

# KIC 004672045

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004672045-01	OBS	No	0.669253	131.634379	5.2	3.497	9.1	2.2	1.40	6776	0.32	13986.76
004672045-02	OBS	No	99.362257	206.269039	352.8	2.164	7.4	8.0	1.40	6776	2.97	17.79
004672045-03	OBS	No	57.306094	148.397571	279.3	1.942	7.1	7.5	1.40	6776	2.39	37.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004672045-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004672045-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004672045-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

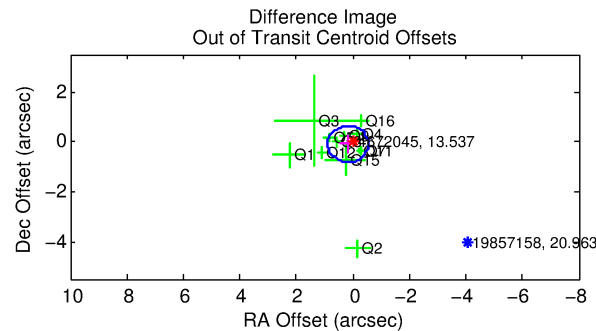
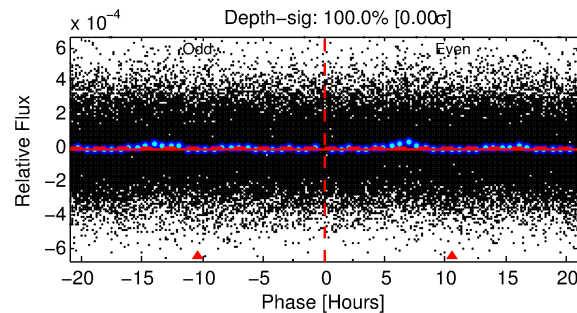
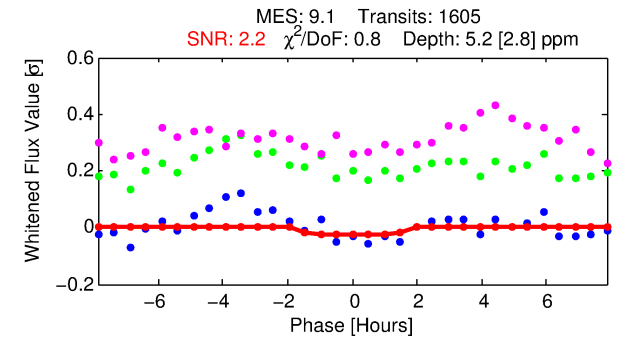
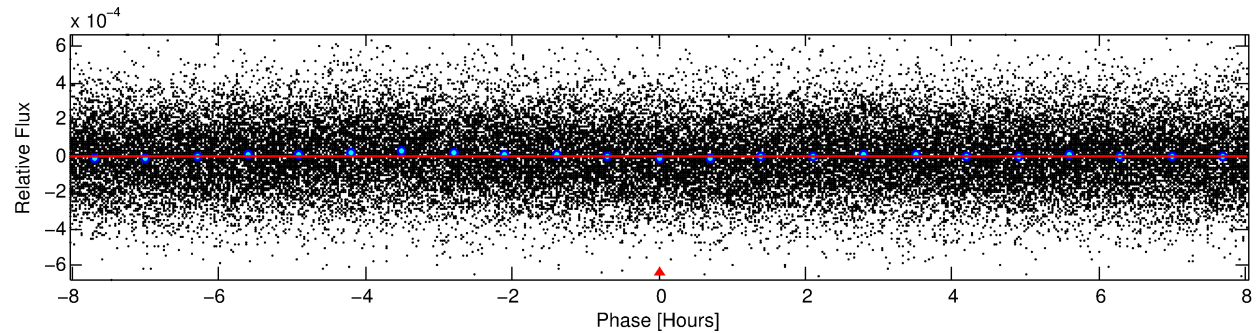
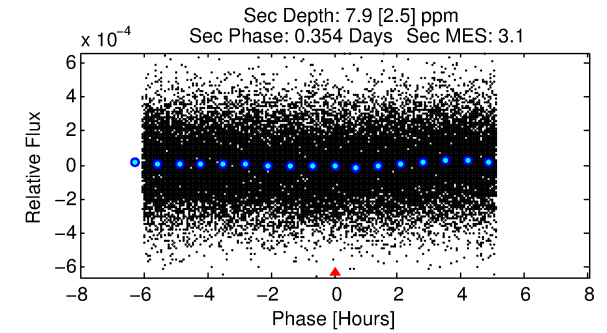
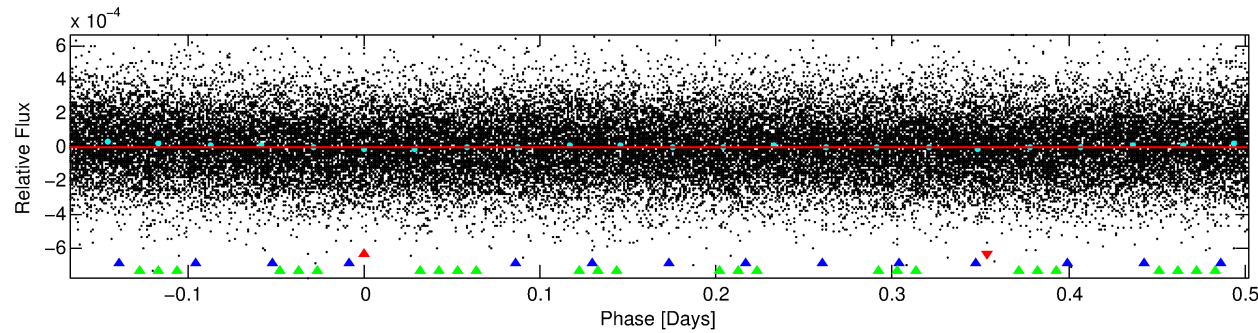
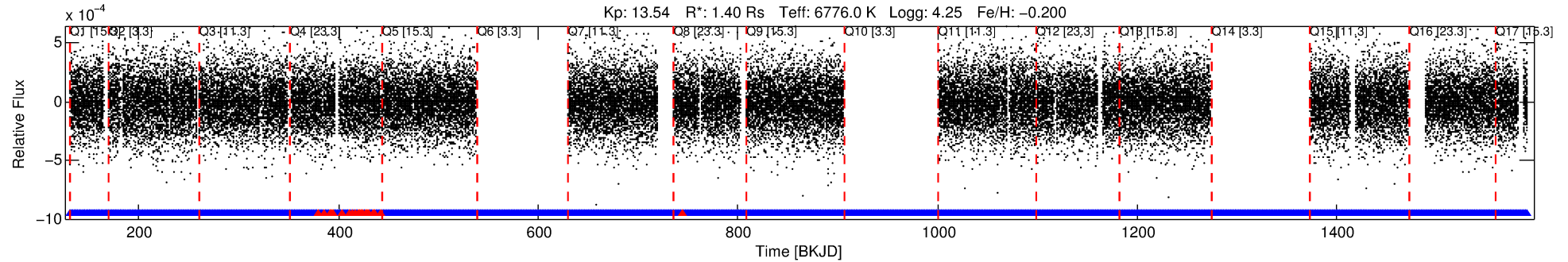
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004672045-01

No Significant Match Found

# DV One-Page Summary

KIC: 4672045 Candidate: 1 of 3 Period: 0.669 d



## DV Fit Results:

Period = 0.66925 [0.00005] d  
Epoch = 131.6344 [0.0159] BKJD  
Rp/R\* = 0.0021 [0.0038]  
a/R\* = 1.54 [8.92]  
b = 0.30 [30.36]  
Seff = 13986.76 [5534.49]  
Teq = 2773 [274] K  
Rp = 0.32 [0.59] Re  
a = 0.0162 [0.0042] AU  
Ag = 10.95 [39.75] [0.25σ]  
Teffp = 7800 [7047] K [0.71σ]

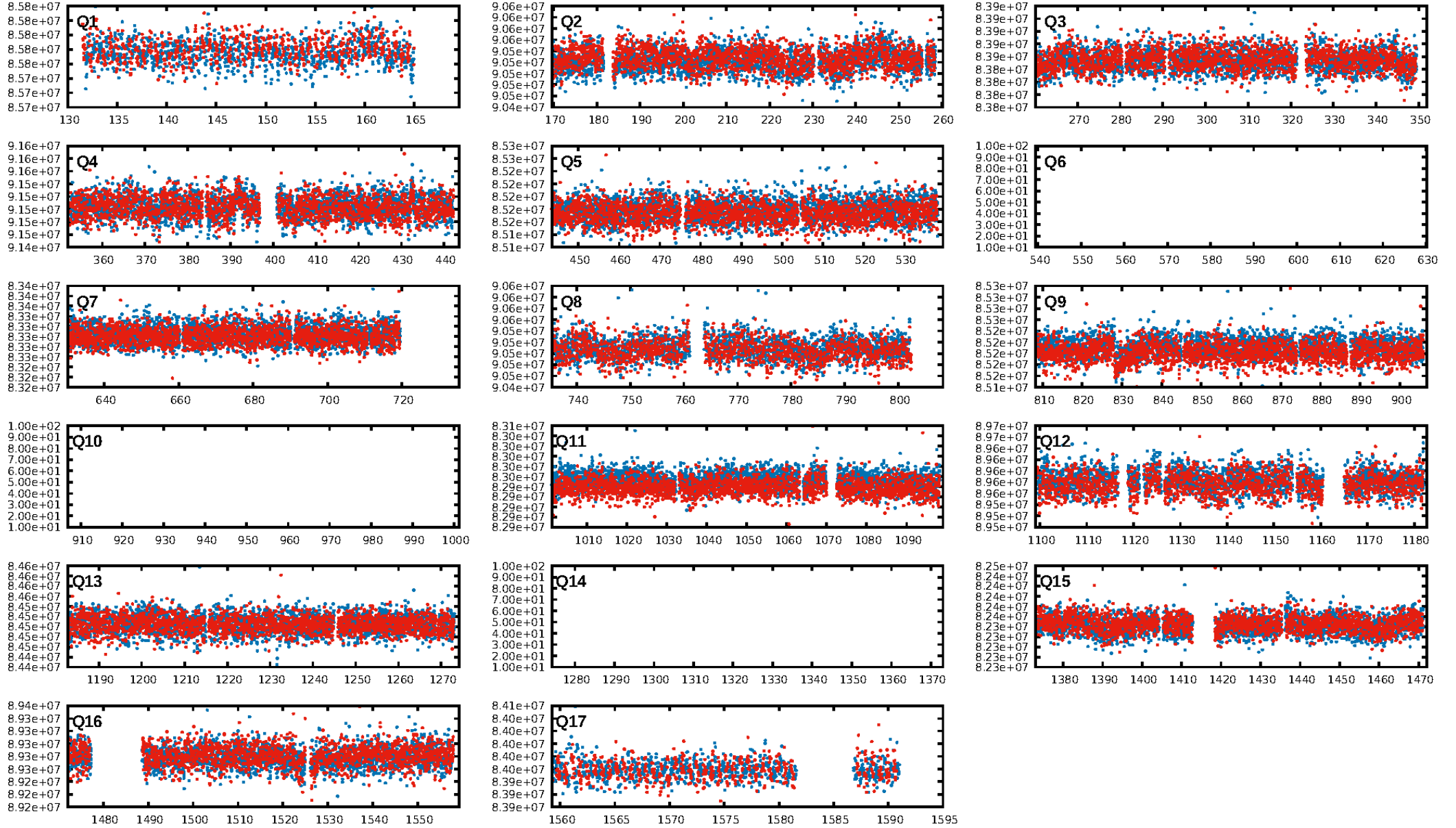
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [339.78σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.45e-14  
RollingBand-fgt: 0.98 [1493/1516]  
GhostDiagnostic-chr: 5.032  
Centroid-sig: 2.1%  
Centroid-so: 7.587 arcsec [1.44σ]  
OotOffset-rm: 0.199 arcsec [0.83σ]  
KicOffset-rm: 0.155 arcsec [0.73σ]  
OotOffset-st: 1/4/4/3 [12]  
KicOffset-st: 1/4/4/3 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 1.00 [14/14]

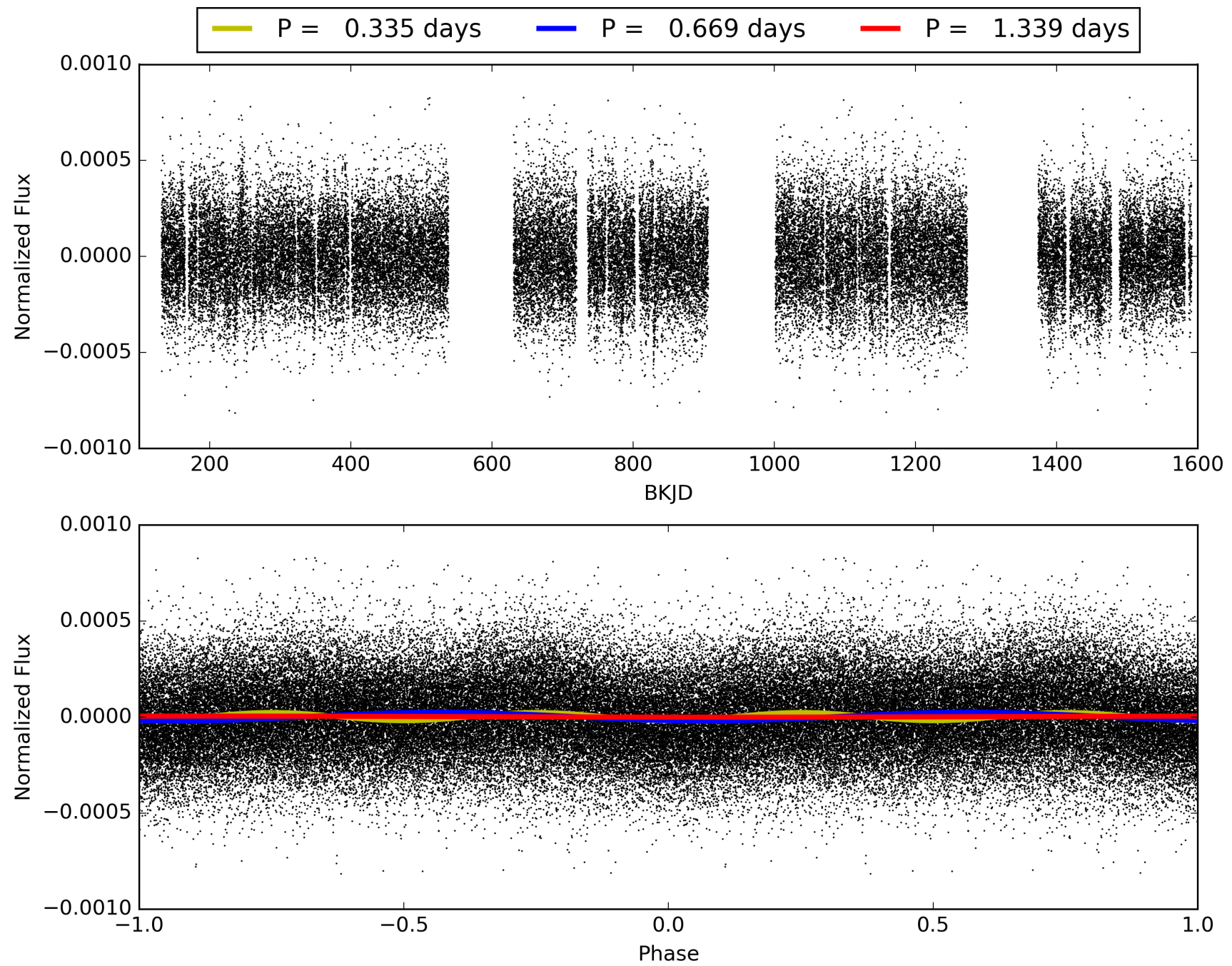
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:03:28 Z

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

# TCE 004672045-01, PDC Light Curves



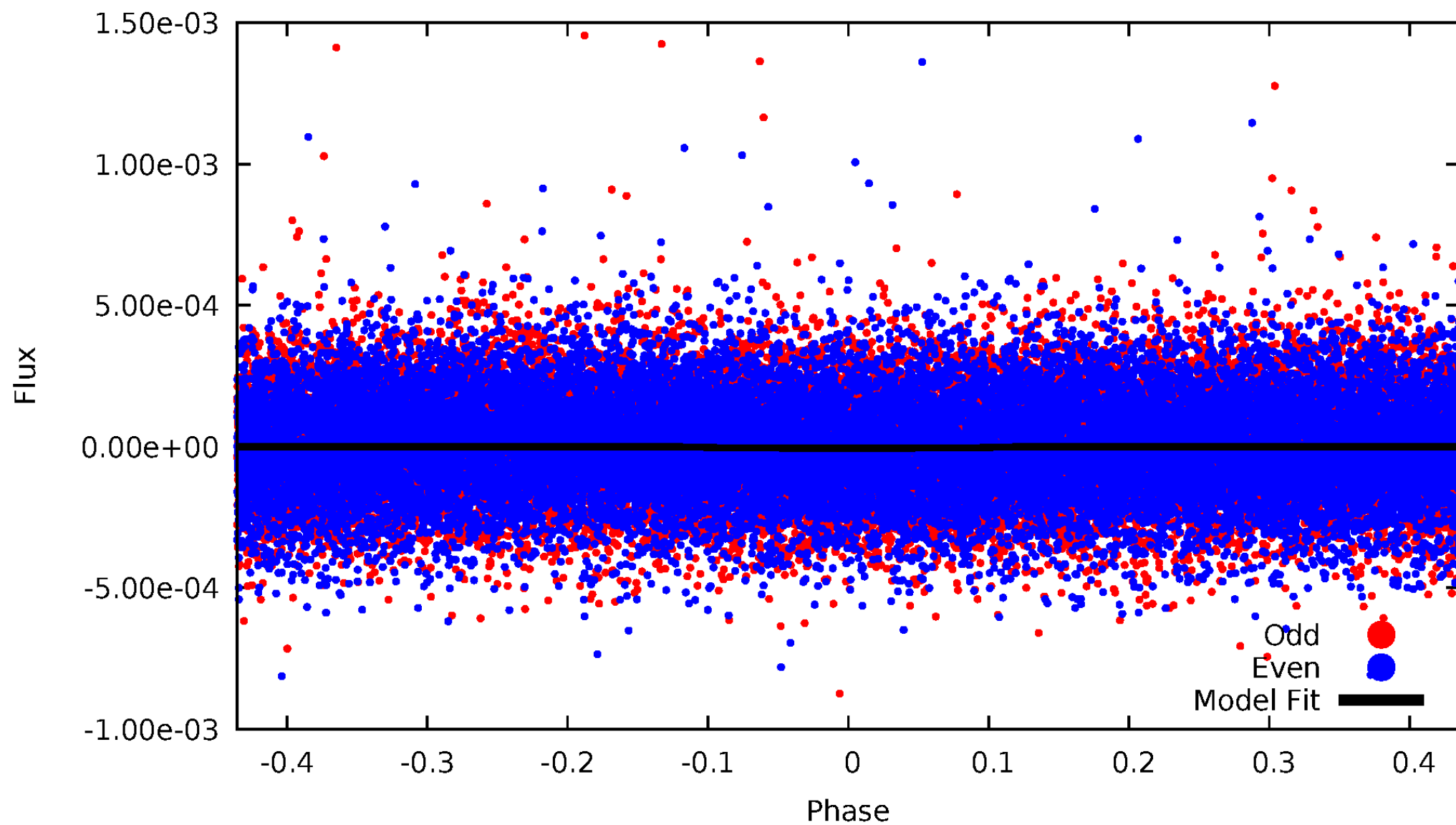
TCE 004672045-01





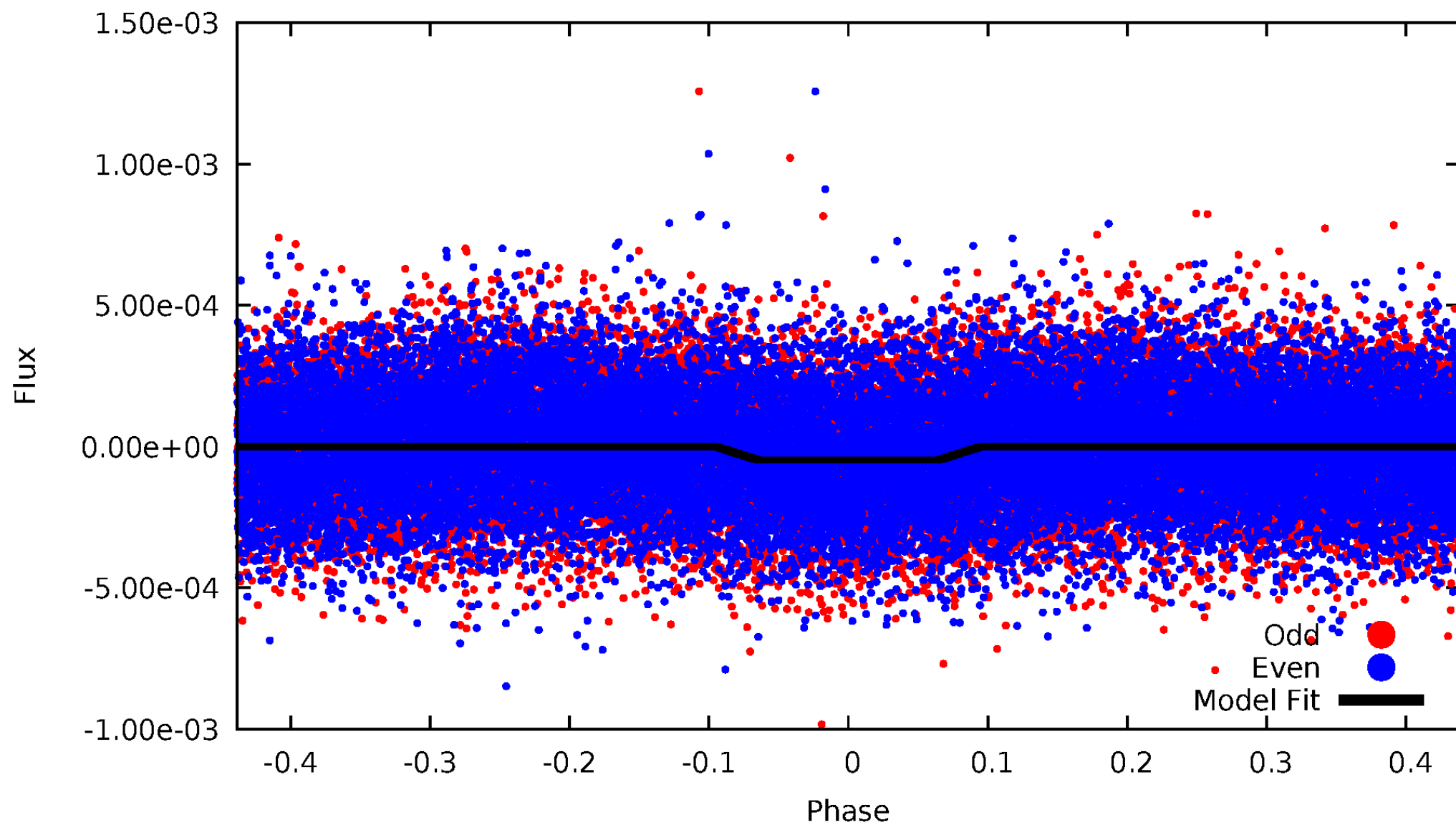
# DV Odd/Even

TCE 004672045-01

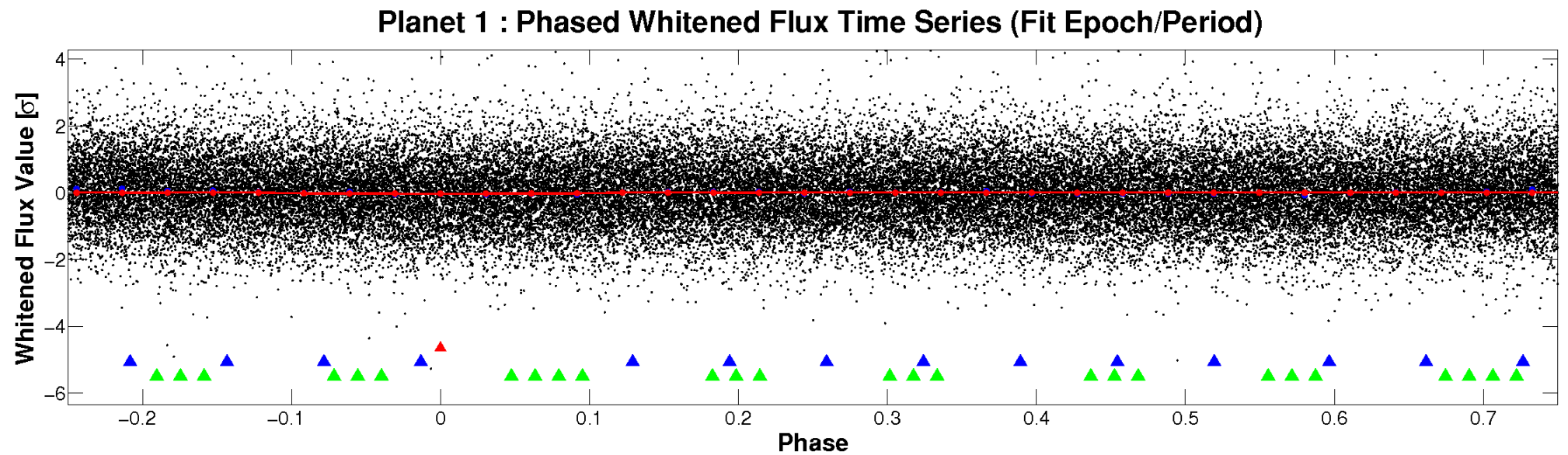
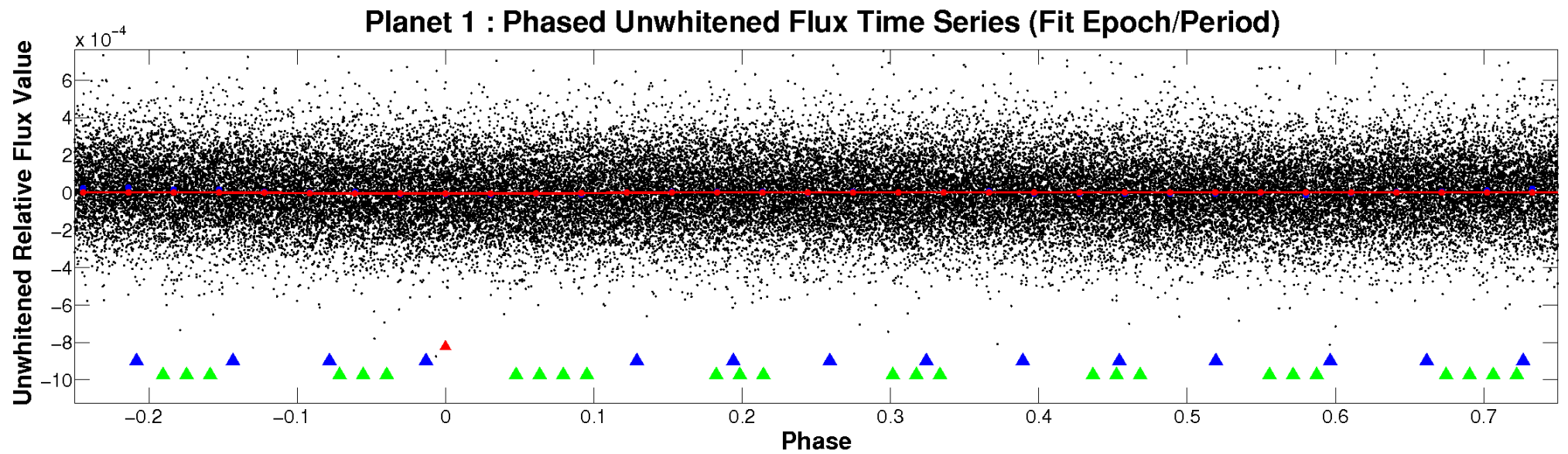


