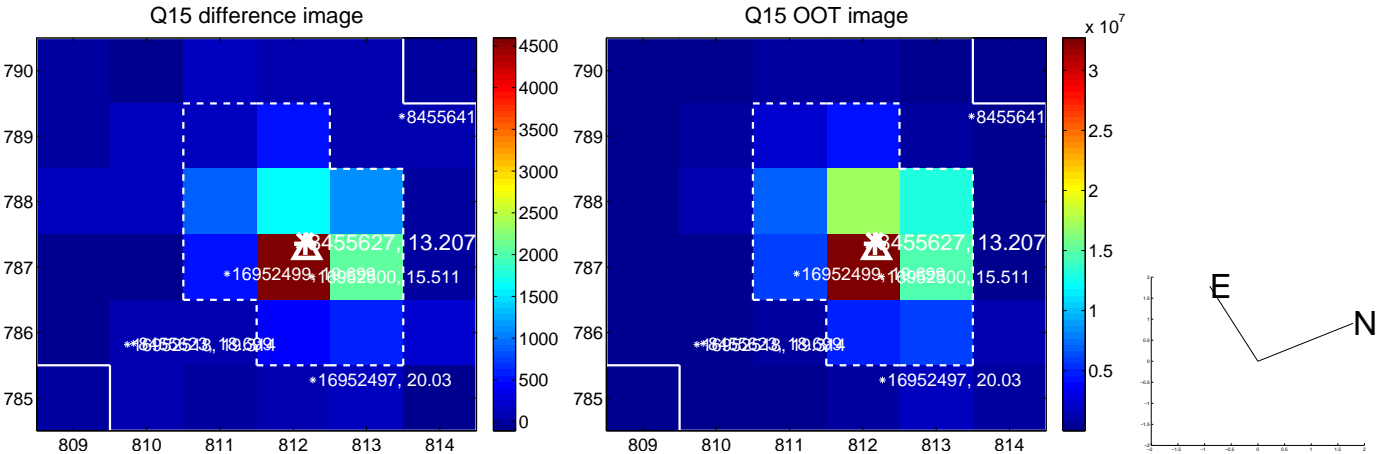
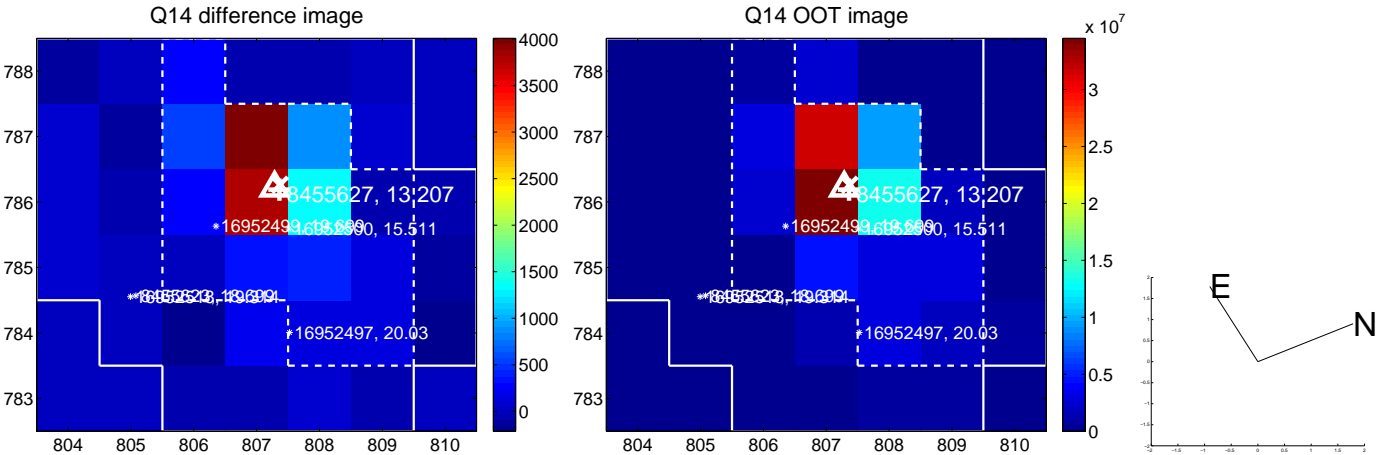
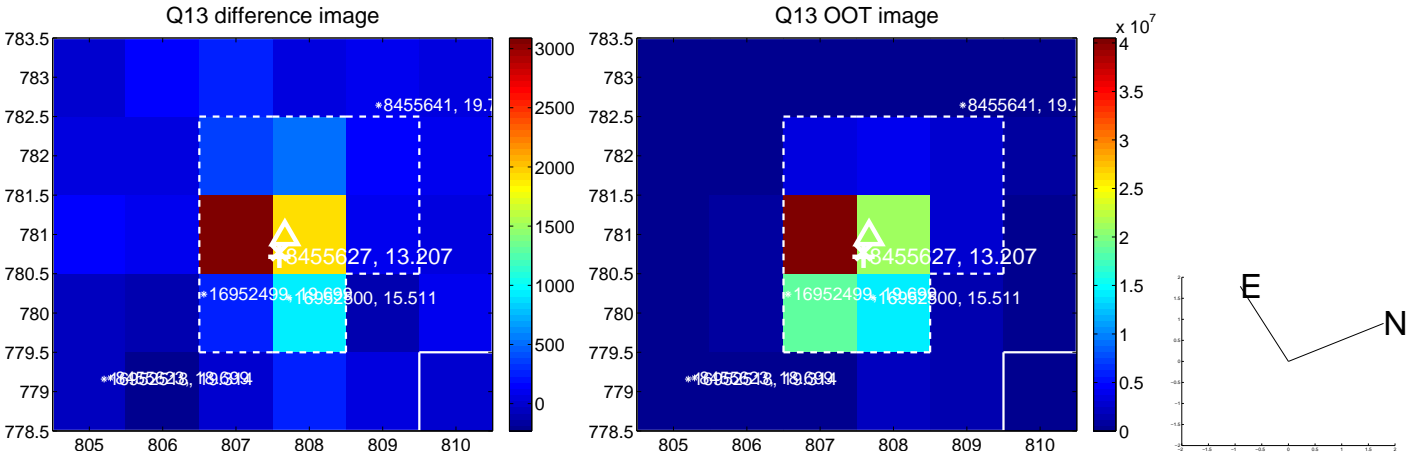
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



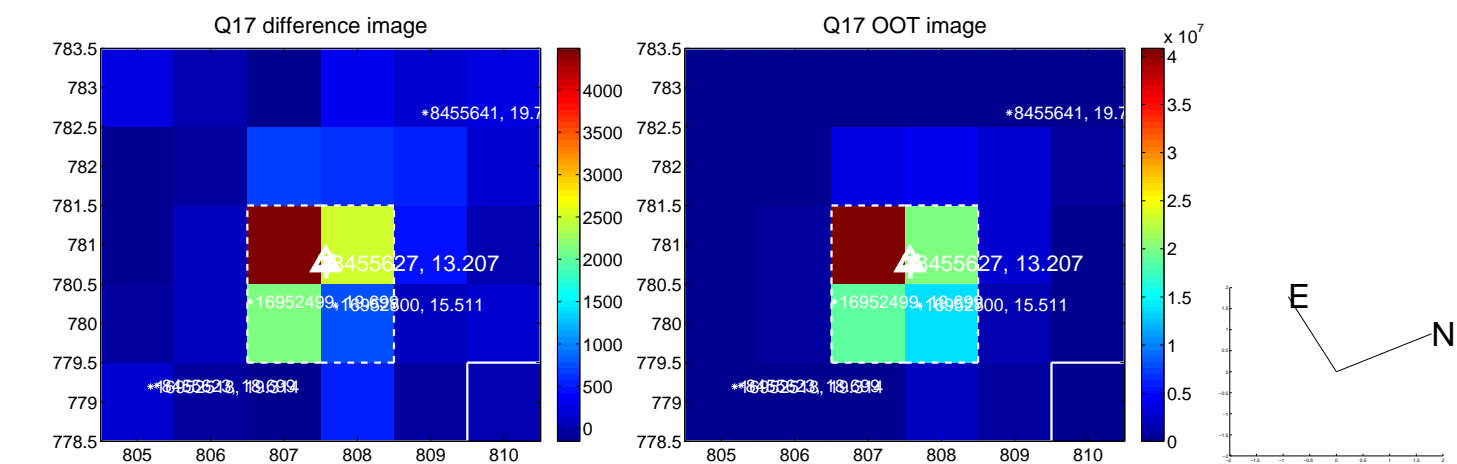
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



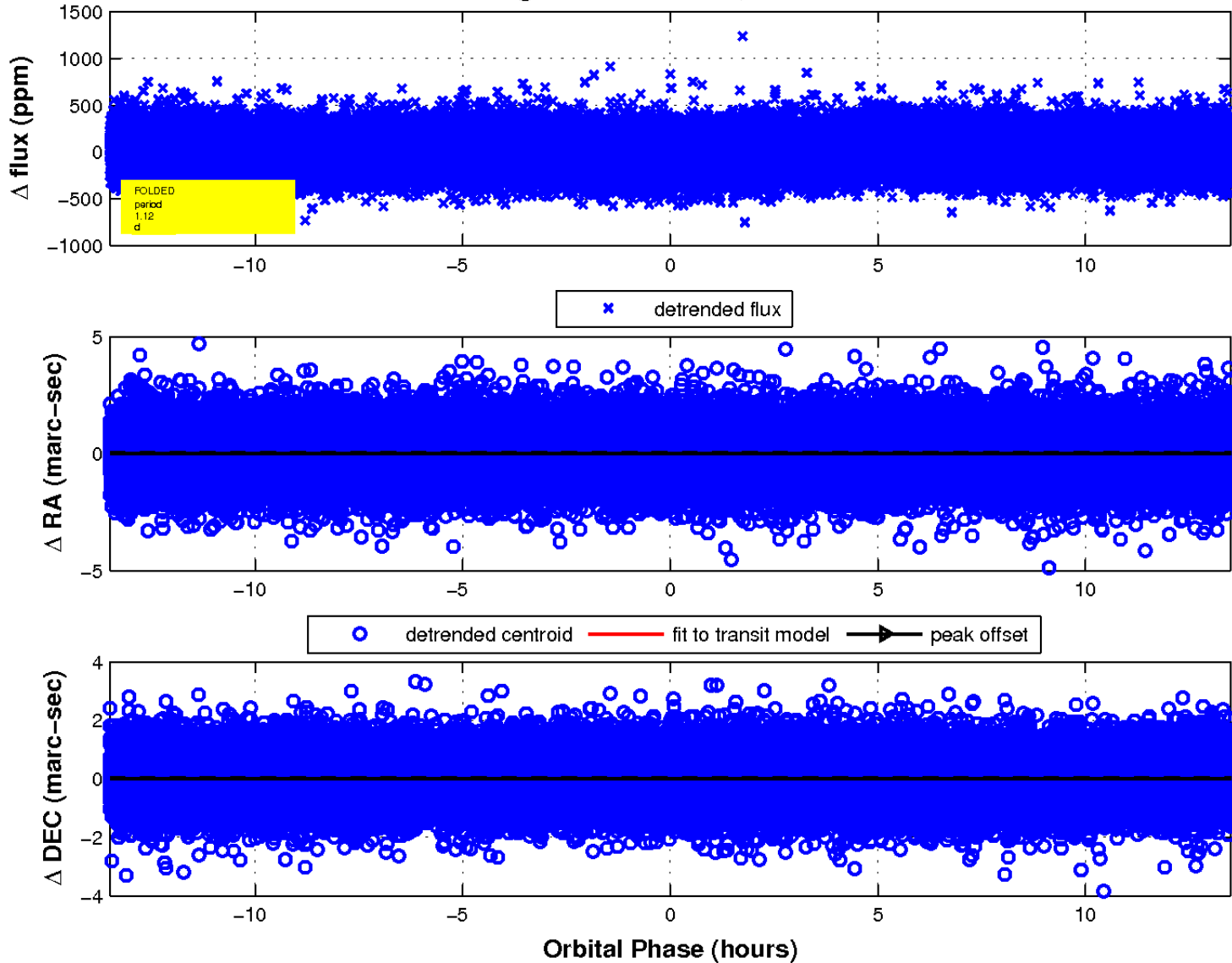
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



