

# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
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008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

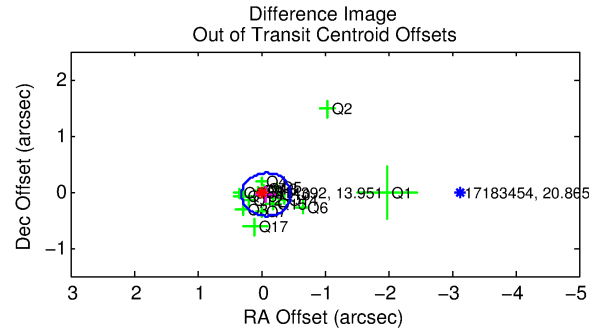
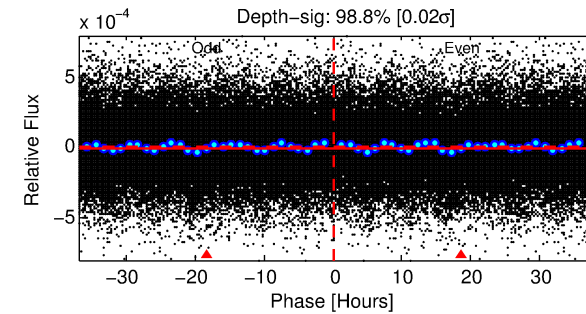
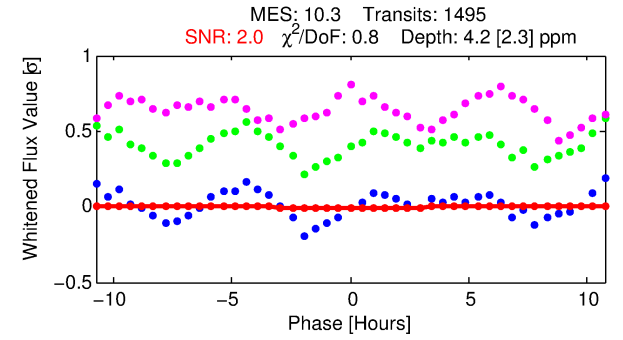
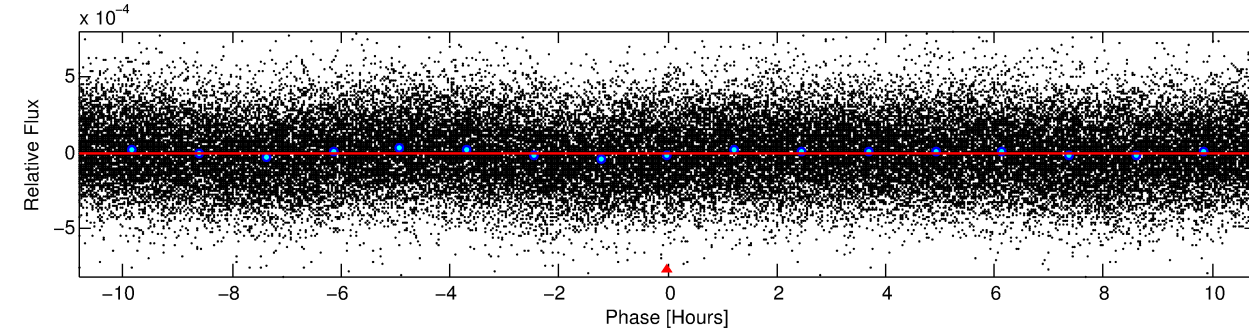
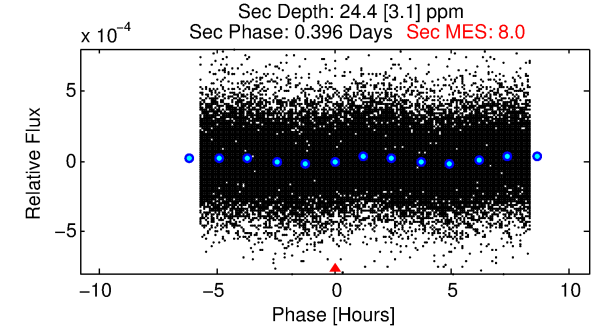
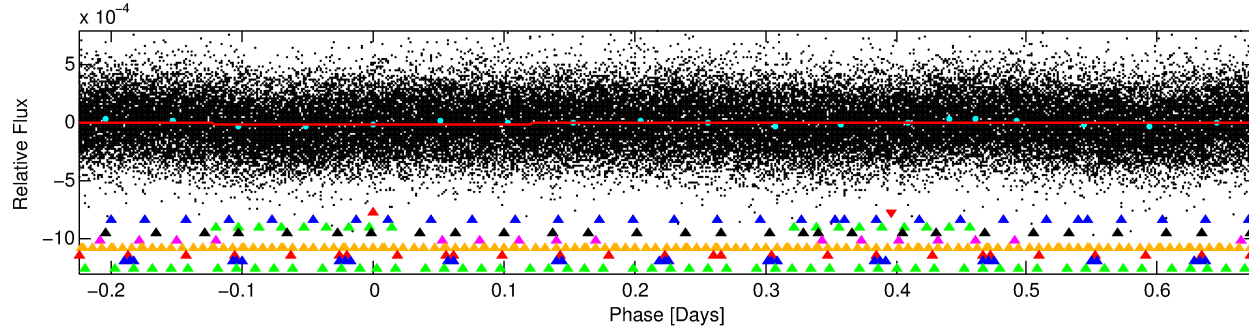
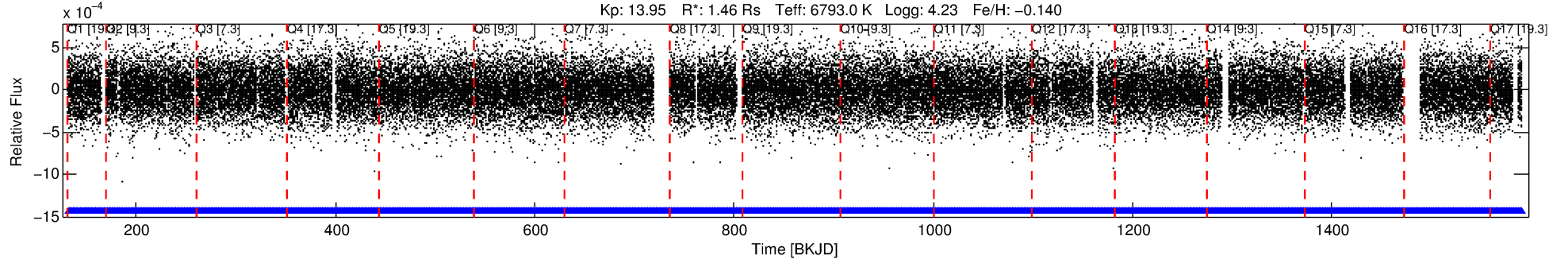
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008314392-01

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 1 of 9 Period: 0.901 d



## DV Fit Results:

Period = 0.90143 [0.00007] d  
Epoch = 132.3252 [0.0268] BKJD  
Rp/R\* = 0.0022 [0.0046]  
a/R\* = 1.06 [1.59]  
b = 0.90 [2.76]  
Seff = 10189.07 [3970.14]  
Teq = 2562 [250] K  
Rp = 0.35 [0.75] Re  
a = 0.0200 [0.0052] AU  
Ag = 43.85 [185.47] [0.23σ]  
Teffp = 10193 [10747] K [0.71σ]

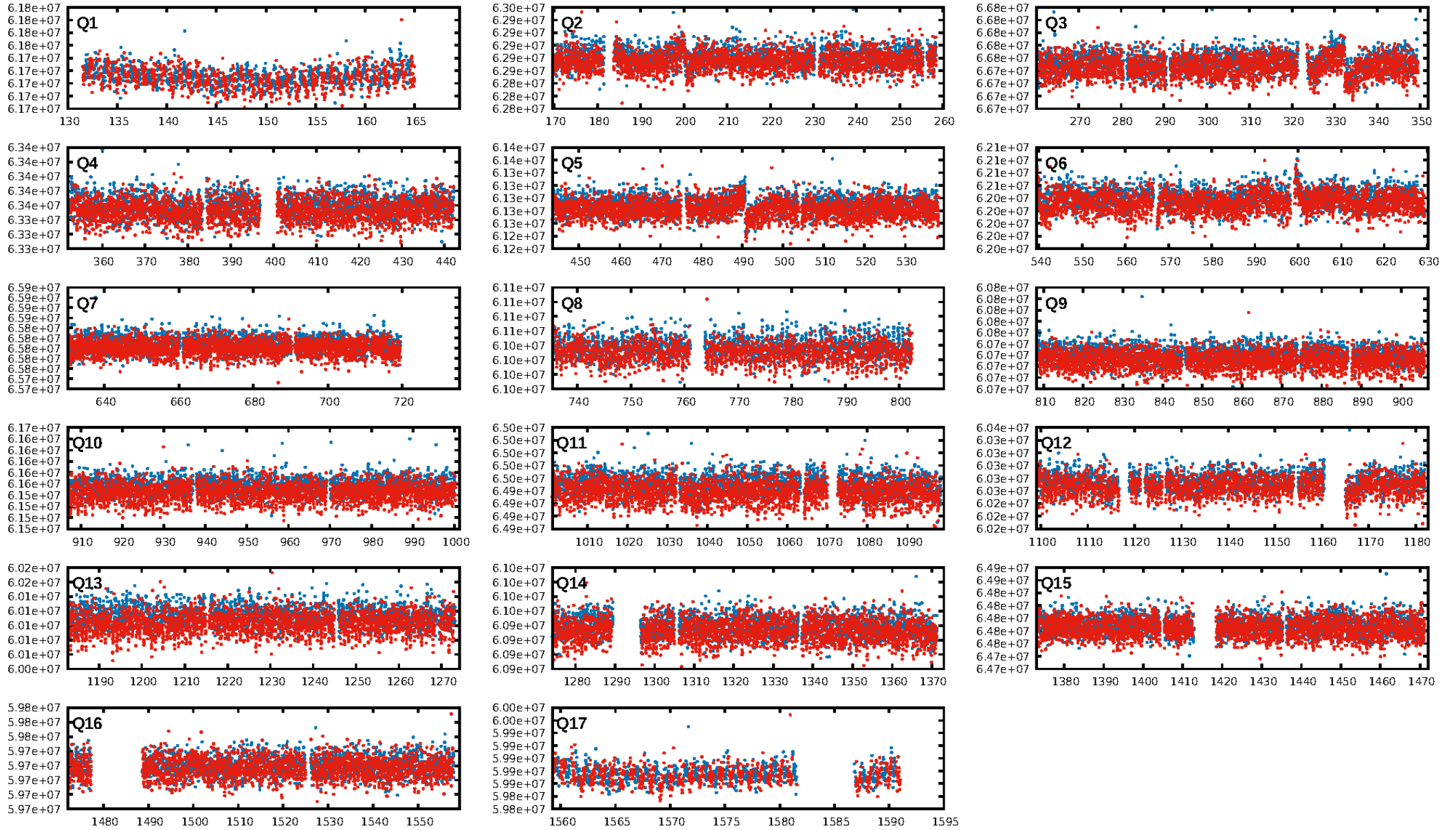
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [33.14σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.35e-22  
RollingBand-fgt: 1.00 [1427/1427]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.093 arcsec [0.72σ]  
KicOffset-rm: 0.127 arcsec [1.09σ]  
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]

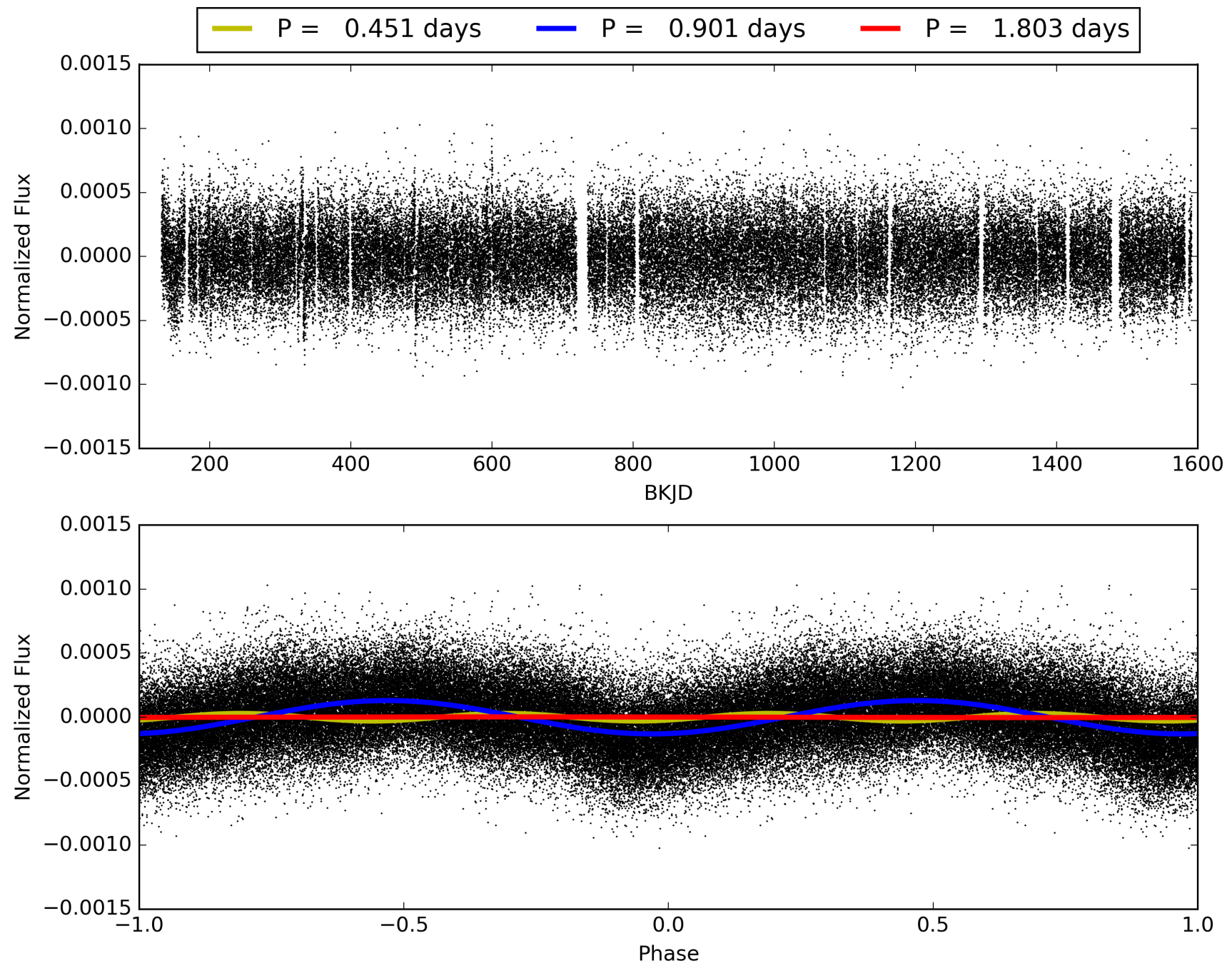
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:55:54 Z

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

# TCE 008314392-01, PDC Light Curves



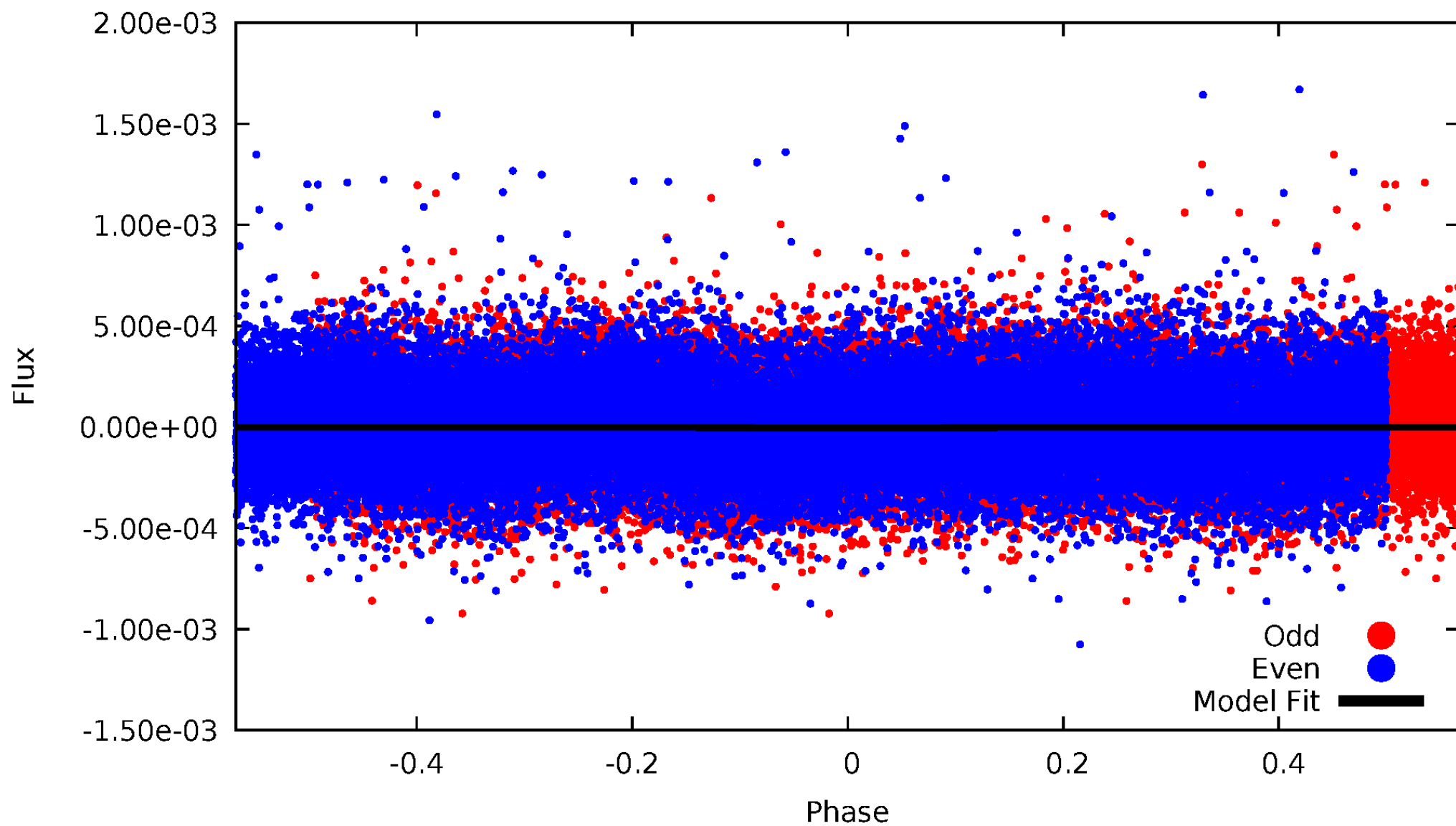
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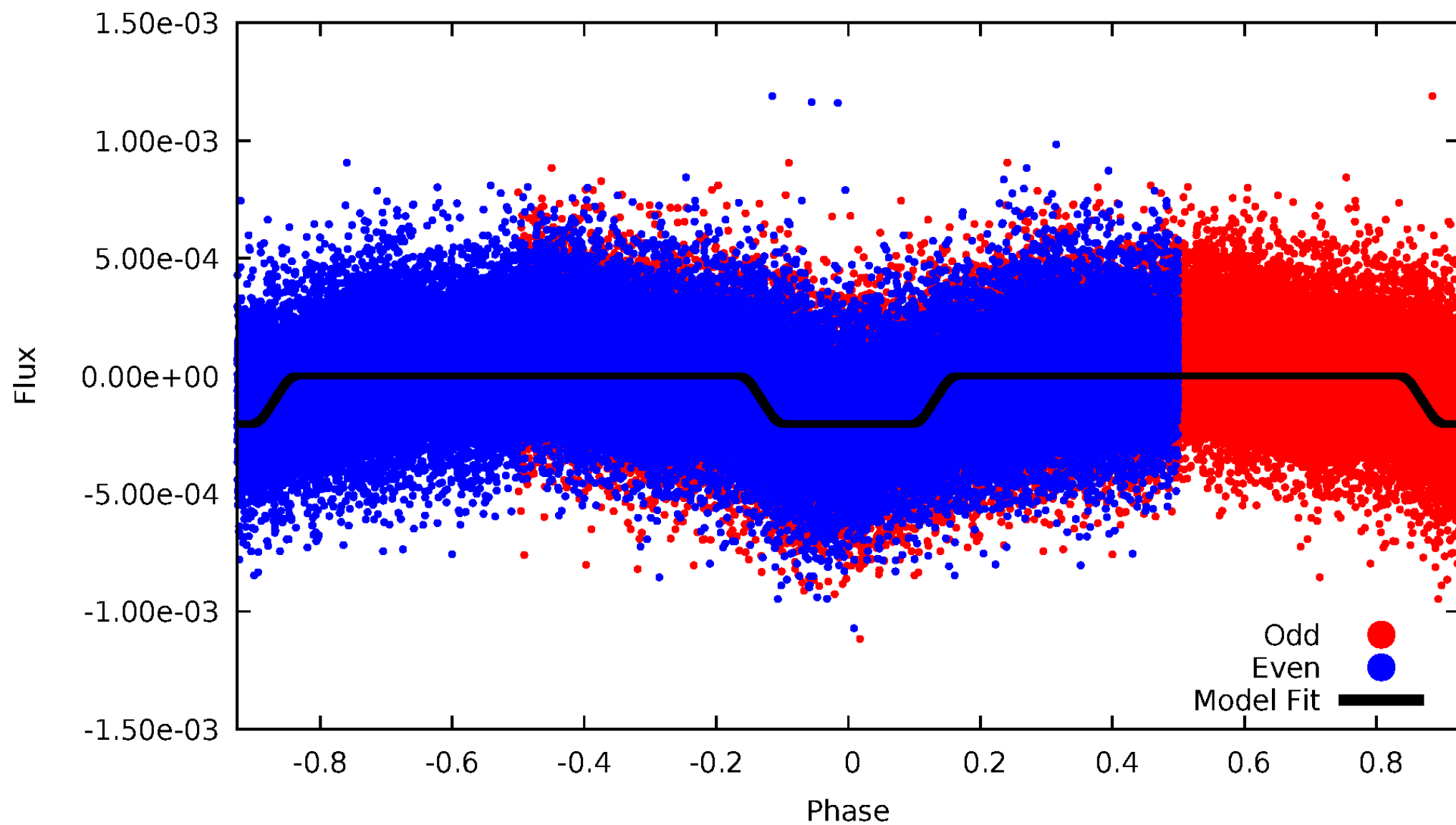
# DV Odd/Even

TCE 008314392-01



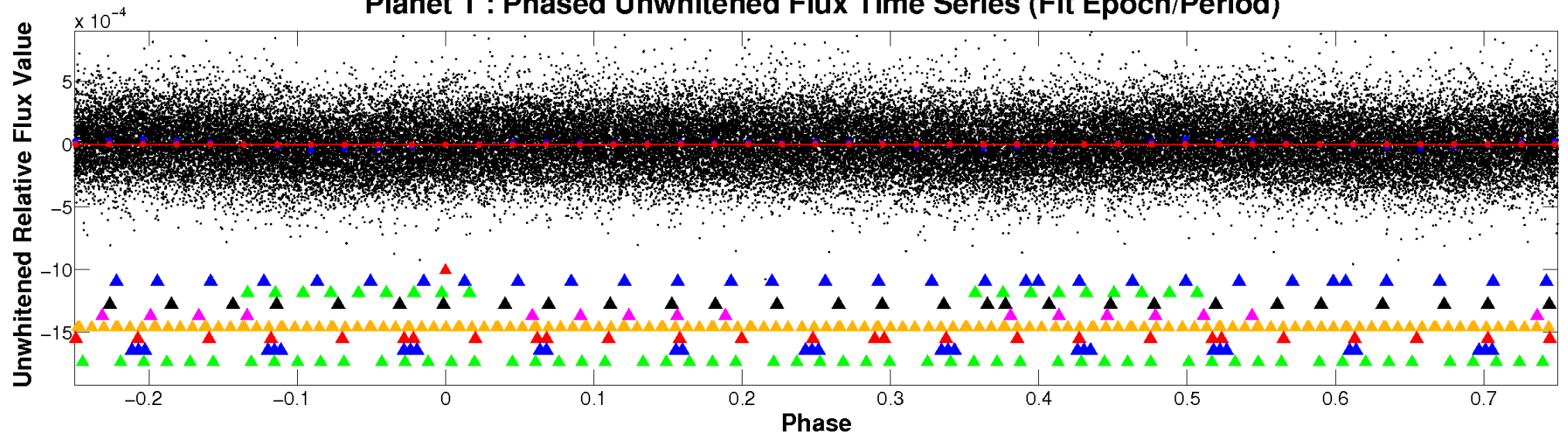
# ALT Odd/Even

TCE 008314392-01

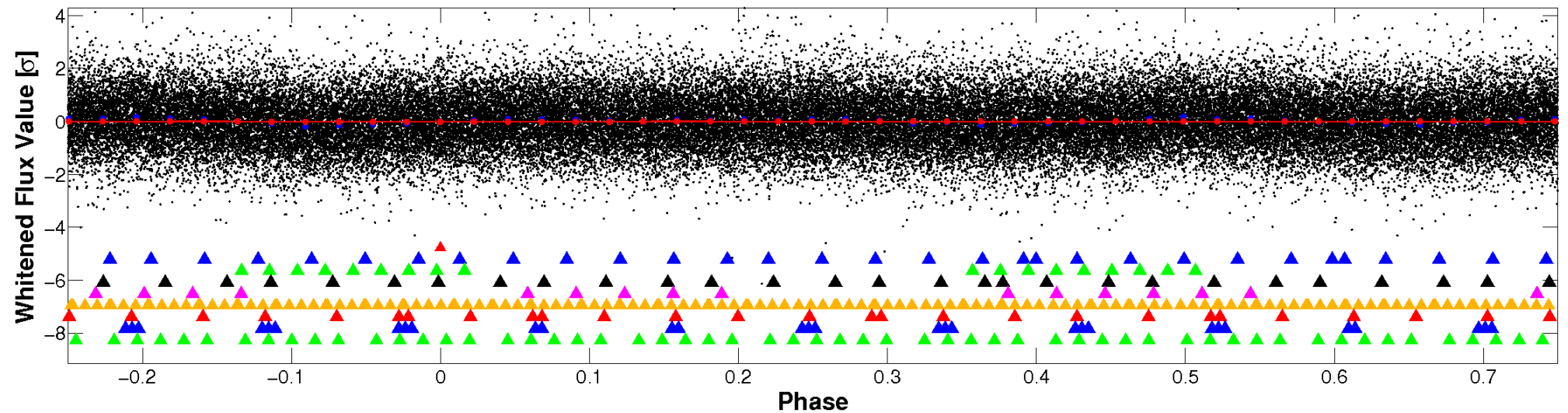


# Non-Whitened Vs. Whitened Light Curve

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

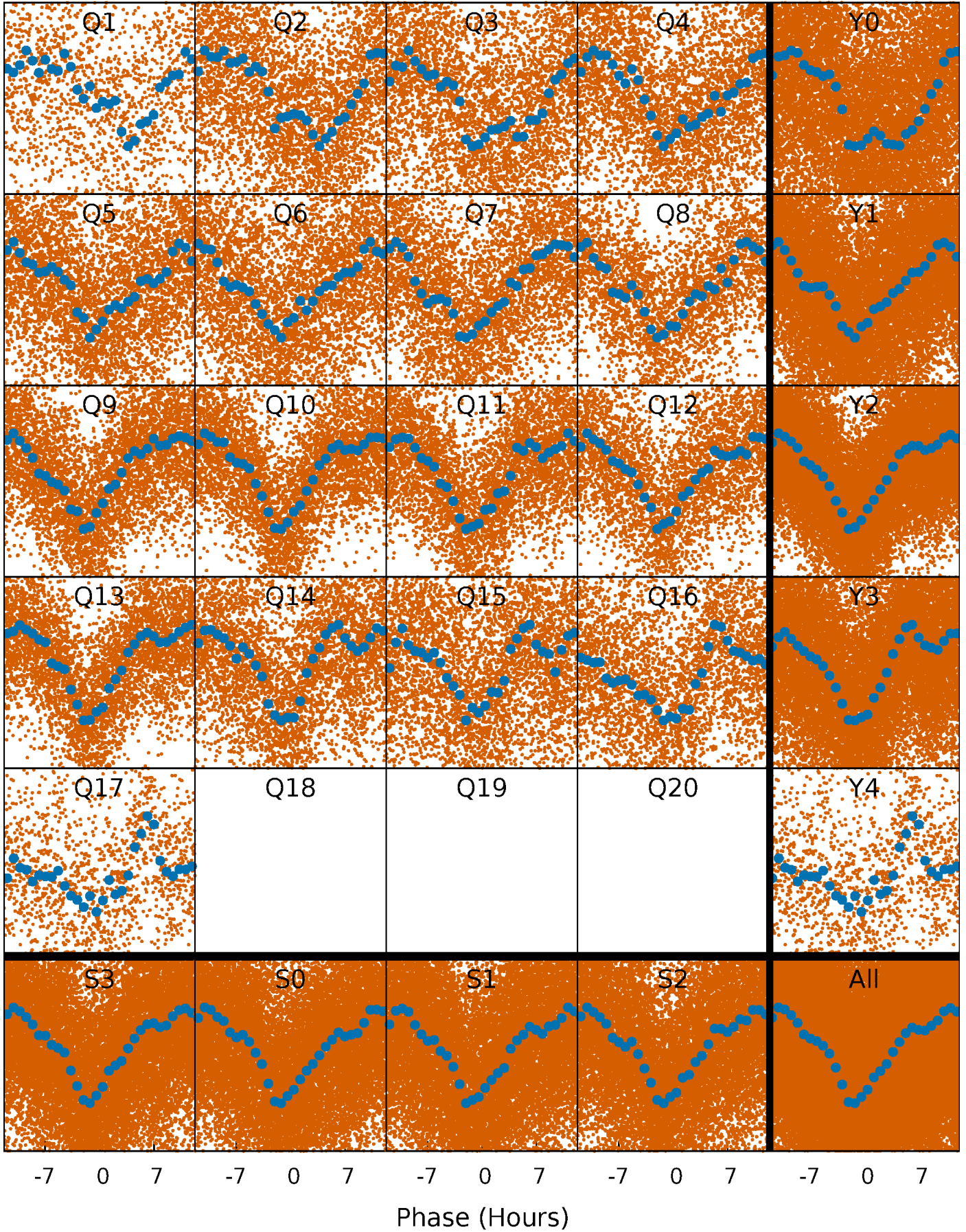


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

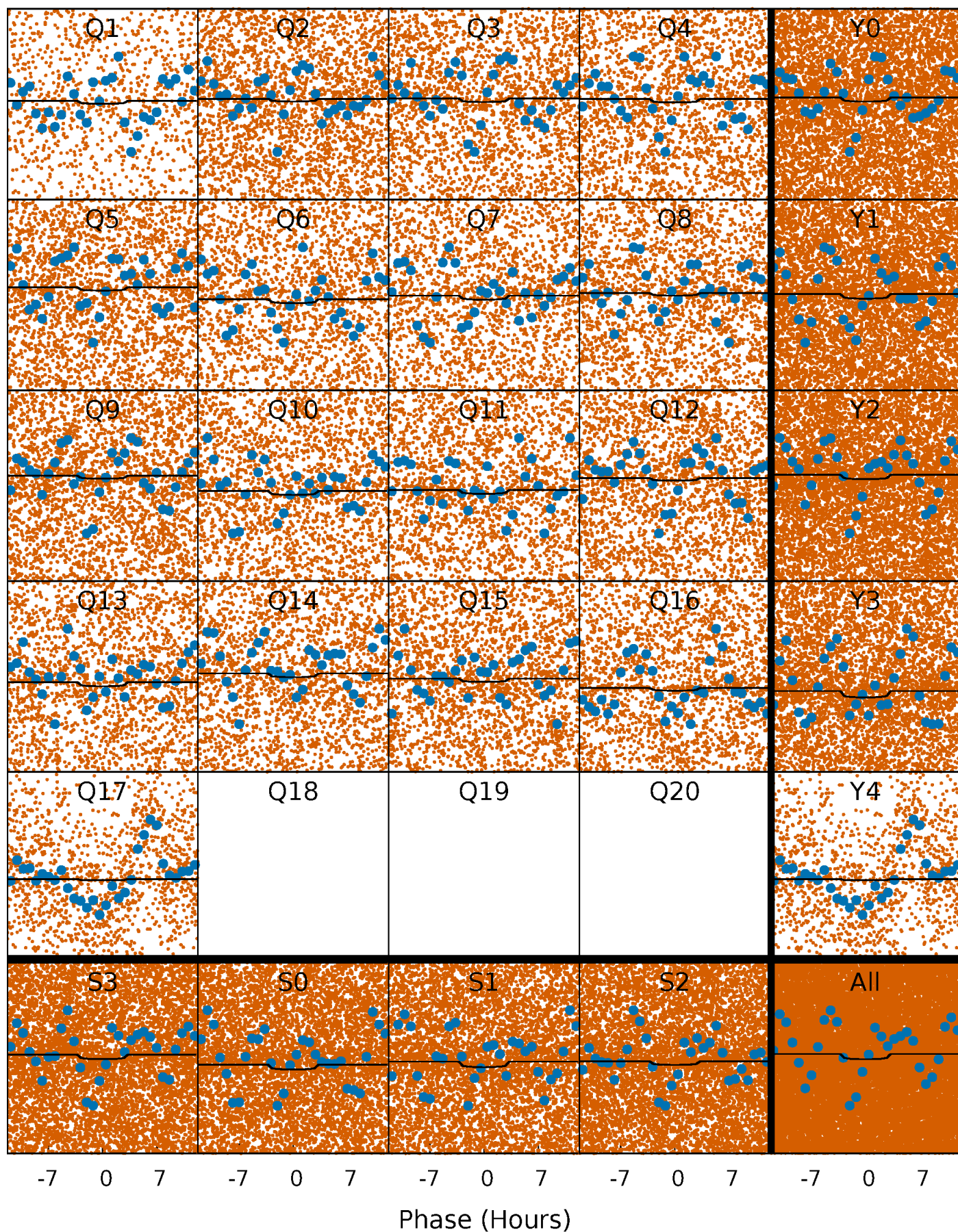
TCE 008314392-01 P= 0.901428 Days  $T_0=132.325157$  (BKJD)





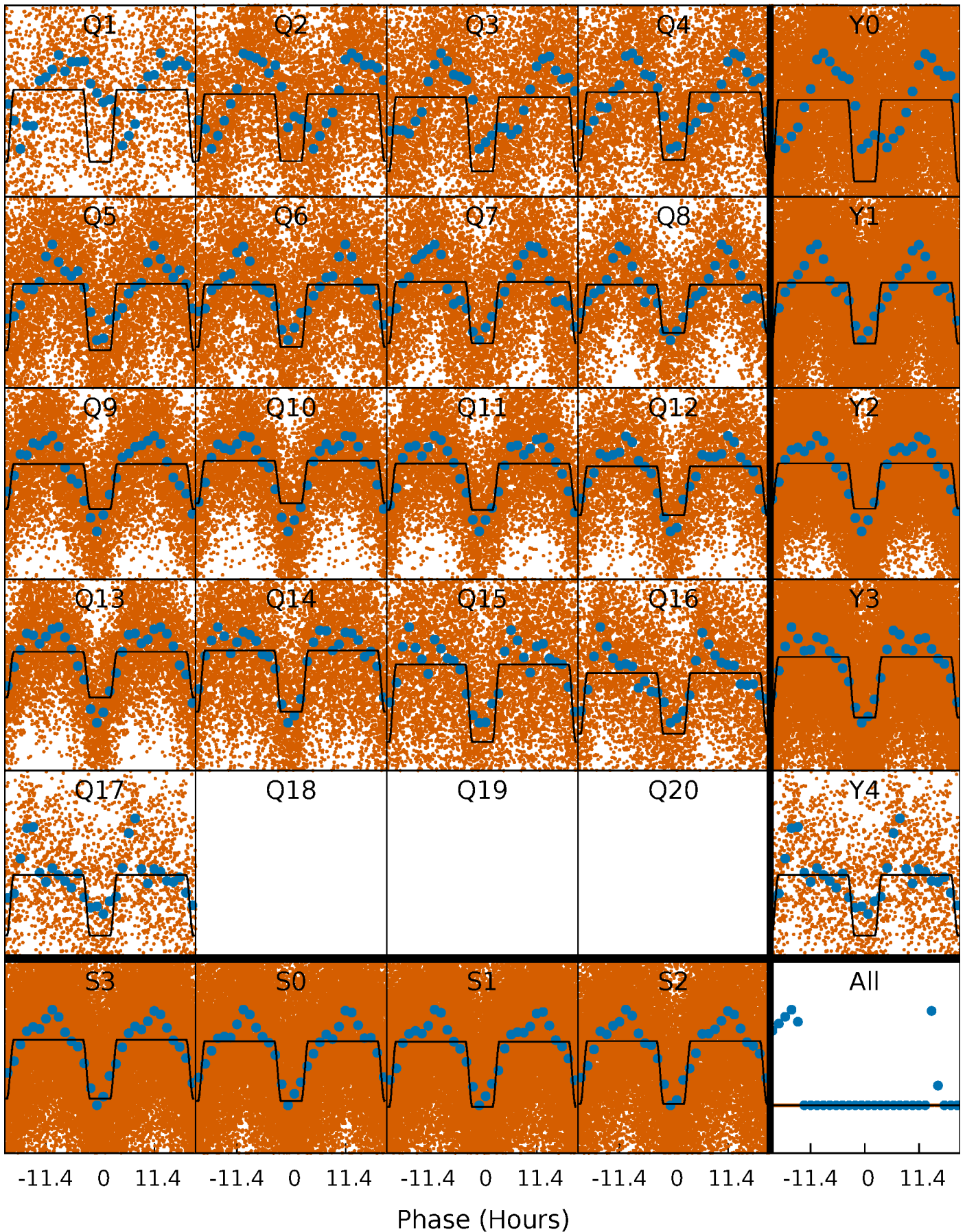
# DV Quarter-Phased Transit Curves

TCE 008314392-01 P= 0.901428 Days  $T_0=132.325157$  (BKJD)



### Alt. Detrend Quarter-Phased Transit Curves

TCE 008314392-01    P= 0.901441 Days     $T_0=132.278173$  (BKJD)

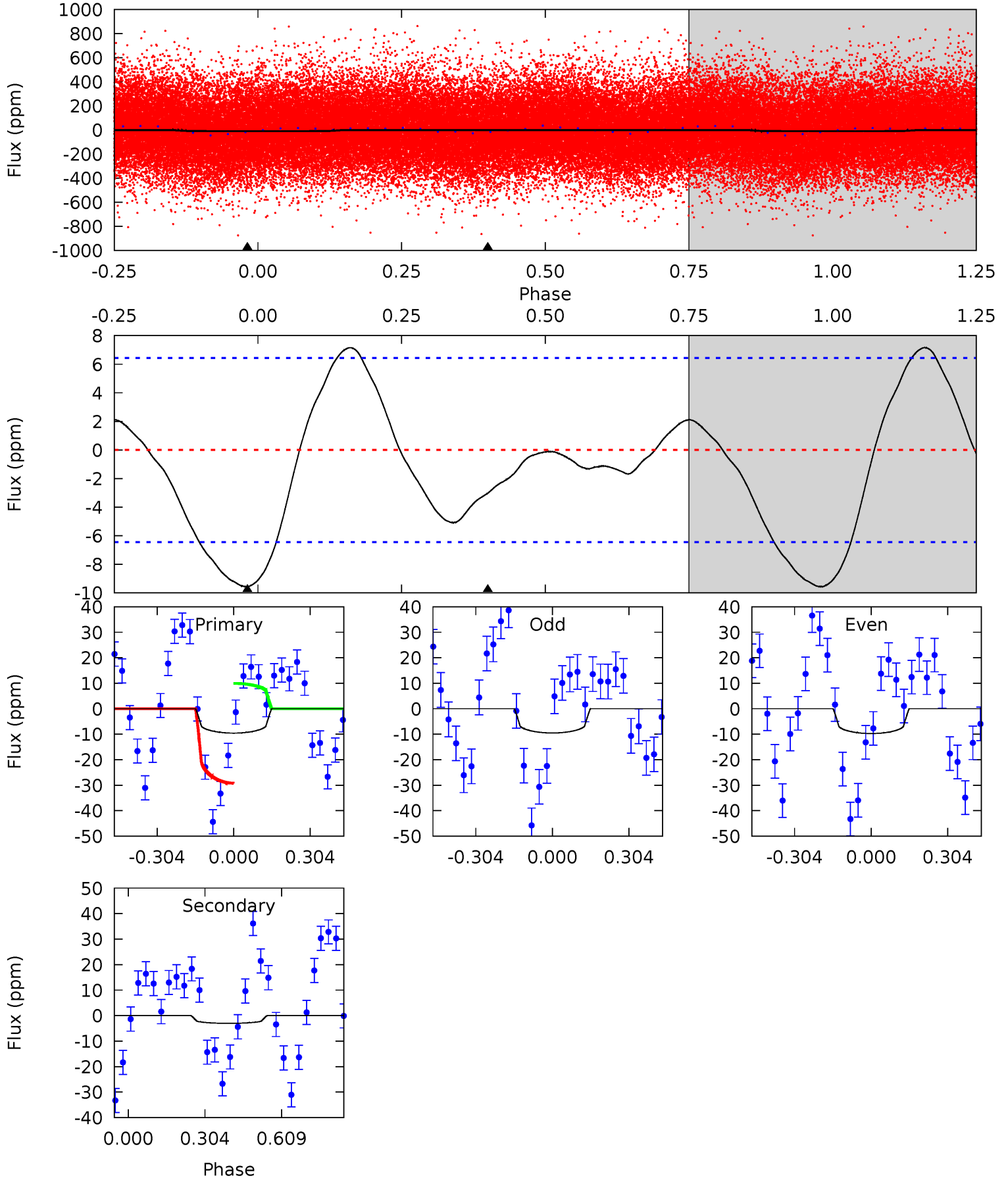




# DV Model-Shift Uniqueness Test

008314392-01, P = 0.901428 Days, E = 131.423729 Days

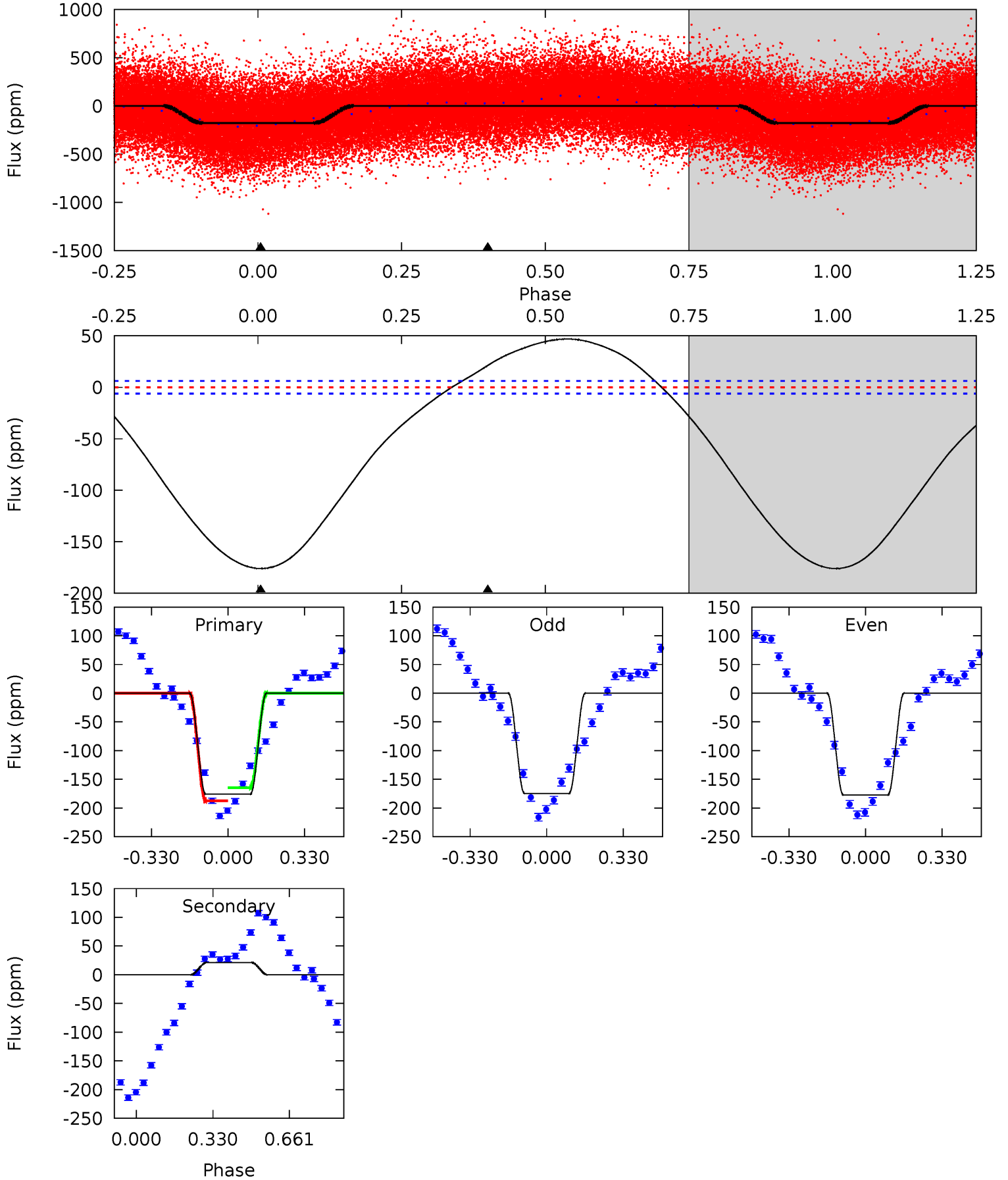
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.43	2.03	0	0	4.33	1.03	0.80	6.43	6.43	2.03	2.03	0.07	1.43	0.43	6.55



# Alt Model-Shift Uniqueness Test

008314392-01, P = 0.901441 Days, E = 131.376732 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
122.6	-14.8	0	0	4.31	0.97	11.2	122.6	122.6	-14.8	-14.8	0.92	1.02	0.21	7.85





### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3 \pm 1$	$0.68^{+0.68}_{-0.46}$	$3623^{+294}_{-228}$	$4325^{+3192}_{-6746}$	$1.400^{+10.394}_{-1.117}$
Alt.	$21 \pm 1$	$2.27^{+0.84}_{-0.73}$	$3614^{+258}_{-232}$	$-4385^{+317}_{-596}$	$-0.893^{+0.414}_{-1.117}$

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

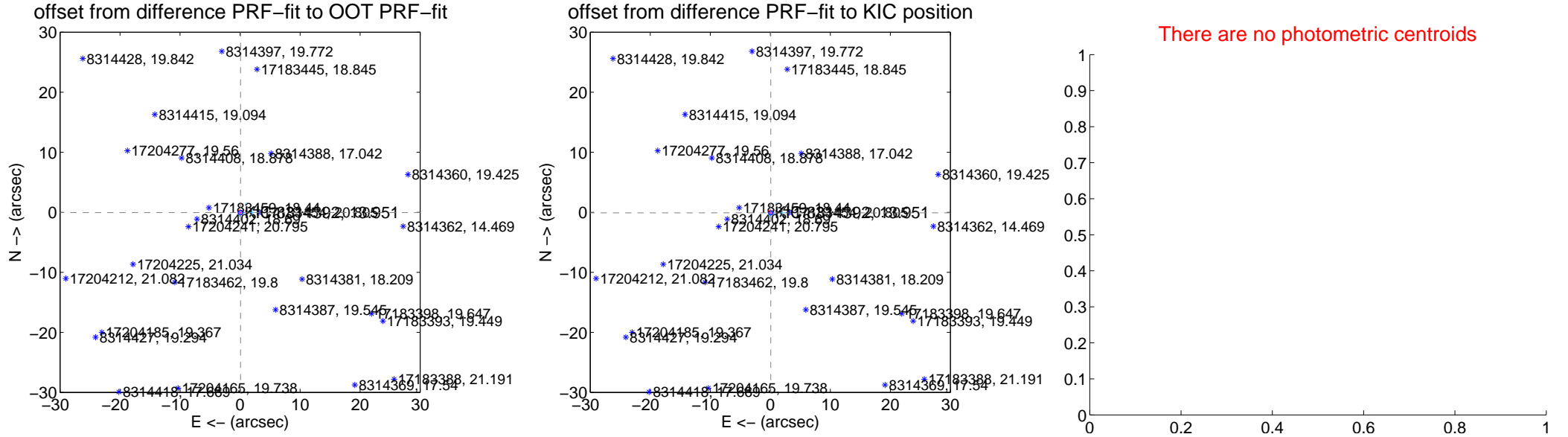
## DV Centroid Data

Supplemental centroid analysis for 008314392-01. Kepler magnitude: 13.95. Transit SNR 1.99

There are 17 quarters with good PRF difference image offsets

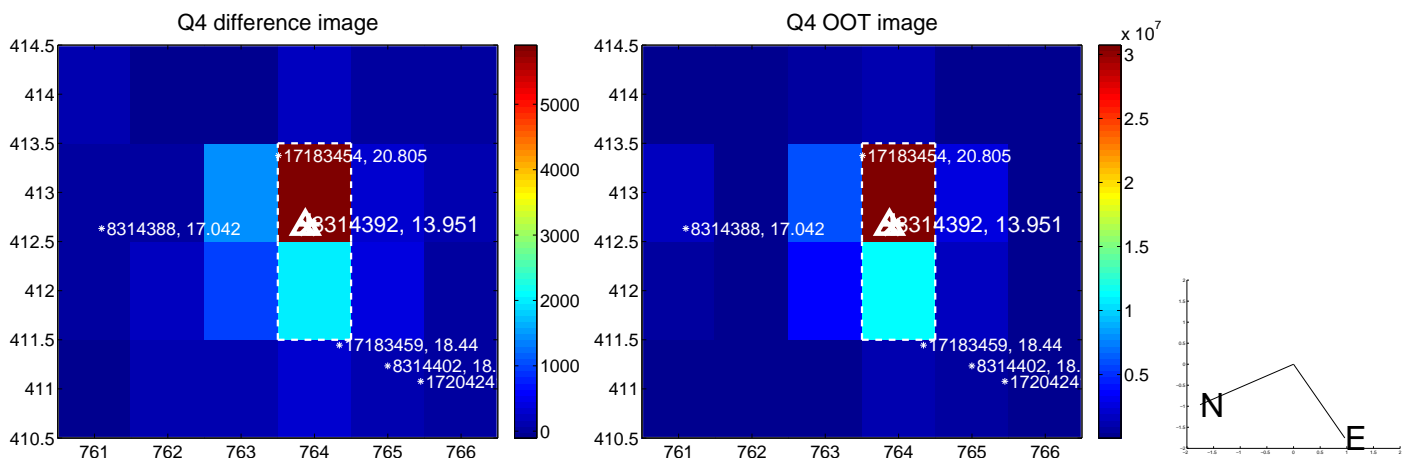
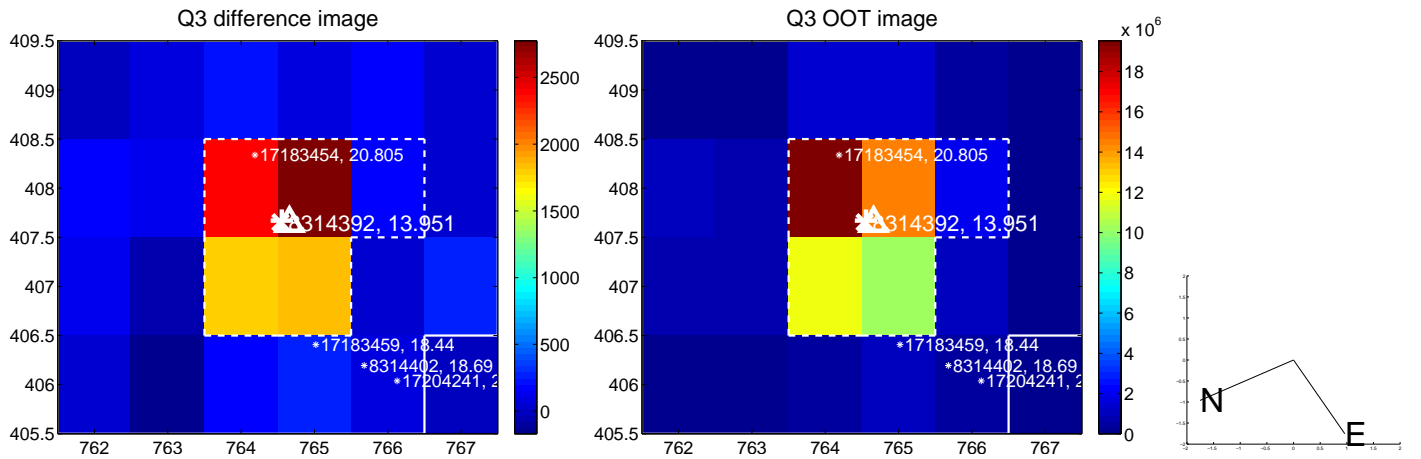
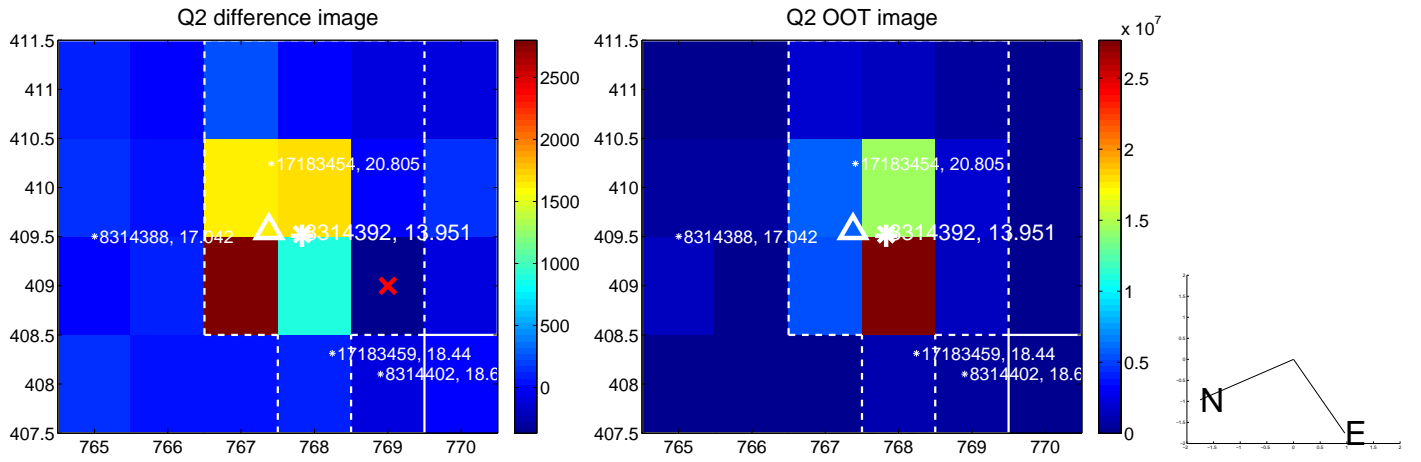
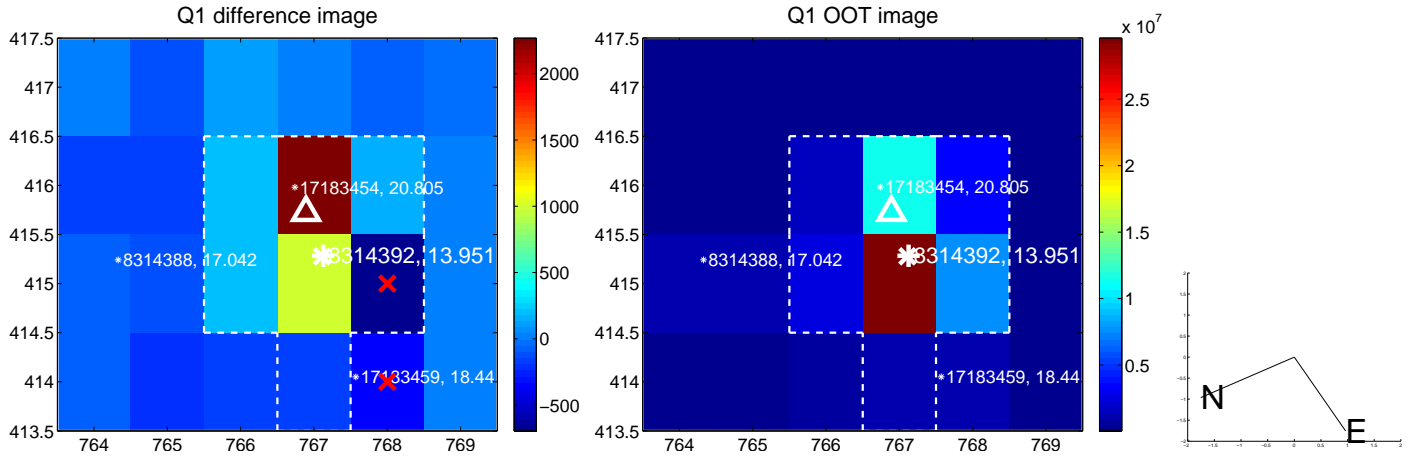
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.093 \pm 0.128$	0.72	$-0.078 \pm 0.156$	$-0.050 \pm 0.119$
PRF-fit source offset from KIC position	$0.127 \pm 0.117$	1.09	$-0.082 \pm 0.149$	$-0.097 \pm 0.127$
photometric centroid source offset	—	—	—	—

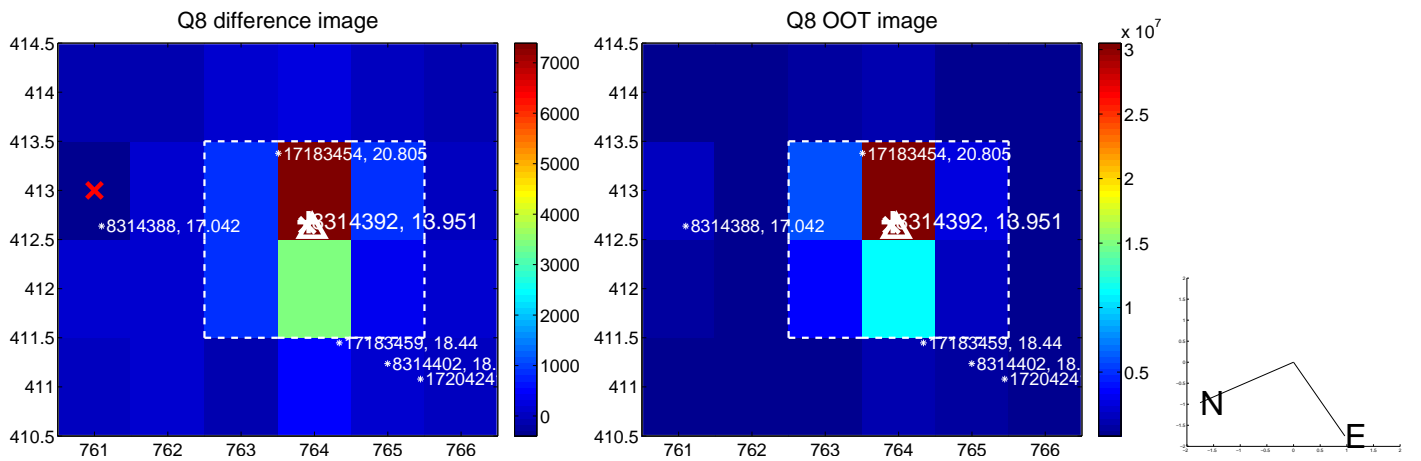
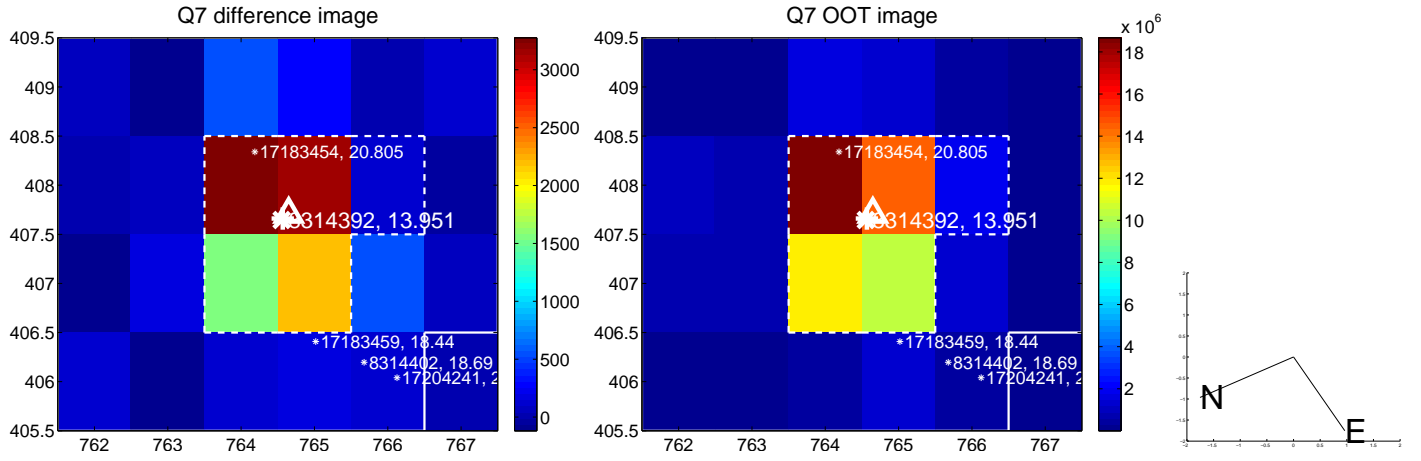
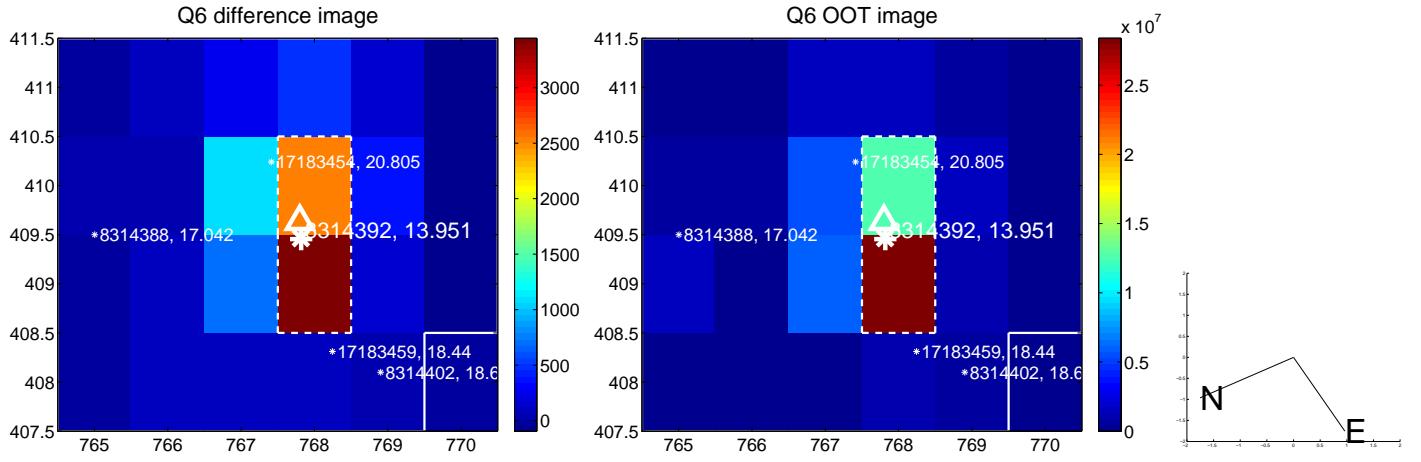
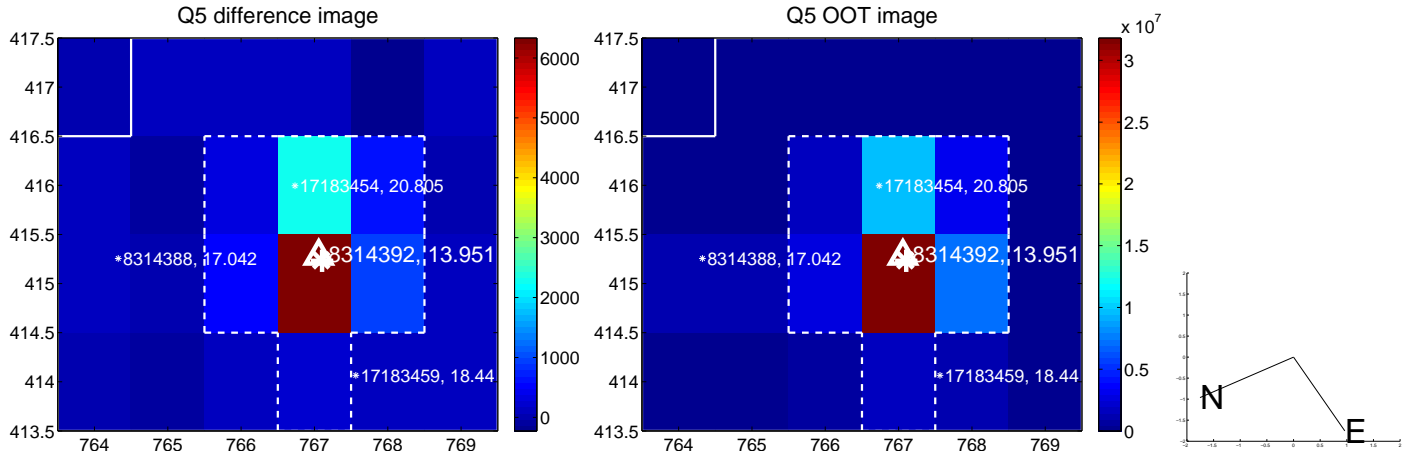


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

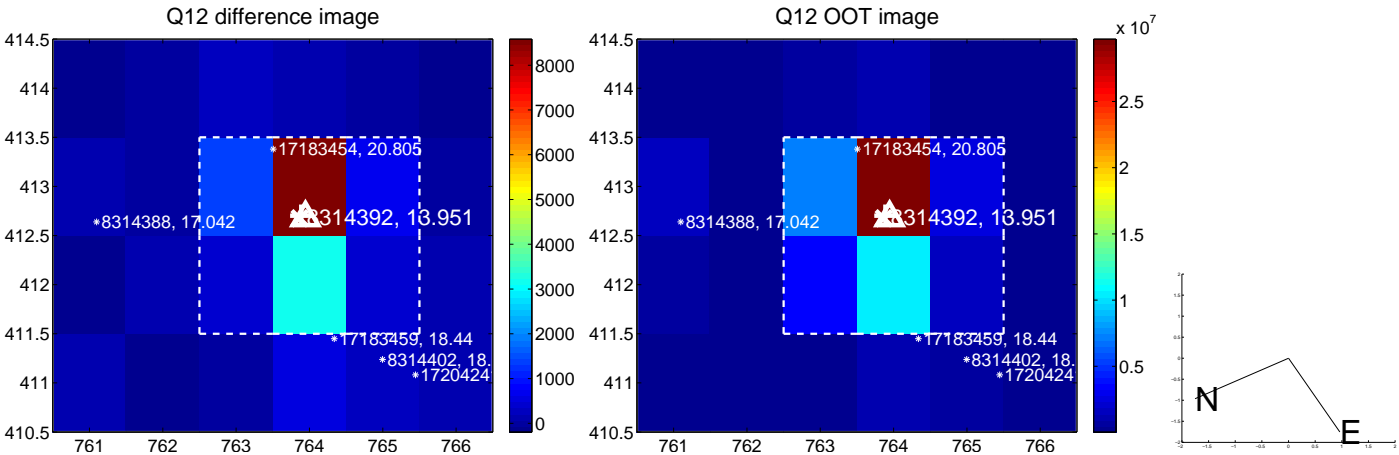
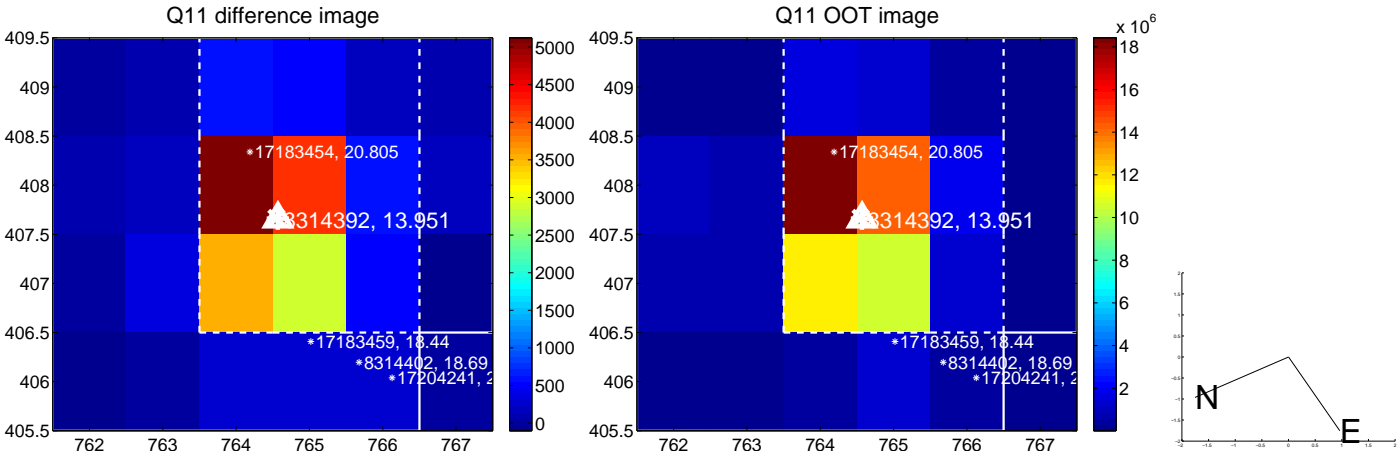
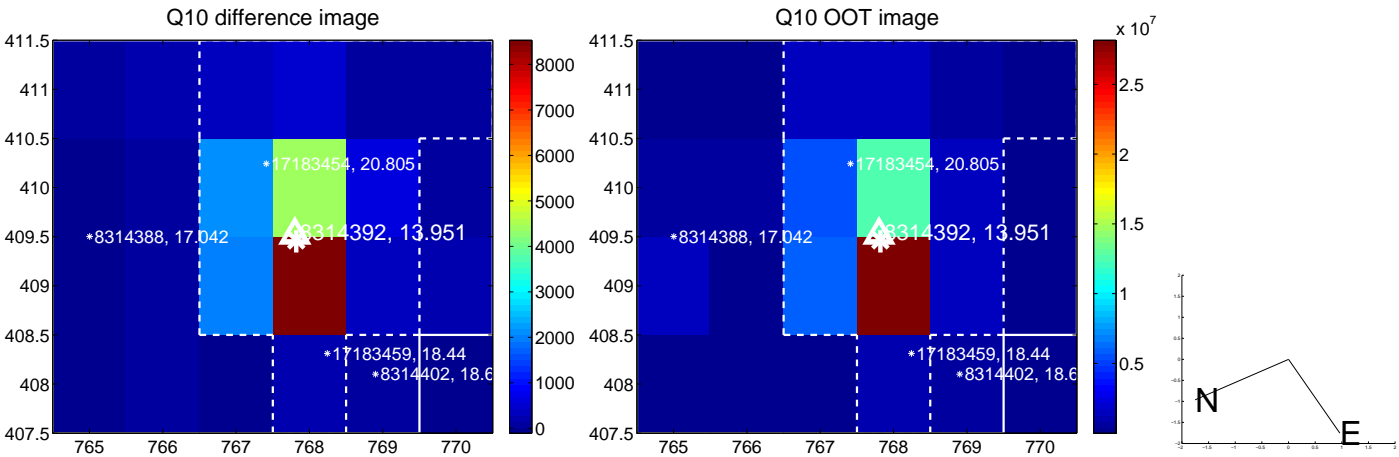
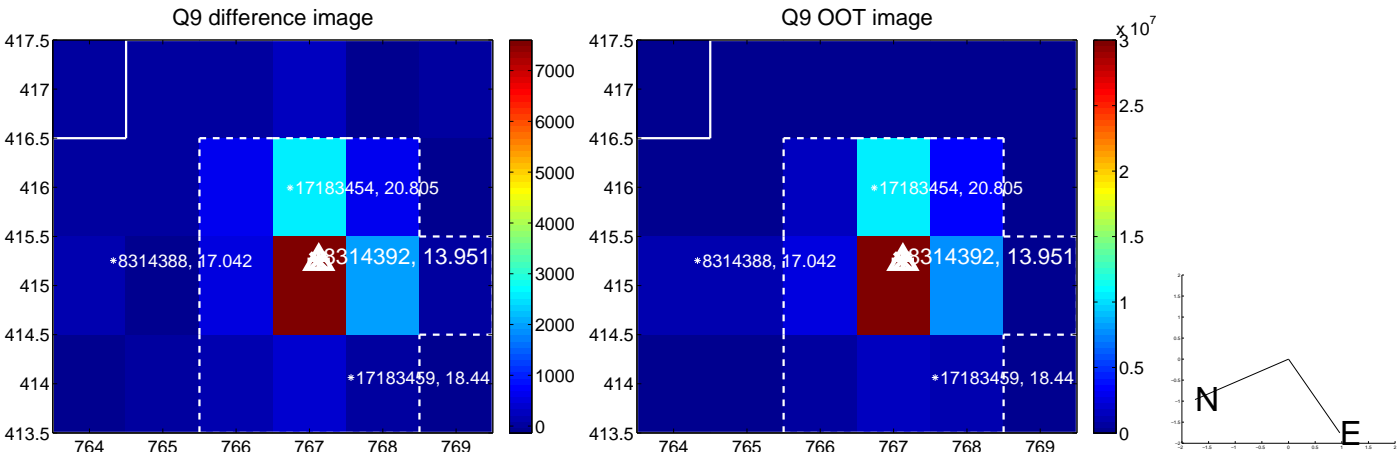


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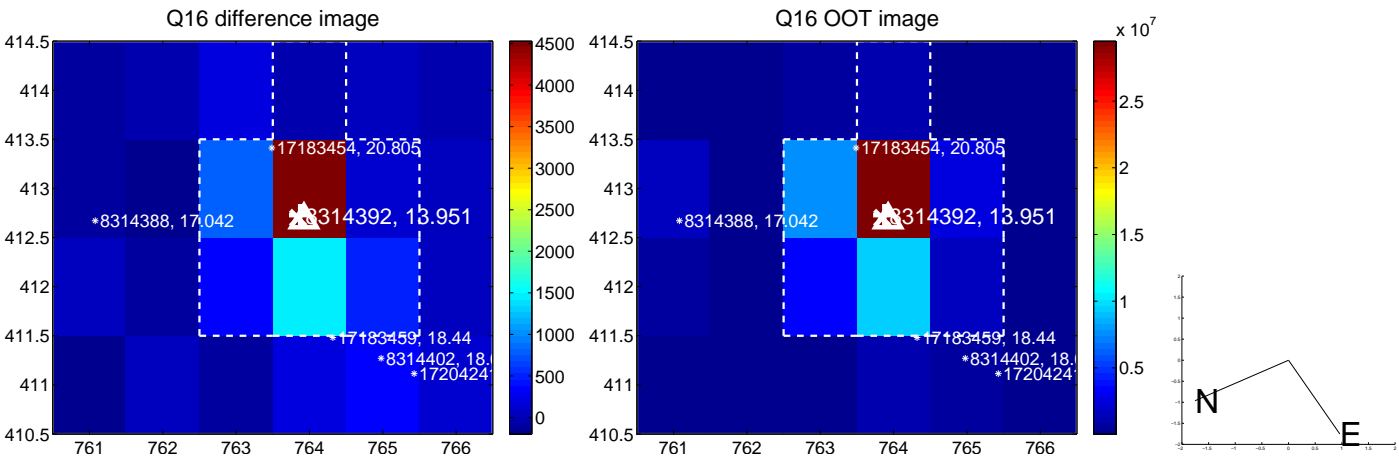
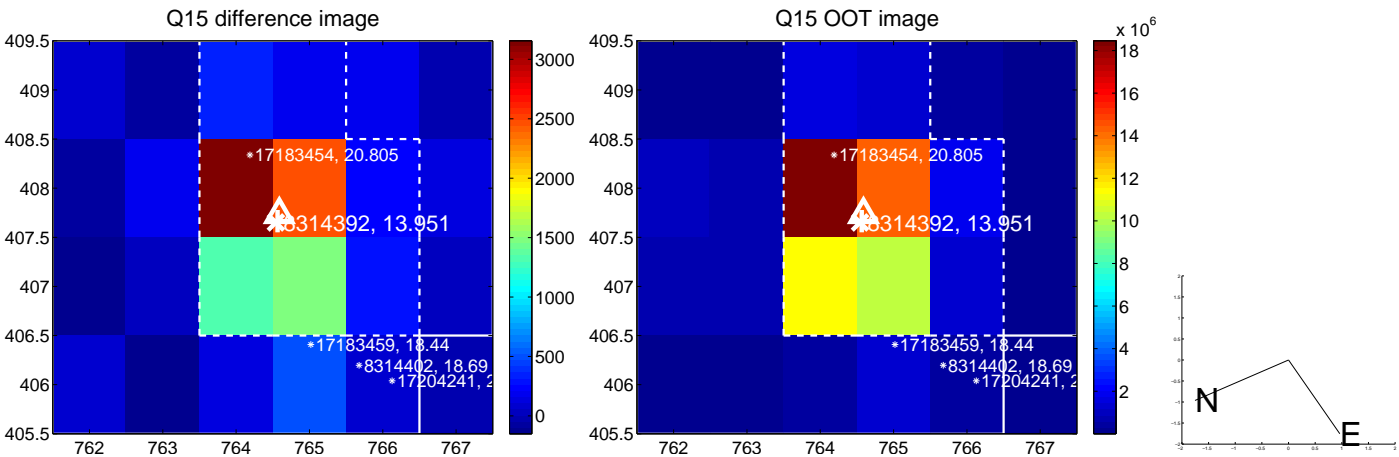
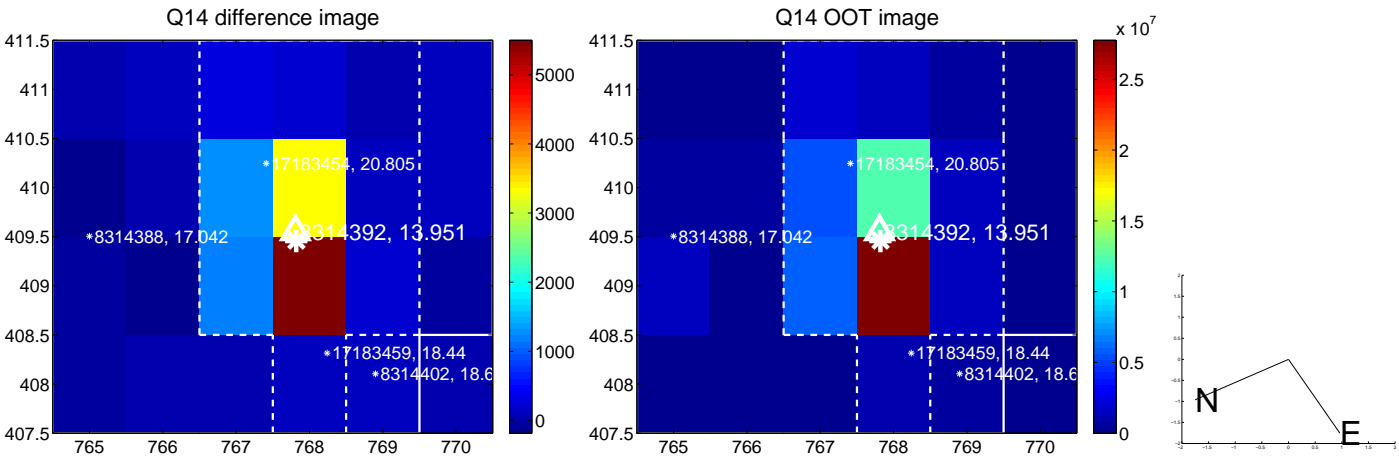
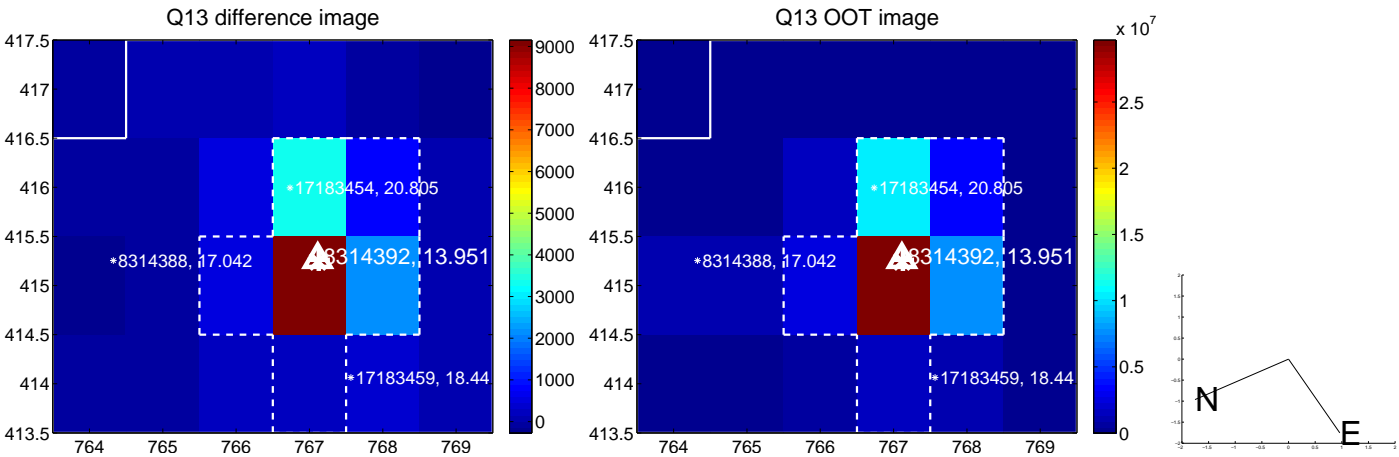




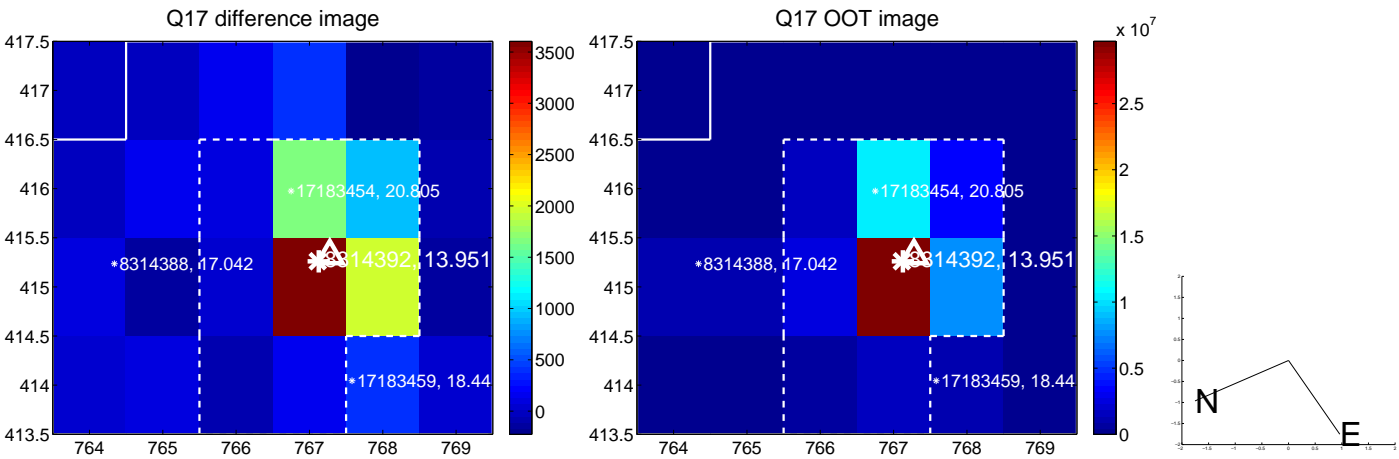
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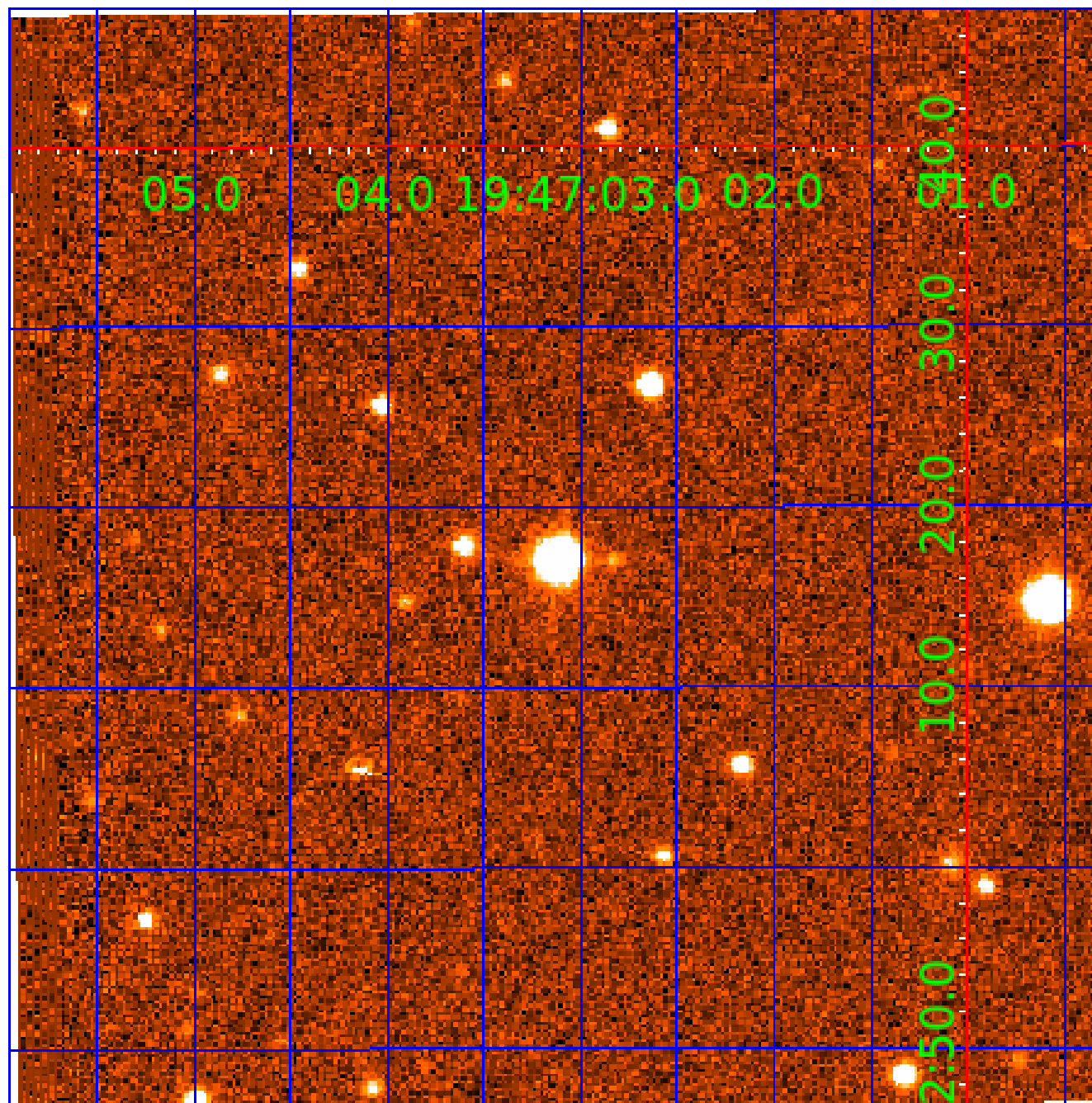
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



folded centroid time series figure for this object.