# ALT Odd/Even

TCE 004672045-01

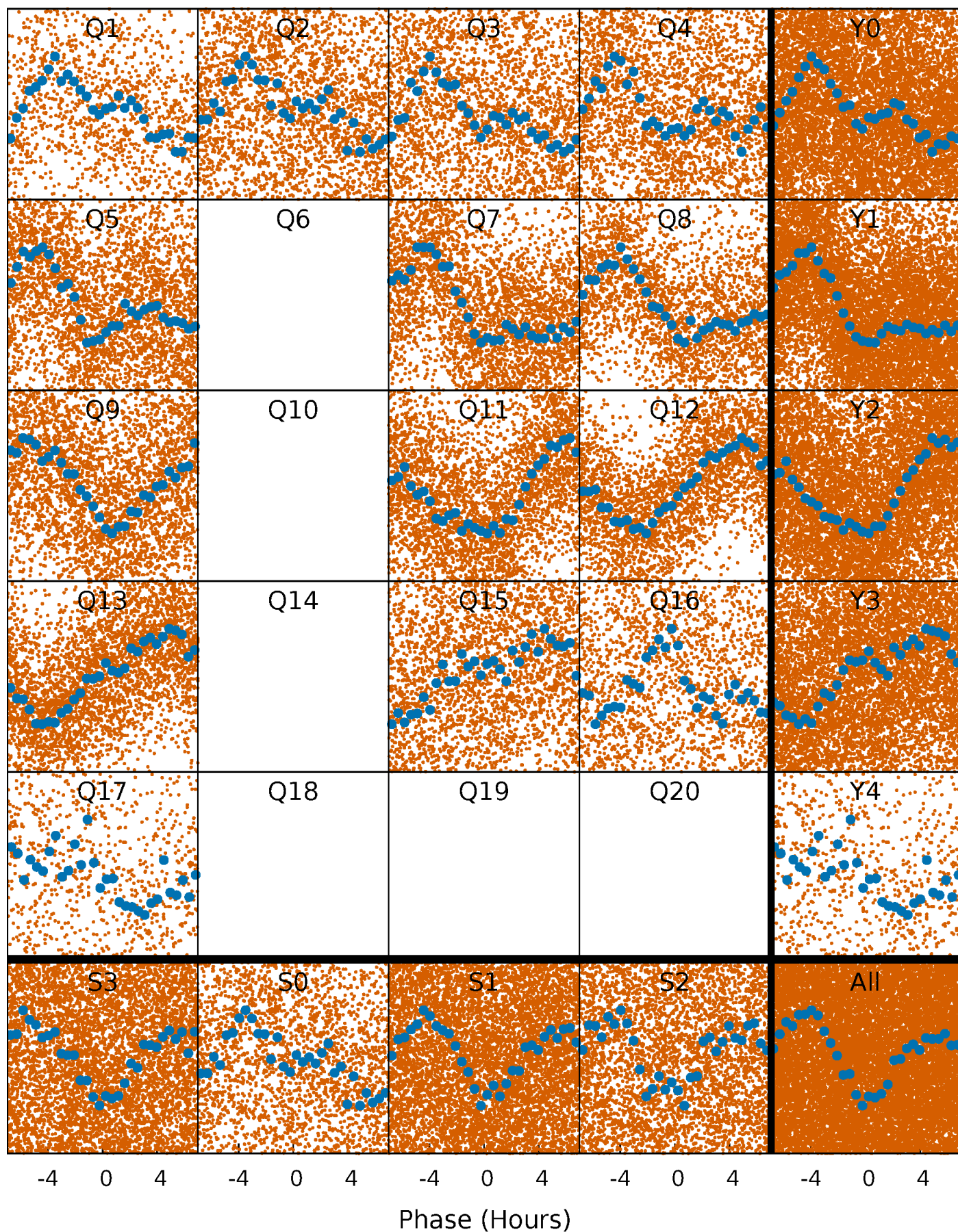


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

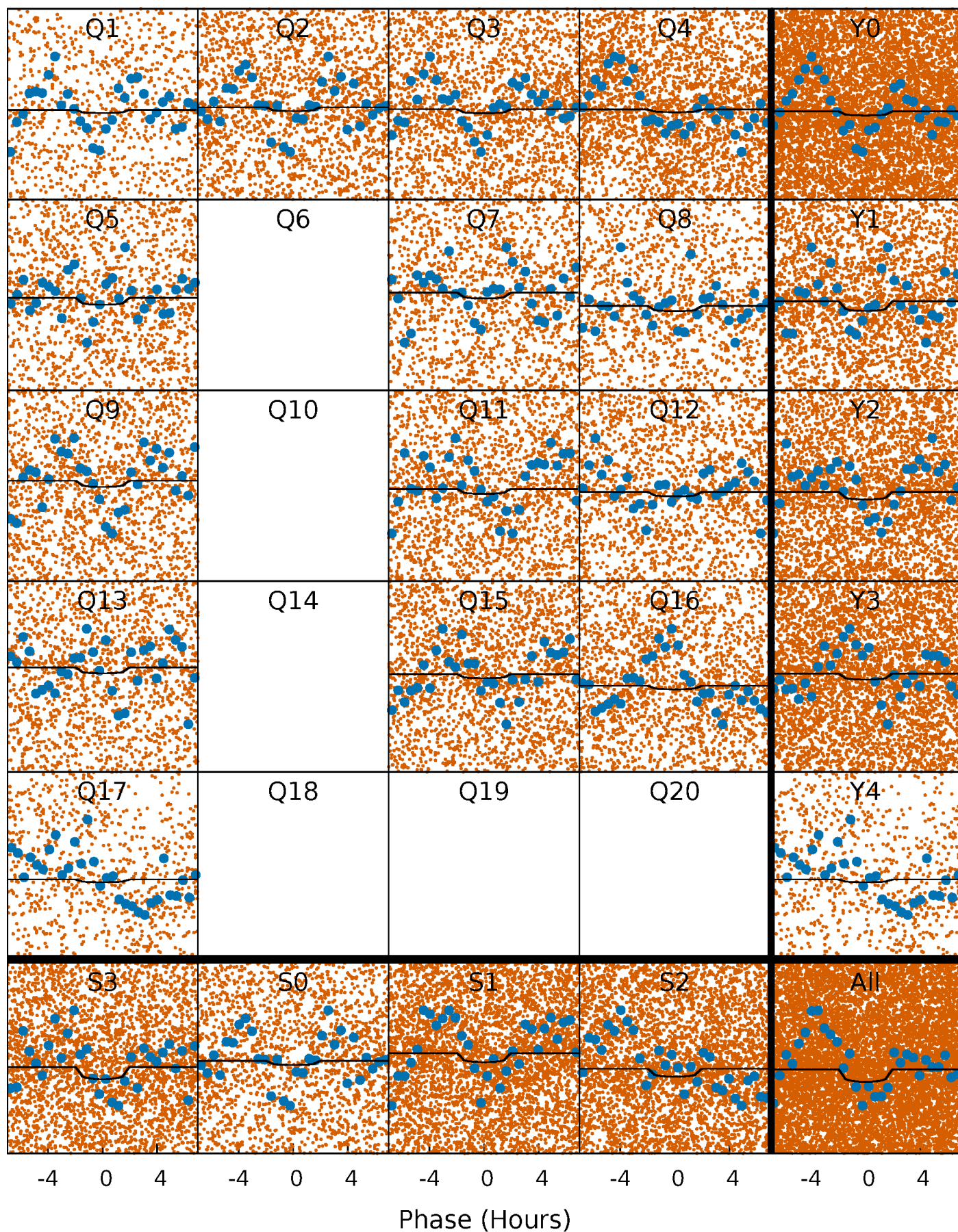
TCE 004672045-01 P= 0.669253 Days  $T_0=131.634378$  (BKJD)





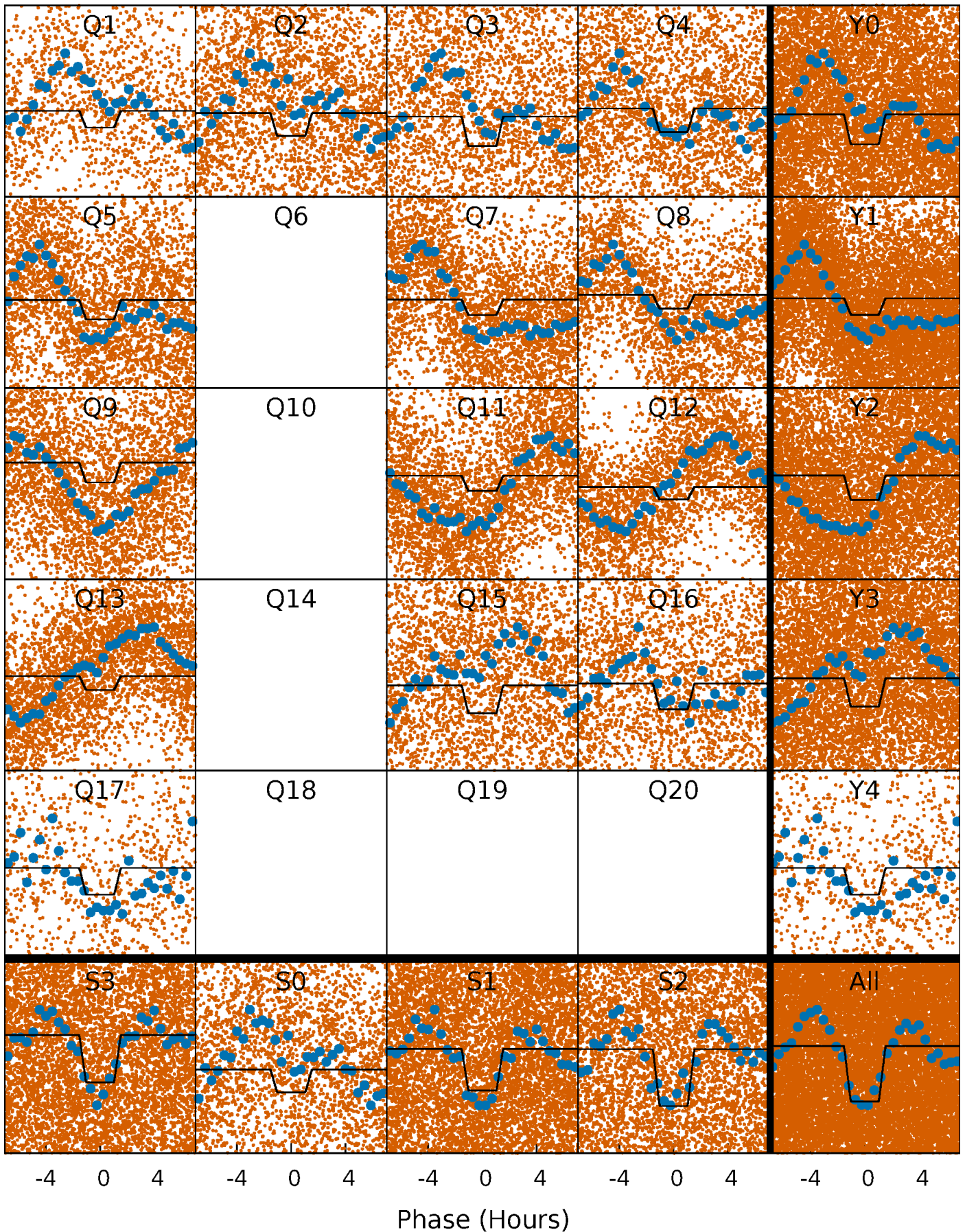
# DV Quarter-Phased Transit Curves

TCE 004672045-01 P= 0.669253 Days  $T_0=131.634378$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004672045-01 P= 0.669318 Days  $T_0=131.591607$  (BKJD)

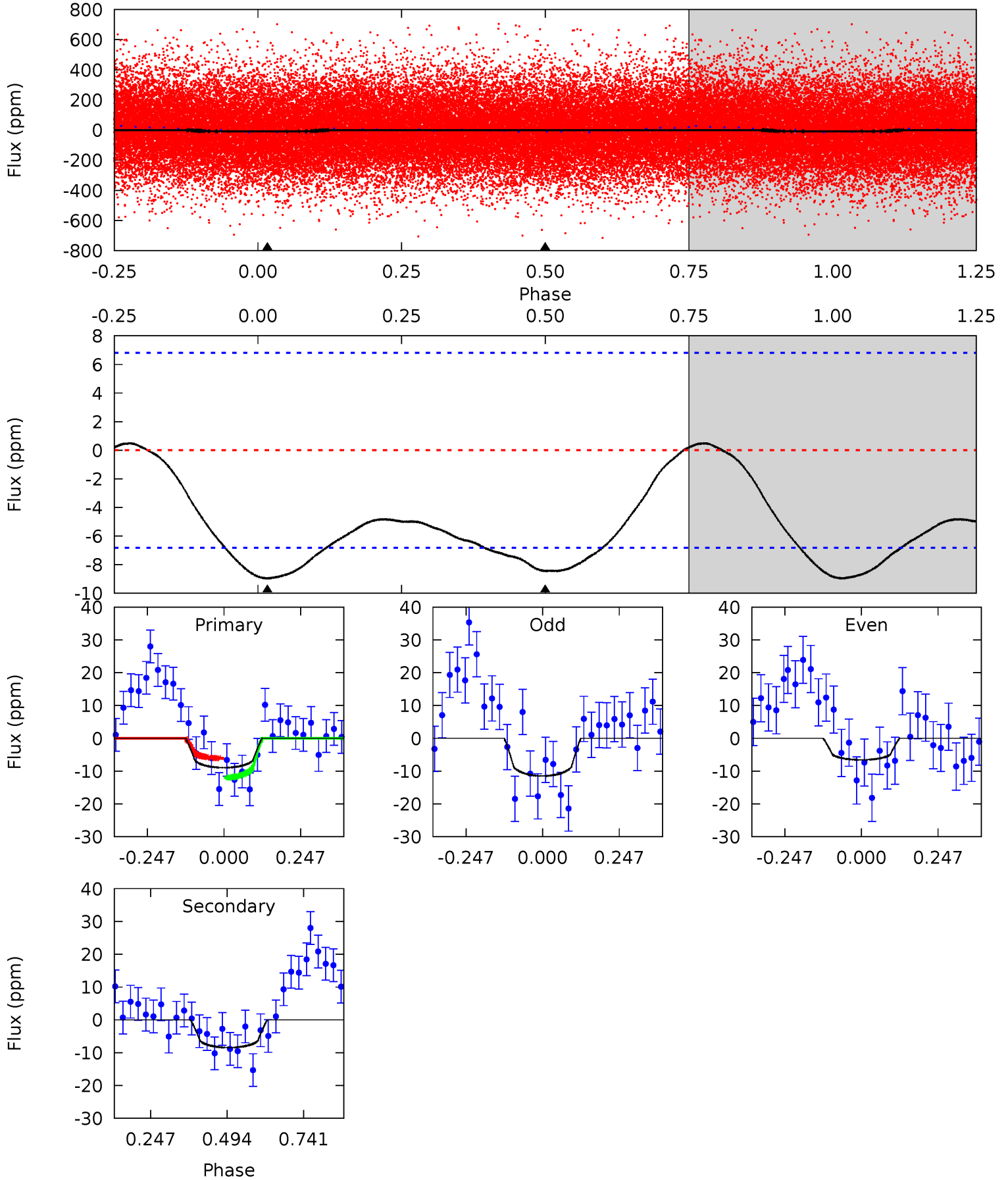




# DV Model-Shift Uniqueness Test

004672045-01, P = 0.669253 Days, E = 130.965125 Days

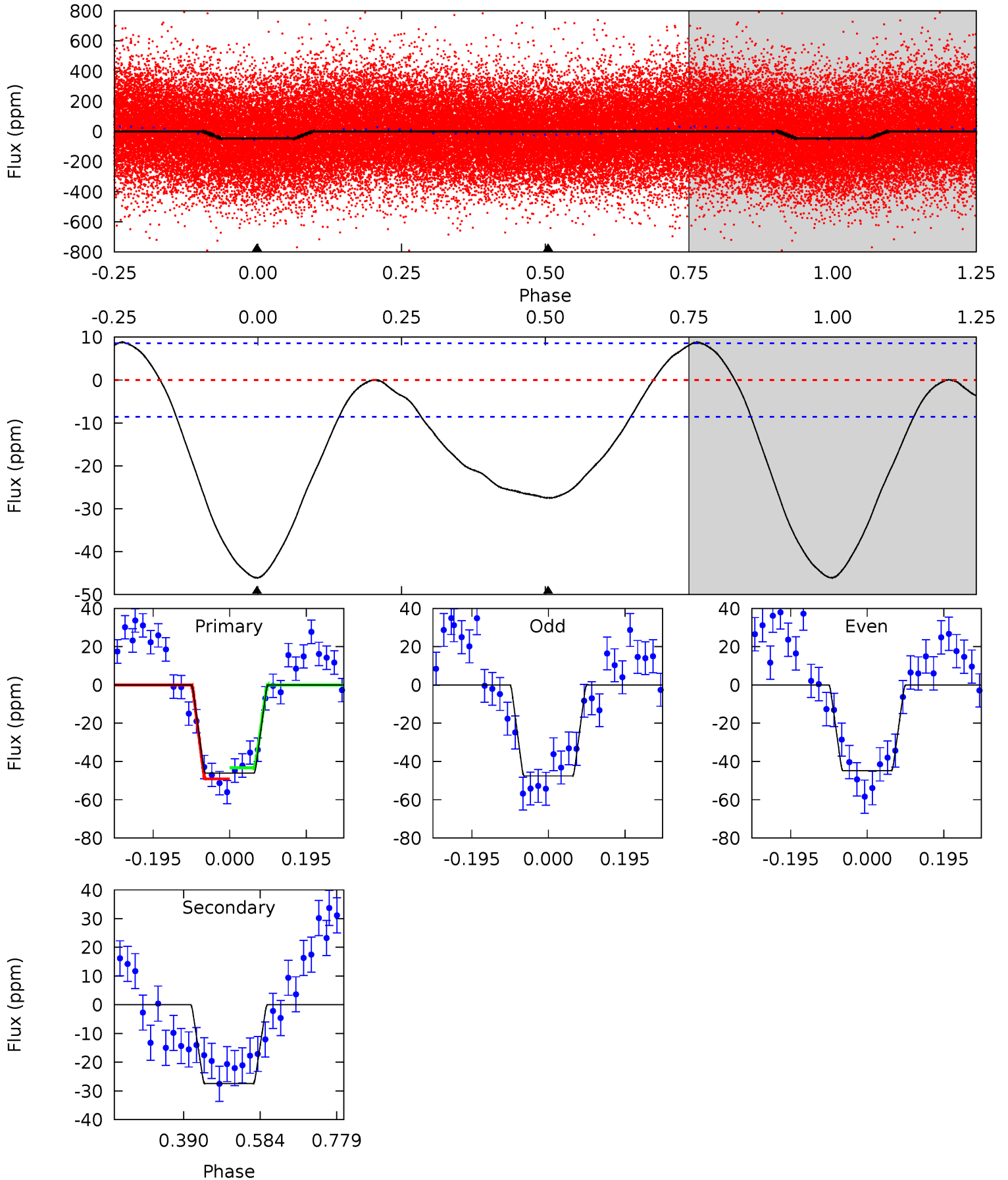
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.75	5.42	0	0	4.37	1.16	1.58	5.75	5.75	5.42	5.42	1.55	0.77	0.05	1.89



# Alt Model-Shift Uniqueness Test

004672045-01, P = 0.669318 Days, E = 130.922289 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
23.8	14.2	0	0	4.42	1.30	3.36	23.8	23.8	14.2	14.2	0.70	0.95	0.16	1.52





### Stellar Parameters For KIC 004672045

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6776^{+189}_{-260}$	$4.252^{+0.120}_{-0.195}$	$-0.200^{+0.250}_{-0.300}$	$1.395^{+0.436}_{-0.235}$	$1.278^{+0.189}_{-0.189}$	$0.663^{+0.385}_{-0.329}$
	+3%/-4%	+3%/-5%	+125%/-150%	+31%/-17%	+15%/-15%	+58%/-50%
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 004672045-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-8 \pm 2$	$0.56^{+0.49}_{-0.38}$	$3897^{+278}_{-227}$	$5868^{+5792}_{-1565}$	$3.815^{+29.534}_{-2.752}$
Alt.	$-27 \pm 2$	$1.14^{+0.58}_{-0.57}$	$3878^{+298}_{-225}$	$5527^{+2693}_{-1028}$	$3.084^{+9.280}_{-1.738}$

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

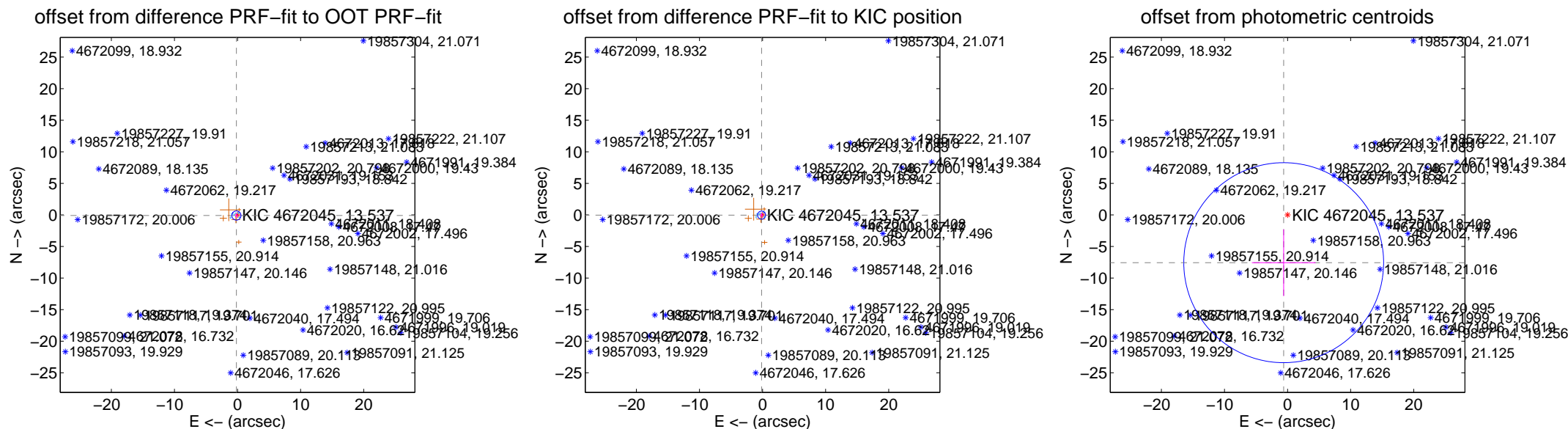
## DV Centroid Data

Supplemental centroid analysis for 004672045-01. Kepler magnitude: 13.54. Transit SNR 2.21

There are 7 quarters with good PRF difference image offsets

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

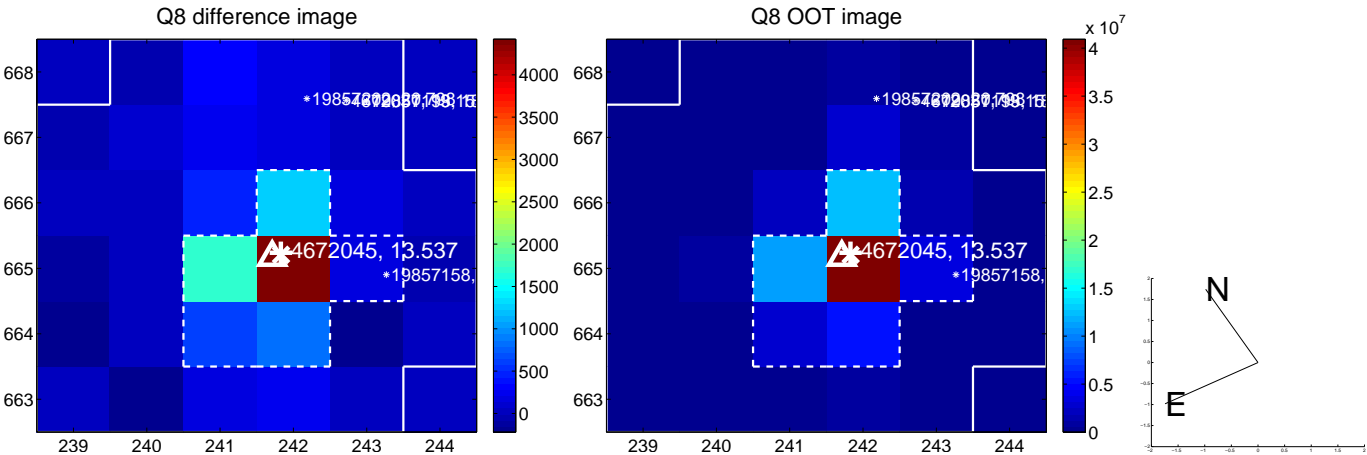
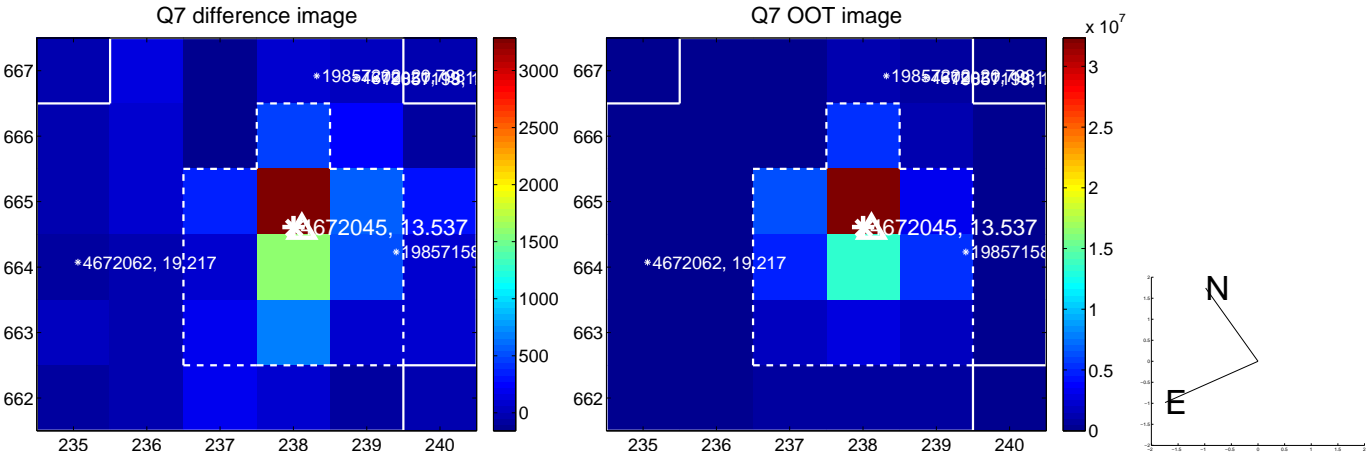
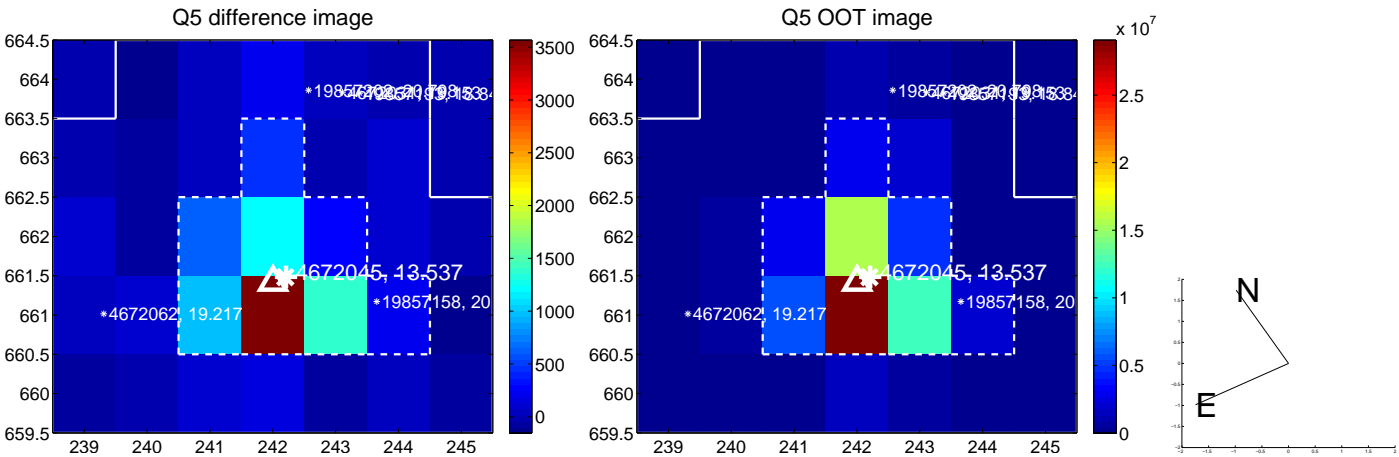
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.199 \pm 0.241$	0.83	$0.177 \pm 0.235$	$-0.092 \pm 0.343$
PRF-fit source offset from KIC position	$0.155 \pm 0.213$	0.73	$0.152 \pm 0.221$	$-0.031 \pm 0.374$
photometric centroid source offset	$7.59 \pm 5.28$	1.44	$0.61 \pm 5.04$	$-7.56 \pm 5.28$



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.

