

# KIC 006039095

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006039095-01	OBS	No	363.817321	161.374781	3030.0	30.785	9.5	12.9	0.90	5912	5.84	0.93
006039095-02	OBS	No	375.421042	298.475328	1687.9	27.423	7.6	8.2	0.90	5912	4.56	0.90
006039095-03	OBS	No	359.797835	374.194841	1073.0	8.875	7.5	7.0	0.90	5912	3.08	0.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039095-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—MOD_TER_DV—MOD_NONUNIQ_ALT—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.

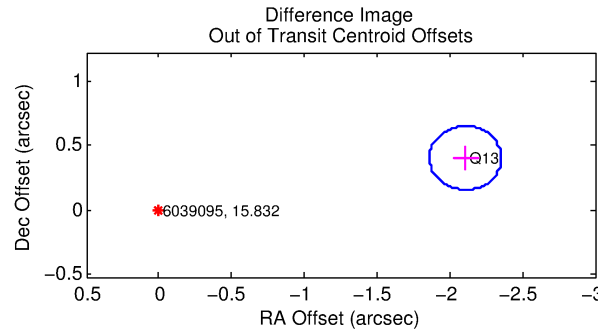
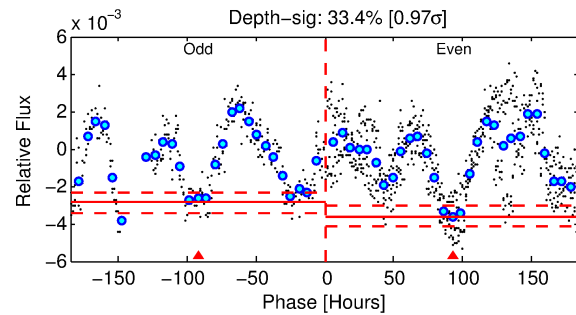
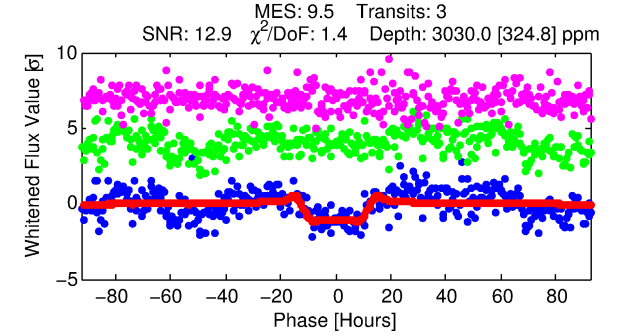
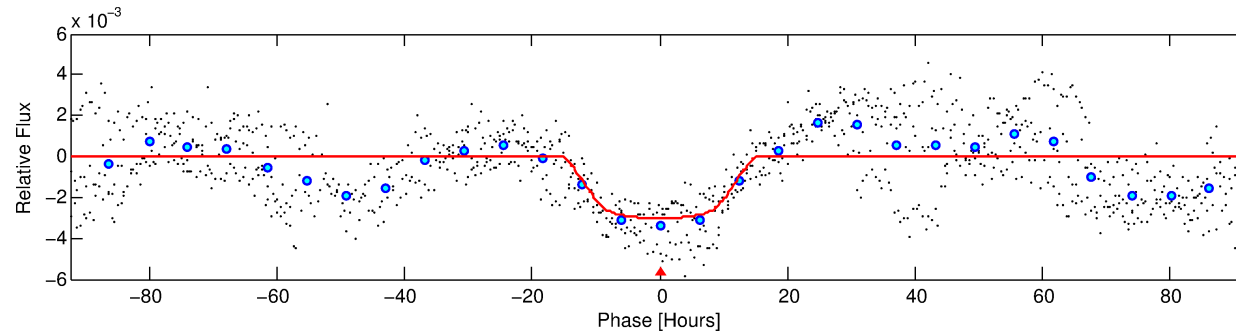
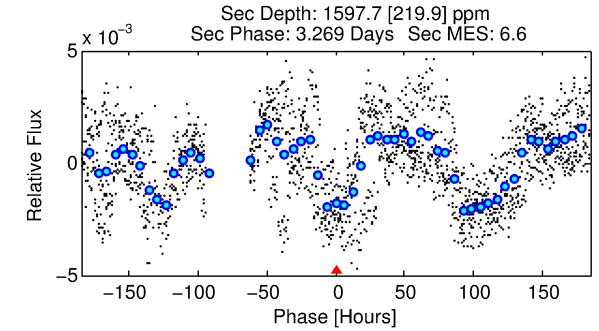
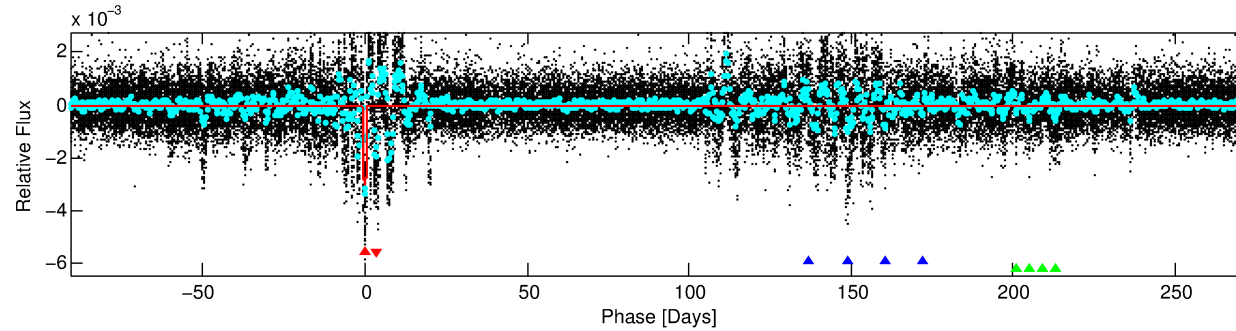
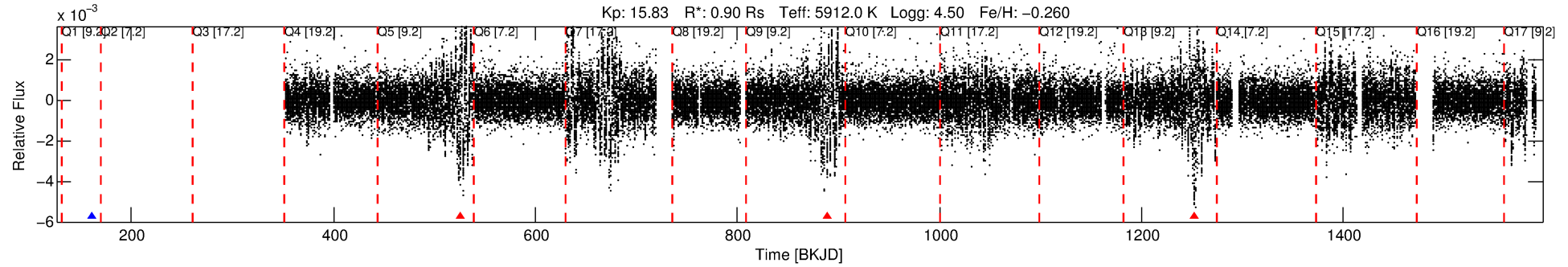
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006039095-01

