

# KIC 007174505

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007174505-01	OBS	No	403.118446	204.264473	2054.3	5.258	15.3	8.5	0.82	5411	4.30	0.55
007174505-02	OBS	No	341.397154	343.482096	1351.0	4.886	13.0	6.9	0.82	5411	3.07	0.69
007174505-03	OBS	No	712.948497	149.754361	2052.0	25.341	11.2	6.1	0.82	5411	3.65	0.26
007174505-04	OBS	No	381.634377	394.626900	1545.6	4.006	15.7	7.9	0.82	5411	3.92	0.59
007174505-05	OBS	No	456.893076	533.590089	1370.0	3.533	15.4	6.6	0.82	5411	3.10	0.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007174505-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007174505-02	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—CENT_FEW_DIFFS
007174505-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007174505-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007174505-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

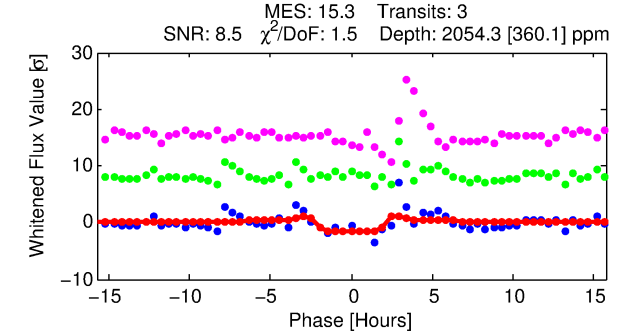
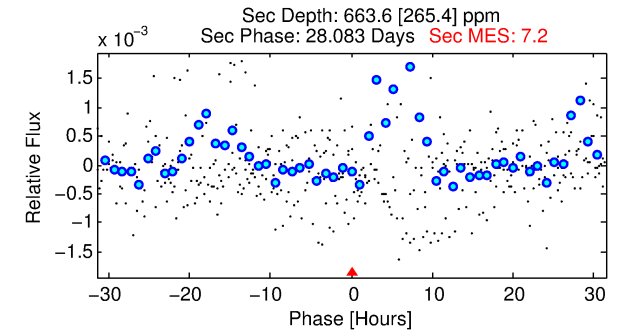
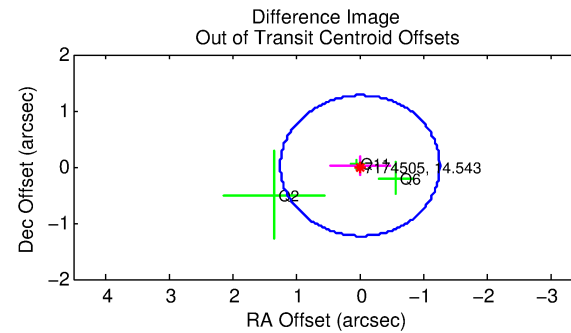
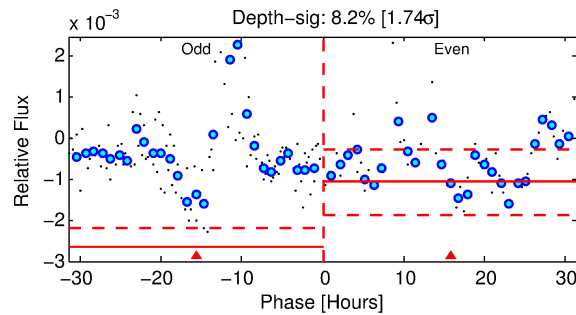
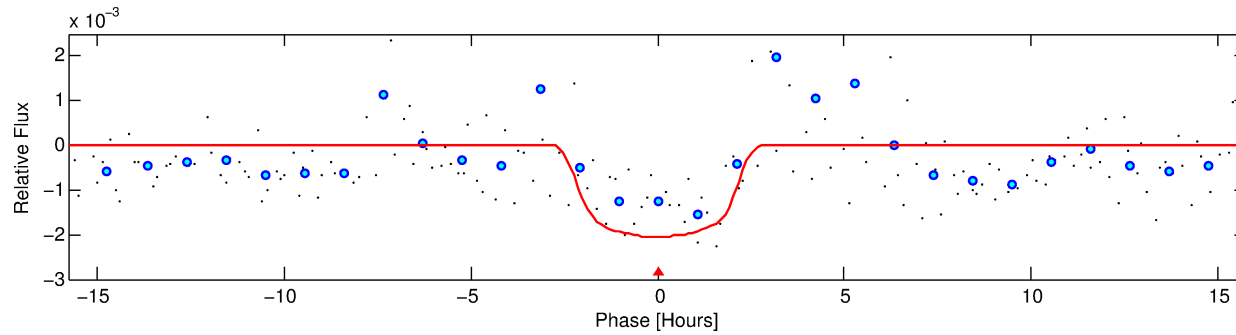
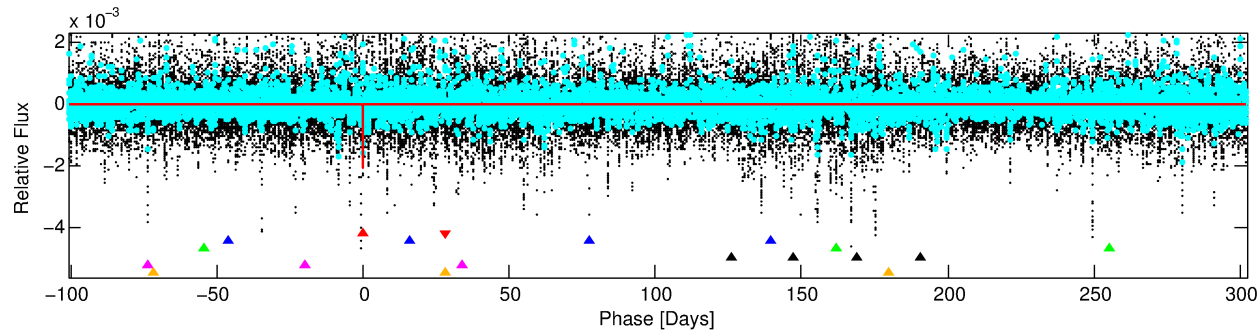
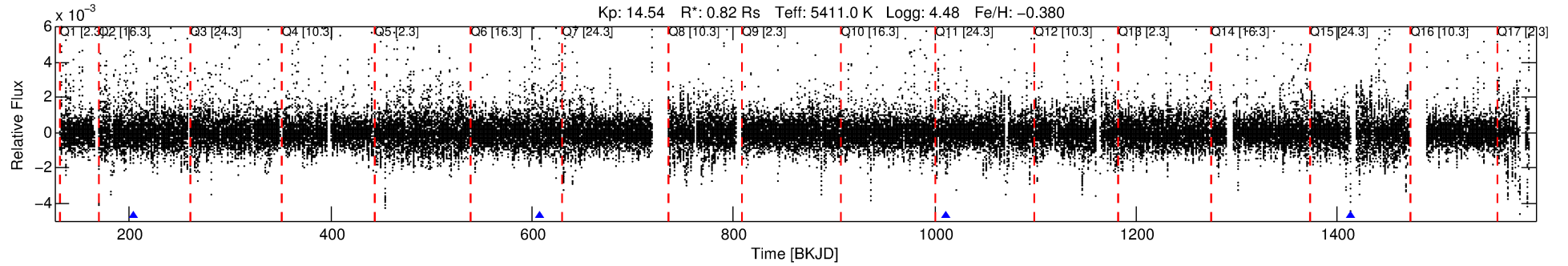
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007174505-01

No Significant Match Found

# DV One-Page Summary

KIC: 7174505 Candidate: 1 of 6 Period: 403.118 d



## DV Fit Results:

Period = 403.11845 [0.00600] d  
Epoch = 204.2645 [0.0077] BKJD  
Rp/R\* = 0.0481 [0.0074]  
a/R\* = 348.25 [151.00]  
b = 0.86 [0.13]  
Seff = 0.55 [0.14]  
Teq = 220 [14] K  
Rp = 4.30 [0.95] Re  
a = 0.9672 [0.1423] AU  
Ag = 18471.88 [10221.08] [1.81σ]  
Teffp = 3959 [512] K [7.30σ]

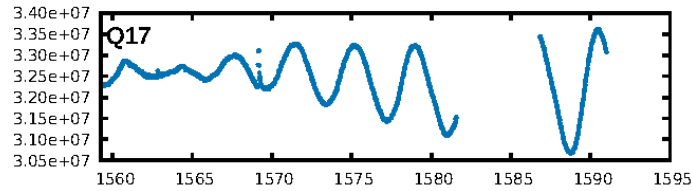
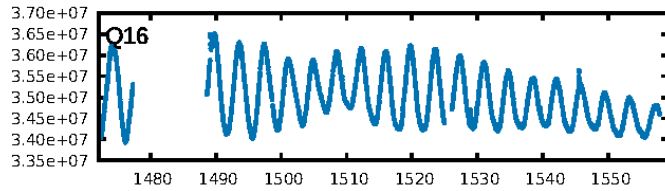
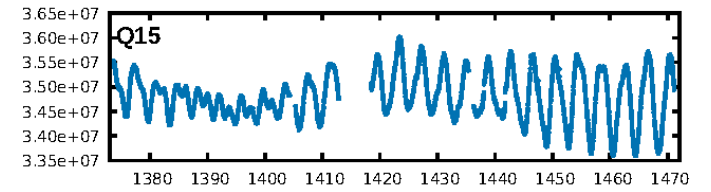
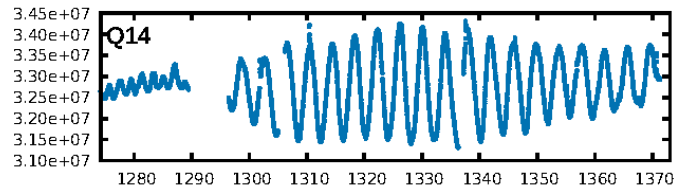
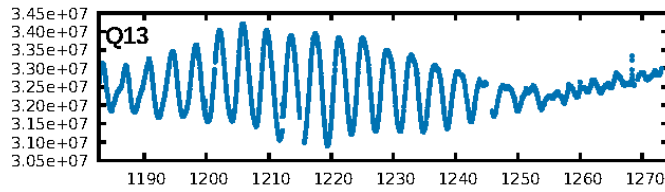
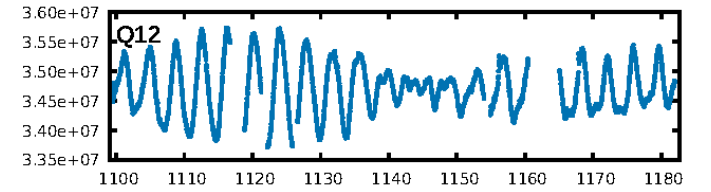
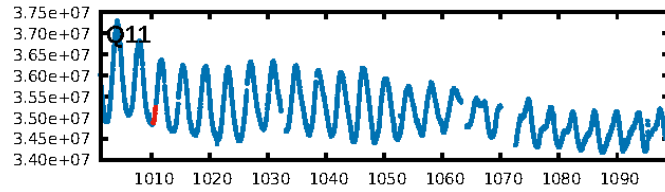
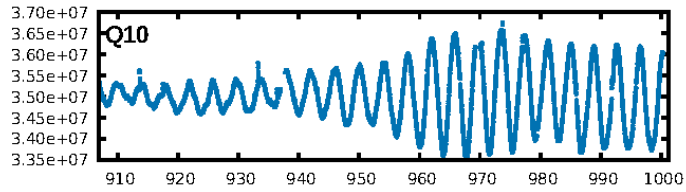
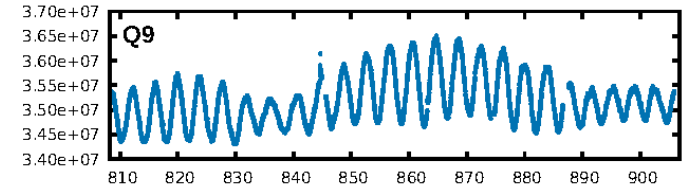
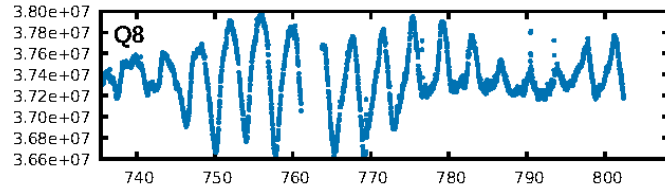
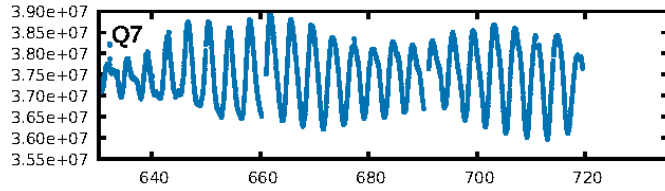
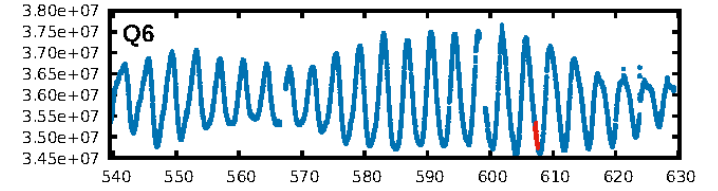
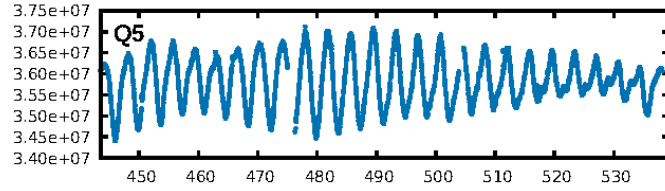
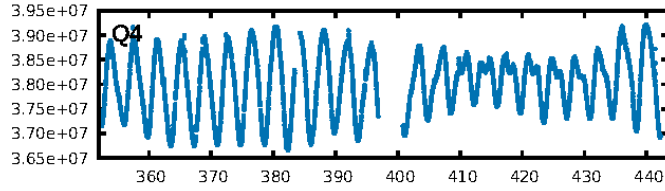
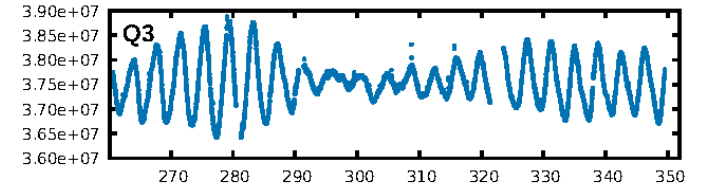
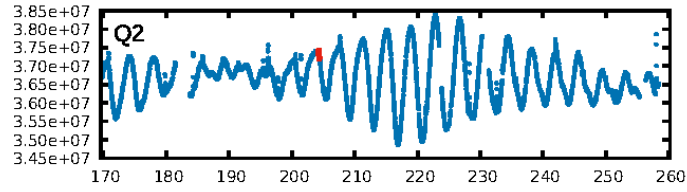
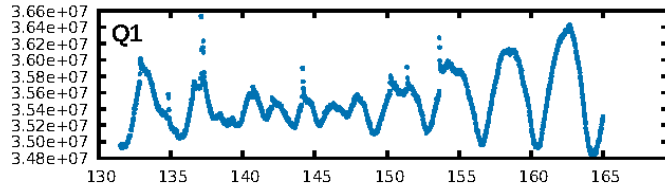
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.00σ]  
LongPeriod-sig: 100.0% [203.73σ]  
ModelChiSquare2-sig: 48.6%  
ModelChiSquareGof-sig: 46.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -12.25  
Centroid-sig: 74.8%  
Centroid-so: 0.763 arcsec [1.02σ]  
OotOffset-rm: 0.021 arcsec [0.05σ]  
OotOffset-st: 2/1/0/0 [3]  
KicOffset-rm: 0.060 arcsec [0.16σ]  
KicOffset-st: 2/1/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

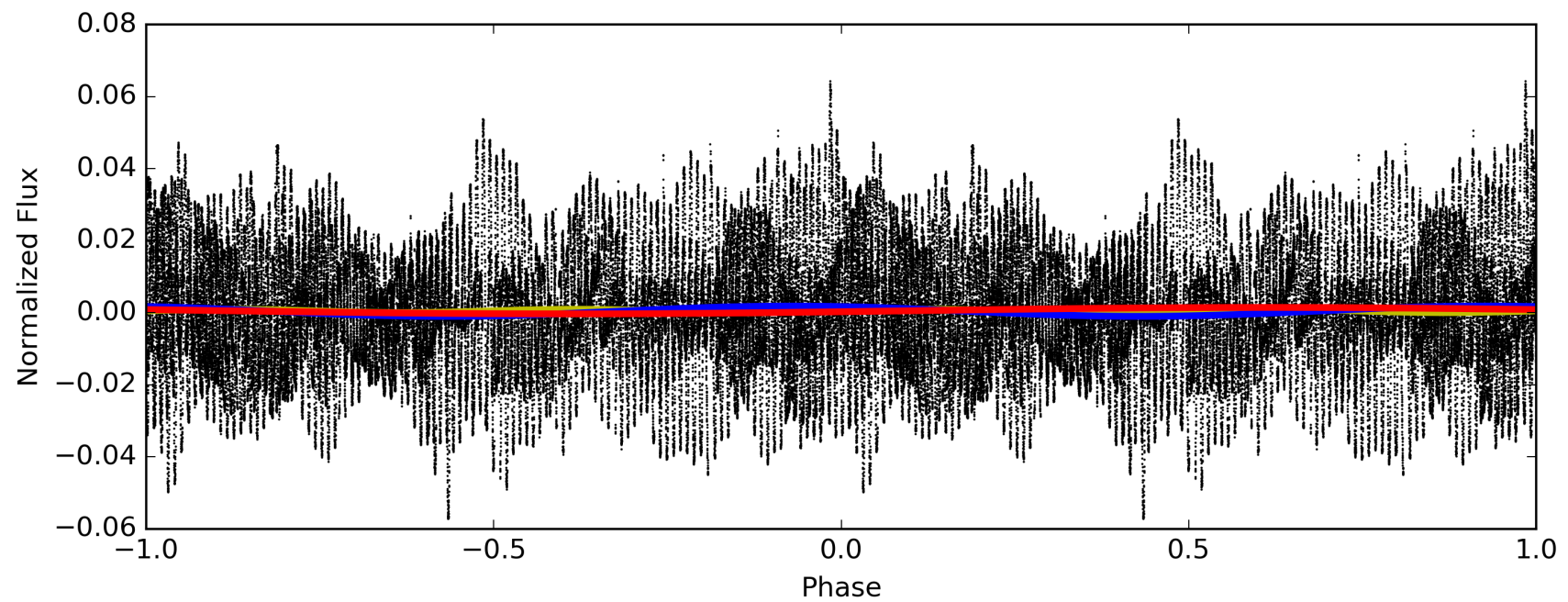
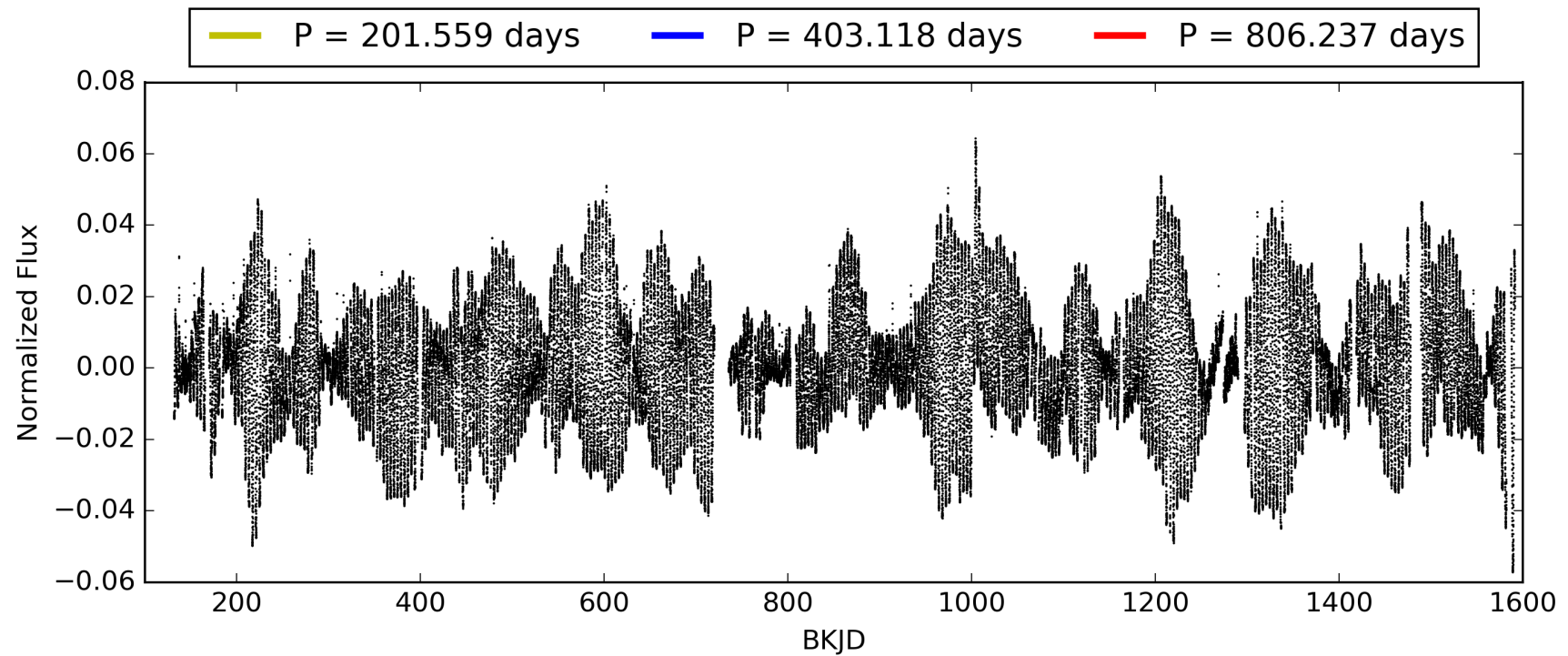
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:40:46 Z

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

# TCE 007174505-01, PDC Light Curves



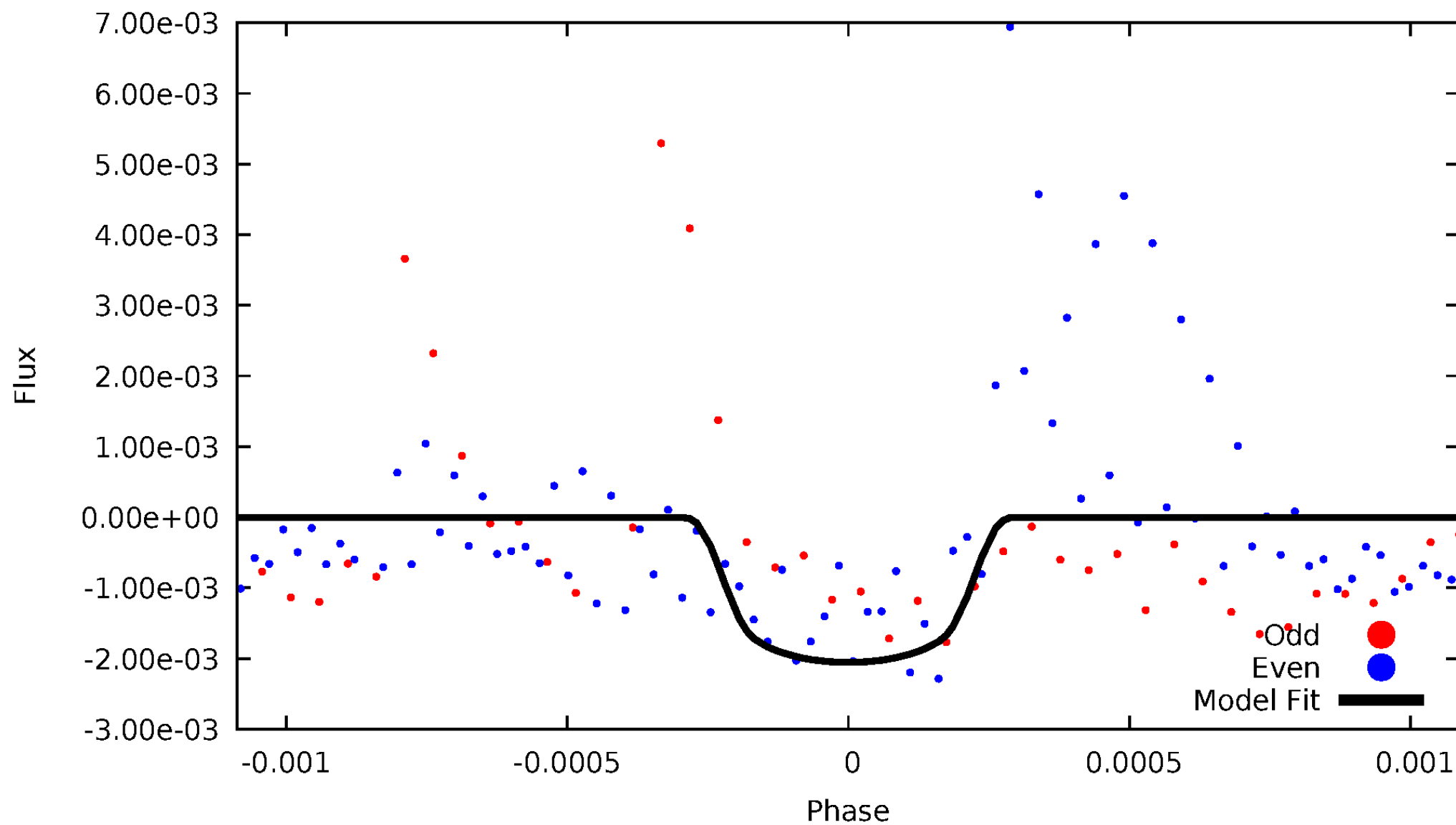
TCE 007174505-01





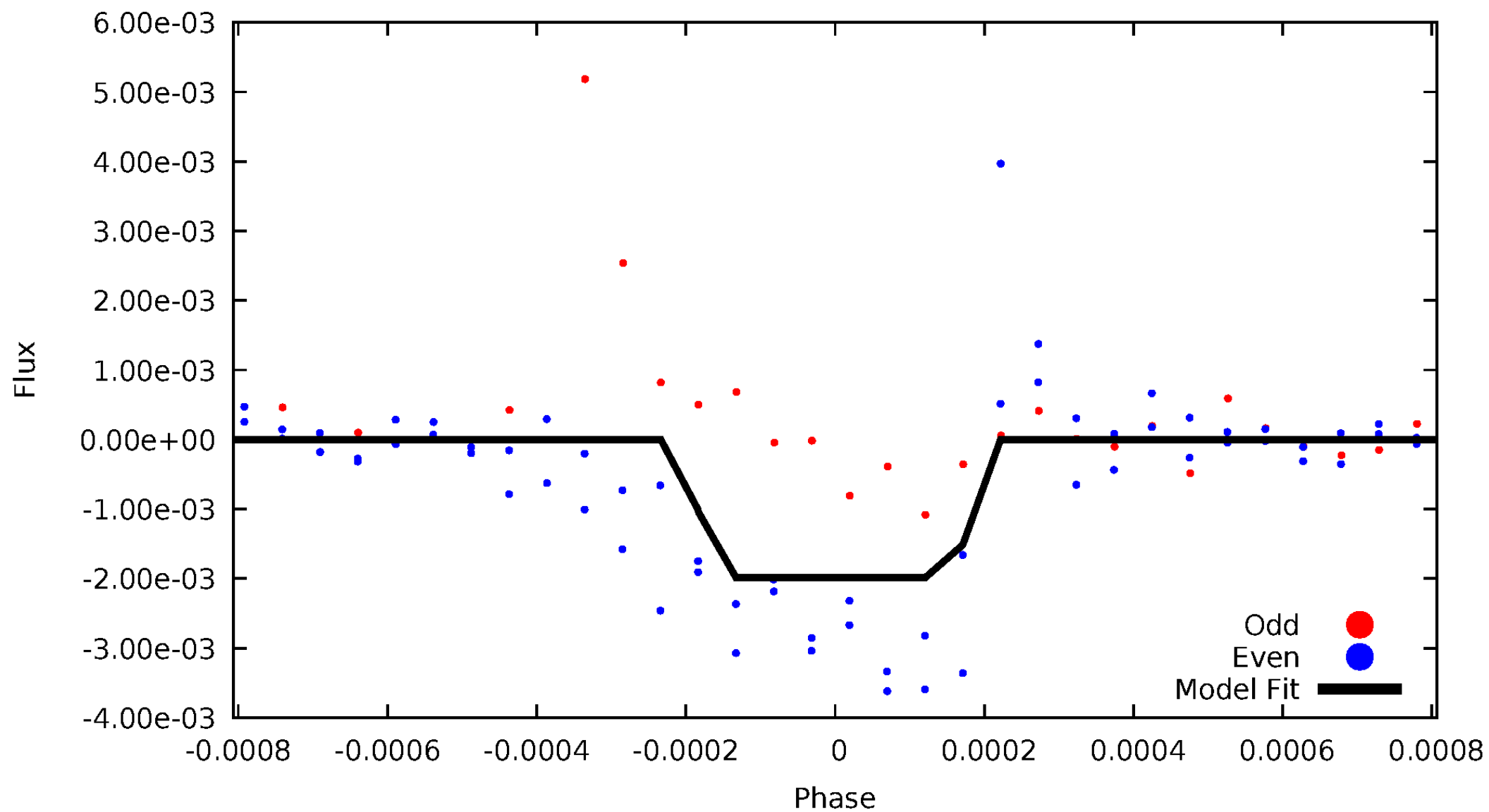
# DV Odd/Even

TCE 007174505-01



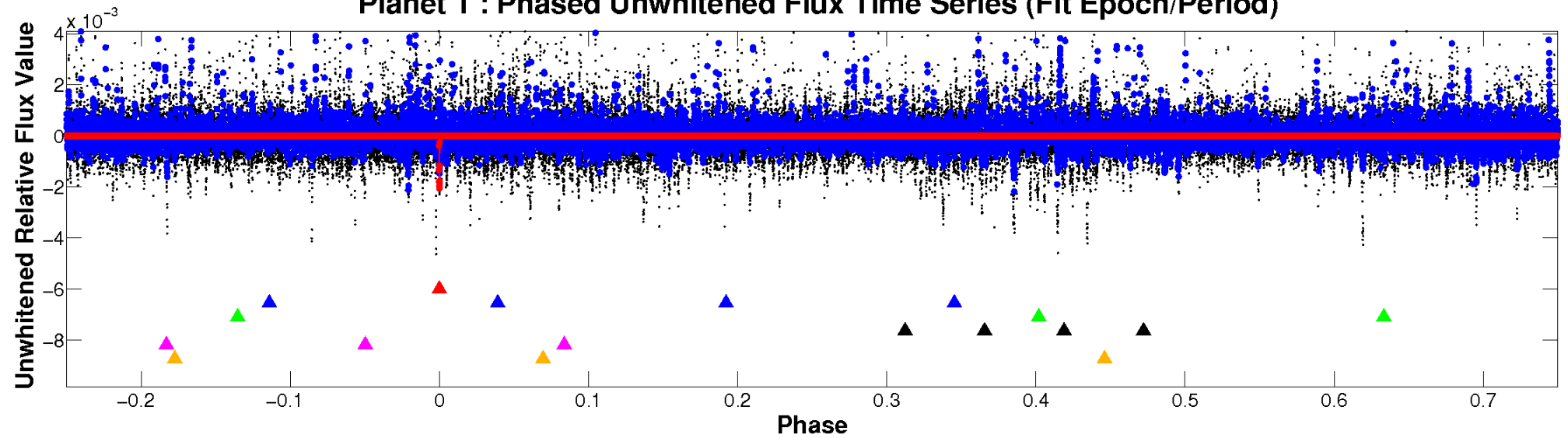
# ALT Odd/Even

TCE 007174505-01

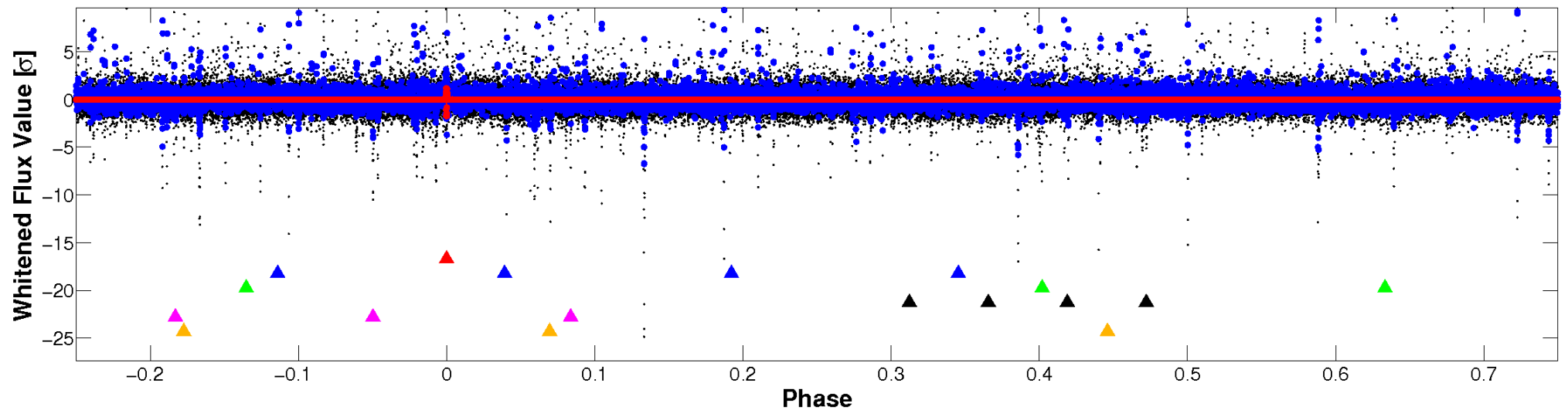


# Non-Whitened Vs. Whitened Light Curve

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

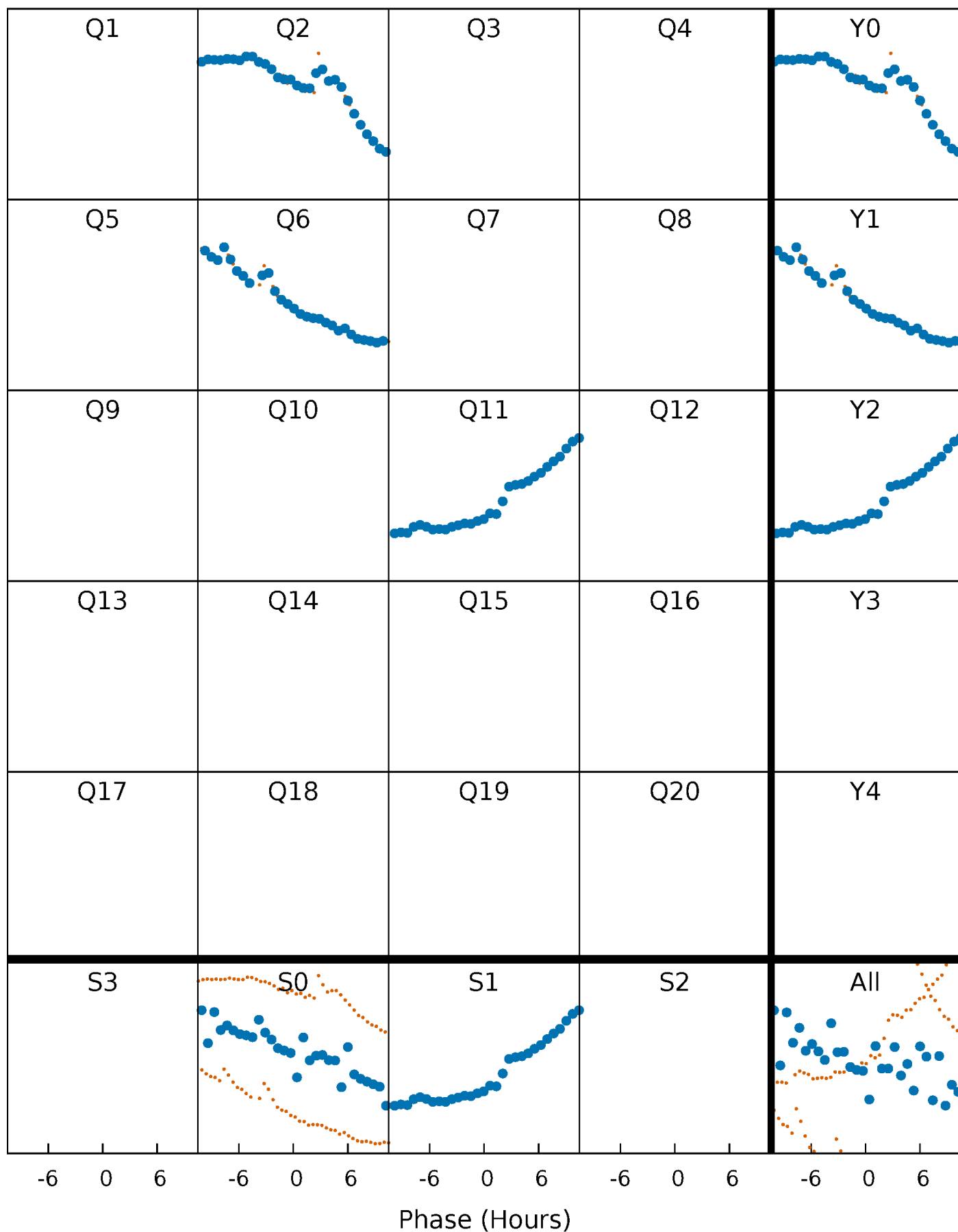


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



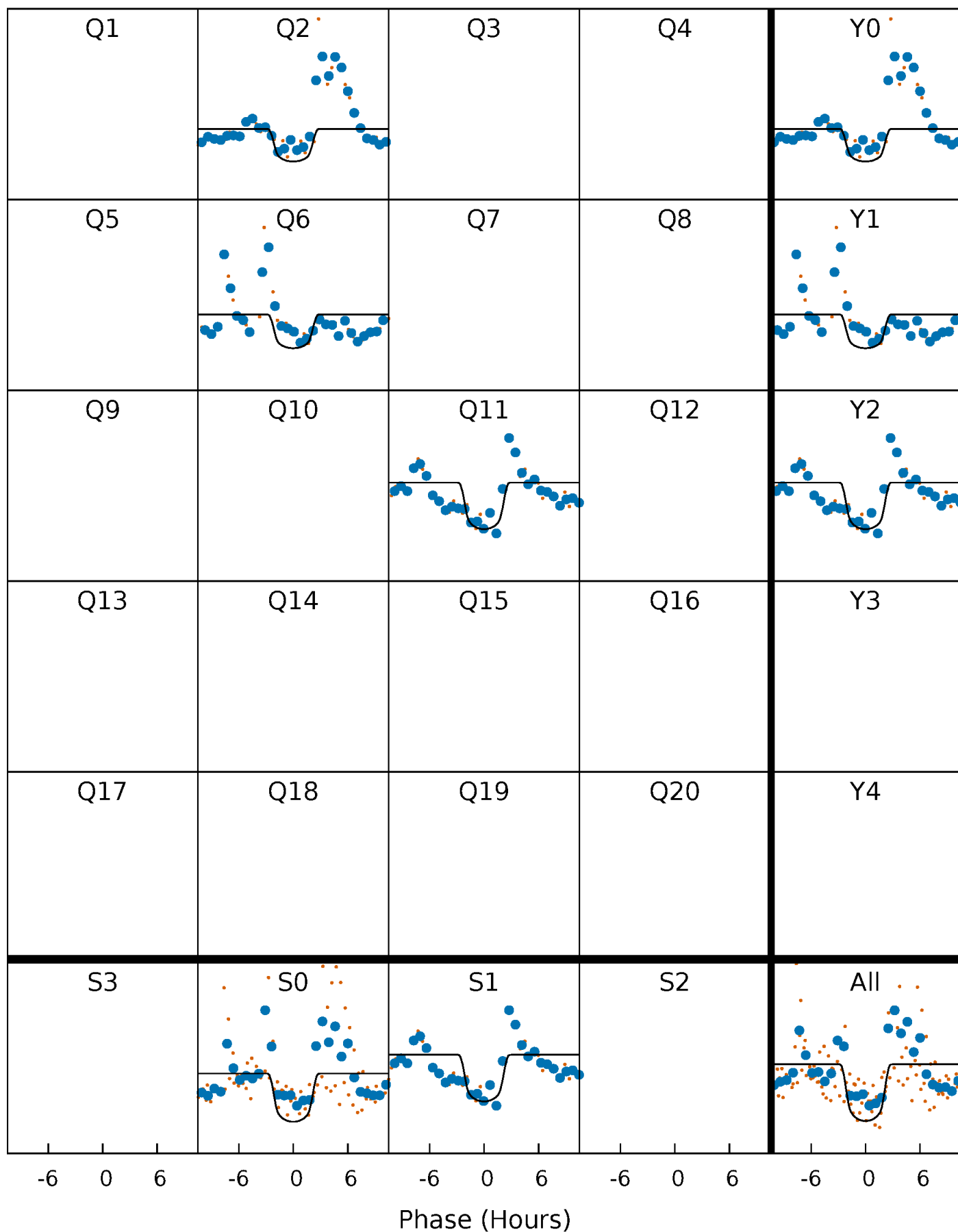
# PDC Quarter-Phased Transit Curves

TCE 007174505-01 P=403.118446 Days  $T_0=204.264473$  (BKJD)



# DV Quarter-Phased Transit Curves

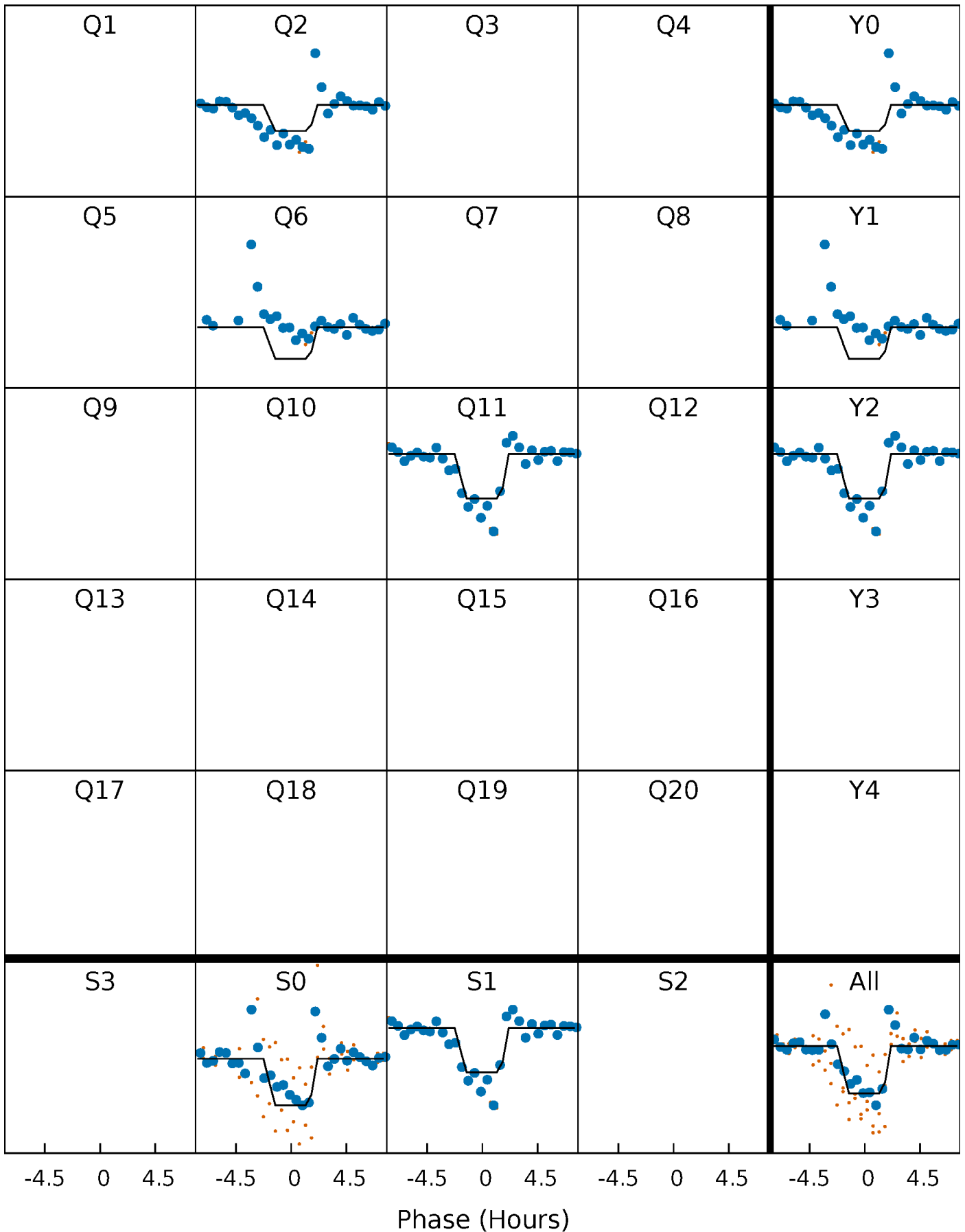
TCE 007174505-01 P=403.118446 Days  $T_0=204.264473$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

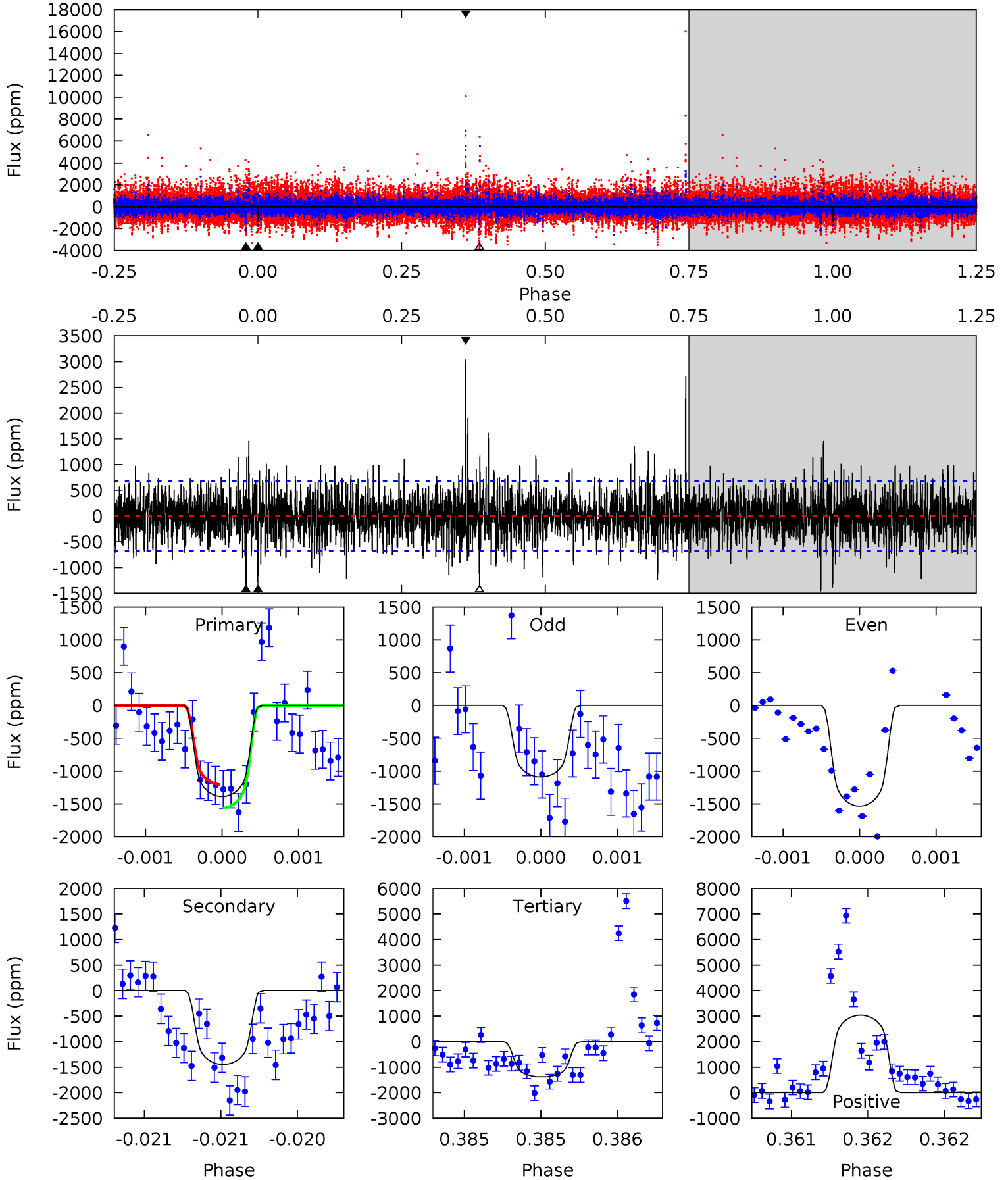
TCE 007174505-01 P=403.113272 Days  $T_0=204.291017$  (BKJD)



