

# KIC 008435232

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008435232-01	OBS	3833.01	49.571236	178.248121	16659.8	13.412	55.1	114.7	0.53	4040	12.05	1.46
008435232-02	OBS	No	49.570614	176.223307	16693.4	15.447	72.3	112.8	0.53	4040	12.06	1.46
008435232-03	OBS	No	49.568977	153.421215	2803.8	17.146	11.2	23.4	0.53	4040	5.25	1.46
008435232-04	OBS	No	396.263074	152.555912	315.4	2.129	13.0	3.4	0.53	4040	1.15	0.09
008435232-05	OBS	No	49.572104	151.610978	3699.1	24.823	12.1	27.7	0.53	4040	3.88	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008435232-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008435232-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
008435232-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_TER_DV—SAME_NTL_PERIOD
008435232-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008435232-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

**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.

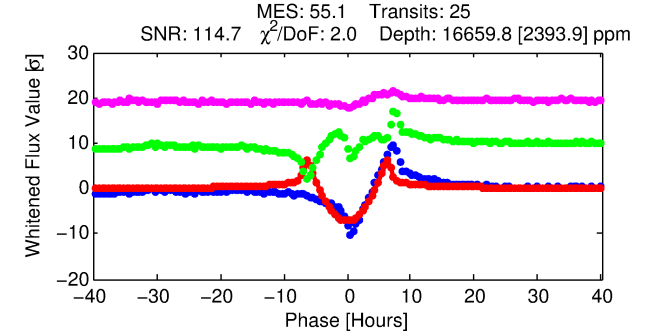
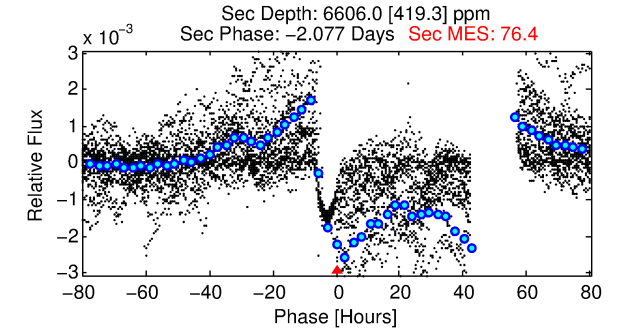
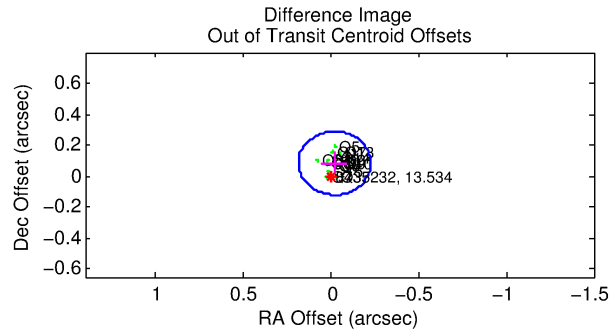
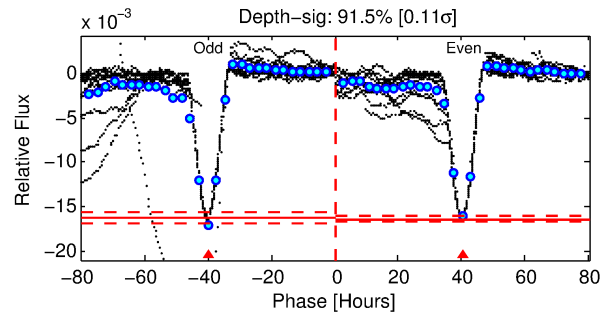
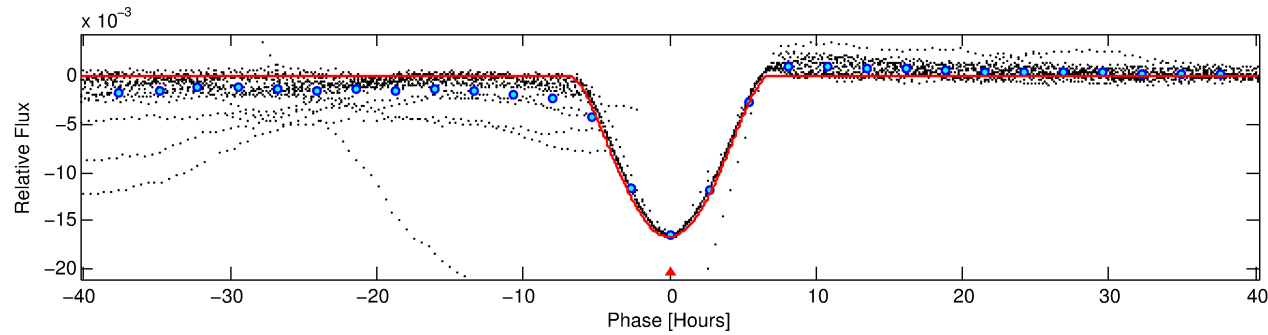
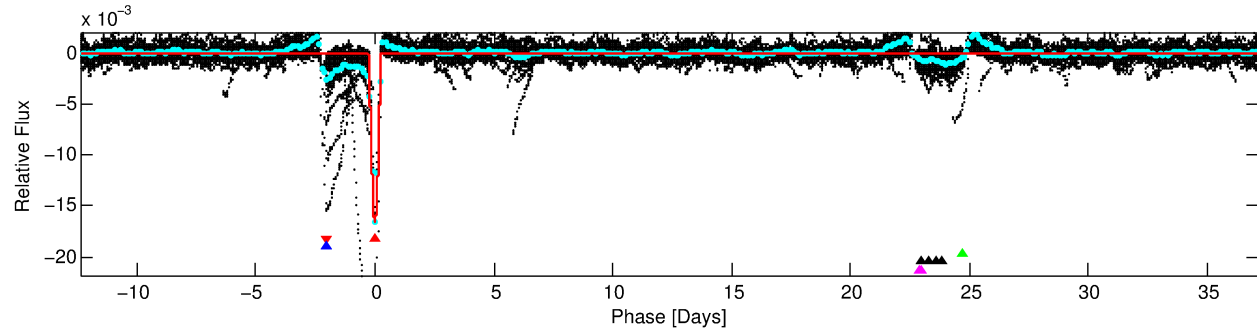
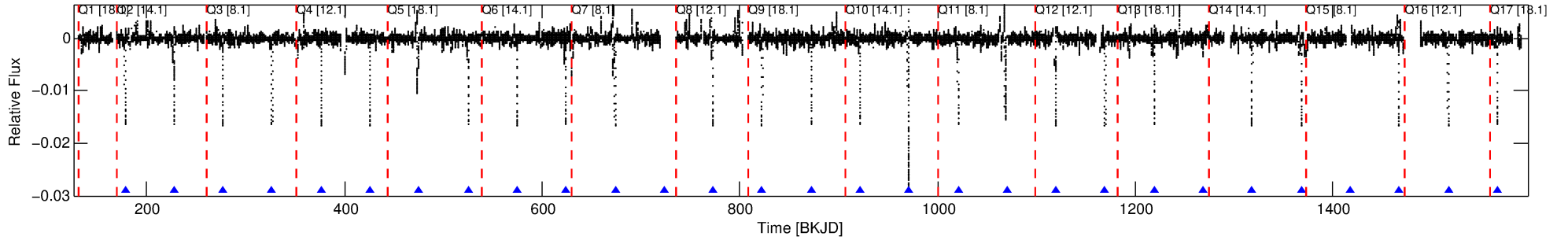
## Ephemeris Match Information For 008435232-01

No Significant Match Found

# DV One-Page Summary

KIC: 8435232 Candidate: 1 of 5 Period: 49.571 d  
KOI: K03833 Corr: No Ephemeris Match

Kp: 13.53 R\*: 0.53 Rs Teff: 4040.0 K Logg: 4.71 Fe/H: -0.440



## DV Fit Results:

Period = 49.57124 [0.00011] d  
Epoch = 178.2481 [0.0018] BKJD  
Rp/R\* = 0.2096 [0.0295]  
a/R\* = 19.25 [0.27]  
b = 1.00 [0.02]  
Seff = 1.46 [0.33]  
Teq = 280 [16] K  
Rp = 12.05 [2.55] Re  
a = 0.2130 [0.0262] AU  
Ag = 1134.88 [377.84] [3.00σ]  
Teffp = 2516 [206] K [10.80σ]

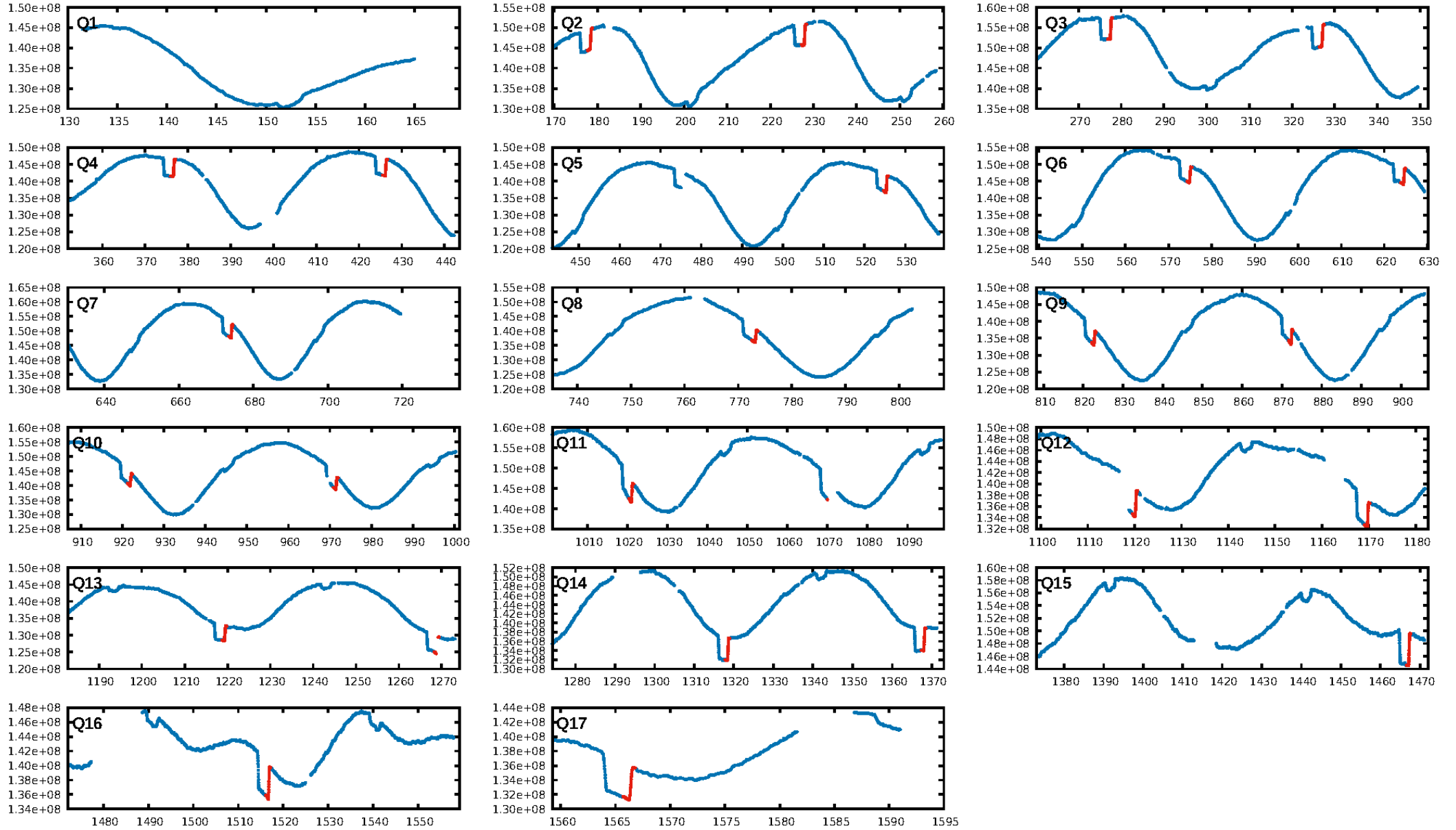
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: 72.4%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [24/24]  
GhostDiagnostic-chr: 1.178  
Centroid-sig: 0.0%  
Centroid-so: 0.151 arcsec [22.36σ]  
OotOffset-rm: 0.087 arcsec [1.27σ]  
KicOffset-rm: 0.120 arcsec [1.71σ]  
OotOffset-st: 4/3/3/4 [14]  
KicOffset-st: 4/3/3/4 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

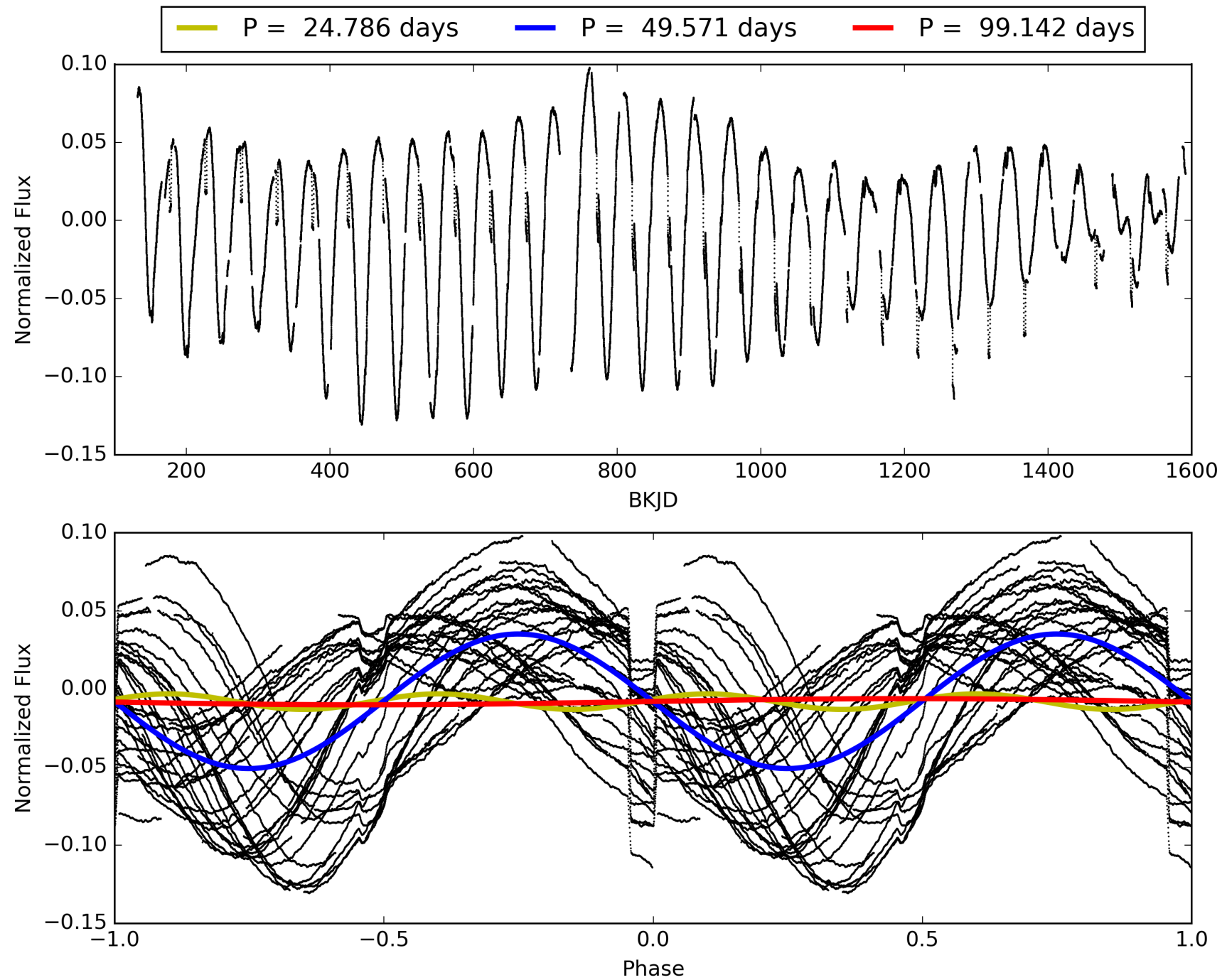
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:41:52 Z

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

# TCE 008435232-01, PDC Light Curves



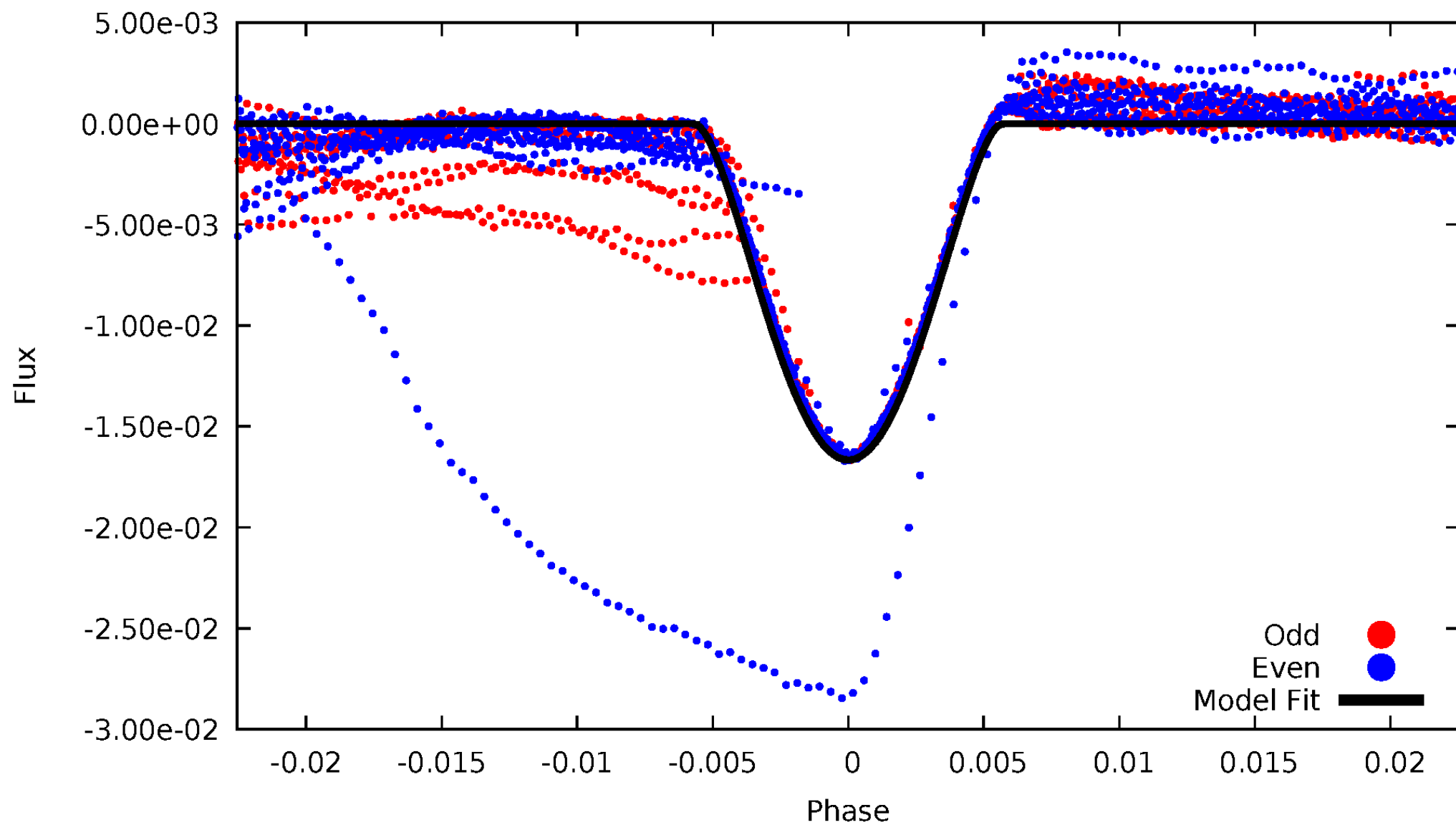
TCE 008435232-01





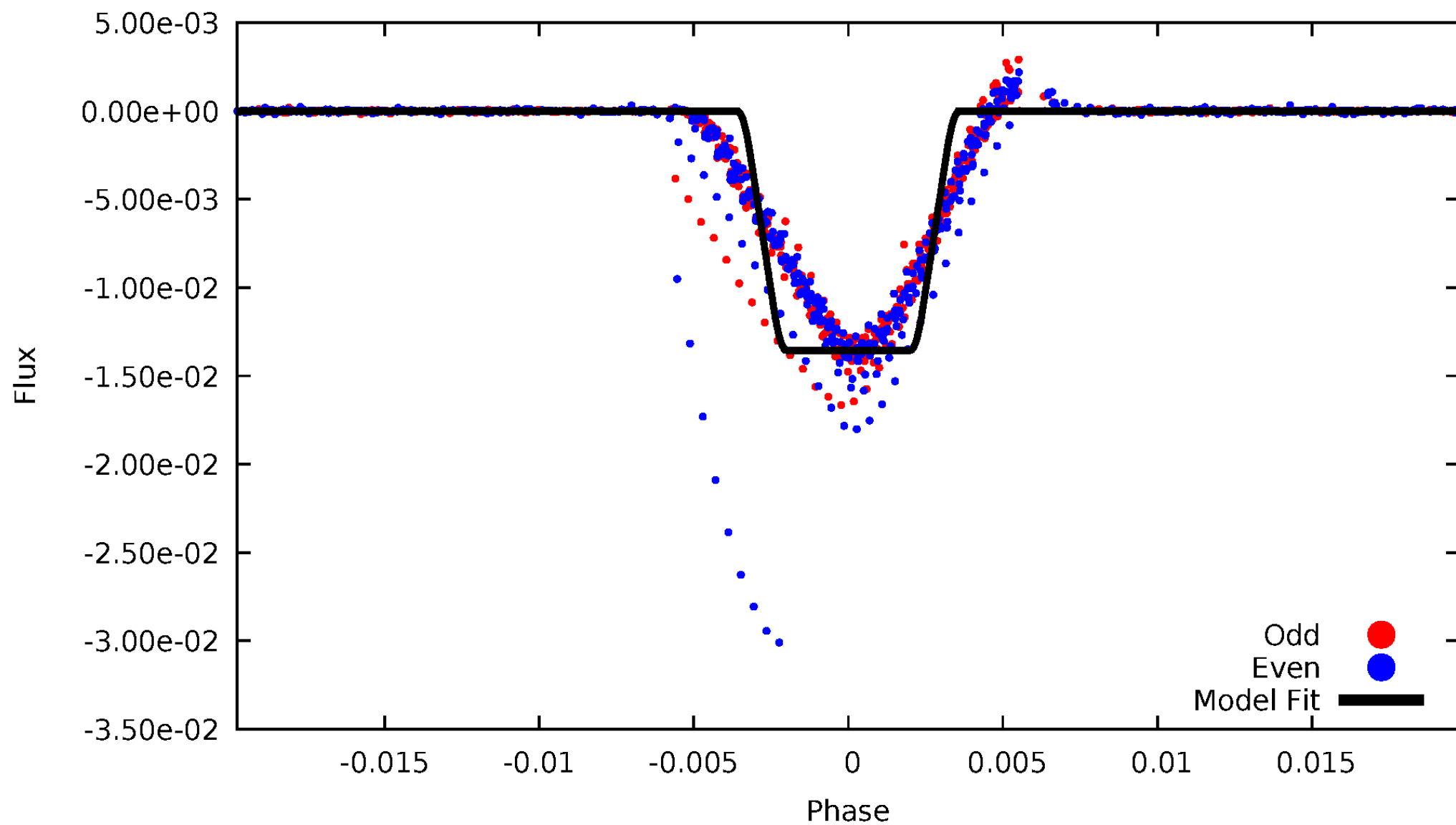
# DV Odd/Even

TCE 008435232-01



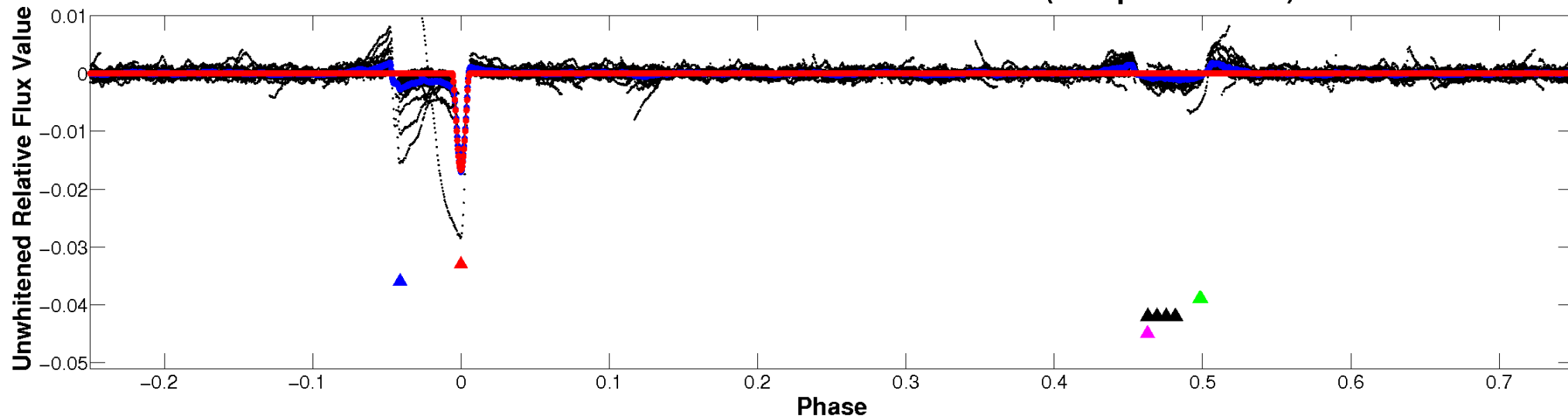
# ALT Odd/Even

TCE 008435232-01

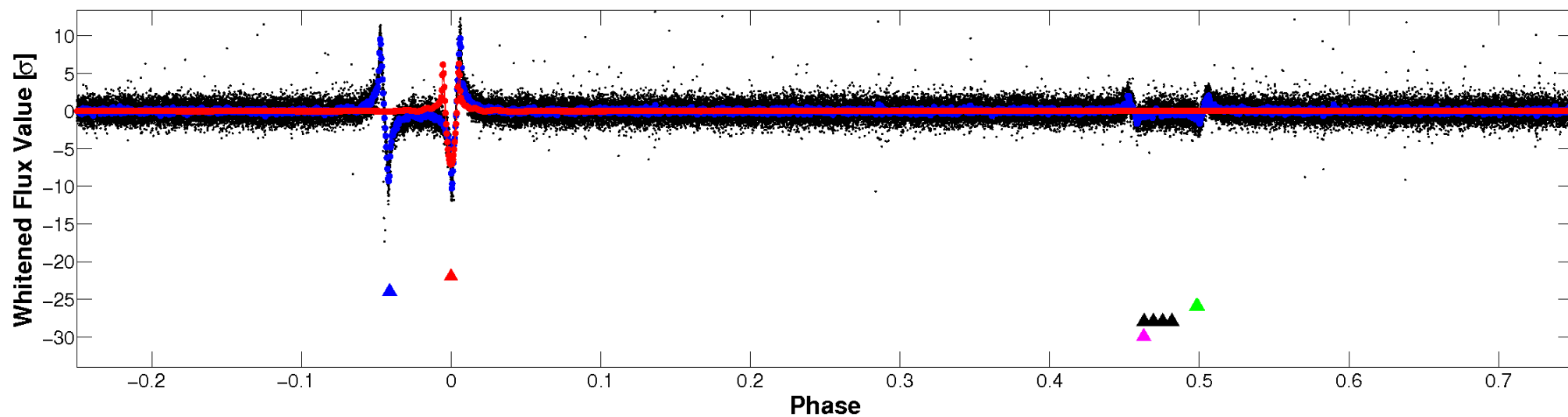


# Non-Whitened Vs. Whitened Light Curve

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

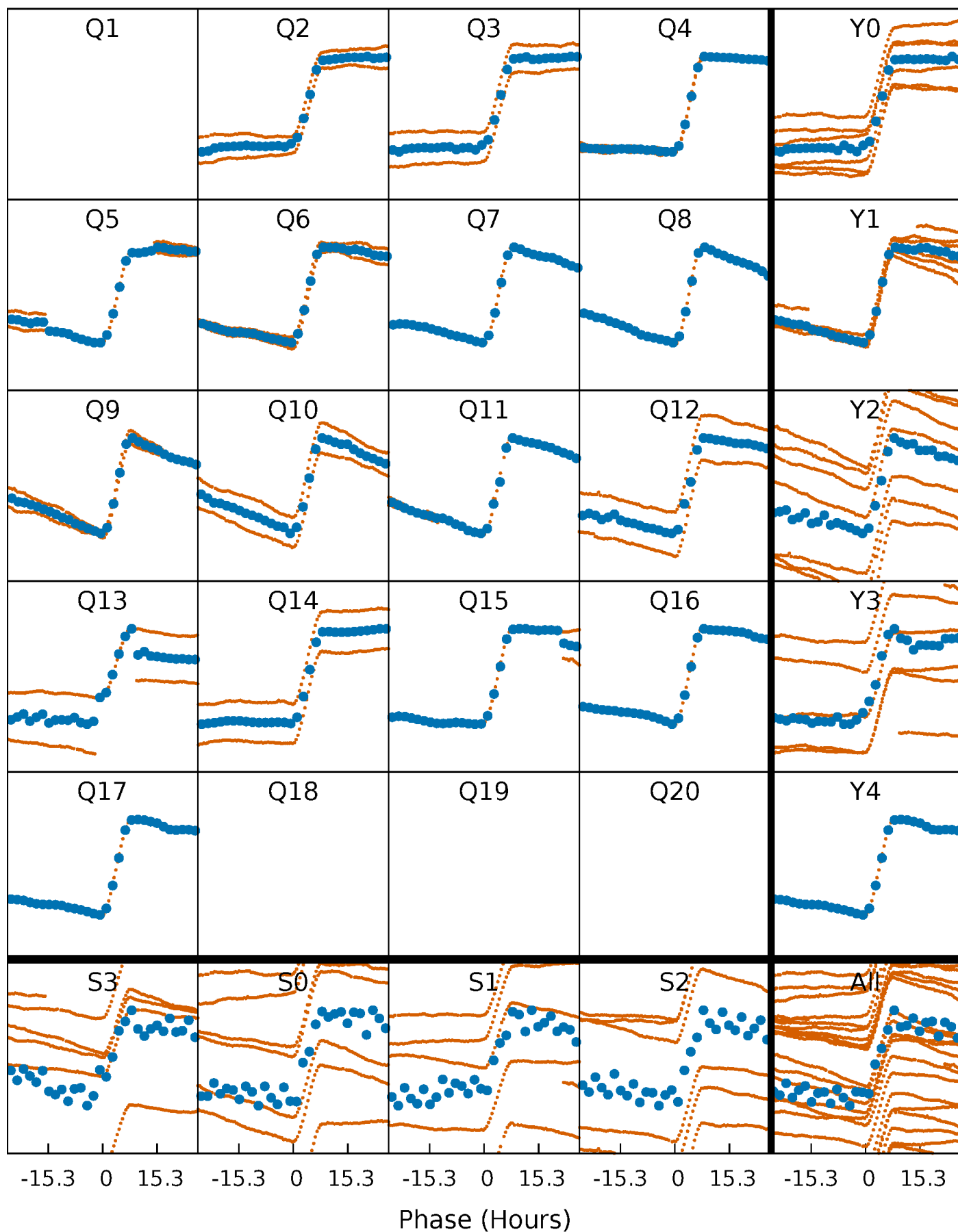


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



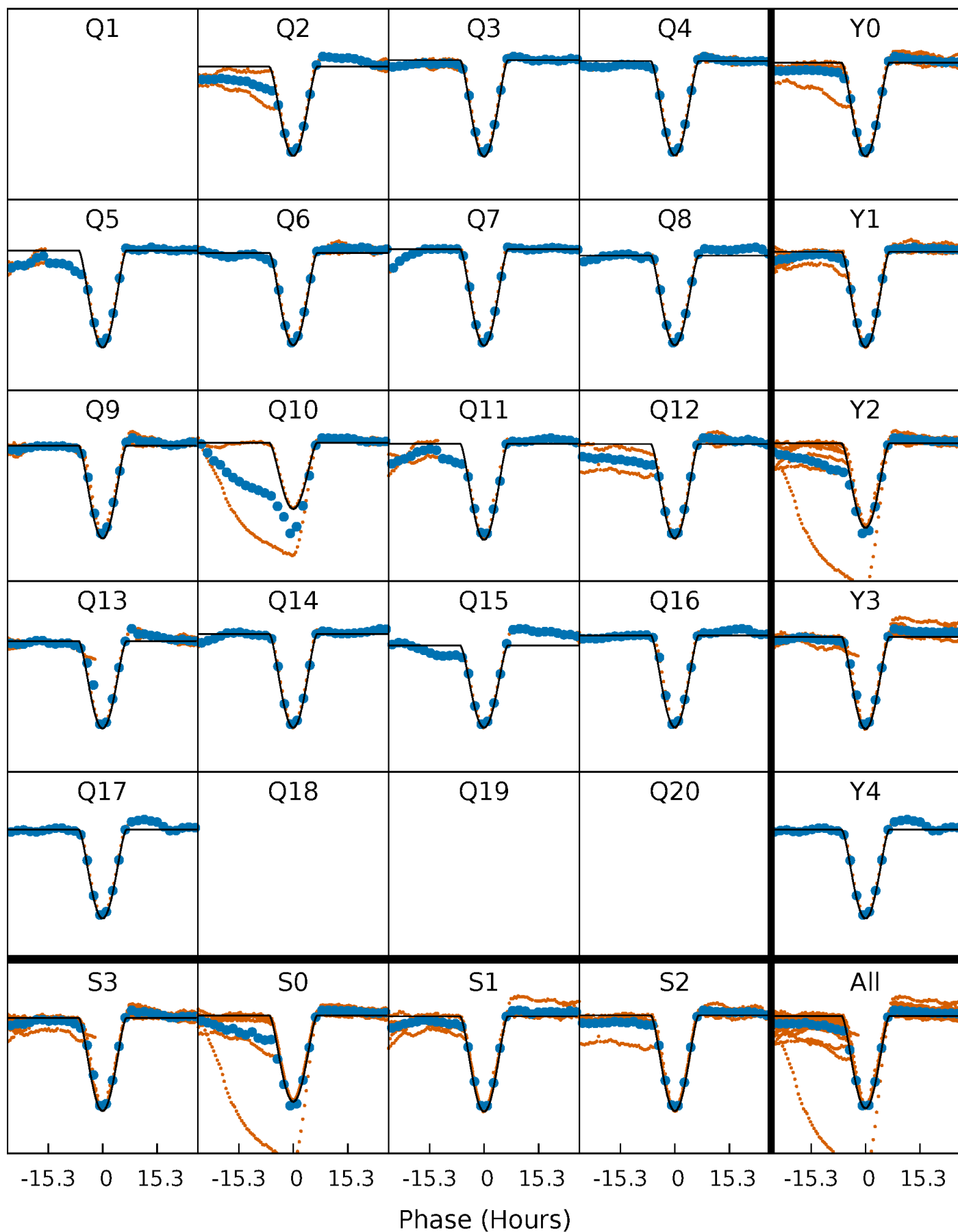
# PDC Quarter-Phased Transit Curves

TCE 008435232-01   P= 49.571236 Days    $T_0=178.248121$  (BKJD)



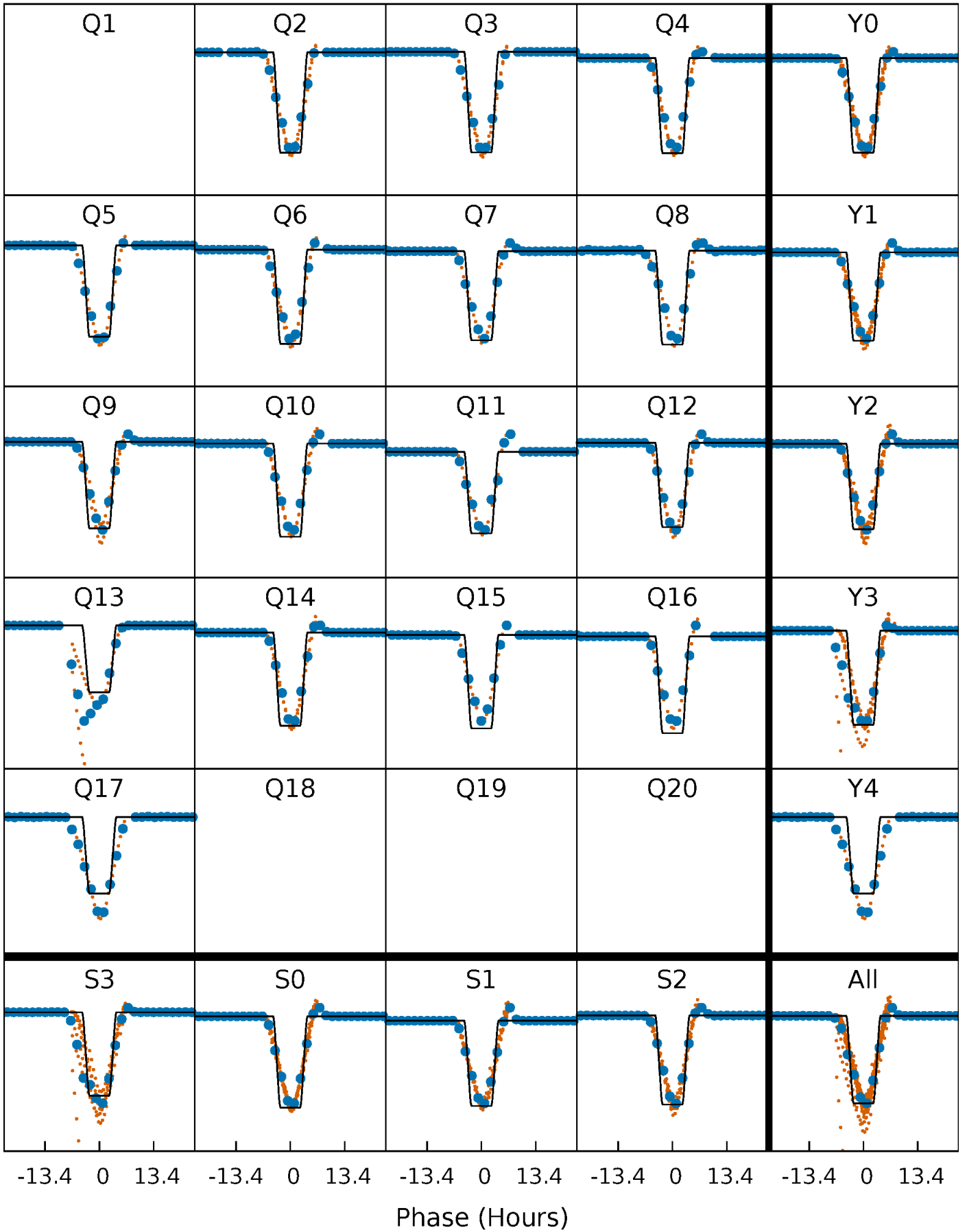
# DV Quarter-Phased Transit Curves

TCE 008435232-01 P= 49.571236 Days  $T_0=178.248121$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

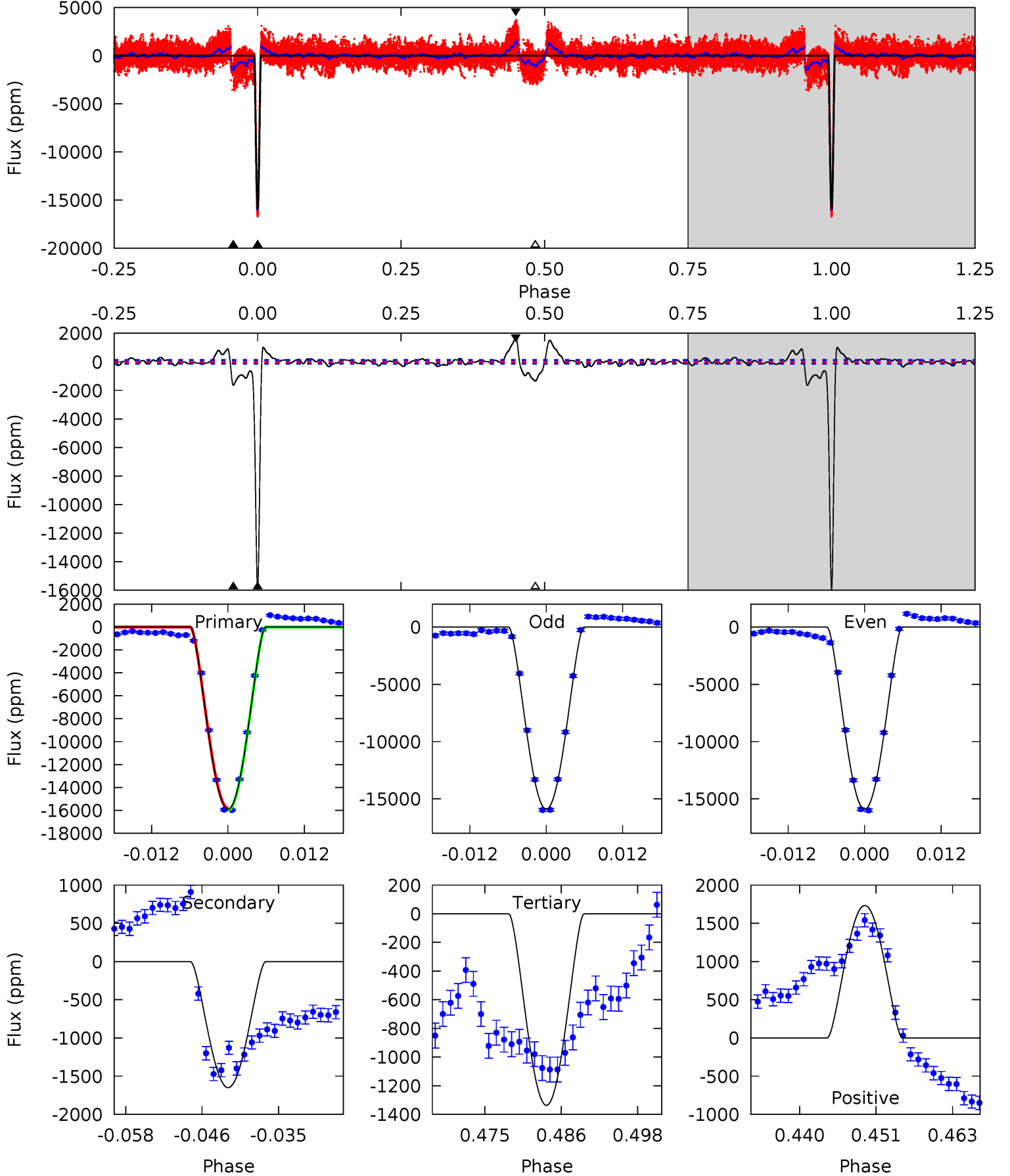
TCE 008435232-01 P= 49.571102 Days  $T_0=178.271257$  (BKJD)



# DV Model-Shift Uniqueness Test

008435232-01, P = 49.571236 Days, E = 128.676885 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
608.5	63.1	51.1	66.3	5.00	2.52	14.4	557.4	542.2	12.0	-3.19	0.23	1.01	0.10	4.02

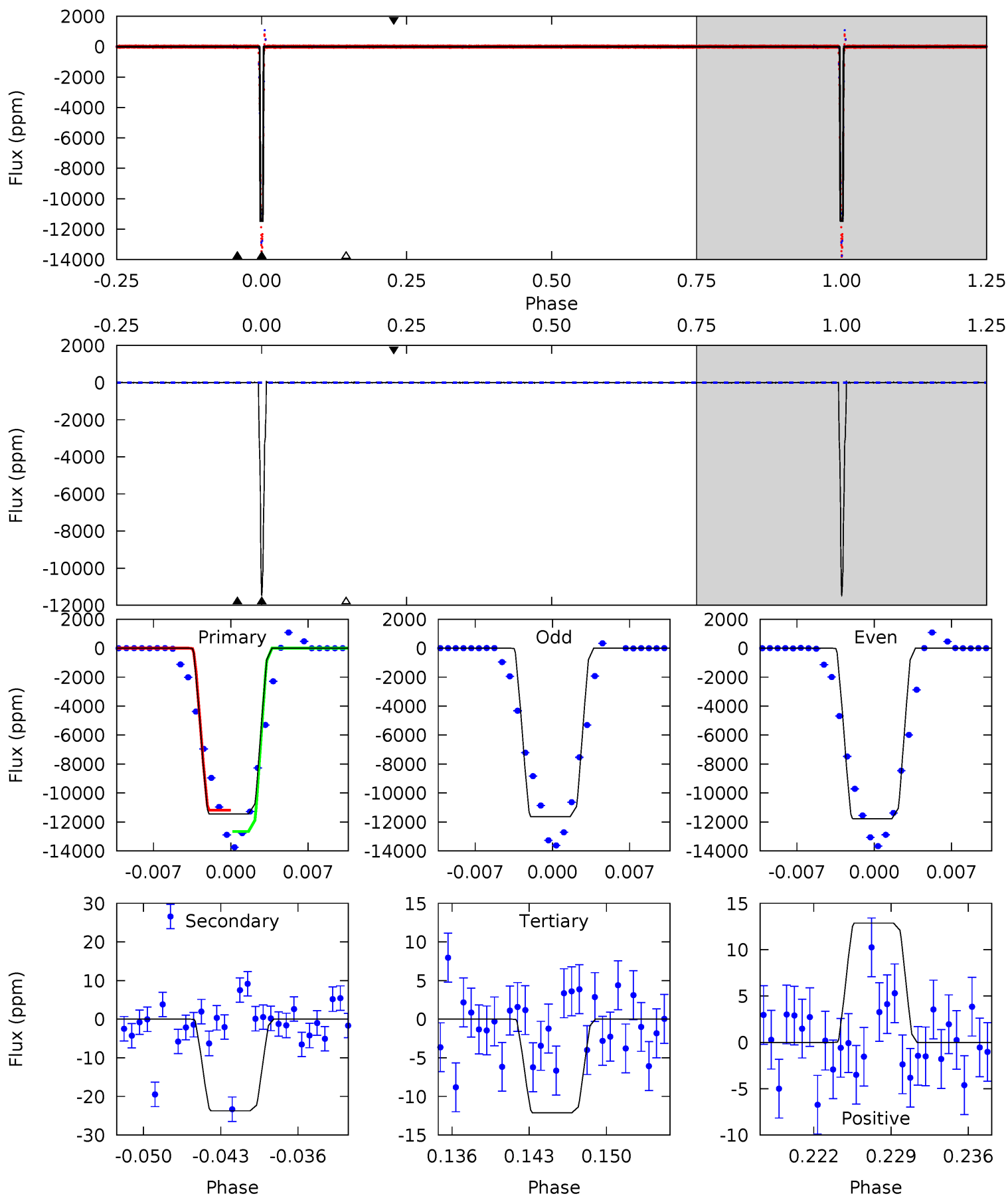




# Alt Model-Shift Uniqueness Test

008435232-01, P = 49.571102 Days, E = 128.700155 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
3486	7.22	3.69	3.92	5.09	2.69	3.79	3483	3483	3.53	3.30	24.7	1.12	0.01	235.6



### Stellar Parameters For KIC 008435232

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4040^{+129}_{-158}$	$4.714^{+0.084}_{-0.039}$	$-0.440^{+0.300}_{-0.350}$	$0.527^{+0.055}_{-0.083}$	$0.525^{+0.059}_{-0.066}$	$5.045^{+2.178}_{-0.886}$
	+3%/-4%	+2%/-1%	+68%/-80%	+10%/-16%	+11%/-13%	+43%/-18%
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 008435232-01 / KOI 3833.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1650 \pm 26$	$11.82^{+1.96}_{-1.88}$	$389^{+15}_{-18}$	$2502^{+112}_{-98}$	$297^{+117}_{-69}$
Alt.	$-24 \pm 3$	$6.67^{+1.69}_{-1.79}$	$388^{+17}_{-18}$	$1790^{+113}_{-80}$	$13^{+11}_{-5}$

