

# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

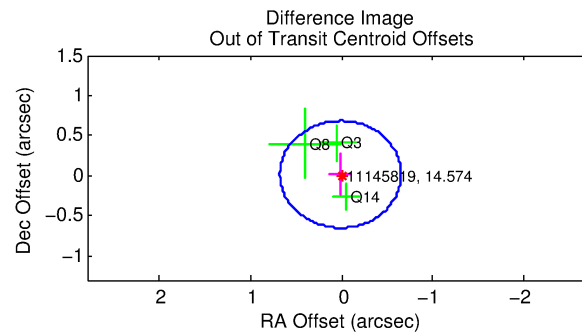
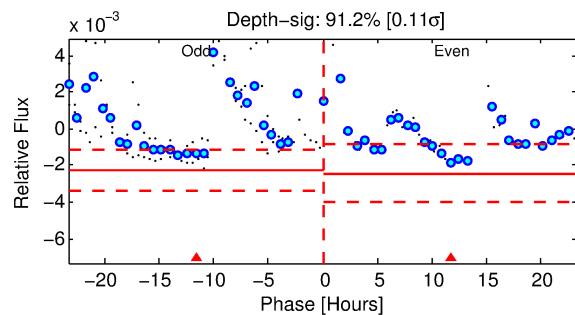
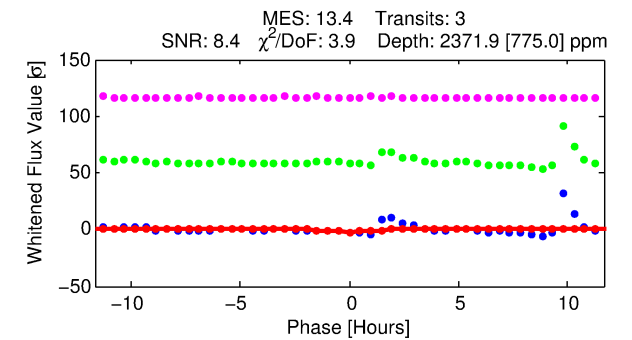
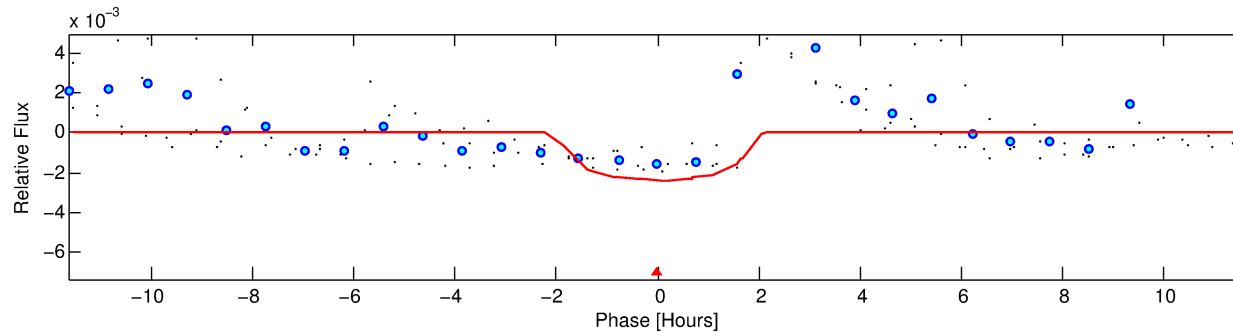
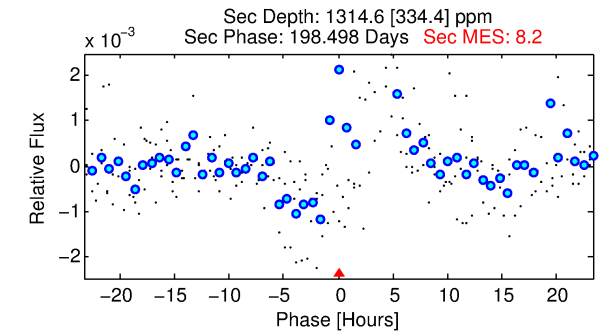
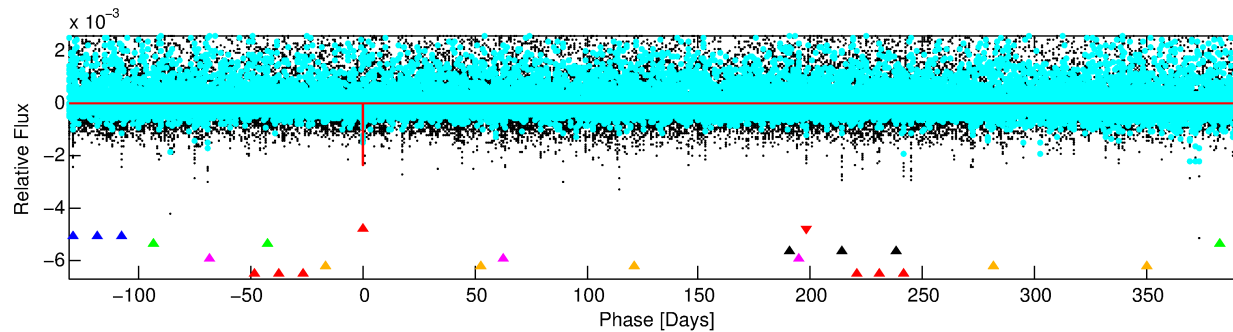
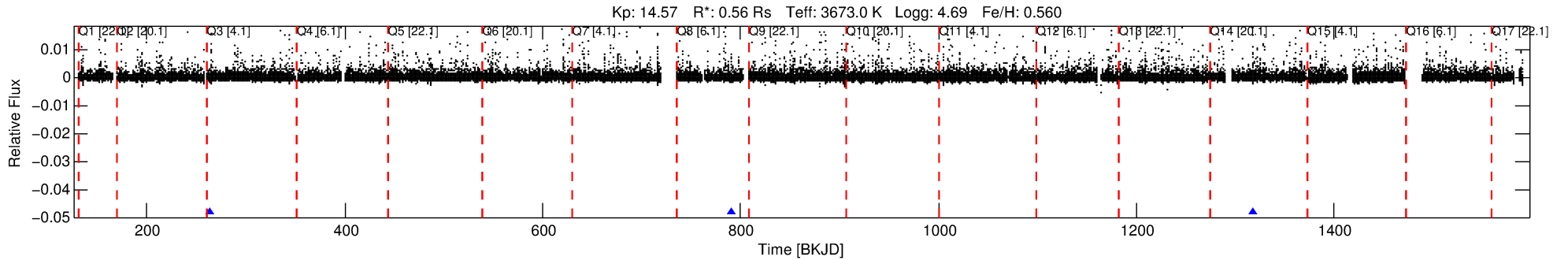
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011145819-01

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 1 of 7 Period: 526.676 d



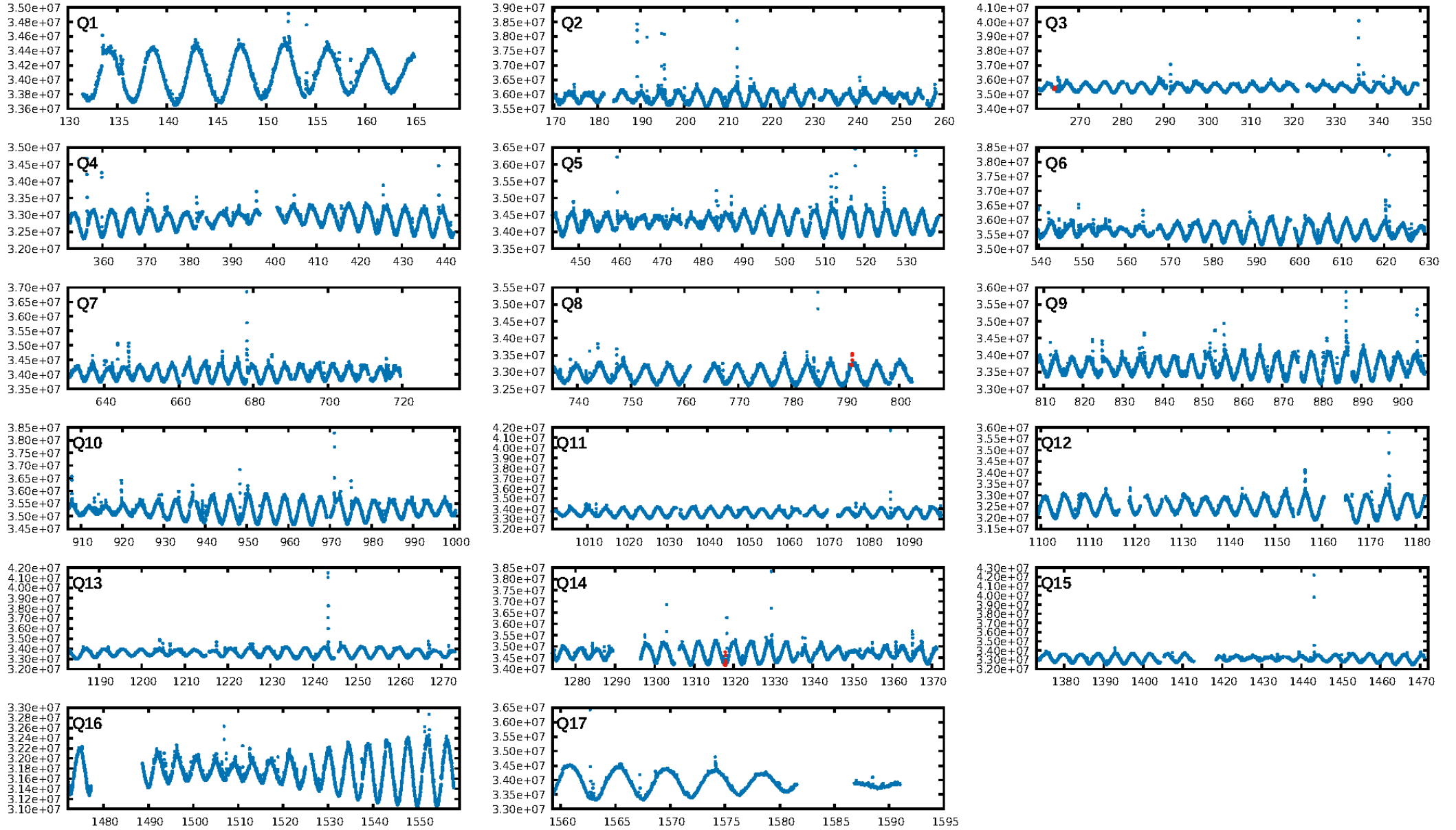
## DV Fit Results:

Period = 526.67604 [0.00887] d  
Epoch = 264.4465 [0.0134] BKJD  
Rp/R\* = 0.0442 [0.1125]  
a/R\* = 994.46 [7856.83]  
b = 0.41 [16.36]  
Seff = 0.05 [0.01]  
Teq = 118 [7] K  
Rp = 2.70 [6.89] Re  
a = 1.0532 [0.1204] AU  
Ag = 110040.63 [561413.98] [0.20σ]  
Teffp = 3327 [4244] K [0.76σ]

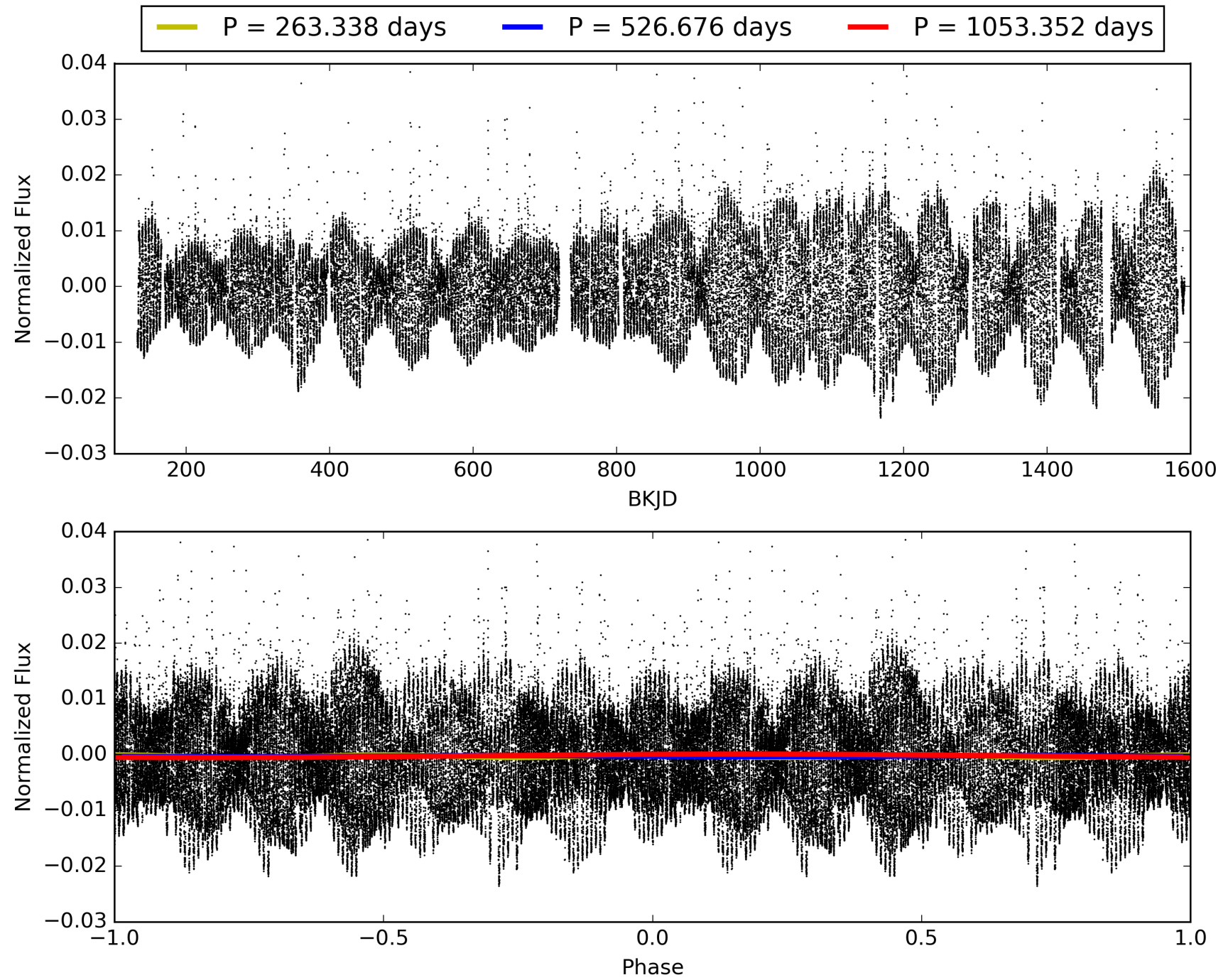
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [168.79σ]  
LongPeriod-sig: 100.0% [19.88σ]  
ModelChiSquare2-sig: 1.5%  
ModelChiSquareGof-sig: 6.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.937  
Centroid-sig: 0.5%  
Centroid-so: 0.528 arcsec [1.05σ]  
OotOffset-rm: 0.021 arcsec [0.09σ]  
KicOffset-rm: 0.292 arcsec [1.26σ]  
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]

# TCE 011145819-01, PDC Light Curves



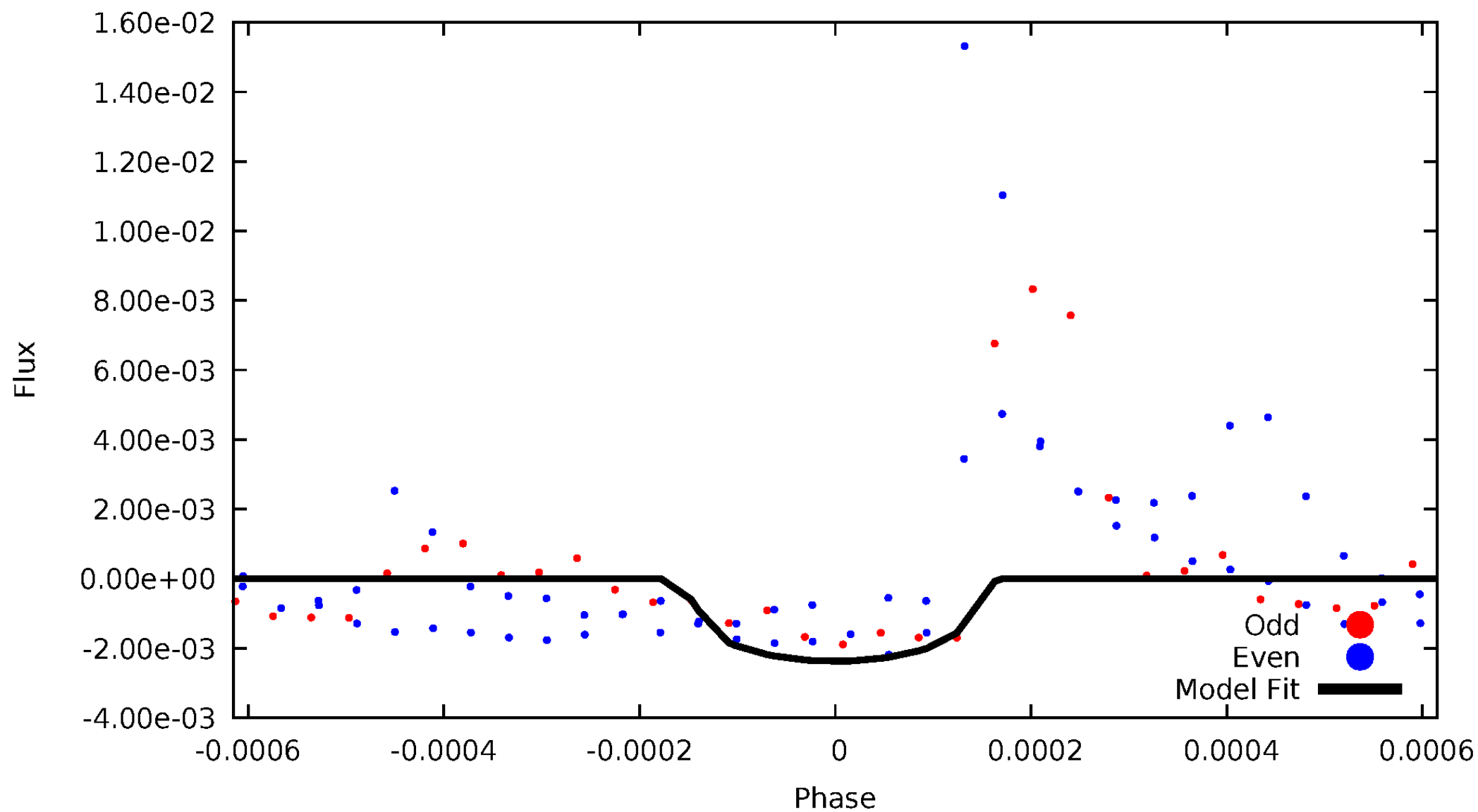
# TCE 011145819-01





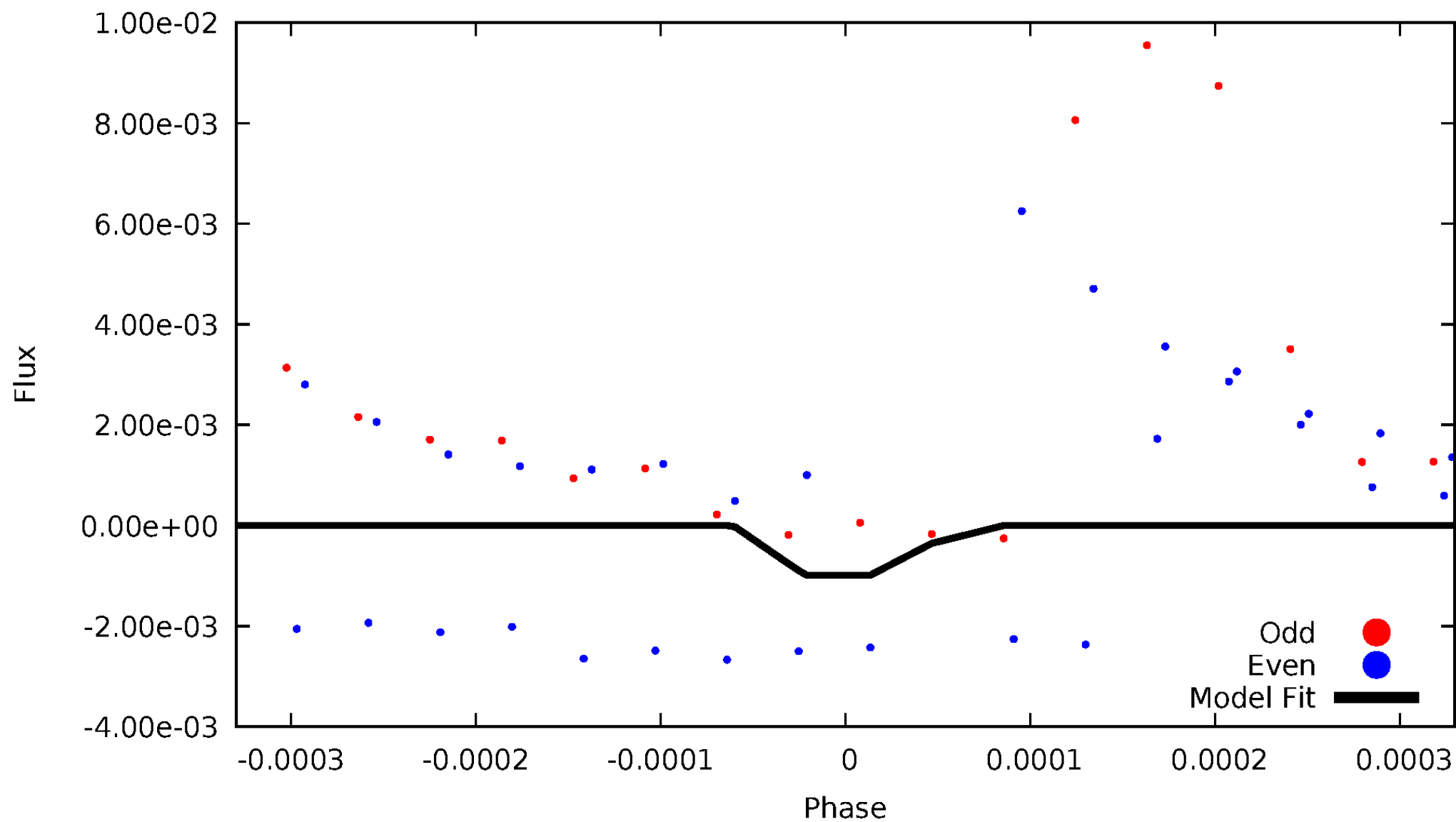
# DV Odd/Even

TCE 011145819-01



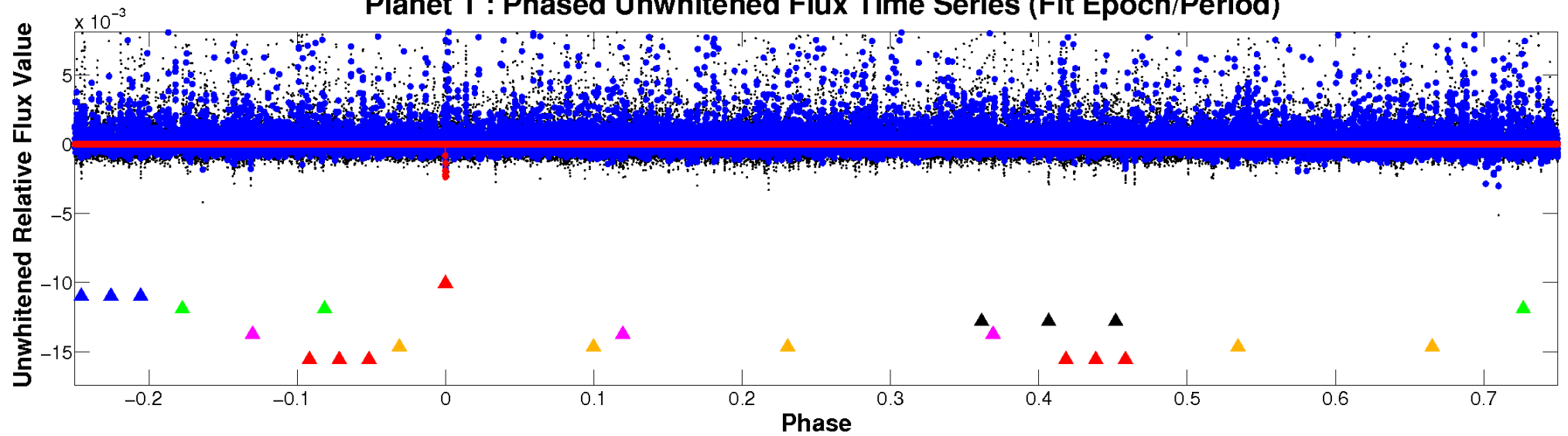
# ALT Odd/Even

TCE 011145819-01

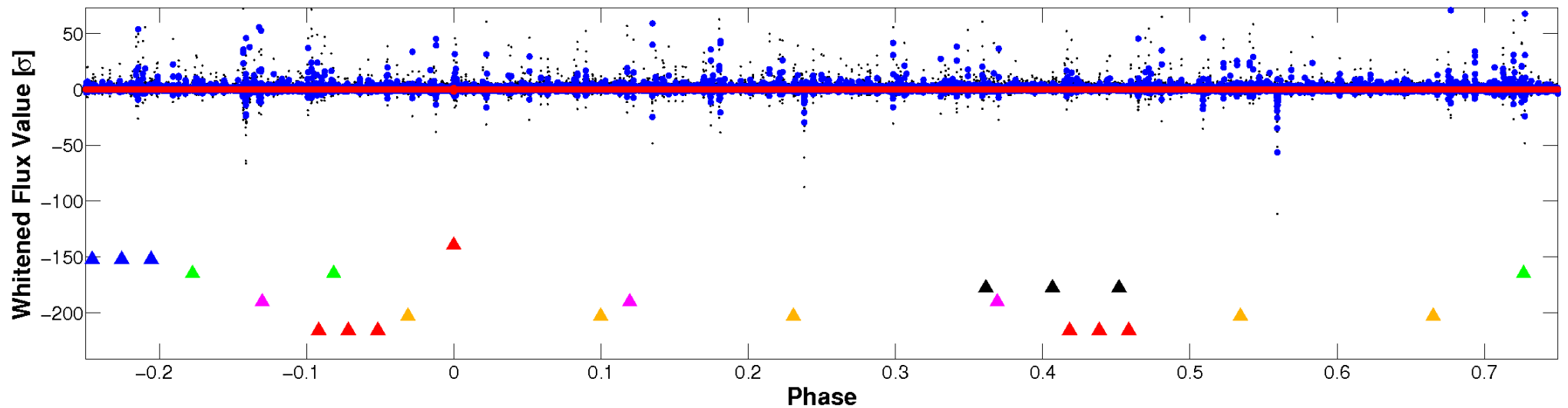


# Non-Whitened Vs. Whitened Light Curve

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

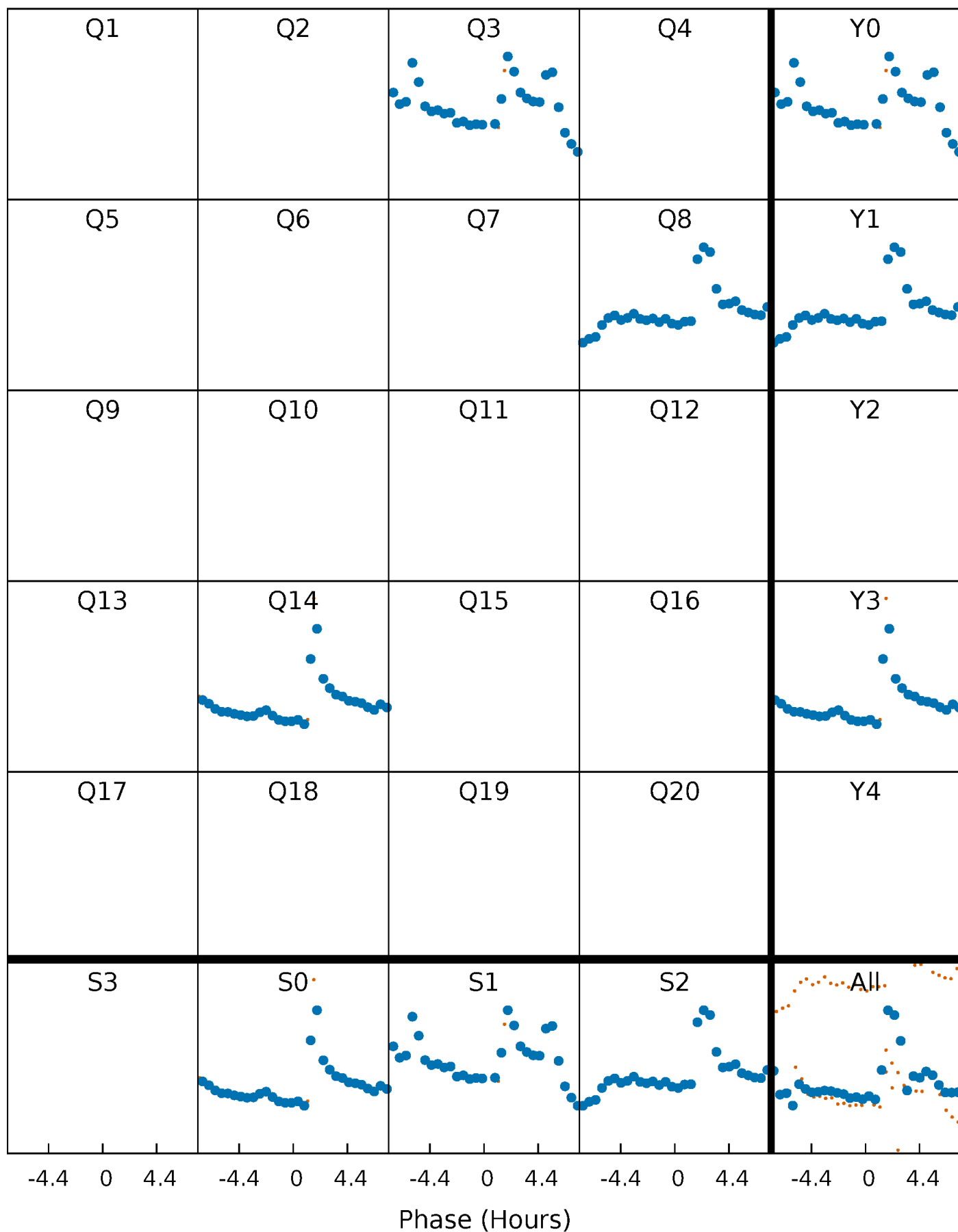


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



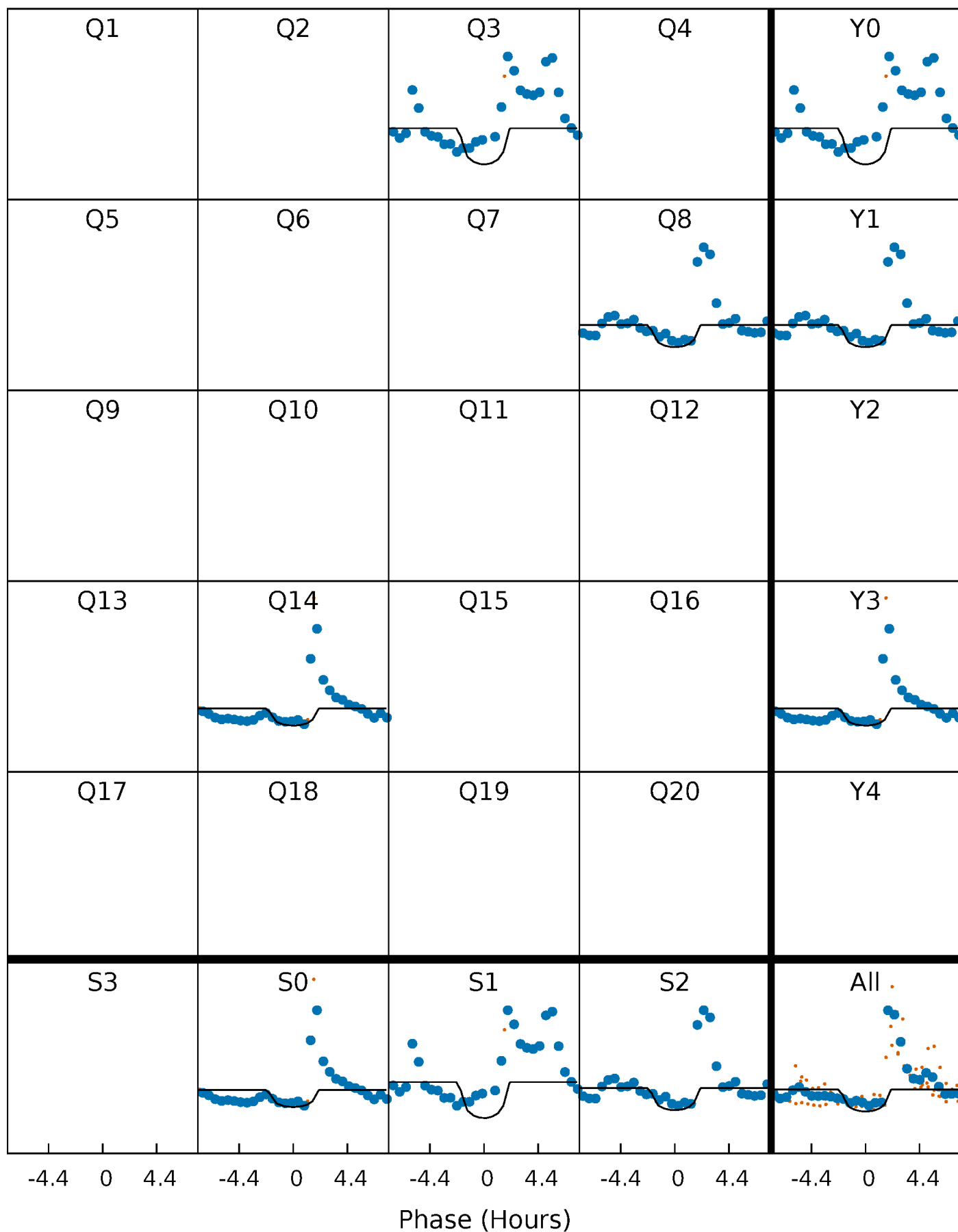
# PDC Quarter-Phased Transit Curves

TCE 011145819-01 P=526.676036 Days  $T_0=264.446480$  (BKJD)



# DV Quarter-Phased Transit Curves

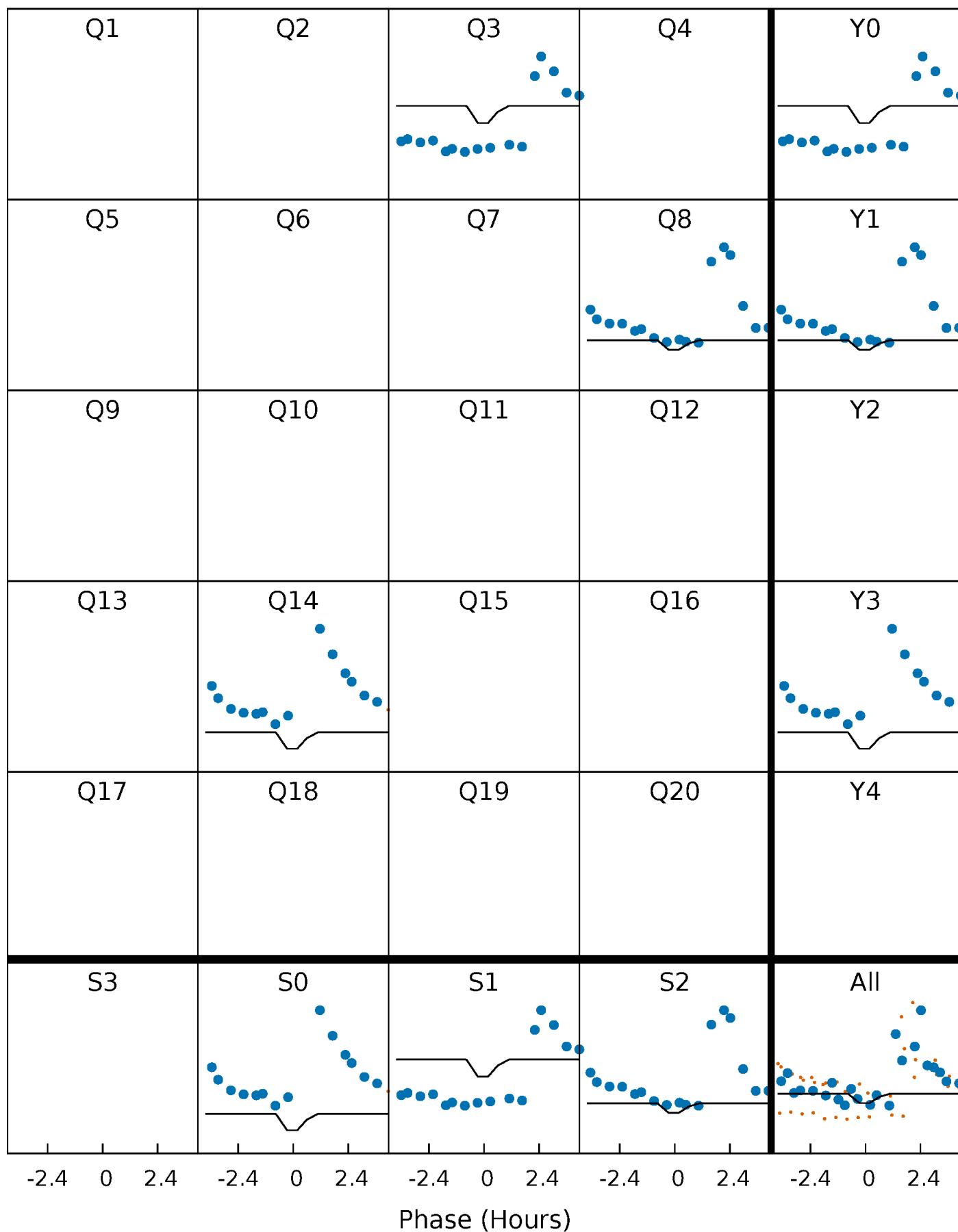
TCE 011145819-01 P=526.676036 Days  $T_0=264.446480$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

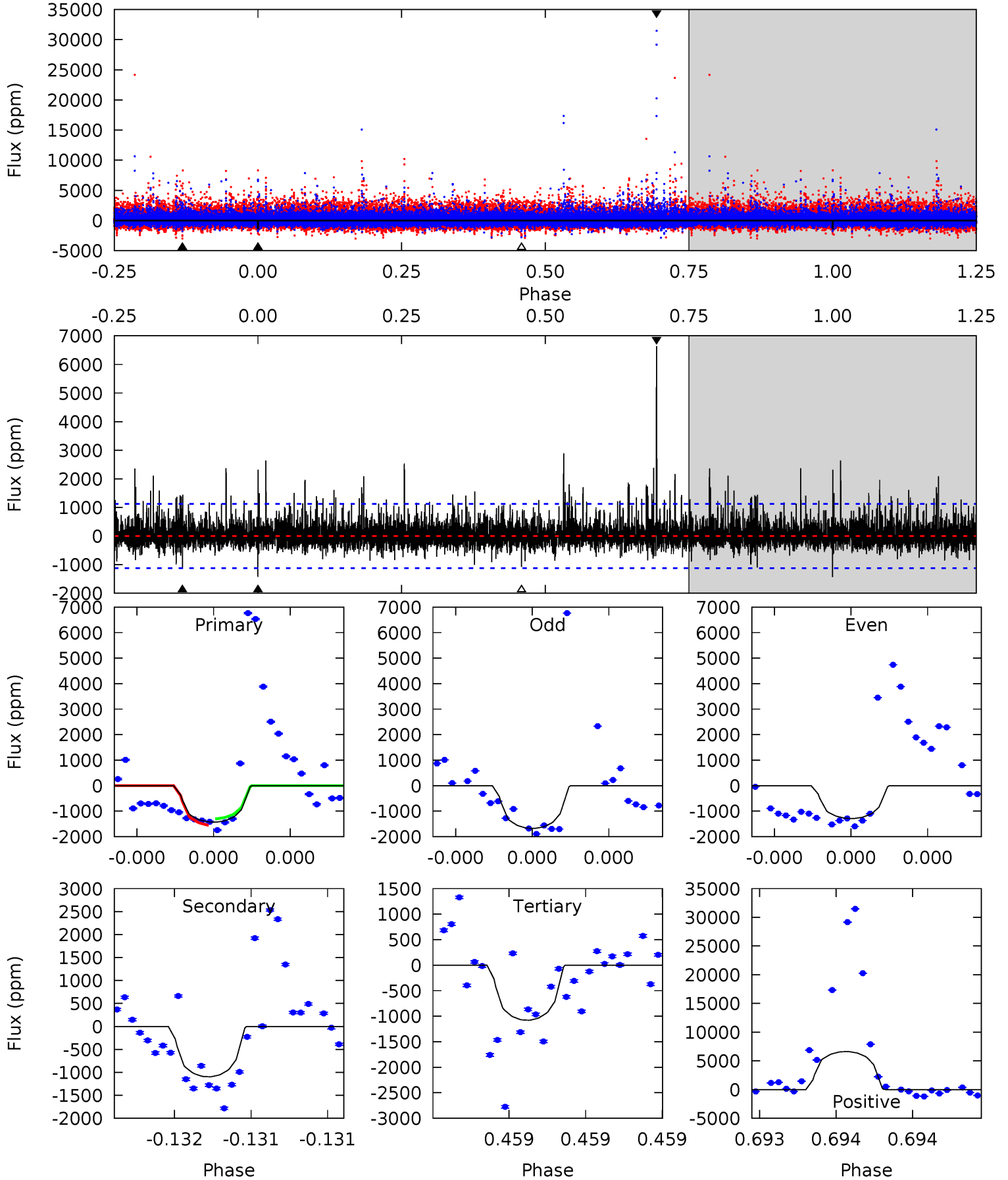
TCE 011145819-01 P=526.715876 Days  $T_0=264.426957$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-01, P = 526.676036 Days, E = 264.446480 Days

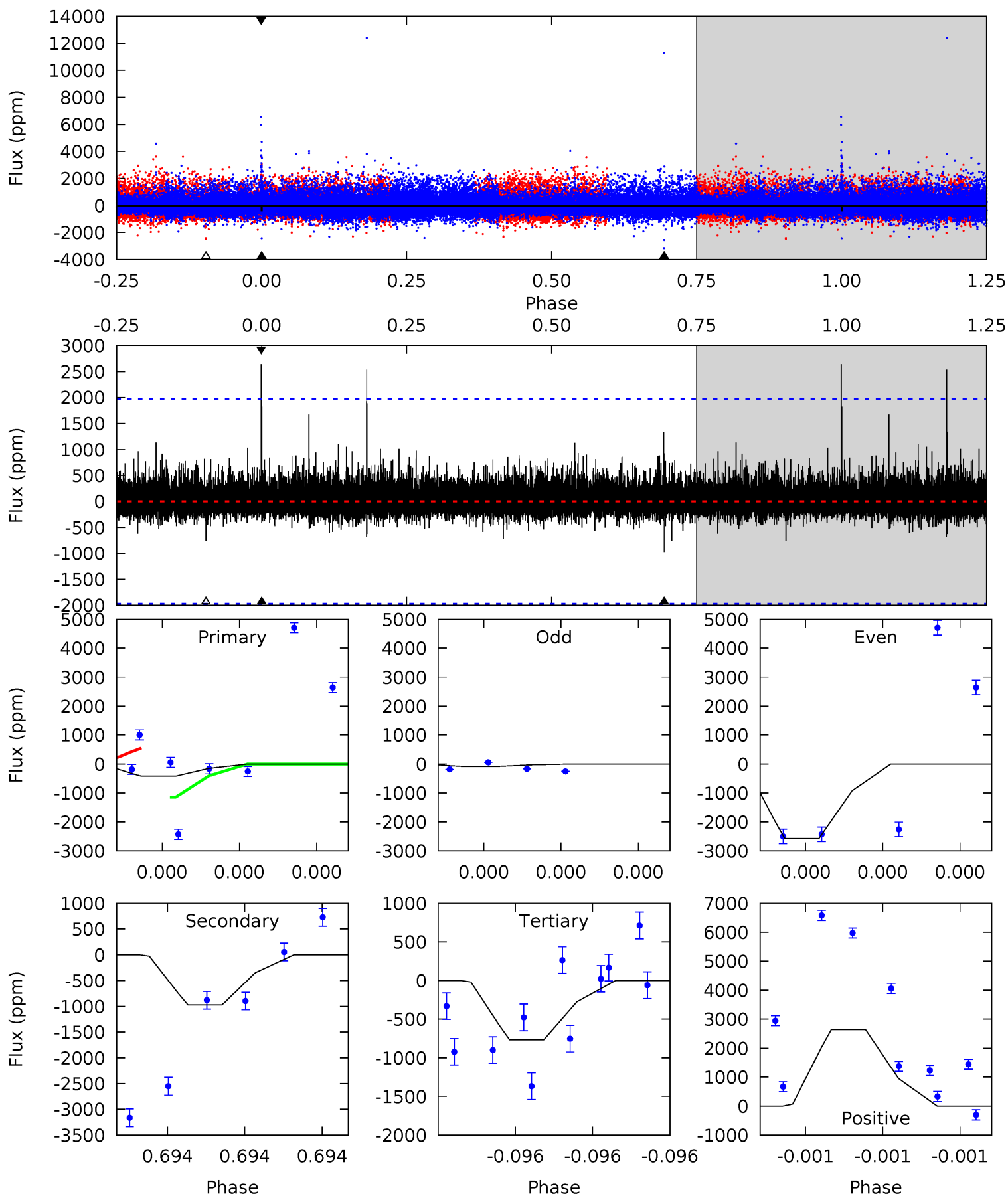
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.16	5.49	5.40	33.2	5.64	3.58	1.80	1.76	-26.0	0.09	-27.7	0.42	1.70	0.82	0.61



# Alt Model-Shift Uniqueness Test

011145819-01, P = 526.715876 Days, E = 264.426957 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.25	2.90	2.29	7.89	5.89	3.95	0.55	-1.03	-6.63	0.61	-4.99	3.09	6.50	0.73	0.85



### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1097 \pm 200$	$5.68^{+5.54}_{-3.91}$	$163^{+6}_{-7}$	$2681^{+1155}_{-398}$	$20194^{+197709}_{-14980}$
Alt.	$-971 \pm 335$	$5.75^{+5.13}_{-4.04}$	$163^{+6}_{-8}$	$2619^{+1137}_{-376}$	$17034^{+172584}_{-12378}$

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

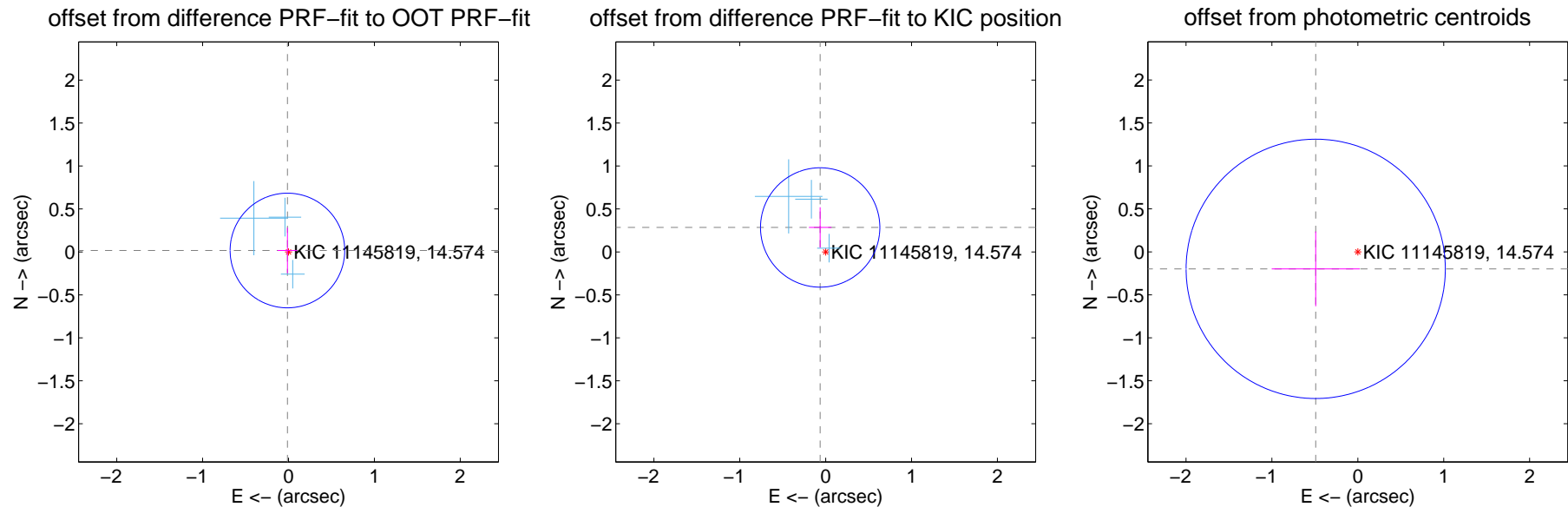
## DV Centroid Data

Supplemental centroid analysis for 011145819-01. Kepler magnitude: 14.57. Transit SNR 8.41

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

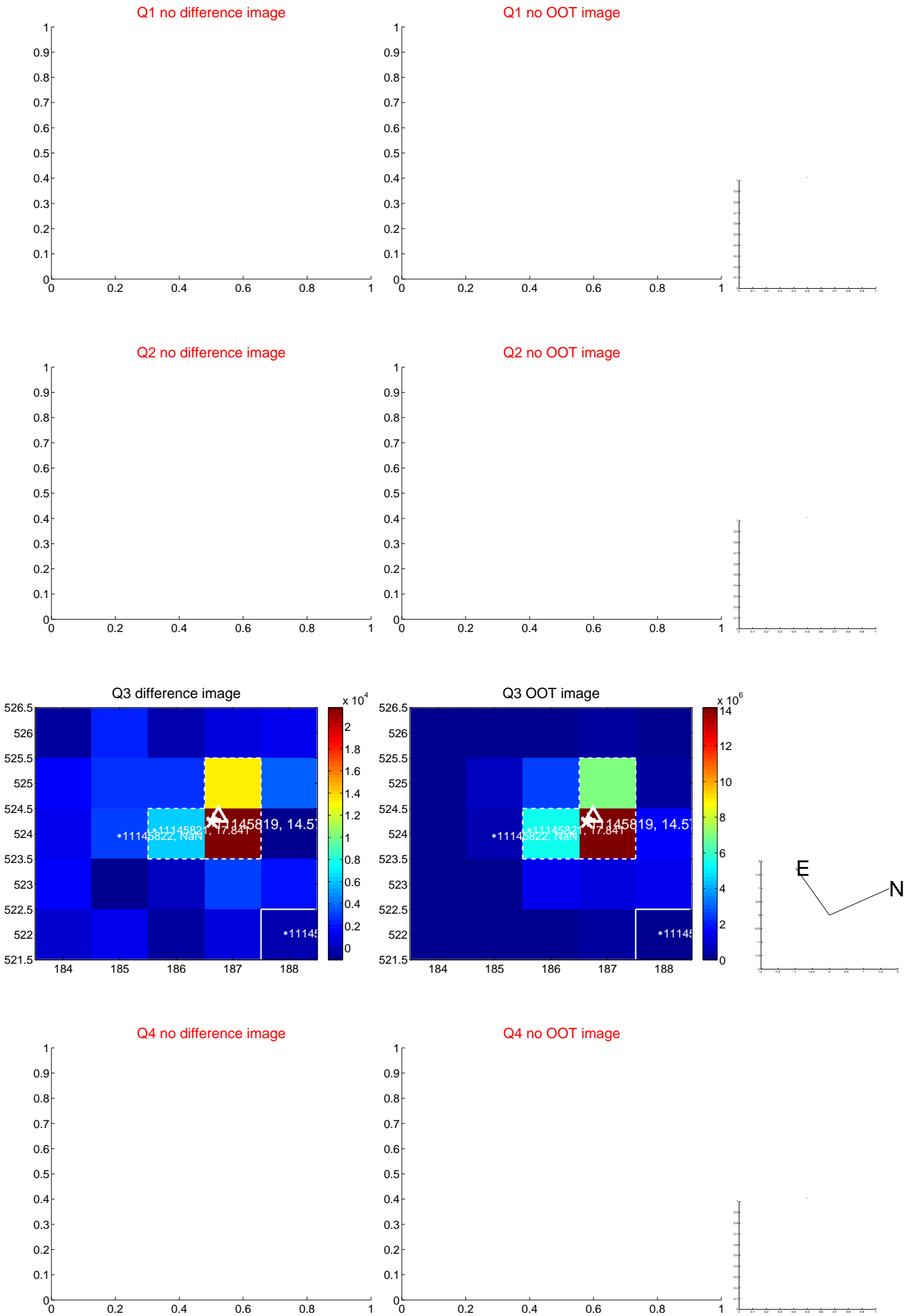
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.021 \pm 0.222$	0.09	$0.013 \pm 0.114$	$0.017 \pm 0.265$
PRF-fit source offset from KIC position	$0.292 \pm 0.232$	1.26	$0.064 \pm 0.131$	$0.285 \pm 0.236$
photometric centroid source offset	$0.53 \pm 0.50$	1.05	$0.49 \pm 0.51$	$-0.20 \pm 0.44$



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



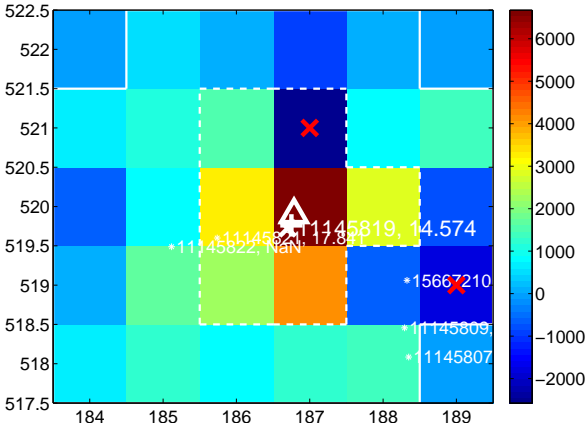
Q7 no difference image



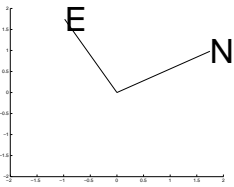
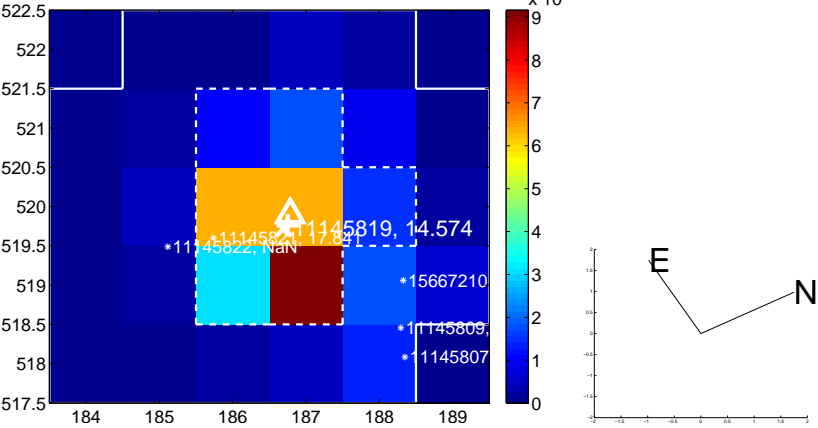
Q7 no OOT image



Q8 difference image



Q8 OOT image



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

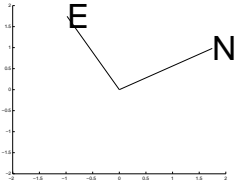
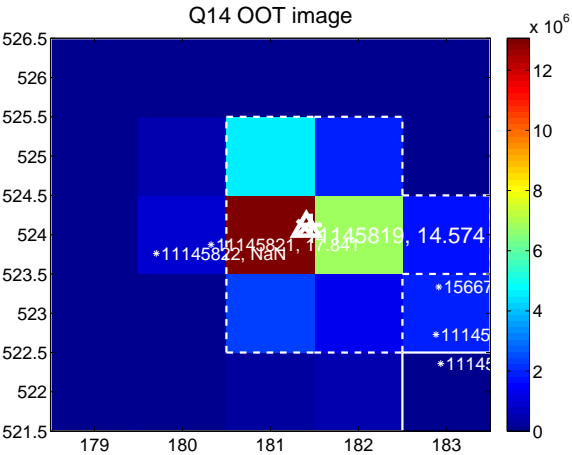
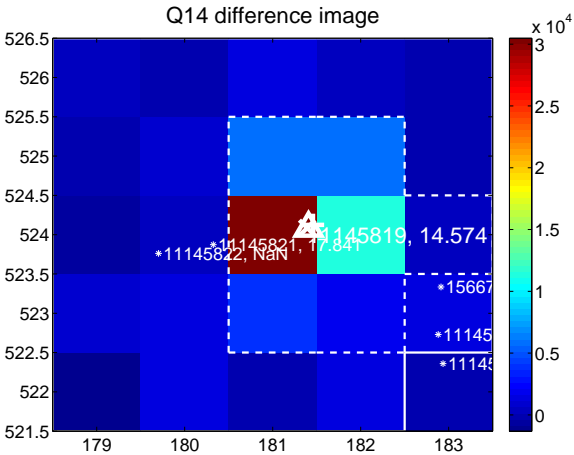


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

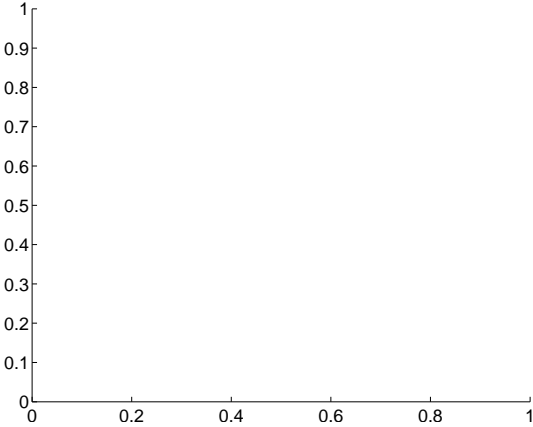
Q13 no difference image



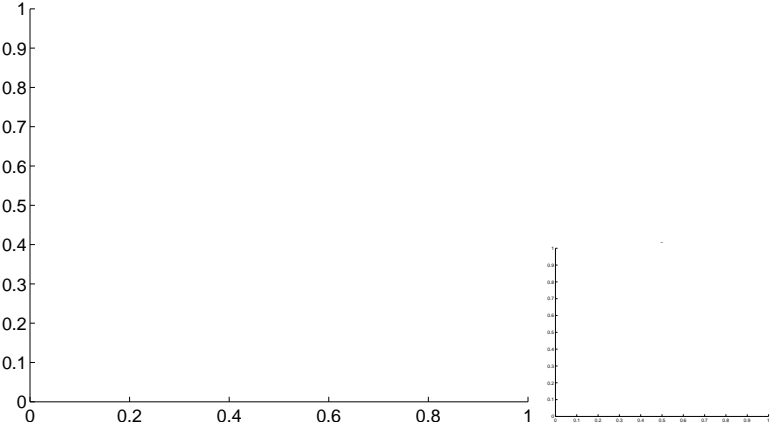
Q13 no OOT image



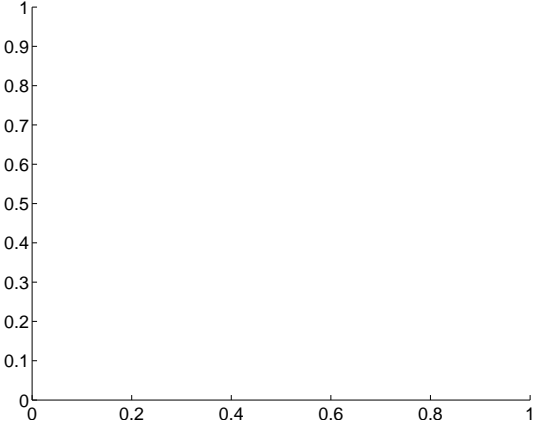
Q15 no difference image



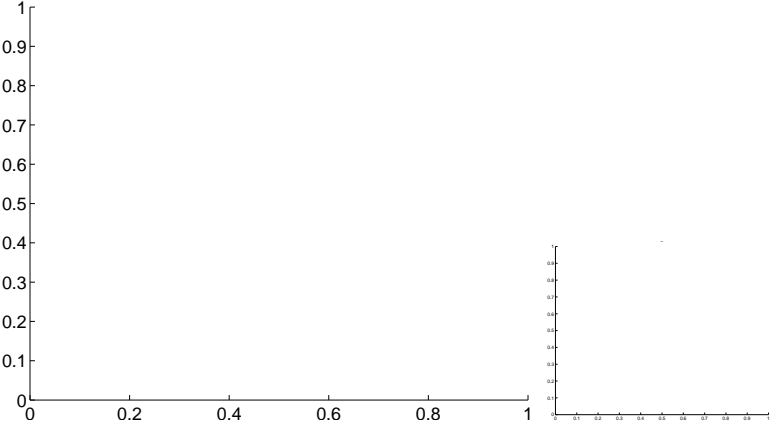
Q15 no OOT image



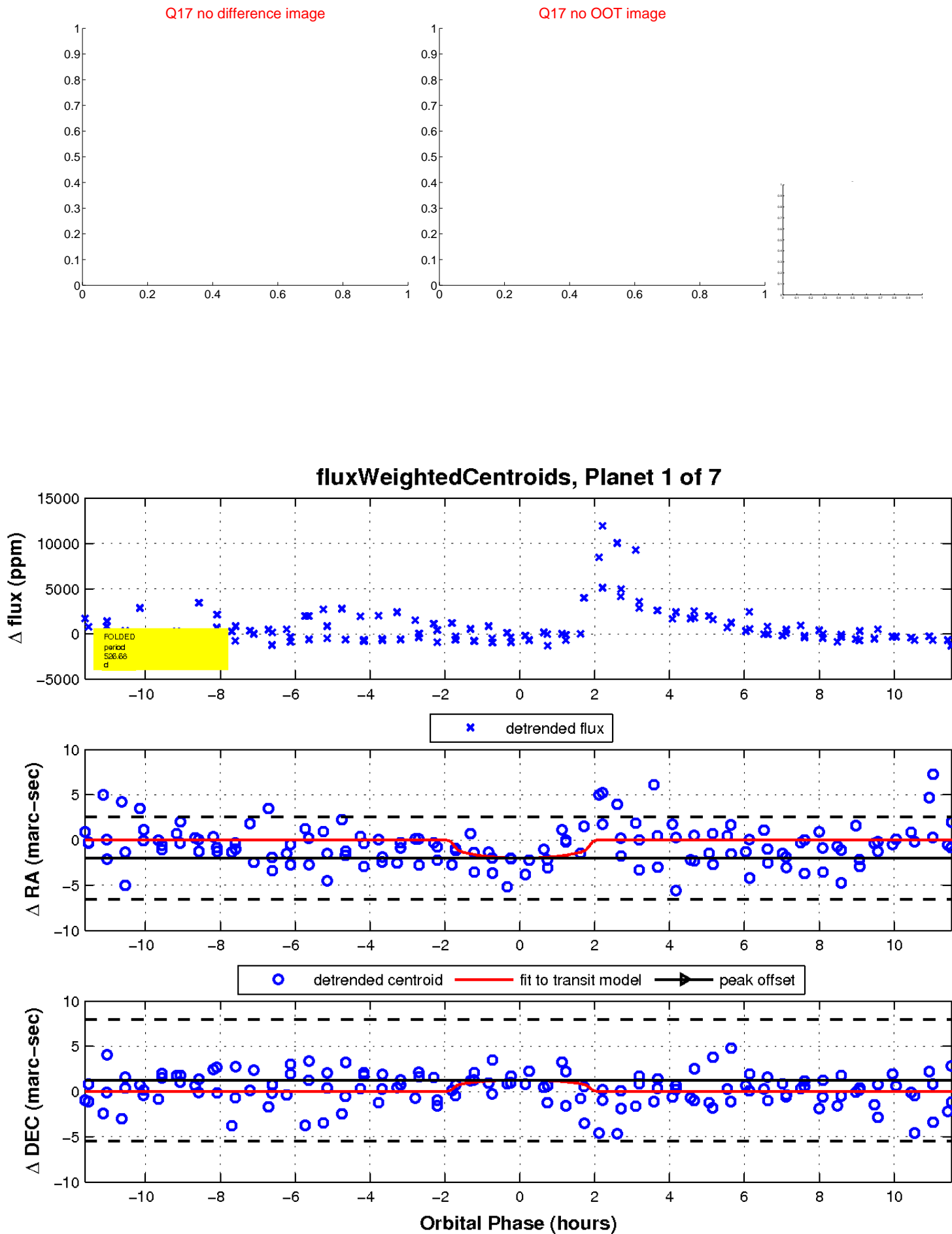
Q16 no difference image



Q16 no OOT image



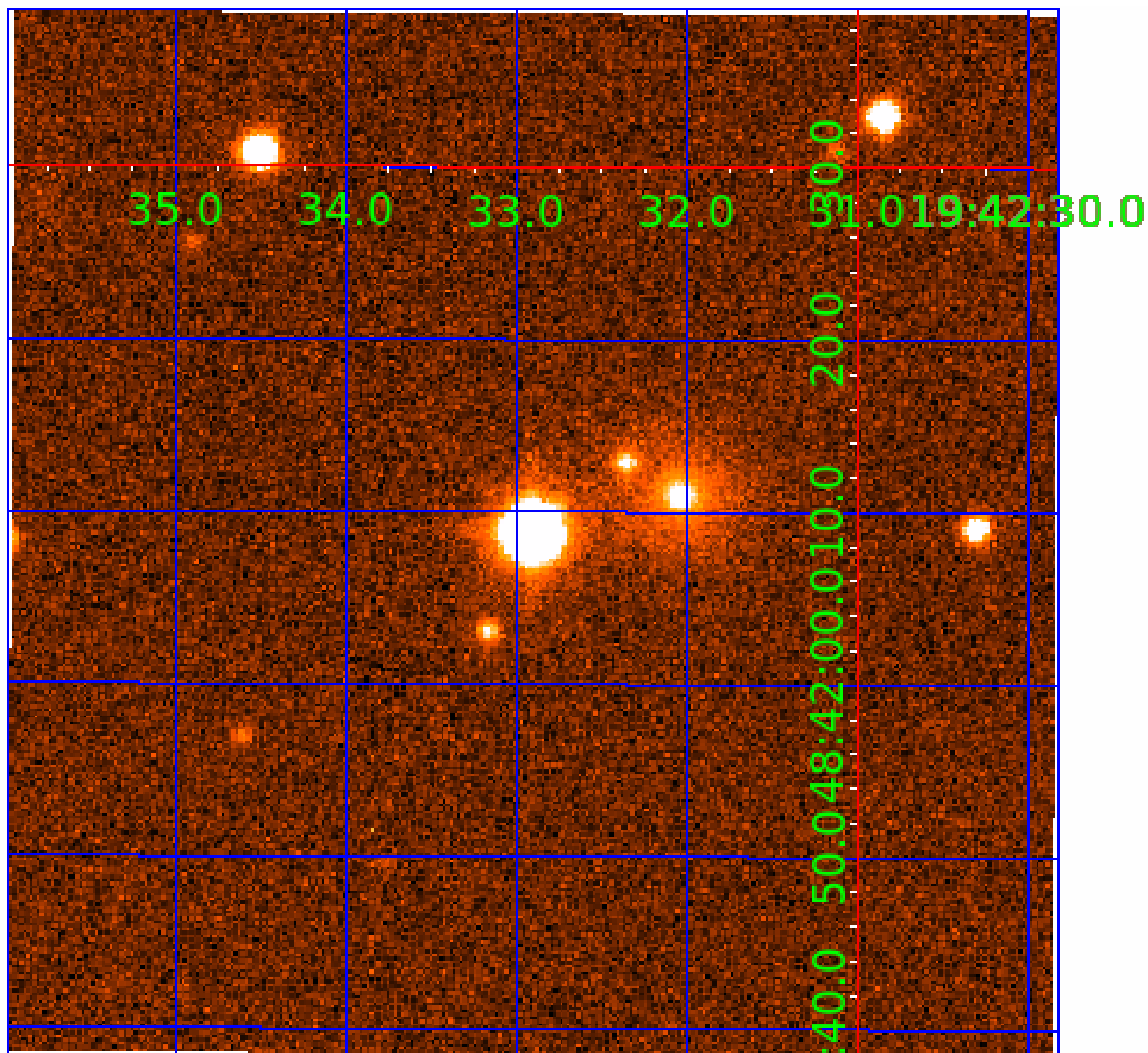
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

