

# KIC 010205598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010205598-01	OBS	No	484.441873	154.078834	239.2	18.968	9.2	3.6	0.70	5263	1.21	0.30
010205598-02	OBS	No	318.755439	282.037793	456.1	20.125	8.4	10.5	0.70	5263	1.54	0.53
010205598-03	OBS	8198.01	374.003348	261.476313	637.8	11.461	8.0	7.8	0.70	5263	1.78	0.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010205598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-03	OBS	FP	0.01	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

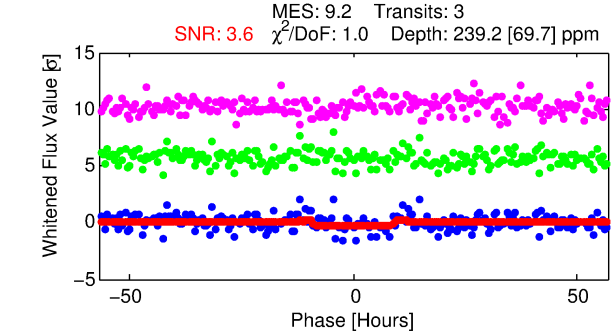
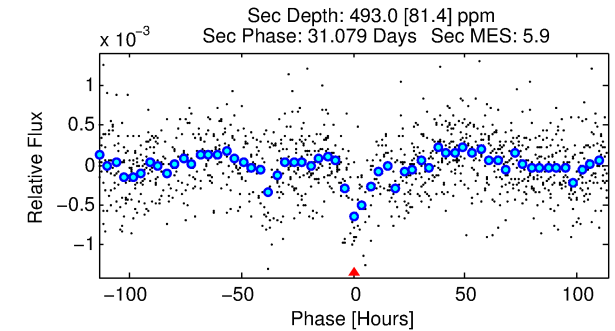
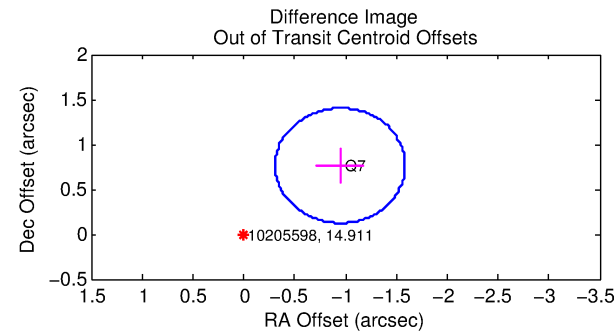
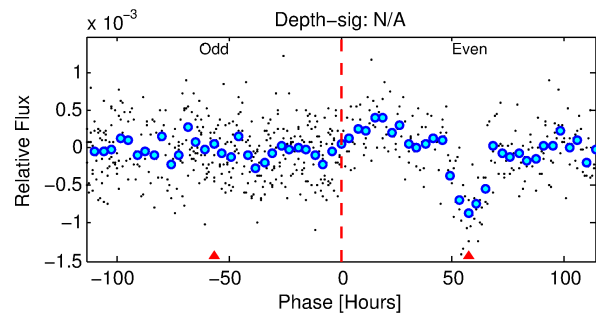
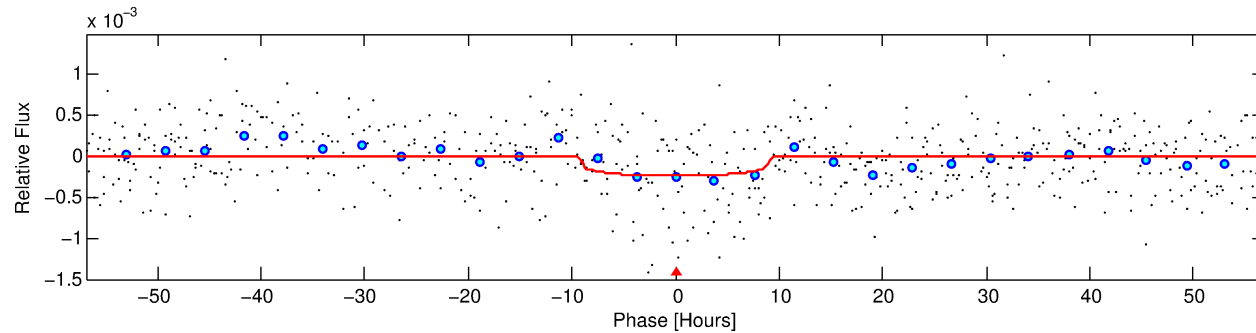
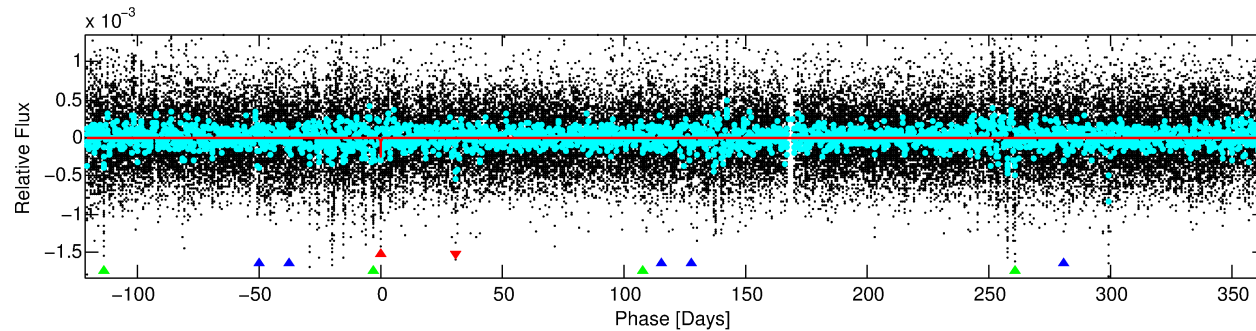
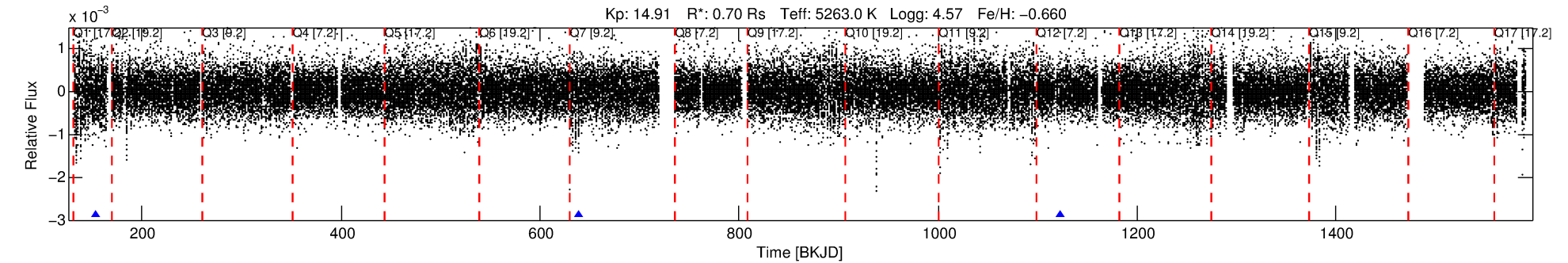
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 010205598-01

No Significant Match Found

KIC: 10205598    Candidate: 1 of 3    Period: 484.442 d



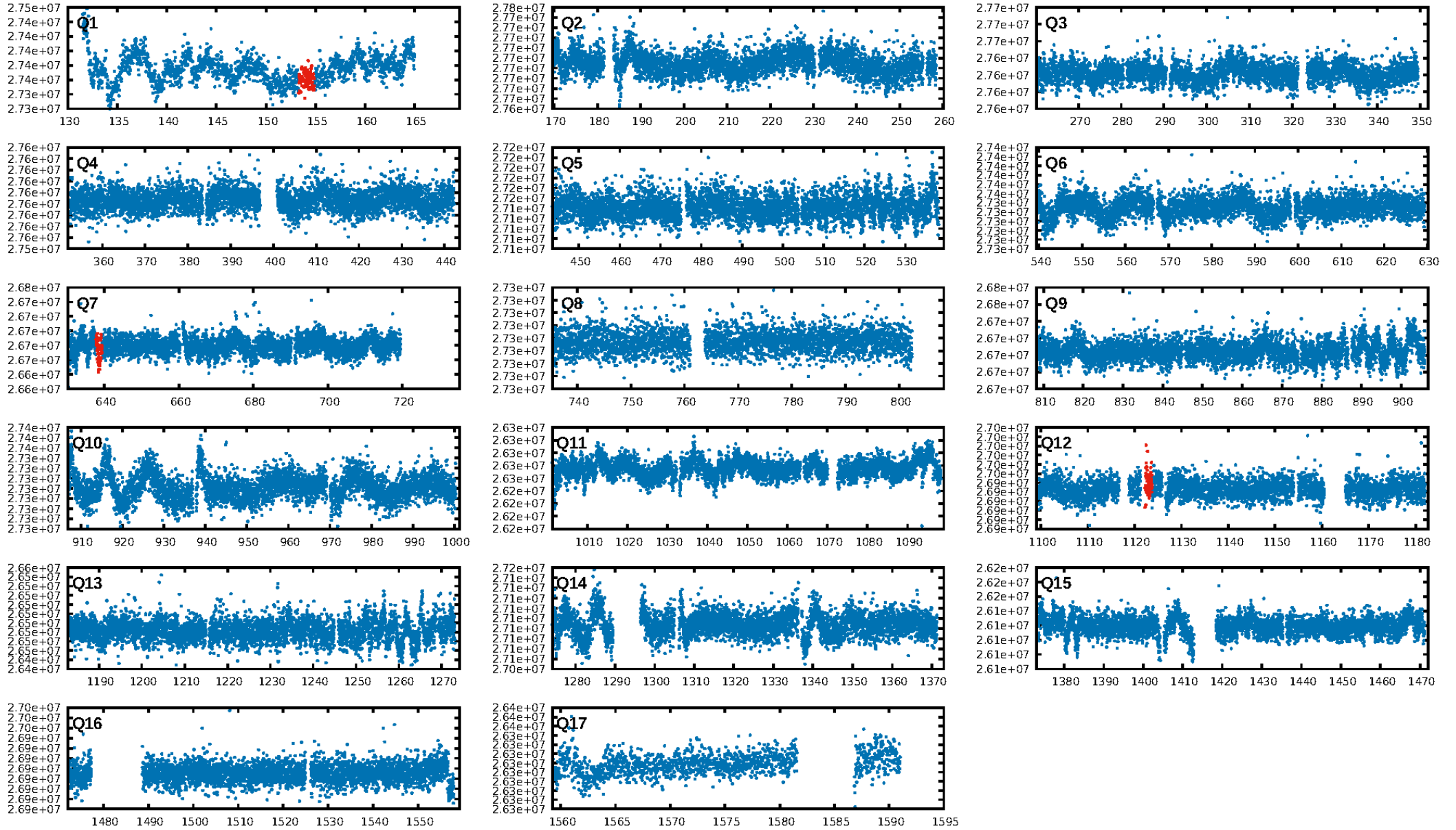
DV Fit Results:

Period = 484.44187 [0.03544] d  
 Epoch = 154.0788 [0.0511] BKJD  
 Rp/R\* = 0.0158 [0.0088]  
 a/R\* = 119.45 [269.69]  
 b = 0.81 [0.96]  
 Seff = 0.30 [0.06]  
 Teq = 189 [9] K  
 Rp = 1.21 [0.68] Re  
 a = 1.0556 [0.0977] AU  
 Ag = 207077.90 [233903.57] [0.89σ]  
 Tefp = 6231 [1756] K [3.44σ]

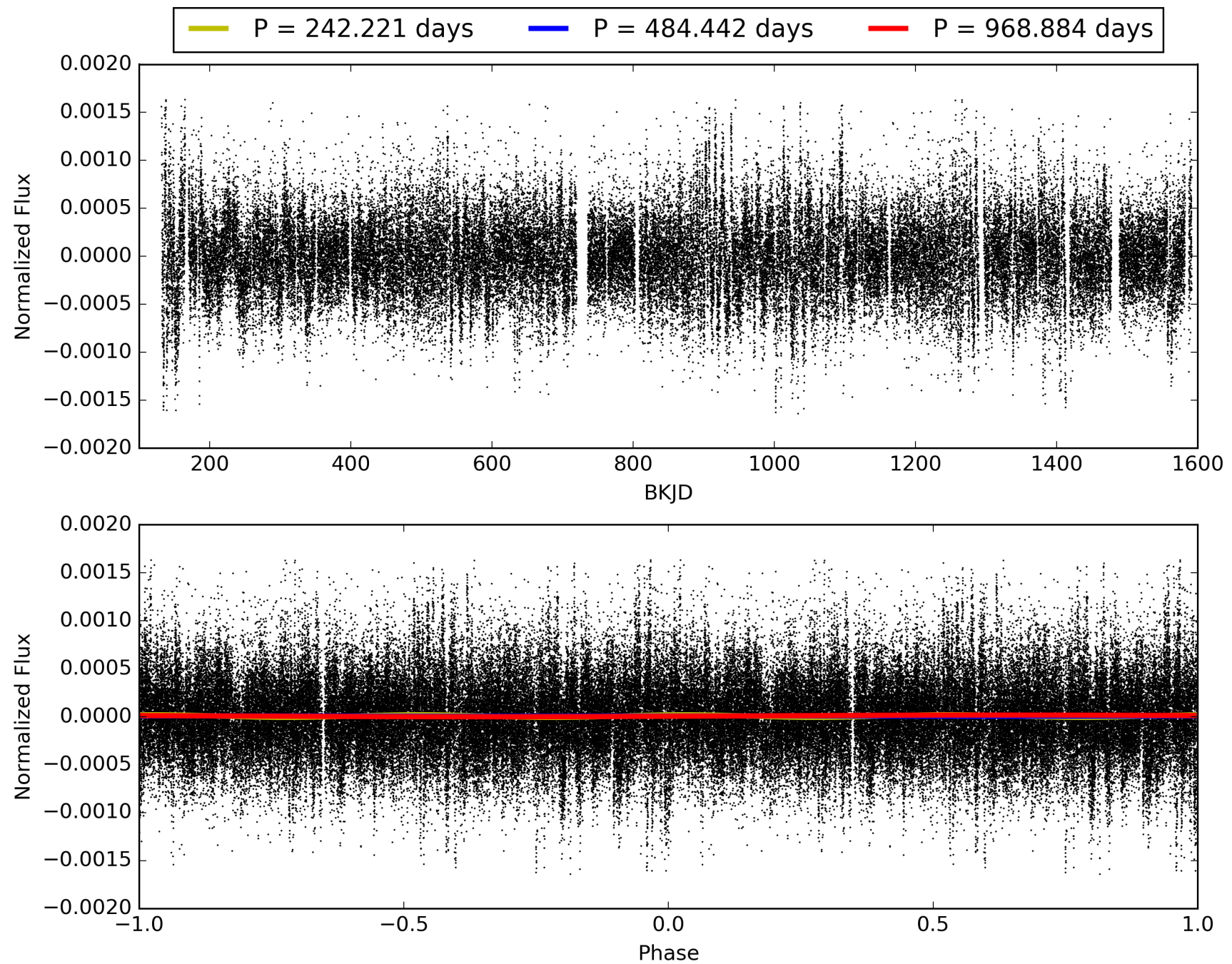
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [119.60σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 98.5%  
Bootstrap-pfa: 4.72e-11  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -2.296  
  
Centroid-sig: 73.6%  
Centroid-so: 2.602 arcsec [0.66σ]  
OotOffset-rm: 1.216 arcsec [5.71σ]  
KicOffset-rm: 1.206 arcsec [5.66σ]  
  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 010205598-01, PDC Light Curves

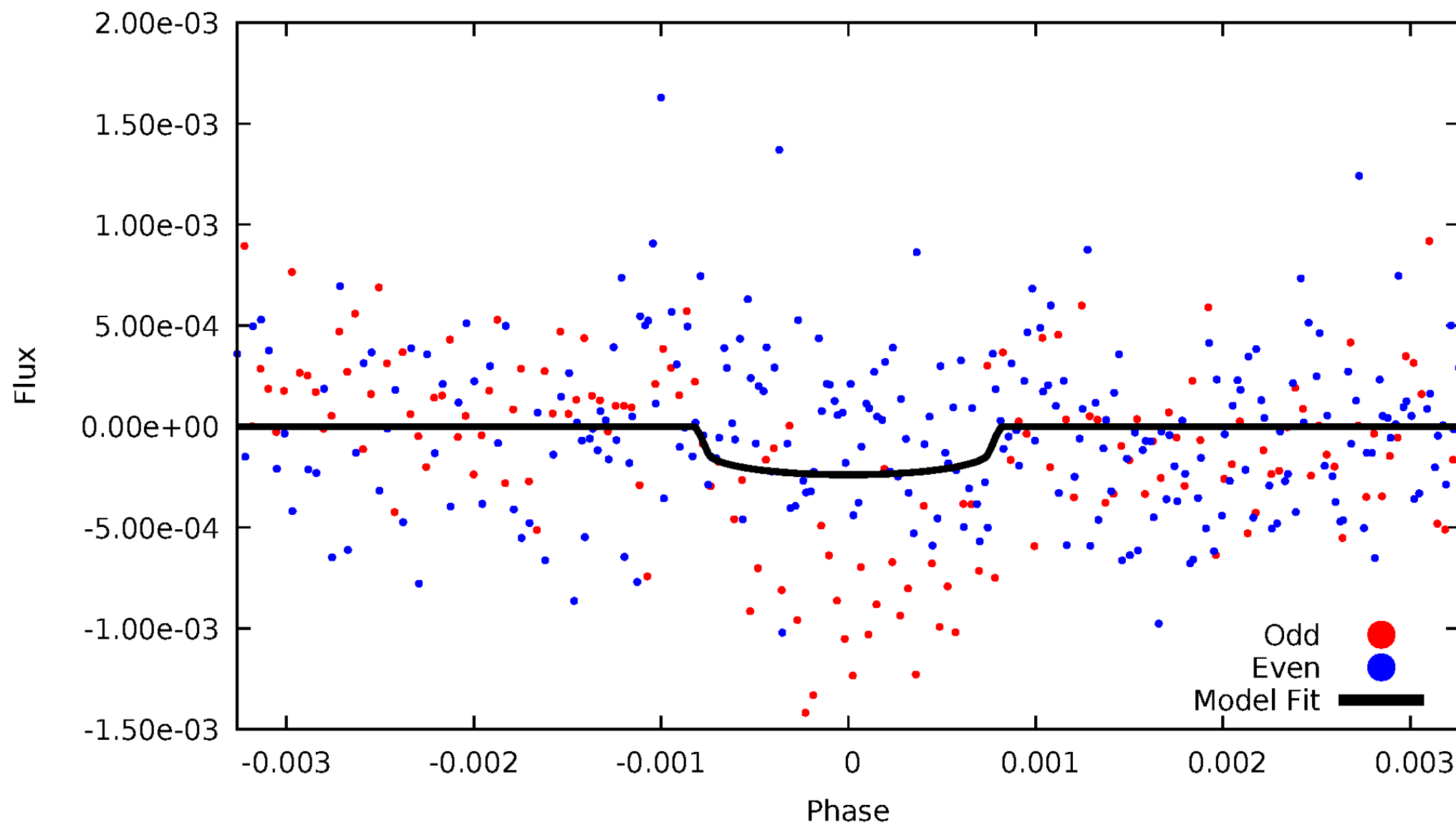


# TCE 010205598-01



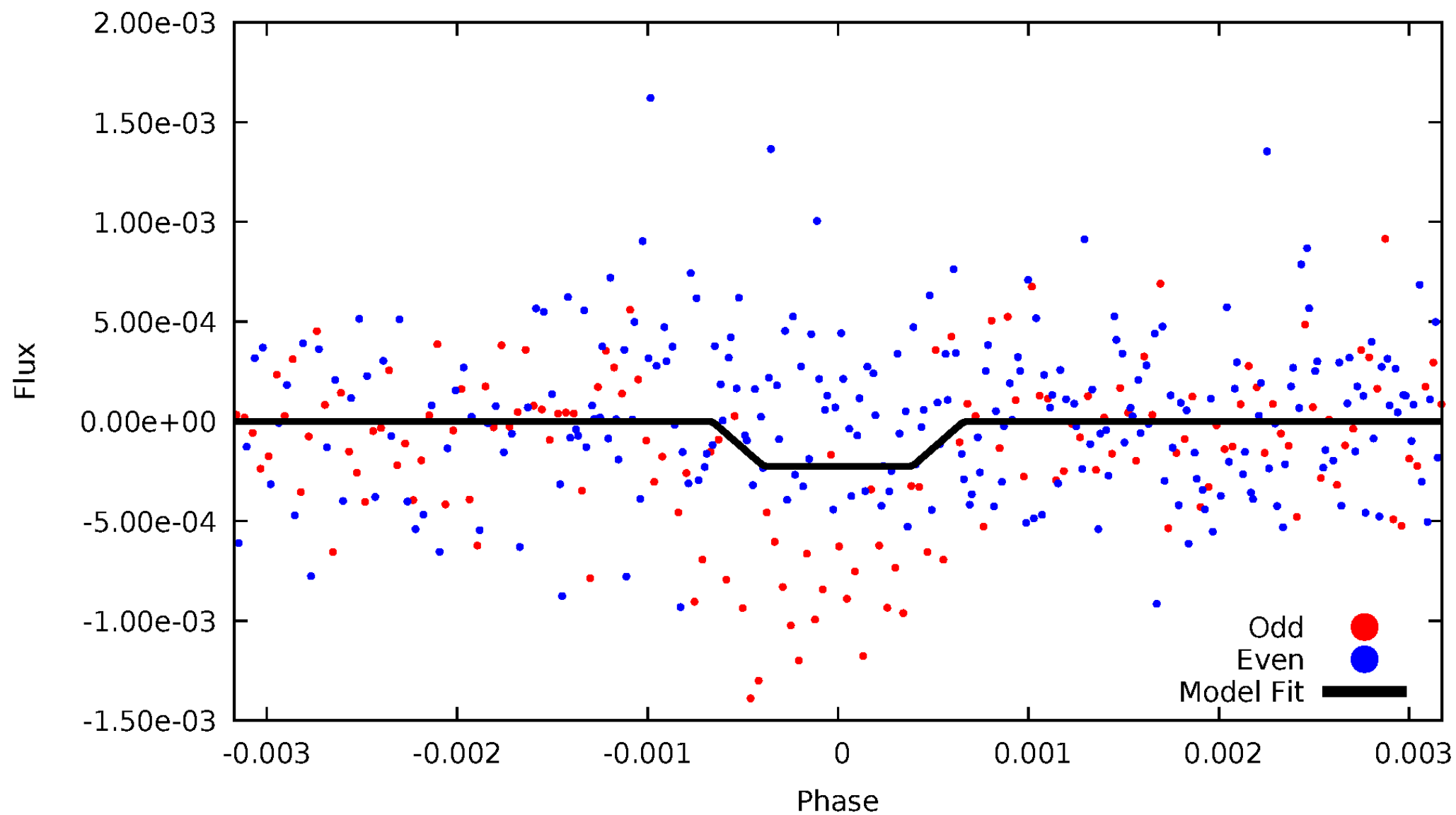
# DV Odd/Even

TCE 010205598-01



# ALT Odd/Even

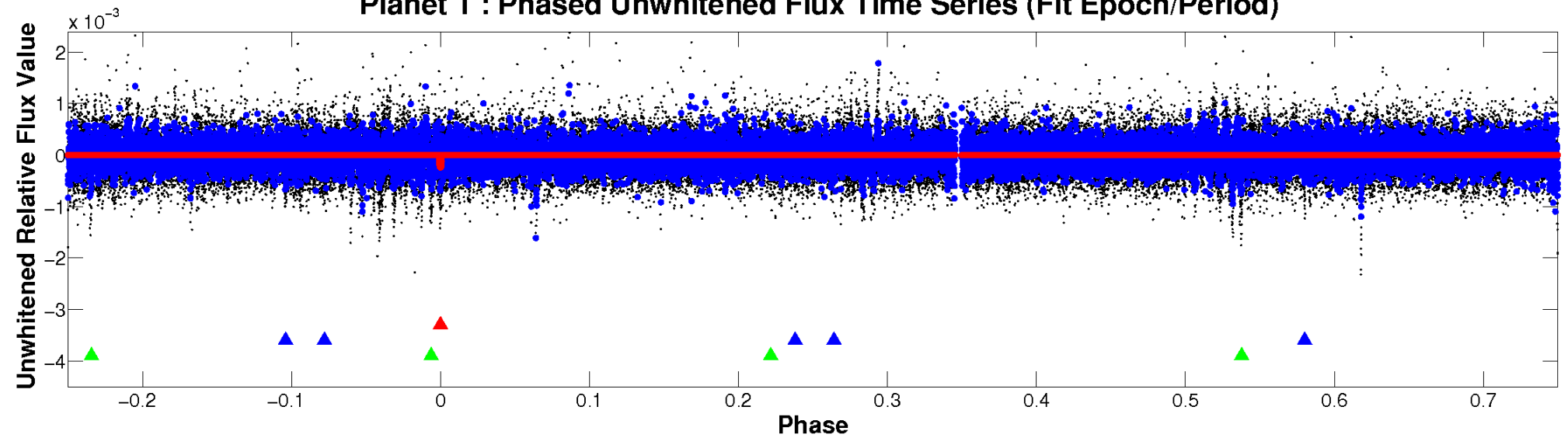
TCE 010205598-01



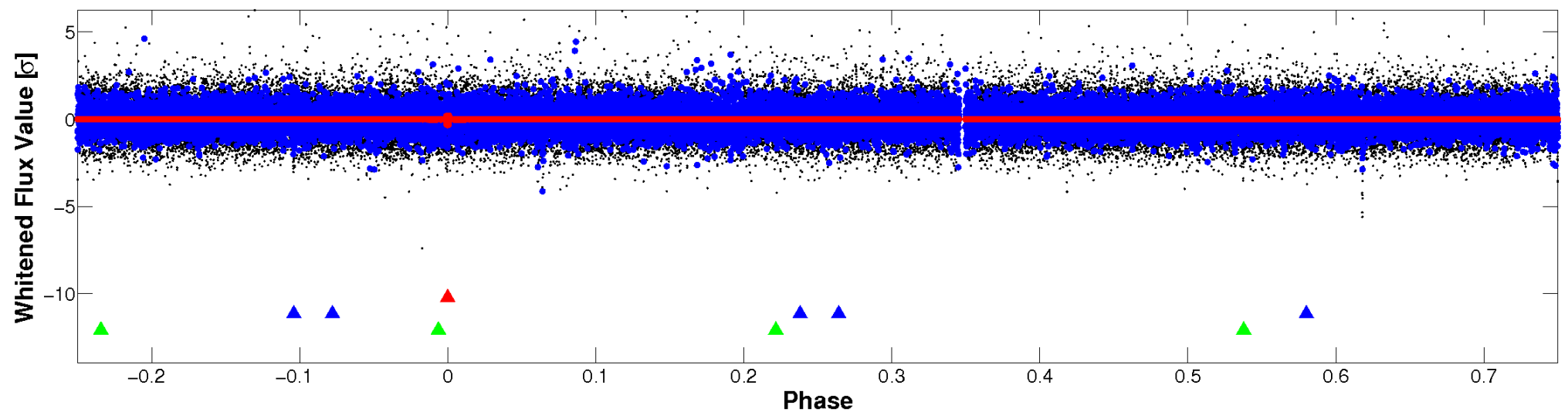


# Non-Whitened Vs. Whitened Light Curve

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 010205598-01 P=484.441873 Days  $T_0=154.078834$  (BKJD)