# DV Model-Shift Uniqueness Test

007174505-01, P = 403.118446 Days, E = 204.264473 Days

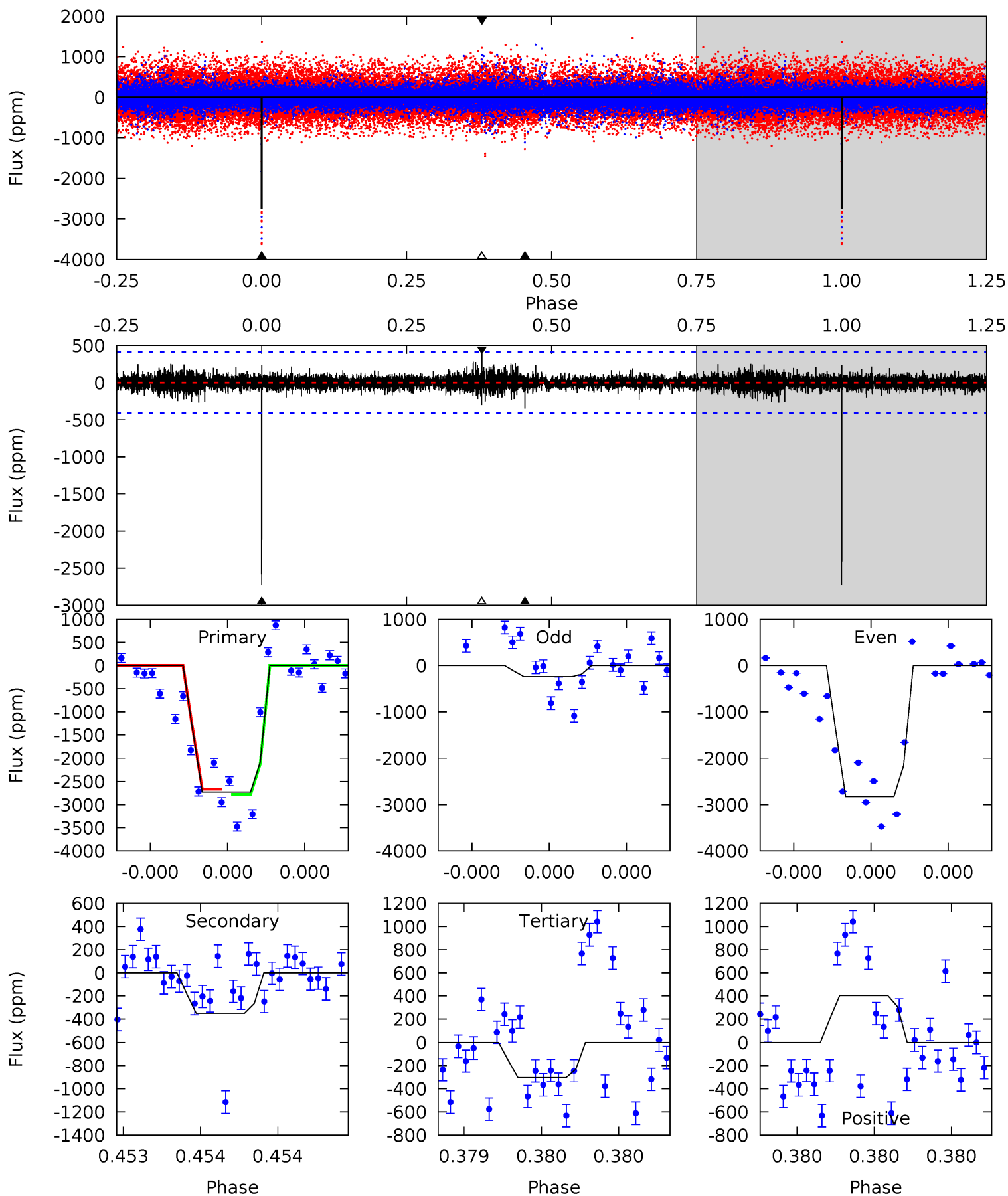
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	11.8	11.3	24.8	5.54	3.43	2.78	0.06	-13.5	0.53	-13.0	1.42	1.15	0.68	1.48



# Alt Model-Shift Uniqueness Test

007174505-01, P = 403.113272 Days, E = 204.291017 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
37.2	4.78	4.15	5.49	5.61	3.54	0.71	33.1	31.7	0.63	-0.71	20.6	0.74	0.13	0



### Stellar Parameters For KIC 007174505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5411^{+160}_{-160}$	$4.482^{+0.120}_{-0.132}$	$-0.380^{+0.350}_{-0.300}$	$0.819^{+0.131}_{-0.105}$	$0.742^{+0.115}_{-0.046}$	$1.904^{+0.991}_{-0.647}$
	+3%/-3%	+3%/-3%	+92%/-79%	+16%/-13%	+15%/-6%	+52%/-34%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007174505-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1446 \pm 122$	$4.38^{+0.79}_{-0.75}$	$307^{+17}_{-15}$	$4870^{+378}_{-311}$	$39473^{+19280}_{-11750}$
Alt.	$-350 \pm 73$	$3.96^{+0.83}_{-0.67}$	$308^{+17}_{-15}$	$3859^{+309}_{-246}$	$11415^{+6432}_{-4049}$

$T_{\text{max}}$  = 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

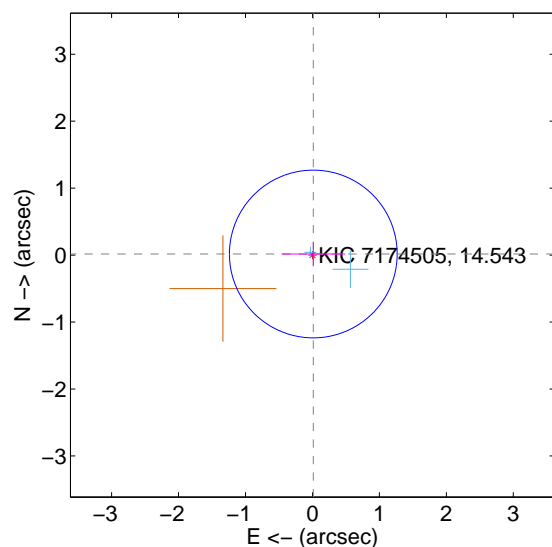
Supplemental centroid analysis for 007174505-01. Kepler magnitude: 14.54. Transit SNR 8.47

There are 2 quarters with good PRF difference image offsets

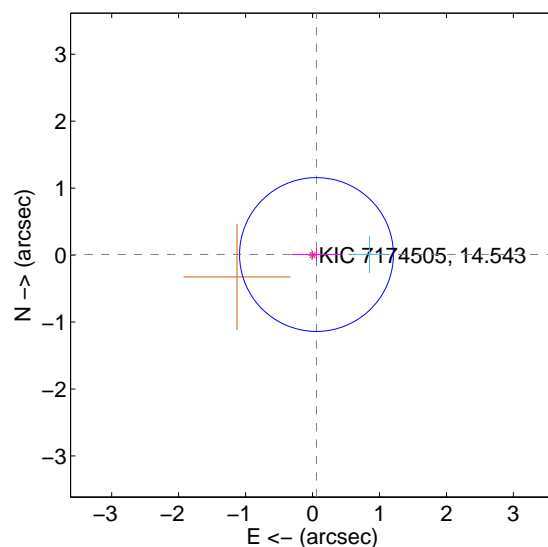
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.021 \pm 0.417$	0.05	$-0.013 \pm 0.474$	$0.016 \pm 0.175$
PRF-fit source offset from KIC position	$0.060 \pm 0.383$	0.16	$-0.059 \pm 0.376$	$0.009 \pm 0.104$
photometric centroid source offset	$0.76 \pm 0.75$	1.02	$-0.76 \pm 0.75$	$0.07 \pm 0.66$

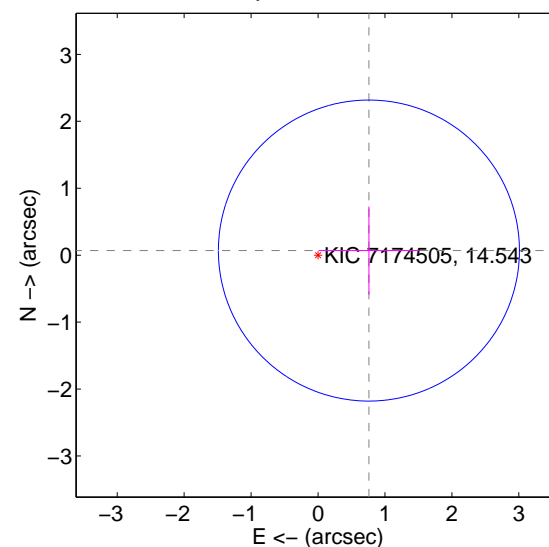
offset from difference PRF-fit to OOT PRF-fit



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.

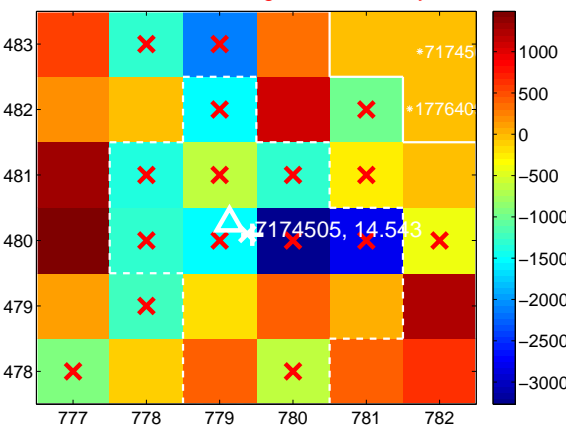
Q1 no difference image



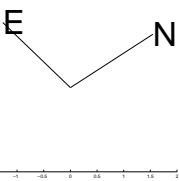
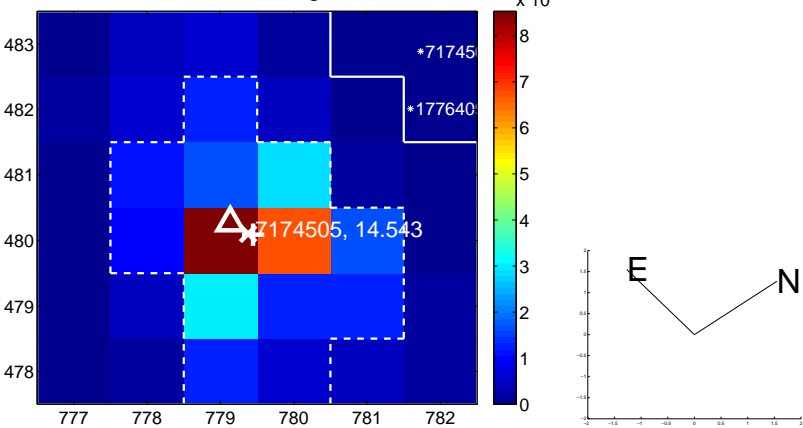
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image

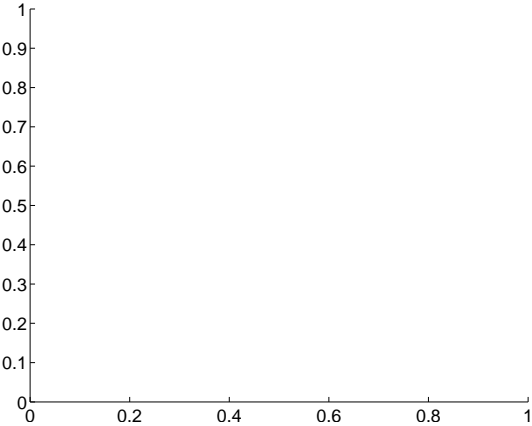


Q4 no OOT image

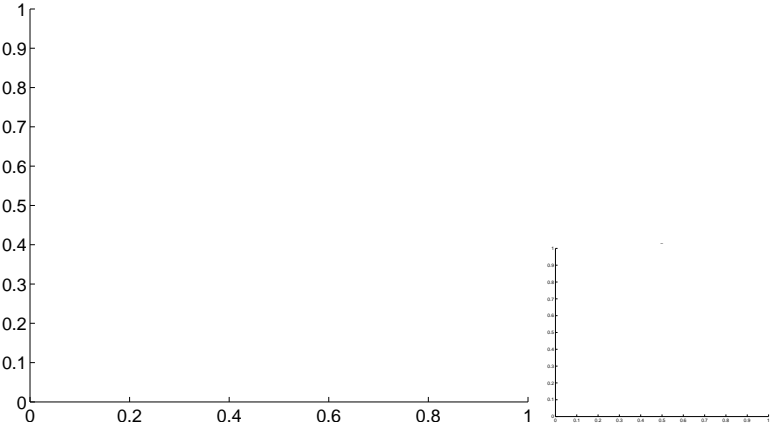


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

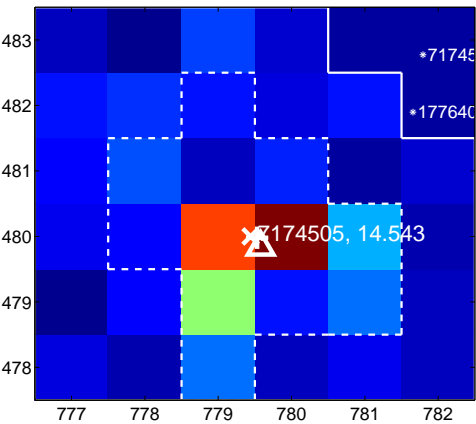
Q5 no difference image



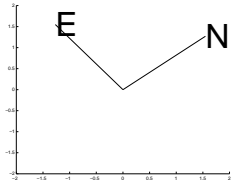
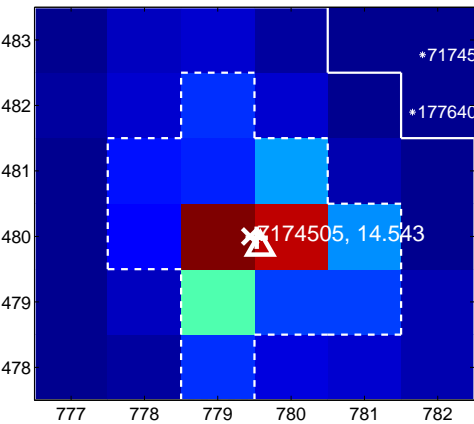
Q5 no OOT image



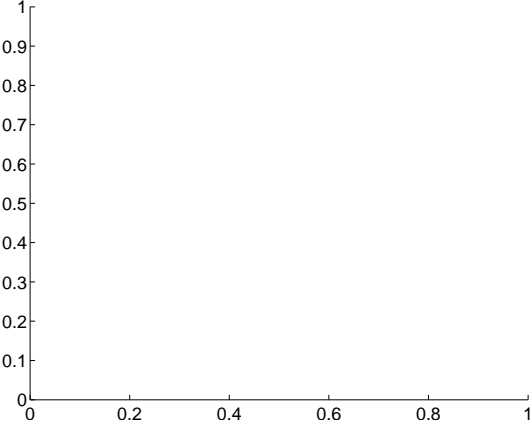
Q6 difference image



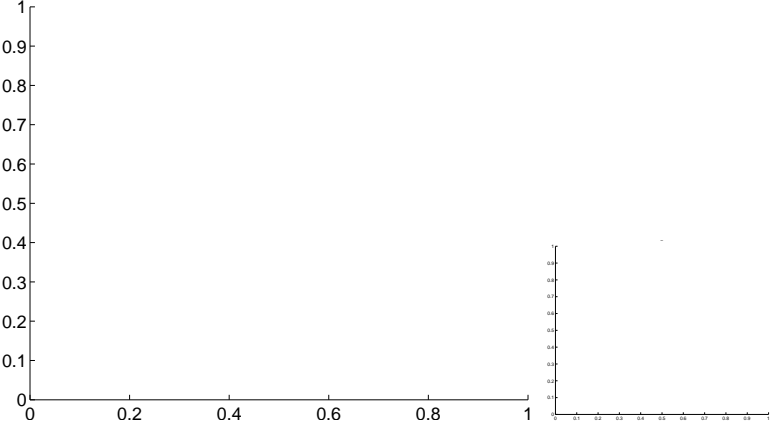
Q6 OOT image



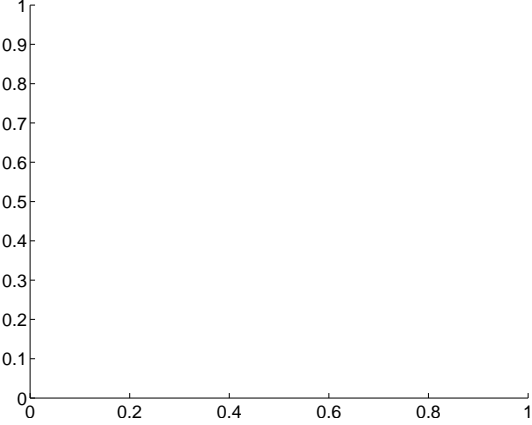
Q7 no difference image



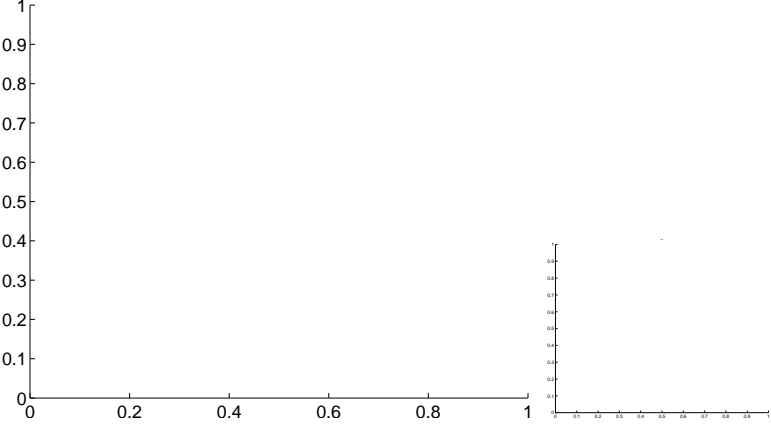
Q7 no OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



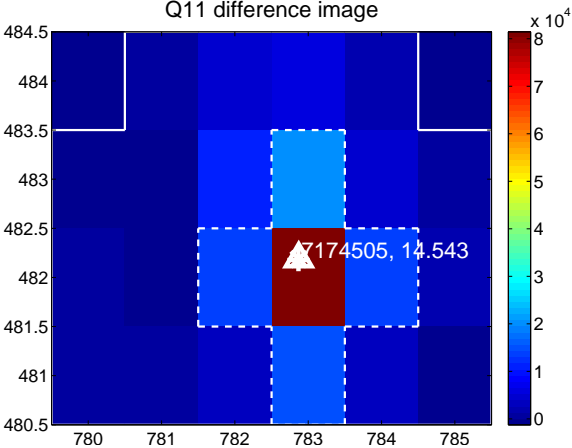
Q10 no difference image



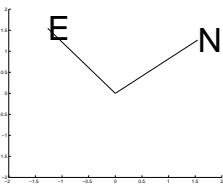
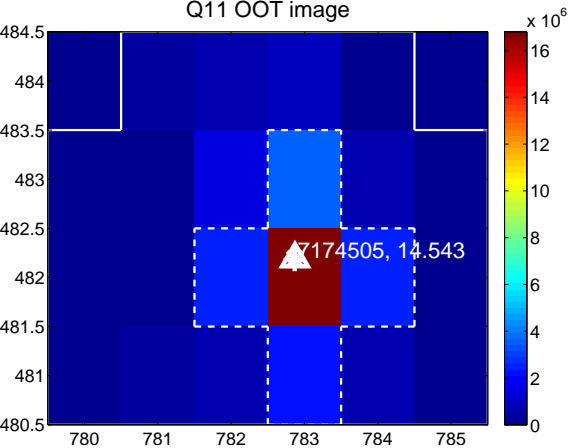
Q10 no OOT image



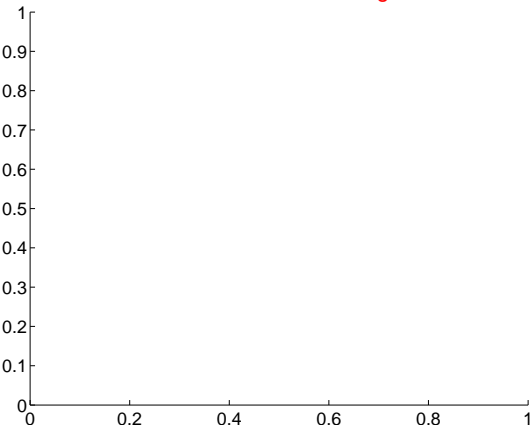
Q11 difference image



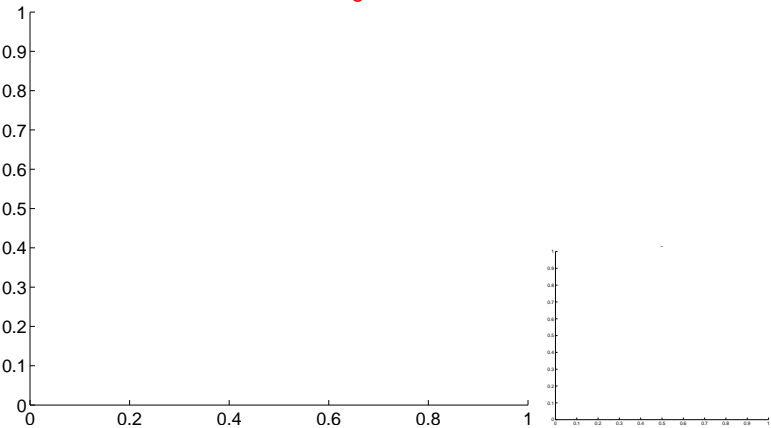
Q11 OOT image



Q12 no difference image



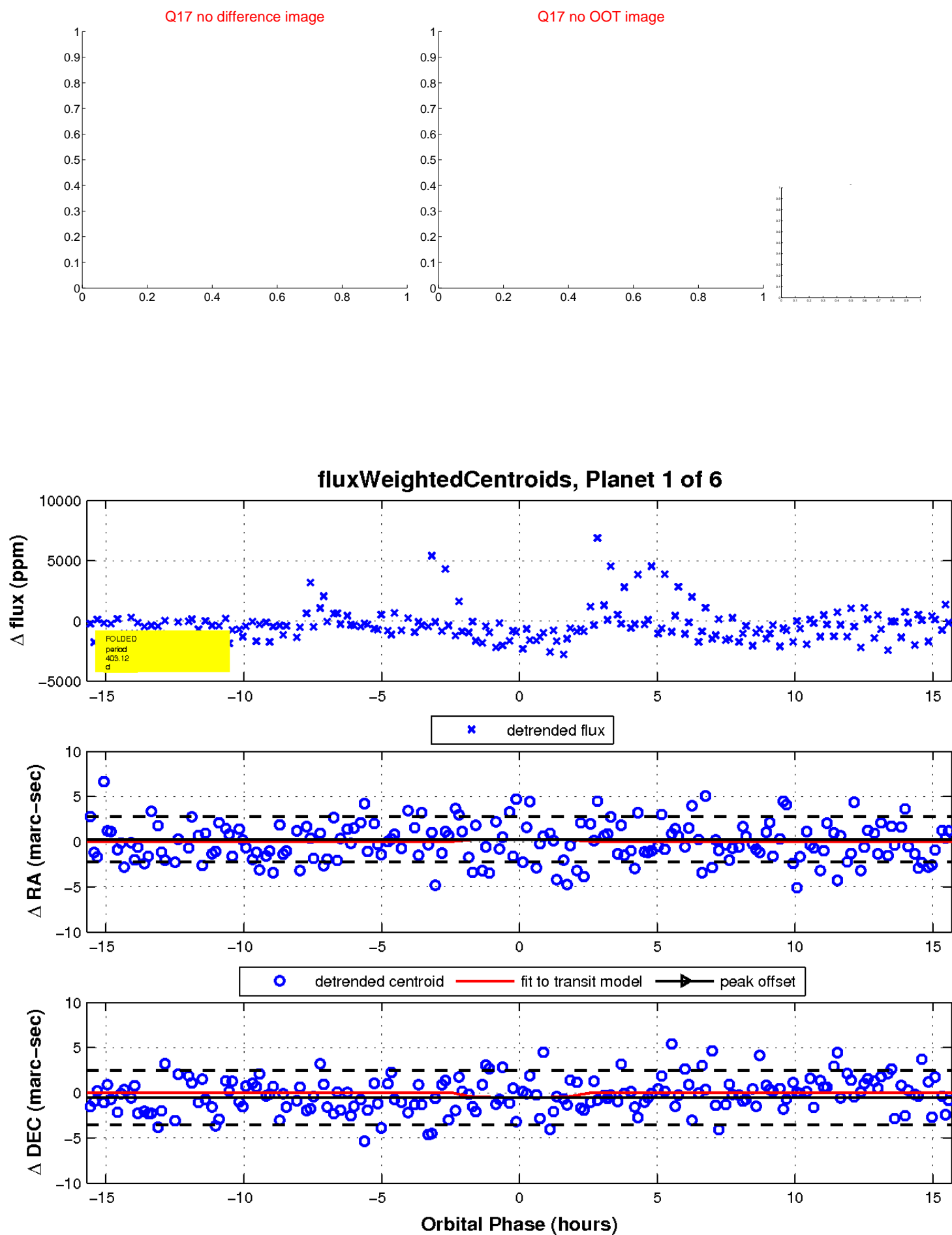
Q12 no OOT image



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



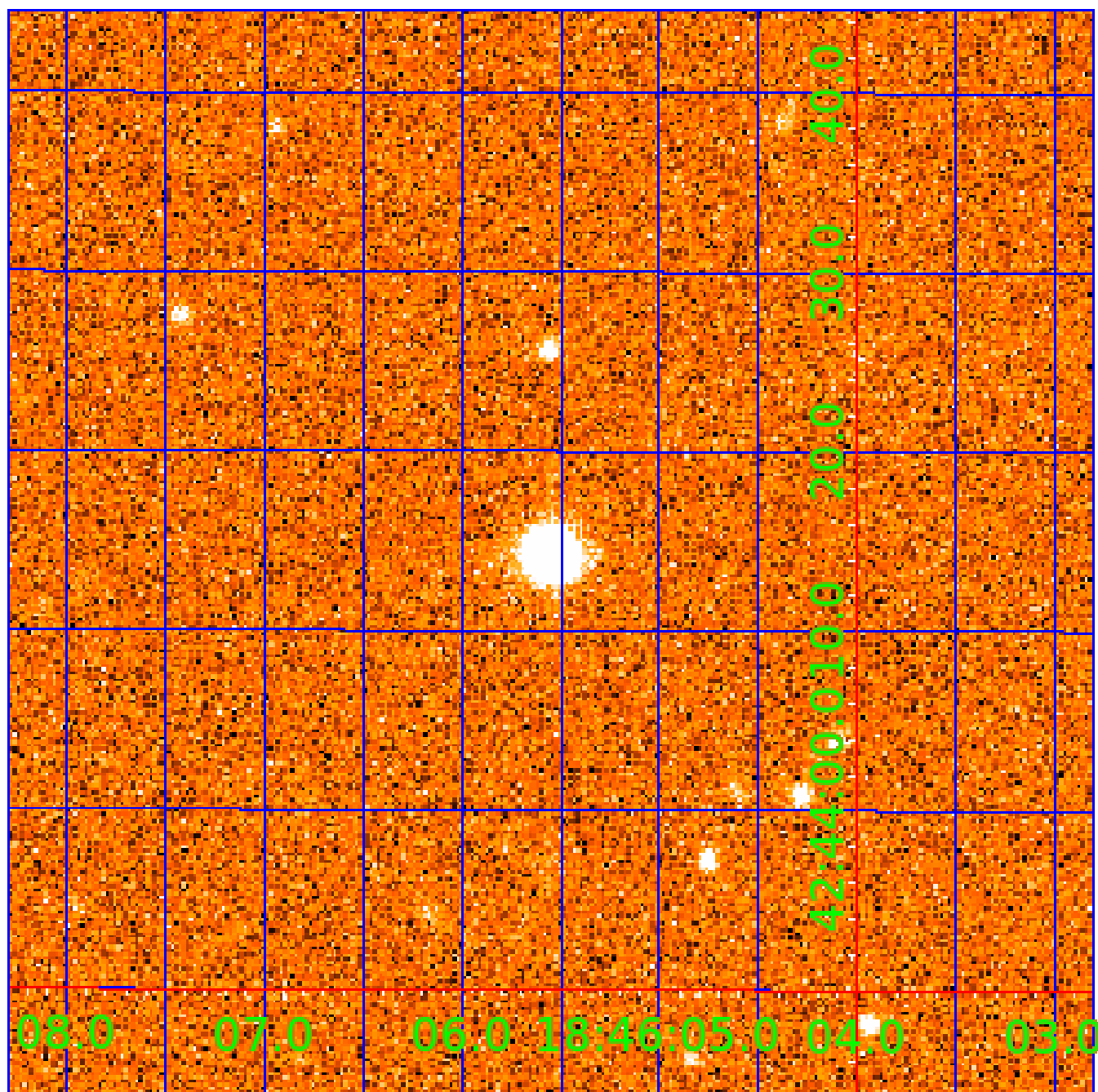
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





# UKIRT Image

Declination



# KIC 007174505

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007174505-01	OBS	No	403.118446	204.264473	2054.3	5.258	15.3	8.5	0.82	5411	4.30	0.55
007174505-02	OBS	No	341.397154	343.482096	1351.0	4.886	13.0	6.9	0.82	5411	3.07	0.69
007174505-03	OBS	No	712.948497	149.754361	2052.0	25.341	11.2	6.1	0.82	5411	3.65	0.26
007174505-04	OBS	No	381.634377	394.626900	1545.6	4.006	15.7	7.9	0.82	5411	3.92	0.59
007174505-05	OBS	No	456.893076	533.590089	1370.0	3.533	15.4	6.6	0.82	5411	3.10	0.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007174505-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007174505-02	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—CENT_FEW_DIFFS
007174505-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007174505-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007174505-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

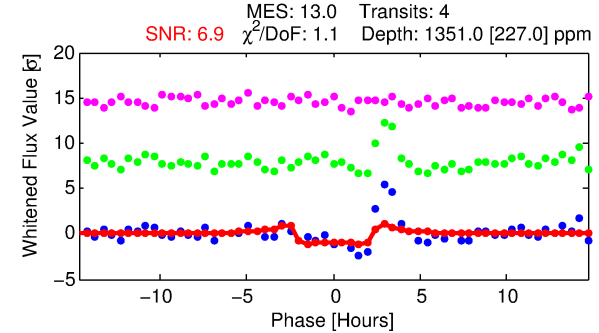
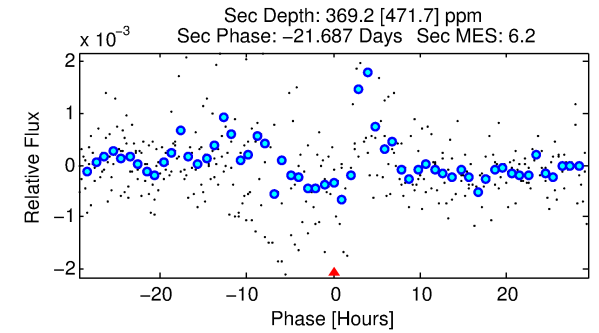
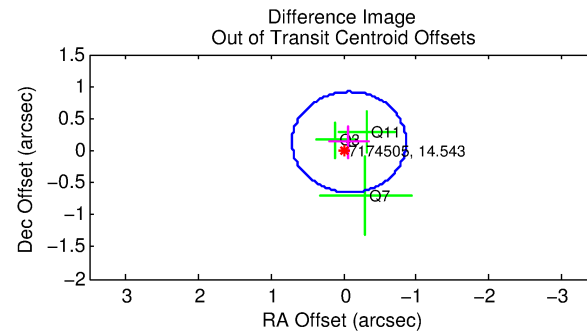
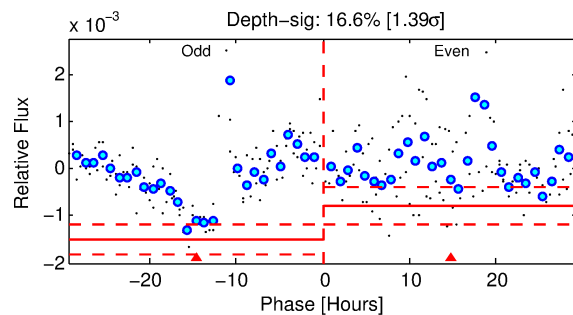
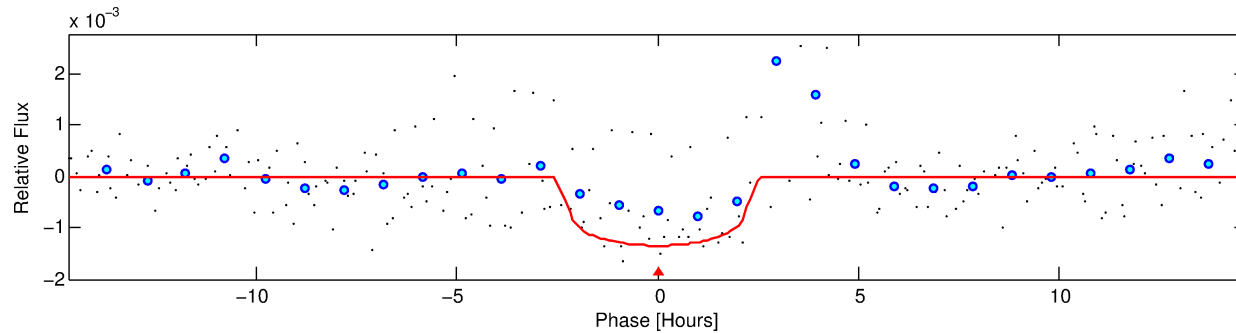
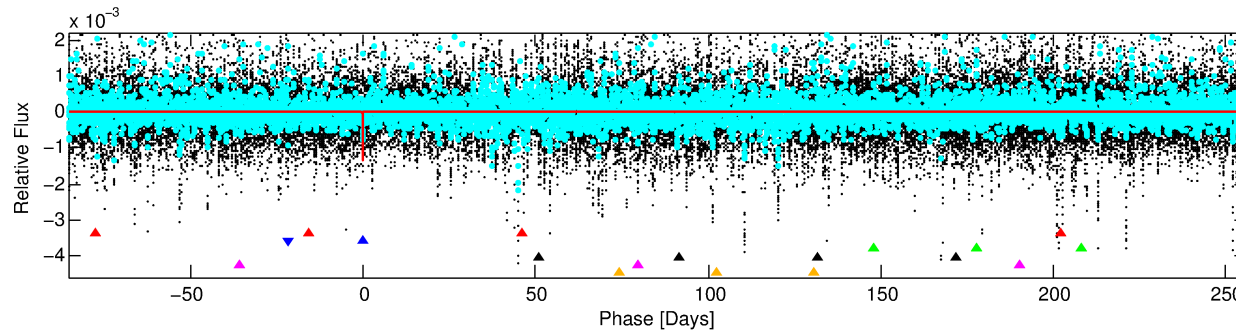
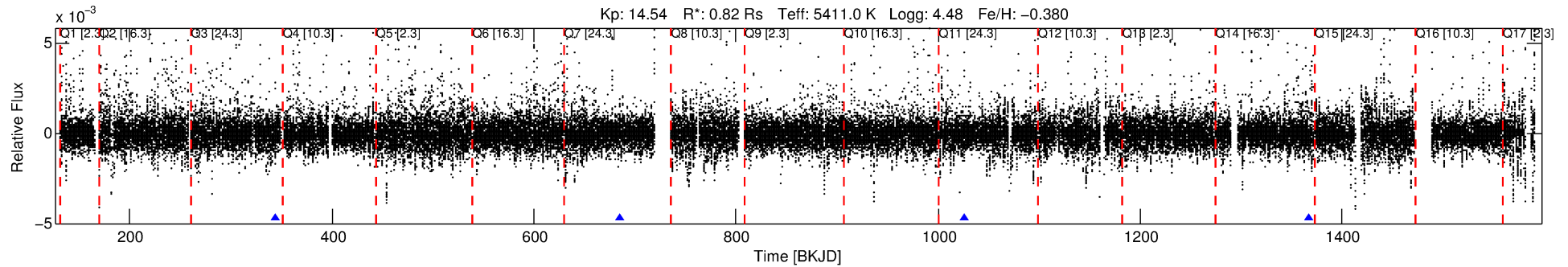
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007174505-02

No Significant Match Found

# DV One-Page Summary

KIC: 7174505 Candidate: 2 of 6 Period: 341.397 d



## DV Fit Results:

Period = 341.39715 [0.00367] d  
Epoch = 343.4821 [0.0077] BKJD  
Rp/R\* = 0.0343 [0.0294]  
a/R\* = 482.78 [1663.73]  
b = 0.50 [5.19]  
Seff = 0.69 [0.18]  
Teq = 232 [15] K  
Rp = 3.07 [2.67] Re  
a = 0.8658 [0.1273] AU  
Ag = 16167.77 [34746.86] [0.47 $\sigma$ ]  
Teff = 4048 [2166] K [1.76 $\sigma$ ]

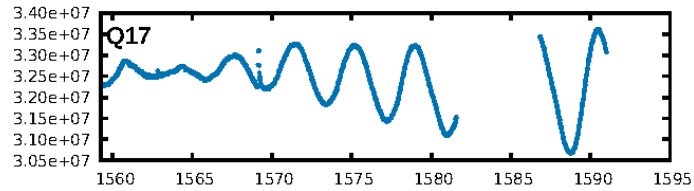
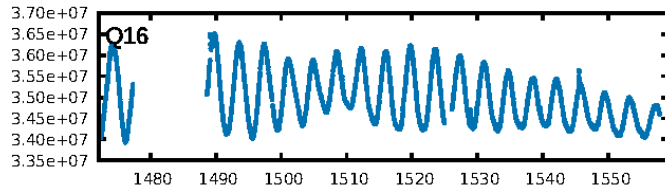
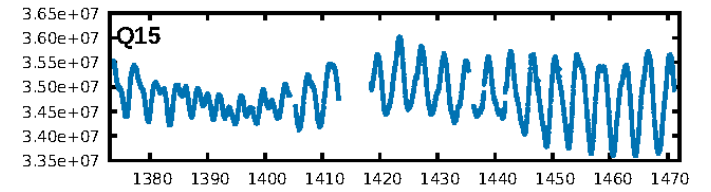
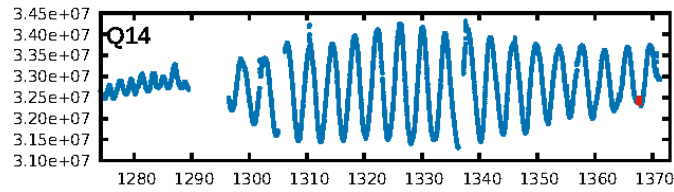
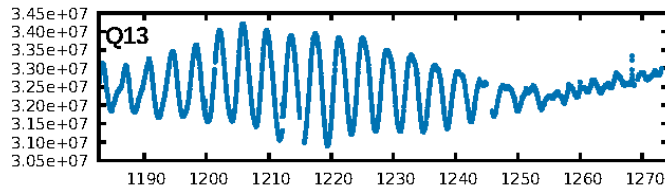
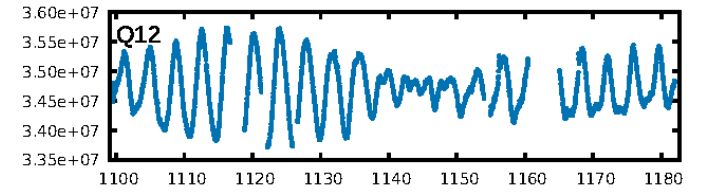
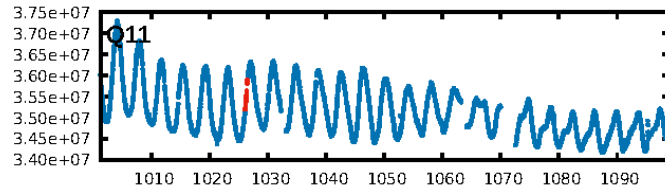
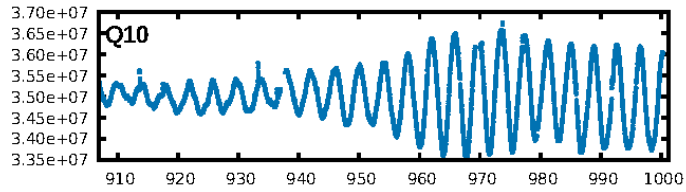
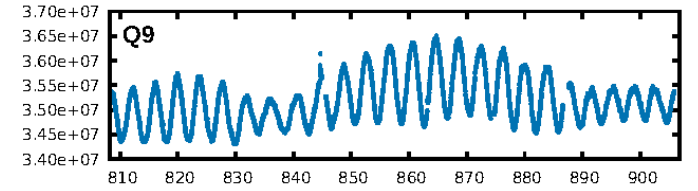
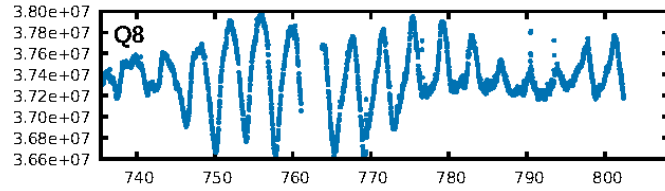
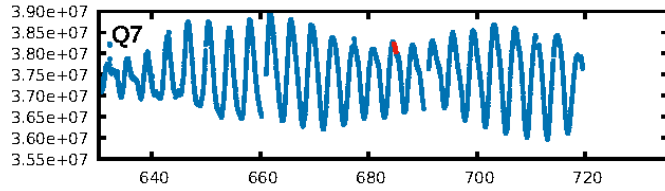
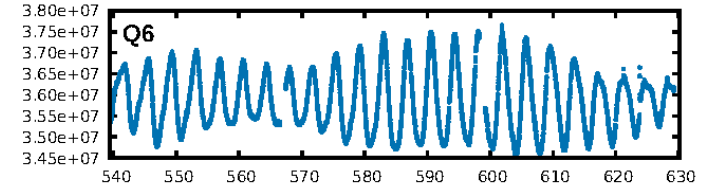
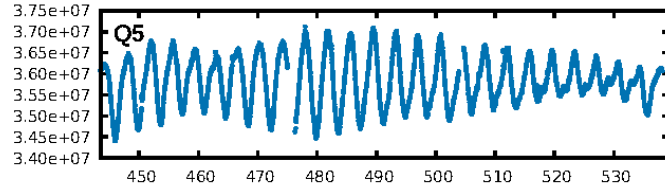
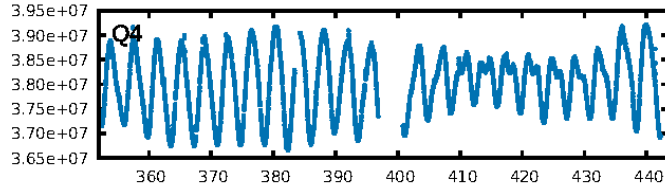
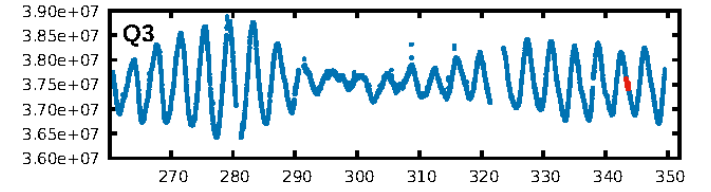
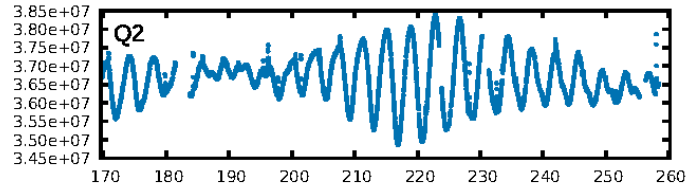
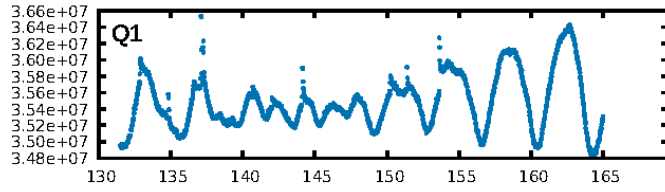
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [152.84 $\sigma$ ]  
ModelChiSquare2-sig: 2.6%  
ModelChiSquareGof-sig: 50.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.314  
Centroid-sig: 98.2%  
Centroid-so: 0.600 arcsec [0.74 $\sigma$ ]  
OotOffset-rm: 0.153 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-rm: 0.173 arcsec [0.66 $\sigma$ ]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [4/4]

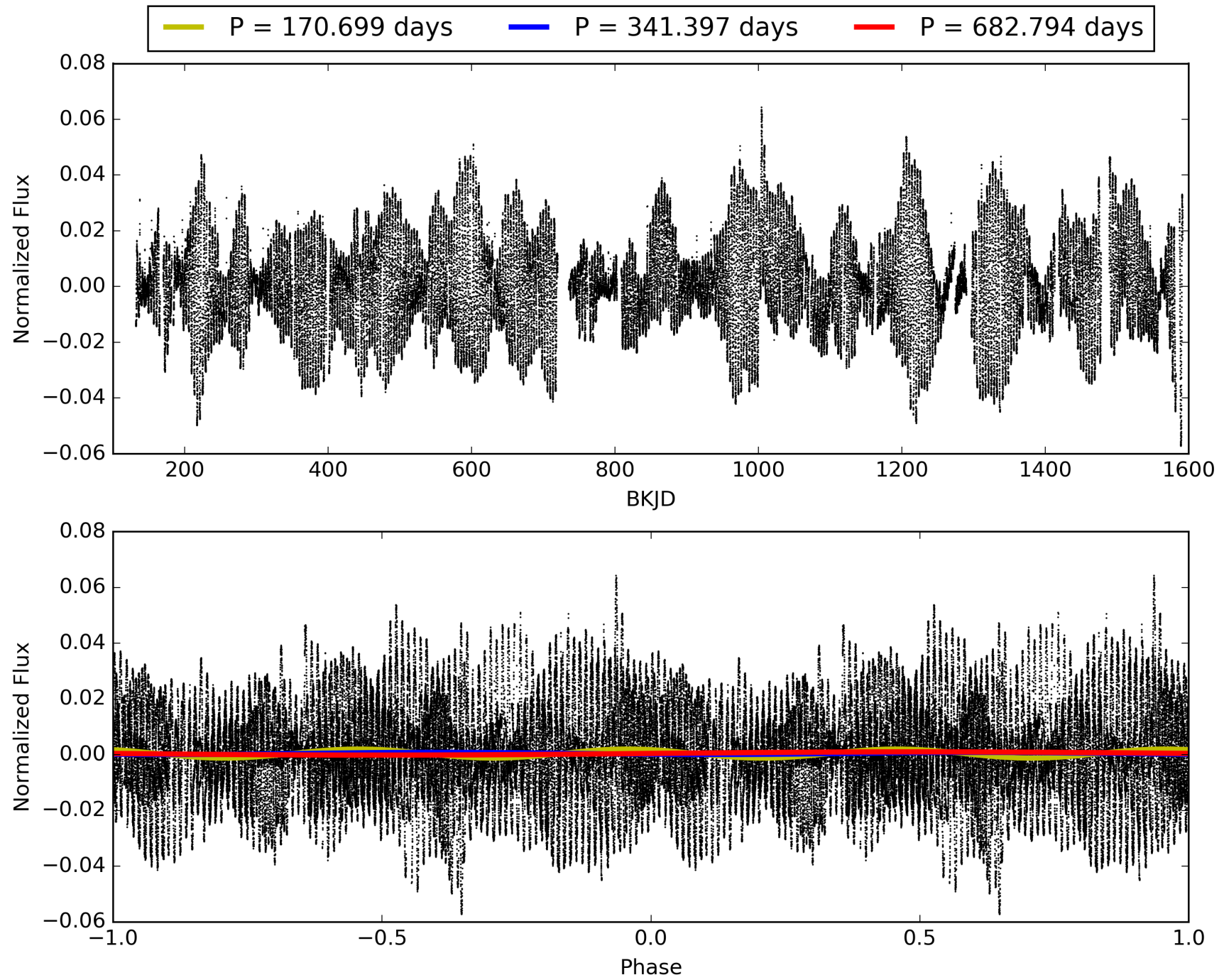
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:40:59 Z

