

# KIC 008715392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008715392-01	OBS	No	1.253992	132.524063	11.5	8.468	10.2	11.8	1.83	6889	0.65	12563.48
008715392-02	OBS	No	70.907126	178.931765	105.1	4.734	14.2	8.1	1.83	6889	2.18	57.89
008715392-03	OBS	No	52.123137	137.622174	130.2	1.798	10.0	9.4	1.83	6889	2.39	87.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008715392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008715392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
008715392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

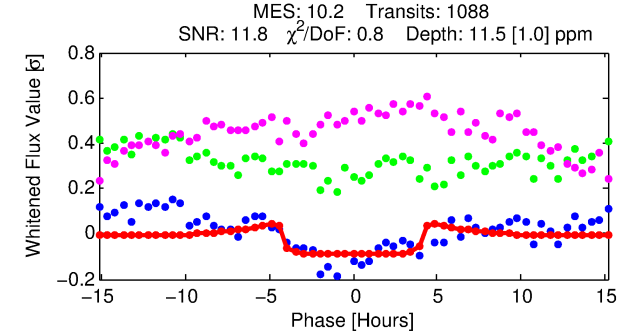
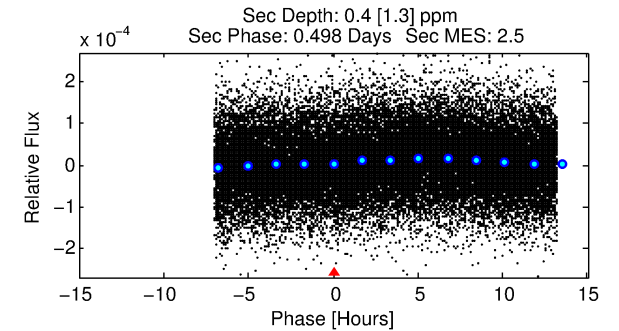
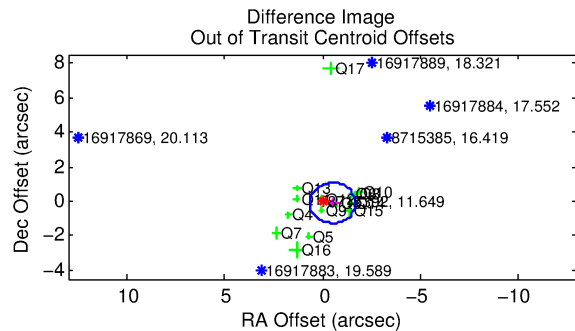
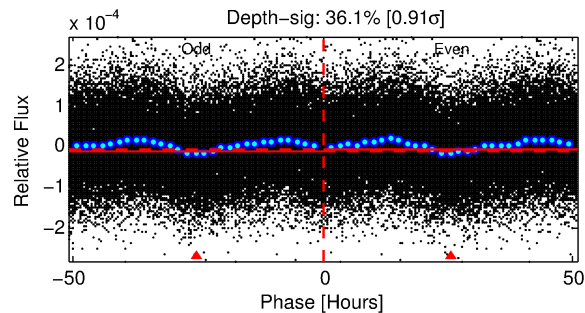
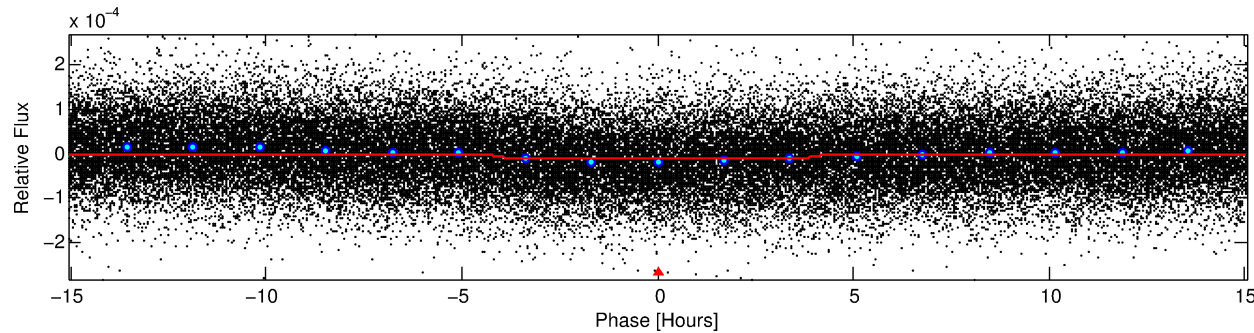
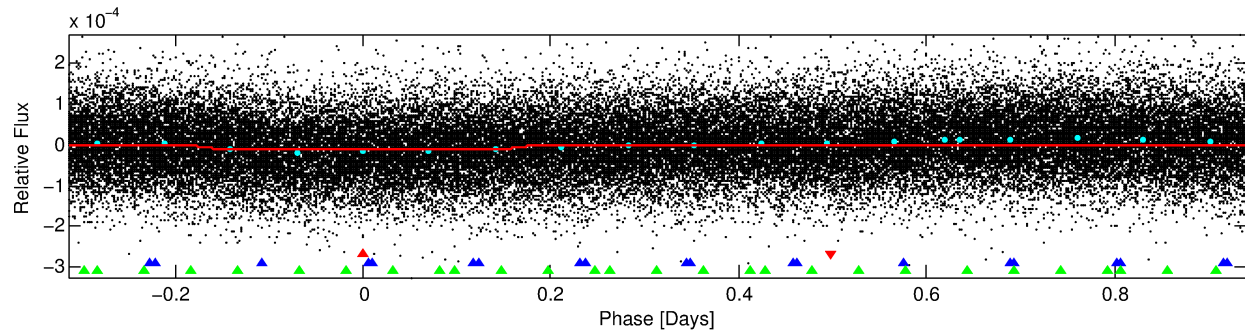
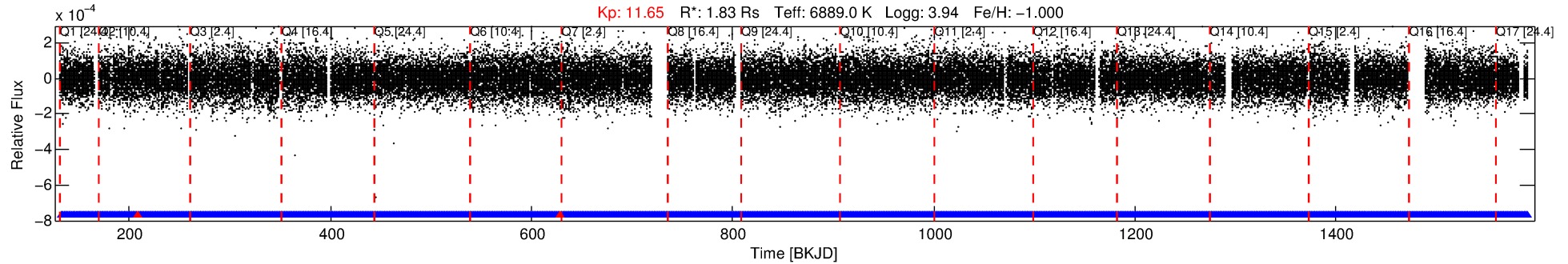
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008715392-01

No Significant Match Found

# DV One-Page Summary

KIC: 8715392 Candidate: 1 of 3 Period: 1.254 d



## DV Fit Results:

Period = 1.25399 [0.00001] d  
Epoch = 132.5241 [0.0040] BKJD  
Rp/R\* = 0.0033 [0.0012]  
a/R\* = 1.20 [0.78]  
b = 0.59 [2.33]  
Seff = 12563.48 [9459.29]  
Teq = 2700 [508] K  
Rp = 0.65 [0.36] Re  
a = 0.0232 [0.0103] AU  
Ag = 0.26 [0.94] [-0.78 $\sigma$ ]  
Teffp = 2984 [2638] K [0.11 $\sigma$ ]

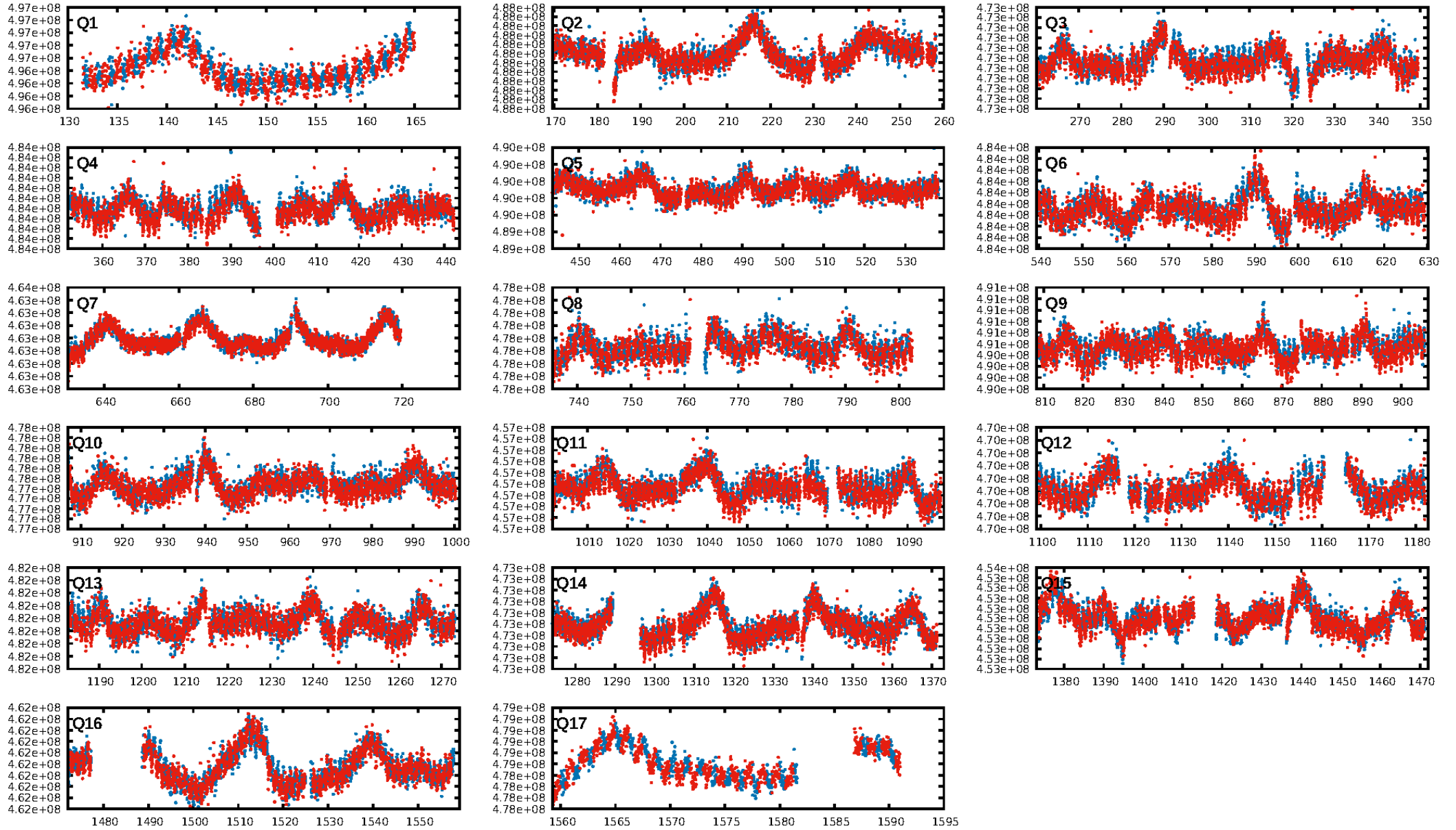
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [141.03 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.86e-16  
RollingBand-fgt: 1.00 [1037/1039]  
GhostDiagnostic-chr: 5.775  
Centroid-sig: 0.0%  
Centroid-so: 2.818 arcsec [2.87 $\sigma$ ]  
OotOffset-rm: 0.523 arcsec [1.35 $\sigma$ ]  
KicOffset-rm: 0.642 arcsec [1.70 $\sigma$ ]  
OotOffset-st: 3/4/4/4 [15]  
KicOffset-st: 3/4/4/4 [15]  
DiffImageQuality-fgm: 0.80 [12/15]  
DiffImageOverlap-fno: 1.00 [17/17]

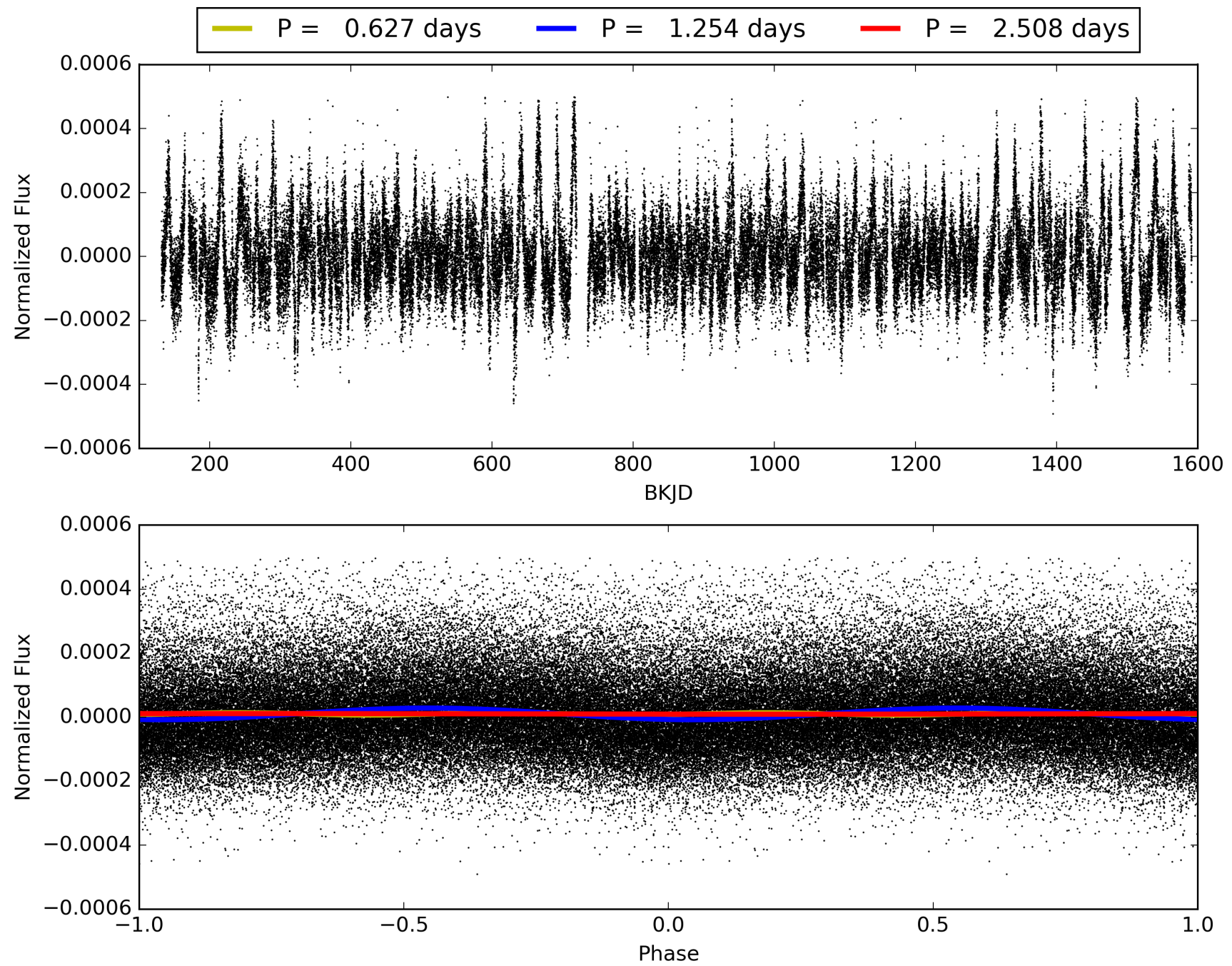
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:23:57 Z