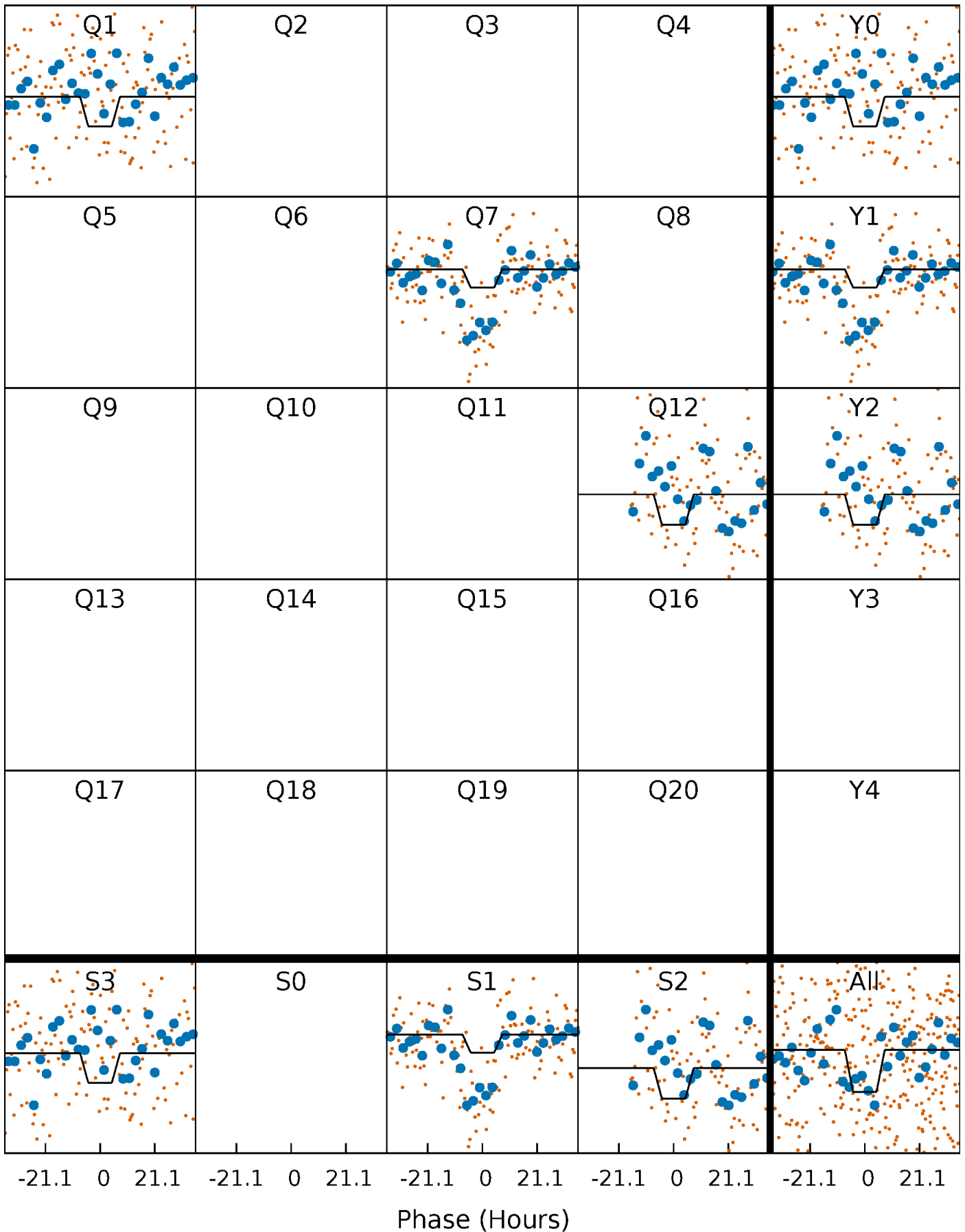
# DV Quarter-Phased Transit Curves

TCE 010205598-01     $P=484.441873$  Days     $T_0=154.078834$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

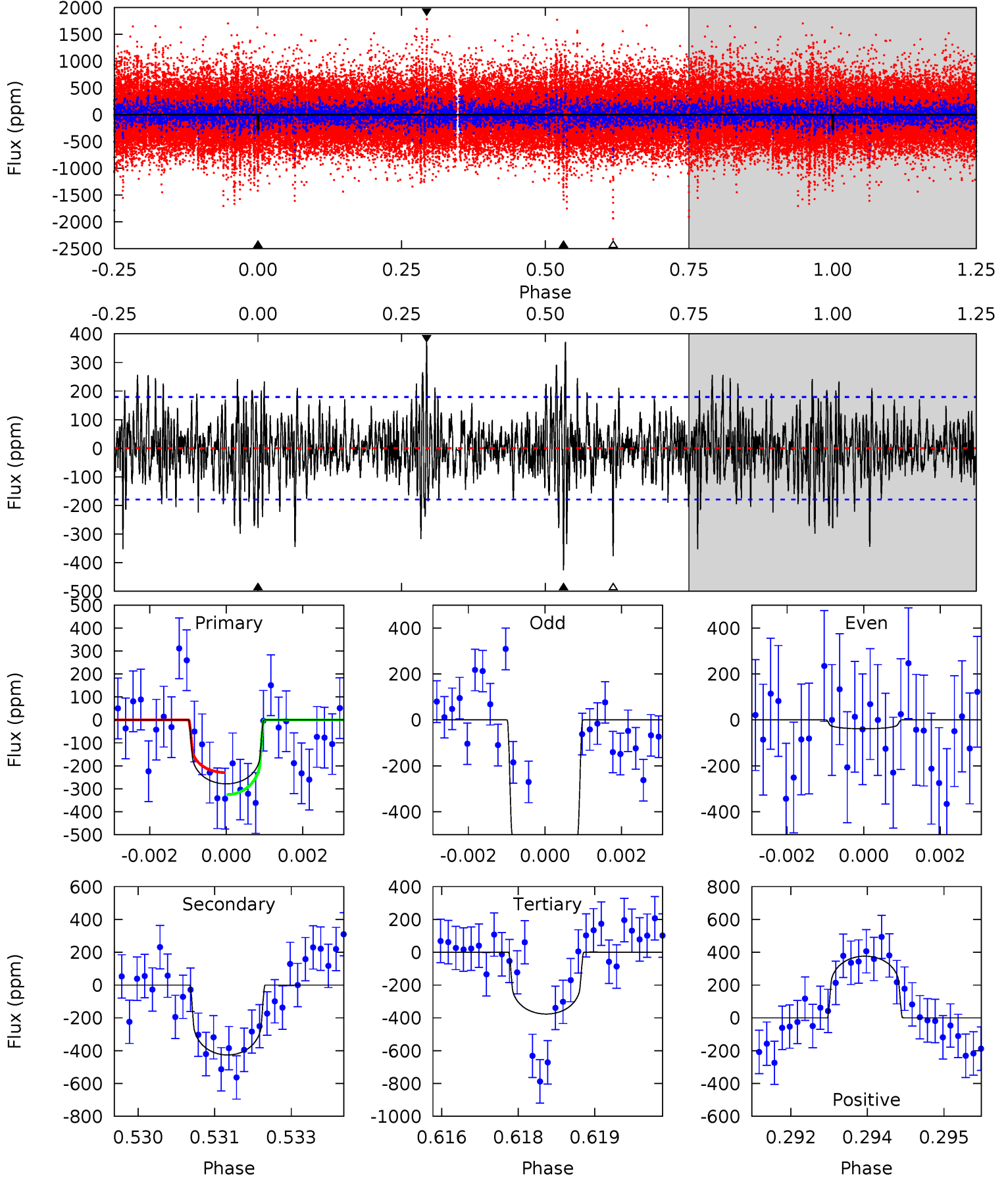
TCE 010205598-01 P=484.323050 Days  $T_0=154.308782$  (BKJD)



# DV Model-Shift Uniqueness Test

010205598-01, P = 484.441873 Days, E = 154.078834 Days

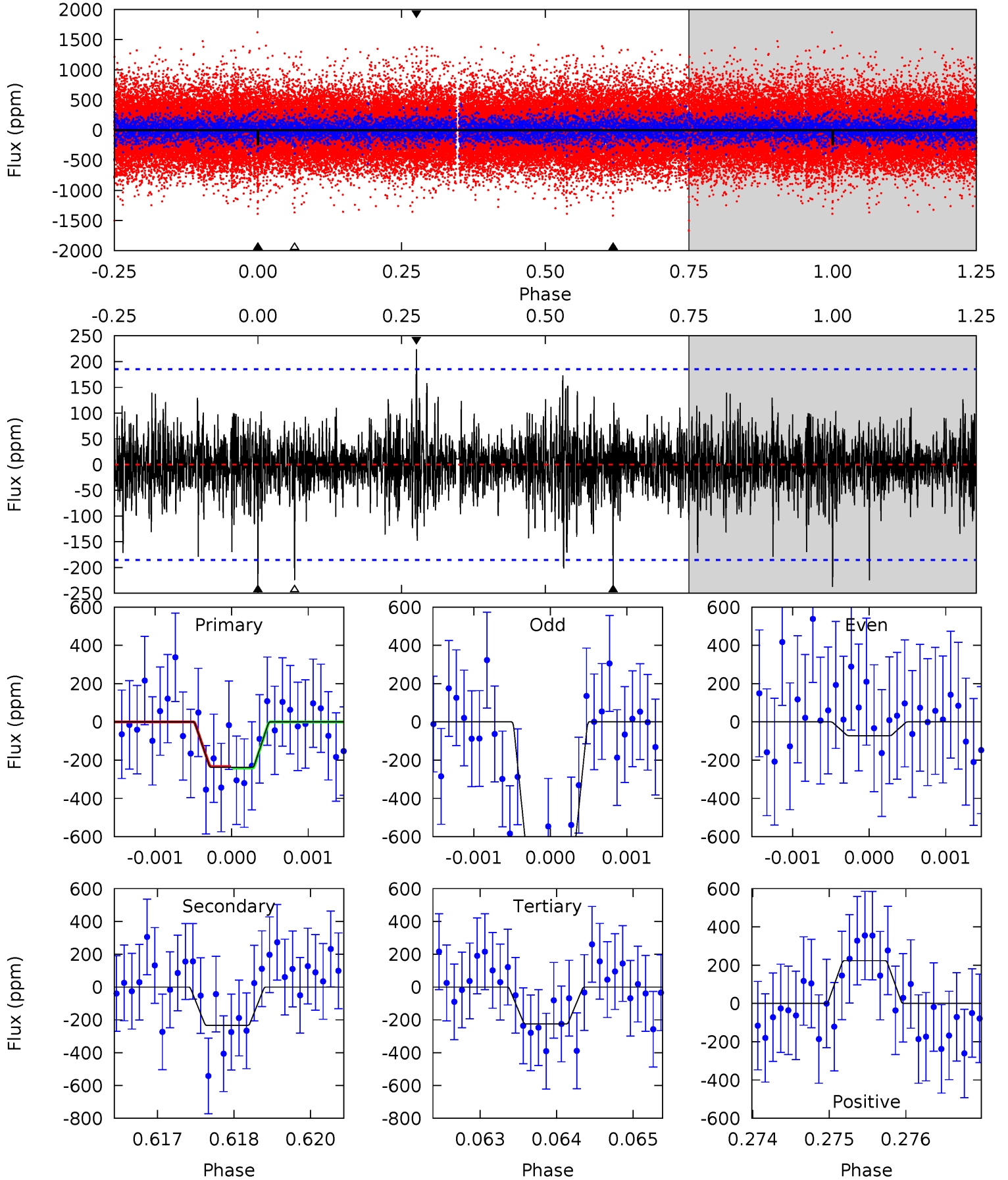
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.33	12.7	11.3	11.2	5.36	3.14	2.60	-2.94	-2.92	1.48	1.50	10.3	5.89	0.47	1.44



# Alt Model-Shift Uniqueness Test

010205598-01, P = 484.323050 Days, E = 154.308782 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
6.92	6.81	6.54	6.52	5.40	3.20	1.31	0.38	0.39	0.27	0.29	9.87	-19.0	0.49	0.12



### Stellar Parameters For KIC 010205598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5263^{+157}_{-141}$	$4.574^{+0.078}_{-0.052}$	$-0.660^{+0.350}_{-0.300}$	$0.699^{+0.074}_{-0.066}$	$0.668^{+0.082}_{-0.032}$	$2.753^{+0.937}_{-0.544}$
	+3%/-3%	+2%/-1%	+53%/-45%	+11%/-9%	+12%/-5%	+34%/-20%
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 010205598-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-426 \pm 33$	$1.24^{+0.61}_{-0.63}$	$264^{+10}_{-10}$	$5943^{+2928}_{-1040}$	$174283^{+566244}_{-97621}$
Alt.	$-234 \pm 34$	$1.20^{+0.64}_{-0.66}$	$263^{+10}_{-10}$	$5185^{+2619}_{-864}$	$100181^{+409779}_{-58339}$

$T_{\text{max}}$  = 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

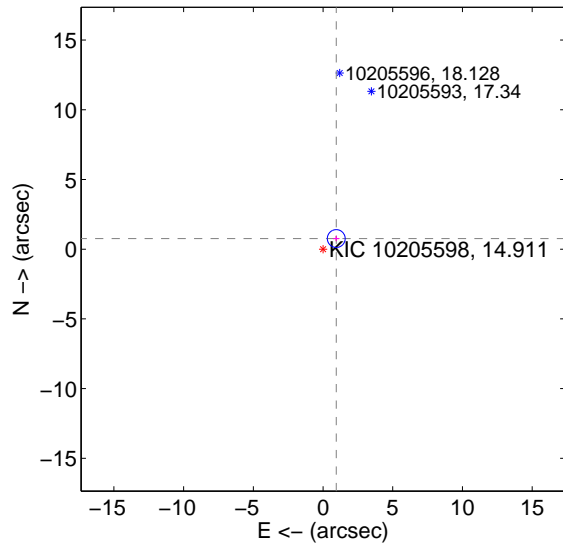
Supplemental centroid analysis for 010205598-01. Kepler magnitude: 14.91. Transit SNR 3.59

There are 0 quarters with good PRF difference image offsets

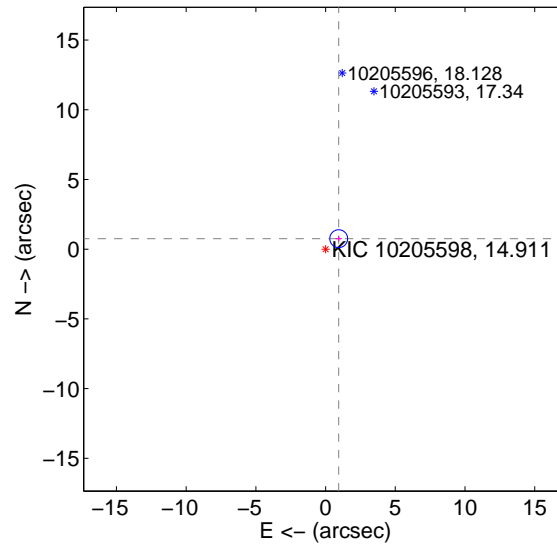
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.216 \pm 0.213$	5.71	$-0.948 \pm 0.224$	$0.762 \pm 0.195$
PRF-fit source offset from KIC position	$1.206 \pm 0.213$	5.66	$-0.941 \pm 0.224$	$0.754 \pm 0.195$
photometric centroid source offset	$2.60 \pm 3.95$	0.66	$-2.39 \pm 3.97$	$1.03 \pm 3.87$

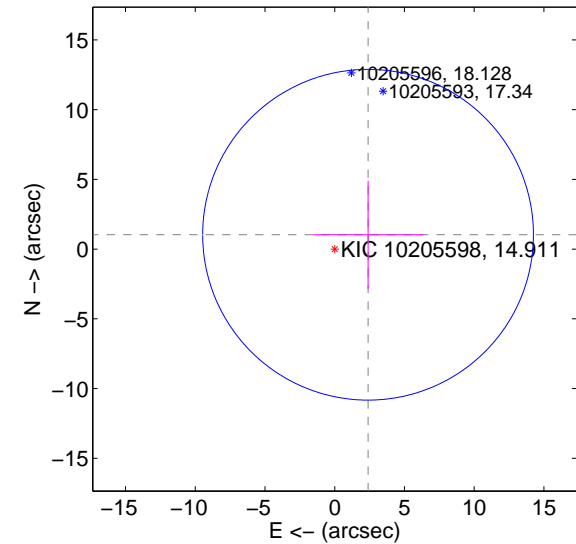
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

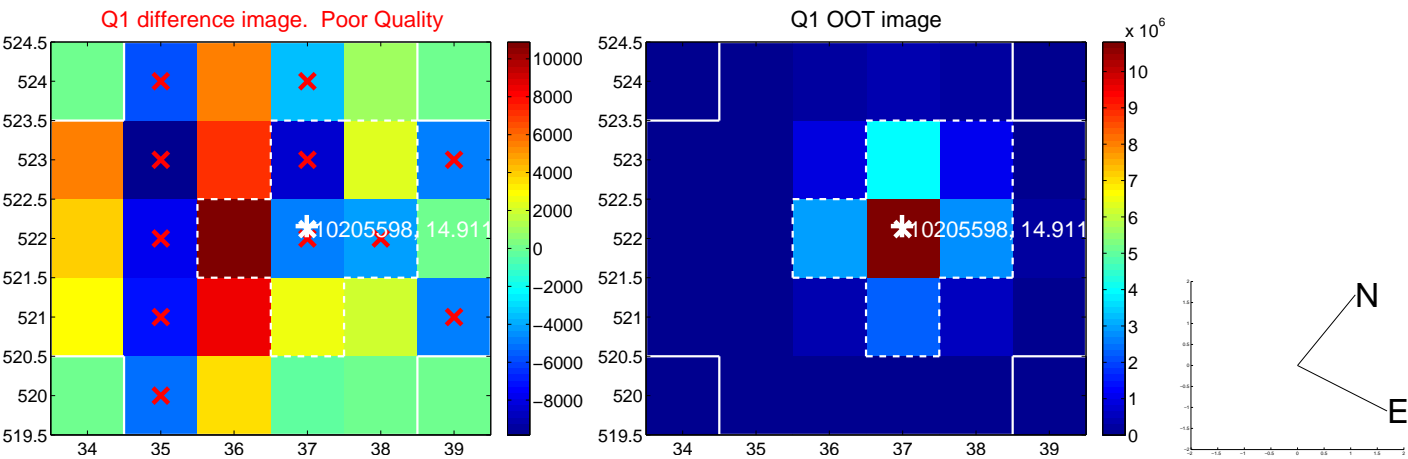


offset from photometric centroids



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 ×: 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.