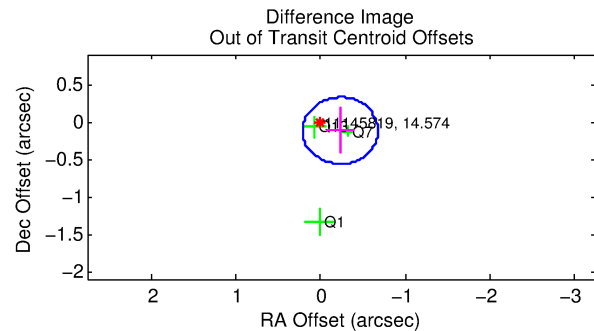
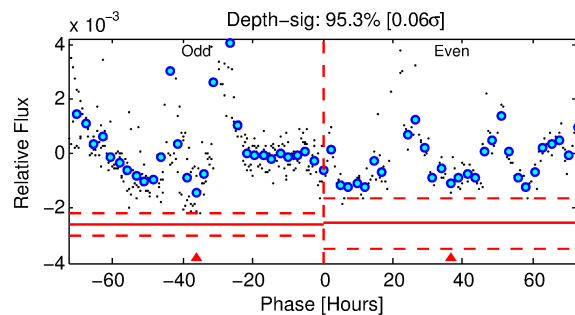
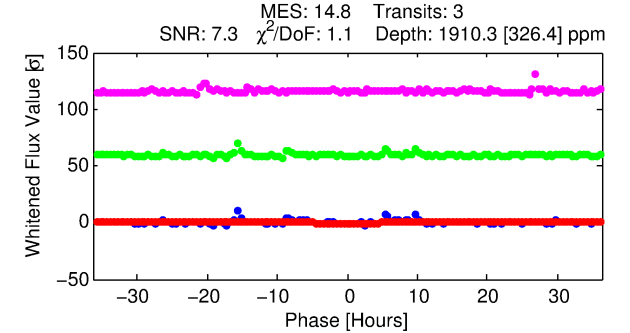
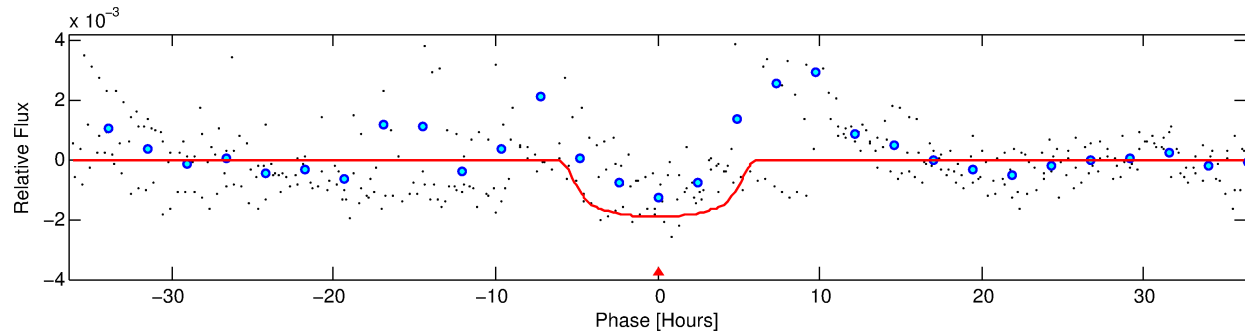
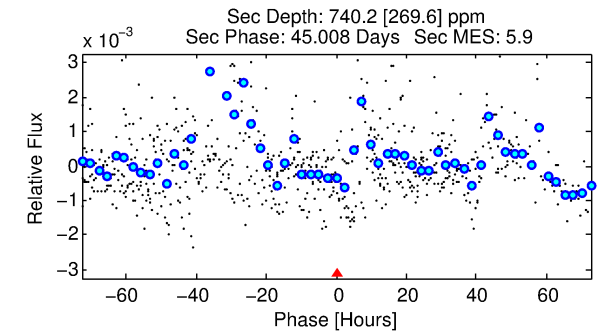
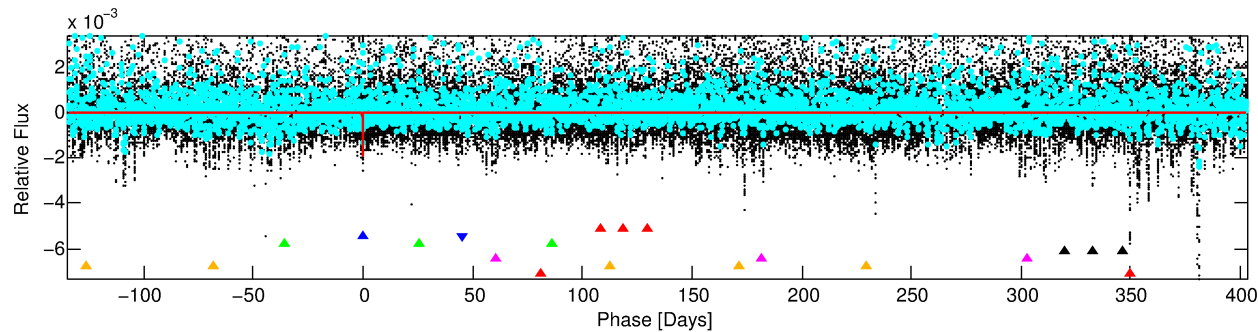
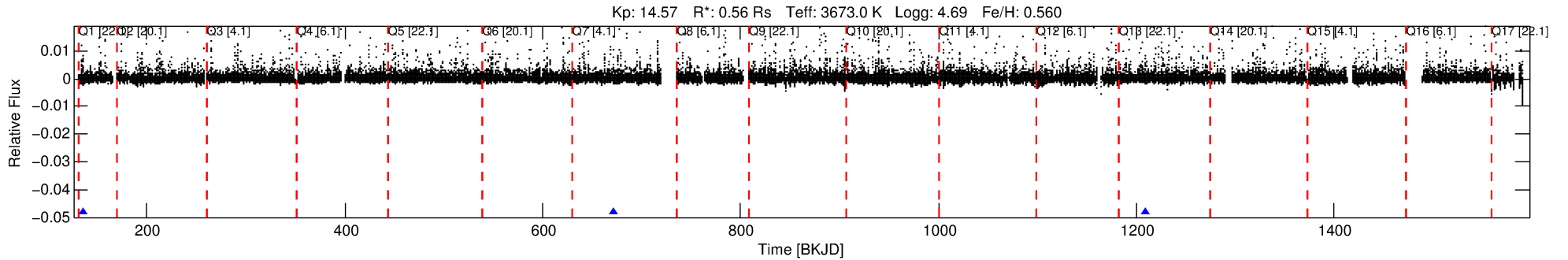
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011145819-02

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 2 of 7 Period: 537.223 d



## DV Fit Results:

Period = 537.22282 [0.01301] d  
Epoch = 135.1135 [0.0155] BKJD  
Rp/R\* = 0.0465 [0.0056]  
a/R\* = 208.42 [56.53]  
b = 0.85 [0.09]  
Seff = 0.04 [0.01]  
Teq = 117 [7] K  
Rp = 2.84 [0.54] Re  
a = 1.0672 [0.1220] AU  
Ag = 57406.66 [26670.56] [2.15σ]  
Teffp = 2809 [327] K [8.22σ]

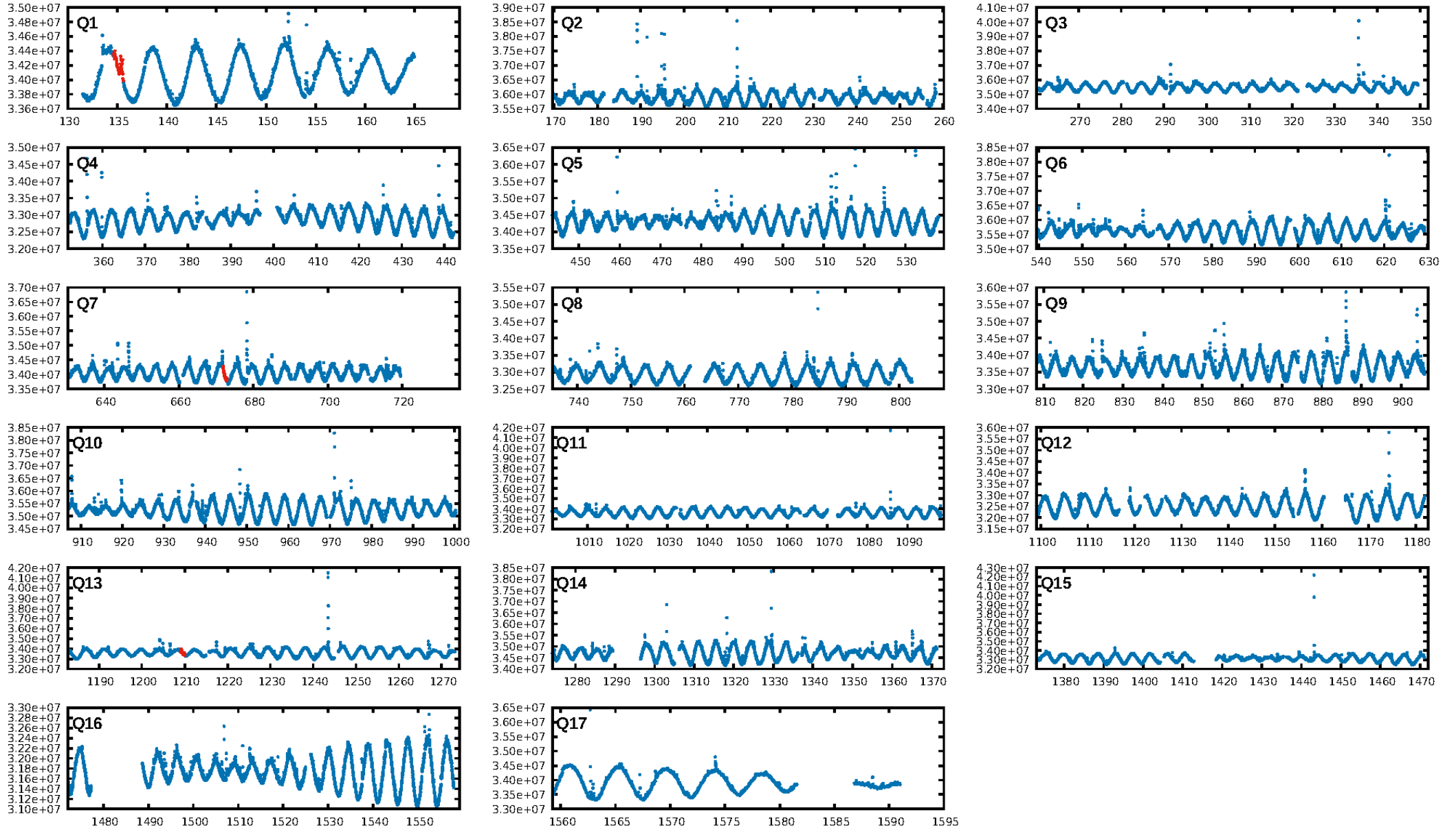
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.88σ]  
LongPeriod-sig: 100.0% [21.71σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.7602  
Centroid-sig: 62.9%  
Centroid-so: 0.345 arcsec [0.97σ]  
OotOffset-rm: 0.262 arcsec [1.76σ]  
OotOffset-st: 0.1/0/2 [3]  
KicOffset-rm: 0.196 arcsec [0.73σ]  
KicOffset-st: 0.1/0/2 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

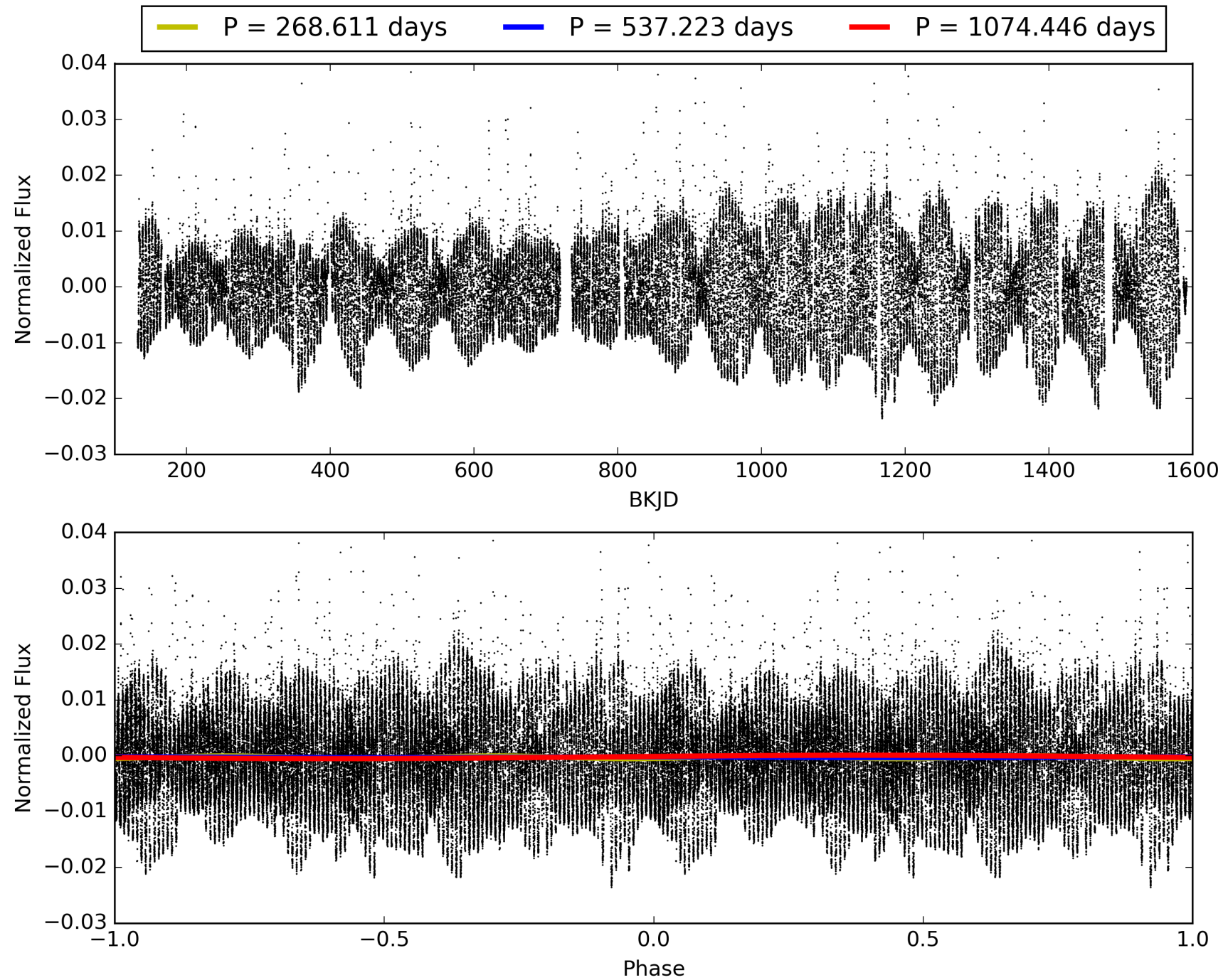
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:46:14 Z

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

# TCE 011145819-02, PDC Light Curves



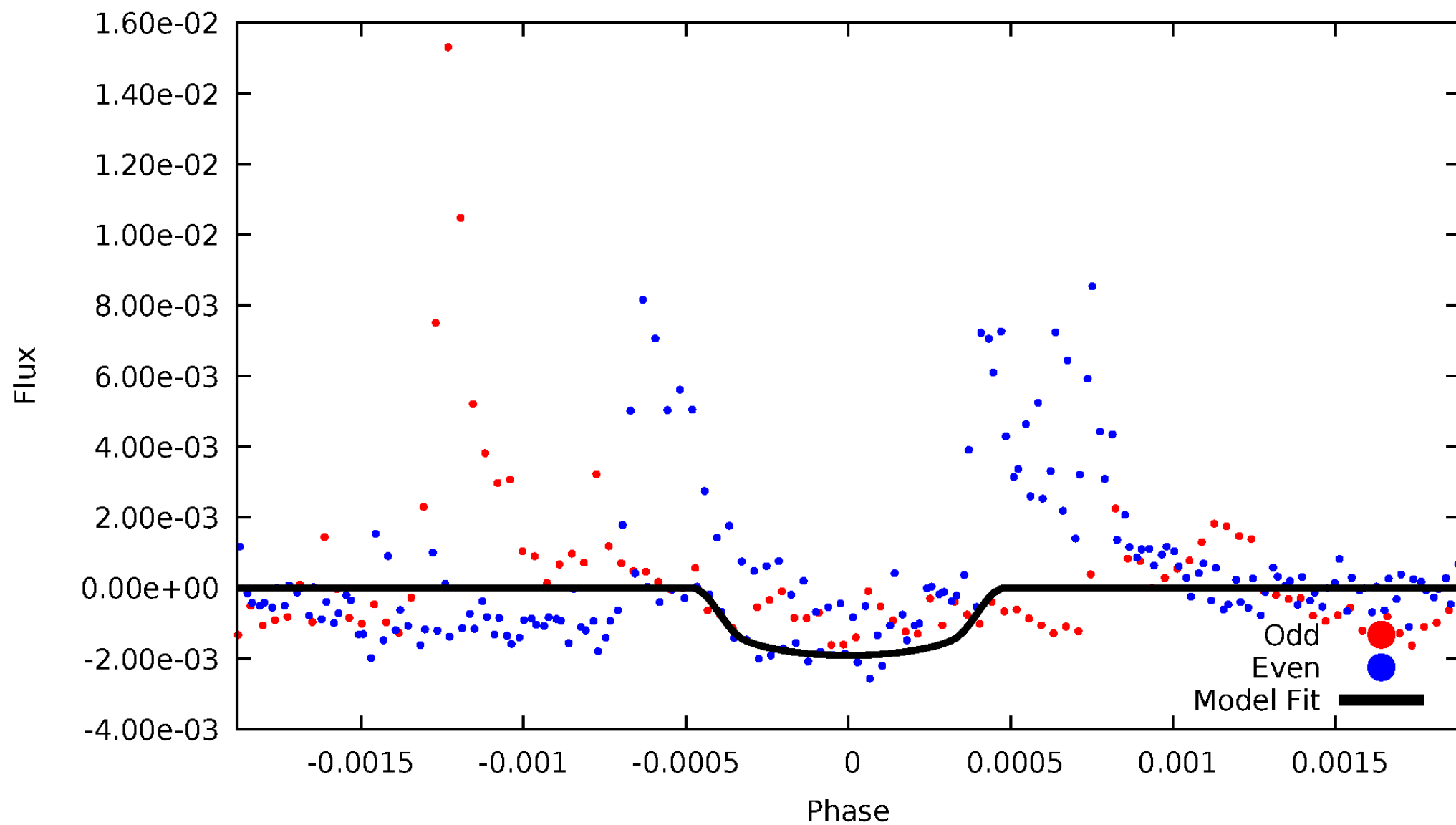
TCE 011145819-02





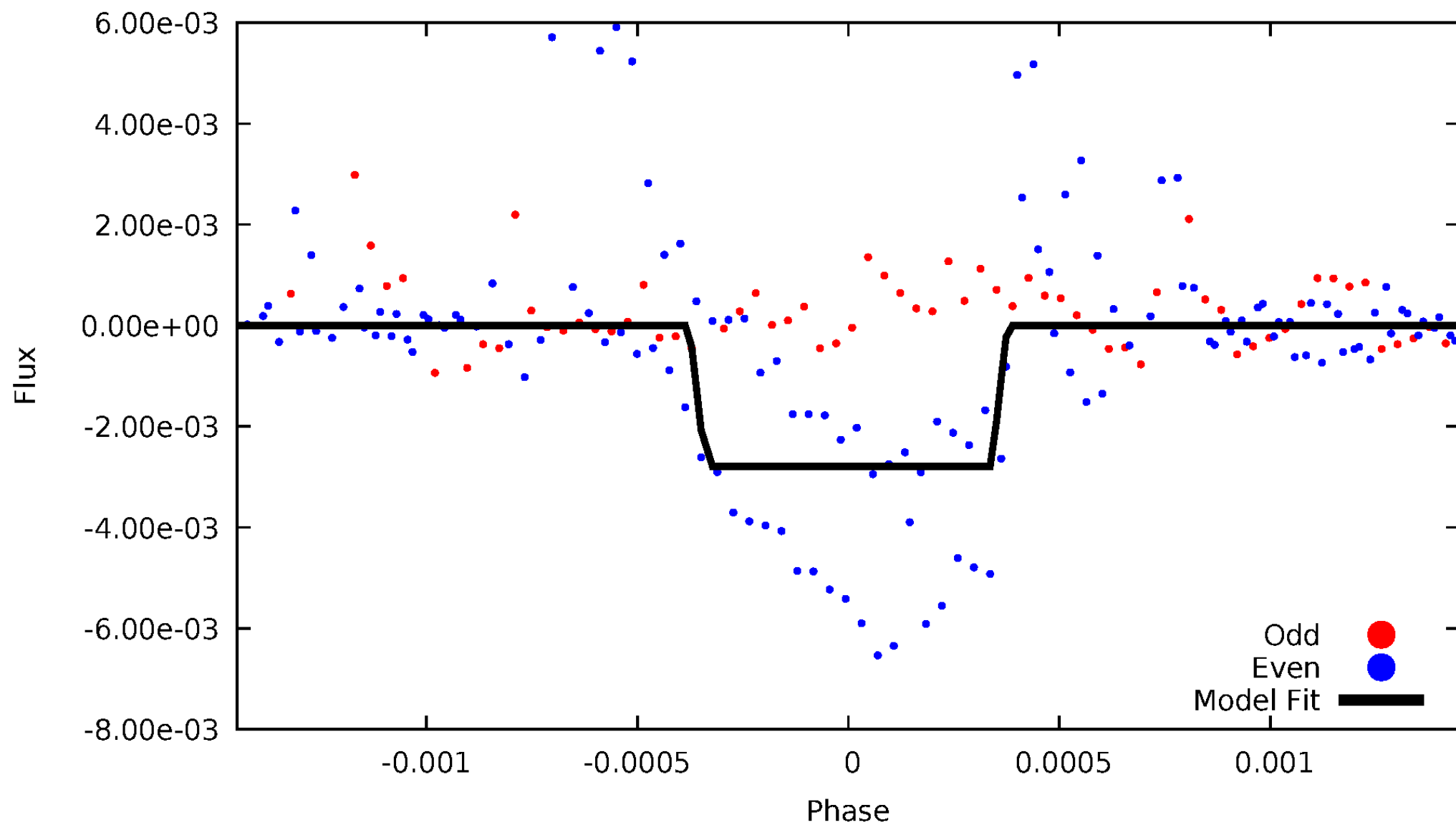
# DV Odd/Even

TCE 011145819-02



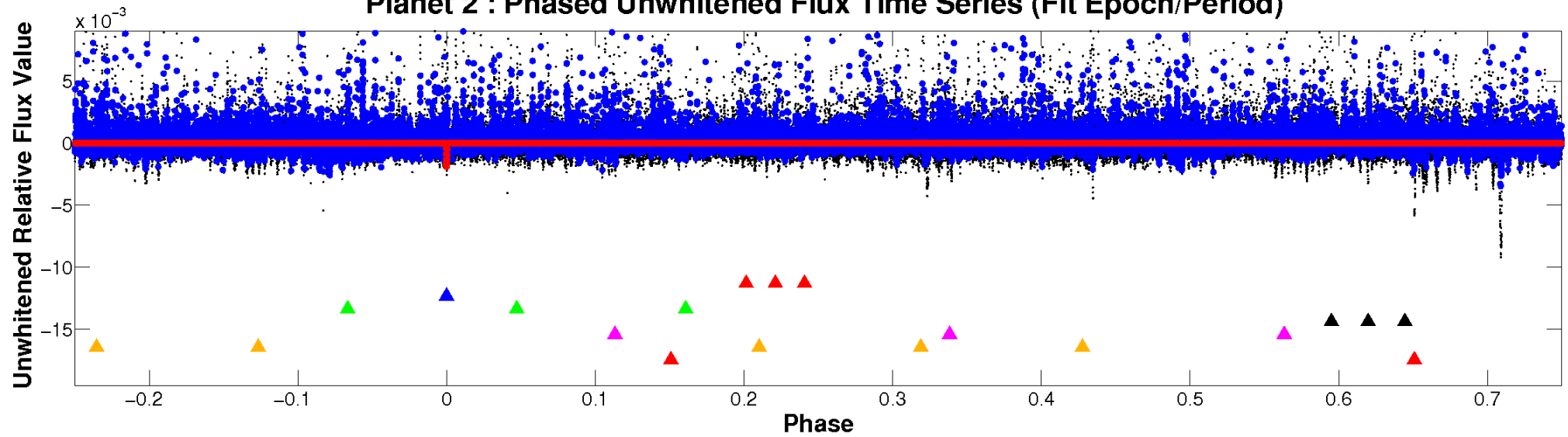
# ALT Odd/Even

TCE 011145819-02

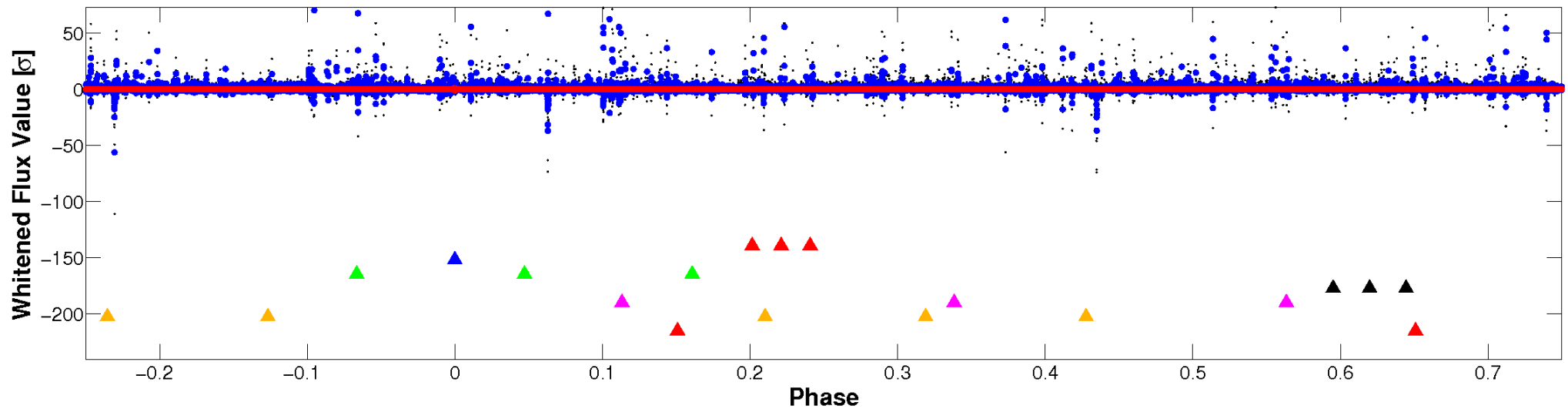


# Non-Whitened Vs. Whitened Light Curve

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

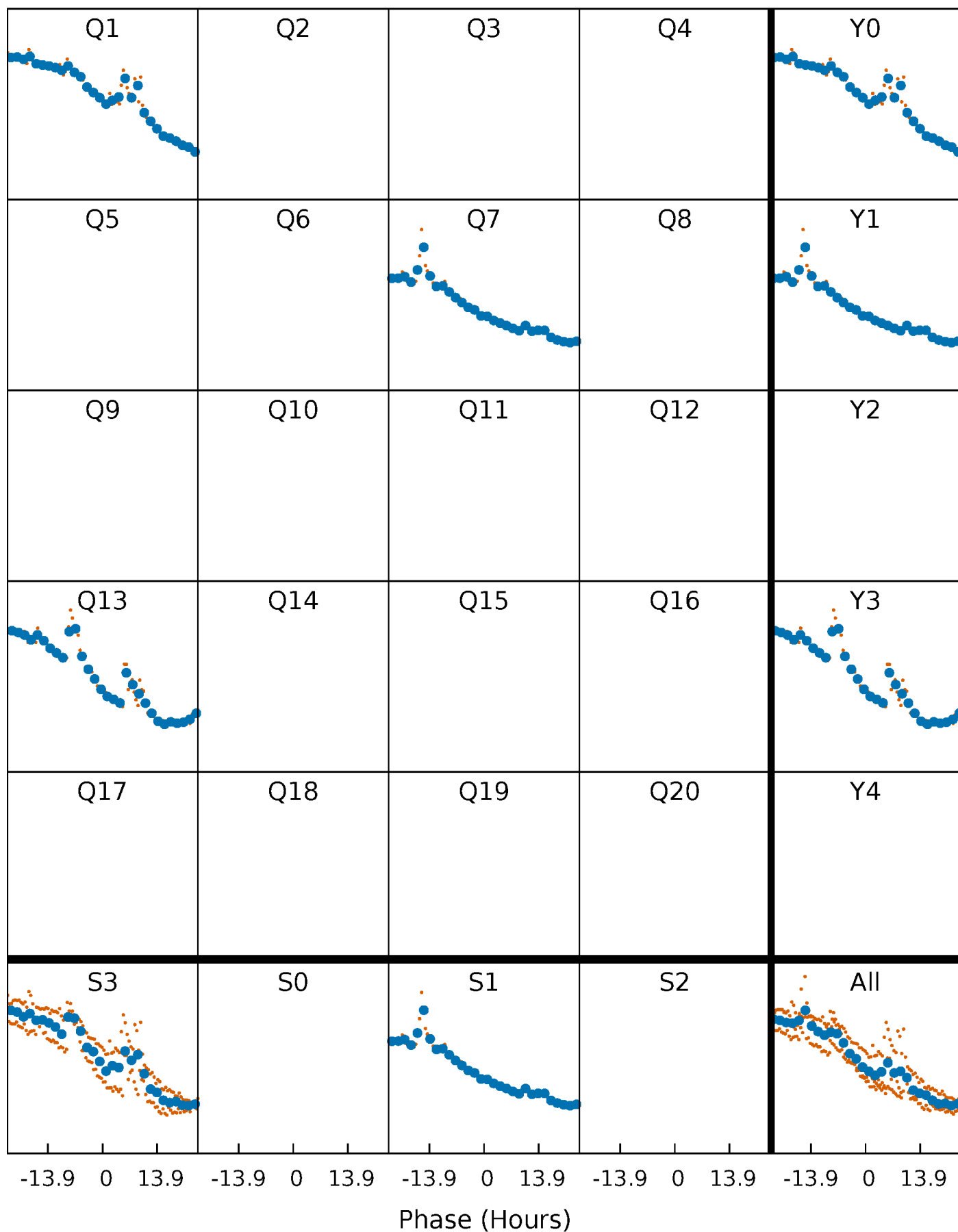


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



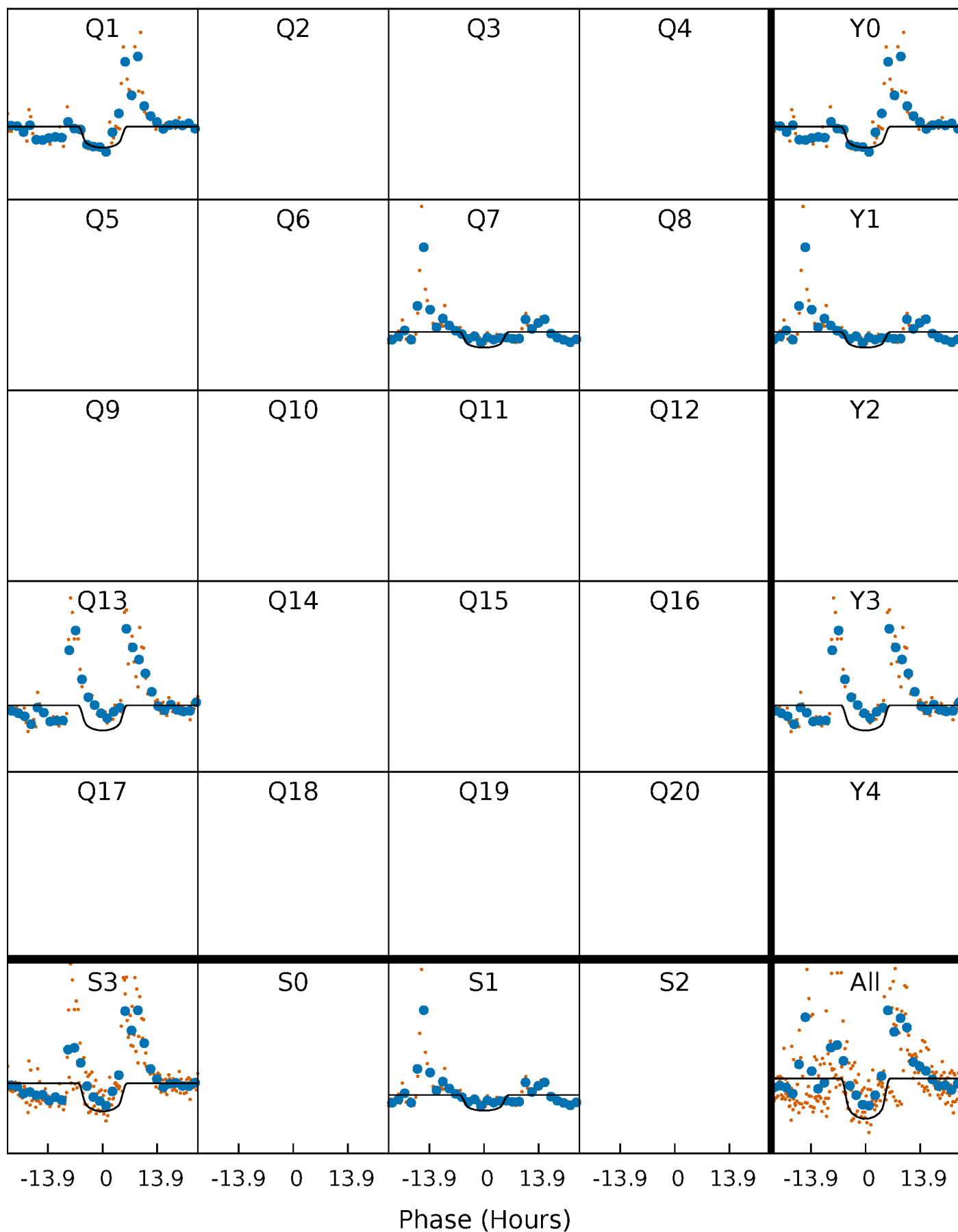
# PDC Quarter-Phased Transit Curves

TCE 011145819-02   P=537.222825 Days    $T_0=135.113512$  (BKJD)



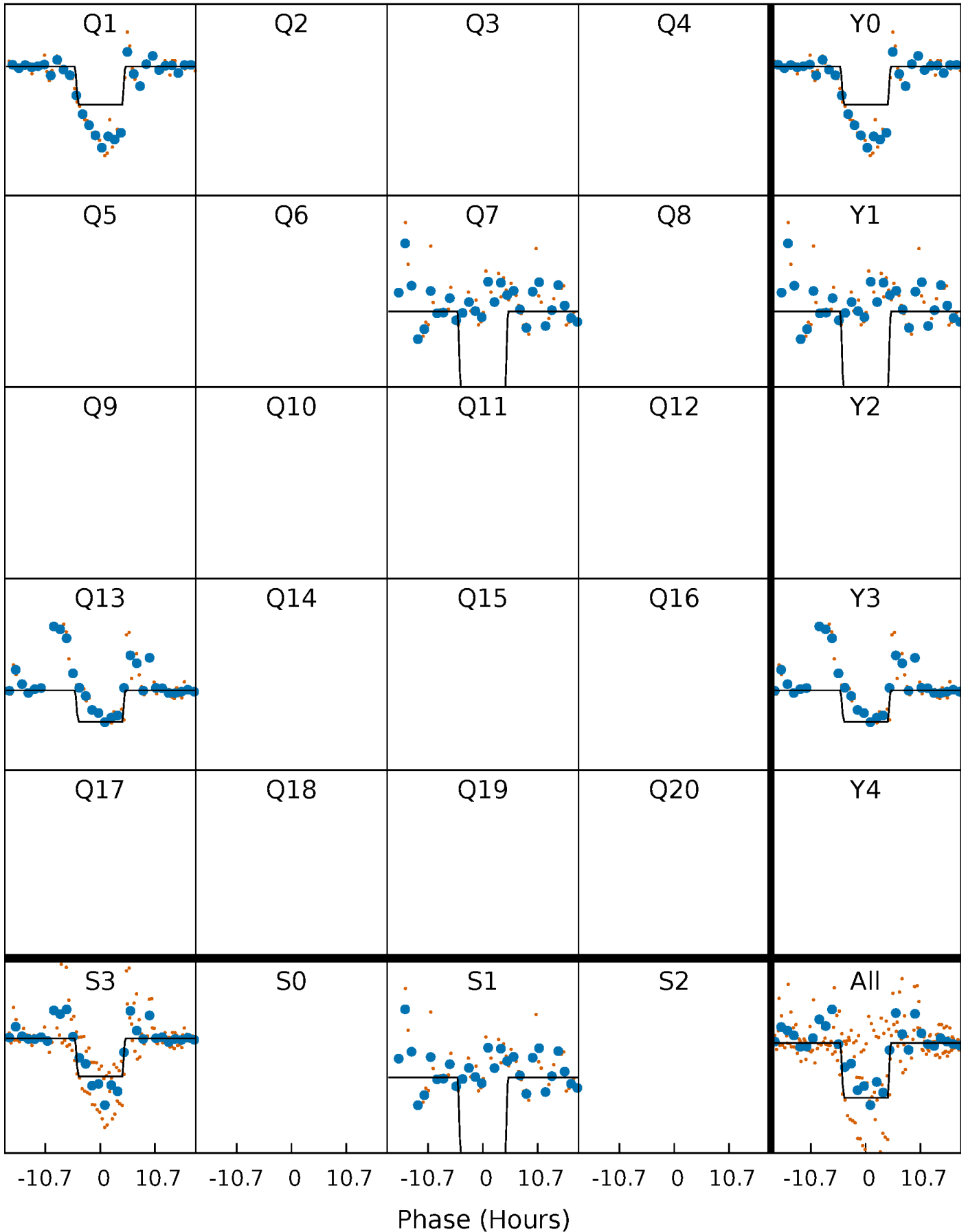
# DV Quarter-Phased Transit Curves

TCE 011145819-02   P=537.222825 Days    $T_0=135.113512$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

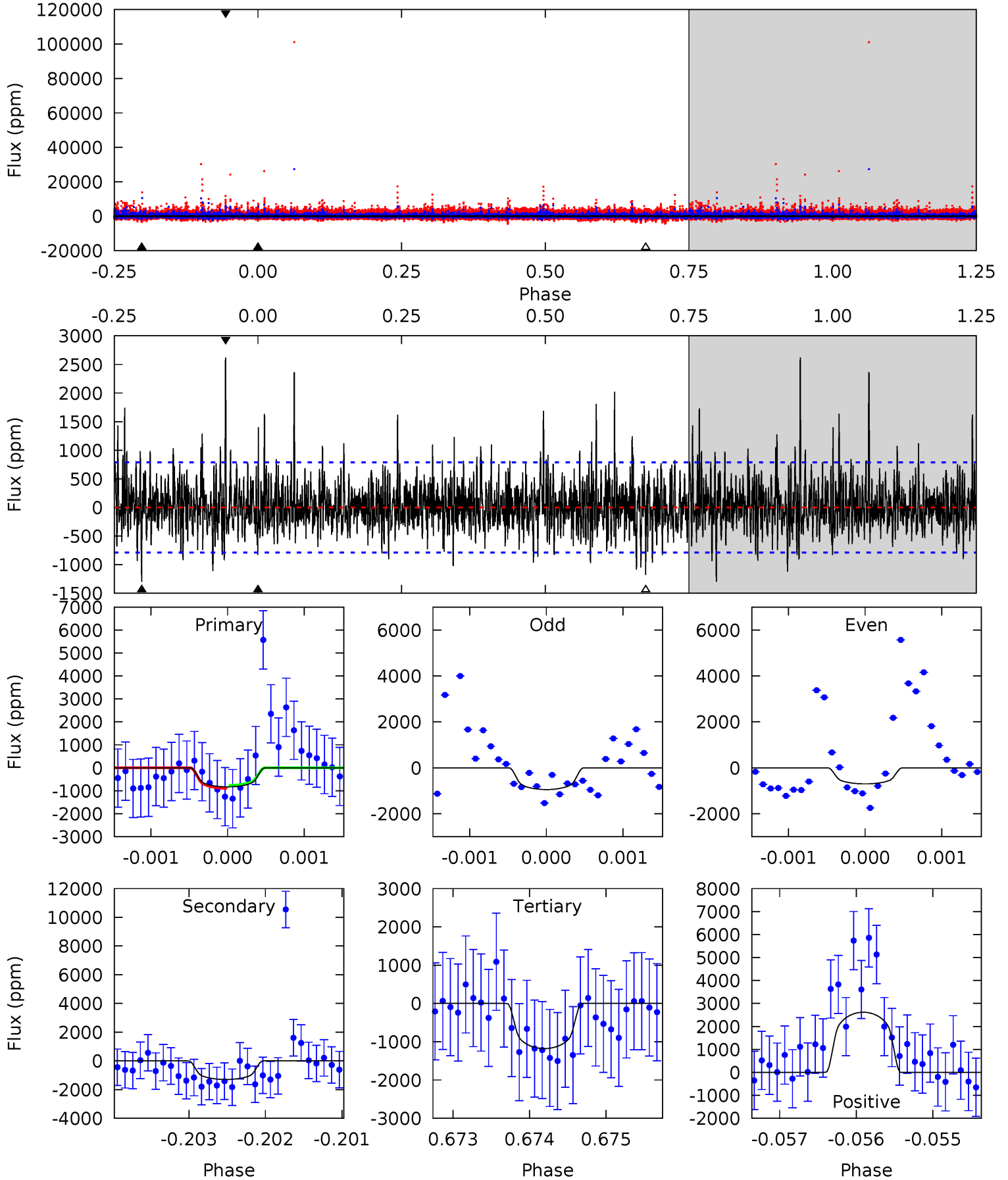
TCE 011145819-02 P=537.232348 Days  $T_0=135.111724$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-02, P = 537.222825 Days, E = 135.113512 Days

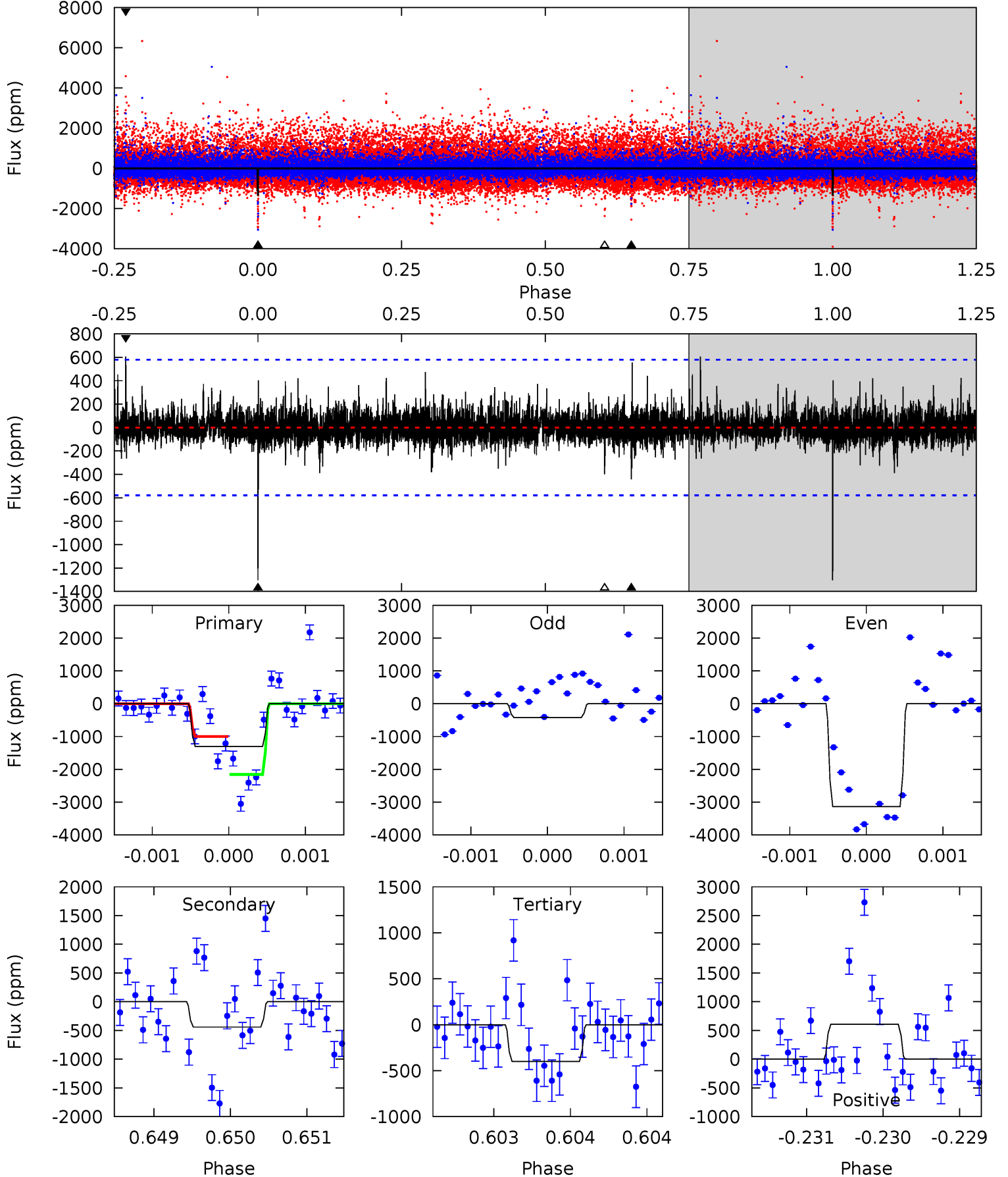
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.75	8.98	8.16	18.1	5.45	3.29	2.55	-2.41	-12.4	0.82	-9.15	0.46	0.83	0.67	0.43



# Alt Model-Shift Uniqueness Test

011145819-02, P = 537.232348 Days, E = 135.111724 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
12.4	4.19	3.79	5.77	5.51	3.38	0.80	8.60	6.63	0.40	-1.58	14.9	1.20	0.32	5.48





### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1296 \pm 144$	$2.78^{+0.36}_{-0.37}$	$162^{+6}_{-7}$	$3373^{+185}_{-168}$	$106476^{+35224}_{-25954}$
Alt.	$-441 \pm 105$	$3.13^{+0.39}_{-0.36}$	$162^{+6}_{-7}$	$2797^{+145}_{-139}$	$28367^{+10652}_{-8437}$

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

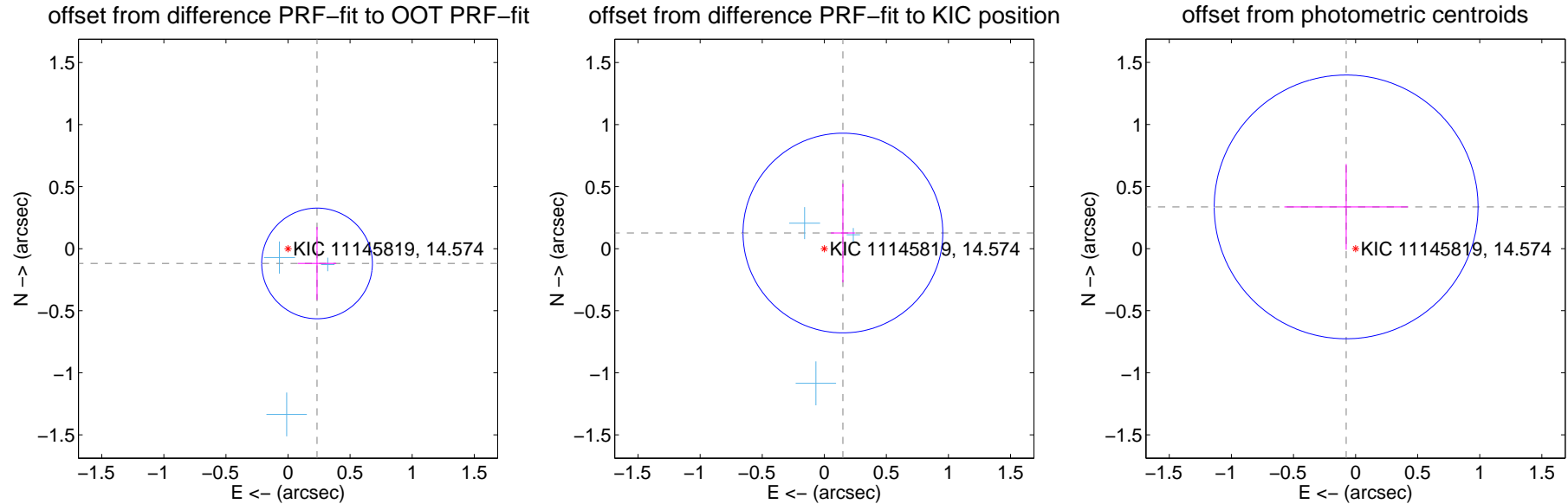
## DV Centroid Data

Supplemental centroid analysis for 011145819-02. Kepler magnitude: 14.57. Transit SNR 7.26

There are 3 quarters with good PRF difference image offsets

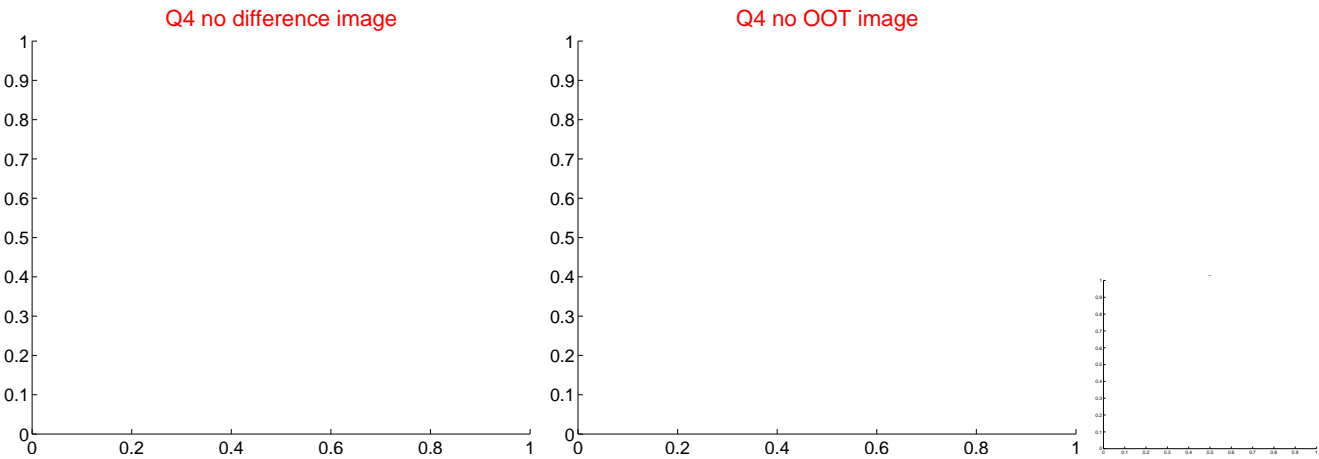
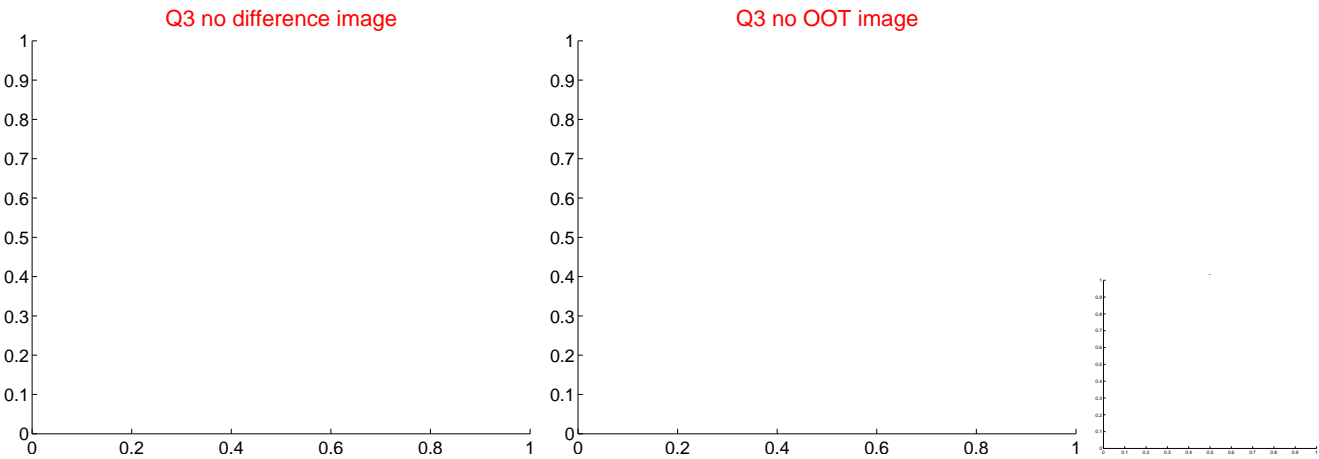
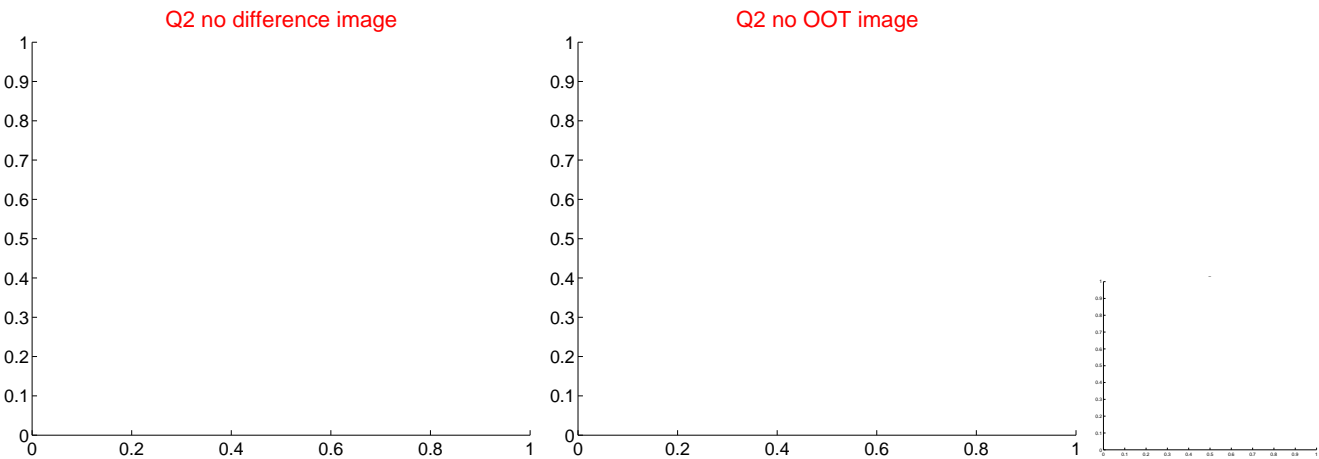
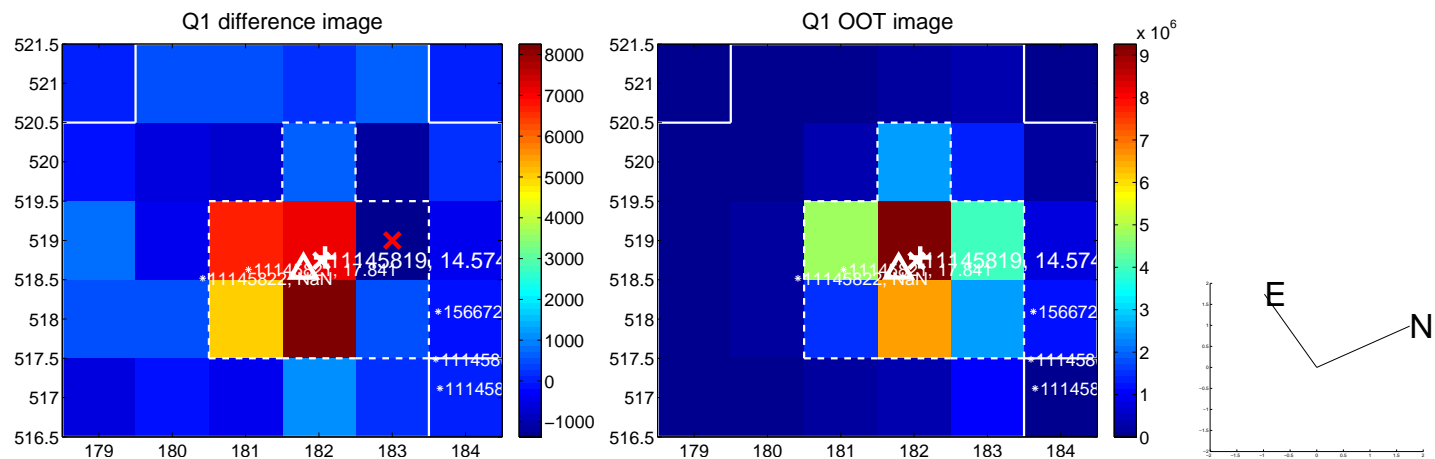
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.262 \pm 0.149$	1.76	$-0.234 \pm 0.154$	$-0.119 \pm 0.294$
PRF-fit source offset from KIC position	$0.196 \pm 0.268$	0.73	$-0.150 \pm 0.098$	$0.126 \pm 0.397$
photometric centroid source offset	$0.34 \pm 0.35$	0.97	$0.08 \pm 0.50$	$0.34 \pm 0.35$

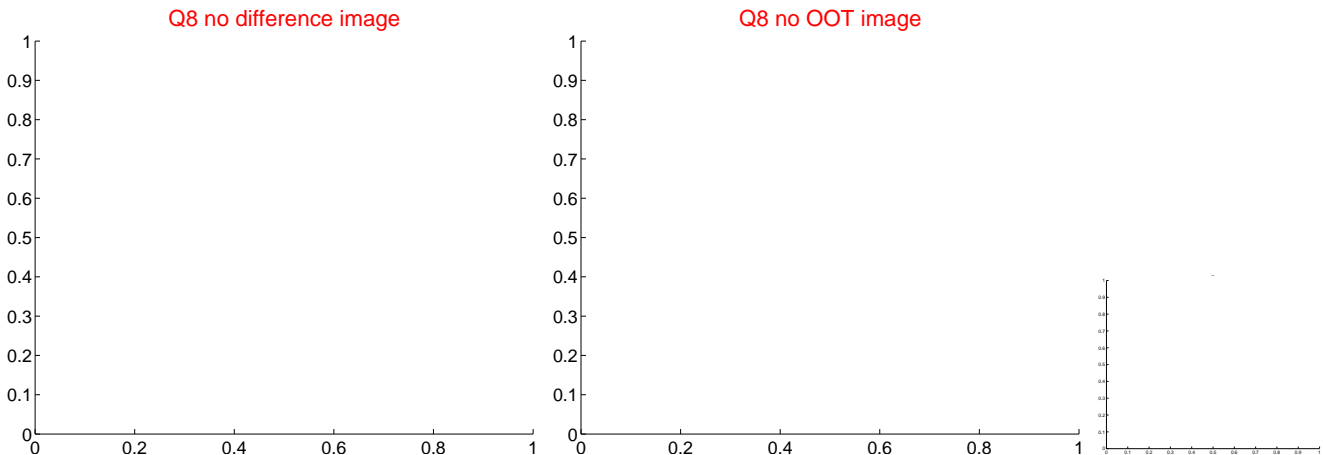
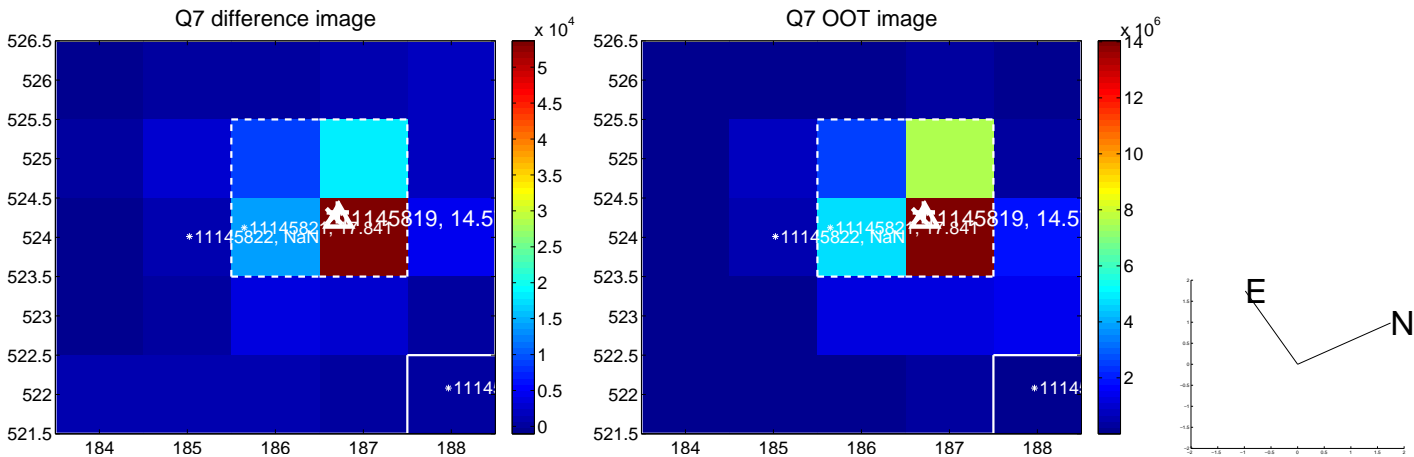
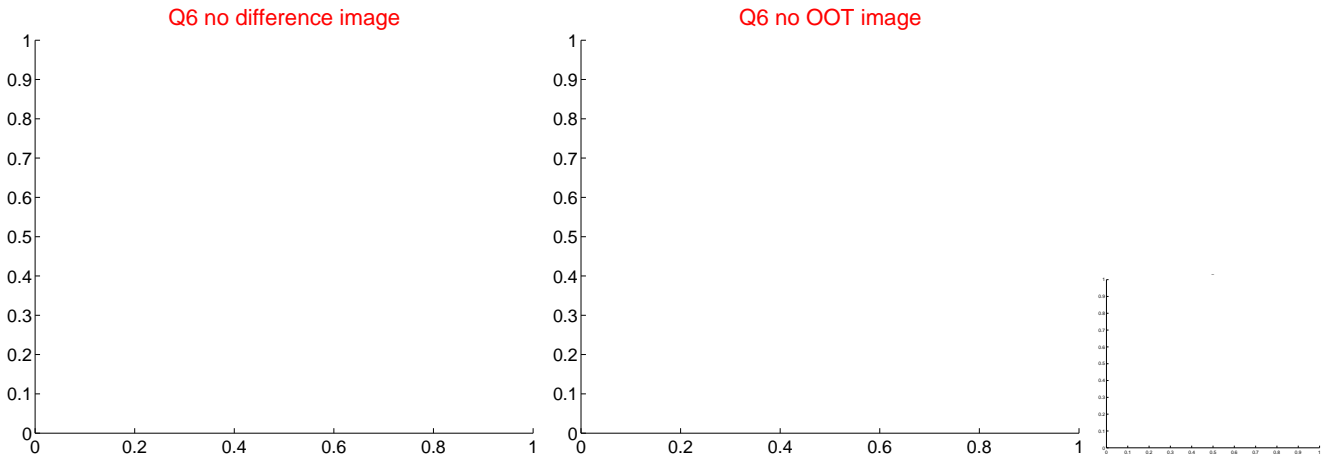
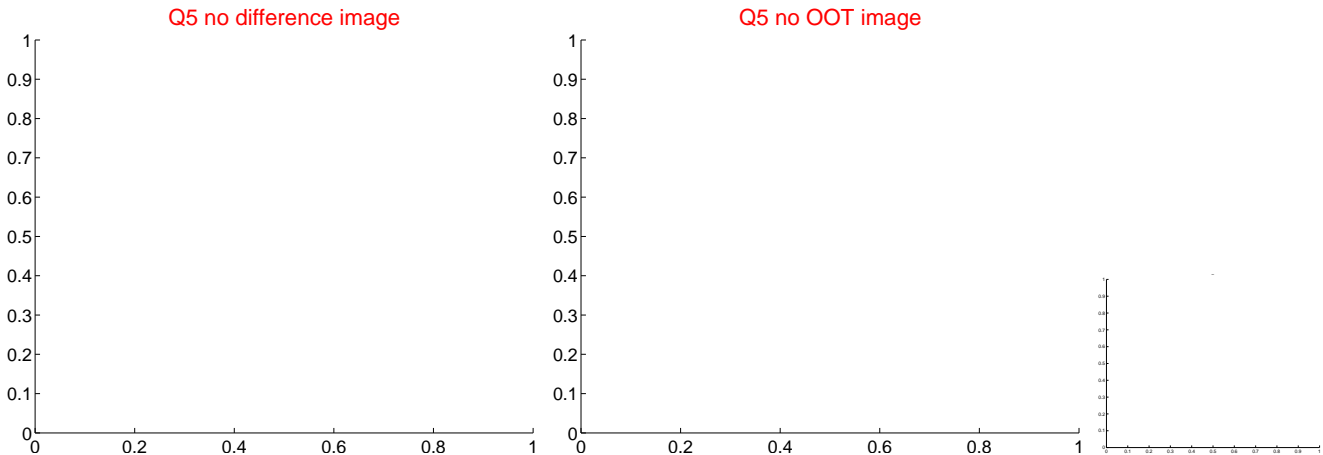


