

# KIC 007618645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007618645-01	OBS	No	348.346823	299.976570	1112.5	6.081	14.5	7.1	1.91	5010	6.47	2.36
007618645-02	OBS	No	531.582886	264.221026	1362.1	5.128	13.8	7.5	1.91	5010	7.29	1.34
007618645-03	OBS	No	419.867087	244.146714	1022.4	4.189	12.6	7.6	1.91	5010	6.23	1.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007618645-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007618645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007618645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS

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

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

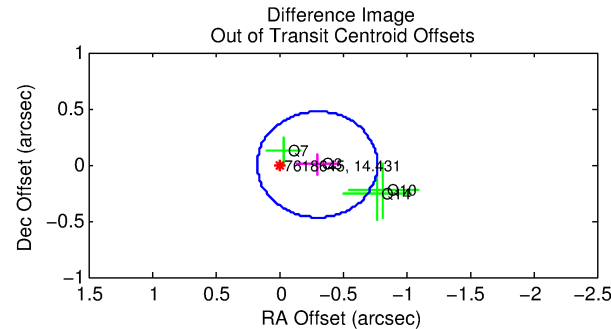
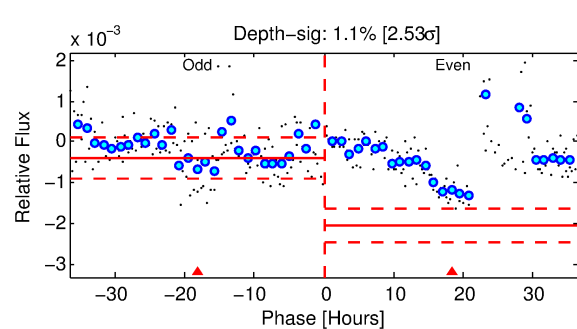
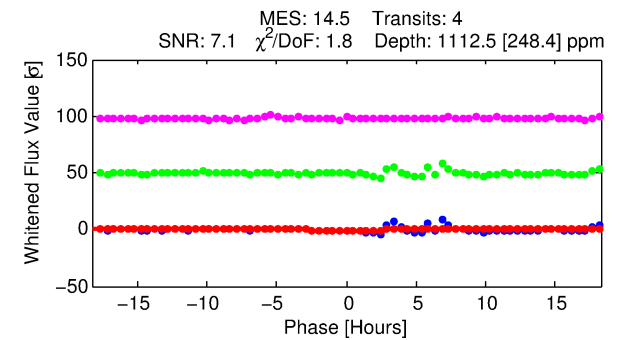
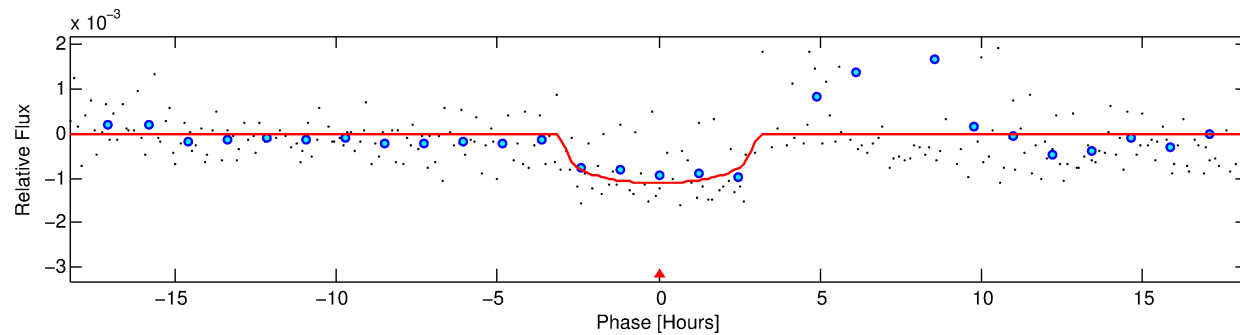
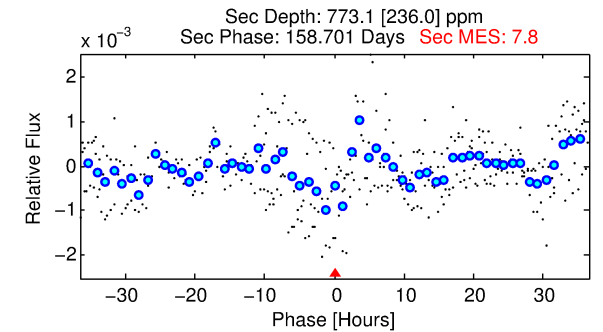
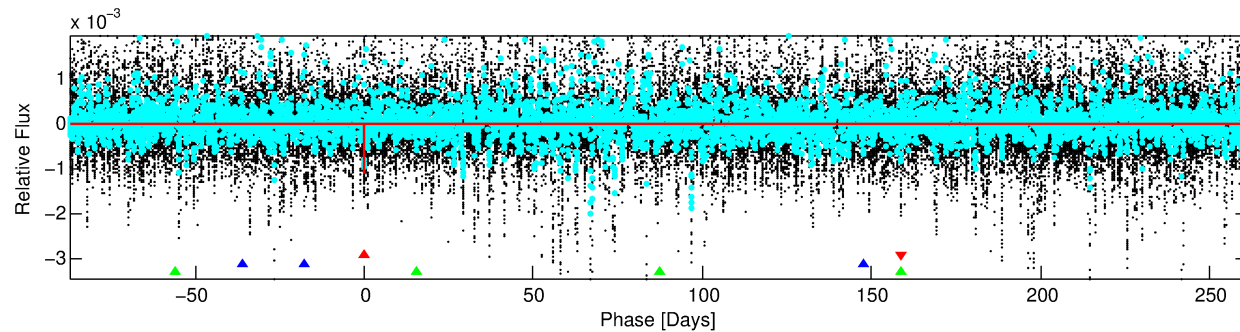
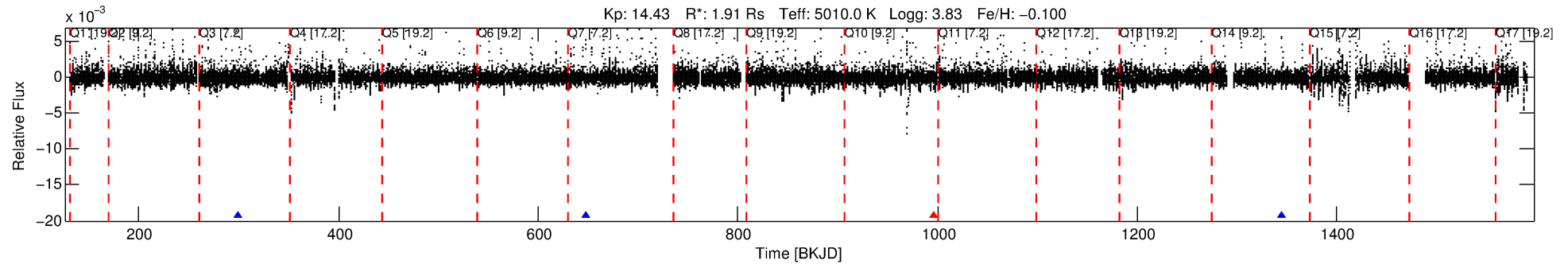
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007618645-01

No Significant Match Found

# DV One-Page Summary

KIC: 7618645 Candidate: 1 of 3 Period: 348.347 d



## DV Fit Results:

Period = 348.34682 [0.00666] d  
Epoch = 299.9766 [0.0137] BKJD  
Rp/R\* = 0.0310 [0.0369]  
a/R\* = 387.69 [1588.65]  
b = 0.53 [5.69]  
Seff = 2.36 [2.91]  
Teq = 316 [97] K  
Rp = 6.47 [8.74] Re  
a = 0.9351 [0.6701] AU  
Ag = 8885.22 [23929.87] [0.37 $\sigma$ ]  
Teffp = 4743 [2846] K [1.55 $\sigma$ ]

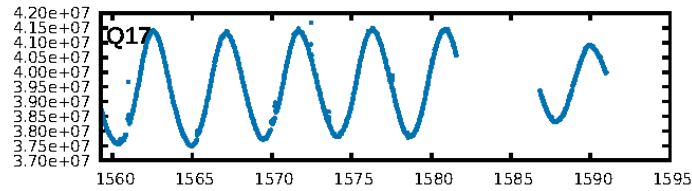
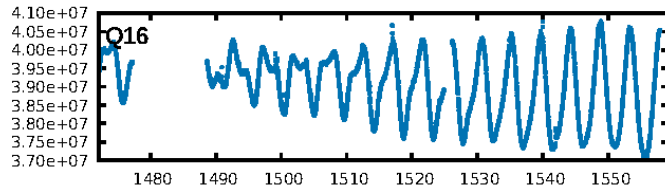
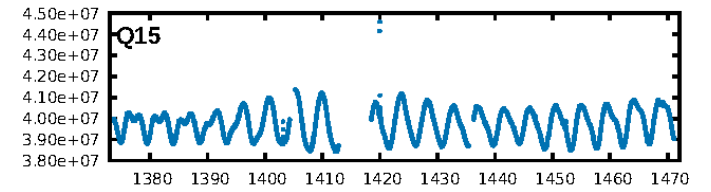
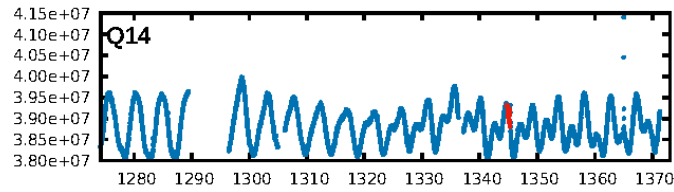
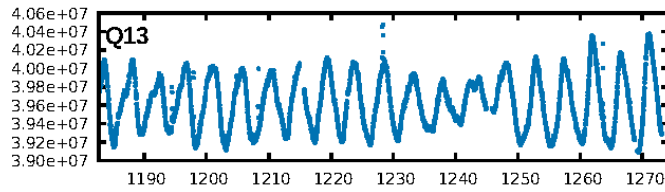
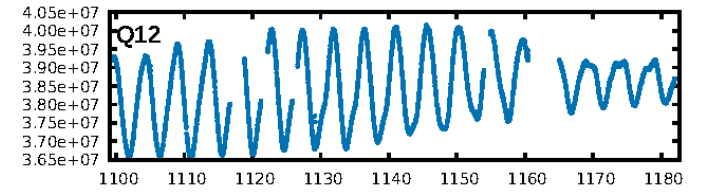
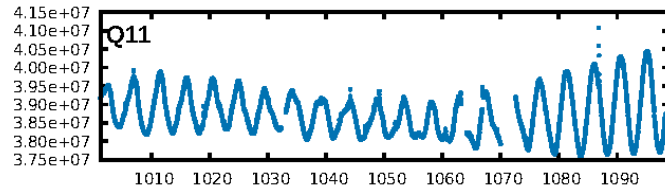
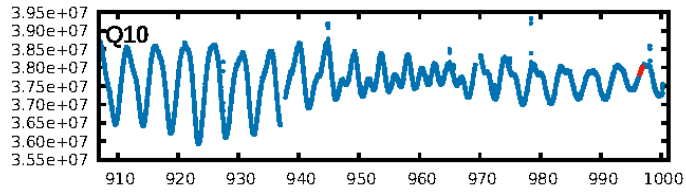
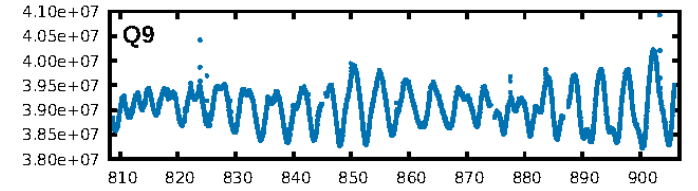
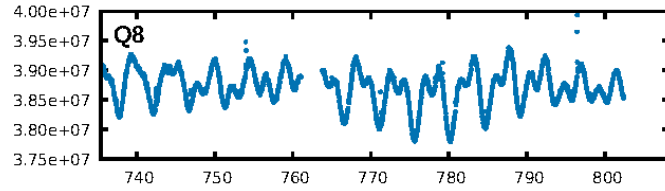
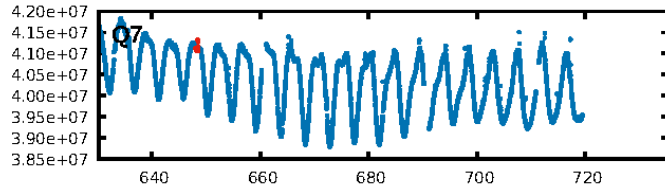
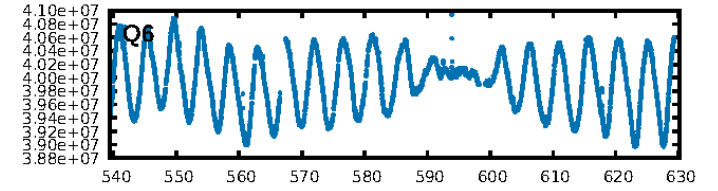
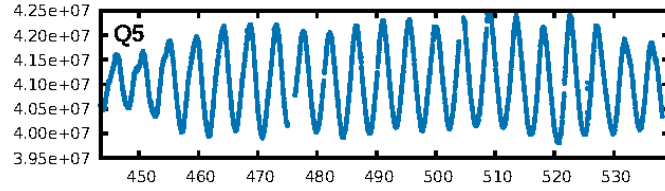
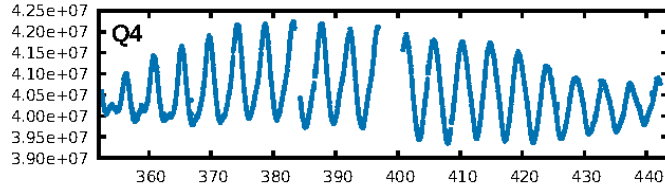
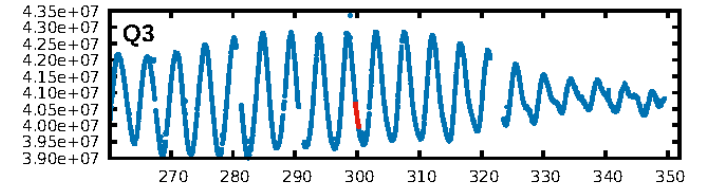
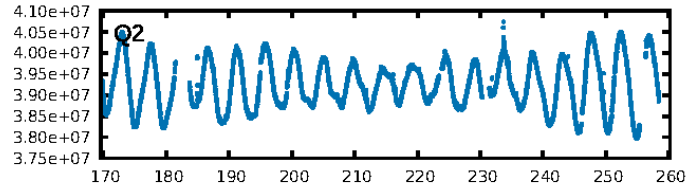
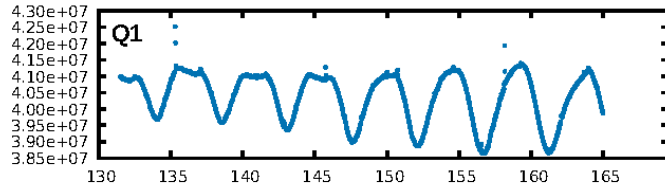
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [232.44 $\sigma$ ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 52.1%  
Bootstrap-pfa: 3.29e-13  
**RollingBand-fgt: 0.75 [3/4]**  
GhostDiagnostic-chr: 2.394  
**Centroid-sig: 0.0%**  
Centroid-so: 3.398 arcsec [2.96 $\sigma$ ]  
OotOffset-rm: 0.301 arcsec [1.91 $\sigma$ ]  
OotOffset-st: 2/2/0/0 [4]  
KicOffset-rm: 0.259 arcsec [1.79 $\sigma$ ]  
KicOffset-st: 2/2/0/0 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 1.00 [4/4]

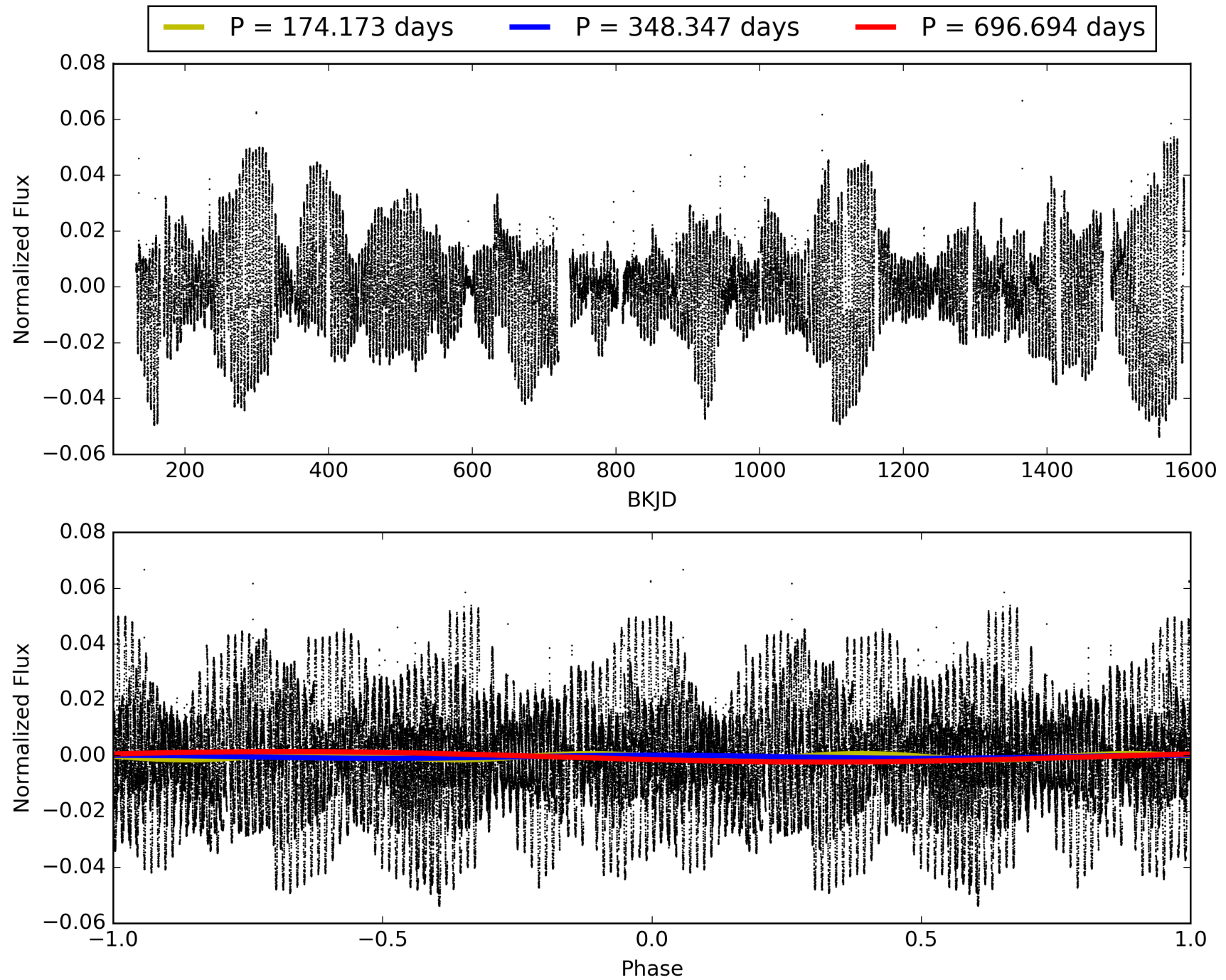
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:59:28 Z