Q5 no difference image



Q5 no OOT image



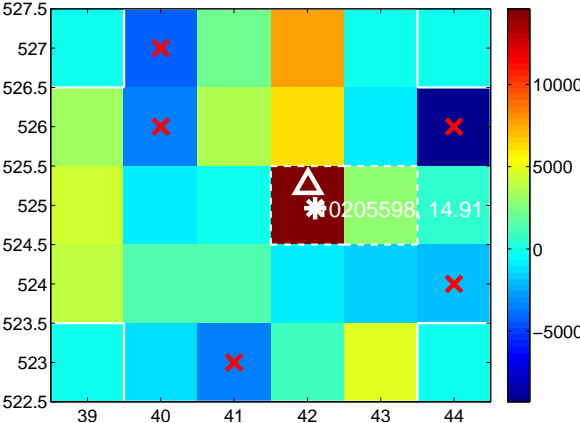
Q6 no difference image



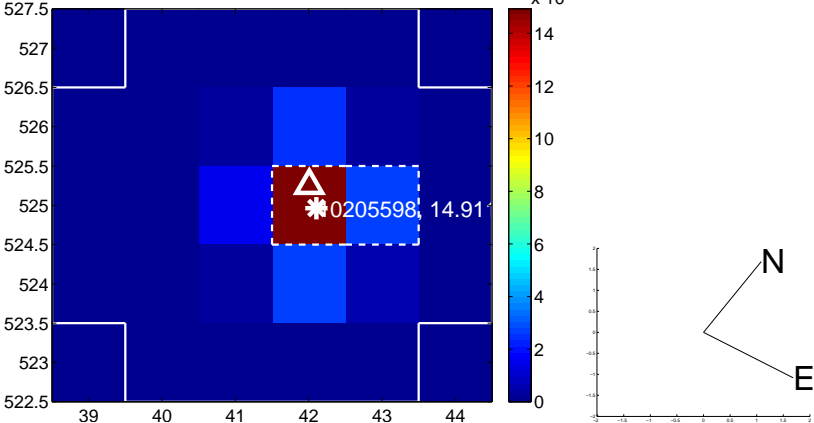
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



Q8 no OOT image



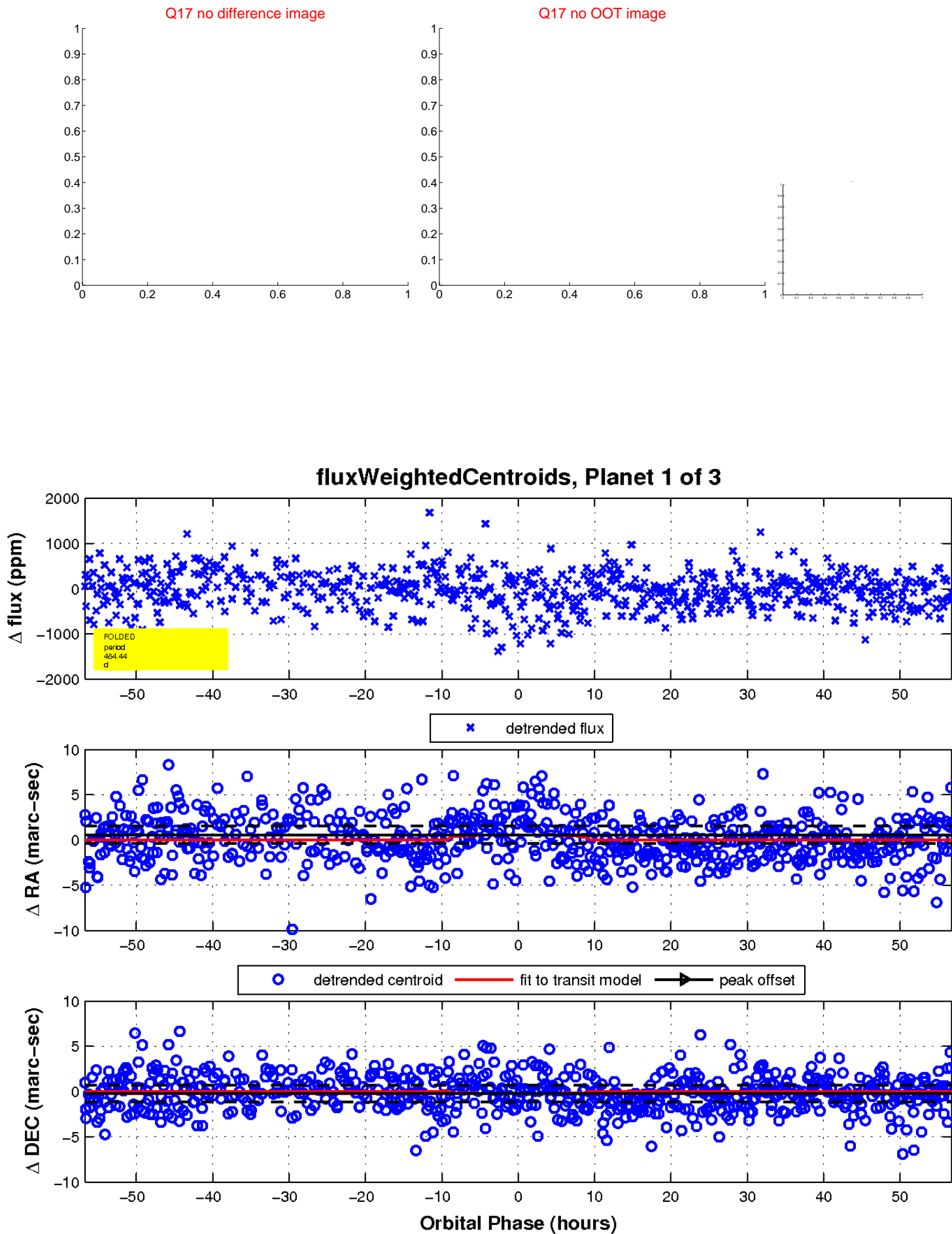
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

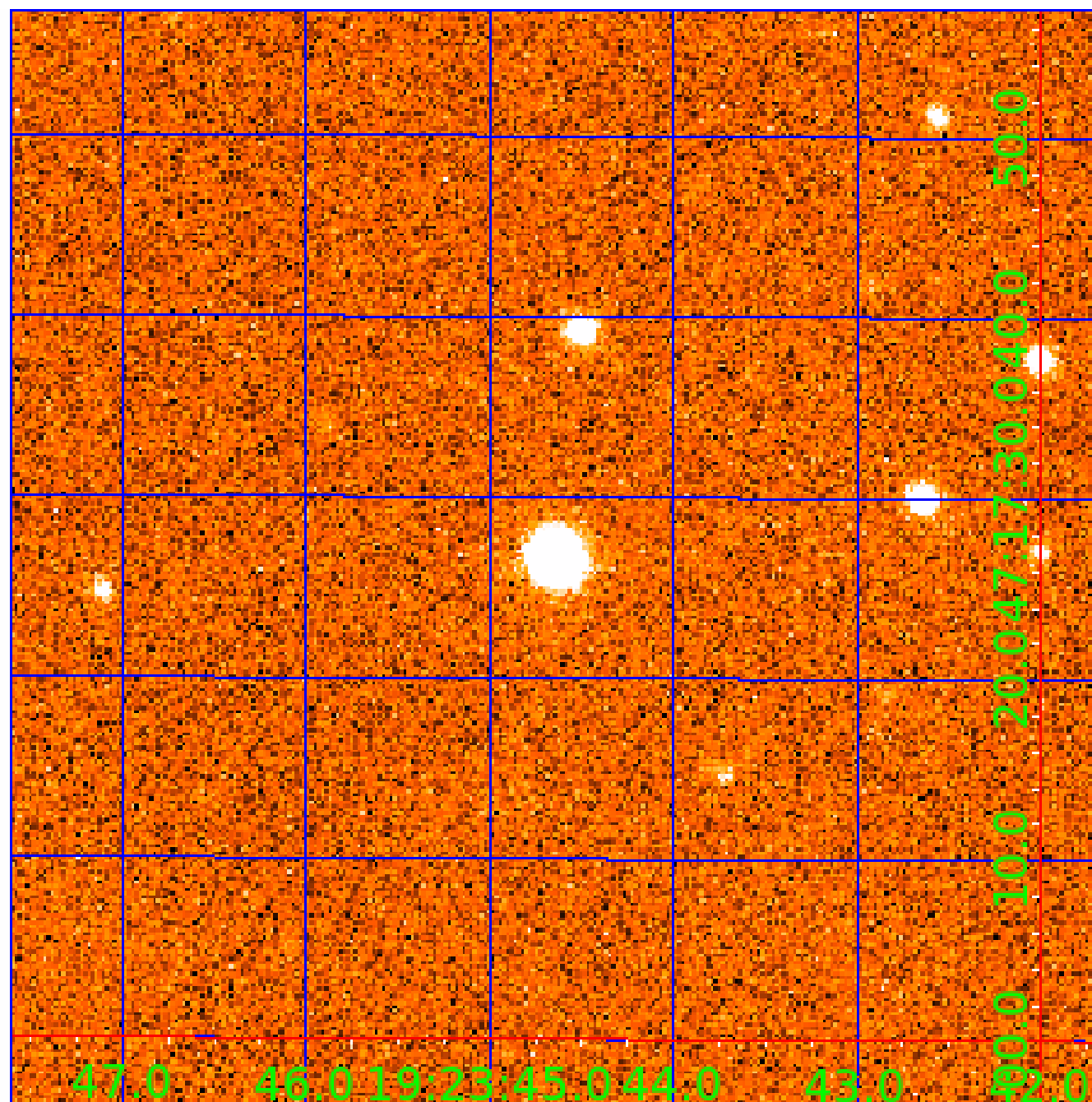


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 010205598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010205598-01	OBS	No	484.441873	154.078834	239.2	18.968	9.2	3.6	0.70	5263	1.21	0.30
010205598-02	OBS	No	318.755439	282.037793	456.1	20.125	8.4	10.5	0.70	5263	1.54	0.53
010205598-03	OBS	8198.01	374.003348	261.476313	637.8	11.461	8.0	7.8	0.70	5263	1.78	0.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010205598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-03	OBS	FP	0.01	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—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.

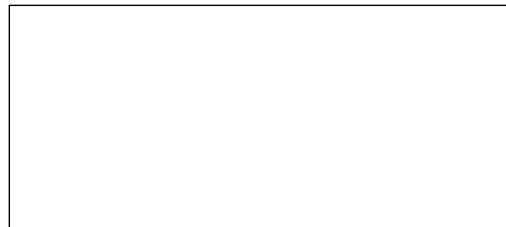
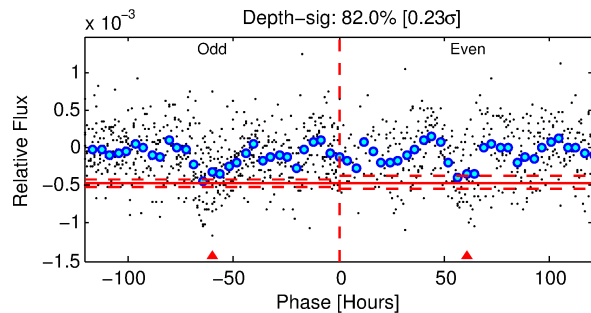
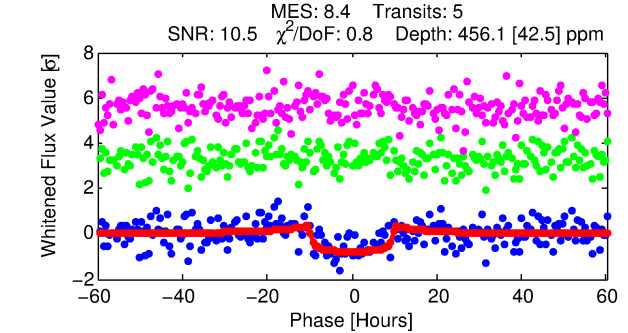
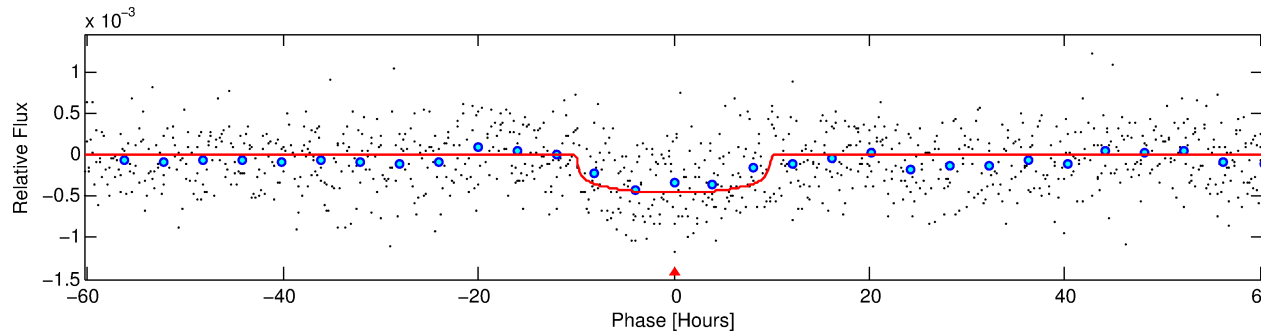
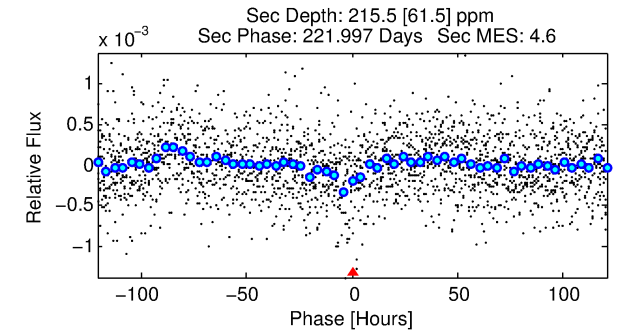
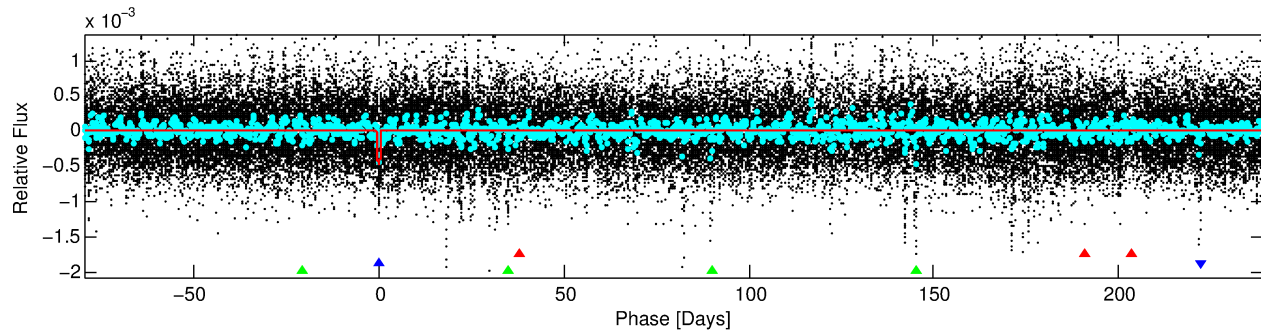
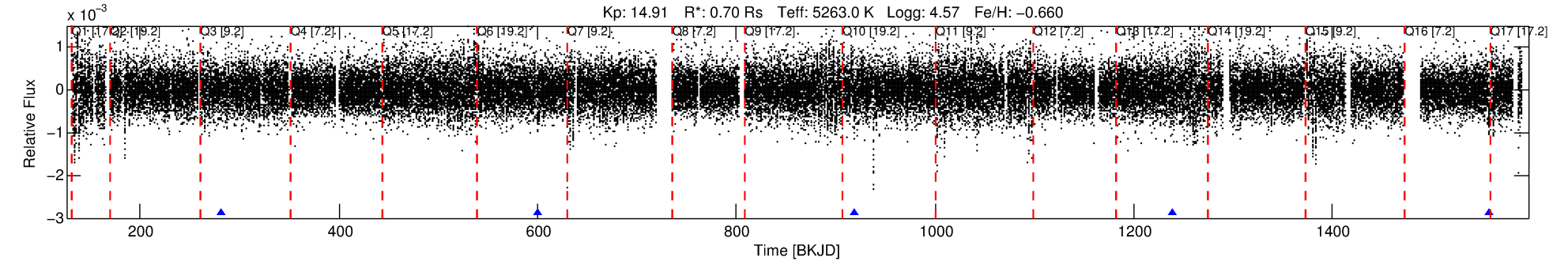
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010205598-02

No Significant Match Found

# DV One-Page Summary

KIC: 10205598 Candidate: 2 of 3 Period: 318.755 d



## DV Fit Results:

Period = 318.75544 [0.00673] d  
Epoch = 282.0378 [0.0176] BKJD  
Rp/R\* = 0.0202 [0.0067]  
a/R\* = 102.03 [138.56]  
b = 0.57 [1.60]  
Seff = 0.53 [0.10]  
Teff = 217 [10] K  
Rp = 1.54 [0.54] Re  
a = 0.7986 [0.0739] AU  
Ag = 31849.67 [23386.57] [1.36σ]  
Teffp = 4487 [820] K [5.21σ]

## DV Diagnostic Results:

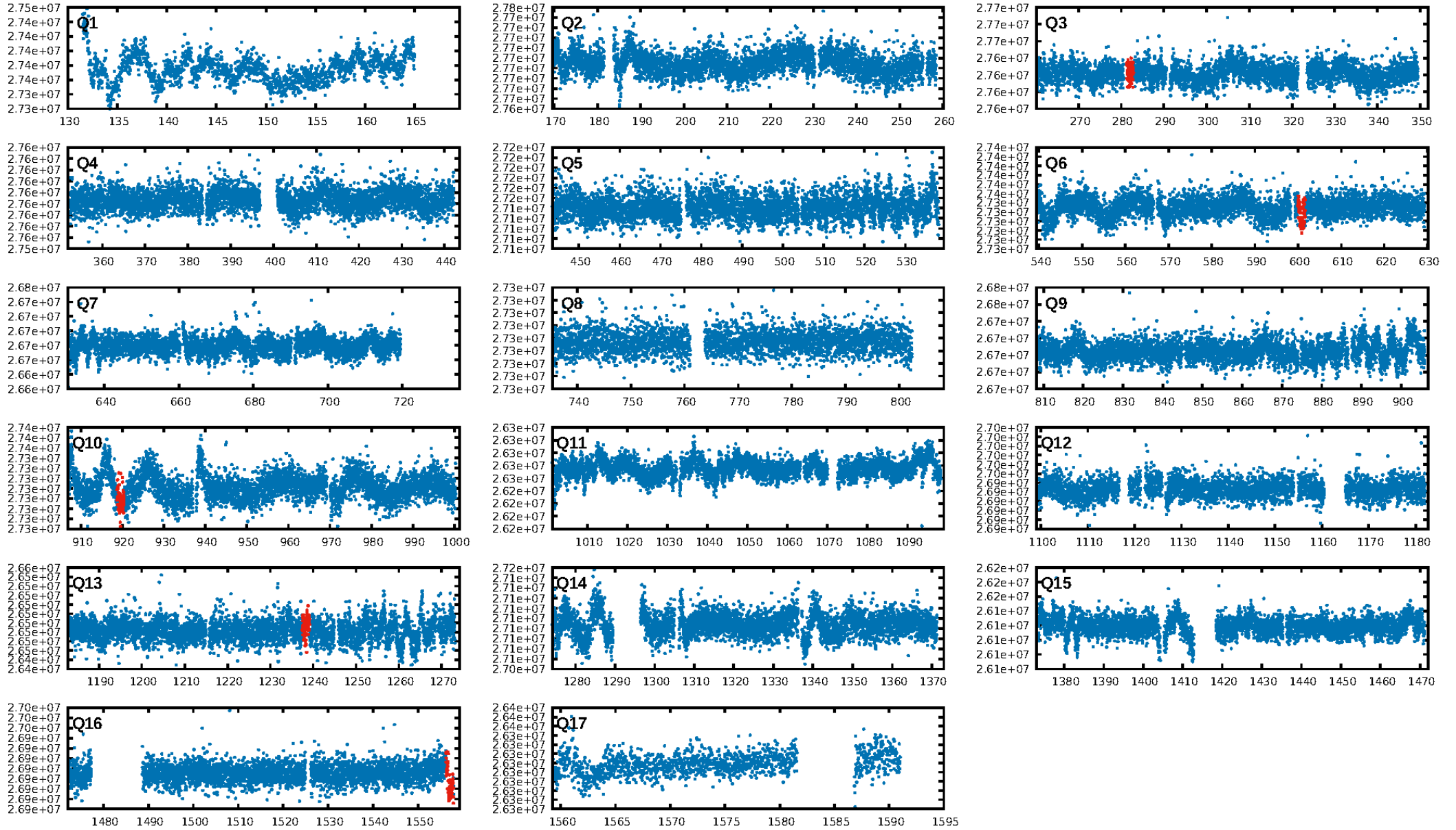
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [57.25σ]  
ModelChiSquare2-sig: 1.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 4.36e-11**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.068  
Centroid-sig: 22.6%  
Centroid-so: 2.464 arcsec [1.30σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [2/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:31:25 Z

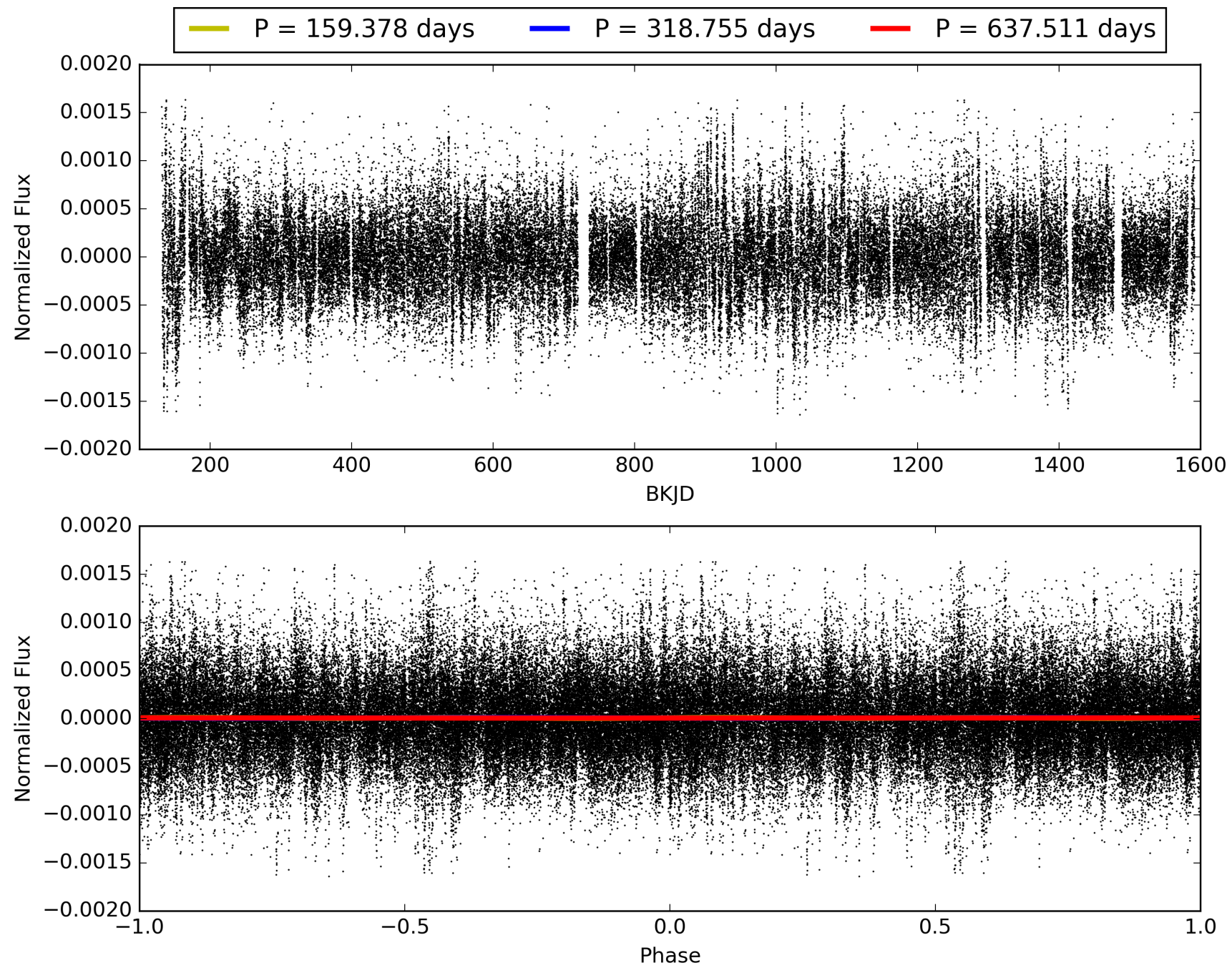
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 010205598-02, PDC Light Curves