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



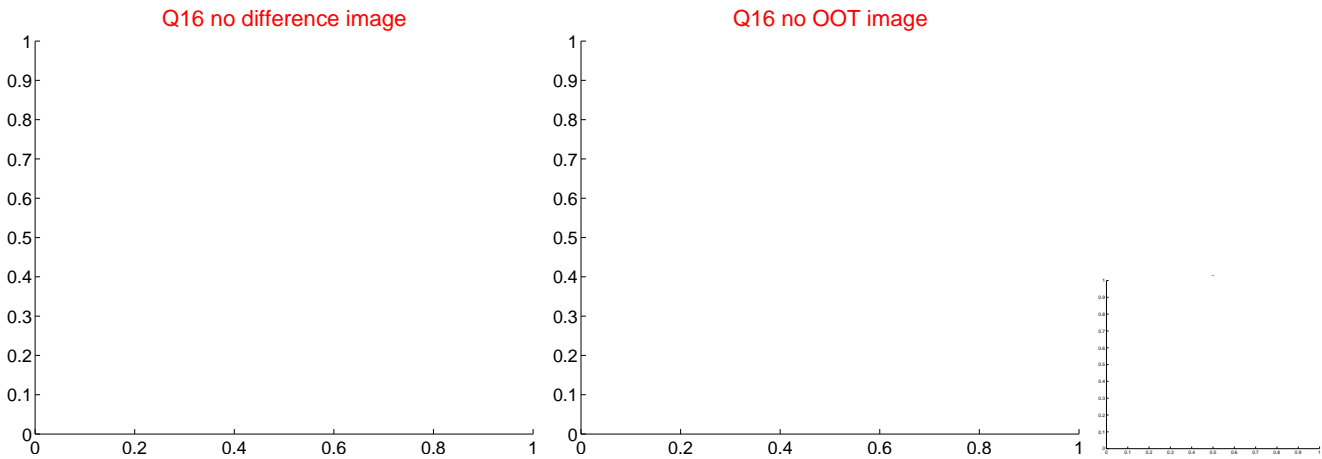
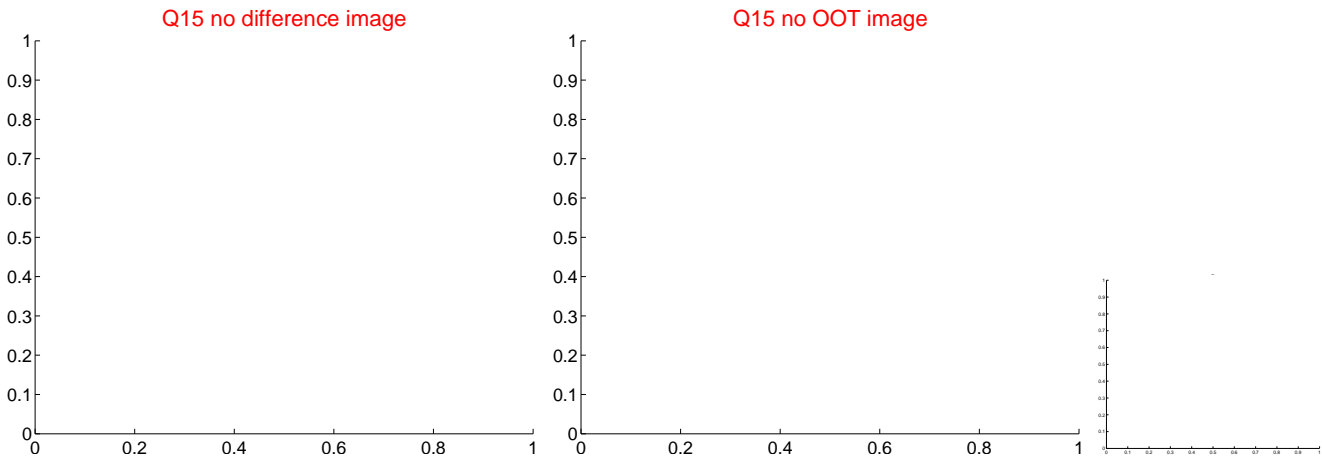
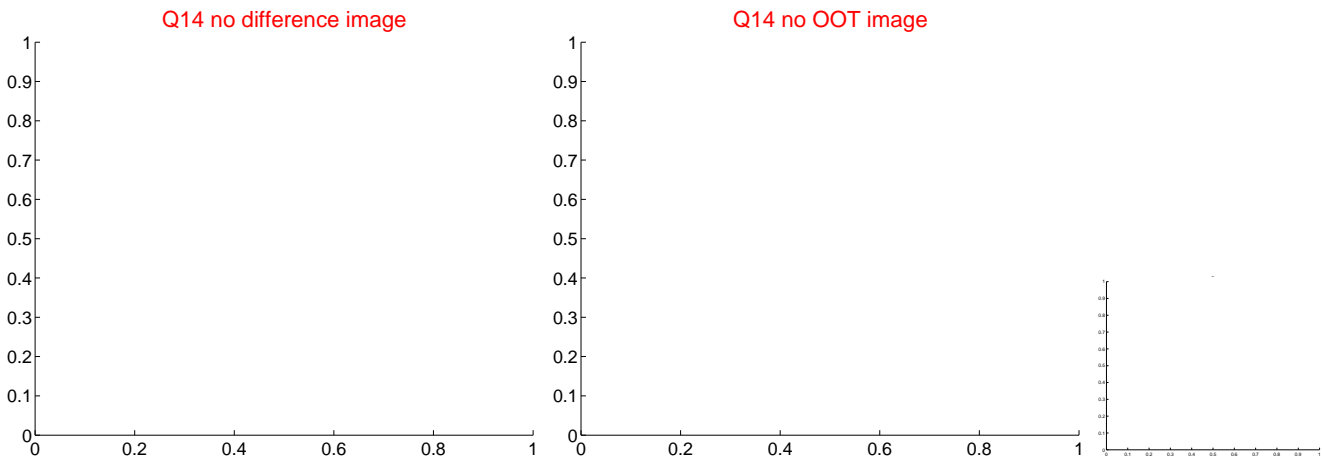
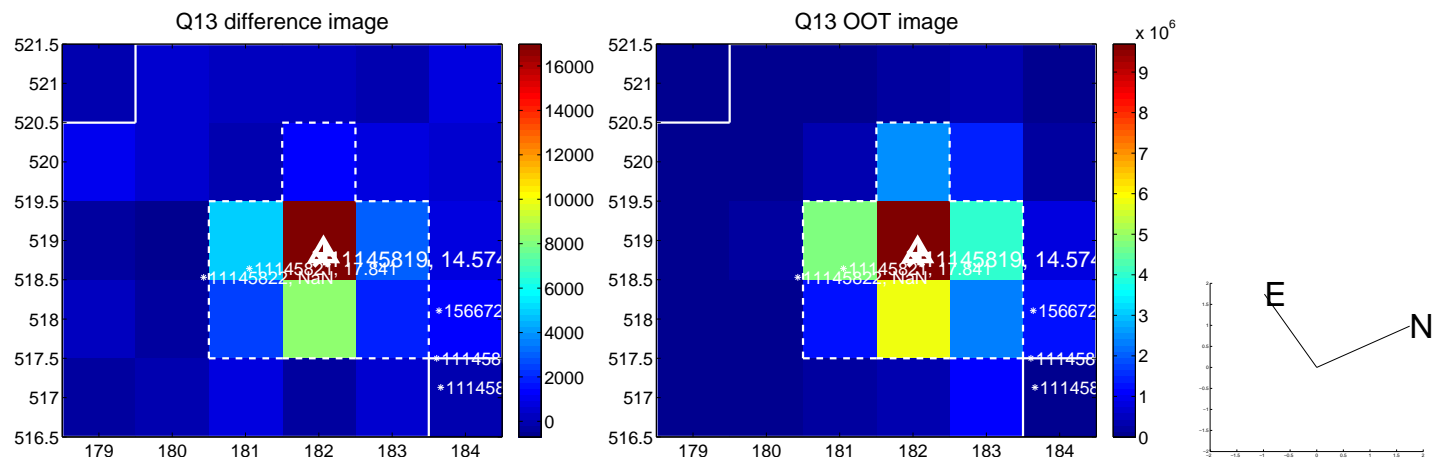
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



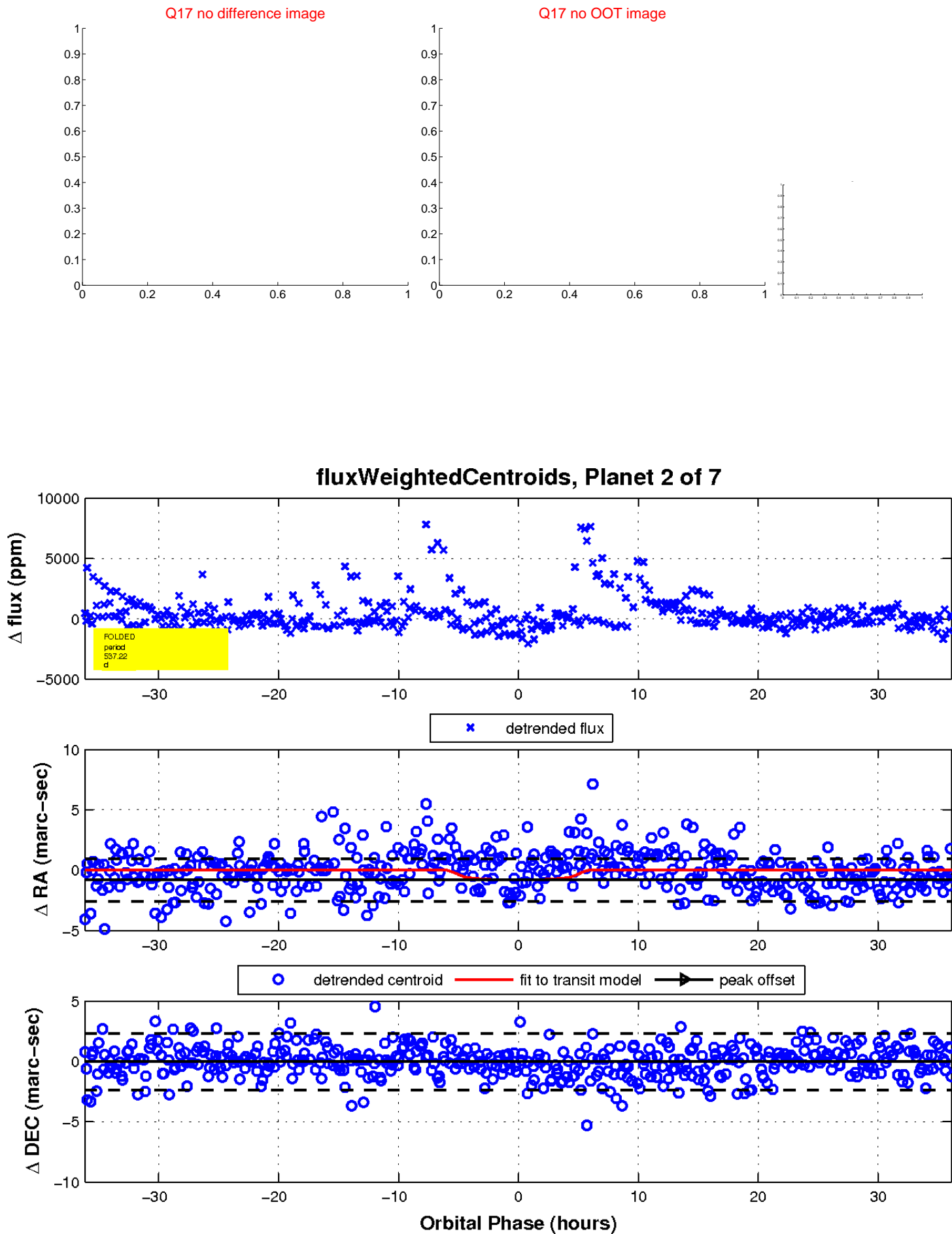
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

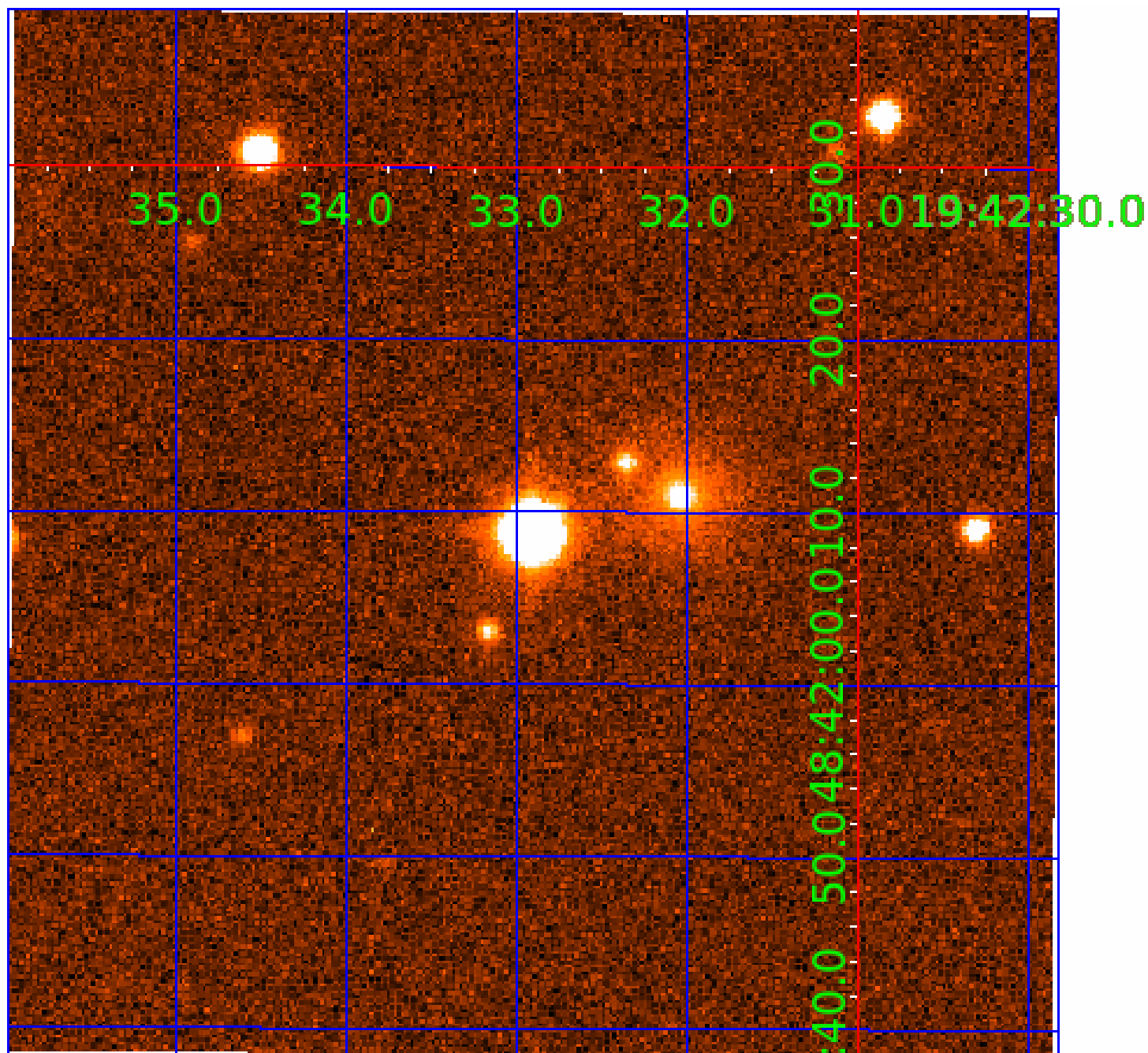


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

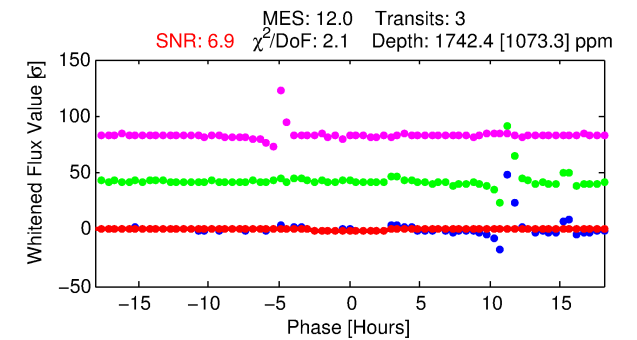
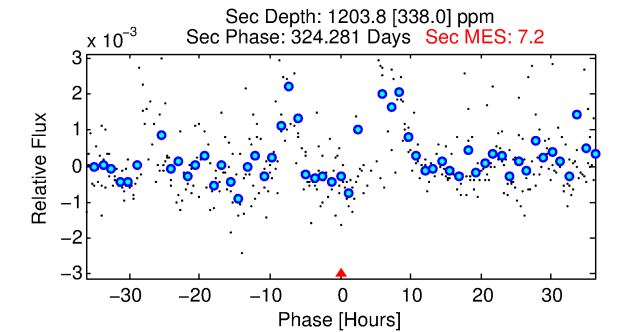
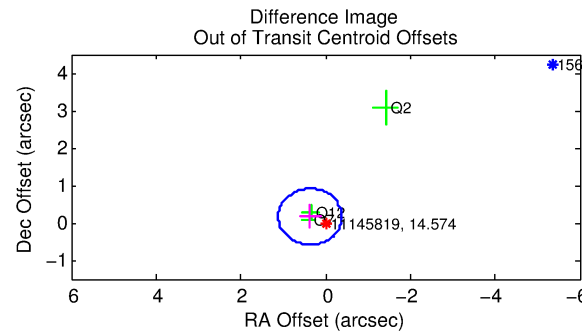
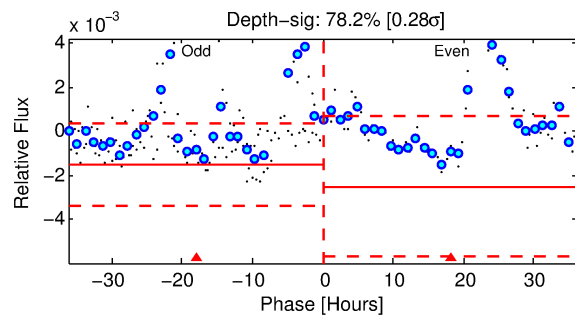
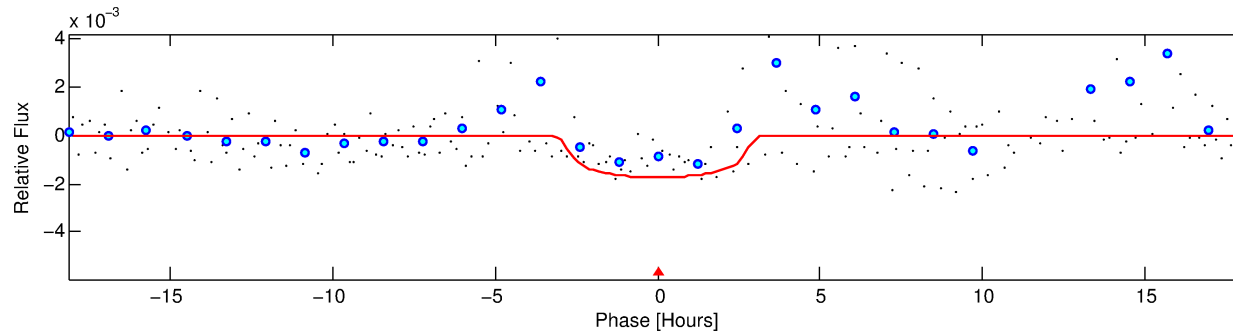
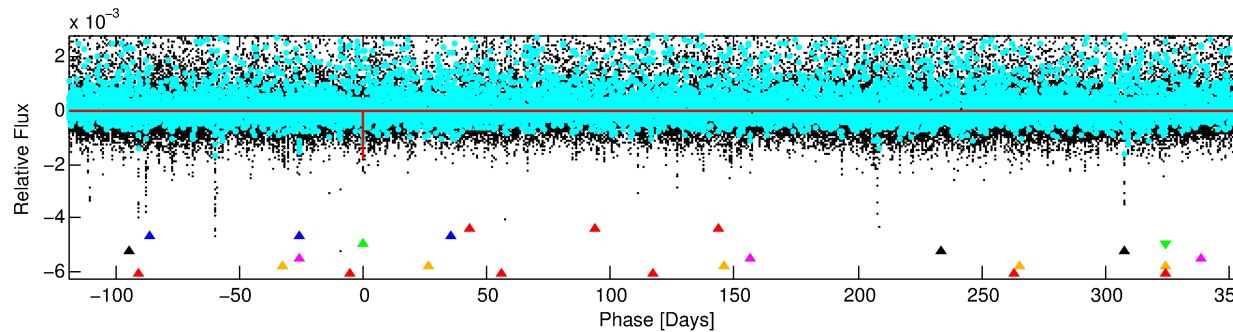
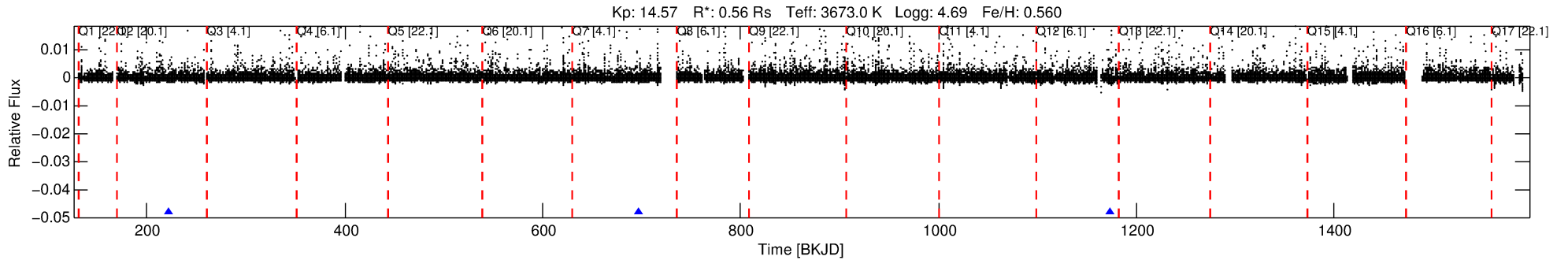
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011145819-03

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 3 of 7 Period: 476.175 d



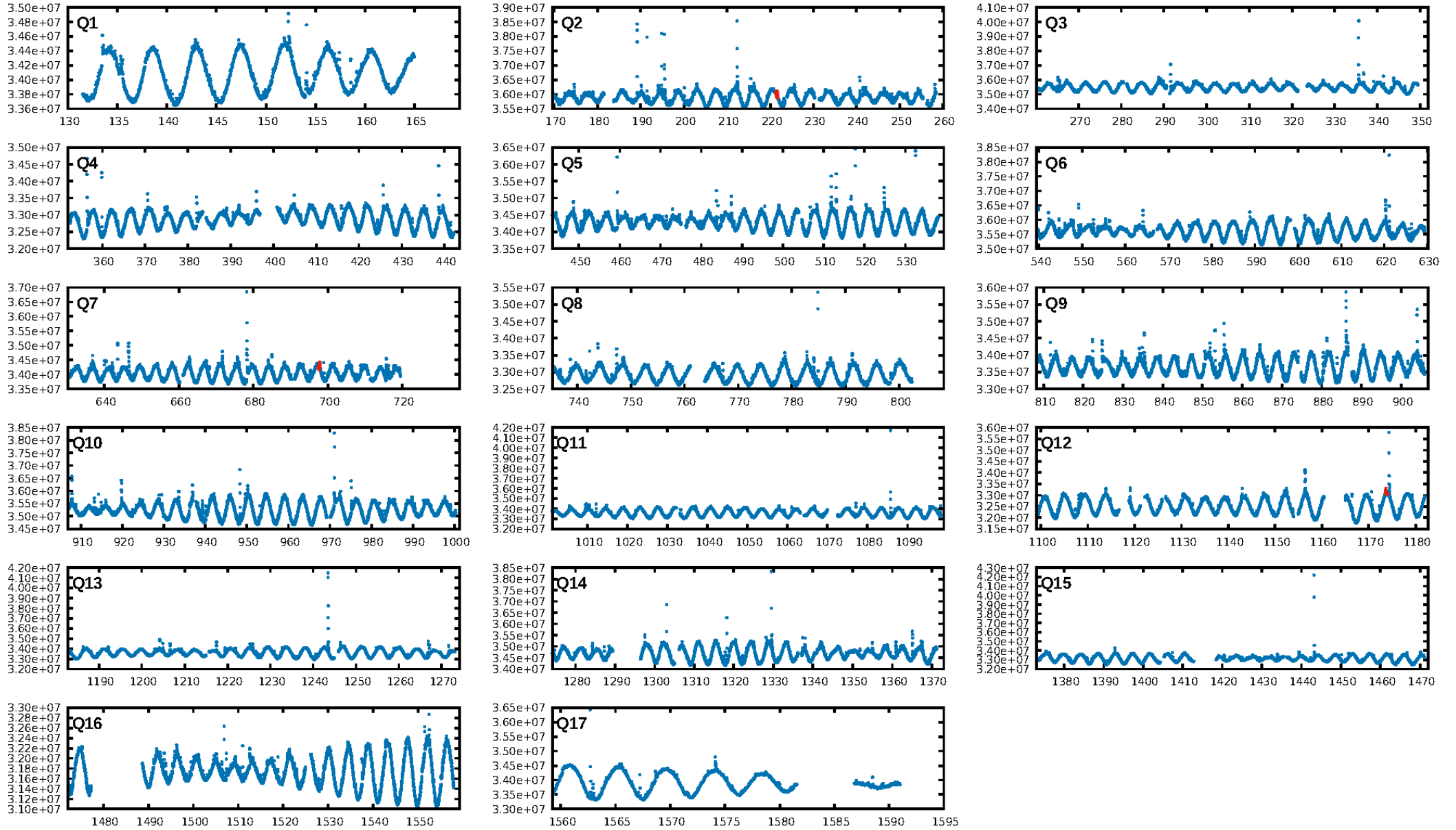
## DV Fit Results:

Period = 476.17478 [0.02695] d  
Epoch = 221.5037 [0.0367] BKJD  
Rp/R\* = 0.0406 [0.0672]  
a/R\* = 470.80 [2470.75]  
b = 0.69 [4.11]  
Seff = 0.05 [0.01]  
Teq = 122 [7] K  
Rp = 2.48 [4.12] Re  
a = 0.9848 [0.1126] AU  
Ag = 104261.93 [346725.09] [0.30σ]  
Teffp = 3395 [2823] K [1.16σ]

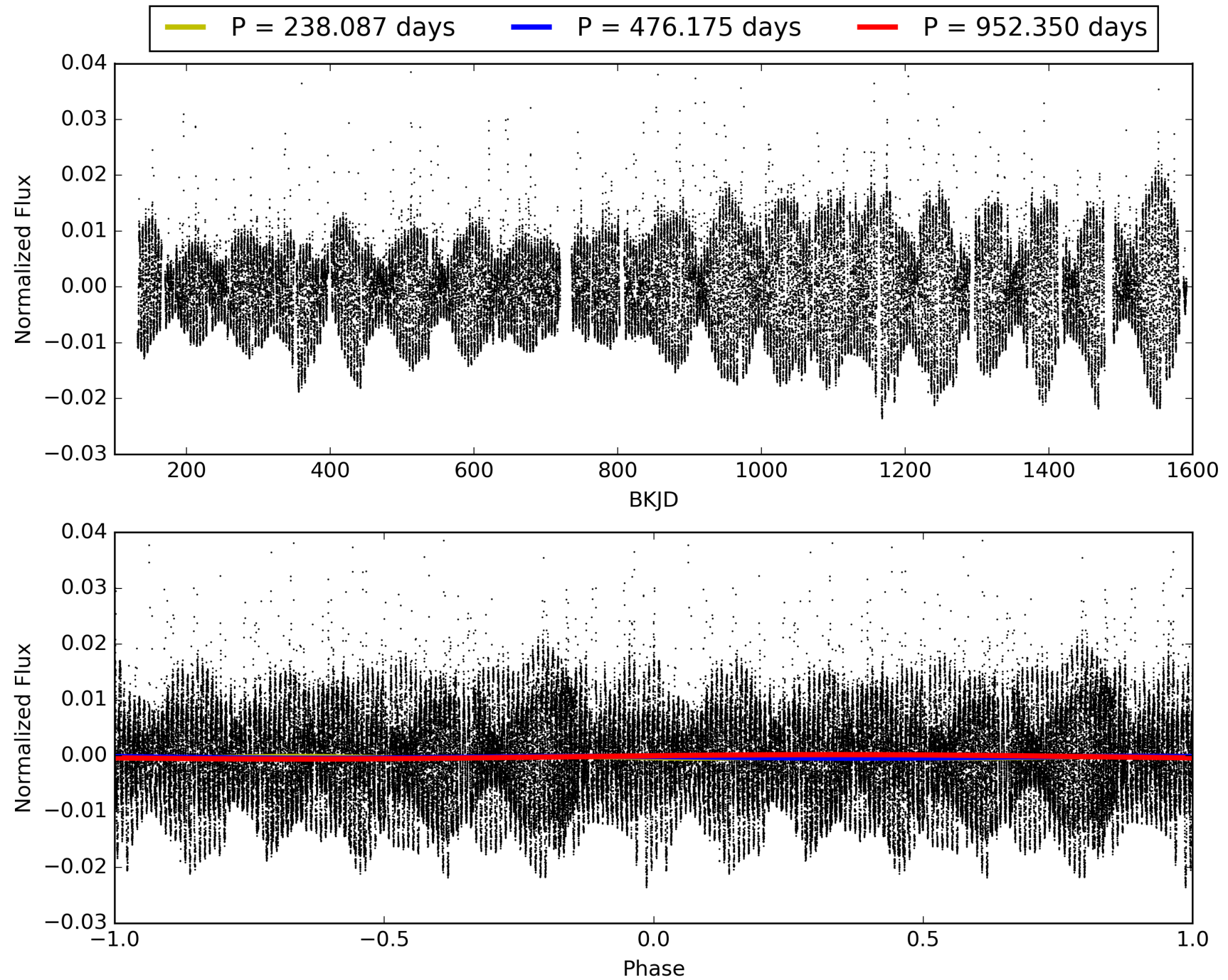
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [586.02σ]  
LongPeriod-sig: 100.0% [168.79σ]  
ModelChiSquare2-sig: 55.5%  
ModelChiSquareGof-sig: 41.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.443  
Centroid-sig: 13.1%  
Centroid-so: 0.197 arcsec [0.35σ]  
OotOffset-rm: 0.403 arcsec [1.61σ]  
KicOffset-rm: 0.586 arcsec [2.16σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 011145819-03, PDC Light Curves

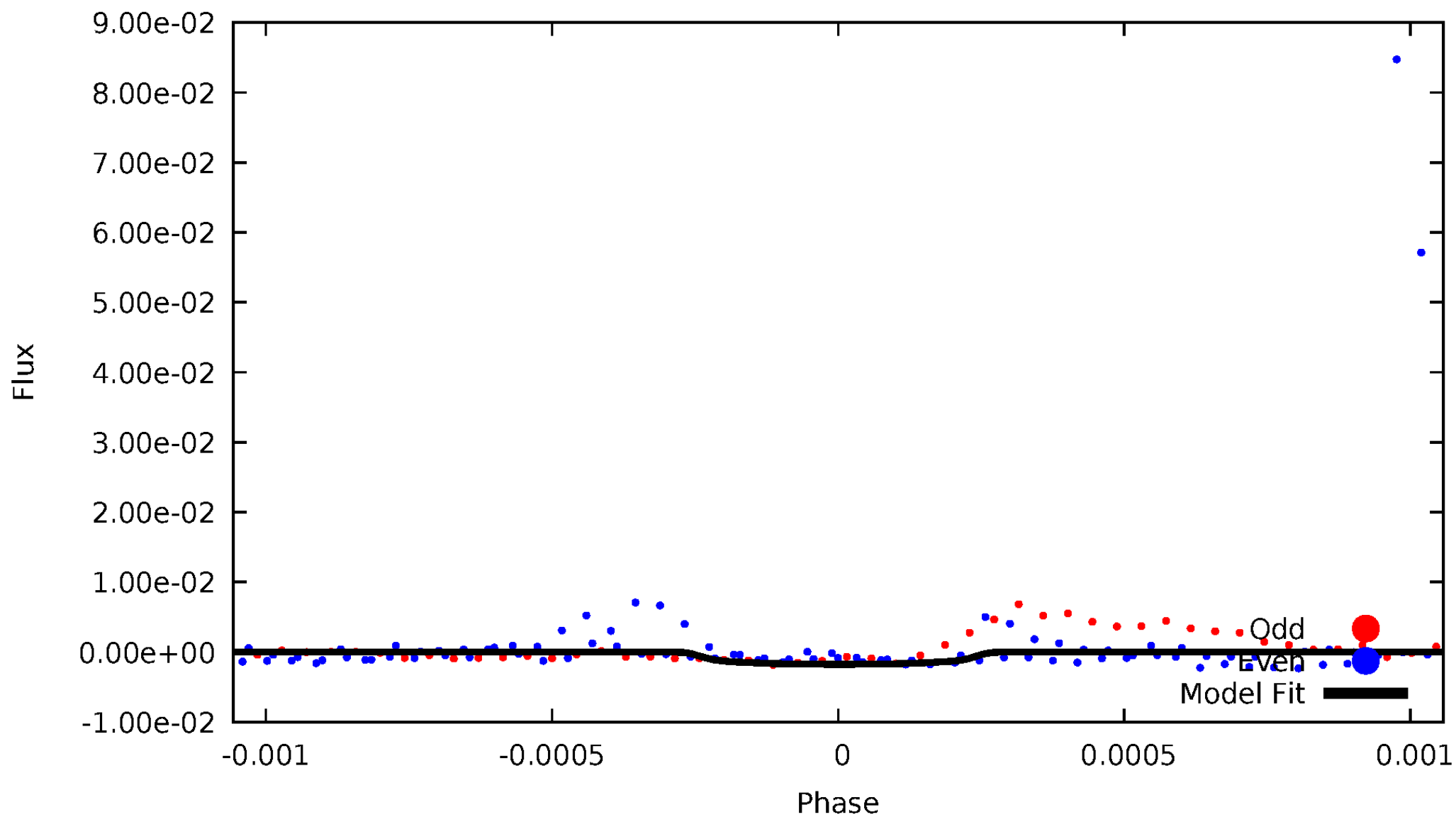


# TCE 011145819-03



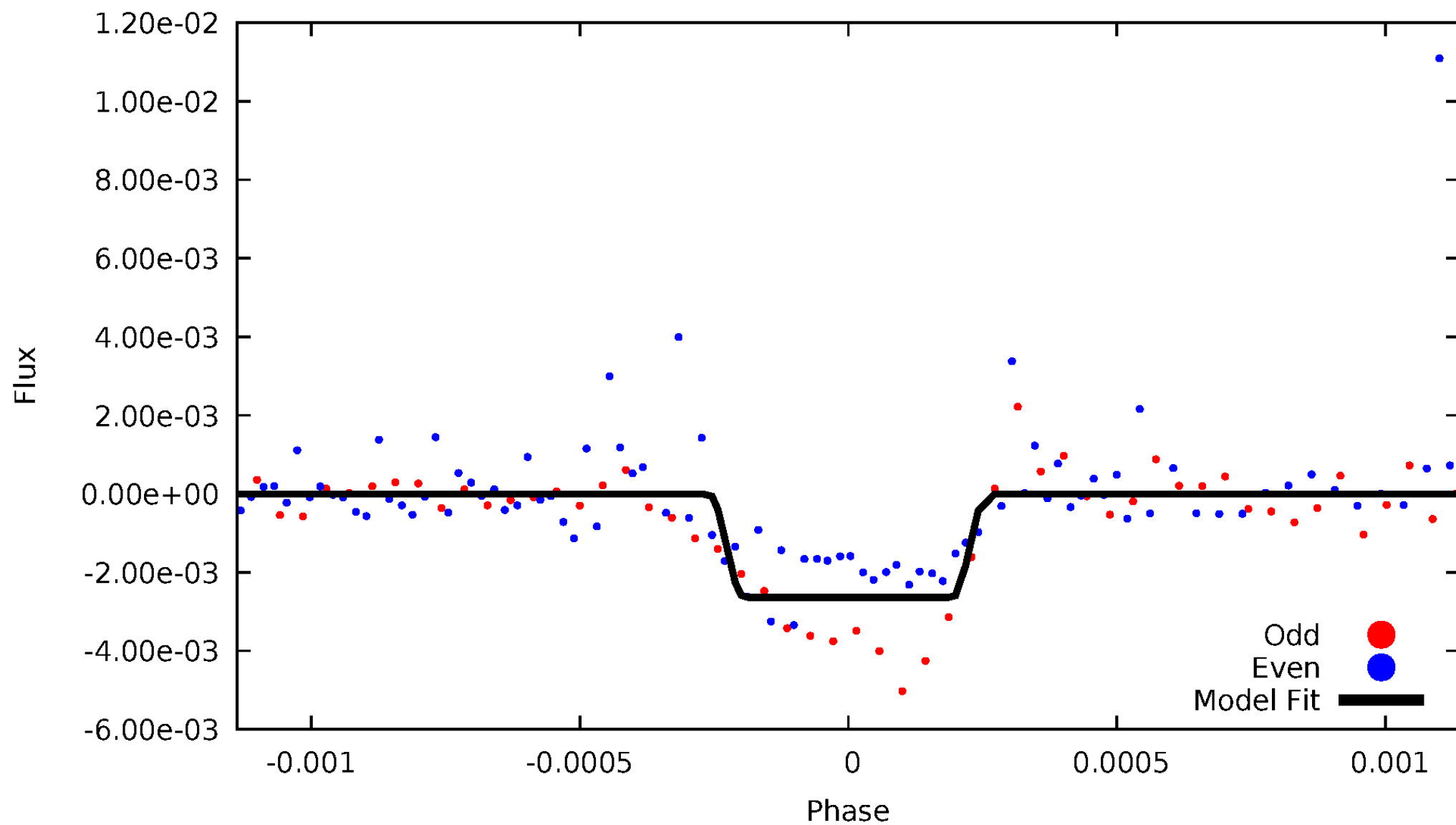
# DV Odd/Even

TCE 011145819-03



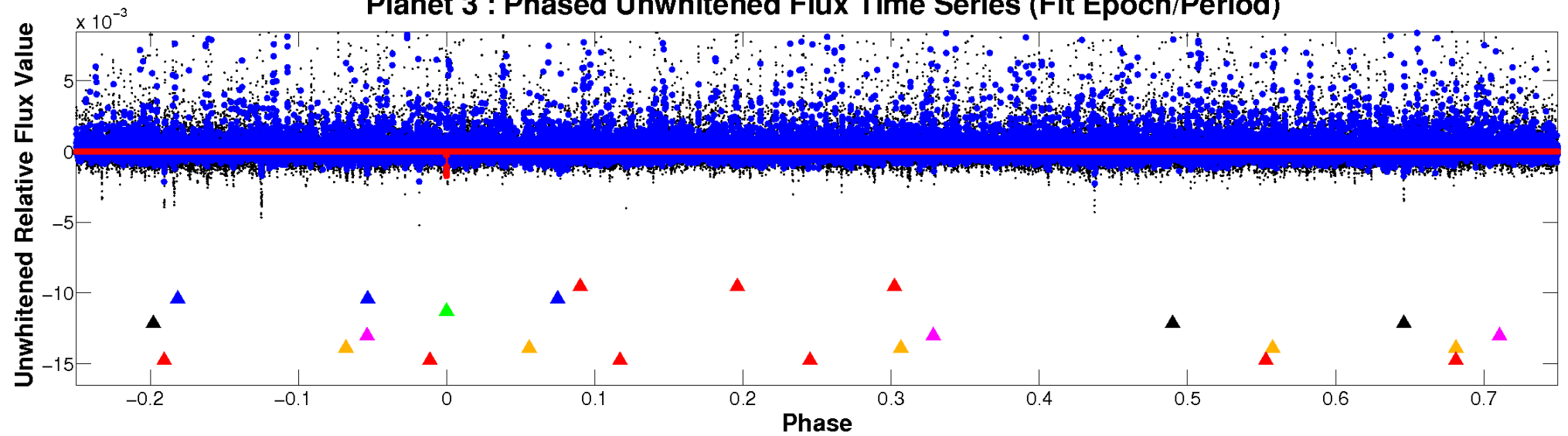
# ALT Odd/Even

TCE 011145819-03

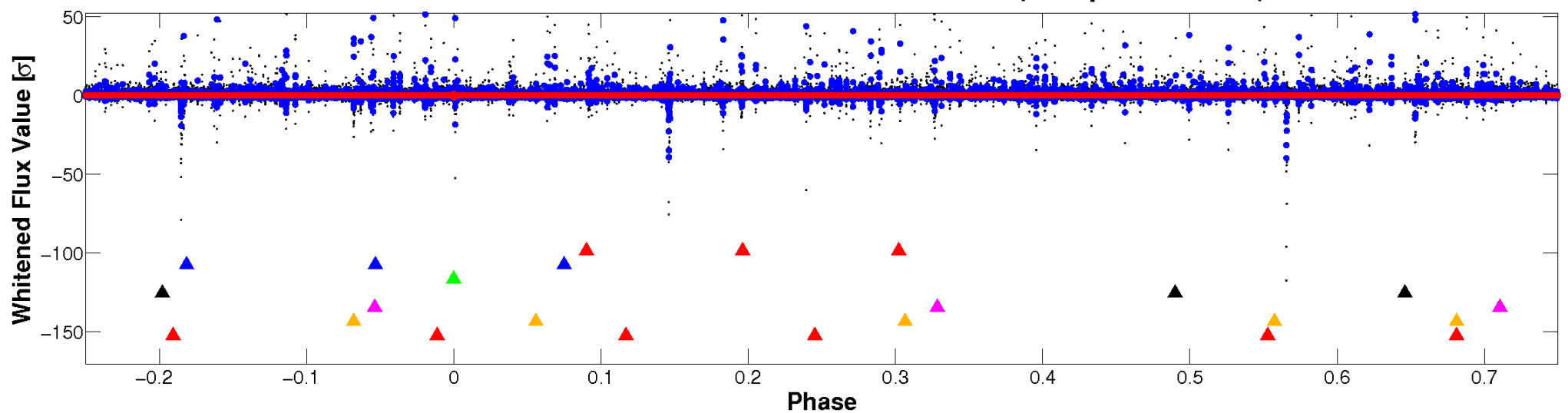


# Non-Whitened Vs. Whitened Light Curve

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

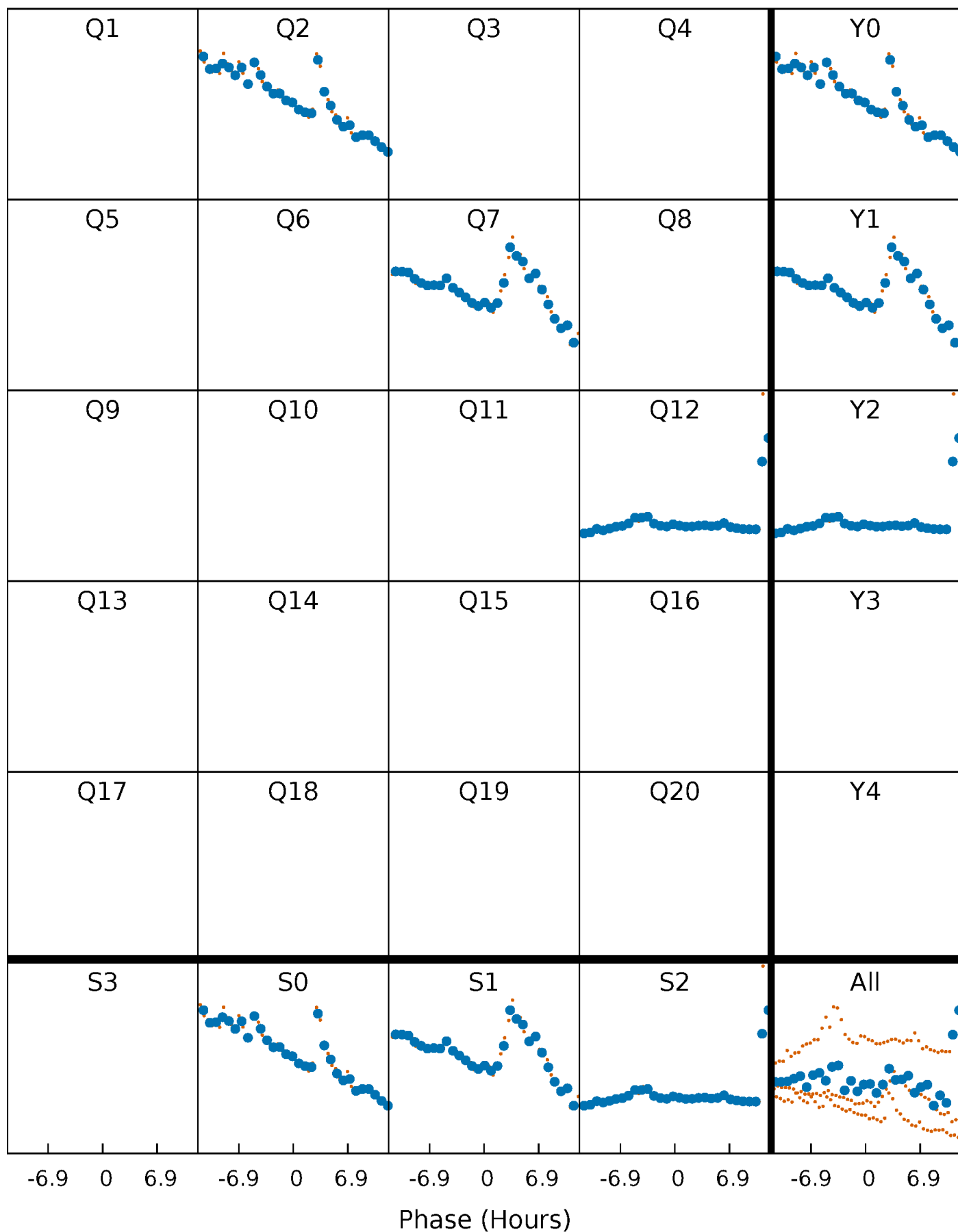


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

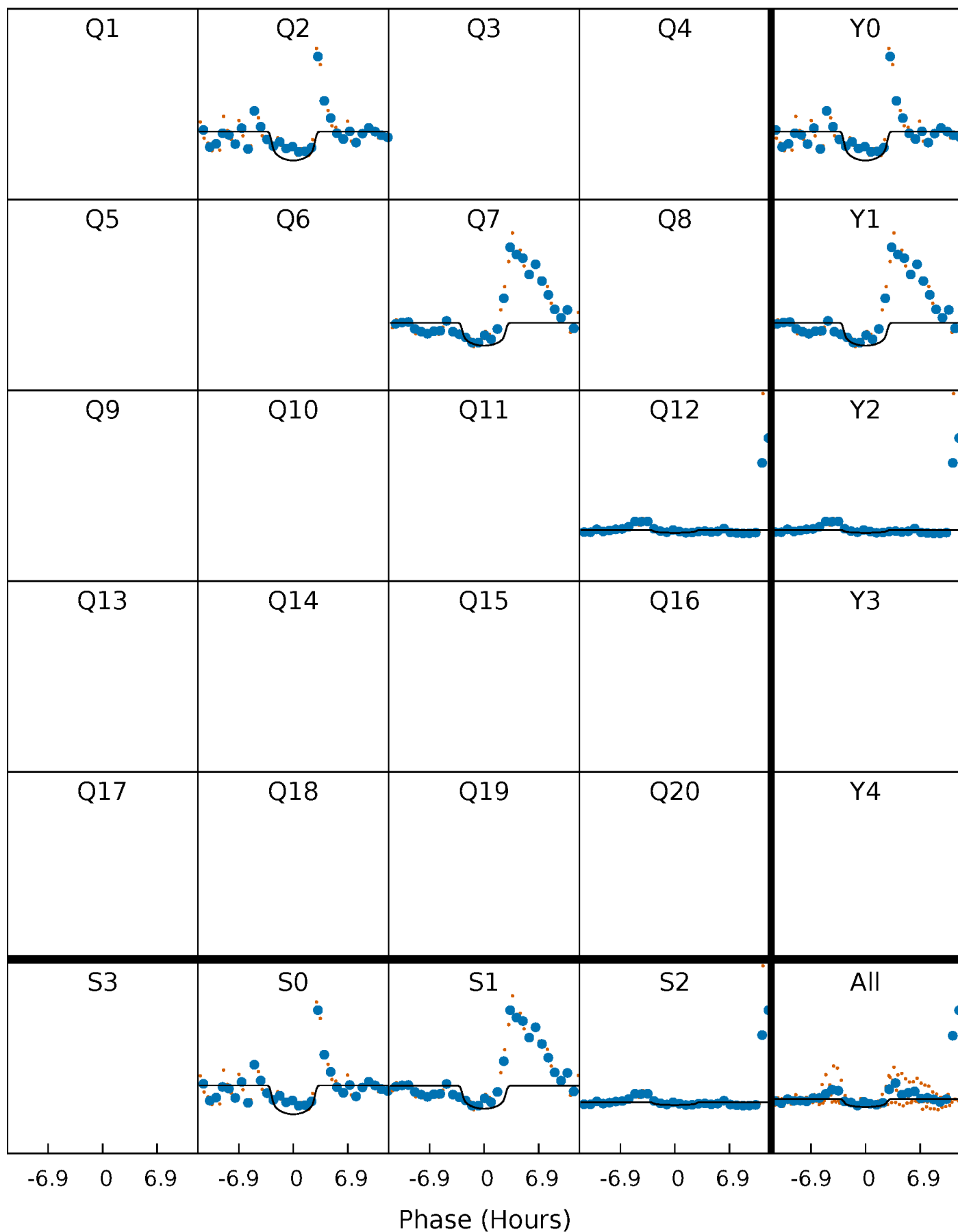
TCE 011145819-03 P=476.174783 Days  $T_0=221.503727$  (BKJD)





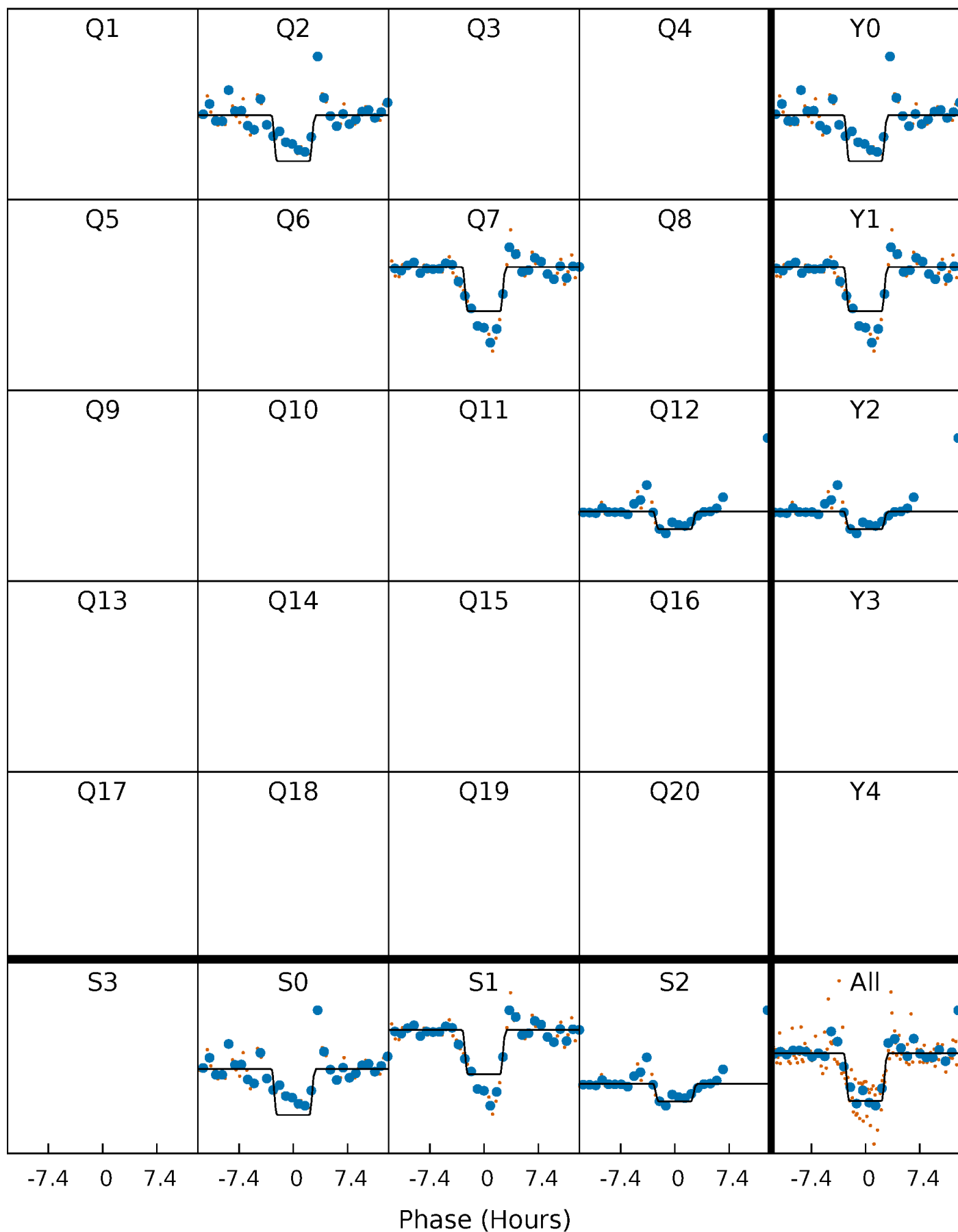
# DV Quarter-Phased Transit Curves

TCE 011145819-03 P=476.174783 Days  $T_0=221.503727$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

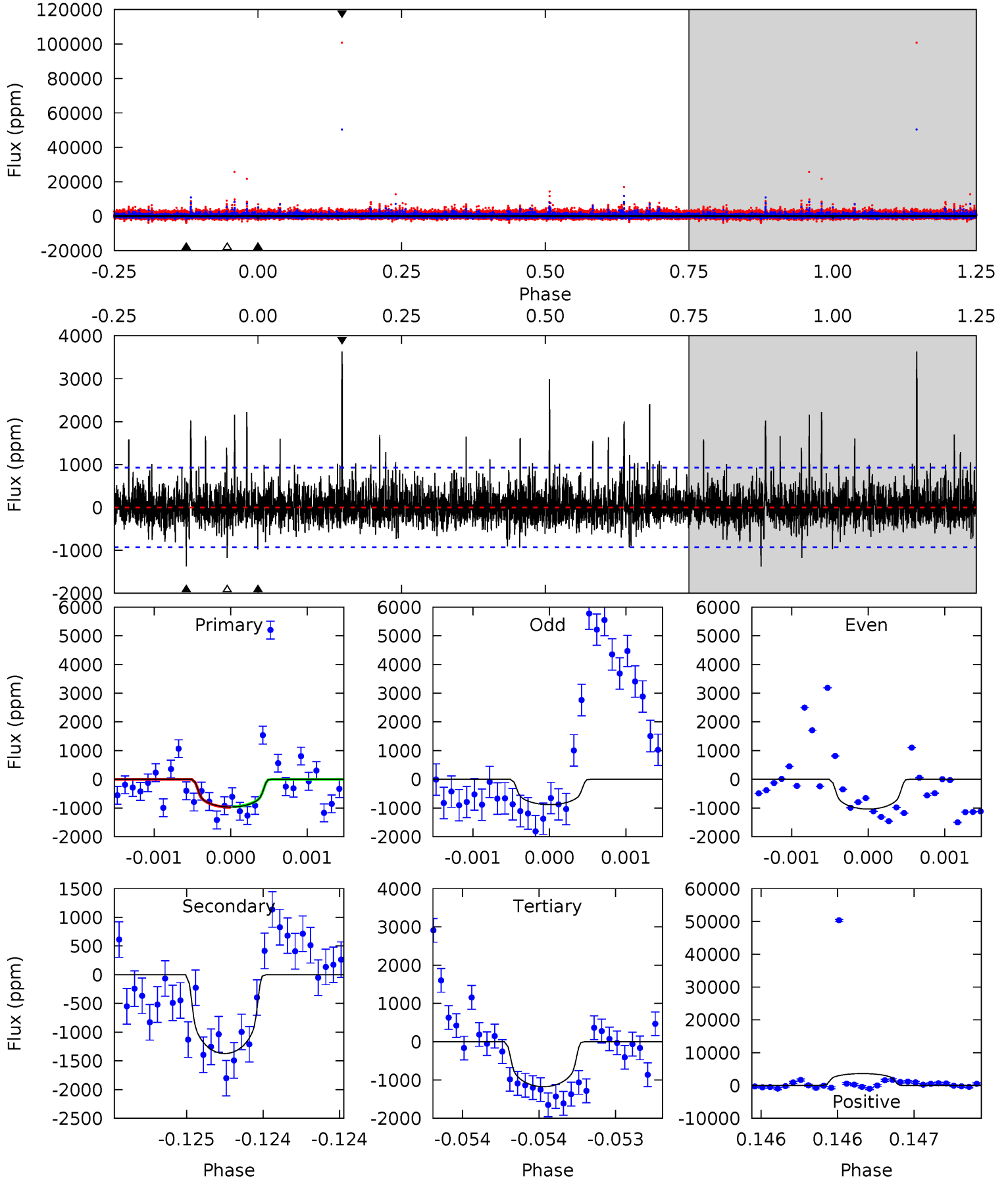
TCE 011145819-03 P=476.176871 Days  $T_0=221.501633$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-03, P = 476.174783 Days, E = 221.503727 Days

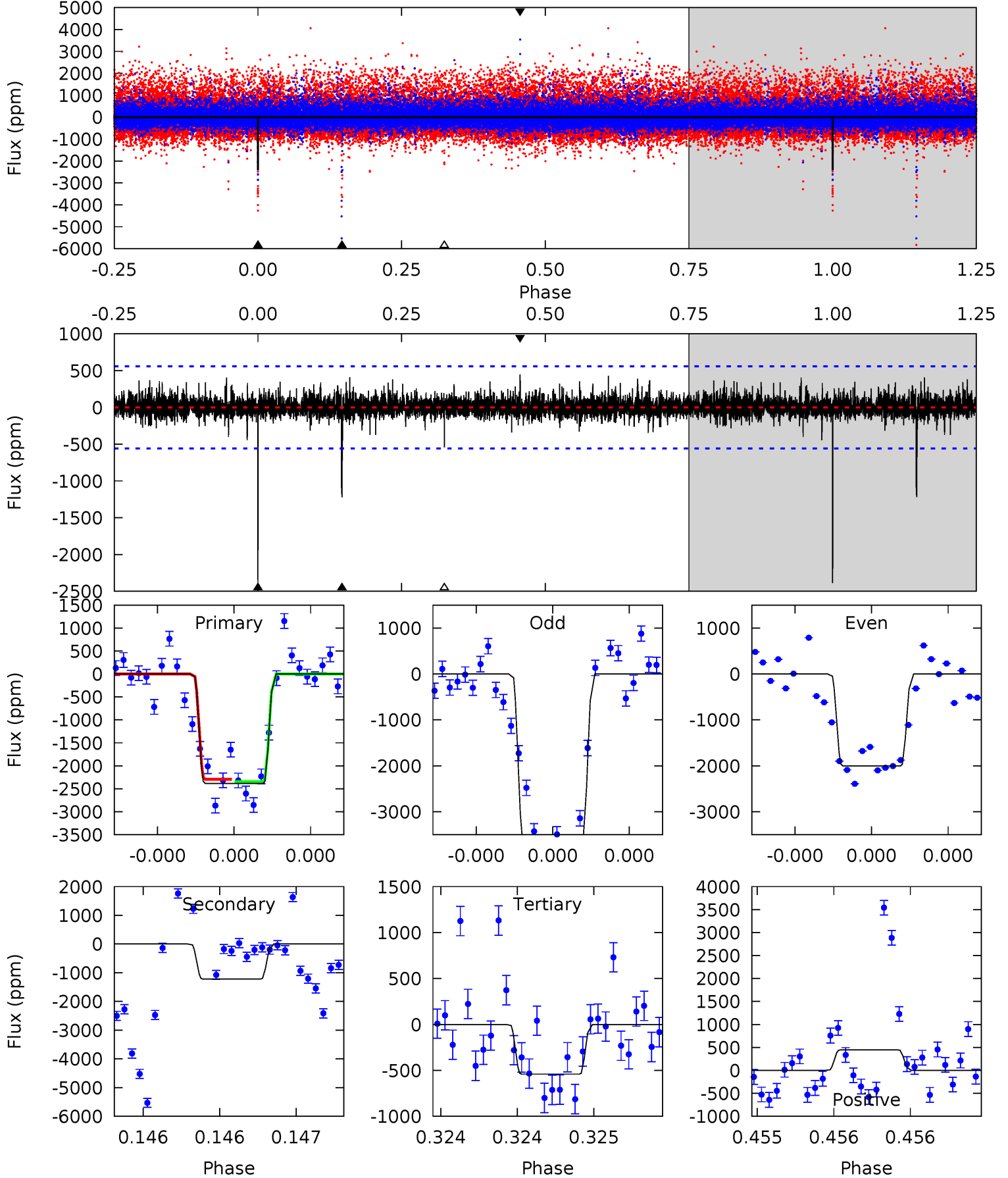
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.78	8.19	7.01	21.7	5.55	3.45	1.95	-1.24	-15.9	1.18	-13.5	0.27	0.98	0.73	0.06



# Alt Model-Shift Uniqueness Test

011145819-03, P = 476.176871 Days, E = 221.501633 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
23.8	12.2	5.40	4.45	5.57	3.48	0.90	18.4	19.4	6.77	7.72	7.05	1.10	0.16	0.24



### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1372 \pm 168$	$3.60^{+3.62}_{-2.47}$	$168^{+6}_{-8}$	$3129^{+1576}_{-511}$	$56296^{+523837}_{-41808}$
Alt.	$-1219 \pm 100$	$4.05^{+3.54}_{-2.65}$	$168^{+7}_{-8}$	$3005^{+1266}_{-477}$	$40858^{+295264}_{-29483}$