# UKIRT Image

Declination





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008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
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N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

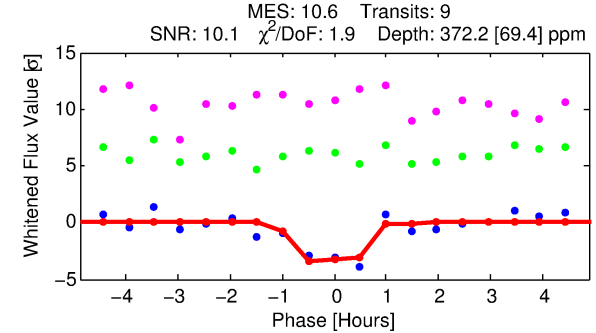
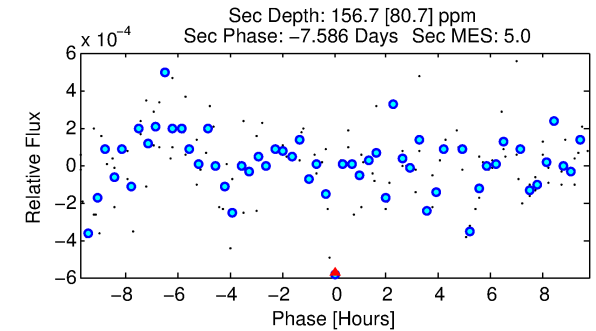
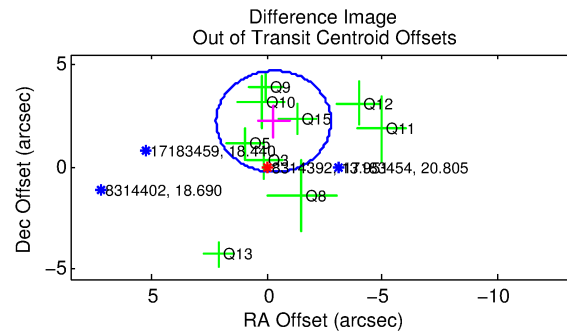
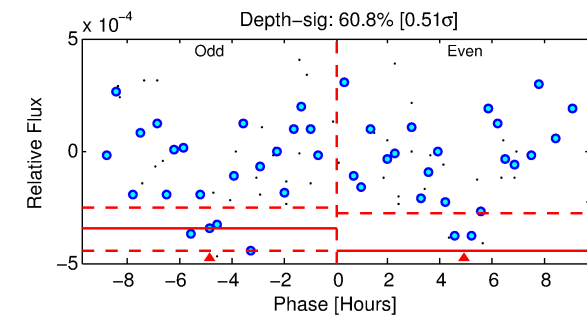
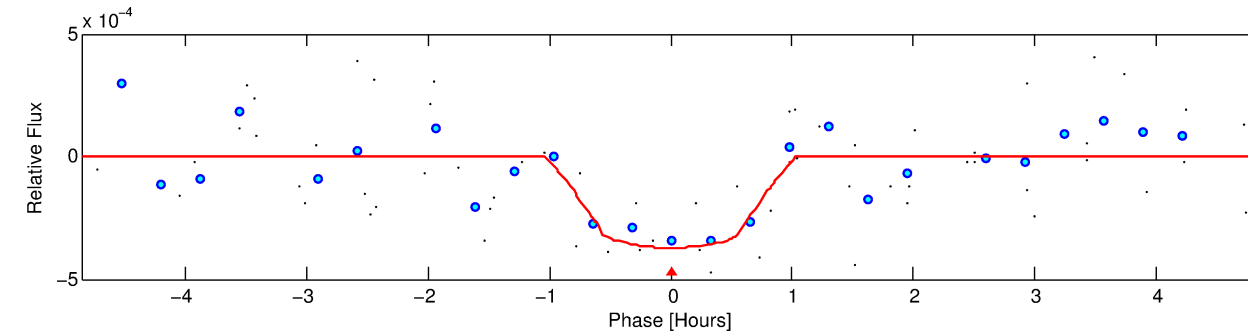
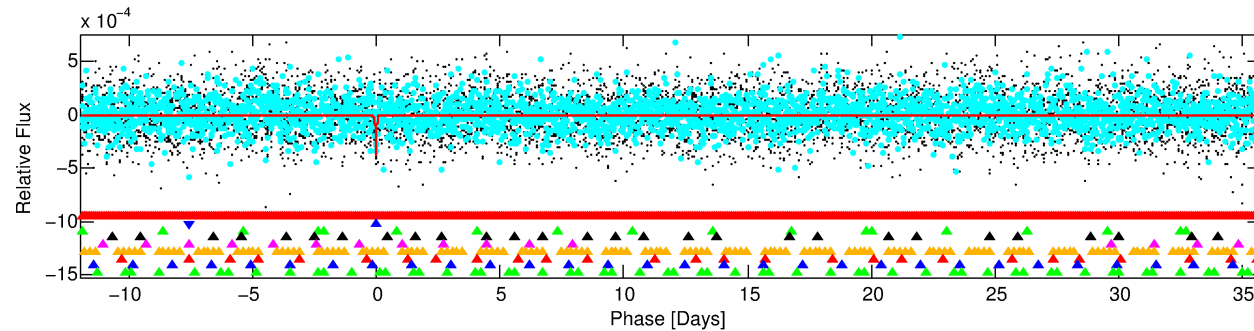
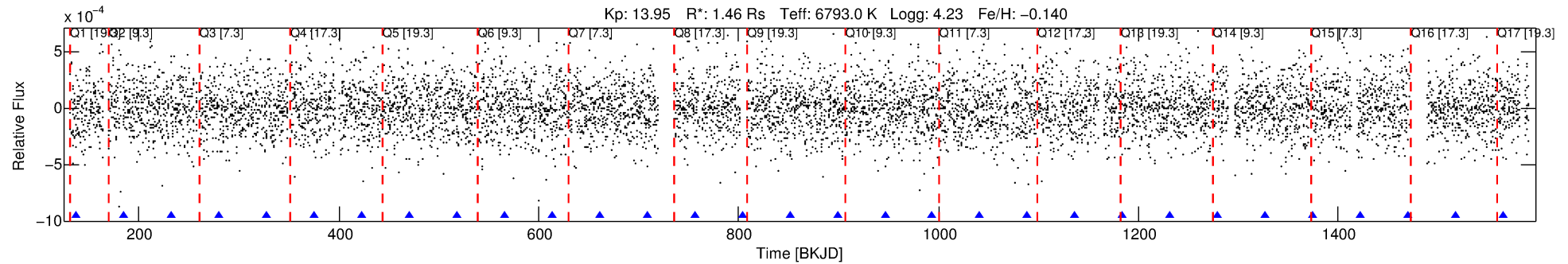
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008314392-02

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 2 of 9 Period: 47.589 d



## DV Fit Results:

Period = 47.58892 [0.00043] d  
Epoch = 137.3794 [0.0081] BKJD  
Rp/R\* = 0.0181 [0.0292]  
a/R\* = 211.62 [1923.16]  
b = 0.38 [20.06]  
Seff = 51.45 [20.05]  
Teq = 683 [67] K  
Rp = 2.89 [4.74] Re  
a = 0.2811 [0.0730] AU  
Ag = 816.12 [2674.70] [0.30σ]  
Teffp = 5643 [4601] K [1.08σ]

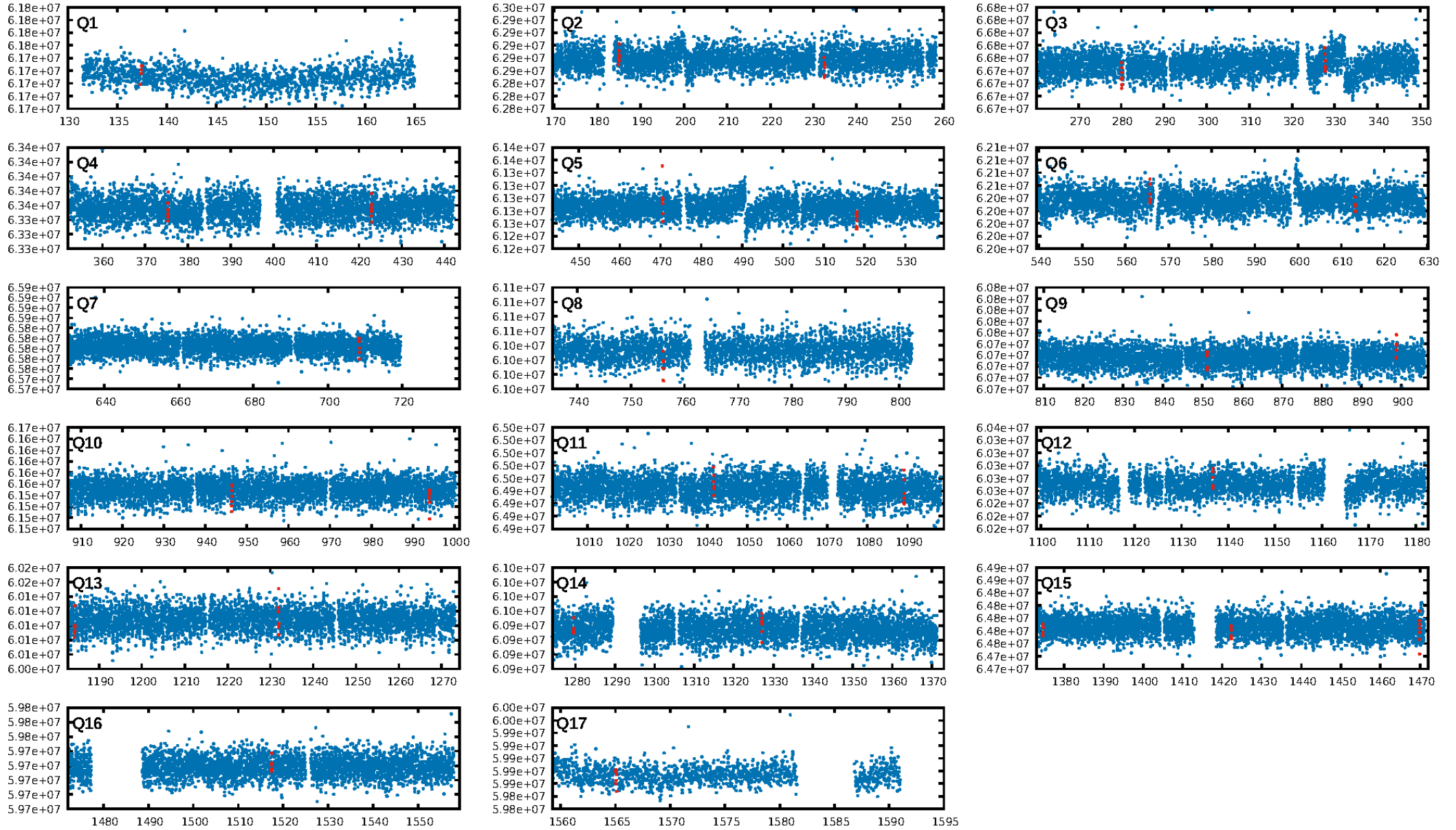
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [47.19σ]  
LongPeriod-sig: 100.0% [15.08σ]  
ModelChiSquare2-sig: 19.7%  
ModelChiSquareGof-sig: 98.0%  
**Bootstrap-pfa: 3.90e-11**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -0.4419  
Centroid-sig: 18.8%  
Centroid-so: 0.809 arcsec [1.31σ]  
OotOffset-rm: 2.227 arcsec [2.69σ]  
KicOffset-rm: 2.160 arcsec [2.68σ]  
OotOffset-st: 1/3/2/3 [9]  
KicOffset-st: 1/3/2/3 [9]  
DiffImageQuality-fgm: 0.22 [2/9]  
DiffImageOverlap-fno: 0.24 [4/17]

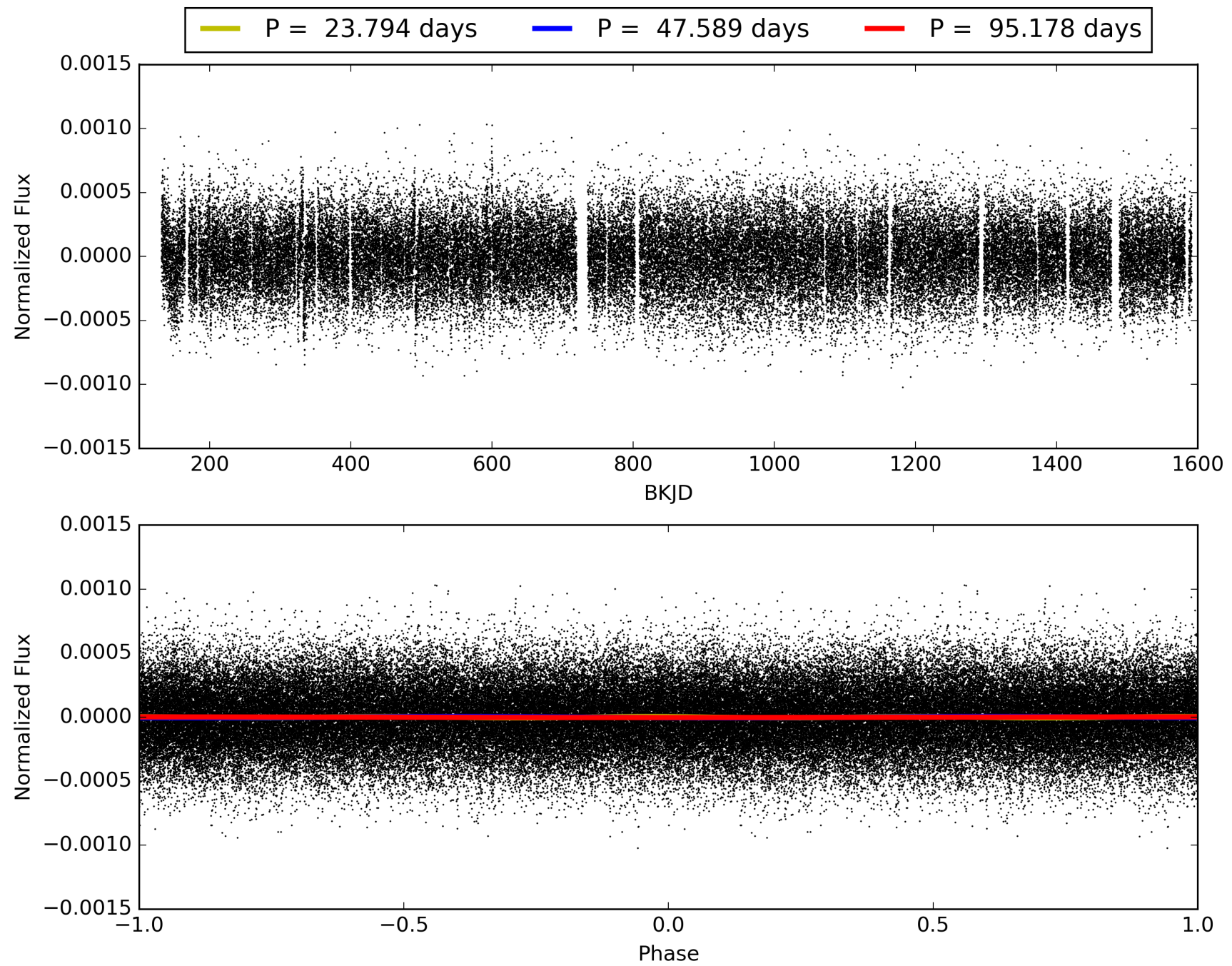
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:05 Z

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

# TCE 008314392-02, PDC Light Curves

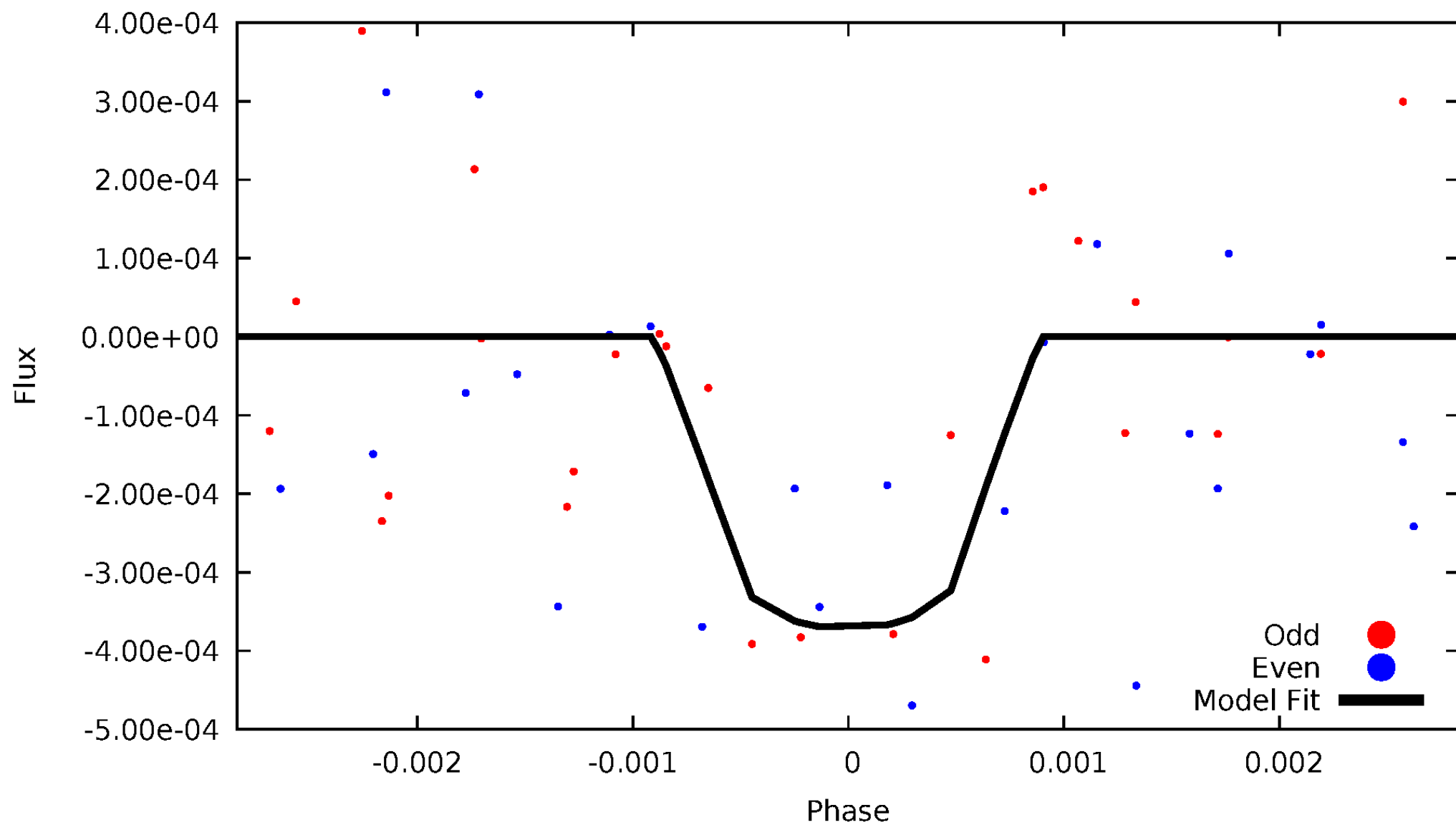


TCE 008314392-02



# DV Odd/Even

TCE 008314392-02





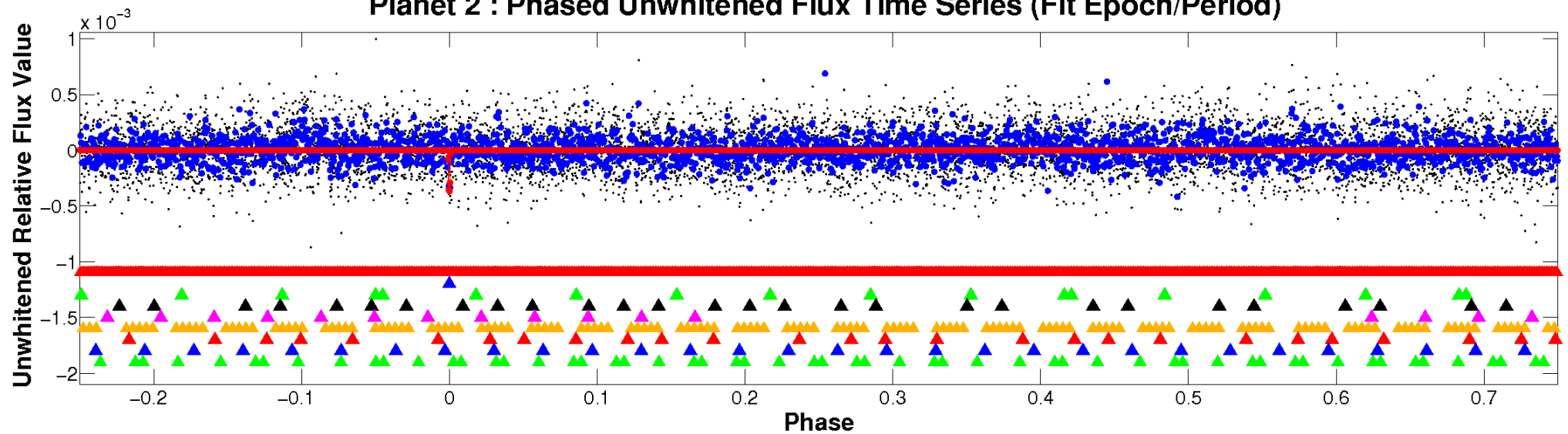


ALT Odd/Even

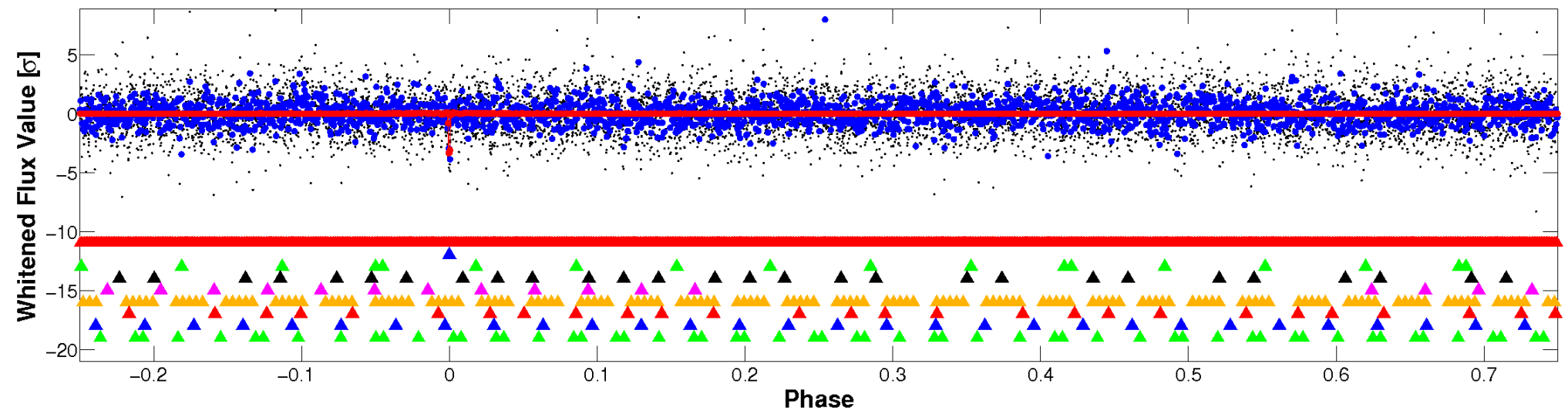
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

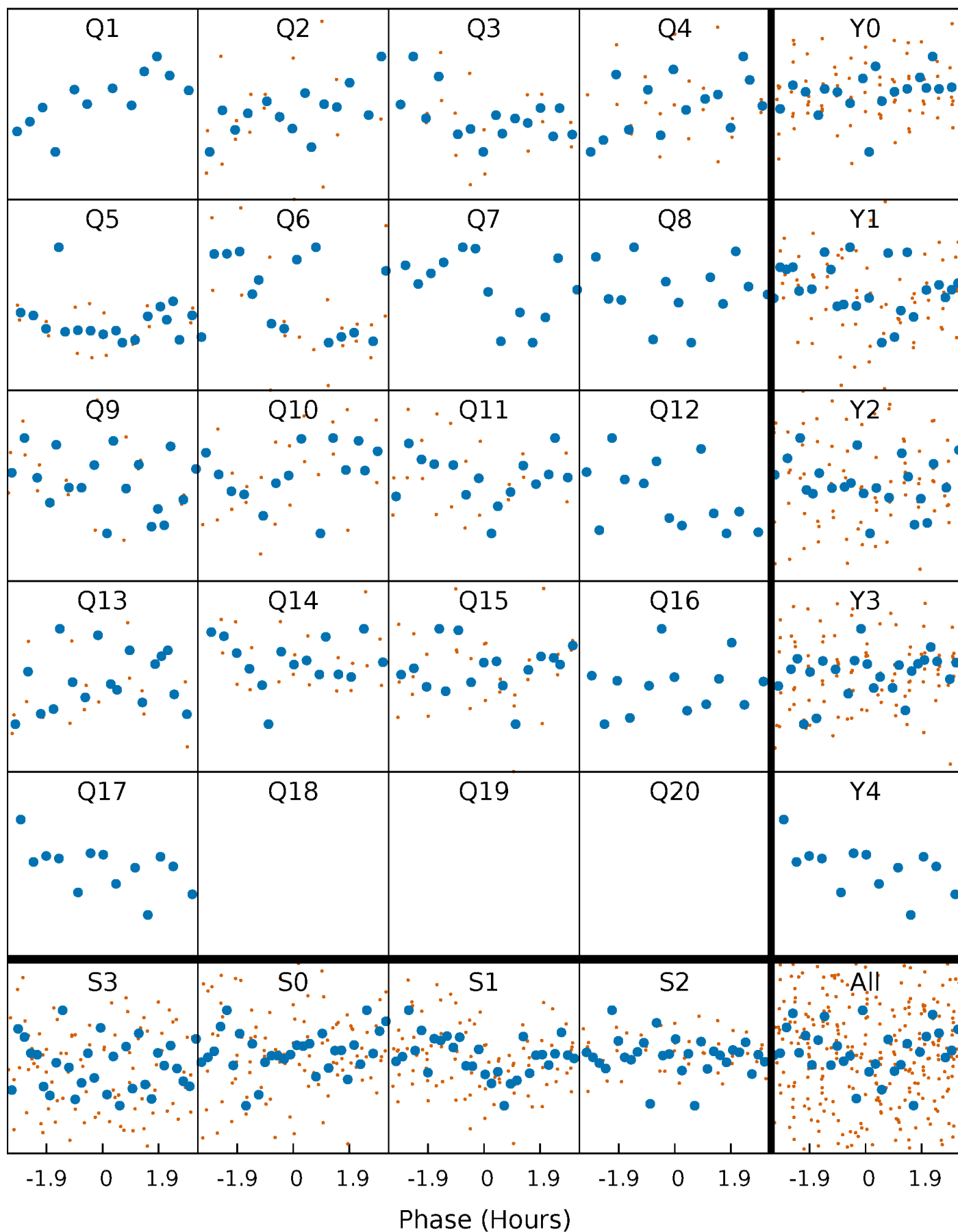


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



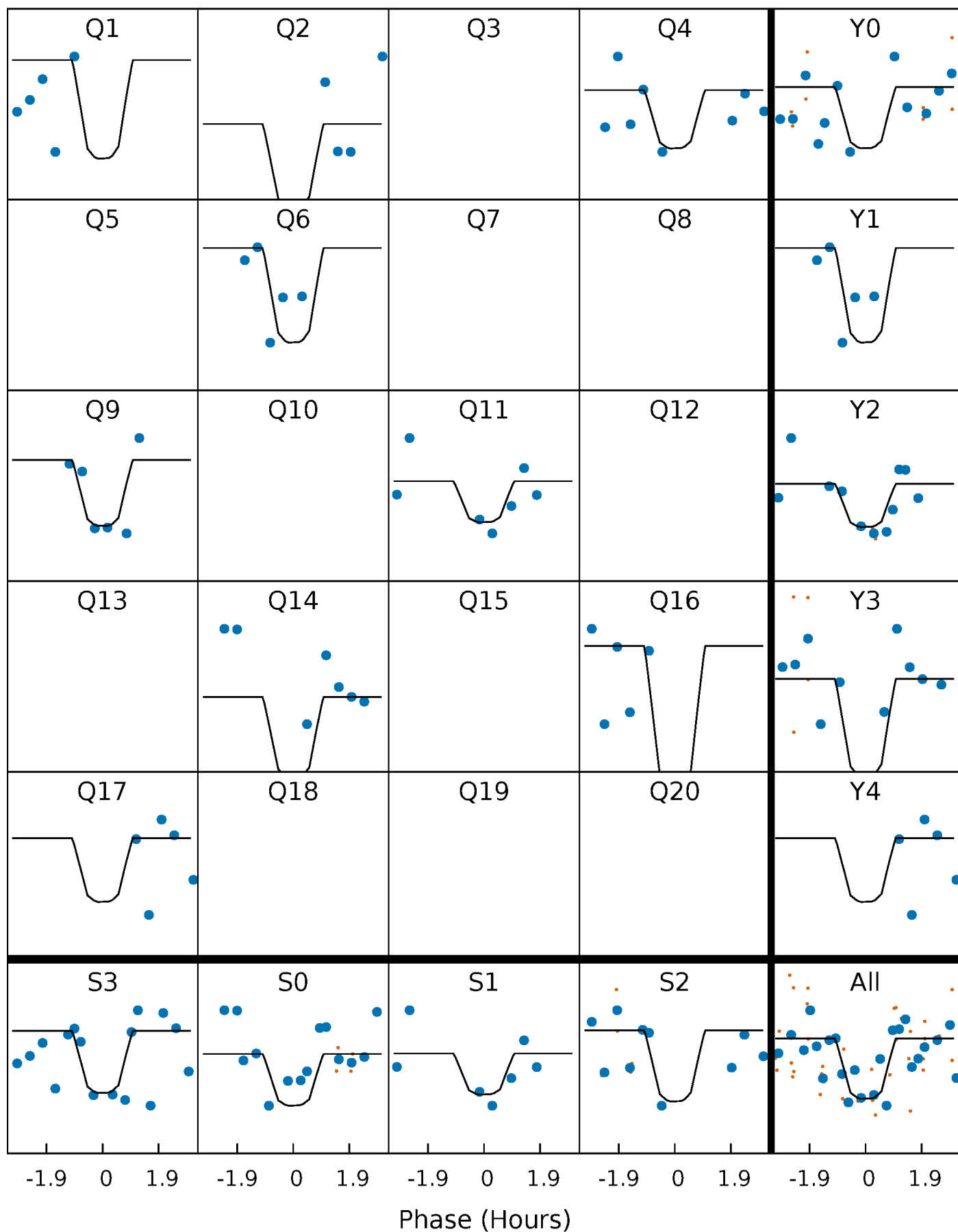
# PDC Quarter-Phased Transit Curves

TCE 008314392-02   P= 47.588924 Days    $T_0=137.379401$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008314392-02 P= 47.588924 Days  $T_0=137.379401$  (BKJD)

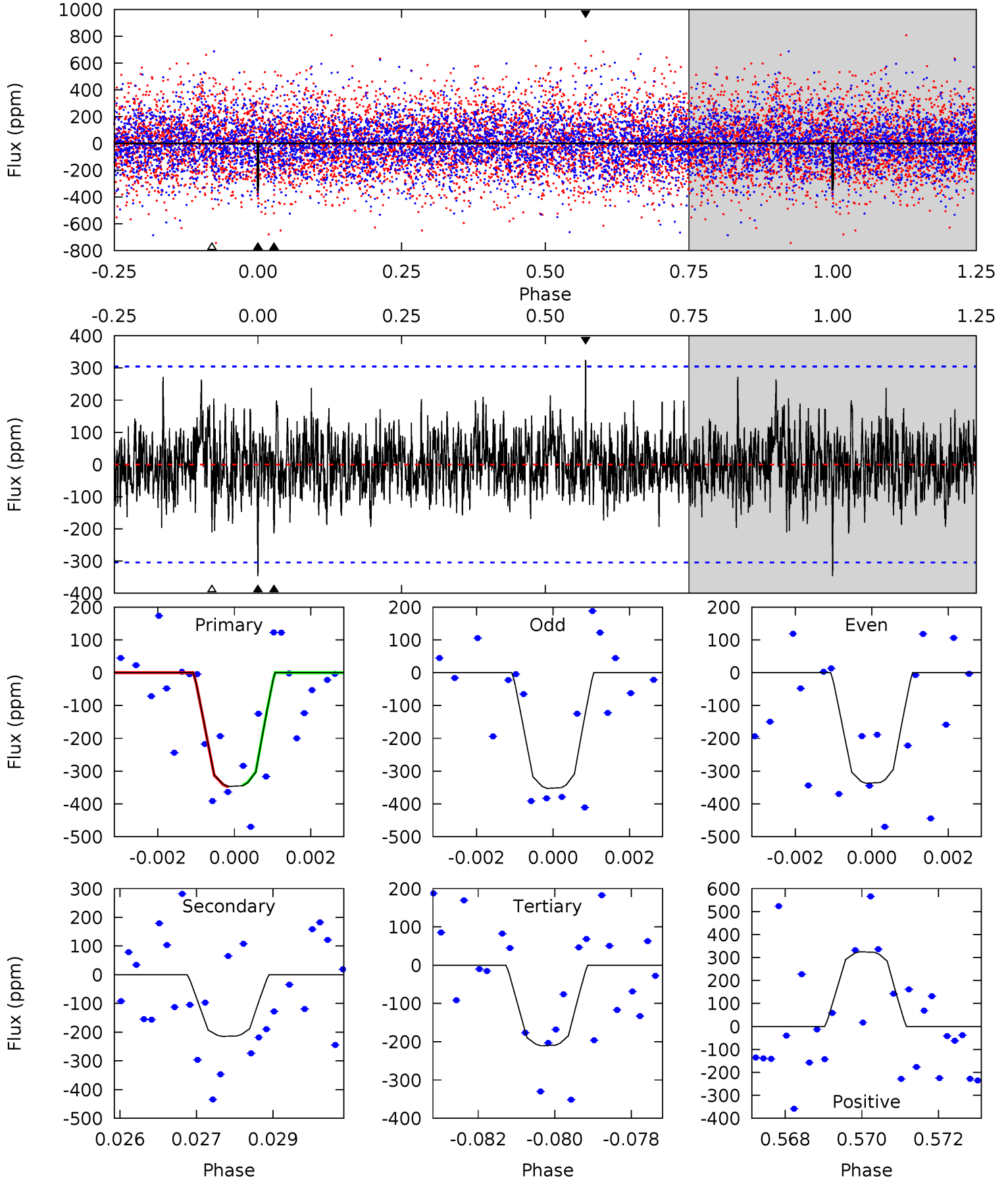


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008314392-02, P = 47.588924 Days, E = 89.790477 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
6.10	3.77	3.70	5.72	5.36	3.14	1.25	2.40	0.39	0.07	-1.94	0.14	0.91	0.48	0.04



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-215 \pm 57$	$4.51^{+4.10}_{-2.87}$	$959^{+69}_{-58}$	$4993^{+3572}_{-1136}$	$448^{+3132}_{-325}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{max}$  = 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

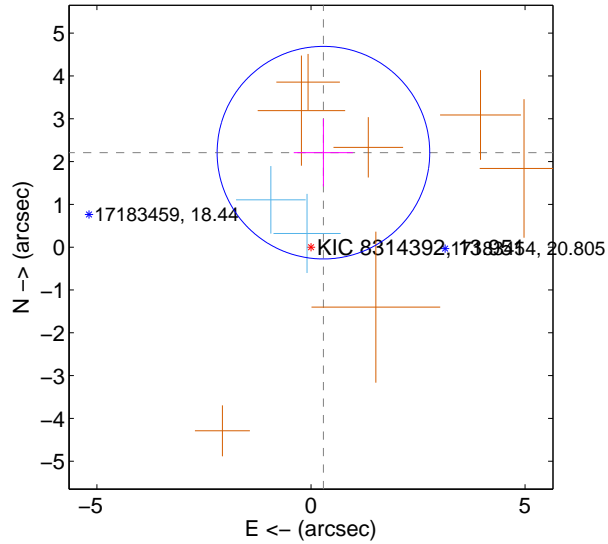
Supplemental centroid analysis for 008314392-02. Kepler magnitude: 13.95. Transit SNR 10.10

There are 2 quarters with good PRF difference image offsets

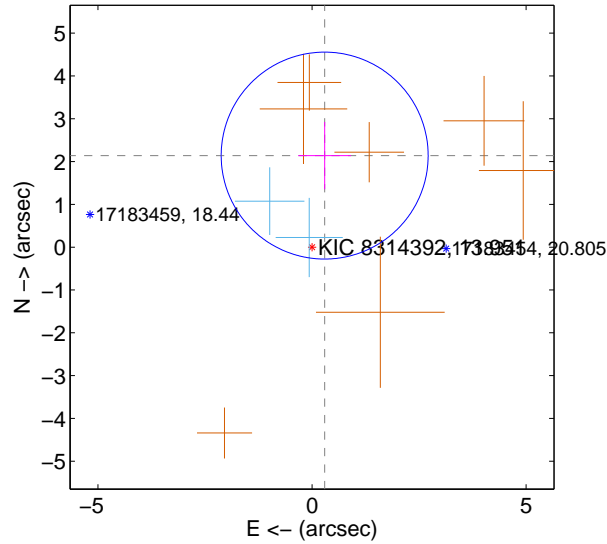
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.227 \pm 0.828$	2.69	$-0.291 \pm 0.693$	$2.208 \pm 0.789$
PRF-fit source offset from KIC position	$2.160 \pm 0.806$	2.68	$-0.295 \pm 0.616$	$2.139 \pm 0.787$
photometric centroid source offset	$0.81 \pm 0.62$	1.31	$-0.69 \pm 0.61$	$0.42 \pm 0.63$

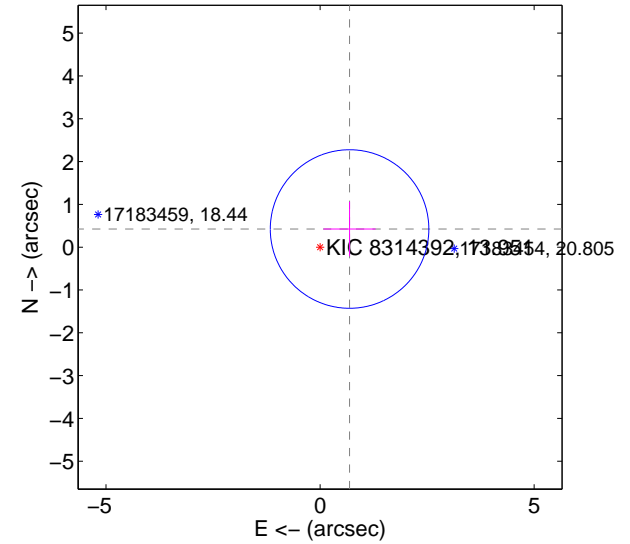
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

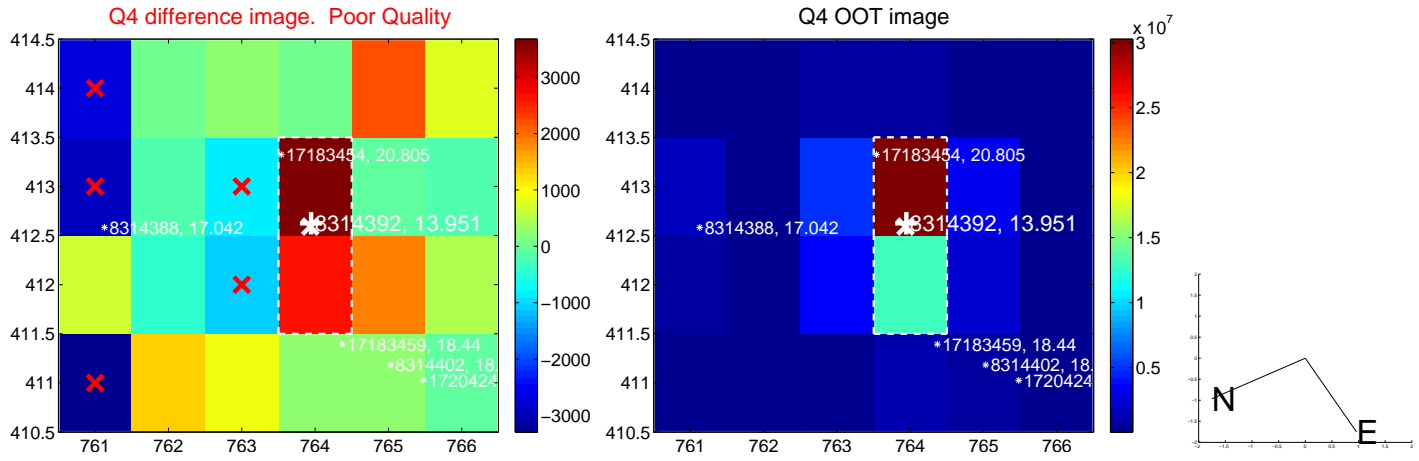
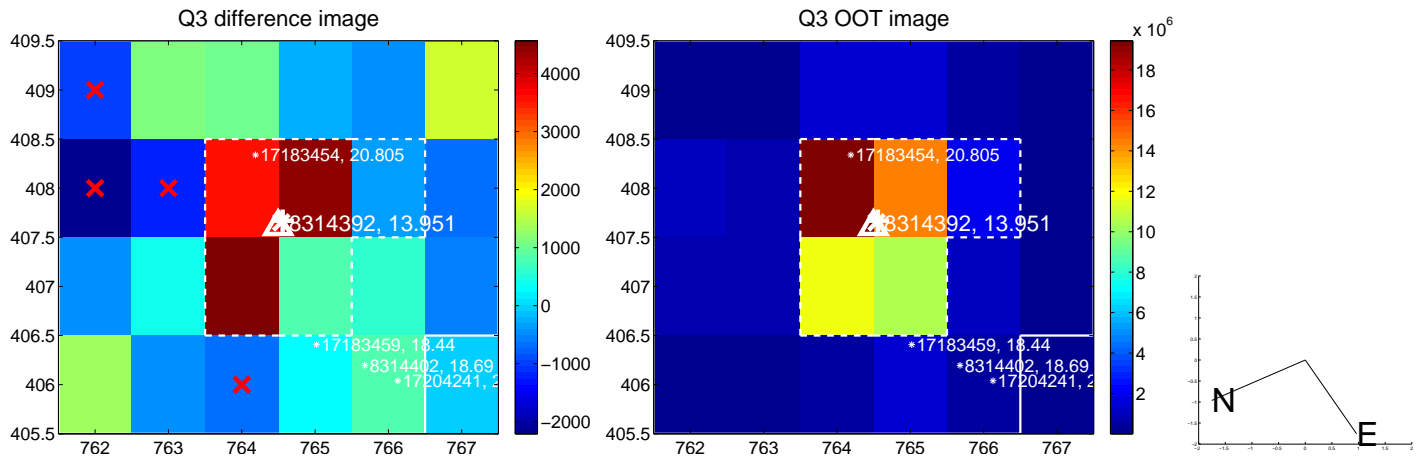
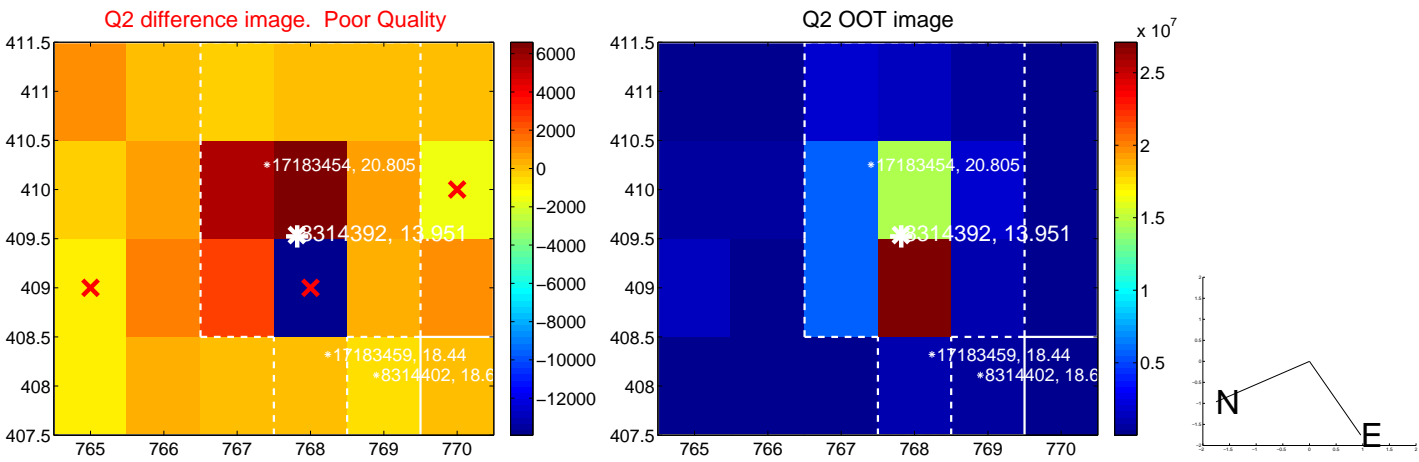
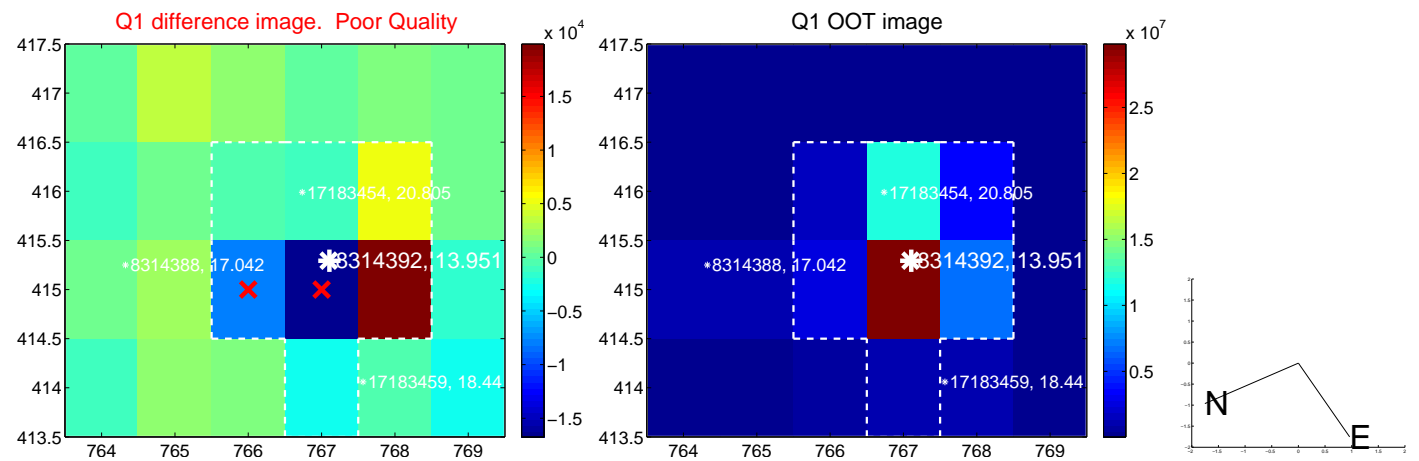


offset from photometric centroids

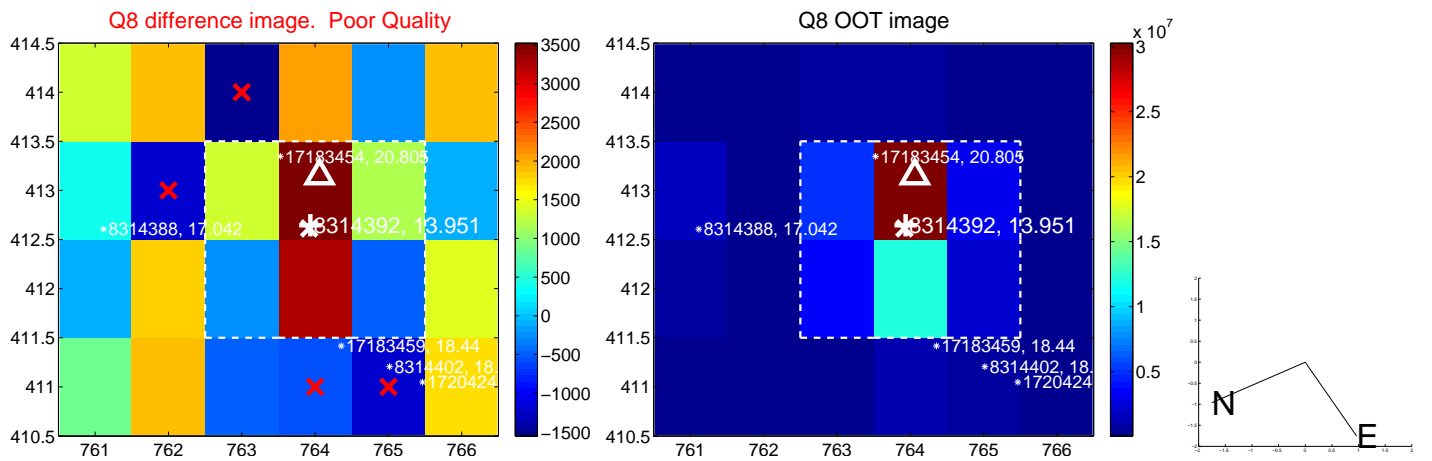
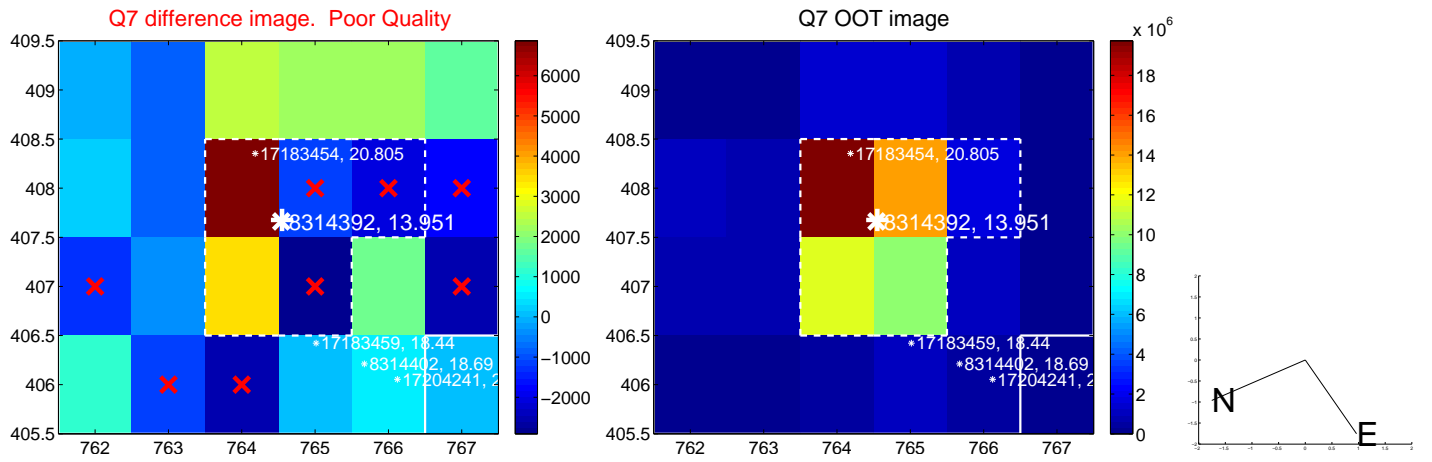
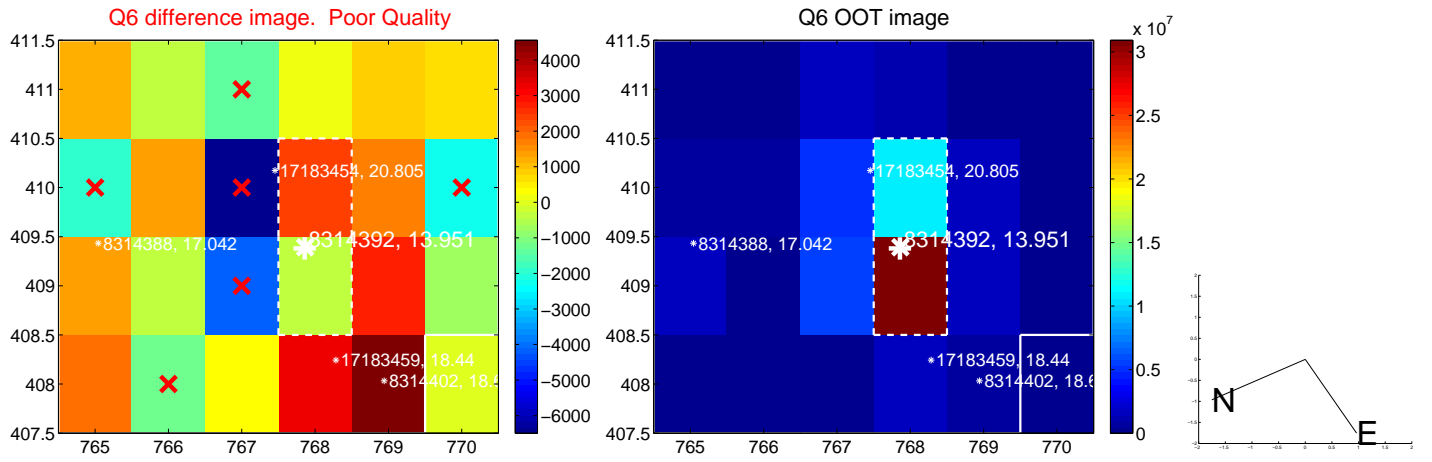
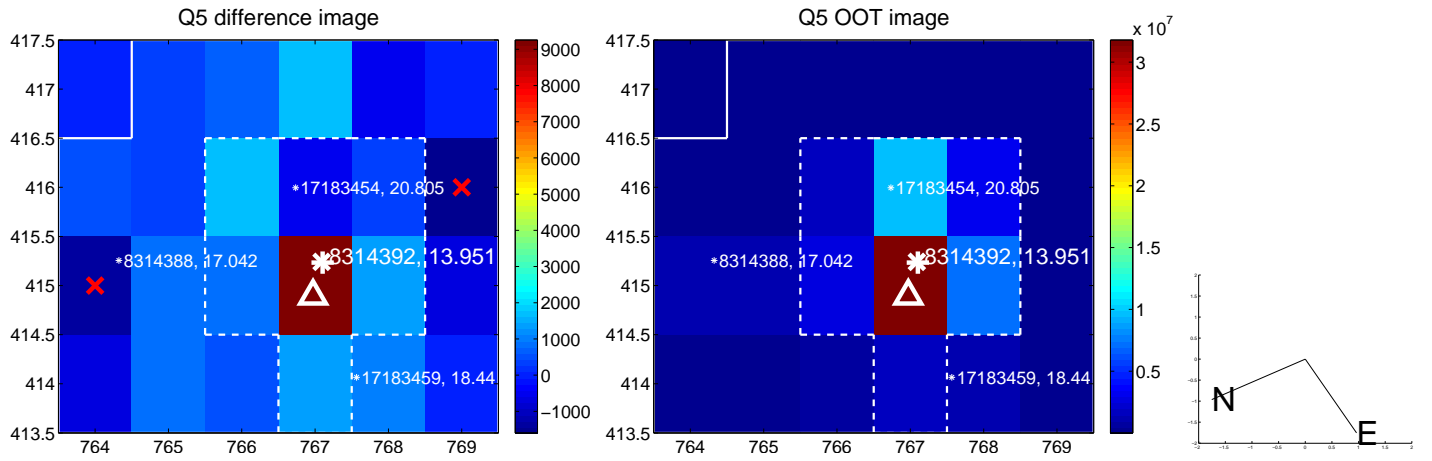


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

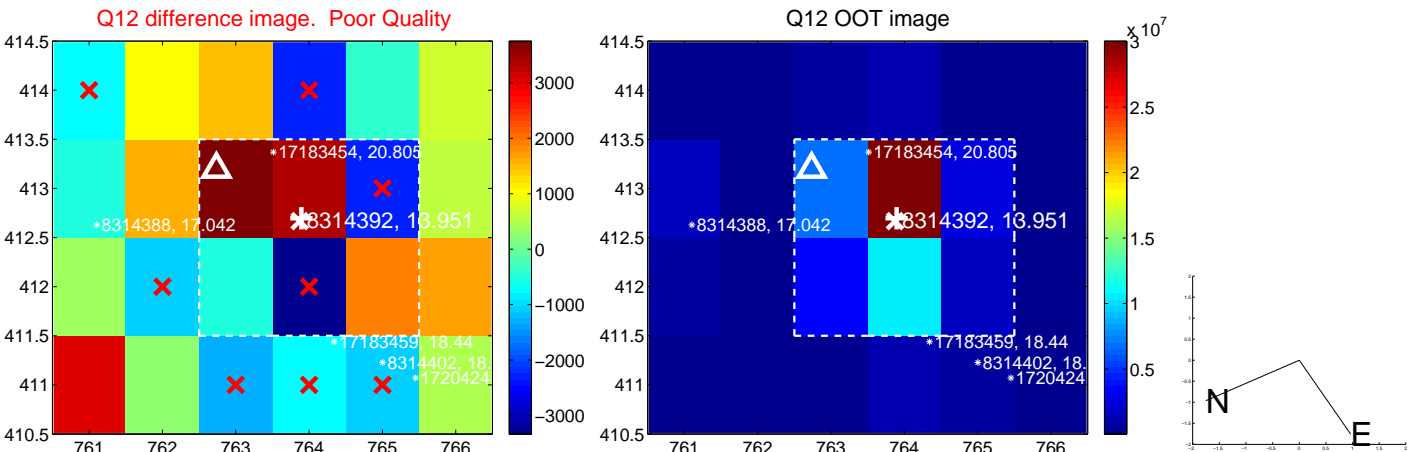
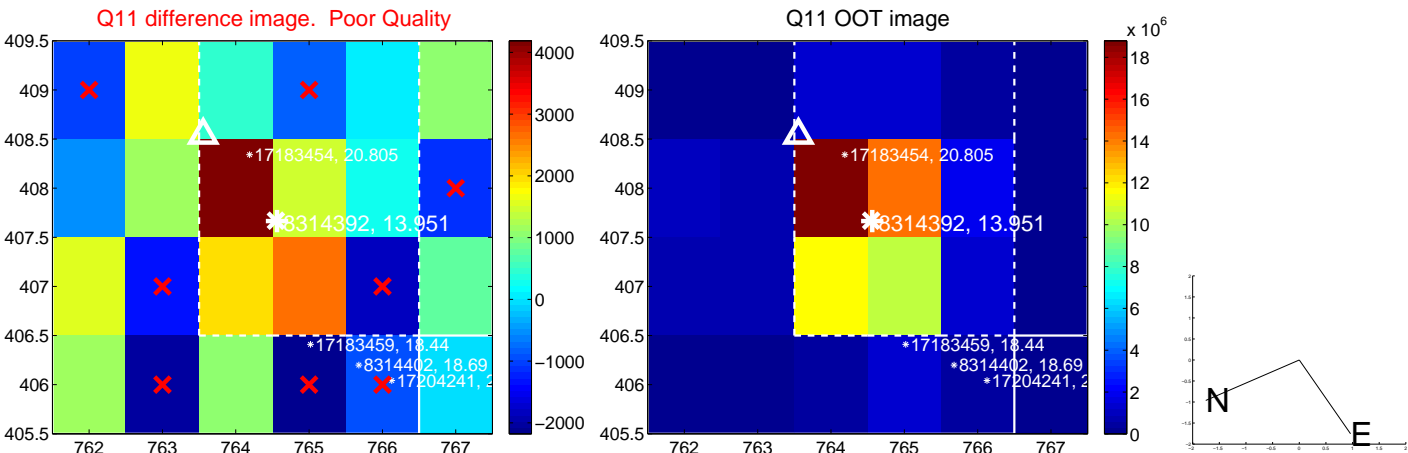
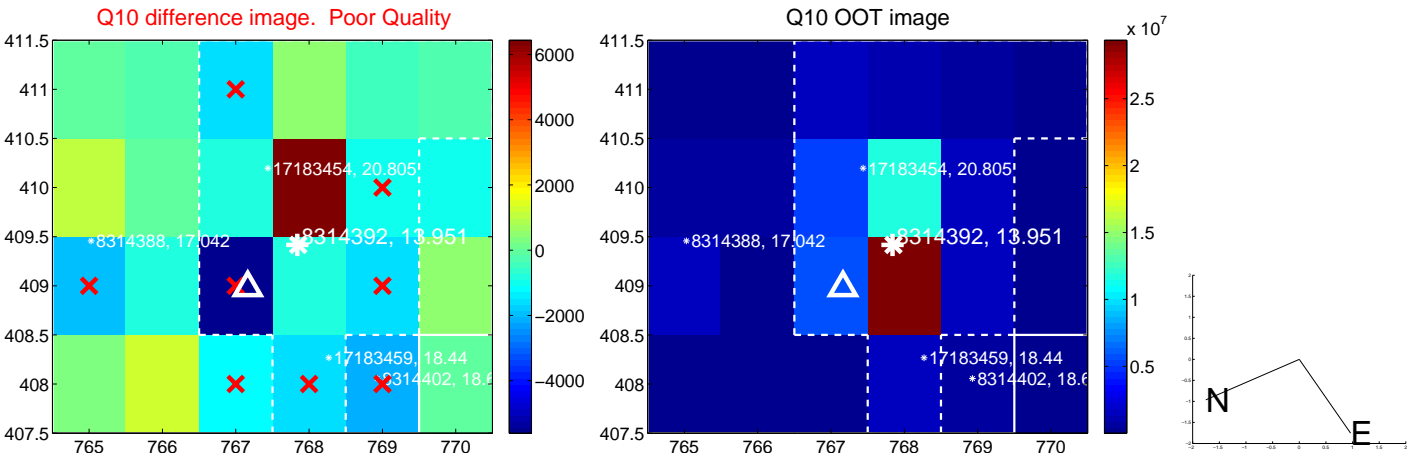
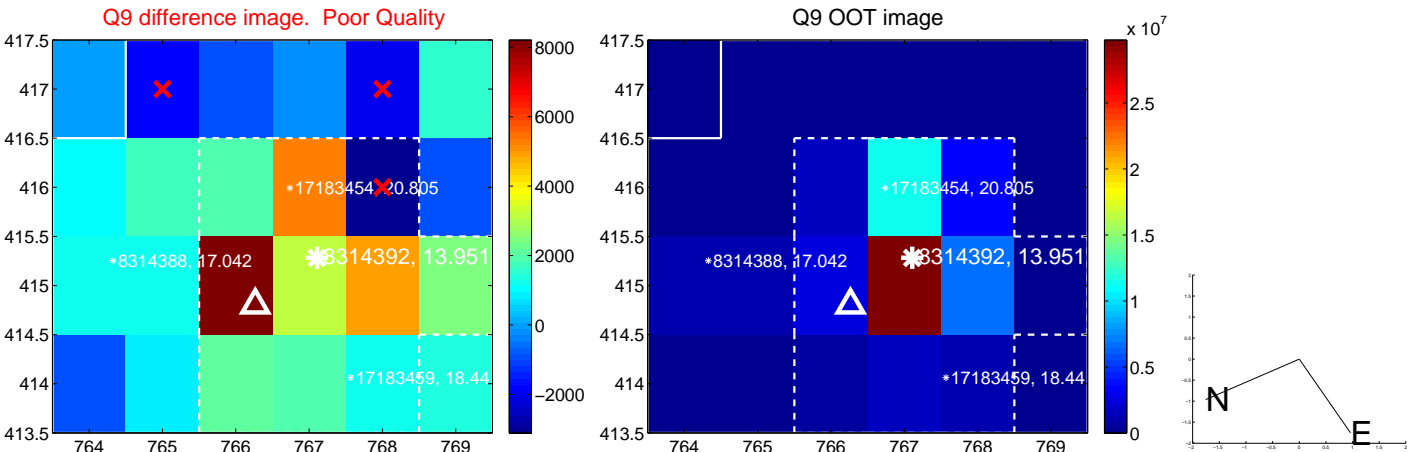
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

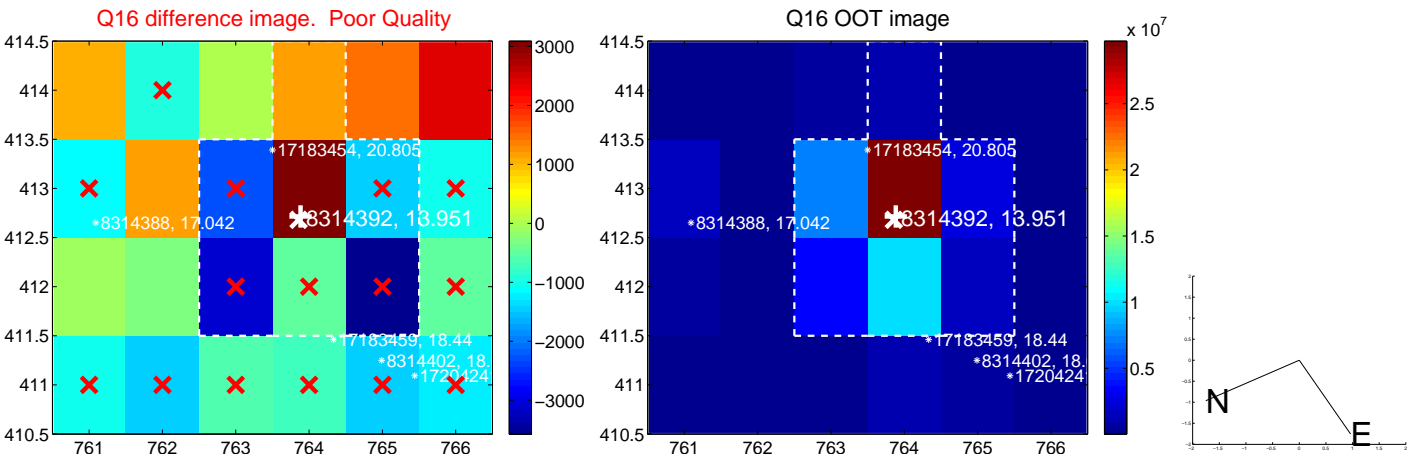
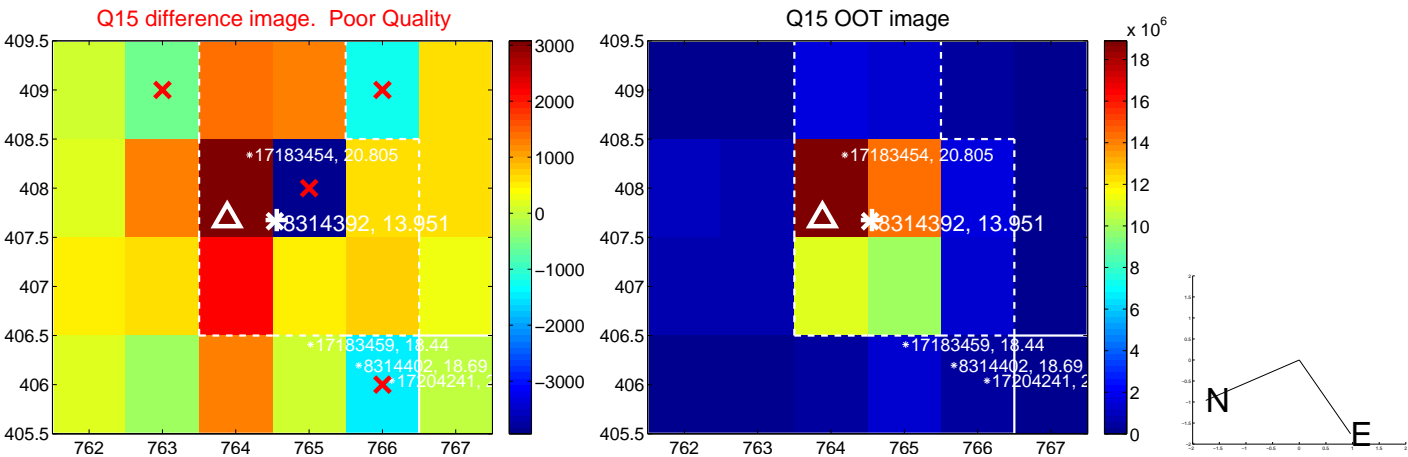
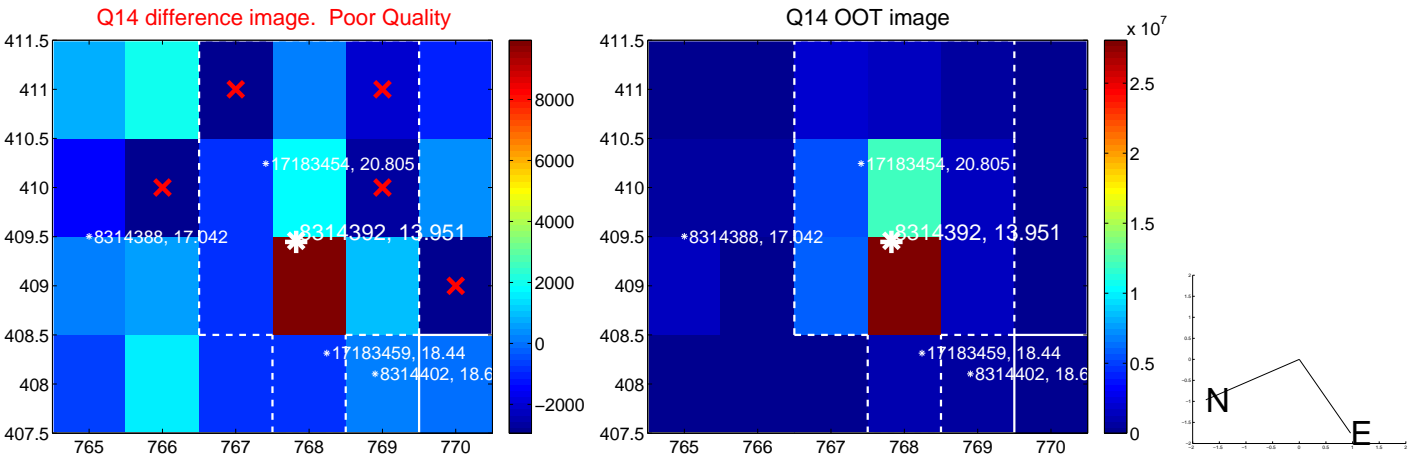
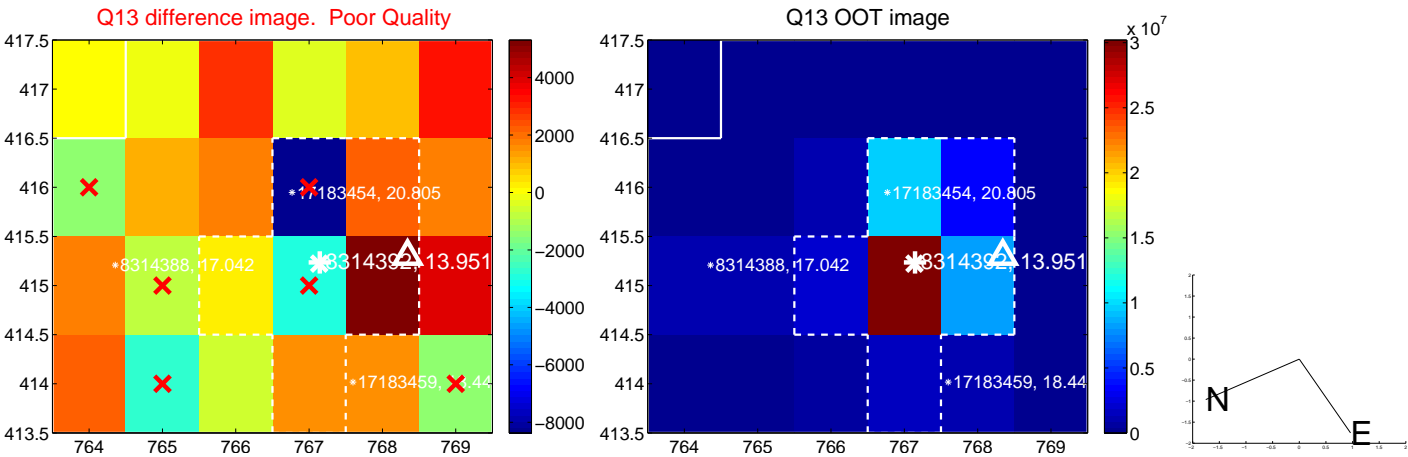


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

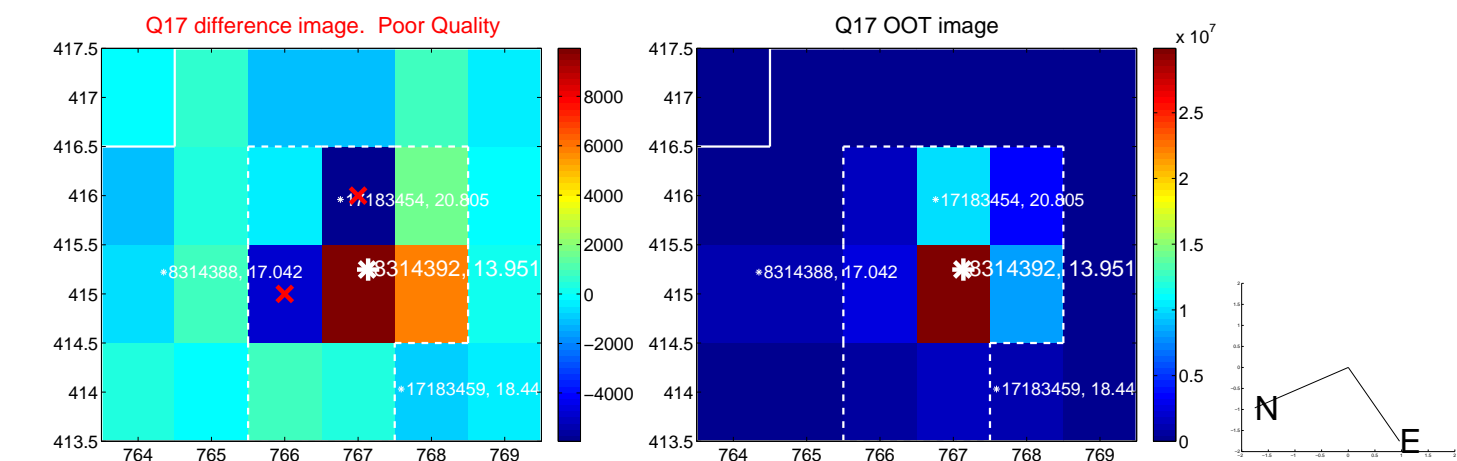




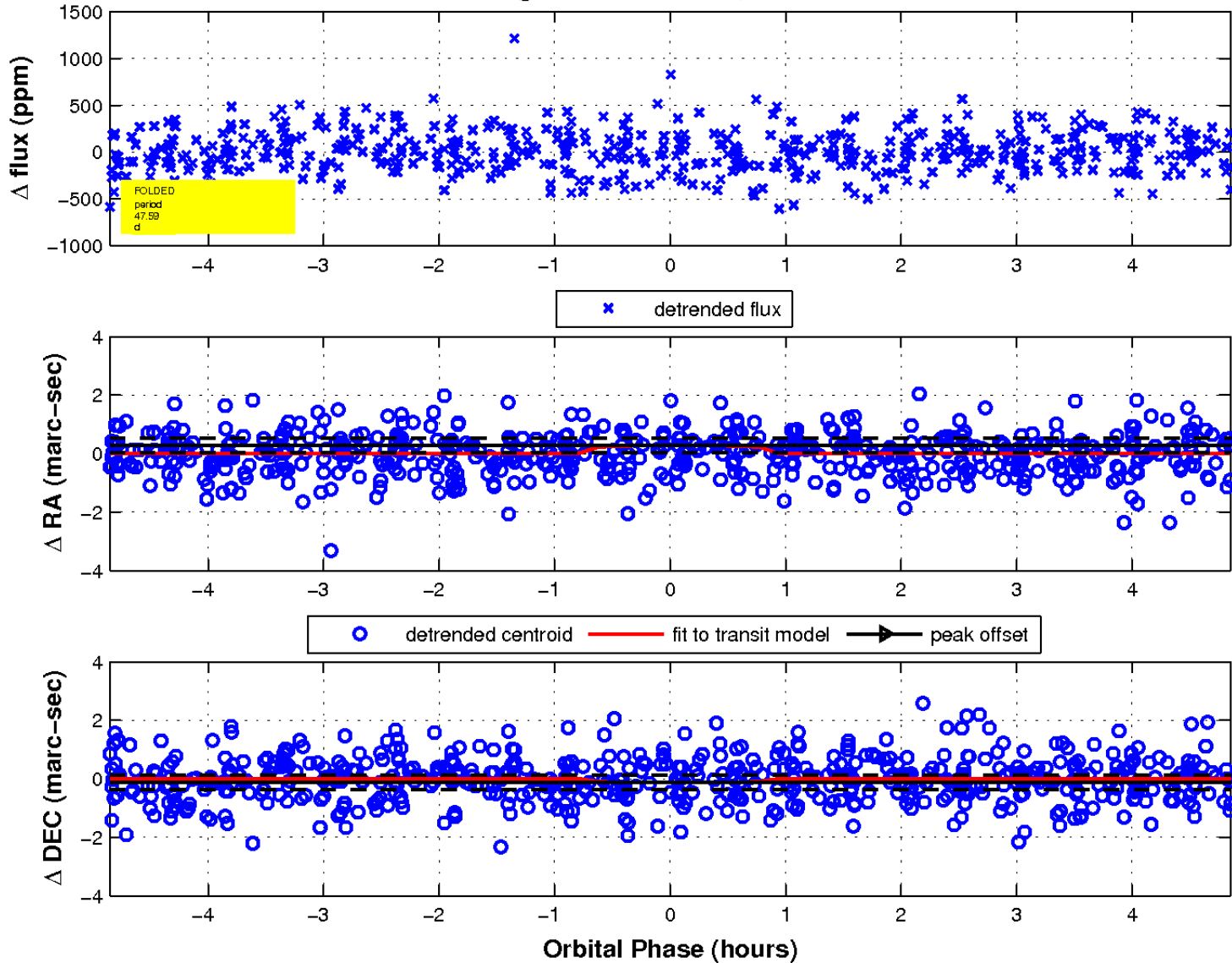
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

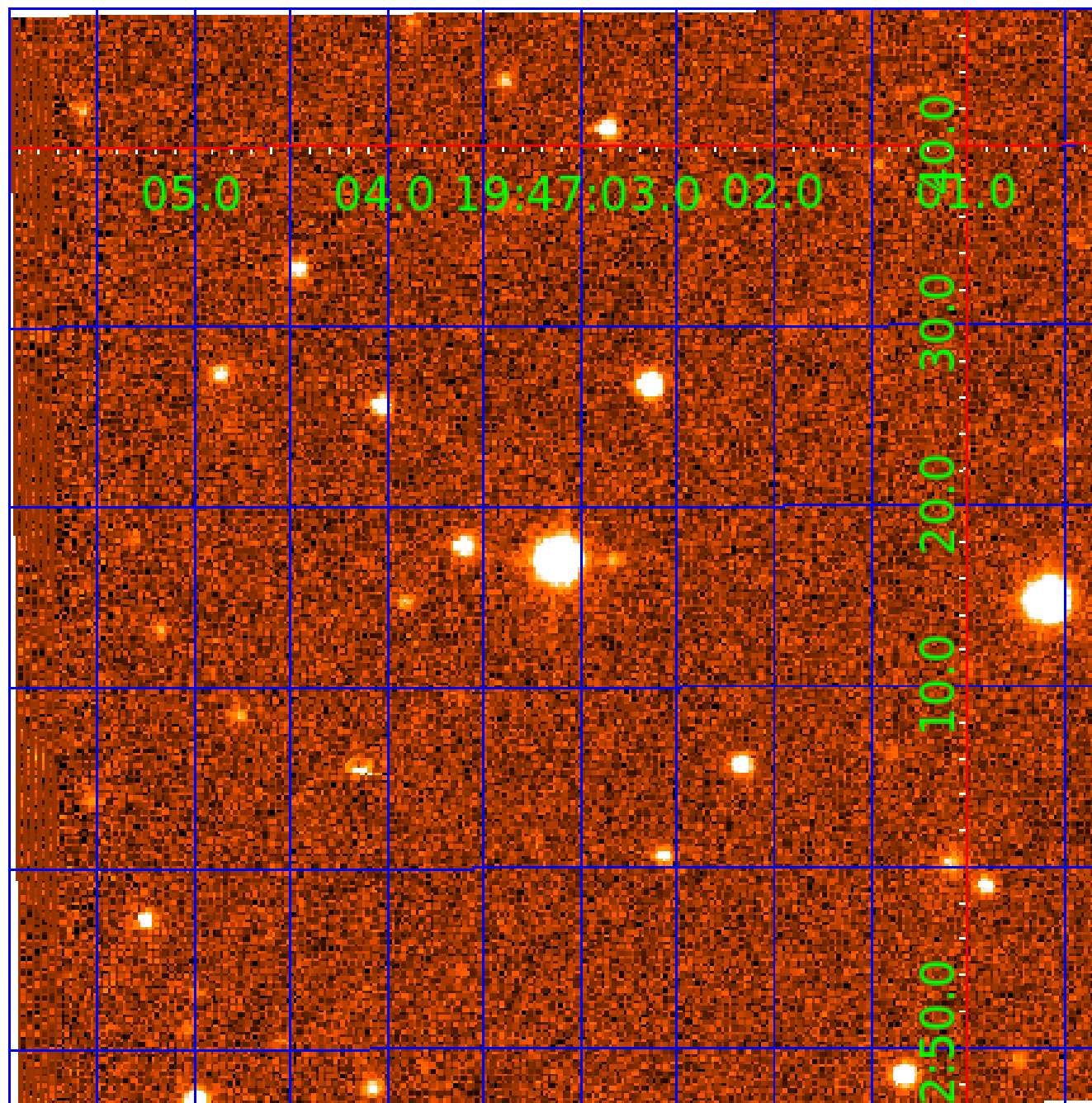


### fluxWeightedCentroids, Planet 2 of 9



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

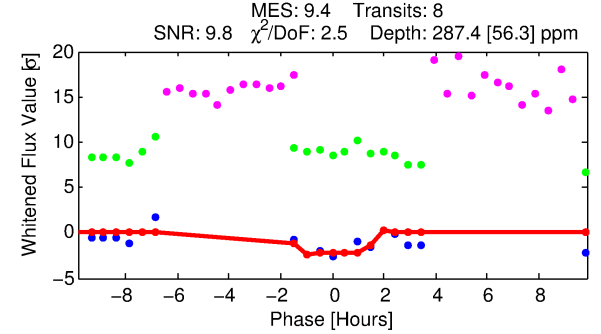
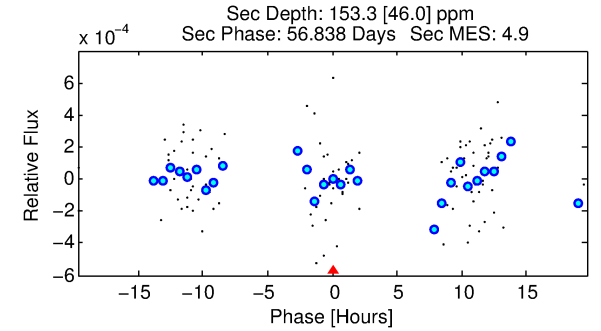
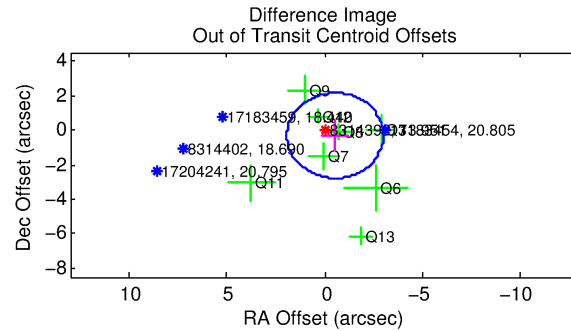
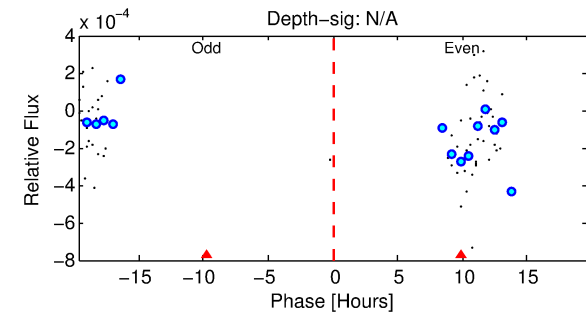
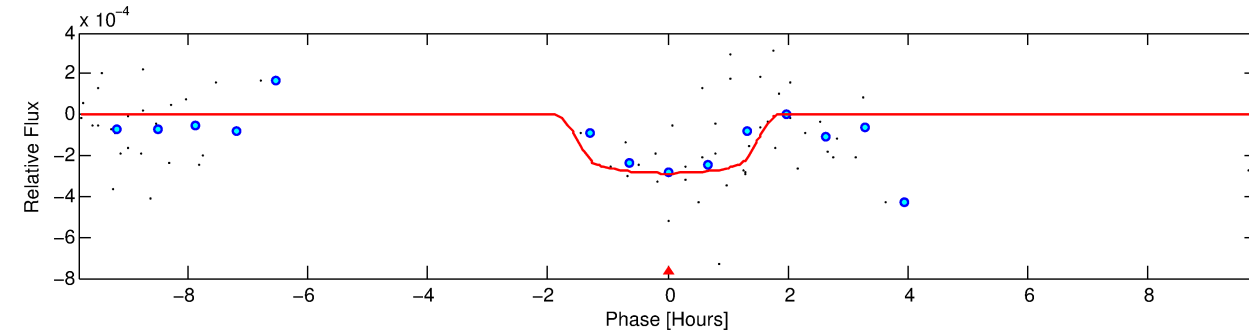
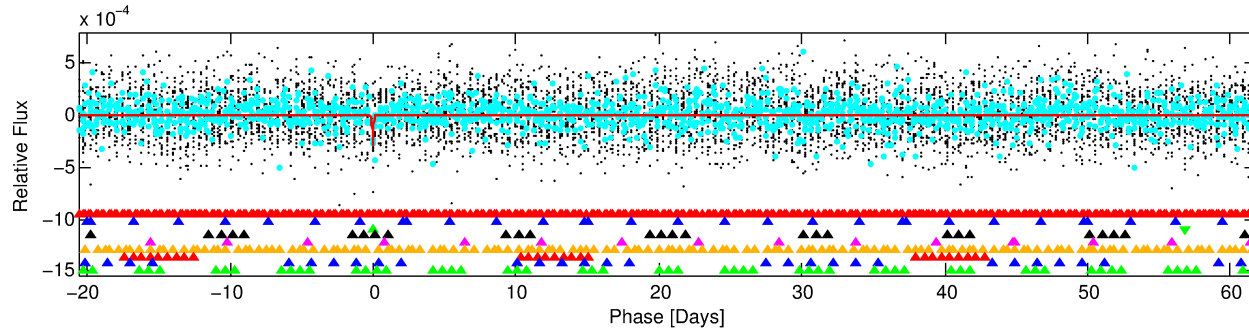
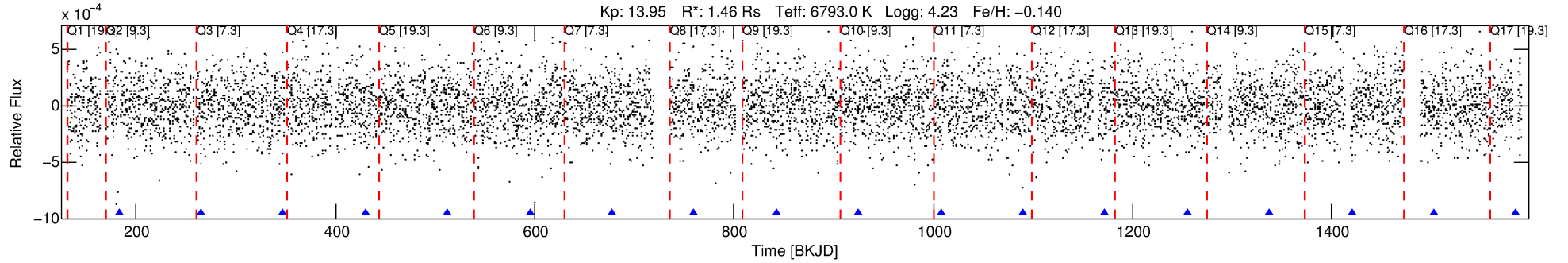
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008314392-03

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 3 of 9 Period: 82.472 d



## DV Fit Results:

Period = 82.47223 [0.00226] d  
Epoch = 182.8197 [0.0148] BKJD  
Rp/R\* = 0.0175 [0.0127]  
a/R\* = 110.12 [457.50]  
b = 0.84 [1.46]  
Seff = 24.72 [9.63]  
Teq = 569 [55] K  
Rp = 2.78 [2.22] Re  
a = 0.4056 [0.1053] AU  
Ag = 1794.29 [2740.78] [0.65σ]  
Teffp = 5721 [2135] K [2.41σ]

## DV Diagnostic Results:

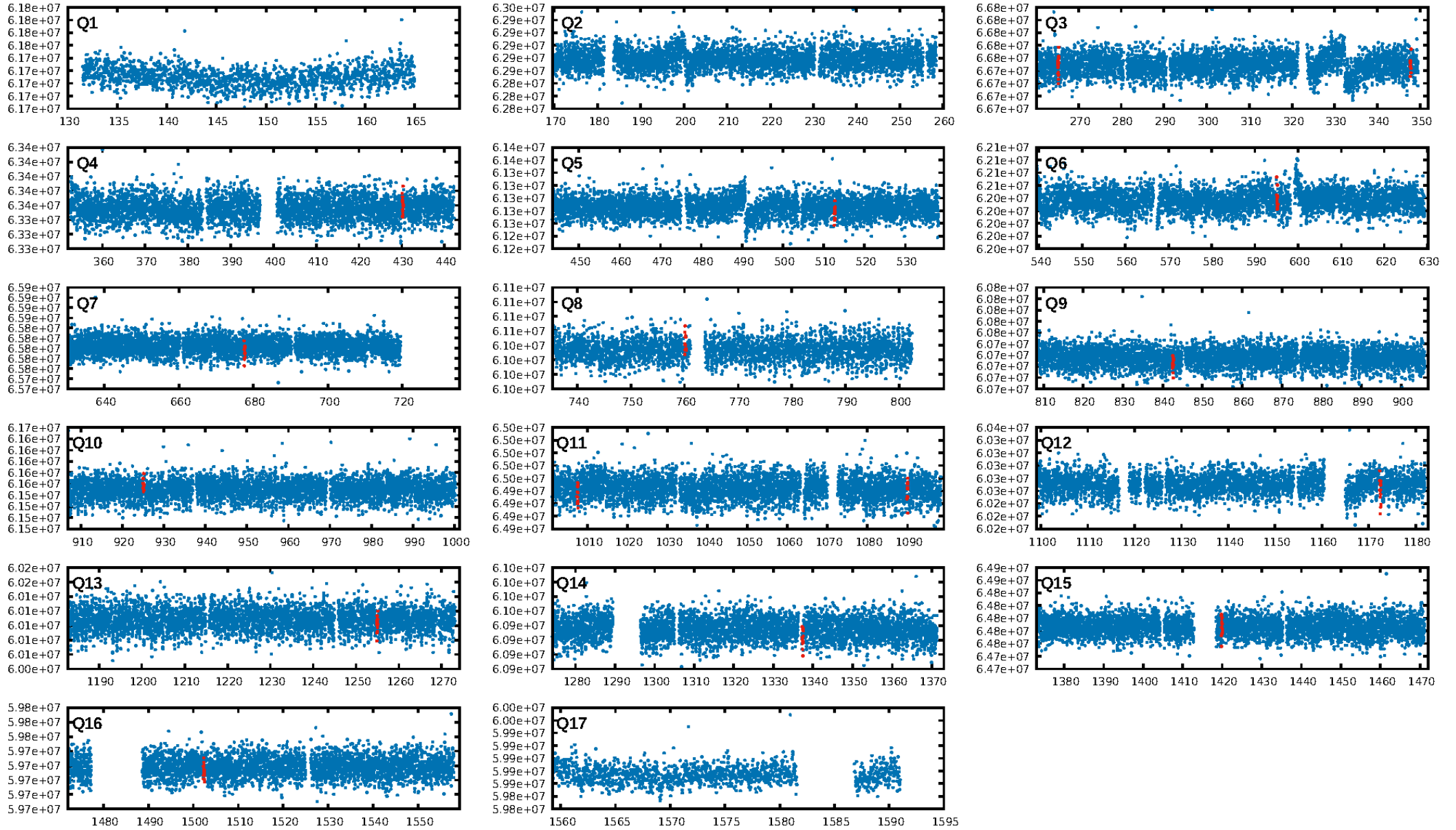
ShortPeriod-sig: 100.0% [181.34σ]  
LongPeriod-sig: 100.0% [70.56σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 90.0%  
Bootstrap-pfa: 1.29e-10  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: -0.5634  
Centroid-sig: 0.2%  
Centroid-so: 1.818 arcsec [2.28σ]  
OotOffset-rm: 0.616 arcsec [0.75σ]  
KicOffset-rm: 0.673 arcsec [0.80σ]  
OotOffset-st: 1/3/2/2 [8]  
KicOffset-st: 1/3/2/2 [8]  
DiffImageQuality-fgm: 0.38 [3/8]  
DiffImageOverlap-fno: 0.00 [0/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:09 Z

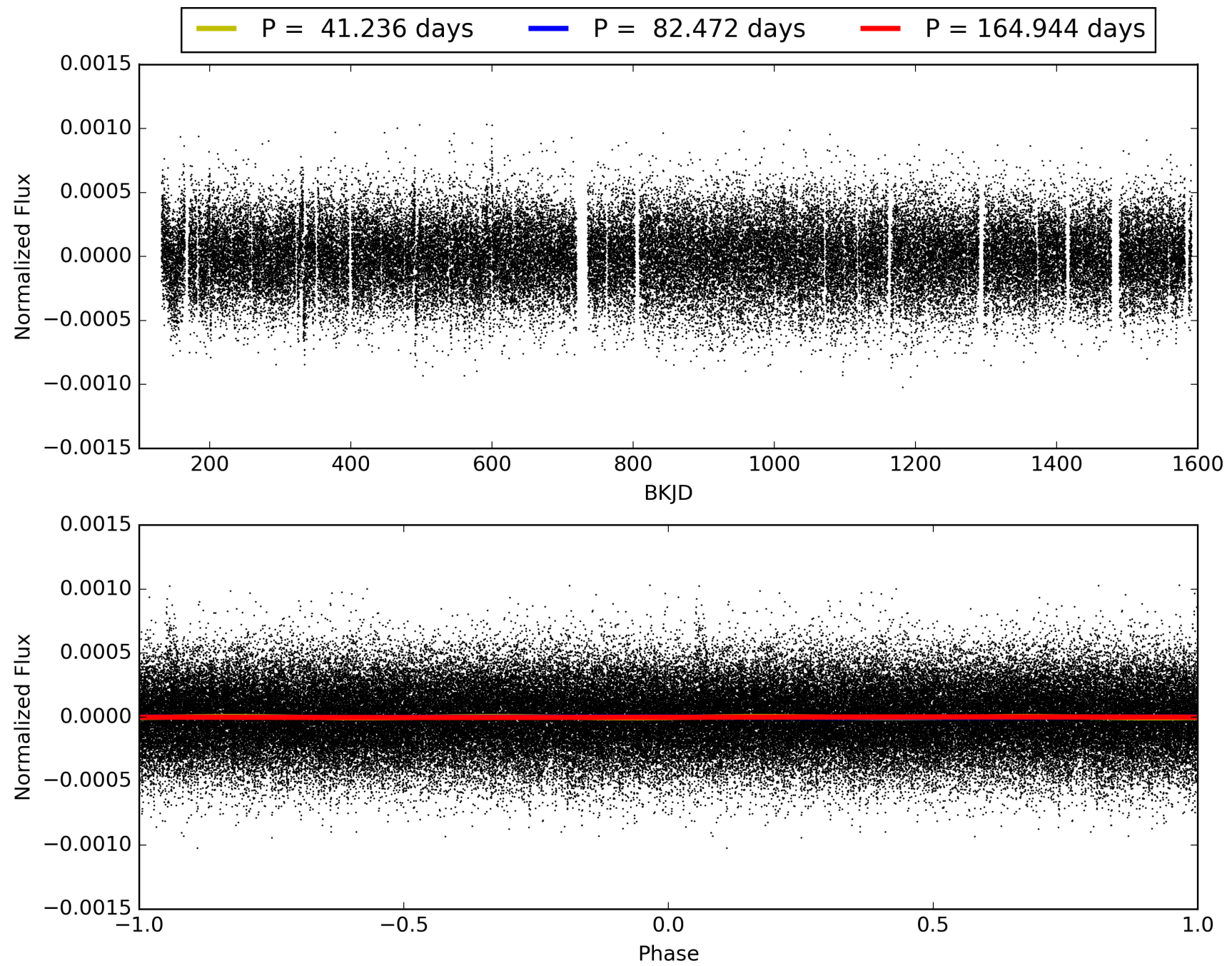
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008314392-03, PDC Light Curves

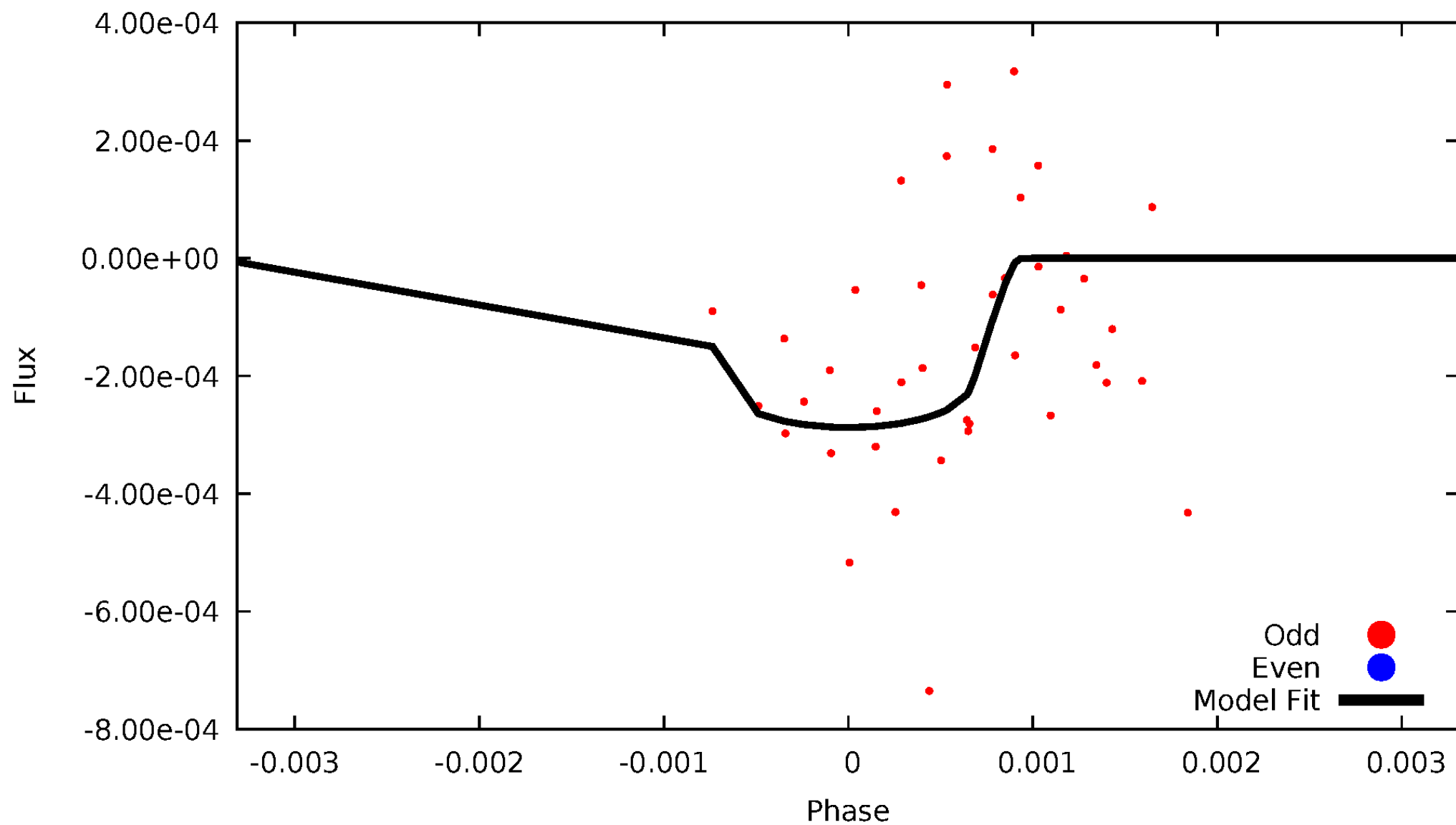


TCE 008314392-03



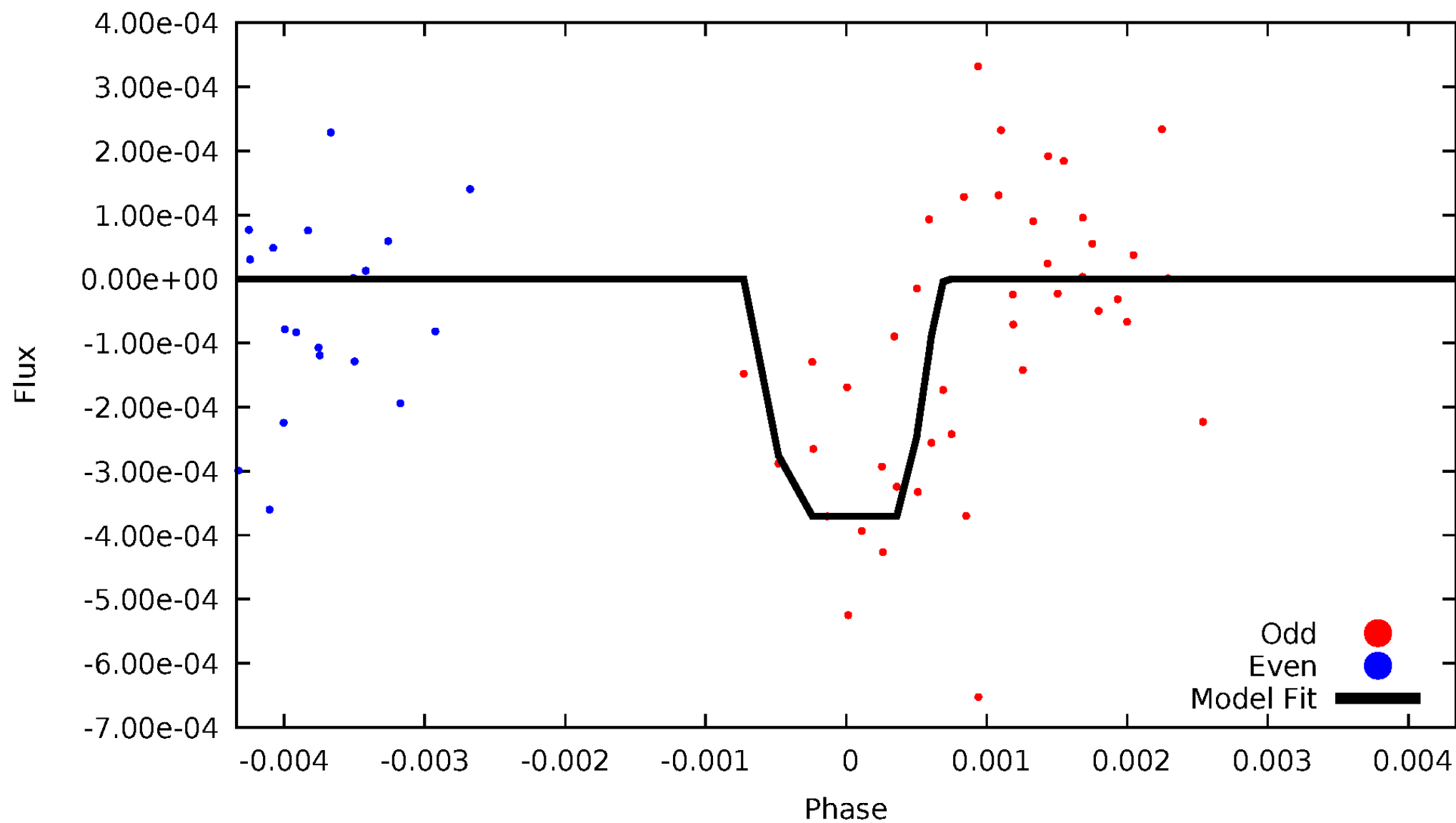
# DV Odd/Even

TCE 008314392-03



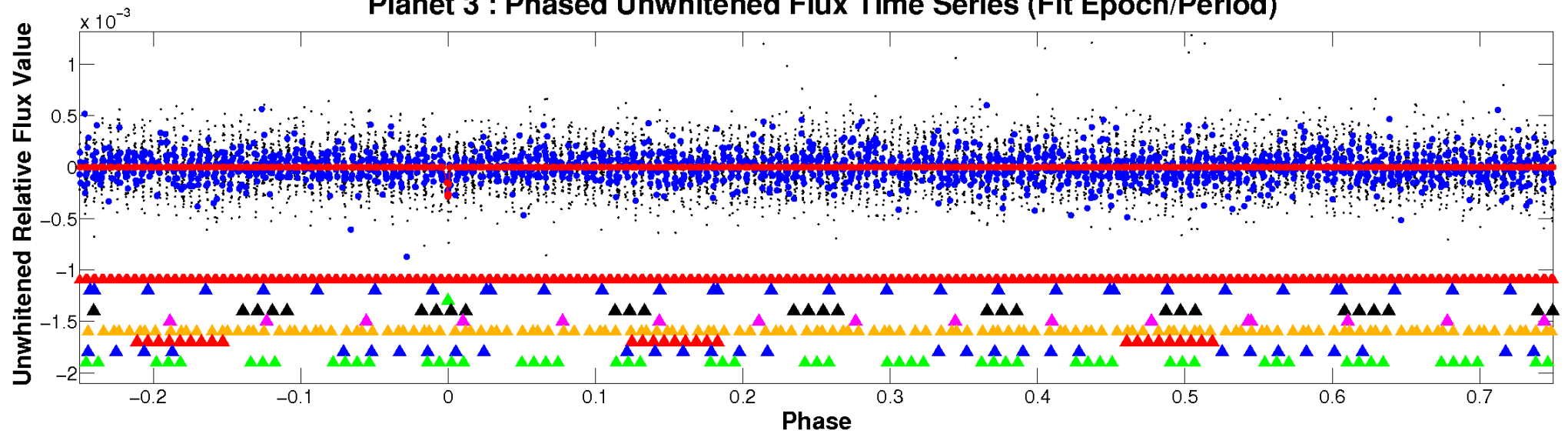
# ALT Odd/Even

TCE 008314392-03

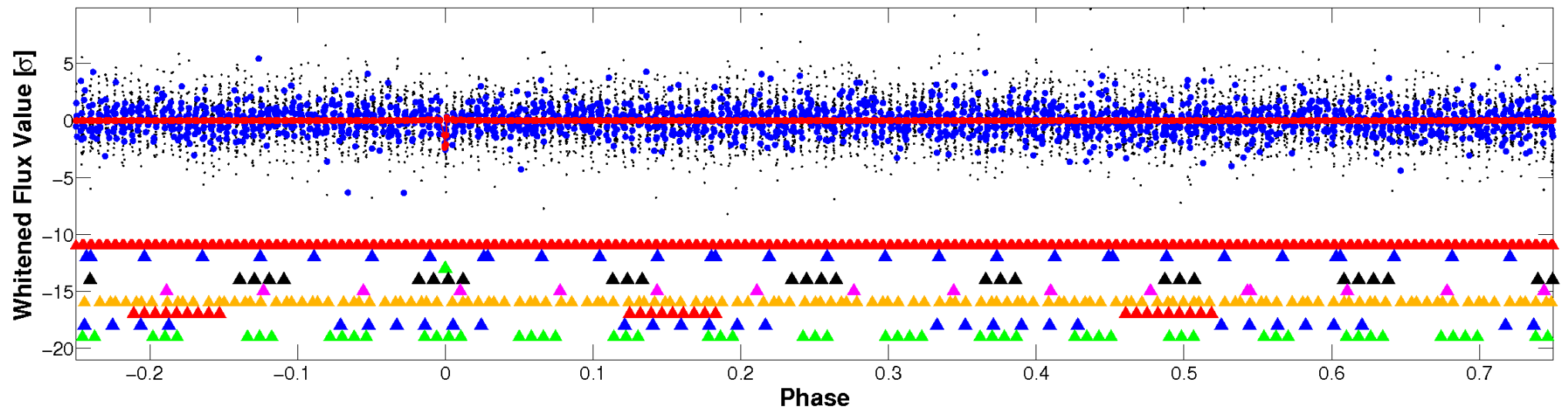


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

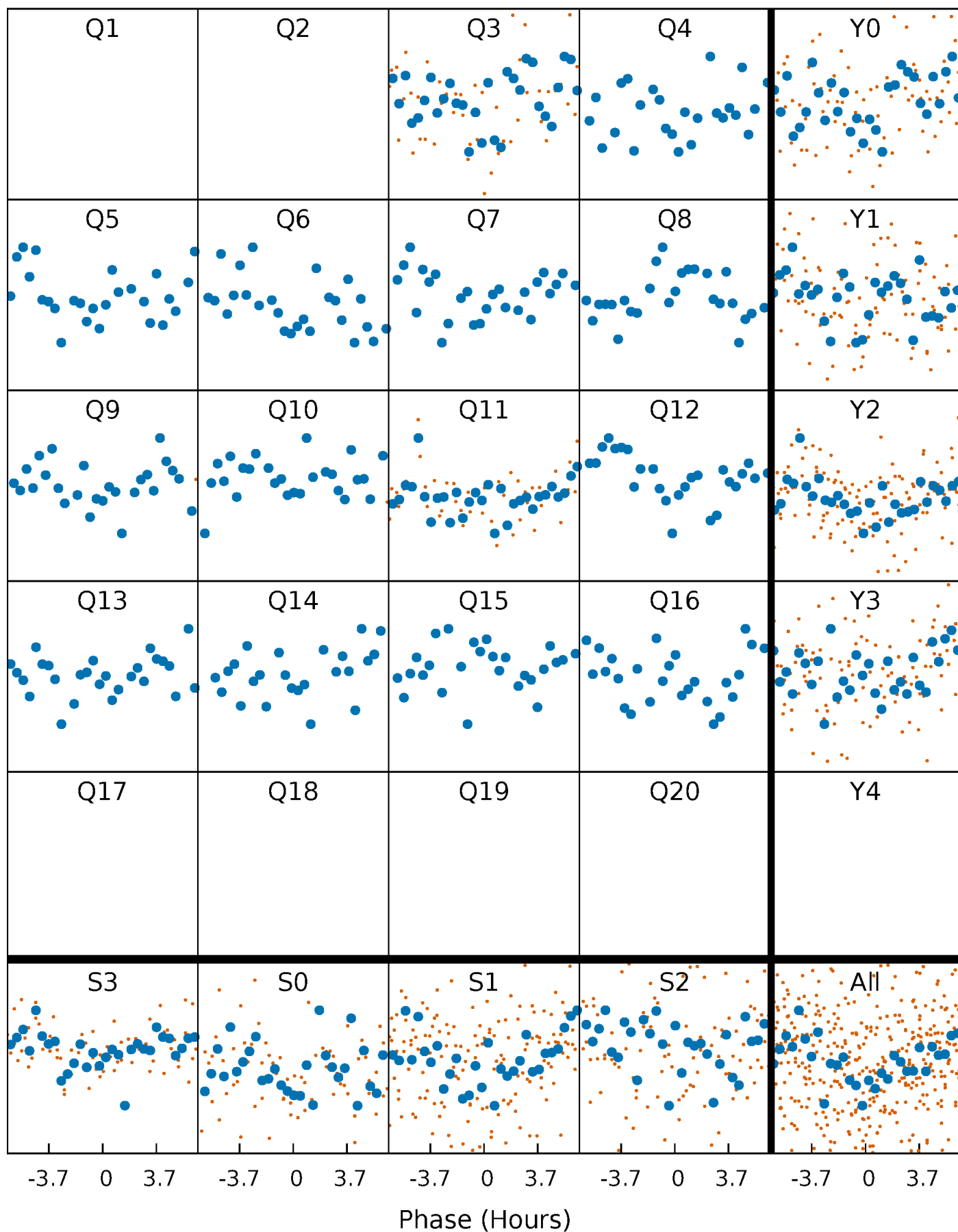


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



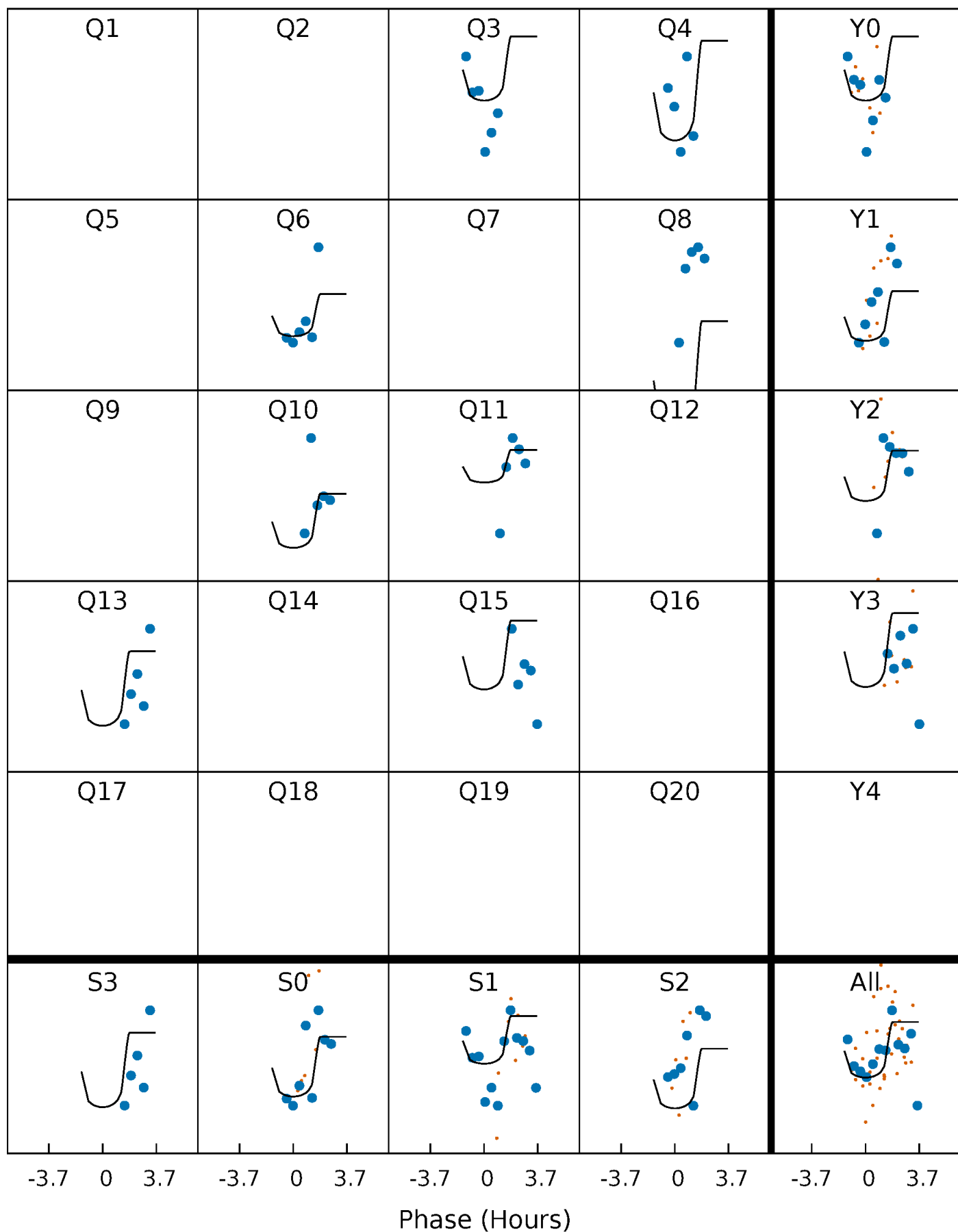
# PDC Quarter-Phased Transit Curves

TCE 008314392-03   P= 82.472234 Days    $T_0=182.819715$  (BKJD)