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

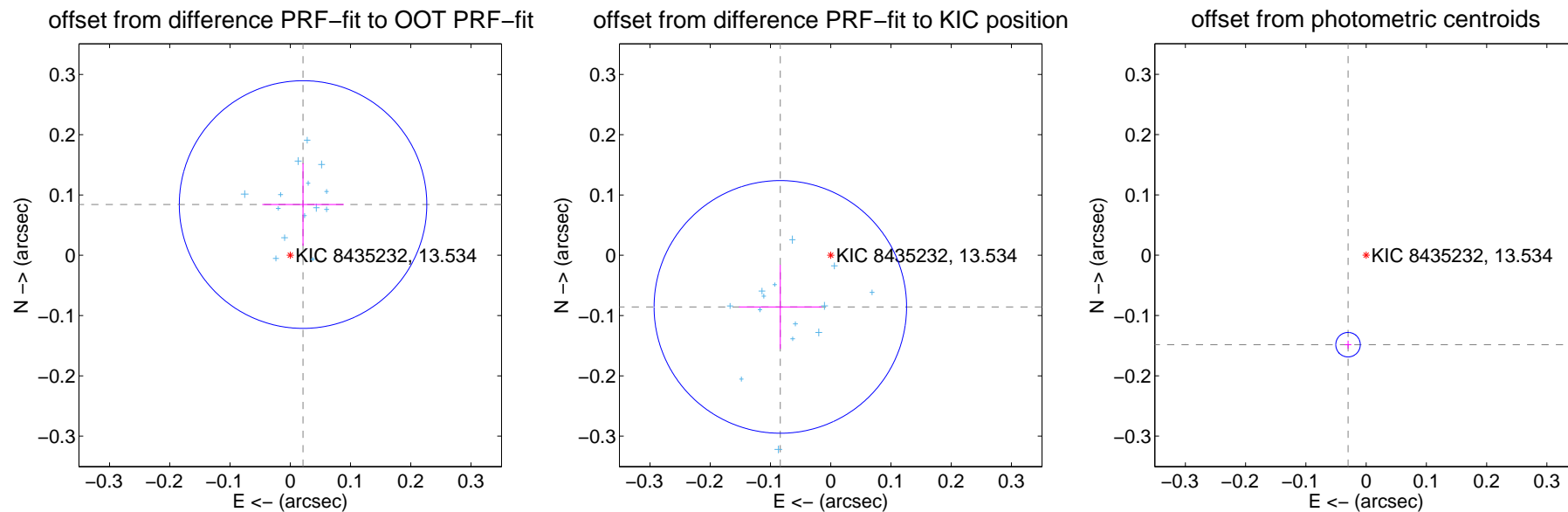
## DV Centroid Data

Supplemental centroid analysis for 008435232-01. Kepler magnitude: 13.53. Transit SNR 114.70

There are 14 quarters with good PRF difference image offsets

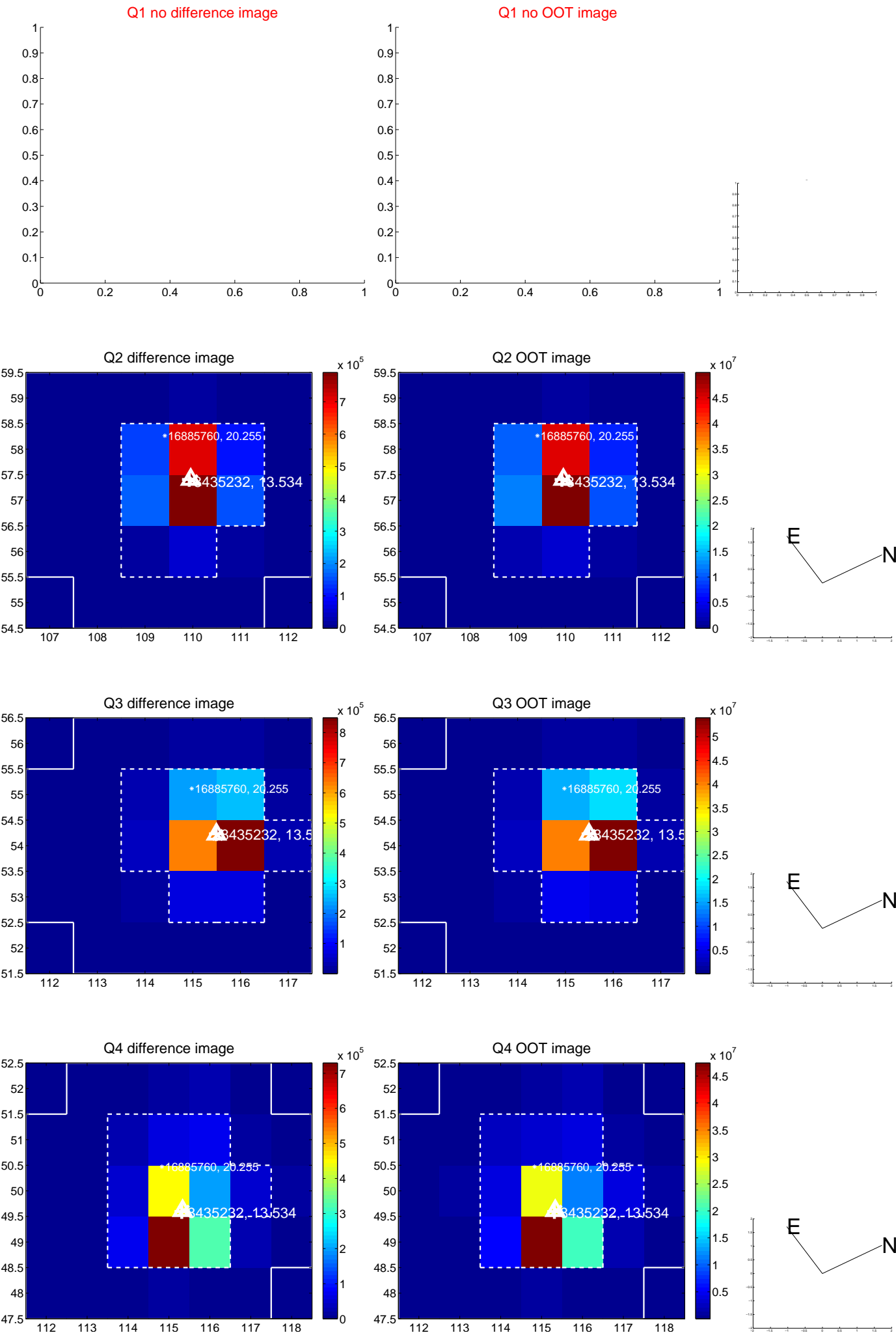
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.087 \pm 0.068$	1.27	$-0.021 \pm 0.068$	$0.084 \pm 0.068$
PRF-fit source offset from KIC position	$0.120 \pm 0.070$	1.71	$0.084 \pm 0.068$	$-0.086 \pm 0.070$
photometric centroid source offset	$0.15 \pm 0.01$	22.36	$0.03 \pm 0.01$	$-0.15 \pm 0.01$

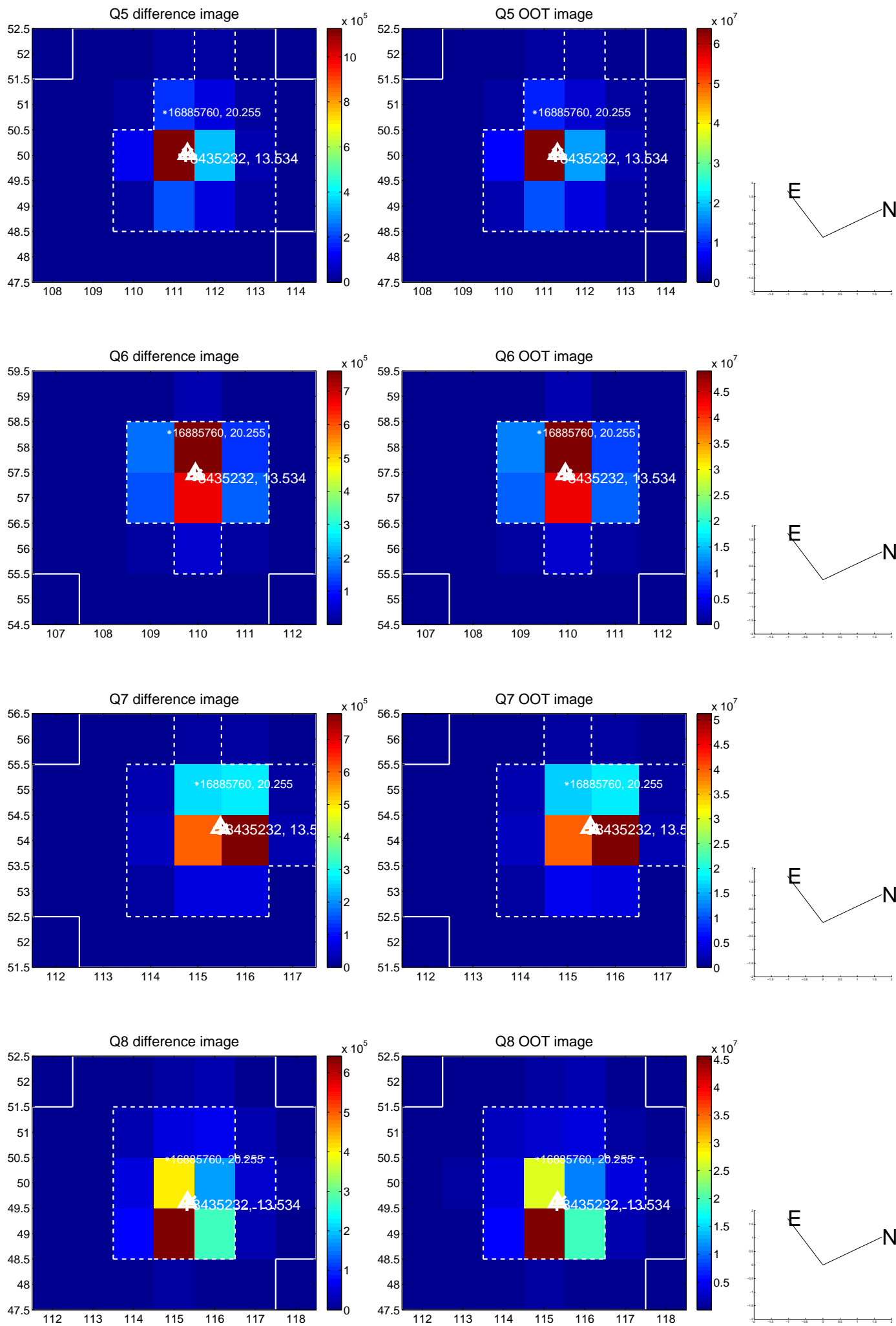


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

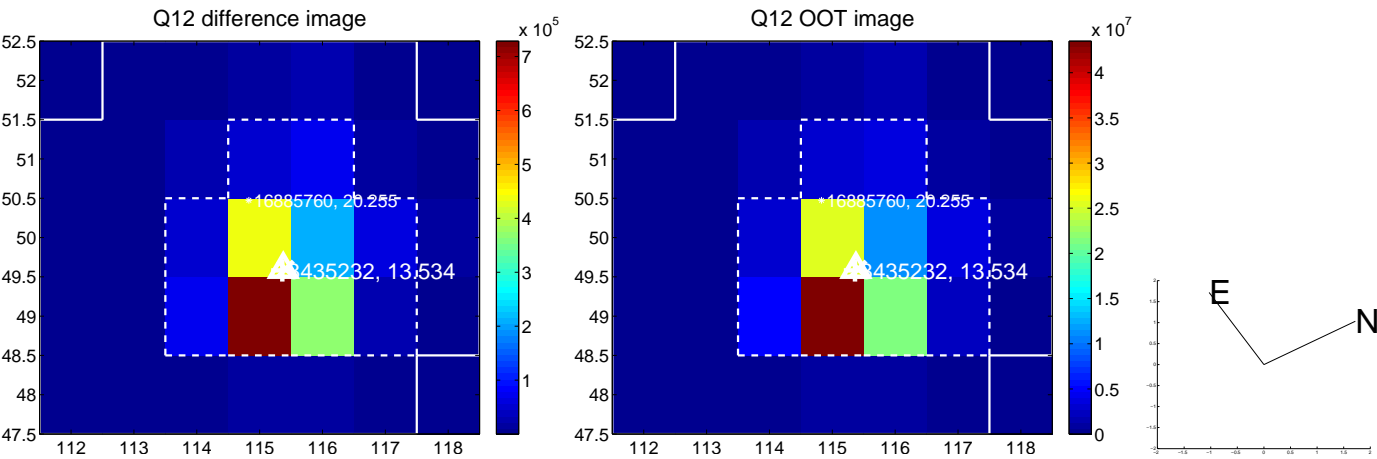
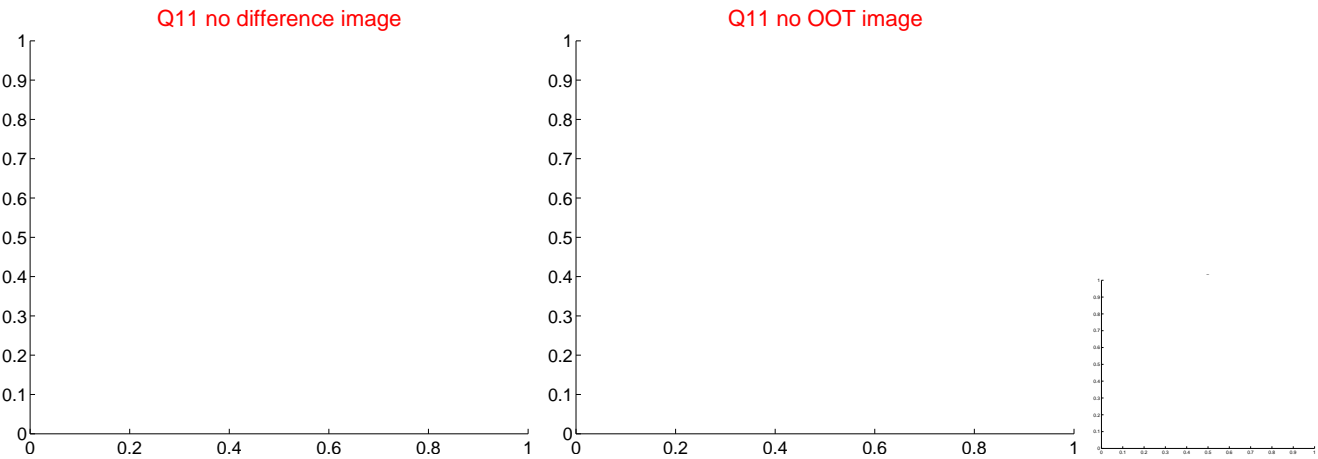
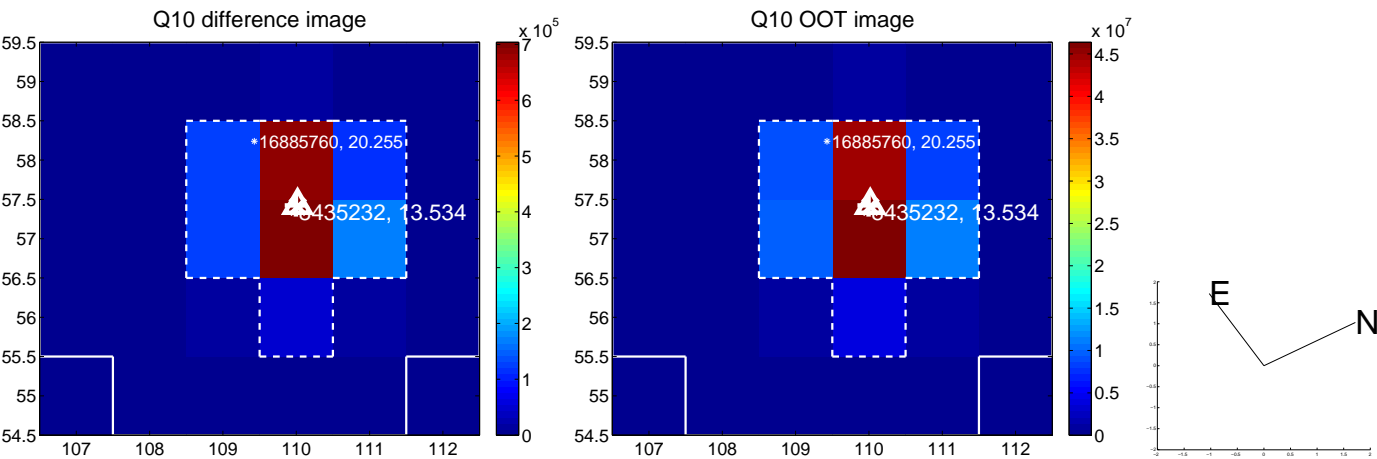
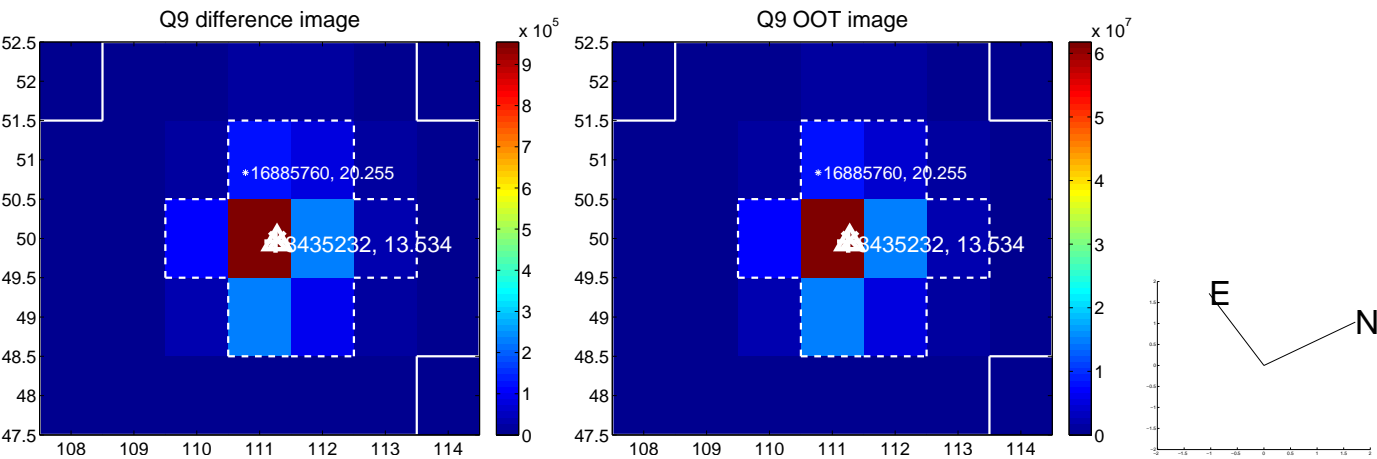
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



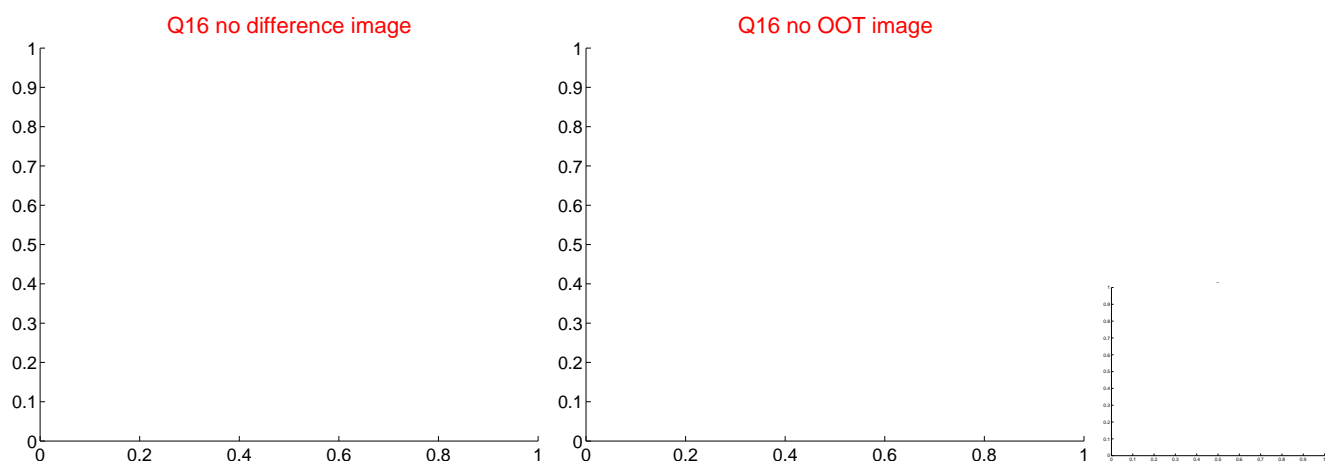
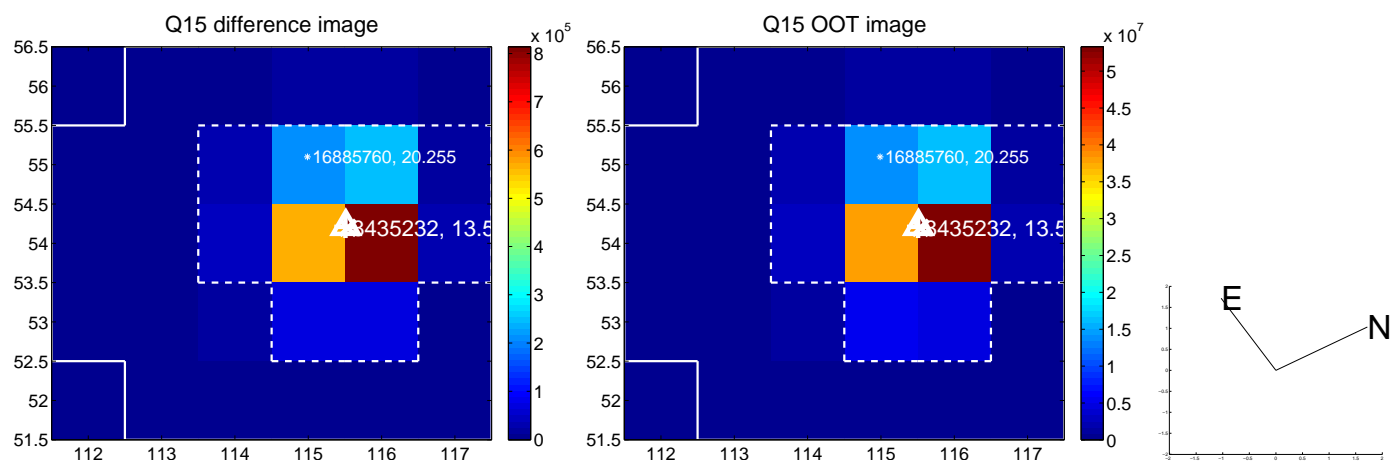
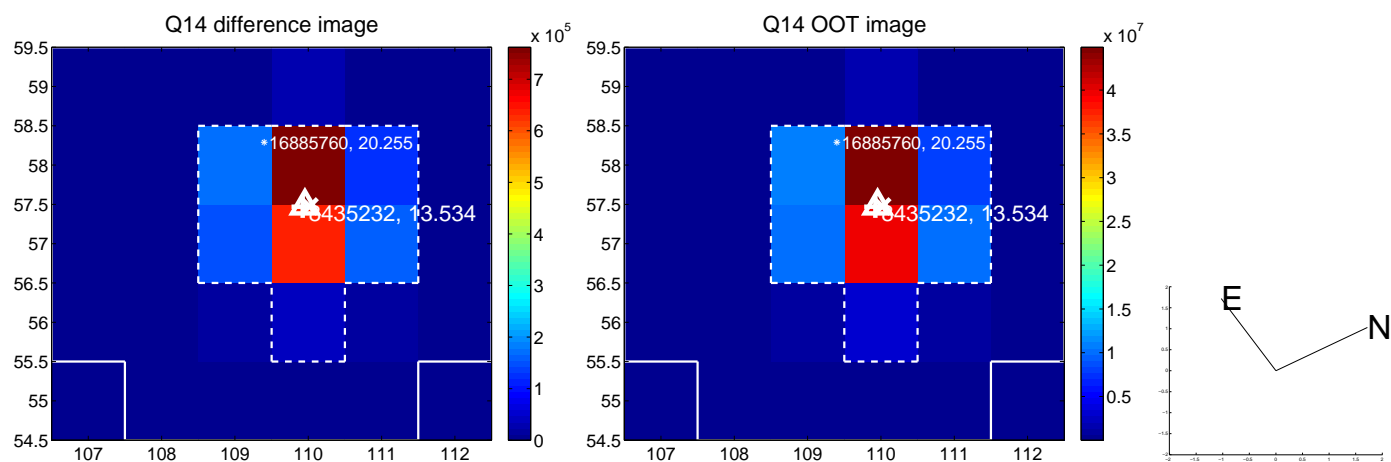
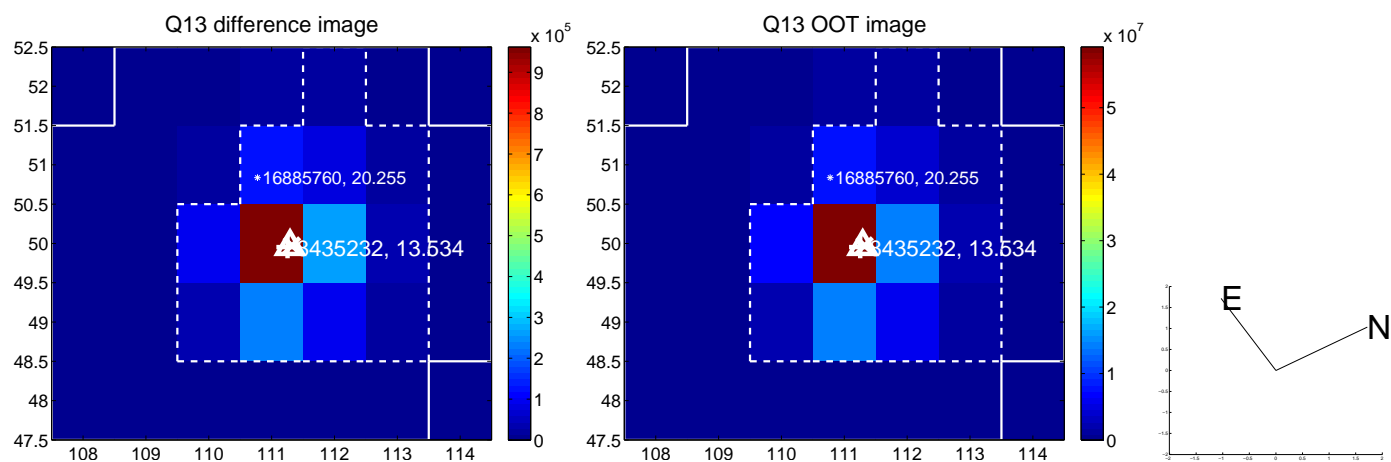
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

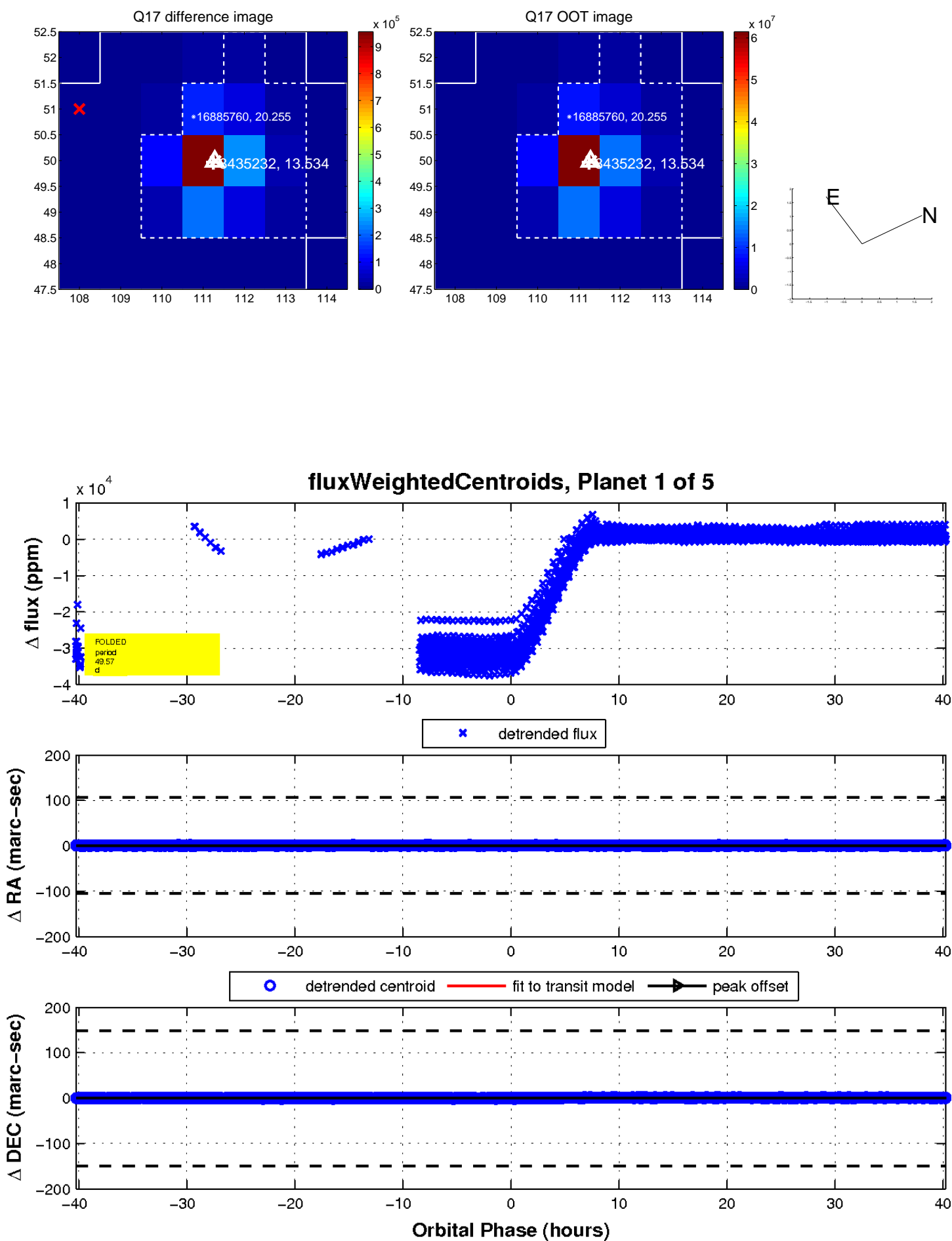


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



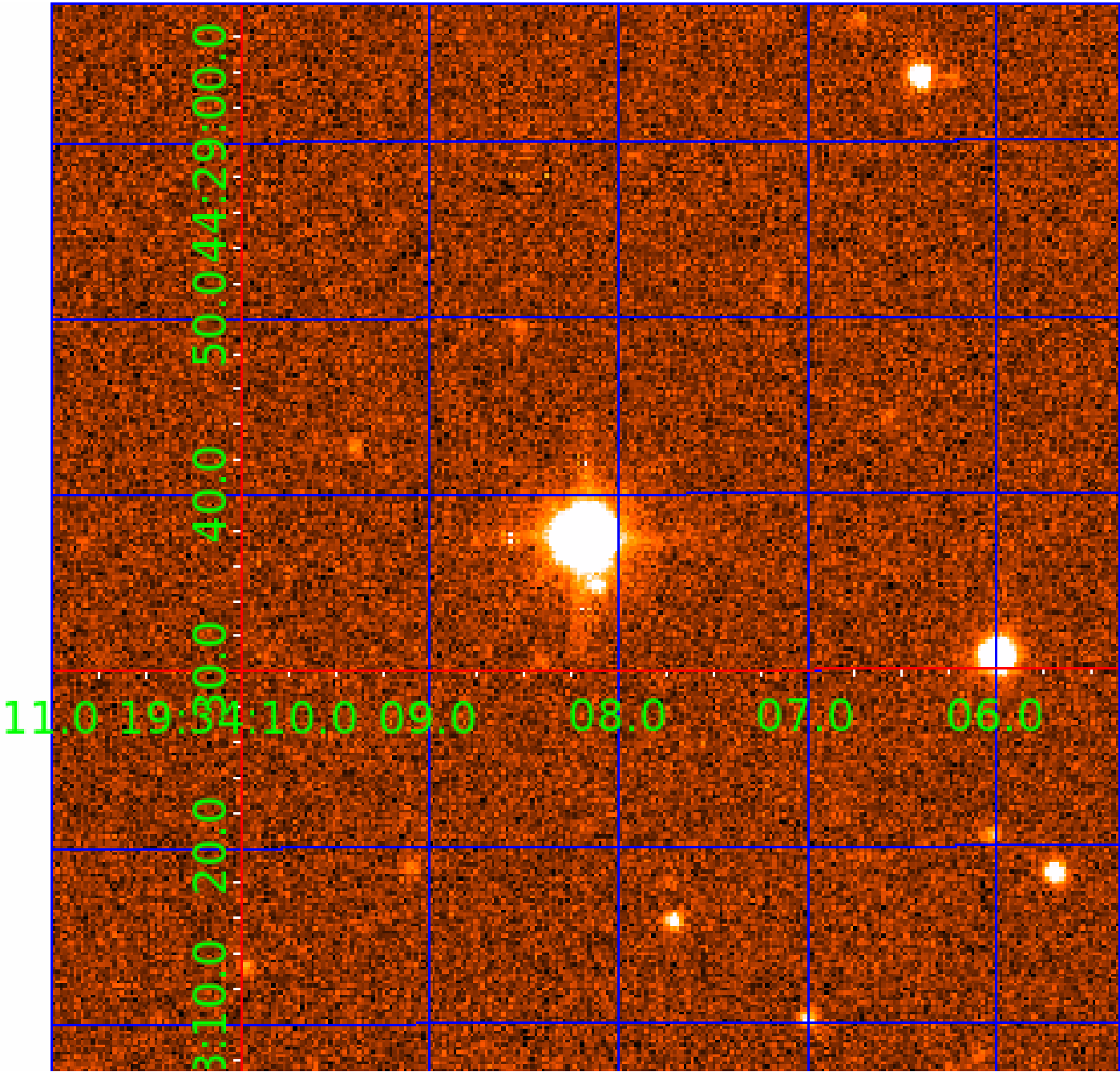


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008435232

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008435232-01	OBS	3833.01	49.571236	178.248121	16659.8	13.412	55.1	114.7	0.53	4040	12.05	1.46
008435232-02	OBS	No	49.570614	176.223307	16693.4	15.447	72.3	112.8	0.53	4040	12.06	1.46
008435232-03	OBS	No	49.568977	153.421215	2803.8	17.146	11.2	23.4	0.53	4040	5.25	1.46
008435232-04	OBS	No	396.263074	152.555912	315.4	2.129	13.0	3.4	0.53	4040	1.15	0.09
008435232-05	OBS	No	49.572104	151.610978	3699.1	24.823	12.1	27.7	0.53	4040	3.88	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008435232-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008435232-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
008435232-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_TER_DV—SAME_NTL_PERIOD
008435232-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008435232-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

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

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

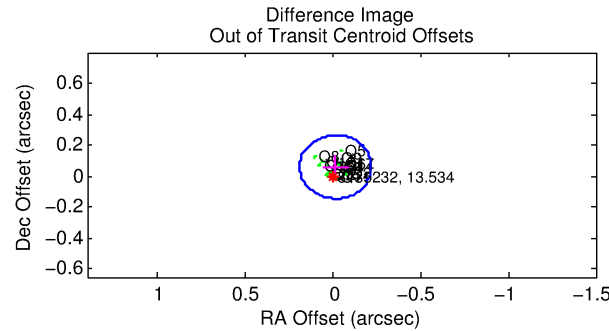
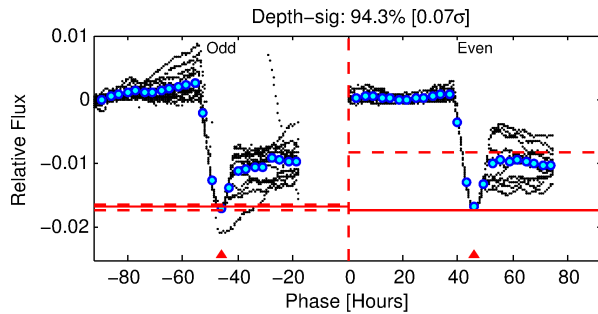
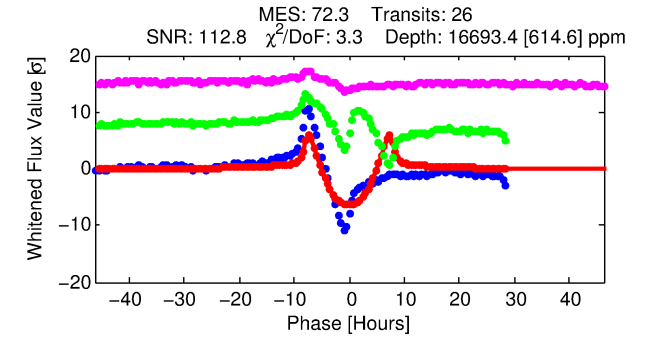
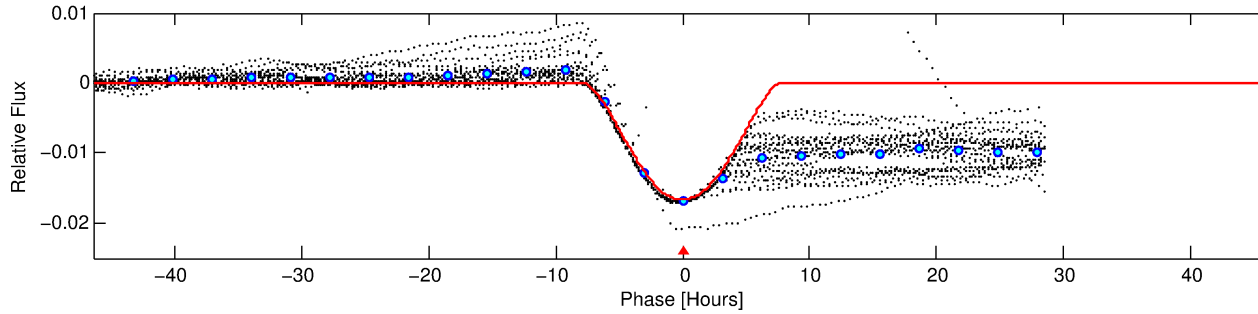
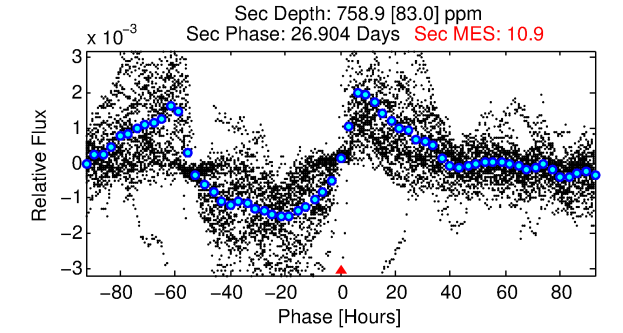
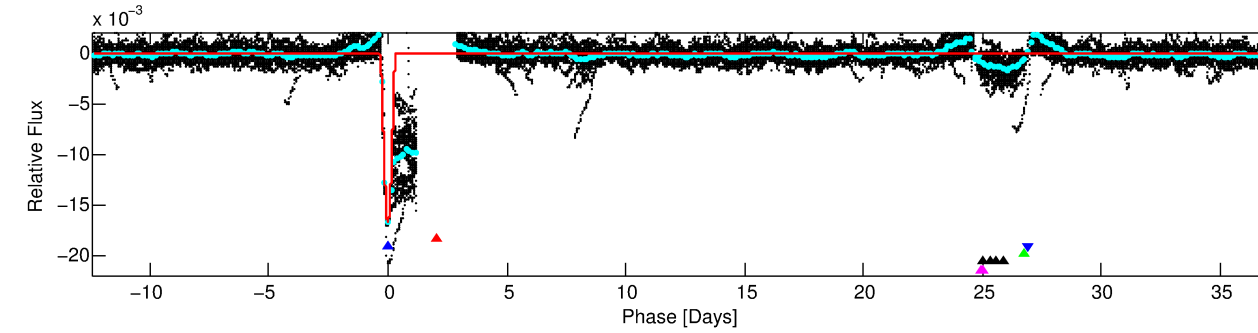
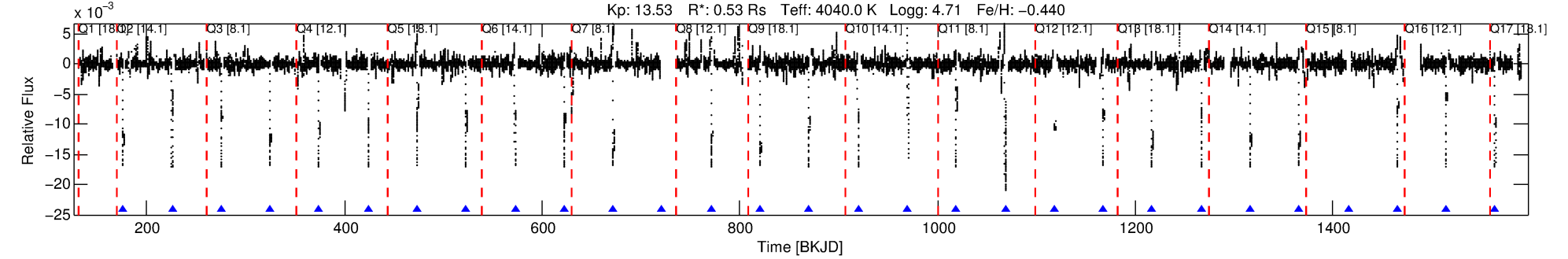
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008435232-02

No Significant Match Found

# DV One-Page Summary

KIC: 8435232 Candidate: 2 of 5 Period: 49.571 d  
KOI: K03833 Corr: No Ephemeris Match



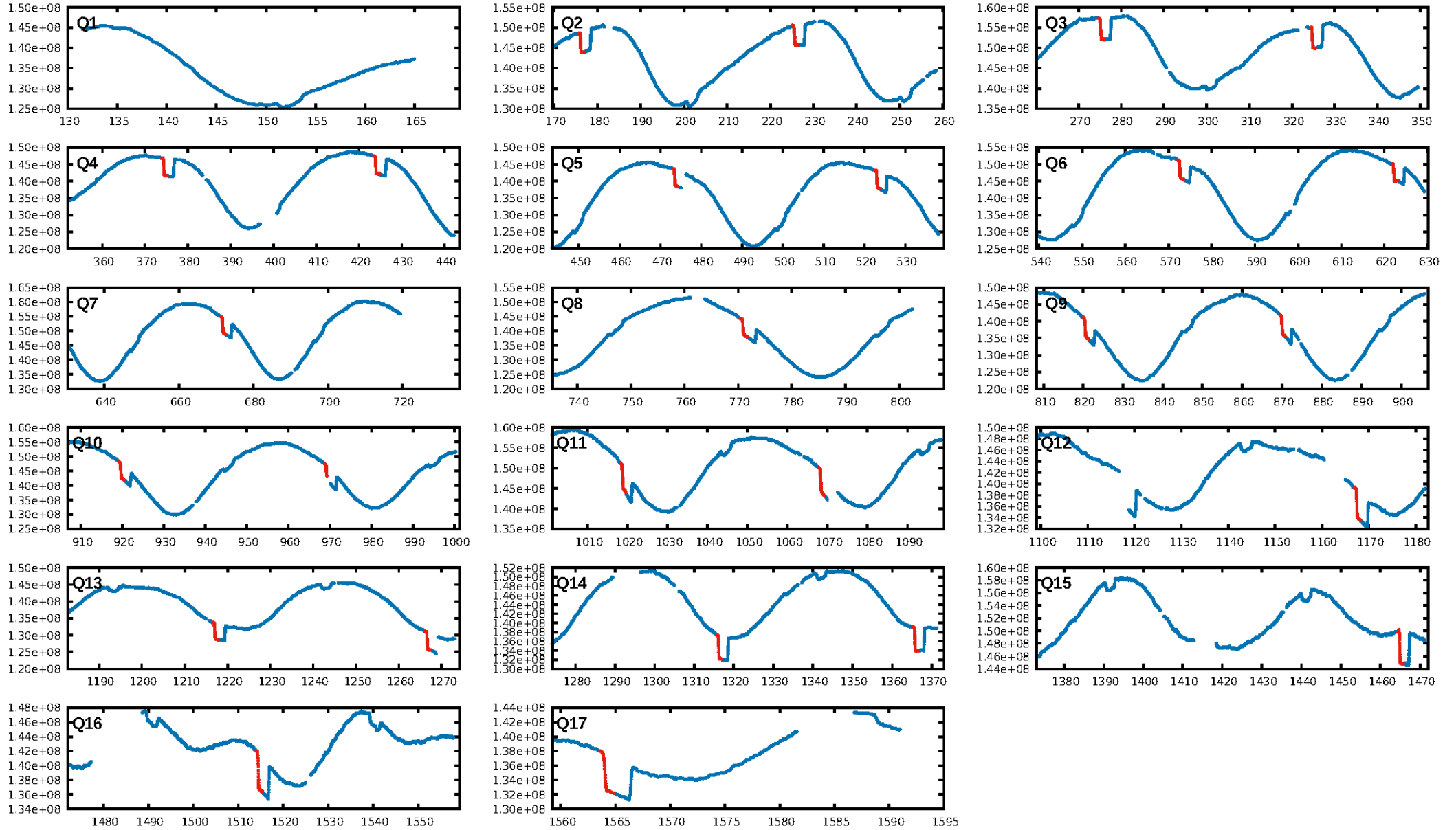
## DV Fit Results:

Period = 49.57061 [0.00015] d  
Epoch = 176.2233 [0.0024] BKJD  
Rp/R\* = 0.2098 [0.0355]  
a/R\* = 16.73 [0.27]  
b = 1.00 [0.04]  
Seff = 1.46 [0.33]  
Teq = 280 [16] K  
Rp = 12.06 [2.79] Re  
a = 0.2130 [0.0262] AU  
Ag = 130.17 [51.10] [2.53σ]  
**Teffp = 1464 [142] K [8.27σ]**