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

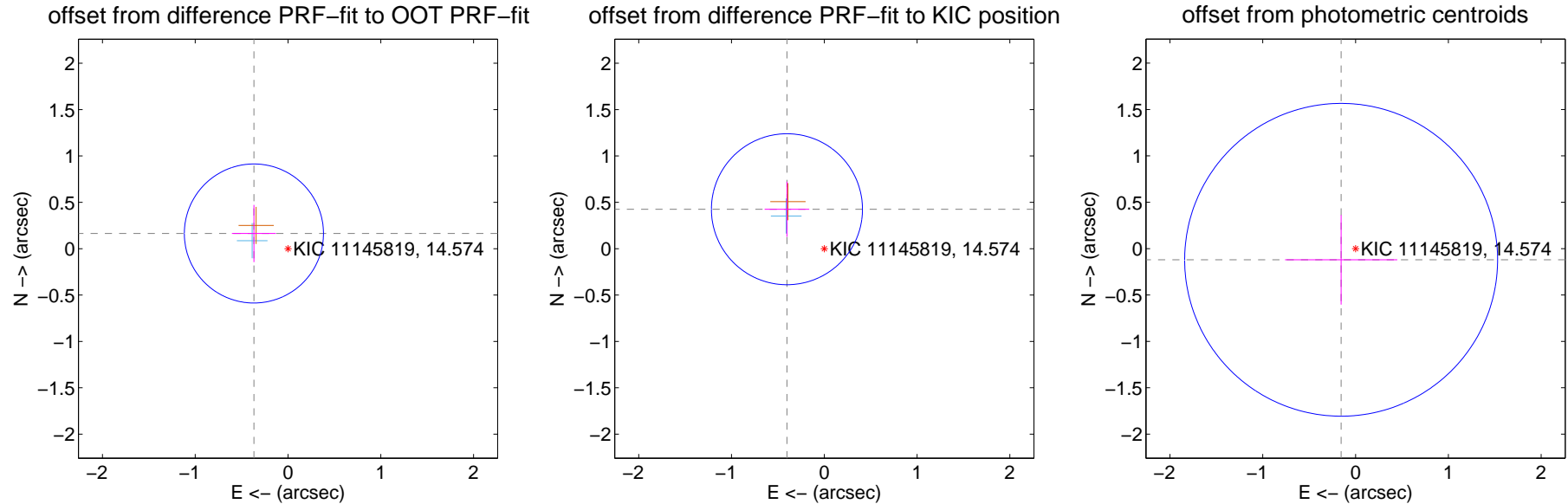
## DV Centroid Data

Supplemental centroid analysis for 011145819-03. Kepler magnitude: 14.57. Transit SNR 6.94

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.403 \pm 0.250$	1.61	$0.368 \pm 0.237$	$0.164 \pm 0.308$
PRF-fit source offset from KIC position	$0.586 \pm 0.271$	2.16	$0.403 \pm 0.240$	$0.425 \pm 0.296$
photometric centroid source offset	$0.20 \pm 0.56$	0.35	$0.16 \pm 0.60$	$-0.12 \pm 0.48$



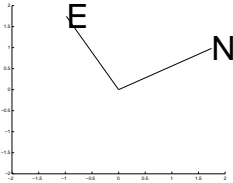
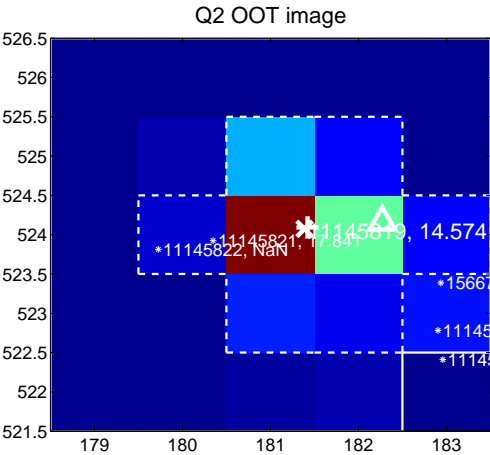
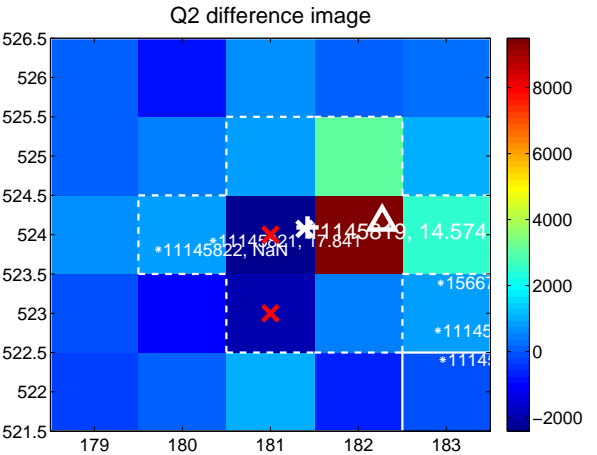
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

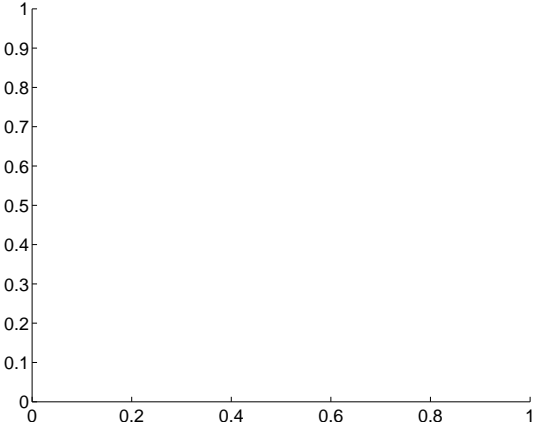
Q1 no difference image



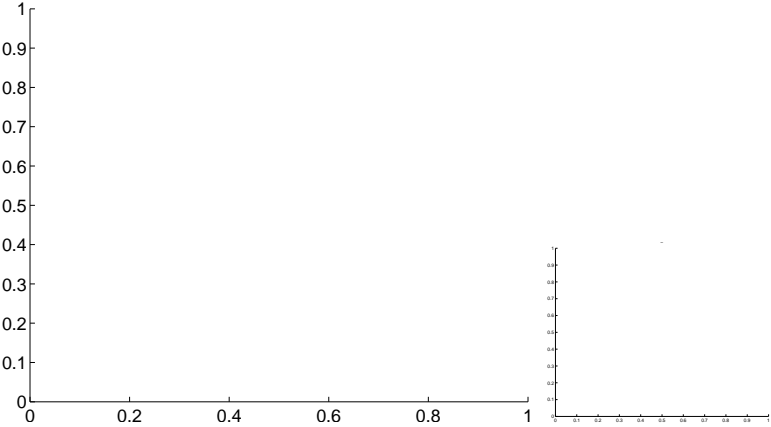
Q1 no OOT image



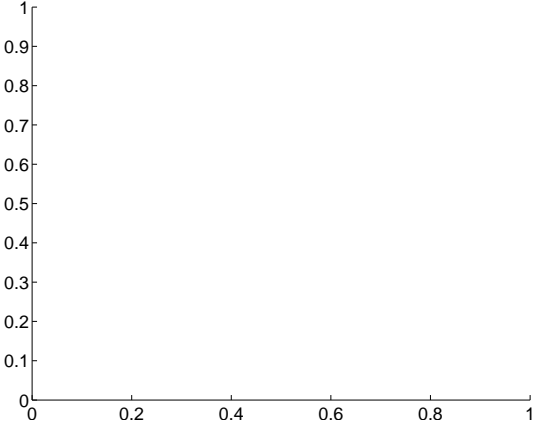
Q3 no difference image



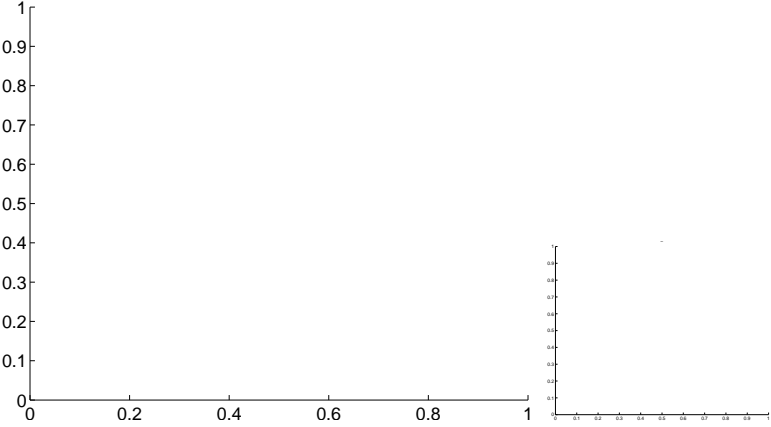
Q3 no OOT image



Q4 no difference image

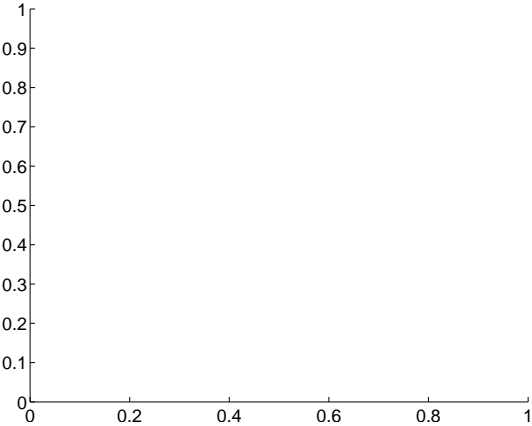


Q4 no OOT image

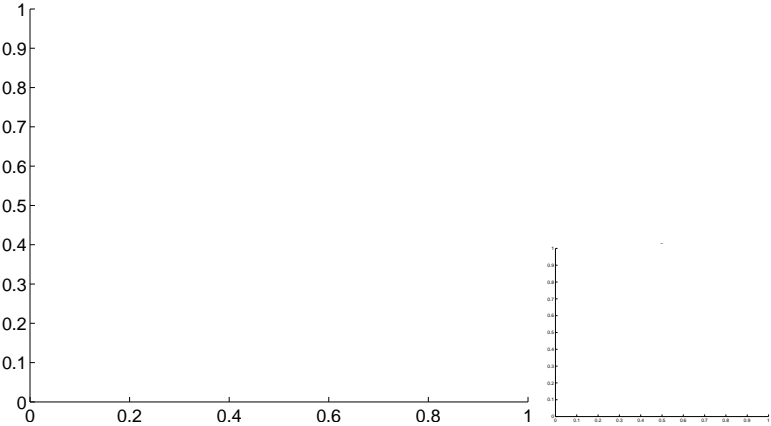


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

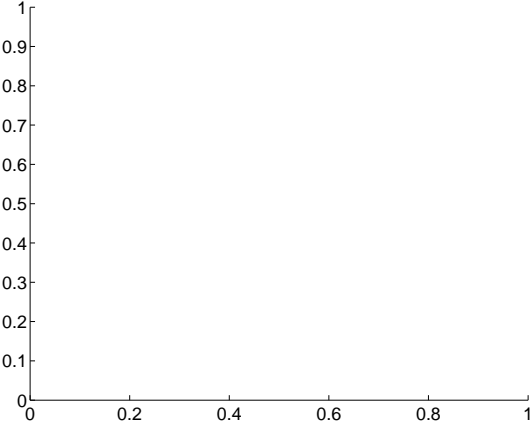
Q5 no difference image



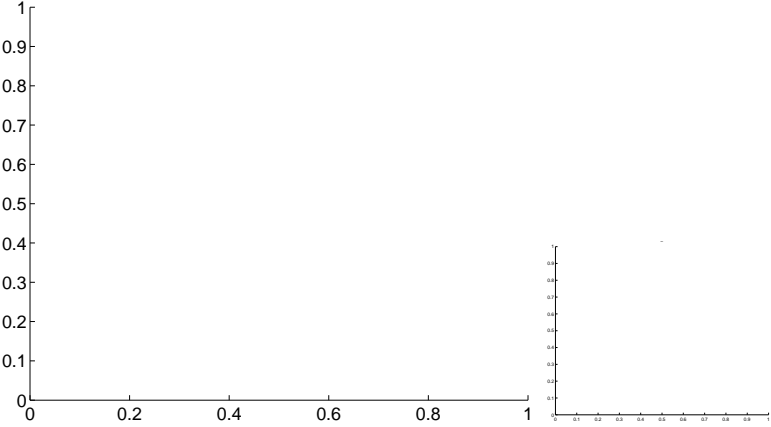
Q5 no OOT image



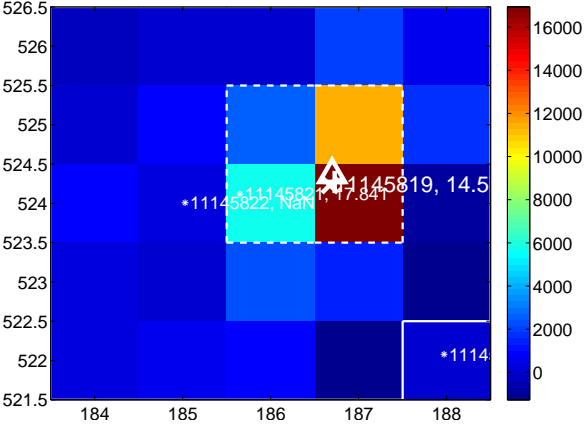
Q6 no difference image



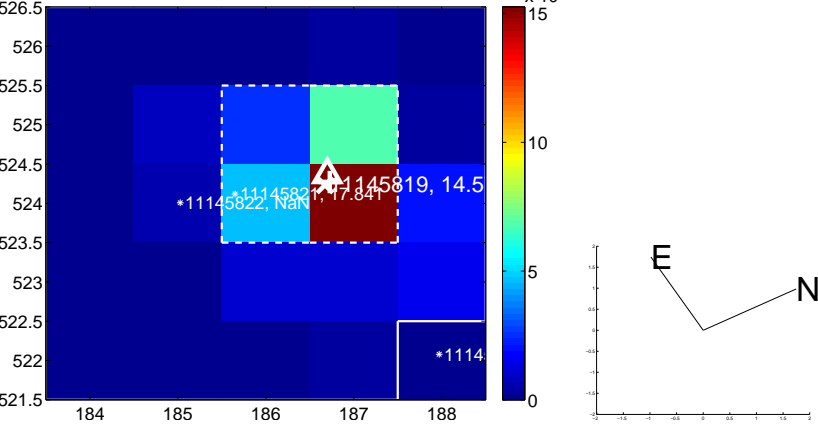
Q6 no OOT image



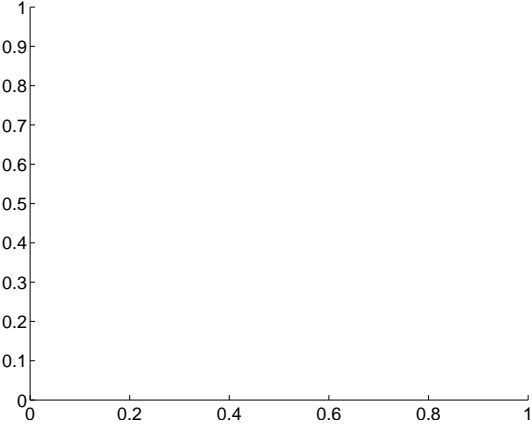
Q7 difference image



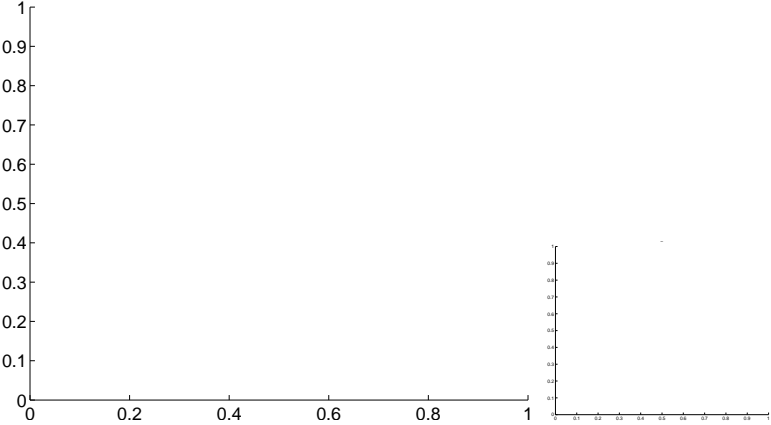
Q7 OOT image



Q8 no difference image

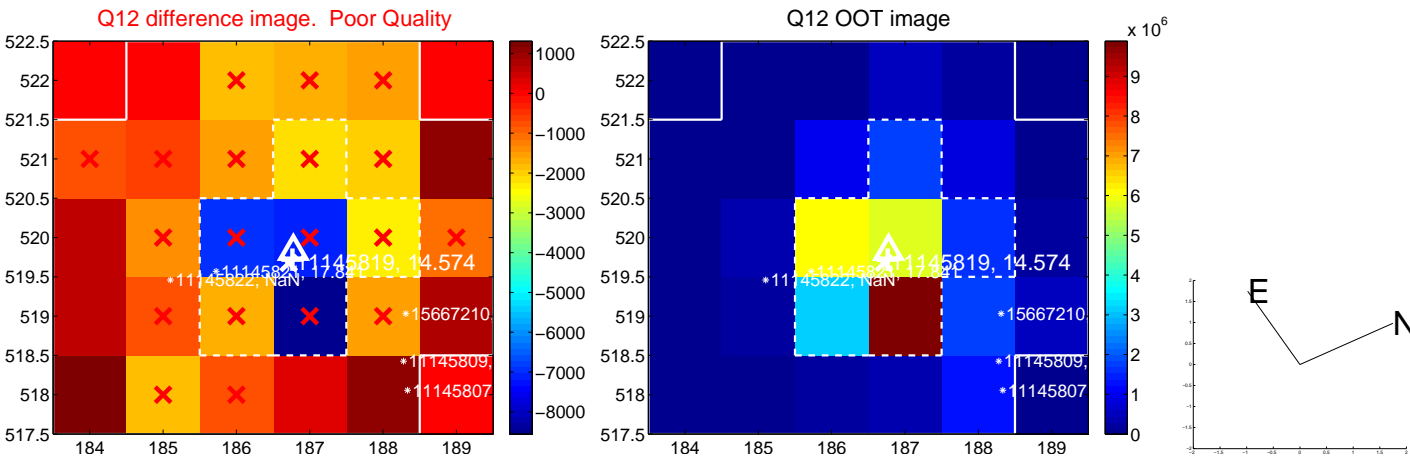


Q8 no OOT image





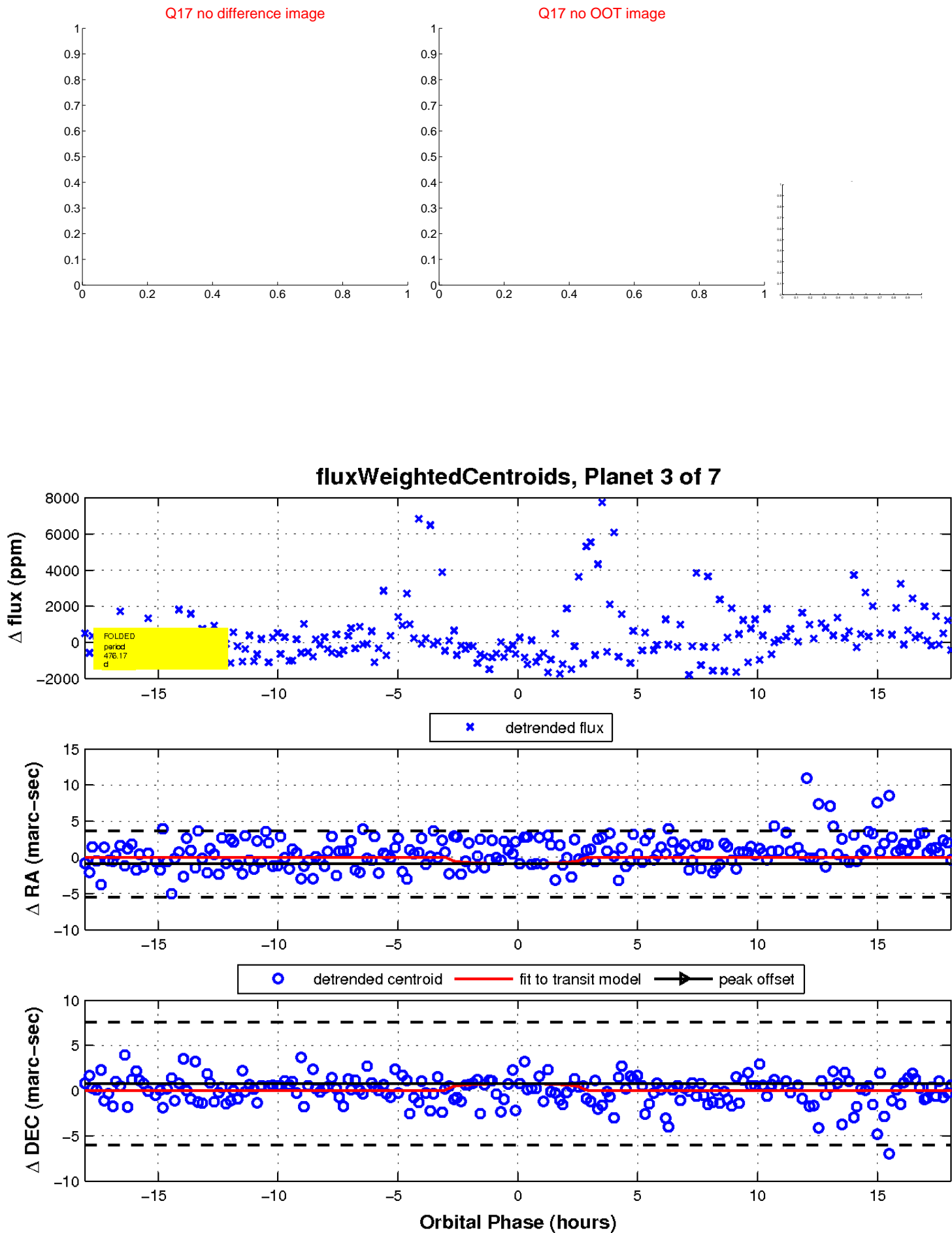
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

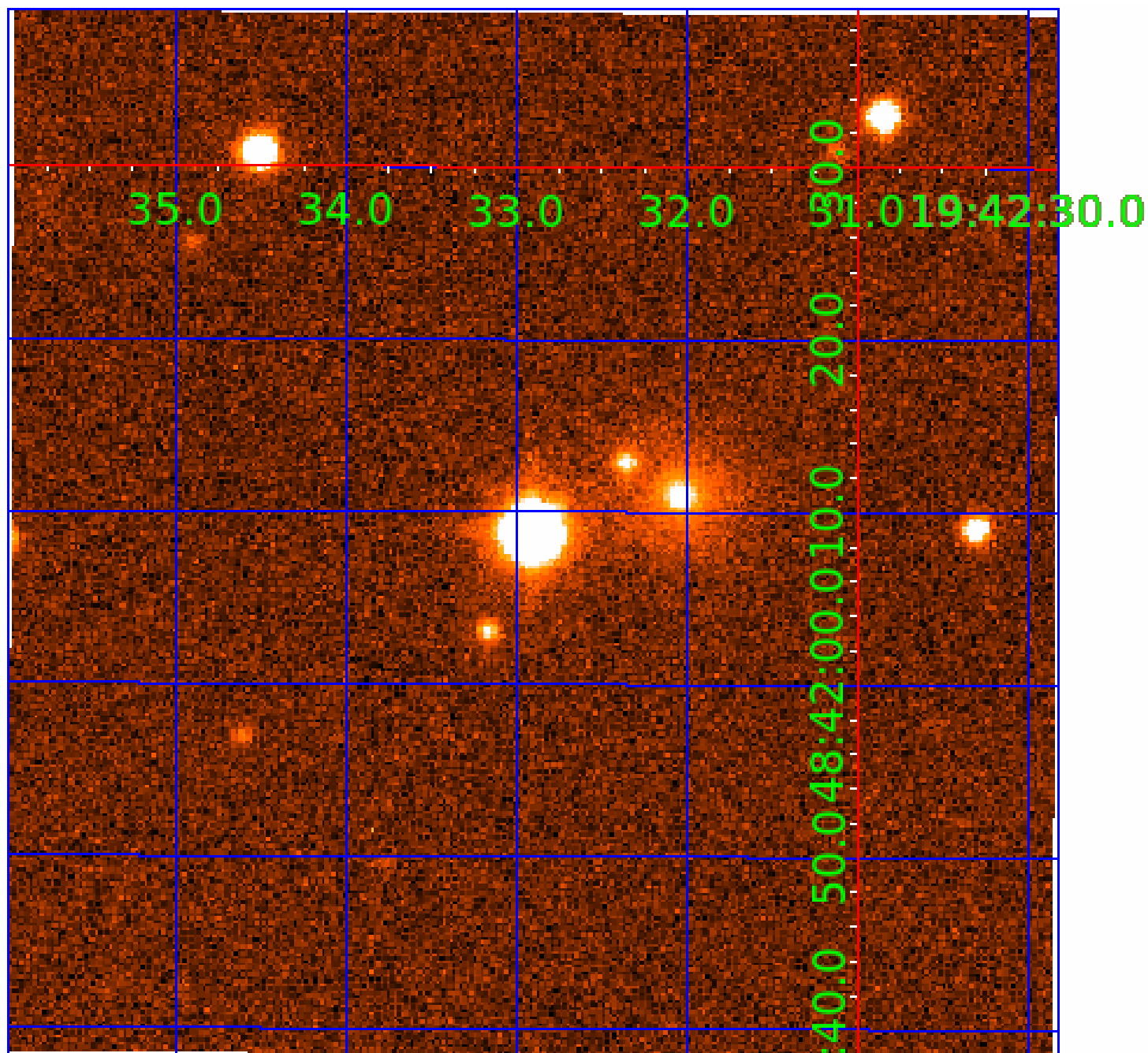


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

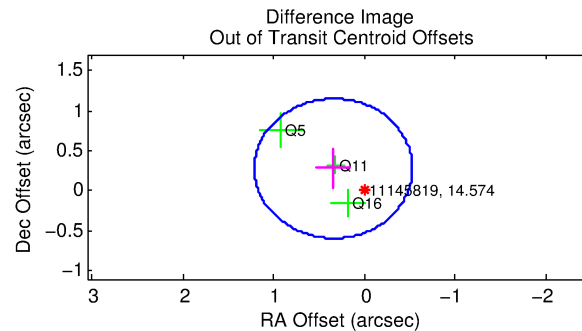
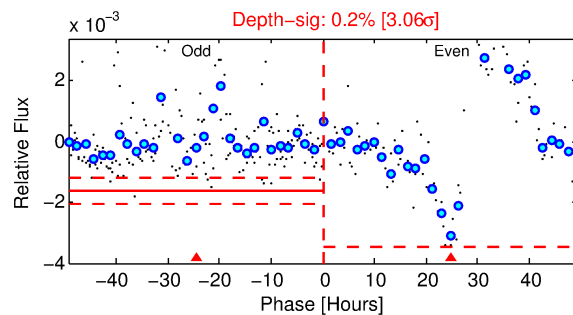
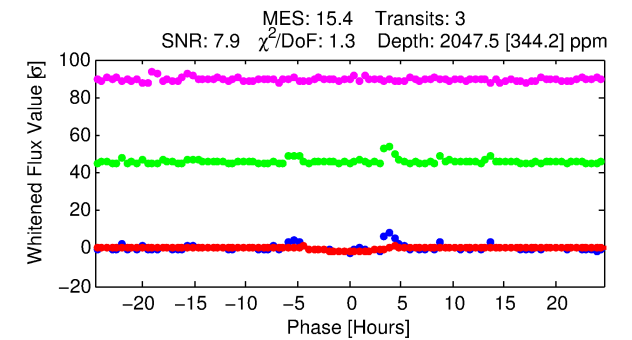
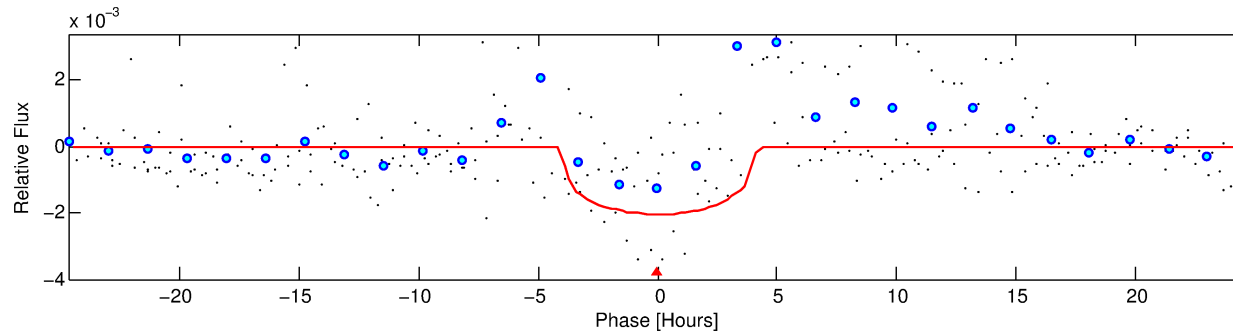
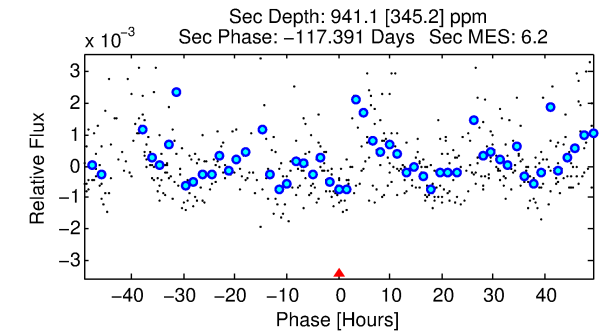
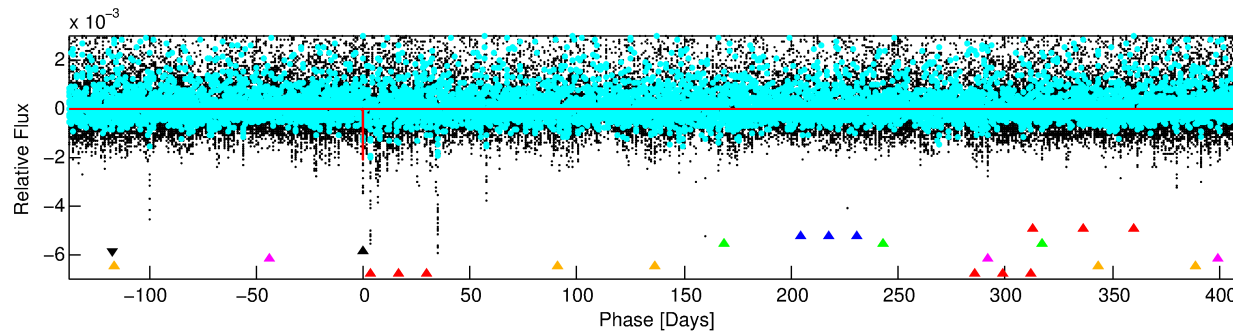
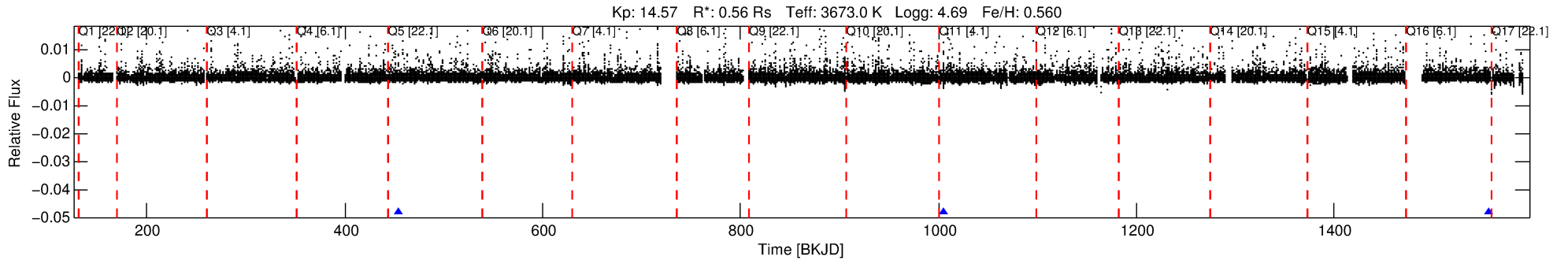
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011145819-04

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 4 of 7 Period: 550.484 d



## DV Fit Results:

Period = 550.48427 [0.00684] d  
Epoch = 454.8236 [0.0098] BKJD  
Rp/R\* = 0.0398 [0.0347]  
a/R\* = 530.96 [1423.47]  
b = 0.01 [411.50]  
Seff = 0.04 [0.01]  
Teq = 116 [7] K  
Rp = 2.43 [2.15] Re  
a = 1.0847 [0.1240] AU  
Ag = 103047.32 [184409.88] [0.56σ]  
Teffp = 3225 [1443] K [2.15σ]

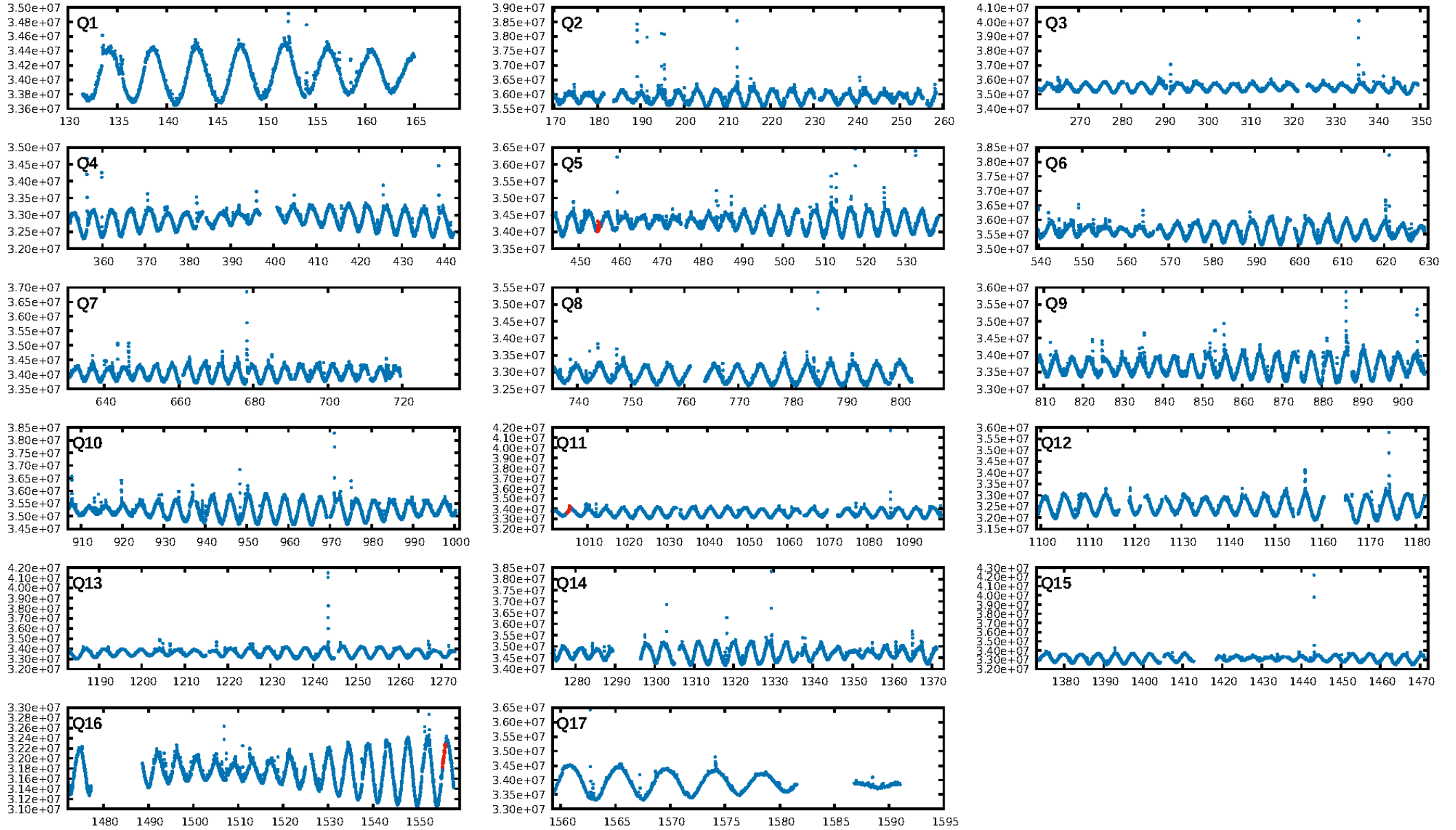
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.71σ]  
LongPeriod-sig: 100.0% [124.75σ]  
ModelChiSquare2-sig: 0.5%  
ModelChiSquareGof-sig: 86.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.675  
Centroid-sig: 9.8%  
Centroid-so: 0.316 arcsec [0.65σ]  
OotOffset-rm: 0.439 arcsec [1.51σ]  
KicOffset-rm: 0.698 arcsec [2.40σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-st: 0/1/1/1 [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: 30-Jan-2016 05:46:39 Z

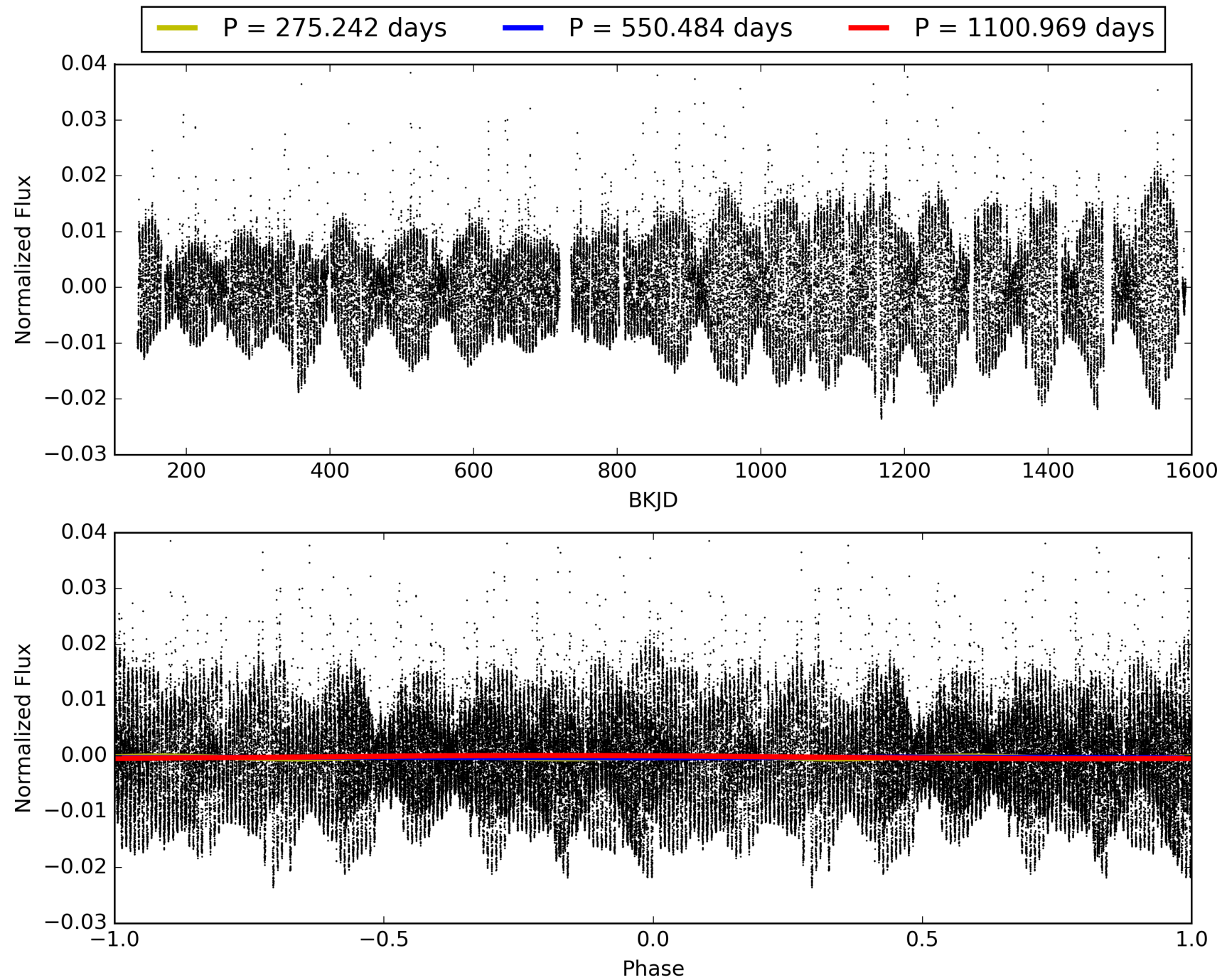
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011145819-04, PDC Light Curves





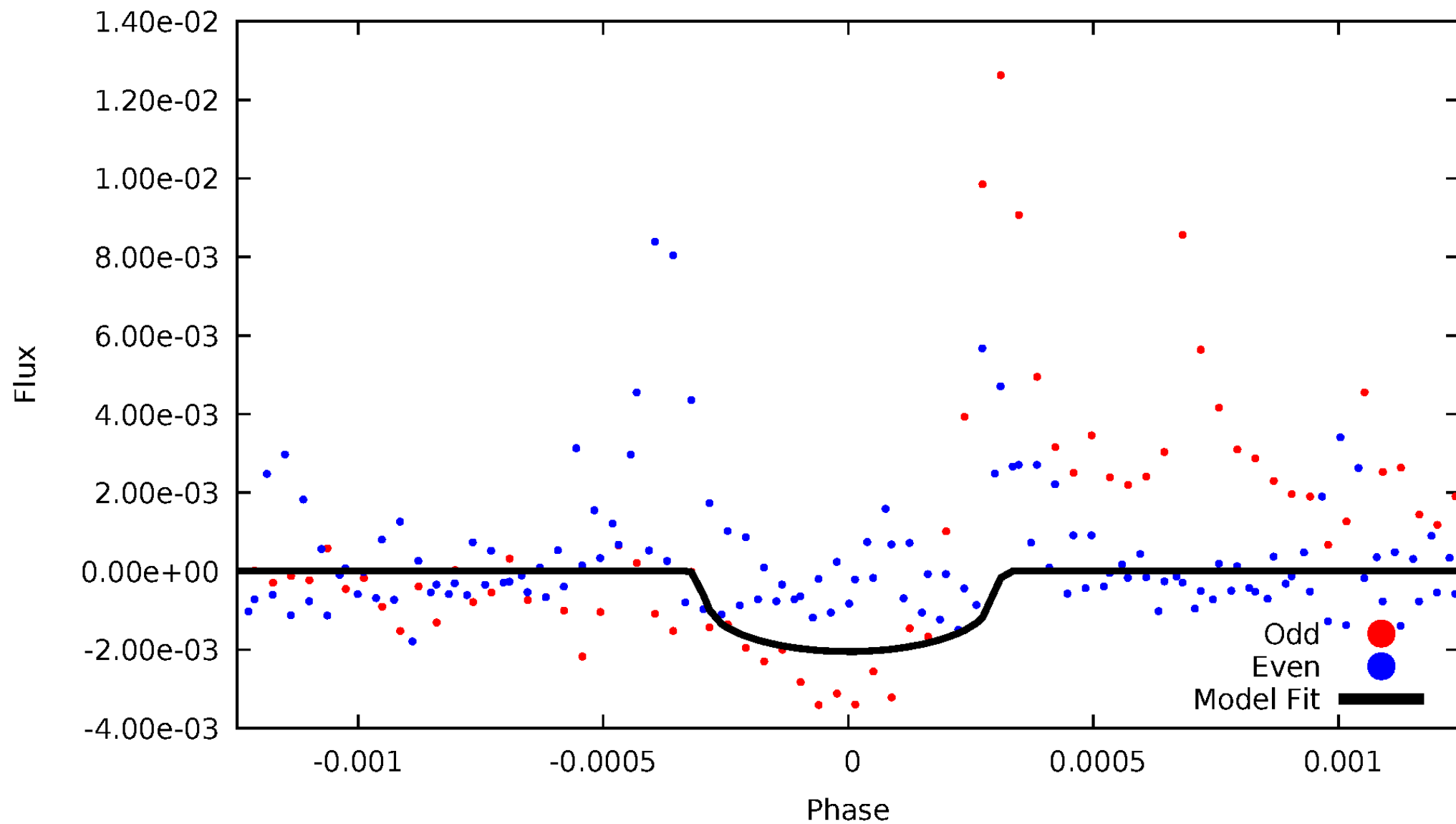
TCE 011145819-04





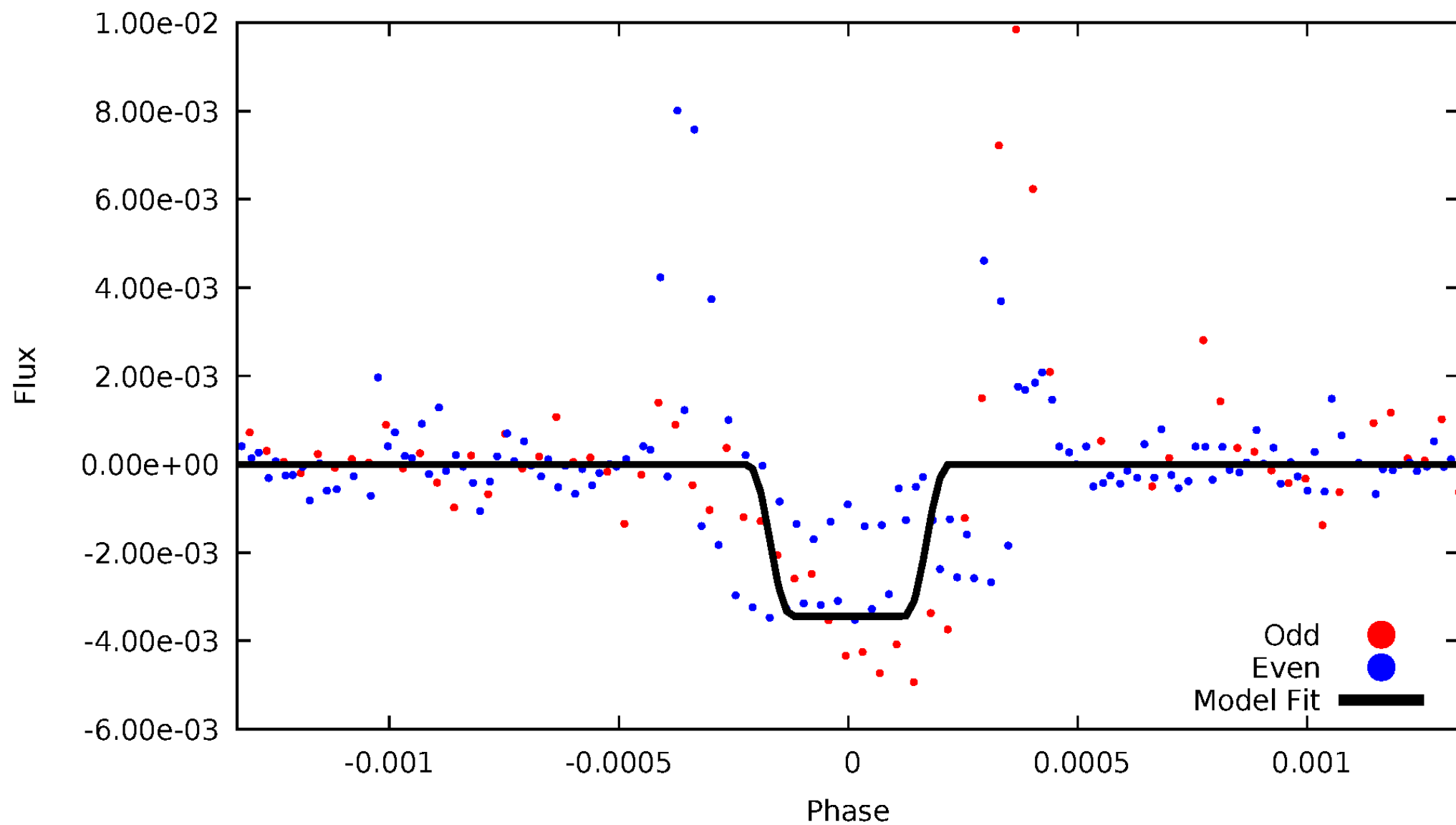
# DV Odd/Even

TCE 011145819-04



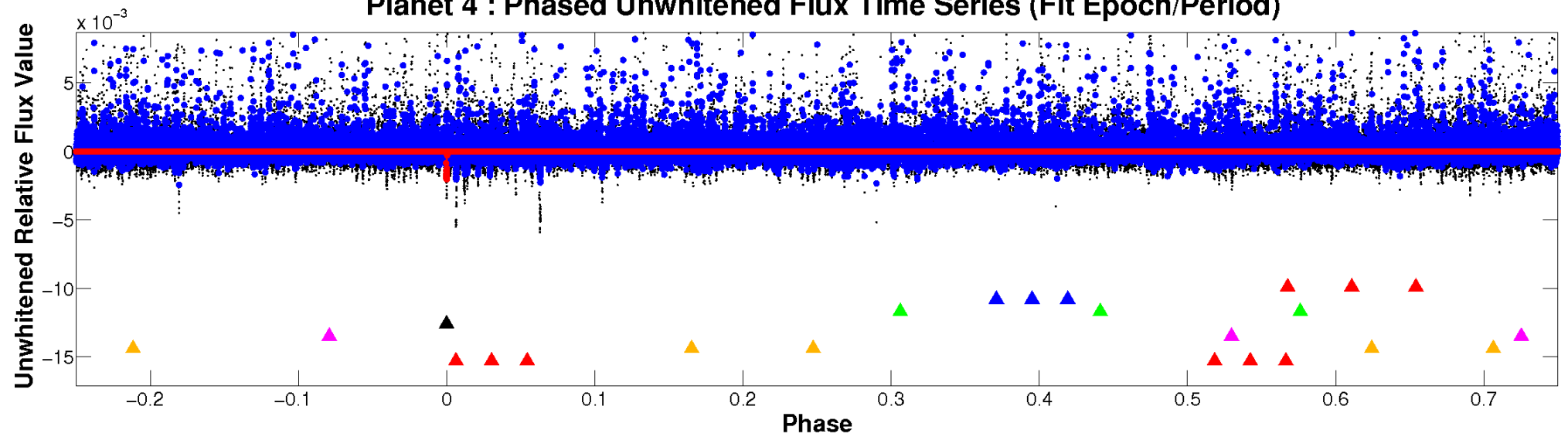
# ALT Odd/Even

TCE 011145819-04

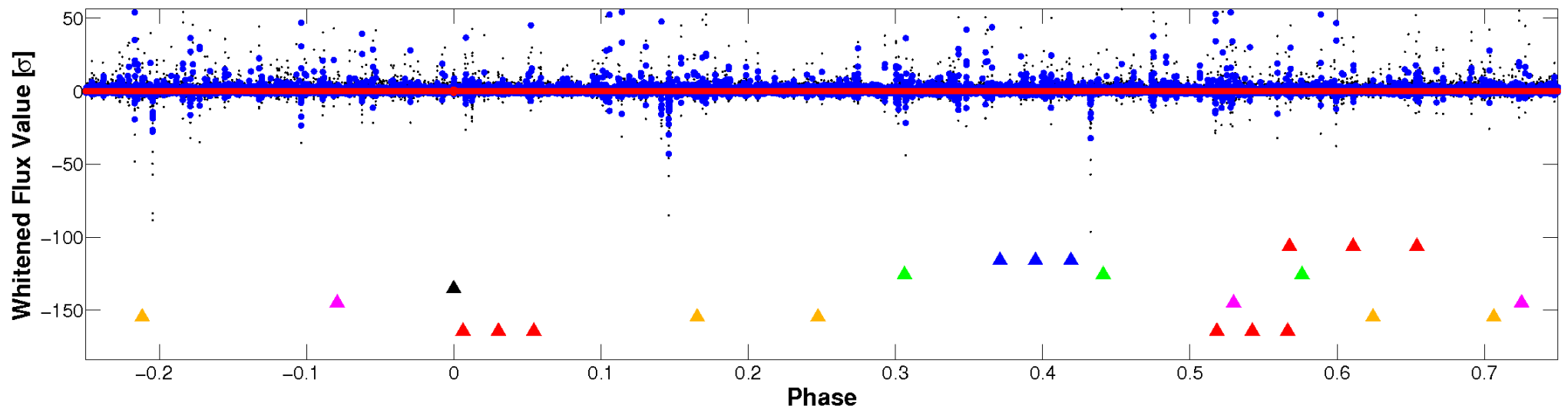


# Non-Whitened Vs. Whitened Light Curve

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

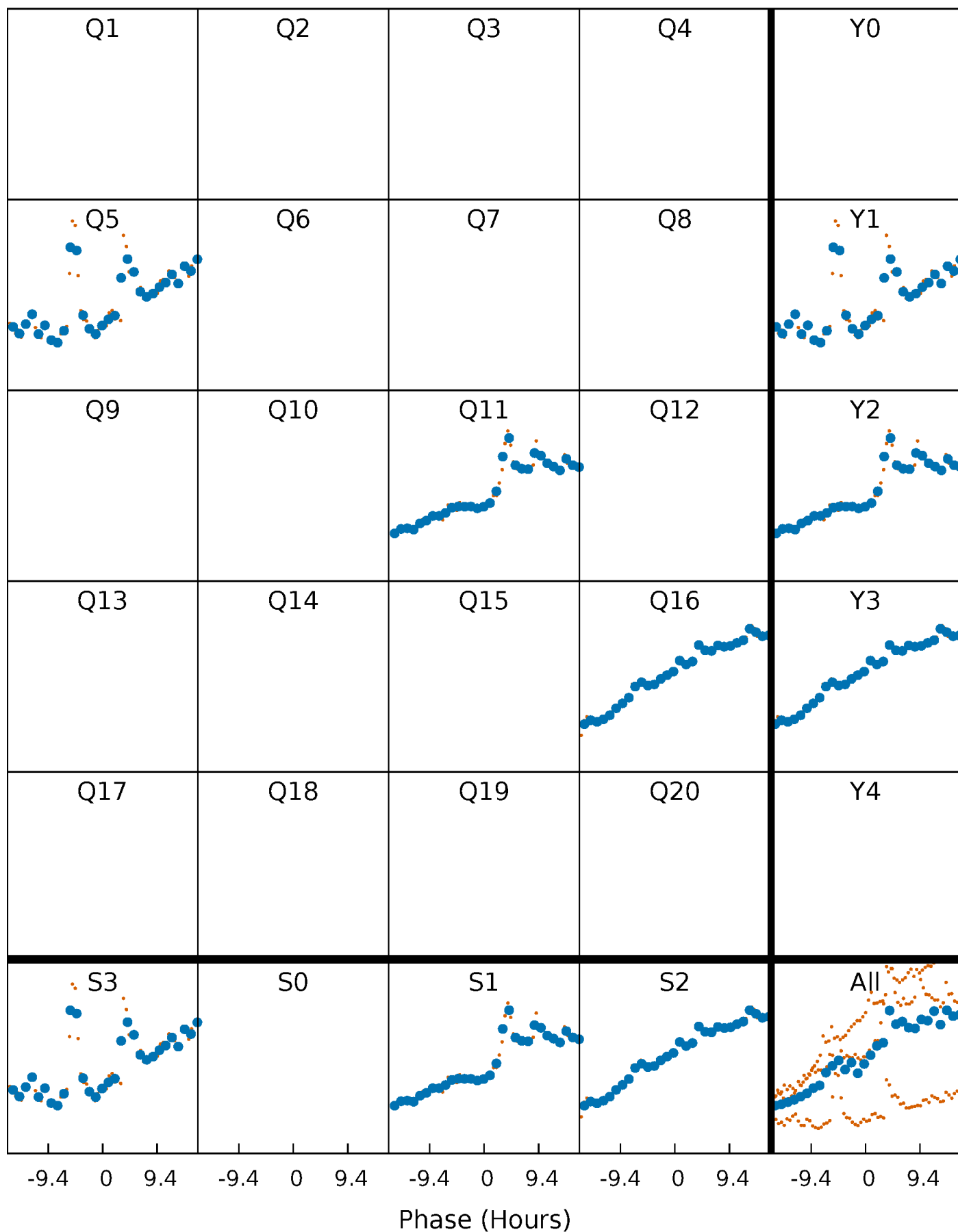


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



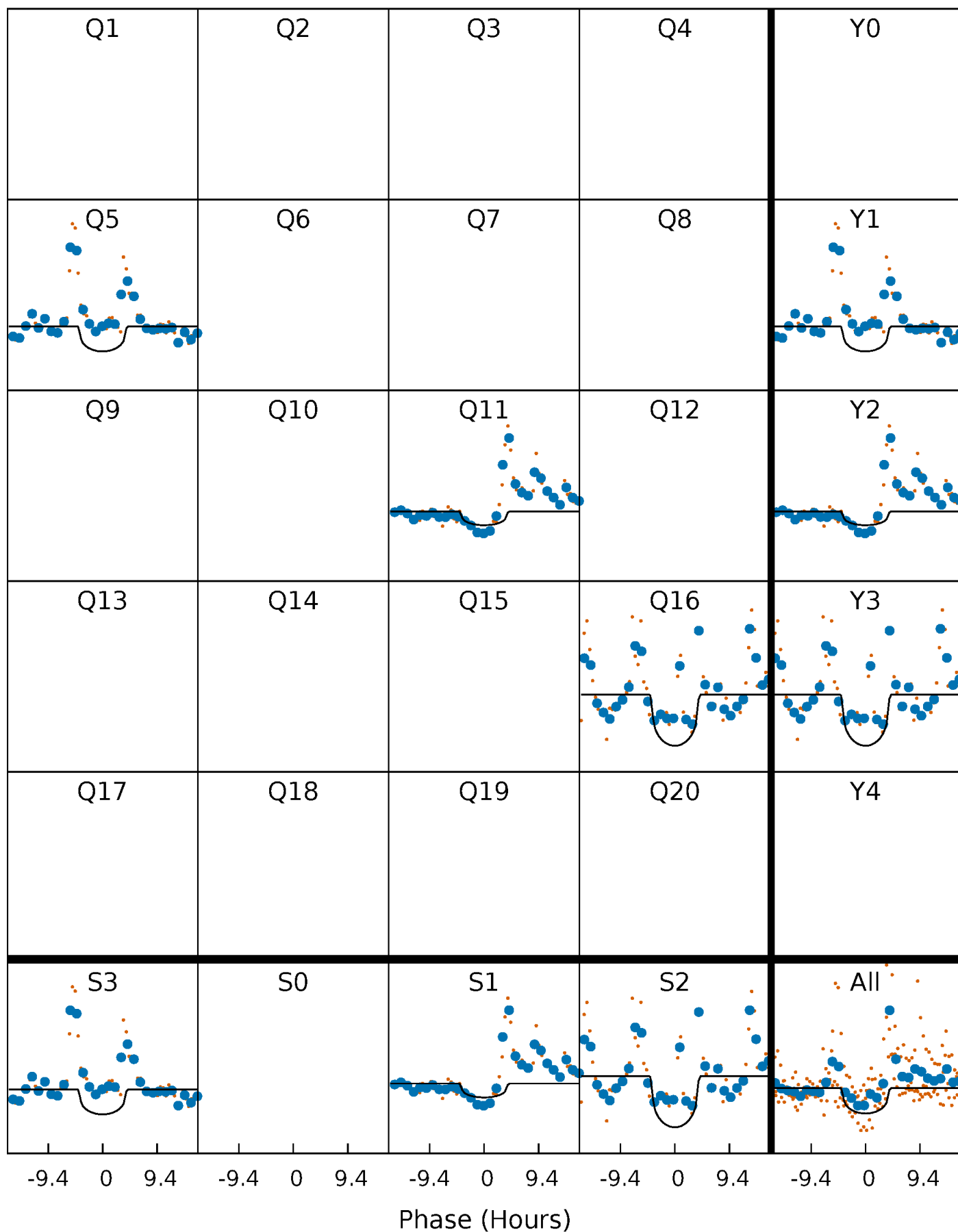
# PDC Quarter-Phased Transit Curves

TCE 011145819-04 P=550.484270 Days  $T_0=454.823603$  (BKJD)



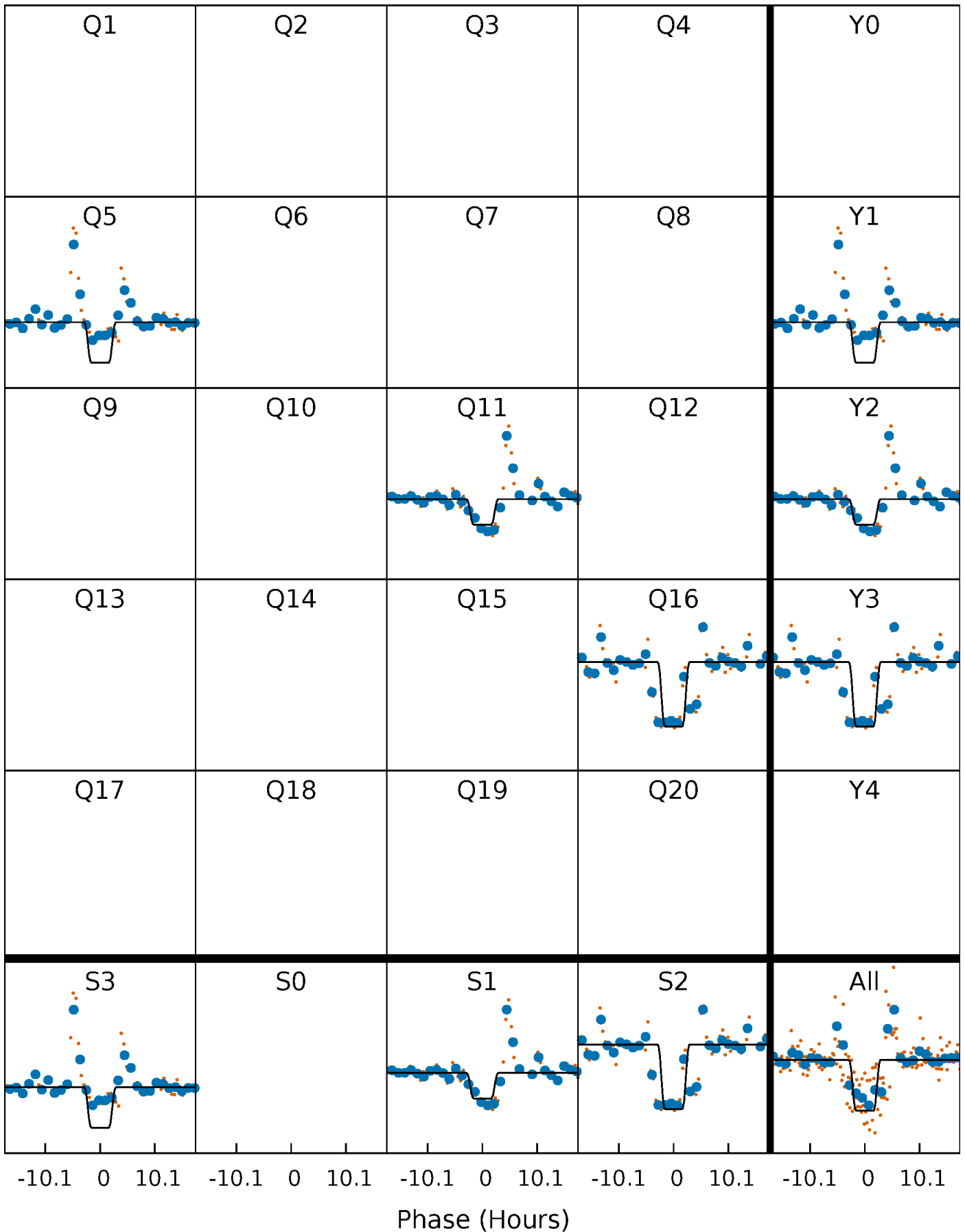
# DV Quarter-Phased Transit Curves

TCE 011145819-04     $P=550.484270$  Days     $T_0=454.823603$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

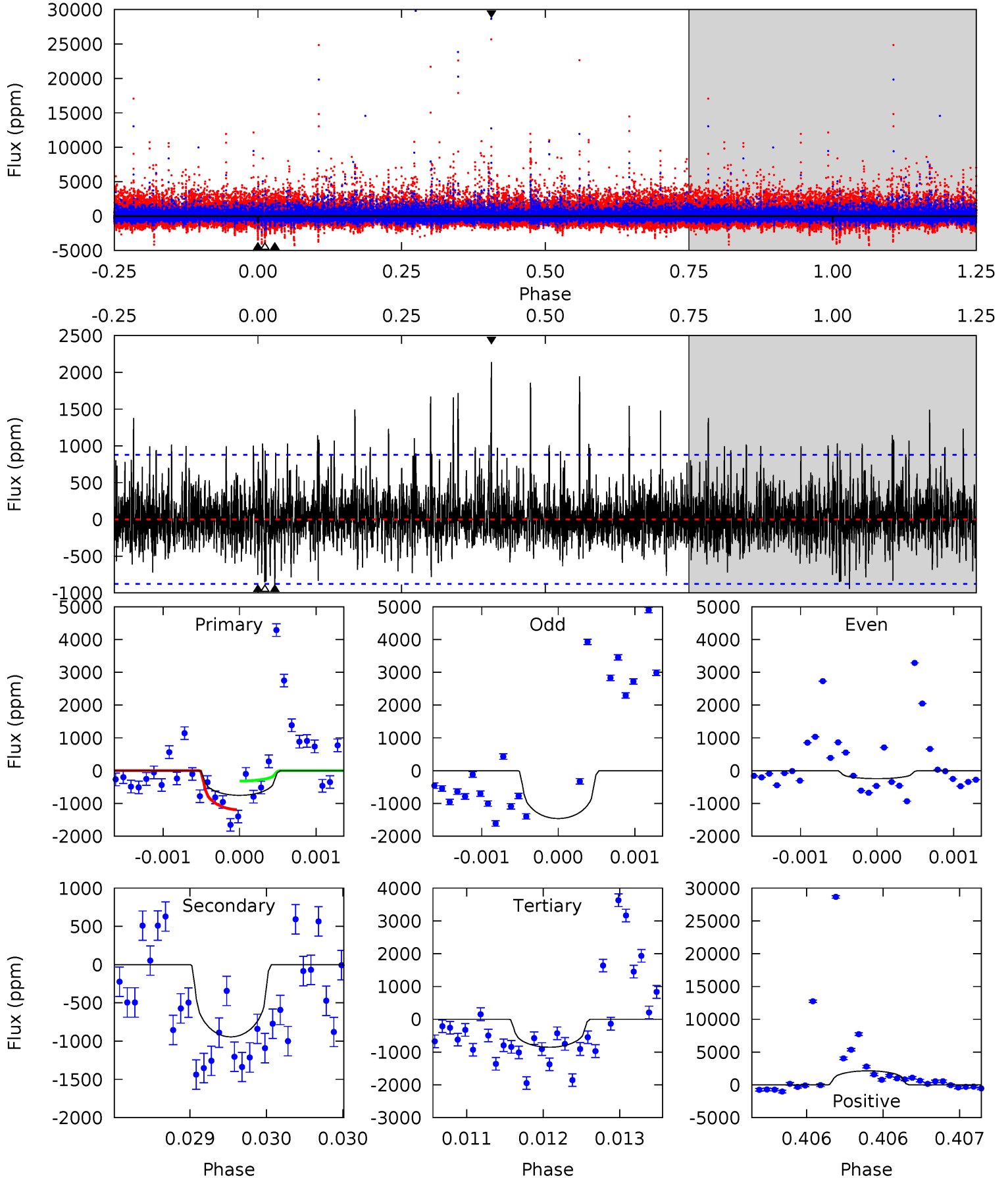
TCE 011145819-04     $P=550.466484$  Days     $T_0=454.811370$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-04, P = 550.484270 Days, E = 454.823603 Days