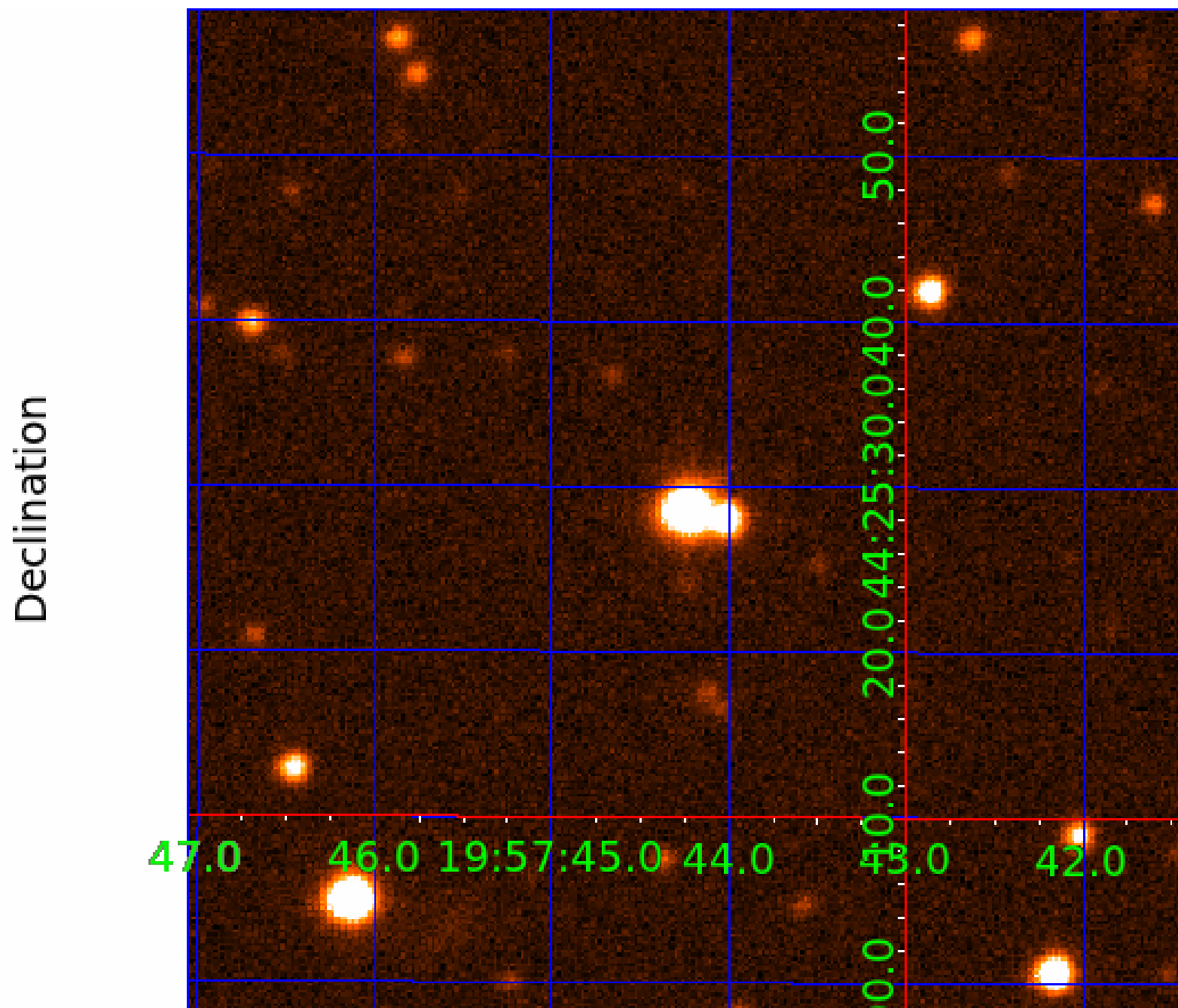
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



# KIC 008455627

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008455627-01	OBS	No	1.124830	132.534945	26.1	4.888	11.7	11.6	5.14	6480	2.65	58143.36
008455627-02	OBS	No	121.027860	149.965635	150.8	13.919	11.5	6.2	5.14	6480	7.04	113.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008455627-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008455627-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

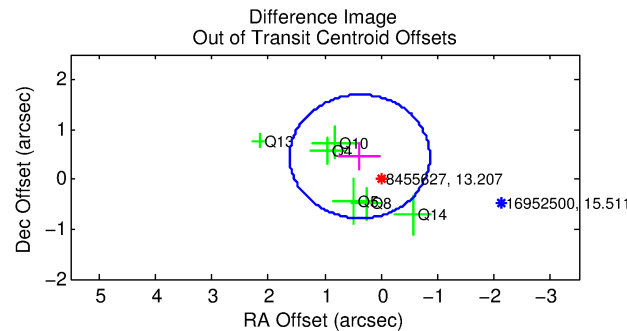
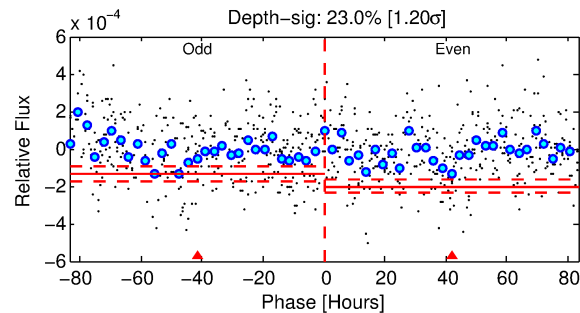
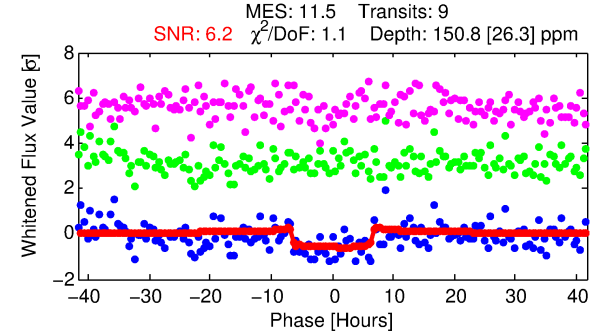
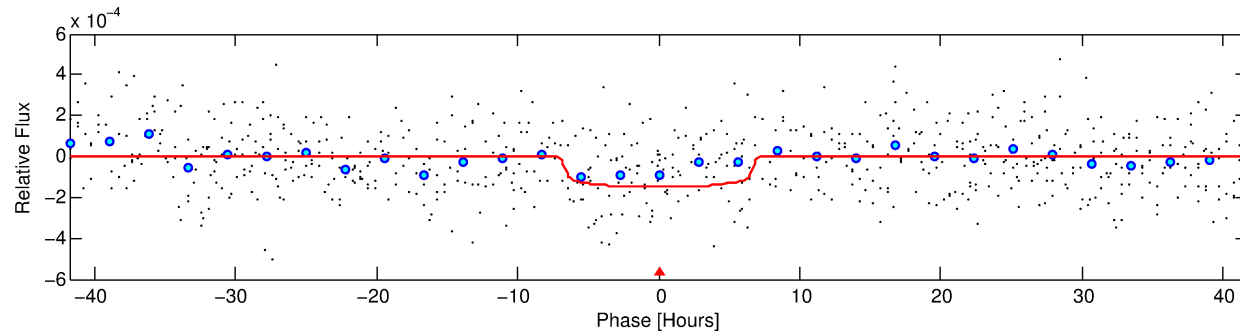
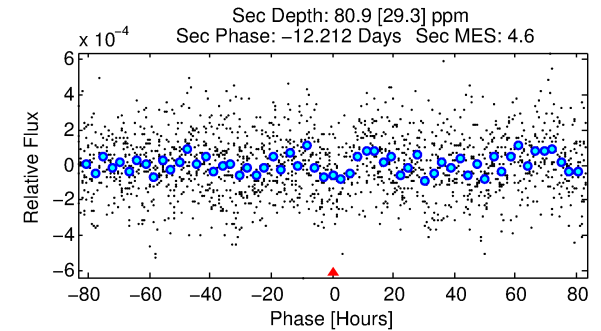
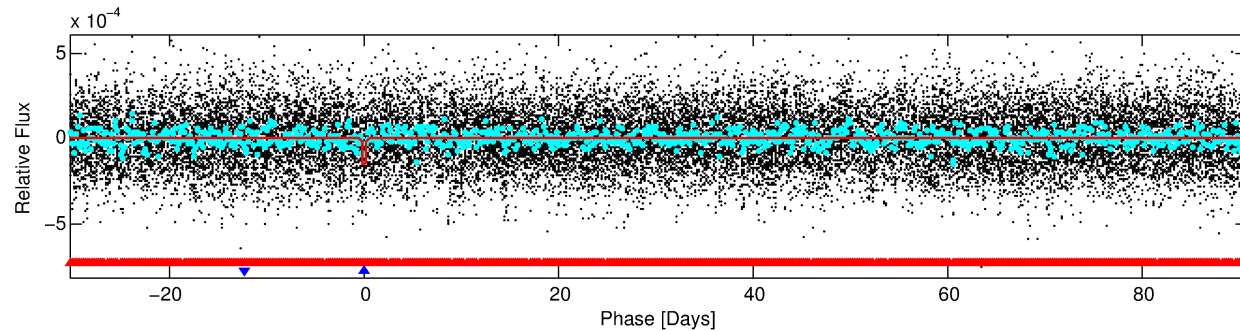
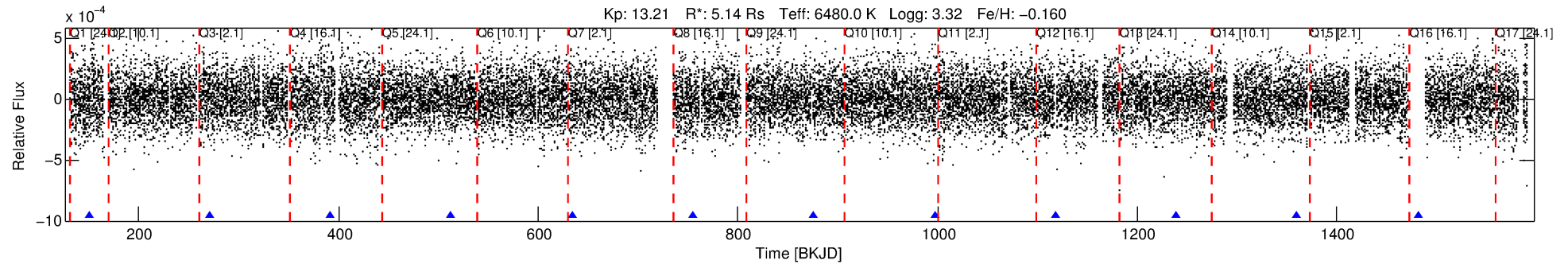
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## Ephemeris Match Information For 008455627-02

No Significant Match Found

# DV One-Page Summary

KIC: 8455627 Candidate: 2 of 2 Period: 121.028 d



## DV Fit Results:

Period = 121.02786 [0.00544] d  
Epoch = 149.9656 [0.0339] BKJD  
Rp/R\* = 0.0125 [0.0035]  
a/R\* = 39.30 [57.08]  
b = 0.82 [0.58]  
Seff = 113.61 [86.04]  
Teq = 833 [158] K  
Rp = 7.04 [3.87] Re  
a = 0.6063 [0.2811] AU  
Ag = 330.43 [330.02] [1.00σ]  
Teffp = 5488 [924] K [4.97σ]

