

# KIC 006936046

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006936046-01	OBS	No	1.582107	132.266058	67.7	7.258	9.3	9.9	0.50	3770	0.48	100.31
006936046-03	OBS	No	187.896768	273.632593	622.0	8.490	8.4	8.5	0.50	3770	1.33	0.17
006936046-04	OBS	No	273.024802	134.647409	630.5	5.257	7.5	7.0	0.50	3770	1.42	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006936046-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006936046-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006936046-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_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.

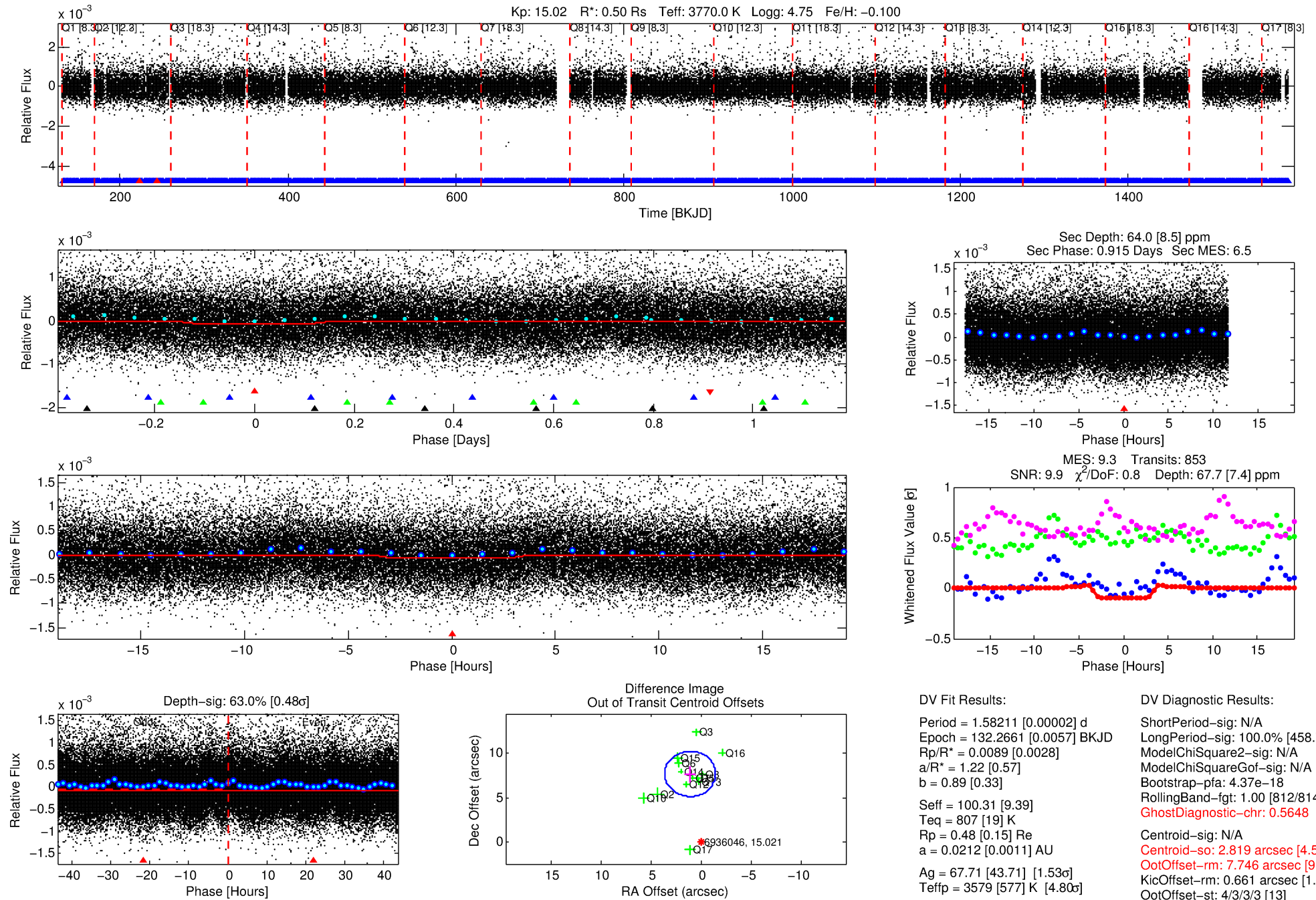
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006936046-01

No Significant Match Found

# DV One-Page Summary

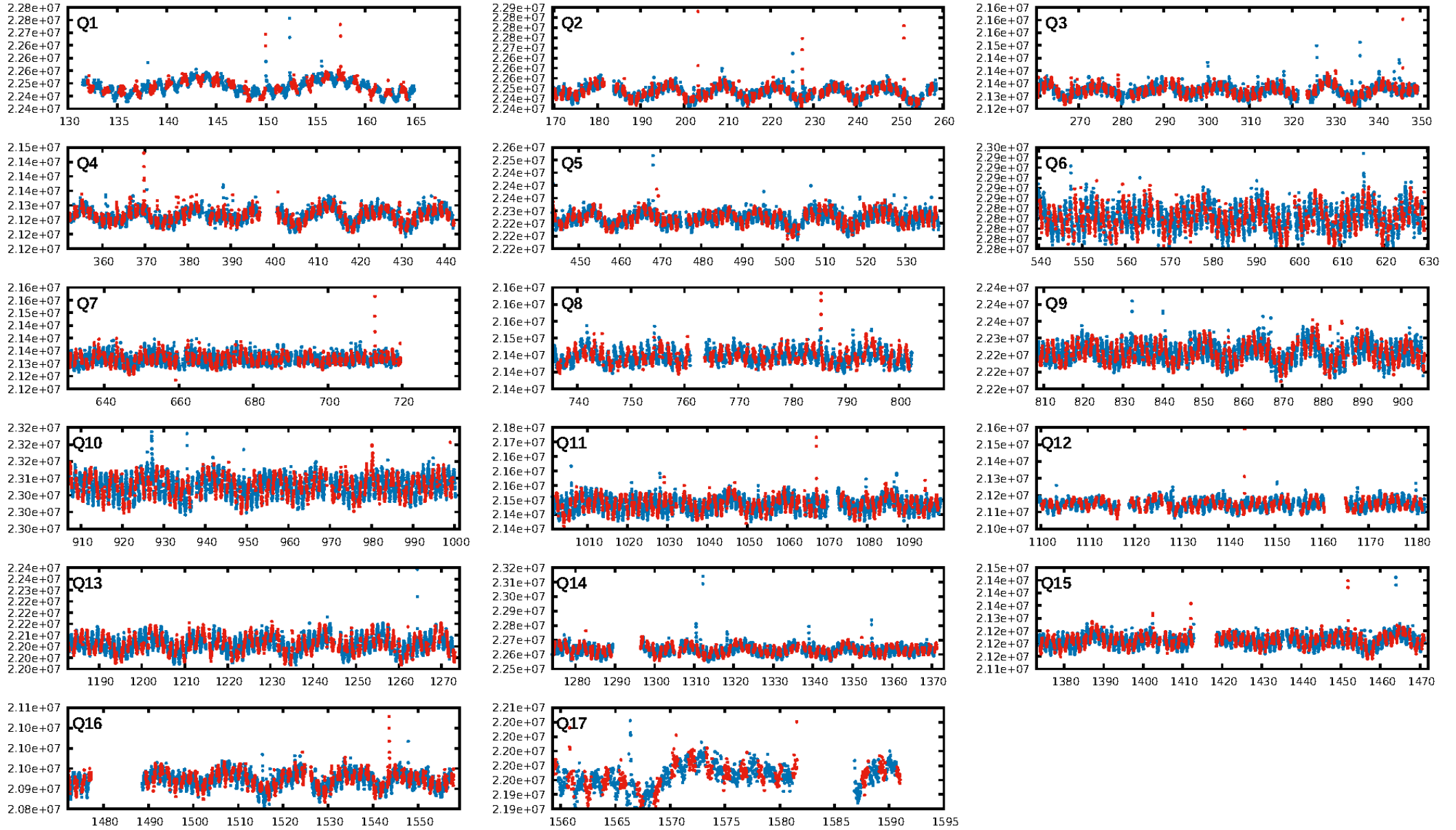
KIC: 6936046 Candidate: 1 of 4 Period: 1.582 d



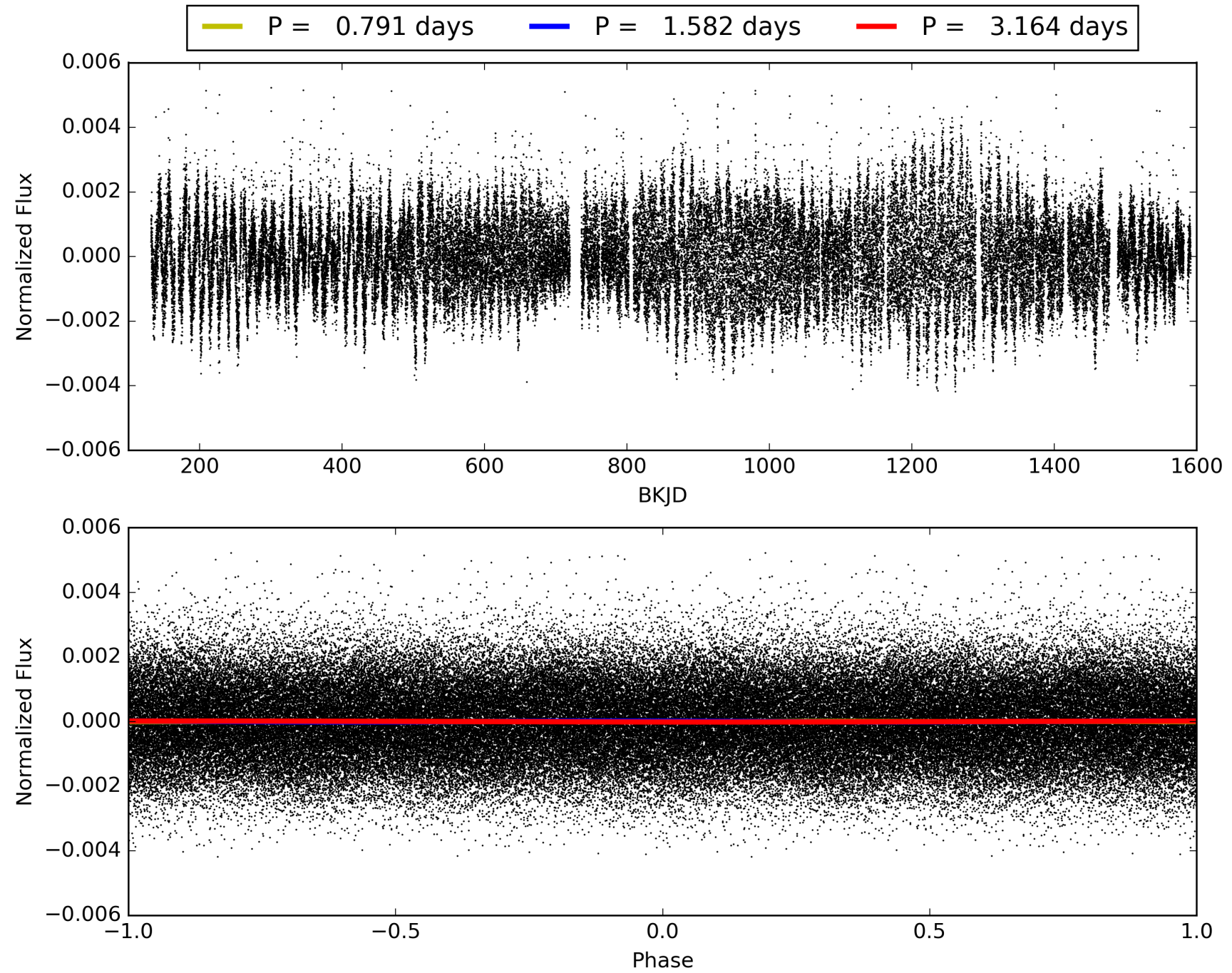
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:03 Z

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

# TCE 006936046-01, PDC Light Curves

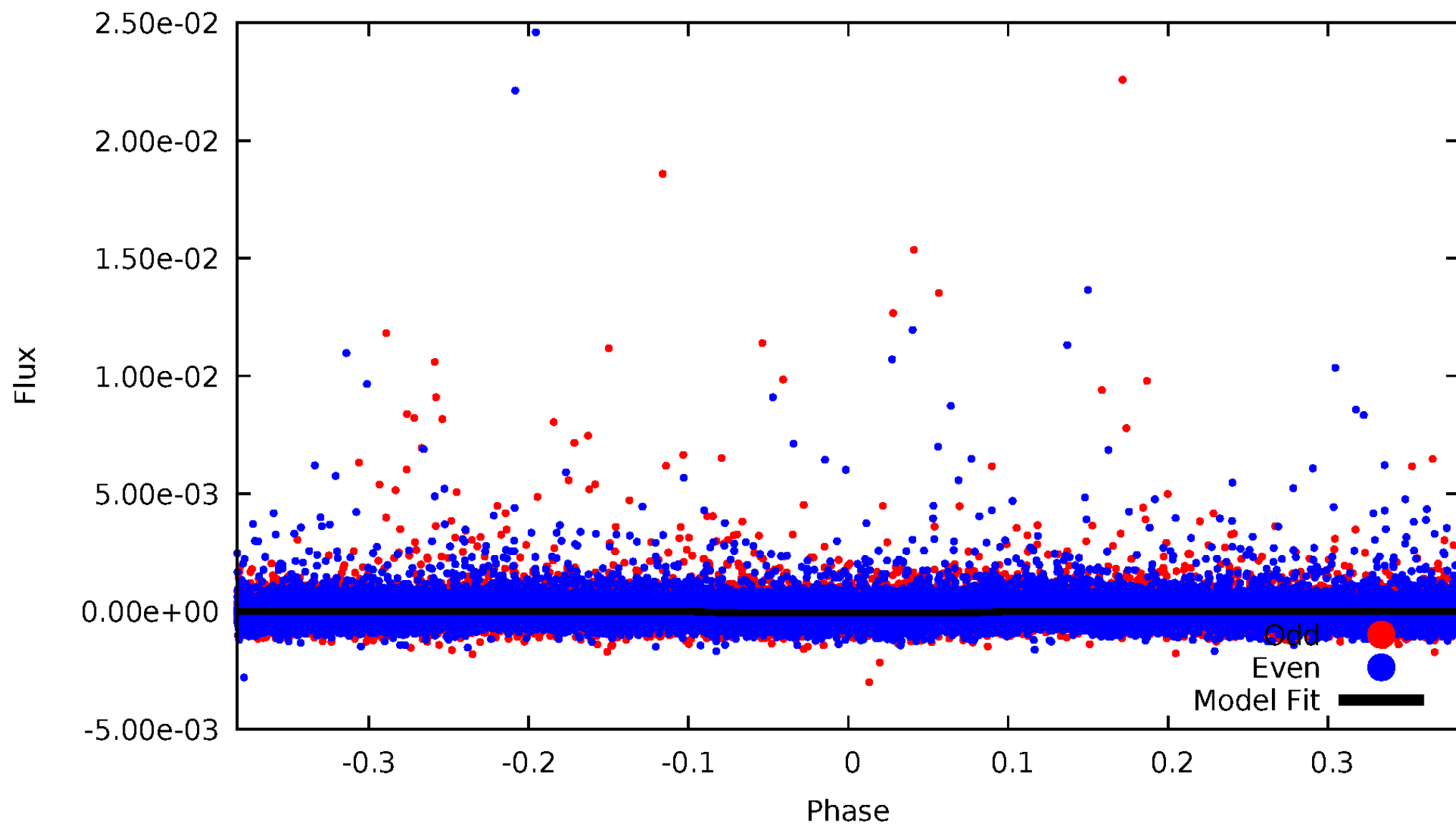


TCE 006936046-01



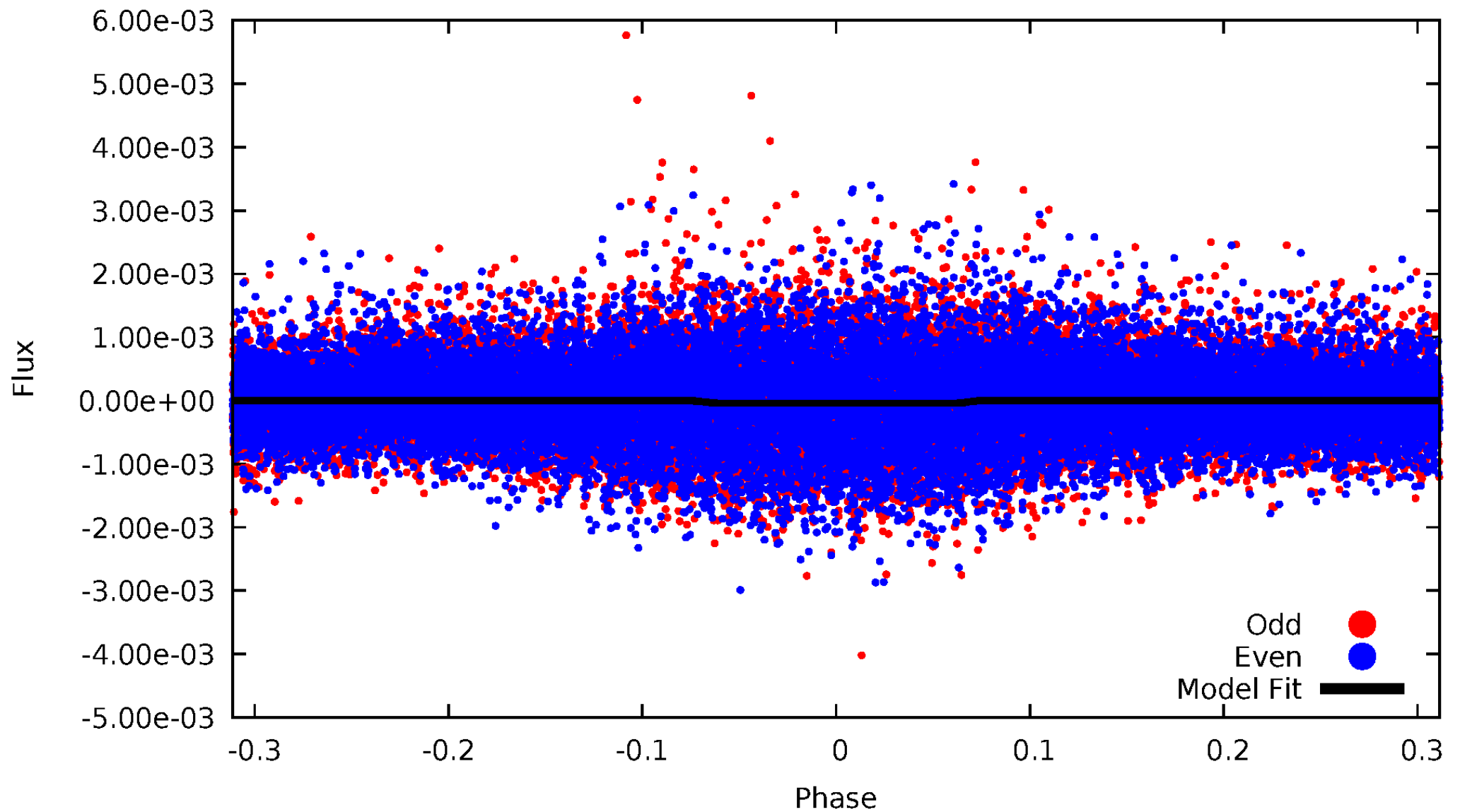
# DV Odd/Even

TCE 006936046-01



# ALT Odd/Even

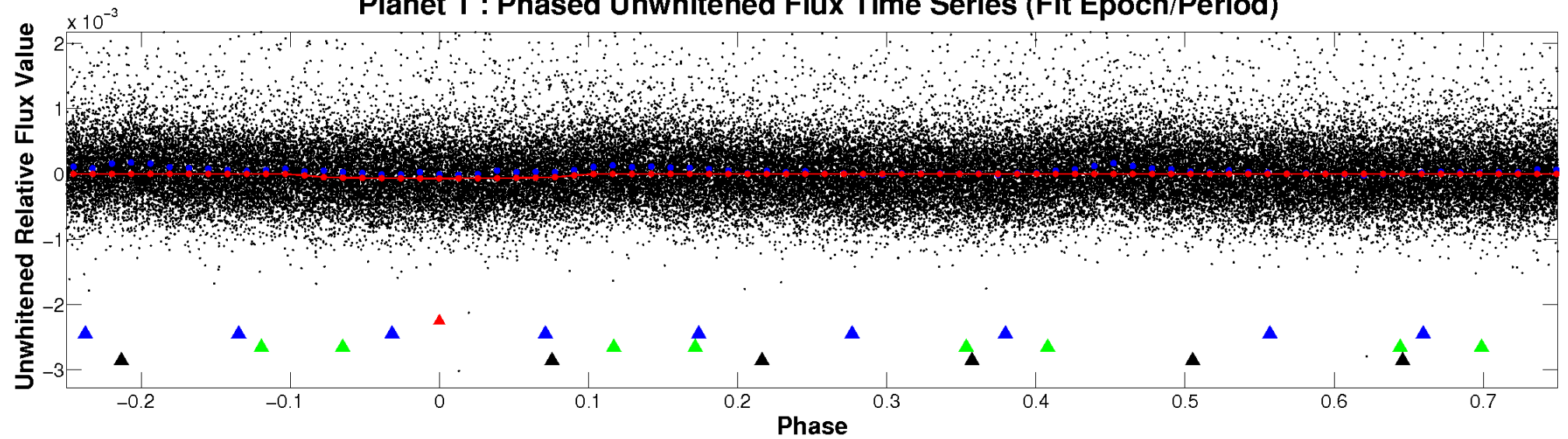
TCE 006936046-01



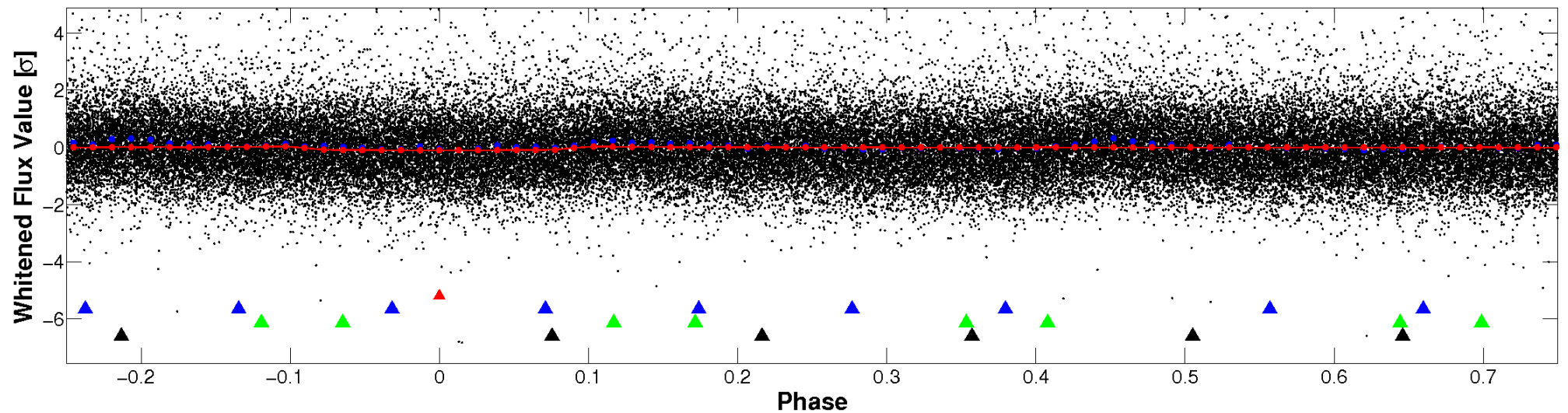


# Non-Whitened Vs. Whitened Light Curve

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

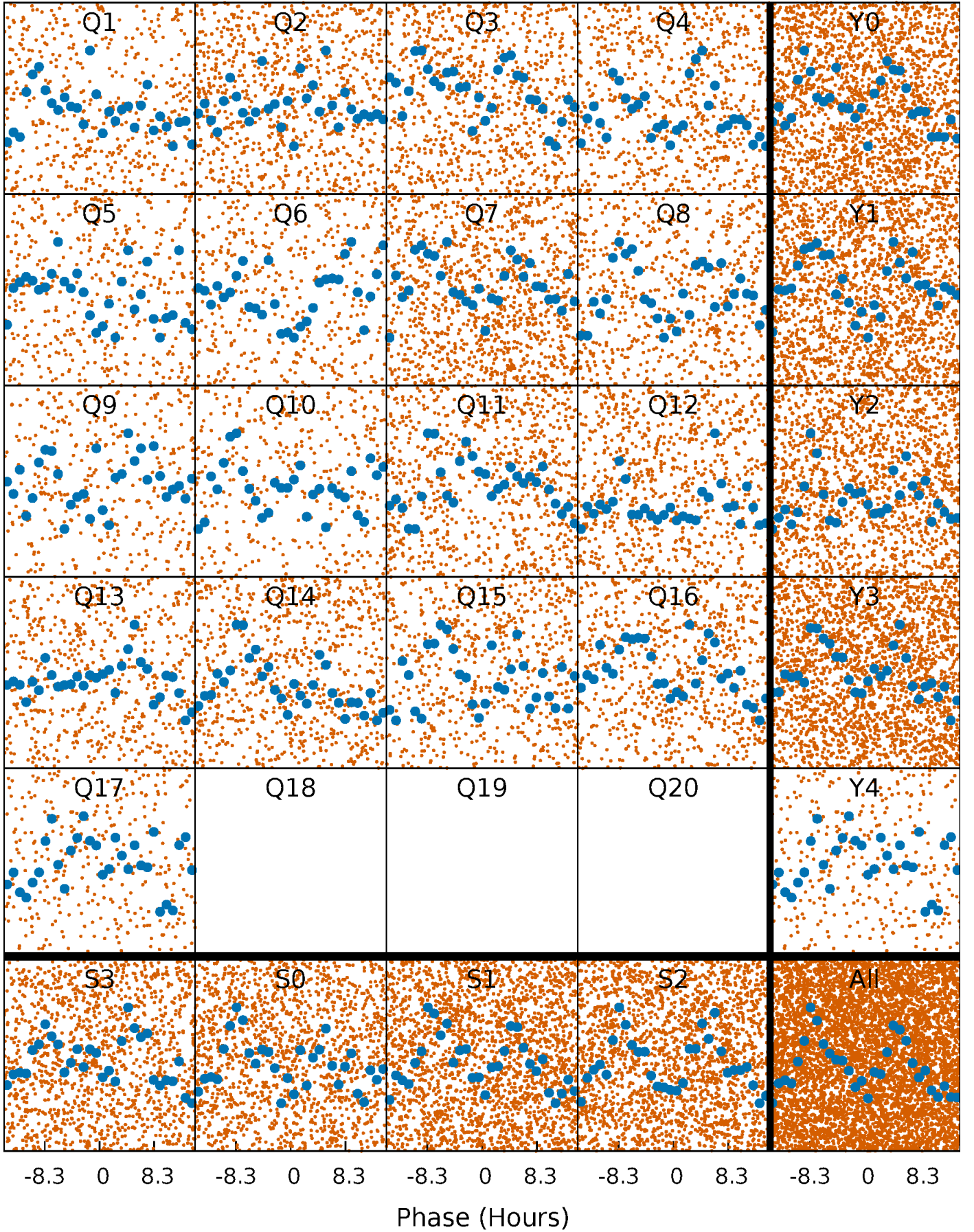


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

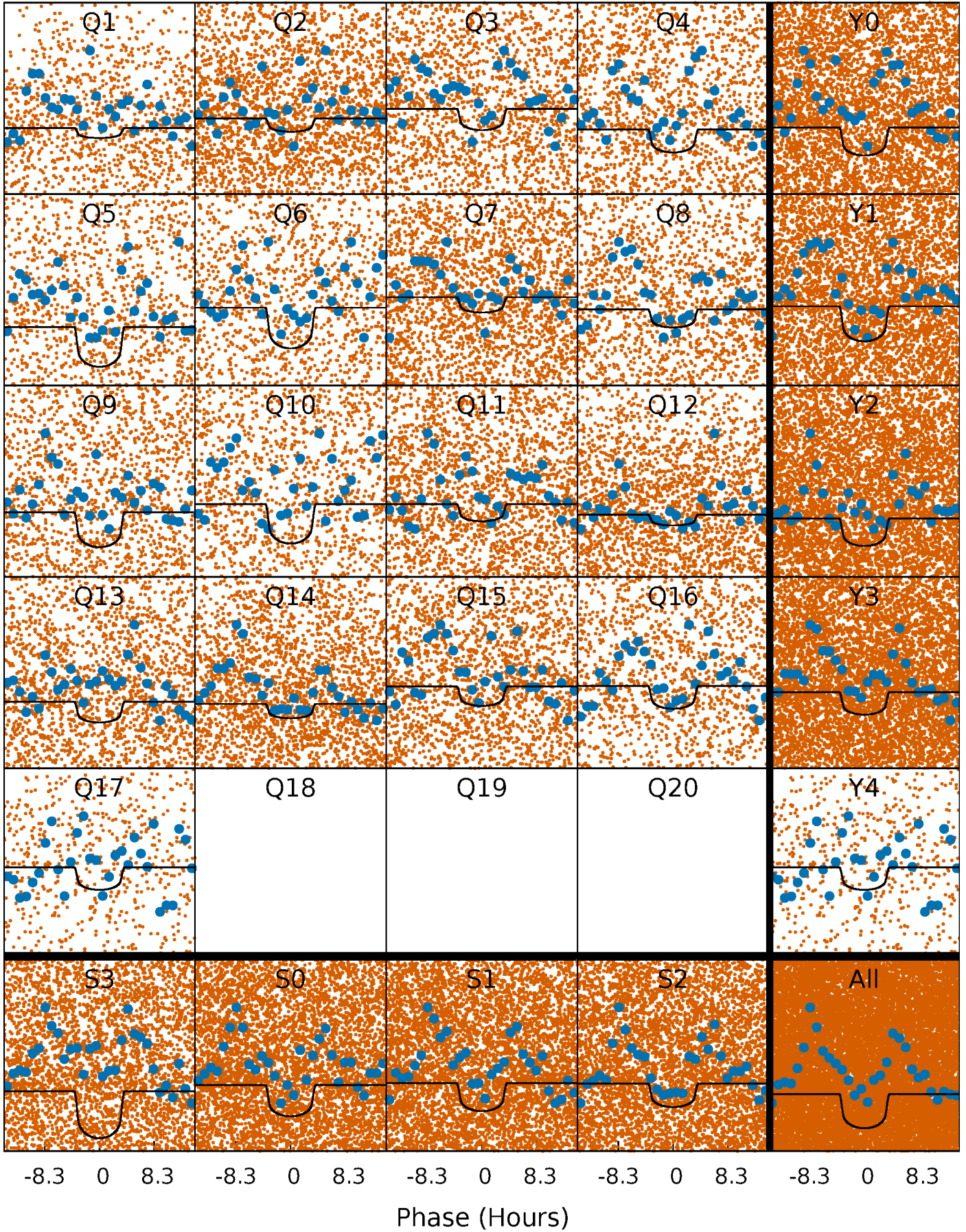
TCE 006936046-01 P= 1.582107 Days  $T_0=132.266058$  (BKJD)