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

# TCE 007618645-01, PDC Light Curves

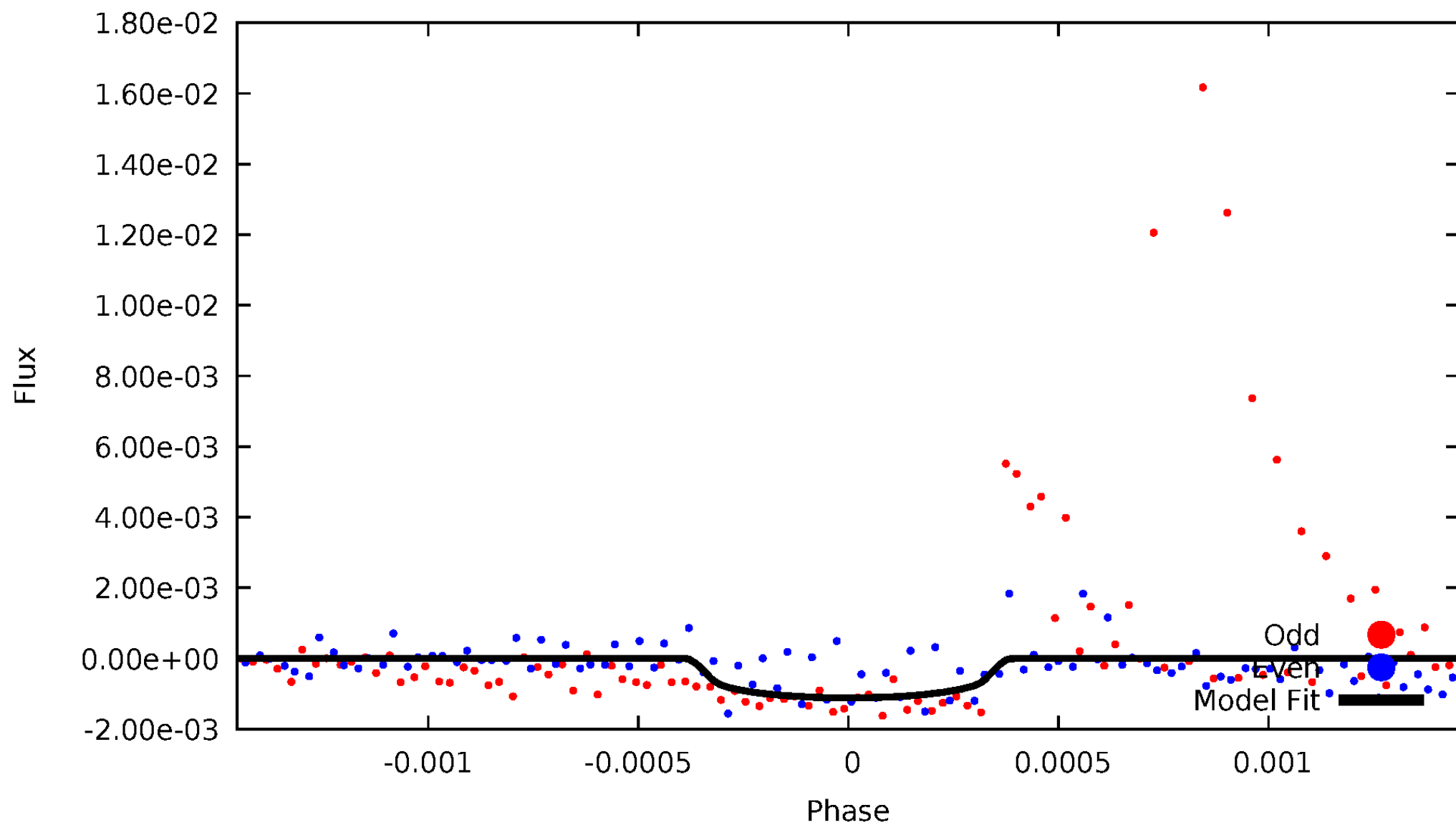


# TCE 007618645-01



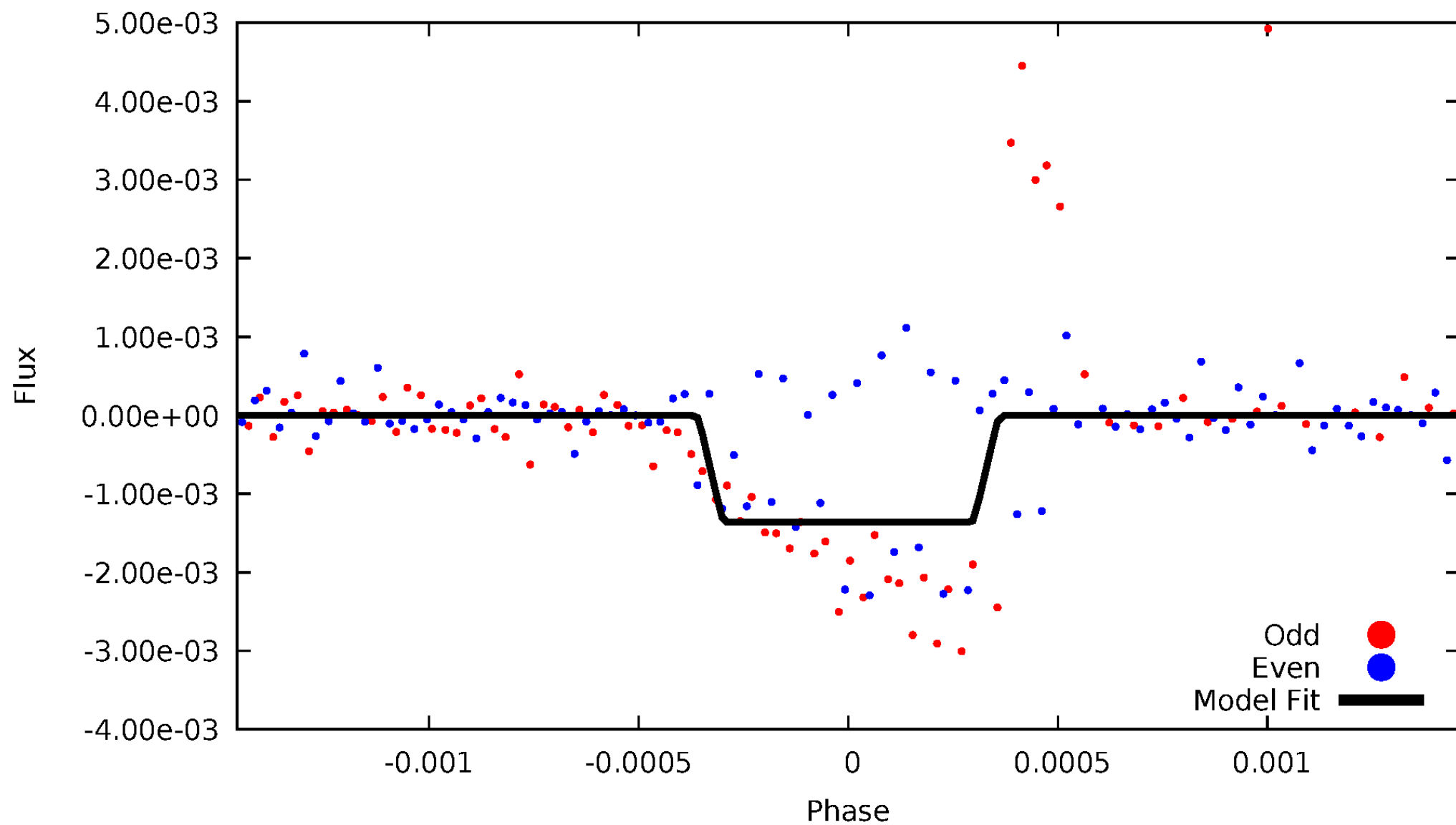
# DV Odd/Even

TCE 007618645-01



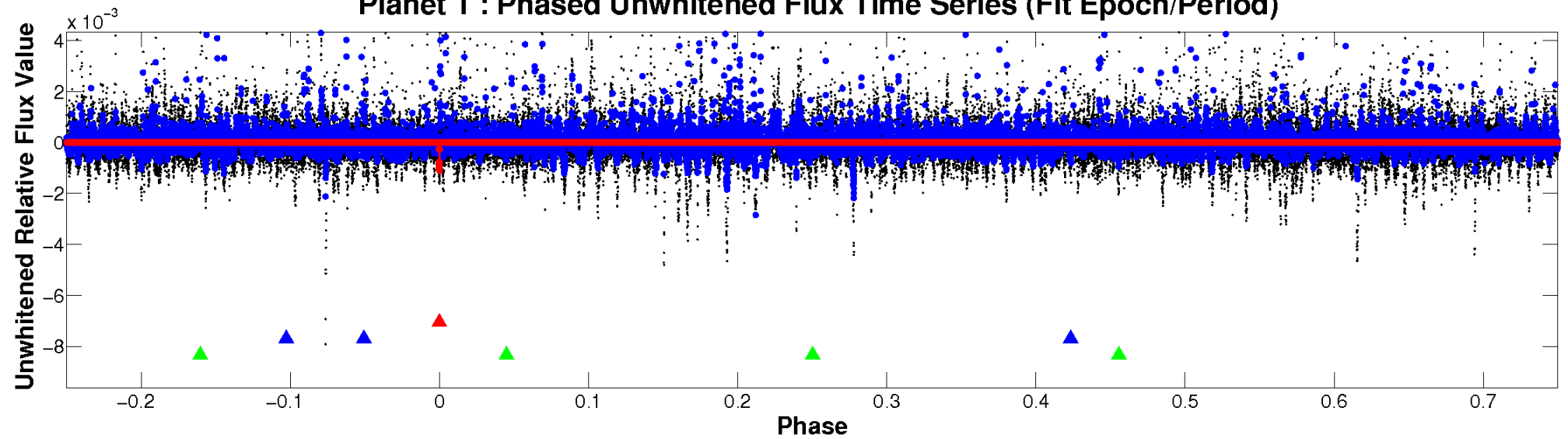
# ALT Odd/Even

TCE 007618645-01

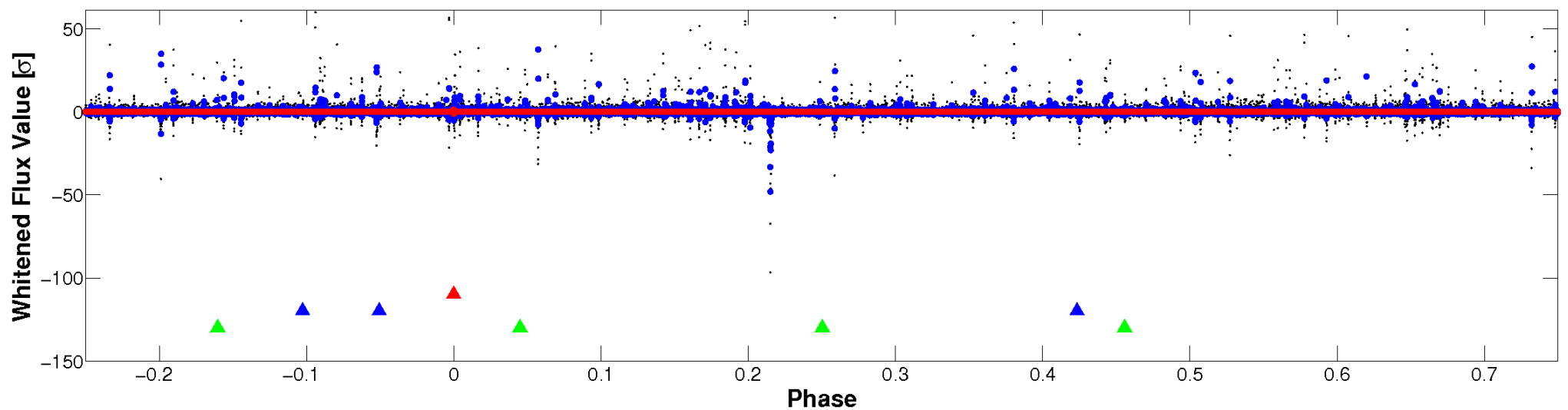


# Non-Whitened Vs. Whitened Light Curve

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

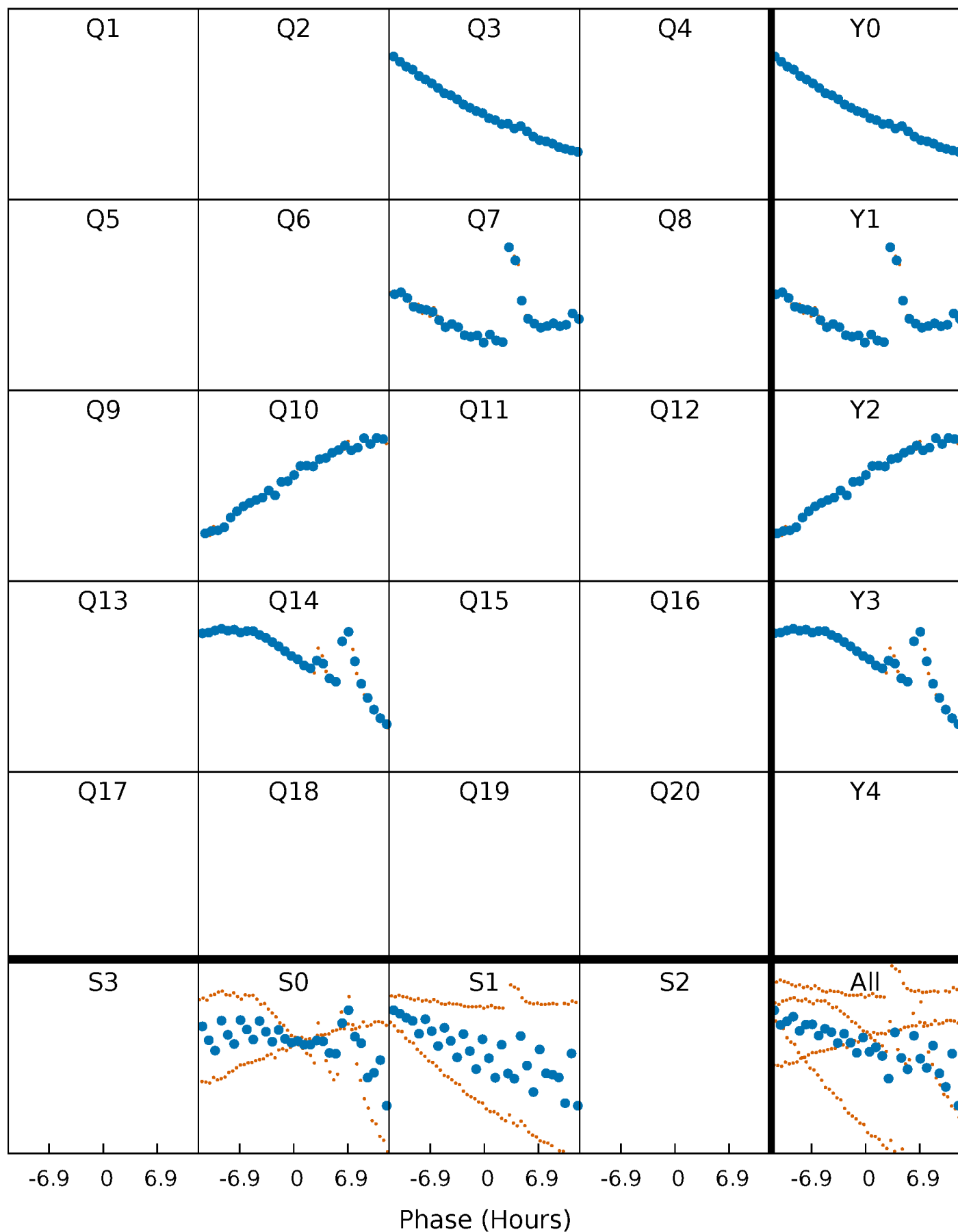


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

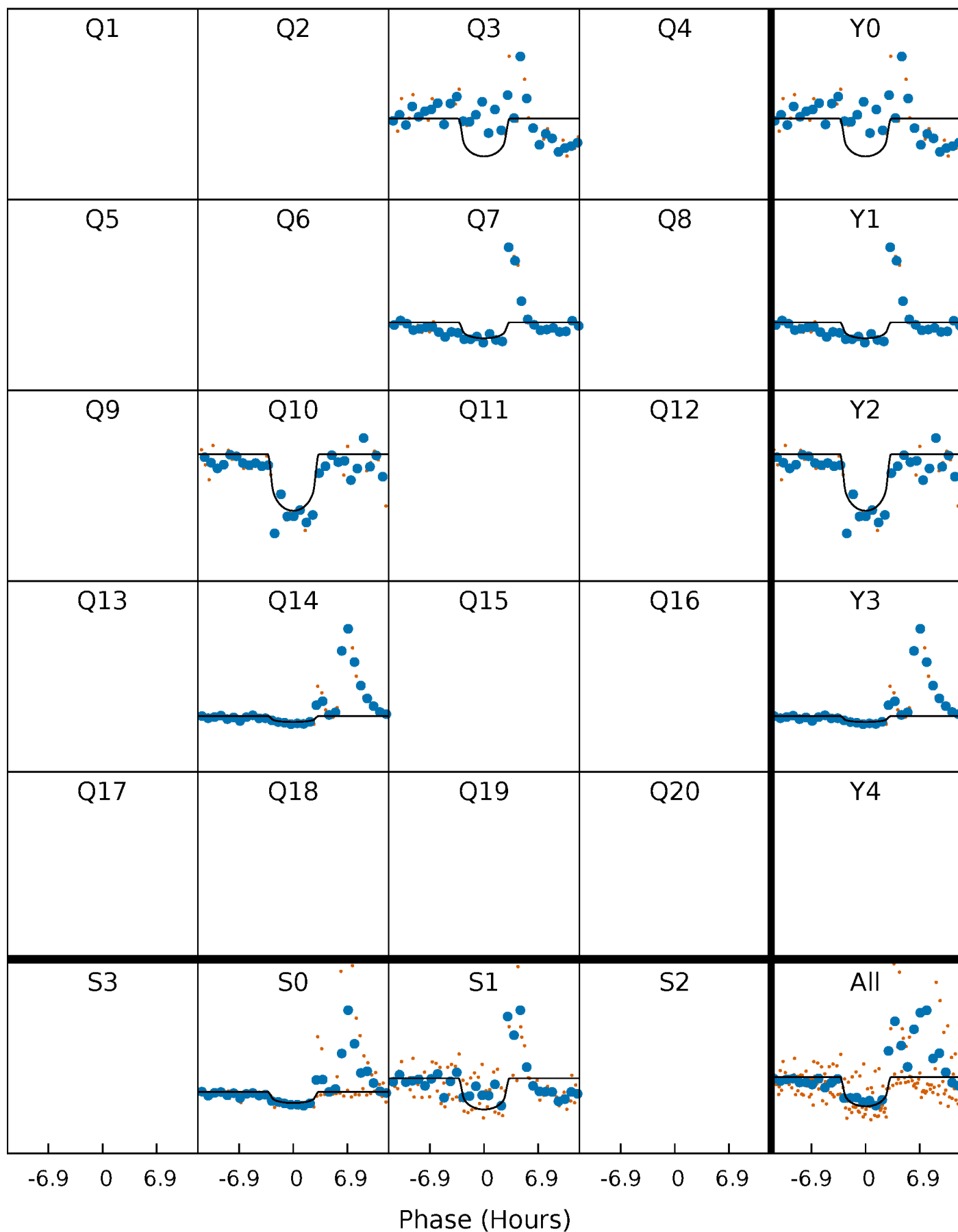
TCE 007618645-01 P=348.346823 Days  $T_0=299.976570$  (BKJD)





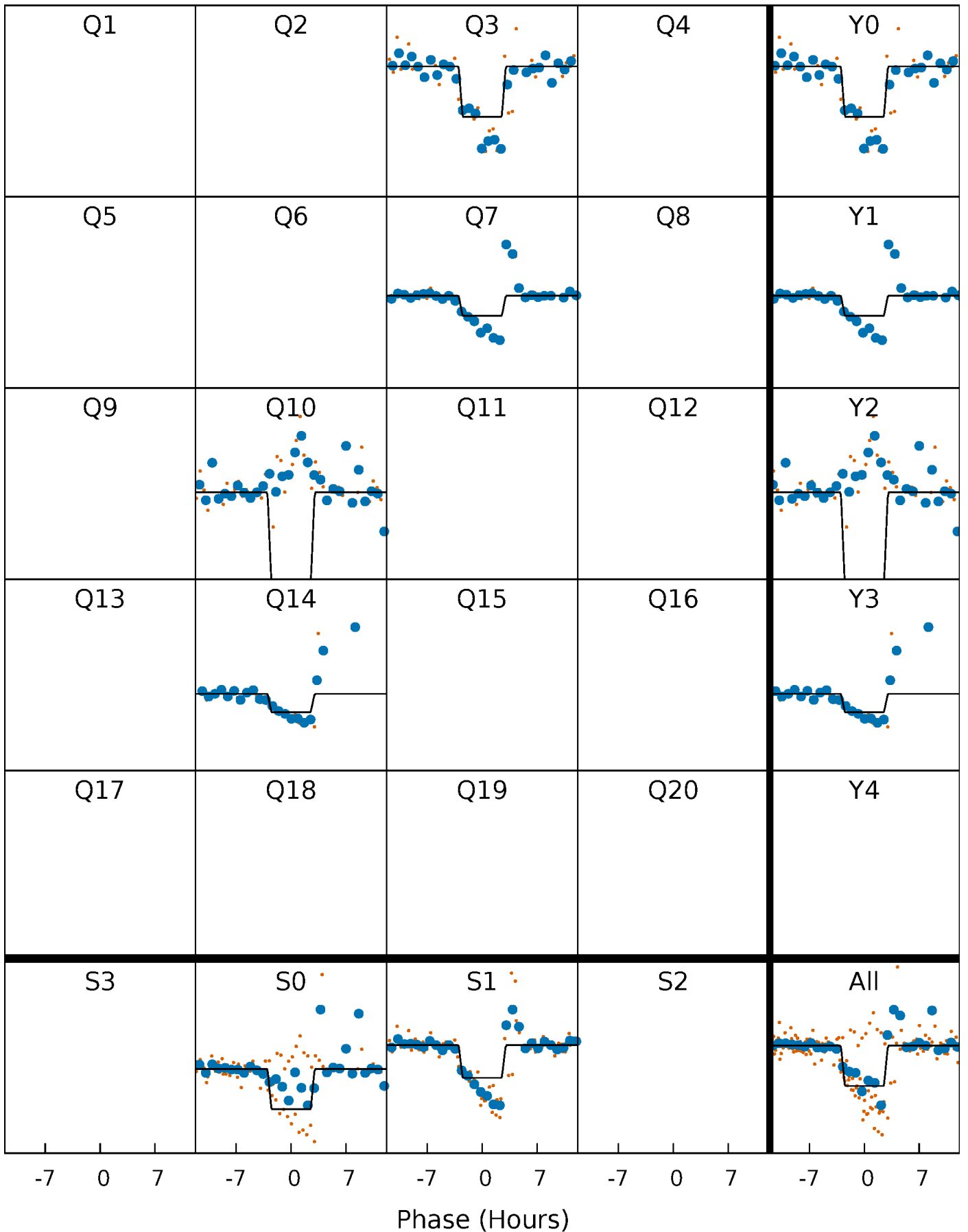
# DV Quarter-Phased Transit Curves

TCE 007618645-01 P=348.346823 Days  $T_0=299.976570$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

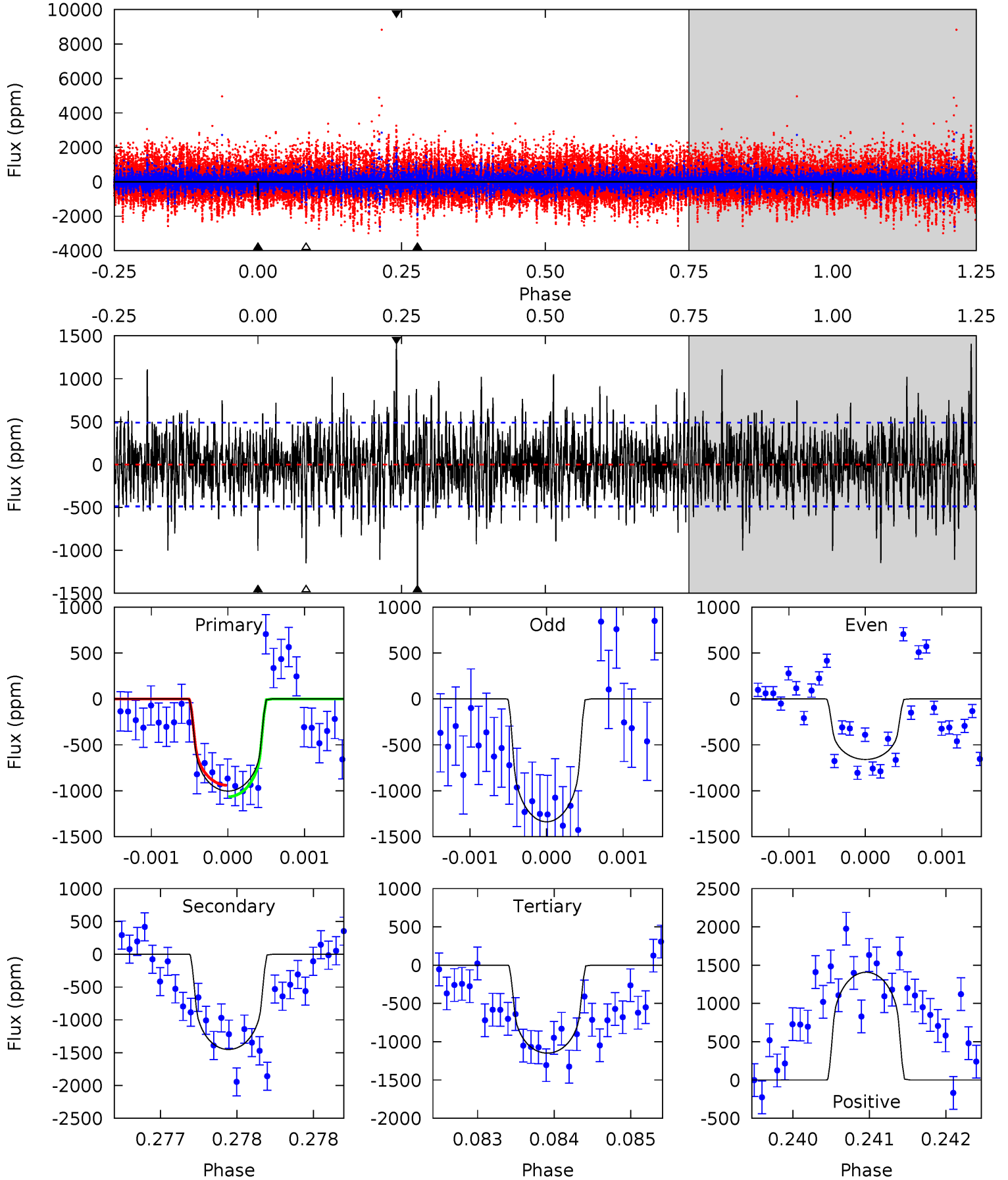
TCE 007618645-01 P=348.337709 Days  $T_0=299.990083$  (BKJD)



# DV Model-Shift Uniqueness Test

007618645-01, P = 348.346823 Days, E = 299.976570 Days

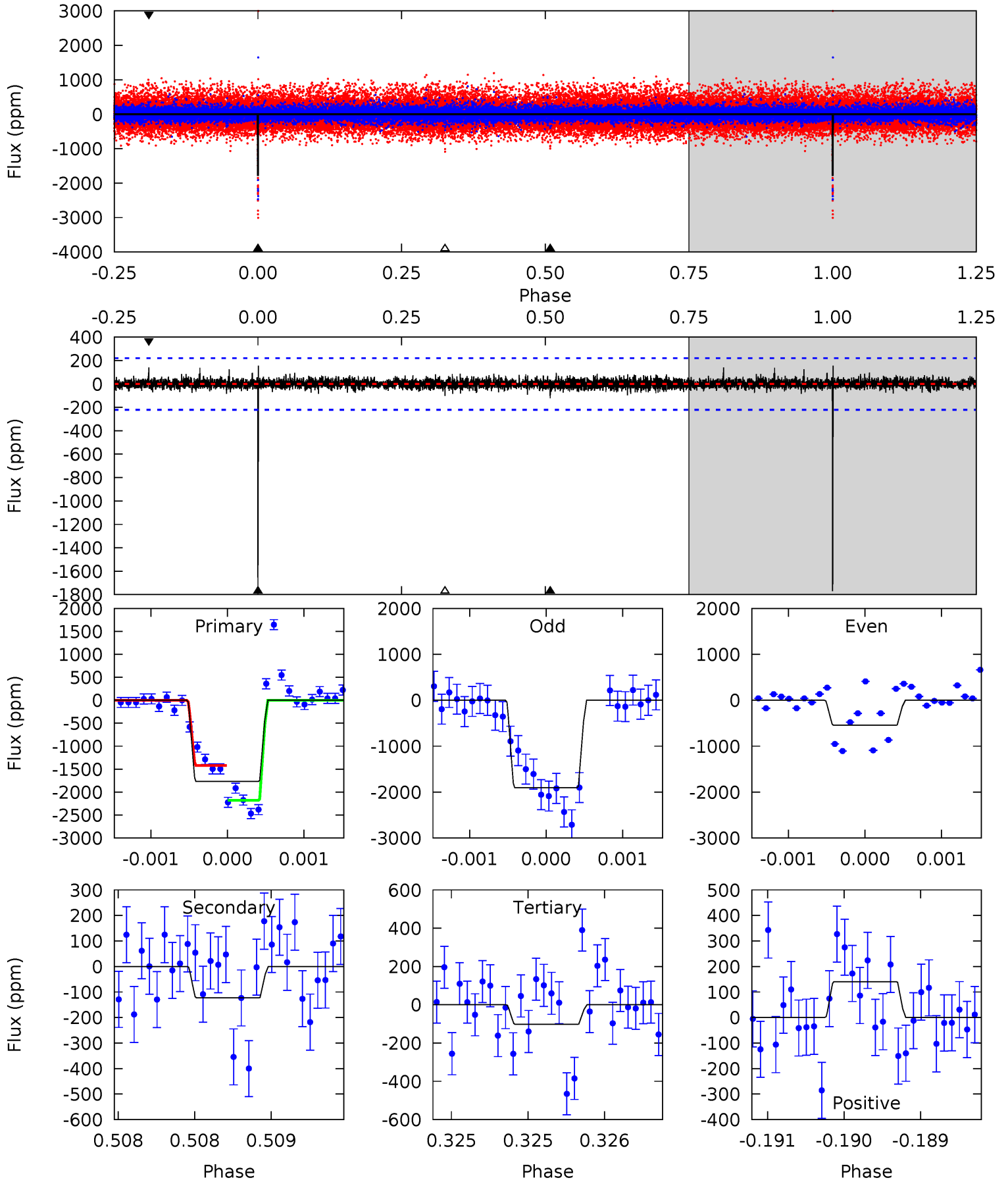
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	16.3	12.9	15.8	5.50	3.37	3.20	-1.63	-4.55	3.41	0.49	2.82	0.79	0.49	0.71



# Alt Model-Shift Uniqueness Test

007618645-01, P = 348.337709 Days, E = 299.990083 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
44.3	3.07	2.56	3.51	5.51	3.39	0.56	41.7	40.7	0.52	-0.43	18.3	0.77	0.08	9.41



### Stellar Parameters For KIC 007618645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5010^{+151}_{-136}$	$3.829^{+0.749}_{-0.321}$	$-0.100^{+0.300}_{-0.300}$	$1.911^{+1.003}_{-1.226}$	$0.899^{+0.209}_{-0.174}$	$0.181^{+2.517}_{-0.122}$
	+3%/-3%	+20%/-8%	+300%/-300%	+52%/-64%	+23%/-19%	+1387%/-67%
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 007618645-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1451 \pm 89$	$8.11^{+7.56}_{-5.33}$	$444^{+60}_{-84}$	$4813^{+3285}_{-919}$	$10525^{+77668}_{-7625}$
Alt.	$-123 \pm 40$	$8.17^{+8.70}_{-5.26}$	$437^{+63}_{-78}$	$3106^{+1277}_{-496}$	$892^{+5866}_{-697}$

$T_{max}$  = 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

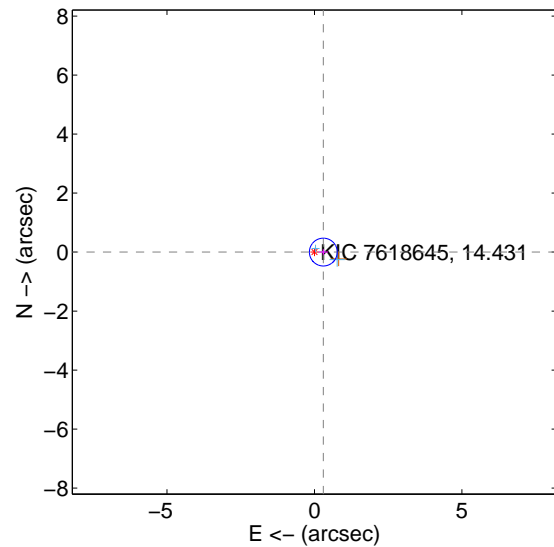
Supplemental centroid analysis for 007618645-01. Kepler magnitude: 14.43. Transit SNR 7.14