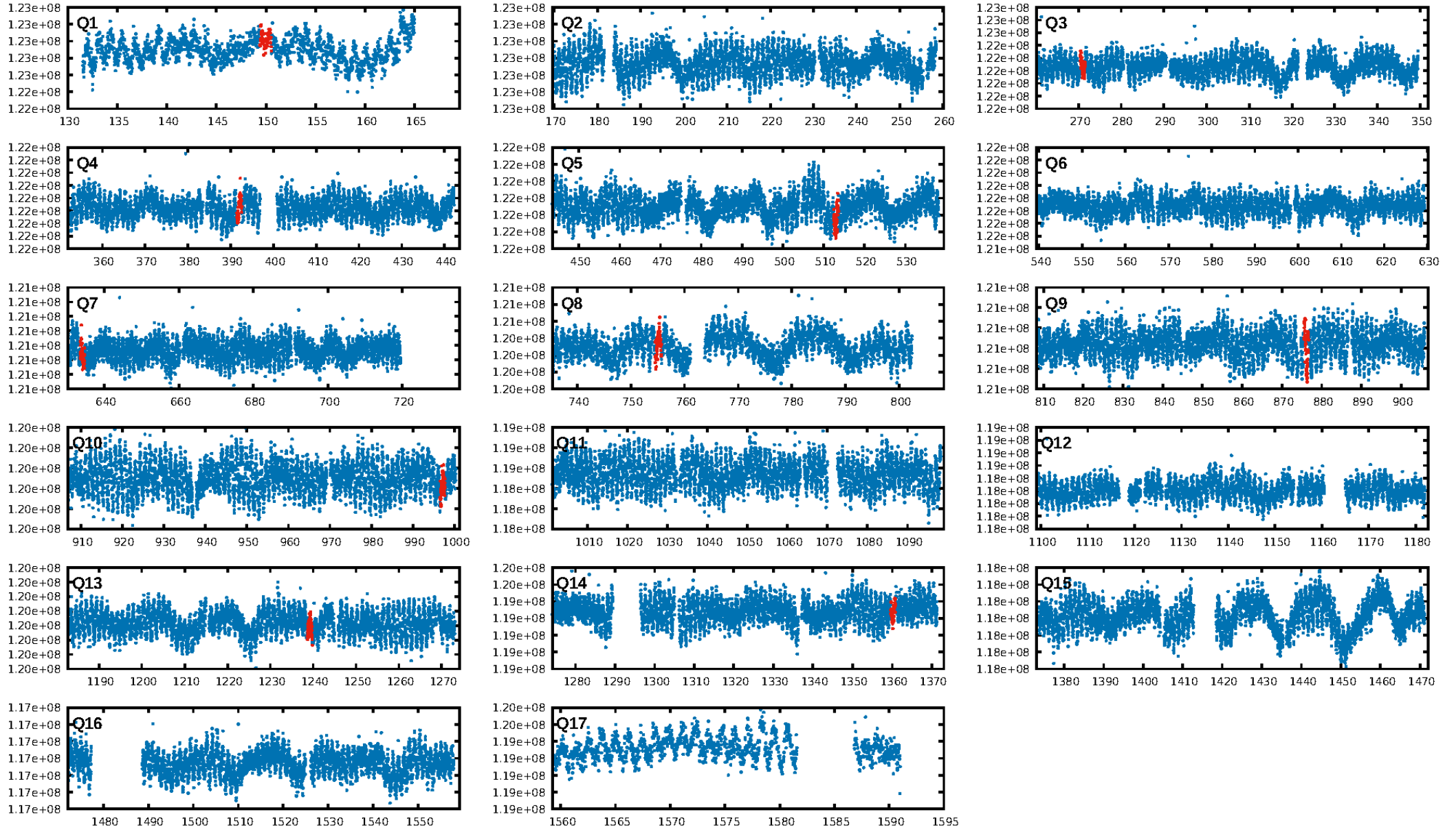
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [195.07σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.85e-19  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 11.66  
Centroid-sig: 81.3%  
Centroid-so: 0.235 arcsec [0.20σ]  
OotOffset-rm: 0.591 arcsec [1.43σ]  
KicOffset-rm: 0.381 arcsec [1.15σ]  
OotOffset-st: 2/0/2/2 [6]  
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DiffImageOverlap-fno: 0.00 [0/7]

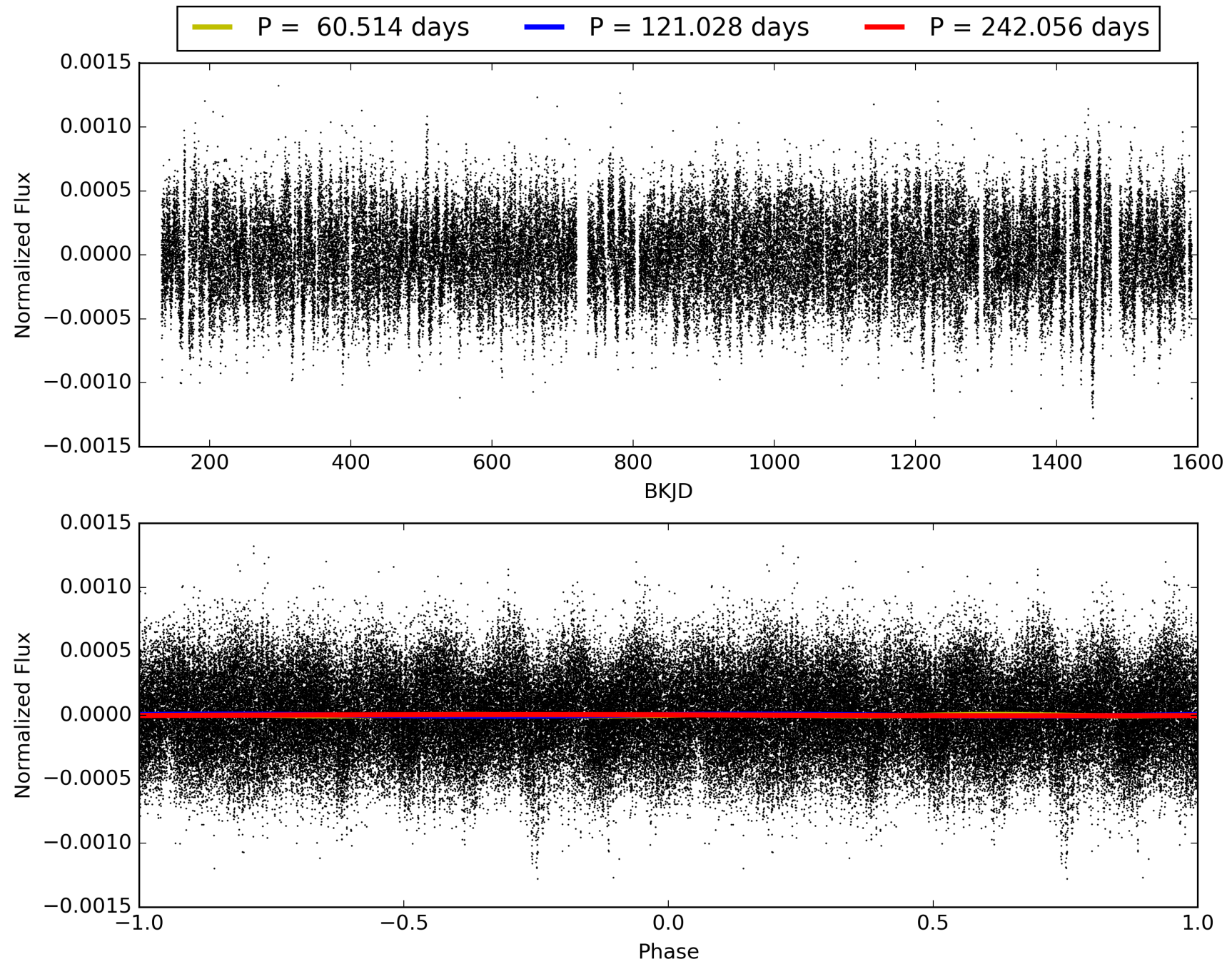
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:21:45 Z