# DV Quarter-Phased Transit Curves

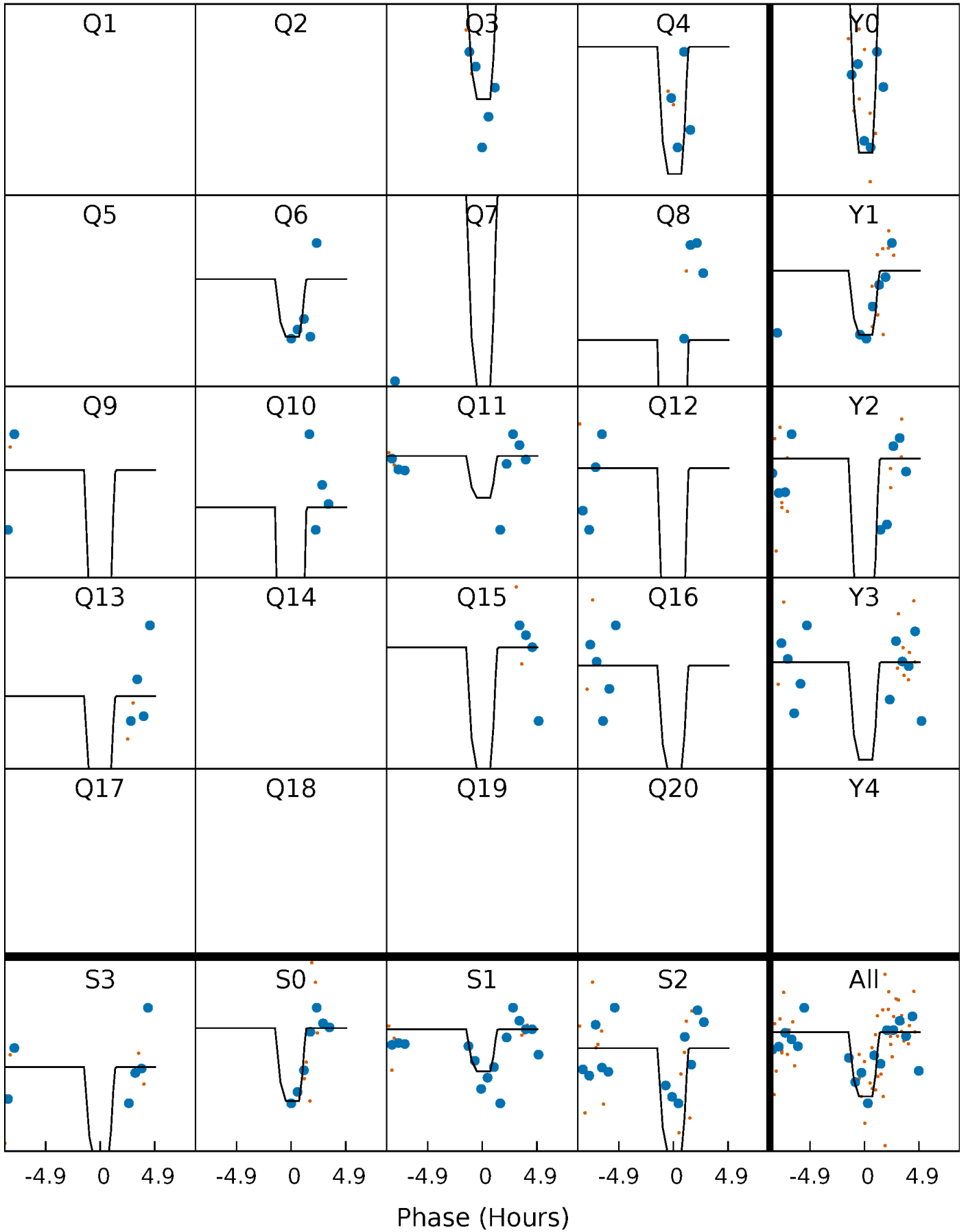
TCE 008314392-03     $P = 82.472234$  Days     $T_0 = 182.819715$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

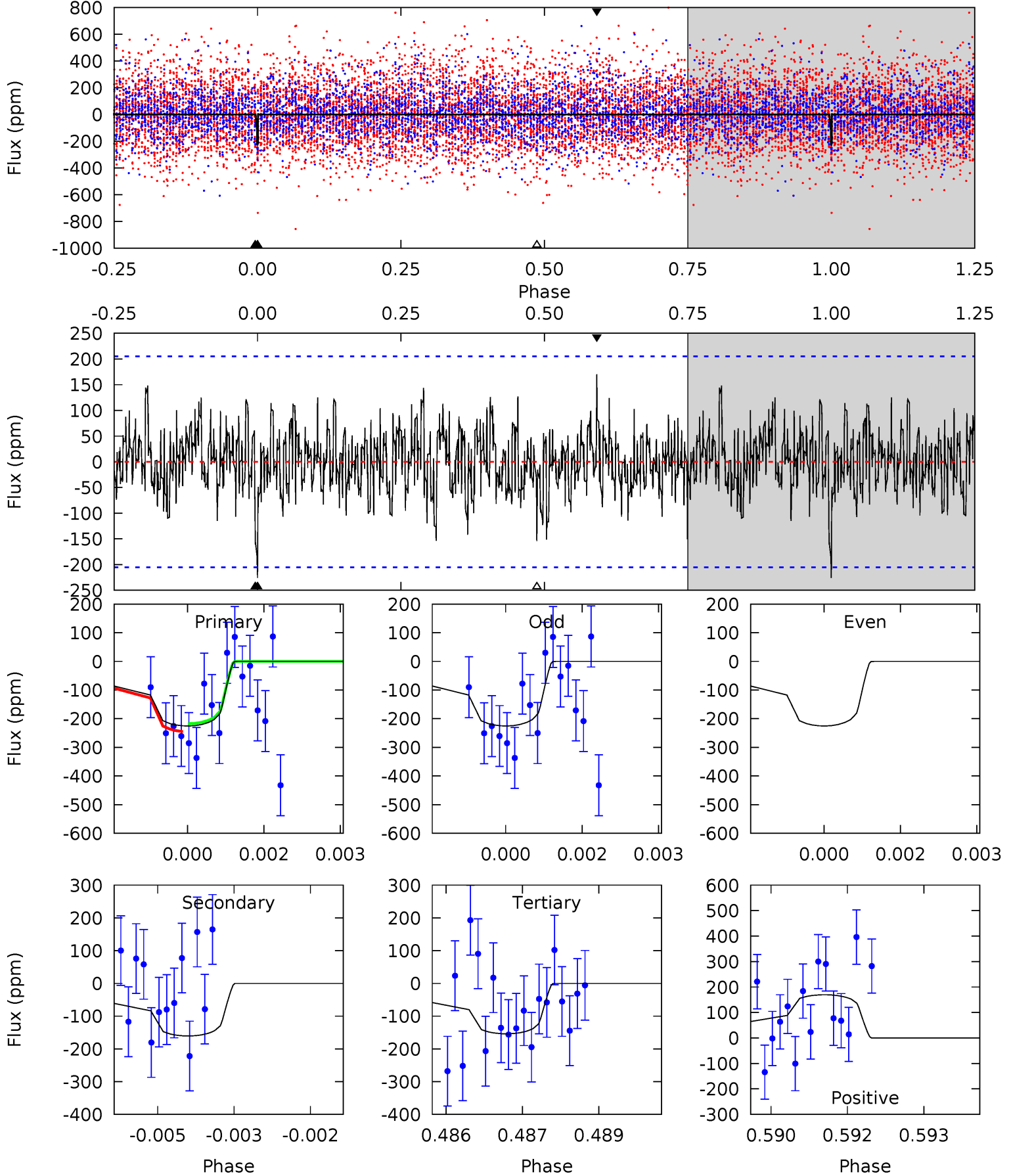
TCE 008314392-03 P= 82.468155 Days  $T_0=182.823243$  (BKJD)



# DV Model-Shift Uniqueness Test

008314392-03, P = 82.472234 Days, E = 100.347481 Days

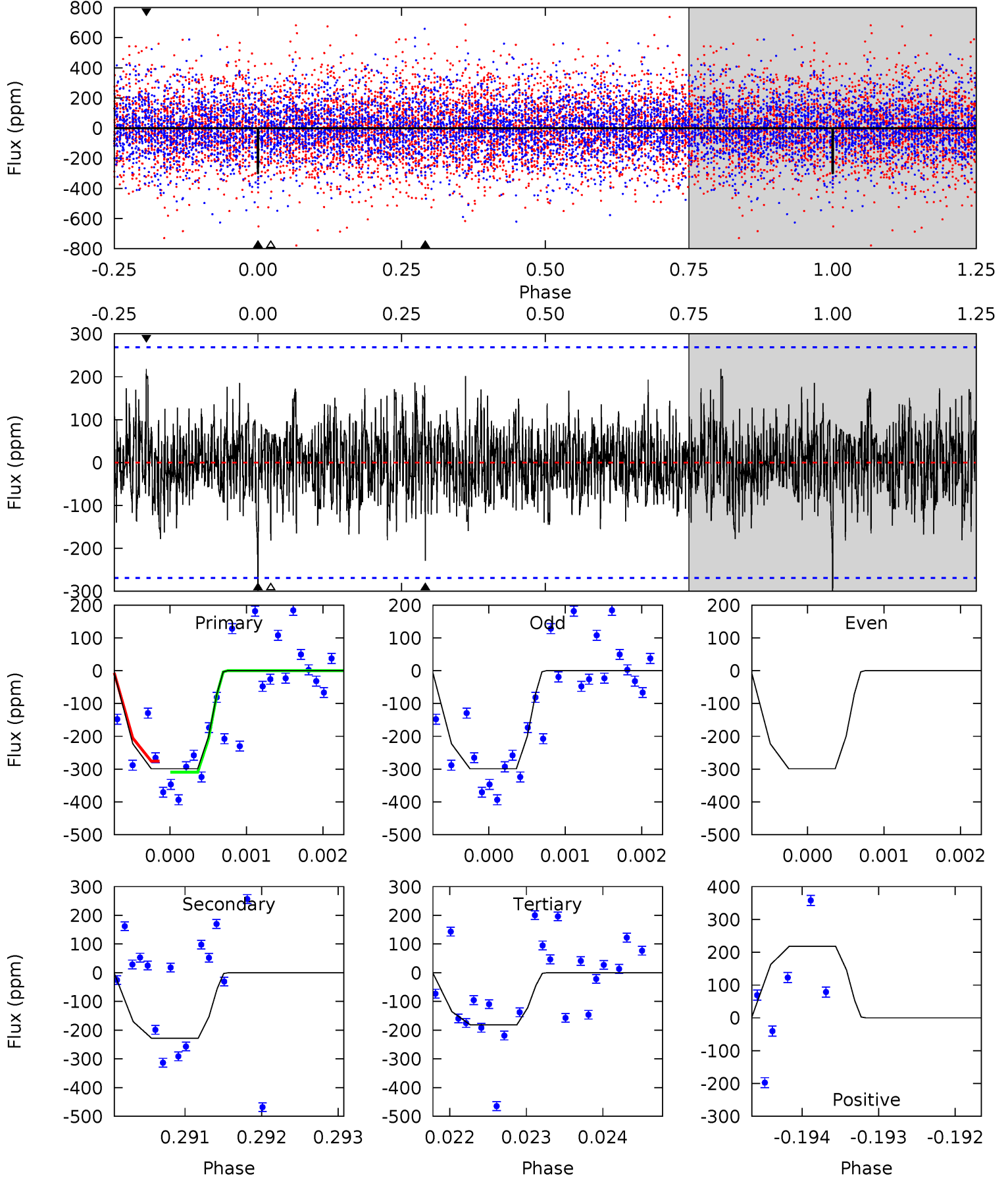
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.91	4.21	4.04	4.45	5.38	3.17	1.25	1.87	1.46	0.17	-0.24	0	0.84	0.43	0.28



# Alt Model-Shift Uniqueness Test

008314392-03, P = 82.468155 Days, E = 100.355088 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
6.07	4.63	3.69	4.42	5.45	3.29	1.13	2.38	1.64	0.95	0.21	0	0.93	0.42	0.24



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-161 \pm 38$	$3.09^{+2.08}_{-1.76}$	$800^{+60}_{-46}$	$5544^{+3088}_{-1097}$	$1562^{+6119}_{-1044}$
Alt.	$-228 \pm 49$	$3.32^{+2.02}_{-1.87}$	$795^{+61}_{-47}$	$5808^{+3070}_{-1122}$	$1865^{+7069}_{-1162}$

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

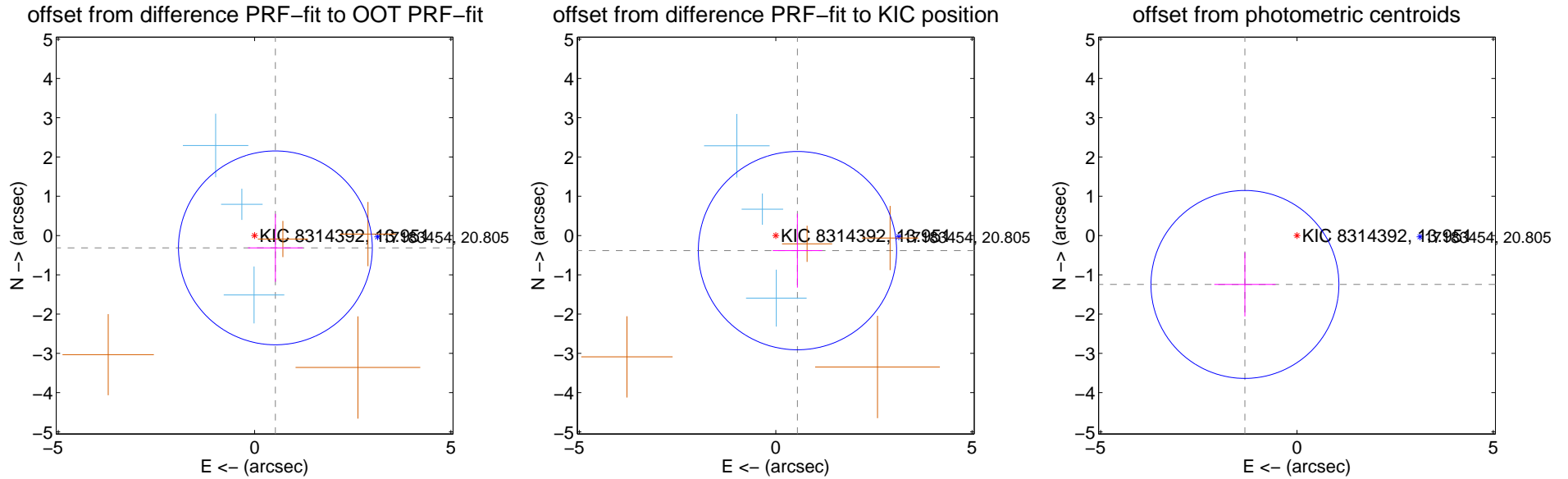
## DV Centroid Data

Supplemental centroid analysis for 008314392-03. Kepler magnitude: 13.95. Transit SNR 9.77

There are 3 quarters with good PRF difference image offsets

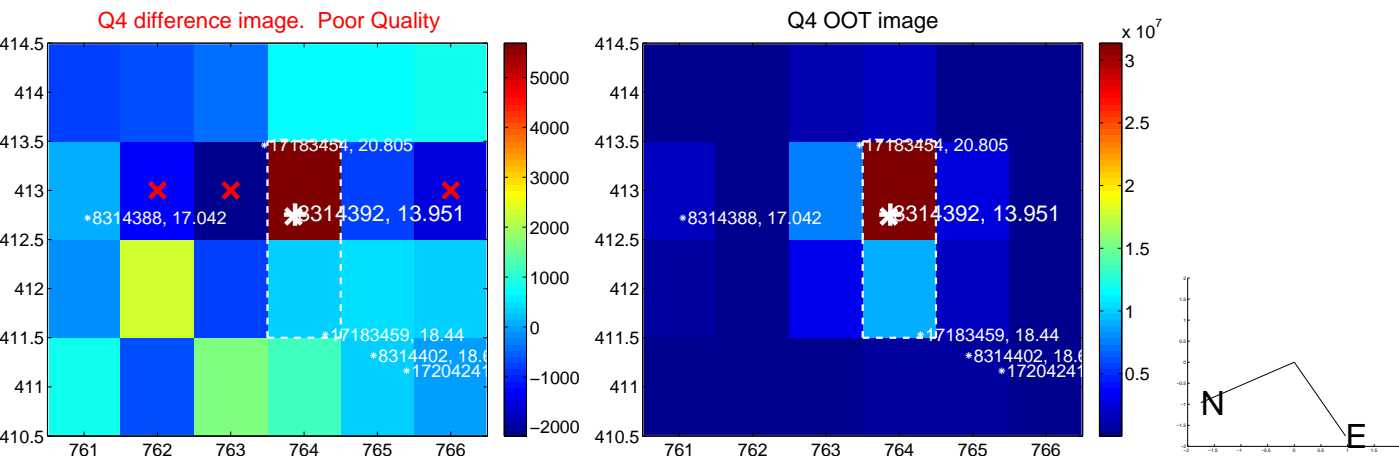
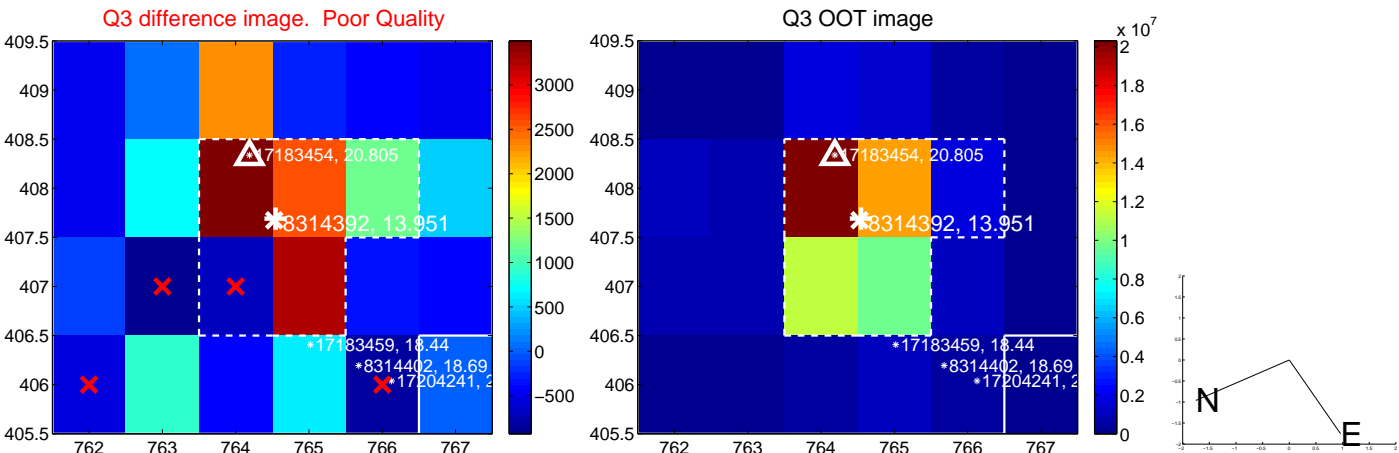
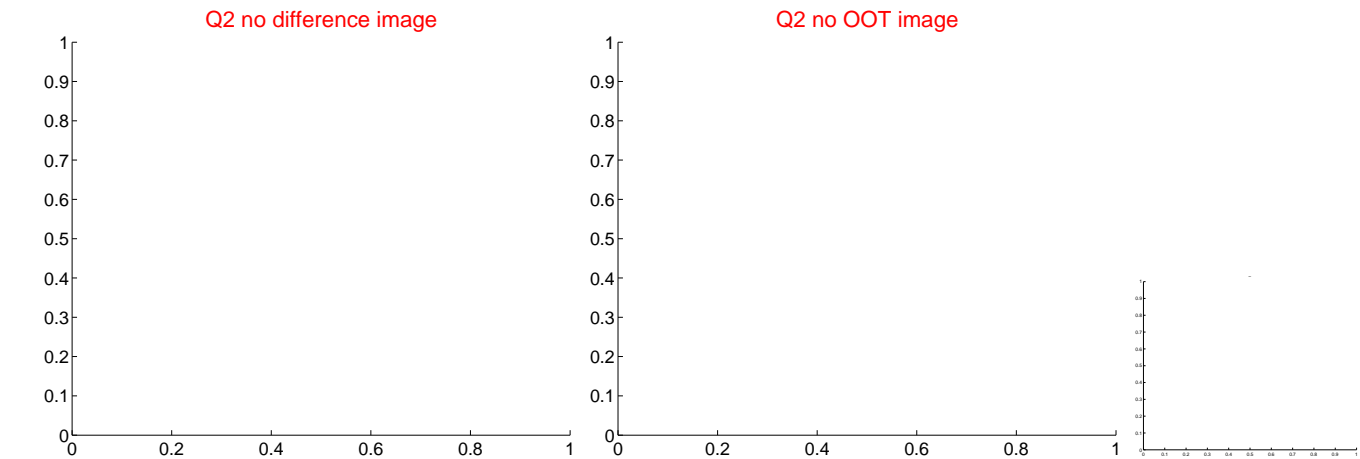
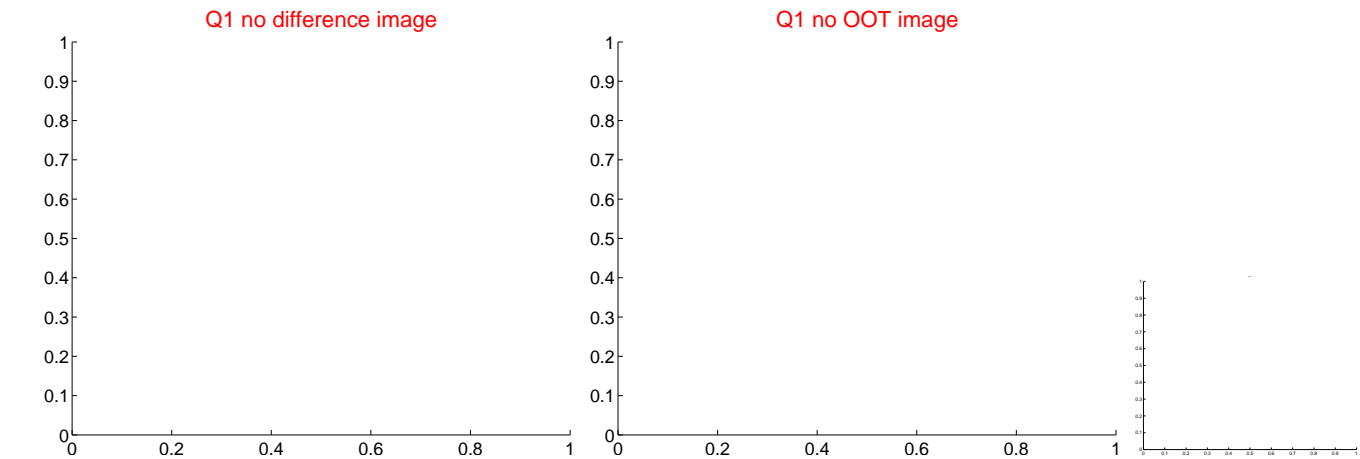
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.616 \pm 0.823$	0.75	$-0.530 \pm 0.699$	$-0.314 \pm 0.864$
PRF-fit source offset from KIC position	$0.673 \pm 0.842$	0.80	$-0.552 \pm 0.630$	$-0.384 \pm 0.941$
photometric centroid source offset	$1.82 \pm 0.80$	2.28	$1.33 \pm 0.78$	$-1.24 \pm 0.82$

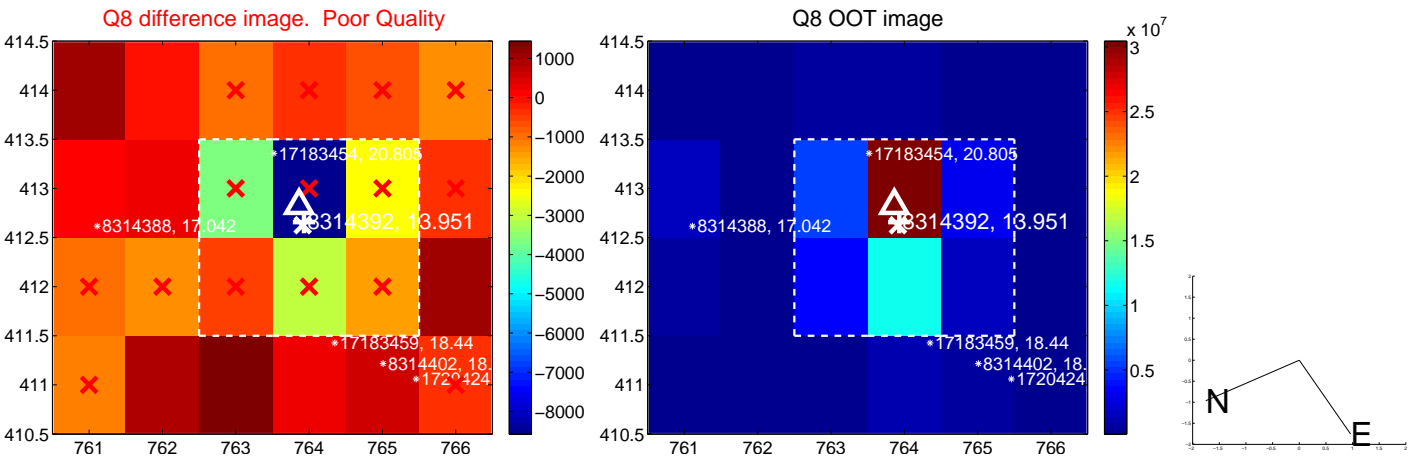
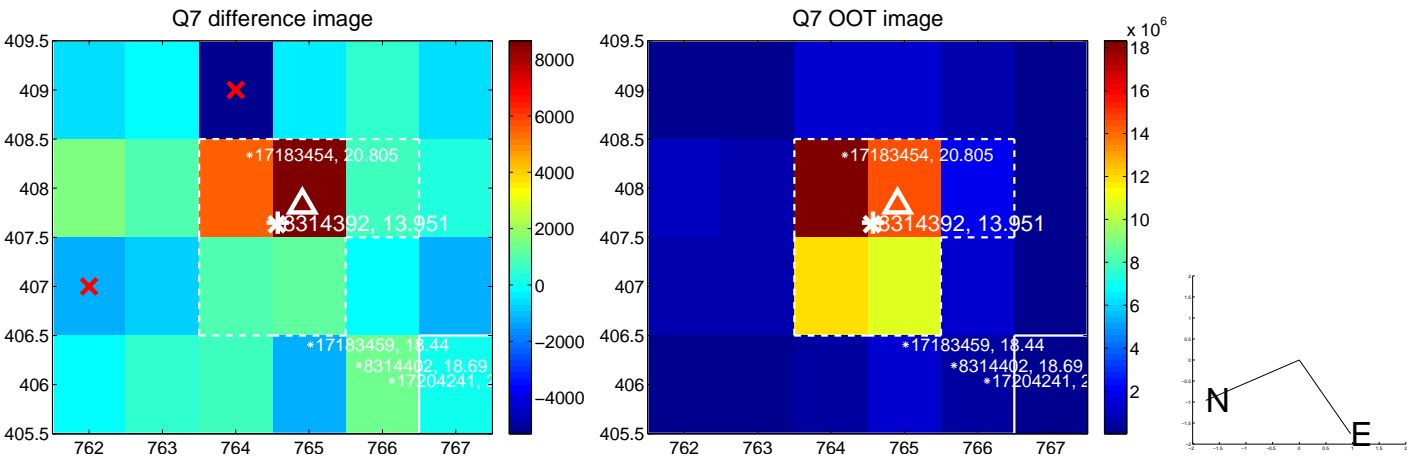
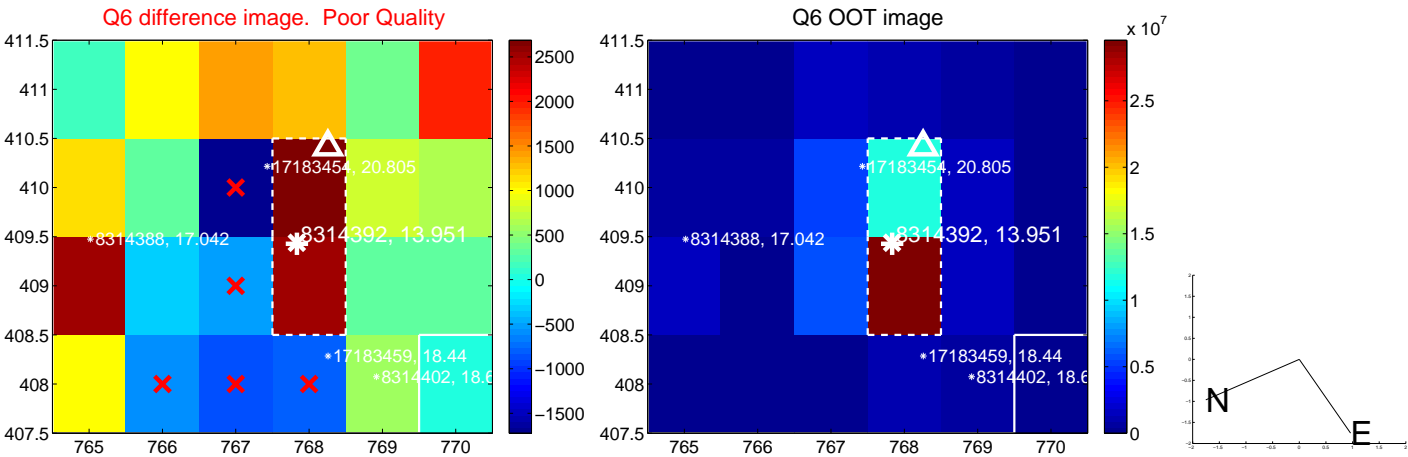
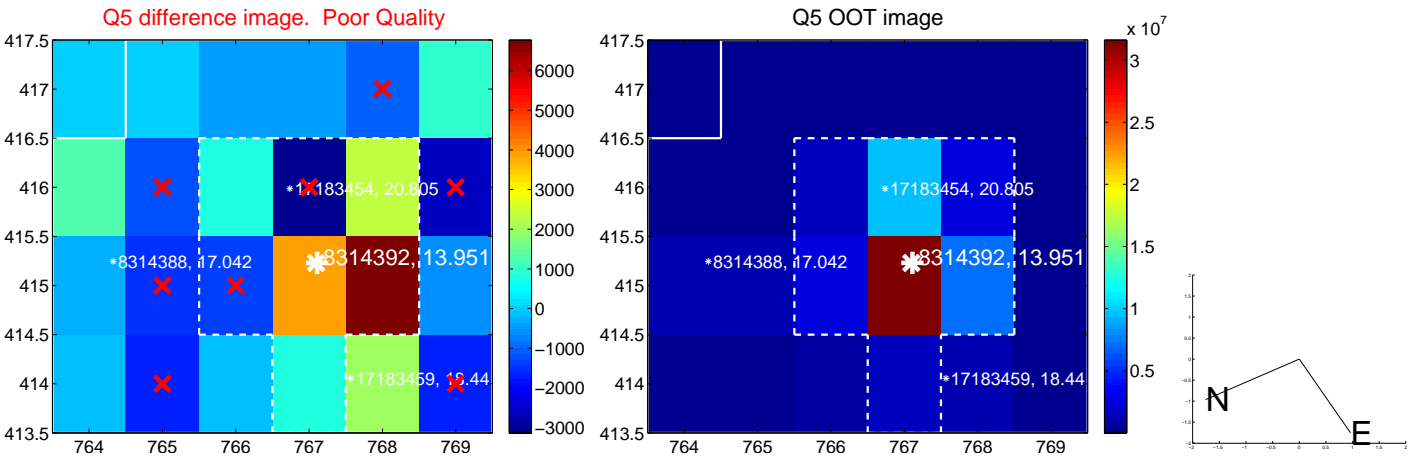


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

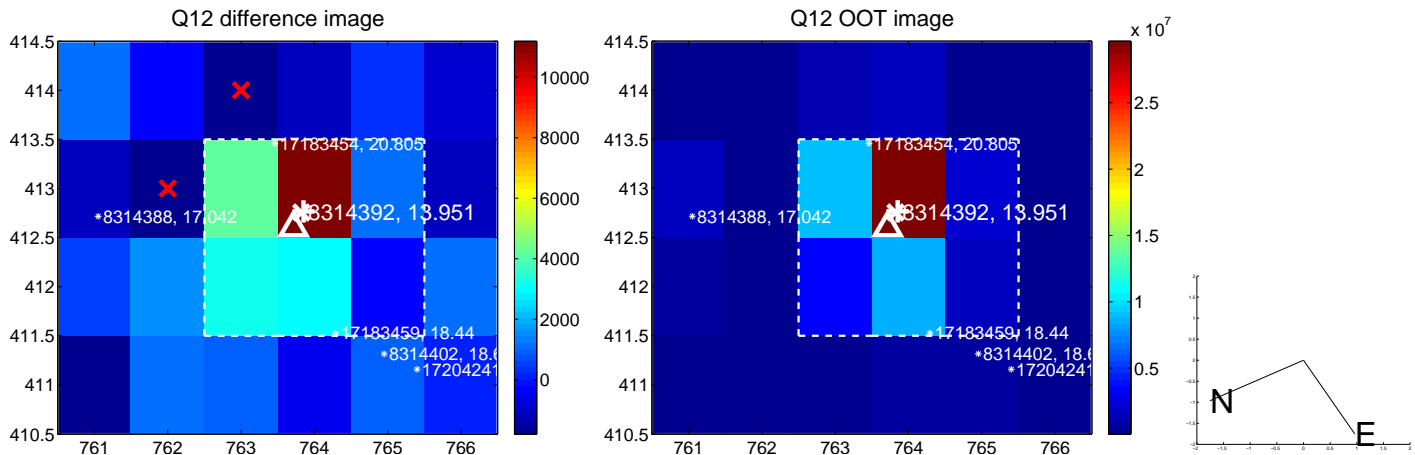
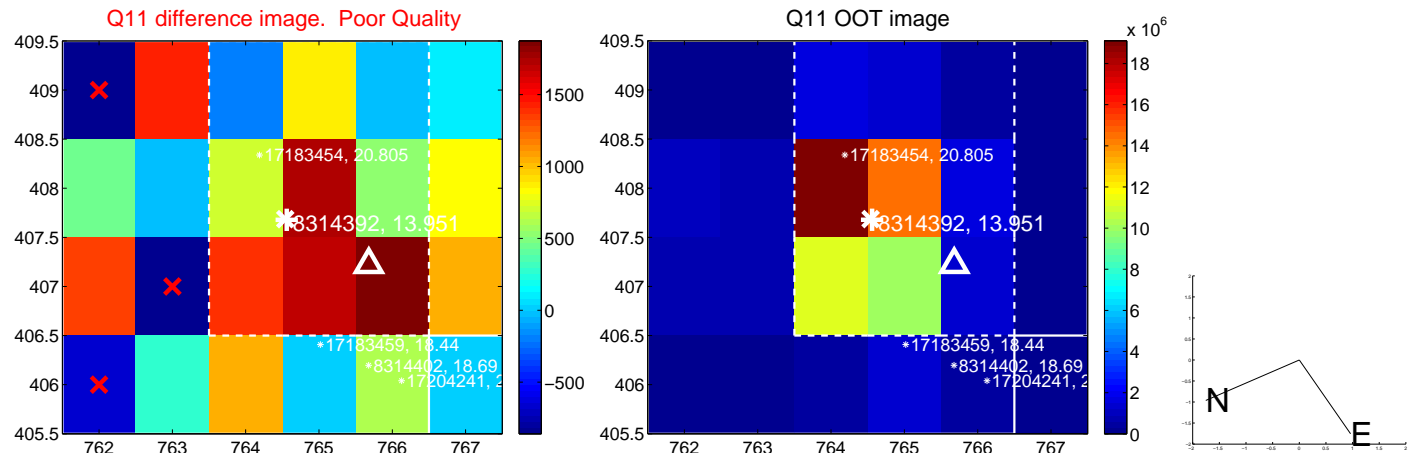
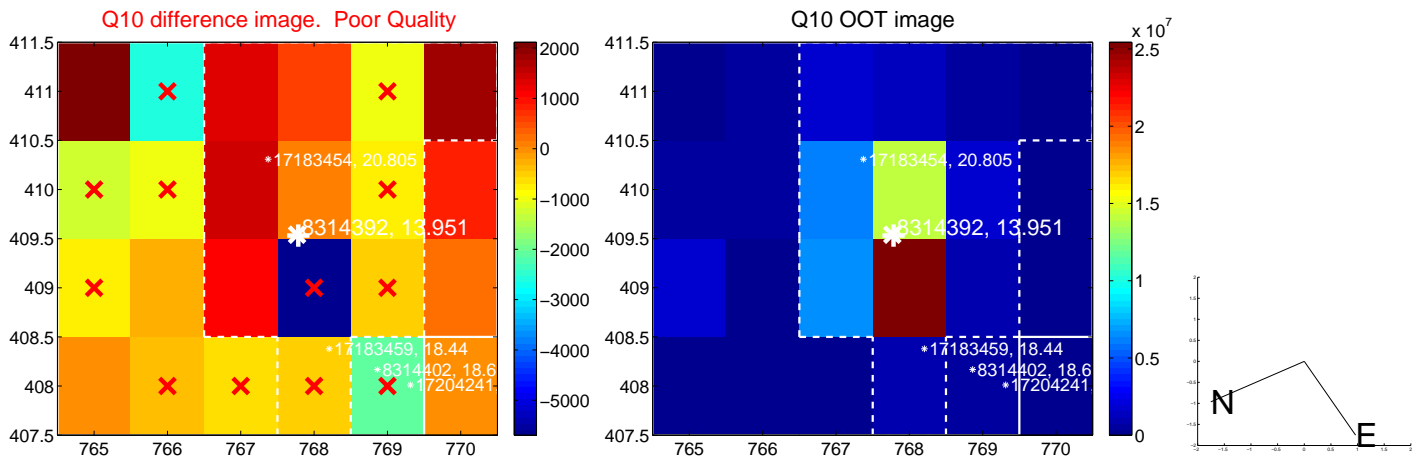
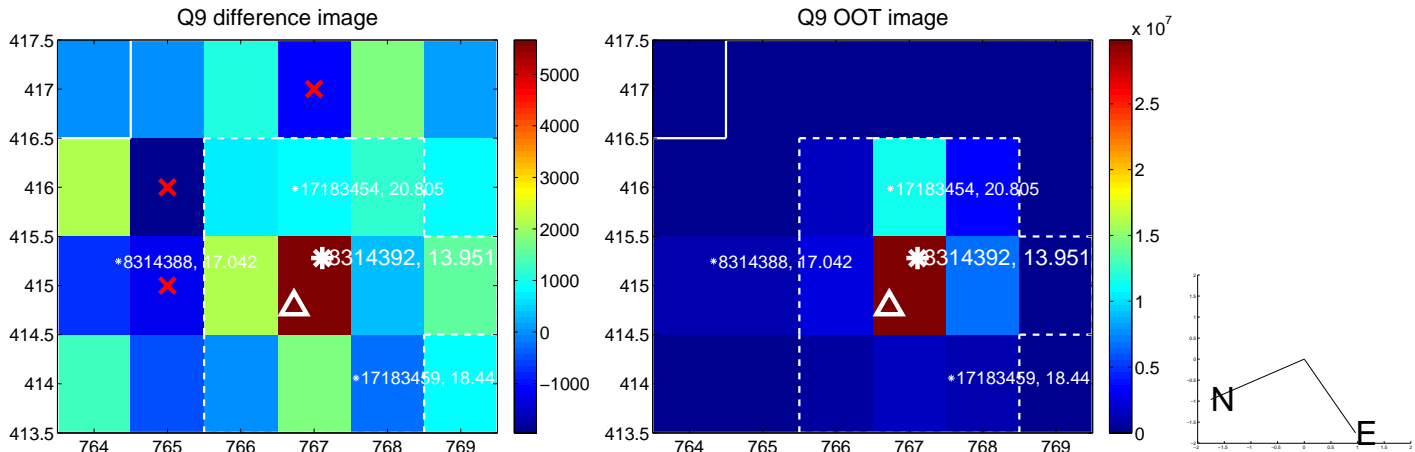


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

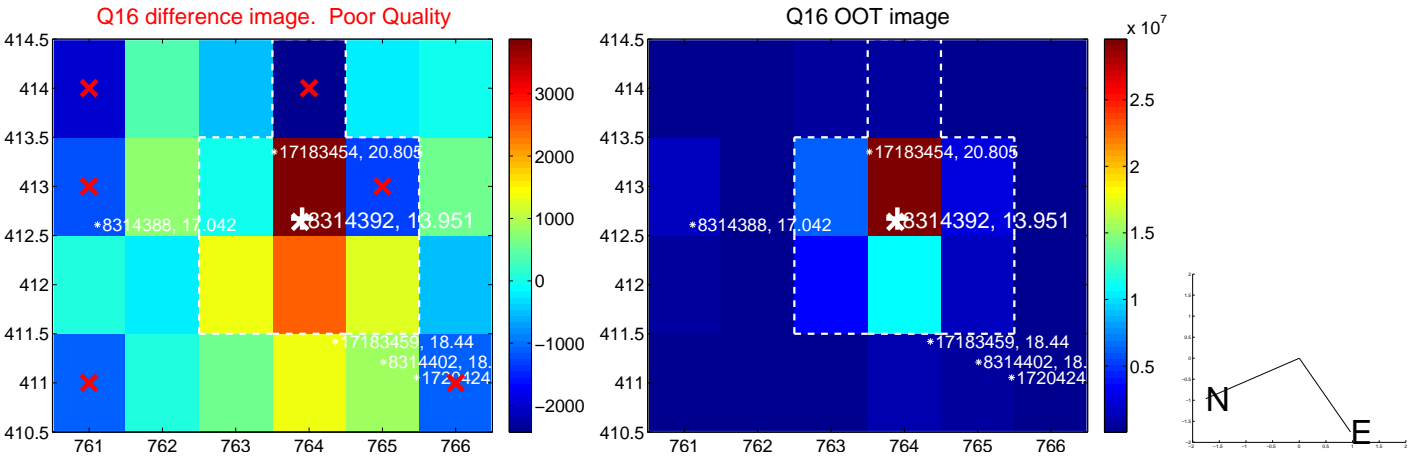
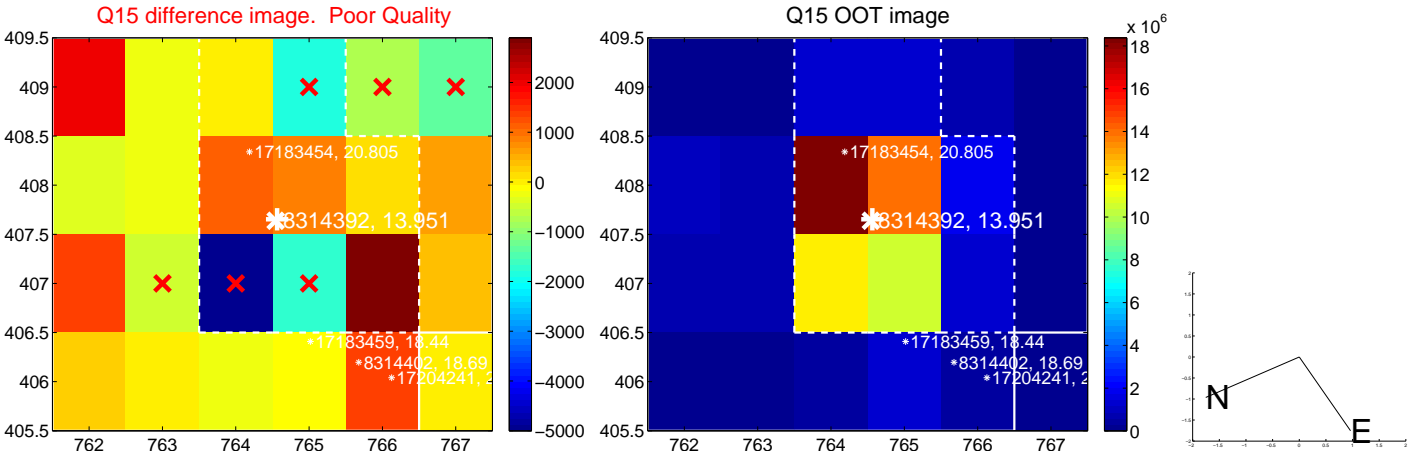
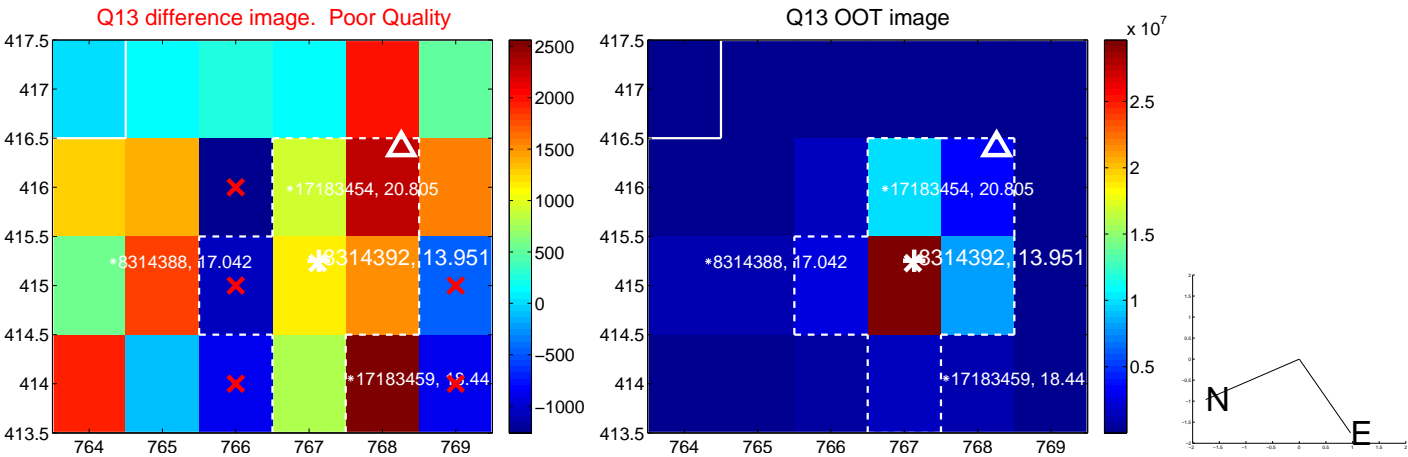




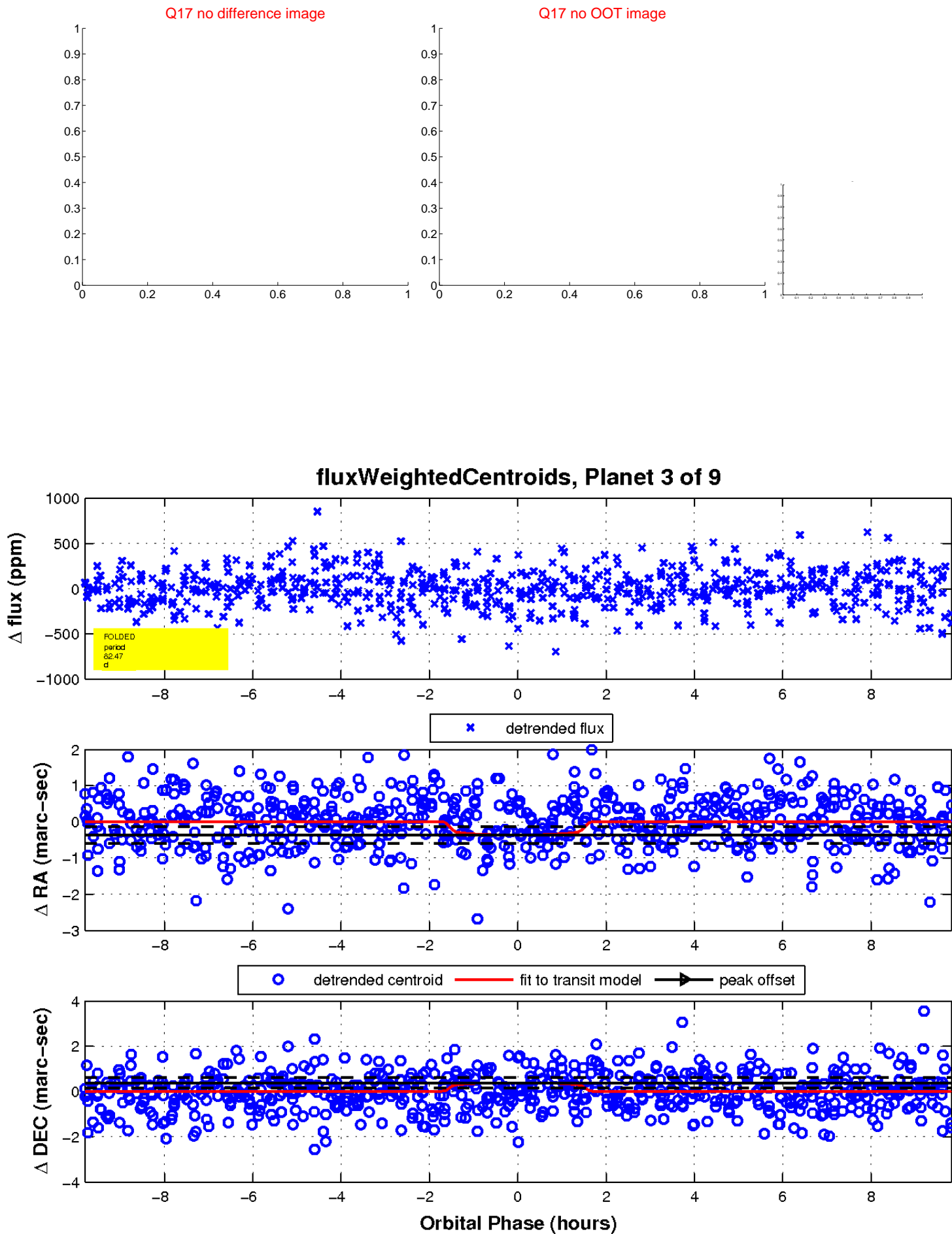
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

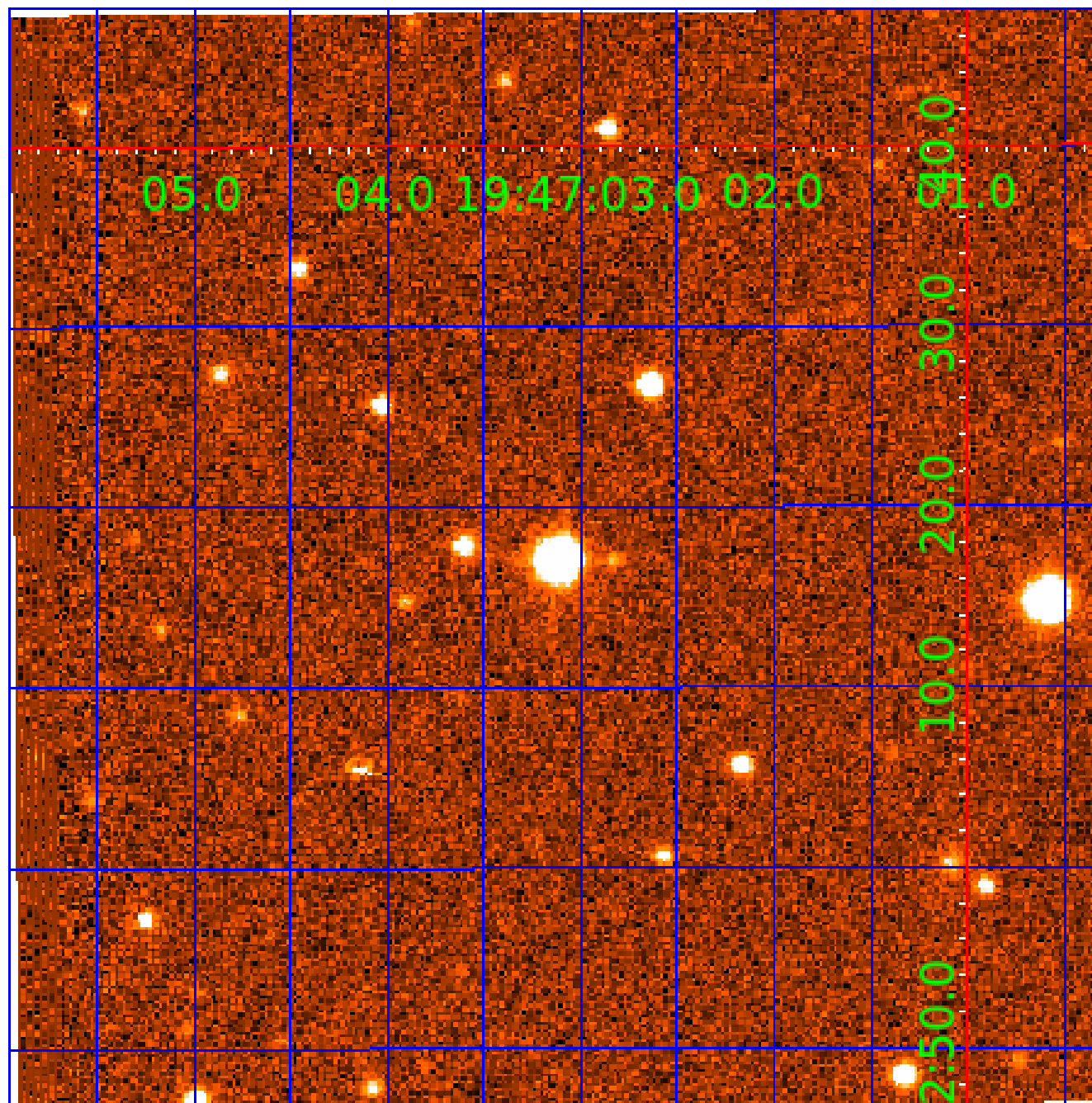


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

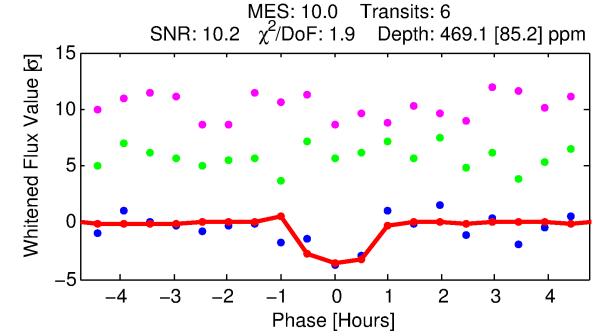
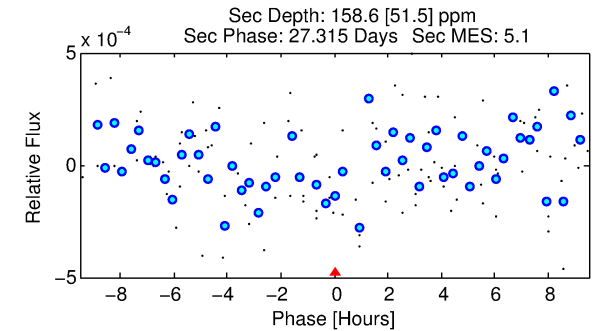
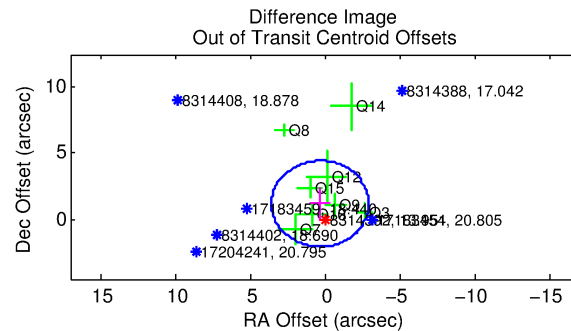
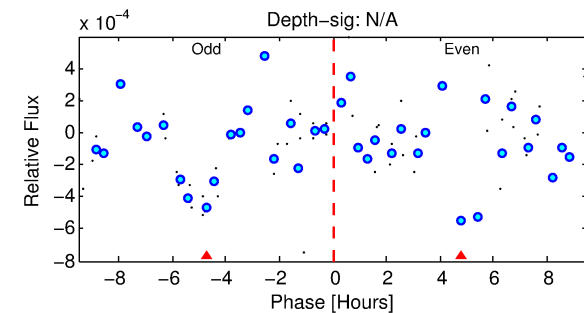
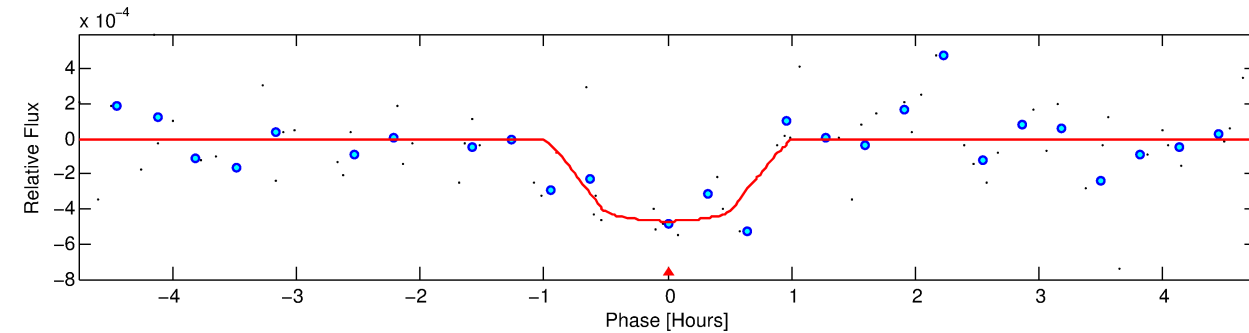
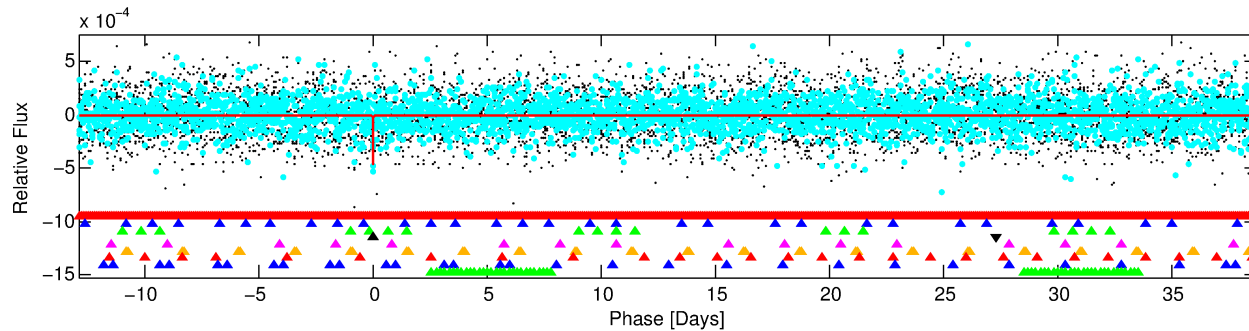
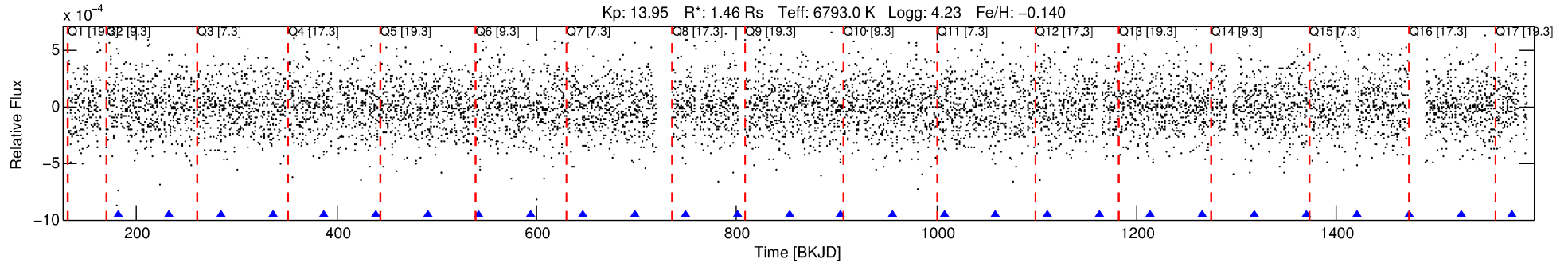
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-04

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 4 of 9 Period: 51.648 d



## DV Fit Results:

Period = 51.64808 [0.00054] d  
Epoch = 181.3426 [0.0089] BKJD  
Rp/R\* = 0.0213 [0.0406]  
a/R\* = 184.51 [1989.58]  
b = 0.70 [7.88]  
Seff = 46.13 [17.97]  
Teq = 665 [65] K  
Rp = 3.40 [6.56] Re  
a = 0.2969 [0.0771] AU  
Ag = 666.43 [2557.73] [0.26σ]  
Teffp = 5220 [4991] K [0.91σ]

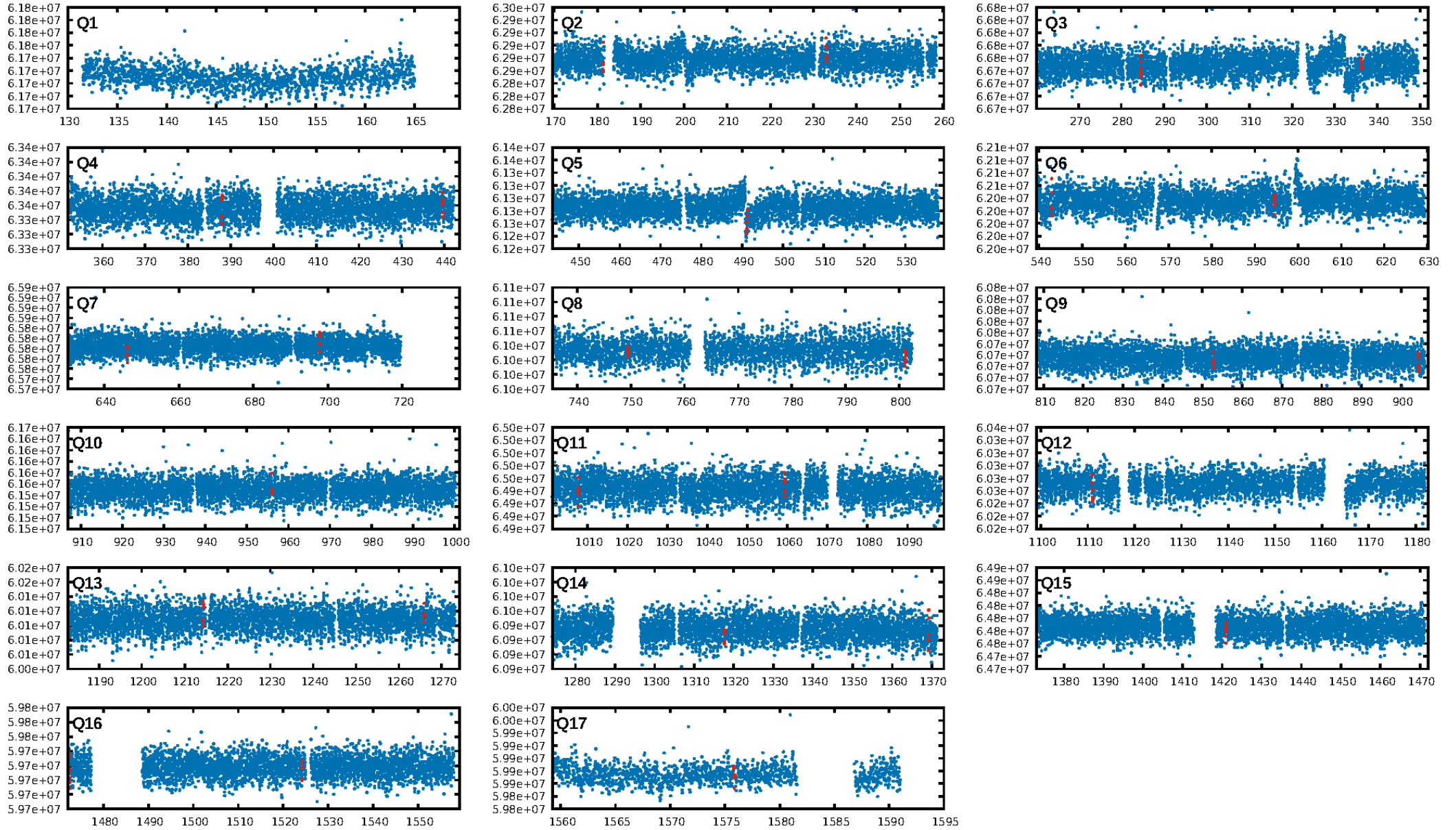
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.85σ]  
LongPeriod-sig: 100.0% [33.00σ]  
ModelChiSquare2-sig: 31.2%  
ModelChiSquareGof-sig: 99.5%  
**Bootstrap-pfa: 1.71e-10**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 4.929  
Centroid-sig: 59.0%  
Centroid-so: 0.435 arcsec [0.82σ]  
OotOffset-rm: 1.229 arcsec [1.13σ]  
OotOffset-st: 2/3/2/1 [8]  
KicOffset-rm: 1.165 arcsec [1.08σ]  
KicOffset-st: 2/3/2/1 [8]  
DiffImageQuality-fgm: 0.25 [2/8]  
DiffImageOverlap-fno: 0.38 [6/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:12 Z

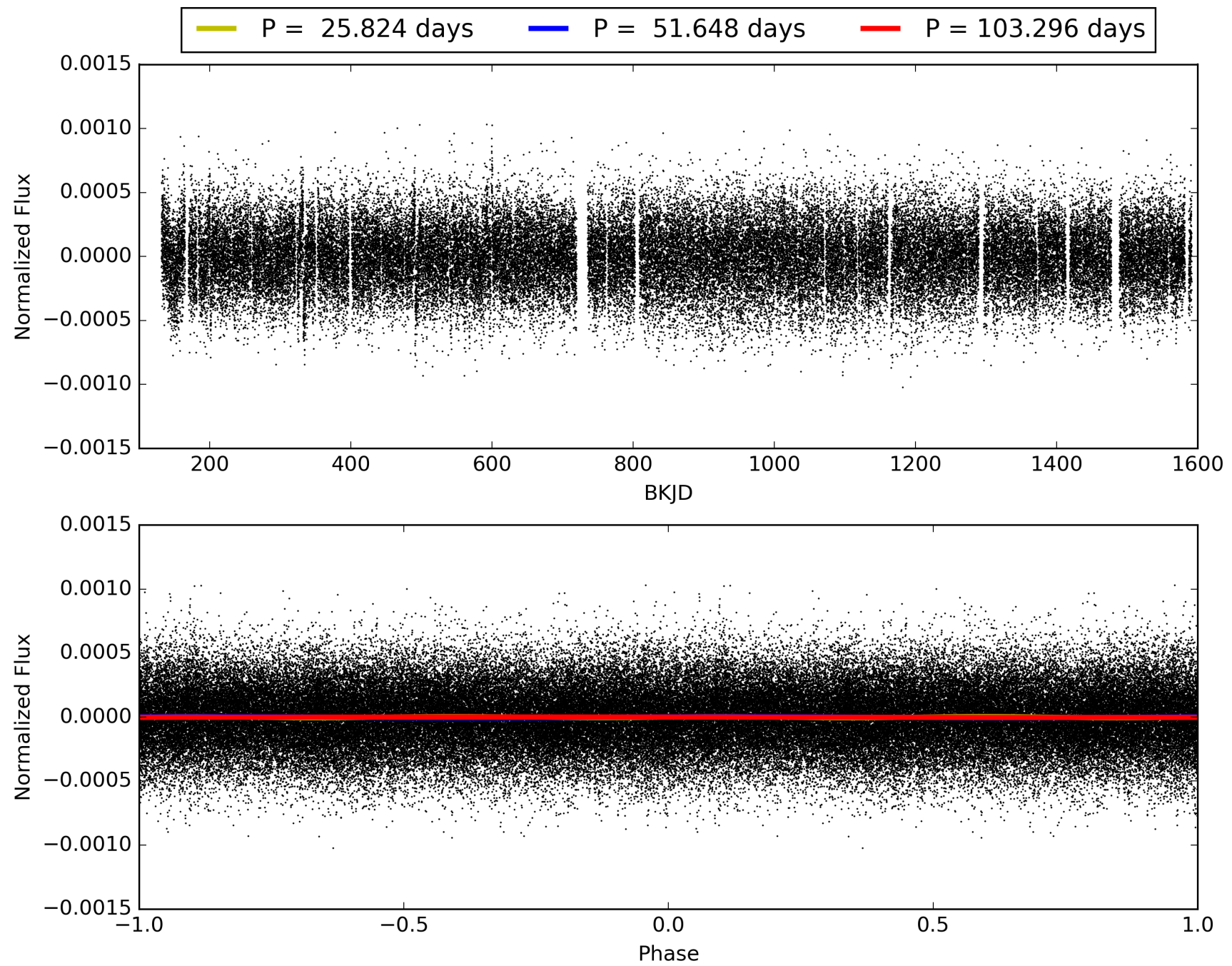
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008314392-04, PDC Light Curves



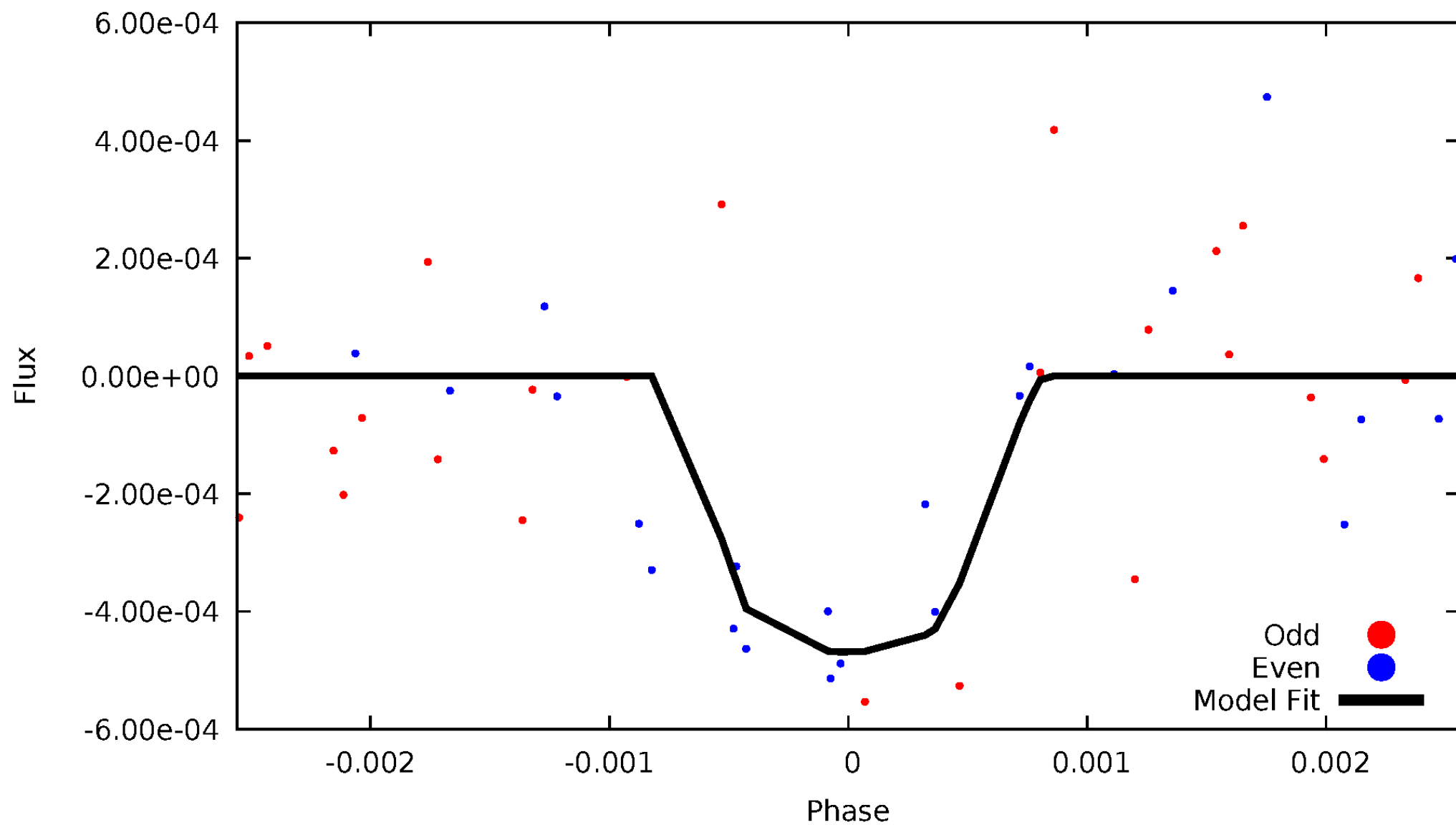


TCE 008314392-04



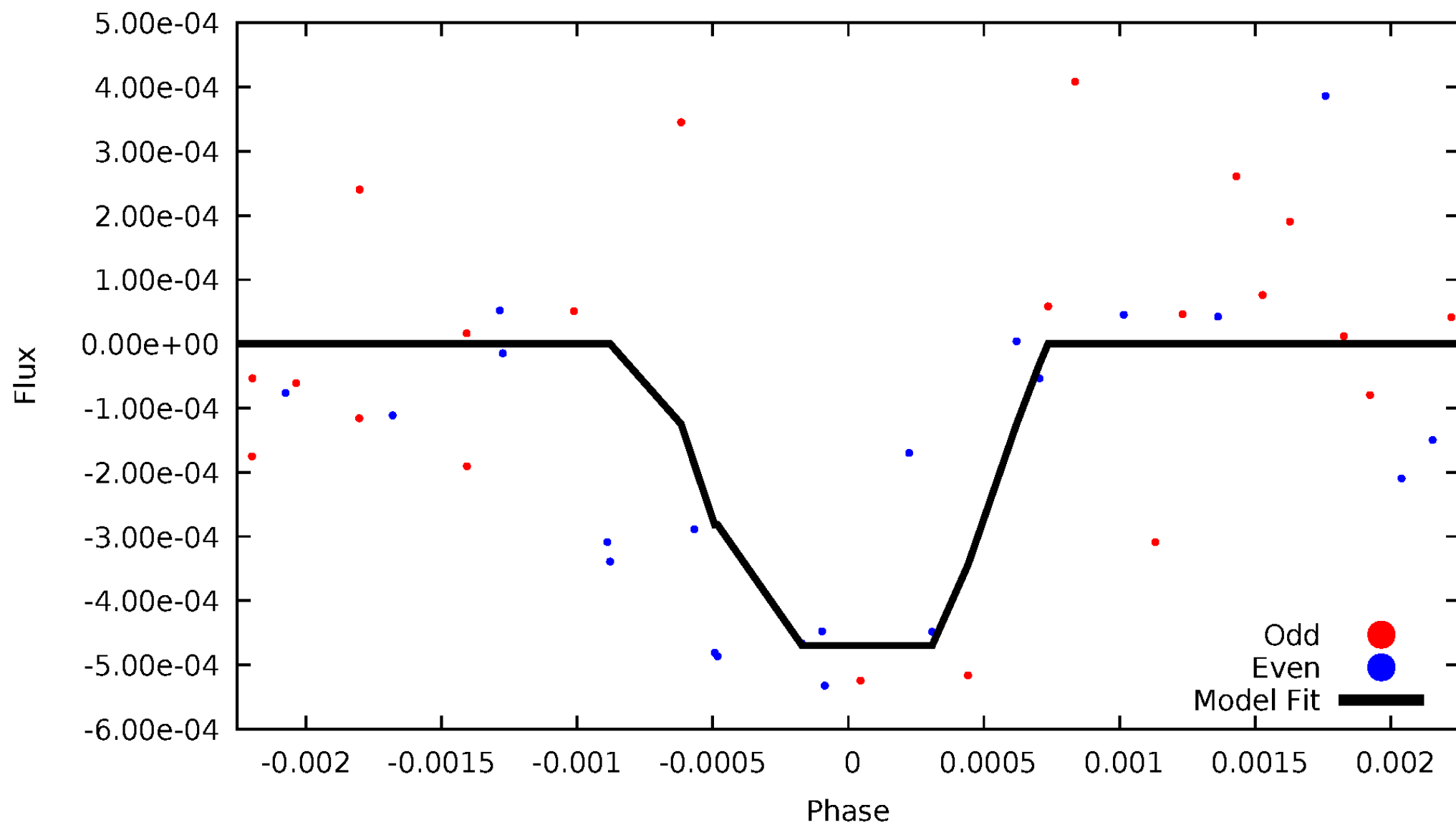
# DV Odd/Even

TCE 008314392-04



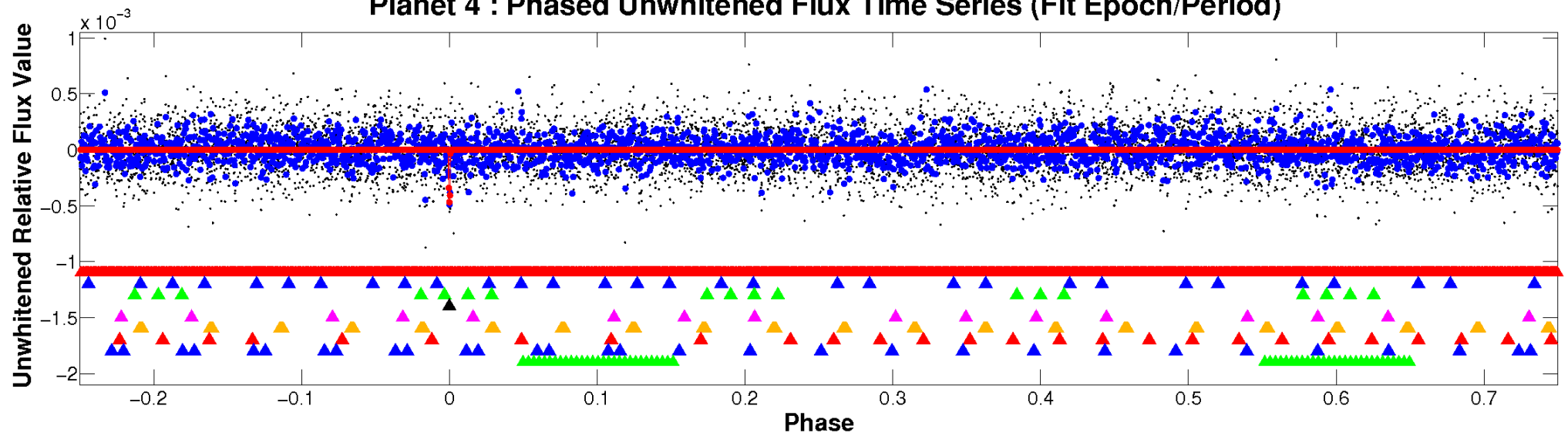
# ALT Odd/Even

TCE 008314392-04

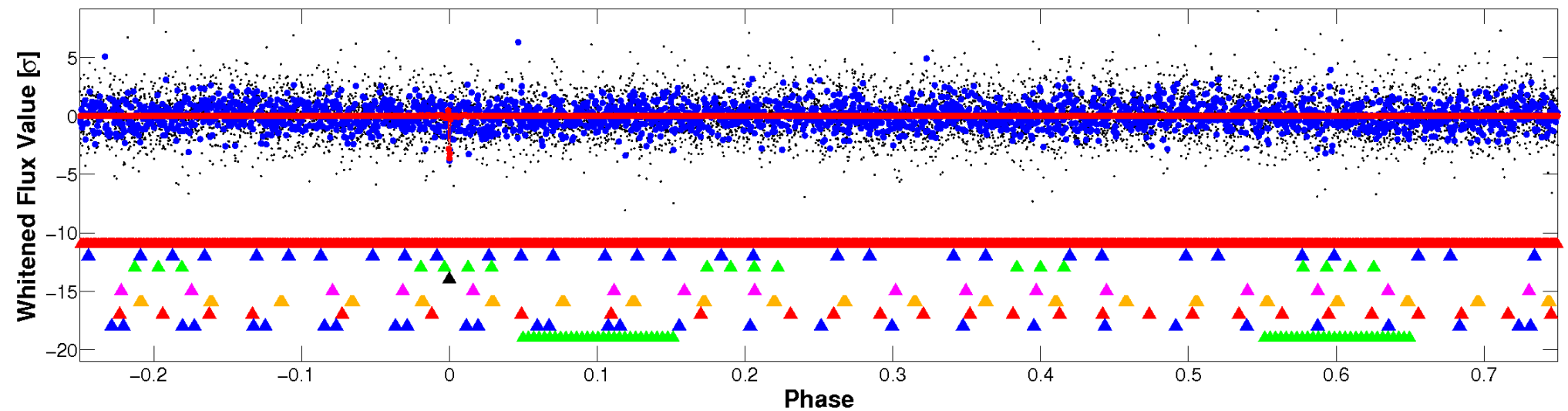


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

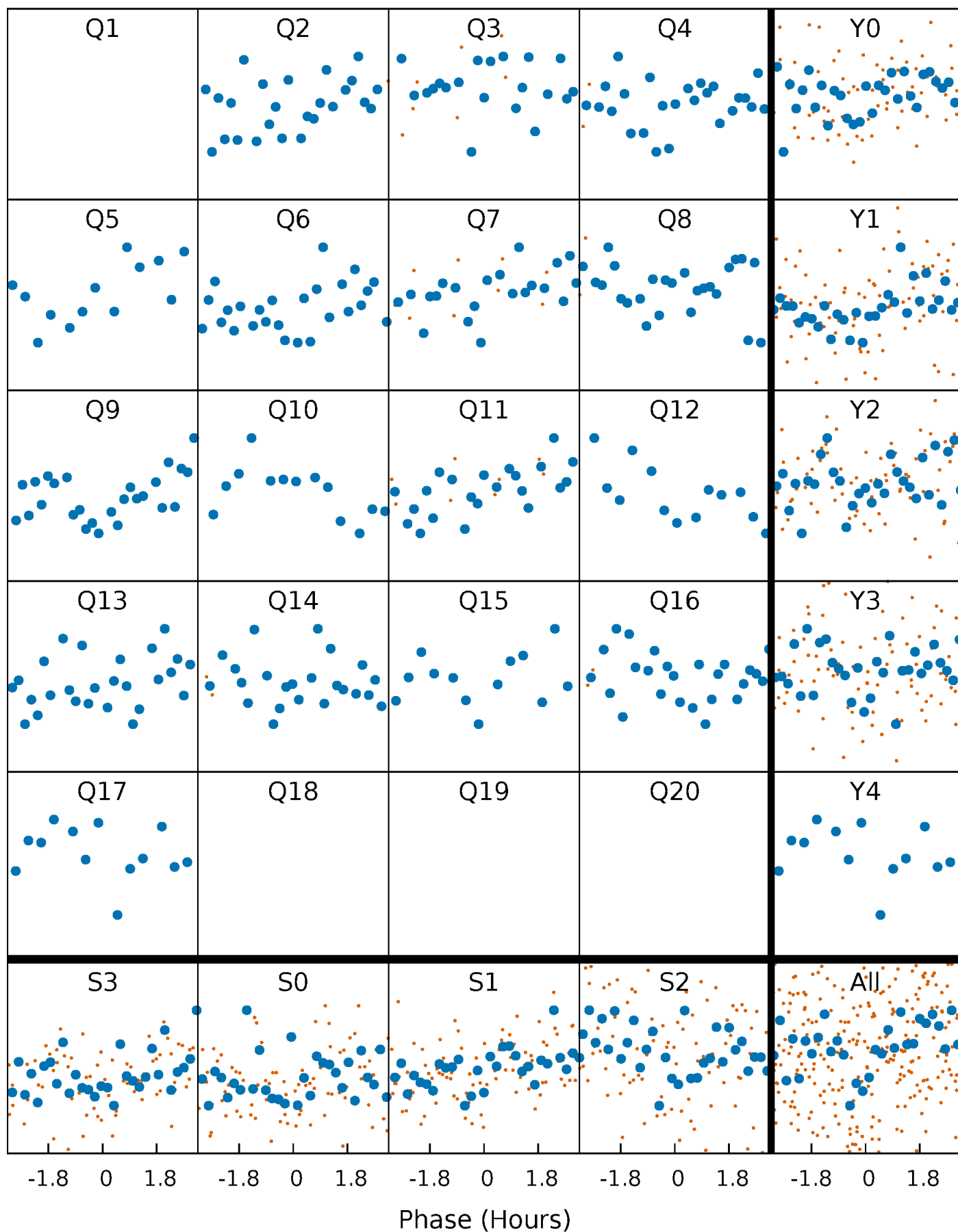


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



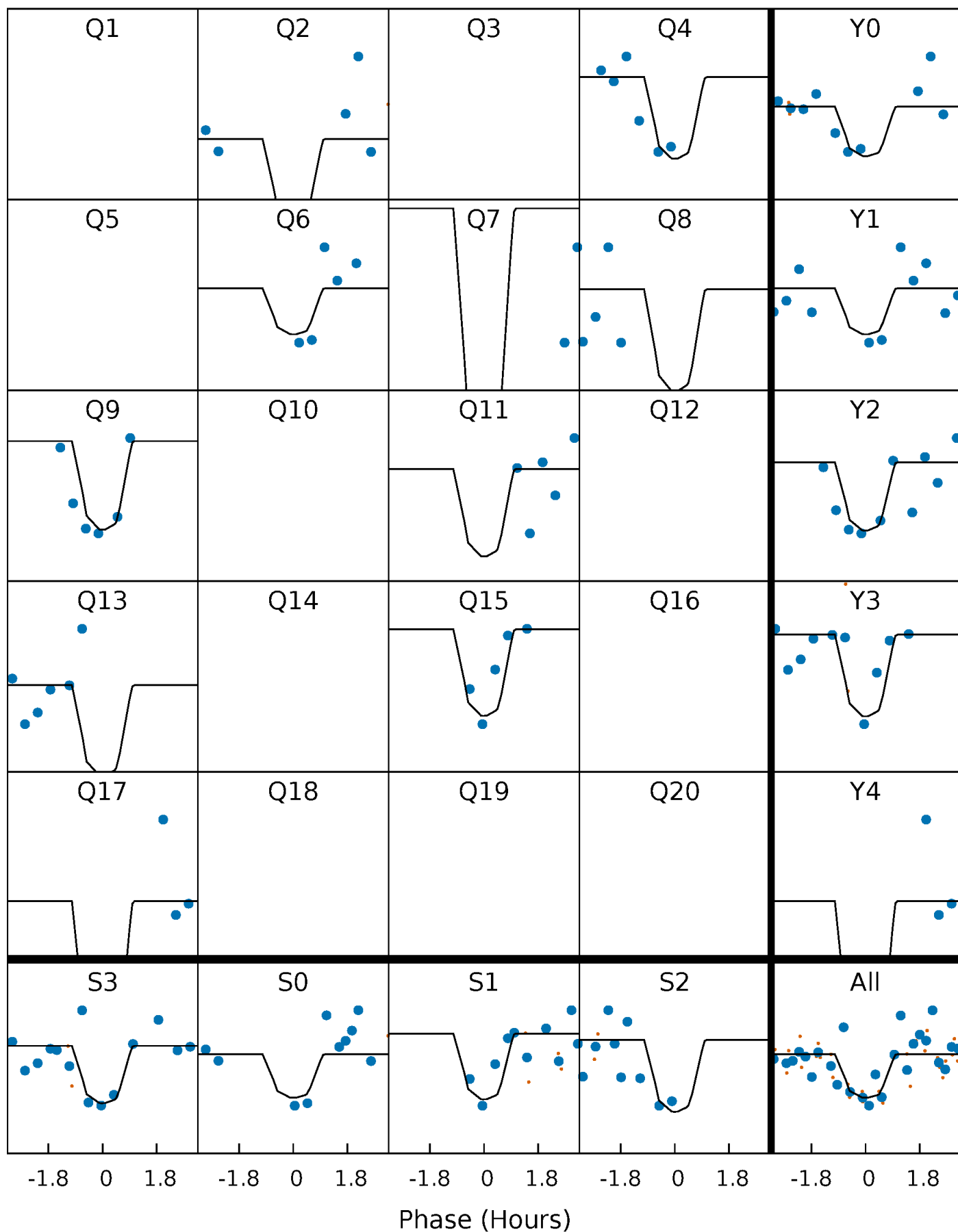
# PDC Quarter-Phased Transit Curves

TCE 008314392-04   P= 51.648084 Days    $T_0=181.342554$  (BKJD)



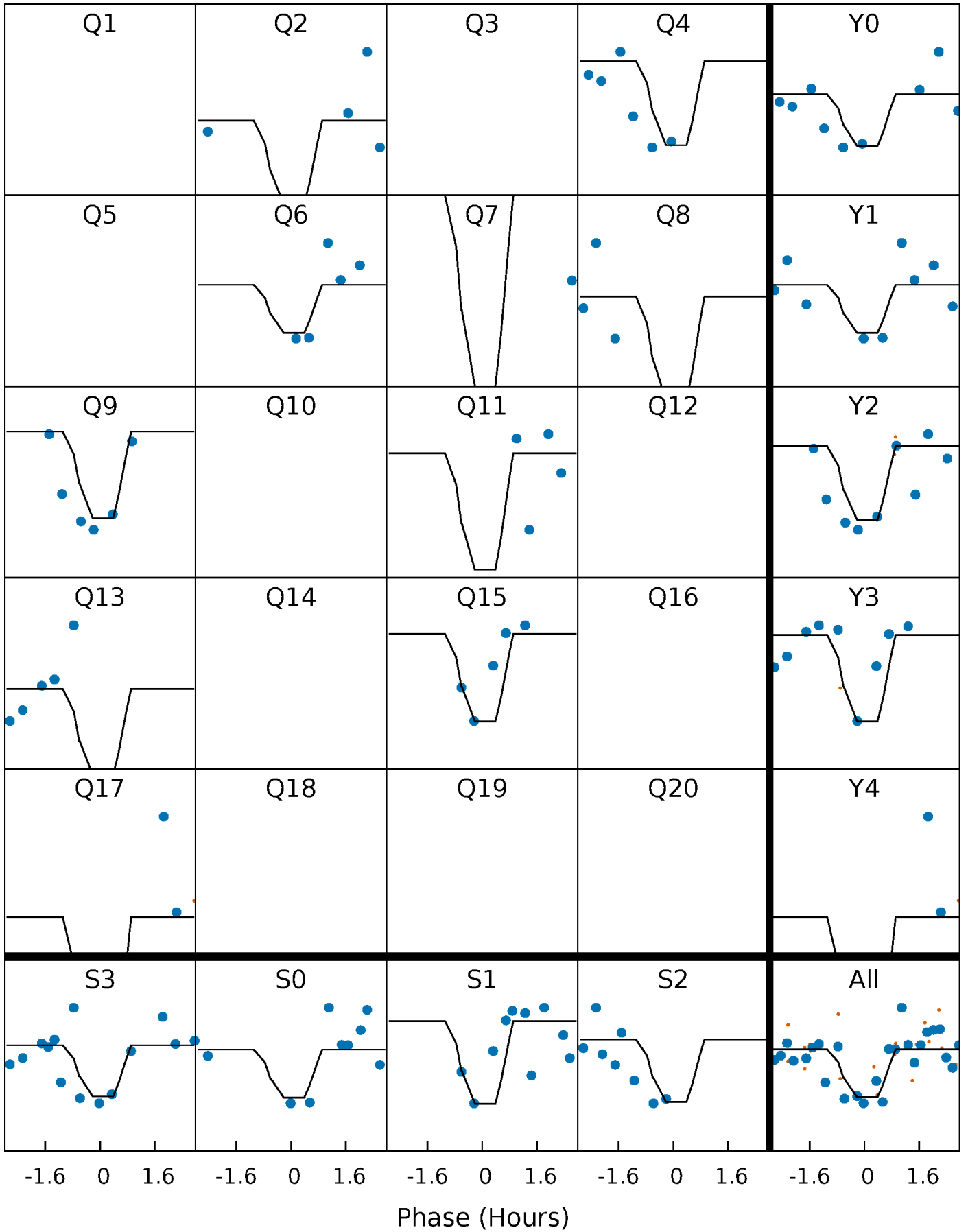
# DV Quarter-Phased Transit Curves

TCE 008314392-04   P= 51.648084 Days    $T_0=181.342554$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008314392-04 P= 51.648305 Days  $T_0=181.342275$  (BKJD)

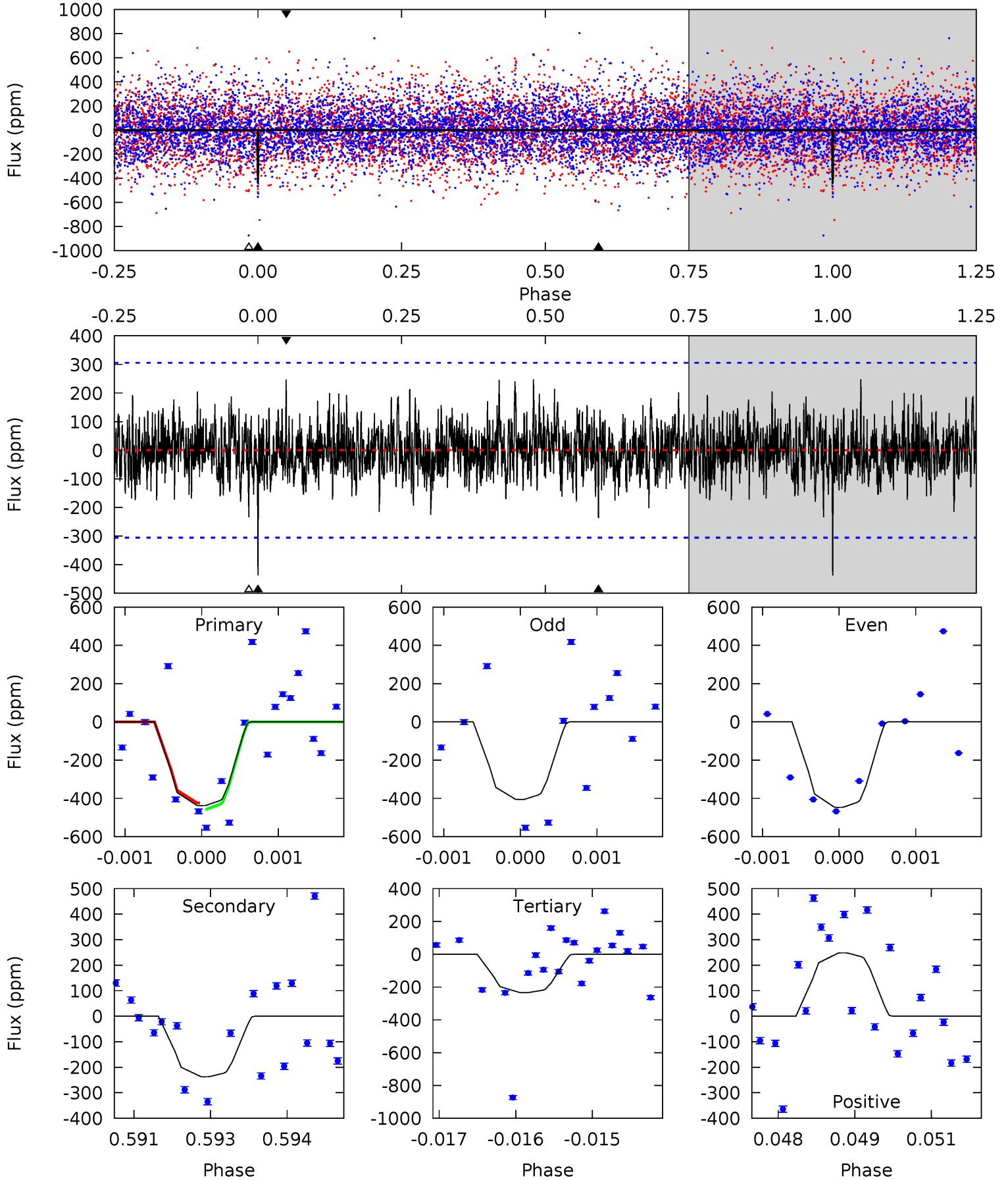




# DV Model-Shift Uniqueness Test

008314392-04, P = 51.648084 Days, E = 129.694470 Days

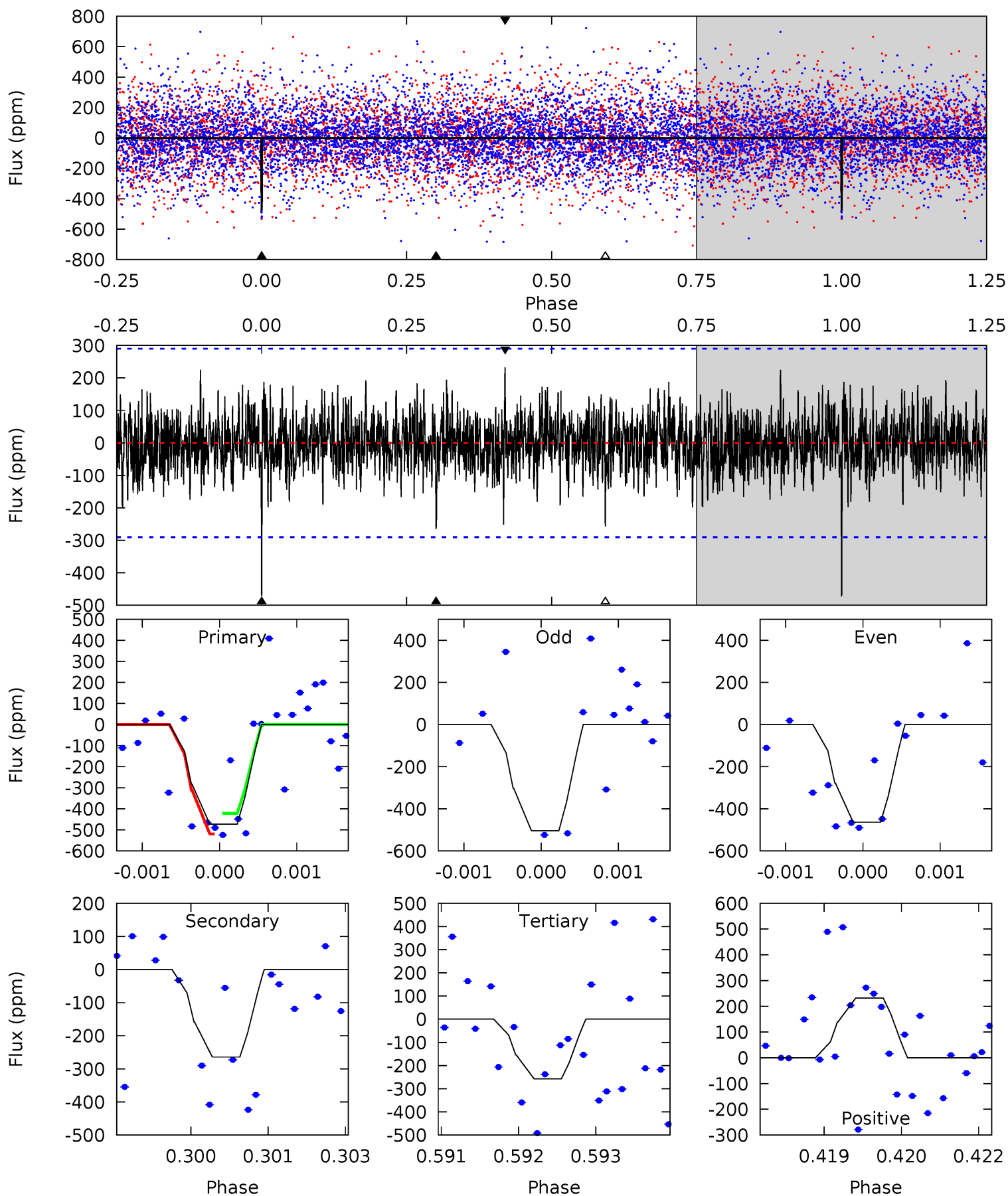
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.73	4.19	4.13	4.38	5.40	3.21	1.21	3.60	3.34	0.06	-0.20	0.27	1.02	0.36	0.30