No Significant Match Found

# DV One-Page Summary

KIC: 6039095 Candidate: 1 of 3 Period: 363.817 d



## DV Fit Results:

Period = 363.81732 [0.02634] d  
Epoch = 161.3748 [0.0562] BKJD  
Rp/R\* = 0.0593 [0.0037]  
a/R\* = 51.54 [5.81]  
b = 0.89 [0.03]  
Seff = 0.93 [0.36]  
Teq = 251 [24] K  
Rp = 5.84 [1.77] Re  
a = 0.9767 [0.2419] AU  
Ag = 24613.95 [9949.38] [2.47σ]  
Teff = 4854 [284] K [16.17σ]

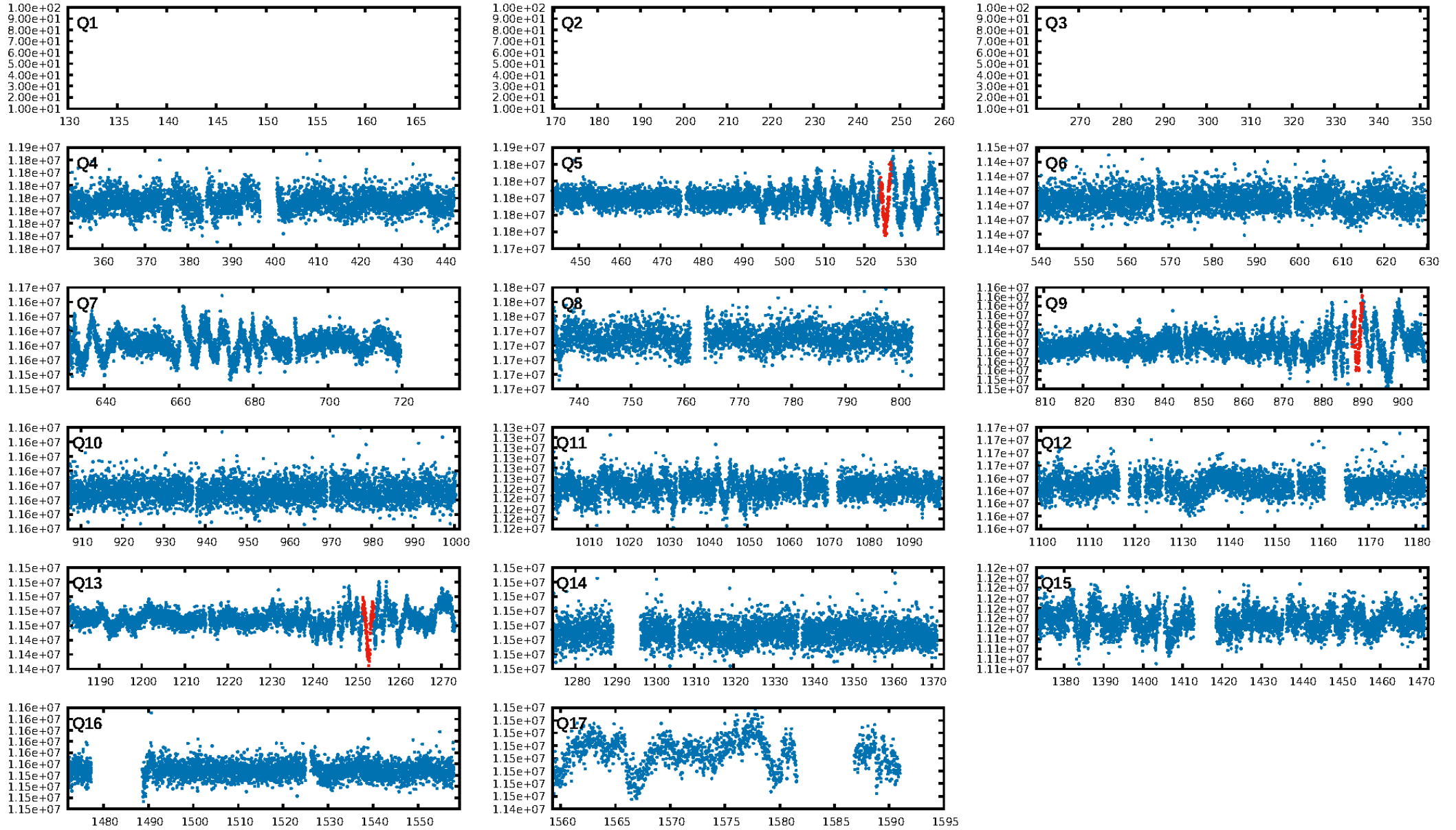
## DV Diagnostic Results:

ShortPeriod-sig: 99.7% [3.01σ]  
LongPeriod-sig: 100.0% [6.75σ]  
ModelChiSquare2-sig: 37.6%  
ModelChiSquareGoF-sig: 99.9%  
**Bootstrap-pfa: 9.65e-10**  
**RollingBand-fgt: 0.00 [0/3]**  
GhostDiagnostic-chr: 8.238  
Centroid-sig: 11.5%  
Centroid-so: 3.010 arcsec [1.49σ]  
**OotOffset-rm: 2.145 arcsec [25.95σ]**  
**KicOffset-rm: 2.248 arcsec [27.20σ]**  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