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

# TCE 007174505-02, PDC Light Curves

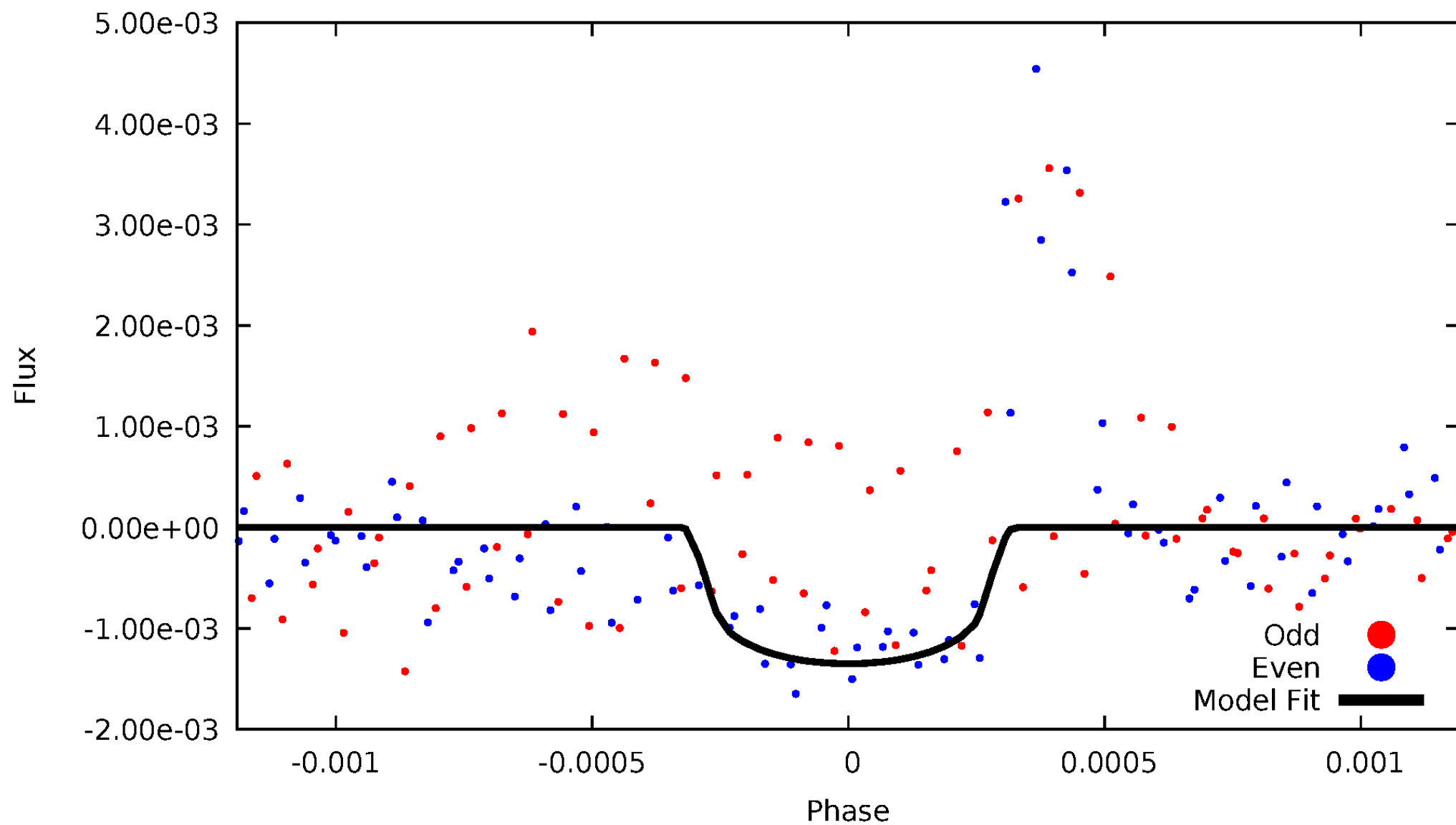


TCE 007174505-02



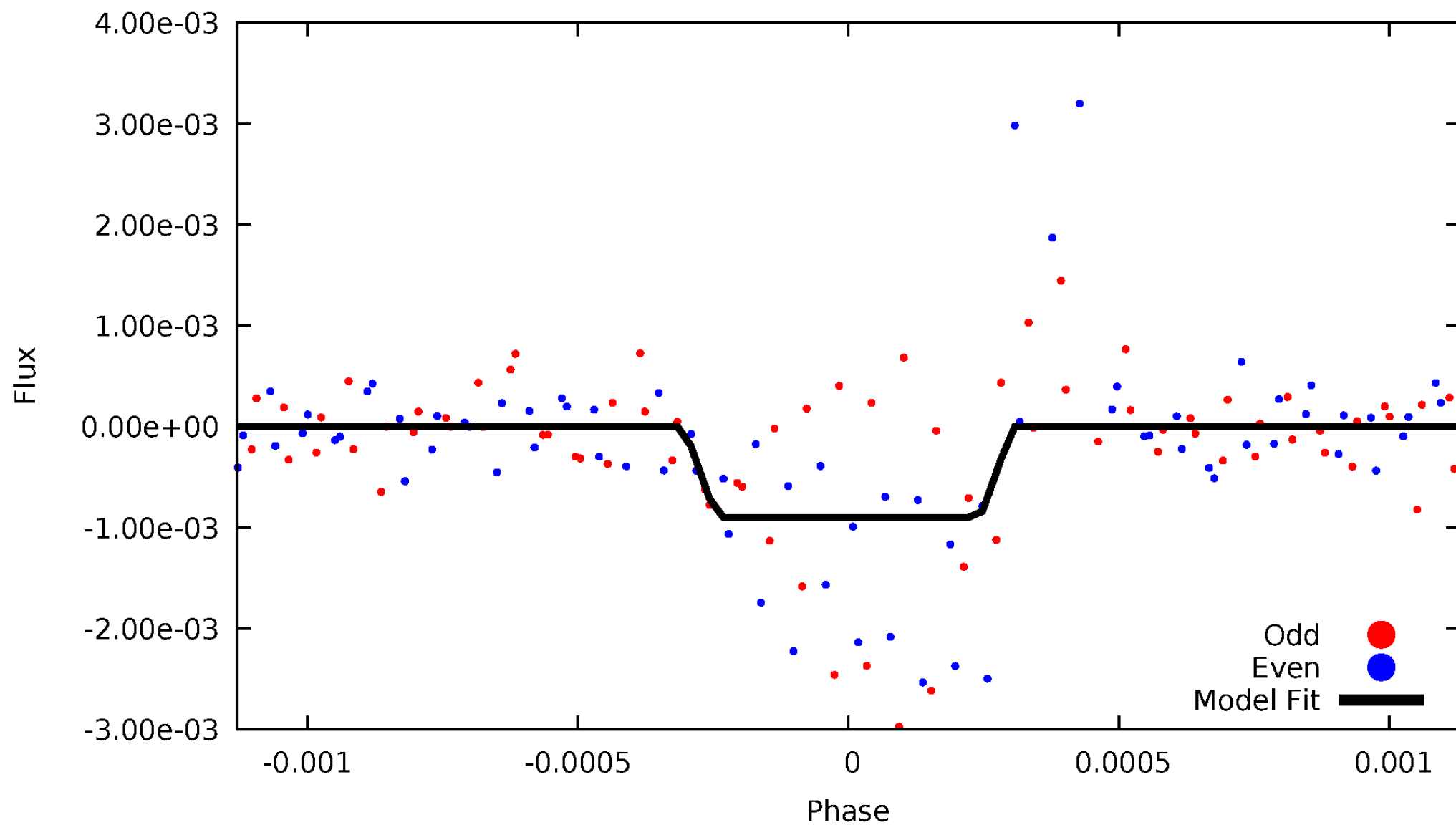
# DV Odd/Even

TCE 007174505-02



# ALT Odd/Even

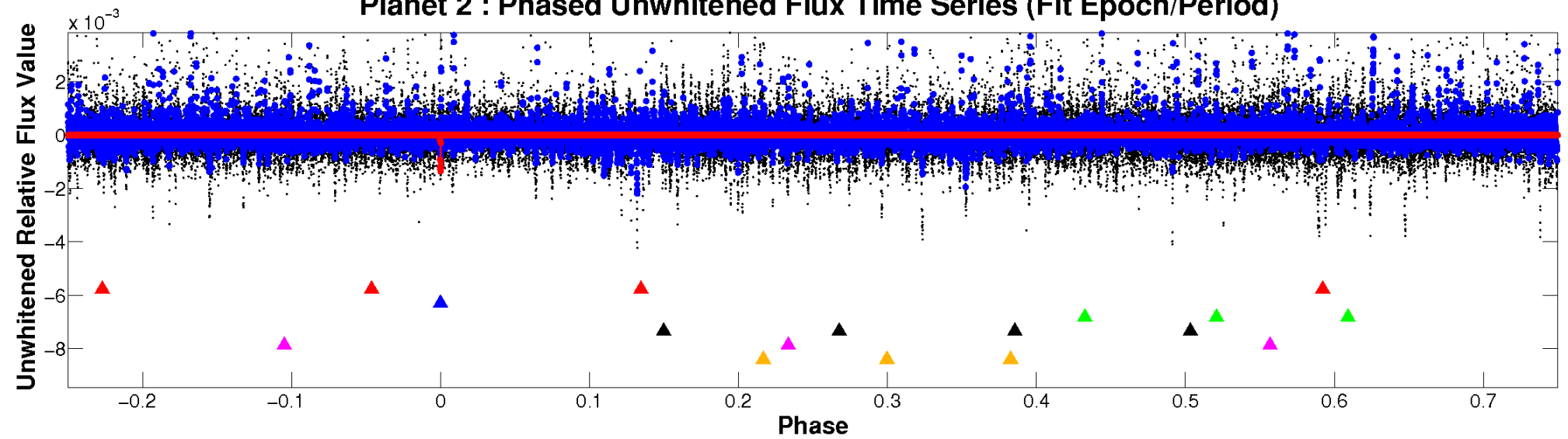
TCE 007174505-02



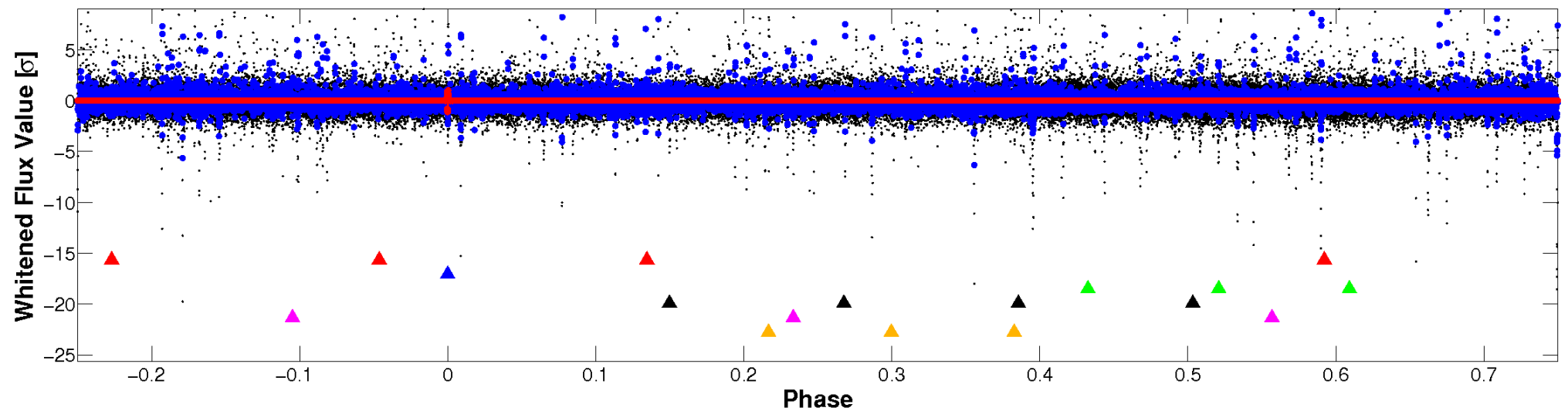


# Non-Whitened Vs. Whitened Light Curve

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



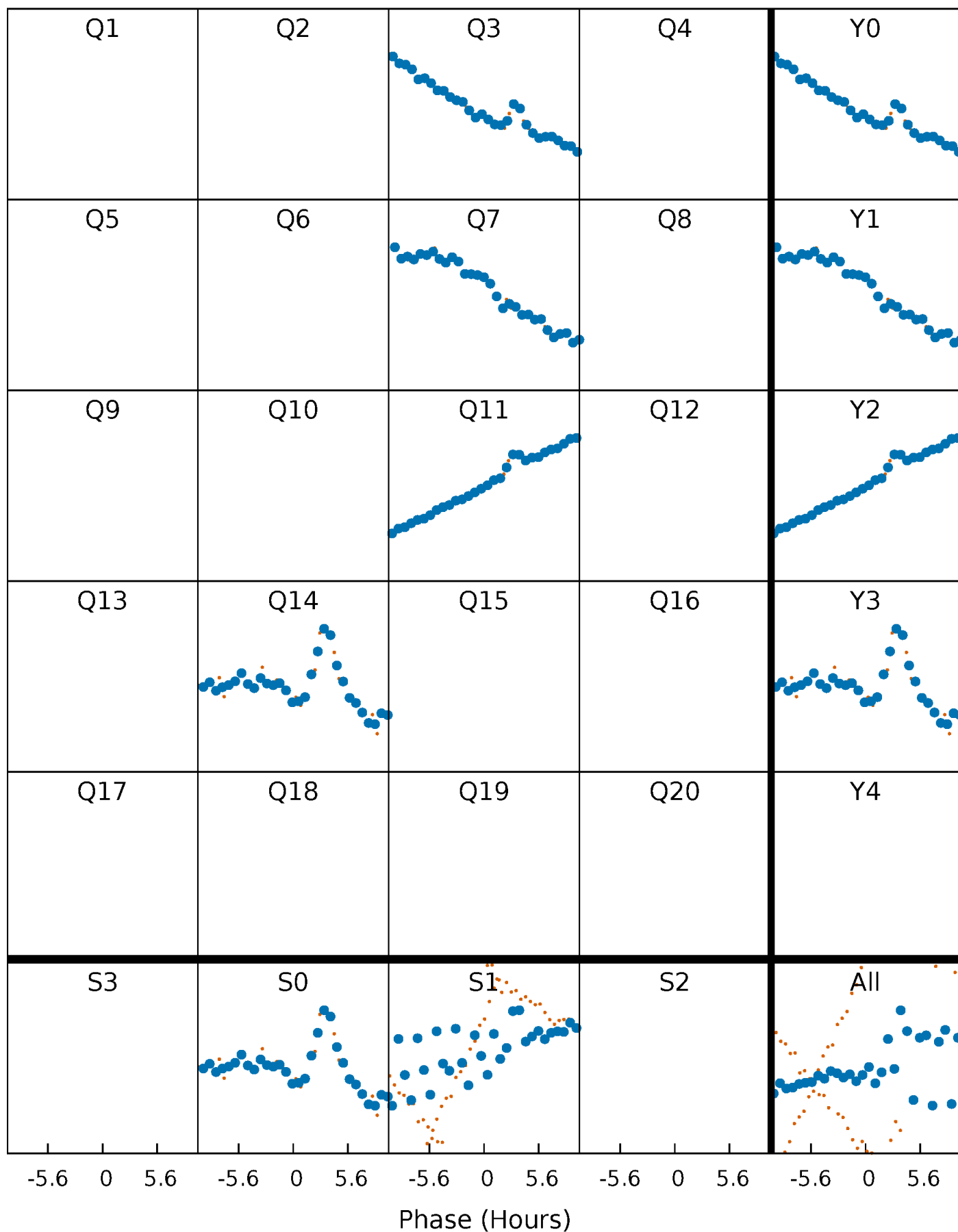
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





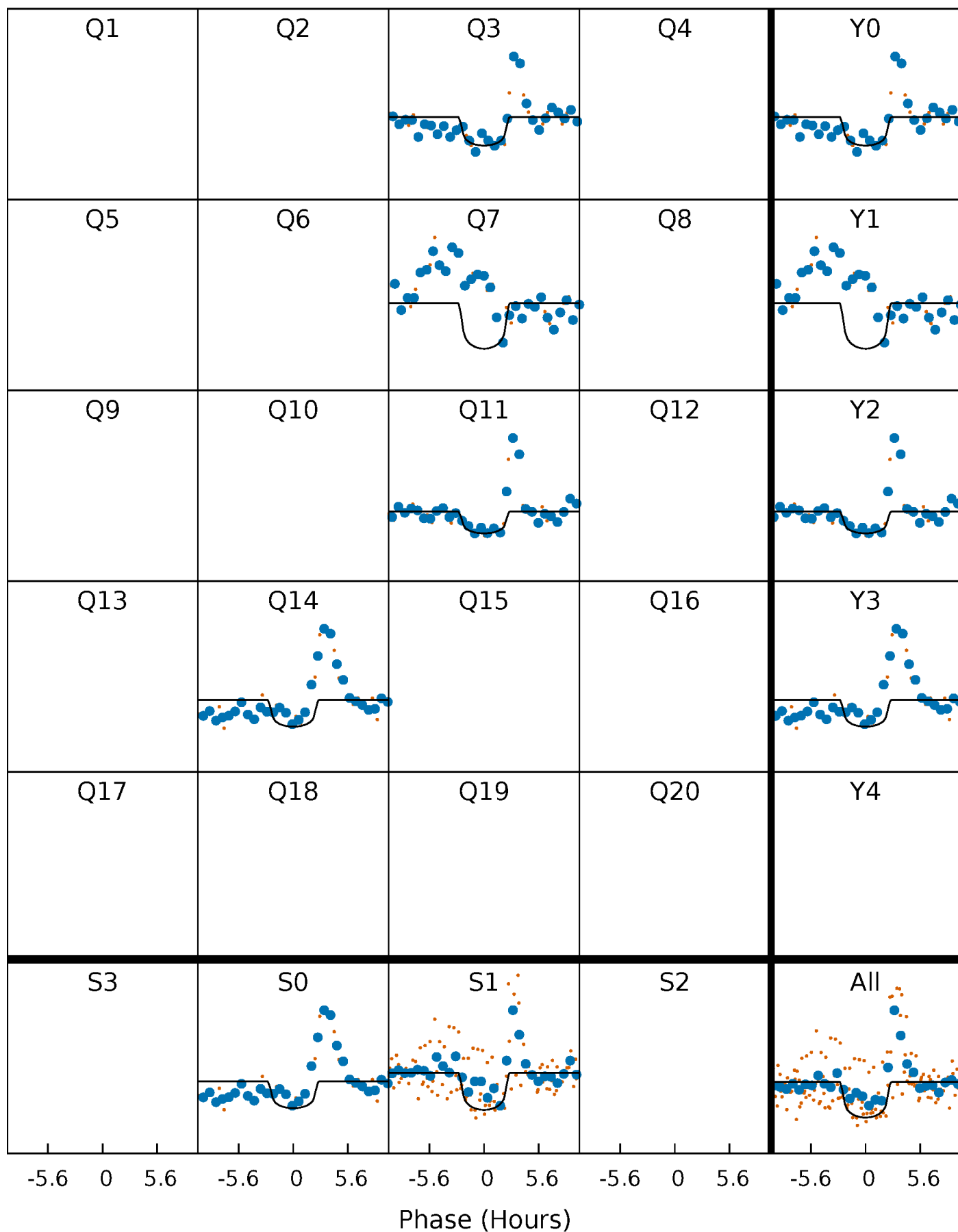
# PDC Quarter-Phased Transit Curves

TCE 007174505-02 P=341.397154 Days  $T_0=343.482097$  (BKJD)



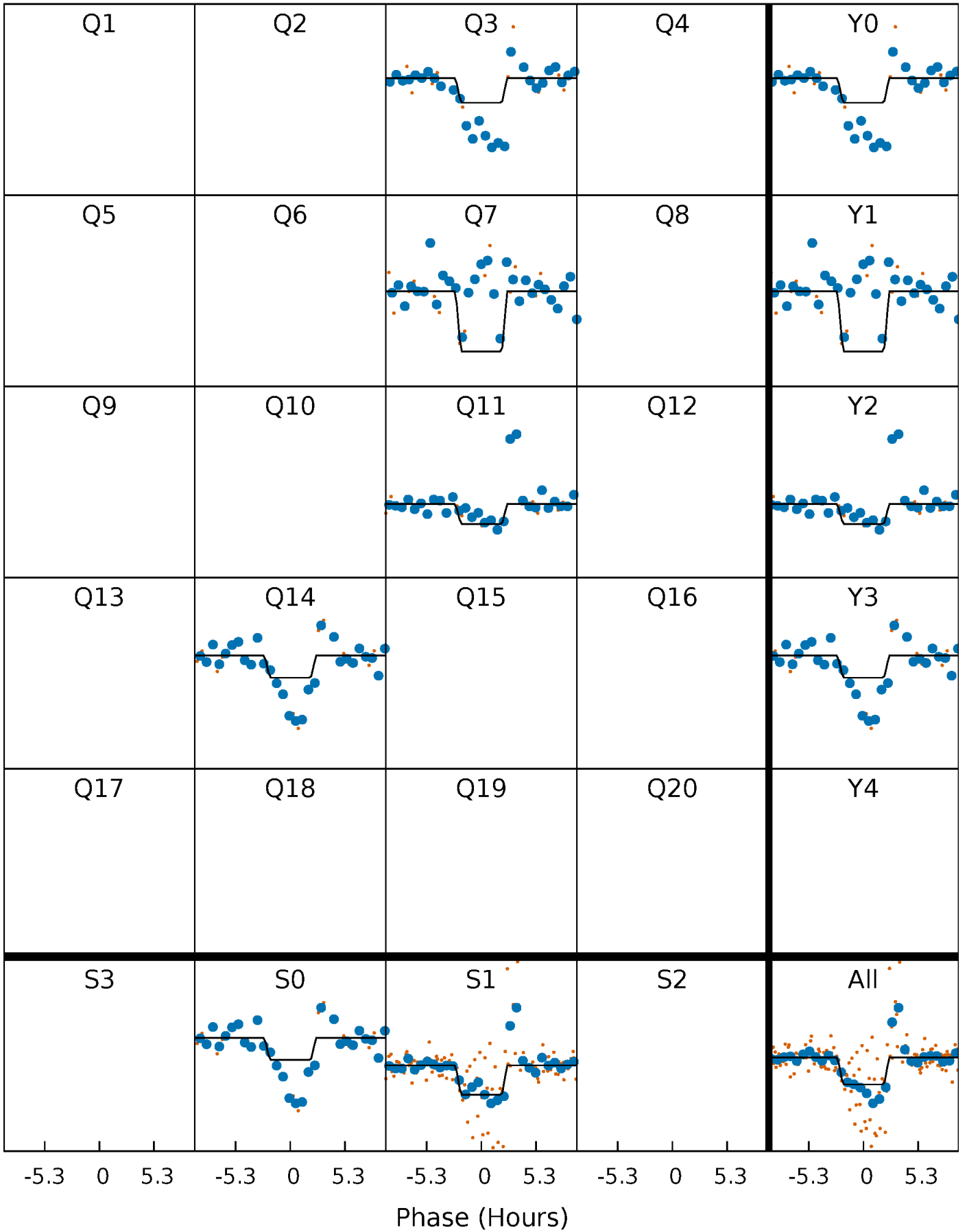
# DV Quarter-Phased Transit Curves

TCE 007174505-02     $P=341.397154$  Days     $T_0=343.482097$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

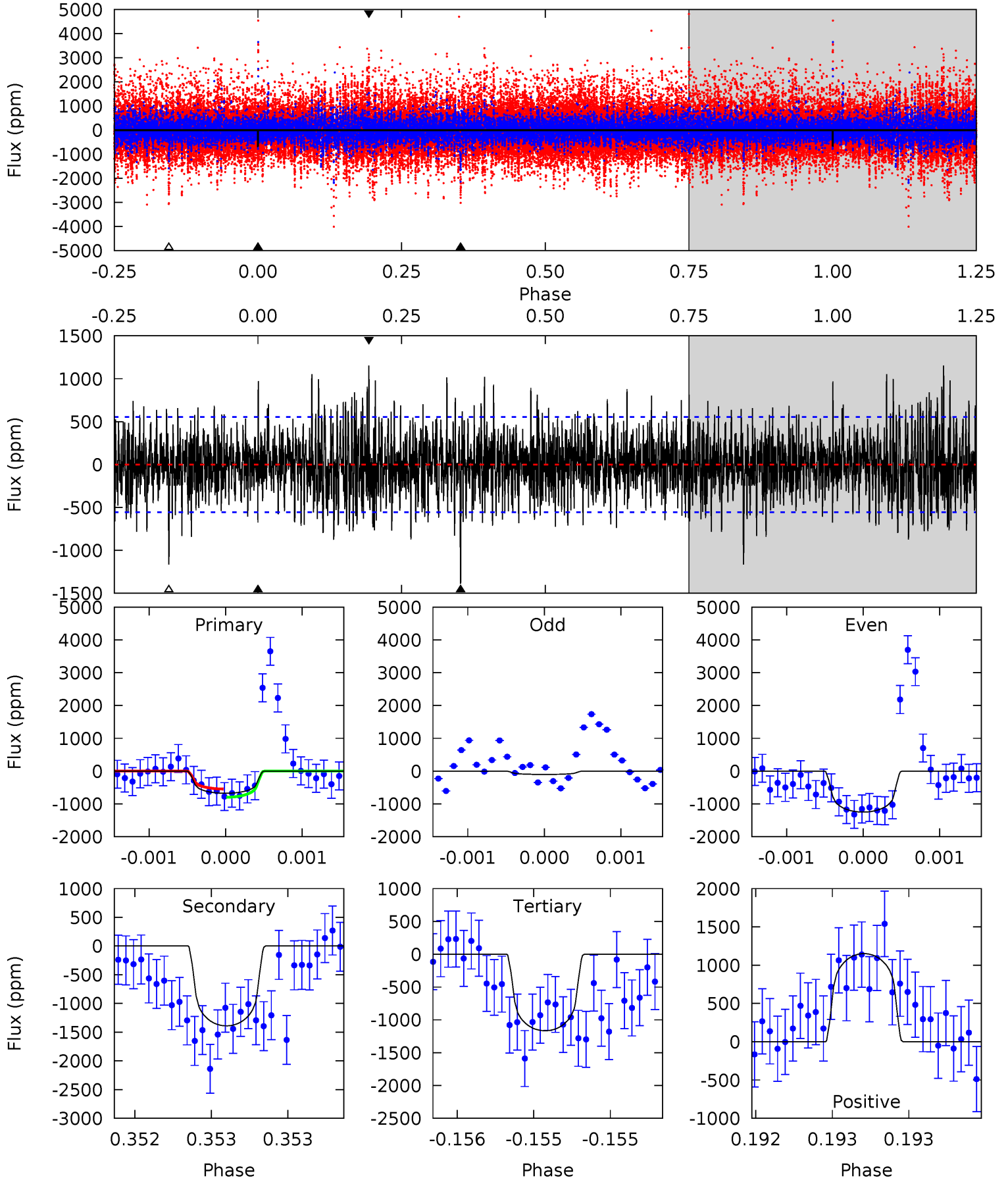
TCE 007174505-02 P=341.397109 Days  $T_0=343.481767$  (BKJD)



# DV Model-Shift Uniqueness Test

007174505-02, P = 341.397154 Days, E = 2.084943 Days

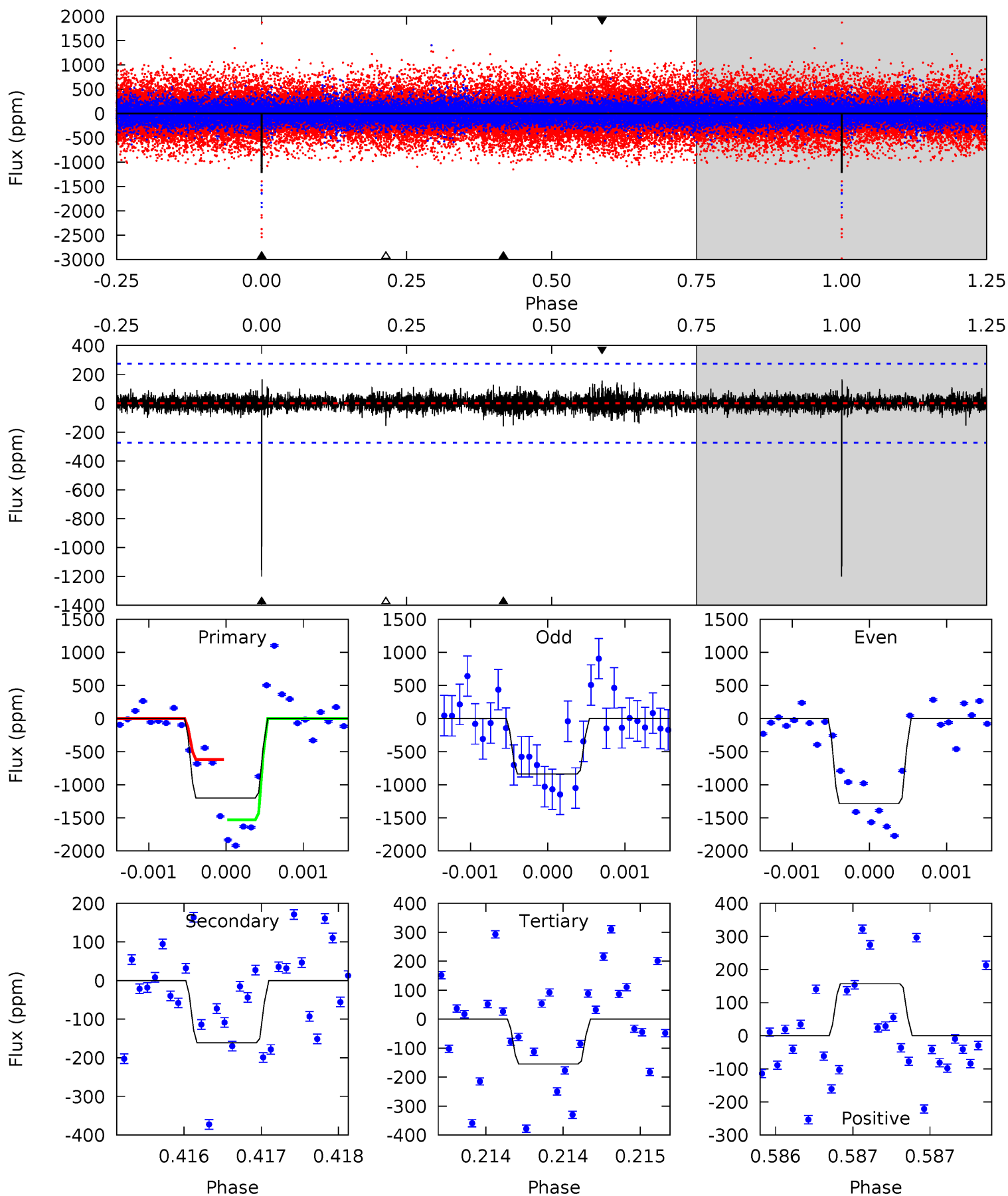
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.74	13.9	11.6	11.5	5.53	3.41	2.73	-4.88	-4.73	2.23	2.38	5.13	0.76	0.45	1.26



# Alt Model-Shift Uniqueness Test

007174505-02, P = 341.397109 Days, E = 2.084658 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
24.3	3.25	3.13	3.17	5.54	3.44	0.62	21.1	21.1	0.12	0.08	4.92	0.91	0.12	8.97



### Stellar Parameters For KIC 007174505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5411^{+160}_{-160}$	$4.482^{+0.120}_{-0.132}$	$-0.380^{+0.350}_{-0.300}$	$0.819^{+0.131}_{-0.105}$	$0.742^{+0.115}_{-0.046}$	$1.904^{+0.991}_{-0.647}$
	+3%/-3%	+3%/-3%	+92%/-79%	+16%/-13%	+15%/-6%	+52%/-34%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007174505-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1390 \pm 100$	$3.50^{+2.30}_{-2.09}$	$324^{+18}_{-16}$	$5363^{+3292}_{-1075}$	$48751^{+248608}_{-31530}$
Alt.	$-161 \pm 49$	$3.04^{+2.60}_{-1.96}$	$325^{+17}_{-16}$	$3706^{+1739}_{-655}$	$6872^{+46675}_{-4904}$

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

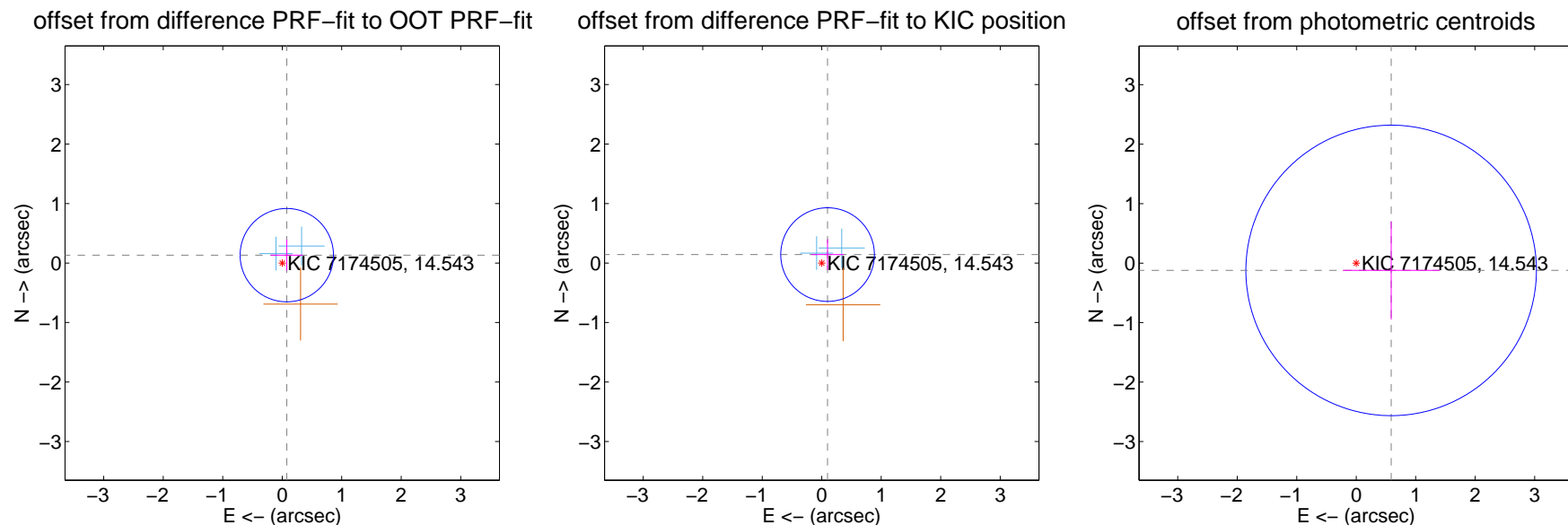
## DV Centroid Data

Supplemental centroid analysis for 007174505-02. Kepler magnitude: 14.54. Transit SNR 6.86

There are 2 quarters with good PRF difference image offsets

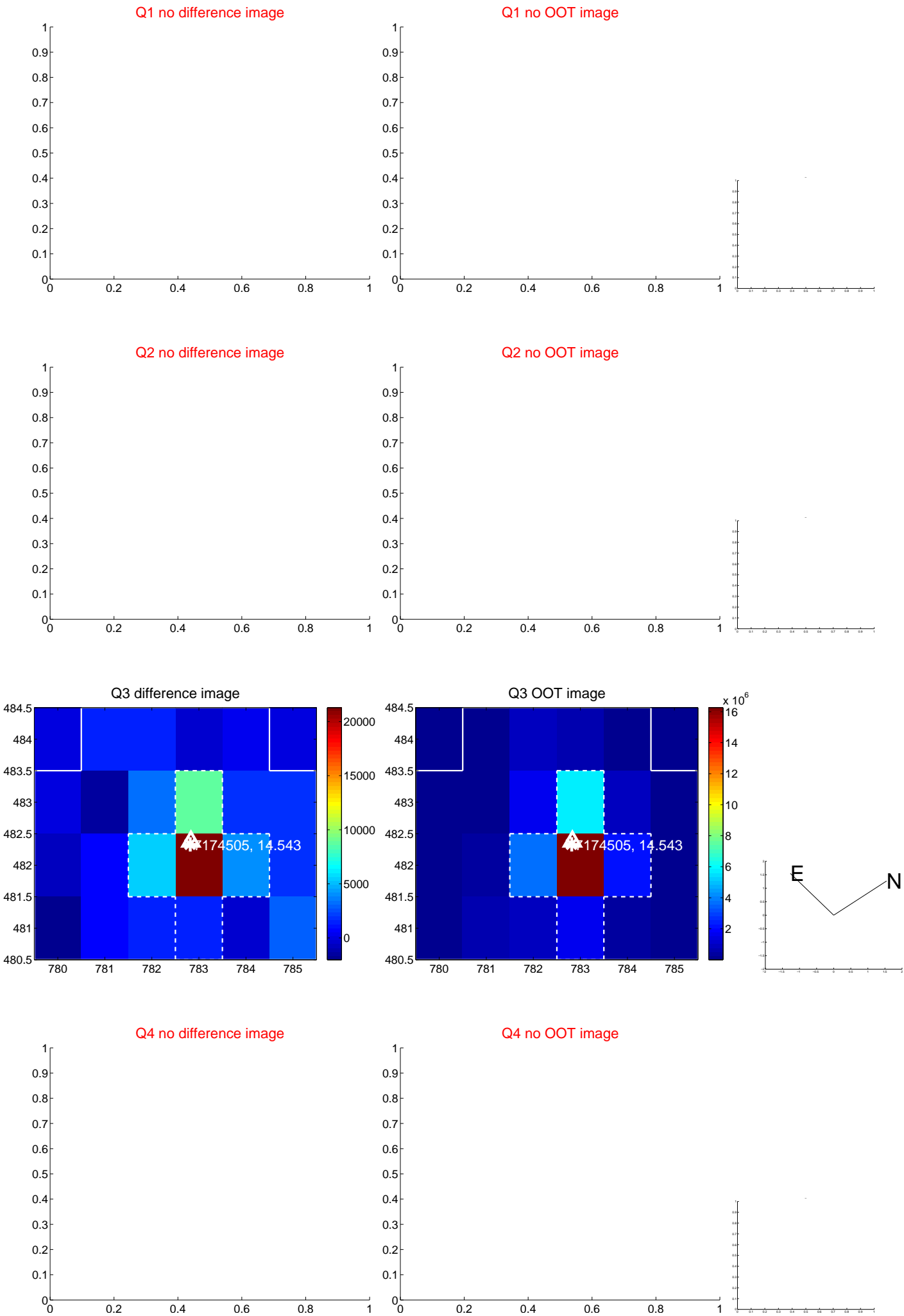
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.153 \pm 0.262$	0.59	$-0.077 \pm 0.270$	$0.133 \pm 0.259$
PRF-fit source offset from KIC position	$0.173 \pm 0.262$	0.66	$-0.098 \pm 0.270$	$0.142 \pm 0.259$
photometric centroid source offset	$0.60 \pm 0.81$	0.74	$-0.59 \pm 0.81$	$-0.12 \pm 0.82$



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

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





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

Q5 no difference image



Q5 no OOT image



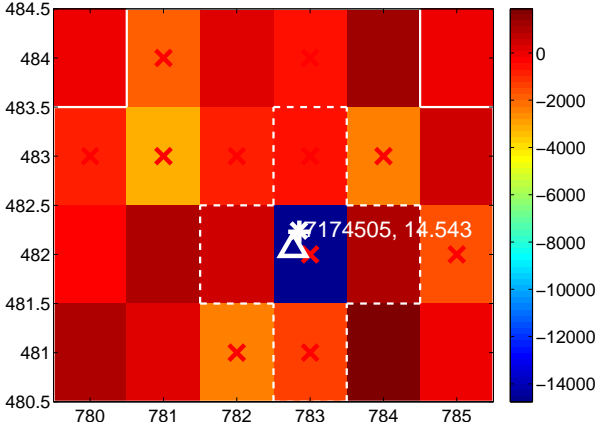
Q6 no difference image



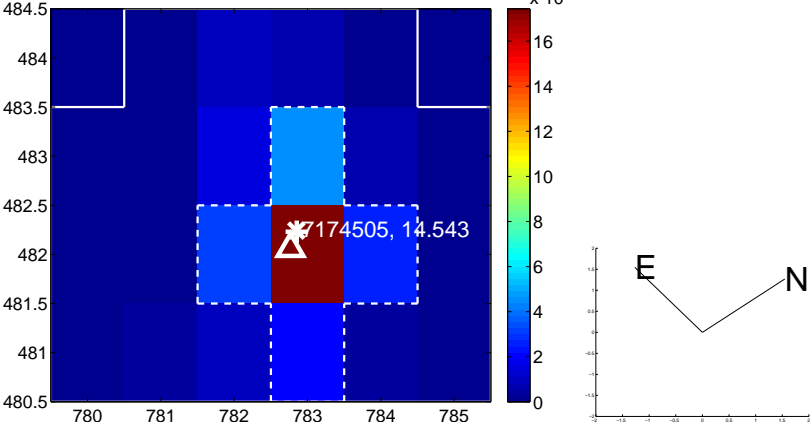
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



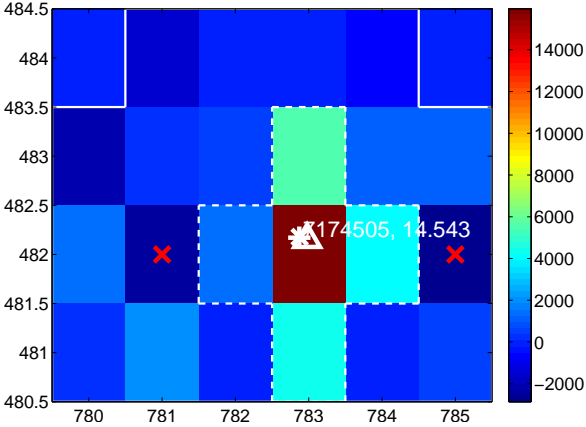
Q10 no difference image



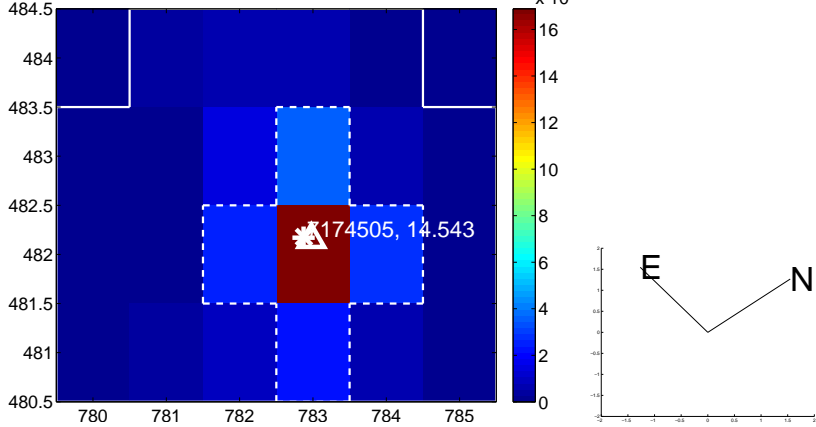
Q10 no OOT image



Q11 difference image



Q11 OOT image



Q12 no difference image



Q12 no OOT image

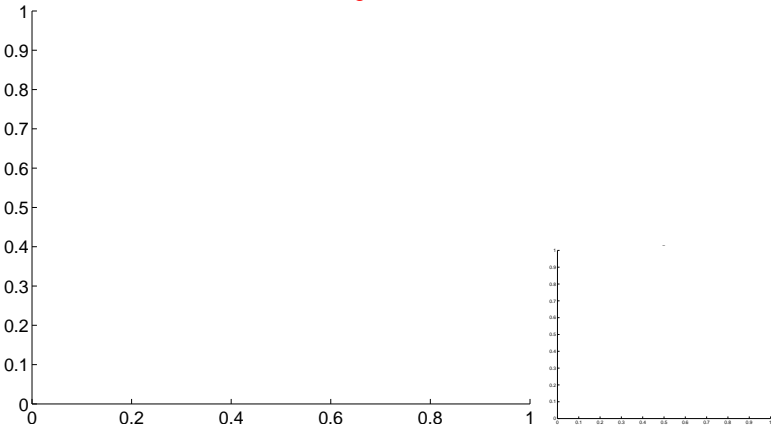


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

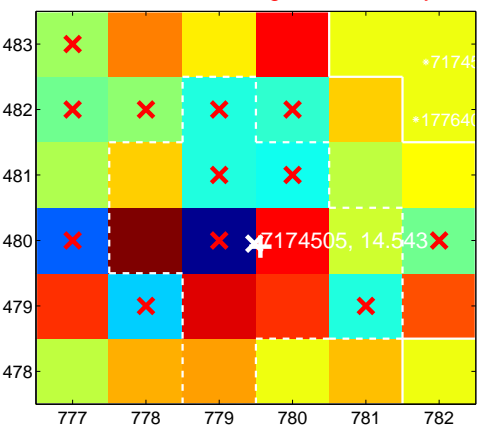
Q13 no difference image



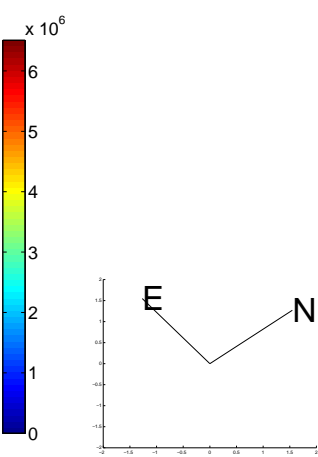
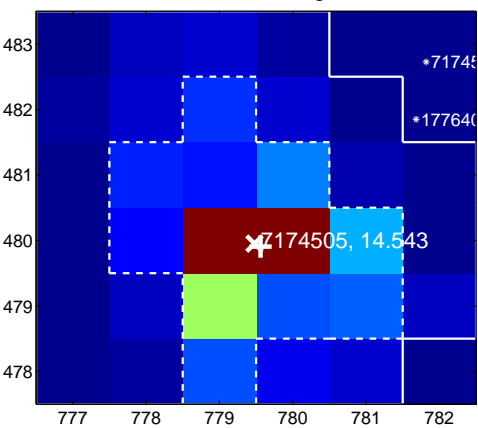
Q13 no OOT image



Q14 difference image. Poor Quality



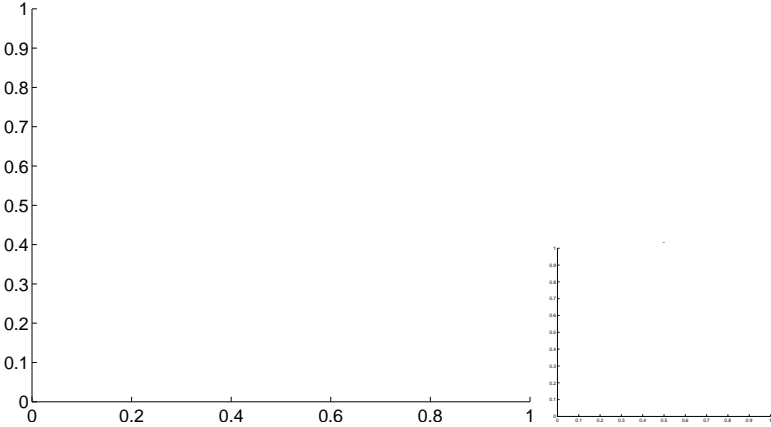
Q14 OOT image



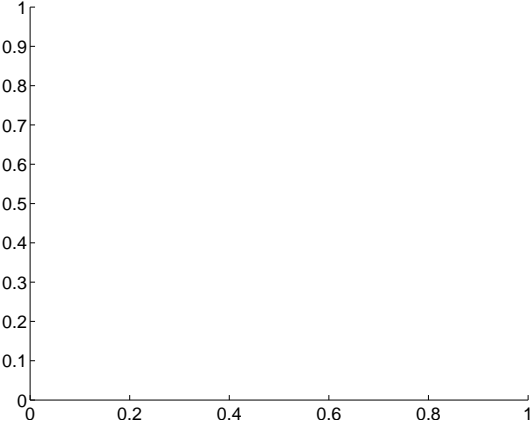
Q15 no difference image



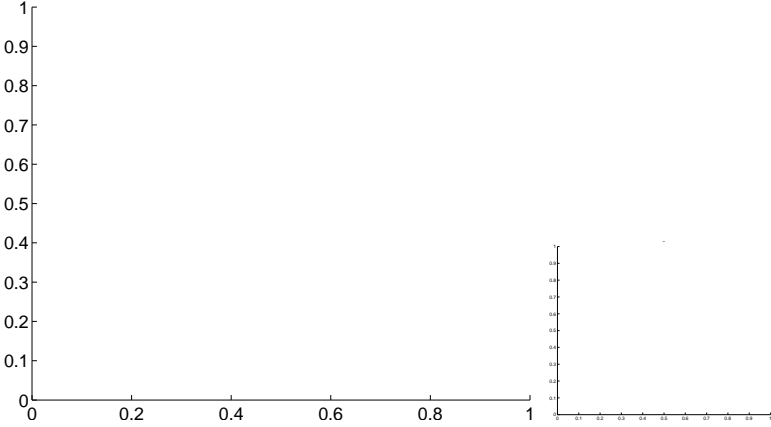
Q15 no OOT image



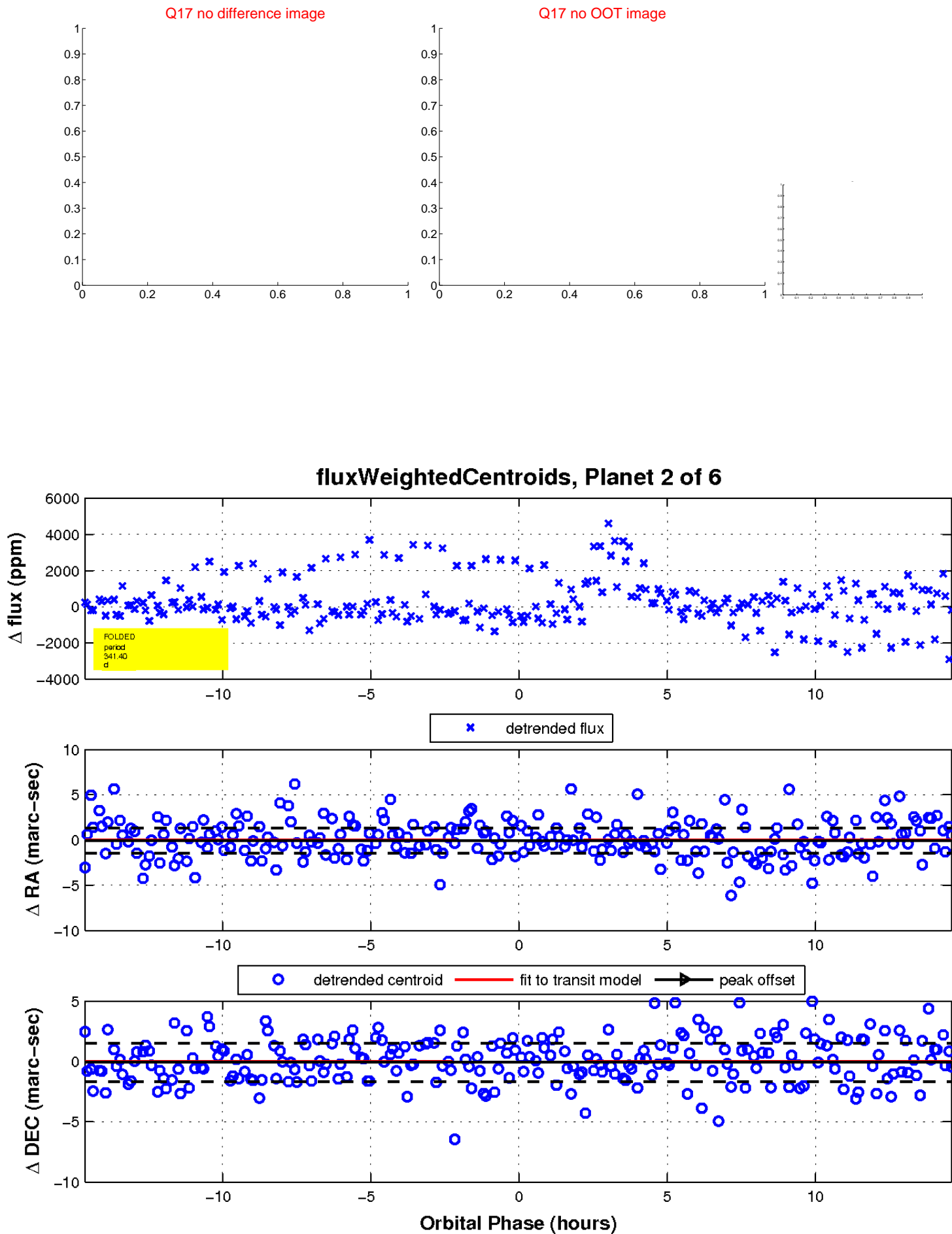
Q16 no difference image



Q16 no OOT image

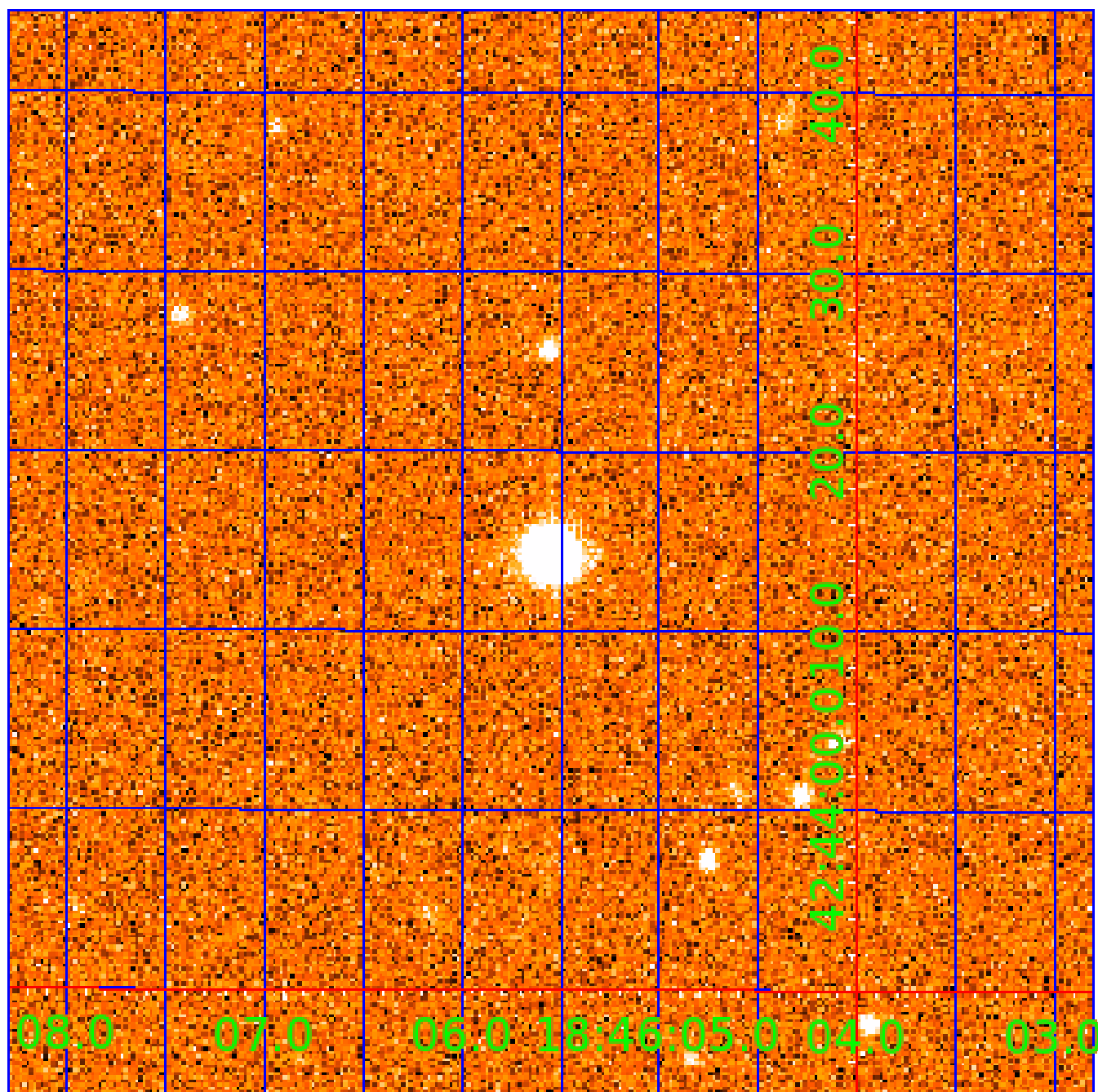


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007174505

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007174505-01	OBS	No	403.118446	204.264473	2054.3	5.258	15.3	8.5	0.82	5411	4.30	0.55
007174505-02	OBS	No	341.397154	343.482096	1351.0	4.886	13.0	6.9	0.82	5411	3.07	0.69
007174505-03	OBS	No	712.948497	149.754361	2052.0	25.341	11.2	6.1	0.82	5411	3.65	0.26
007174505-04	OBS	No	381.634377	394.626900	1545.6	4.006	15.7	7.9	0.82	5411	3.92	0.59
007174505-05	OBS	No	456.893076	533.590089	1370.0	3.533	15.4	6.6	0.82	5411	3.10	0.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007174505-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007174505-02	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—CENT_FEW_DIFFS
007174505-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007174505-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007174505-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

