

# KIC 004174717

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004174717-02	OBS	No	414.625844	272.731729	1759.4	5.856	12.8	6.3	0.59	4187	2.50	0.12
004174717-03	OBS	No	189.875451	143.743885	1167.6	10.500	11.5	-1.0	0.59	4187	1.96	0.33
004174717-04	OBS	No	260.011219	230.260111	2054.7	3.804	9.5	9.4	0.59	4187	2.85	0.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004174717-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004174717-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004174717-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—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.

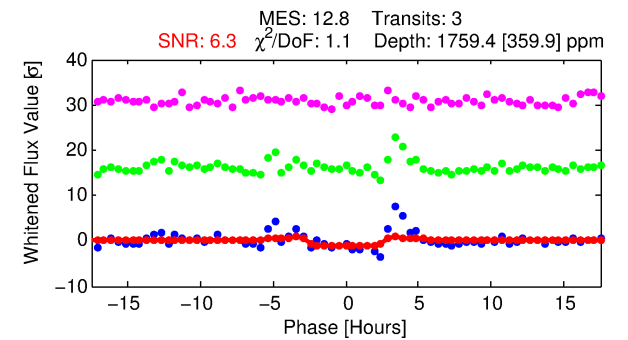
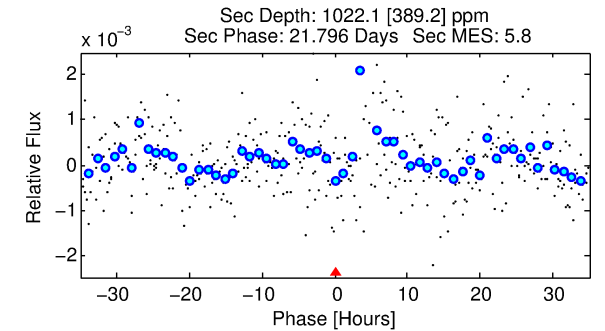
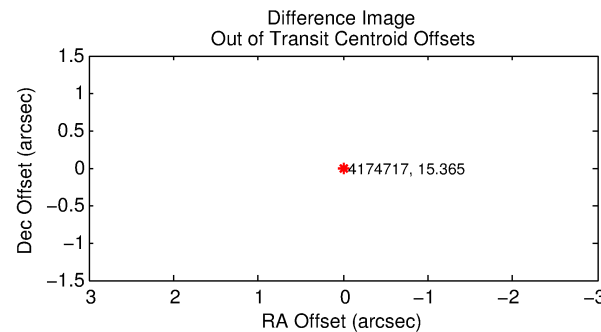
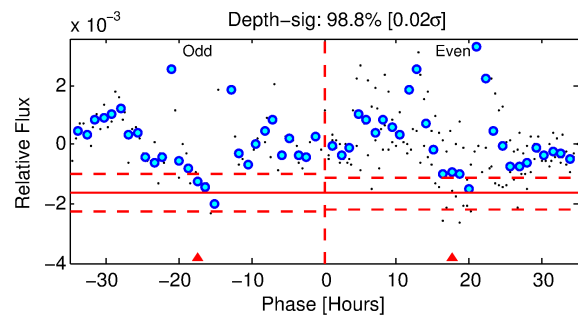
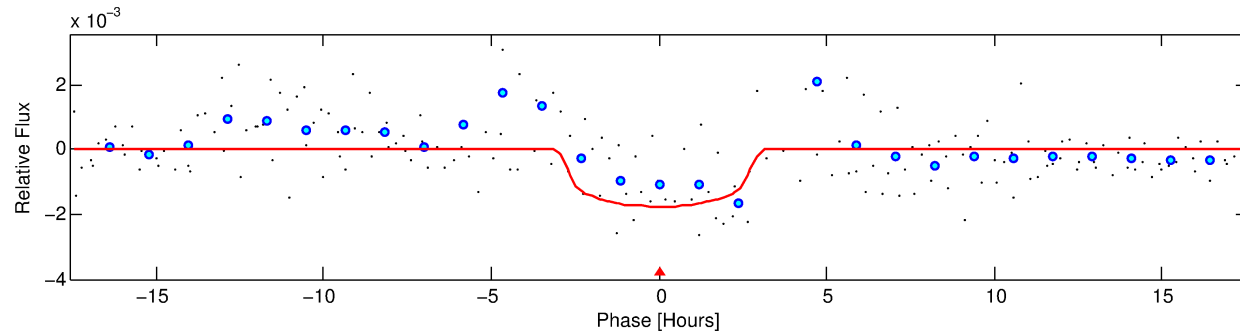
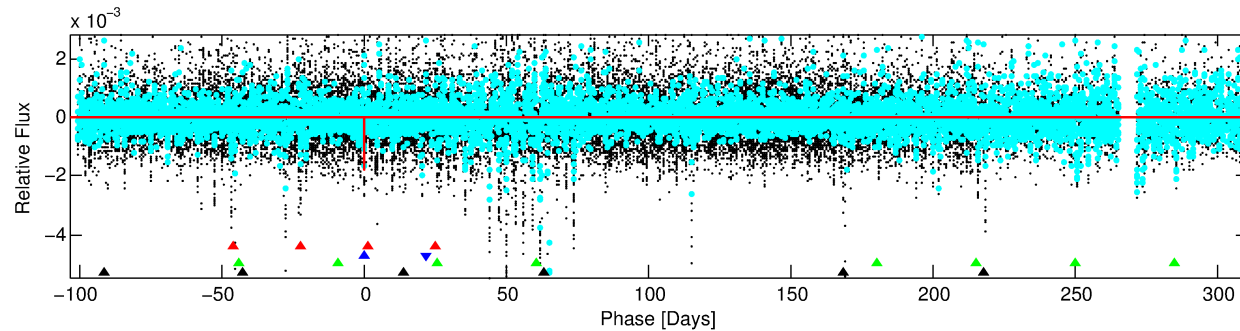
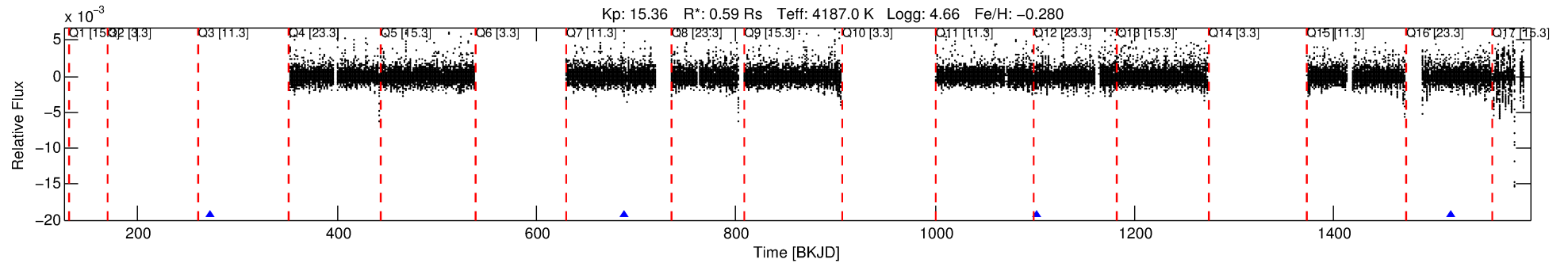
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004174717-02

No Significant Match Found

# DV One-Page Summary

KIC: 4174717 Candidate: 2 of 4 Period: 414.626 d



## DV Fit Results:

Period = 414.62584 [0.00709] d  
Epoch = 272.7317 [0.0158] BKJD  
Rp/R\* = 0.0386 [0.0539]  
a/R\* = 502.34 [2448.32]  
b = 0.47 [8.36]  
Seff = 0.12 [0.02]  
Teq = 149 [7] K  
Rp = 2.50 [3.50] Re  
a = 0.9072 [0.0848] AU  
Ag = 74253.67 [209459.95] [0.35 $\sigma$ ]  
Teffp = 3808 [2687] K [1.36 $\sigma$ ]

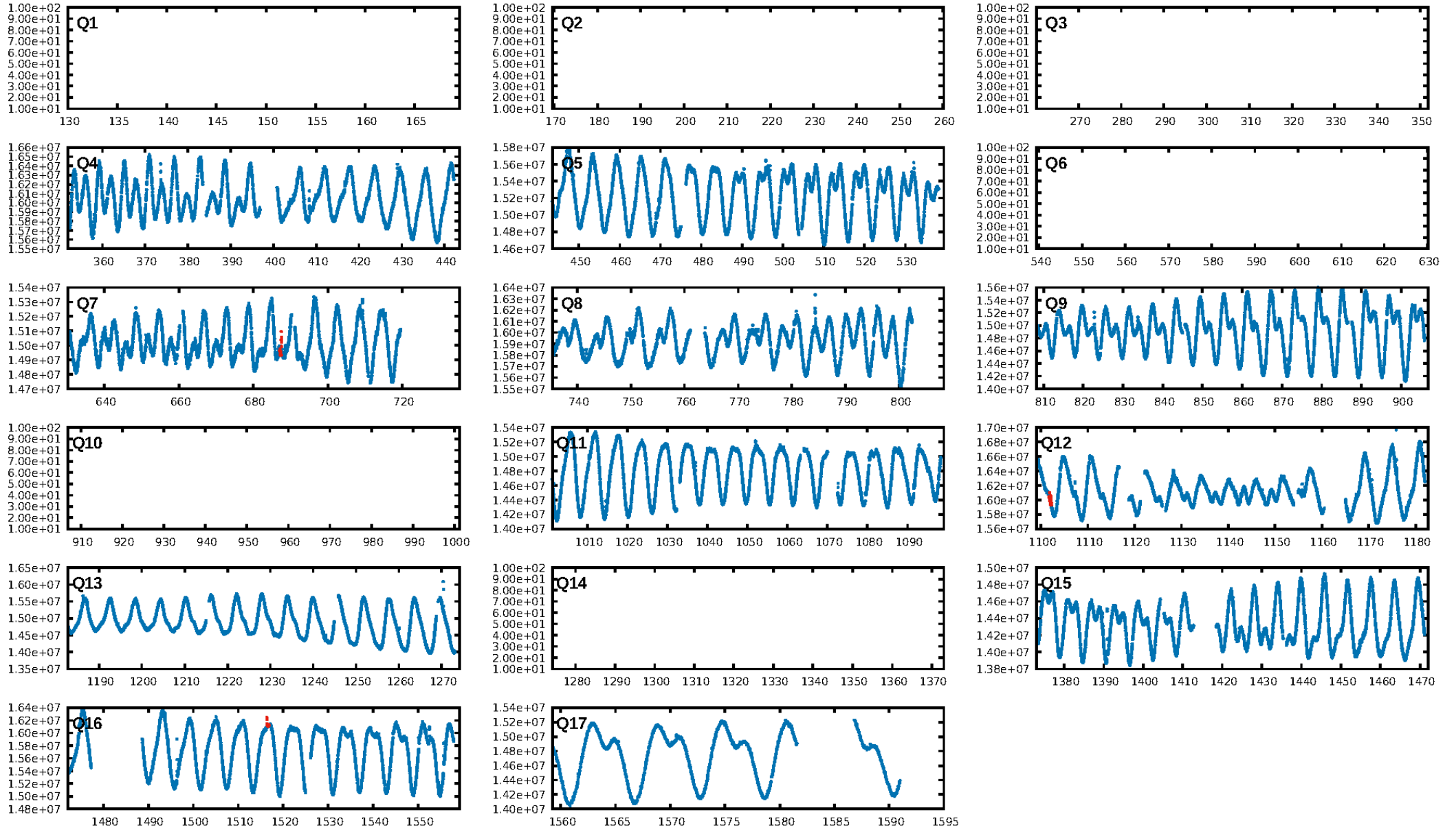
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.30 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.6%  
ModelChiSquareGof-sig: 77.2%  
**Bootstrap-pfa: 1.90e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.836  
Centroid-sig: 0.6%  
Centroid-so: 1.839 arcsec [0.88 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: 1.921 arcsec [0.43 $\sigma$ ]  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

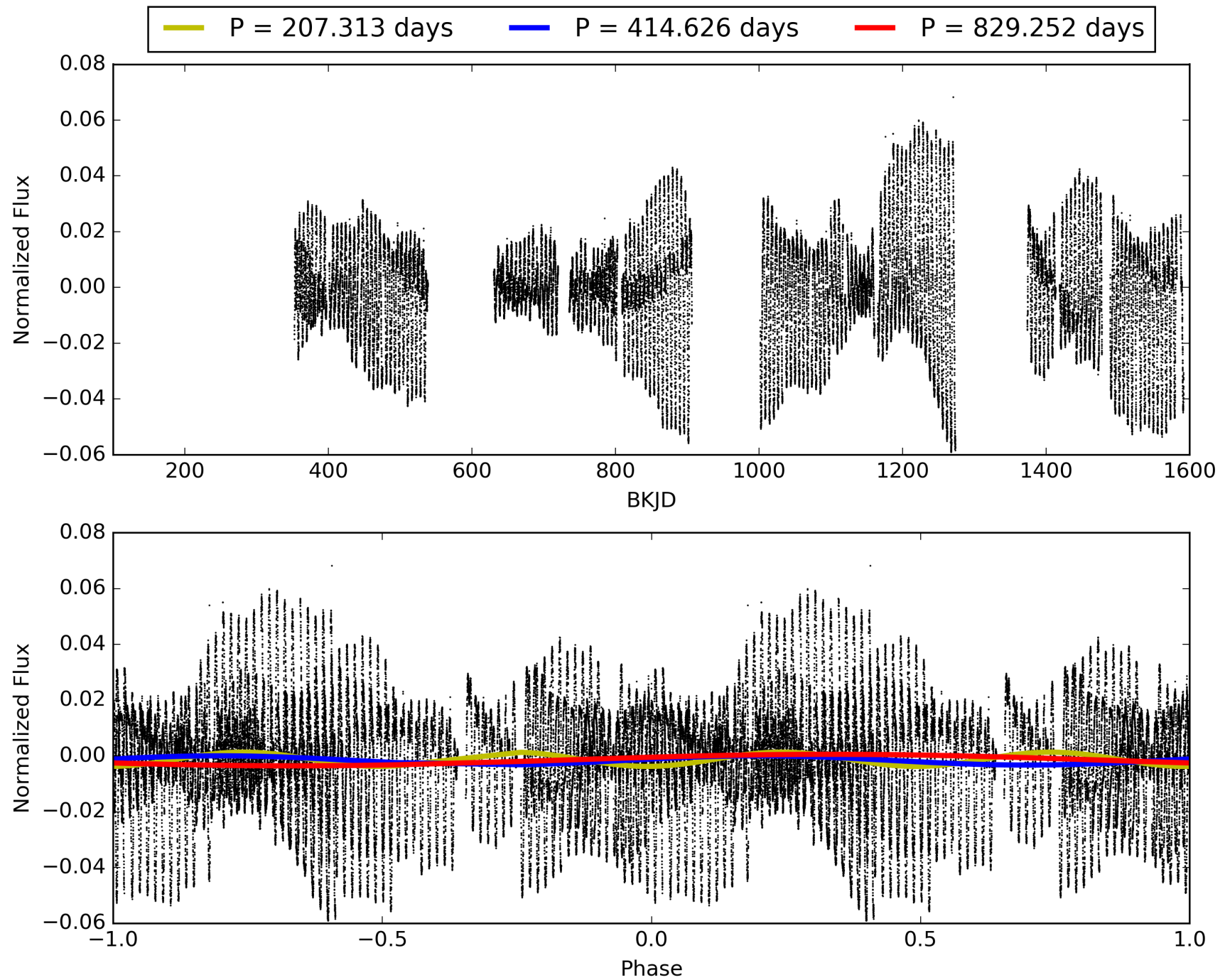
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004174717-02, PDC Light Curves