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

# TCE 008455627-02, PDC Light Curves

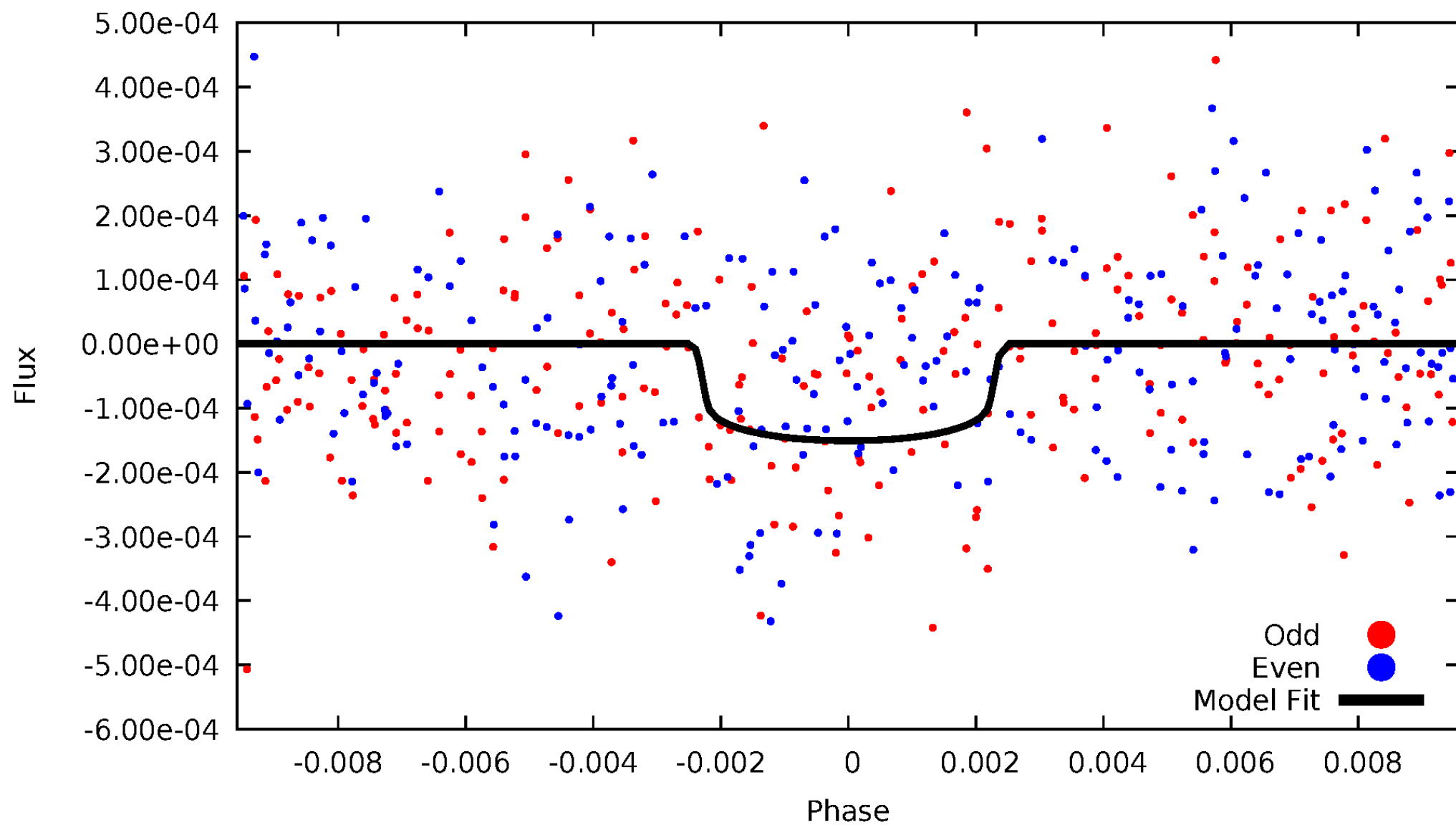


TCE 008455627-02



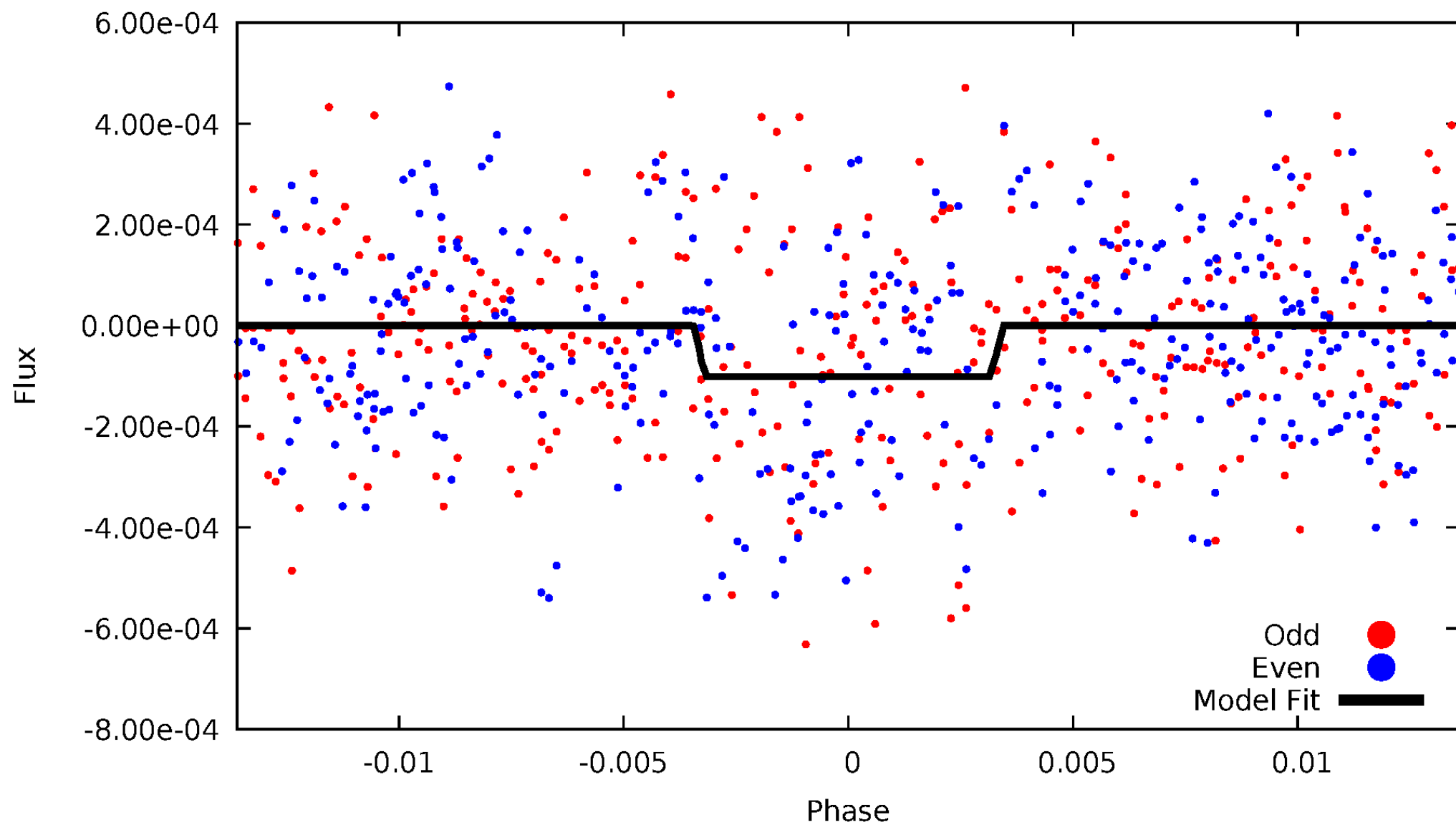
# DV Odd/Even

TCE 008455627-02



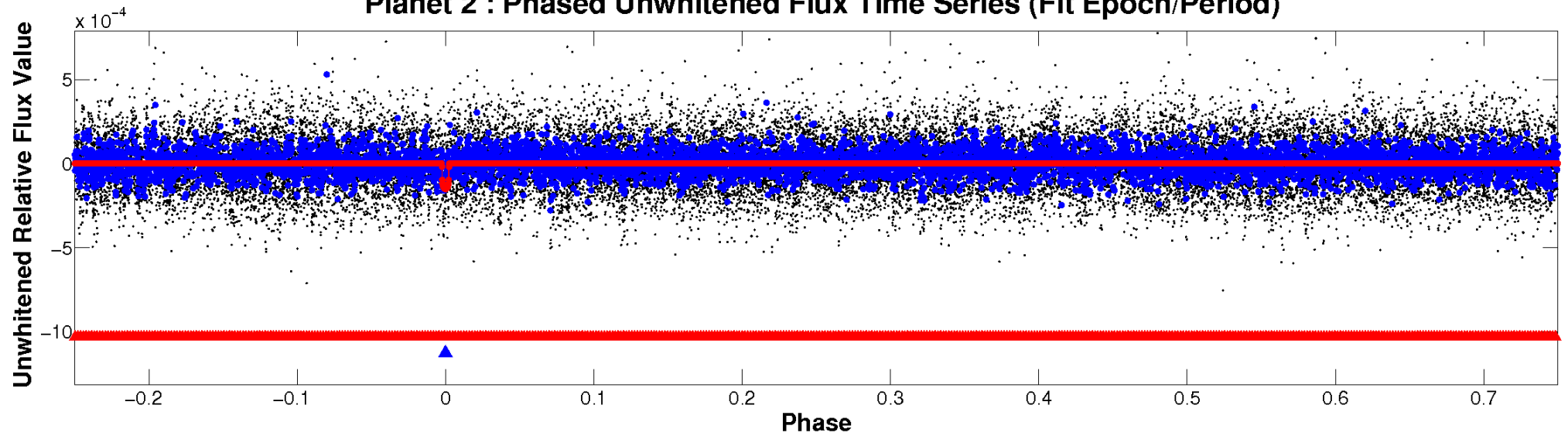
# ALT Odd/Even

TCE 008455627-02

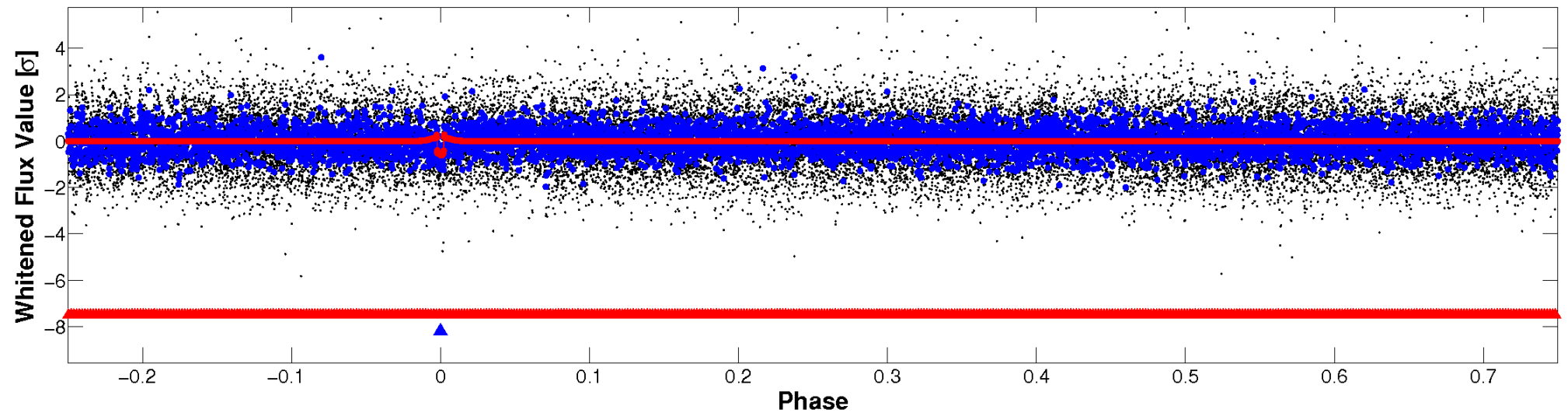


# Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

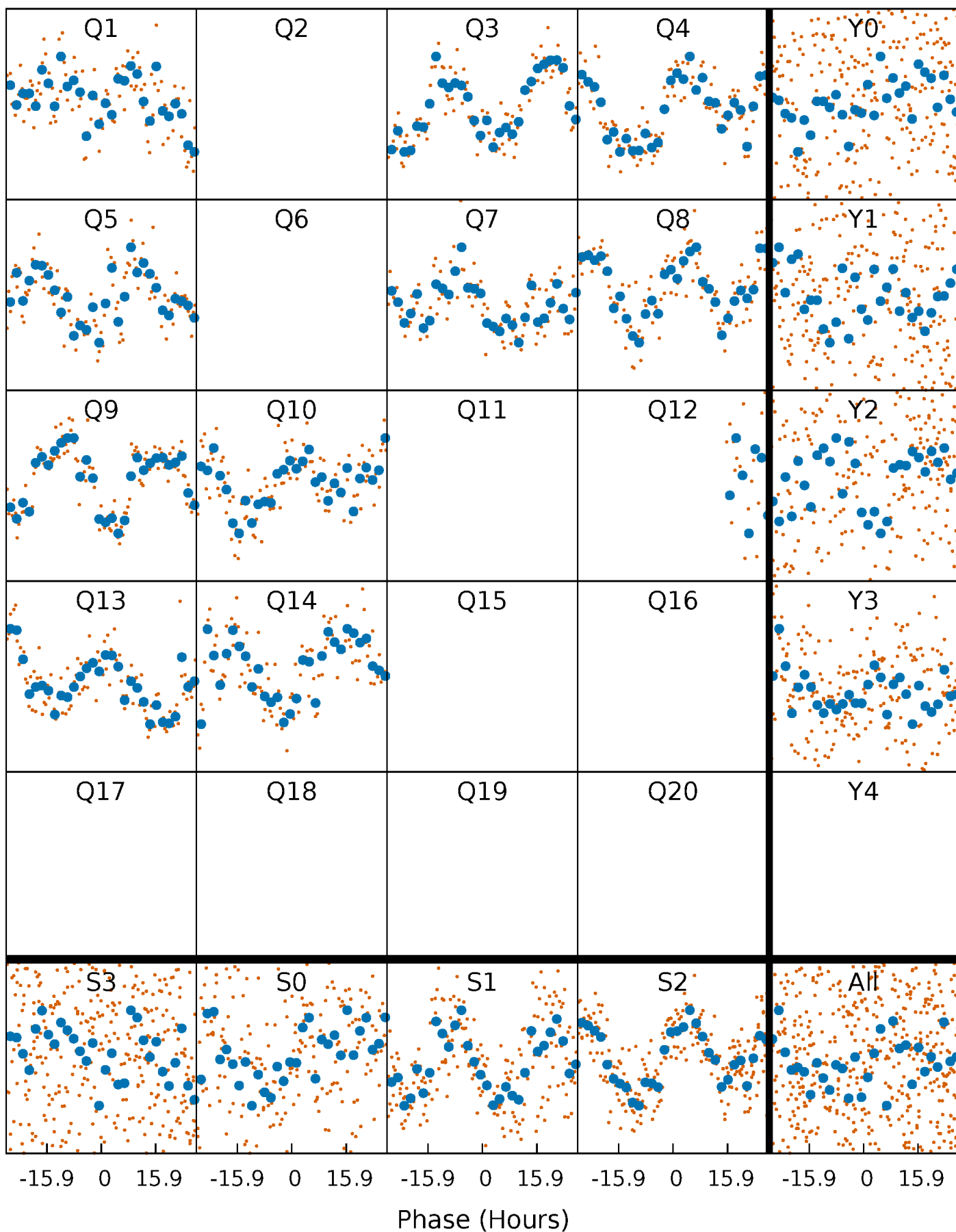


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



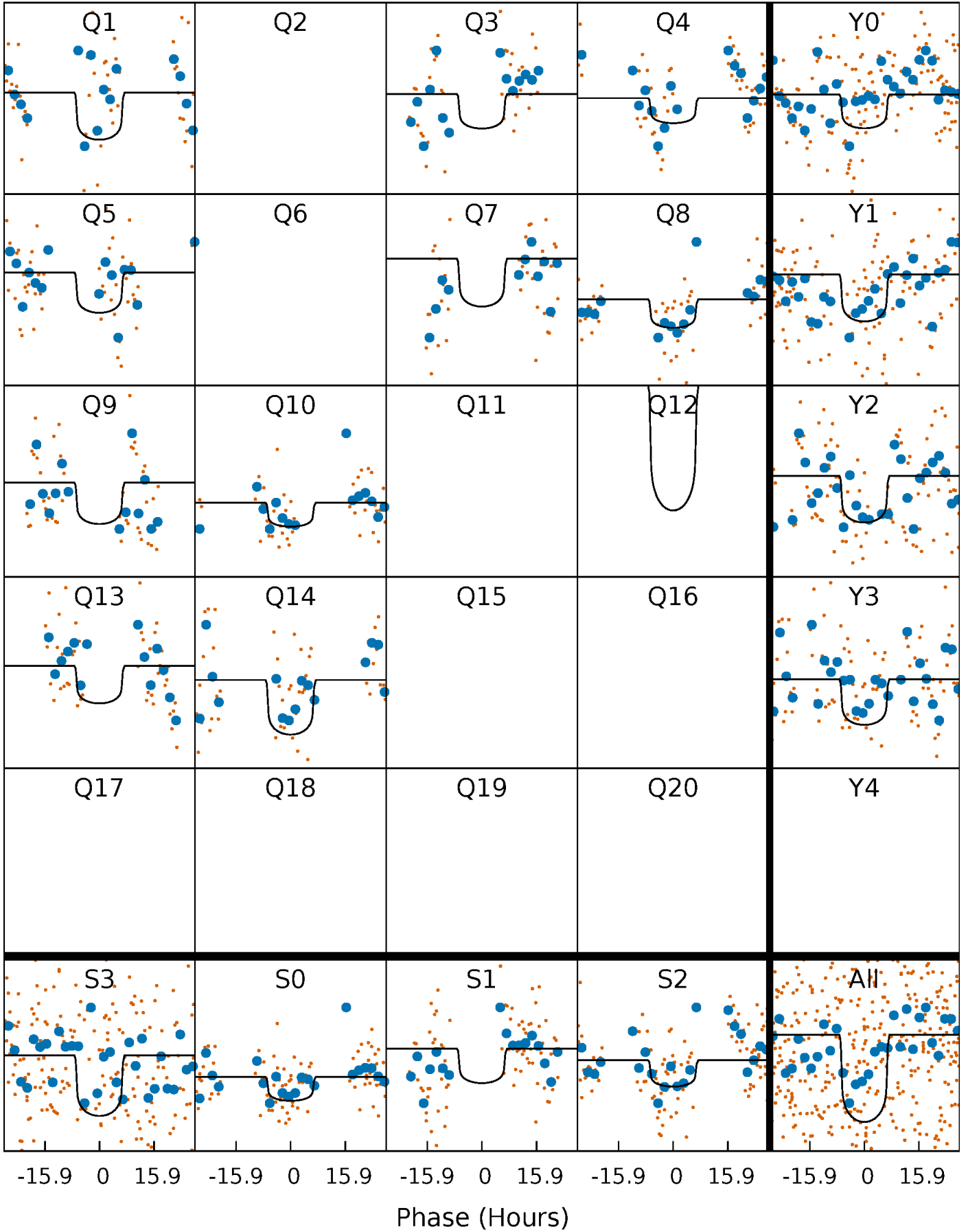
# PDC Quarter-Phased Transit Curves

TCE 008455627-02 P=121.027860 Days  $T_0=149.965635$  (BKJD)