# DV Quarter-Phased Transit Curves

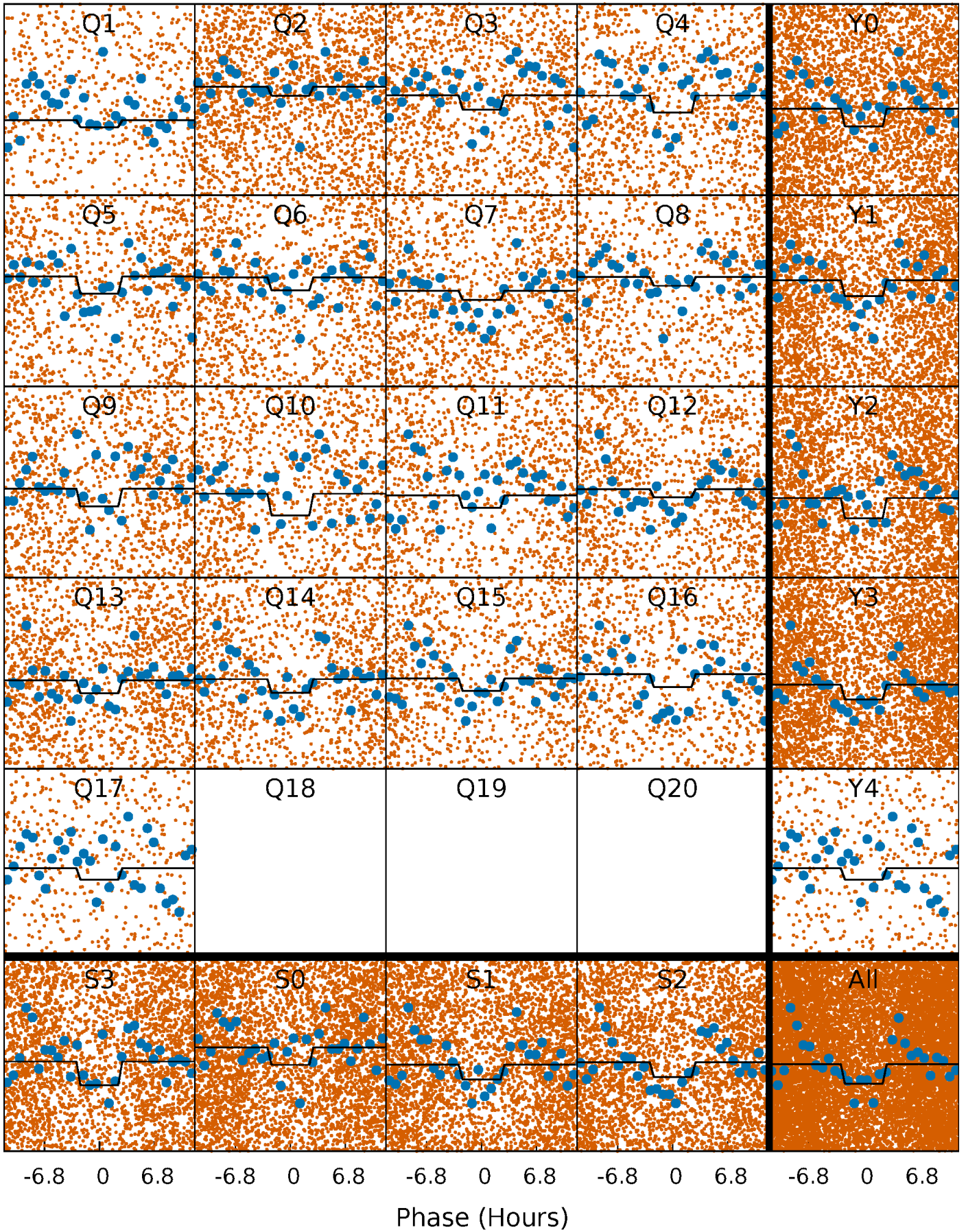
TCE 006936046-01 P= 1.582107 Days  $T_0=132.266058$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

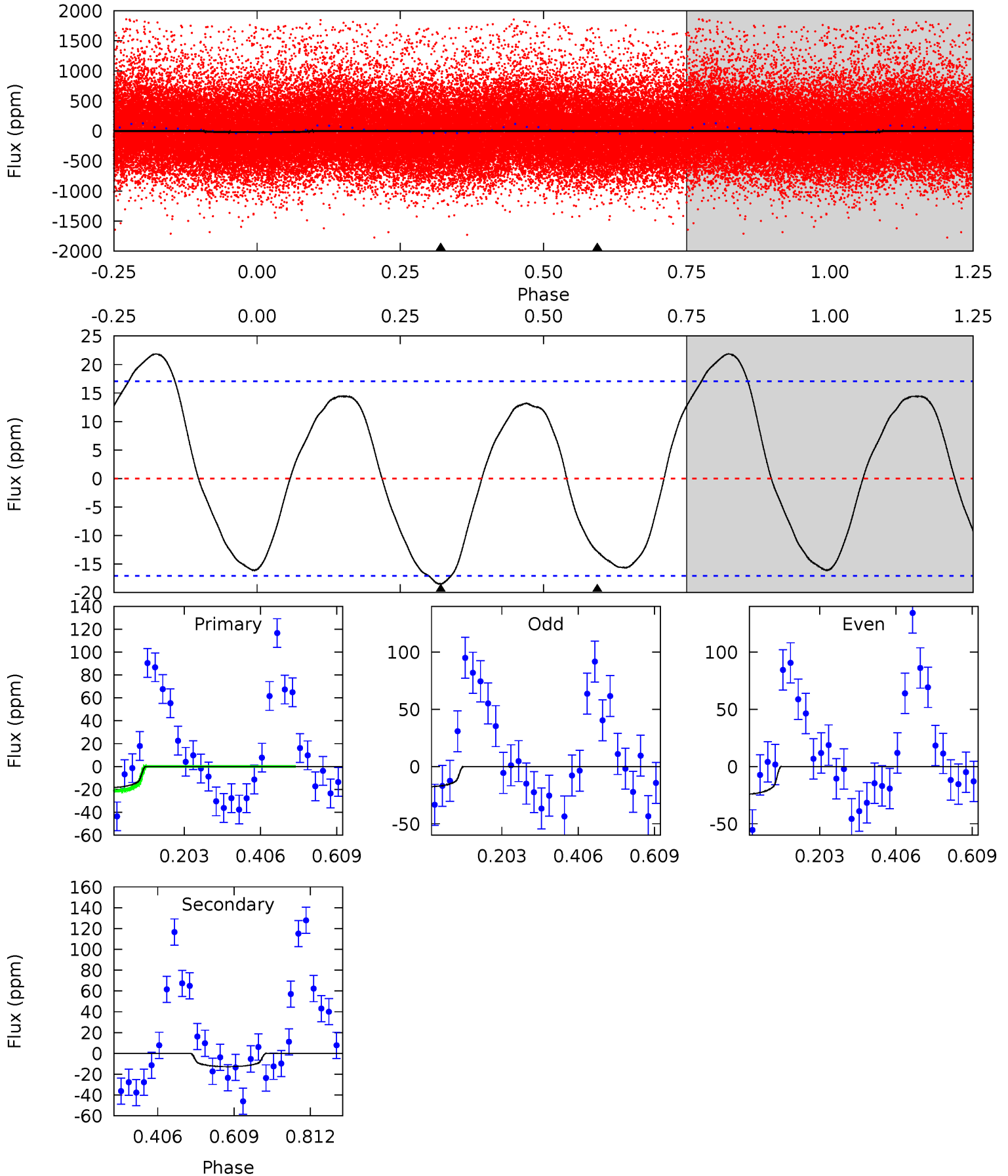
TCE 006936046-01 P= 1.582204 Days  $T_0=132.233578$  (BKJD)



# DV Model-Shift Uniqueness Test

006936046-01, P = 1.582107 Days, E = 130.683951 Days

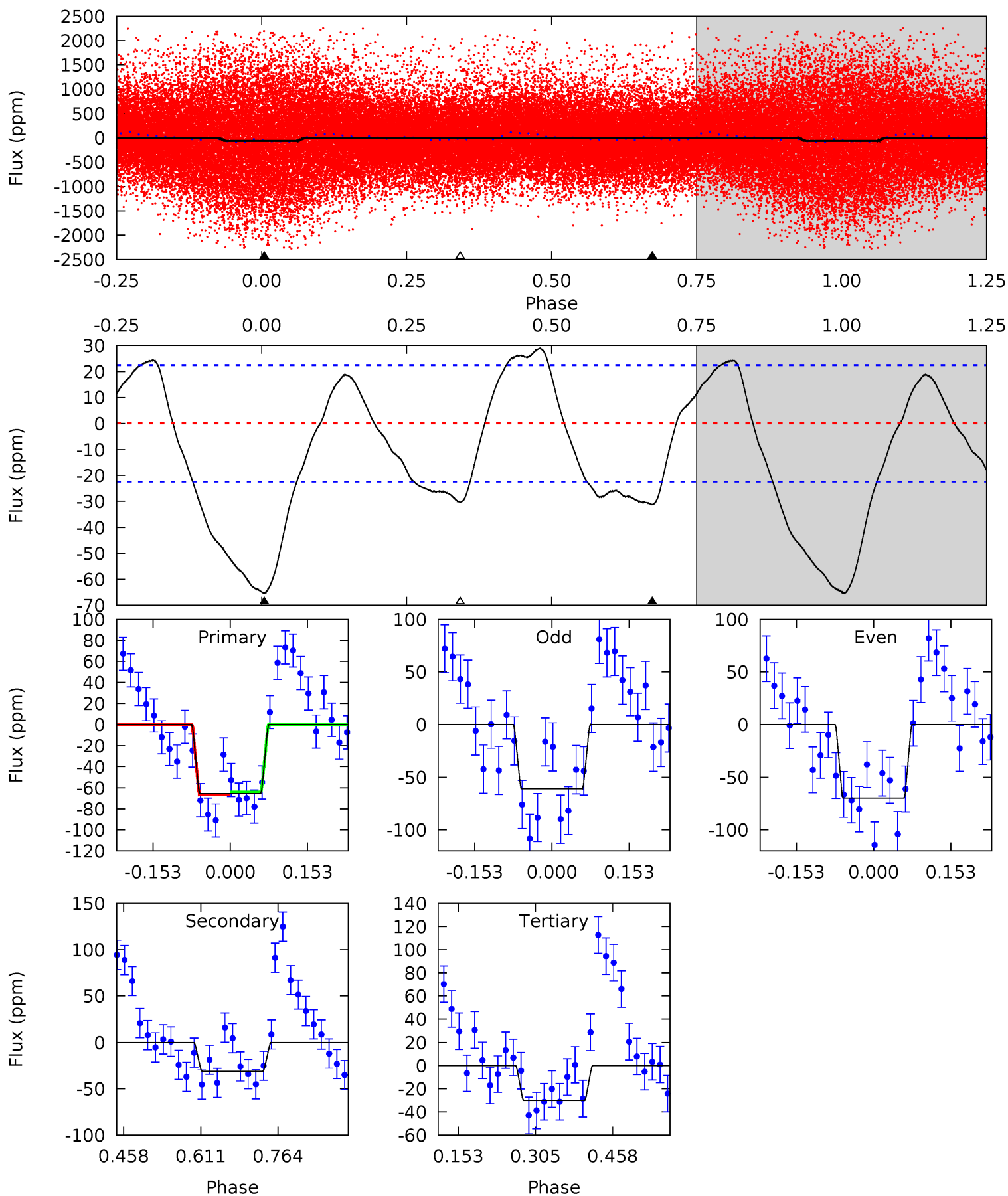
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.78	3.30	0	0	4.41	1.27	3.33	4.78	4.78	3.30	3.30	0.85	-0.75	0.54	0.24



# Alt Model-Shift Uniqueness Test

006936046-01, P = 1.582204 Days, E = 130.651374 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
13.0	6.22	6.03	0	4.48	1.43	3.94	6.97	13.0	0.18	6.22	0.87	1.05	0.31	0.26





### Stellar Parameters For KIC 006936046

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3770^{+60}_{-52}$	$4.747^{+0.035}_{-0.020}$	$-0.100^{+0.100}_{-0.100}$	$0.499^{+0.022}_{-0.032}$	$0.508^{+0.028}_{-0.025}$	$5.743^{+0.850}_{-0.505}$
	+2%/-1%	+1%/-0%	+100%/-100%	+4%/-6%	+6%/-5%	+15%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006936046-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-13 \pm 4$	$0.48^{+0.15}_{-0.15}$	$1125^{+22}_{-20}$	$2847^{+344}_{-243}$	$13^{+16}_{-6}$
Alt.	$-31 \pm 5$	$0.36^{+0.15}_{-0.13}$	$1124^{+22}_{-19}$	$3536^{+657}_{-350}$	$59^{+89}_{-30}$

$T_{max}$  = 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

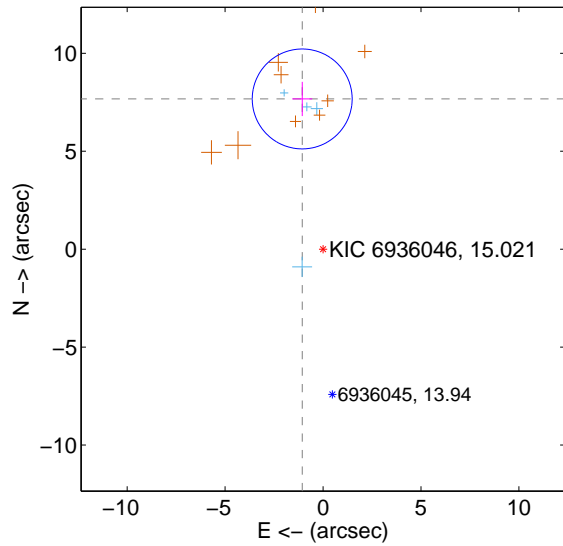
Supplemental centroid analysis for 006936046-01. Kepler magnitude: 15.02. Transit SNR 9.87

There are 4 quarters with good PRF difference image offsets

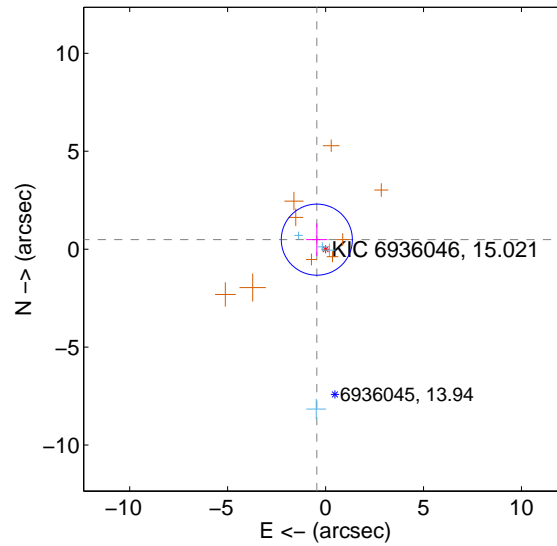
The OOT PRF centroid is offset from the target star catalog position by about 7.29 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.746 \pm 0.850$	9.11	$1.064 \pm 0.514$	$7.672 \pm 0.873$
PRF-fit source offset from KIC position	$0.661 \pm 0.605$	1.09	$0.447 \pm 0.545$	$0.486 \pm 0.827$
photometric centroid source offset	$2.82 \pm 0.62$	4.55	$-0.32 \pm 0.30$	$-2.80 \pm 0.62$

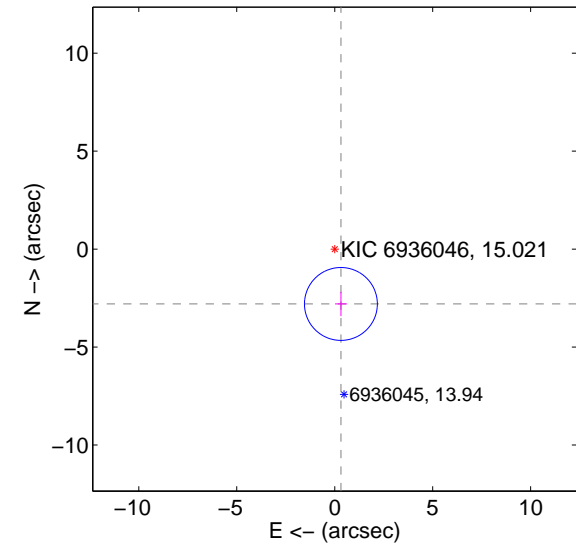
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

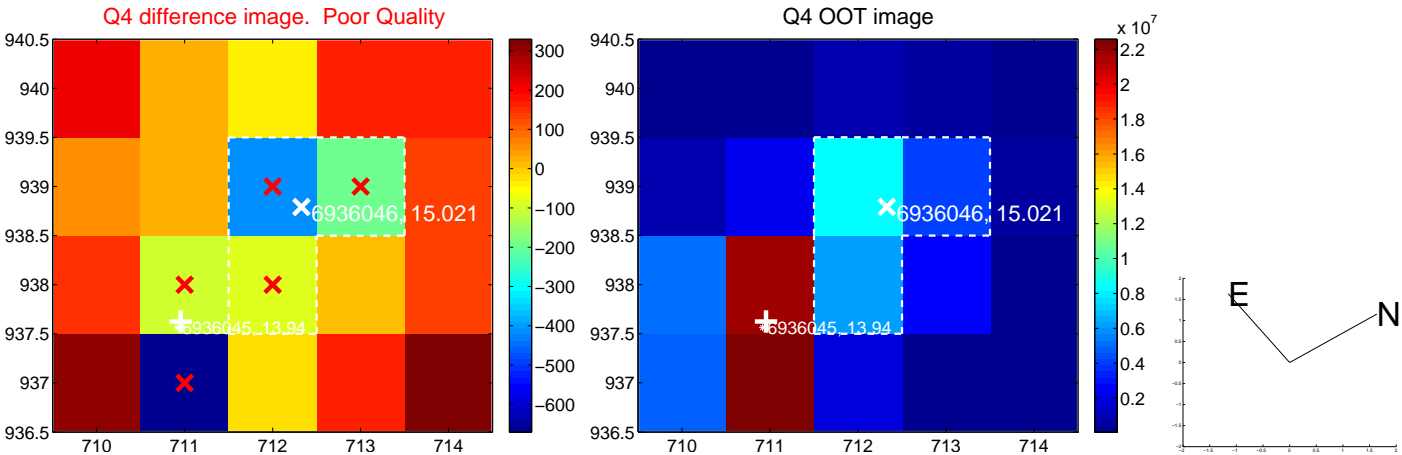
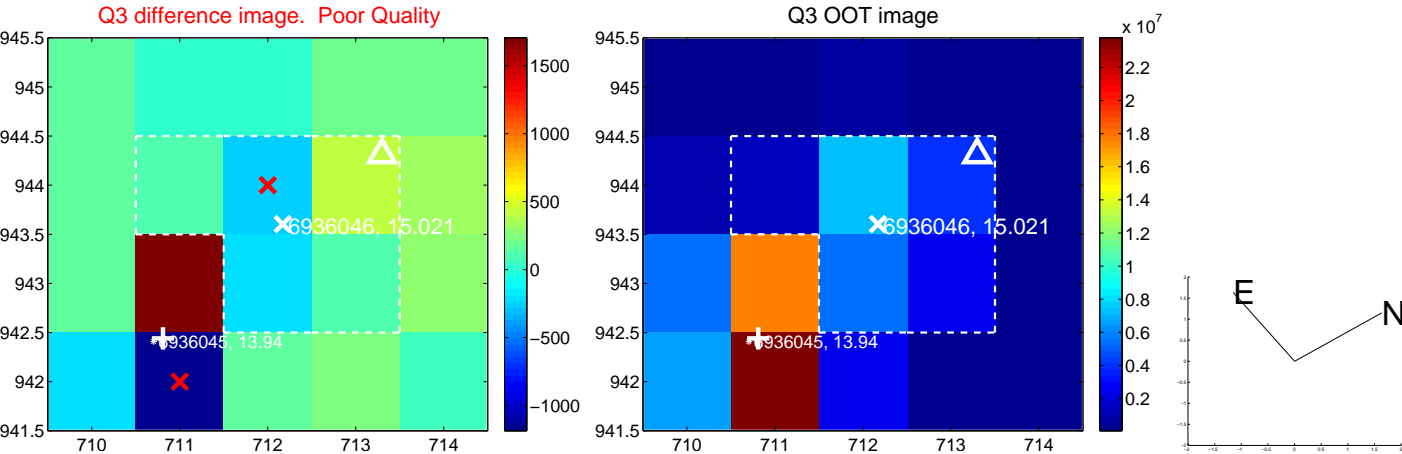
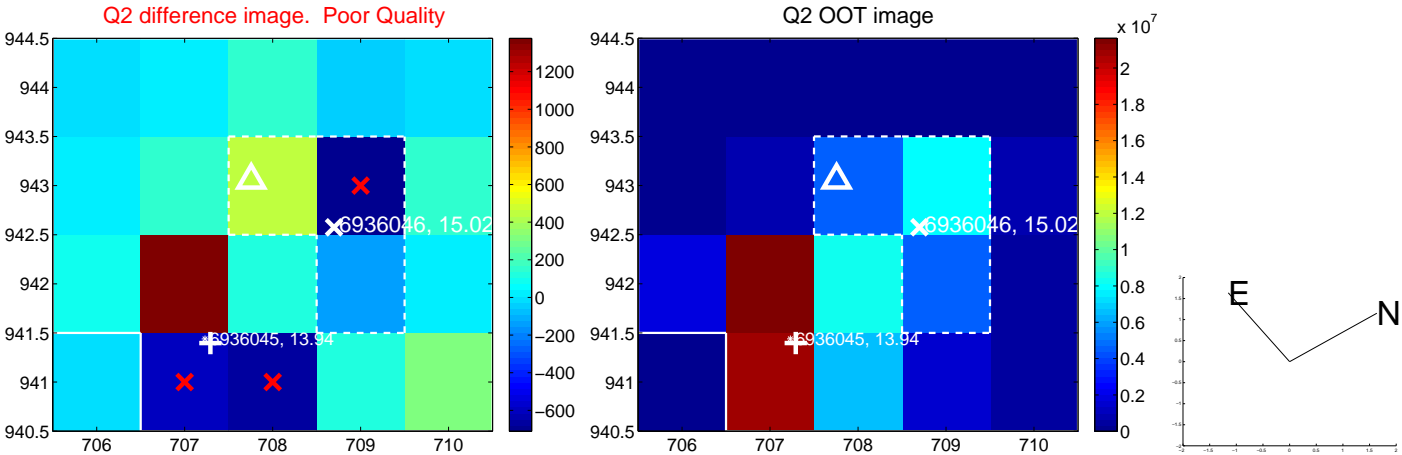
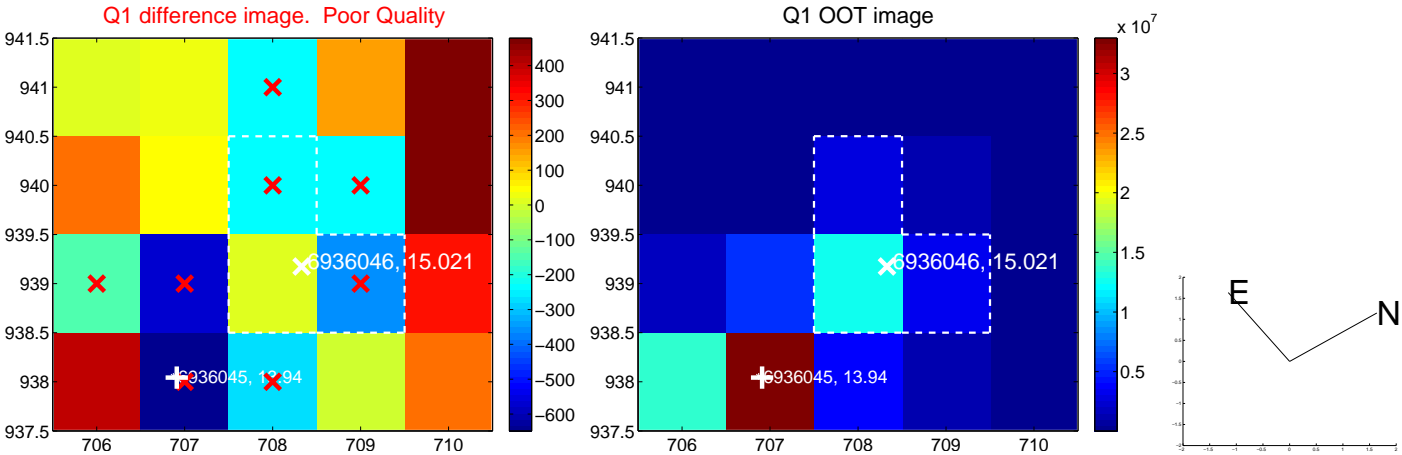


offset from photometric centroids

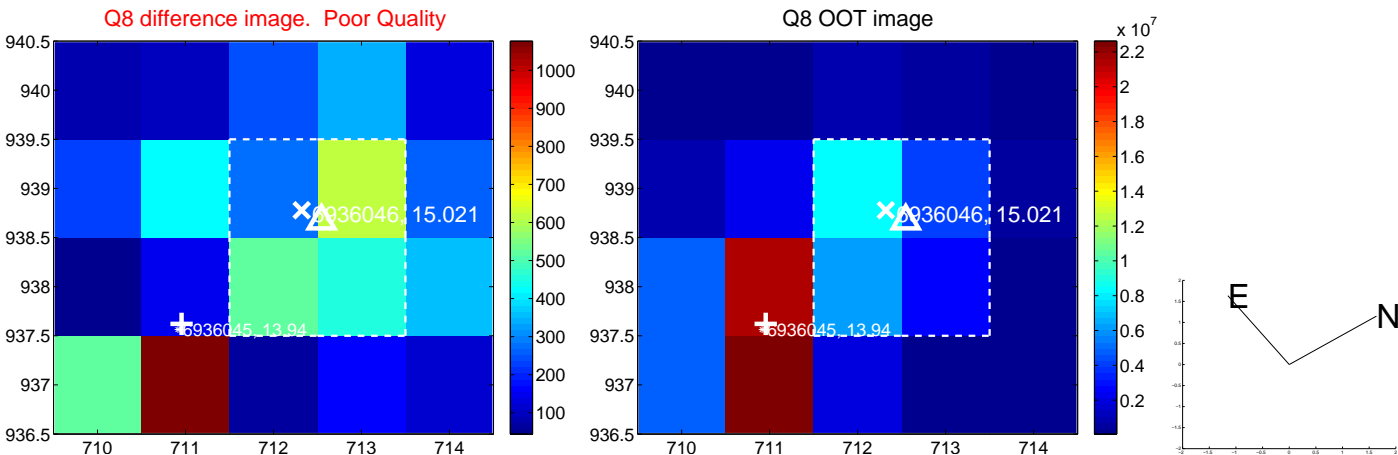
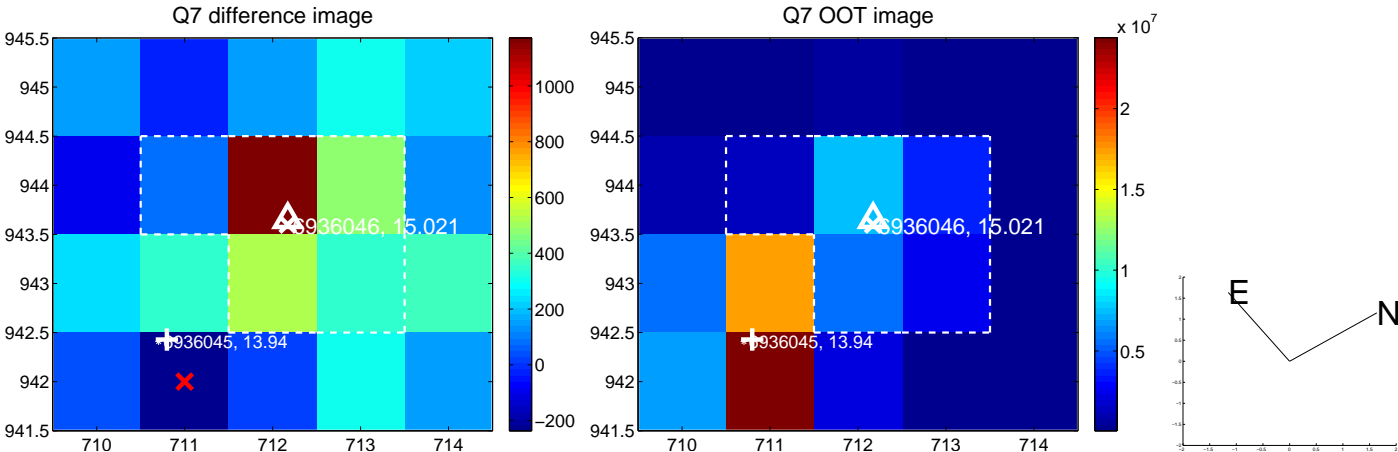
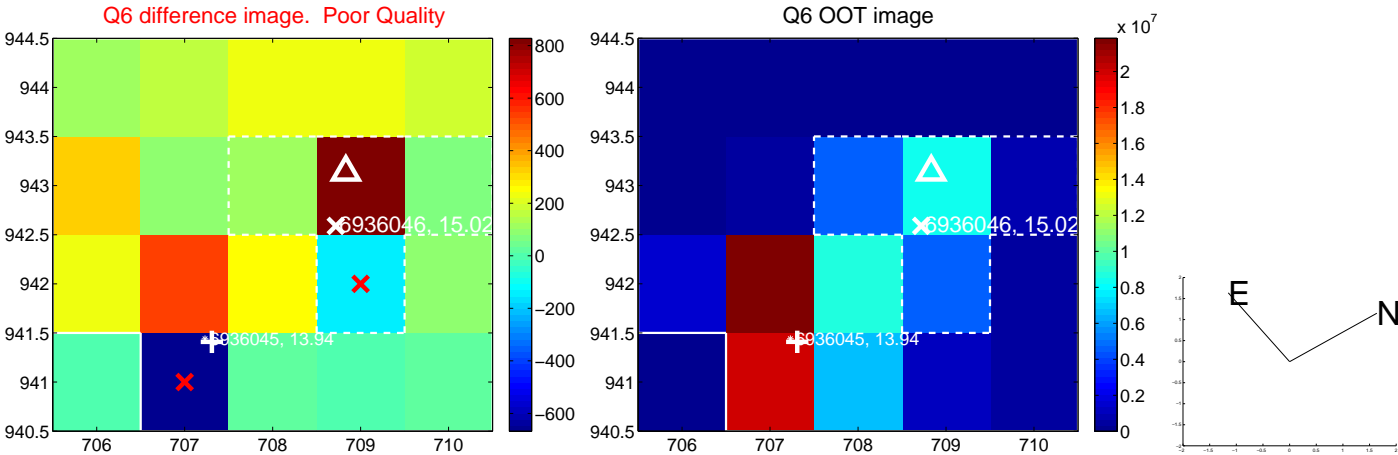
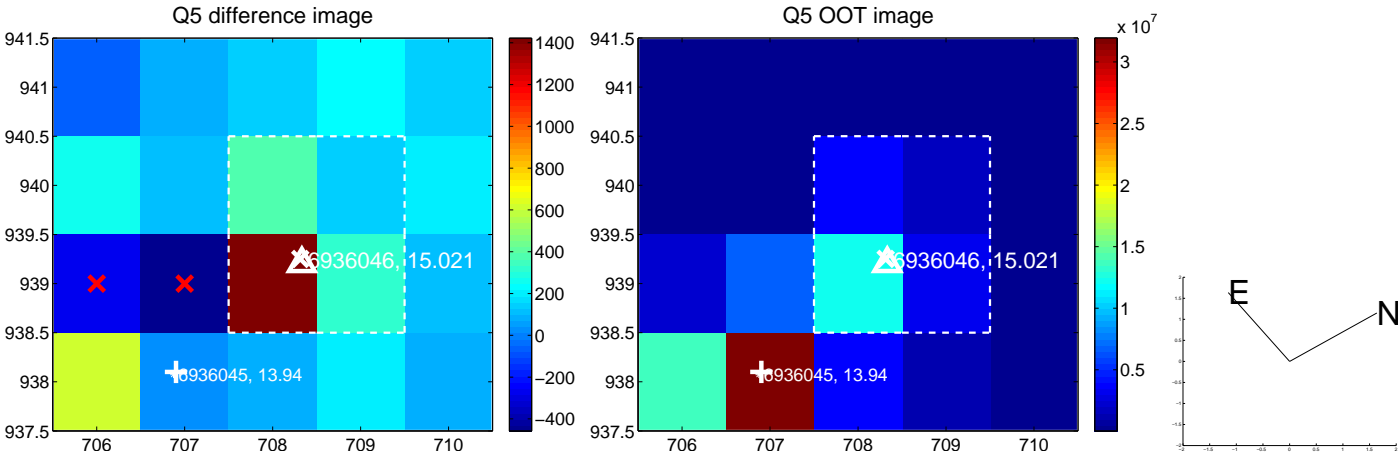