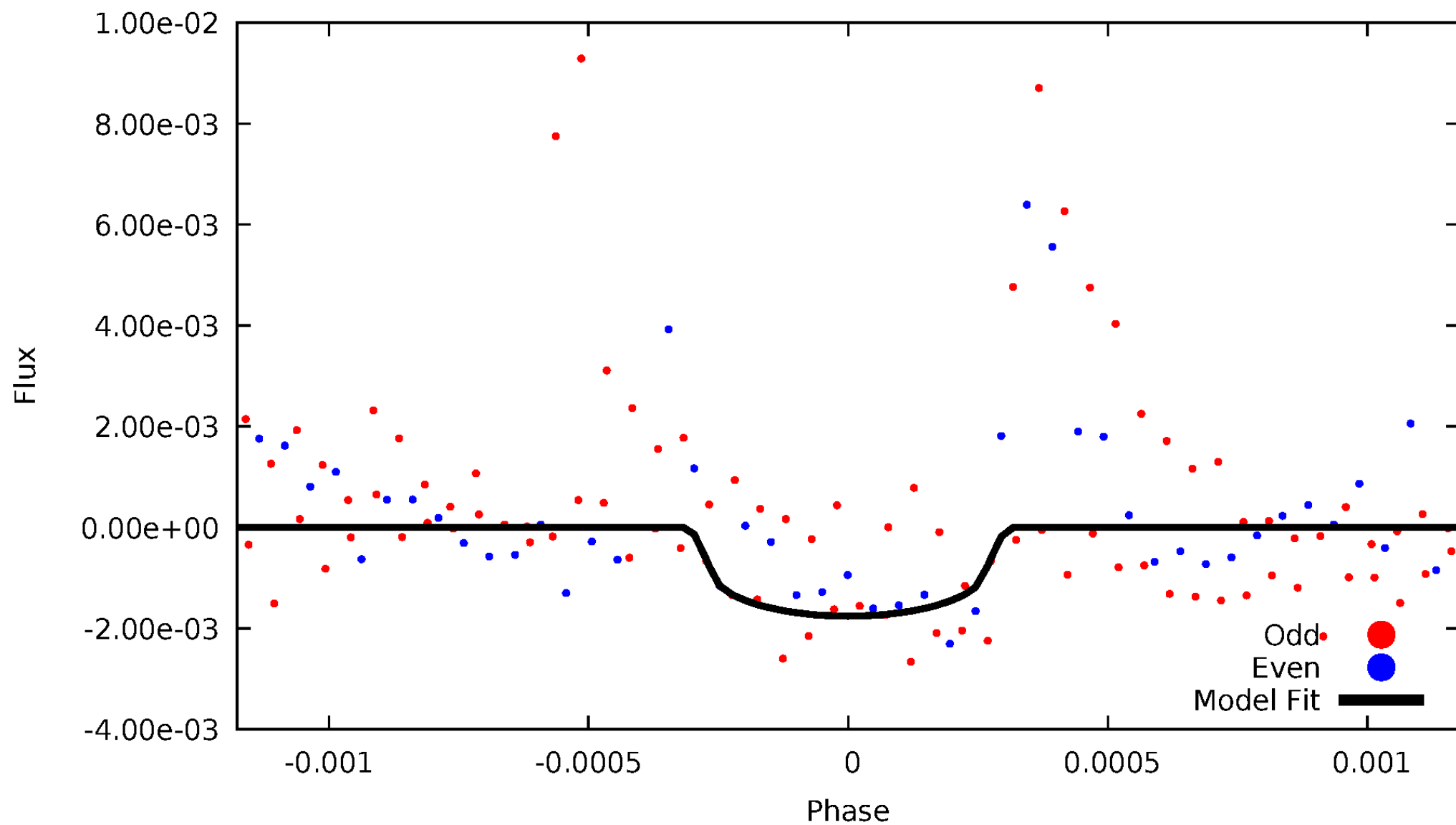


TCE 004174717-02



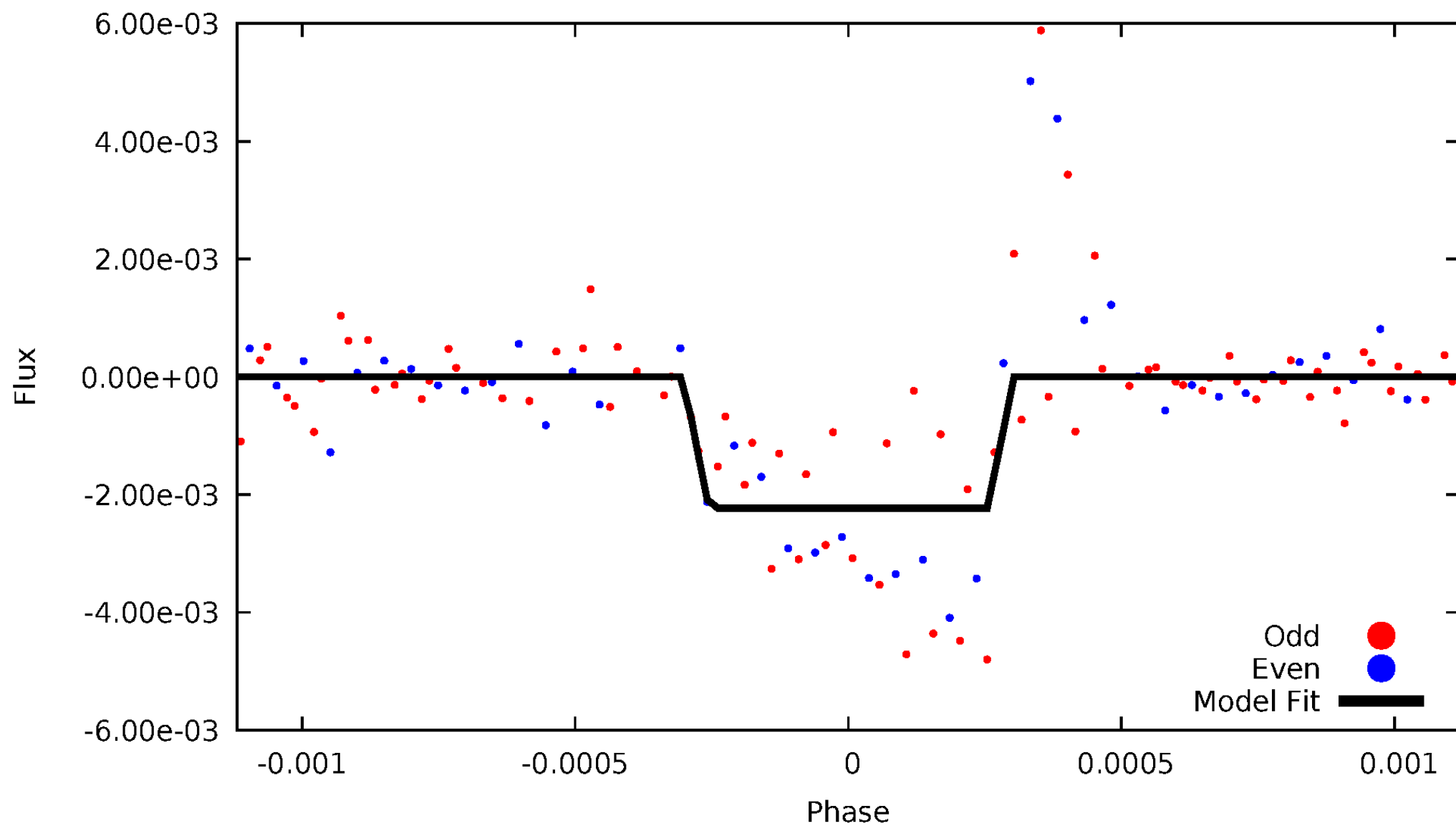
# DV Odd/Even

TCE 004174717-02



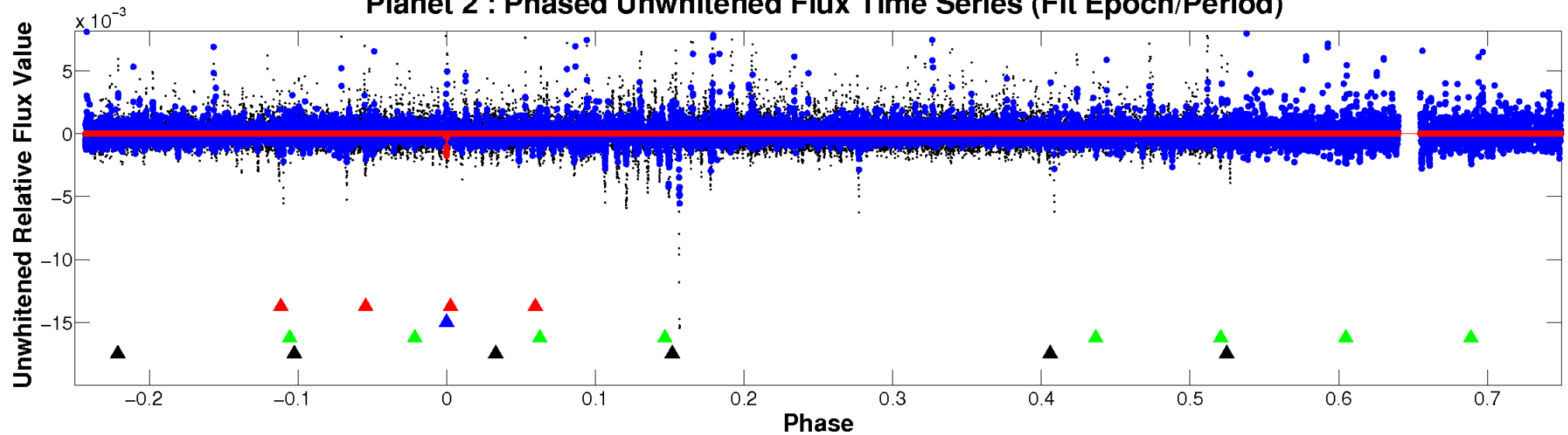
# ALT Odd/Even

TCE 004174717-02

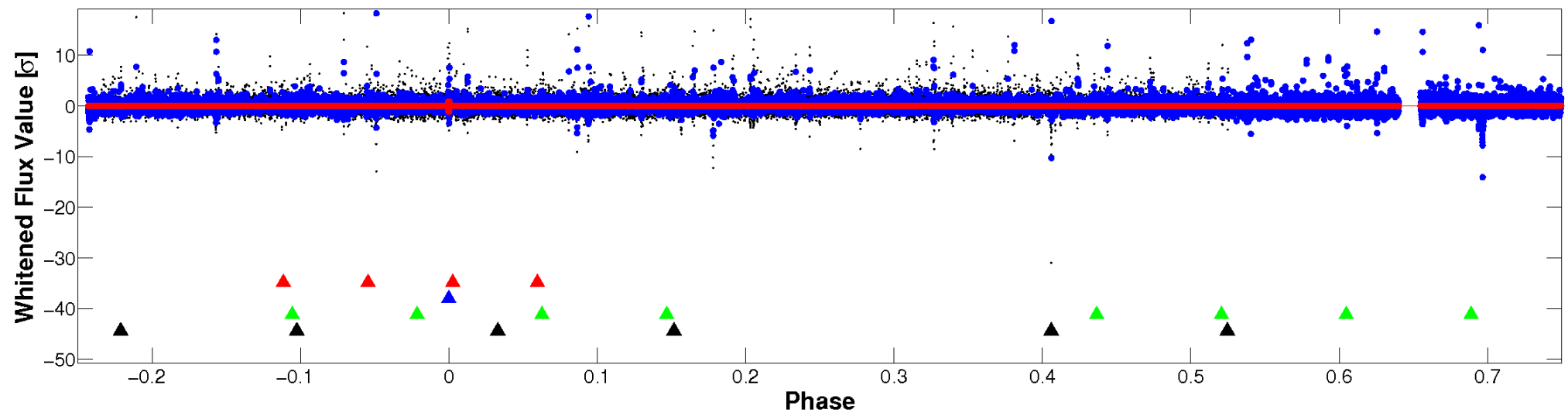


# Non-Whitened Vs. Whitened Light Curve

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

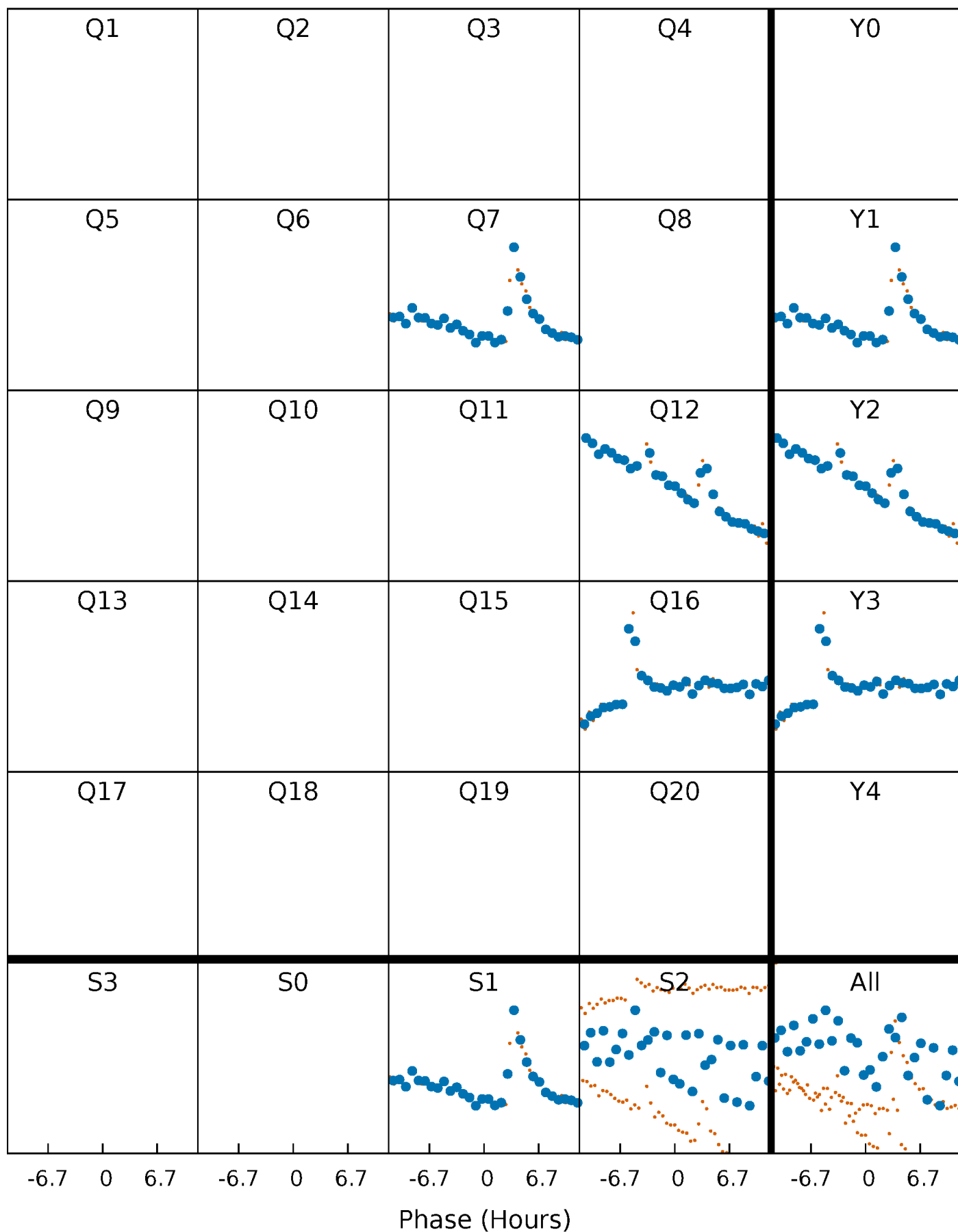


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

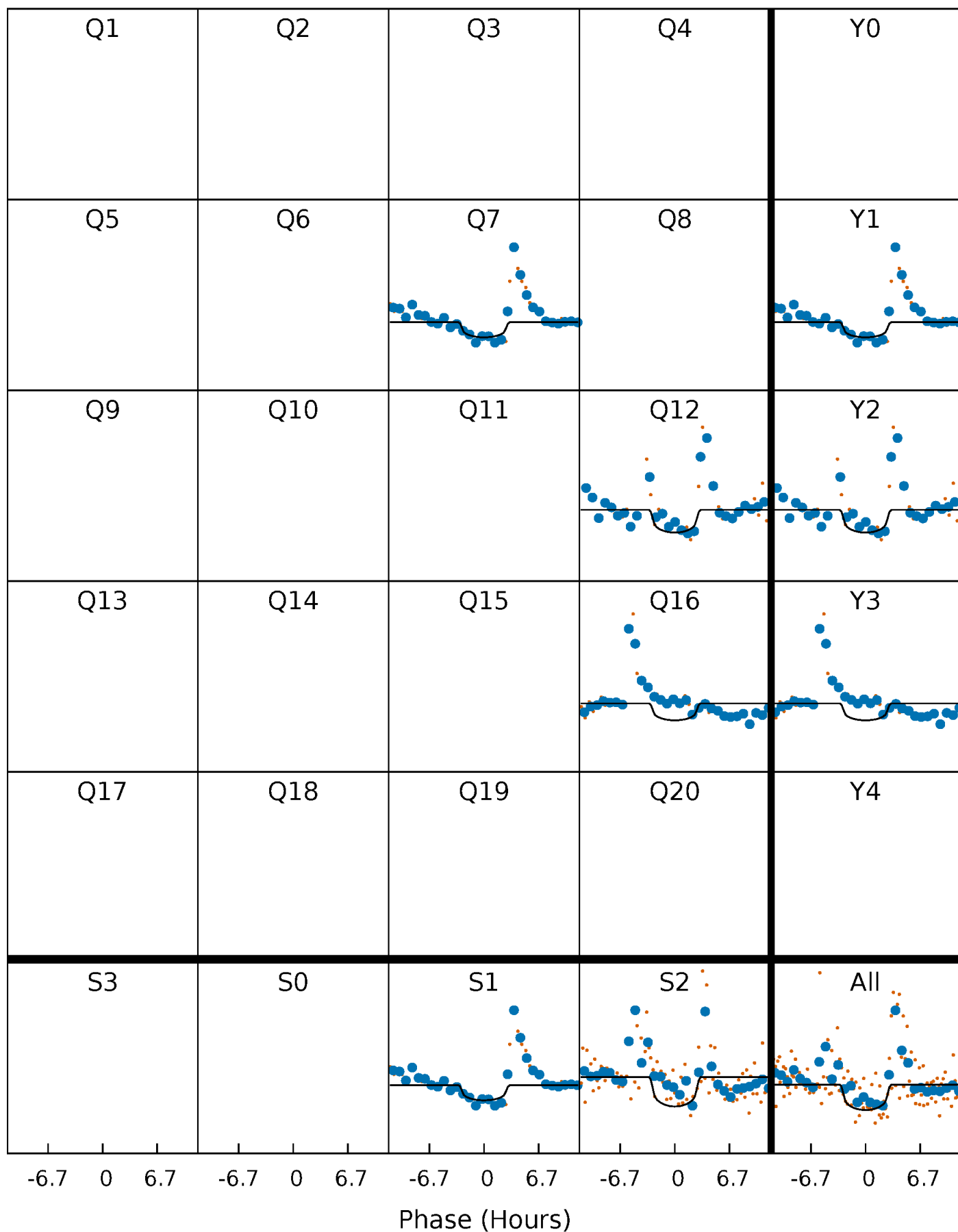
TCE 004174717-02     $P=414.625844$  Days     $T_0=272.731729$  (BKJD)





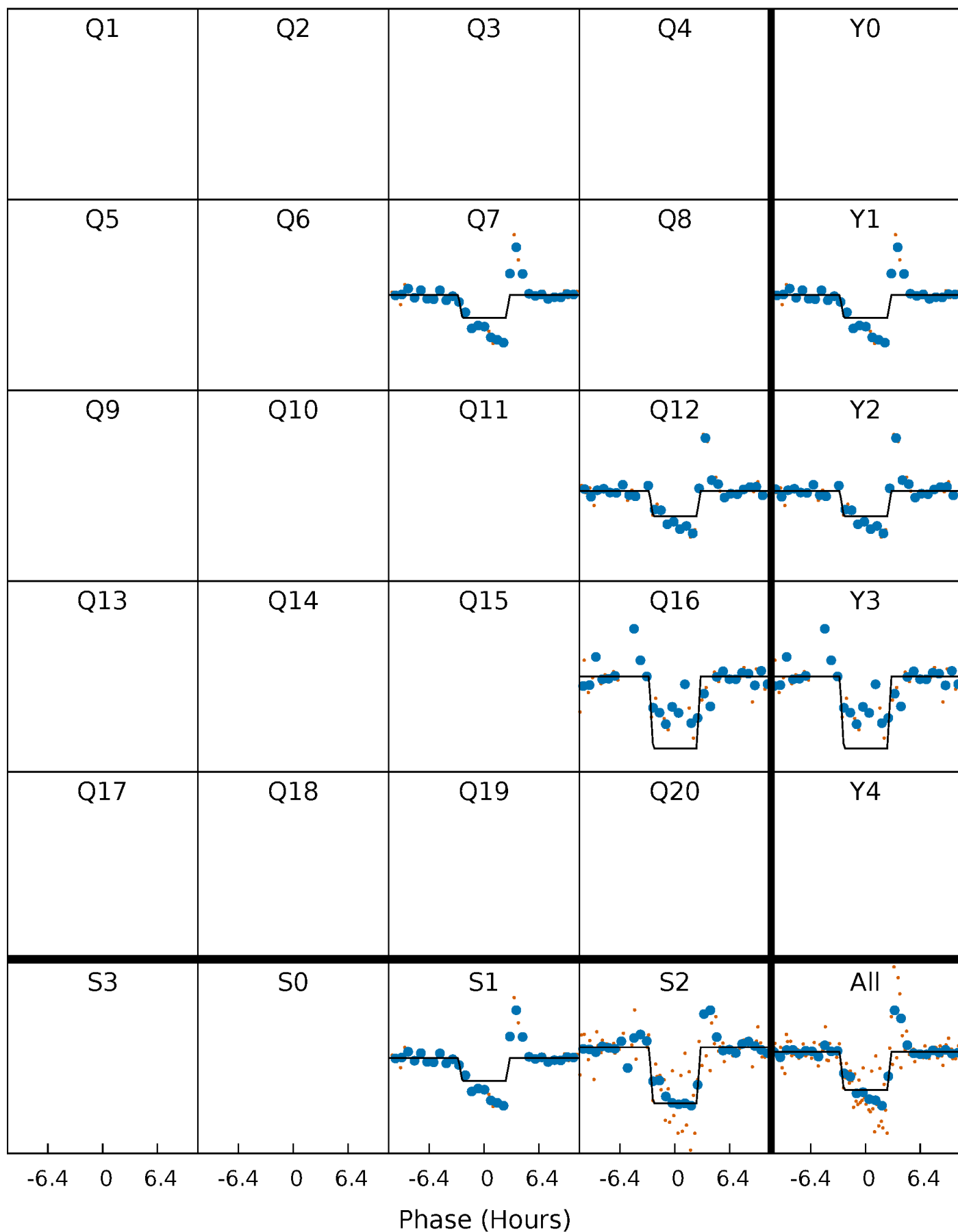
# DV Quarter-Phased Transit Curves

TCE 004174717-02 P=414.625844 Days  $T_0=272.731729$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

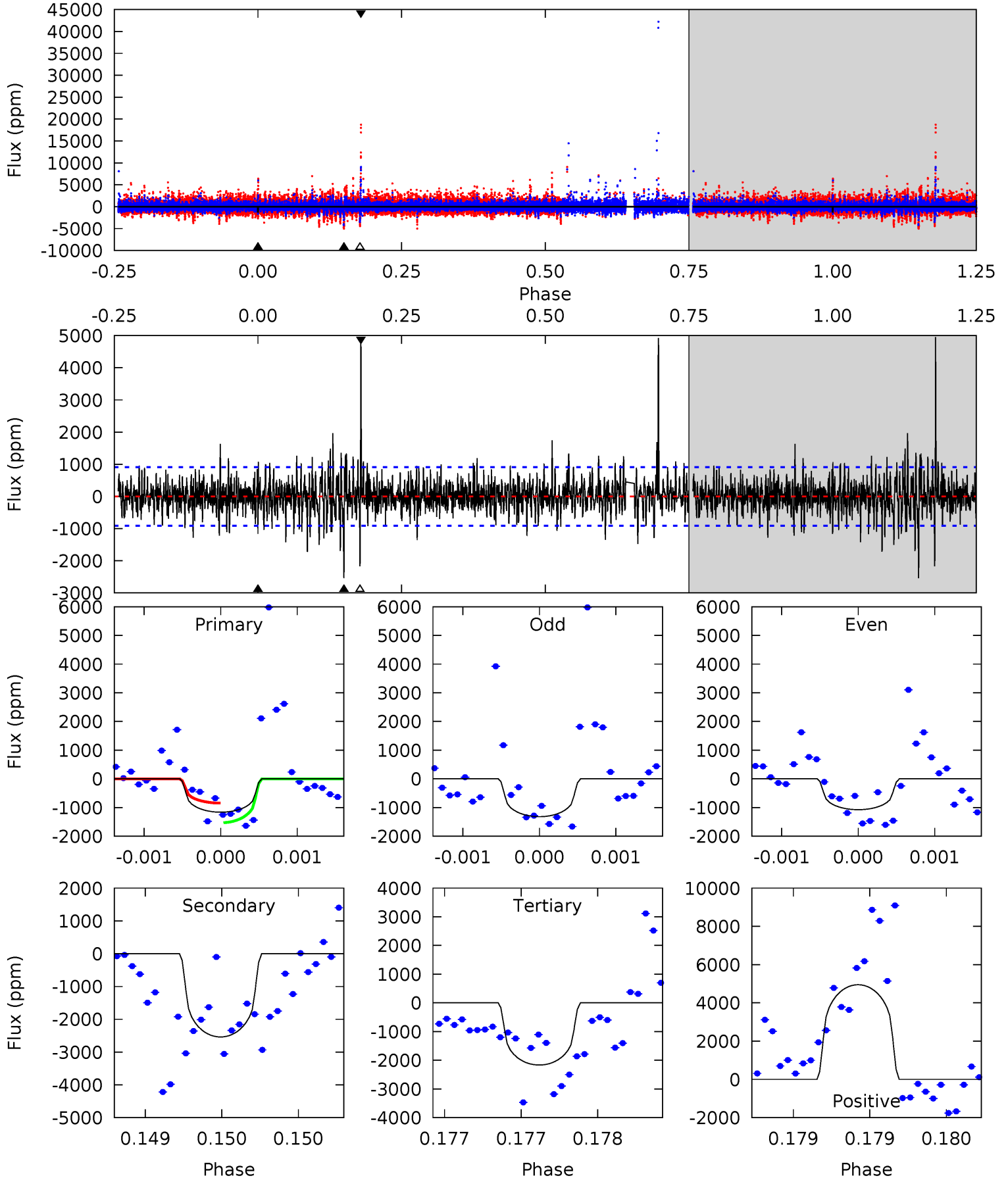
TCE 004174717-02 P=414.624177 Days  $T_0=272.739363$  (BKJD)



# DV Model-Shift Uniqueness Test

004174717-02, P = 414.625844 Days, E = 272.731729 Days

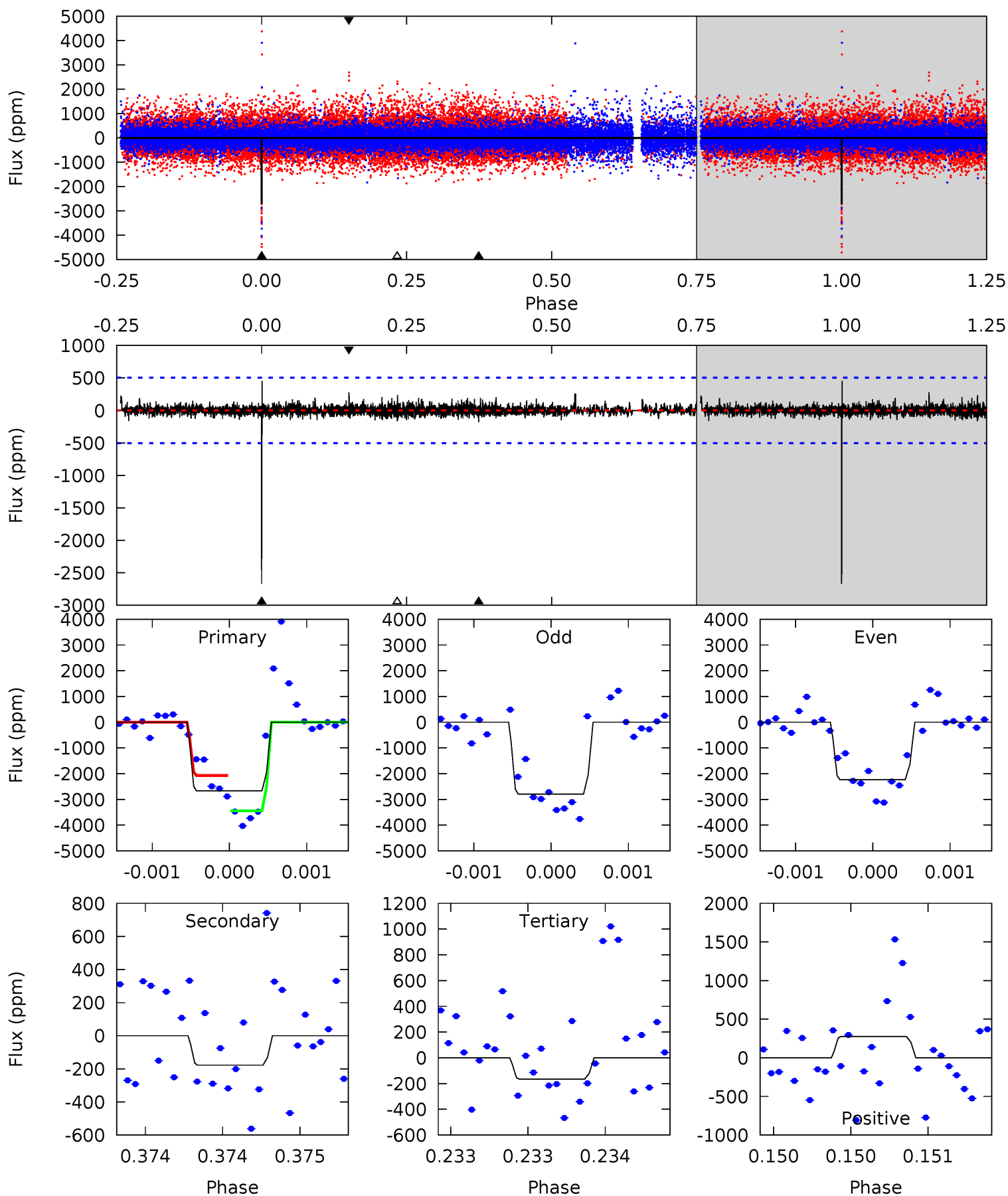
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.06	15.4	13.2	30.1	5.54	3.44	2.63	-6.10	-23.0	2.27	-14.6	0.68	0.84	0.66	2.07



# Alt Model-Shift Uniqueness Test

004174717-02, P = 414.624177 Days, E = 272.739363 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
29.4	1.96	1.82	3.04	5.55	3.45	0.50	27.5	26.3	0.14	-1.08	3.15	0.88	0.15	7.59



### Stellar Parameters For KIC 004174717

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4187^{+130}_{-159}$	$4.656^{+0.063}_{-0.023}$	$-0.280^{+0.300}_{-0.300}$	$0.592^{+0.044}_{-0.071}$	$0.580^{+0.062}_{-0.056}$	$3.935^{+1.144}_{-0.506}$
	+3%/-4%	+1%/-0%	+107%/-107%	+7%/-12%	+11%/-10%	+29%/-13%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004174717-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2540 \pm 165$	$3.46^{+3.15}_{-2.32}$	$206^{+8}_{-8}$	$4105^{+2422}_{-842}$	$98027^{+750496}_{-71559}$
Alt.	$-178 \pm 91$	$3.92^{+3.18}_{-2.43}$	$207^{+8}_{-8}$	$2607^{+808}_{-393}$	$4891^{+28597}_{-3599}$

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

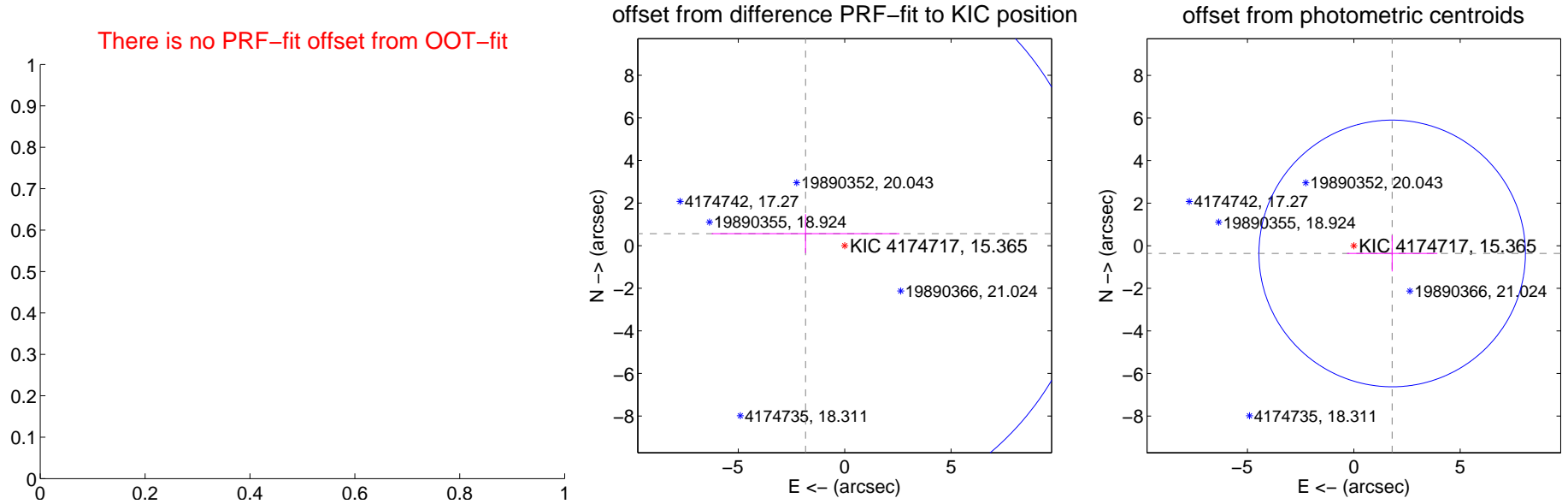
## DV Centroid Data

Supplemental centroid analysis for 004174717-02. Kepler magnitude: 15.37. Transit SNR 6.29

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$1.921 \pm 4.486$	0.43	$1.837 \pm 4.412$	$0.562 \pm 0.915$
photometric centroid source offset	$1.84 \pm 2.09$	0.88	$-1.80 \pm 2.12$	$-0.36 \pm 0.85$