# Alt Model-Shift Uniqueness Test

008314392-04, P = 51.648305 Days, E = 129.693970 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
8.79	4.92	4.78	4.32	5.40	3.20	1.24	4.01	4.47	0.14	0.60	0.28	0.93	0.33	0.91



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-237 \pm 57$	$5.86^{+6.12}_{-4.01}$	$939^{+68}_{-65}$	$4545^{+3330}_{-989}$	$331^{+2845}_{-256}$
Alt.	$-264 \pm 54$	$6.01^{+5.78}_{-4.06}$	$930^{+74}_{-57}$	$4681^{+3196}_{-1046}$	$366^{+2866}_{-277}$

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

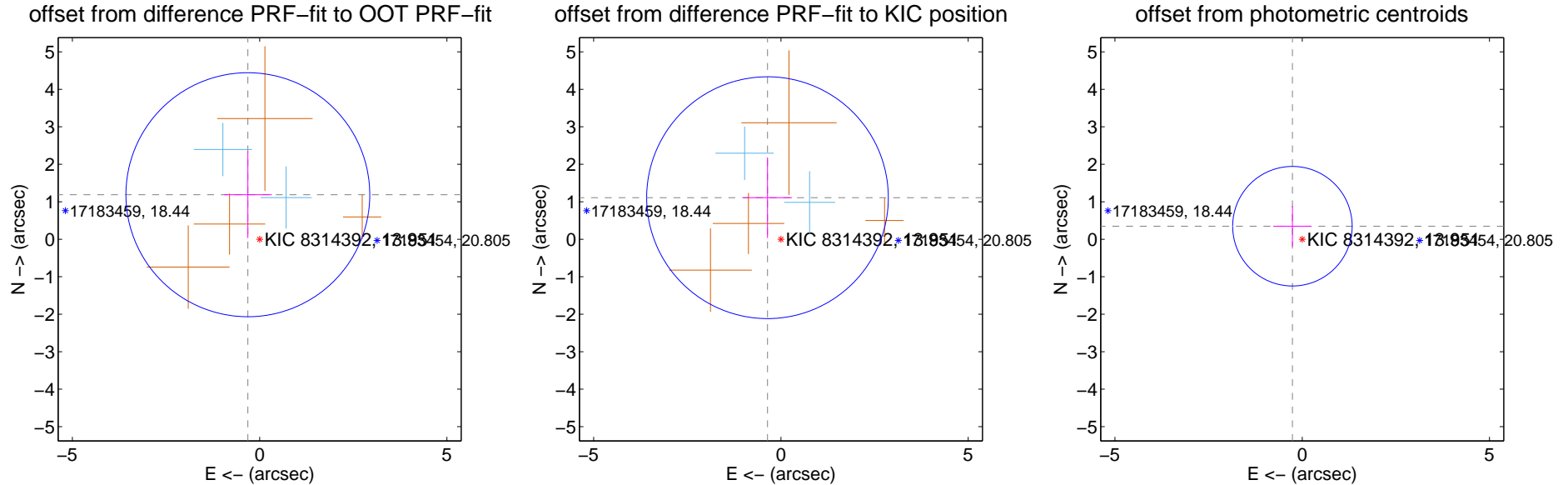
## DV Centroid Data

Supplemental centroid analysis for 008314392-04. Kepler magnitude: 13.95. Transit SNR 10.16

There are 2 quarters with good PRF difference image offsets

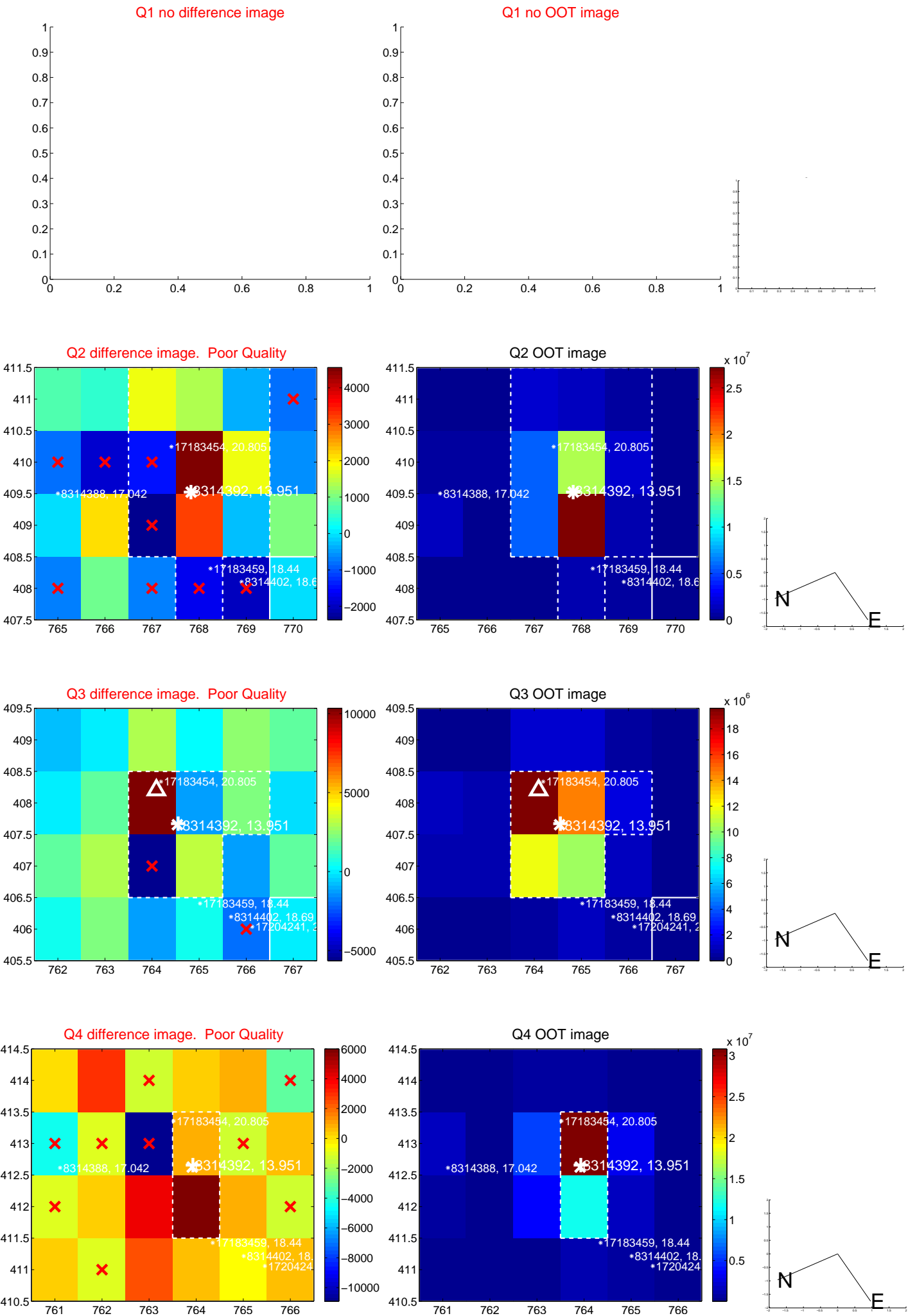
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.229 \pm 1.085$	1.13	$0.315 \pm 0.639$	$1.188 \pm 1.156$
PRF-fit source offset from KIC position	$1.165 \pm 1.075$	1.08	$0.358 \pm 0.649$	$1.109 \pm 1.076$
photometric centroid source offset	$0.44 \pm 0.53$	0.82	$0.26 \pm 0.51$	$0.35 \pm 0.54$

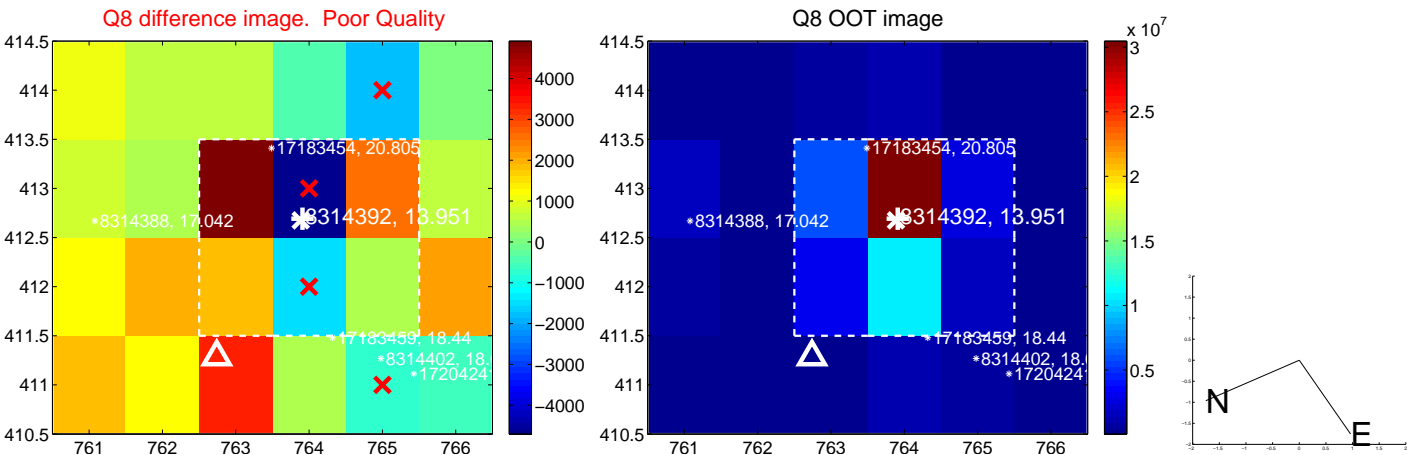
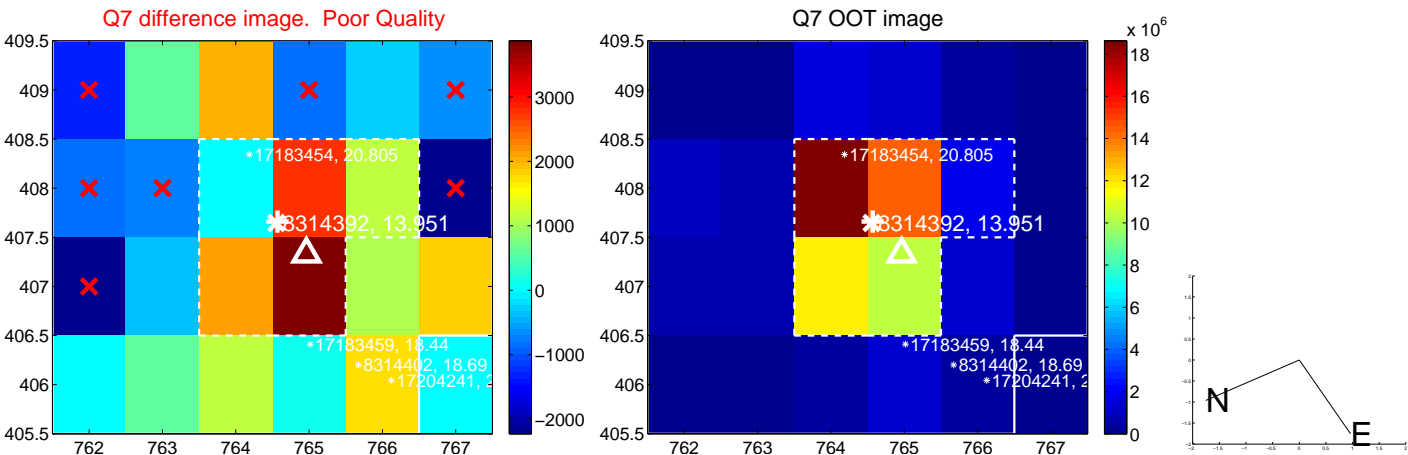
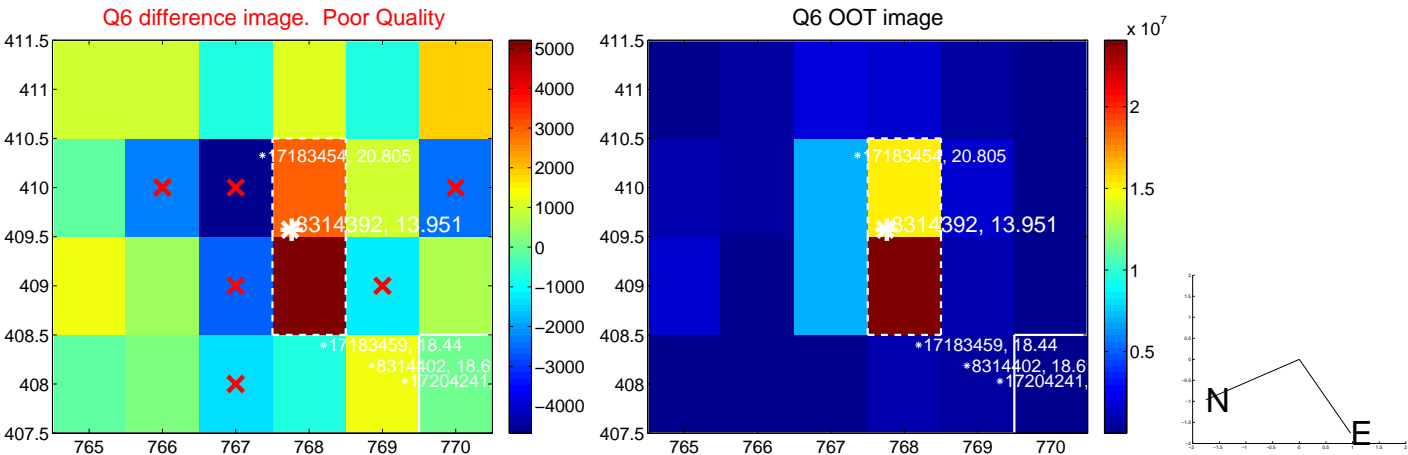
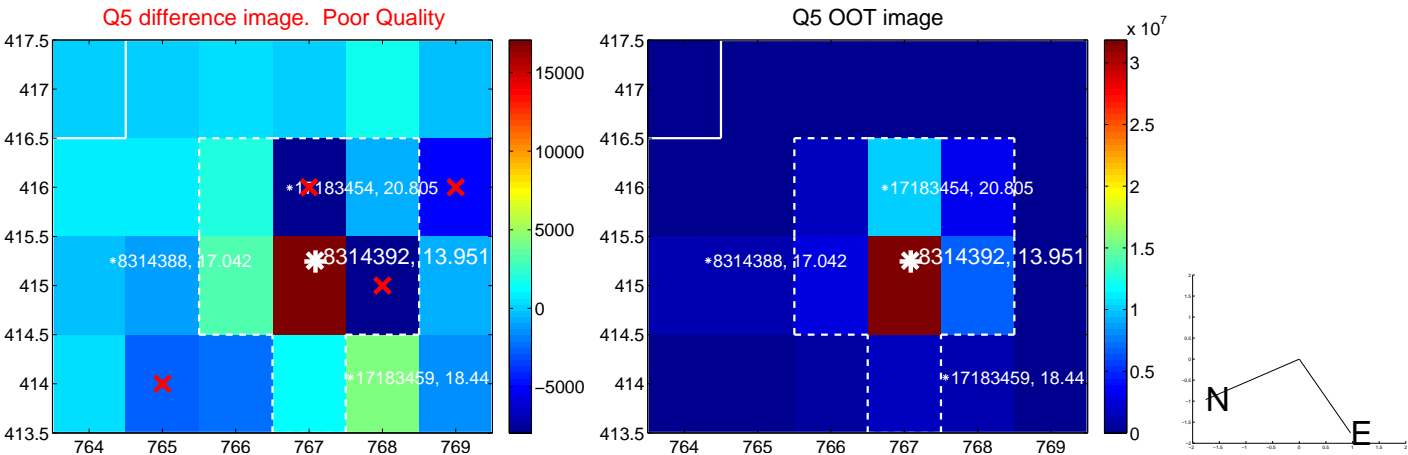


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

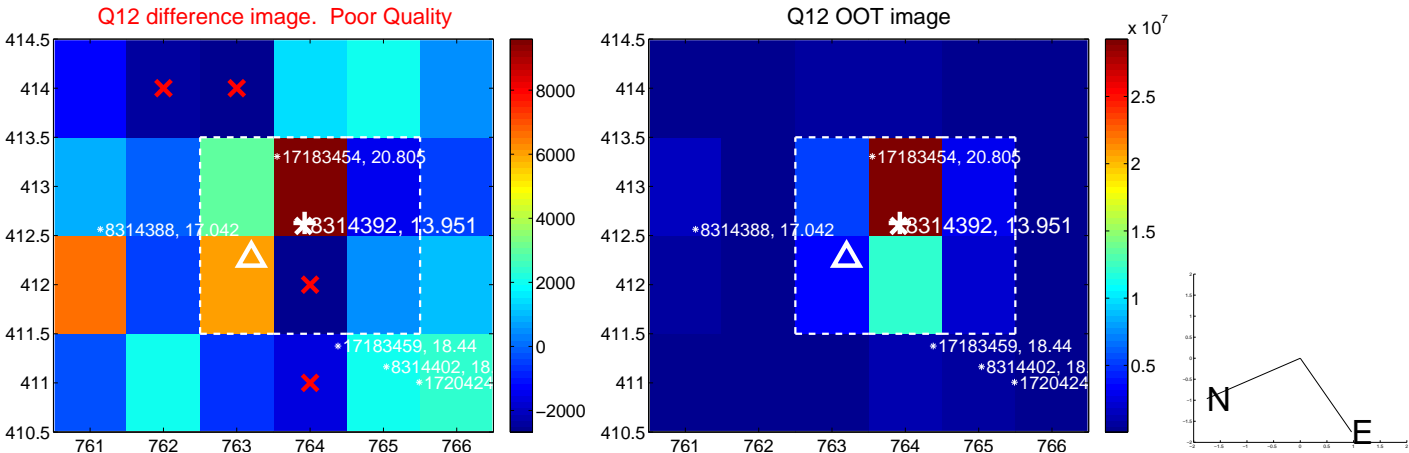
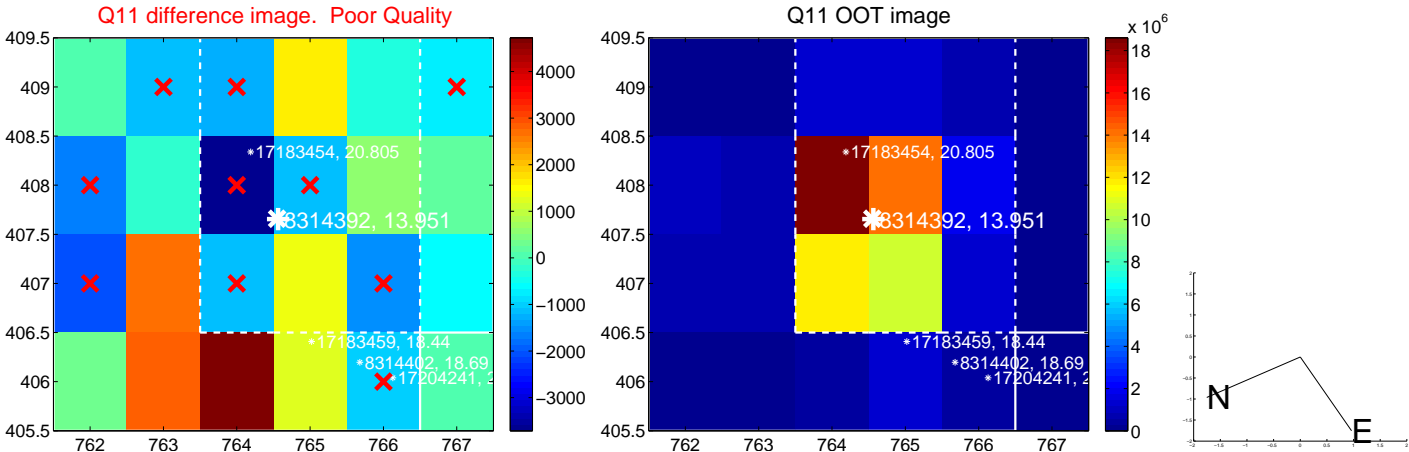
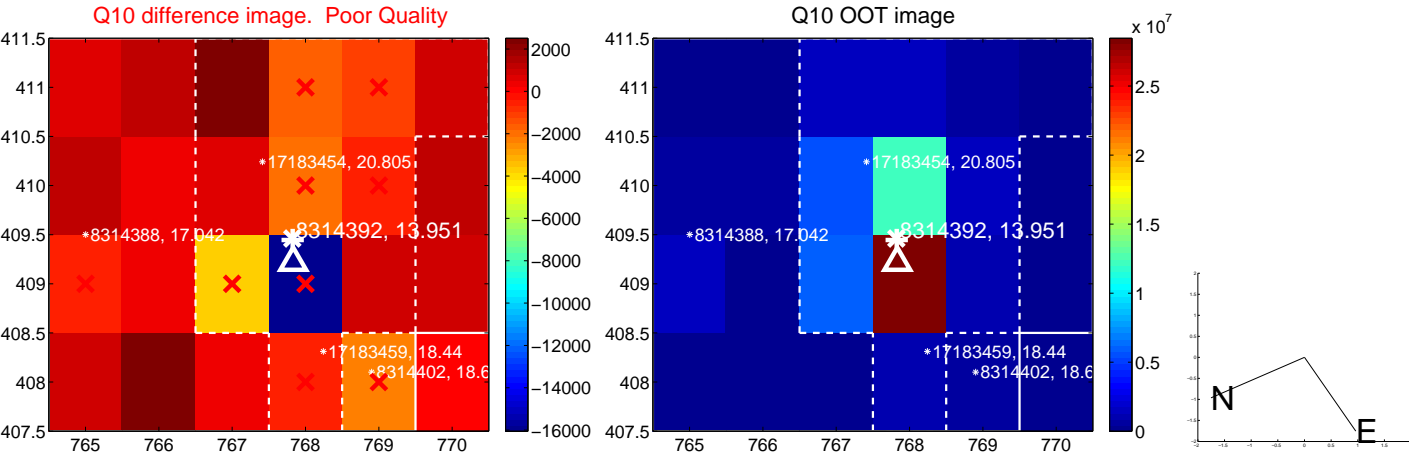
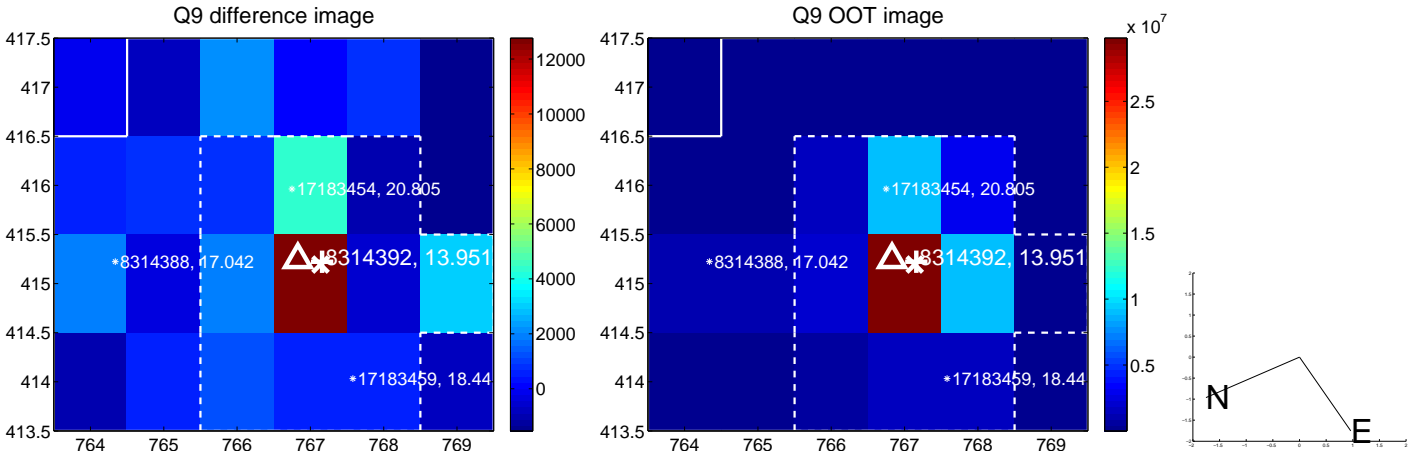
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

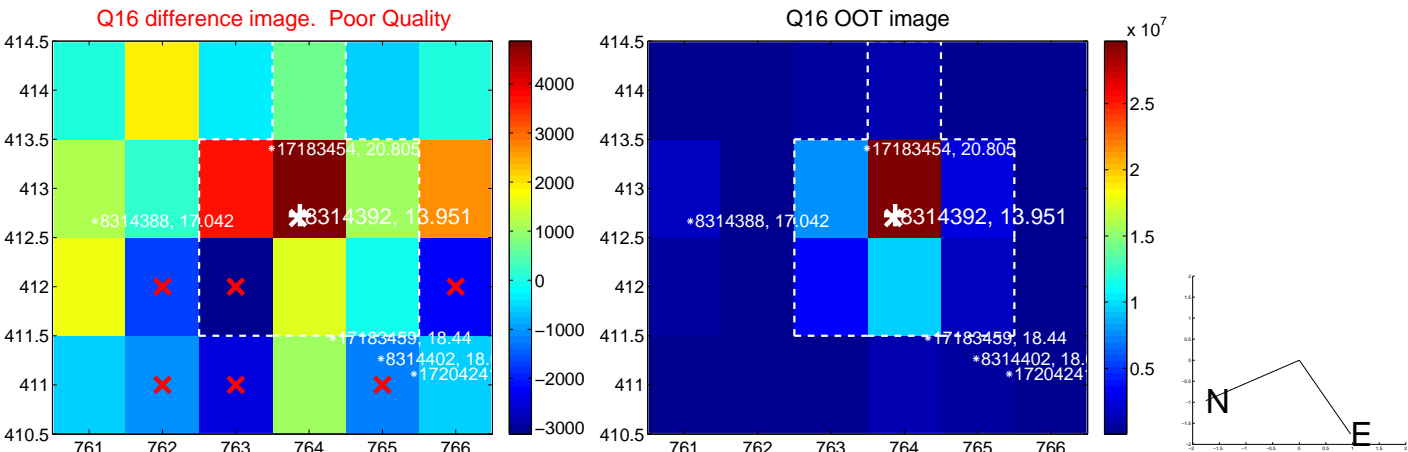
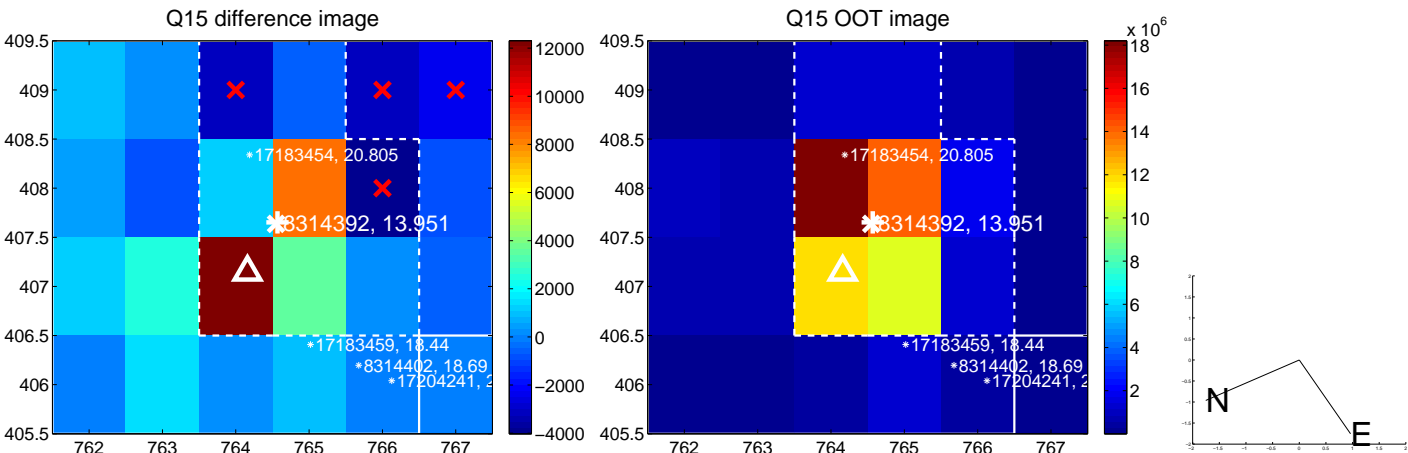
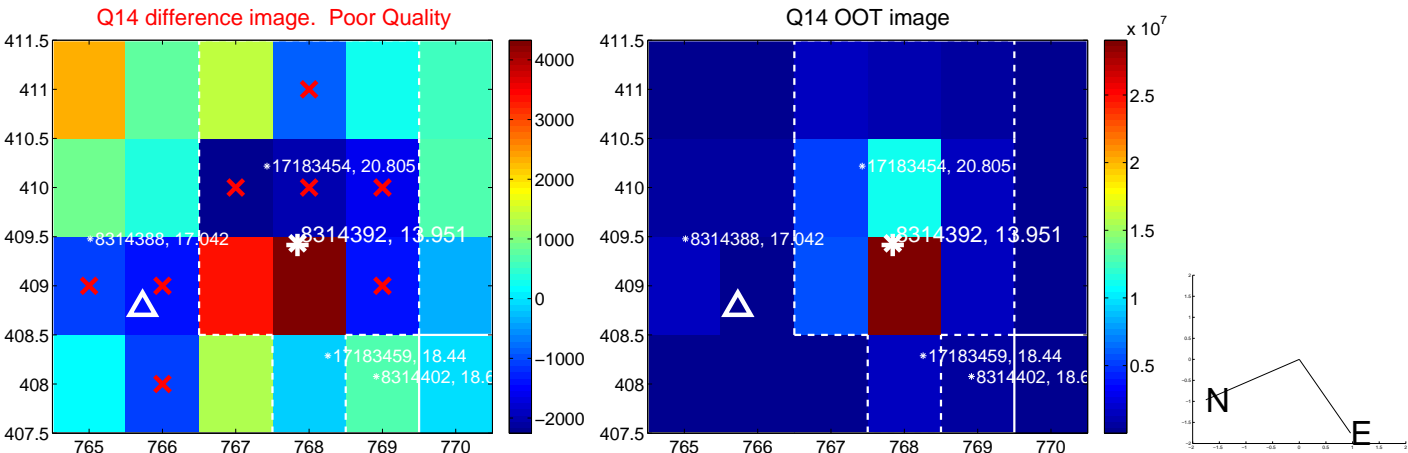
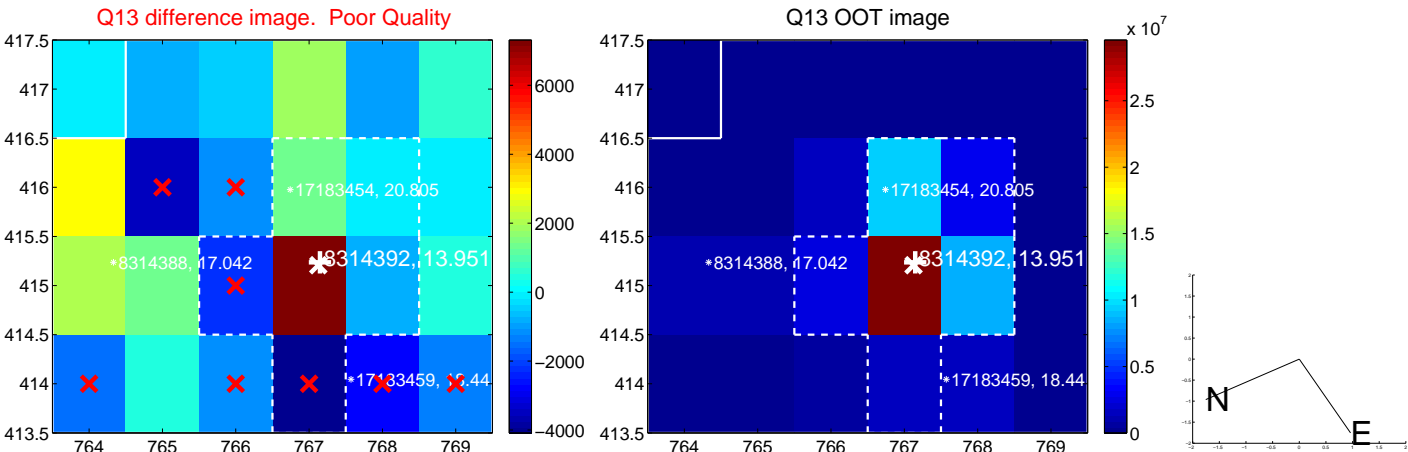


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

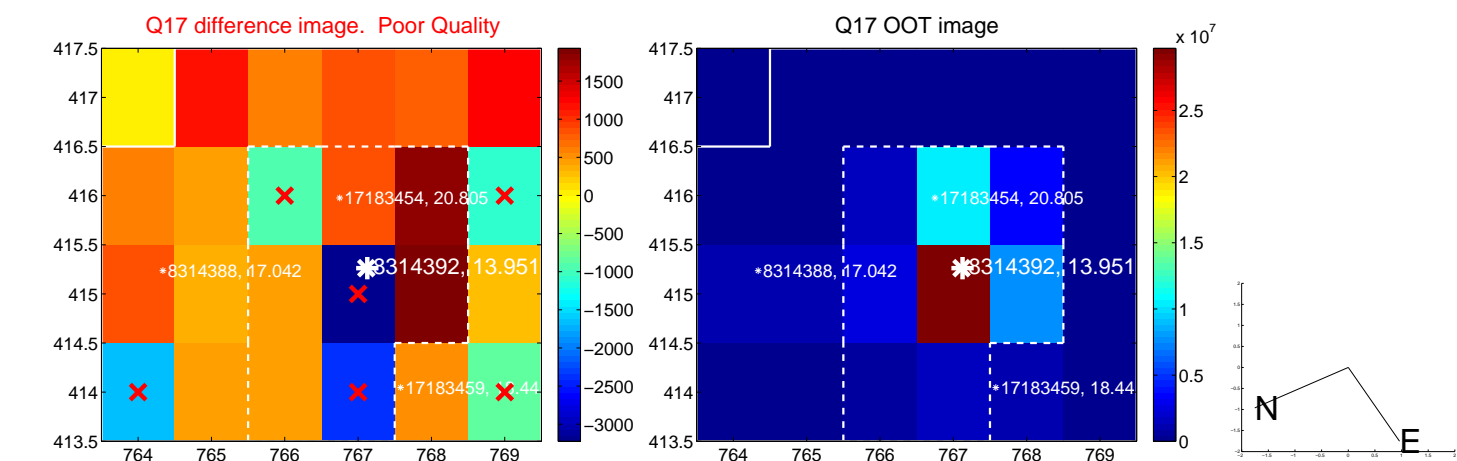




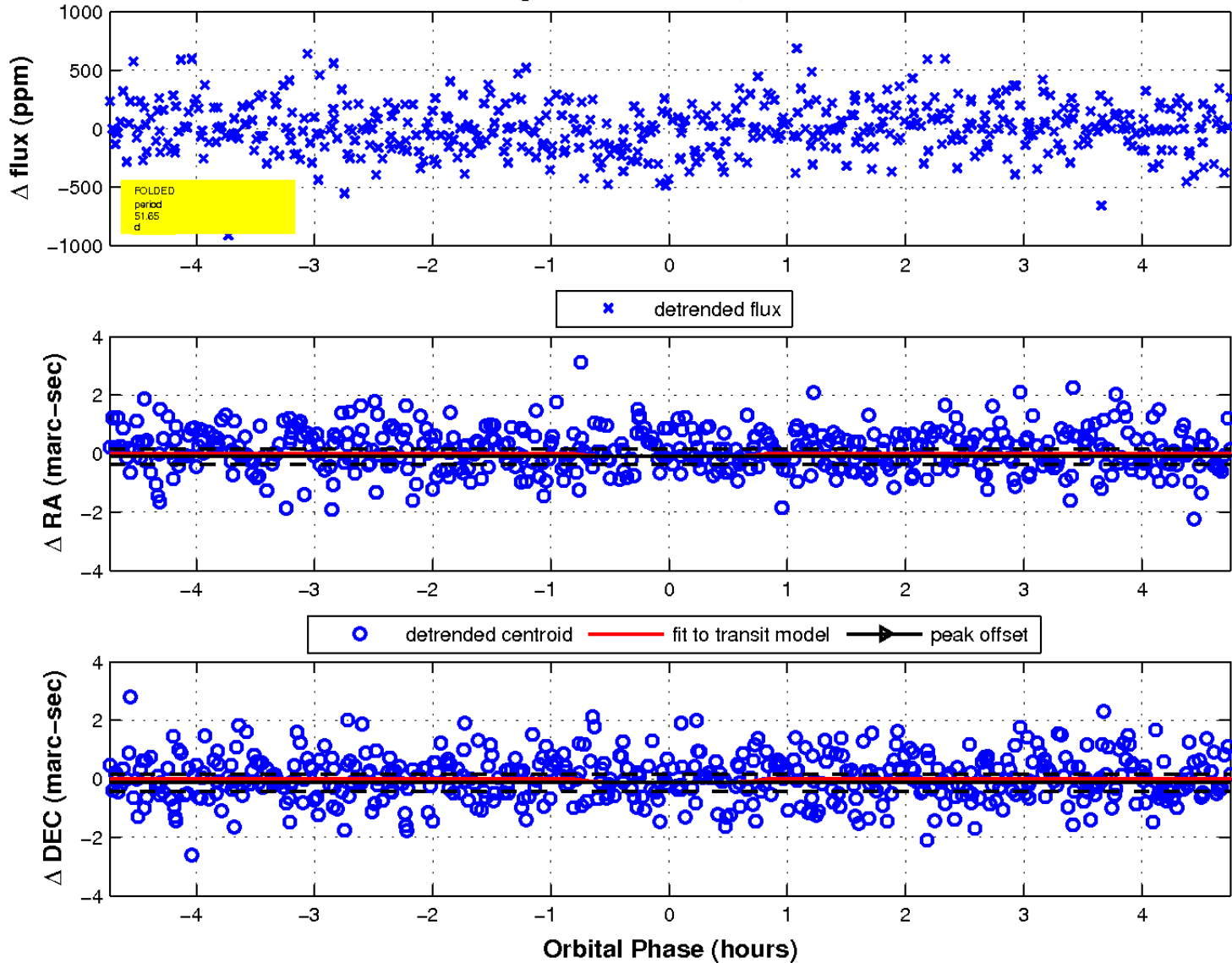
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

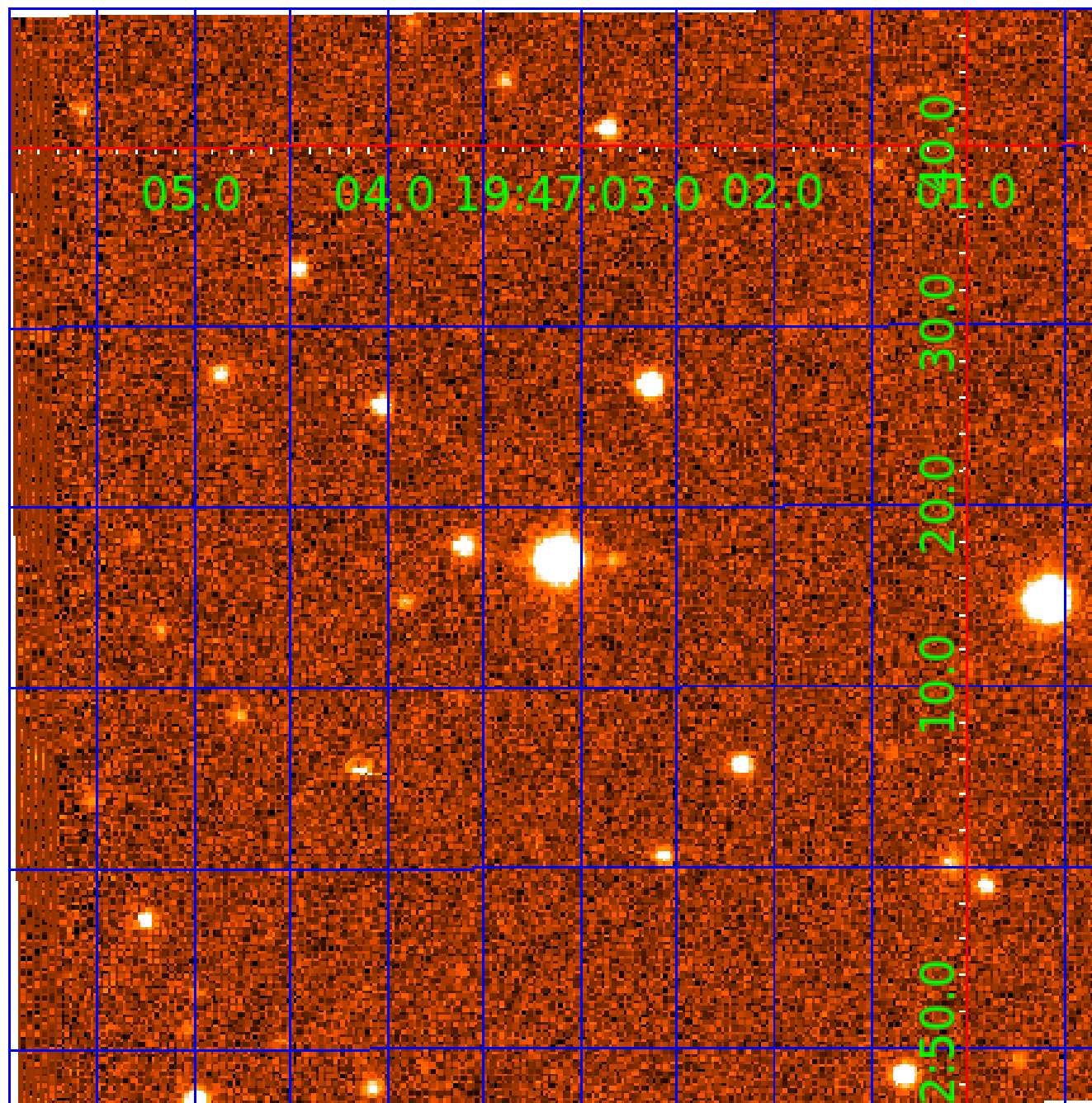


fluxWeightedCentroids, Planet 4 of 9



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

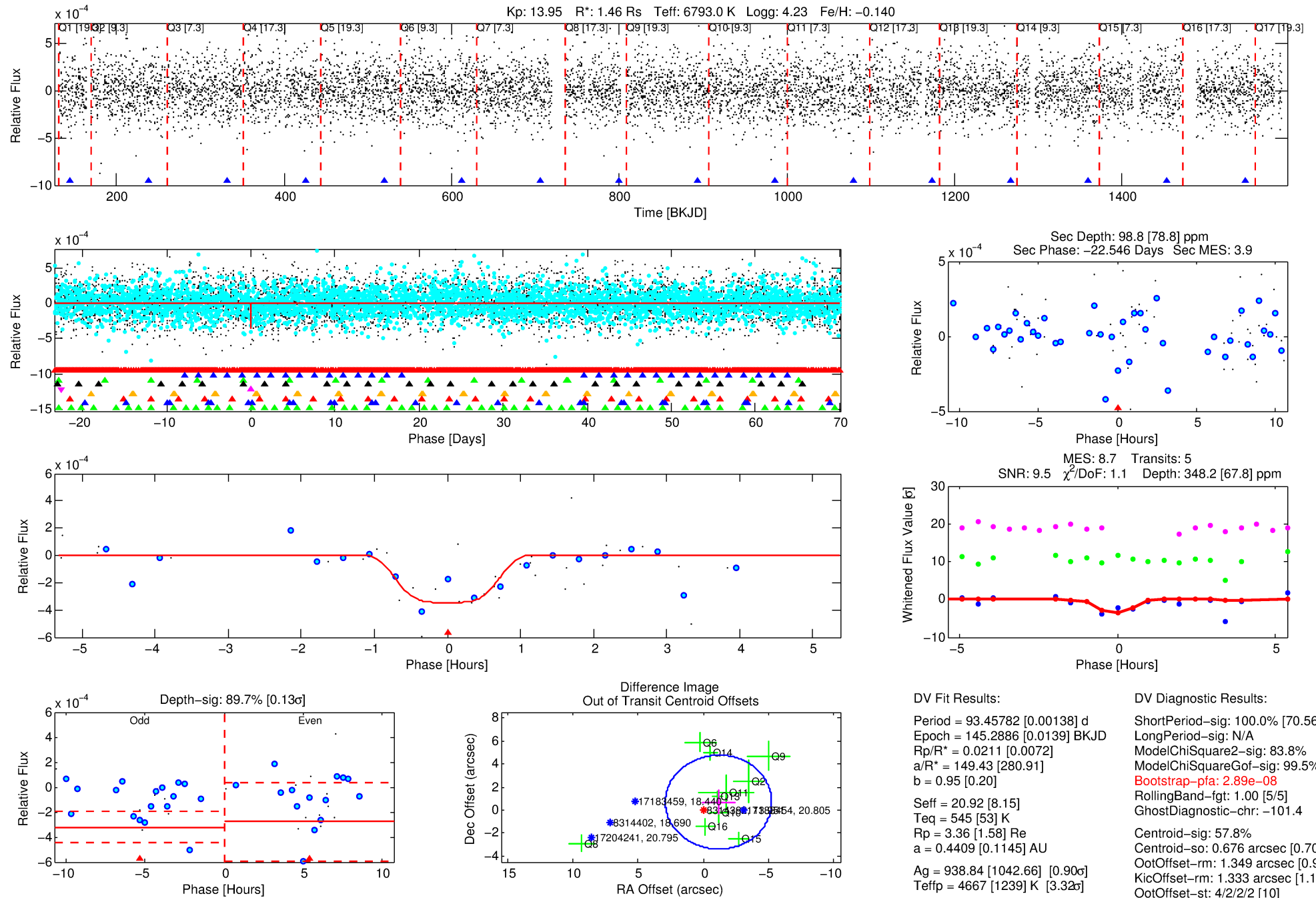
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-05

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 5 of 9 Period: 93.458 d



## DV Fit Results:

Period = 93.45782 [0.00138] d  
Epoch = 145.2886 [0.0139] BKJD  
Rp/R\* = 0.0211 [0.0072]  
a/R\* = 149.43 [280.91]  
b = 0.95 [0.20]  
Seff = 20.92 [8.15]  
Teq = 545 [53] K  
Rp = 3.36 [1.58] Re  
a = 0.4409 [0.1145] AU  
Ag = 938.84 [1042.66] [0.90 $\sigma$ ]  
Teff = 4667 [1239] K [3.32 $\sigma$ ]

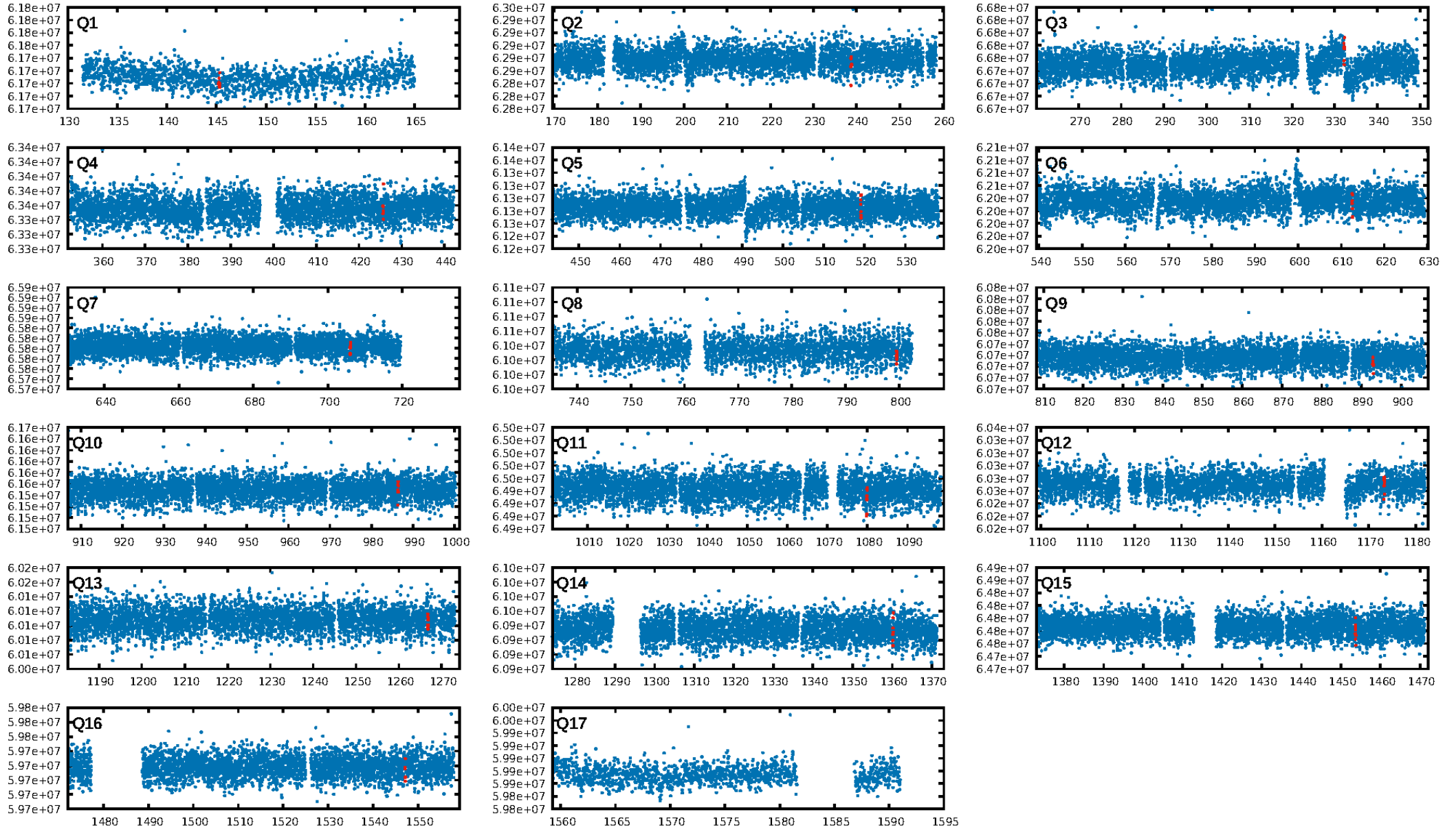
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [70.56 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 83.8%  
ModelChiSquareGof-sig: 99.5%  
**Bootstrap-pfa: 2.89e-08**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -101.4  
Centroid-sig: 57.8%  
Centroid-so: 0.676 arcsec [0.70 $\sigma$ ]  
OotOffset-rm: 1.349 arcsec [0.99 $\sigma$ ]  
OotOffset-st: 4/2/2/2 [10]  
KicOffset-rm: 1.333 arcsec [1.11 $\sigma$ ]  
KicOffset-st: 4/2/2/2 [10]  
DiffImageQuality-fgm: 0.30 [3/10]  
DiffImageOverlap-fno: 0.12 [2/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:16 Z

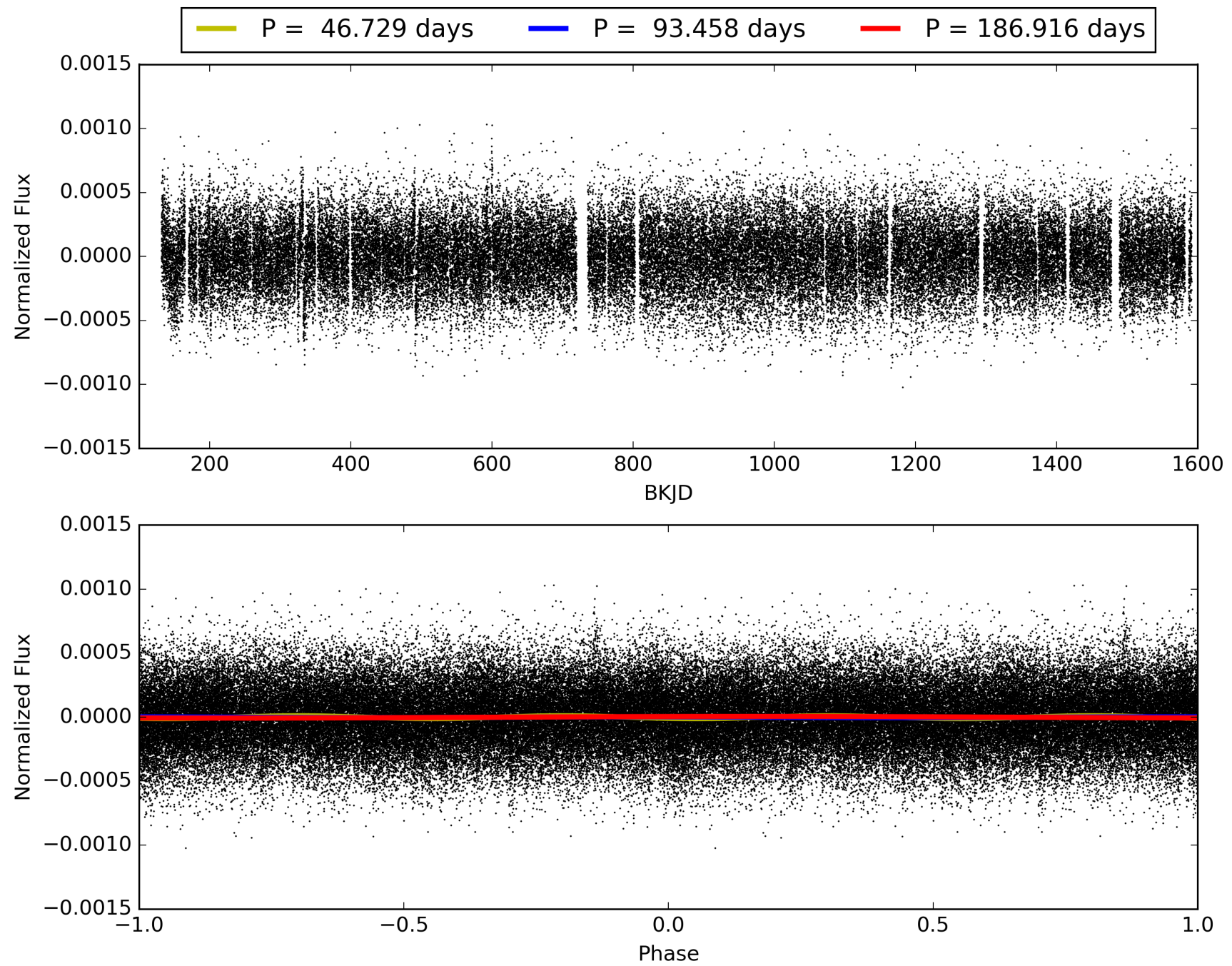
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008314392-05, PDC Light Curves





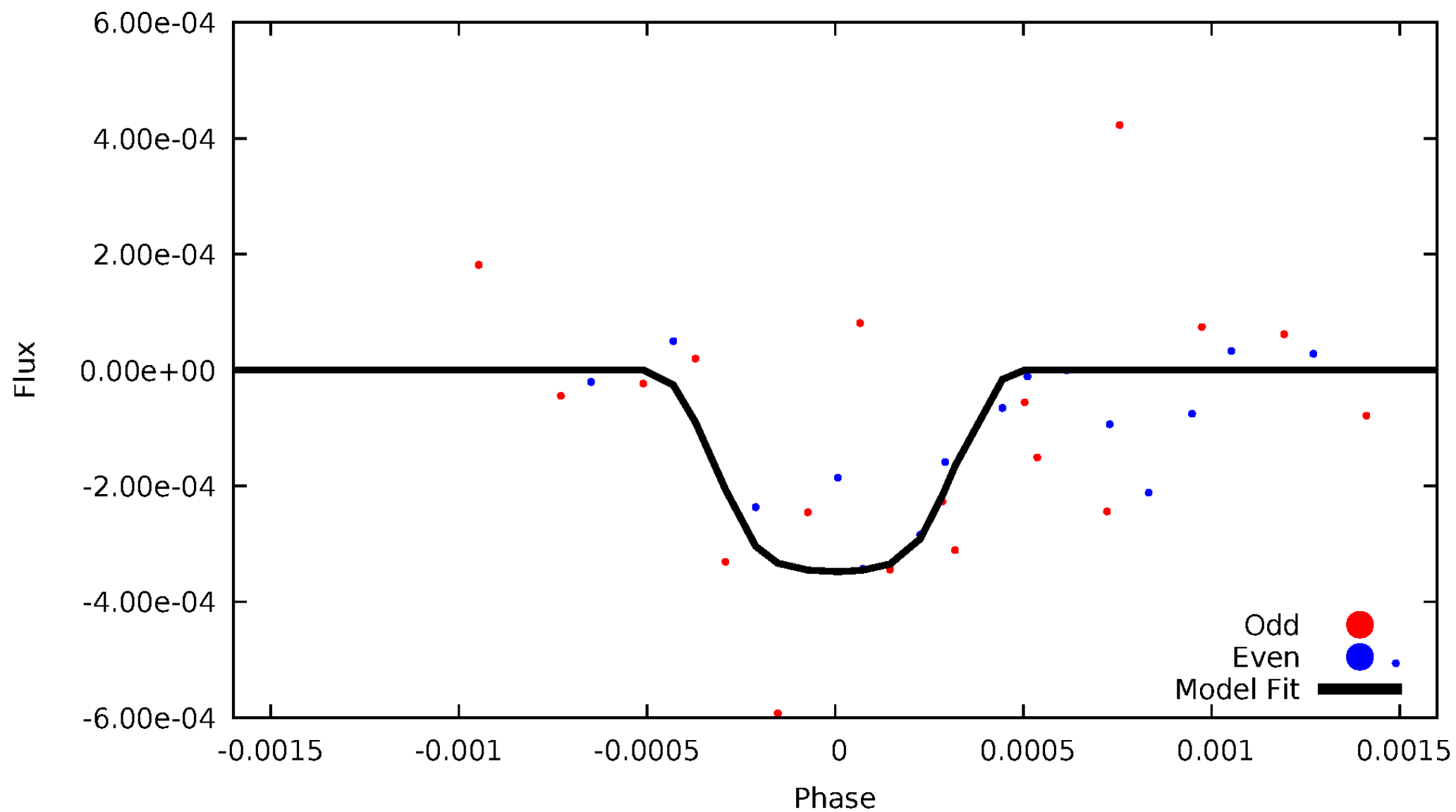
TCE 008314392-05





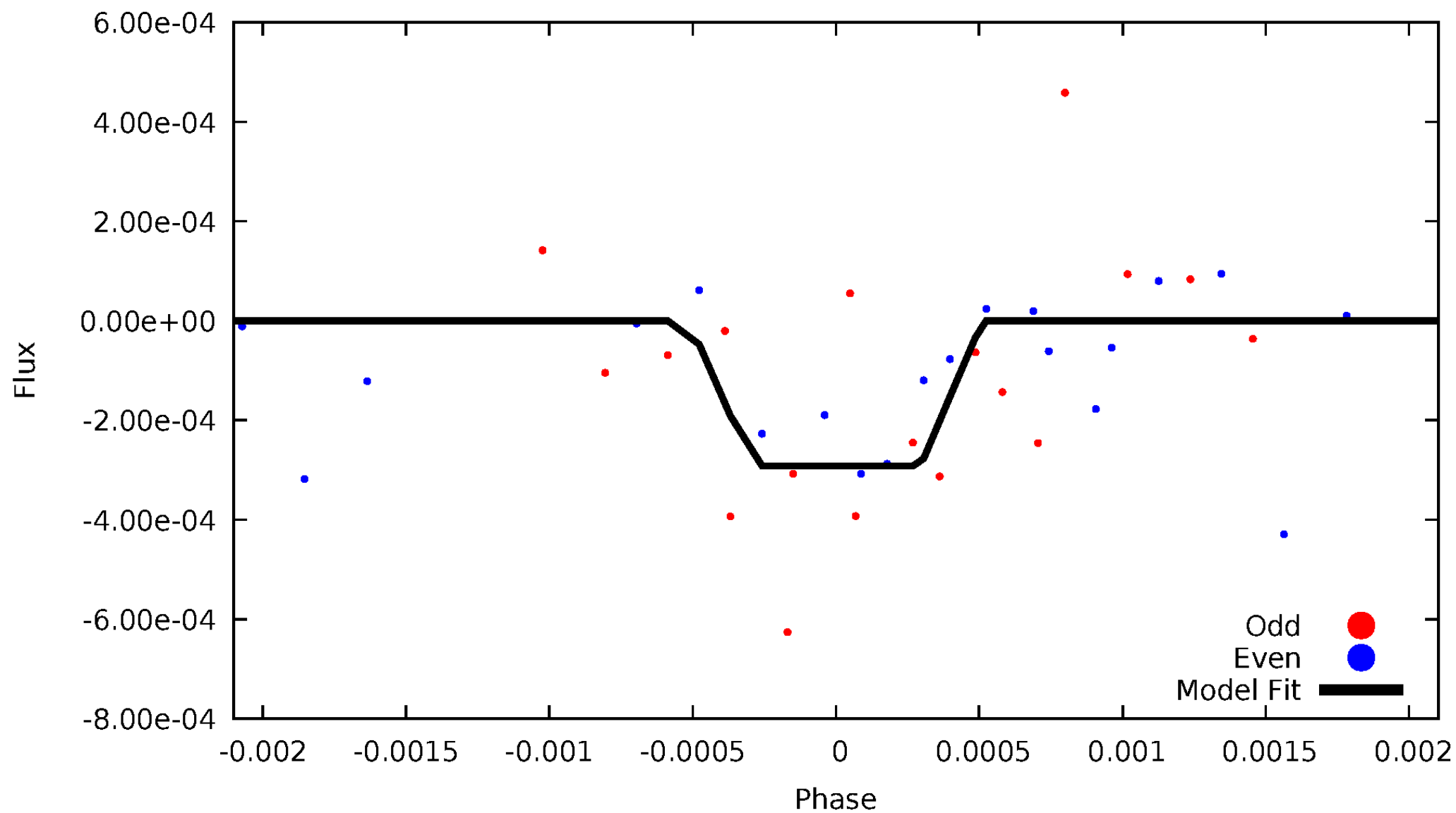
# DV Odd/Even

TCE 008314392-05



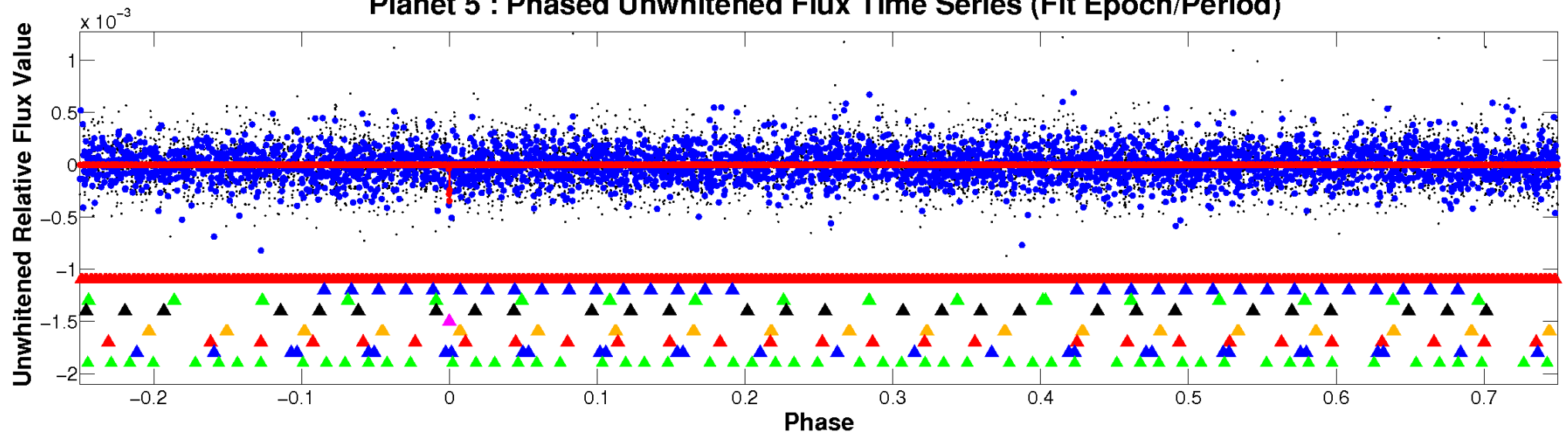
# ALT Odd/Even

TCE 008314392-05

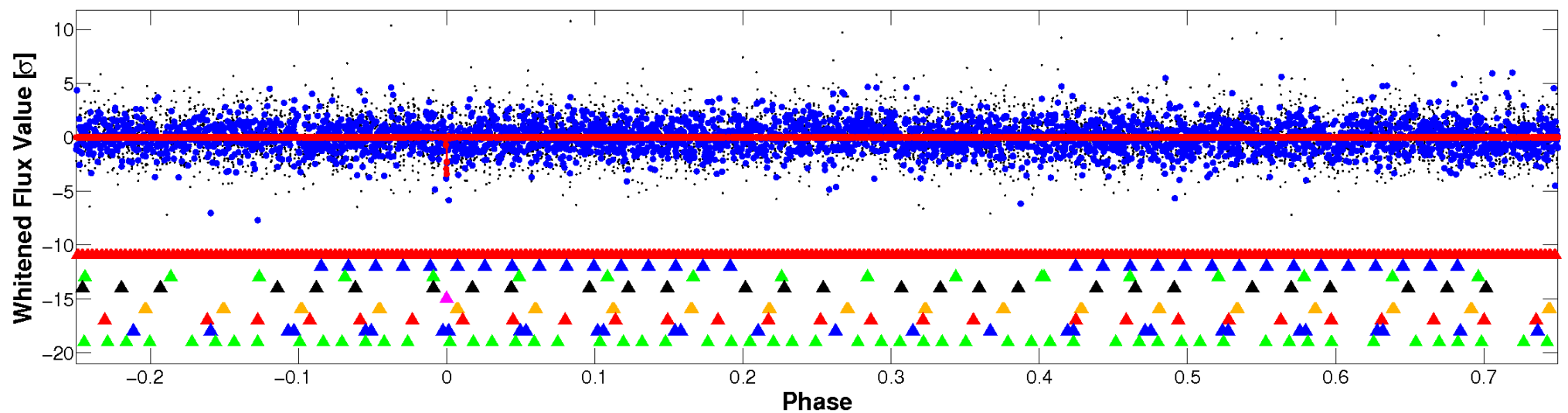


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

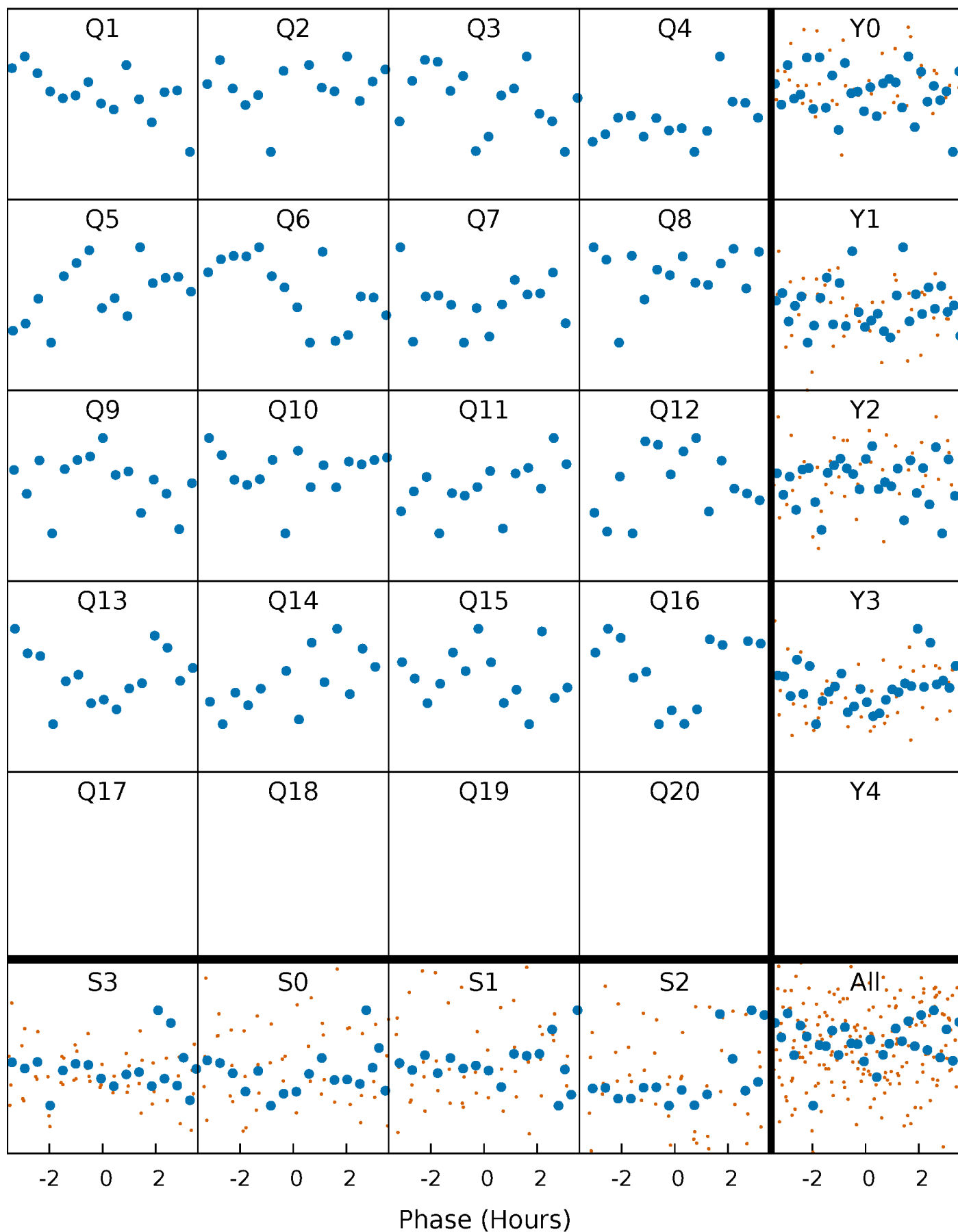


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



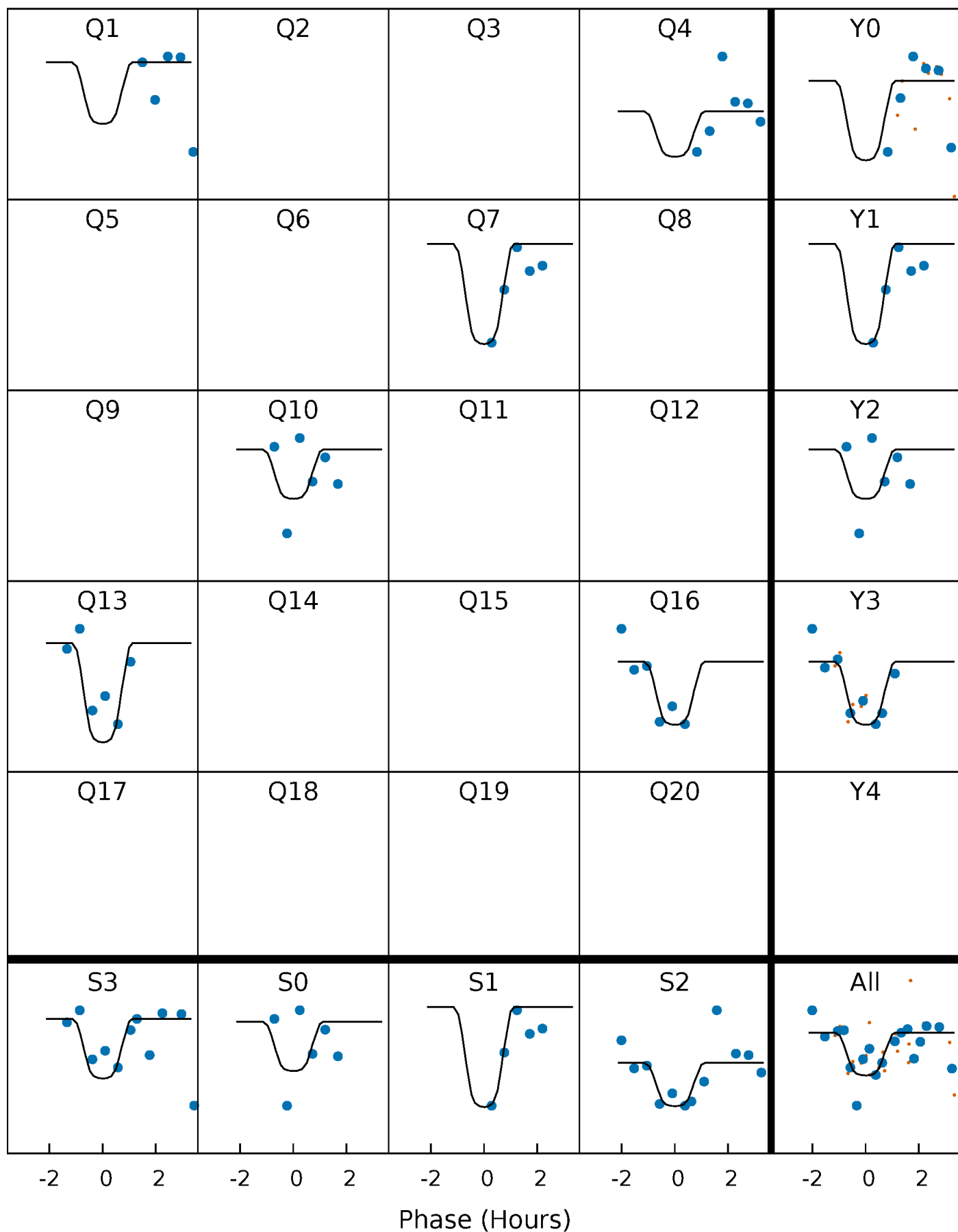
# PDC Quarter-Phased Transit Curves

TCE 008314392-05     $P = 93.457820$  Days     $T_0 = 145.288612$  (BKJD)



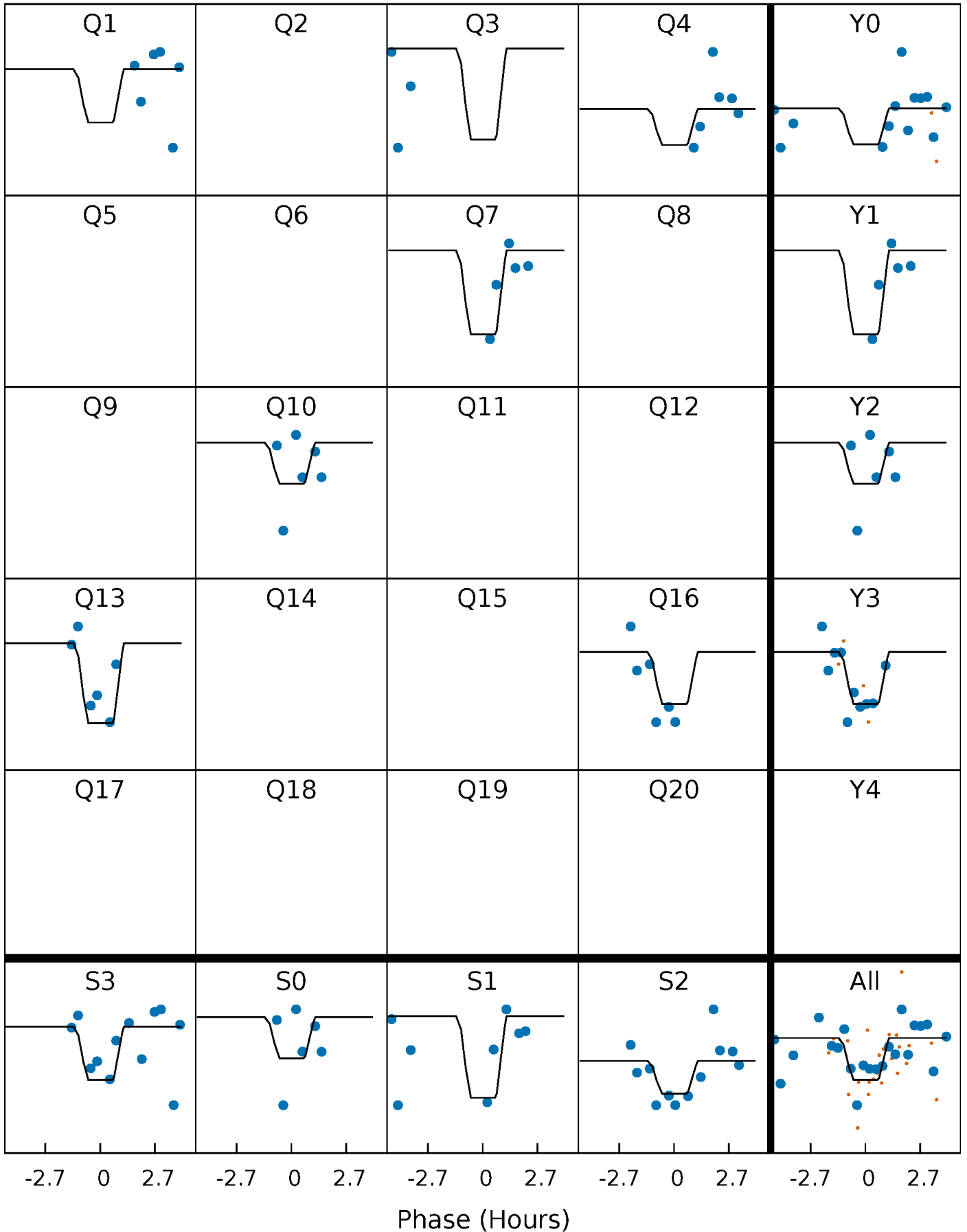
# DV Quarter-Phased Transit Curves

TCE 008314392-05     $P = 93.457820$  Days     $T_0 = 145.288612$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

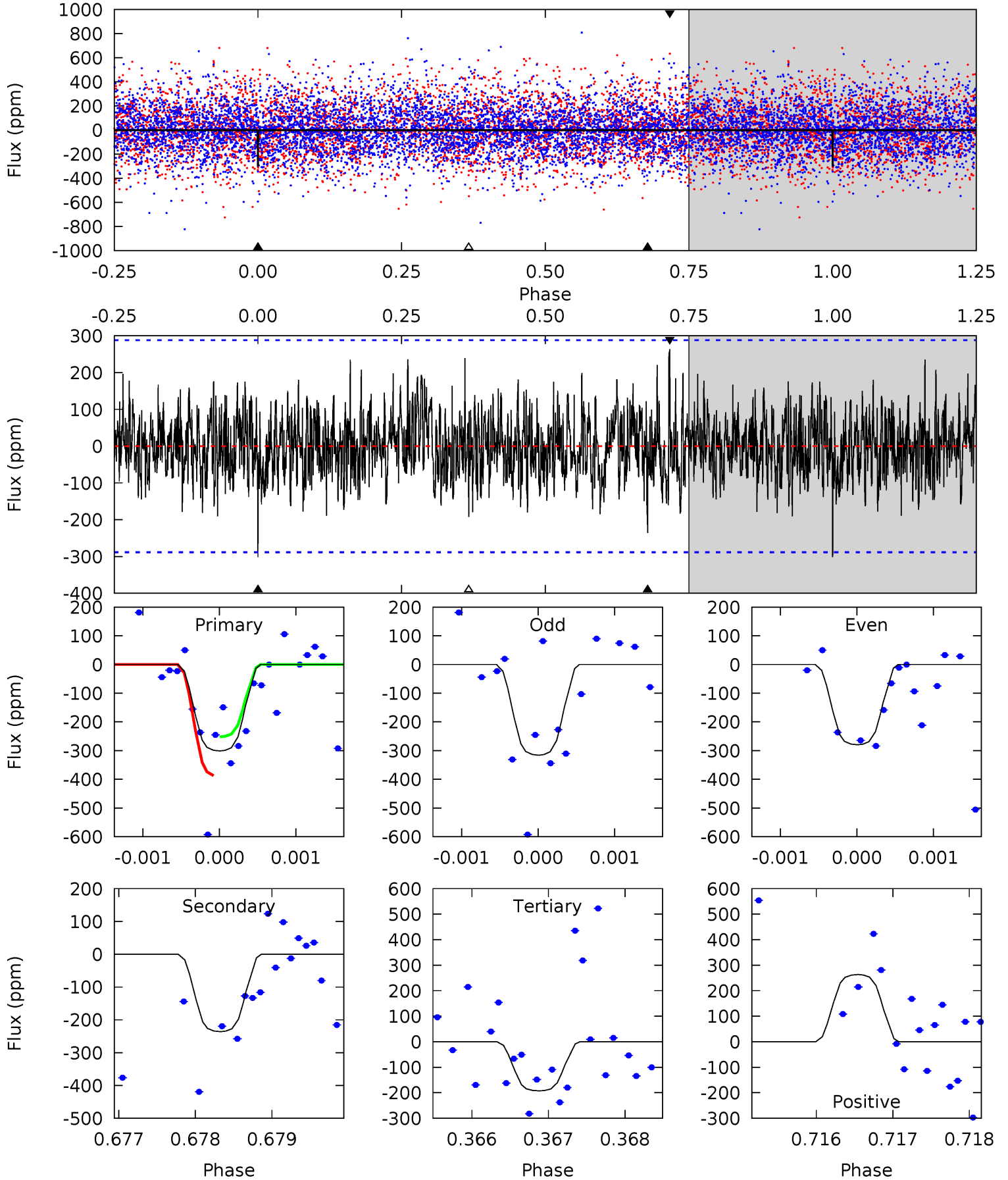
TCE 008314392-05     $P = 93.458761$  Days     $T_0 = 145.281719$  (BKJD)



# DV Model-Shift Uniqueness Test

008314392-05, P = 93.457820 Days, E = 51.830792 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
5.71	4.47	3.65	4.99	5.46	3.31	1.38	2.06	0.72	0.83	-0.52	0.34	1.00	0.47	1.24

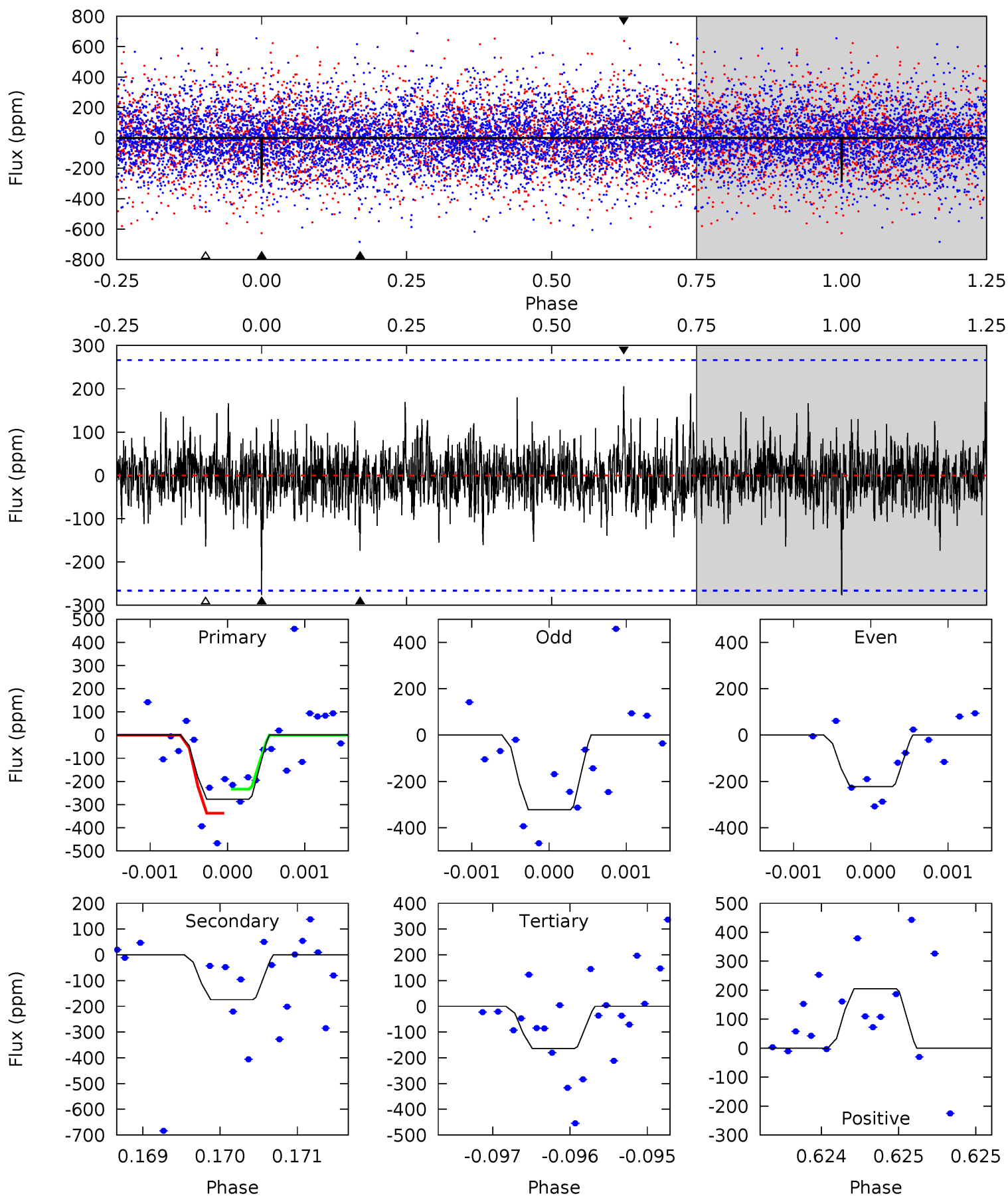




# Alt Model-Shift Uniqueness Test

008314392-05, P = 93.458761 Days, E = 51.822958 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
5.67	3.57	3.37	4.21	5.46	3.30	0.95	2.30	1.46	0.20	-0.64	1.01	1.15	0.43	1.05



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-236 \pm 53$	$3.39^{+1.39}_{-1.22}$	$764^{+56}_{-46}$	$5737^{+1464}_{-762}$	$2146^{+3114}_{-1093}$
Alt.	$-174 \pm 49$	$2.72^{+1.36}_{-1.12}$	$768^{+58}_{-51}$	$5970^{+2069}_{-991}$	$2511^{+4479}_{-1466}$

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

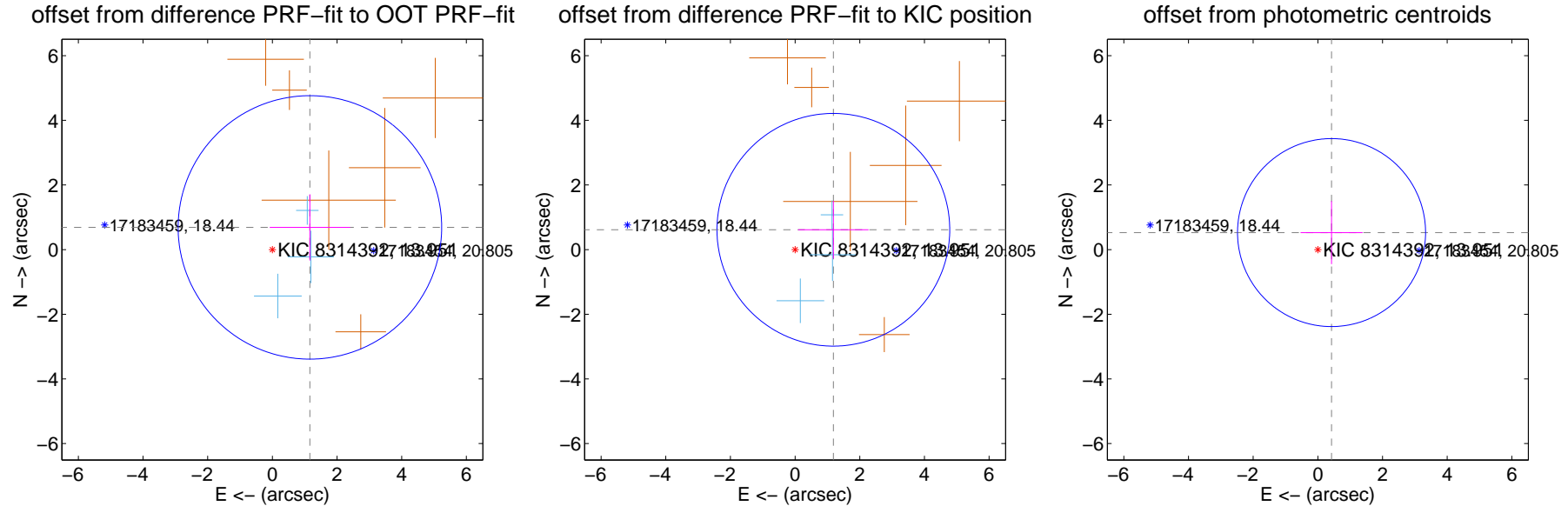
## DV Centroid Data

Supplemental centroid analysis for 008314392-05. Kepler magnitude: 13.95. Transit SNR 9.49

There are 3 quarters with good PRF difference image offsets

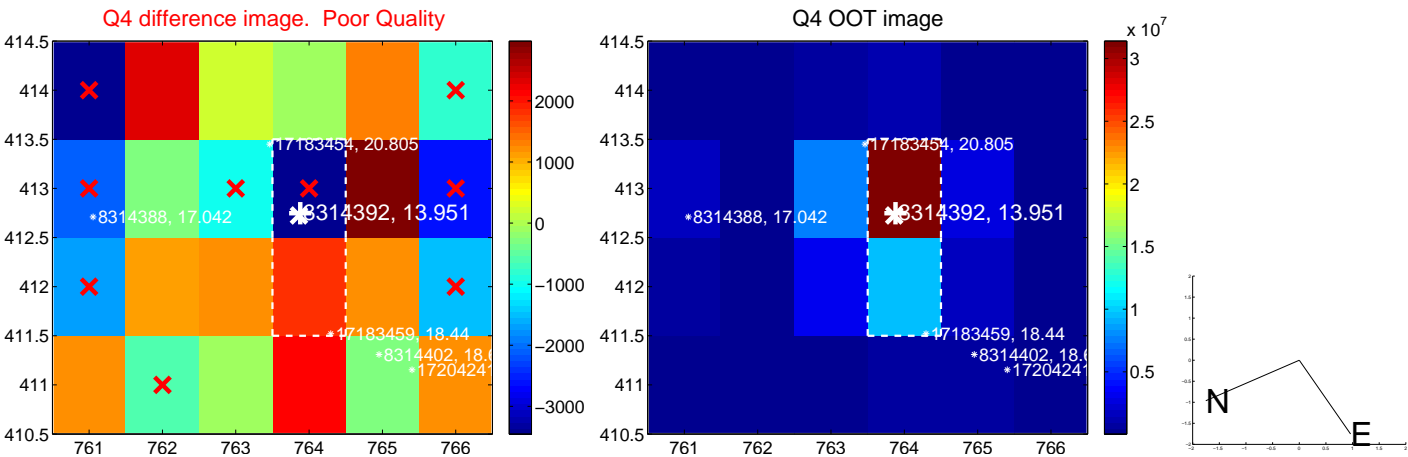
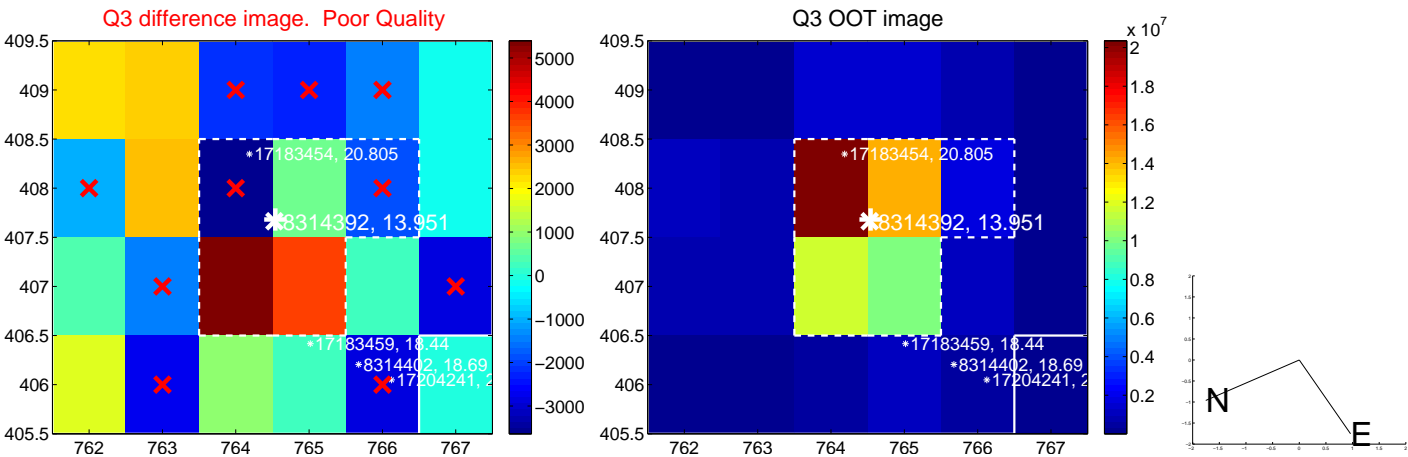
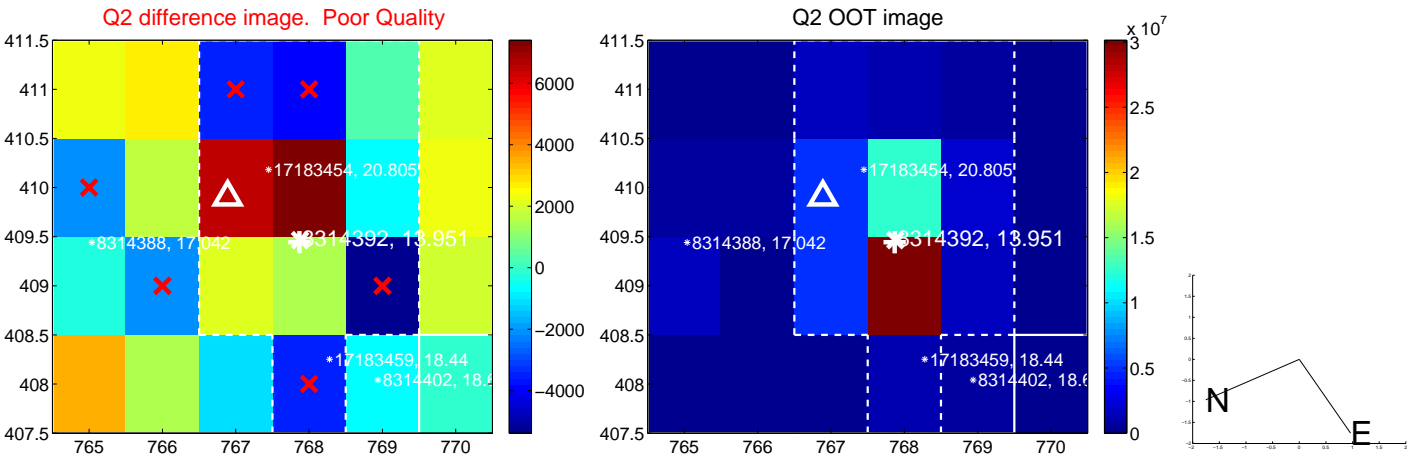
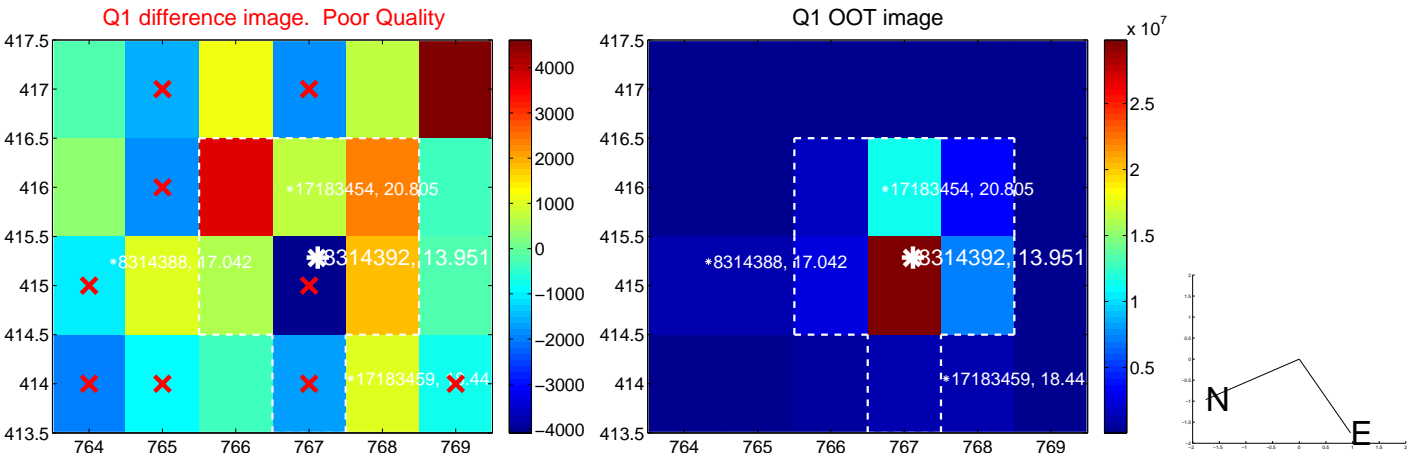
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.349 \pm 1.358$	0.99	$-1.161 \pm 1.242$	$0.687 \pm 1.024$
PRF-fit source offset from KIC position	$1.333 \pm 1.200$	1.11	$-1.183 \pm 1.088$	$0.614 \pm 0.893$
photometric centroid source offset	$0.68 \pm 0.97$	0.70	$-0.42 \pm 0.96$	$0.53 \pm 0.98$