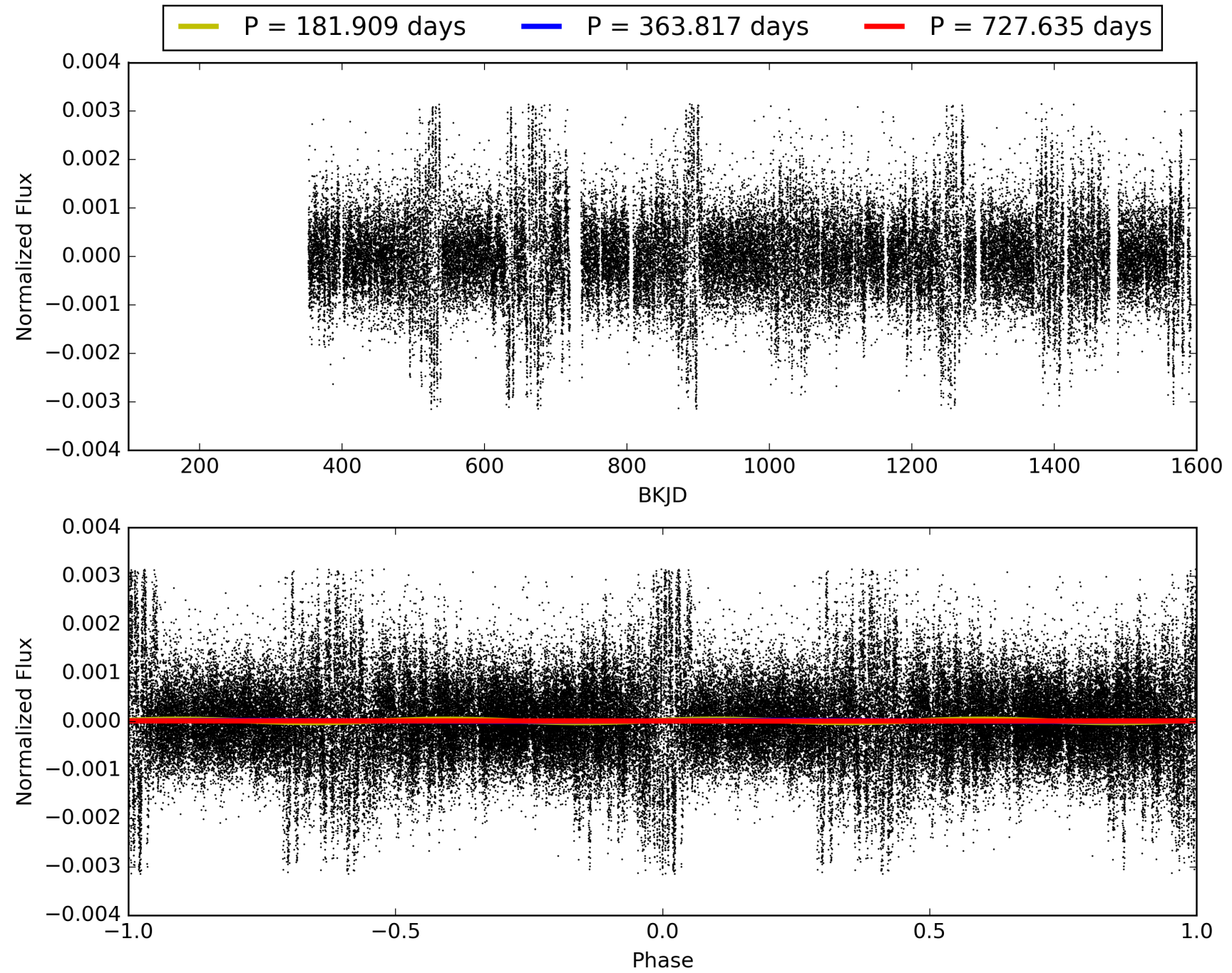
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:39:40 Z