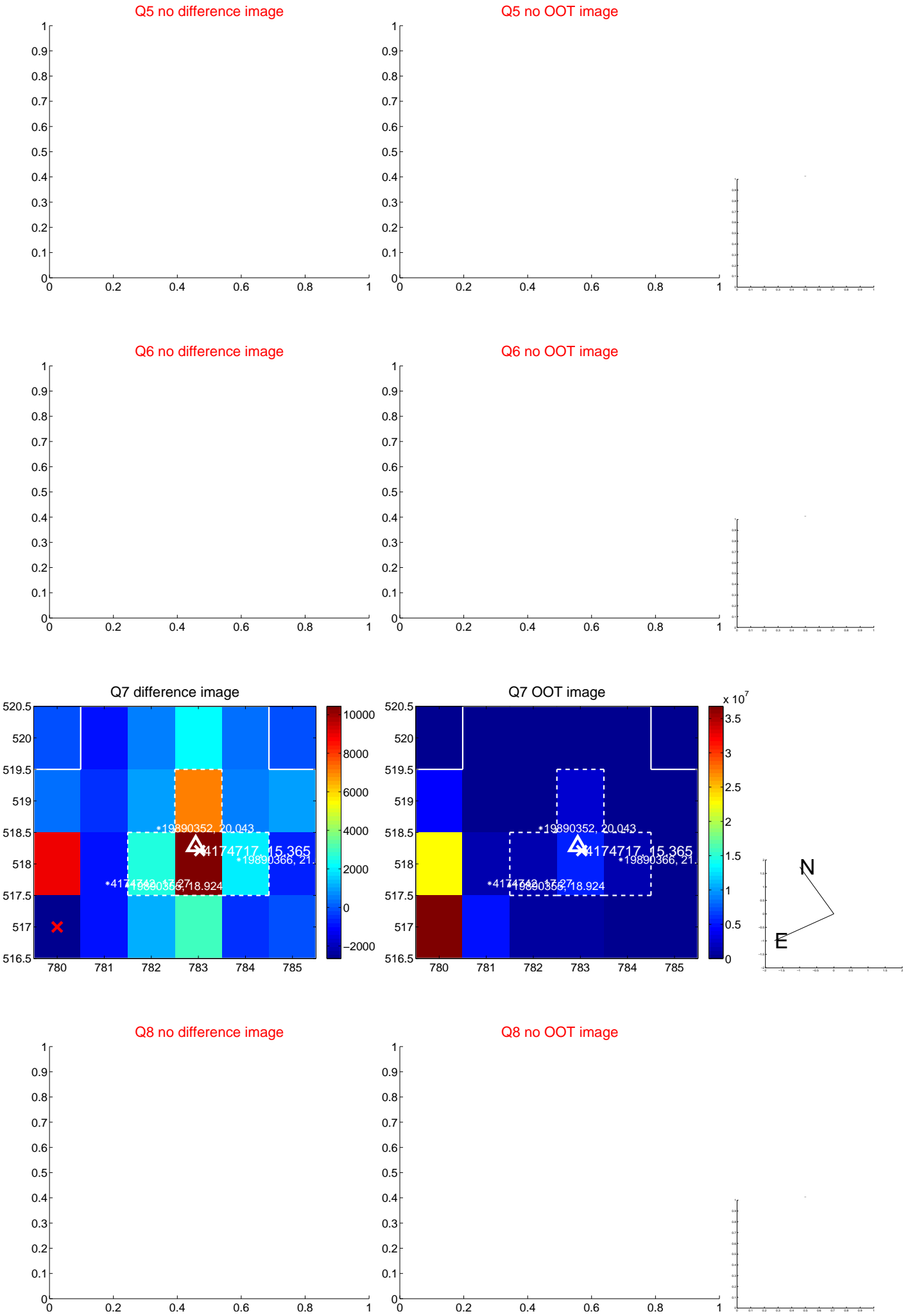


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

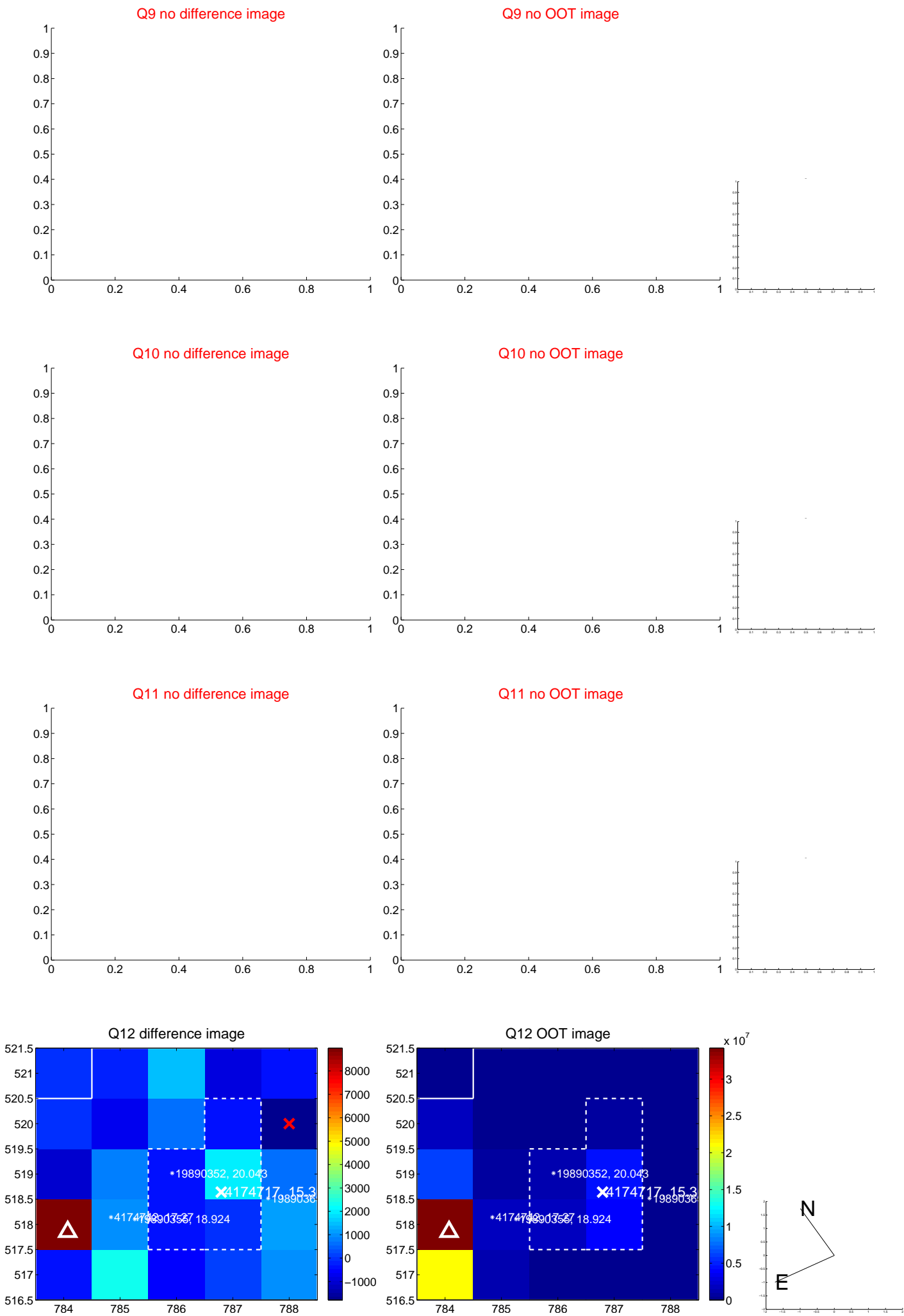


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

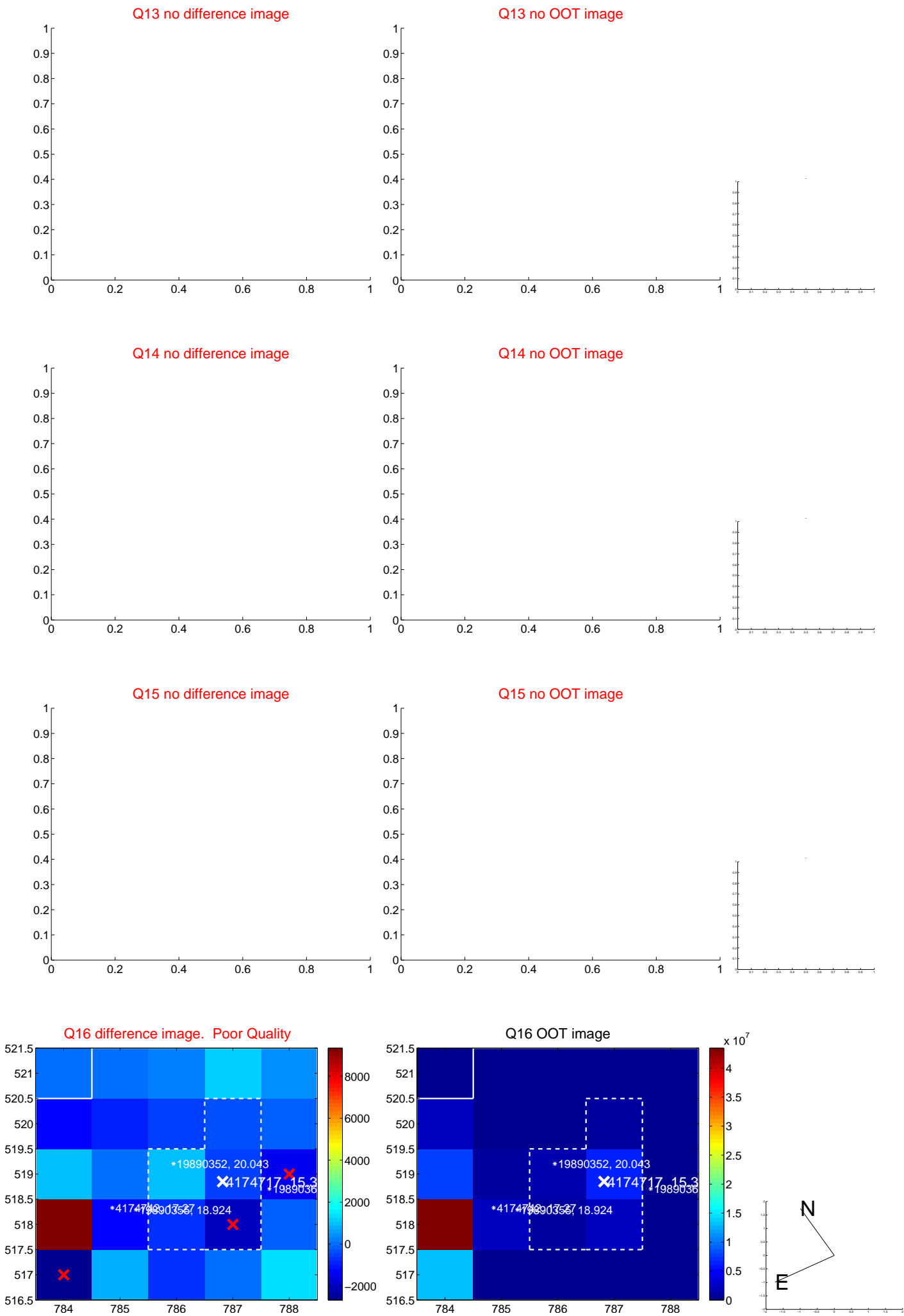




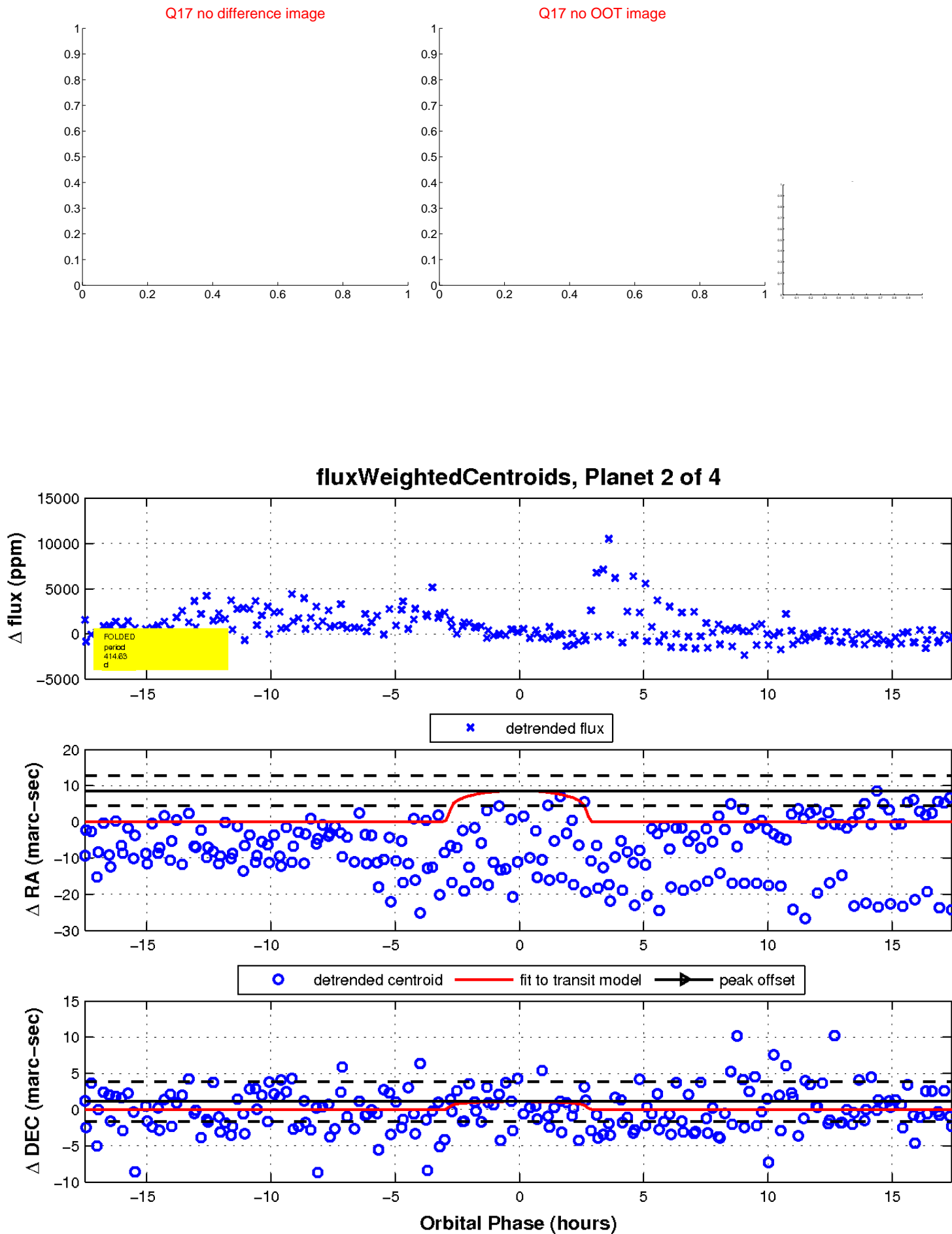
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



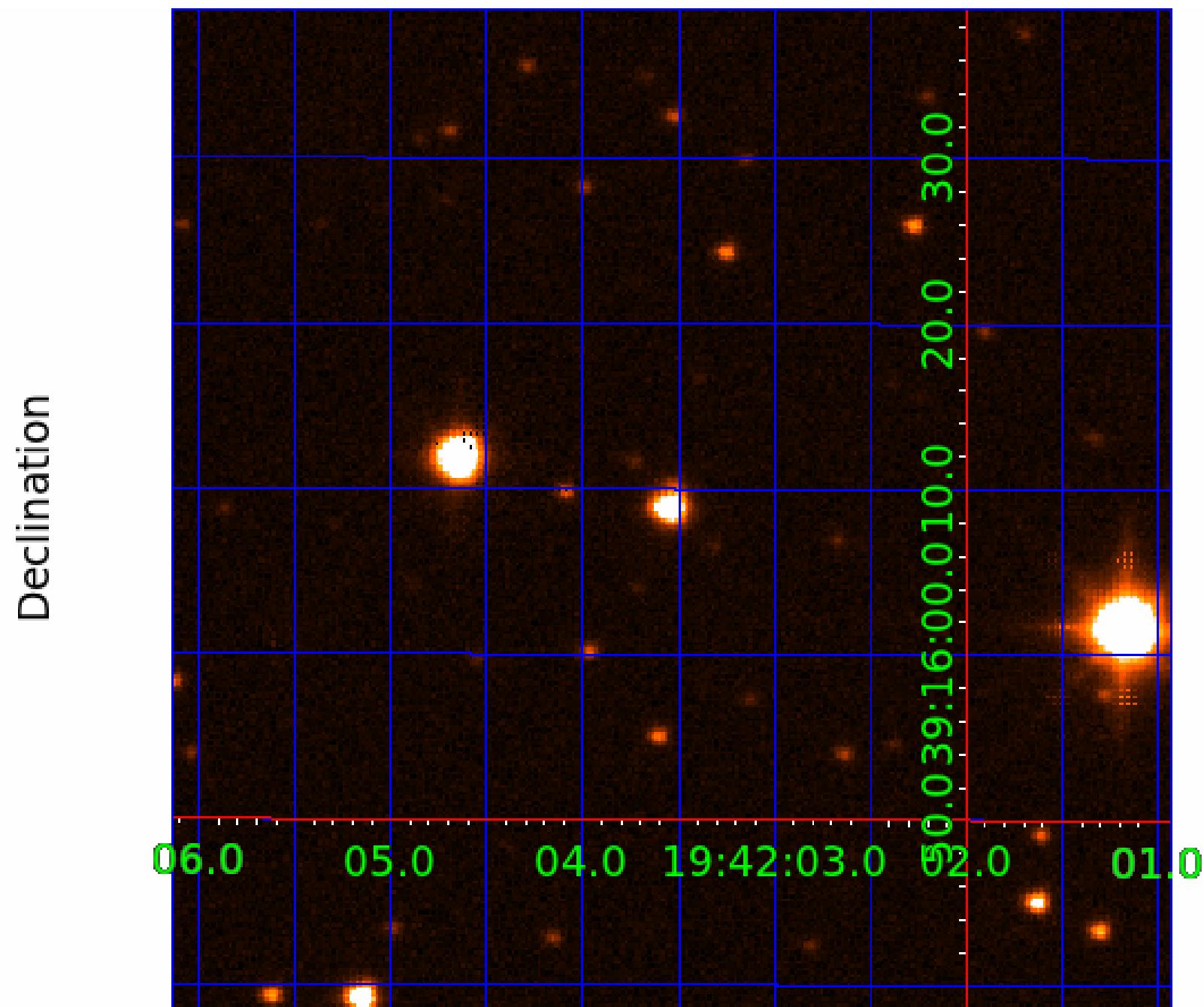
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



# KIC 004174717

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004174717-02	OBS	No	414.625844	272.731729	1759.4	5.856	12.8	6.3	0.59	4187	2.50	0.12
004174717-03	OBS	No	189.875451	143.743885	1167.6	10.500	11.5	-1.0	0.59	4187	1.96	0.33
004174717-04	OBS	No	260.011219	230.260111	2054.7	3.804	9.5	9.4	0.59	4187	2.85	0.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004174717-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004174717-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004174717-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—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.

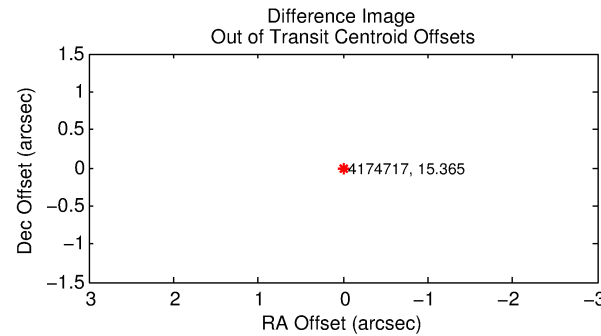
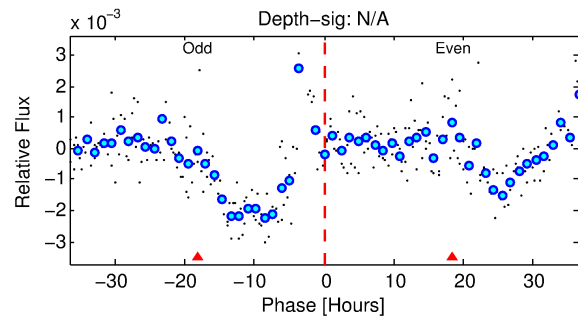
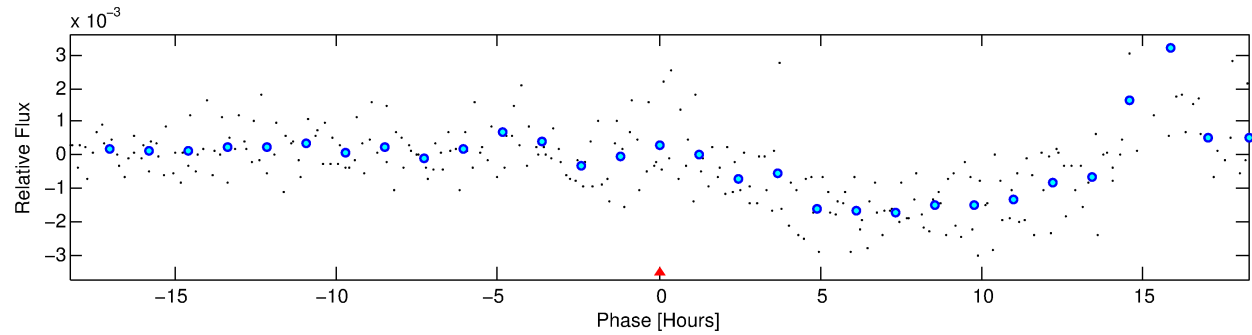
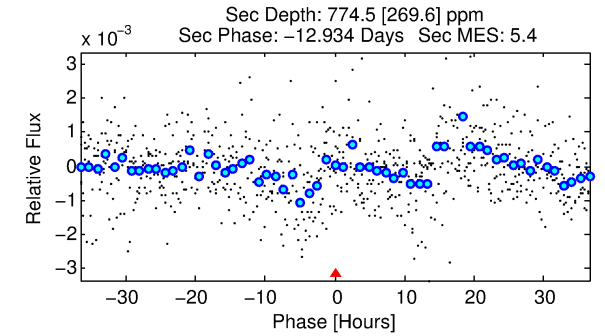
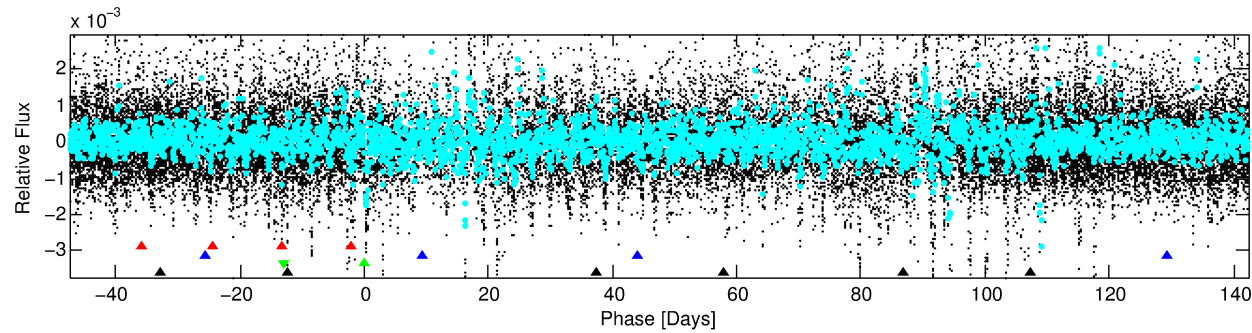
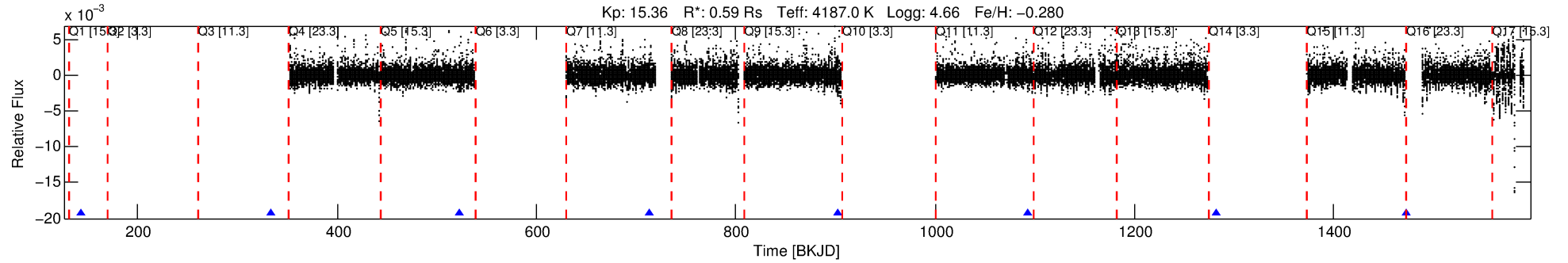
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004174717-03

No Significant Match Found

# DV One-Page Summary

KIC: 4174717 Candidate: 3 of 4 Period: 189.875 d



## TPS TCE Results:

Period = 189.87545 d  
Epoch = 143.7439 BKJD

DV fit results are unavailable

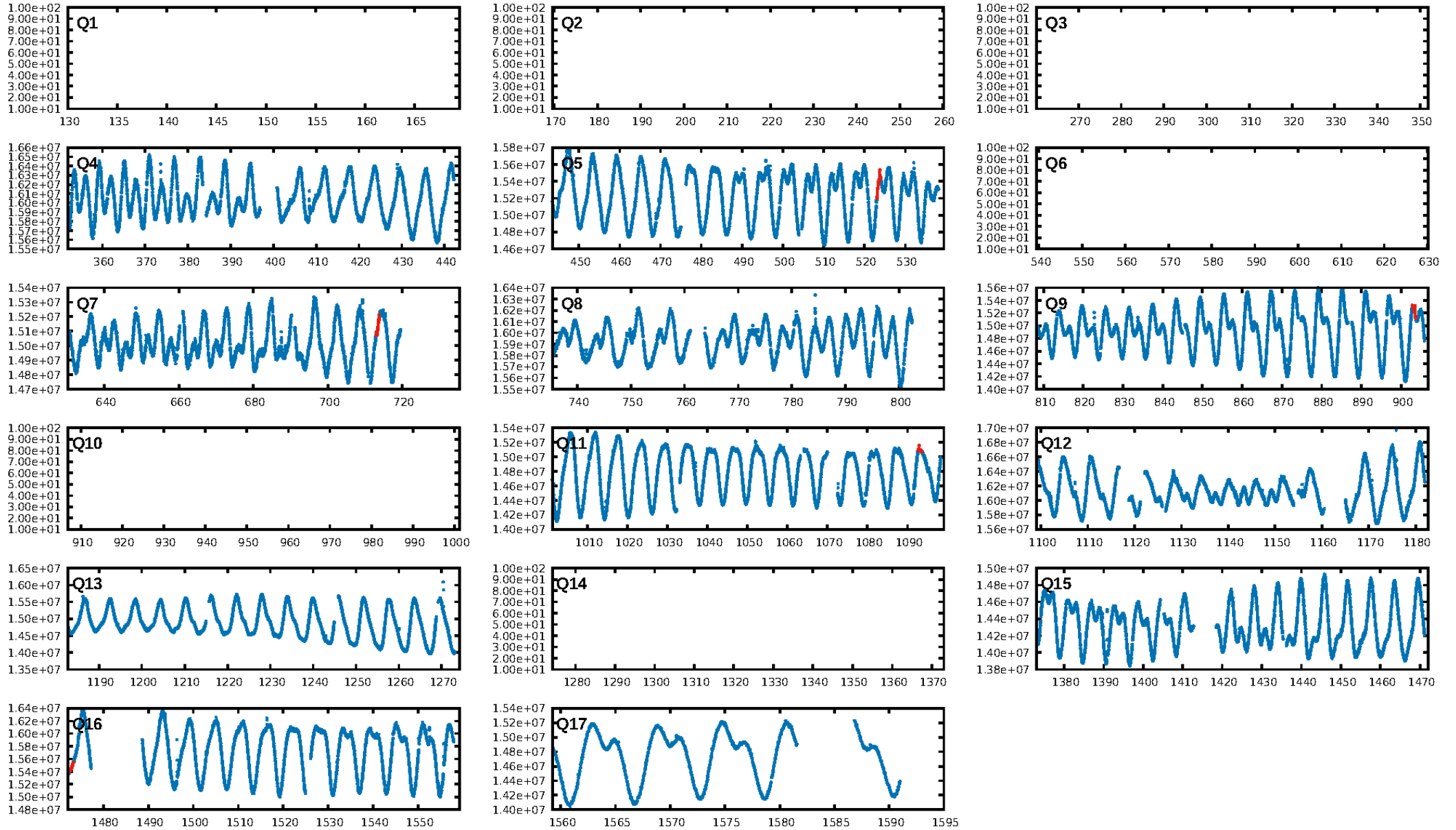
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [150.72 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa:  $3.87e-11$   
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -0.4197  
Centroid-sig: 49.4%  
Centroid-so: 7.097 arcsec [0.57 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: 0.337 arcsec [2.36 $\sigma$ ]  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/1/0/2 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [4/4]