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

# TCE 008715392-01, PDC Light Curves



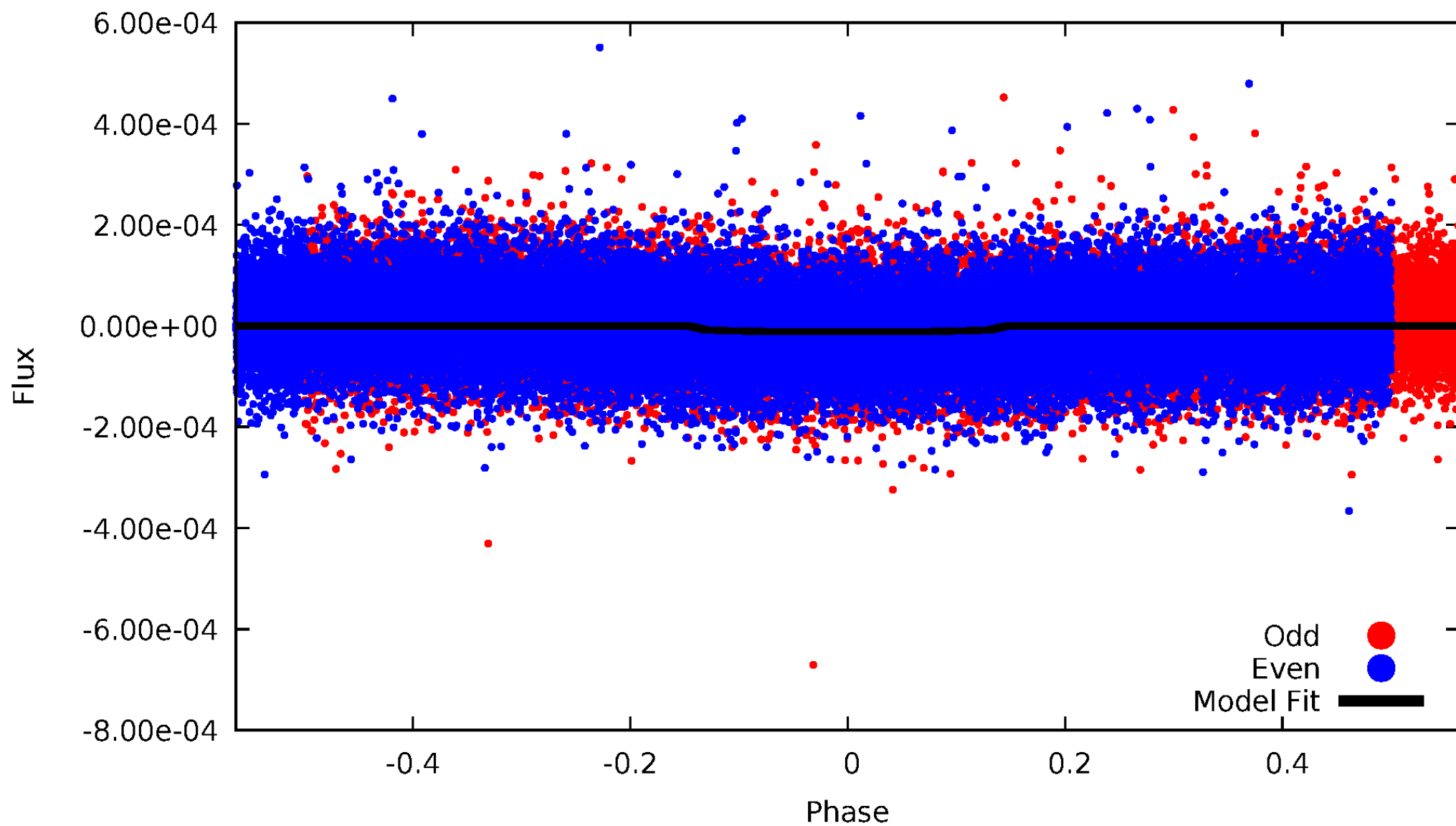
TCE 008715392-01





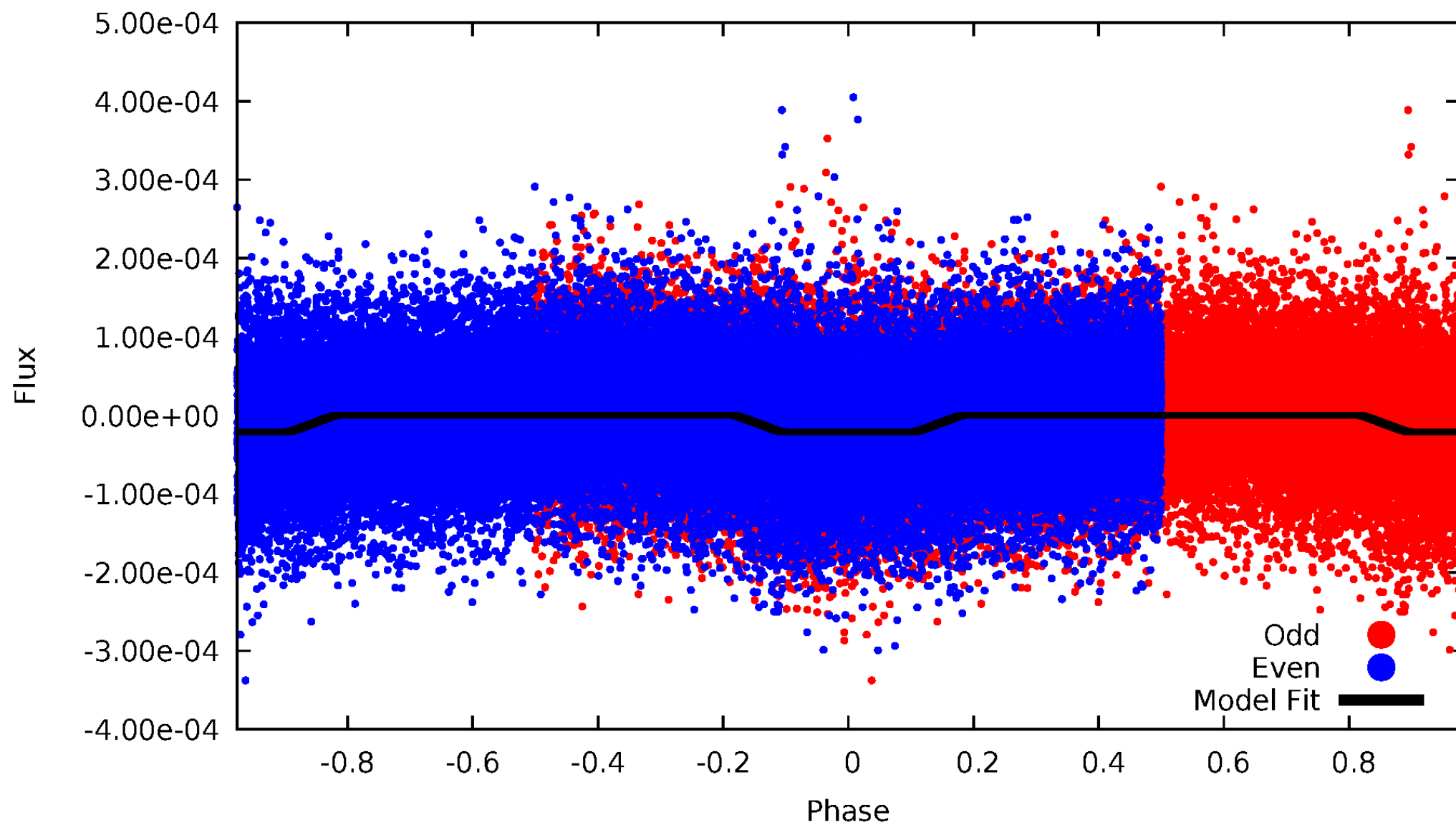
# DV Odd/Even

TCE 008715392-01



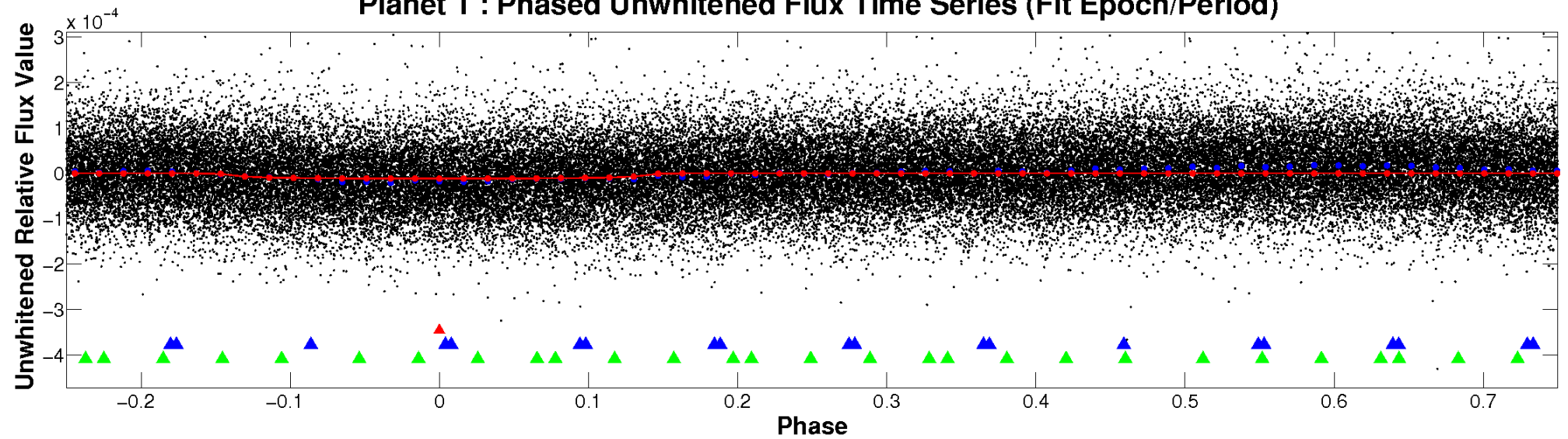
# ALT Odd/Even

TCE 008715392-01

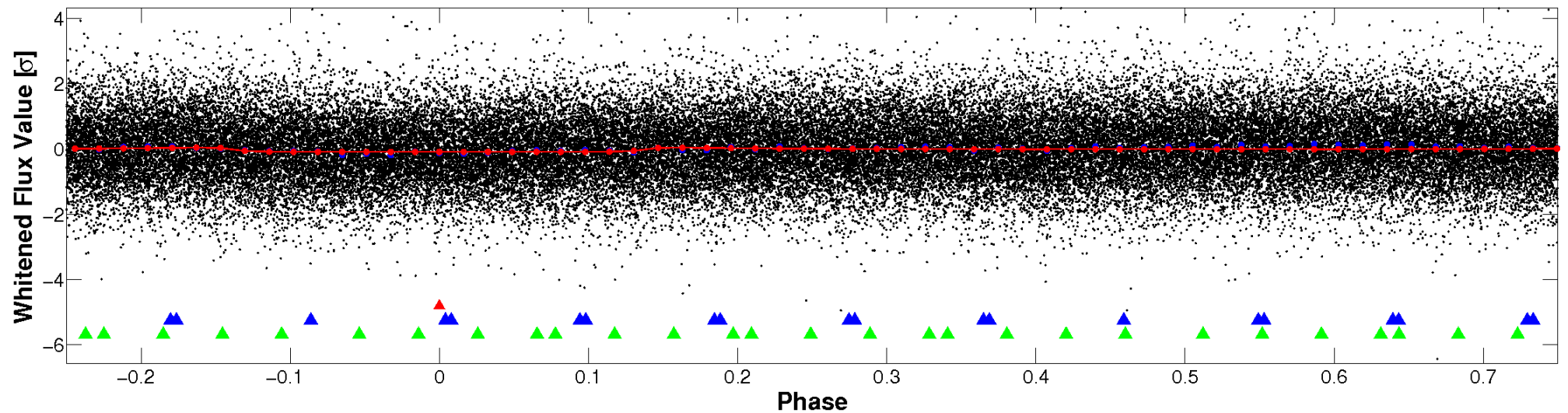


# Non-Whitened Vs. Whitened Light Curve

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

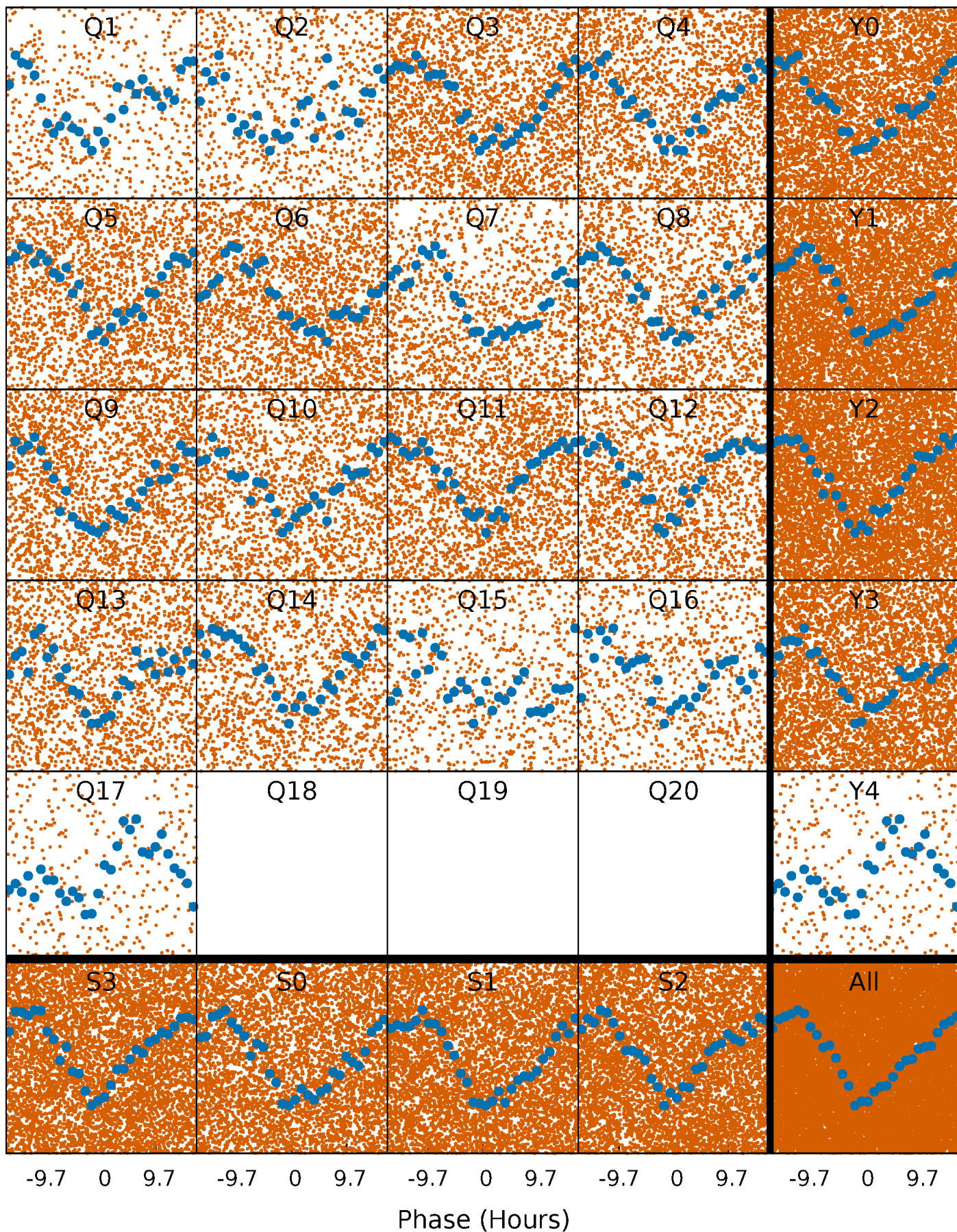


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

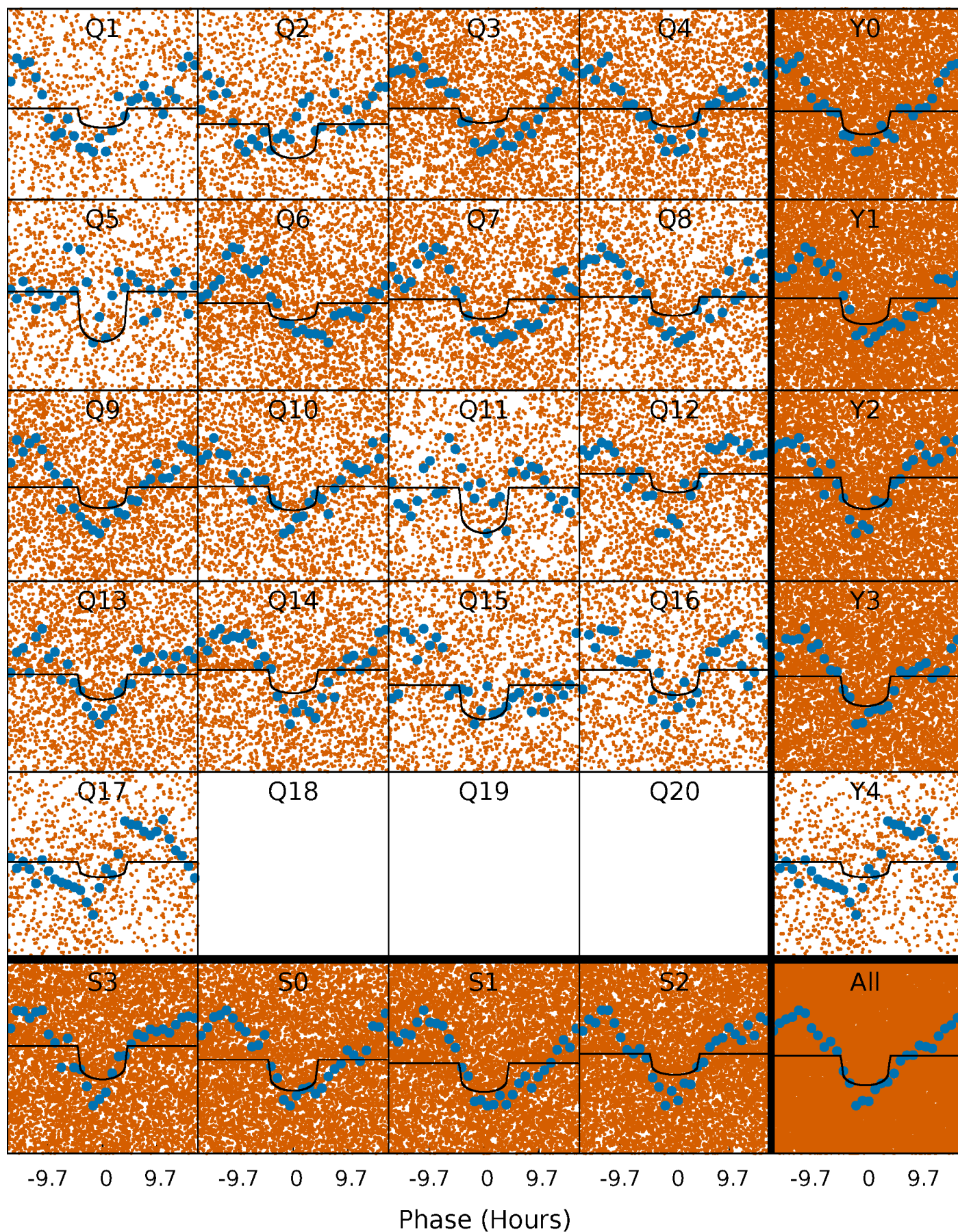
TCE 008715392-01 P= 1.253992 Days  $T_0=132.524063$  (BKJD)





# DV Quarter-Phased Transit Curves

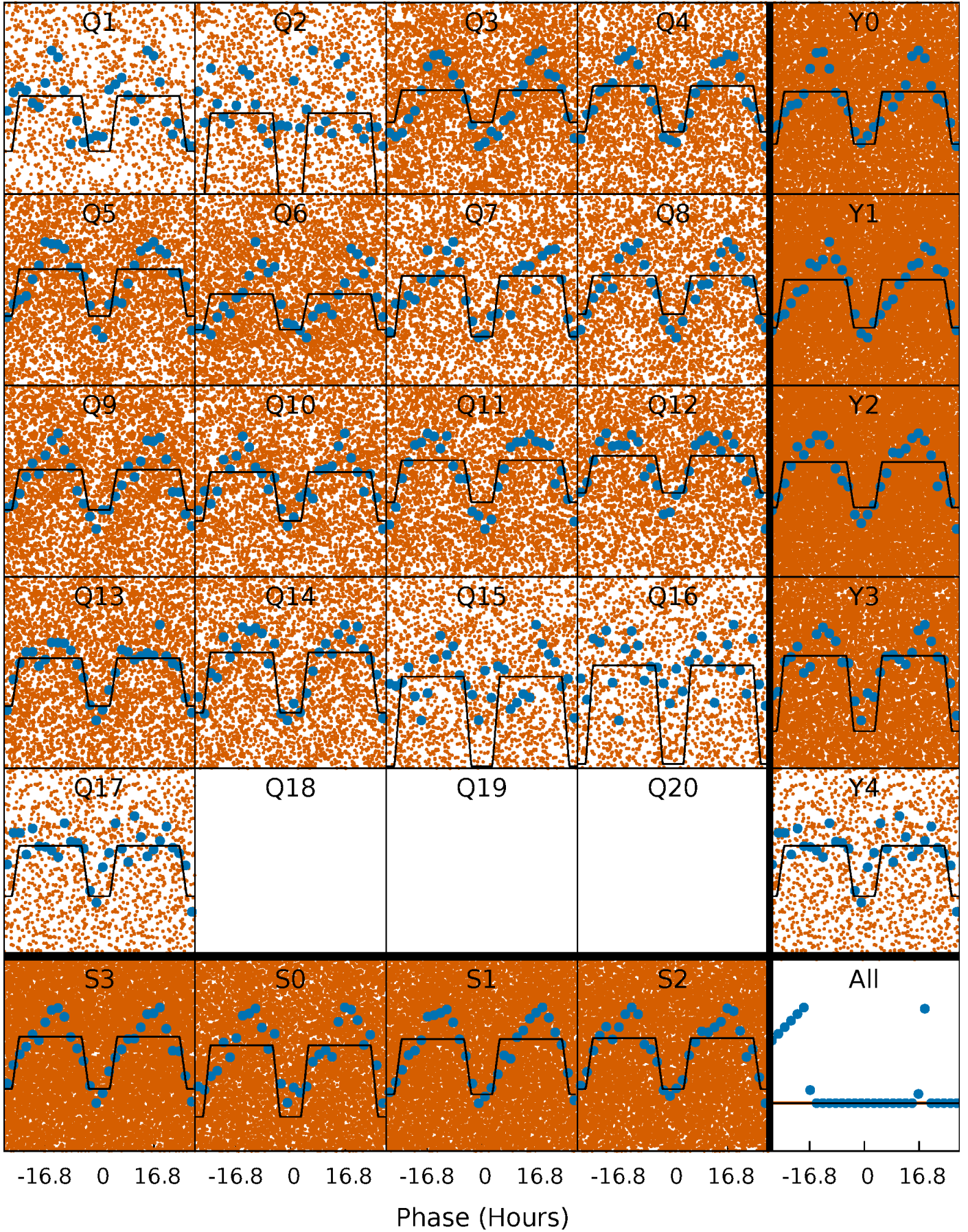
TCE 008715392-01 P= 1.253992 Days  $T_0=132.524063$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

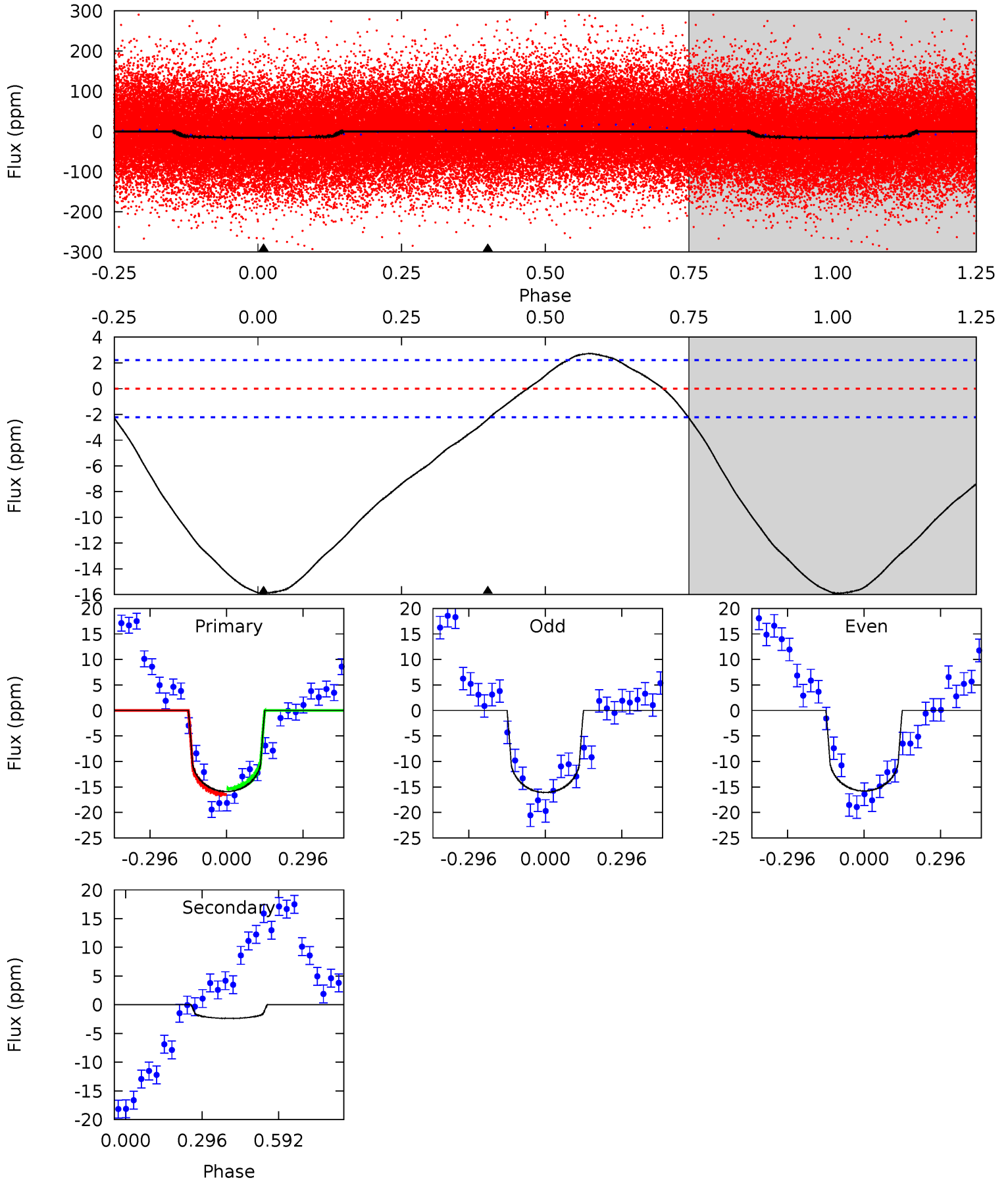
TCE 008715392-01 P= 1.253990 Days  $T_0=132.529857$  (BKJD)



# DV Model-Shift Uniqueness Test

008715392-01, P = 1.253992 Days, E = 131.270071 Days

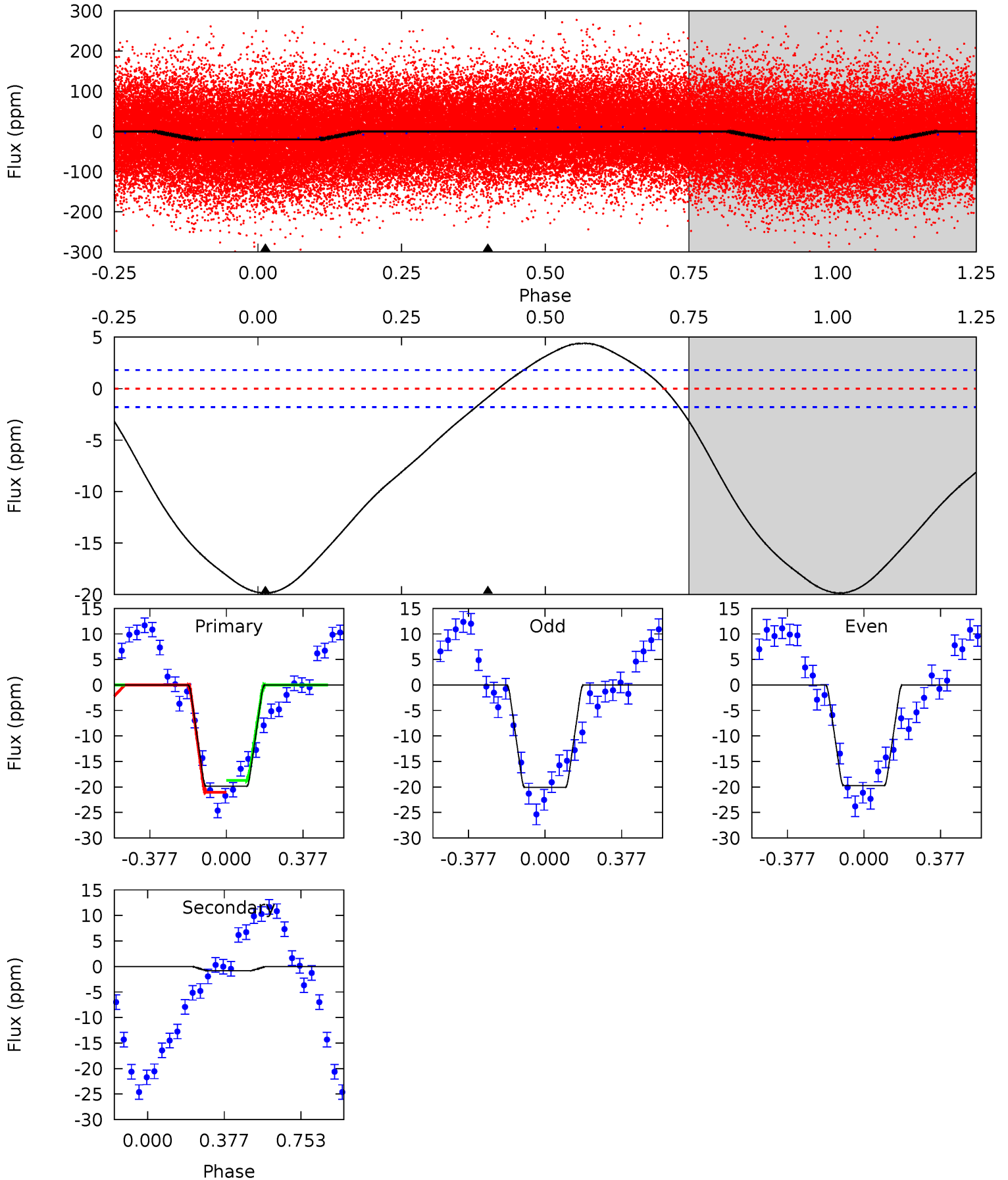
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.1	4.64	0	0	4.33	1.05	2.27	31.1	31.1	4.64	4.64	0.30	1.01	0.15	1.11



# Alt Model-Shift Uniqueness Test

008715392-01, P = 1.253990 Days, E = 131.275867 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
47.1	2.01	0	0	4.28	0.88	4.17	47.1	47.1	2.01	2.01	0.42	1.06	0.18	2.76





### Stellar Parameters For KIC 008715392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6889^{+215}_{-263}$	$3.937^{+0.443}_{-0.148}$	$-1.000^{+0.300}_{-0.300}$	$1.828^{+0.420}_{-0.781}$	$1.054^{+0.119}_{-0.145}$	$0.243^{+0.989}_{-0.104}$
	+3%/-4%	+11%/-4%	+30%/-30%	+23%/-43%	+11%/-14%	+407%/-43%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008715392-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2 \pm 1$	$0.61^{+0.26}_{-0.24}$	$3712^{+293}_{-408}$	$4608^{+1158}_{-708}$	$1.850^{+3.169}_{-1.009}$
Alt.	$-1 \pm 0$	$0.87^{+0.29}_{-0.27}$	$3712^{+295}_{-420}$	$2470^{+1100}_{-5712}$	$0.328^{+0.426}_{-0.195}$

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

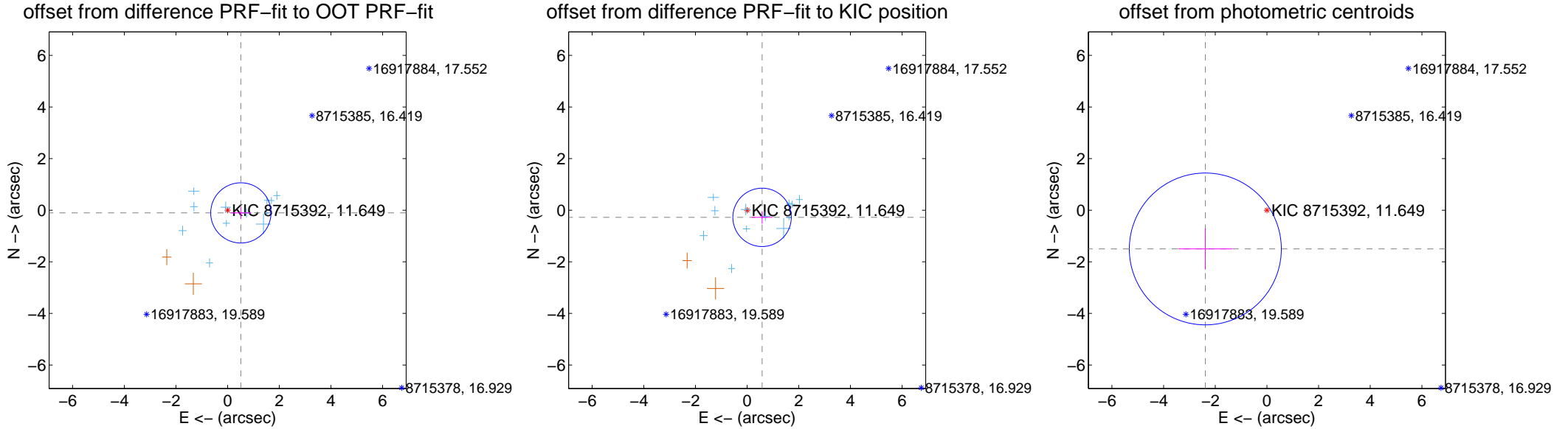
## DV Centroid Data

Supplemental centroid analysis for 008715392-01. **Kepler magnitude: 11.65.** Transit SNR 11.82

There are 12 quarters with good PRF difference image offsets

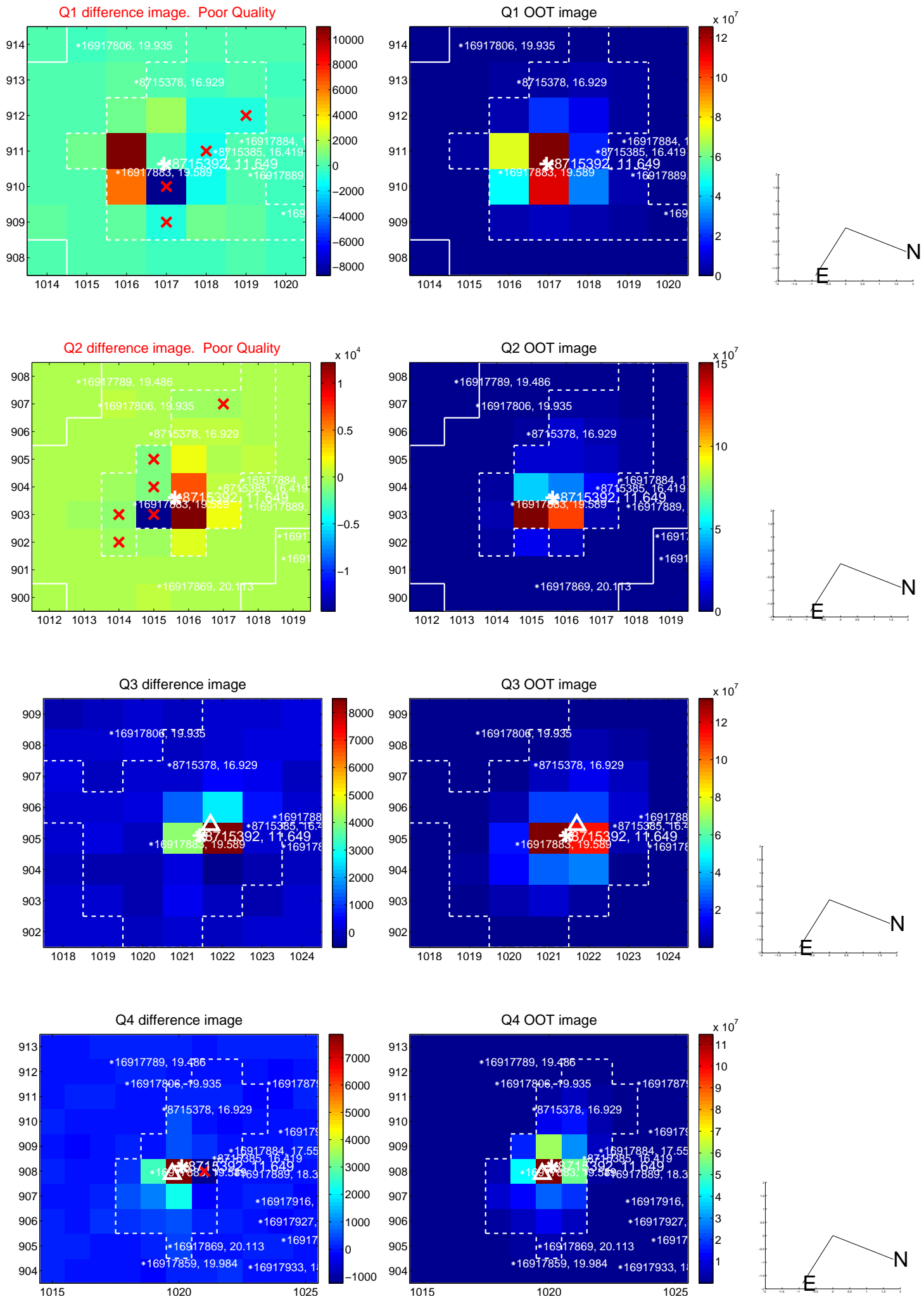
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.523 \pm 0.389$	1.35	$-0.513 \pm 0.394$	$-0.104 \pm 0.237$
PRF-fit source offset from KIC position	$0.642 \pm 0.377$	1.70	$-0.579 \pm 0.401$	$-0.277 \pm 0.244$
photometric centroid source offset	$2.82 \pm 0.98$	2.87	$2.38 \pm 1.04$	$-1.50 \pm 0.80$