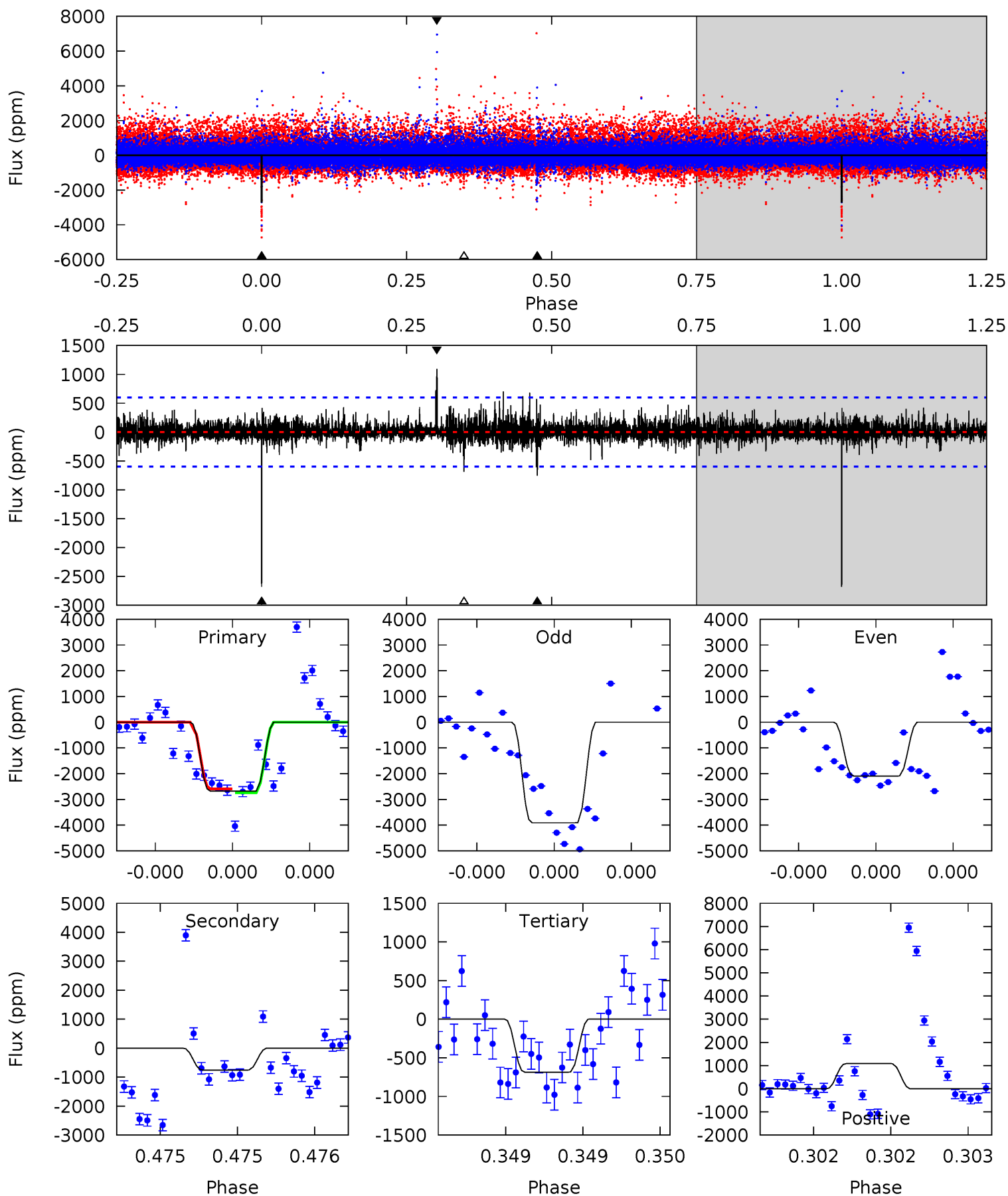
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.75	5.96	5.38	13.5	5.53	3.42	1.83	-0.63	-8.74	0.58	-7.53	1.50	0.82	0.69	2.74



# Alt Model-Shift Uniqueness Test

011145819-04, P = 550.466484 Days, E = 454.811370 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
25.1	7.09	6.43	10.2	5.61	3.53	1.02	18.7	15.0	0.66	-3.09	7.23	0.90	0.29	0.72





### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-945 \pm 159$	$2.64^{+1.91}_{-1.62}$	$161^{+6}_{-8}$	$3263^{+1182}_{-482}$	$88100^{+496282}_{-59038}$
Alt.	$-756 \pm 107$	$3.58^{+2.07}_{-1.79}$	$160^{+7}_{-7}$	$2893^{+658}_{-316}$	$37677^{+111568}_{-22285}$

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

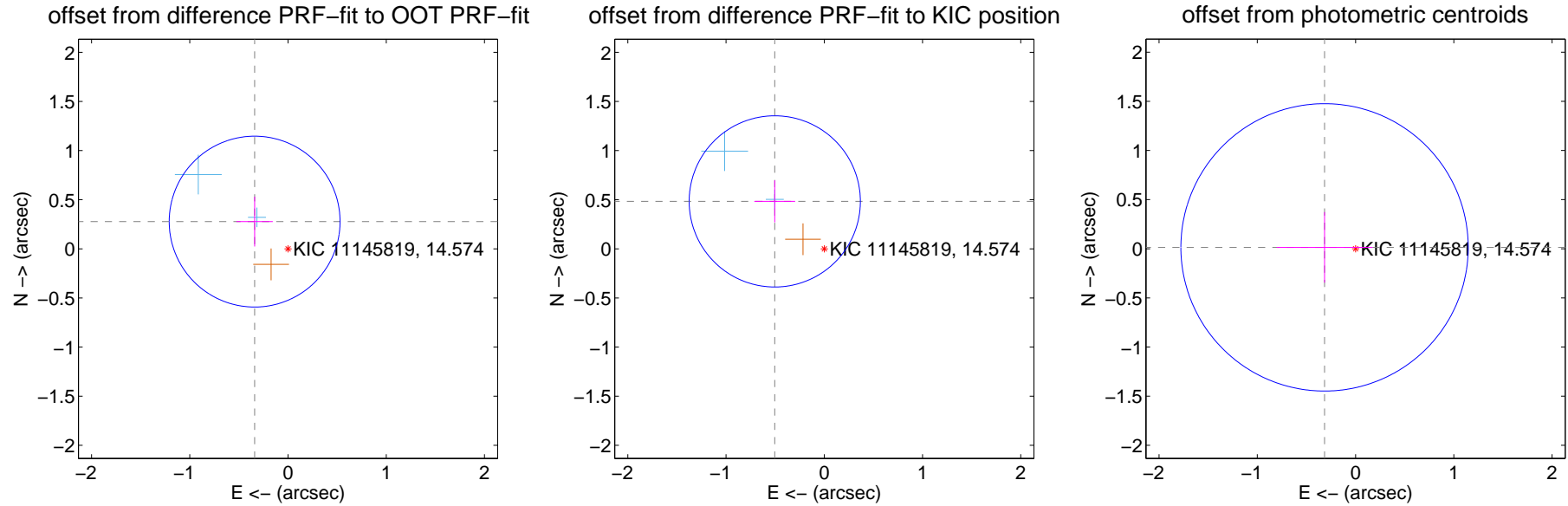
## DV Centroid Data

Supplemental centroid analysis for 011145819-04. Kepler magnitude: 14.57. Transit SNR 7.94

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.439 \pm 0.290$	1.51	$0.340 \pm 0.185$	$0.277 \pm 0.253$
PRF-fit source offset from KIC position	$0.698 \pm 0.291$	2.40	$0.504 \pm 0.208$	$0.483 \pm 0.214$
photometric centroid source offset	$0.32 \pm 0.49$	0.65	$0.32 \pm 0.49$	$0.01 \pm 0.36$

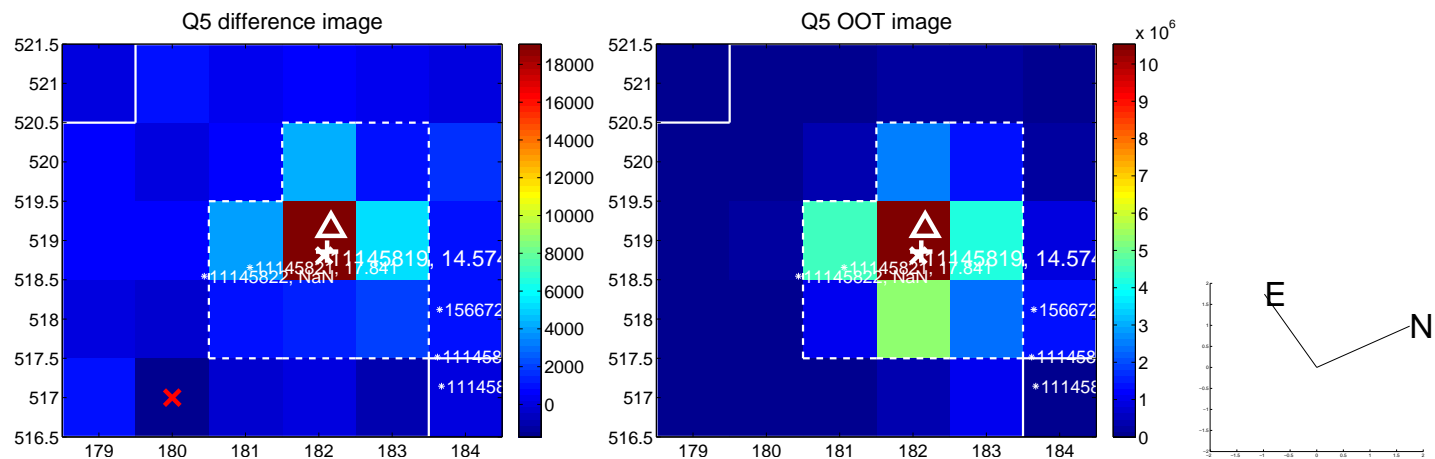


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

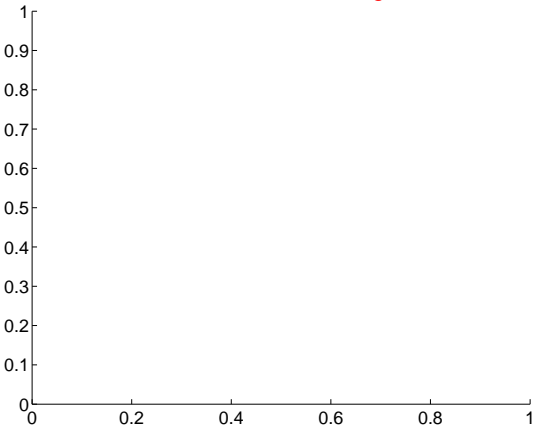
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



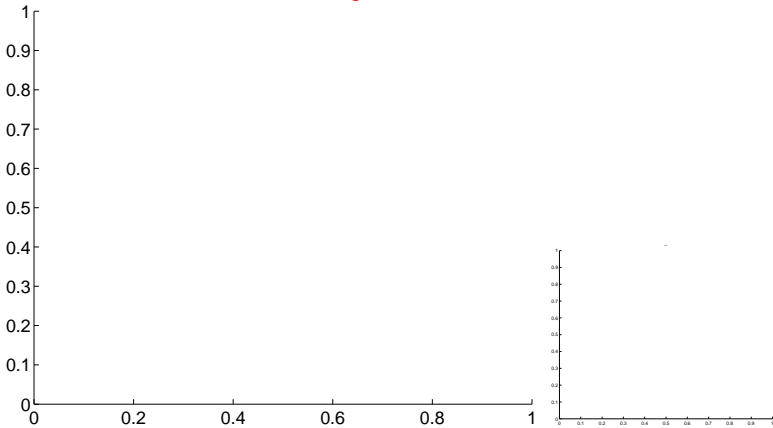
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



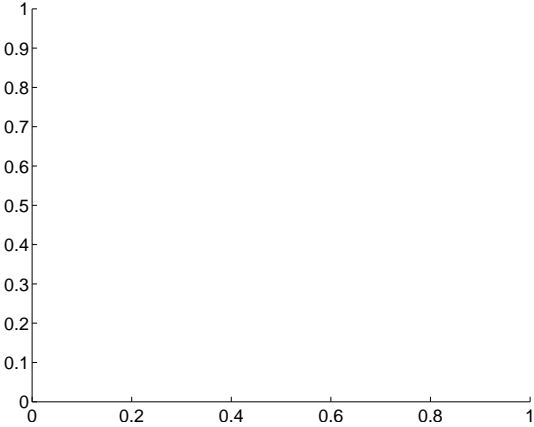
Q6 no difference image



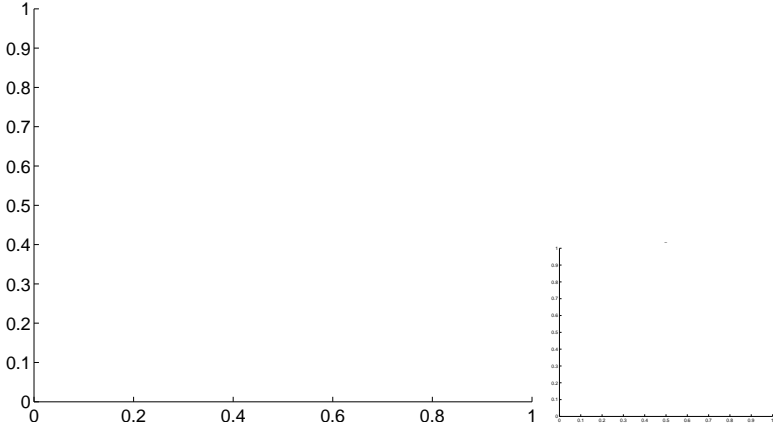
Q6 no OOT image



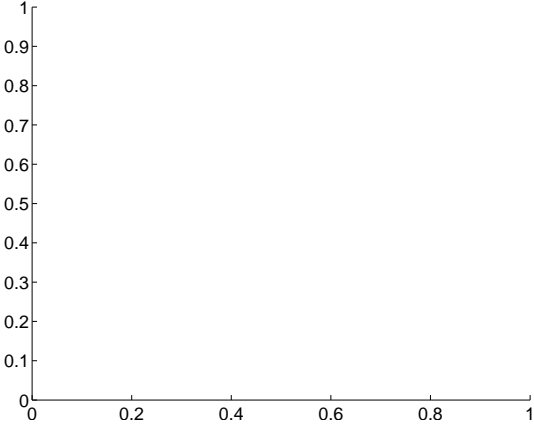
Q7 no difference image



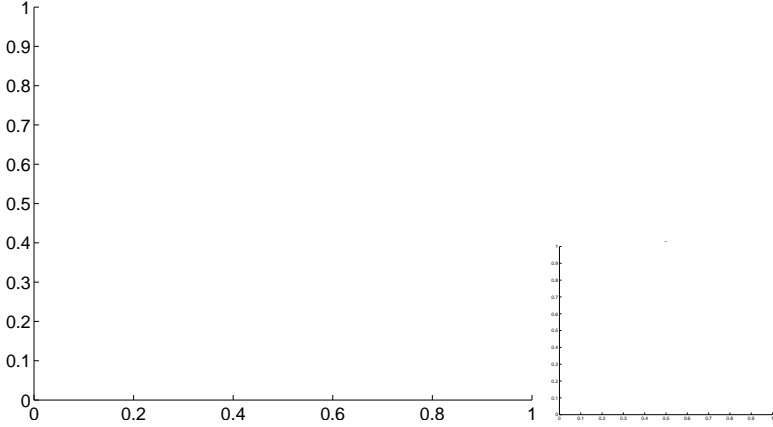
Q7 no OOT image



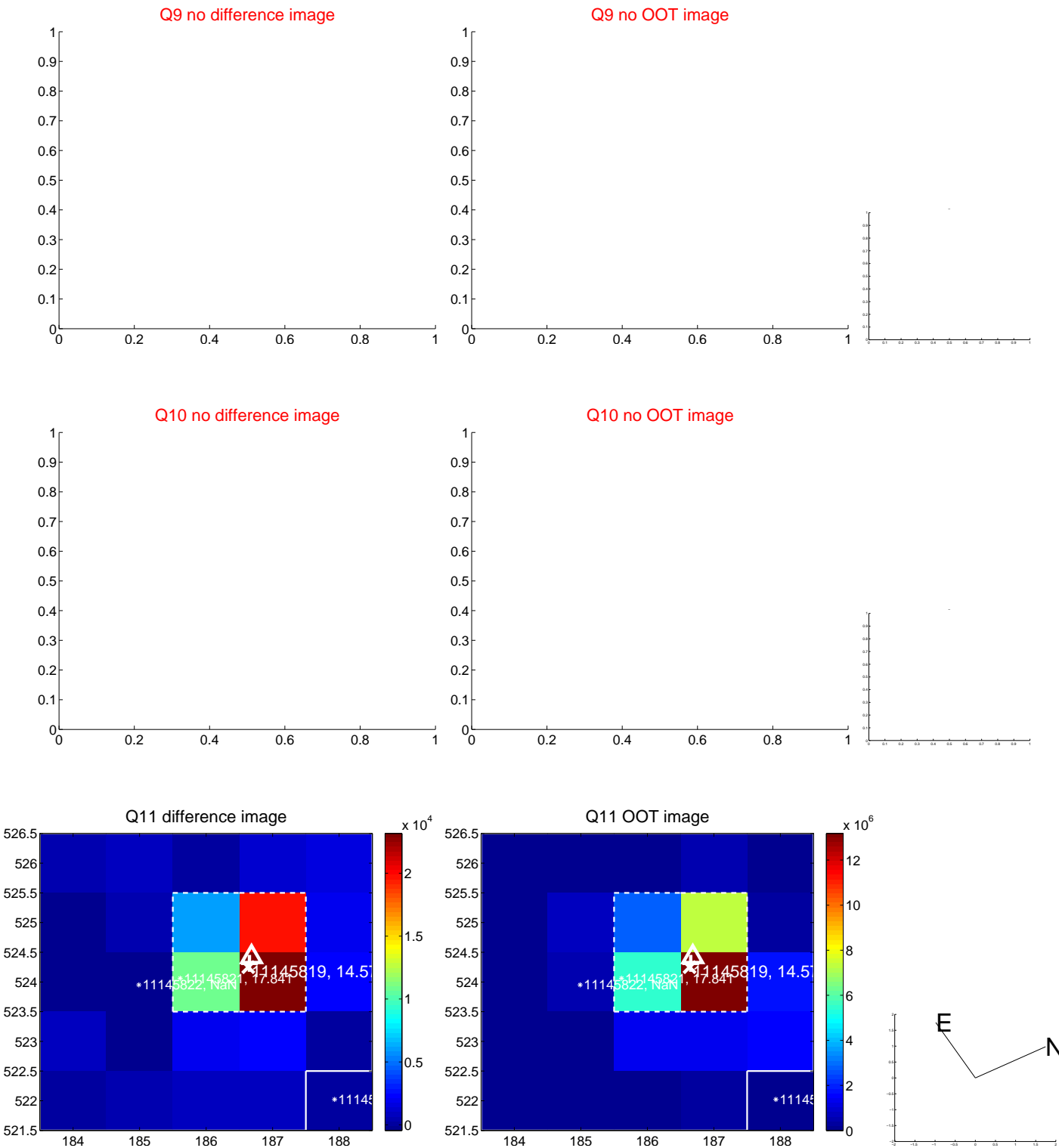
Q8 no difference image



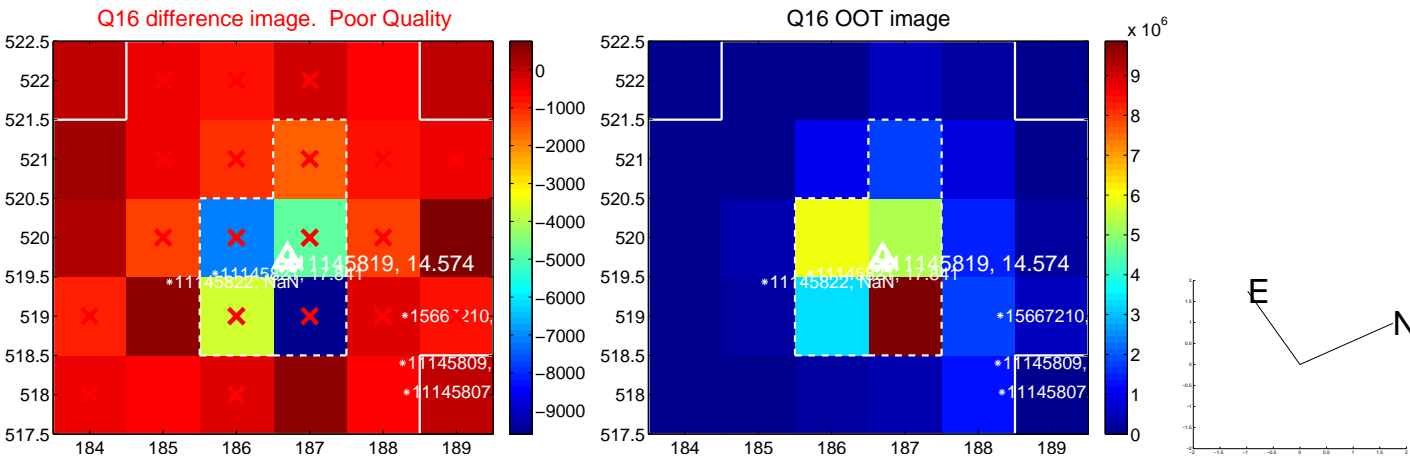
Q8 no OOT image



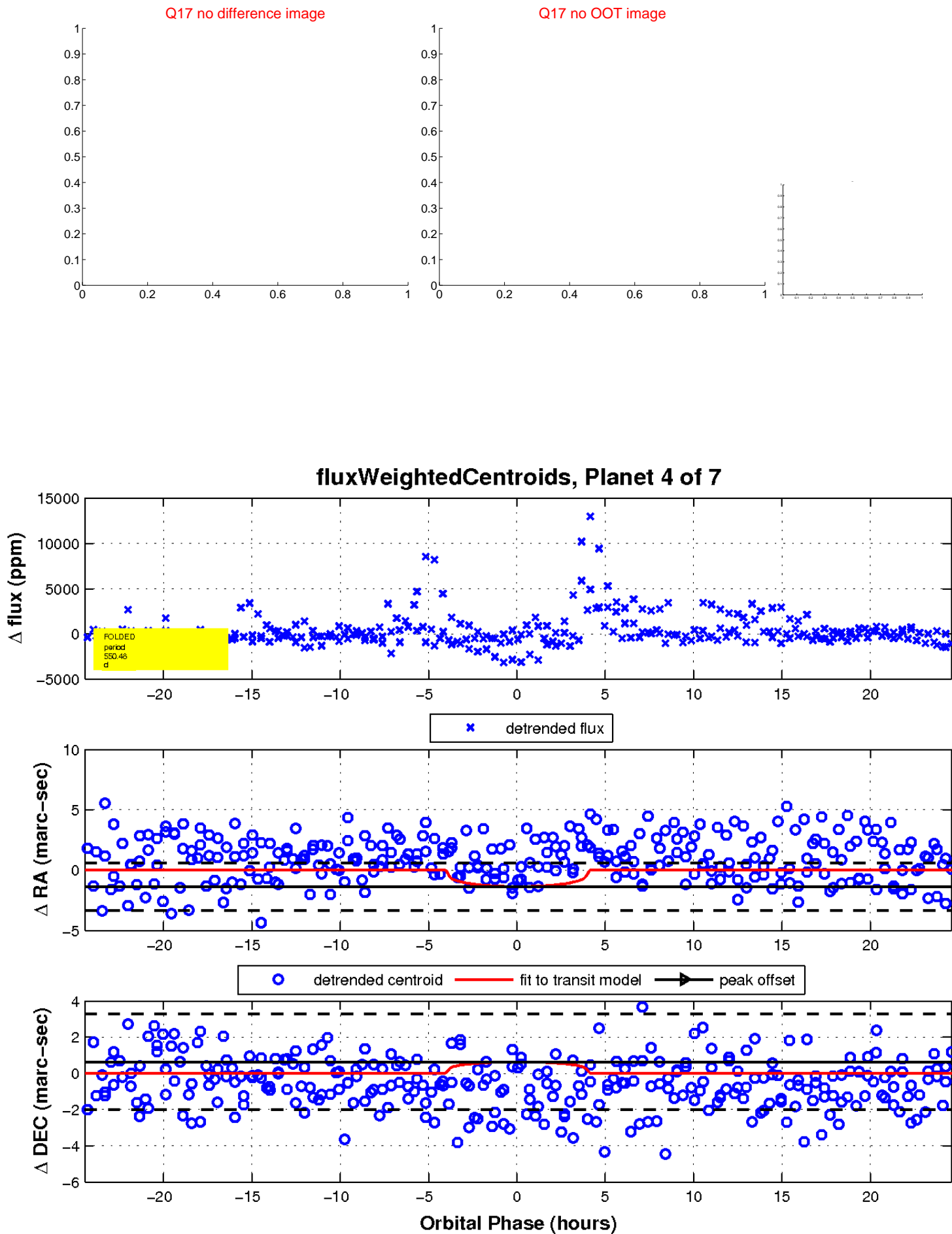
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

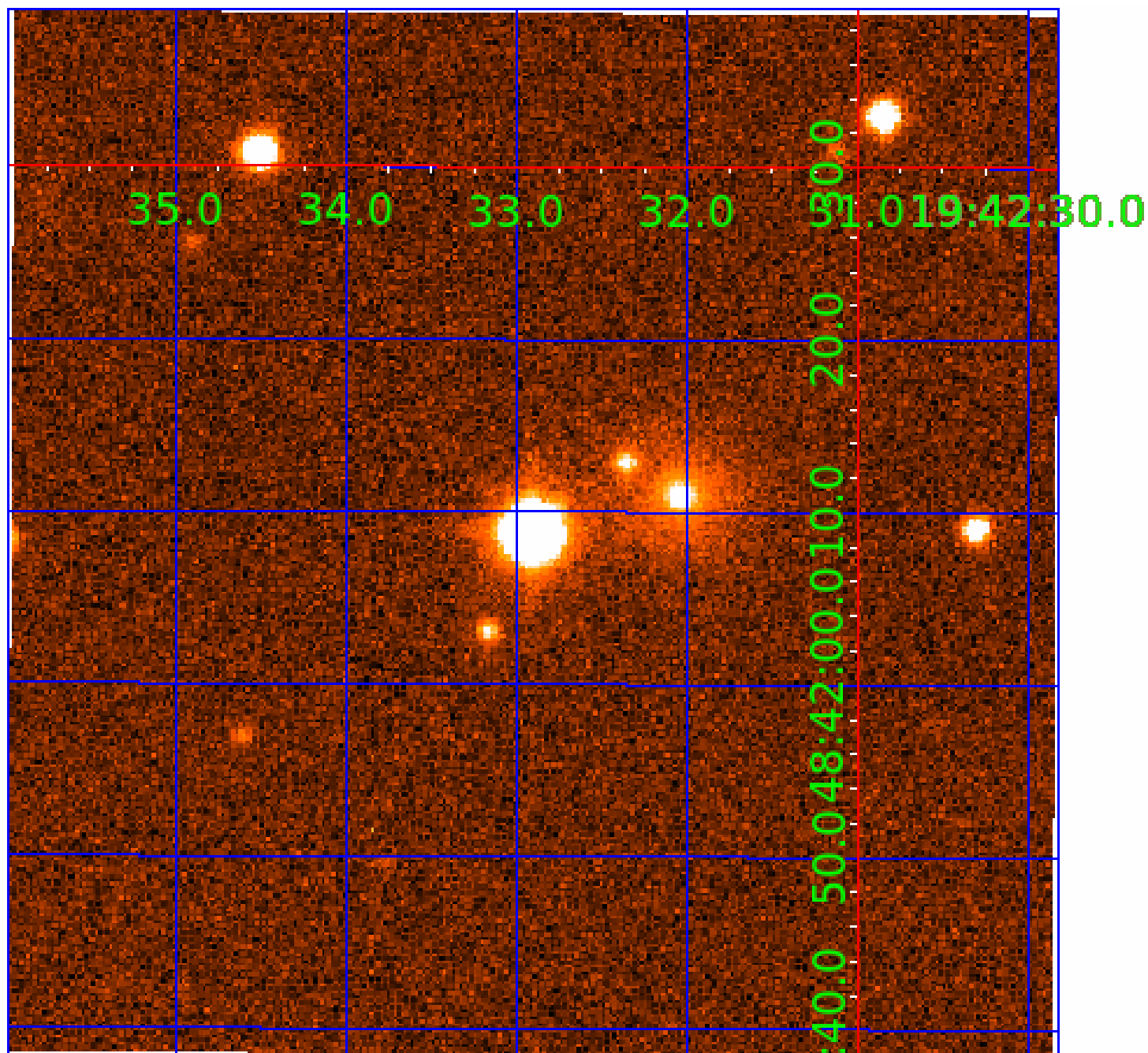


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

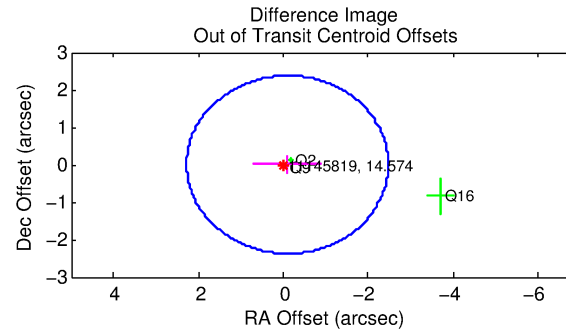
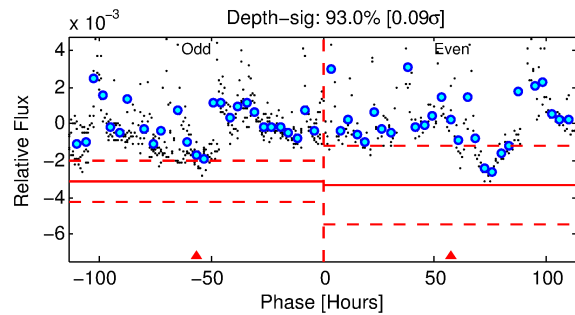
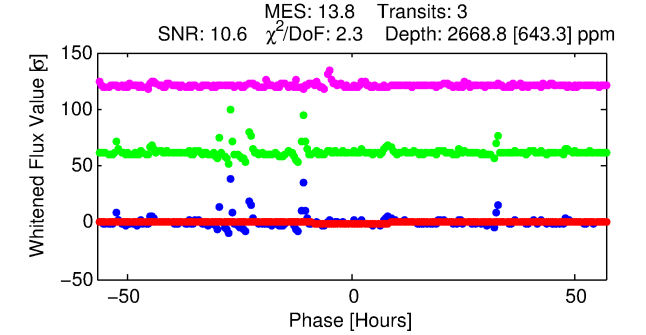
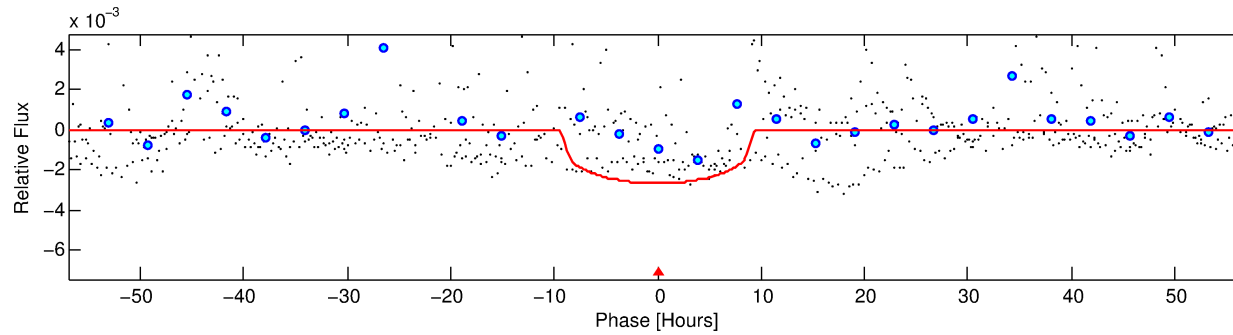
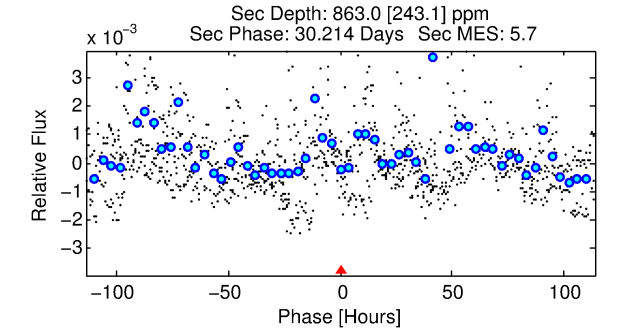
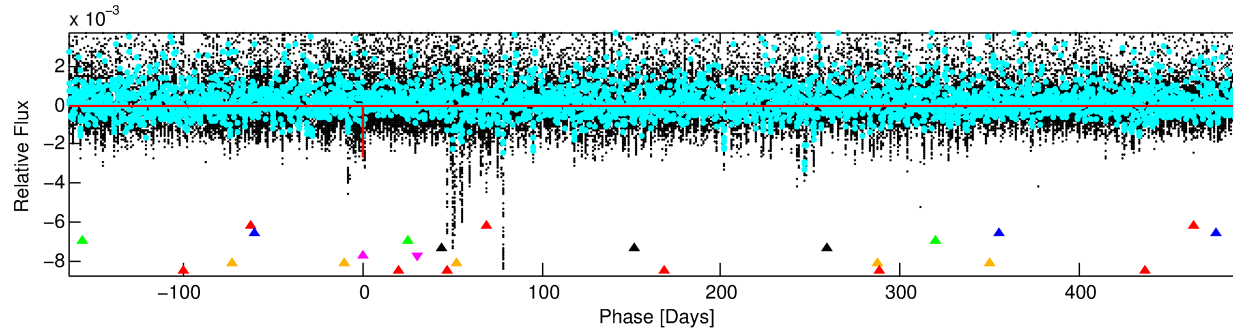
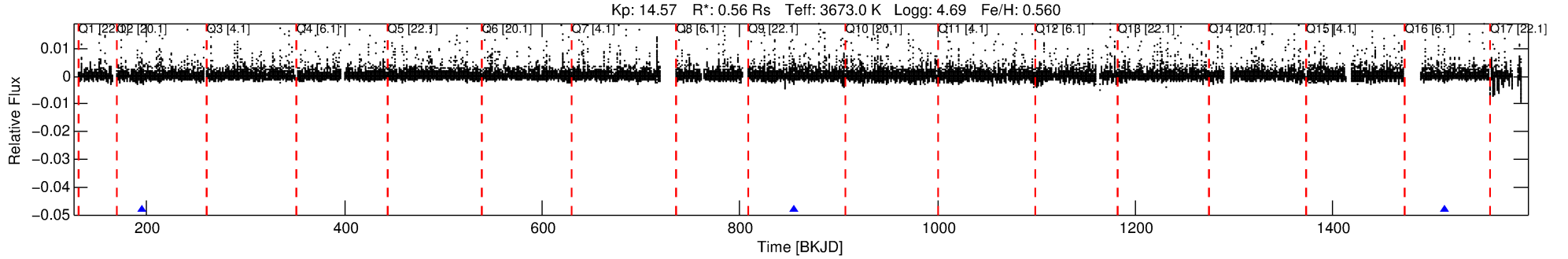
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011145819-05

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 5 of 7 Period: 658.136 d



## DV Fit Results:

Period = 658.13581 [0.01642] d  
Epoch = 195.9550 [0.0209] BKJD  
Rp/R\* = 0.0460 [0.0151]  
a/R\* = 267.80 [249.30]  
b = 0.26 [3.31]  
Seff = 0.03 [0.01]  
Teq = 110 [6] K  
Rp = 2.81 [1.01] Re  
a = 1.2219 [0.1397] AU  
Ag = 89869.56 [65891.13] [1.36σ]  
Teffp = 2937 [539] K [5.25σ]

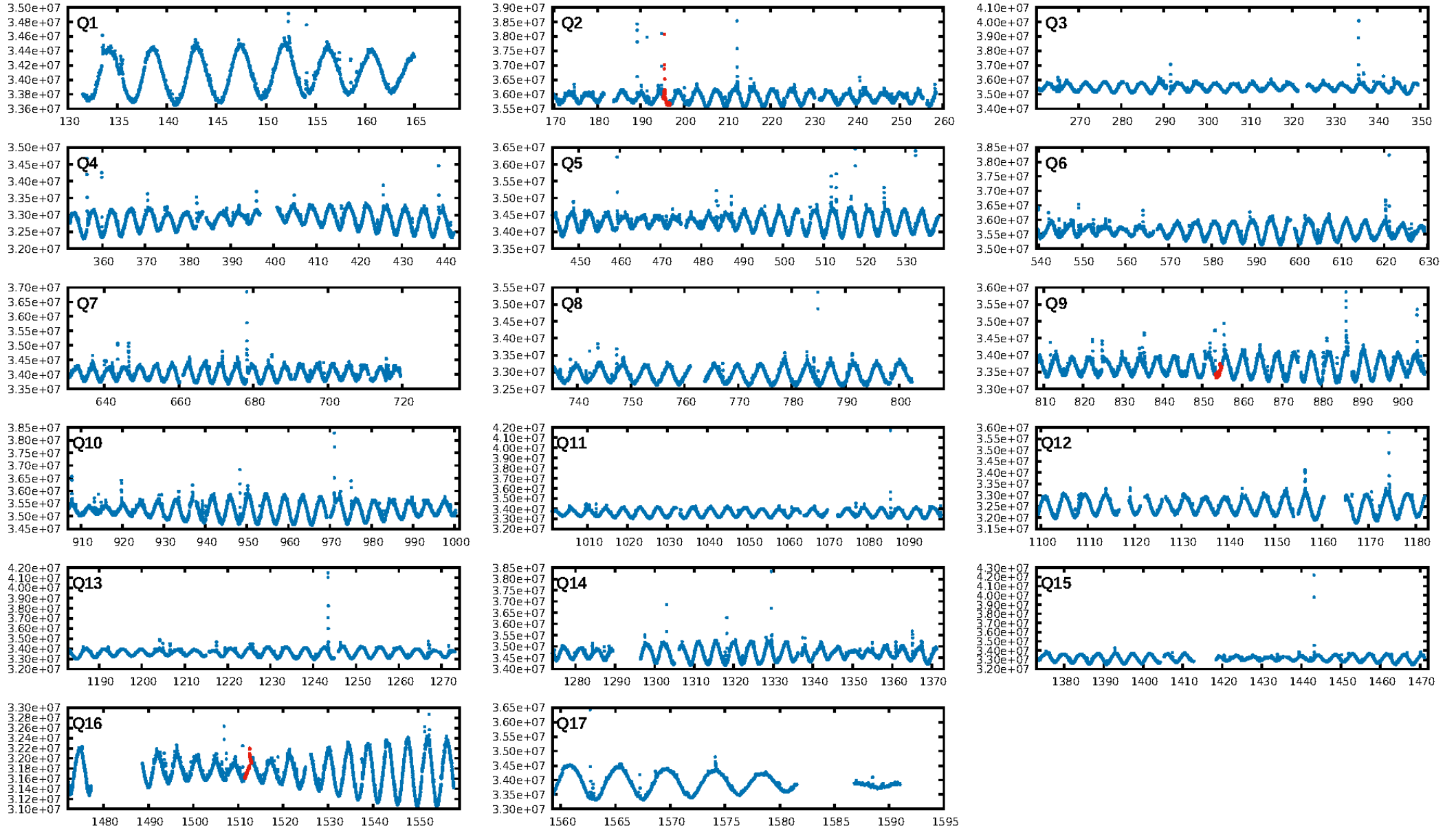
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [124.75σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 28.5%  
ModelChiSquareGof-sig: 29.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.9915**  
Centroid-sig: 46.0%  
Centroid-so: 0.389 arcsec [1.46σ]  
OotOffset-rm: 0.101 arcsec [0.13σ]  
KicOffset-rm: 0.209 arcsec [1.20σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

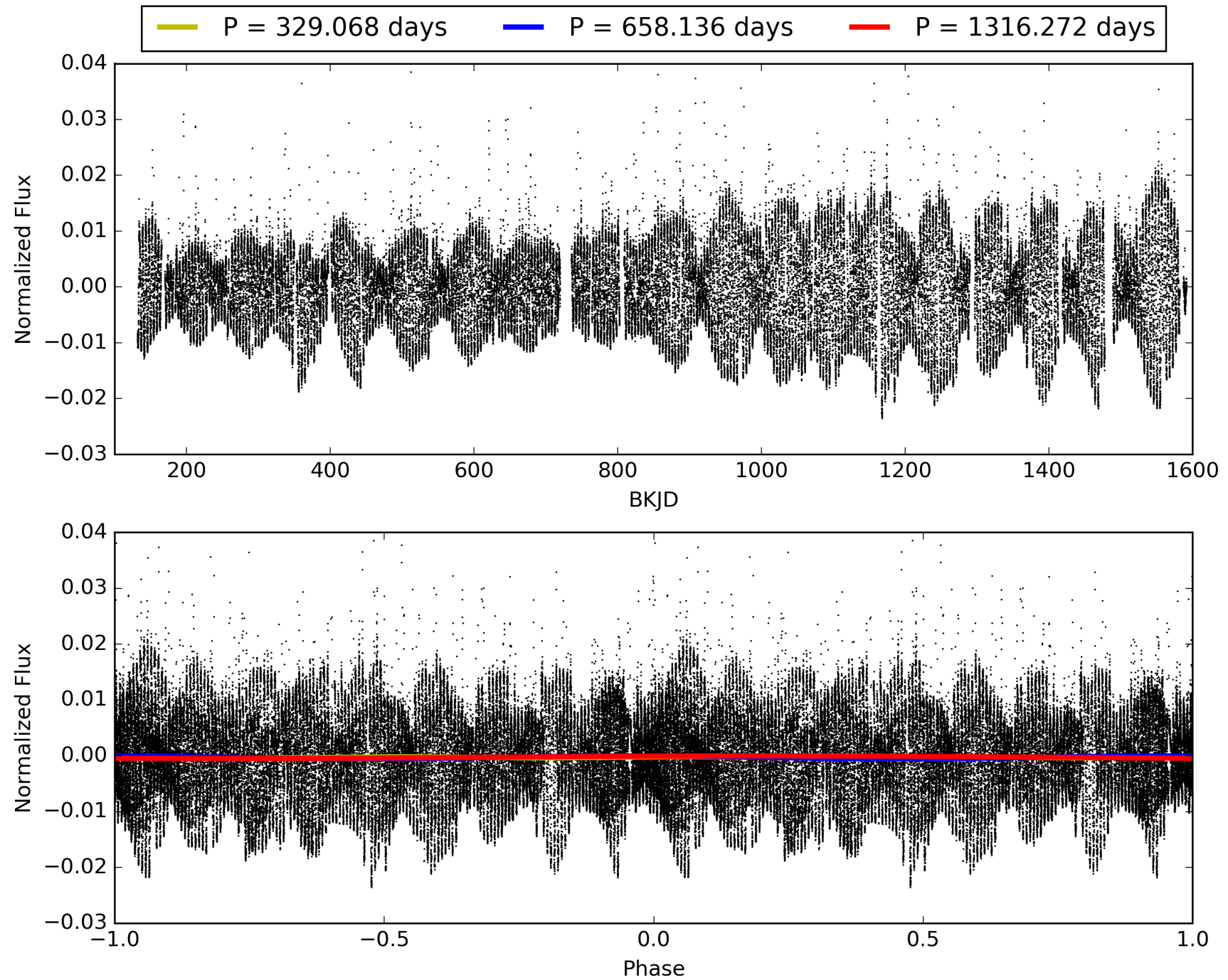
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:46:48 Z

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

# TCE 011145819-05, PDC Light Curves

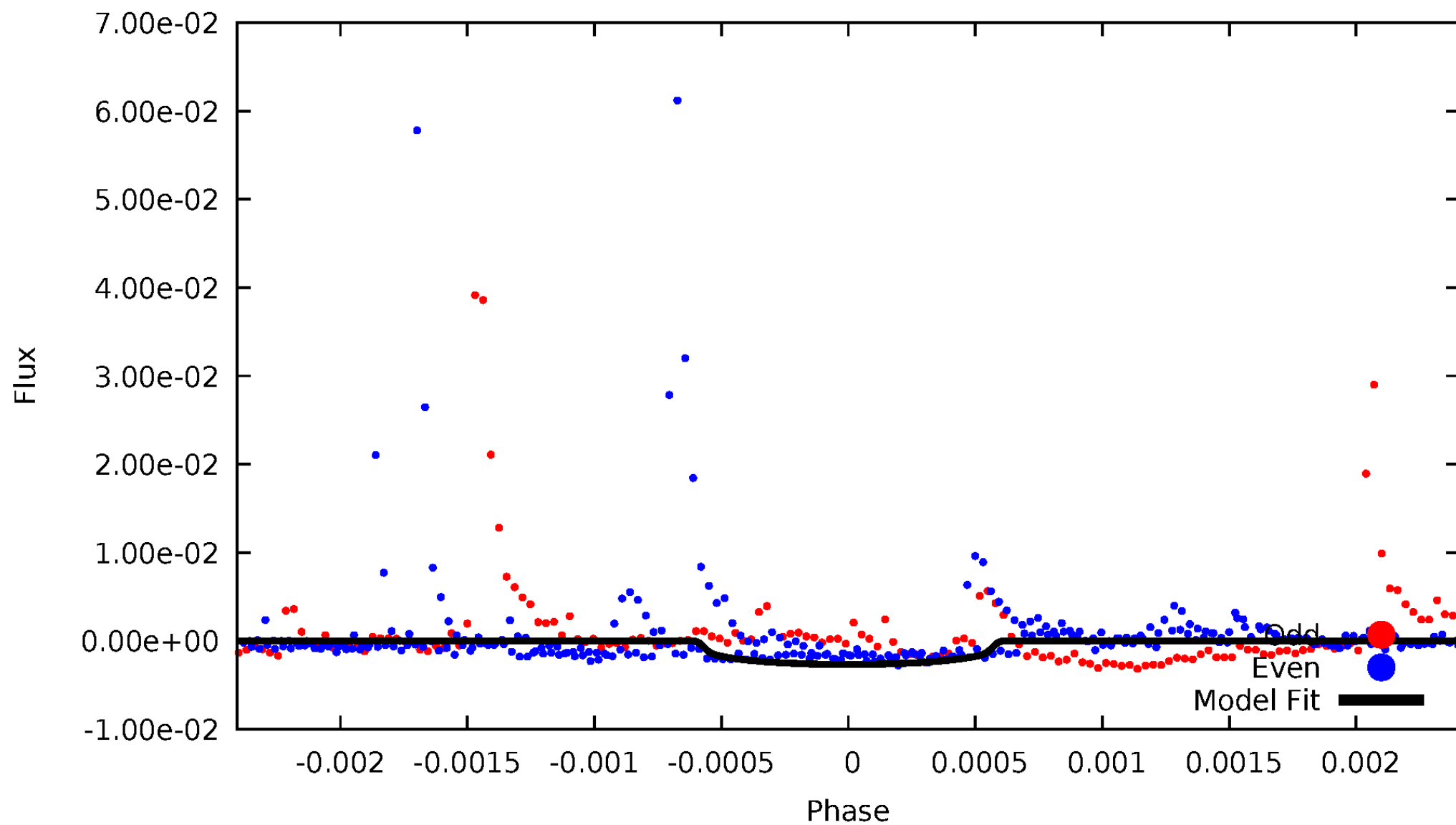


TCE 011145819-05



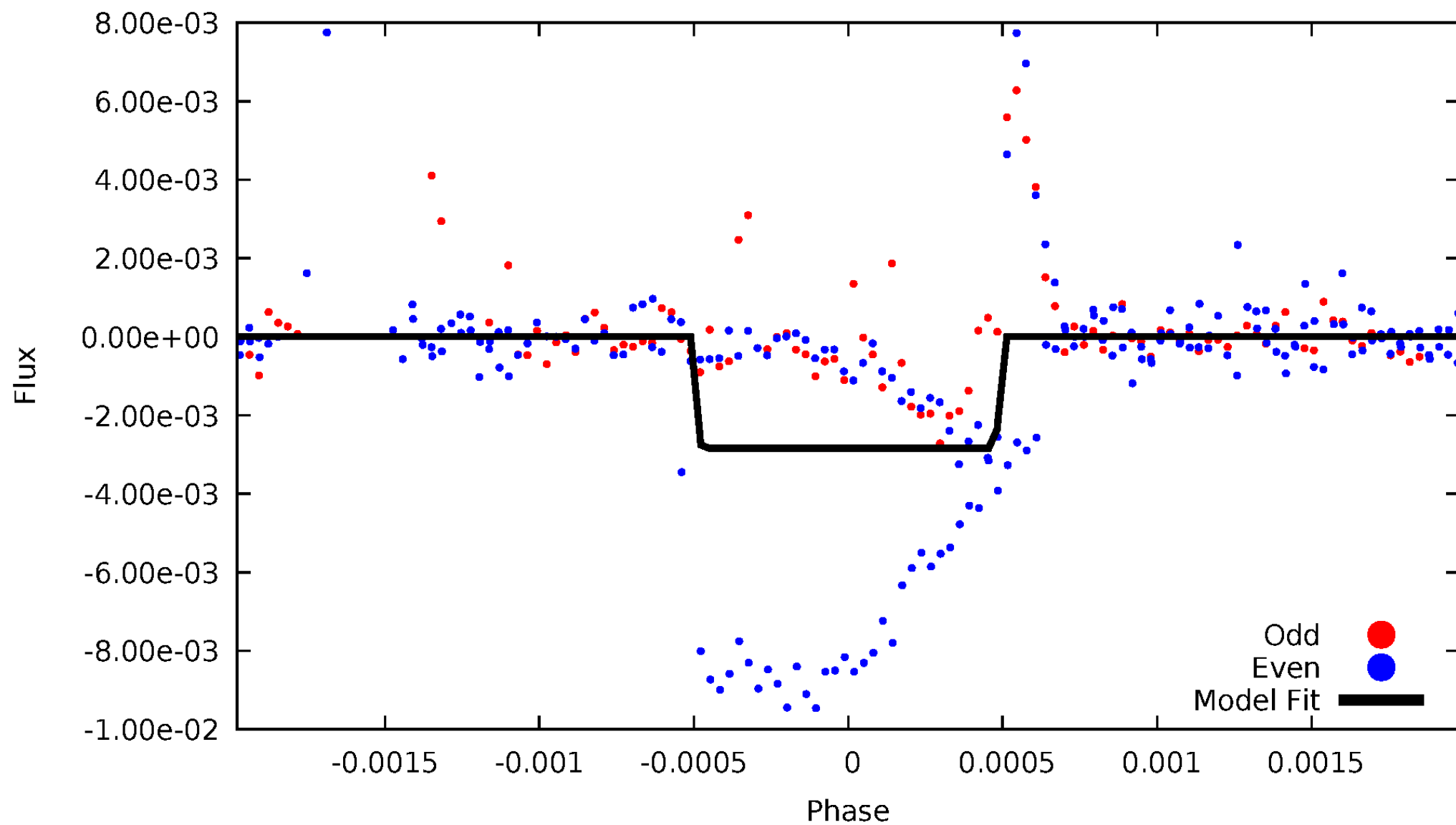
# DV Odd/Even

TCE 011145819-05



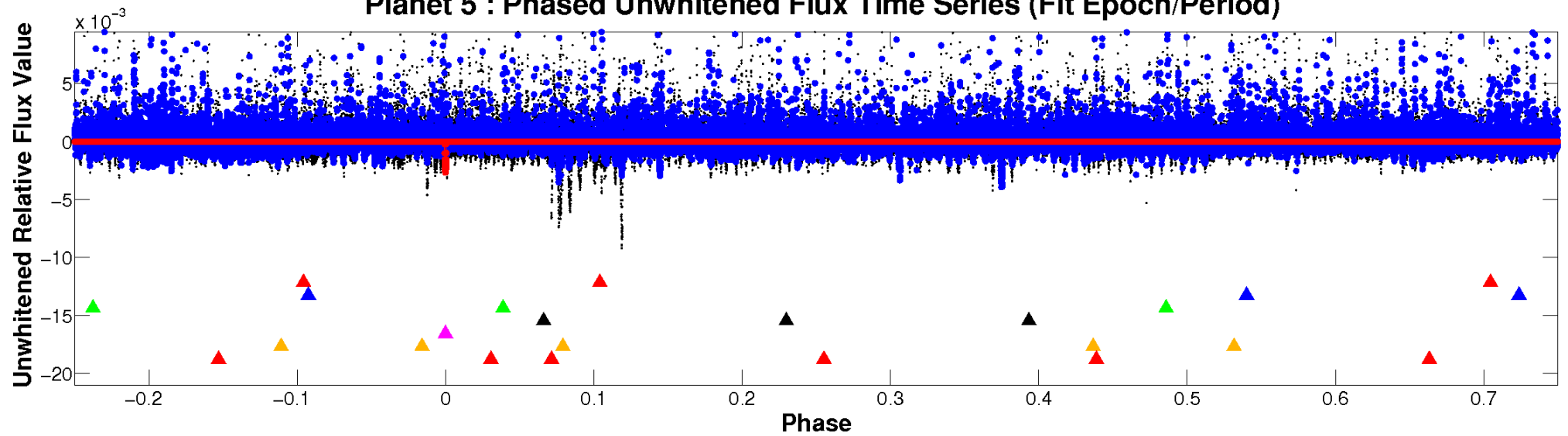
# ALT Odd/Even

TCE 011145819-05

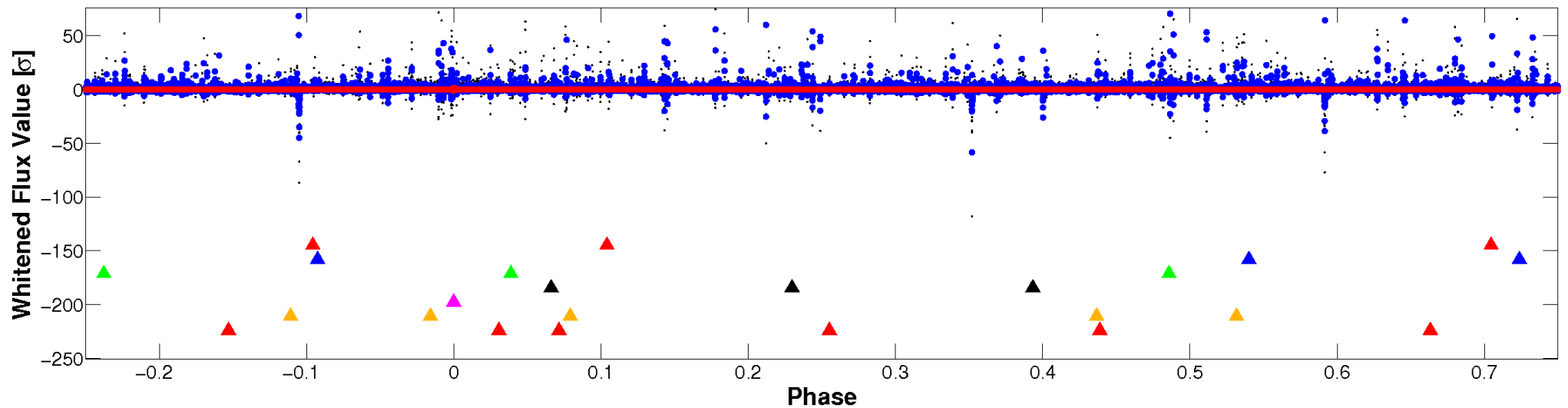


# Non-Whitened Vs. Whitened Light Curve

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

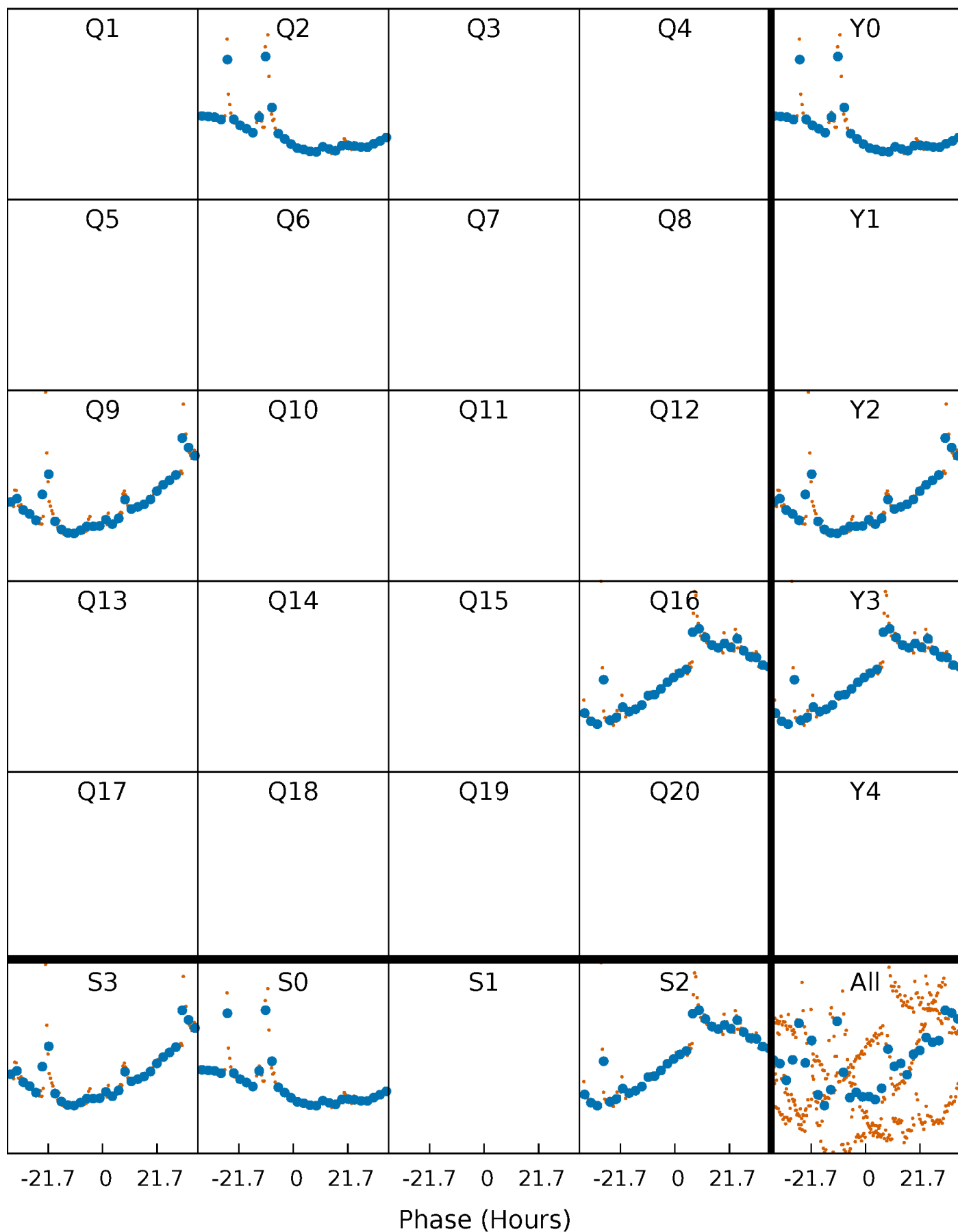


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

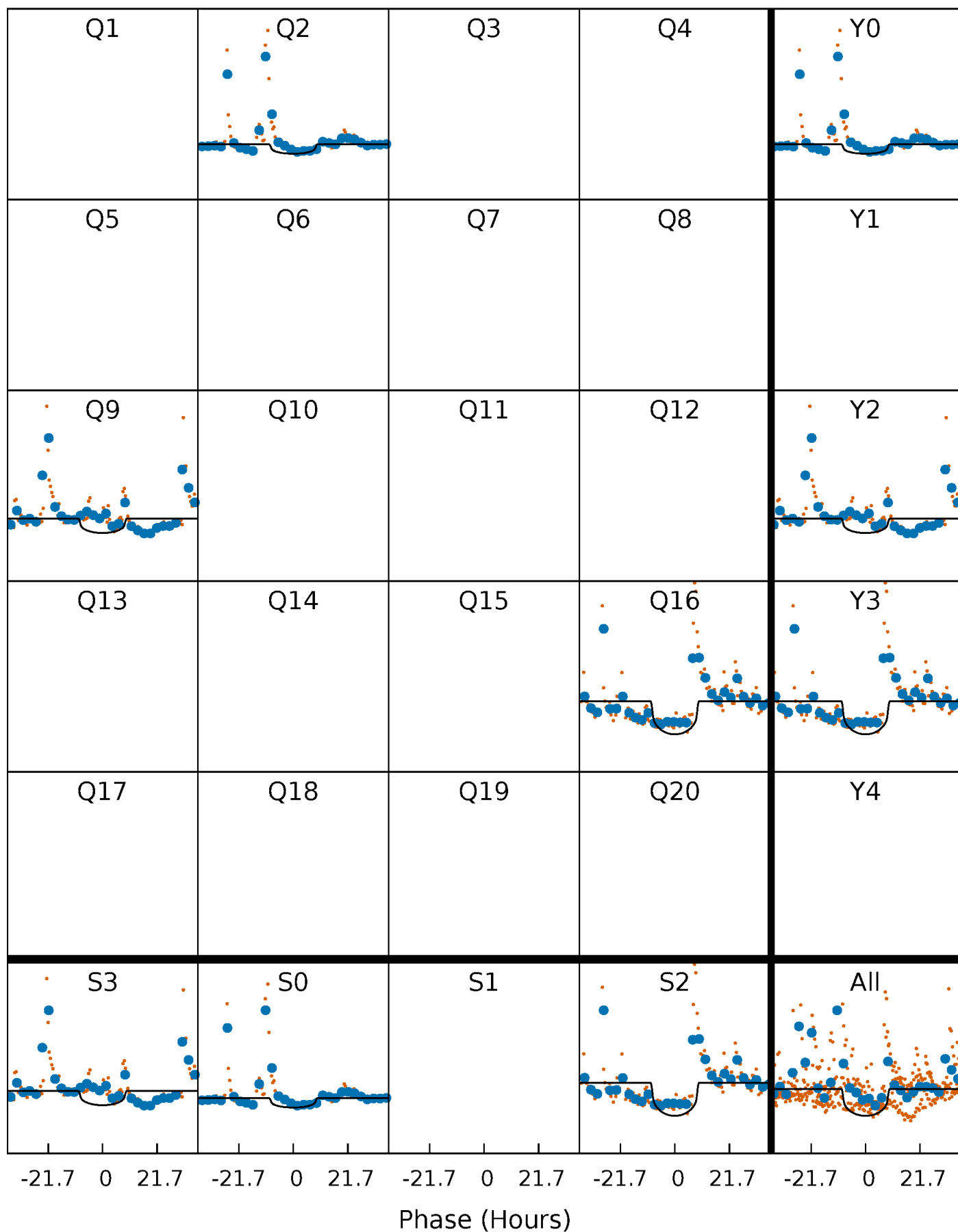
TCE 011145819-05 P=658.135815 Days  $T_0=195.954975$  (BKJD)