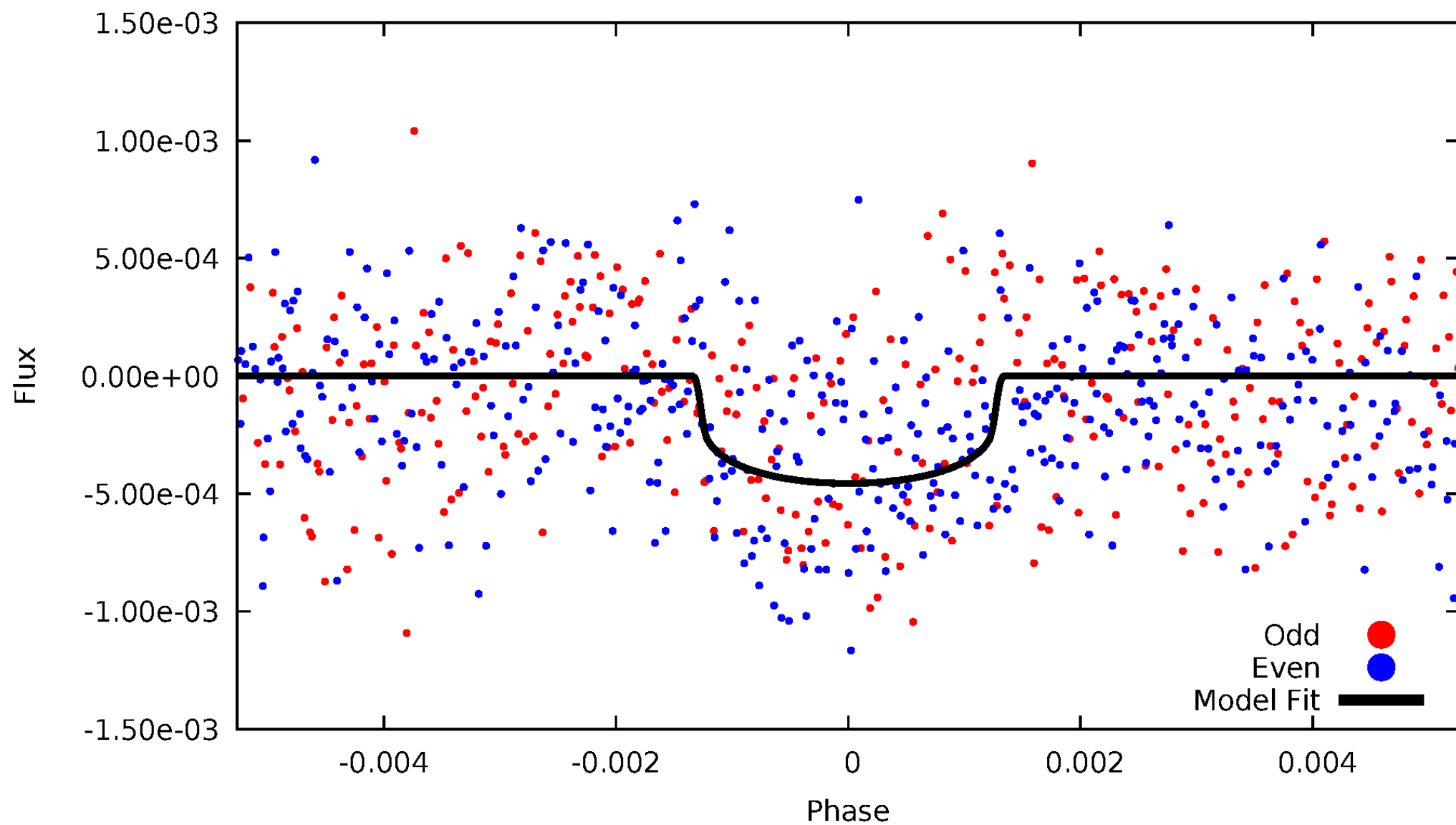


TCE 010205598-02



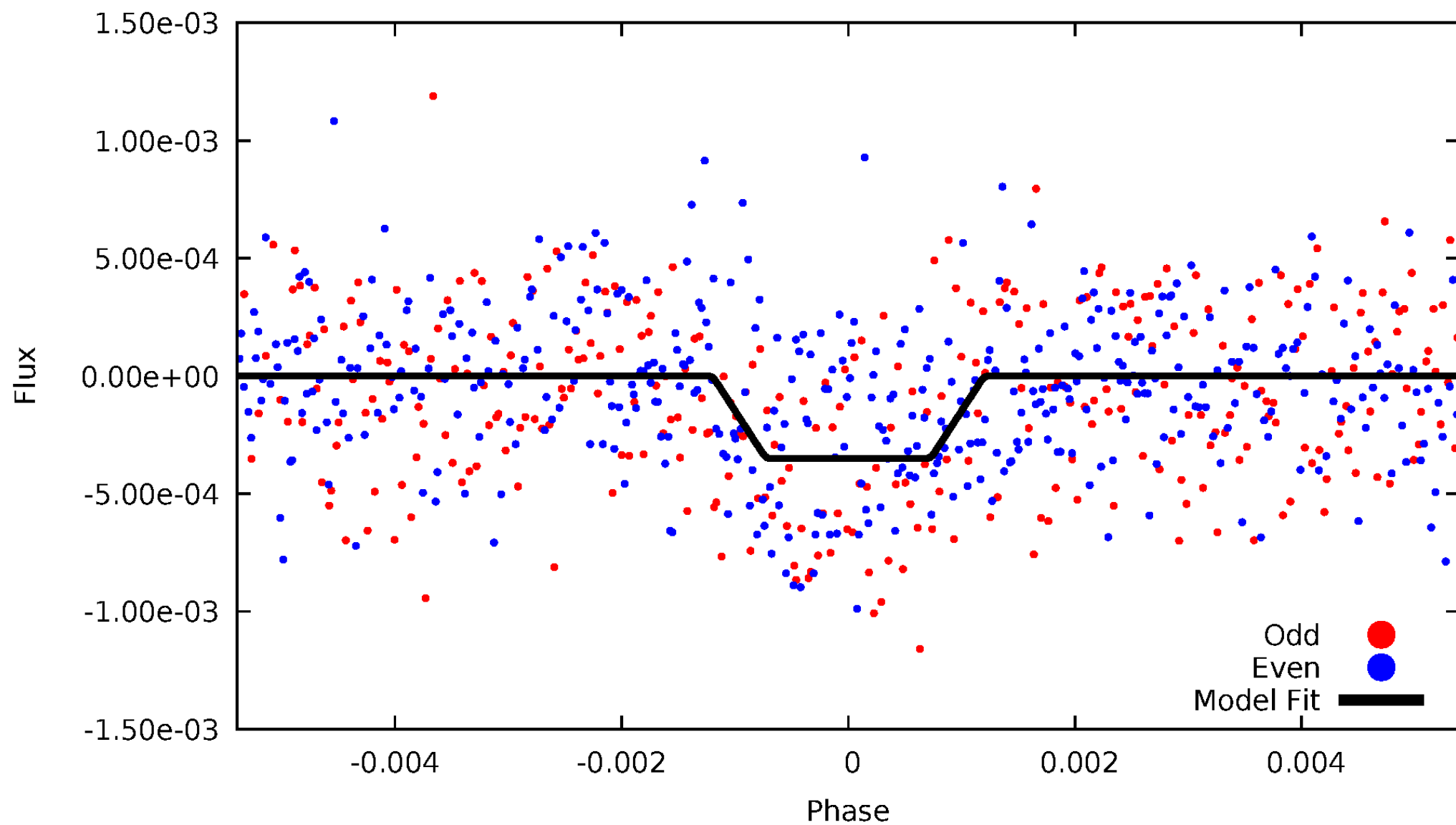
# DV Odd/Even

TCE 010205598-02



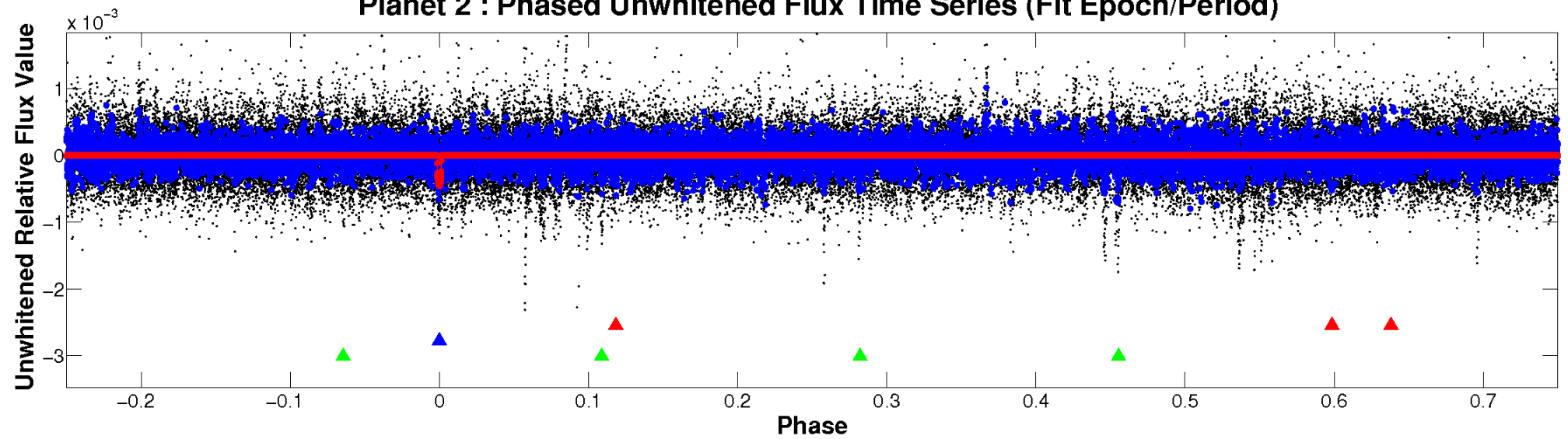
# ALT Odd/Even

TCE 010205598-02

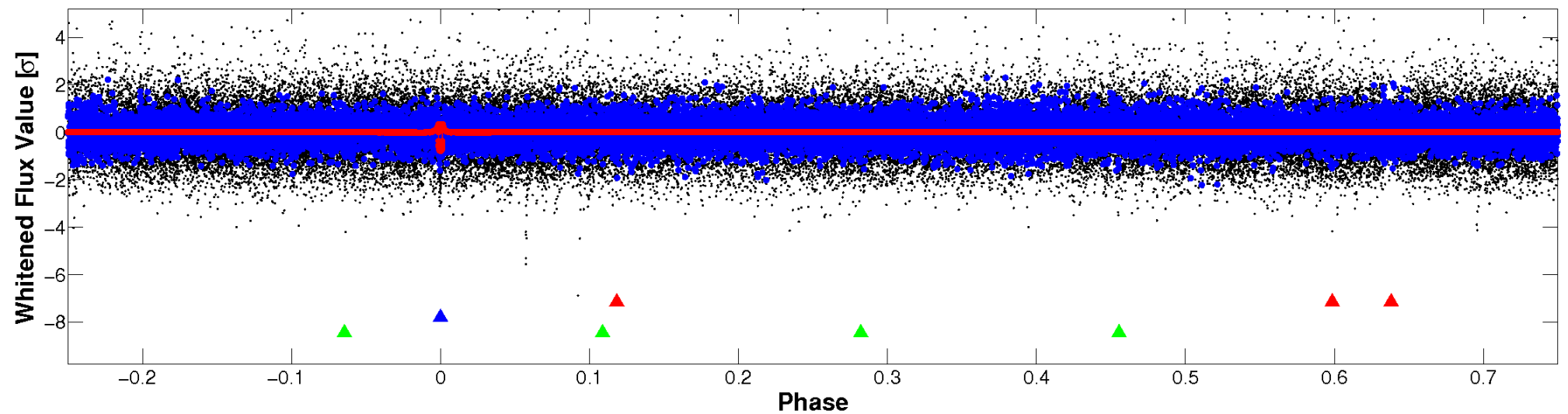


# Non-Whitened Vs. Whitened Light Curve

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

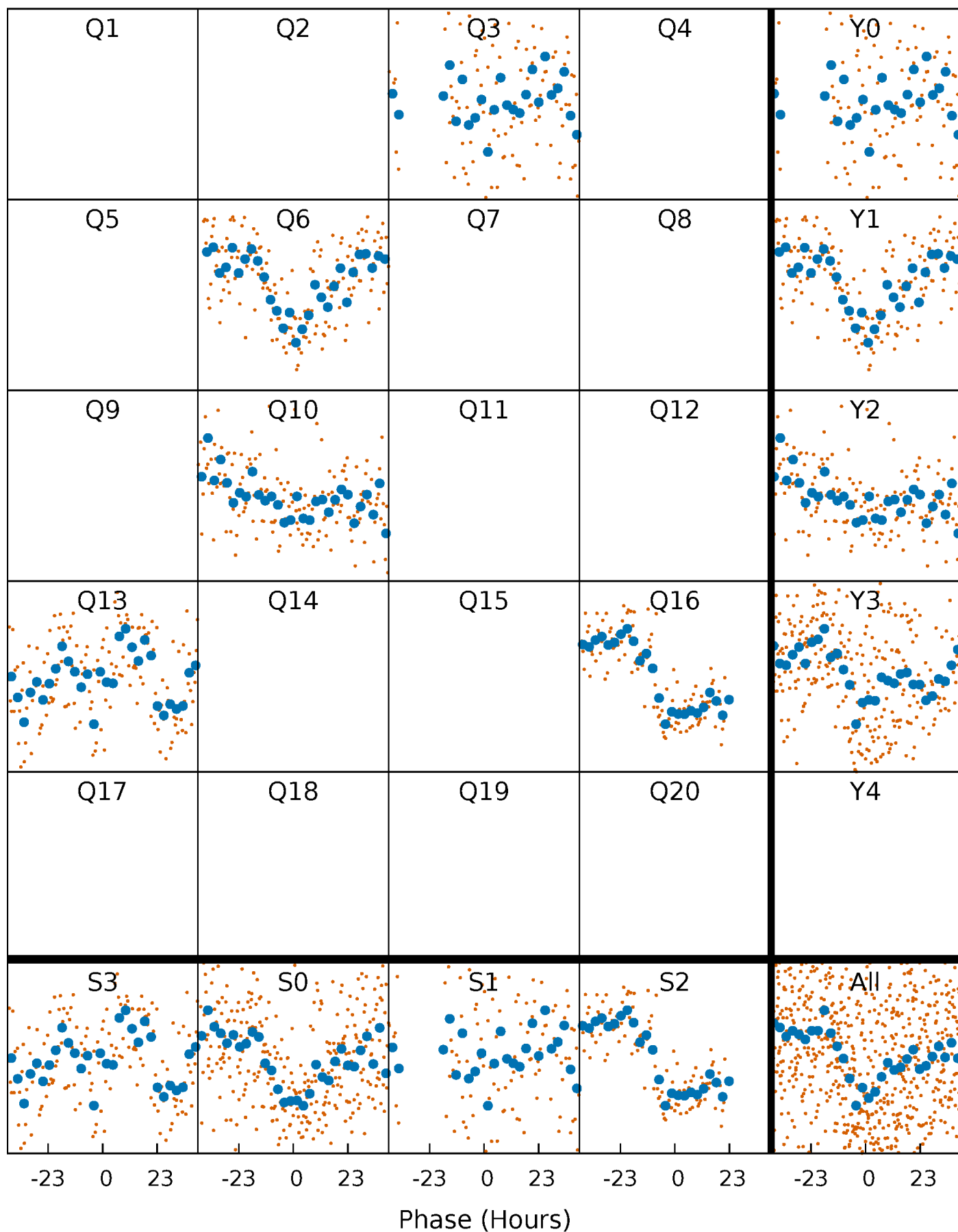


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

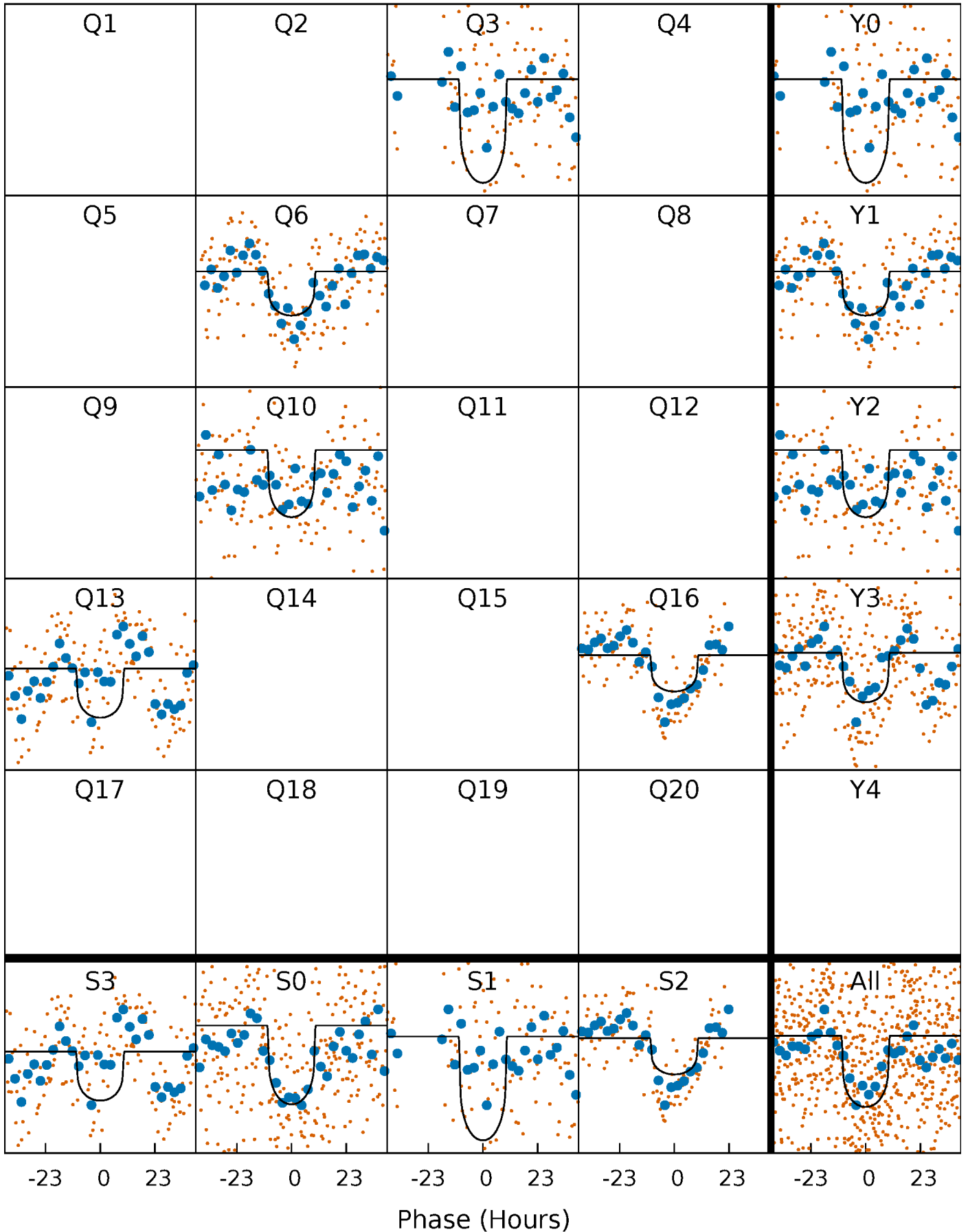
TCE 010205598-02     $P=318.755439$  Days     $T_0=282.037793$  (BKJD)





# DV Quarter-Phased Transit Curves

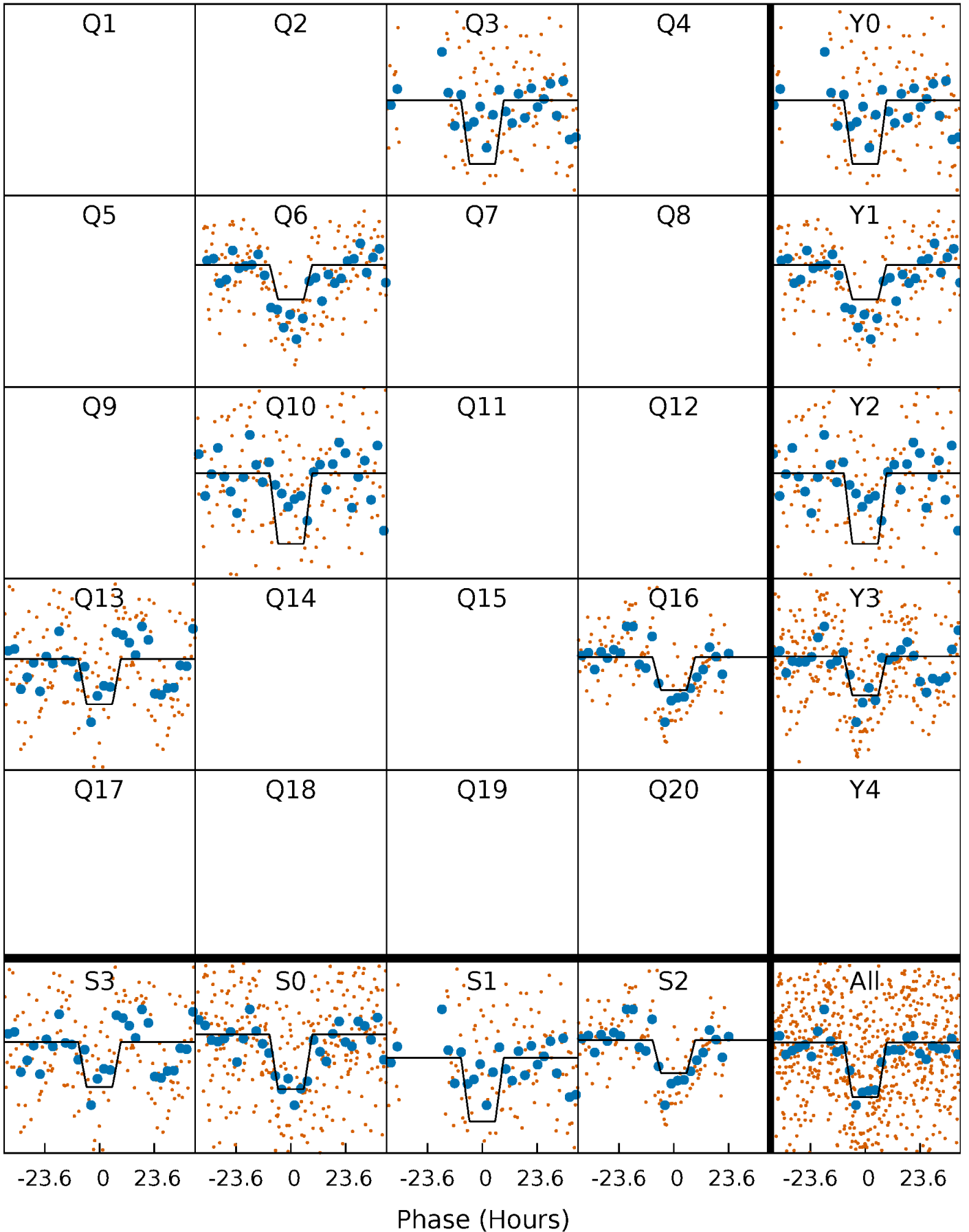
TCE 010205598-02     $P=318.755439$  Days     $T_0=282.037793$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

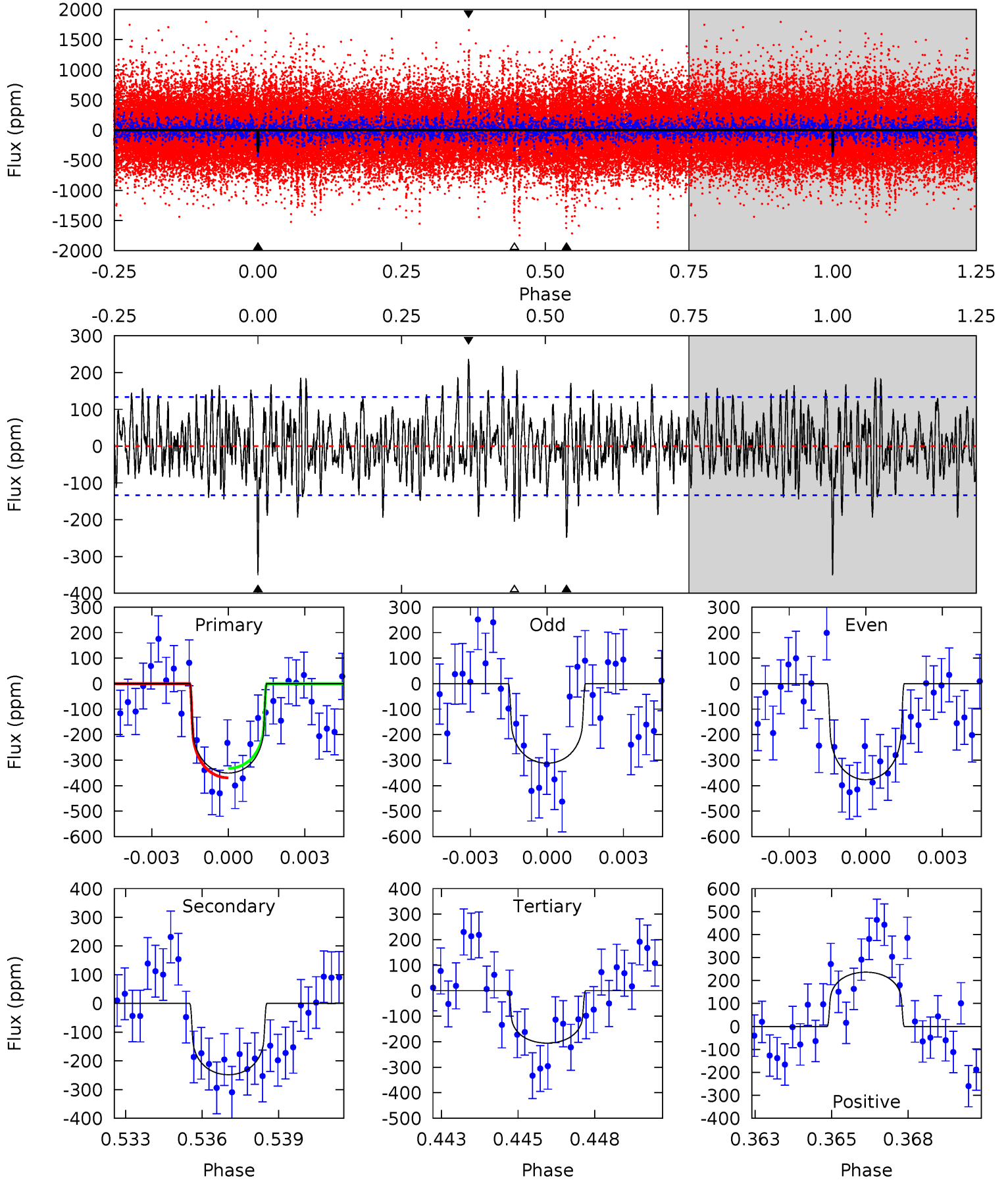
TCE 010205598-02 P=318.749914 Days  $T_0=282.030988$  (BKJD)