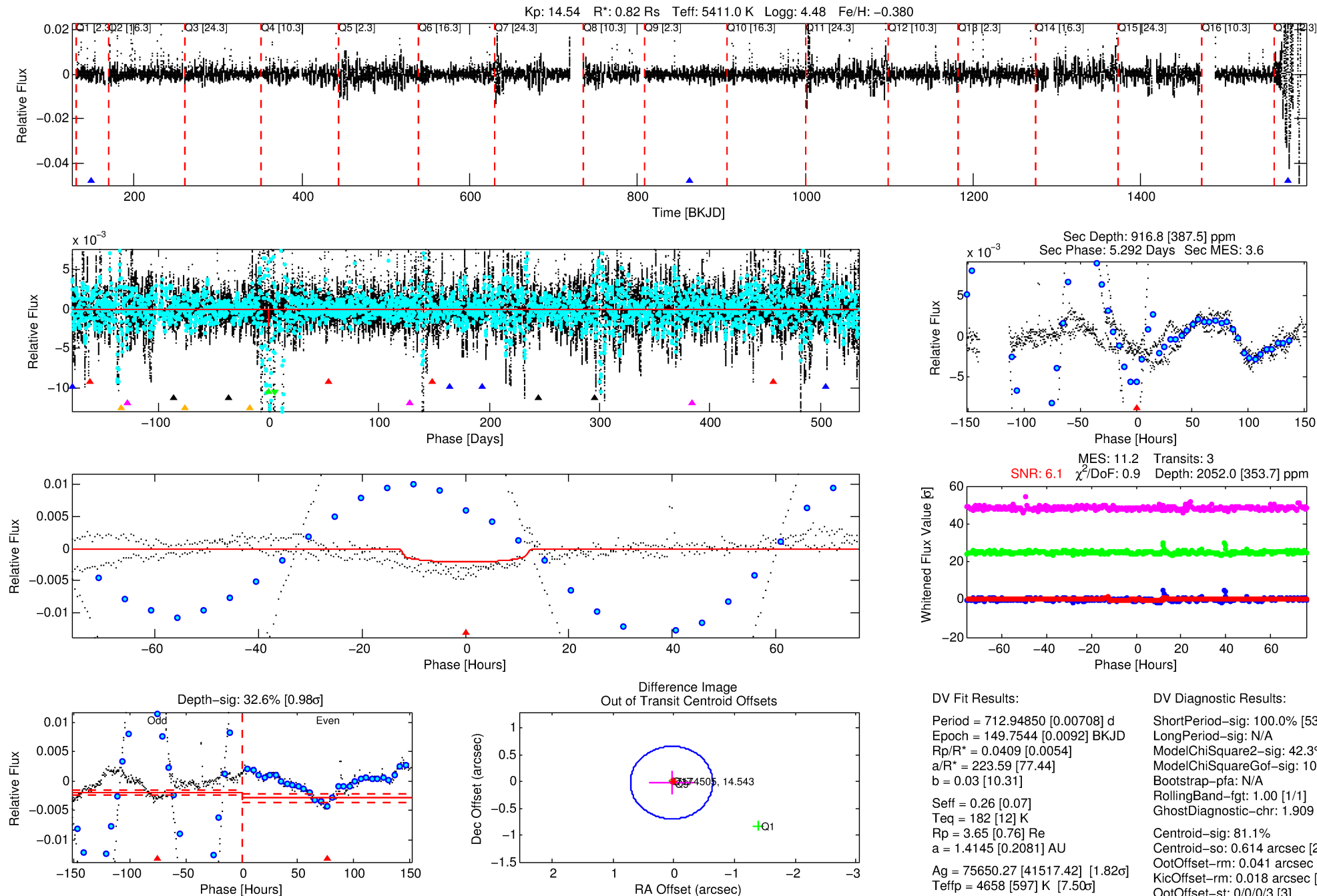
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007174505-03

No Significant Match Found

# DV One-Page Summary

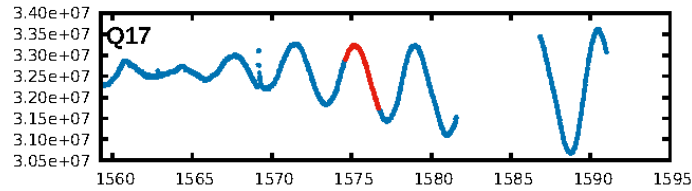
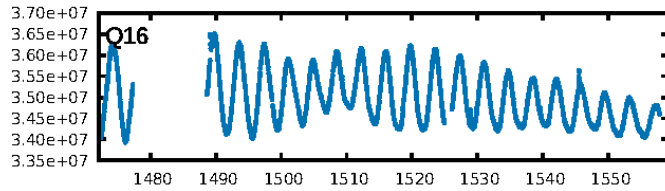
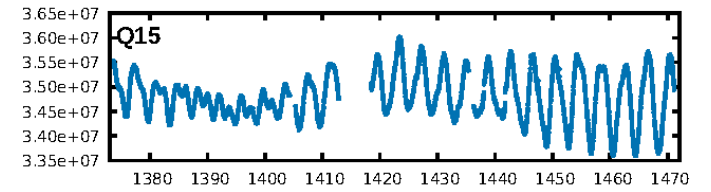
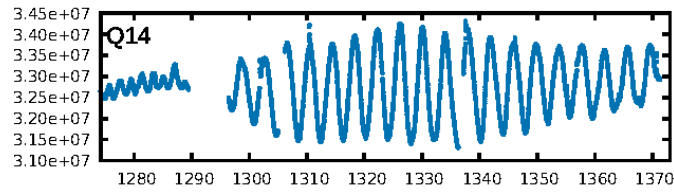
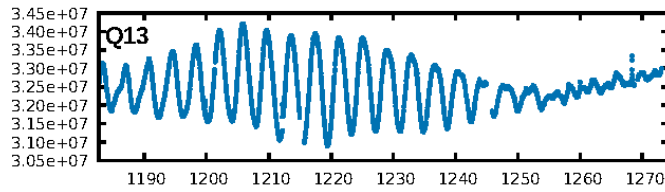
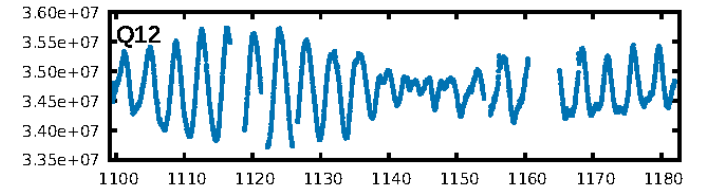
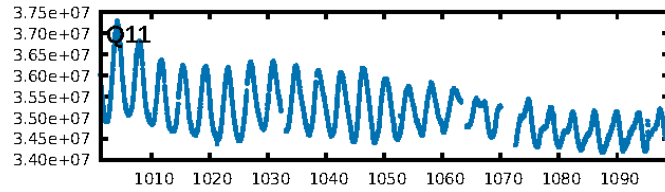
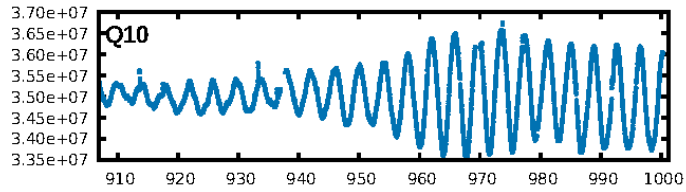
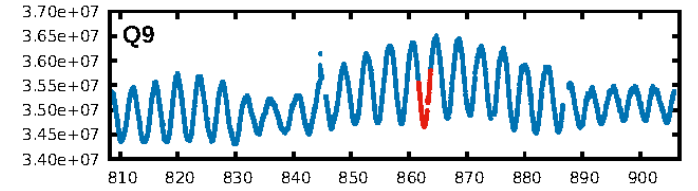
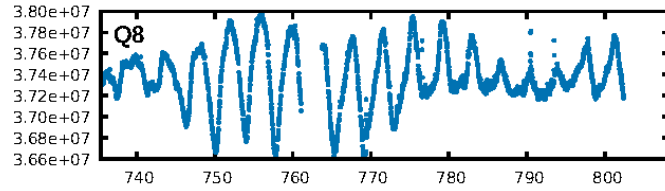
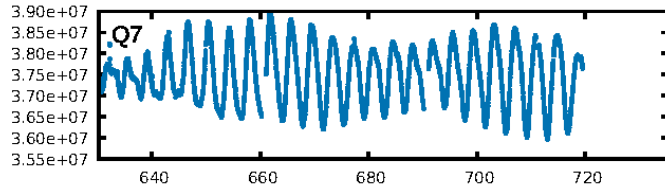
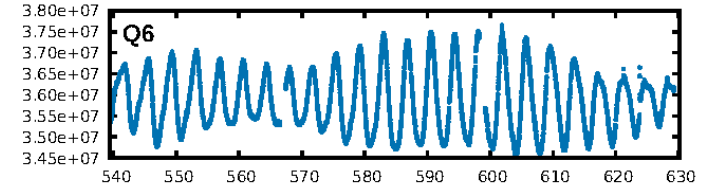
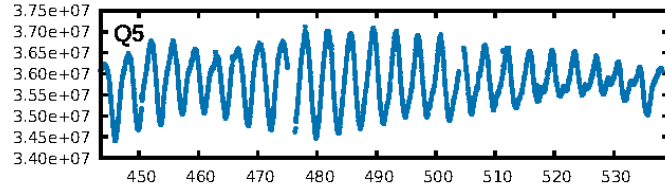
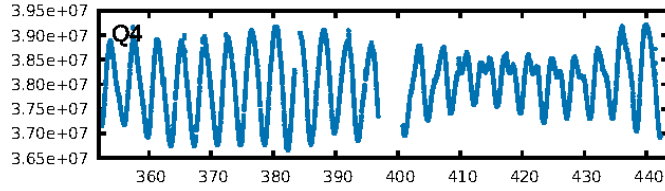
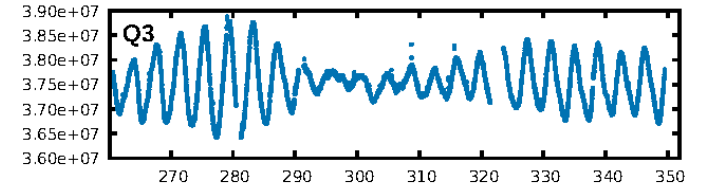
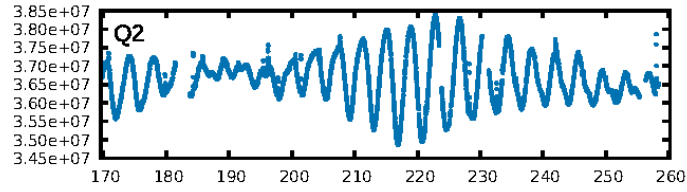
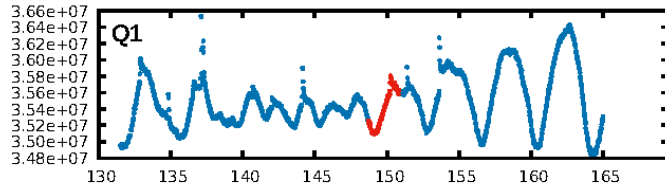
KIC: 7174505 Candidate: 3 of 6 Period: 712.948 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:41:08 Z

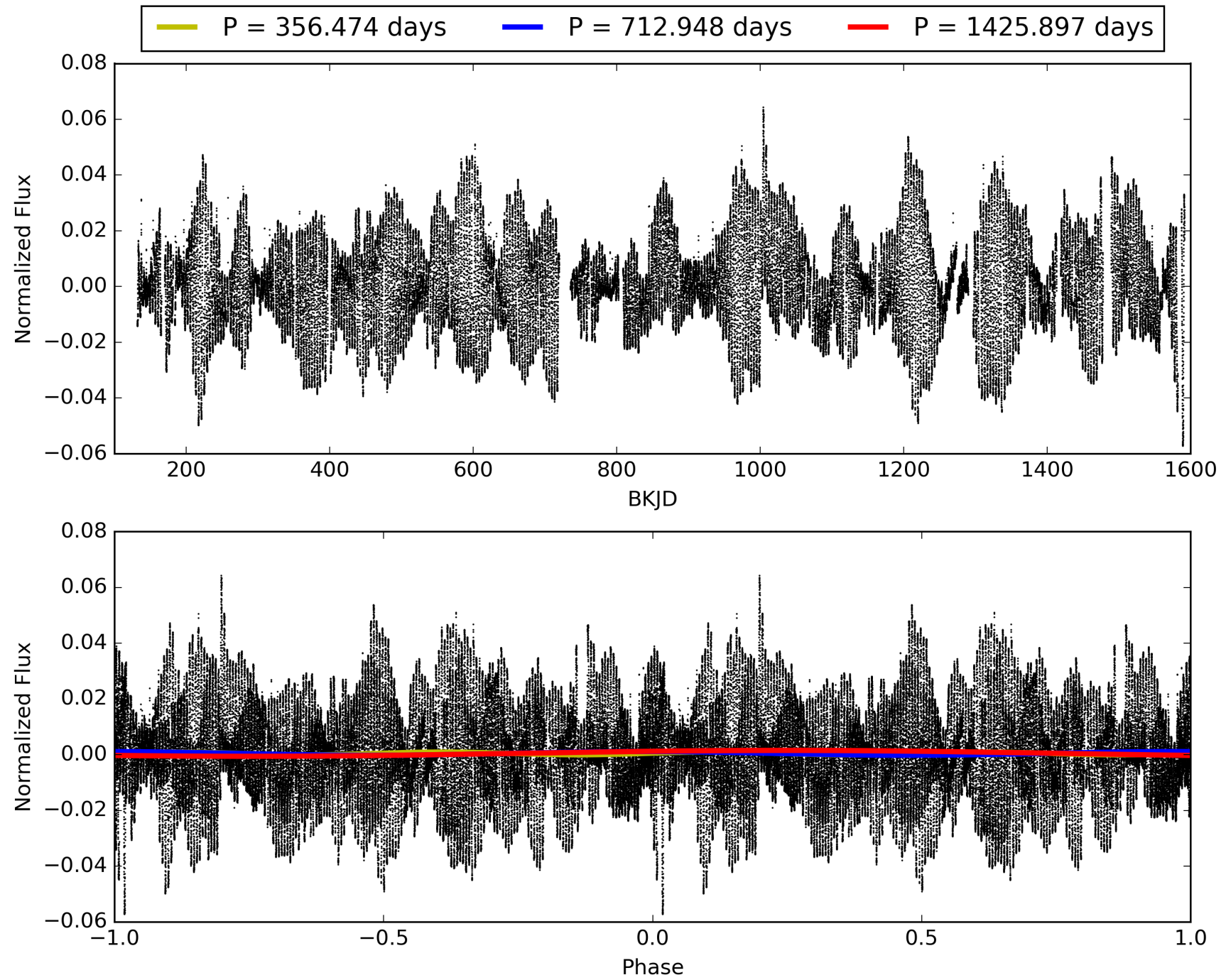
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007174505-03, PDC Light Curves



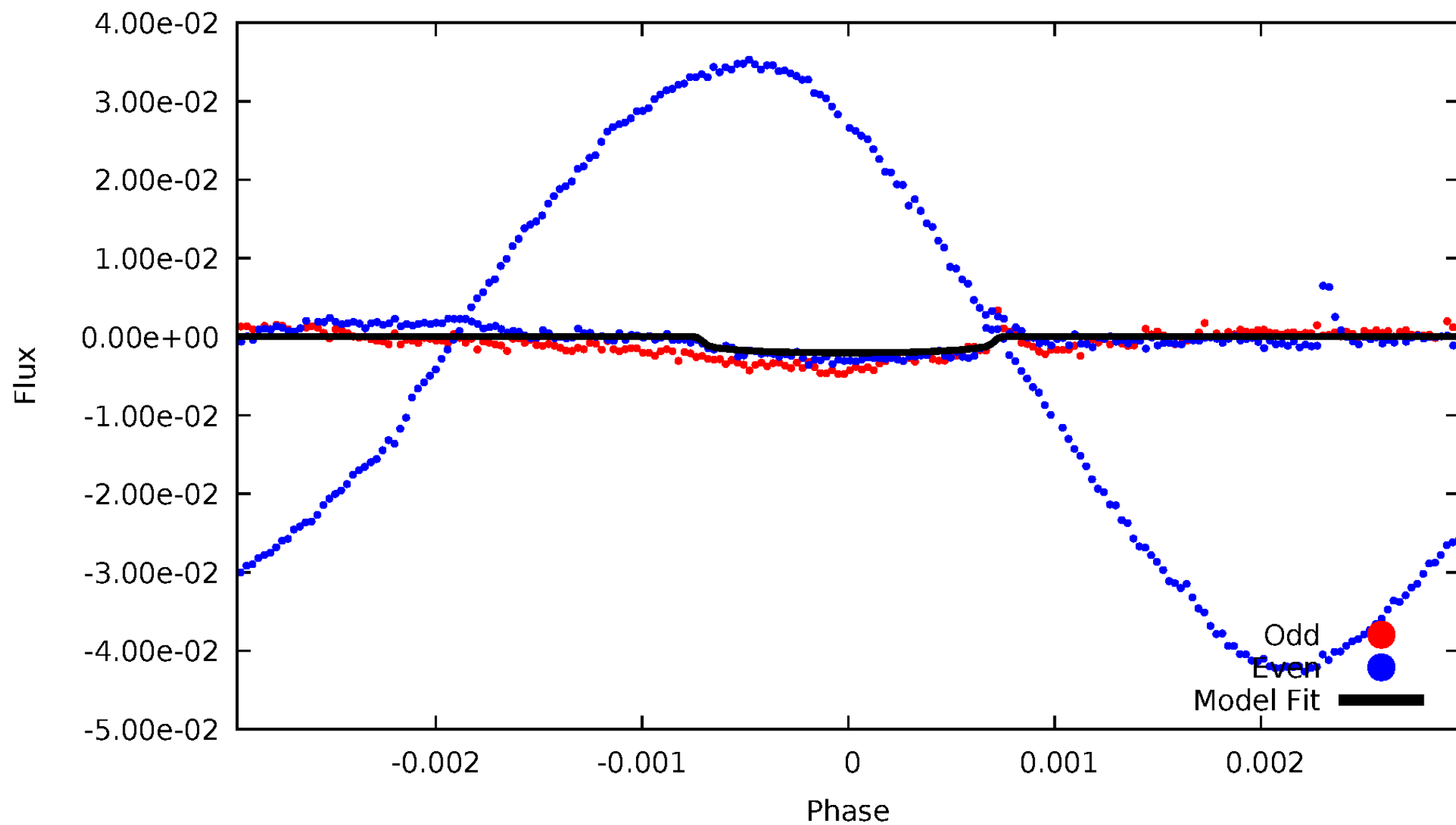


TCE 007174505-03



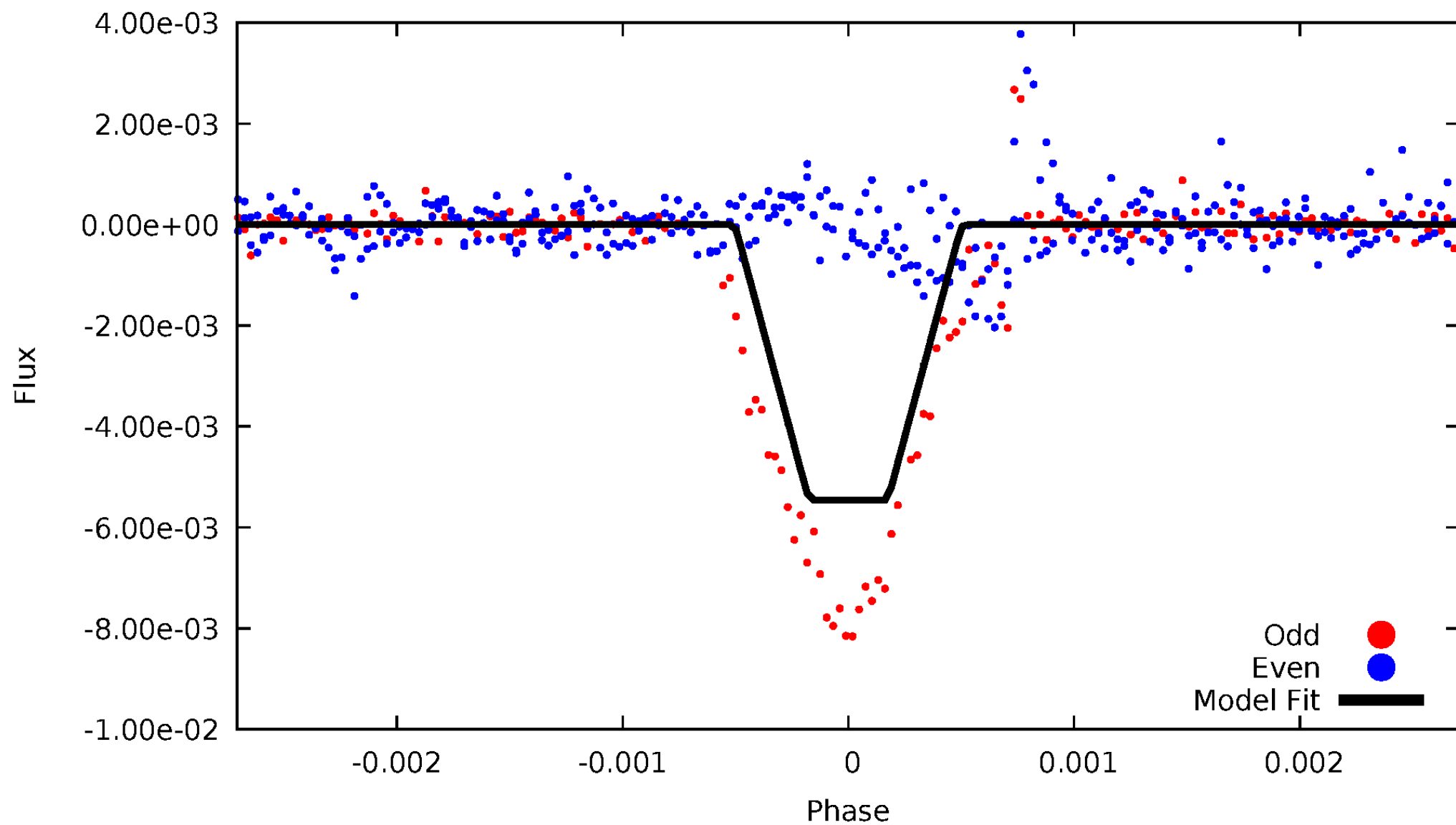
# DV Odd/Even

TCE 007174505-03



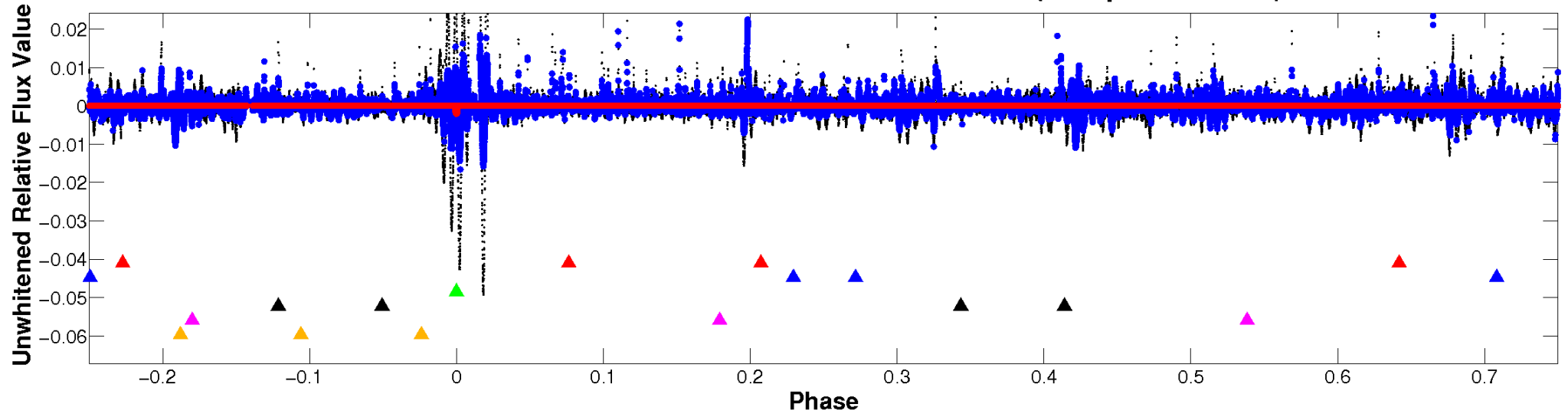
# ALT Odd/Even

TCE 007174505-03

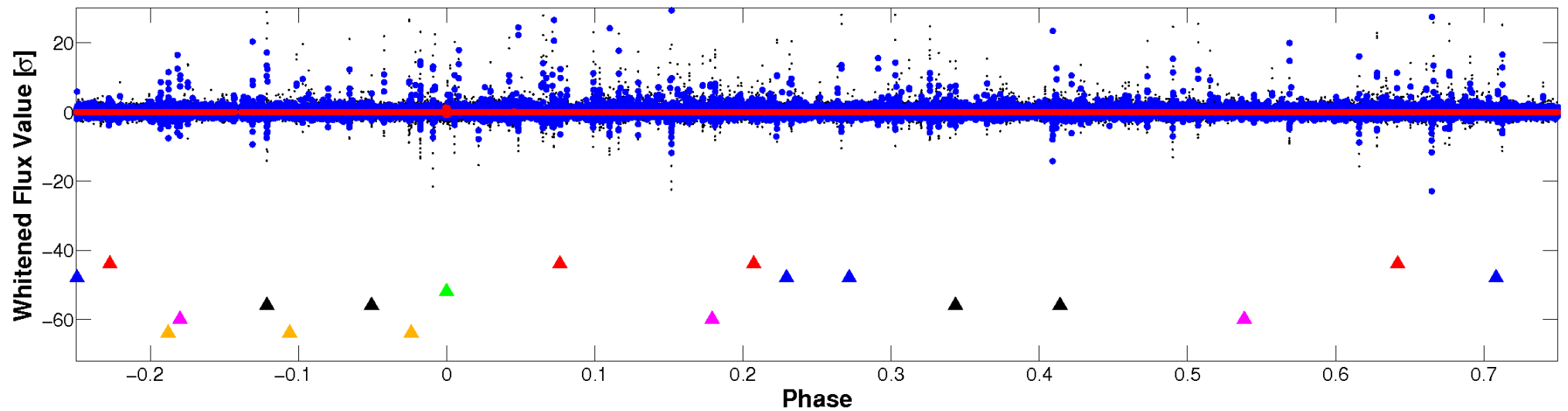


# Non-Whitened Vs. Whitened Light Curve

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

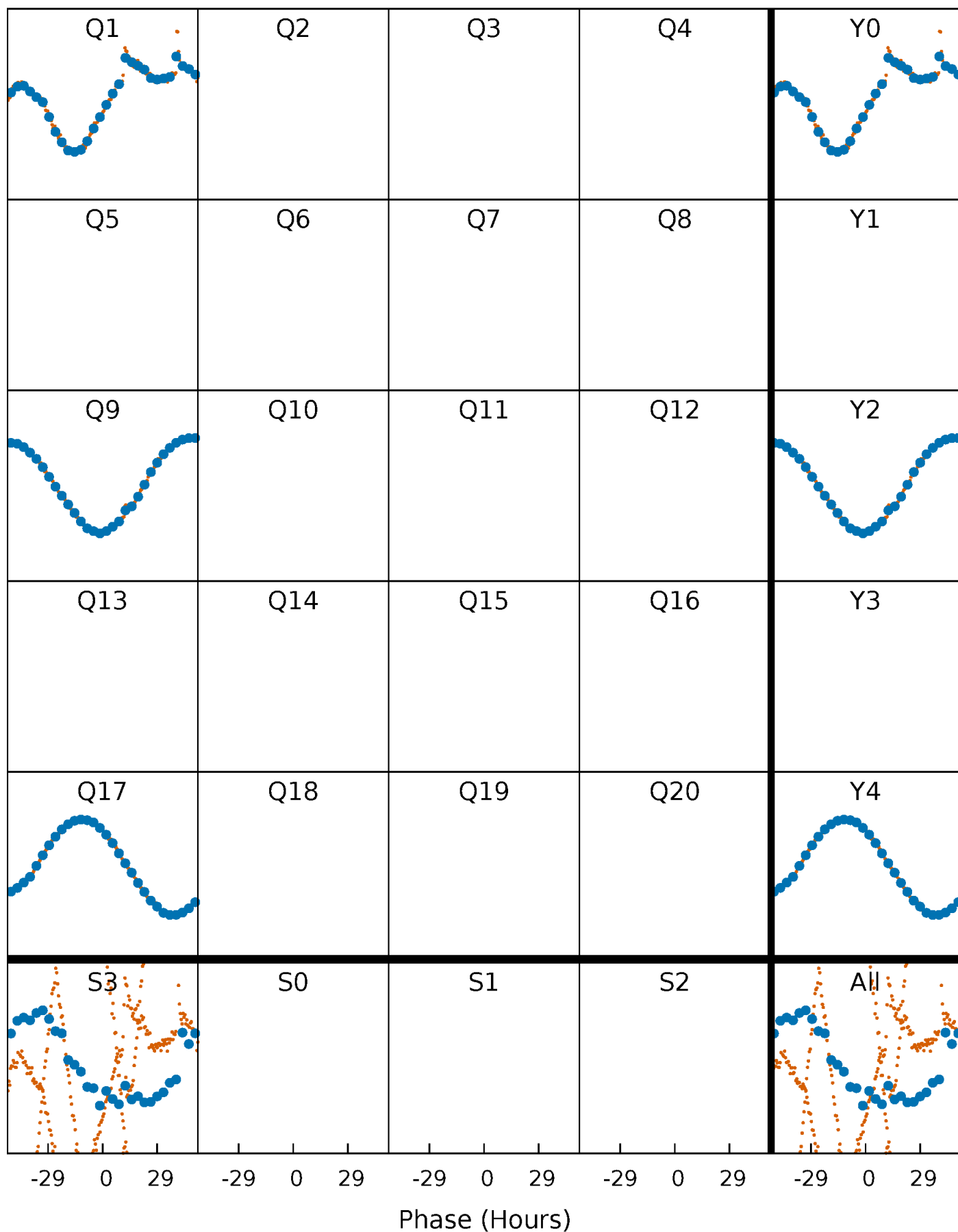


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



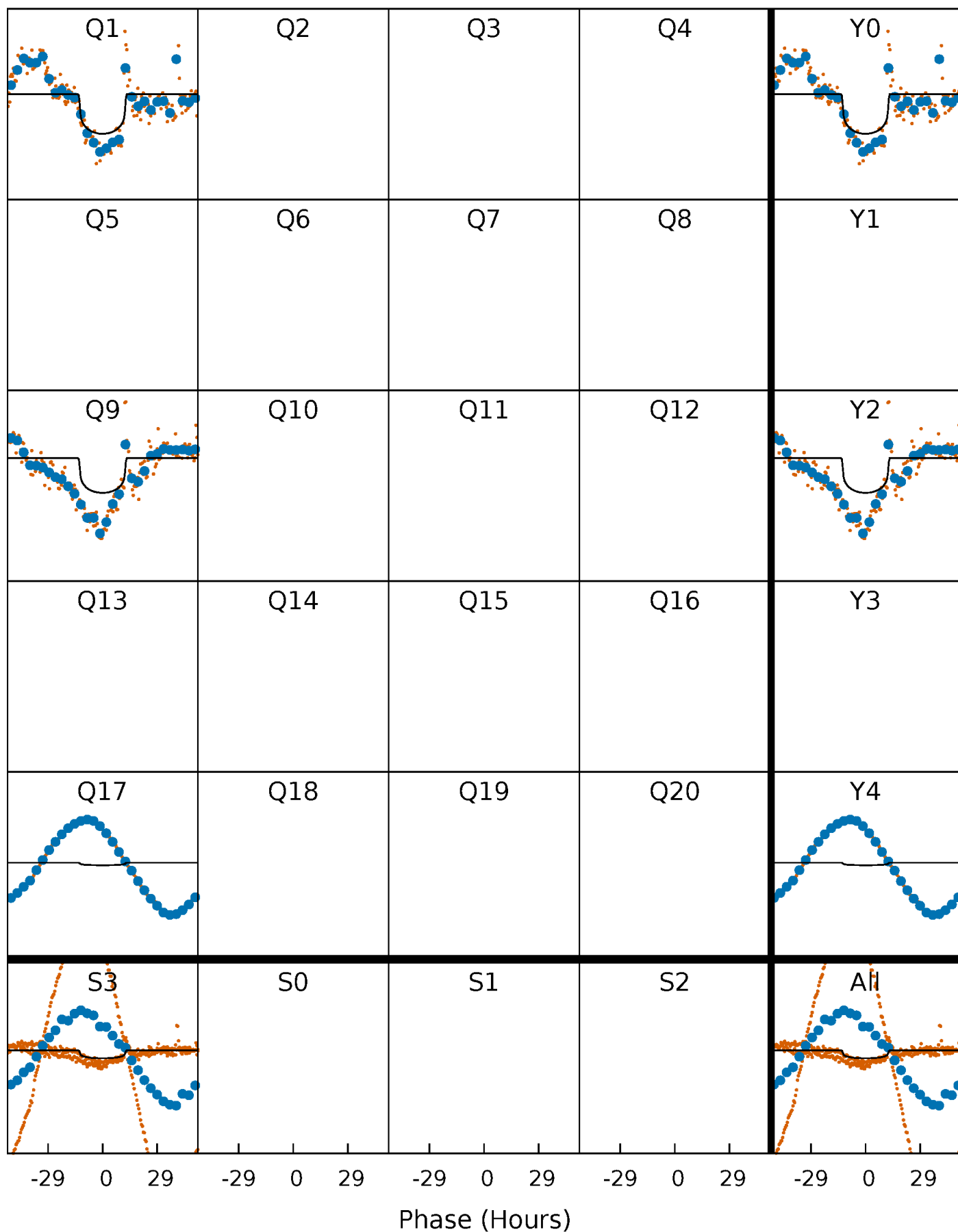
# PDC Quarter-Phased Transit Curves

TCE 007174505-03 P=712.948497 Days  $T_0=149.754361$  (BKJD)



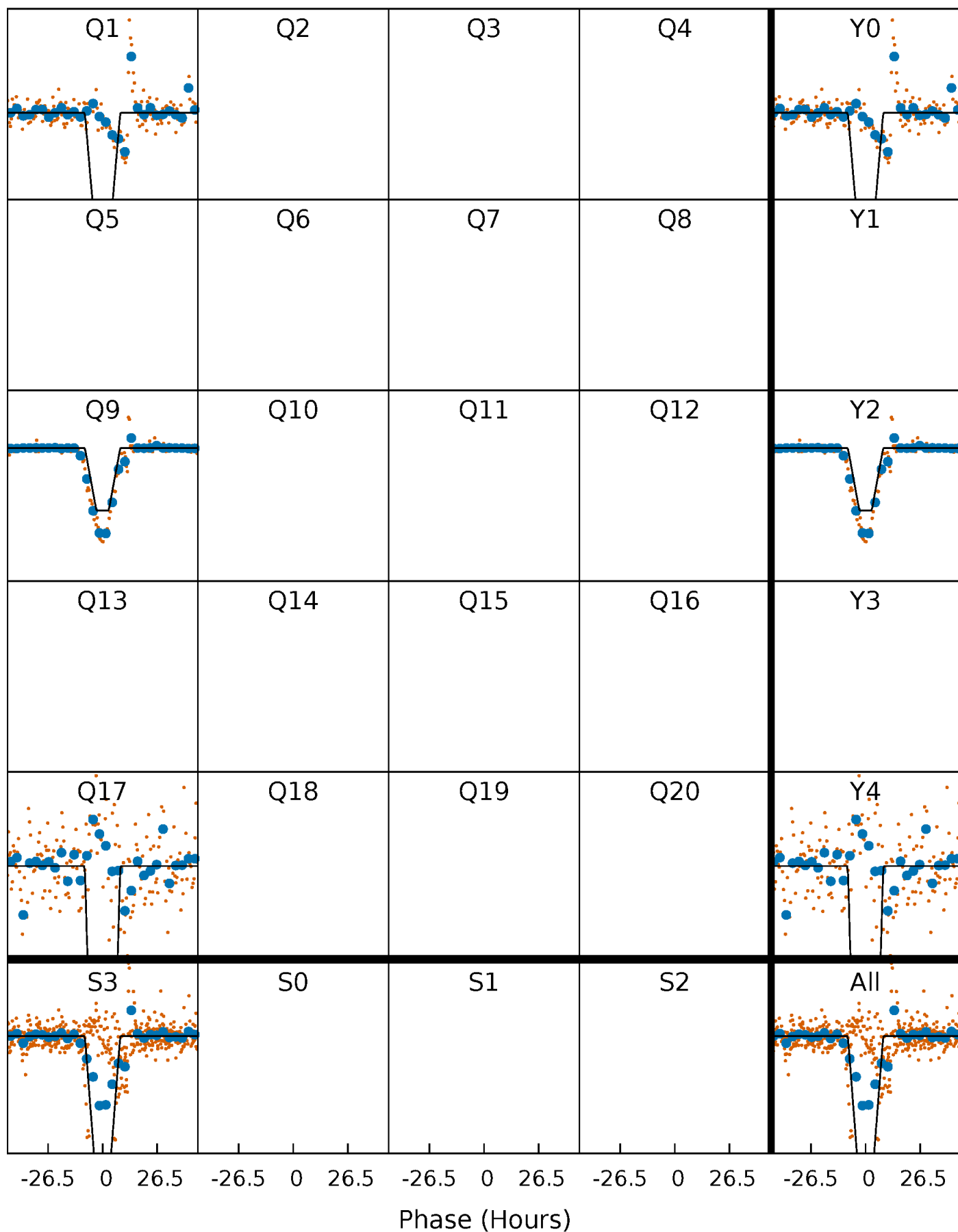
# DV Quarter-Phased Transit Curves

TCE 007174505-03 P=712.948497 Days  $T_0=149.754361$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

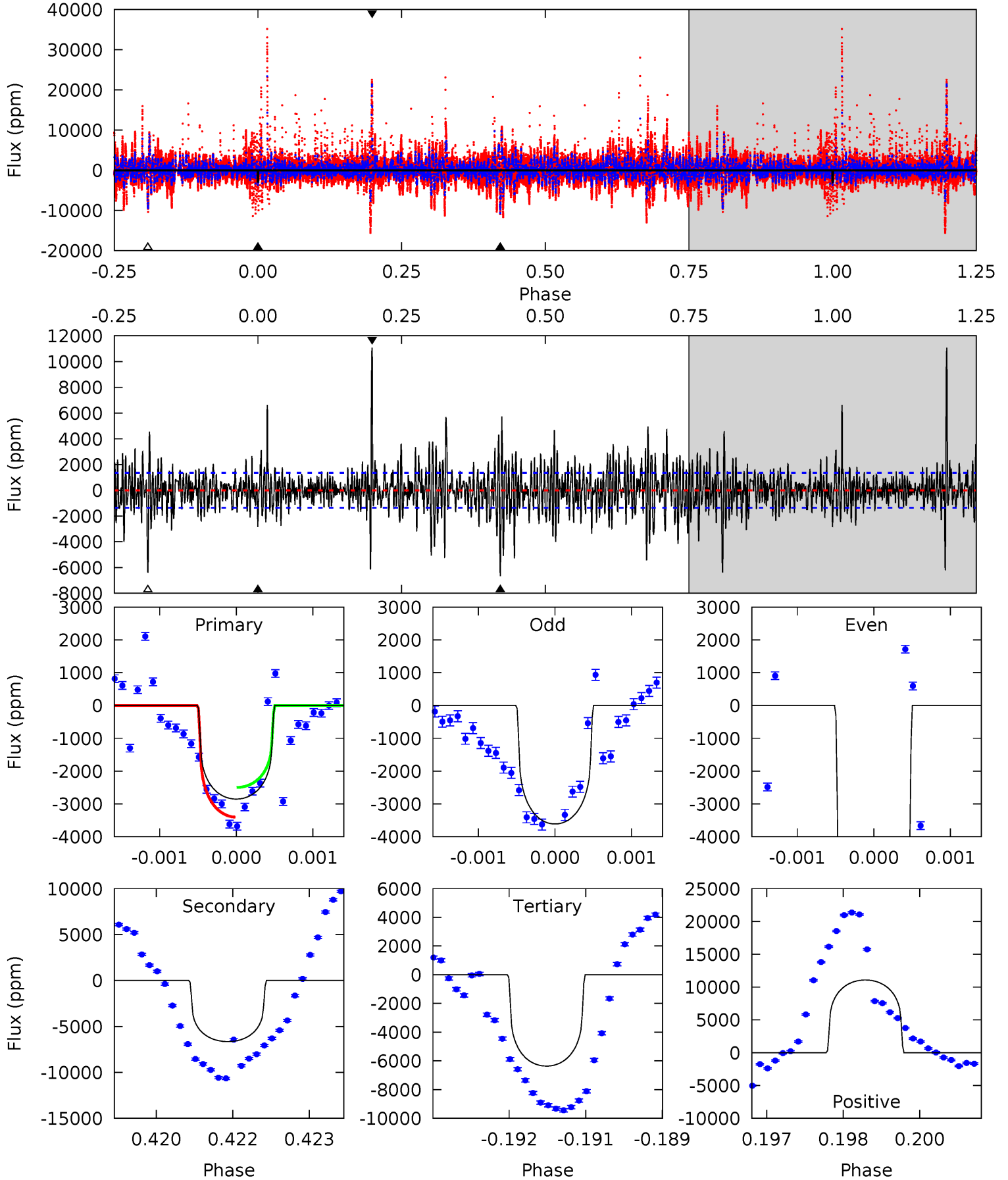
TCE 007174505-03     $P=712.967776$  Days     $T_0=149.706952$  (BKJD)



# DV Model-Shift Uniqueness Test

007174505-03, P = 712.948497 Days, E = 149.754361 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
11.3	26.4	25.2	43.9	5.38	3.18	5.94	-13.9	-32.6	1.14	-17.5	14.7	-2.67	0.62	1.79