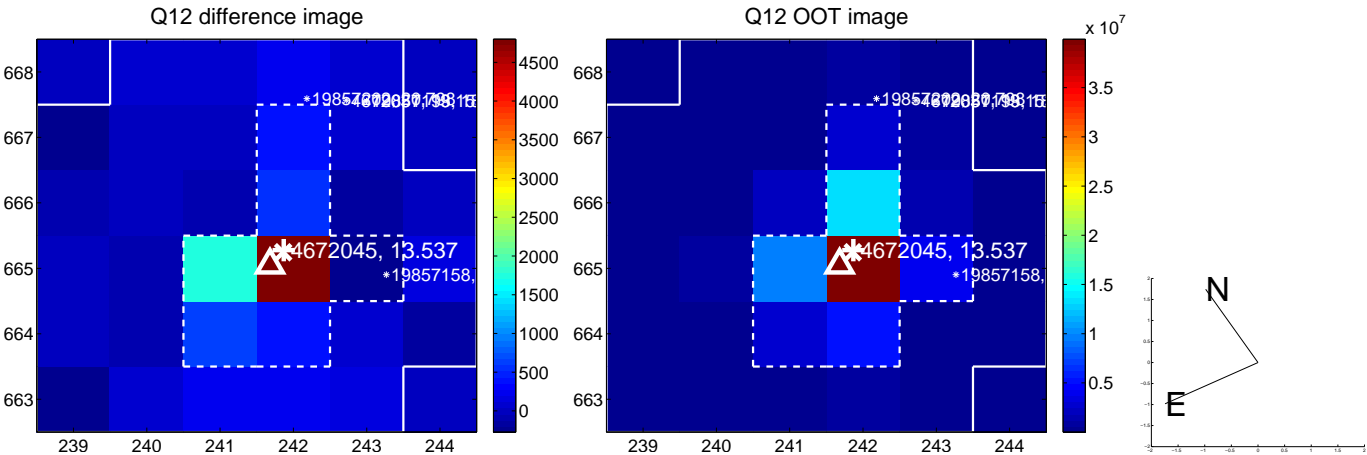
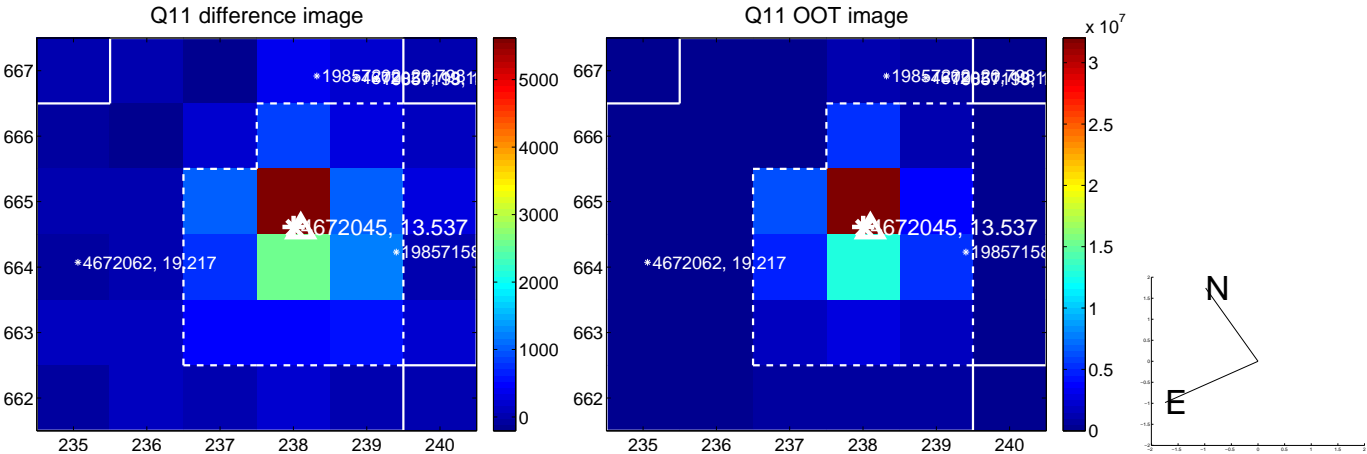
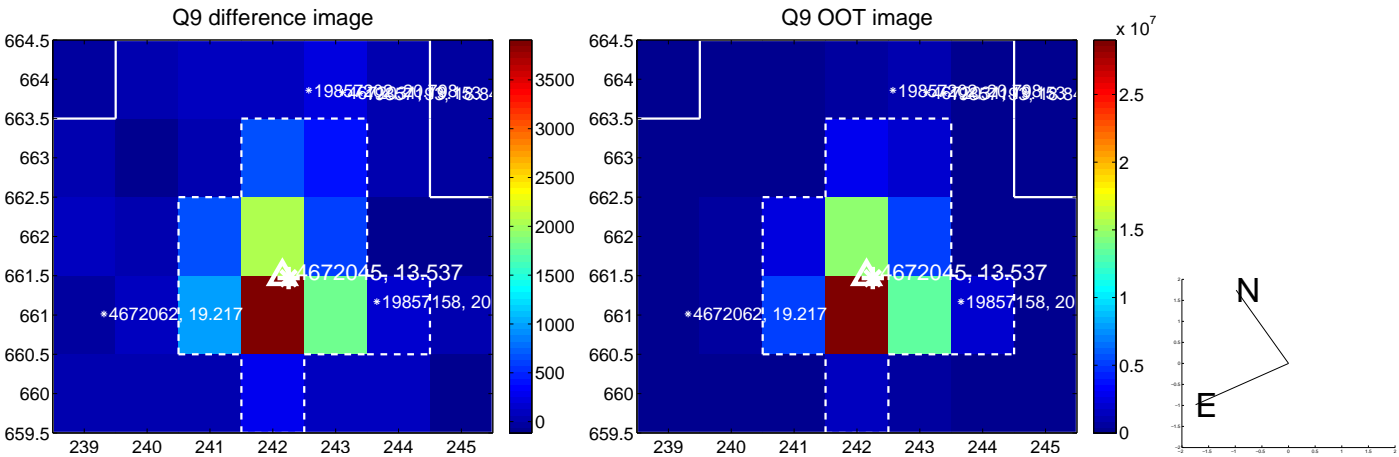


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

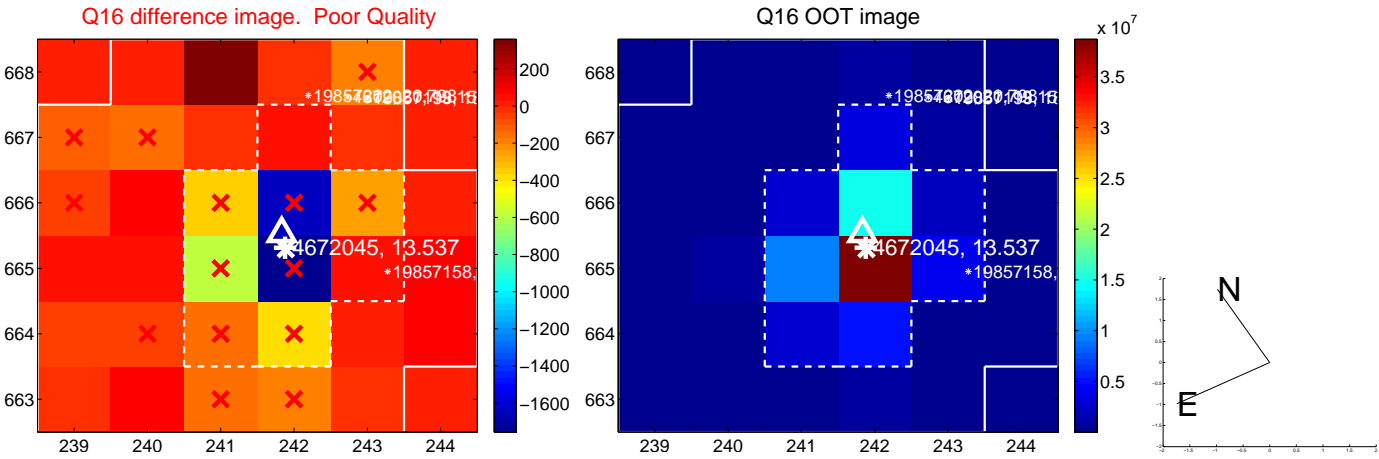
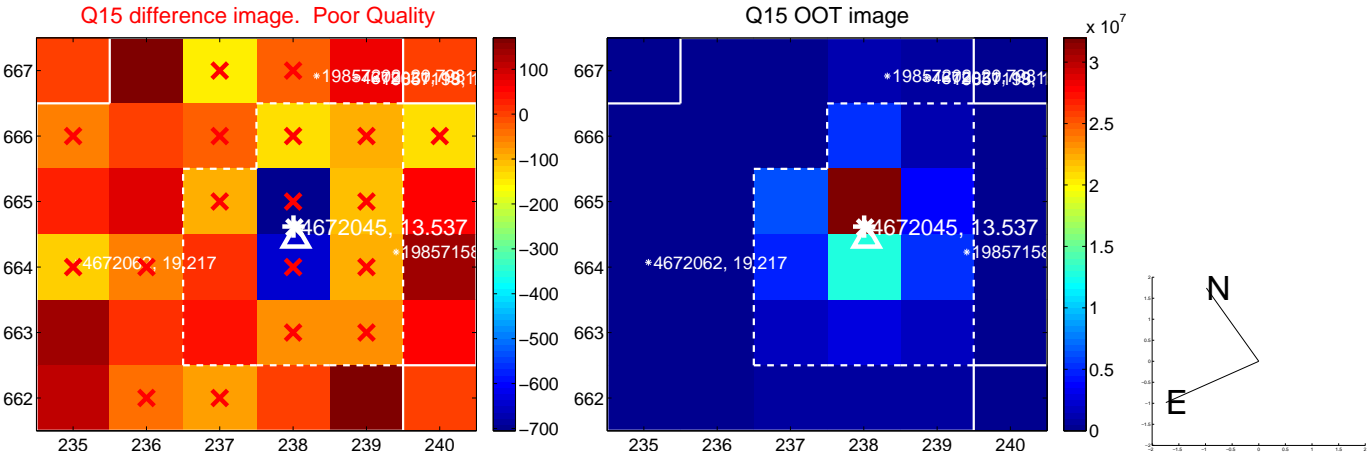
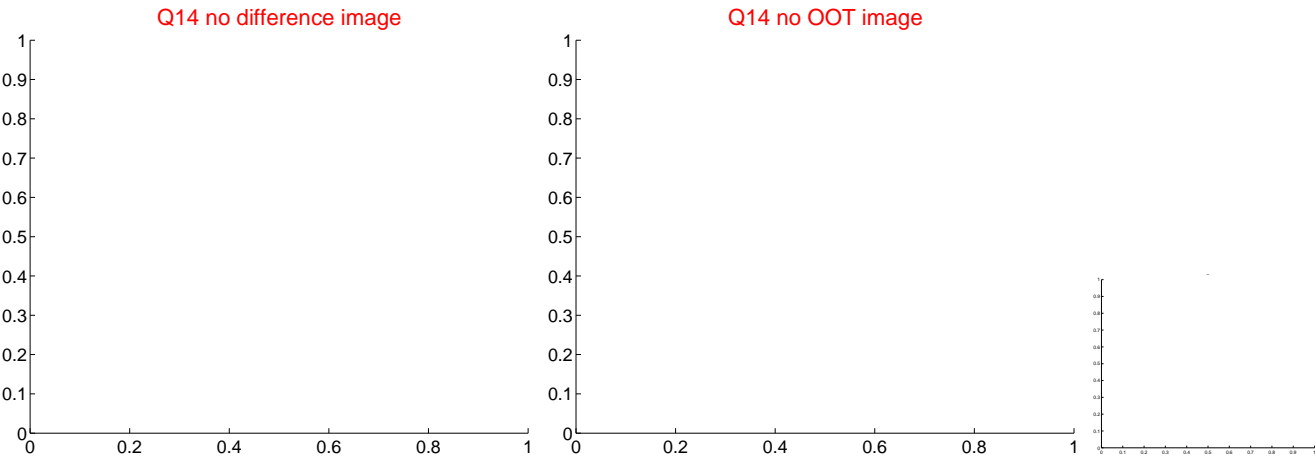
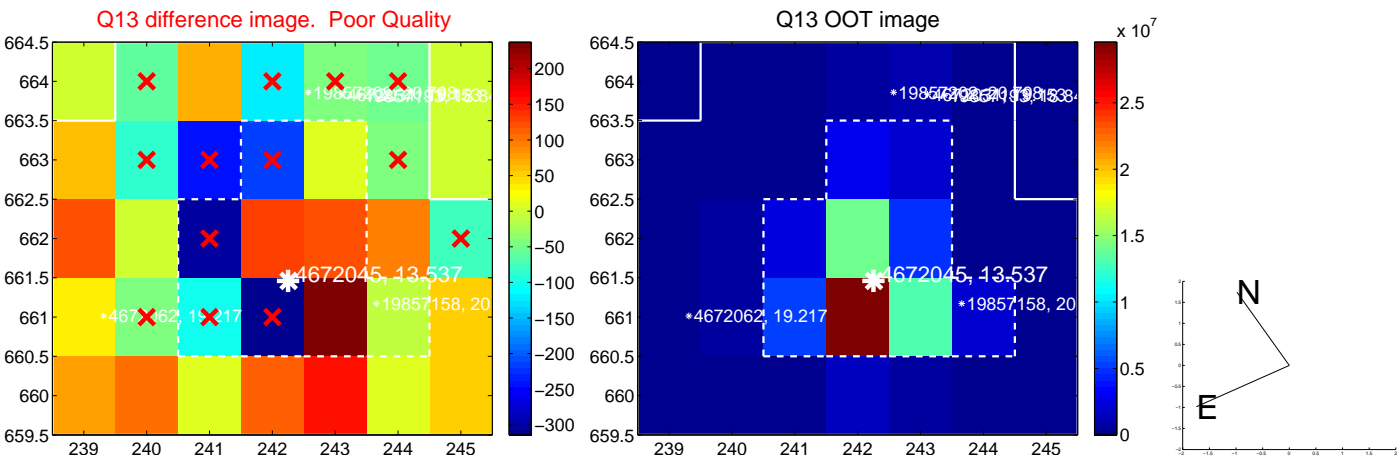




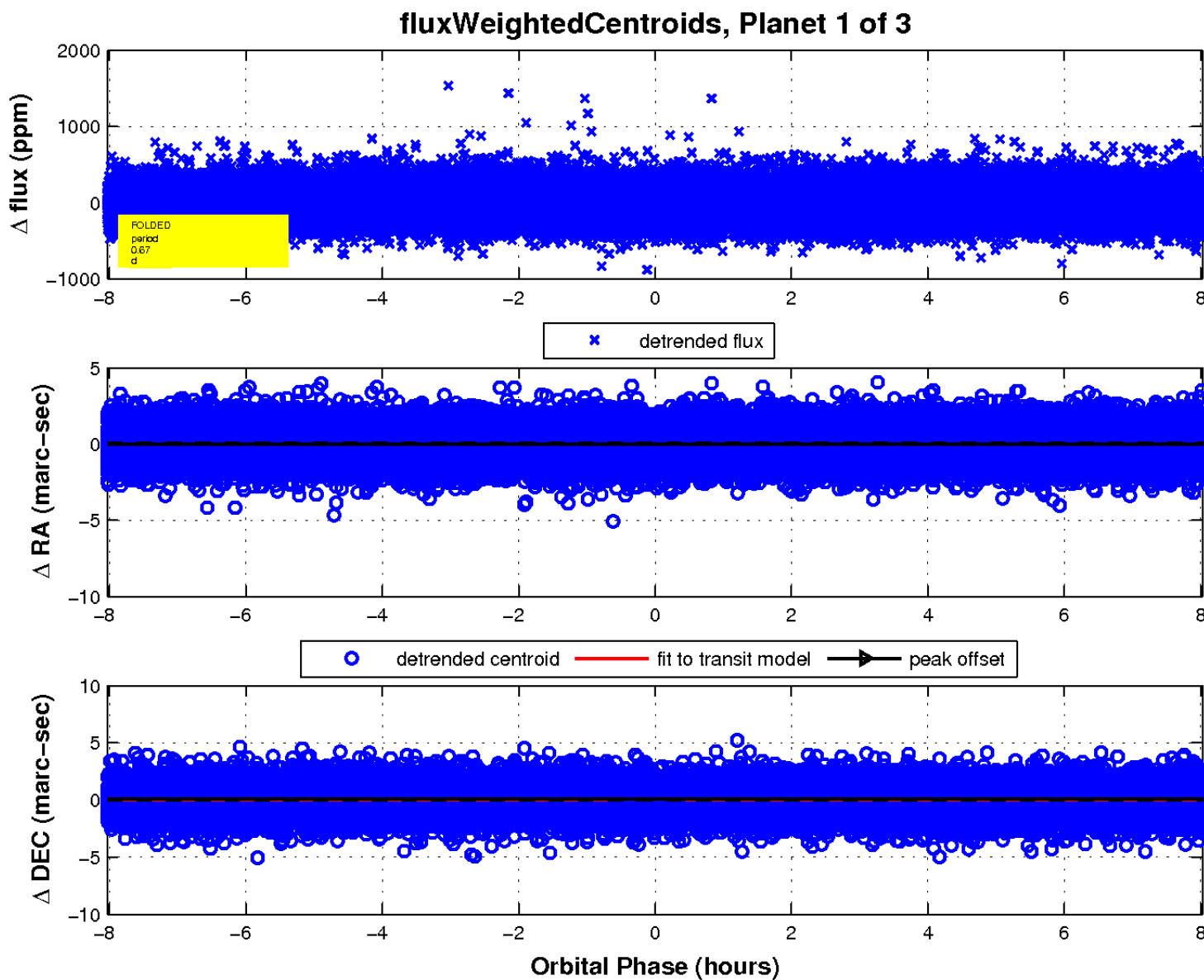
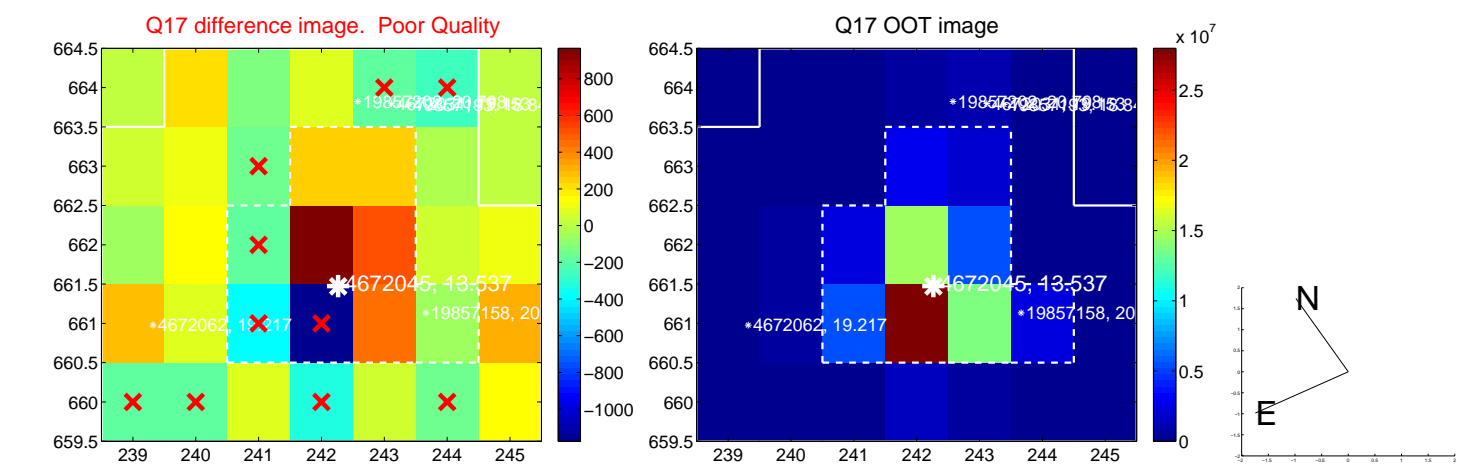
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

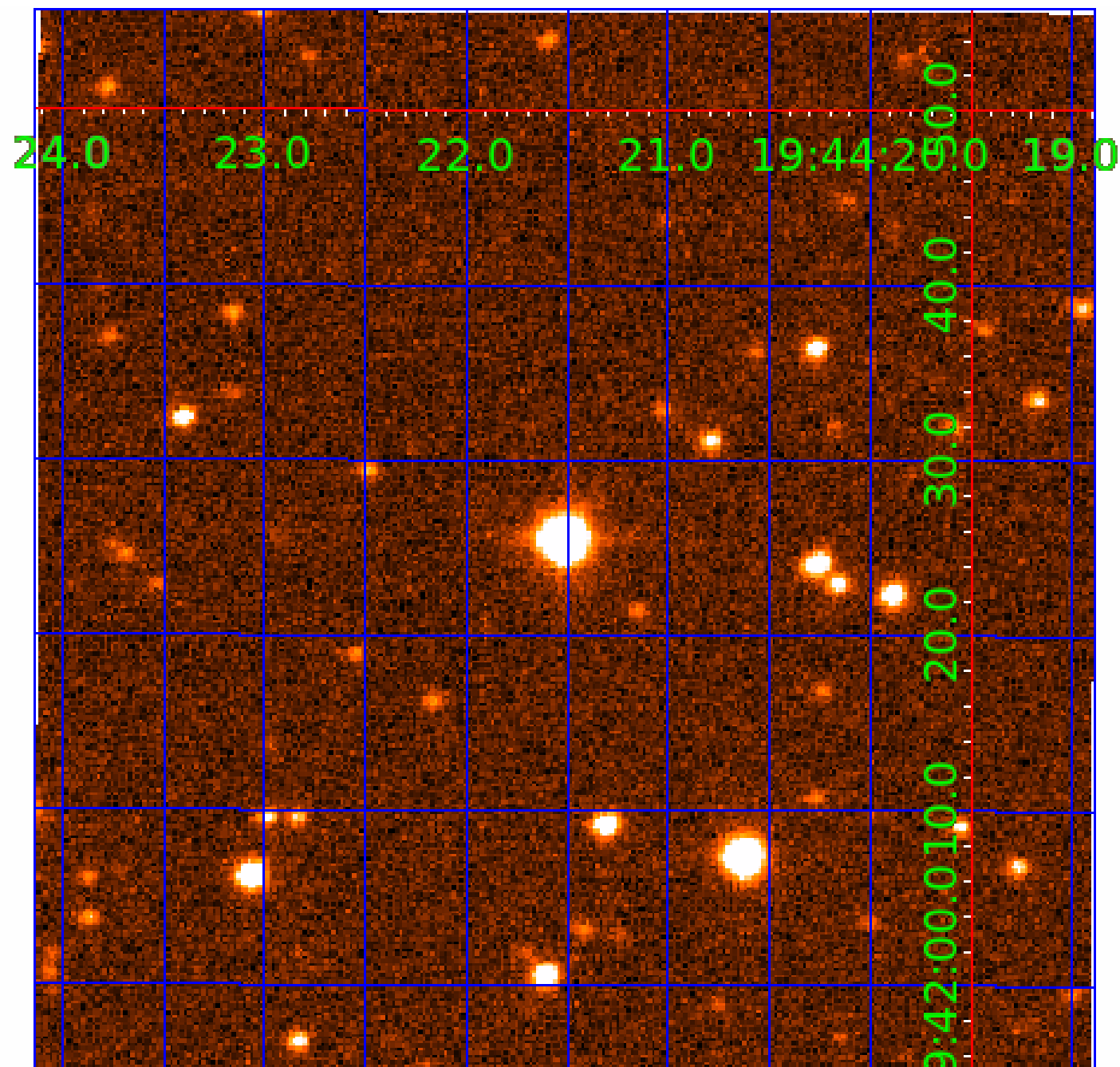


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 004672045

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004672045-01	OBS	No	0.669253	131.634379	5.2	3.497	9.1	2.2	1.40	6776	0.32	13986.76
004672045-02	OBS	No	99.362257	206.269039	352.8	2.164	7.4	8.0	1.40	6776	2.97	17.79
004672045-03	OBS	No	57.306094	148.397571	279.3	1.942	7.1	7.5	1.40	6776	2.39	37.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004672045-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004672045-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004672045-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

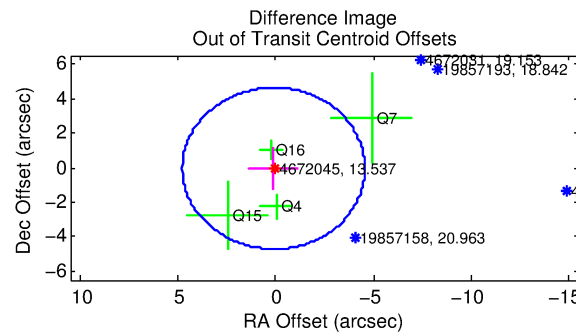
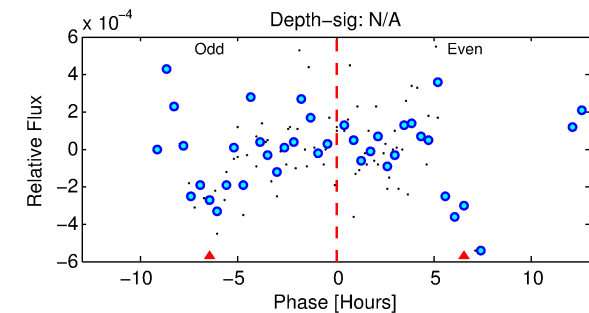
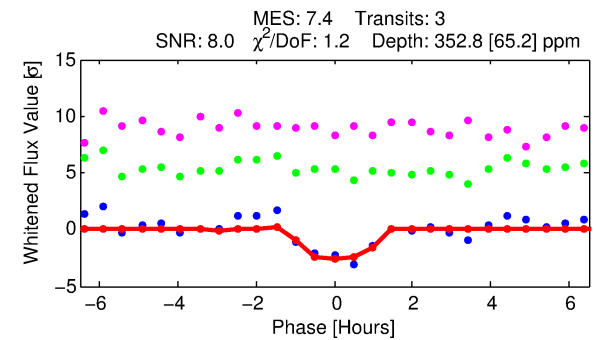
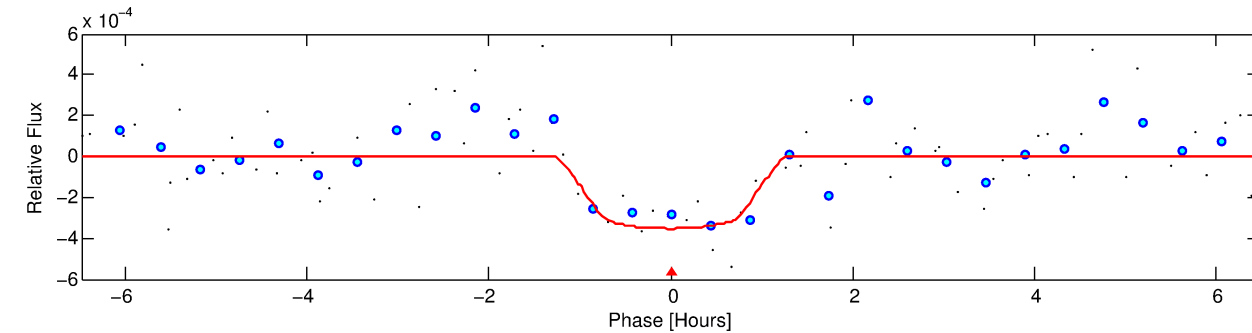
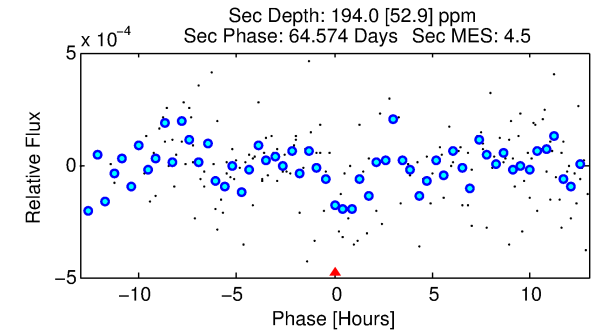
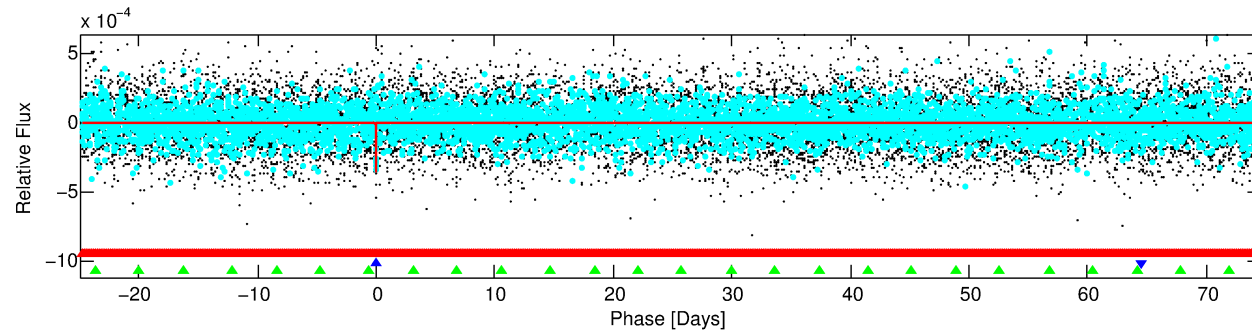
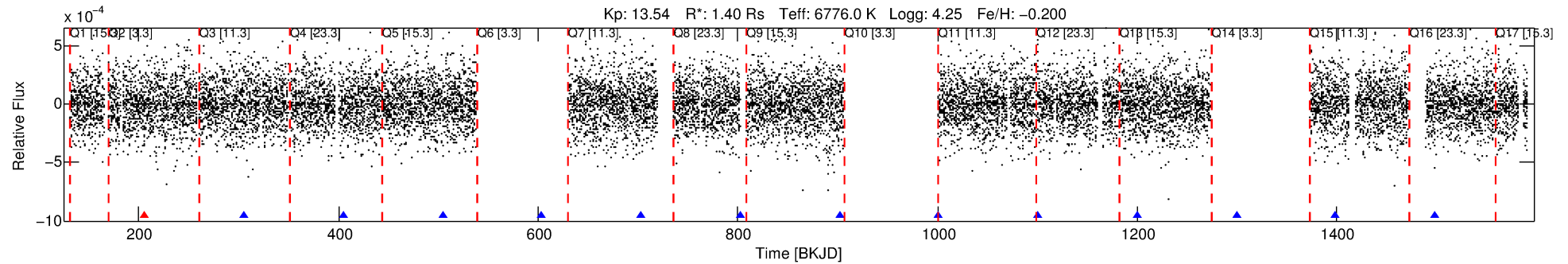
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004672045-02

No Significant Match Found

# DV One-Page Summary

KIC: 4672045 Candidate: 2 of 3 Period: 99.362 d



## DV Fit Results:

Period = 99.36226 [0.00121] d  
Epoch = 206.2690 [0.0068] BKJD  
Rp/R\* = 0.0195 [0.0270]  
a/R\* = 194.10 [1566.16]  
b = 0.86 [2.55]  
Seff = 17.79 [7.04]  
Teq = 524 [52] K  
Rp = 2.97 [4.21] Re  
a = 0.4545 [0.1166] AU  
Ag = 2500.10 [7010.95] [0.36 $\sigma$ ]  
Teffp = 5725 [3986] K [1.30 $\sigma$ ]