# DV Model-Shift Uniqueness Test

010205598-02, P = 318.755439 Days, E = 282.037793 Days

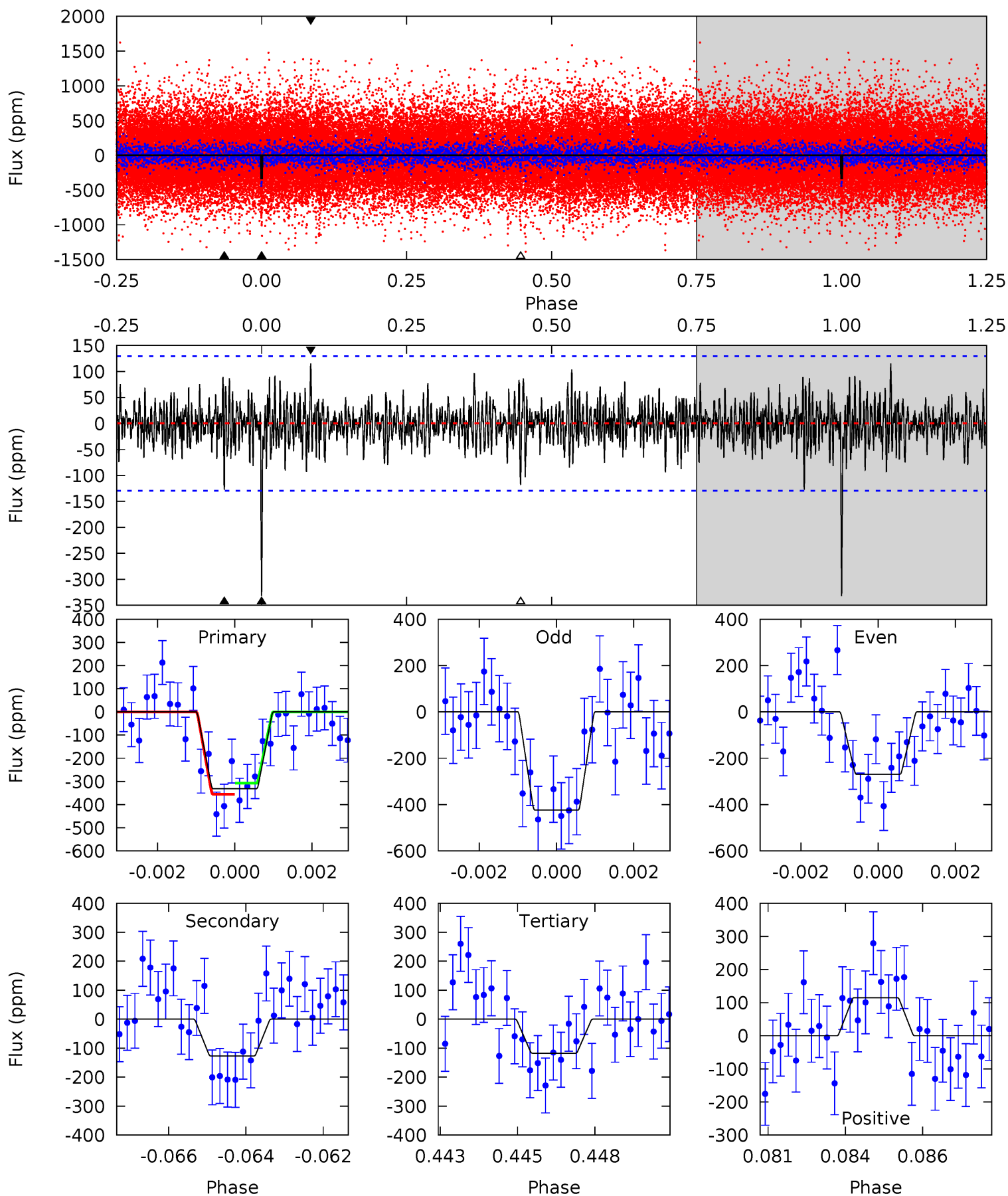
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	9.79	8.10	9.33	5.27	3.00	2.64	5.73	4.51	1.69	0.47	1.24	0.99	0.40	0.73



# Alt Model-Shift Uniqueness Test

010205598-02, P = 318.749914 Days, E = 282.030988 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	5.19	4.80	4.70	5.29	3.03	1.25	8.75	8.86	0.38	0.49	3.09	1.32	0.26	0.98



### Stellar Parameters For KIC 010205598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5263^{+157}_{-141}$	$4.574^{+0.078}_{-0.052}$	$-0.660^{+0.350}_{-0.300}$	$0.699^{+0.074}_{-0.066}$	$0.668^{+0.082}_{-0.032}$	$2.753^{+0.937}_{-0.544}$
	+3%/-3%	+2%/-1%	+53%/-45%	+11%/-9%	+12%/-5%	+34%/-20%
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 010205598-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-248 \pm 25$	$1.53^{+0.52}_{-0.51}$	$302^{+11}_{-12}$	$4754^{+945}_{-550}$	$37424^{+52029}_{-16857}$
Alt.	$-127 \pm 24$	$1.42^{+0.52}_{-0.53}$	$302^{+12}_{-11}$	$4301^{+825}_{-498}$	$22758^{+33425}_{-11606}$

$T_{max}$  = 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

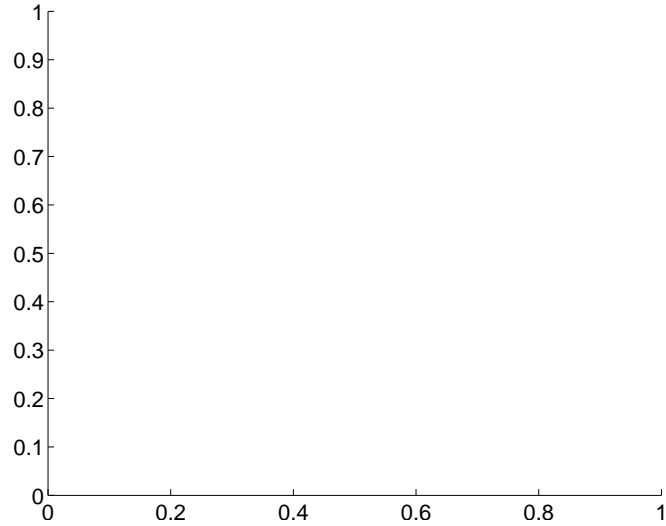
Supplemental centroid analysis for 010205598-02. Kepler magnitude: 14.91. Transit SNR 10.53

There are 0 quarters with good PRF difference image offsets

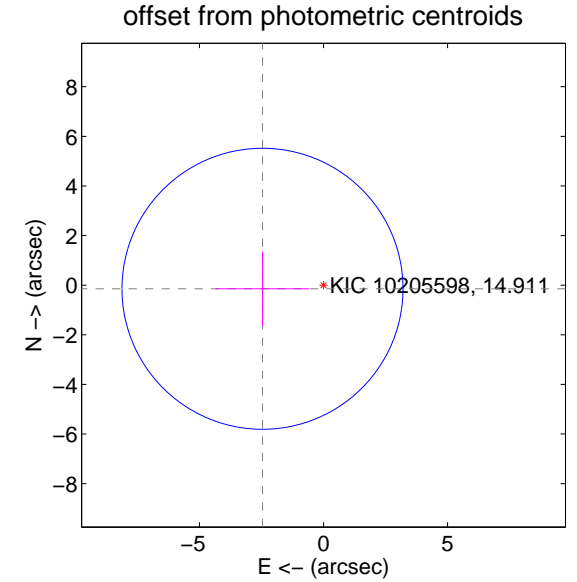
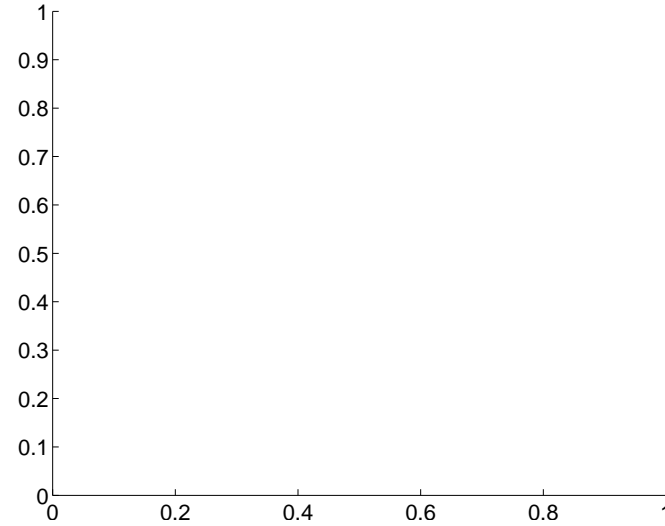
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.46 \pm 1.89$	1.30	$2.46 \pm 1.89$	$-0.15 \pm 1.50$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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

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

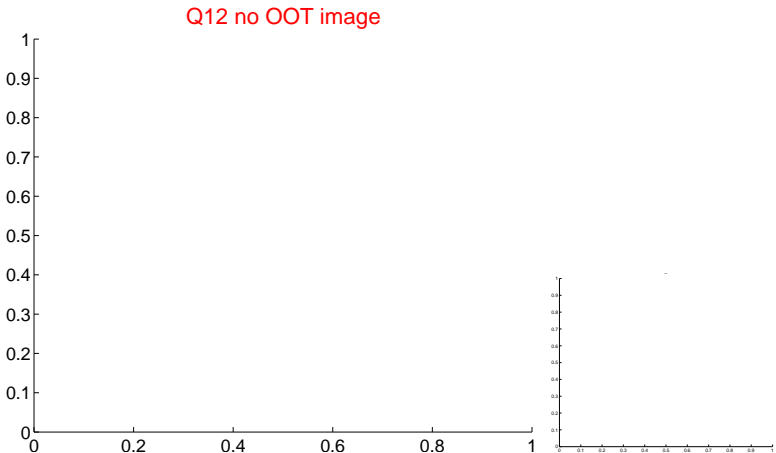
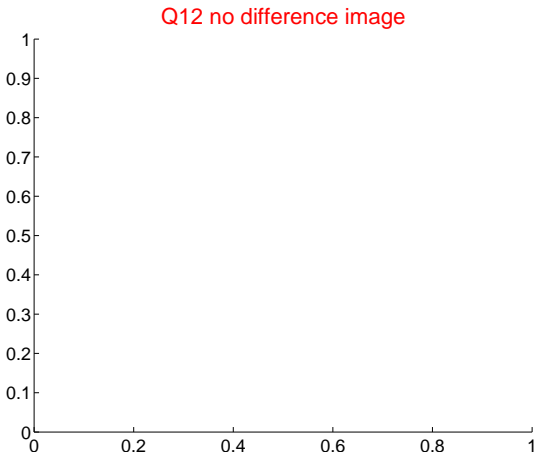
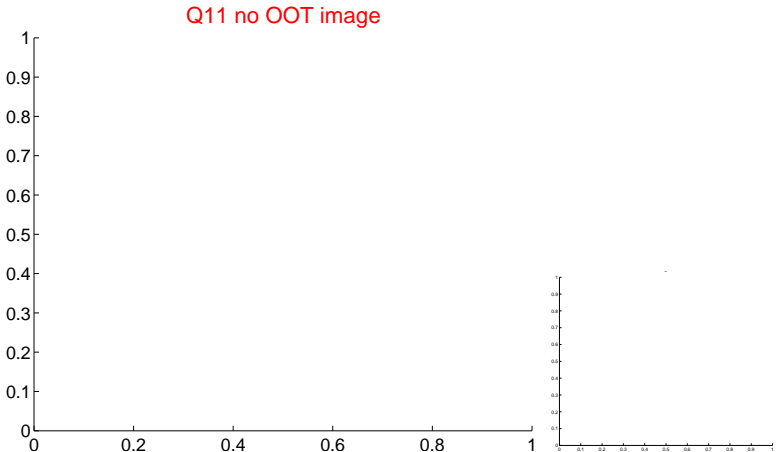
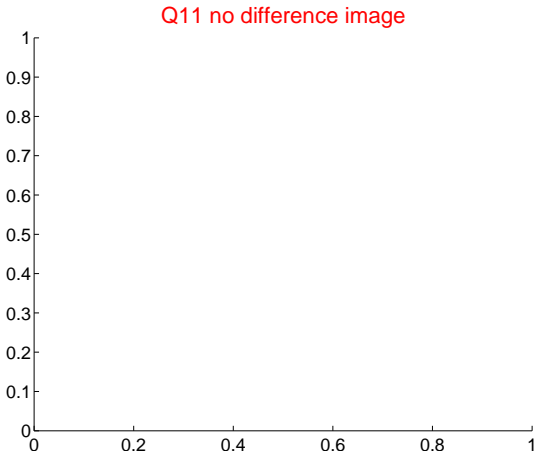
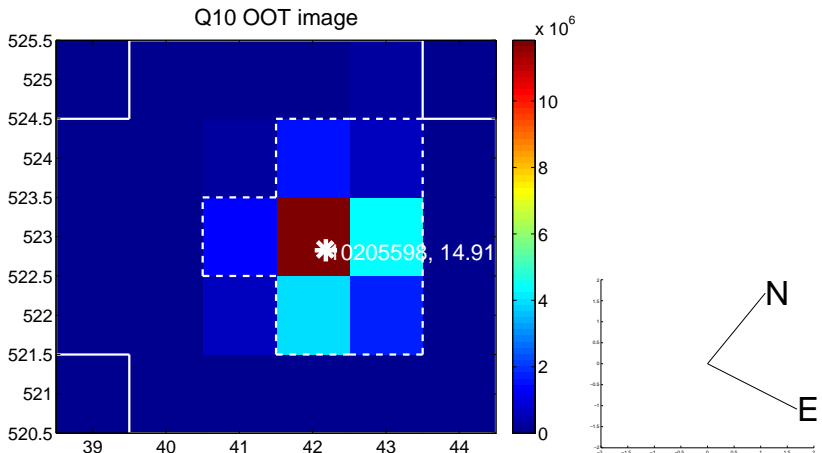
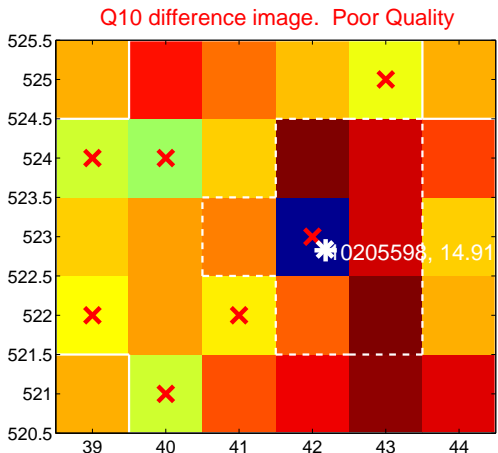
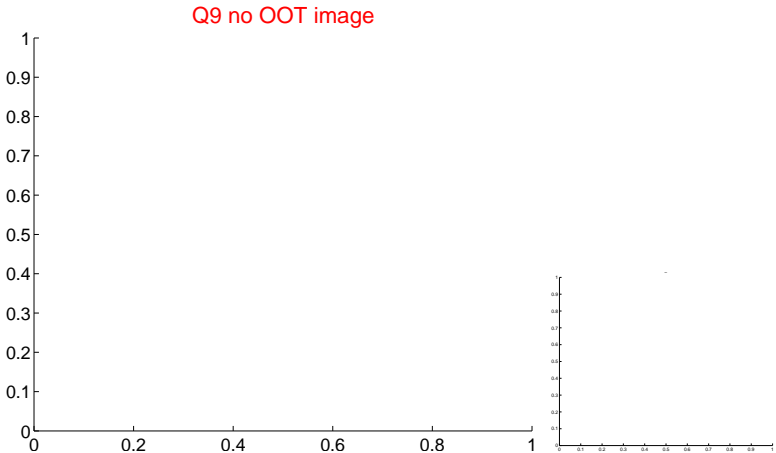
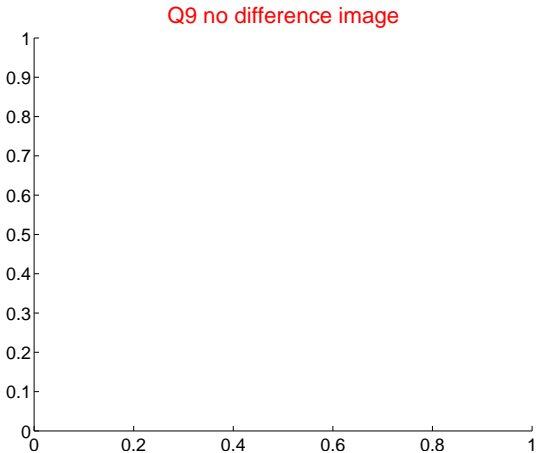


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

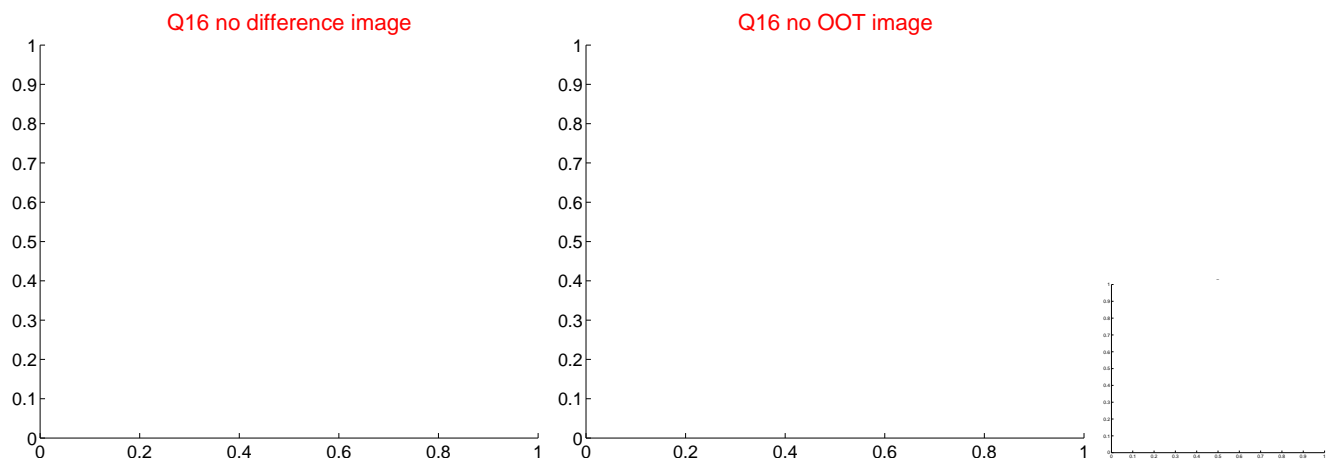
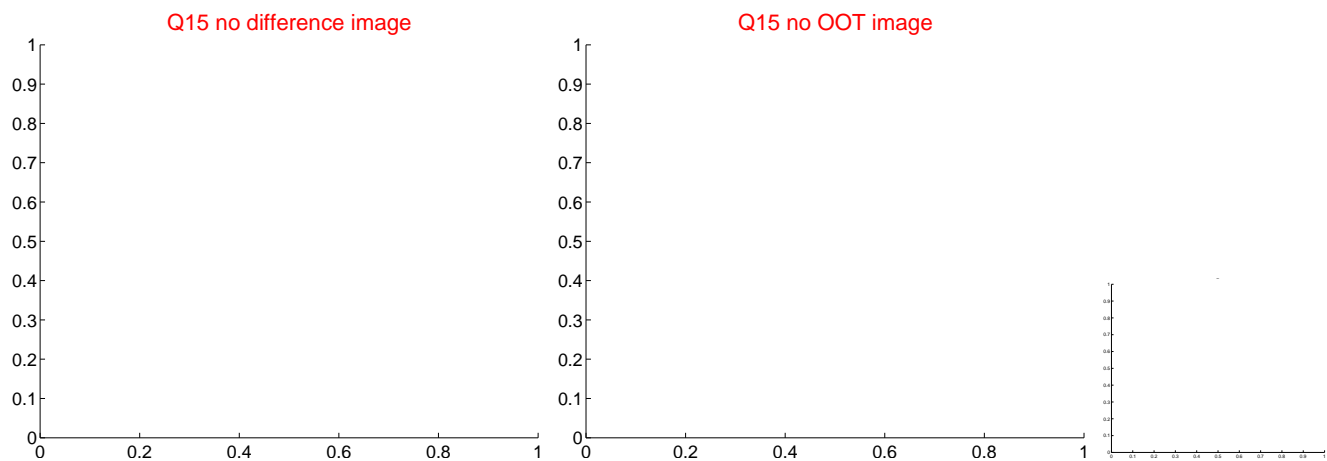
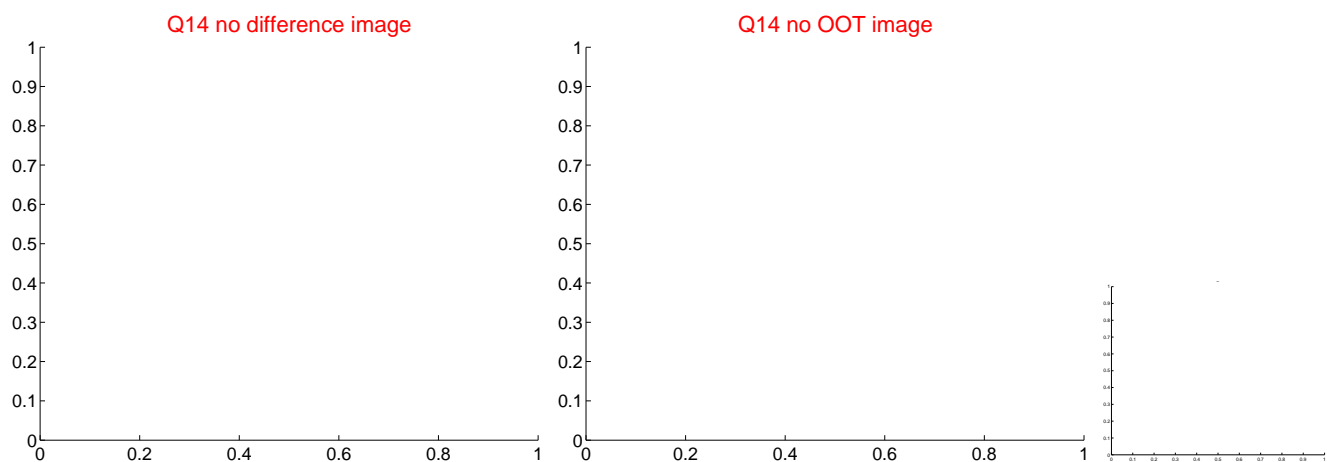
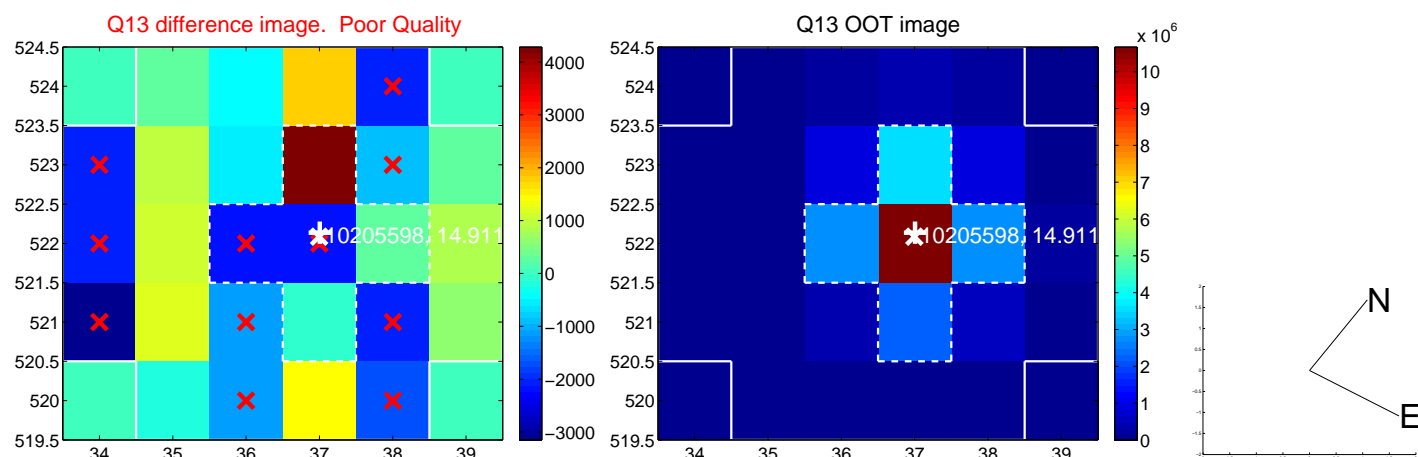