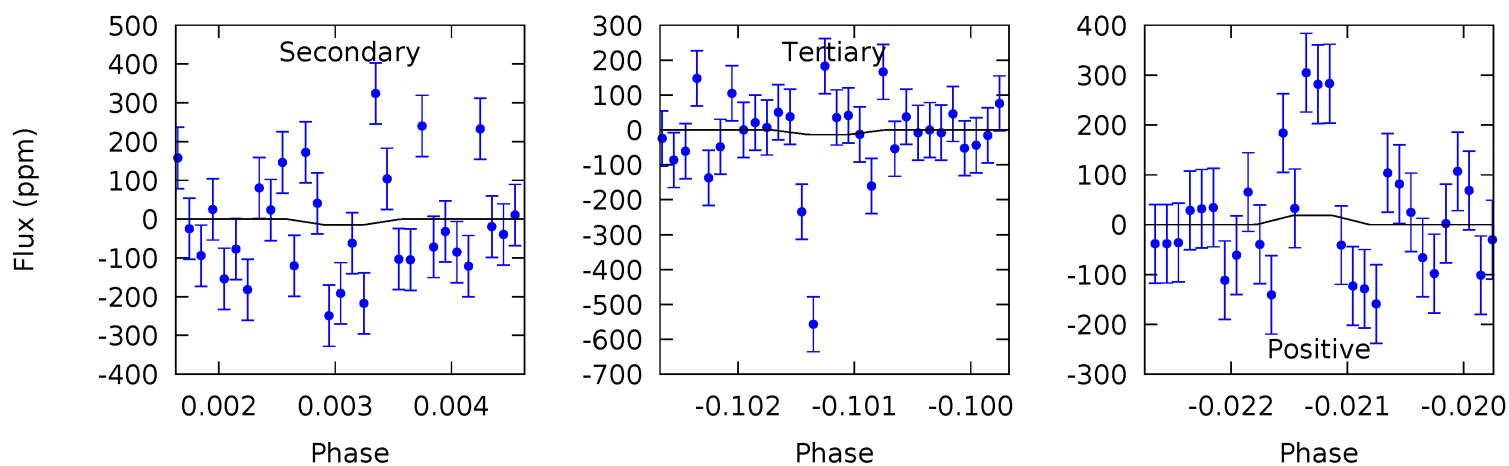
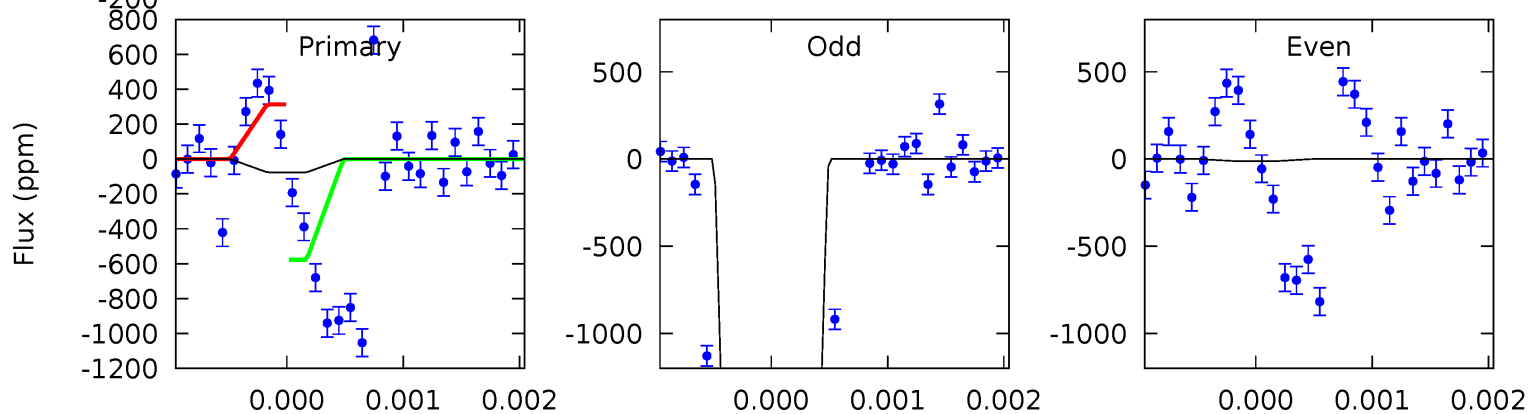
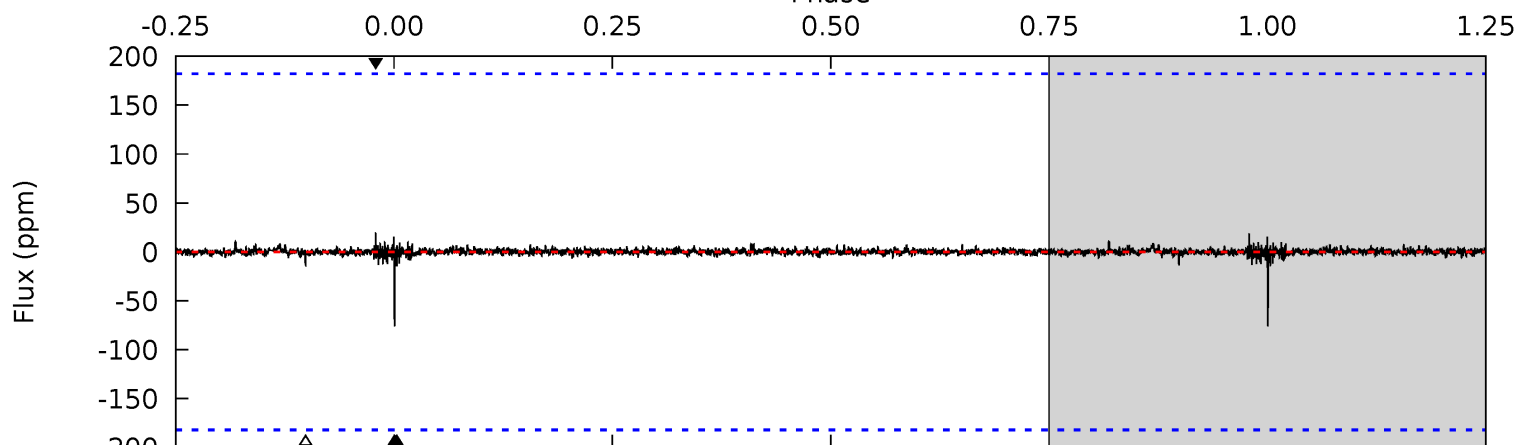
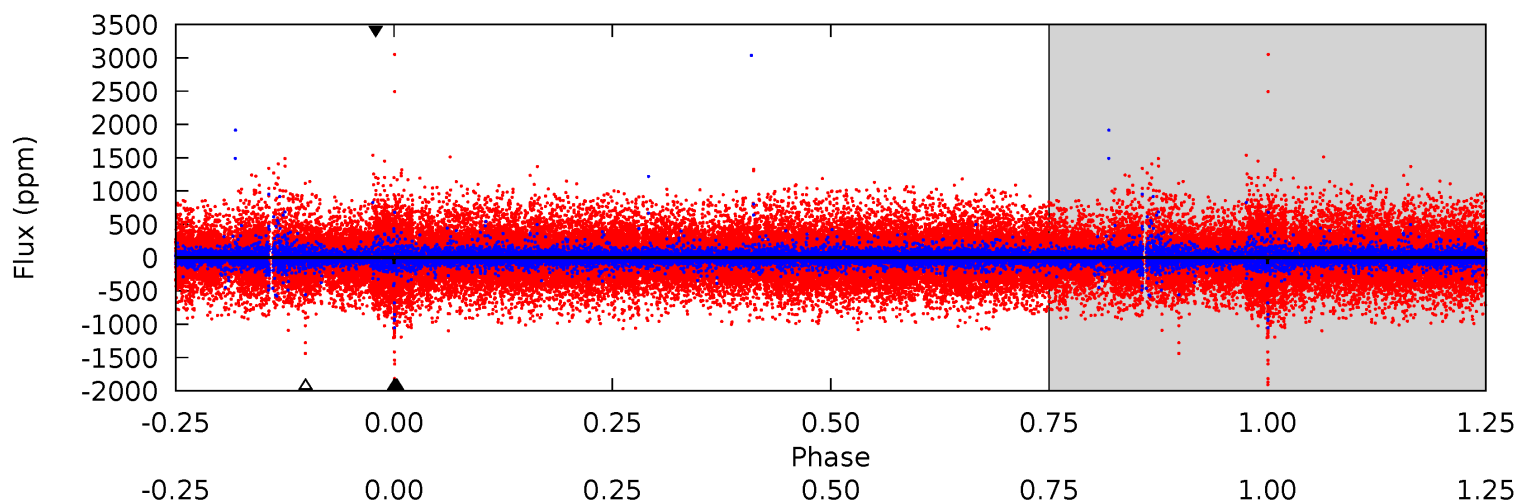




# Alt Model-Shift Uniqueness Test

007174505-03, P = 712.967776 Days, E = 149.706952 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
2.28	0.44	0.40	0.56	5.45	3.28	0.06	1.88	1.73	0.04	-0.11	130.0	8.13	0.20	0



### Stellar Parameters For KIC 007174505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5411^{+160}_{-160}$	$4.482^{+0.120}_{-0.132}$	$-0.380^{+0.350}_{-0.300}$	$0.819^{+0.131}_{-0.105}$	$0.742^{+0.115}_{-0.046}$	$1.904^{+0.991}_{-0.647}$
	+3%/-3%	+3%/-3%	+92%/-79%	+16%/-13%	+15%/-6%	+52%/-34%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007174505-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-6652 \pm 252$	$3.70^{+0.59}_{-0.60}$	$254^{+13}_{-13}$	$7769^{+823}_{-634}$	$549165^{+231994}_{-142707}$
Alt.	$-15 \pm 33$	$6.71^{+0.74}_{-0.82}$	$254^{+15}_{-12}$	$2213^{+305}_{-4465}$	$400^{+846}_{-857}$

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

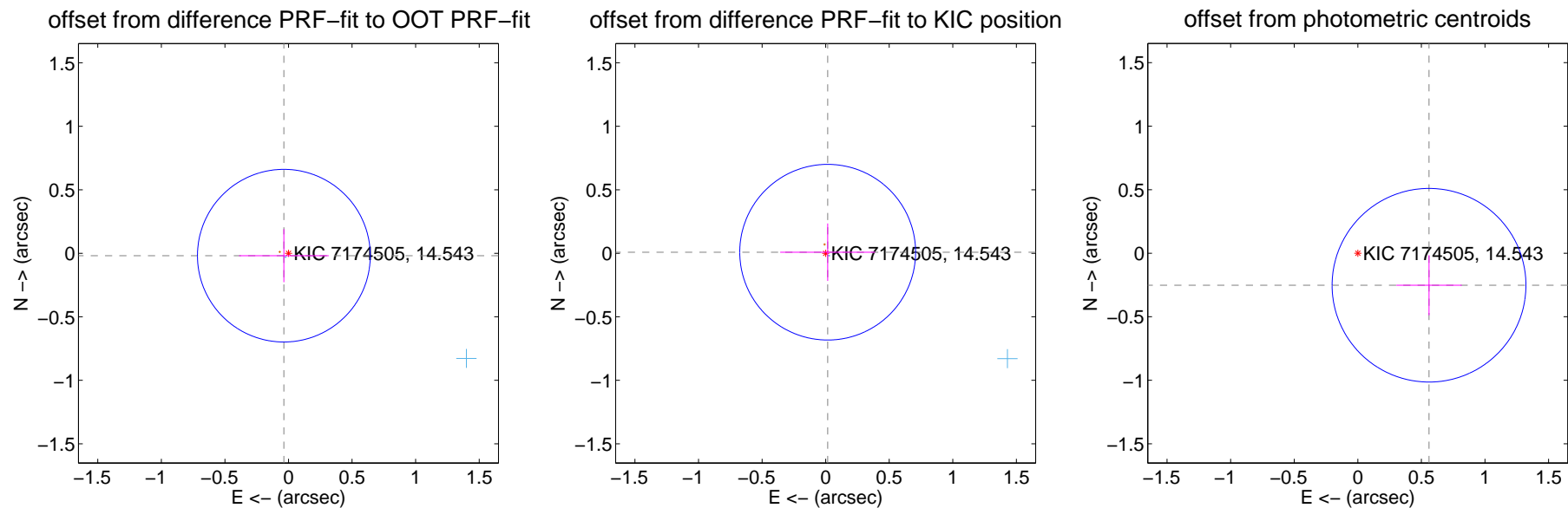
## DV Centroid Data

Supplemental centroid analysis for 007174505-03. Kepler magnitude: 14.54. Transit SNR 6.08

There are 2 quarters with good PRF difference image offsets

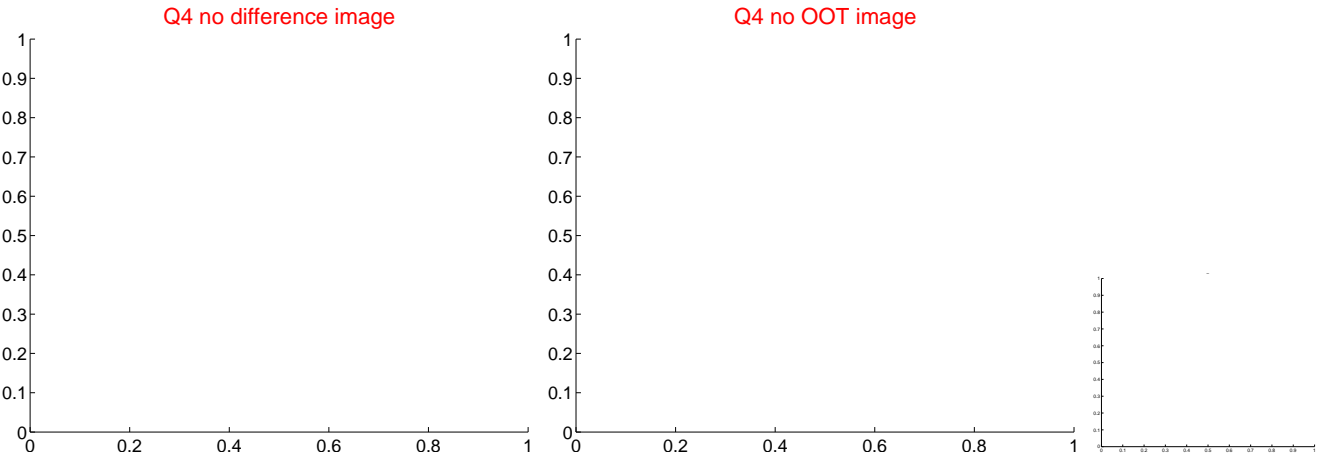
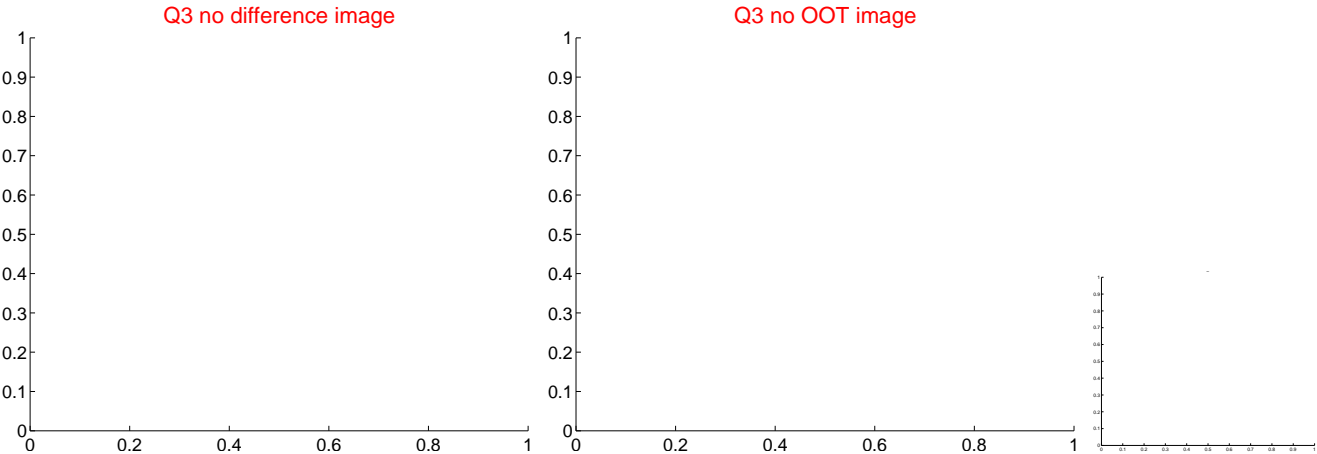
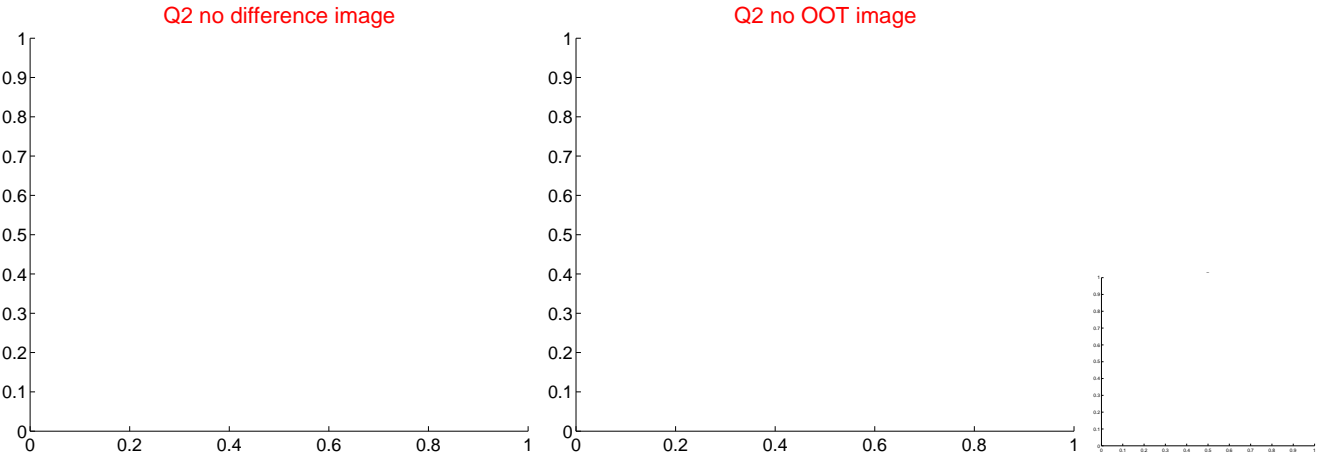
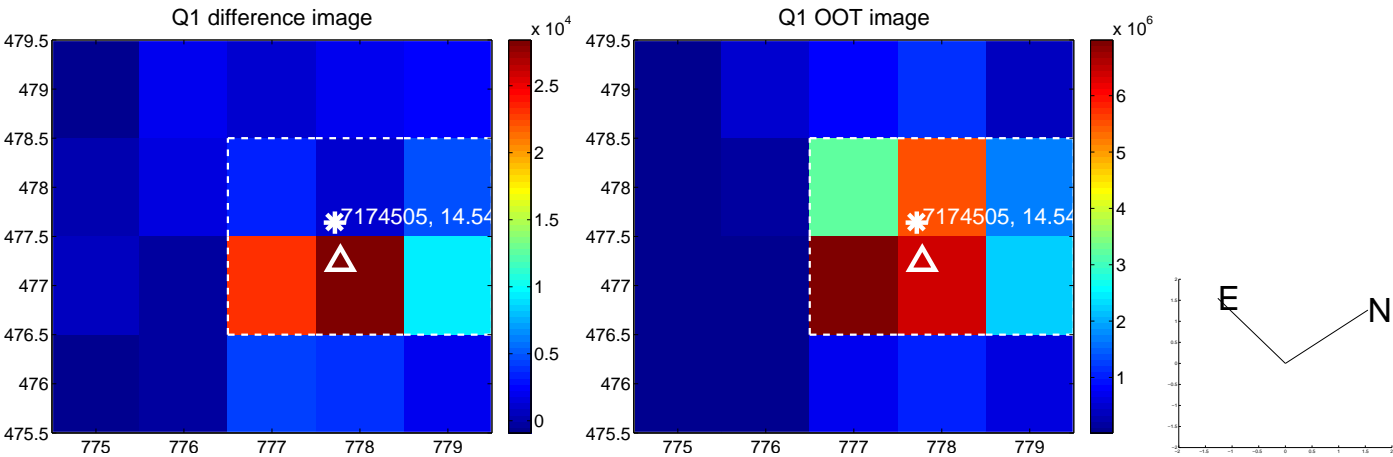
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.041 \pm 0.227$	0.18	$0.036 \pm 0.353$	$-0.019 \pm 0.209$
PRF-fit source offset from KIC position	$0.018 \pm 0.230$	0.08	$-0.016 \pm 0.373$	$0.009 \pm 0.226$
photometric centroid source offset	$0.61 \pm 0.25$	2.42	$-0.56 \pm 0.26$	$-0.25 \pm 0.24$



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.

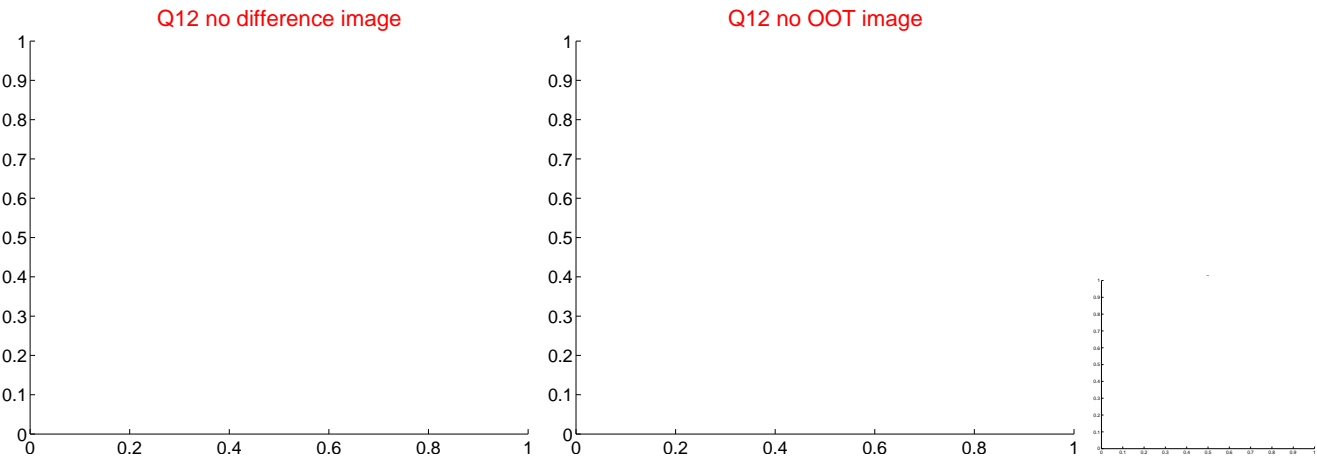
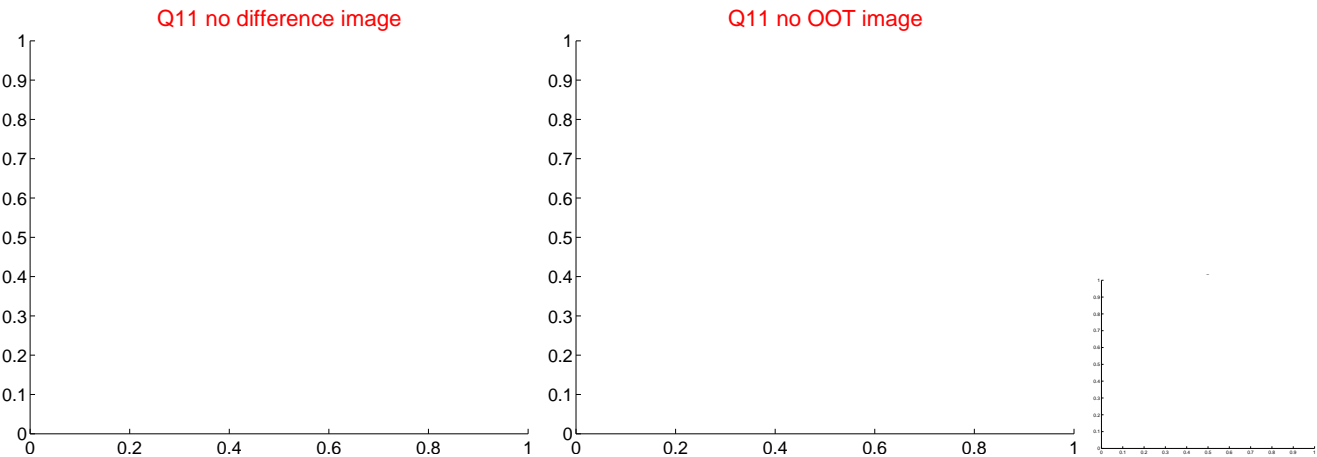
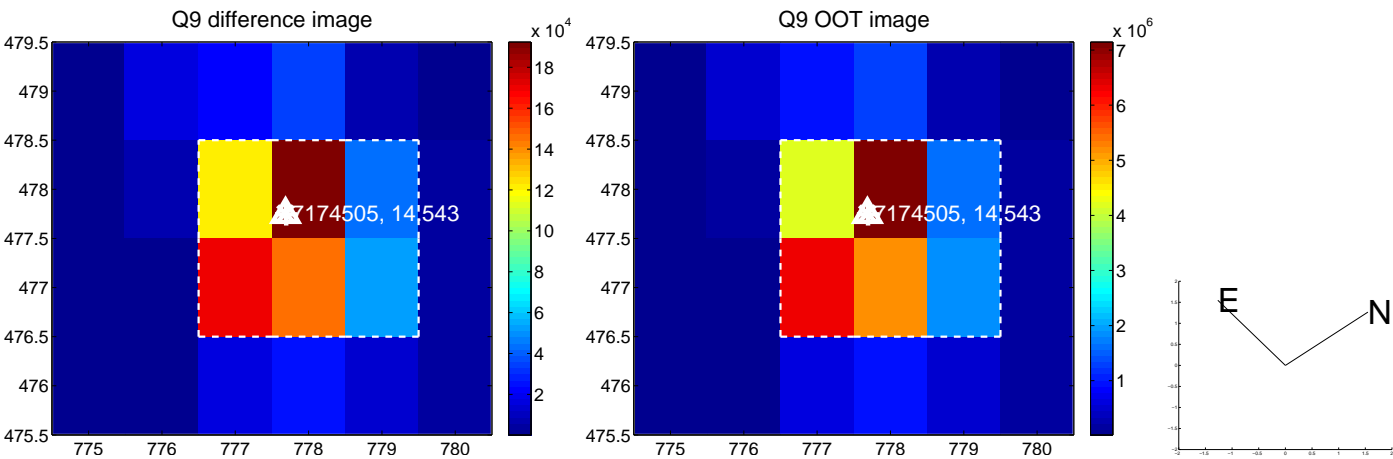
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



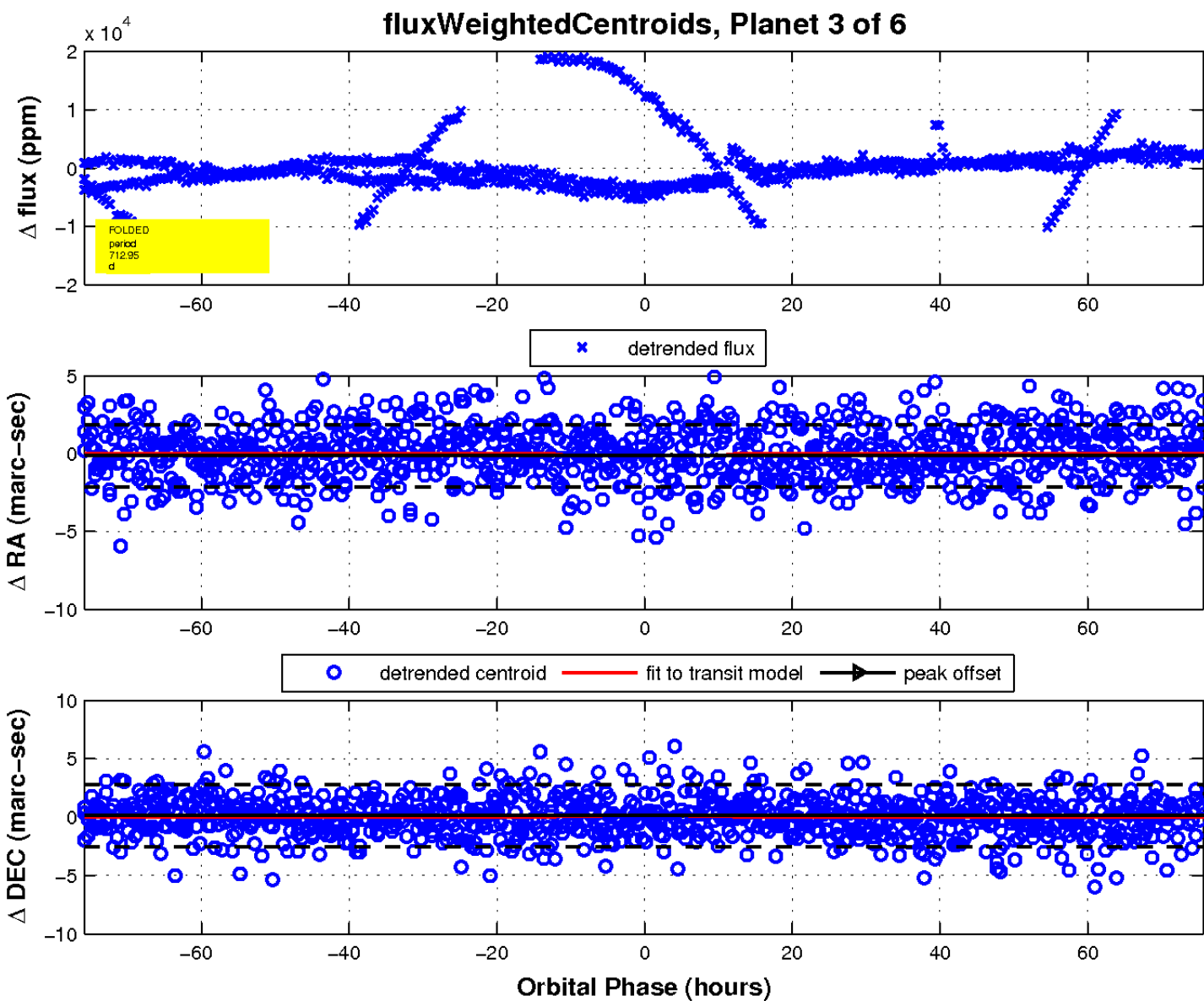
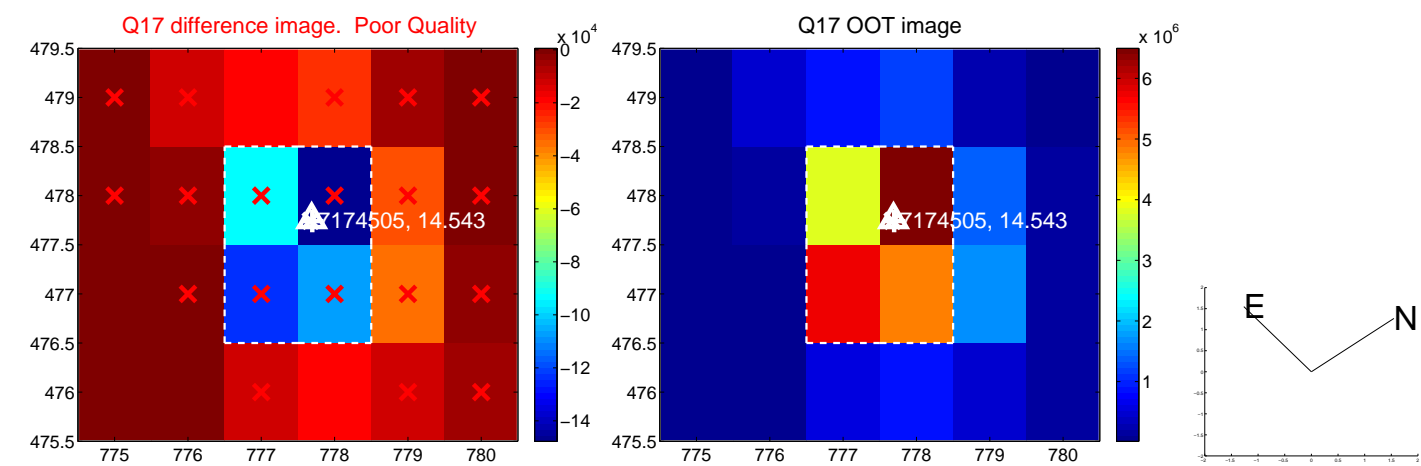
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



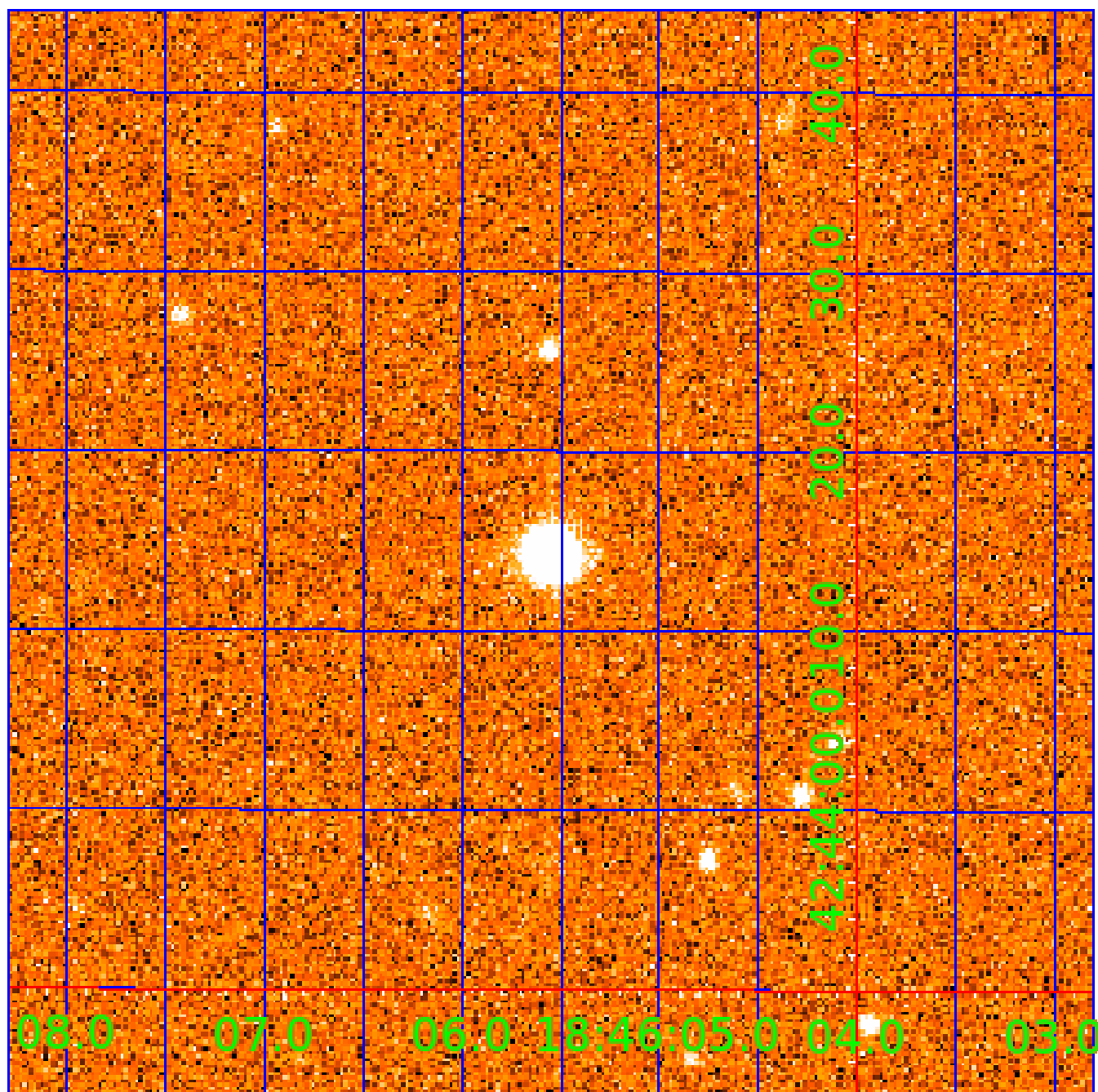
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





# UKIRT Image

Declination



# KIC 007174505

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007174505-01	OBS	No	403.118446	204.264473	2054.3	5.258	15.3	8.5	0.82	5411	4.30	0.55
007174505-02	OBS	No	341.397154	343.482096	1351.0	4.886	13.0	6.9	0.82	5411	3.07	0.69
007174505-03	OBS	No	712.948497	149.754361	2052.0	25.341	11.2	6.1	0.82	5411	3.65	0.26
007174505-04	OBS	No	381.634377	394.626900	1545.6	4.006	15.7	7.9	0.82	5411	3.92	0.59
007174505-05	OBS	No	456.893076	533.590089	1370.0	3.533	15.4	6.6	0.82	5411	3.10	0.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007174505-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007174505-02	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—CENT_FEW_DIFFS
007174505-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007174505-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007174505-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

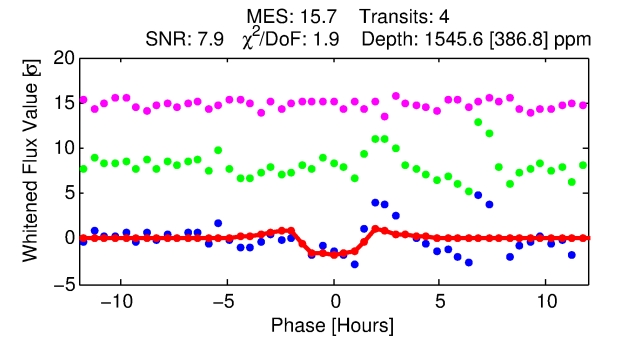
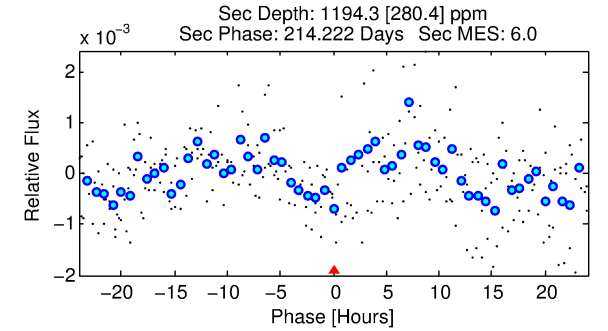
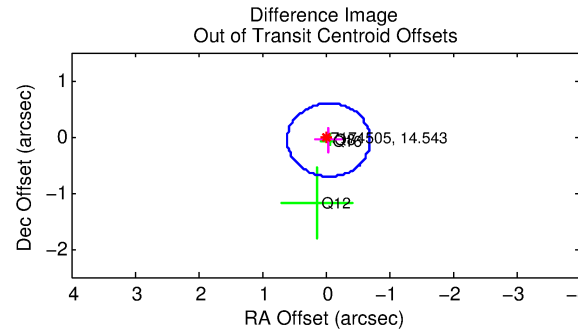
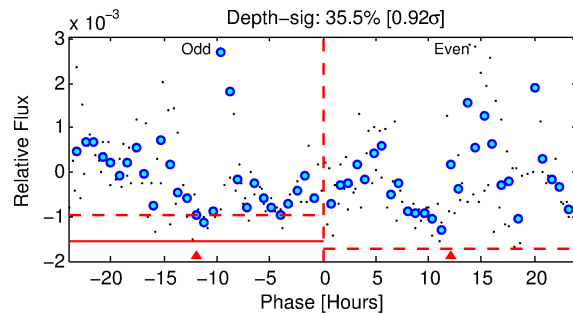
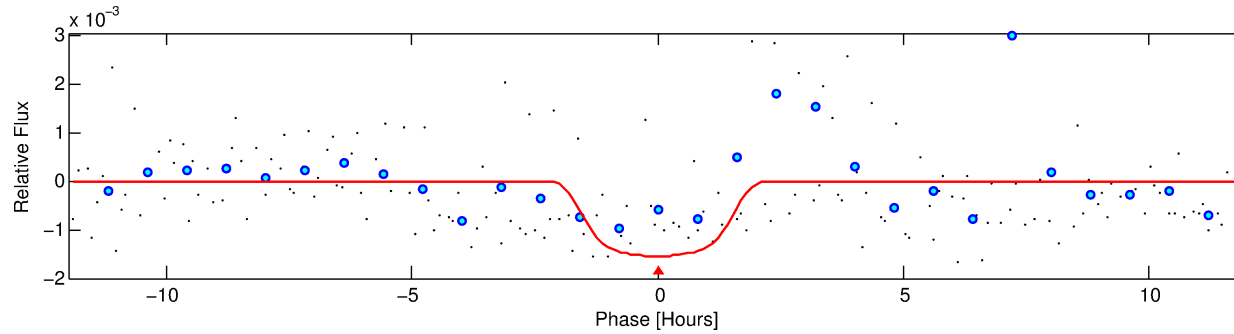
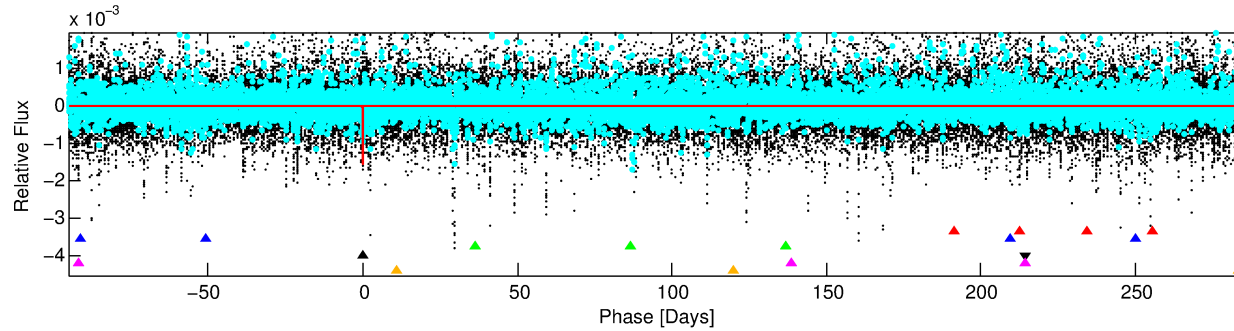
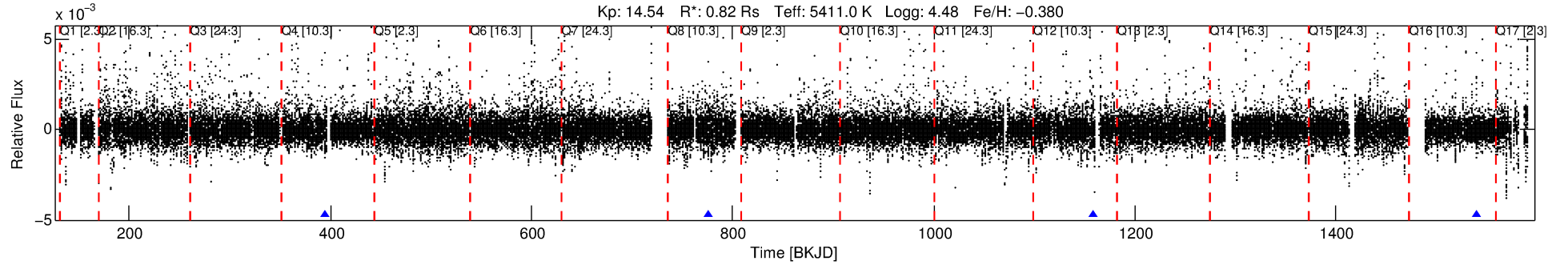
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007174505-04

No Significant Match Found

# DV One-Page Summary

KIC: 7174505 Candidate: 4 of 6 Period: 381.634 d



## DV Fit Results:

Period = 381.63438 [0.00546] d  
Epoch = 394.6269 [0.0110] BKJD  
Rp/R\* = 0.0439 [0.0085]  
a/R\* = 365.83 [183.59]  
b = 0.91 [0.09]  
Seff = 0.59 [0.15]  
Teq = 224 [14] K  
Rp = 3.92 [0.99] Re  
a = 0.9325 [0.1372] AU  
Ag = 37125.80 [18874.03] [1.97 $\sigma$ ]  
Teffp = 4801 [563] K [8.13 $\sigma$ ]

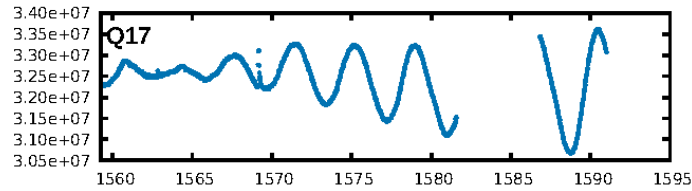
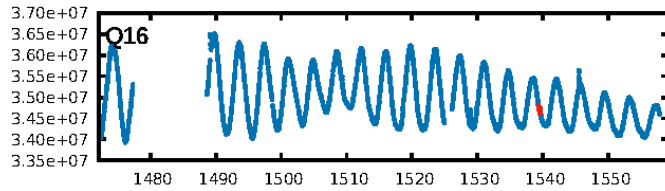
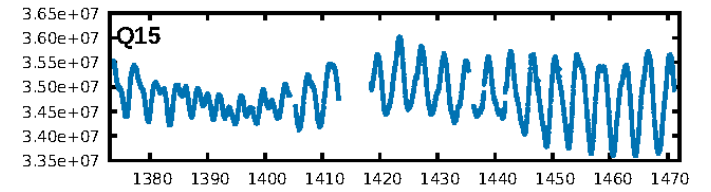
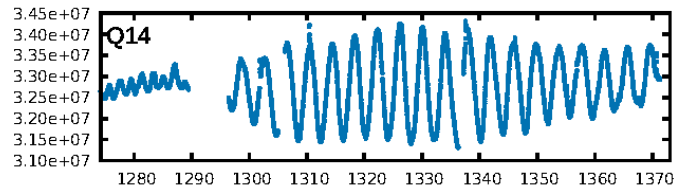
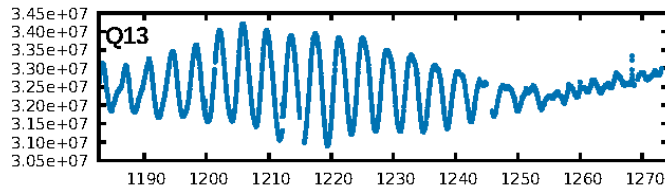
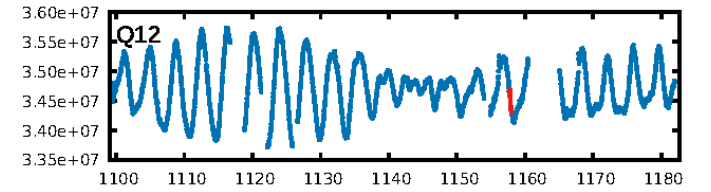
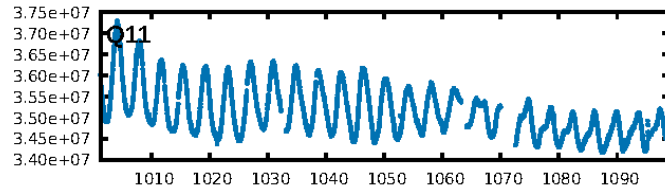
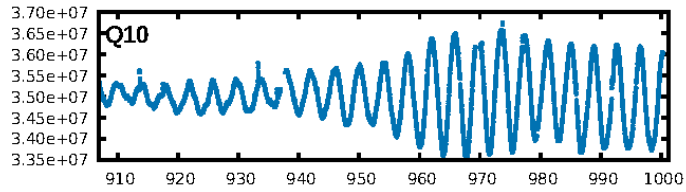
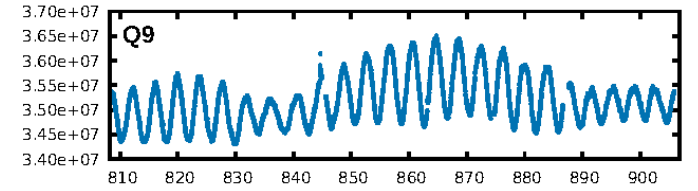
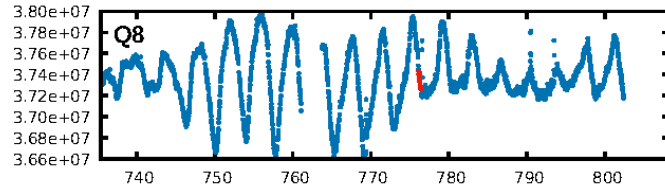
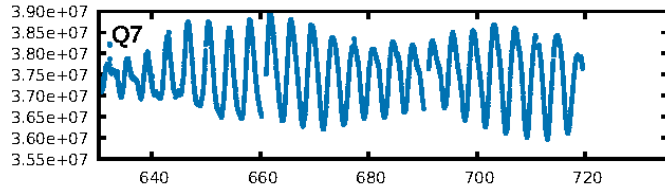
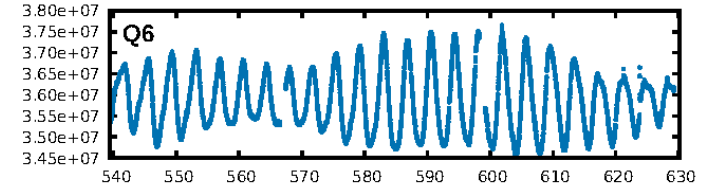
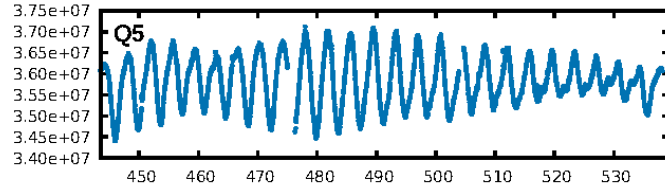
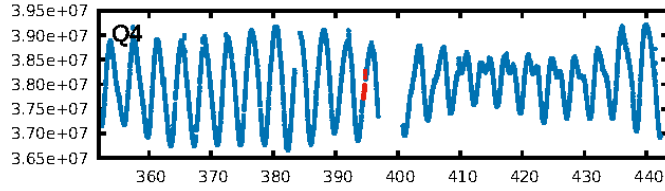
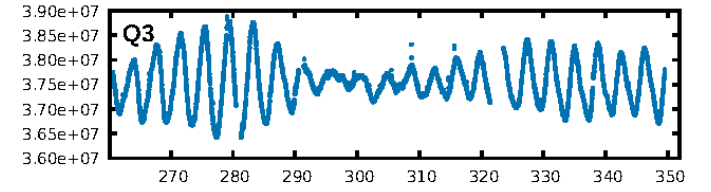
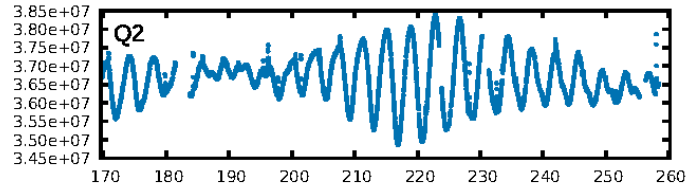
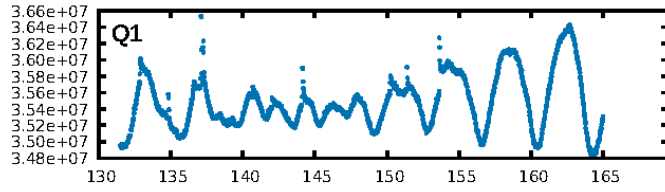
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [152.84 $\sigma$ ]  
LongPeriod-sig: 100.0% [78.00 $\sigma$ ]  
**ModelChiSquare2-sig: 0.1%**  
ModelChiSquareGof-sig: 23.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.665  
Centroid-sig: 1.6%  
Centroid-so: 1.070 arcsec [1.90 $\sigma$ ]  
OotOffset-rm: 0.078 arcsec [0.36 $\sigma$ ]  
OotOffset-st: 0/0/3/0 [3]  
KicOffset-rm: 0.111 arcsec [0.40 $\sigma$ ]  
KicOffset-st: 0/0/3/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [4/4]