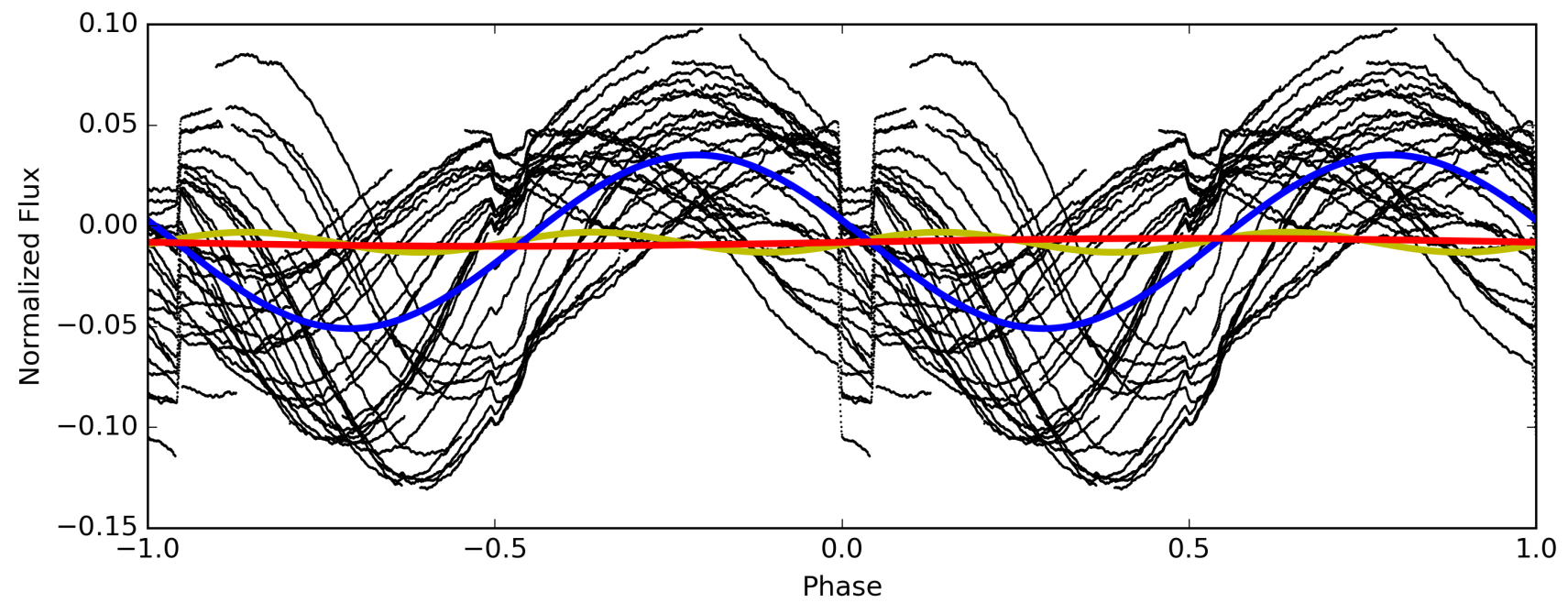
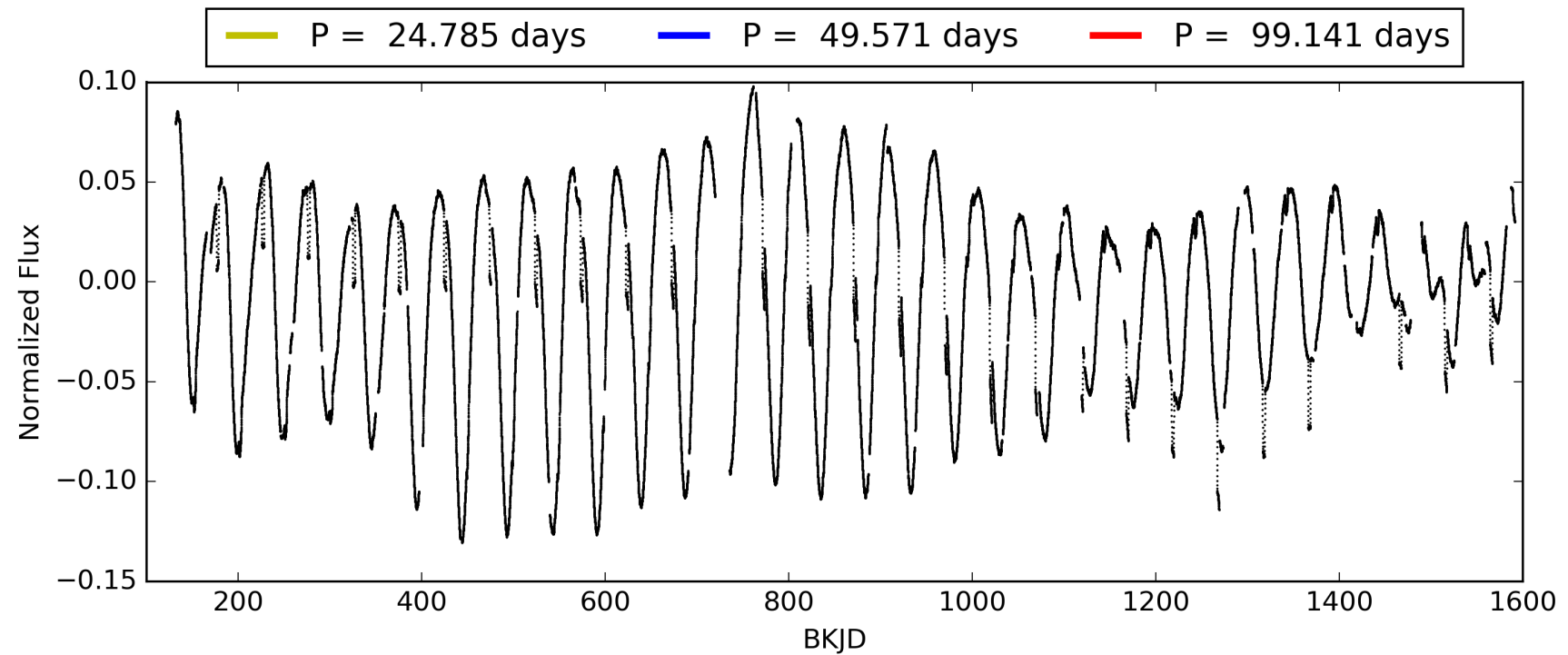
## DV Diagnostic Results:

**ShortPeriod-sig: 0.1% [0.00σ]**  
**LongPeriod-sig: 0.1% [0.00σ]**  
ModelChiSquare2-sig: 3.3%  
**ModelChiSquareGof-sig: 0.0%**  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [25/25]  
**GhostDiagnostic-chr: 0.8586**  
**Centroid-sig: 0.0%**  
**Centroid-so: 0.167 arcsec [26.02σ]**  
OotOffset-rm: 0.062 arcsec [0.91σ]  
KicOffset-rm: 0.155 arcsec [2.20σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [15/15]

# TCE 008435232-02, PDC Light Curves

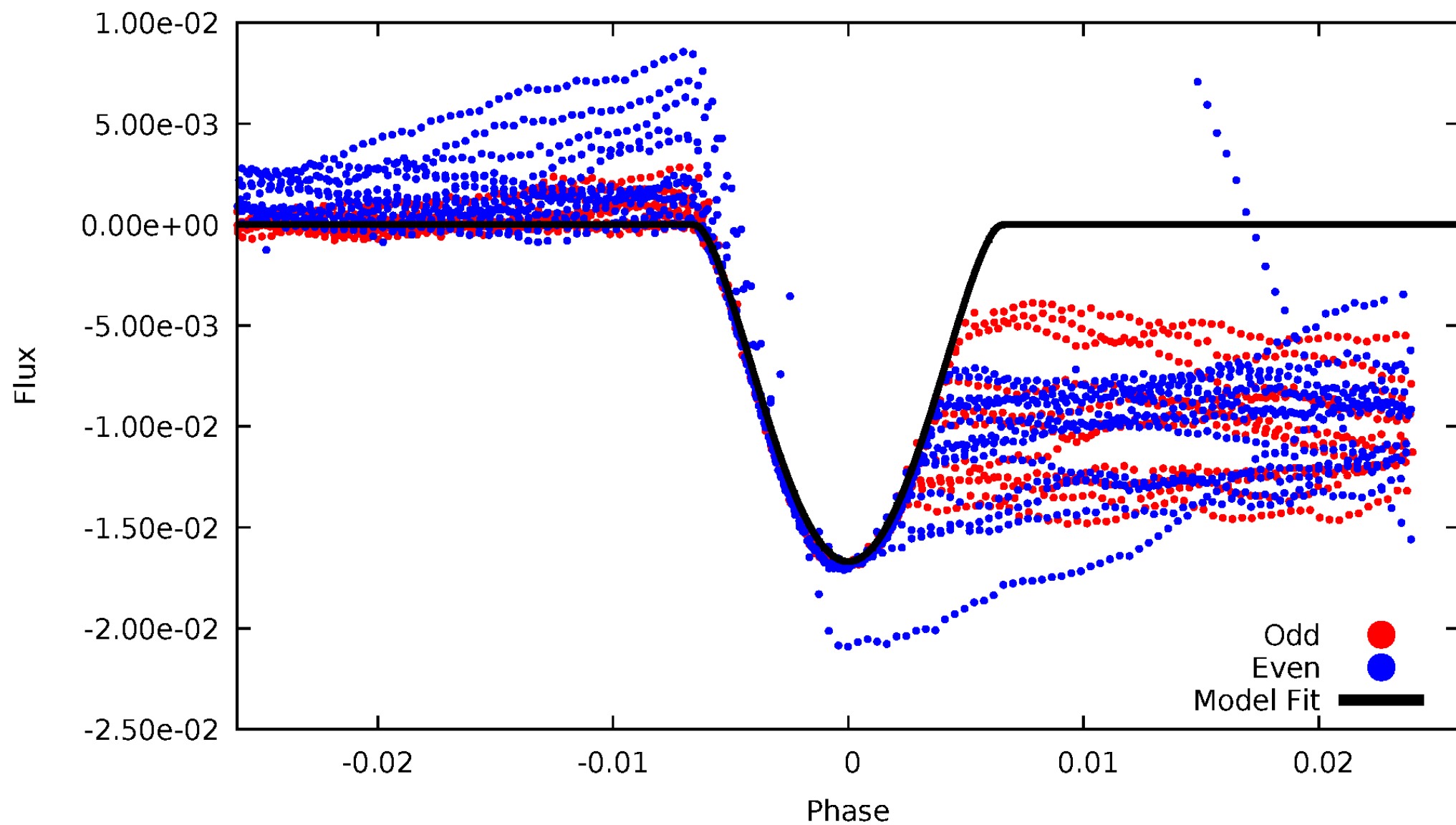


TCE 008435232-02



# DV Odd/Even

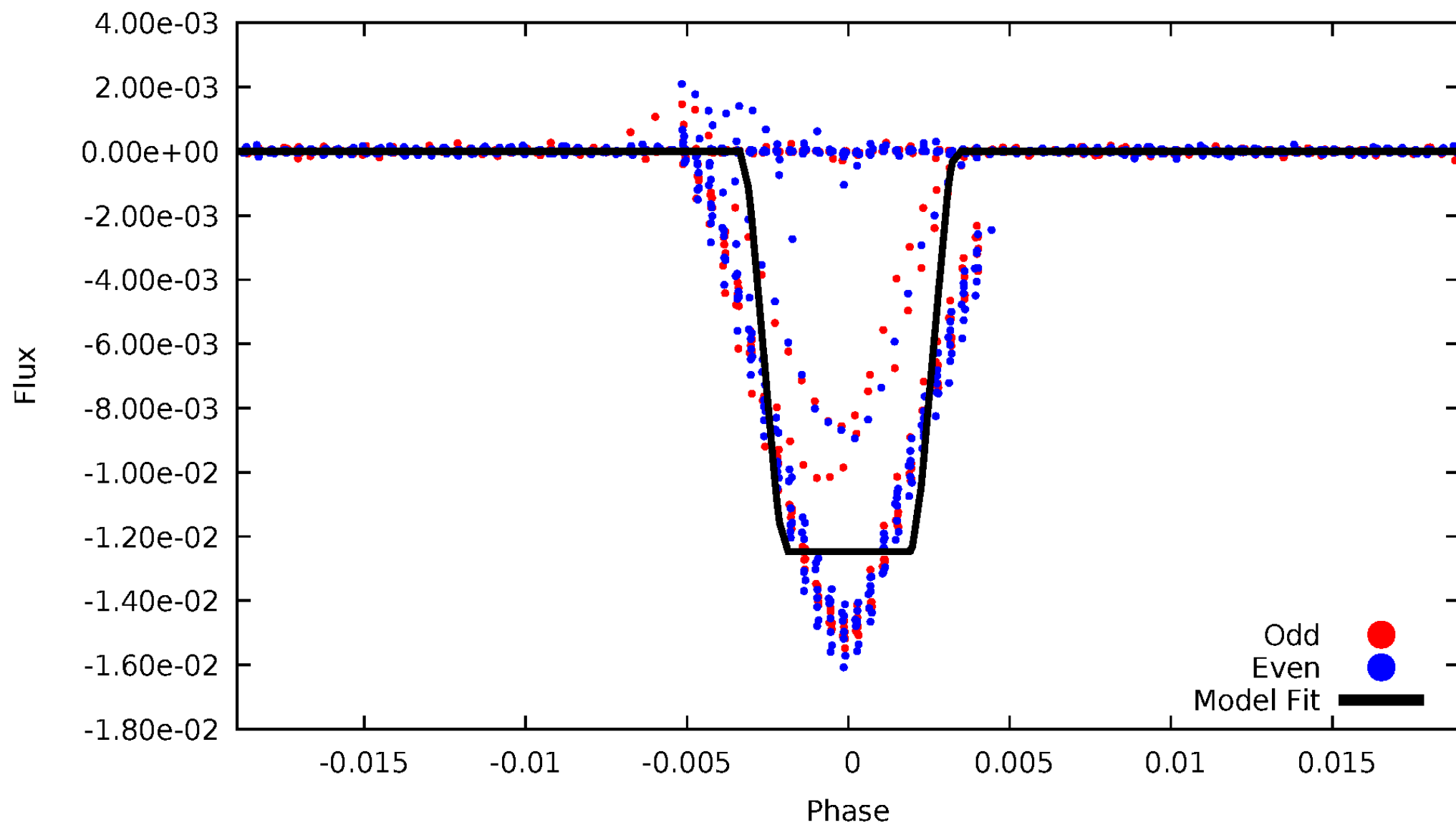
TCE 008435232-02





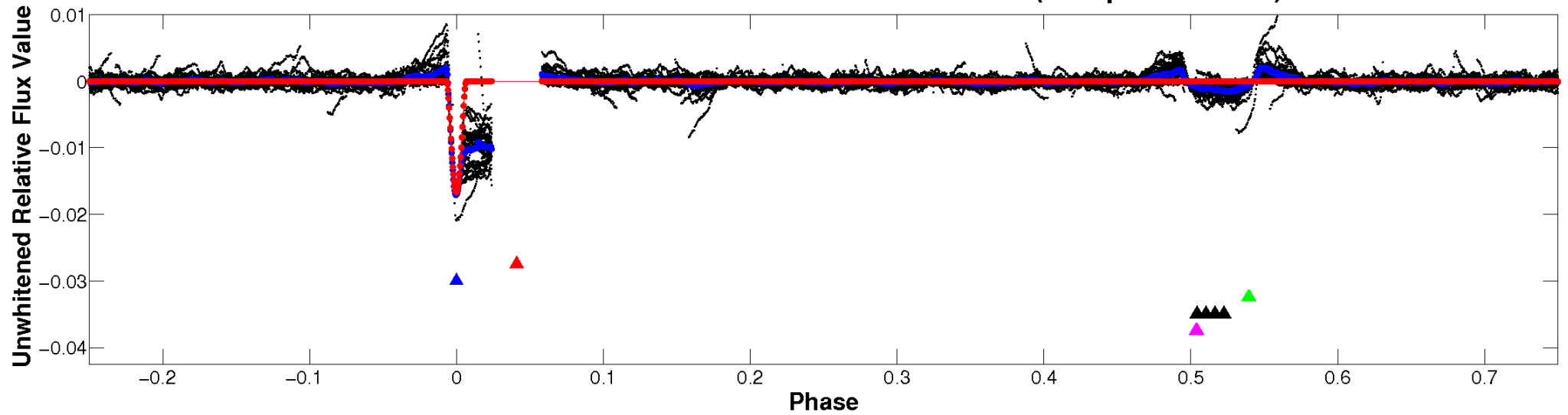
# ALT Odd/Even

TCE 008435232-02

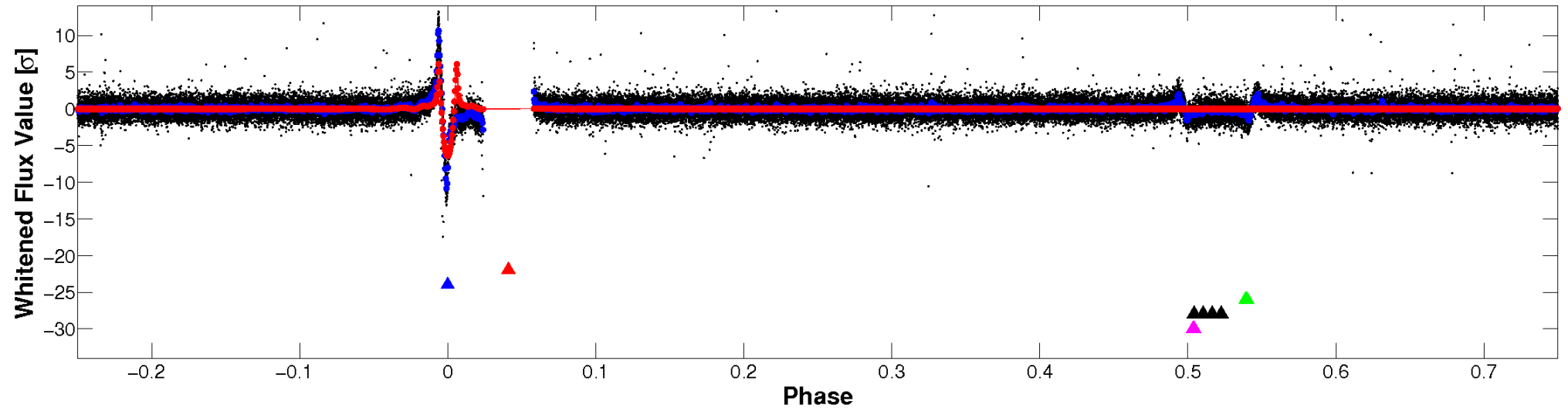


# Non-Whitened Vs. Whitened Light Curve

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

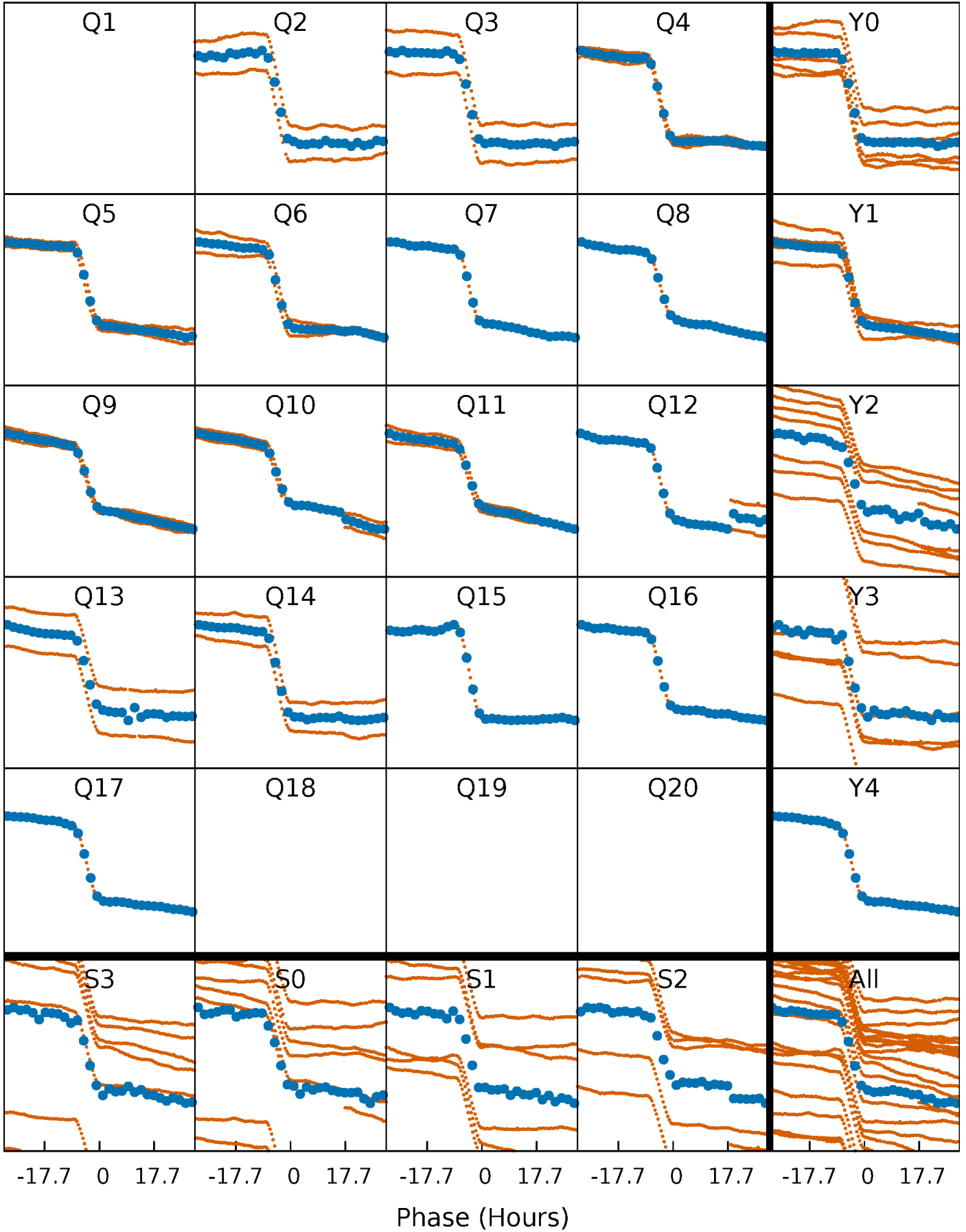


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



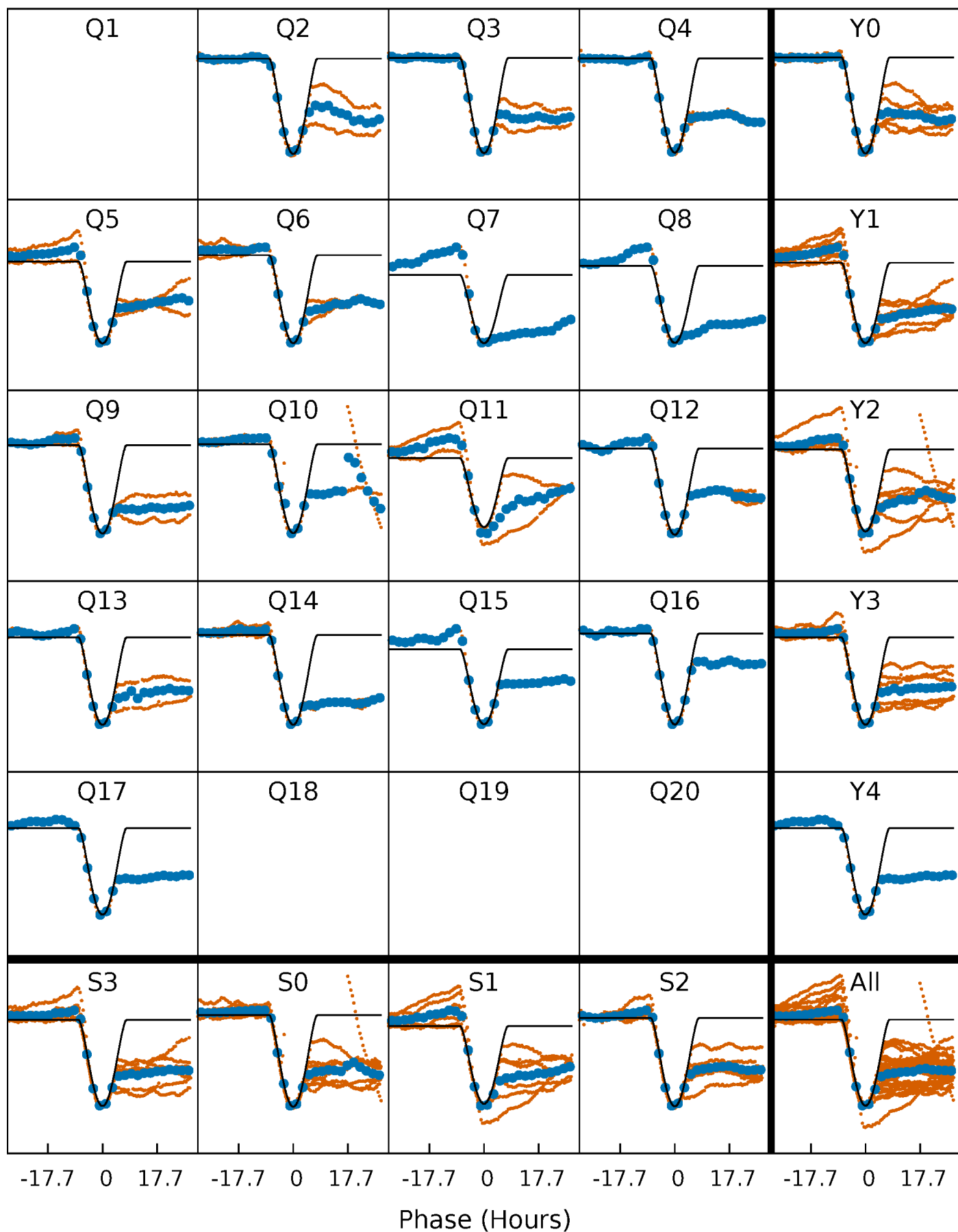
# PDC Quarter-Phased Transit Curves

TCE 008435232-02   P= 49.570614 Days    $T_0=176.223307$  (BKJD)



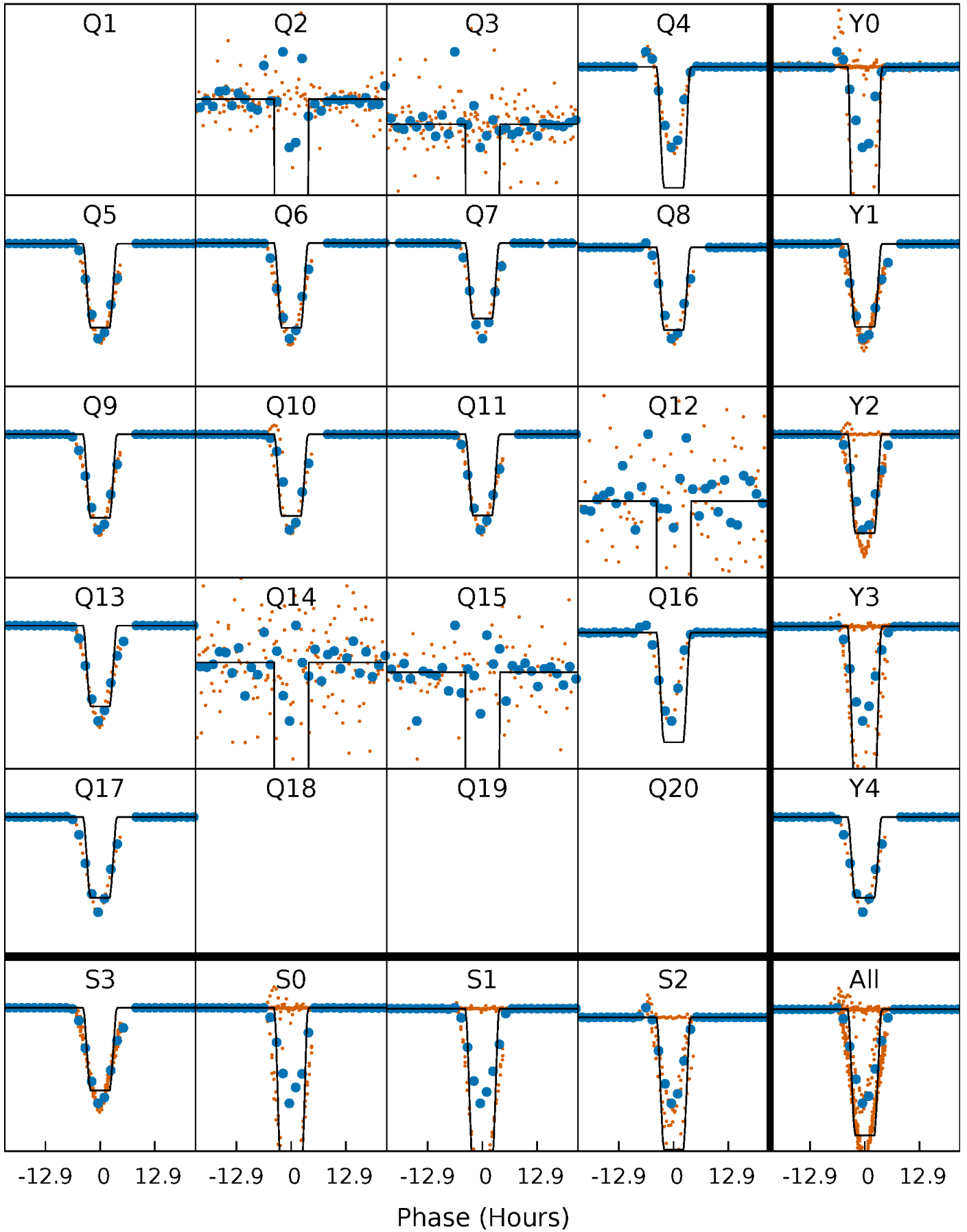
# DV Quarter-Phased Transit Curves

TCE 008435232-02     $P = 49.570614$  Days     $T_0 = 176.223307$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

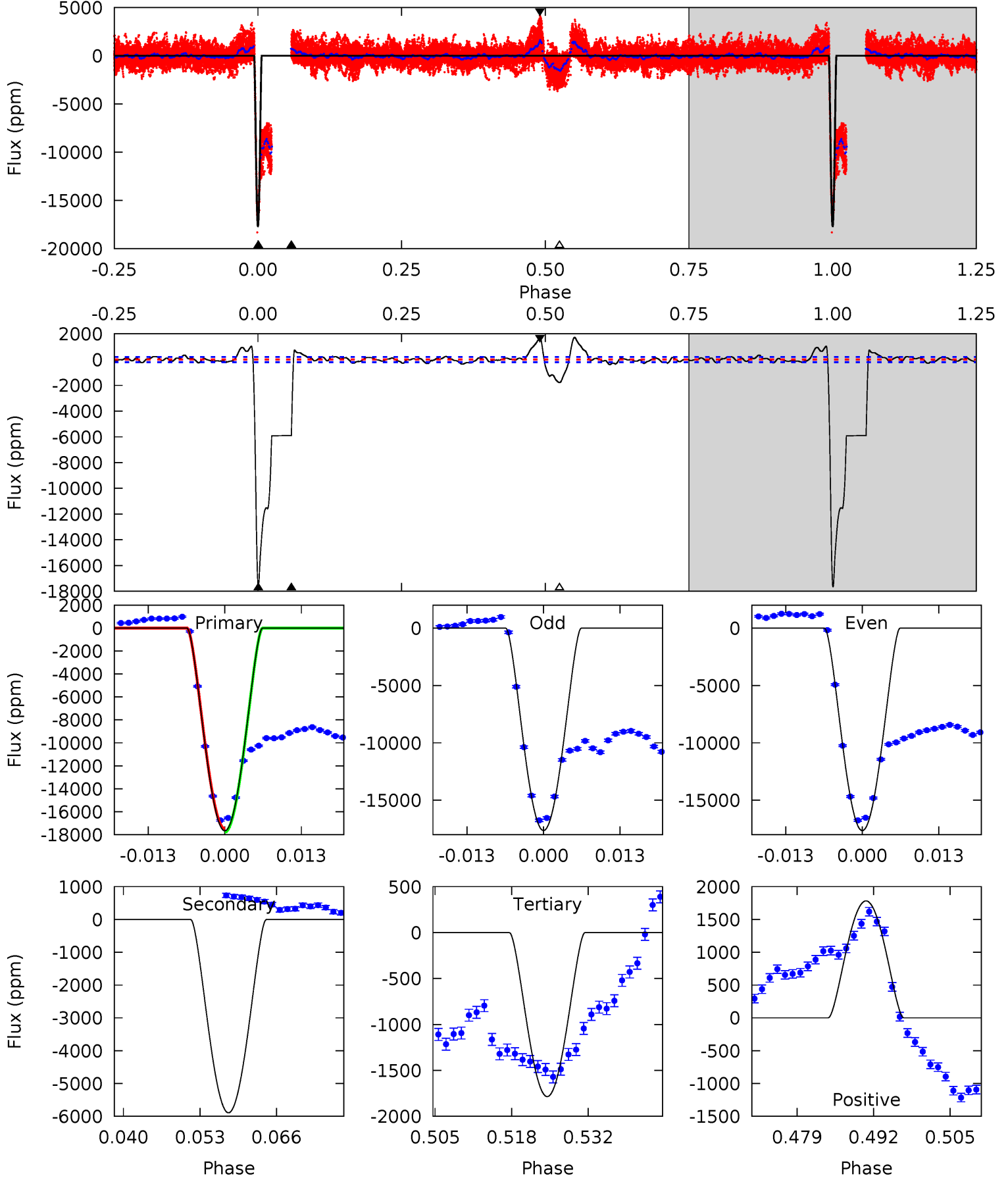
TCE 008435232-02 P= 49.571779 Days  $T_0=176.167945$  (BKJD)



# DV Model-Shift Uniqueness Test

008435232-02, P = 49.570614 Days, E = 126.652693 Days

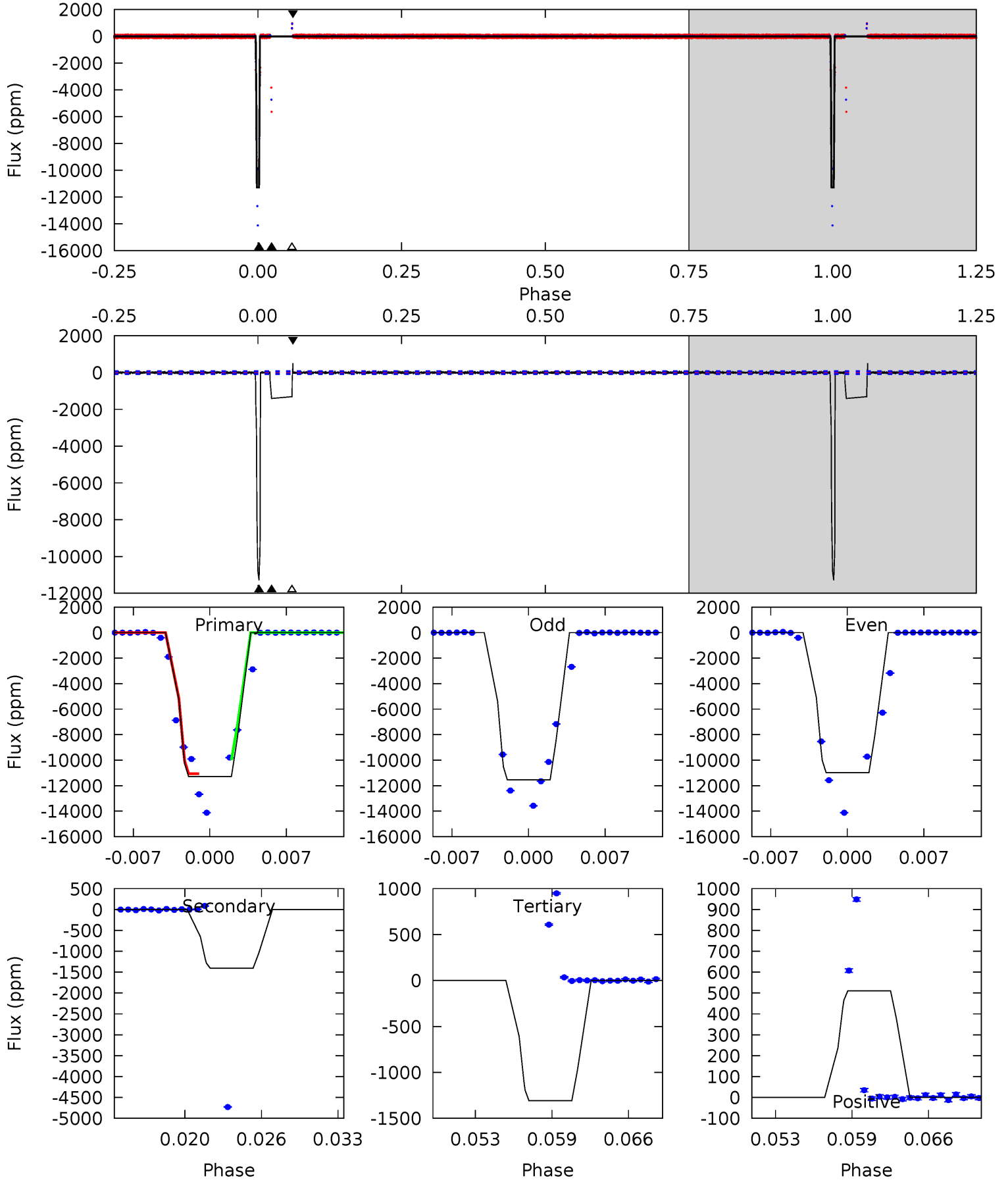
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
441.2	147.2	44.6	44.5	4.97	2.48	23.1	396.6	396.7	102.6	102.7	0.15	1.00	0.09	0



# Alt Model-Shift Uniqueness Test

008435232-02, P = 49.571779 Days, E = 126.596166 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
741.5	92.5	86.0	33.5	5.11	2.72	1.31	655.5	708.0	6.48	58.9	27.5	0.64	0.04	0





### Stellar Parameters For KIC 008435232

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4040^{+129}_{-158}$	$4.714^{+0.084}_{-0.039}$	$-0.440^{+0.300}_{-0.350}$	$0.527^{+0.055}_{-0.083}$	$0.525^{+0.059}_{-0.066}$	$5.045^{+2.178}_{-0.886}$
	+3%/-4%	+2%/-1%	+68%/-80%	+10%/-16%	+11%/-13%	+43%/-18%
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 008435232-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-5893 \pm 40$	$11.87^{+2.31}_{-2.15}$	$388^{+15}_{-18}$	$2950^{+172}_{-162}$	$1057^{+504}_{-315}$
Alt.	$-1407 \pm 15$	$6.38^{+1.99}_{-2.01}$	$388^{+16}_{-18}$	$2867^{+313}_{-200}$	$859^{+995}_{-351}$

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

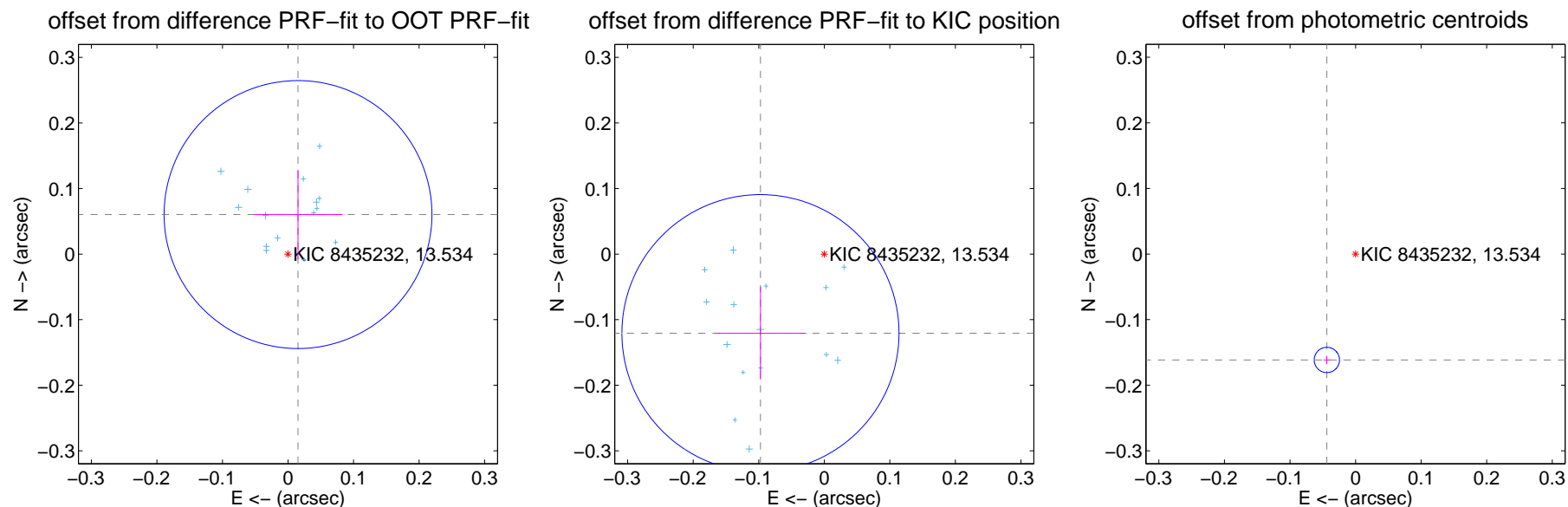
## DV Centroid Data

Supplemental centroid analysis for 008435232-02. Kepler magnitude: 13.53. Transit SNR 112.79

There are 15 quarters with good PRF difference image offsets

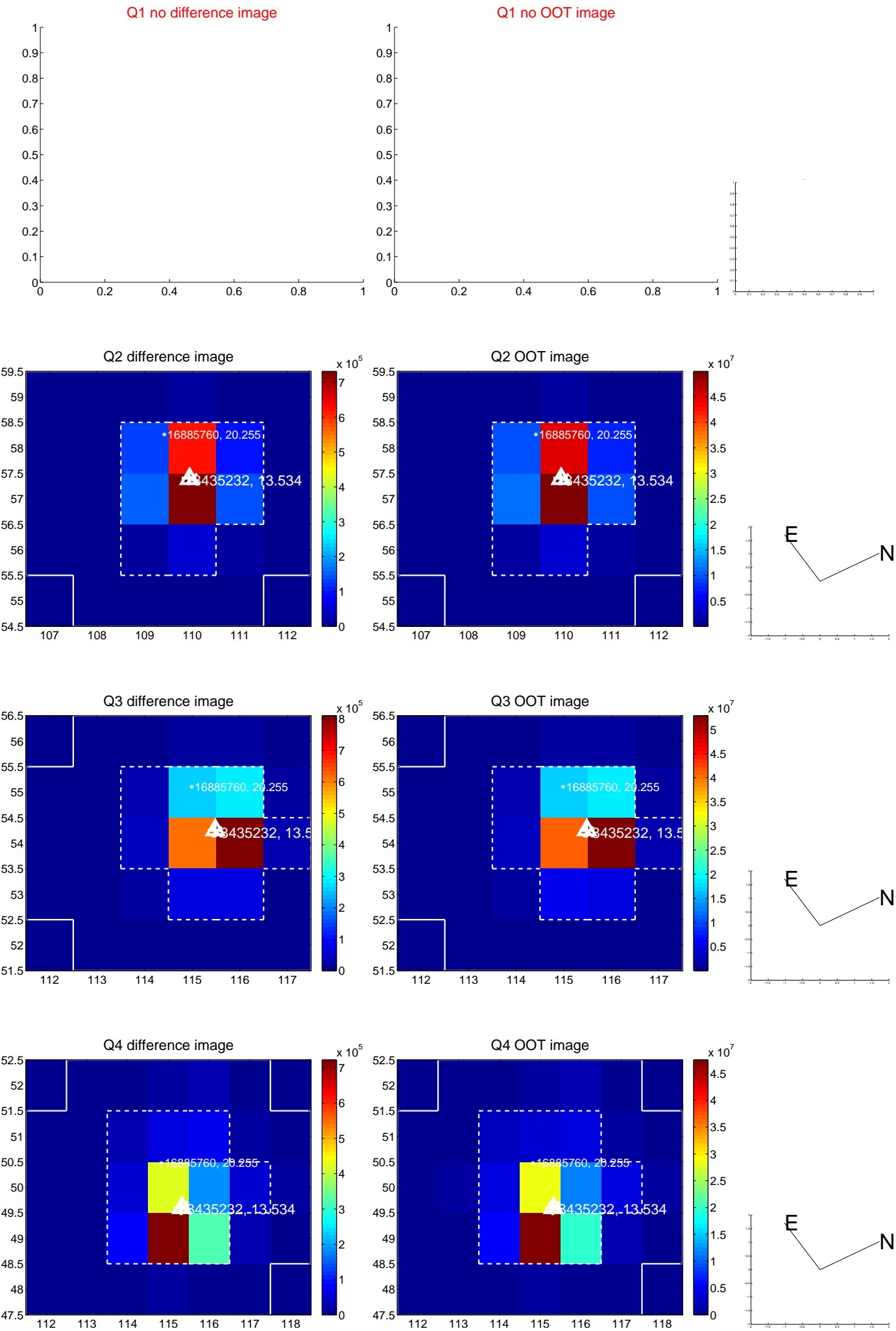
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.062 \pm 0.068$	0.91	$-0.015 \pm 0.068$	$0.060 \pm 0.068$
PRF-fit source offset from KIC position	$0.155 \pm 0.070$	2.20	$0.097 \pm 0.070$	$-0.121 \pm 0.071$
photometric centroid source offset	$0.17 \pm 0.01$	26.02	$0.04 \pm 0.01$	$-0.16 \pm 0.01$

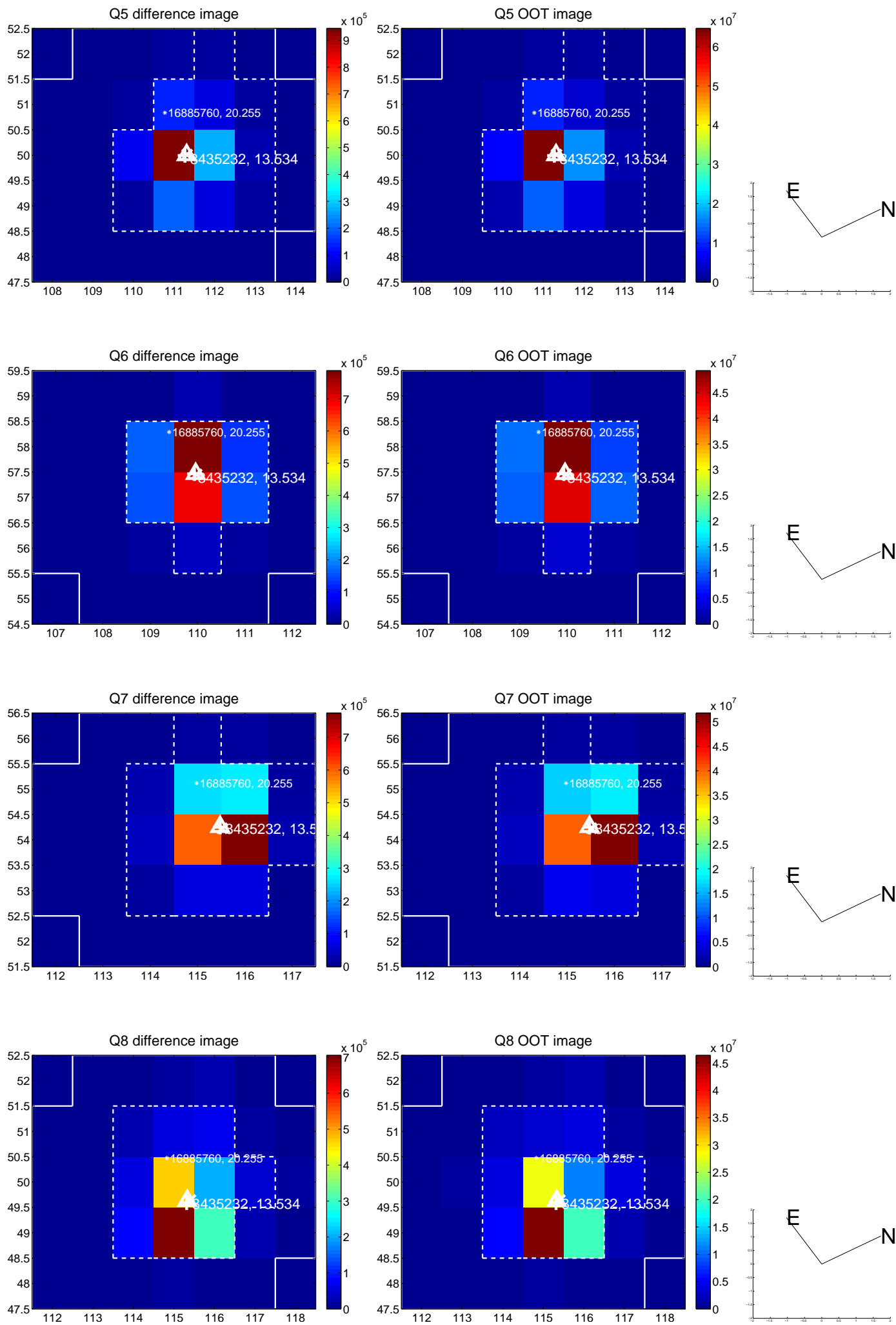


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

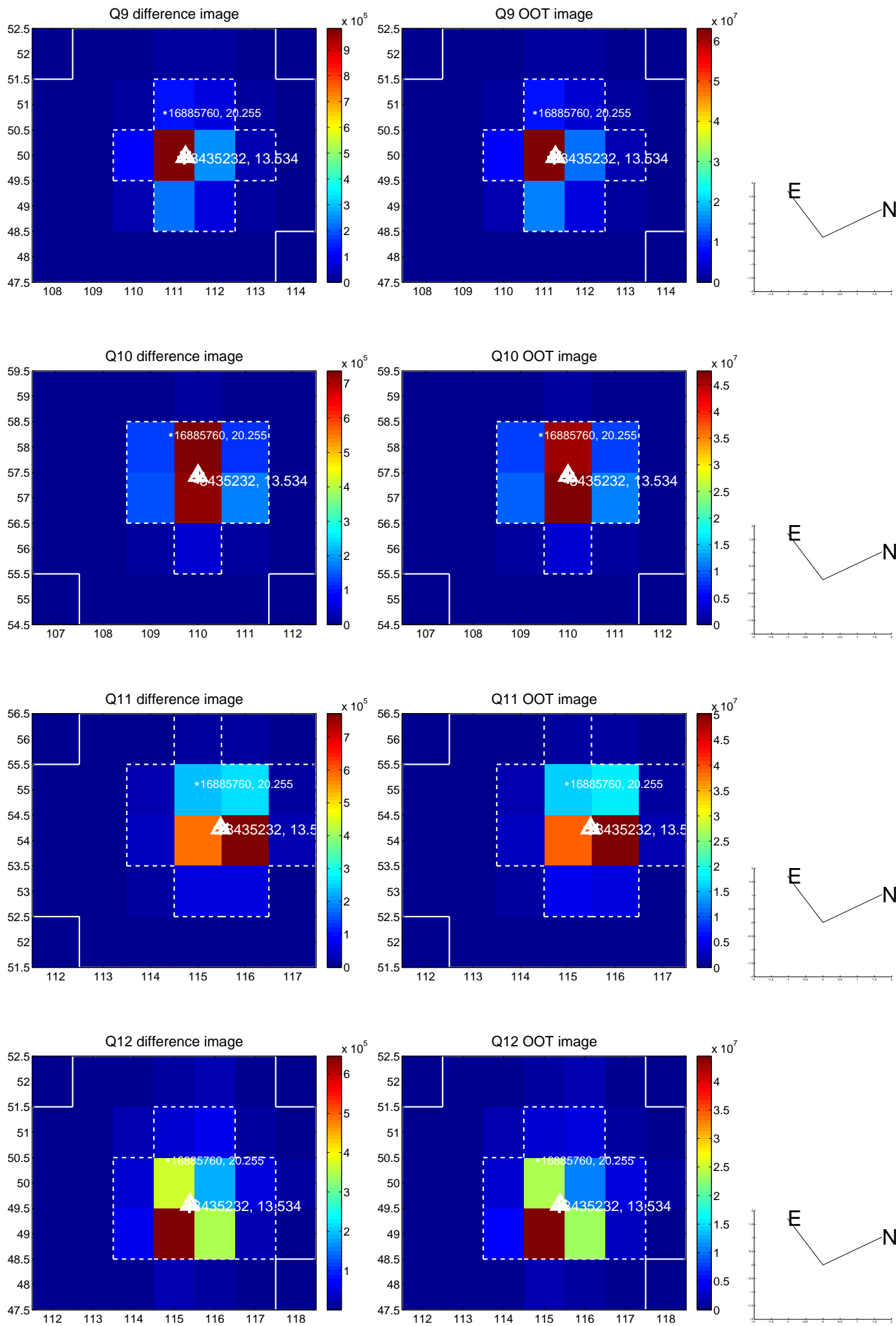
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