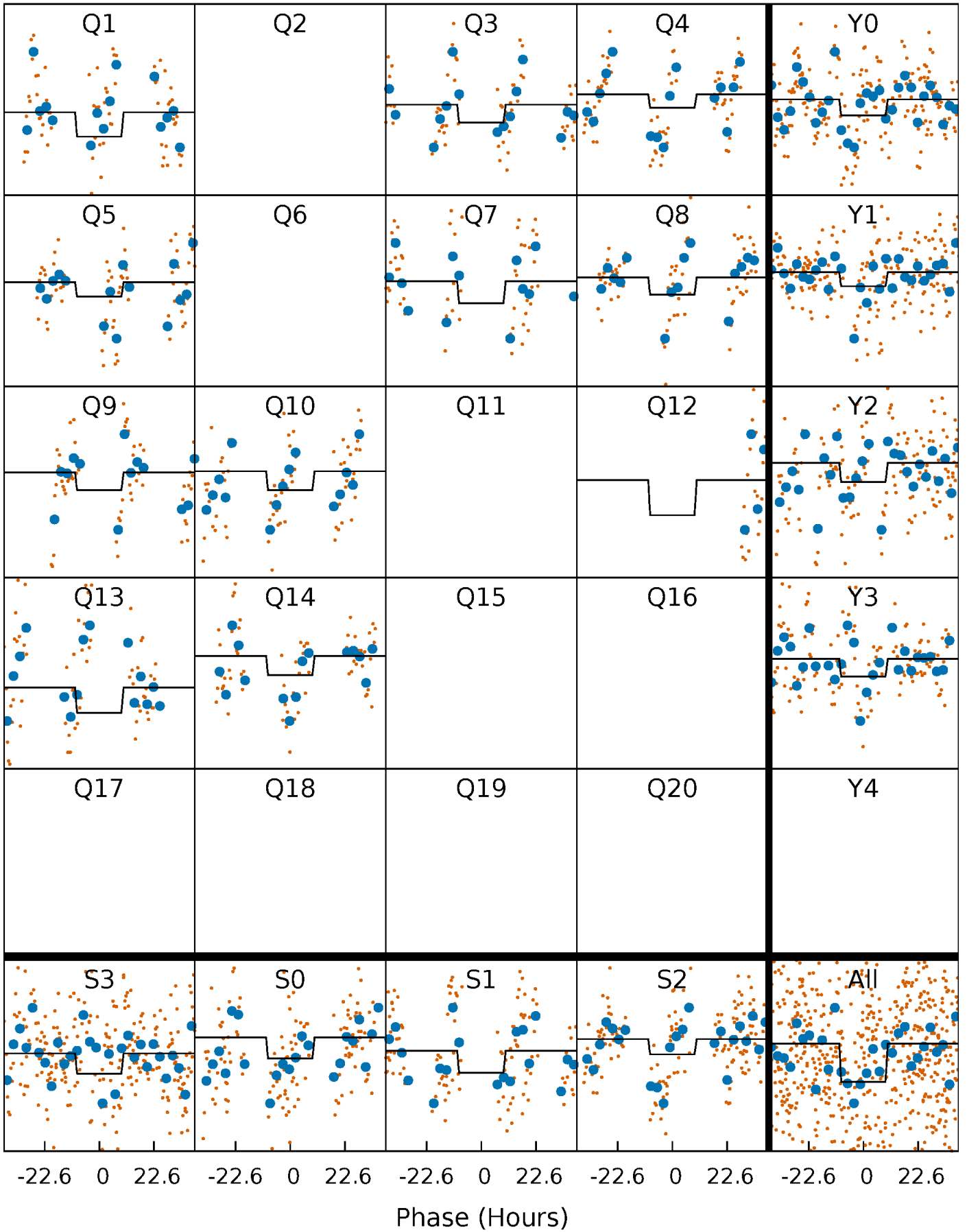
# DV Quarter-Phased Transit Curves

TCE 008455627-02   P=121.027860 Days    $T_0=149.965635$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

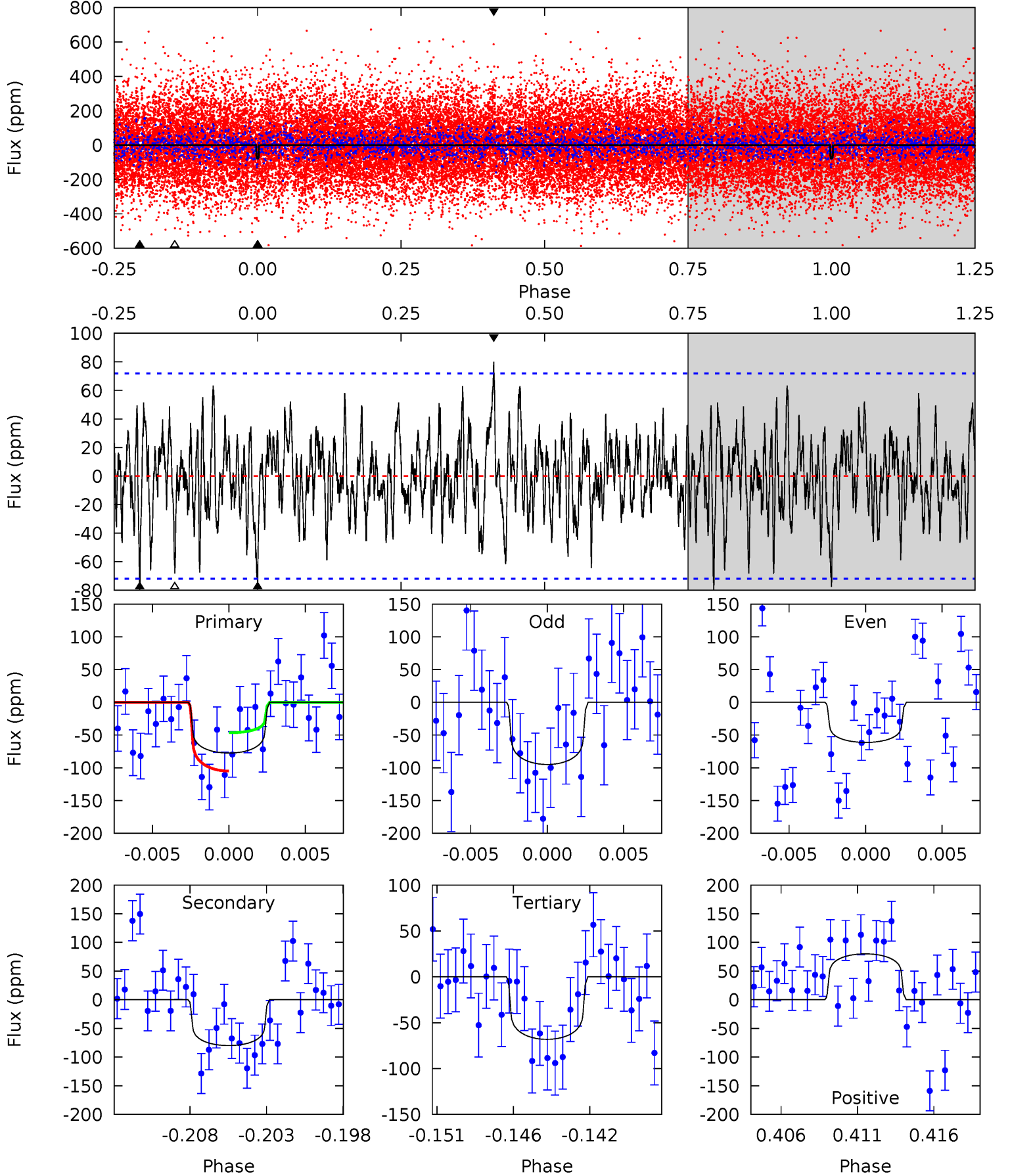
TCE 008455627-02 P=121.027976 Days  $T_0=149.913028$  (BKJD)



# DV Model-Shift Uniqueness Test

008455627-02,  $P = 121.027860$  Days,  $E = 28.937775$  Days

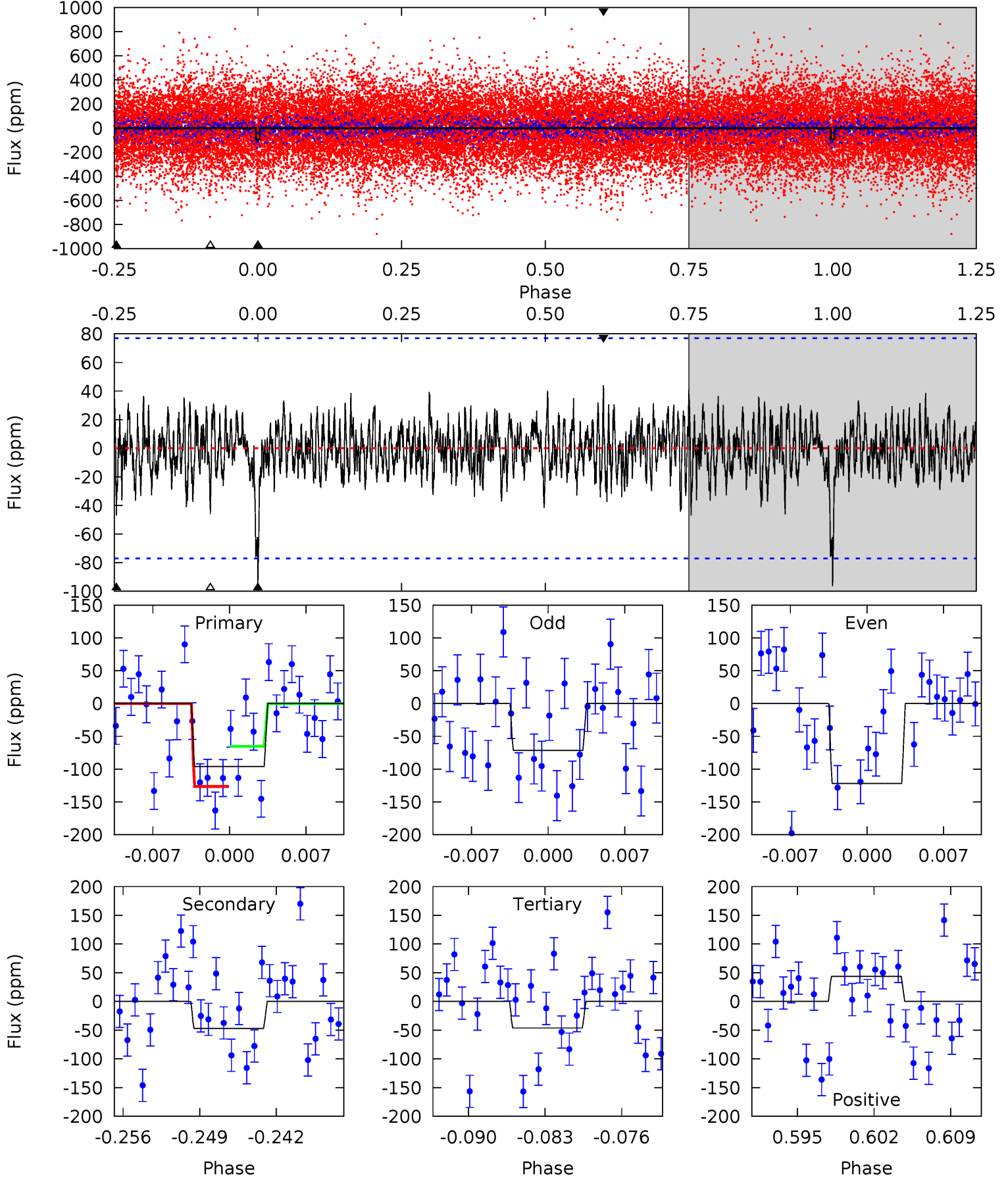
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.57	5.75	4.90	5.76	5.17	2.83	1.66	0.67	-0.18	0.85	-0.01	1.21	1.08	0.50	2.10