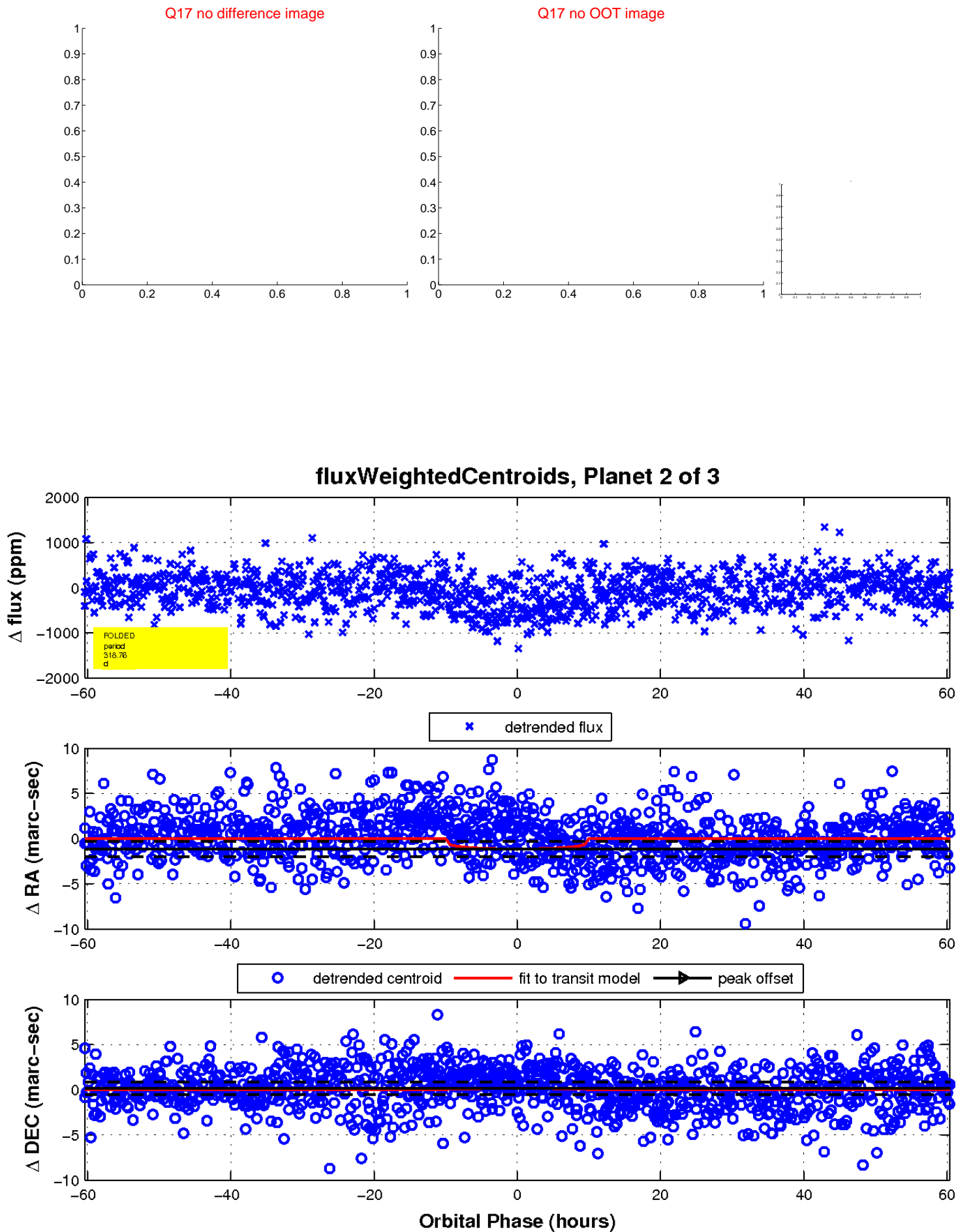
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

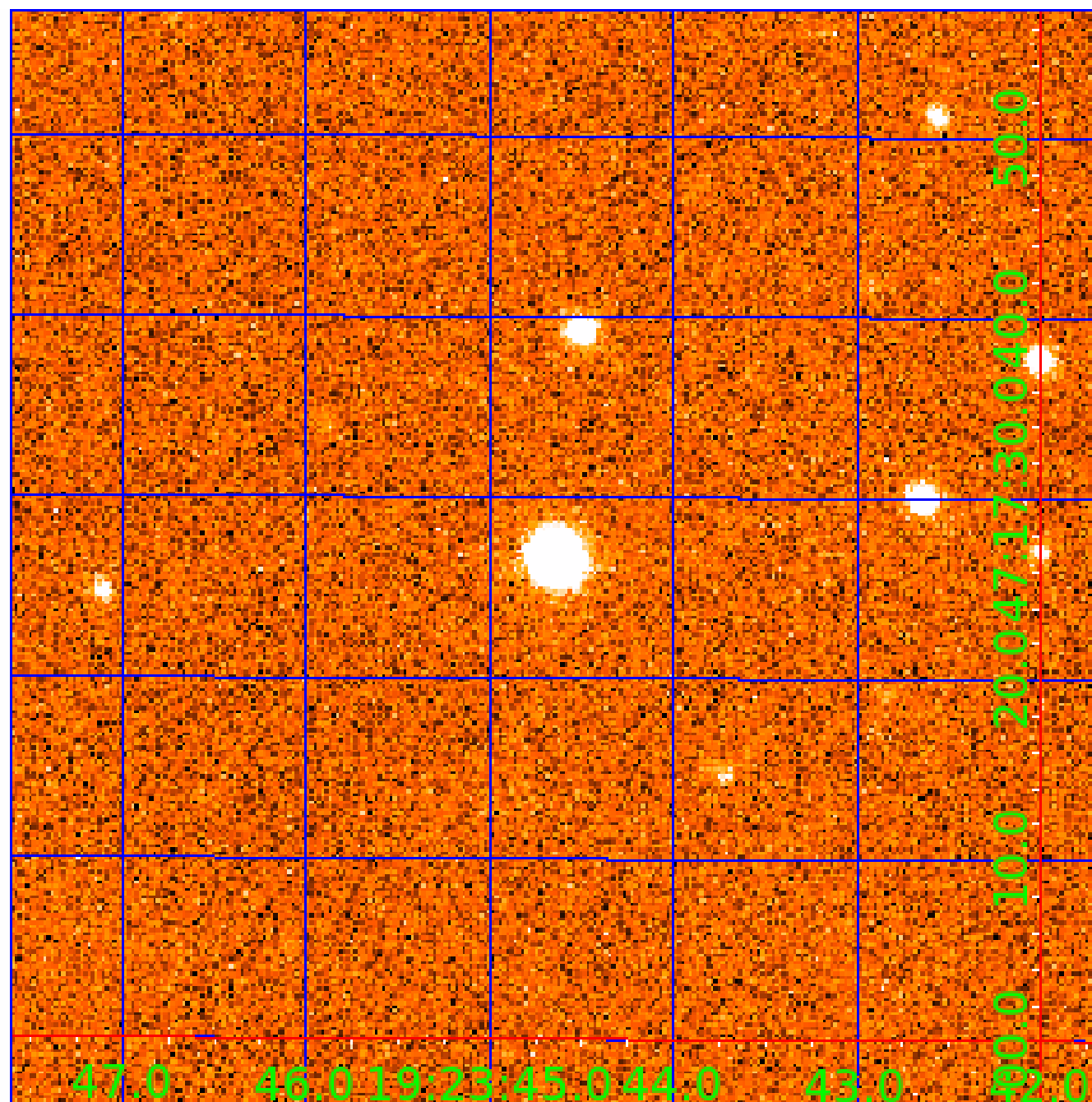


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 010205598

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010205598-01	OBS	No	484.441873	154.078834	239.2	18.968	9.2	3.6	0.70	5263	1.21	0.30
010205598-02	OBS	No	318.755439	282.037793	456.1	20.125	8.4	10.5	0.70	5263	1.54	0.53
010205598-03	OBS	8198.01	374.003348	261.476313	637.8	11.461	8.0	7.8	0.70	5263	1.78	0.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010205598-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010205598-03	OBS	FP	0.01	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—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.

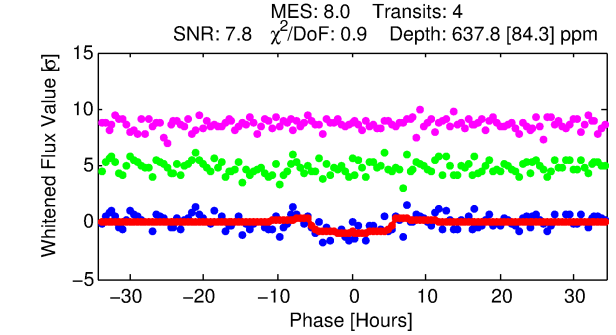
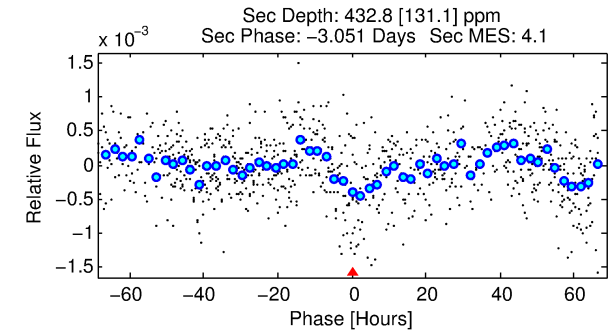
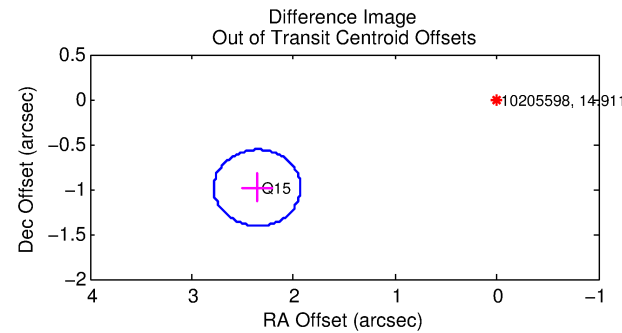
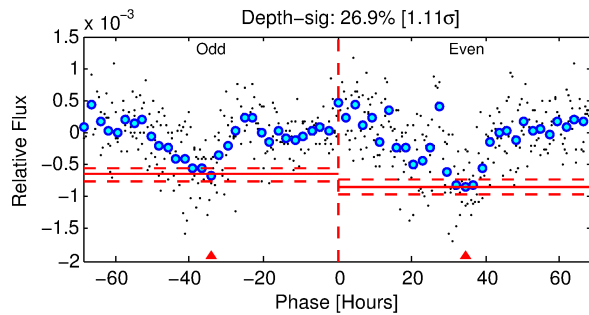
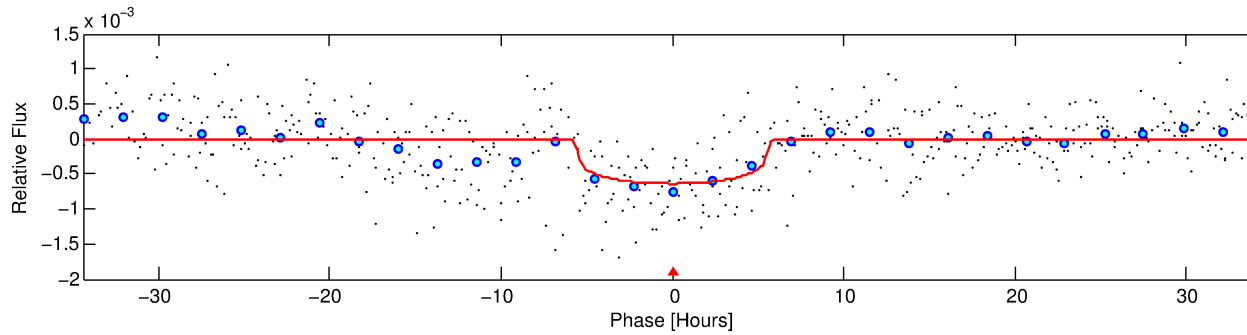
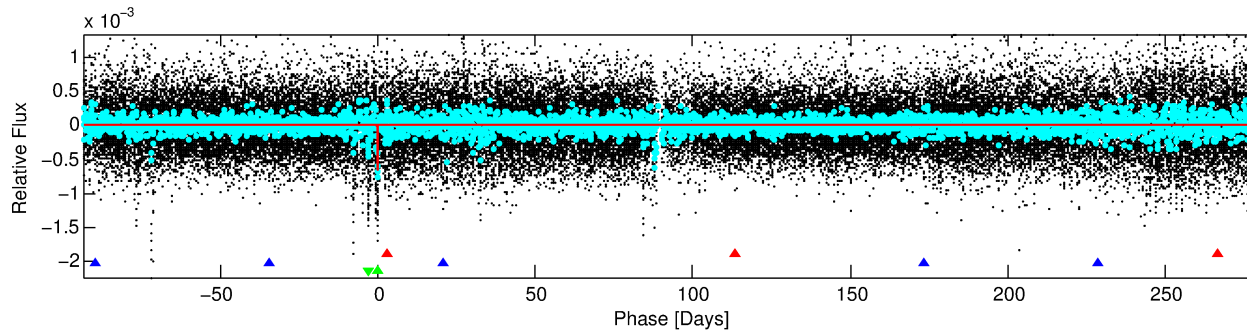
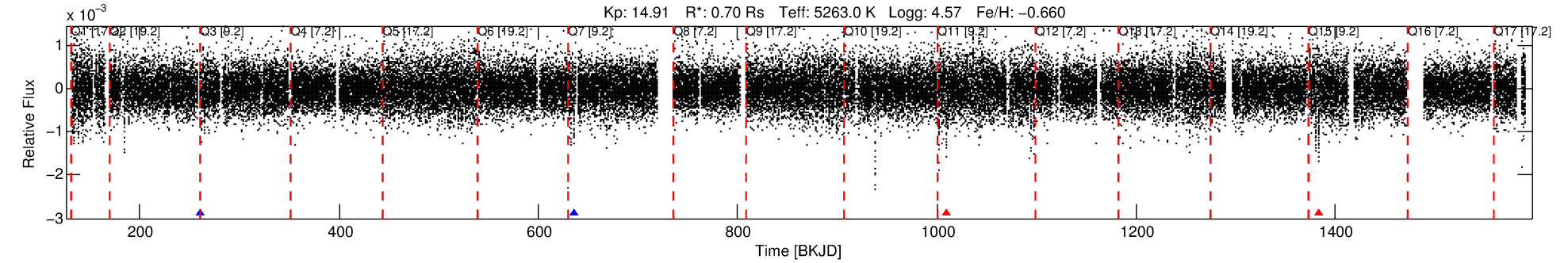
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010205598-03

No Significant Match Found

# DV One-Page Summary

KIC: 10205598 Candidate: 3 of 3 Period: 374.003 d



## DV Fit Results:

Period = 374.00335 [0.00690] d  
Epoch = 261.4763 [0.0120] BKJD  
Rp/R\* = 0.0234 [0.0198]  
a/R\* = 230.88 [806.07]  
b = 0.44 [6.55]  
Seff = 0.43 [0.08]  
Teq = 206 [9] K  
Rp = 1.78 [1.52] Re  
a = 0.8884 [0.0822] AU  
Ag = 59219.48 [102199.60] [0.58 $\sigma$ ]  
Teffp = 4967 [2141] K [2.22 $\sigma$ ]

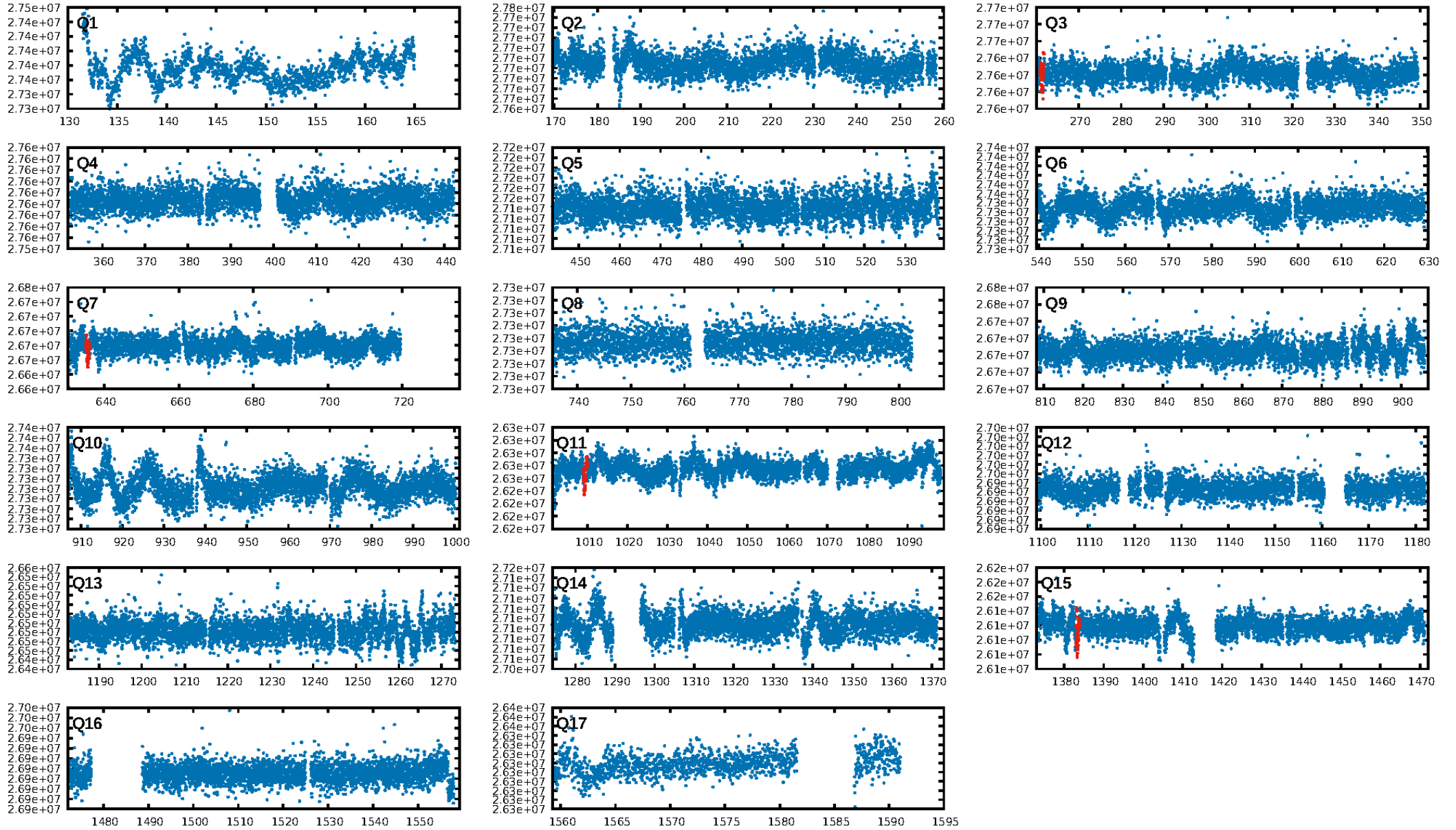
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.25 $\sigma$ ]  
LongPeriod-sig: 100.0% [119.60 $\sigma$ ]  
ModelChiSquare2-sig: 29.5%  
ModelChiSquareGof-sig: 99.0%  
Bootstrap-pfa: 5.53e-09  
RollingBand-fgt: 0.50 [2/4]  
GhostDiagnostic-chr: 3.27  
Centroid-sig: 76.8%  
Centroid-so: 1.031 arcsec [0.46 $\sigma$ ]  
OotOffset-rm: 2.553 arcsec [18.01 $\sigma$ ]  
KicOffset-rm: 2.541 arcsec [17.97 $\sigma$ ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:31:35 Z

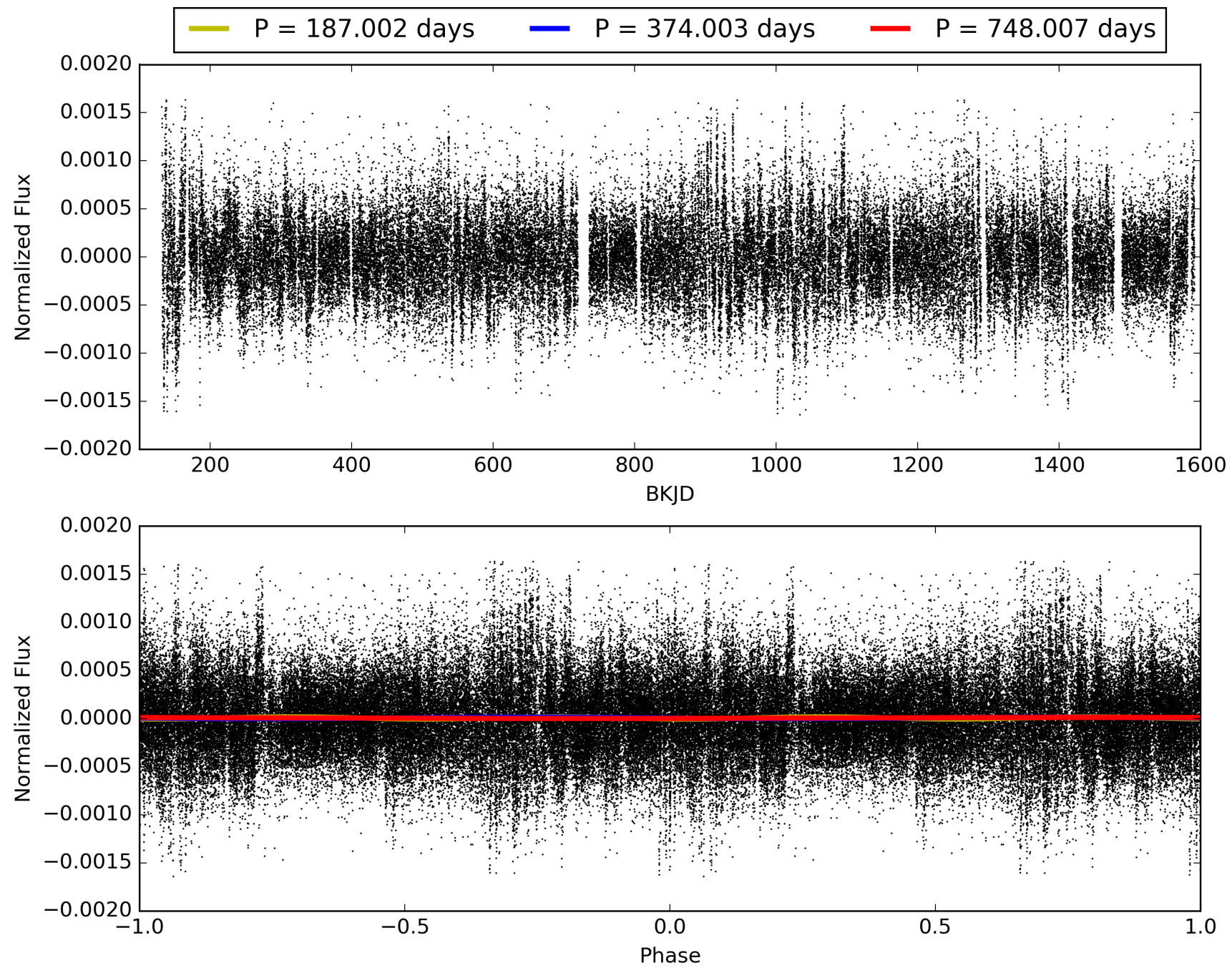
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010205598-03, PDC Light Curves