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

# TCE 006039095-01, PDC Light Curves

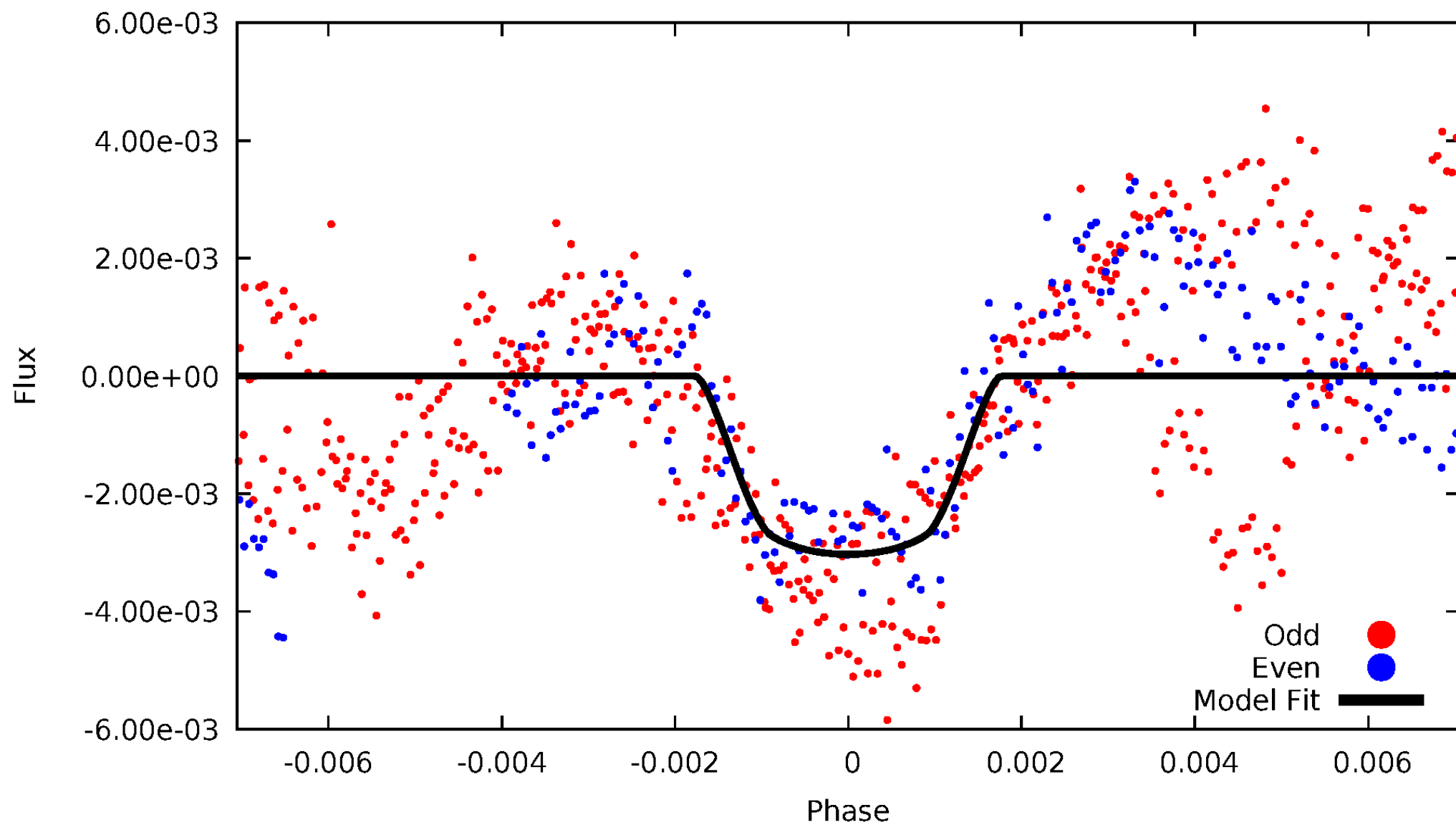


TCE 006039095-01



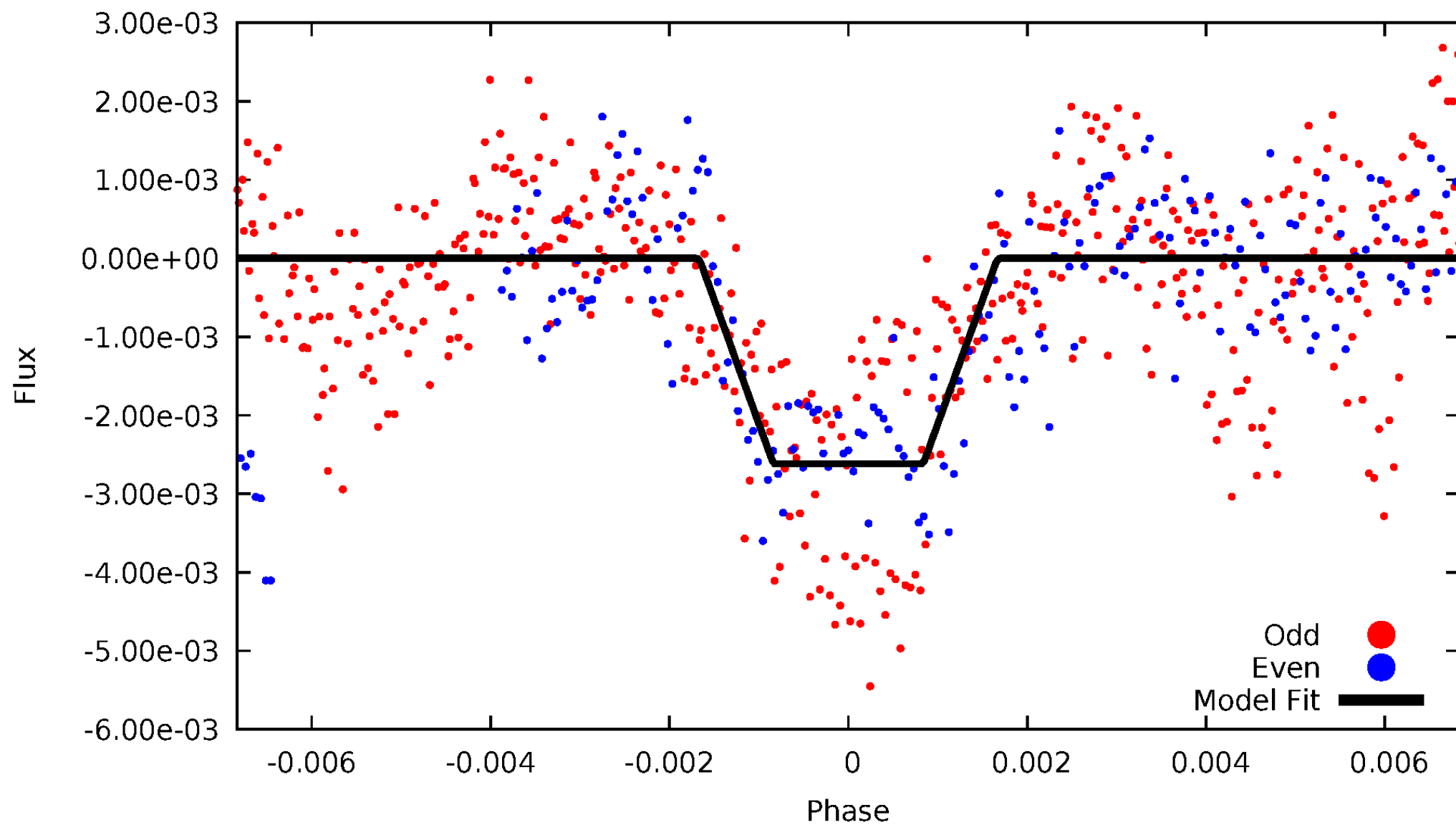
# DV Odd/Even

TCE 006039095-01