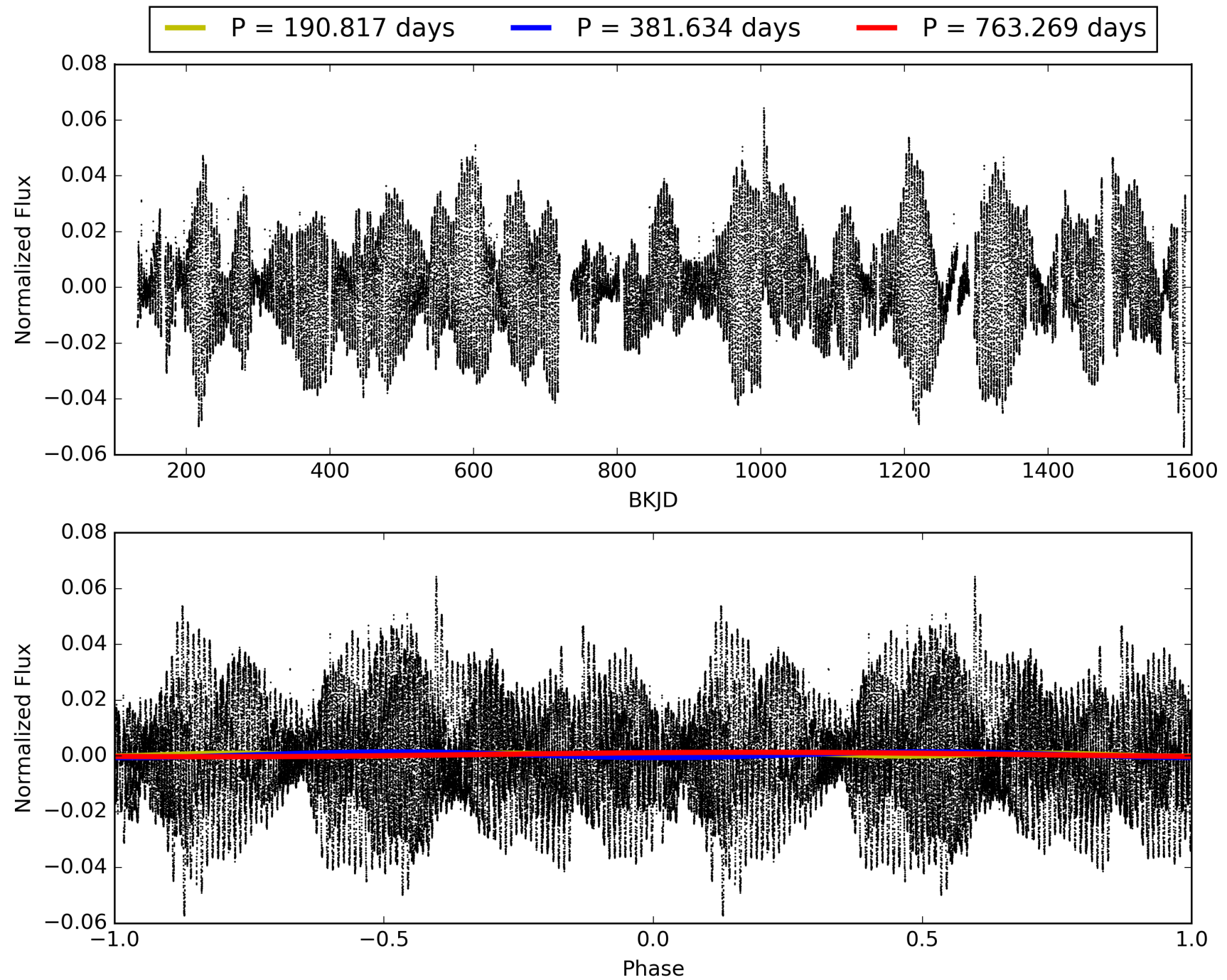
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:41:22 Z

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

# TCE 007174505-04, PDC Light Curves

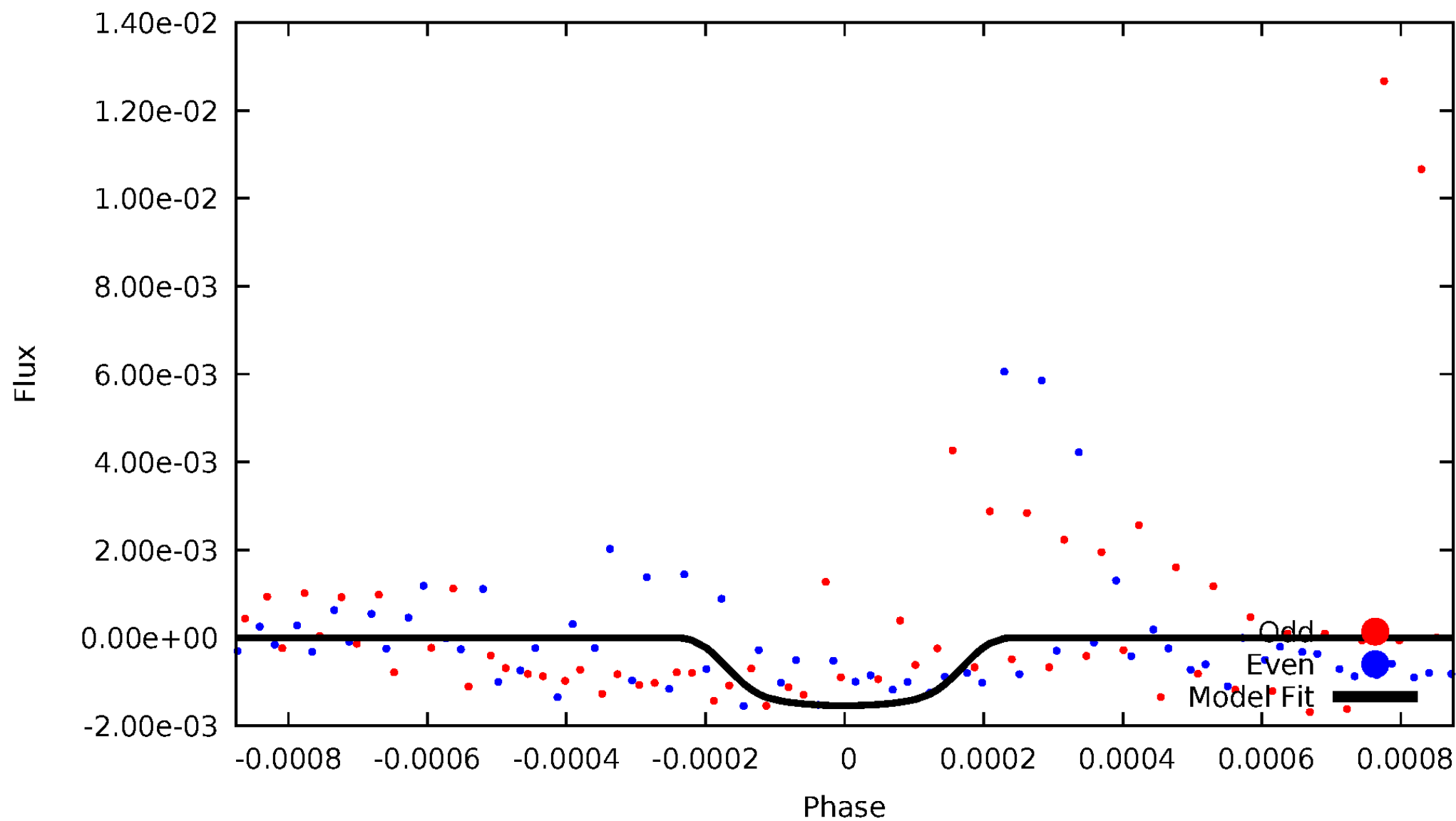


TCE 007174505-04



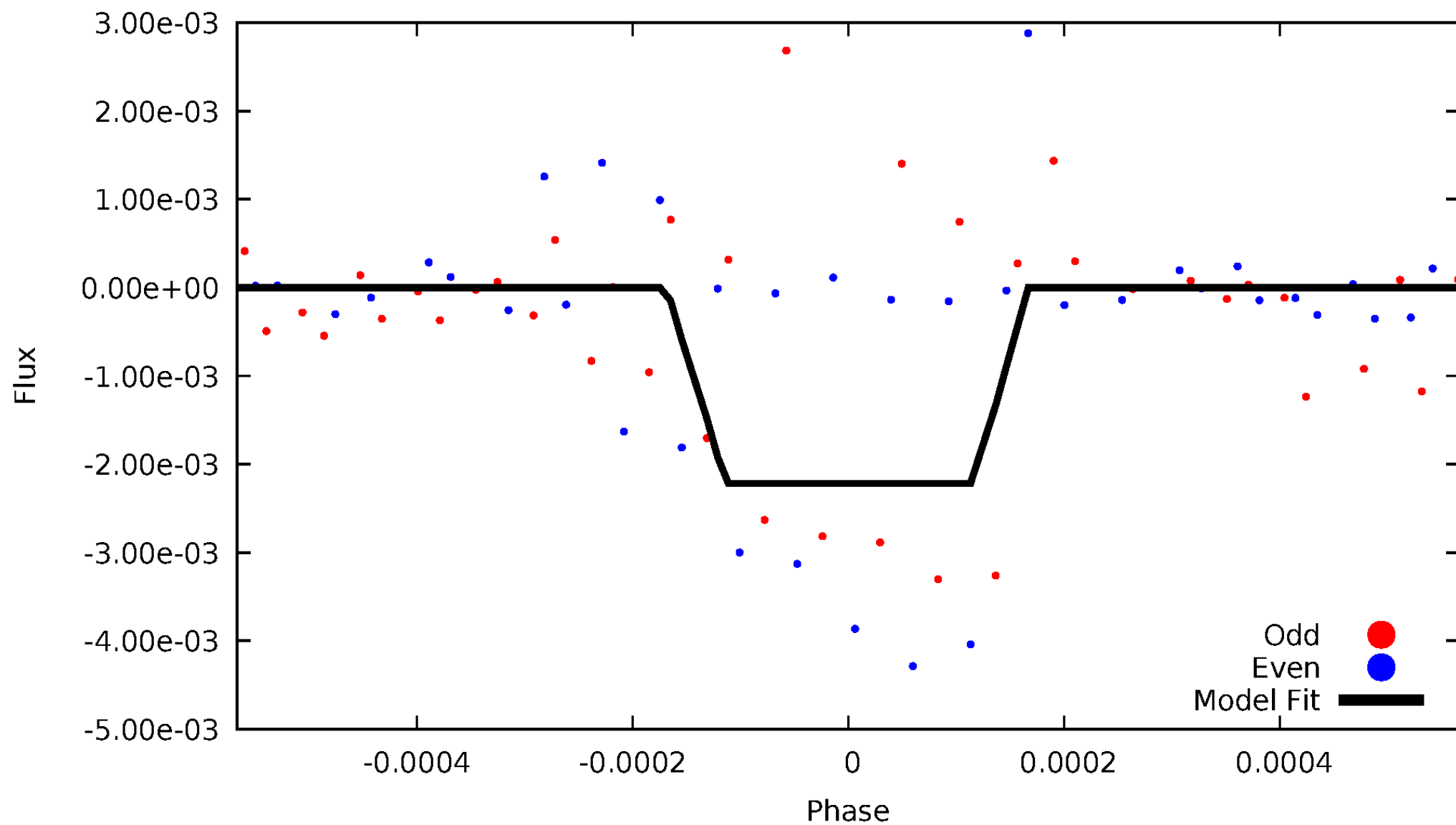
# DV Odd/Even

TCE 007174505-04



# ALT Odd/Even

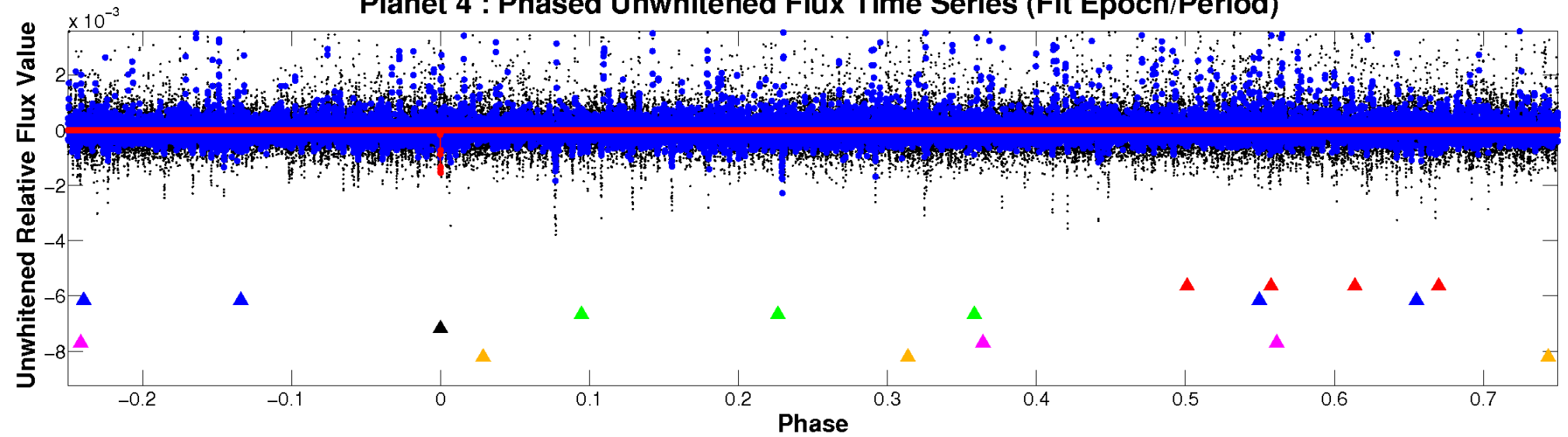
TCE 007174505-04



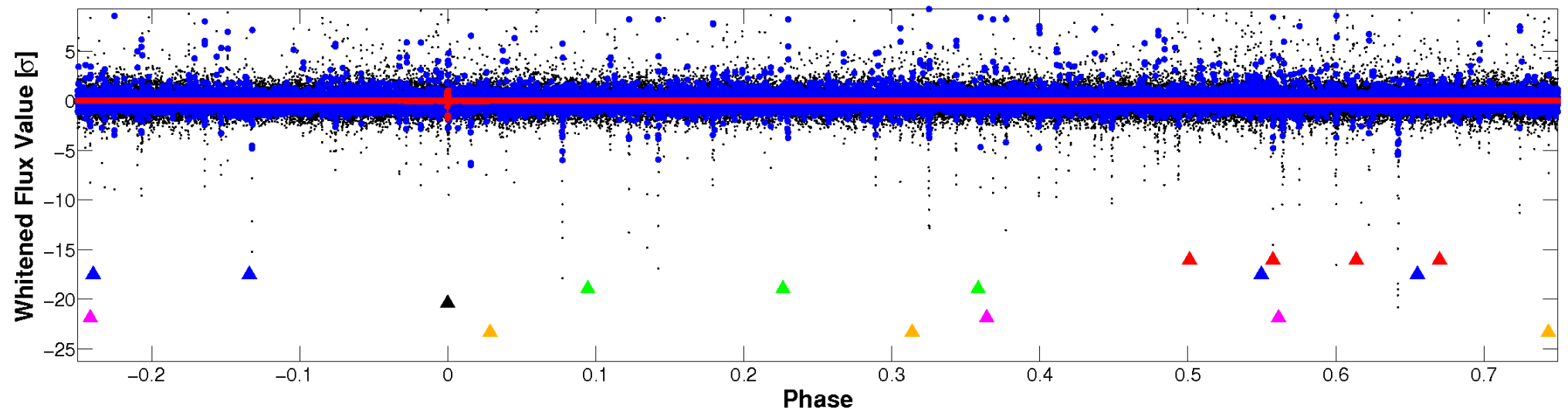


# Non-Whitened Vs. Whitened Light Curve

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



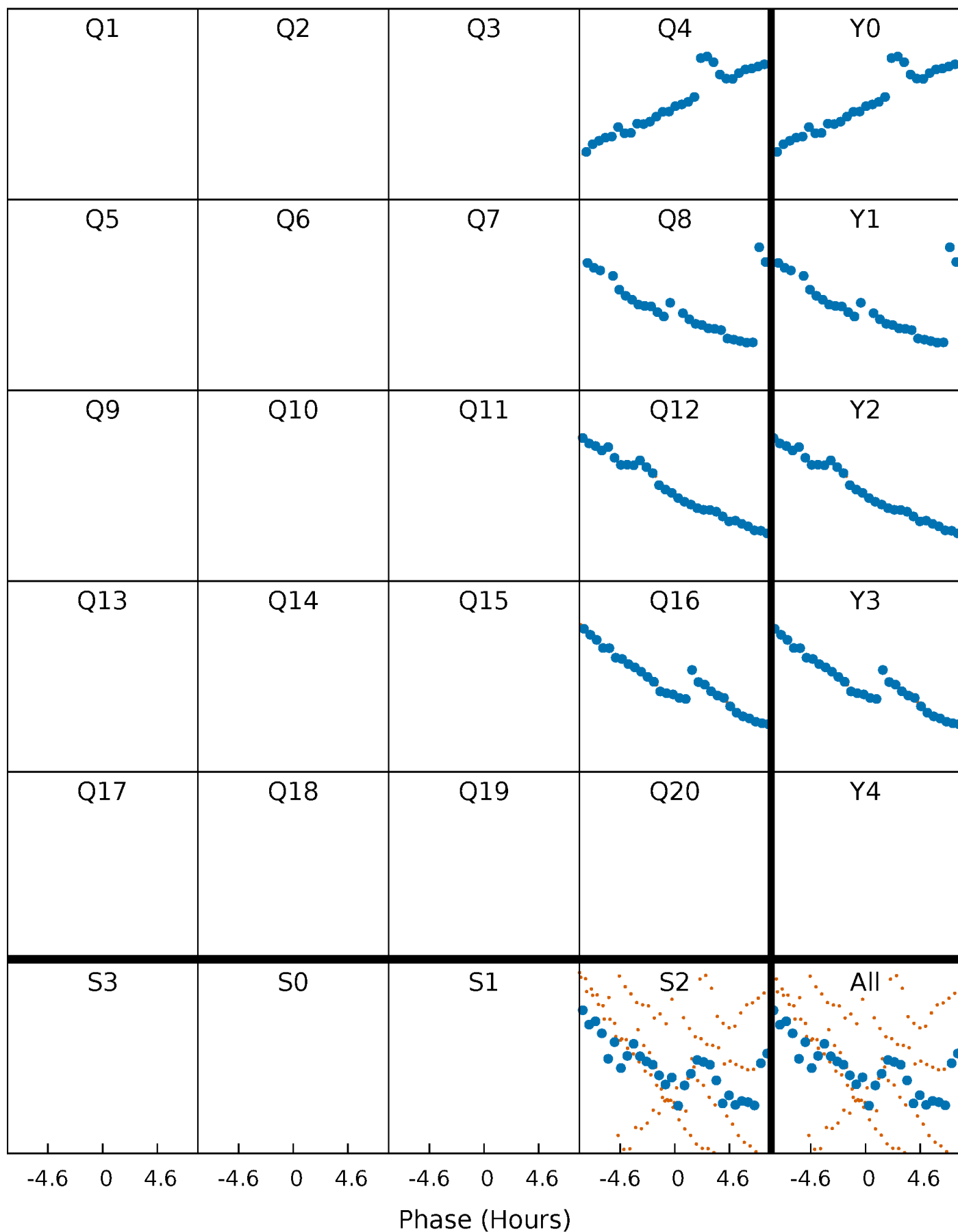
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





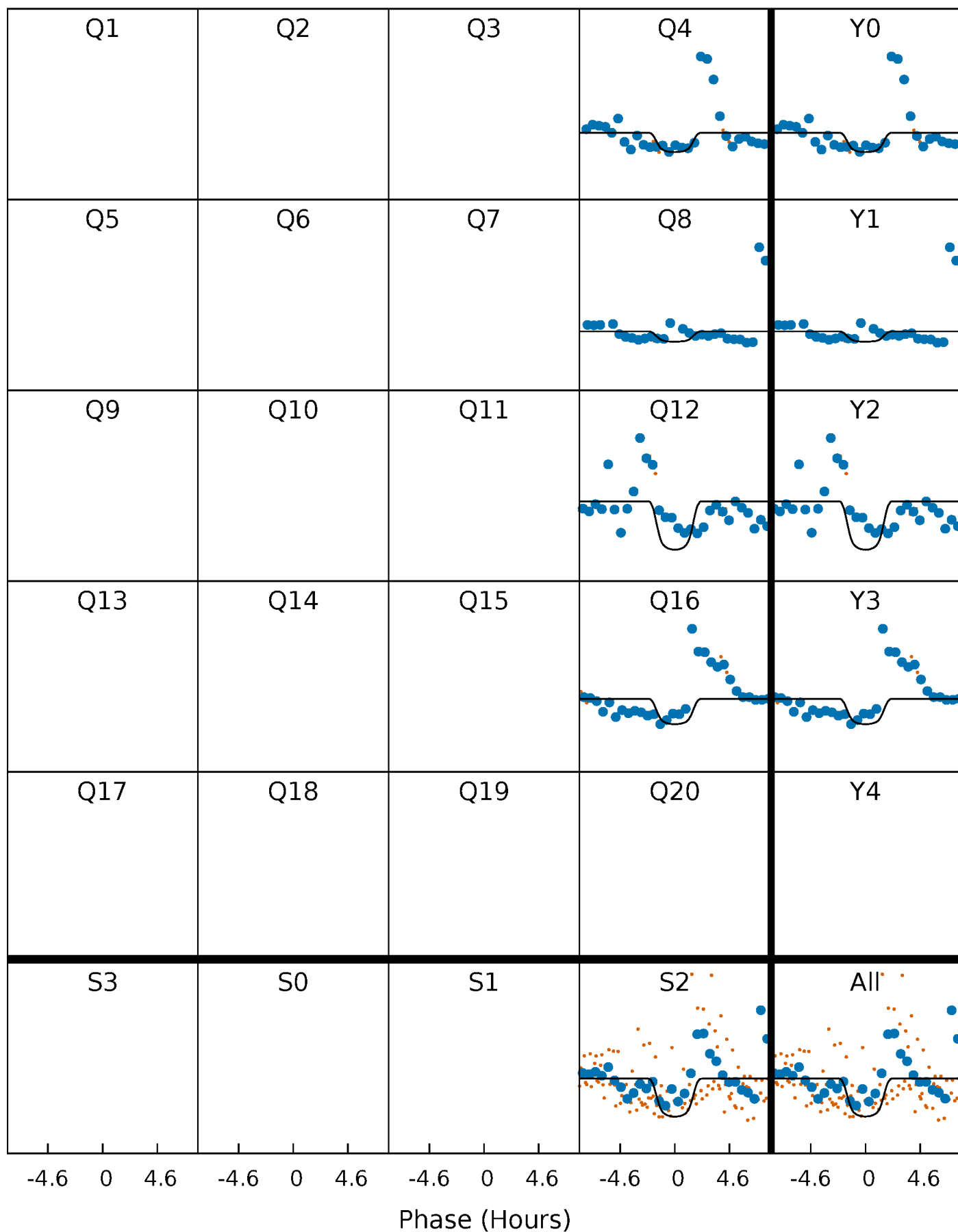
# PDC Quarter-Phased Transit Curves

TCE 007174505-04     $P=381.634377$  Days     $T_0=394.626900$  (BKJD)



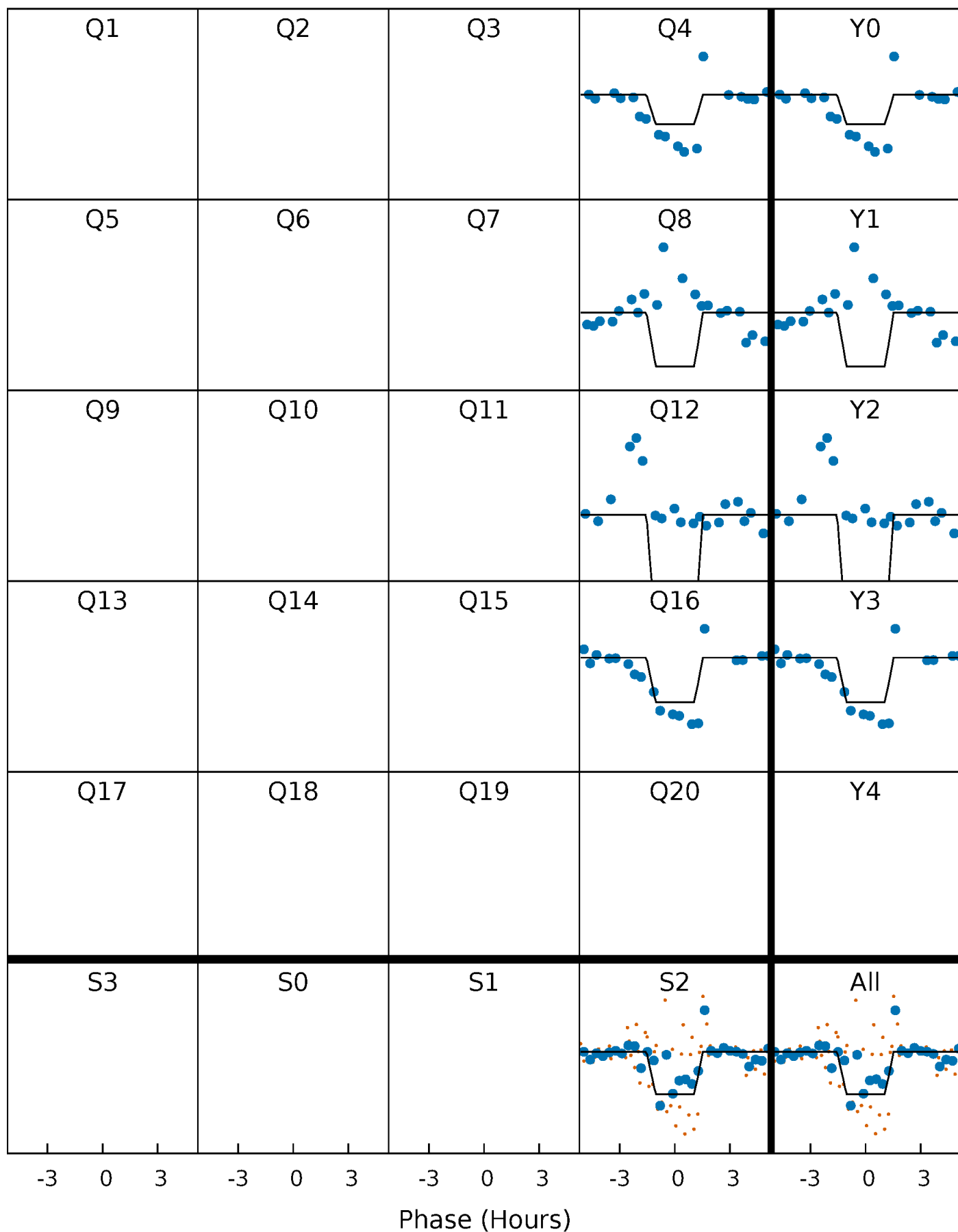
# DV Quarter-Phased Transit Curves

TCE 007174505-04     $P=381.634377$  Days     $T_0=394.626900$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

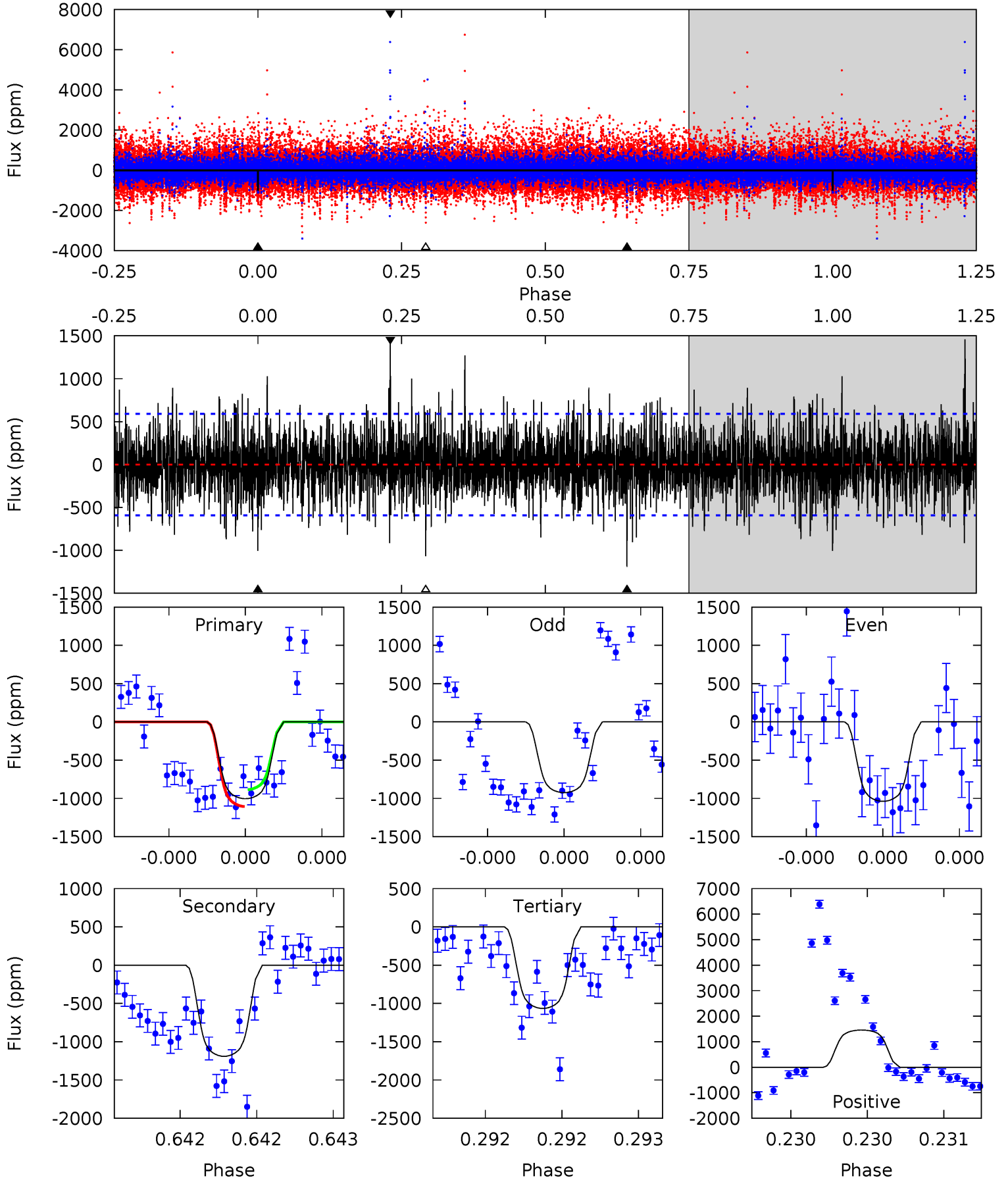
TCE 007174505-04 P=381.621941 Days  $T_0=394.650899$  (BKJD)



# DV Model-Shift Uniqueness Test

007174505-04, P = 381.634377 Days, E = 12.992523 Days

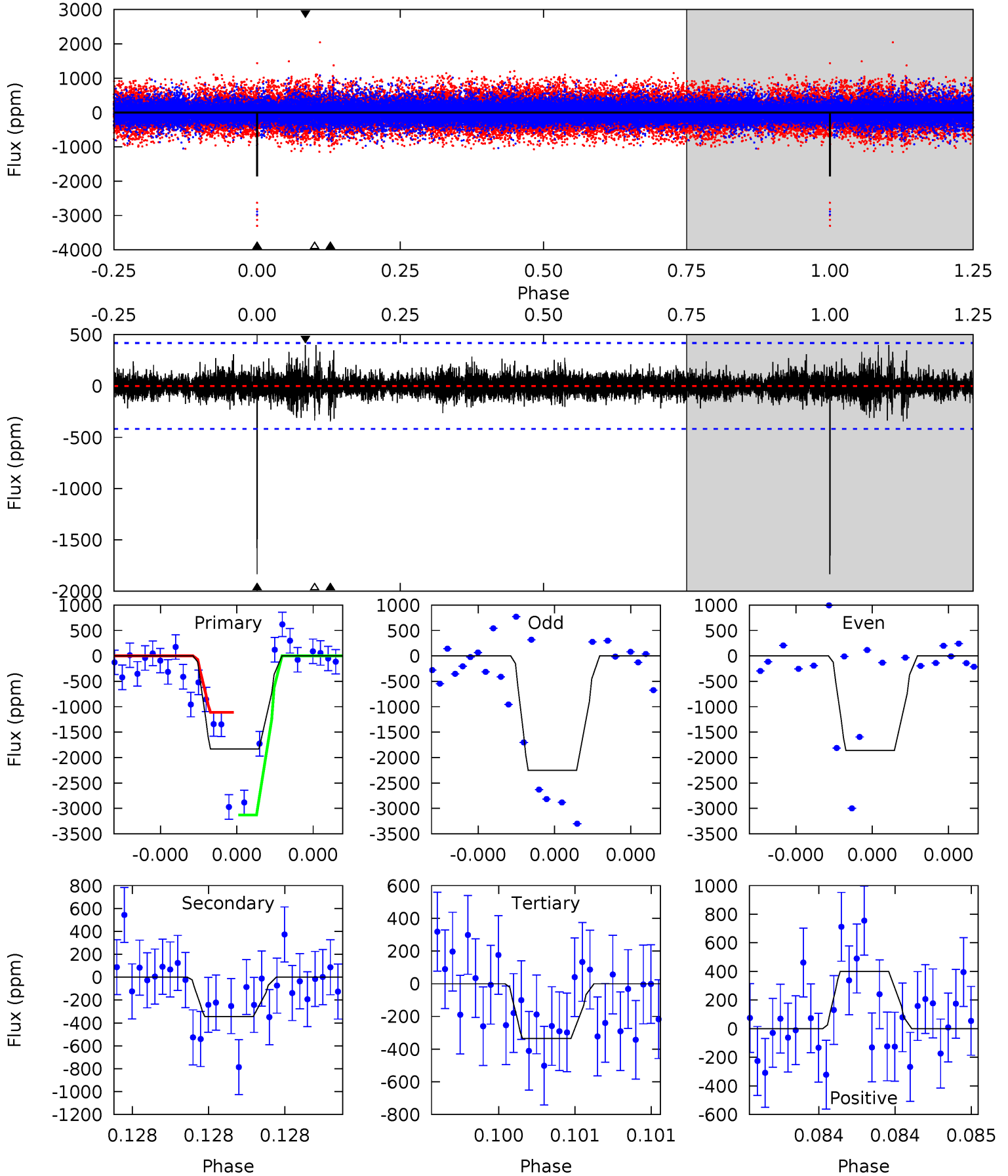
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.48	11.2	10.1	13.8	5.58	3.49	2.38	-0.58	-4.30	1.18	-2.53	0.44	1.12	0.55	1.04



# Alt Model-Shift Uniqueness Test

007174505-04, P = 381.621941 Days, E = 13.028958 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
24.7	4.64	4.53	5.40	5.65	3.60	0.82	20.2	19.3	0.11	-0.75	2.71	0.89	0.18	12.2



### Stellar Parameters For KIC 007174505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5411^{+160}_{-160}$	$4.482^{+0.120}_{-0.132}$	$-0.380^{+0.350}_{-0.300}$	$0.819^{+0.131}_{-0.105}$	$0.742^{+0.115}_{-0.046}$	$1.904^{+0.991}_{-0.647}$
	+3%/-3%	+3%/-3%	+92%/-79%	+16%/-13%	+15%/-6%	+52%/-34%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007174505-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1191 \pm 106$	$3.94^{+0.88}_{-0.84}$	$313^{+18}_{-17}$	$4900^{+528}_{-376}$	$37253^{+22379}_{-12174}$
Alt.	$-344 \pm 74$	$4.24^{+0.91}_{-0.81}$	$313^{+17}_{-16}$	$3747^{+319}_{-248}$	$9215^{+5341}_{-3348}$

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

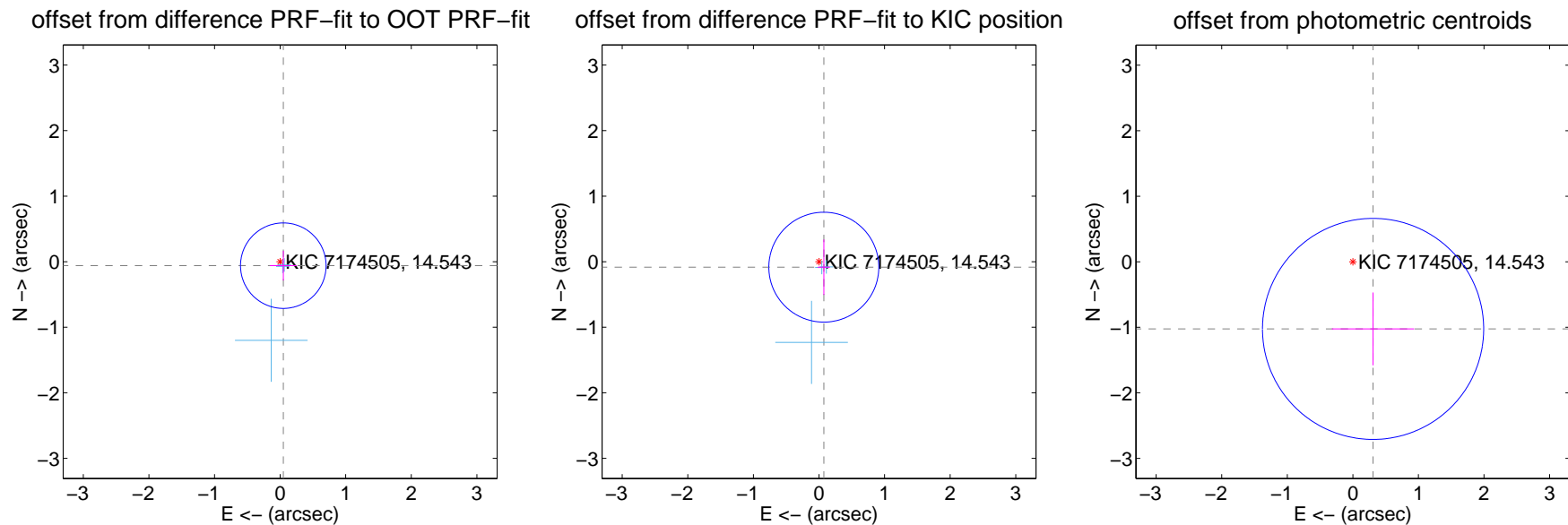
## DV Centroid Data

Supplemental centroid analysis for 007174505-04. Kepler magnitude: 14.54. Transit SNR 7.89

There are 3 quarters with good PRF difference image offsets

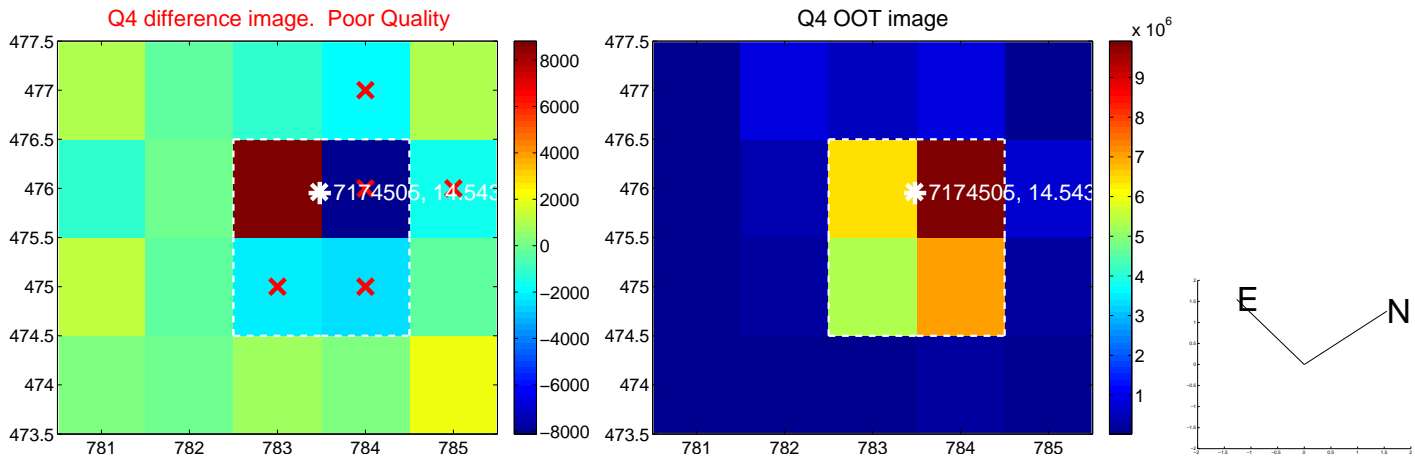
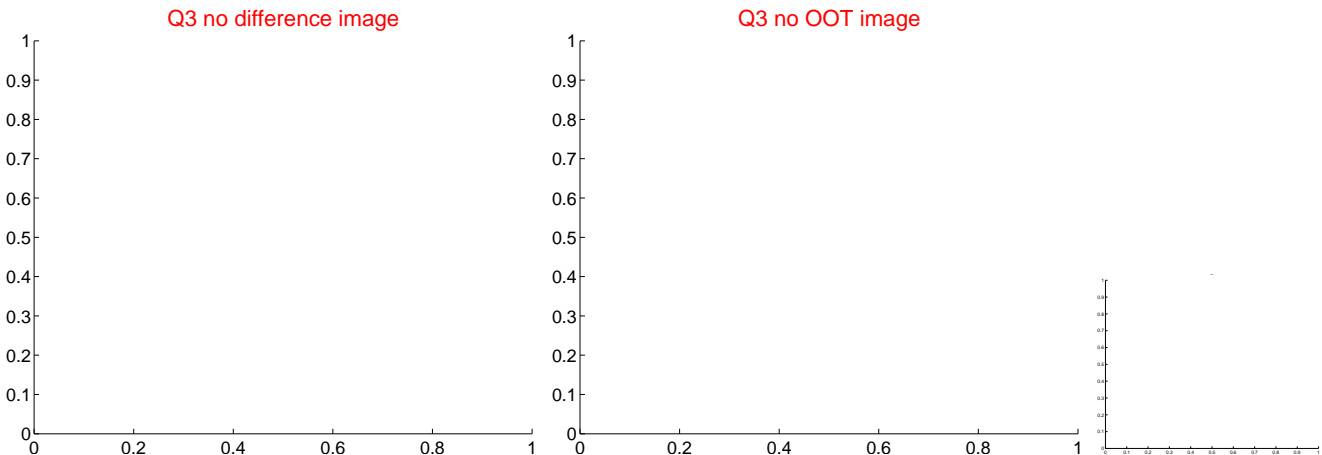
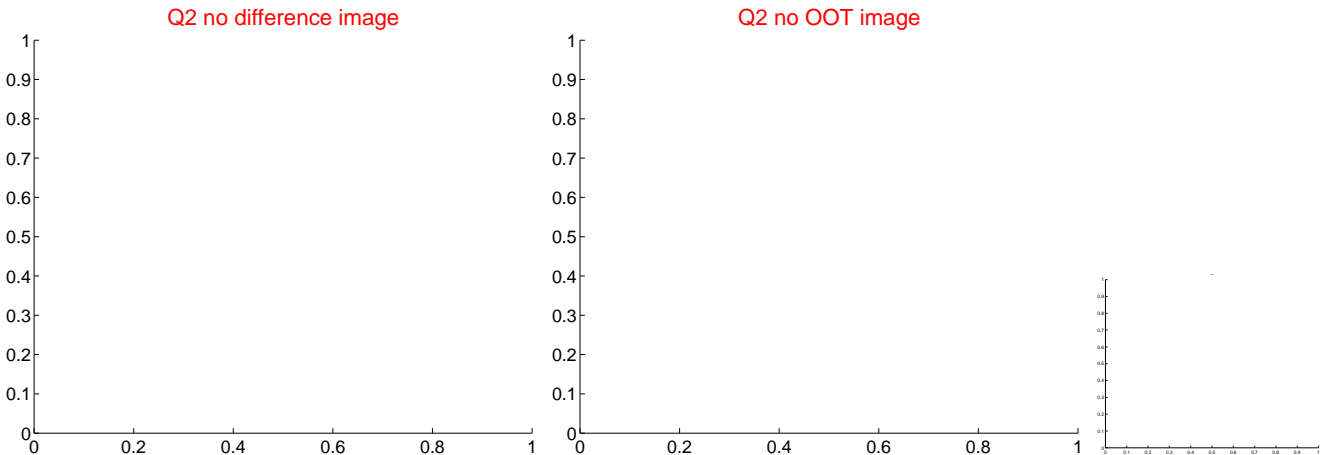
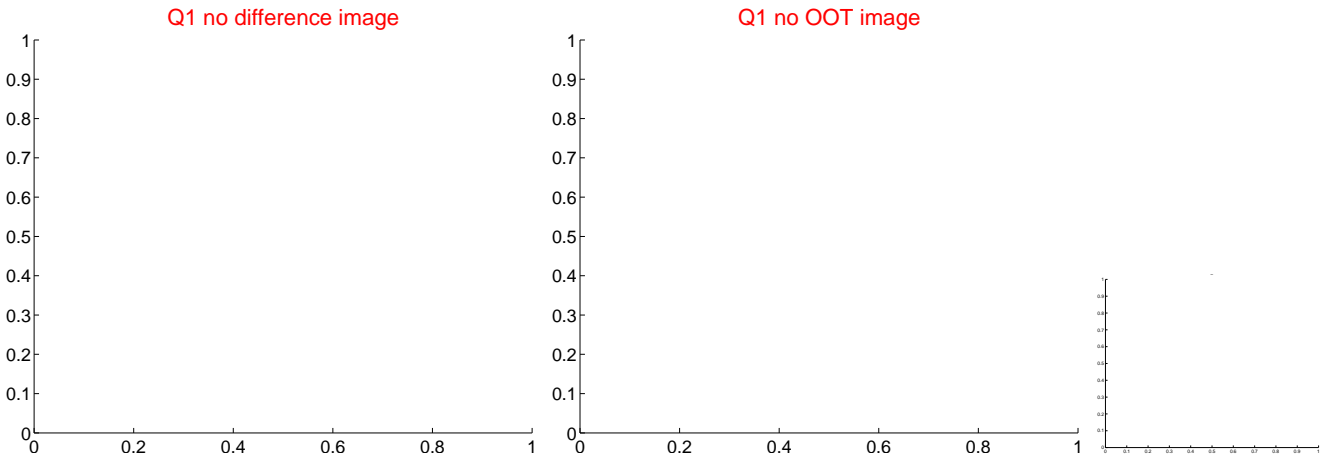
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.078 \pm 0.217$	0.36	$-0.049 \pm 0.202$	$-0.060 \pm 0.227$
PRF-fit source offset from KIC position	$0.111 \pm 0.279$	0.40	$-0.074 \pm 0.093$	$-0.084 \pm 0.423$
photometric centroid source offset	$1.07 \pm 0.56$	1.90	$-0.31 \pm 0.63$	$-1.02 \pm 0.56$



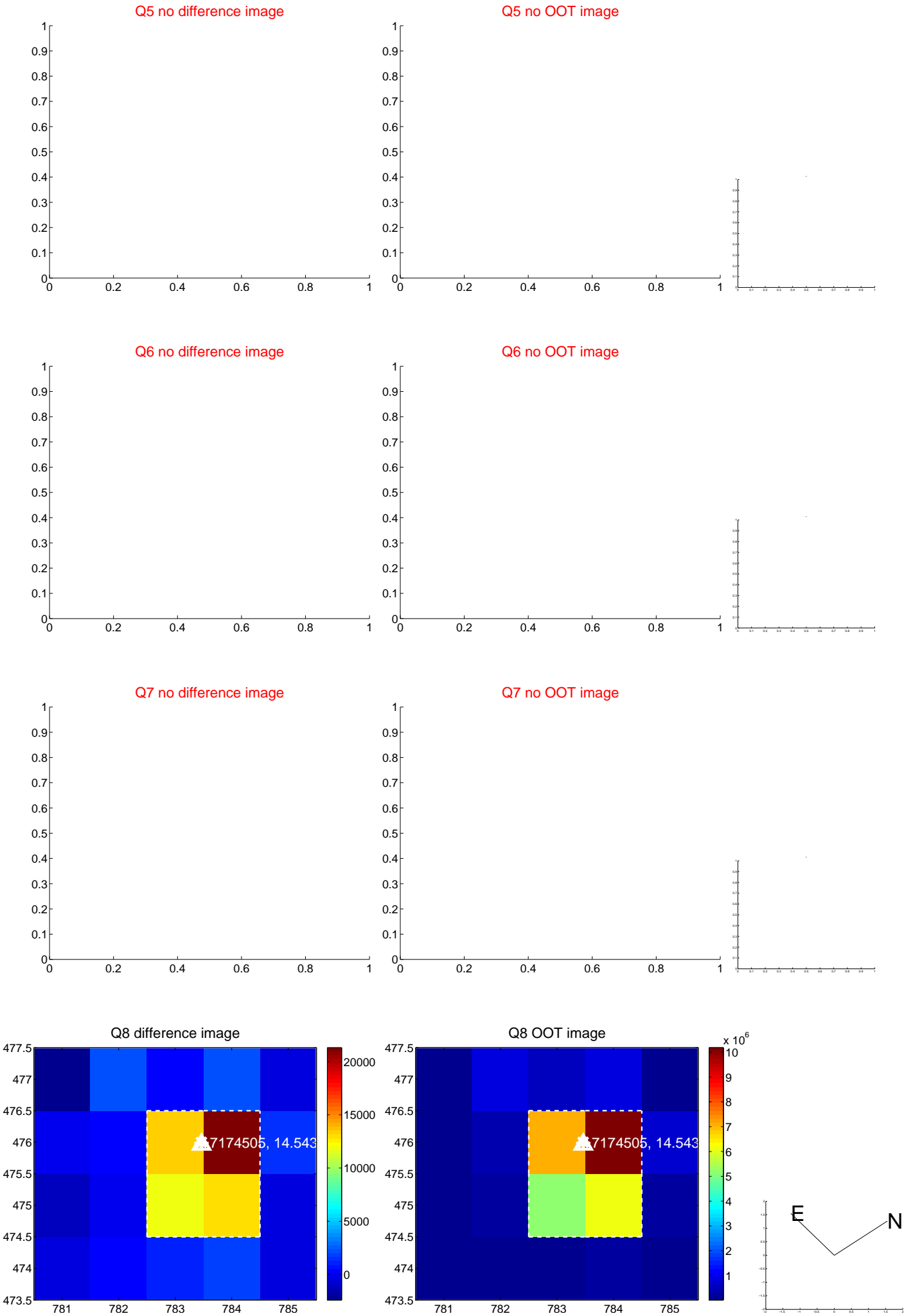
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