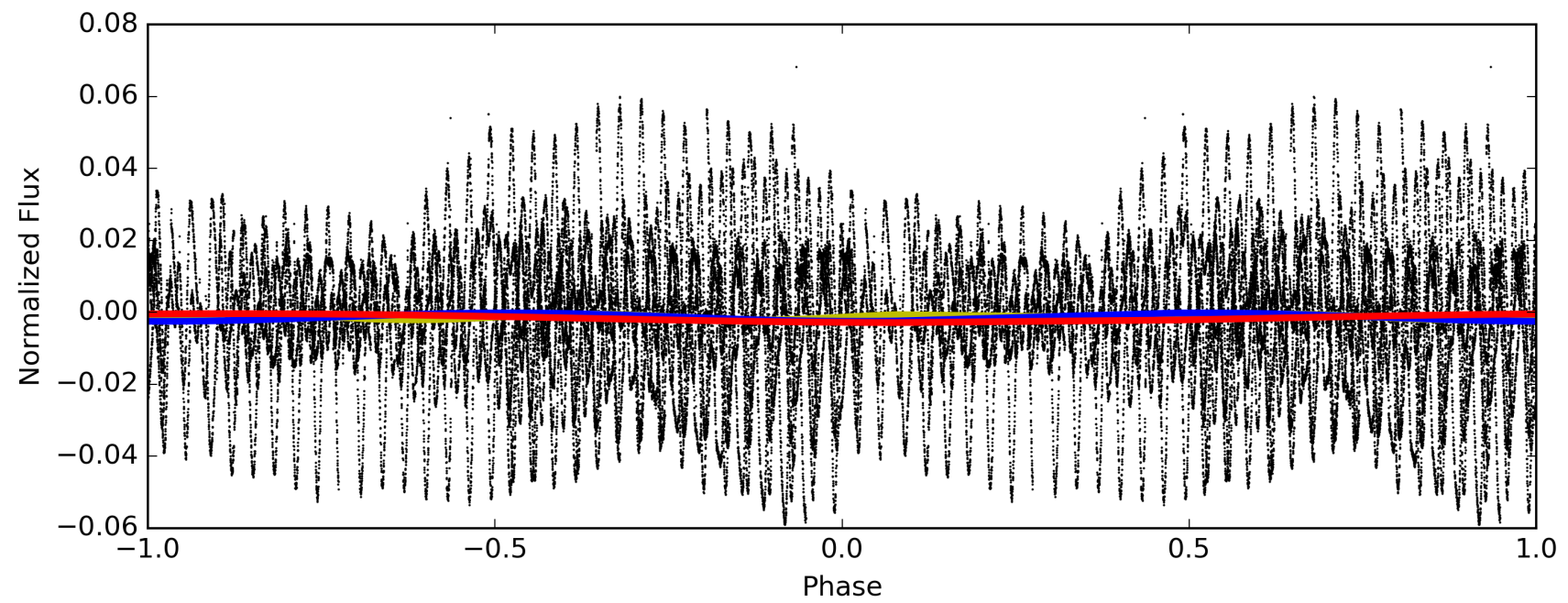
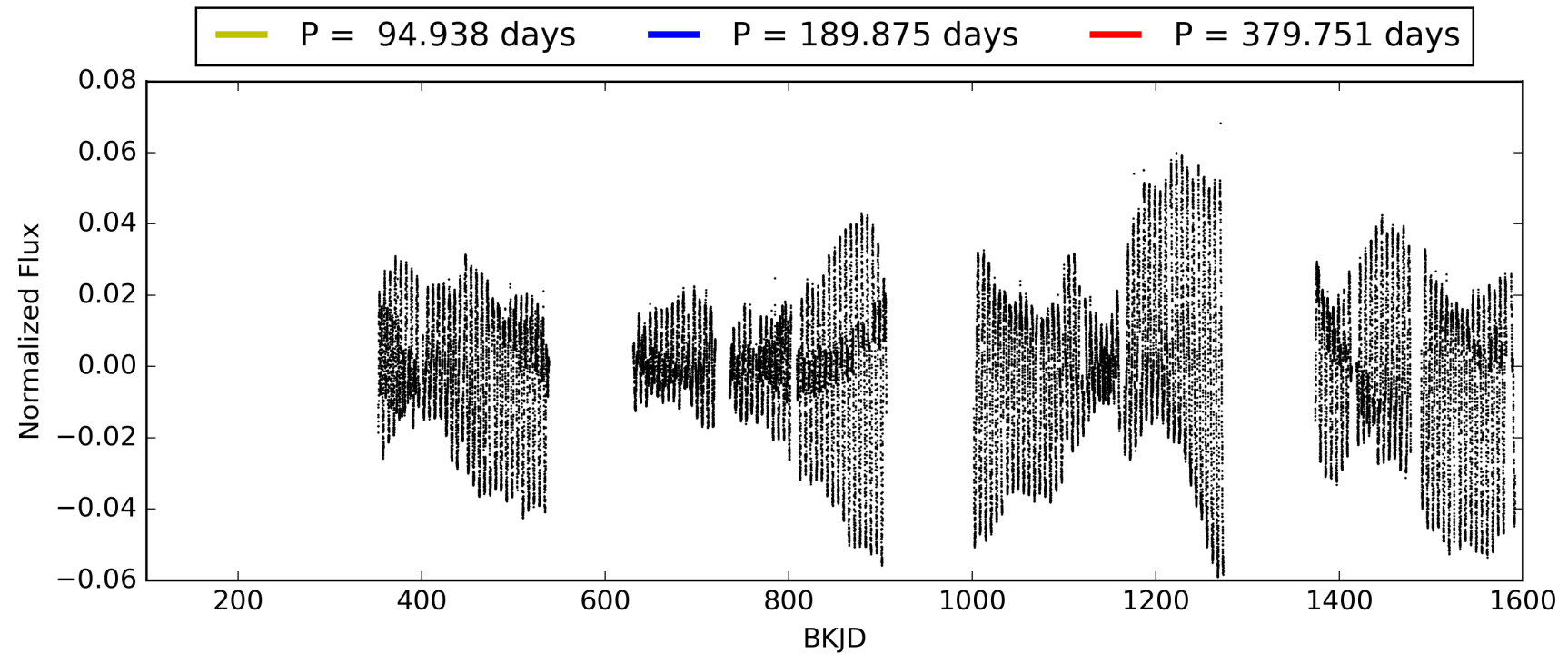
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004174717-03, PDC Light Curves



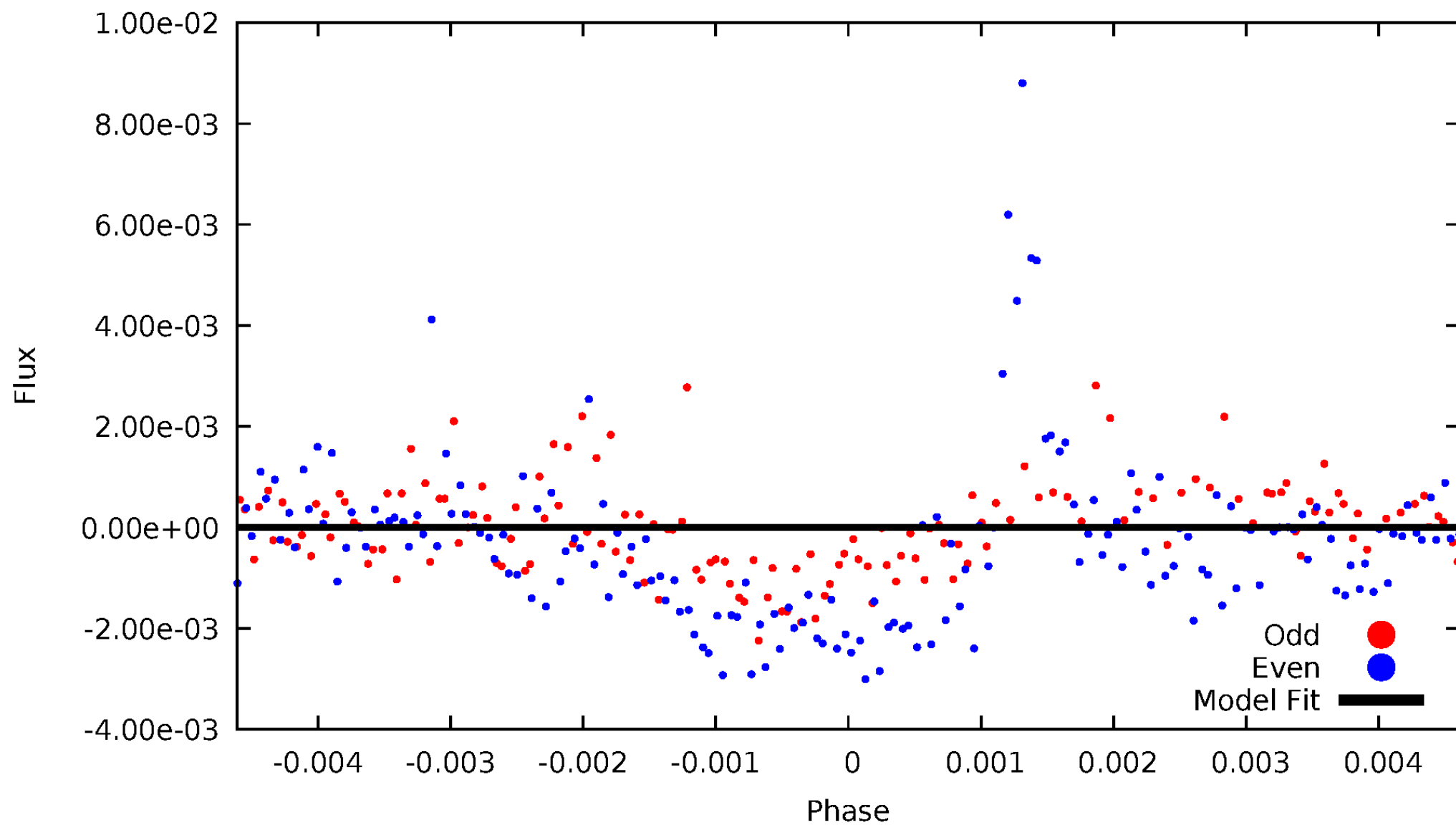
TCE 004174717-03





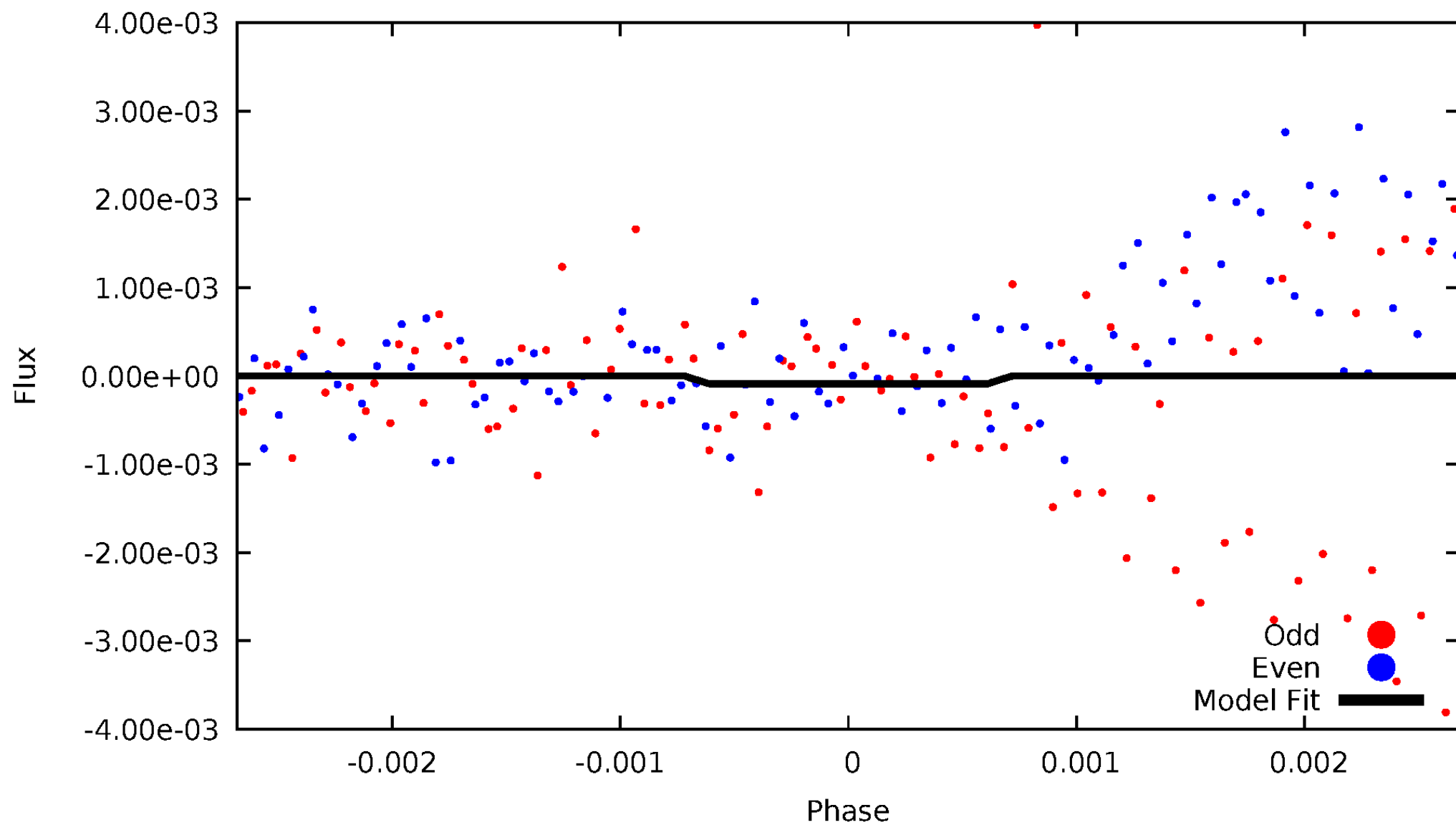
# DV Odd/Even

TCE 004174717-03

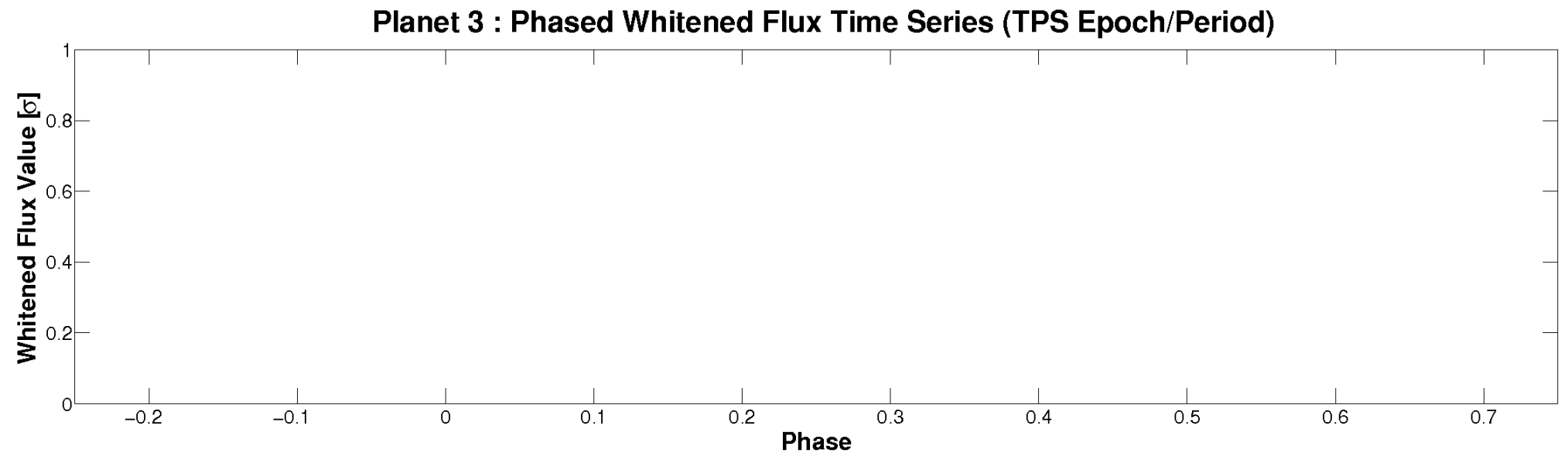
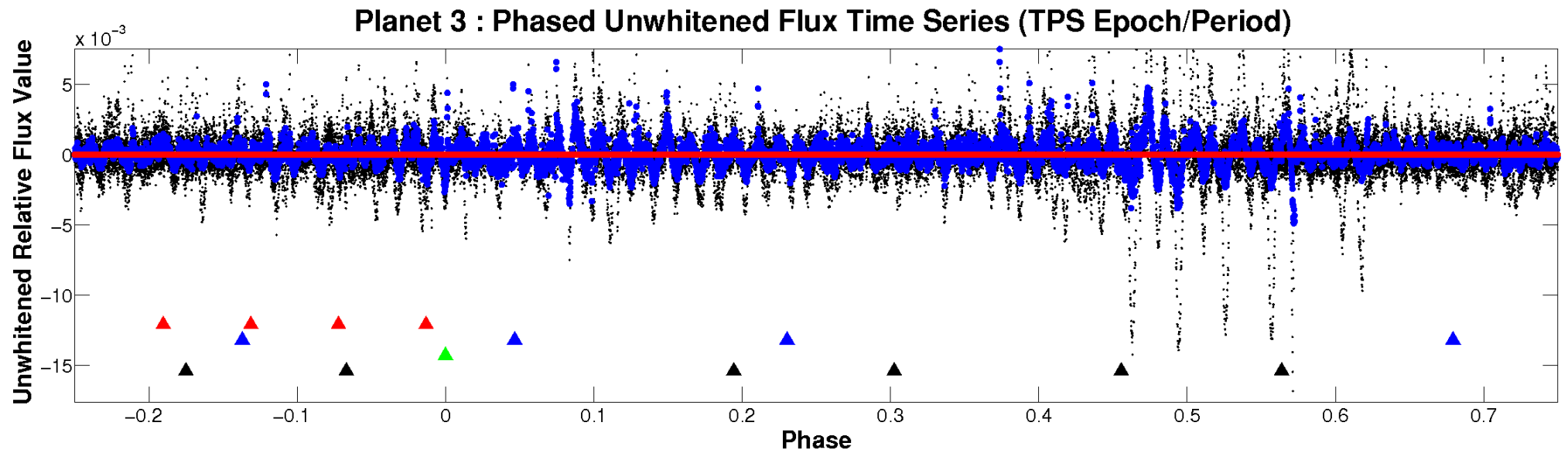


# ALT Odd/Even

TCE 004174717-03

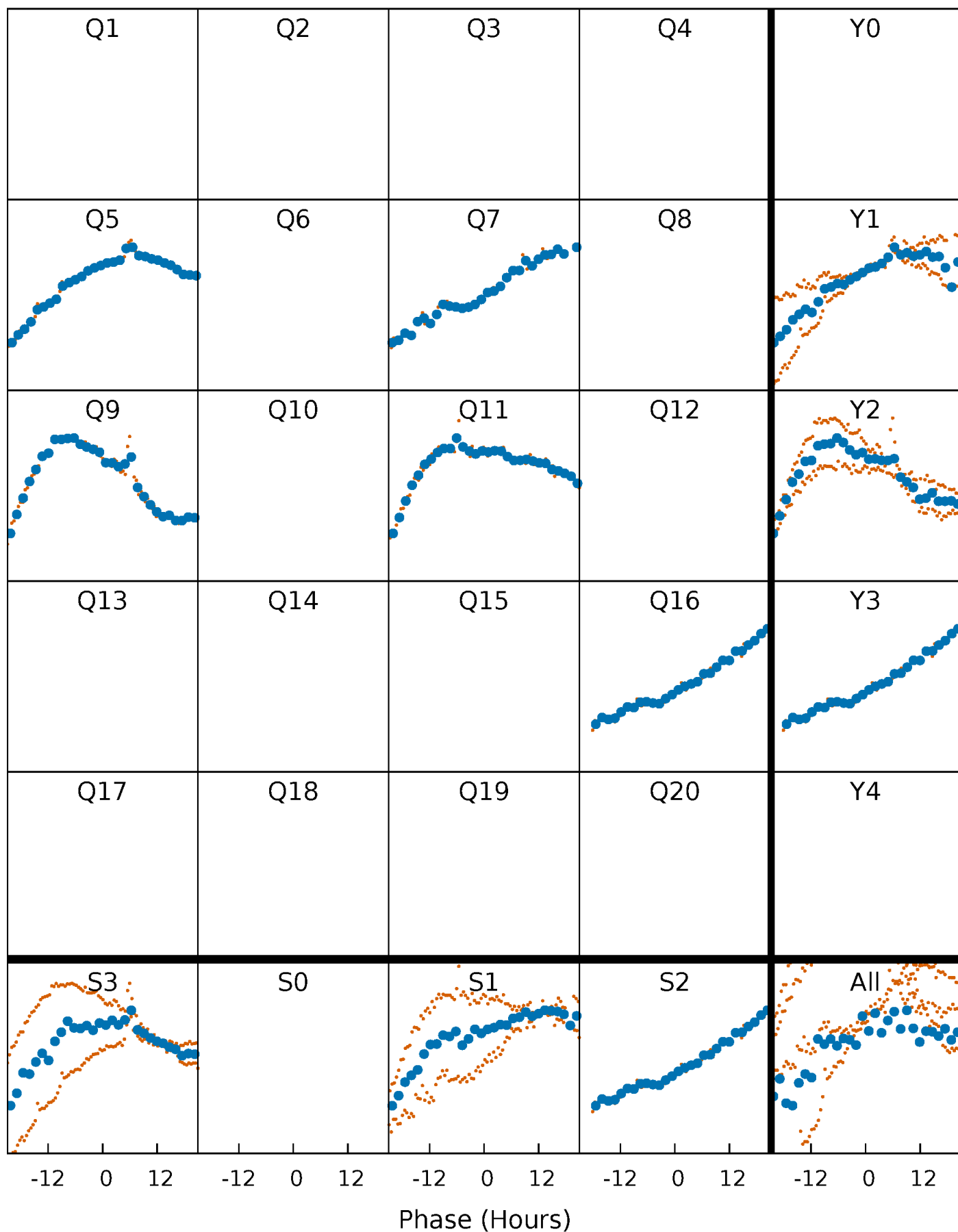


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 004174717-03     $P=189.875451$  Days     $T_0=143.743885$  (BKJD)



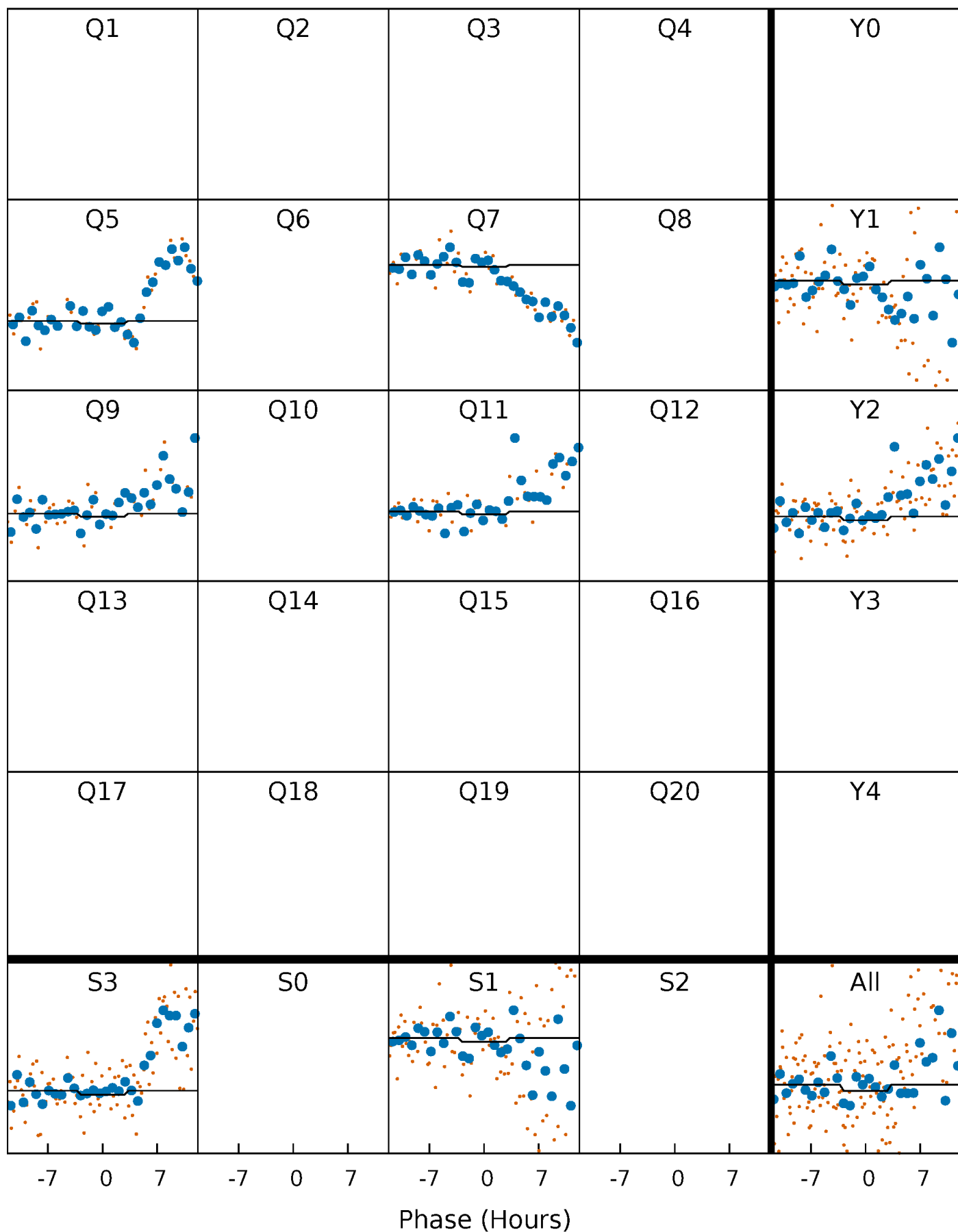
# DV Quarter-Phased Transit Curves

TCE 004174717-03     $P=189.875451$  Days     $T_0=143.743885$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