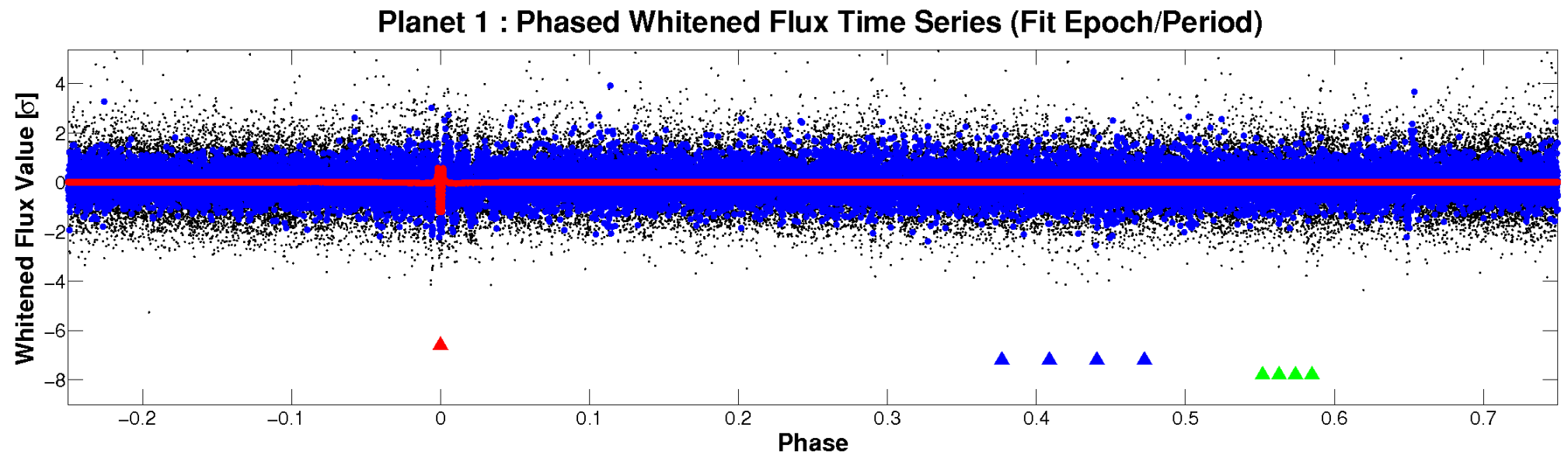
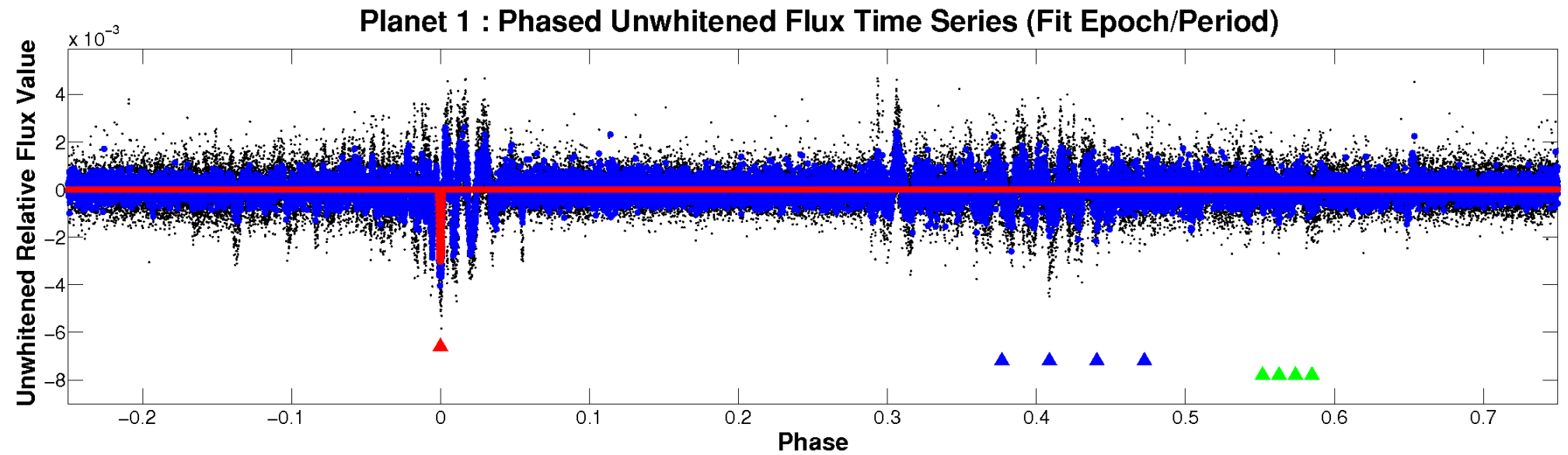
# ALT Odd/Even