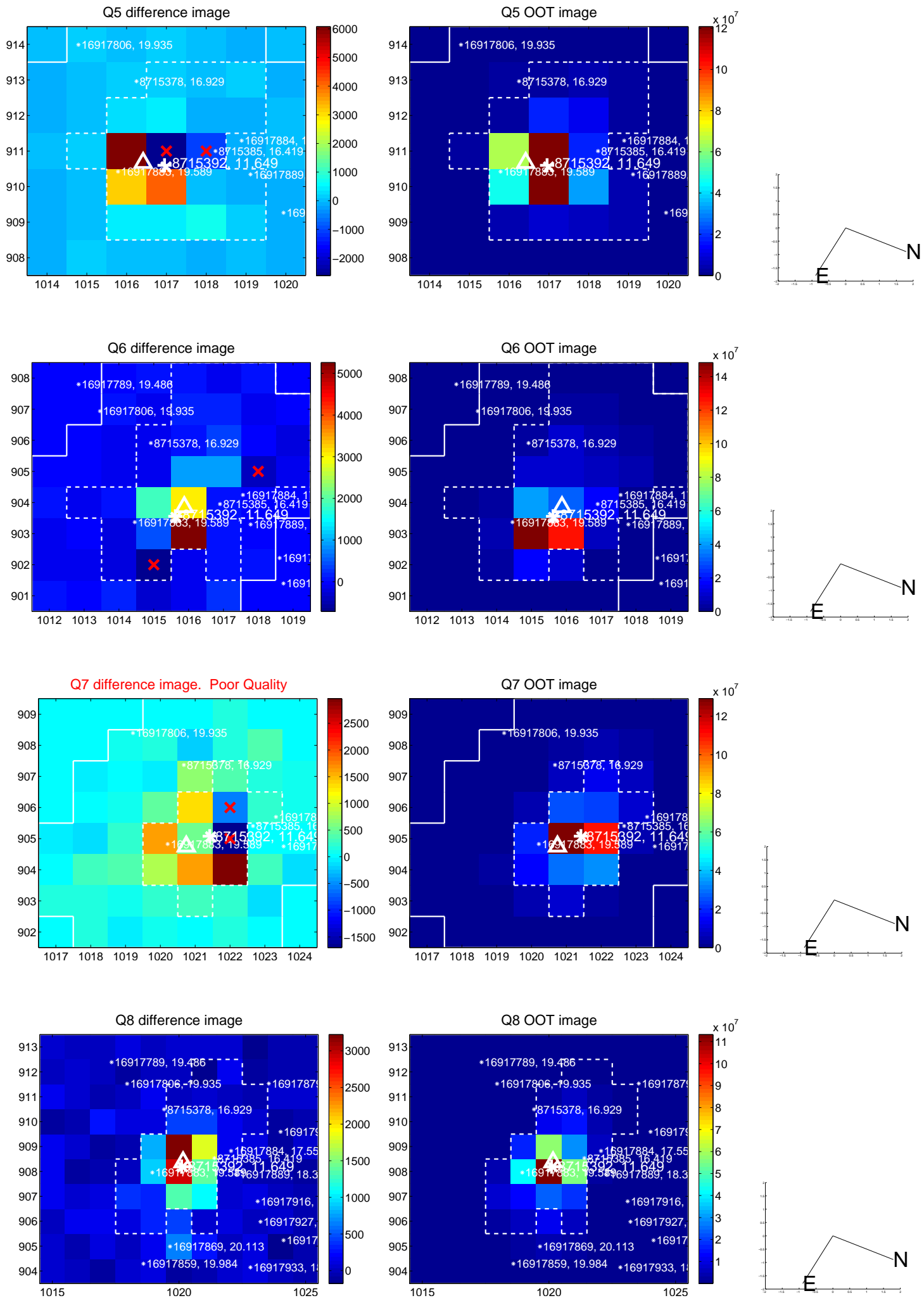


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

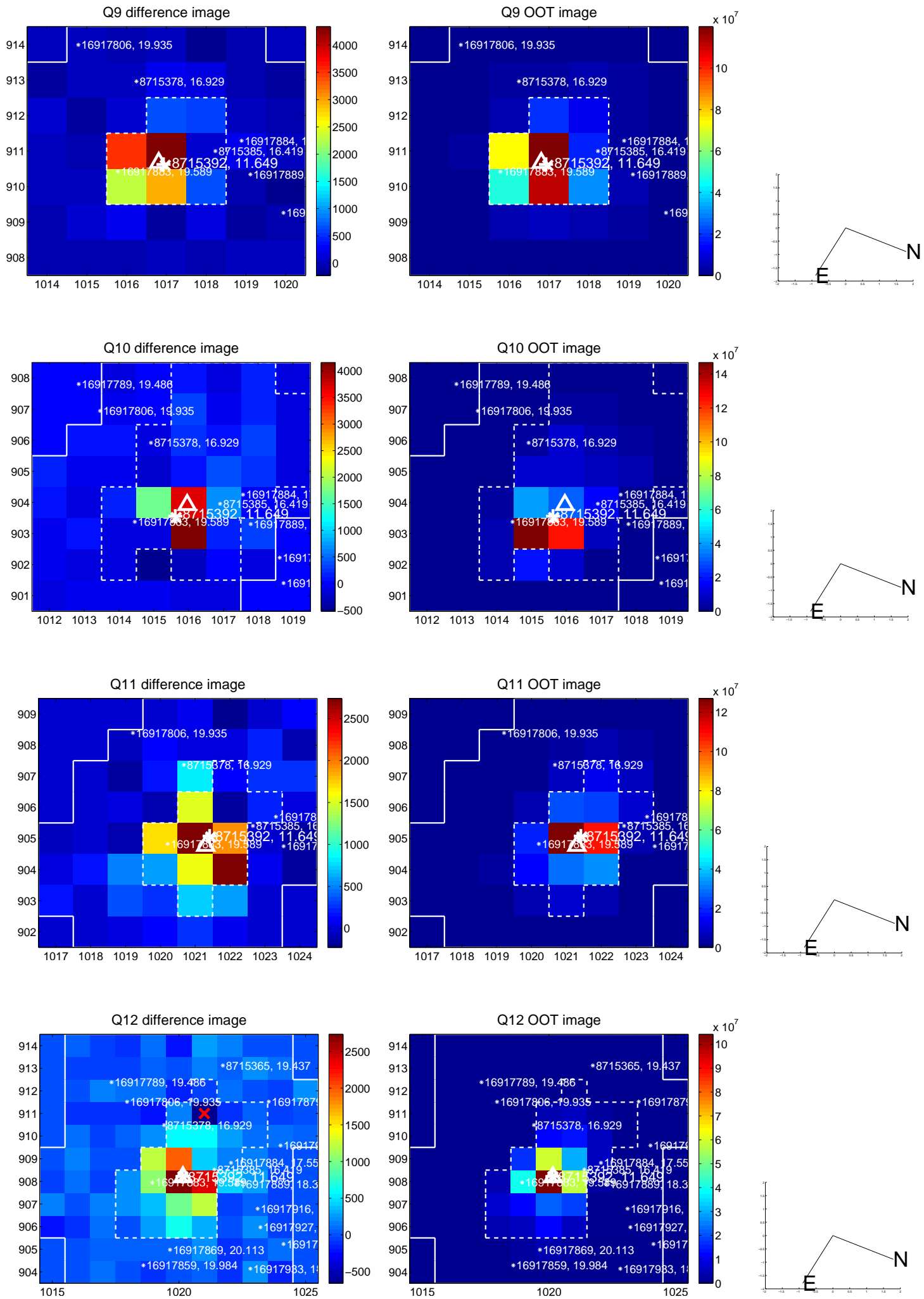


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

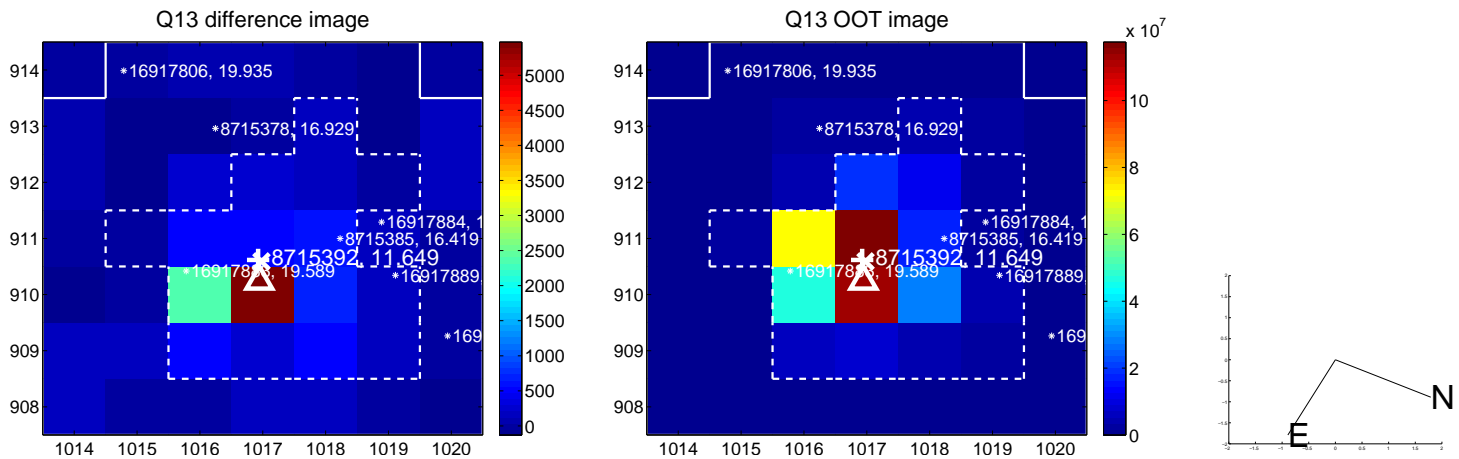




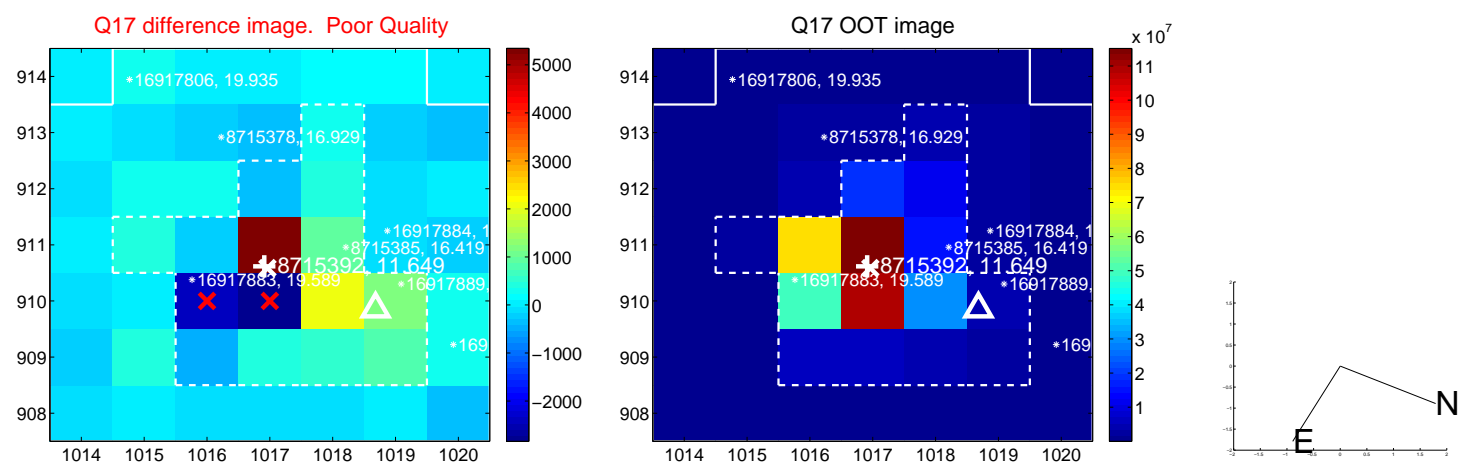
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



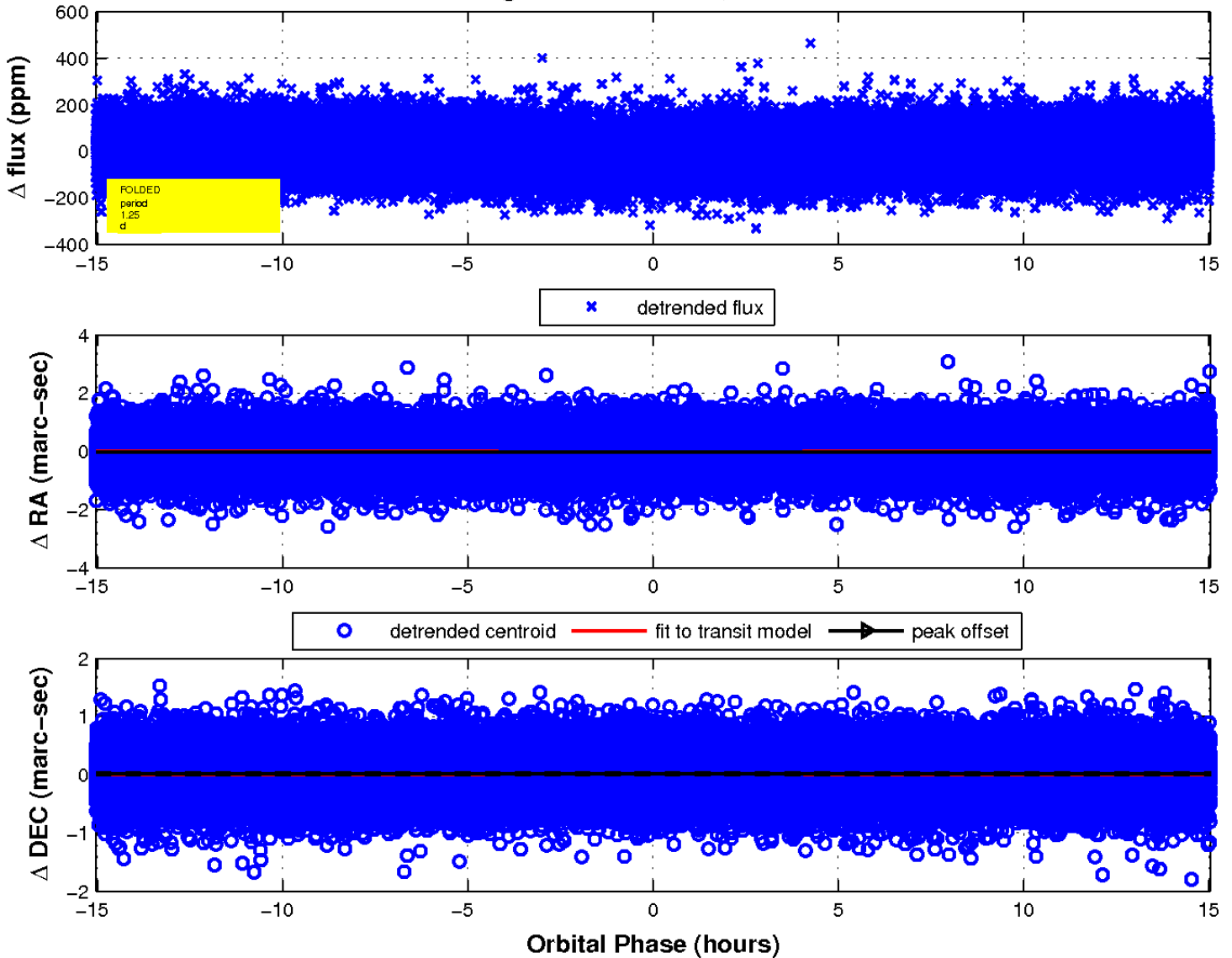
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

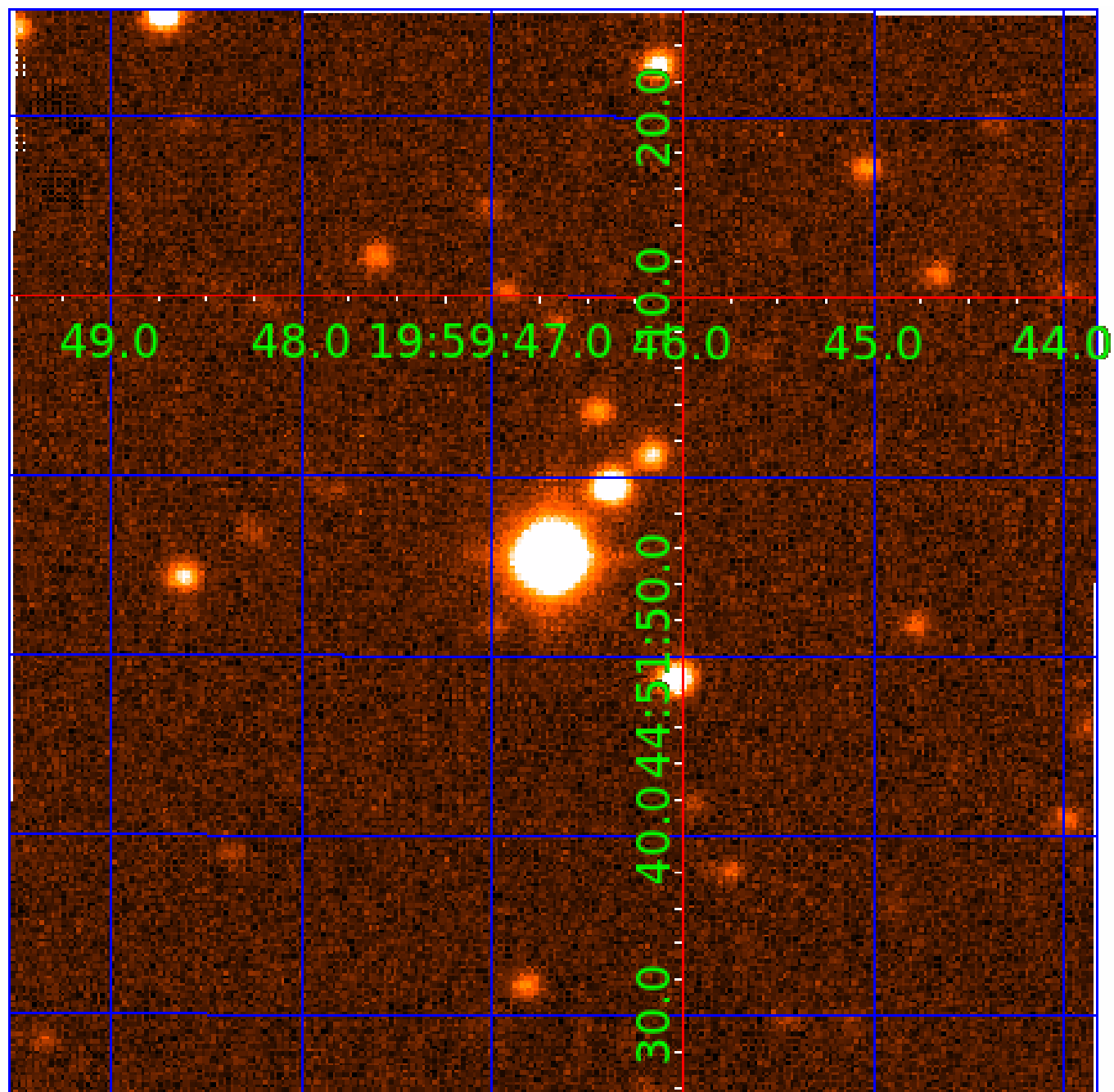


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 008715392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008715392-01	OBS	No	1.253992	132.524063	11.5	8.468	10.2	11.8	1.83	6889	0.65	12563.48
008715392-02	OBS	No	70.907126	178.931765	105.1	4.734	14.2	8.1	1.83	6889	2.18	57.89
008715392-03	OBS	No	52.123137	137.622174	130.2	1.798	10.0	9.4	1.83	6889	2.39	87.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008715392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008715392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
008715392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

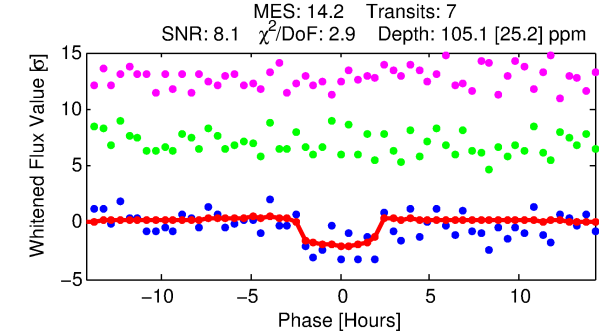
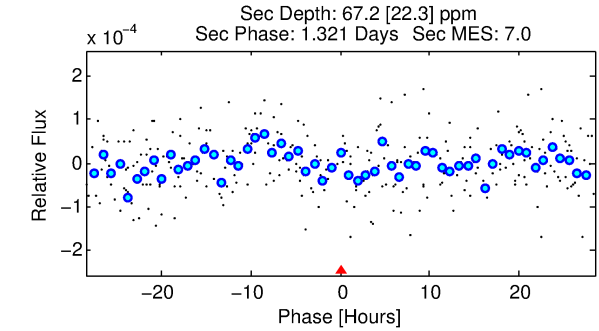
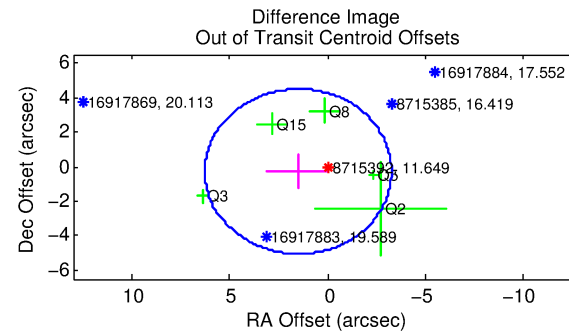
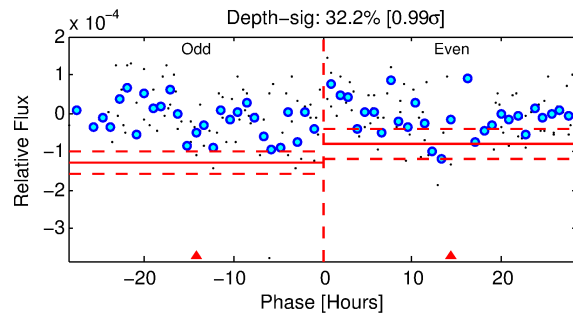
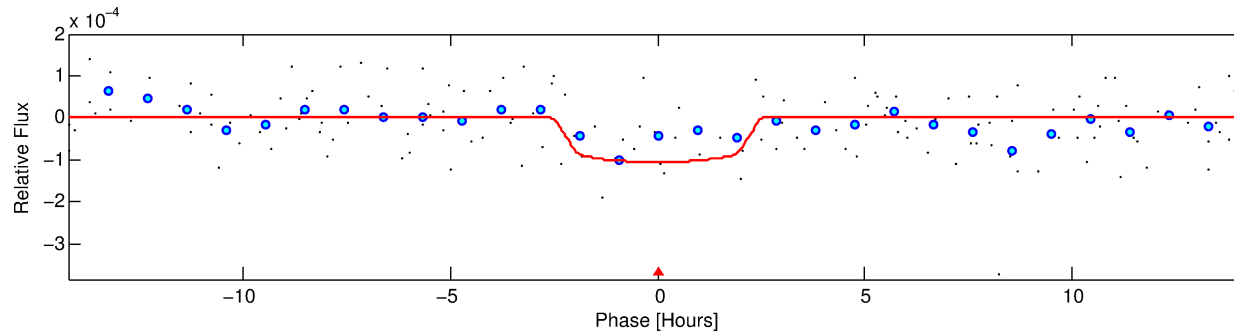
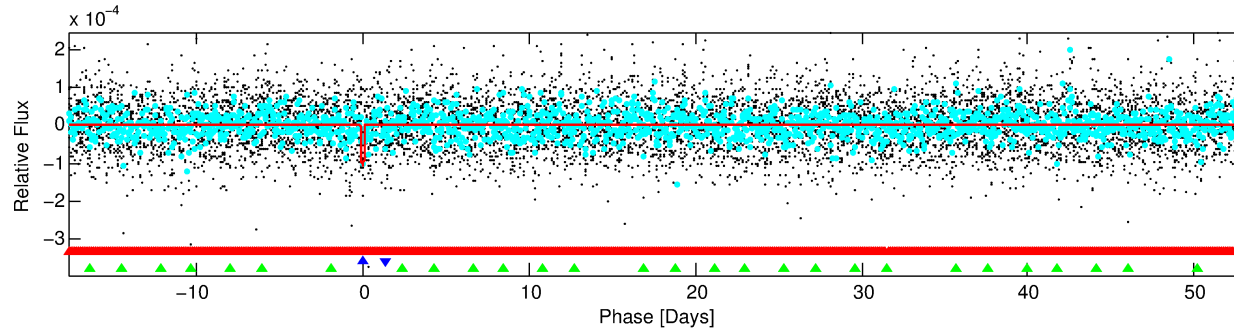
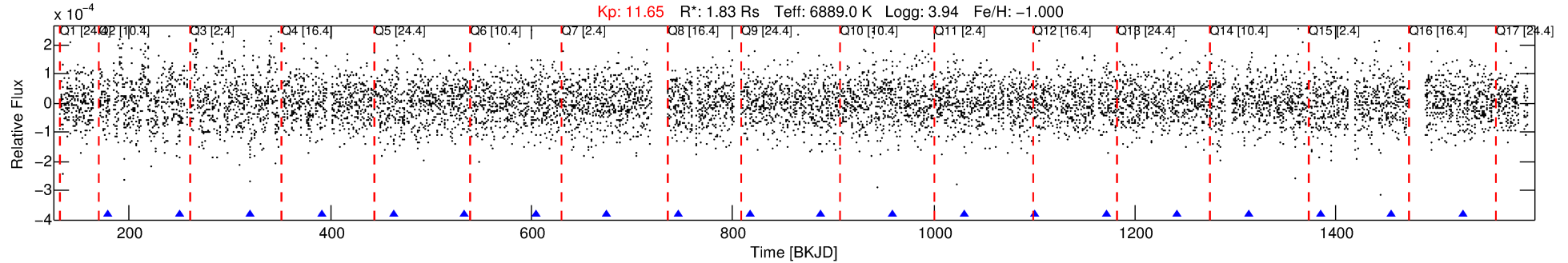
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008715392-02

No Significant Match Found

# DV One-Page Summary

KIC: 8715392 Candidate: 2 of 3 Period: 70.907 d



## DV Fit Results:

Period = 70.90713 [0.00162] d  
Epoch = 178.9318 [0.0203] BKJD  
Rp/R\* = 0.0109 [0.0046]  
a/R\* = 52.82 [125.16]  
b = 0.90 [0.51]  
Seff = 57.89 [43.58]  
Teq = 703 [132] K  
Rp = 2.18 [1.31] Re  
a = 0.3413 [0.1514] AU  
Ag = 907.89 [1060.85] [0.85 $\sigma$ ]  
Teffp = 5969 [1372] K [3.82 $\sigma$ ]

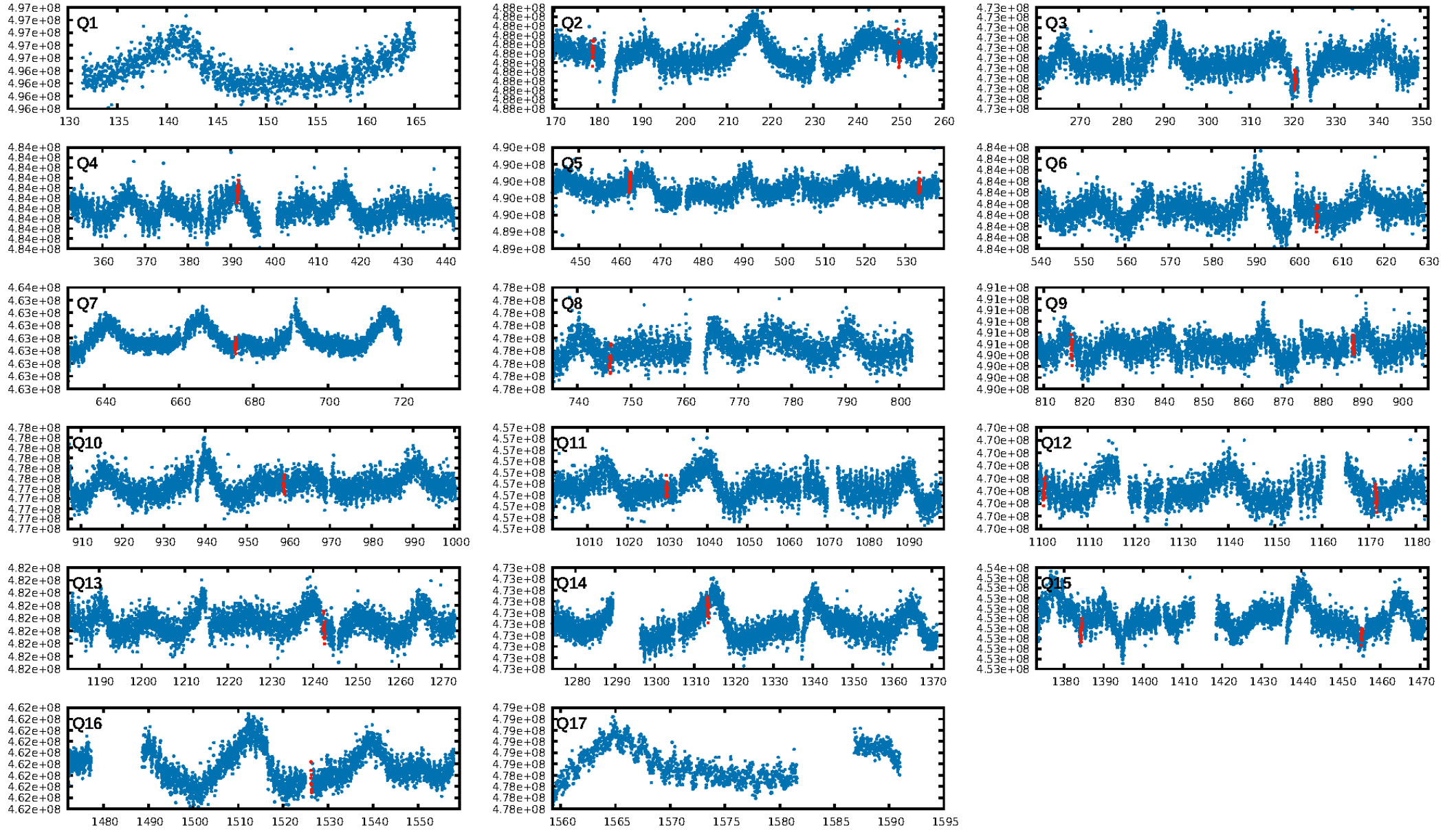
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.03 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.0%  
ModelChiSquareGof-sig: 96.4%  
Bootstrap-pfa: 8.13e-33  
RollingBand-fgt: 1.00 [7/7]  
**GhostDiagnostic-chr: 3.866**  
Centroid-sig: 24.5%  
Centroid-so: 0.930 arcsec [1.00 $\sigma$ ]  
OotOffset-rm: 1.528 arcsec [0.96 $\sigma$ ]  
KicOffset-rm: 1.596 arcsec [0.88 $\sigma$ ]  
OotOffset-st: 1/2/1/1 [5]  
KicOffset-st: 1/2/1/1 [5]  
DiffImageQuality-fgm: 0.00 [0/5]  
DiffImageOverlap-fno: 0.00 [0/12]

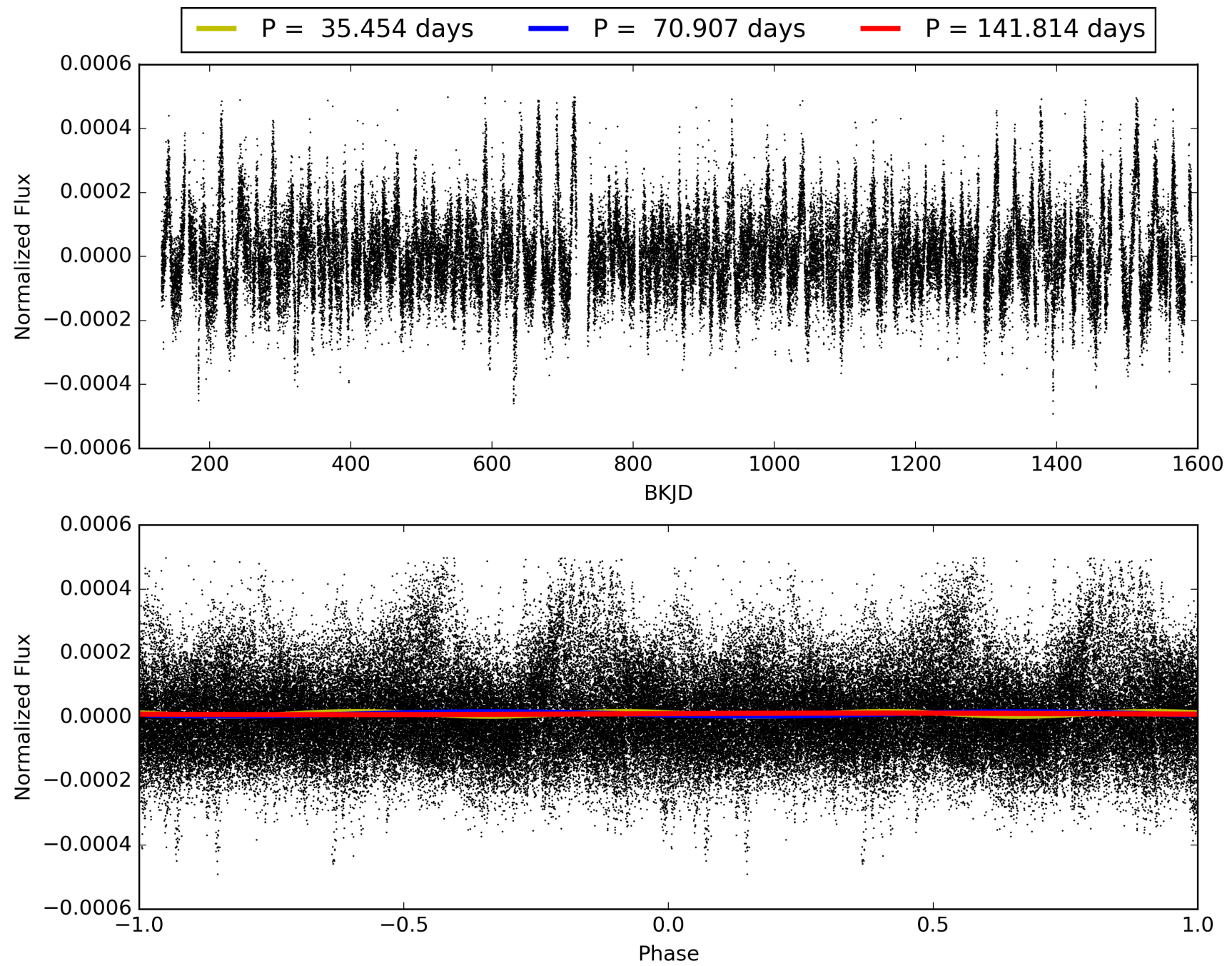
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:24:08 Z