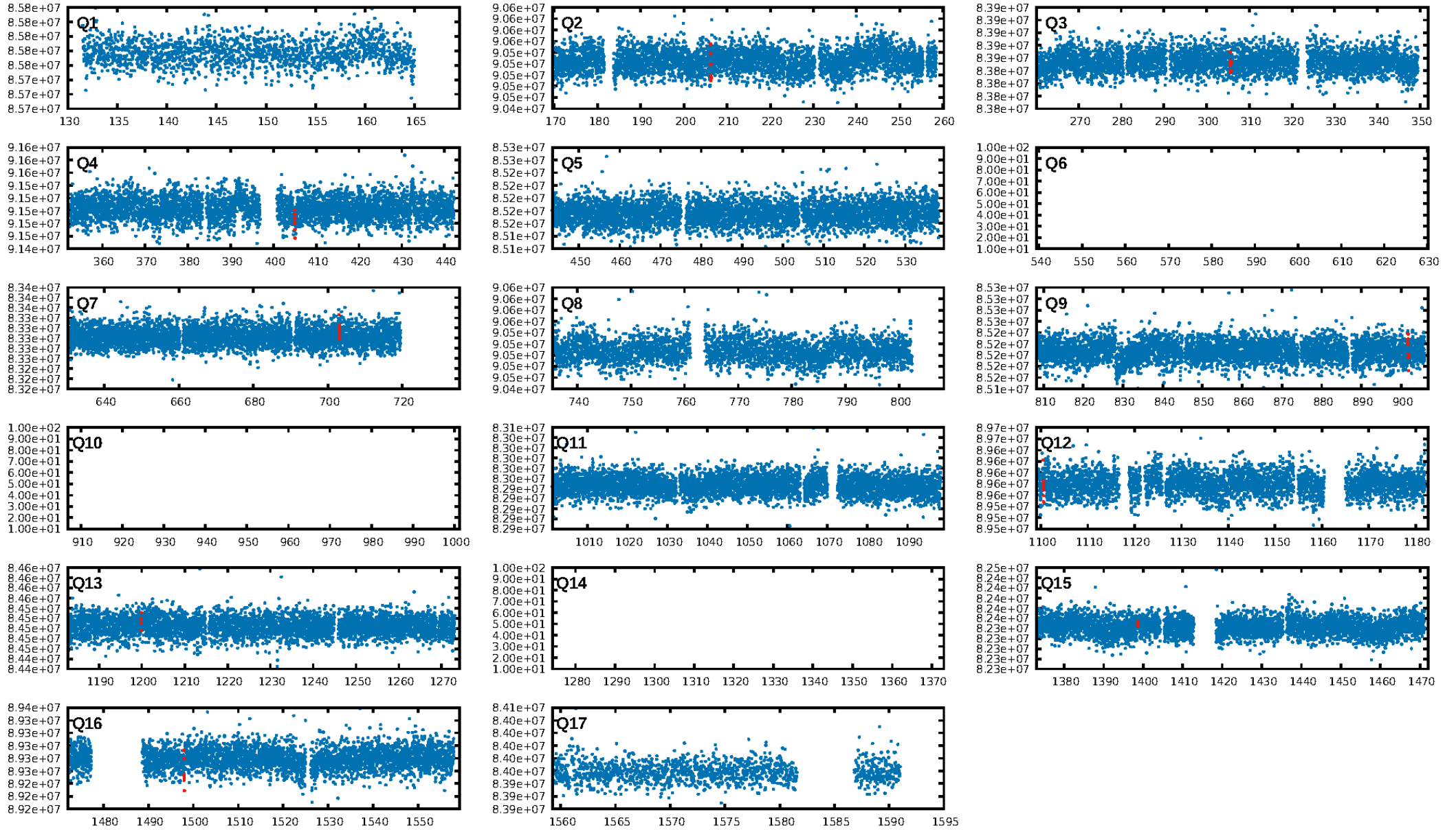
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [347.09 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 65.0%  
ModelChiSquareGof-sig: 98.8%  
**Bootstrap-pfa: 4.90e-09**  
**RollingBand-fgt: 0.67 [2/3]**  
GhostDiagnostic-chr: -1.19  
Centroid-sig: 67.7%  
Centroid-so: 0.839 arcsec [0.60 $\sigma$ ]  
OotOffset-rm: 0.116 arcsec [0.07 $\sigma$ ]  
OotOffset-st: 0/2/2/0 [4]  
KicOffset-rm: 0.105 arcsec [0.13 $\sigma$ ]  
KicOffset-st: 0/2/2/0 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/7]

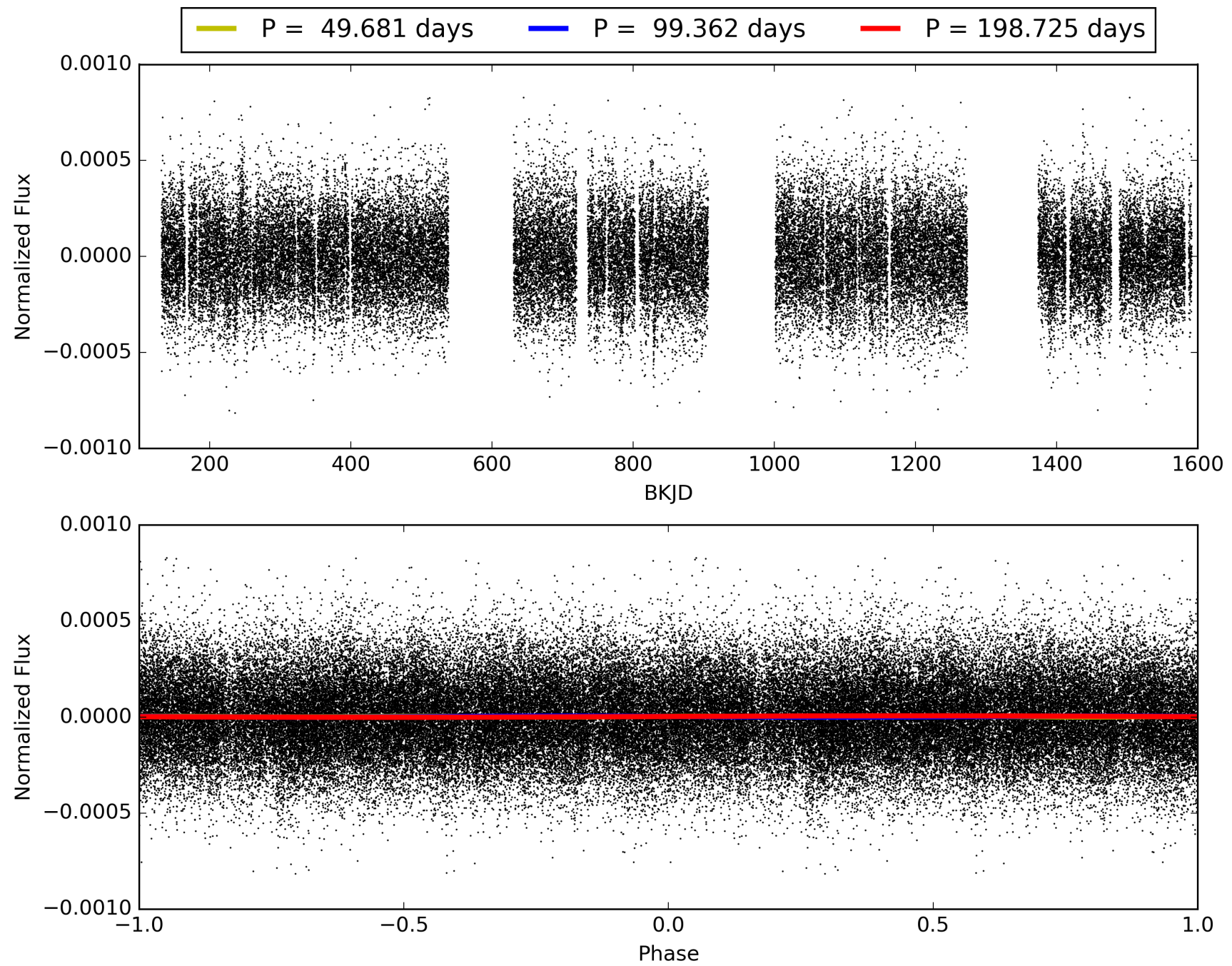
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:03:38 Z

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

# TCE 004672045-02, PDC Light Curves



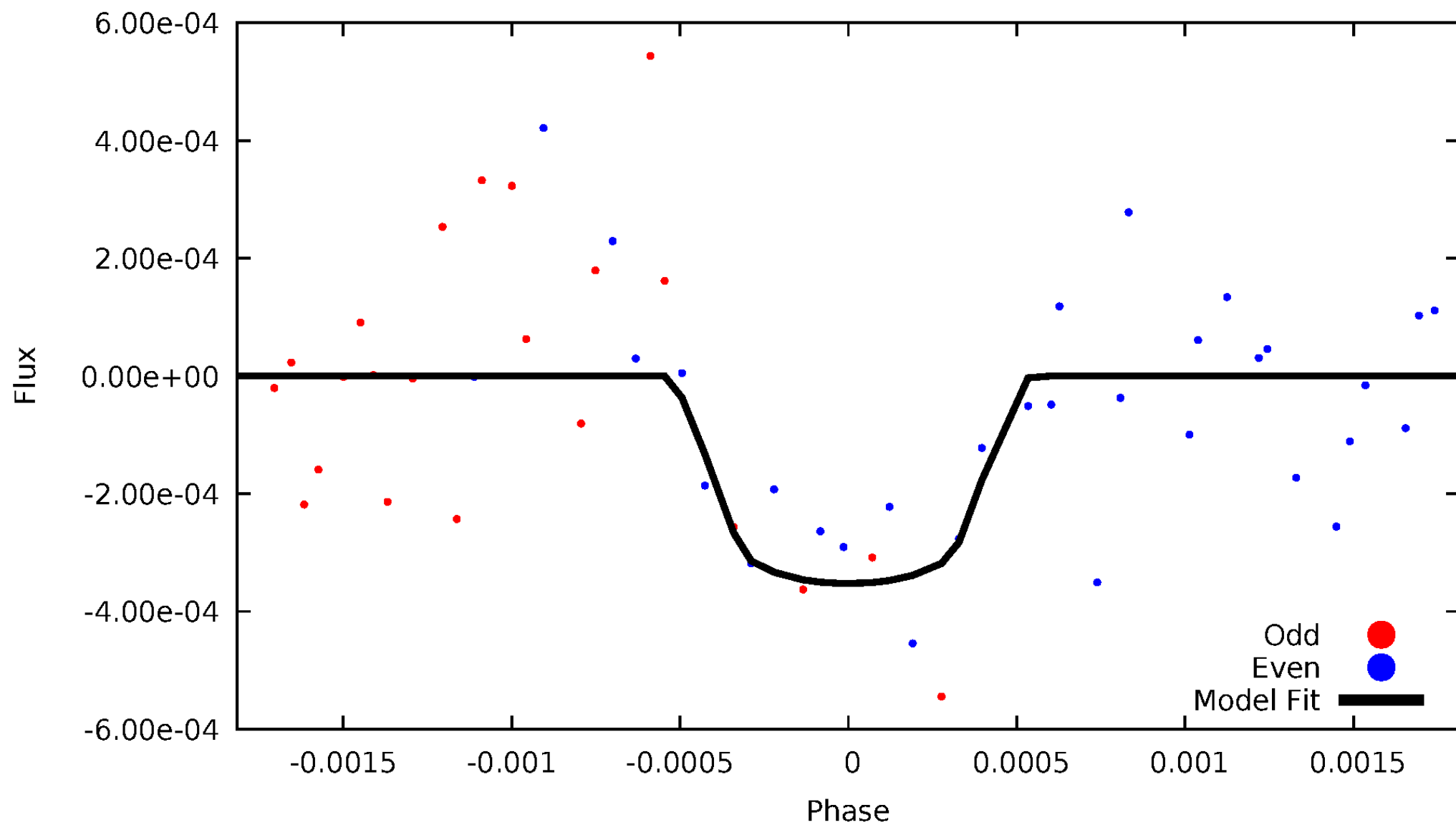
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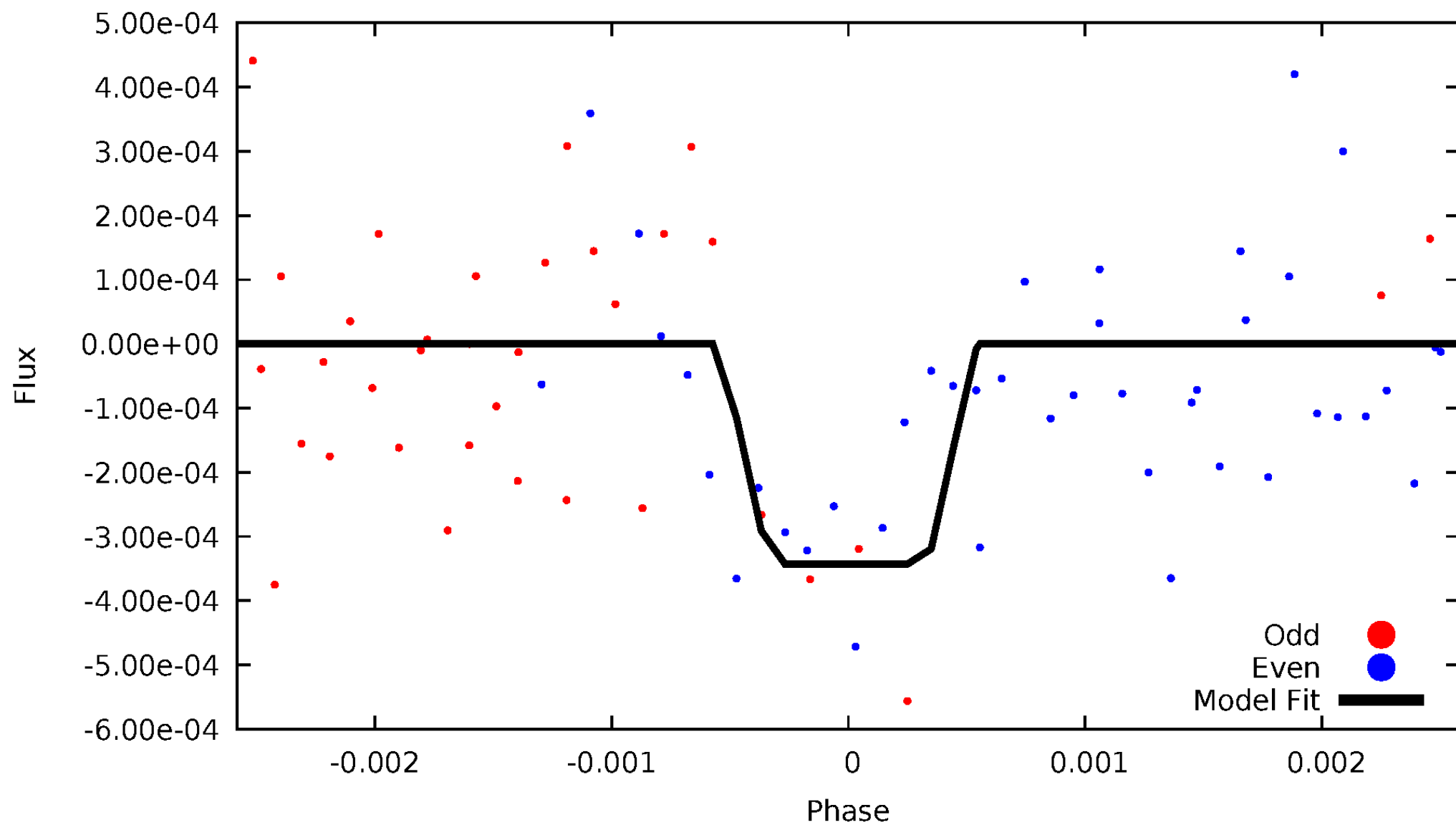
# DV Odd/Even

TCE 004672045-02



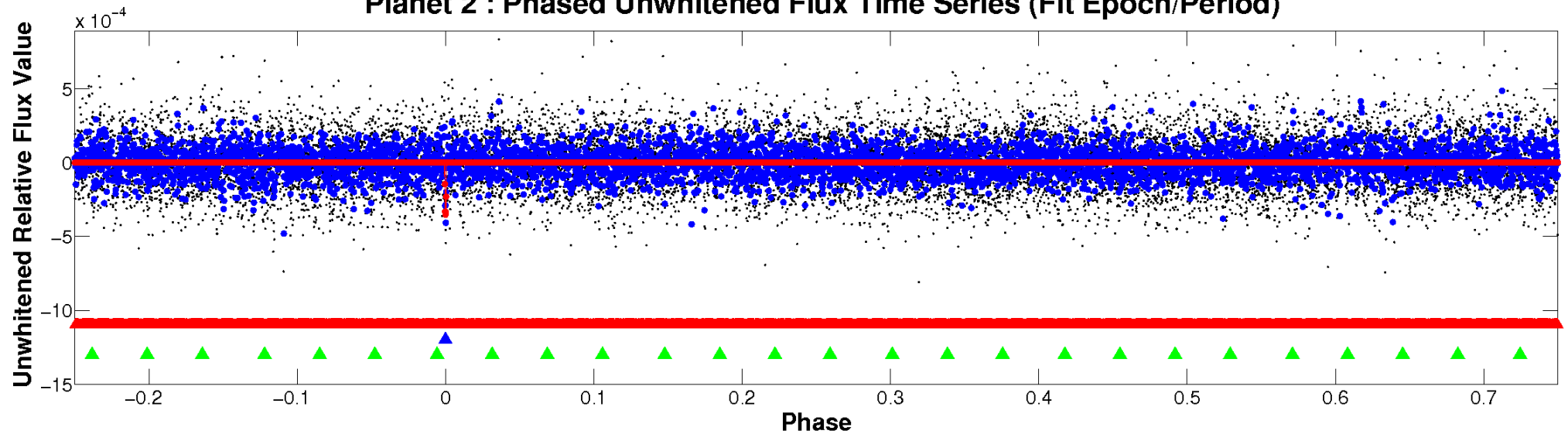
# ALT Odd/Even

TCE 004672045-02

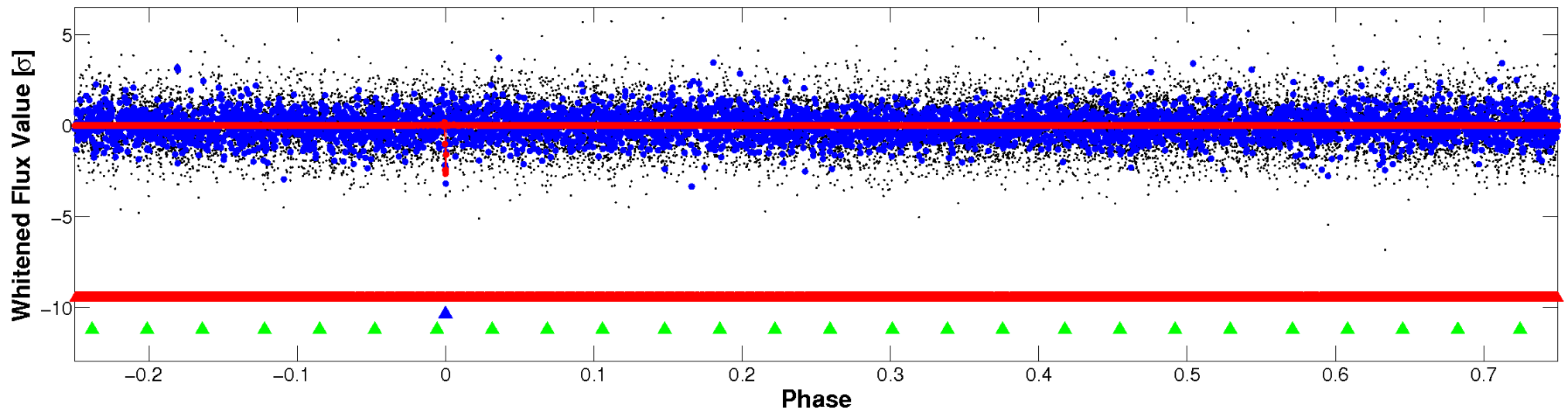


# Non-Whitened Vs. Whitened Light Curve

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

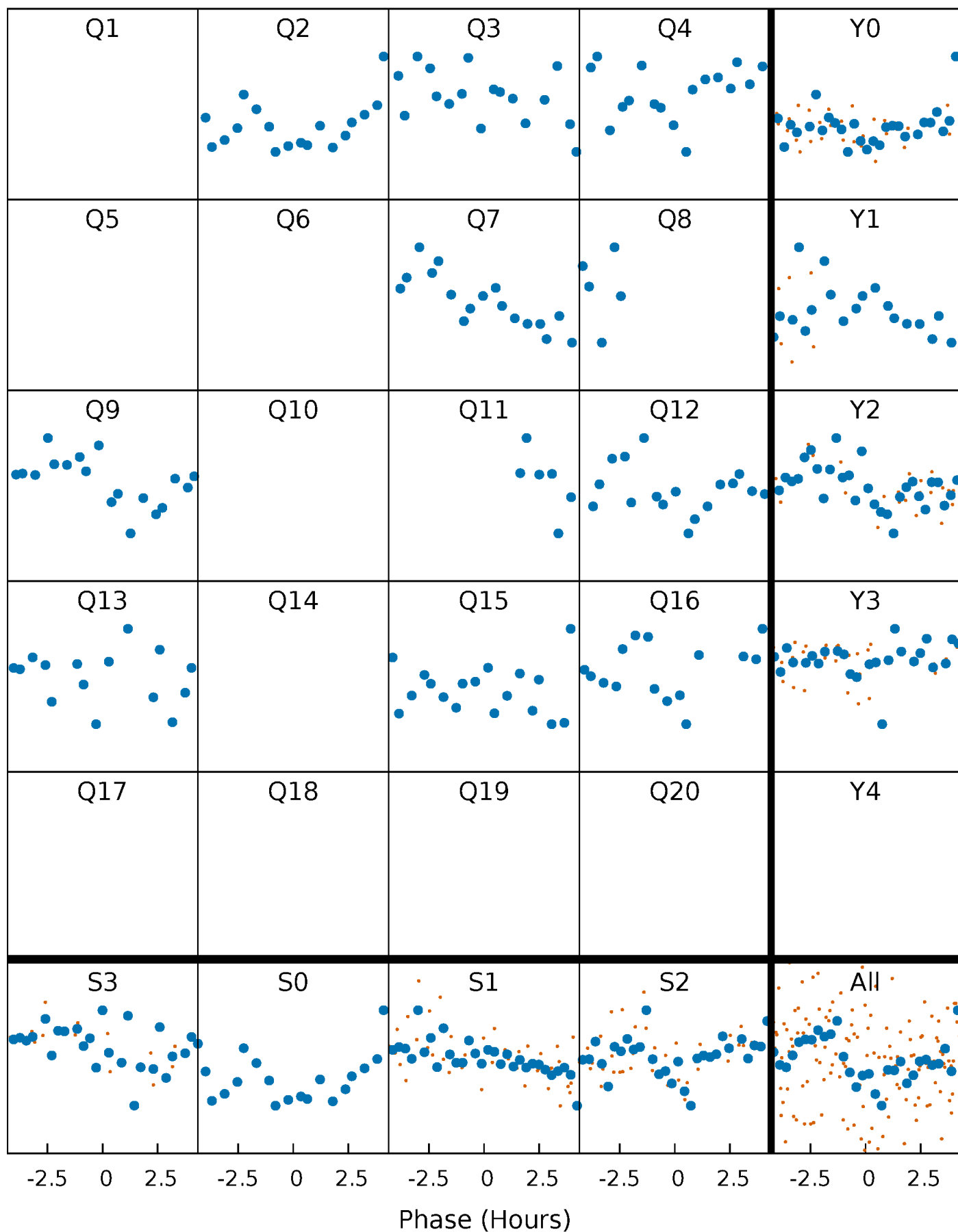


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



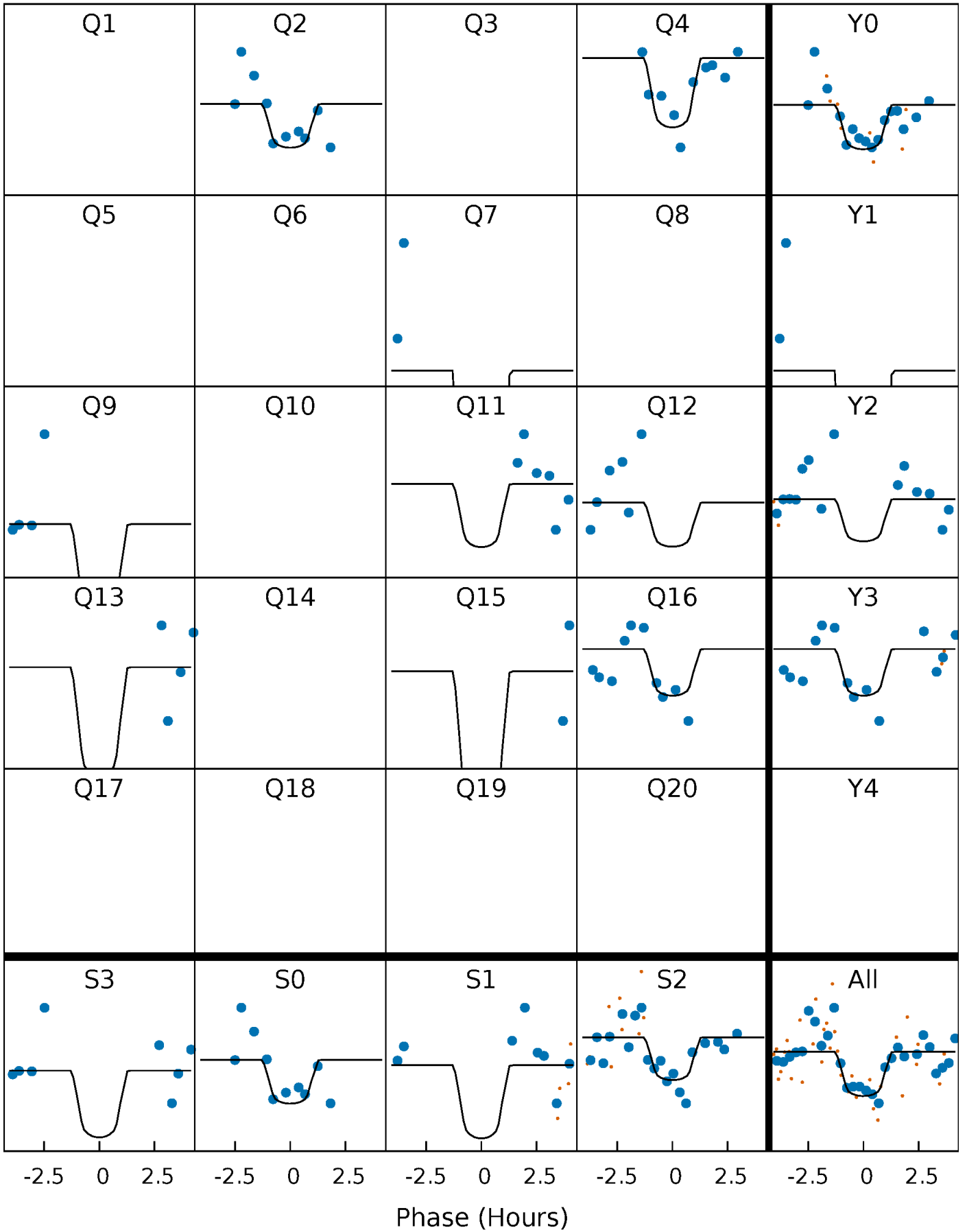
# PDC Quarter-Phased Transit Curves

TCE 004672045-02     $P = 99.362257$  Days     $T_0 = 206.269038$  (BKJD)



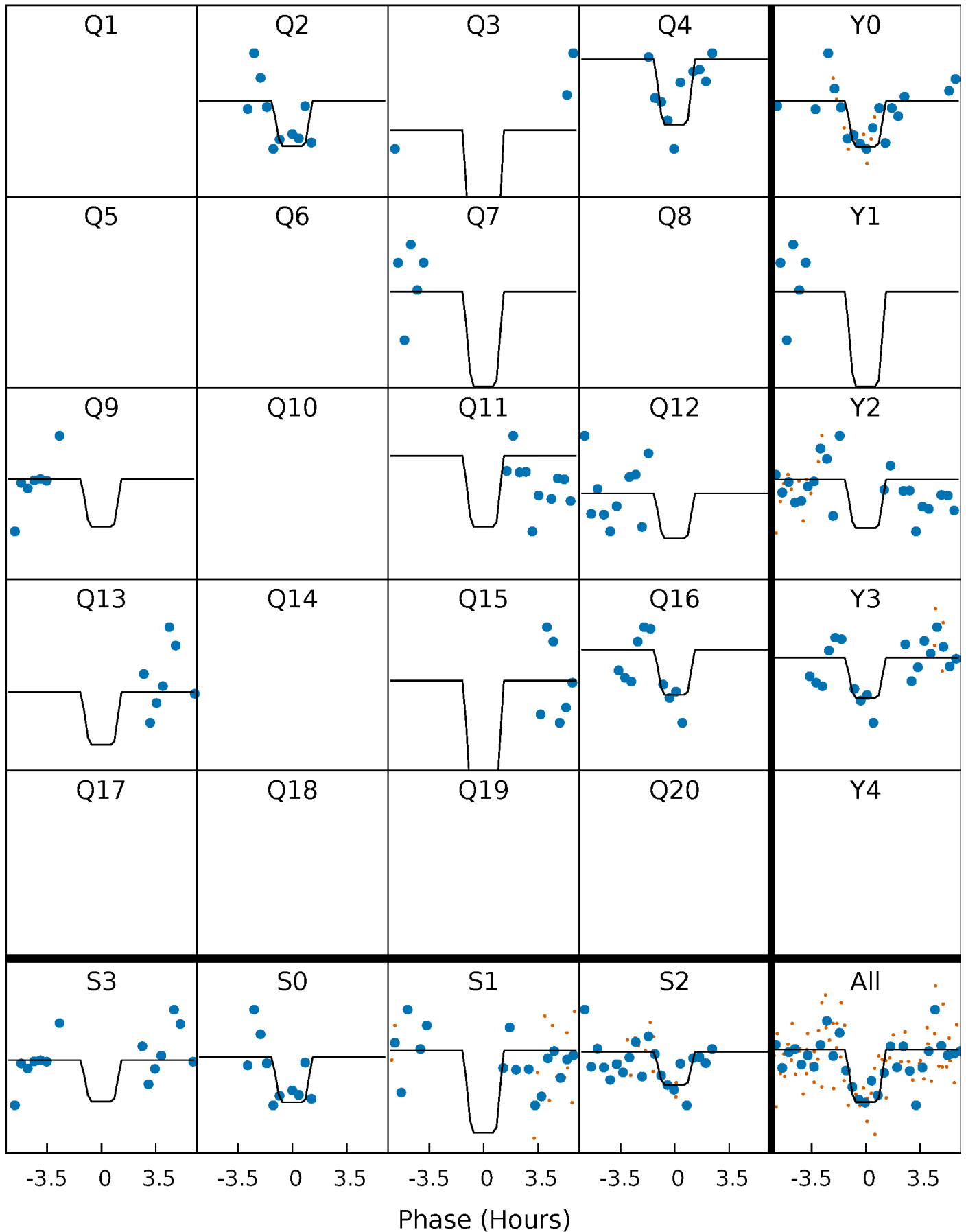
# DV Quarter-Phased Transit Curves

TCE 004672045-02    P= 99.362257 Days     $T_0=206.269038$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004672045-02 P= 99.361057 Days  $T_0=206.287323$  (BKJD)