TCE 006039095-01



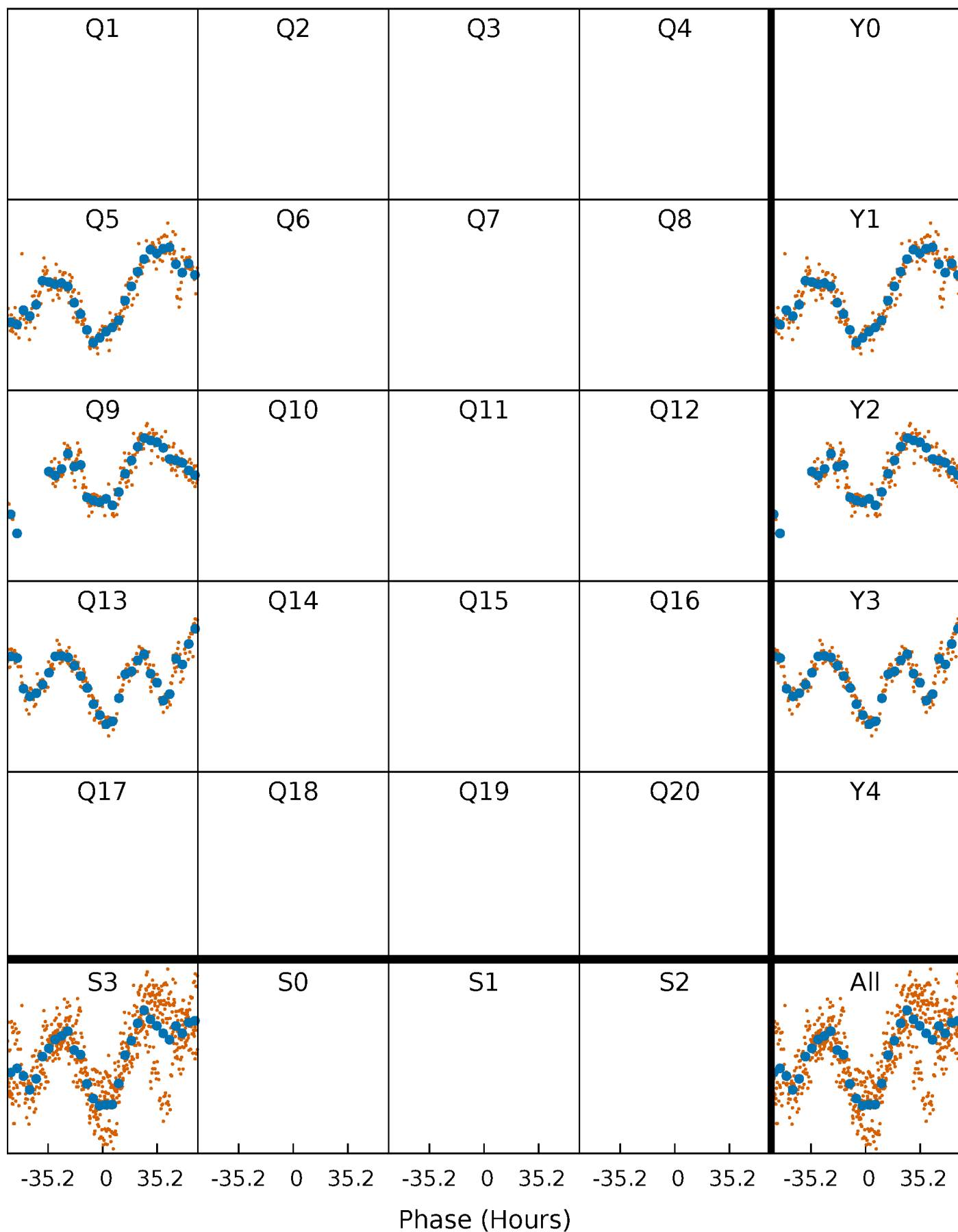


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