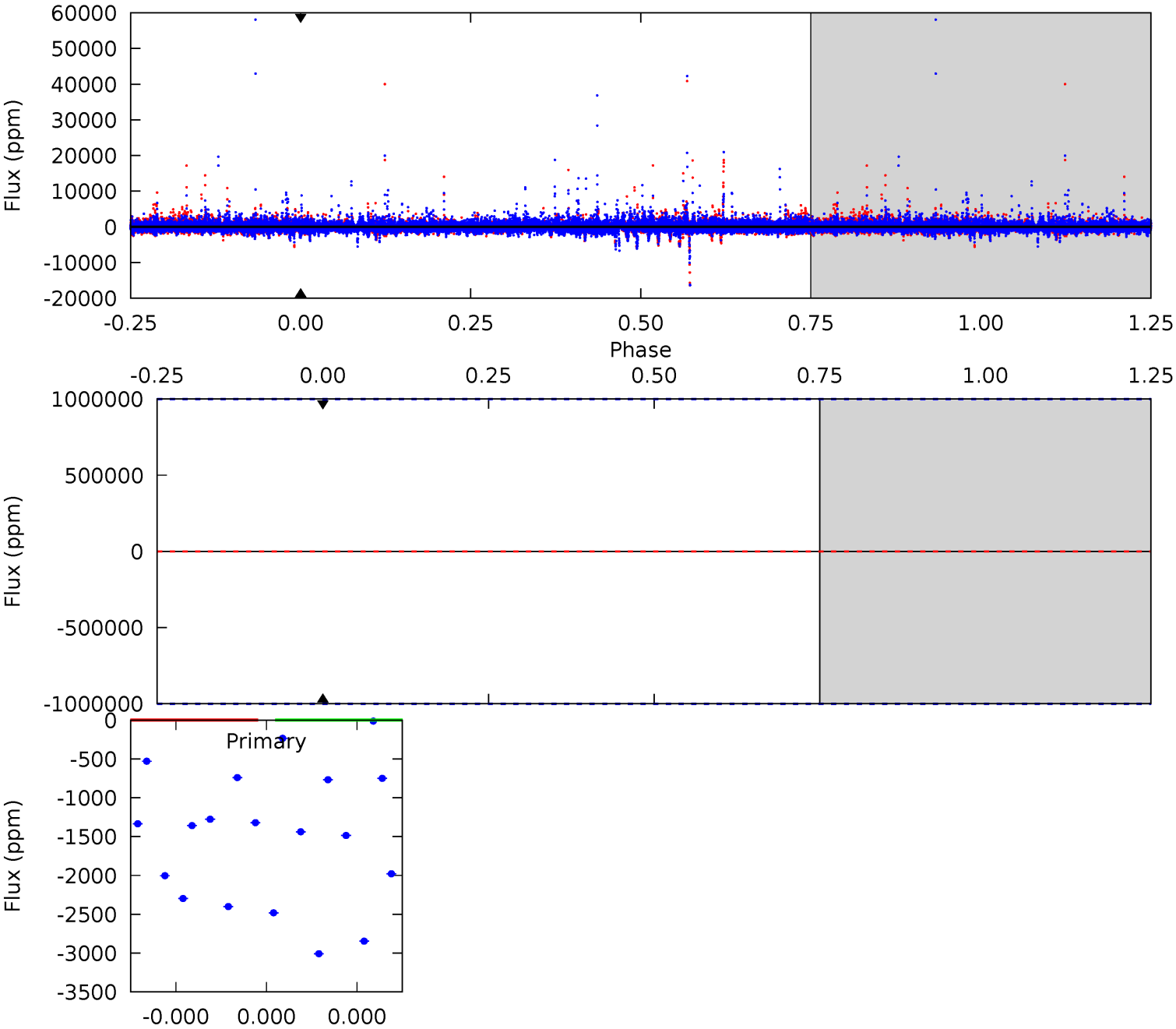
TCE 004174717-03 P=189.875451 Days  $T_0=143.355860$  (BKJD)



# DV Model-Shift Uniqueness Test

004174717-03, P = 189.875451 Days, E = 143.743885 Days

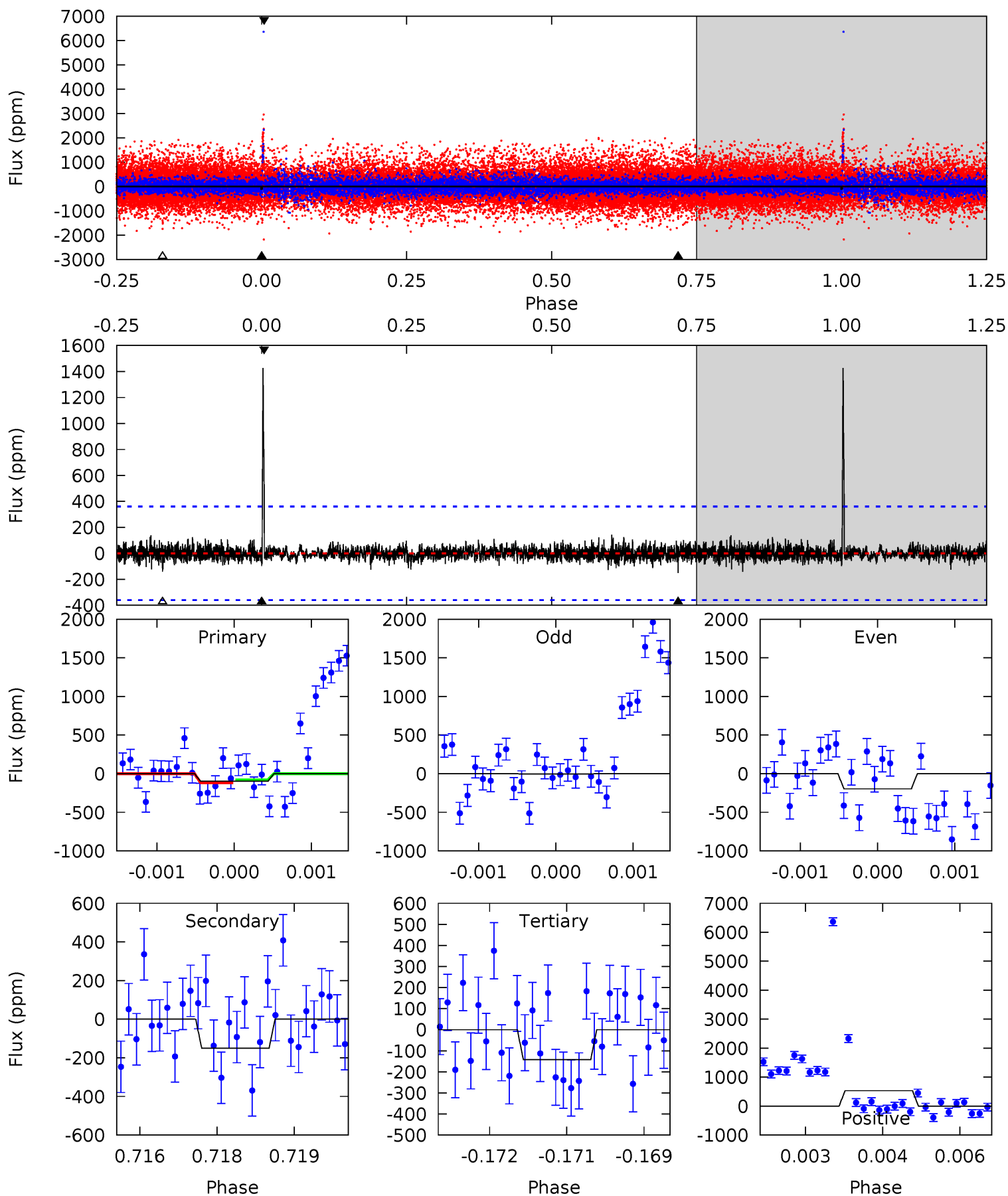
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004174717-03, P = 189.875451 Days, E = 143.355860 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
1.47	2.24	2.12	7.96	5.39	3.19	0.78	-0.65	-6.49	0.12	-5.71	1.44	1.17	0.90	0.28





### Stellar Parameters For KIC 004174717

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4187^{+130}_{-159}$	$4.656^{+0.063}_{-0.023}$	$-0.280^{+0.300}_{-0.300}$	$0.592^{+0.044}_{-0.071}$	$0.580^{+0.062}_{-0.056}$	$3.935^{+1.144}_{-0.506}$
	+3%/-4%	+1%/-0%	+107%/-107%	+7%/-12%	+11%/-10%	+29%/-13%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004174717-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$5.27^{+4.70}_{-3.56}$	$268^{+10}_{-11}$	$-3549^{+13119}_{-5610}$	$-13532.452^{+1066982.612}_{-909570.737}$
Alt.	$-150 \pm 67$	$4.58^{+4.93}_{-3.28}$	$267^{+11}_{-11}$	$2448^{+1047}_{-398}$	$1075^{+11641}_{-858}$

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

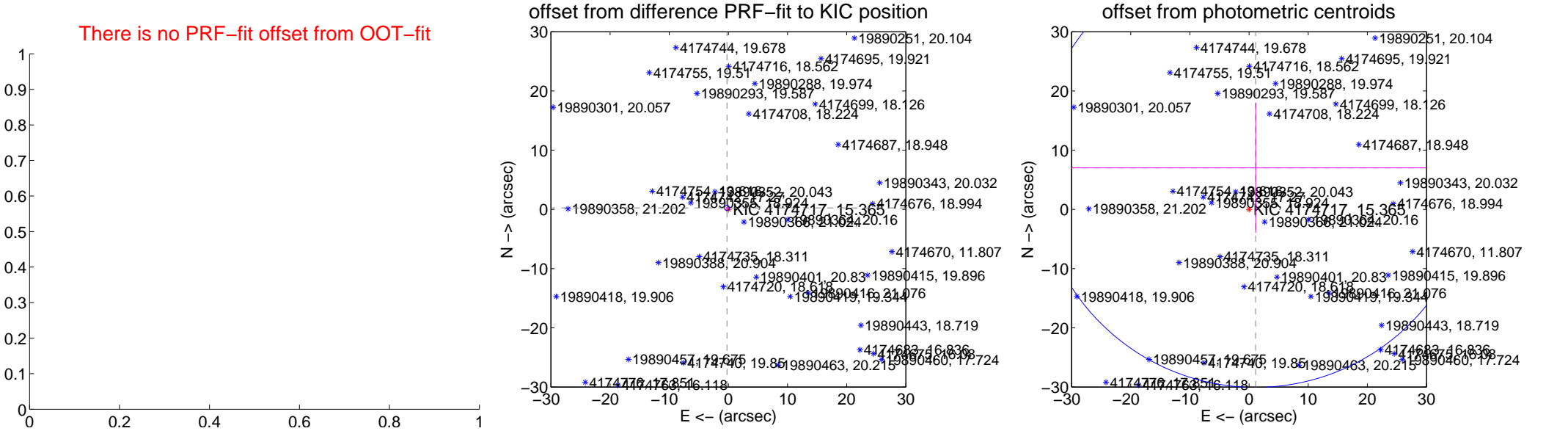
## DV Centroid Data

Supplemental centroid analysis for 004174717-03. Kepler magnitude: 15.37. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$0.337 \pm 0.143$	2.36	$0.234 \pm 0.159$	$0.243 \pm 0.127$
photometric centroid source offset	$7.10 \pm 12.36$	0.57	$-1.11 \pm 37.73$	$7.01 \pm 10.99$

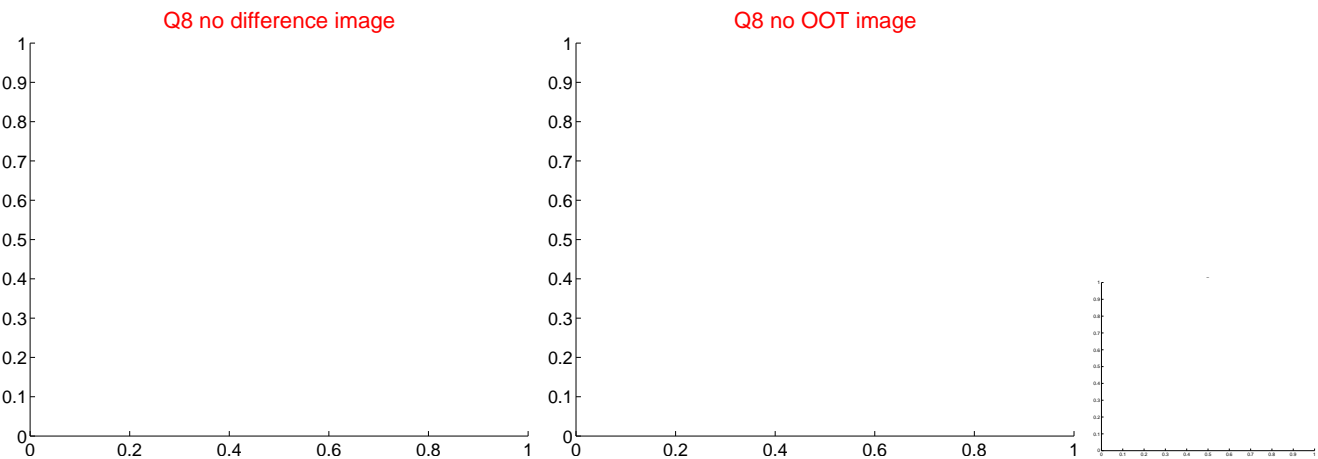
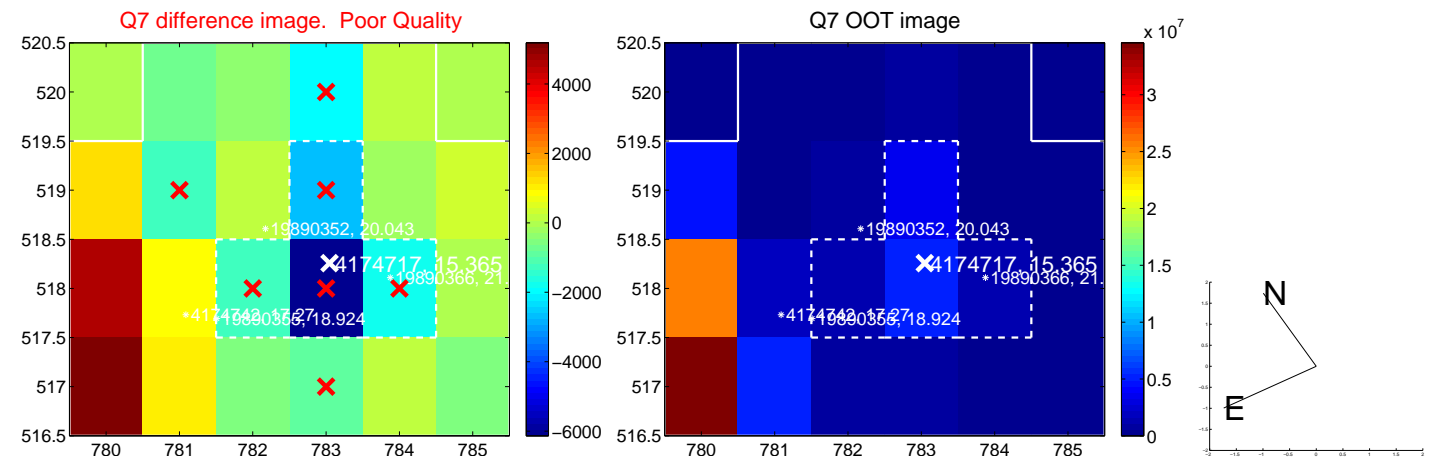
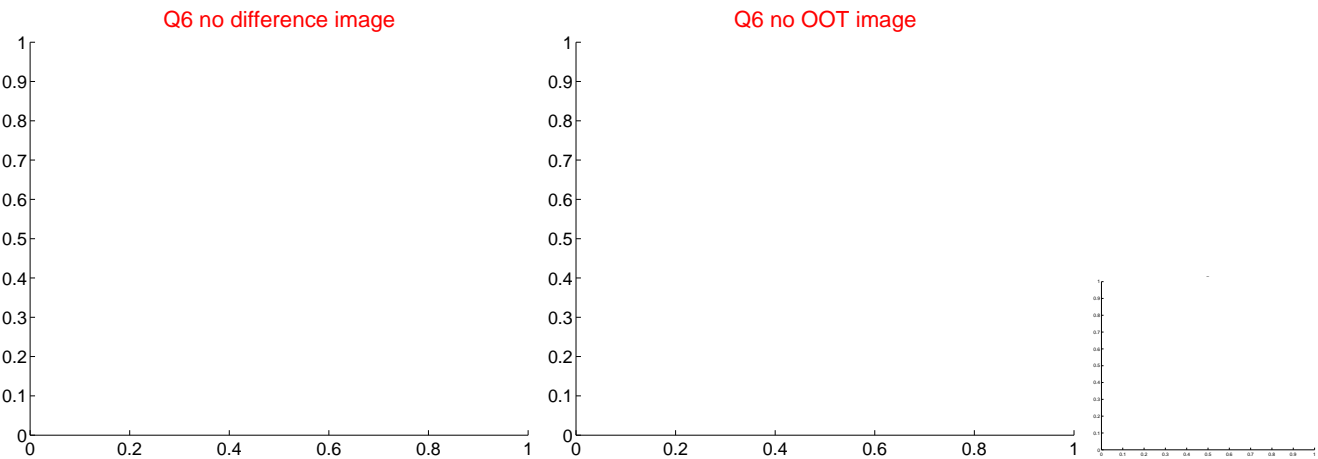
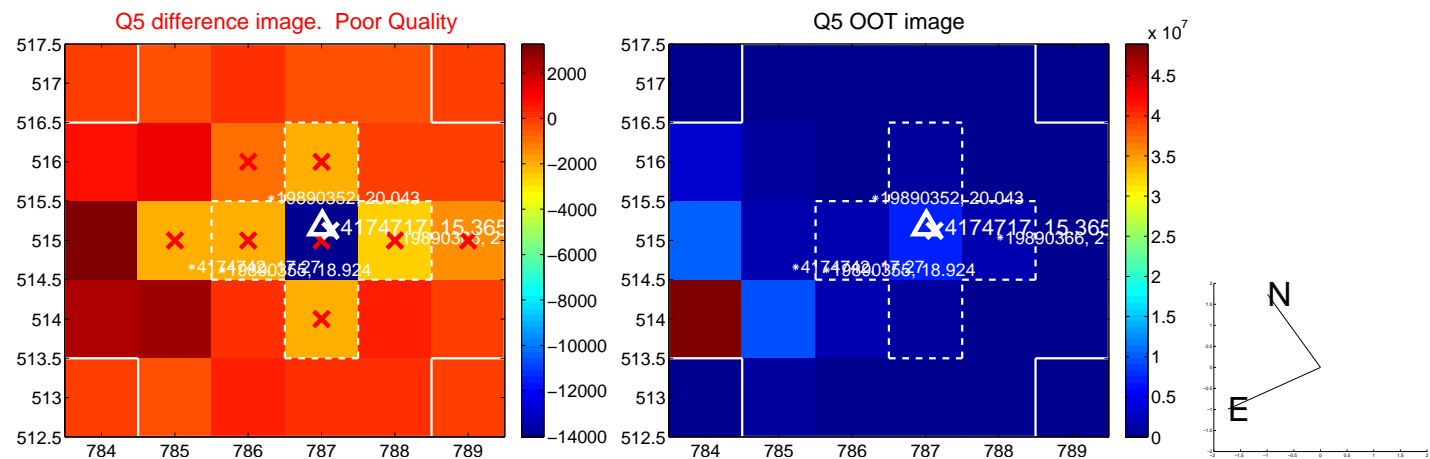


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

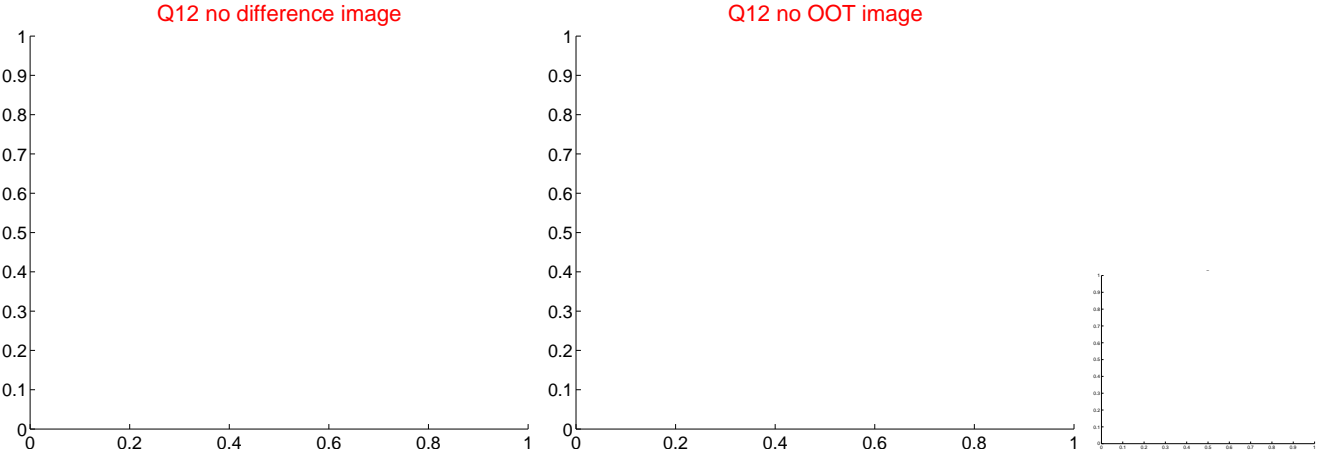
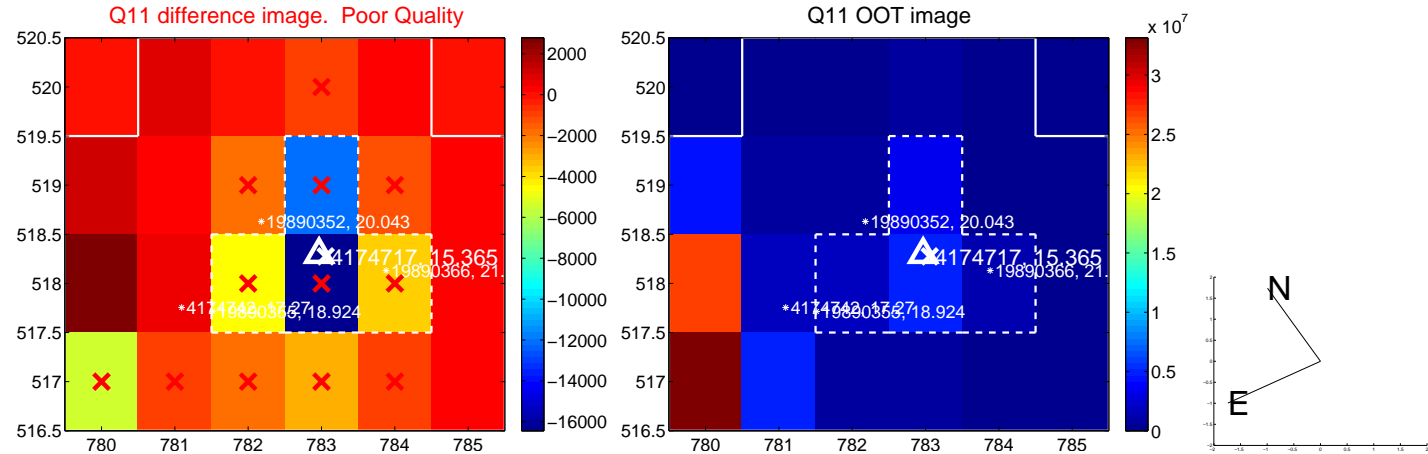
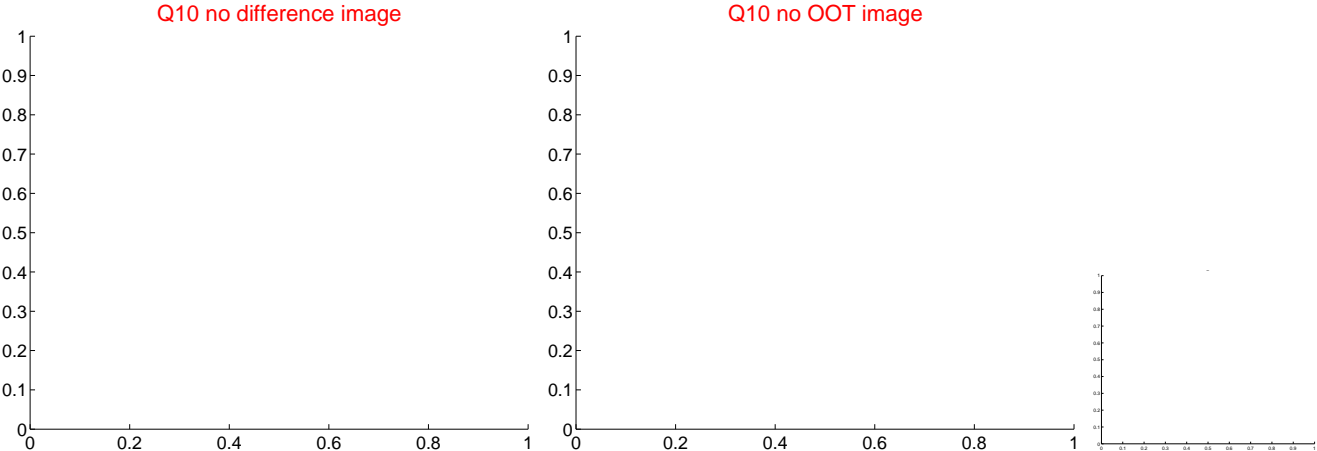
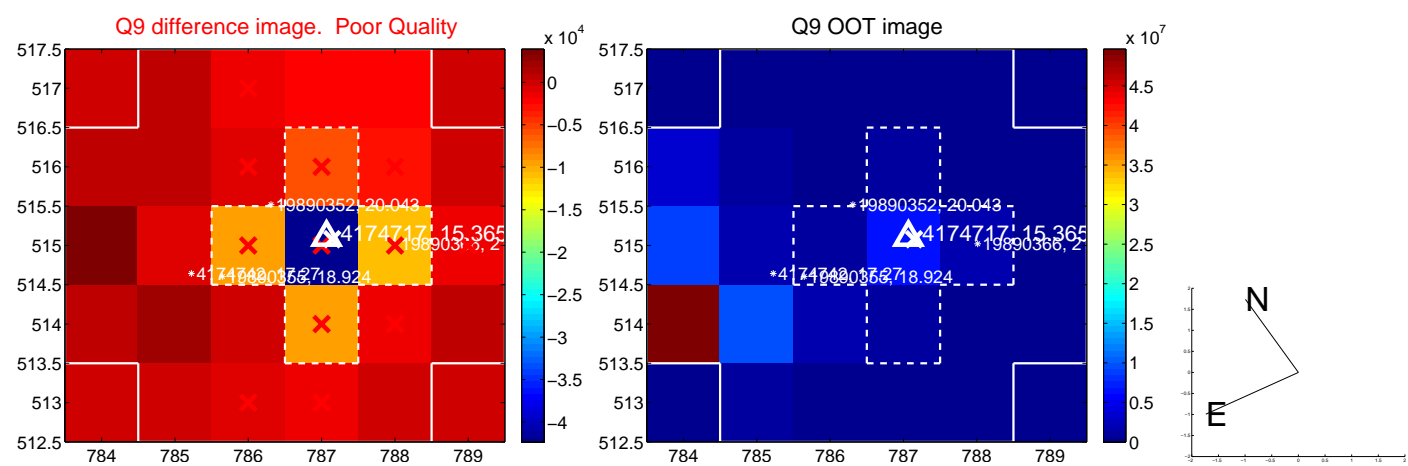
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