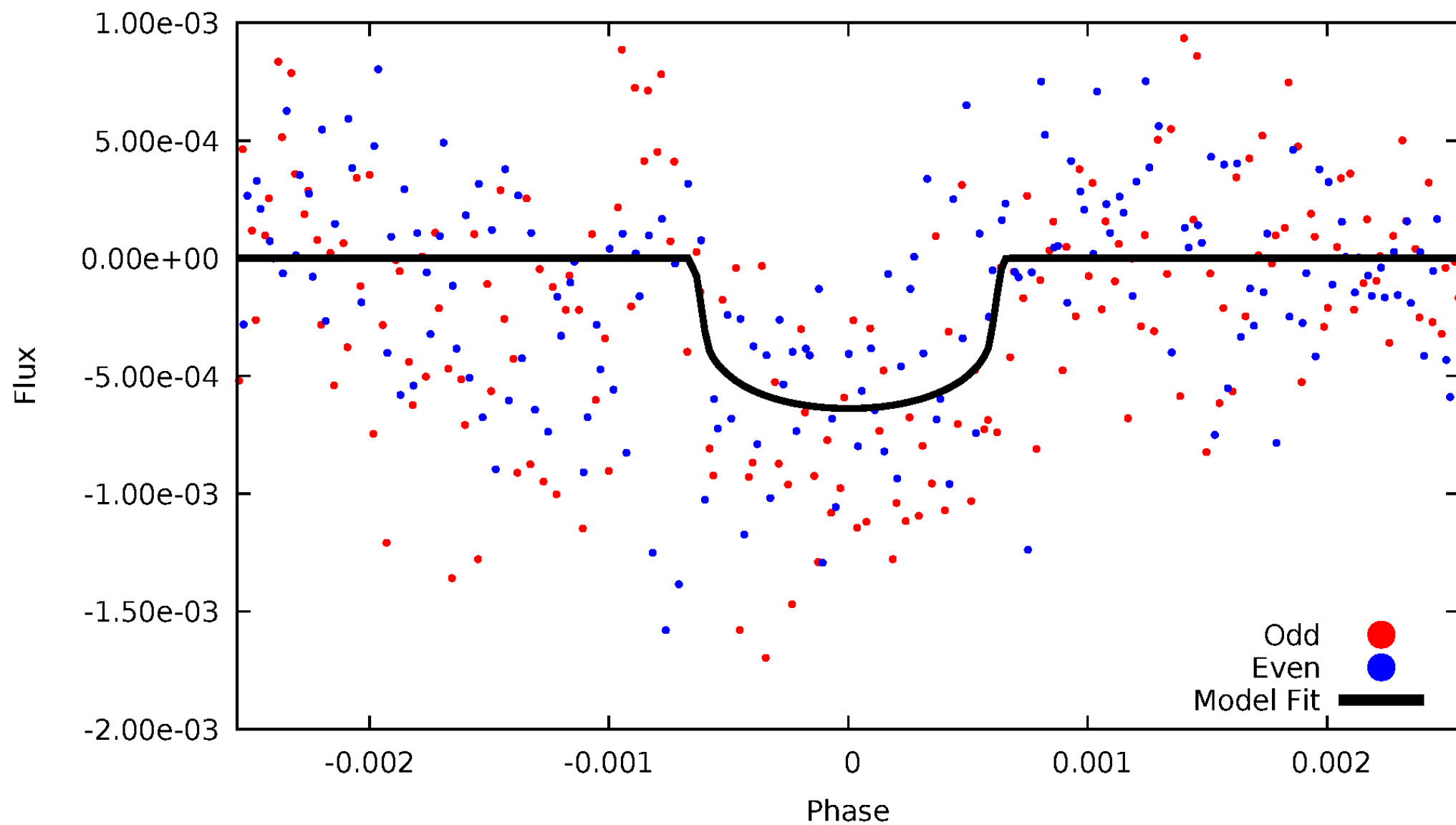
TCE 010205598-03





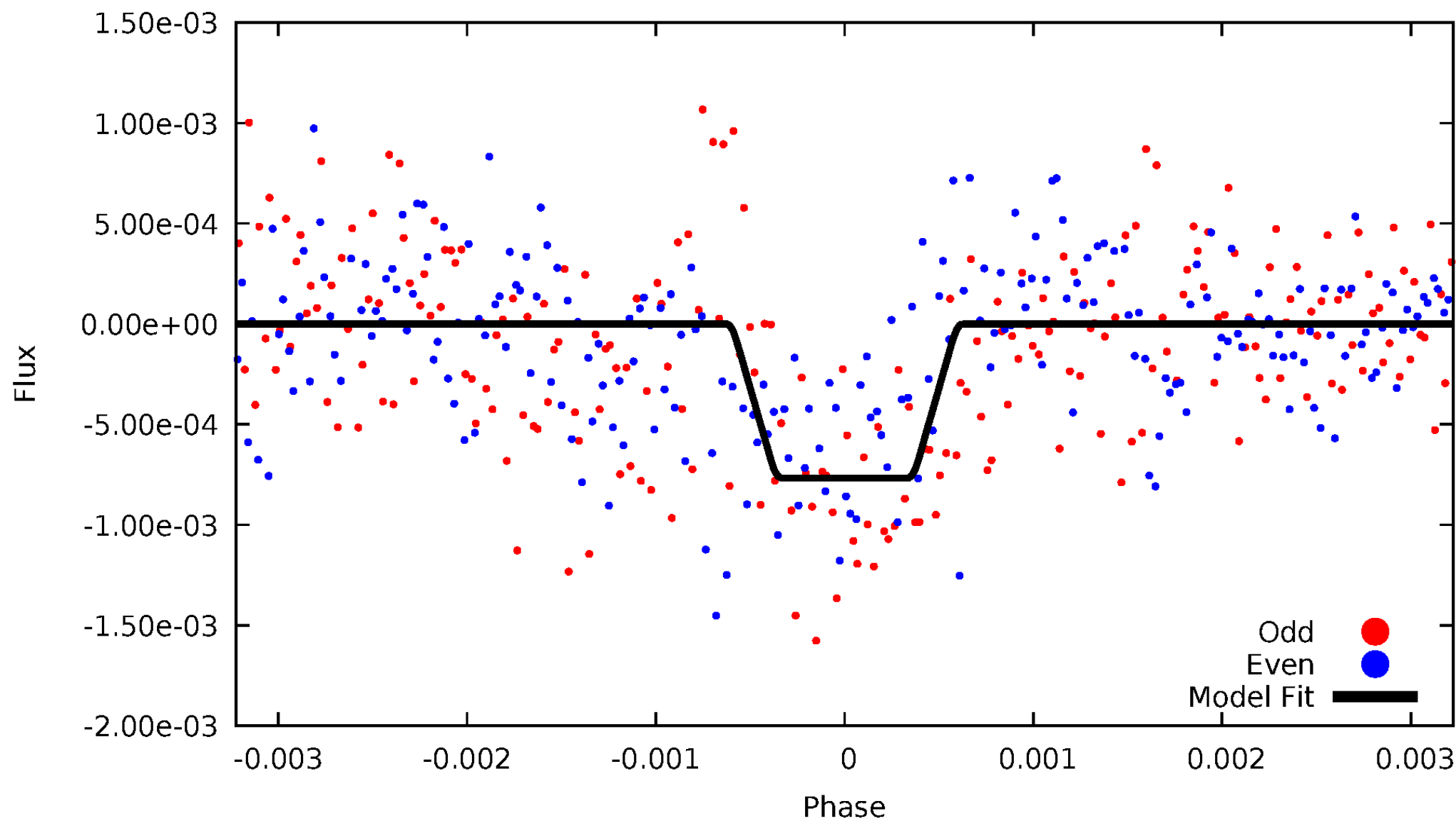
# DV Odd/Even

TCE 010205598-03



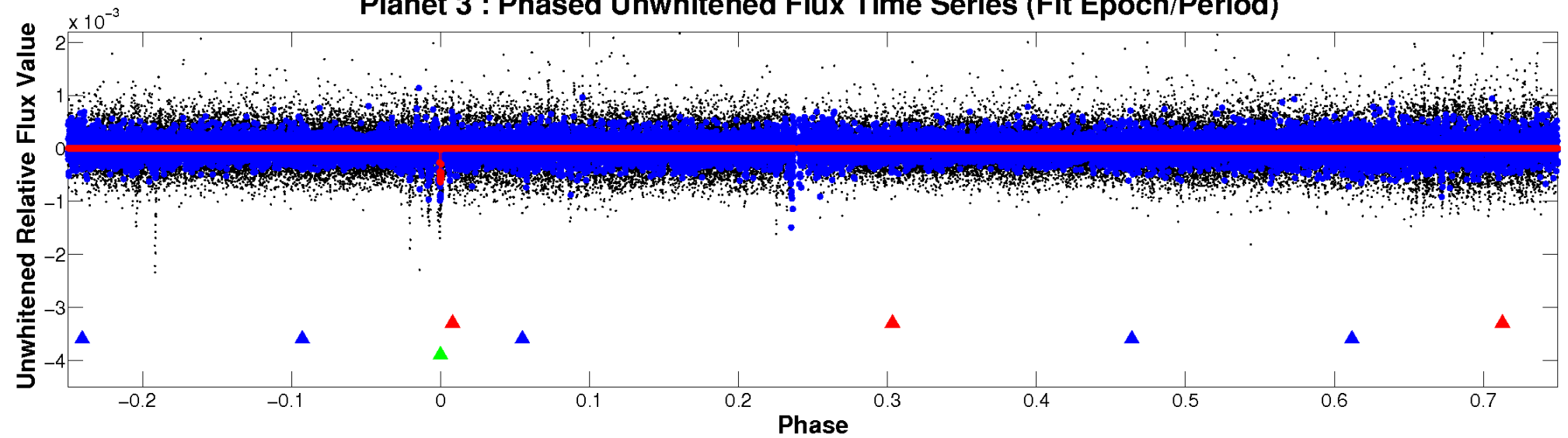
# ALT Odd/Even

TCE 010205598-03

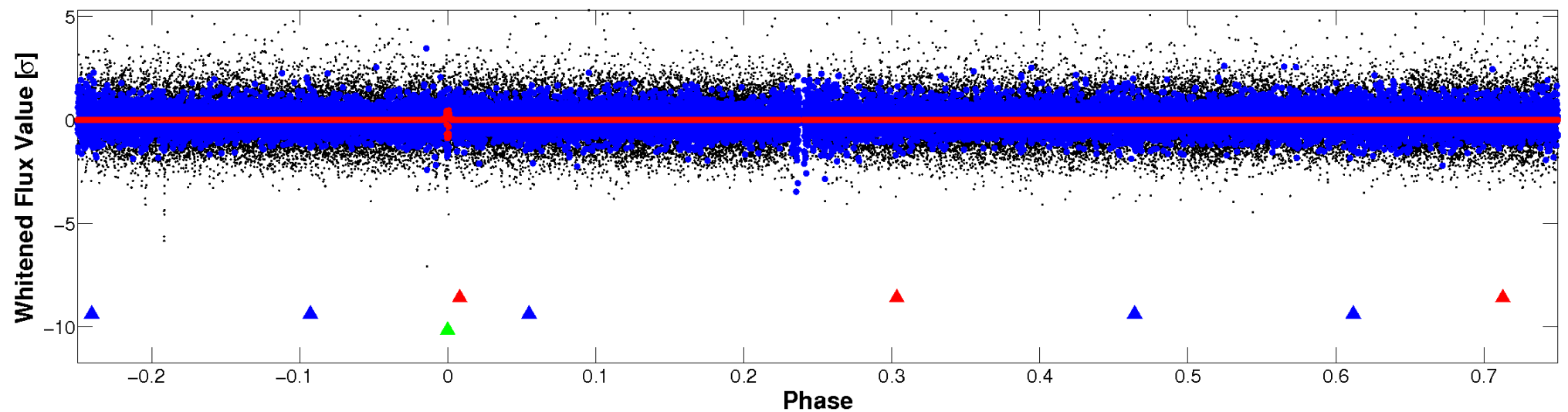


# Non-Whitened Vs. Whitened Light Curve

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

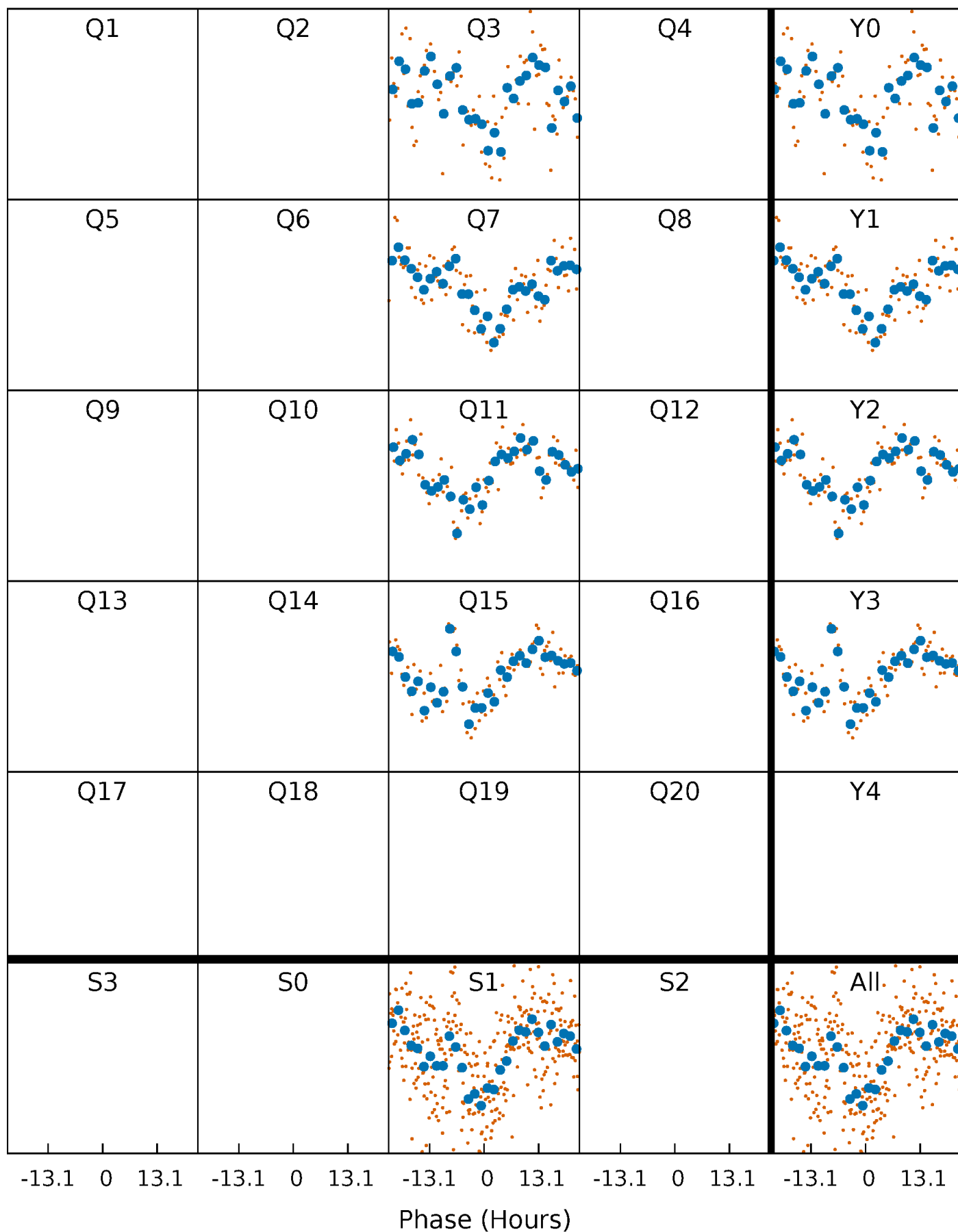


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



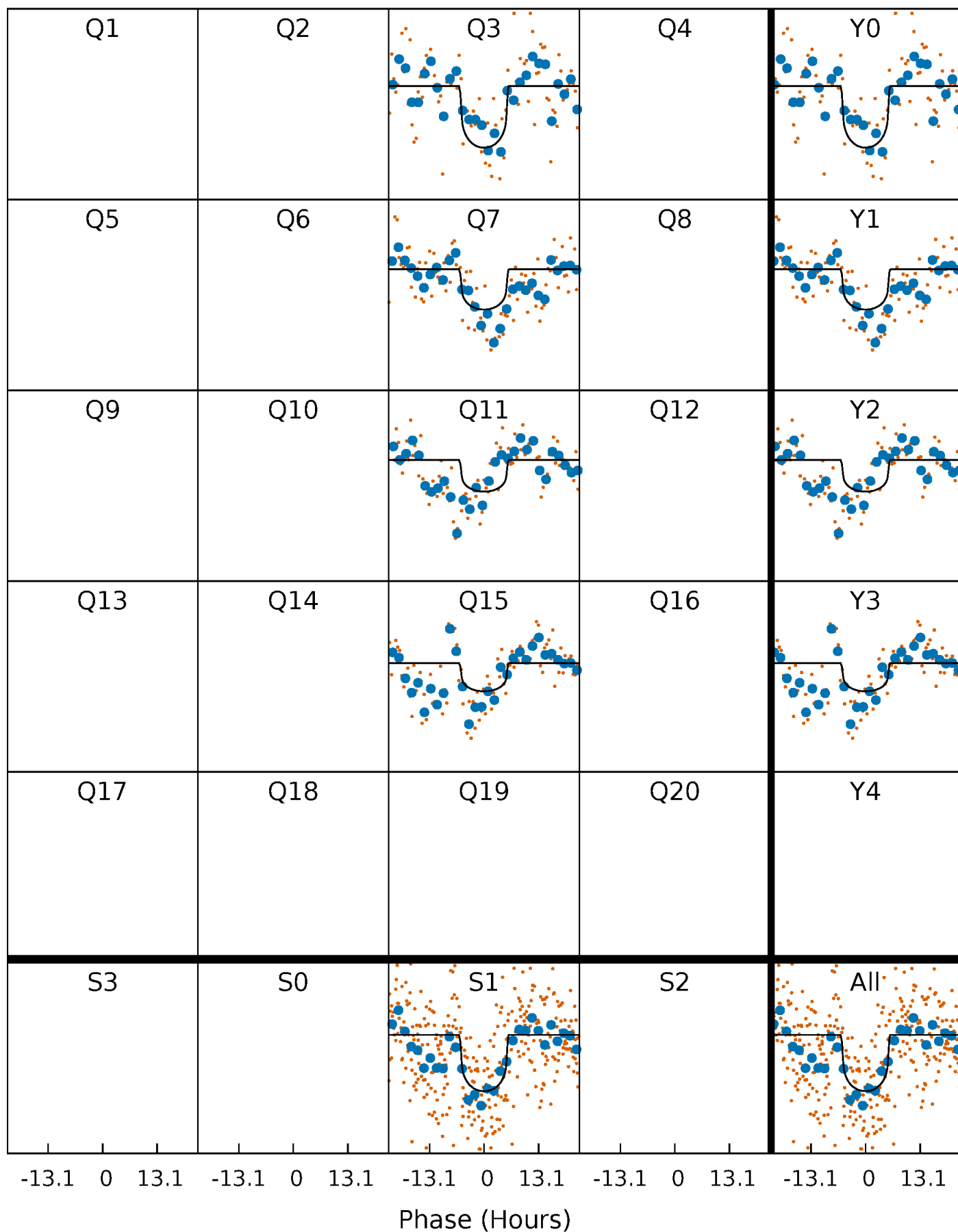
# PDC Quarter-Phased Transit Curves

TCE 010205598-03     $P=374.003348$  Days     $T_0=261.476313$  (BKJD)



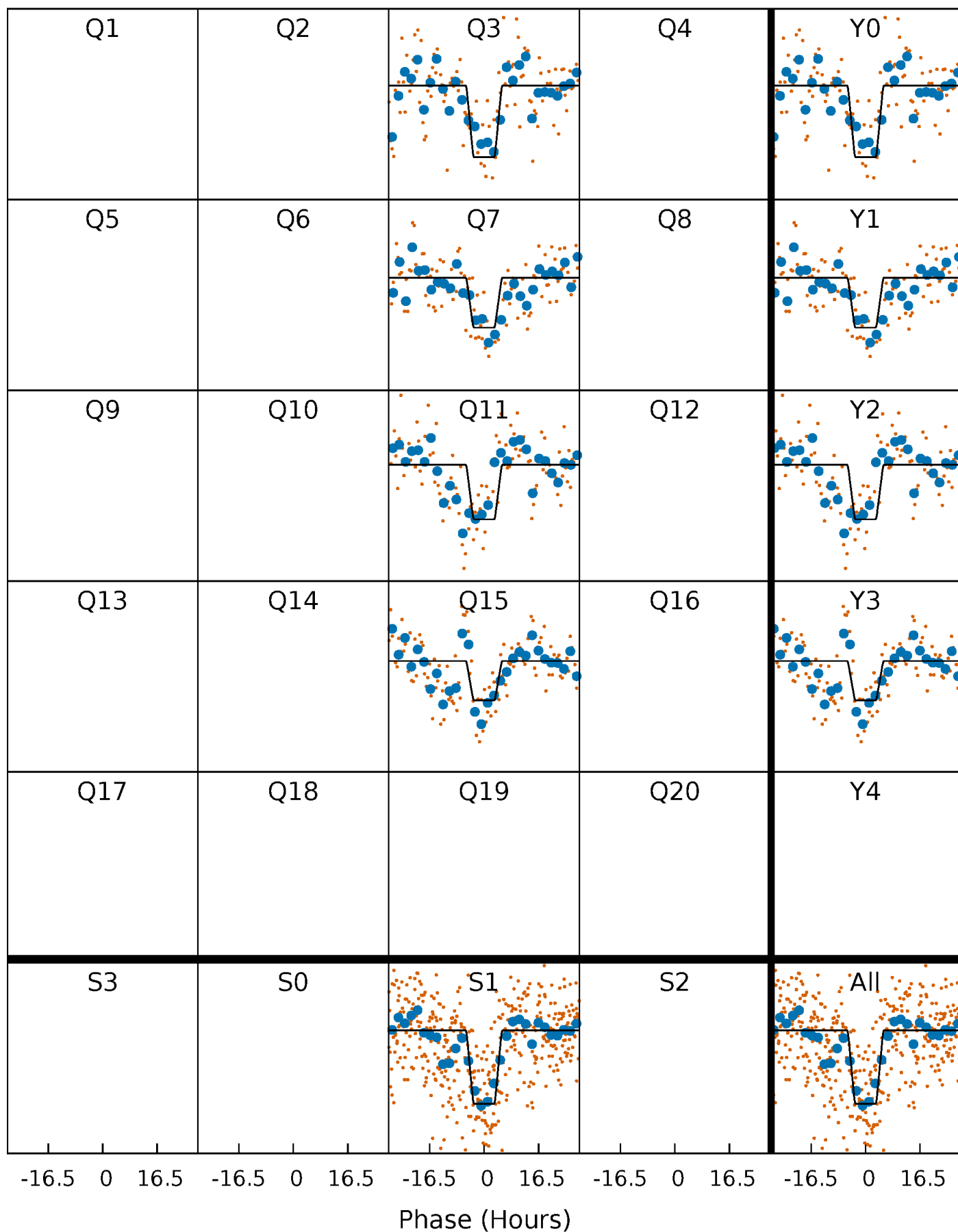
# DV Quarter-Phased Transit Curves

TCE 010205598-03     $P=374.003348$  Days     $T_0=261.476313$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