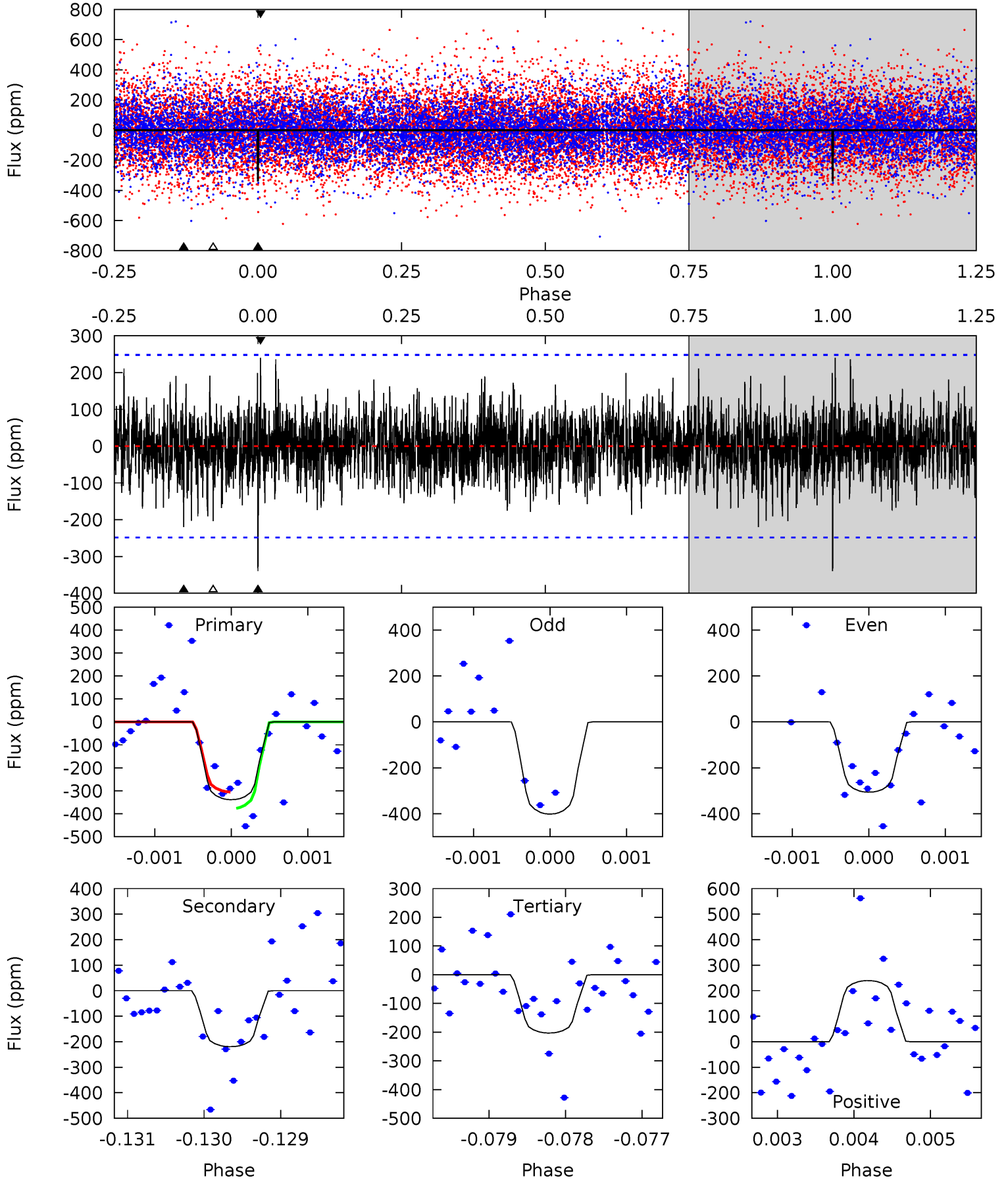




# DV Model-Shift Uniqueness Test

004672045-02, P = 99.362257 Days, E = 106.906781 Days

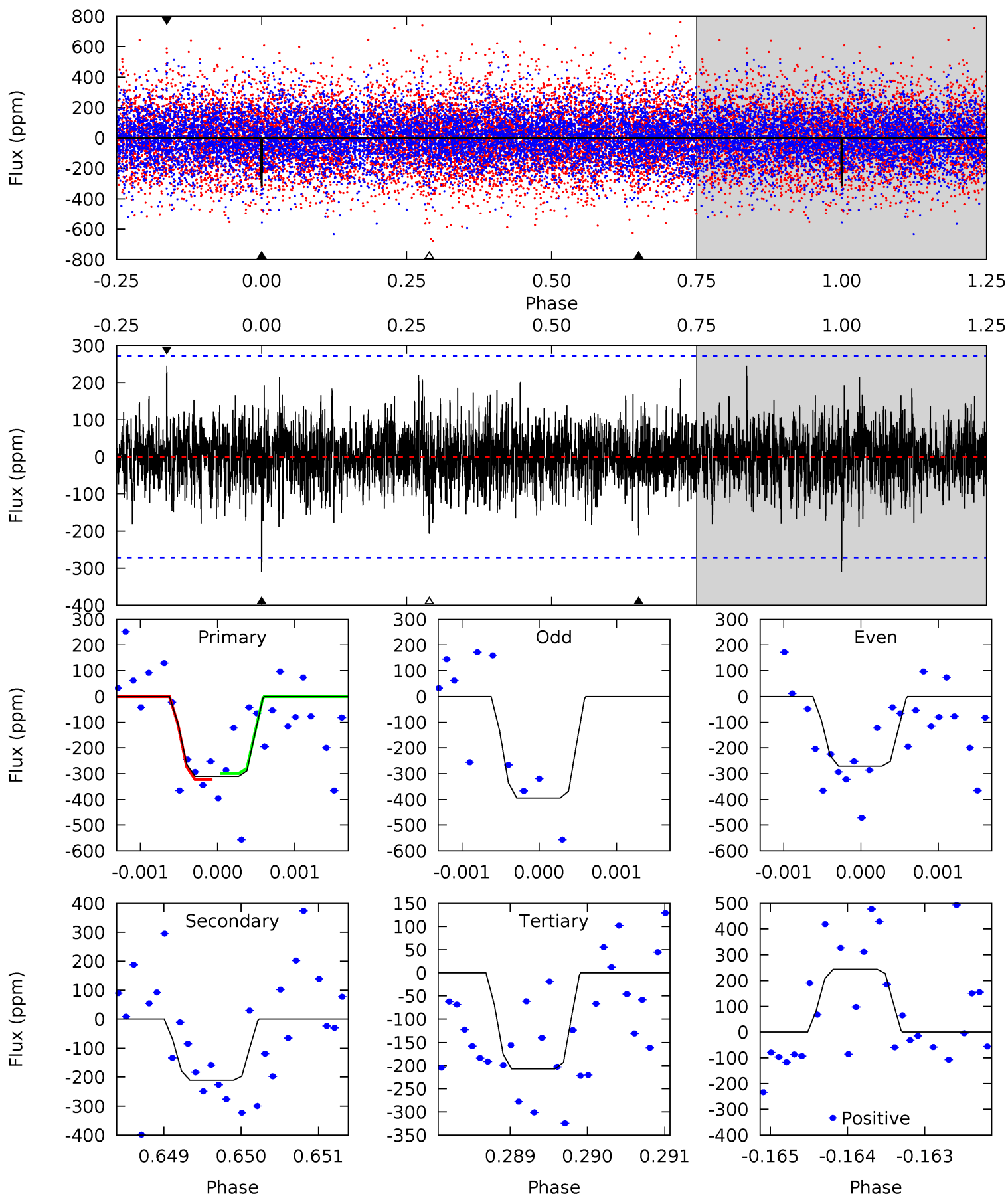
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.43	4.81	4.45	5.25	5.44	3.27	1.31	2.98	2.18	0.36	-0.44	0.95	1.05	0.41	0.77



# Alt Model-Shift Uniqueness Test

004672045-02, P = 99.361057 Days, E = 106.926266 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
6.23	4.24	4.16	4.91	5.47	3.31	1.21	2.08	1.32	0.08	-0.67	1.20	1.07	0.44	0.23



### Stellar Parameters For KIC 004672045

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6776^{+189}_{-260}$	$4.252^{+0.120}_{-0.195}$	$-0.200^{+0.250}_{-0.300}$	$1.395^{+0.436}_{-0.235}$	$1.278^{+0.189}_{-0.189}$	$0.663^{+0.385}_{-0.329}$
	+3%/-4%	+3%/-5%	+125%/-150%	+31%/-17%	+15%/-15%	+58%/-50%
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 004672045-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-219 \pm 46$	$4.45^{+4.06}_{-3.03}$	$737^{+49}_{-46}$	$4928^{+4062}_{-1077}$	$1215^{+11347}_{-887}$
Alt.	$-211 \pm 50$	$4.06^{+3.54}_{-2.69}$	$736^{+52}_{-43}$	$5123^{+3891}_{-1135}$	$1455^{+10761}_{-1055}$

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

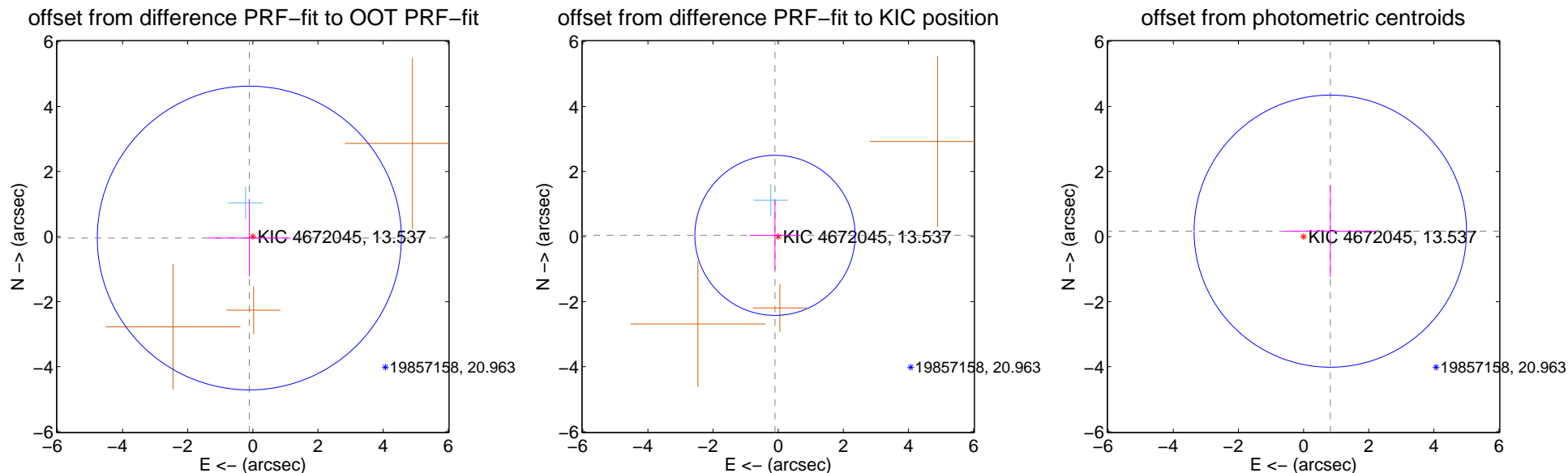
## DV Centroid Data

Supplemental centroid analysis for 004672045-02. Kepler magnitude: 13.54. Transit SNR 8.01

There are 1 quarters with good PRF difference image offsets

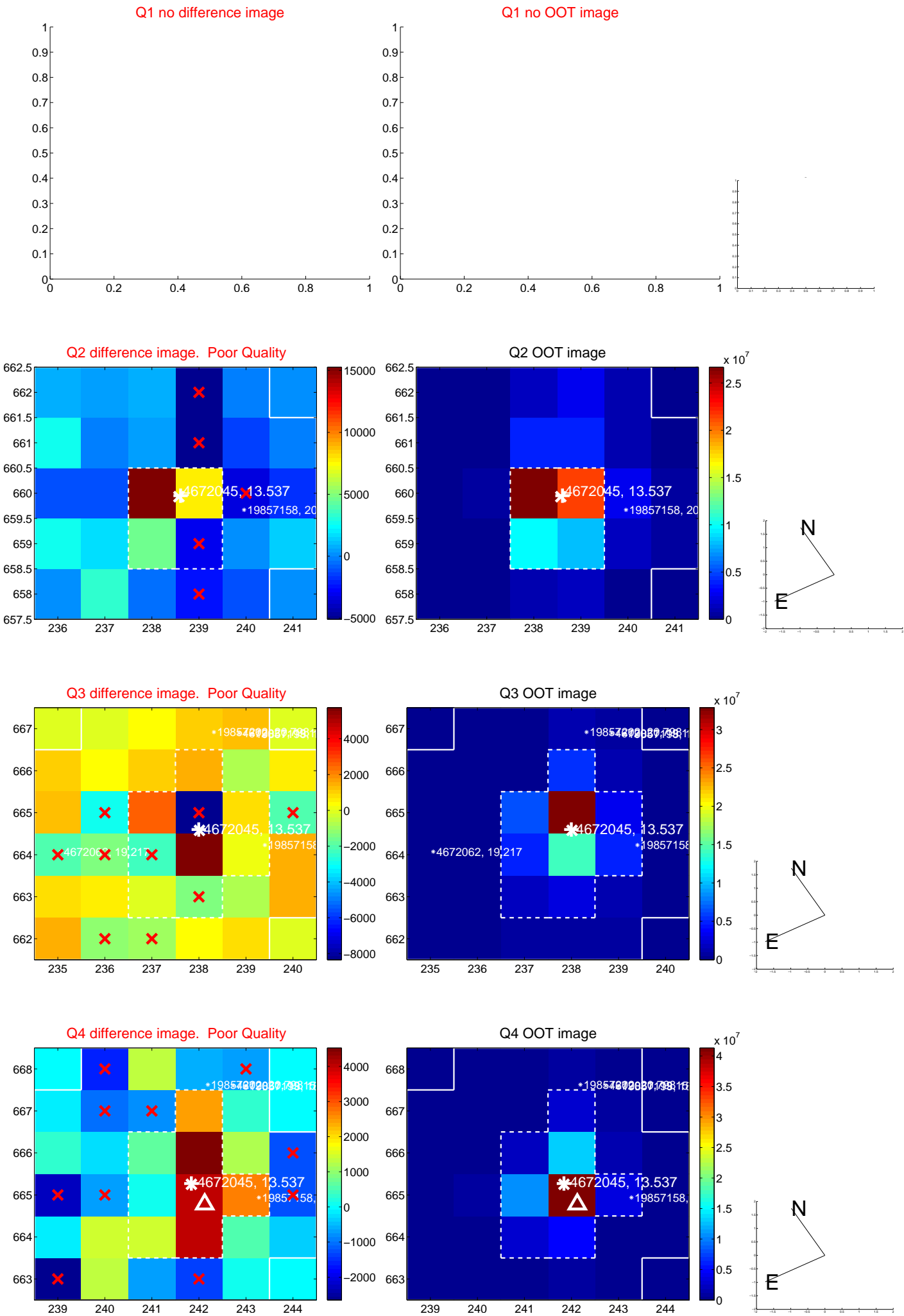
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.116 \pm 1.557$	0.07	$0.107 \pm 1.267$	$-0.045 \pm 1.181$
PRF-fit source offset from KIC position	$0.105 \pm 0.821$	0.13	$0.098 \pm 0.775$	$0.038 \pm 1.072$
photometric centroid source offset	$0.84 \pm 1.39$	0.60	$-0.82 \pm 1.39$	$0.17 \pm 1.42$

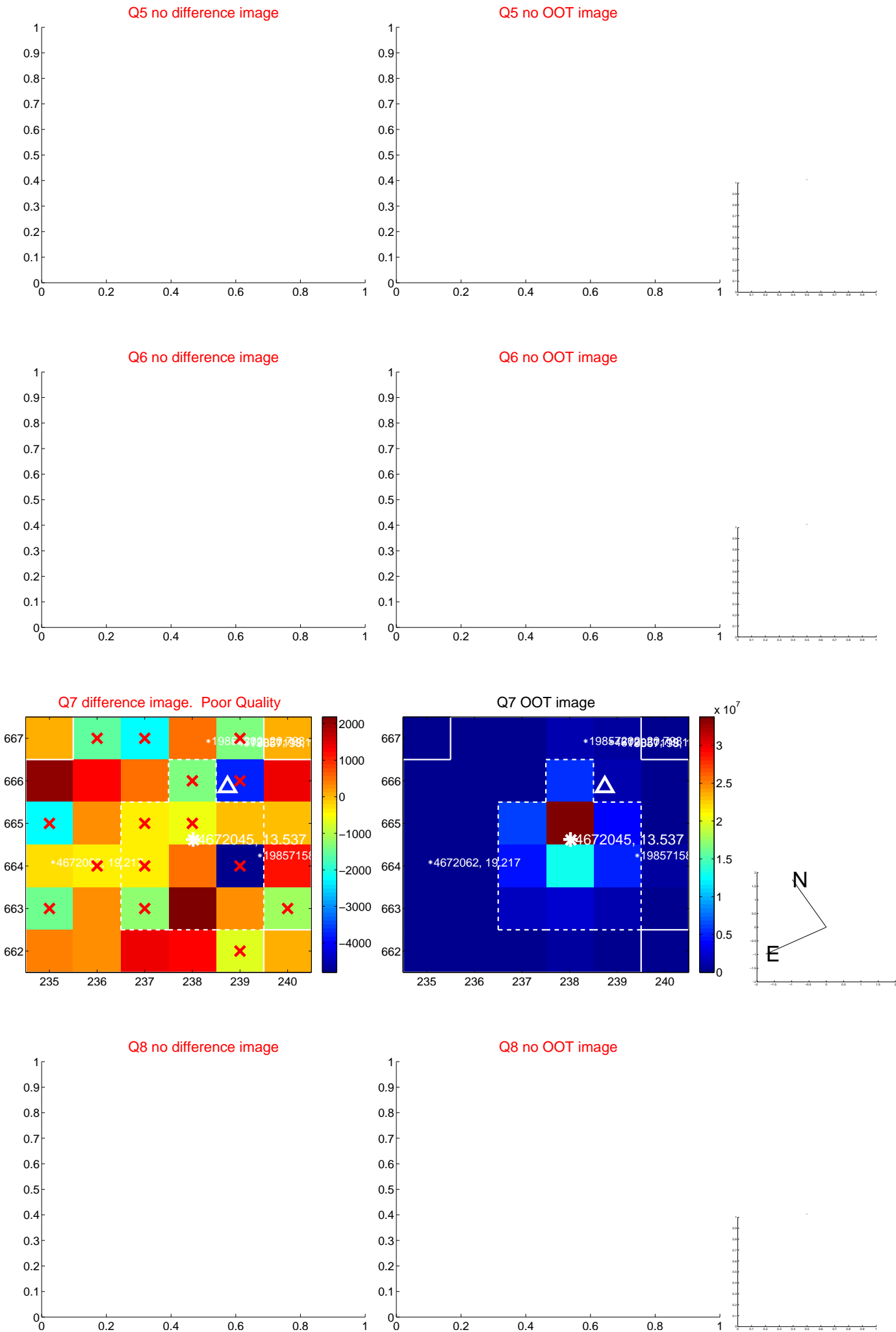


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

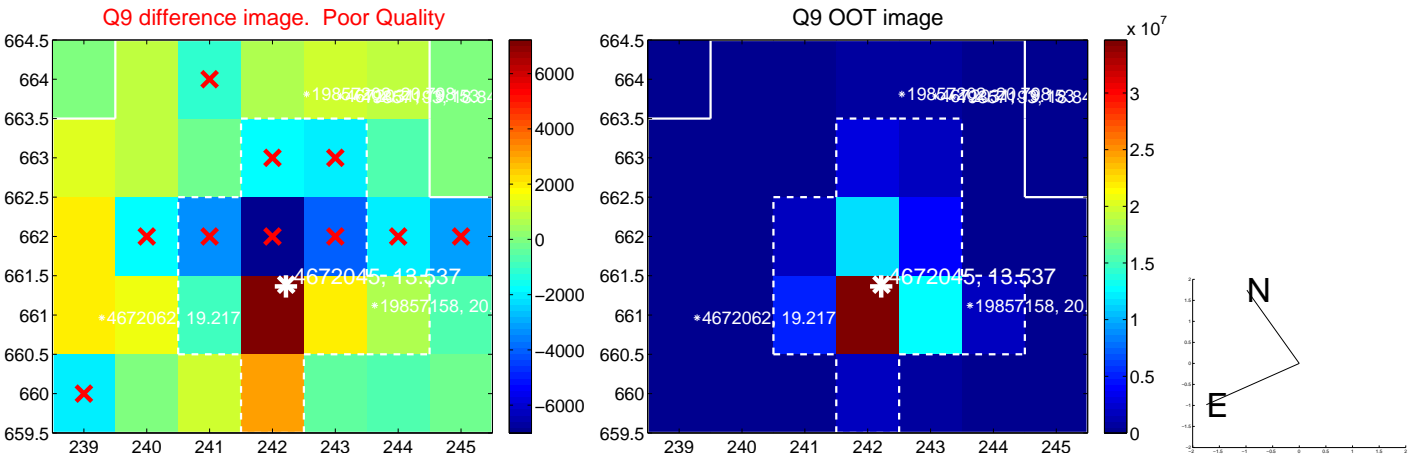


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

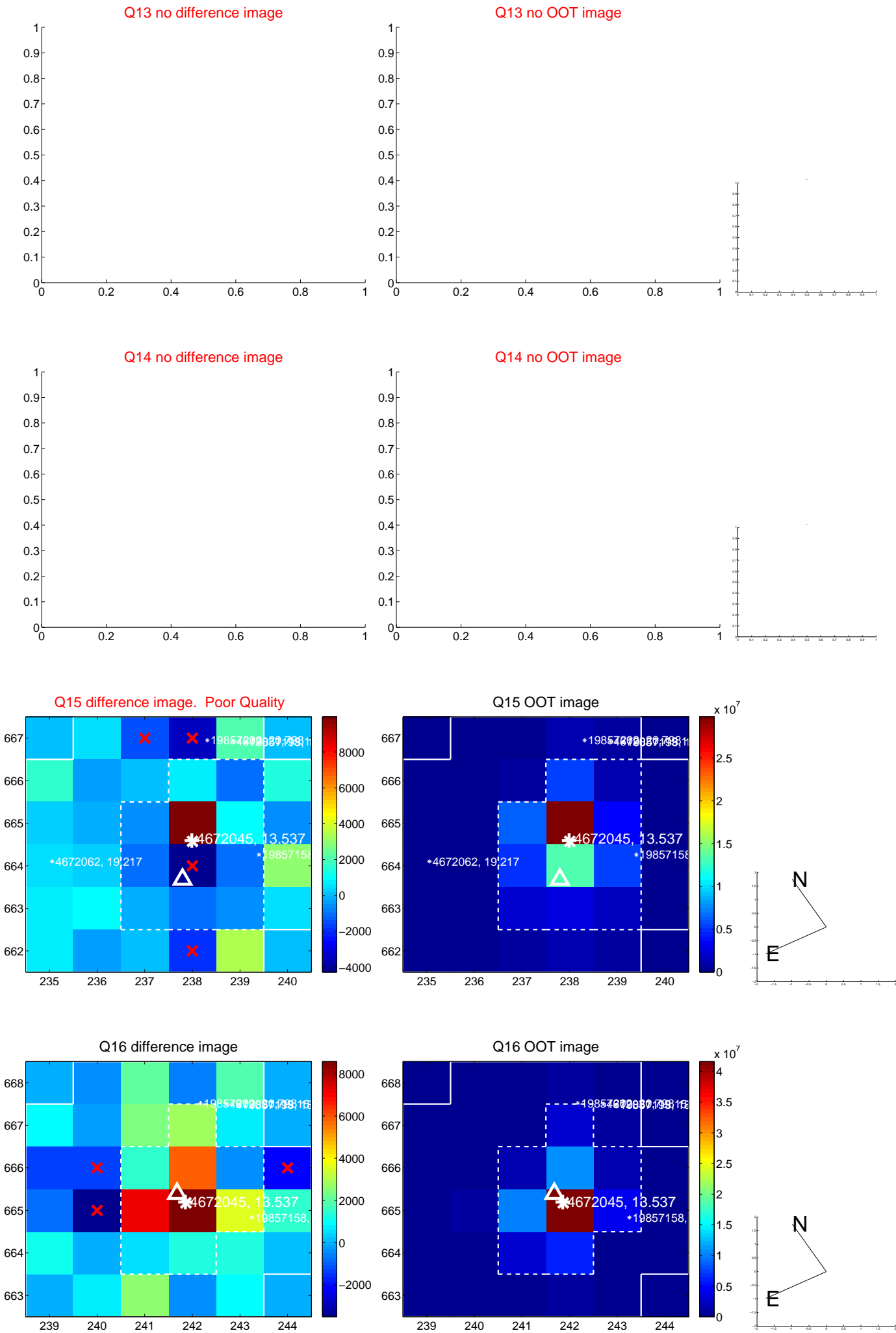




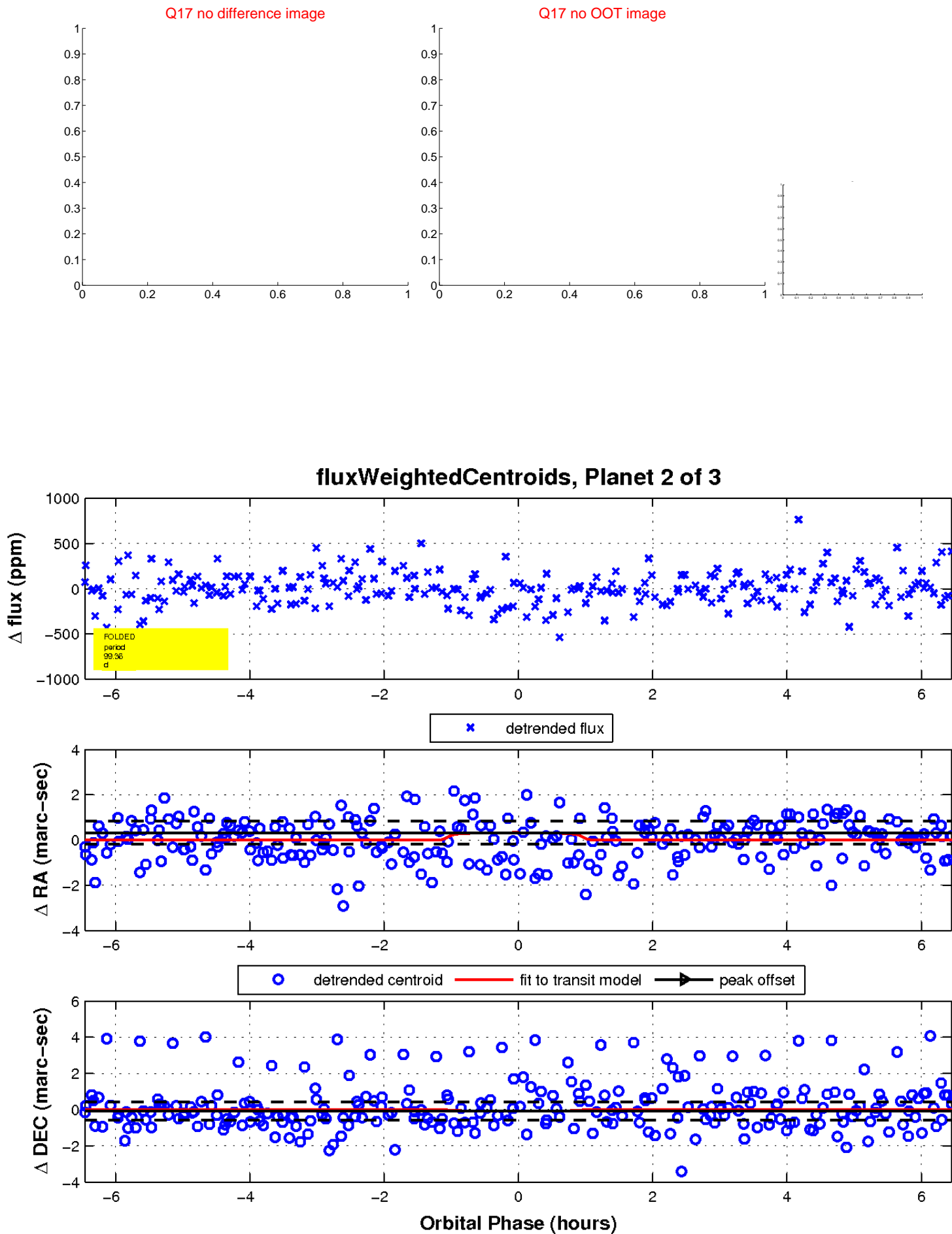
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