There are 3 quarters with good PRF difference image offsets

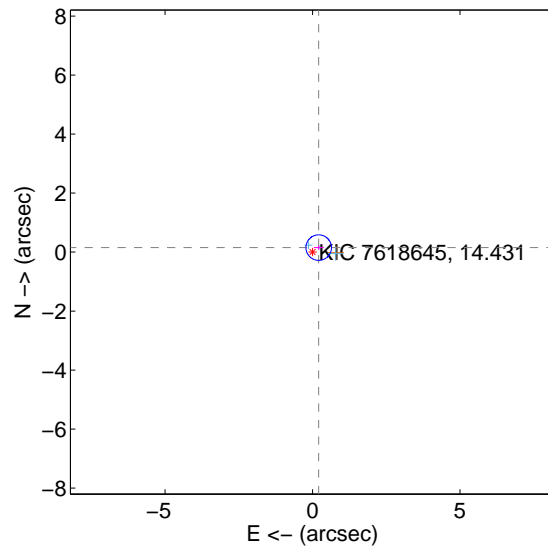
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.301 \pm 0.157$	1.91	$-0.301 \pm 0.157$	$0.001 \pm 0.097$
PRF-fit source offset from KIC position	$0.259 \pm 0.144$	1.79	$-0.209 \pm 0.169$	$0.152 \pm 0.079$
photometric centroid source offset	$3.40 \pm 1.15$	2.96	$0.58 \pm 0.98$	$3.35 \pm 1.15$

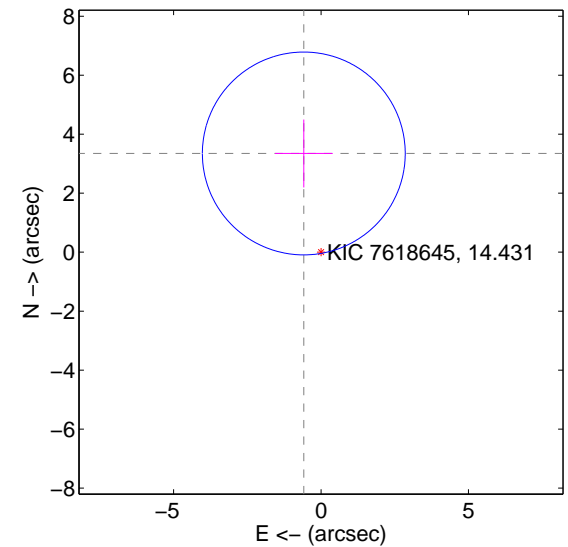
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

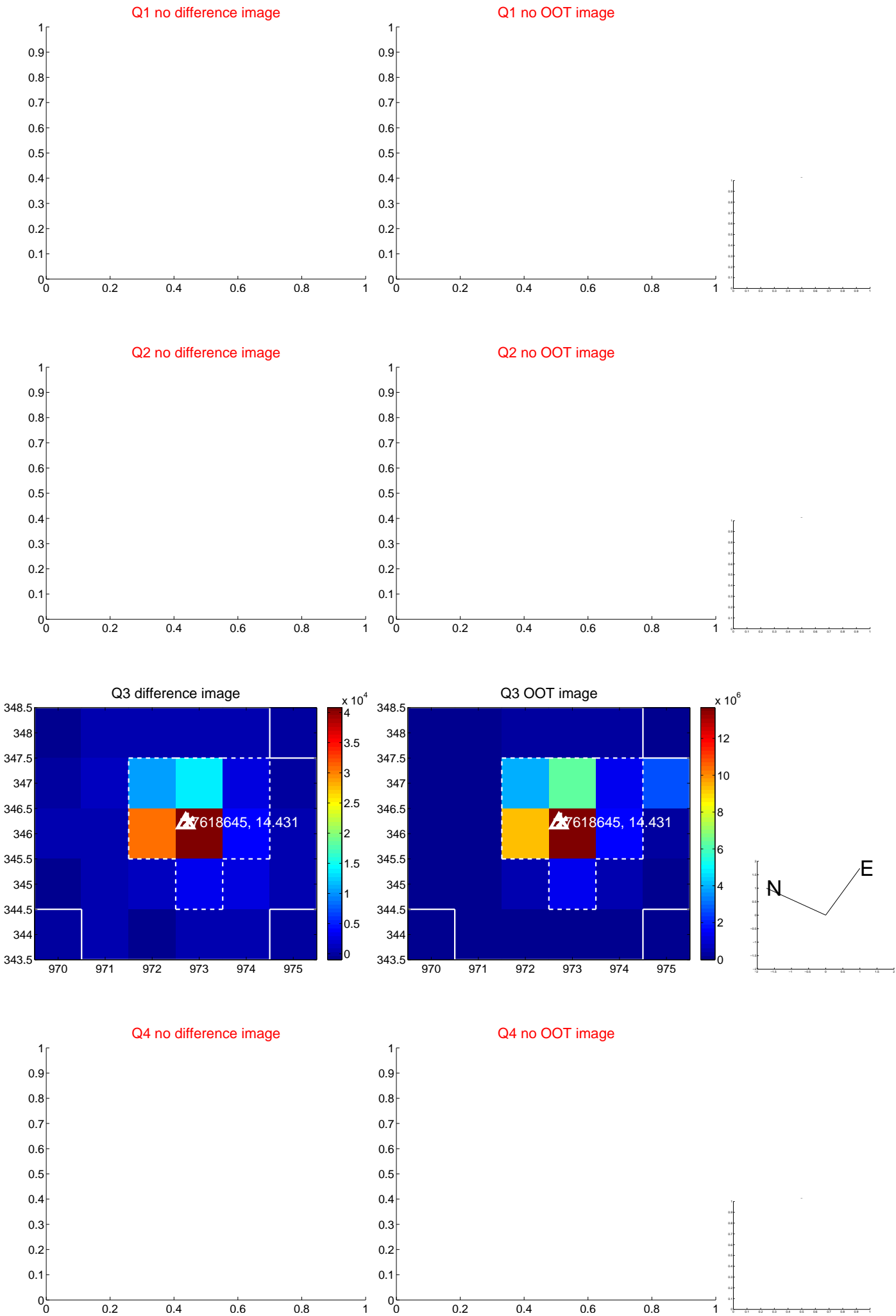


offset from photometric centroids



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

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



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

Q5 no difference image



Q5 no OOT image



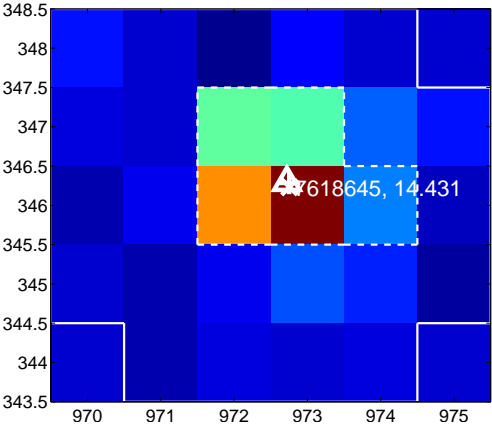
Q6 no difference image



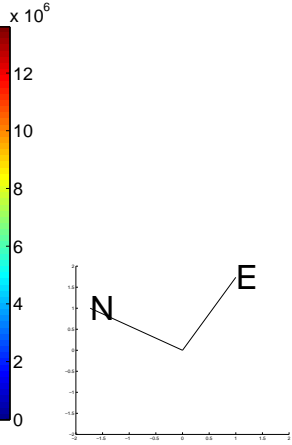
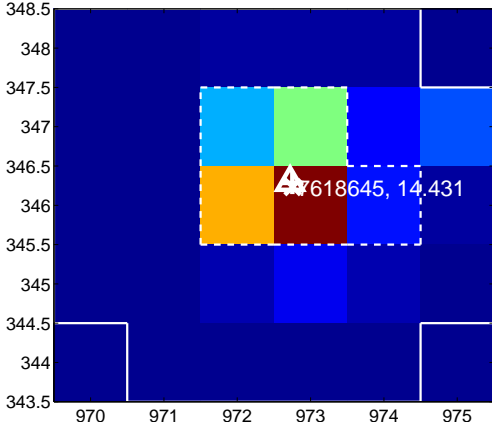
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image





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

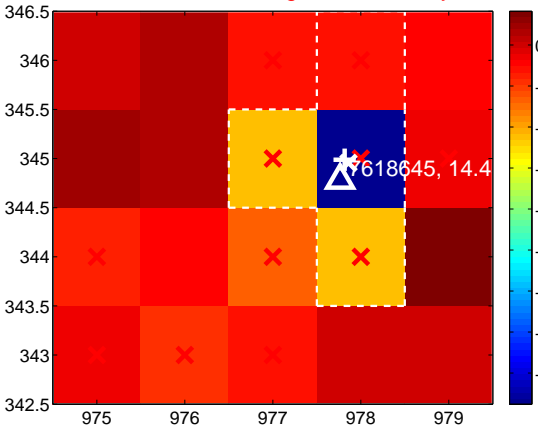
Q9 no difference image



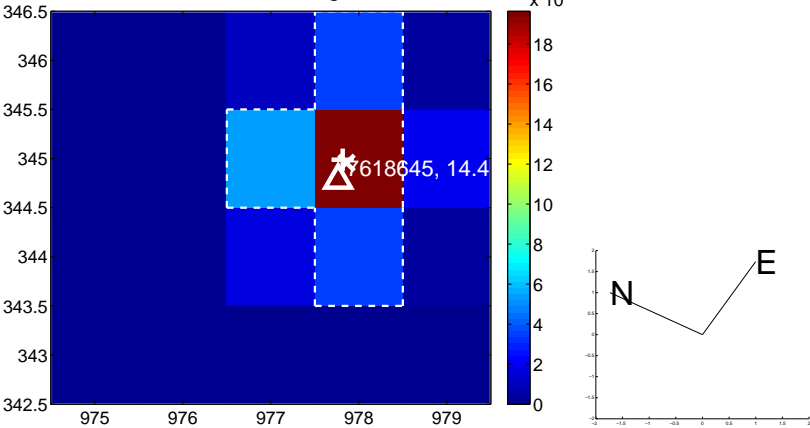
Q9 no OOT image



Q10 difference image. Poor Quality



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.

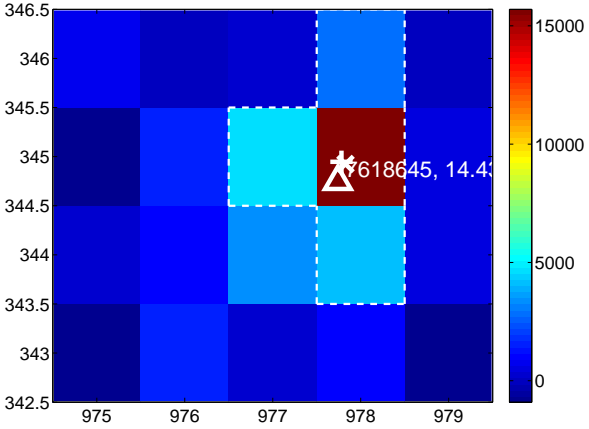
Q13 no difference image



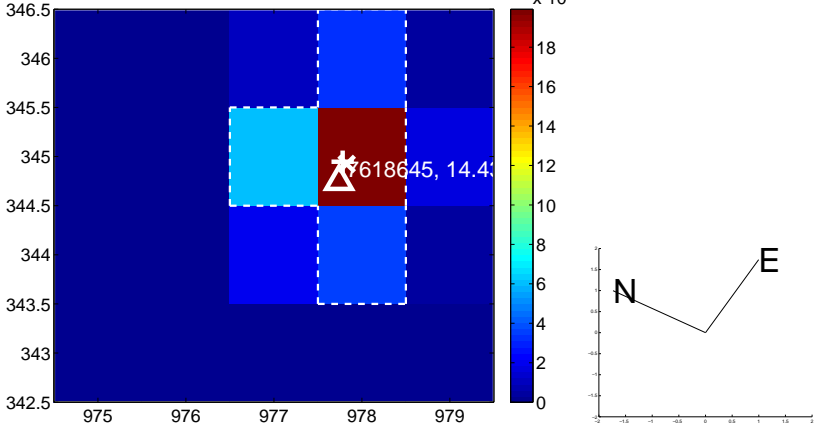
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



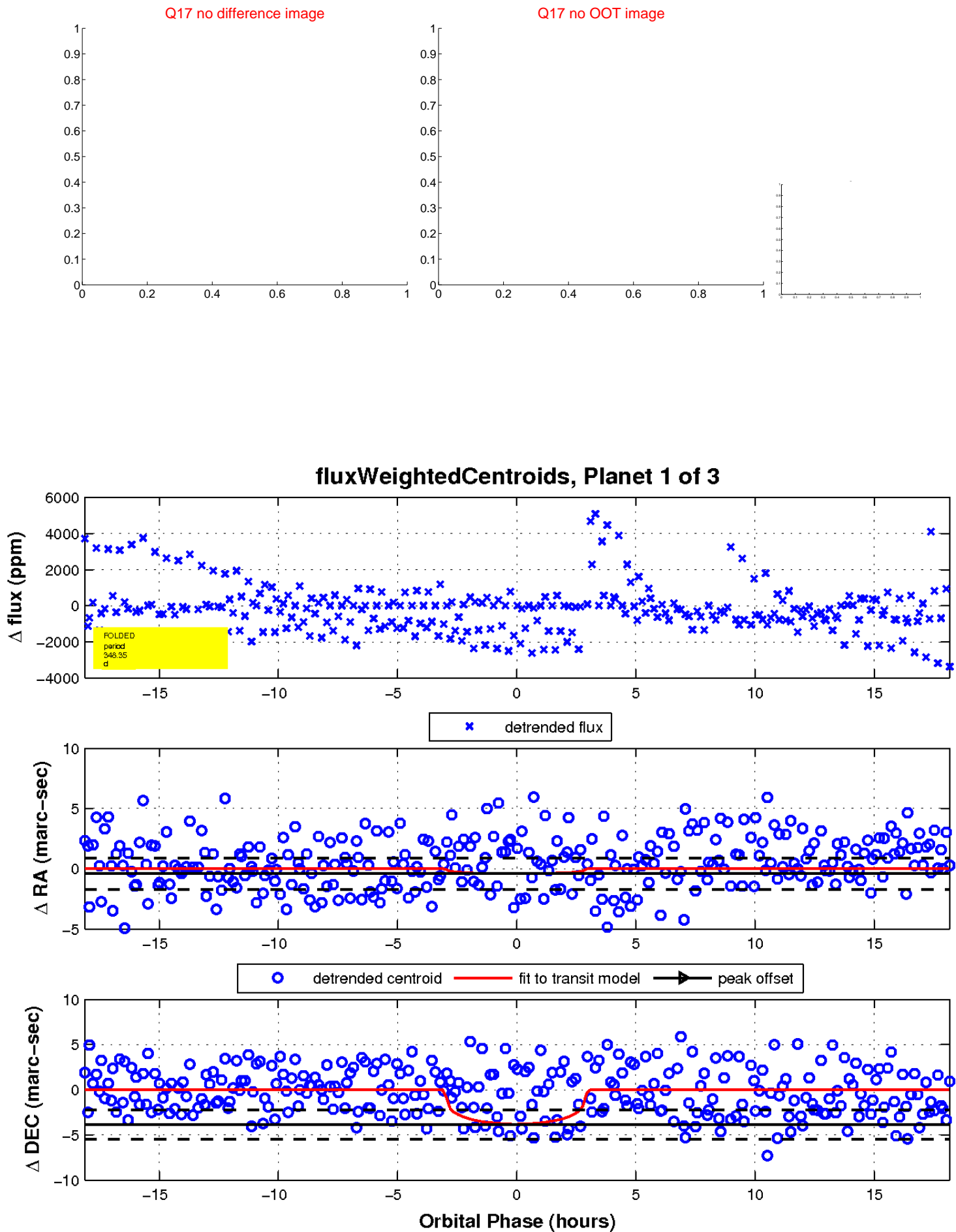
Q16 no difference image



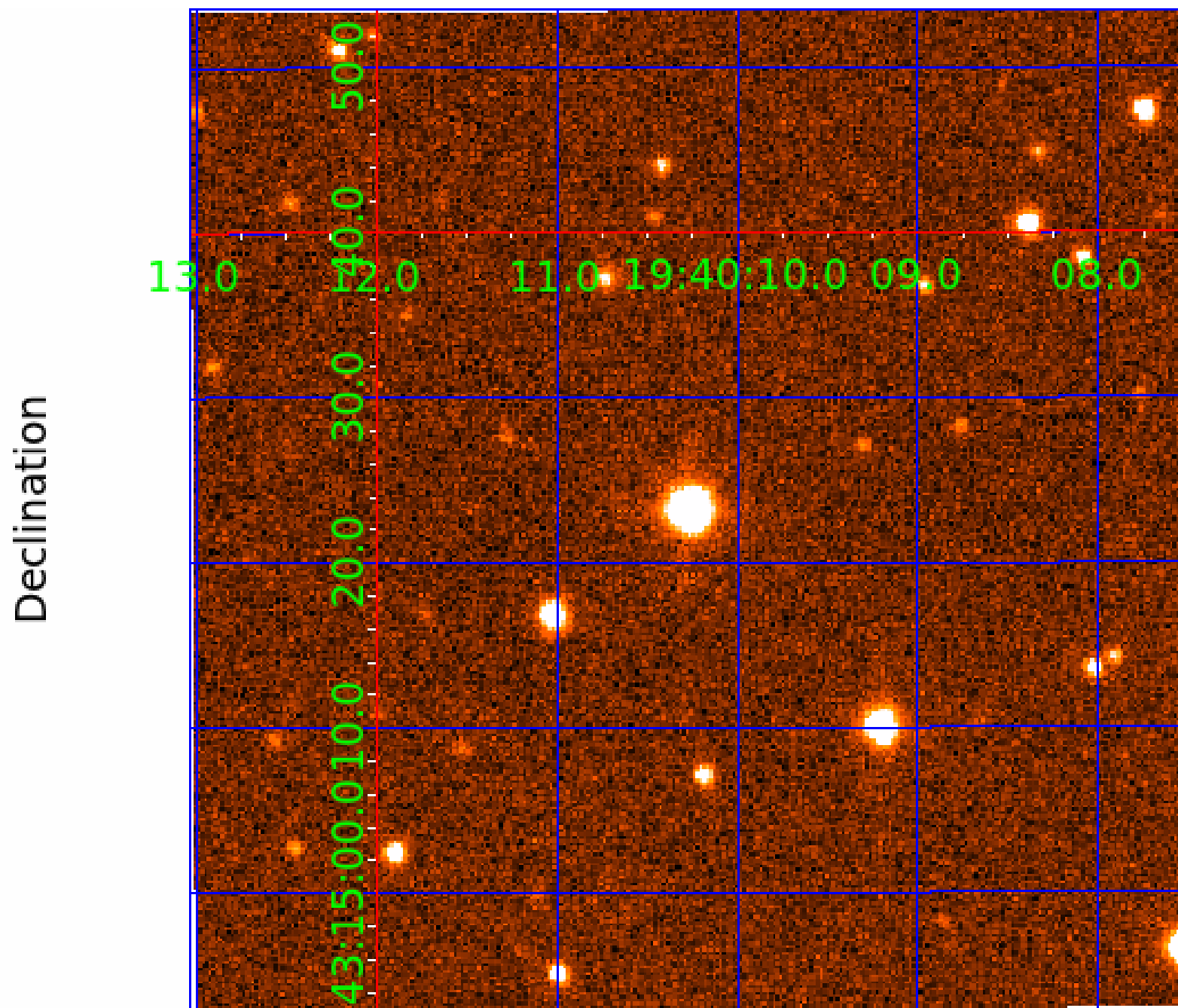
Q16 no OOT image



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



UKIRT Image



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007618645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007618645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS

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

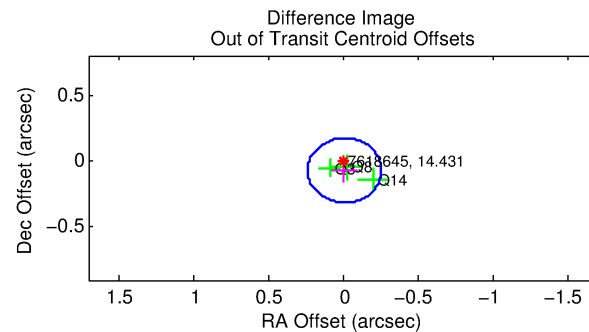
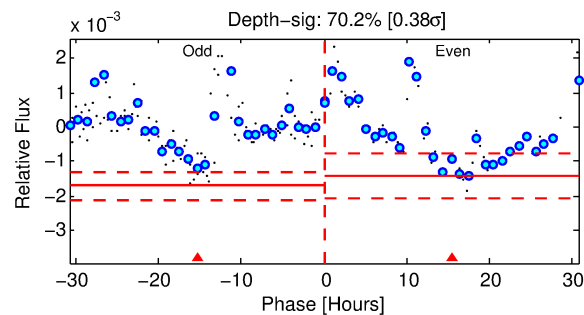
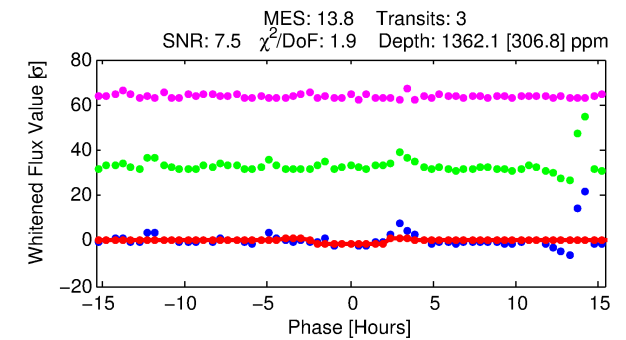
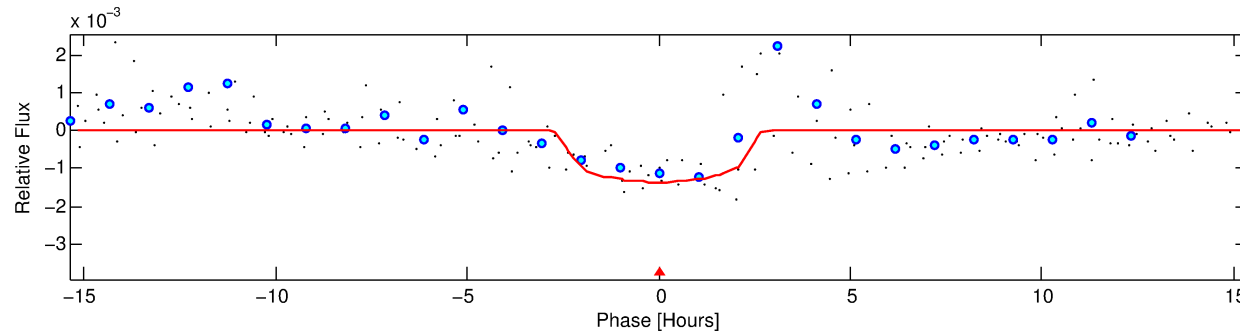
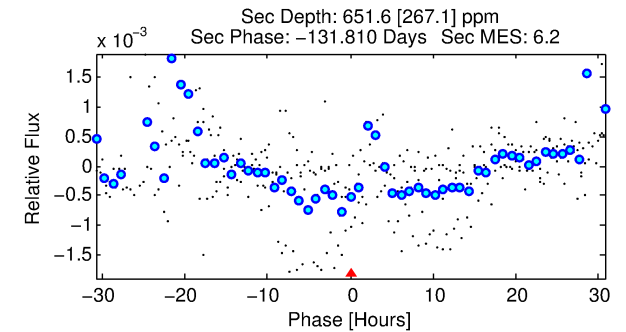
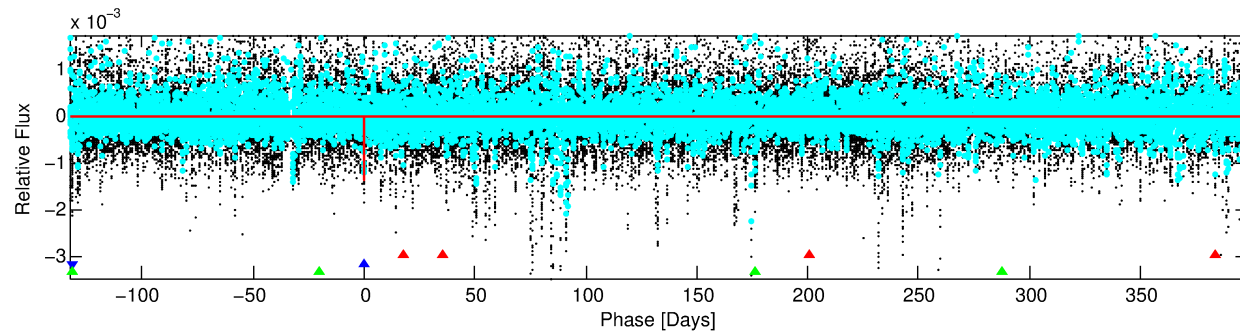
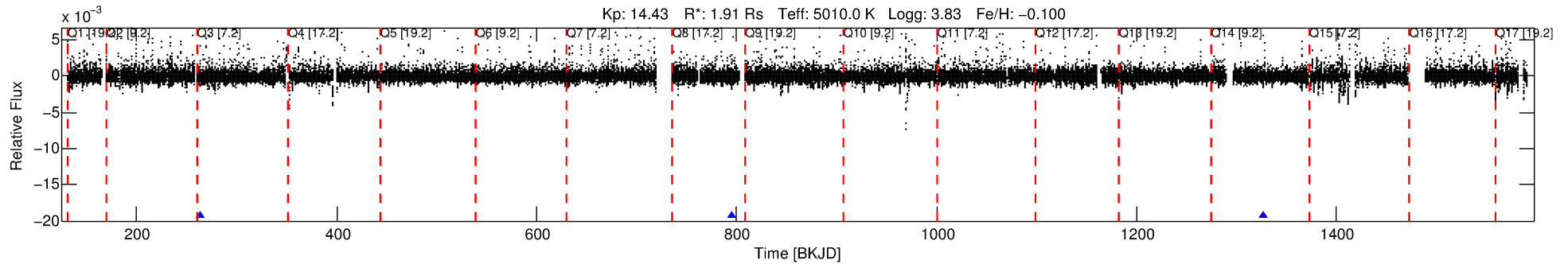
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007618645-02