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

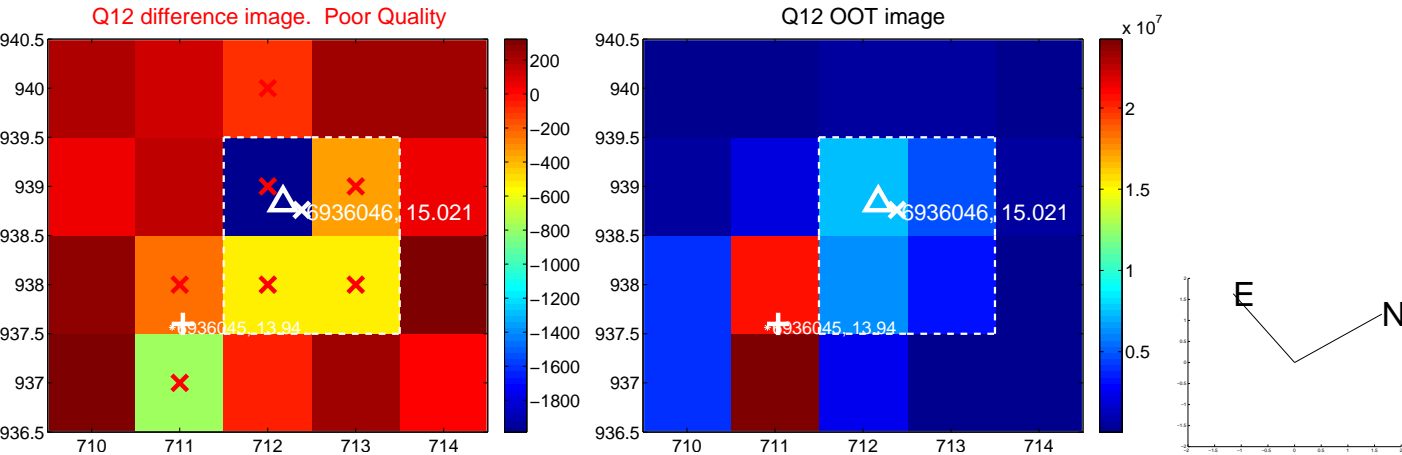
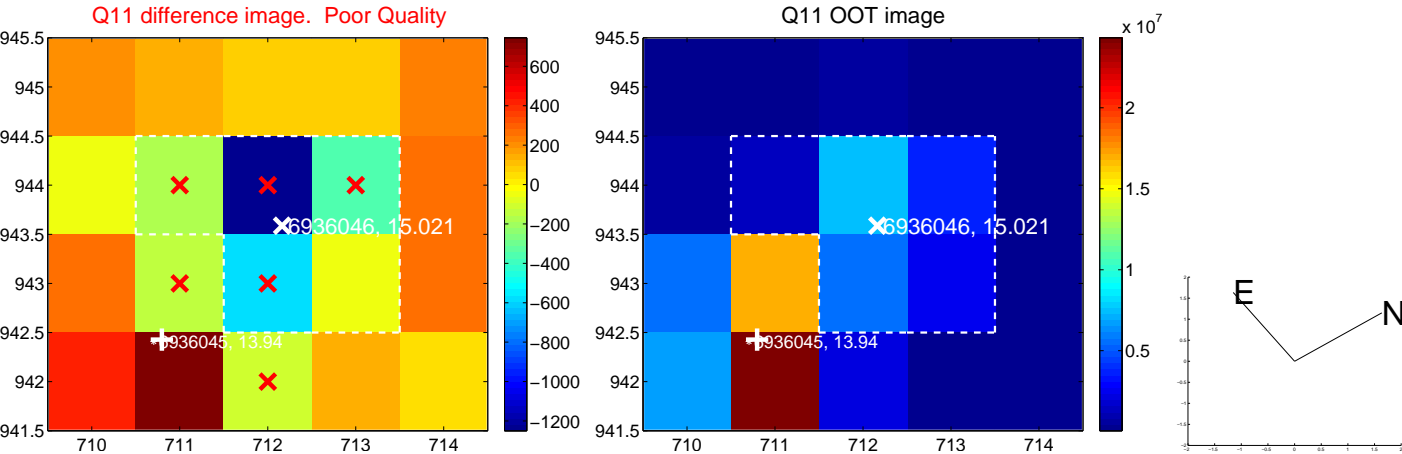
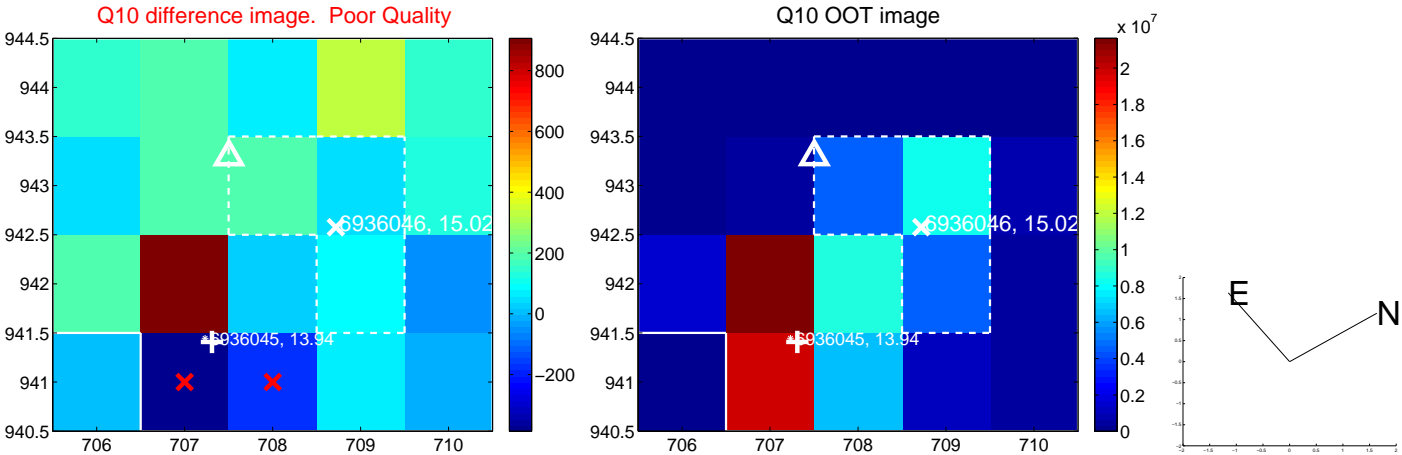
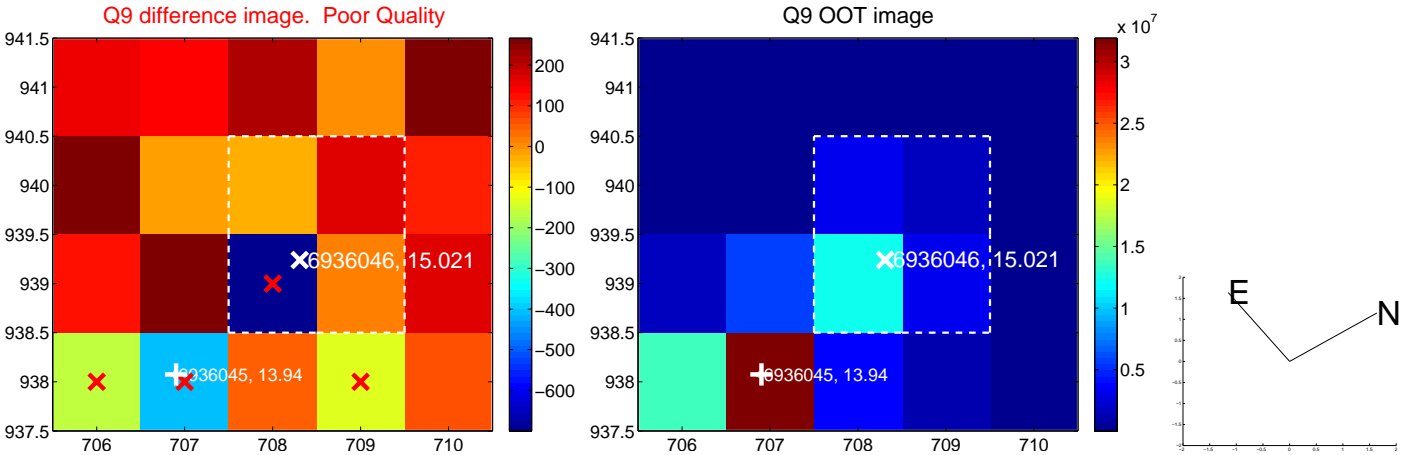


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

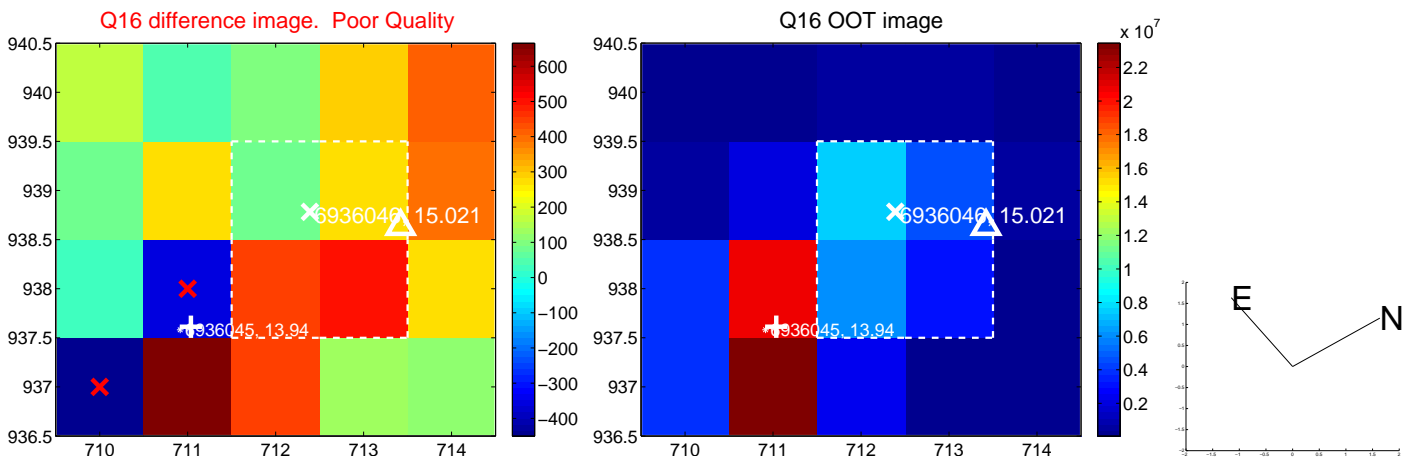
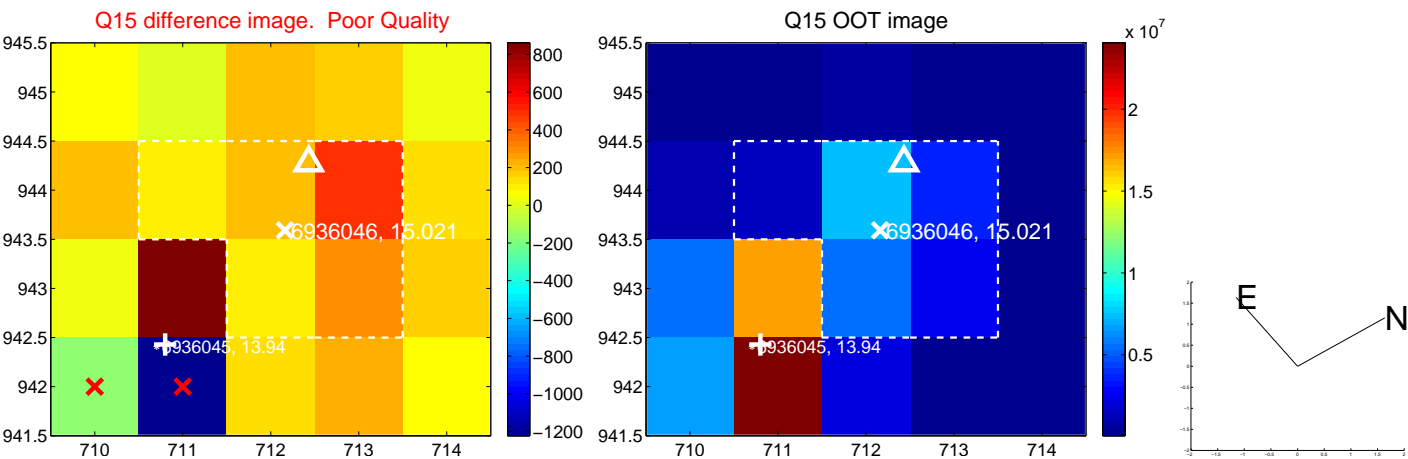
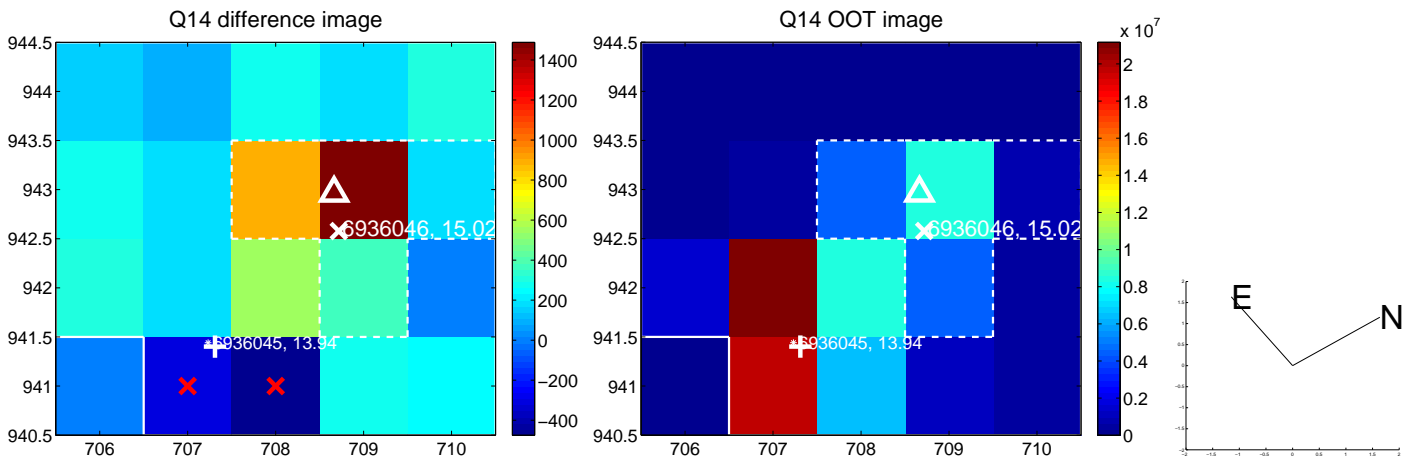
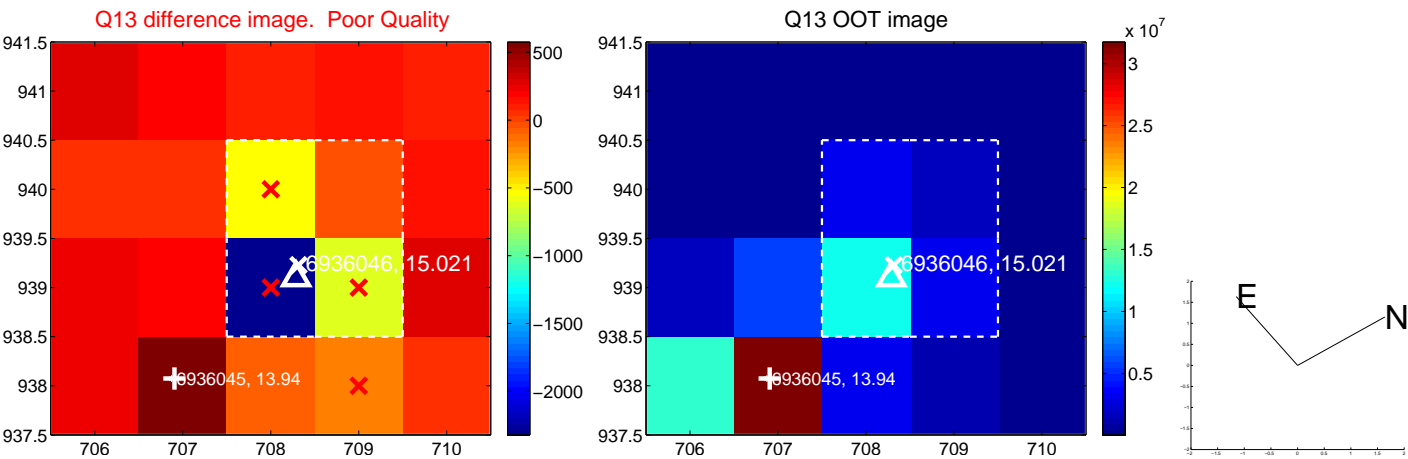




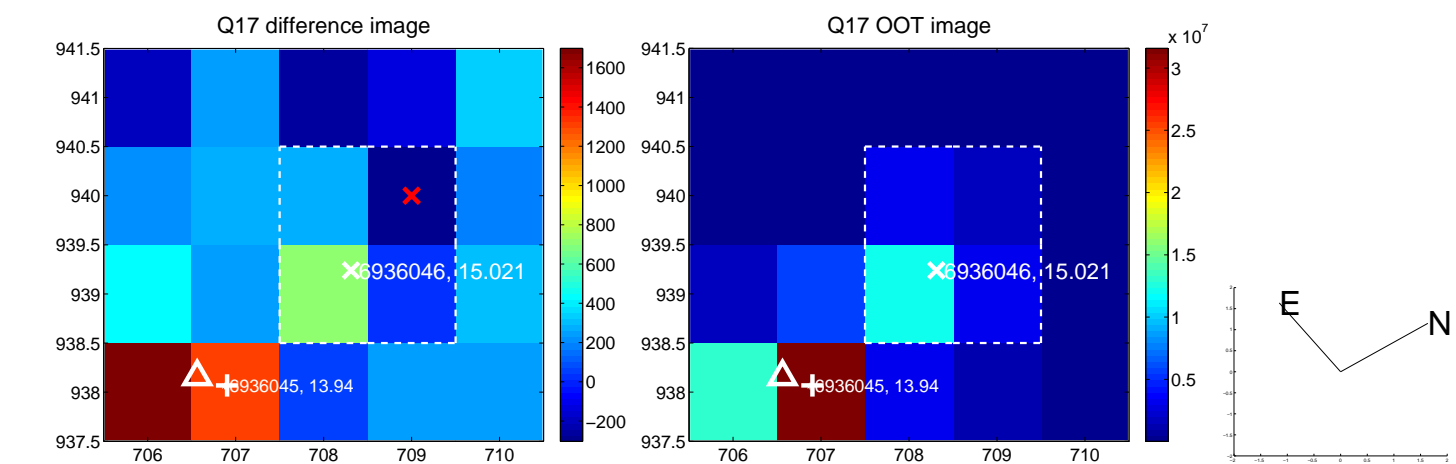
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



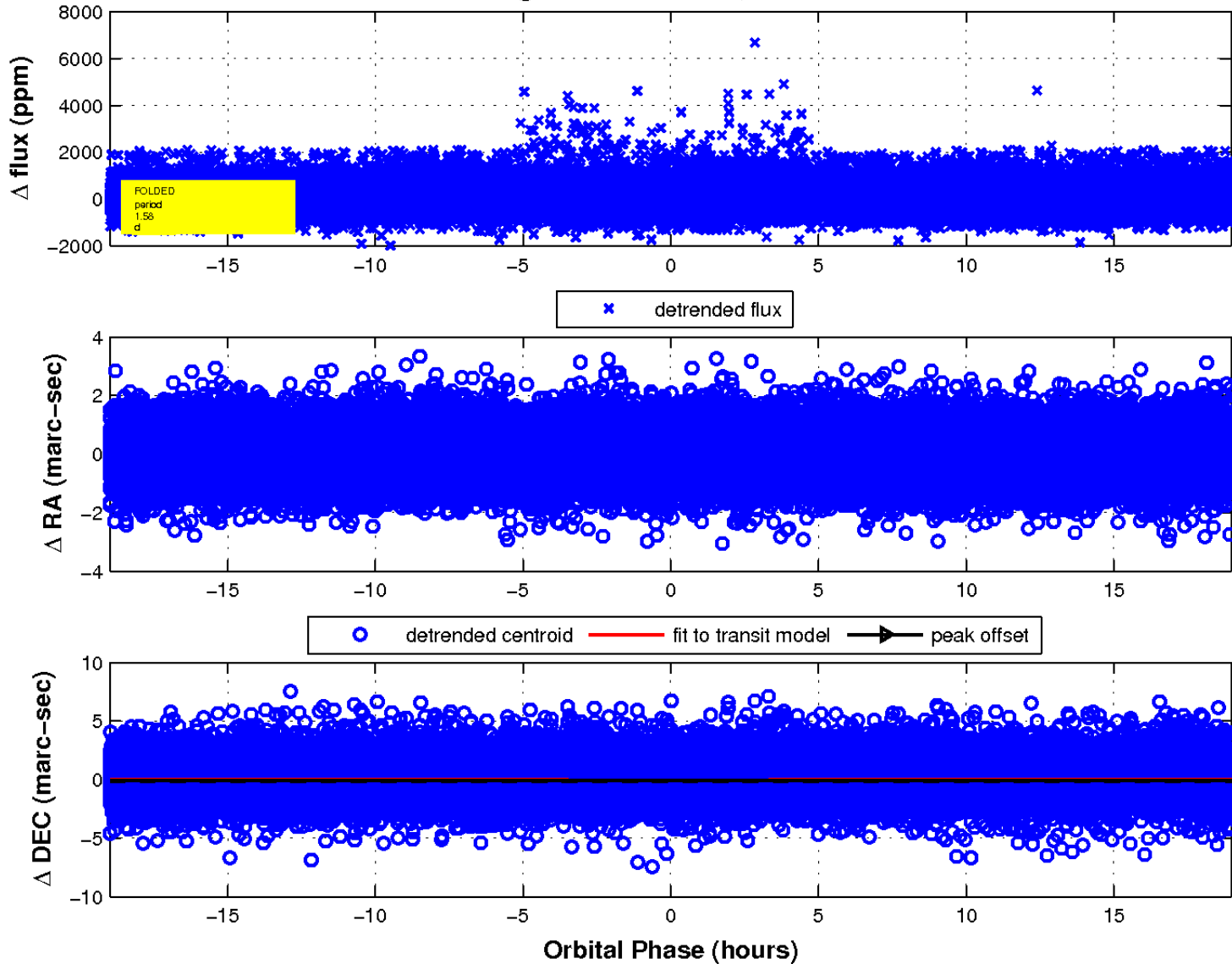
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

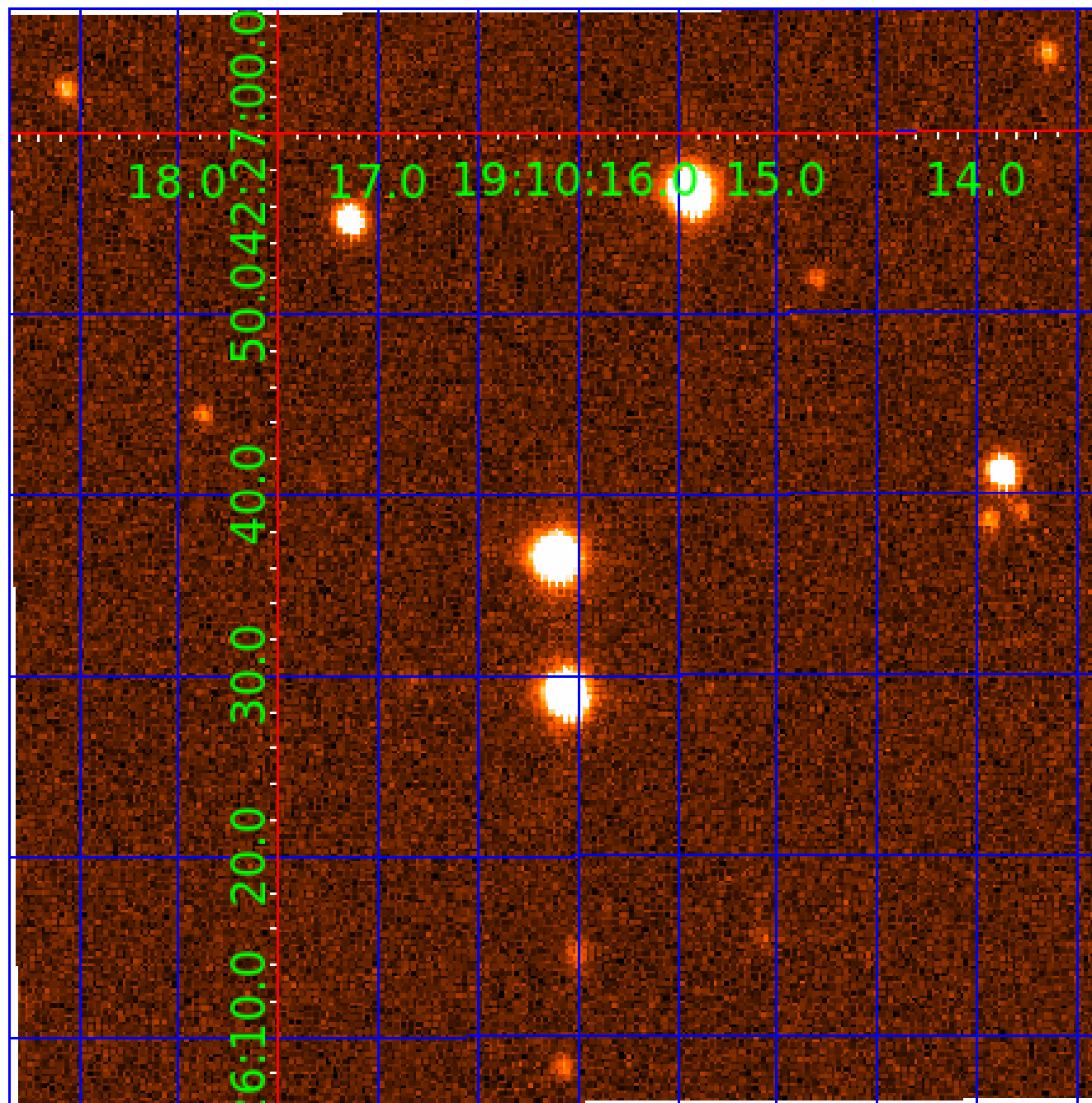


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination





# KIC 006936046

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006936046-01	OBS	No	1.582107	132.266058	67.7	7.258	9.3	9.9	0.50	3770	0.48	100.31
006936046-03	OBS	No	187.896768	273.632593	622.0	8.490	8.4	8.5	0.50	3770	1.33	0.17
006936046-04	OBS	No	273.024802	134.647409	630.5	5.257	7.5	7.0	0.50	3770	1.42	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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006936046-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006936046-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_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.