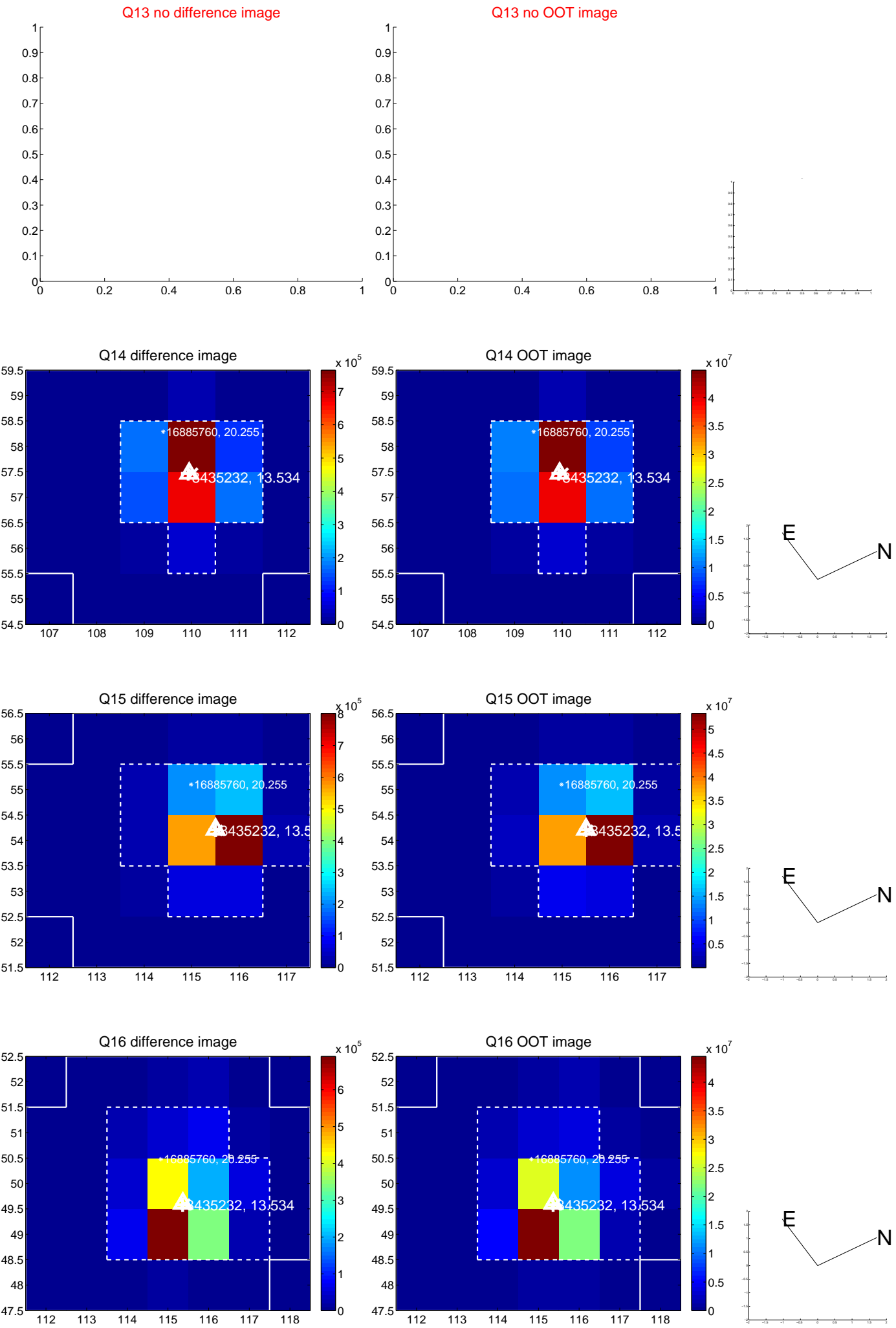
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



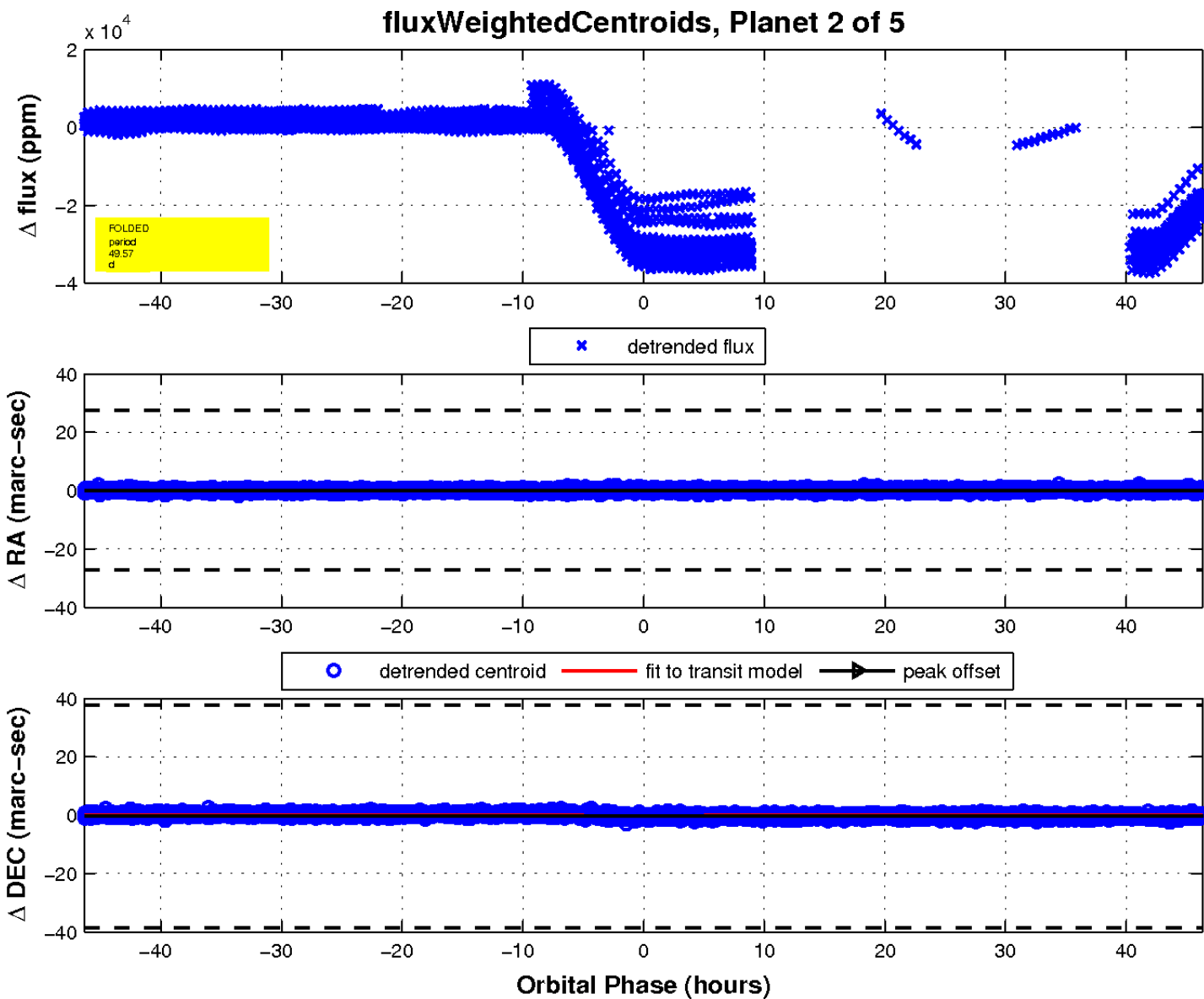
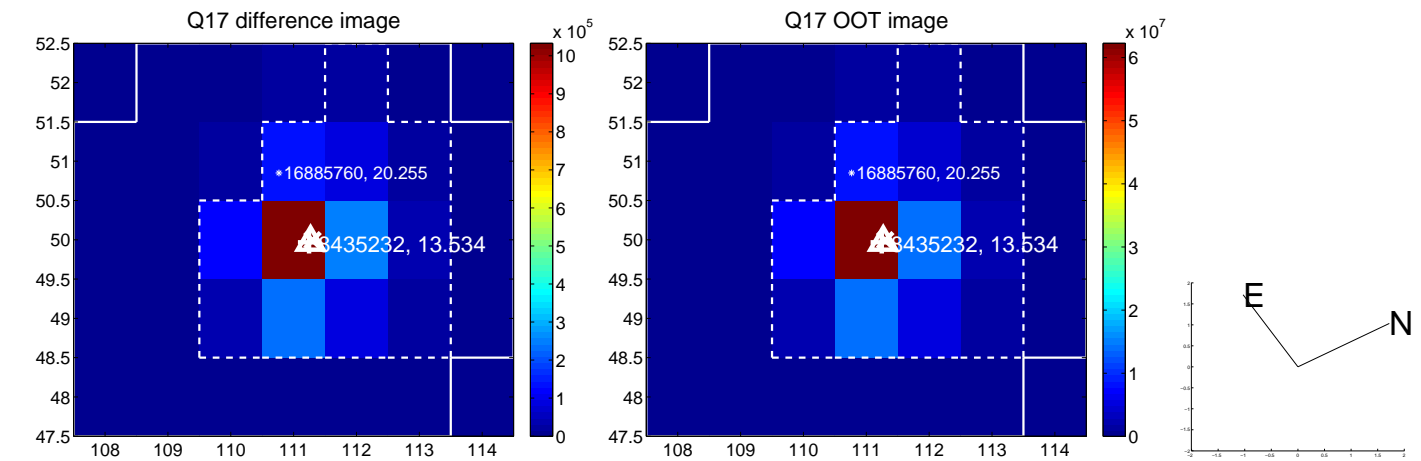
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



Declination



# KIC 008435232

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008435232-01	OBS	3833.01	49.571236	178.248121	16659.8	13.412	55.1	114.7	0.53	4040	12.05	1.46
008435232-02	OBS	No	49.570614	176.223307	16693.4	15.447	72.3	112.8	0.53	4040	12.06	1.46
008435232-03	OBS	No	49.568977	153.421215	2803.8	17.146	11.2	23.4	0.53	4040	5.25	1.46
008435232-04	OBS	No	396.263074	152.555912	315.4	2.129	13.0	3.4	0.53	4040	1.15	0.09
008435232-05	OBS	No	49.572104	151.610978	3699.1	24.823	12.1	27.7	0.53	4040	3.88	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008435232-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008435232-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
008435232-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_TER_DV—SAME_NTL_PERIOD
008435232-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008435232-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

**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.

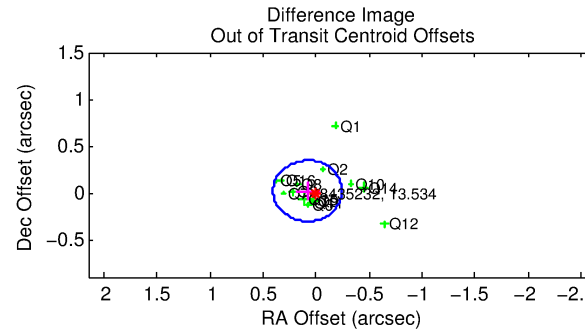
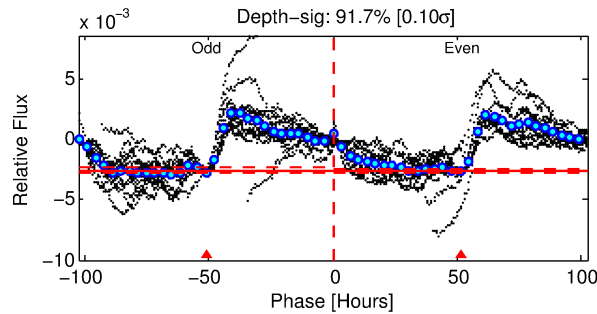
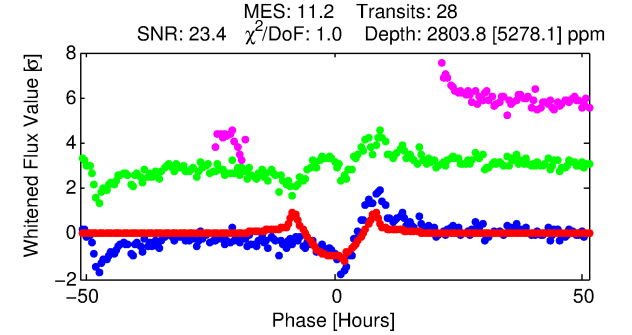
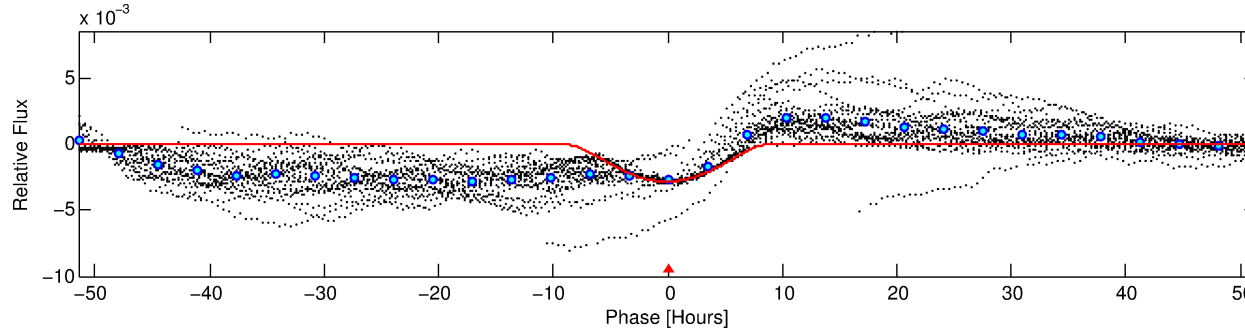
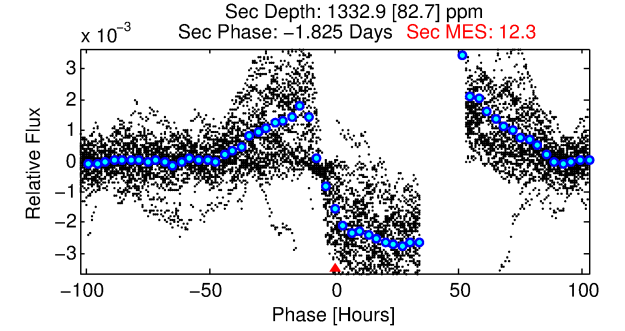
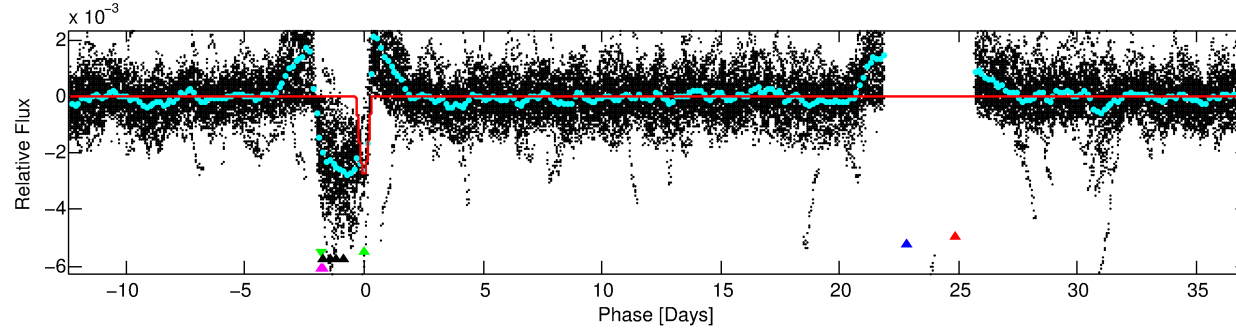
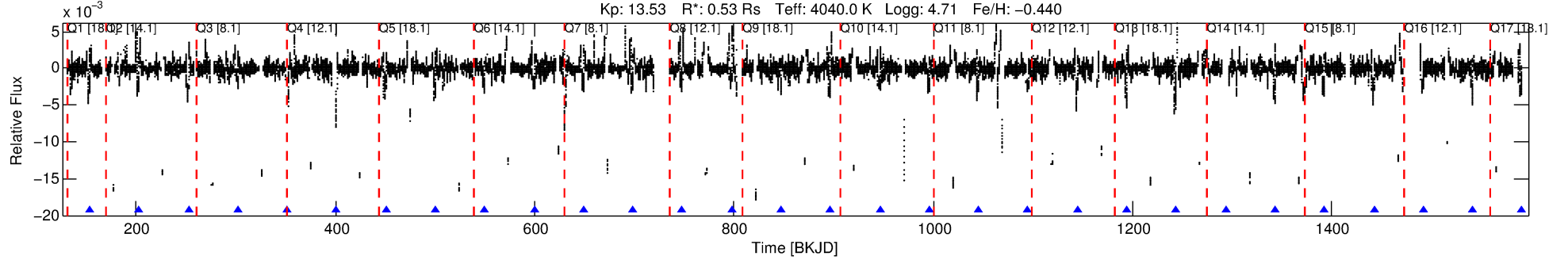
Ephemeris Match Information For 008435232-03

No Significant Match Found

# DV One-Page Summary

KIC: 8435232 Candidate: 3 of 5 Period: 49.569 d  
KOI: K03833 Corr: No Ephemeris Match

Kp: 13.53 R\*: 0.53 Rs Teff: 4040.0 K Logg: 4.71 Fe/H: -0.440



## DV Fit Results:

Period = 49.56898 [0.00049] d  
Epoch = 153.4212 [0.0080] BKJD  
Rp/R\* = 0.0914 [0.0385]  
a/R\* = 9.71 [0.72]  
b = 1.00 [0.06]  
Seff = 1.46 [0.33]  
Teq = 280 [16] K  
Rp = 5.25 [2.36] Re  
a = 0.2130 [0.0262] AU  
Ag = 1205.27 [1038.77] [1.16σ]  
Teffp = 2554 [549] K [4.14σ]

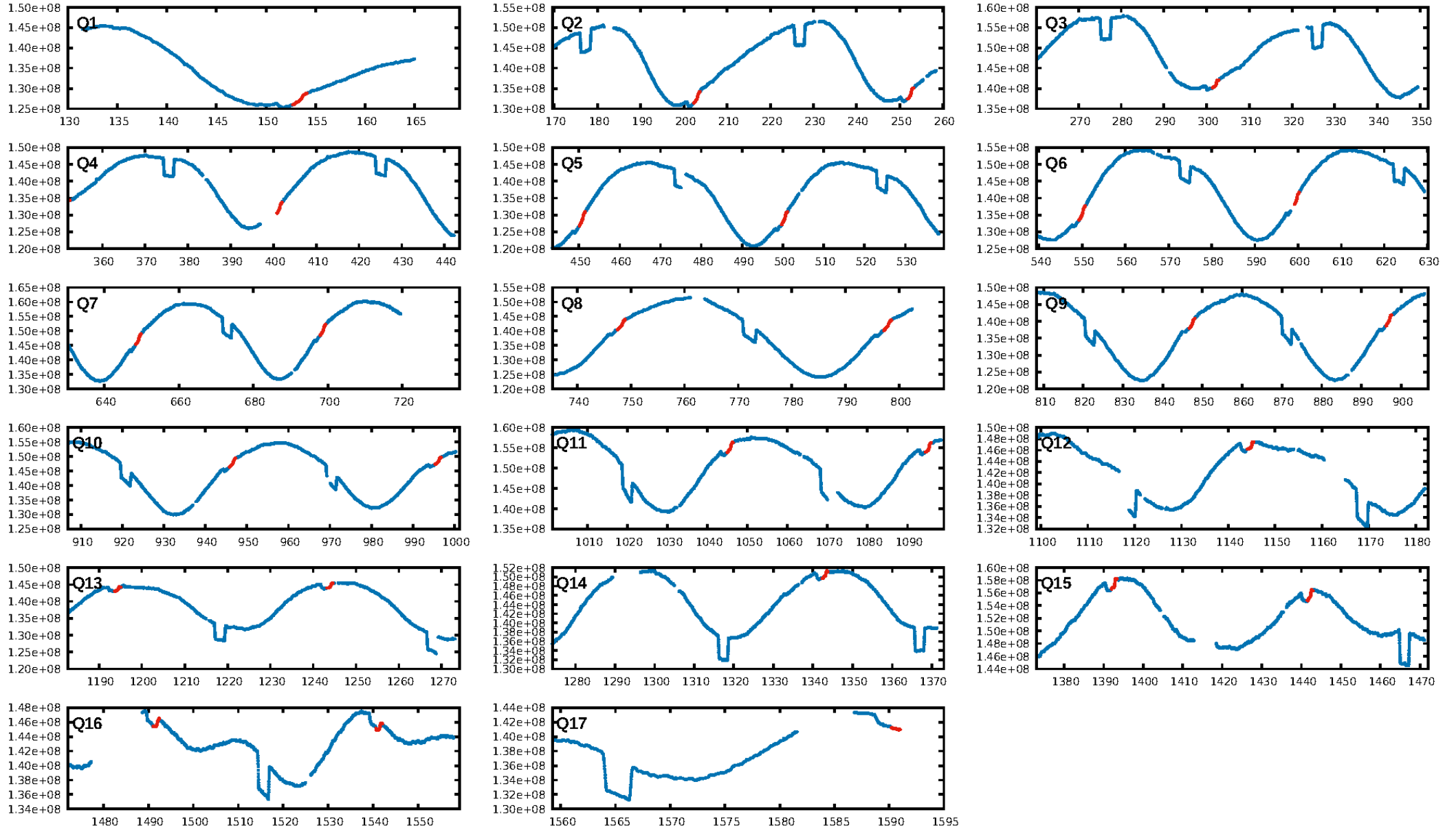
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.96e-21  
RollingBand-fgt: 1.00 [26/26]  
GhostDiagnostic-chr: 0.7989  
Centroid-sig: 87.2%  
Centroid-so: 0.203 arcsec [5.72σ]  
OotOffset-rm: 0.085 arcsec [0.79σ]  
KicOffset-rm: 0.232 arcsec [2.42σ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 0.86 [12/14]

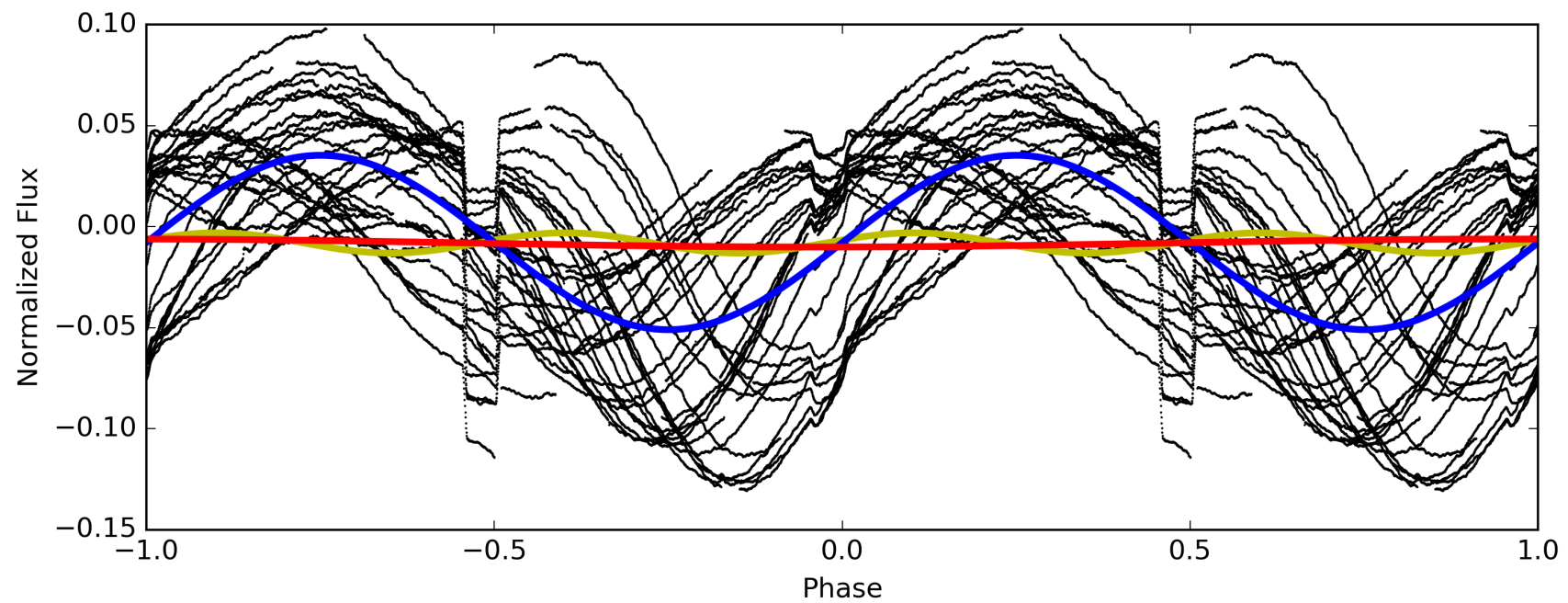
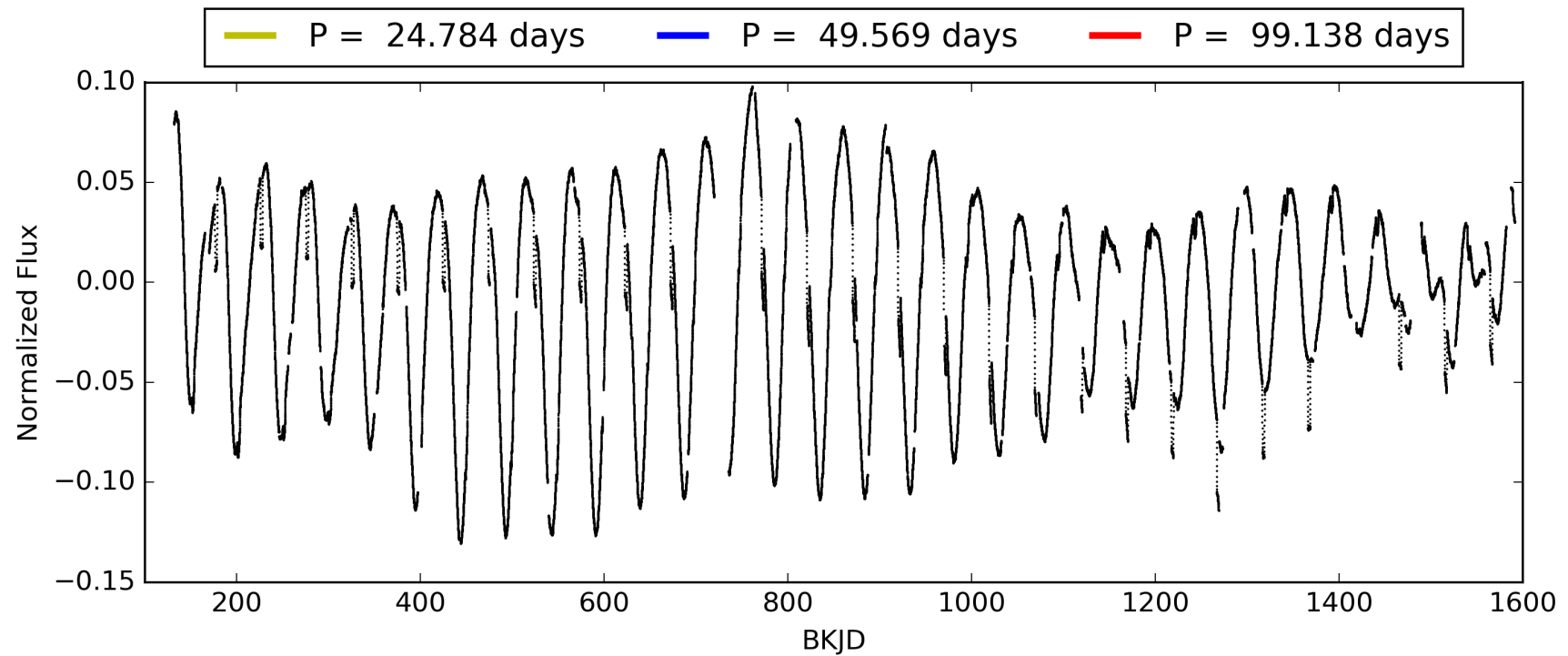
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:42:03 Z

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

# TCE 008435232-03, PDC Light Curves

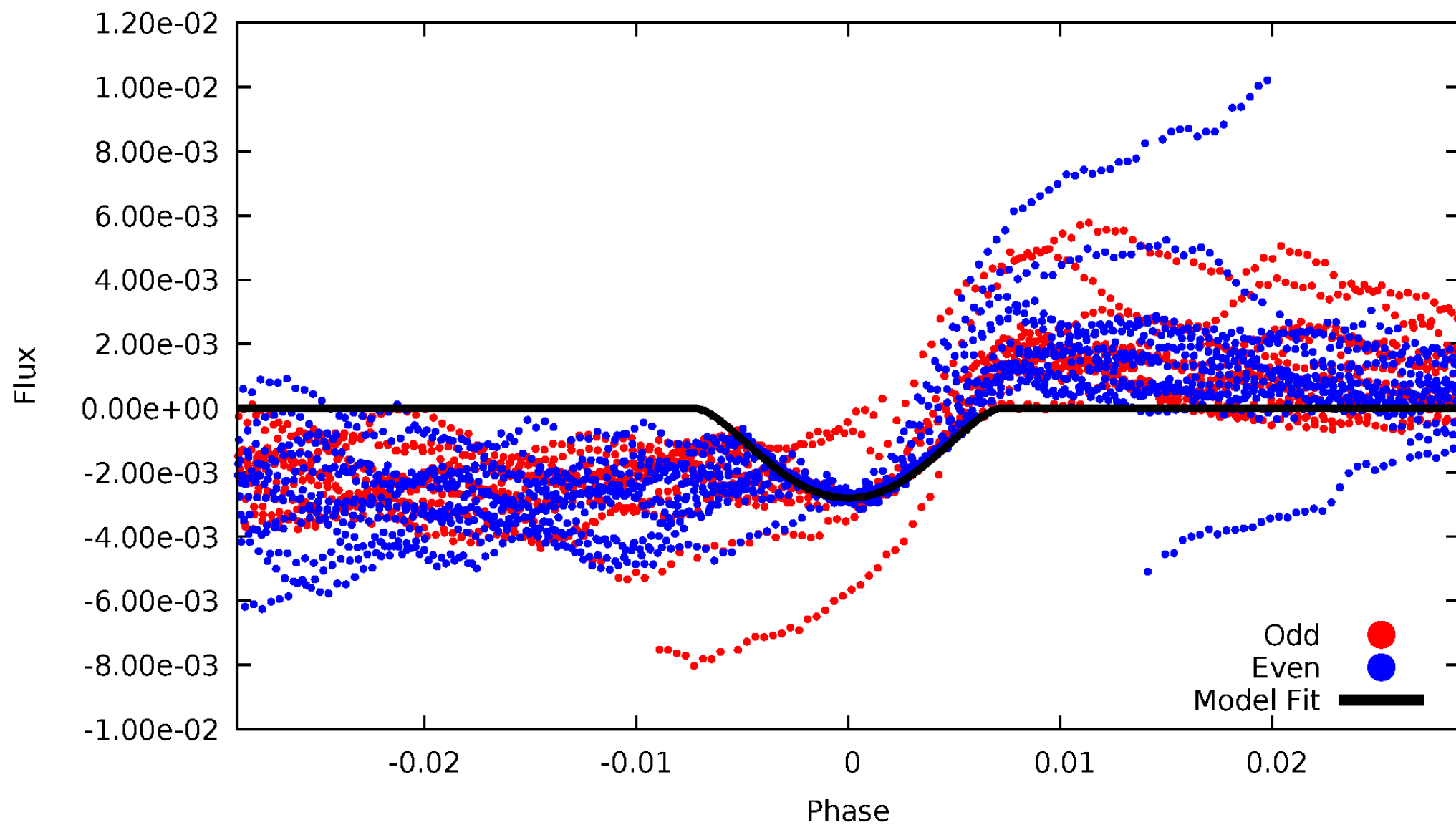


TCE 008435232-03



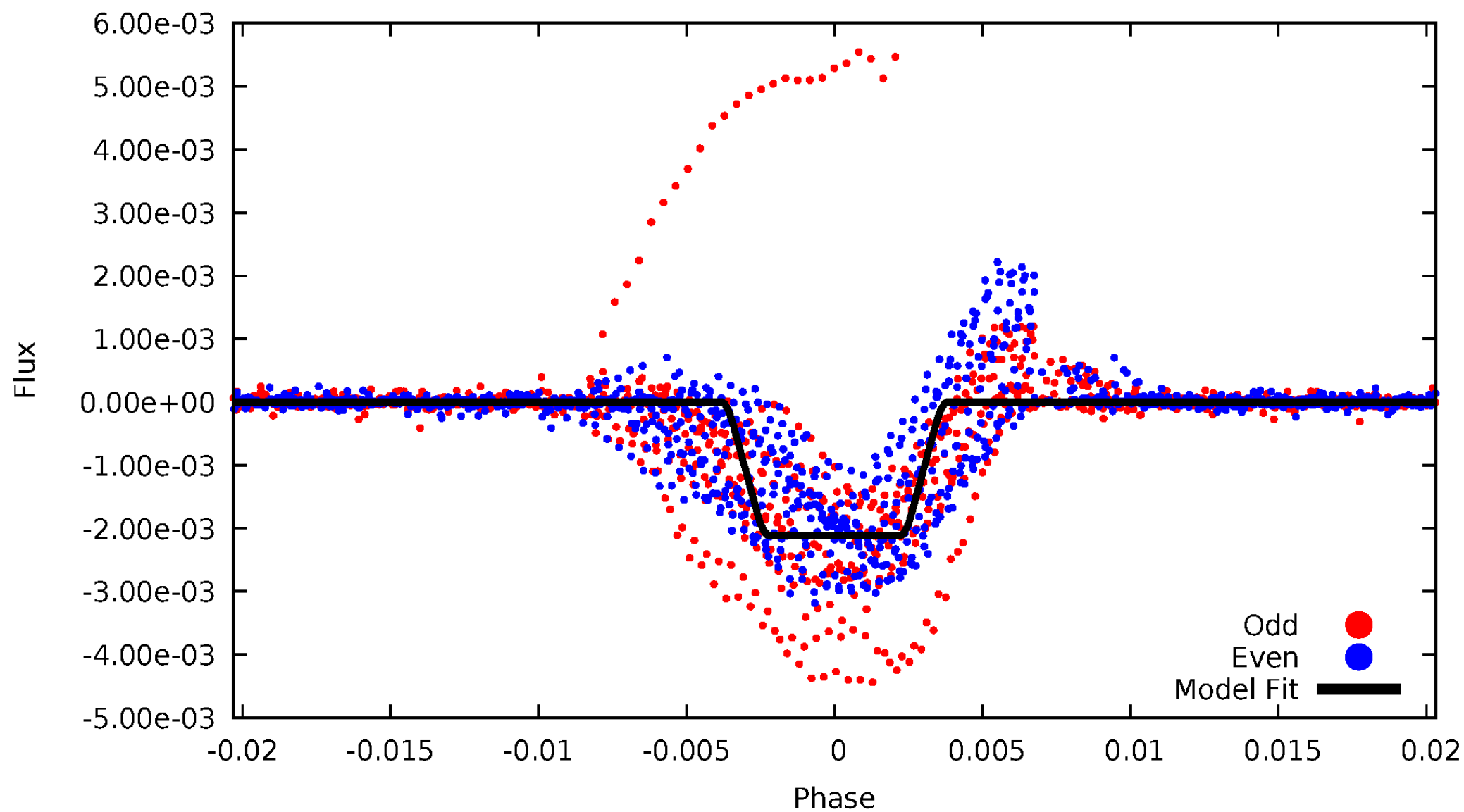
# DV Odd/Even

TCE 008435232-03



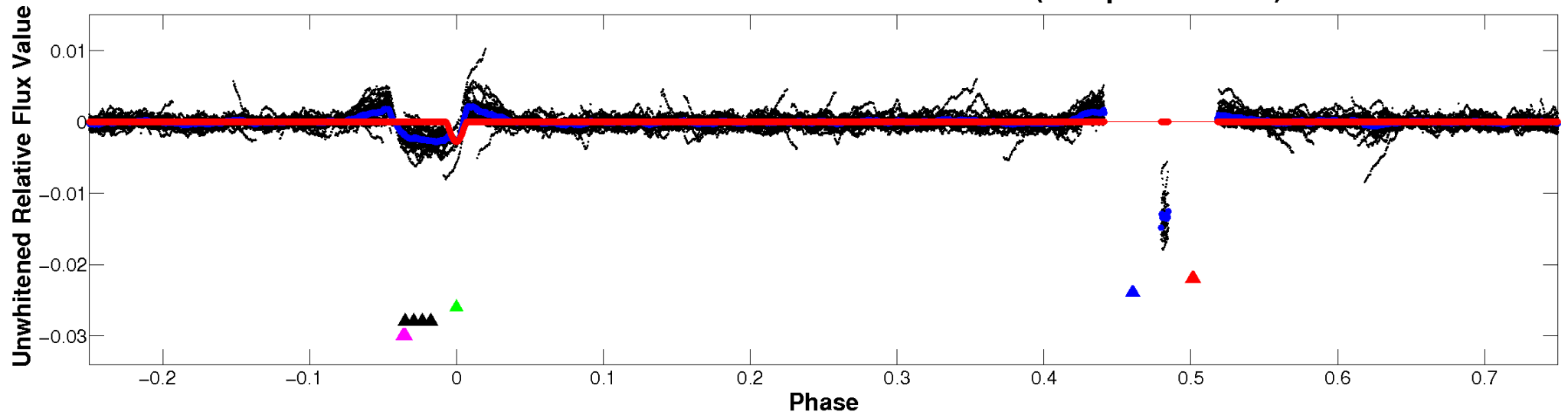
# ALT Odd/Even

TCE 008435232-03

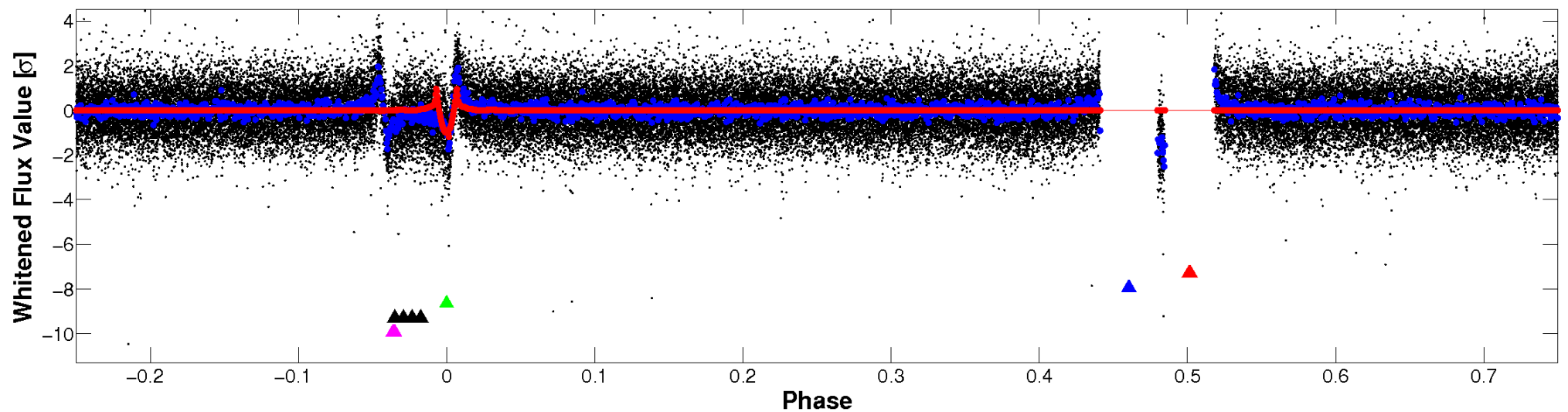


# Non-Whitened Vs. Whitened Light Curve

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

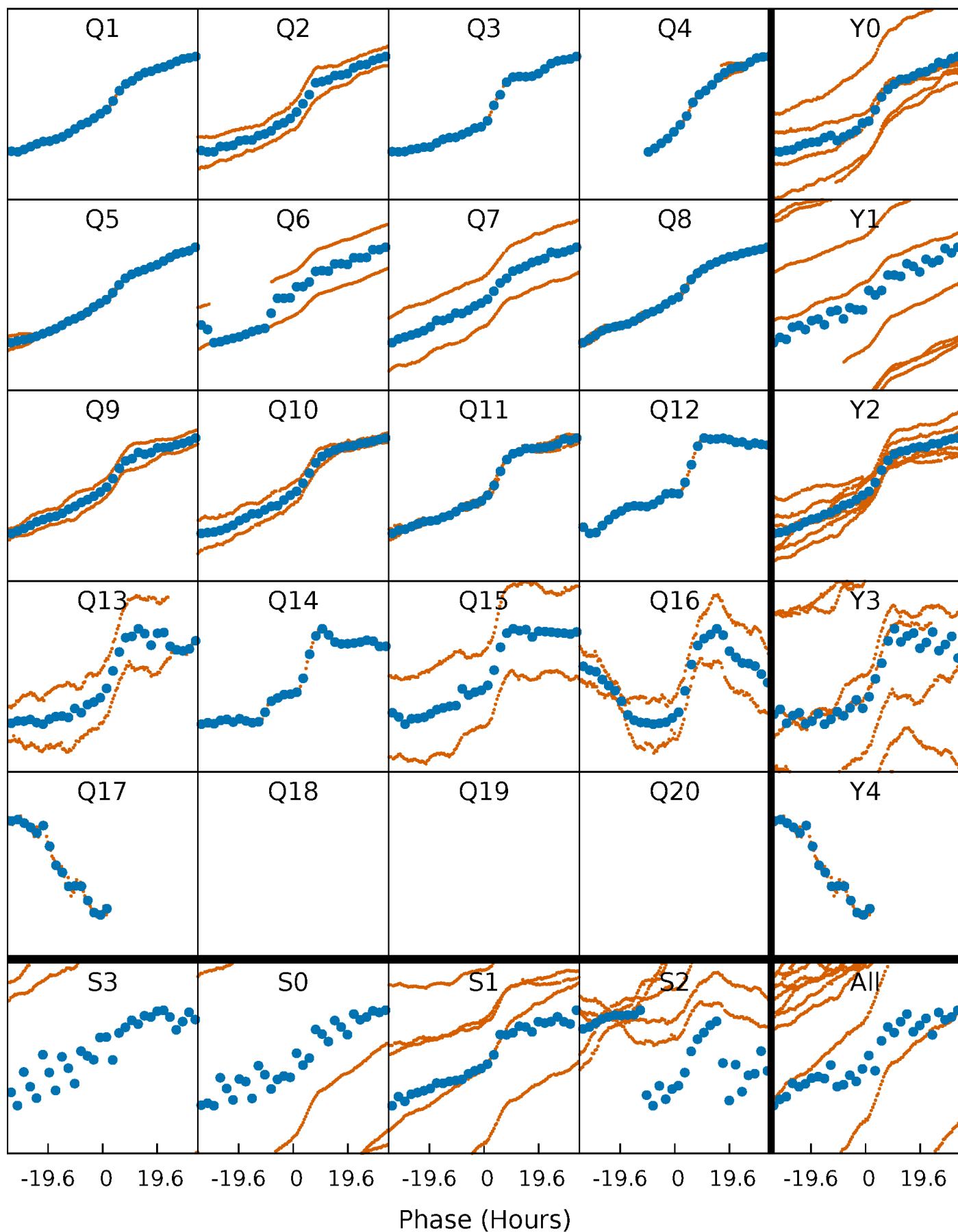


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

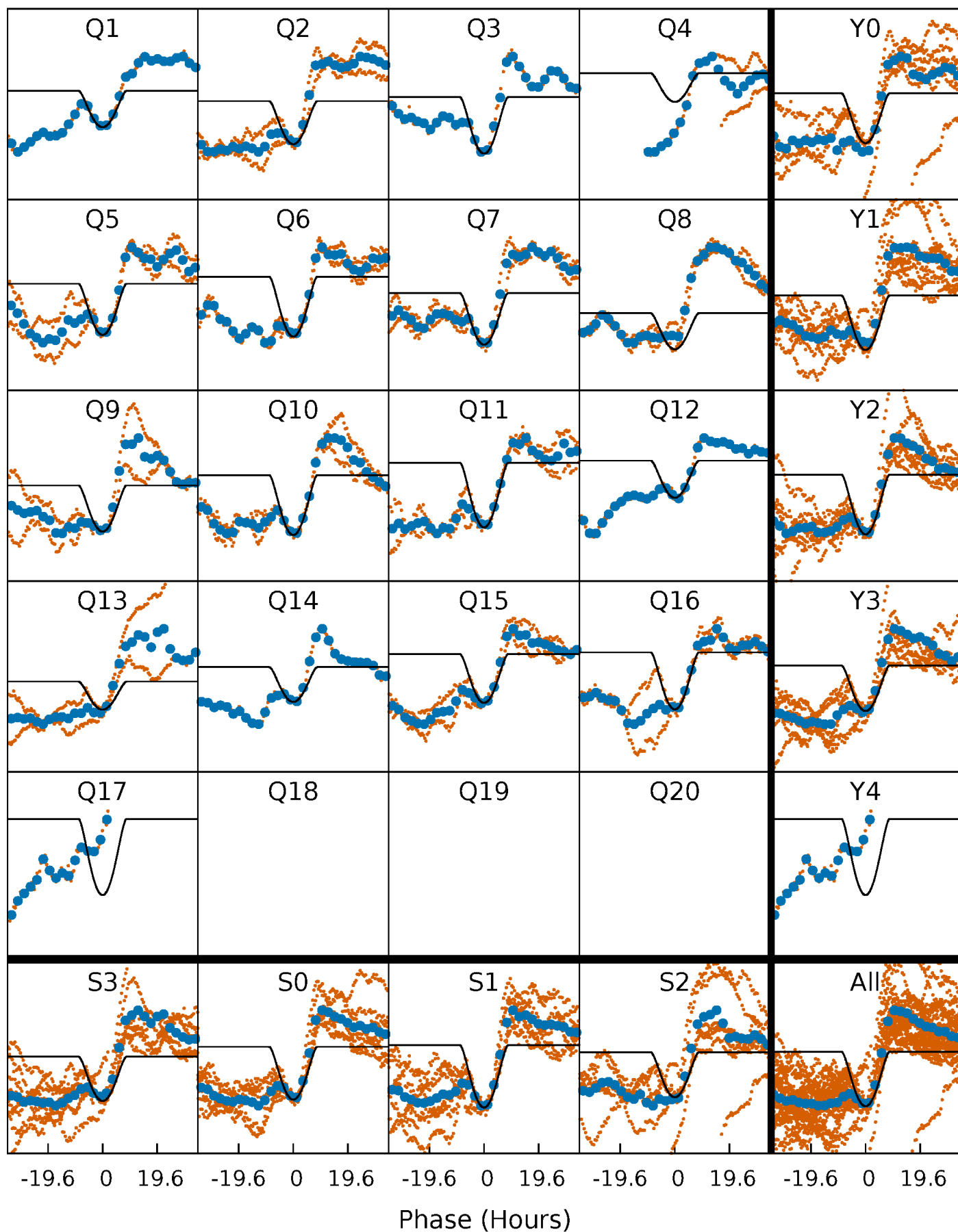
TCE 008435232-03     $P = 49.568977$  Days     $T_0 = 153.421215$  (BKJD)