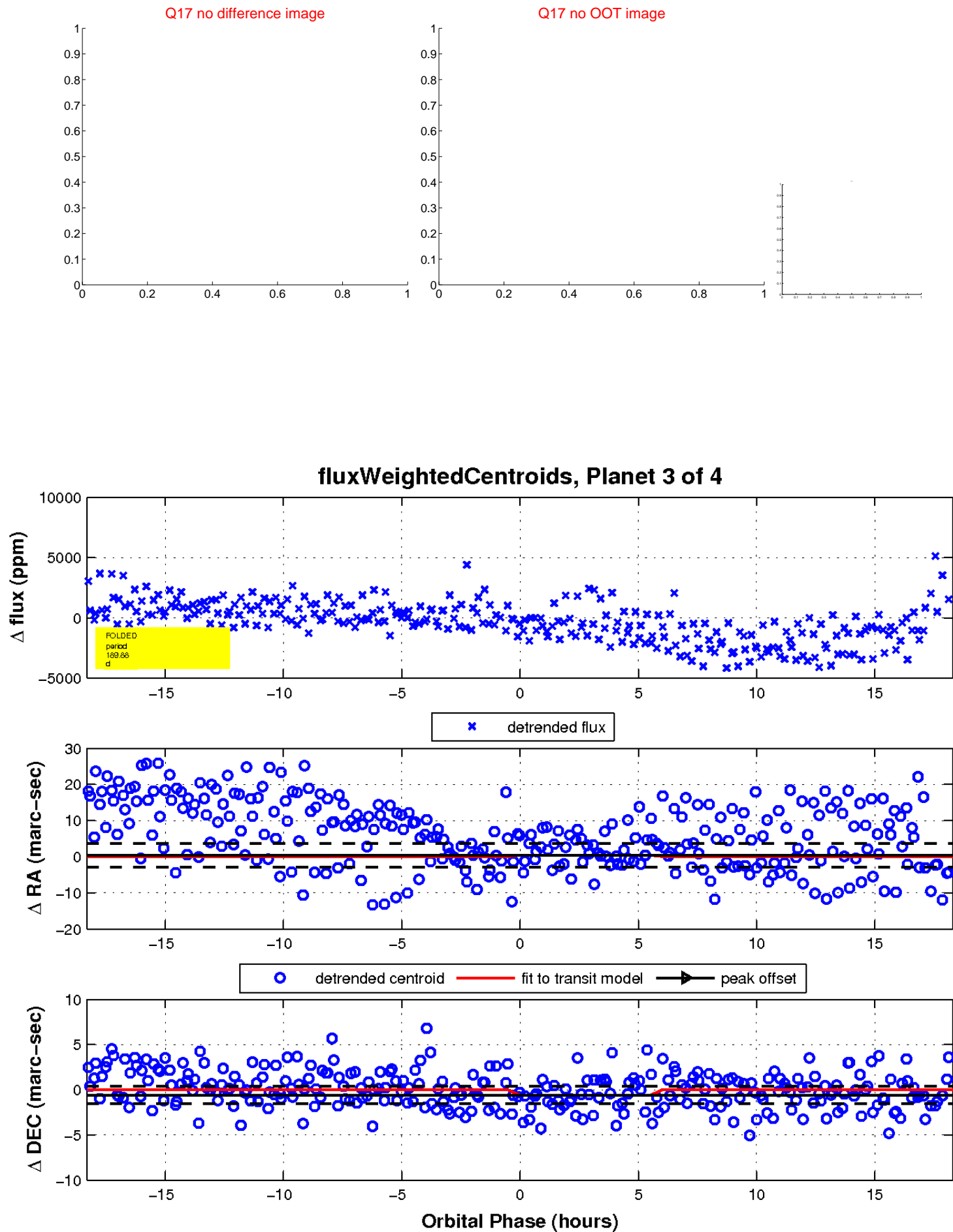
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



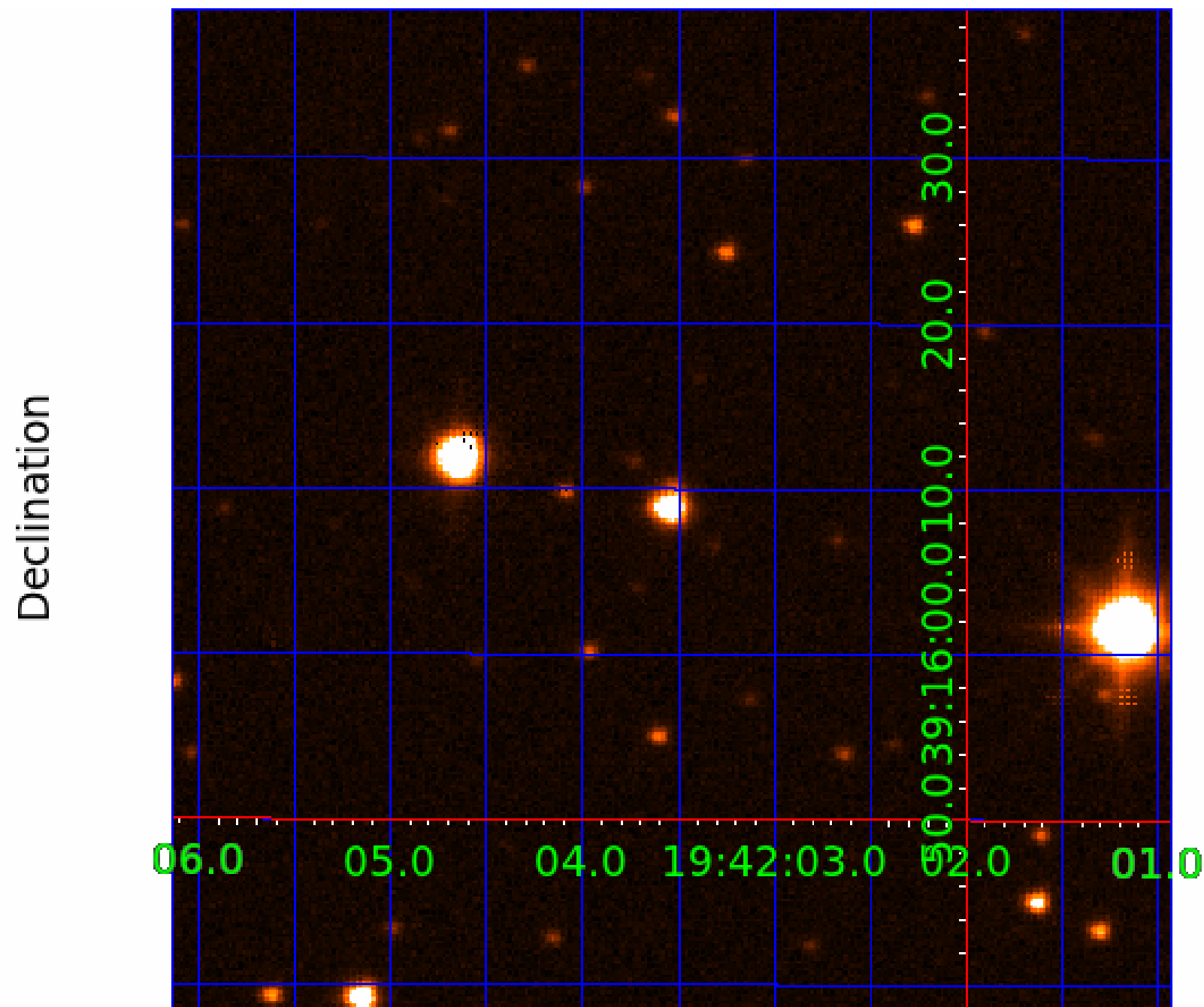
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 004174717

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004174717-02	OBS	No	414.625844	272.731729	1759.4	5.856	12.8	6.3	0.59	4187	2.50	0.12
004174717-03	OBS	No	189.875451	143.743885	1167.6	10.500	11.5	-1.0	0.59	4187	1.96	0.33
004174717-04	OBS	No	260.011219	230.260111	2054.7	3.804	9.5	9.4	0.59	4187	2.85	0.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004174717-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004174717-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
004174717-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—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.

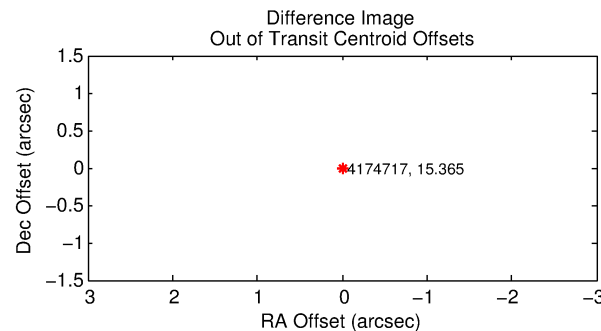
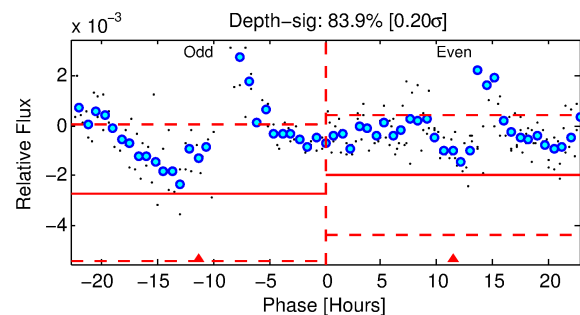
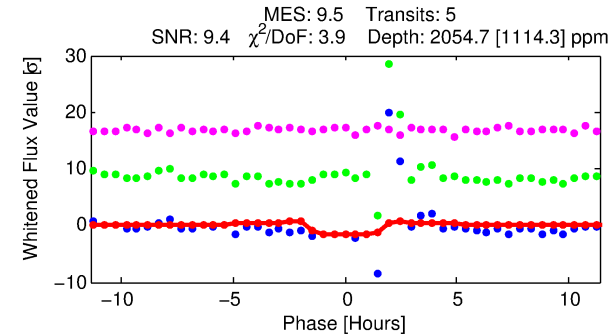
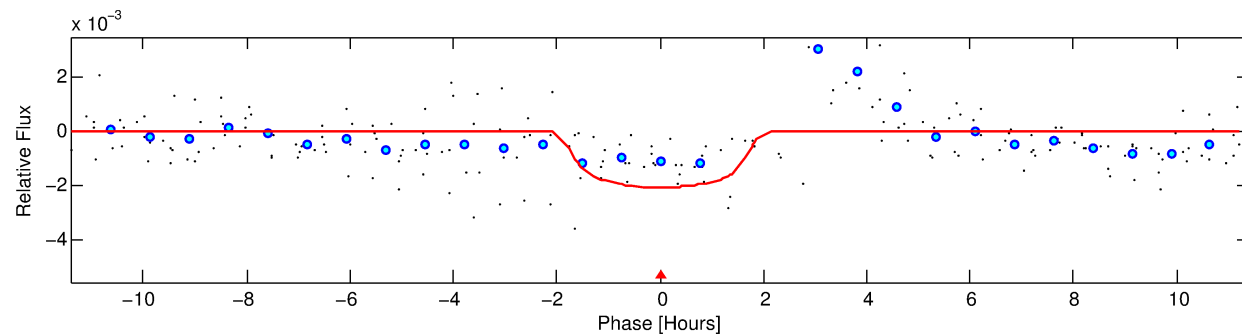
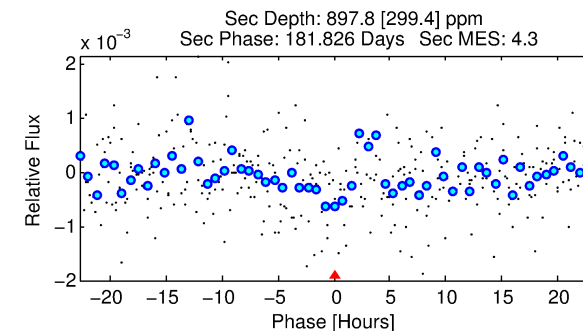
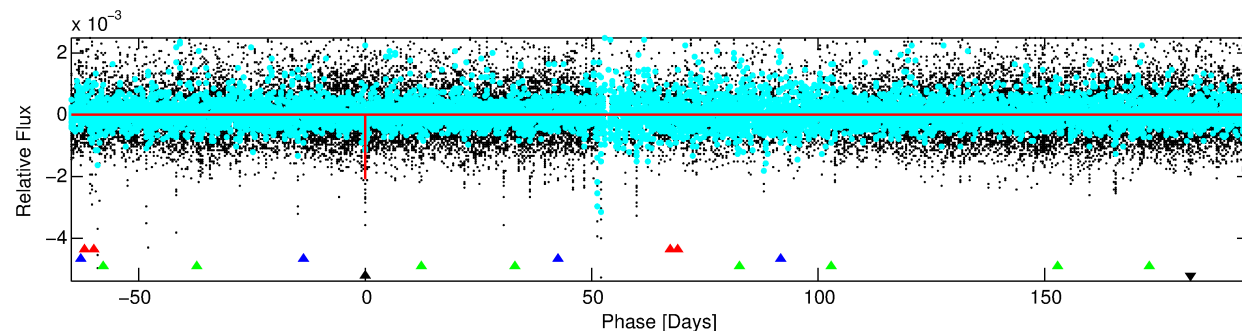
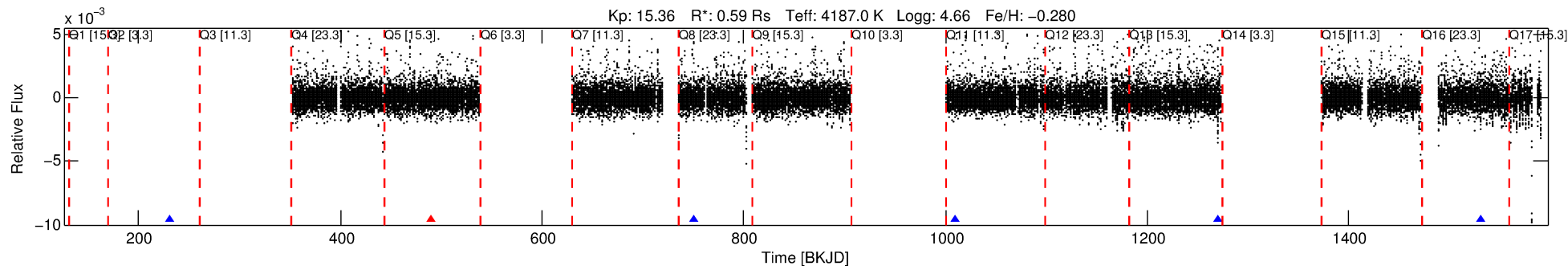
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004174717-04

No Significant Match Found

# DV One-Page Summary

KIC: 4174717 Candidate: 4 of 4 Period: 260.011 d



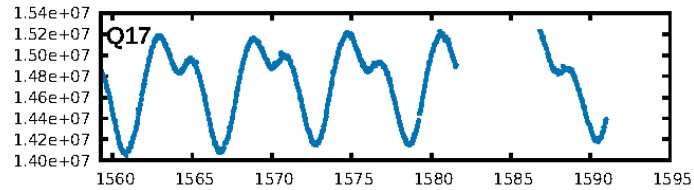
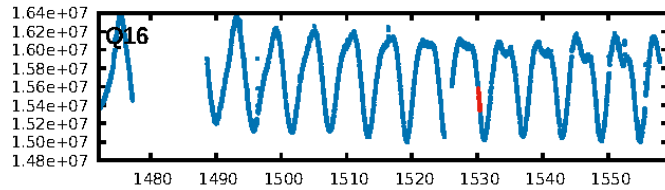
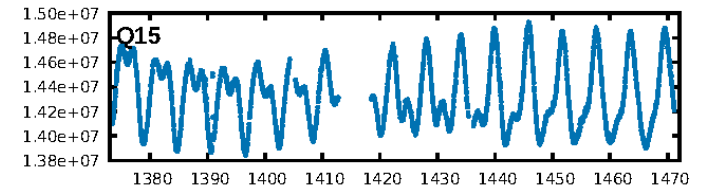
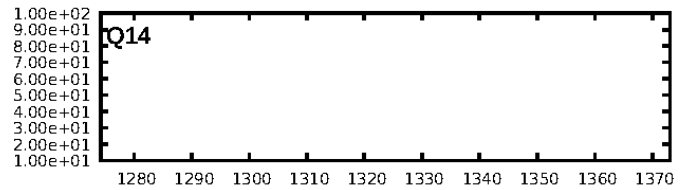
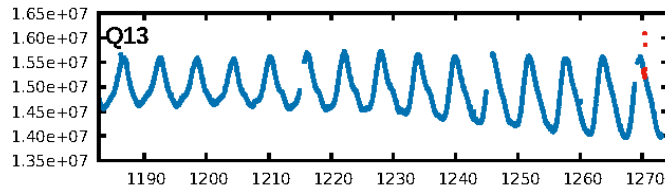
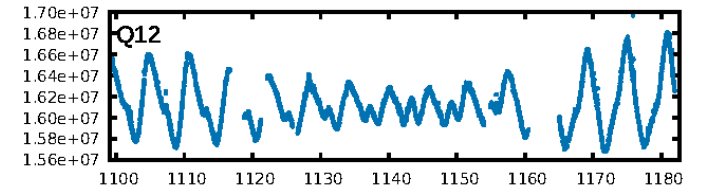
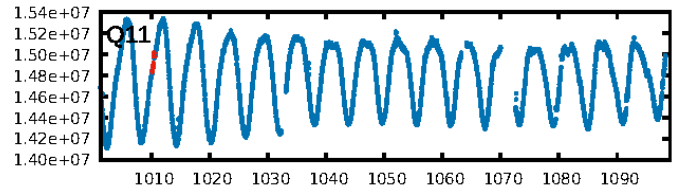
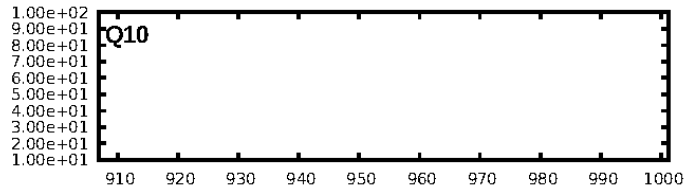
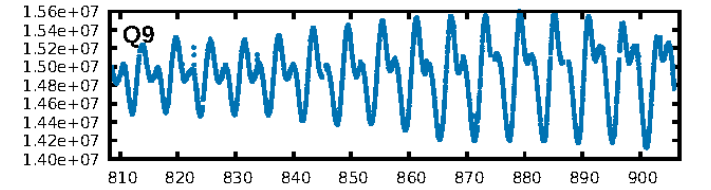
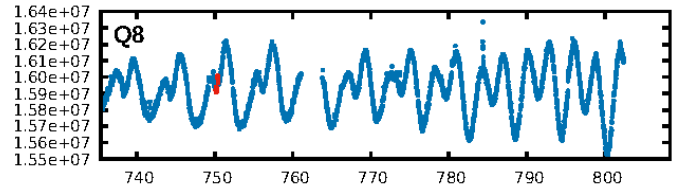
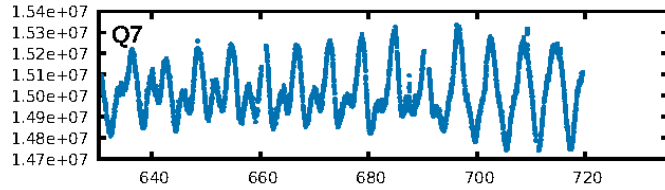
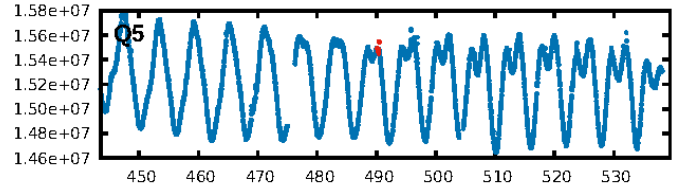
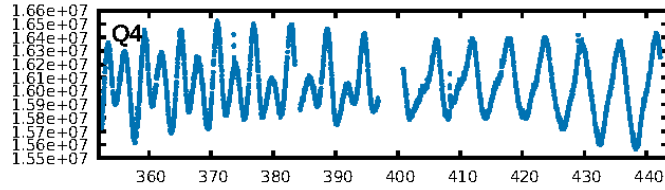
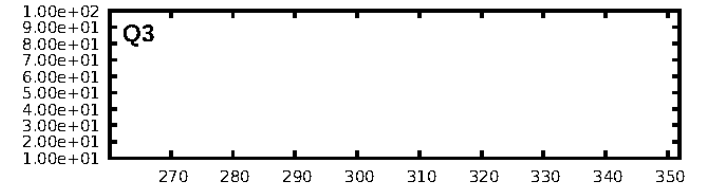
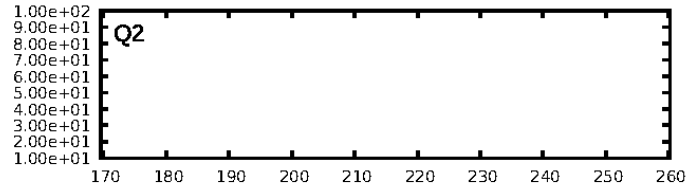
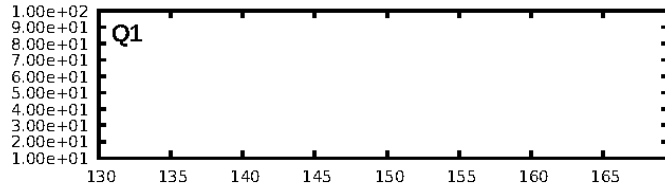
## DV Fit Results:

Period = 260.01122 [0.00973] d  
Epoch = 230.2601 [0.0326] BKJD  
Rp/R\* = 0.0440 [0.1744]  
a/R\* = 414.45 [5978.25]  
b = 0.68 [11.66]  
Seff = 0.22 [0.04]  
Teq = 174 [9] K  
Rp = 2.85 [11.27] Re  
a = 0.6646 [0.0621] AU  
Ag = 26942.73 [213533.46] [0.13 $\sigma$ ]  
Teffp = 3453 [6843] K [0.48 $\sigma$ ]

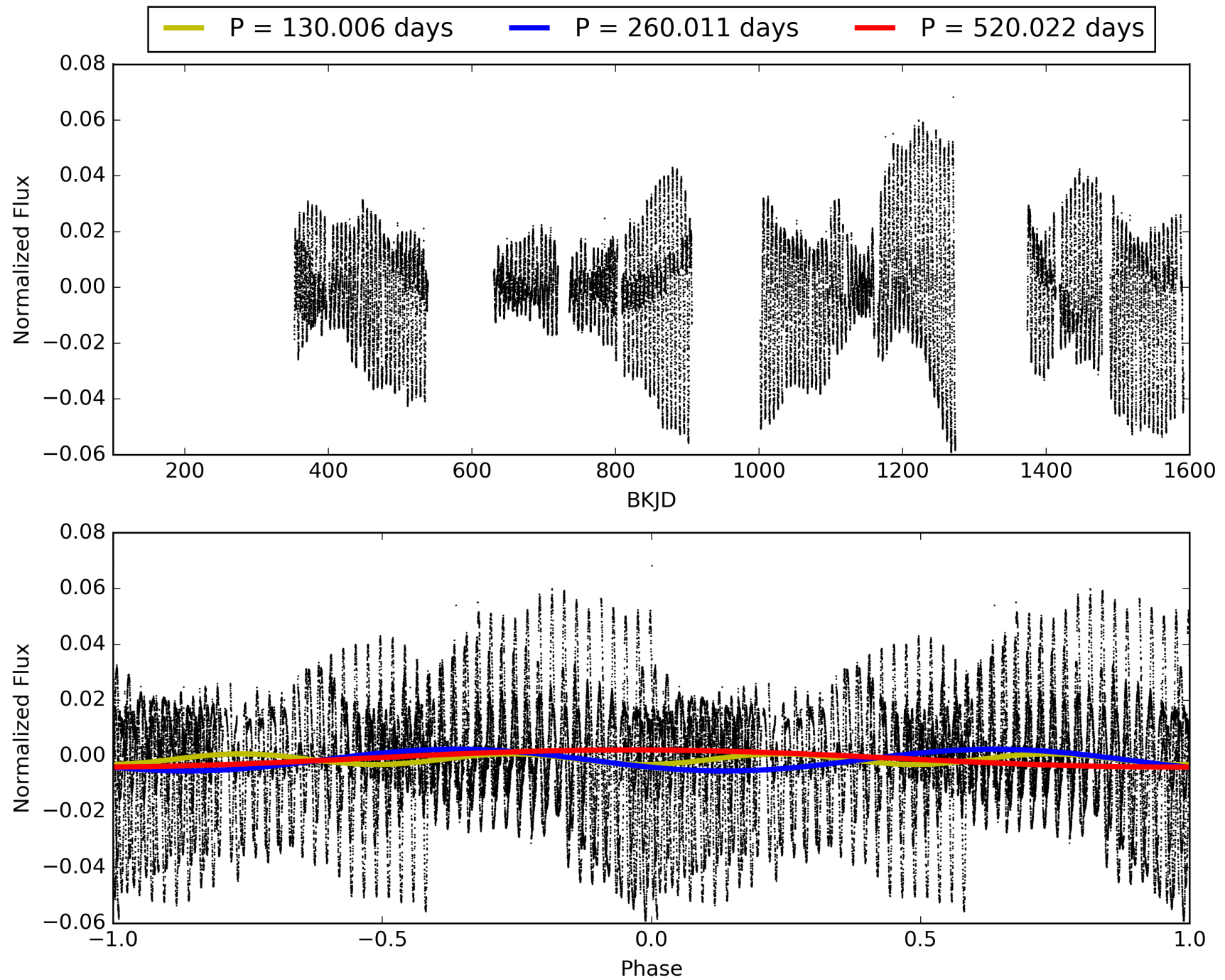
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [150.72 $\sigma$ ]  
LongPeriod-sig: 100.0% [608.70 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 5.3%  
Bootstrap-pfa: 8.77e-11  
RollingBand-fgt: 0.80 [4/5]  
GhostDiagnostic-chr: -1.023  
Centroid-sig: 60.0%  
Centroid-so: 2.222 arcsec [1.49 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: 0.575 arcsec [1.03 $\sigma$ ]  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [5/5]