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

# TCE 008715392-02, PDC Light Curves

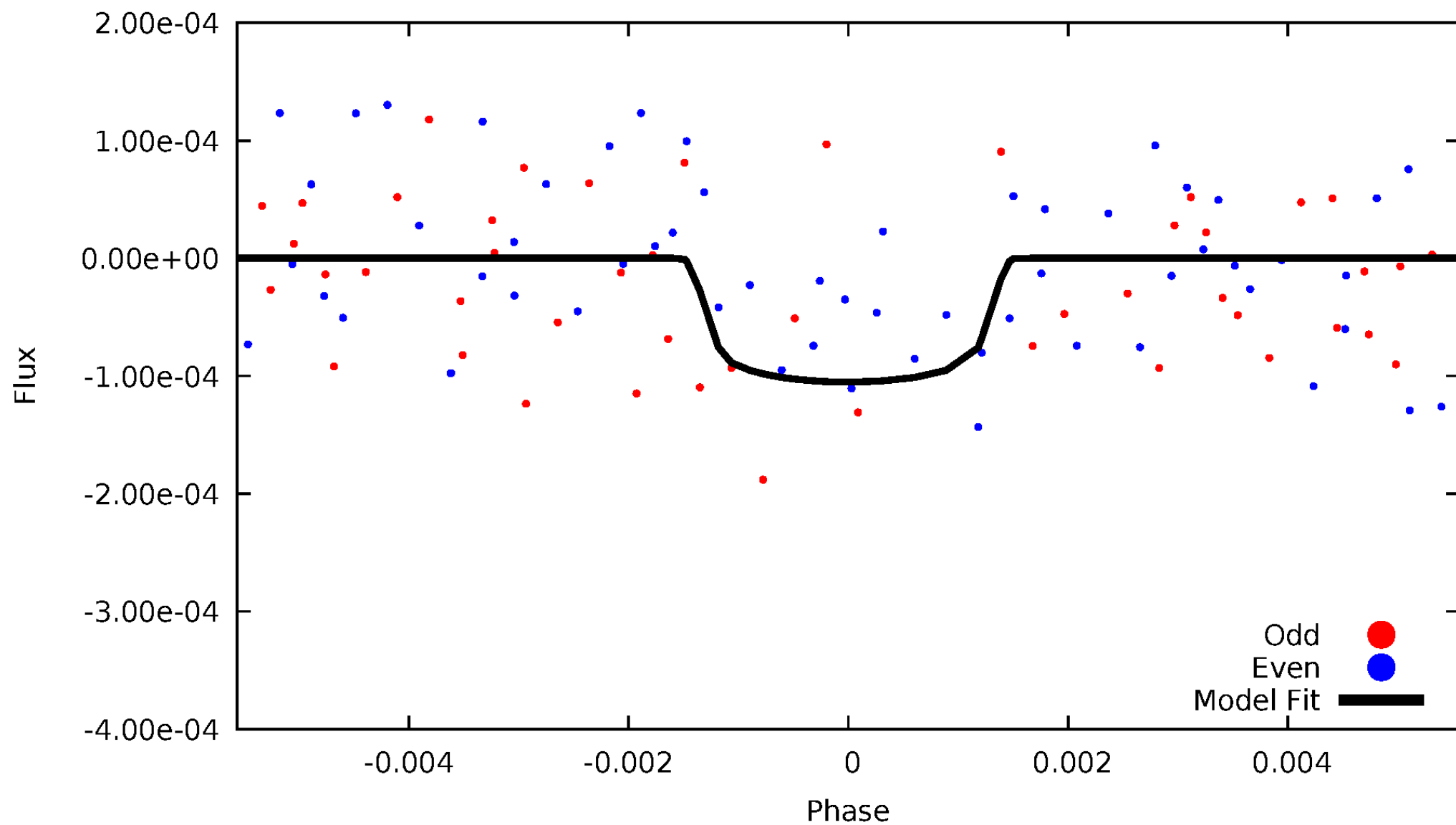


TCE 008715392-02



# DV Odd/Even

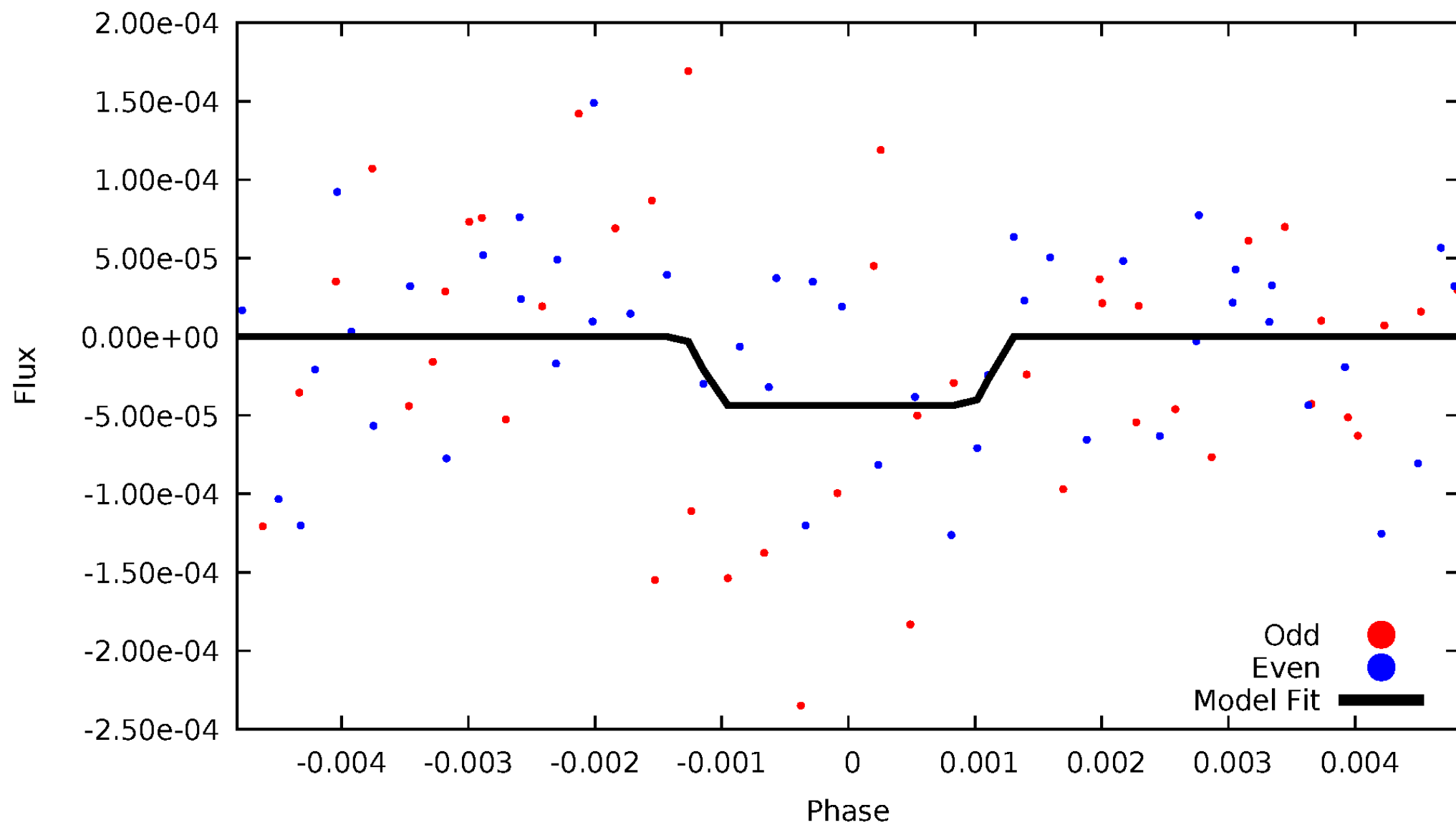
TCE 008715392-02





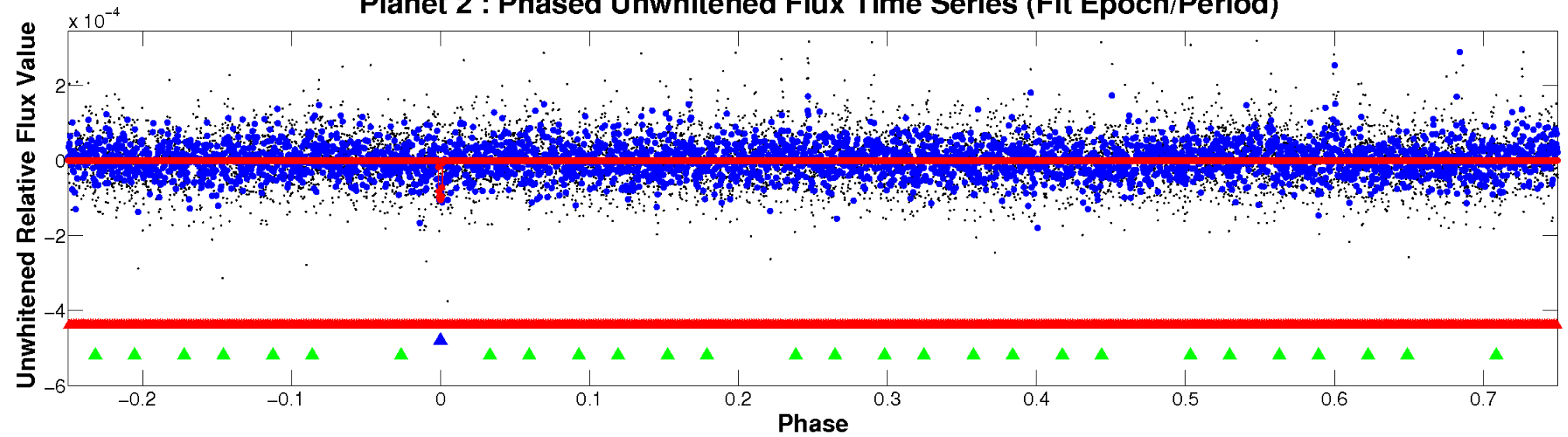
# ALT Odd/Even

TCE 008715392-02

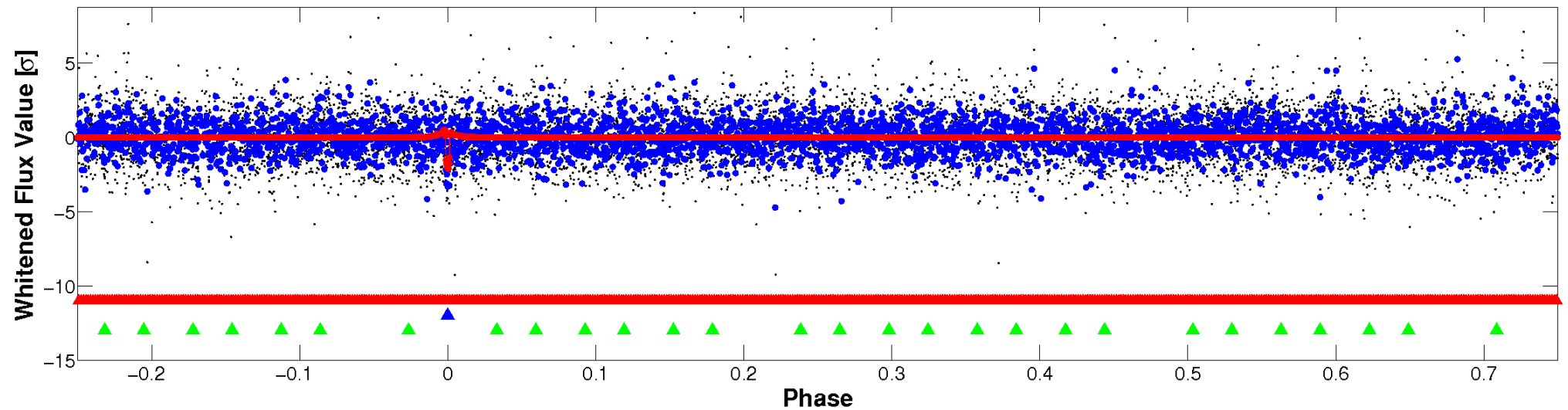


# Non-Whitened Vs. Whitened Light Curve

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

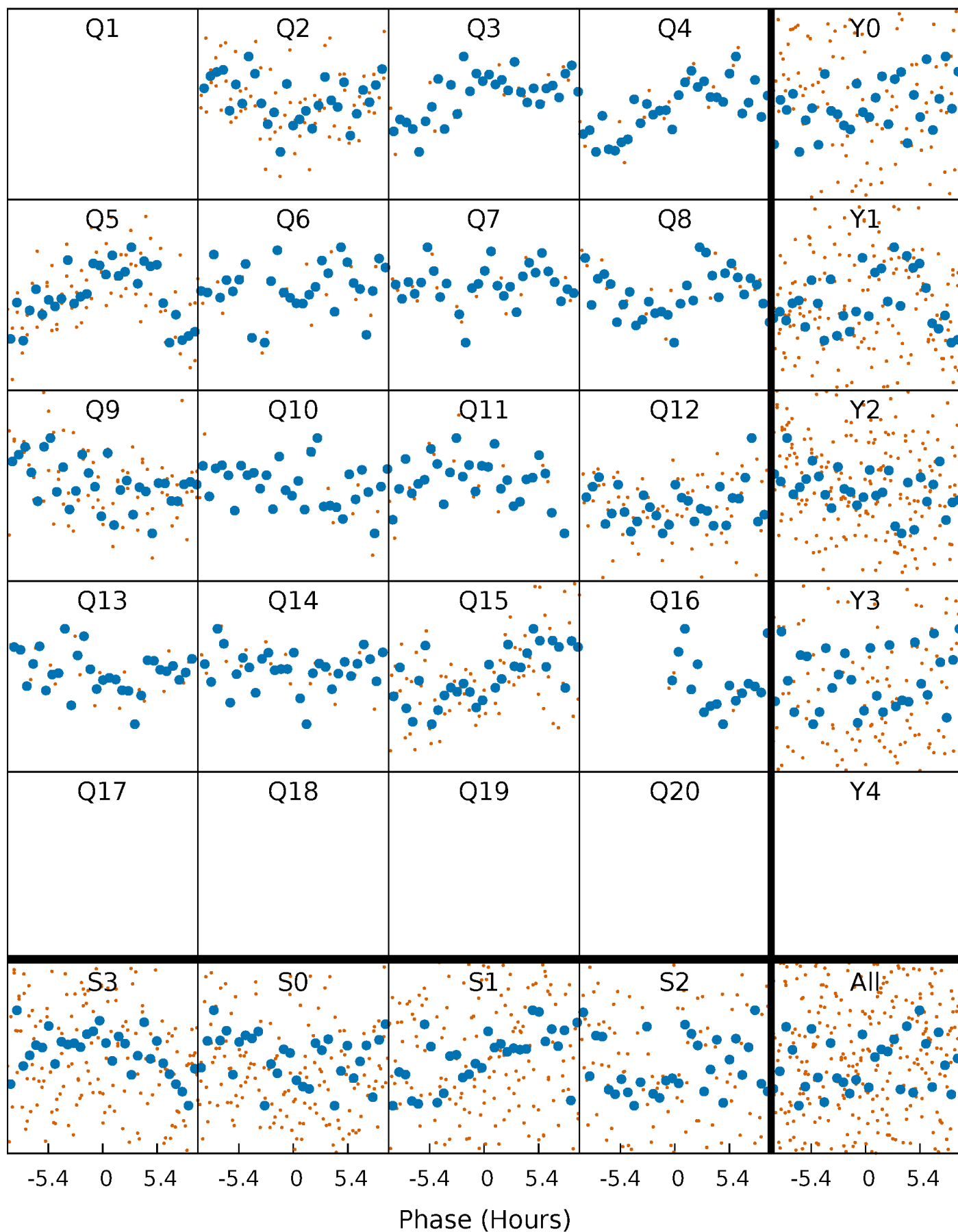


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



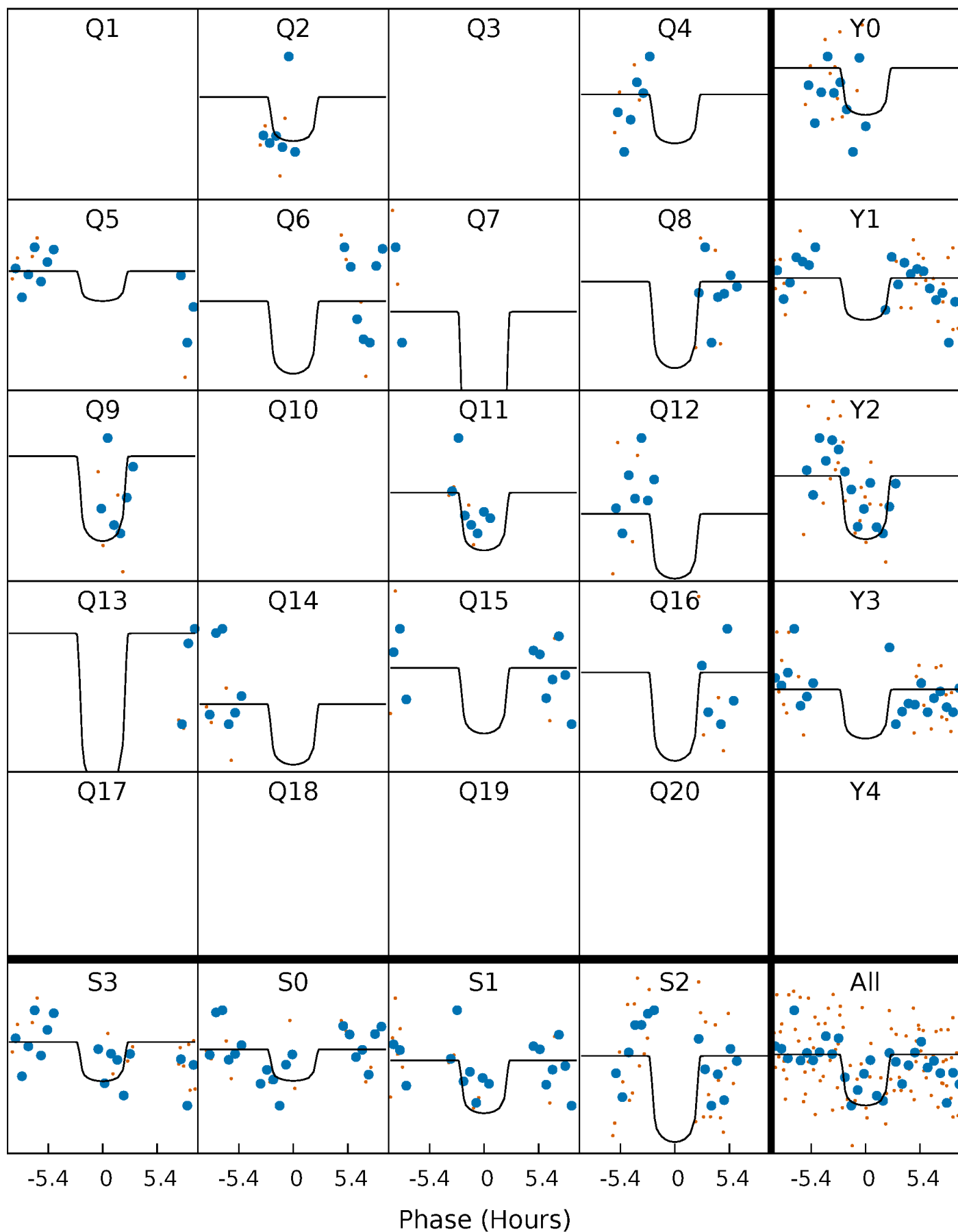
# PDC Quarter-Phased Transit Curves

TCE 008715392-02   P= 70.907126 Days    $T_0=178.931765$  (BKJD)



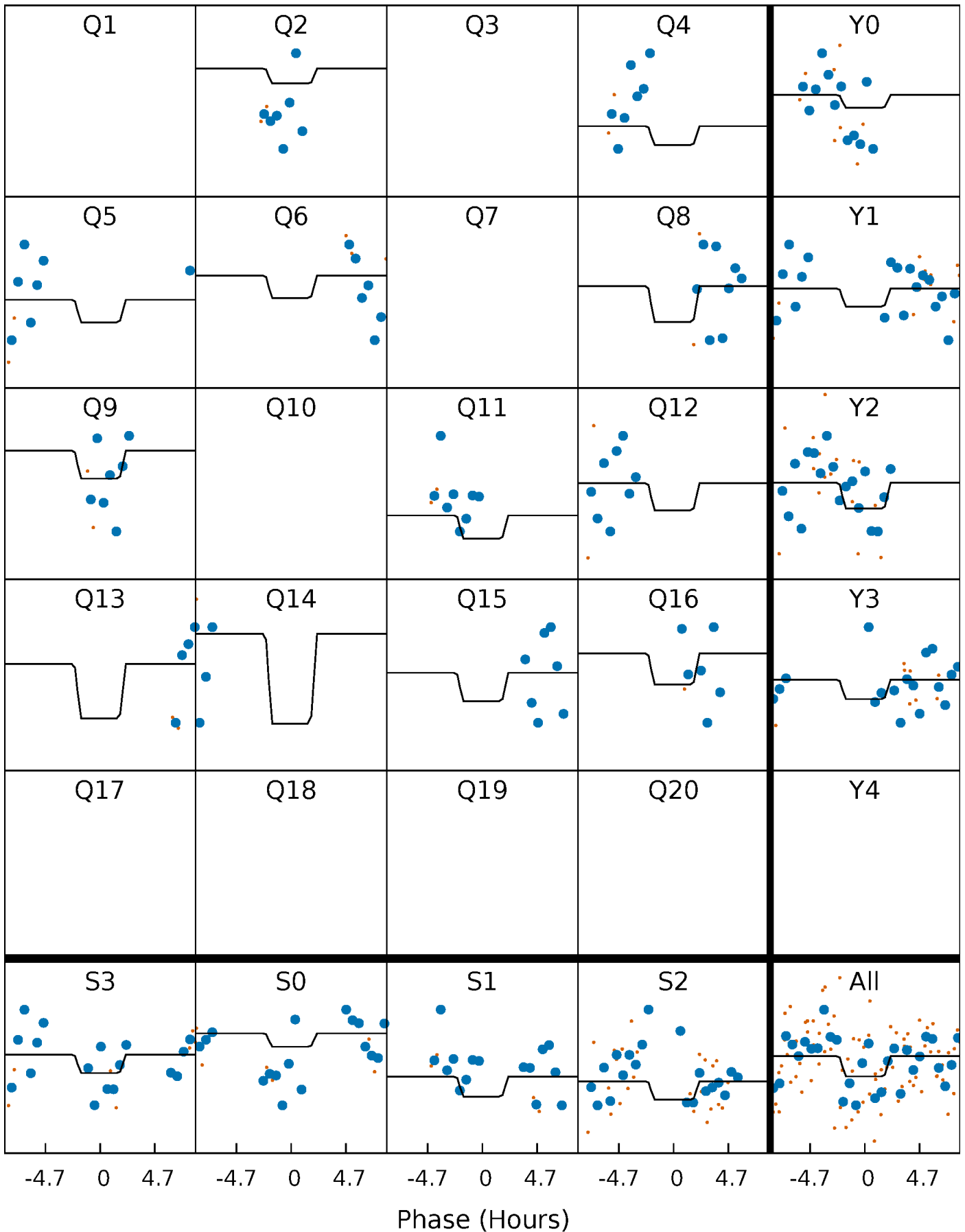
# DV Quarter-Phased Transit Curves

TCE 008715392-02   P= 70.907126 Days    $T_0=178.931765$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

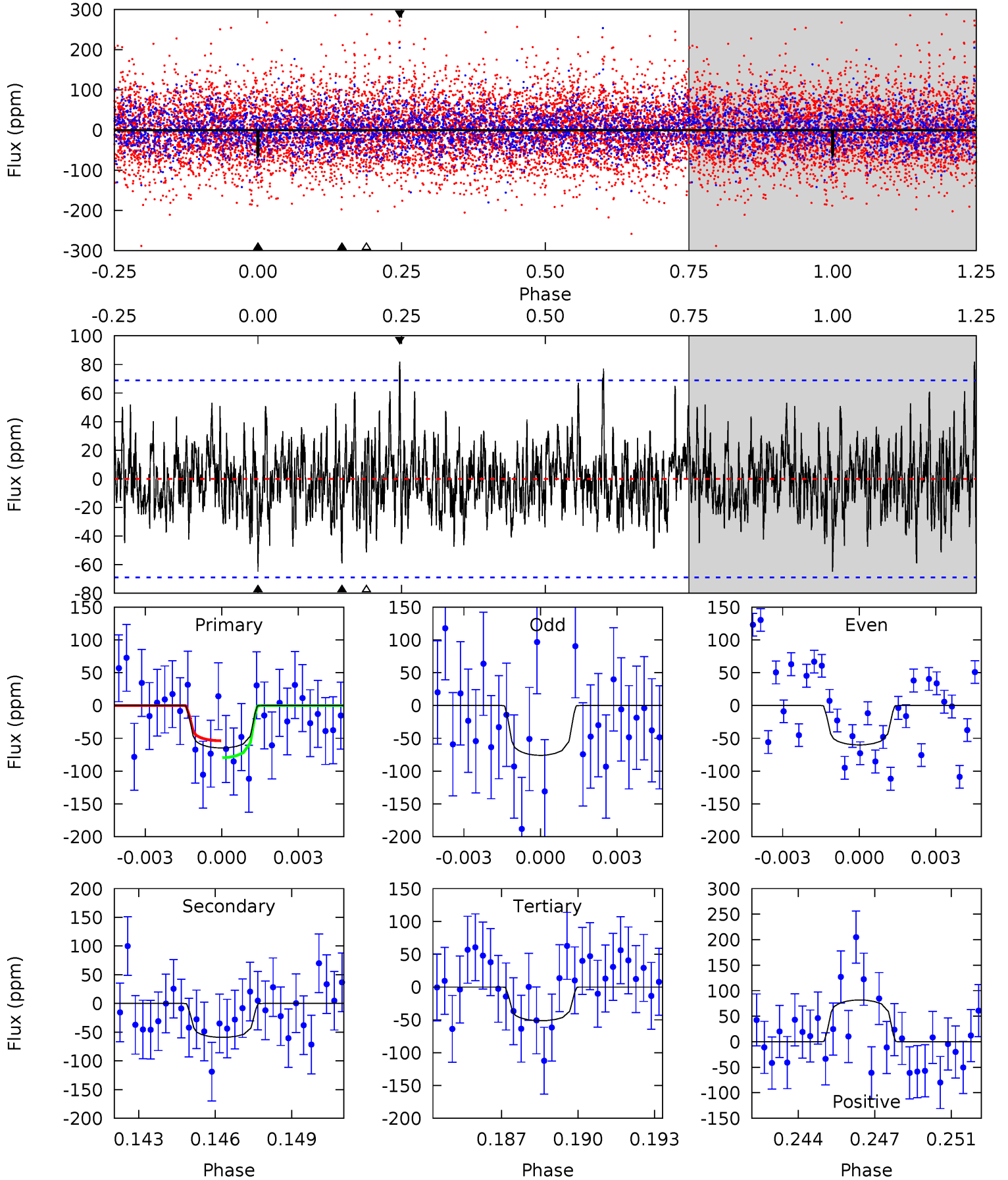
TCE 008715392-02   P= 70.913171 Days    $T_0=178.897329$  (BKJD)



# DV Model-Shift Uniqueness Test

008715392-02,  $P = 70.907126$  Days,  $E = 108.024639$  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
4.93	4.50	3.90	6.23	5.24	2.95	1.44	1.03	-1.30	0.60	-1.73	0.55	1.12	0.56	0.99

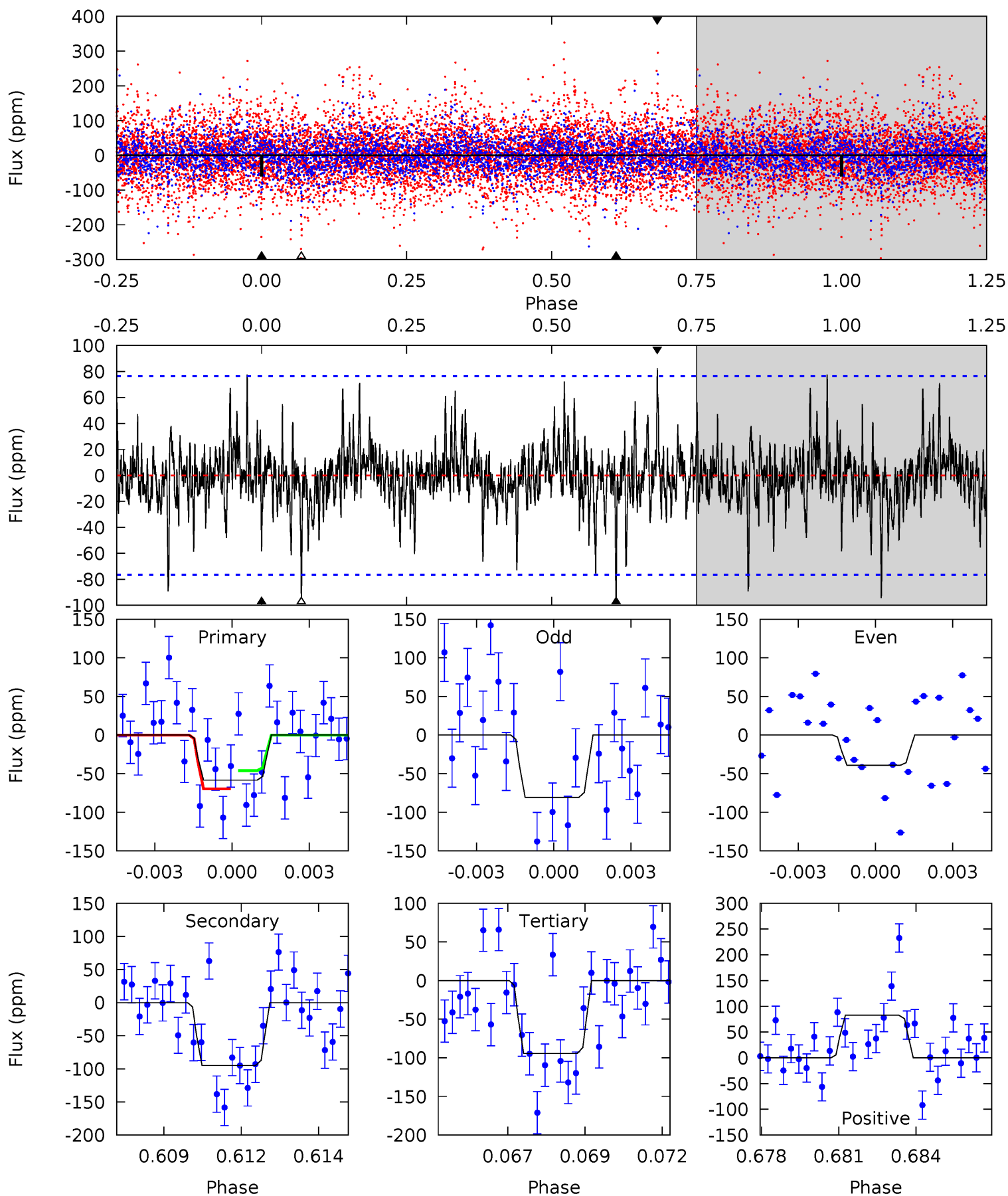




# Alt Model-Shift Uniqueness Test

008715392-02, P = 70.913171 Days, E = 107.984158 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
4.04	6.56	6.52	5.71	5.28	3.02	1.36	-2.49	-1.67	0.04	0.85	1.44	1.67	0.47	0.81