No Significant Match Found

# DV One-Page Summary

KIC: 7618645 Candidate: 2 of 3 Period: 531.583 d



## DV Fit Results:

Period = 531.58289 [0.00764] d  
Epoch = 264.2210 [0.0099] BKJD  
Rp/R\* = 0.0349 [0.0353]  
a/R\* = 666.97 [2306.95]  
b = 0.60 [3.73]  
Seff = 1.34 [1.65]  
Teq = 274 [85] K  
Rp = 7.29 [8.73] Re  
a = 1.2395 [0.8881] AU  
Ag = 10370.54 [24889.54] [0.42 $\sigma$ ]  
Teffp = 4282 [2212] K [1.81 $\sigma$ ]

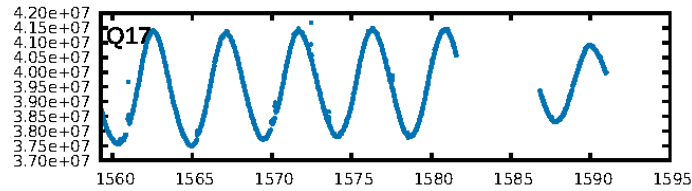
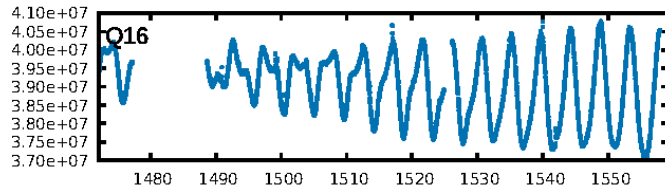
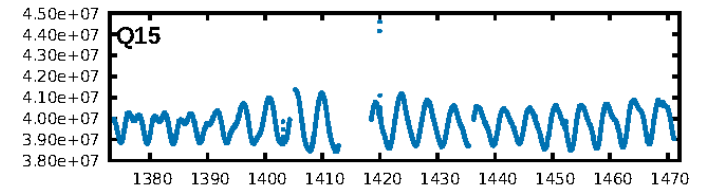
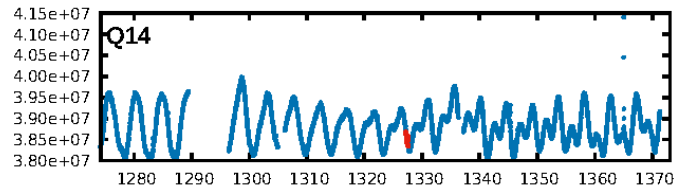
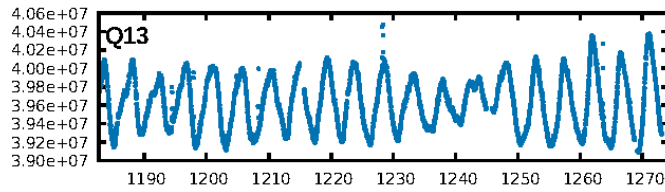
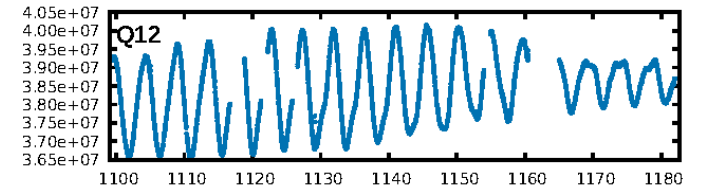
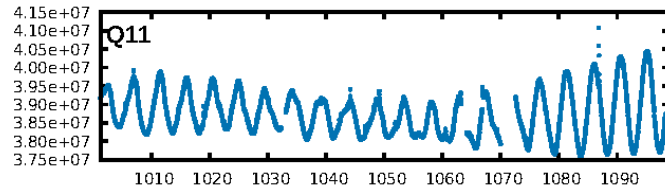
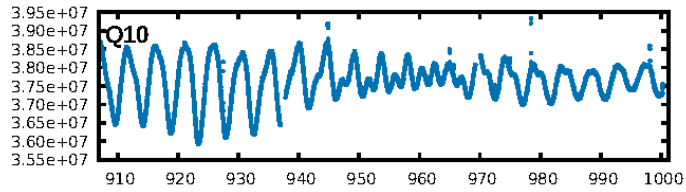
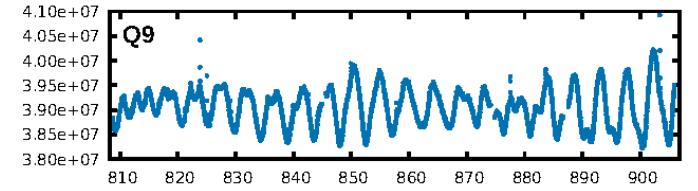
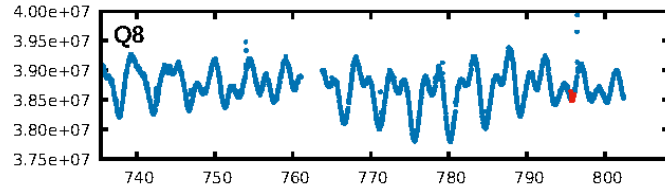
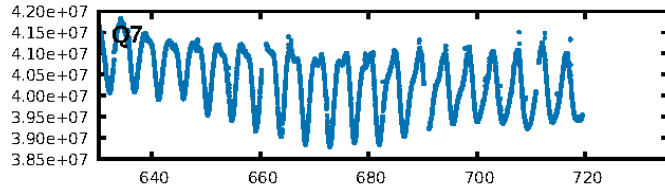
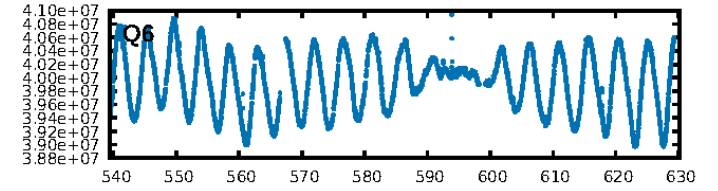
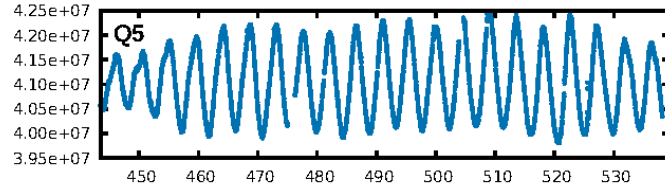
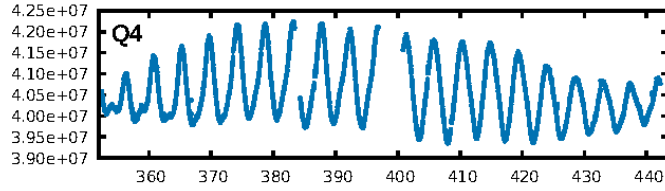
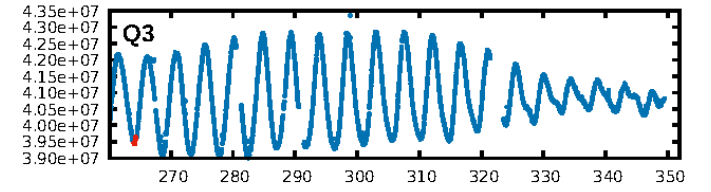
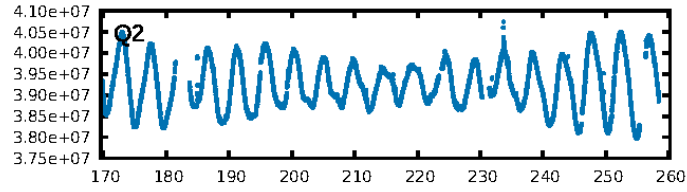
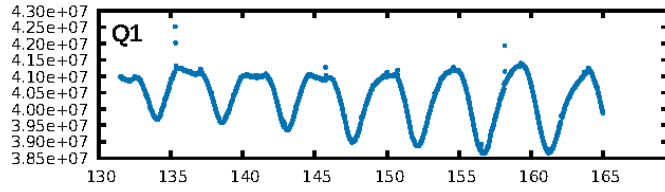
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [404.93 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 7.5%  
ModelChiSquareGof-sig: 32.1%  
**Bootstrap-pfa: 2.51e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.248  
Centroid-sig: 20.7%  
Centroid-so: 1.375 arcsec [1.83 $\sigma$ ]  
OotOffset-rm: 0.072 arcsec [0.88 $\sigma$ ]  
KicOffset-rm: 0.086 arcsec [0.74 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

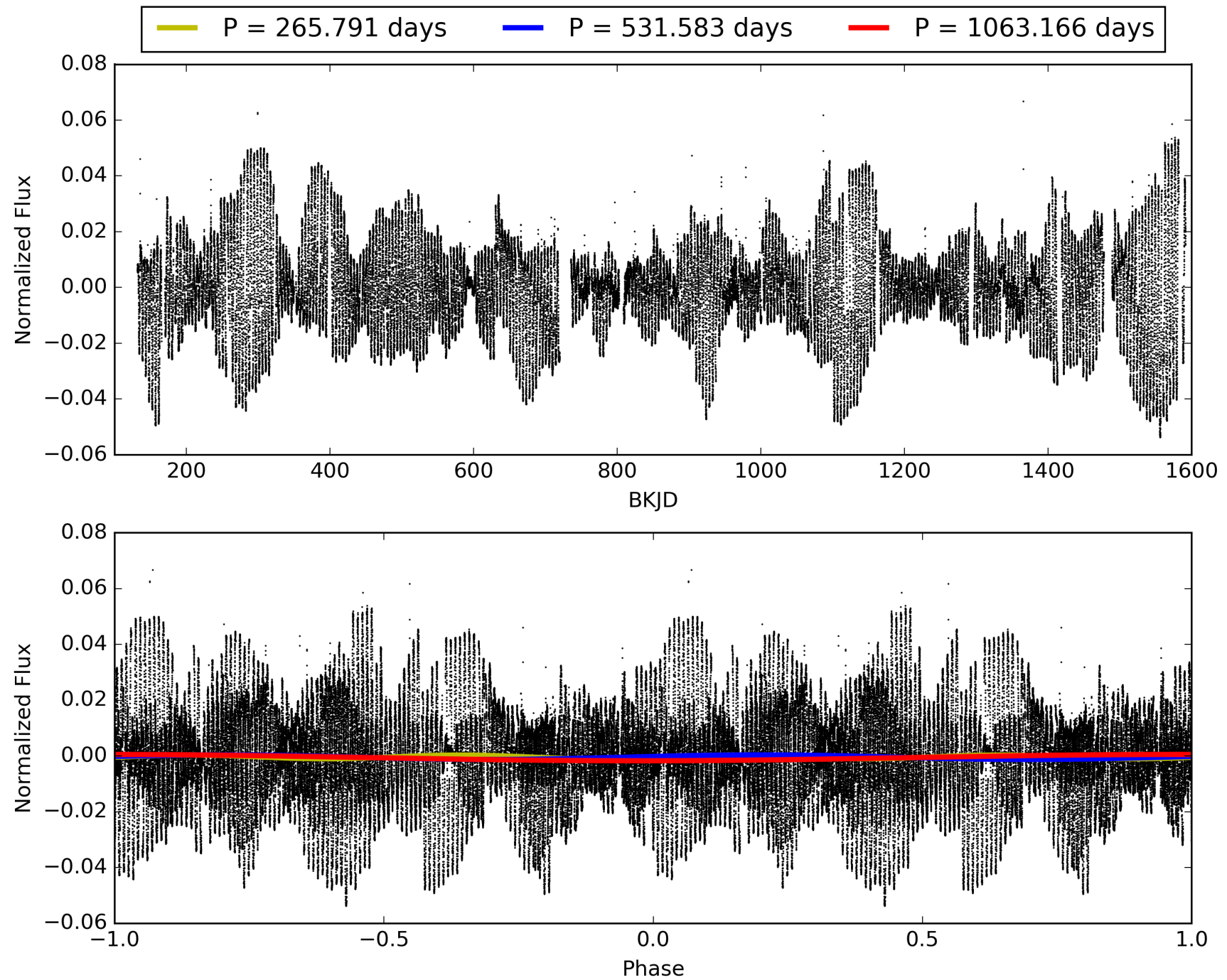
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:59:44 Z