# Alt Model-Shift Uniqueness Test

008455627-02, P = 121.027976 Days, E = 28.885052 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
6.37	3.10	3.06	2.91	5.10	2.70	0.94	3.30	3.46	0.04	0.20	1.67	0.83	0.31	2.03



### Stellar Parameters For KIC 008455627

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6480^{+197}_{-197}$	$3.323^{+0.441}_{-0.049}$	$-0.160^{+0.350}_{-0.300}$	$5.142^{+0.272}_{-2.444}$	$2.028^{+0.124}_{-0.496}$	$0.021^{+0.092}_{-0.004}$
	+3%/-3%	+13%/-1%	+219%/-188%	+5%/-48%	+6%/-24%	+436%/-17%
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 008455627-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-80 \pm 14$	$6.33^{+2.08}_{-2.15}$	$1137^{+58}_{-114}$	$5494^{+1038}_{-584}$	$379^{+497}_{-155}$
Alt.	$-47 \pm 15$	$5.02^{+2.15}_{-1.77}$	$1134^{+60}_{-121}$	$5381^{+1232}_{-758}$	$365^{+565}_{-197}$

$T_{max}$  = 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

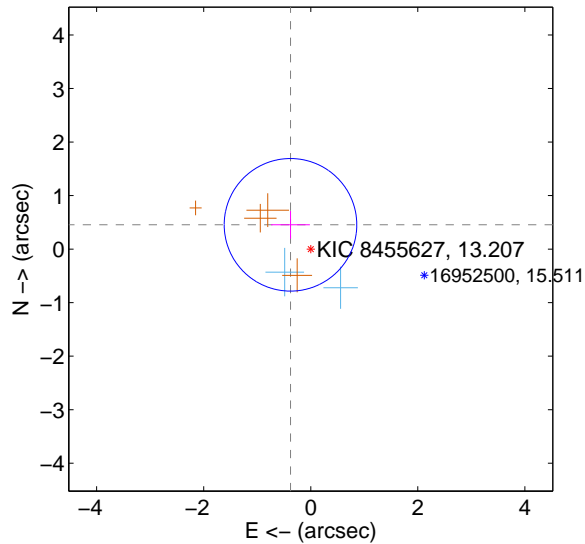
Supplemental centroid analysis for 008455627-02. Kepler magnitude: 13.21. Transit SNR 6.24

There are 2 quarters with good PRF difference image offsets

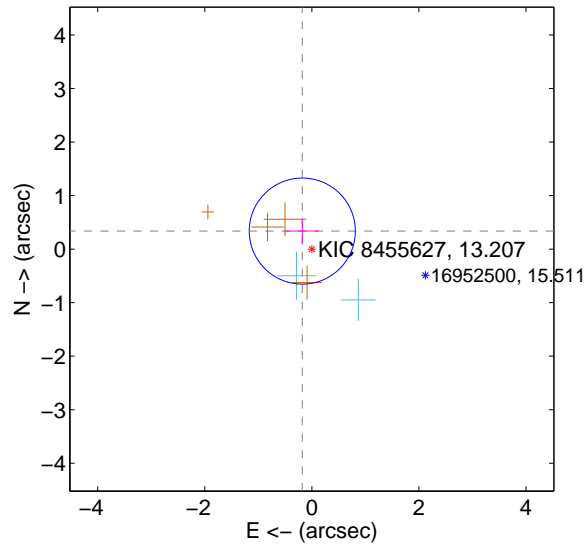
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.591 \pm 0.413$	1.43	$0.378 \pm 0.362$	$0.454 \pm 0.260$
PRF-fit source offset from KIC position	$0.381 \pm 0.330$	1.15	$0.178 \pm 0.314$	$0.337 \pm 0.238$
photometric centroid source offset	$0.24 \pm 1.18$	0.20	$0.23 \pm 1.18$	$0.03 \pm 0.99$

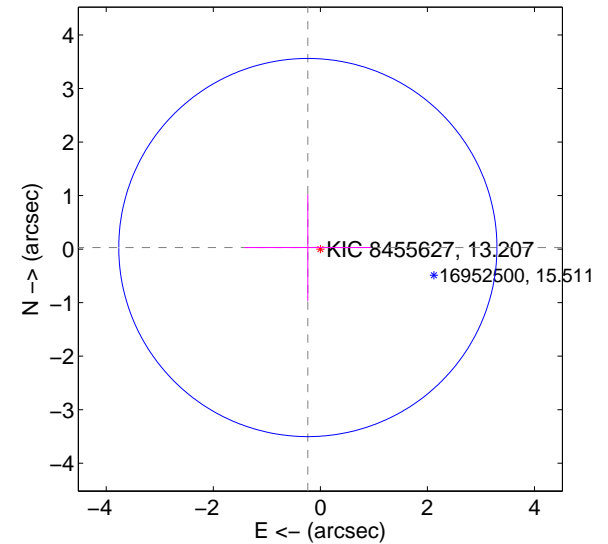
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

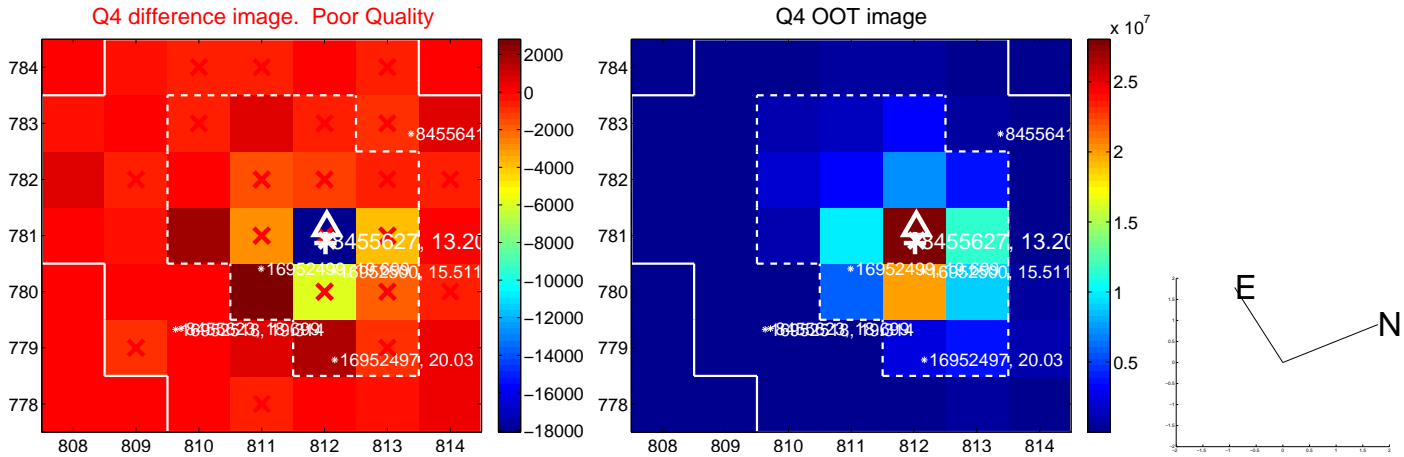
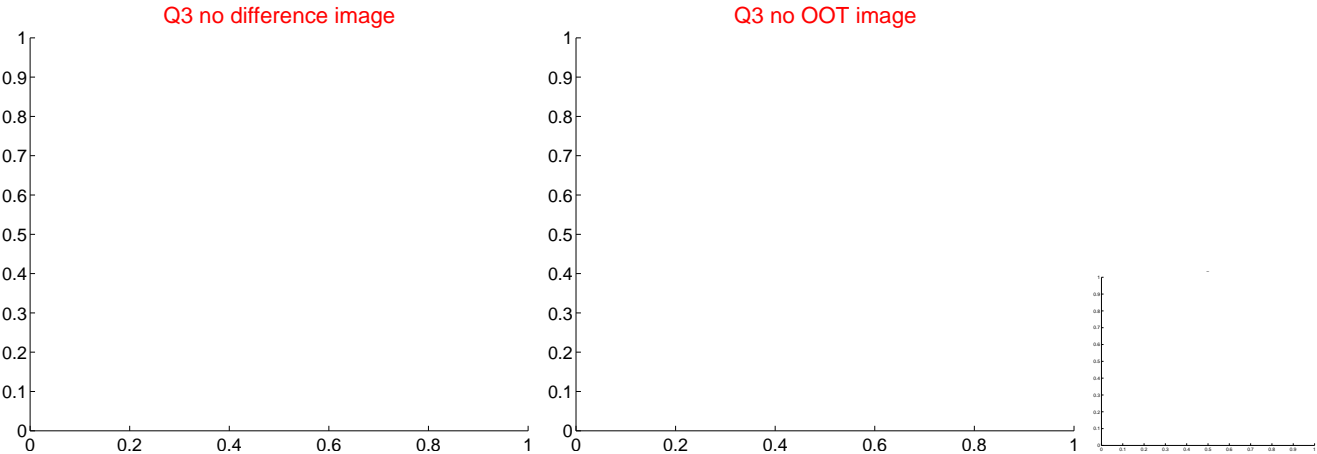
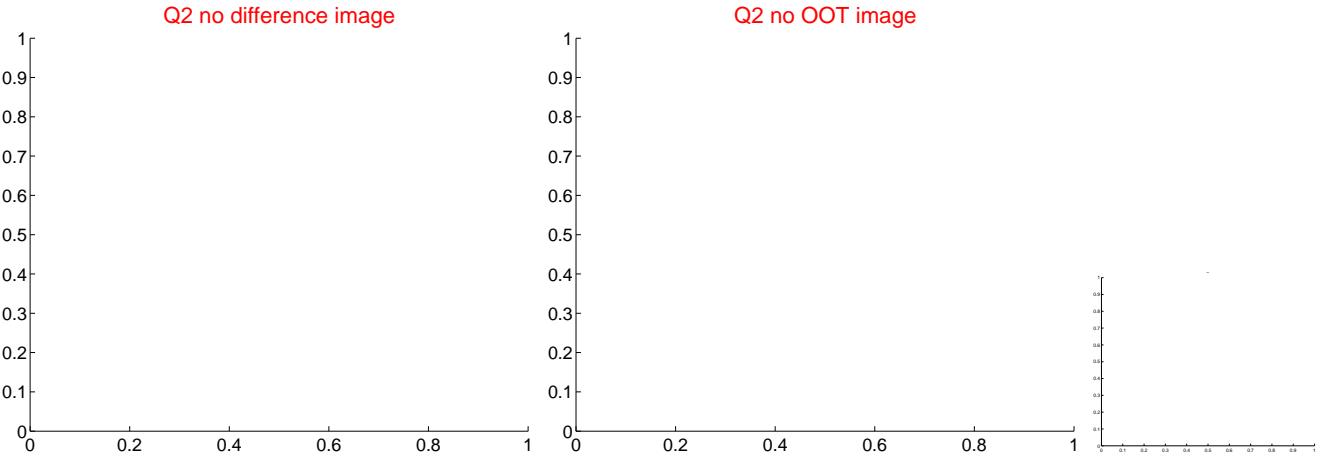
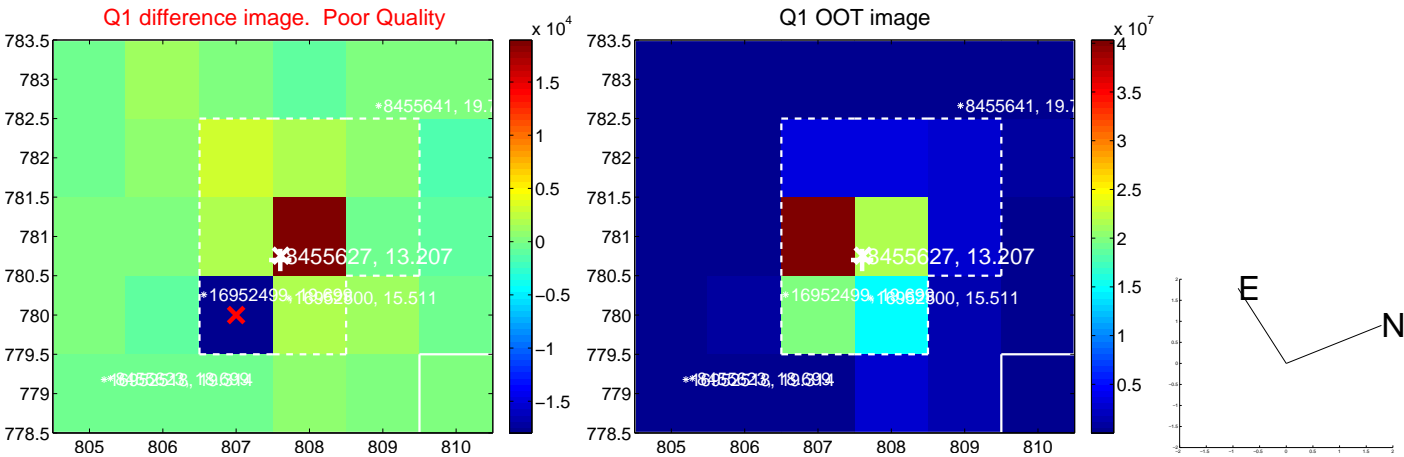