### Stellar Parameters For KIC 008715392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6889^{+215}_{-263}$	$3.937^{+0.443}_{-0.148}$	$-1.000^{+0.300}_{-0.300}$	$1.828^{+0.420}_{-0.781}$	$1.054^{+0.119}_{-0.145}$	$0.243^{+0.989}_{-0.104}$
	+3%/-4%	+11%/-4%	+30%/-30%	+23%/-43%	+11%/-14%	+407%/-43%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008715392-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-59 \pm 13$	$1.95^{+1.05}_{-0.85}$	$964^{+77}_{-119}$	$5747^{+1912}_{-890}$	$977^{+2079}_{-590}$
Alt.	$-95 \pm 14$	$1.24^{+0.98}_{-0.72}$	$960^{+79}_{-116}$	$8432^{+7990}_{-2182}$	$3852^{+17878}_{-2610}$

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

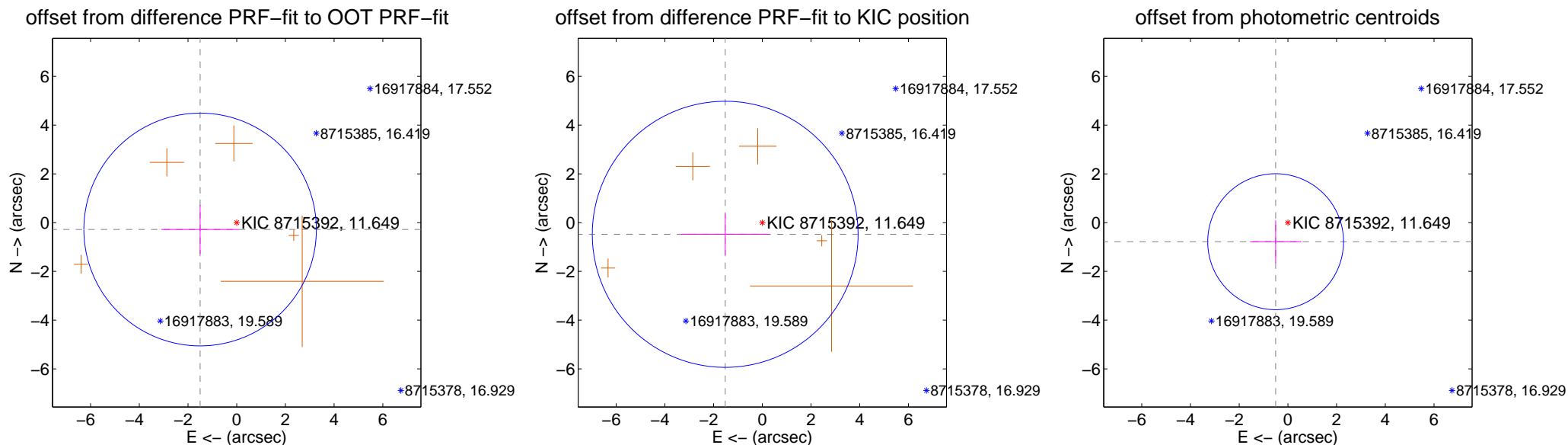
## DV Centroid Data

Supplemental centroid analysis for 008715392-02. **Kepler magnitude: 11.65.** Transit SNR 8.07

**There are 0 quarters with good PRF difference image offsets**

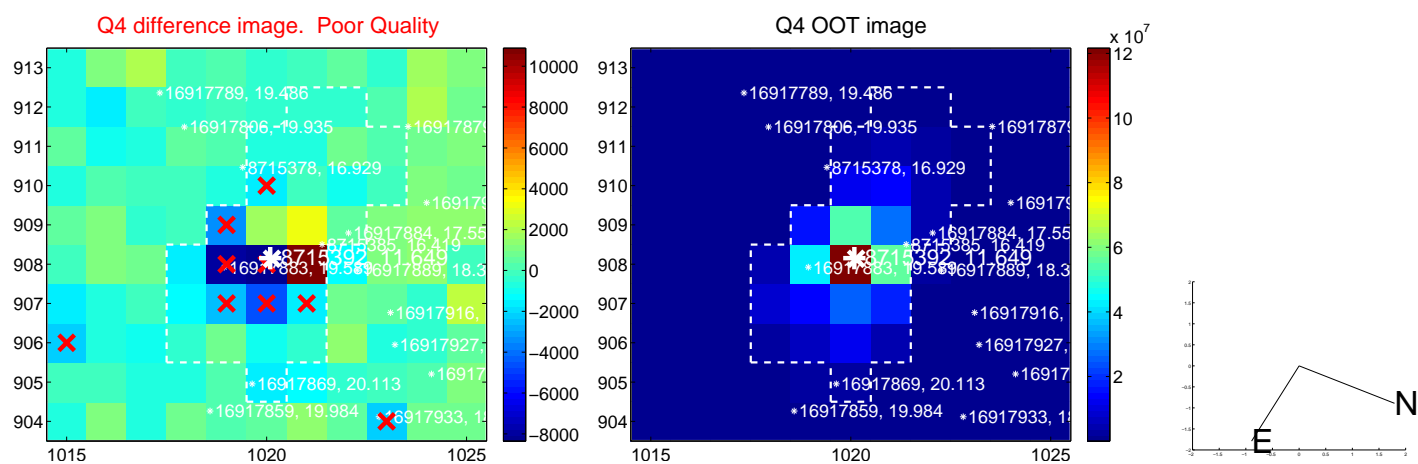
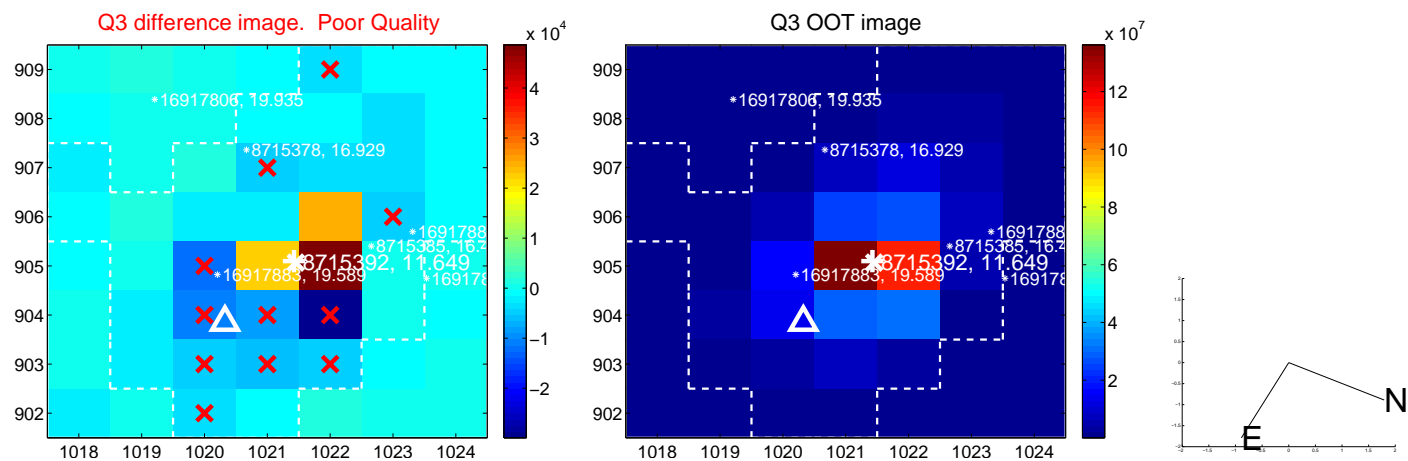
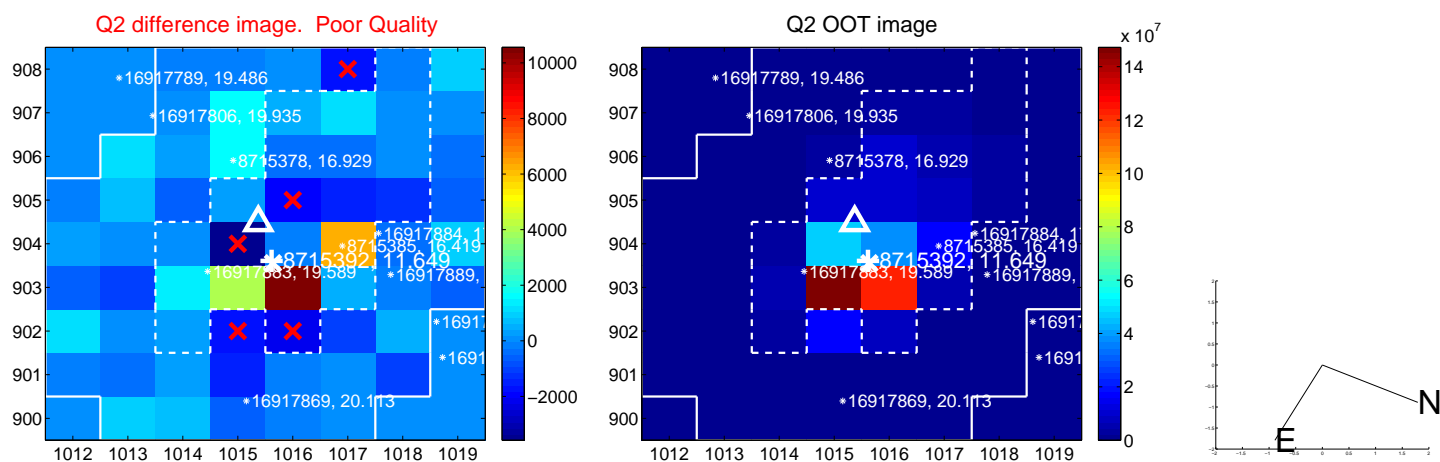
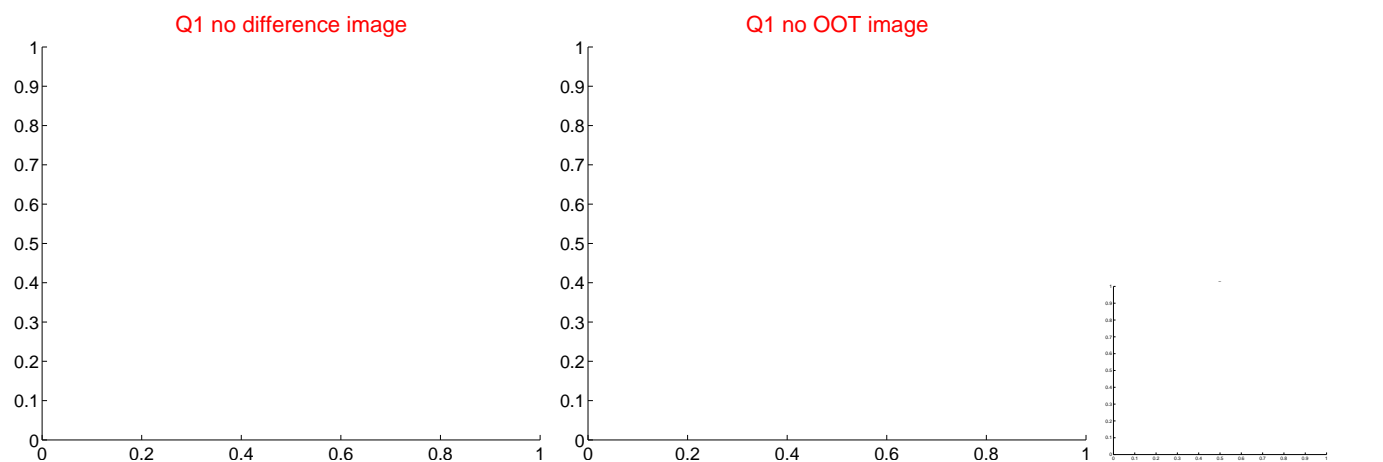
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.528 \pm 1.591$	0.96	$1.502 \pm 1.594$	$-0.282 \pm 1.005$
PRF-fit source offset from KIC position	$1.596 \pm 1.819$	0.88	$1.523 \pm 1.826$	$-0.479 \pm 0.849$
photometric centroid source offset	$0.93 \pm 0.93$	1.00	$0.50 \pm 1.06$	$-0.78 \pm 0.87$

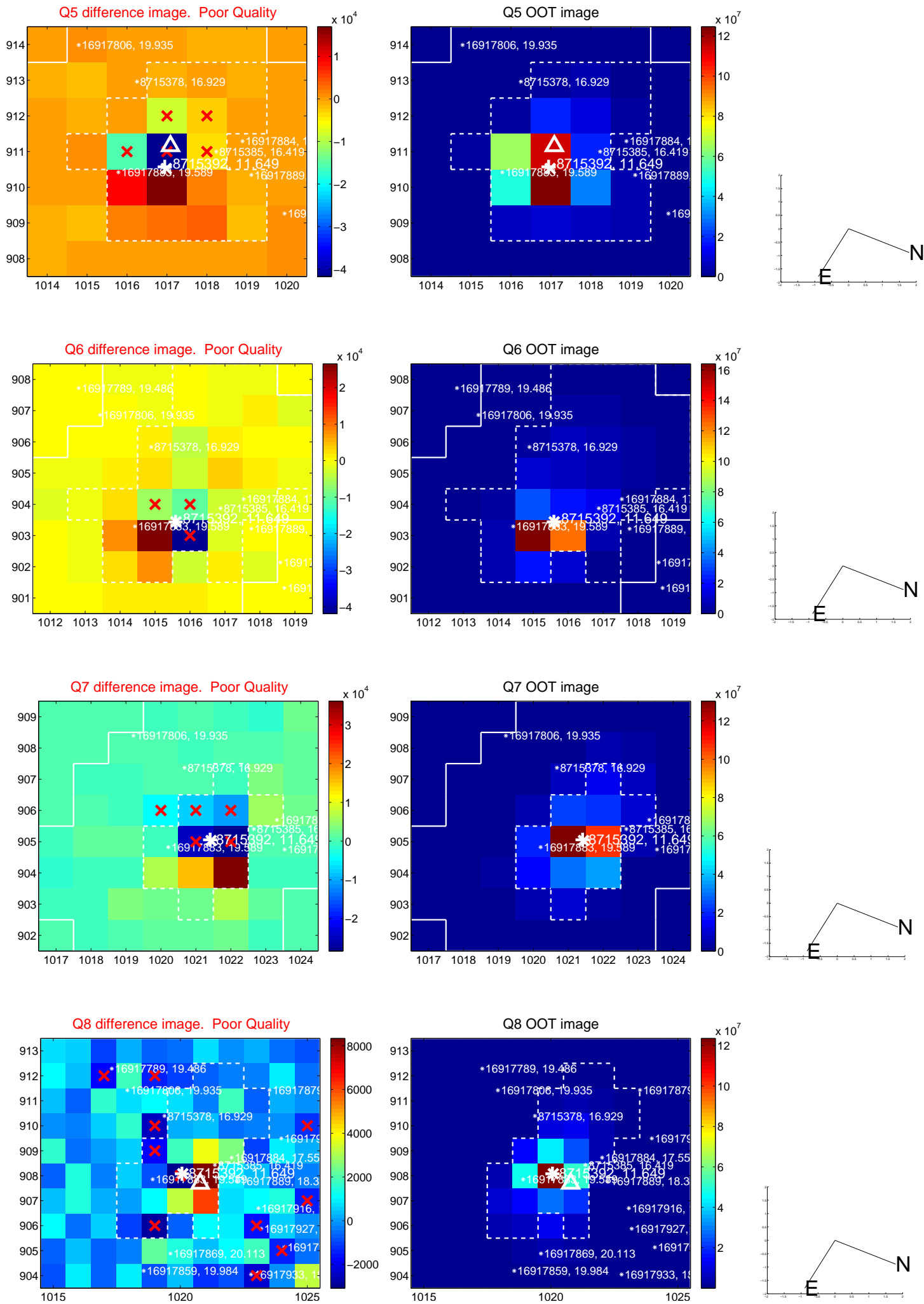


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

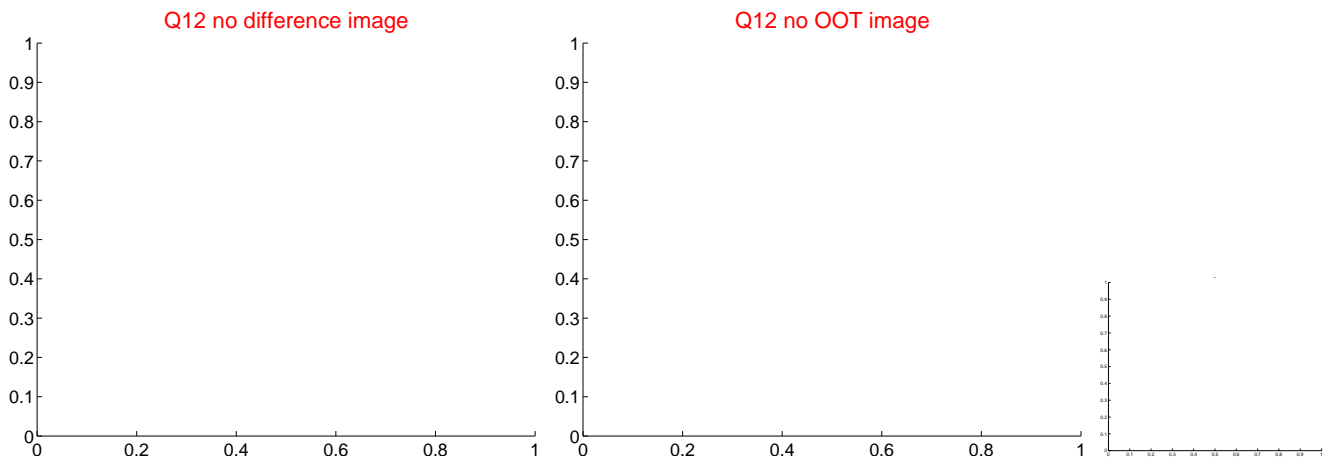
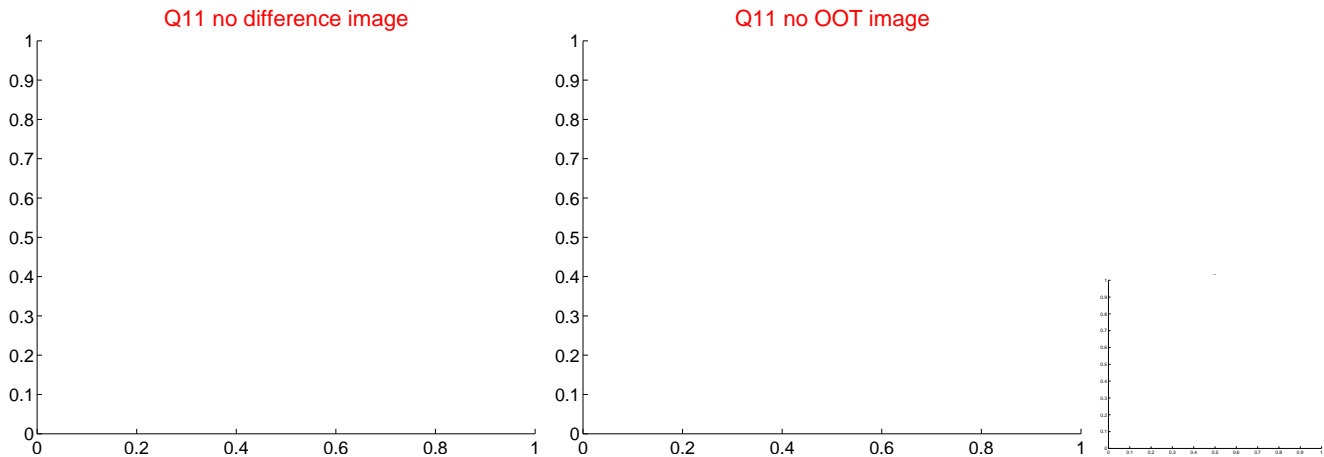
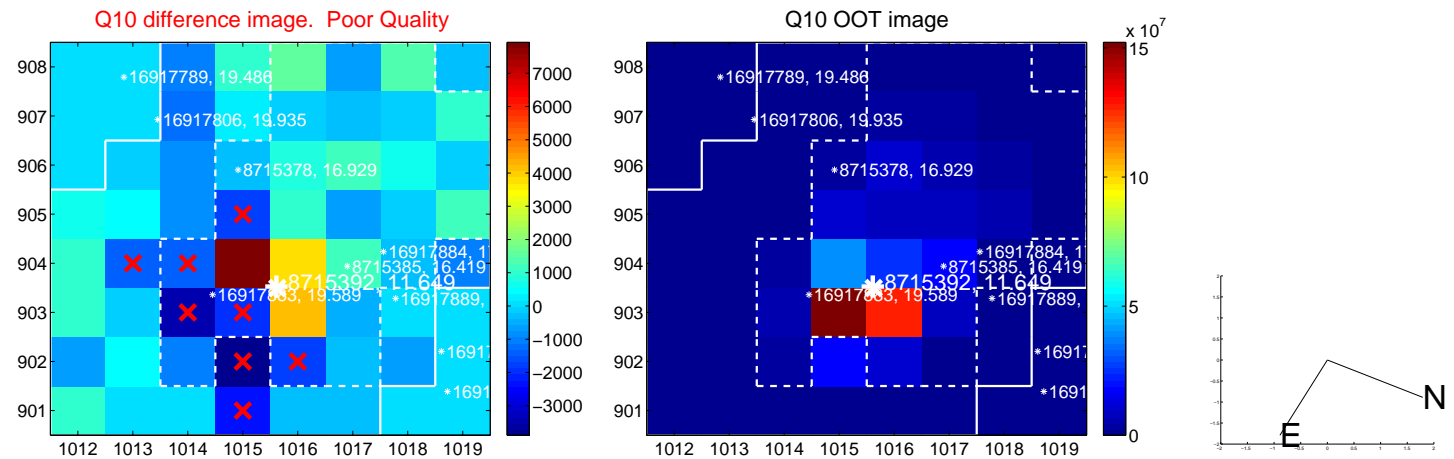
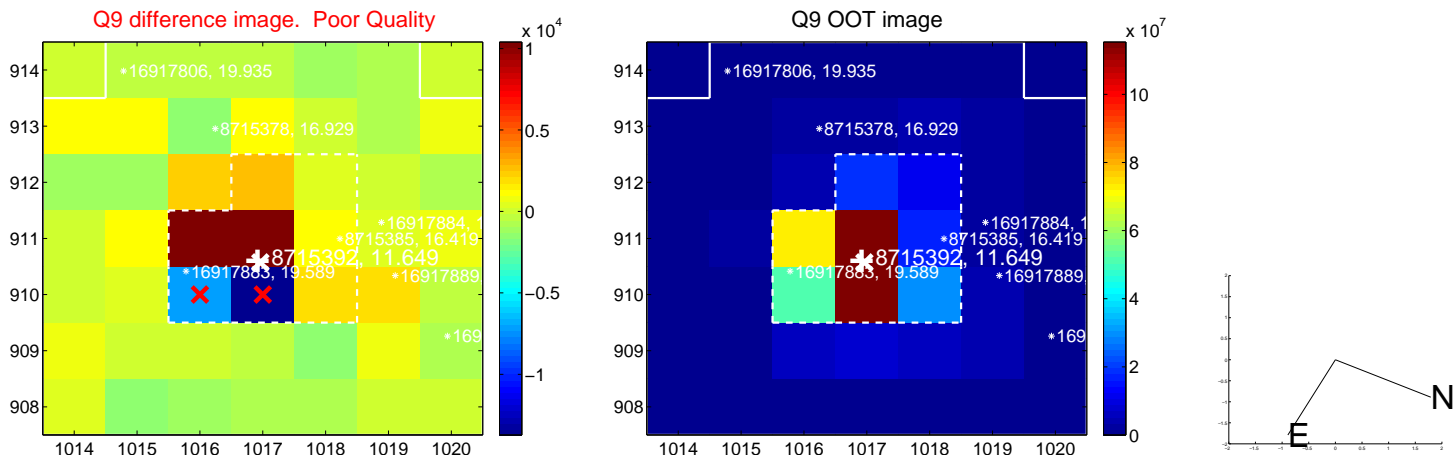
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

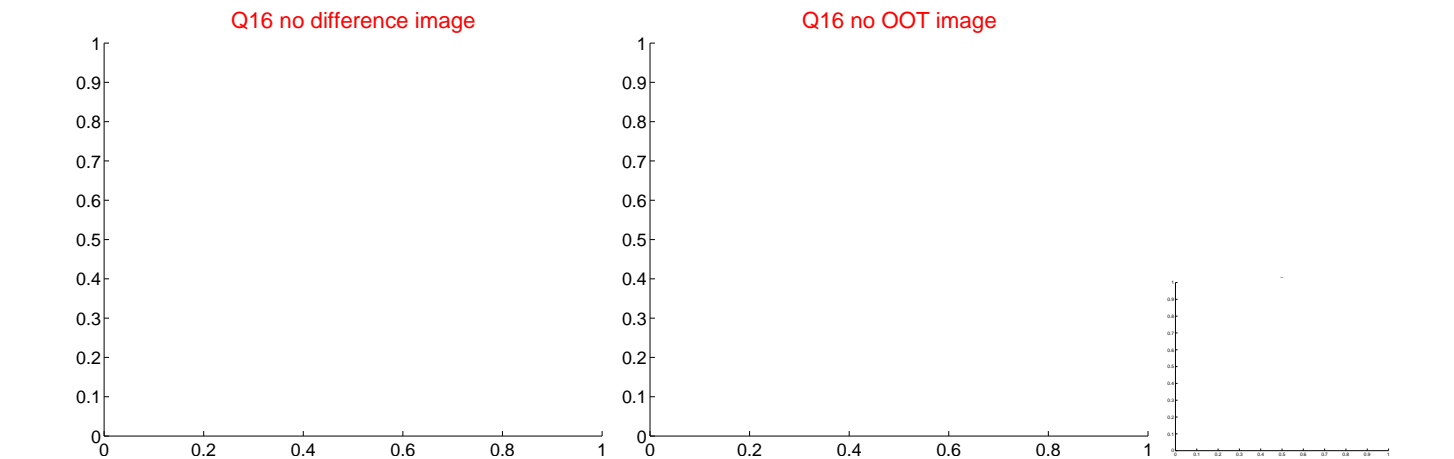
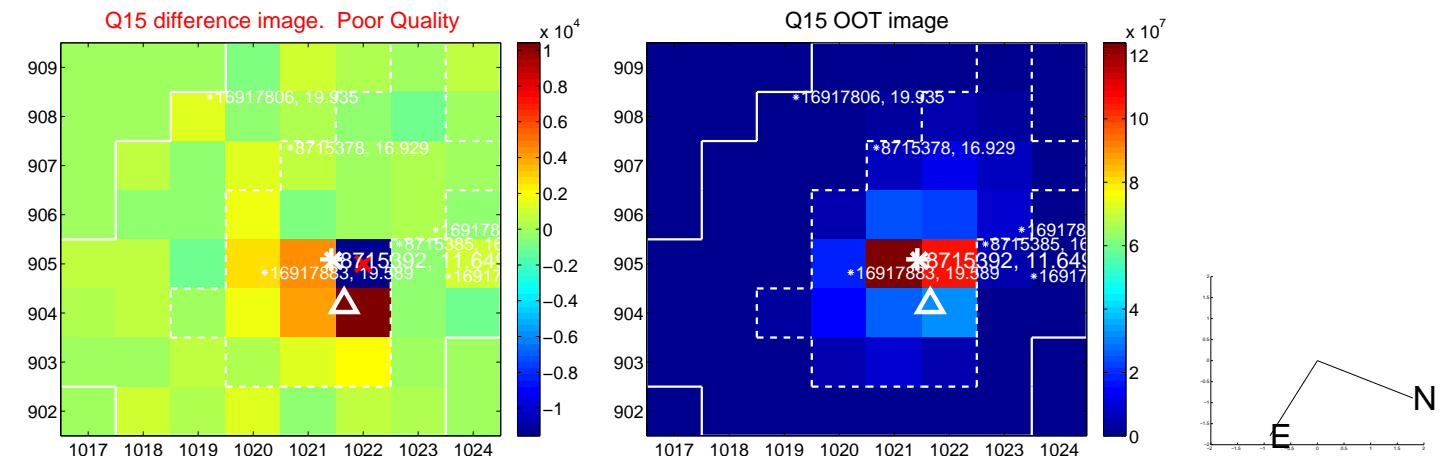
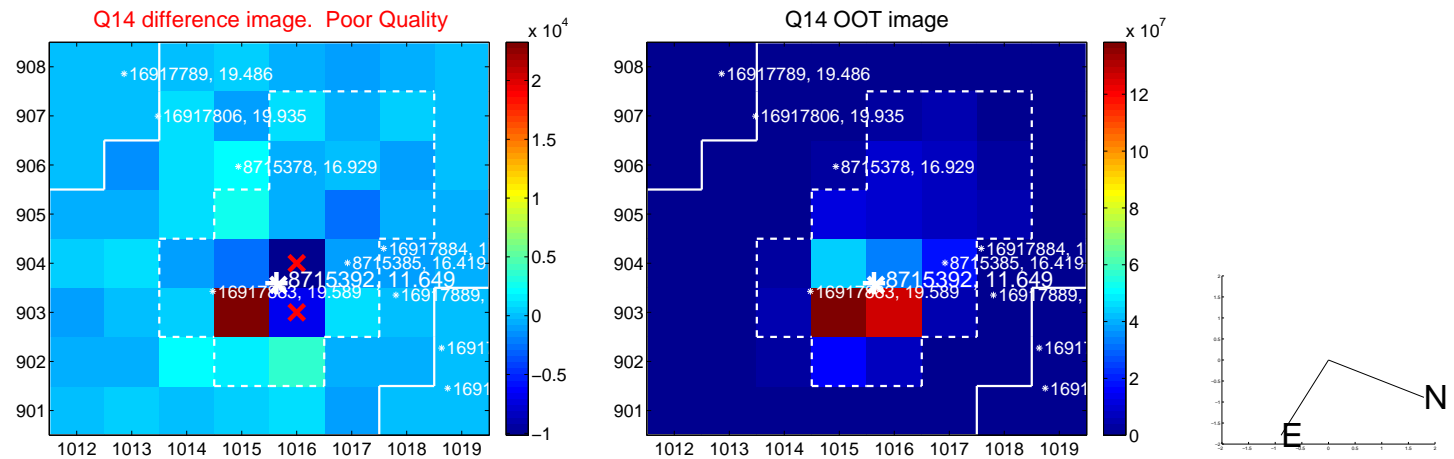
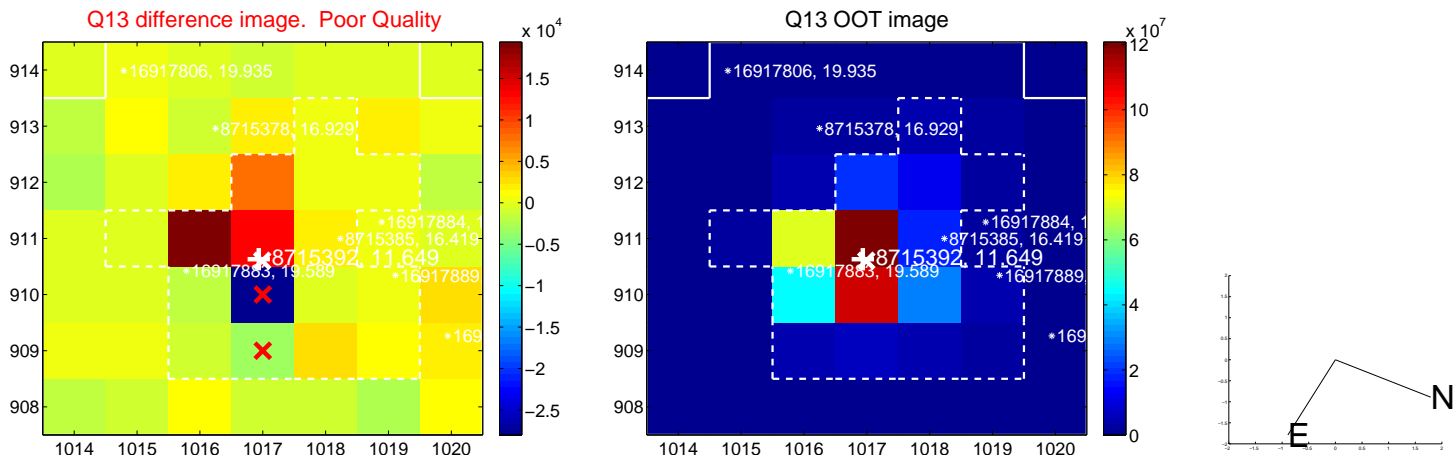