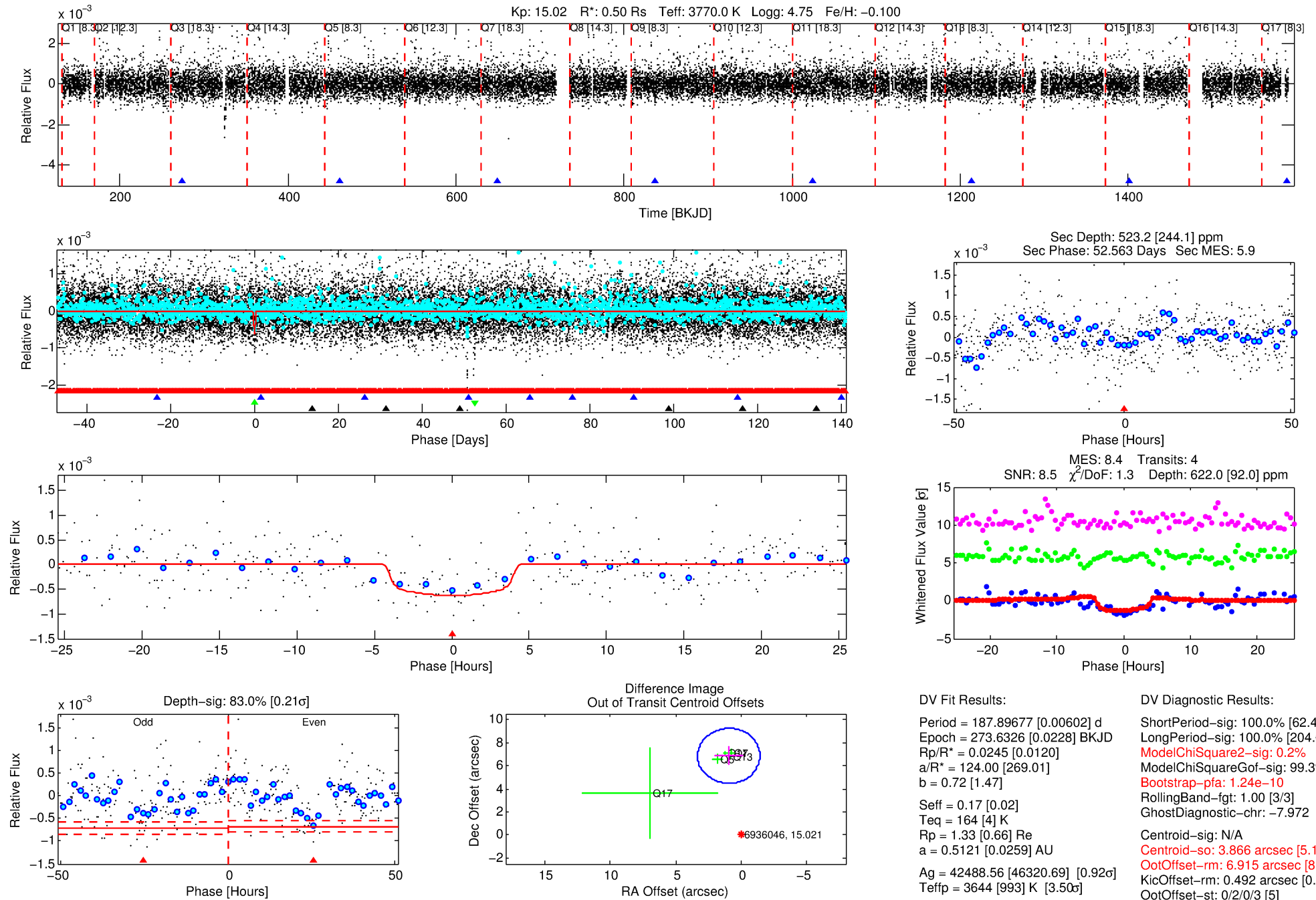
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006936046-03

No Significant Match Found

# DV One-Page Summary

KIC: 6936046 Candidate: 3 of 4 Period: 187.897 d



## DV Fit Results:

Period = 187.89677 [0.00602] d  
Epoch = 273.6326 [0.0228] BKJD  
Rp/R\* = 0.0245 [0.0120]  
a/R\* = 124.00 [269.01]  
b = 0.72 [1.47]  
Seff = 0.17 [0.02]  
Teq = 164 [4] K  
Rp = 1.33 [0.66] Re  
a = 0.5121 [0.0259] AU  
Ag = 42488.56 [46320.69] [0.92 $\sigma$ ]  
Teffp = 3644 [993] K [3.50 $\sigma$ ]

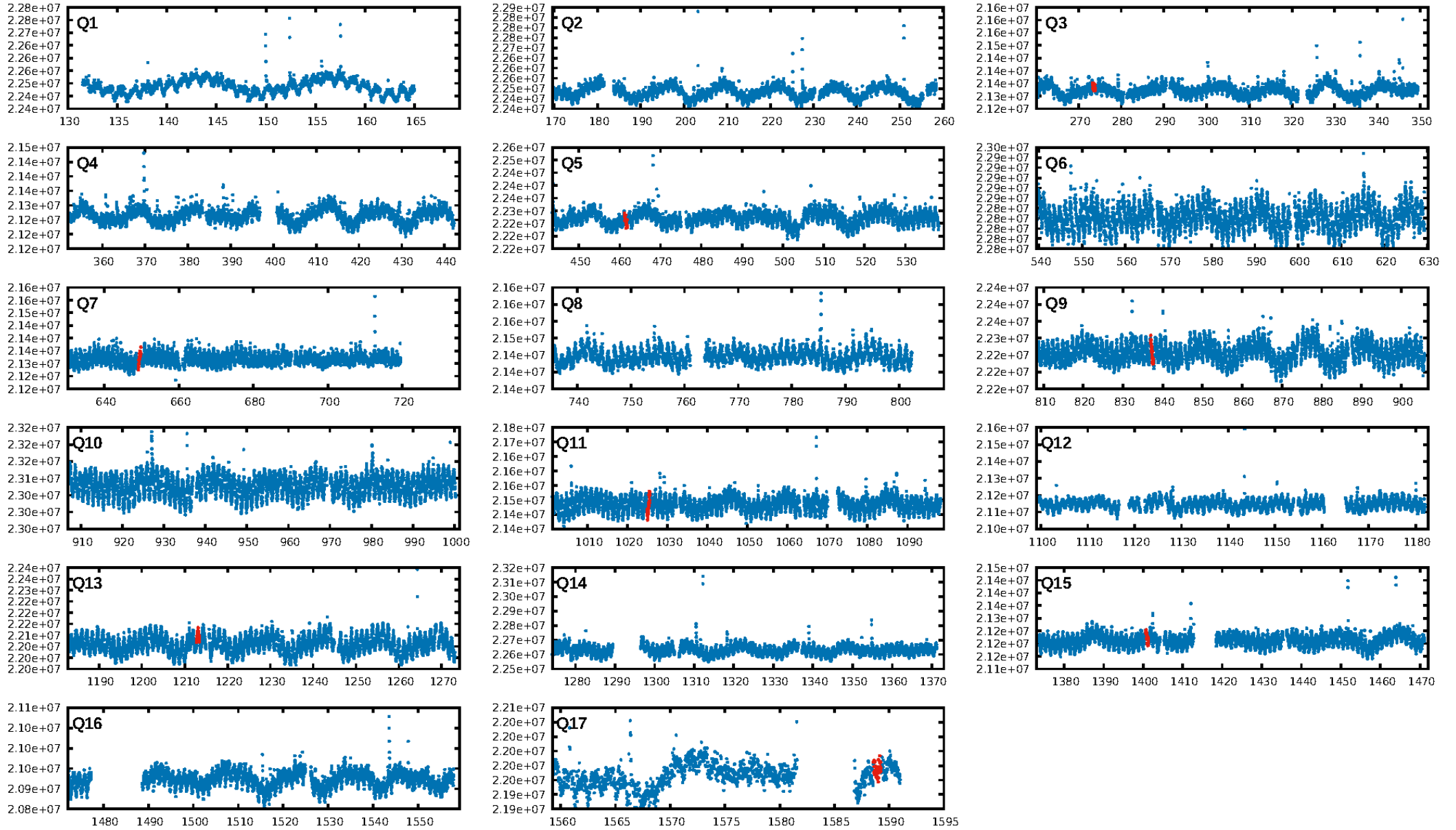
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.40 $\sigma$ ]  
LongPeriod-sig: 100.0% [204.60 $\sigma$ ]  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 99.3%  
Bootstrap-pfa: 1.24e-10  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -7.972  
Centroid-sig: N/A  
Centroid-so: 3.866 arcsec [5.18 $\sigma$ ]  
OotOffset-rm: 6.915 arcsec [8.73 $\sigma$ ]  
KicOffset-rm: 0.492 arcsec [0.33 $\sigma$ ]  
OotOffset-st: 0/2/0/3 [5]  
KicOffset-st: 0/2/0/3 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.00 [0/8]

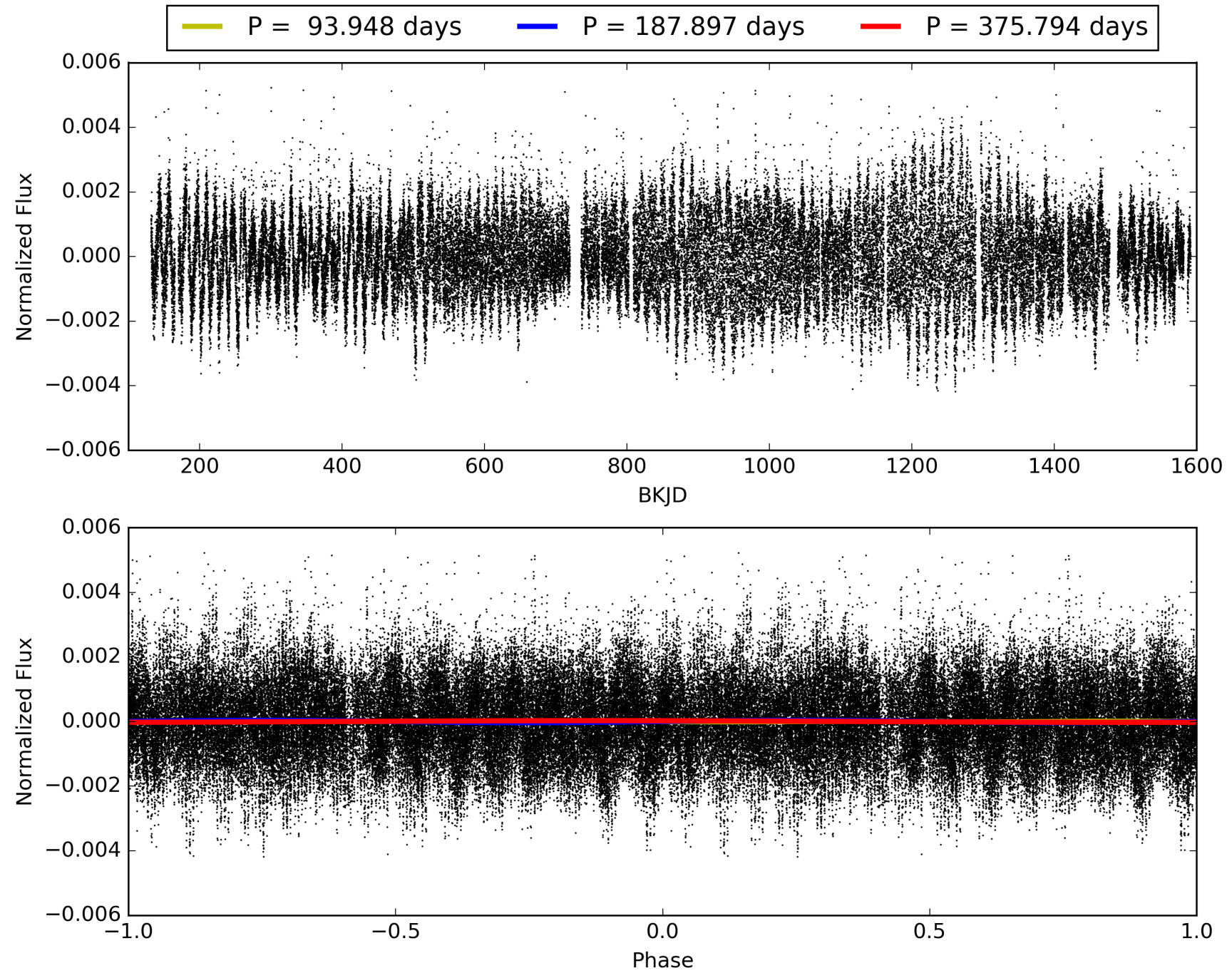
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:20 Z

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

# TCE 006936046-03, PDC Light Curves



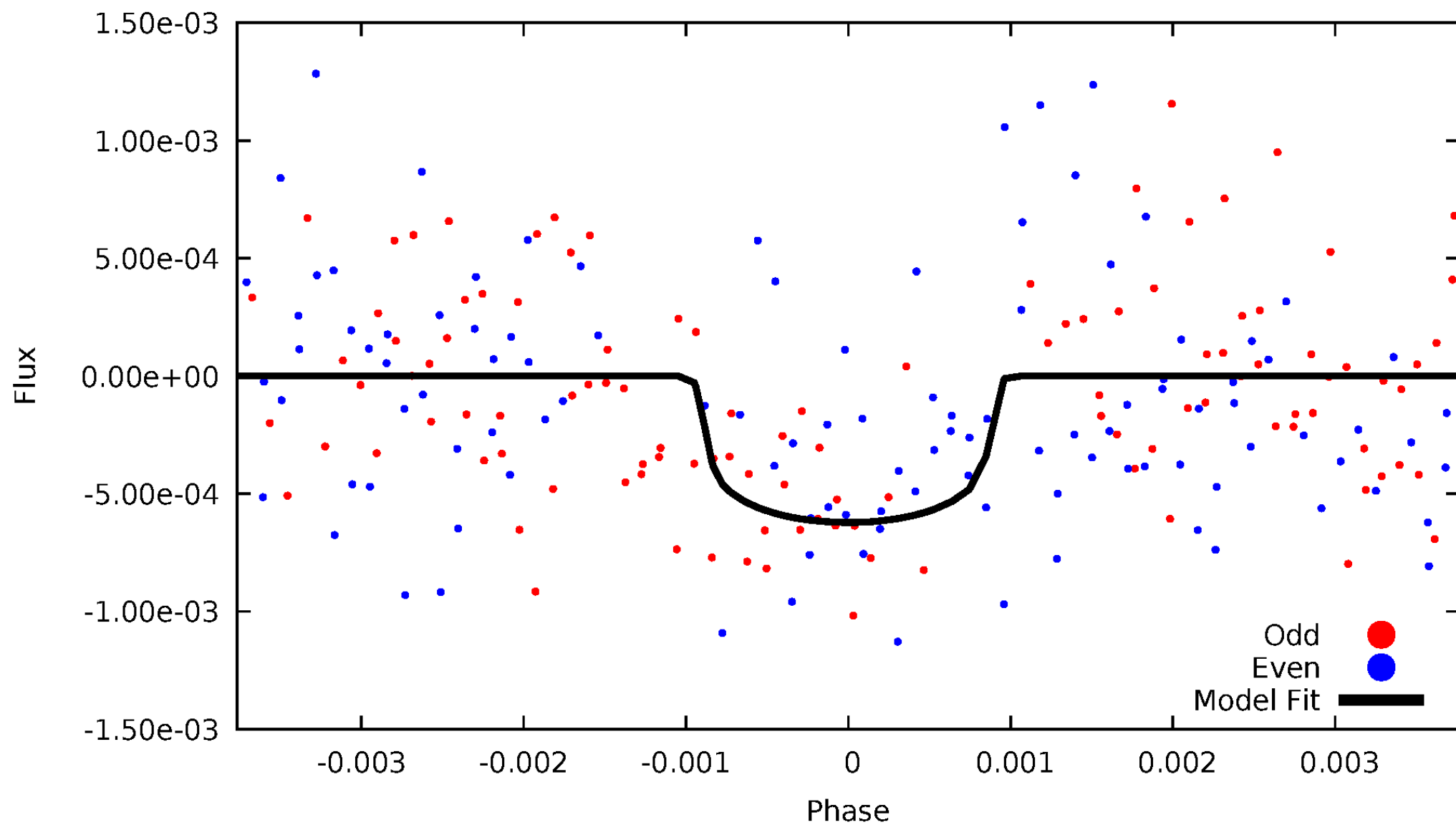
TCE 006936046-03





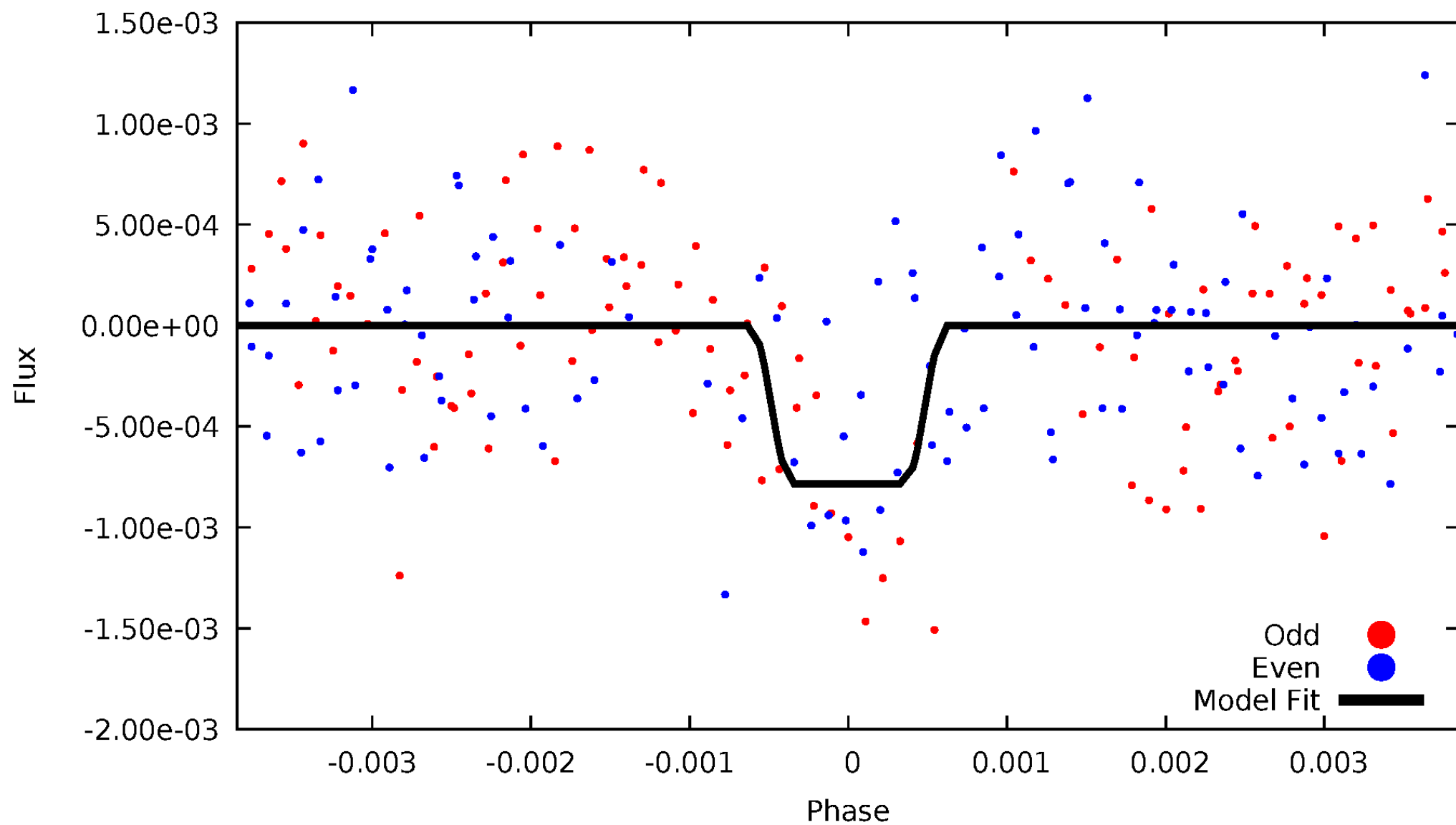
# DV Odd/Even

TCE 006936046-03



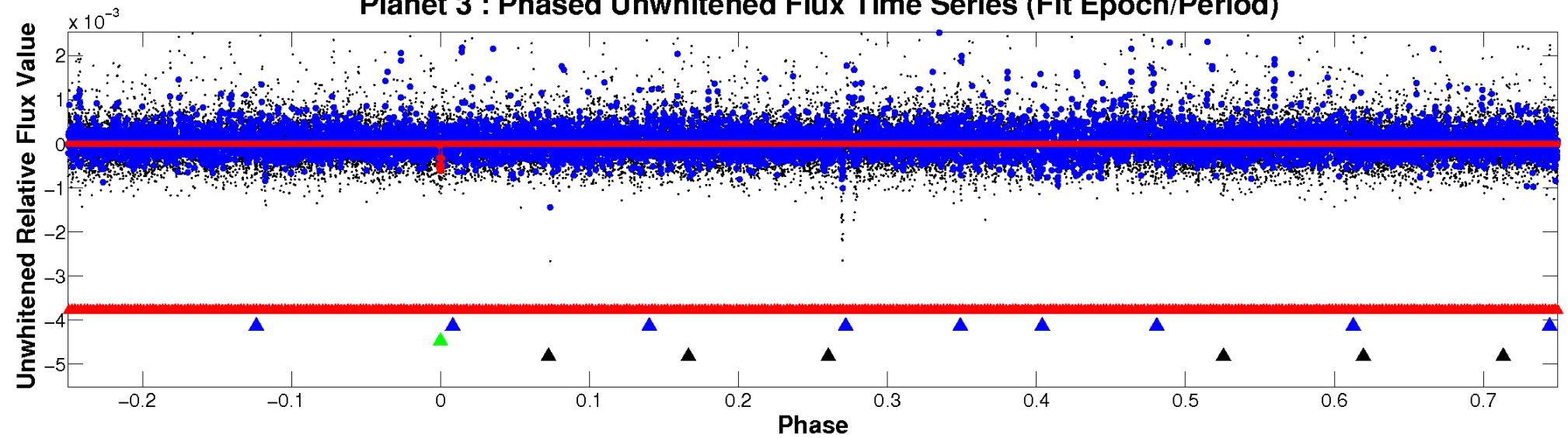
# ALT Odd/Even

TCE 006936046-03

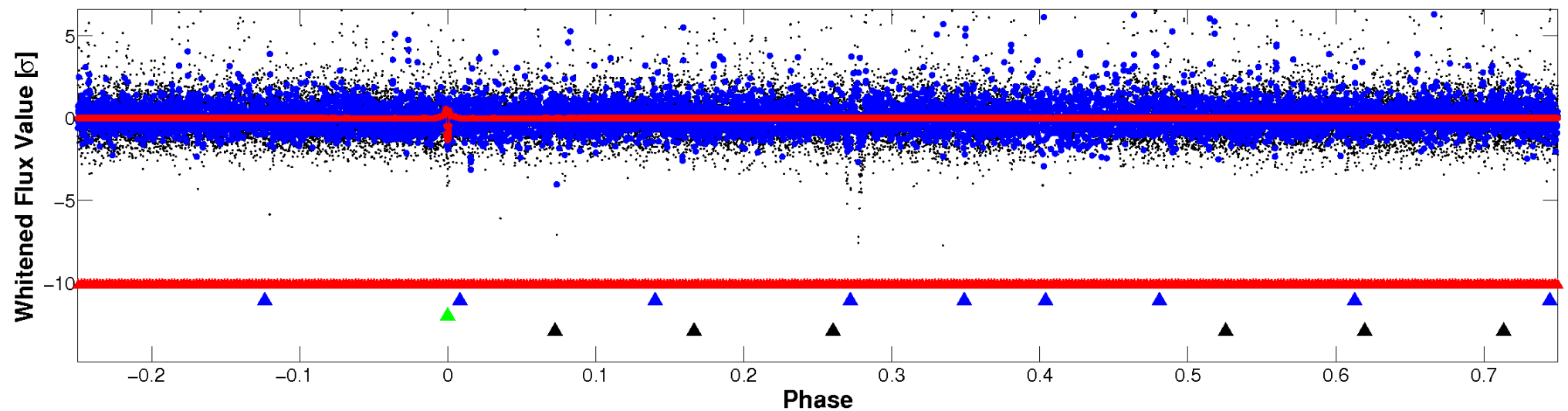


# Non-Whitened Vs. Whitened Light Curve

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

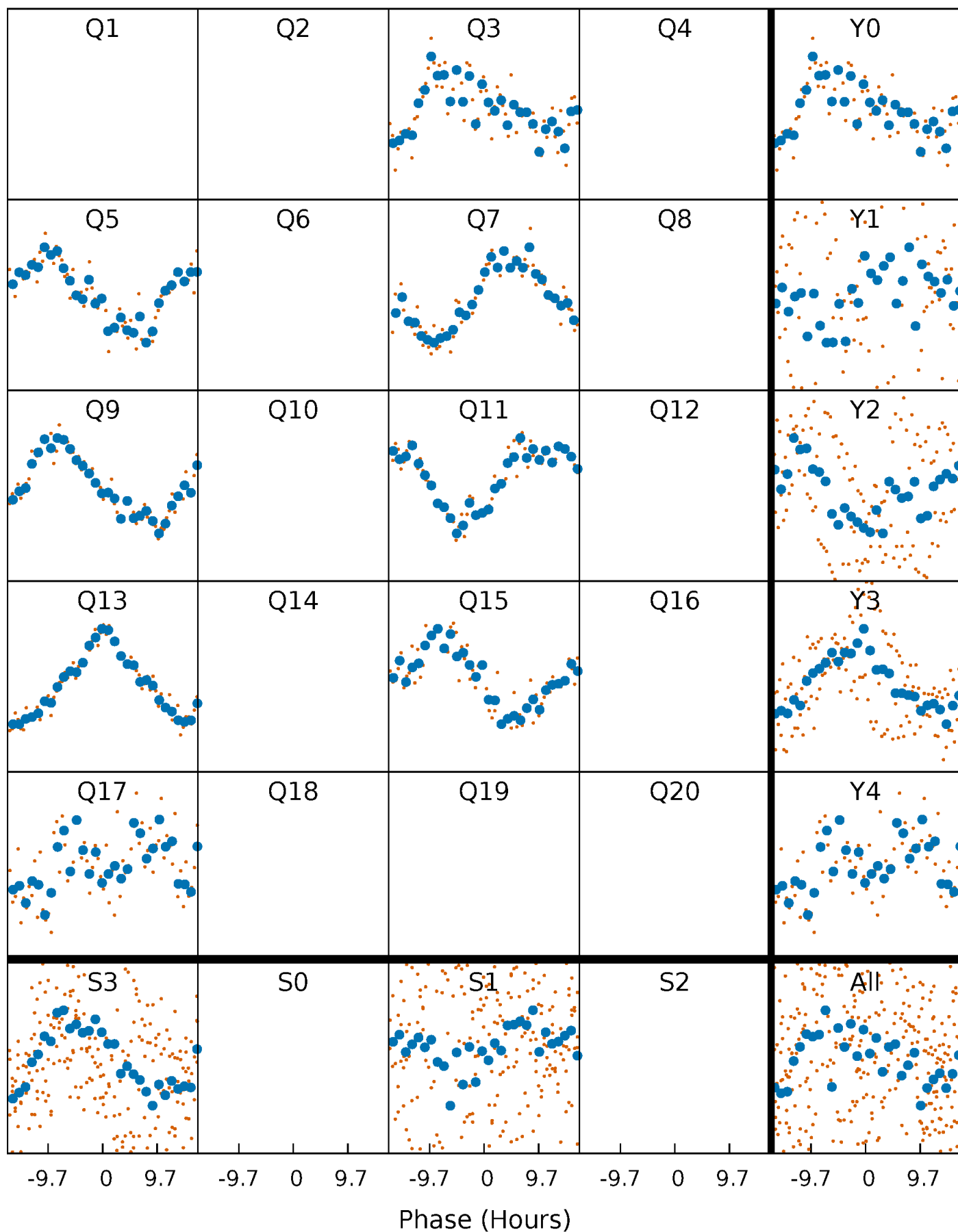


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



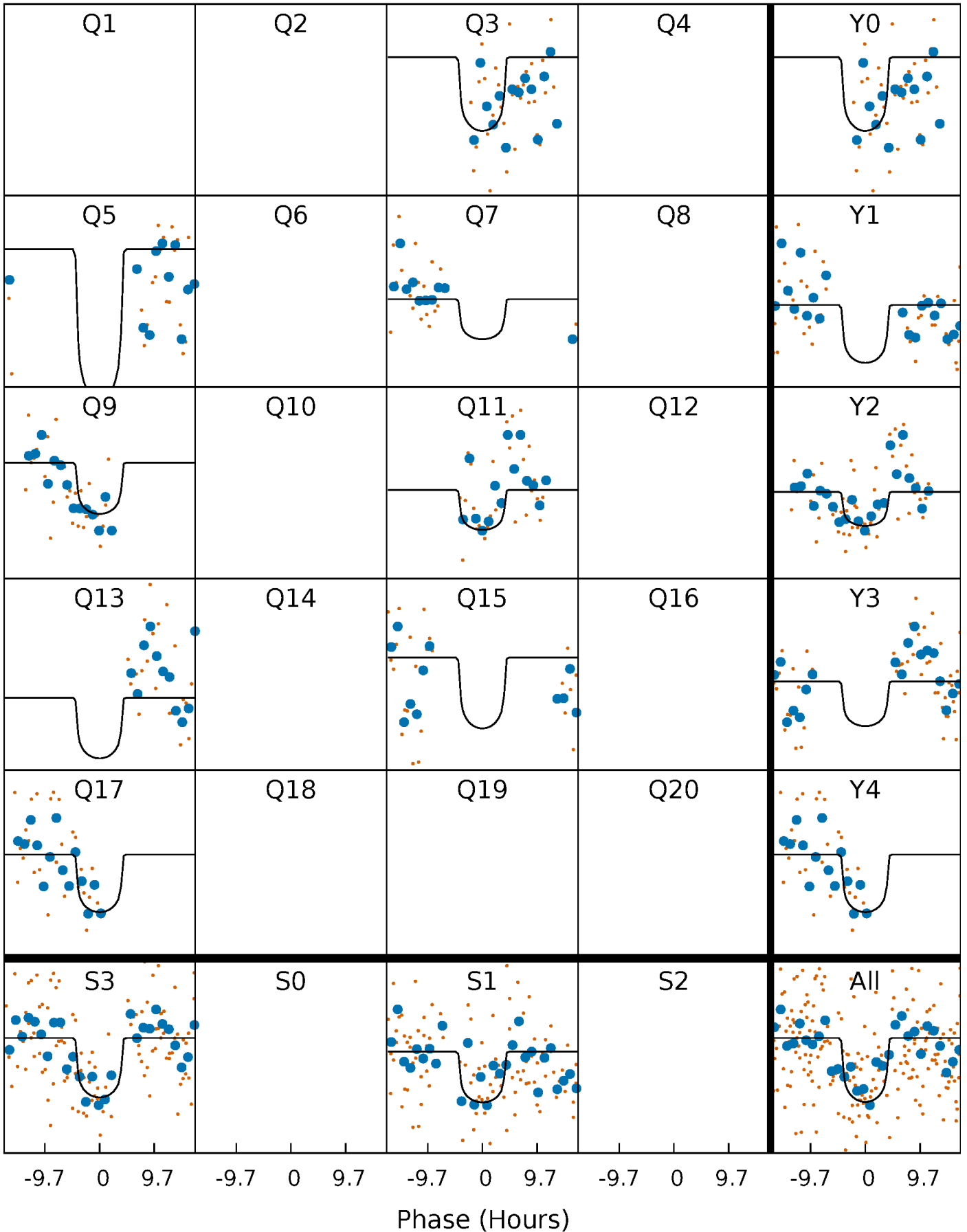
# PDC Quarter-Phased Transit Curves

TCE 006936046-03     $P=187.896768$  Days     $T_0=273.632593$  (BKJD)