# TCE 004174717-04, PDC Light Curves

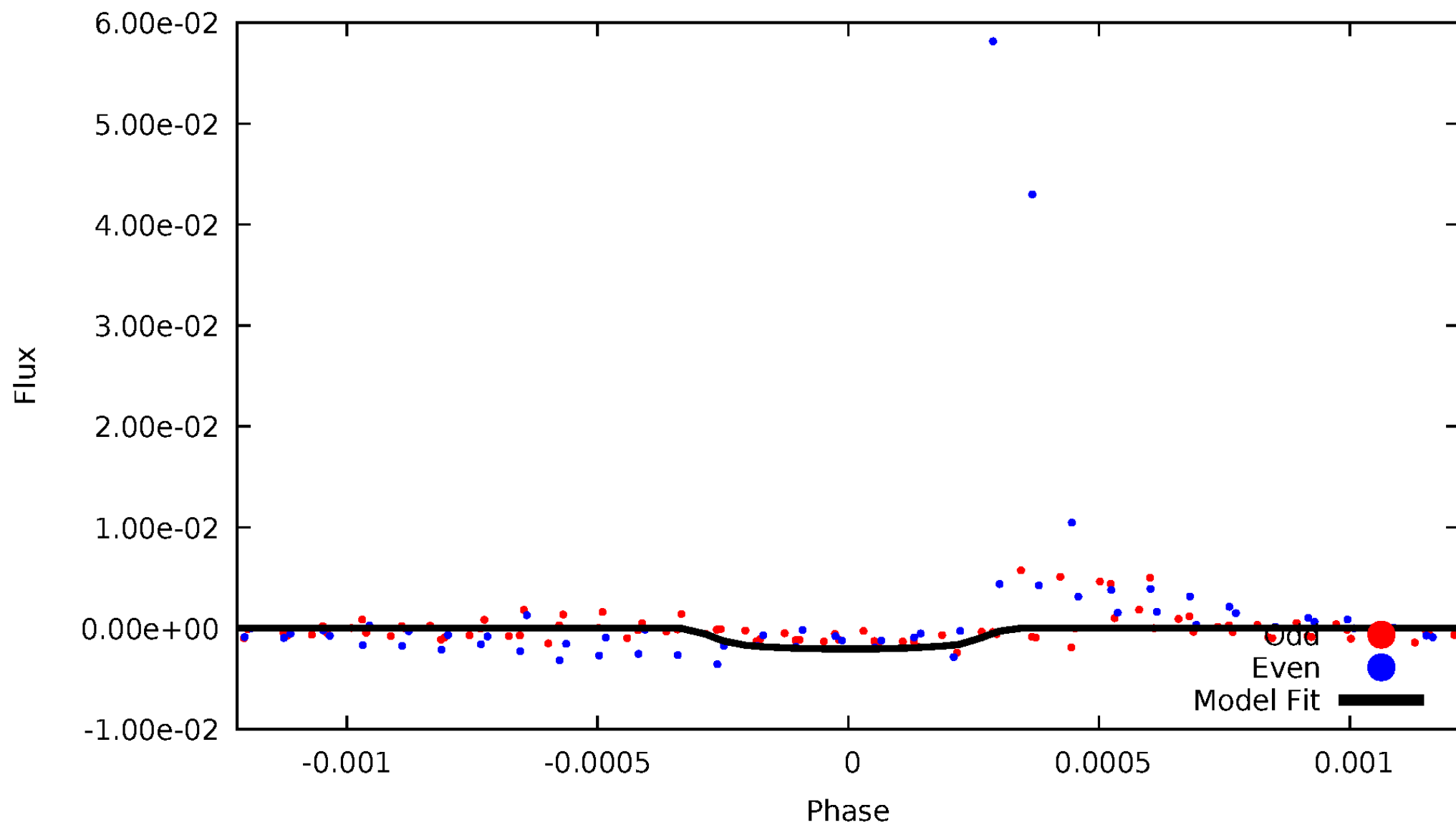


# TCE 004174717-04



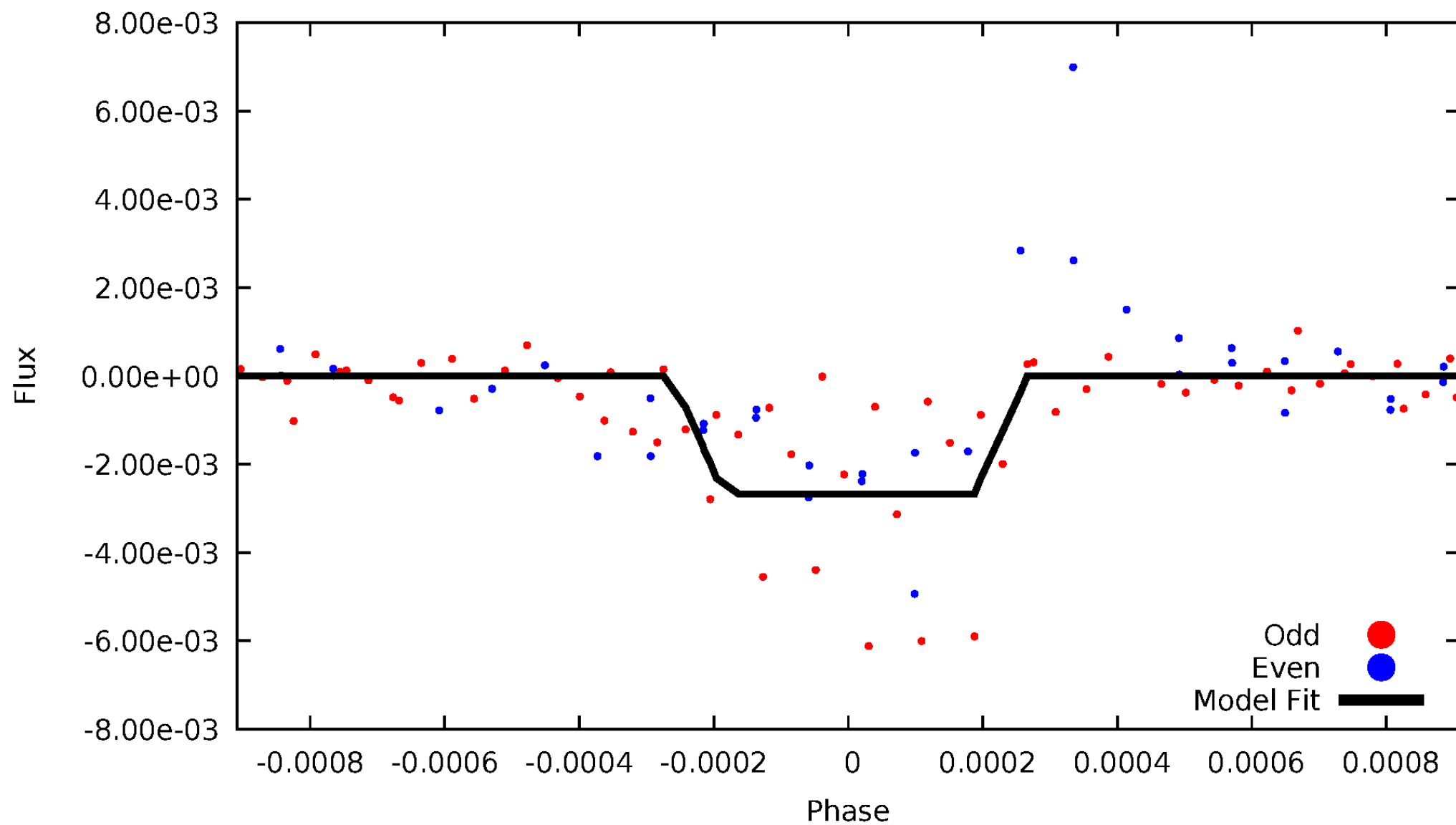
# DV Odd/Even

TCE 004174717-04



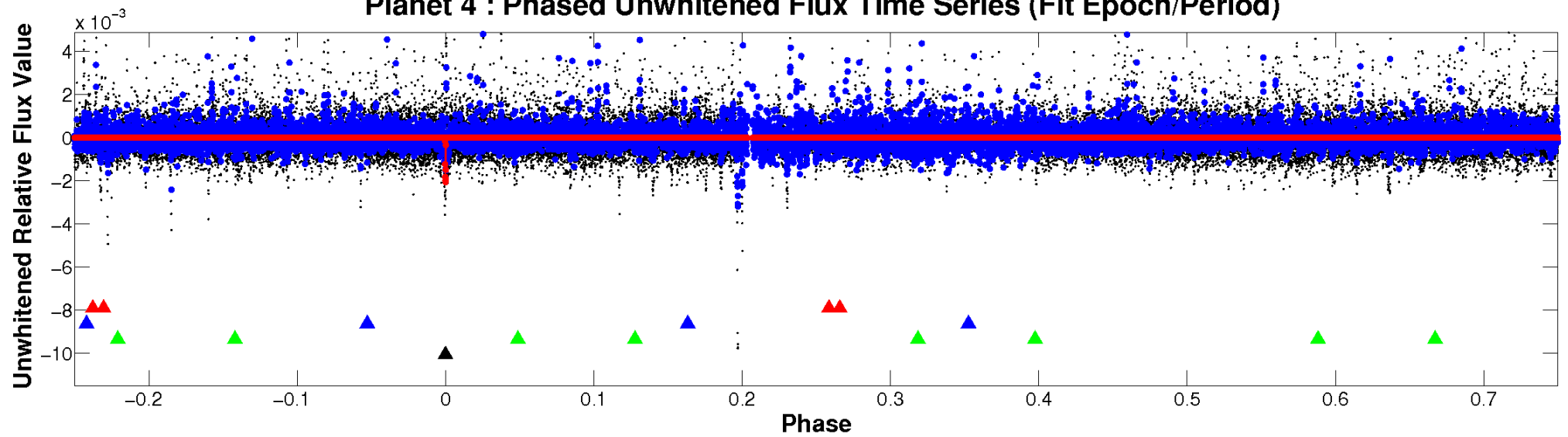
# ALT Odd/Even

TCE 004174717-04

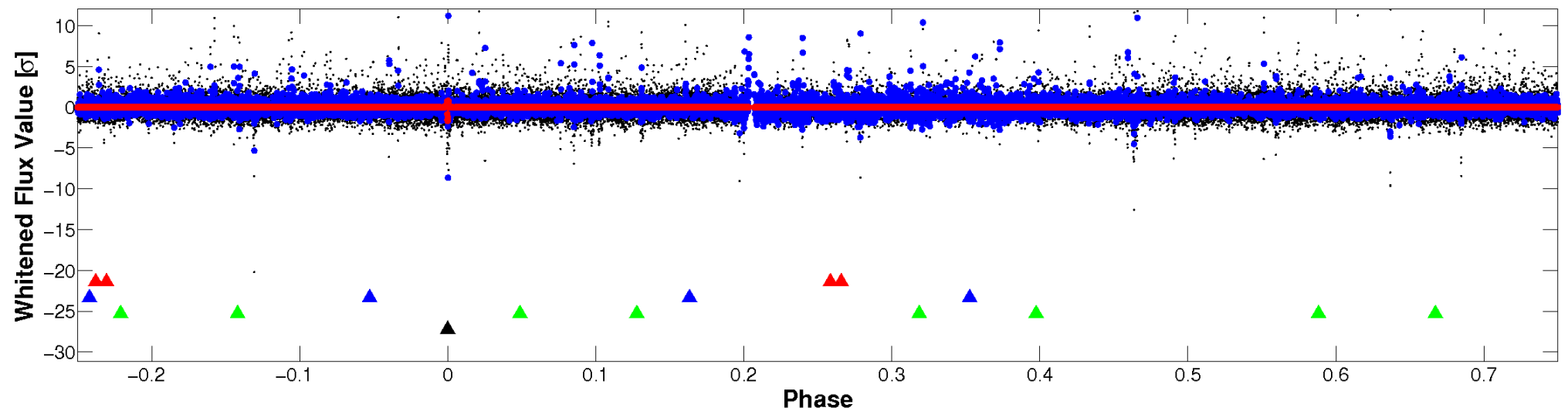


# Non-Whitened Vs. Whitened Light Curve

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

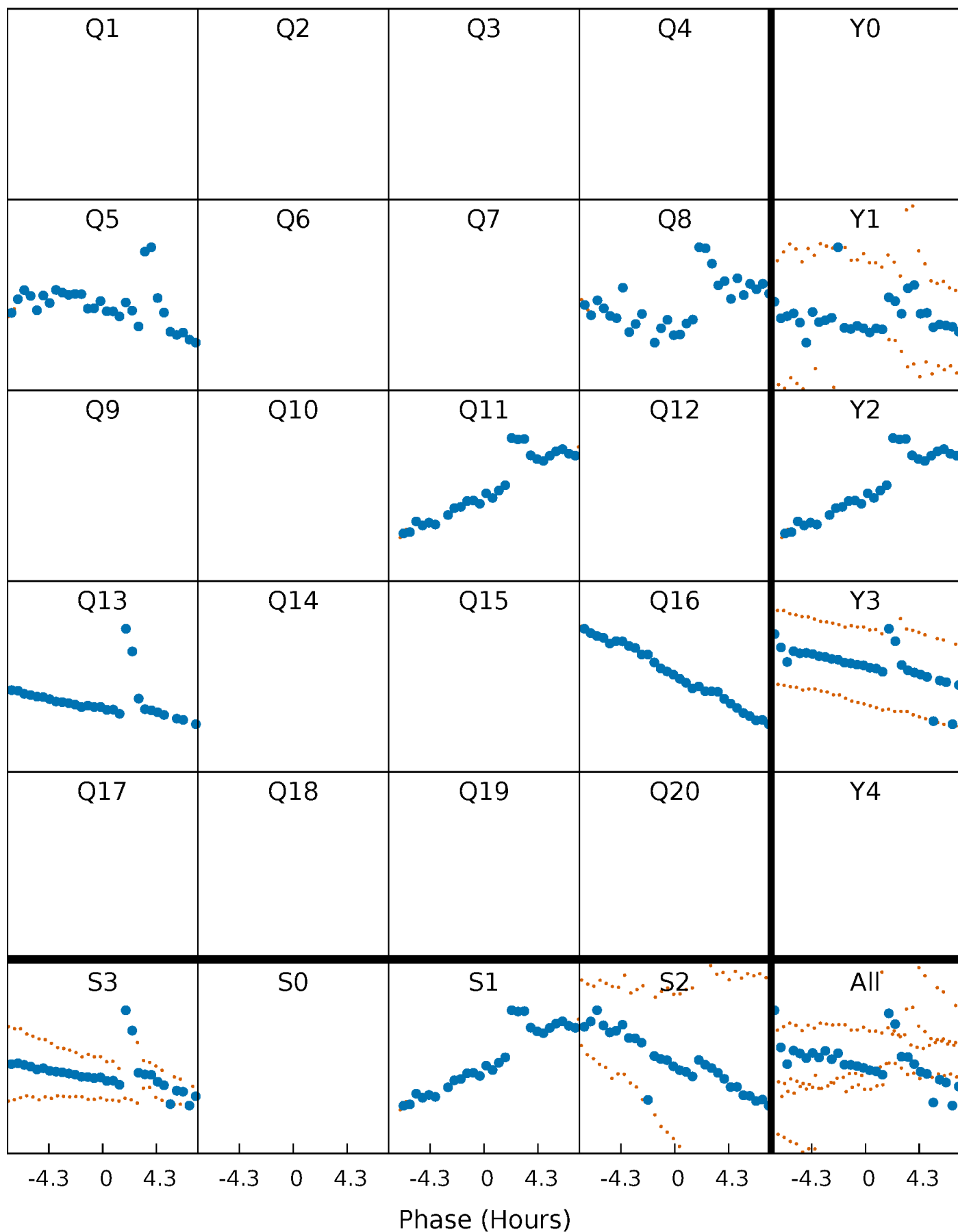


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

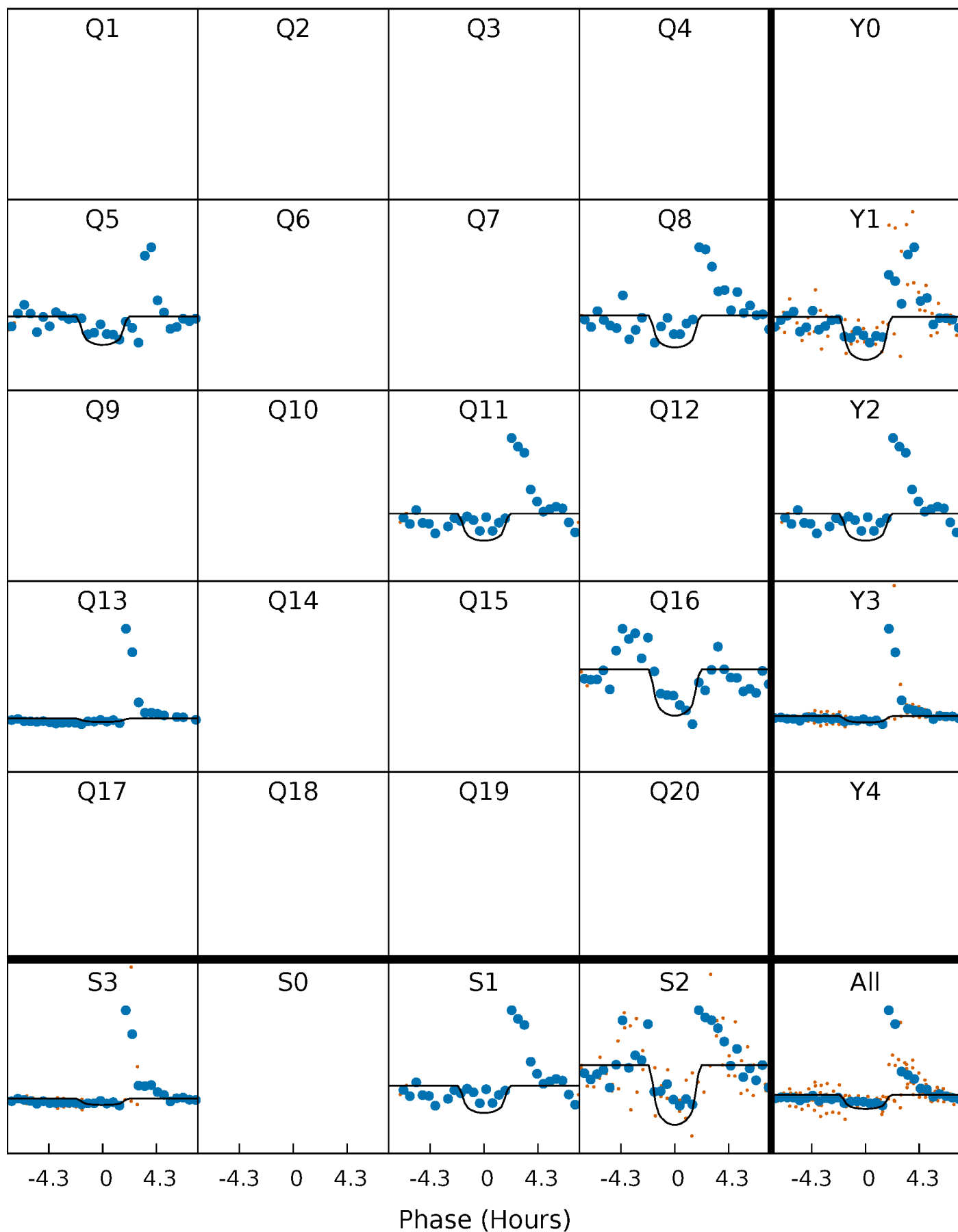
TCE 004174717-04 P=260.011219 Days  $T_0=230.260111$  (BKJD)





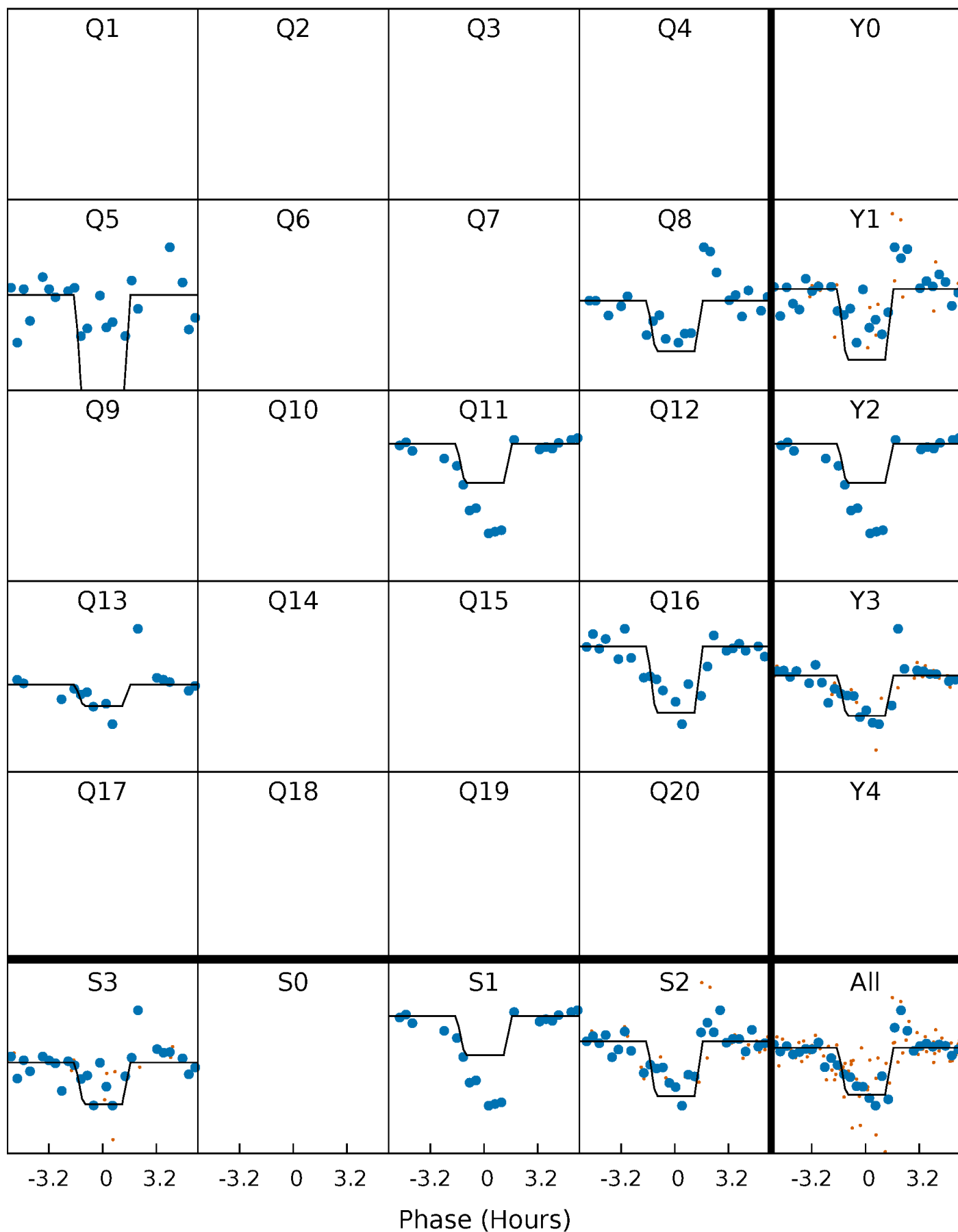
# DV Quarter-Phased Transit Curves

TCE 004174717-04 P=260.011219 Days  $T_0=230.260111$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

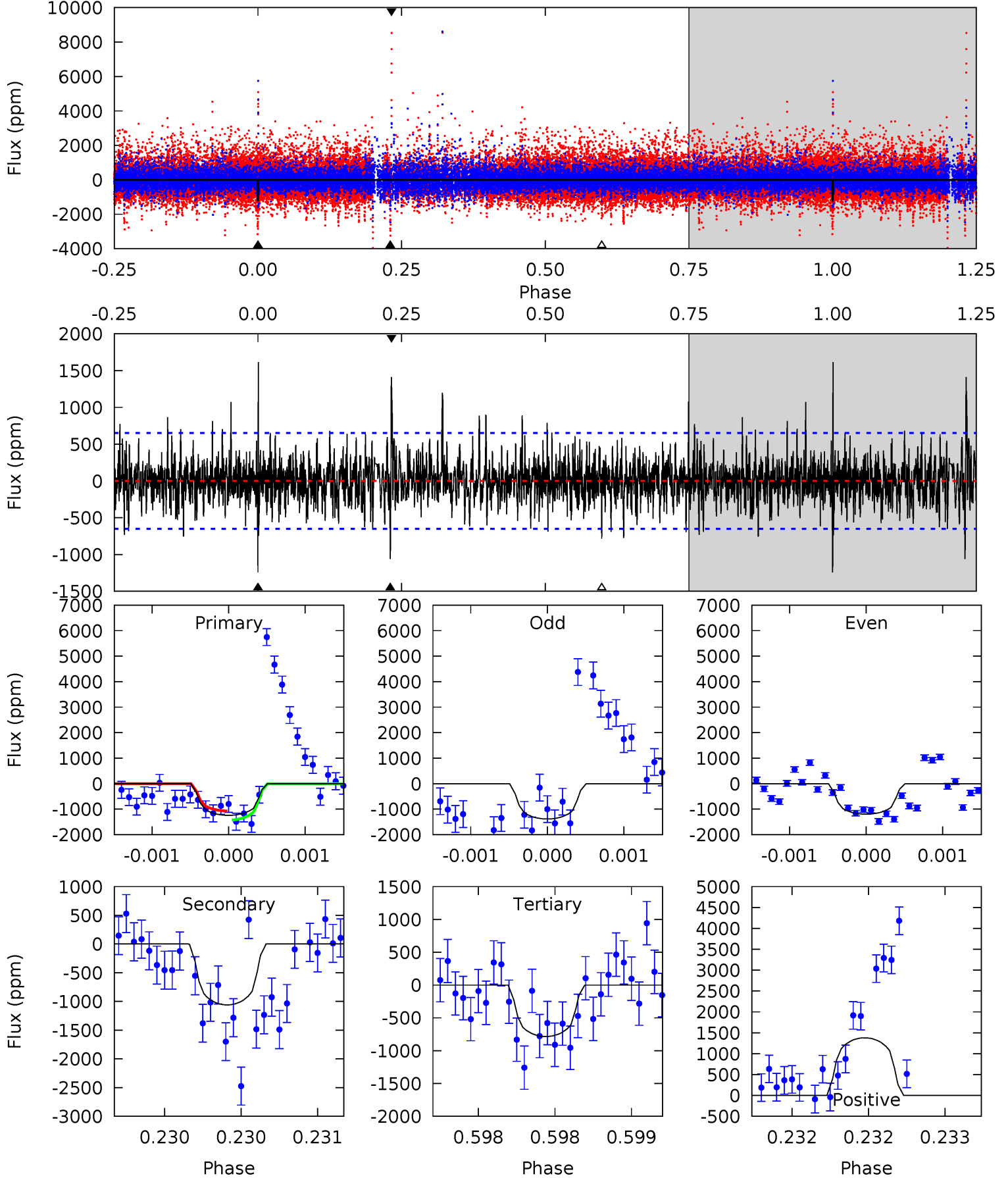
TCE 004174717-04 P=260.019829 Days  $T_0=230.254666$  (BKJD)