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

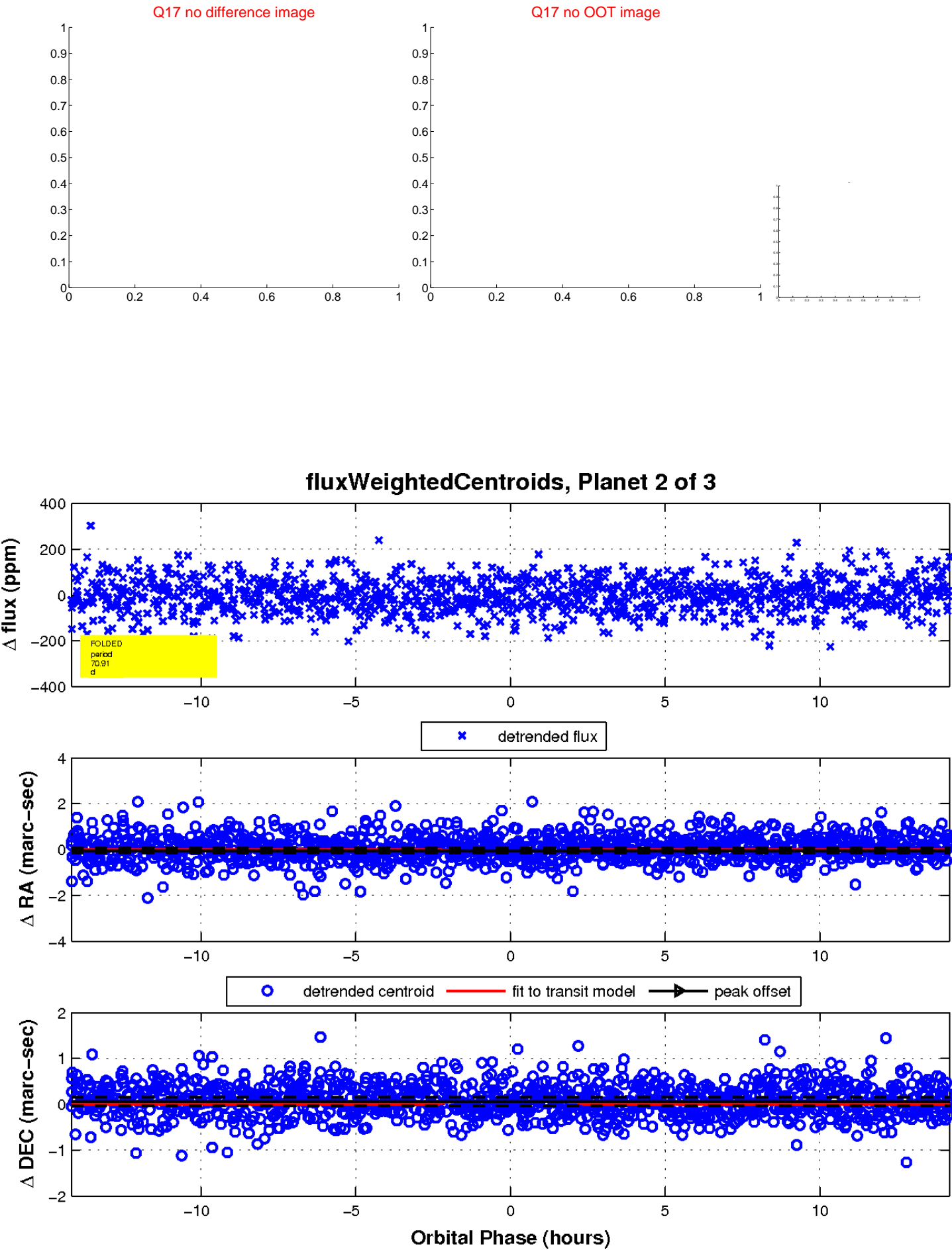




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

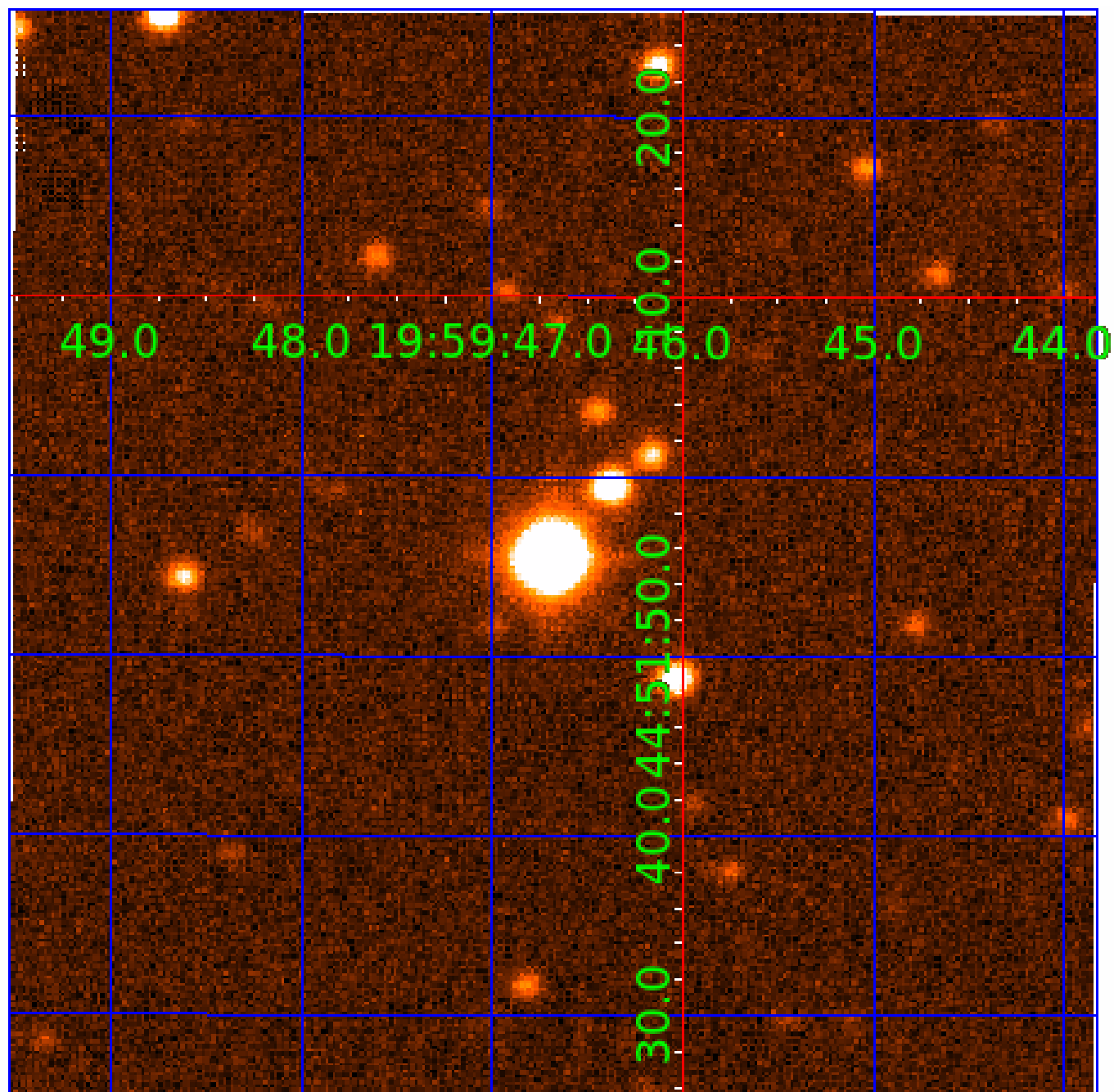


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008715392

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008715392-01	OBS	No	1.253992	132.524063	11.5	8.468	10.2	11.8	1.83	6889	0.65	12563.48
008715392-02	OBS	No	70.907126	178.931765	105.1	4.734	14.2	8.1	1.83	6889	2.18	57.89
008715392-03	OBS	No	52.123137	137.622174	130.2	1.798	10.0	9.4	1.83	6889	2.39	87.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008715392-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008715392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
008715392-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

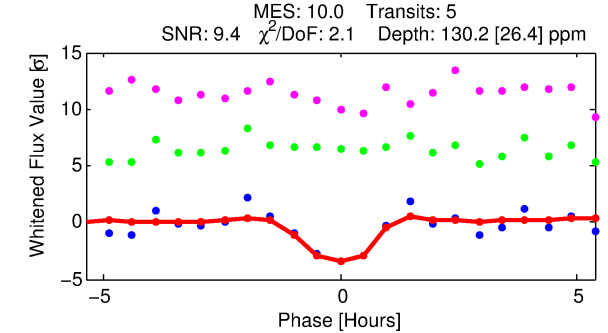
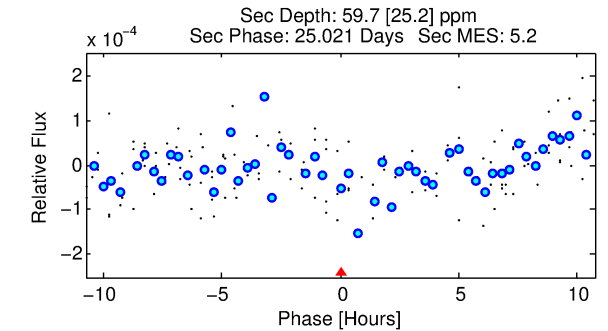
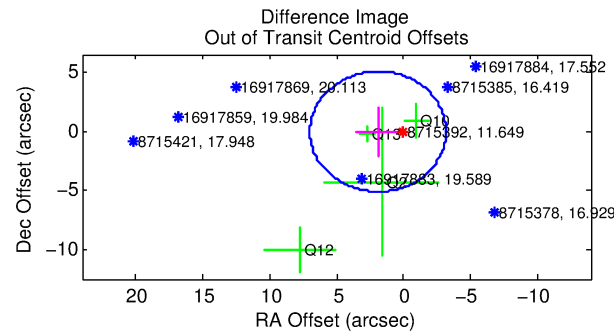
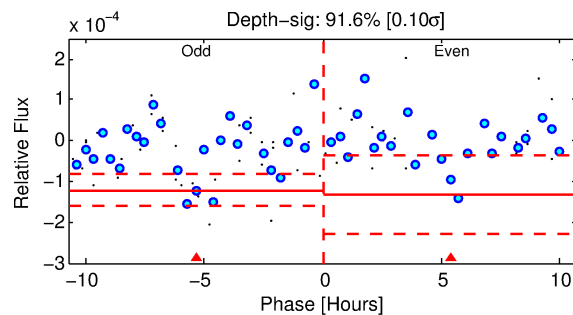
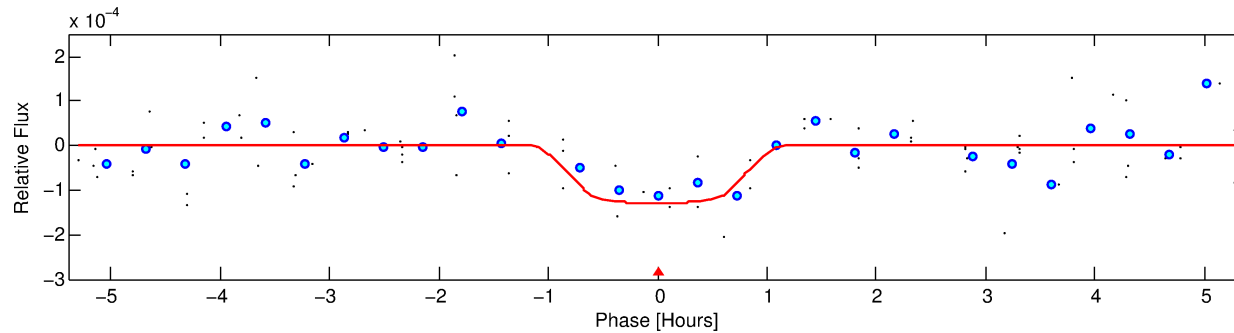
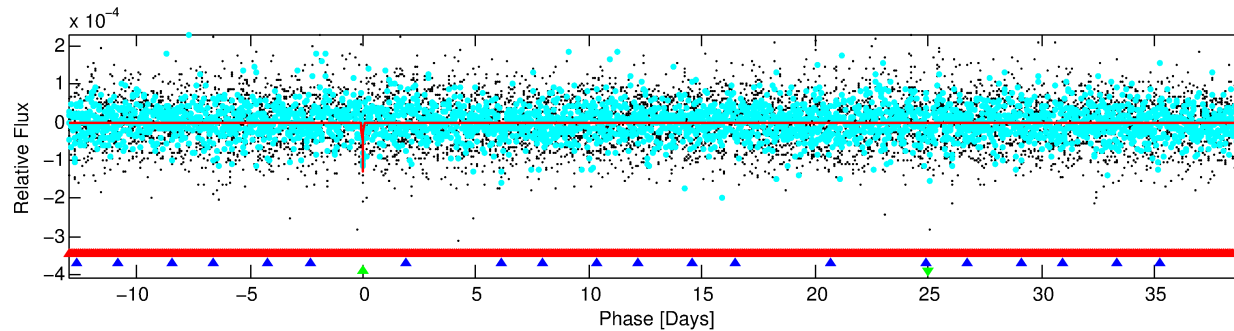
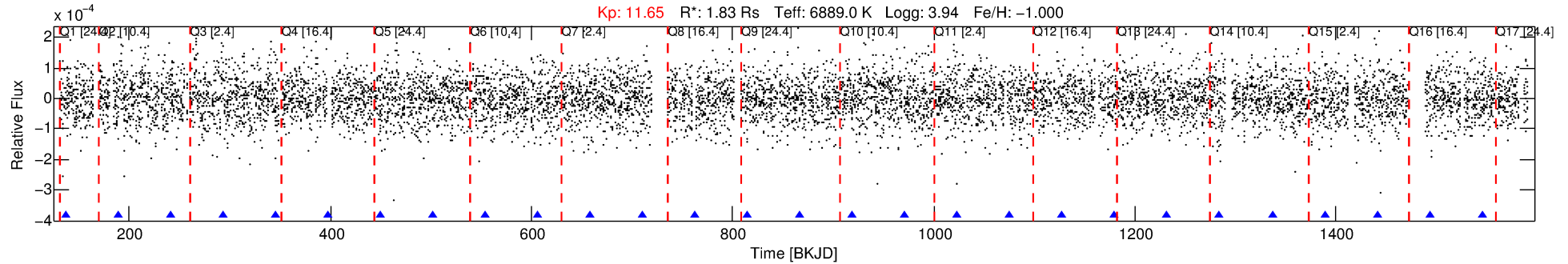
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008715392-03

No Significant Match Found

# DV One-Page Summary

KIC: 8715392 Candidate: 3 of 3 Period: 52.123 d



## DV Fit Results:

Period = 52.12314 [0.00061] d  
Epoch = 137.6222 [0.0095] BKJD  
Rp/R\* = 0.0120 [0.0126]  
a/R\* = 111.51 [705.61]  
b = 0.88 [1.66]  
Seff = 87.26 [65.70]  
Teq = 779 [147] K  
Rp = 2.39 [2.71] Re  
a = 0.2780 [0.1233] AU  
Ag = 443.26 [1003.93] [0.44σ]  
Teffp = 5529 [2968] K [1.60σ]

## DV Diagnostic Results:

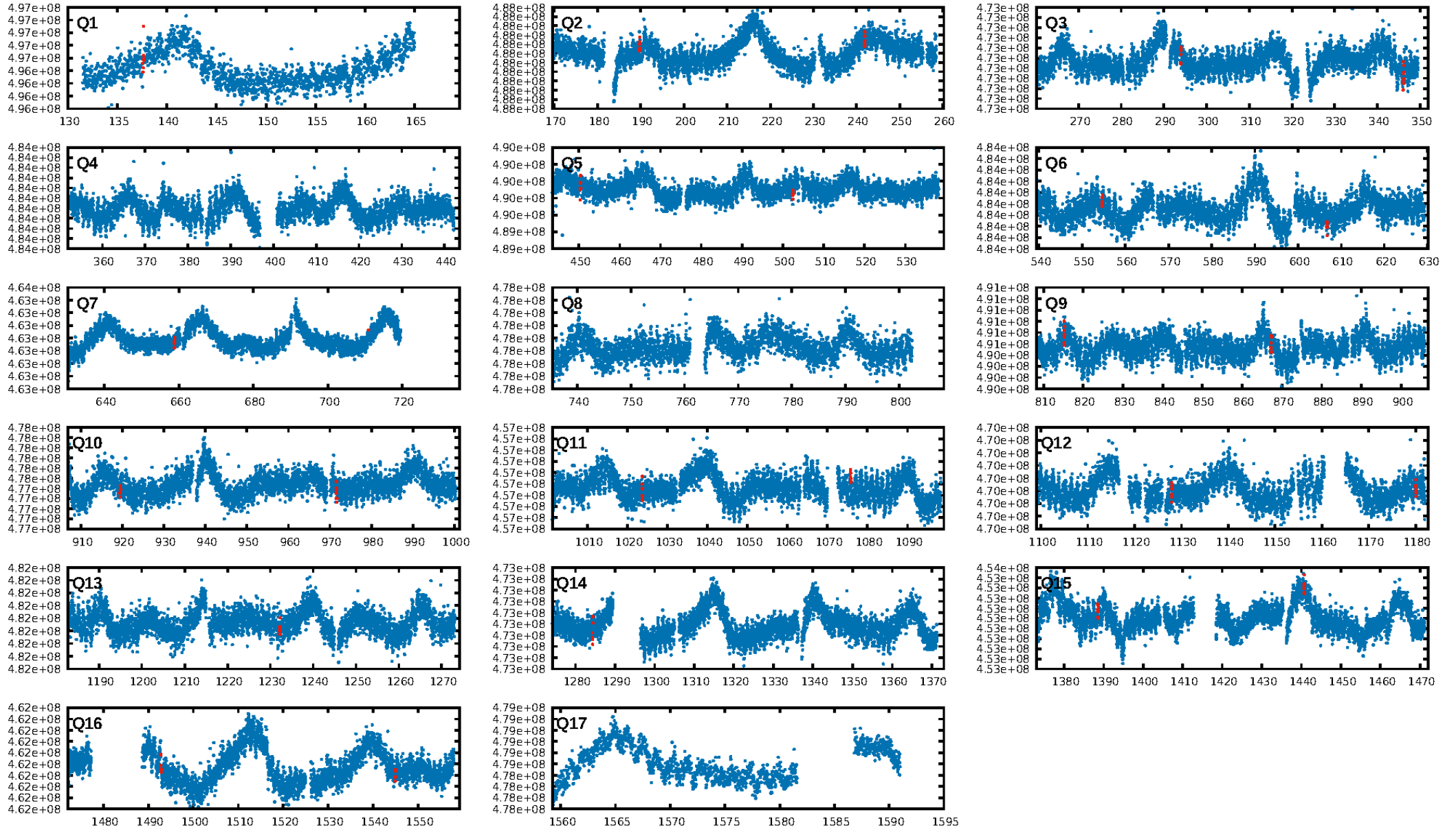
ShortPeriod-sig: 100.0% [141.03σ]  
LongPeriod-sig: 100.0% [89.03σ]  
ModelChiSquare2-sig: 6.4%  
ModelChiSquareGof-sig: 98.8%  
**Bootstrap-pfa: 6.05e-10**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.455  
Centroid-sig: 5.7%  
Centroid-so: 1.676 arcsec [1.53σ]  
OotOffset-rm: 1.913 arcsec [1.13σ]  
KicOffset-rm: 1.912 arcsec [1.05σ]  
OotOffset-st: 2/0/1/1 [4]  
KicOffset-st: 2/0/1/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.64 [9/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:24:11 Z

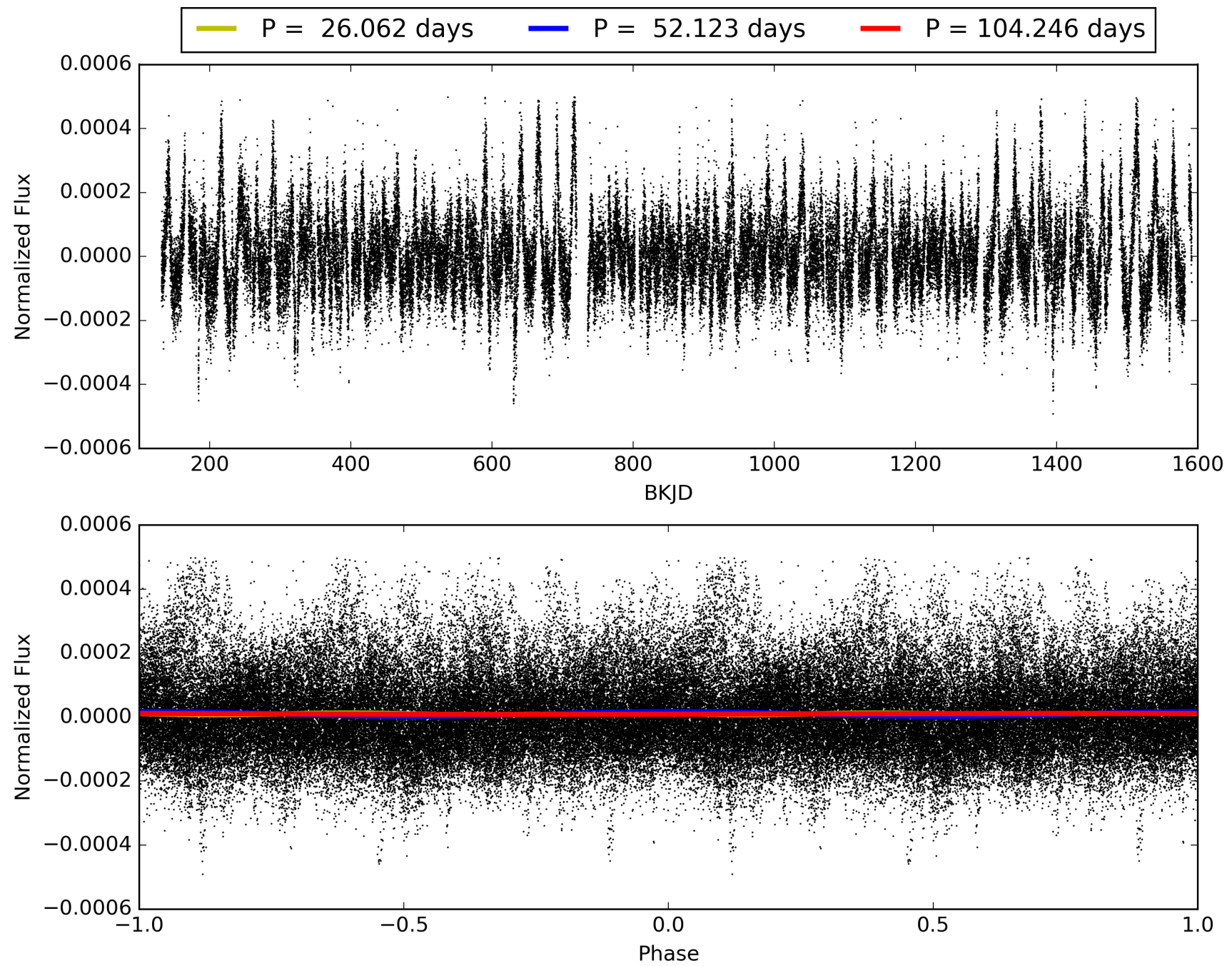
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008715392-03, PDC Light Curves