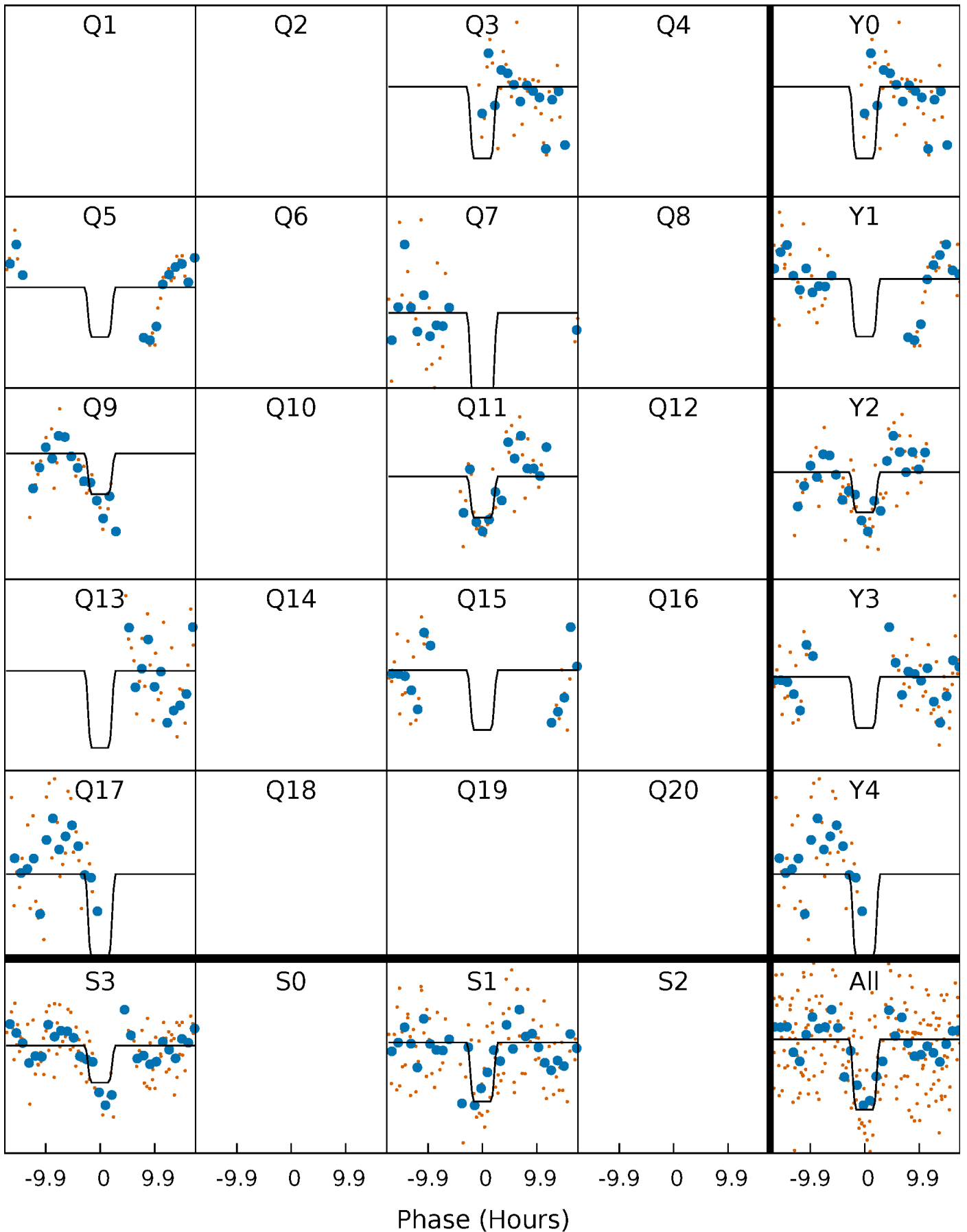
# DV Quarter-Phased Transit Curves

TCE 006936046-03     $P=187.896768$  Days     $T_0=273.632593$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

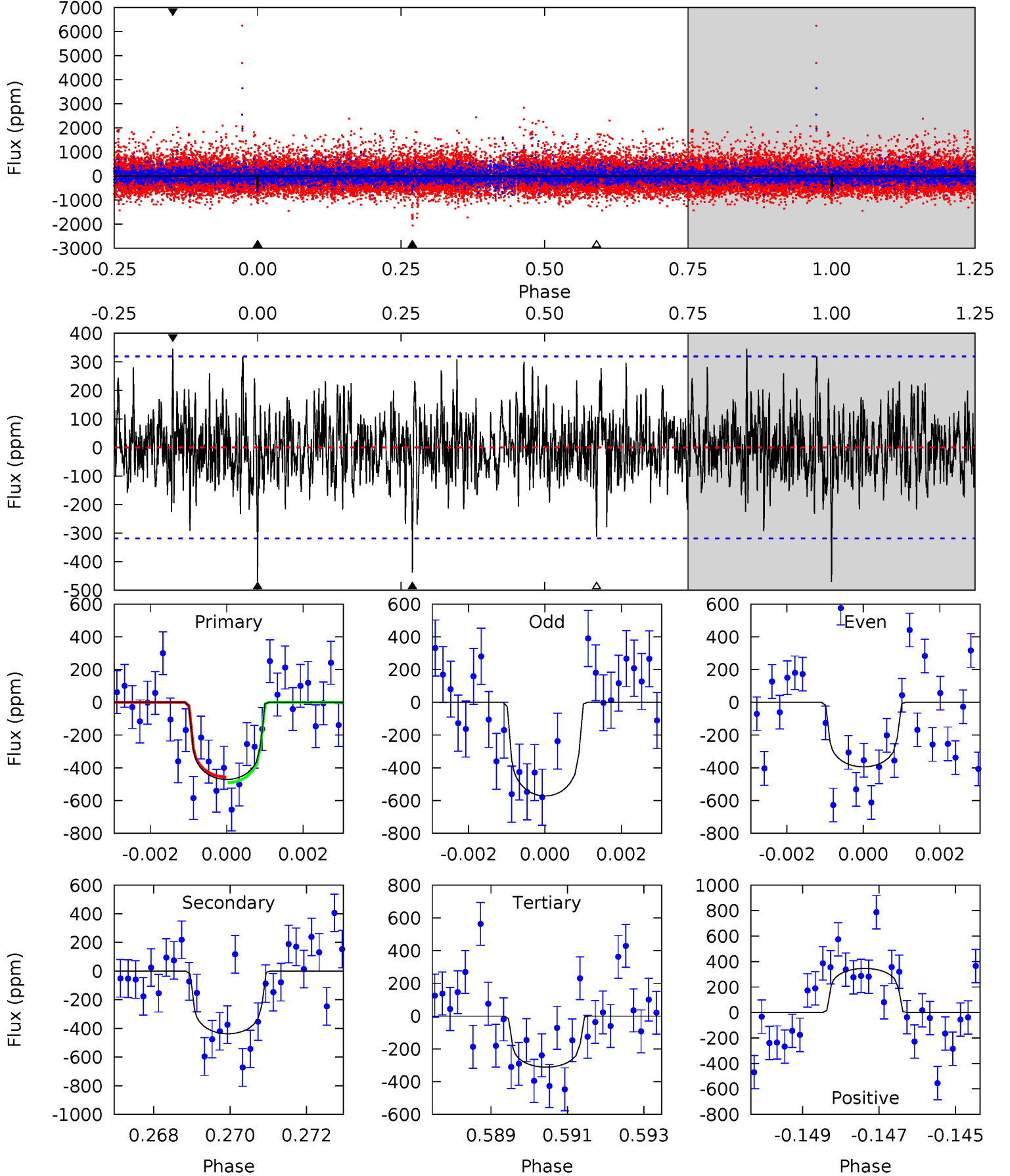
TCE 006936046-03     $P=187.911780$  Days     $T_0=273.572758$  (BKJD)



# DV Model-Shift Uniqueness Test

006936046-03, P = 187.896768 Days, E = 85.735825 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
7.89	7.32	5.21	5.79	5.33	3.10	1.50	2.68	2.10	2.11	1.53	1.37	1.00	0.42	0.29

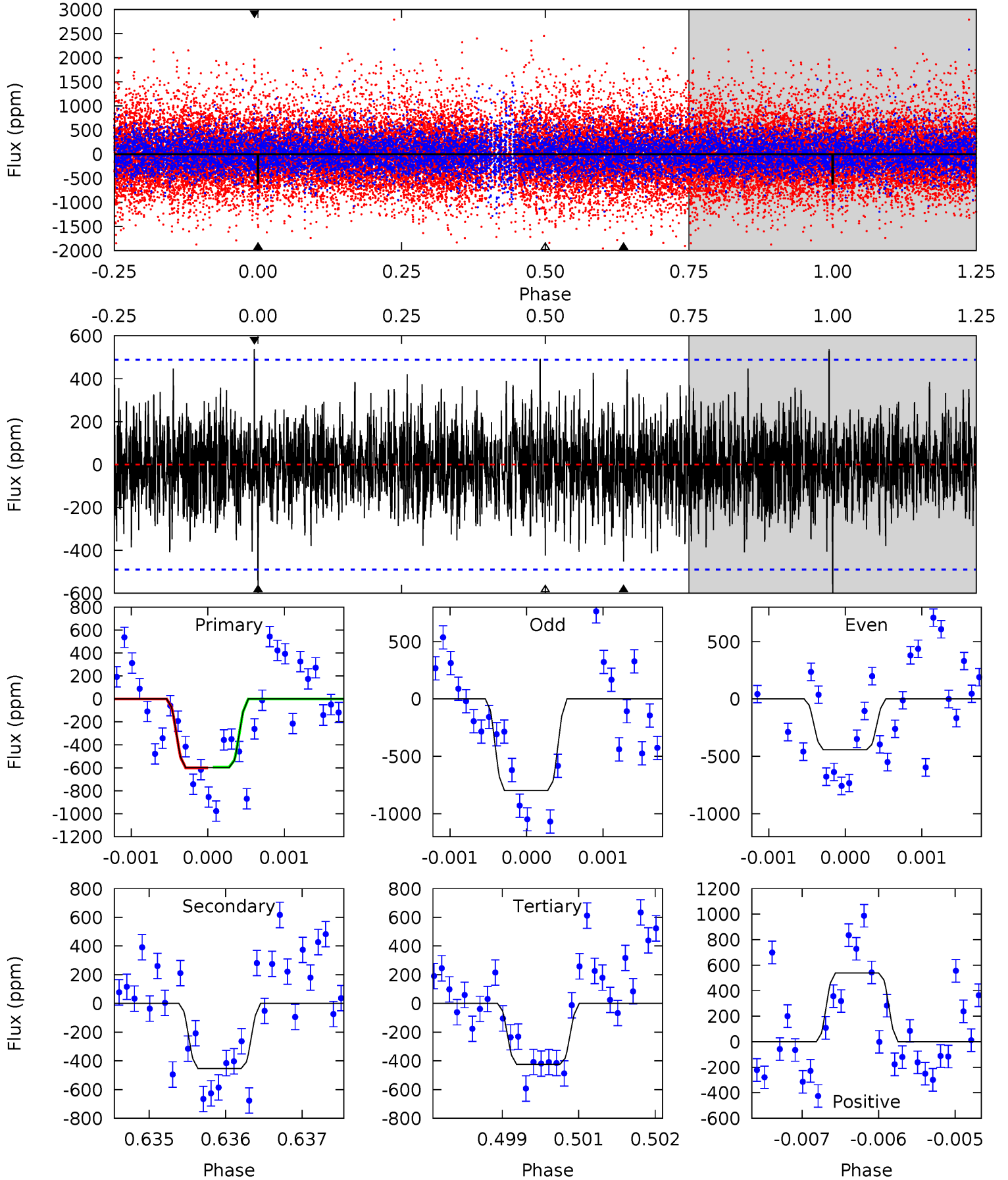




# Alt Model-Shift Uniqueness Test

006936046-03,  $P = 187.911780$  Days,  $E = 85.660978$  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
6.63	5.02	4.70	5.97	5.42	3.24	1.54	1.93	0.66	0.32	-0.95	1.93	1.07	0.47	0.03



### Stellar Parameters For KIC 006936046

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3770^{+60}_{-52}$	$4.747^{+0.035}_{-0.020}$	$-0.100^{+0.100}_{-0.100}$	$0.499^{+0.022}_{-0.032}$	$0.508^{+0.028}_{-0.025}$	$5.743^{+0.850}_{-0.505}$
	+2%/-1%	+1%/-0%	+100%/-100%	+4%/-6%	+6%/-5%	+15%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006936046-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-437 \pm 60$	$1.33^{+0.66}_{-0.59}$	$229^{+5}_{-4}$	$3580^{+799}_{-430}$	$35524^{+78837}_{-20075}$
Alt.	$-453 \pm 90$	$1.53^{+0.65}_{-0.64}$	$229^{+4}_{-5}$	$3446^{+711}_{-355}$	$28225^{+57245}_{-14800}$

$T_{\text{max}}$  = 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

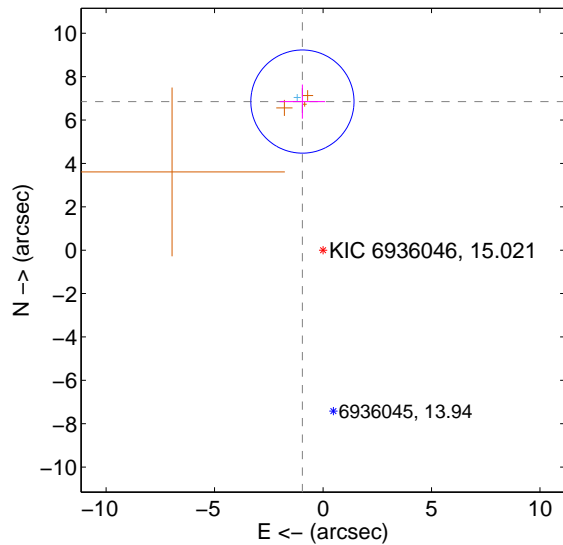
Supplemental centroid analysis for 006936046-03. Kepler magnitude: 15.02. Transit SNR 8.53

There are 1 quarters with good PRF difference image offsets

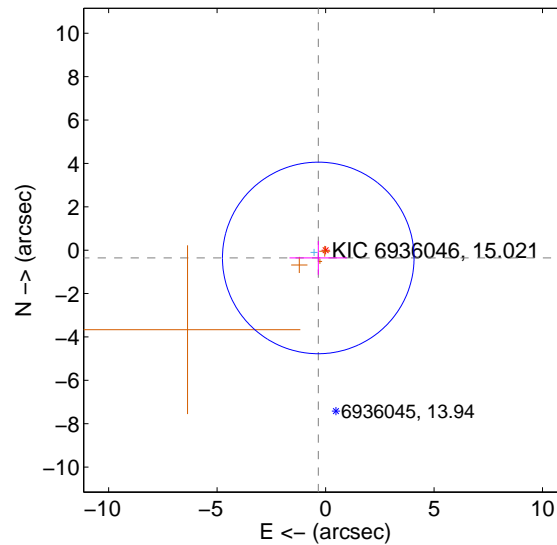
The OOT PRF centroid is offset from the target star catalog position by about 7.30 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.915 \pm 0.793$	$8.73$	$0.950 \pm 1.046$	$6.849 \pm 0.787$
PRF-fit source offset from KIC position	$0.492 \pm 1.471$	$0.33$	$0.338 \pm 1.327$	$-0.358 \pm 0.777$
photometric centroid source offset	$3.87 \pm 0.75$	$5.18$	$-0.10 \pm 0.32$	$-3.86 \pm 0.75$

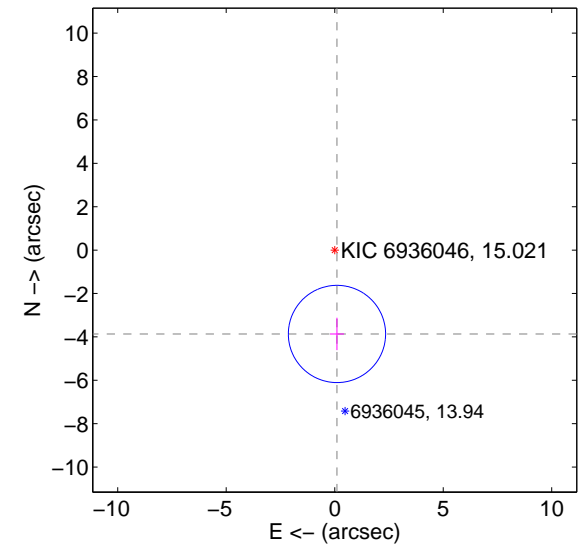
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

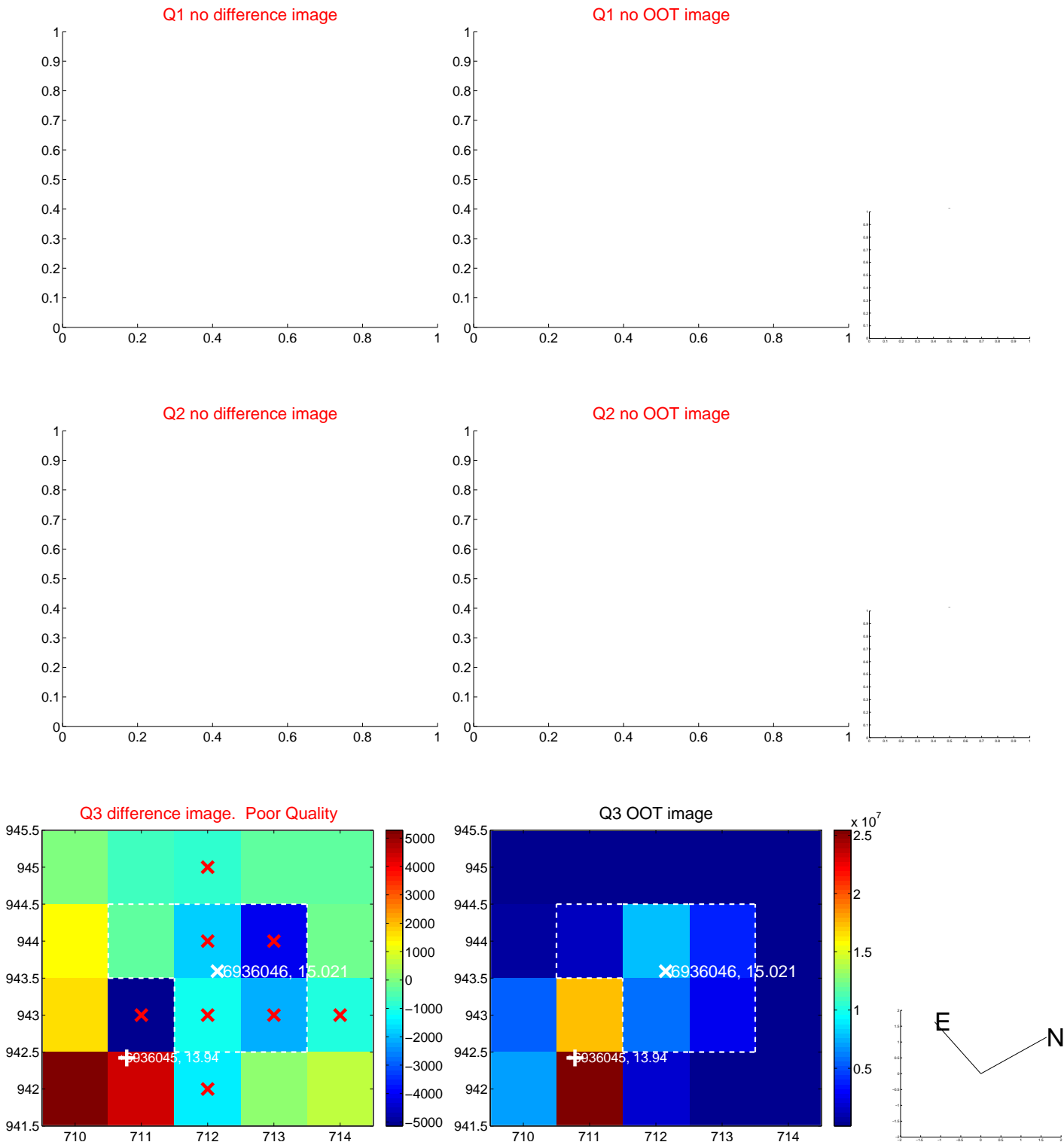


offset from photometric centroids

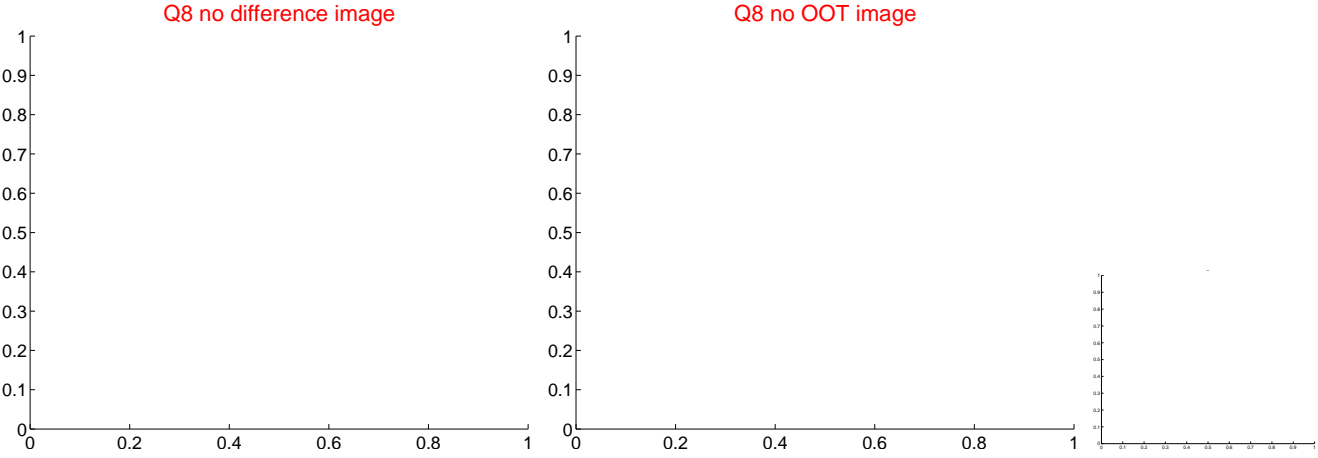
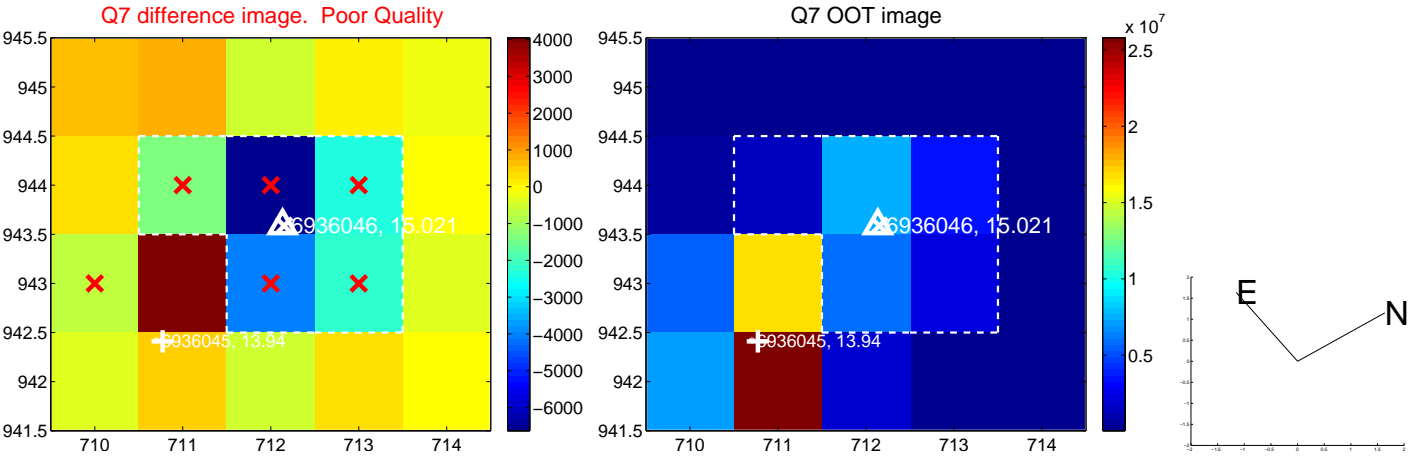
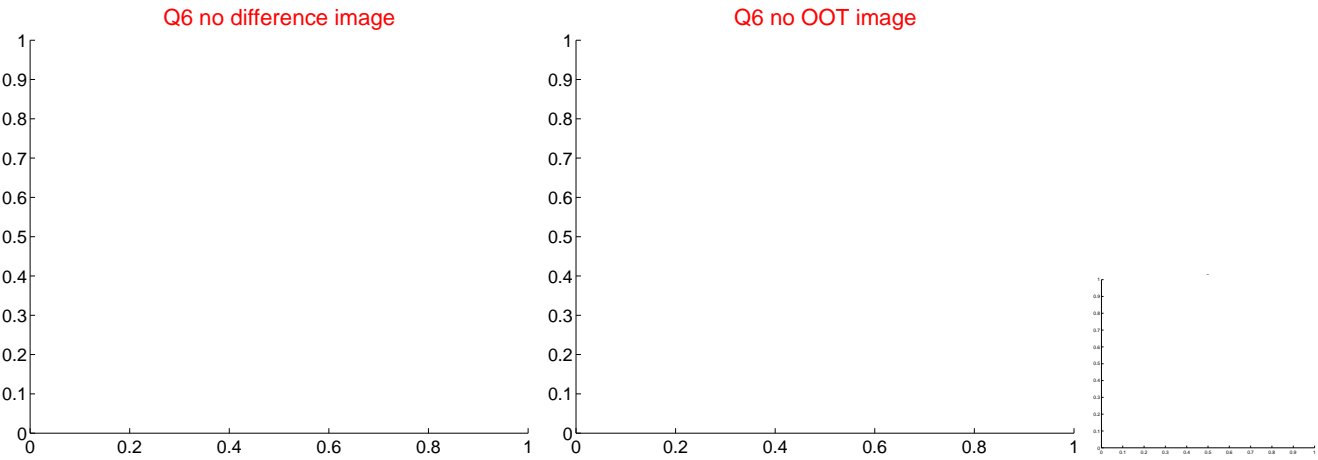
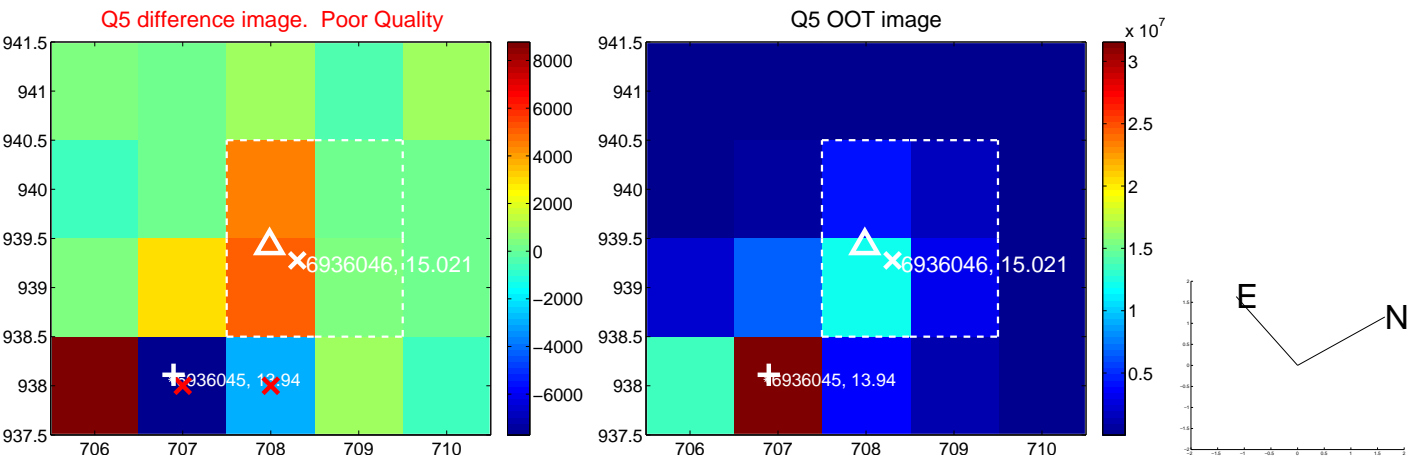


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

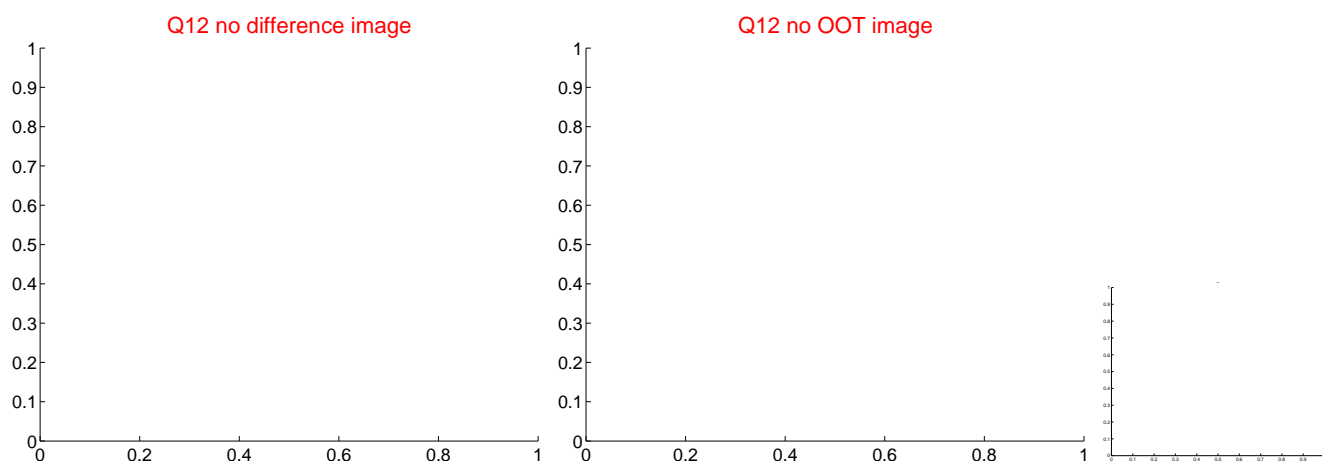
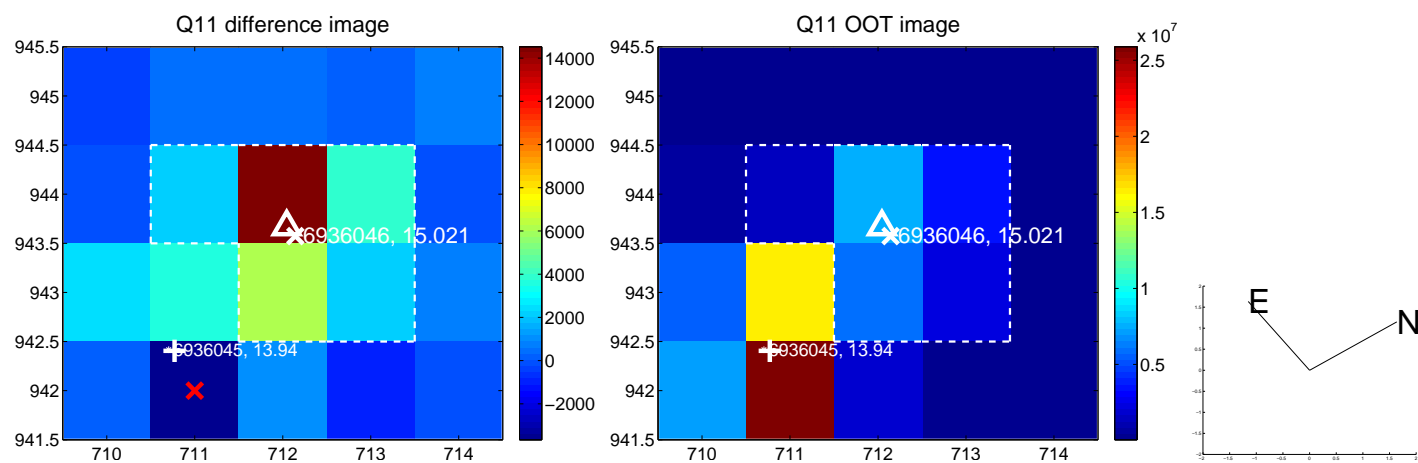
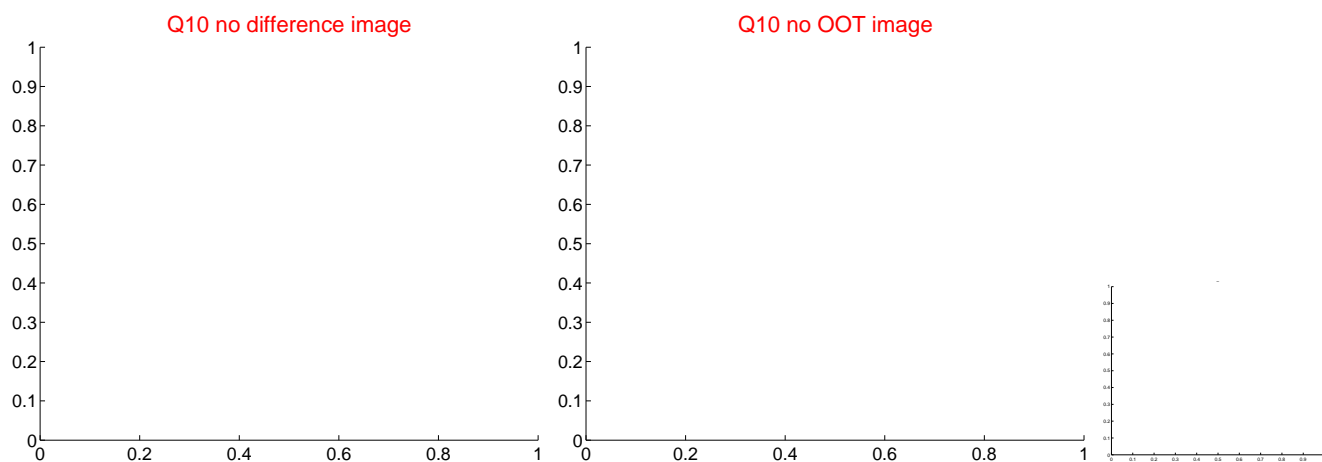
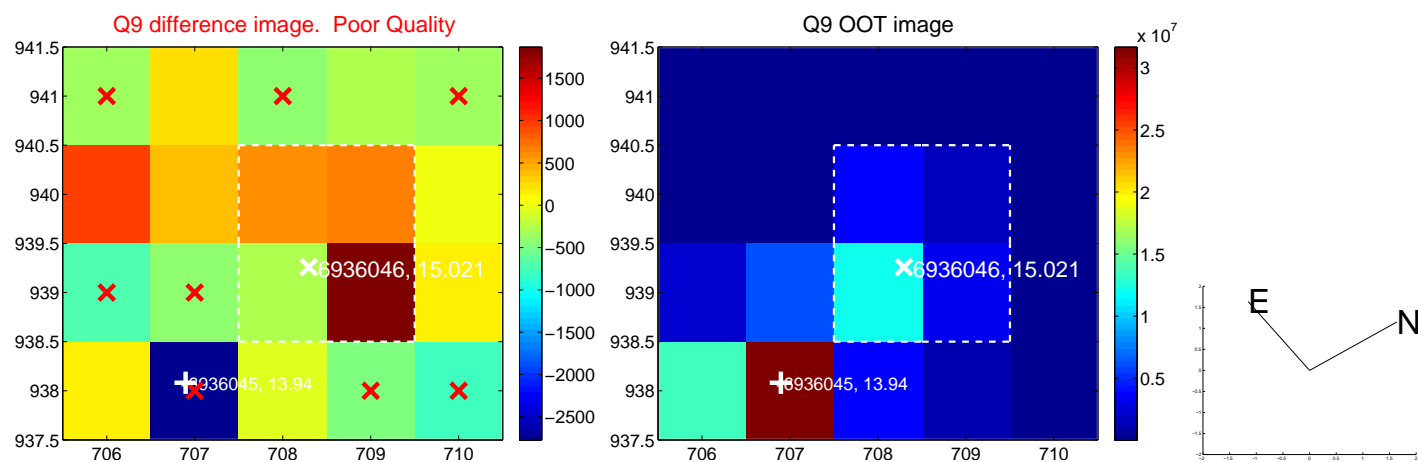
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