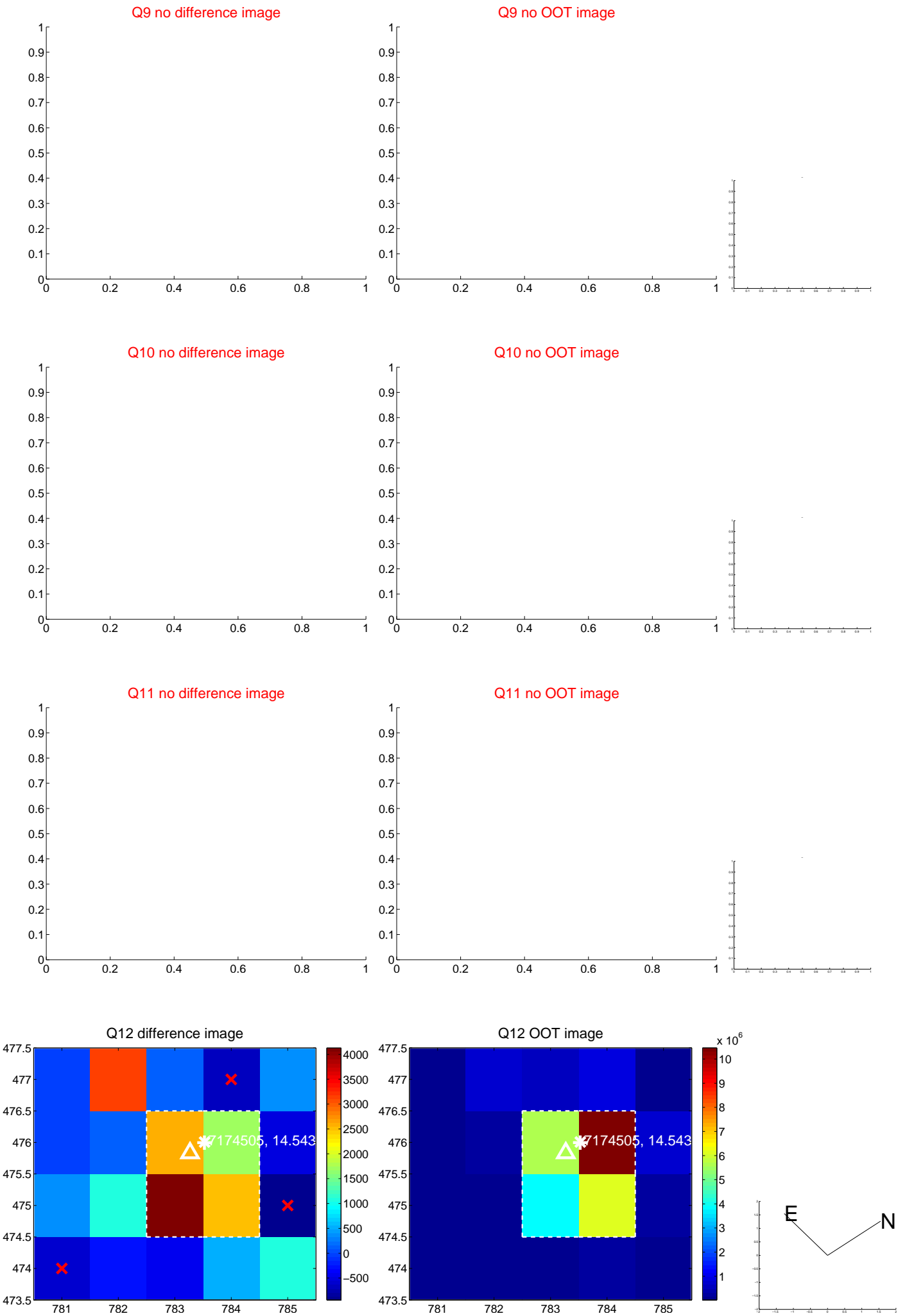




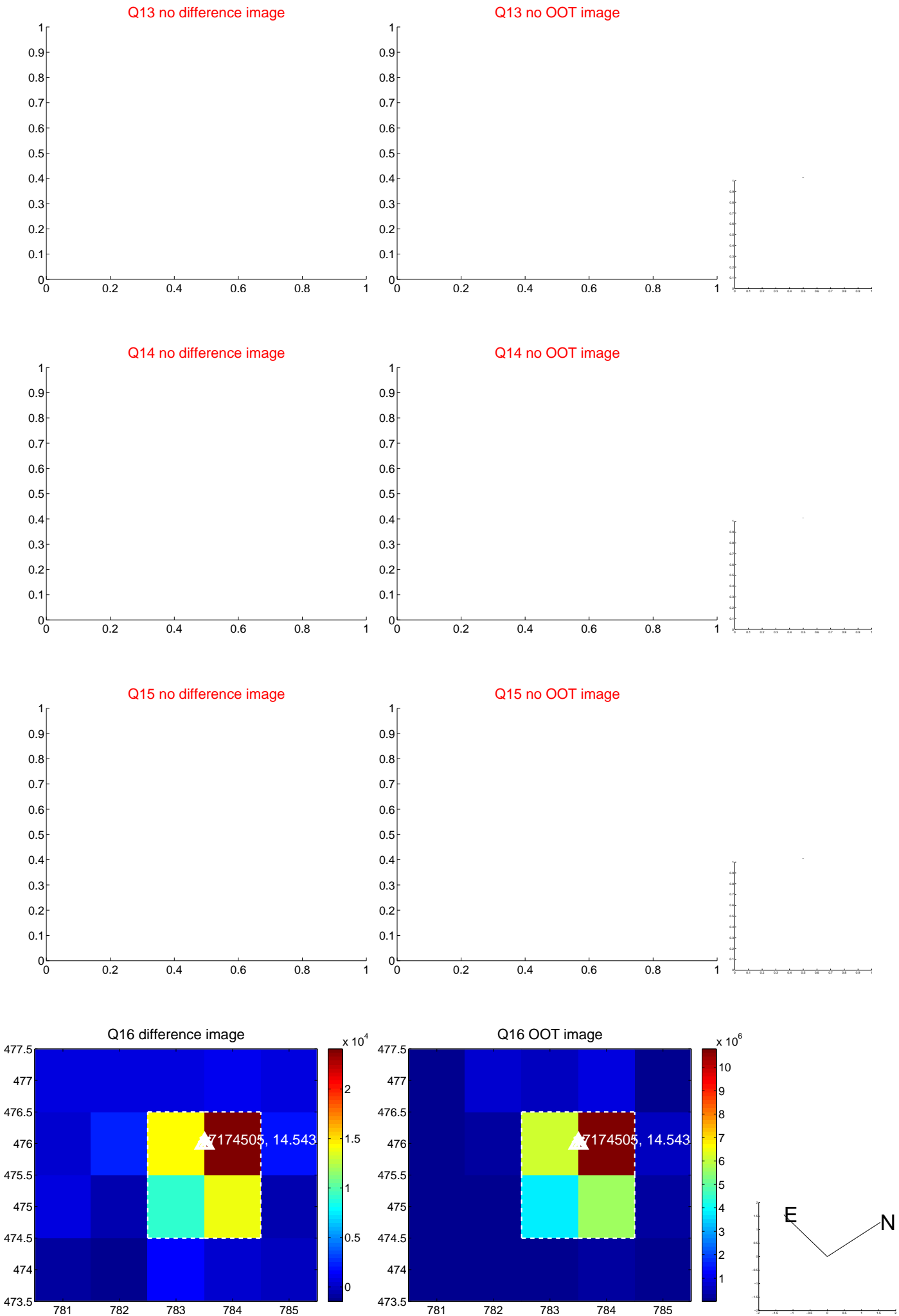
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



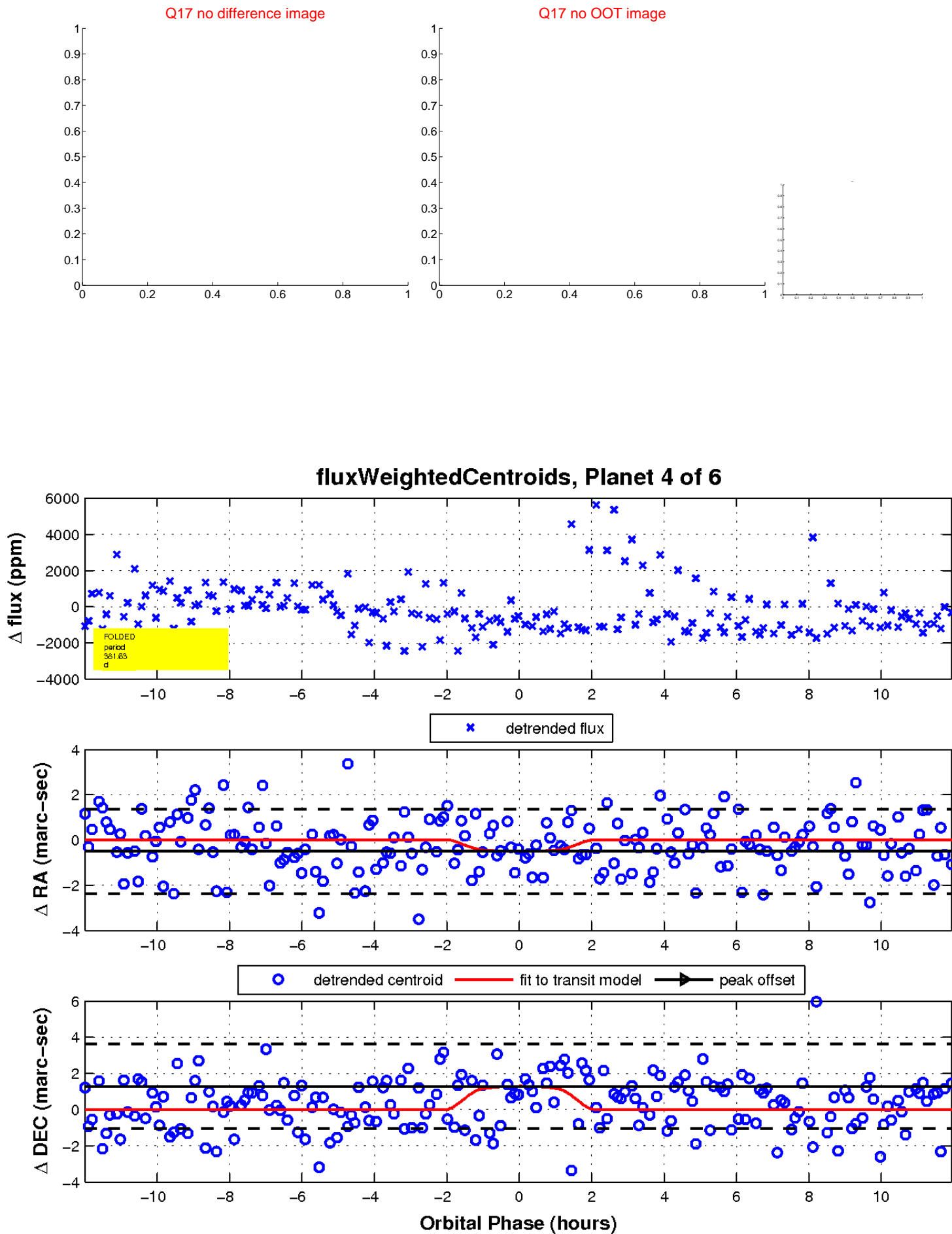
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

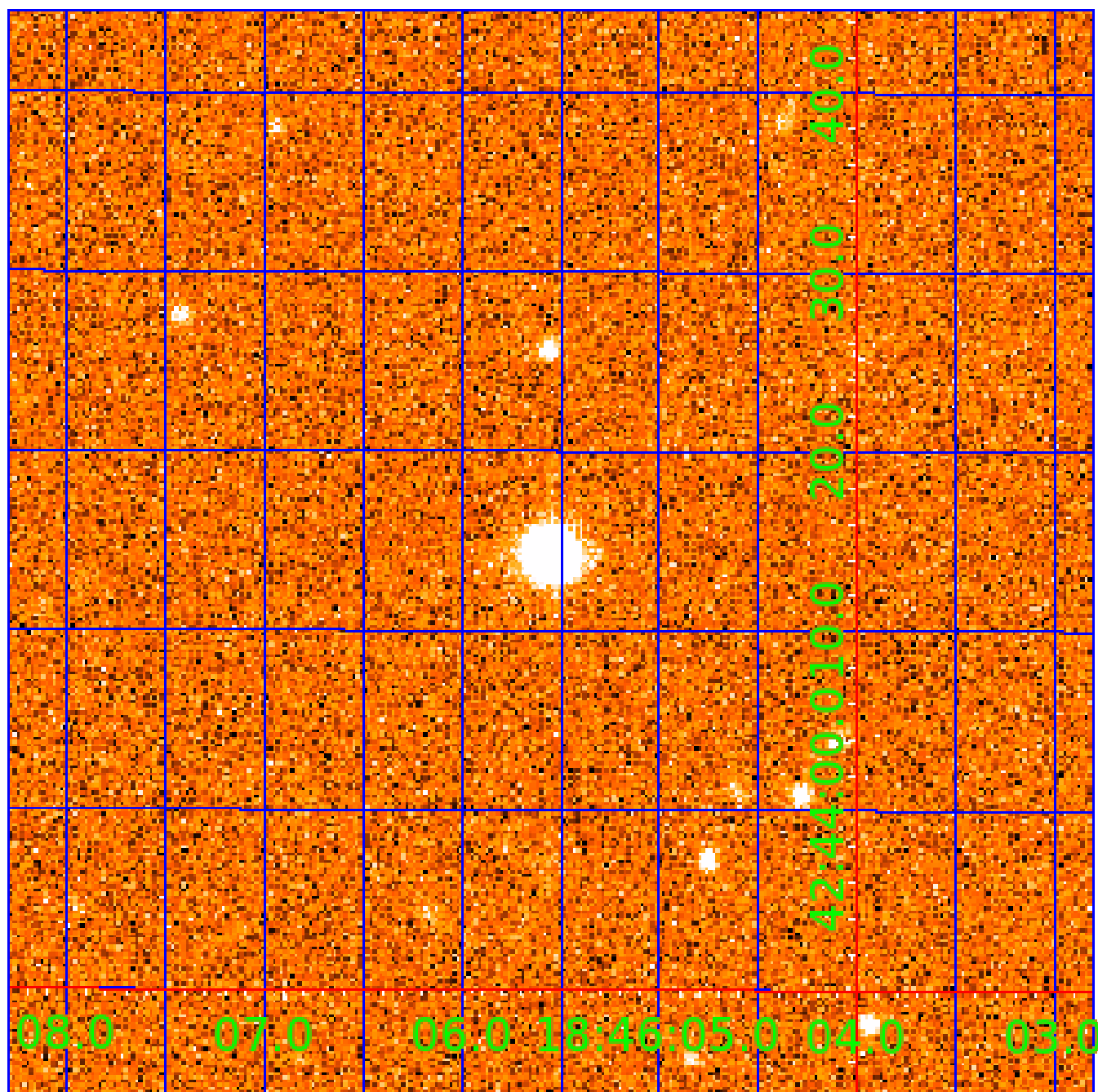


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007174505

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007174505-01	OBS	No	403.118446	204.264473	2054.3	5.258	15.3	8.5	0.82	5411	4.30	0.55
007174505-02	OBS	No	341.397154	343.482096	1351.0	4.886	13.0	6.9	0.82	5411	3.07	0.69
007174505-03	OBS	No	712.948497	149.754361	2052.0	25.341	11.2	6.1	0.82	5411	3.65	0.26
007174505-04	OBS	No	381.634377	394.626900	1545.6	4.006	15.7	7.9	0.82	5411	3.92	0.59
007174505-05	OBS	No	456.893076	533.590089	1370.0	3.533	15.4	6.6	0.82	5411	3.10	0.47

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007174505-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007174505-02	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—CENT_FEW_DIFFS
007174505-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007174505-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007174505-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

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

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

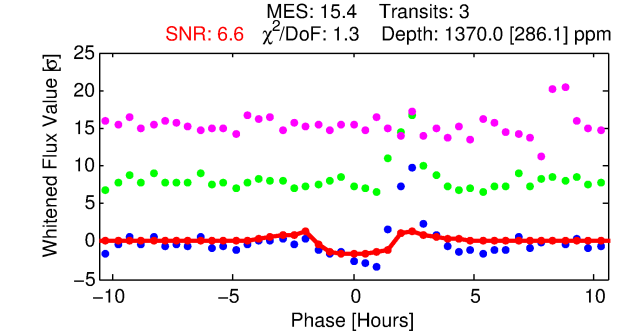
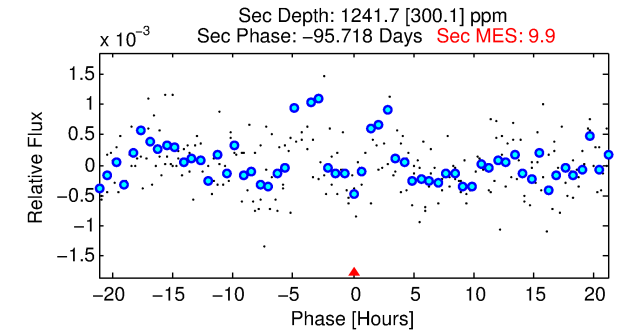
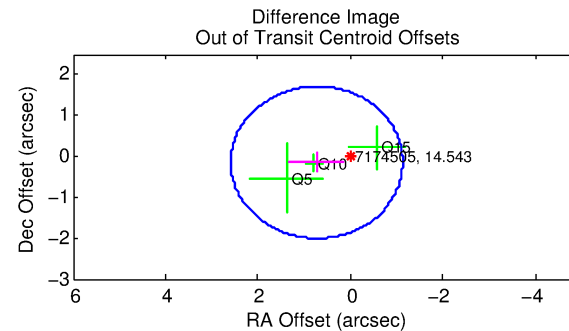
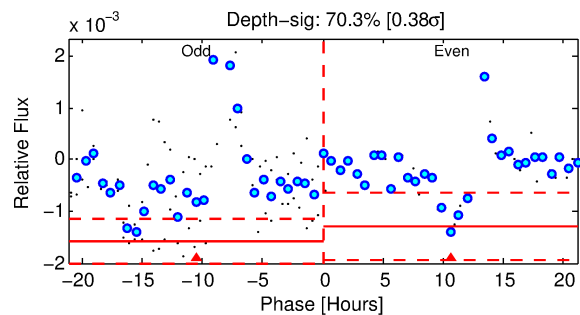
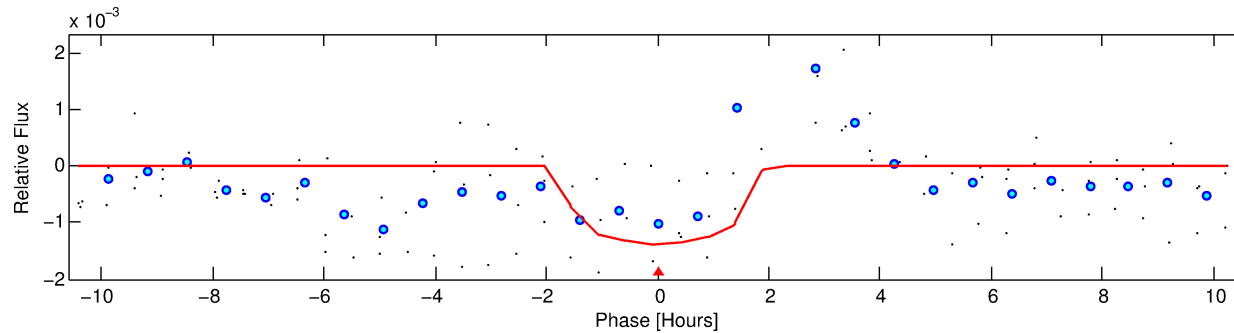
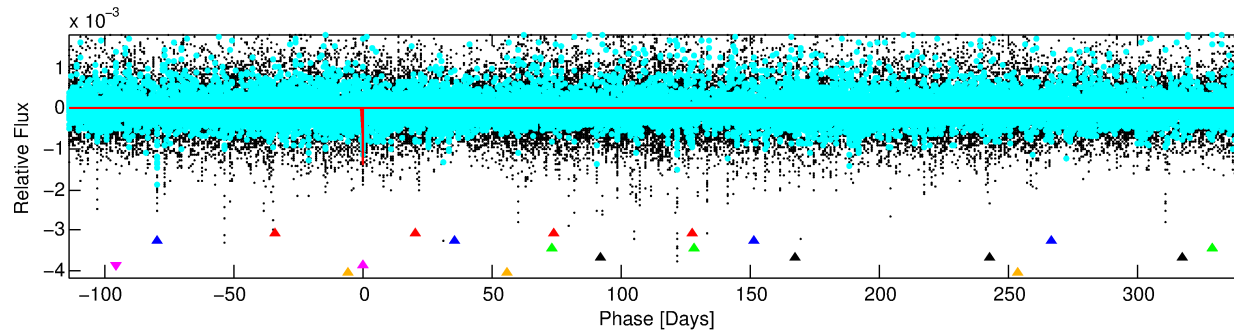
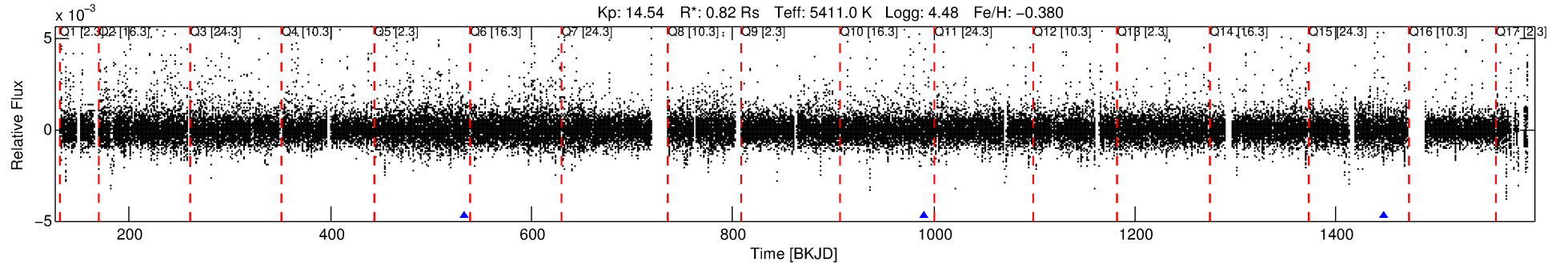
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007174505-05

No Significant Match Found

# DV One-Page Summary

KIC: 7174505 Candidate: 5 of 6 Period: 456.893 d



## DV Fit Results:

Period = 456.89308 [0.00683] d  
Epoch = 533.5901 [0.0097] BKJD  
Rp/R\* = 0.0347 [0.0781]  
a/R\* = 881.16 [8038.56]  
b = 0.52 [12.79]  
Seff = 0.47 [0.12]  
Teq = 211 [14] K  
Rp = 3.10 [6.99] Re  
a = 1.0514 [0.1546] AU  
Ag = 78410.92 [353498.27] [0.22 $\sigma$ ]  
Teffp = 5451 [6138] K [0.85 $\sigma$ ]

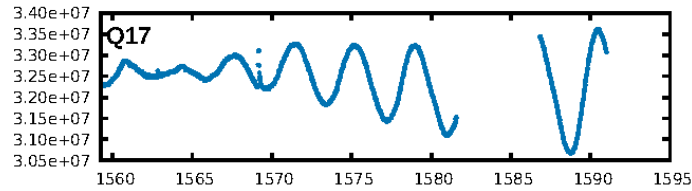
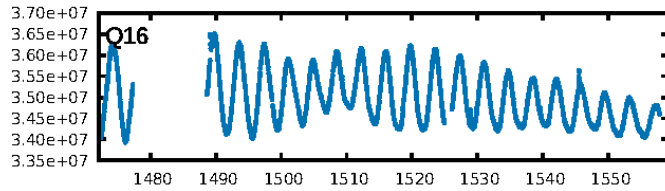
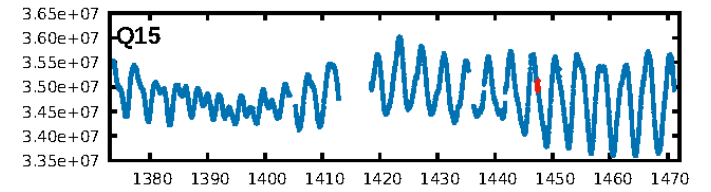
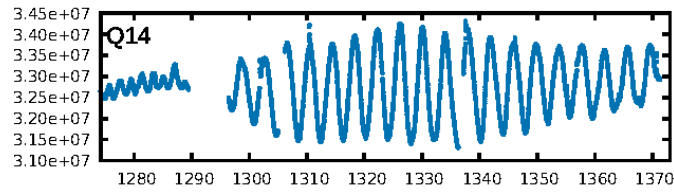
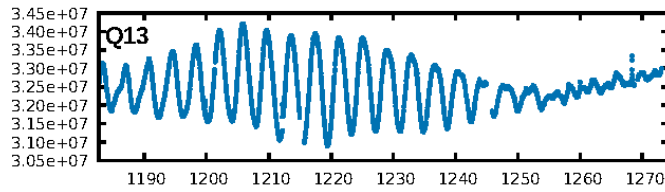
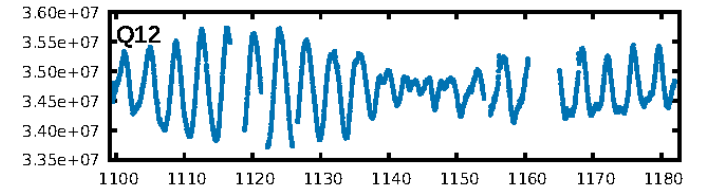
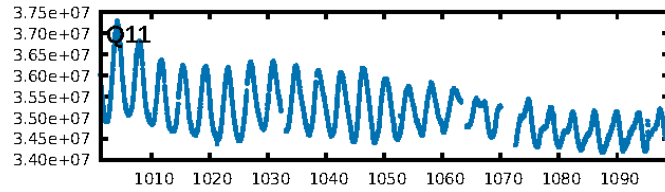
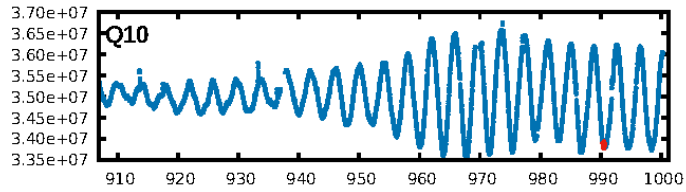
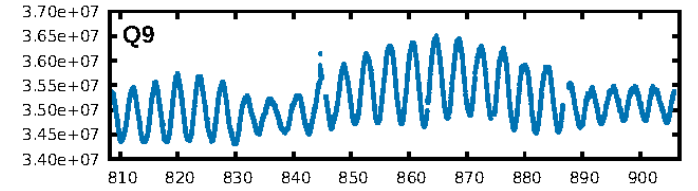
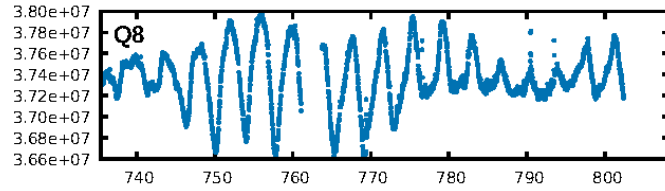
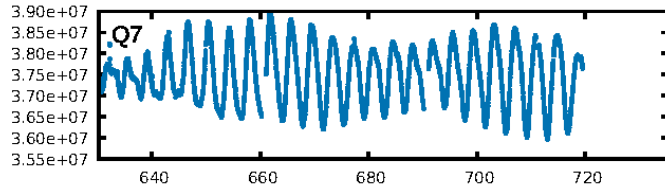
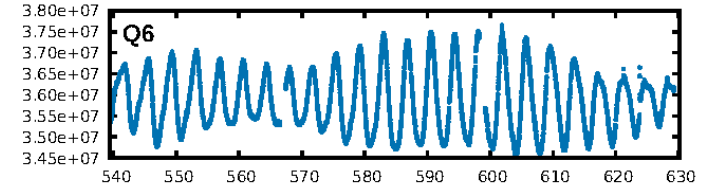
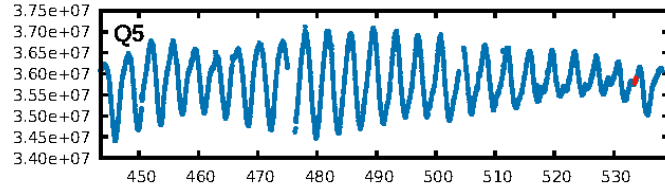
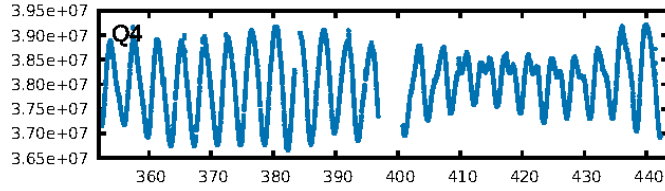
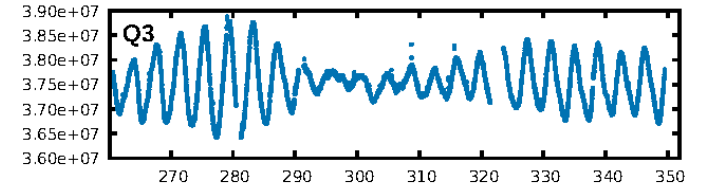
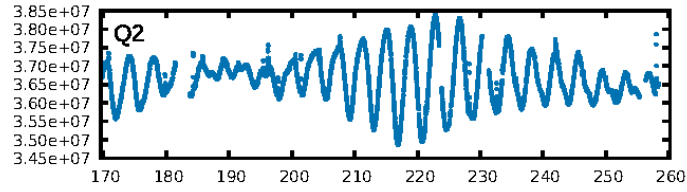
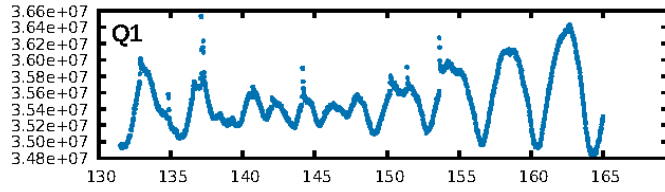
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [203.73 $\sigma$ ]  
LongPeriod-sig: 100.0% [680.98 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 71.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.72  
Centroid-sig: 21.9%  
Centroid-so: 0.797 arcsec [0.73 $\sigma$ ]  
OotOffset-rm: 0.747 arcsec [1.20 $\sigma$ ]  
KicOffset-rm: 0.406 arcsec [0.84 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:41:41 Z

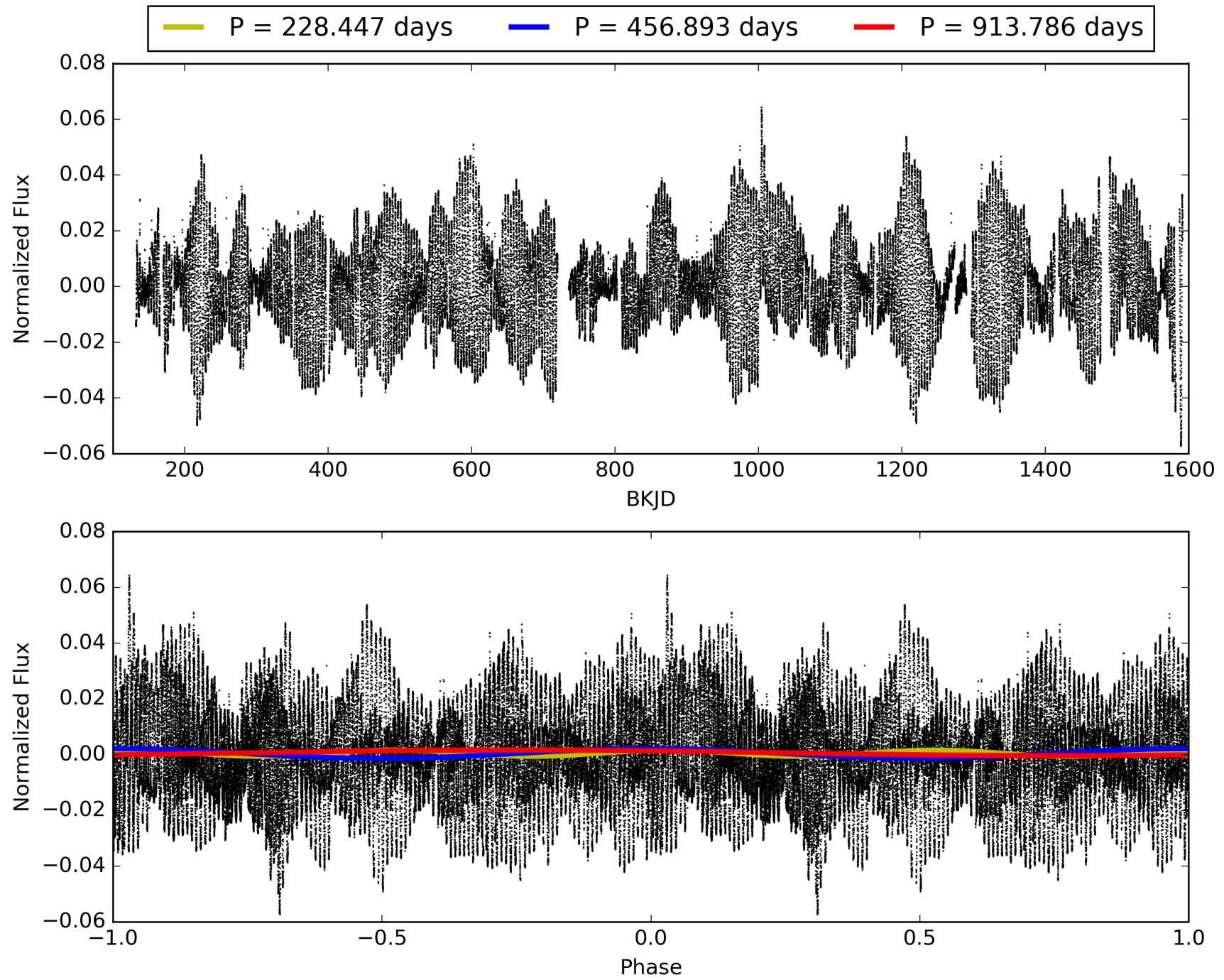
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007174505-05, PDC Light Curves



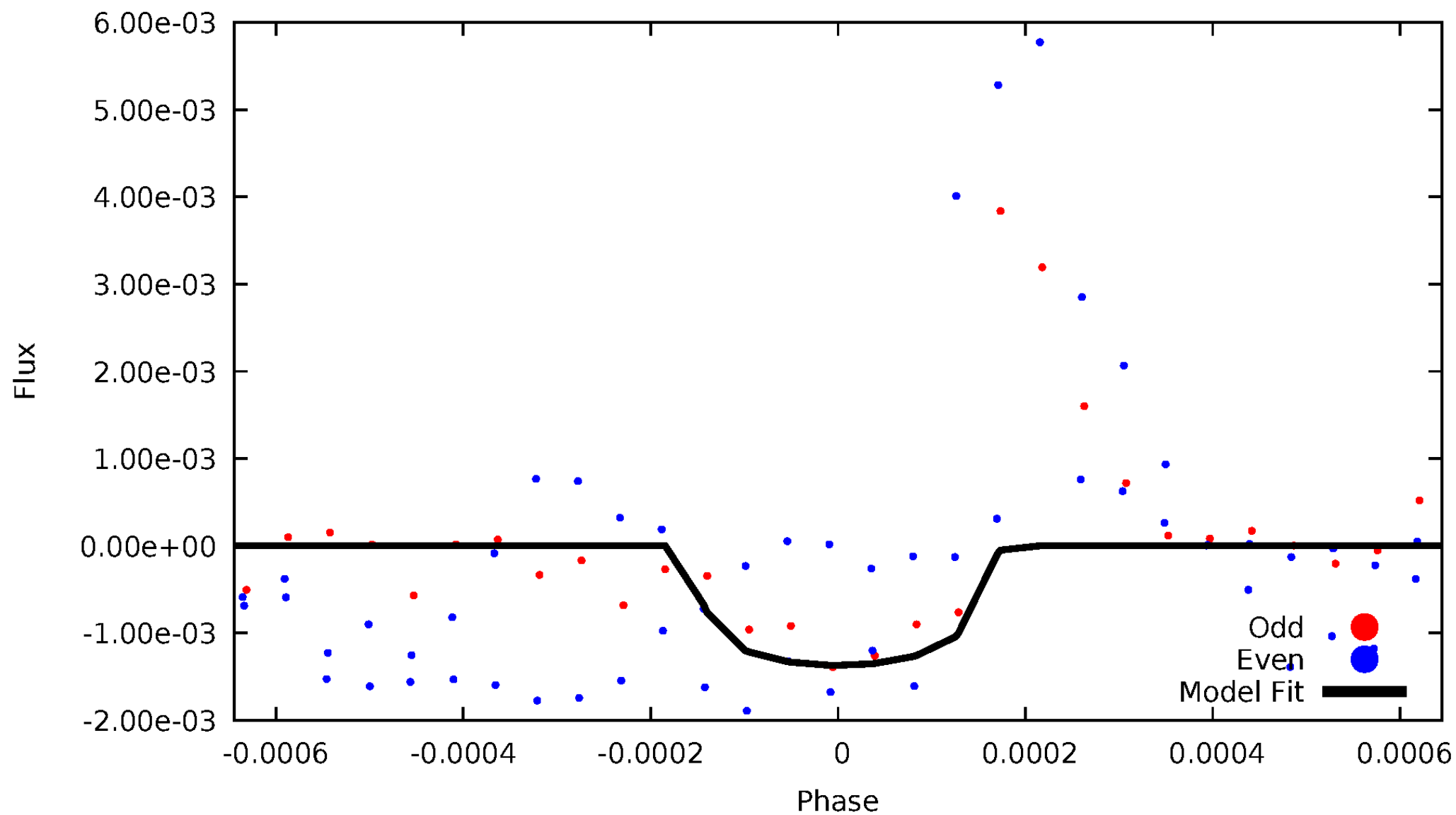


TCE 007174505-05



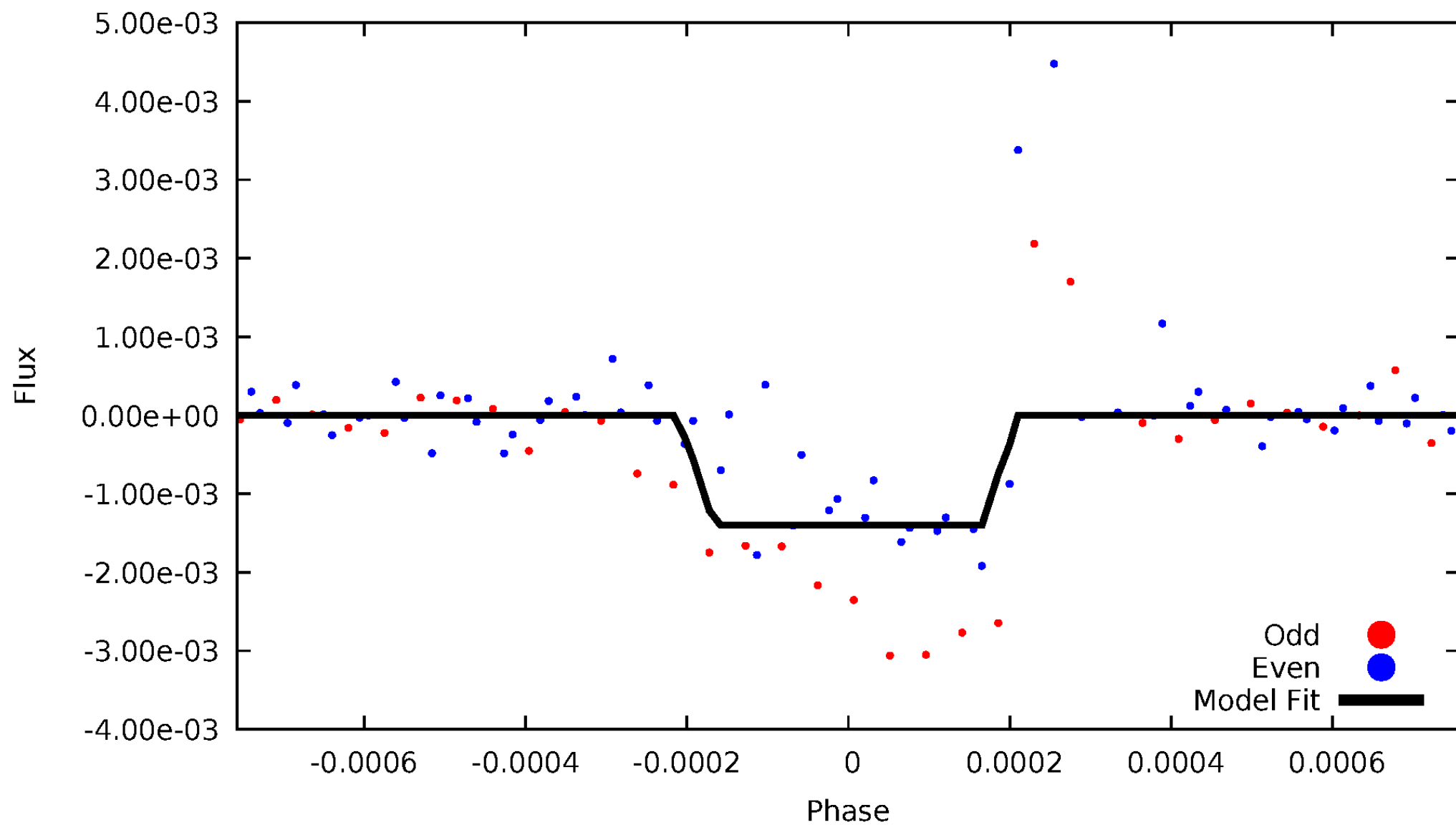
# DV Odd/Even

TCE 007174505-05



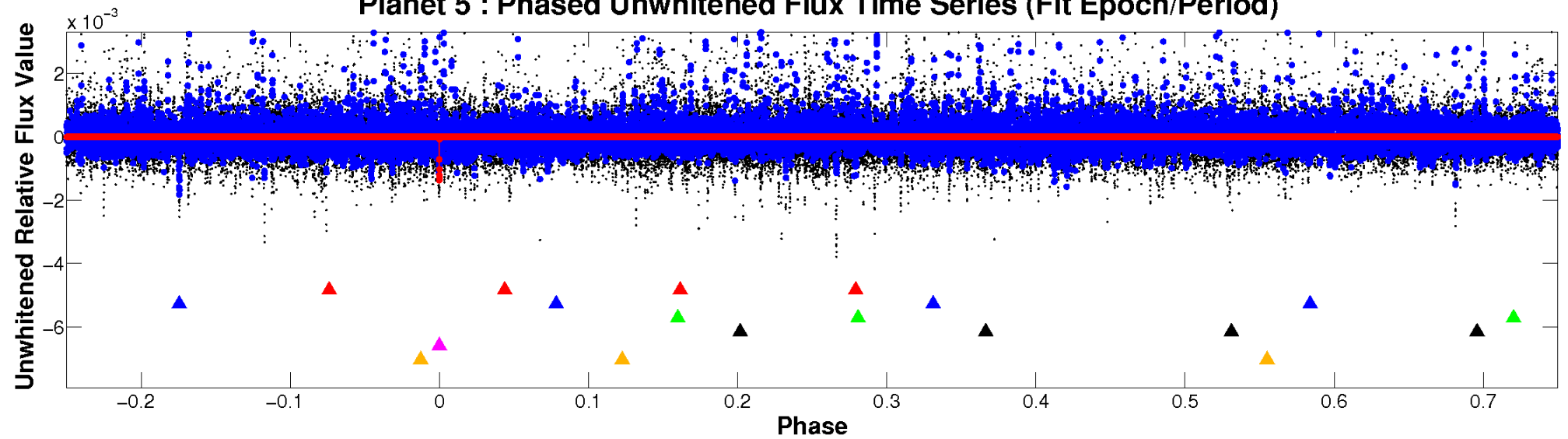
# ALT Odd/Even

TCE 007174505-05

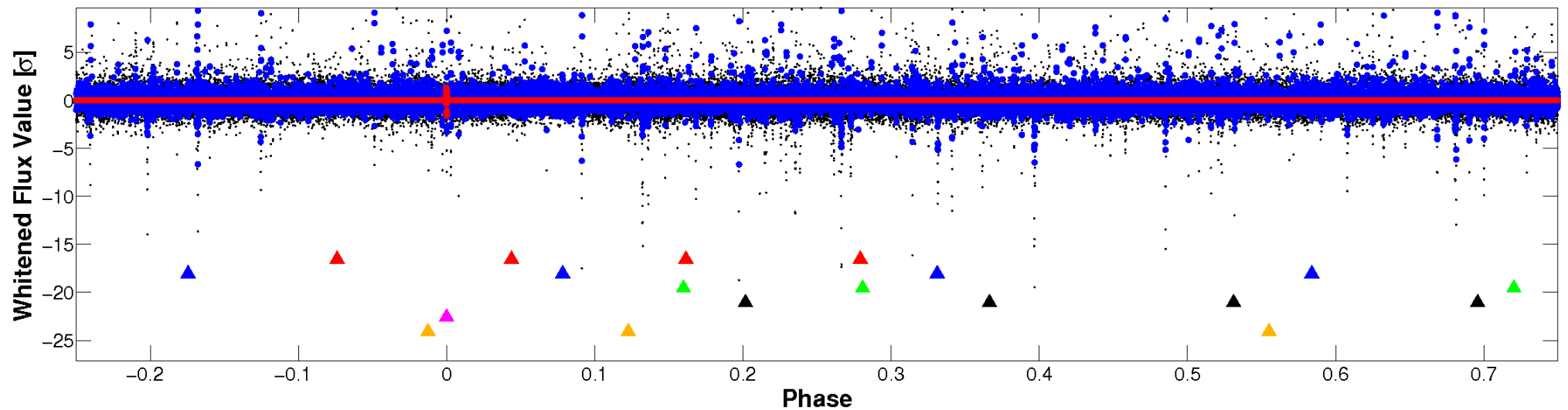


# Non-Whitened Vs. Whitened Light Curve

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

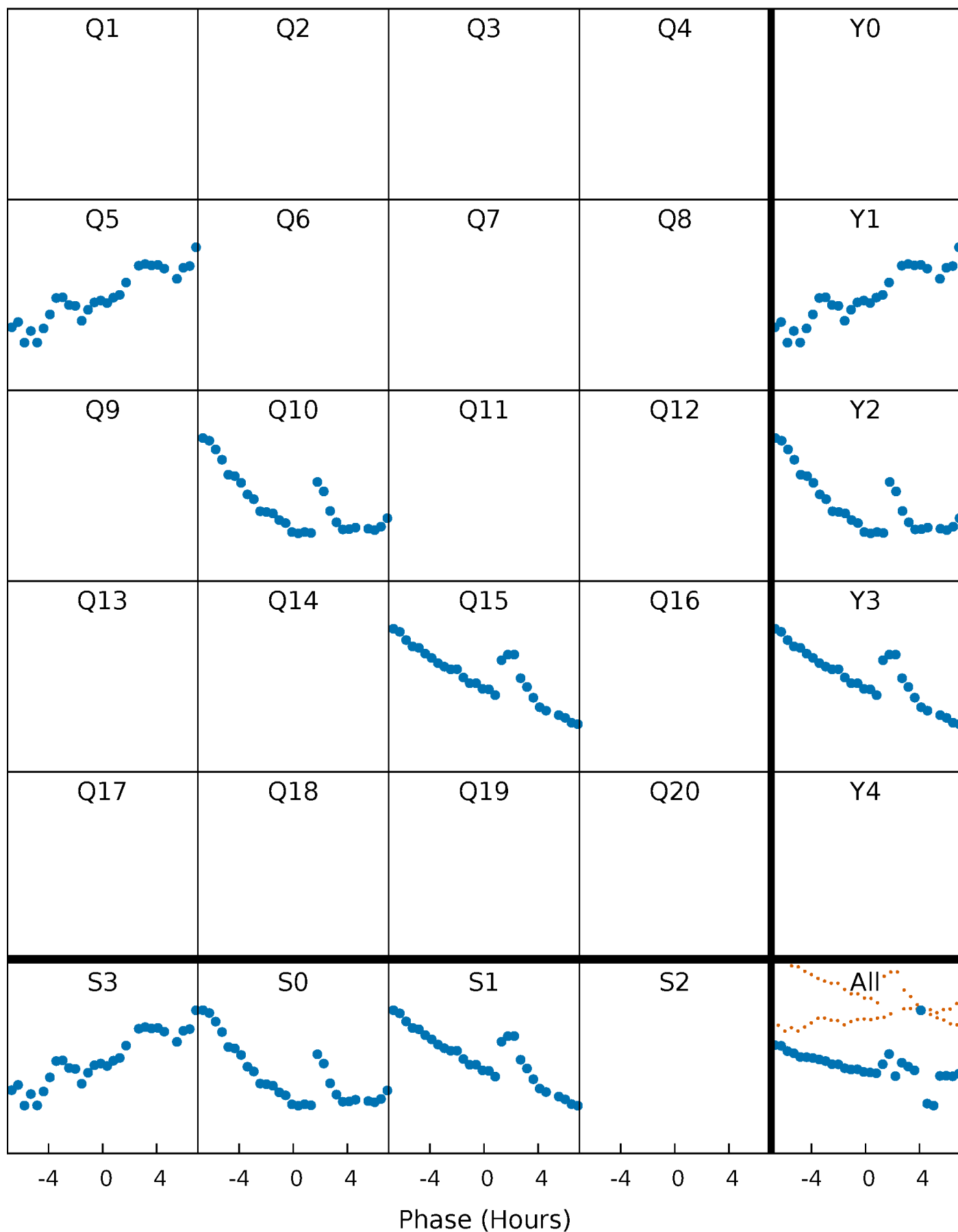


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



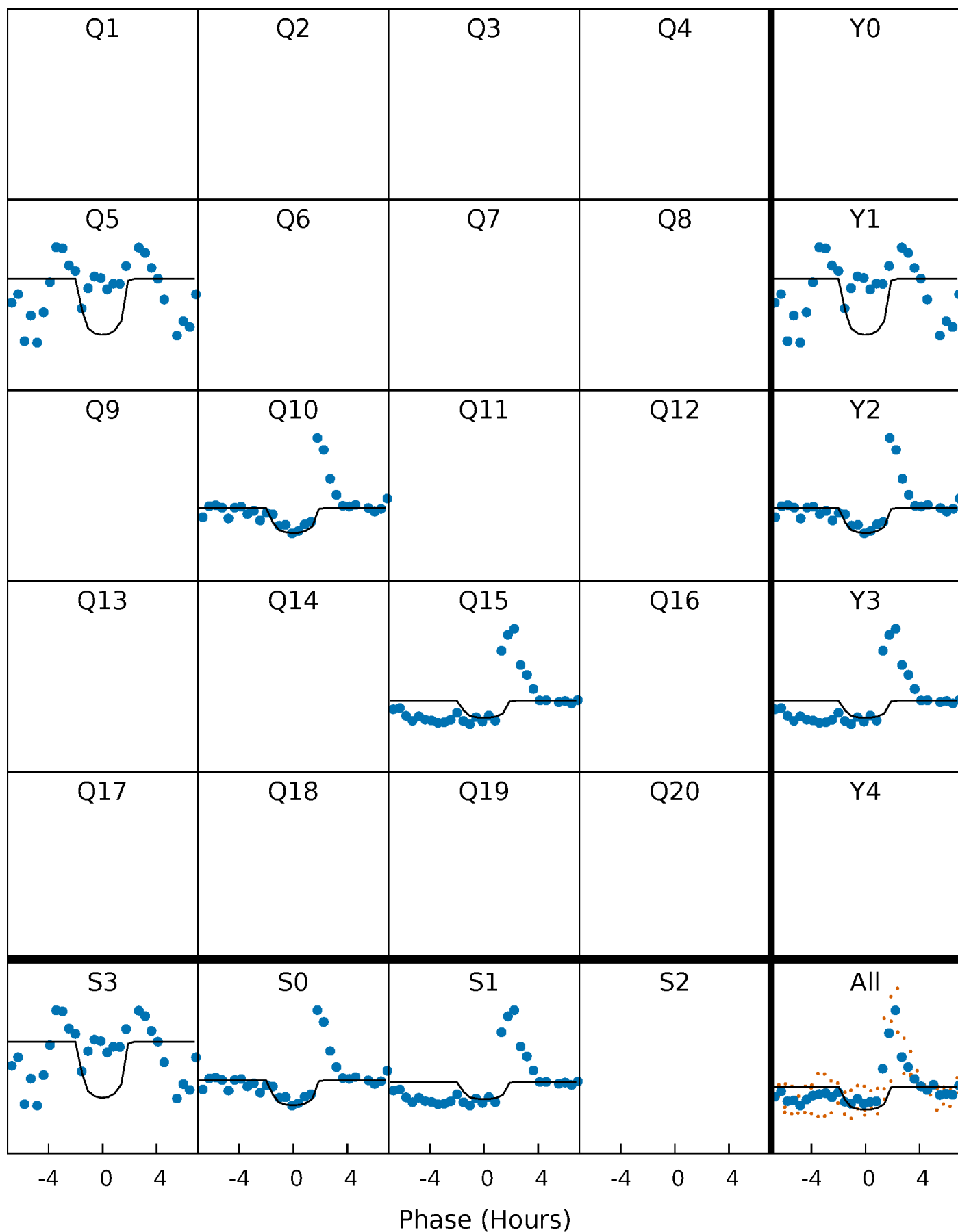
# PDC Quarter-Phased Transit Curves

TCE 007174505-05     $P=456.893076$  Days     $T_0=533.590089$  (BKJD)