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

# TCE 007618645-02, PDC Light Curves



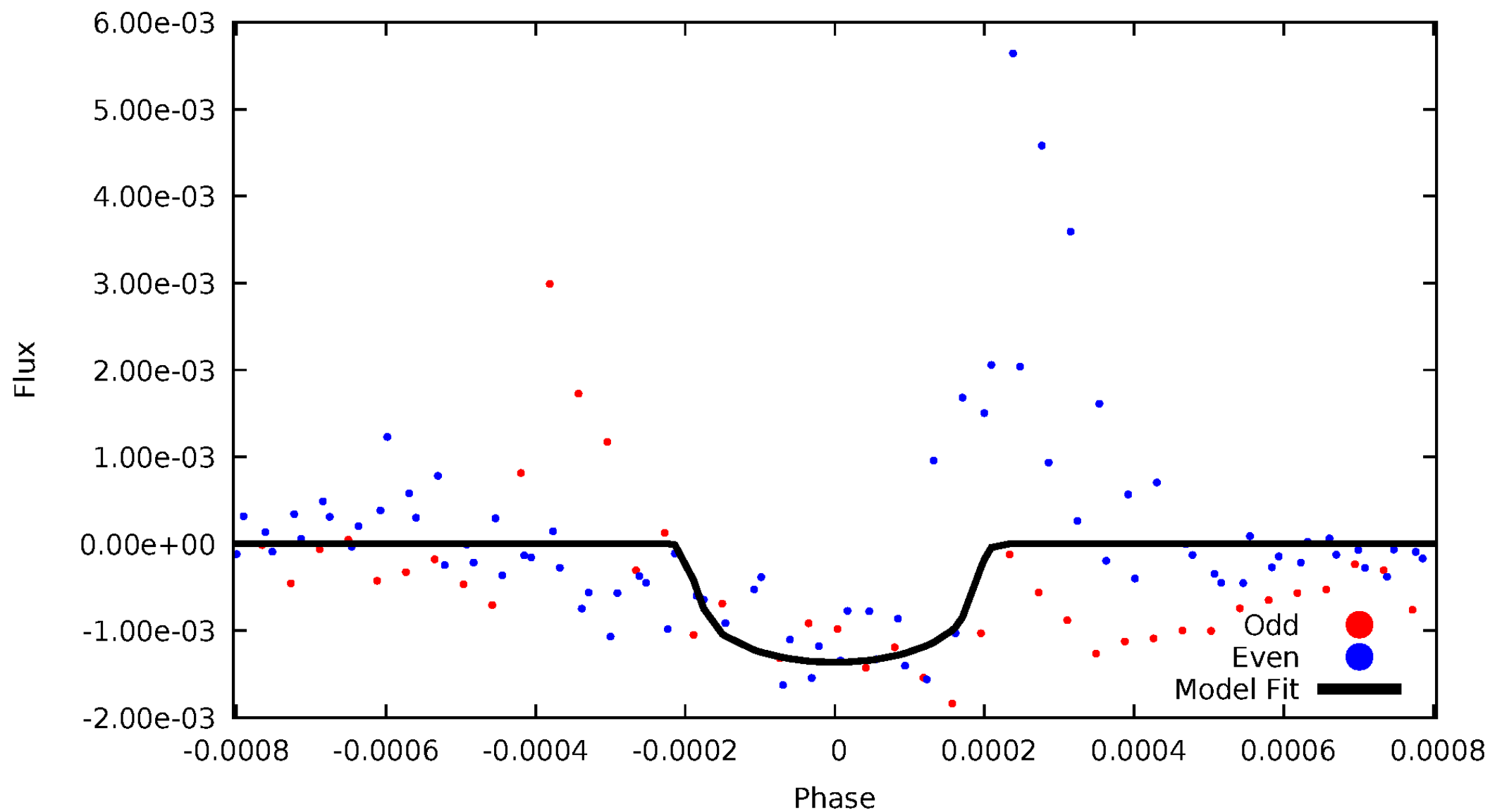
# TCE 007618645-02





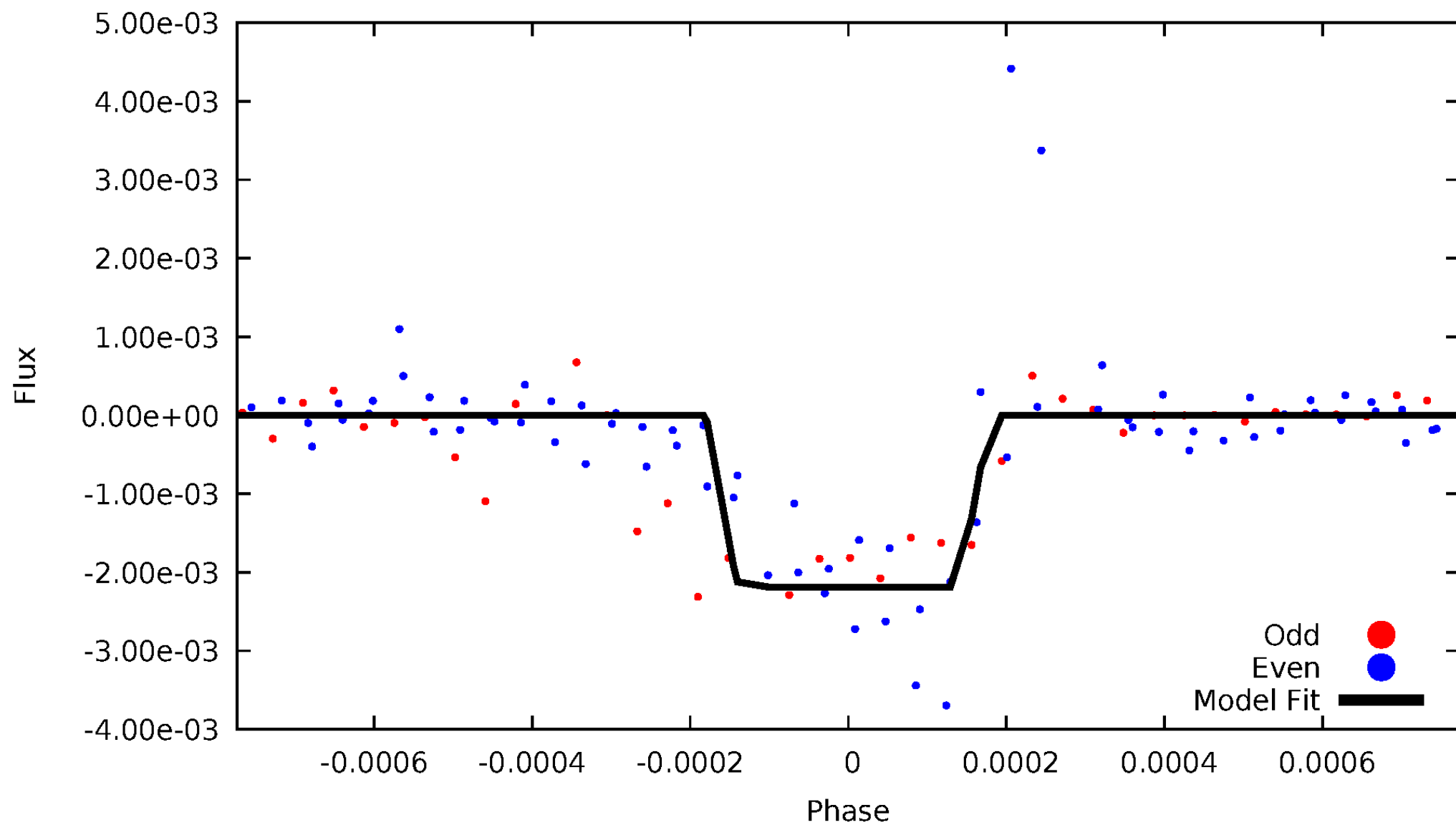
# DV Odd/Even

TCE 007618645-02



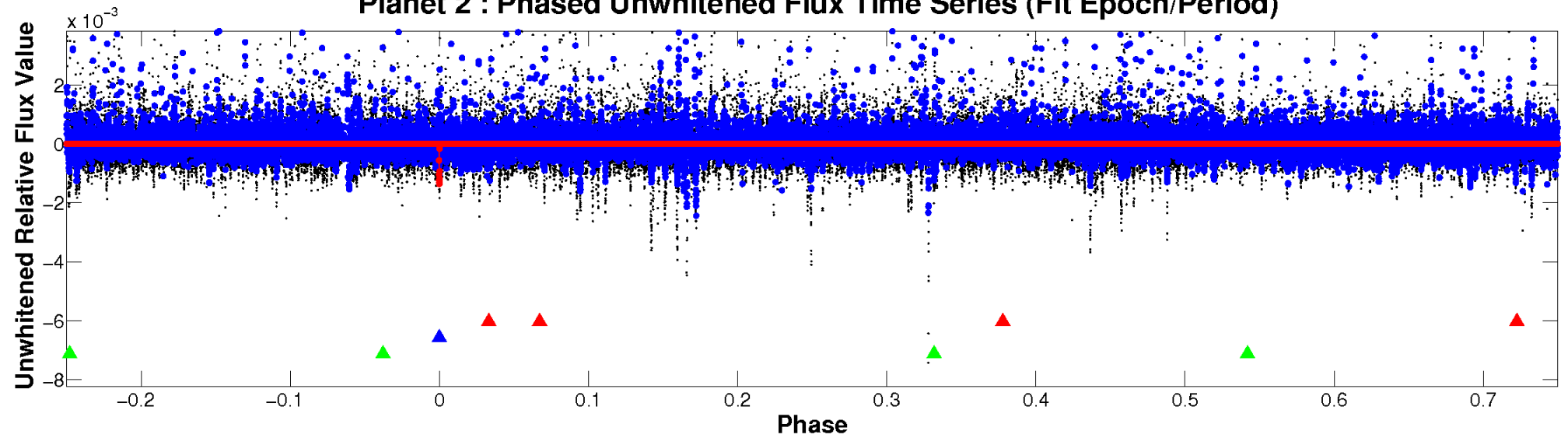
# ALT Odd/Even

TCE 007618645-02

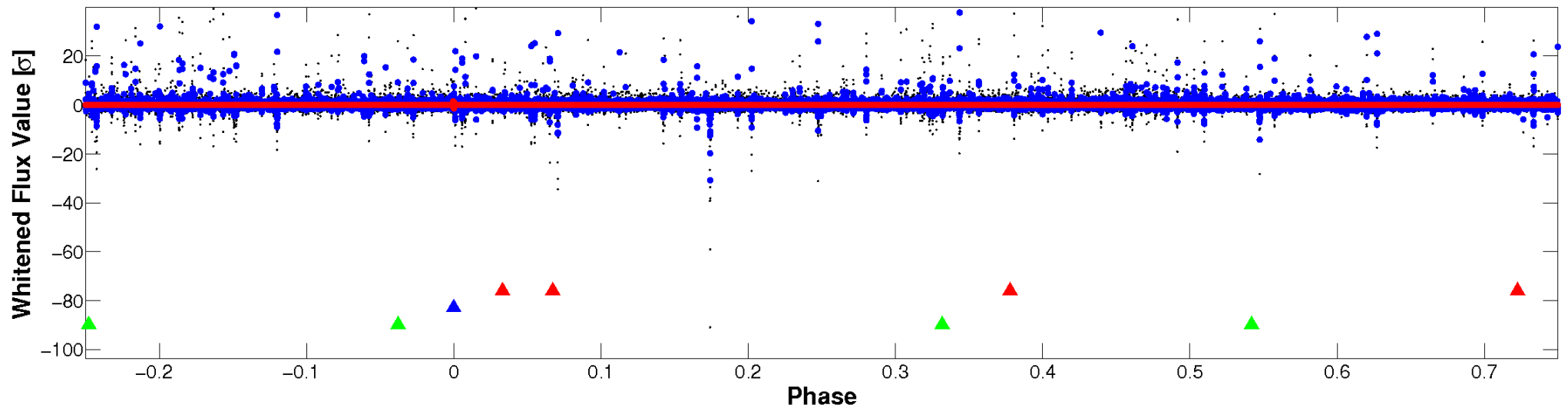


# Non-Whitened Vs. Whitened Light Curve

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

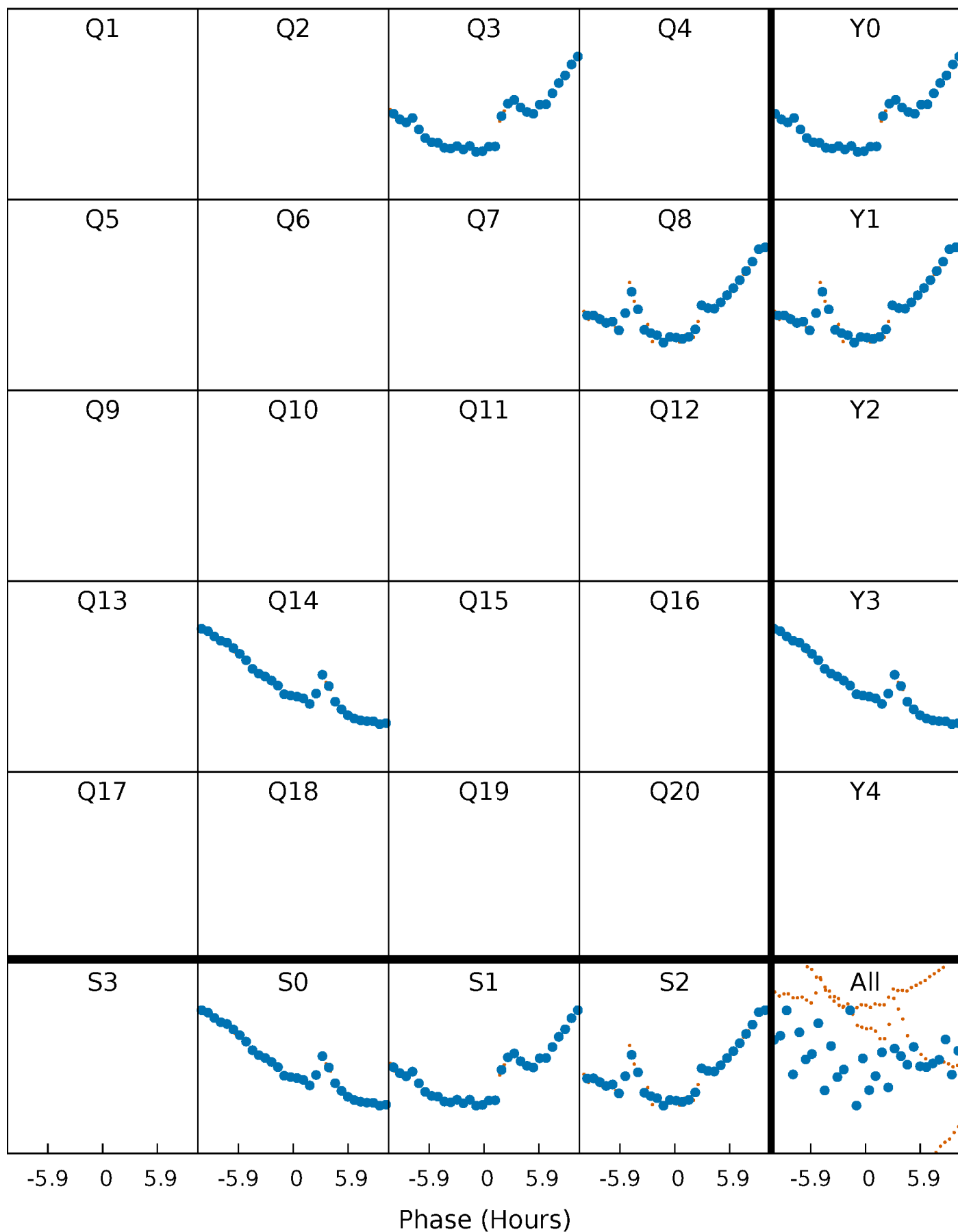


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



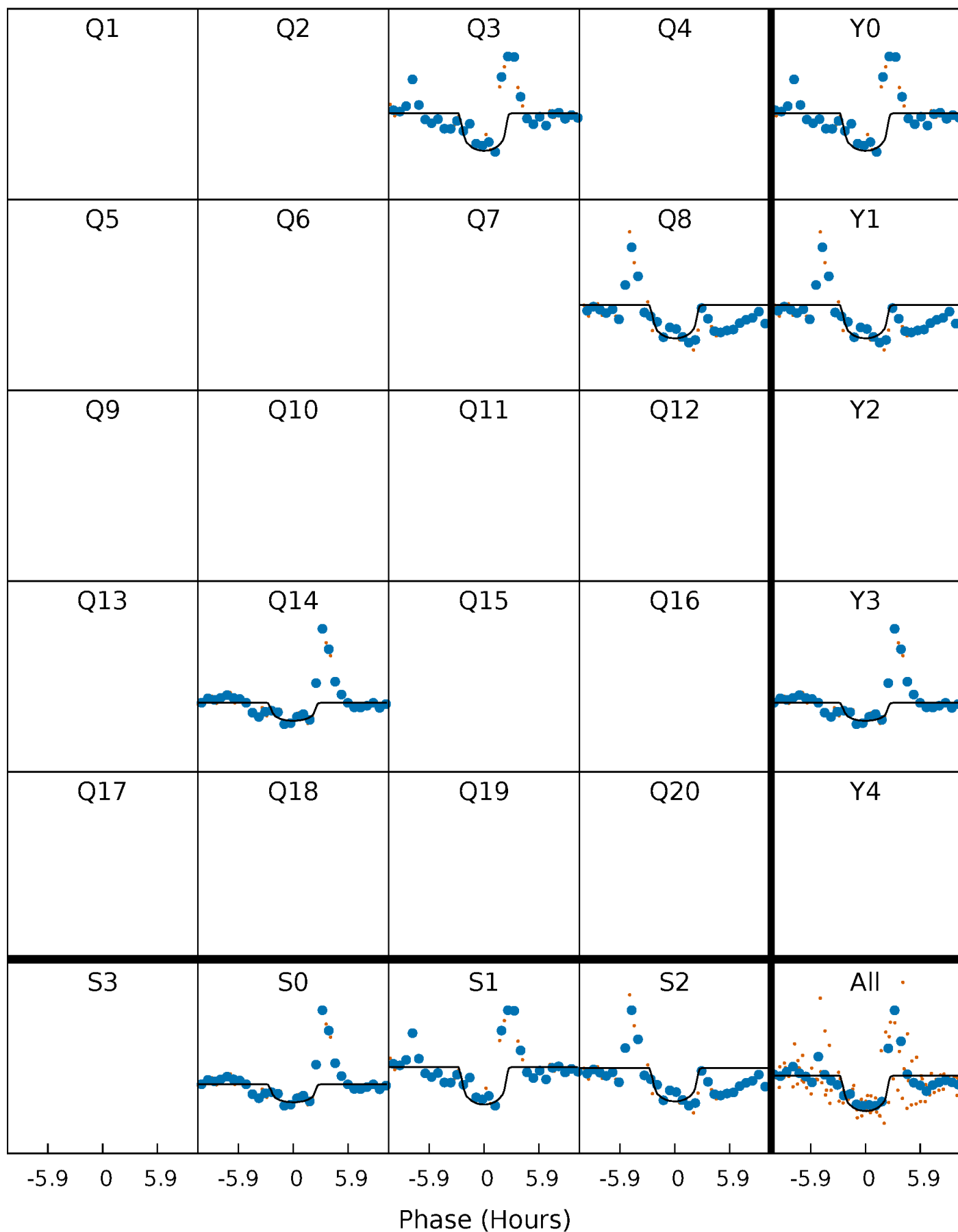
# PDC Quarter-Phased Transit Curves

TCE 007618645-02 P=531.582886 Days  $T_0=264.221026$  (BKJD)



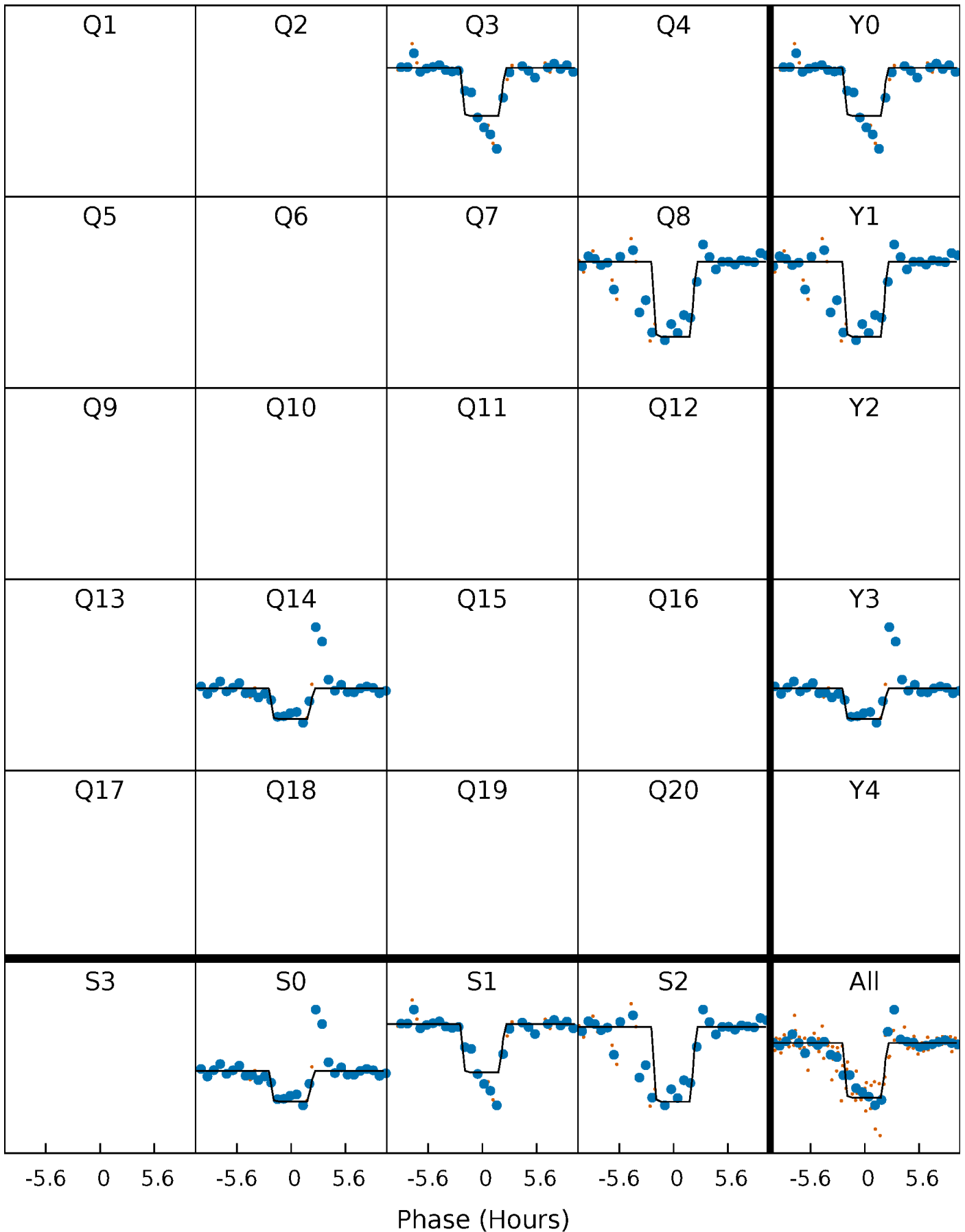
# DV Quarter-Phased Transit Curves

TCE 007618645-02     $P=531.582886$  Days     $T_0=264.221026$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

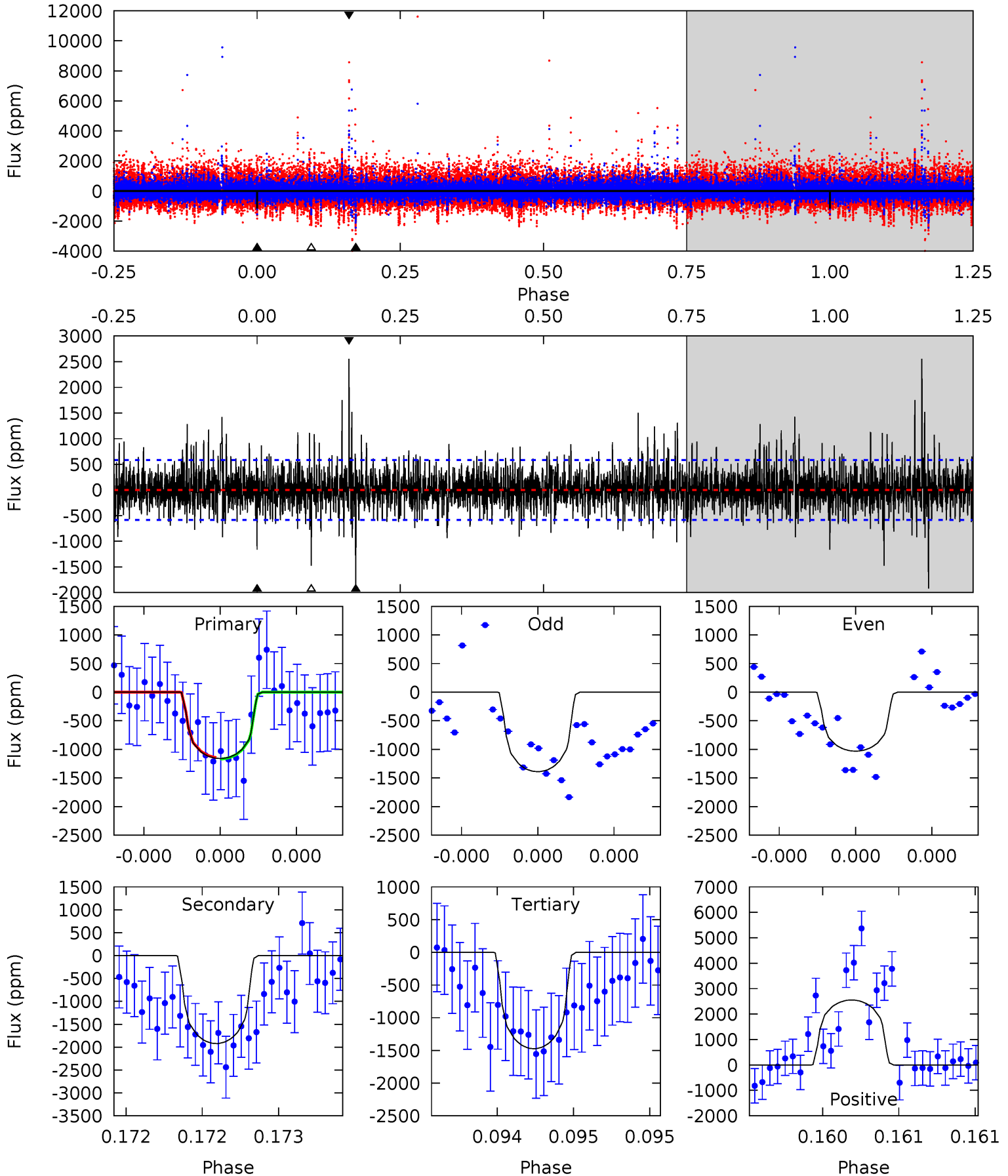
TCE 007618645-02 P=531.599497 Days  $T_0=264.204985$  (BKJD)



# DV Model-Shift Uniqueness Test

007618645-02, P = 531.582886 Days, E = 264.221026 Days

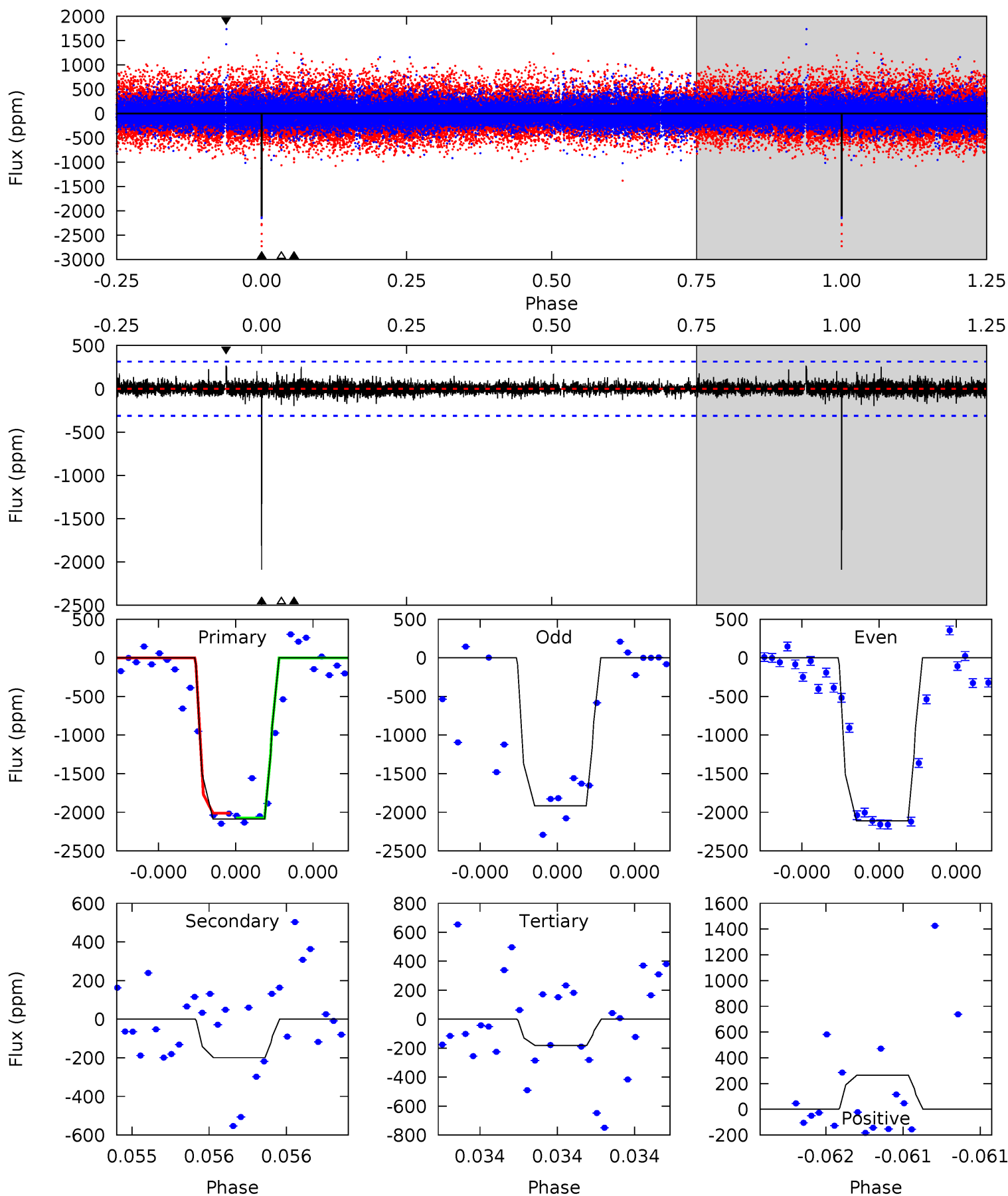
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	18.4	14.1	24.5	5.60	3.53	2.69	-3.02	-13.4	4.29	-6.07	1.08	0.88	0.57	0.12



# Alt Model-Shift Uniqueness Test

007618645-02, P = 531.599497 Days, E = 264.204985 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
37.6	3.59	3.27	4.78	5.64	3.58	0.63	34.3	32.8	0.32	-1.19	1.62	1.07	0.11	0.59





### Stellar Parameters For KIC 007618645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5010^{+151}_{-136}$	$3.829^{+0.749}_{-0.321}$	$-0.100^{+0.300}_{-0.300}$	$1.911^{+1.003}_{-1.226}$	$0.899^{+0.209}_{-0.174}$	$0.181^{+2.517}_{-0.122}$
	+3%/-3%	+20%/-8%	+300%/-300%	+52%/-64%	+23%/-19%	+1387%/-67%
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 007618645-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1922 \pm 104$	$7.78^{+8.15}_{-5.20}$	$379^{+56}_{-60}$	$5131^{+3843}_{-1049}$	$27226^{+211831}_{-20458}$
Alt.	$-199 \pm 56$	$9.63^{+8.76}_{-5.70}$	$382^{+52}_{-73}$	$3169^{+975}_{-420}$	$1716^{+10059}_{-1248}$

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

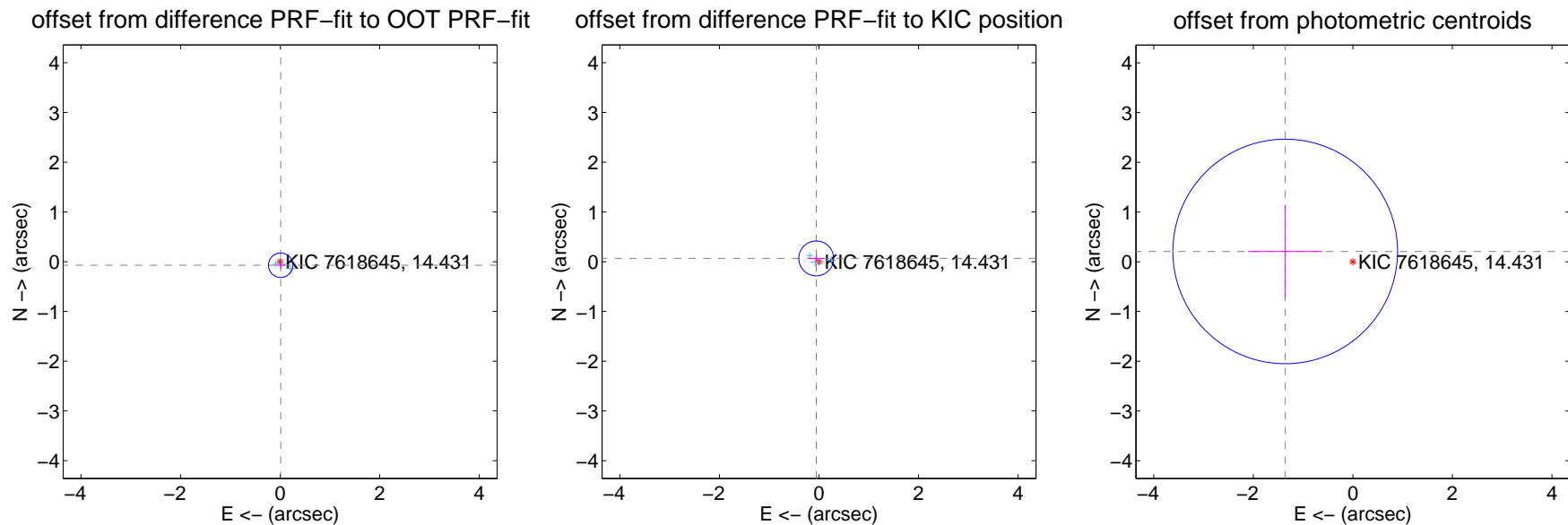
## DV Centroid Data

Supplemental centroid analysis for 007618645-02. Kepler magnitude: 14.43. Transit SNR 7.54

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.072 \pm 0.082$	0.88	$-0.012 \pm 0.085$	$-0.071 \pm 0.082$
PRF-fit source offset from KIC position	$0.086 \pm 0.117$	0.74	$0.055 \pm 0.154$	$0.066 \pm 0.081$
photometric centroid source offset	$1.37 \pm 0.75$	1.83	$1.36 \pm 0.75$	$0.21 \pm 0.94$



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



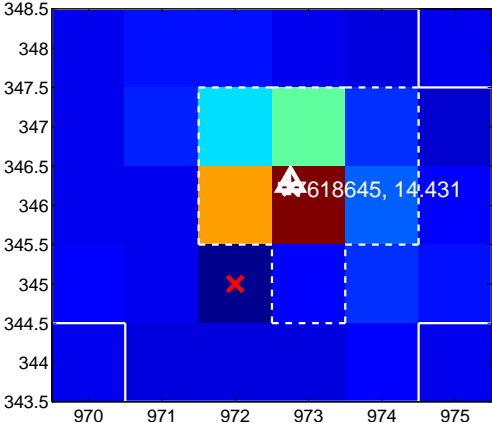
Q2 no difference image



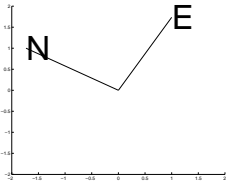
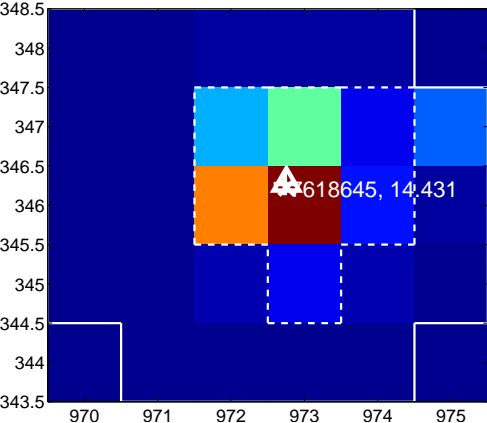
Q2 no OOT image



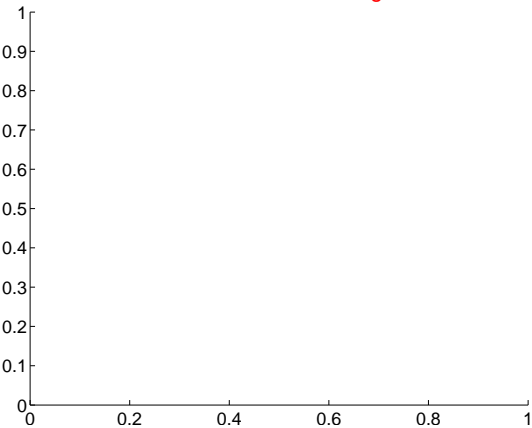
Q3 difference image



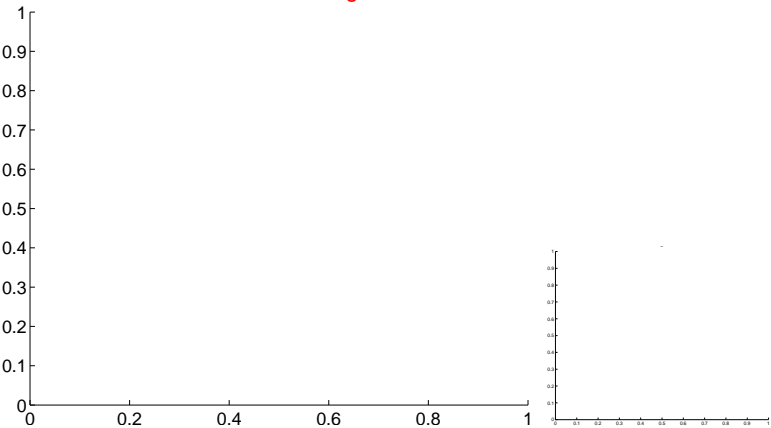
Q3 OOT image



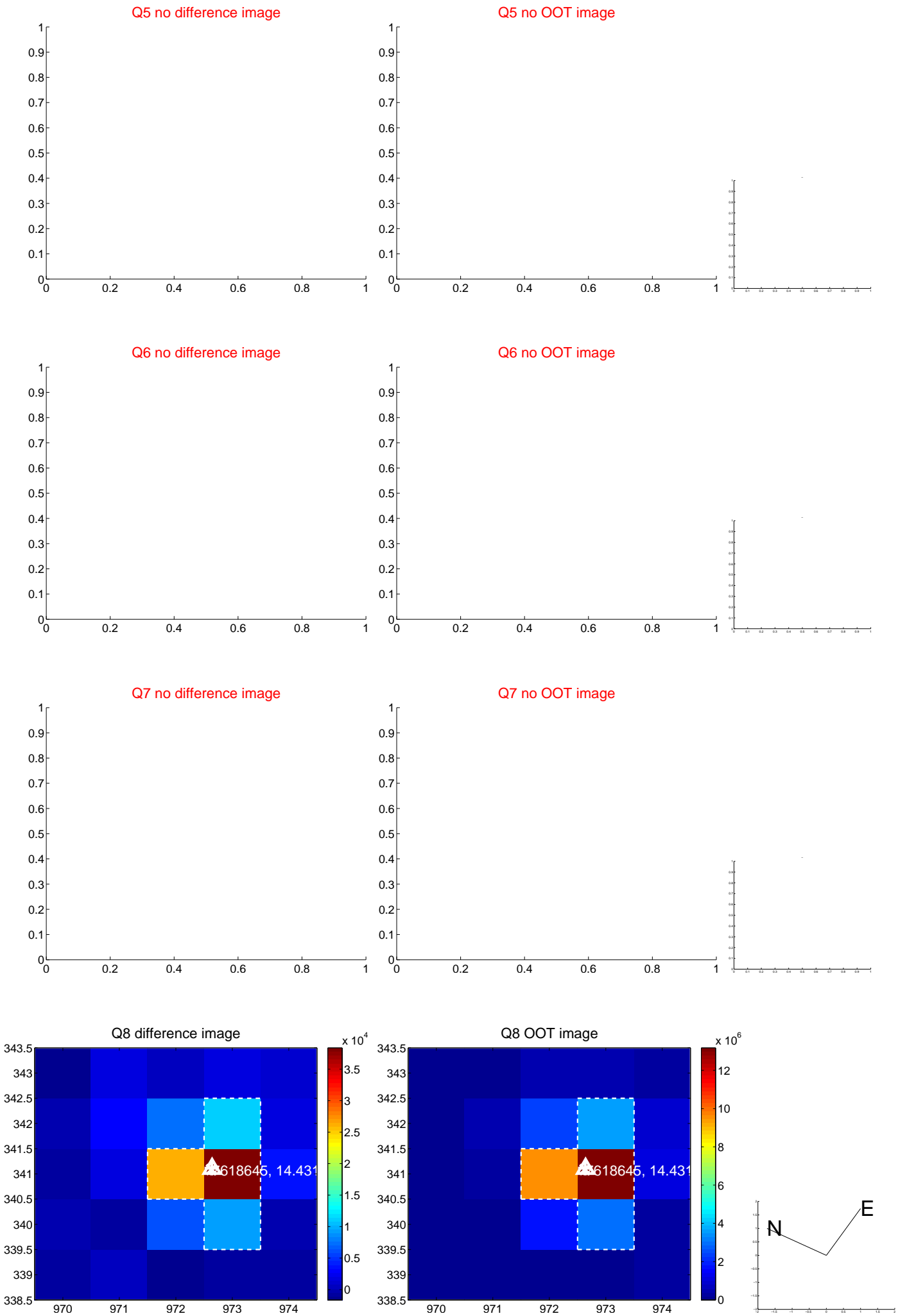
Q4 no difference image



Q4 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.