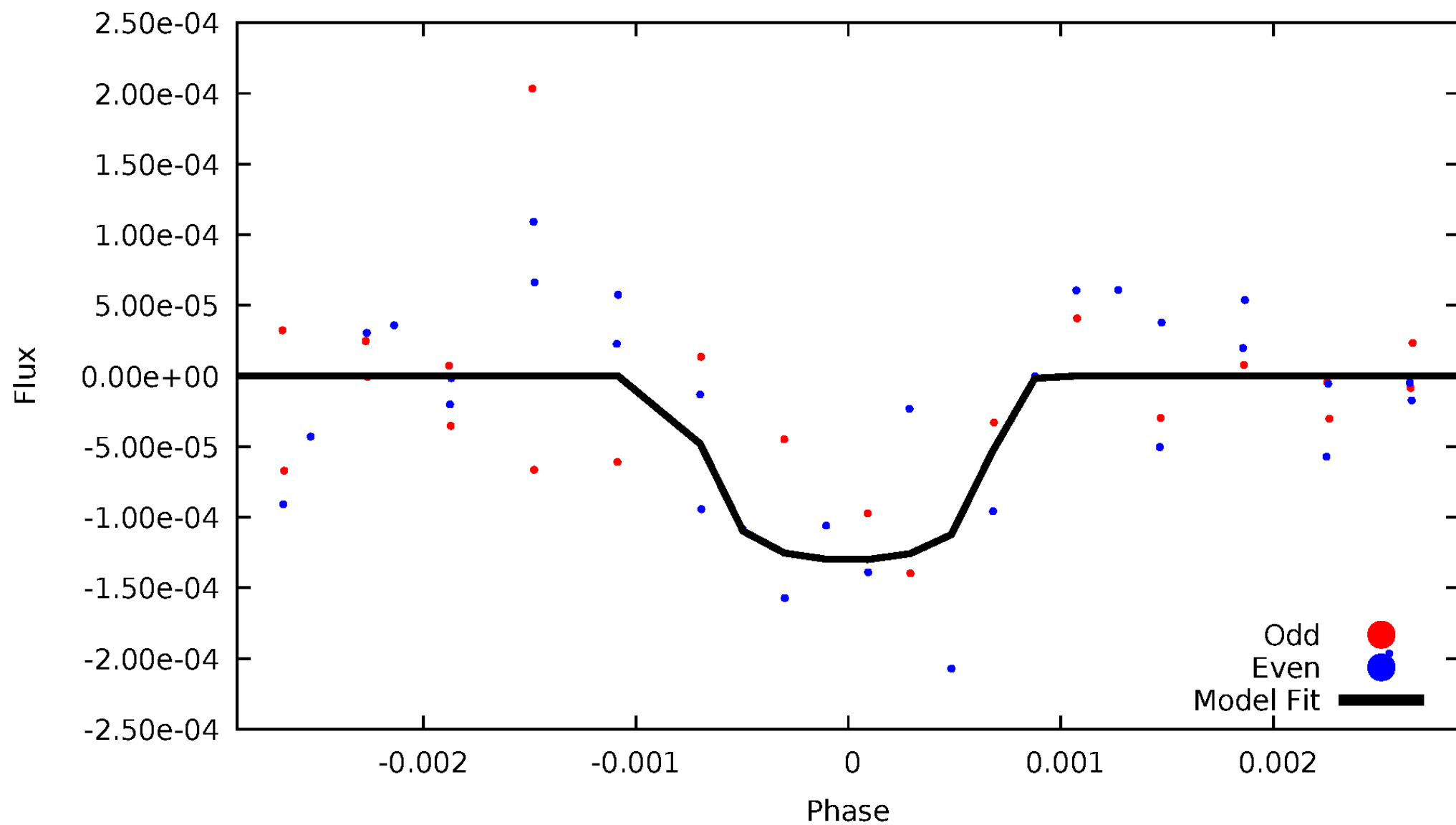


TCE 008715392-03



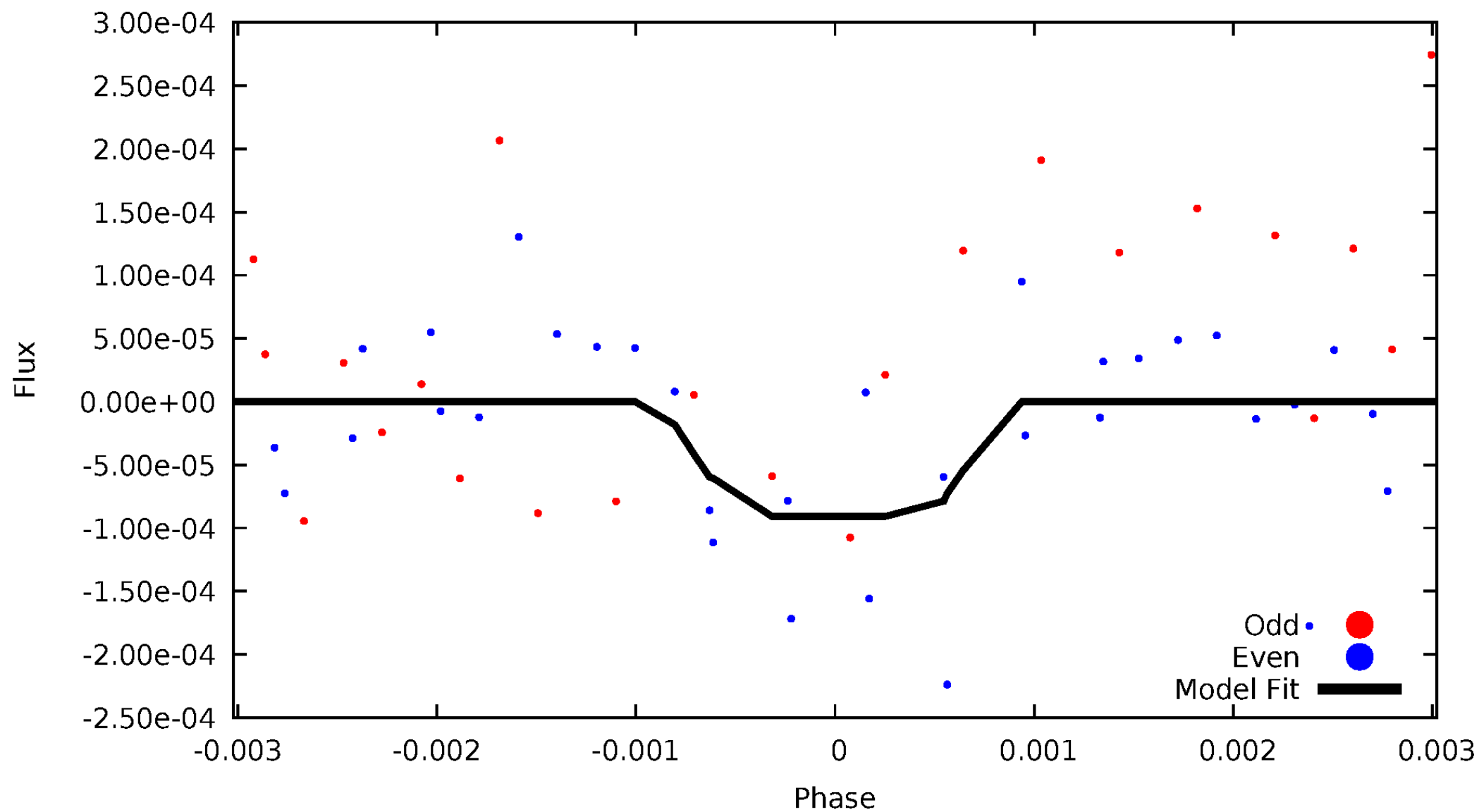
DV Odd/Even

TCE 008715392-03



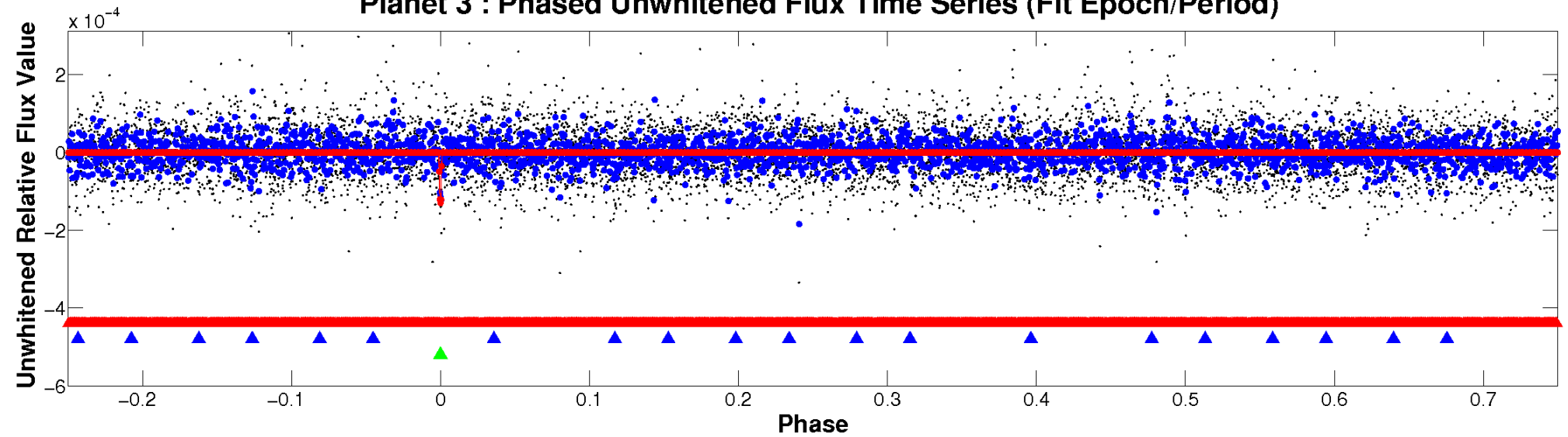
# ALT Odd/Even

TCE 008715392-03

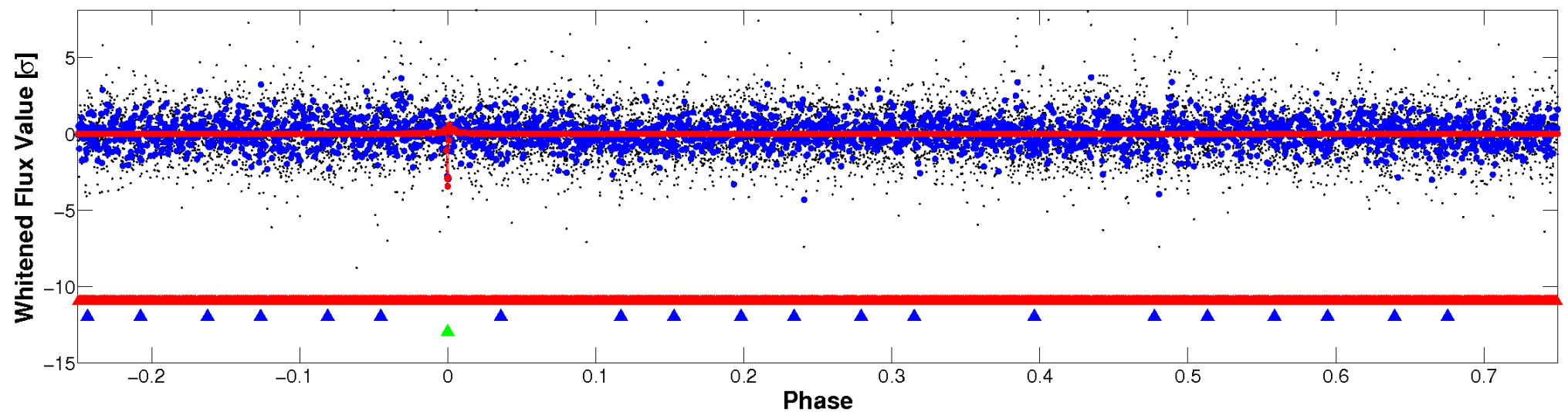


# Non-Whitened Vs. Whitened Light Curve

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



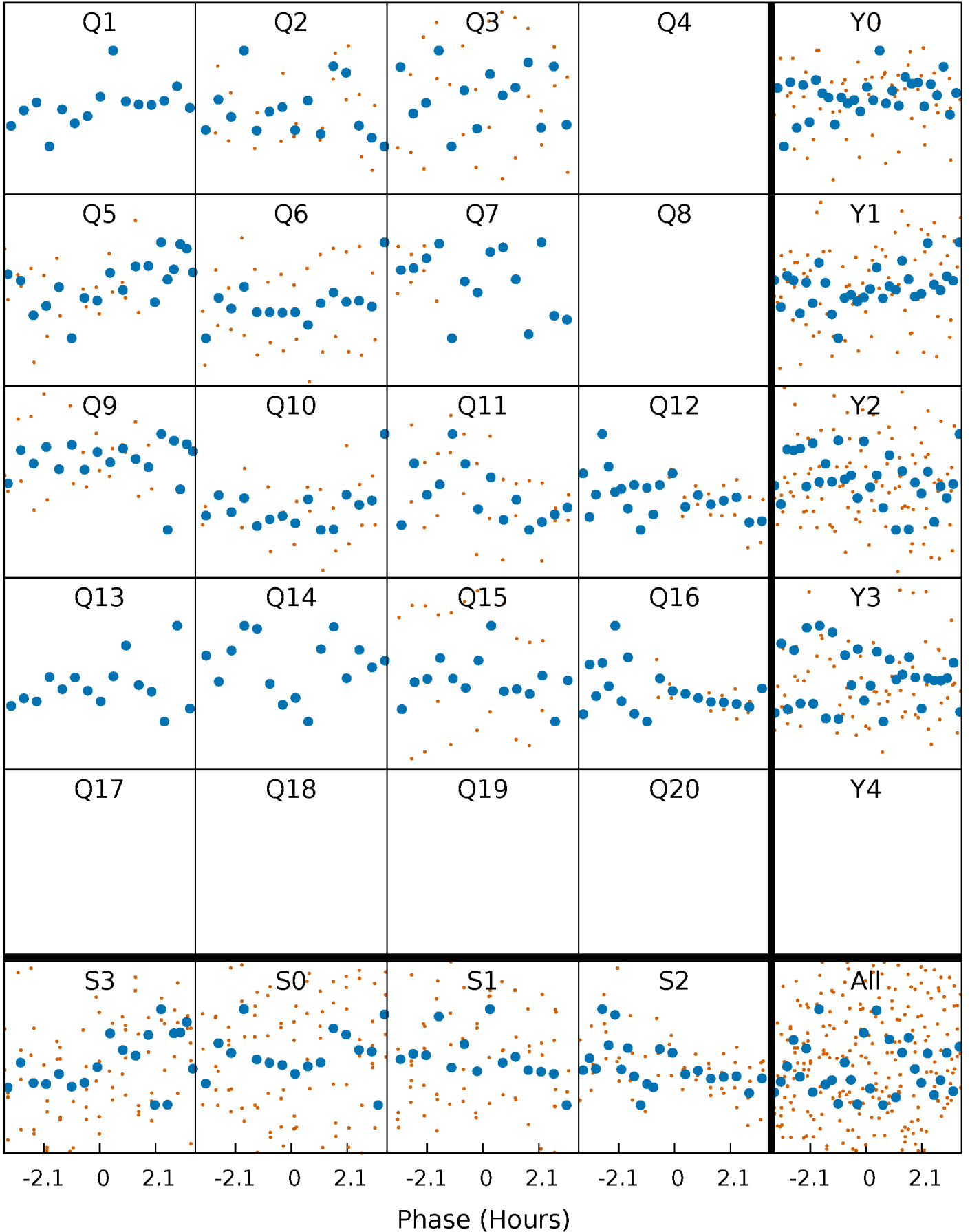
**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





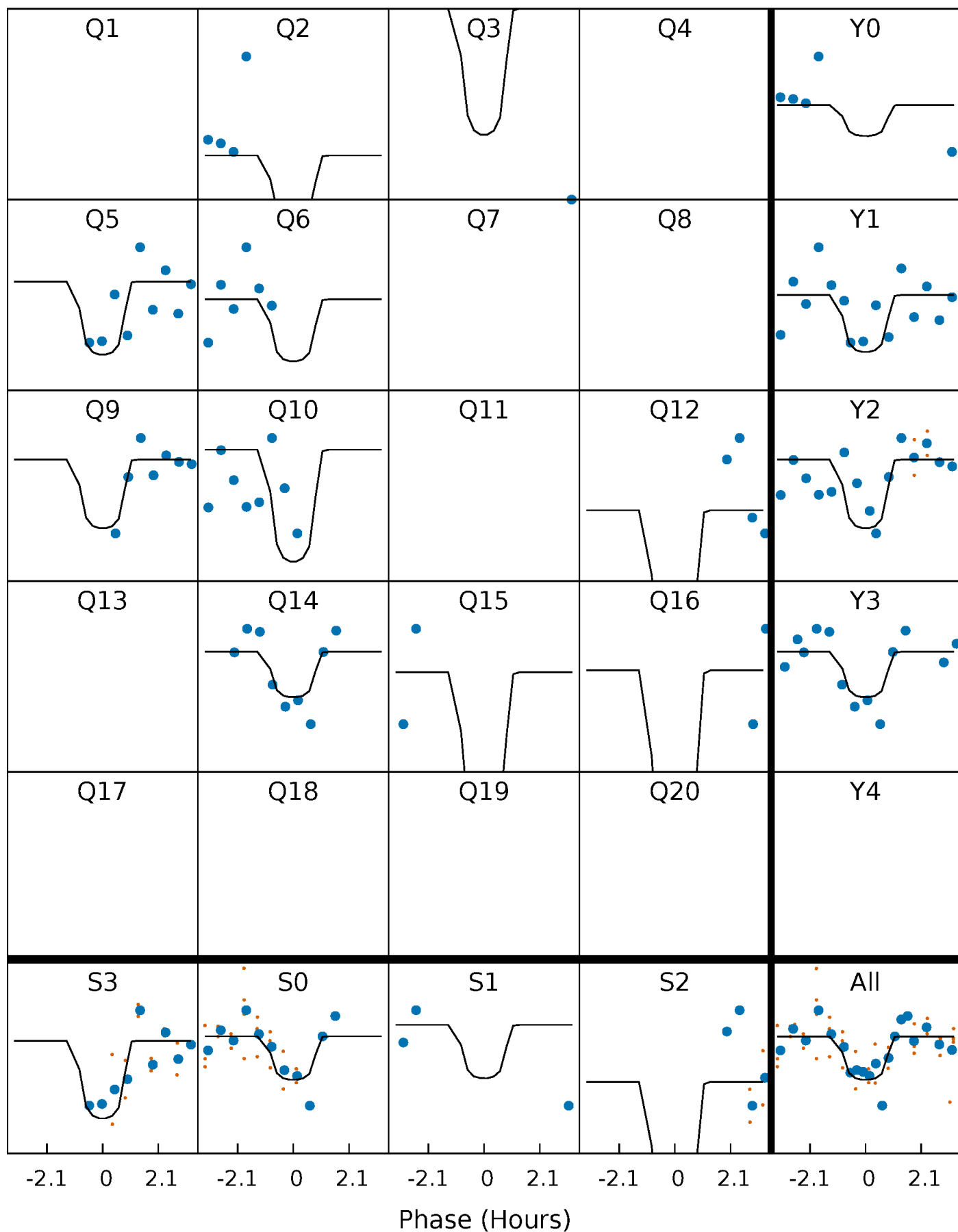
# PDC Quarter-Phased Transit Curves

TCE 008715392-03   P= 52.123137 Days    $T_0=137.622174$  (BKJD)



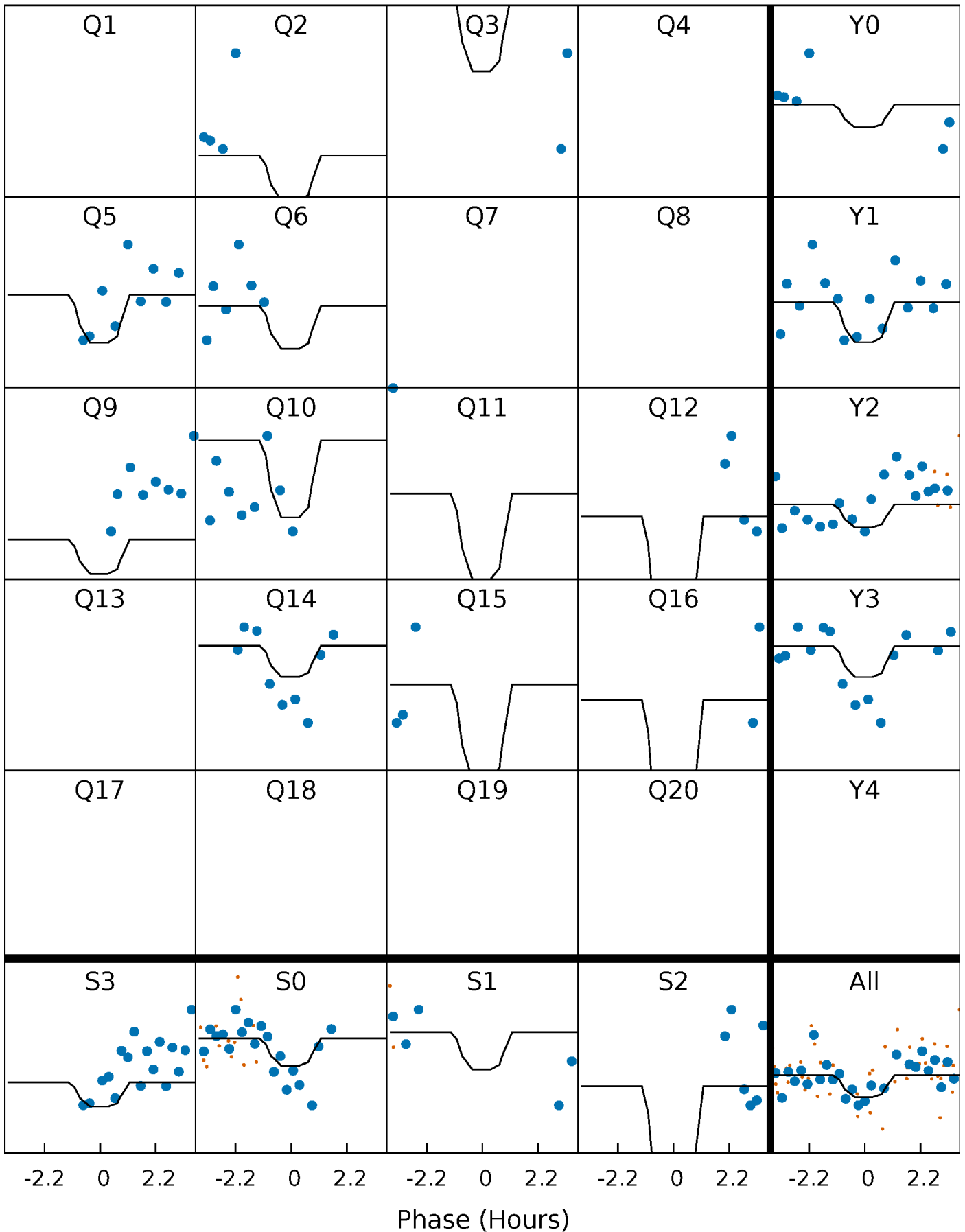
# DV Quarter-Phased Transit Curves

TCE 008715392-03 P= 52.123137 Days  $T_0=137.622174$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

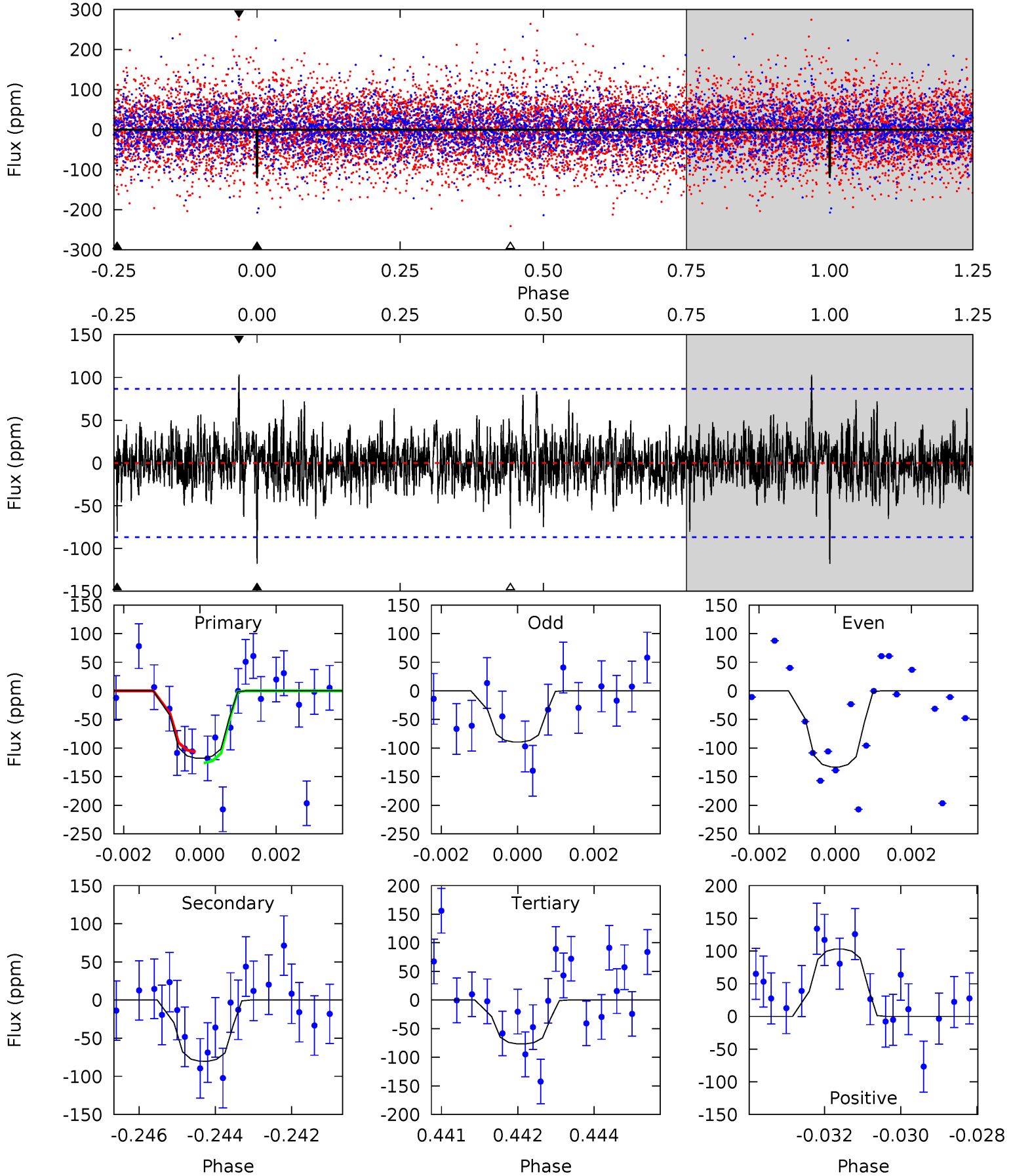
TCE 008715392-03 P= 52.122443 Days  $T_0=137.633319$  (BKJD)



# DV Model-Shift Uniqueness Test

008715392-03, P = 52.123137 Days, E = 85.499037 Days

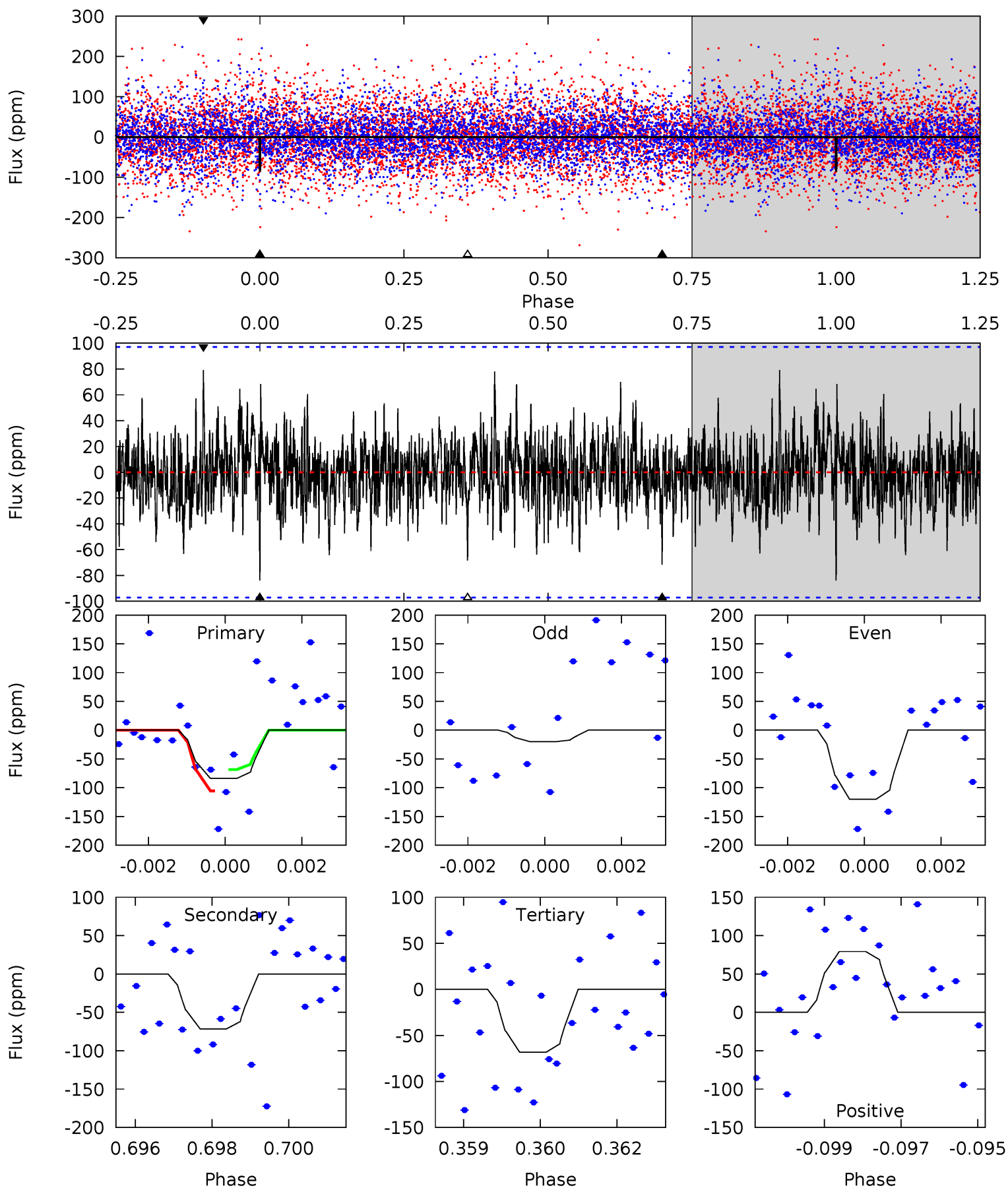
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.26	4.95	4.73	6.36	5.35	3.13	1.32	2.53	0.90	0.22	-1.41	1.29	1.04	0.47	0.60



# Alt Model-Shift Uniqueness Test

008715392-03, P = 52.122443 Days, E = 85.510876 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
4.63	3.95	3.77	4.38	5.36	3.15	1.13	0.86	0.26	0.18	-0.43	2.60	0.96	0.49	1.02





### Stellar Parameters For KIC 008715392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6889^{+215}_{-263}$	$3.937^{+0.443}_{-0.148}$	$-1.000^{+0.300}_{-0.300}$	$1.828^{+0.420}_{-0.781}$	$1.054^{+0.119}_{-0.145}$	$0.243^{+0.989}_{-0.104}$
	+3%/-4%	+11%/-4%	+30%/-30%	+23%/-43%	+11%/-14%	+407%/-43%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008715392-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-80 \pm 16$	$2.64^{+2.36}_{-1.65}$	$1069^{+87}_{-127}$	$5430^{+3898}_{-1169}$	$476^{+2925}_{-344}$
Alt.	$-71 \pm 18$	$2.36^{+2.24}_{-1.58}$	$1068^{+89}_{-129}$	$5442^{+4792}_{-1168}$	$519^{+4207}_{-379}$

$T_{max}$  = 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

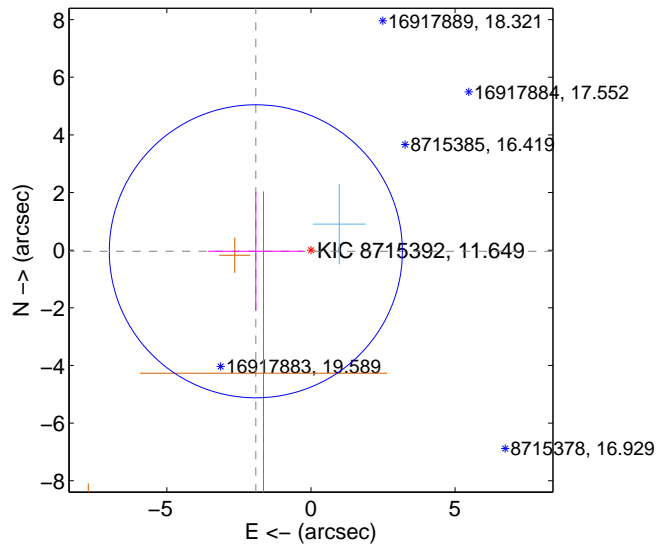
Supplemental centroid analysis for 008715392-03. **Kepler magnitude: 11.65.** Transit SNR 9.43