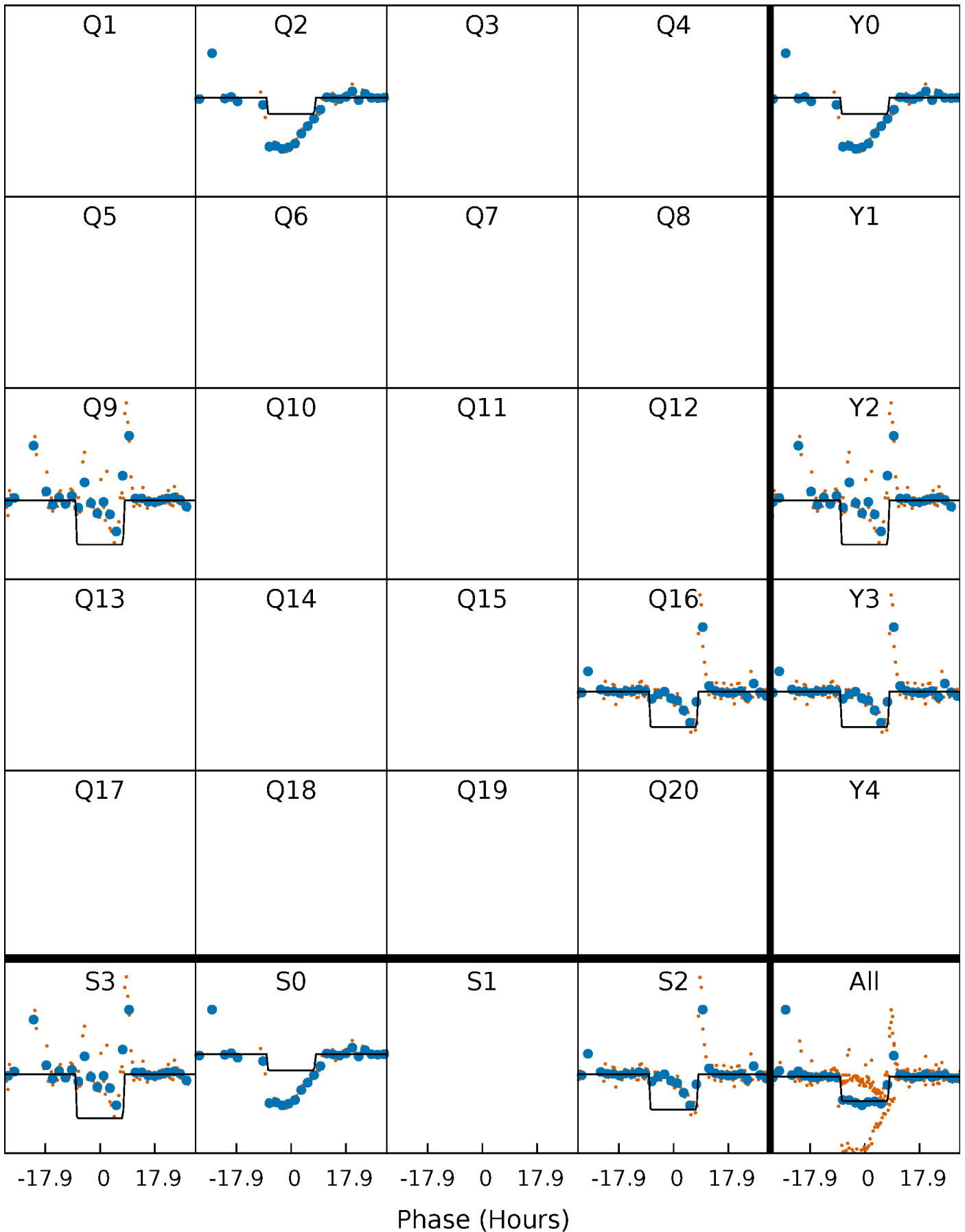
# DV Quarter-Phased Transit Curves

TCE 011145819-05     $P=658.135815$  Days     $T_0=195.954975$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

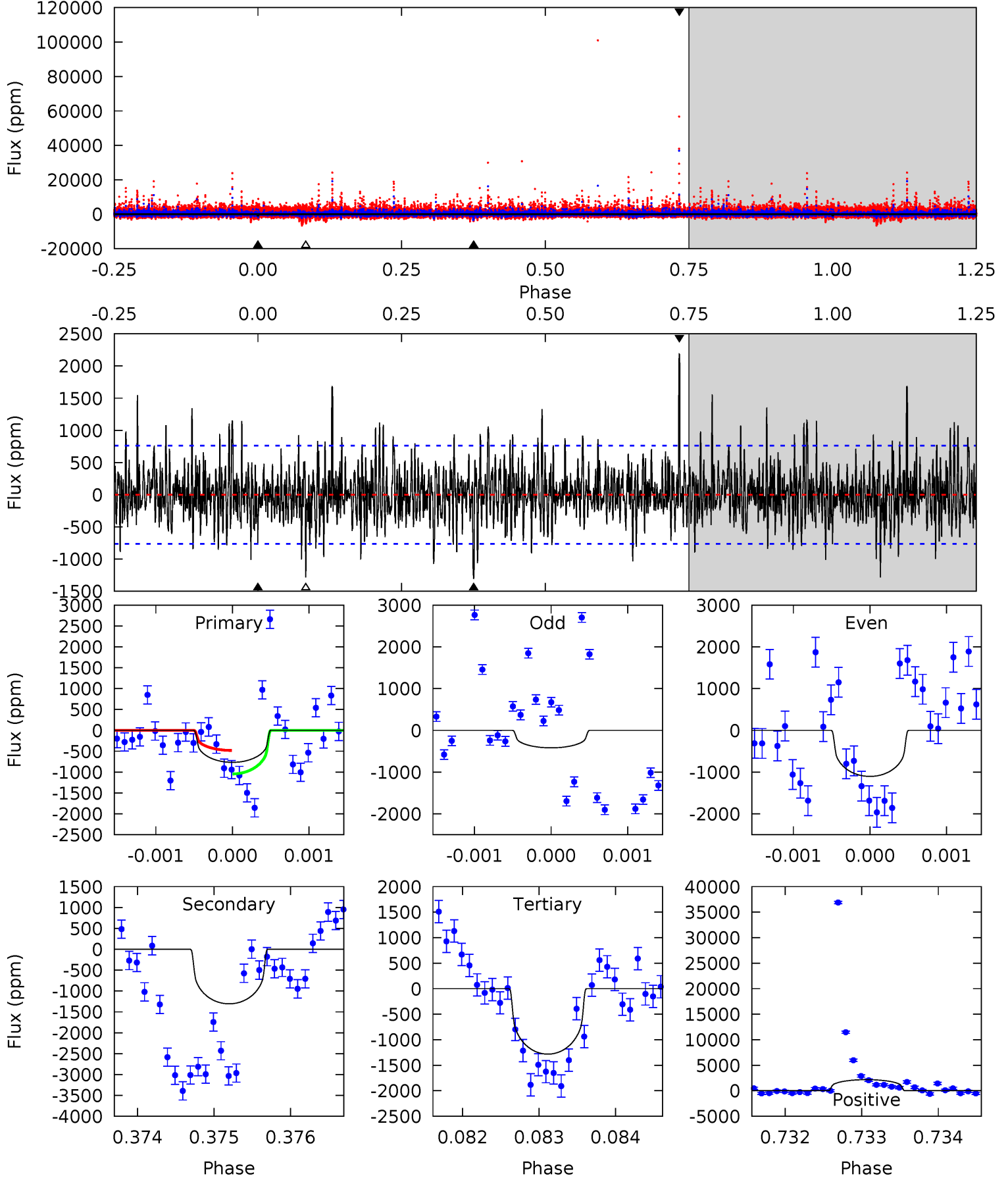
TCE 011145819-05 P=658.103667 Days  $T_0=195.989535$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-05, P = 658.135815 Days, E = 195.954975 Days

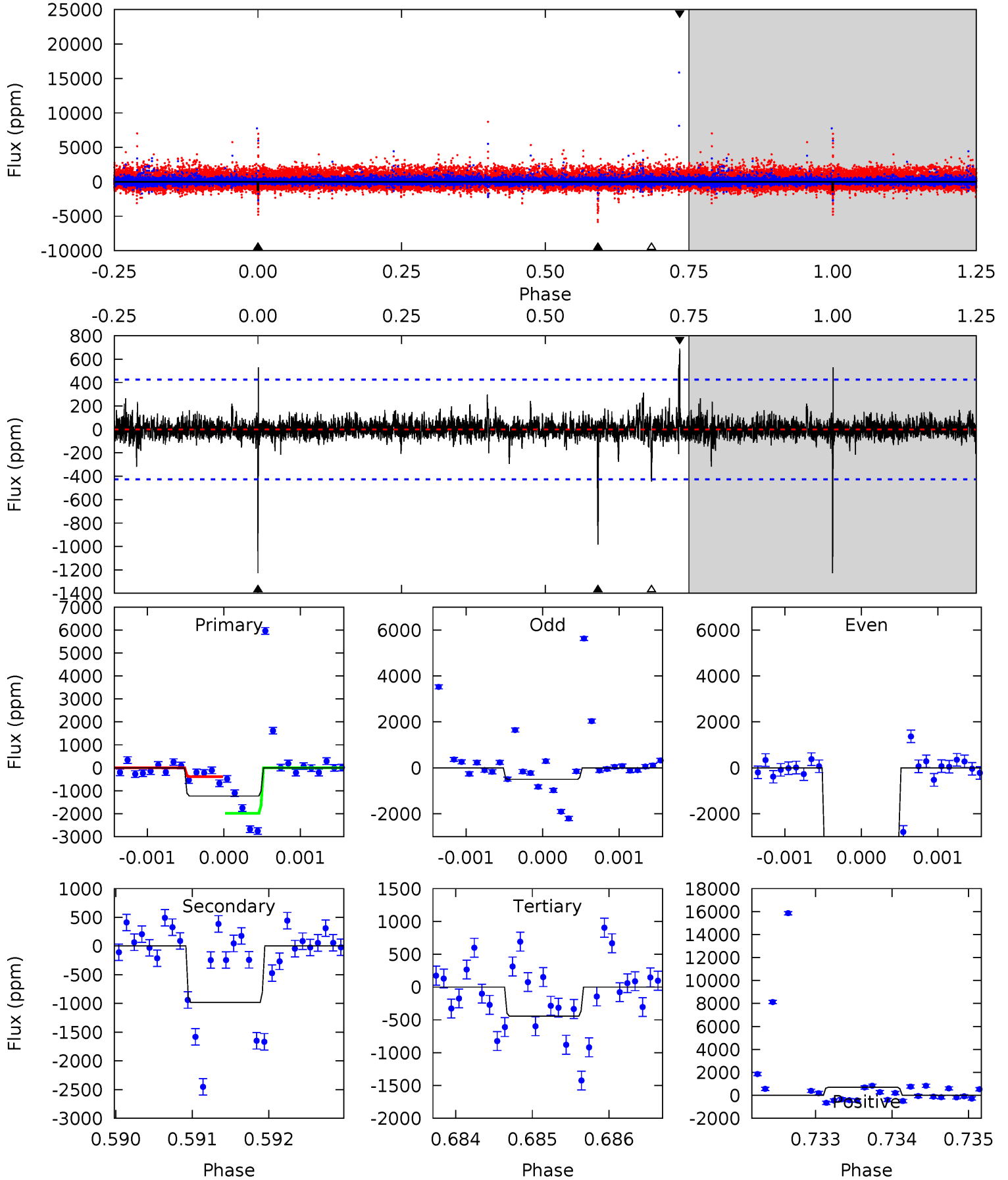
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.44	9.27	9.10	15.5	5.42	3.23	2.50	-3.66	-10.0	0.17	-6.22	1.56	0.60	0.63	2.00



# Alt Model-Shift Uniqueness Test

011145819-05, P = 658.103667 Days, E = 195.989535 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
15.7	12.6	5.67	8.82	5.45	3.29	0.69	10.0	6.89	6.91	3.75	23.4	2.86	0.36	0



### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1306 \pm 141$	$2.70^{+0.98}_{-0.87}$	$151^{+6}_{-7}$	$3397^{+468}_{-316}$	$146537^{+171784}_{-68063}$
Alt.	$-983 \pm 78$	$3.18^{+0.95}_{-0.88}$	$152^{+6}_{-7}$	$3111^{+354}_{-232}$	$81072^{+73896}_{-34232}$

$T_{\text{max}}$  = 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

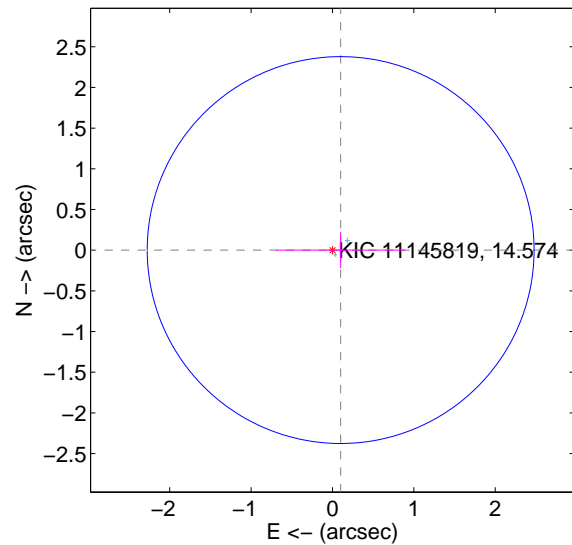
Supplemental centroid analysis for 011145819-05. Kepler magnitude: 14.57. Transit SNR 10.62

There are 3 quarters with good PRF difference image offsets

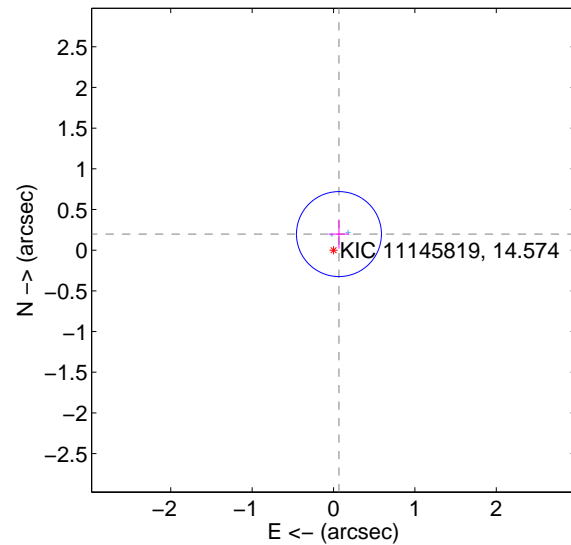
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.101 \pm 0.792$	0.13	$-0.101 \pm 0.795$	$0.001 \pm 0.221$
PRF-fit source offset from KIC position	$0.209 \pm 0.174$	1.20	$-0.067 \pm 0.126$	$0.198 \pm 0.179$
photometric centroid source offset	$0.39 \pm 0.27$	1.46	$0.07 \pm 0.42$	$0.38 \pm 0.26$

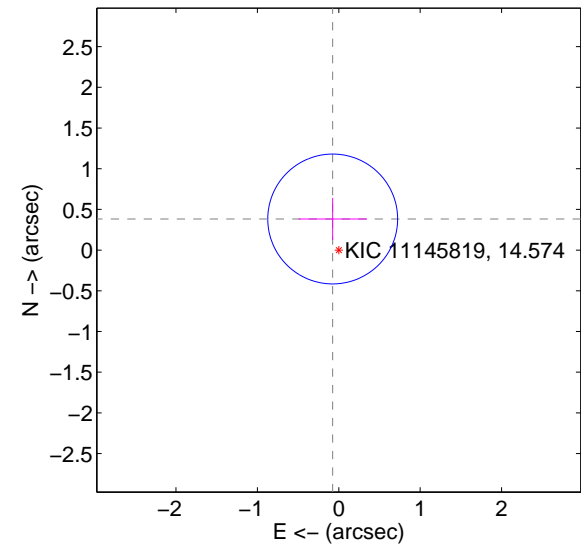
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



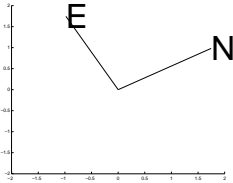
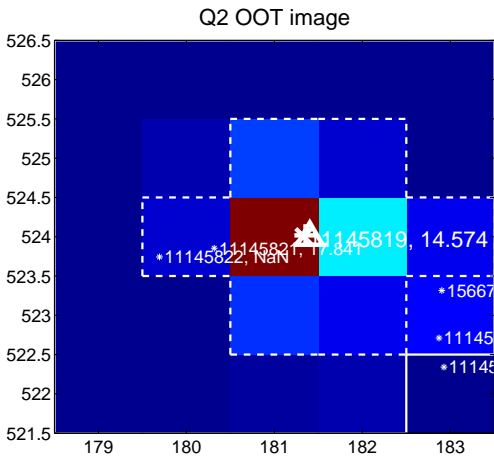
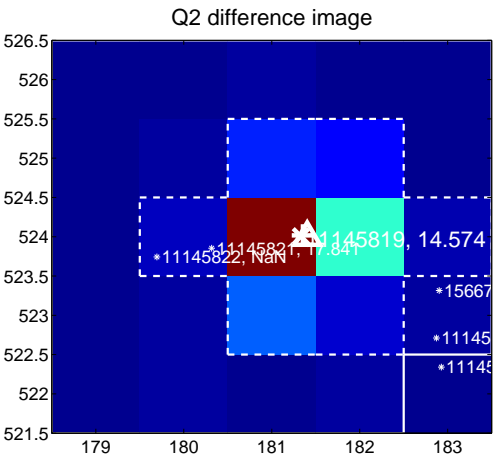
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

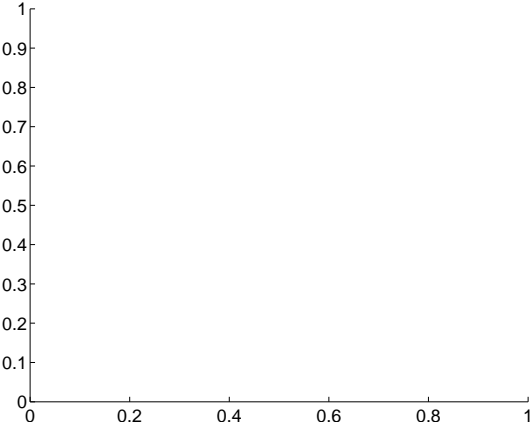
Q1 no difference image



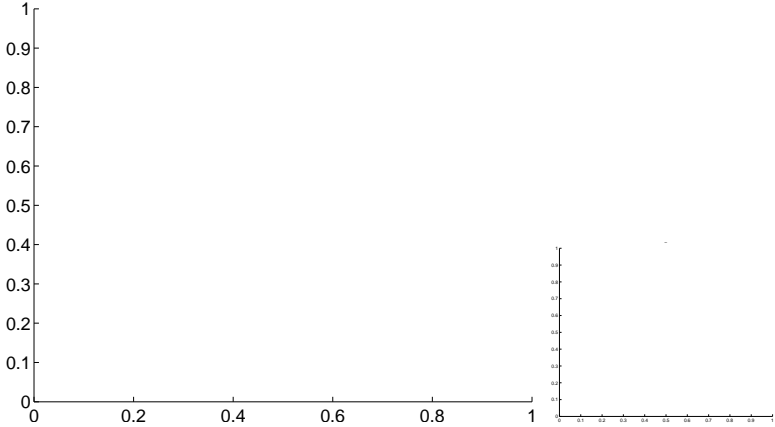
Q1 no OOT image



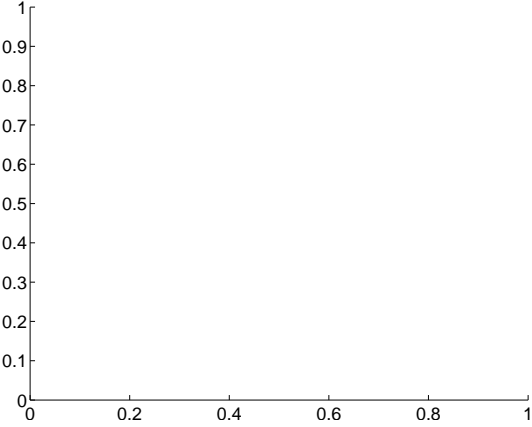
Q3 no difference image



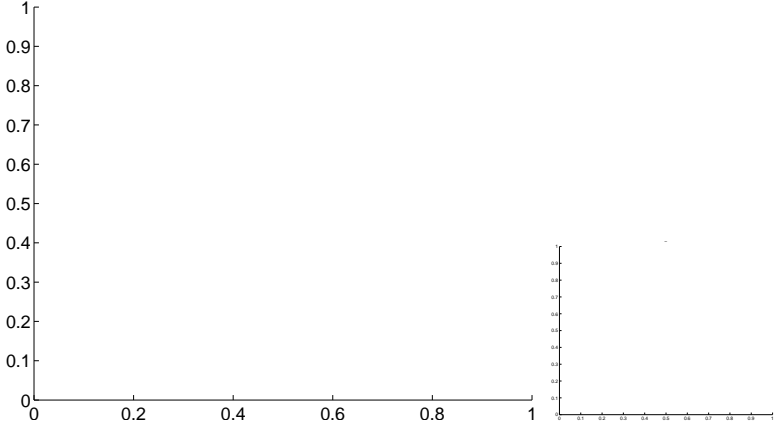
Q3 no OOT image



Q4 no difference image



Q4 no OOT image

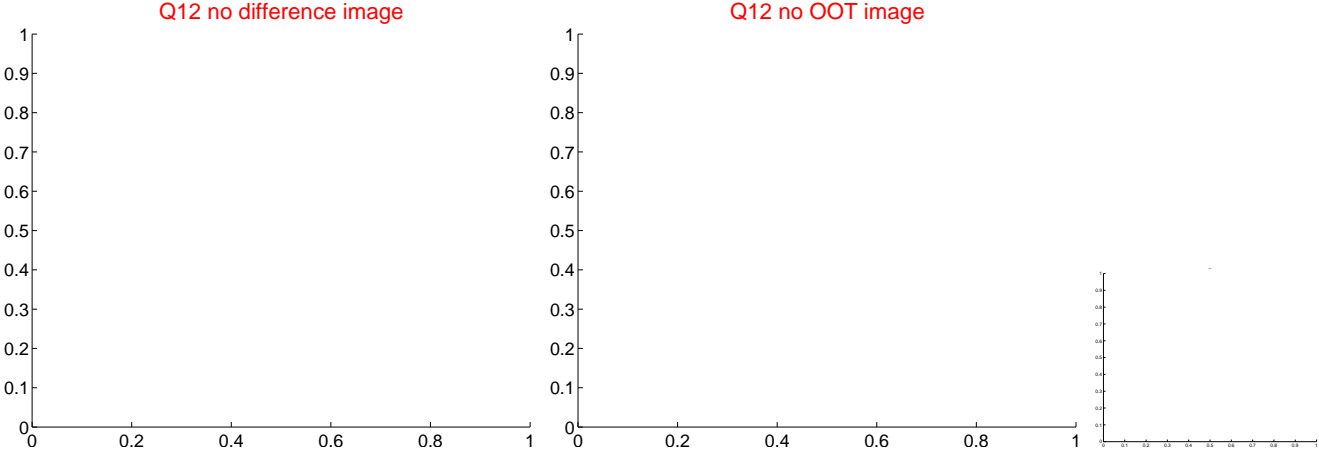
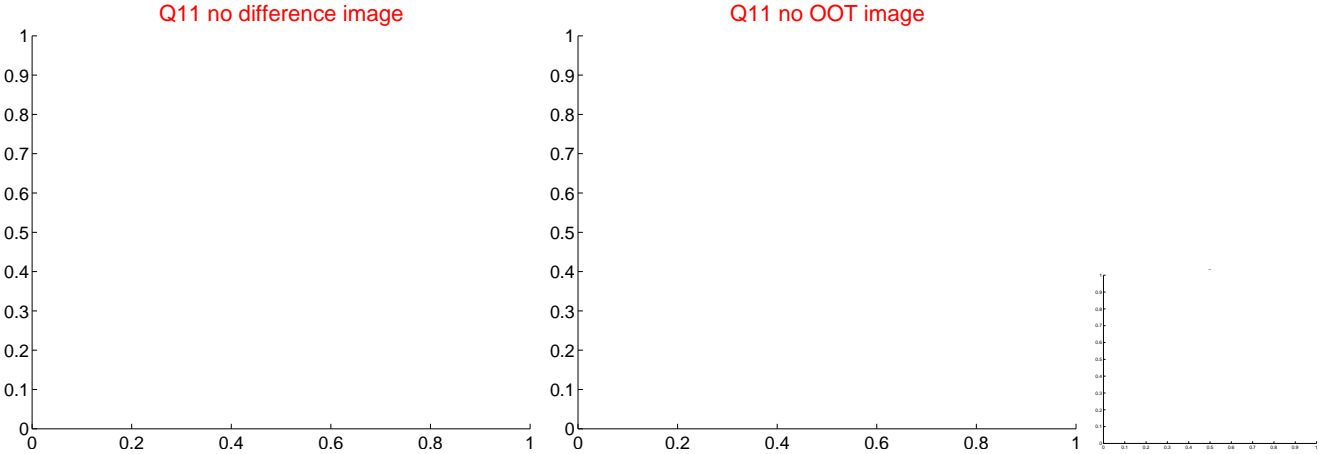
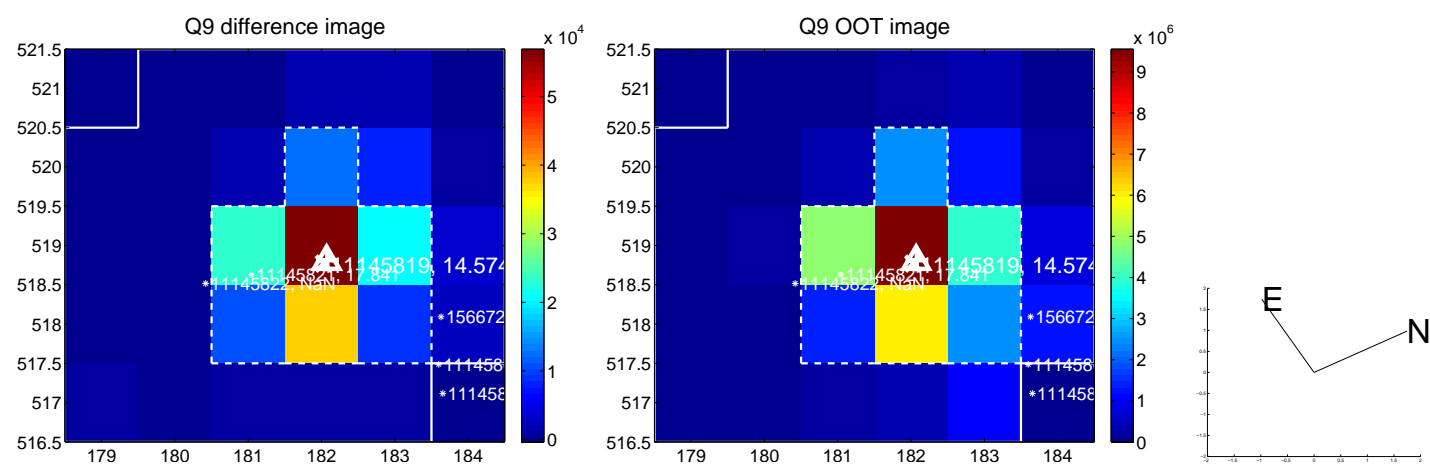


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



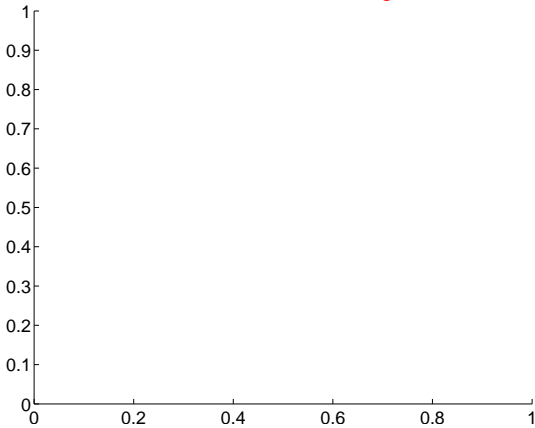


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

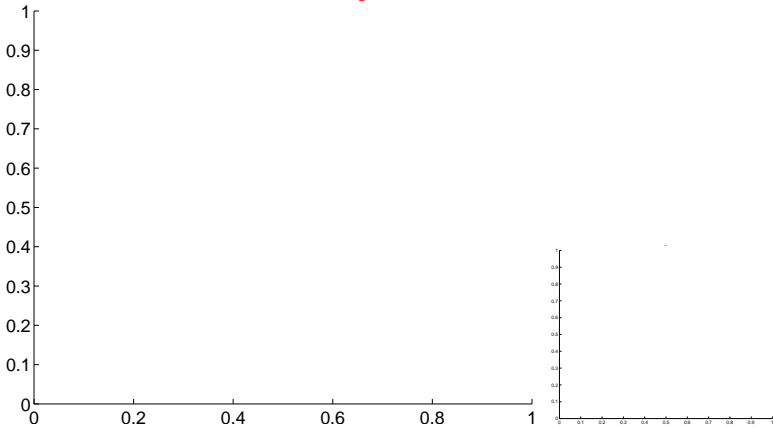


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

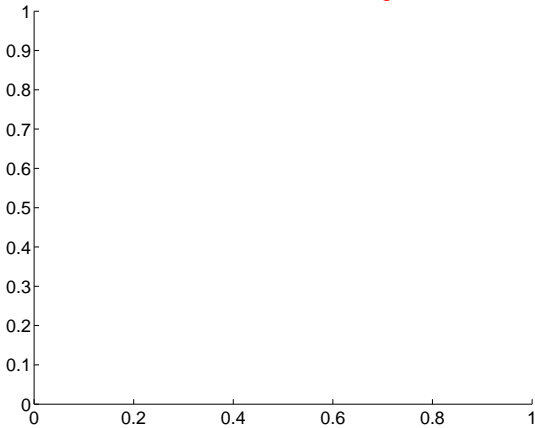
Q13 no difference image



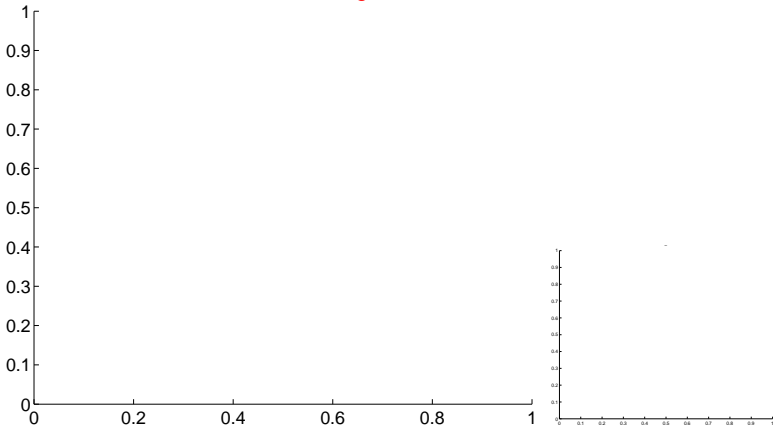
Q13 no OOT image



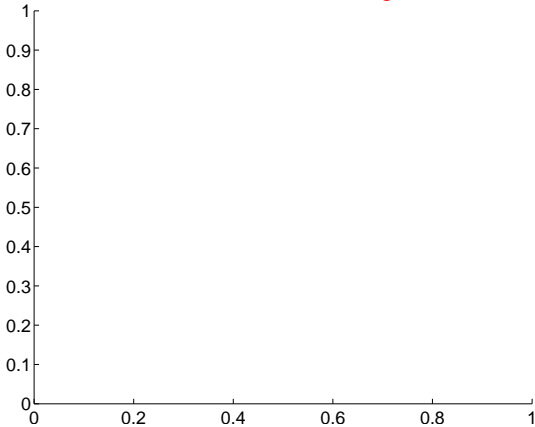
Q14 no difference image



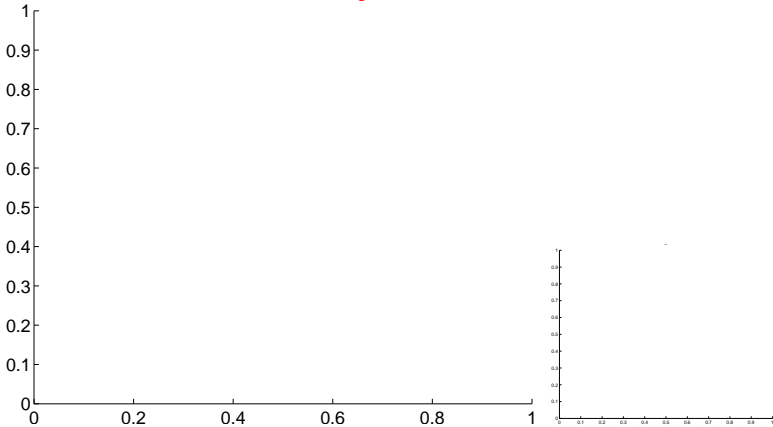
Q14 no OOT image



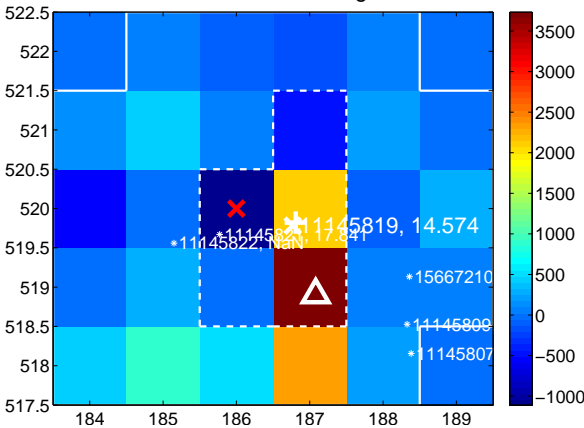
Q15 no difference image



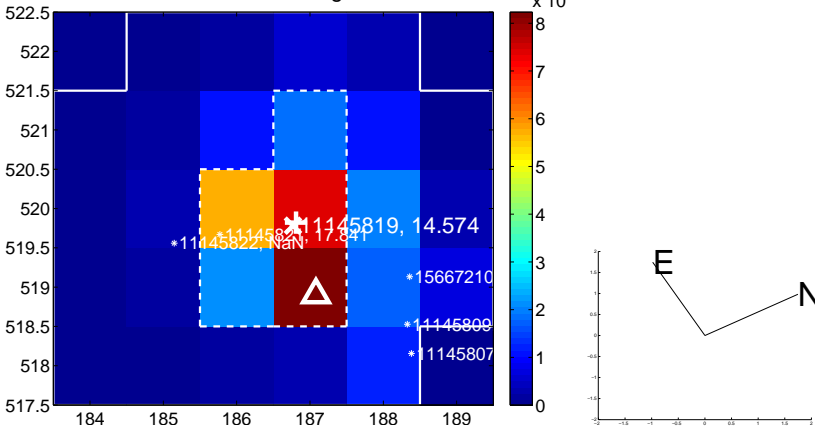
Q15 no OOT image



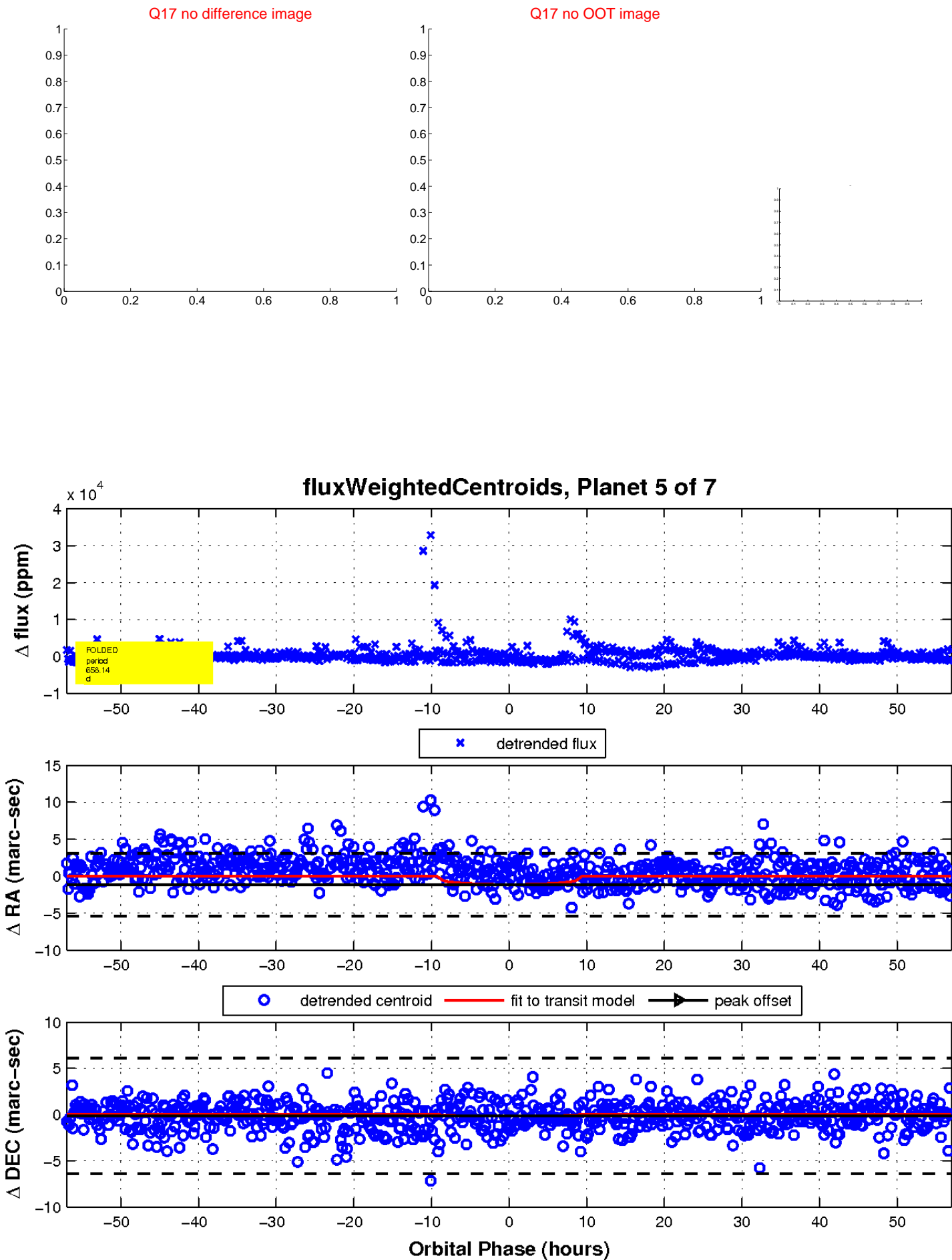
Q16 difference image



Q16 OOT image

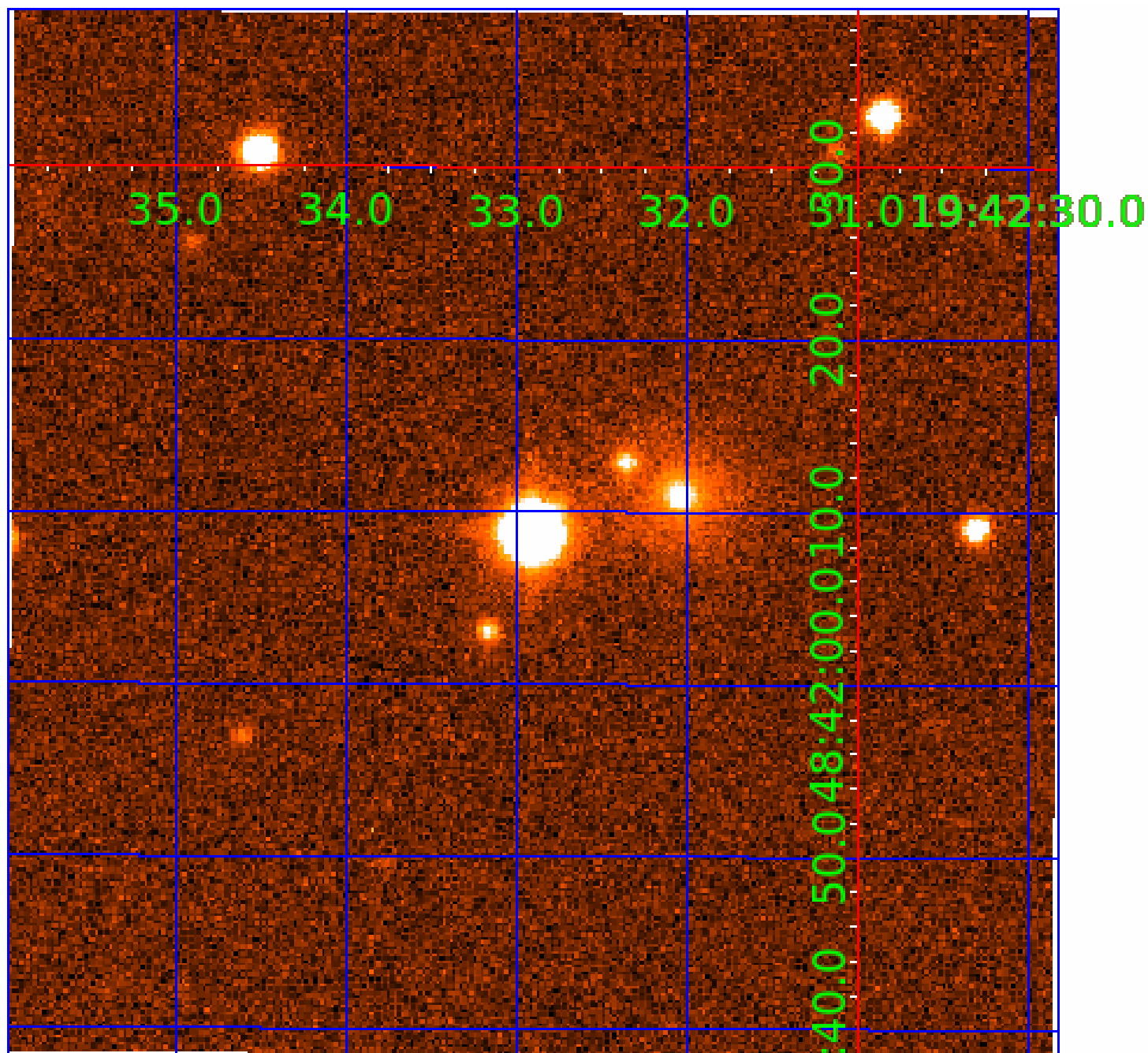


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

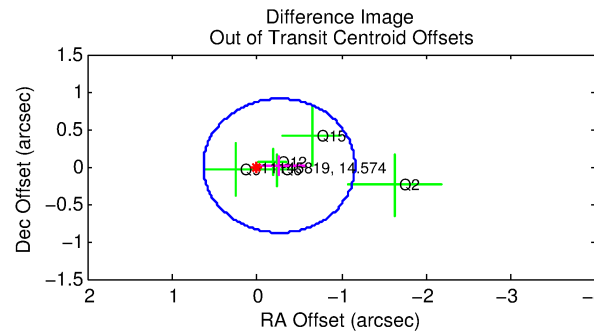
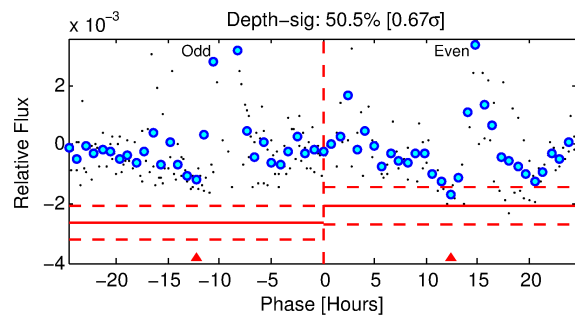
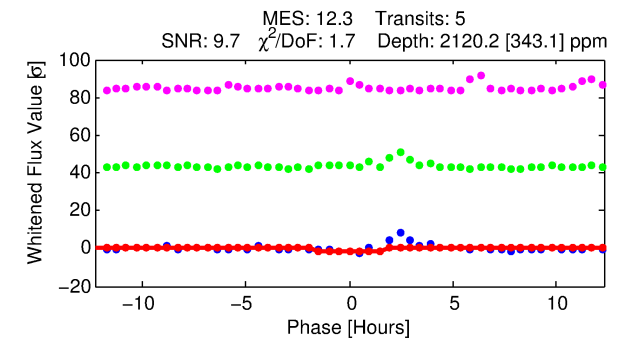
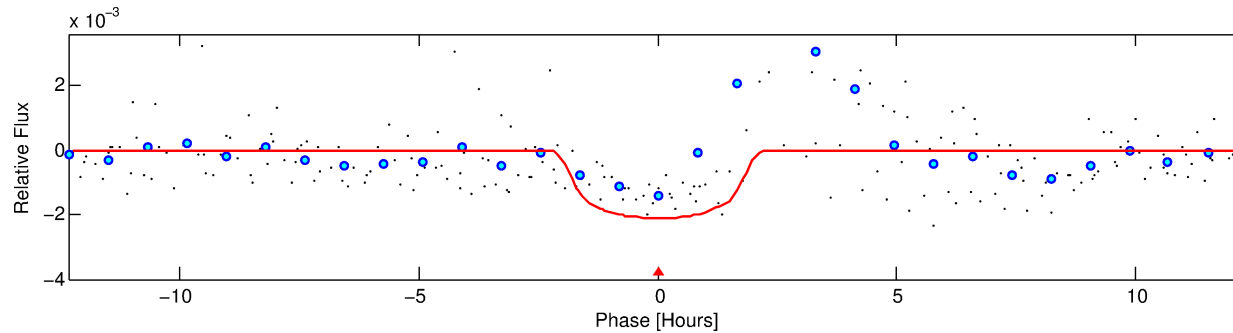
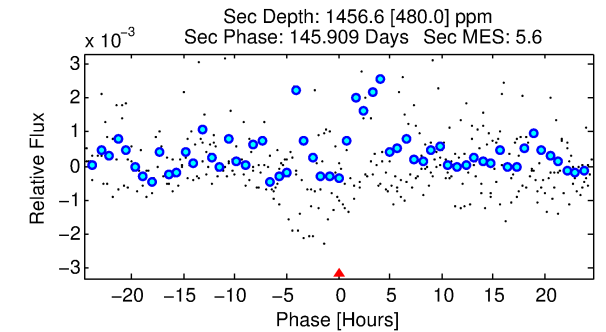
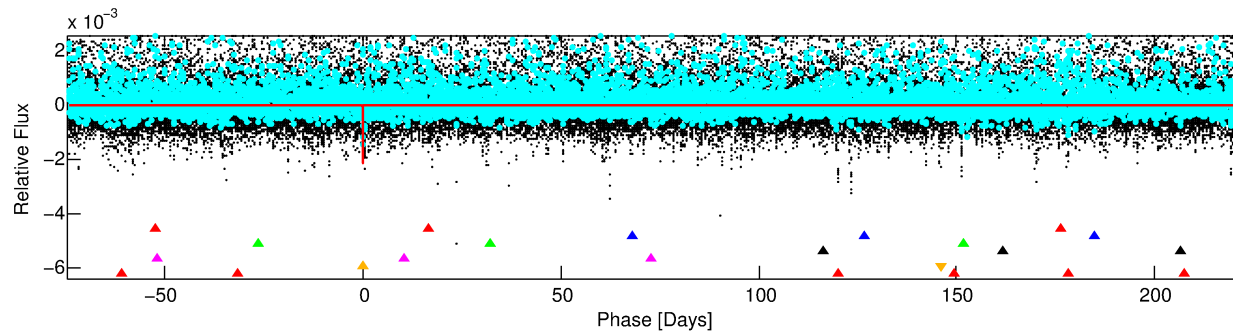
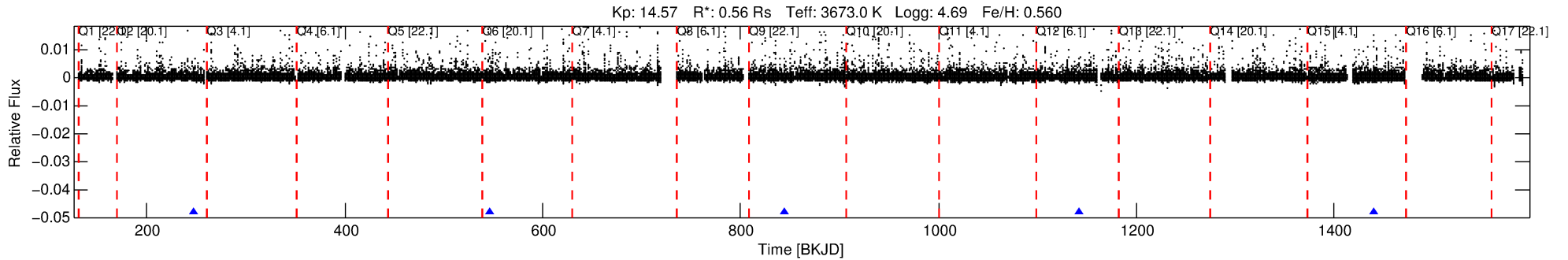
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011145819-06

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 6 of 7 Period: 297.816 d



## DV Fit Results:

Period = 297.81564 [0.00362] d  
Epoch = 248.0594 [0.0081] BKJD  
Rp/R\* = 0.0458 [0.0228]  
a/R\* = 410.32 [660.53]  
b = 0.74 [1.01]  
Seff = 0.10 [0.02]  
Teq = 143 [8] K  
Rp = 2.80 [1.45] Re  
a = 0.7202 [0.0823] AU  
Ag = 52984.61 [56091.18] [0.94σ]  
Teffp = 3352 [888] K [3.62σ]

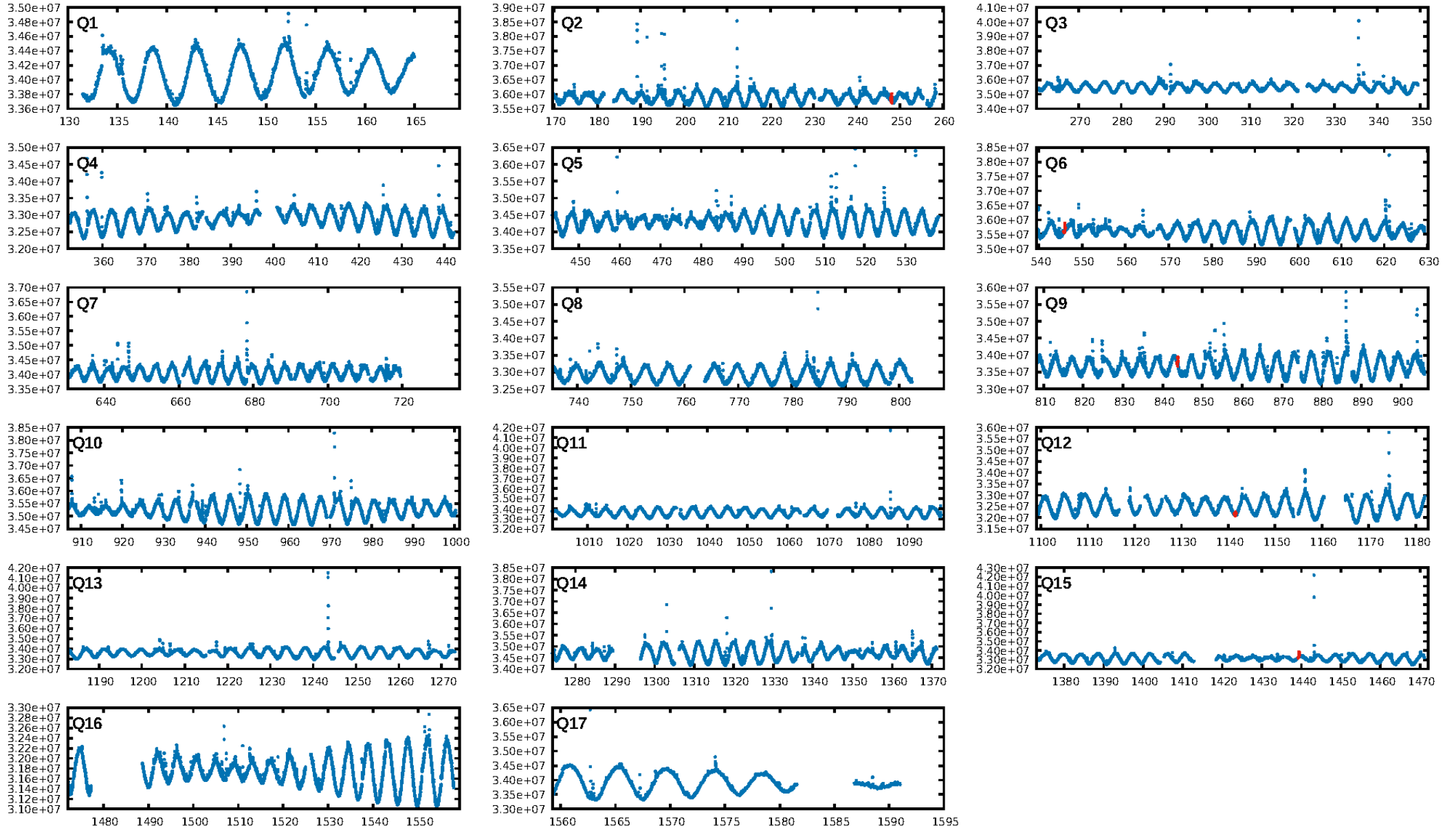
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [100.89σ]  
LongPeriod-sig: 100.0% [586.02σ]  
ModelChiSquare2-sig: 25.3%  
ModelChiSquareGof-sig: 57.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.116  
Centroid-sig: 1.1%  
Centroid-so: 0.368 arcsec [0.86σ]  
OotOffset-rm: 0.263 arcsec [0.88σ]  
OotOffset-st: 2/1/1/1 [5]  
KicOffset-rm: 0.311 arcsec [1.59σ]  
KicOffset-st: 2/1/1/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [5/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:47:01 Z

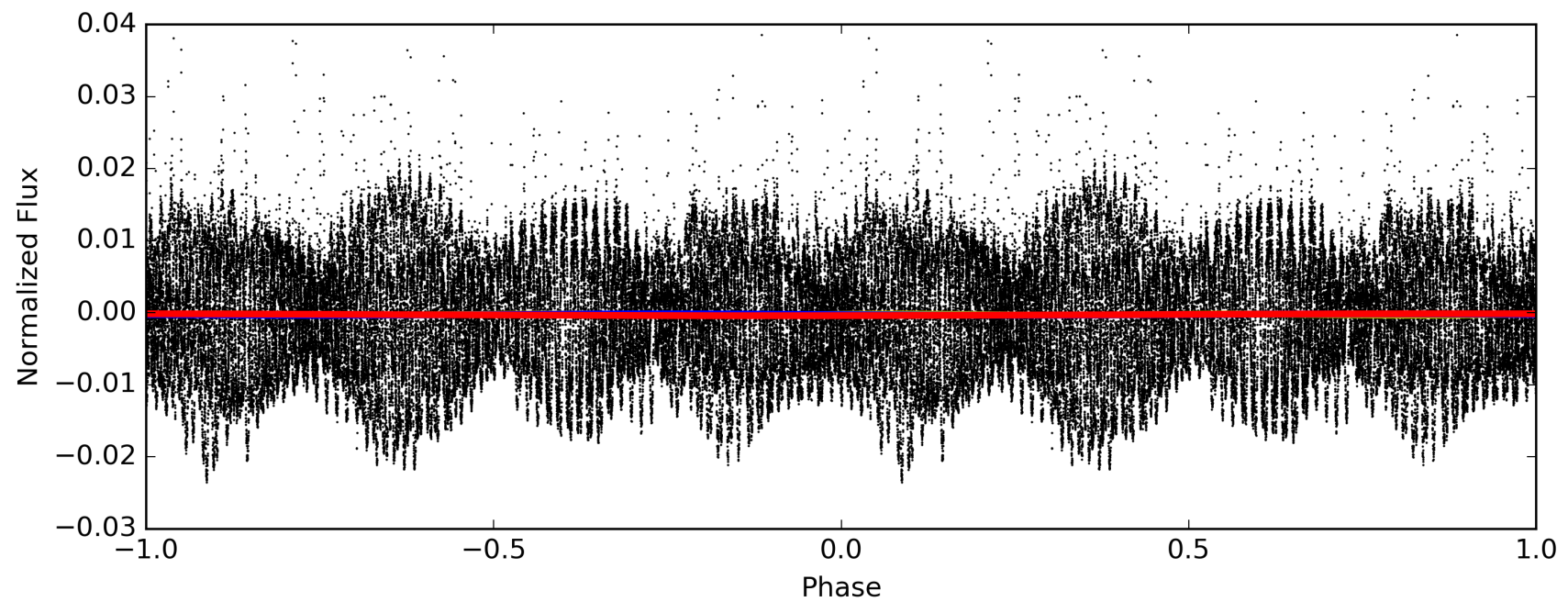
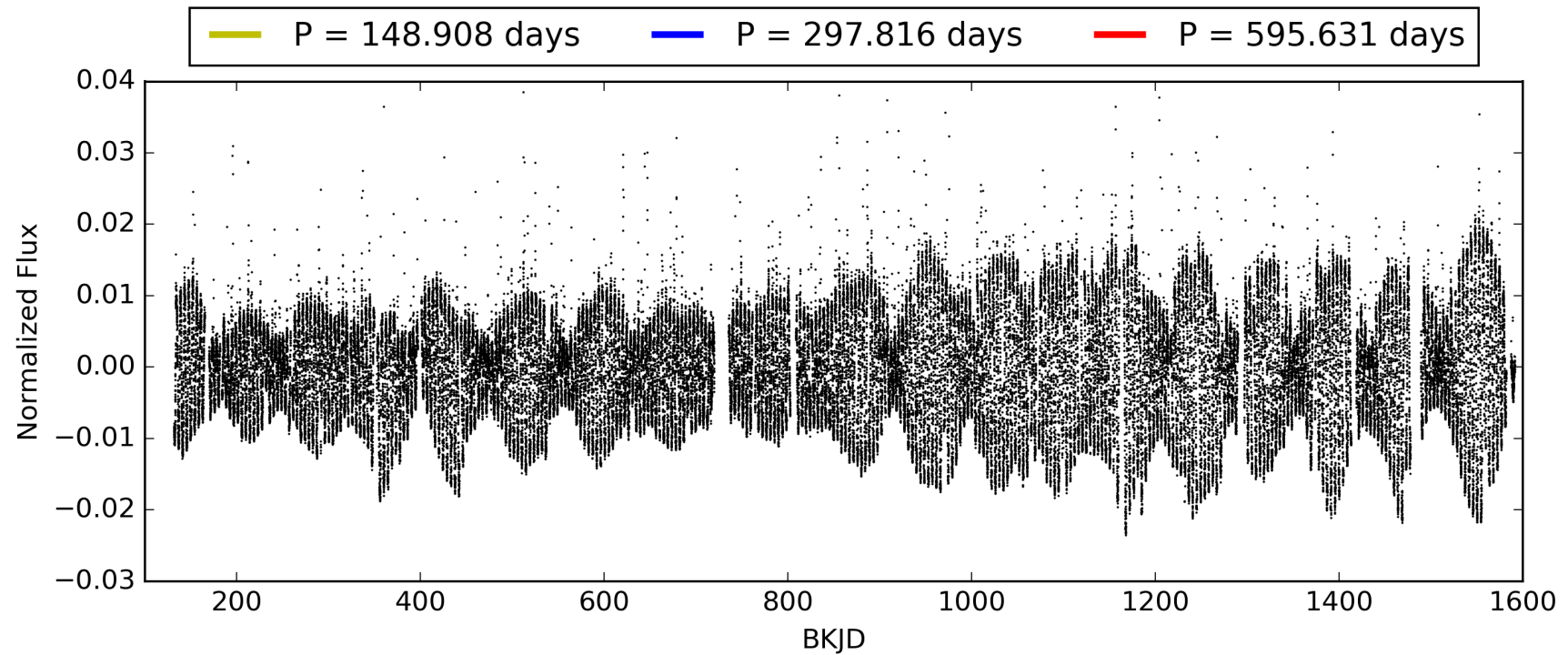
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011145819-06, PDC Light Curves