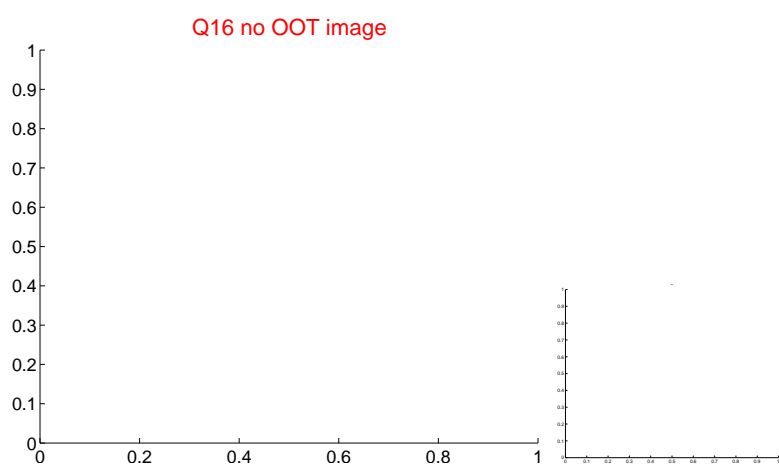
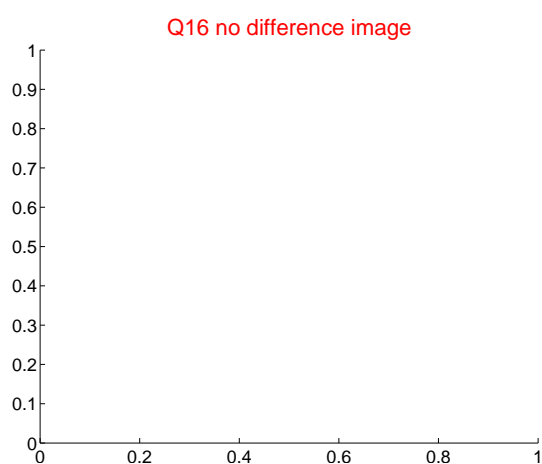
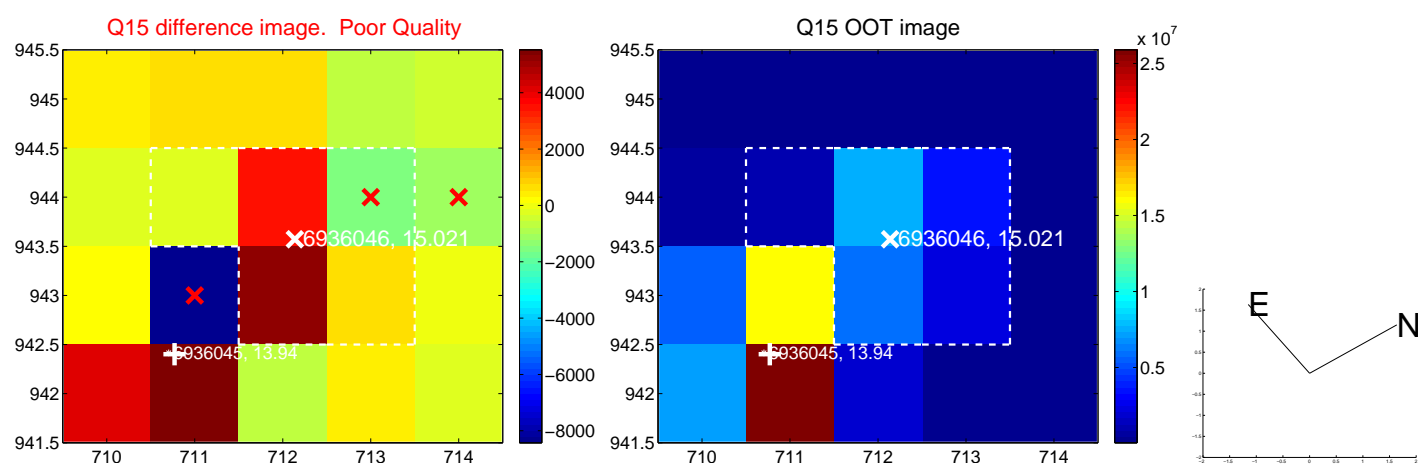
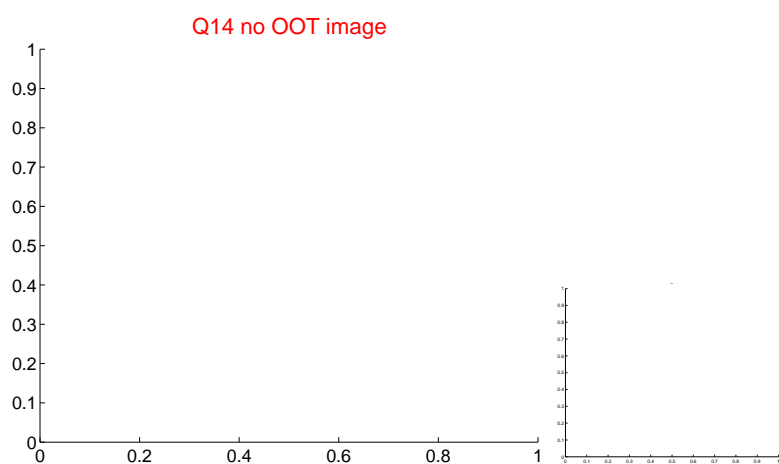
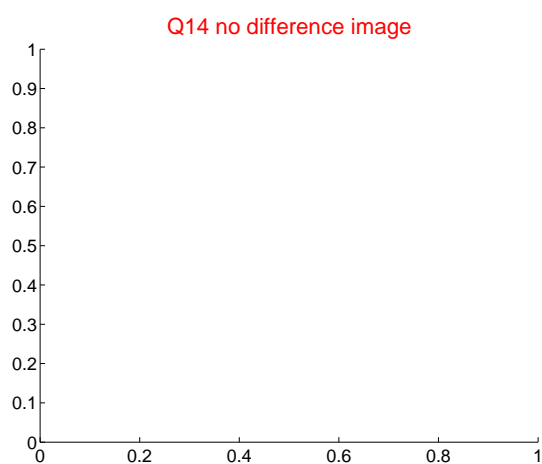
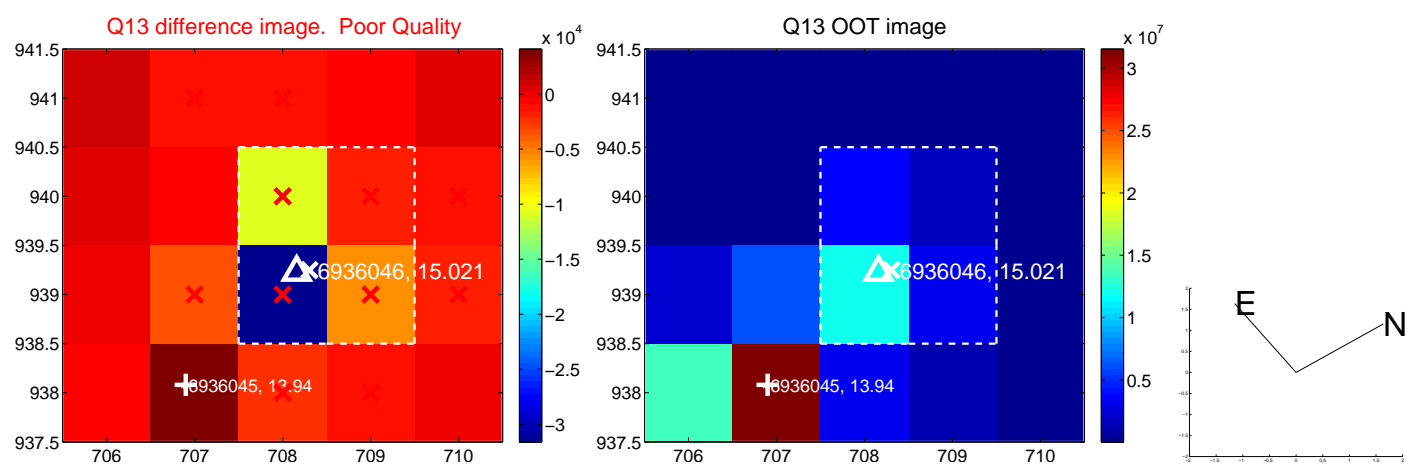
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

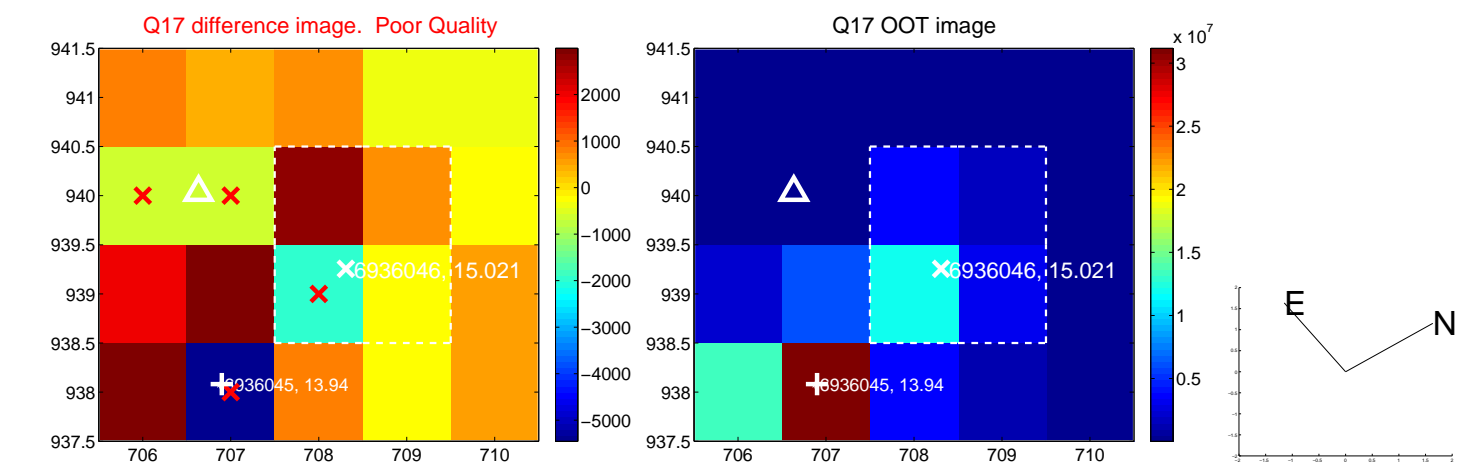


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

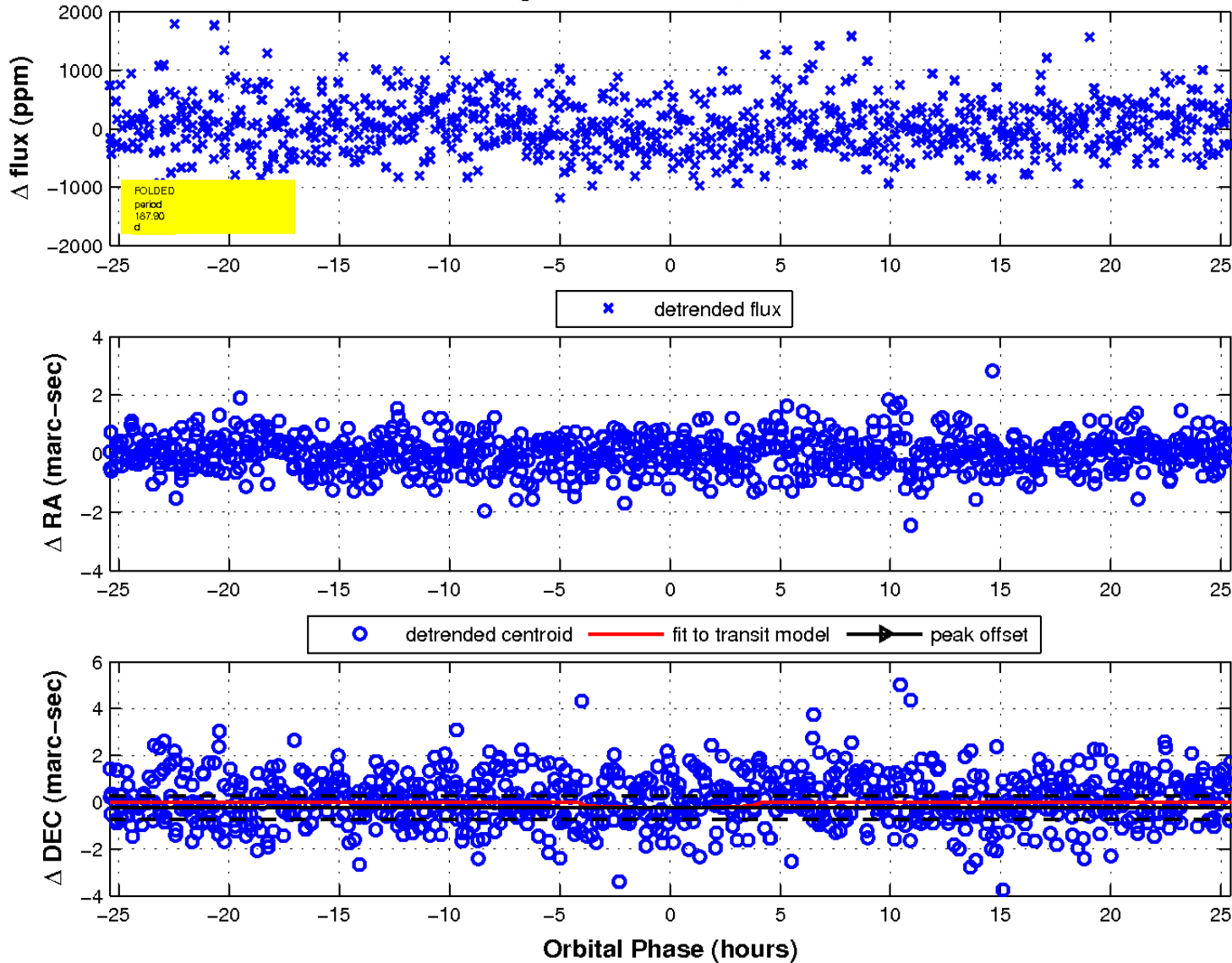




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

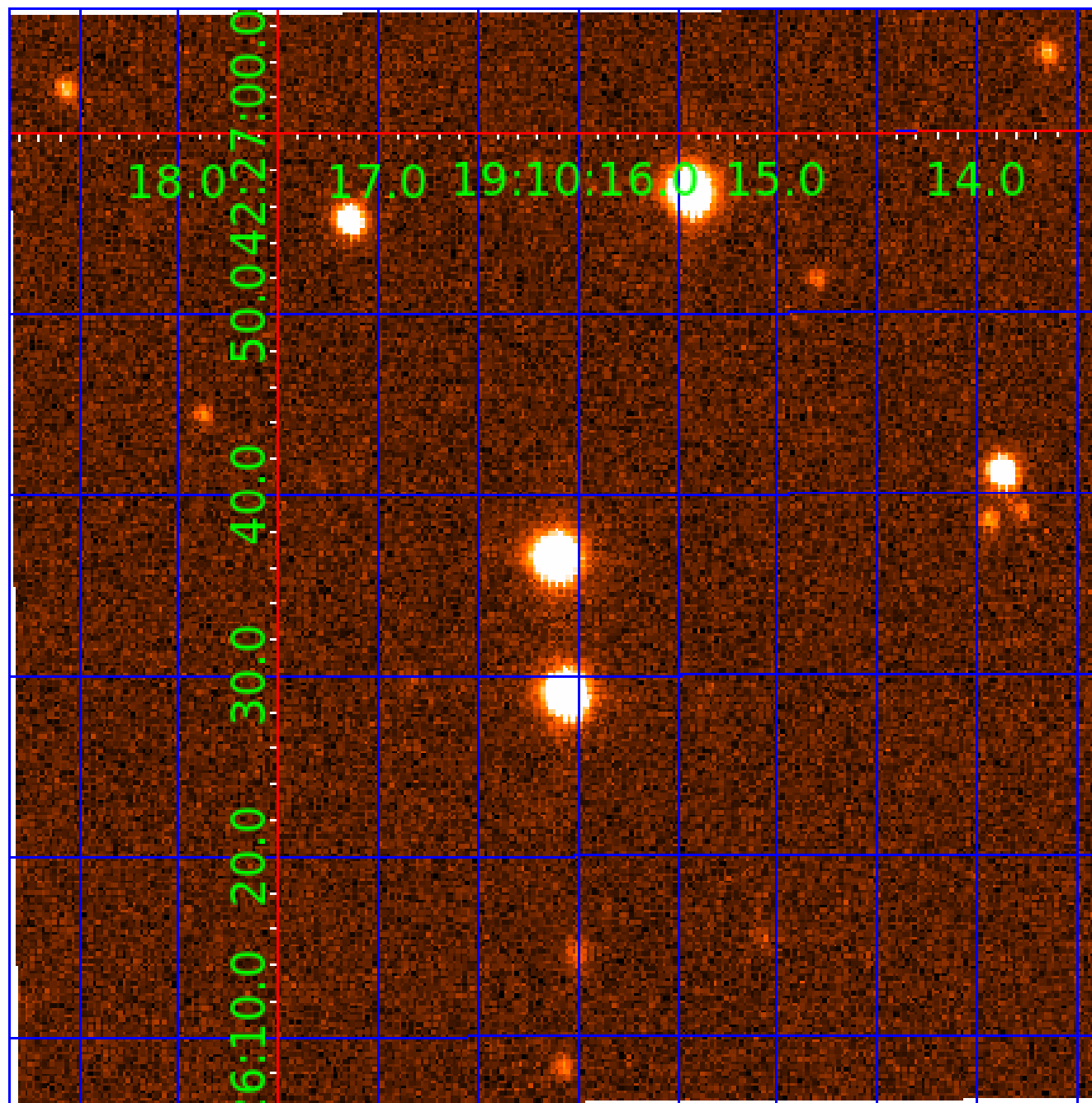


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



# KIC 006936046

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006936046-01	OBS	No	1.582107	132.266058	67.7	7.258	9.3	9.9	0.50	3770	0.48	100.31
006936046-03	OBS	No	187.896768	273.632593	622.0	8.490	8.4	8.5	0.50	3770	1.33	0.17
006936046-04	OBS	No	273.024802	134.647409	630.5	5.257	7.5	7.0	0.50	3770	1.42	0.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006936046-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
006936046-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006936046-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_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.

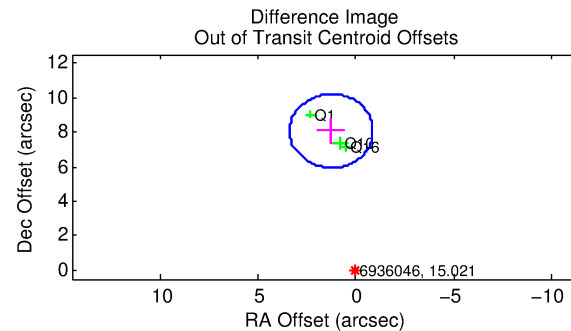
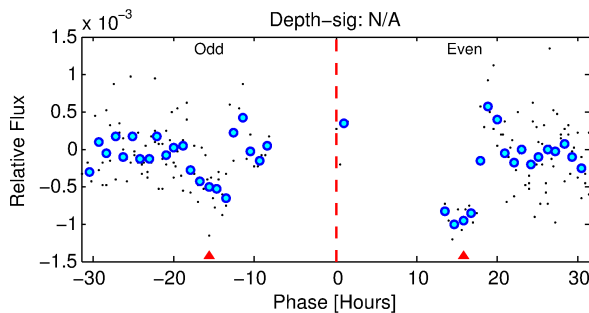
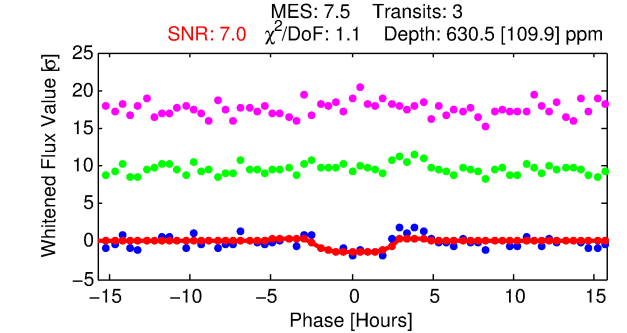
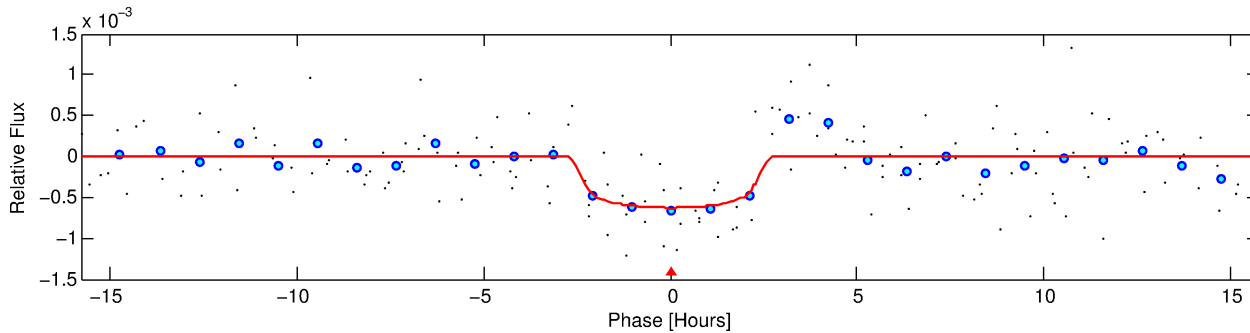
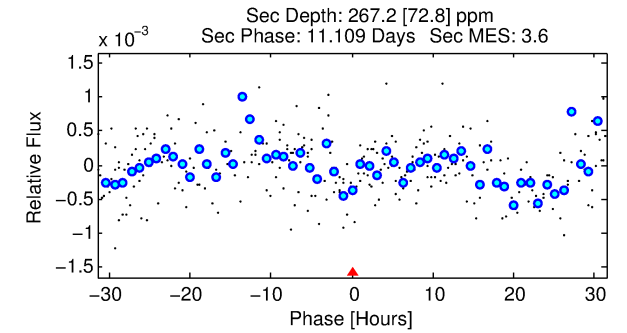
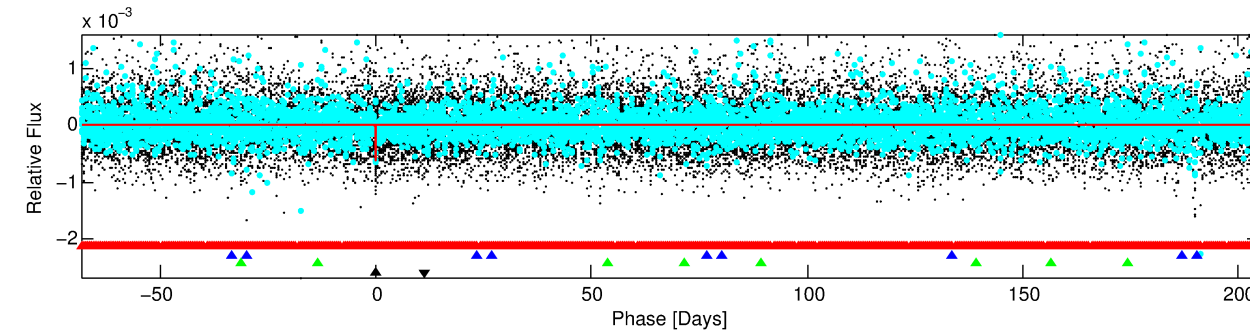
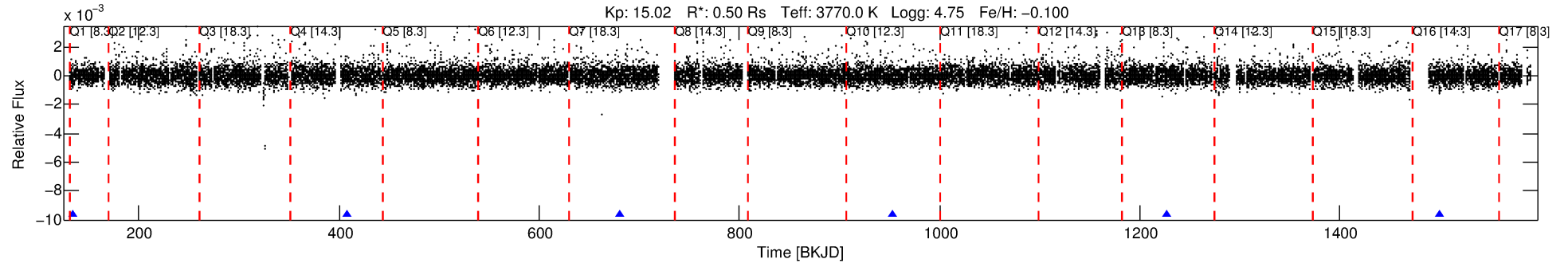
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006936046-04

No Significant Match Found

# DV One-Page Summary

KIC: 6936046 Candidate: 4 of 4 Period: 273.025 d



## DV Fit Results:

Period = 273.02480 [0.00453] d  
Epoch = 134.6474 [0.0123] BKJD  
Rp/R\* = 0.0261 [0.0122]  
a/R\* = 233.65 [492.67]  
b = 0.84 [0.72]  
Seff = 0.10 [0.01]  
Teq = 145 [3] K  
Rp = 1.42 [0.67] Re  
a = 0.6570 [0.0332] AU  
Ag = 31516.77 [30859.85] [1.02σ]  
Teffp = 2986 [731] K [3.89σ]

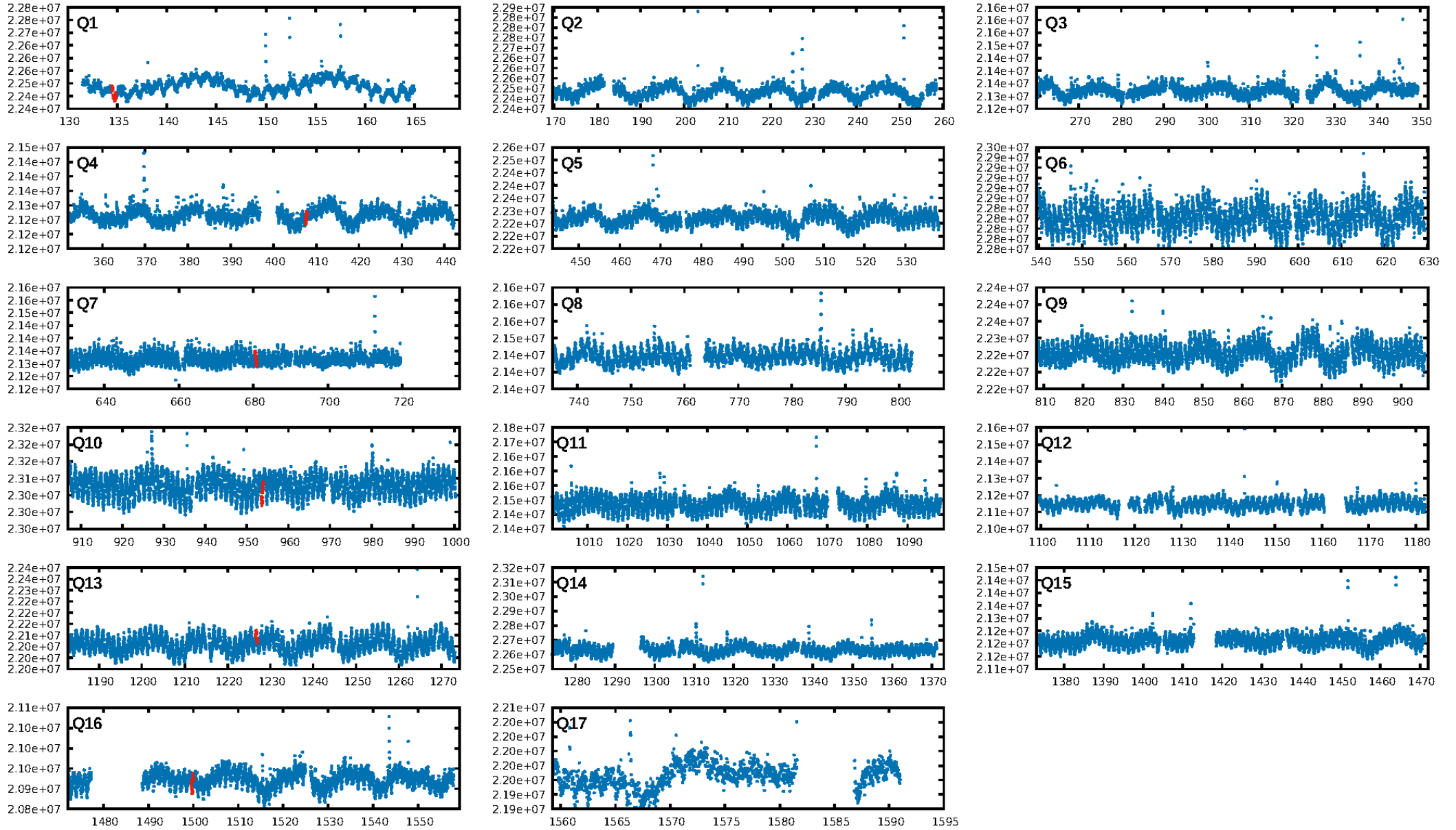
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [204.60σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 38.6%  
ModelChiSquareGof-sig: 98.9%  
**Bootstrap-pfa: 3.81e-09**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 4.341  
Centroid-sig: N/A  
**Centroid-so: 4.331 arcsec [4.69σ]**  
**OotOffset-rm: 8.162 arcsec [11.50σ]**  
KicOffset-rm: 1.097 arcsec [1.56σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.20 [1/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:45:26 Z