**There are 1 quarters with good PRF difference image offsets**

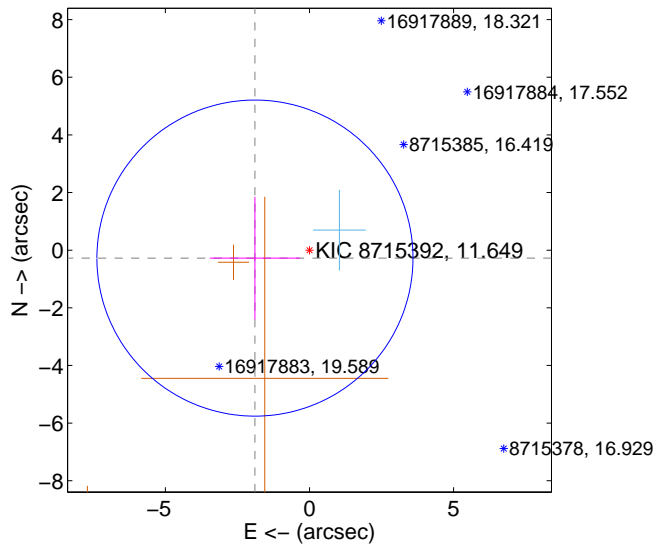
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.913 \pm 1.695$	1.13	$1.912 \pm 1.657$	$-0.039 \pm 2.057$
PRF-fit source offset from KIC position	$1.912 \pm 1.828$	1.05	$1.892 \pm 1.567$	$-0.275 \pm 2.126$
photometric centroid source offset	$1.68 \pm 1.10$	1.53	$-1.46 \pm 1.15$	$-0.82 \pm 0.91$

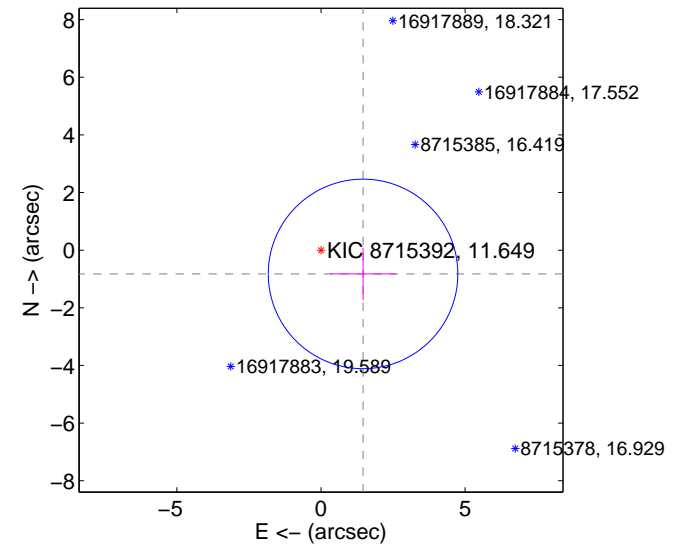
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

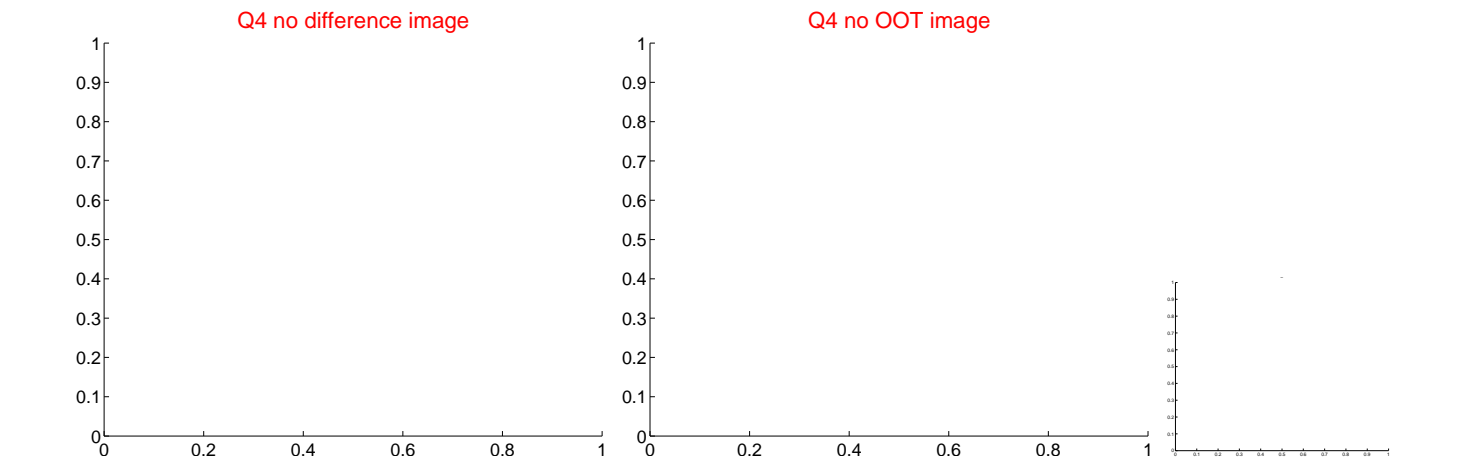
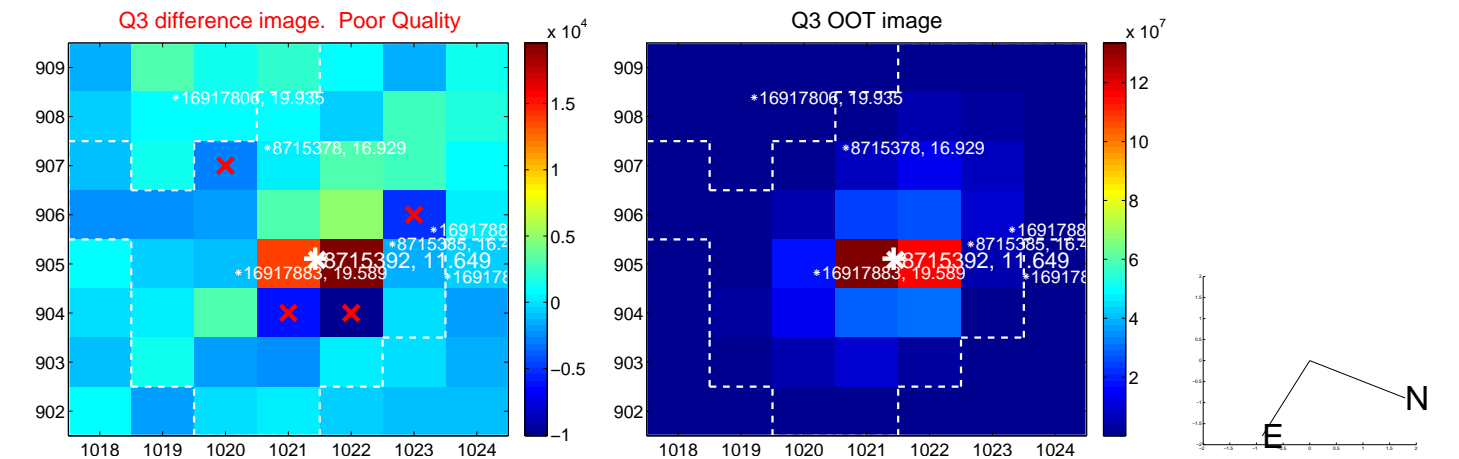
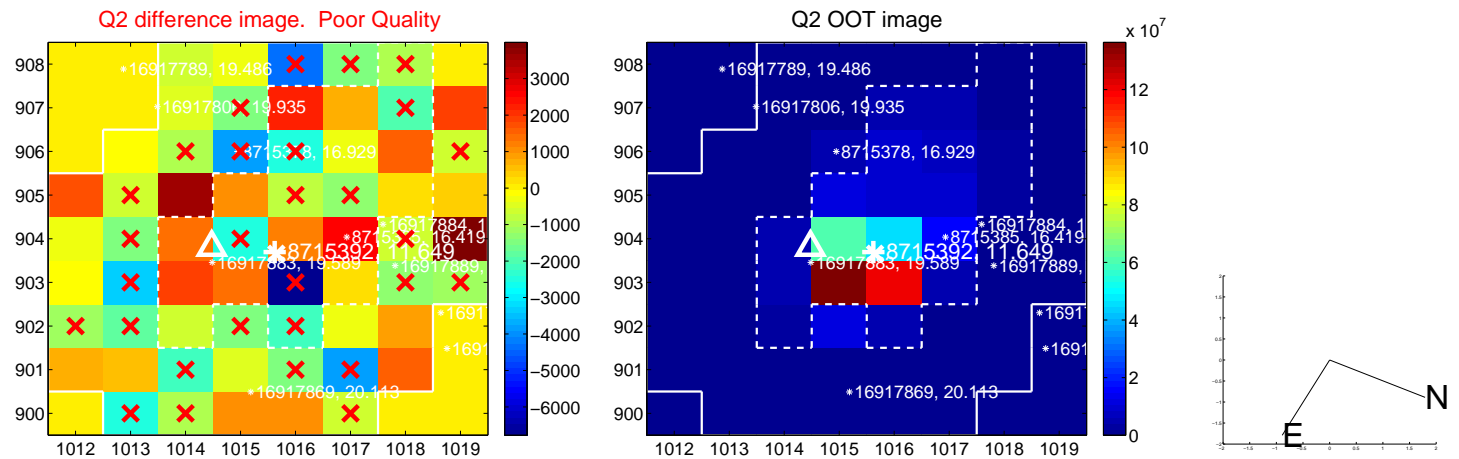
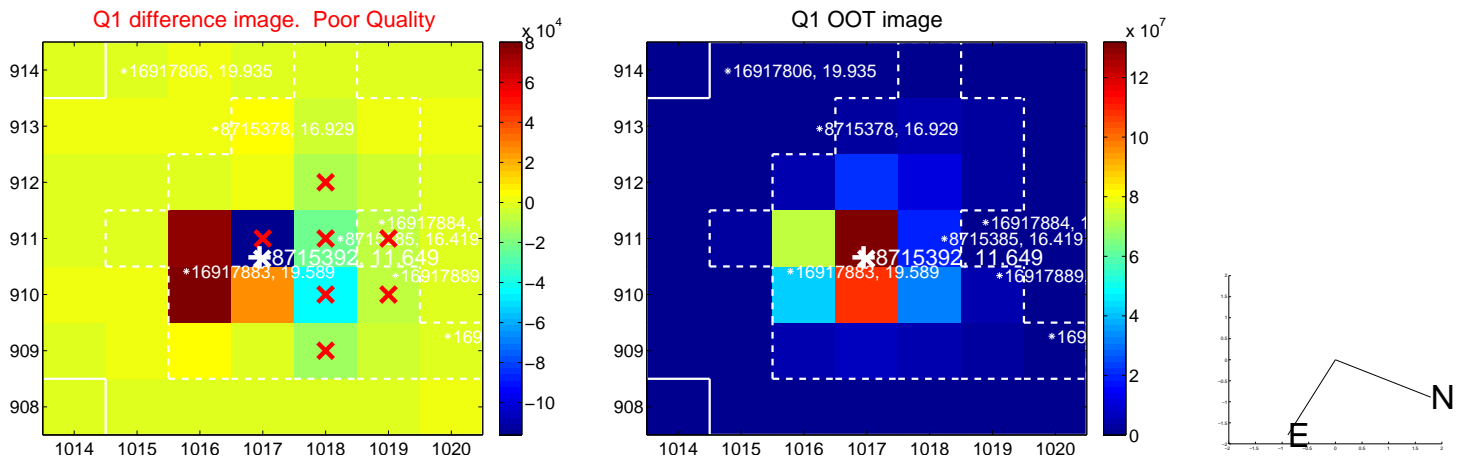


offset from photometric centroids

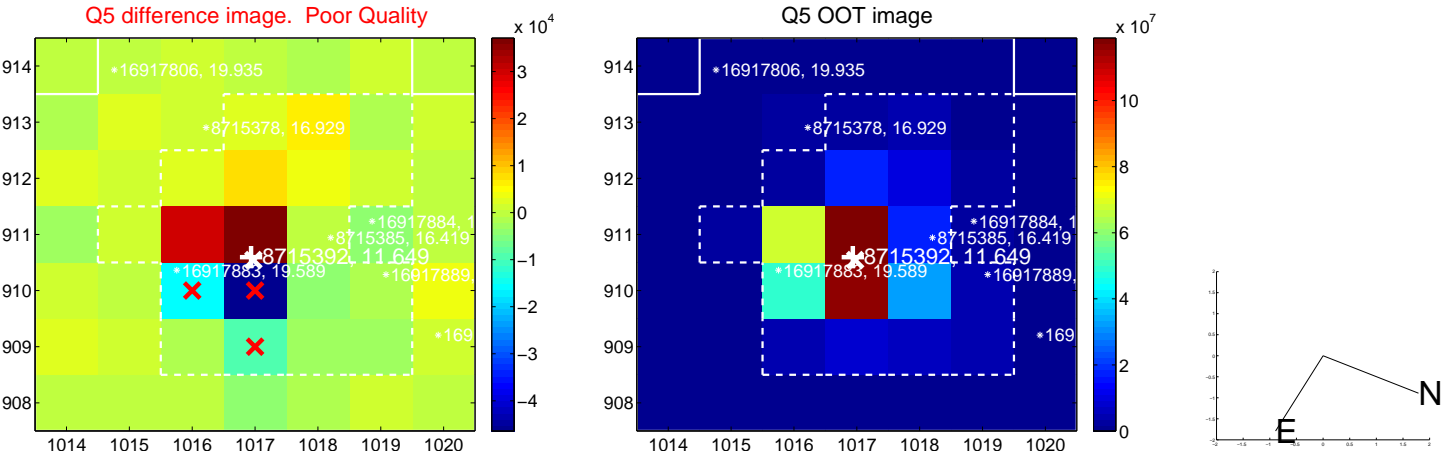


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

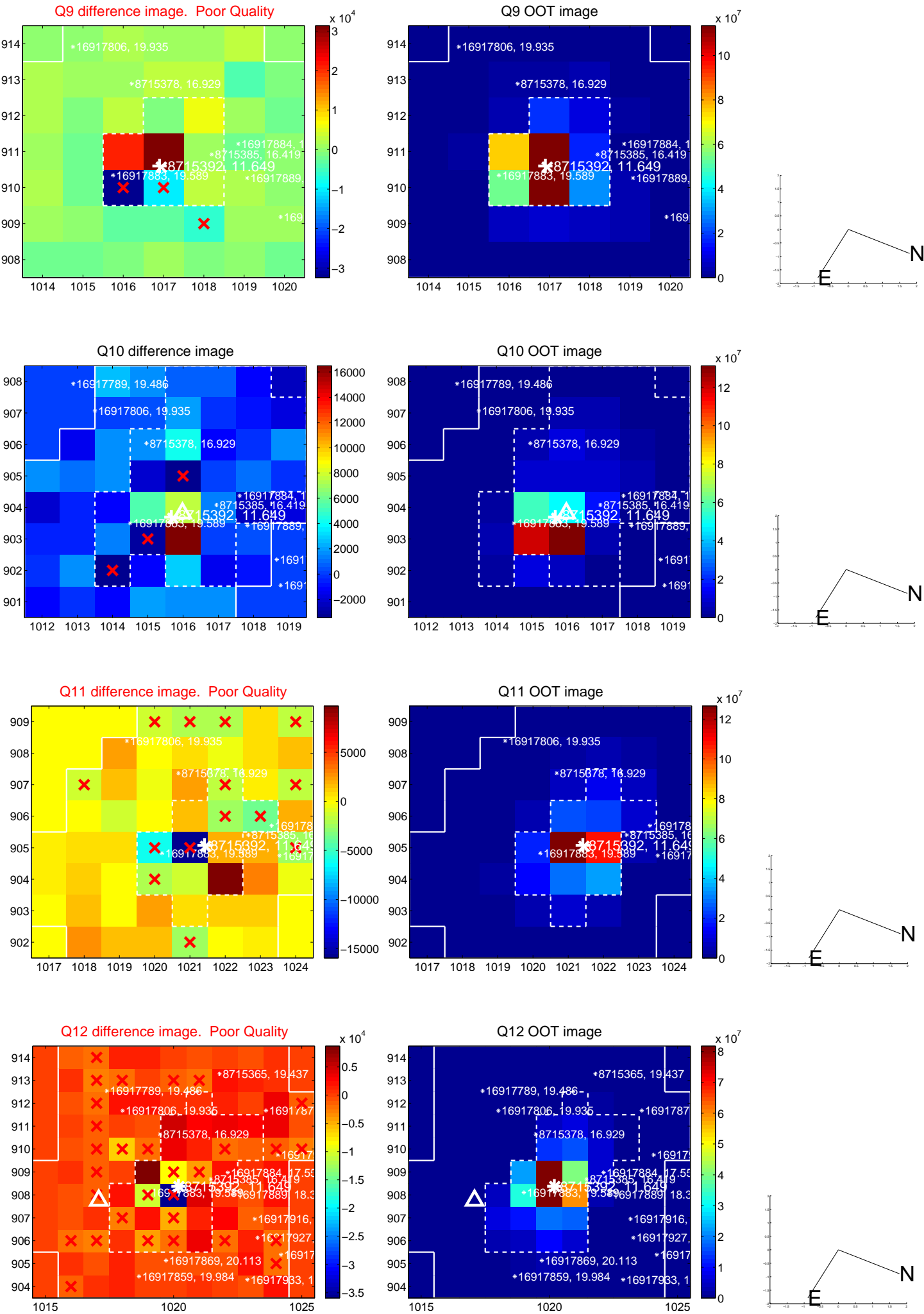
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



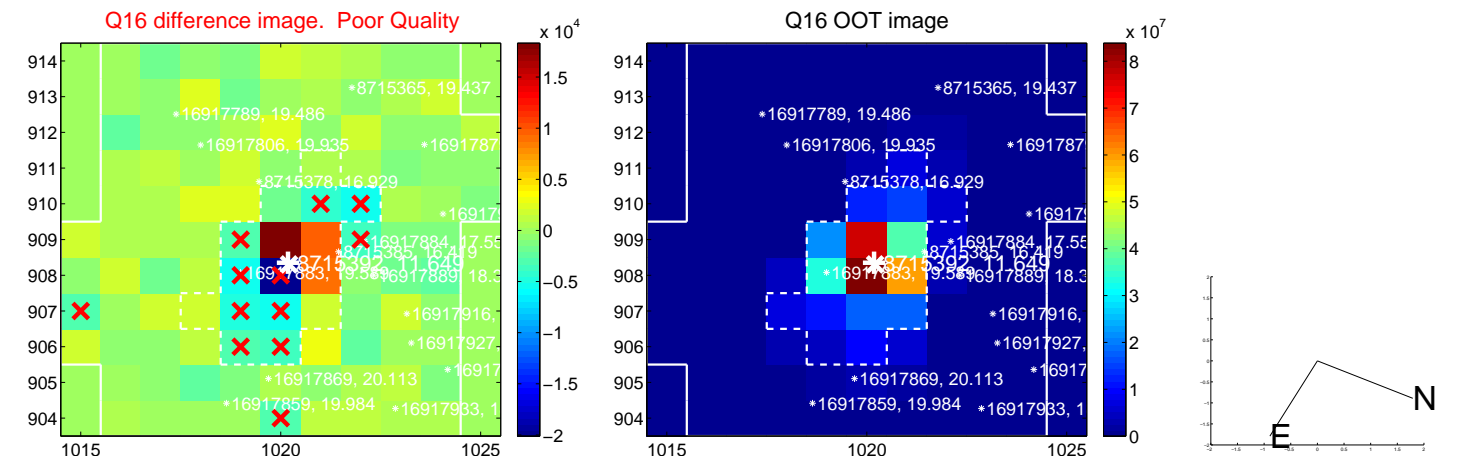
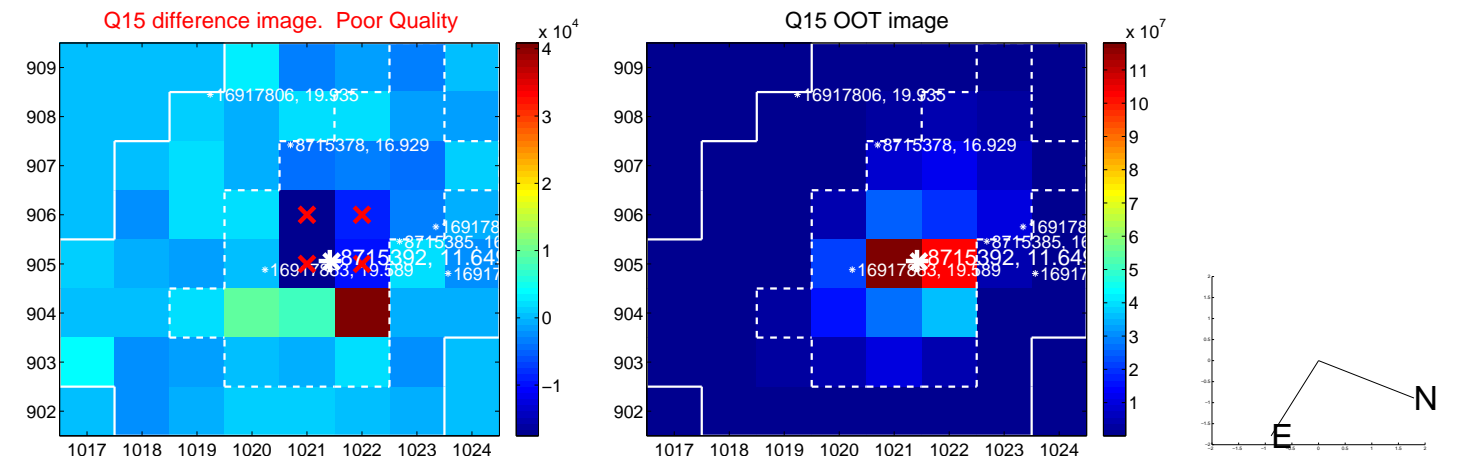
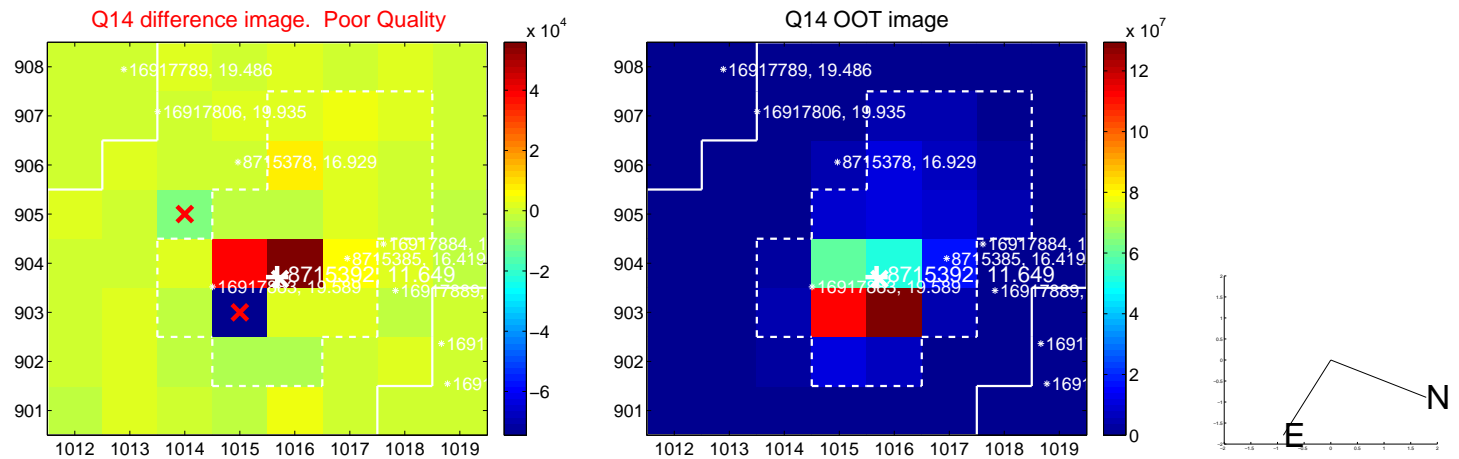
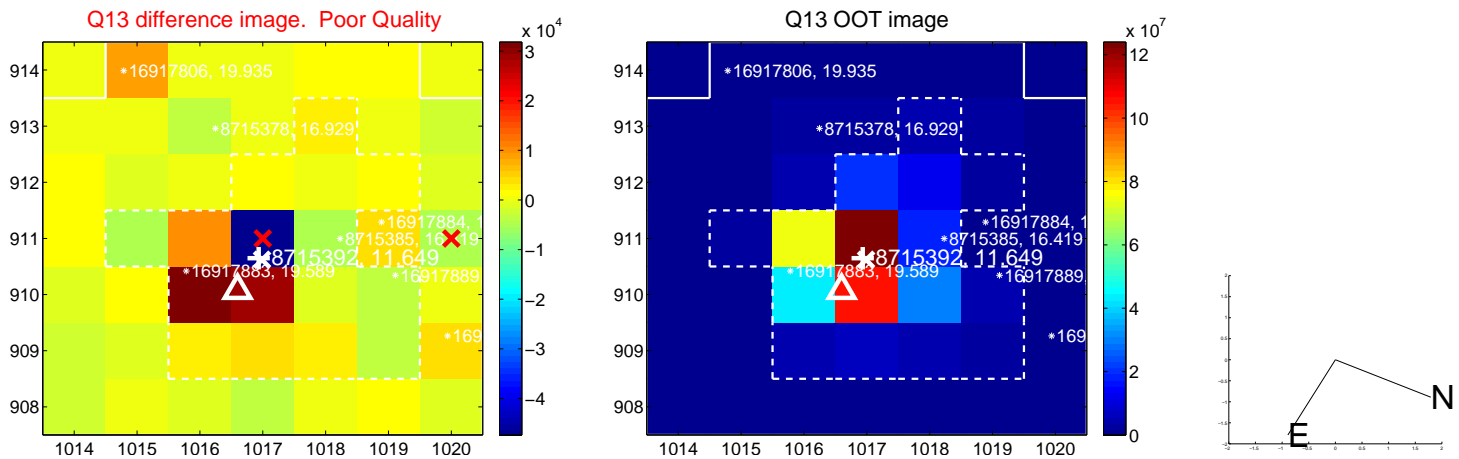
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

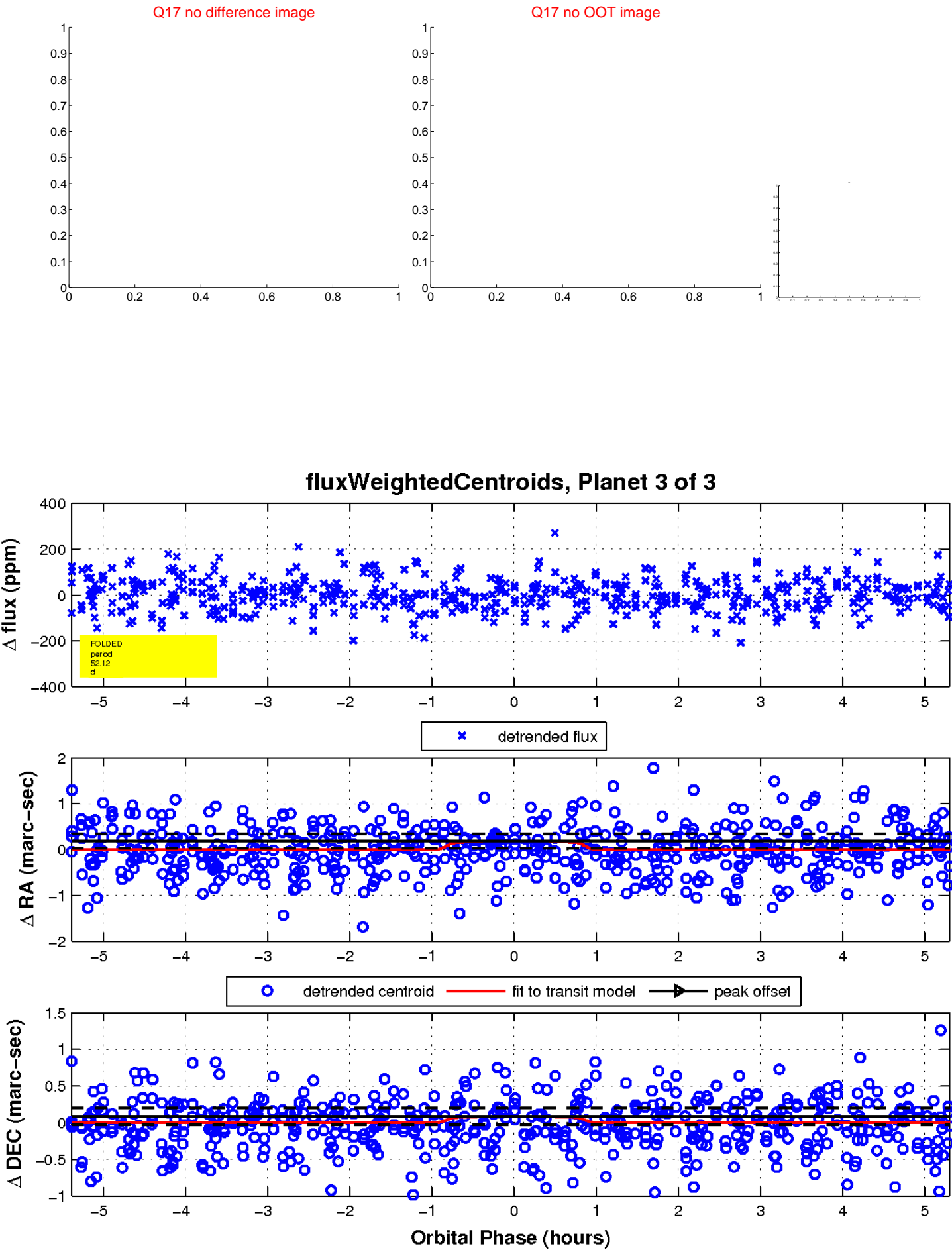


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