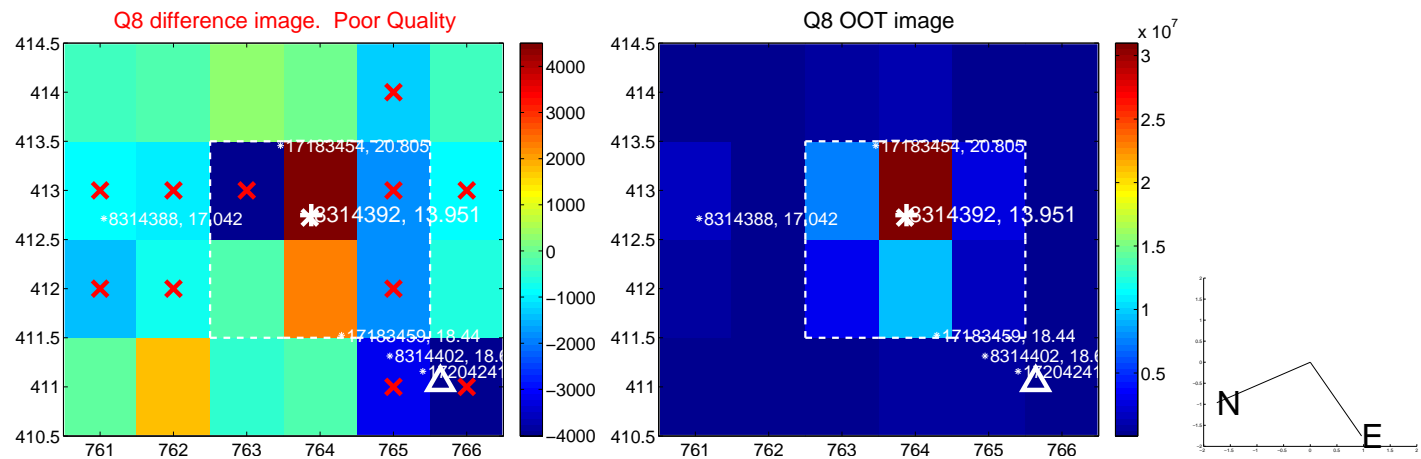
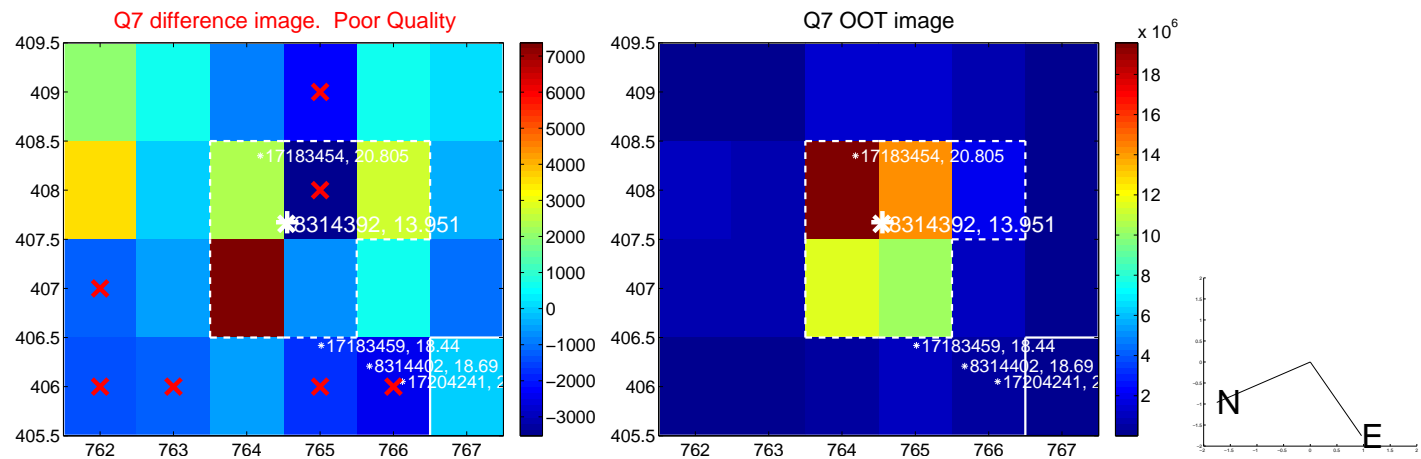
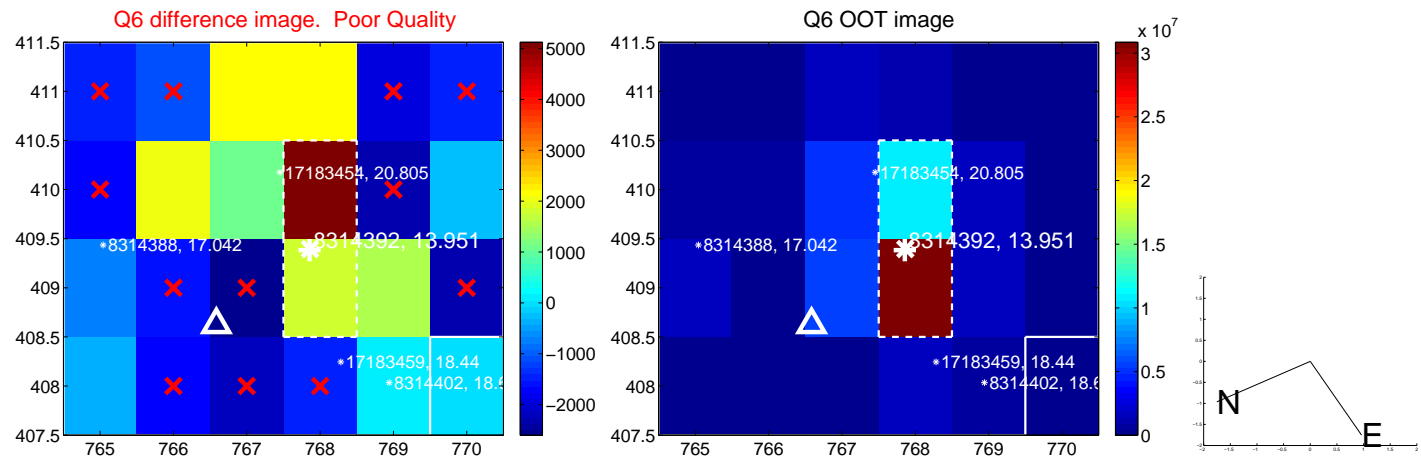
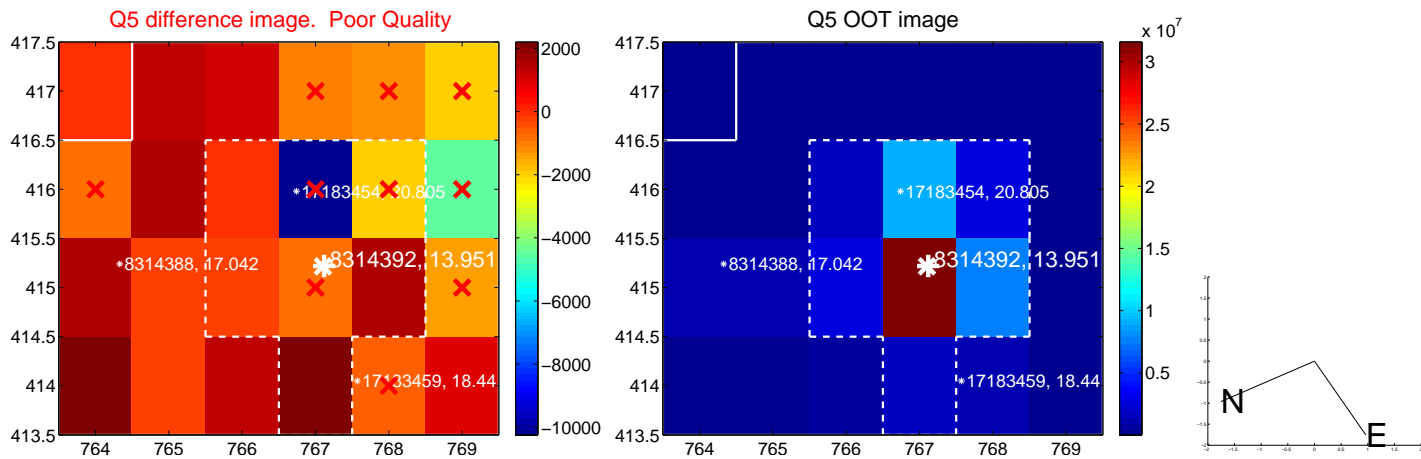


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

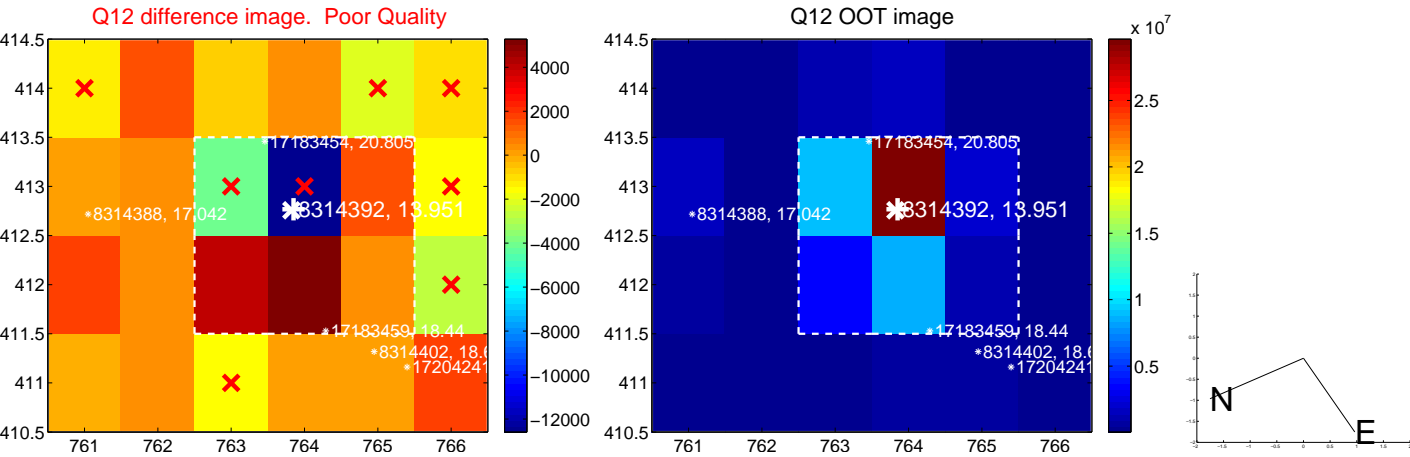
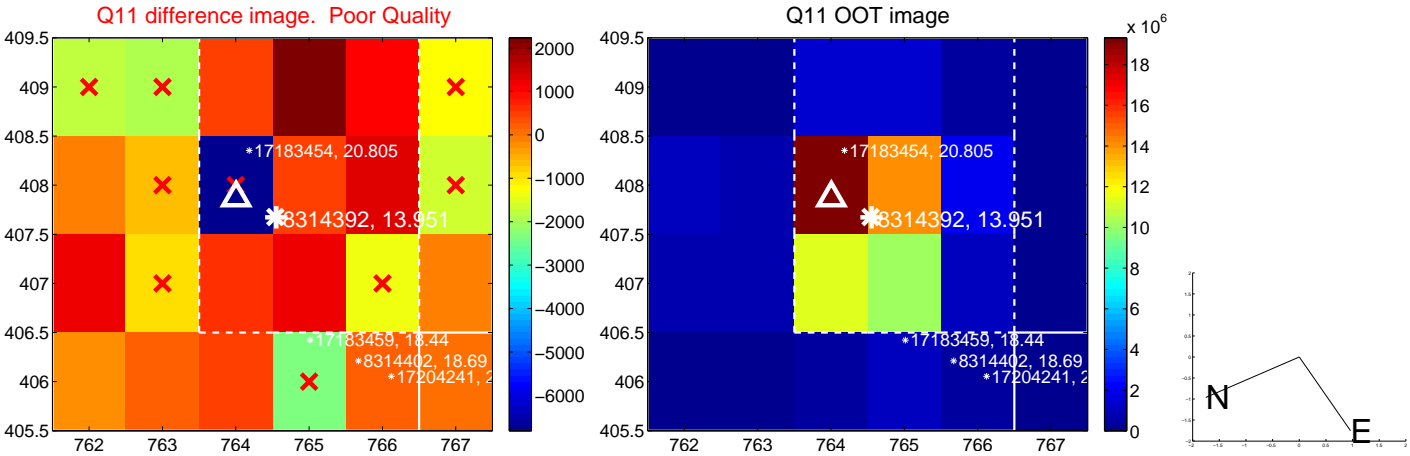
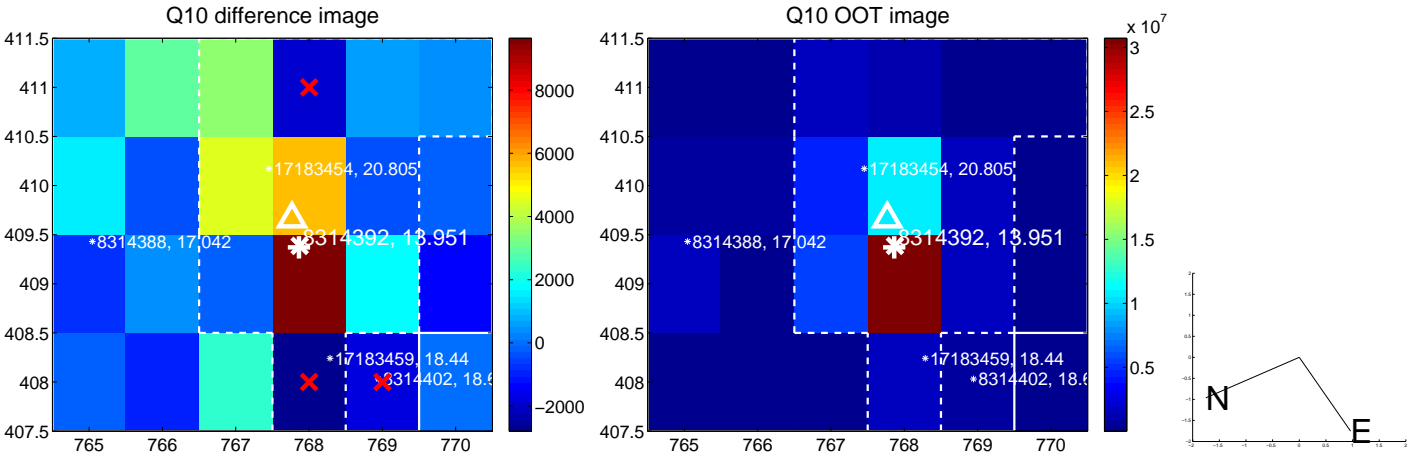
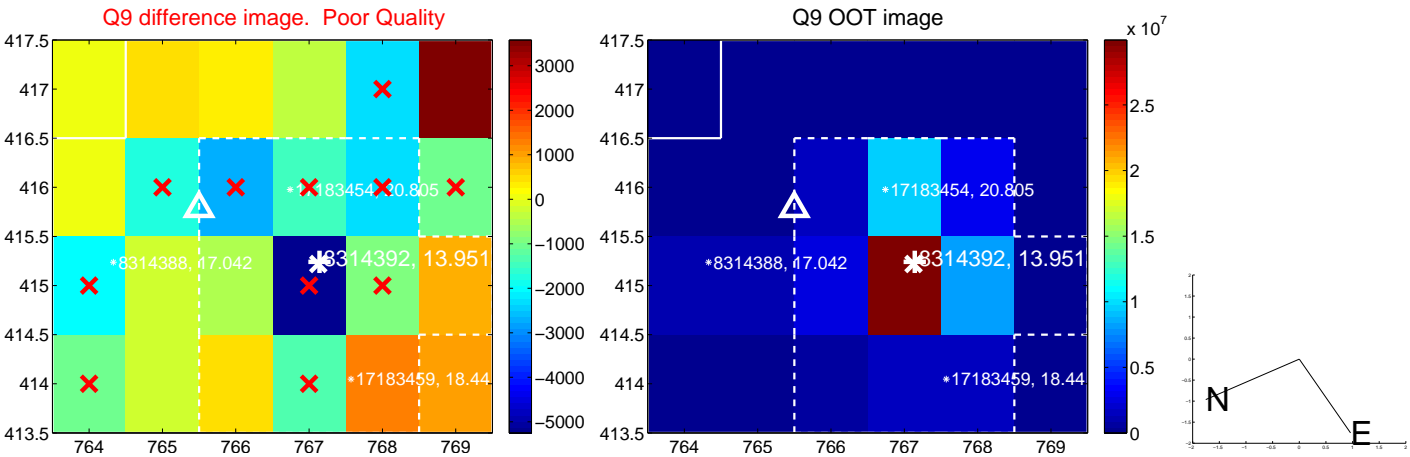
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



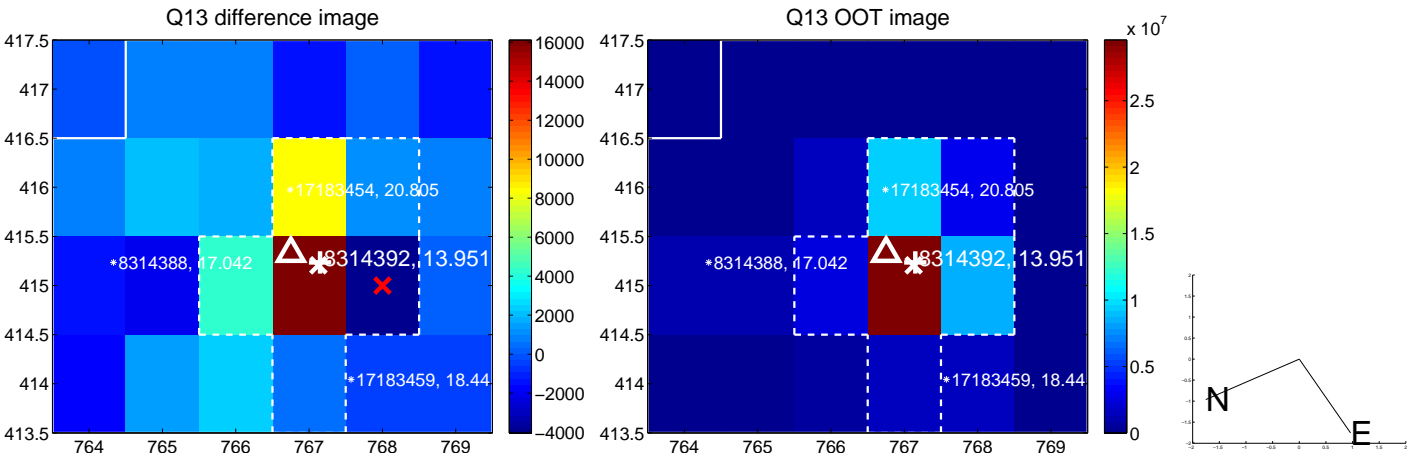
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

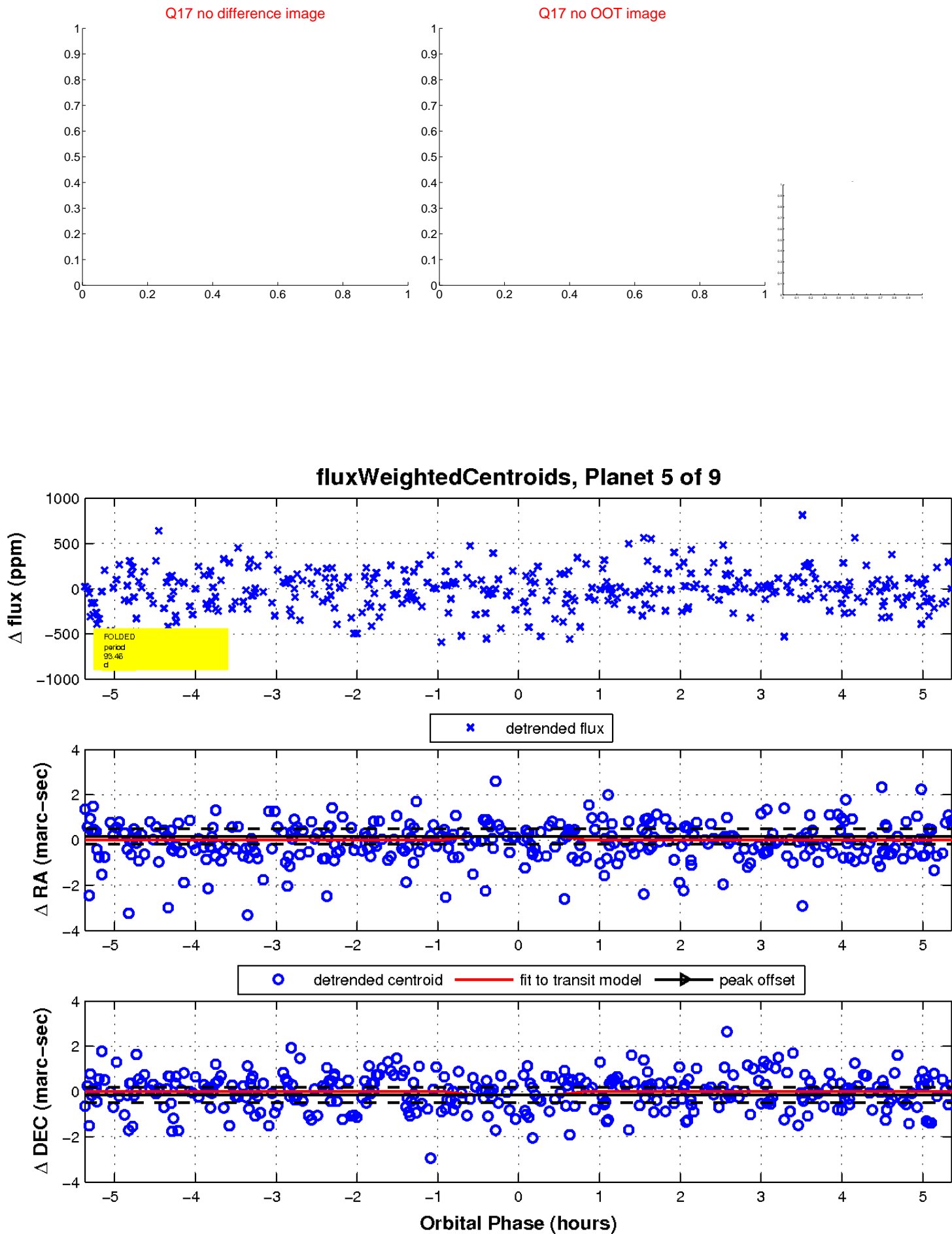


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



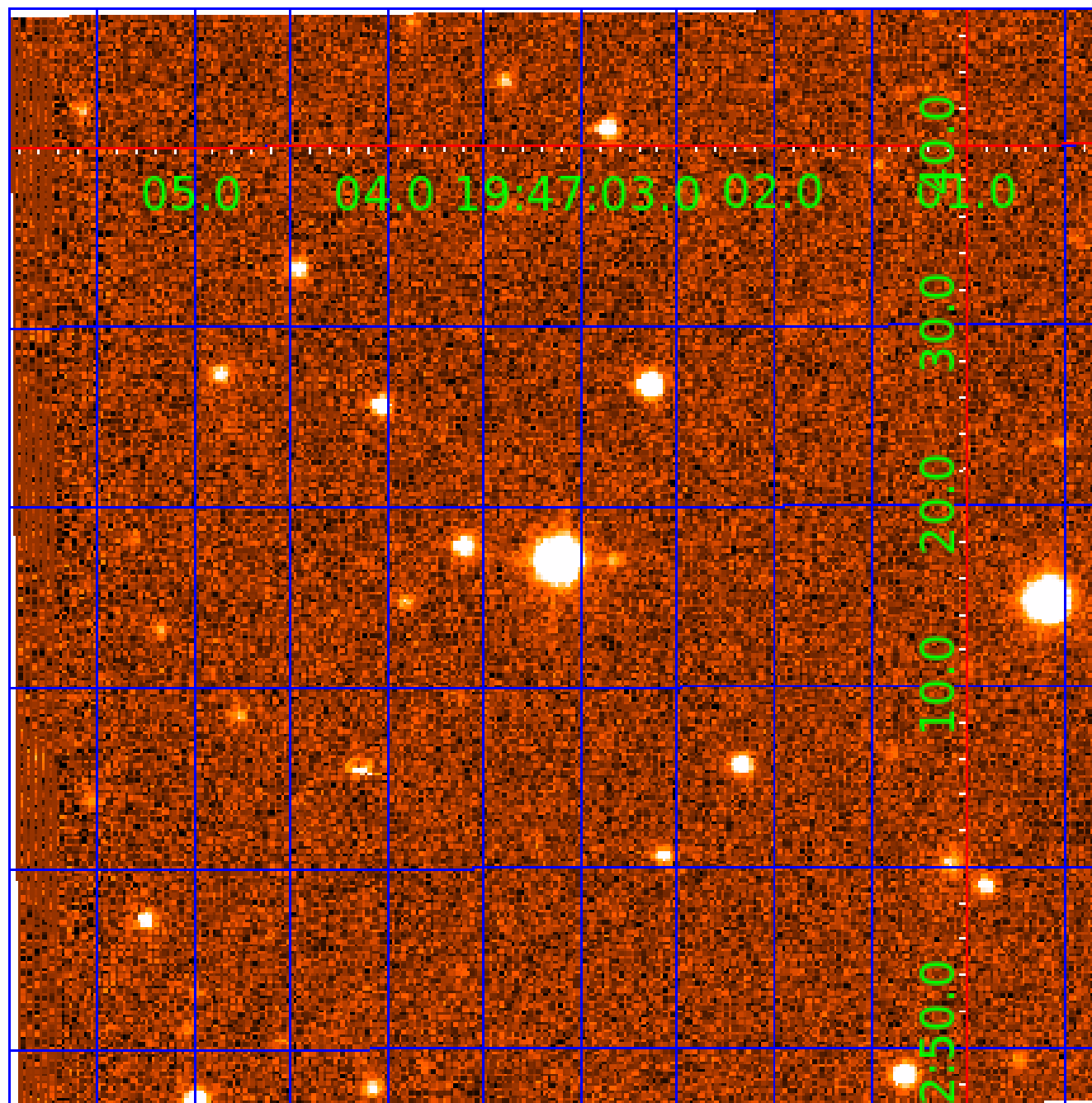


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

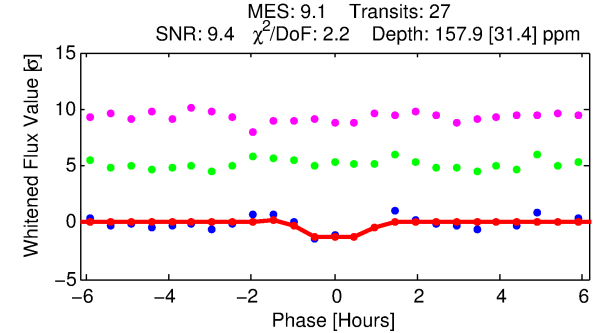
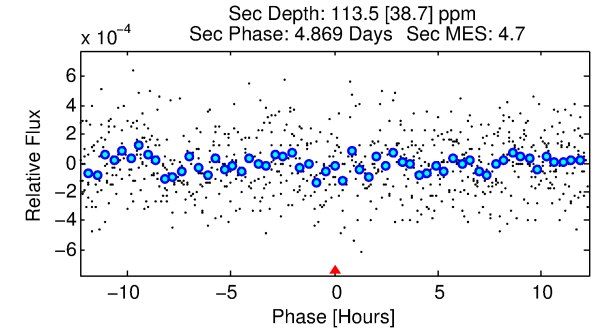
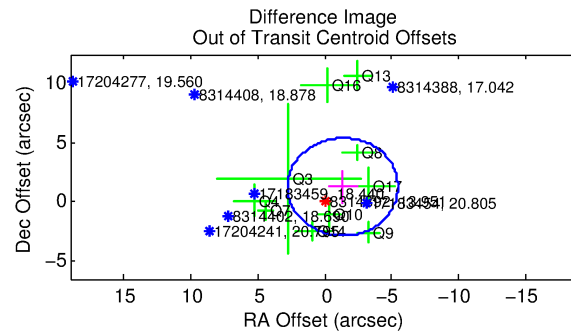
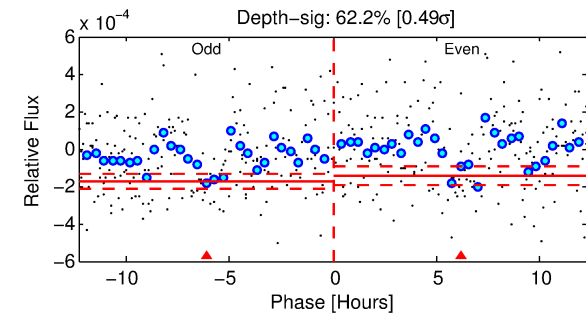
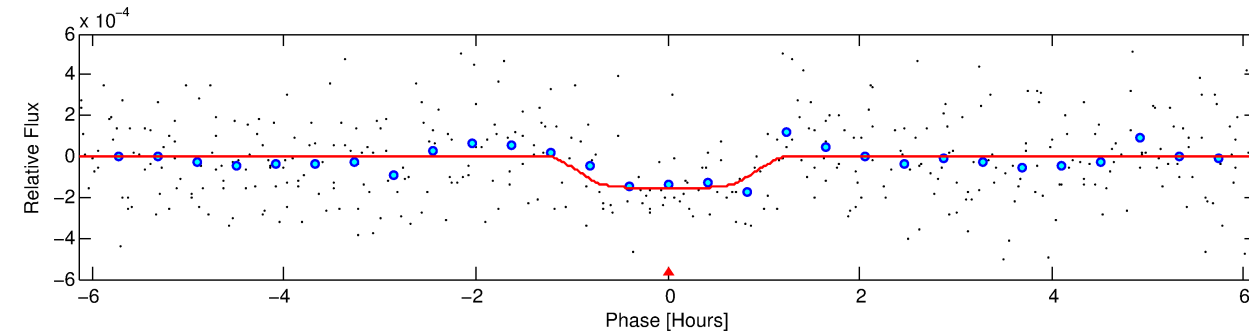
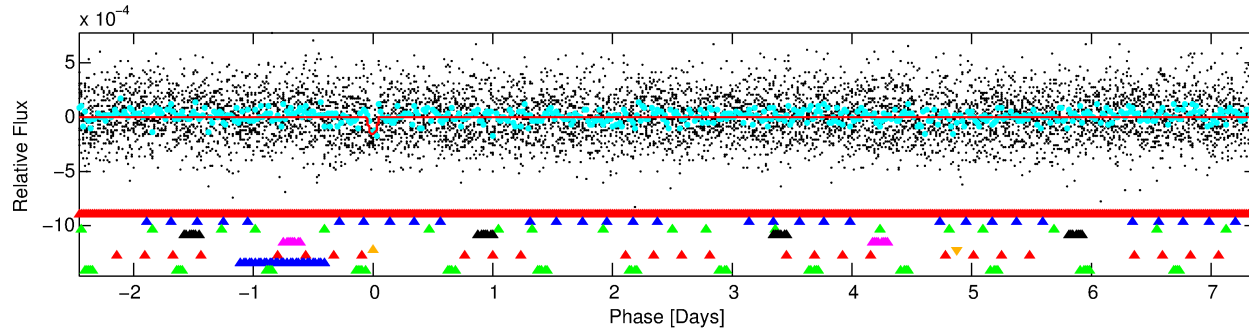
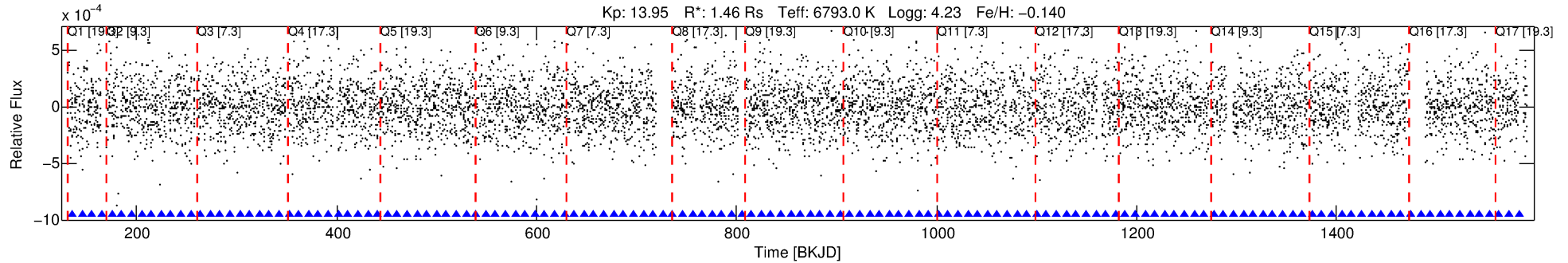
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-06

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 6 of 9 Period: 9.839 d



## DV Fit Results:

Period = 9.83865 [0.00014] d  
Epoch = 136.0631 [0.0106] BKJD  
Rp/R\* = 0.0134 [0.0115]  
a/R\* = 17.36 [87.02]  
b = 0.90 [1.12]  
Seff = 420.85 [163.98]  
Teq = 1155 [113] K  
Rp = 2.13 [1.97] Re  
a = 0.0983 [0.0255] AU  
Ag = 132.56 [237.71] [0.55σ]  
Teffp = 6059 [2671] K [1.83σ]

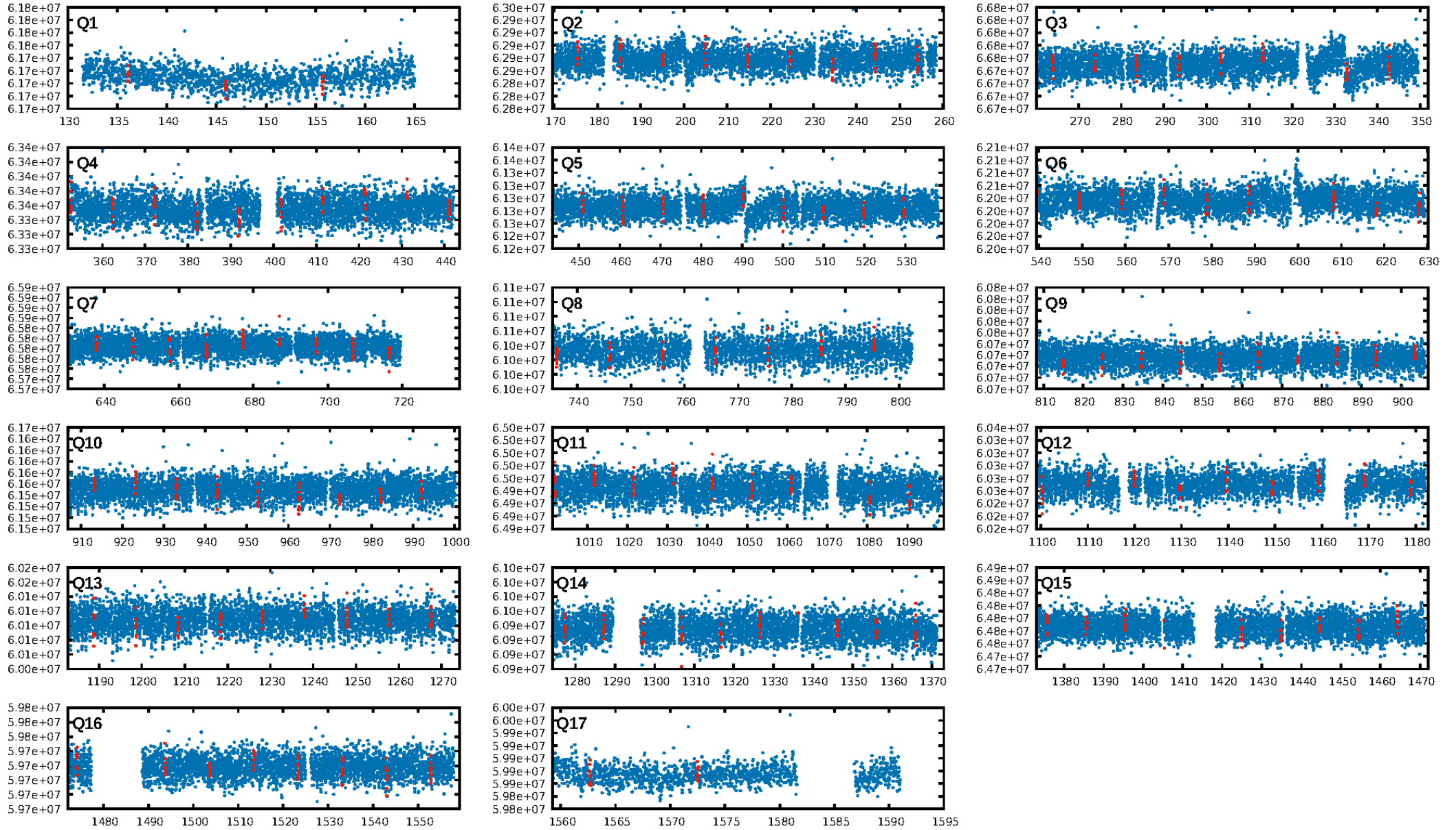
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.14σ]  
LongPeriod-sig: 100.0% [34.09σ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 1.31e-09**  
RollingBand-fgt: 1.00 [27/27]  
GhostDiagnostic-chr: -7.822  
Centroid-sig: 16.6%  
Centroid-so: 0.811 arcsec [1.28σ]  
OotOffset-rm: 1.862 arcsec [1.35σ]  
KicOffset-rm: 1.814 arcsec [1.33σ]  
OotOffset-st: 2/2/3/3 [10]  
KicOffset-st: 2/2/3/3 [10]  
DiffImageQuality-fgm: 0.10 [1/10]  
DiffImageOverlap-fno: 0.59 [10/17]

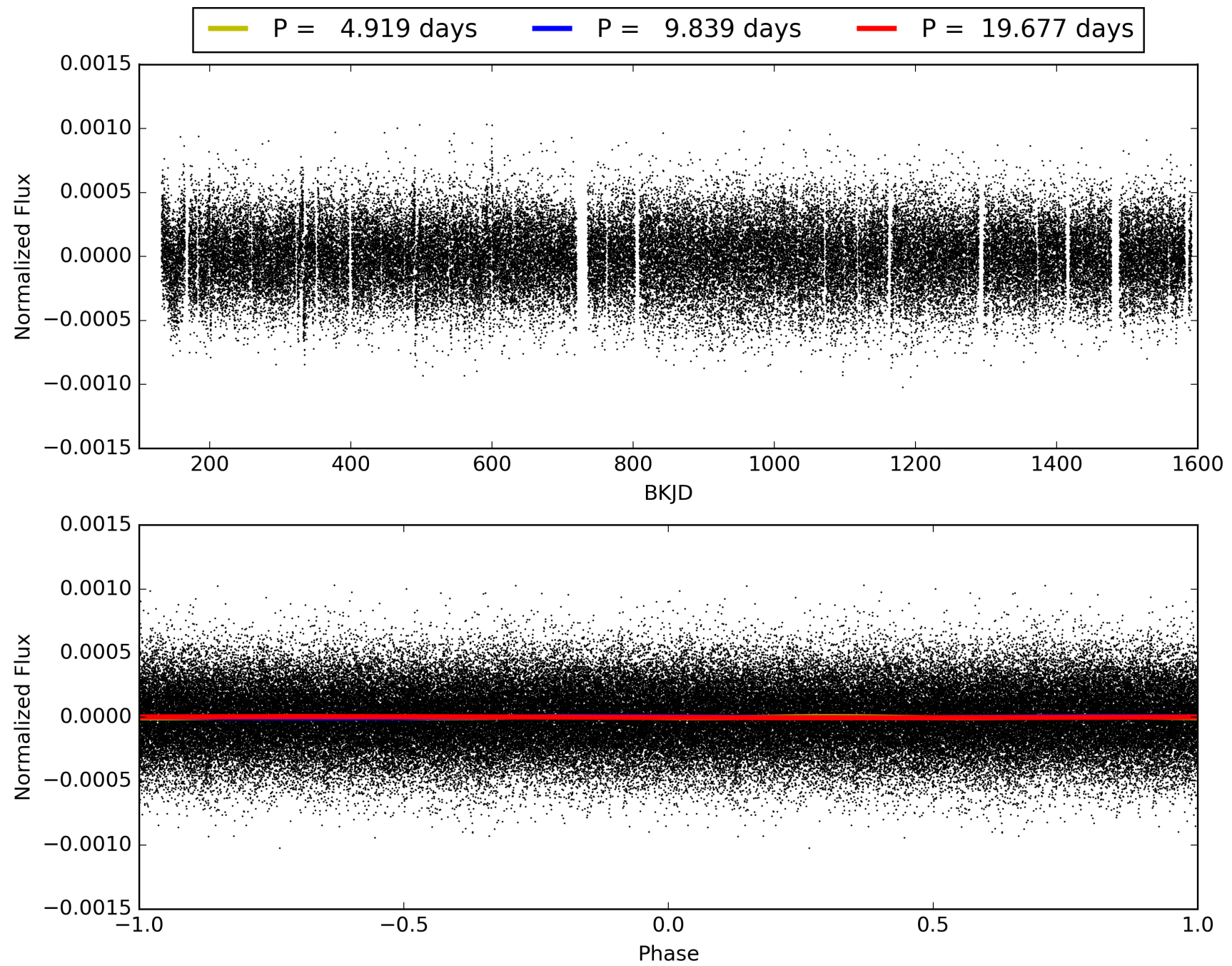
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:20 Z

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

# TCE 008314392-06, PDC Light Curves



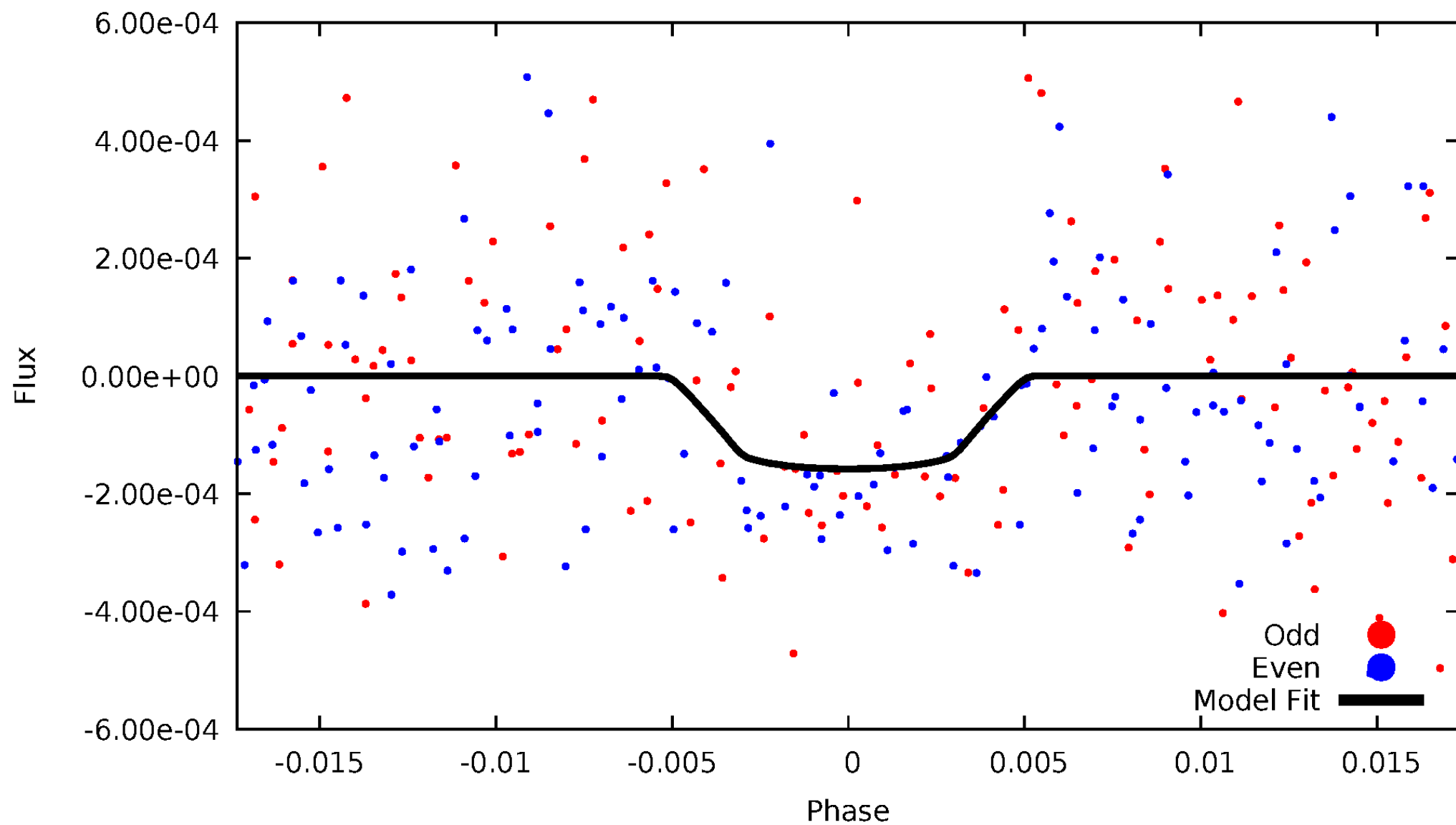
TCE 008314392-06





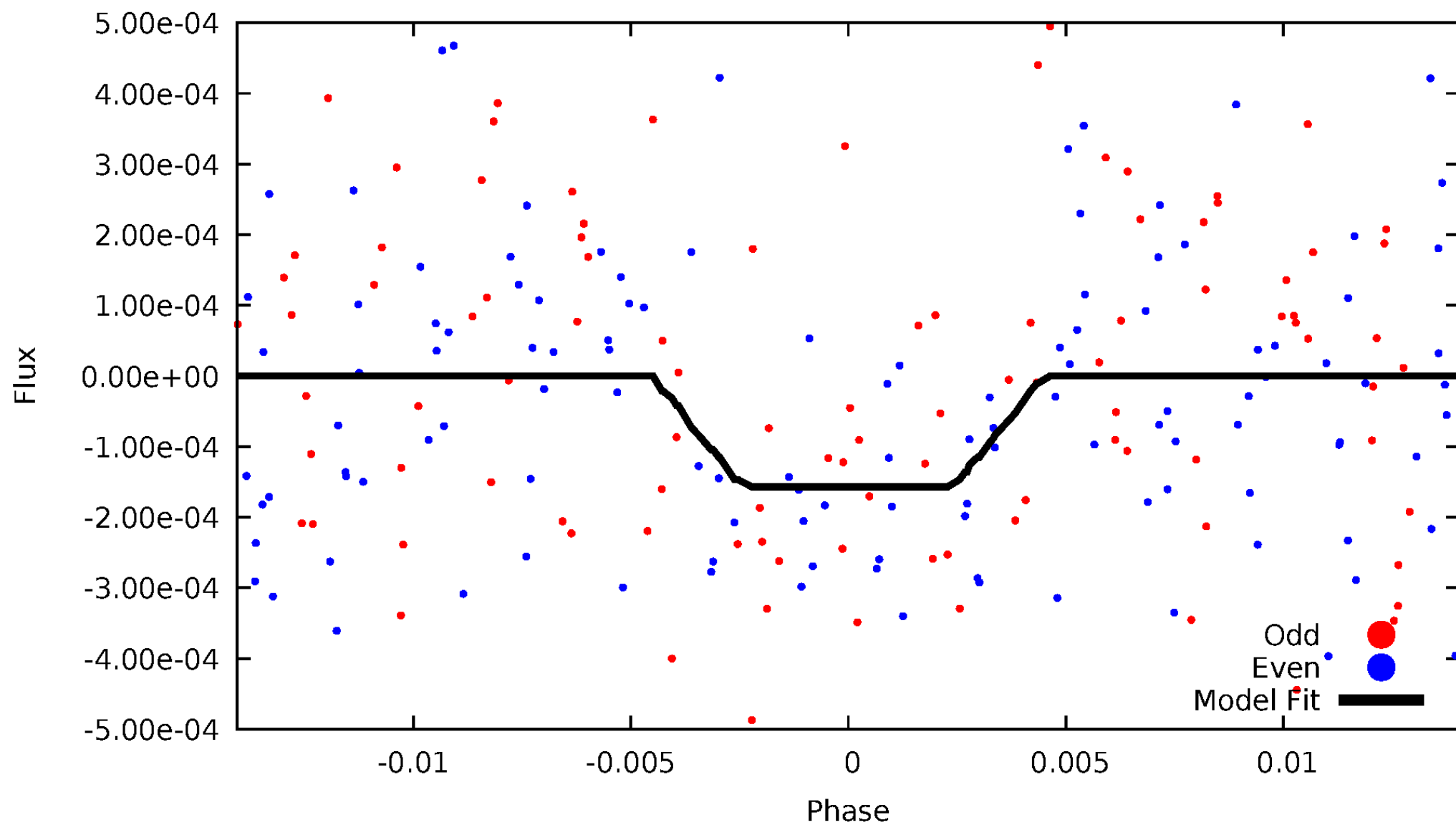
# DV Odd/Even

TCE 008314392-06



# ALT Odd/Even

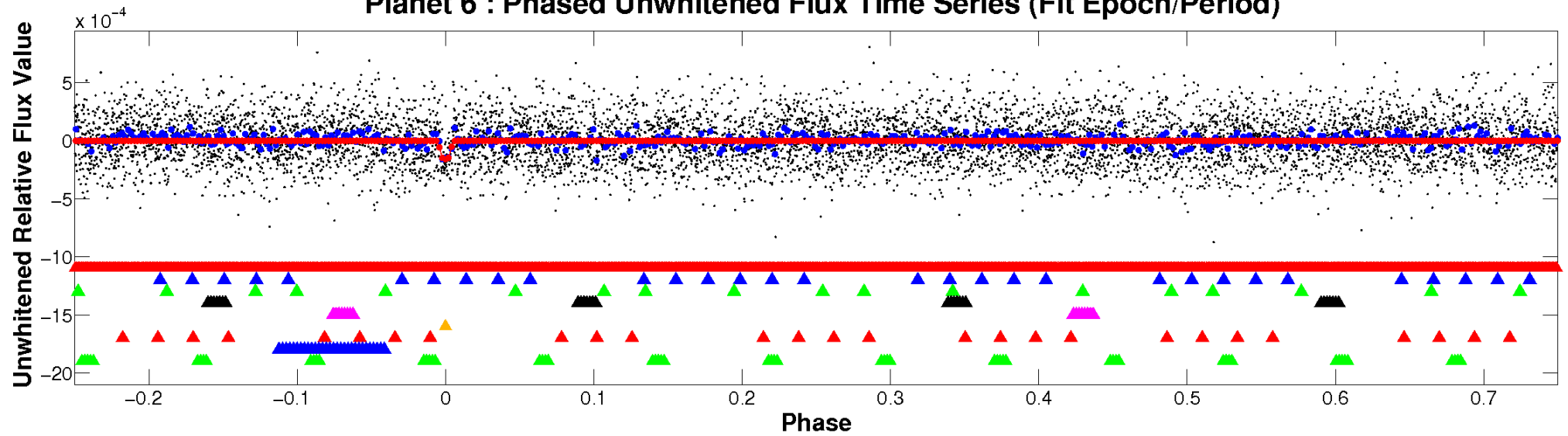
TCE 008314392-06



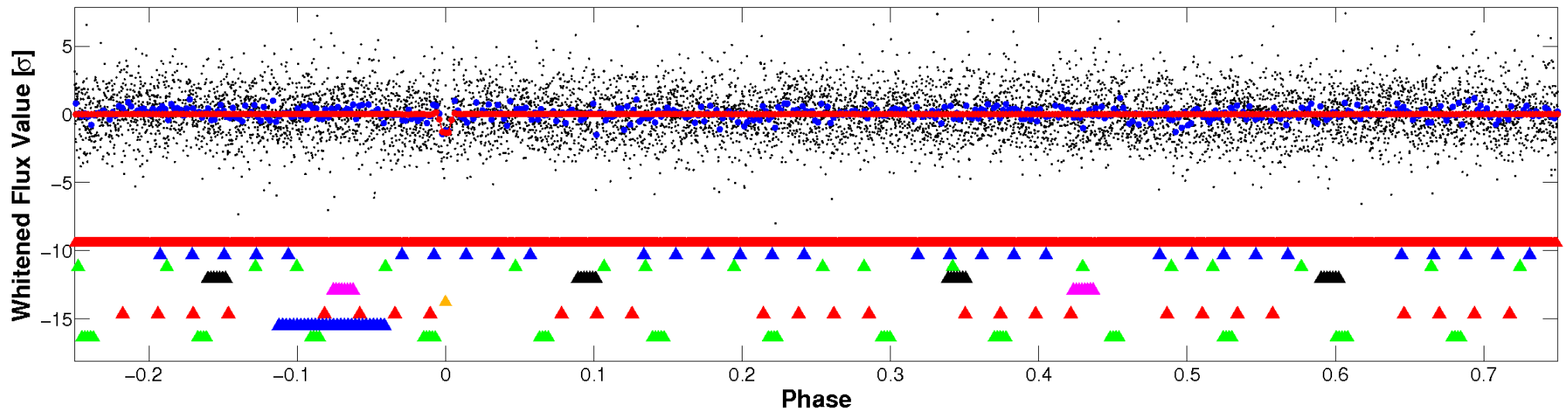


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

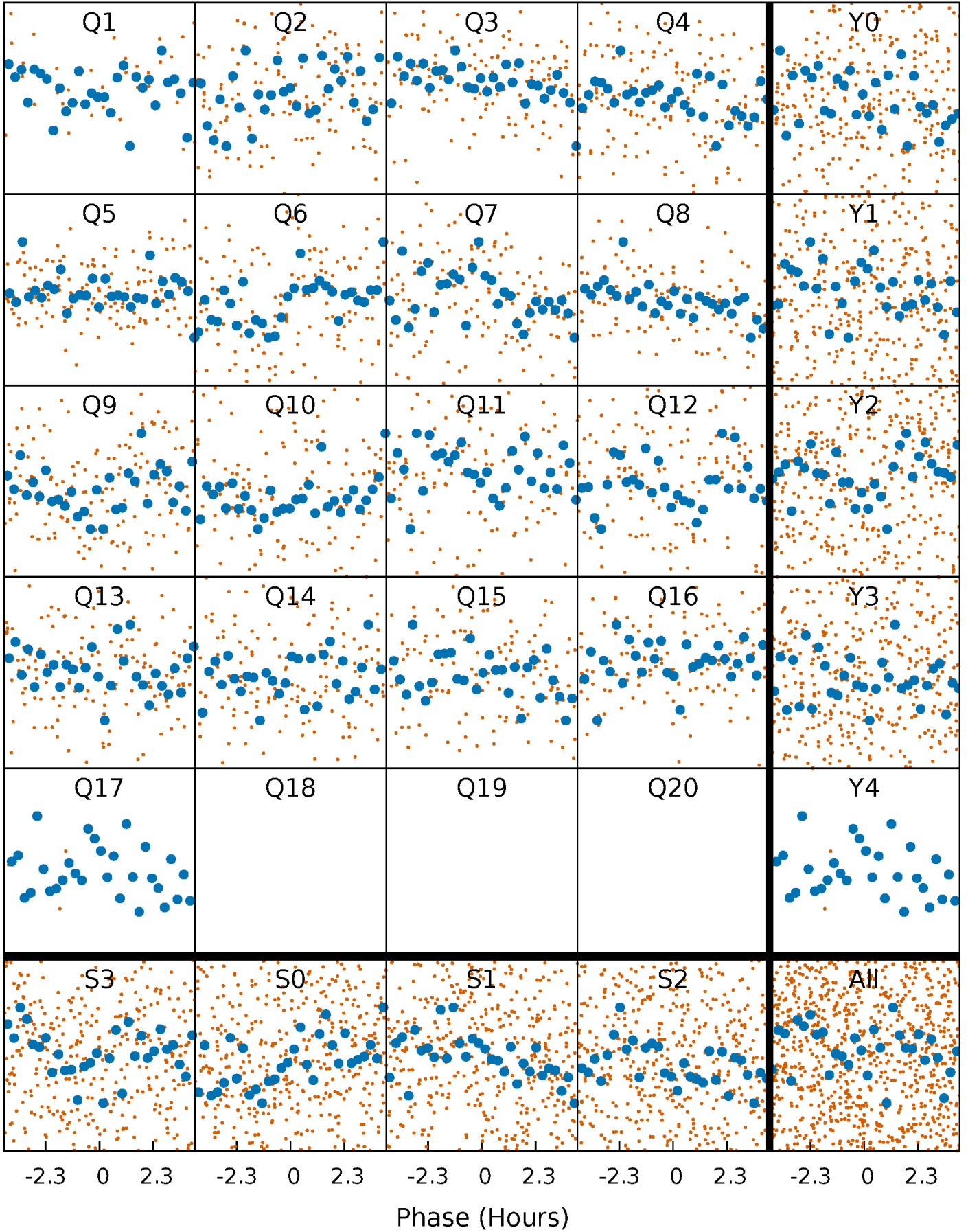


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



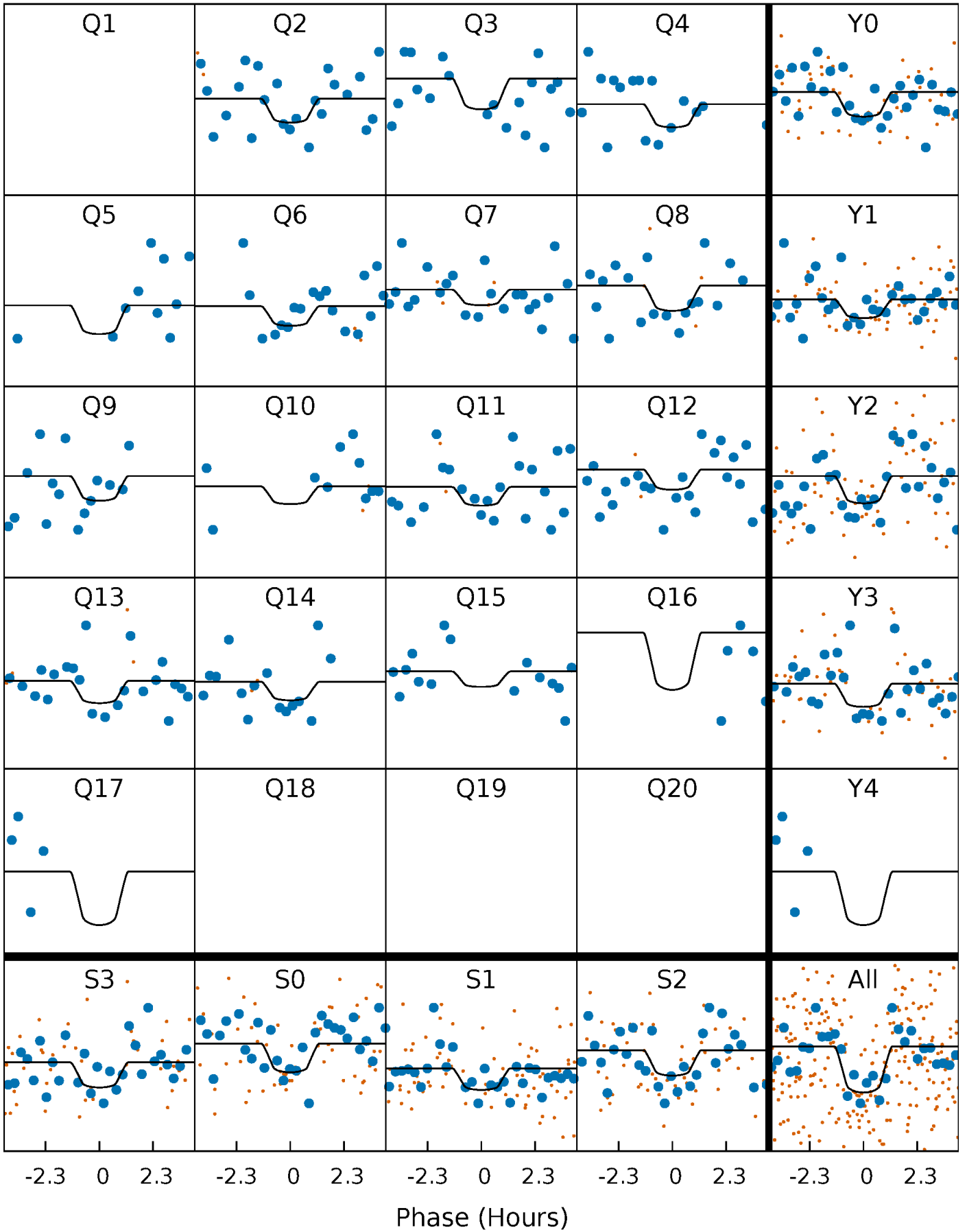
# PDC Quarter-Phased Transit Curves

TCE 008314392-06 P= 9.838654 Days  $T_0=136.063124$  (BKJD)



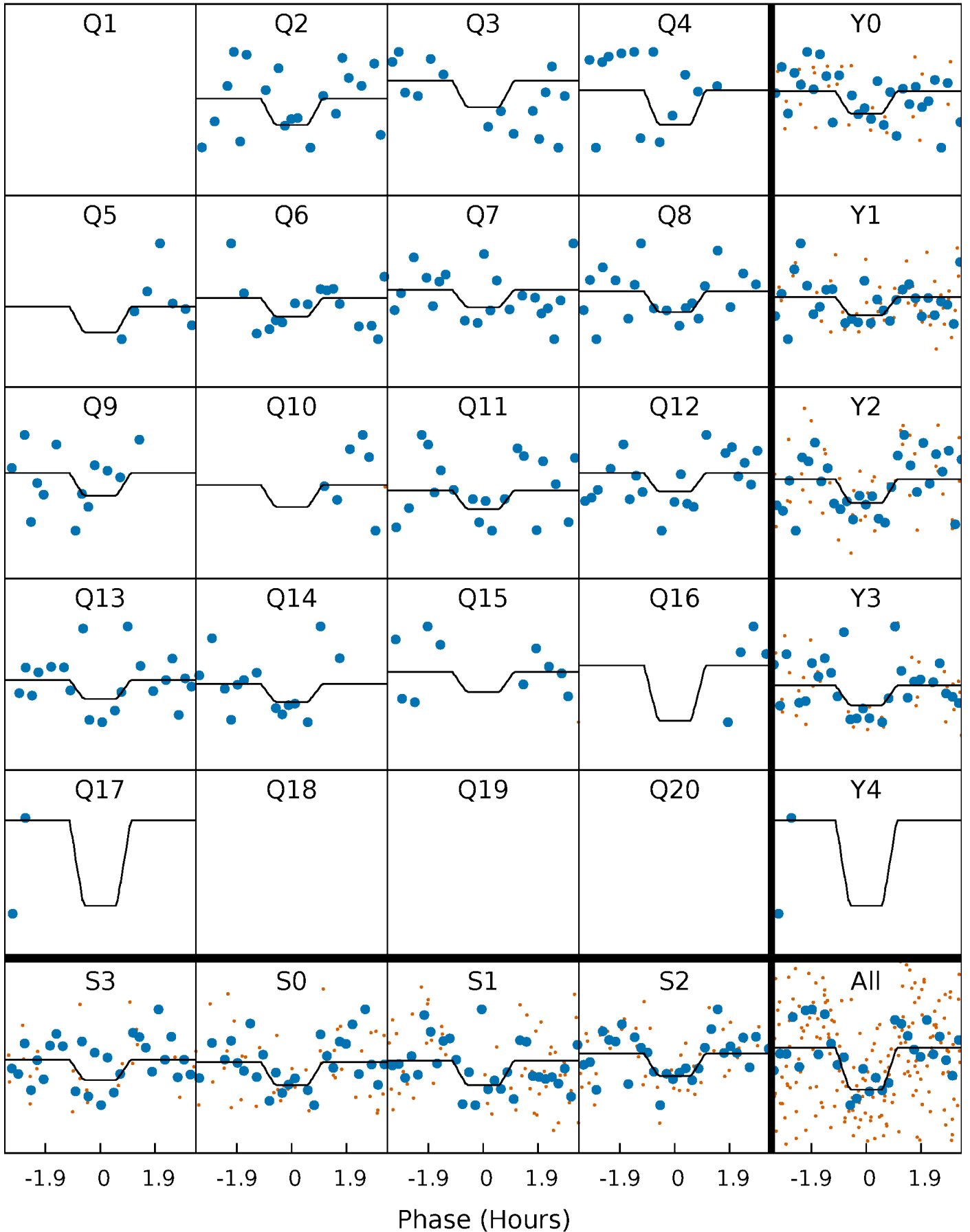
# DV Quarter-Phased Transit Curves

TCE 008314392-06 P= 9.838654 Days  $T_0=136.063124$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

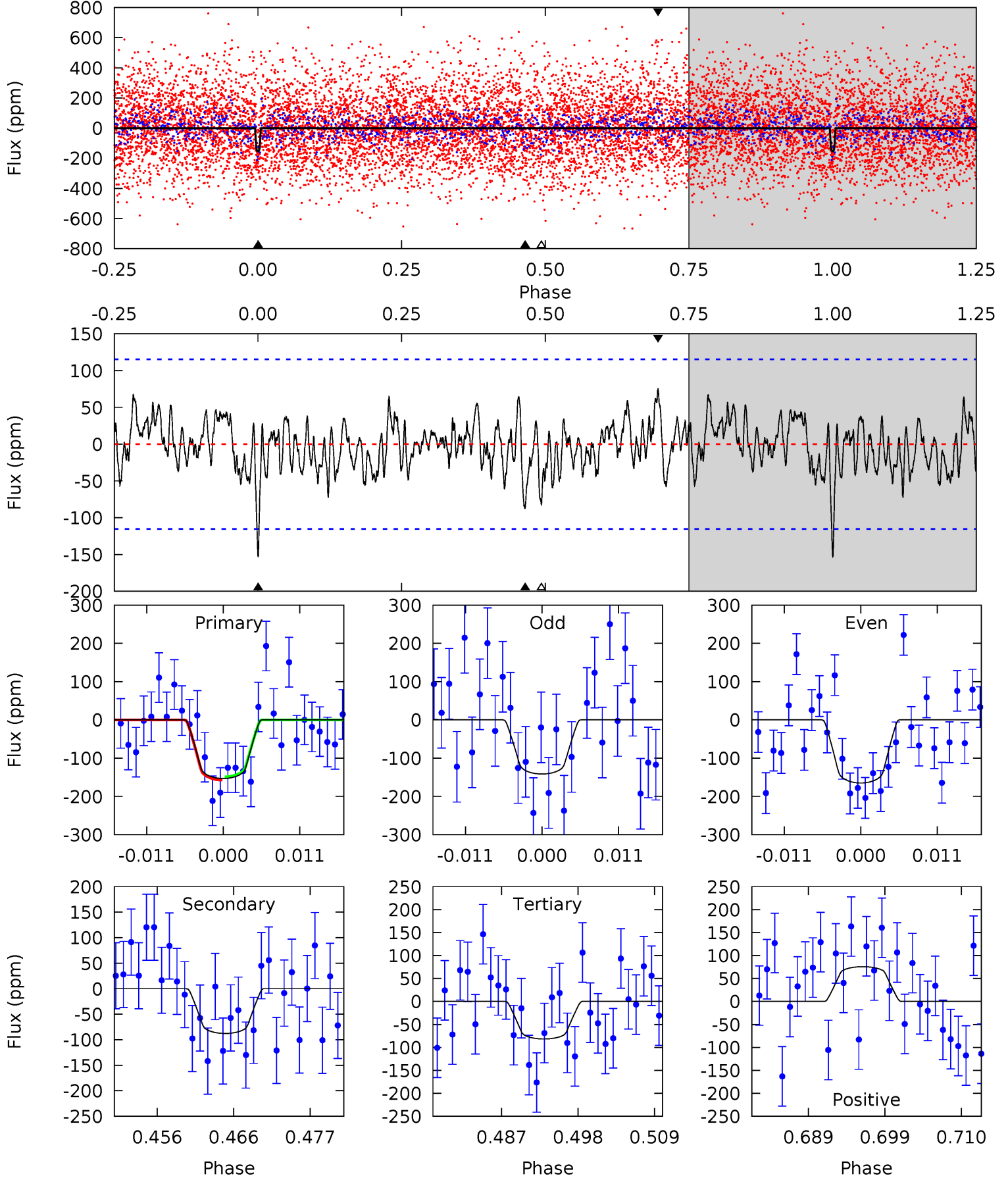
TCE 008314392-06 P= 9.838726 Days  $T_0=136.062277$  (BKJD)



# DV Model-Shift Uniqueness Test

008314392-06, P = 9.838654 Days, E = 126.224470 Days

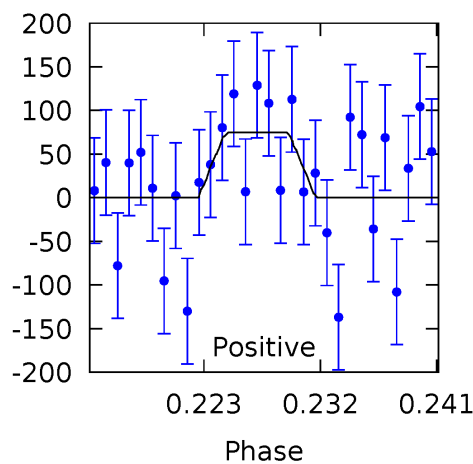
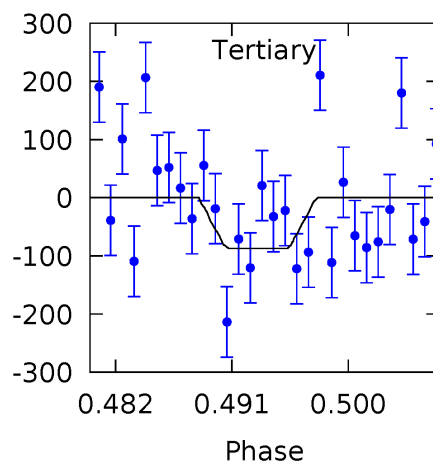
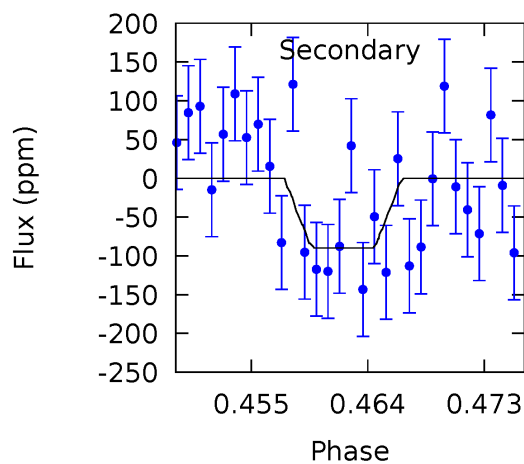
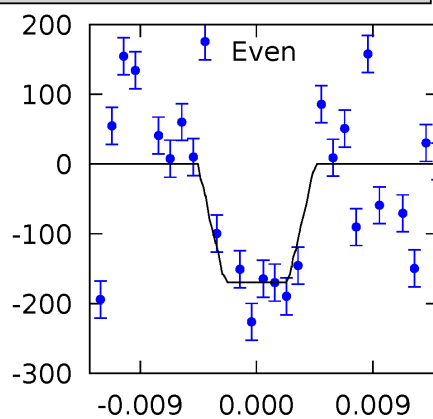
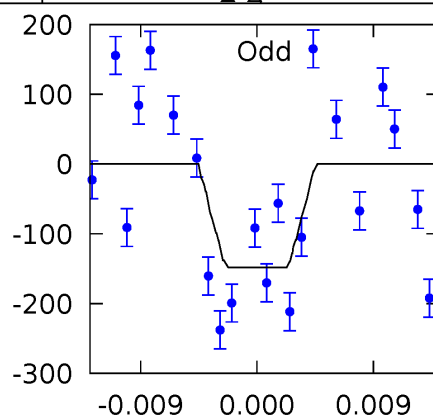
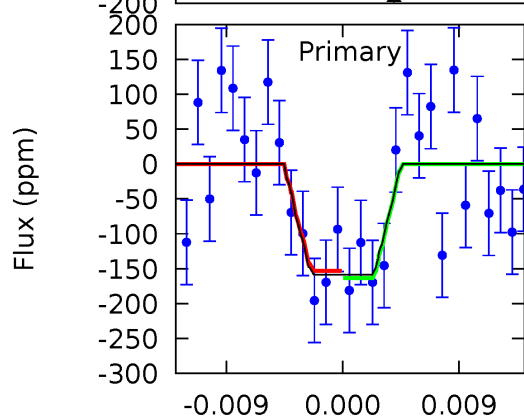
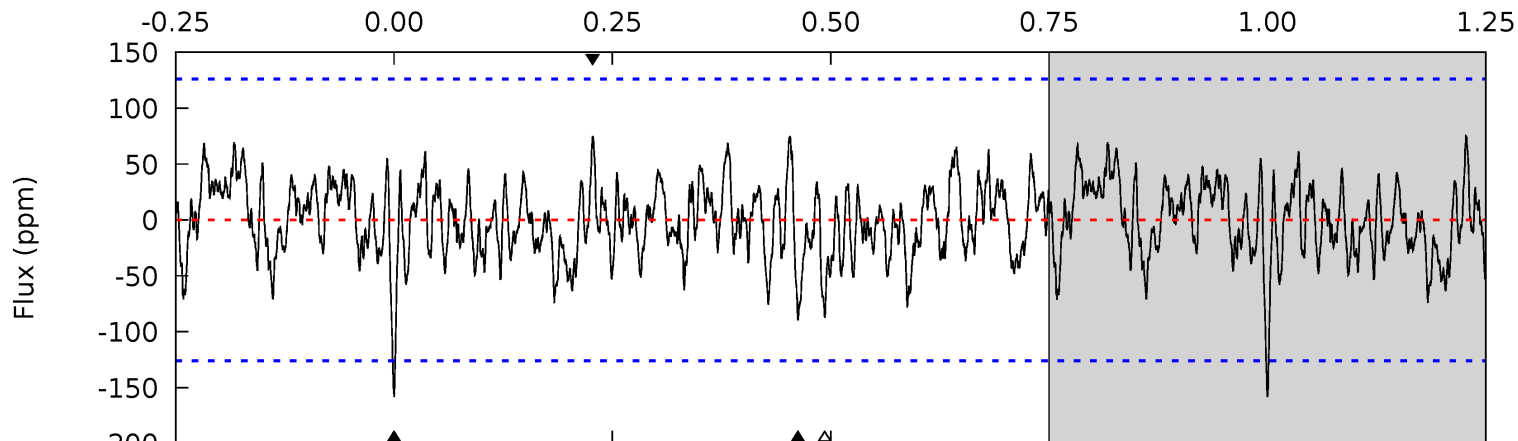
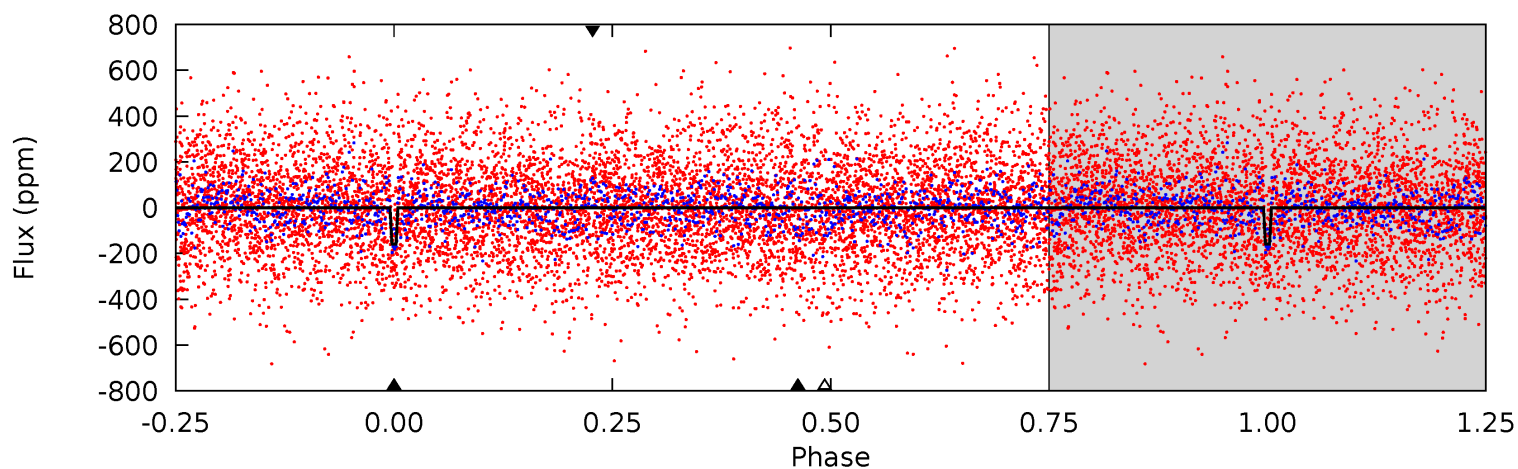
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.66	3.82	3.55	3.29	5.02	2.56	1.20	3.11	3.37	0.26	0.52	0.51	0.75	0.33	0.18



# Alt Model-Shift Uniqueness Test

008314392-06, P = 9.838726 Days, E = 126.223551 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
6.35	3.60	3.50	3.00	5.05	2.61	1.17	2.85	3.35	0.10	0.59	0.43	0.87	0.32	0.22



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-88 \pm 23$	$2.40^{+1.72}_{-1.43}$	$1625^{+121}_{-103}$	$5369^{+3456}_{-1082}$	$81^{+403}_{-55}$
Alt.	$-90 \pm 25$	$2.28^{+1.87}_{-1.40}$	$1637^{+118}_{-113}$	$5541^{+4379}_{-1239}$	$87^{+530}_{-61}$

$T_{\text{max}}$  = 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

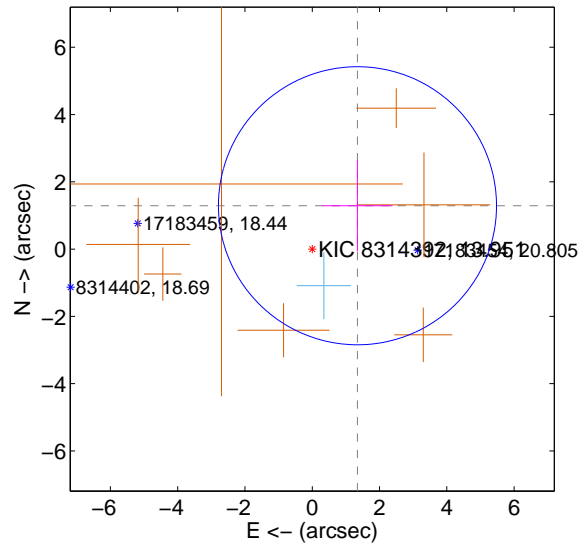
Supplemental centroid analysis for 008314392-06. Kepler magnitude: 13.95. Transit SNR 9.44

There are 1 quarters with good PRF difference image offsets

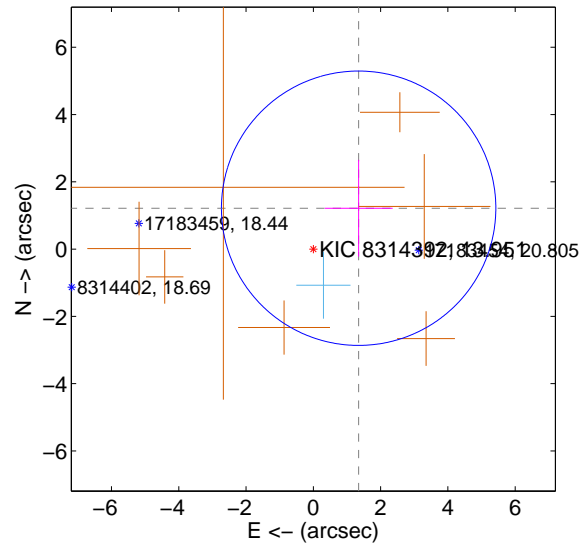
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.862 \pm 1.378$	1.35	$-1.345 \pm 1.045$	$1.288 \pm 1.357$
PRF-fit source offset from KIC position	$1.814 \pm 1.359$	1.33	$-1.347 \pm 1.010$	$1.215 \pm 1.440$
photometric centroid source offset	$0.81 \pm 0.63$	1.28	$0.31 \pm 0.61$	$0.75 \pm 0.64$

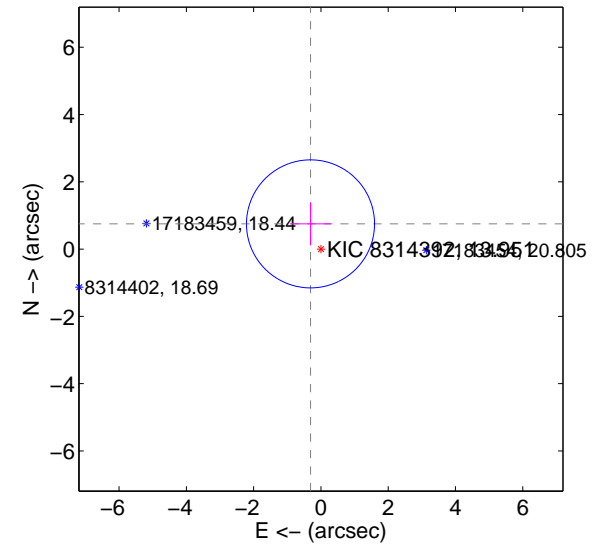
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



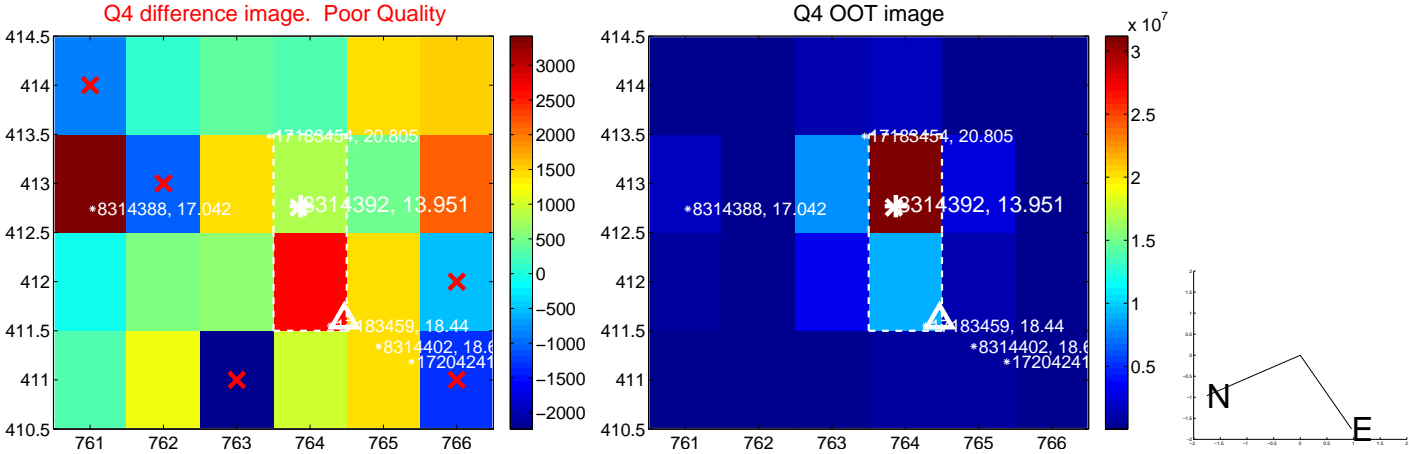
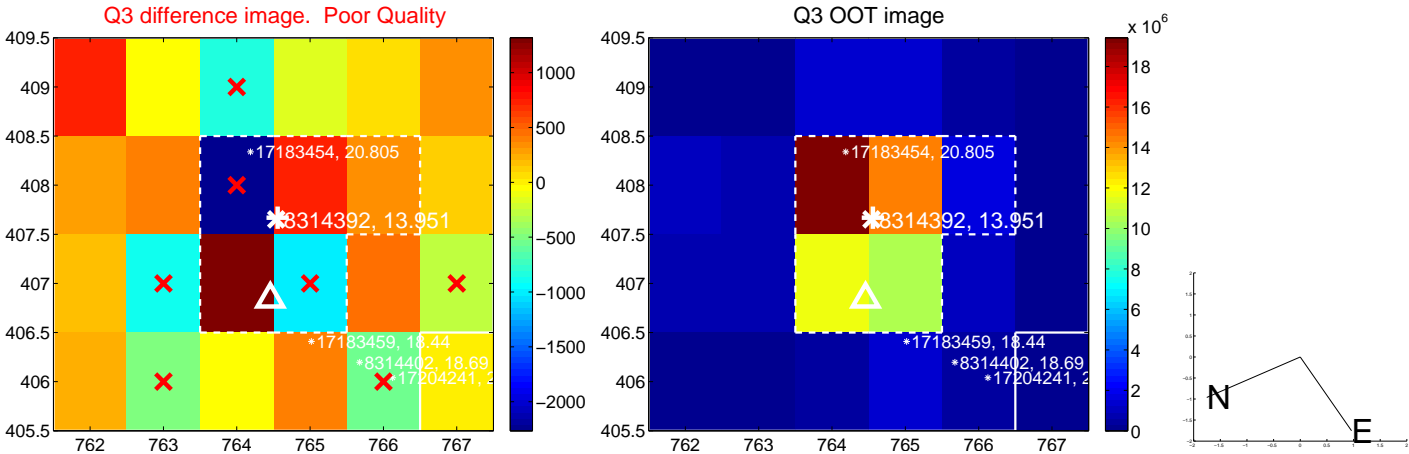
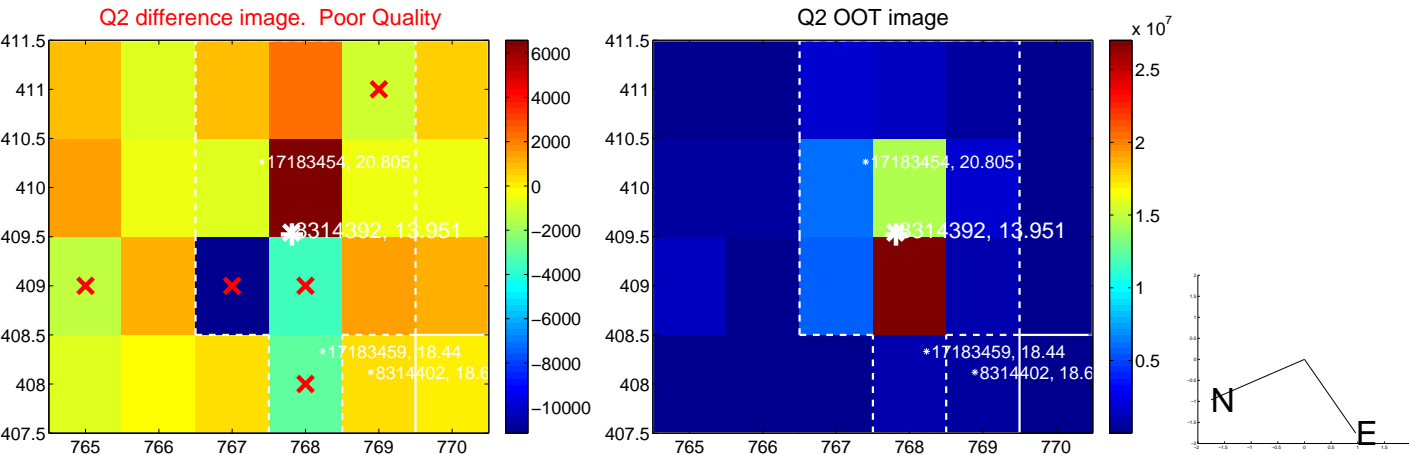
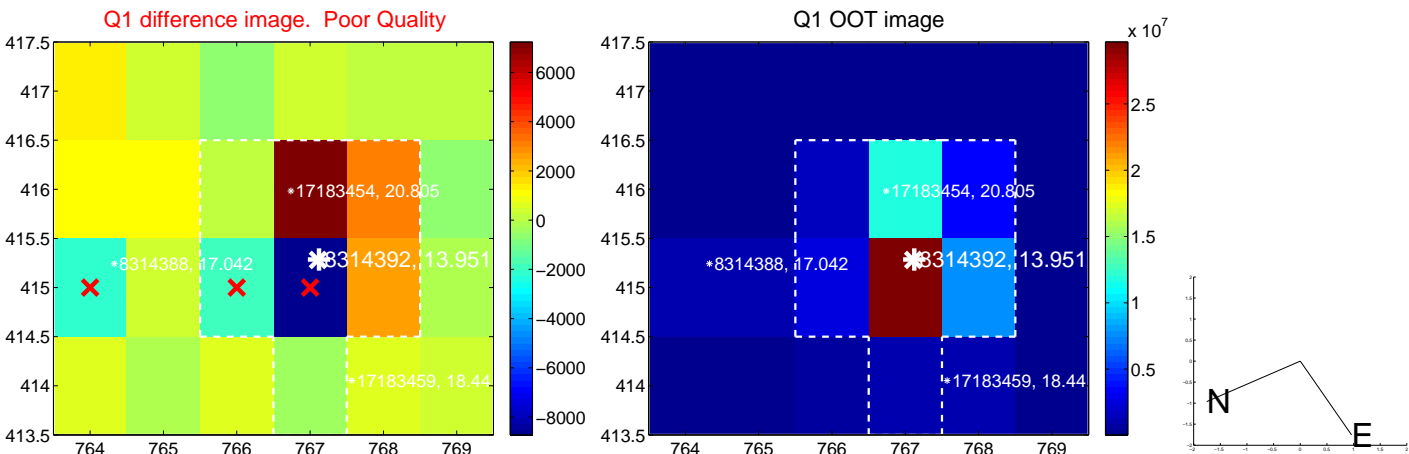
offset from photometric centroids



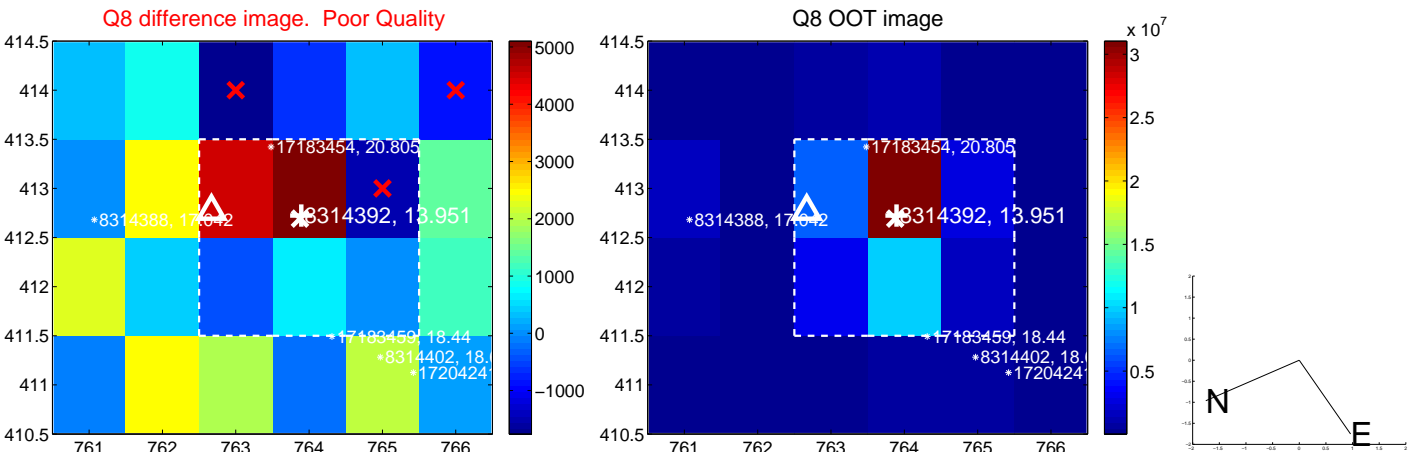
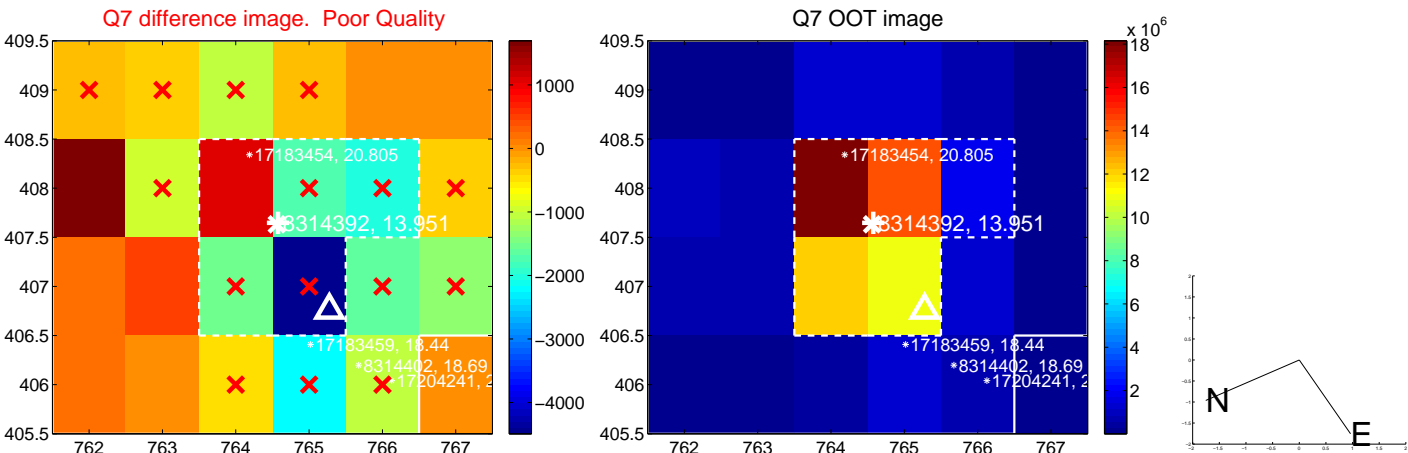
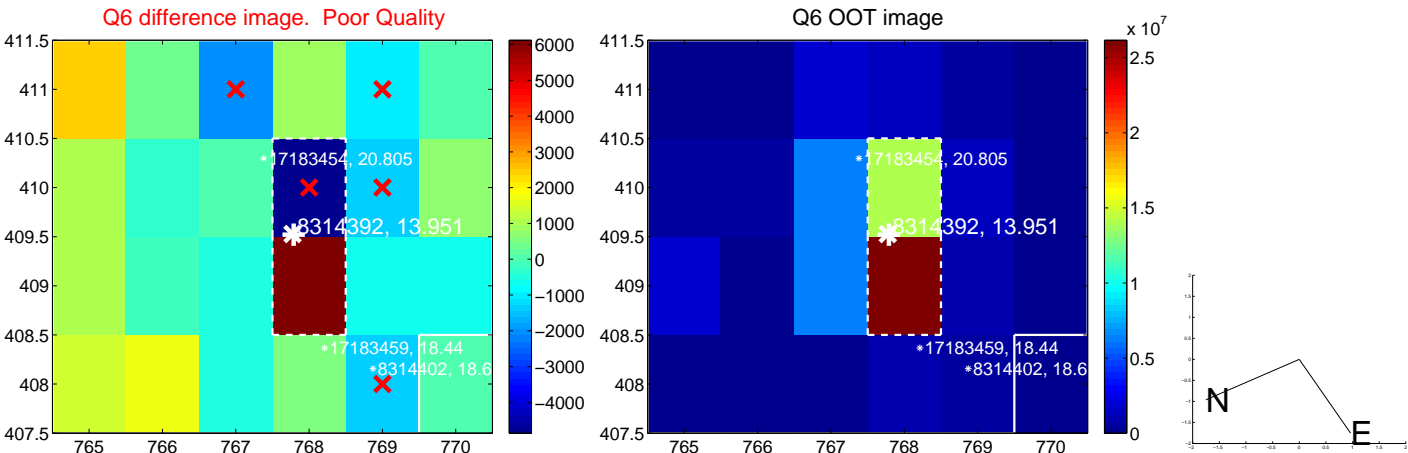
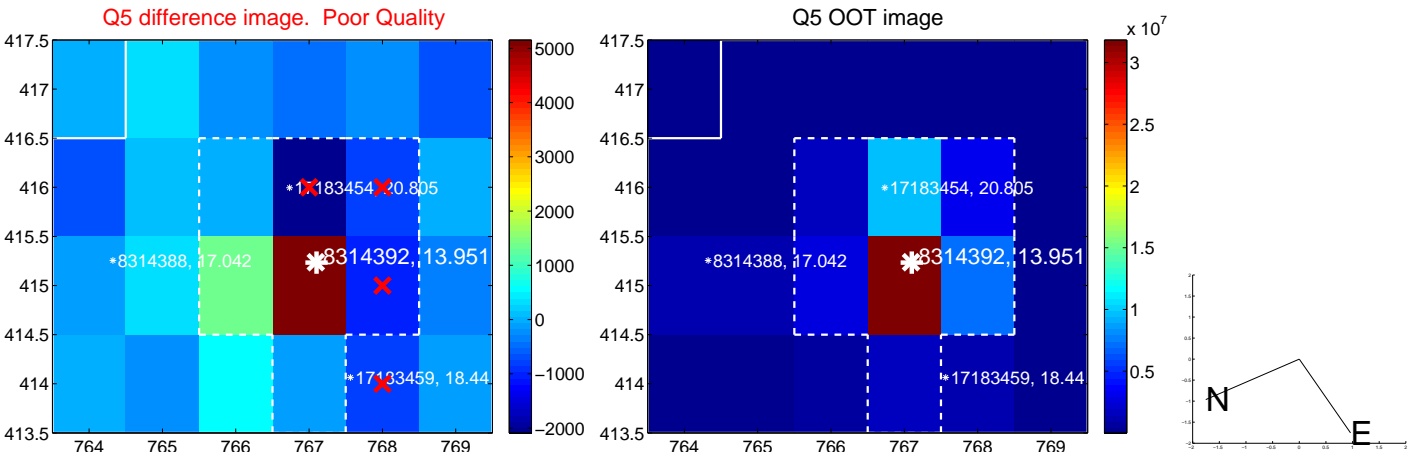
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