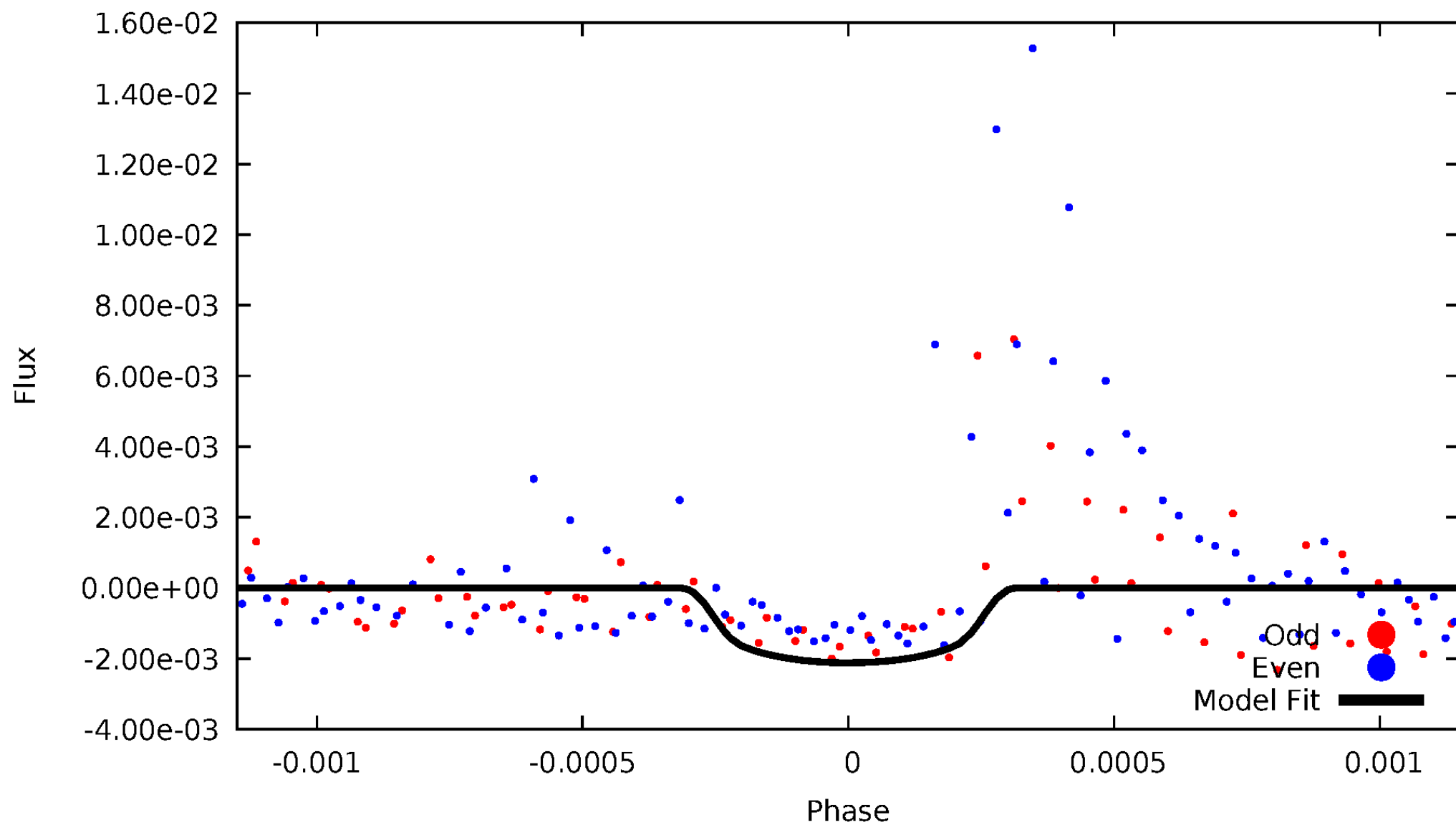
TCE 011145819-06





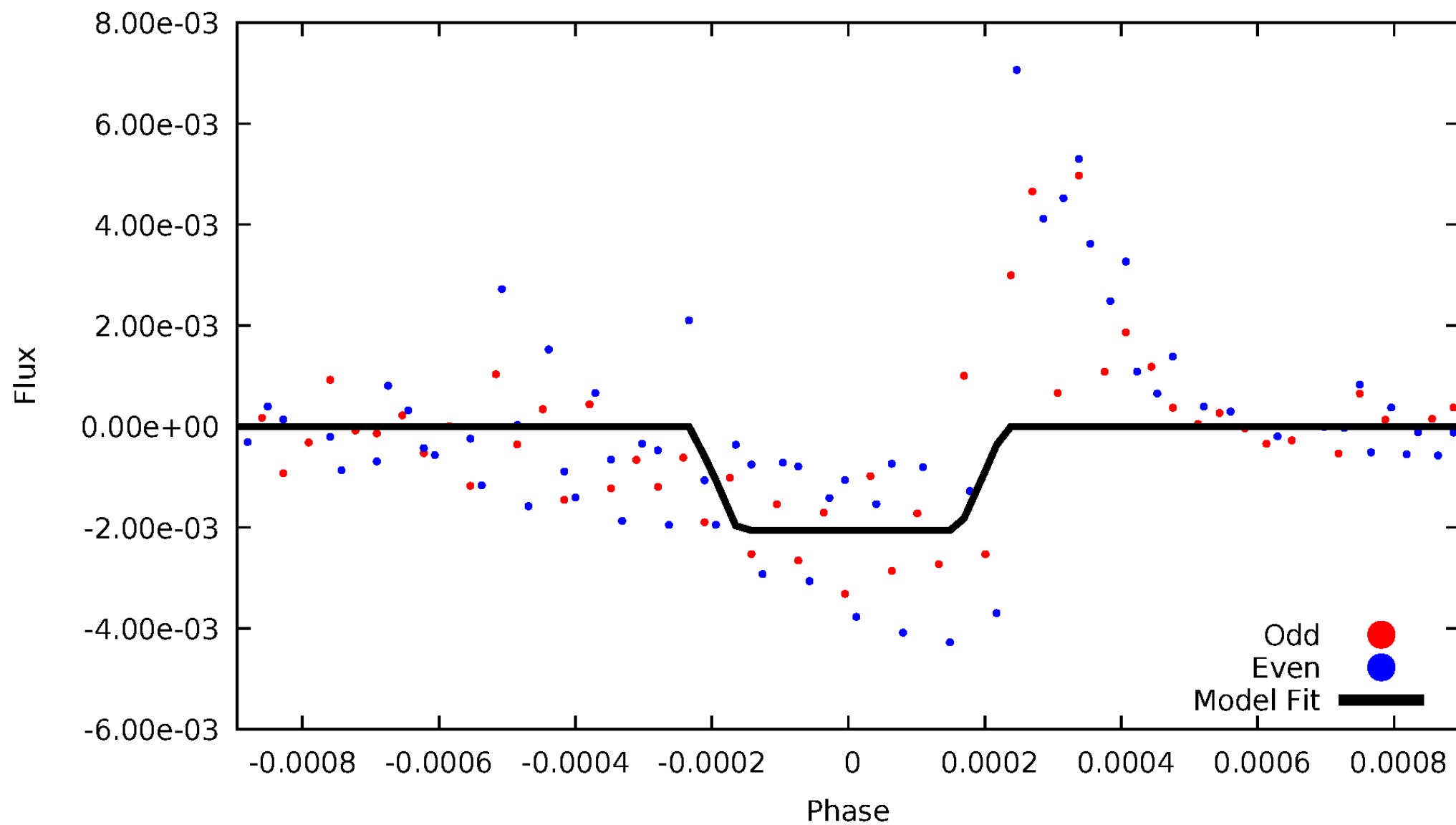
# DV Odd/Even

TCE 011145819-06



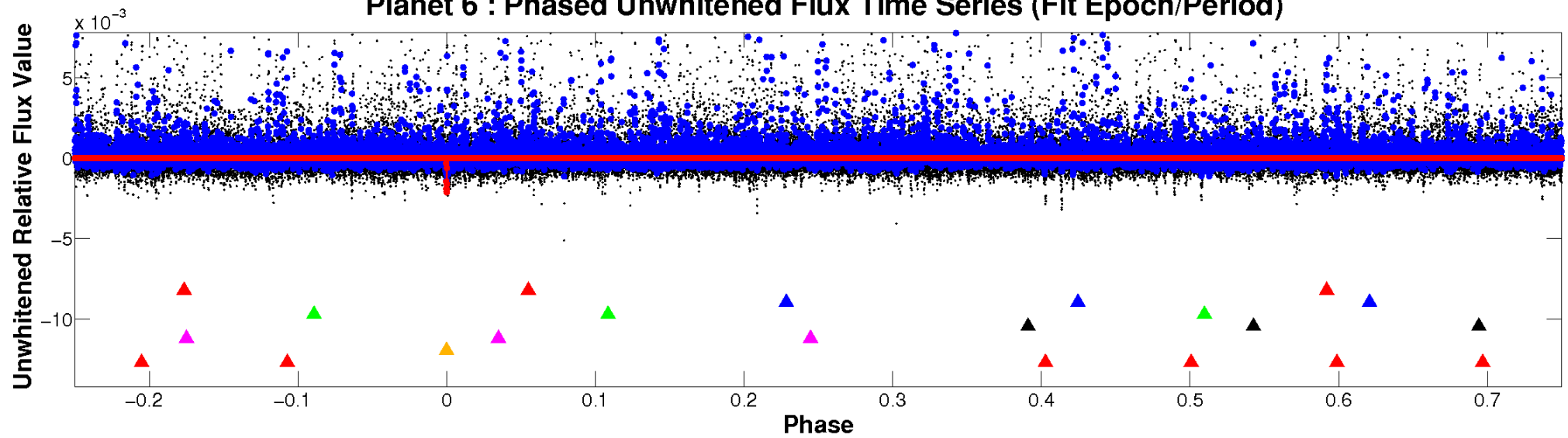
# ALT Odd/Even

TCE 011145819-06

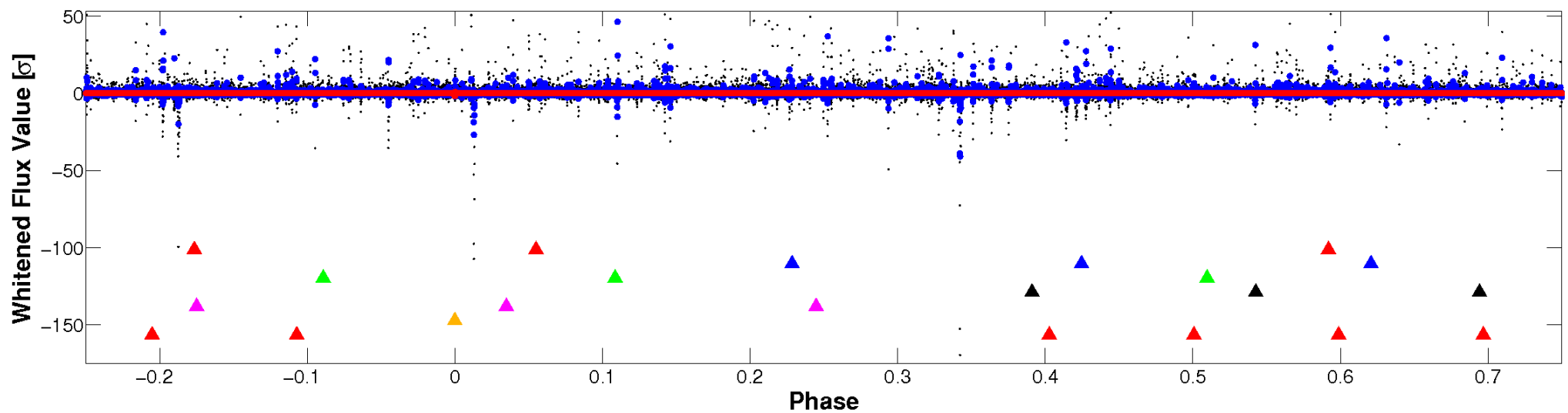


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

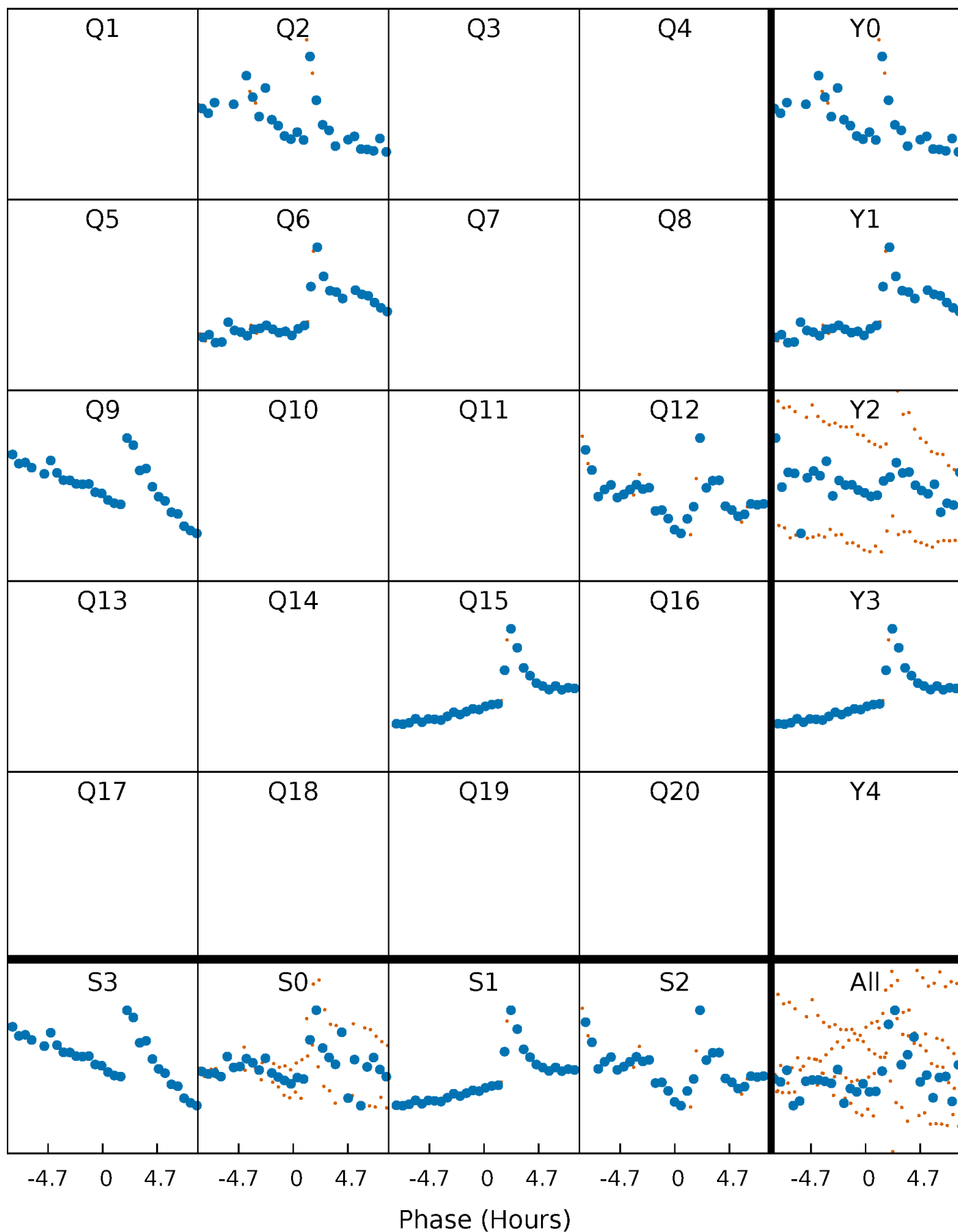


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



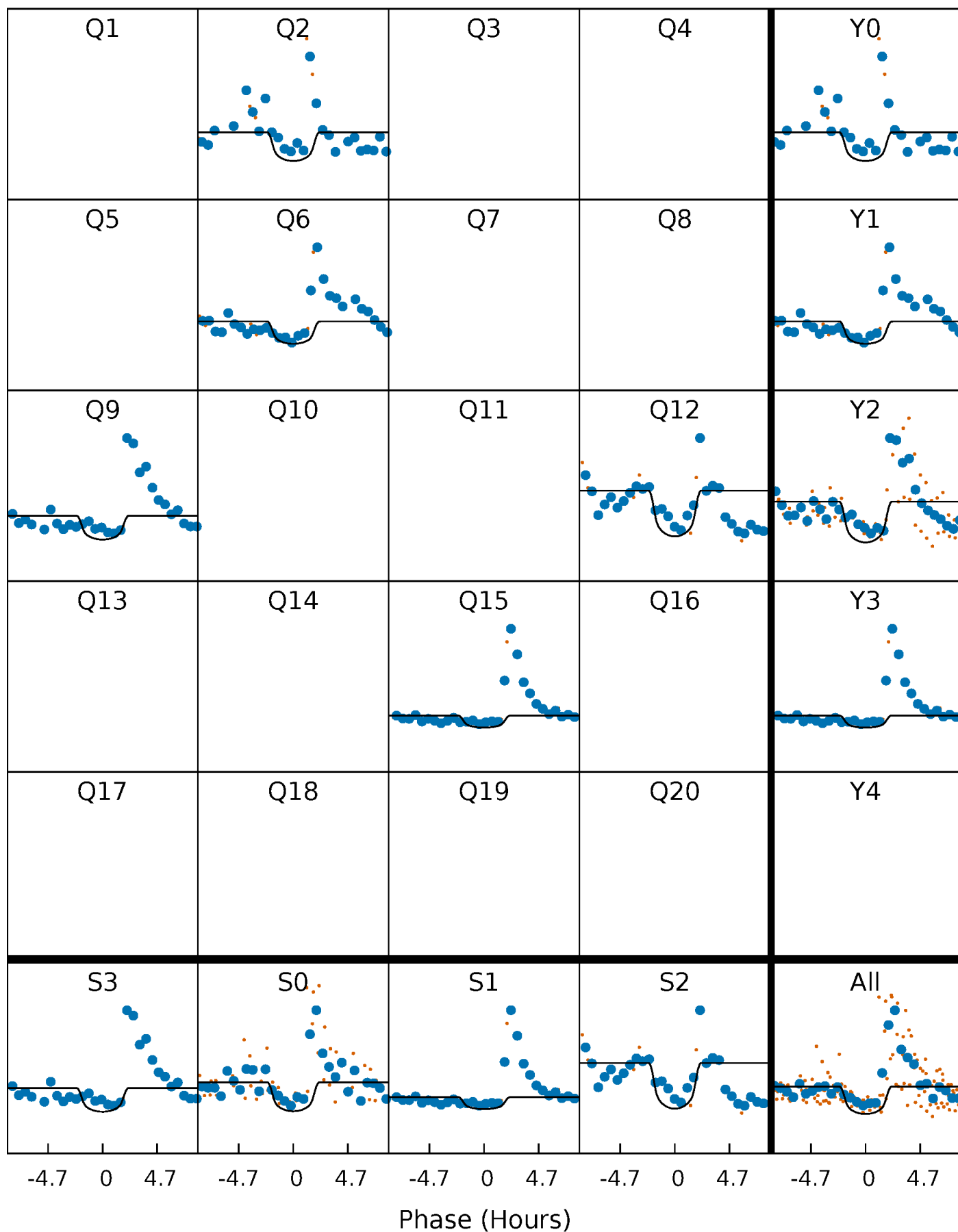
# PDC Quarter-Phased Transit Curves

TCE 011145819-06 P=297.815643 Days  $T_0=248.059412$  (BKJD)



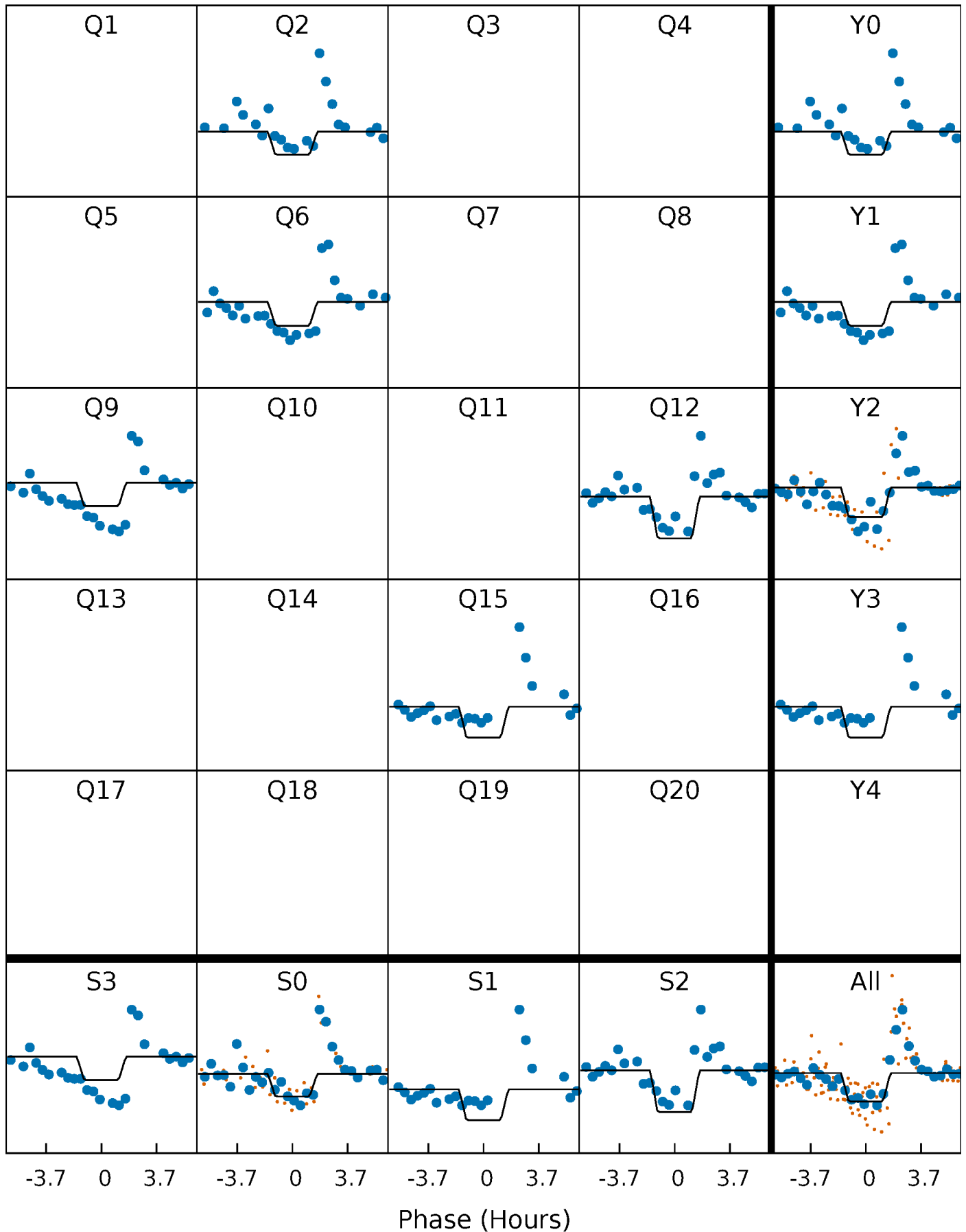
# DV Quarter-Phased Transit Curves

TCE 011145819-06 P=297.815643 Days  $T_0=248.059412$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

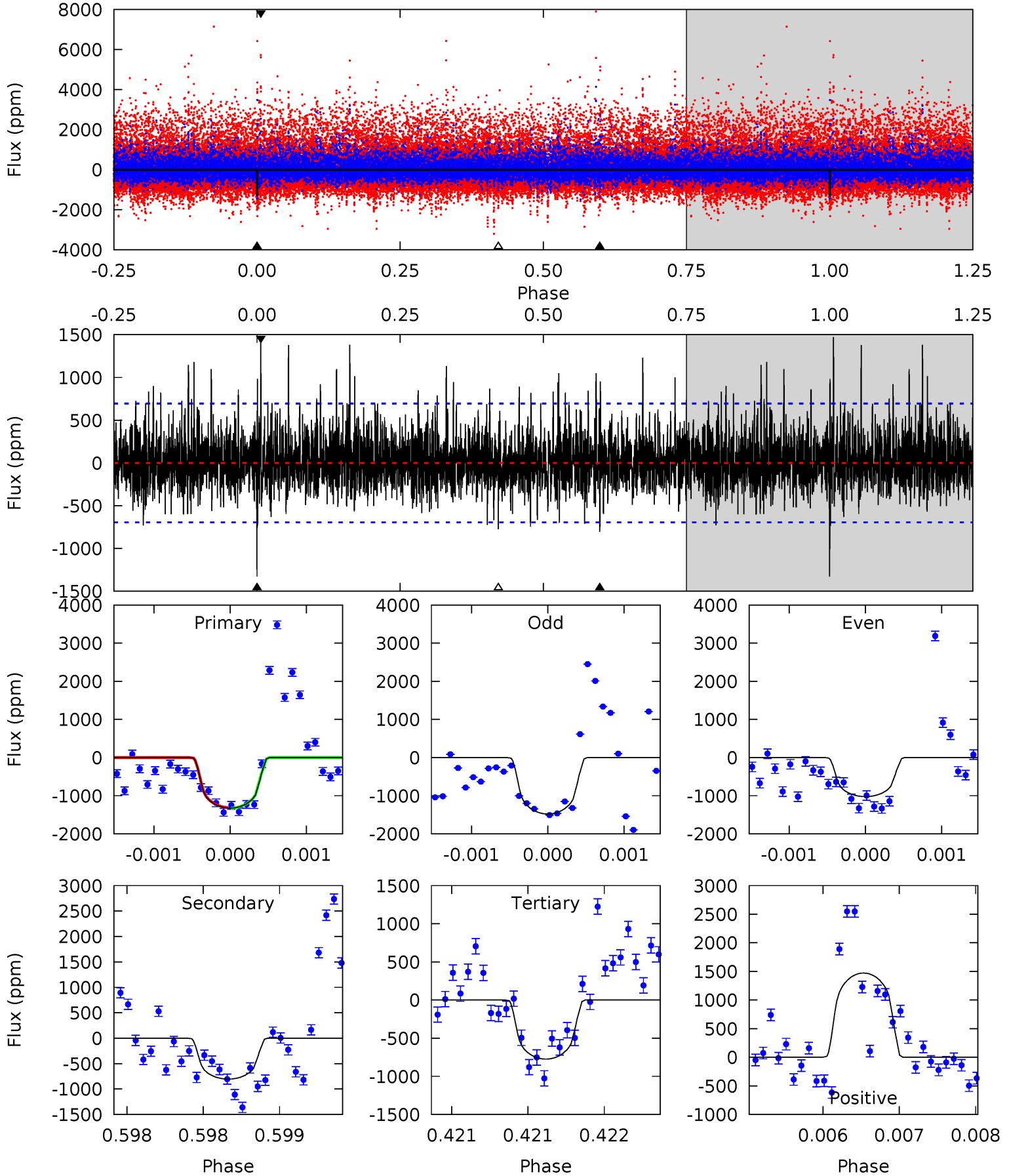
TCE 011145819-06 P=297.832759 Days  $T_0=248.034437$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-06, P = 297.815643 Days, E = 248.059412 Days

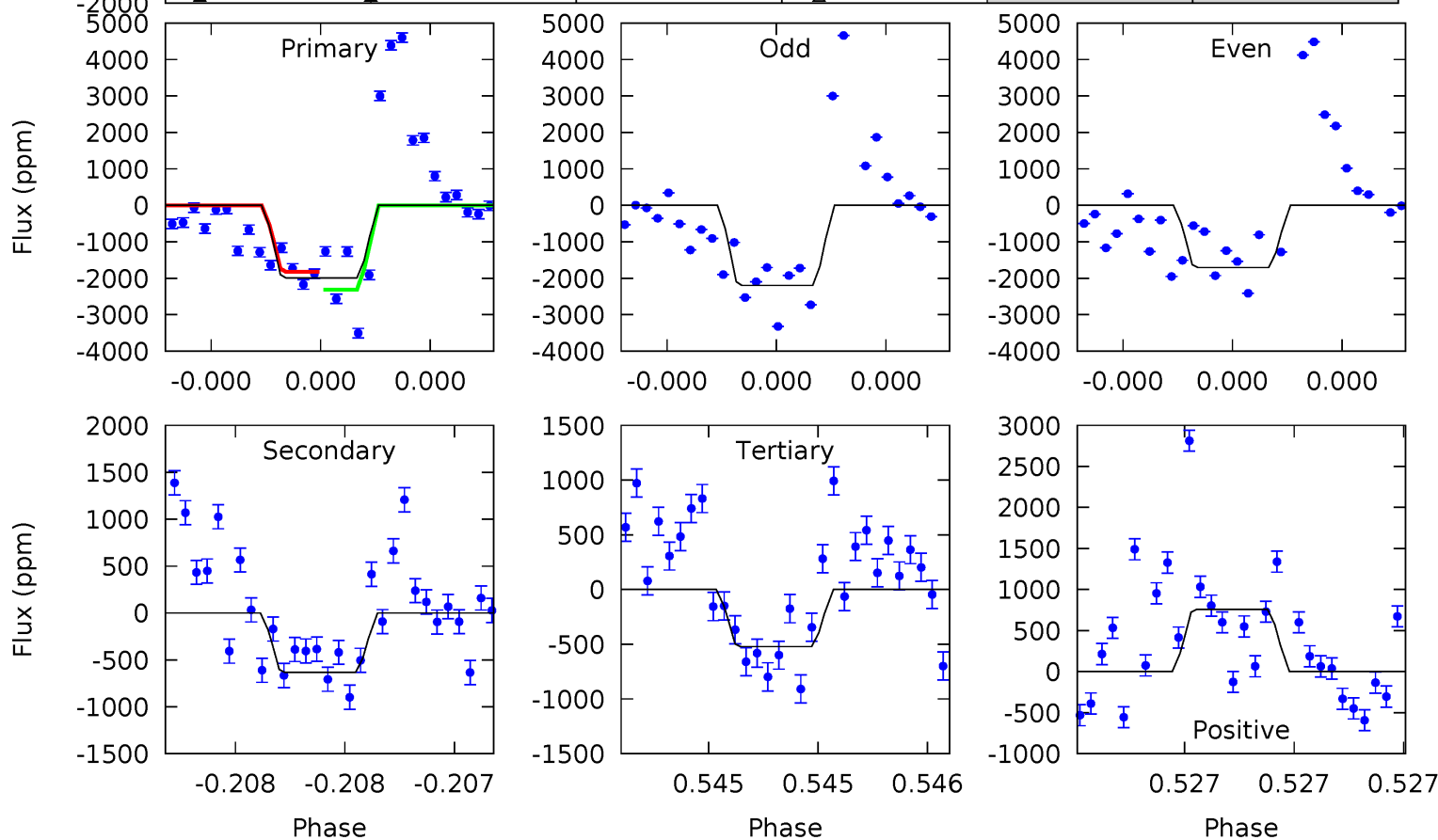
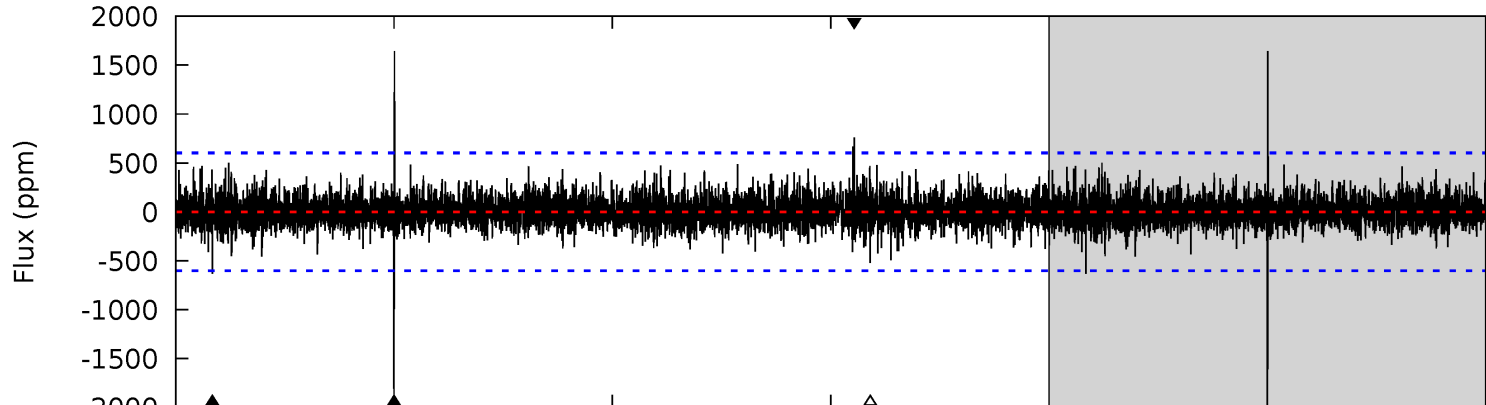
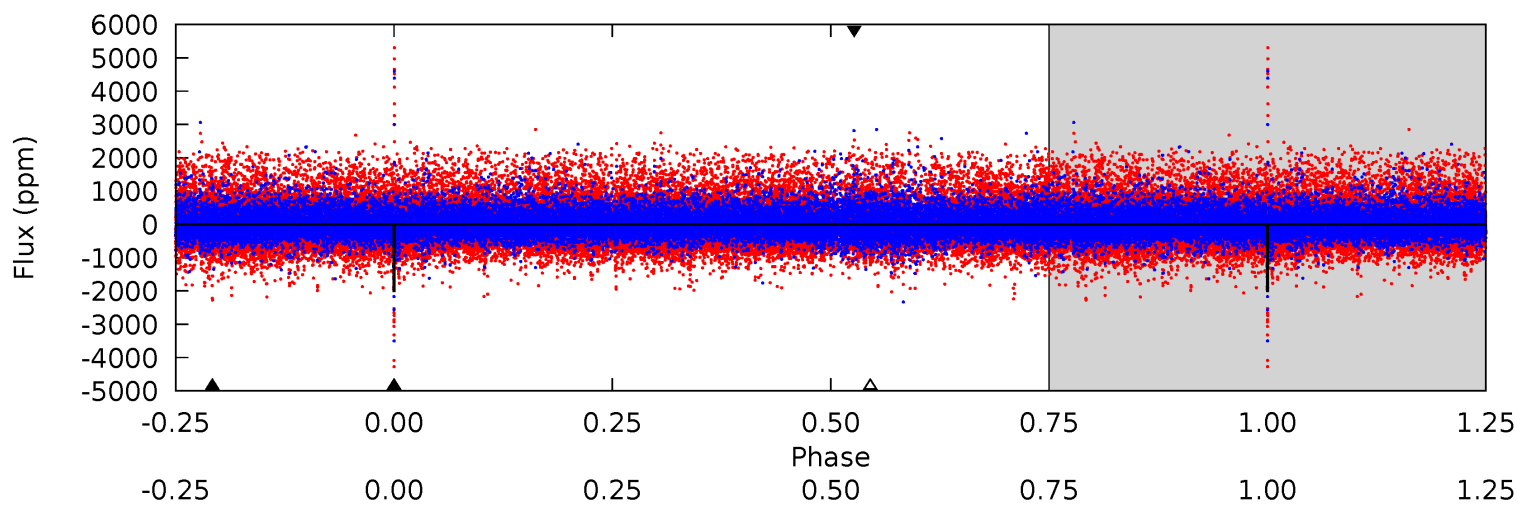
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.40	6.16	11.7	5.53	3.42	2.01	4.39	-1.17	0.24	-5.33	1.21	0.89	0.53	0.05



# Alt Model-Shift Uniqueness Test

011145819-06, P = 297.832759 Days, E = 248.034437 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
18.5	5.86	4.84	7.04	5.59	3.51	1.16	13.6	11.4	1.02	-1.18	2.02	1.81	0.45	2.29





### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-804 \pm 126$	$2.73^{+1.35}_{-1.33}$	$197^{+7}_{-9}$	$3167^{+765}_{-358}$	$31666^{+86359}_{-18148}$
Alt.	$-632 \pm 108$	$2.74^{+1.30}_{-1.33}$	$197^{+8}_{-9}$	$3046^{+702}_{-323}$	$24189^{+71165}_{-13294}$

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

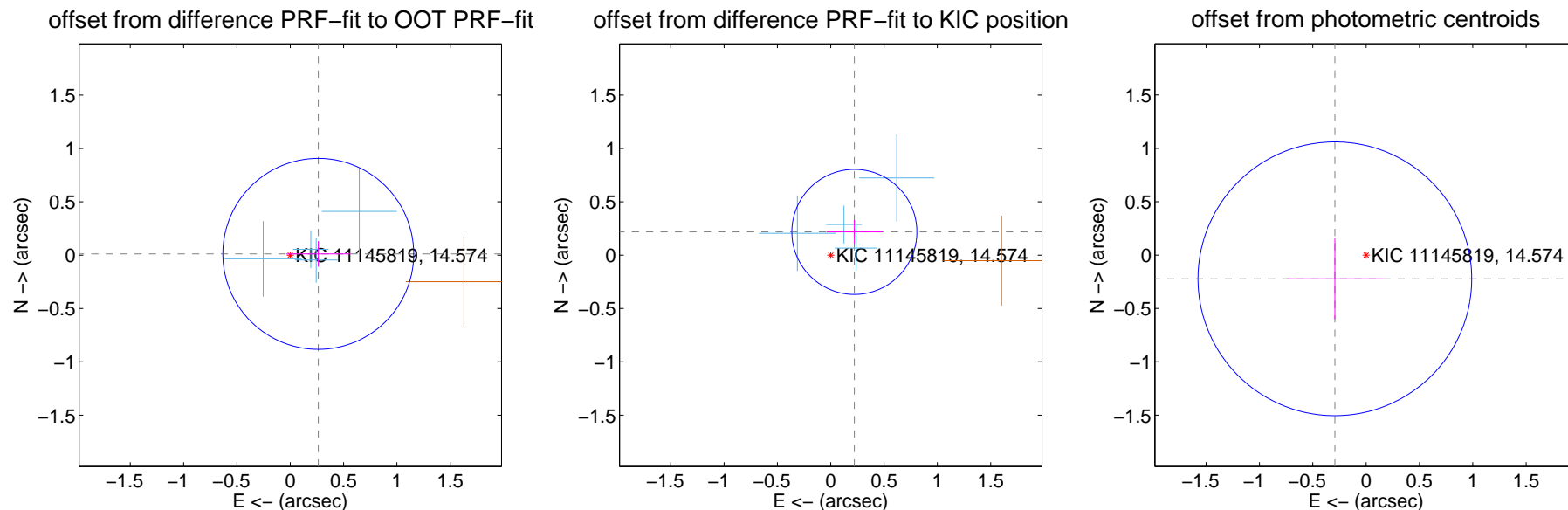
## DV Centroid Data

Supplemental centroid analysis for 011145819-06. Kepler magnitude: 14.57. Transit SNR 9.73

There are 4 quarters with good PRF difference image offsets

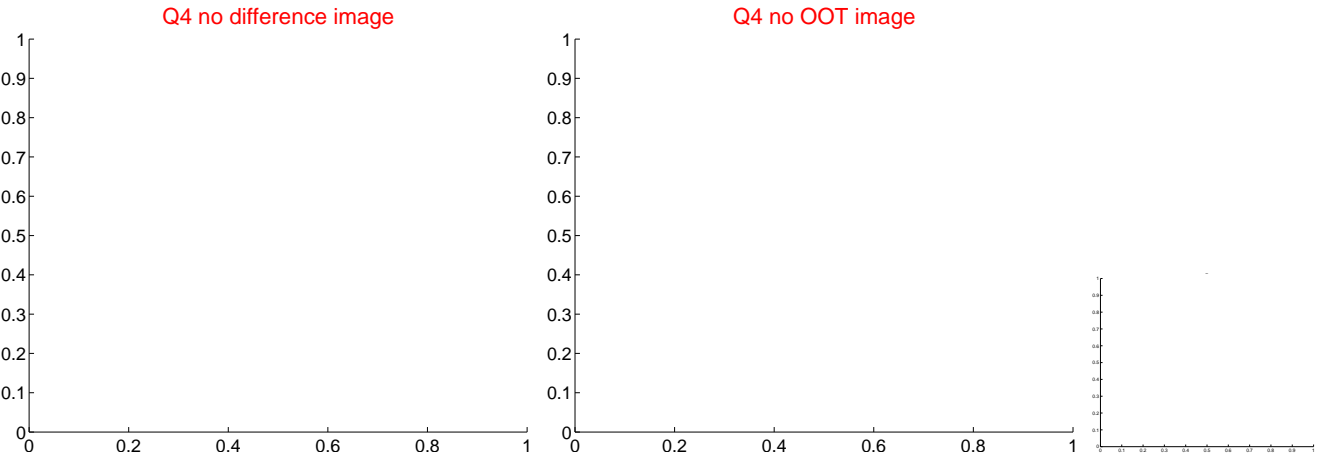
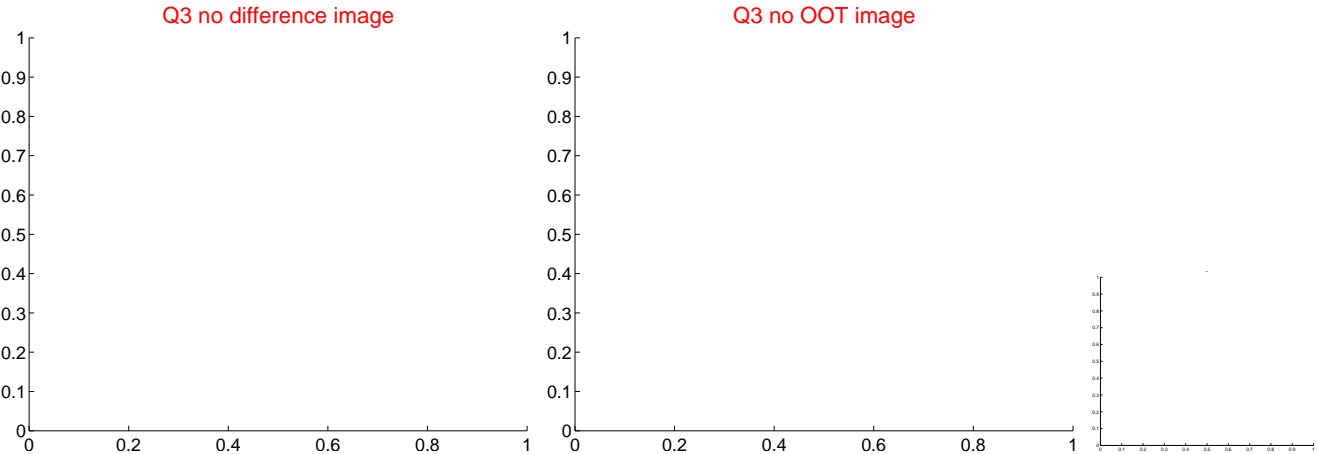
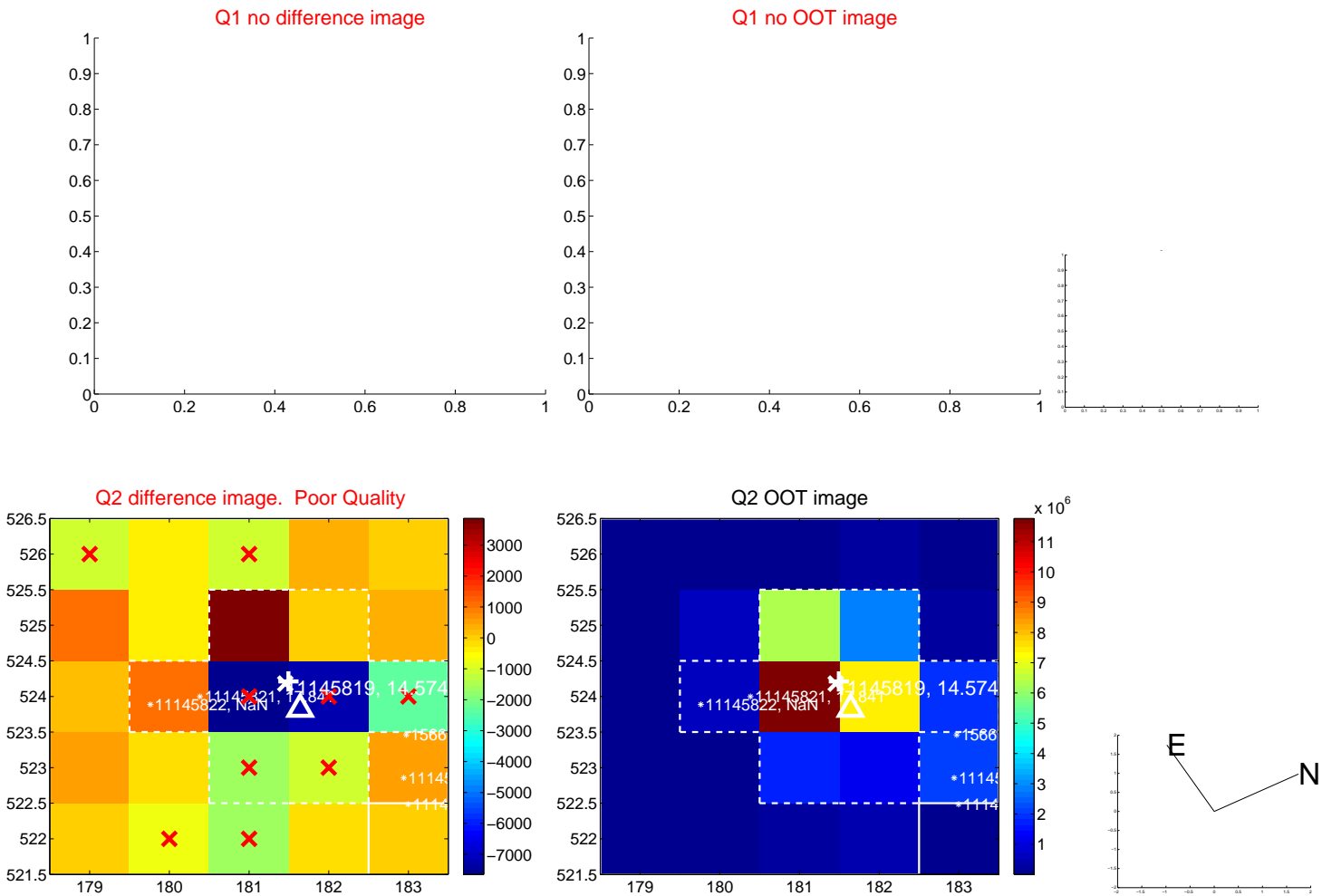
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.263 \pm 0.298$	0.88	$-0.263 \pm 0.299$	$0.012 \pm 0.121$
PRF-fit source offset from KIC position	$0.311 \pm 0.195$	1.59	$-0.222 \pm 0.261$	$0.218 \pm 0.111$
photometric centroid source offset	$0.37 \pm 0.43$	0.86	$0.29 \pm 0.45$	$-0.22 \pm 0.38$



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.

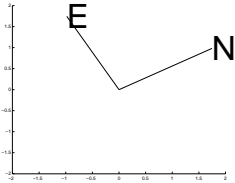
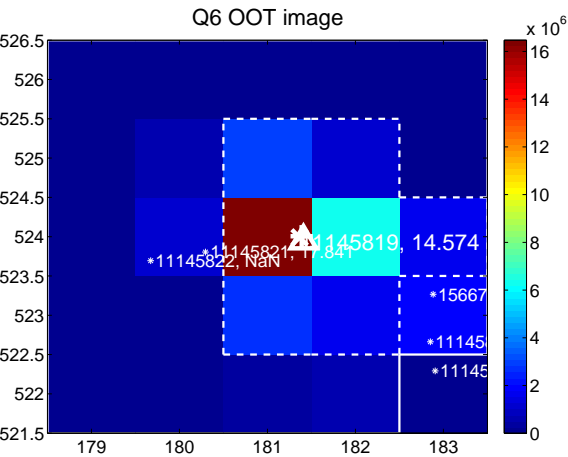
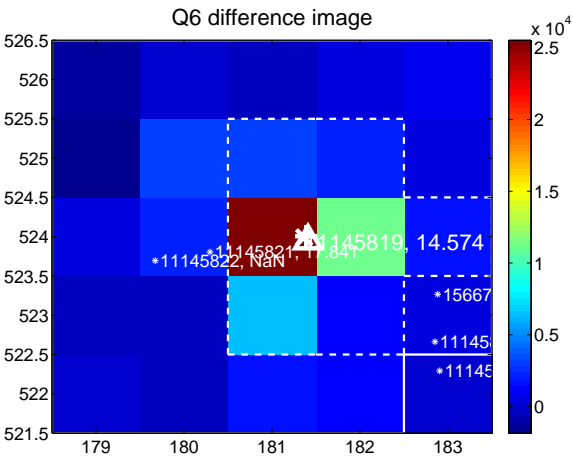
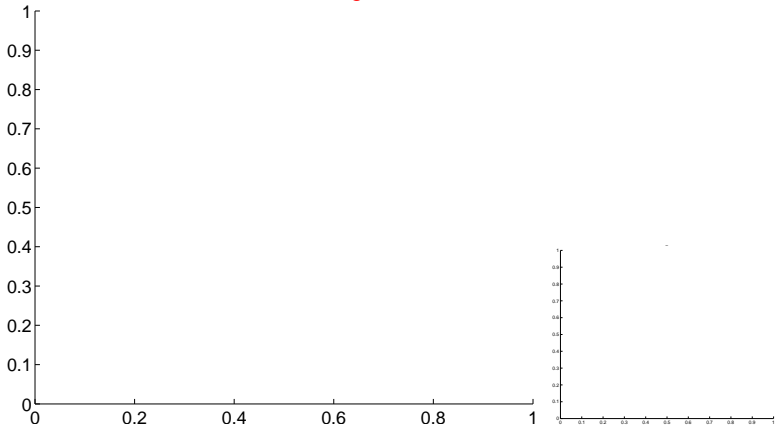


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

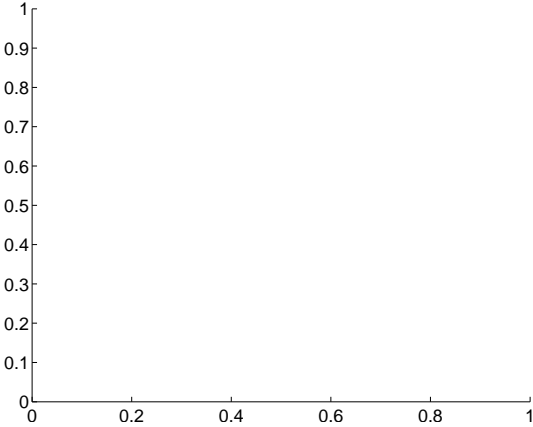
Q5 no difference image



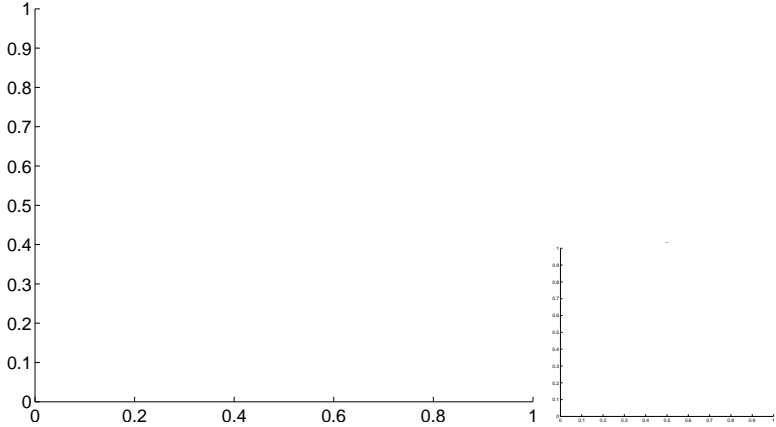
Q5 no OOT image



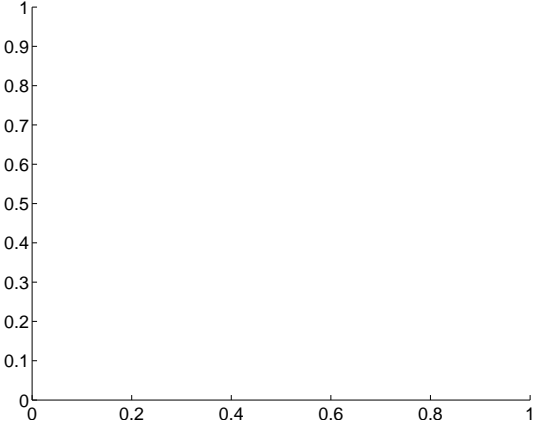
Q7 no difference image



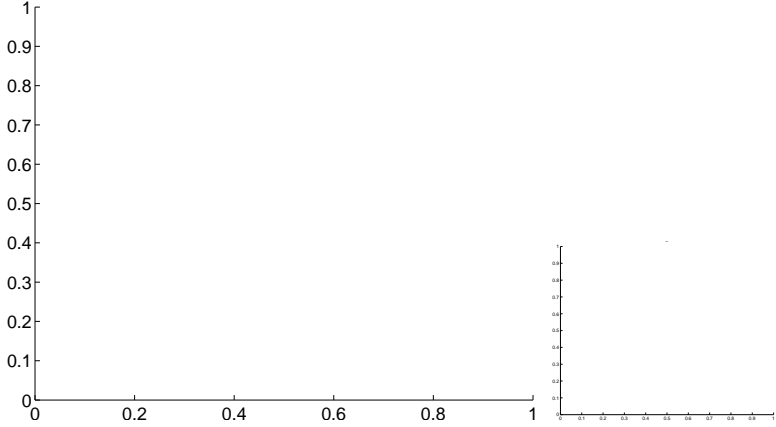
Q7 no OOT image



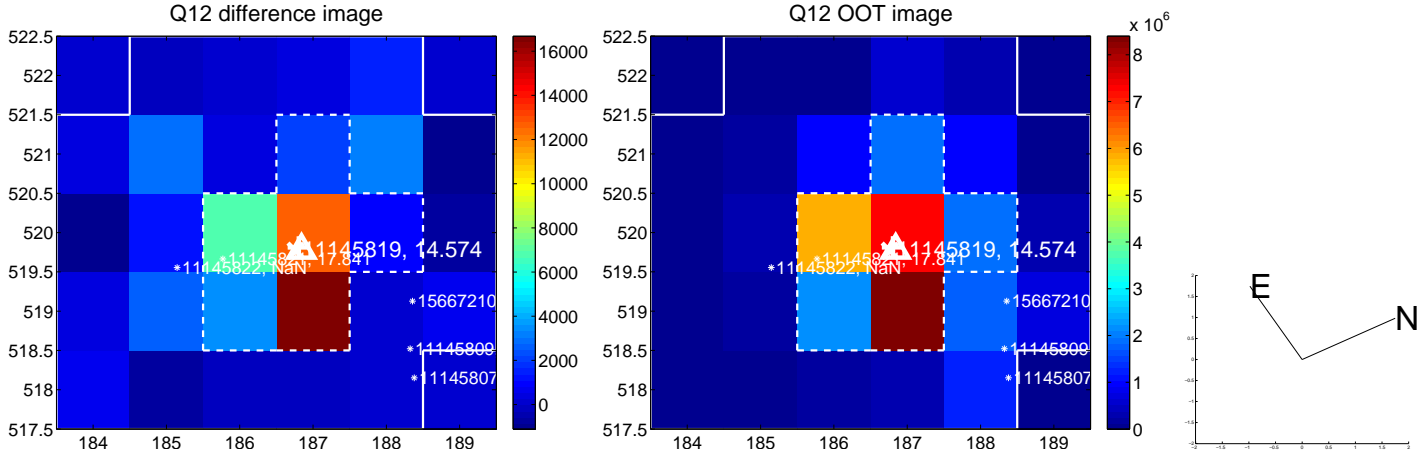
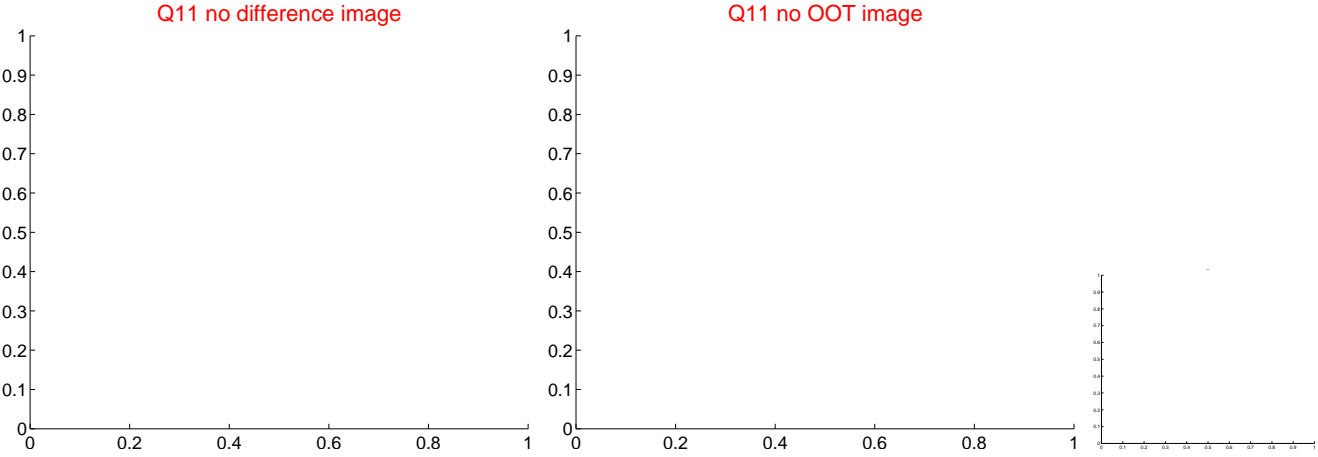
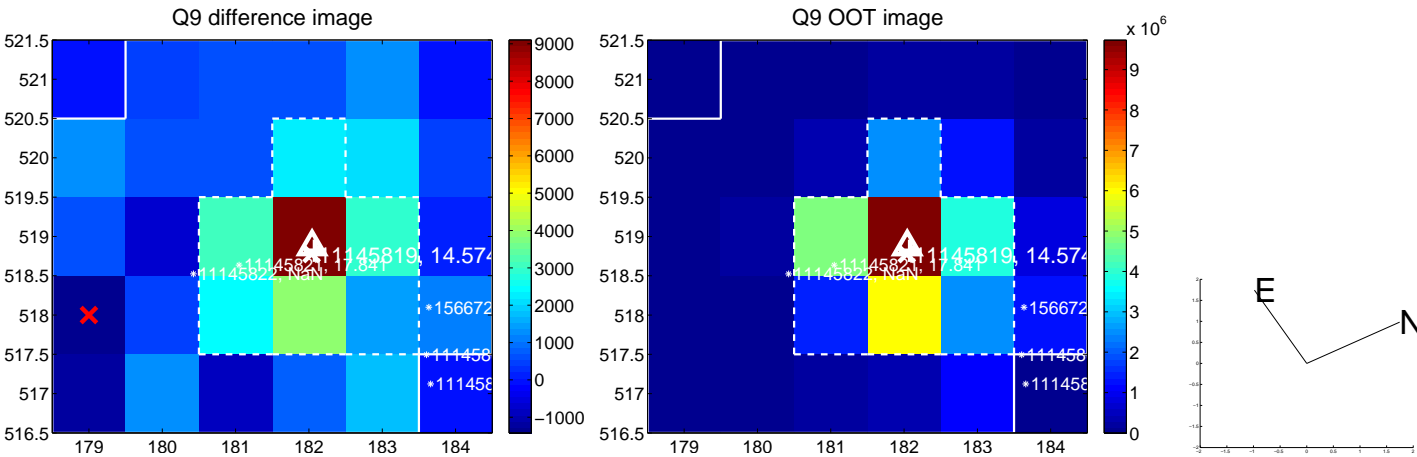
Q8 no difference image



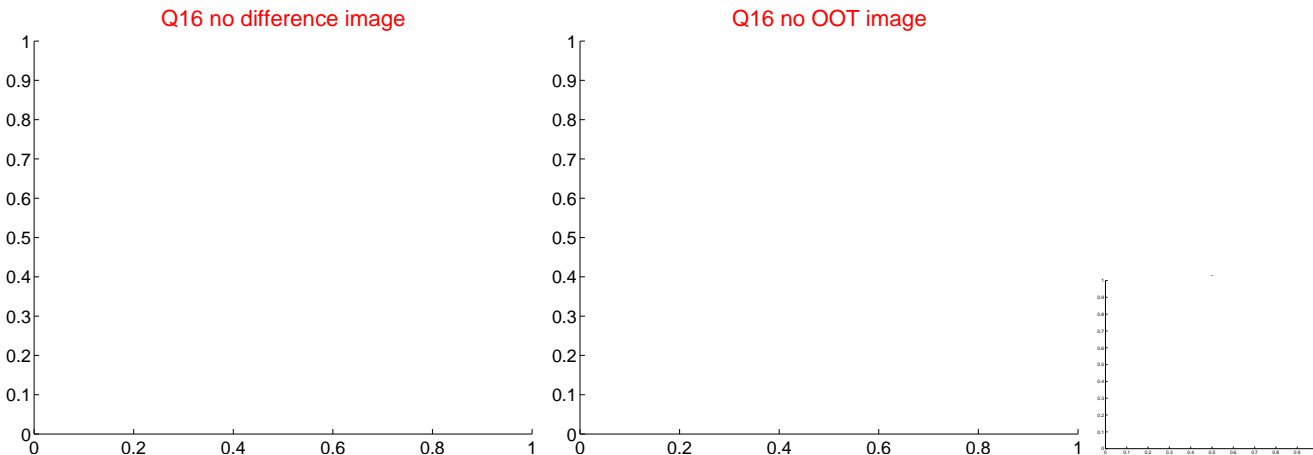
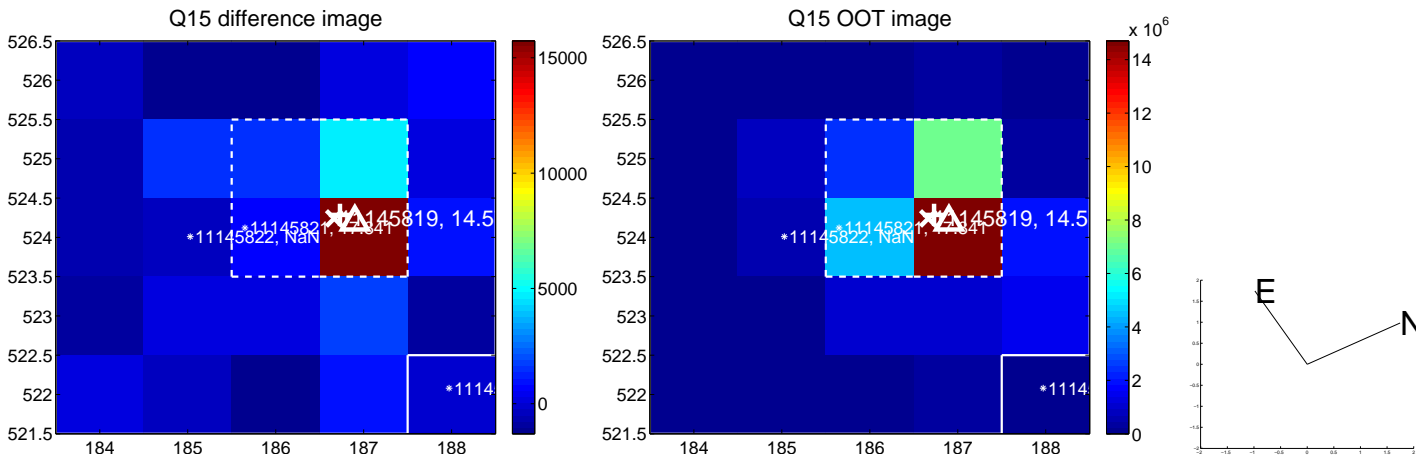
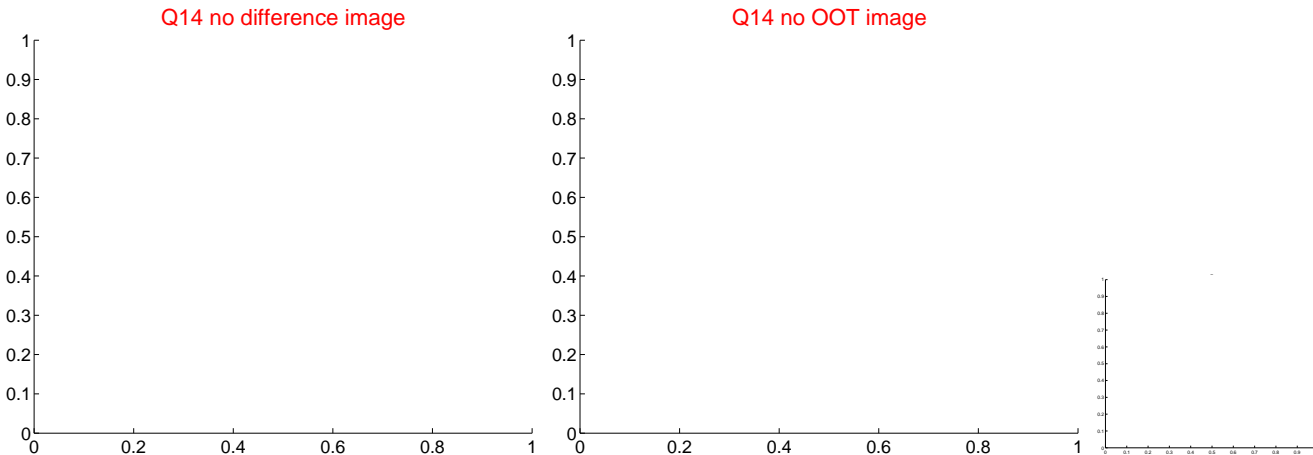
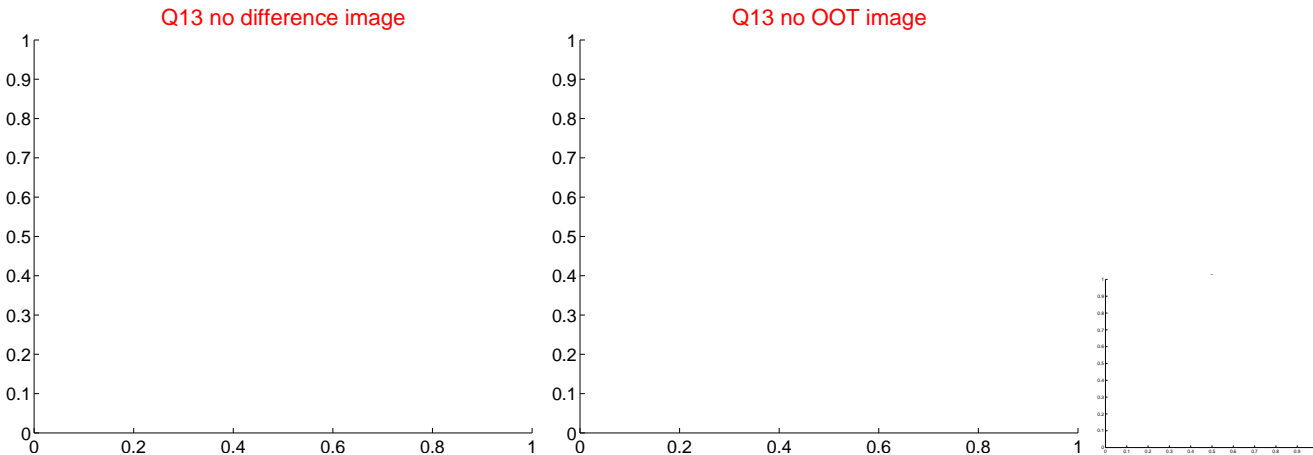
Q8 no OOT image



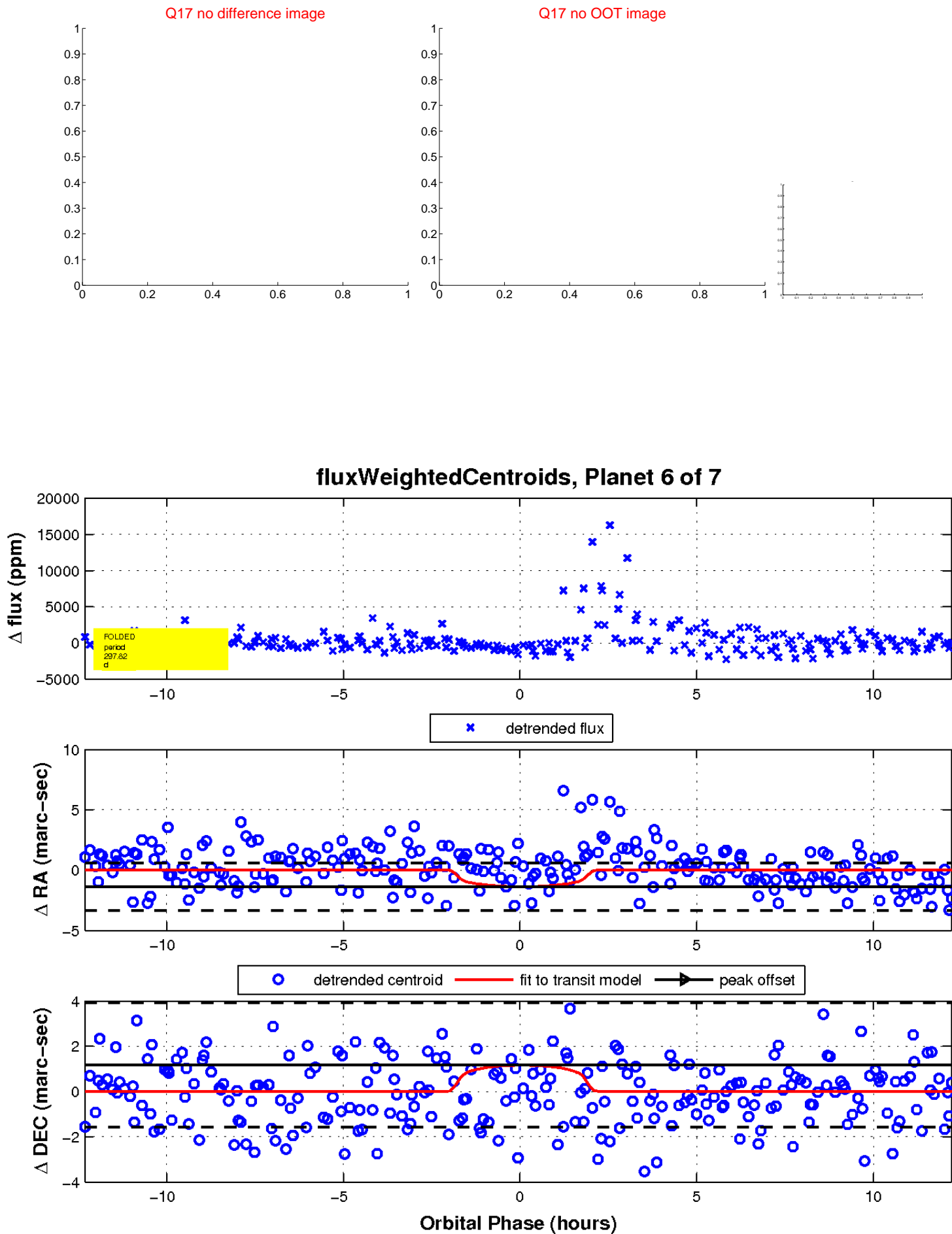
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

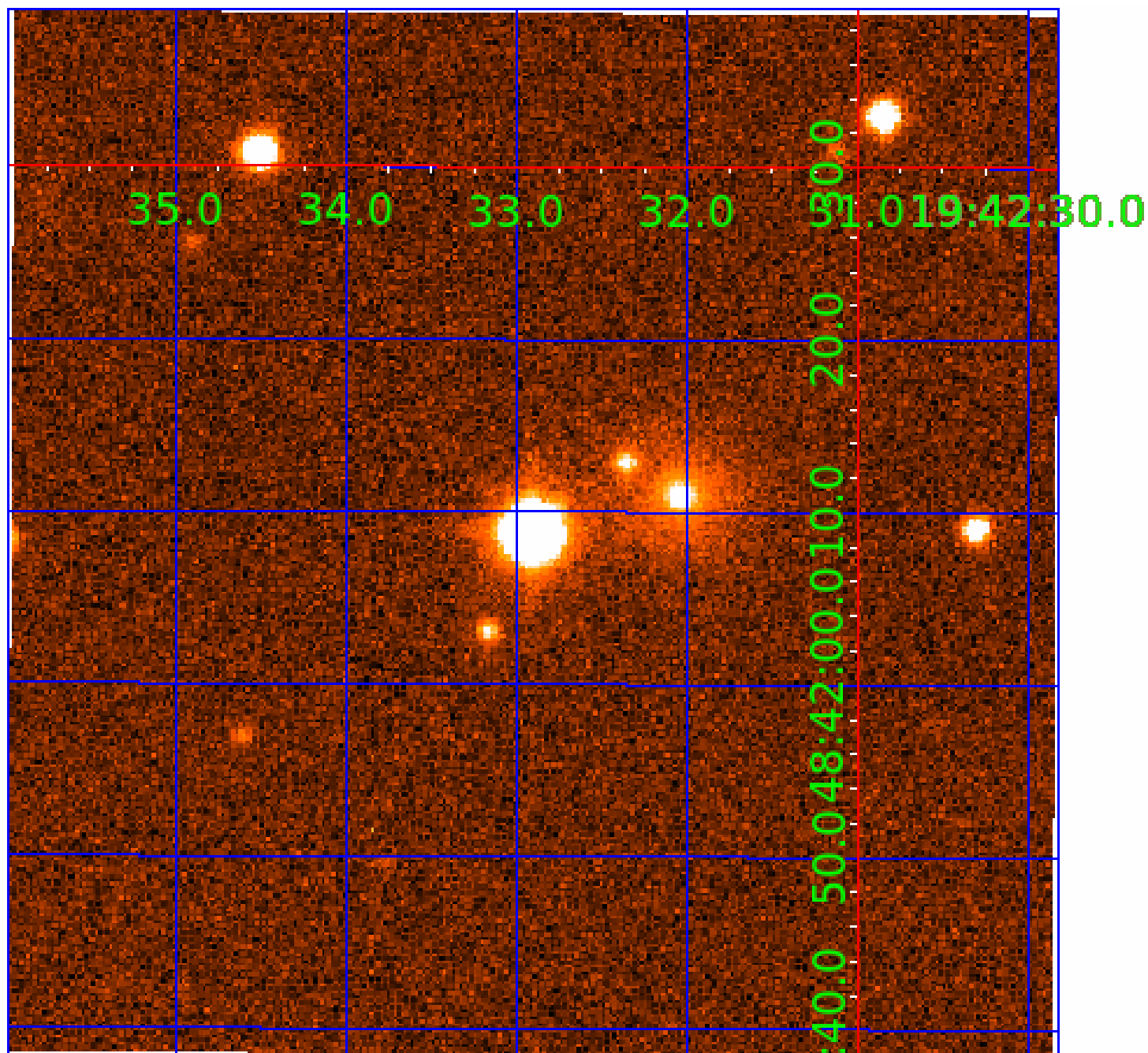


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011145819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011145819-01	OBS	No	526.676036	264.446480	2371.9	3.885	13.4	8.4	0.56	3673	2.70	0.05
011145819-02	OBS	No	537.222825	135.113512	1910.3	12.126	14.8	7.3	0.56	3673	2.84	0.04
011145819-03	OBS	No	476.174783	221.503727	1742.4	6.039	12.0	6.9	0.56	3673	2.48	0.05
011145819-04	OBS	No	550.484270	454.823603	2047.5	8.235	15.4	7.9	0.56	3673	2.43	0.04
011145819-05	OBS	No	658.135815	195.954975	2668.8	19.003	13.8	10.6	0.56	3673	2.81	0.03
011145819-06	OBS	No	297.815643	248.059412	2120.2	4.109	12.3	9.7	0.56	3673	2.80	0.10
011145819-07	OBS	No	268.624203	216.155869	1452.5	5.598	13.5	7.0	0.56	3673	2.17	0.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011145819-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011145819-02	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
011145819-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
011145819-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011145819-05	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
011145819-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV
011145819-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—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.