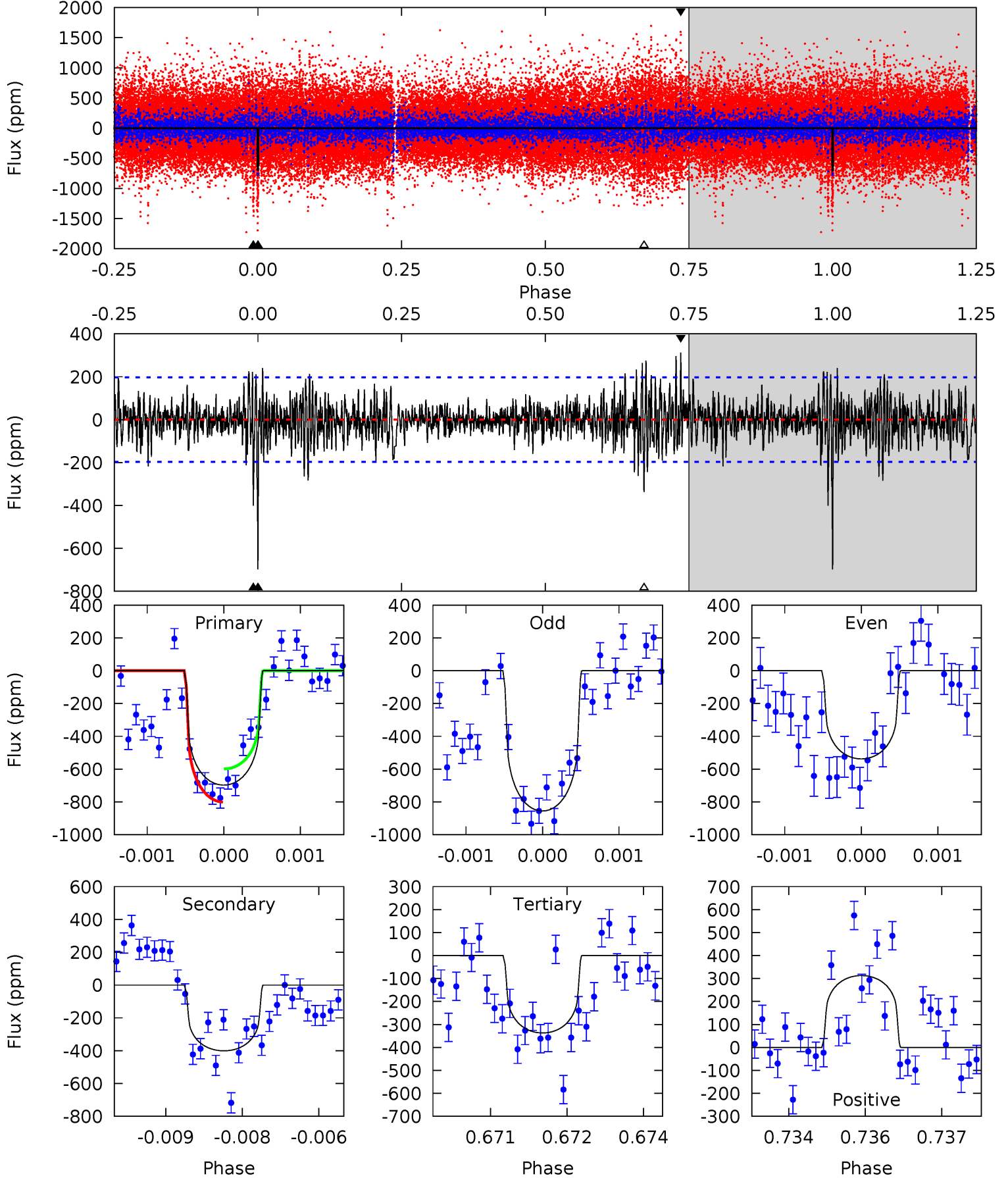
TCE 010205598-03     $P=373.961393$  Days     $T_0=261.529385$  (BKJD)



# DV Model-Shift Uniqueness Test

010205598-03, P = 374.003348 Days, E = 261.476313 Days

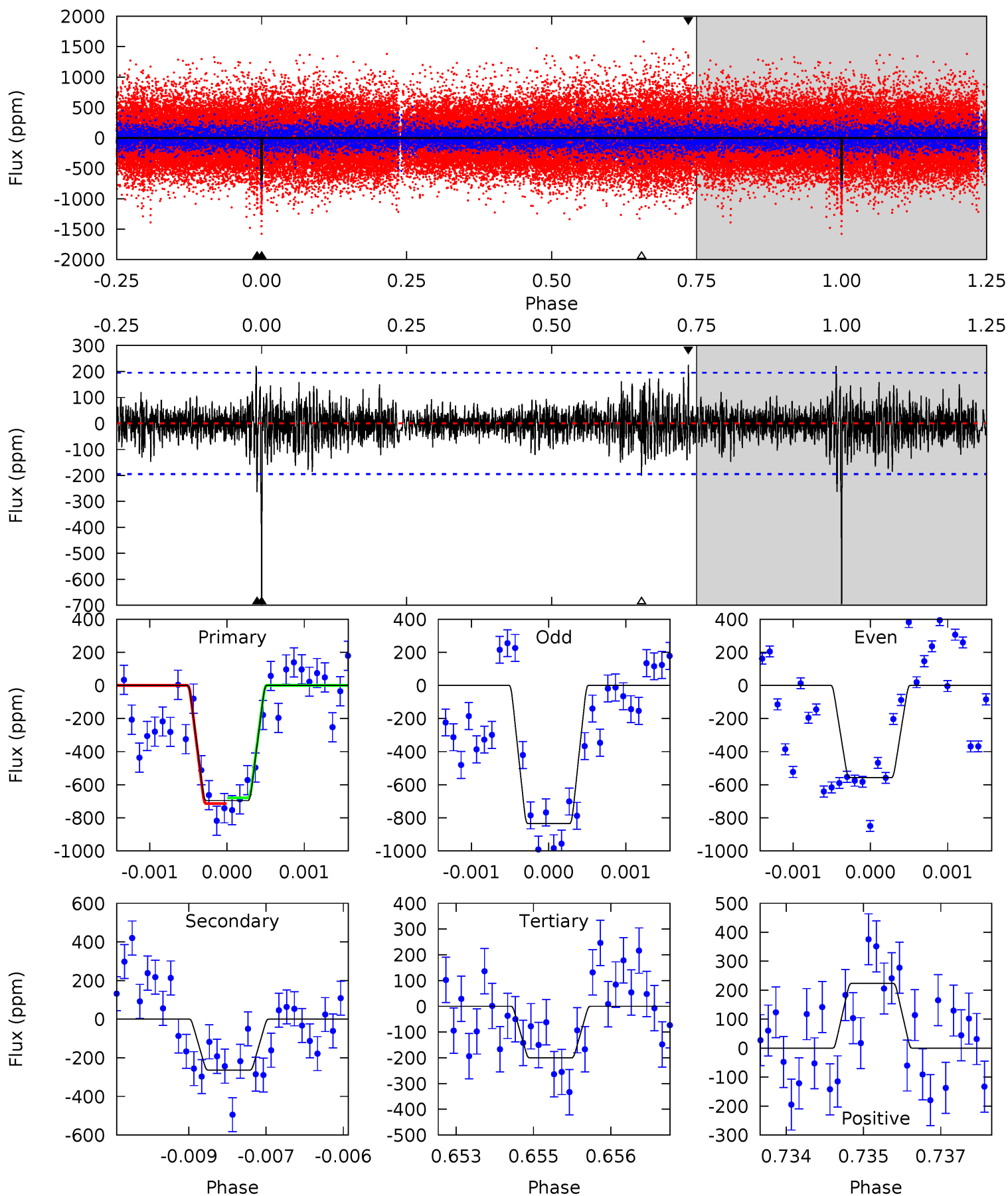
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	11.0	9.26	8.59	5.41	3.22	1.87	9.89	10.6	1.75	2.42	4.36	1.01	0.31	2.76



# Alt Model-Shift Uniqueness Test

010205598-03, P = 373.961393 Days, E = 261.529385 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
19.3	7.32	5.57	6.21	5.42	3.23	1.35	13.8	13.1	1.75	1.11	3.85	1.00	0.24	0.48





### Stellar Parameters For KIC 010205598

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5263^{+157}_{-141}$	$4.574^{+0.078}_{-0.052}$	$-0.660^{+0.350}_{-0.300}$	$0.699^{+0.074}_{-0.066}$	$0.668^{+0.082}_{-0.032}$	$2.753^{+0.937}_{-0.544}$
	+3%/-3%	+2%/-1%	+53%/-45%	+11%/-9%	+12%/-5%	+34%/-20%
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 010205598-03 / KOI 8198.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-401 \pm 36$	$2.04^{+1.39}_{-1.27}$	$288^{+10}_{-11}$	$4633^{+2587}_{-788}$	$42580^{+242571}_{-27556}$
Alt.	$-263 \pm 36$	$2.28^{+1.53}_{-1.25}$	$287^{+12}_{-10}$	$4142^{+1501}_{-673}$	$21979^{+89206}_{-13948}$

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

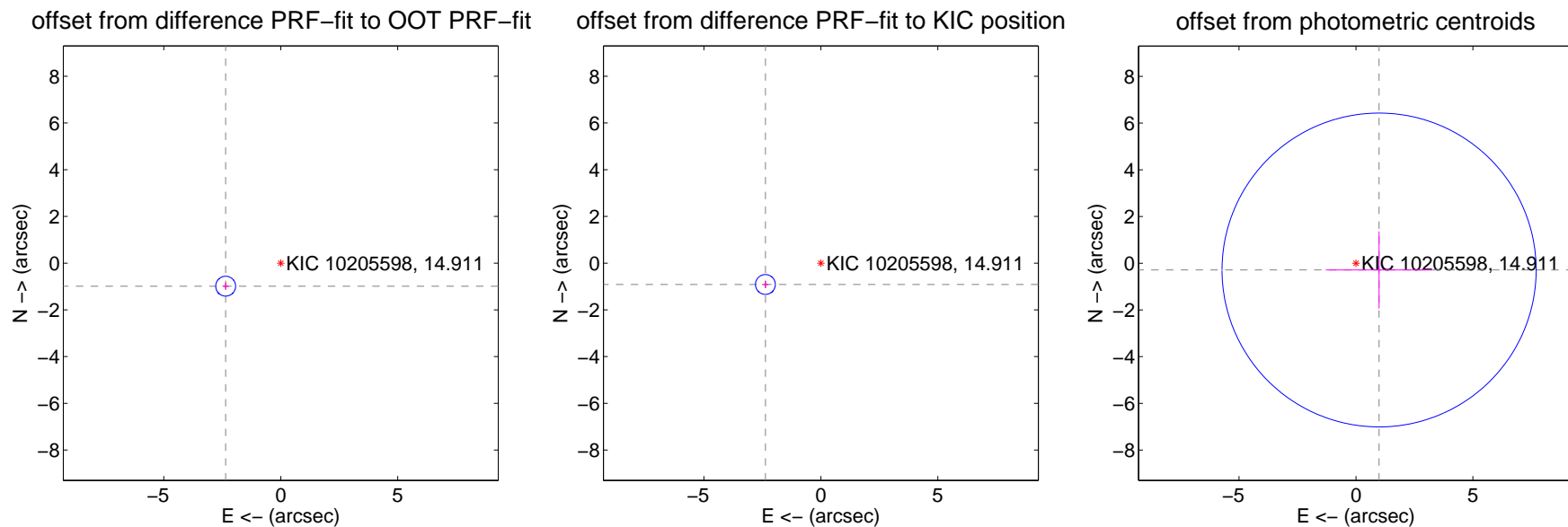
## DV Centroid Data

Supplemental centroid analysis for 010205598-03. Kepler magnitude: 14.91. Transit SNR 7.79

There are 0 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	$2.553 \pm 0.142$	18.01	$2.355 \pm 0.139$	$-0.986 \pm 0.155$
PRF-fit source offset from KIC position	$2.541 \pm 0.141$	17.97	$2.372 \pm 0.139$	$-0.912 \pm 0.155$
photometric centroid source offset	$1.03 \pm 2.24$	0.46	$-0.99 \pm 2.28$	$-0.29 \pm 1.65$



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.

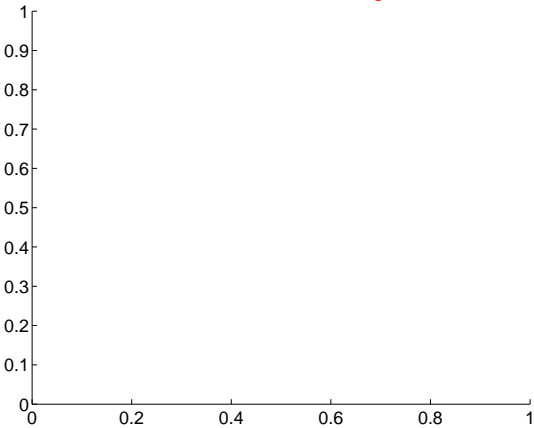
Q5 no difference image



Q5 no OOT image



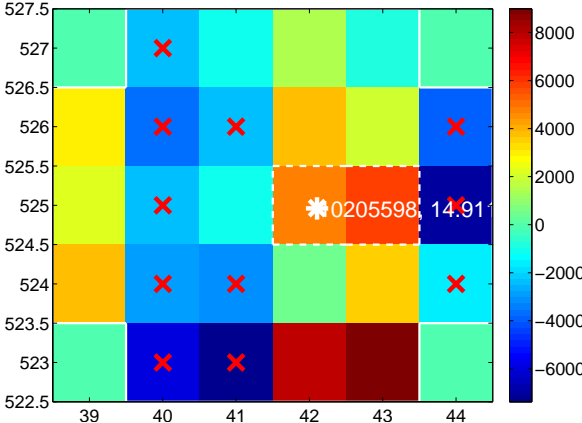
Q6 no difference image



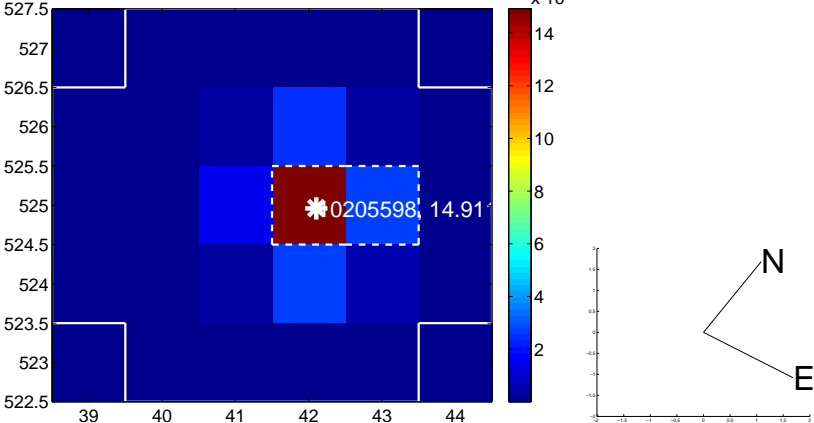
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



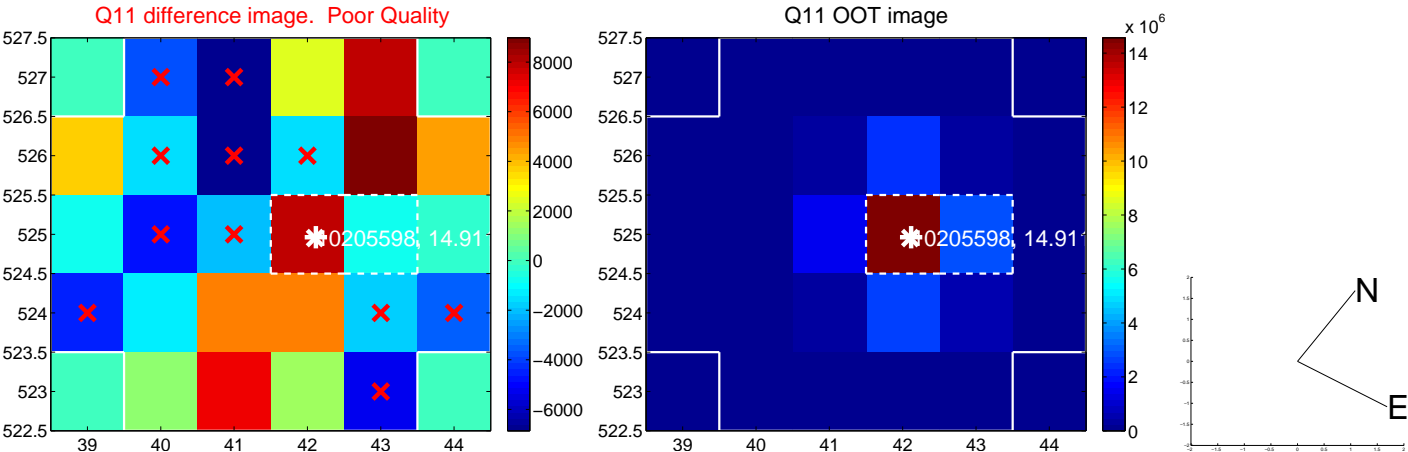
Q8 no difference image



Q8 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.

Q13 no difference image



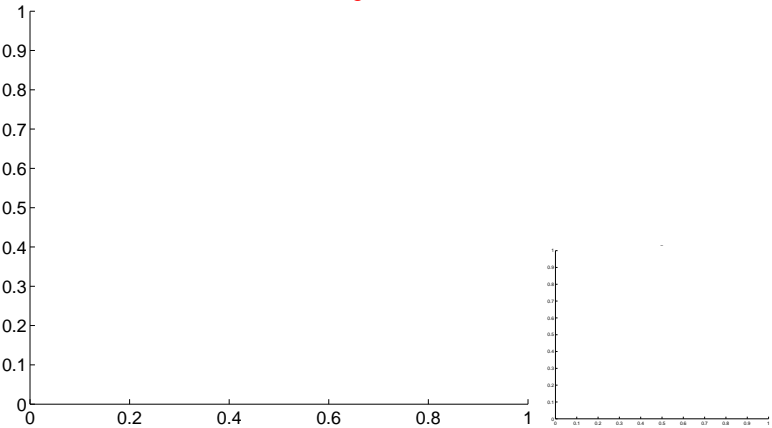
Q13 no OOT image



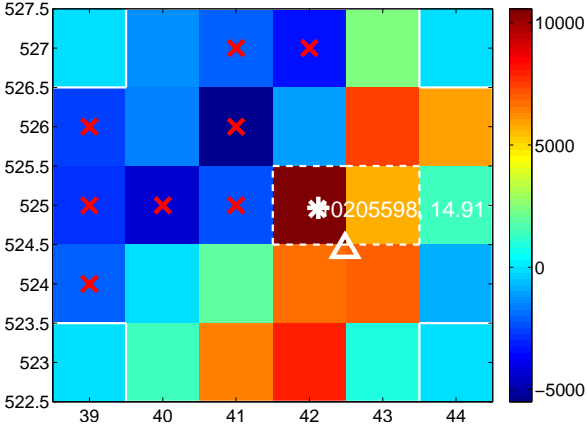
Q14 no difference image



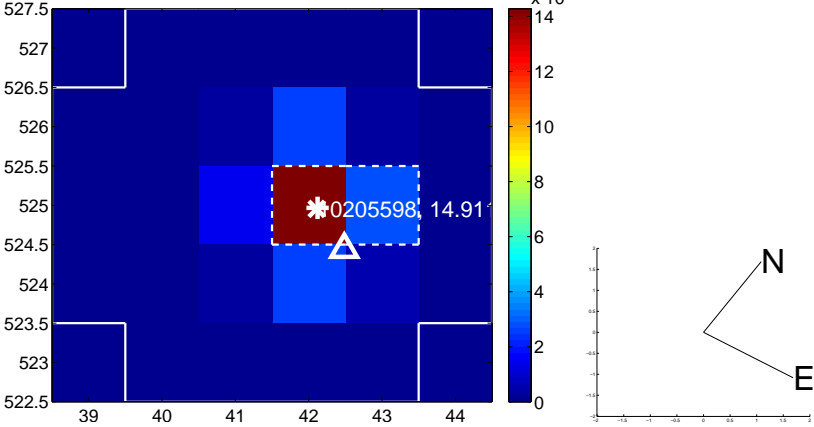
Q14 no OOT image



Q15 difference image. Poor Quality



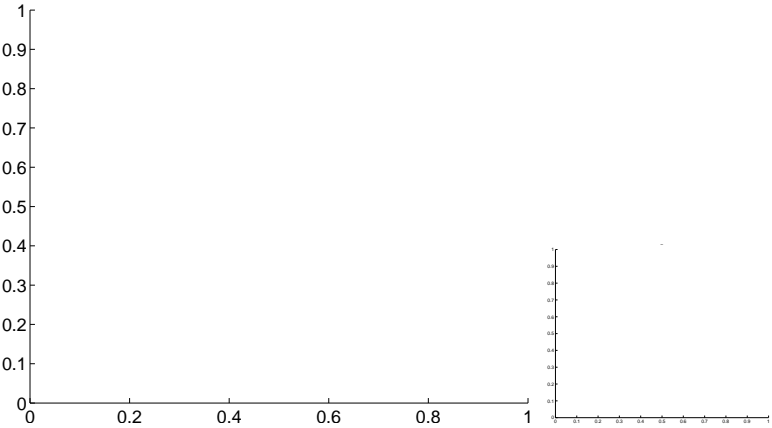
Q15 OOT image



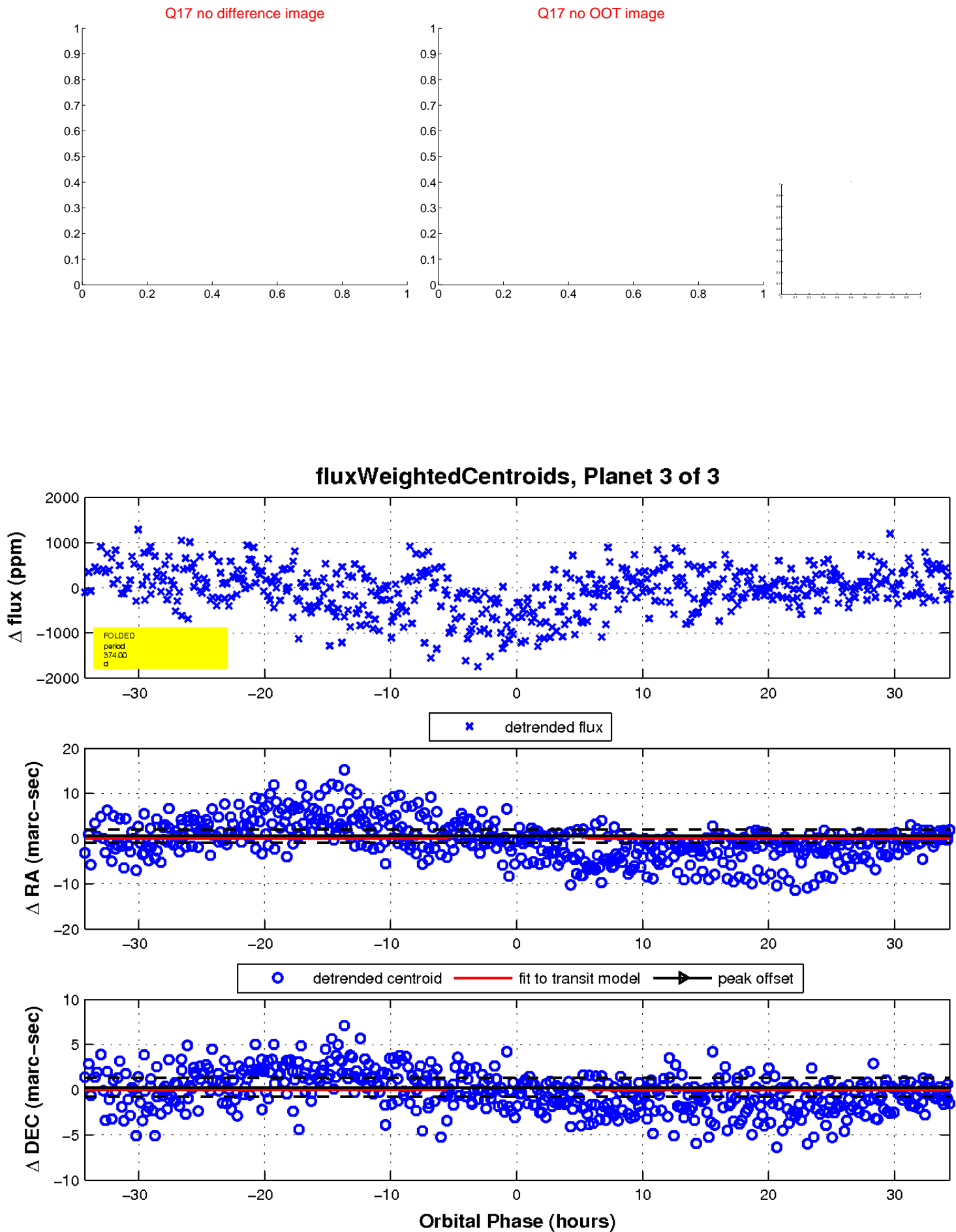
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