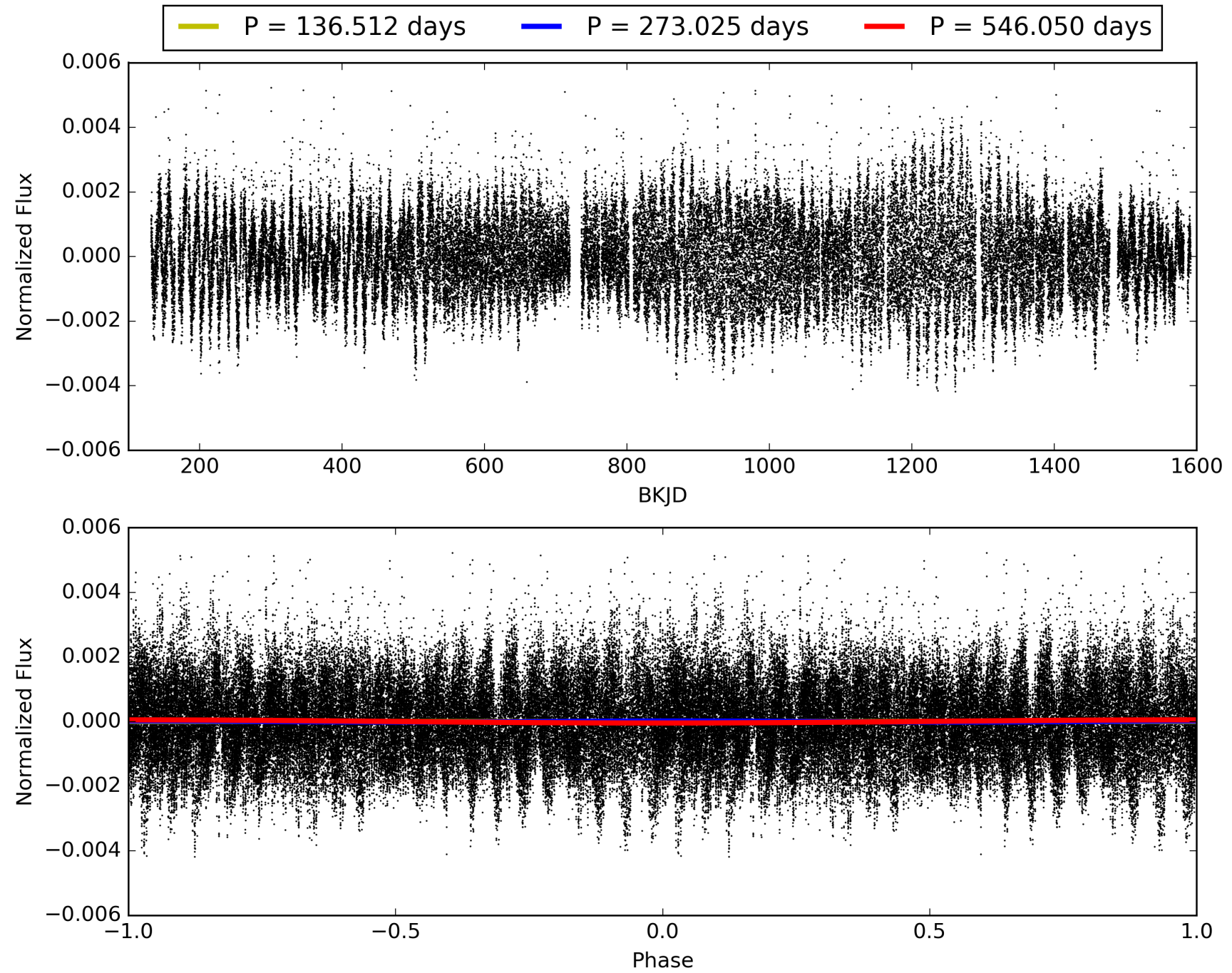
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006936046-04, PDC Light Curves



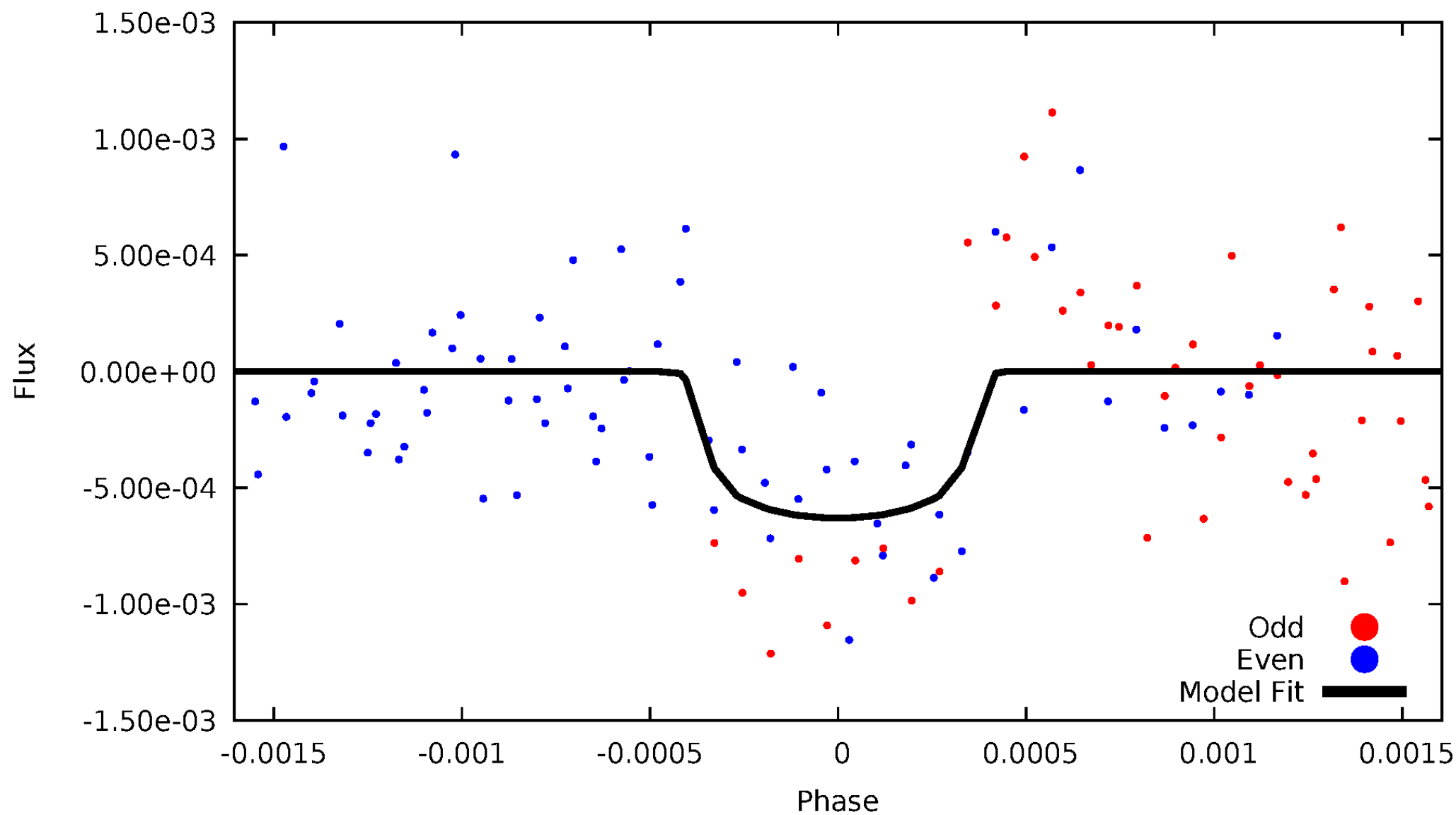


TCE 006936046-04



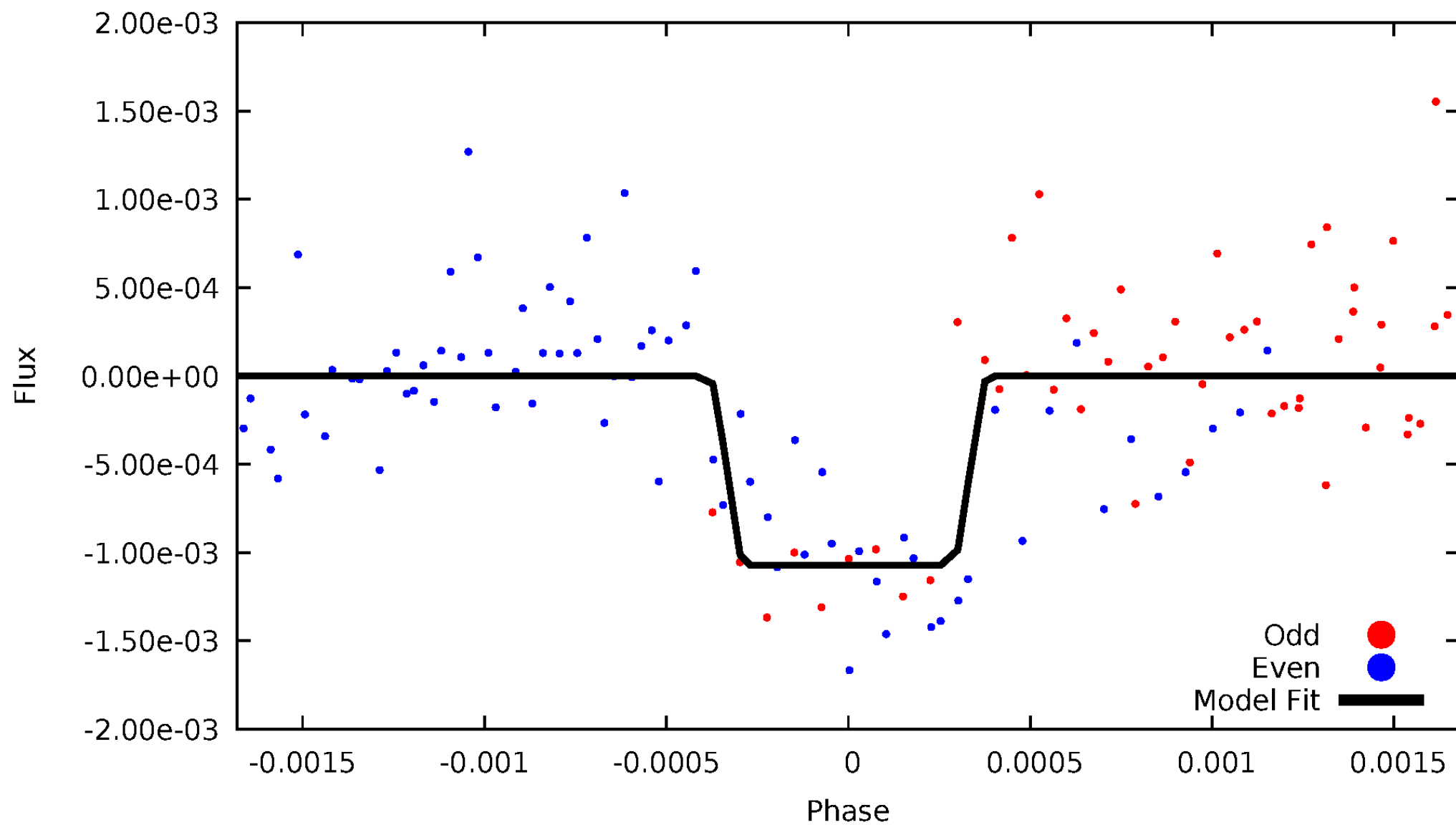
# DV Odd/Even

TCE 006936046-04



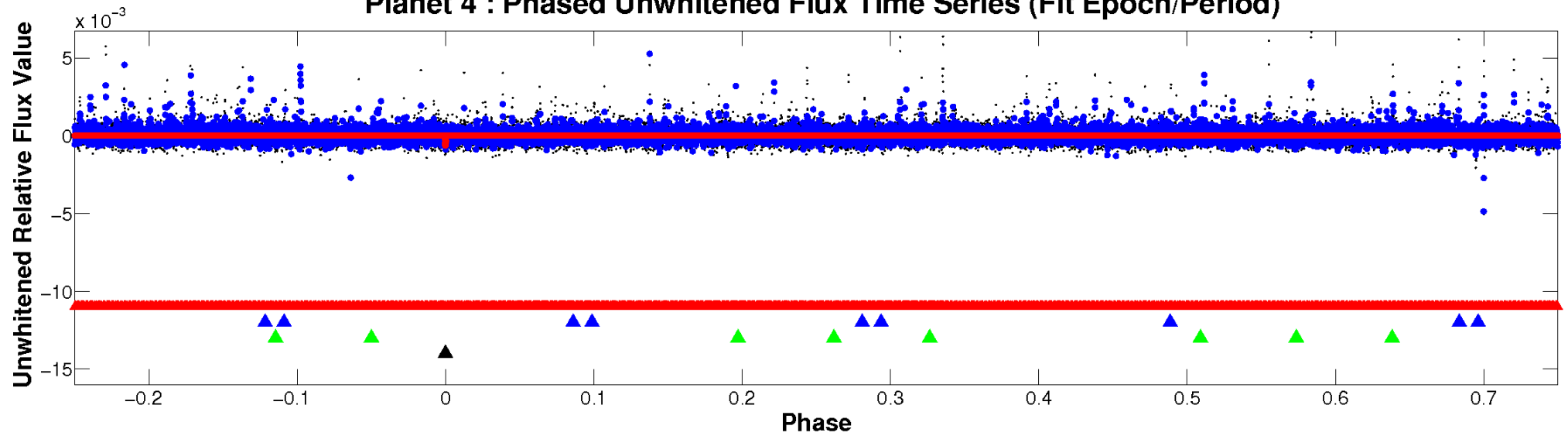
# ALT Odd/Even

TCE 006936046-04

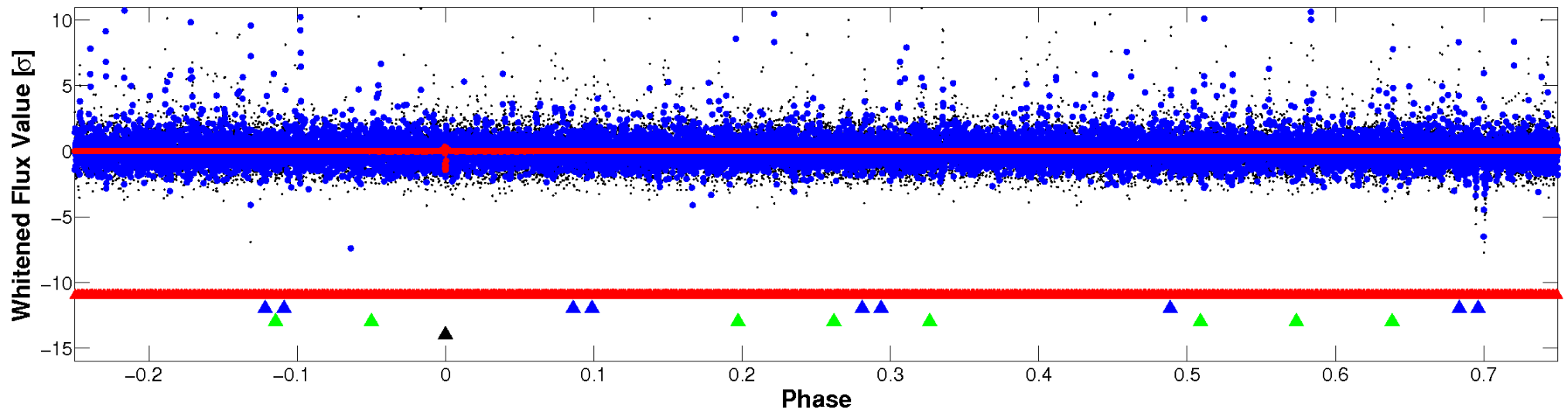


# Non-Whitened Vs. Whitened Light Curve

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

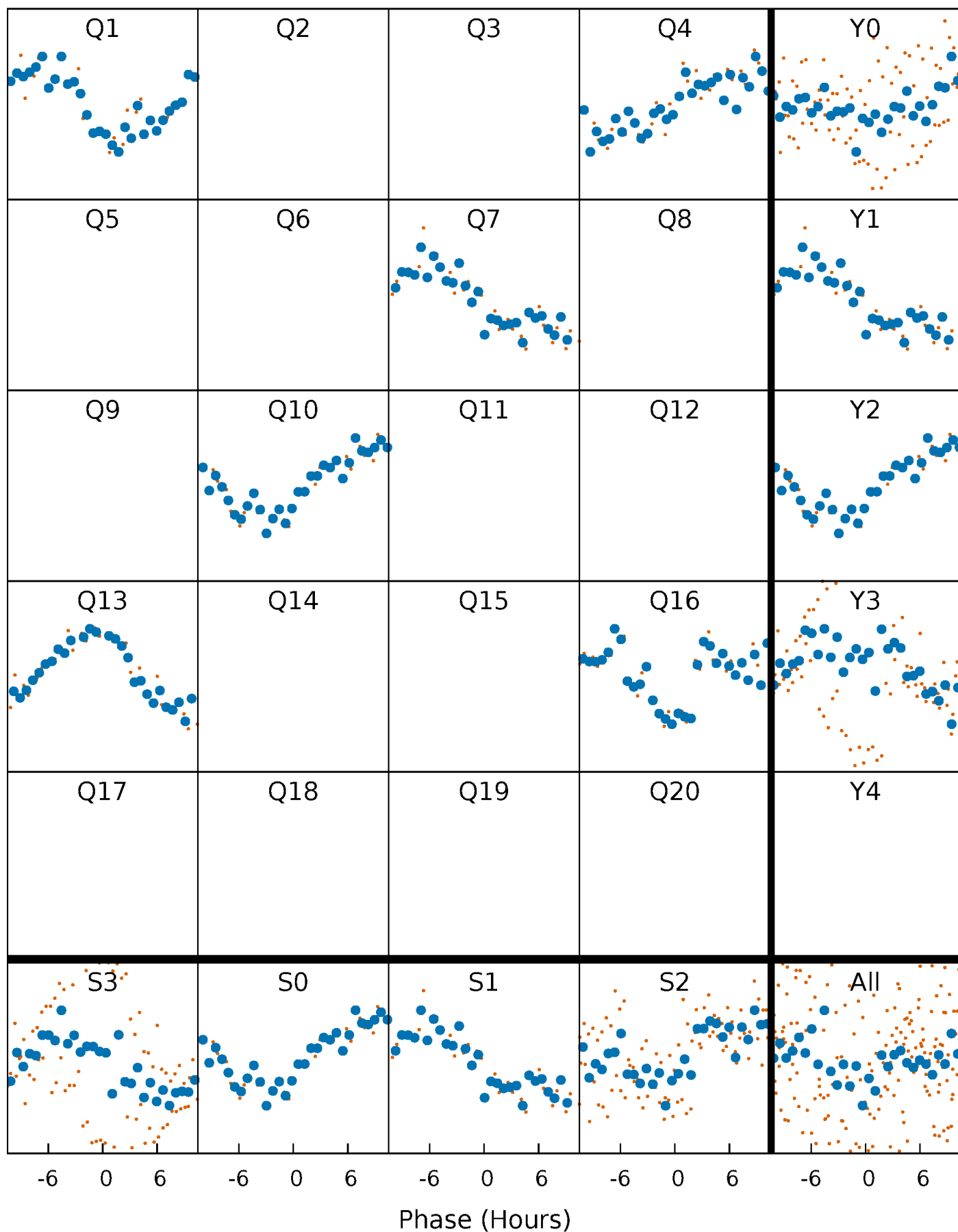


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

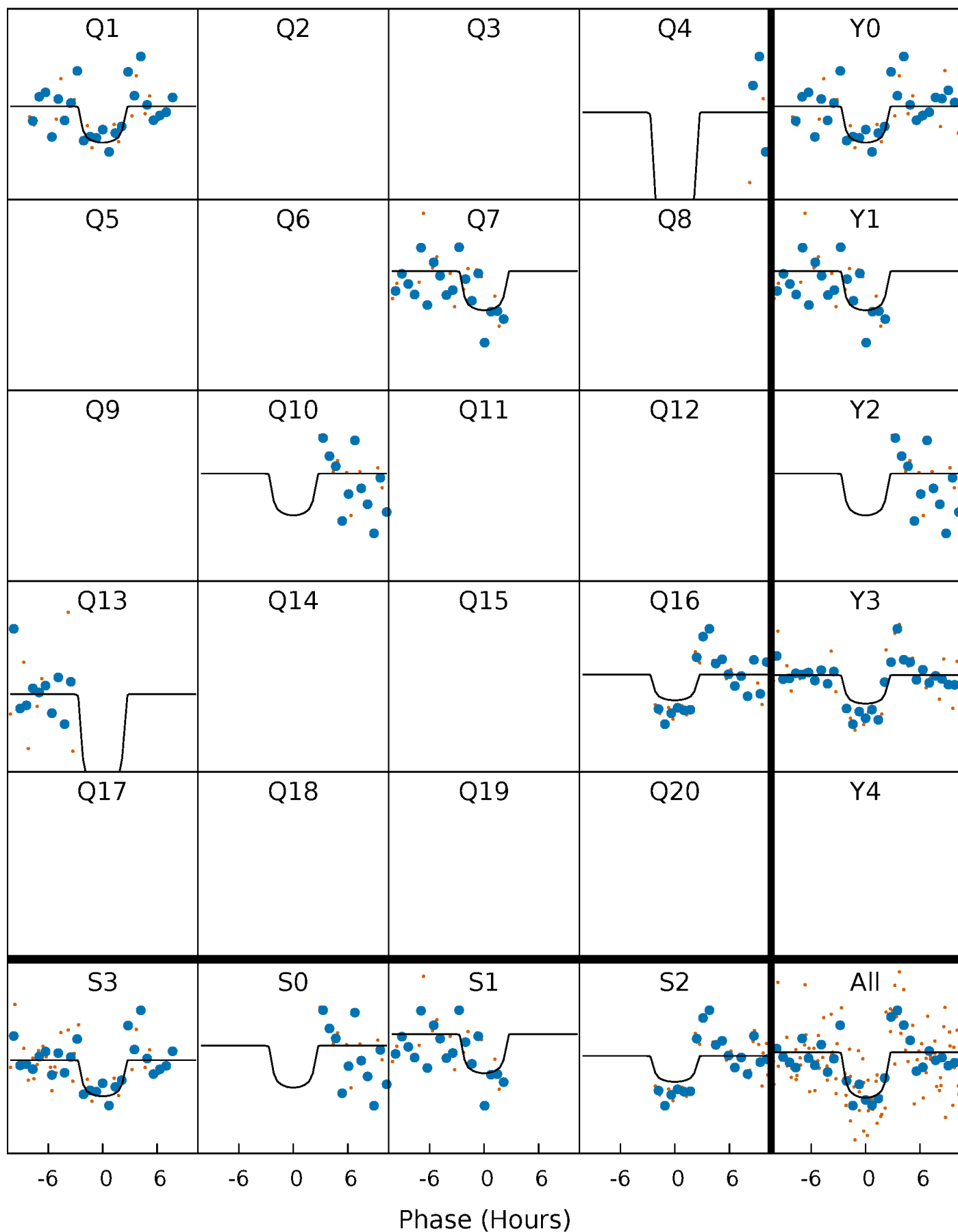
TCE 006936046-04     $P=273.024802$  Days     $T_0=134.647409$  (BKJD)





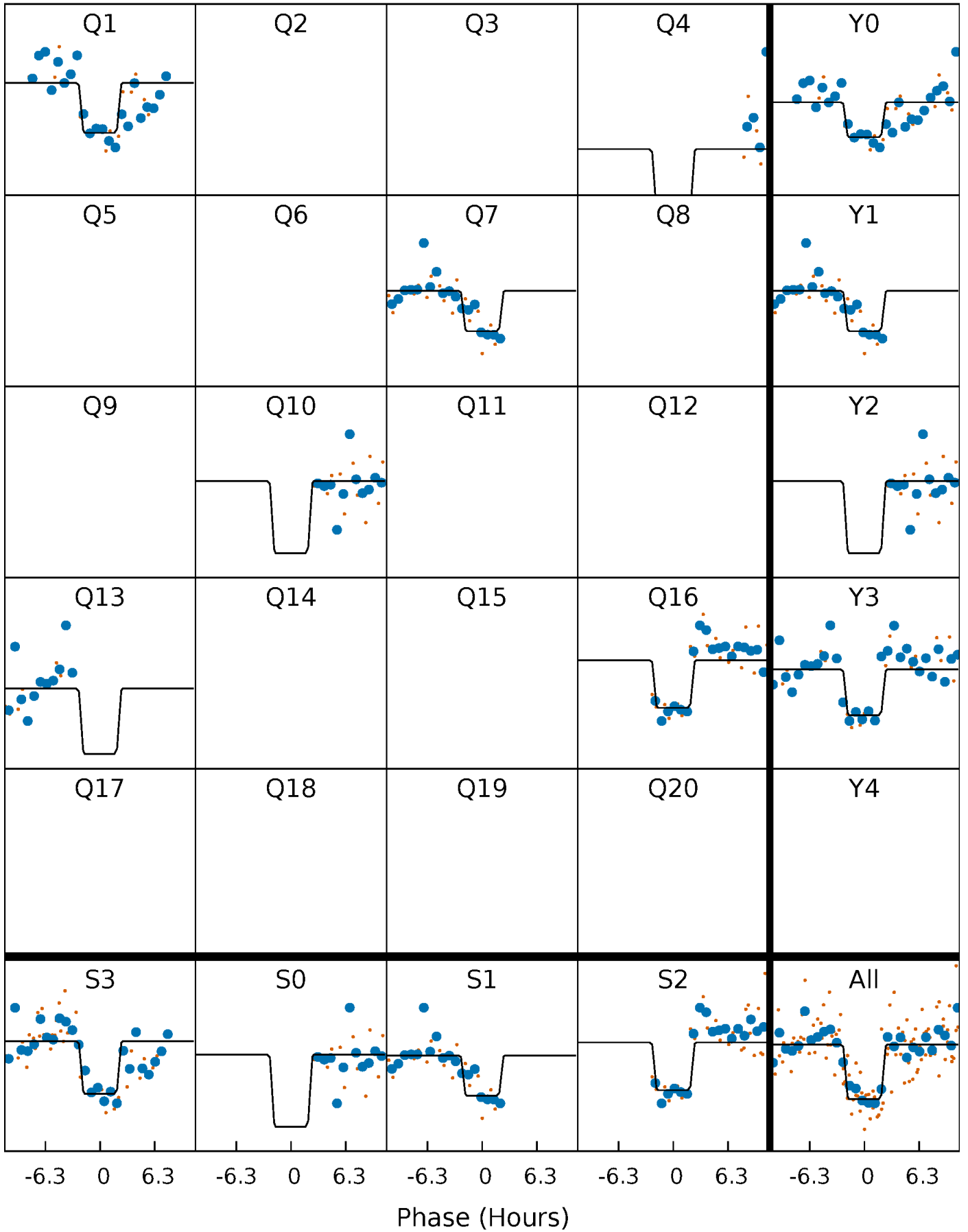
# DV Quarter-Phased Transit Curves

TCE 006936046-04     $P=273.024802$  Days     $T_0=134.647409$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

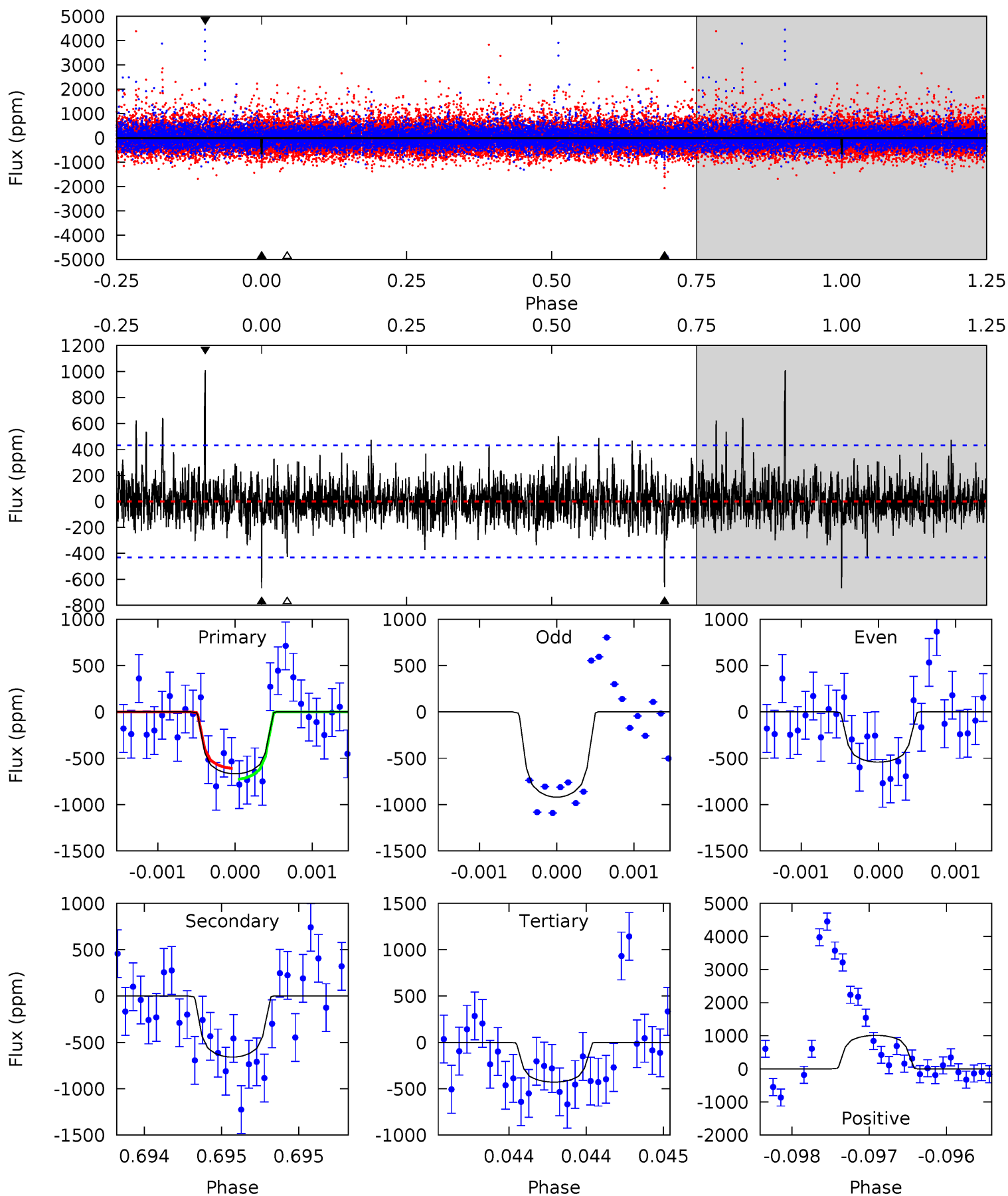
TCE 006936046-04 P=273.026417 Days  $T_0=134.651525$  (BKJD)