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

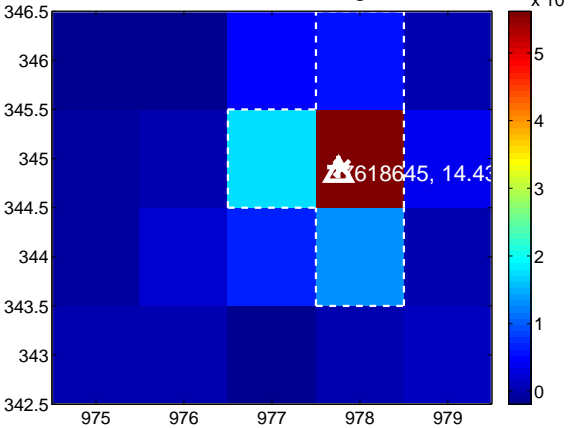
Q13 no difference image



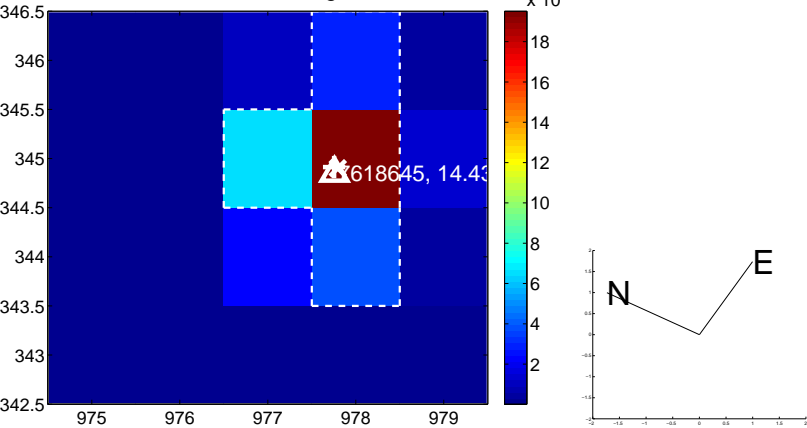
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



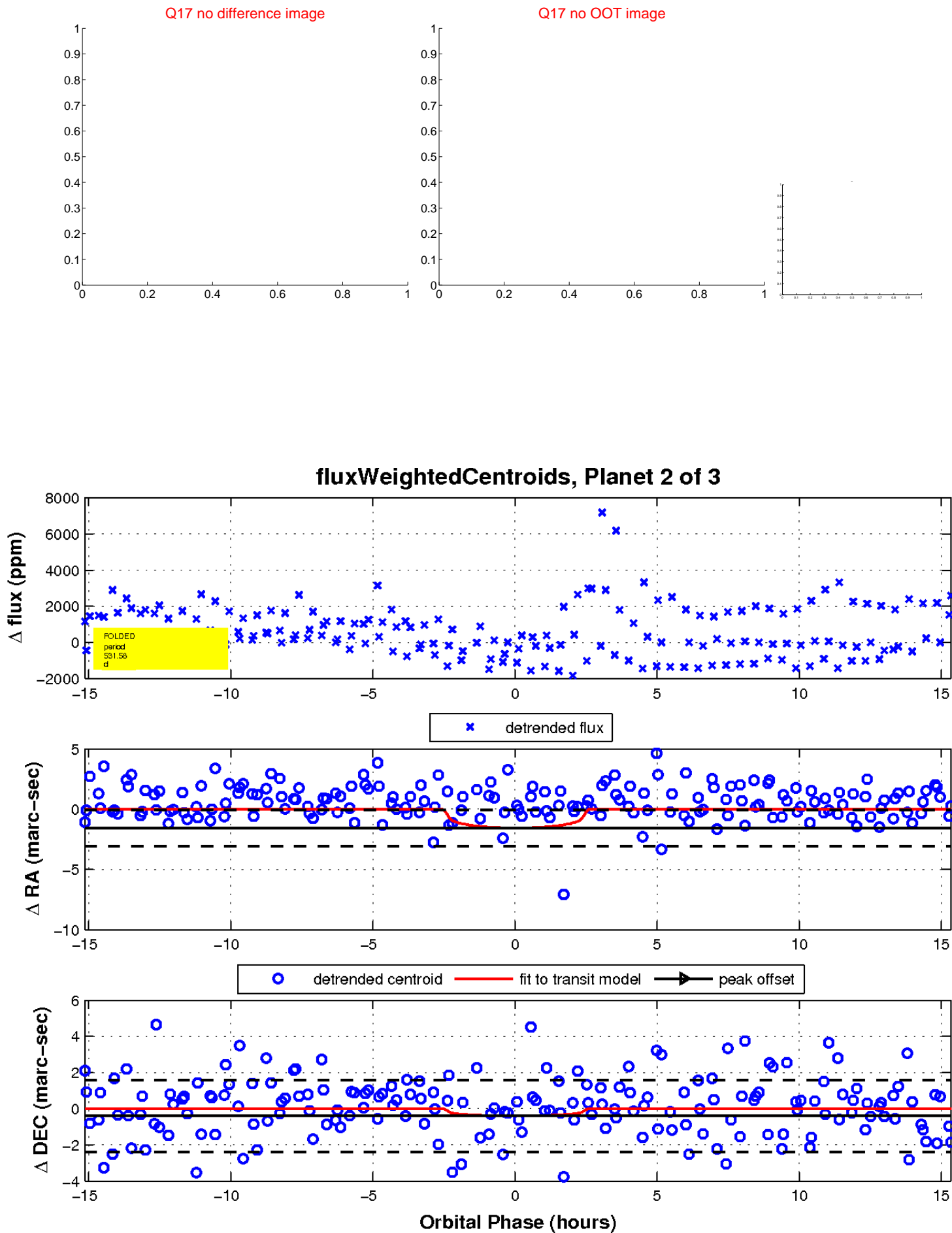
Q16 no difference image



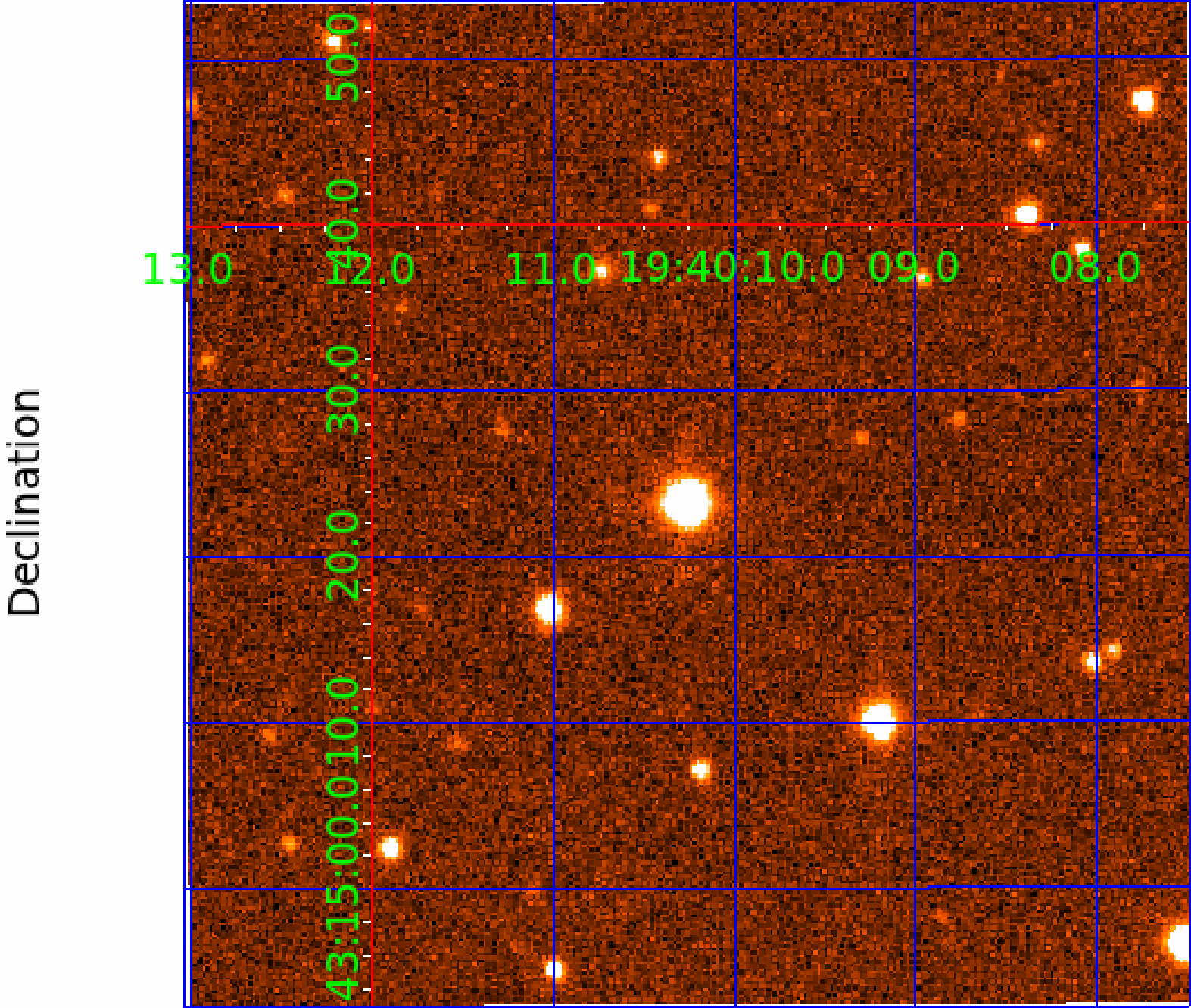
Q16 no OOT image



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



UKIRT Image





# KIC 007618645

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007618645-01	OBS	No	348.346823	299.976570	1112.5	6.081	14.5	7.1	1.91	5010	6.47	2.36
007618645-02	OBS	No	531.582886	264.221026	1362.1	5.128	13.8	7.5	1.91	5010	7.29	1.34
007618645-03	OBS	No	419.867087	244.146714	1022.4	4.189	12.6	7.6	1.91	5010	6.23	1.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007618645-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007618645-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007618645-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS

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

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

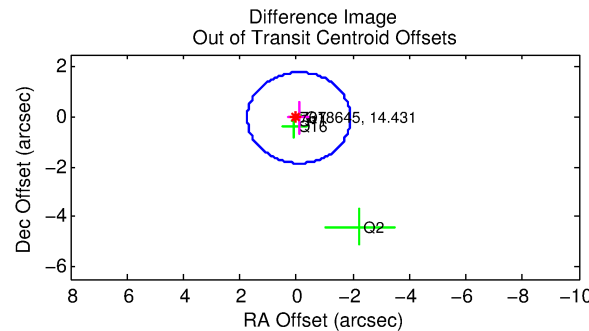
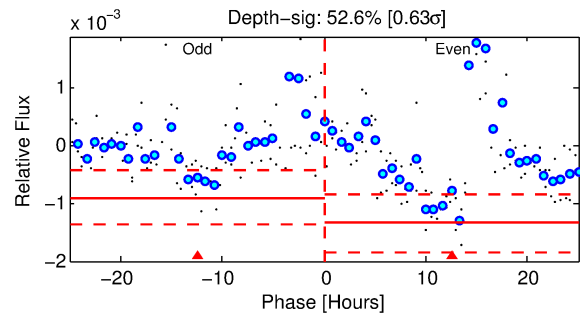
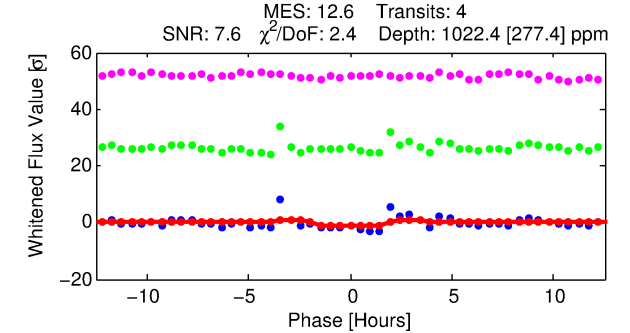
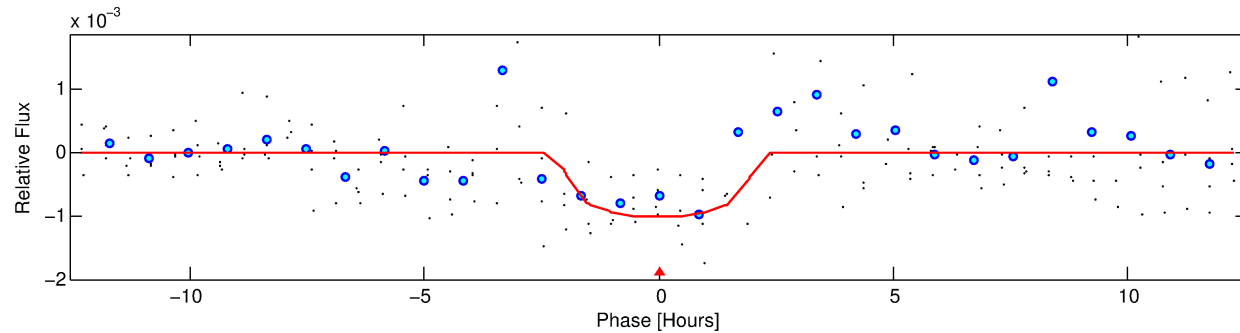
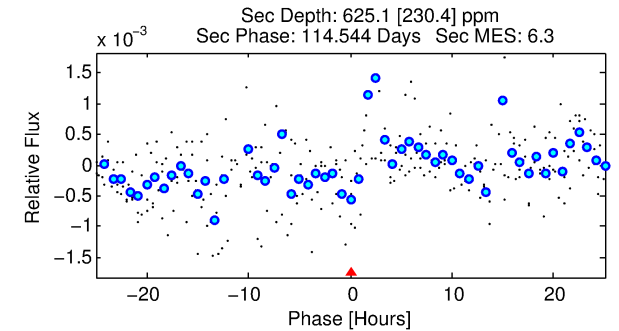
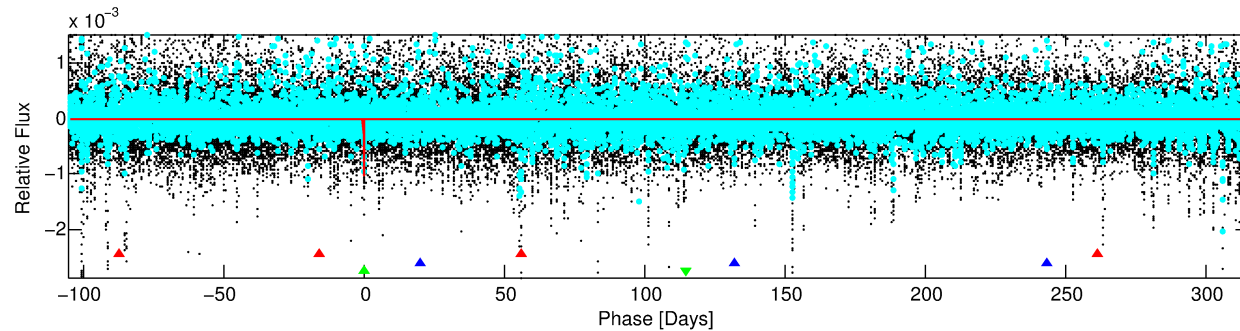
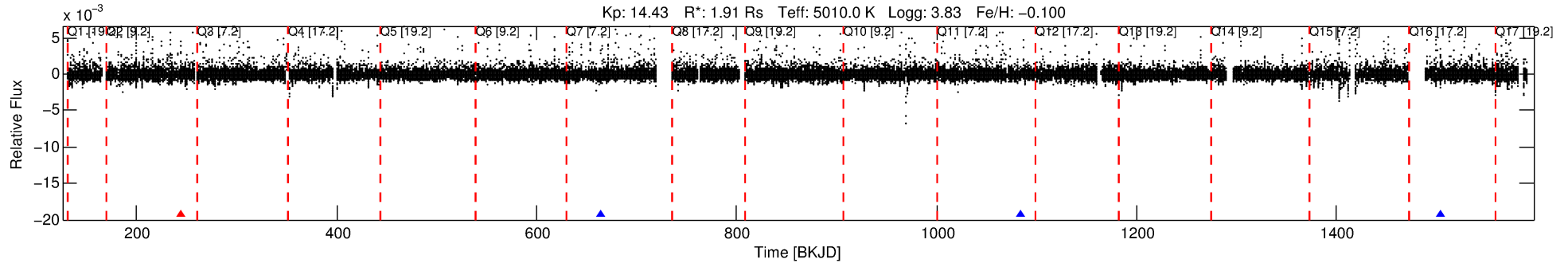
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007618645-03

No Significant Match Found

# DV One-Page Summary

KIC: 7618645 Candidate: 3 of 3 Period: 419.867 d



## DV Fit Results:

Period = 419.86709 [0.00593] d  
Epoch = 244.1467 [0.0117] BKJD  
Rp/R\* = 0.0299 [0.0807]  
a/R\* = 669.34 [6306.61]  
b = 0.54 [12.41]  
Seff = 1.84 [2.27]  
Teq = 297 [91] K  
Rp = 6.23 [17.30] Re  
a = 1.0591 [0.7589] AU  
Ag = 9947.57 [55275.91] [0.18 $\sigma$ ]  
Teffp = 4584 [6213] K [0.69 $\sigma$ ]

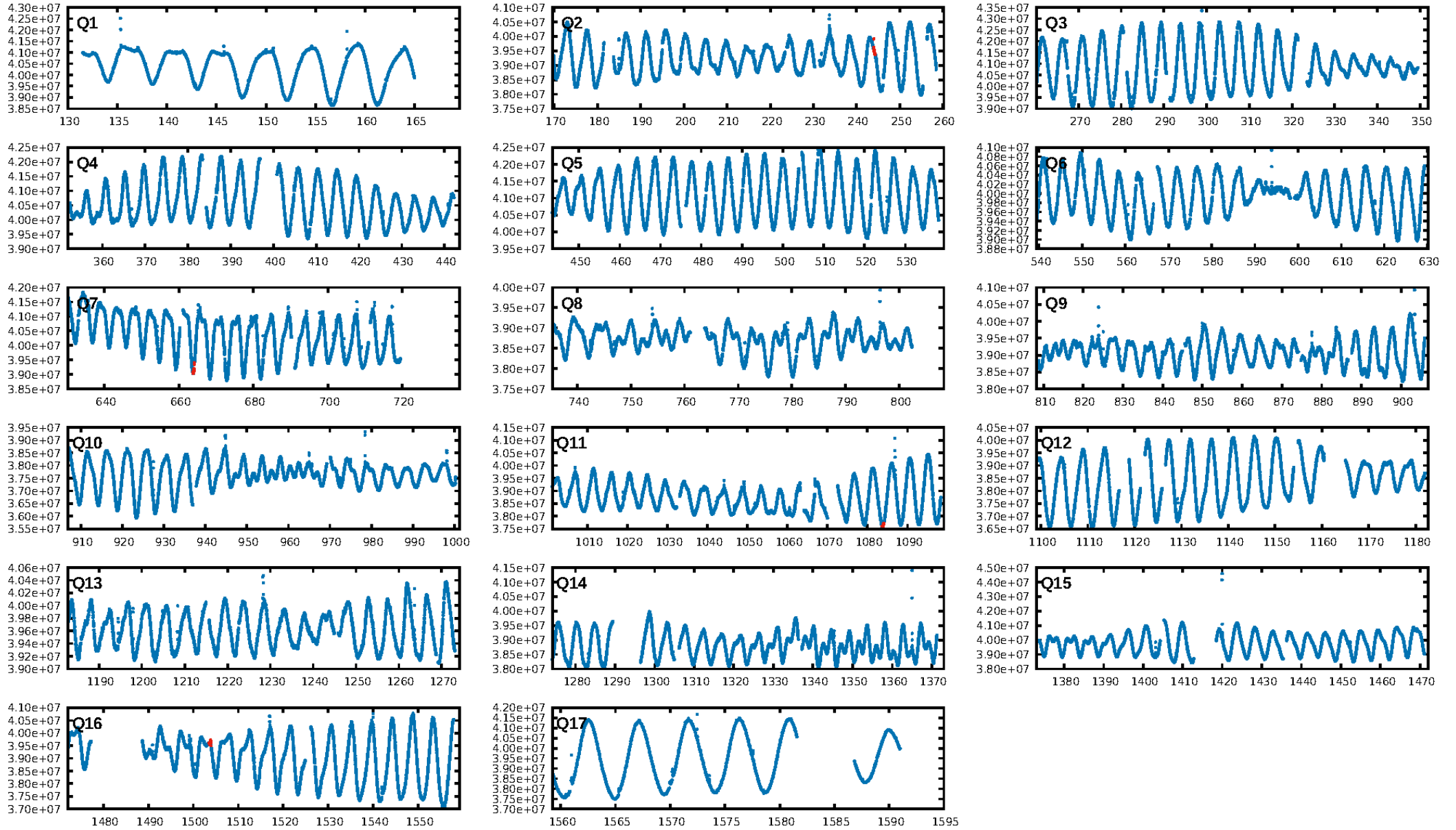
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [232.44 $\sigma$ ]  
LongPeriod-sig: 100.0% [404.93 $\sigma$ ]  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 14.5%  
**Bootstrap-pfa: 2.63e-11**  
**RollingBand-fgt: 0.75 [3/4]**  
GhostDiagnostic-chr: -1.886  
Centroid-sig: 49.7%  
Centroid-so: 0.546 arcsec [0.51 $\sigma$ ]  
OotOffset-rm: 0.095 arcsec [0.16 $\sigma$ ]  
OotOffset-st: 1/2/1/0 [4]  
KicOffset-rm: 0.099 arcsec [0.11 $\sigma$ ]  
KicOffset-st: 1/2/1/0 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 1.00 [4/4]

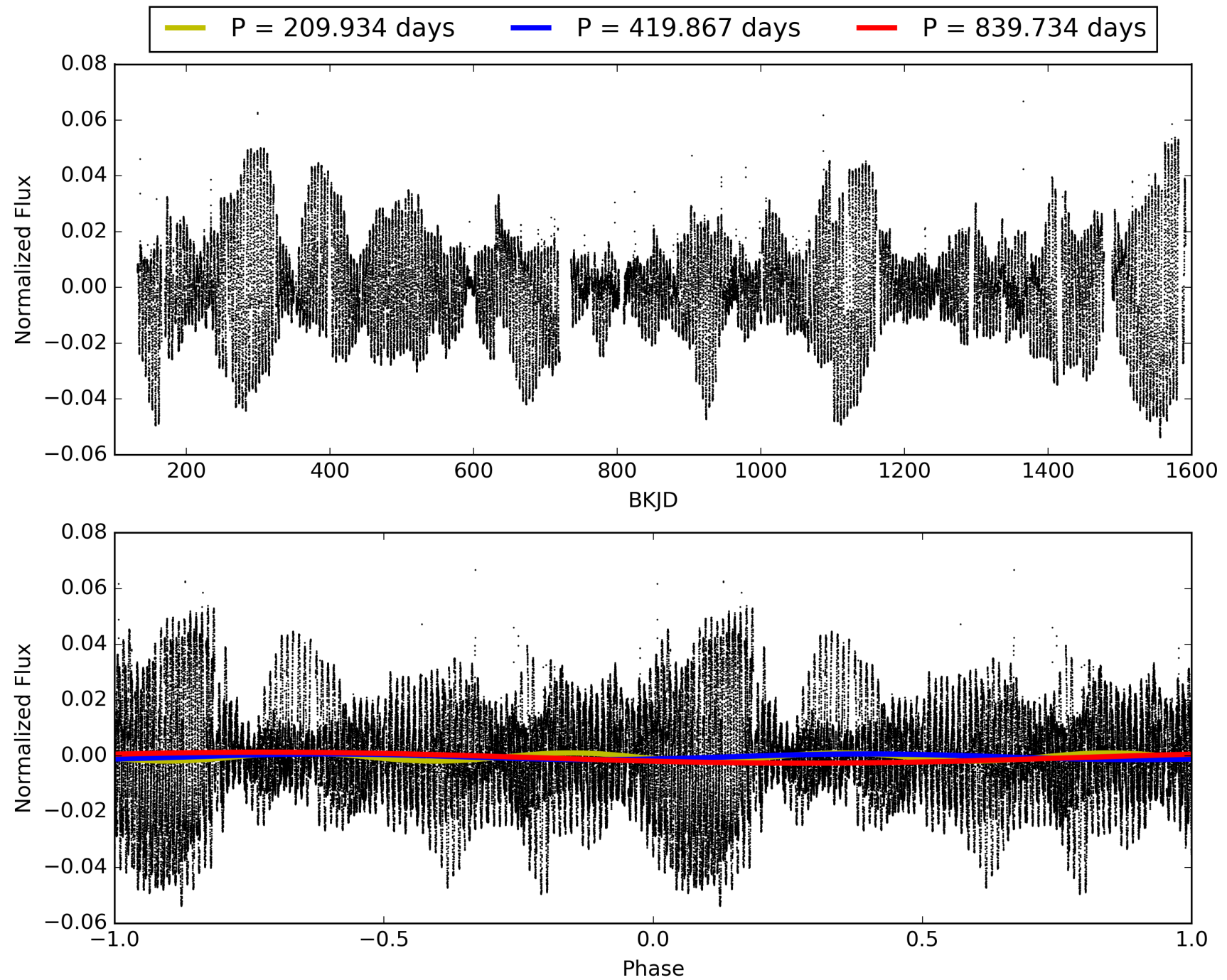
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:00:00 Z