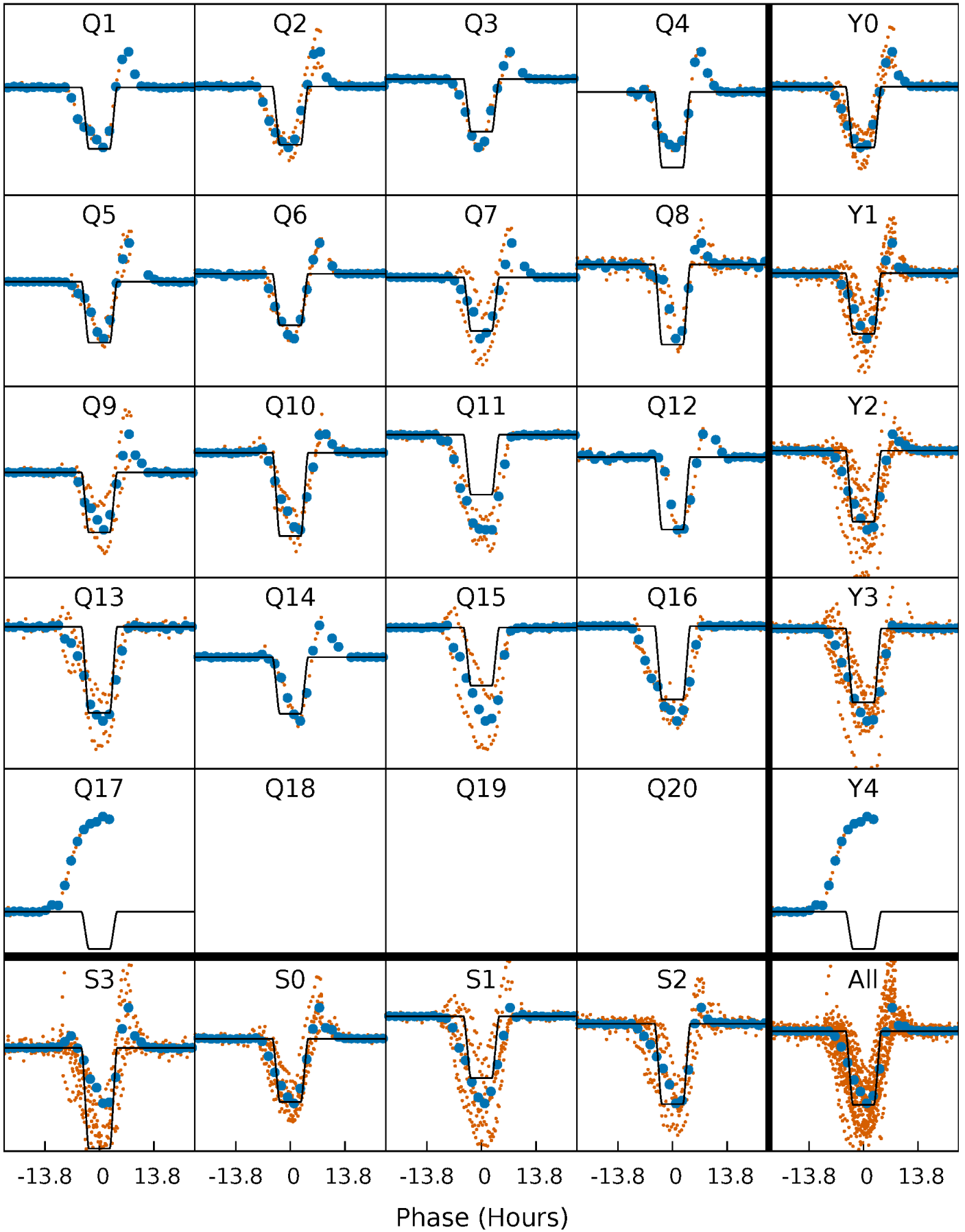
# DV Quarter-Phased Transit Curves

TCE 008435232-03 P= 49.568977 Days  $T_0=153.421215$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

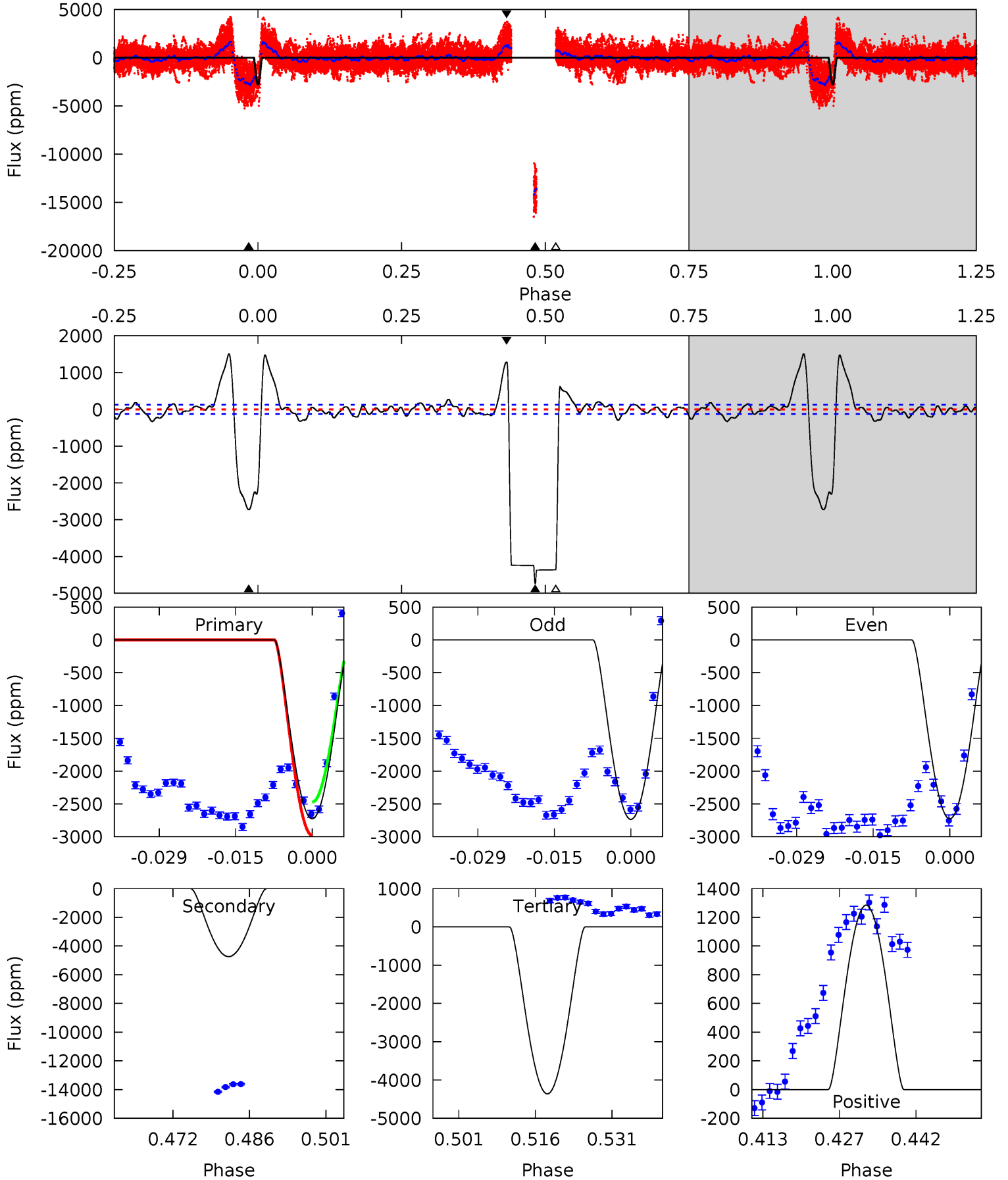
TCE 008435232-03 P= 49.566972 Days  $T_0=153.457214$  (BKJD)



# DV Model-Shift Uniqueness Test

008435232-03, P = 49.568977 Days, E = 103.852238 Days

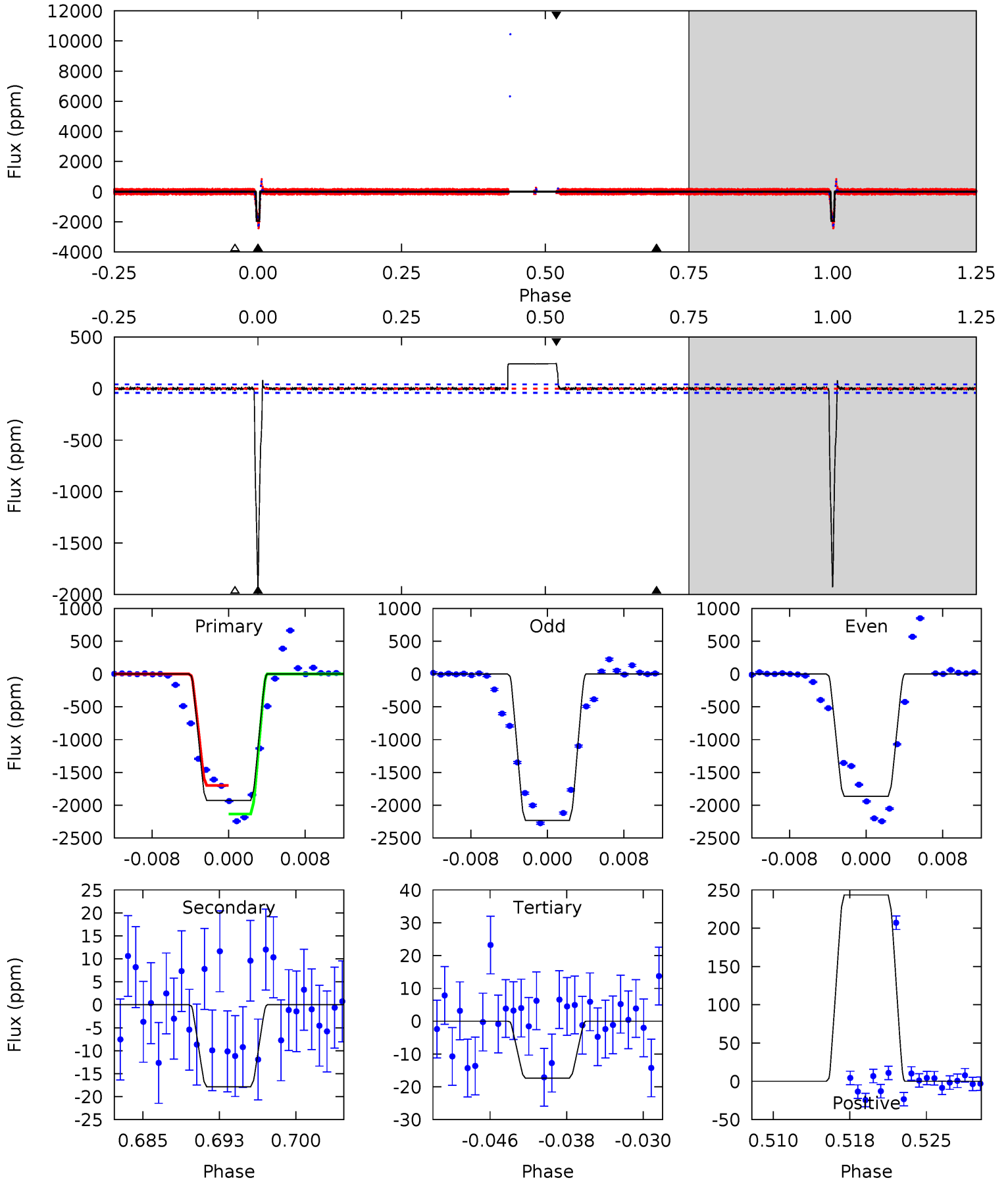
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
107.9	187.4	172.5	50.8	4.95	2.44	18.5	-64.7	57.0	14.8	136.6	0.16	1.00	0.24	10.1



# Alt Model-Shift Uniqueness Test

008435232-03, P = 49.566972 Days, E = 103.890242 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
236.0	2.18	2.13	29.8	5.08	2.67	1.23	233.9	206.2	0.06	-27.6	25.2	0.98	0.11	0



### Stellar Parameters For KIC 008435232

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4040^{+129}_{-158}$	$4.714^{+0.084}_{-0.039}$	$-0.440^{+0.300}_{-0.350}$	$0.527^{+0.055}_{-0.083}$	$0.525^{+0.059}_{-0.066}$	$5.045^{+2.178}_{-0.886}$
	+3%/-4%	+2%/-1%	+68%/-80%	+10%/-16%	+11%/-13%	+43%/-18%
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 008435232-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-4737 \pm 25$	$5.27^{+2.28}_{-2.19}$	$388^{+14}_{-18}$	$3637^{+761}_{-374}$	$4365^{+8320}_{-2194}$
Alt.	$-18 \pm 8$	$2.83^{+2.25}_{-1.67}$	$388^{+17}_{-18}$	$2046^{+482}_{-253}$	$51^{+279}_{-37}$

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

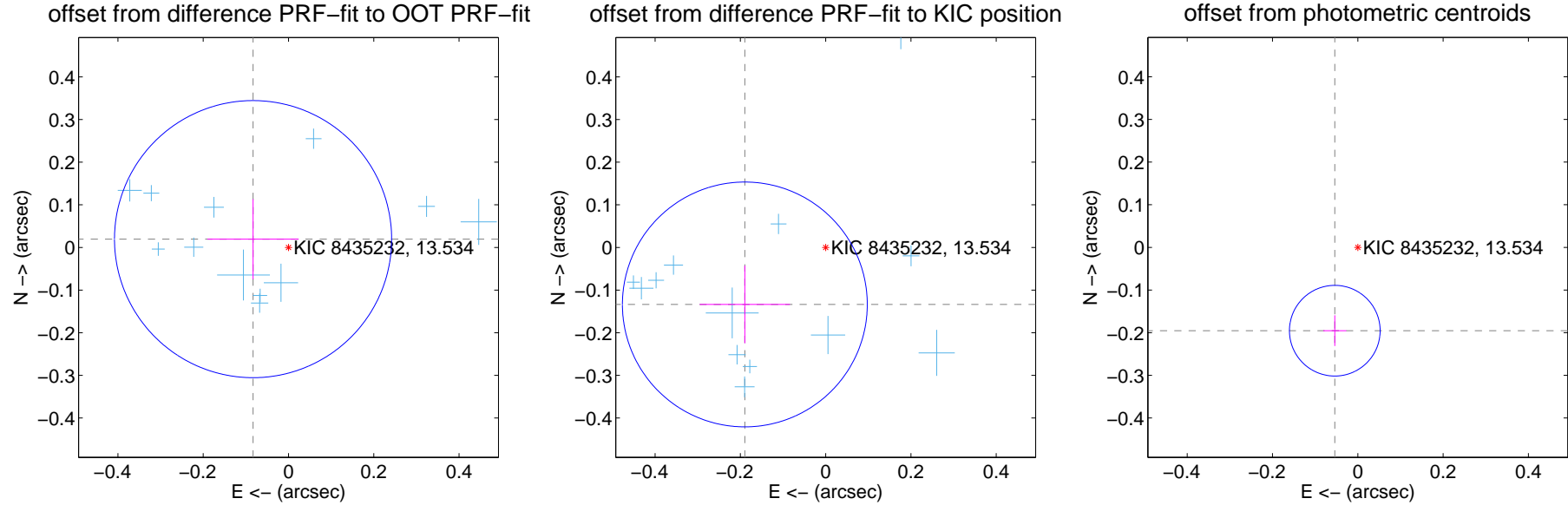
## DV Centroid Data

Supplemental centroid analysis for 008435232-03. Kepler magnitude: 13.53. Transit SNR 23.39

There are 14 quarters with good PRF difference image offsets

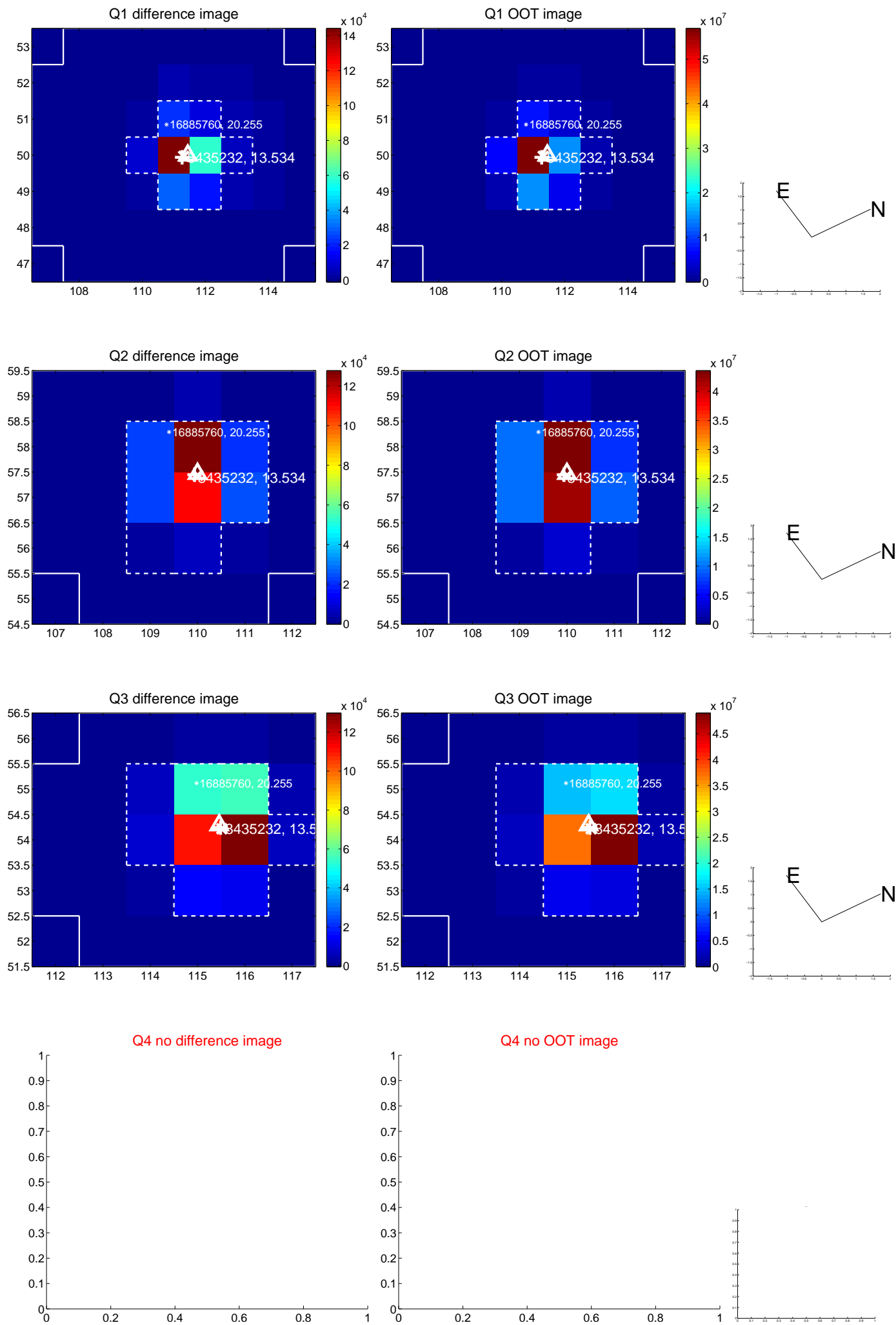
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.085 \pm 0.108$	0.79	$0.083 \pm 0.107$	$0.019 \pm 0.094$
PRF-fit source offset from KIC position	$0.232 \pm 0.096$	2.42	$0.190 \pm 0.106$	$-0.134 \pm 0.091$
photometric centroid source offset	$0.20 \pm 0.04$	5.72	$0.05 \pm 0.03$	$-0.20 \pm 0.04$

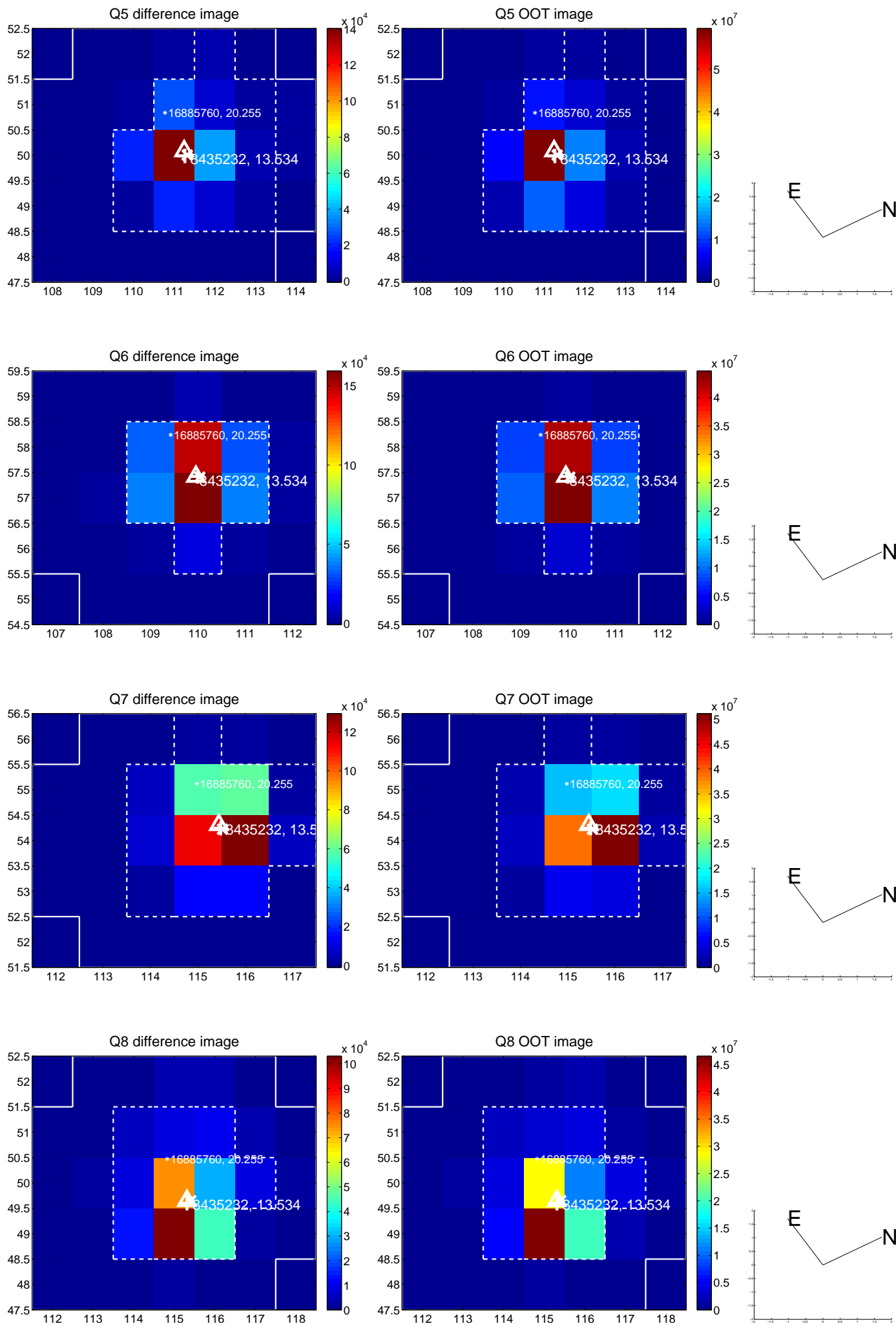


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

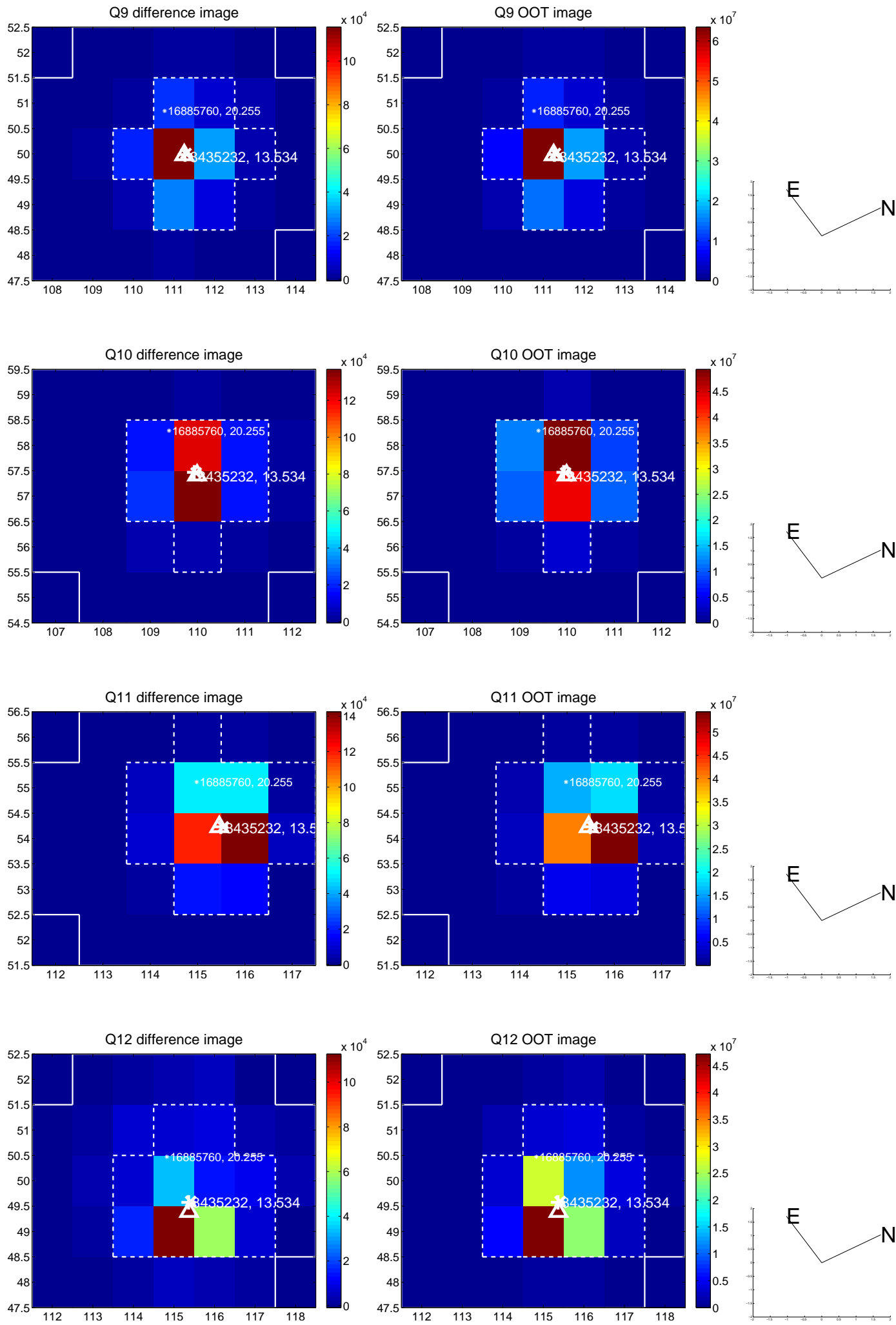


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

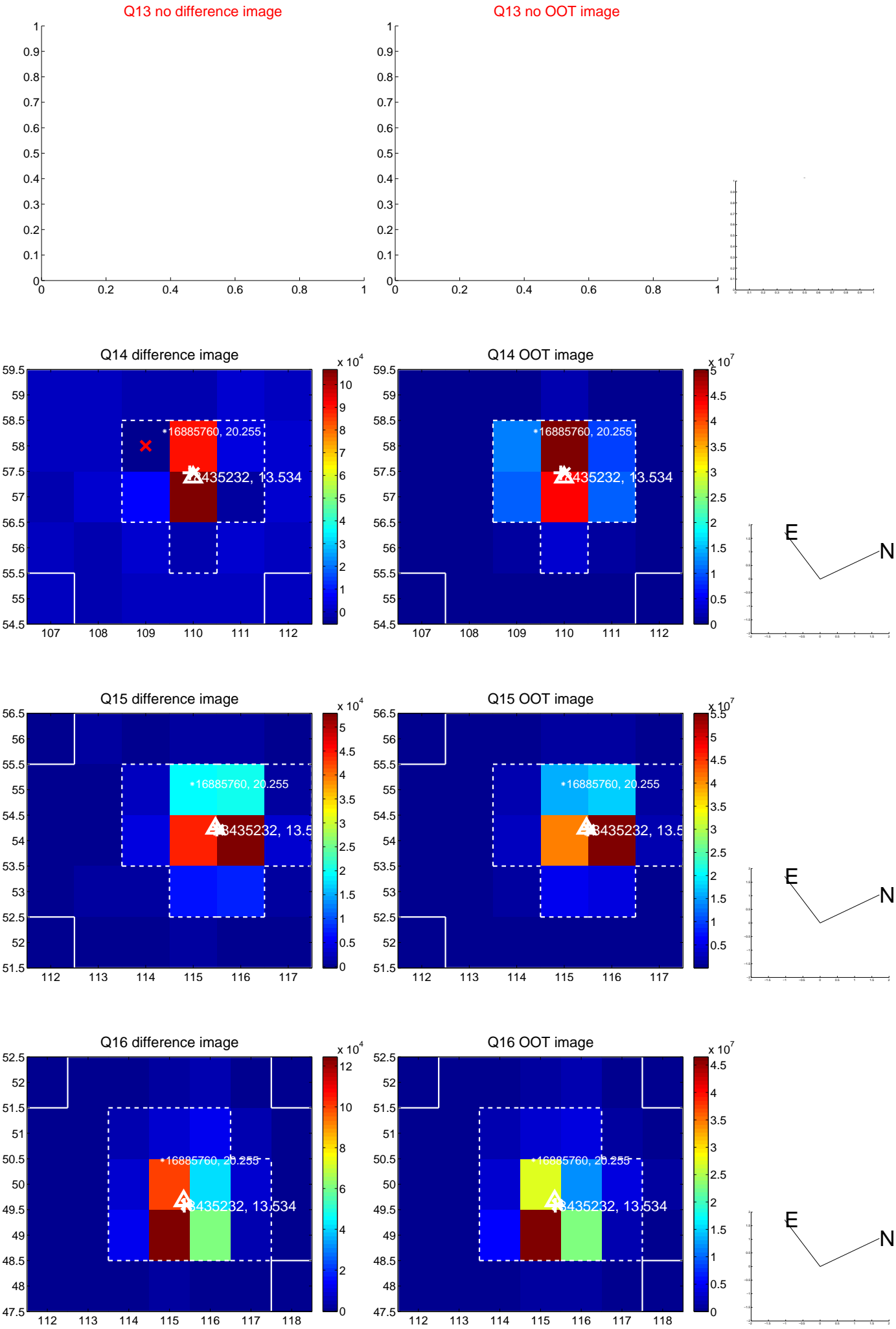




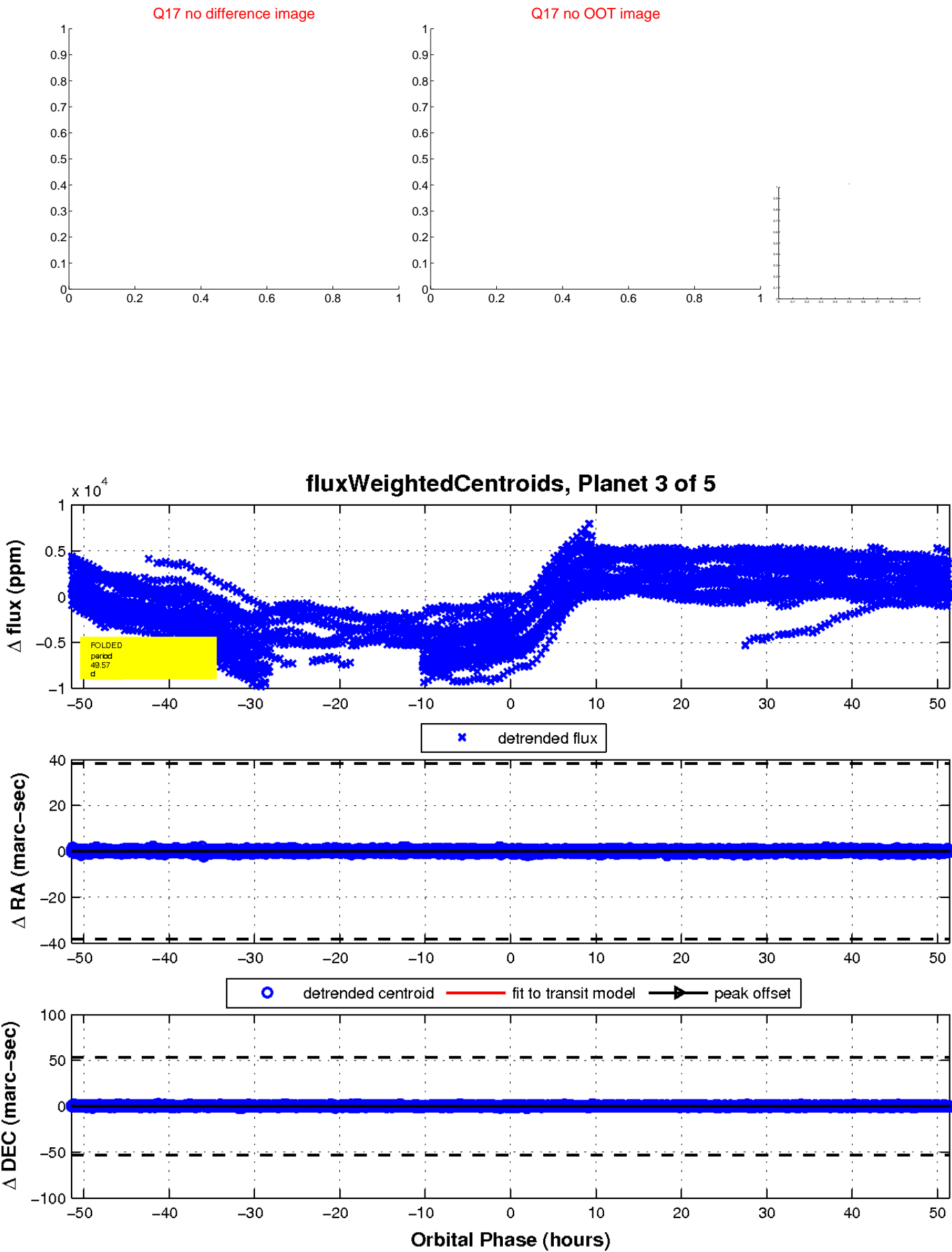
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



Astronomical image showing a star field with a blue grid overlay. The grid lines are labeled with coordinates in green text. The central star is bright and white, surrounded by a blue grid. Other stars are visible in the field.

Declination

# KIC 008435232

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008435232-01	OBS	3833.01	49.571236	178.248121	16659.8	13.412	55.1	114.7	0.53	4040	12.05	1.46
008435232-02	OBS	No	49.570614	176.223307	16693.4	15.447	72.3	112.8	0.53	4040	12.06	1.46
008435232-03	OBS	No	49.568977	153.421215	2803.8	17.146	11.2	23.4	0.53	4040	5.25	1.46
008435232-04	OBS	No	396.263074	152.555912	315.4	2.129	13.0	3.4	0.53	4040	1.15	0.09
008435232-05	OBS	No	49.572104	151.610978	3699.1	24.823	12.1	27.7	0.53	4040	3.88	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008435232-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008435232-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
008435232-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_TER_DV—SAME_NTL_PERIOD
008435232-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008435232-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

**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 008435232-04

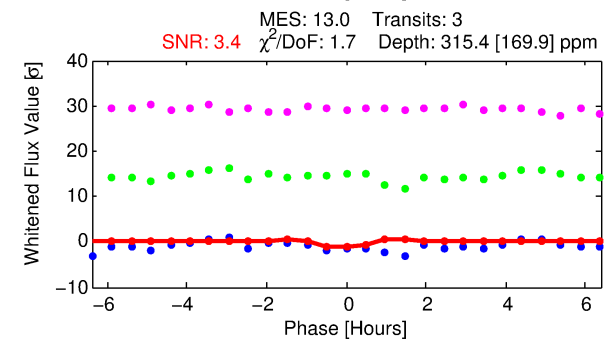
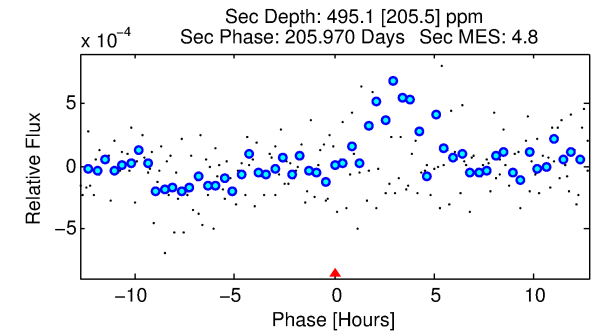
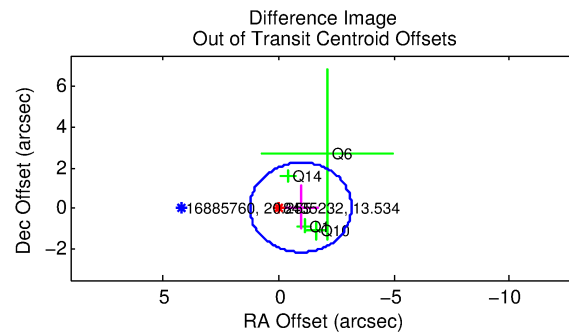
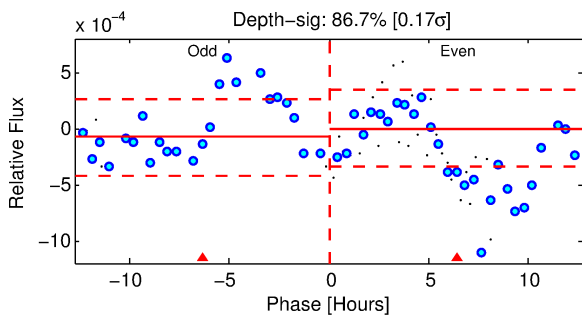
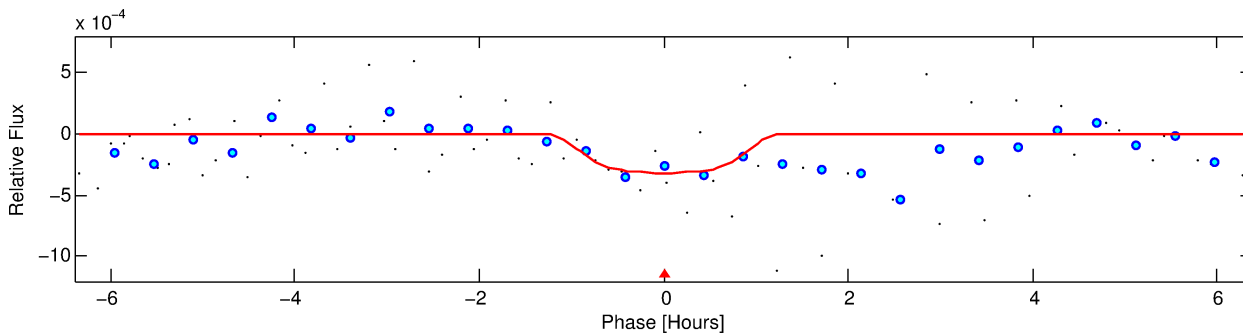
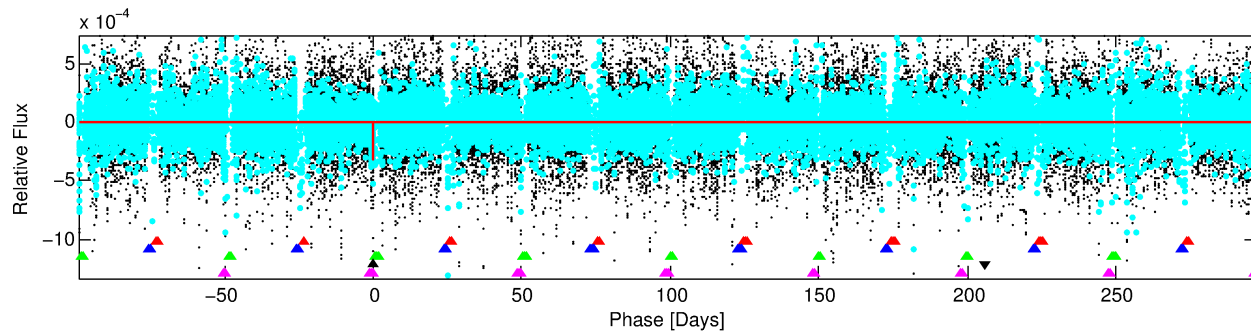
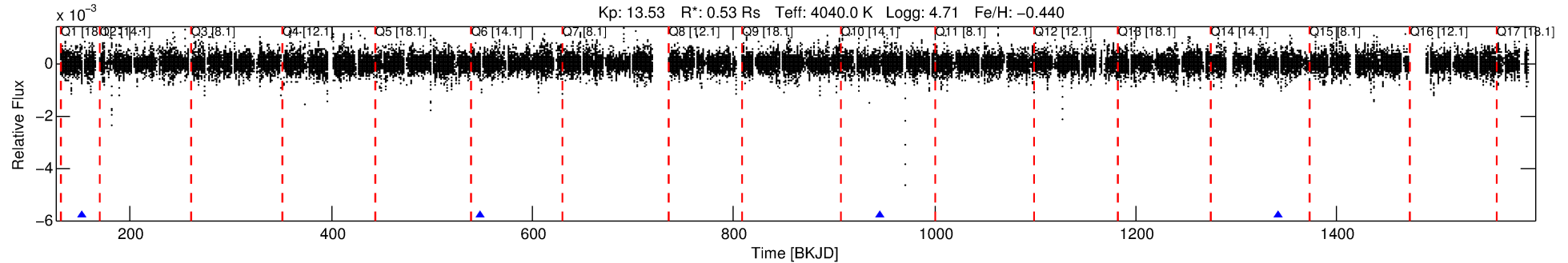
No Significant Match Found

# DV One-Page Summary

KIC: 8435232 Candidate: 4 of 5 Period: 396.263 d

KOI: K03833 Corr: No Ephemeris Match

Kp: 13.53 R\*: 0.53 Rs Teff: 4040.0 K Logg: 4.71 Fe/H: -0.440



## DV Fit Results:

Period = 396.26307 [0.00950] d  
Epoch = 152.5559 [0.0215] BKJD  
Rp/R\* = 0.0199 [0.0221]  
a/R\* = 602.58 [3041.29]  
b = 0.93 [0.76]  
Seff = 0.09 [0.02]  
Teq = 140 [8] K  
Rp = 1.14 [1.29] Re  
a = 0.8516 [0.1049] AU  
Ag = 150716.16 [342094.07] [0.44σ]  
Teffp = 4271 [2423] K [1.70σ]

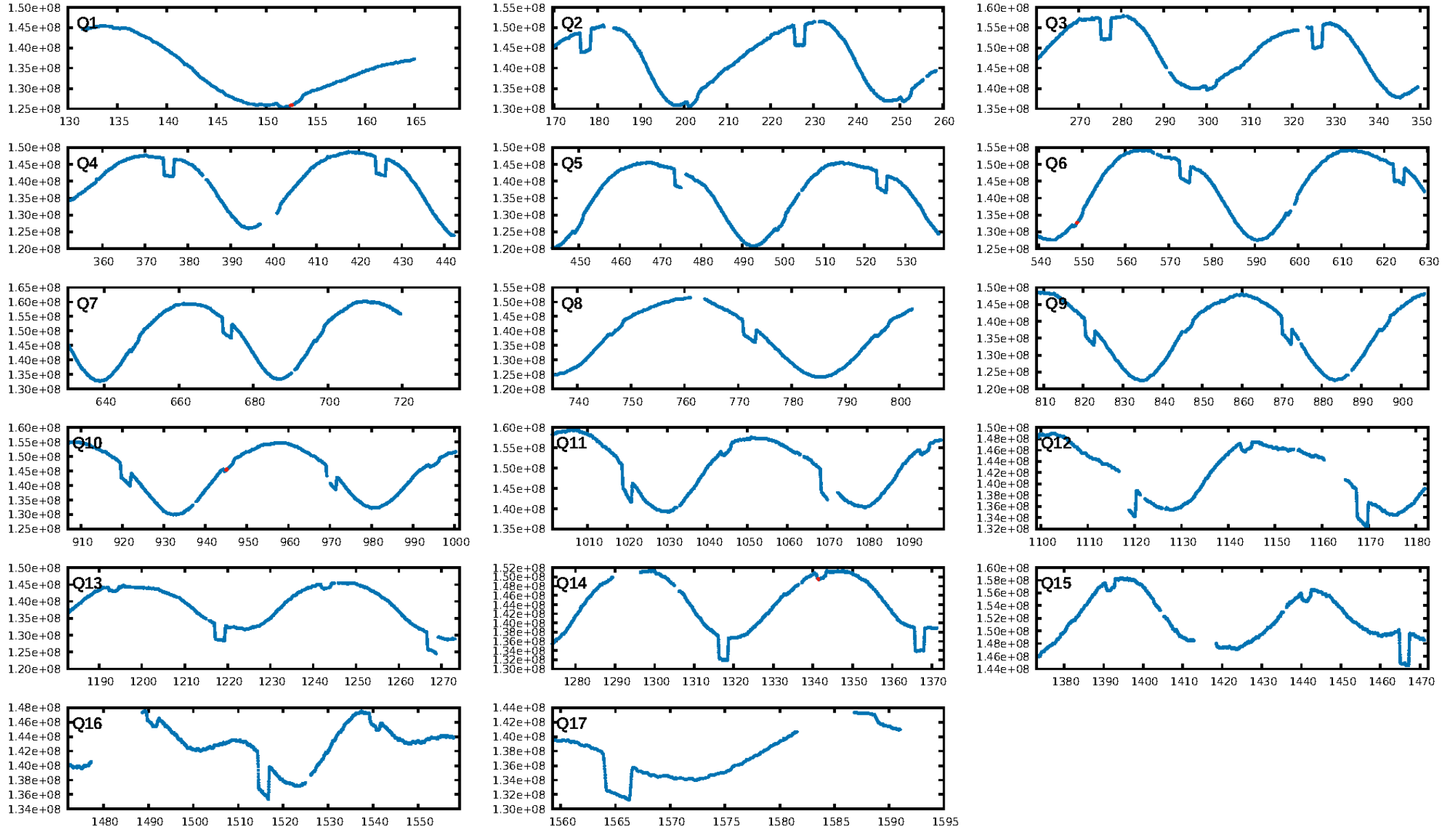
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [333.97σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 25.6%  
ModelChiSquareGof-sig: 78.9%  
Bootstrap-pfa: 6.72e-15  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.822  
Centroid-sig: 26.6%  
Centroid-so: 1.339 arcsec [1.06σ]  
OotOffset-rm: 0.967 arcsec [1.32σ]  
OotOffset-st: 3/0/0/1 [4]  
KicOffset-rm: 0.894 arcsec [1.20σ]  
KicOffset-st: 3/0/0/1 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.25 [1/4]