offset from photometric centroids

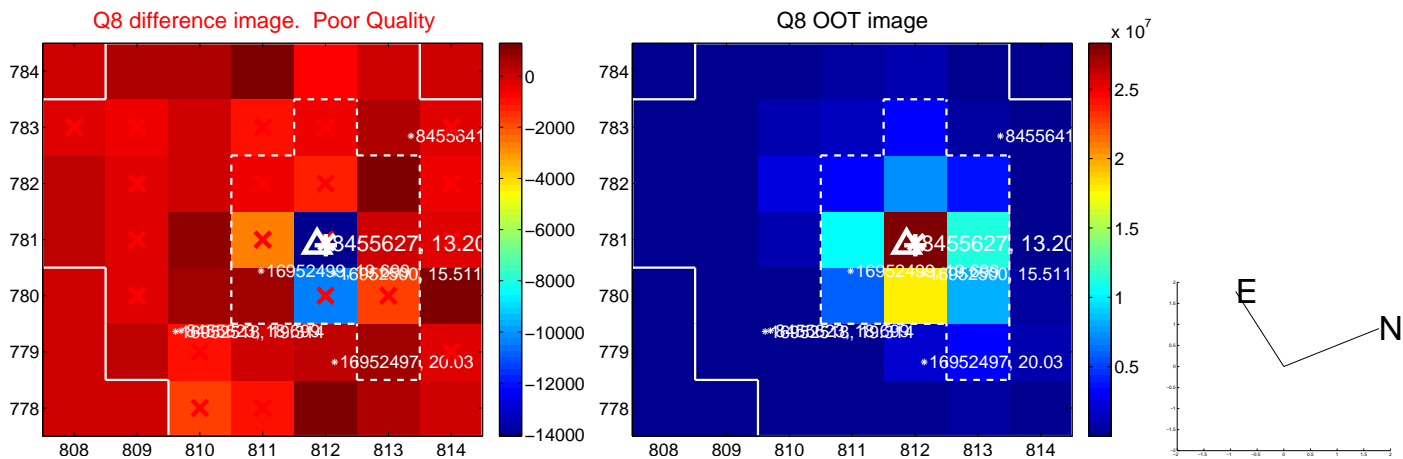
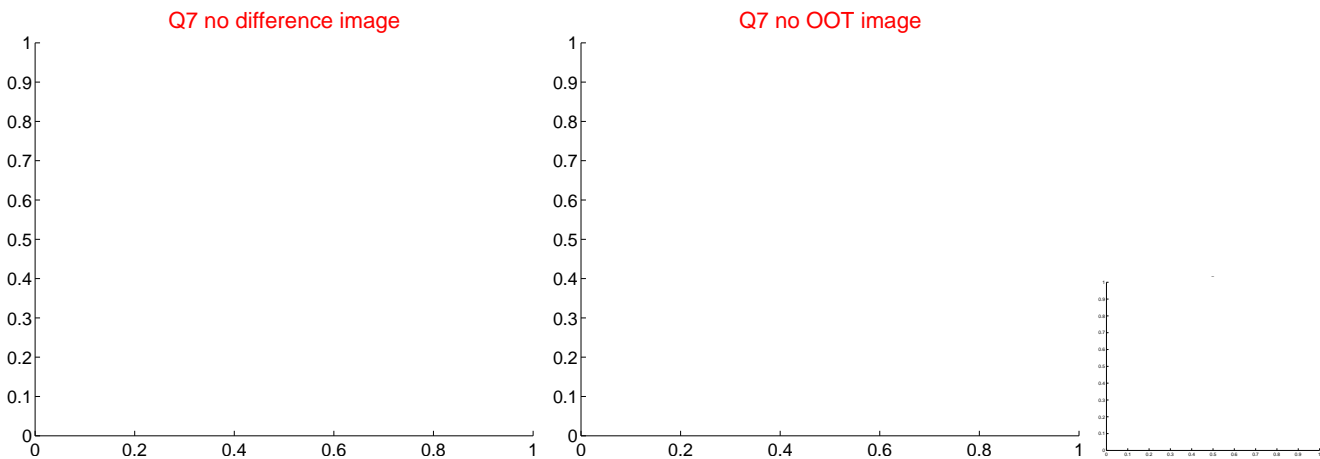
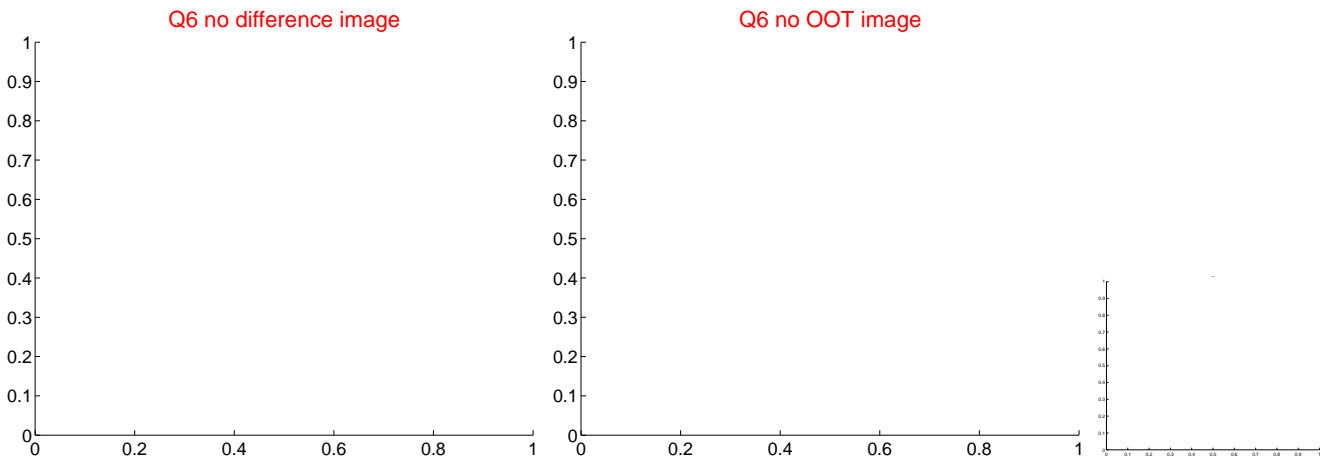
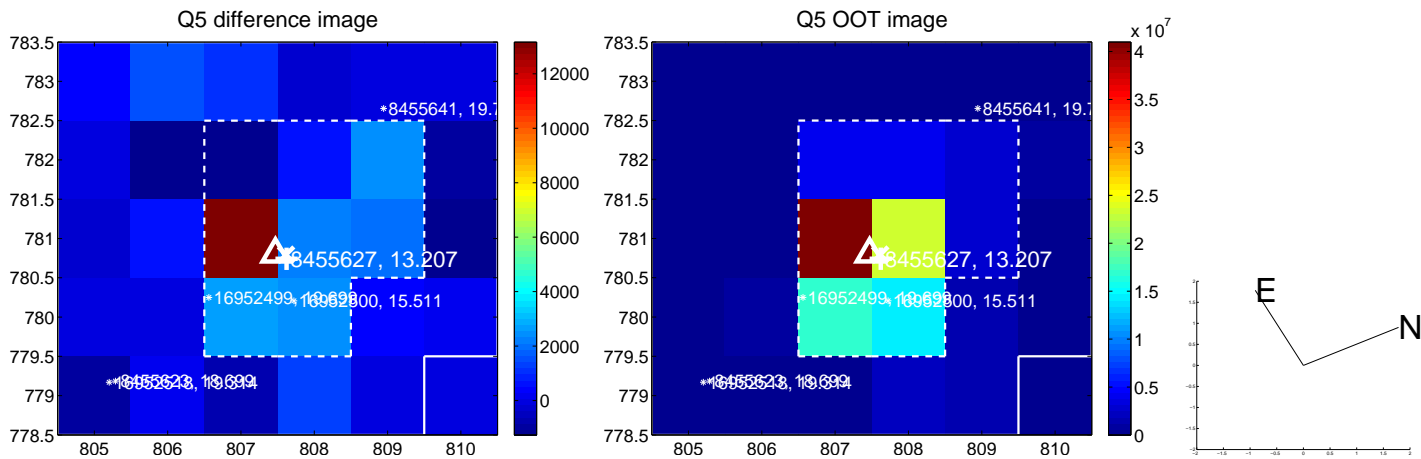


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

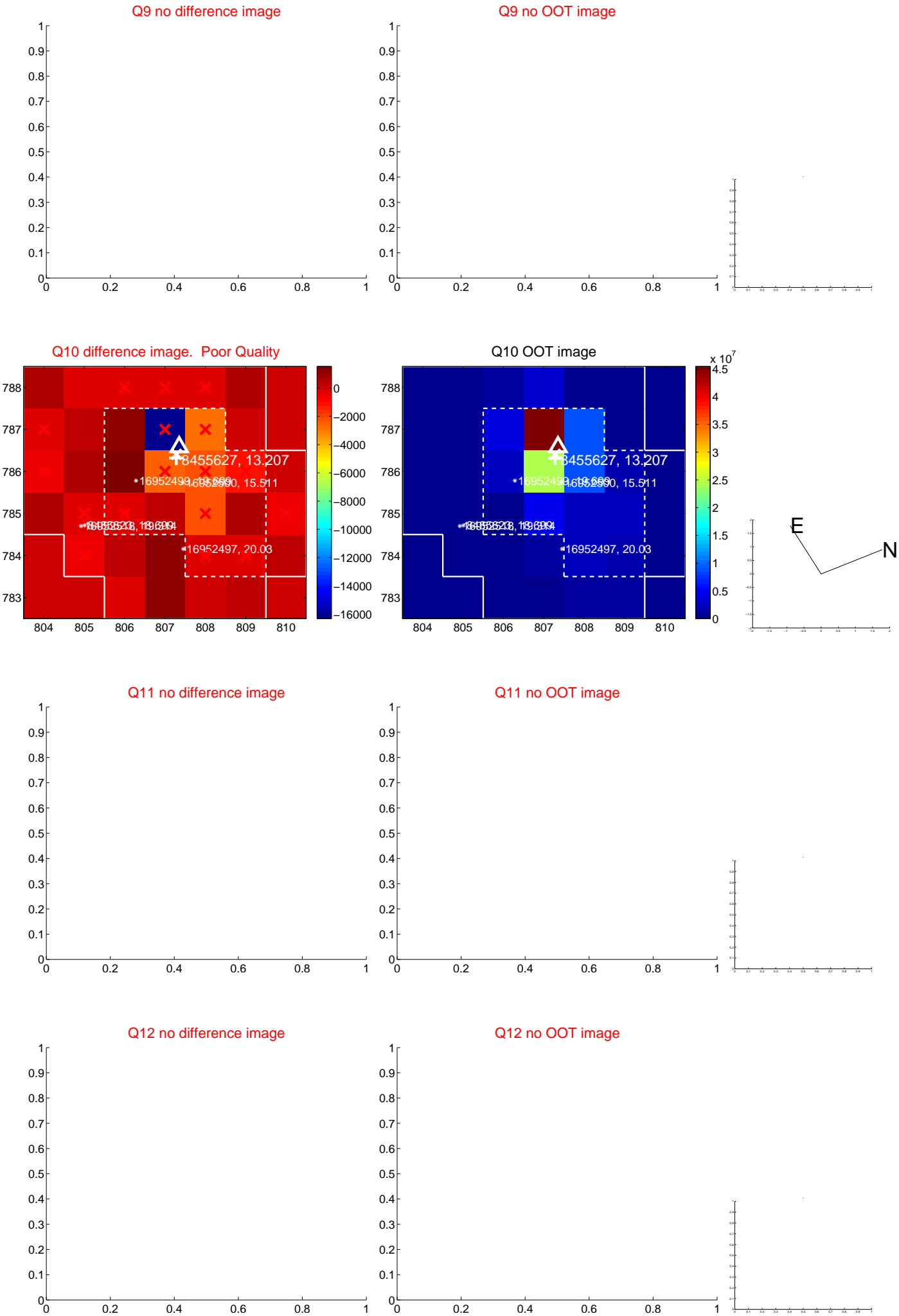
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