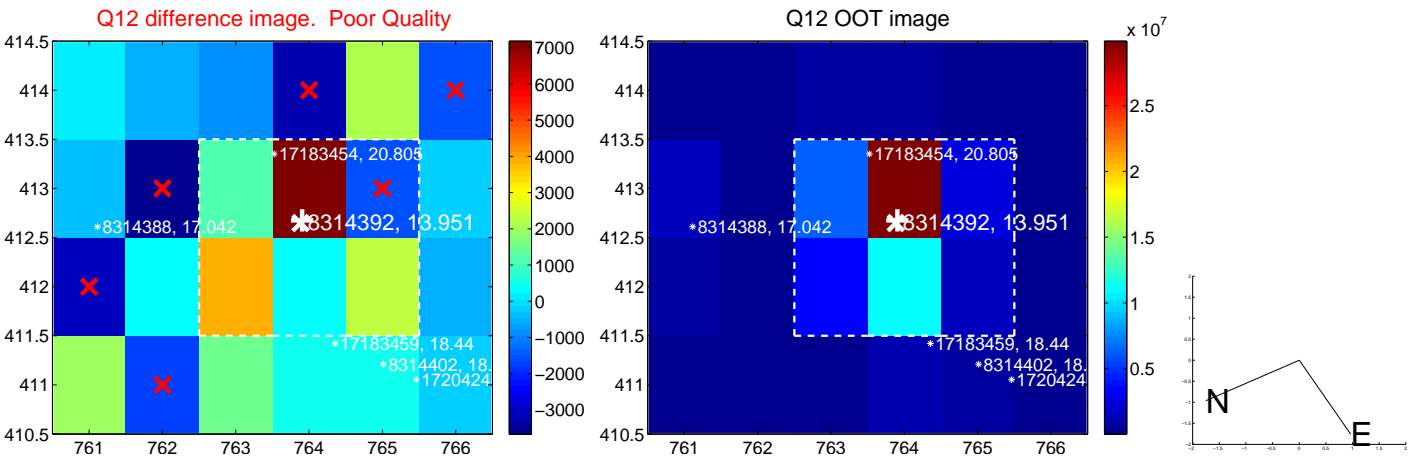
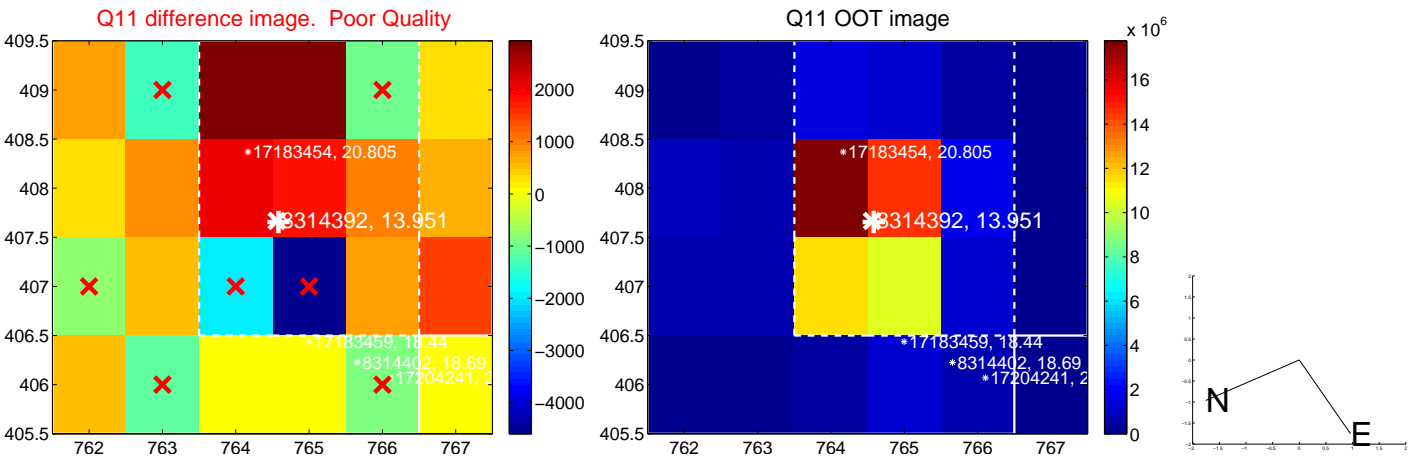
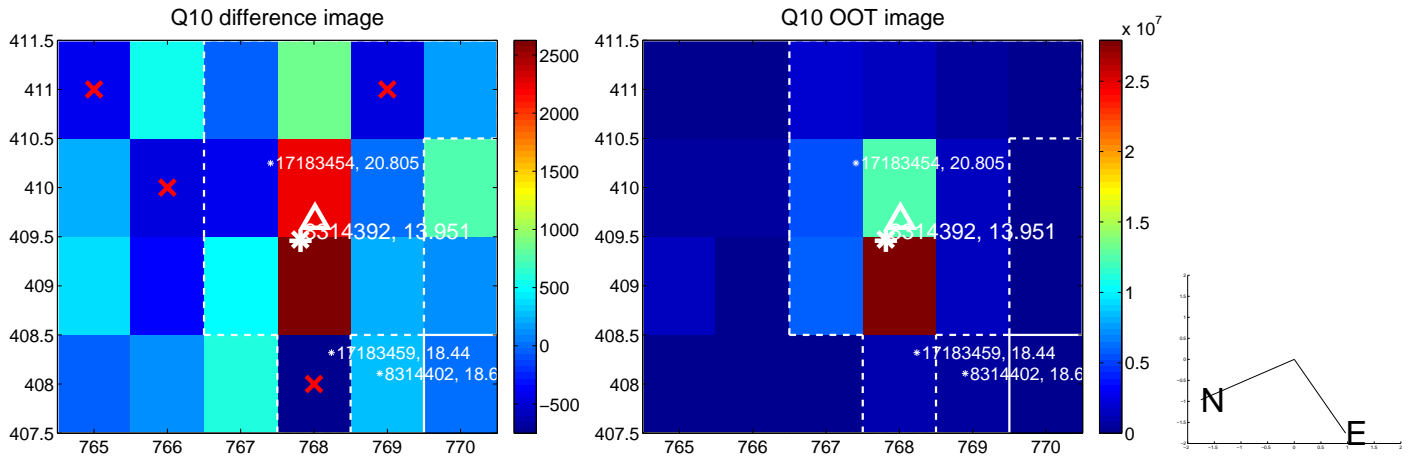
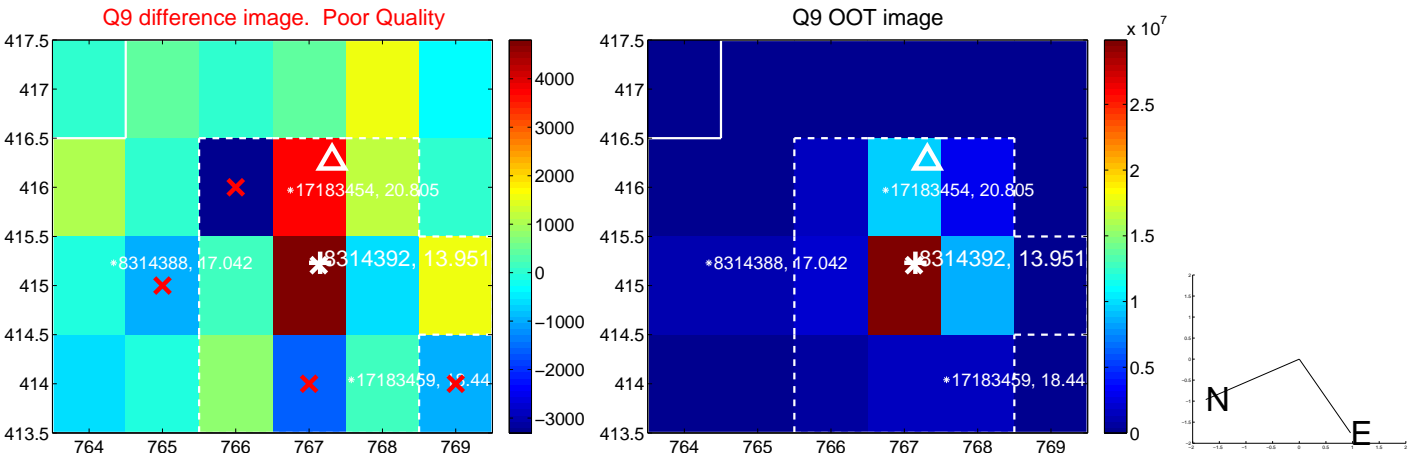
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



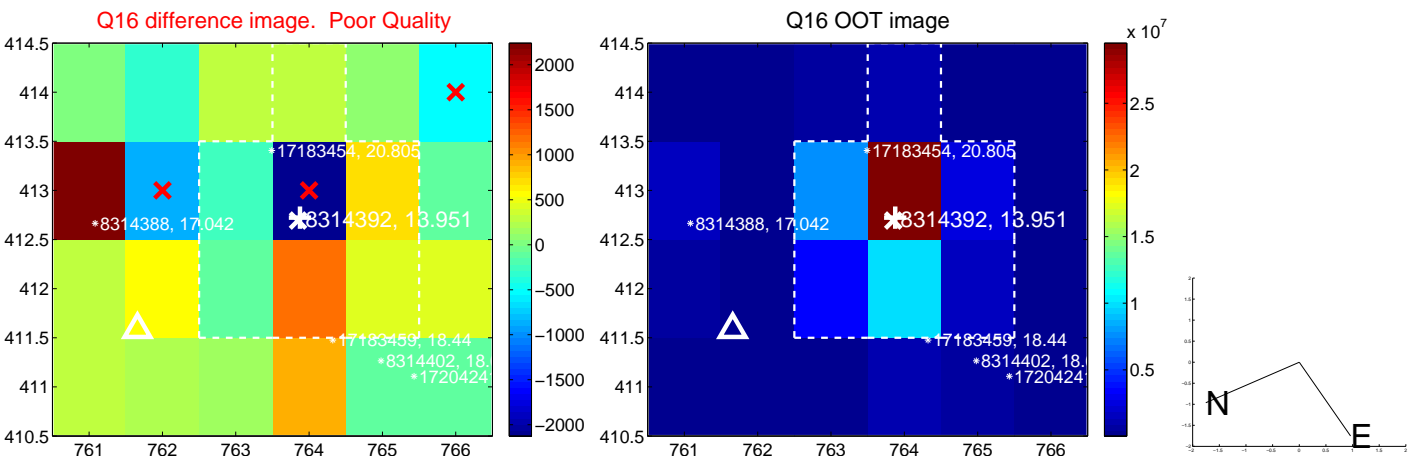
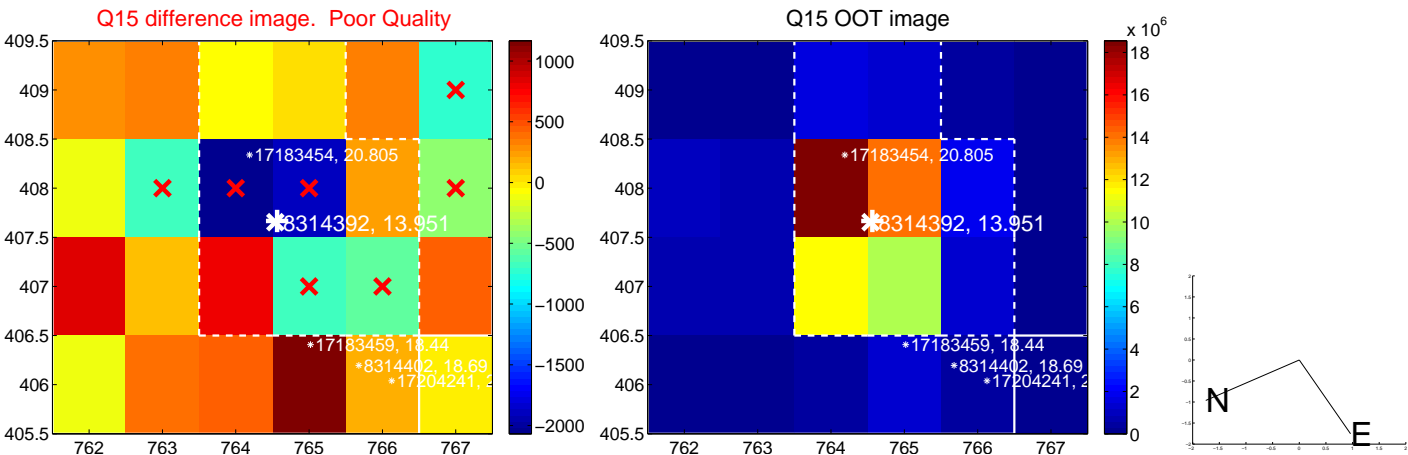
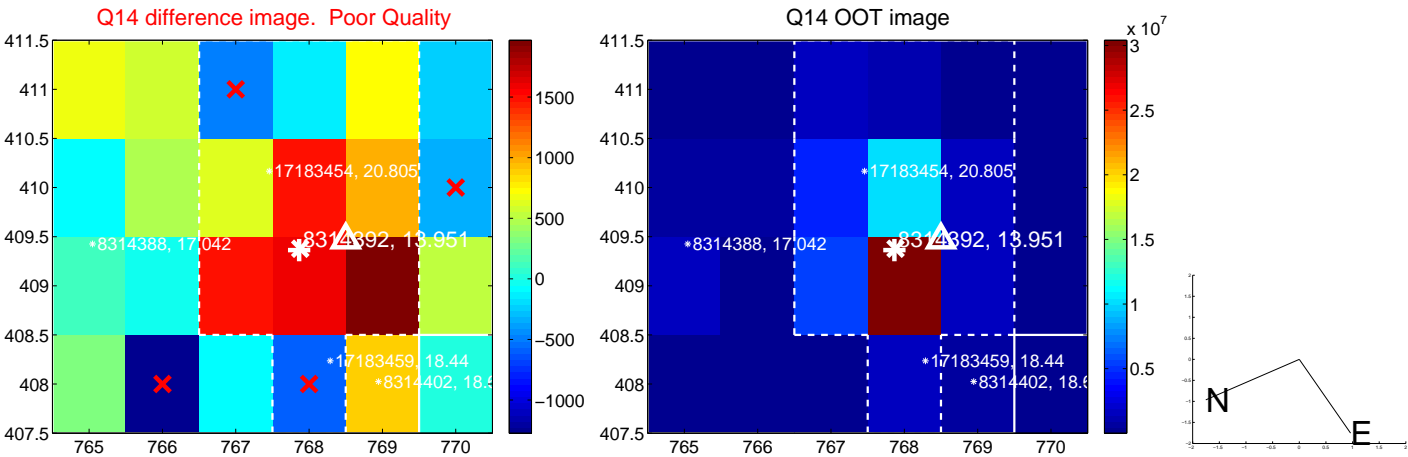
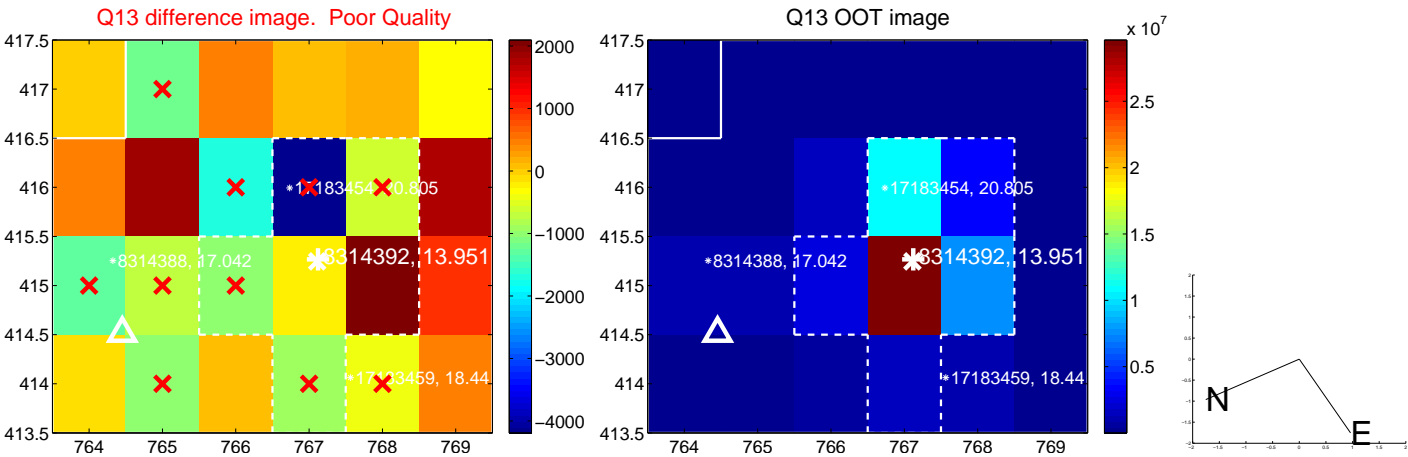
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



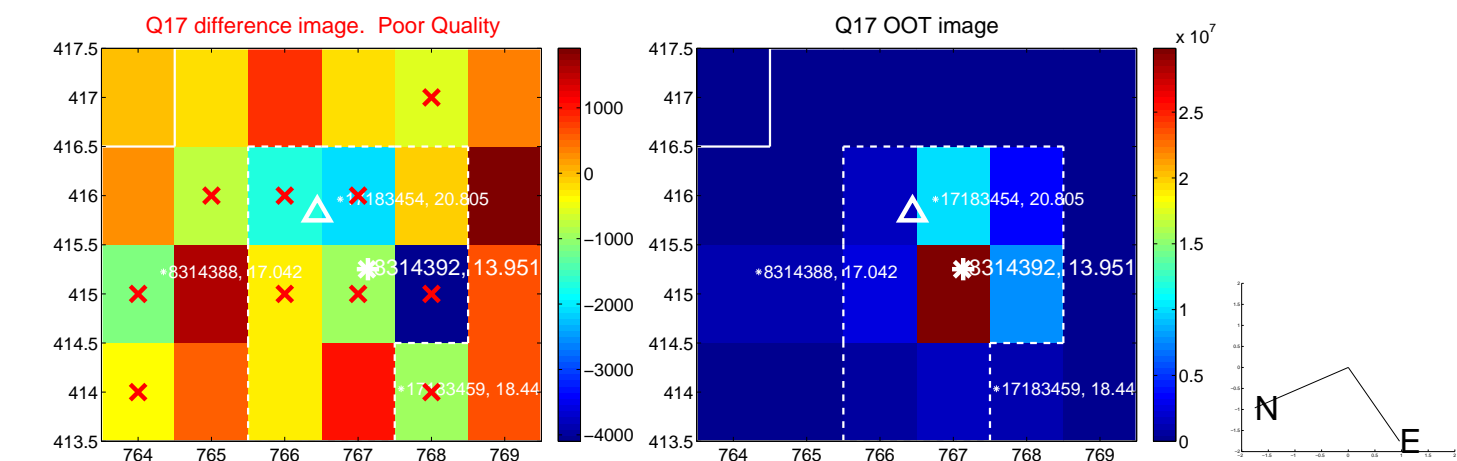
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



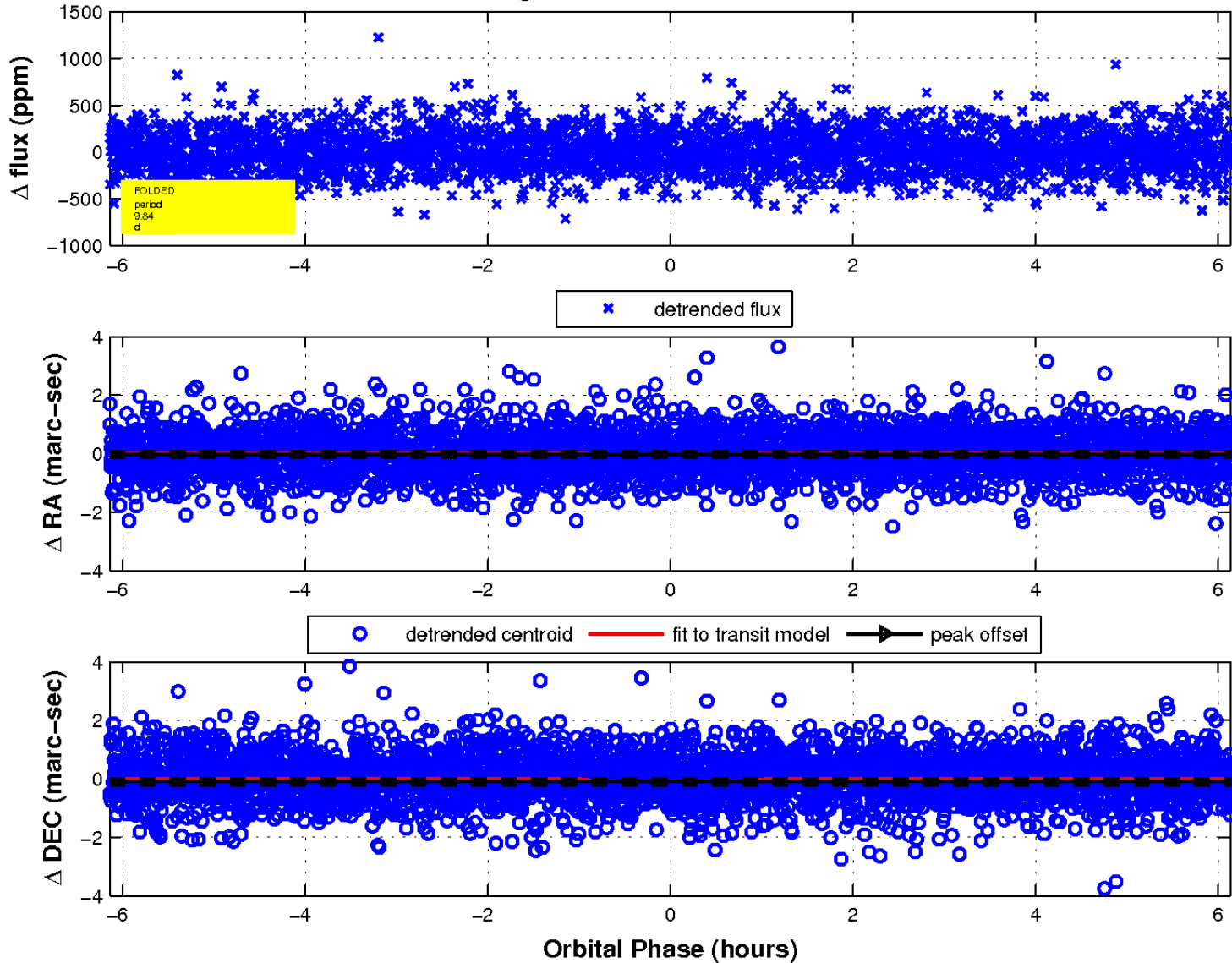
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

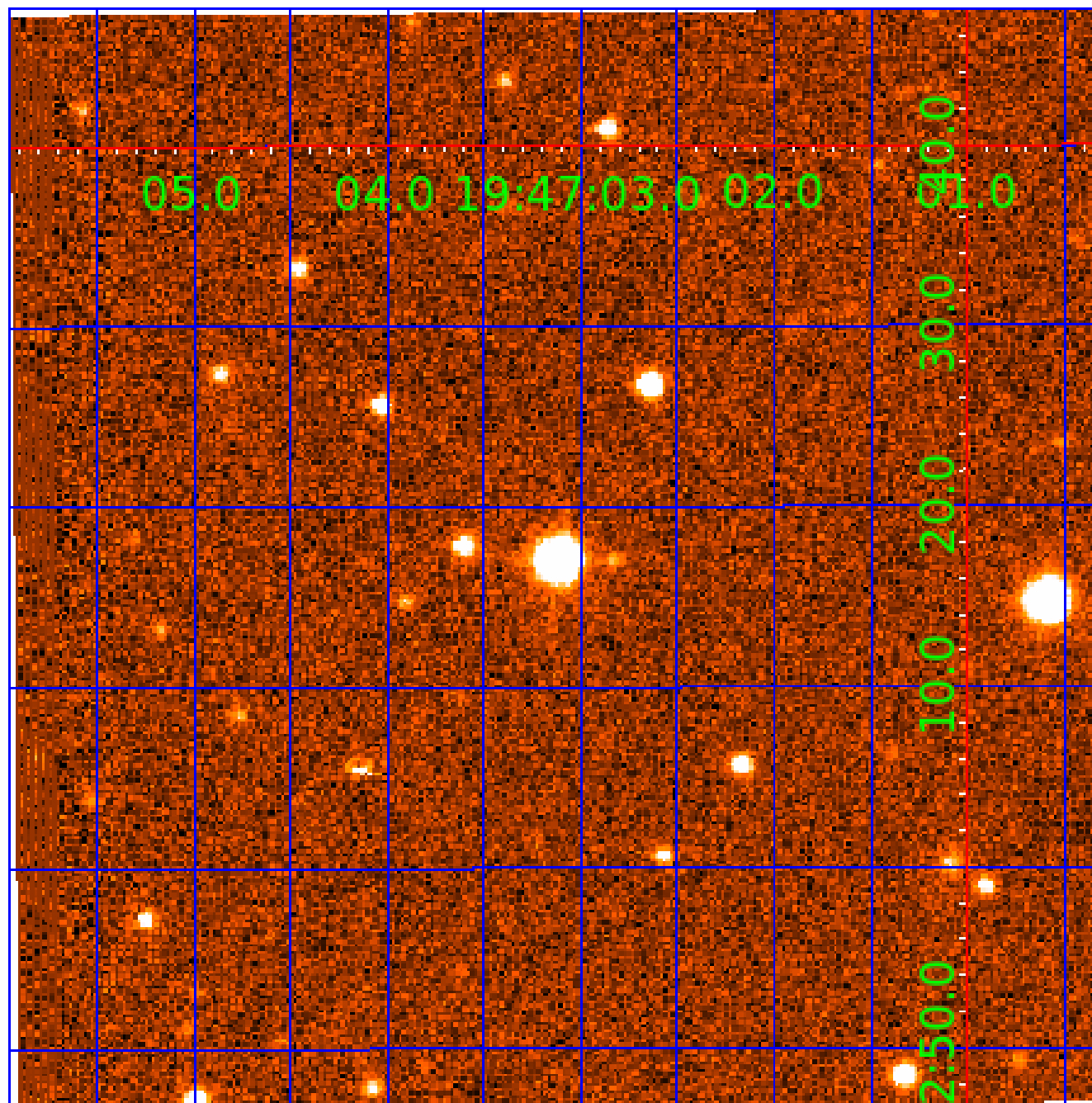


fluxWeightedCentroids, Planet 6 of 9



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

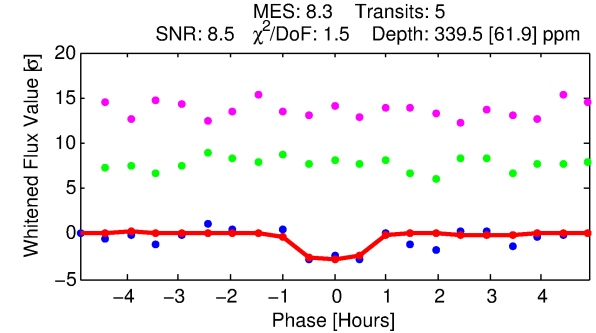
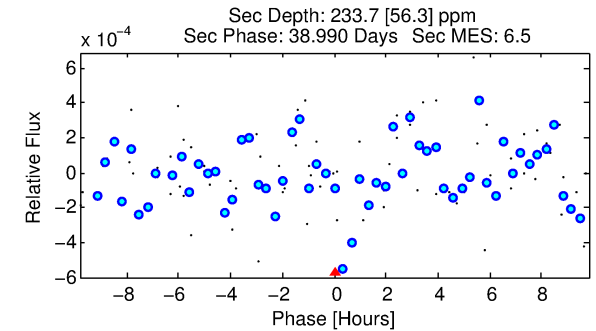
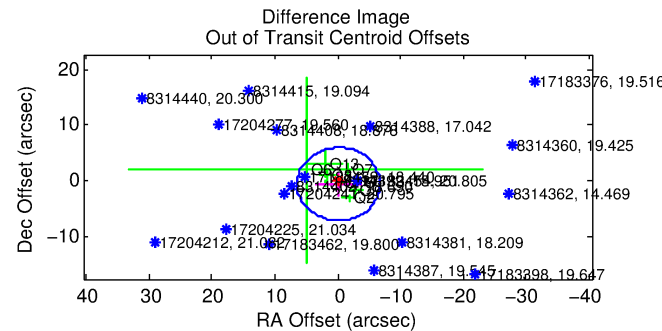
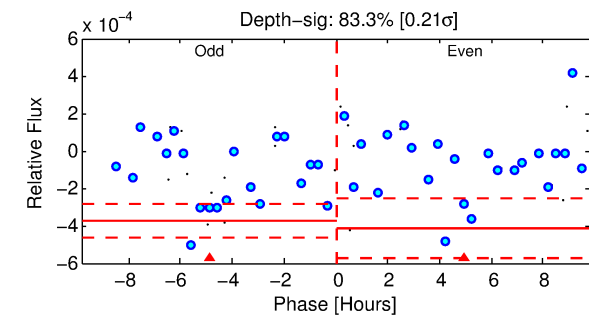
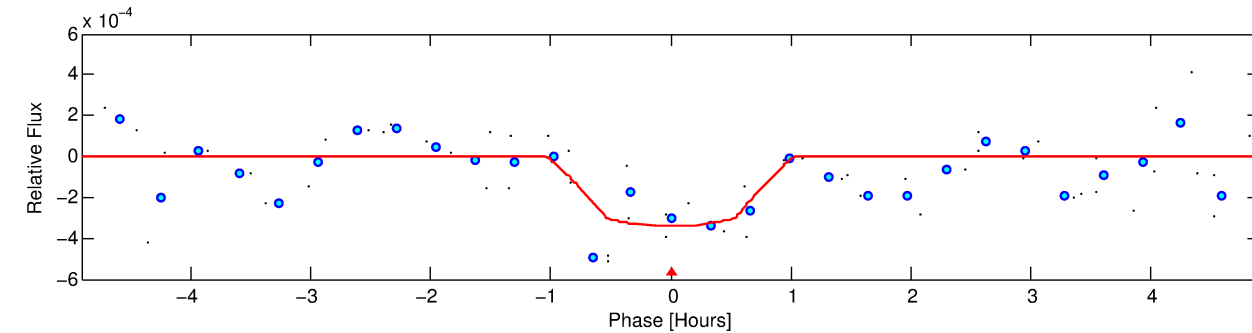
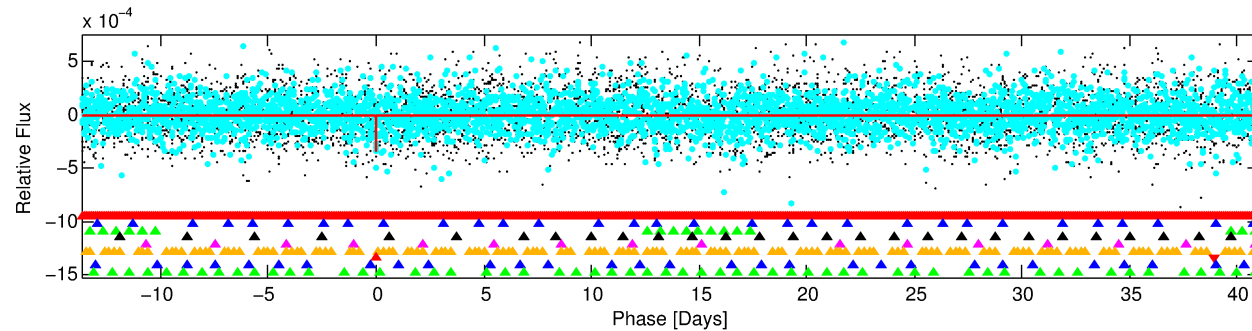
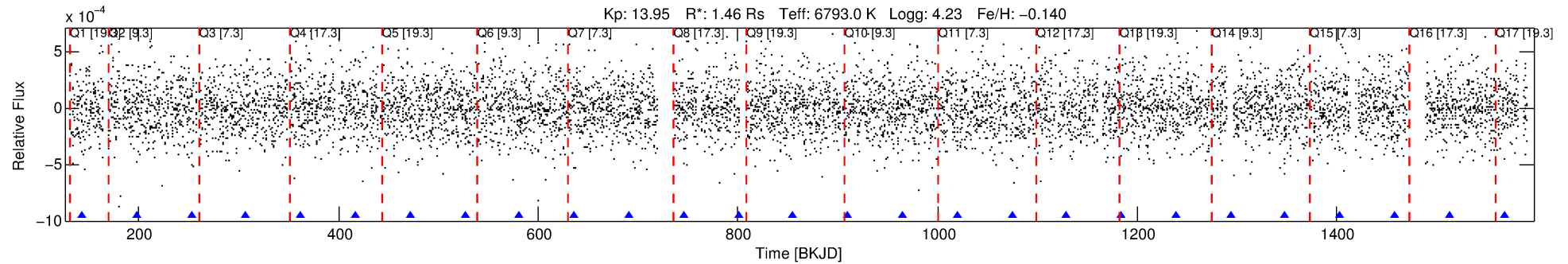
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-07

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 7 of 9 Period: 54.782 d



## DV Fit Results:

Period = 54.78198 [0.00049] d  
Epoch = 143.1228 [0.0086] BKJD  
Rp/R\* = 0.0181 [0.0705]  
a/R\* = 188.89 [4203.32]  
b = 0.70 [16.36]  
Seff = 42.64 [16.62]  
Teq = 652 [63] K  
Rp = 2.89 [11.27] Re  
a = 0.3088 [0.0802] AU  
Ag = 1469.44 [11439.03] [0.13σ]  
Teffp = 6238 [12129] K [0.46σ]

## DV Diagnostic Results:

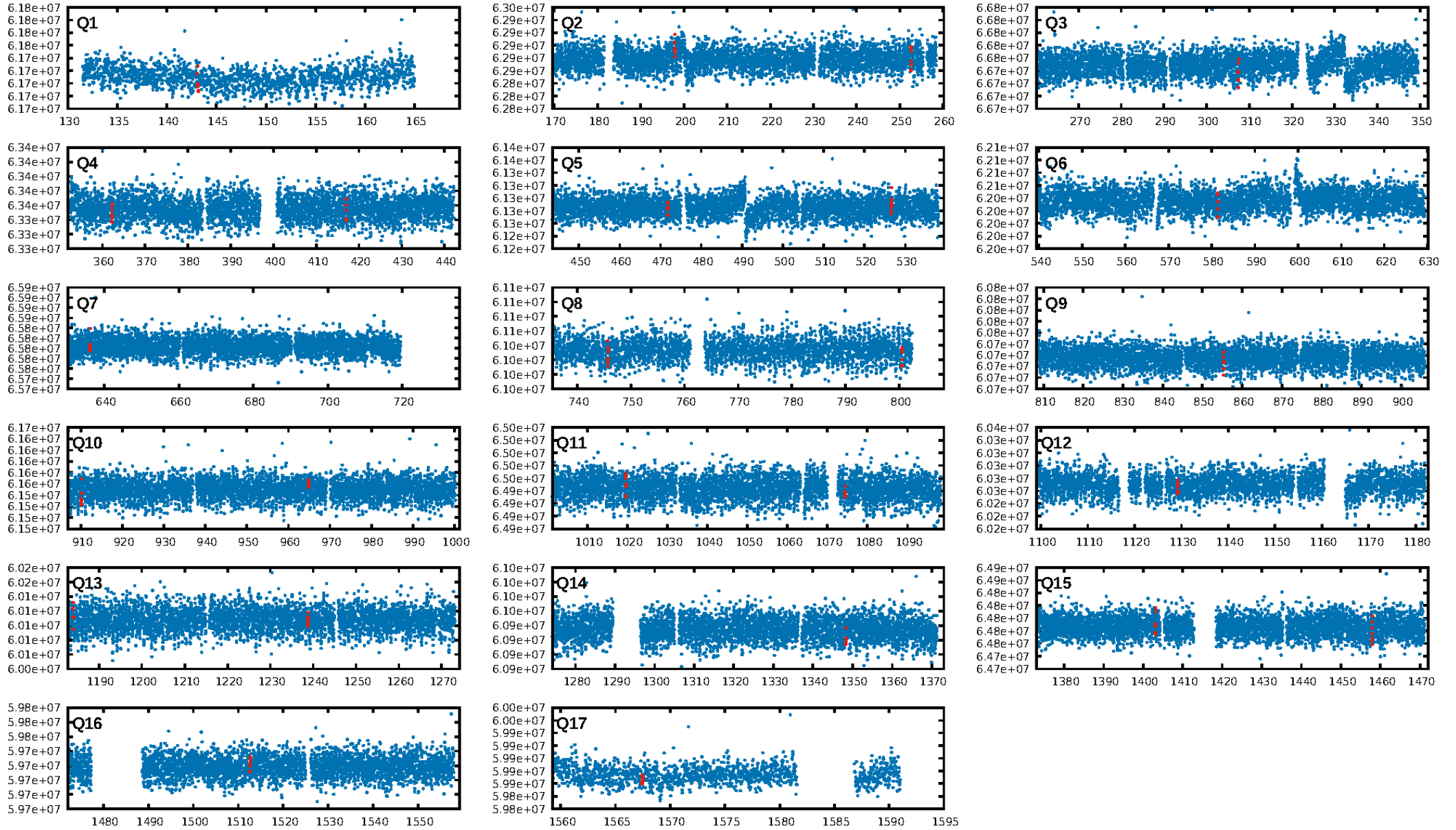
ShortPeriod-sig: 100.0% [33.00σ]  
LongPeriod-sig: 100.0% [181.34σ]  
ModelChiSquare2-sig: 5.3%  
ModelChiSquareGof-sig: 78.7%  
**Bootstrap-pfa: 4.32e-08**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -1.332  
Centroid-sig: 5.8%  
Centroid-so: 1.197 arcsec [1.61σ]  
OotOffset-rm: 0.654 arcsec [0.30σ]  
OotOffset-st: 3/2/1/2 [8]  
KicOffset-rm: 0.683 arcsec [0.31σ]  
KicOffset-st: 3/2/1/2 [8]  
DiffImageQuality-fgm: 0.50 [4/8]  
DiffImageOverlap-fno: 0.29 [5/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:24 Z

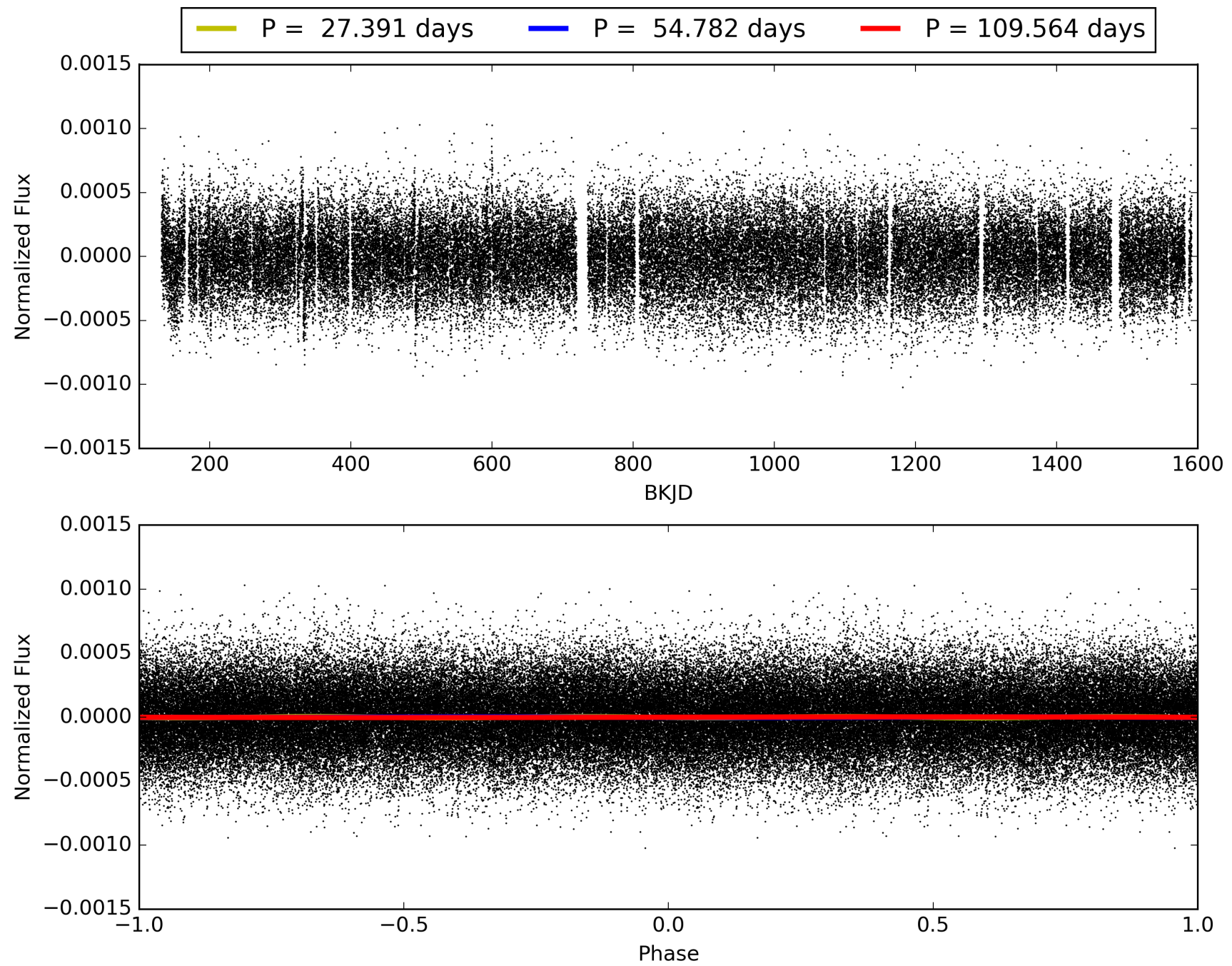
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008314392-07, PDC Light Curves

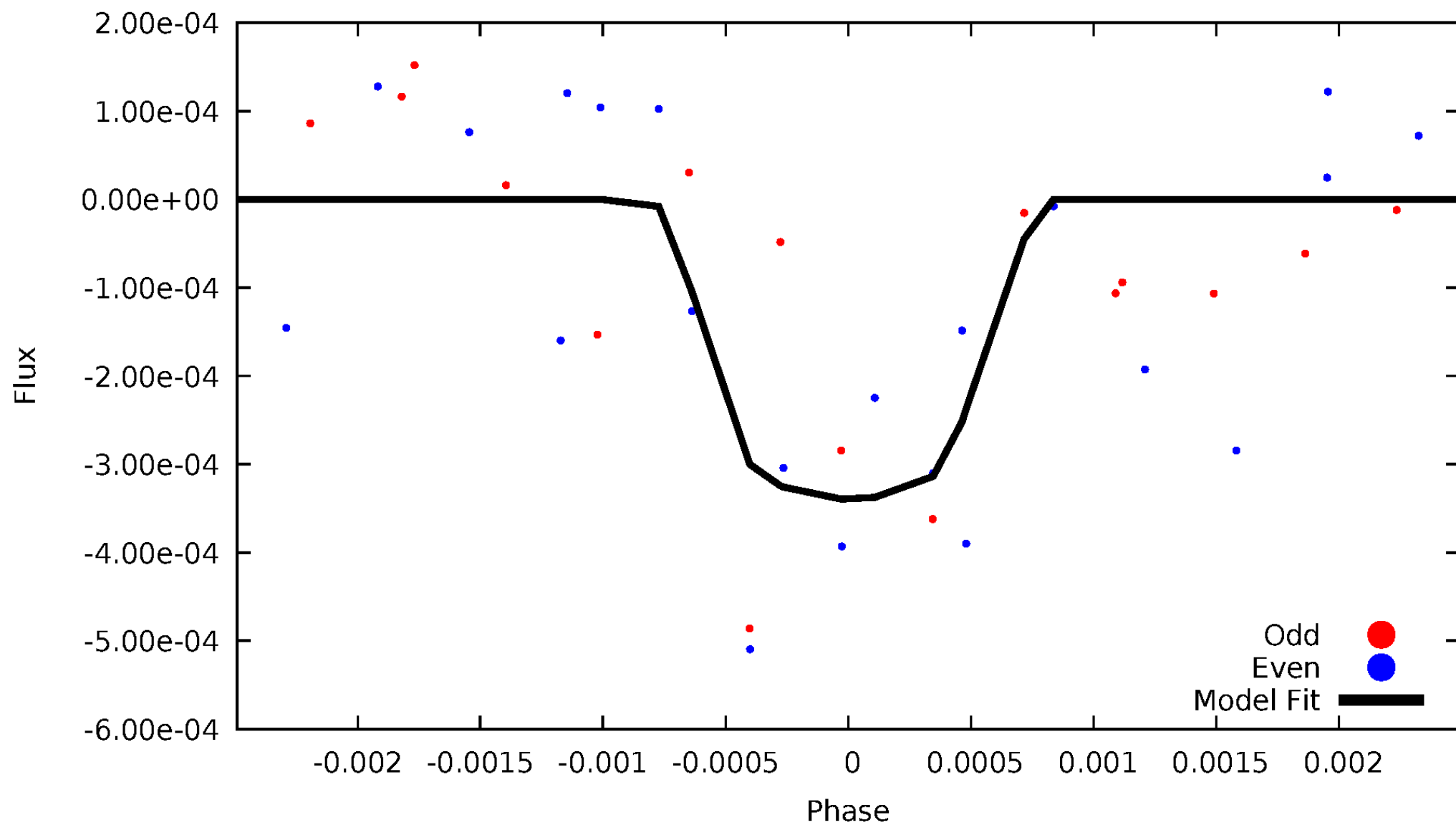


TCE 008314392-07



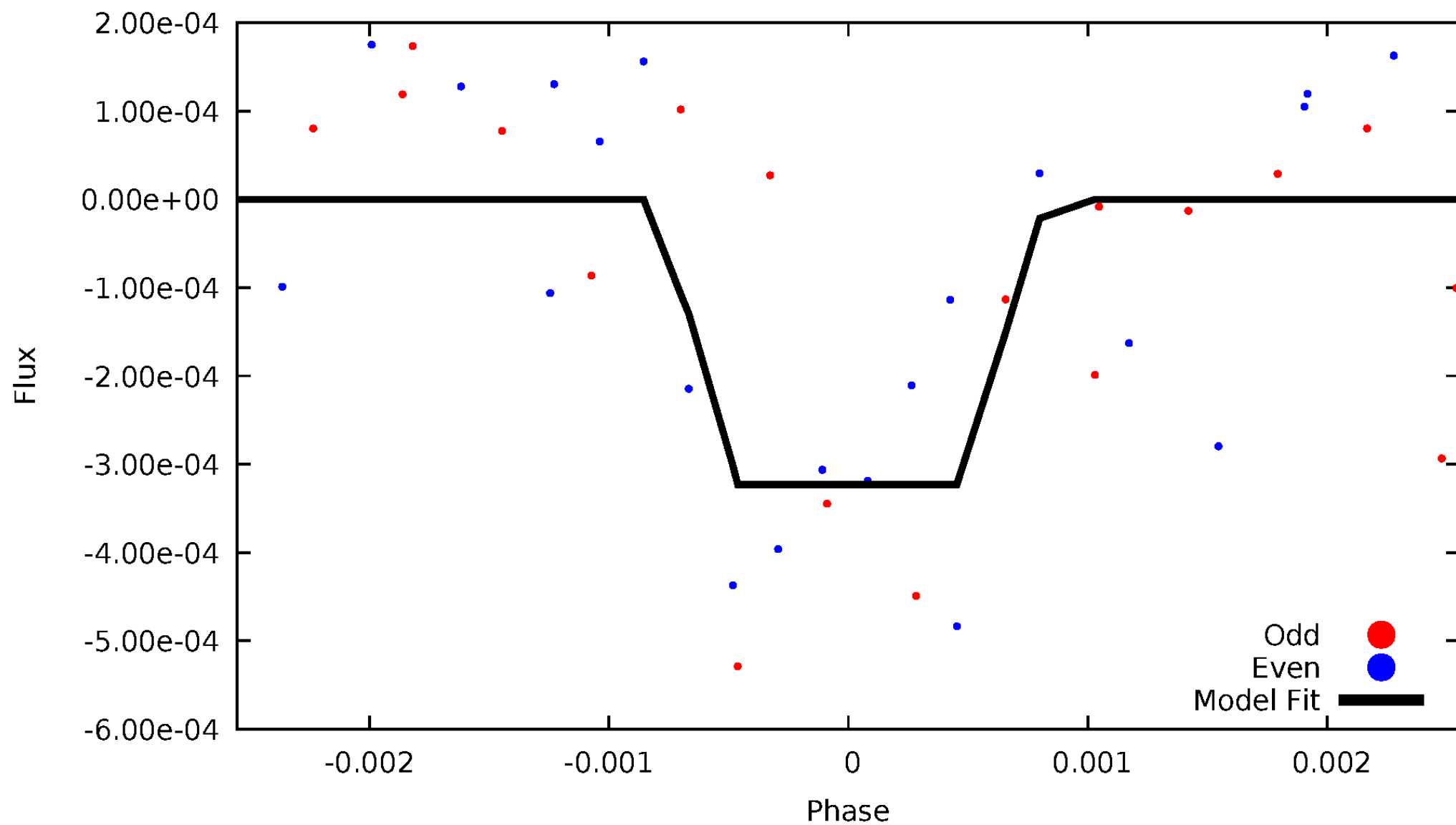
# DV Odd/Even

TCE 008314392-07



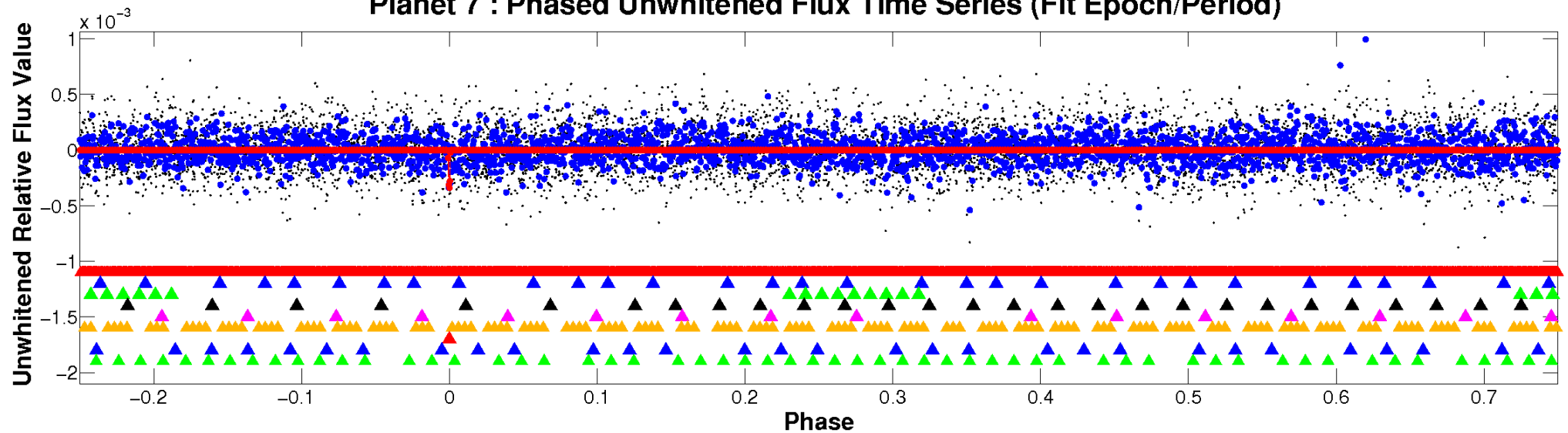
# ALT Odd/Even

TCE 008314392-07

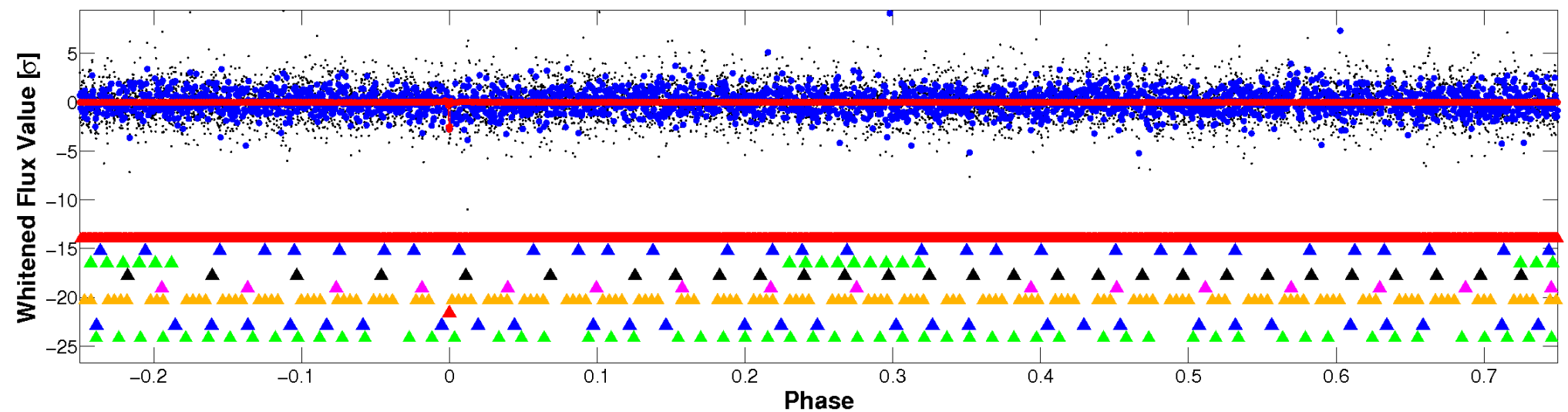


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

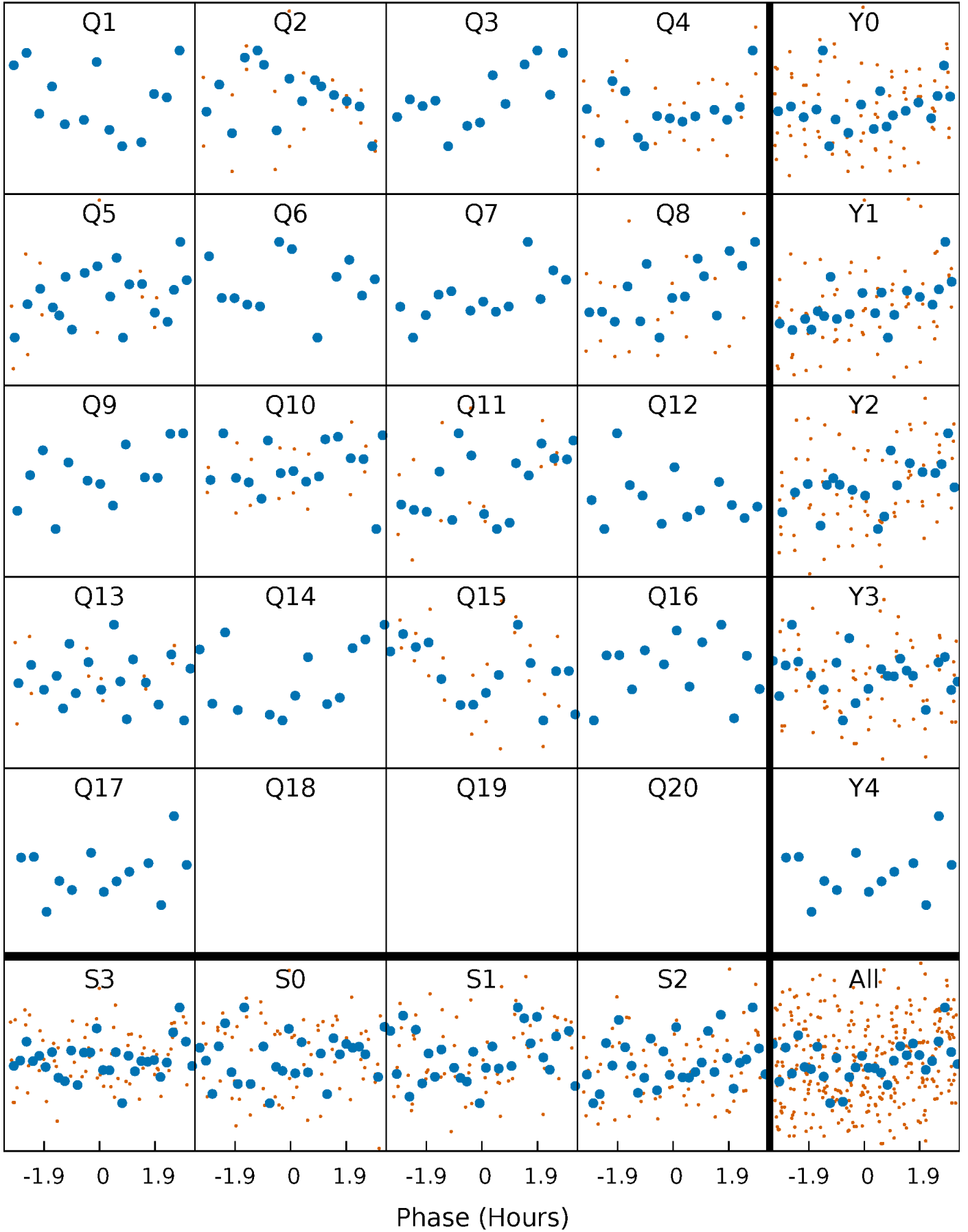


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



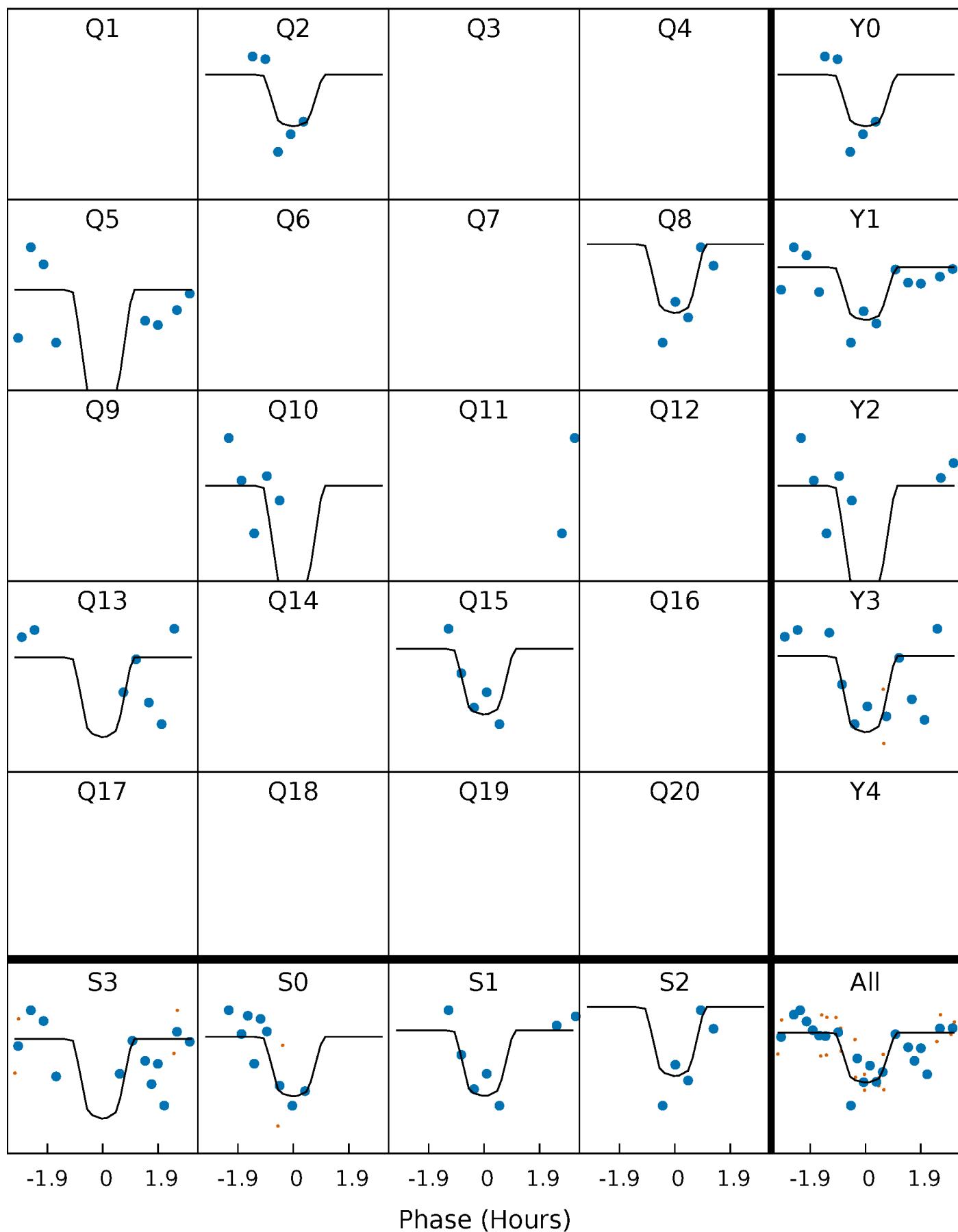
# PDC Quarter-Phased Transit Curves

TCE 008314392-07     $P = 54.781984$  Days     $T_0 = 143.122826$  (BKJD)



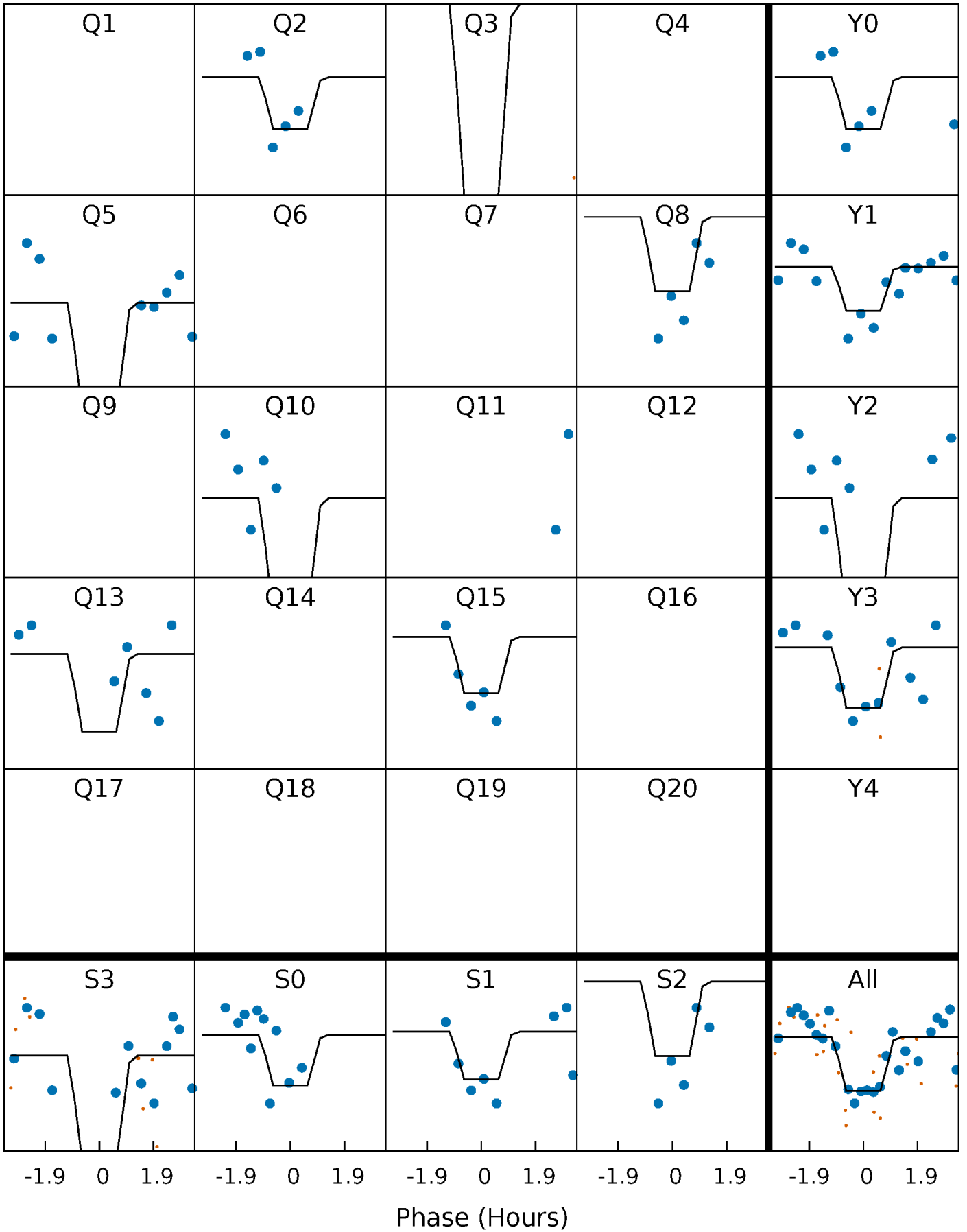
# DV Quarter-Phased Transit Curves

TCE 008314392-07   P= 54.781984 Days    $T_0=143.122826$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008314392-07   P= 54.781850 Days    $T_0=143.127589$  (BKJD)

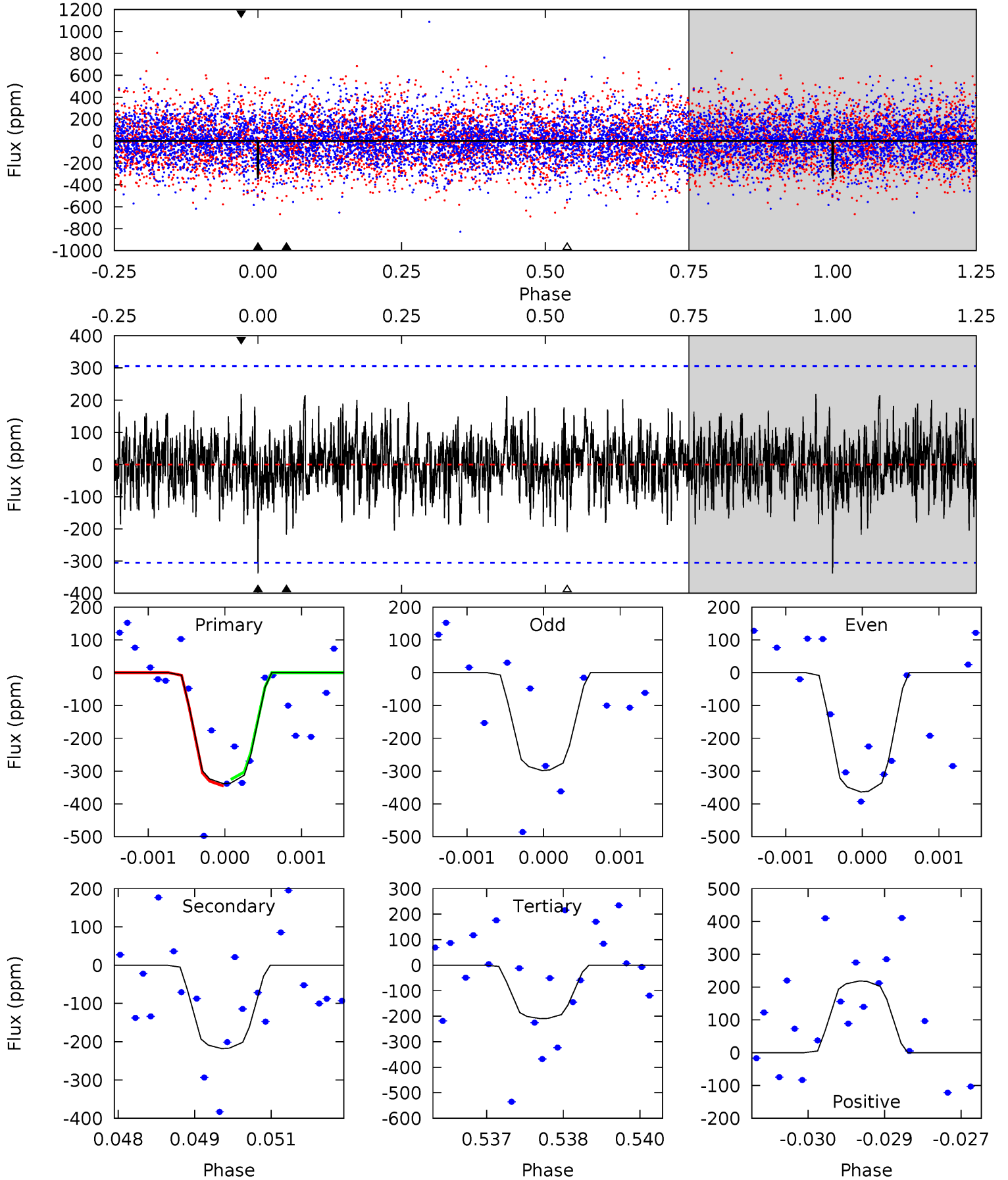




# DV Model-Shift Uniqueness Test

008314392-07, P = 54.781984 Days, E = 88.340842 Days

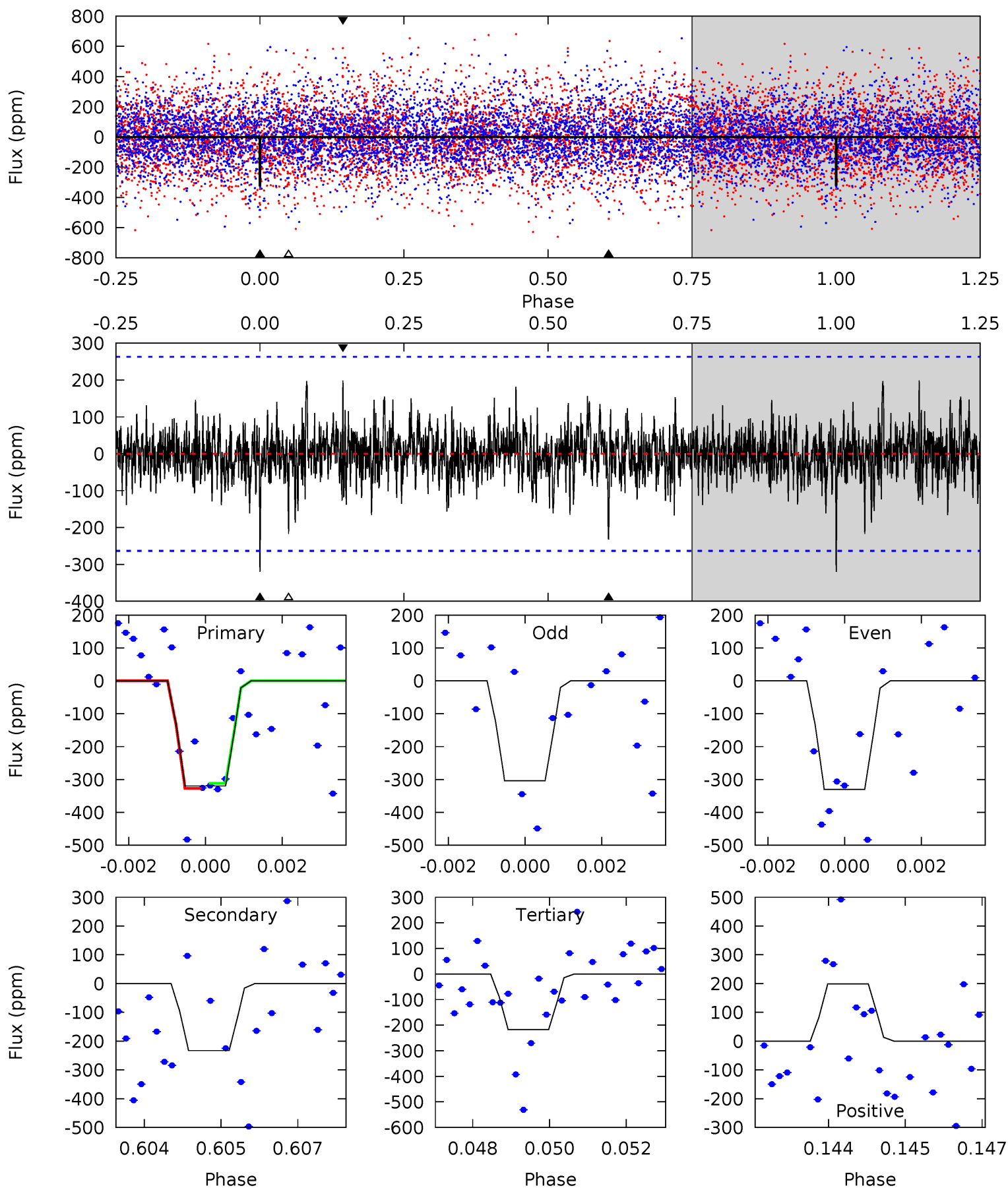
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.97	3.85	3.70	3.86	5.40	3.20	1.19	2.27	2.11	0.15	-0.01	0.54	0.82	0.39	0.17



# Alt Model-Shift Uniqueness Test

008314392-07, P = 54.781850 Days, E = 88.345739 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
6.50	4.73	4.41	4.05	5.35	3.13	1.04	2.09	2.46	0.32	0.69	0.25	0.75	0.38	0.16



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-218 \pm 57$	$8.70^{+9.69}_{-6.18}$	$911^{+68}_{-52}$	$3837^{+2662}_{-802}$	$138^{+1543}_{-108}$
Alt.	$-233 \pm 49$	$8.35^{+9.17}_{-5.05}$	$918^{+70}_{-63}$	$3946^{+1935}_{-776}$	$162^{+1009}_{-122}$

$T_{max}$  = 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

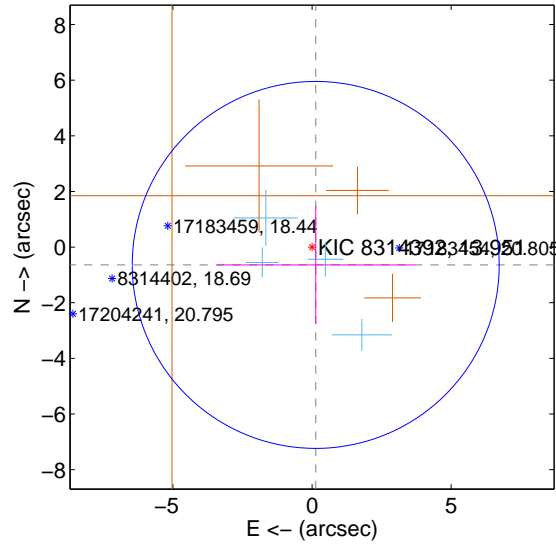
Supplemental centroid analysis for 008314392-07. Kepler magnitude: 13.95. Transit SNR 8.48

There are 4 quarters with good PRF difference image offsets

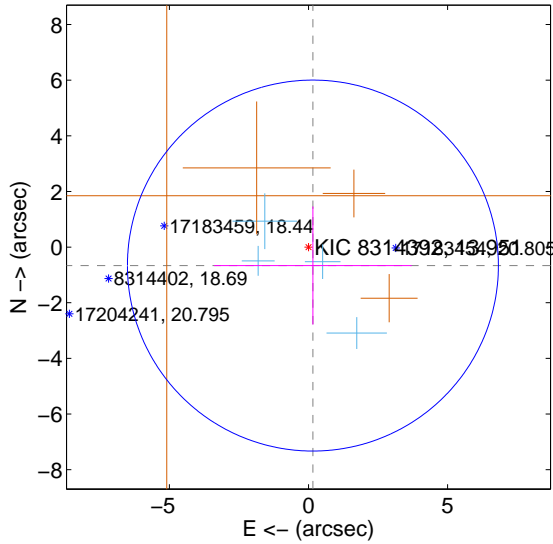
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.654 \pm 2.198$	0.30	$-0.132 \pm 3.549$	$-0.641 \pm 2.121$
PRF-fit source offset from KIC position	$0.683 \pm 2.222$	0.31	$-0.159 \pm 3.549$	$-0.664 \pm 2.121$
photometric centroid source offset	$1.20 \pm 0.74$	1.61	$1.11 \pm 0.74$	$-0.44 \pm 0.77$

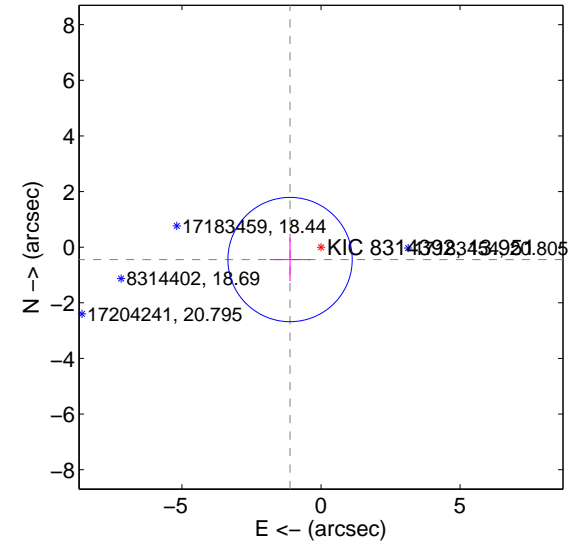
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

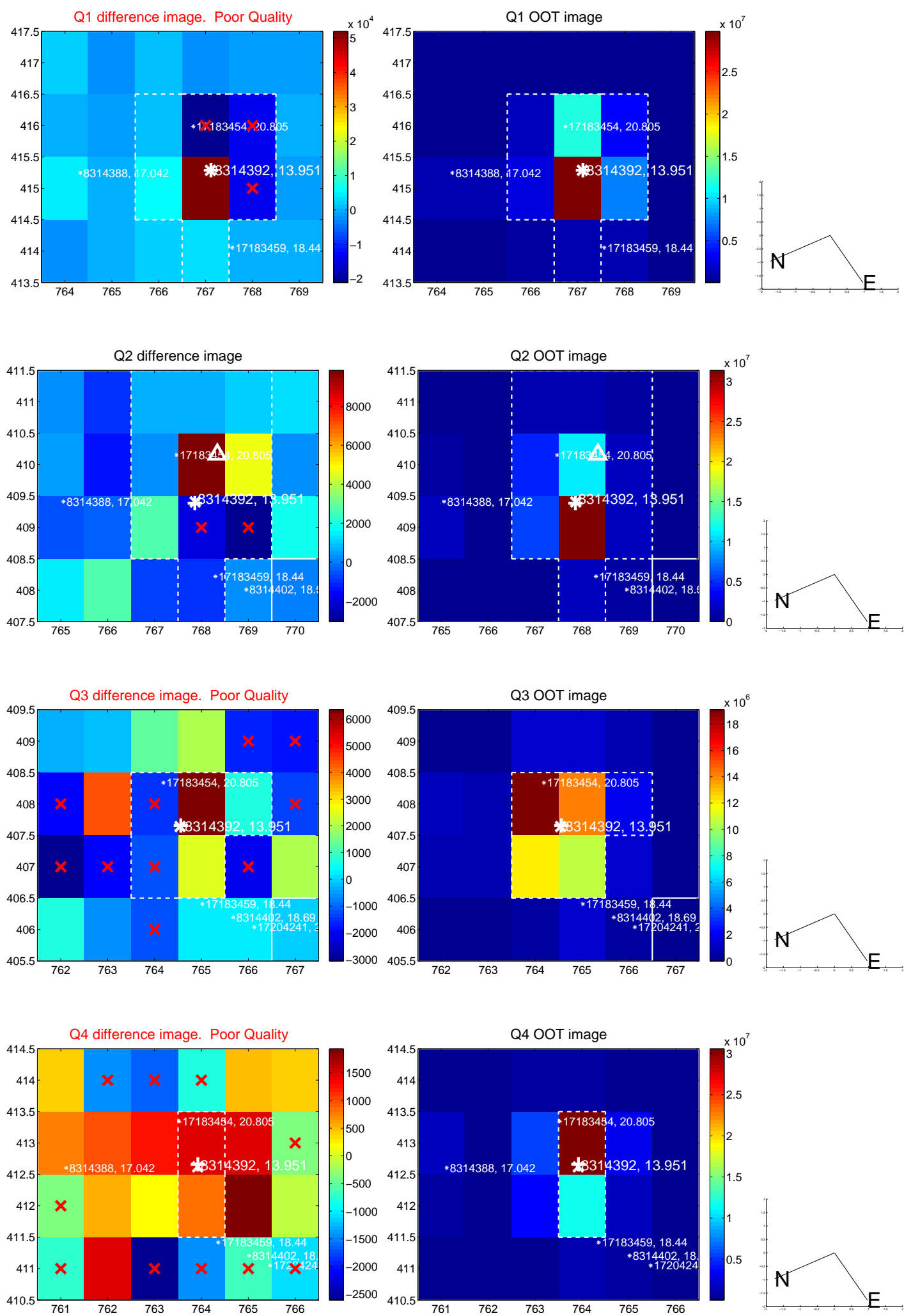


offset from photometric centroids

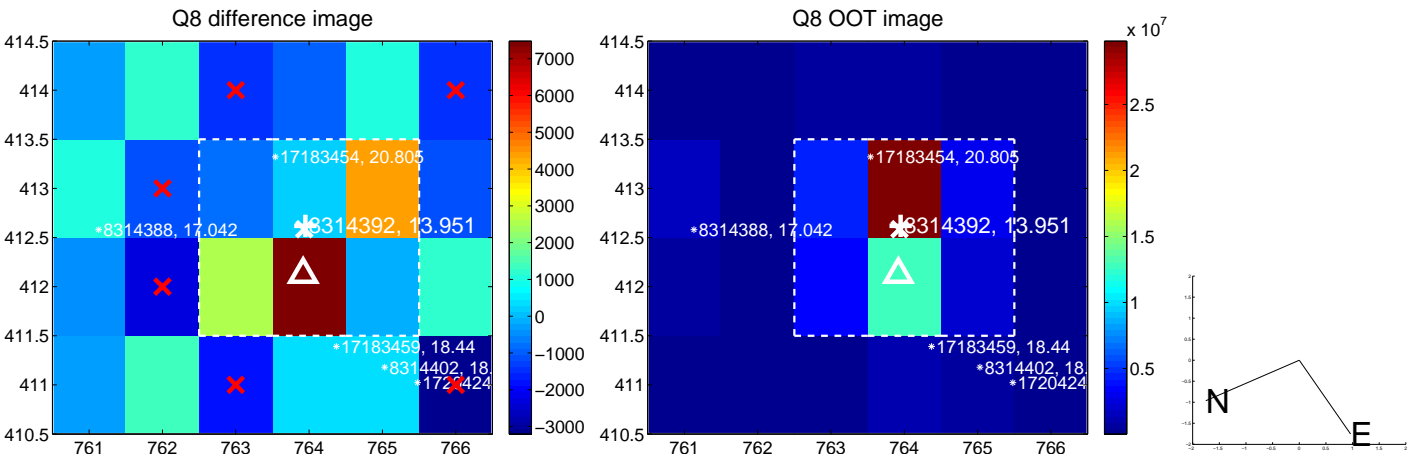
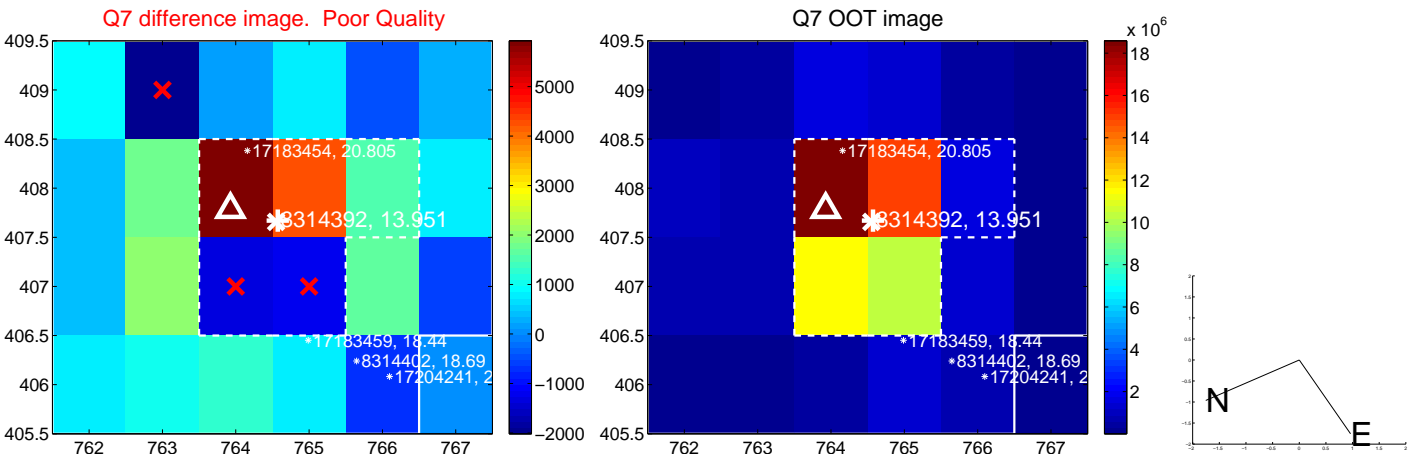
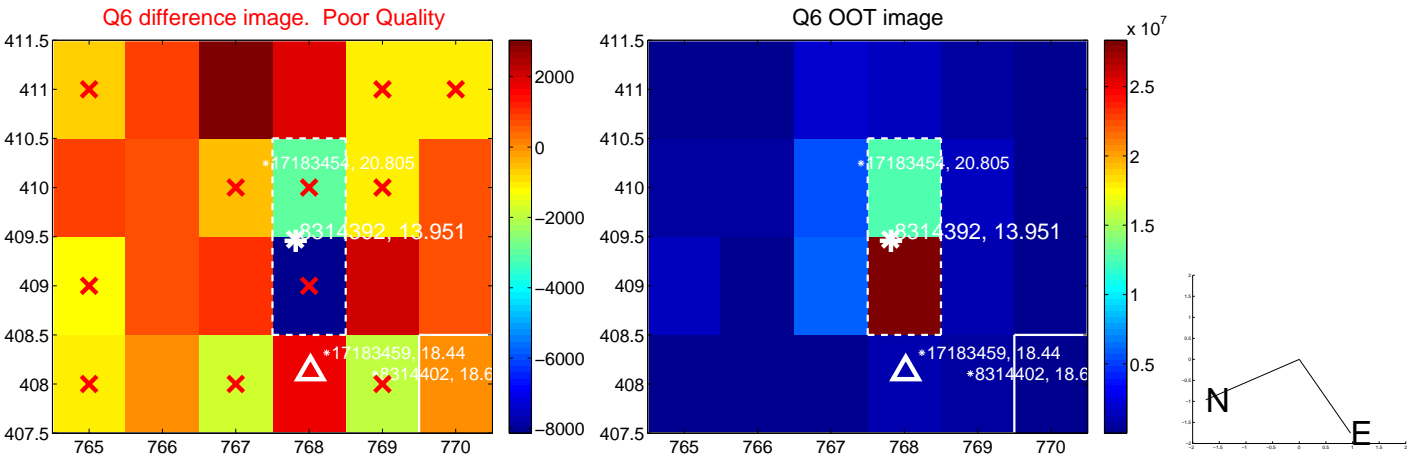
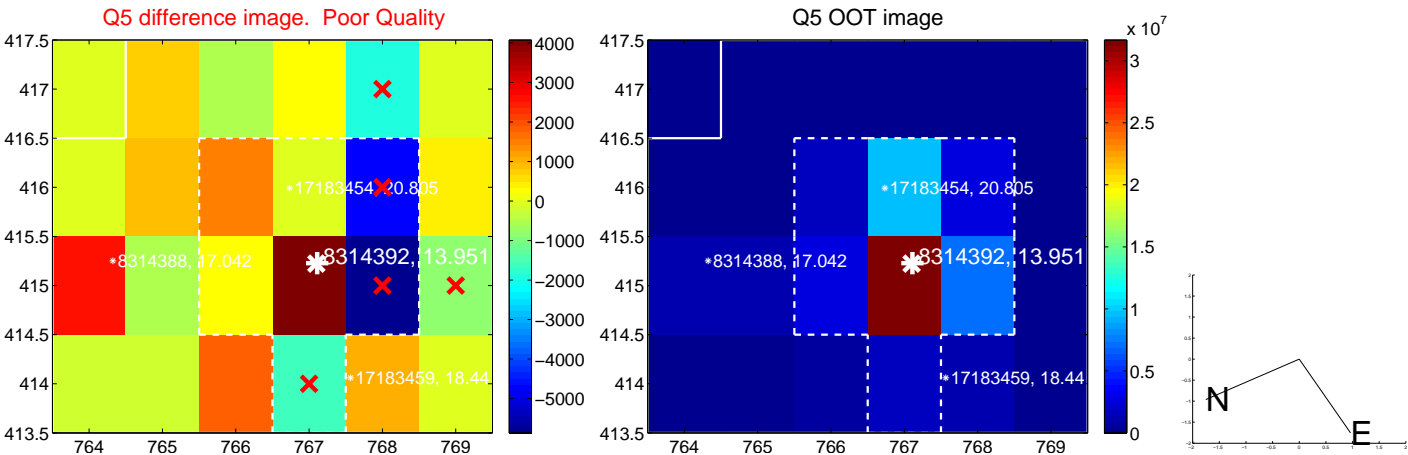


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

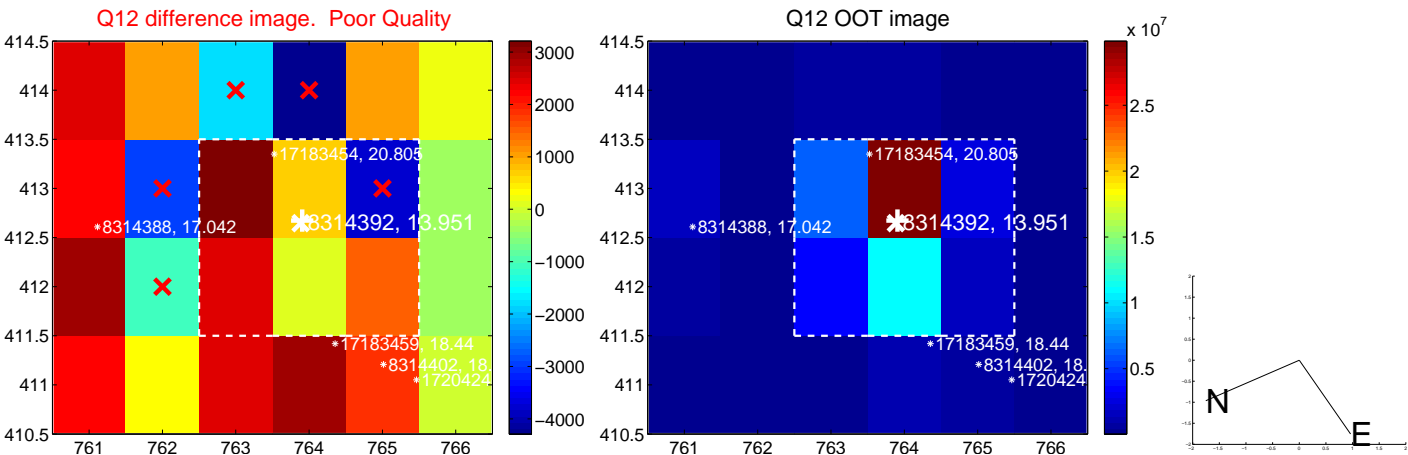
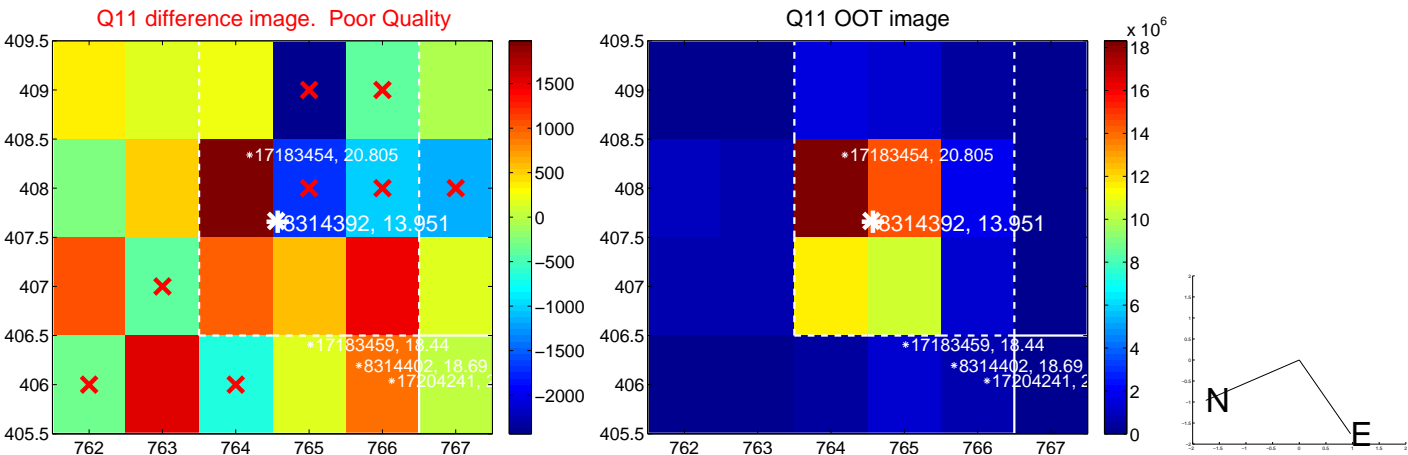
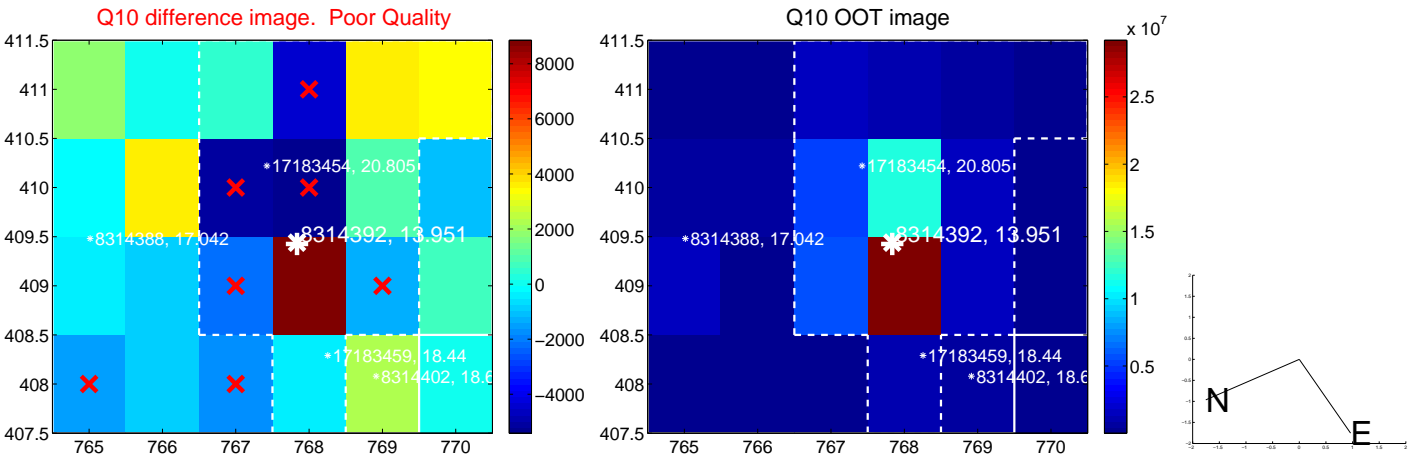
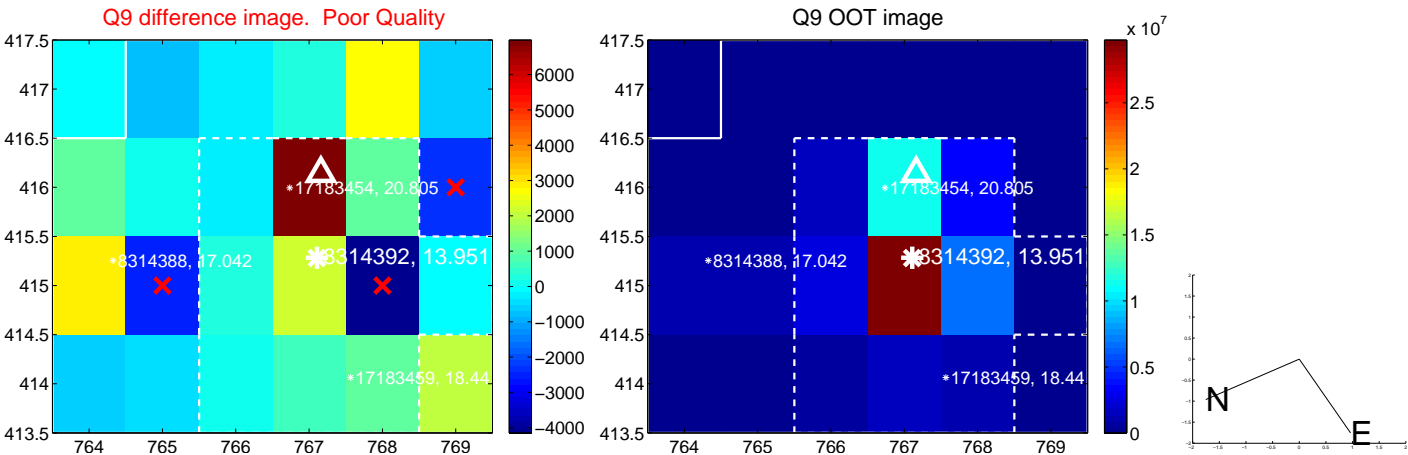
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



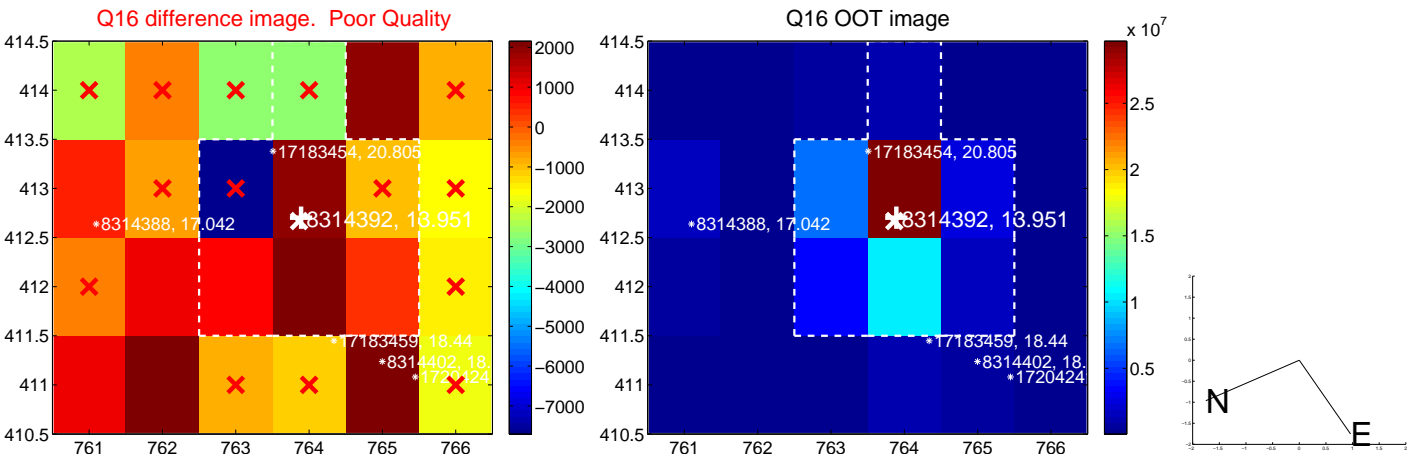
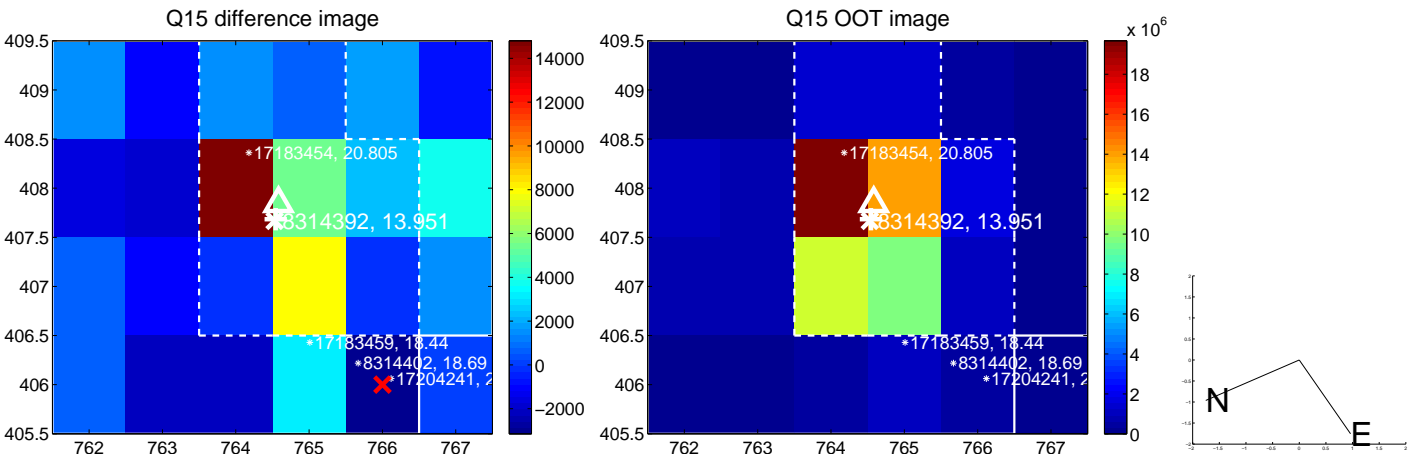
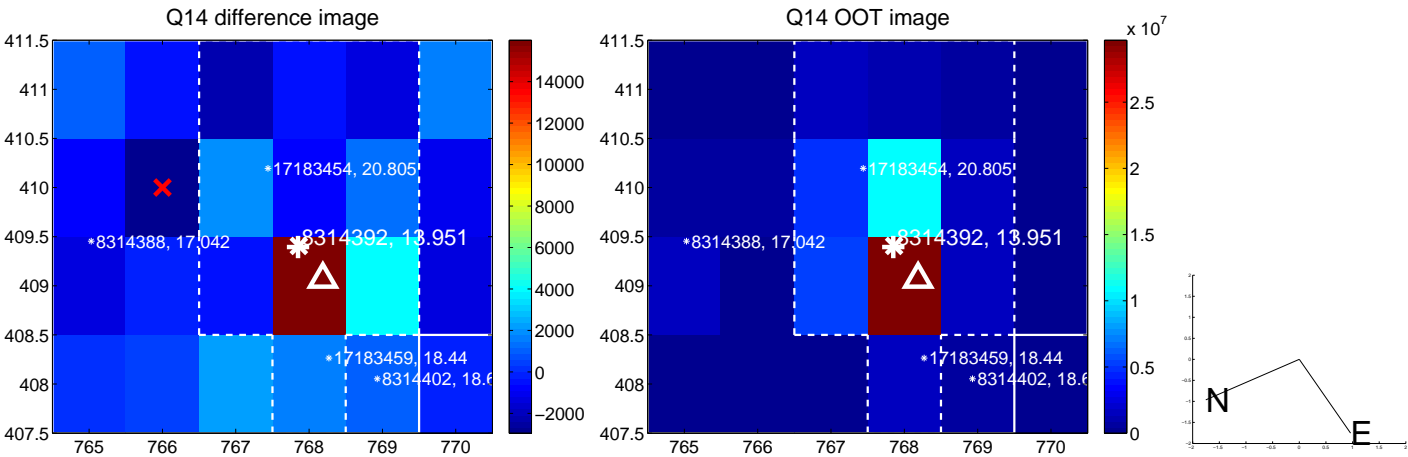
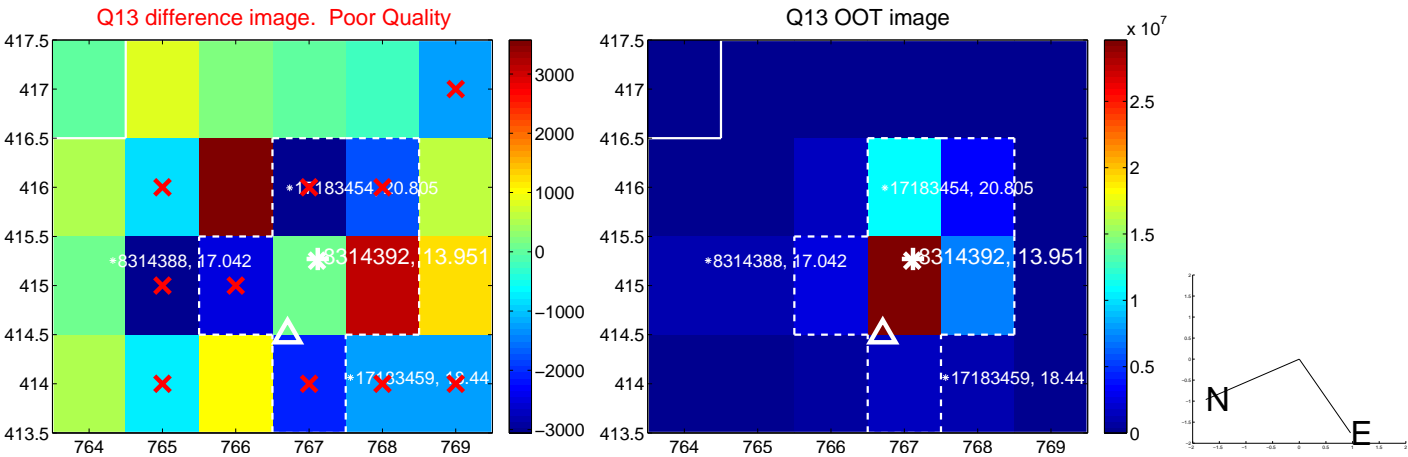
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