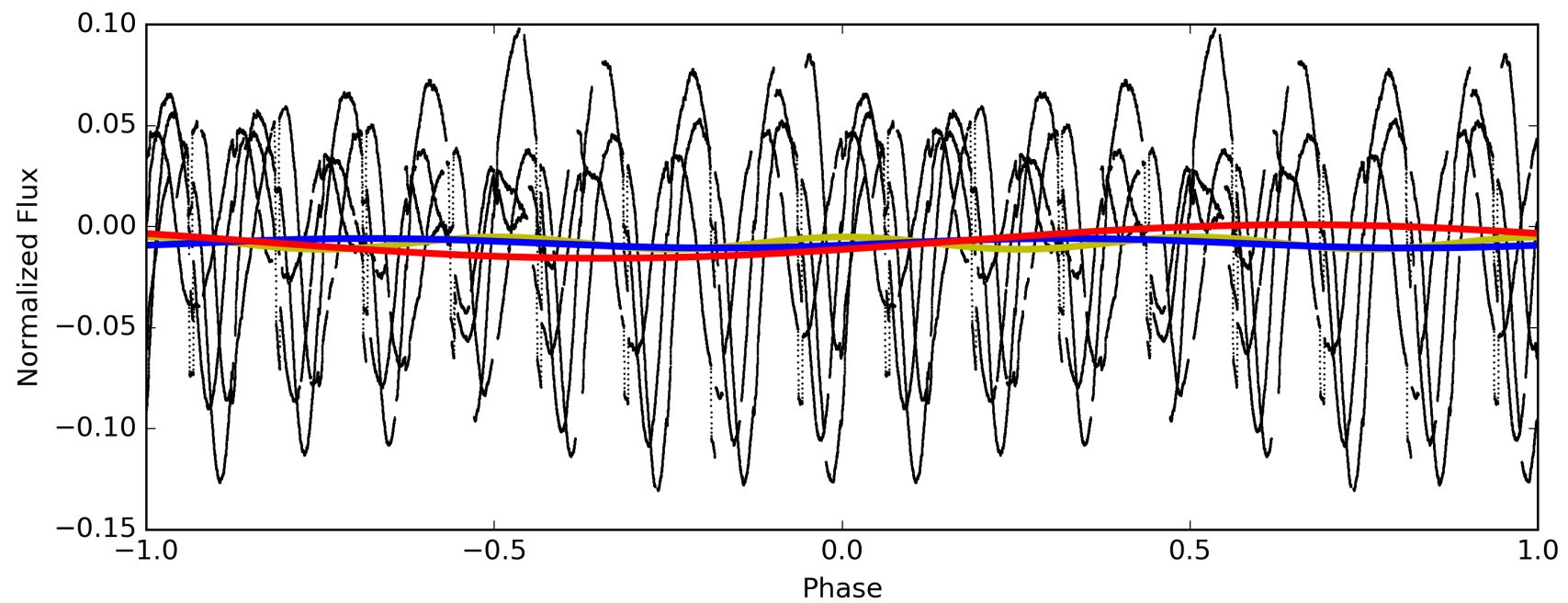
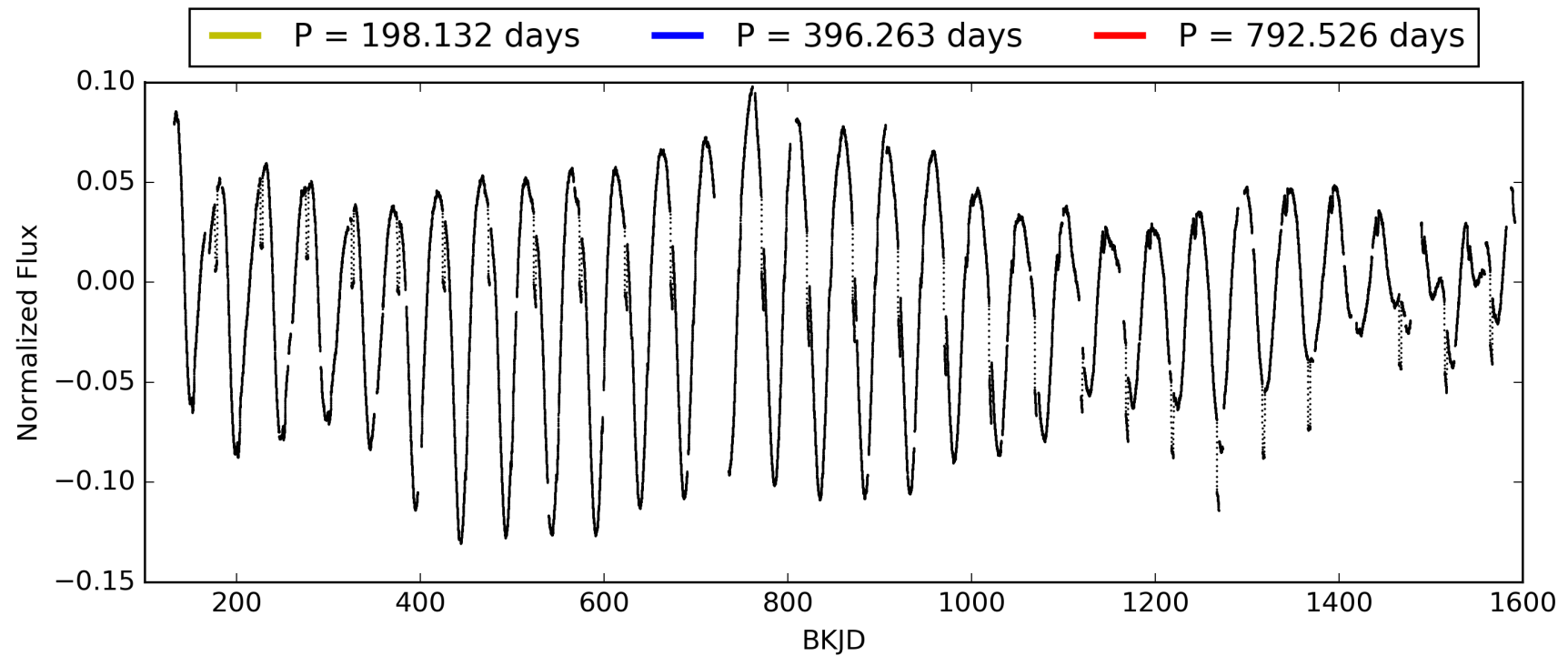
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 10:42:24 Z

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

# TCE 008435232-04, PDC Light Curves



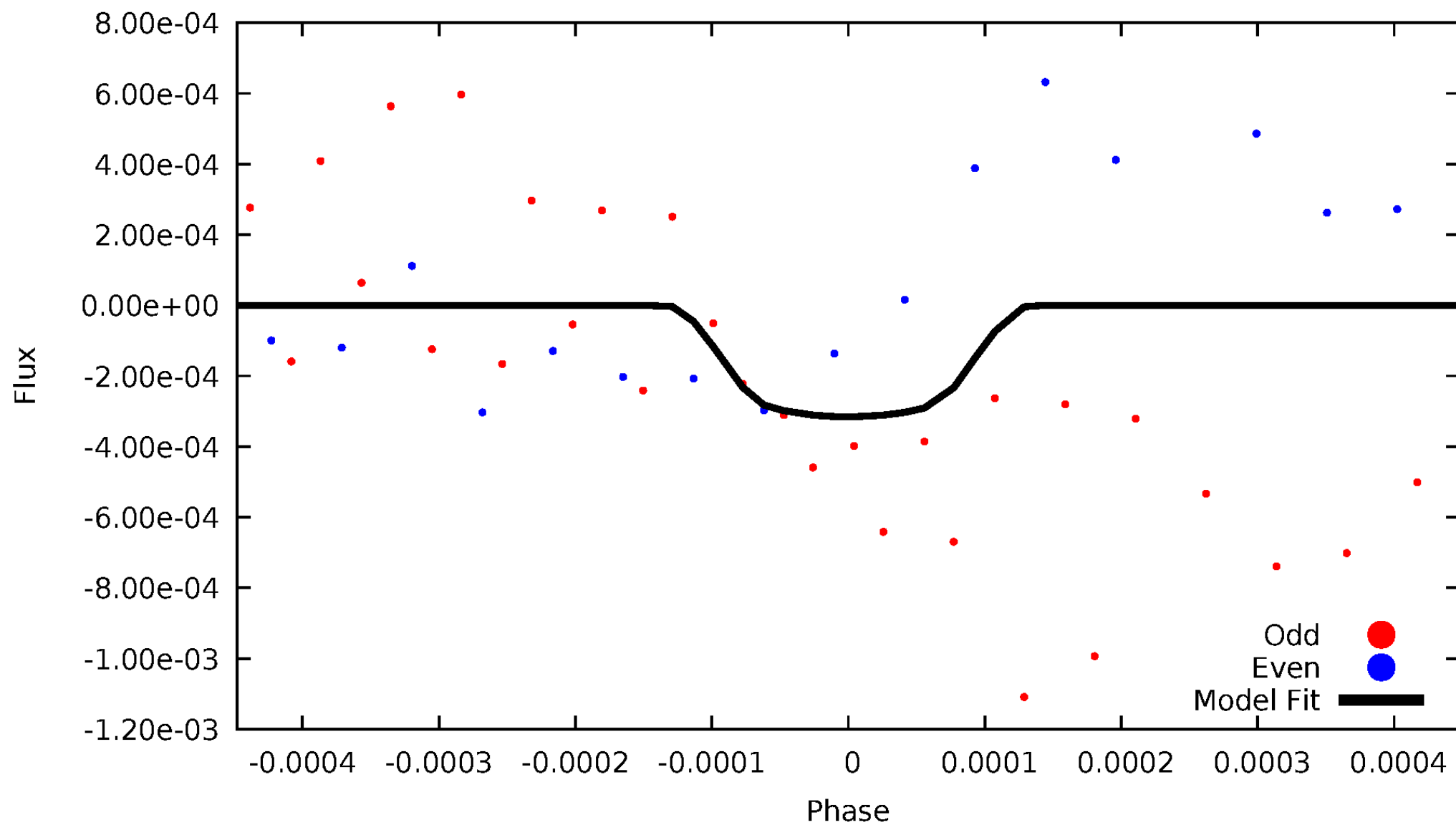
TCE 008435232-04





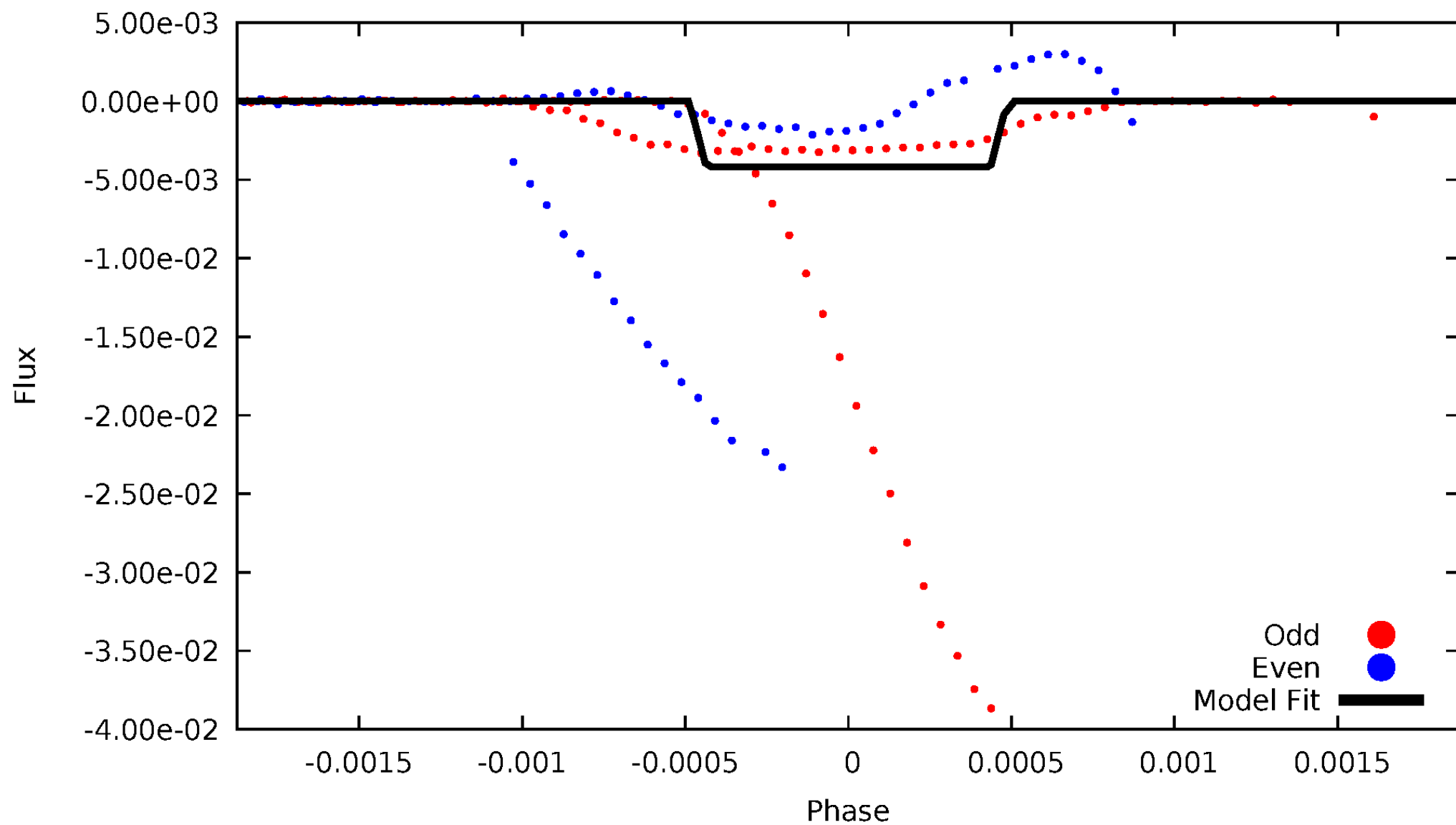
# DV Odd/Even

TCE 008435232-04



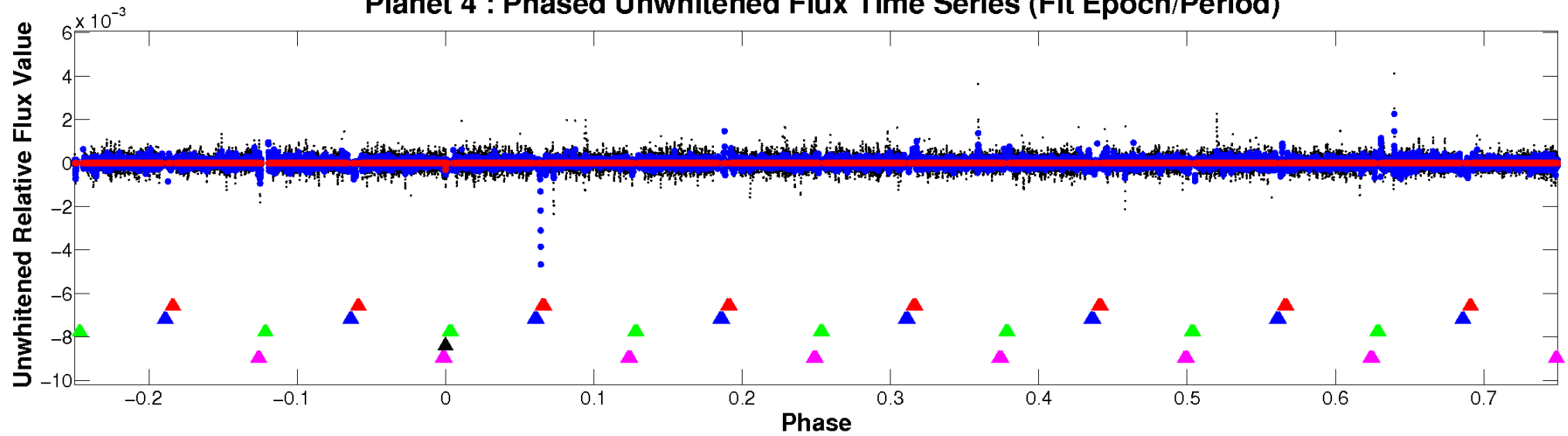
# ALT Odd/Even

TCE 008435232-04

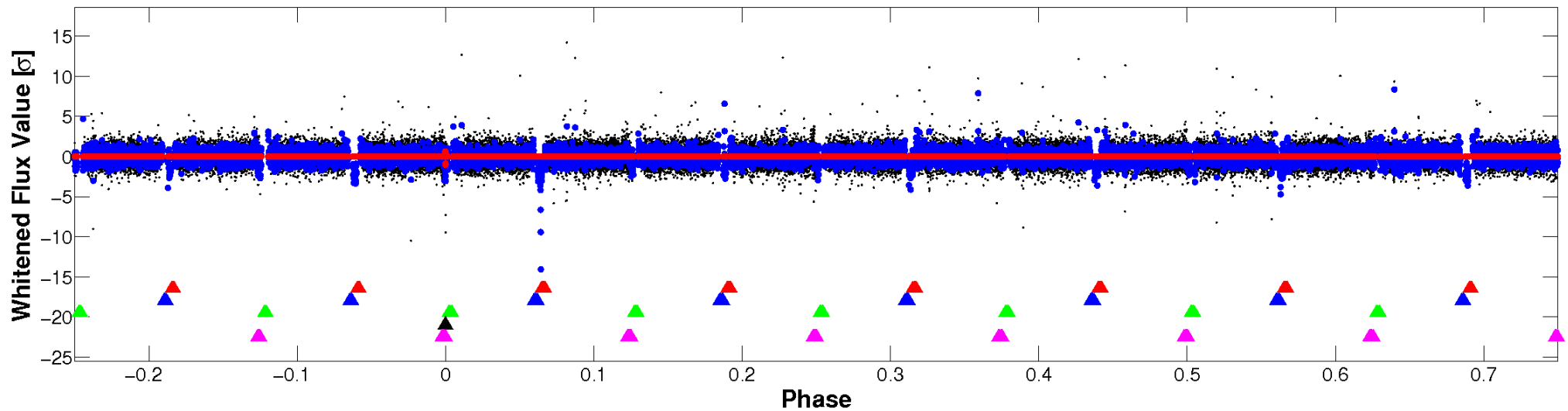


# Non-Whitened Vs. Whitened Light Curve

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

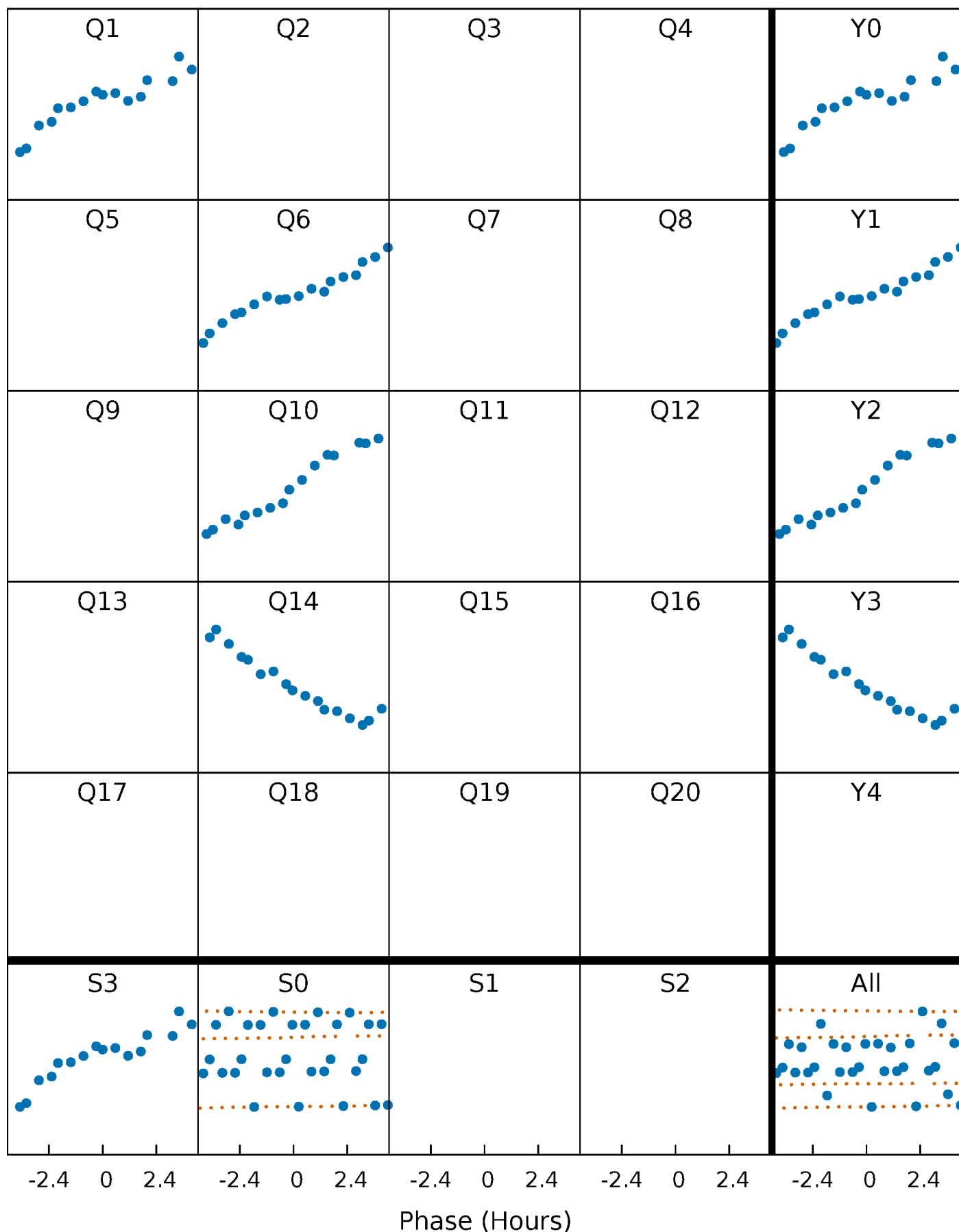


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



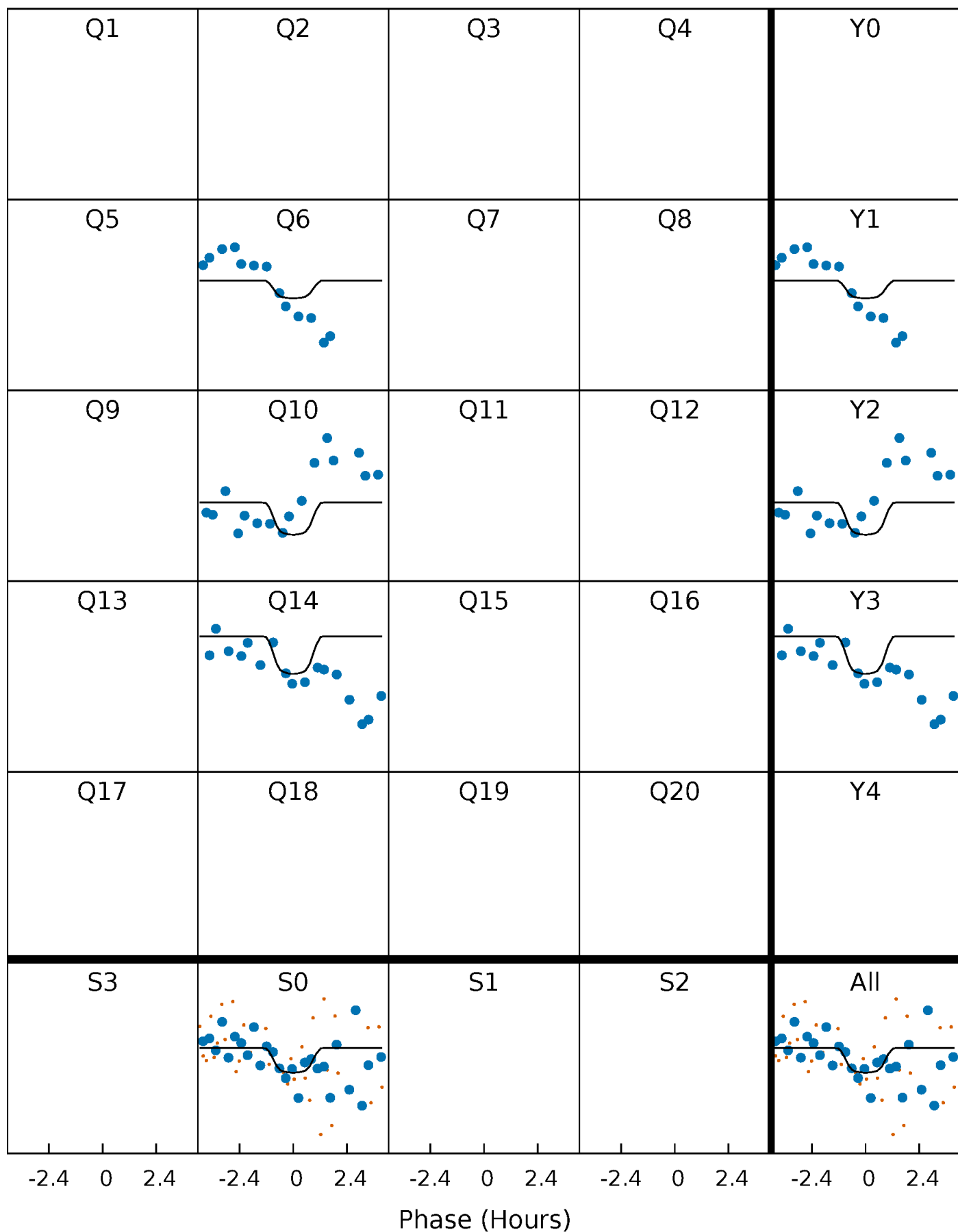
# PDC Quarter-Phased Transit Curves

TCE 008435232-04     $P=396.263074$  Days     $T_0=152.555912$  (BKJD)



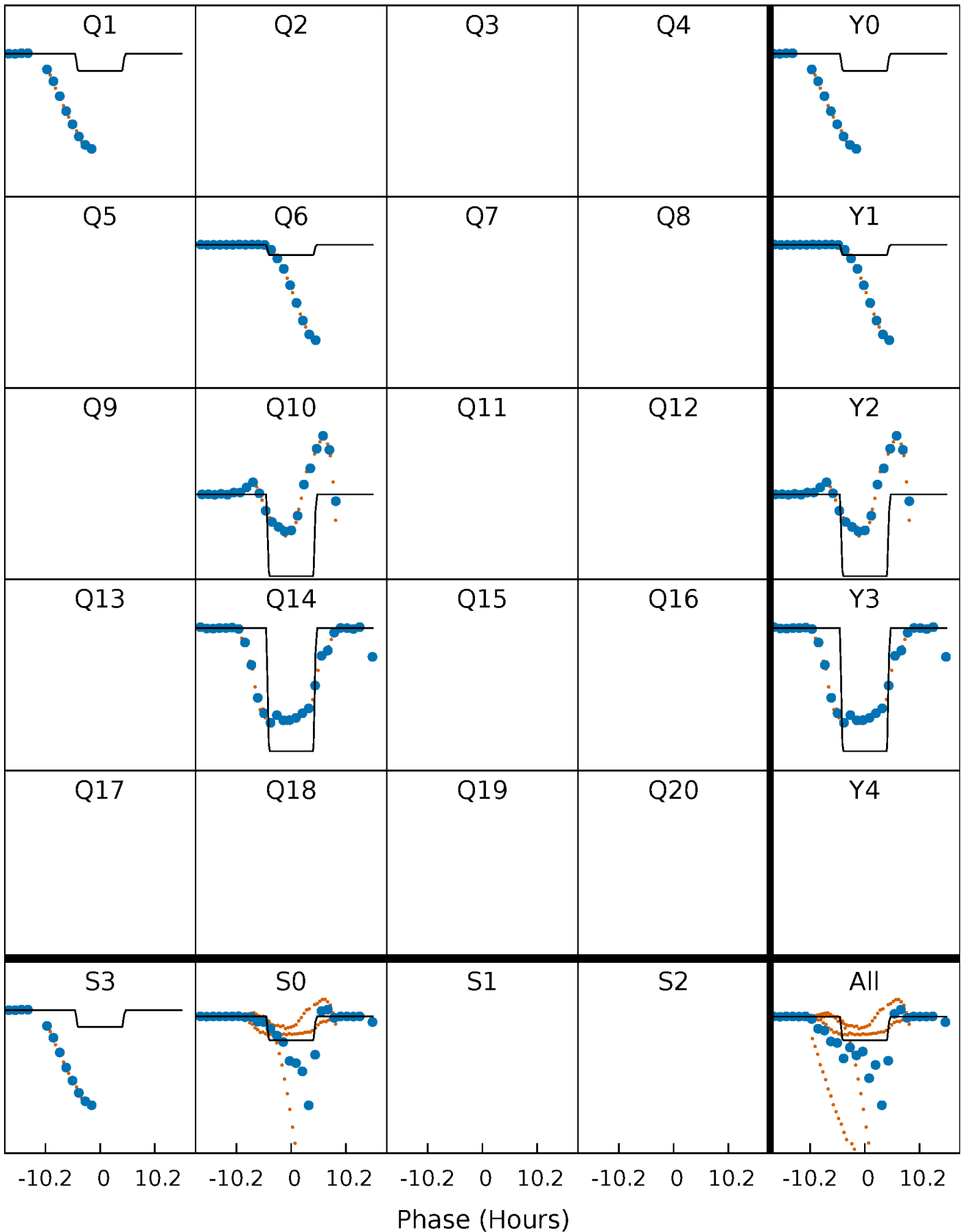
# DV Quarter-Phased Transit Curves

TCE 008435232-04     $P=396.263074$  Days     $T_0=152.555912$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

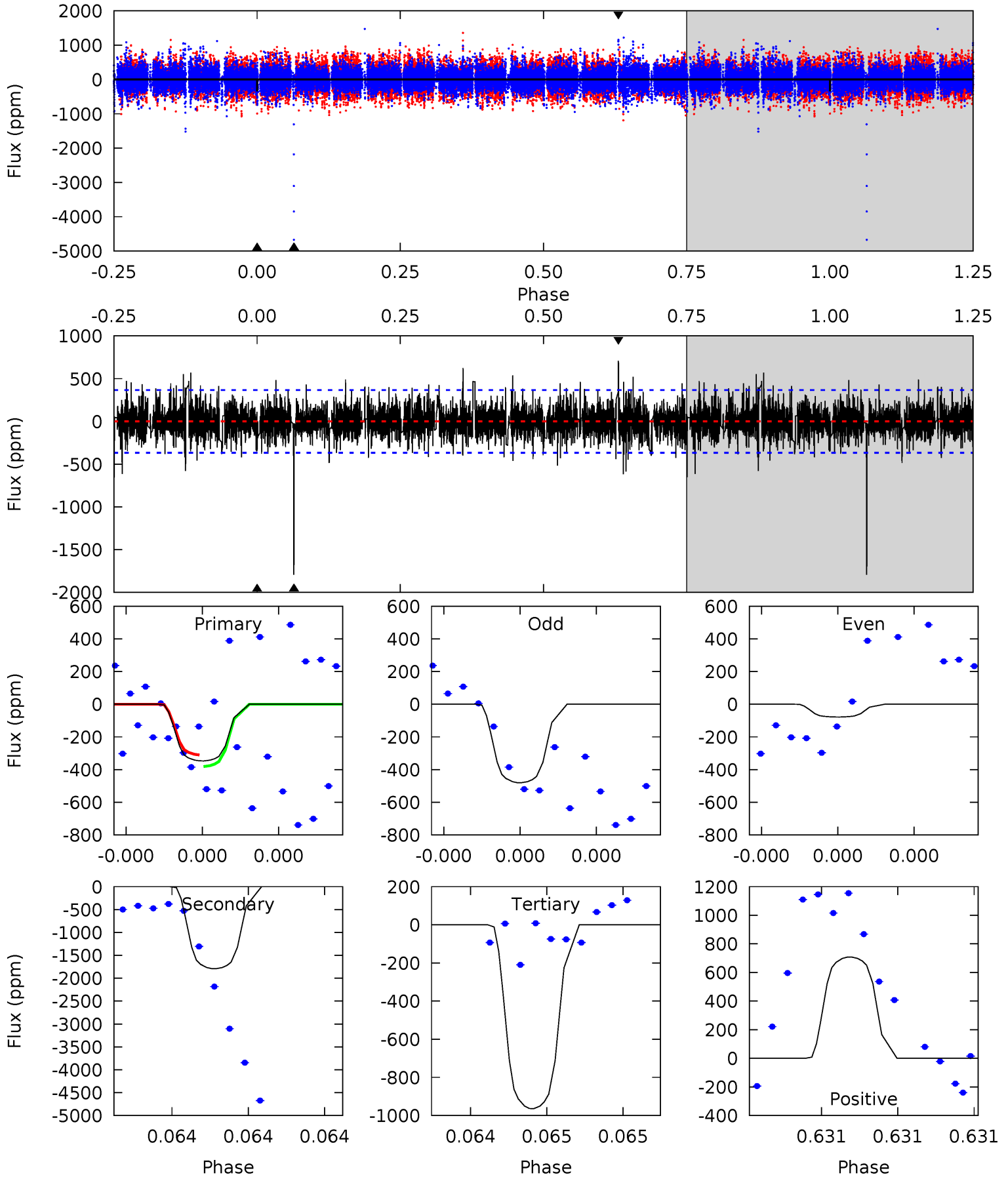
TCE 008435232-04 P=396.302085 Days  $T_0=152.415000$  (BKJD)



# DV Model-Shift Uniqueness Test

008435232-04, P = 396.263074 Days, E = 152.555912 Days

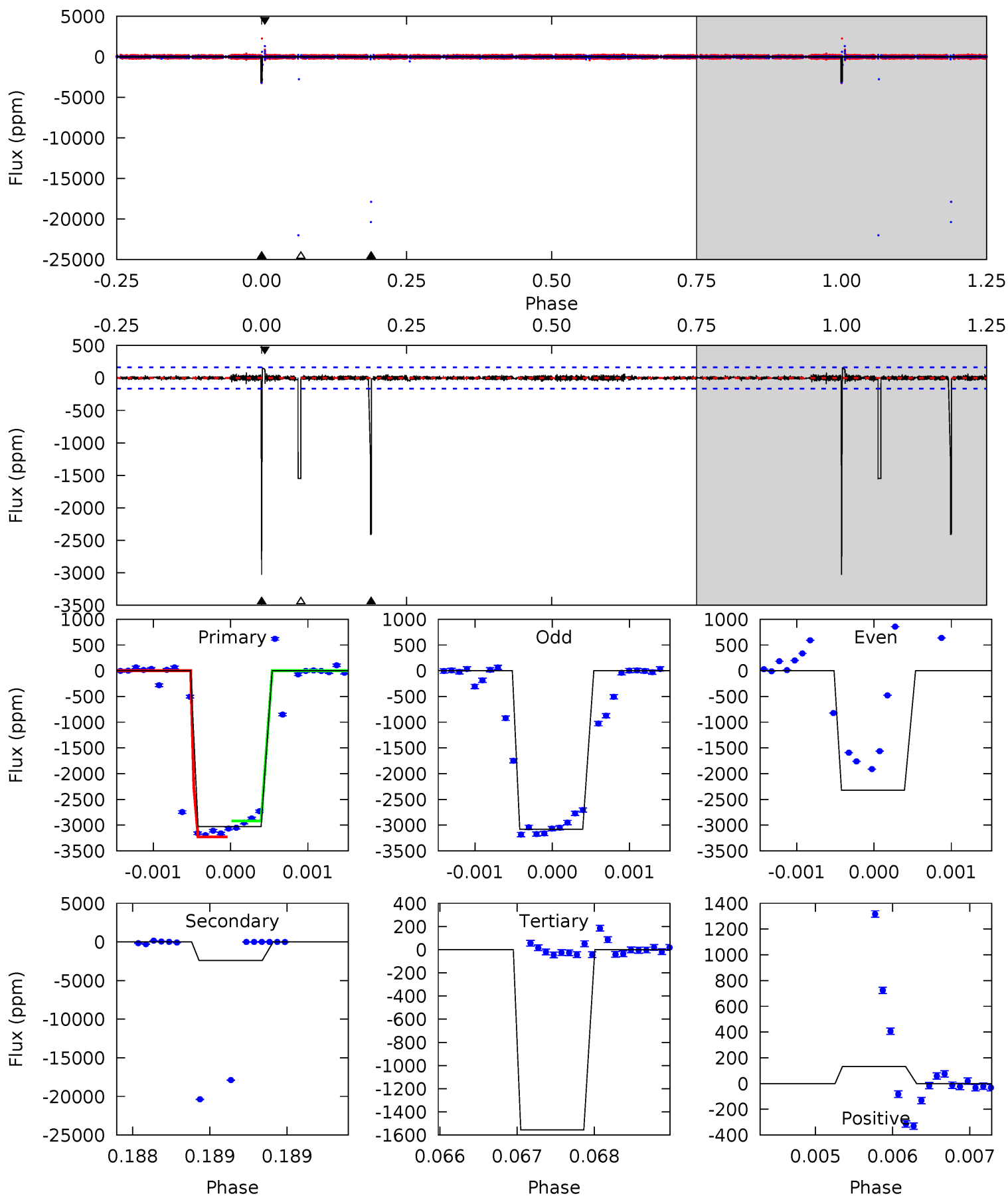
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.40	27.9	15.0	11.0	5.69	3.65	1.96	-9.60	-5.62	12.9	16.9	3.00	0.90	0.28	0.55



# Alt Model-Shift Uniqueness Test

008435232-04, P = 396.302085 Days, E = 152.415000 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
101.0	80.4	51.8	4.43	5.46	3.31	1.13	49.2	96.6	28.5	75.9	13.5	1.04	0.05	0





### Stellar Parameters For KIC 008435232

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4040^{+129}_{-158}$	$4.714^{+0.084}_{-0.039}$	$-0.440^{+0.300}_{-0.350}$	$0.527^{+0.055}_{-0.083}$	$0.525^{+0.059}_{-0.066}$	$5.045^{+2.178}_{-0.886}$
	+3%/-4%	+2%/-1%	+68%/-80%	+10%/-16%	+11%/-13%	+43%/-18%
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 008435232-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1793 \pm 64$	$1.49^{+1.17}_{-0.95}$	$193^{+8}_{-9}$	$4814^{+3181}_{-930}$	$315770^{+2107833}_{-214843}$
Alt.	$-2410 \pm 30$	$3.62^{+1.25}_{-1.28}$	$194^{+8}_{-9}$	$3677^{+595}_{-334}$	$72860^{+103049}_{-31311}$

$T_{\text{max}}$  = 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

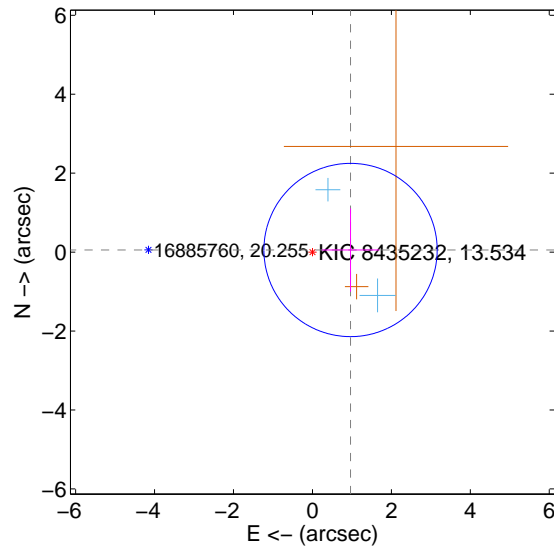
Supplemental centroid analysis for 008435232-04. Kepler magnitude: 13.53. Transit SNR 3.37

There are 2 quarters with good PRF difference image offsets

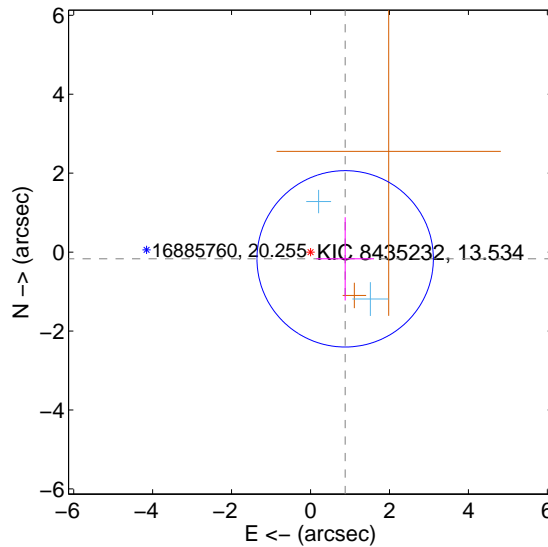
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.967 \pm 0.732$	1.32	$-0.966 \pm 0.731$	$0.053 \pm 1.055$
PRF-fit source offset from KIC position	$0.894 \pm 0.745$	1.20	$-0.878 \pm 0.731$	$-0.171 \pm 1.055$
photometric centroid source offset	$1.34 \pm 1.26$	1.06	$0.24 \pm 1.16$	$-1.32 \pm 1.26$

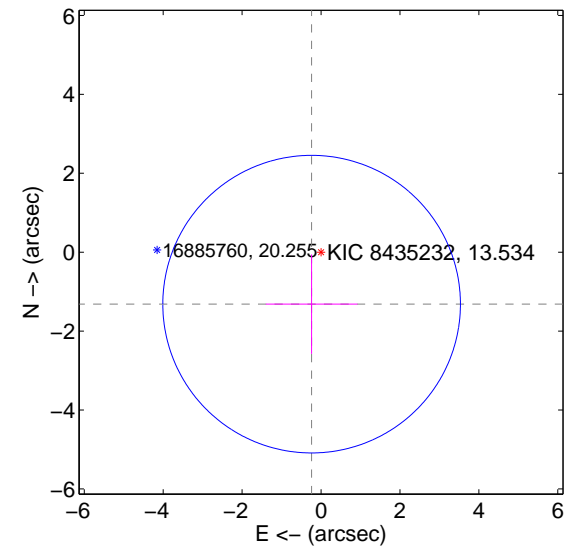
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