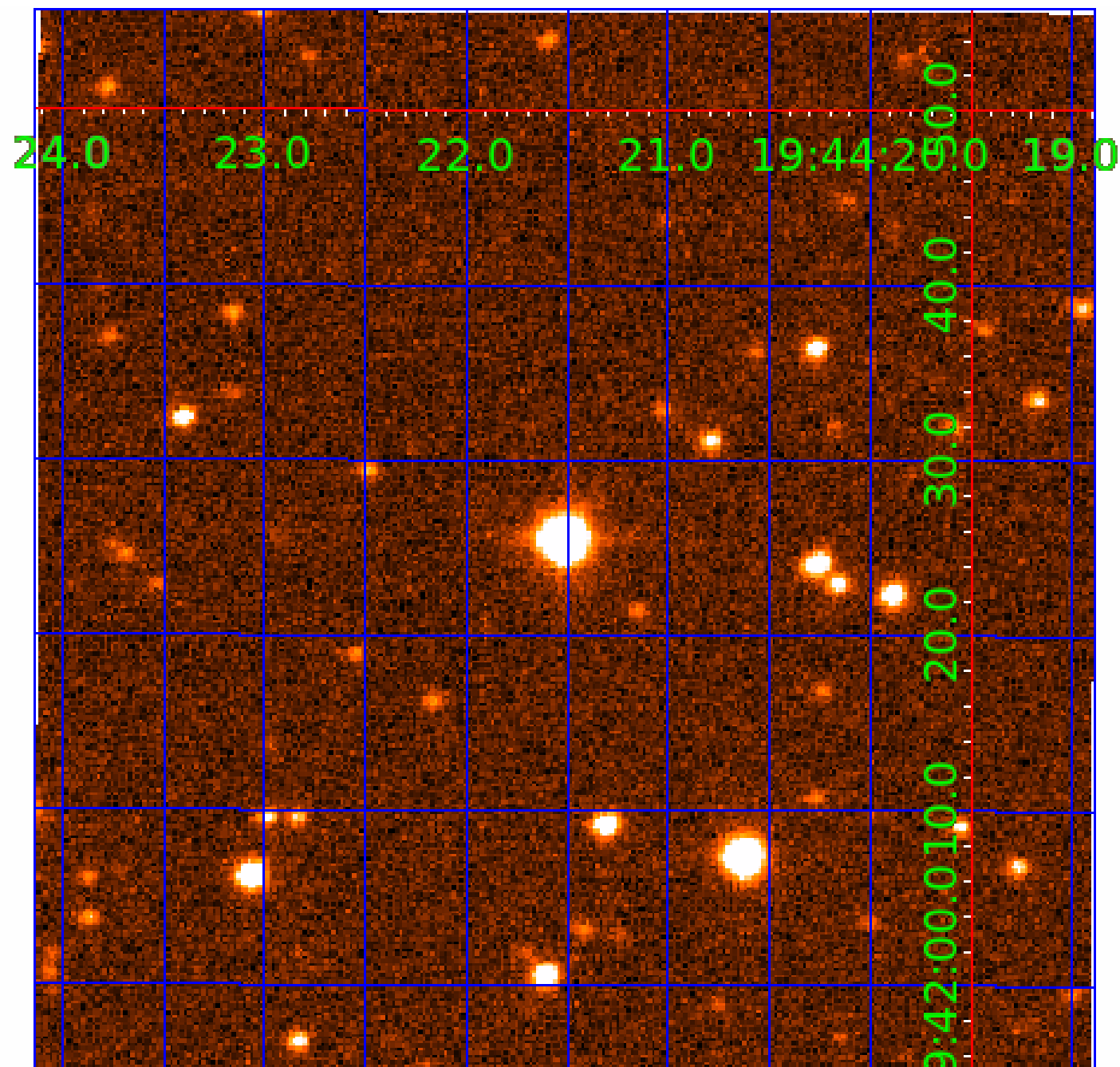


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004672045

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004672045-01	OBS	No	0.669253	131.634379	5.2	3.497	9.1	2.2	1.40	6776	0.32	13986.76
004672045-02	OBS	No	99.362257	206.269039	352.8	2.164	7.4	8.0	1.40	6776	2.97	17.79
004672045-03	OBS	No	57.306094	148.397571	279.3	1.942	7.1	7.5	1.40	6776	2.39	37.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004672045-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
004672045-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
004672045-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

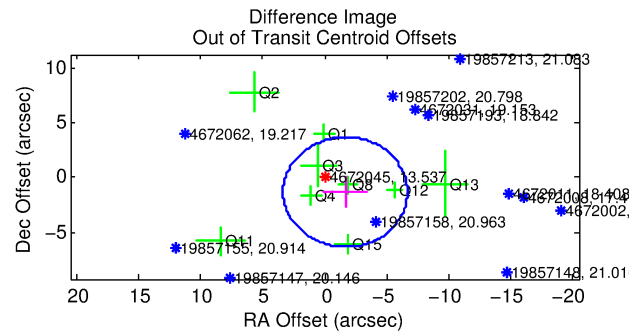
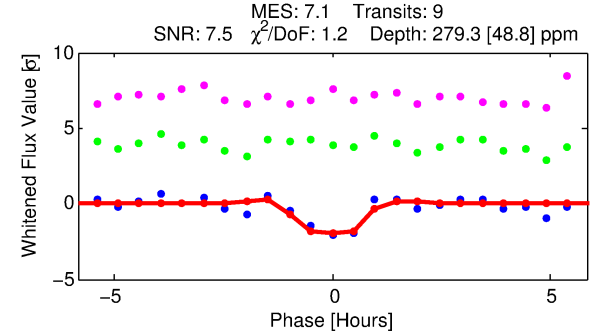
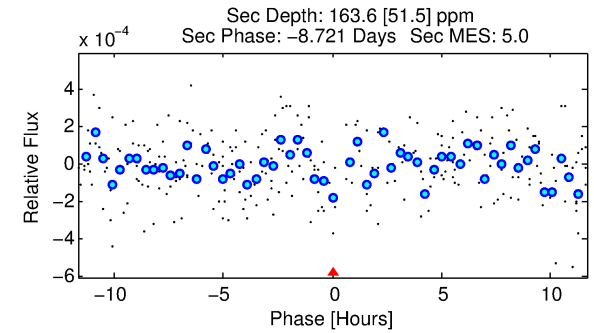
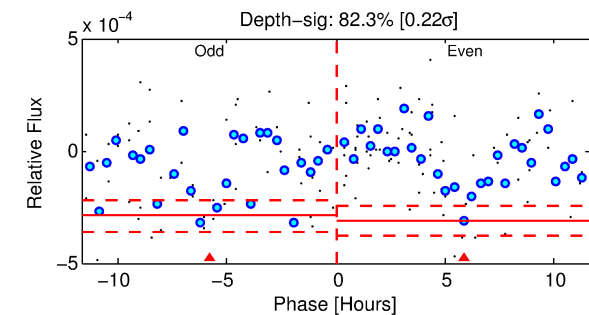
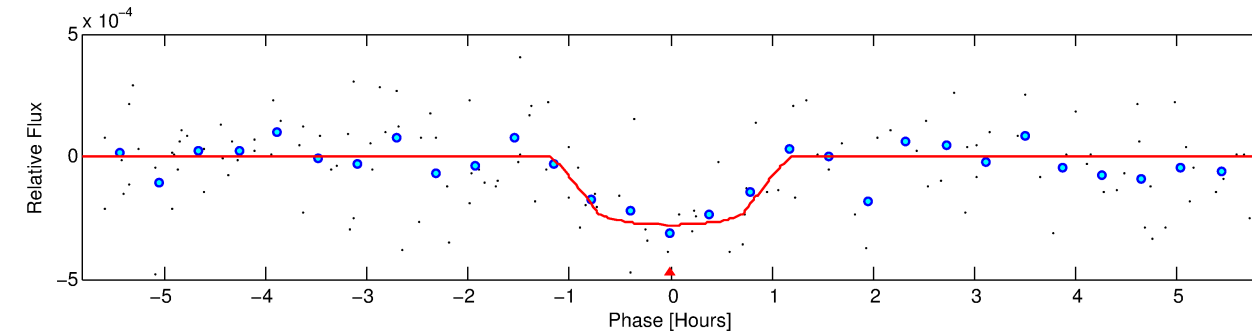
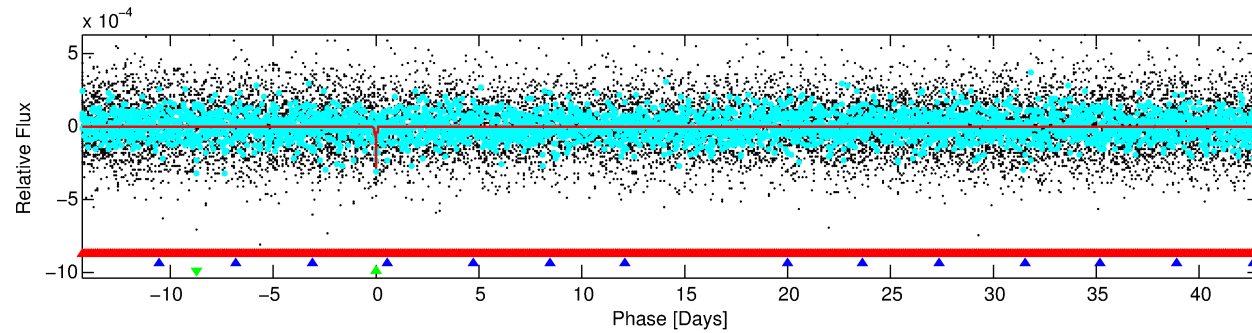
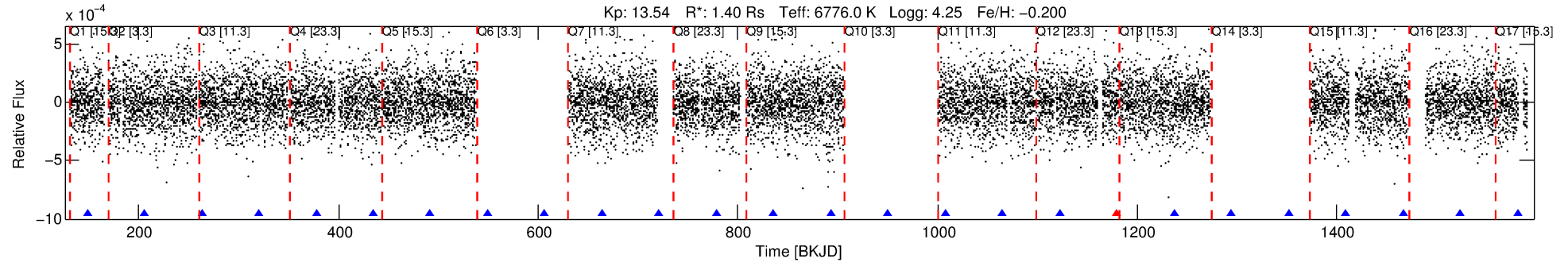
Ephemeris Match Information For 004672045-03

No Significant Match Found



# DV One-Page Summary

KIC: 4672045 Candidate: 3 of 3 Period: 57.306 d



## DV Fit Results:

Period = 57.30609 [0.00051] d  
Epoch = 148.3976 [0.0076] BKJD  
Rp/R\* = 0.0157 [0.0148]  
a/R\* = 210.08 [1102.68]  
b = 0.40 [10.93]  
Seff = 37.06 [14.66]  
Teq = 629 [62] K  
Rp = 2.39 [2.38] Re  
a = 0.3149 [0.0808] AU  
Ag = 1558.88 [3034.61] [0.51 $\sigma$ ]  
Teff = 6112 [2931] K [1.87 $\sigma$ ]

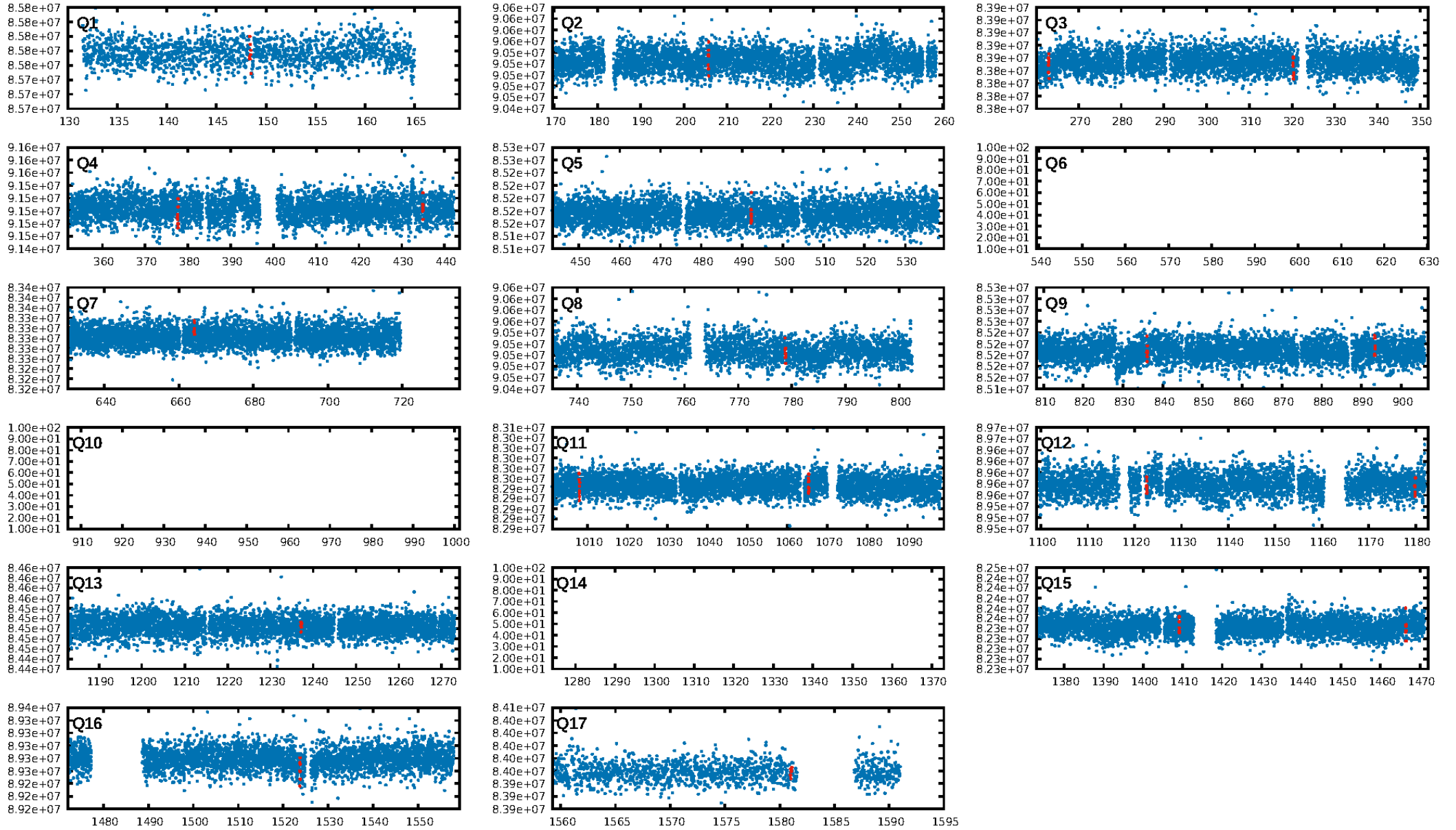
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [339.78 $\sigma$ ]  
LongPeriod-sig: 100.0% [347.09 $\sigma$ ]  
ModelChiSquare2-sig: 39.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.32e-08**  
RollingBand-fgt: 0.89 [8/9]  
**GhostDiagnostic-chr: 0.6266**  
Centroid-sig: 62.4%  
Centroid-so: 0.697 arcsec [0.60 $\sigma$ ]  
OotOffset-rm: 2.128 arcsec [1.28 $\sigma$ ]  
OotOffset-st: 1/3/3/2 [9]  
KicOffset-rm: 2.048 arcsec [1.21 $\sigma$ ]  
KicOffset-st: 1/3/3/2 [9]  
DiffImageQuality-fgm: 0.11 [1/9]  
DiffImageOverlap-fno: 0.00 [0/14]

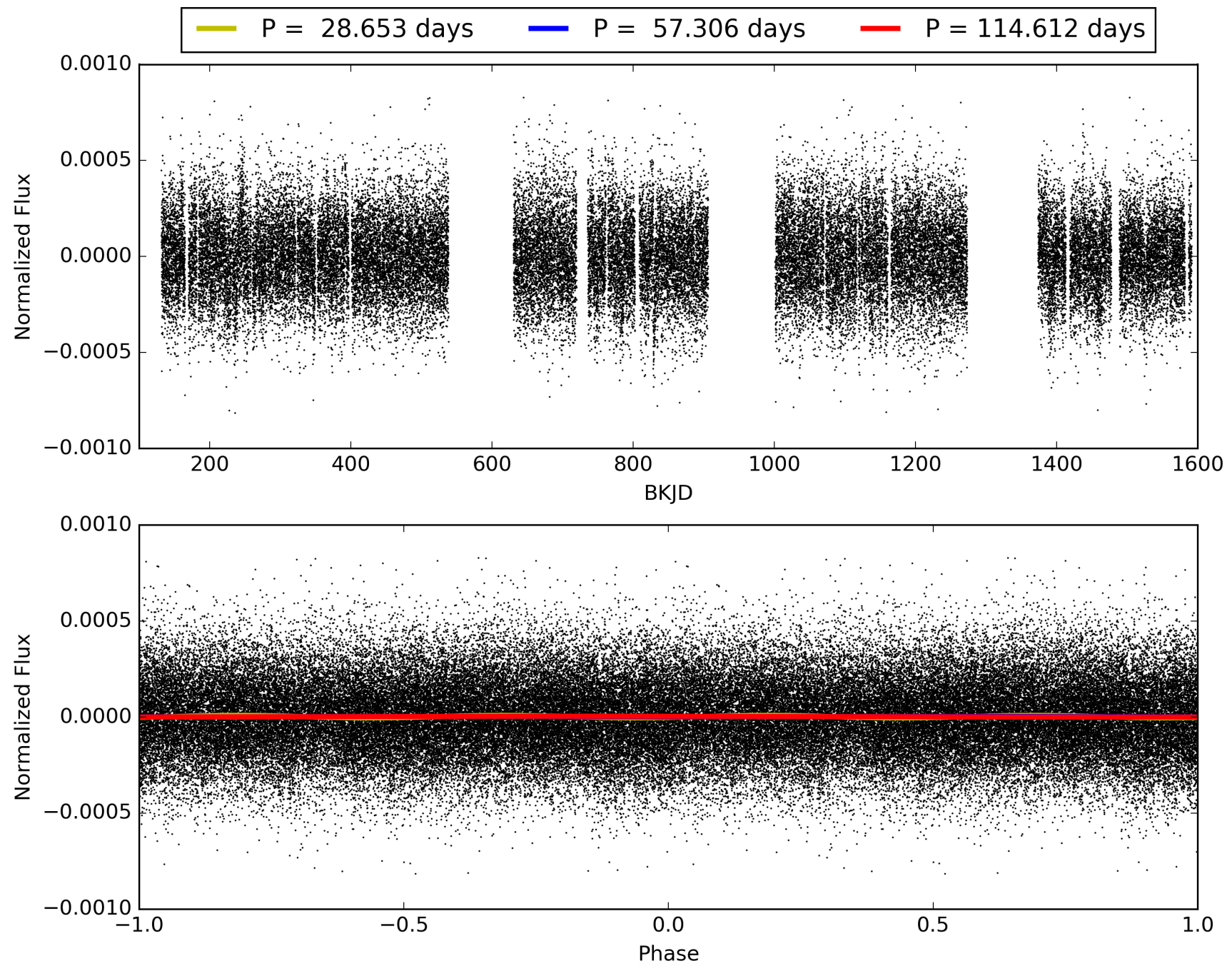
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:03:43 Z

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

# TCE 004672045-03, PDC Light Curves

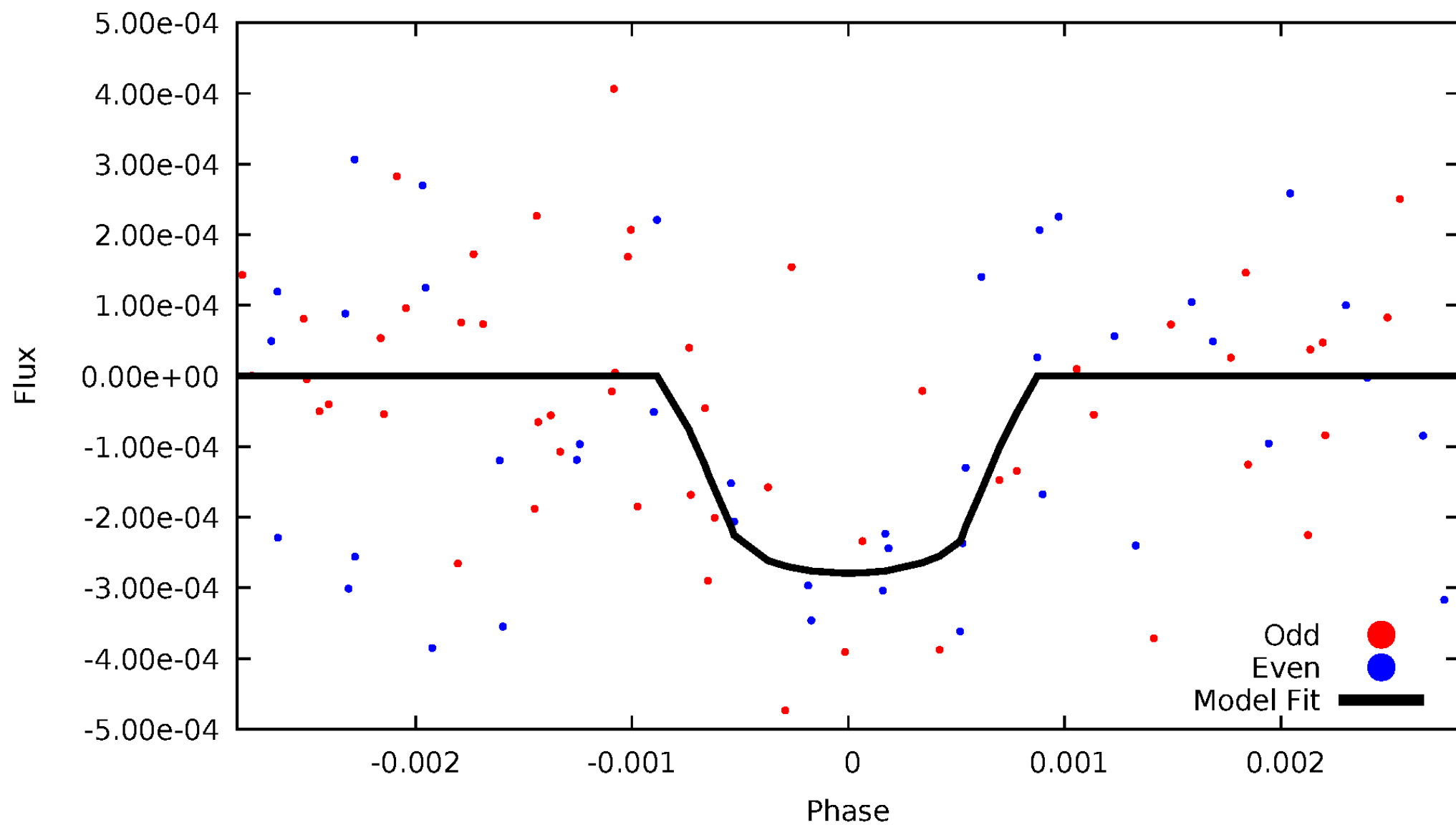


TCE 004672045-03



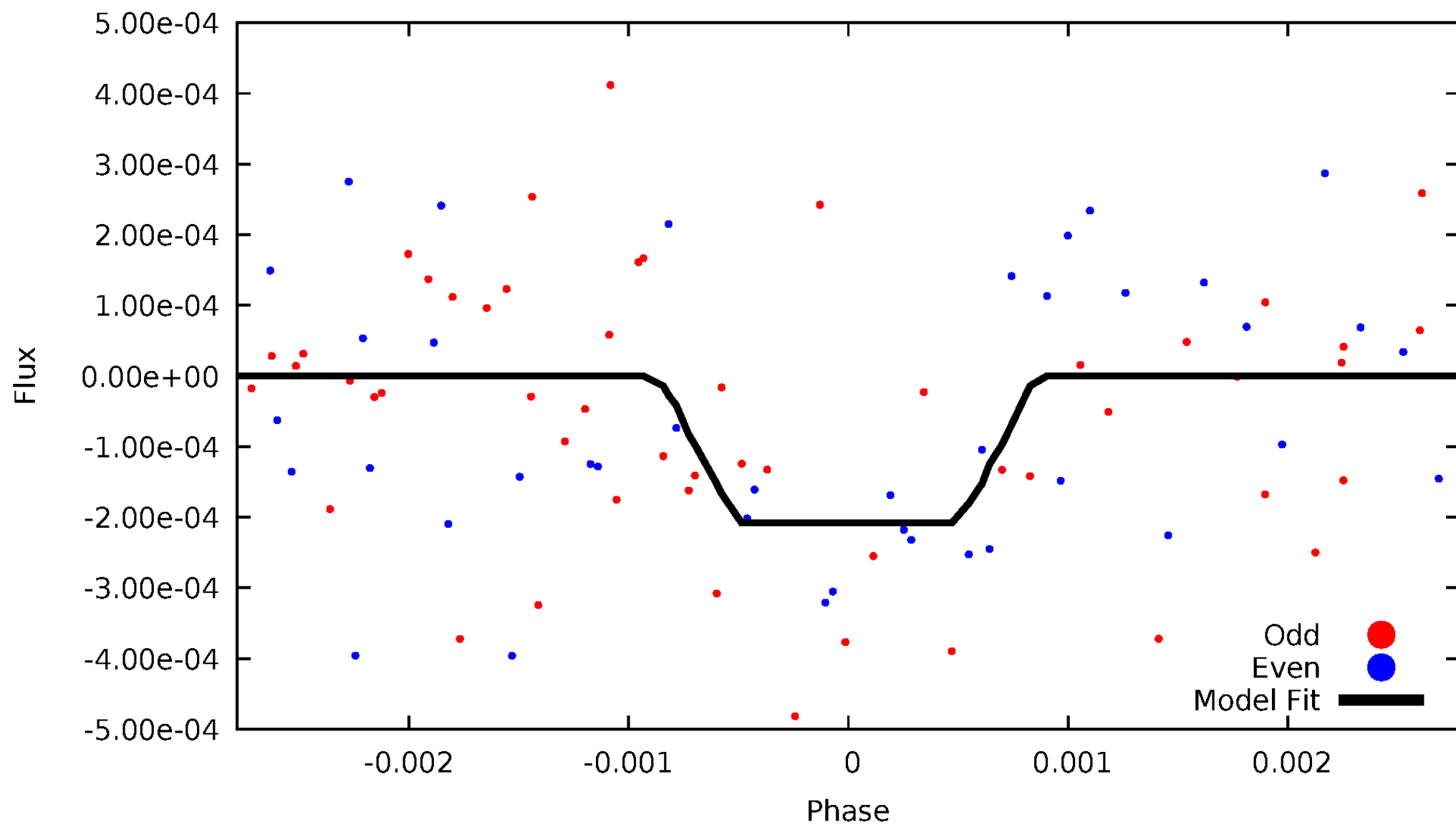
# DV Odd/Even

TCE 004672045-03



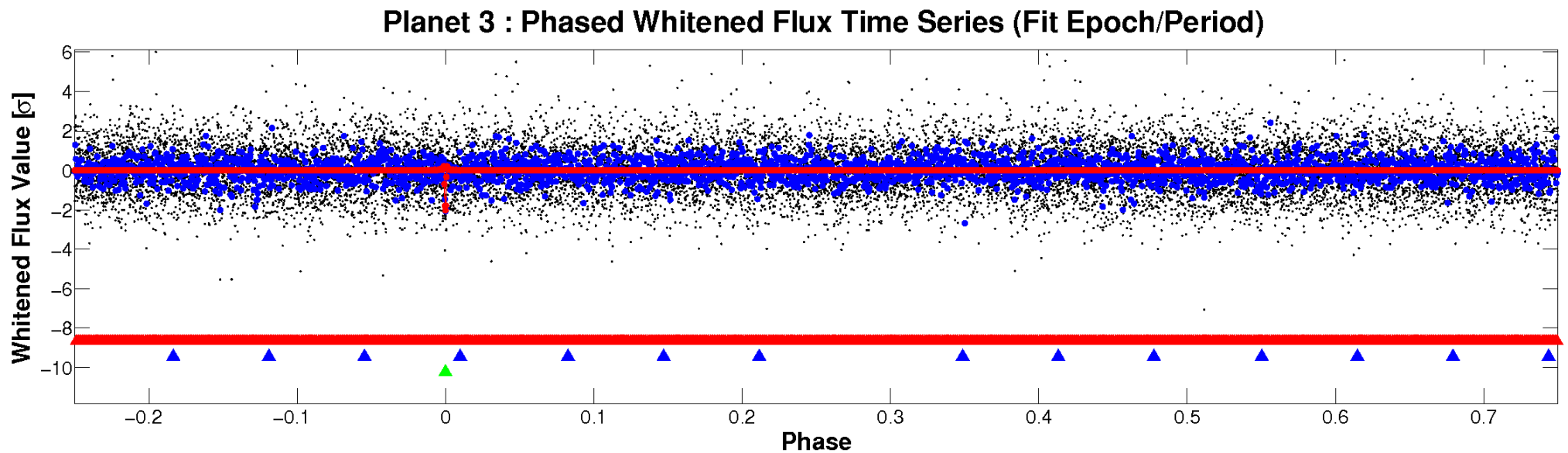
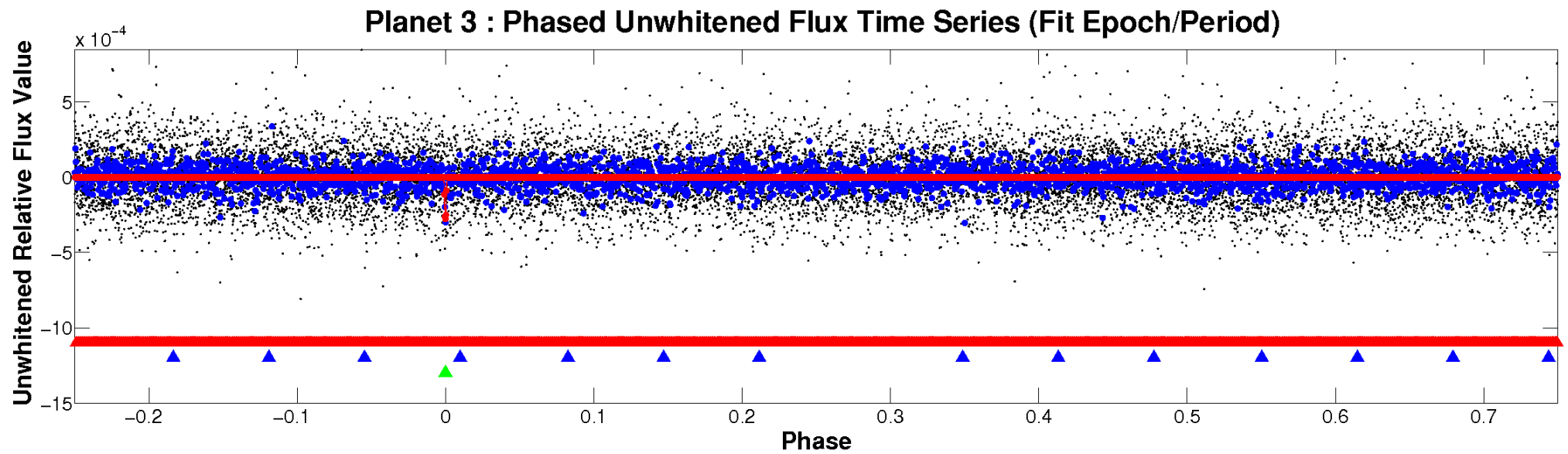
# ALT Odd/Even