# DV Model-Shift Uniqueness Test

006936046-04, P = 273.024802 Days, E = 134.647409 Days

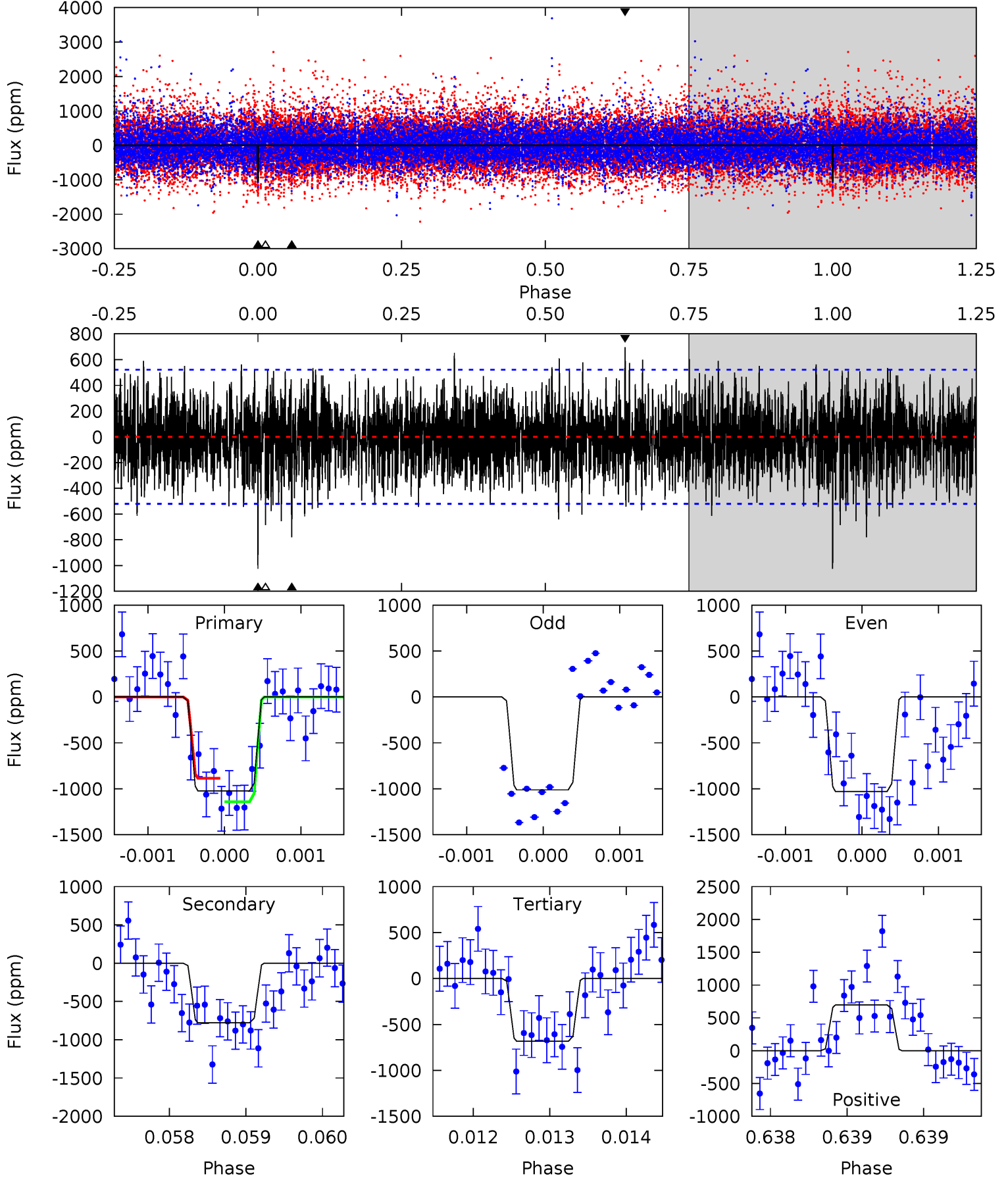
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.49	8.38	5.45	12.8	5.48	3.34	1.53	3.05	-4.35	2.93	-4.46	2.22	1.18	0.60	0.75



# Alt Model-Shift Uniqueness Test

006936046-04,  $P = 273.026417$  Days,  $E = 134.651525$  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
10.8	8.23	7.23	7.36	5.50	3.36	2.27	3.59	3.46	1.01	0.87	0.09	1.01	0.40	1.36



### Stellar Parameters For KIC 006936046

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3770^{+60}_{-52}$	$4.747^{+0.035}_{-0.020}$	$-0.100^{+0.100}_{-0.100}$	$0.499^{+0.022}_{-0.032}$	$0.508^{+0.028}_{-0.025}$	$5.743^{+0.850}_{-0.505}$
	+2%/-1%	+1%/-0%	+100%/-100%	+4%/-6%	+6%/-5%	+15%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 006936046-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-658 \pm 79$	$1.43^{+0.67}_{-0.59}$	$202^{+4}_{-4}$	$3736^{+819}_{-428}$	$77261^{+153404}_{-42041}$
Alt.	$-779 \pm 95$	$1.79^{+0.63}_{-0.65}$	$202^{+4}_{-4}$	$3576^{+621}_{-343}$	$58794^{+82092}_{-27594}$

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

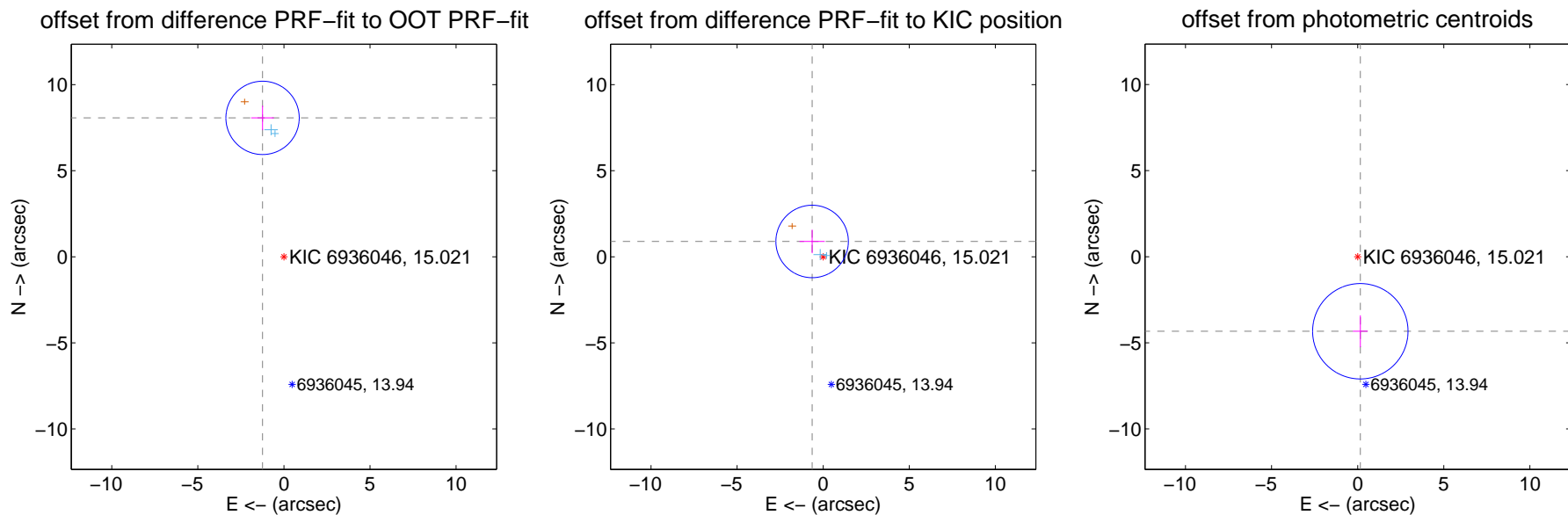
## DV Centroid Data

Supplemental centroid analysis for 006936046-04. Kepler magnitude: 15.02. Transit SNR 7.00

There are 2 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 7.12 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

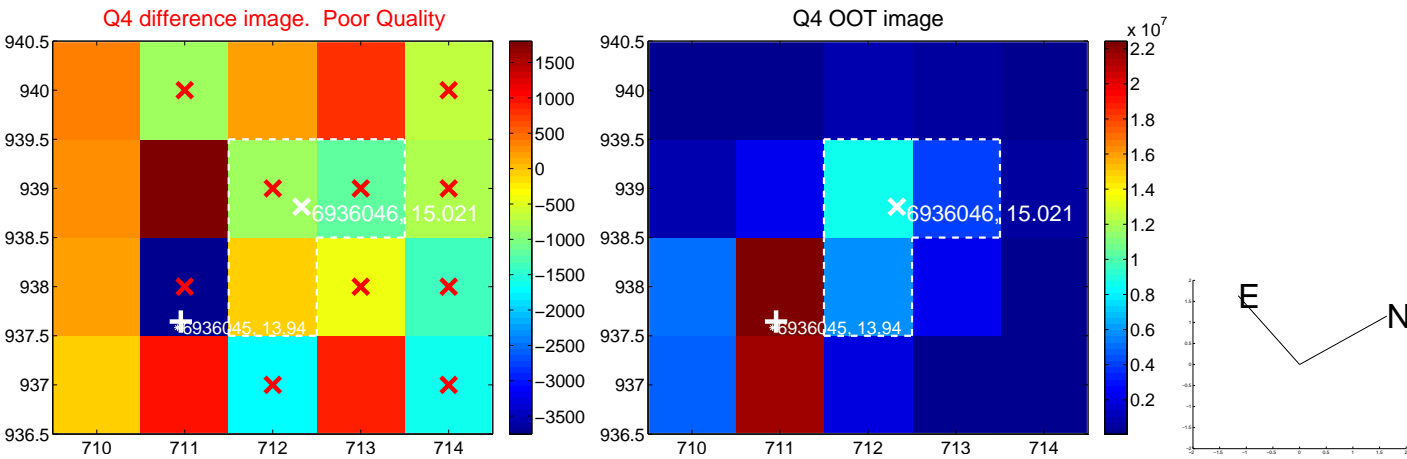
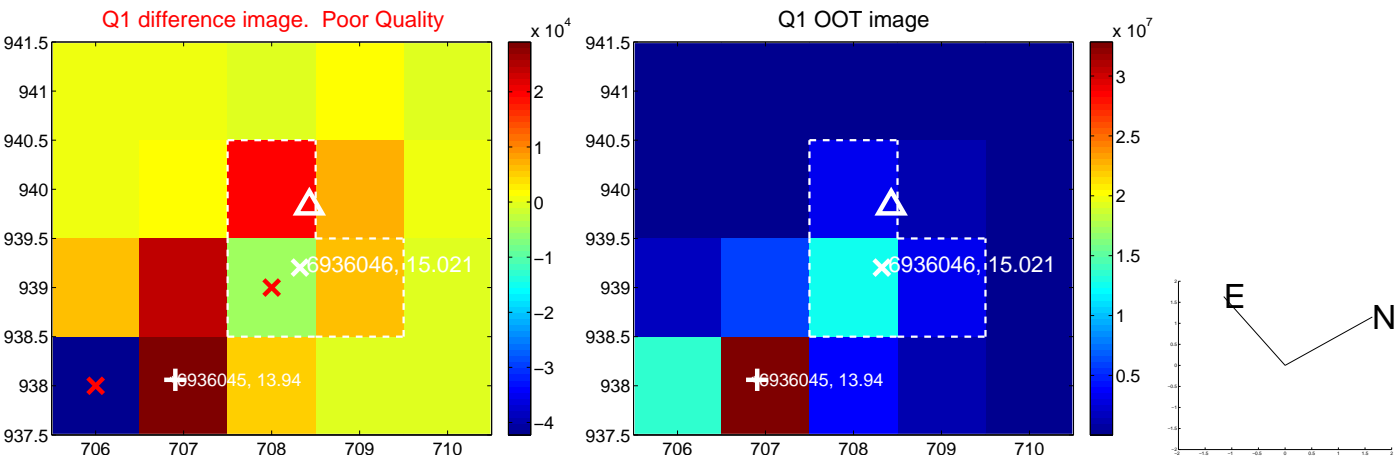
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.162 \pm 0.710$	<b>11.50</b>	$1.240 \pm 0.661$	$8.068 \pm 0.711$
PRF-fit source offset from KIC position	$1.097 \pm 0.702$	1.56	$0.643 \pm 0.736$	$0.889 \pm 0.683$
photometric centroid source offset	$4.33 \pm 0.92$	<b>4.69</b>	$-0.15 \pm 0.43$	$-4.33 \pm 0.92$



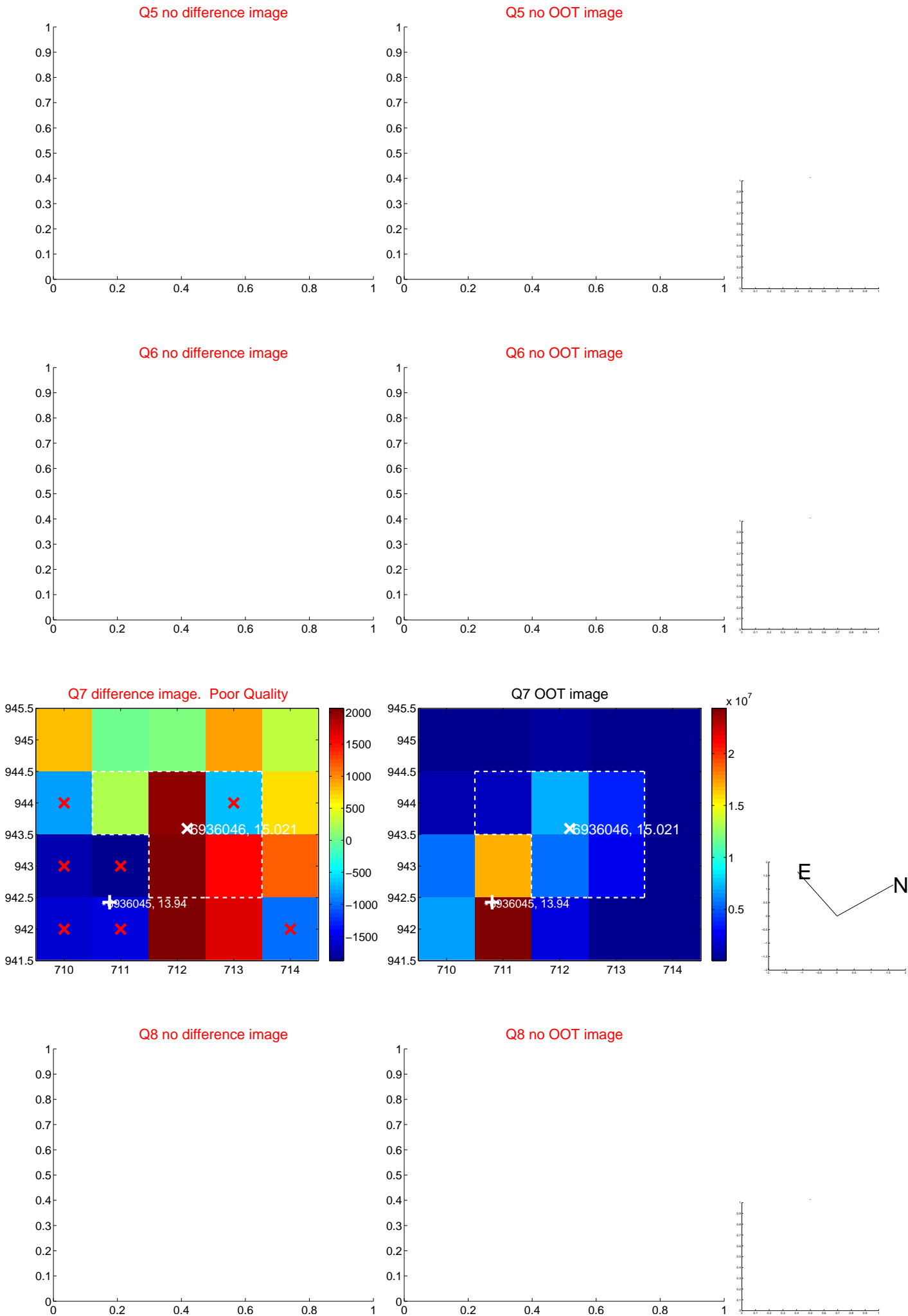
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

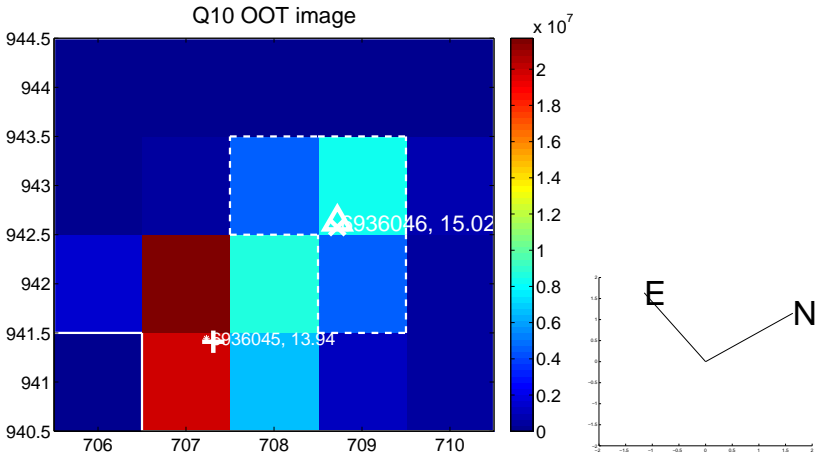
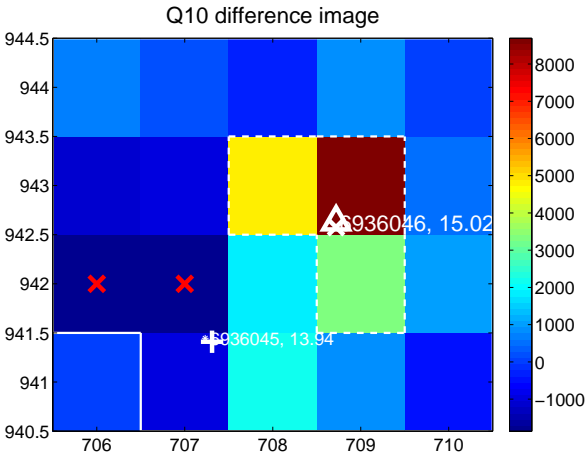


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

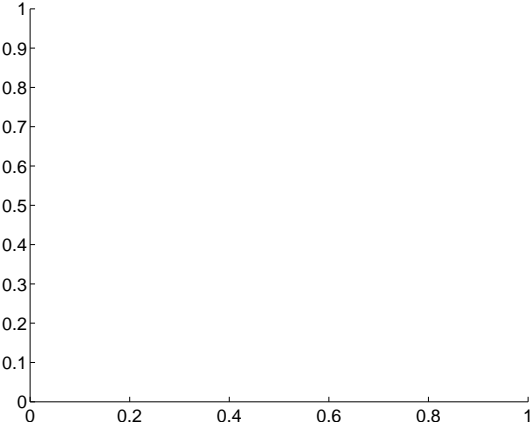
Q9 no difference image



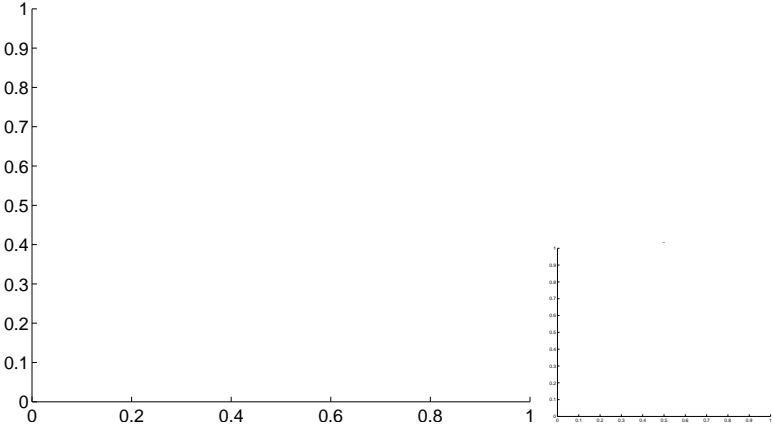
Q9 no OOT image



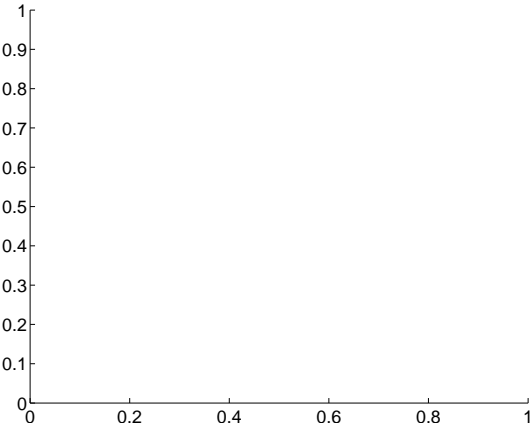
Q11 no difference image



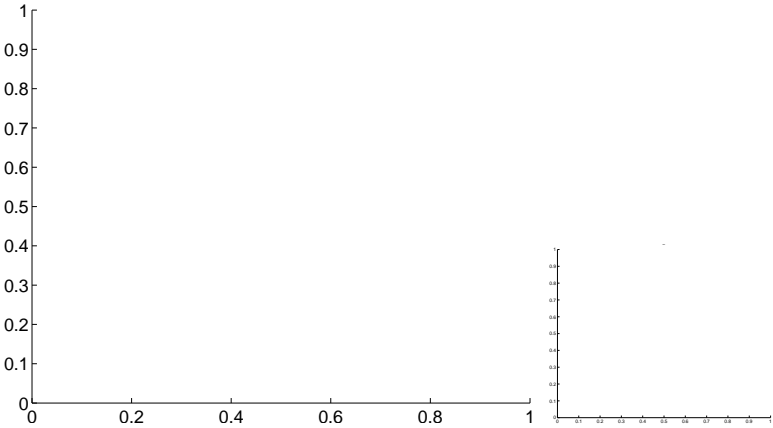
Q11 no OOT image



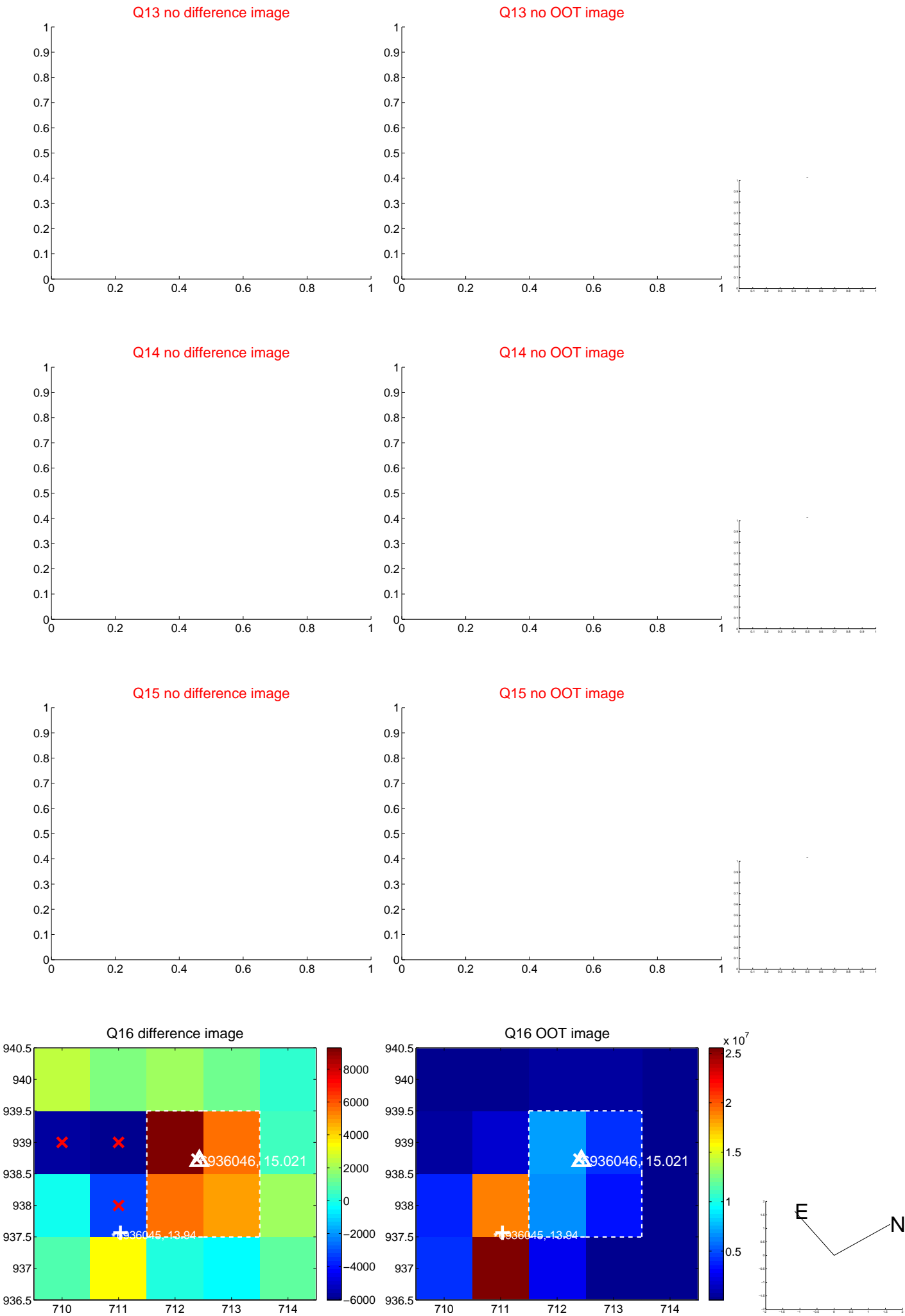
Q12 no difference image



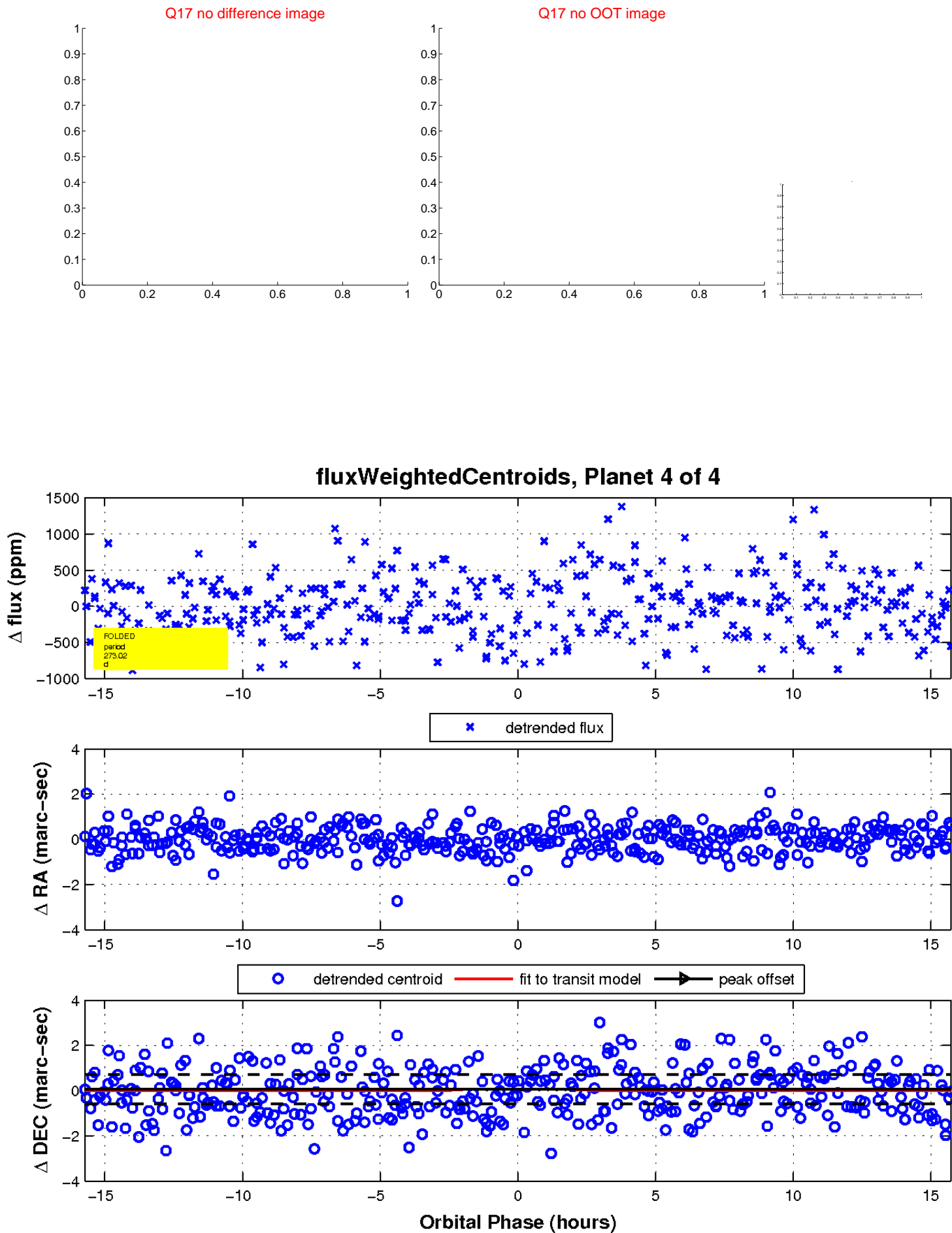
Q12 no OOT image



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