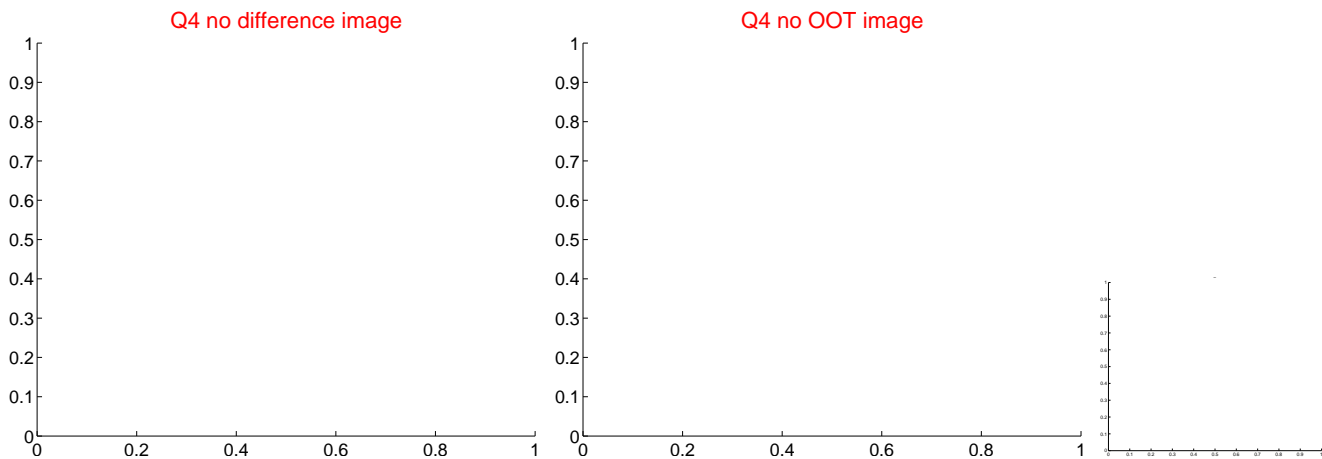
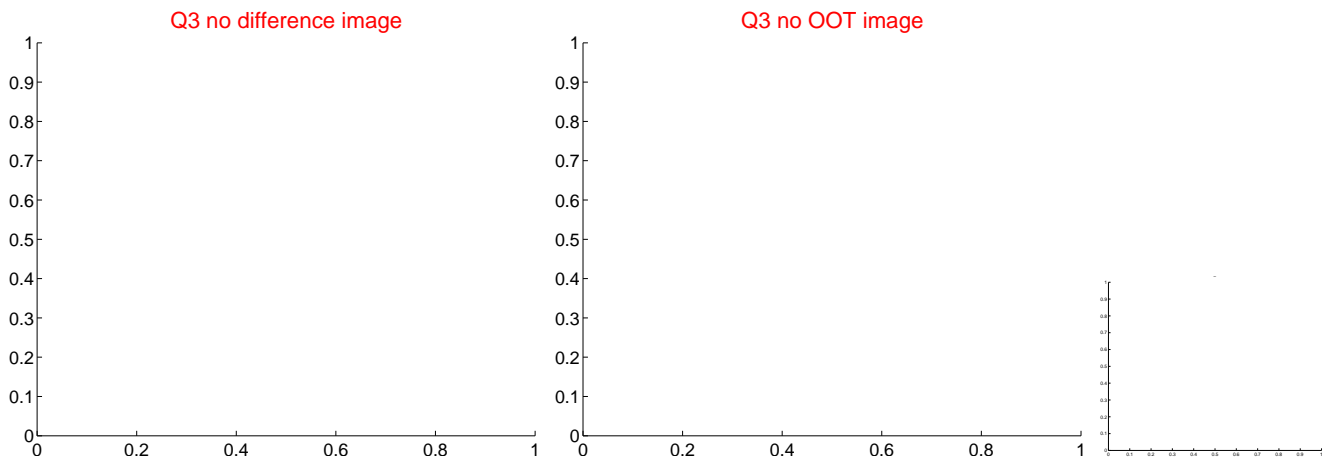
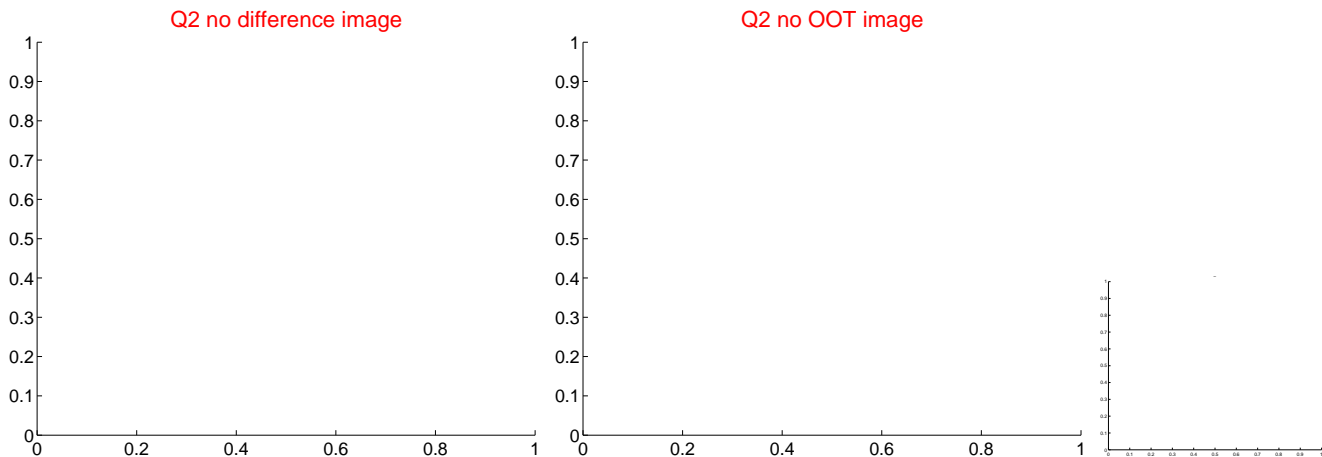
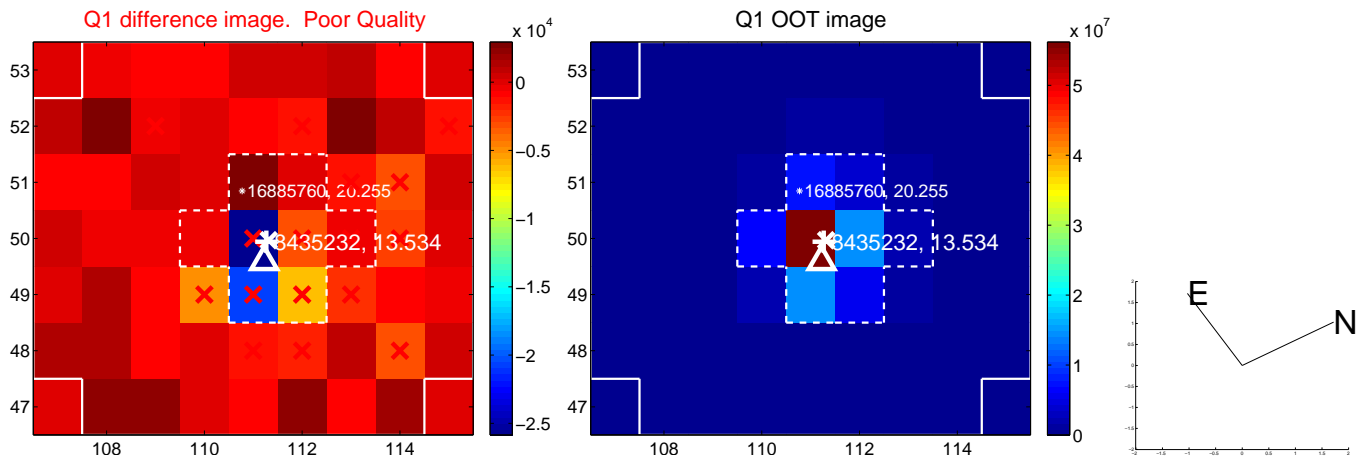


offset from photometric centroids

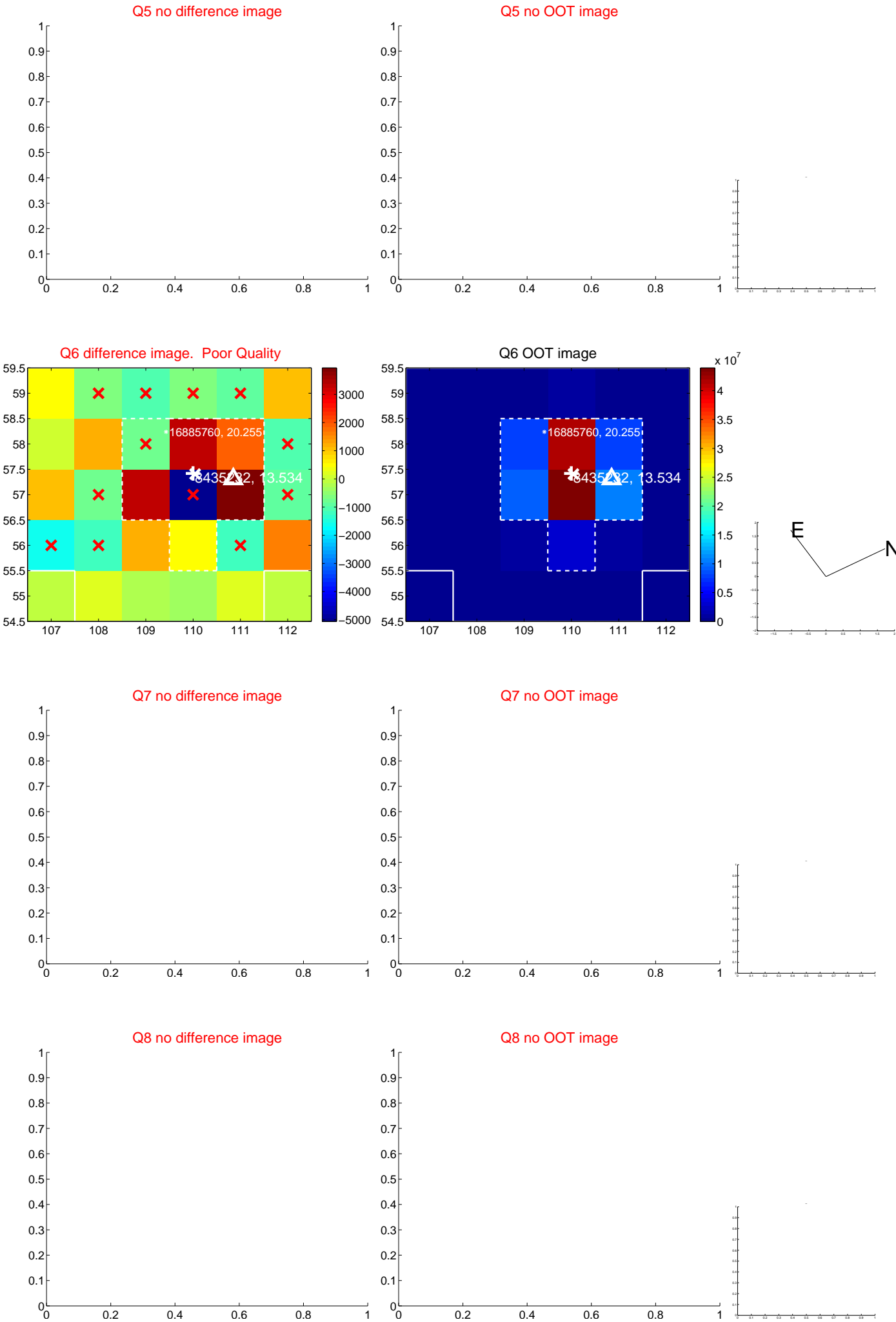


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

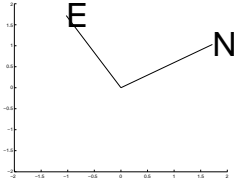
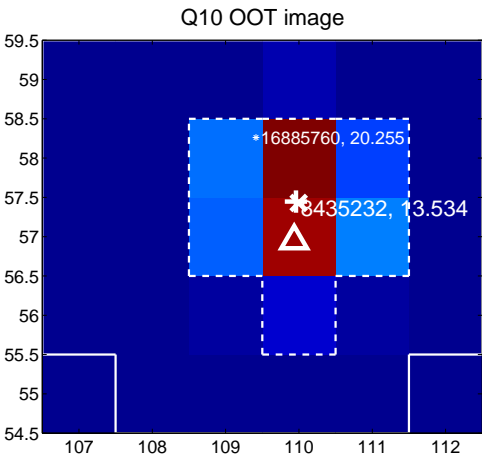
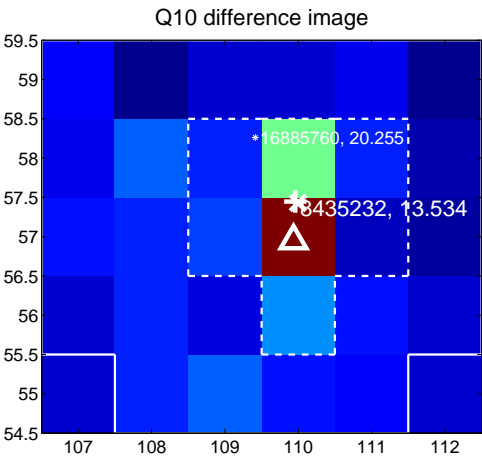


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

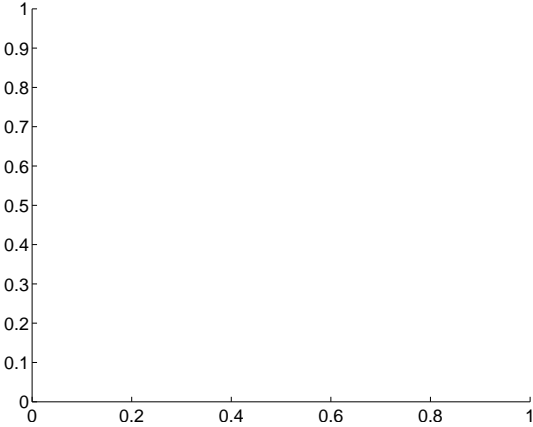
Q9 no difference image



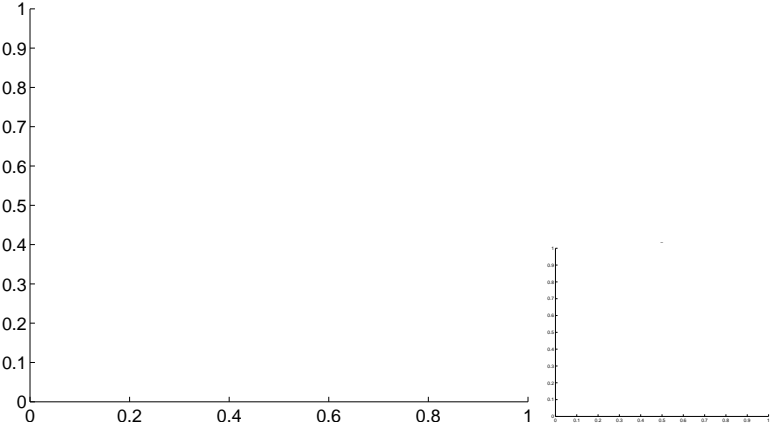
Q9 no OOT image



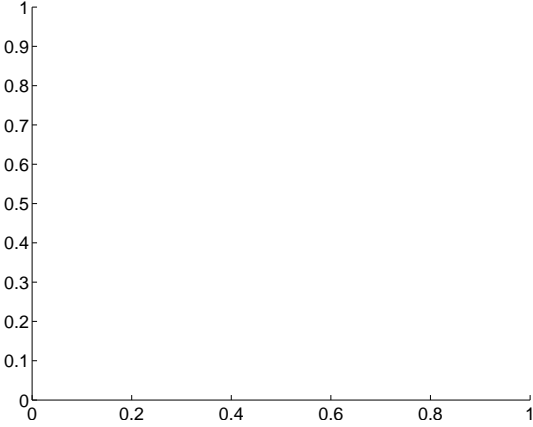
Q11 no difference image



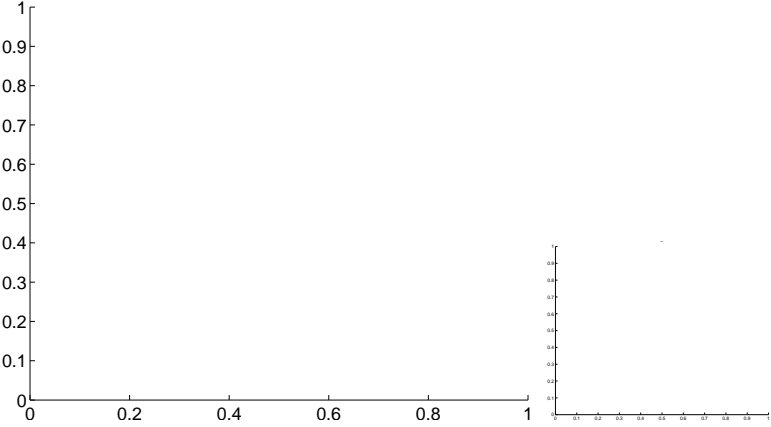
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

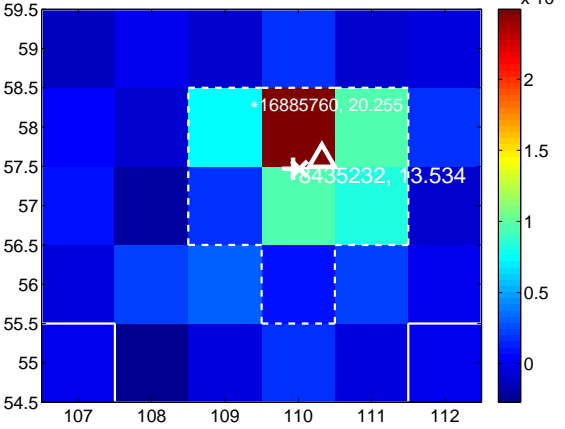
Q13 no difference image



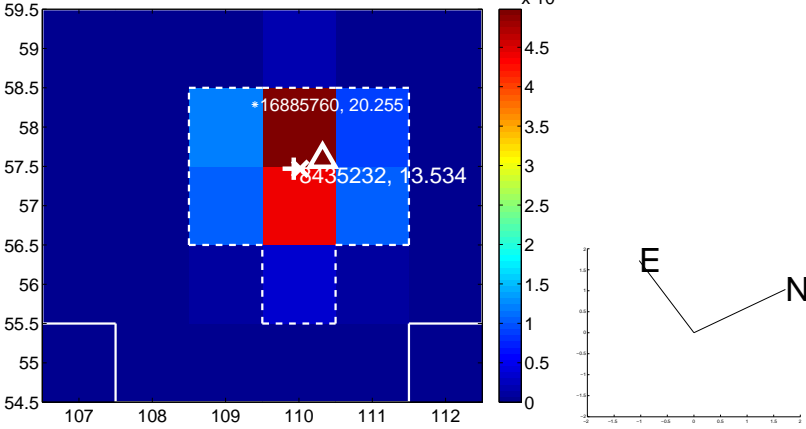
Q13 no OOT image



Q14 difference image



Q14 OOT image



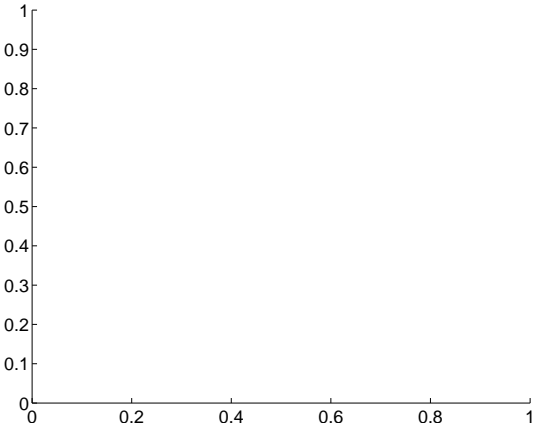
Q15 no difference image



Q15 no OOT image



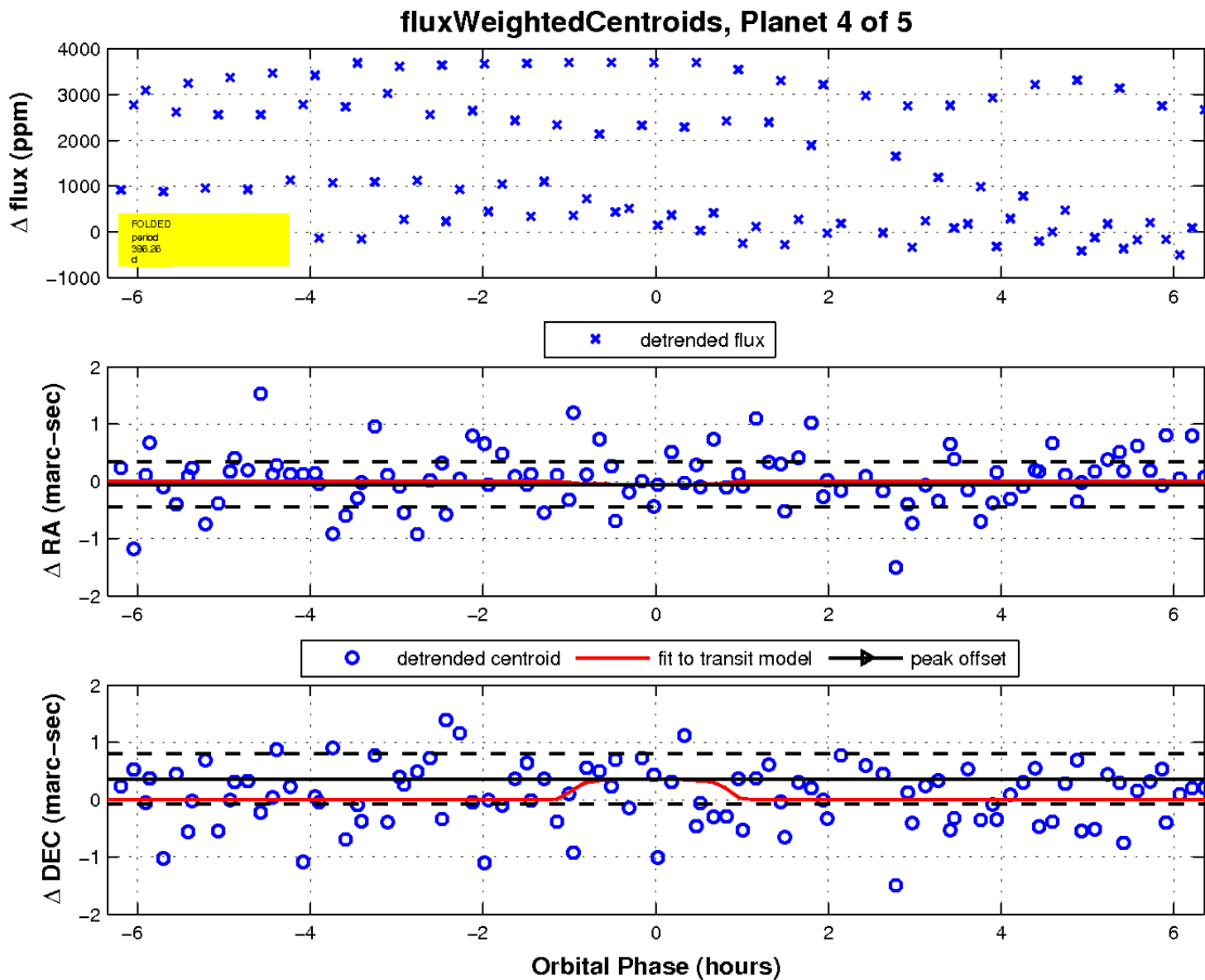
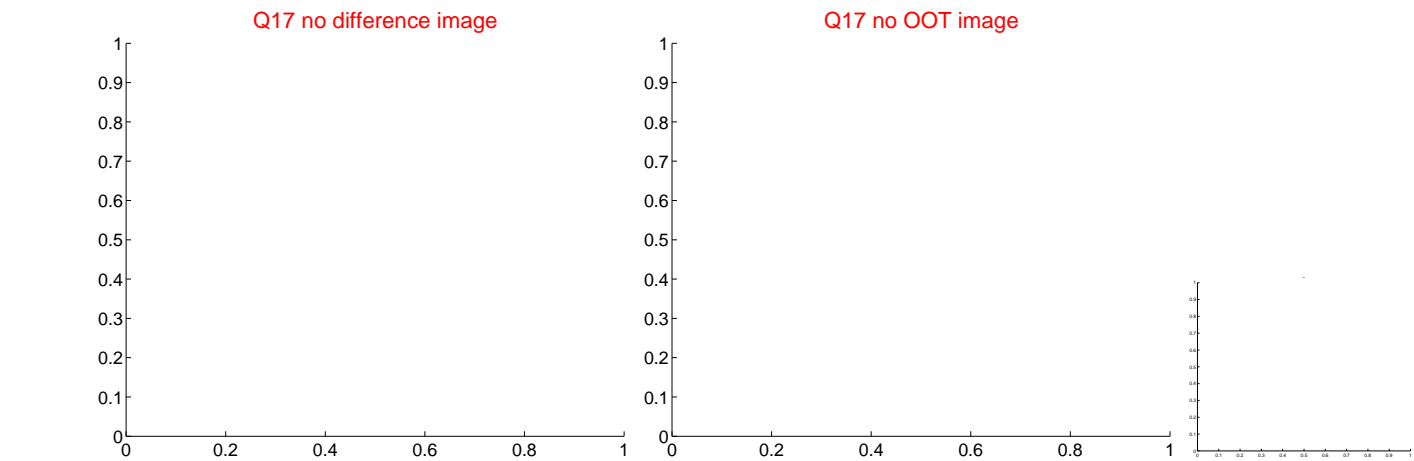
Q16 no difference image



Q16 no OOT image

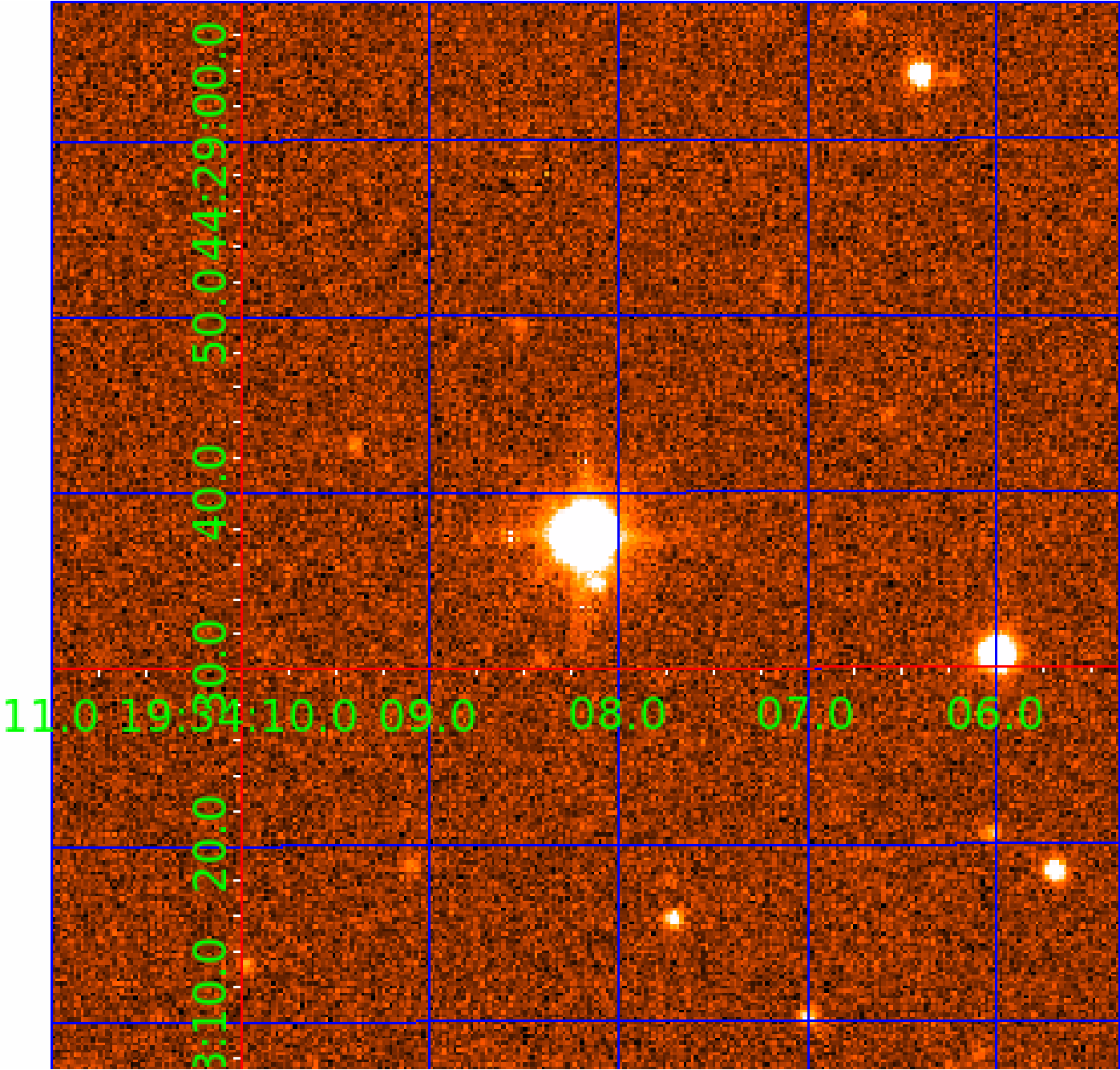


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008435232

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008435232-01	OBS	3833.01	49.571236	178.248121	16659.8	13.412	55.1	114.7	0.53	4040	12.05	1.46
008435232-02	OBS	No	49.570614	176.223307	16693.4	15.447	72.3	112.8	0.53	4040	12.06	1.46
008435232-03	OBS	No	49.568977	153.421215	2803.8	17.146	11.2	23.4	0.53	4040	5.25	1.46
008435232-04	OBS	No	396.263074	152.555912	315.4	2.129	13.0	3.4	0.53	4040	1.15	0.09
008435232-05	OBS	No	49.572104	151.610978	3699.1	24.823	12.1	27.7	0.53	4040	3.88	1.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008435232-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008435232-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
008435232-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_TER_DV—SAME_NTL_PERIOD
008435232-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008435232-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD

**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.

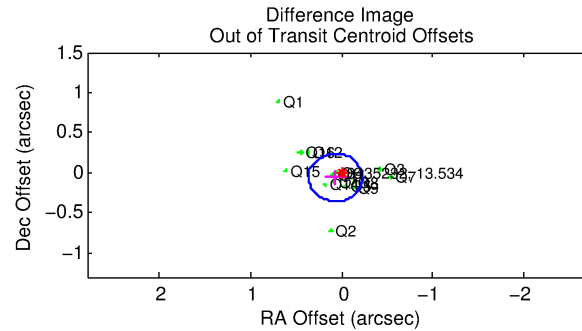
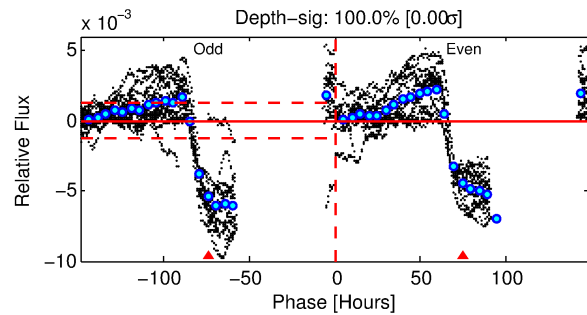
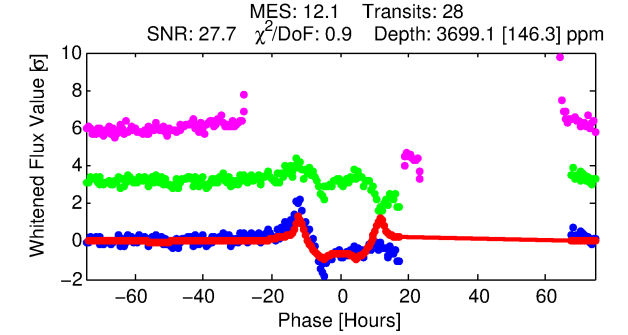
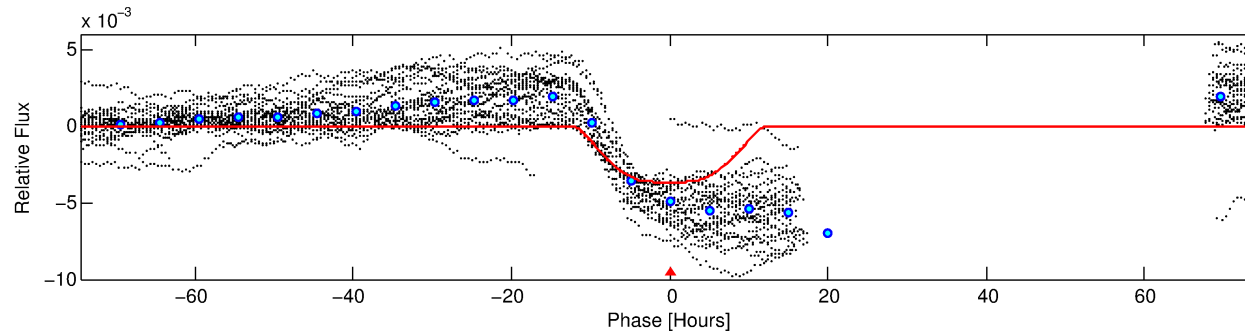
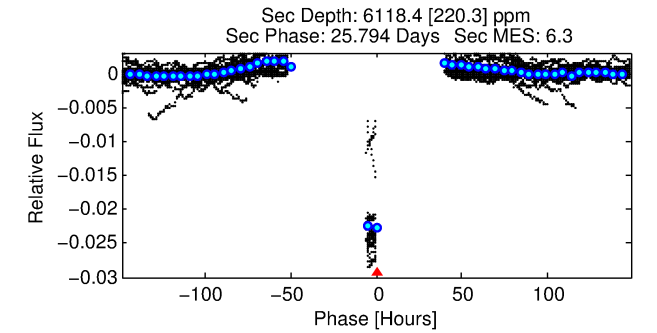
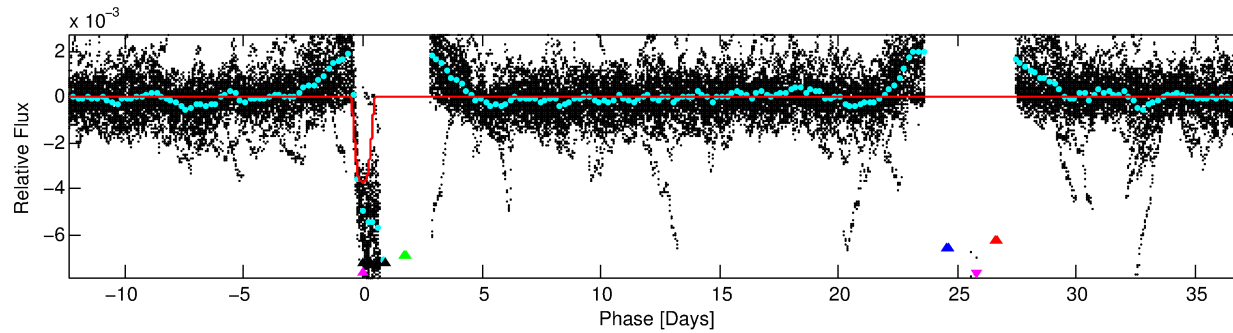
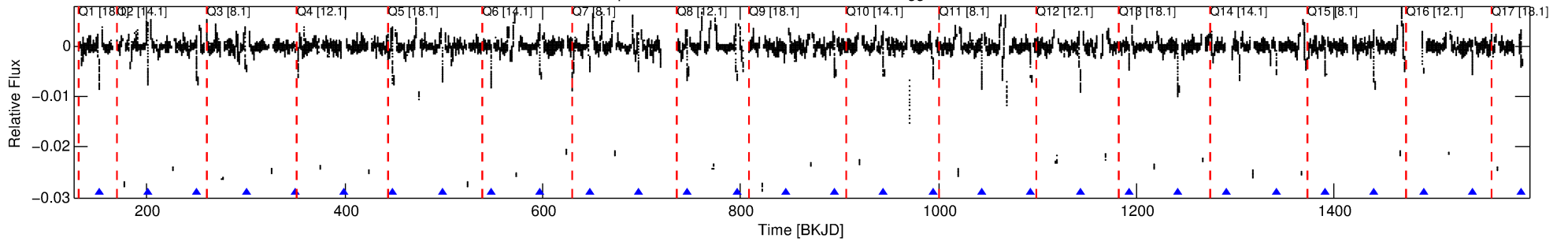
## Ephemeris Match Information For 008435232-05

No Significant Match Found

# DV One-Page Summary

KIC: 8435232 Candidate: 5 of 5 Period: 49.572 d  
KOI: K03833 Corr: No Ephemeris Match

Kp: 13.53 R\*: 0.53 Rs Teff: 4040.0 K Logg: 4.71 Fe/H: -0.440



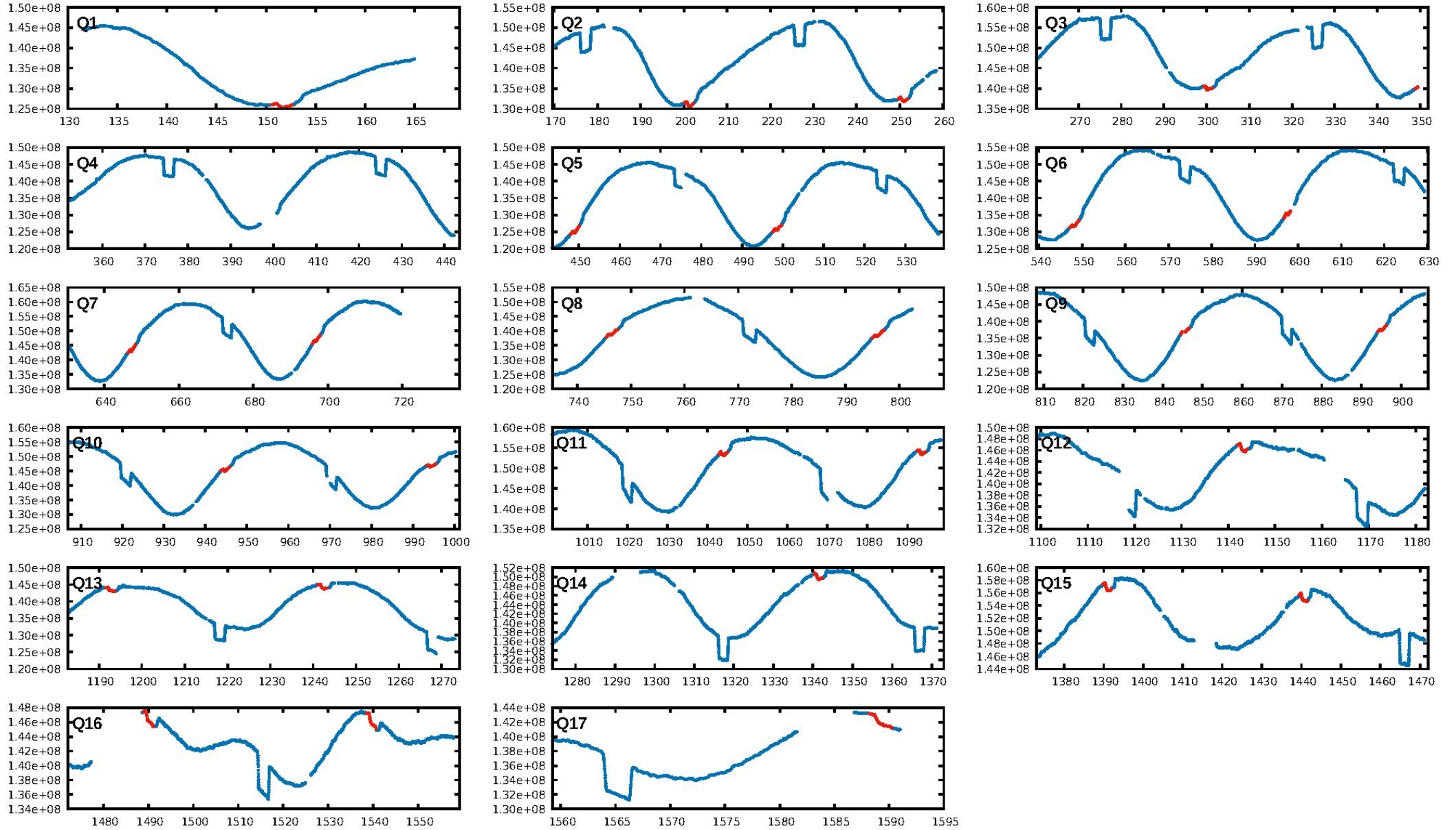
## DV Fit Results:

Period = 49.57210 [0.00041] d  
Epoch = 151.6110 [0.0067] BKJD  
Rp/R\* = 0.0674 [0.0014]  
a/R\* = 8.45 [0.11]  
b = 0.91 [0.00]  
Seff = 1.46 [0.33]  
Teq = 280 [16] K  
Rp = 3.88 [0.62] Re  
a = 0.2130 [0.0262] AU  
Ag = 10162.80 [1777.13] [5.72σ]  
Teffp = 4352 [180] K [22.52σ]

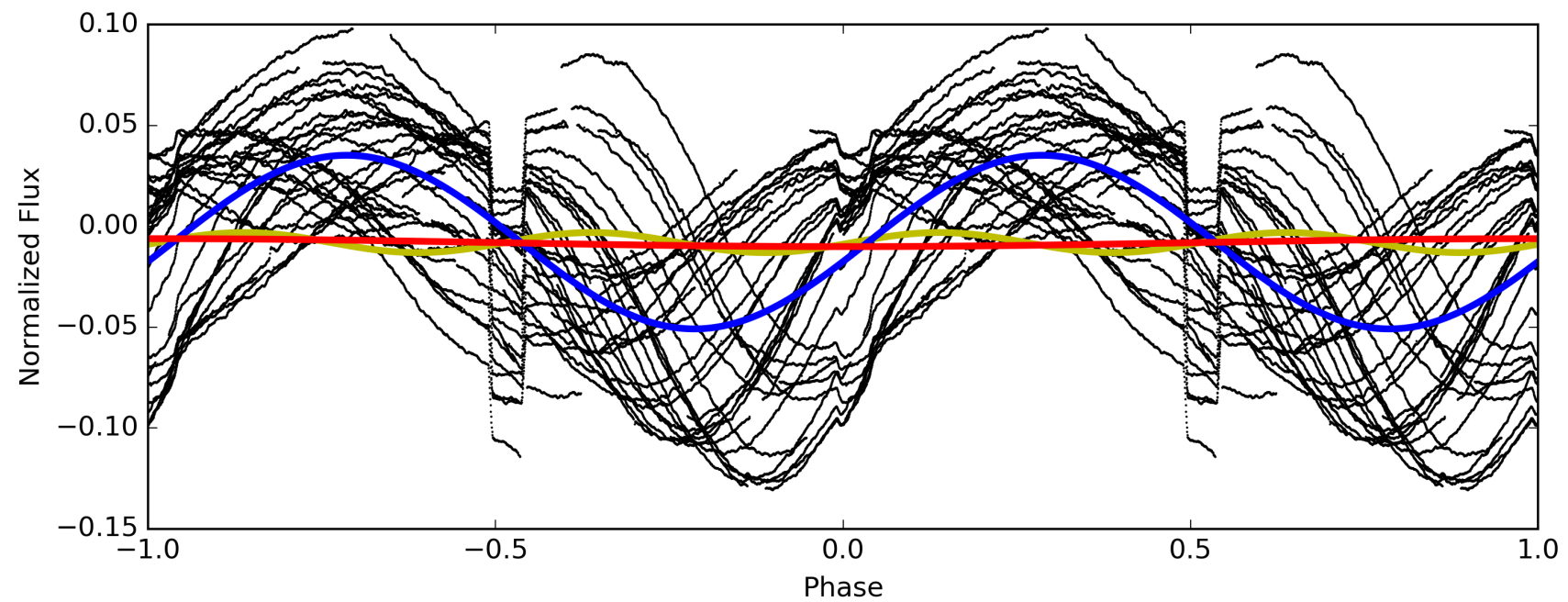
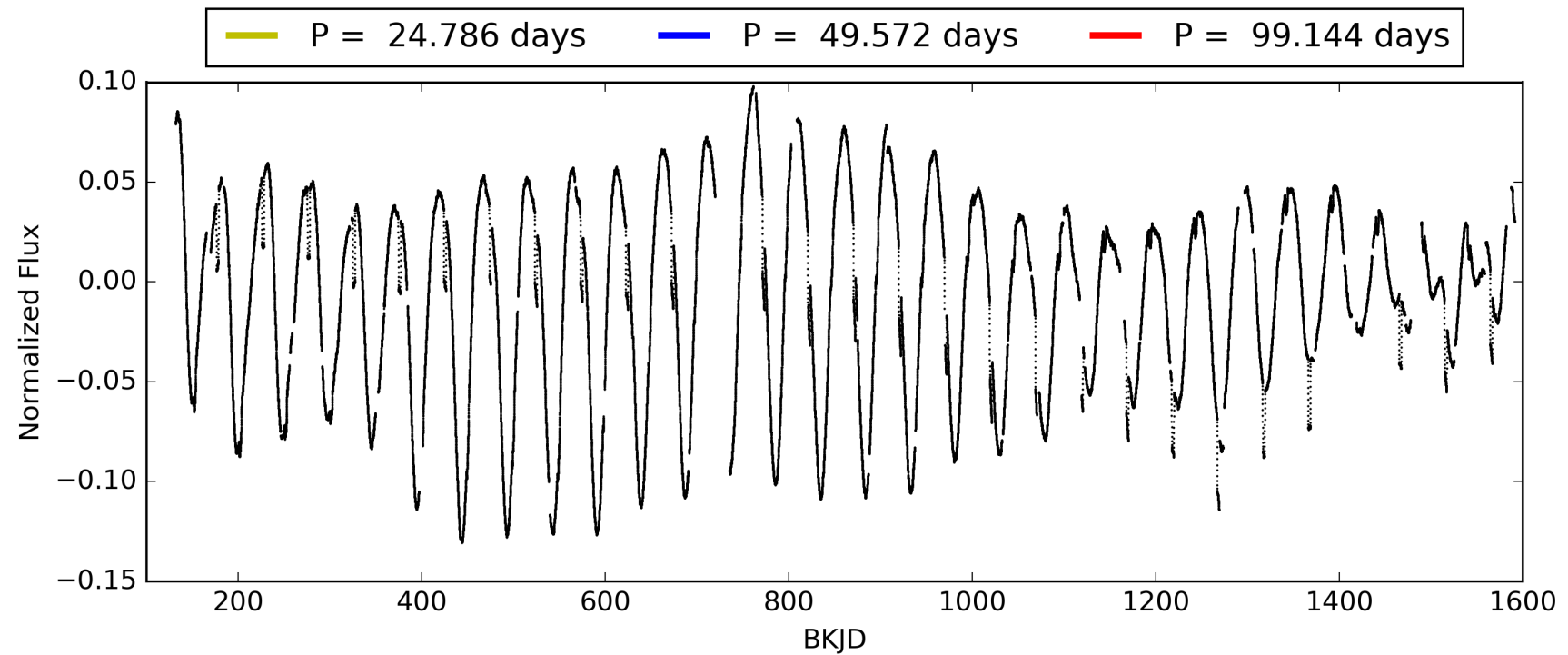
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: 100.0% [333.97σ]  
ModelChiSquare2-sig: 63.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.78e-25  
RollingBand-fgt: 1.00 [26/26]  
GhostDiagnostic-chr: 0.4687  
Centroid-sig: 29.7%  
Centroid-so: 0.172 arcsec [7.24σ]  
OotOffset-rm: 0.091 arcsec [0.92σ]  
KicOffset-rm: 0.300 arcsec [2.75σ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 0.00 [0/14]