TCE 004672045-03



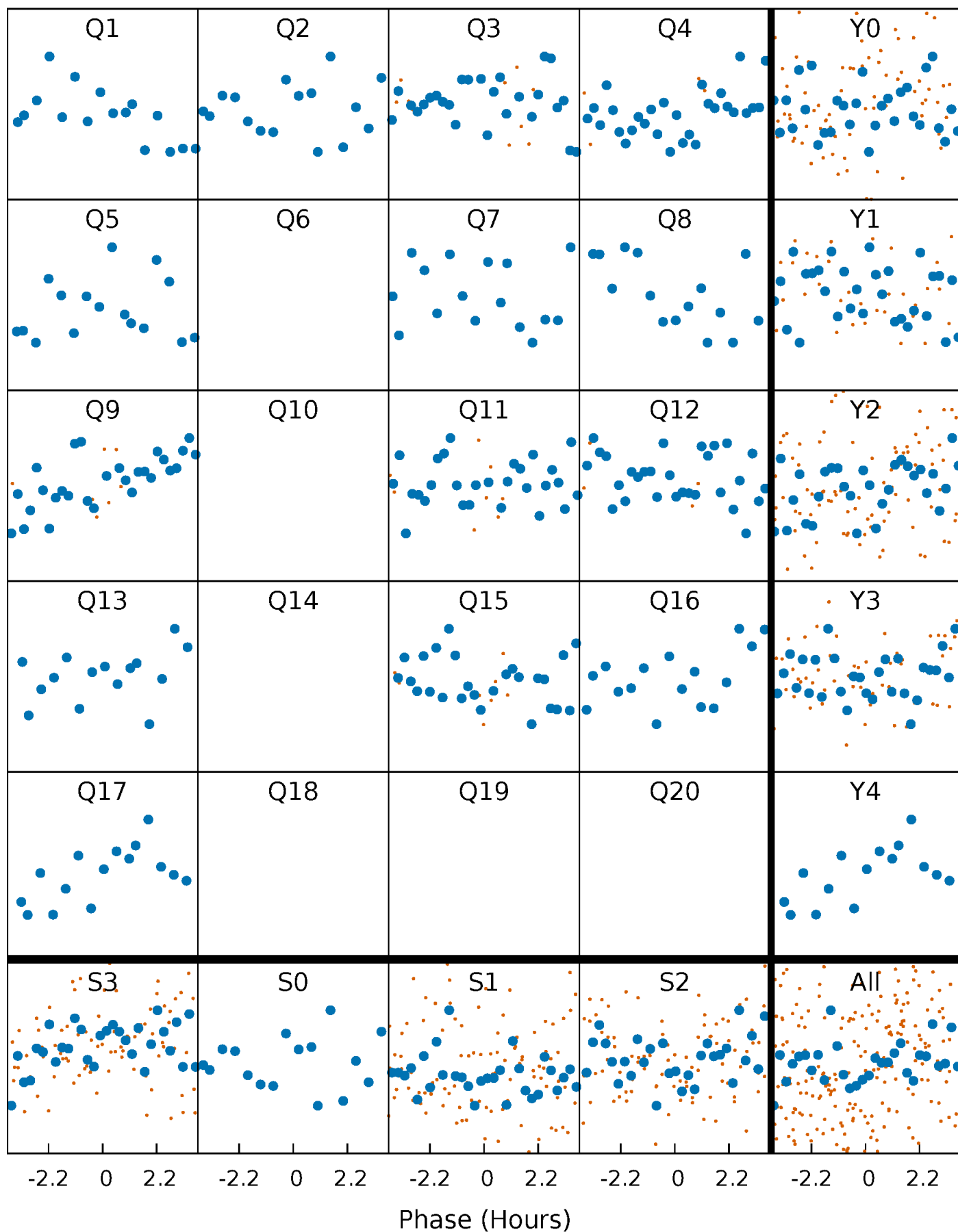


# Non-Whitened Vs. Whitened Light Curve



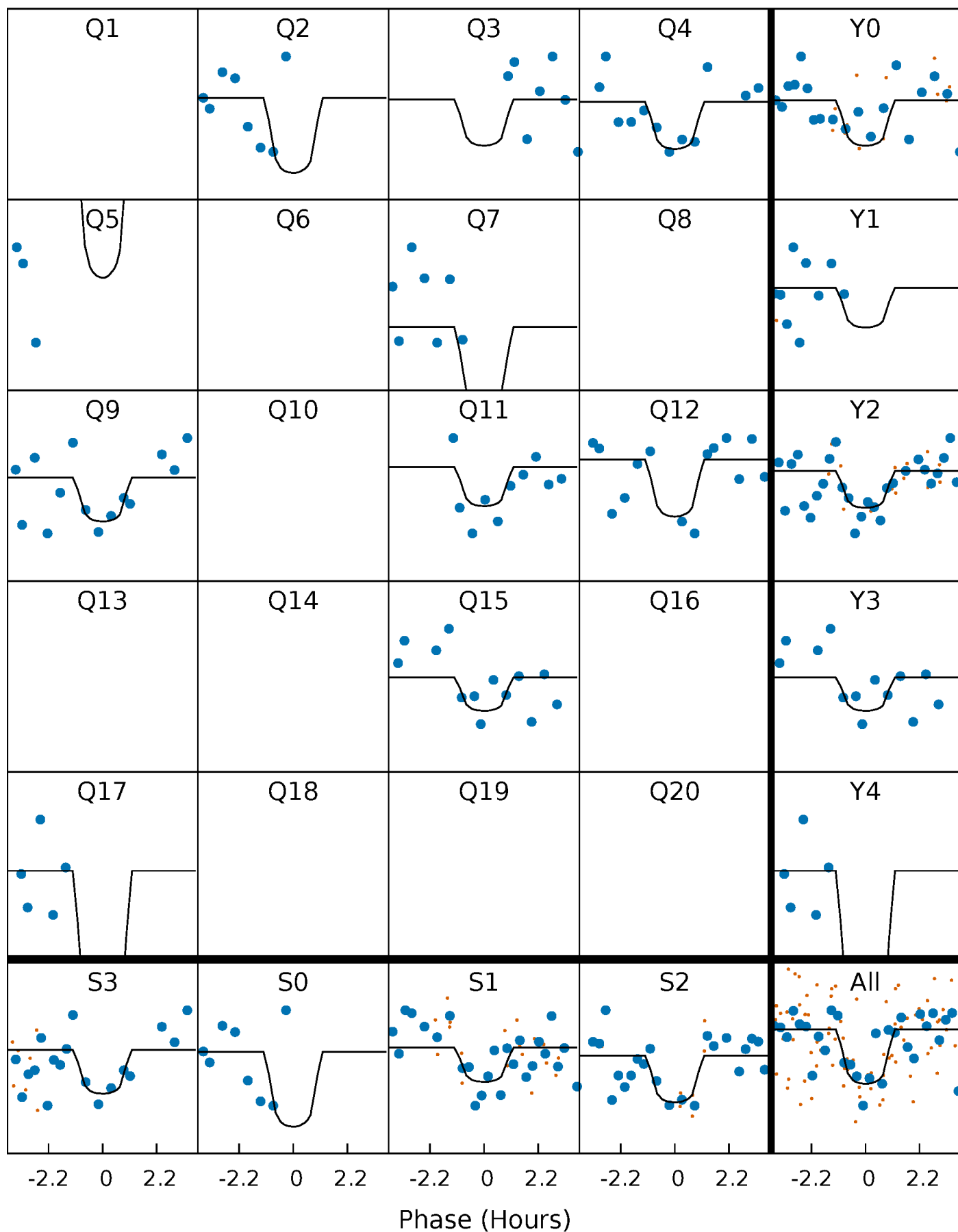
# PDC Quarter-Phased Transit Curves

TCE 004672045-03    P= 57.306094 Days     $T_0=148.397571$  (BKJD)



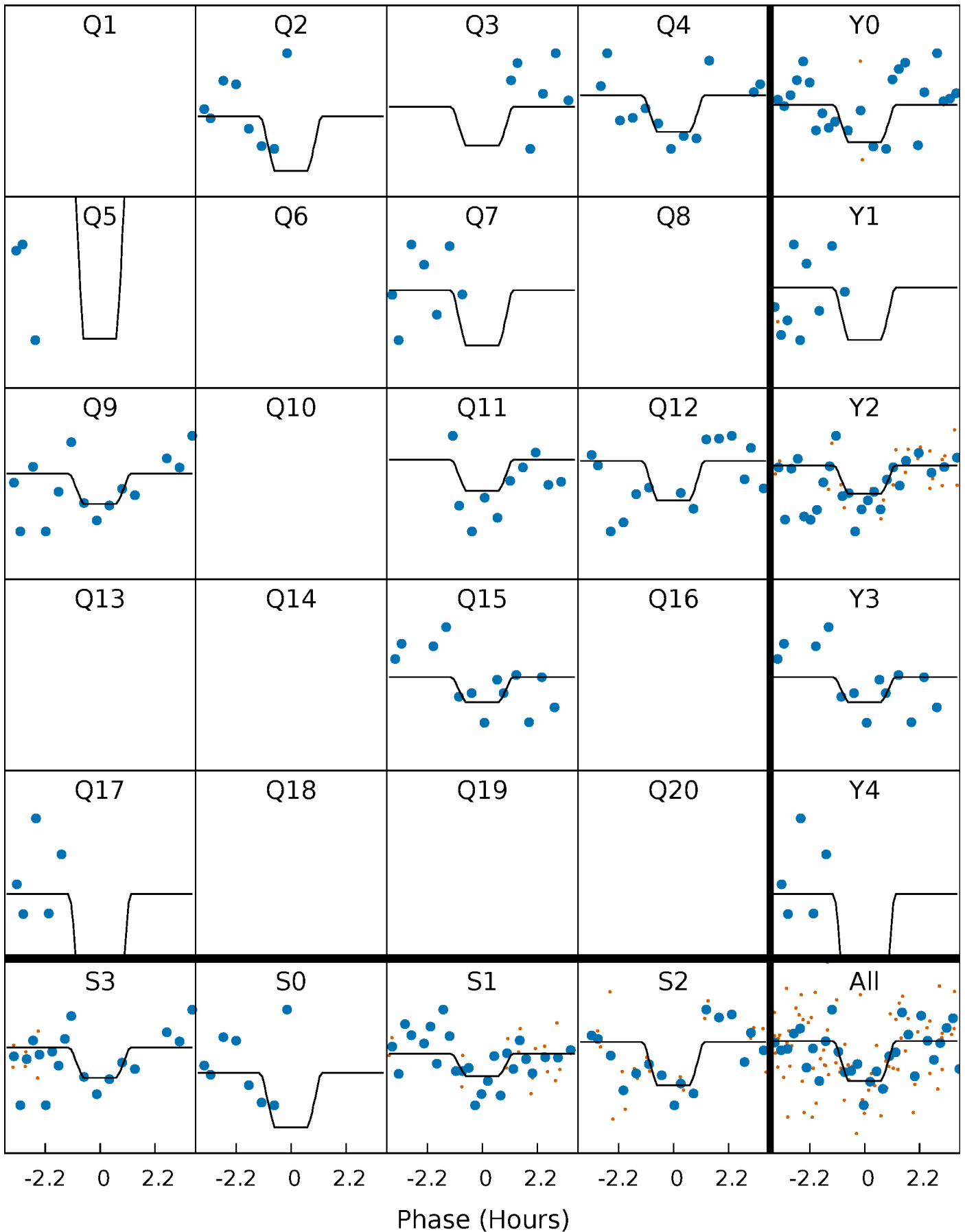
# DV Quarter-Phased Transit Curves

TCE 004672045-03   P= 57.306094 Days    $T_0=148.397571$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

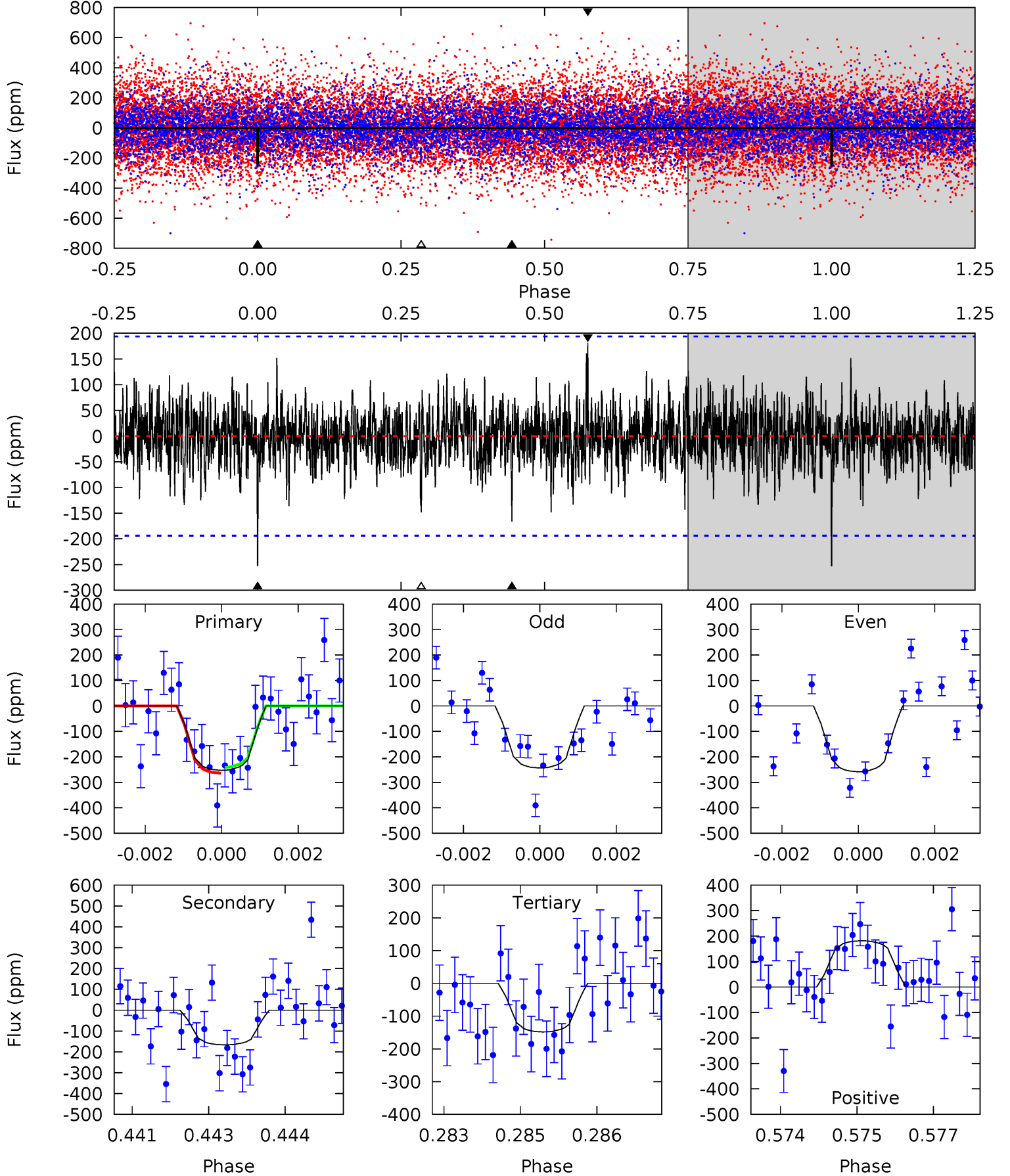
TCE 004672045-03 P= 57.306437 Days  $T_0=148.389596$  (BKJD)



# DV Model-Shift Uniqueness Test

004672045-03, P = 57.306094 Days, E = 91.091477 Days

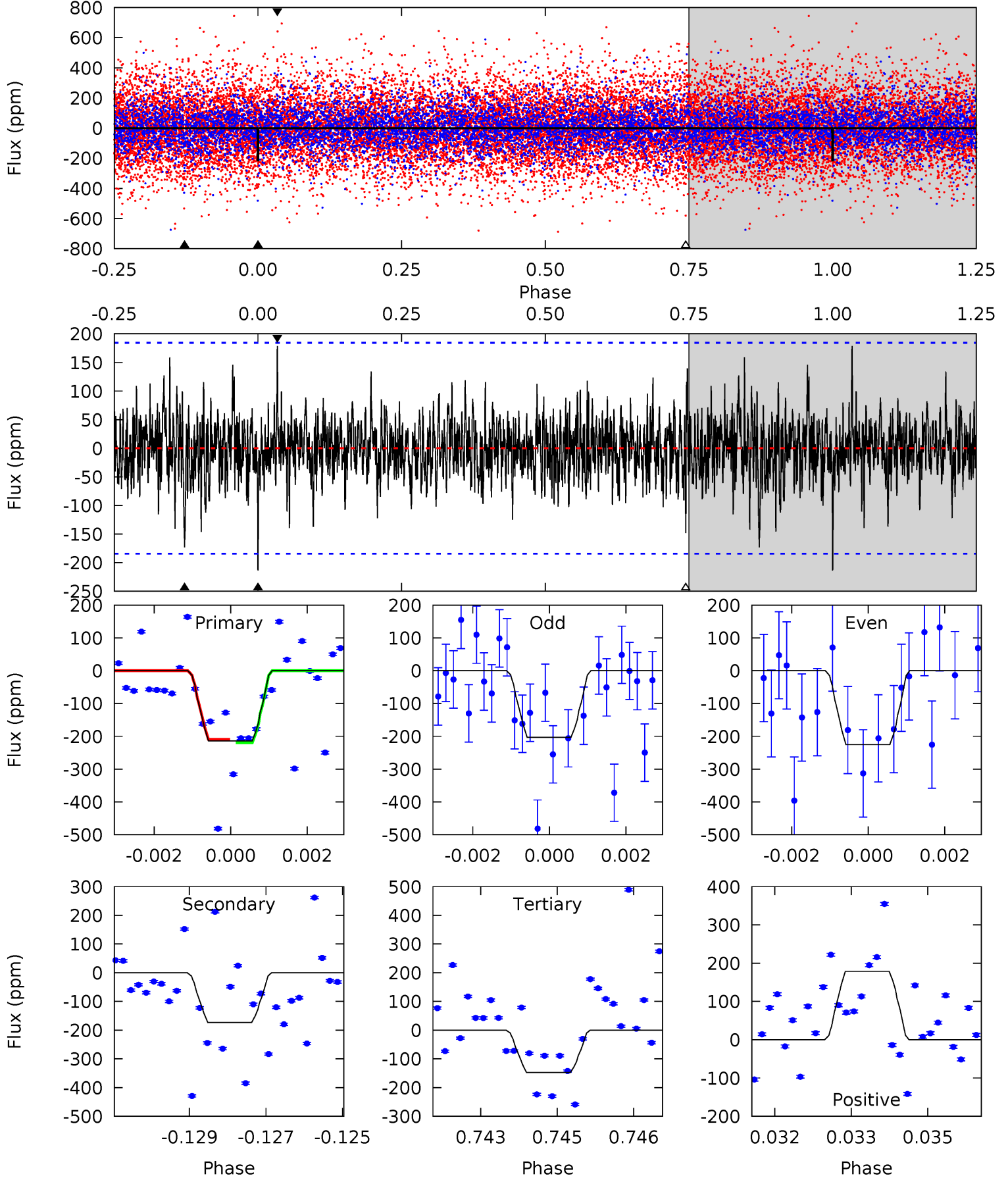
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	4.61	4.12	5.04	5.38	3.17	1.19	2.91	1.98	0.49	-0.43	0.21	0.94	0.42	0.31



# Alt Model-Shift Uniqueness Test

004672045-03, P = 57.306437 Days, E = 91.083159 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
6.21	5.04	4.29	5.19	5.36	3.14	1.24	1.93	1.03	0.75	-0.15	0.32	0.92	0.45	0.15





### Stellar Parameters For KIC 004672045

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6776^{+189}_{-260}$	$4.252^{+0.120}_{-0.195}$	$-0.200^{+0.250}_{-0.300}$	$1.395^{+0.436}_{-0.235}$	$1.278^{+0.189}_{-0.189}$	$0.663^{+0.385}_{-0.329}$
	+3%/-4%	+3%/-5%	+125%/-150%	+31%/-17%	+15%/-15%	+58%/-50%
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 004672045-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-166 \pm 36$	$2.86^{+2.29}_{-1.74}$	$885^{+68}_{-57}$	$5640^{+3984}_{-1211}$	$1080^{+6074}_{-758}$
Alt.	$-173 \pm 34$	$2.78^{+2.04}_{-1.76}$	$883^{+65}_{-54}$	$5730^{+4566}_{-1203}$	$1196^{+7423}_{-809}$

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

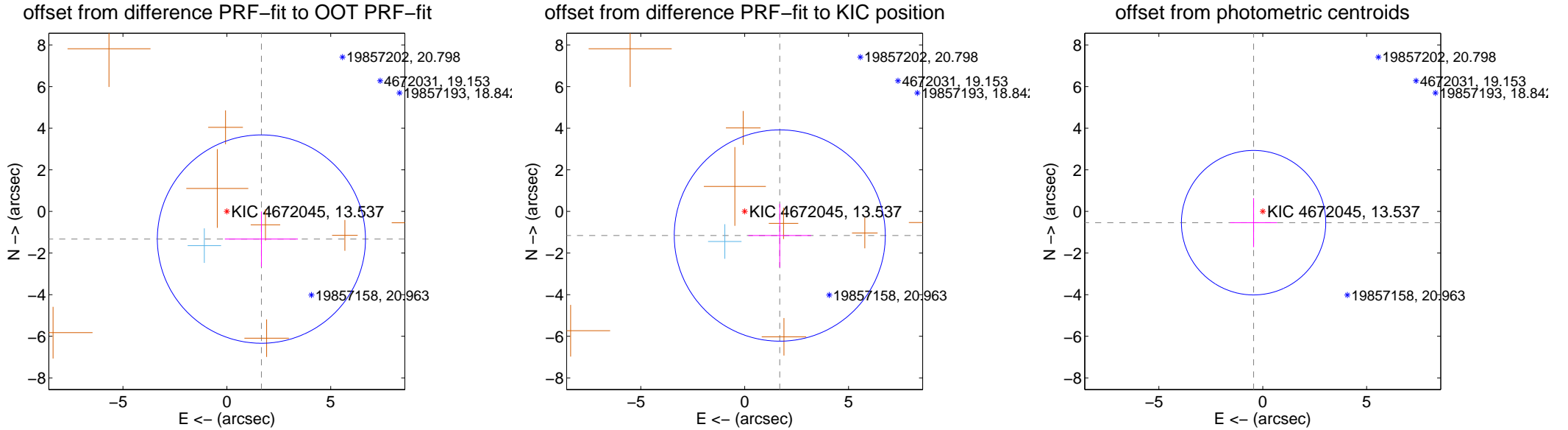
## DV Centroid Data

Supplemental centroid analysis for 004672045-03. Kepler magnitude: 13.54. Transit SNR 7.52

There are 1 quarters with good PRF difference image offsets

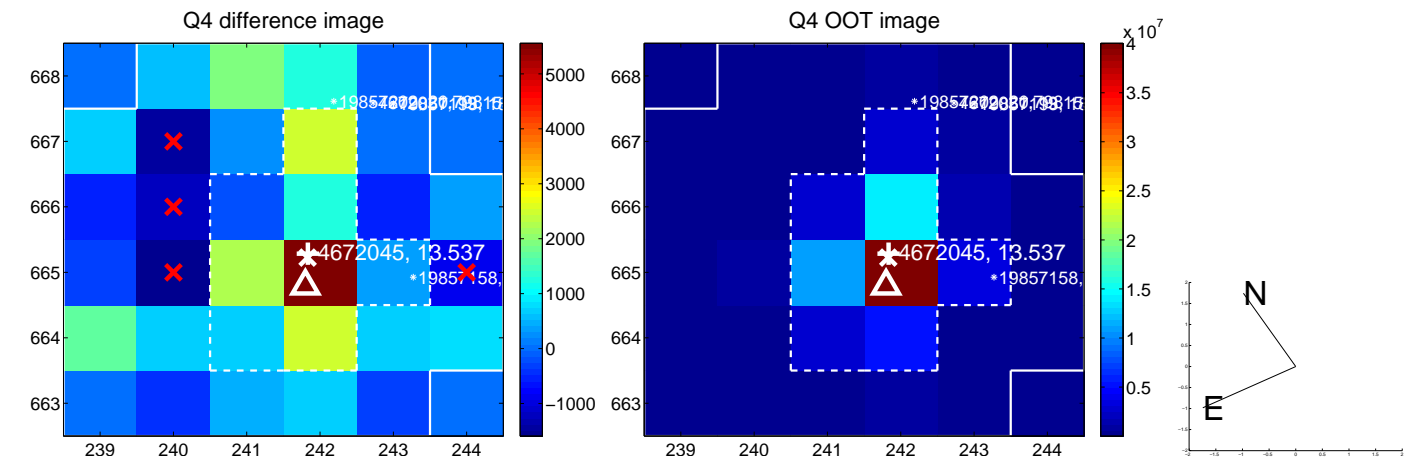
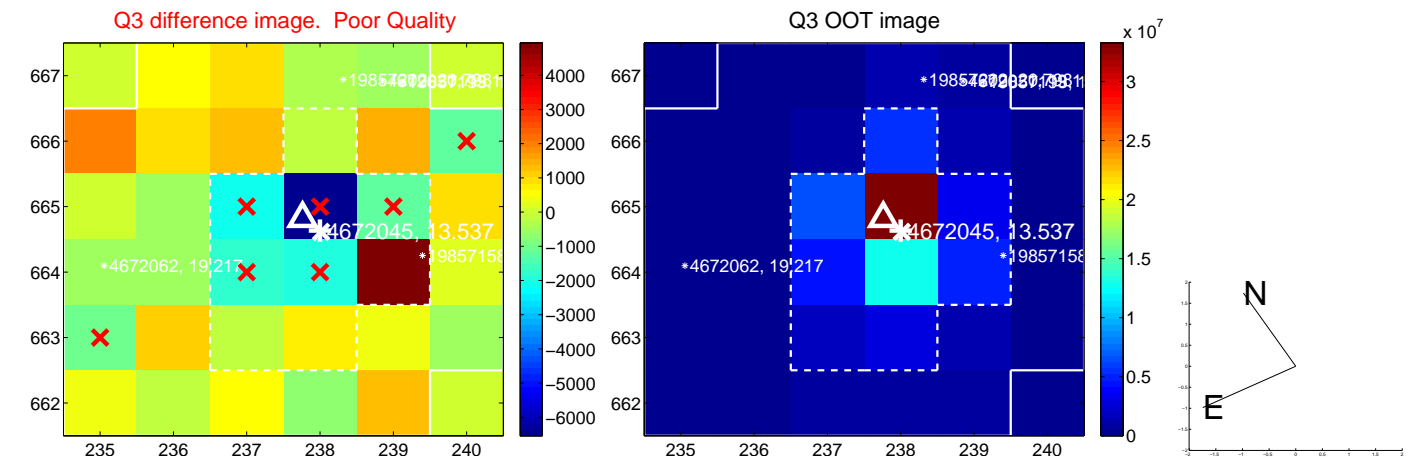
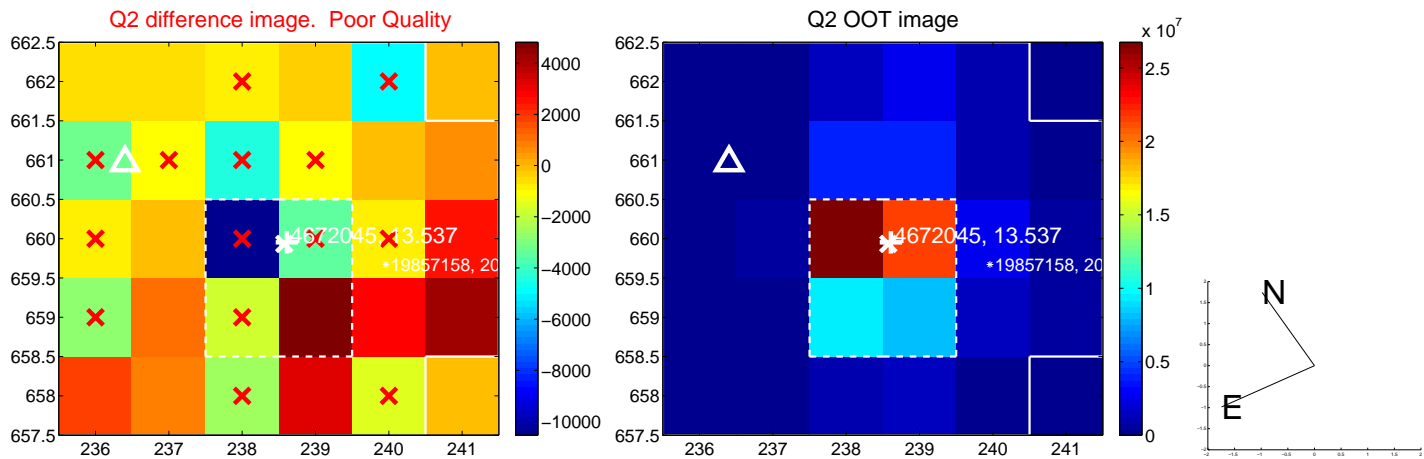
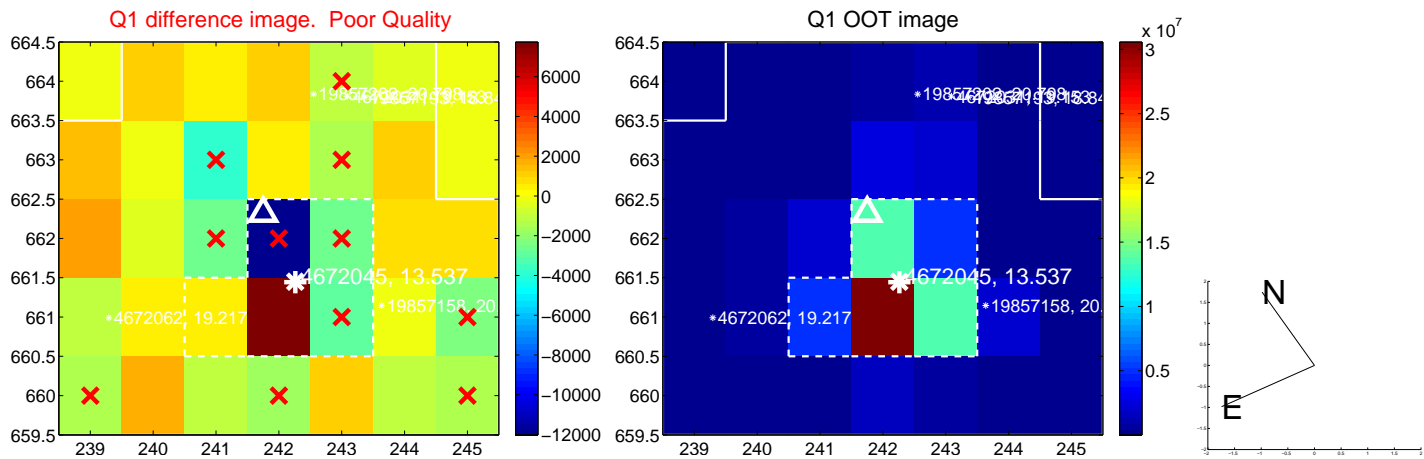
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.128 \pm 1.669$	1.28	$-1.663 \pm 1.757$	$-1.328 \pm 1.326$
PRF-fit source offset from KIC position	$2.048 \pm 1.692$	1.21	$-1.689 \pm 1.513$	$-1.158 \pm 1.526$
photometric centroid source offset	$0.70 \pm 1.16$	0.60	$0.44 \pm 1.13$	$-0.54 \pm 1.18$