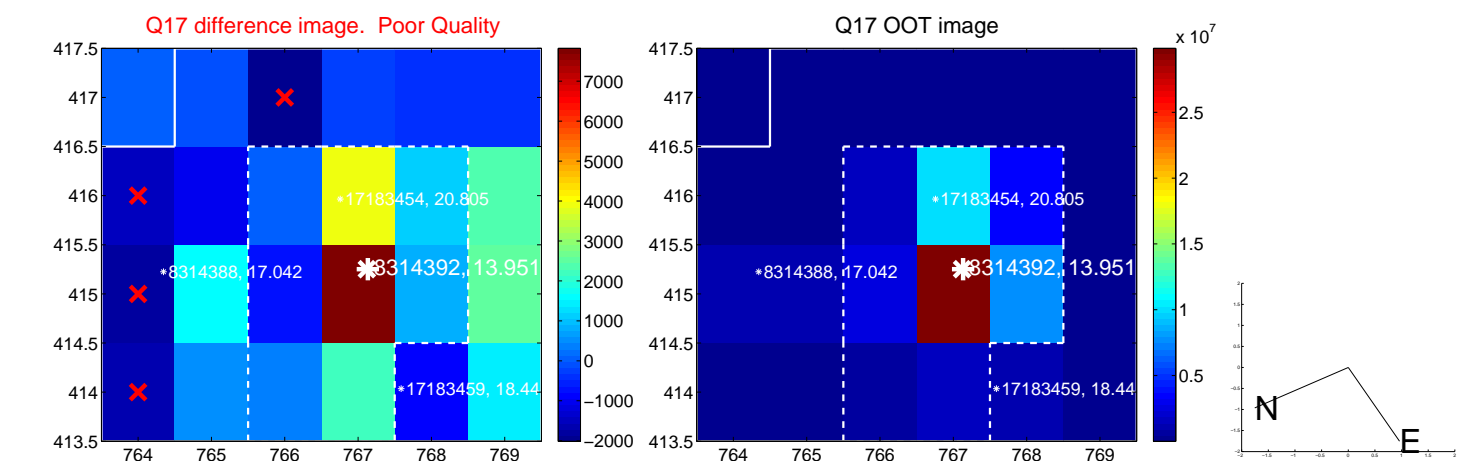


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

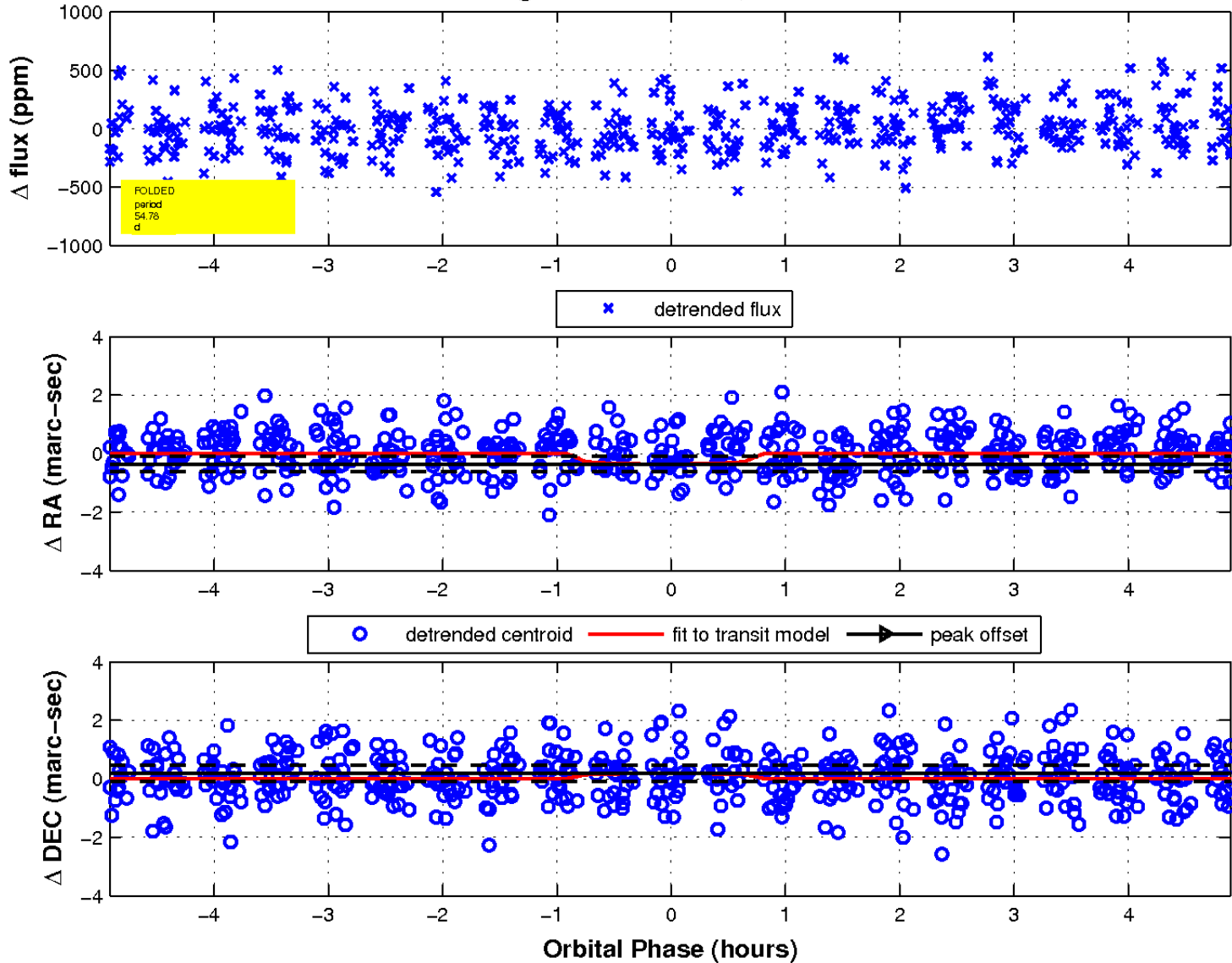




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

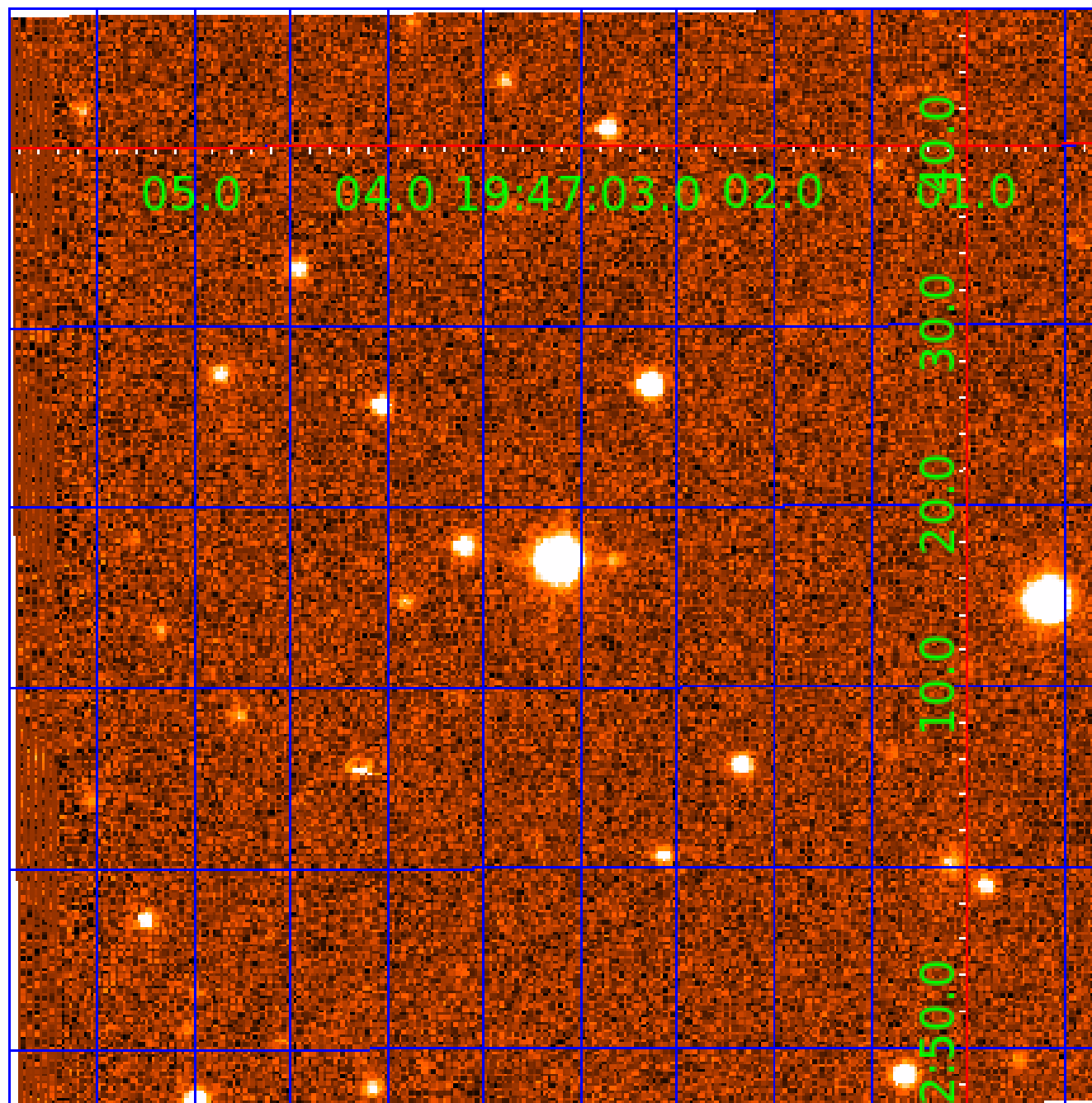


fluxWeightedCentroids, Planet 7 of 9



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

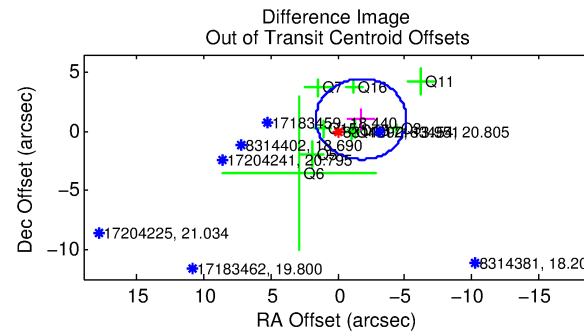
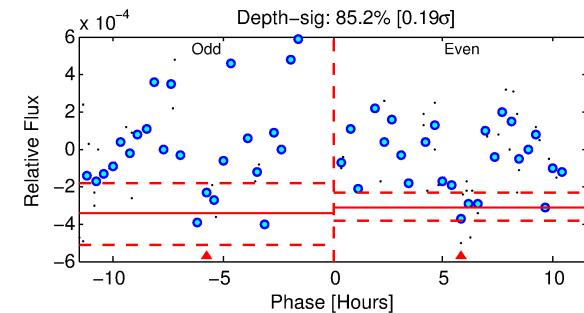
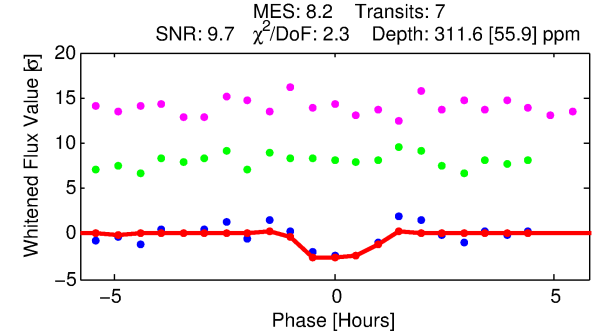
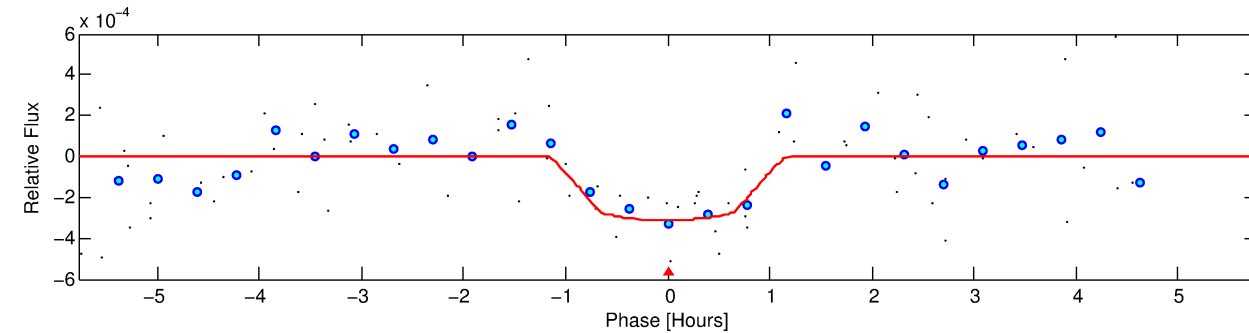
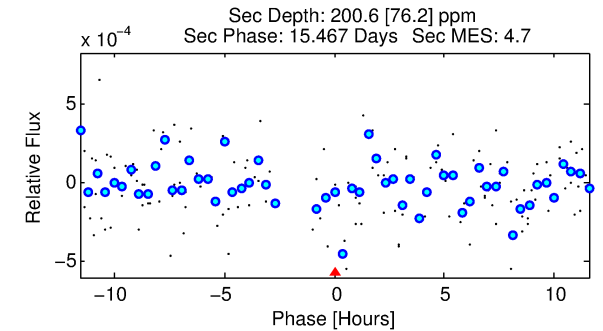
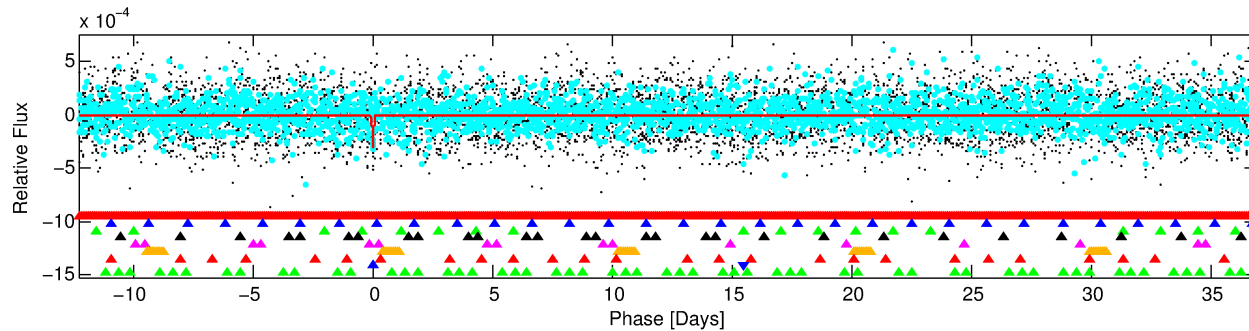
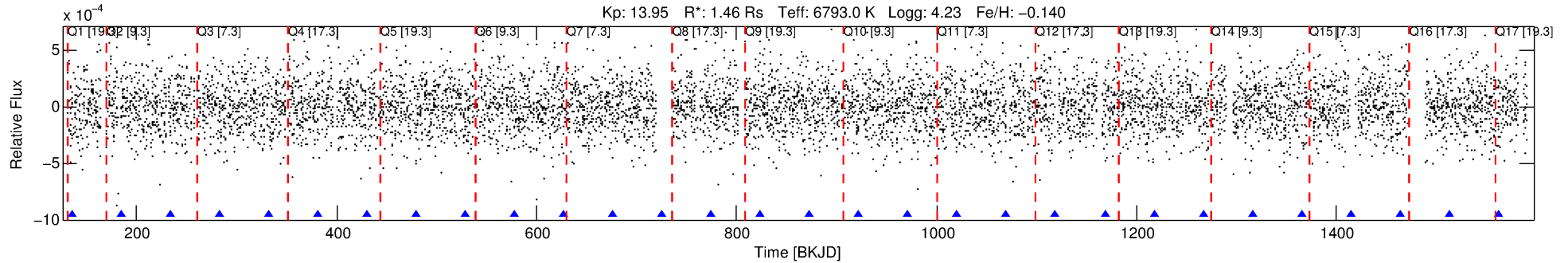
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-08

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 8 of 9 Period: 49.169 d



## DV Fit Results:

Period = 49.16916 [0.00091] d  
Epoch = 135.6576 [0.0185] BKJD  
Rp/R\* = 0.0177 [0.0340]  
a/R\* = 130.89 [1437.41]  
b = 0.77 [6.06]  
Seff = 49.26 [19.19]  
Teq = 676 [66] K  
Rp = 2.81 [5.50] Re  
a = 0.2873 [0.0746] AU  
Ag = 1150.09 [4468.53] [0.26σ]  
Teffp = 6082 [5887] K [0.92σ]

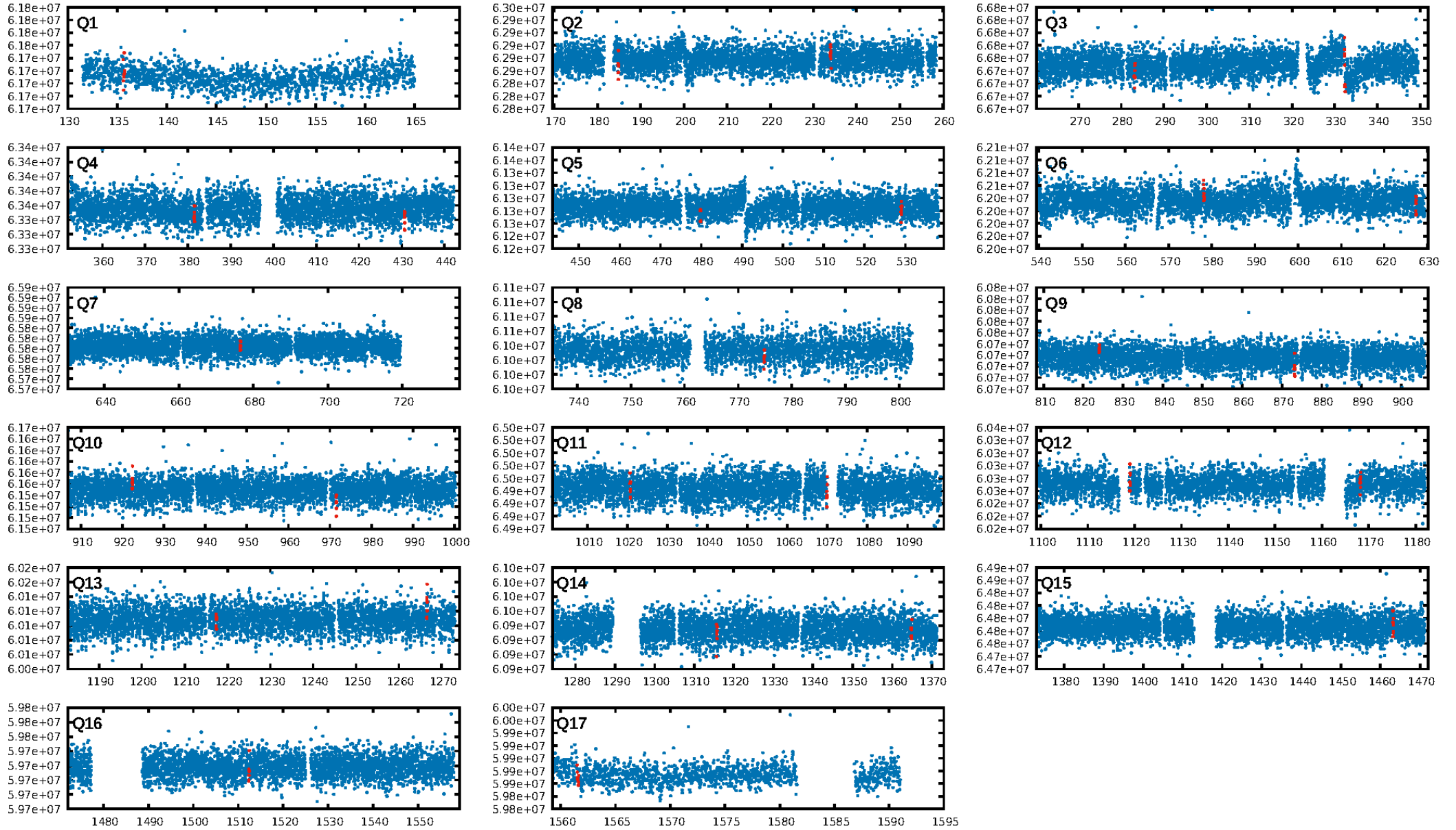
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.08σ]  
LongPeriod-sig: 100.0% [23.85σ]  
ModelChiSquare2-sig: 14.1%  
ModelChiSquareGof-sig: 95.5%  
**Bootstrap-pfa: 8.75e-08**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 4.672  
Centroid-sig: 22.5%  
Centroid-so: 0.660 arcsec [0.93σ]  
OotOffset-rm: 2.024 arcsec [1.79σ]  
KicOffset-rm: 1.998 arcsec [1.68σ]  
OotOffset-st: 1/4/2/2 [9]  
KicOffset-st: 1/4/2/2 [9]  
DiffImageQuality-fgm: 0.33 [3/9]  
DiffImageOverlap-fno: 0.35 [6/17]

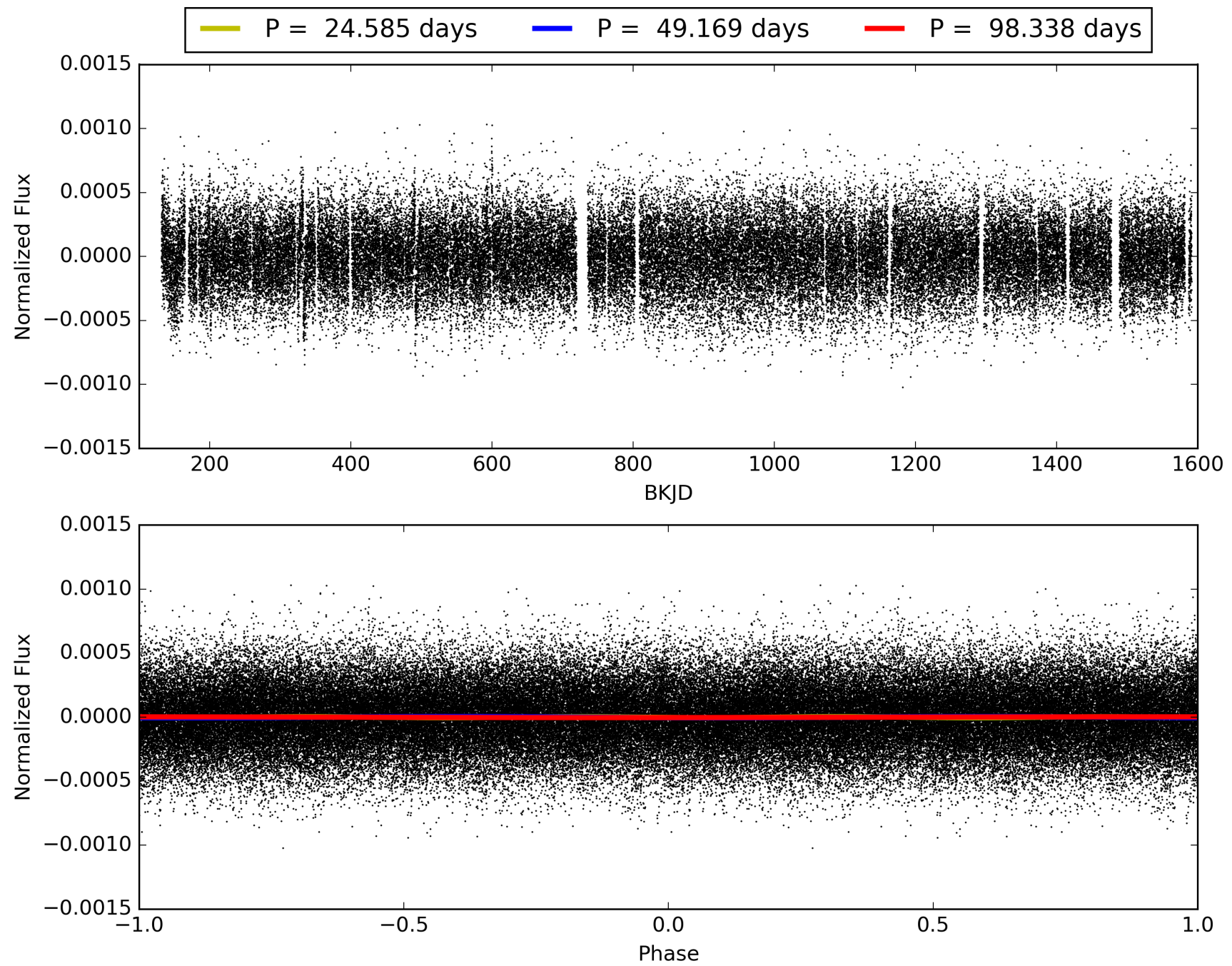
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:27 Z

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

# TCE 008314392-08, PDC Light Curves



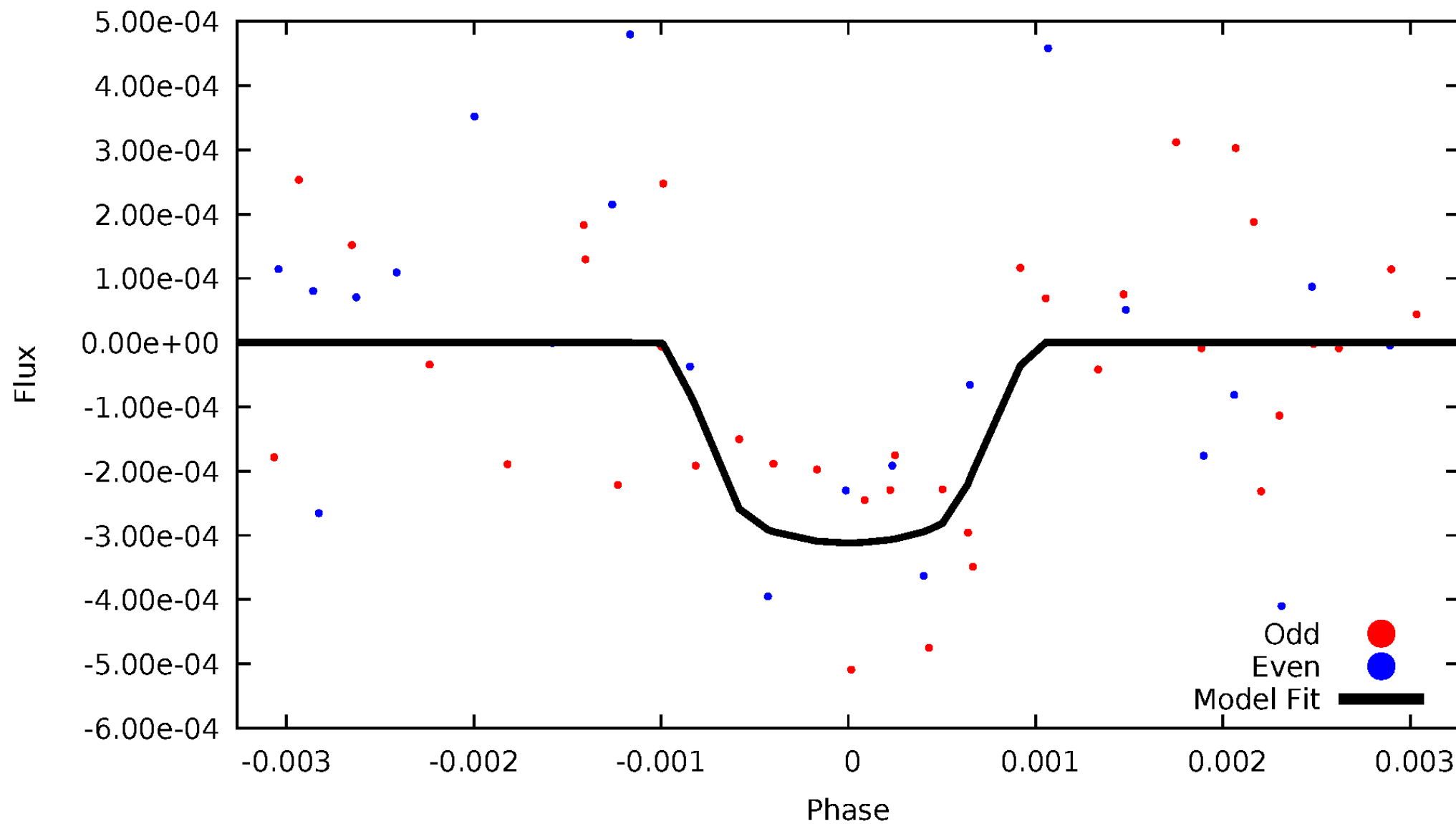
TCE 008314392-08





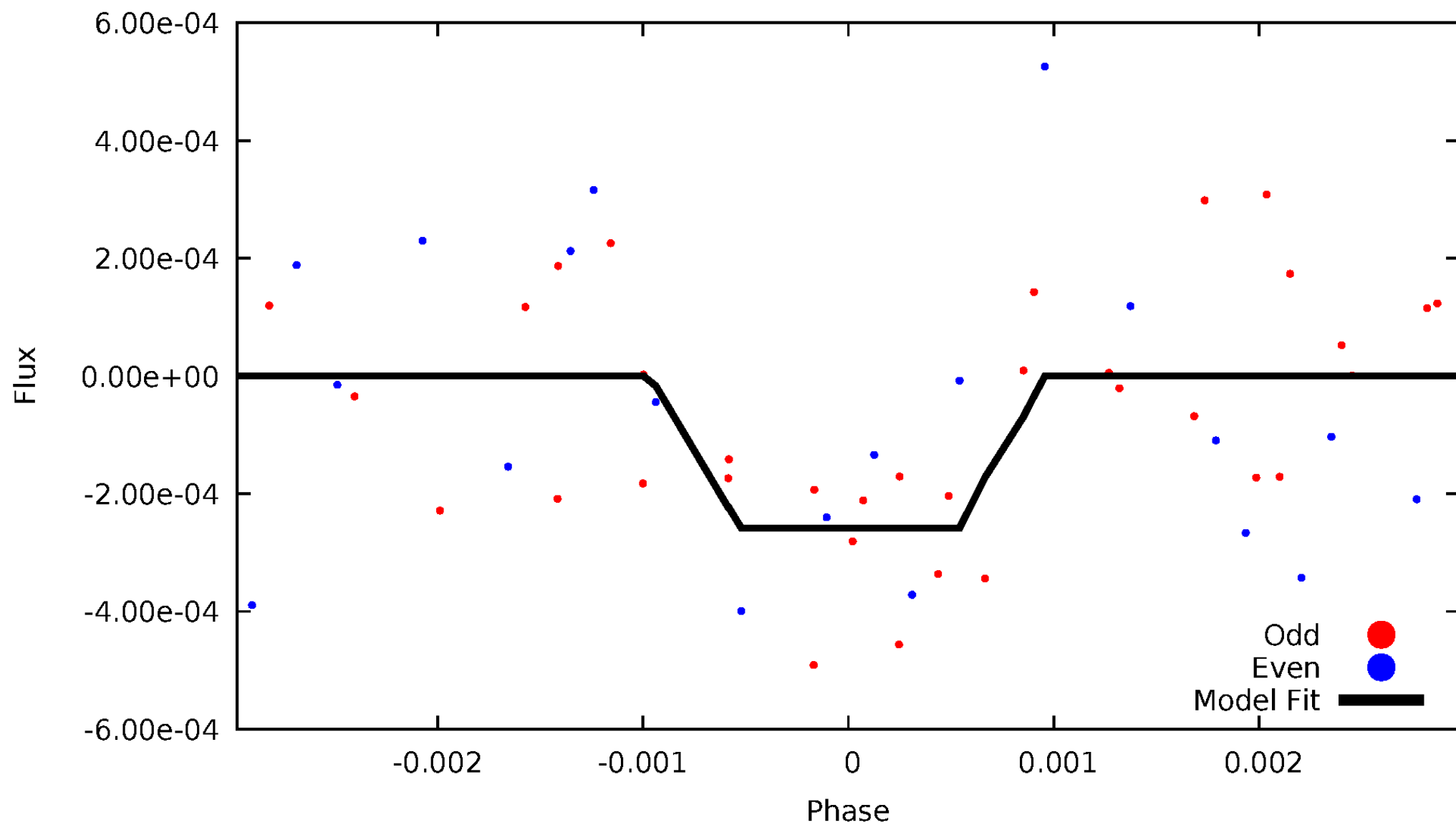
# DV Odd/Even

TCE 008314392-08



# ALT Odd/Even

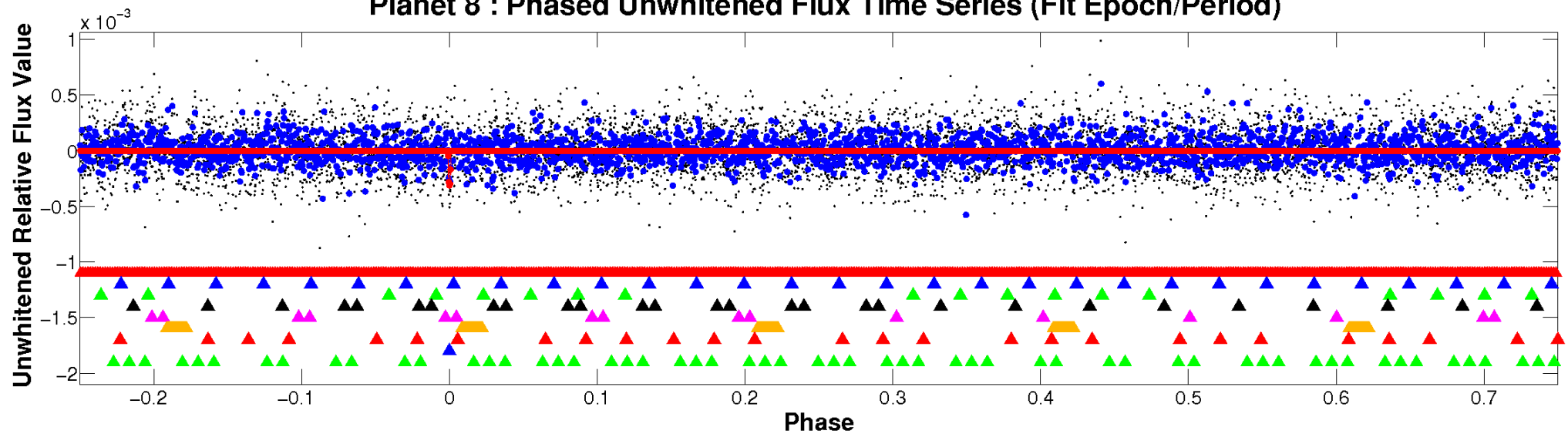
TCE 008314392-08



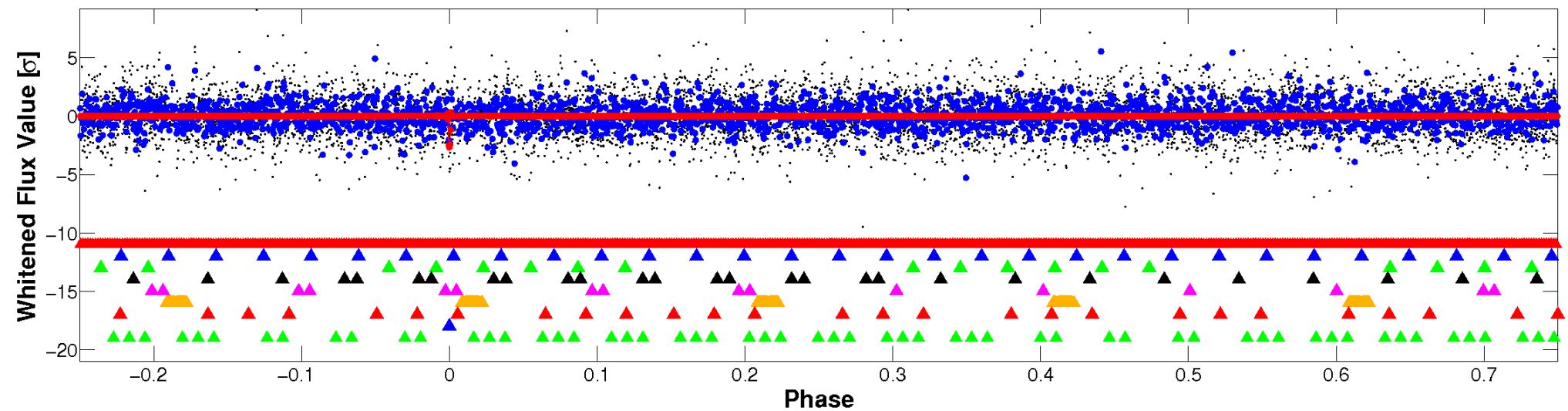


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

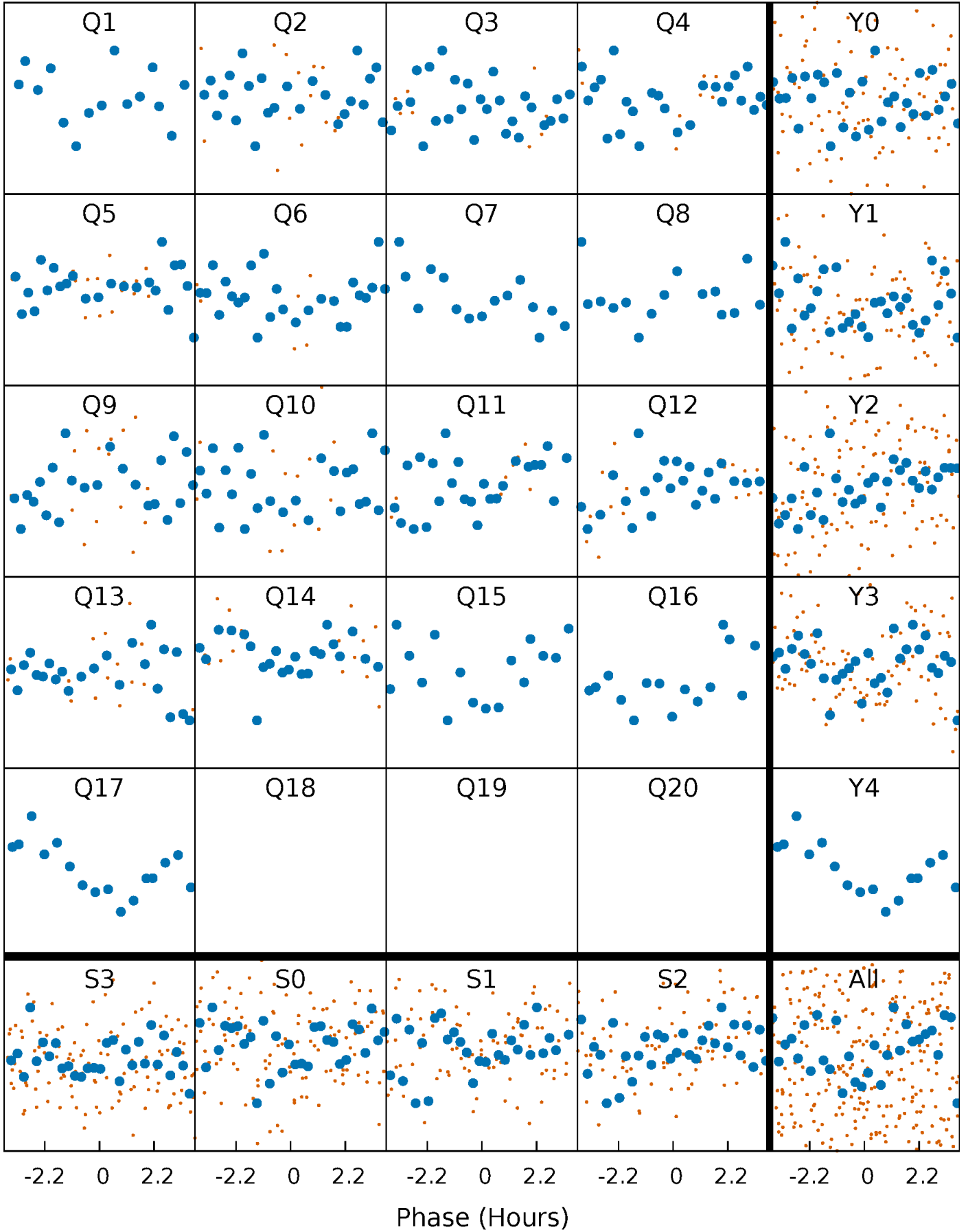


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



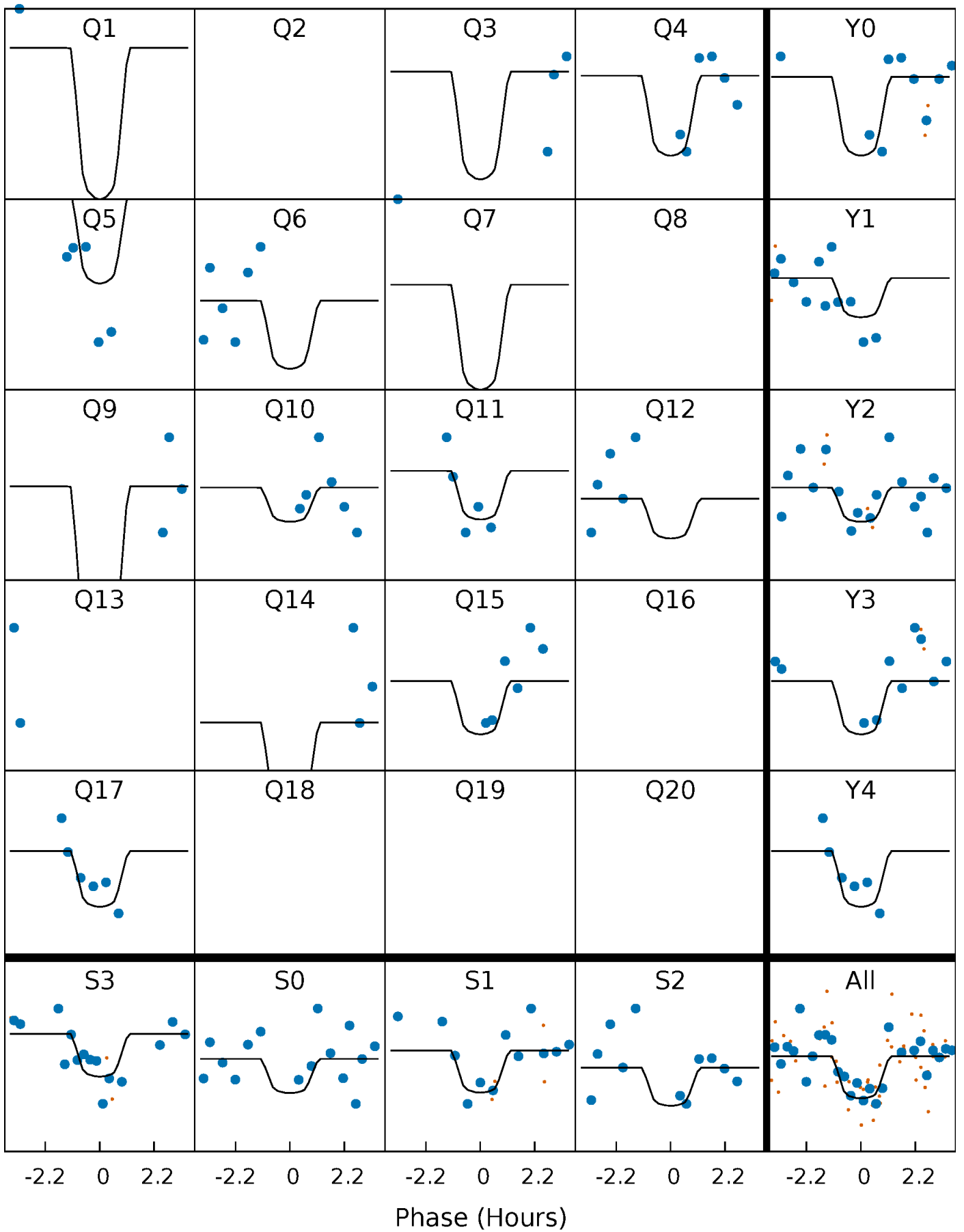
# PDC Quarter-Phased Transit Curves

TCE 008314392-08   P= 49.169162 Days    $T_0=135.657637$  (BKJD)



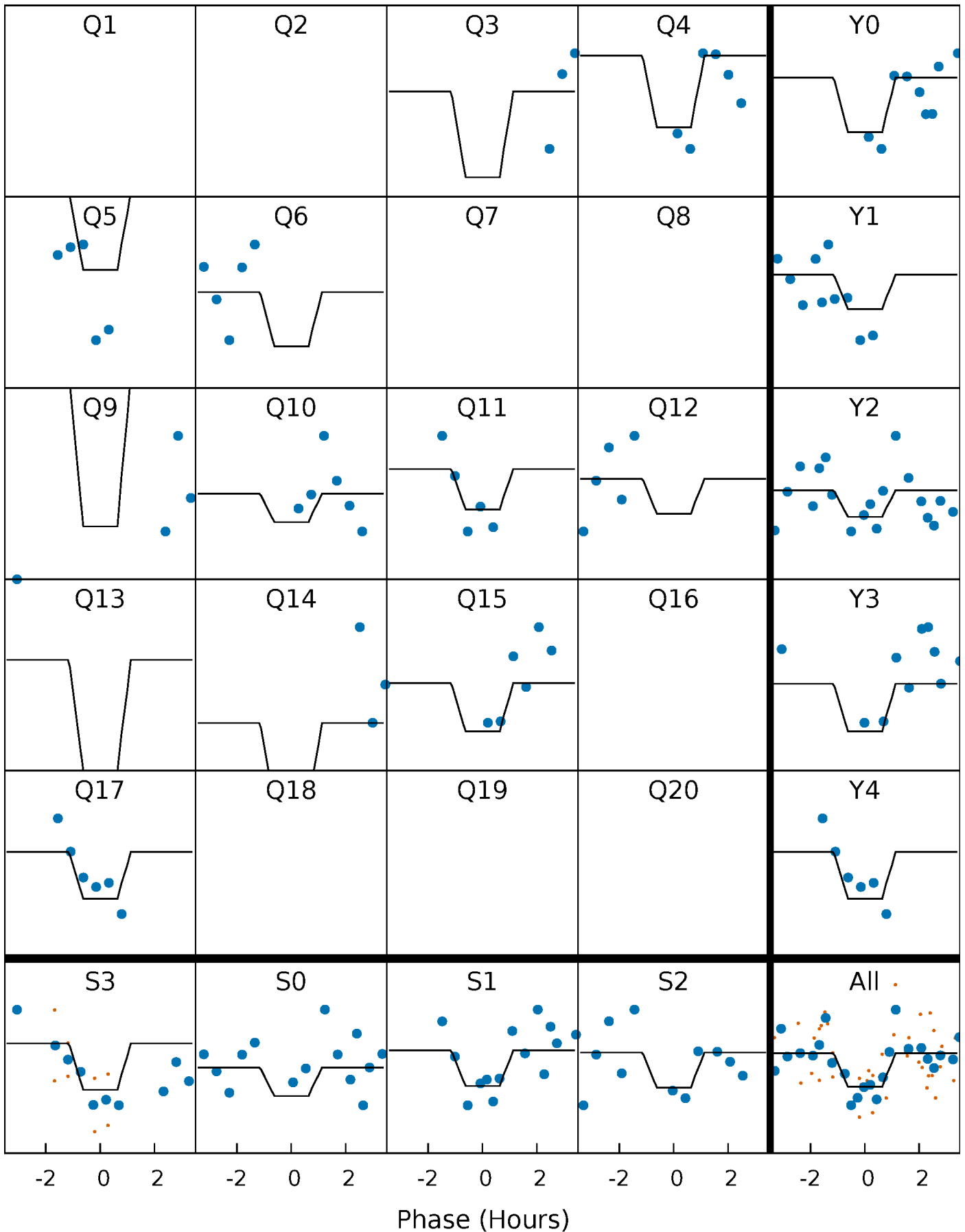
# DV Quarter-Phased Transit Curves

TCE 008314392-08   P= 49.169162 Days    $T_0=135.657637$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

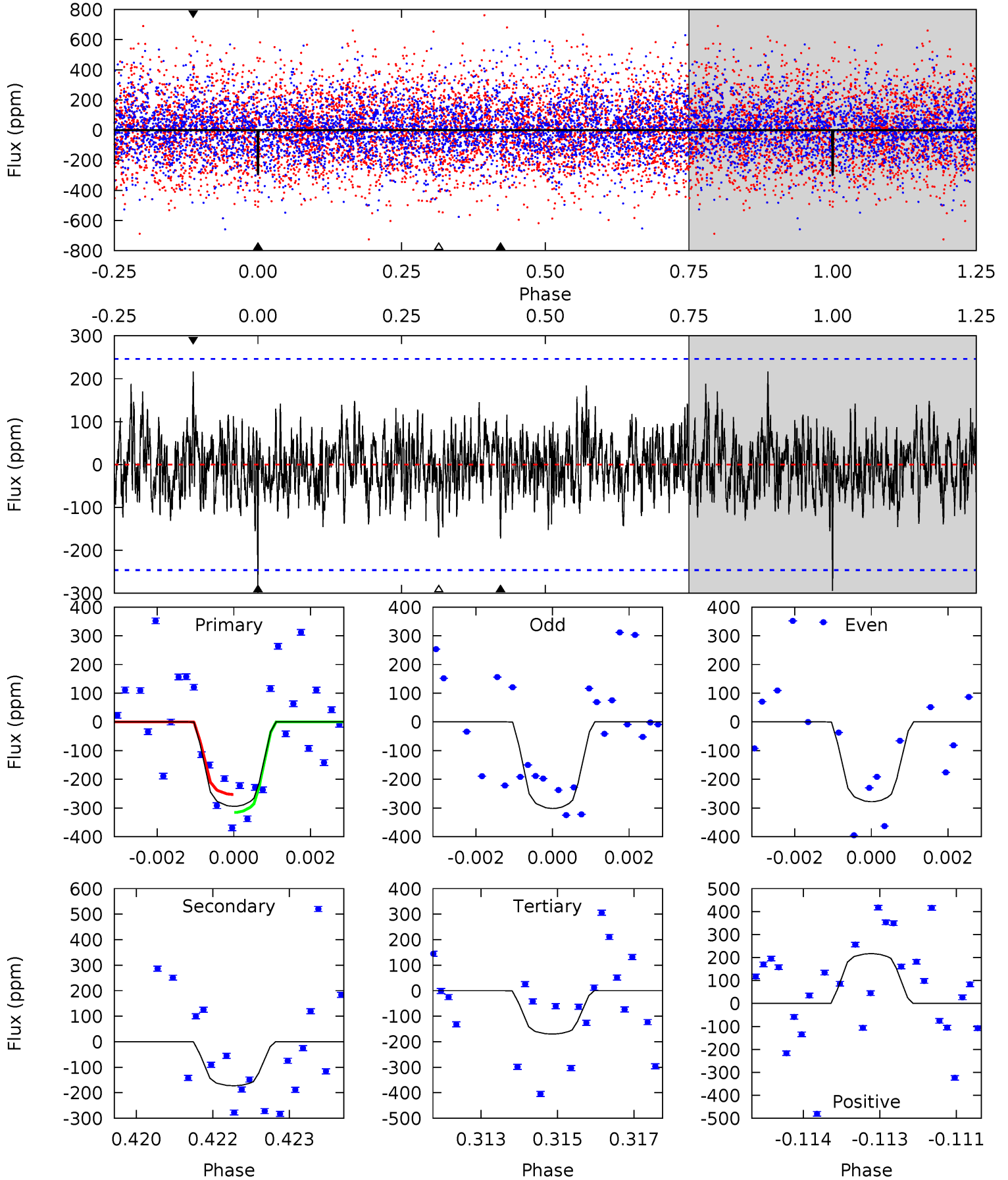
TCE 008314392-08     $P = 49.168745$  Days     $T_0 = 135.669642$  (BKJD)



# DV Model-Shift Uniqueness Test

008314392-08, P = 49.169162 Days, E = 86.488475 Days

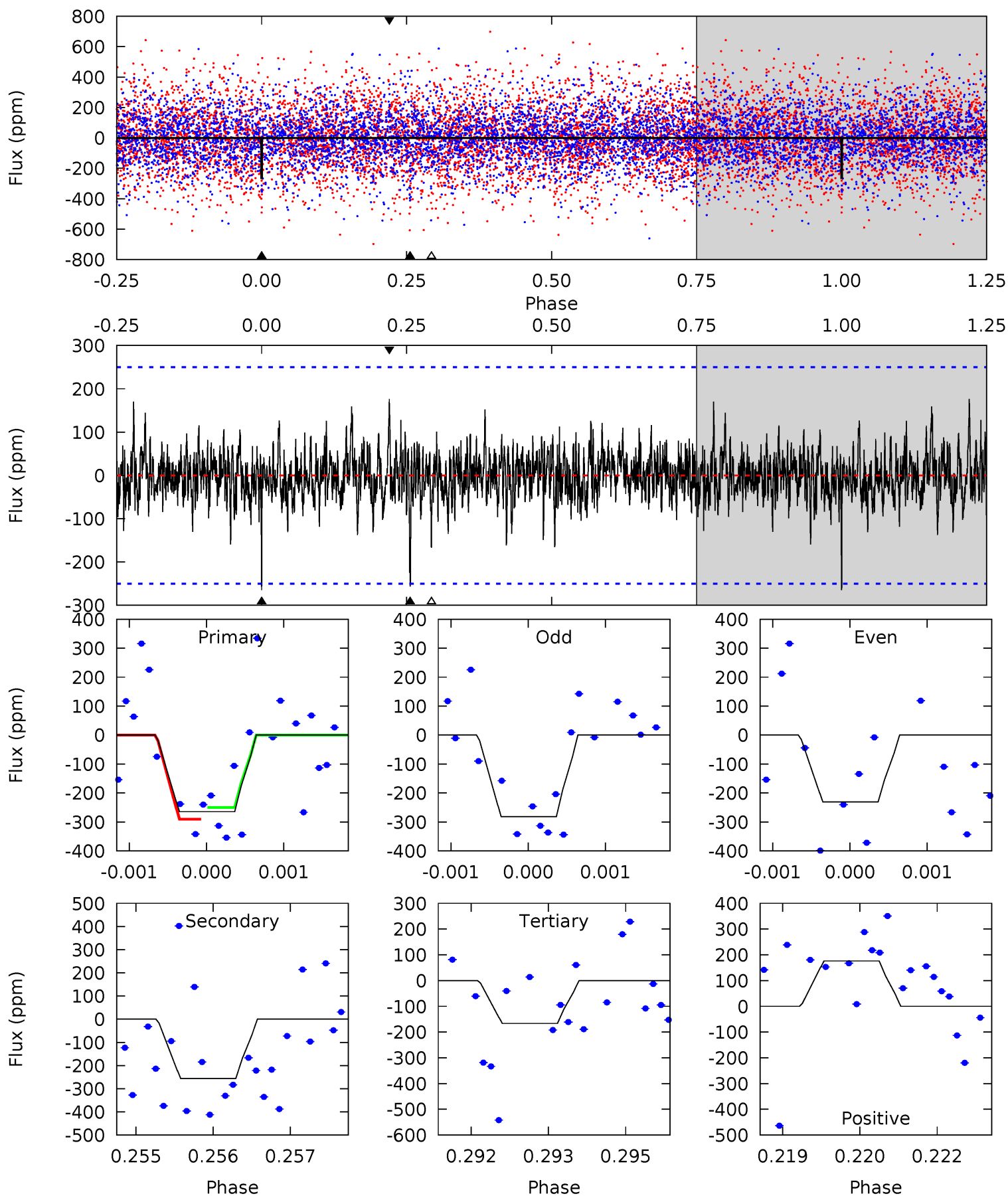
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.38	3.74	3.68	4.70	5.34	3.10	1.21	2.70	1.68	0.05	-0.97	0.24	1.05	0.42	0.66



# Alt Model-Shift Uniqueness Test

008314392-08, P = 49.168745 Days, E = 86.500897 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
5.69	5.51	3.58	3.79	5.38	3.18	0.98	2.11	1.90	1.93	1.72	0.51	0.98	0.40	0.40



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-172 \pm 46$	$5.07^{+4.82}_{-3.39}$	$952^{+71}_{-57}$	$4508^{+3268}_{-921}$	$294^{+2538}_{-217}$
Alt.	$-256 \pm 46$	$4.97^{+5.11}_{-3.26}$	$953^{+74}_{-60}$	$4914^{+4006}_{-1084}$	$432^{+3854}_{-318}$

$T_{\text{max}}$  = 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

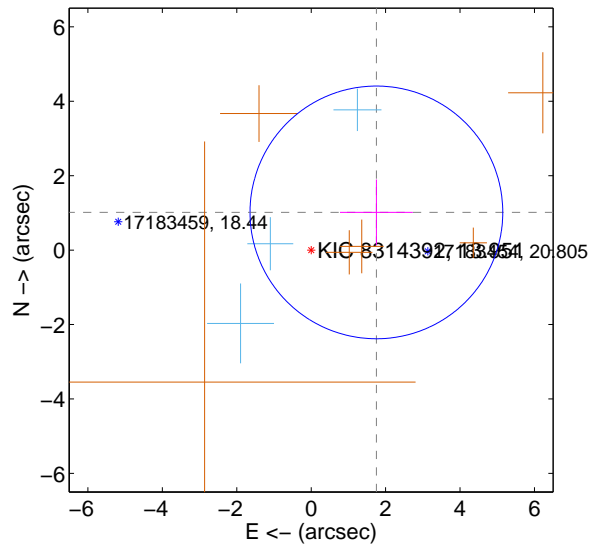
Supplemental centroid analysis for 008314392-08. Kepler magnitude: 13.95. Transit SNR 9.73

There are 3 quarters with good PRF difference image offsets

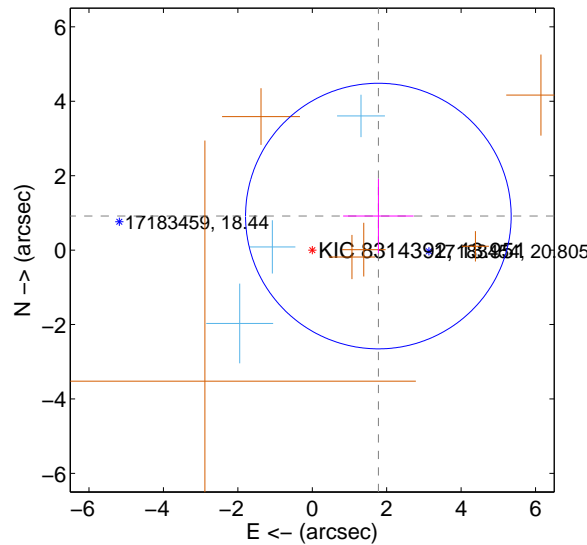
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.024 \pm 1.132$	1.79	$-1.752 \pm 0.979$	$1.013 \pm 0.884$
PRF-fit source offset from KIC position	$1.998 \pm 1.190$	1.68	$-1.776 \pm 0.945$	$0.915 \pm 1.002$
photometric centroid source offset	$0.66 \pm 0.71$	0.93	$-0.42 \pm 0.69$	$-0.51 \pm 0.72$

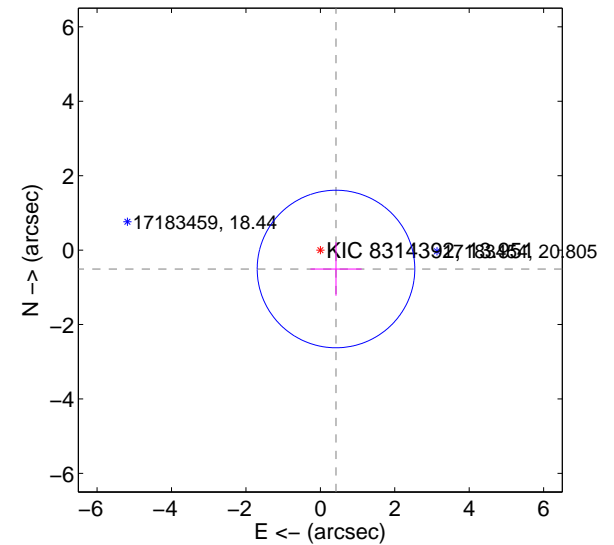
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



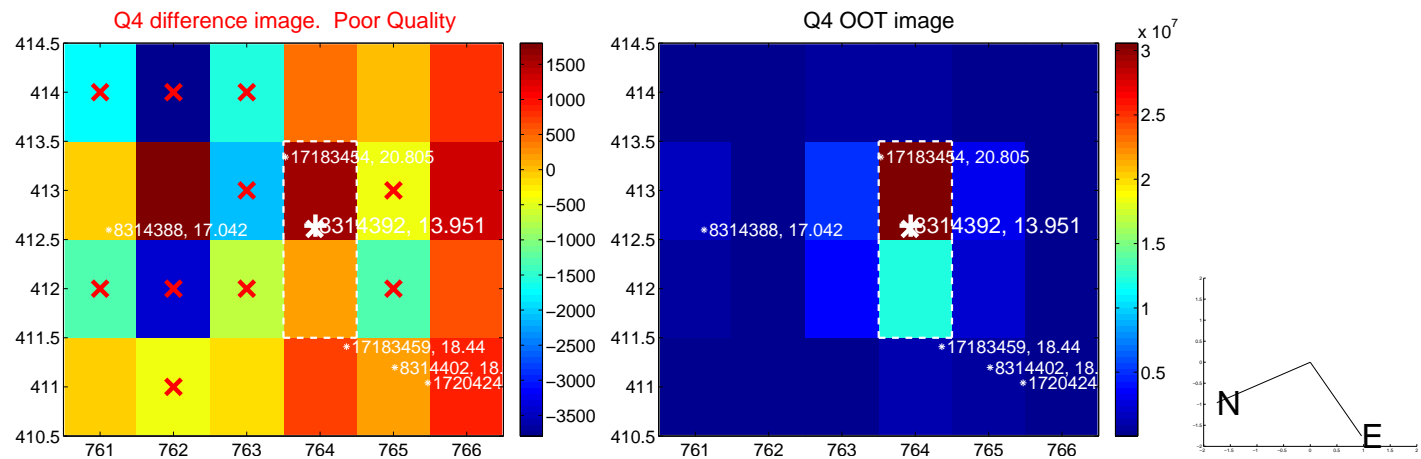
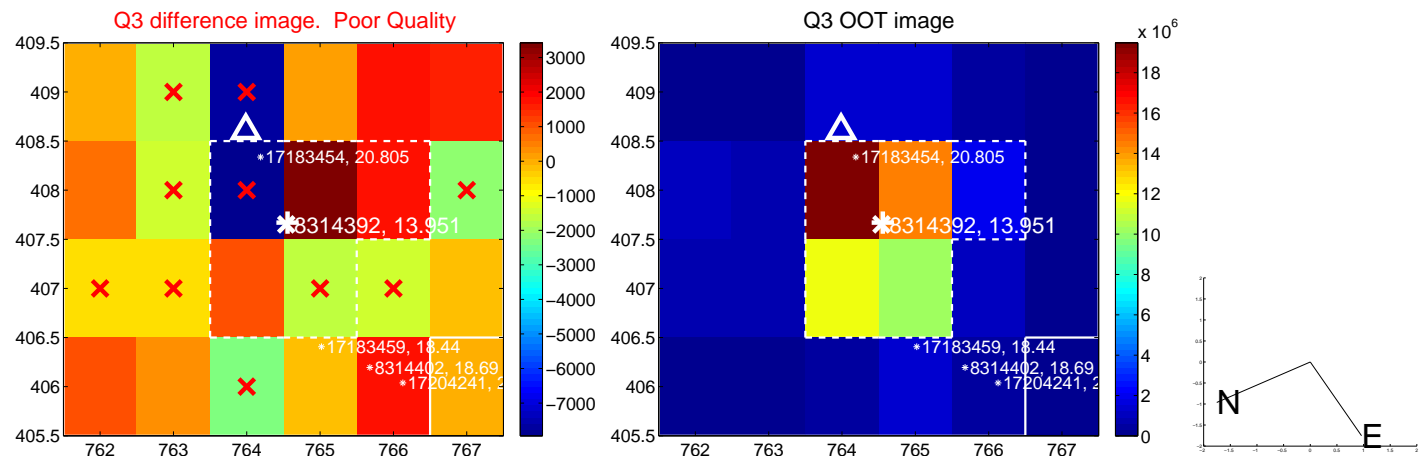
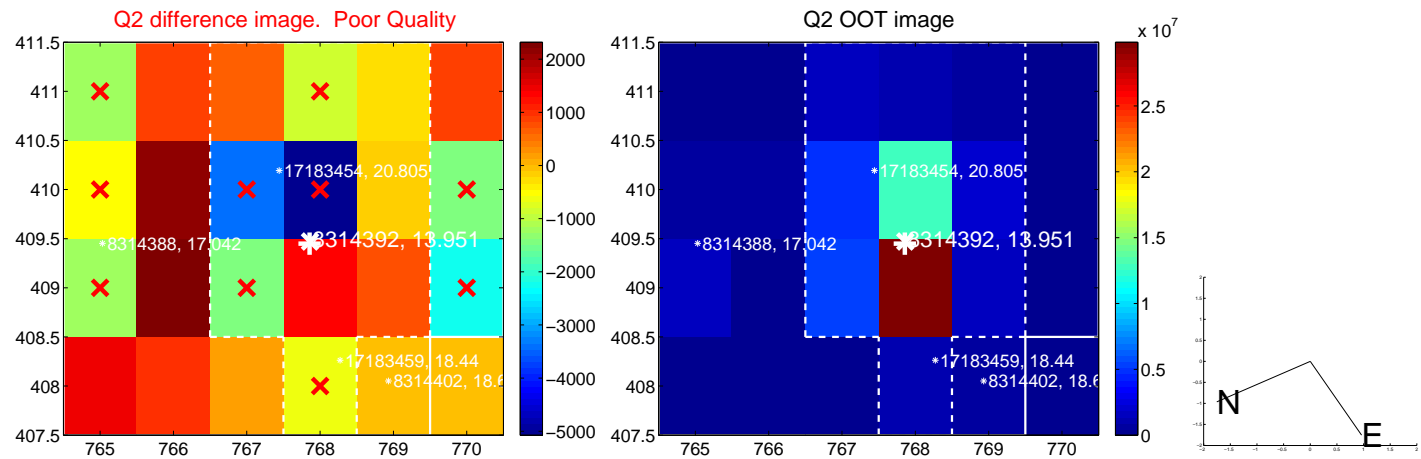
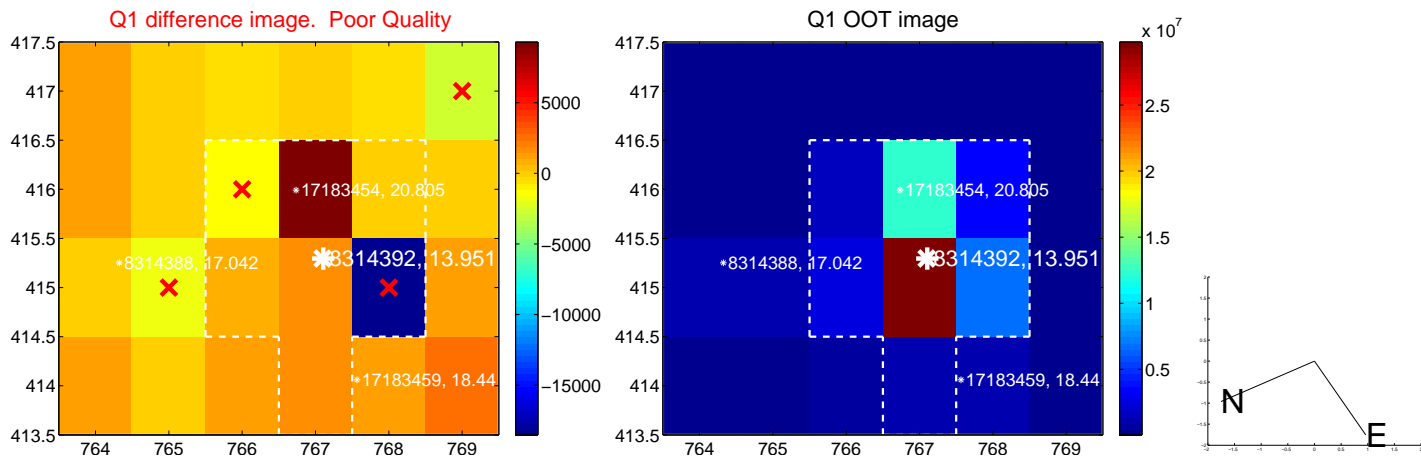
offset from photometric centroids



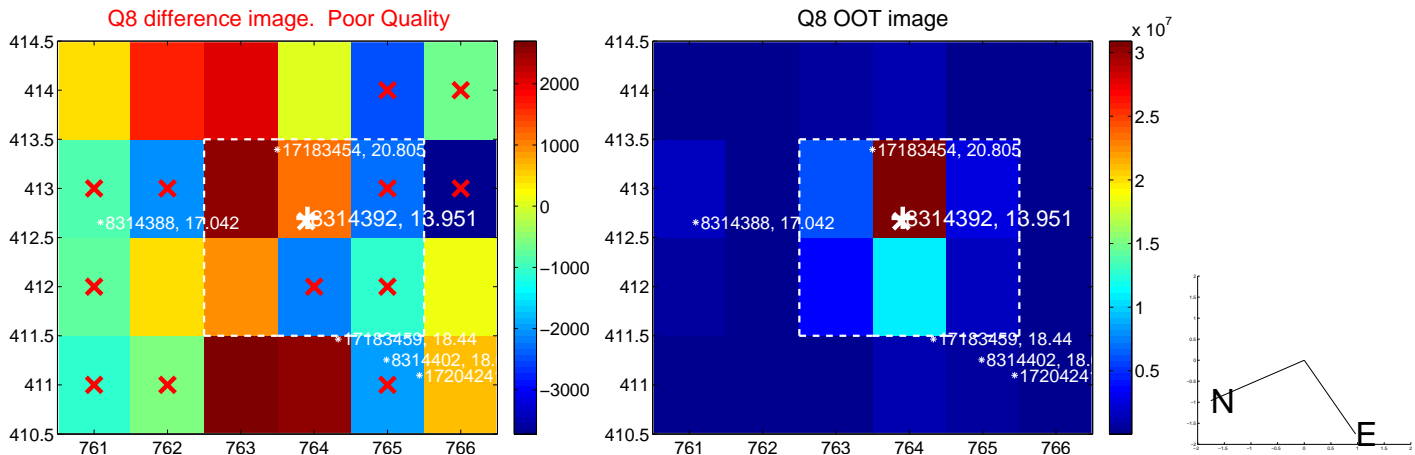
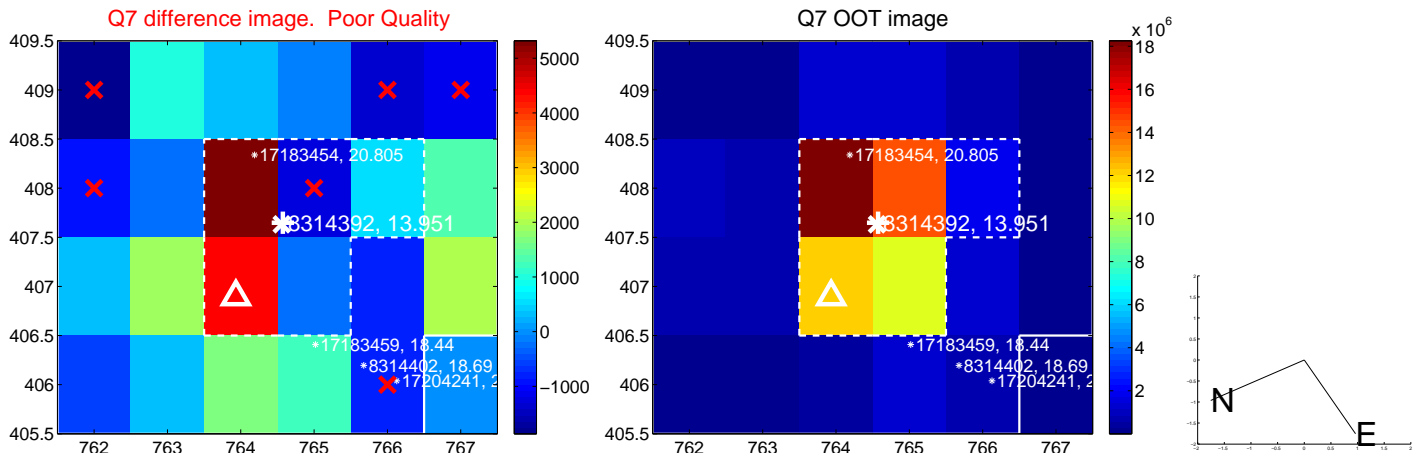
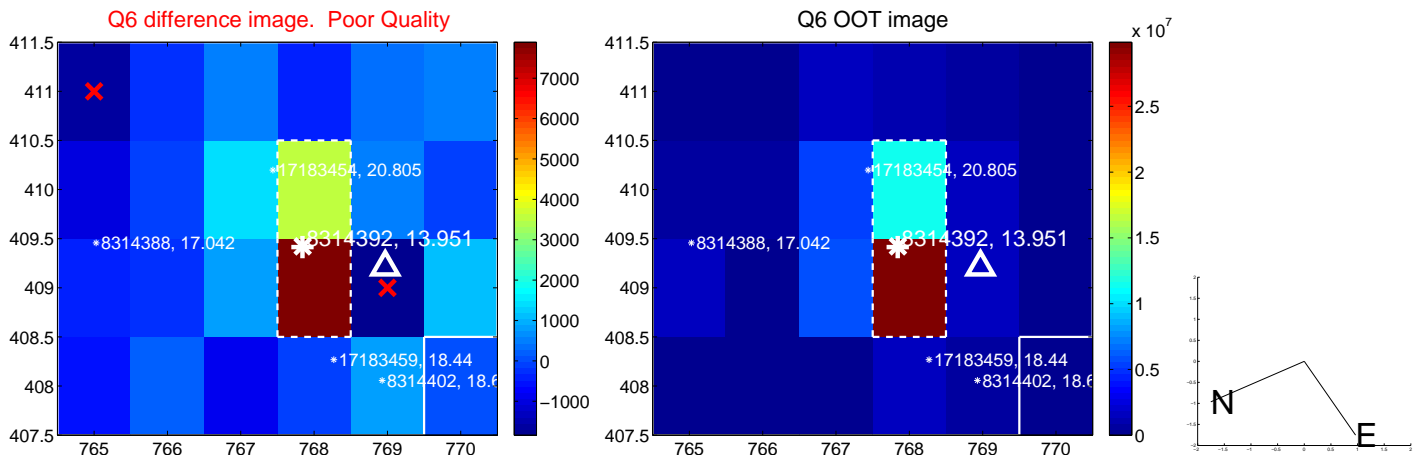
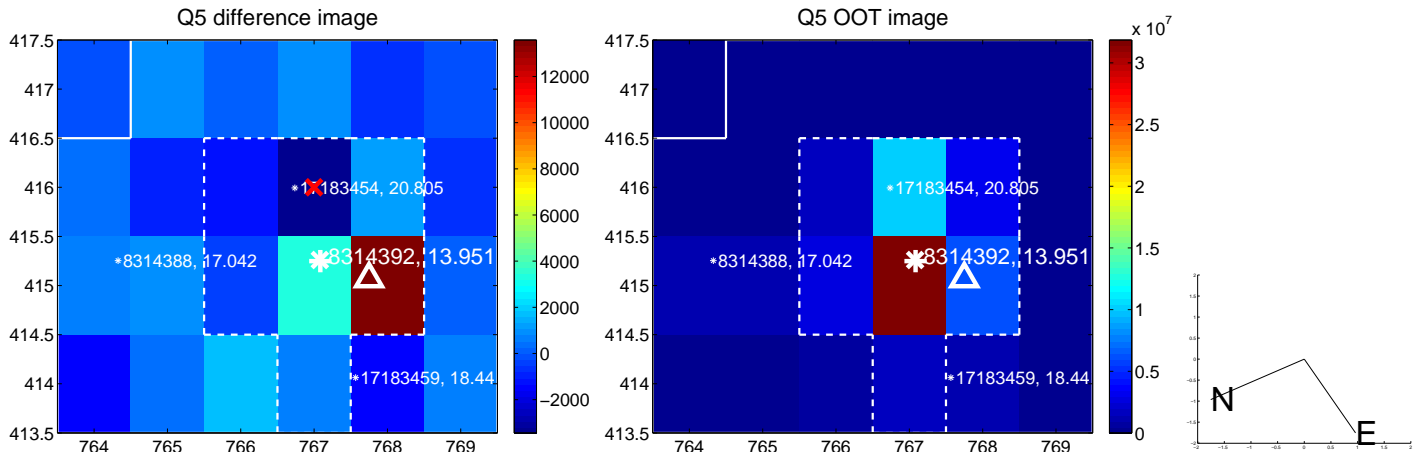
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



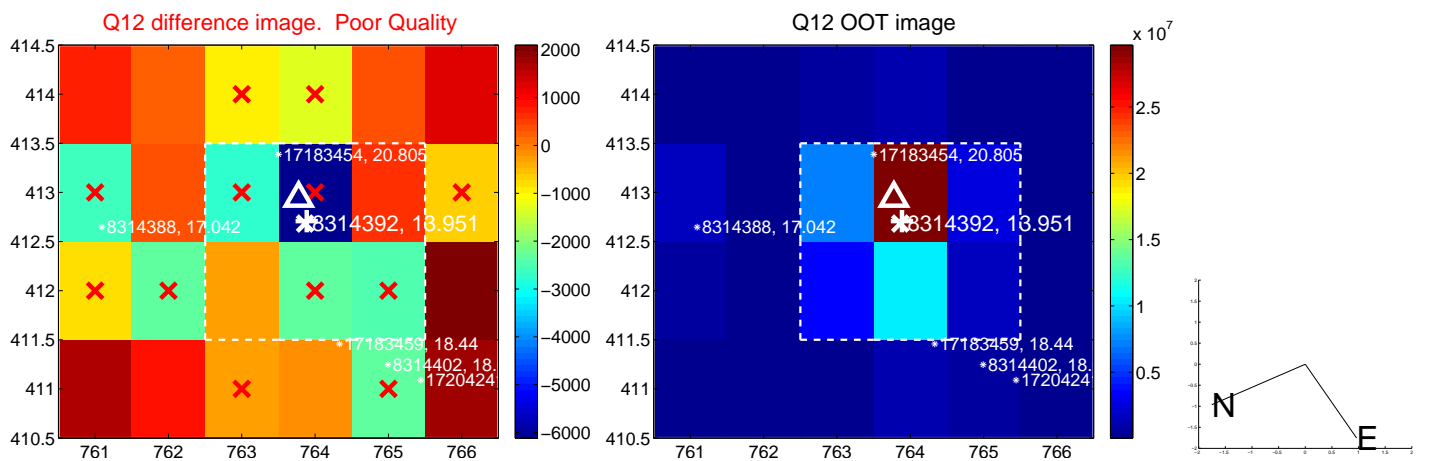
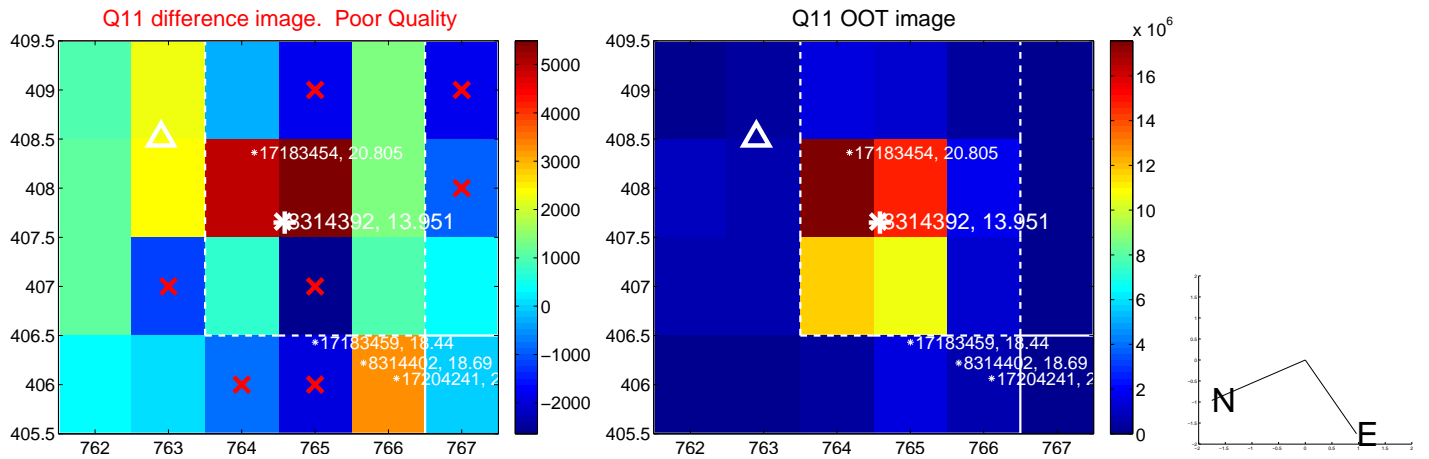
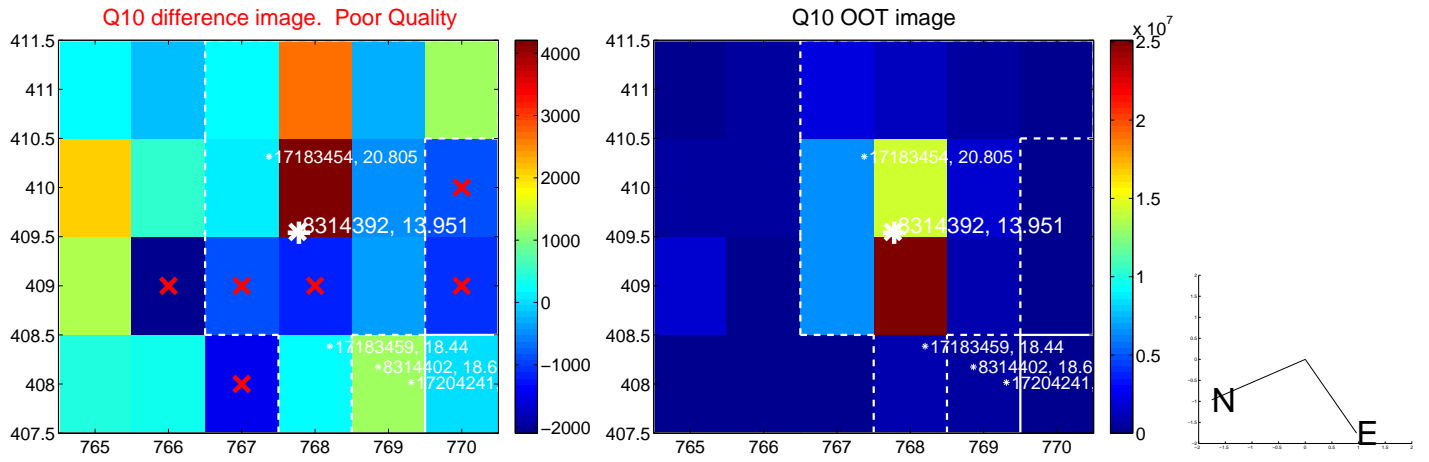
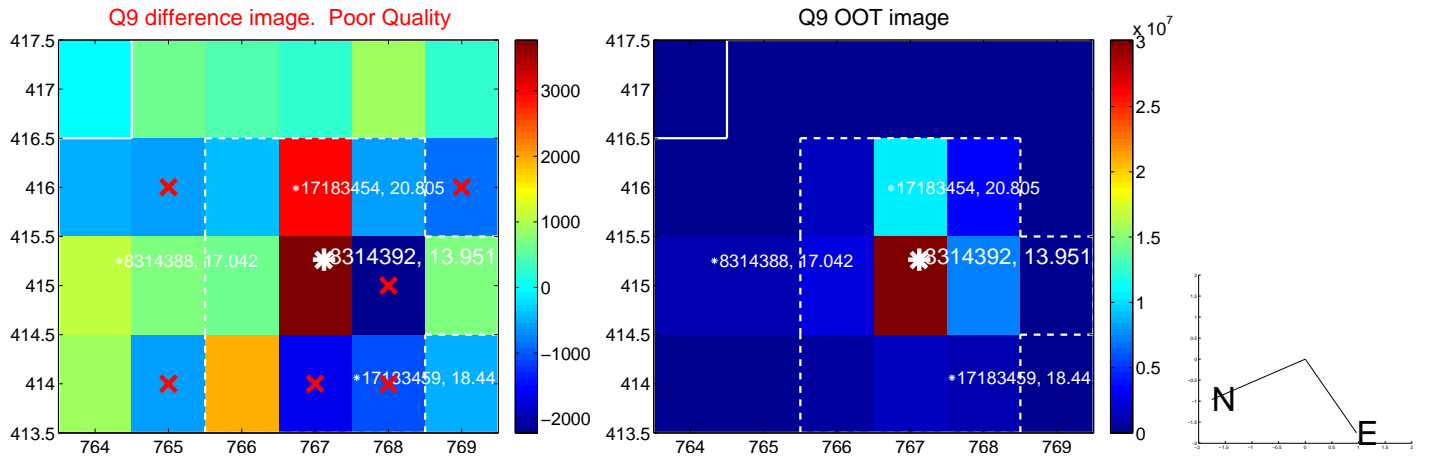
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



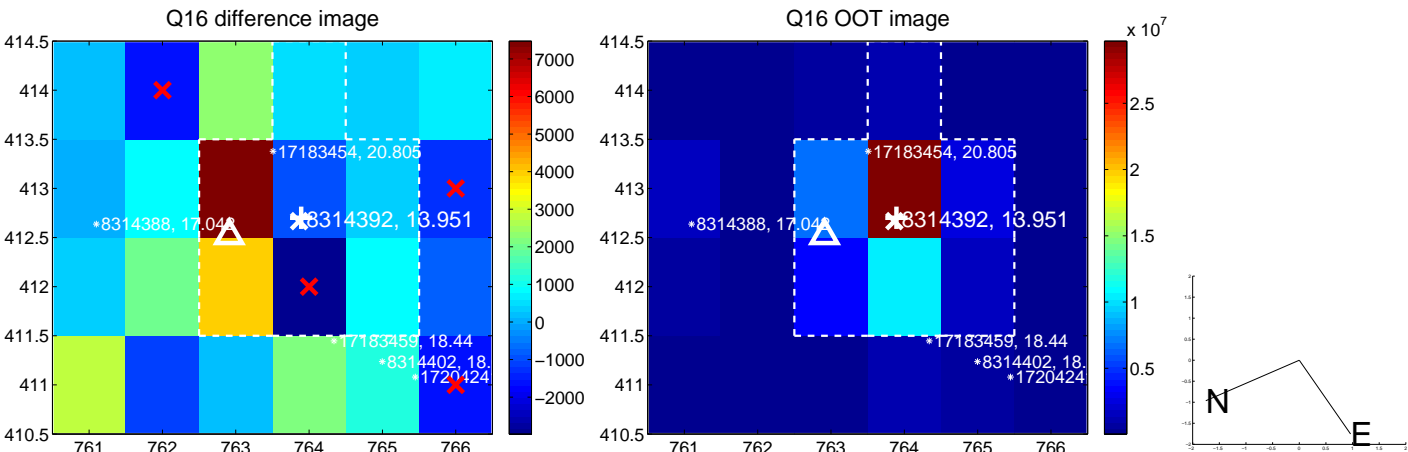
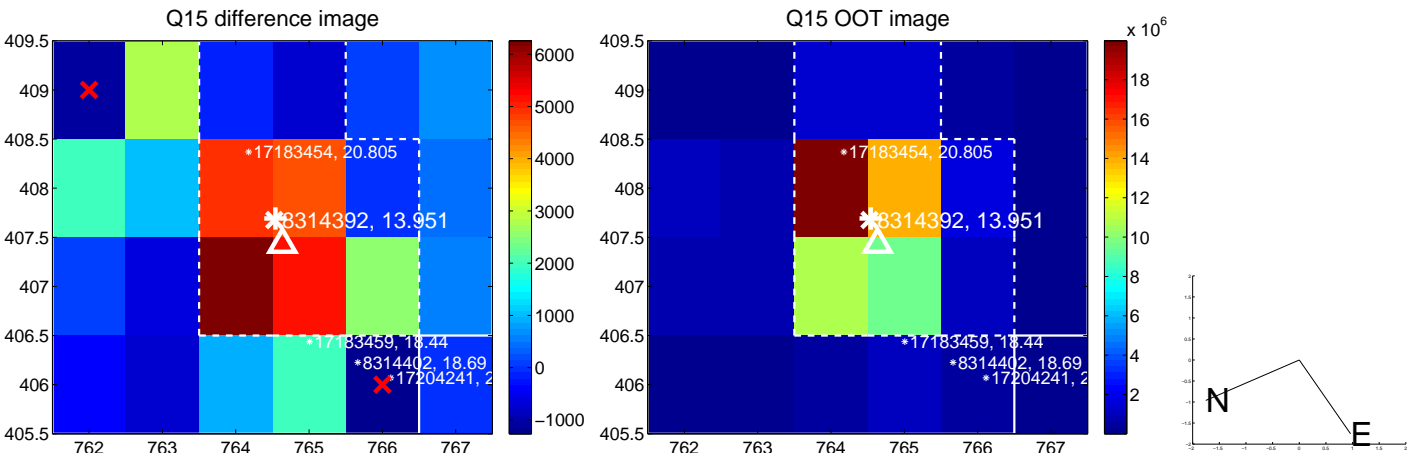
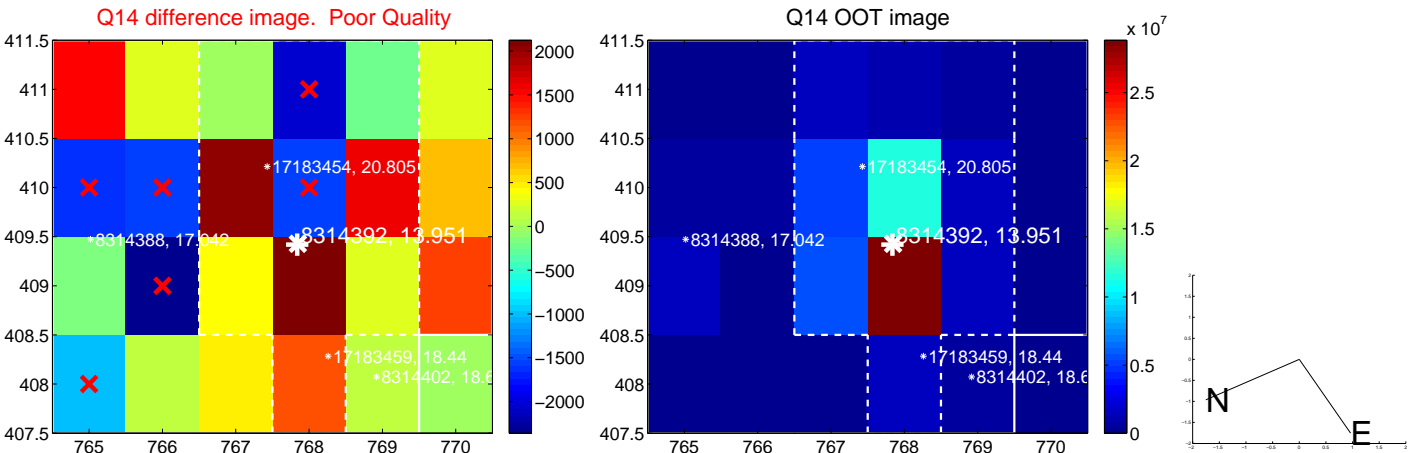
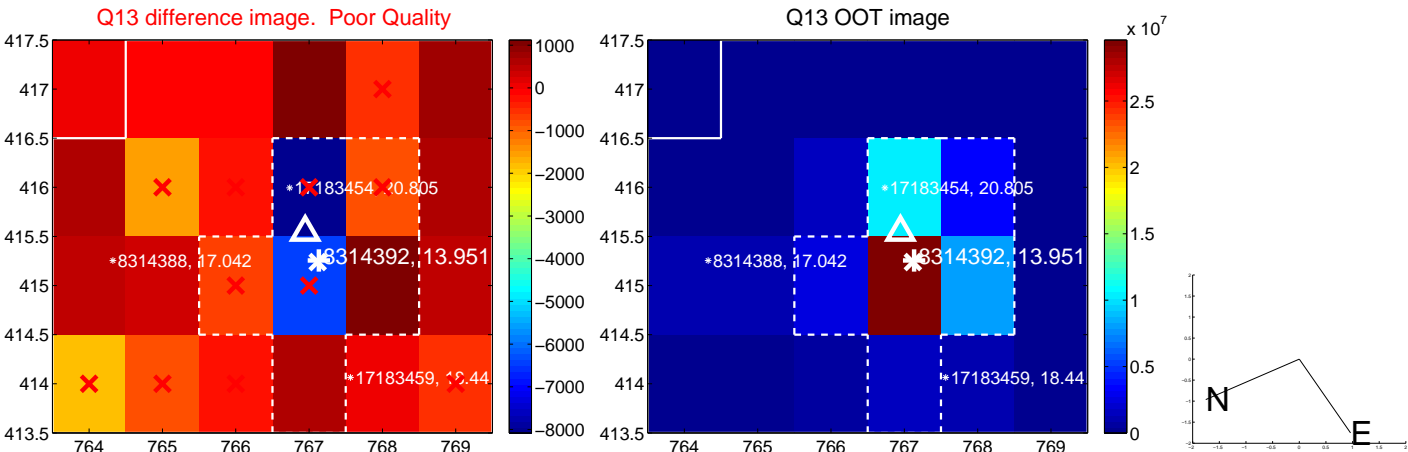
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



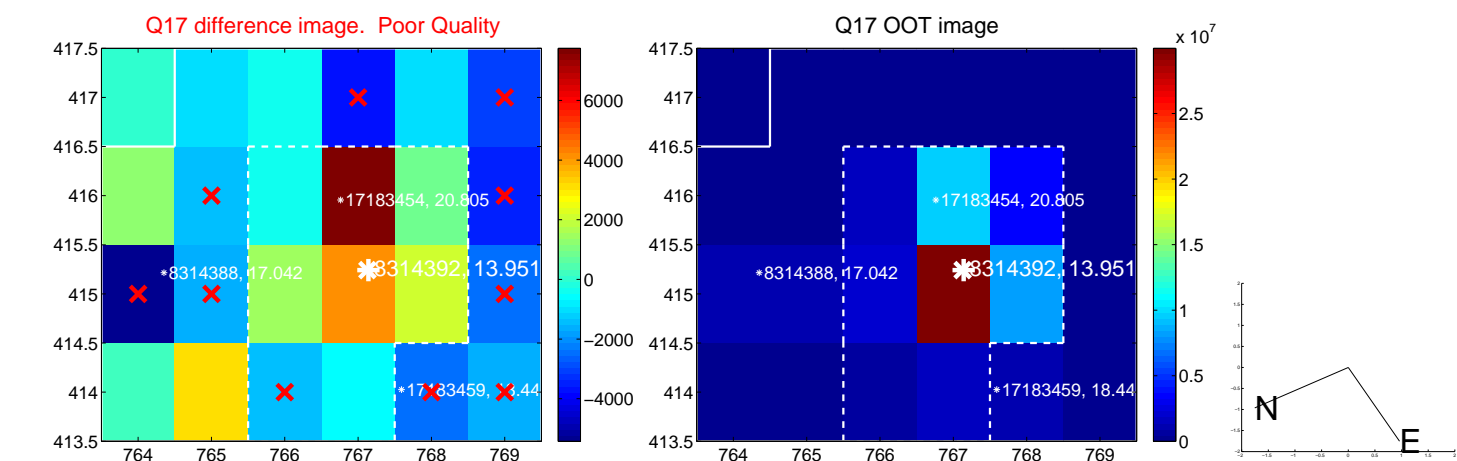
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