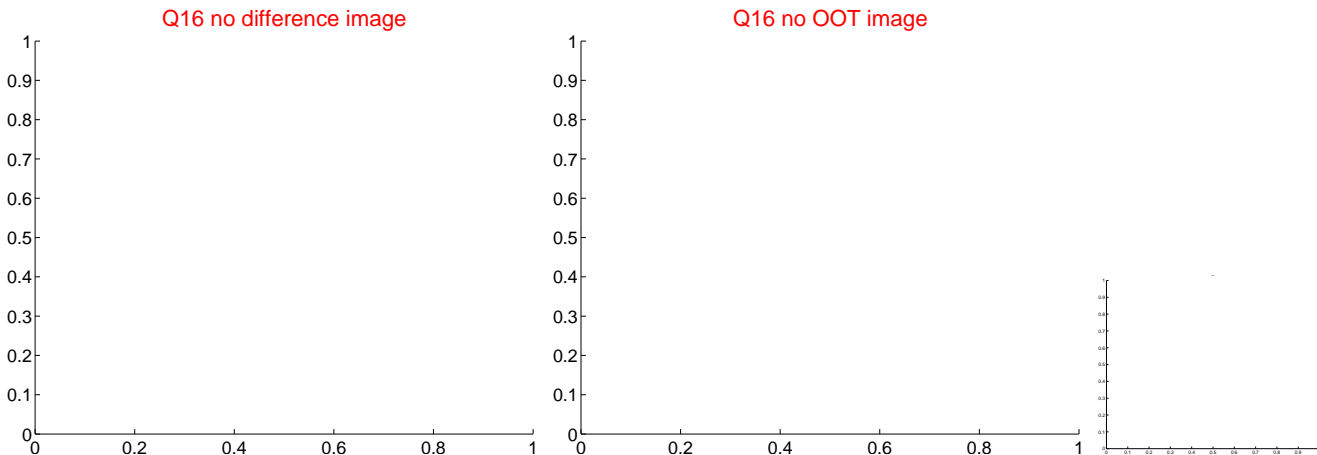
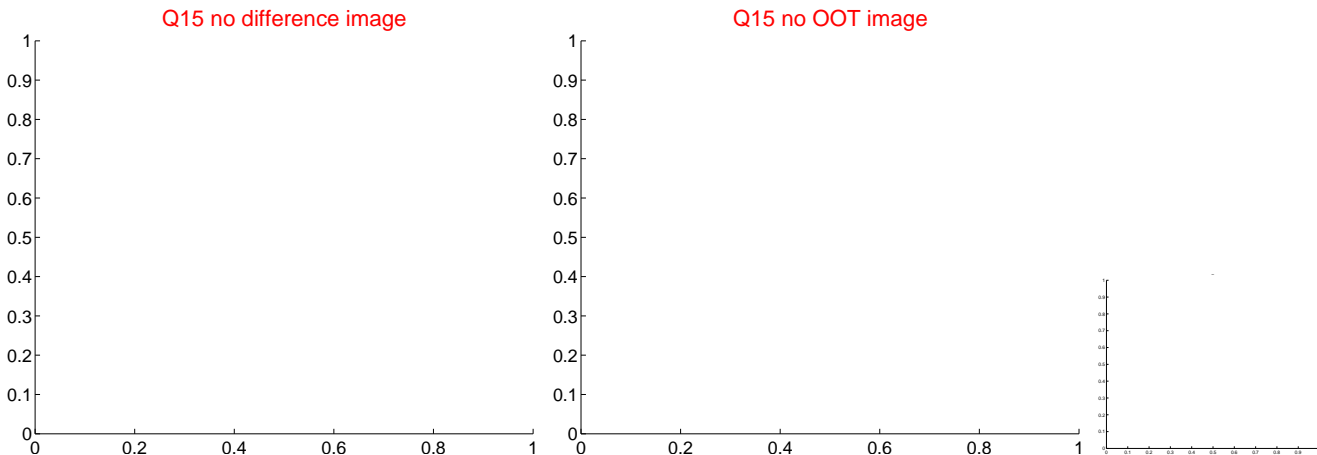
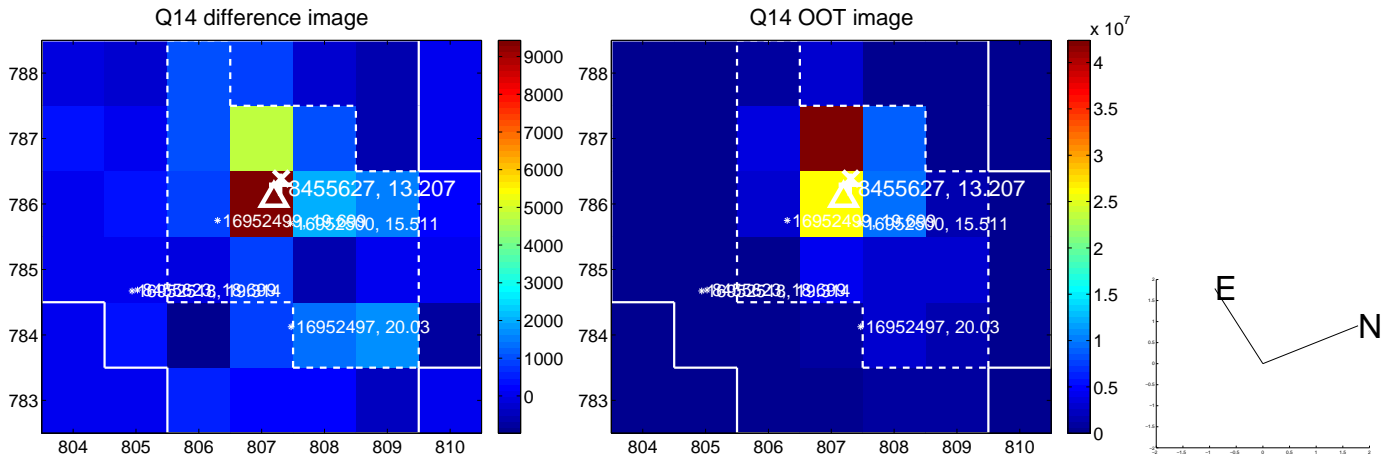
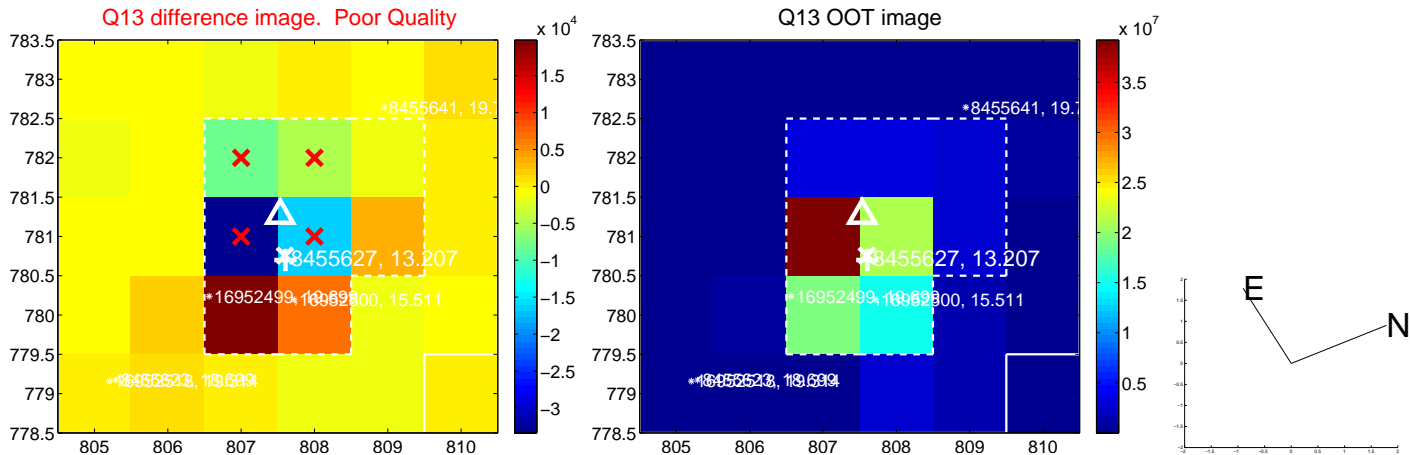
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



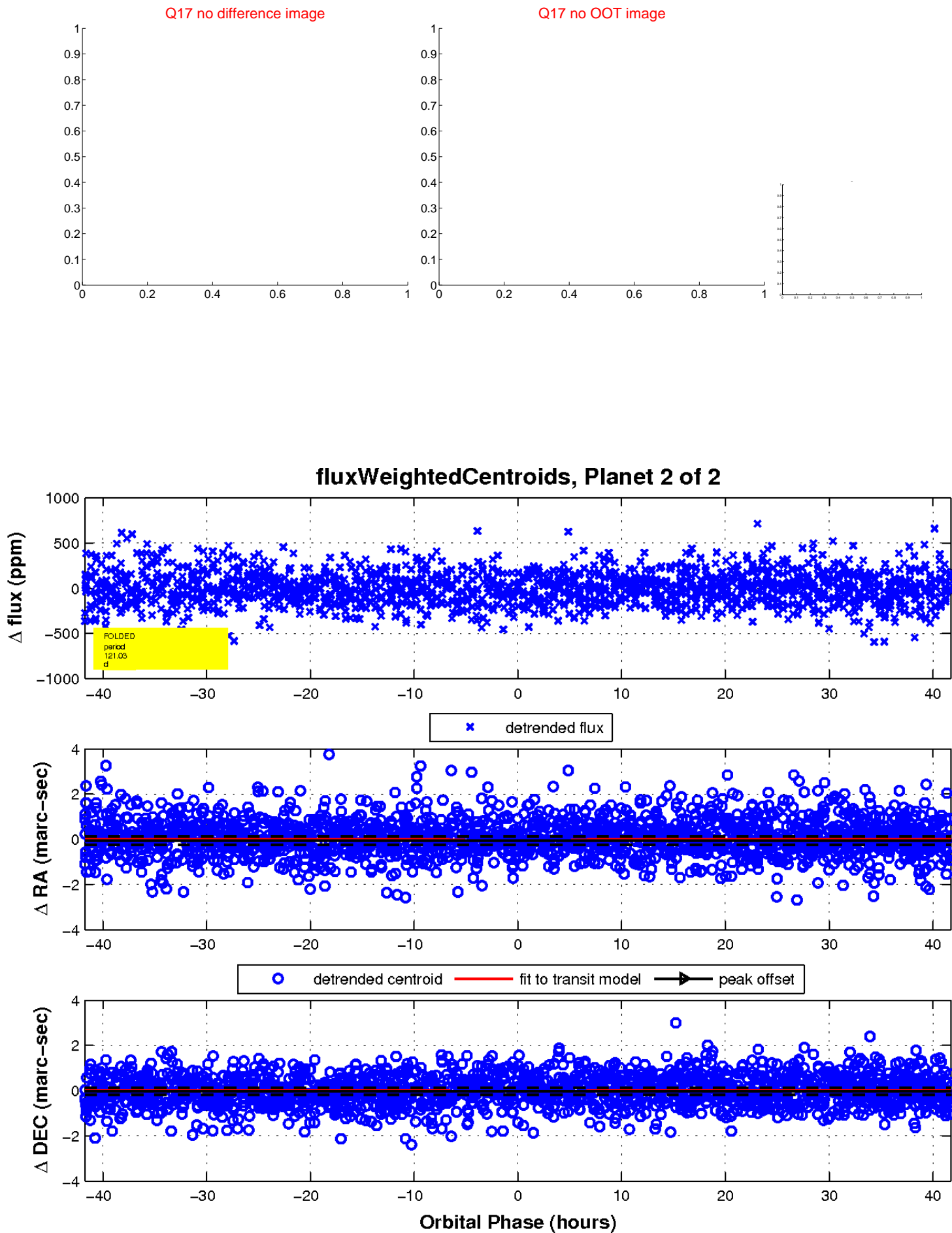
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