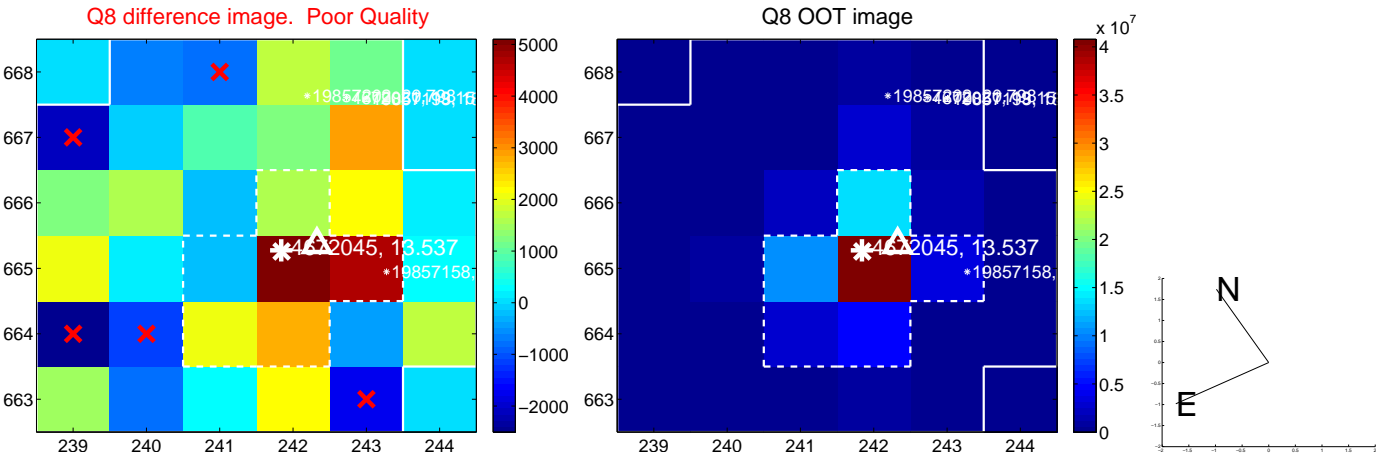
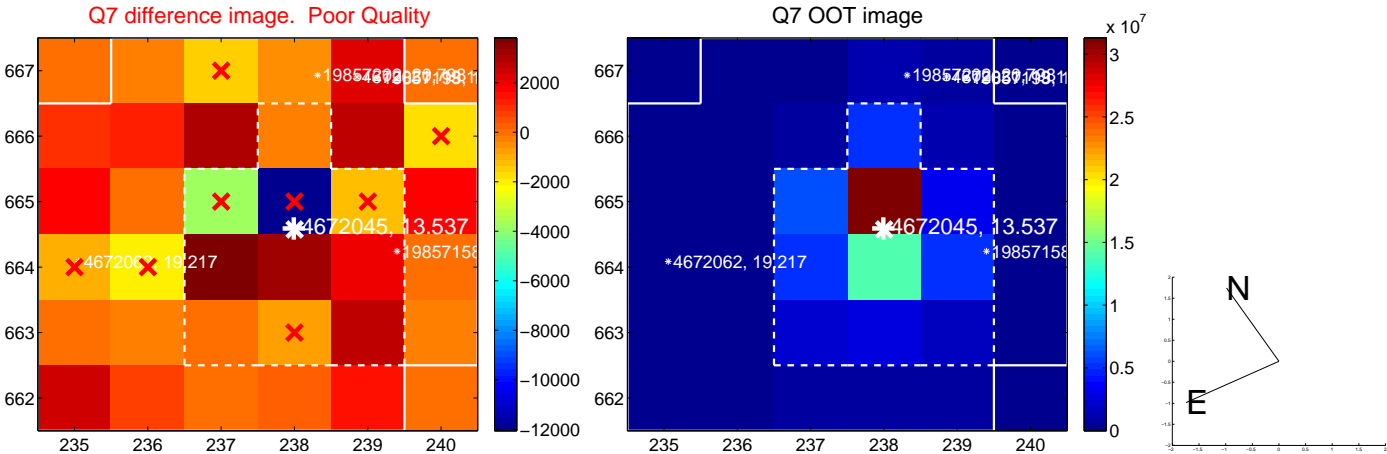
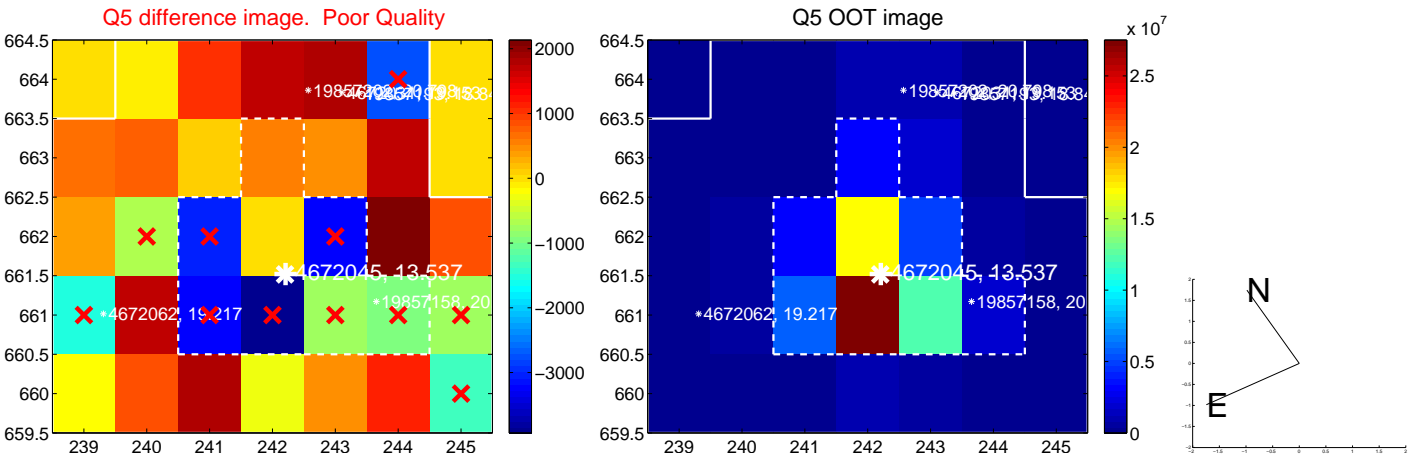


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

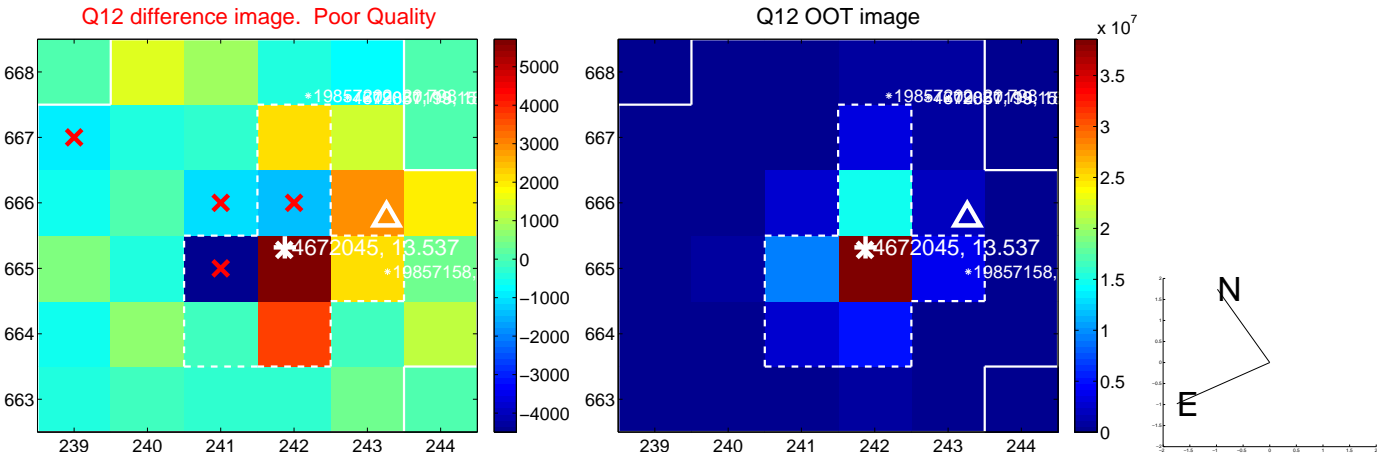
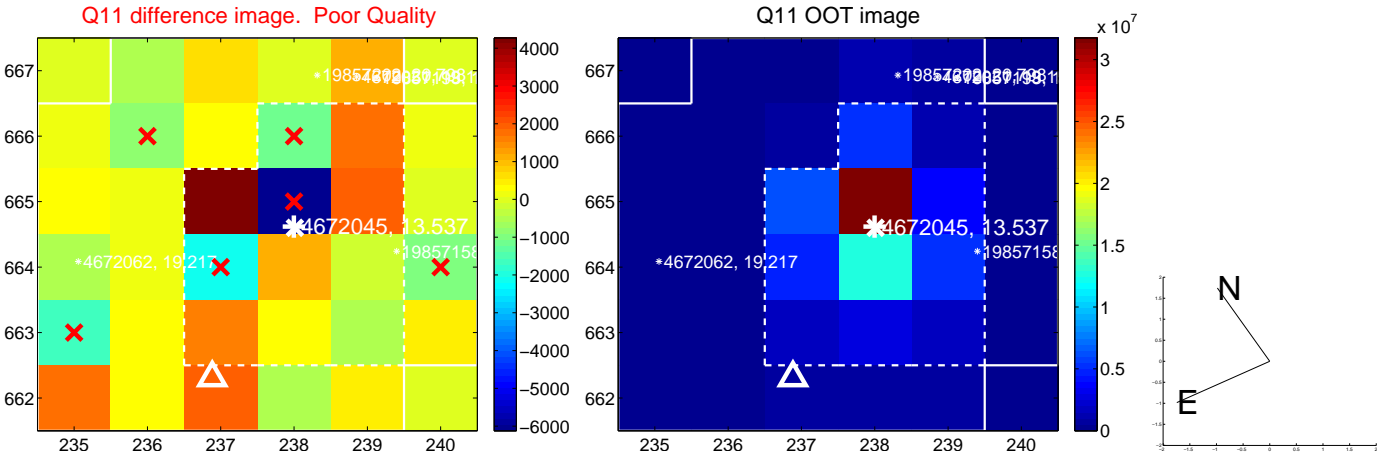
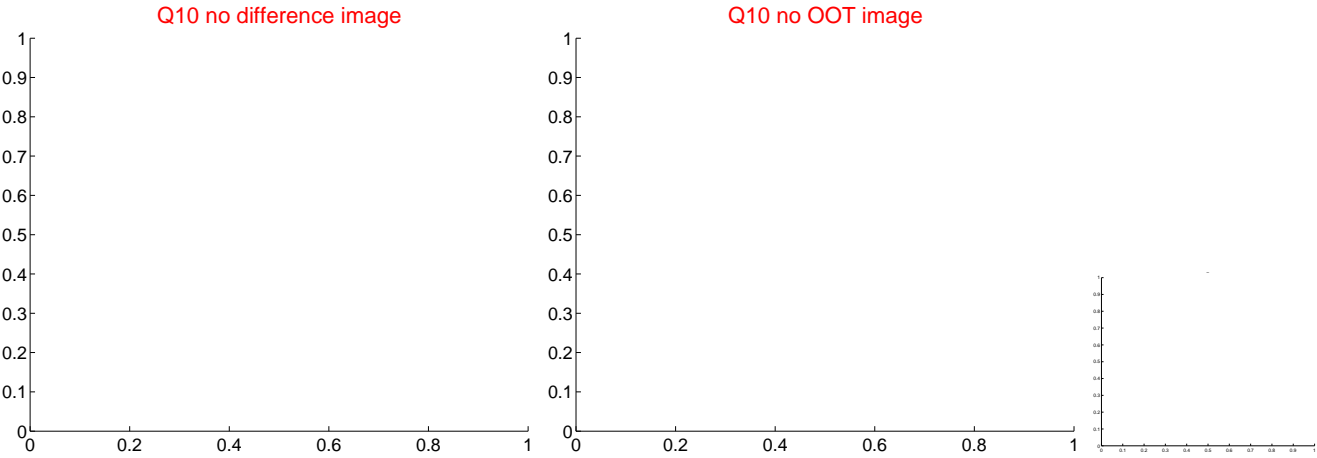
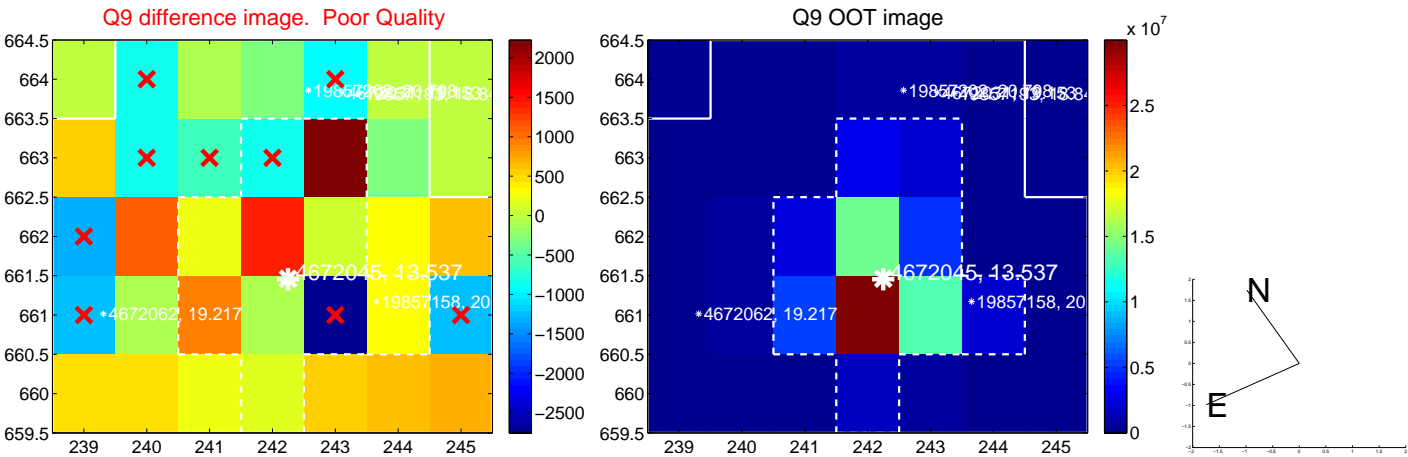
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



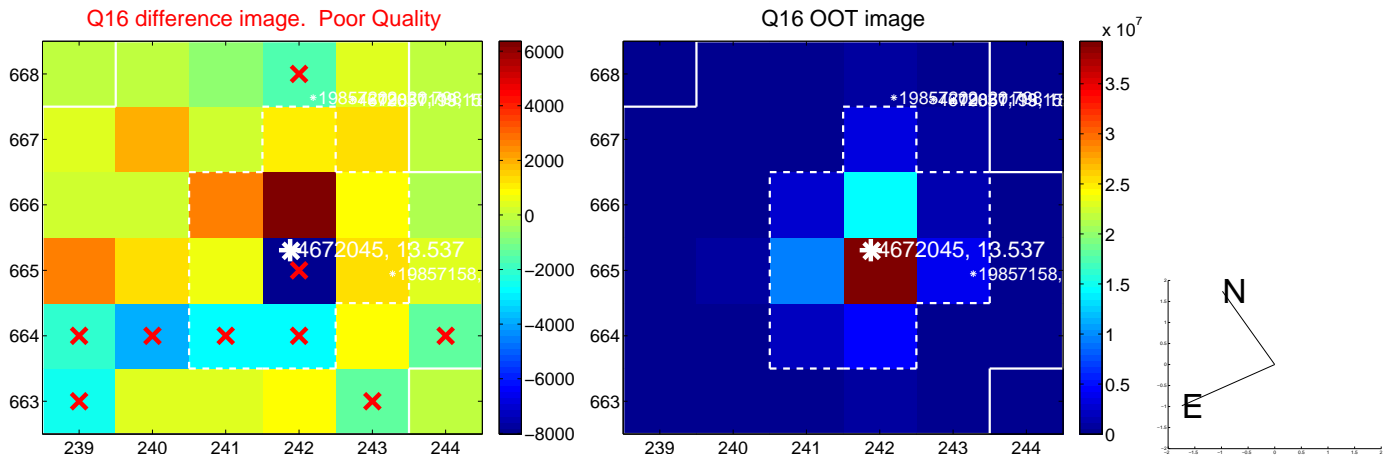
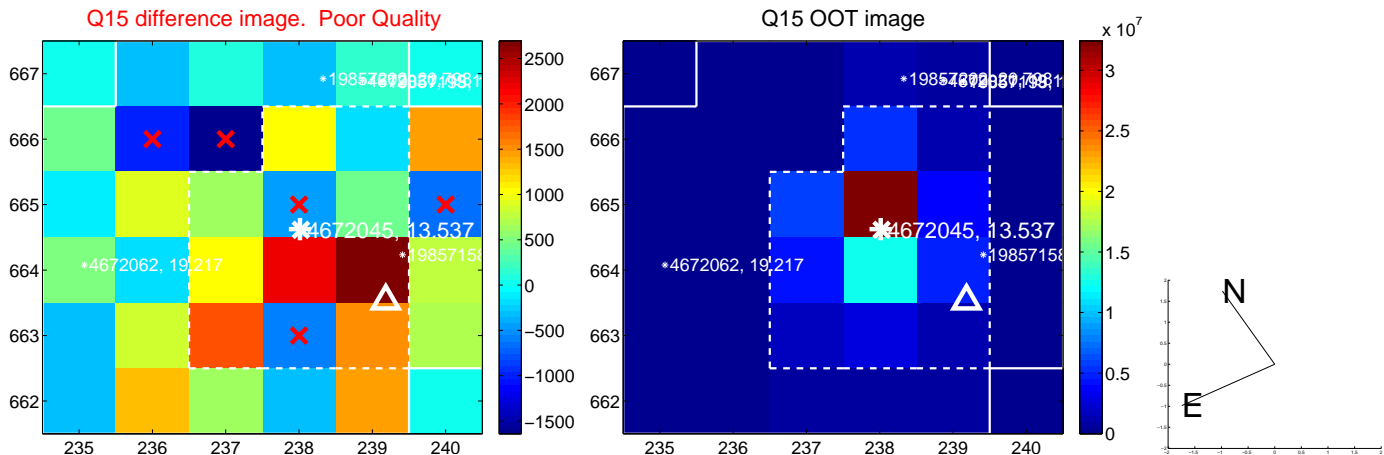
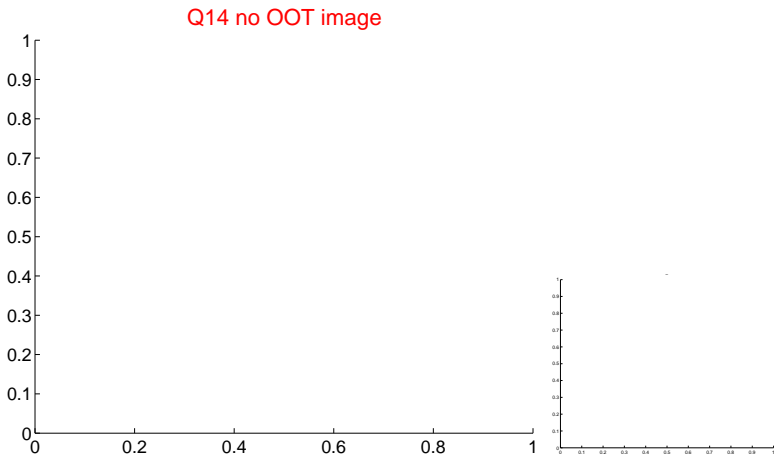
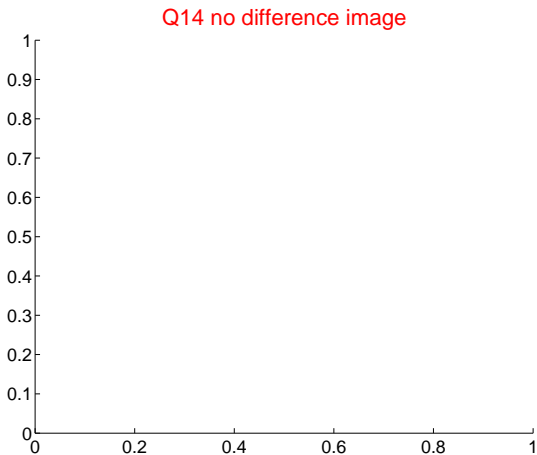
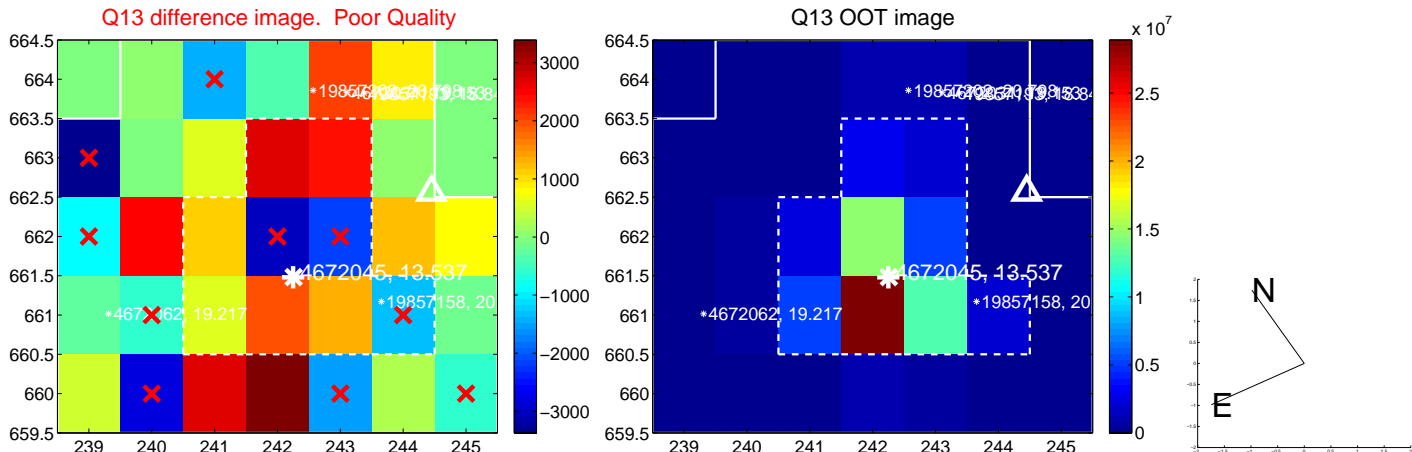
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



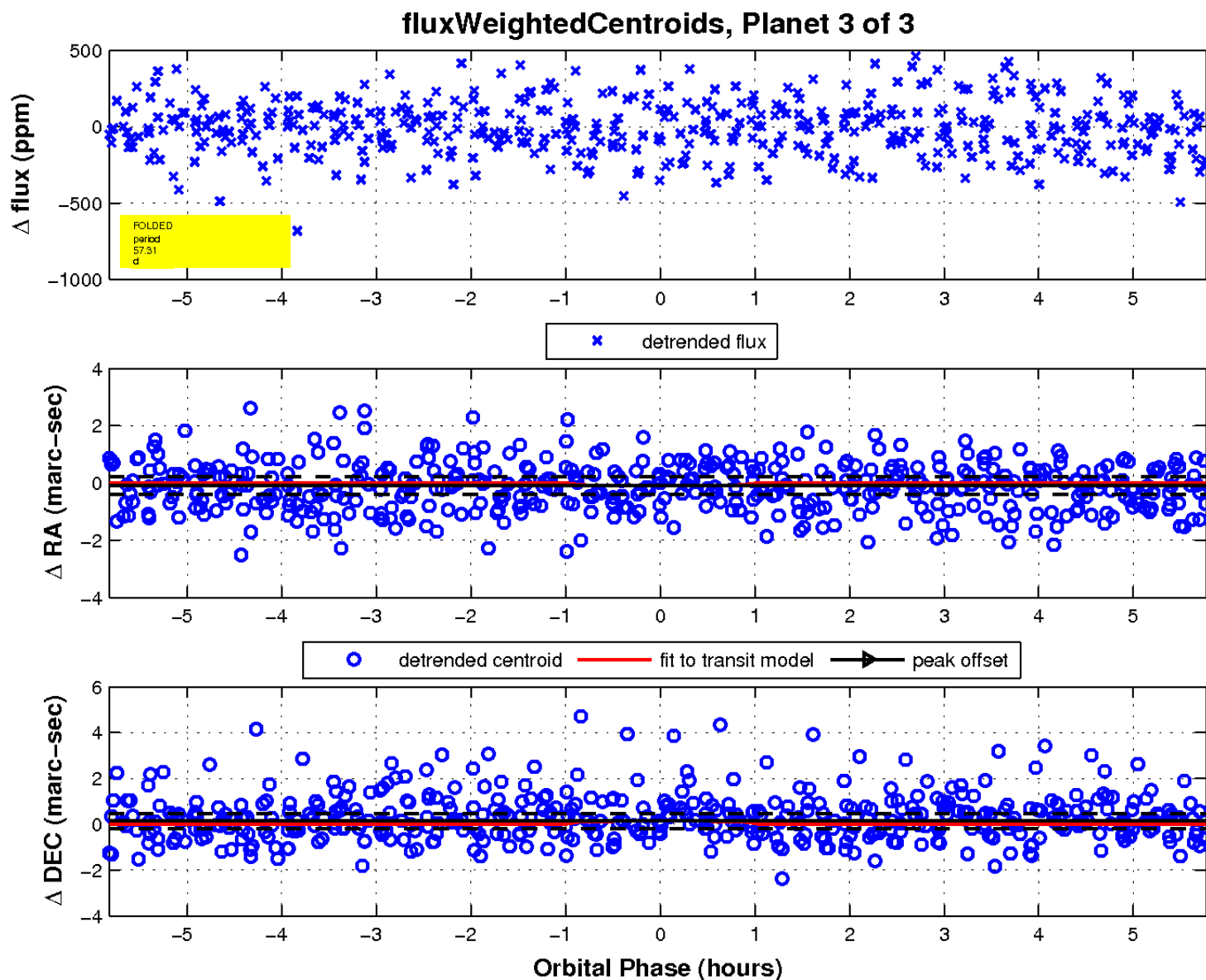
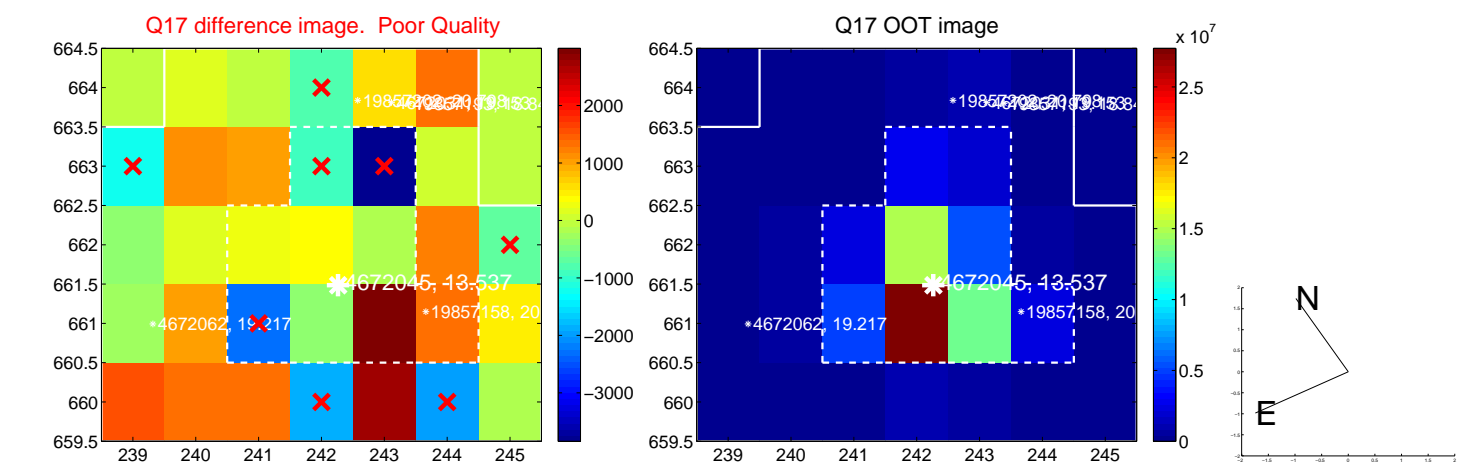
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