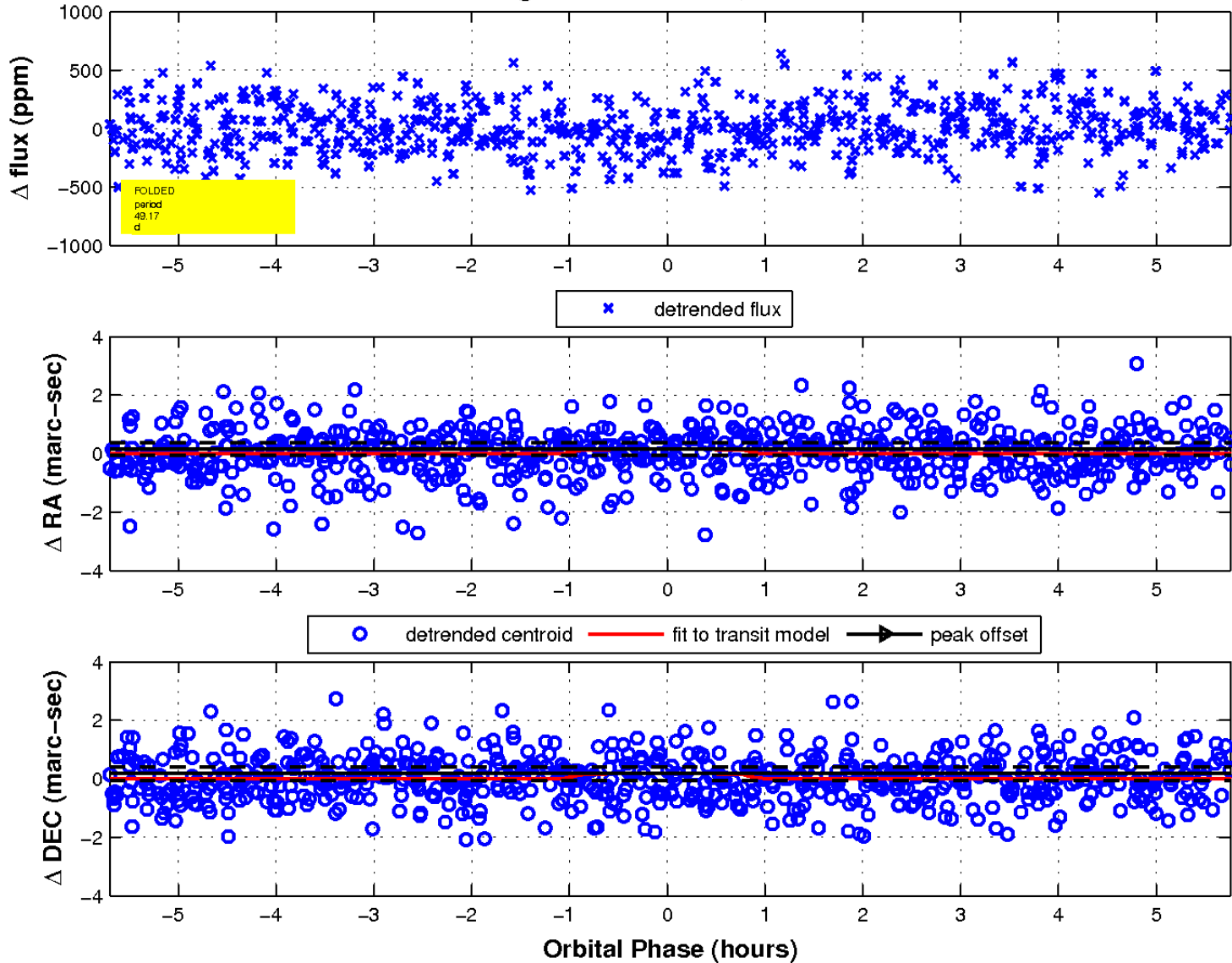
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

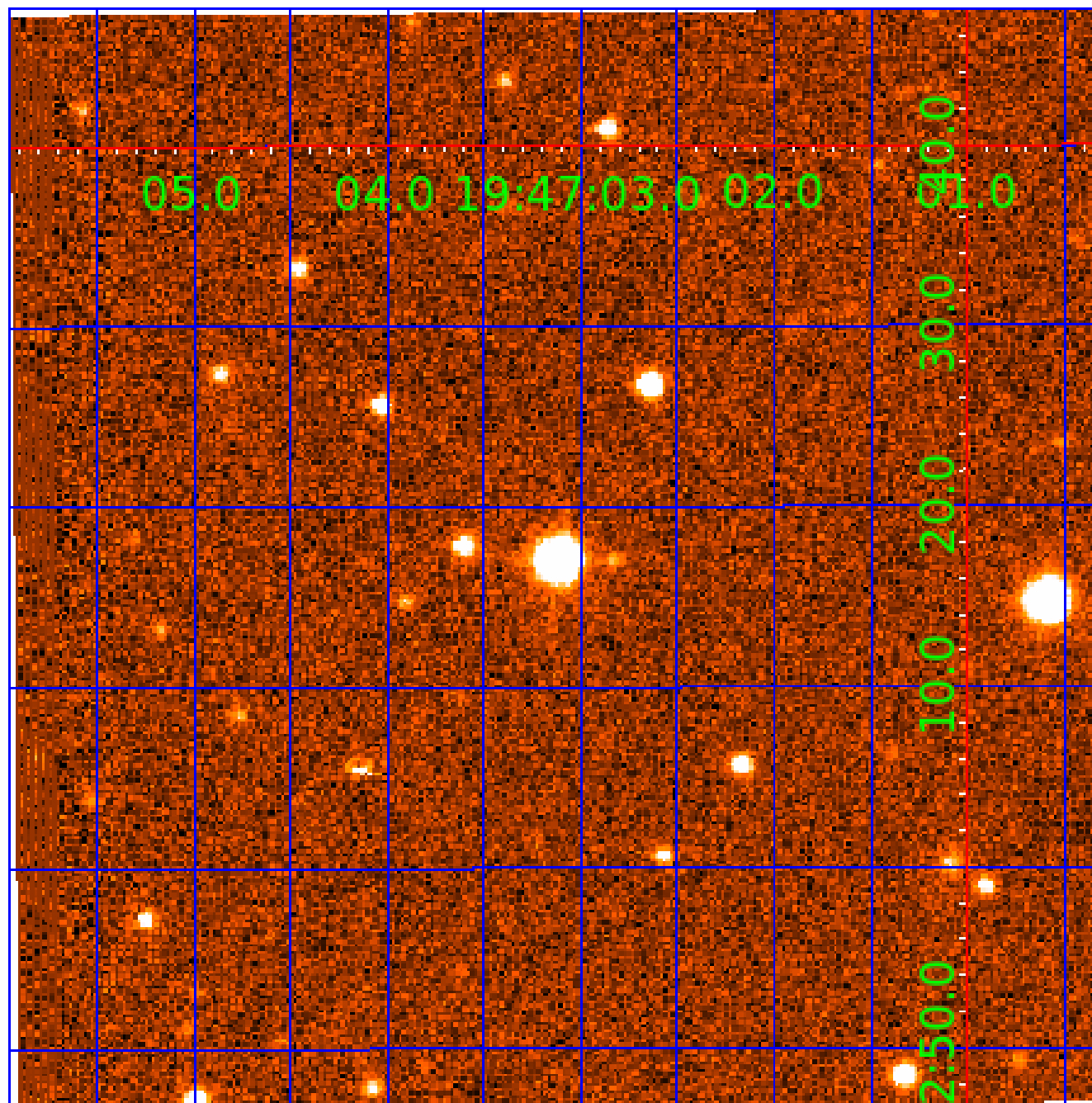


fluxWeightedCentroids, Planet 8 of 9



# UKIRT Image

Declination



# KIC 008314392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008314392-01	OBS	No	0.901428	132.325157	4.2	6.141	10.3	2.0	1.46	6793	0.35	10189.07
008314392-02	OBS	No	47.588924	137.379401	372.2	1.619	10.6	10.1	1.46	6793	2.89	51.45
008314392-03	OBS	No	82.472234	182.819715	287.4	3.279	9.4	9.8	1.46	6793	2.78	24.71
008314392-04	OBS	No	51.648084	181.342554	469.1	1.586	10.0	10.2	1.46	6793	3.40	46.13
008314392-05	OBS	No	93.457820	145.288612	348.2	1.793	8.7	9.5	1.46	6793	3.35	20.92
008314392-06	OBS	No	9.838654	136.063124	157.9	2.047	9.1	9.4	1.46	6793	2.13	420.85
008314392-07	OBS	No	54.781984	143.122826	339.5	1.638	8.3	8.5	1.46	6793	2.89	42.64
008314392-08	OBS	No	49.169162	135.657637	311.6	1.925	8.2	9.7	1.46	6793	2.81	49.26
008314392-09	OBS	No	25.730393	137.513179	64.2	10.998	8.7	4.6	1.46	6793	1.32	116.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008314392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008314392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
008314392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008314392-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008314392-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008314392-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008314392-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

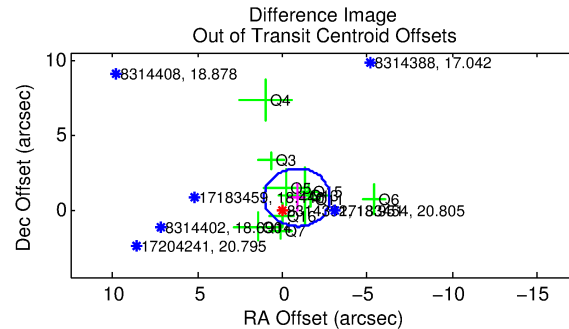
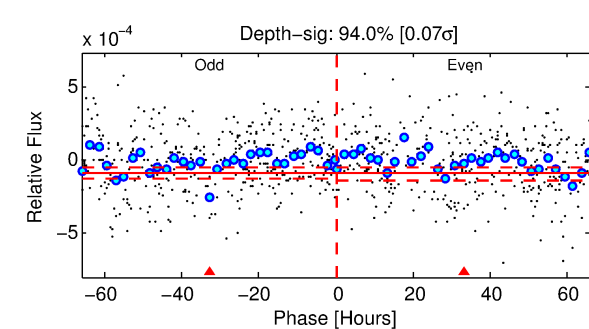
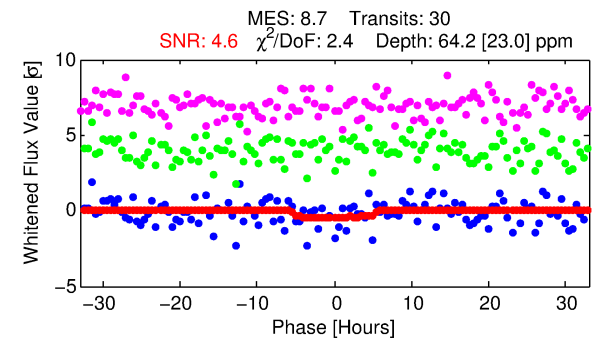
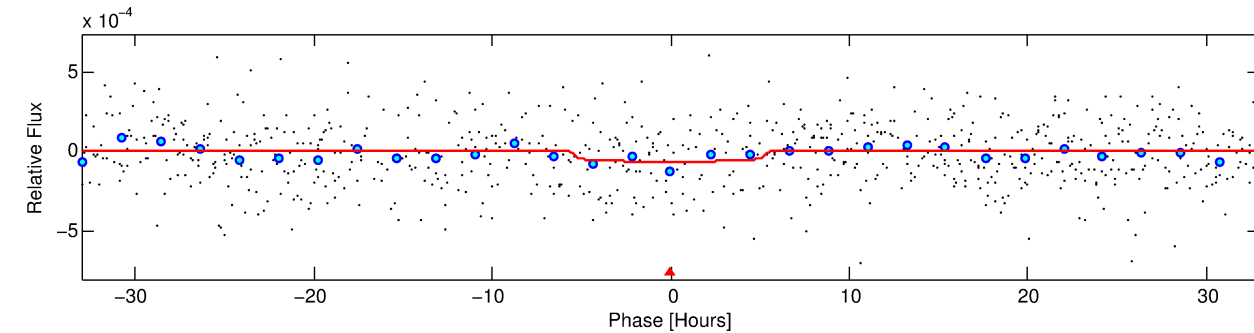
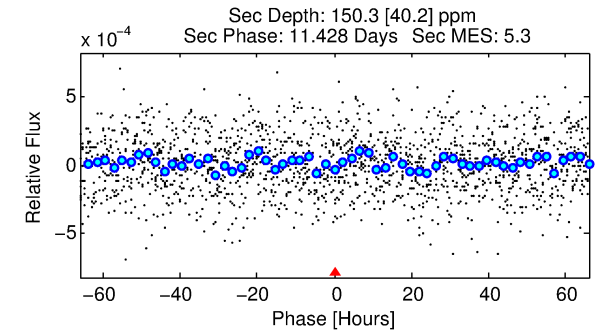
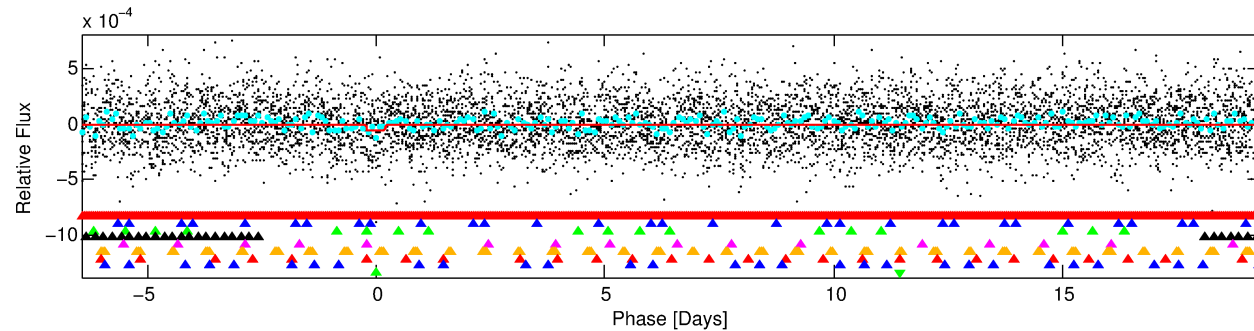
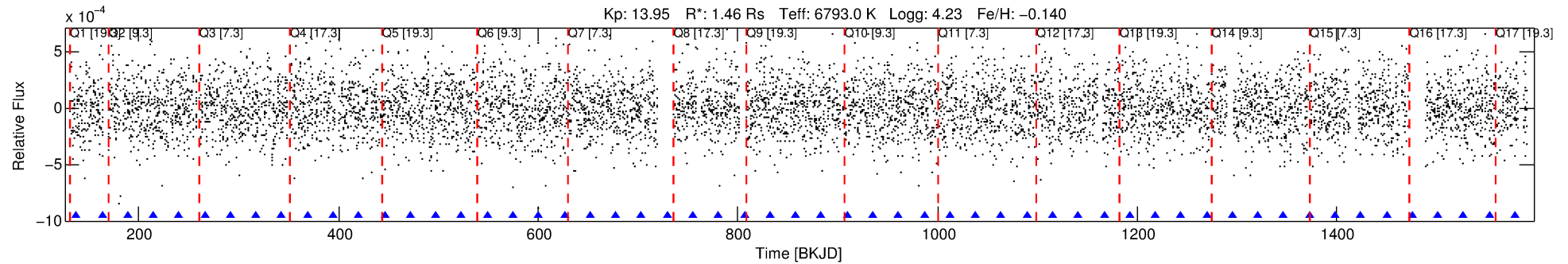
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008314392-09

No Significant Match Found

# DV One-Page Summary

KIC: 8314392 Candidate: 9 of 9 Period: 25.730 d



## DV Fit Results:

Period = 25.73039 [0.00158] d  
Epoch = 137.5132 [0.0580] BKJD  
Rp/R\* = 0.0083 [0.0076]  
a/R\* = 9.73 [51.54]  
b = 0.85 [1.76]  
Seff = 116.80 [45.51]  
Teq = 838 [82] K  
Rp = 1.32 [1.29] R<sub>e</sub>  
a = 0.1866 [0.0485] AU  
Ag = 1654.97 [3138.63] [0.53σ]  
Teffp = 8267 [3862] K [1.92σ]

## DV Diagnostic Results:

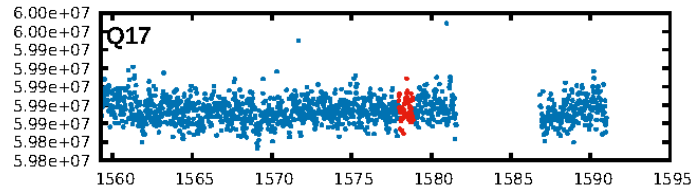
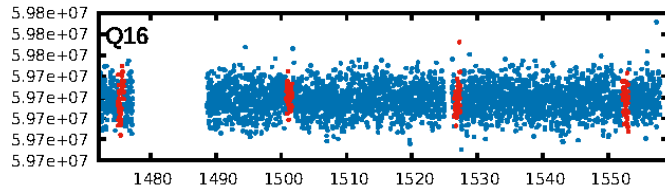
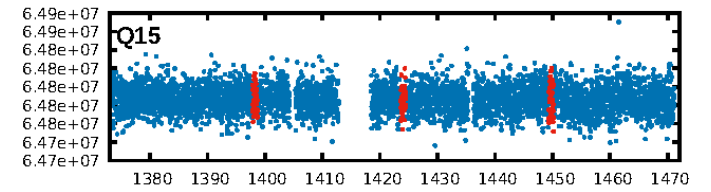
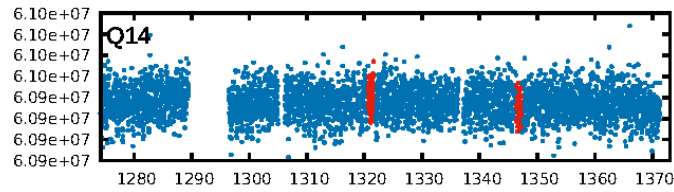
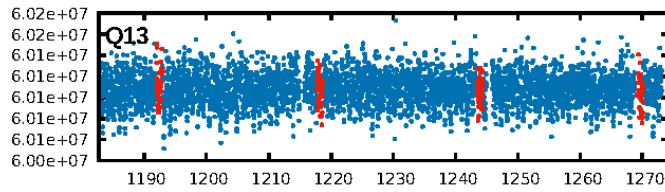
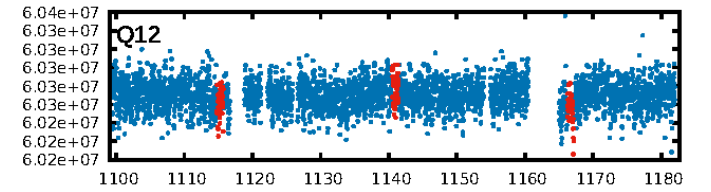
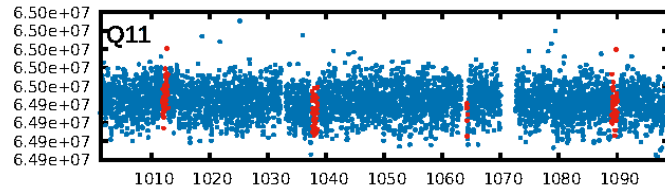
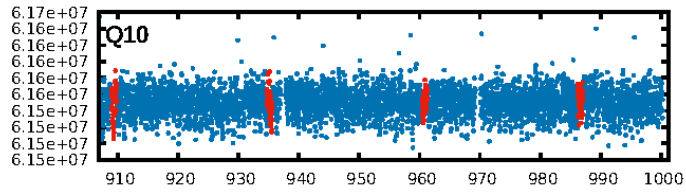
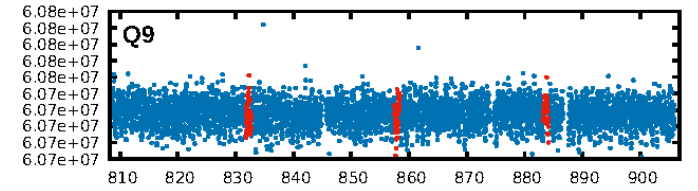
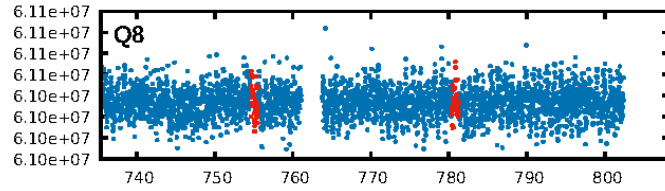
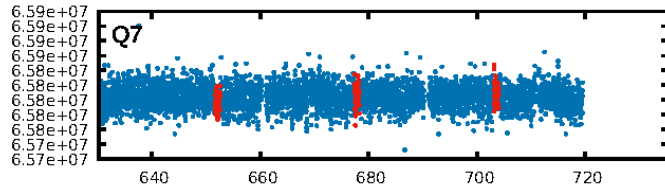
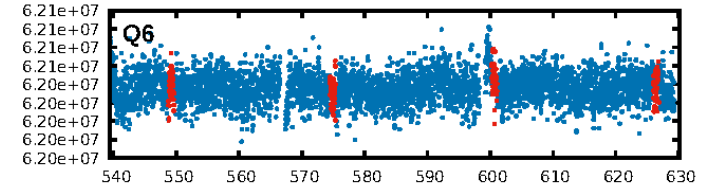
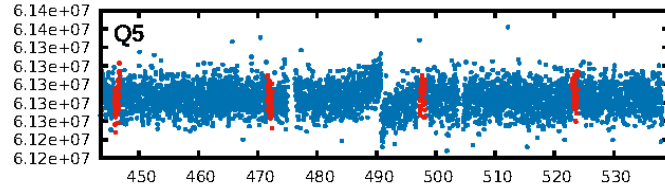
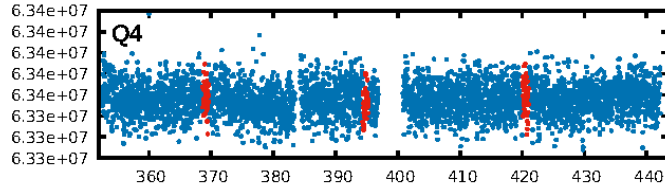
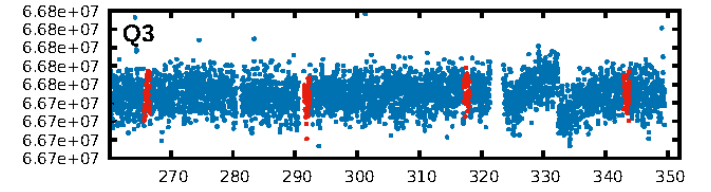
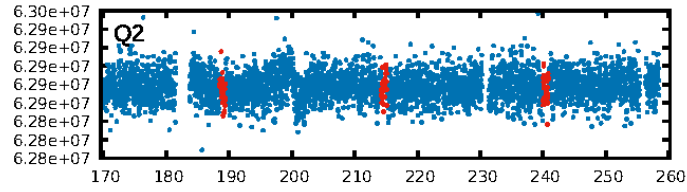
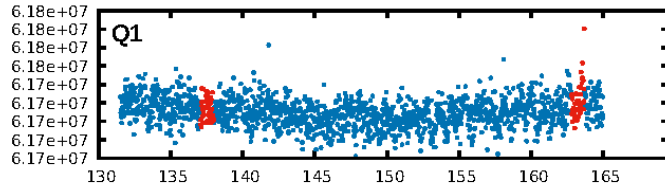
ShortPeriod-sig: 100.0% [34.09σ]  
LongPeriod-sig: 100.0% [47.19σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.32e-08  
RollingBand-fgt: 1.00 [28/28]  
GhostDiagnostic-chr: -1.471  
Centroid-sig: 6.3%  
Centroid-so: 1.970 arcsec [1.74σ]  
OotOffset-rm: 1.197 arcsec [1.85σ]  
KicOffset-rm: 1.133 arcsec [1.84σ]  
OotOffset-st: 2/4/2/2 [10]  
KicOffset-st: 2/4/2/2 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:56:31 Z

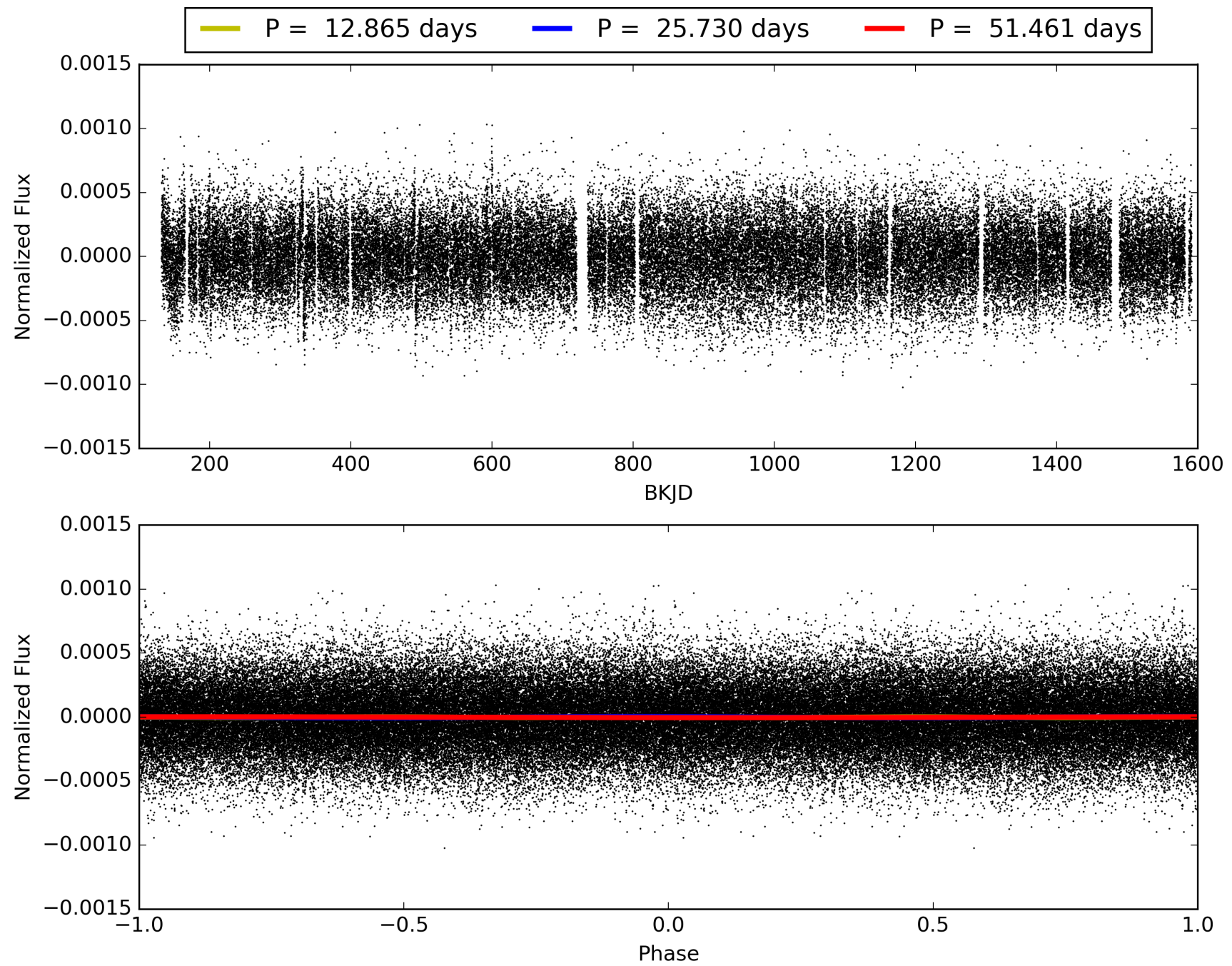
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008314392-09, PDC Light Curves

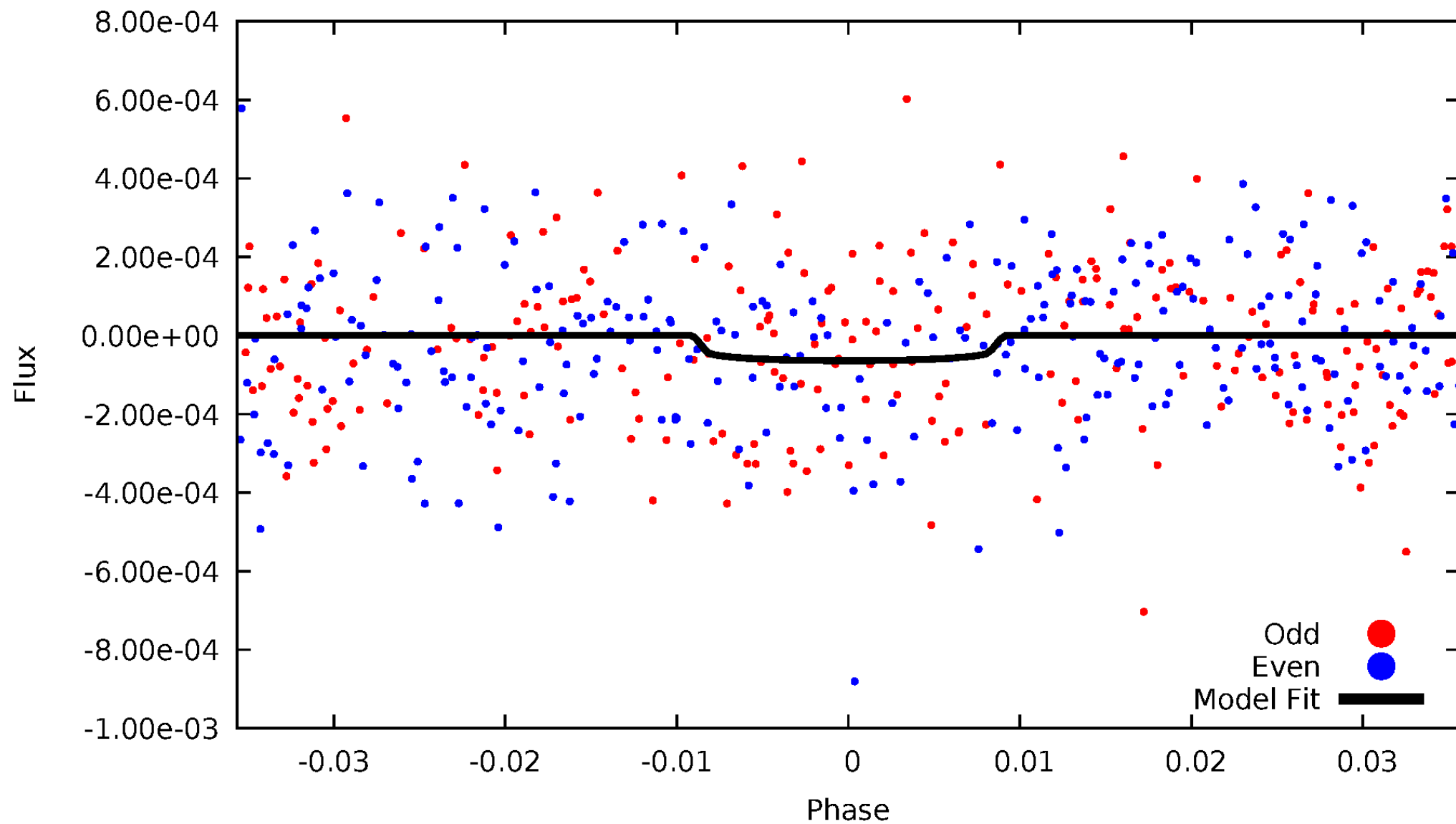


TCE 008314392-09



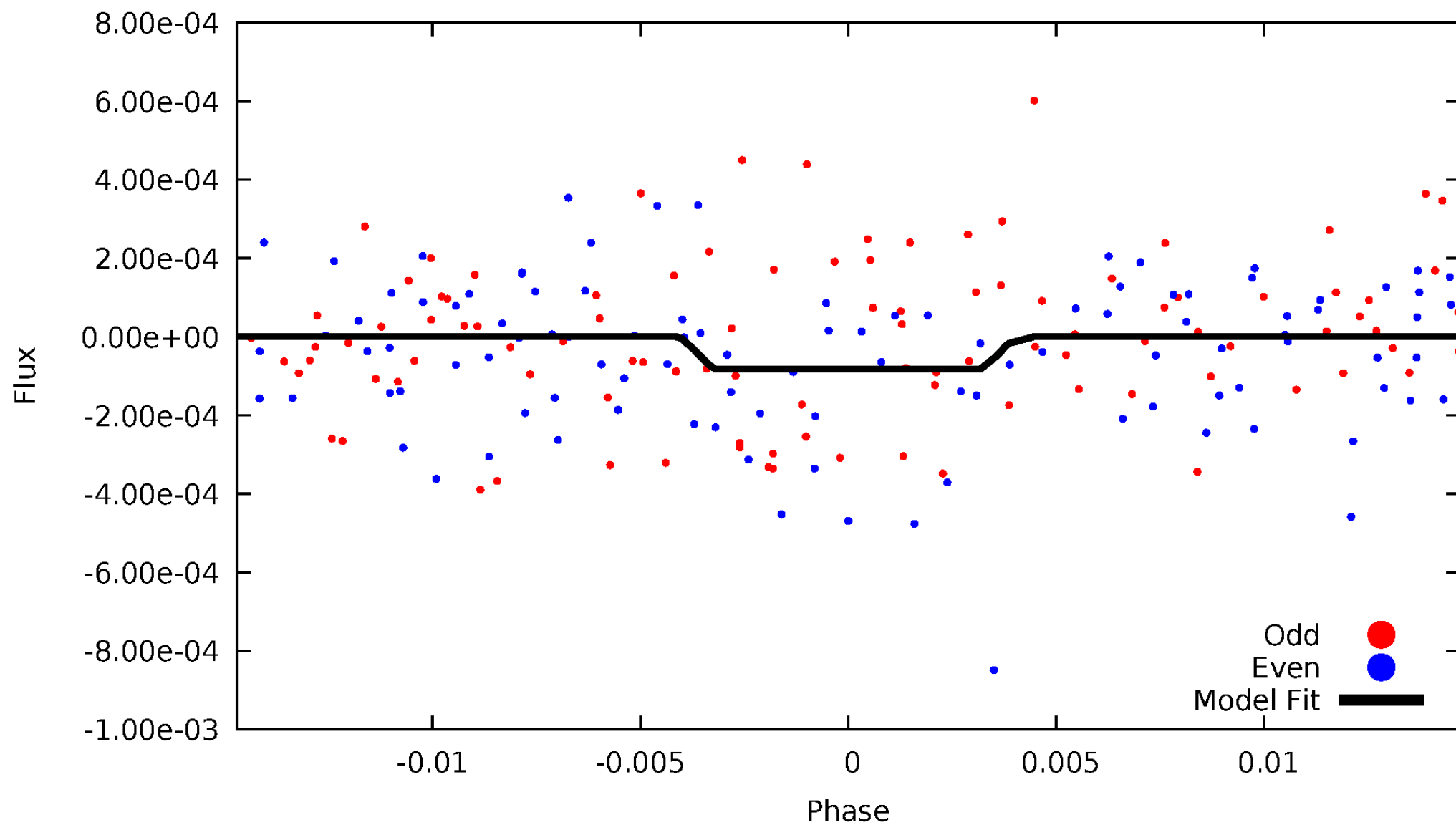
# DV Odd/Even

TCE 008314392-09



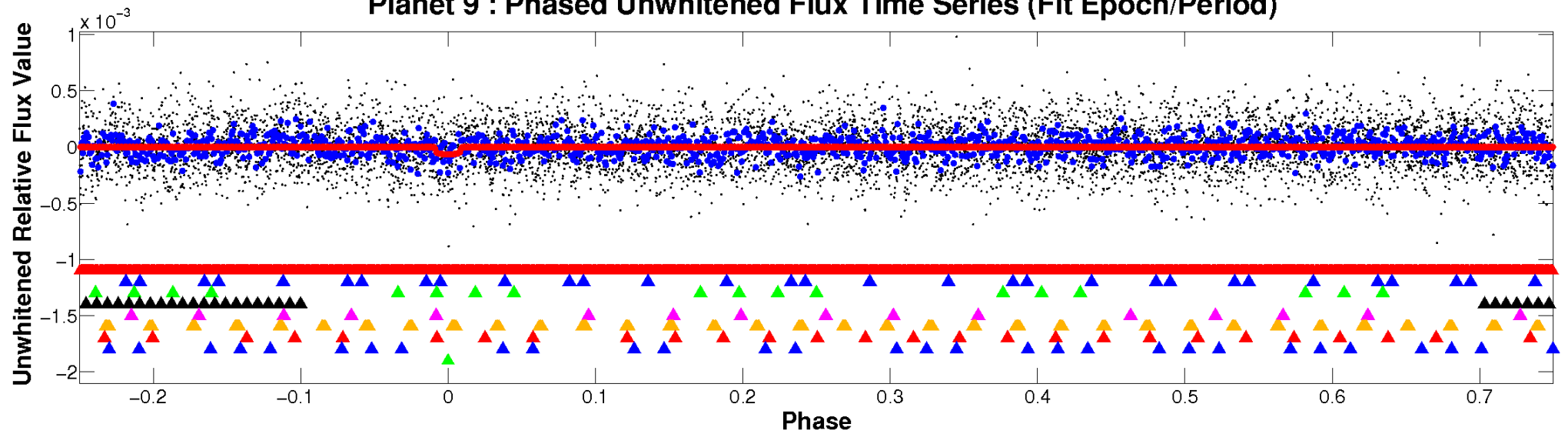
# ALT Odd/Even

TCE 008314392-09

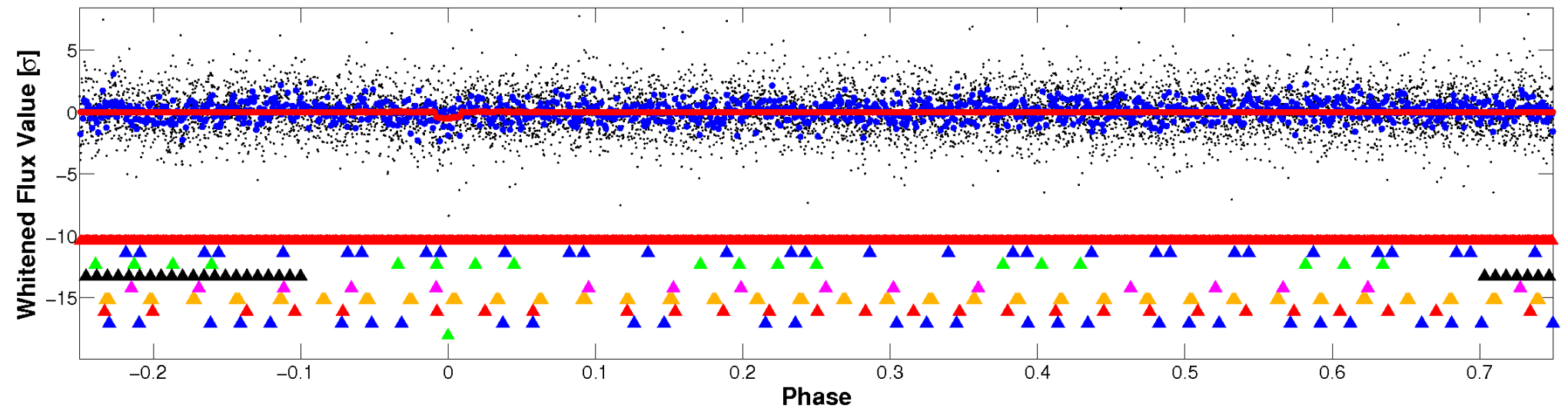


# Non-Whitened Vs. Whitened Light Curve

## Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

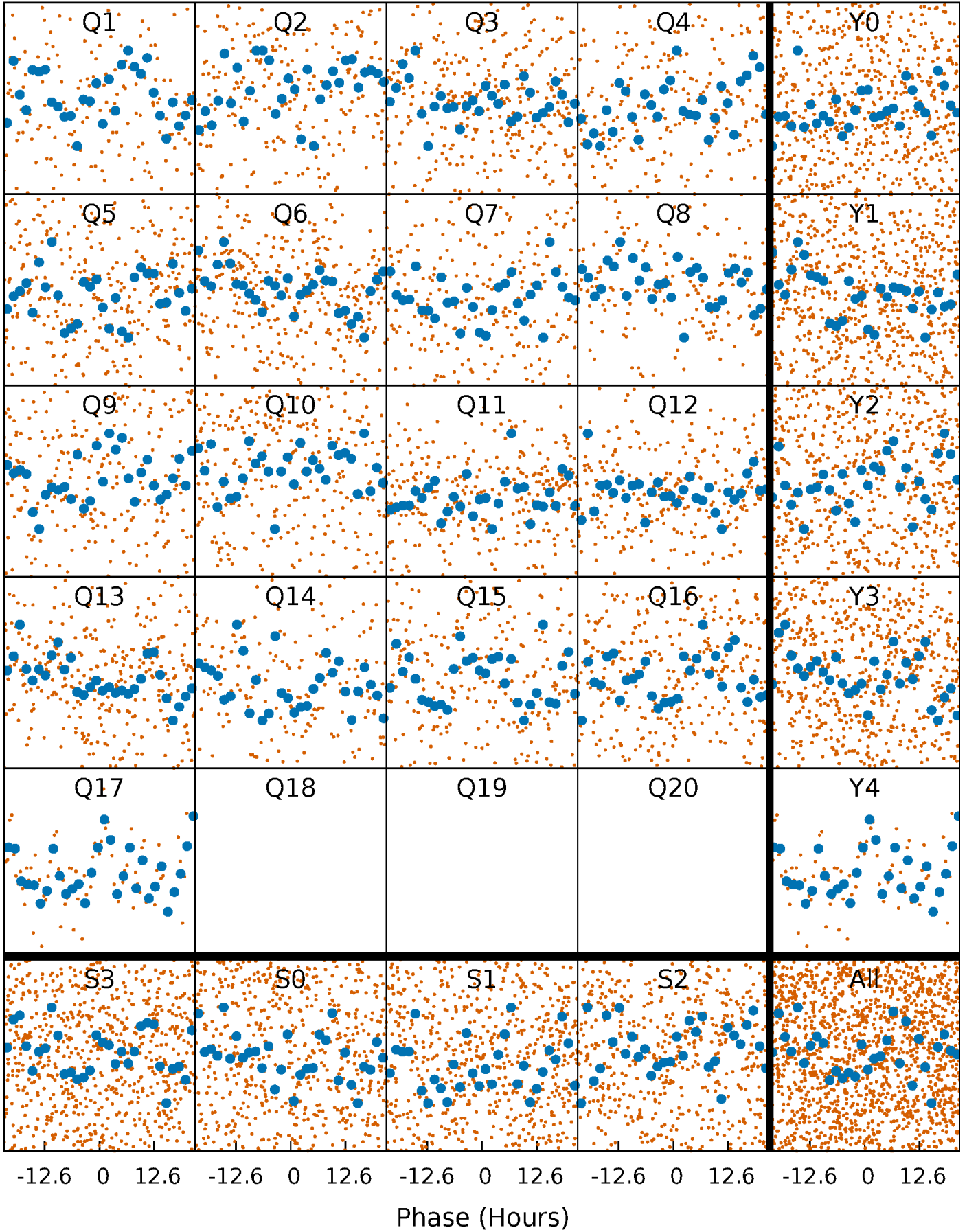


## Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

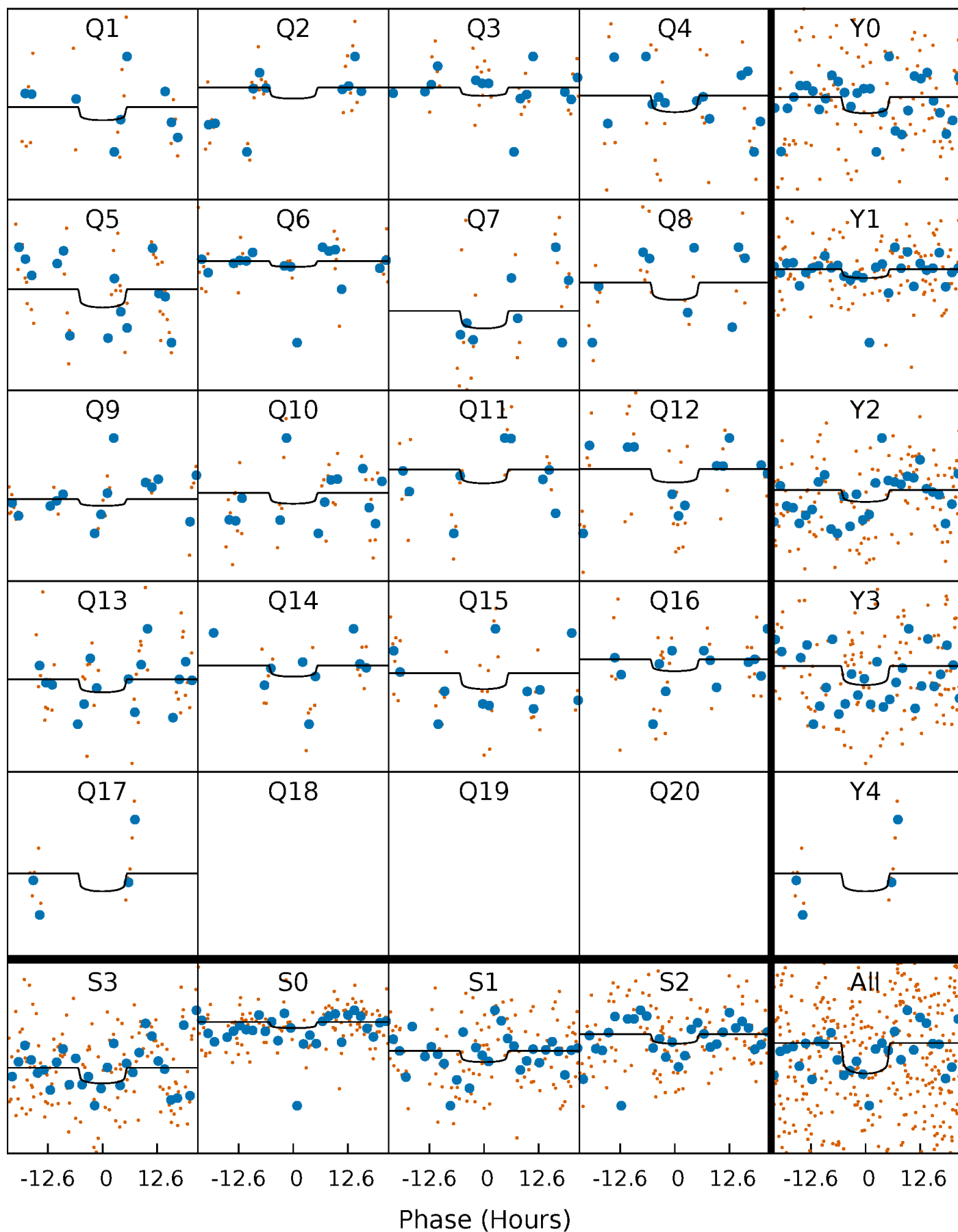
TCE 008314392-09   P= 25.730393 Days    $T_0=137.513179$  (BKJD)





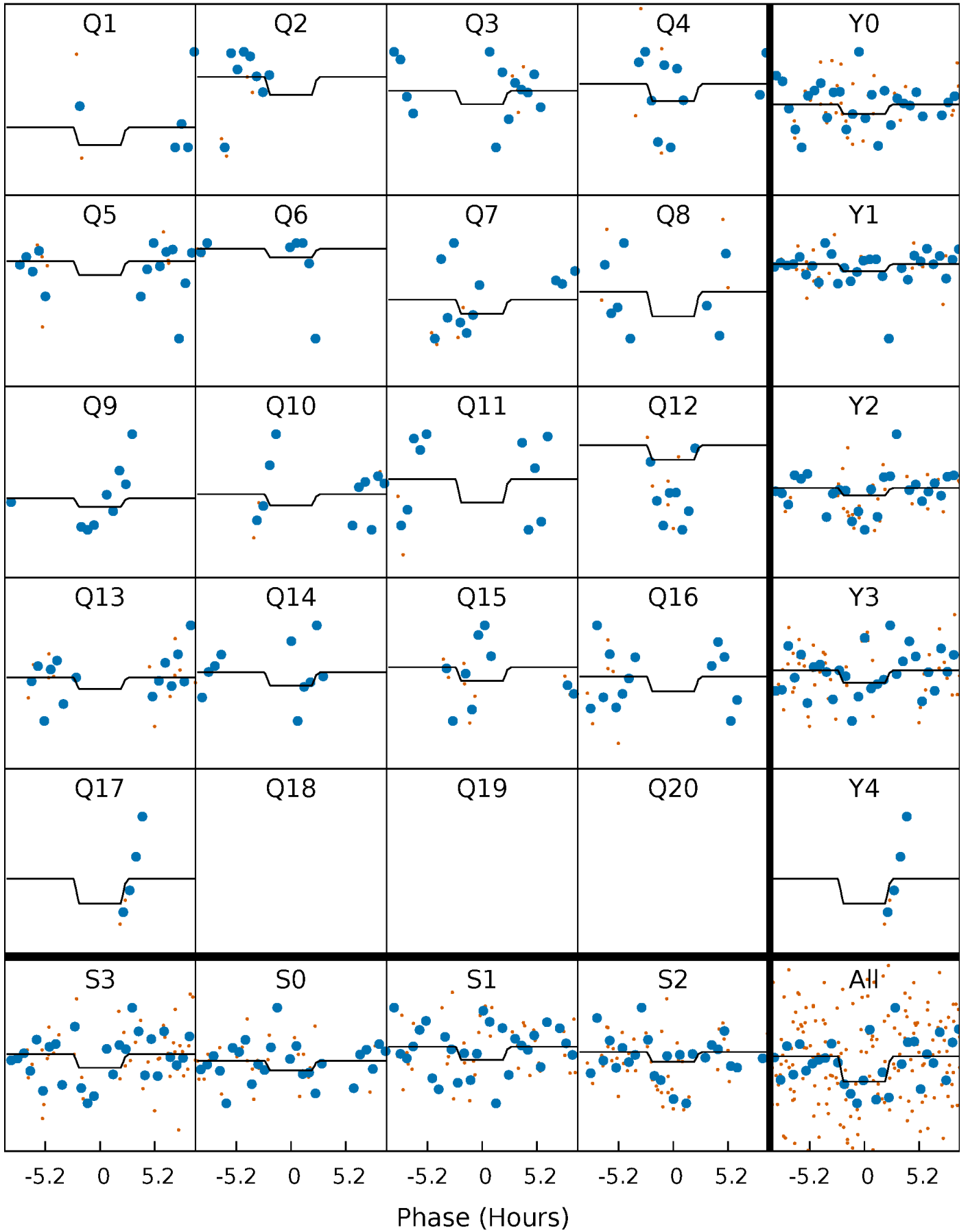
# DV Quarter-Phased Transit Curves

TCE 008314392-09 P= 25.730393 Days  $T_0=137.513179$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

TCE 008314392-09   P= 25.736288 Days    $T_0=137.326615$  (BKJD)

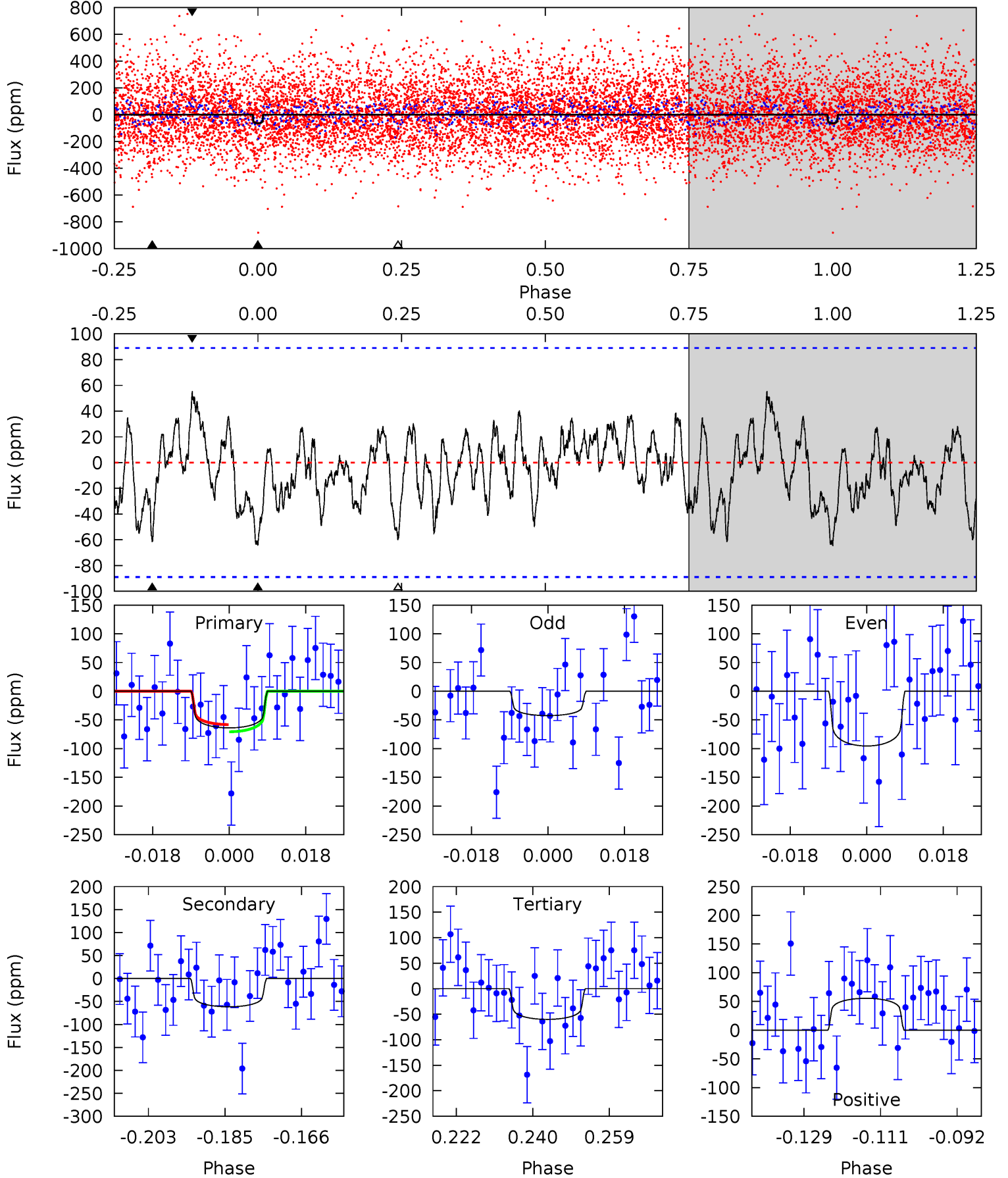




# DV Model-Shift Uniqueness Test

008314392-09, P = 25.730393 Days, E = 111.782786 Days

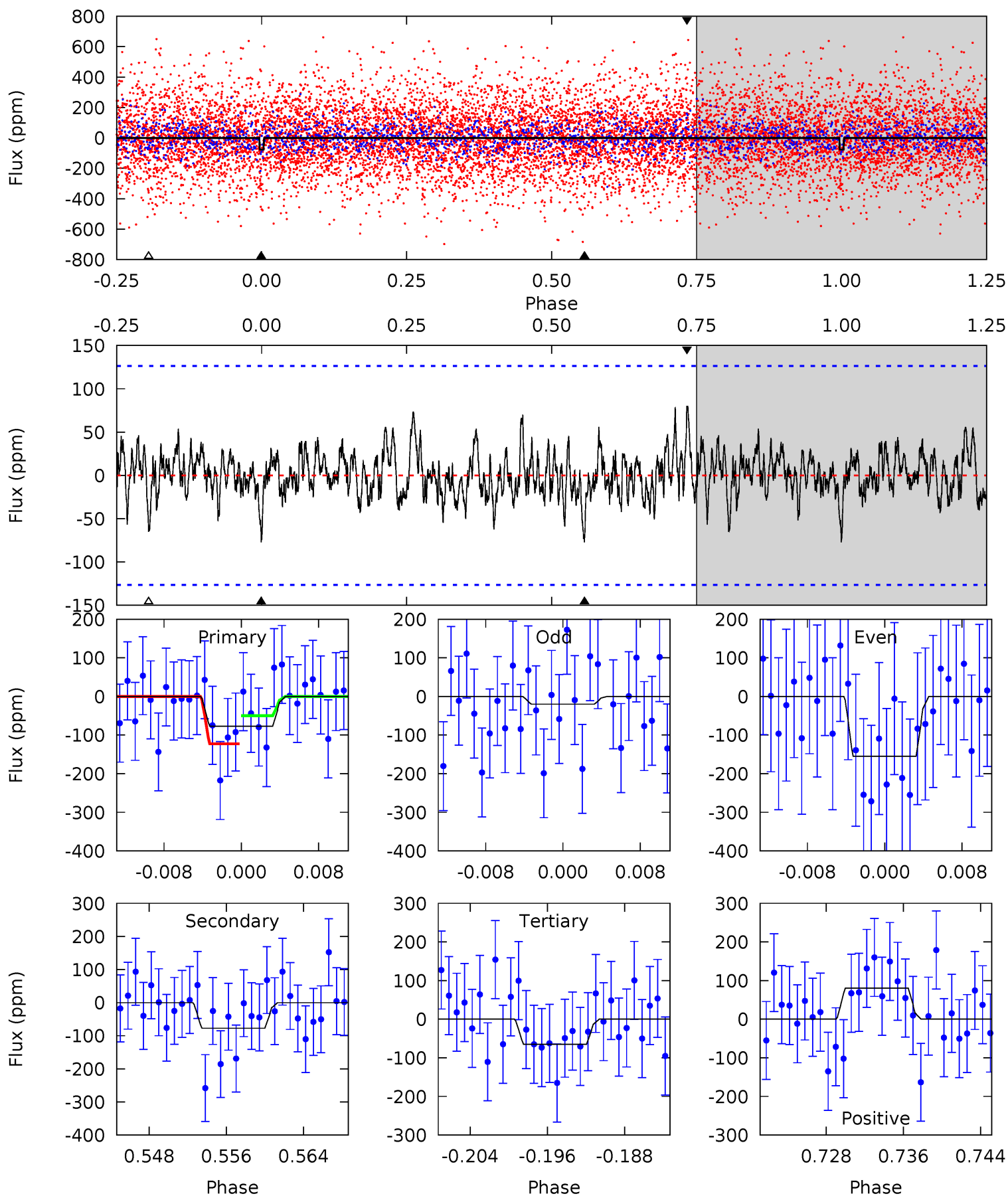
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.53	3.40	3.31	3.06	4.91	2.36	1.21	0.21	0.47	0.08	0.34	1.45	1.34	0.46	0.34



# Alt Model-Shift Uniqueness Test

008314392-09, P = 25.736288 Days, E = 111.590327 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
3.09	3.10	2.61	3.22	5.07	2.66	0.93	0.48	-0.13	0.48	-0.12	2.70	1.26	0.51	1.46



### Stellar Parameters For KIC 008314392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6793^{+189}_{-259}$	$4.226^{+0.124}_{-0.186}$	$-0.140^{+0.250}_{-0.350}$	$1.460^{+0.475}_{-0.292}$	$1.316^{+0.204}_{-0.224}$	$0.595^{+0.368}_{-0.307}$
	+3%/-4%	+3%/-4%	+179%/-250%	+33%/-20%	+16%/-17%	+62%/-52%
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 008314392-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-62 \pm 18$	$1.54^{+1.20}_{-0.95}$	$1180^{+90}_{-76}$	$6088^{+4940}_{-1440}$	$476^{+2832}_{-330}$
Alt.	$-77 \pm 25$	$1.63^{+1.23}_{-0.98}$	$1174^{+89}_{-73}$	$6184^{+5102}_{-1398}$	$509^{+3176}_{-343}$

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

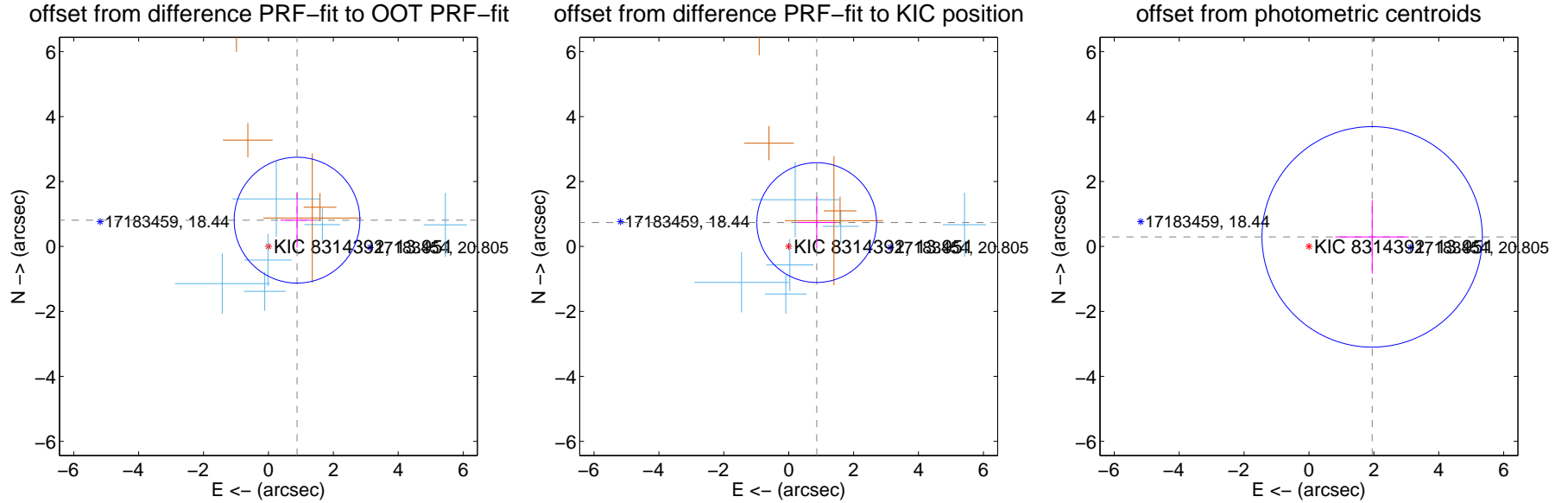
## DV Centroid Data

Supplemental centroid analysis for 008314392-09. Kepler magnitude: 13.95. Transit SNR 4.62

There are 6 quarters with good PRF difference image offsets

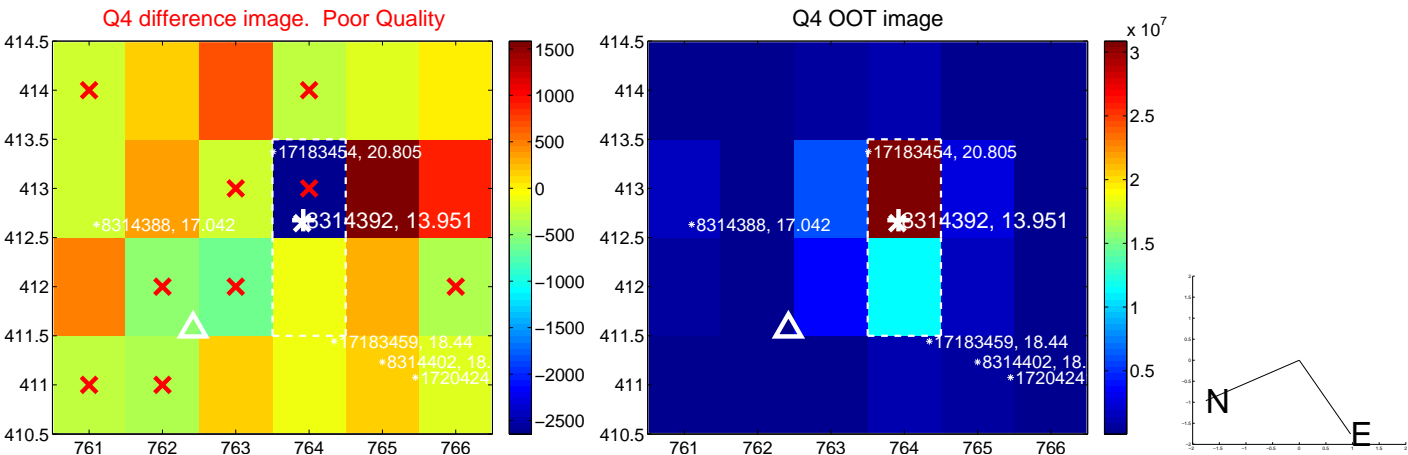
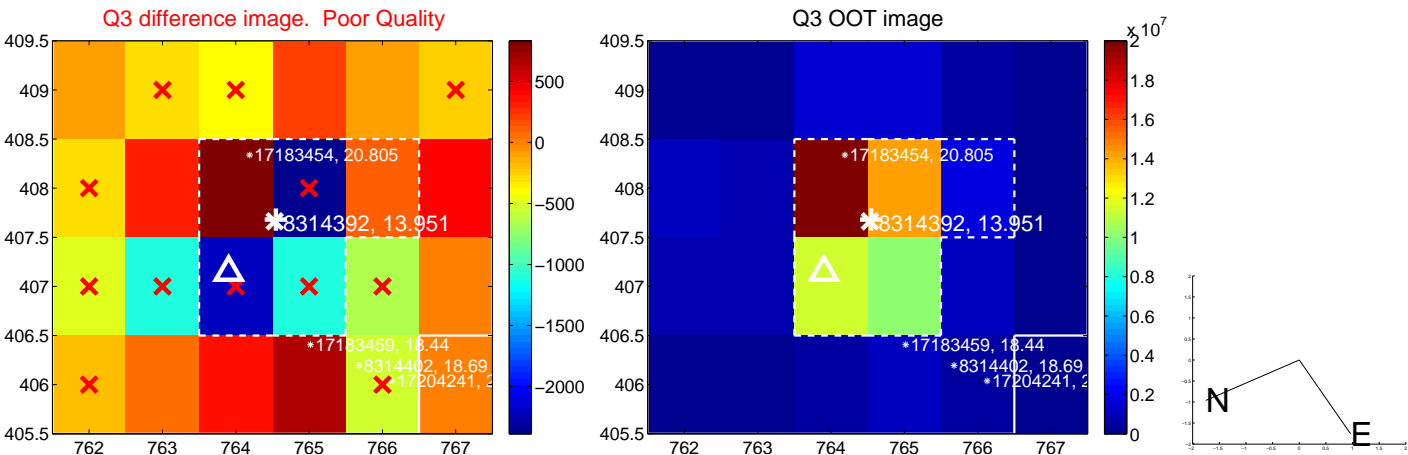
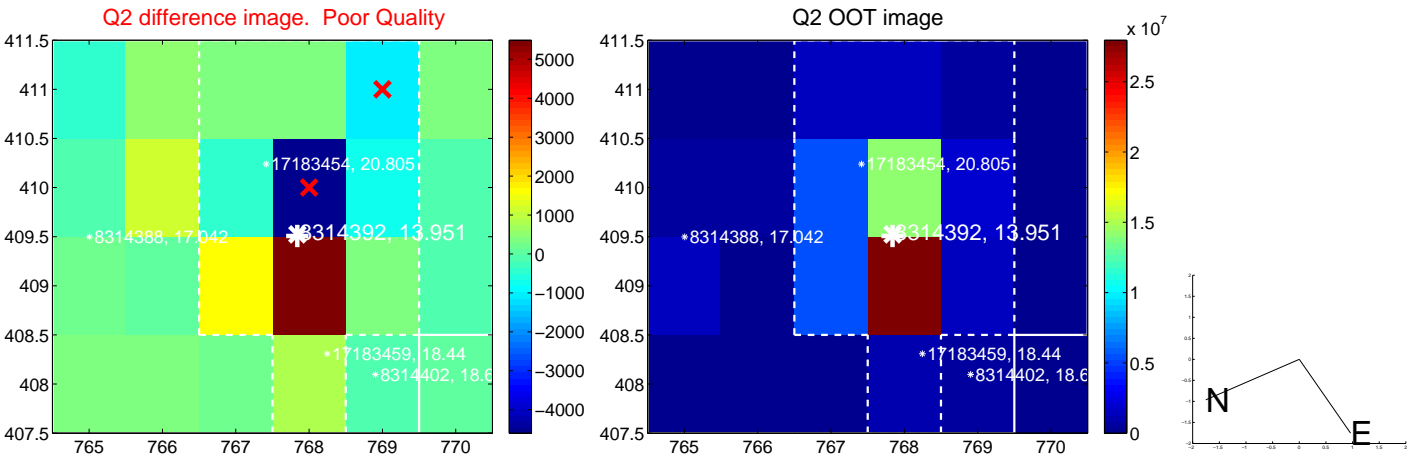
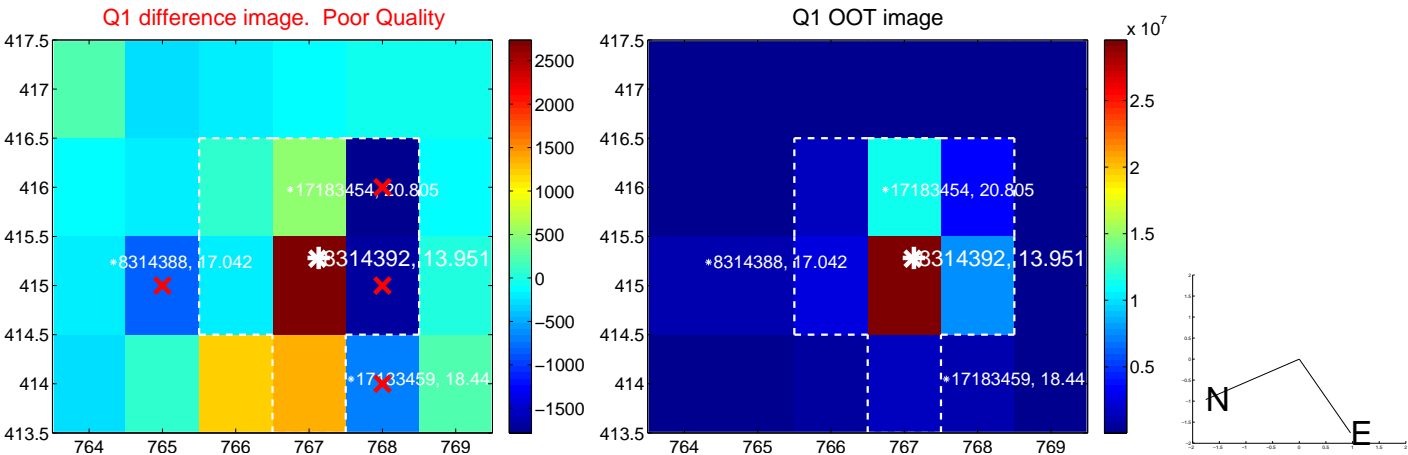
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.197 \pm 0.646$	1.85	$-0.881 \pm 0.511$	$0.810 \pm 0.839$
PRF-fit source offset from KIC position	$1.133 \pm 0.615$	1.84	$-0.862 \pm 0.593$	$0.736 \pm 0.797$
photometric centroid source offset	$1.97 \pm 1.13$	1.74	$-1.95 \pm 1.13$	$0.29 \pm 1.13$

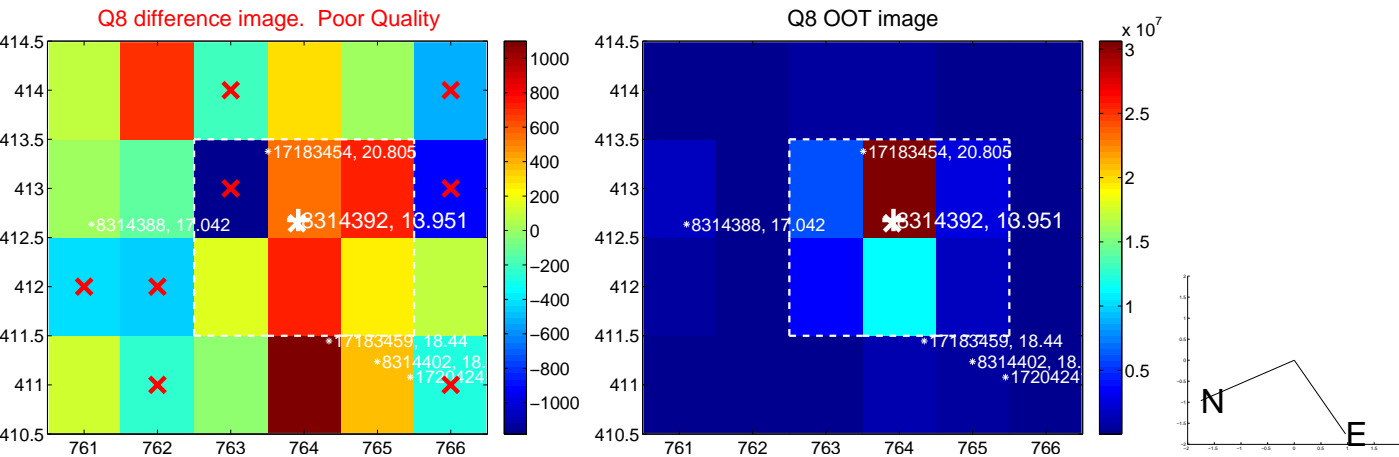
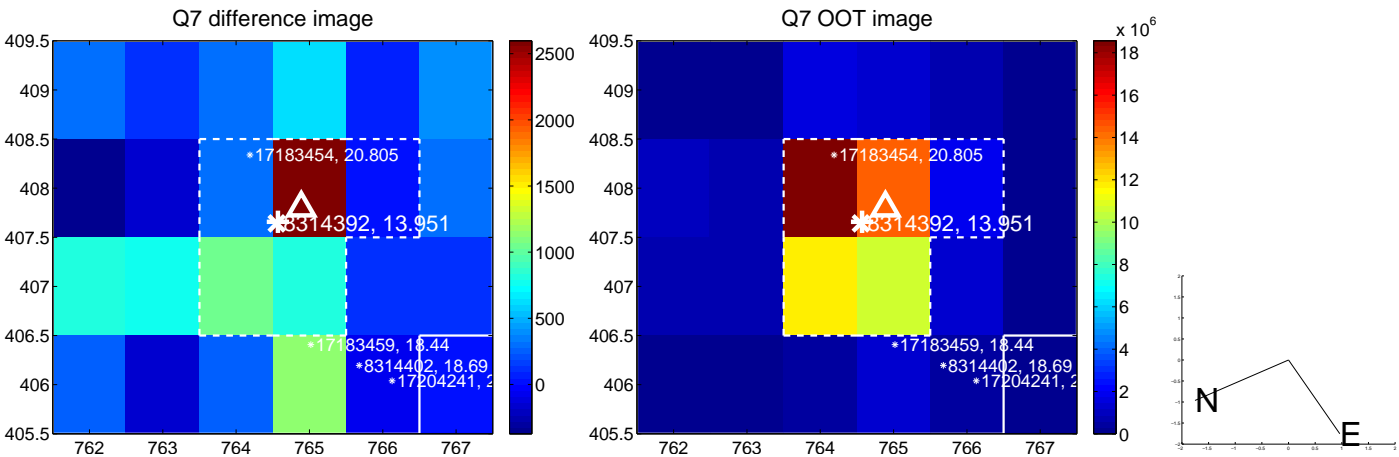
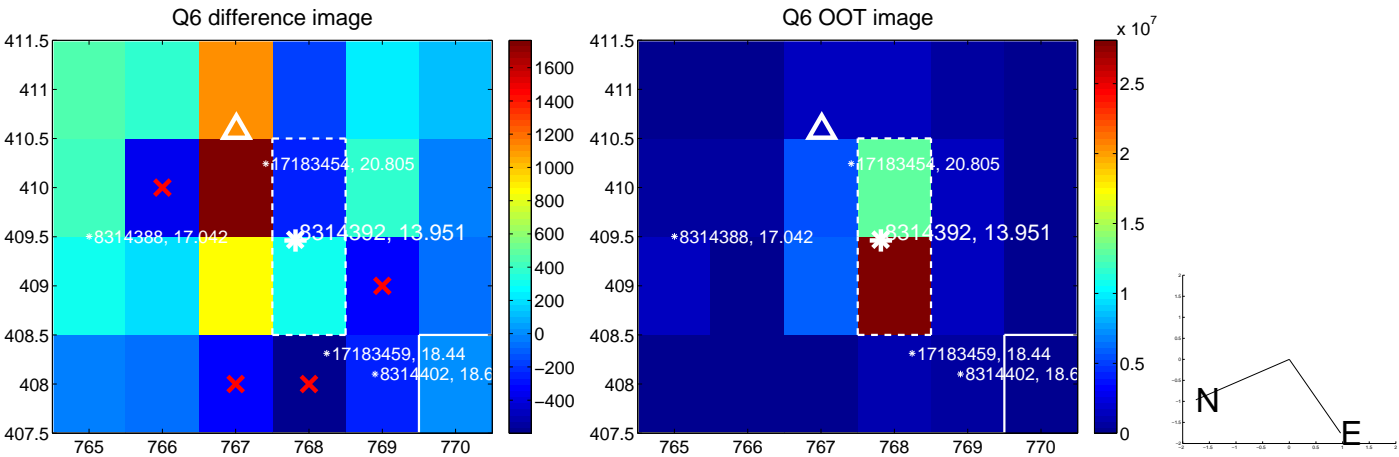
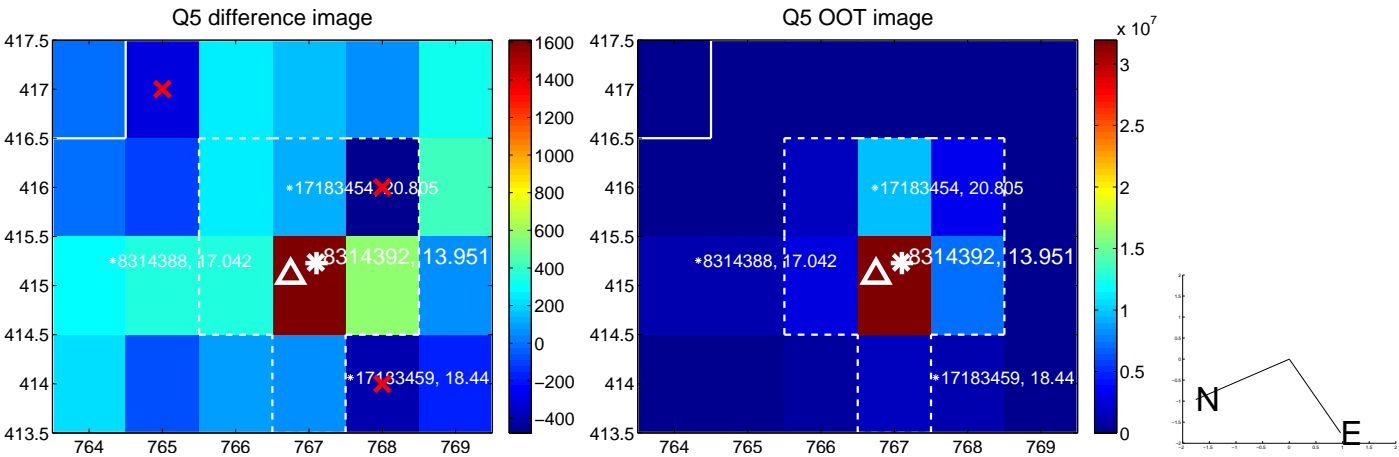


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

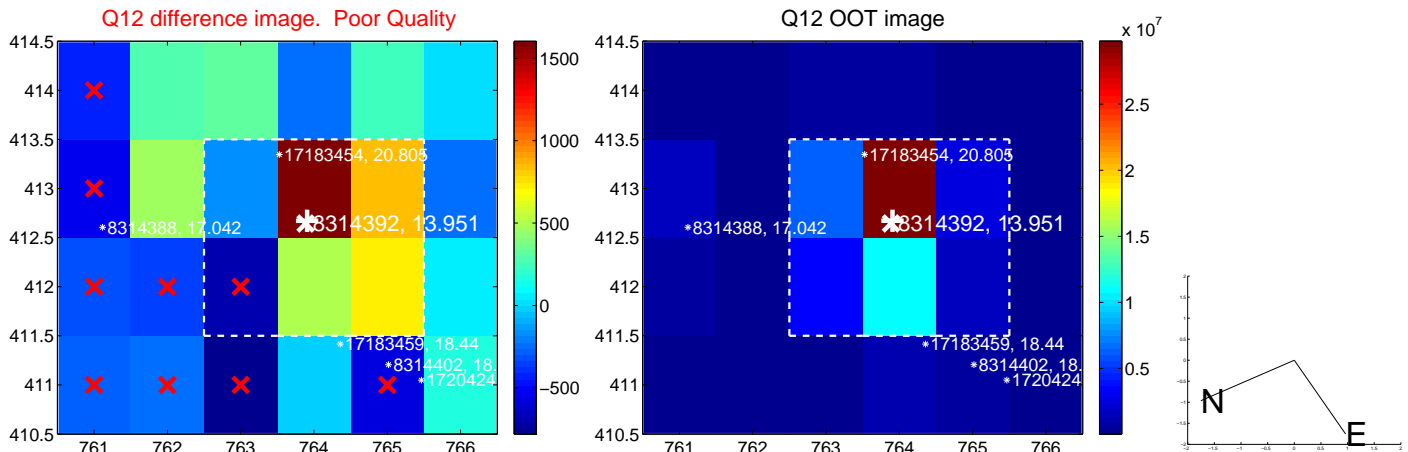
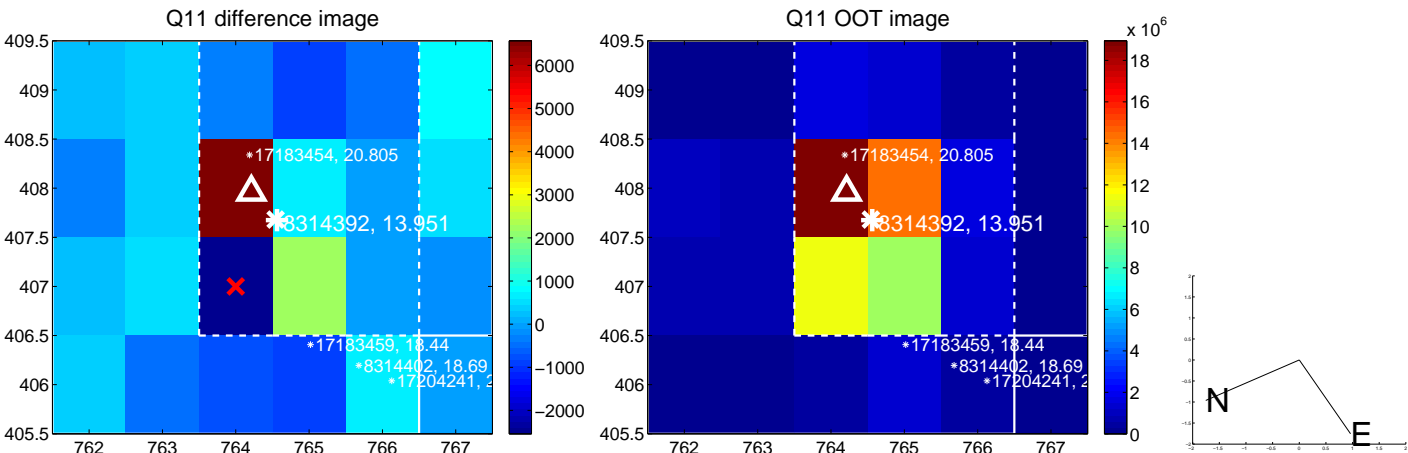
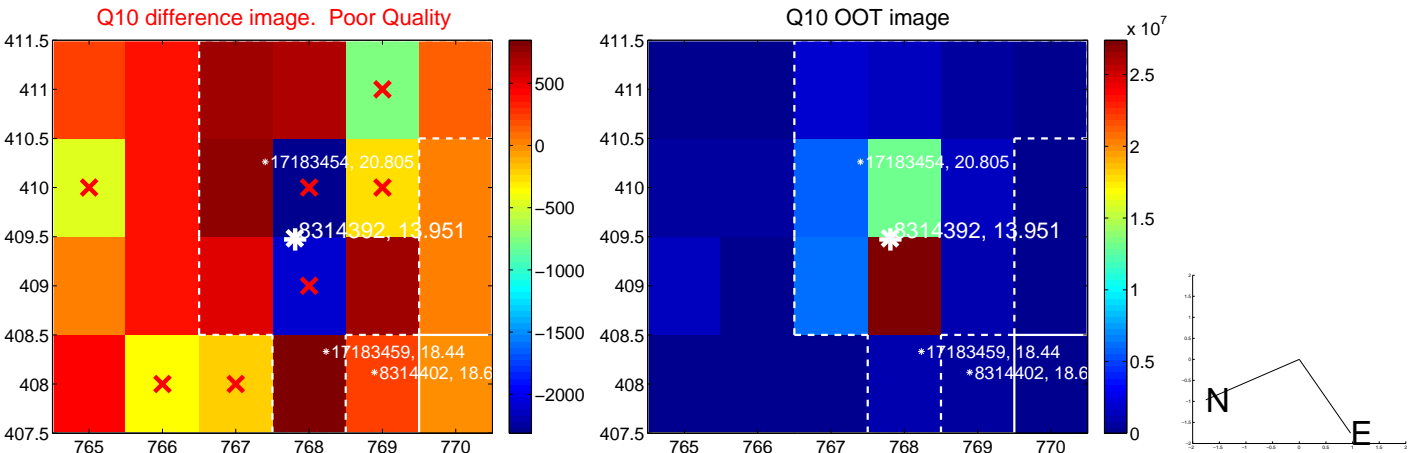
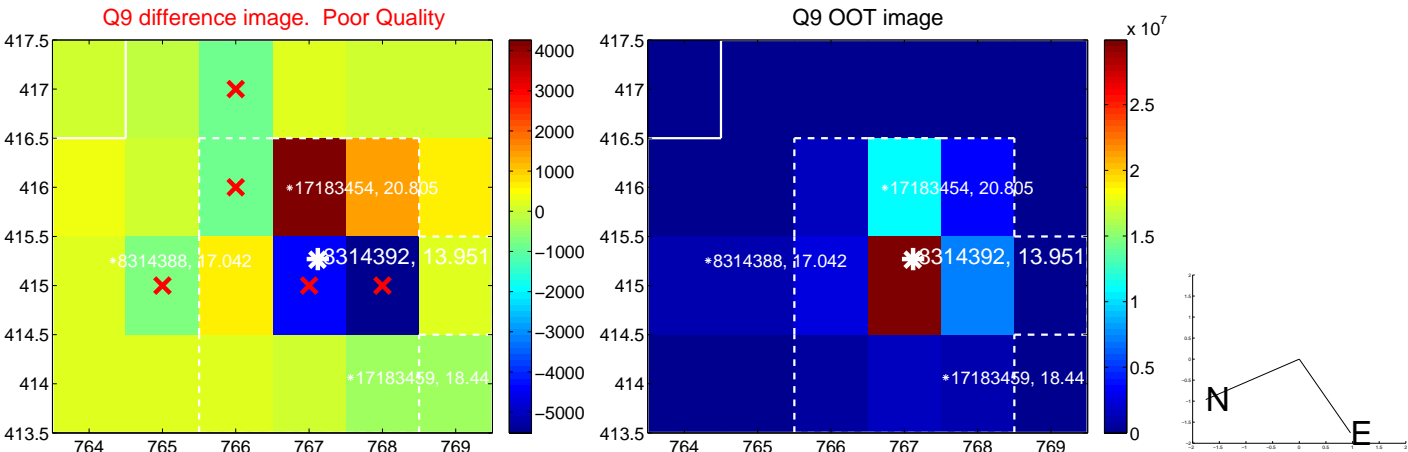
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



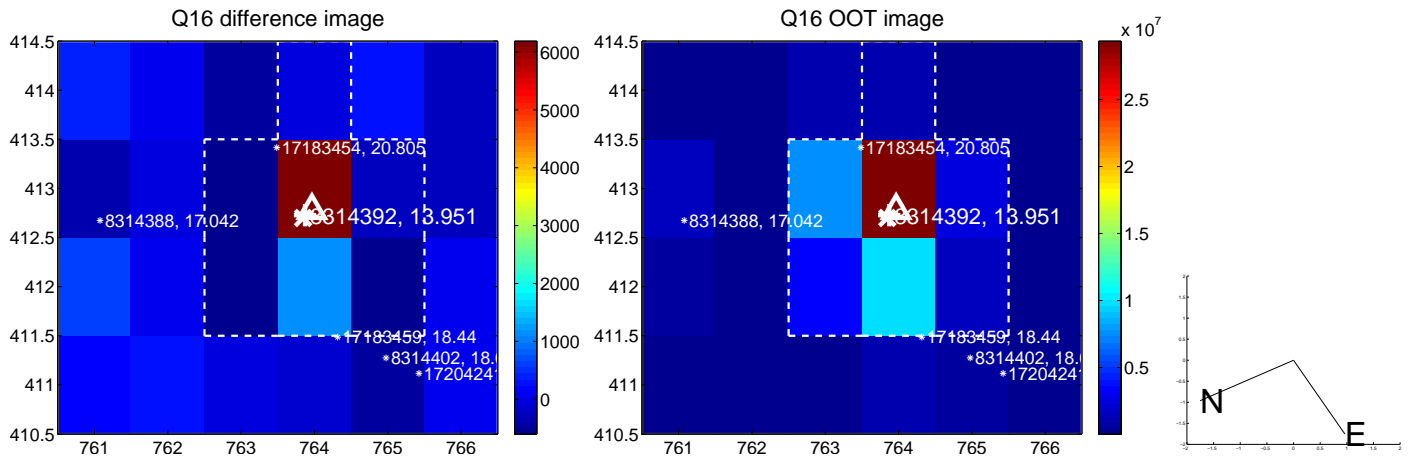
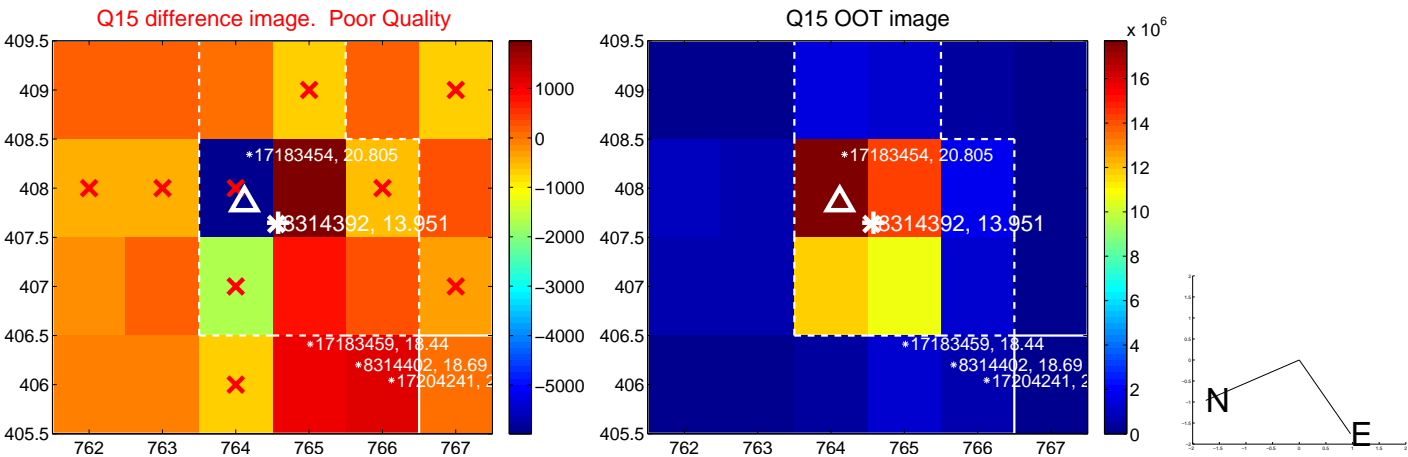
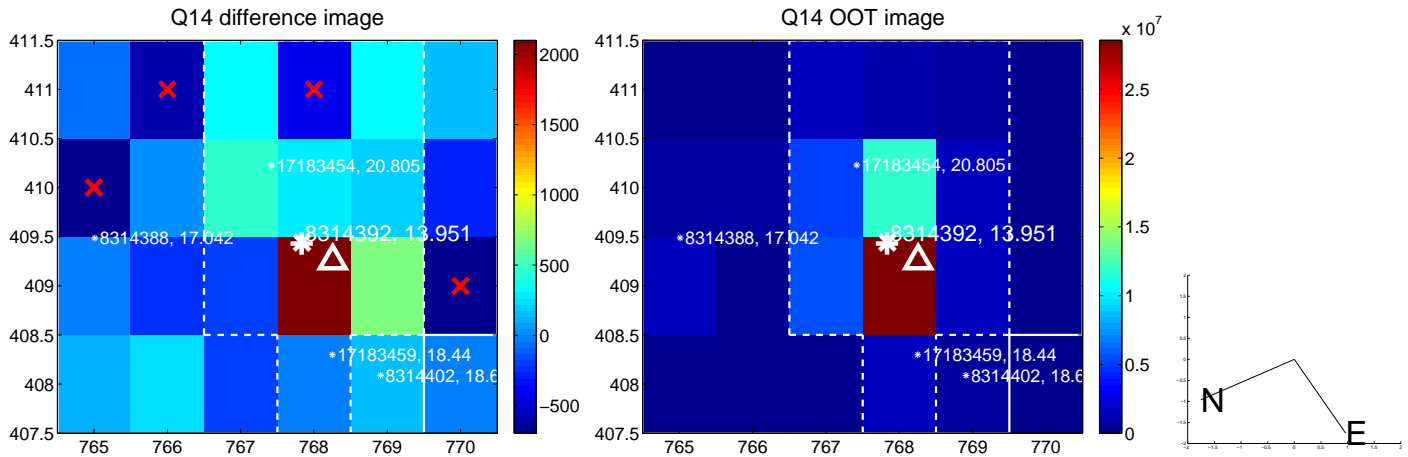
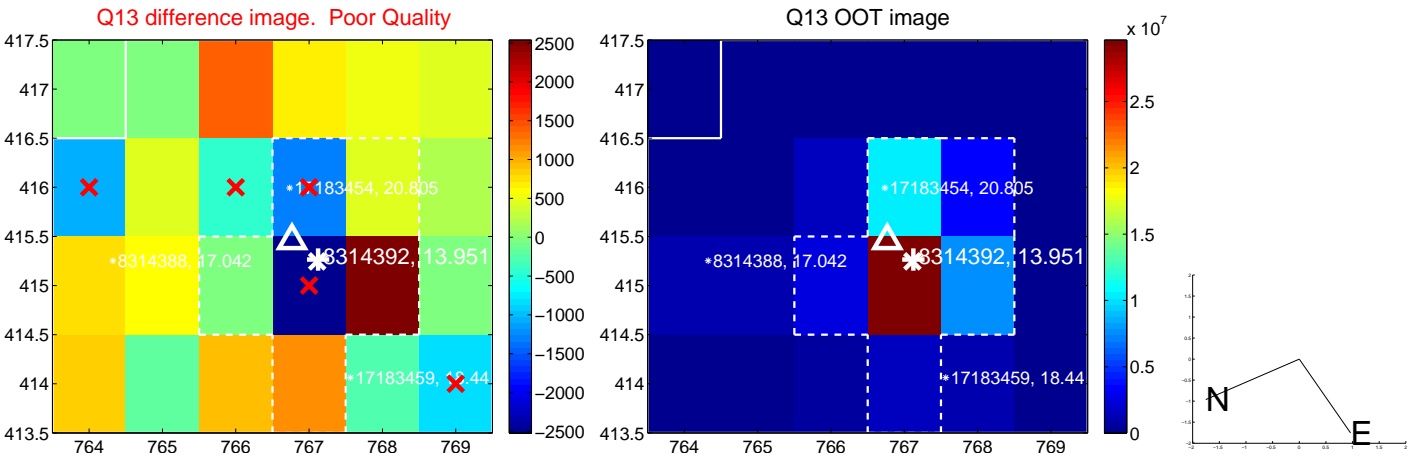
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

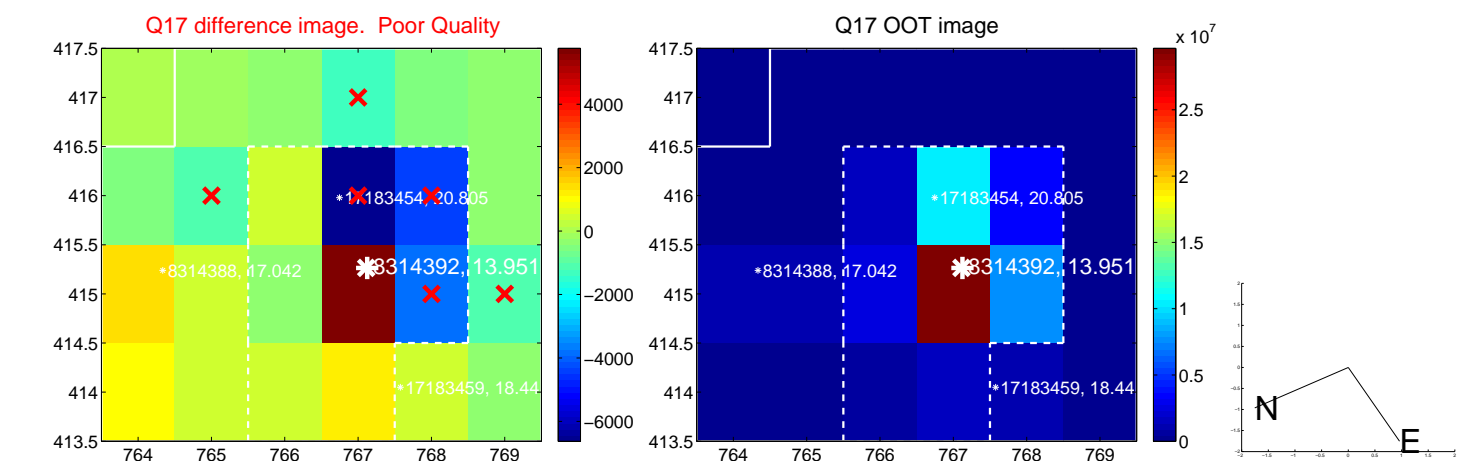


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

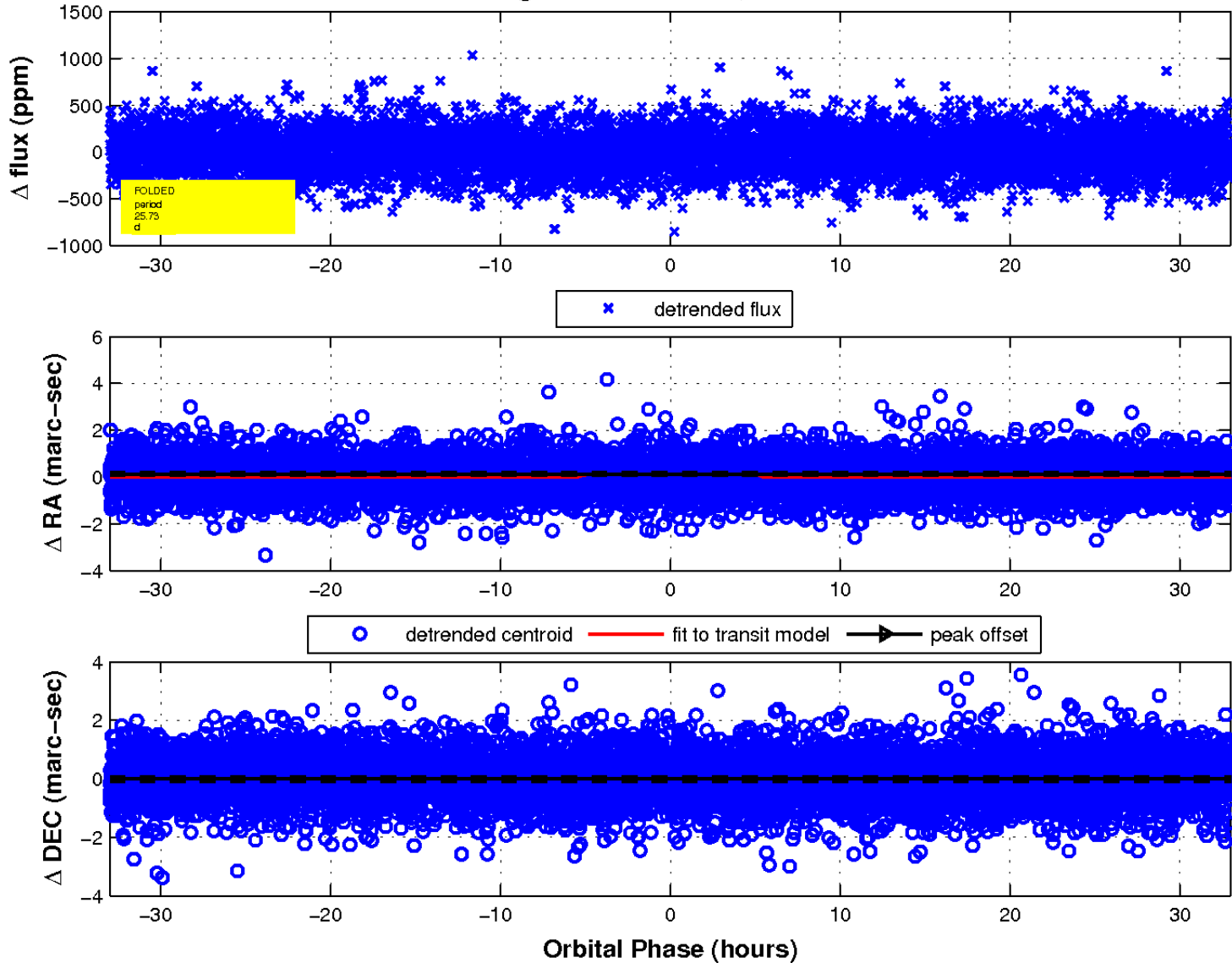




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 9 of 9



# UKIRT Image

Declination