# TCE 008435232-05, PDC Light Curves

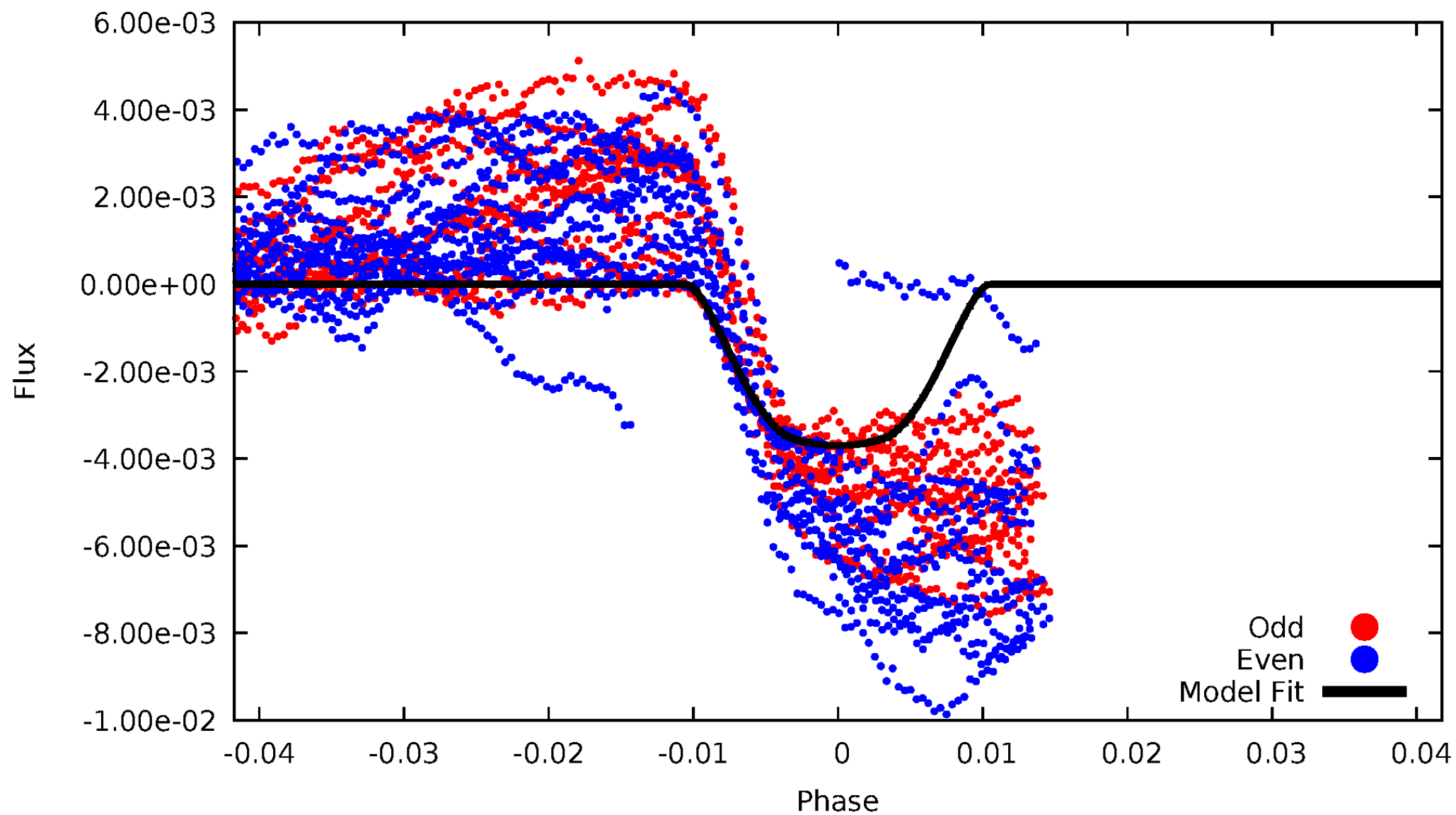


TCE 008435232-05



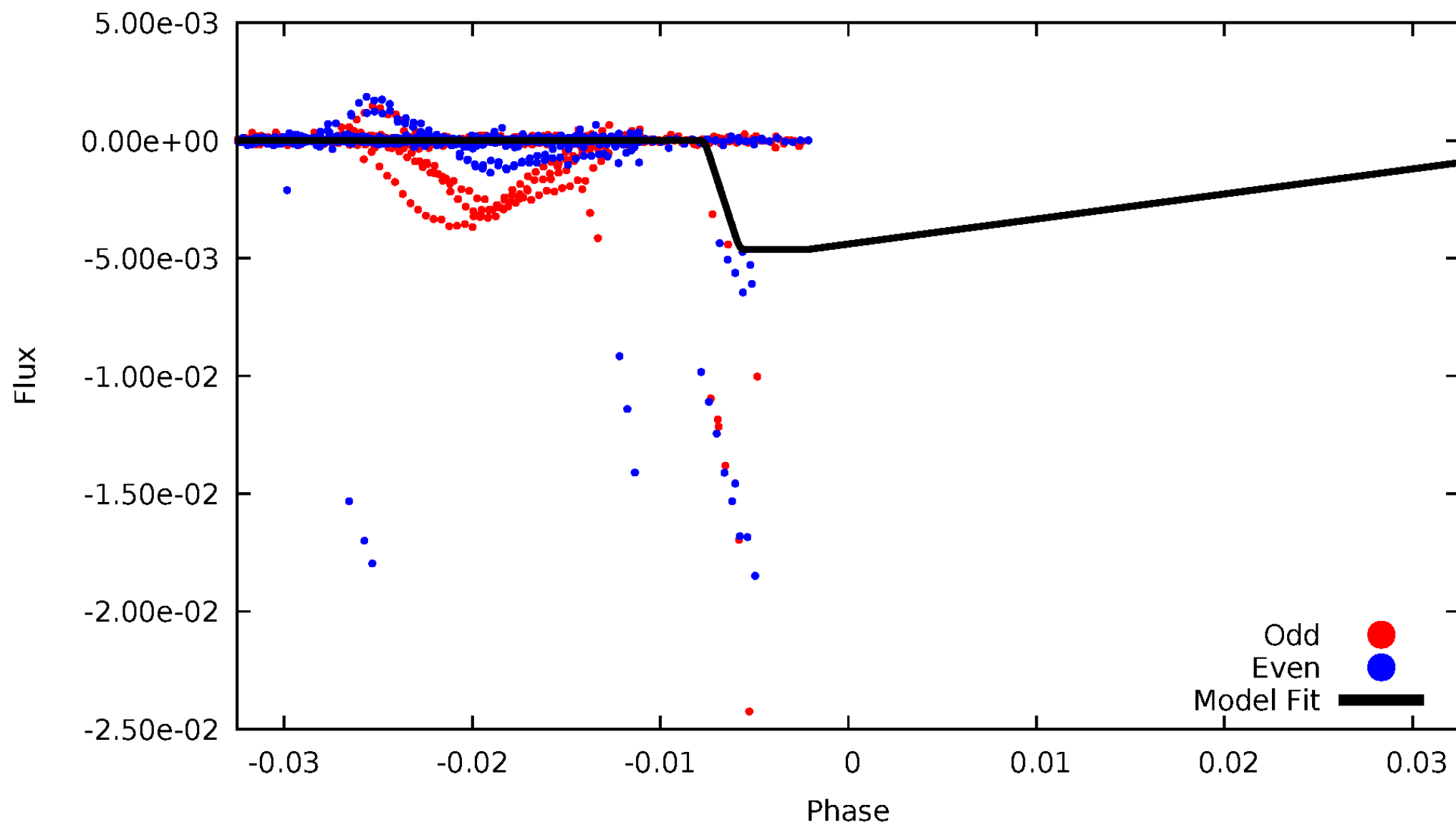
# DV Odd/Even

TCE 008435232-05



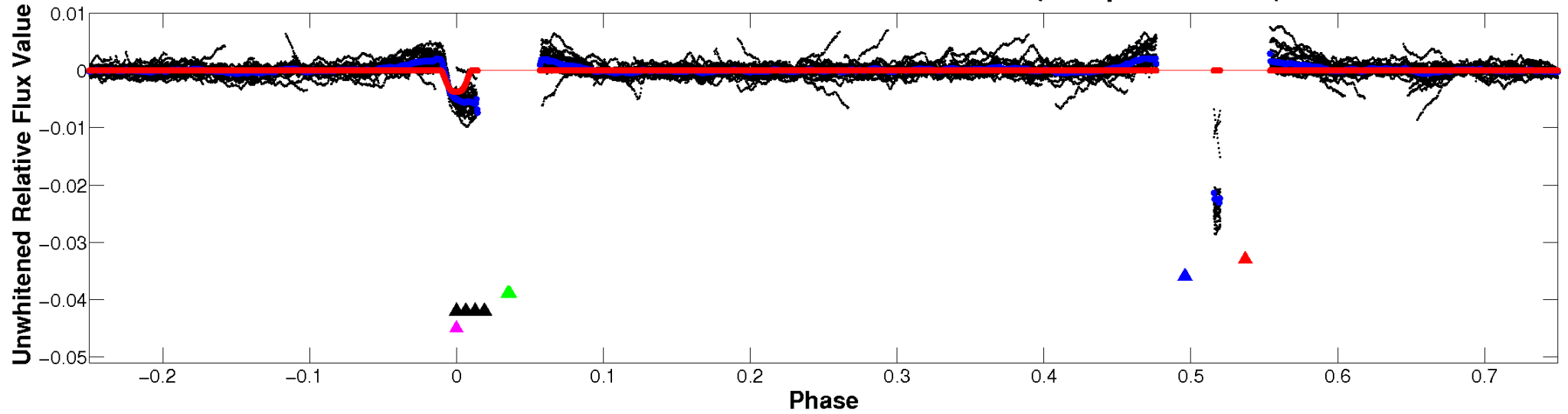
# ALT Odd/Even

TCE 008435232-05

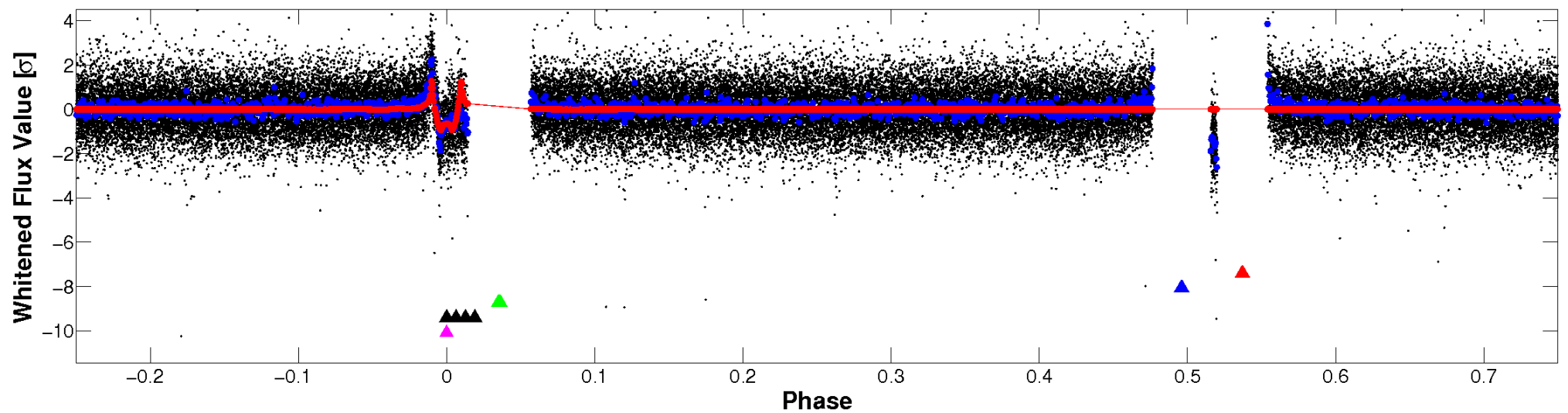


# Non-Whitened Vs. Whitened Light Curve

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

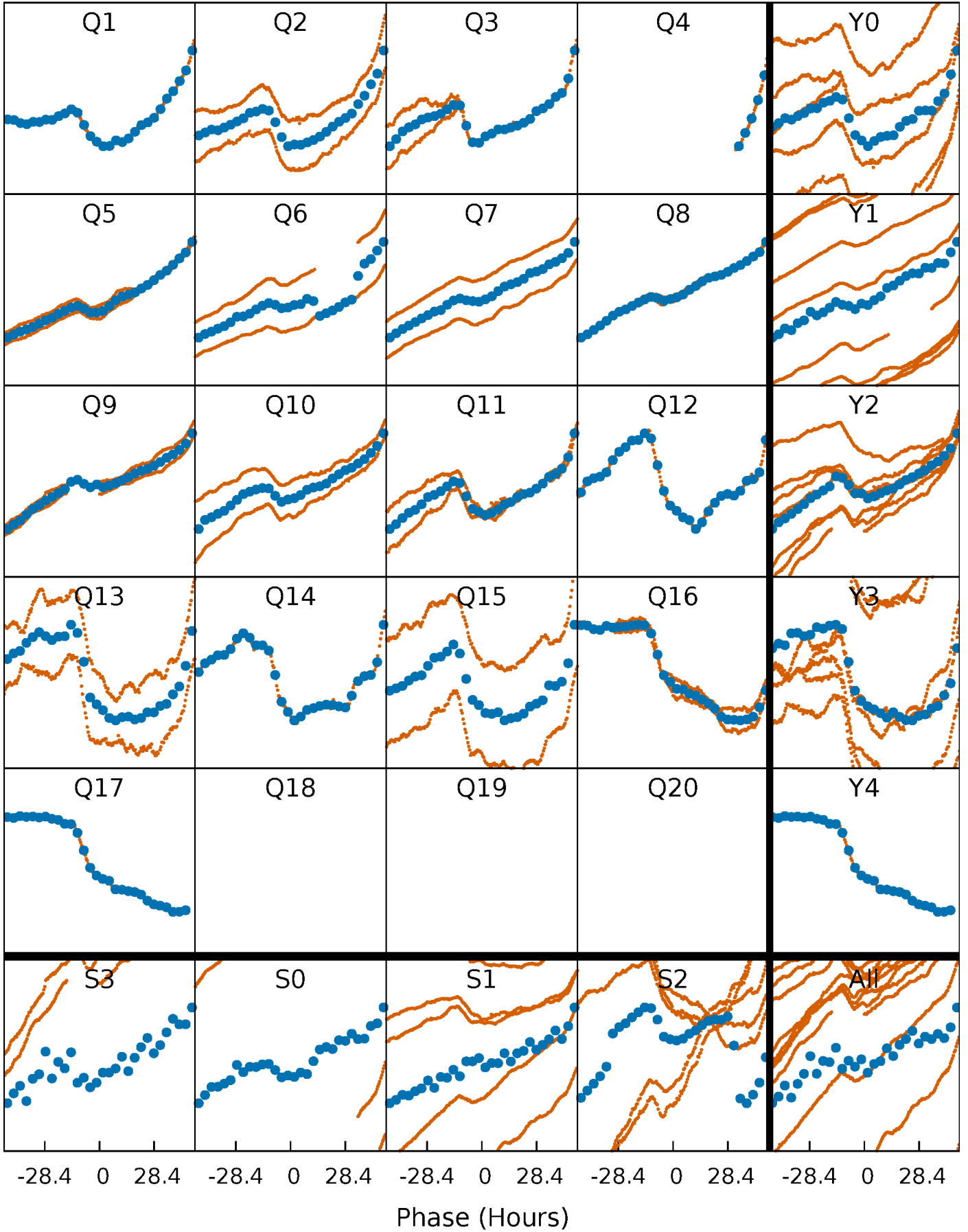


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

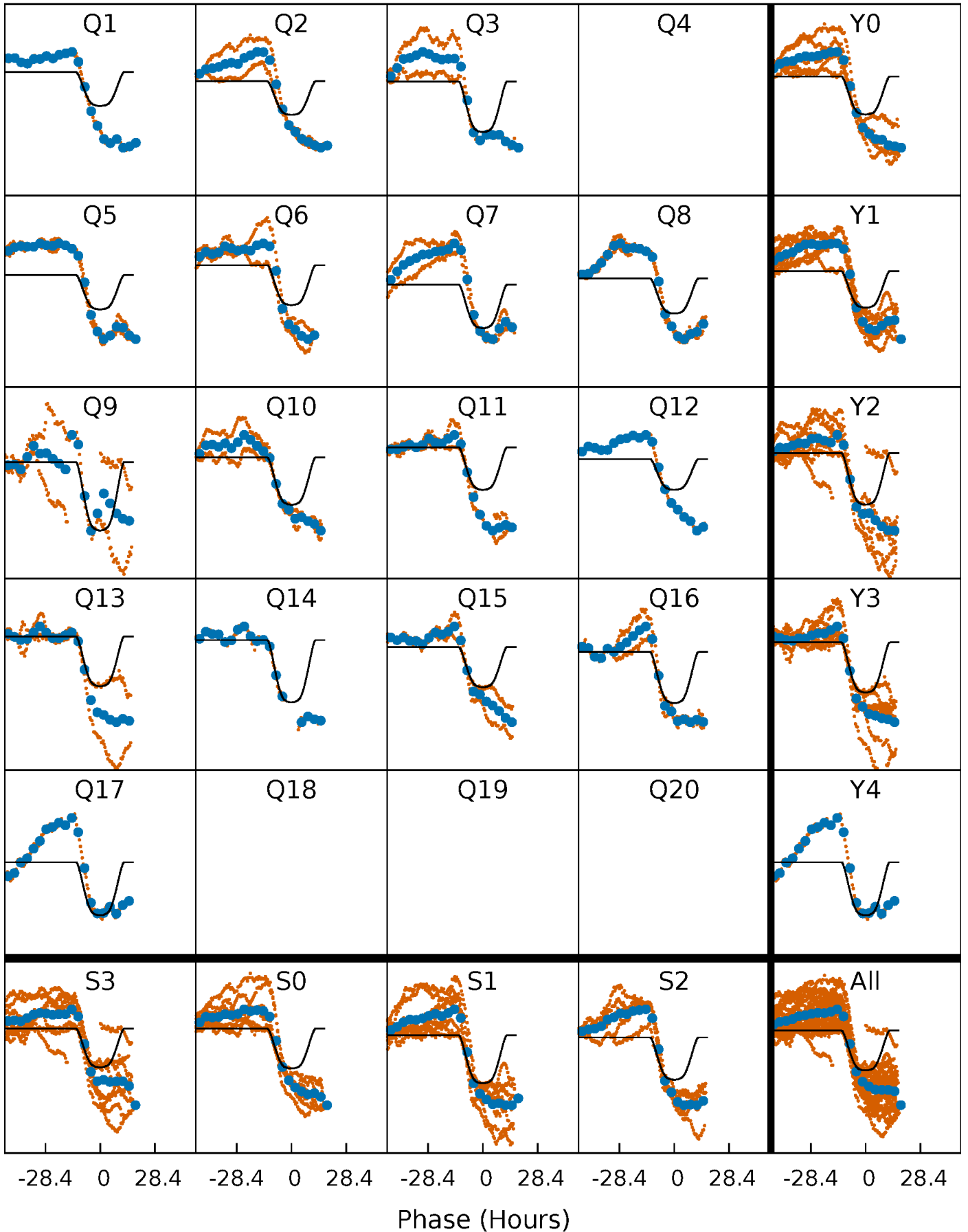
TCE 008435232-05     $P = 49.572104$  Days     $T_0 = 151.610978$  (BKJD)





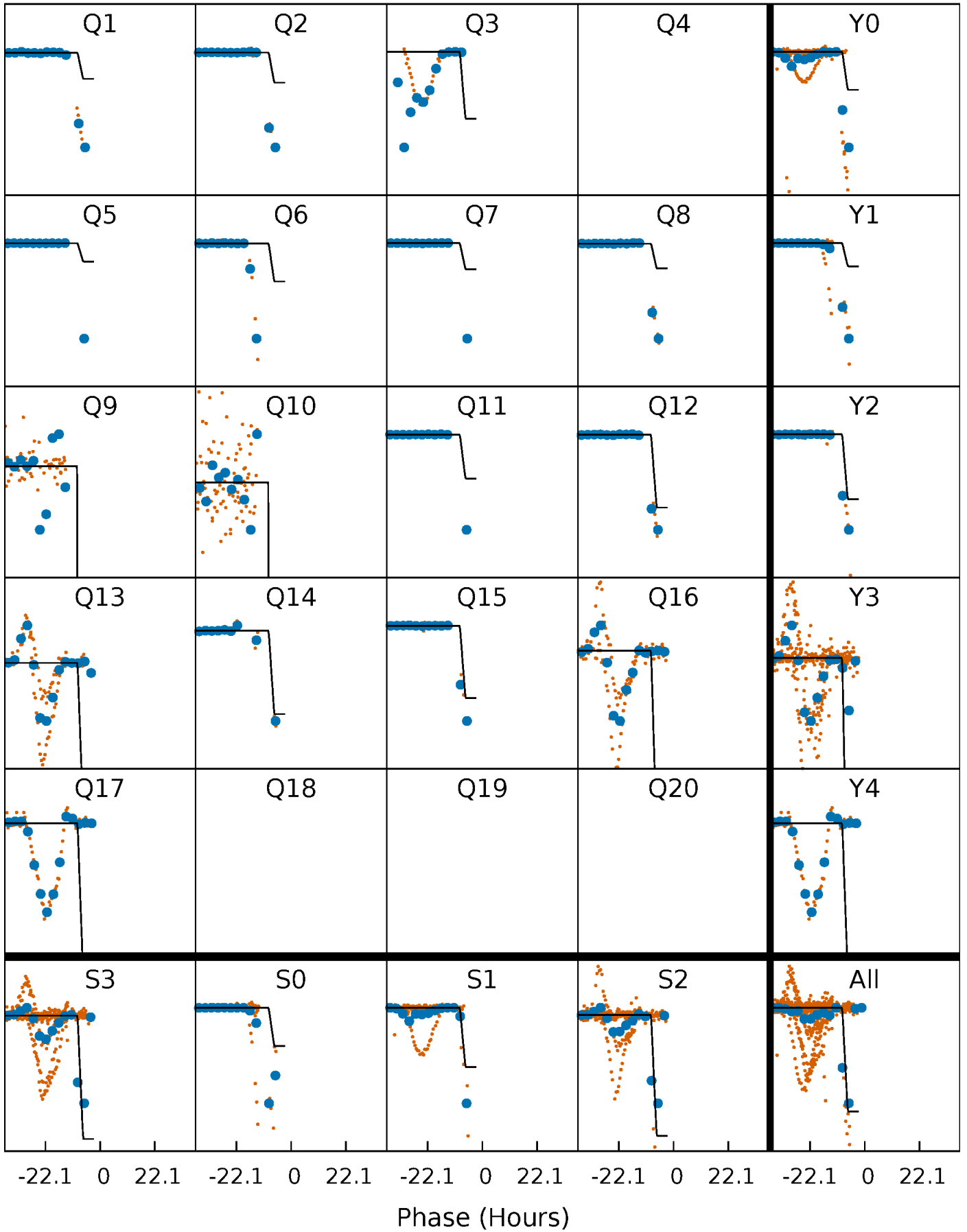
# DV Quarter-Phased Transit Curves

TCE 008435232-05   P= 49.572104 Days    $T_0=151.610978$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

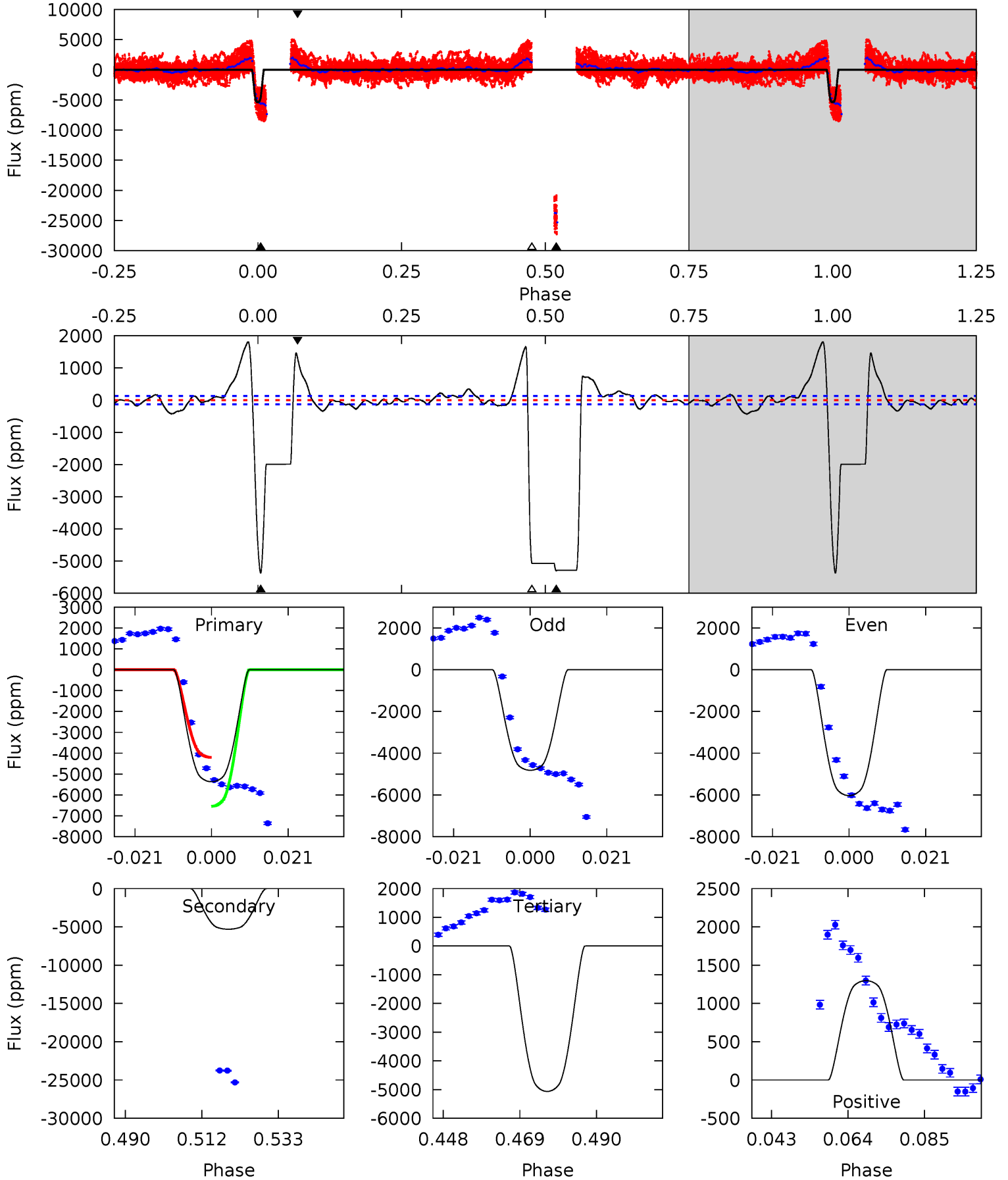
TCE 008435232-05     $P = 49.568264$  Days     $T_0 = 152.457161$  (BKJD)



# DV Model-Shift Uniqueness Test

008435232-05, P = 49.572104 Days, E = 102.038874 Days

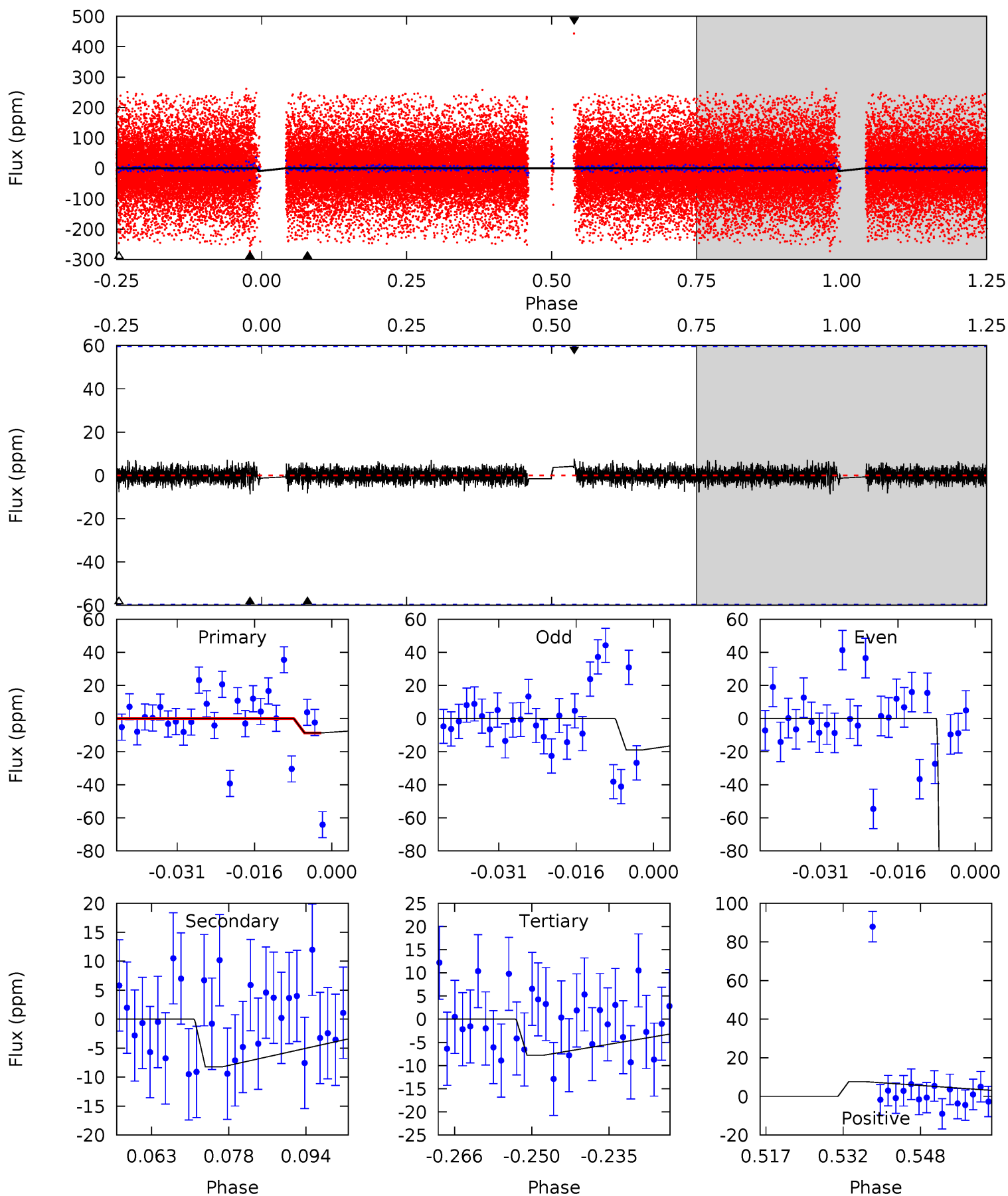
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
201.2	198.8	189.9	48.6	4.88	2.30	22.4	11.3	152.6	8.93	150.2	15.4	0.99	0.25	46.9



# Alt Model-Shift Uniqueness Test

008435232-05, P = 49.568264 Days, E = 102.888897 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
0.72	0.68	0.64	0.63	4.94	2.42	0.16	0.08	0.09	0.04	0.05	17.8	0	0.47	0



### Stellar Parameters For KIC 008435232

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4040^{+129}_{-158}$	$4.714^{+0.084}_{-0.039}$	$-0.440^{+0.300}_{-0.350}$	$0.527^{+0.055}_{-0.083}$	$0.525^{+0.059}_{-0.066}$	$5.045^{+2.178}_{-0.886}$
	+3%/-4%	+2%/-1%	+68%/-80%	+10%/-16%	+11%/-13%	+43%/-18%
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 008435232-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5303 \pm 27$	$3.86^{+0.26}_{-0.33}$	$388^{+15}_{-18}$	$4160^{+122}_{-151}$	$9090^{+1317}_{-887}$
Alt.	$-8 \pm 12$	$3.89^{+0.25}_{-0.30}$	$388^{+16}_{-18}$	$1817^{+164}_{-3456}$	$16^{+19}_{-21}$

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

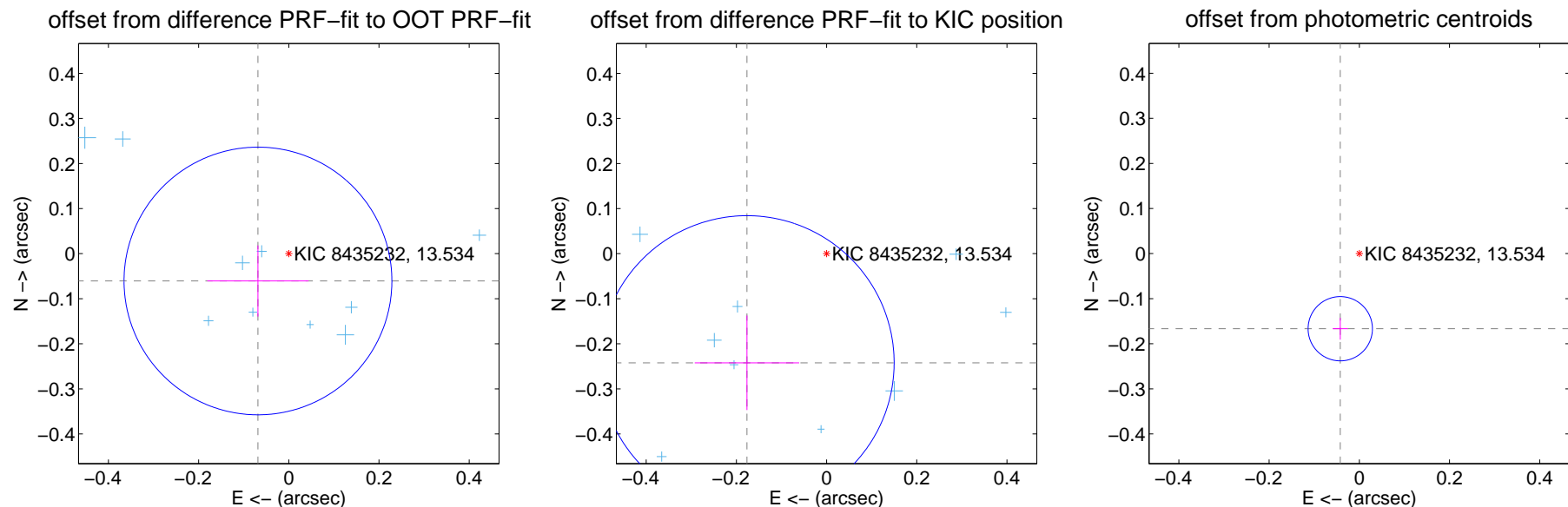
## DV Centroid Data

Supplemental centroid analysis for 008435232-05. Kepler magnitude: 13.53. Transit SNR 27.69

There are 14 quarters with good PRF difference image offsets

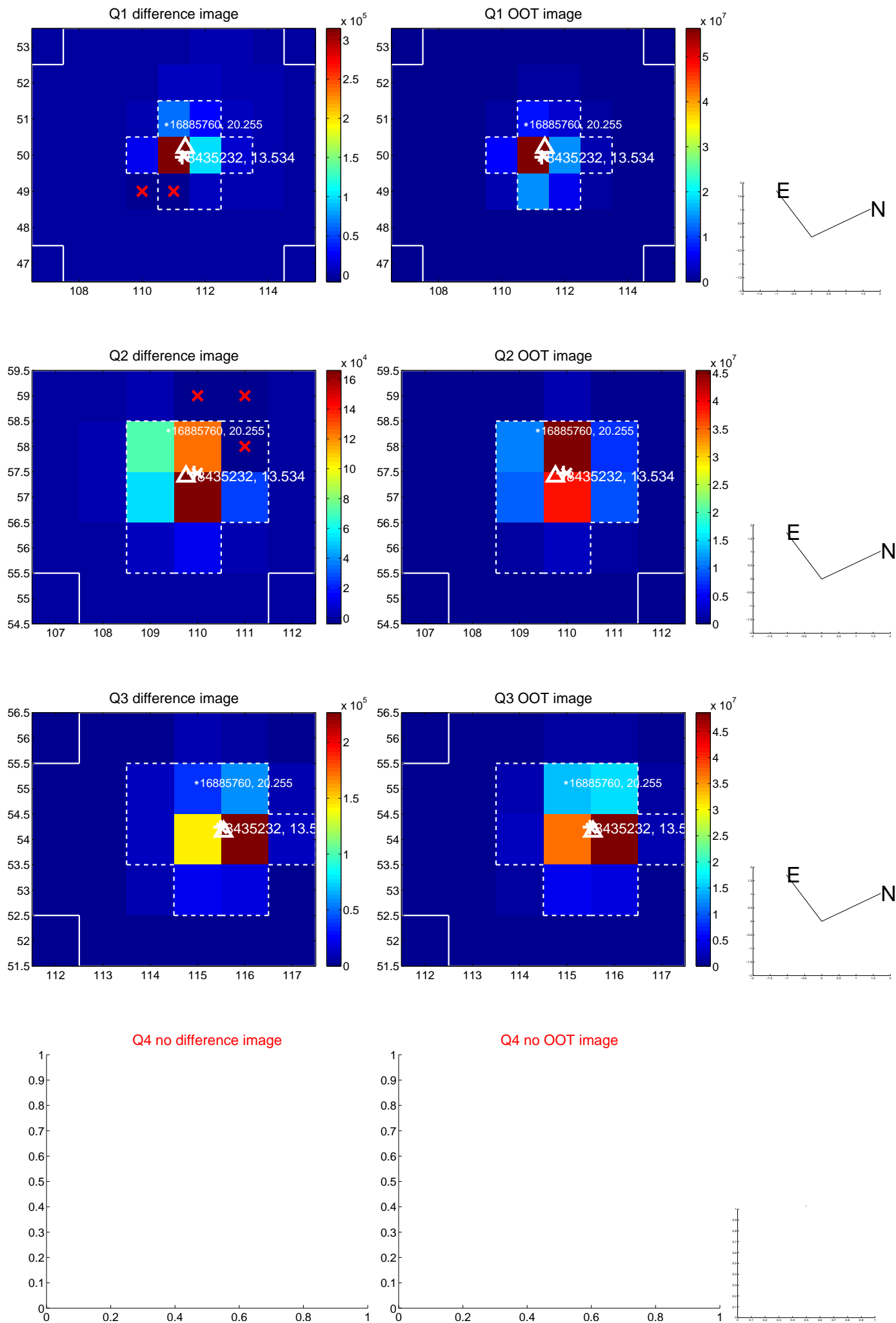
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.091 \pm 0.099$	0.92	$0.068 \pm 0.112$	$-0.061 \pm 0.079$
PRF-fit source offset from KIC position	$0.300 \pm 0.109$	2.75	$0.177 \pm 0.116$	$-0.242 \pm 0.105$
photometric centroid source offset	$0.17 \pm 0.02$	7.24	$0.04 \pm 0.02$	$-0.17 \pm 0.02$

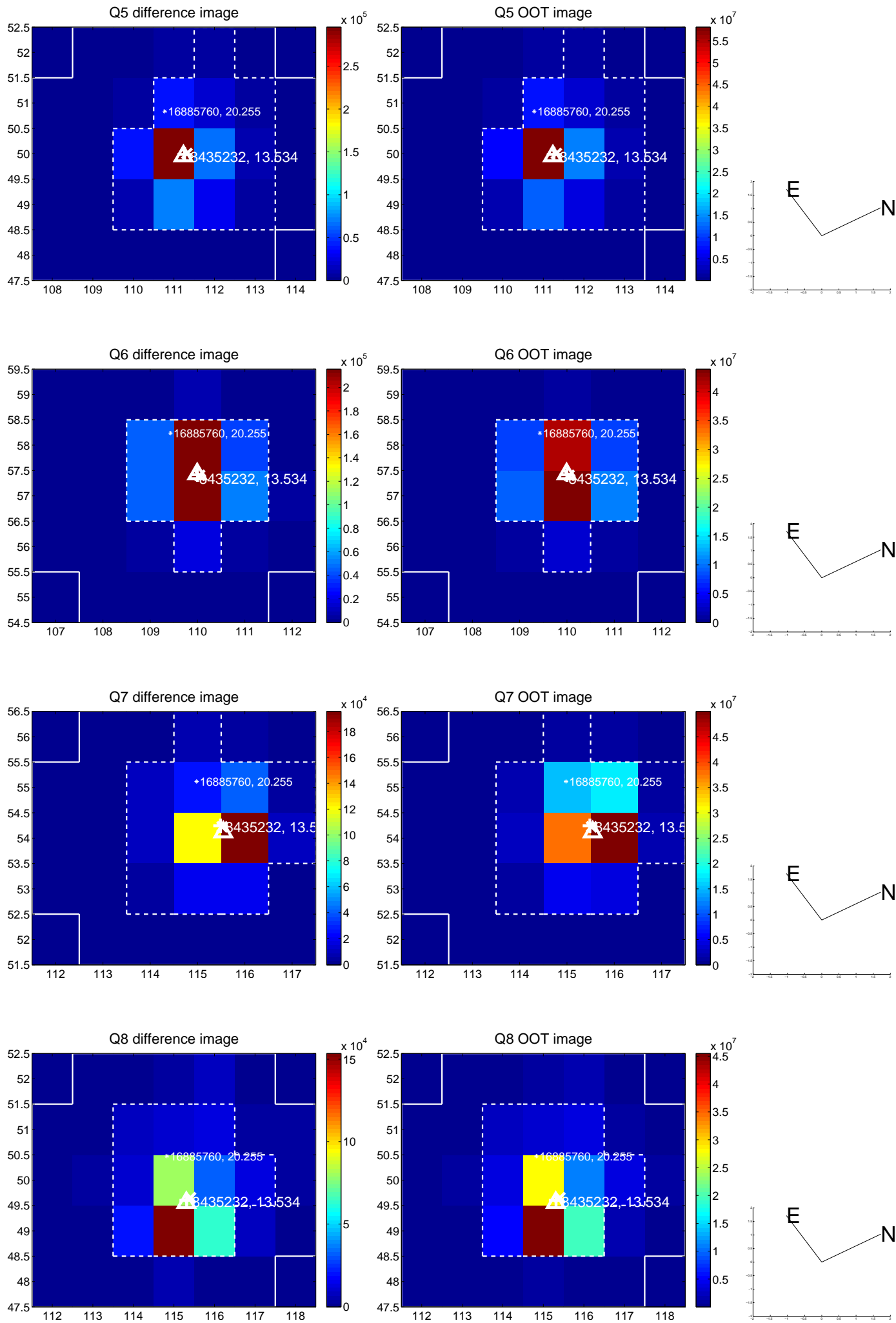


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

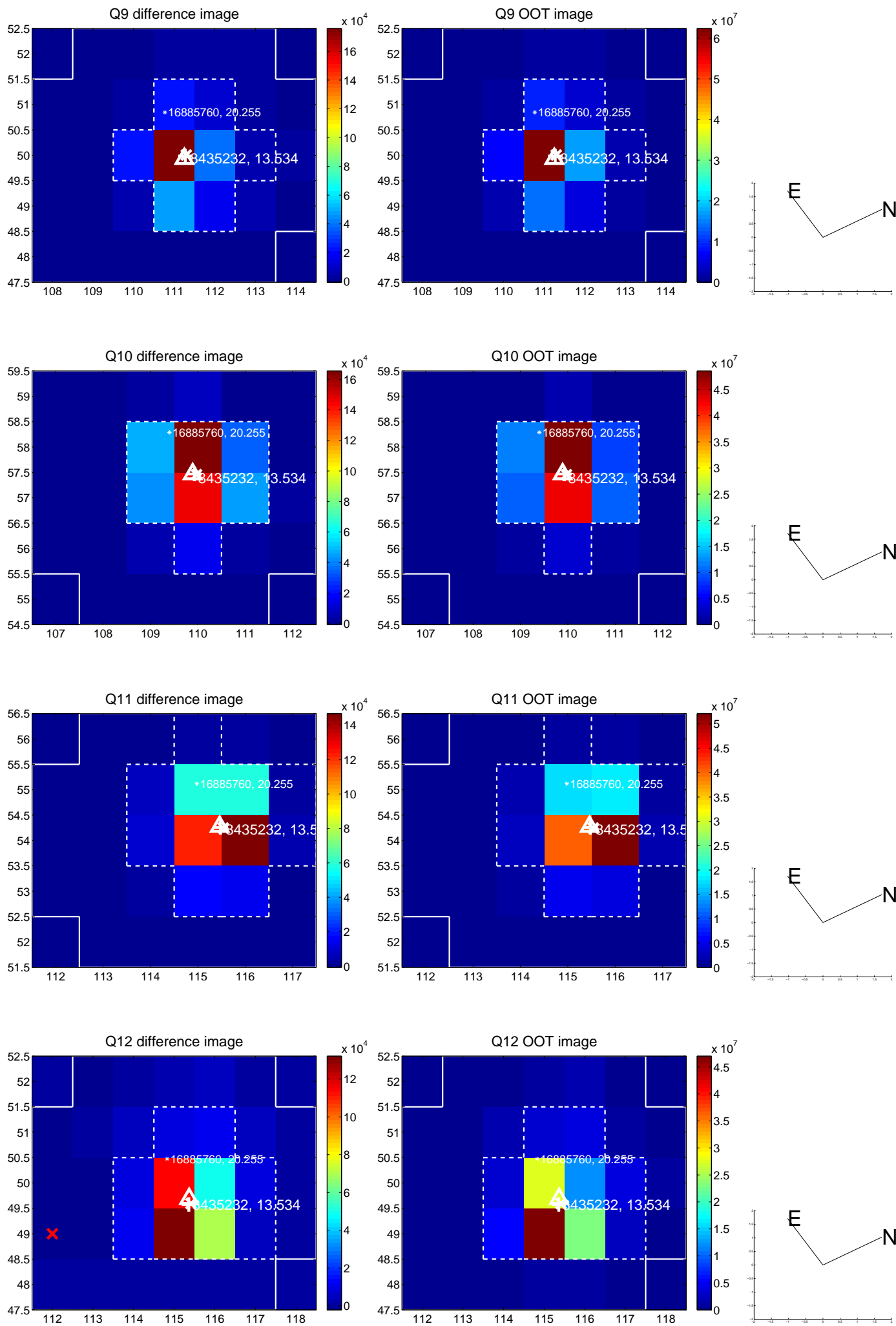


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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.

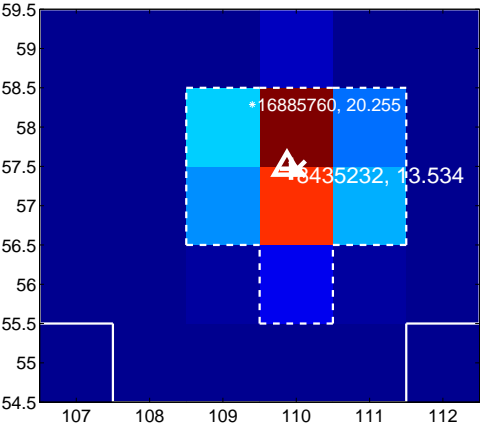
Q13 no difference image



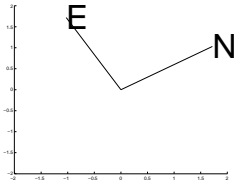
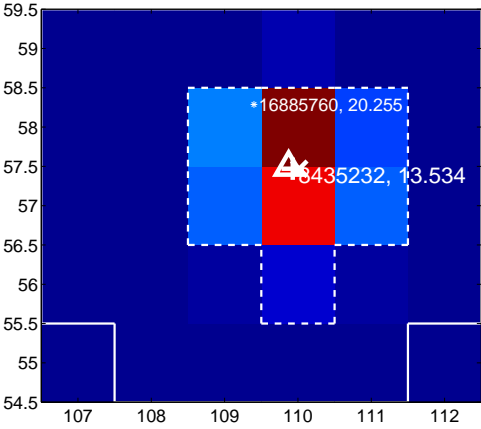
Q13 no OOT image



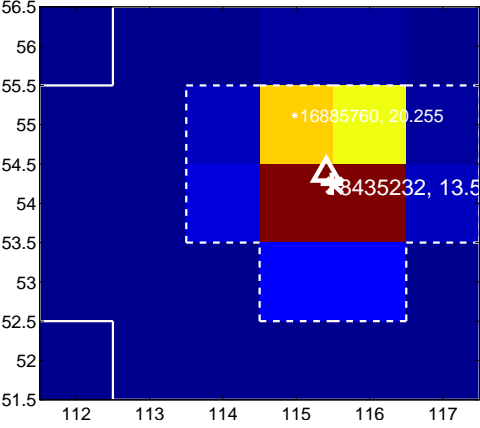
Q14 difference image



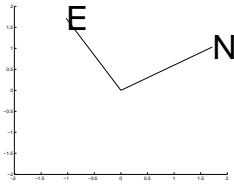
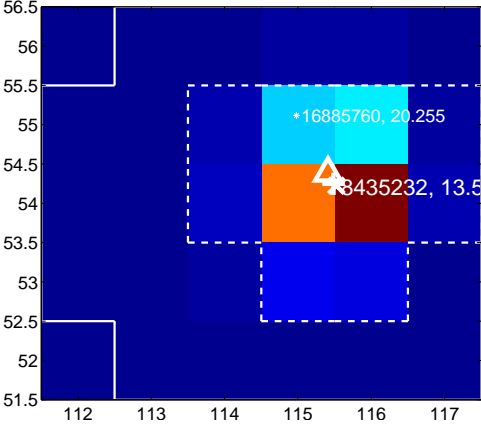
Q14 OOT image



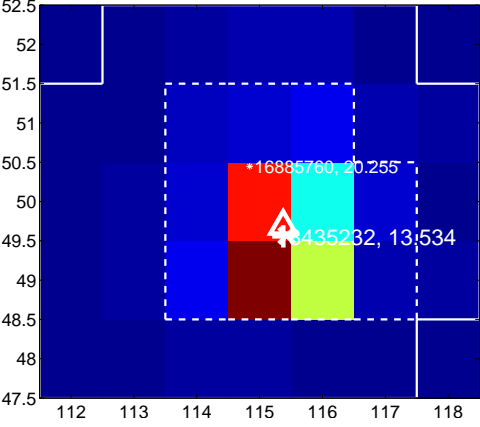
Q15 difference image



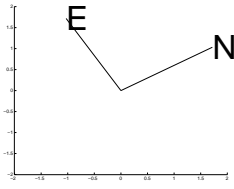
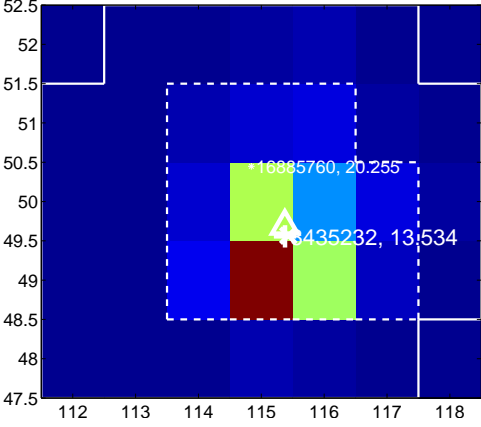
Q15 OOT image



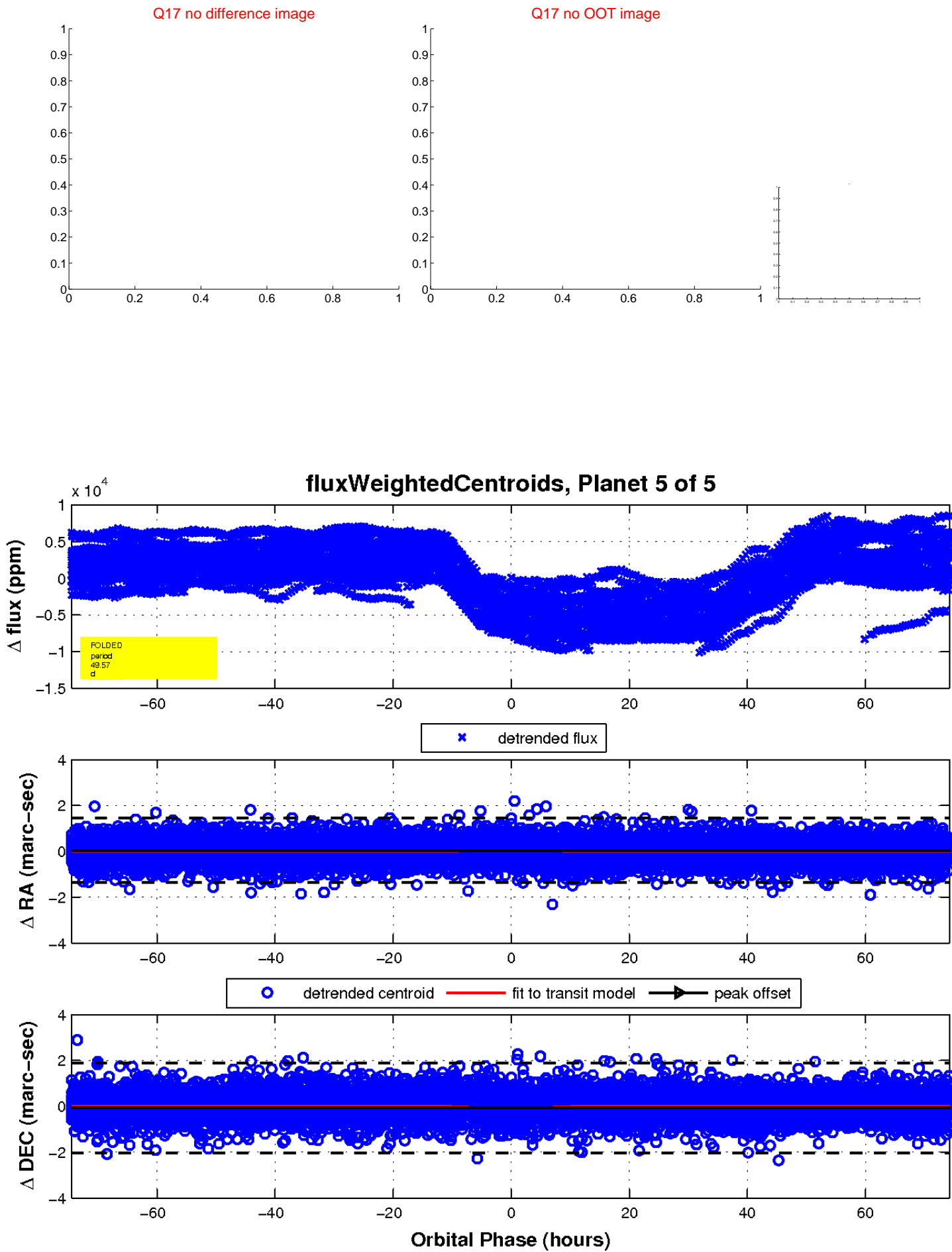
Q16 difference image



Q16 OOT image



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



Declination