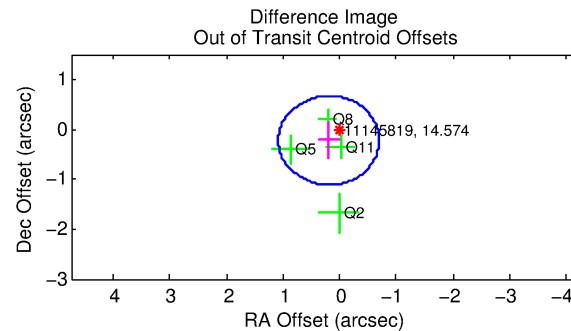
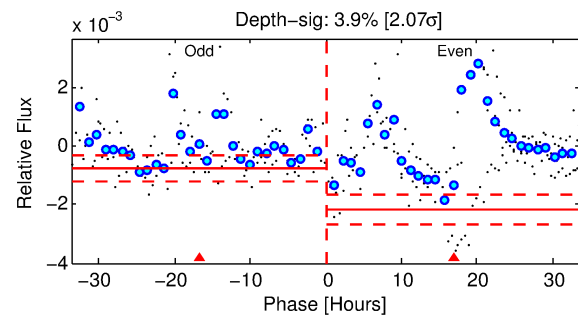
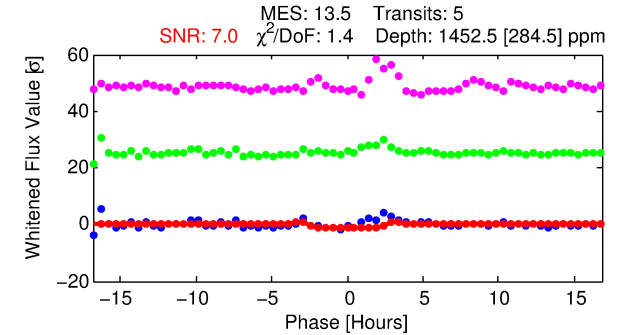
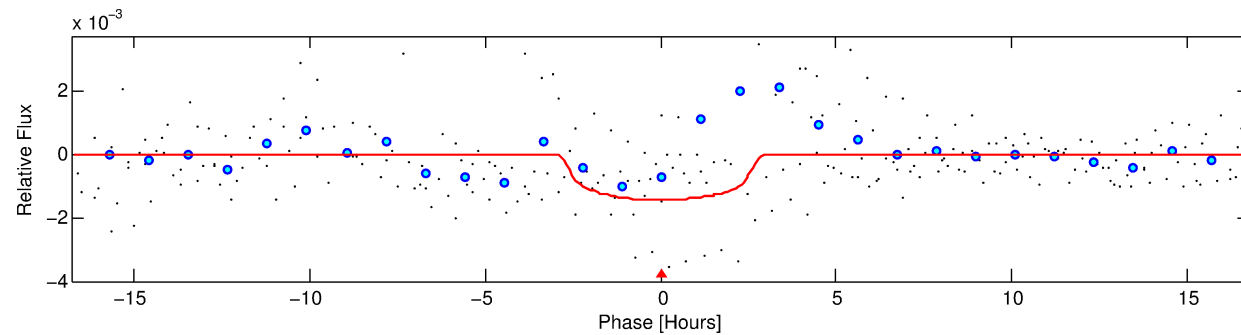
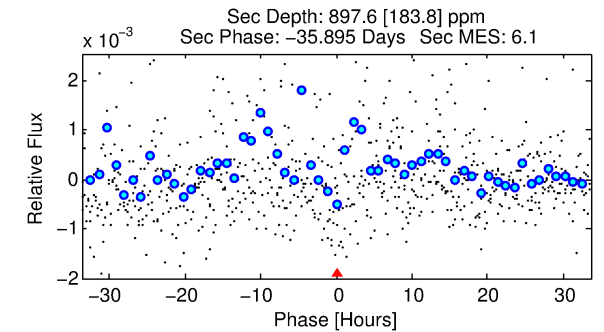
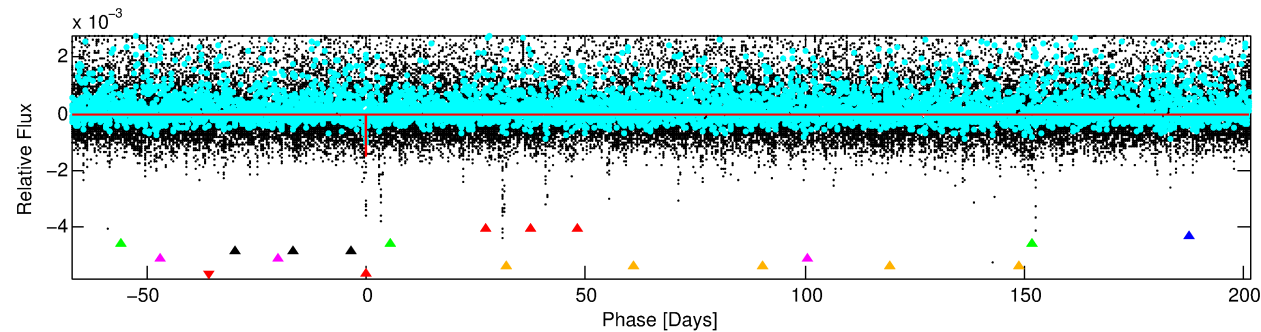
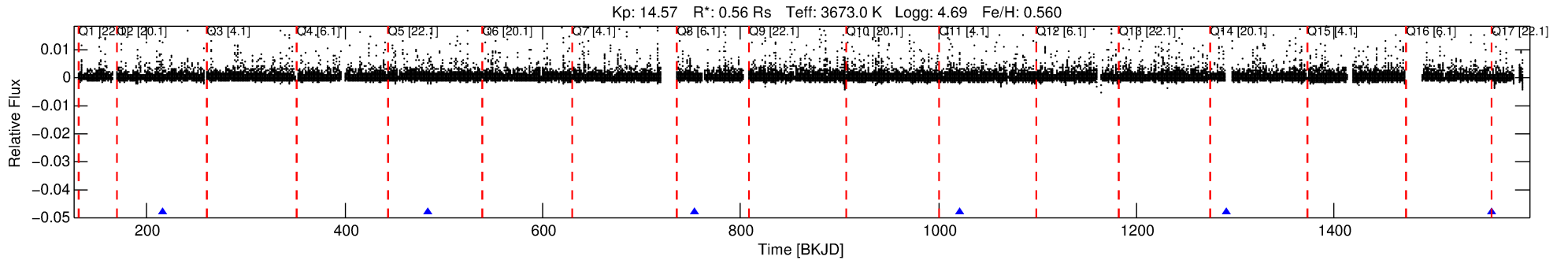
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011145819-07

No Significant Match Found

# DV One-Page Summary

KIC: 11145819 Candidate: 7 of 7 Period: 268.624 d



## DV Fit Results:

Period = 268.62420 [0.00411] d  
Epoch = 216.1559 [0.0091] BKJD  
Rp/R\* = 0.0354 [0.0354]  
a/R\* = 323.72 [1031.51]  
b = 0.54 [4.23]  
Seff = 0.11 [0.03]  
Teq = 148 [8] K  
Rp = 2.17 [2.19] Re  
a = 0.6723 [0.0769] AU  
Ag = 47580.32 [95871.10] [0.50σ]  
Teffp = 3377 [1701] K [1.90σ]

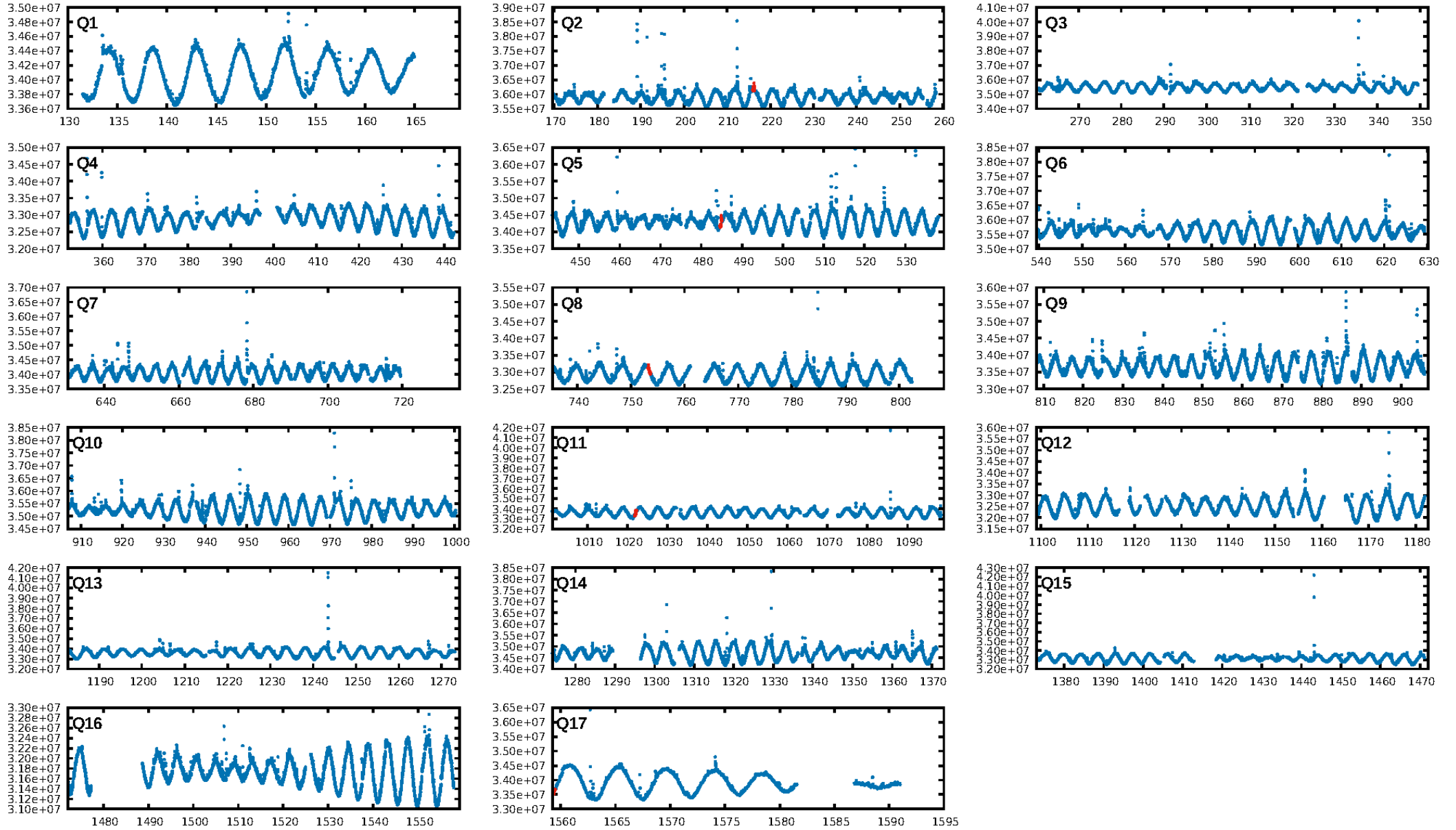
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [100.89σ]  
ModelChiSquare2-sig: 4.5%  
ModelChiSquareGof-sig: 96.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.9494  
Centroid-sig: 44.8%  
Centroid-so: 0.921 arcsec [1.63σ]  
OotOffset-rm: 0.296 arcsec [1.00σ]  
KicOffset-rm: 0.239 arcsec [1.36σ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 1.00 [4/4]

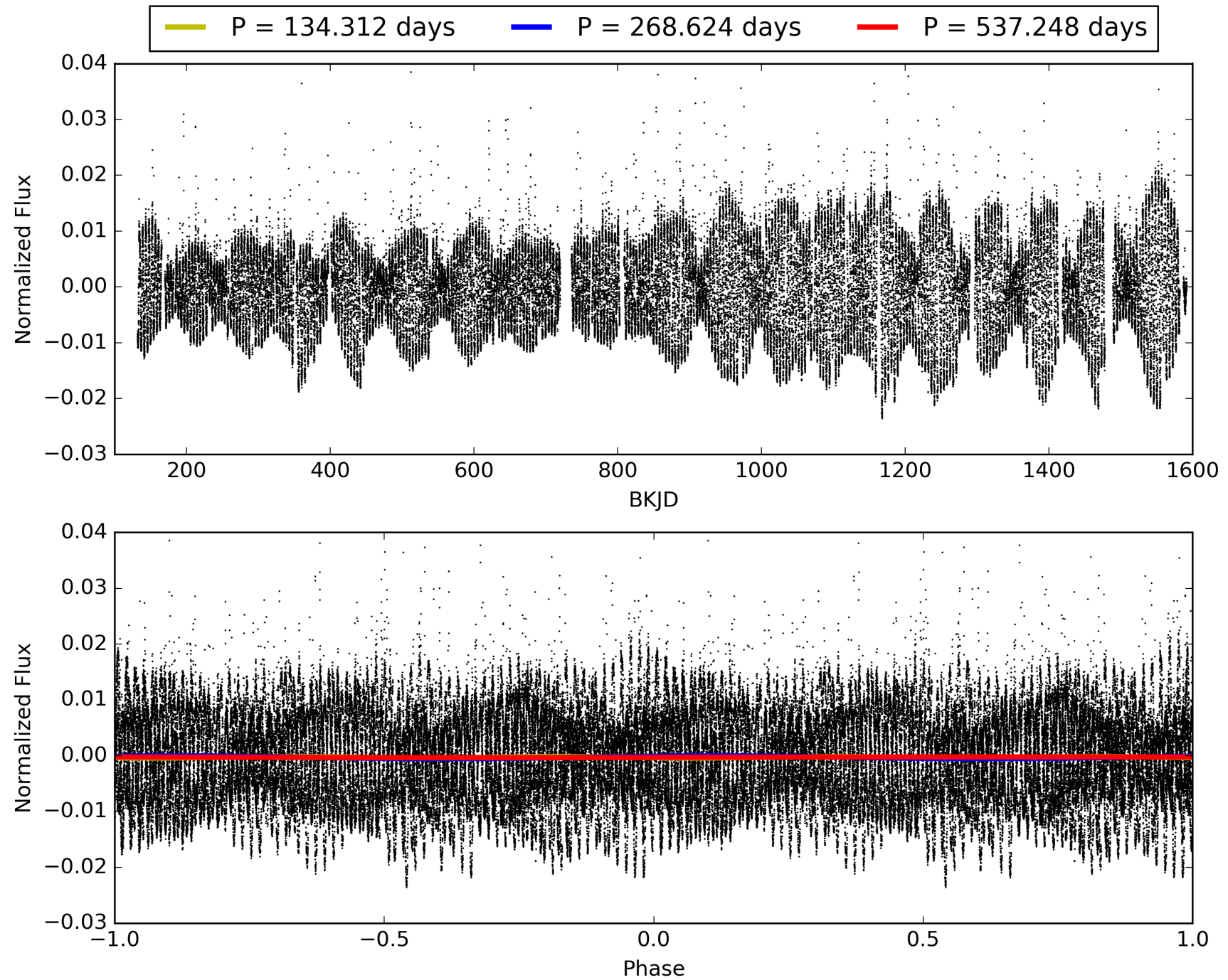
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:47:11 Z

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

# TCE 011145819-07, PDC Light Curves

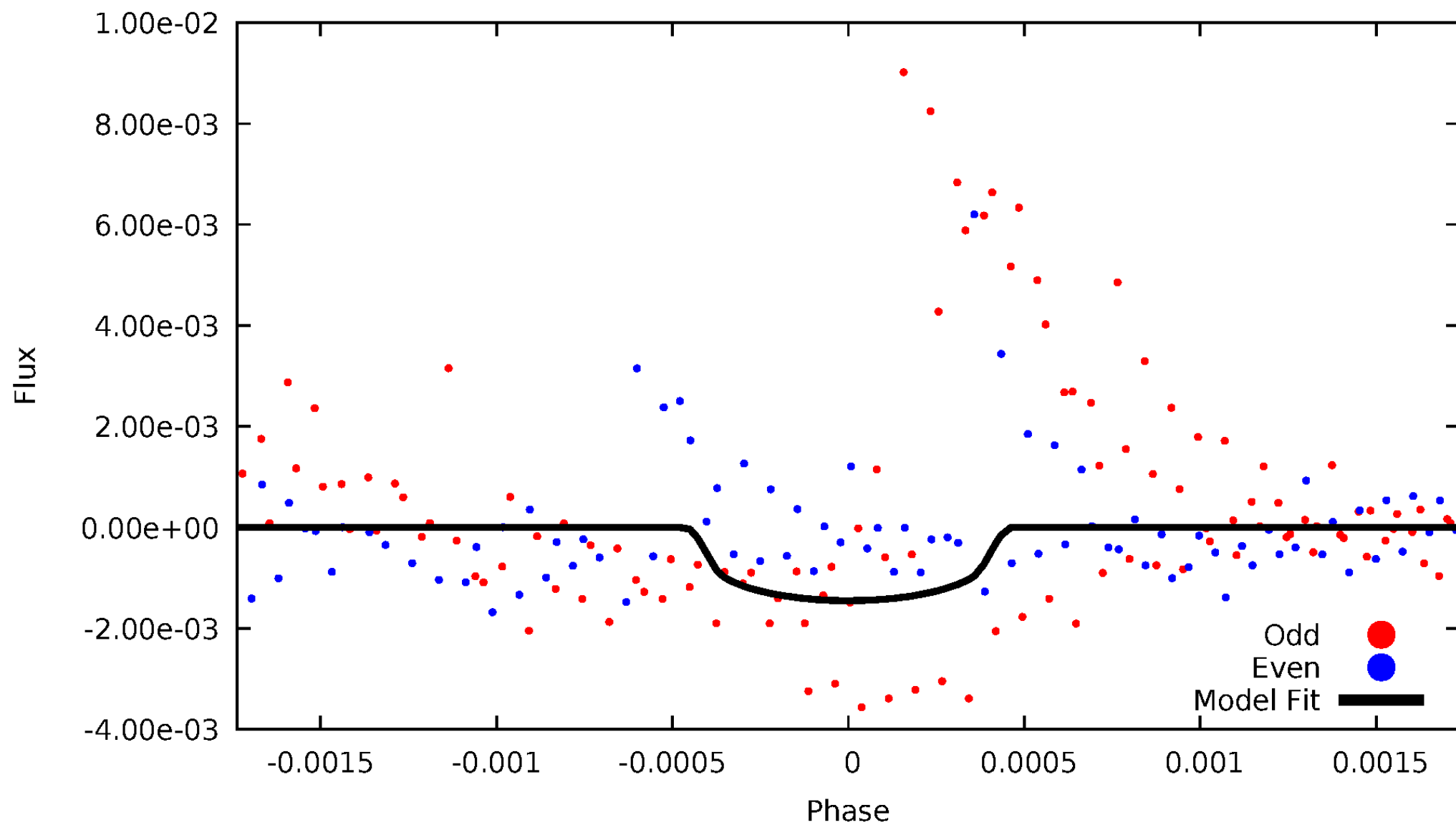


# TCE 011145819-07



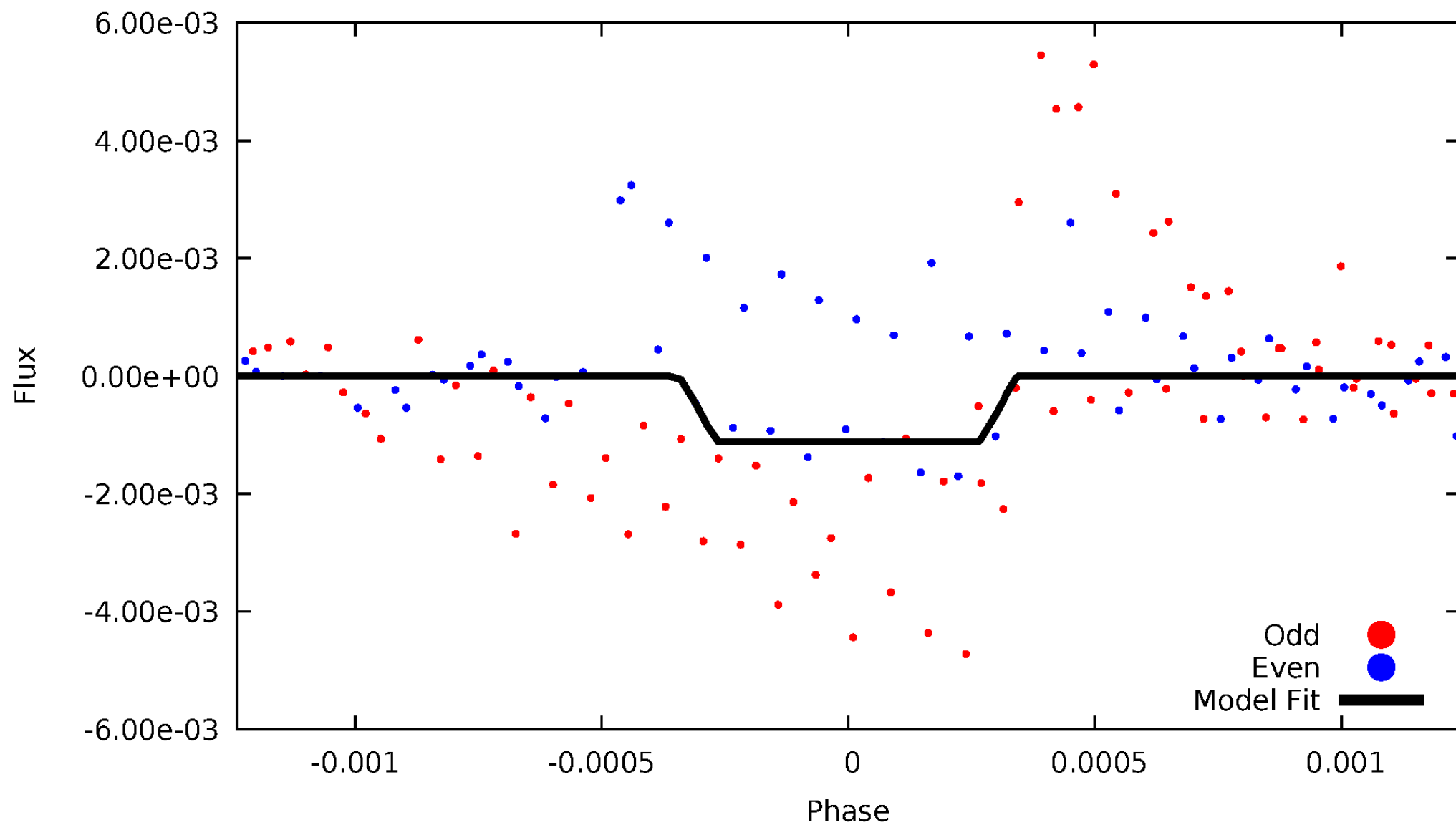
# DV Odd/Even

TCE 011145819-07



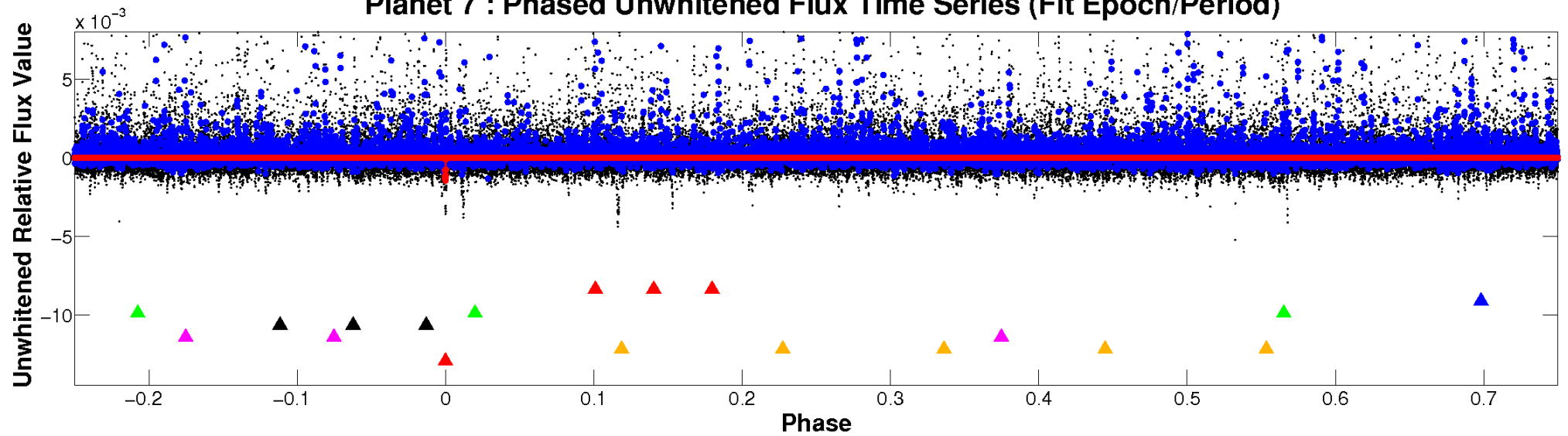
# ALT Odd/Even

TCE 011145819-07

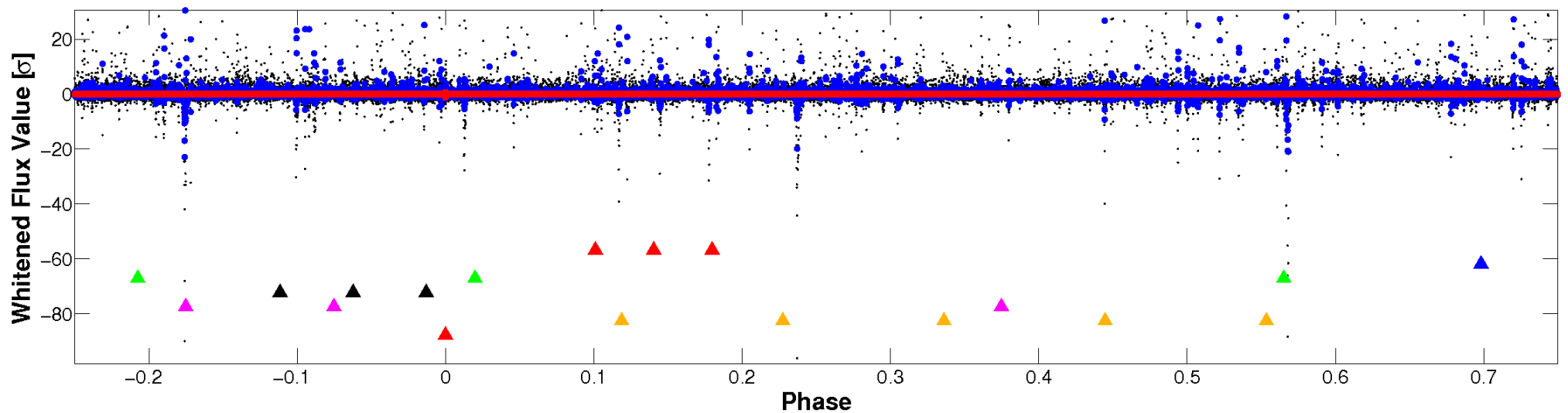


# Non-Whitened Vs. Whitened Light Curve

**Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

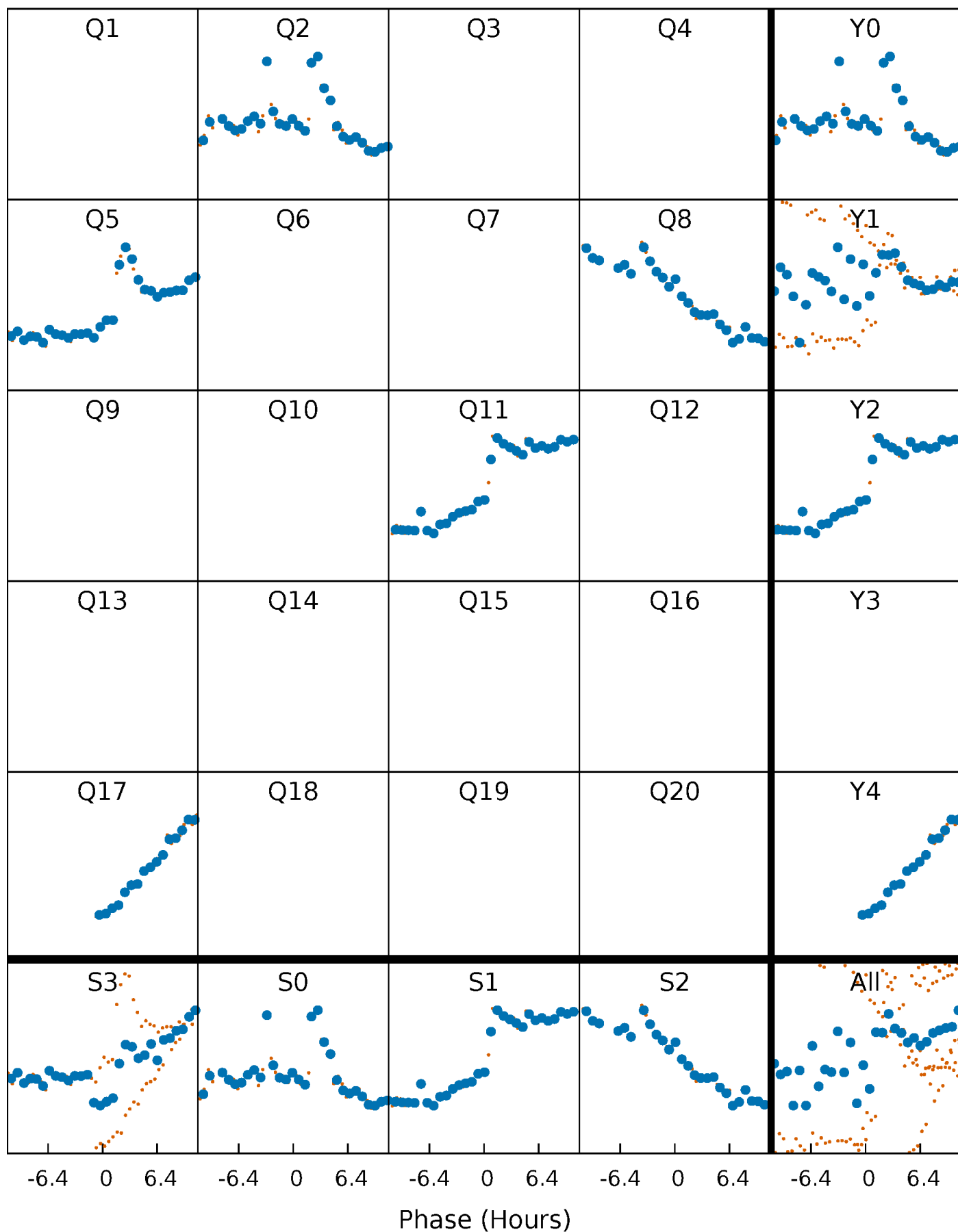


**Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

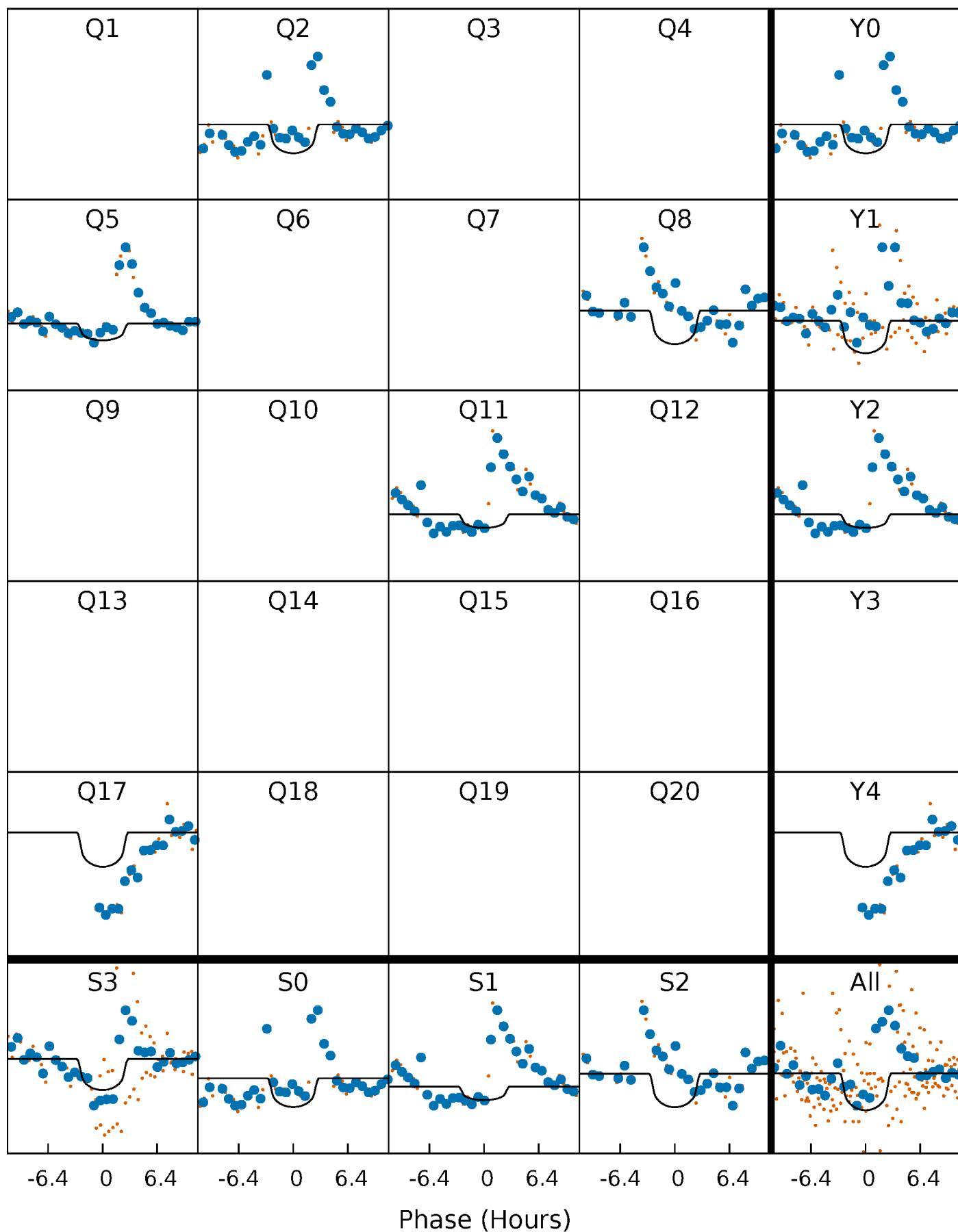
TCE 011145819-07 P=268.624203 Days  $T_0=216.155869$  (BKJD)





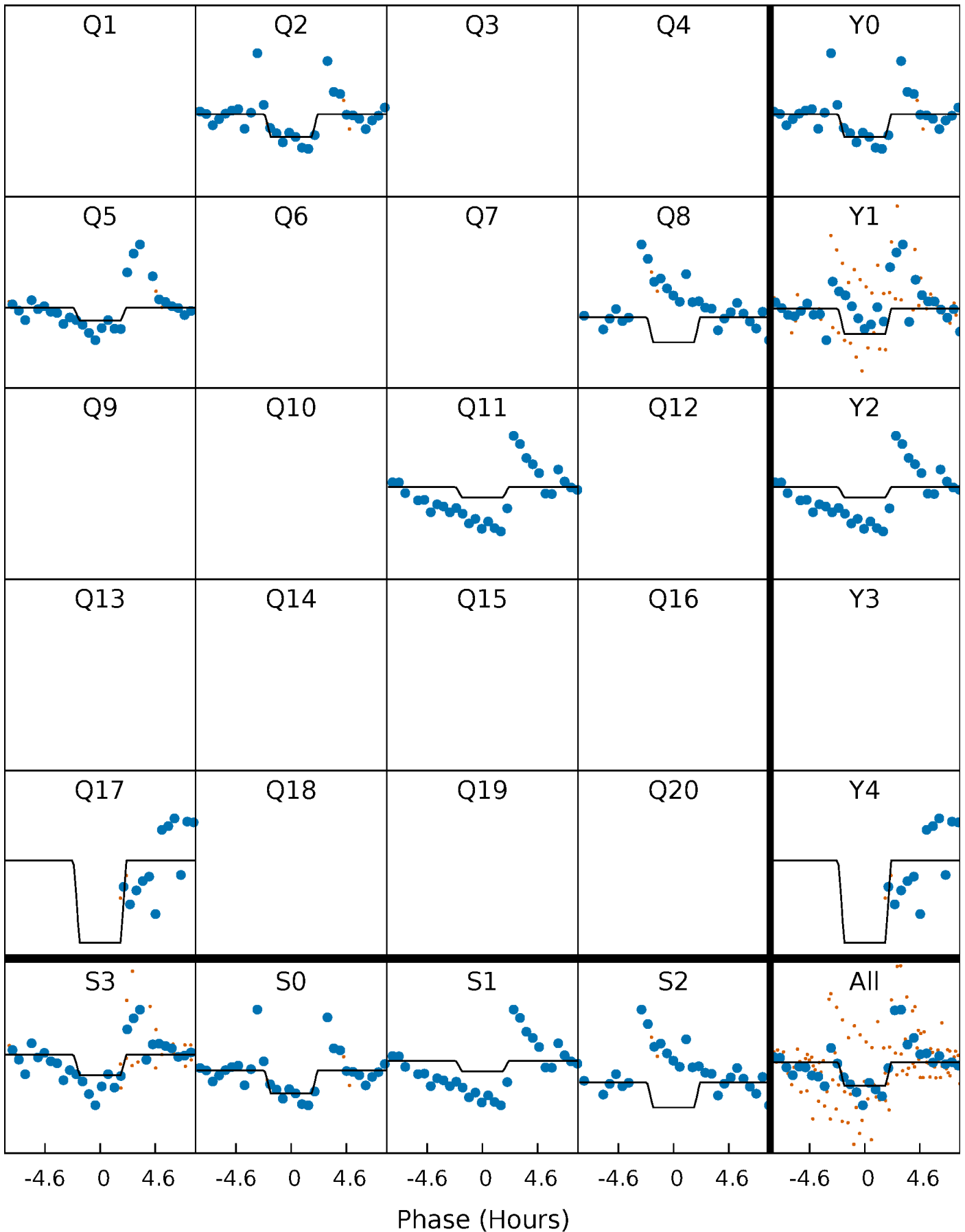
# DV Quarter-Phased Transit Curves

TCE 011145819-07     $P=268.624203$  Days     $T_0=216.155869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

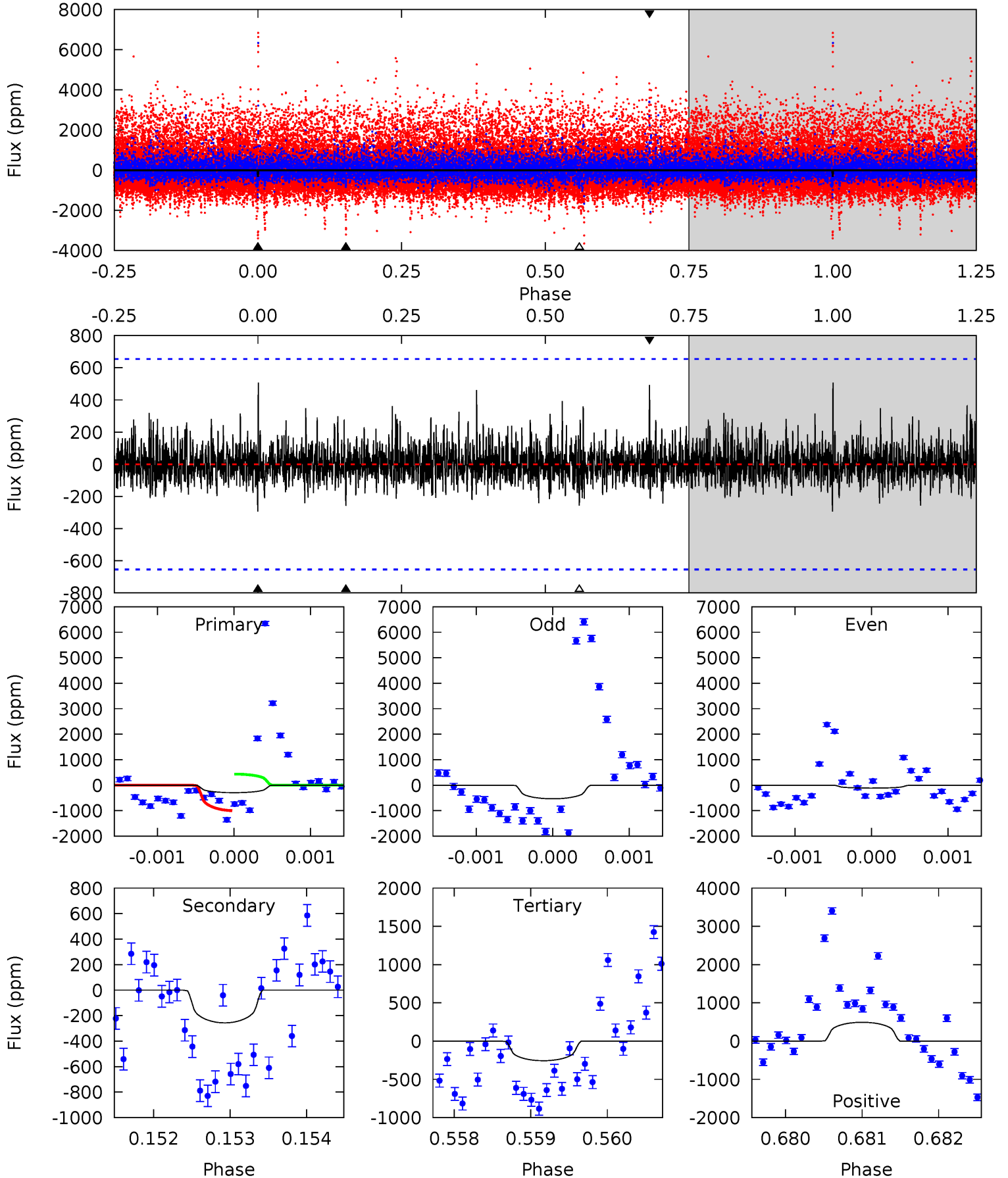
TCE 011145819-07 P=268.604800 Days  $T_0=216.151433$  (BKJD)



# DV Model-Shift Uniqueness Test

011145819-07, P = 268.624203 Days, E = 216.155869 Days

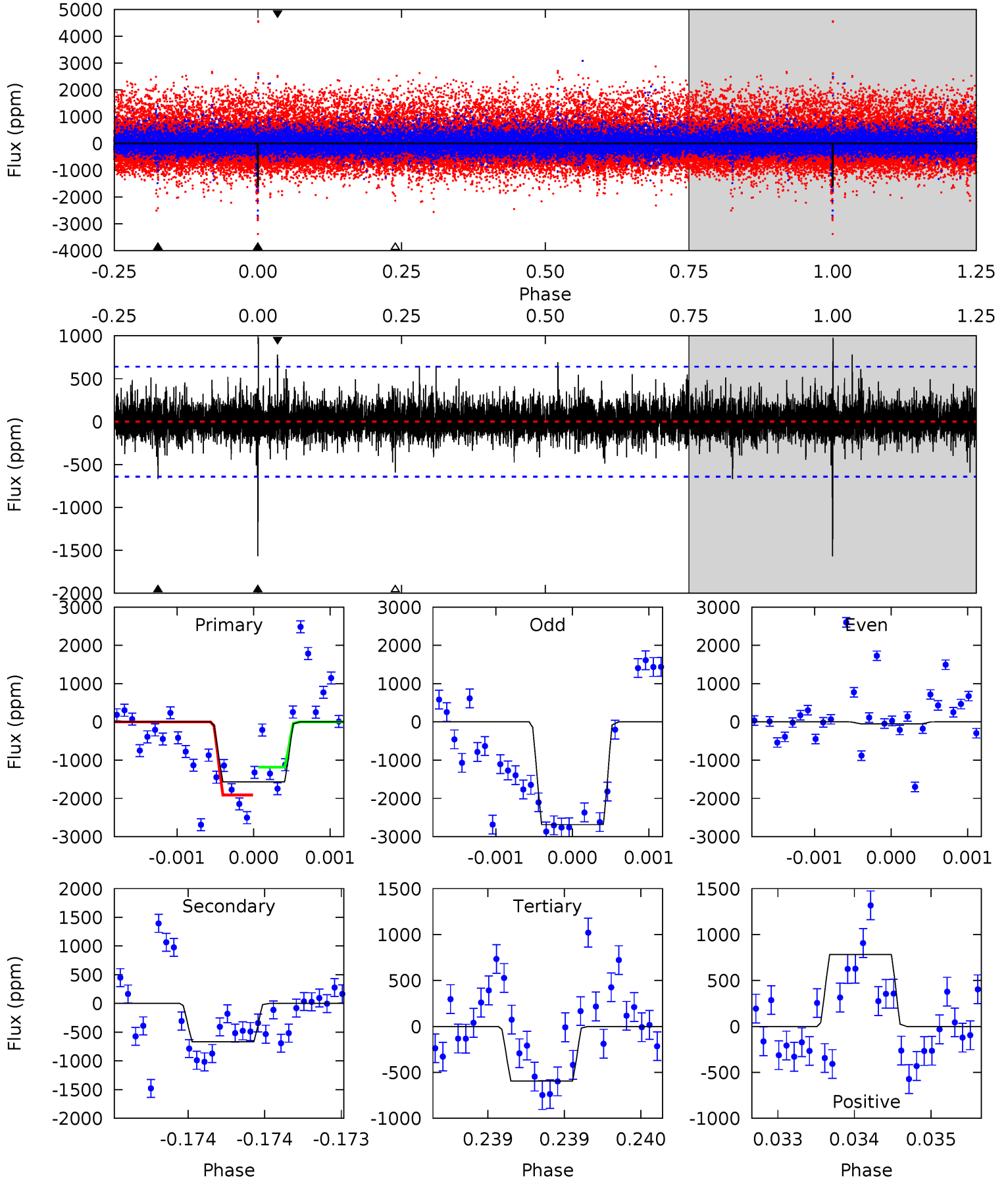
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.45	2.14	2.14	4.11	5.46	3.31	0.74	0.31	-1.67	0.01	-1.97	1.39	-0.40	0.63	2.37



# Alt Model-Shift Uniqueness Test

011145819-07, P = 268.604800 Days, E = 216.151433 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
13.5	5.76	5.12	6.74	5.53	3.41	1.16	8.39	6.77	0.64	-0.98	13.5	1.00	0.38	3.17



### Stellar Parameters For KIC 011145819

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3673^{+117}_{-147}$	$4.691^{+0.080}_{-0.020}$	$0.560^{+0.050}_{-0.300}$	$0.560^{+0.032}_{-0.081}$	$0.561^{+0.040}_{-0.069}$	$4.498^{+1.756}_{-0.469}$
	+3%/-4%	+2%/-0%	+9%/-54%	+6%/-14%	+7%/-12%	+39%/-10%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011145819-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-257 \pm 120$	$2.39^{+1.96}_{-1.52}$	$204^{+9}_{-9}$	$2772^{+935}_{-464}$	$10272^{+66484}_{-7823}$
Alt.	$-668 \pm 116$	$2.40^{+1.97}_{-1.59}$	$204^{+8}_{-9}$	$3180^{+1423}_{-501}$	$29343^{+229595}_{-21034}$

$T_{\text{max}}$  = 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

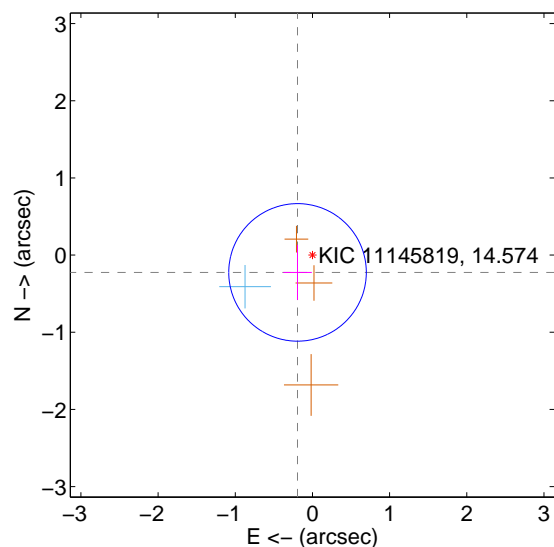
Supplemental centroid analysis for 011145819-07. Kepler magnitude: 14.57. Transit SNR 6.98

There are 1 quarters with good PRF difference image offsets

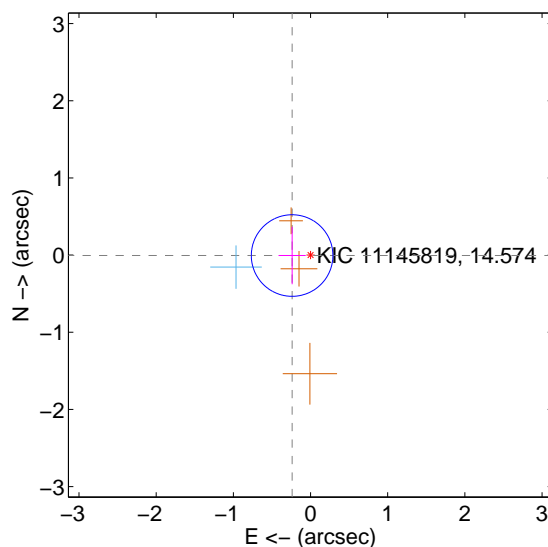
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.296 \pm 0.297$	1.00	$0.193 \pm 0.185$	$-0.224 \pm 0.358$
PRF-fit source offset from KIC position	$0.239 \pm 0.176$	1.36	$0.239 \pm 0.176$	$-0.006 \pm 0.372$
photometric centroid source offset	$0.92 \pm 0.56$	1.63	$-0.70 \pm 0.60$	$0.60 \pm 0.51$

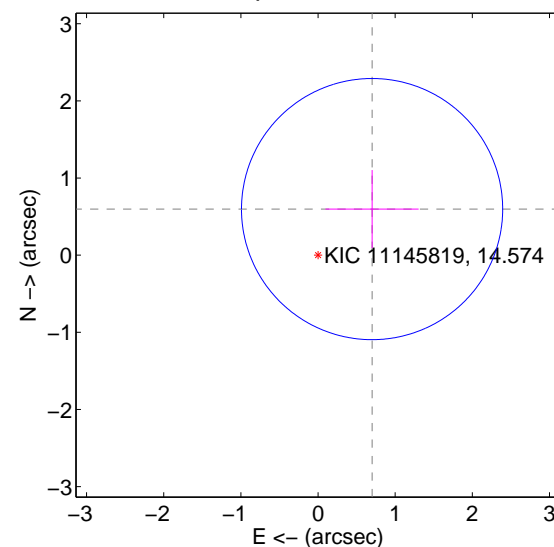
offset from difference PRF-fit to OOT PRF-fit



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.

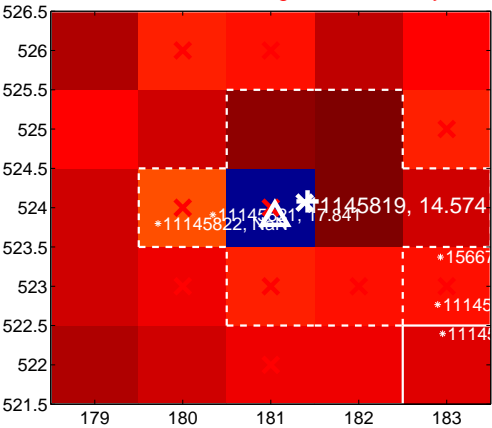
Q1 no difference image



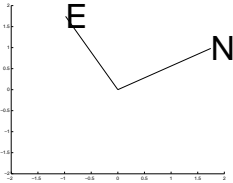
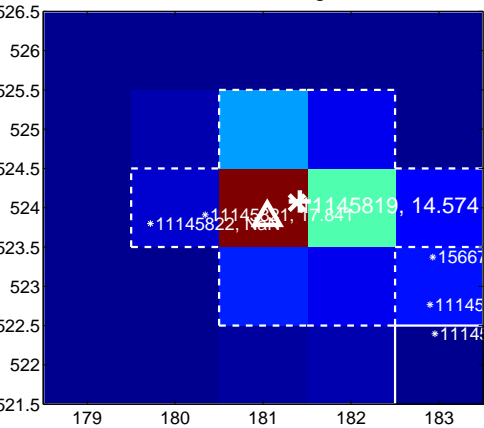
Q1 no OOT image



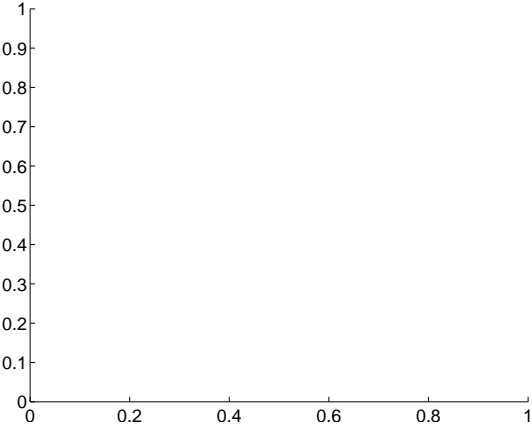
Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



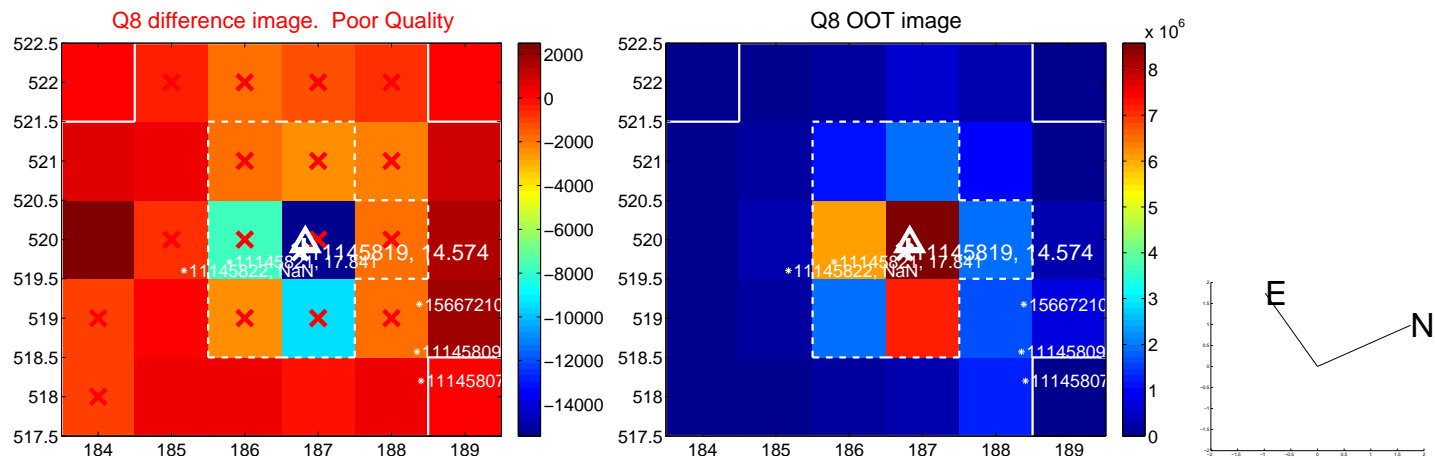
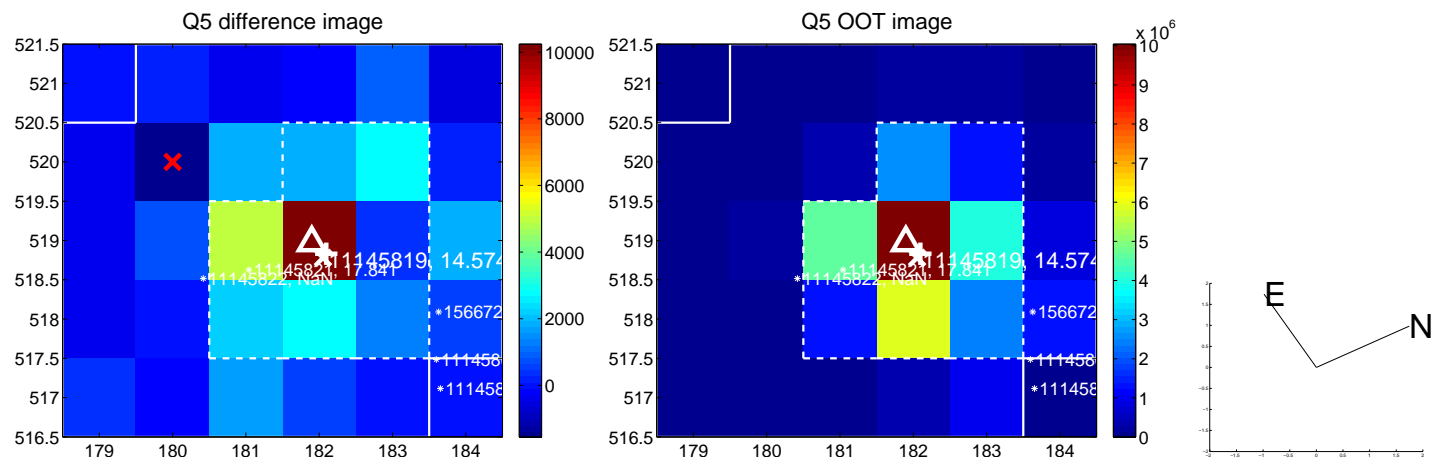
Q4 no difference image



Q4 no OOT image



white  $\times$ : 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.

Q9 no difference image



Q9 no OOT image



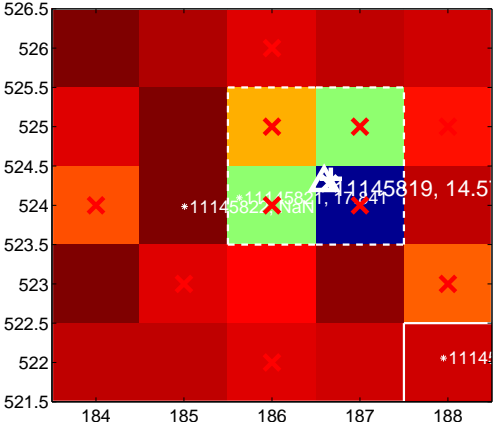
Q10 no difference image



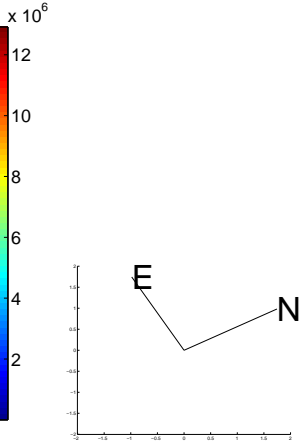
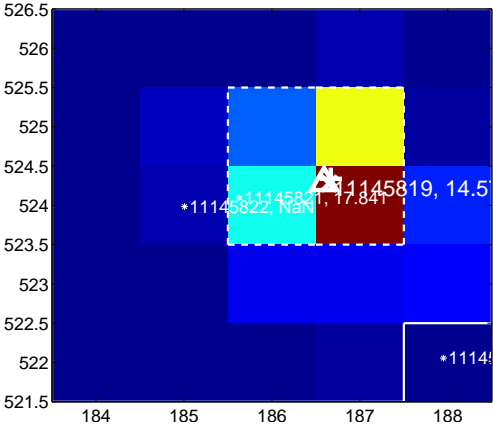
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image



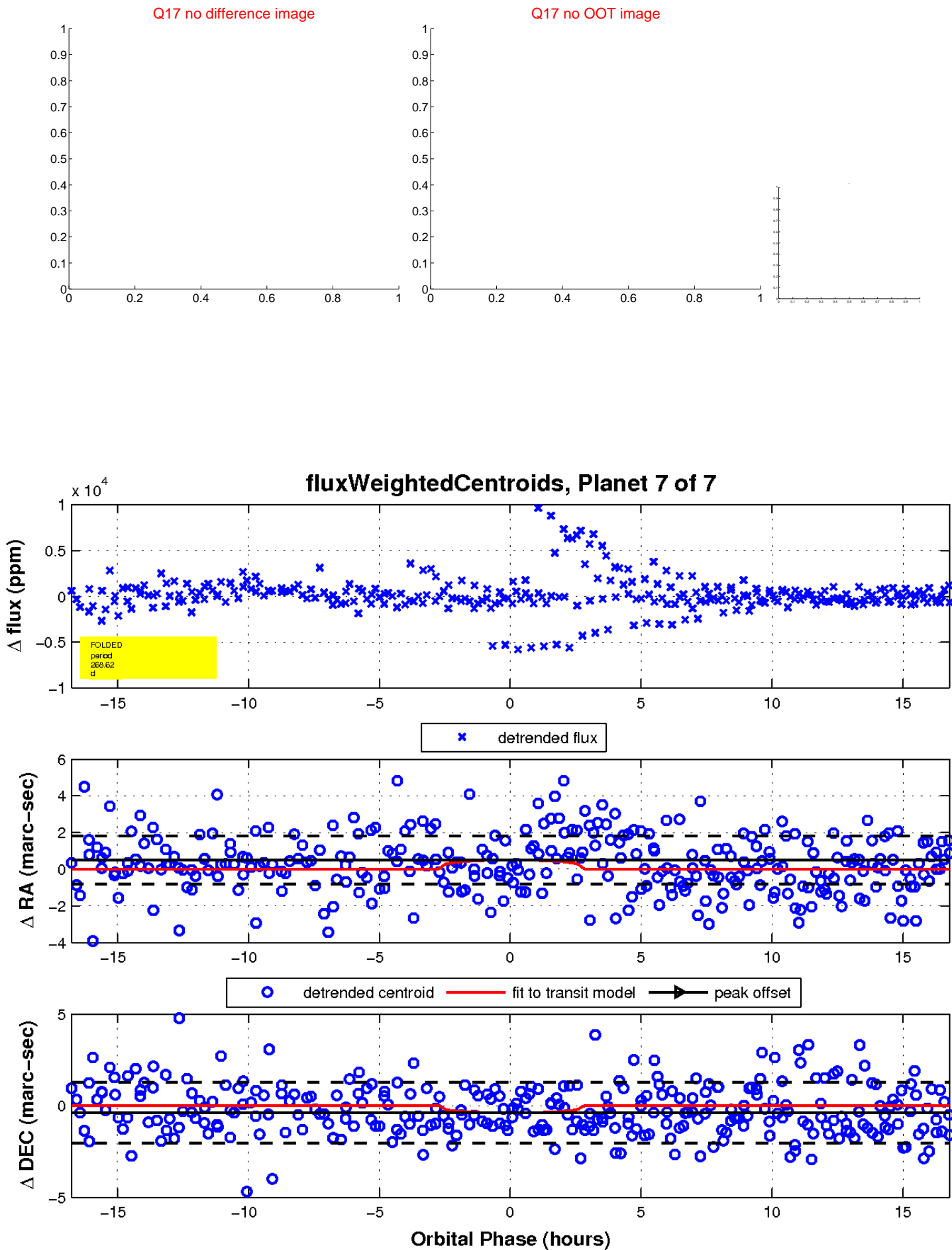
Q12 no OOT image



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