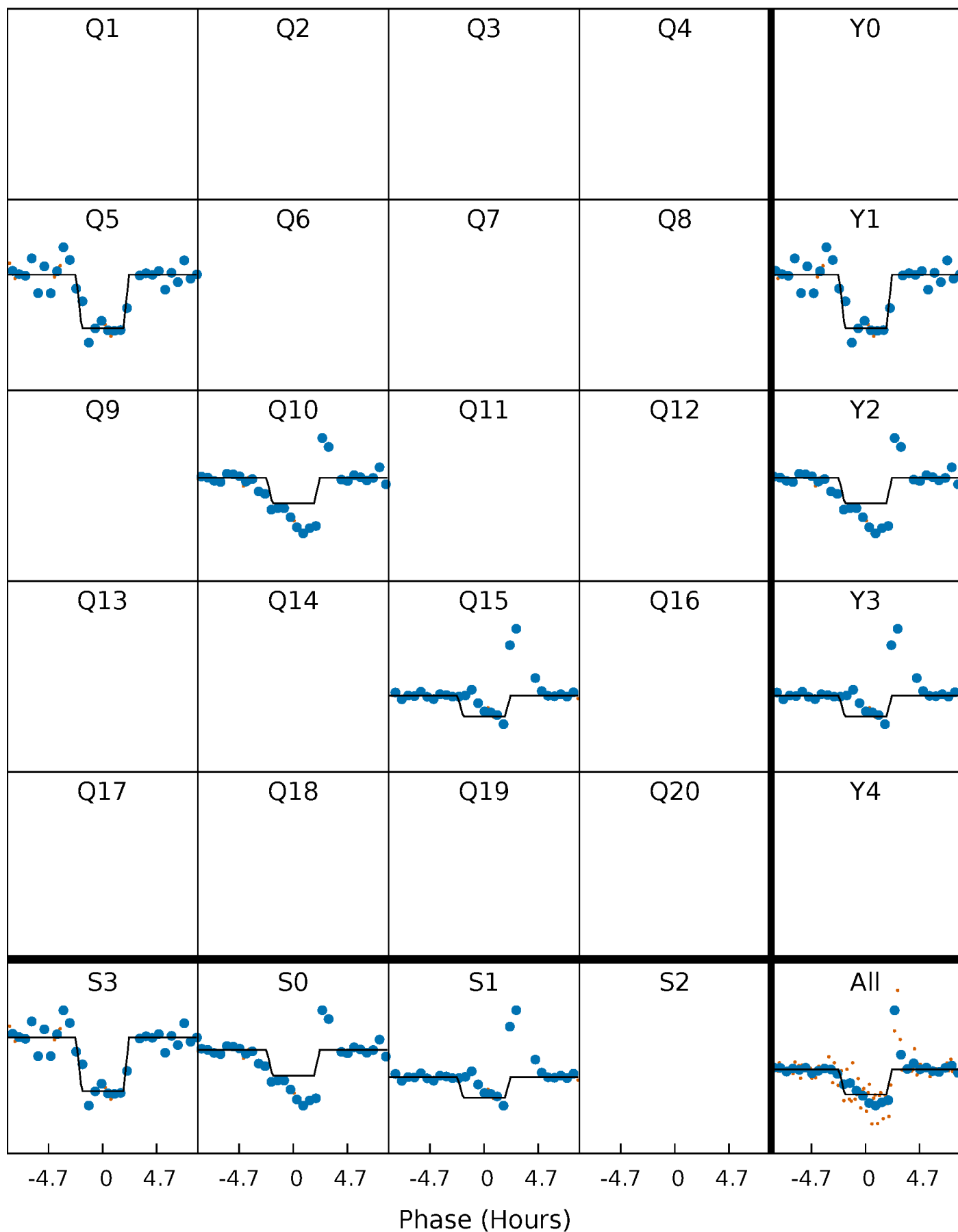
# DV Quarter-Phased Transit Curves

TCE 007174505-05     $P=456.893076$  Days     $T_0=533.590089$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

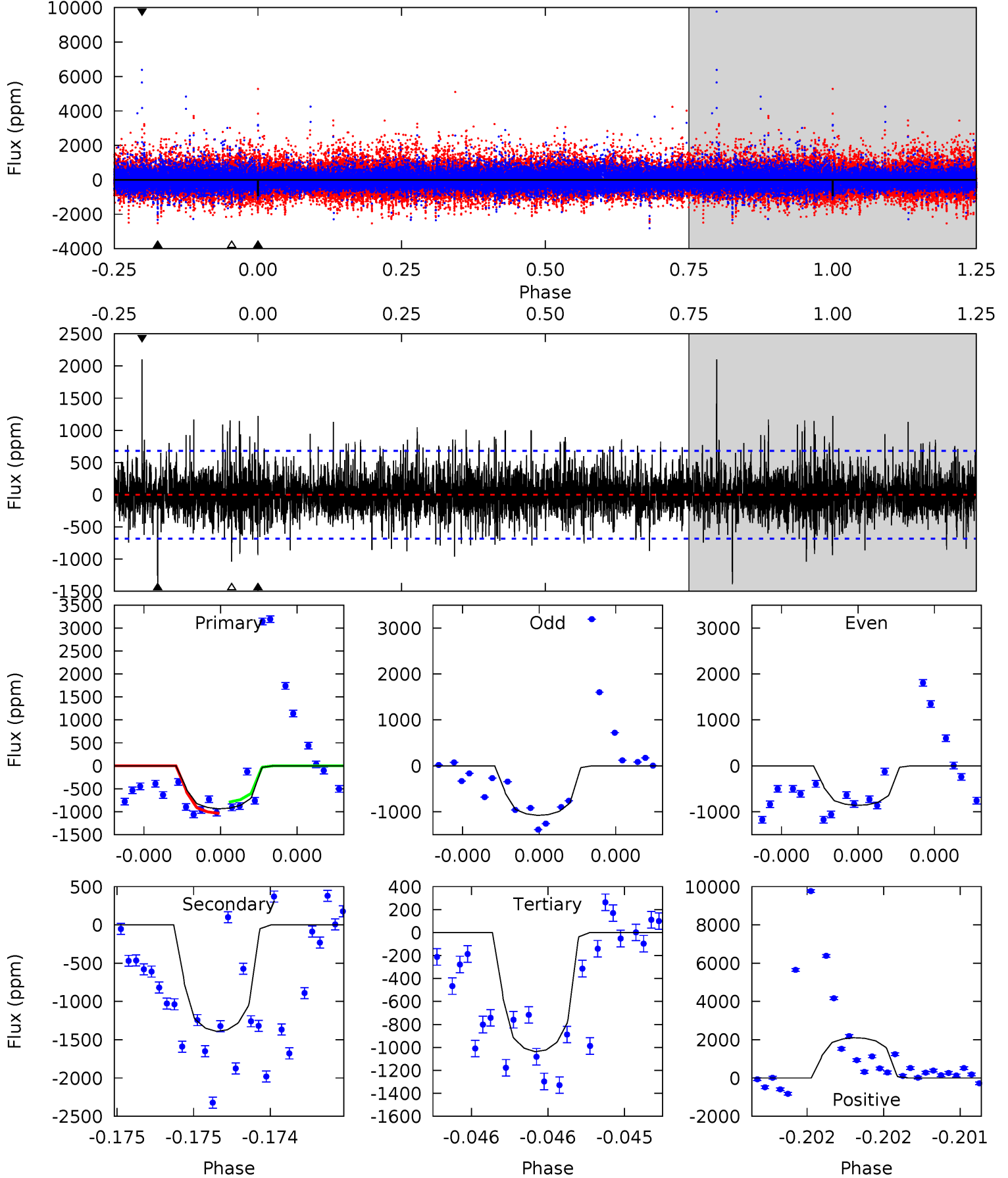
TCE 007174505-05     $P=456.880779$  Days     $T_0=533.576332$  (BKJD)



# DV Model-Shift Uniqueness Test

007174505-05, P = 456.893076 Days, E = 76.697013 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
7.74	11.5	8.58	17.4	5.65	3.60	1.99	-0.85	-9.67	2.92	-5.91	0.67	0.80	0.60	1.01

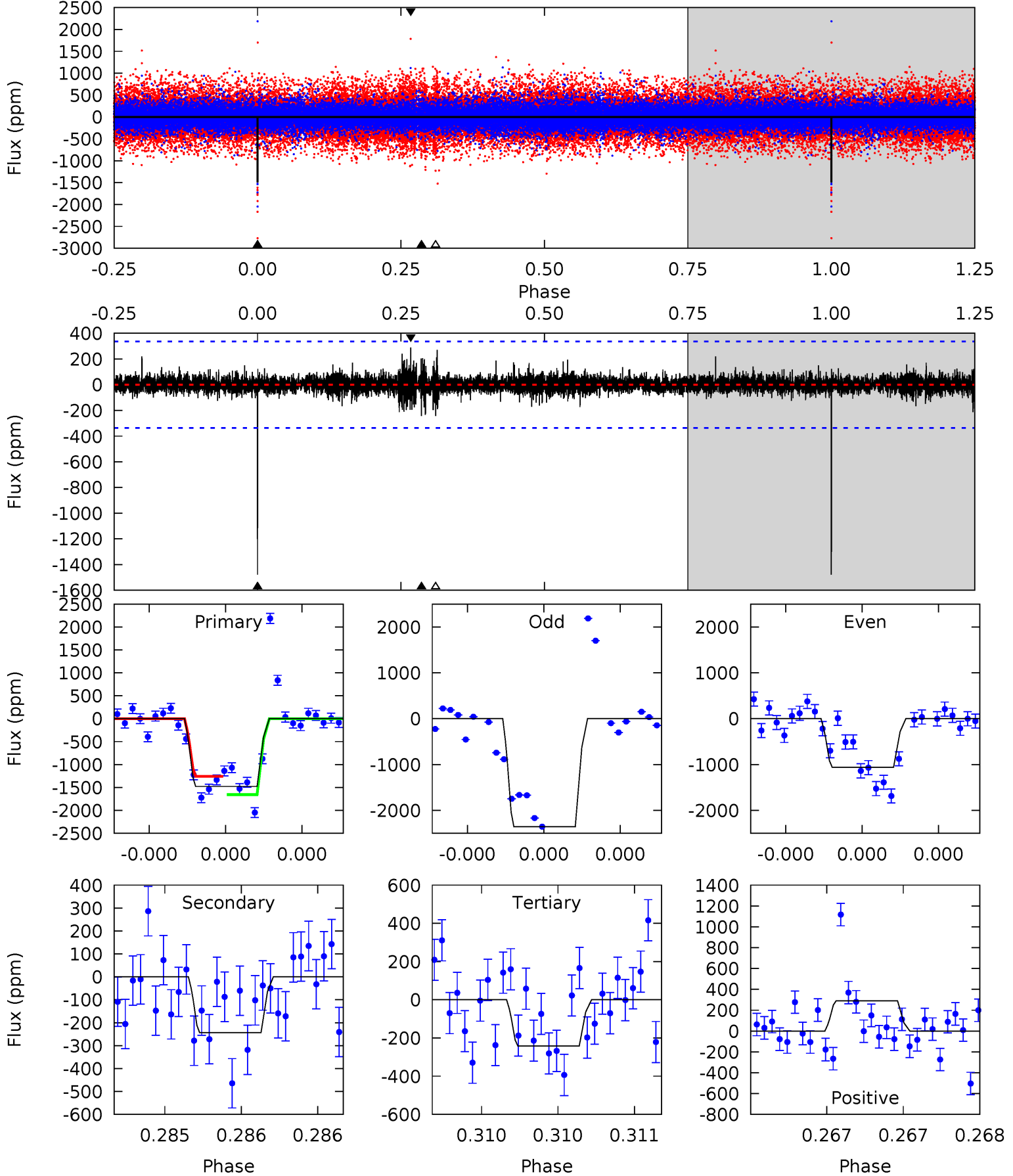




# Alt Model-Shift Uniqueness Test

007174505-05, P = 456.880779 Days, E = 76.695553 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
24.6	4.06	4.03	4.83	5.61	3.54	0.66	20.6	19.8	0.03	-0.77	10.9	1.12	0.16	3.50



### Stellar Parameters For KIC 007174505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5411^{+160}_{-160}$	$4.482^{+0.120}_{-0.132}$	$-0.380^{+0.350}_{-0.300}$	$0.819^{+0.131}_{-0.105}$	$0.742^{+0.115}_{-0.046}$	$1.904^{+0.991}_{-0.647}$
	+3%/-3%	+3%/-3%	+92%/-79%	+16%/-13%	+15%/-6%	+52%/-34%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007174505-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1390 \pm 121$	$6.10^{+5.50}_{-4.20}$	$295^{+15}_{-15}$	$4263^{+2750}_{-845}$	$22826^{+204922}_{-16397}$
Alt.	$-244 \pm 60$	$5.99^{+6.32}_{-4.05}$	$295^{+16}_{-16}$	$3196^{+1501}_{-580}$	$4314^{+34258}_{-3383}$

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

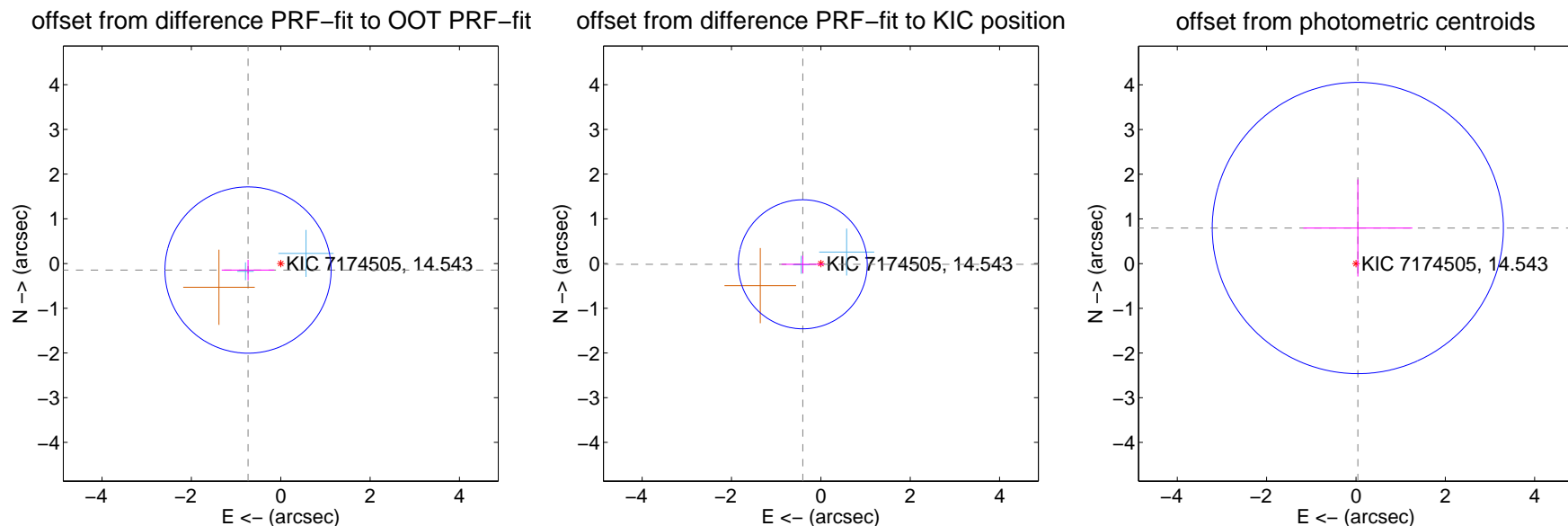
## DV Centroid Data

Supplemental centroid analysis for 007174505-05. Kepler magnitude: 14.54. Transit SNR 6.60

There are 2 quarters with good PRF difference image offsets

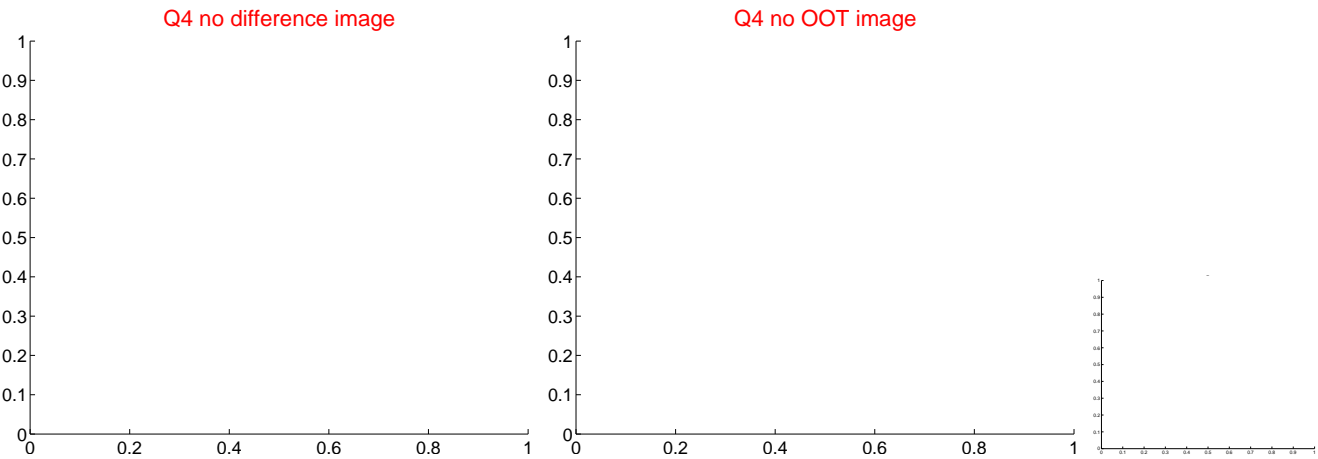
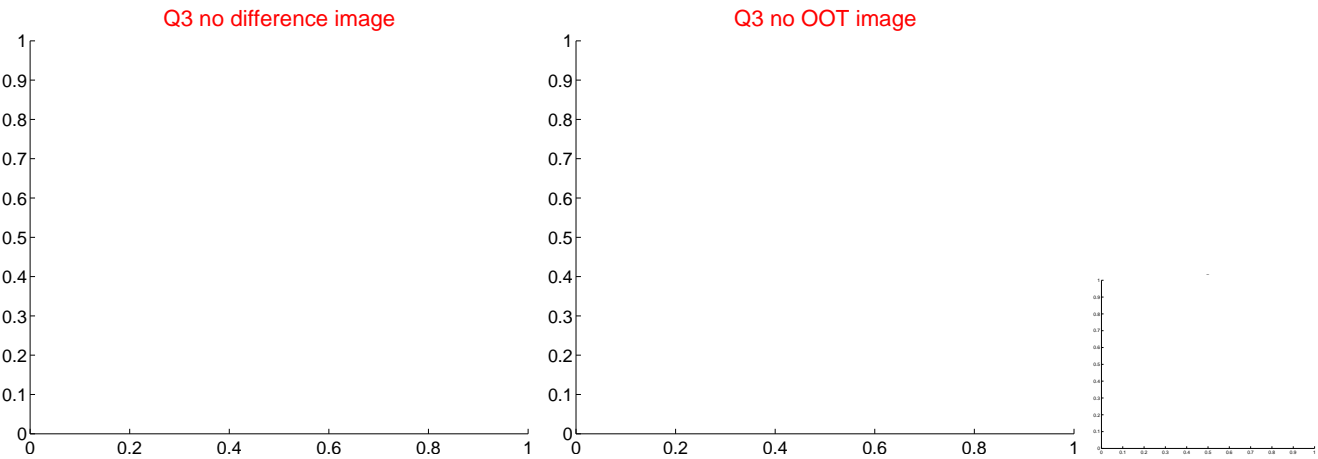
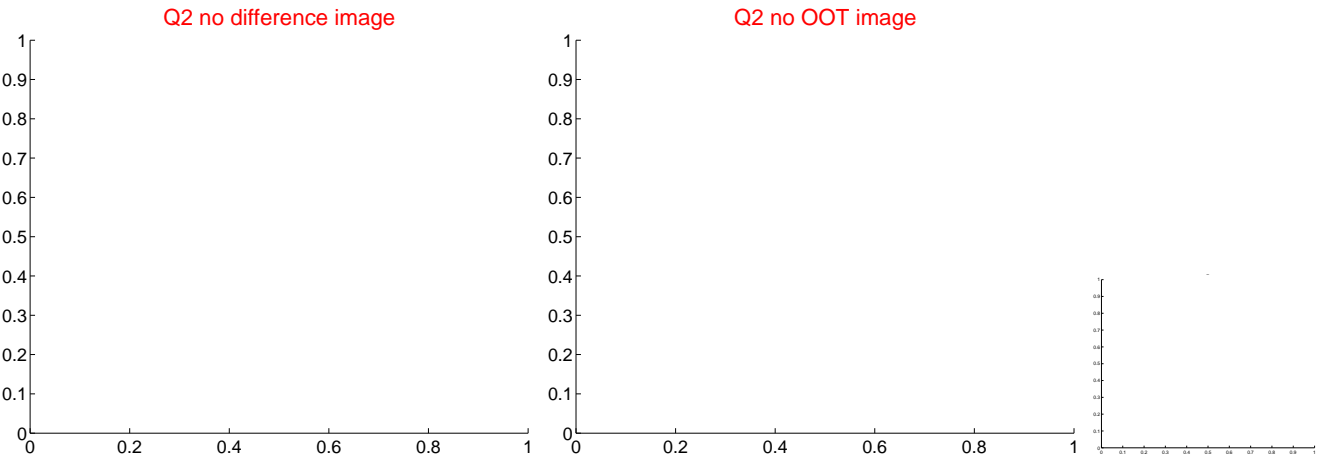
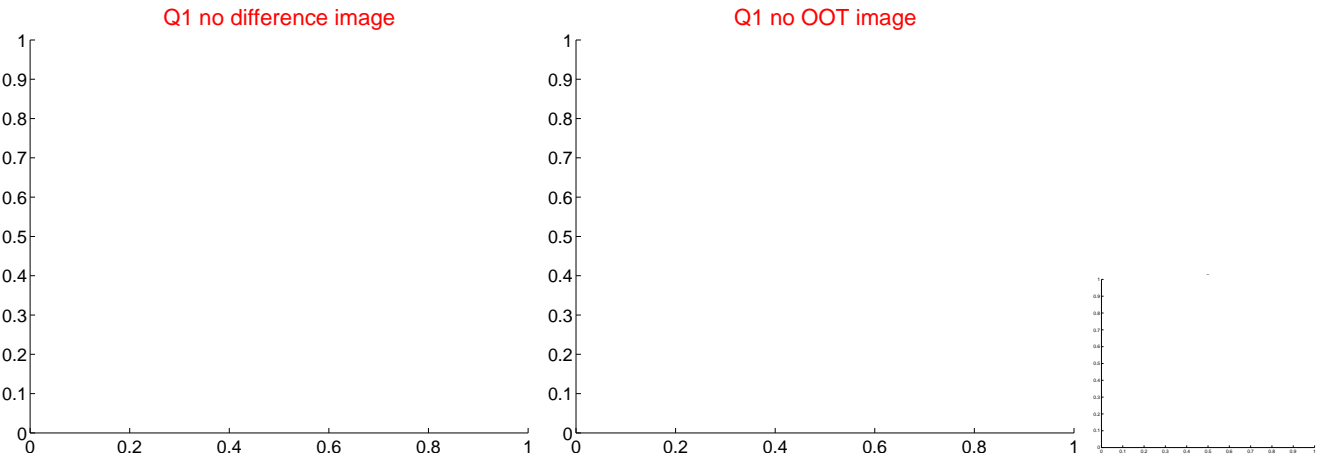
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.747 \pm 0.620$	1.20	$0.732 \pm 0.589$	$-0.146 \pm 0.229$
PRF-fit source offset from KIC position	$0.406 \pm 0.481$	0.84	$0.405 \pm 0.474$	$-0.017 \pm 0.193$
photometric centroid source offset	$0.80 \pm 1.09$	0.73	$-0.04 \pm 1.22$	$0.80 \pm 1.09$

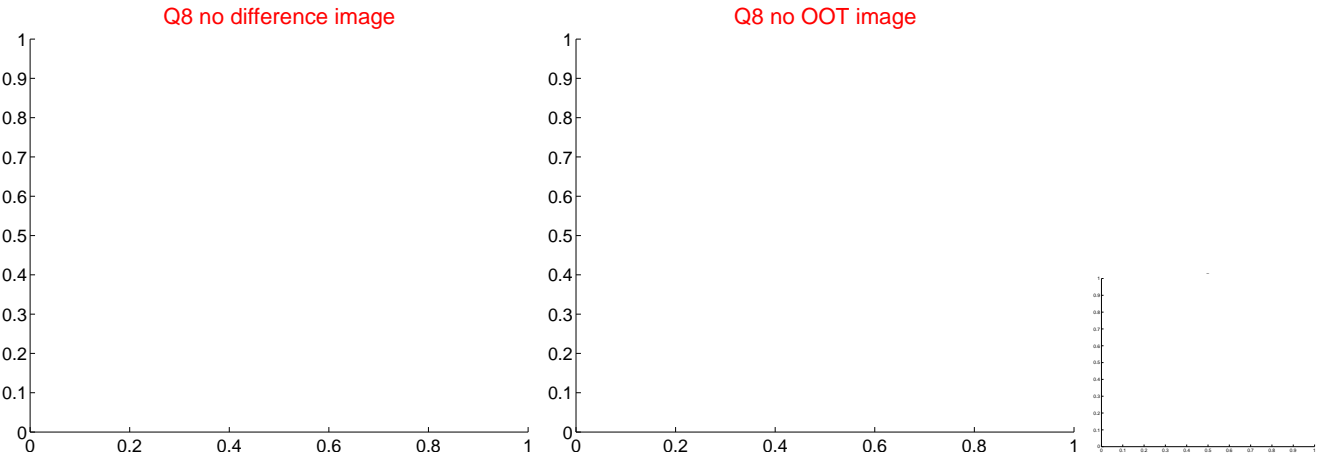
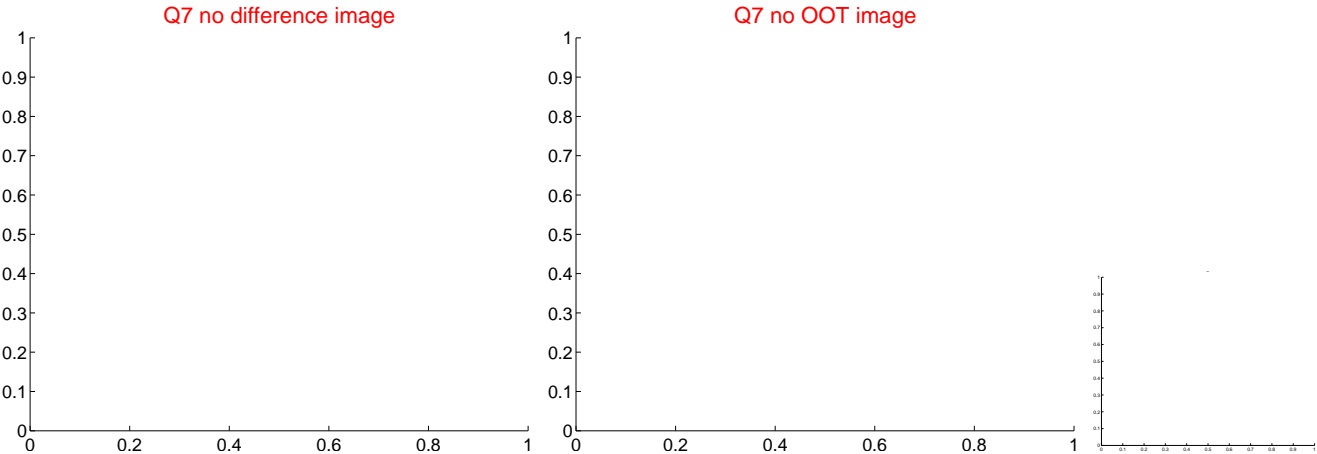
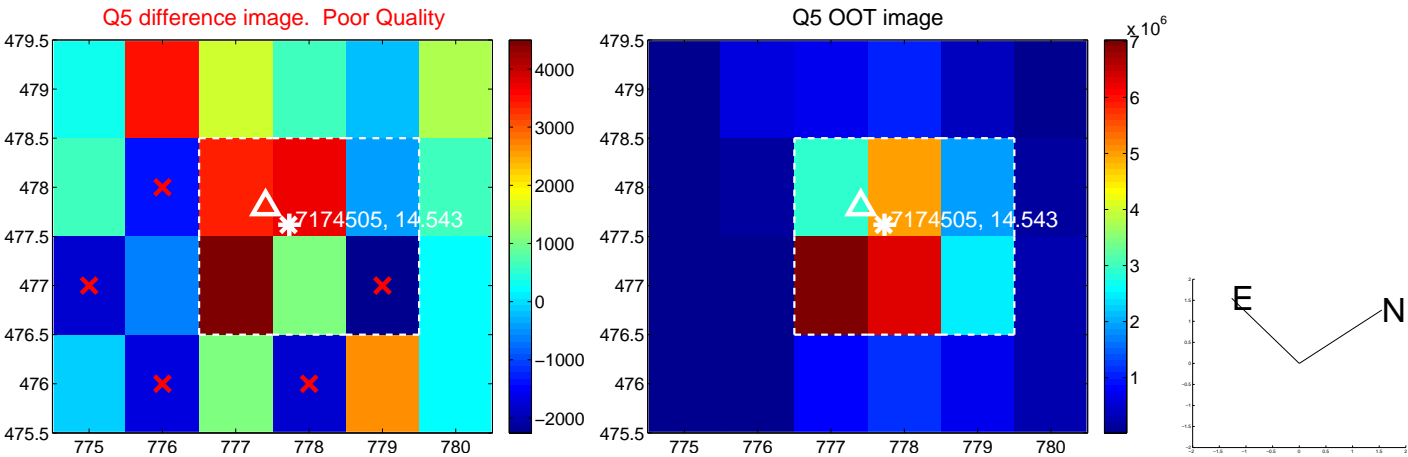


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



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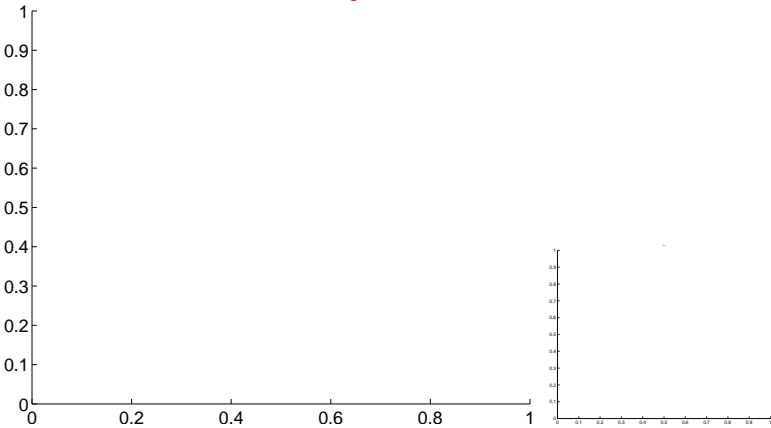


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

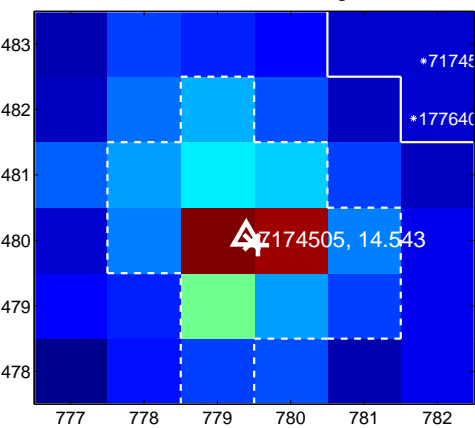
Q9 no difference image



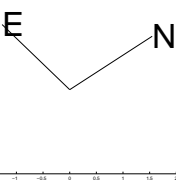
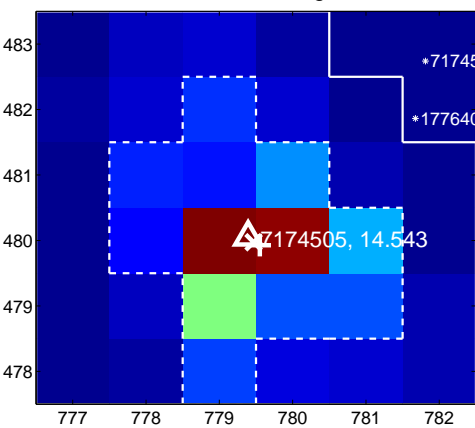
Q9 no OOT image



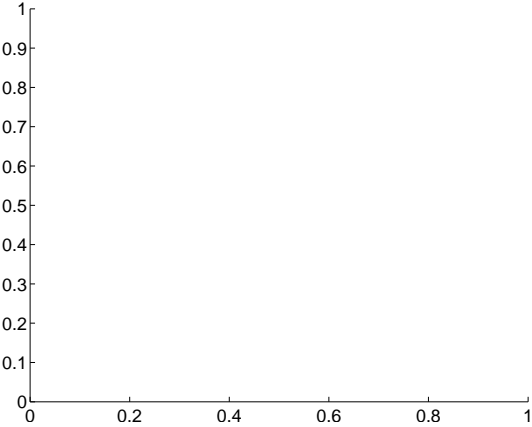
Q10 difference image



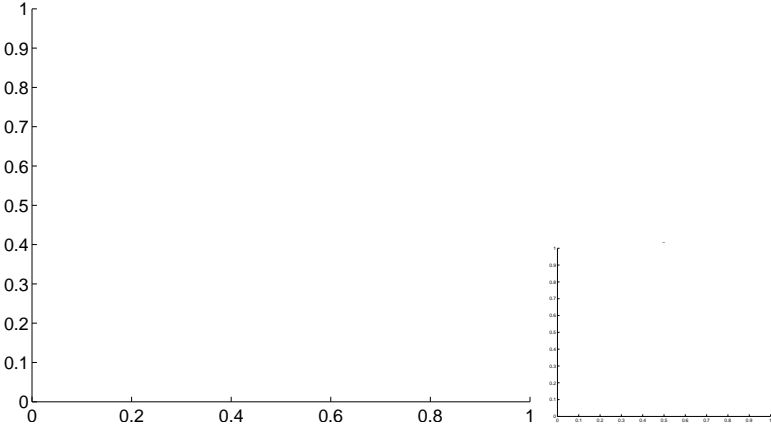
Q10 OOT image



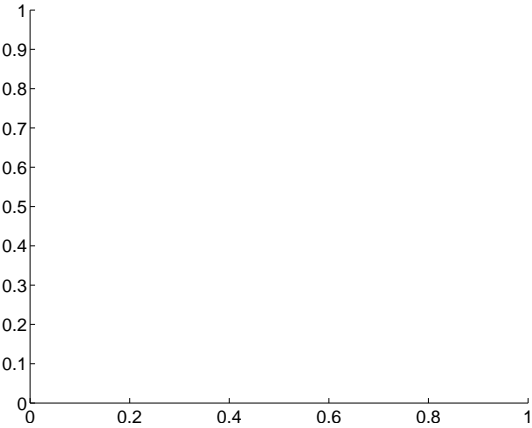
Q11 no difference image



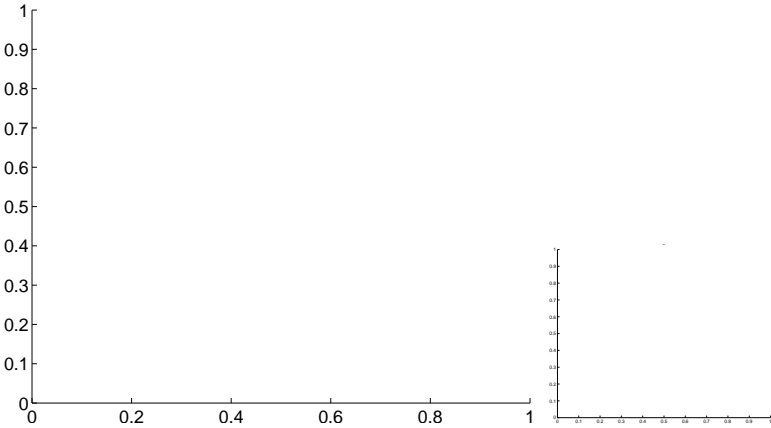
Q11 no OOT image



Q12 no difference image

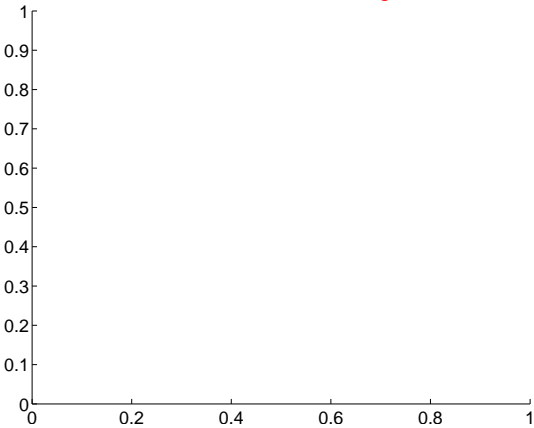


Q12 no OOT image



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

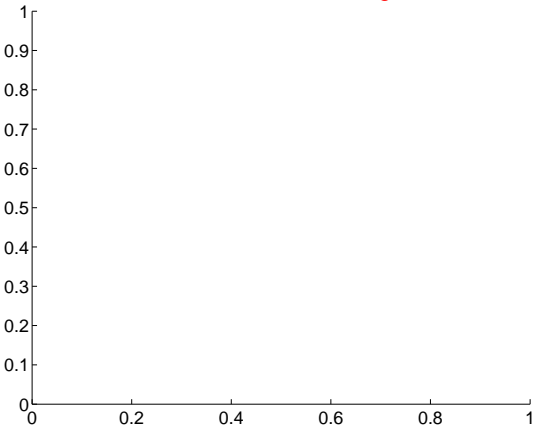
Q13 no difference image



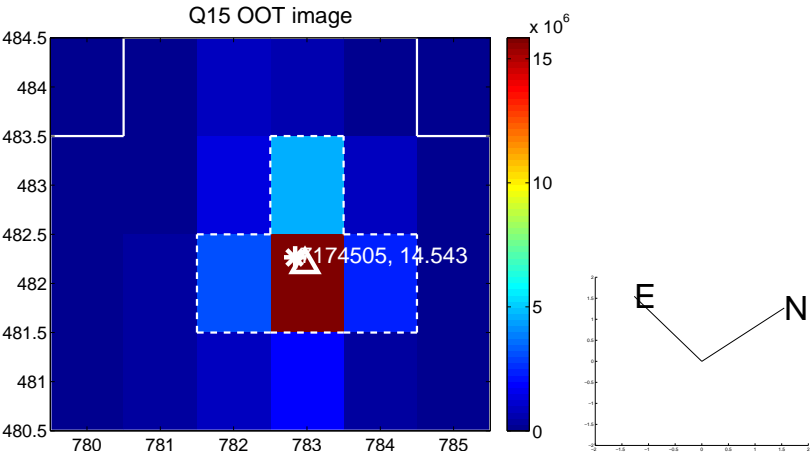
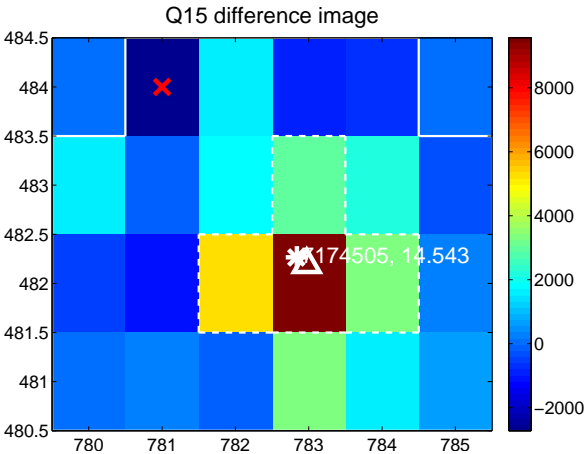
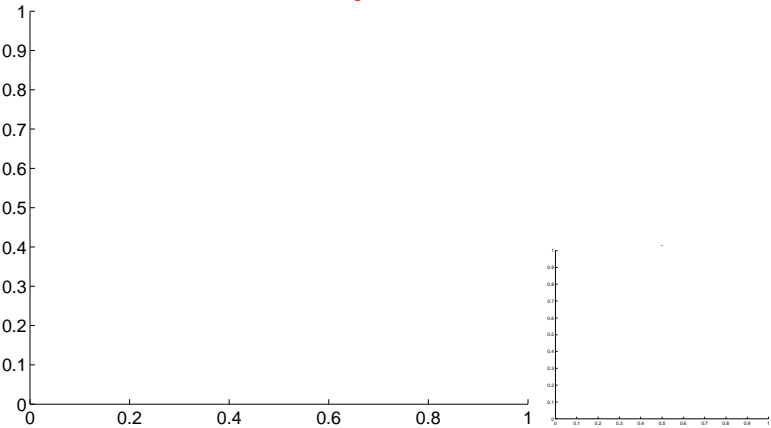
Q13 no OOT image



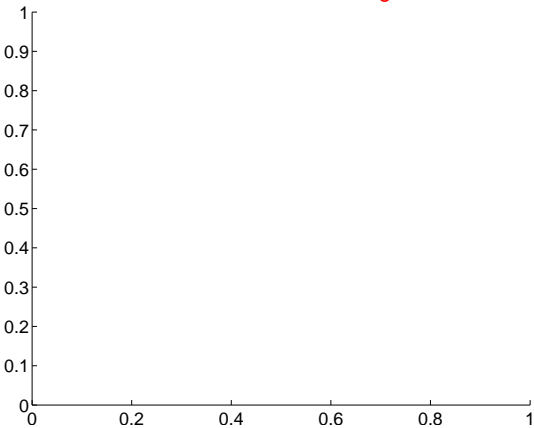
Q14 no difference image



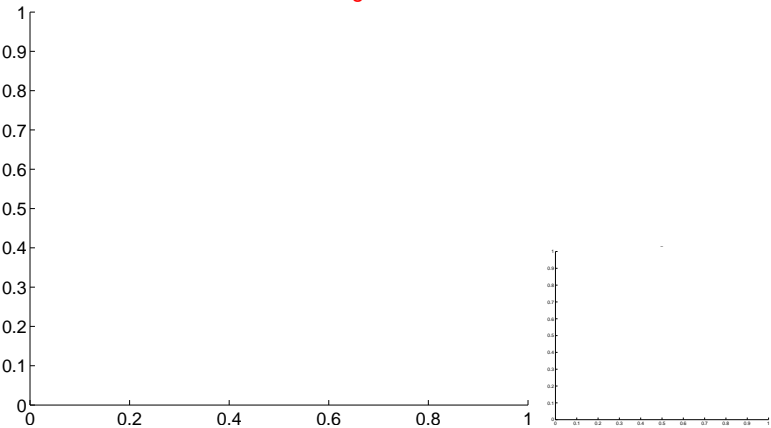
Q14 no OOT image



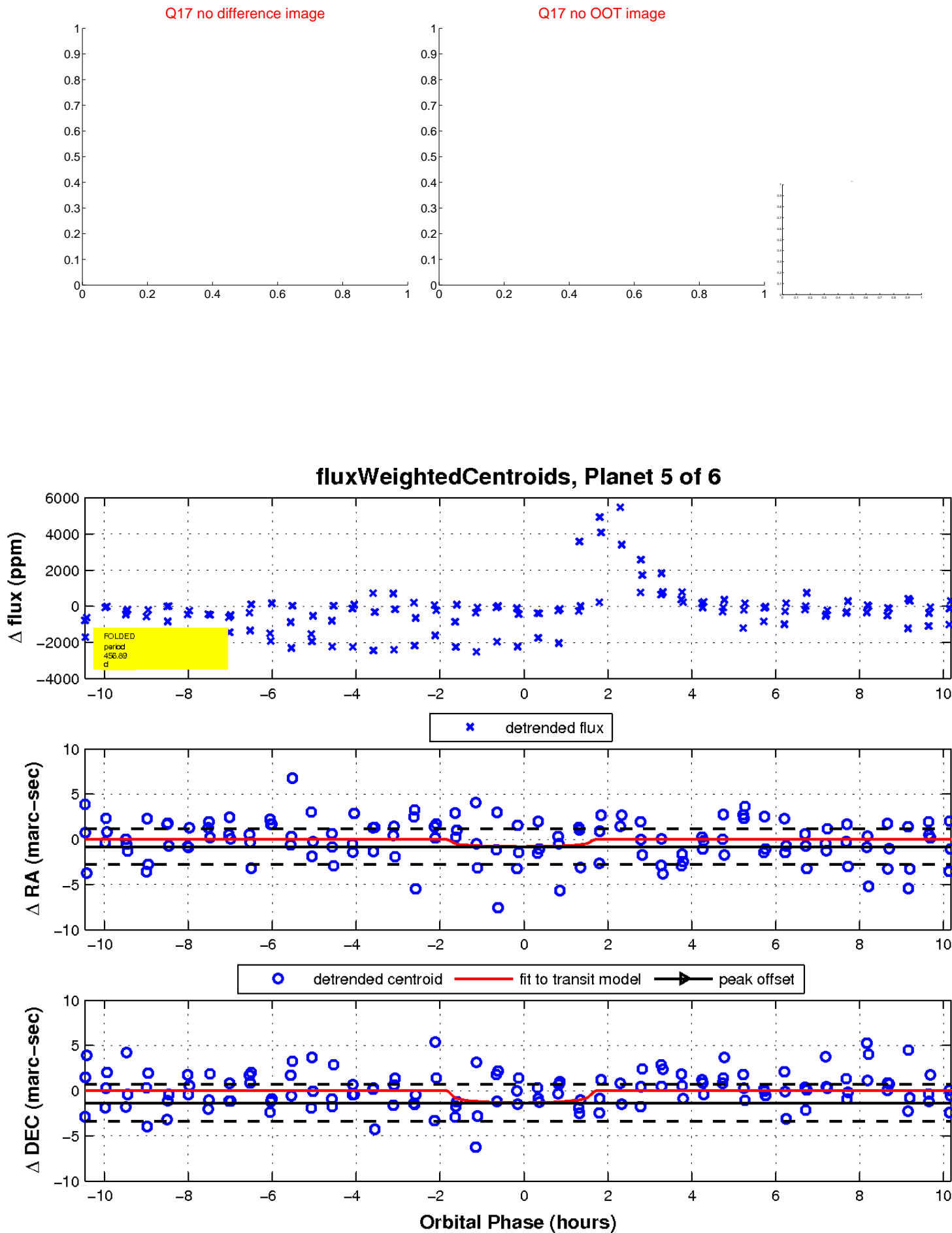
Q16 no difference image



Q16 no OOT image



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





# UKIRT Image

Declination