# DV Model-Shift Uniqueness Test

004174717-04, P = 260.011219 Days, E = 230.260111 Days

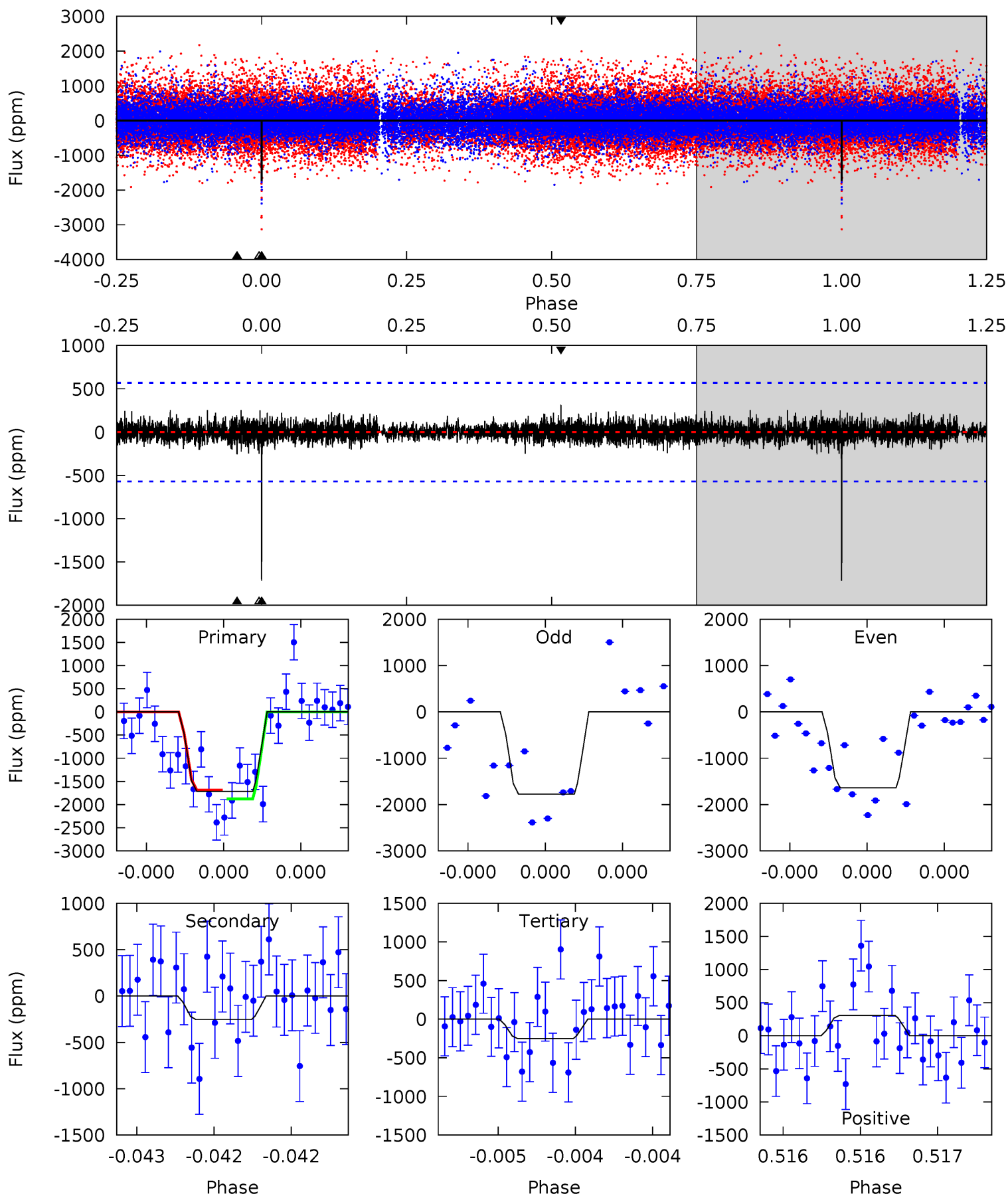
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	8.98	6.64	11.7	5.52	3.40	1.96	3.88	-1.17	2.34	-2.71	0.71	0.93	0.57	1.50



# Alt Model-Shift Uniqueness Test

004174717-04, P = 260.019829 Days, E = 230.254666 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
16.8	2.49	2.45	3.01	5.58	3.50	0.62	14.4	13.8	0.03	-0.52	0.64	1.16	0.15	0.91



### Stellar Parameters For KIC 004174717

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4187^{+130}_{-159}$	$4.656^{+0.063}_{-0.023}$	$-0.280^{+0.300}_{-0.300}$	$0.592^{+0.044}_{-0.071}$	$0.580^{+0.062}_{-0.056}$	$3.935^{+1.144}_{-0.506}$
	+3%/-4%	+1%/-0%	+107%/-107%	+7%/-12%	+11%/-10%	+29%/-13%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004174717-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1060 \pm 118$	$8.85^{+9.14}_{-6.17}$	$241^{+10}_{-11}$	$2681^{+1114}_{-407}$	$3284^{+34190}_{-2480}$
Alt.	$-254 \pm 102$	$8.91^{+8.82}_{-6.17}$	$241^{+9}_{-9}$	$2231^{+808}_{-307}$	$715^{+7144}_{-545}$

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

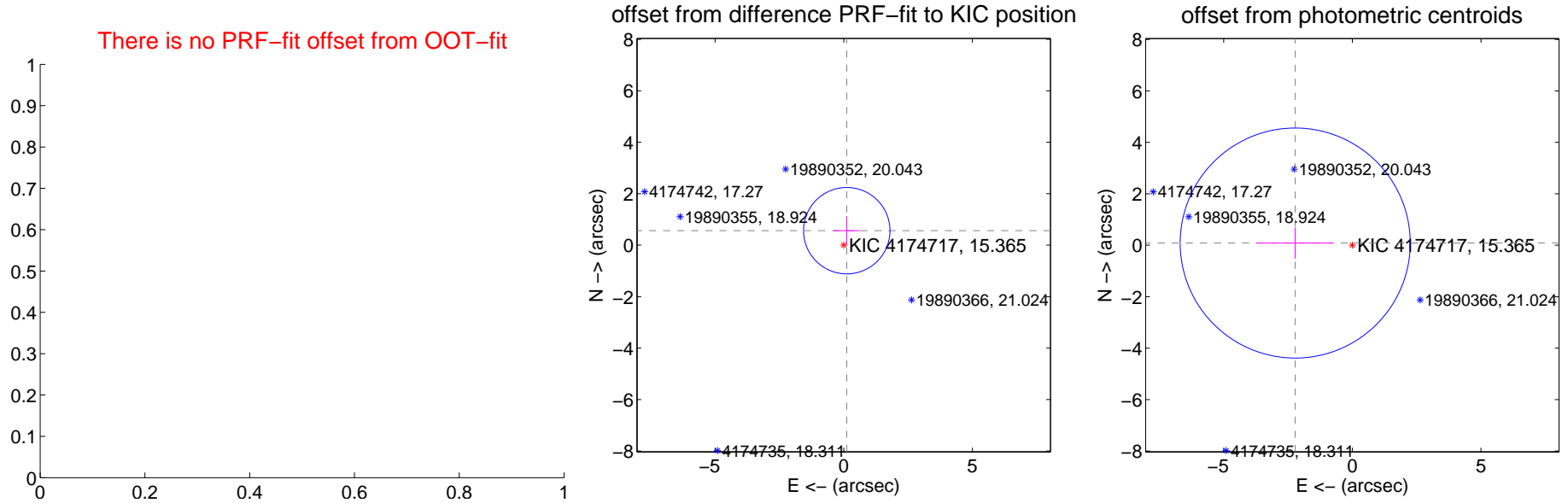
## DV Centroid Data

Supplemental centroid analysis for 004174717-04. Kepler magnitude: 15.37. Transit SNR 9.40

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$0.575 \pm 0.560$	1.03	$-0.117 \pm 0.515$	$0.563 \pm 0.561$
photometric centroid source offset	$2.22 \pm 1.49$	1.49	$2.22 \pm 1.49$	$0.09 \pm 0.61$

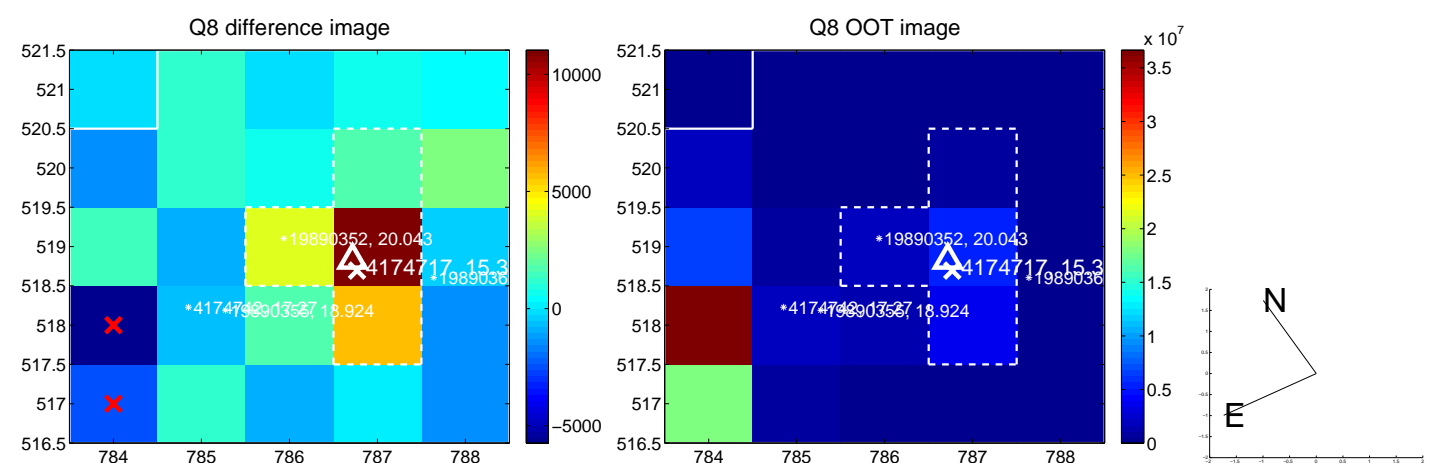
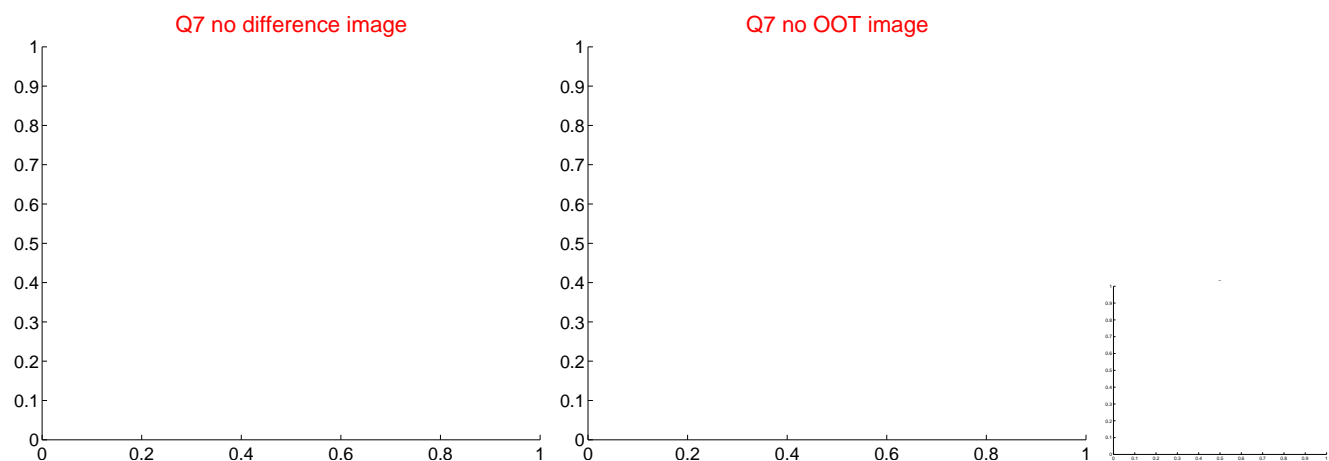
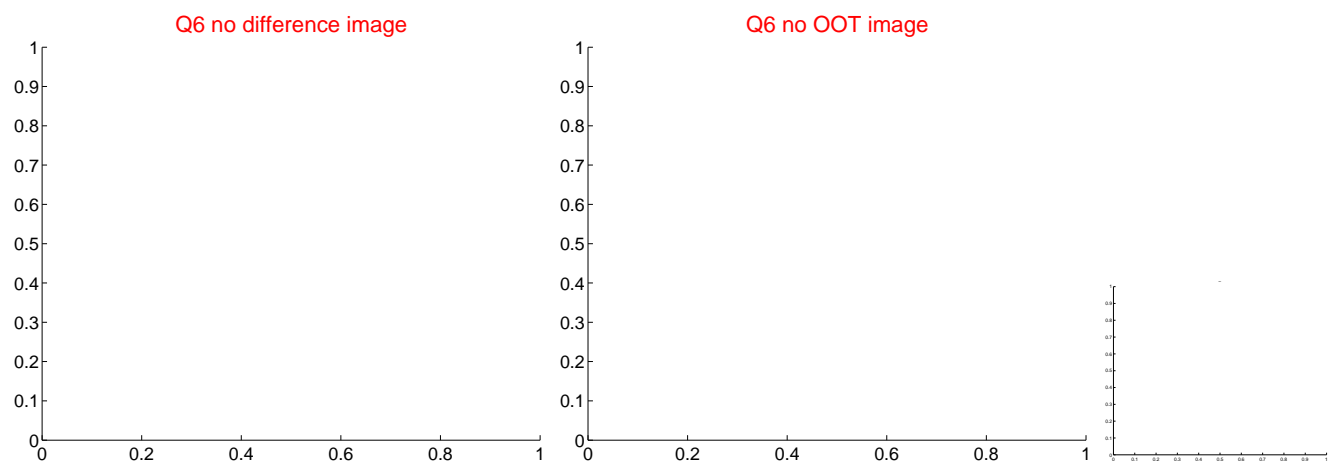
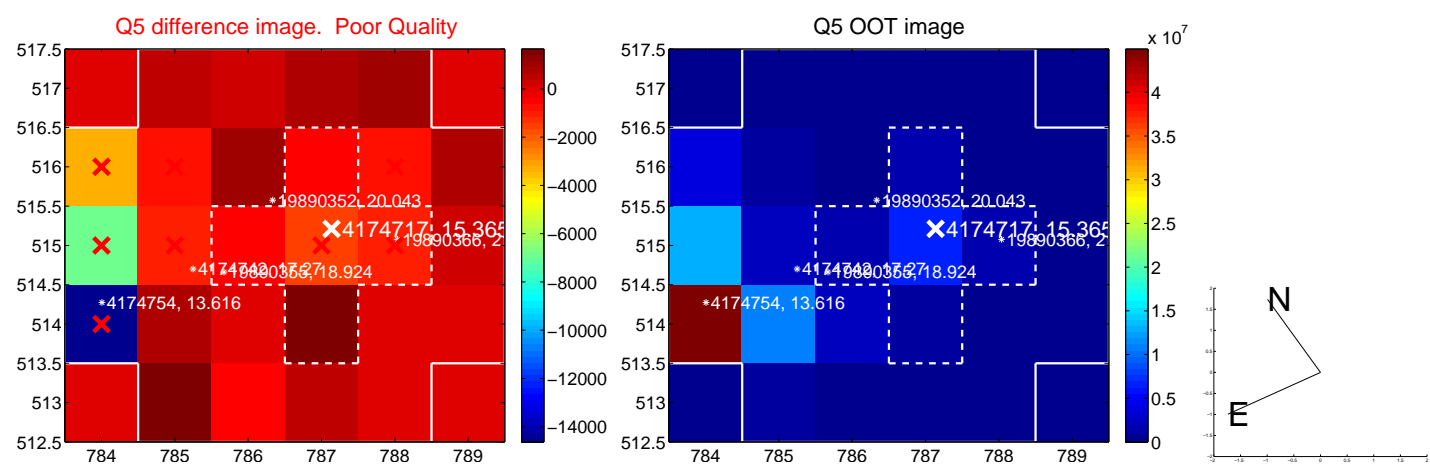


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

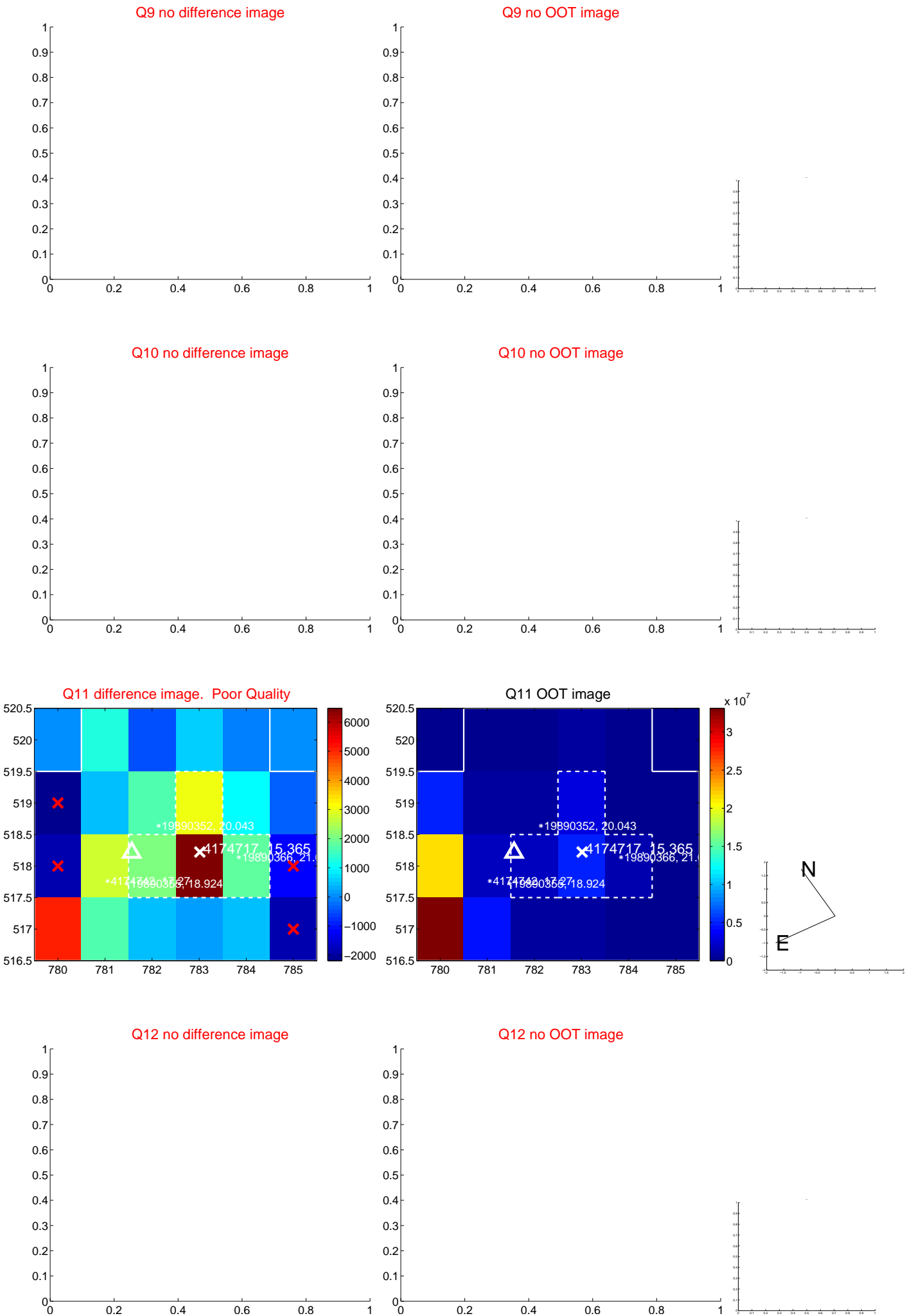


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

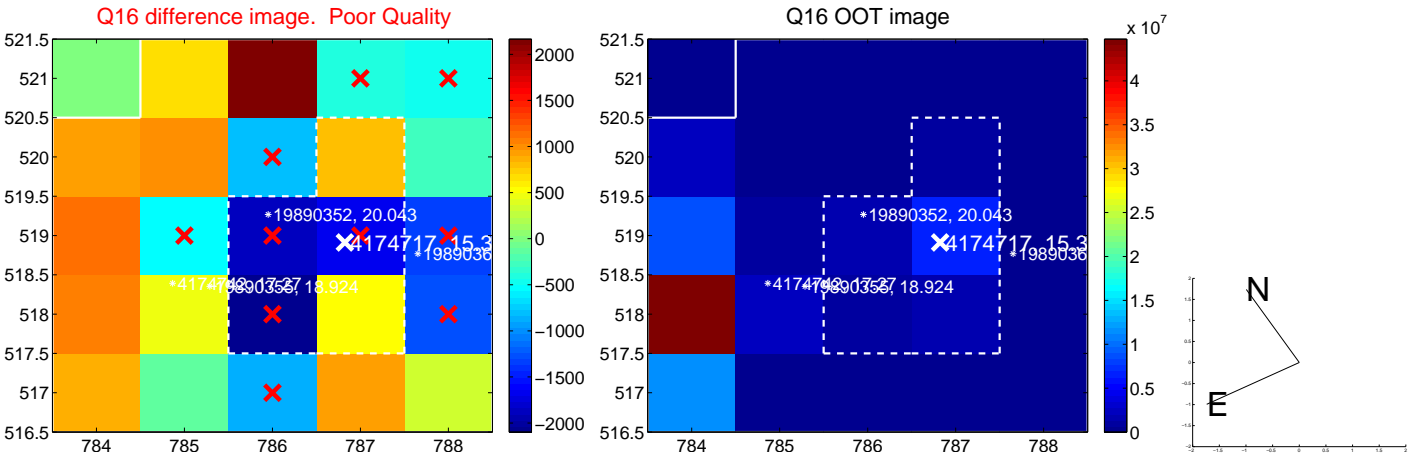
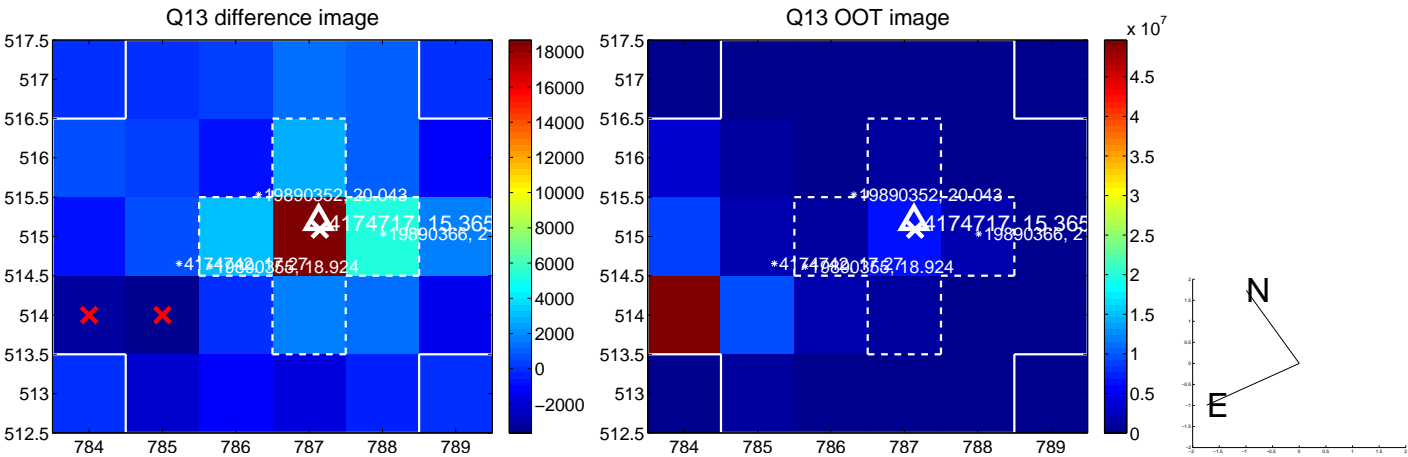




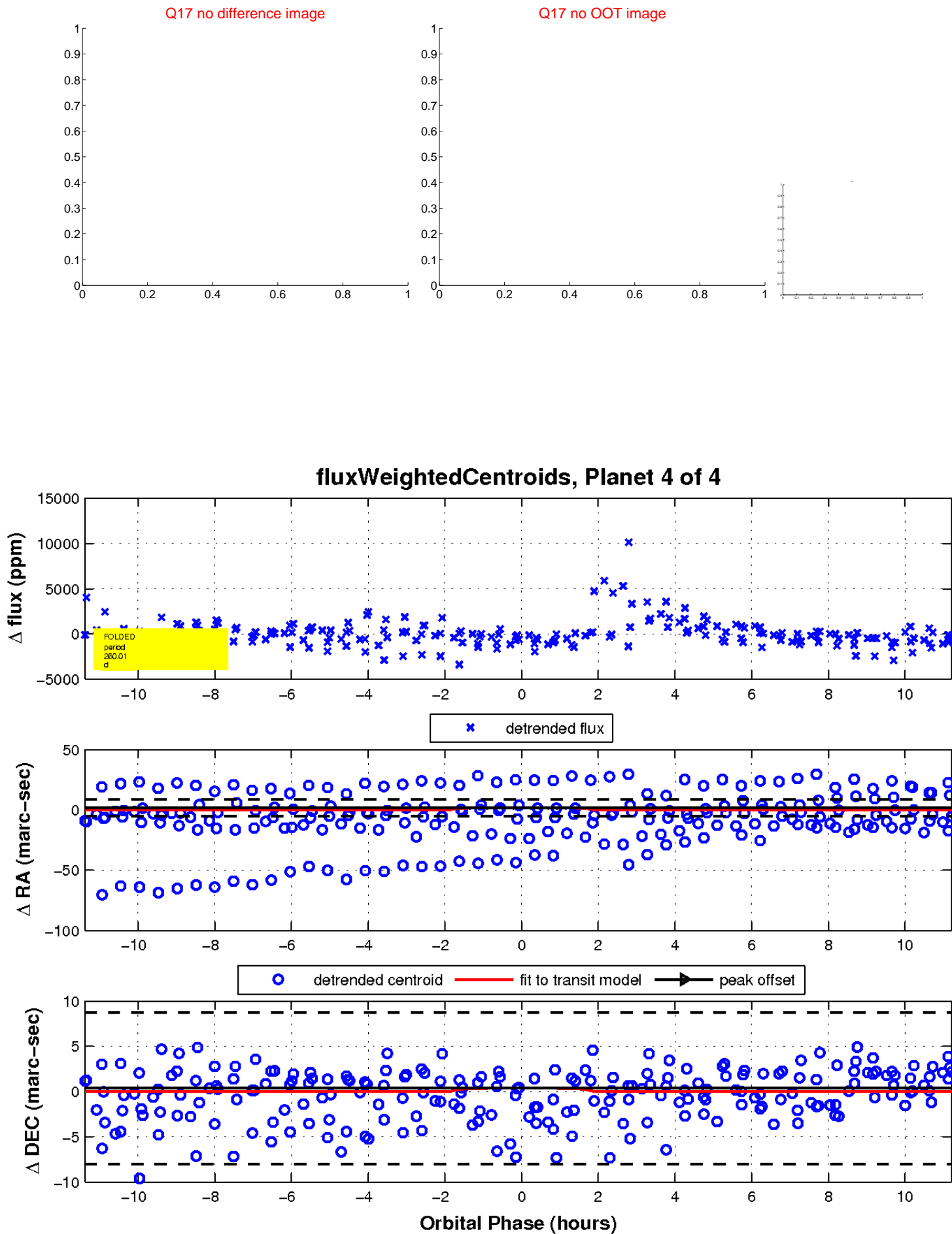
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