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

# TCE 007618645-03, PDC Light Curves

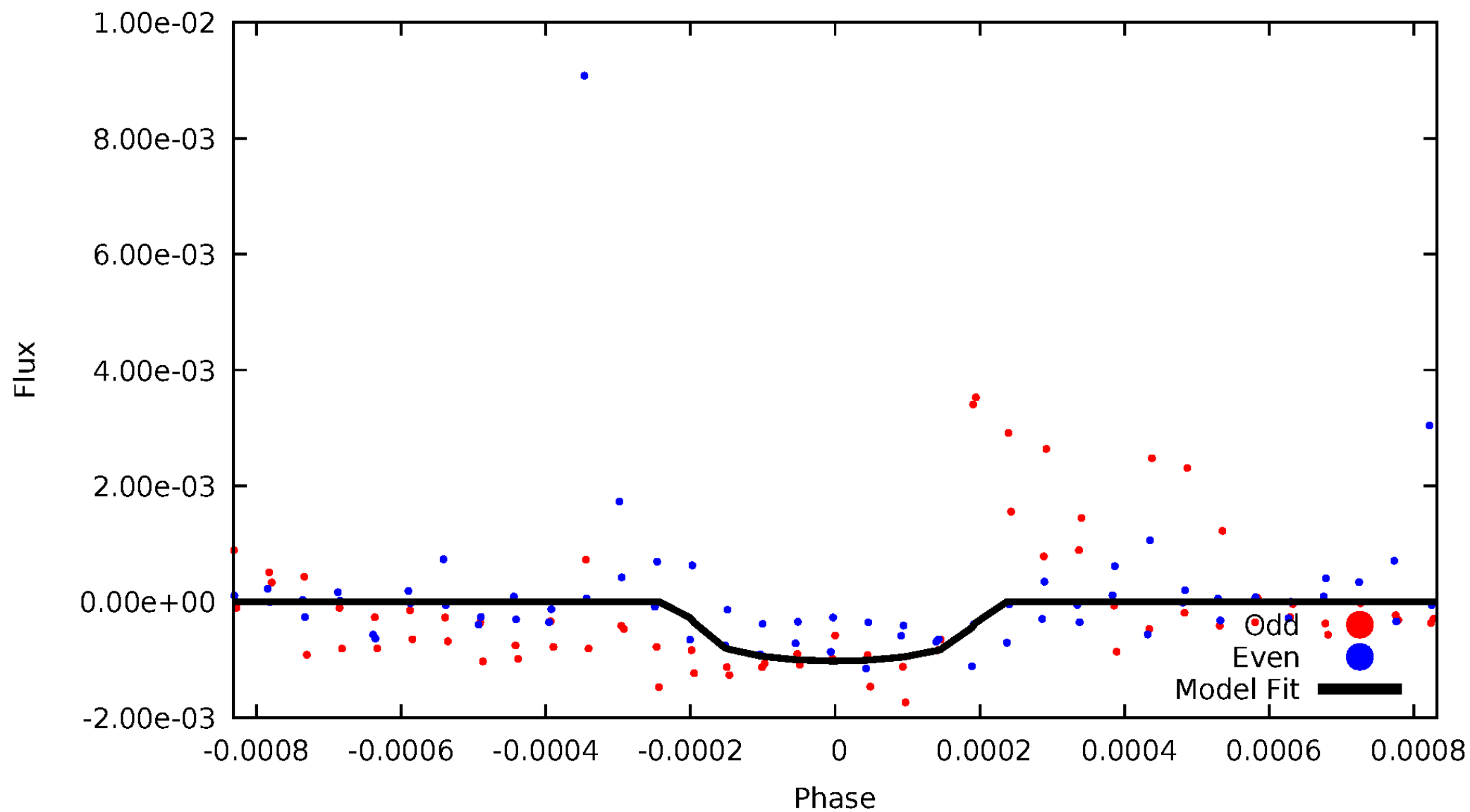


# TCE 007618645-03



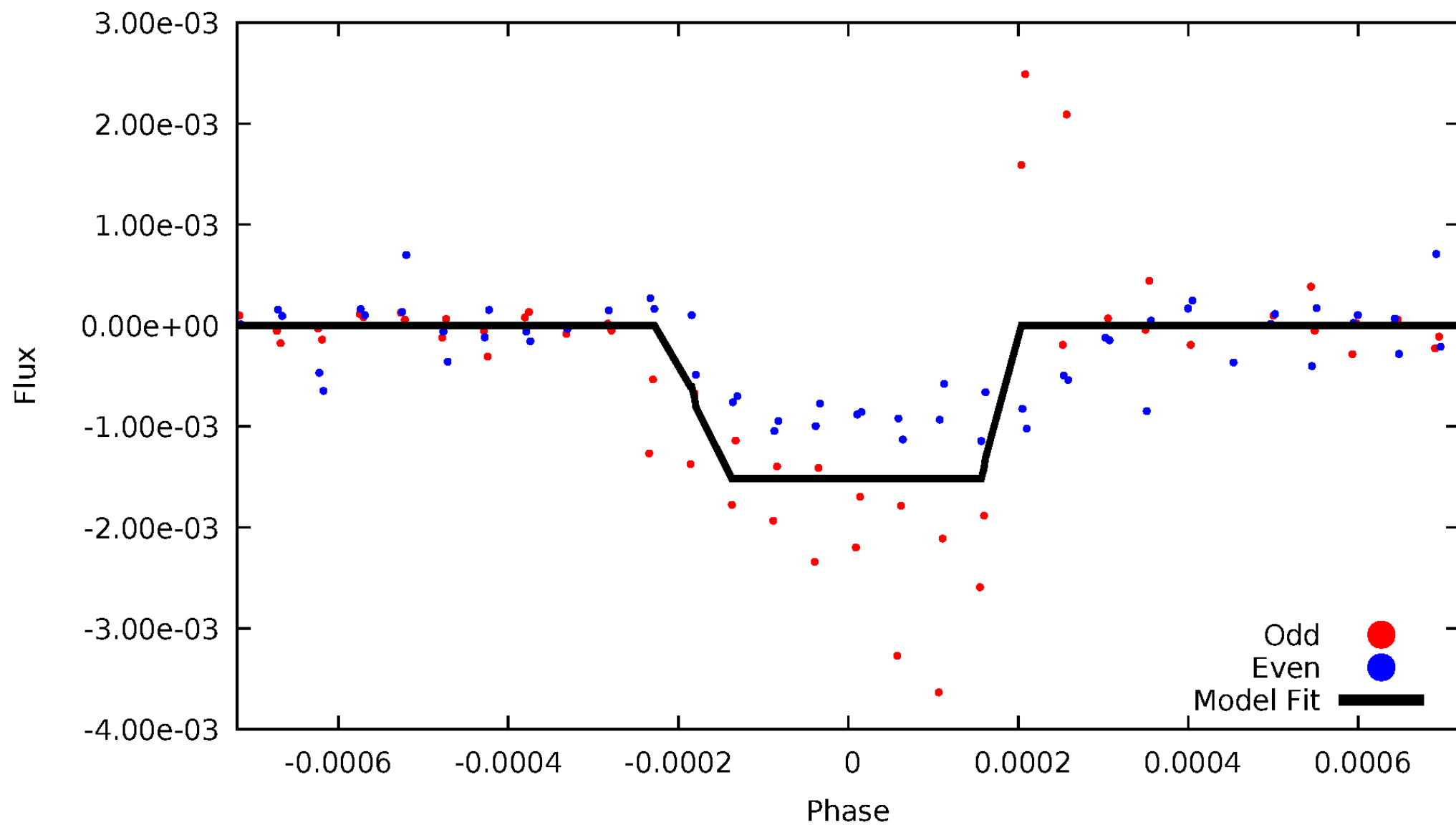
# DV Odd/Even

TCE 007618645-03



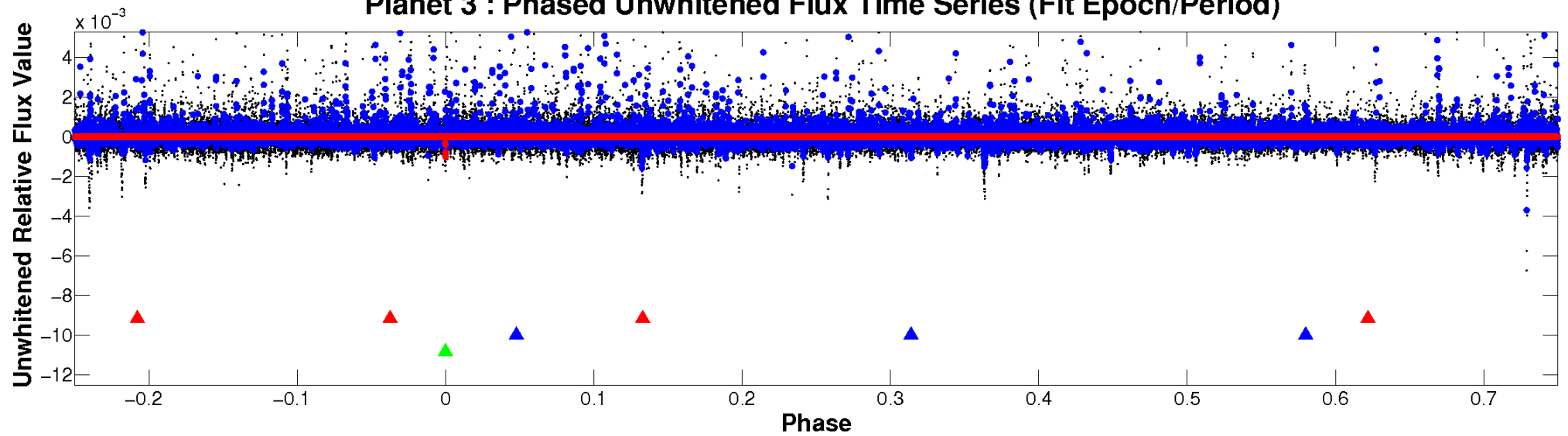
# ALT Odd/Even

TCE 007618645-03

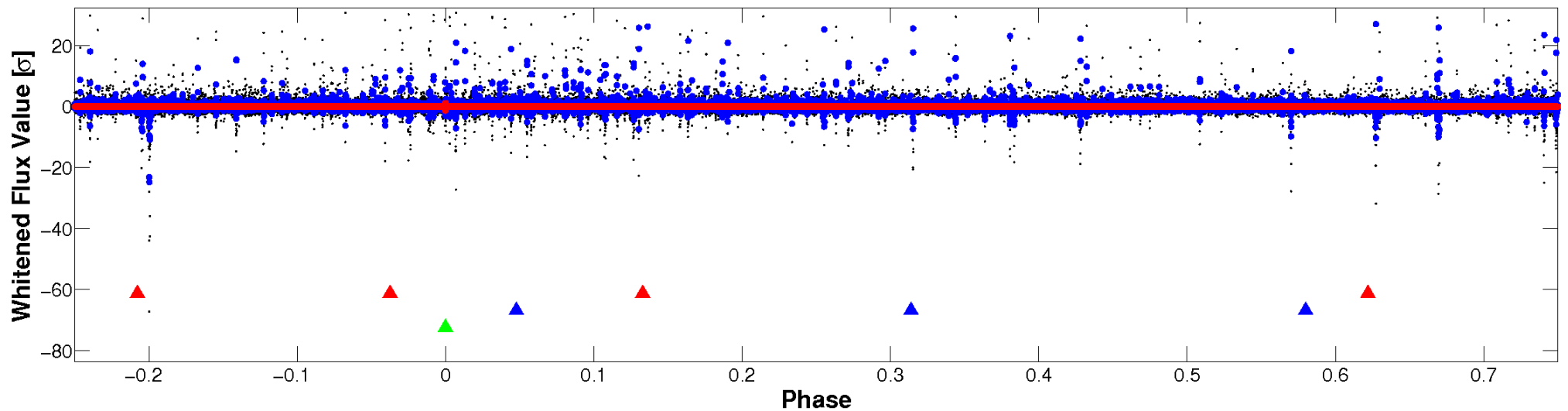


# Non-Whitened Vs. Whitened Light Curve

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

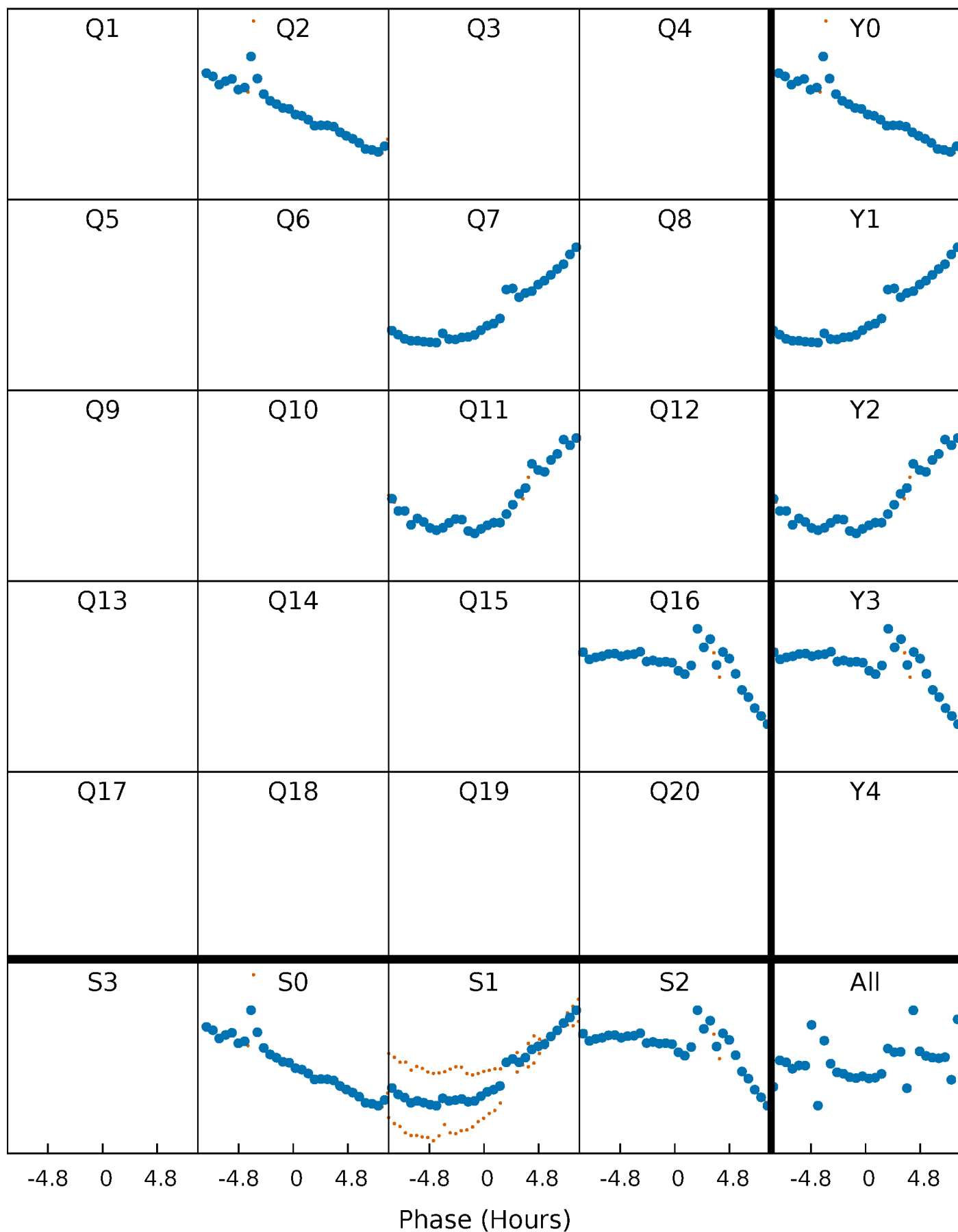


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

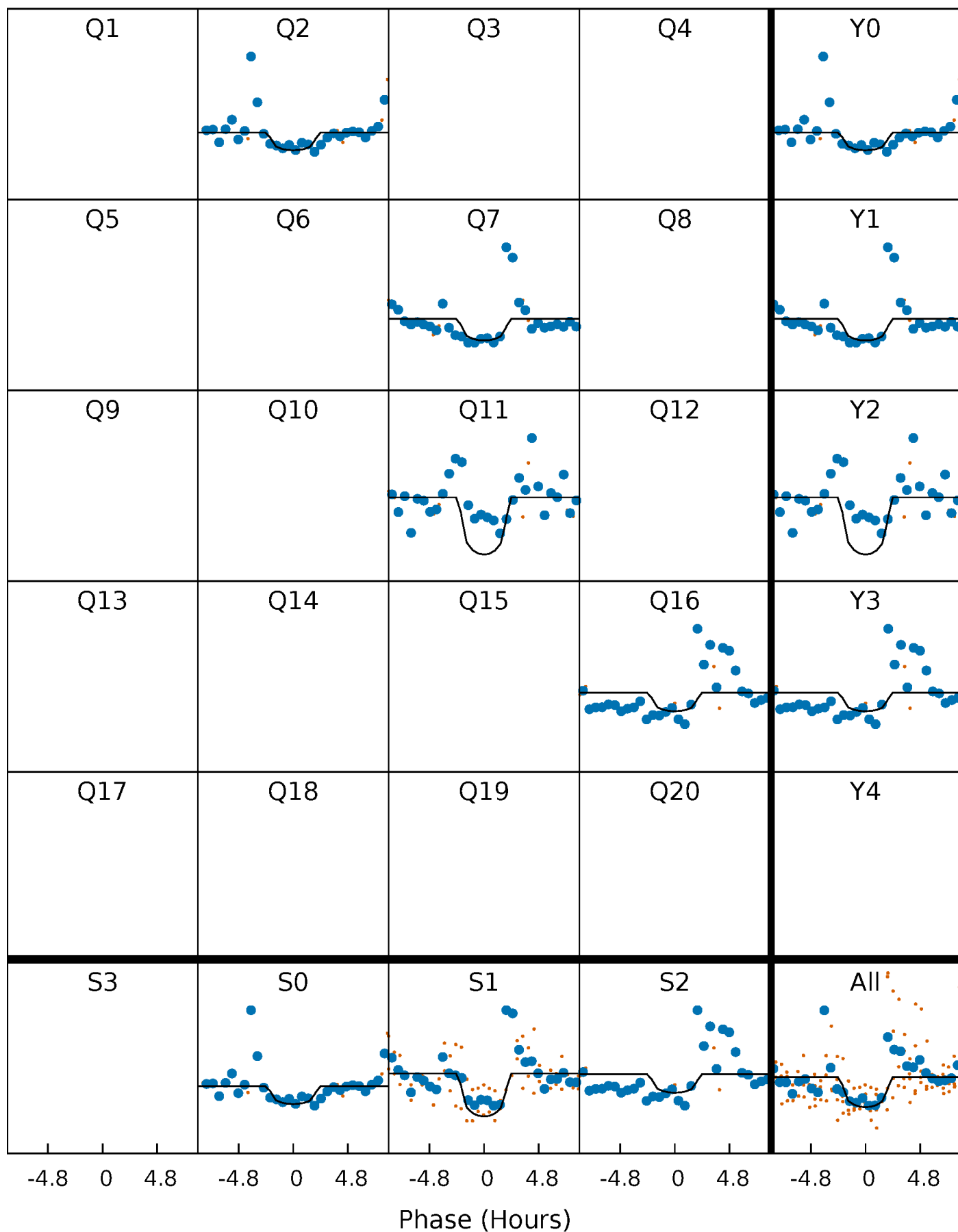
TCE 007618645-03 P=419.867087 Days  $T_0=244.146714$  (BKJD)





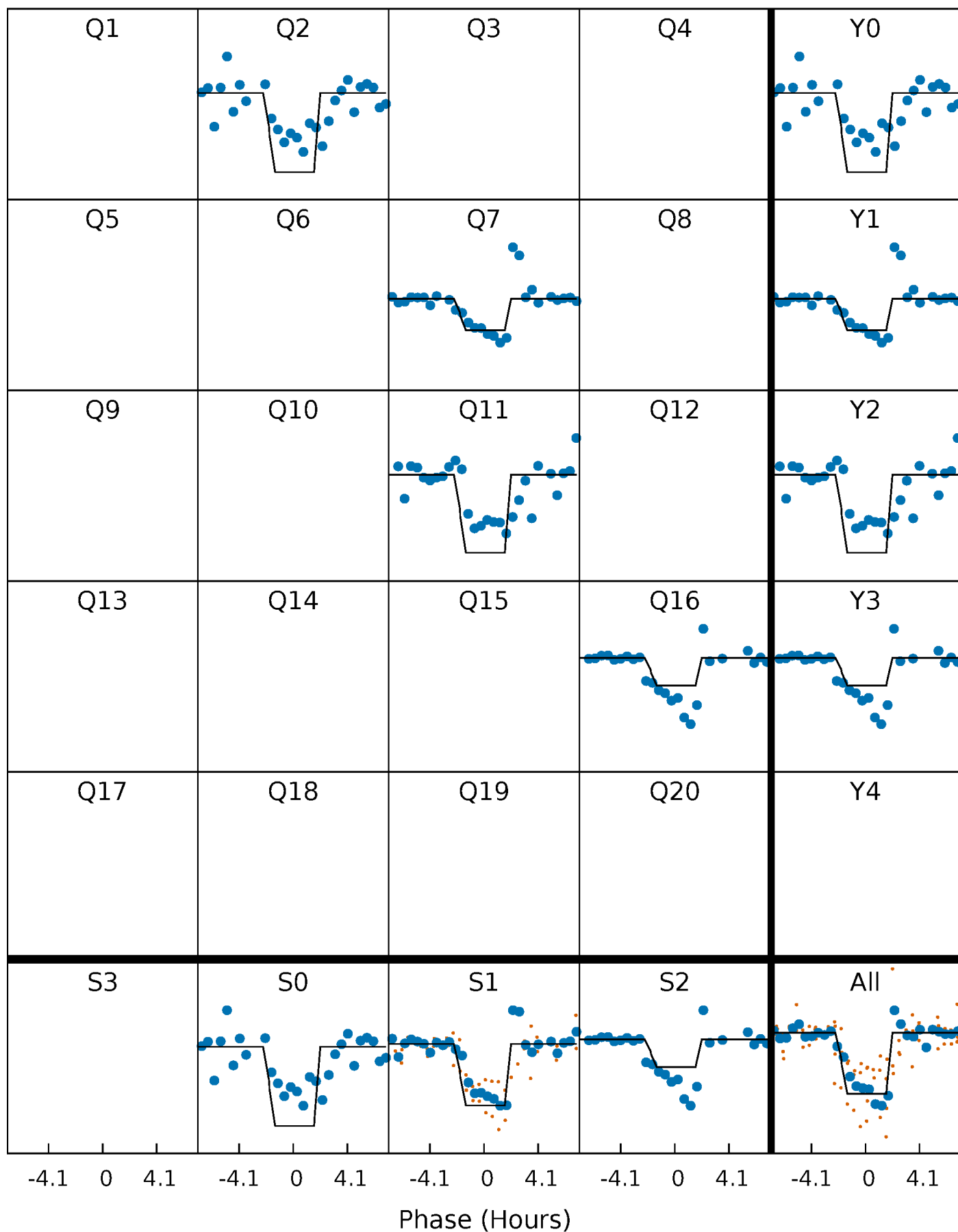
# DV Quarter-Phased Transit Curves

TCE 007618645-03 P=419.867087 Days  $T_0=244.146714$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

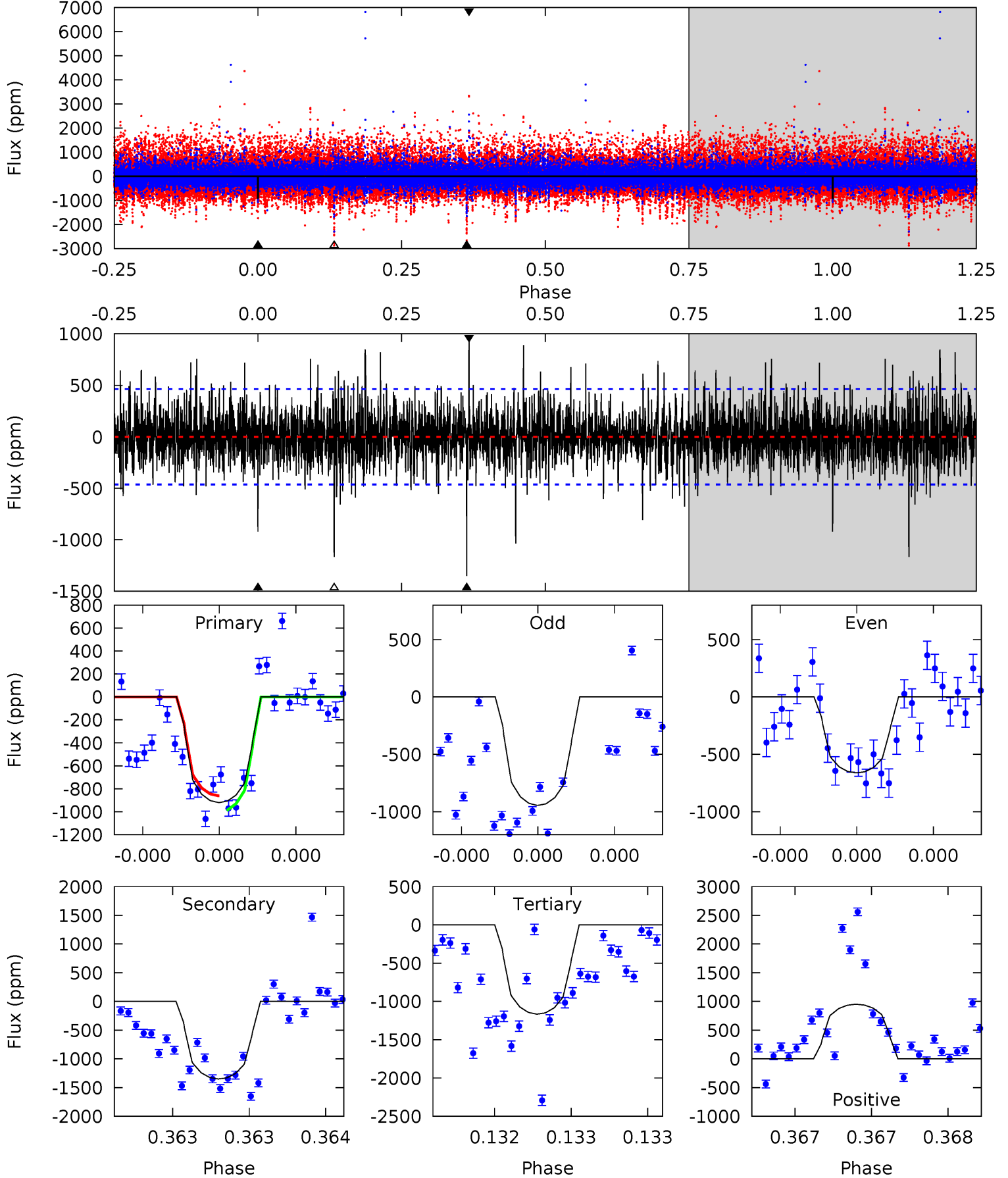
TCE 007618645-03 P=419.868791 Days  $T_0=244.137791$  (BKJD)



# DV Model-Shift Uniqueness Test

007618645-03, P = 419.867087 Days, E = 244.146714 Days

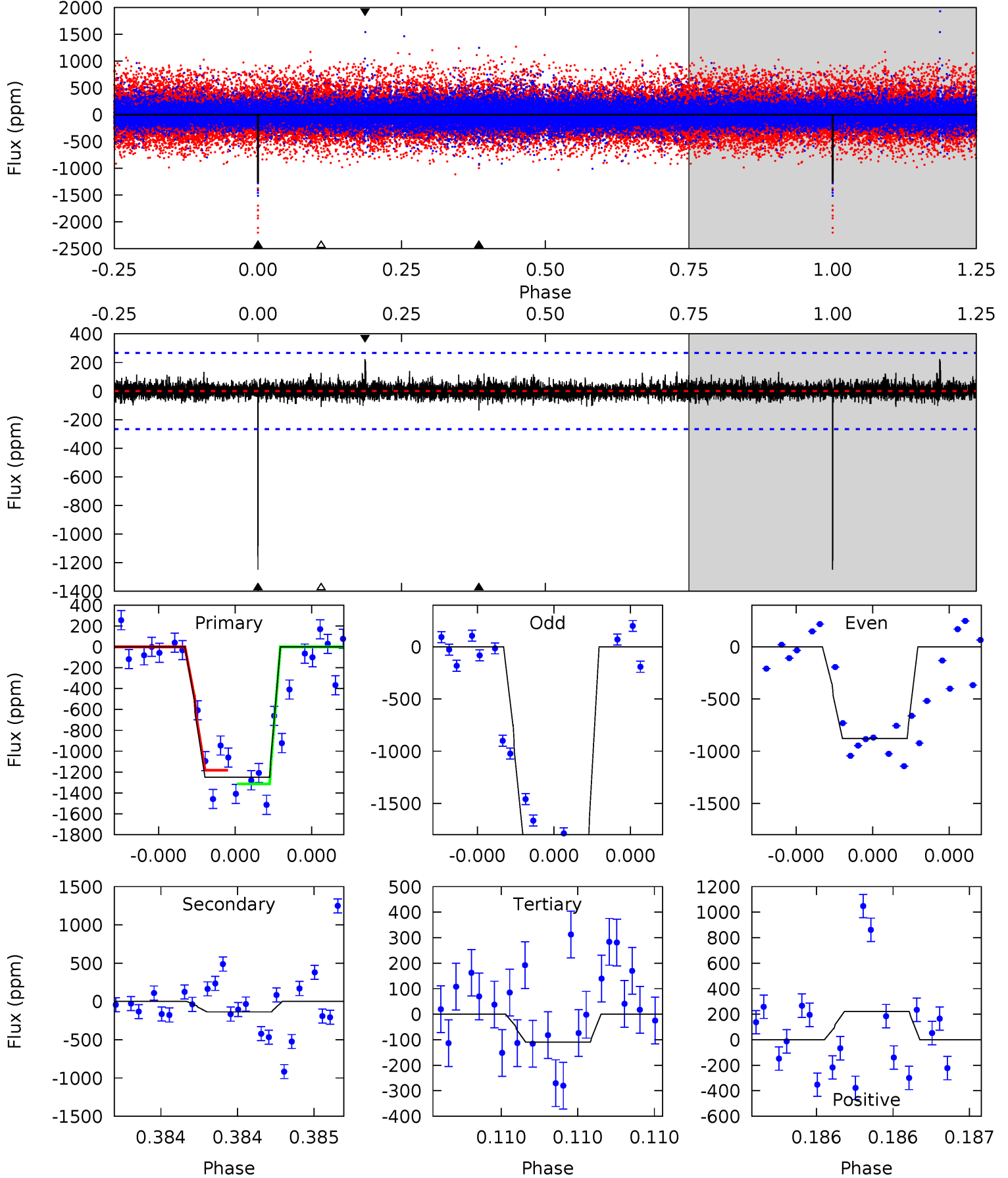
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	16.3	14.1	11.5	5.60	3.52	2.24	-2.96	-0.38	2.22	4.81	1.40	0.89	0.41	0.76



# Alt Model-Shift Uniqueness Test

007618645-03, P = 419.868791 Days, E = 244.137791 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
26.4	2.87	2.31	4.69	5.64	3.58	0.59	24.1	21.7	0.56	-1.81	10.4	1.16	0.15	1.39



### Stellar Parameters For KIC 007618645

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5010^{+151}_{-136}$	$3.829^{+0.749}_{-0.321}$	$-0.100^{+0.300}_{-0.300}$	$1.911^{+1.003}_{-1.226}$	$0.899^{+0.209}_{-0.174}$	$0.181^{+2.517}_{-0.122}$
	+3%/-3%	+20%/-8%	+300%/-300%	+52%/-64%	+23%/-19%	+1387%/-67%
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 007618645-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1349 \pm 83$	$12.81^{+15.09}_{-9.11}$	$410^{+60}_{-74}$	$3973^{+2573}_{-797}$	$5067^{+52399}_{-3997}$
Alt.	$-136 \pm 47$	$13.30^{+16.02}_{-9.13}$	$408^{+63}_{-72}$	$2741^{+1092}_{-445}$	$422^{+4261}_{-330}$

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

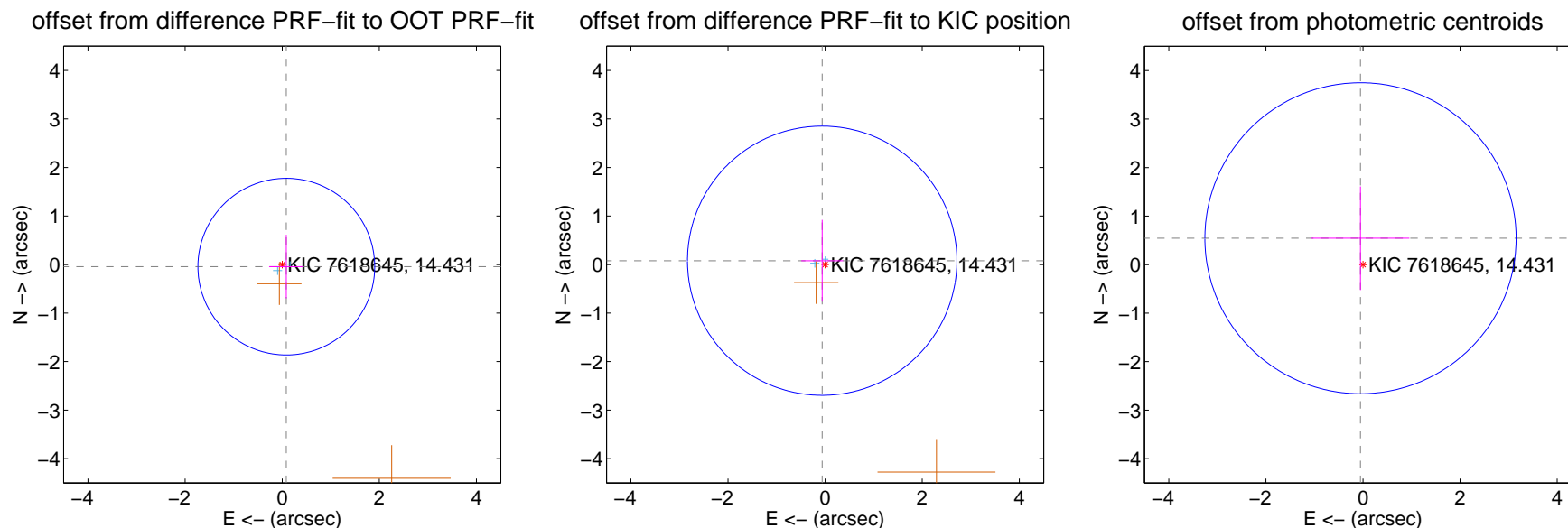
## DV Centroid Data

Supplemental centroid analysis for 007618645-03. Kepler magnitude: 14.43. Transit SNR 7.57

There are 2 quarters with good PRF difference image offsets

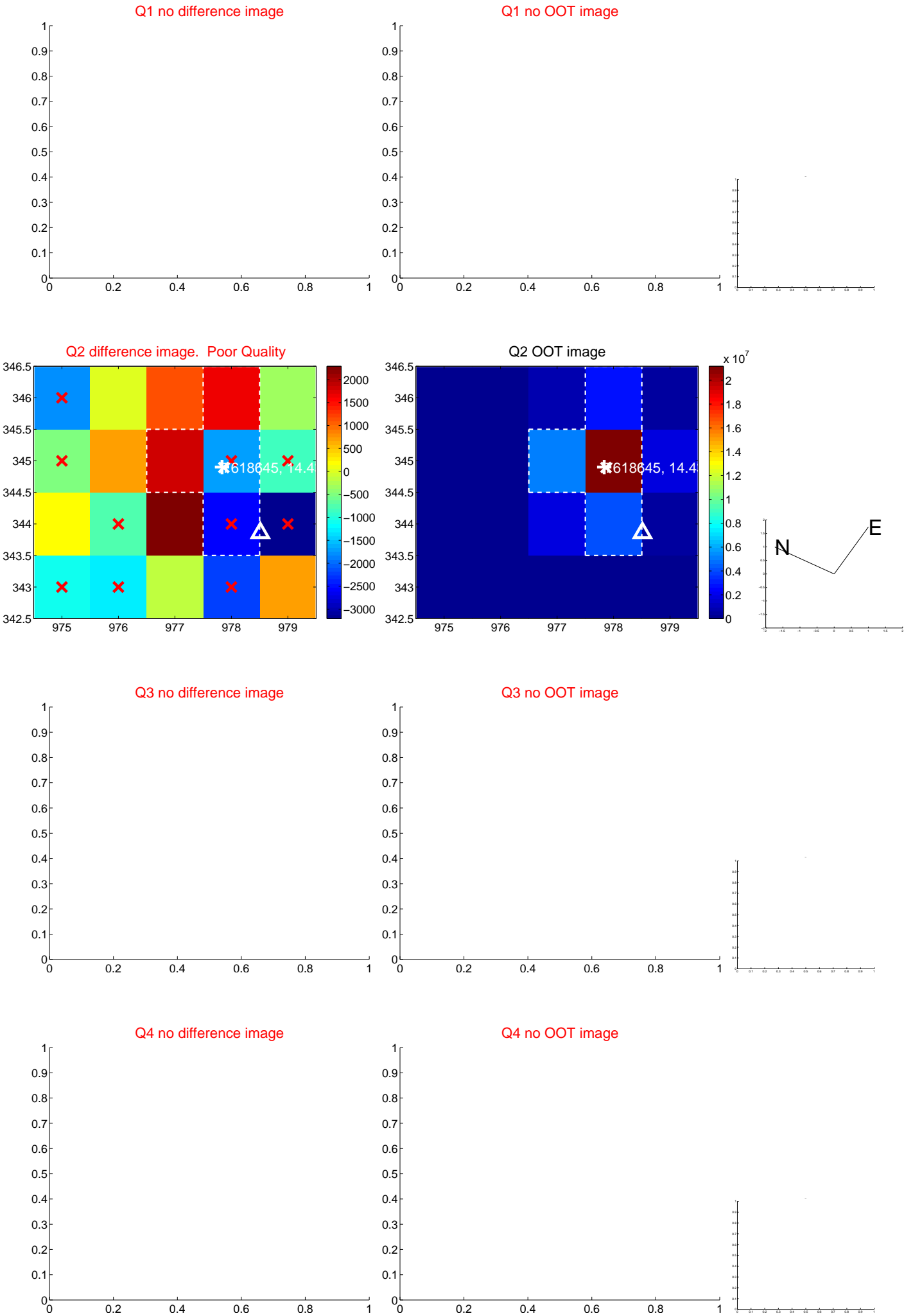
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.095 \pm 0.607$	0.16	$-0.085 \pm 0.355$	$-0.043 \pm 0.655$
PRF-fit source offset from KIC position	$0.099 \pm 0.925$	0.11	$0.060 \pm 0.430$	$0.079 \pm 0.842$
photometric centroid source offset	$0.55 \pm 1.07$	0.51	$0.05 \pm 1.01$	$0.54 \pm 1.07$



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.

Q5 no difference image



Q5 no OOT image



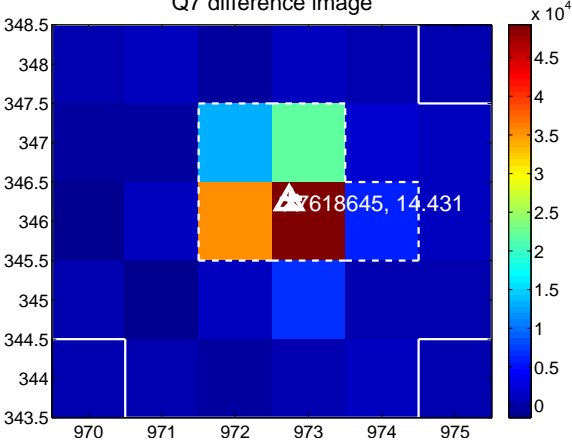
Q6 no difference image



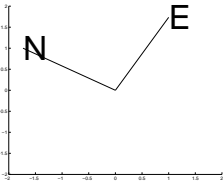
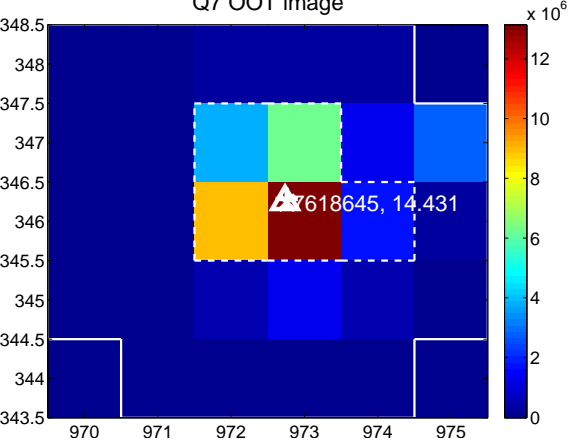
Q6 no OOT image



Q7 difference image



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



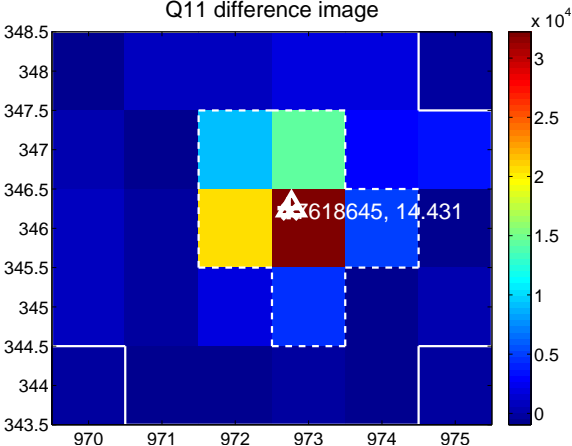
Q10 no difference image



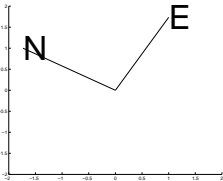
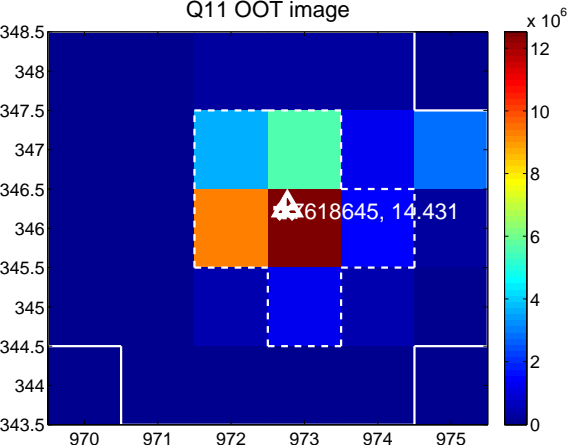
Q10 no OOT image



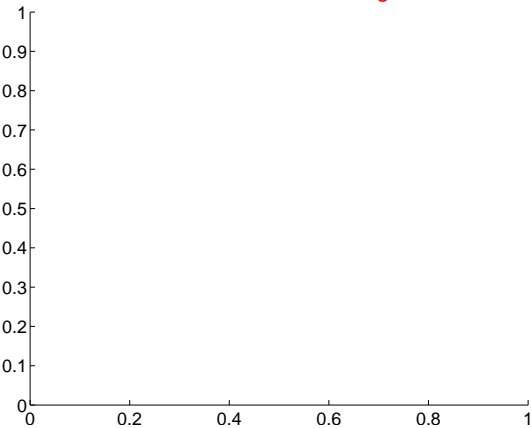
Q11 difference image



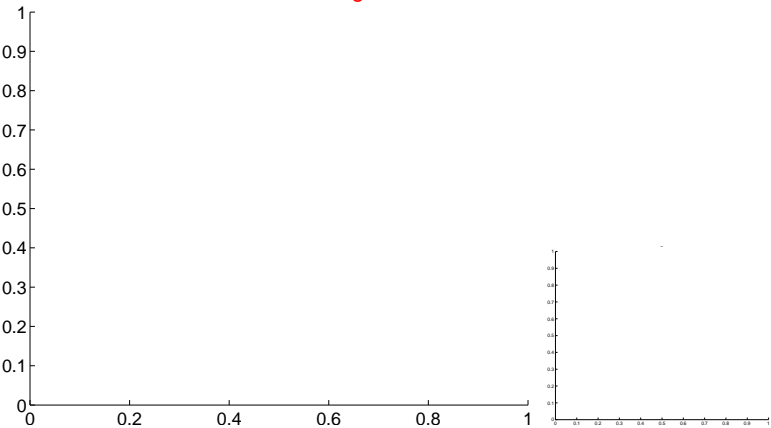
Q11 OOT image



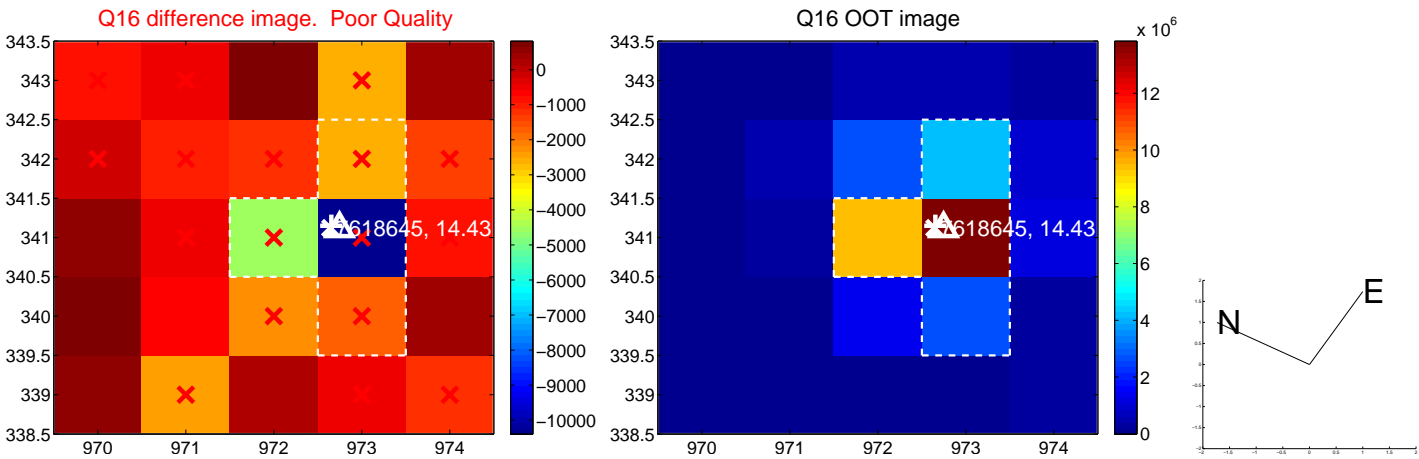
Q12 no difference image



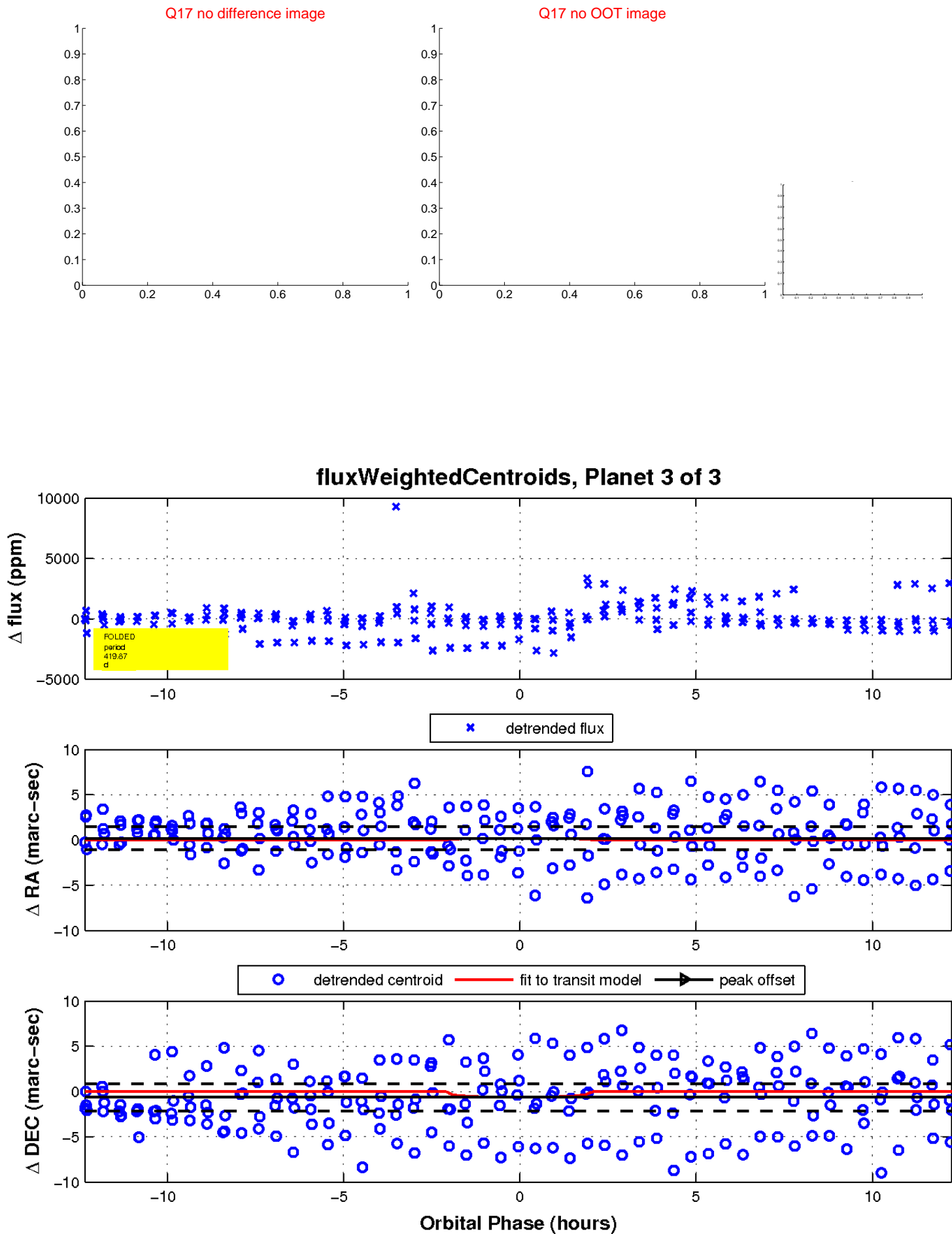
Q12 no OOT image



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



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



UKIRT Image