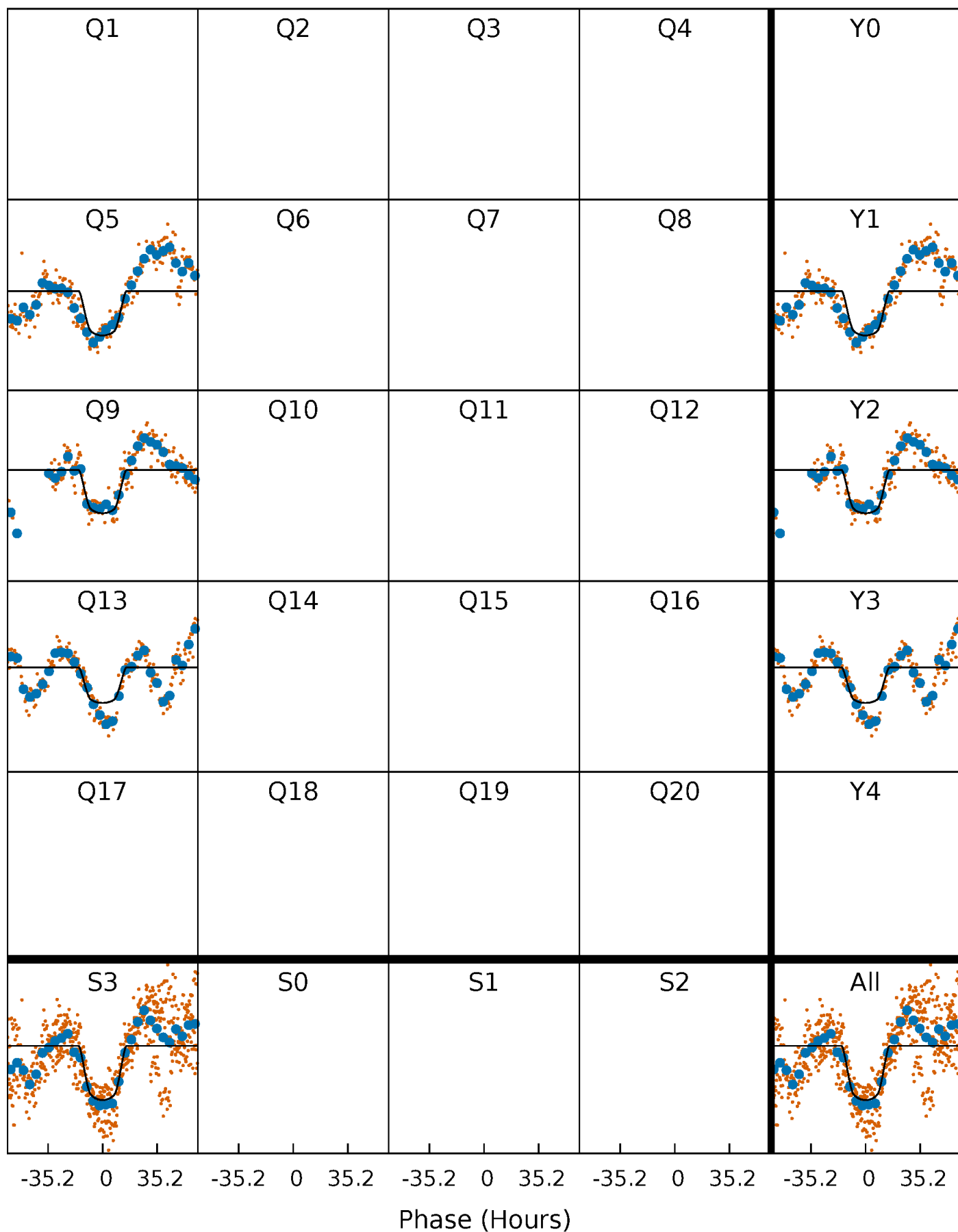
TCE 006039095-01 P=363.817321 Days  $T_0=161.374781$  (BKJD)





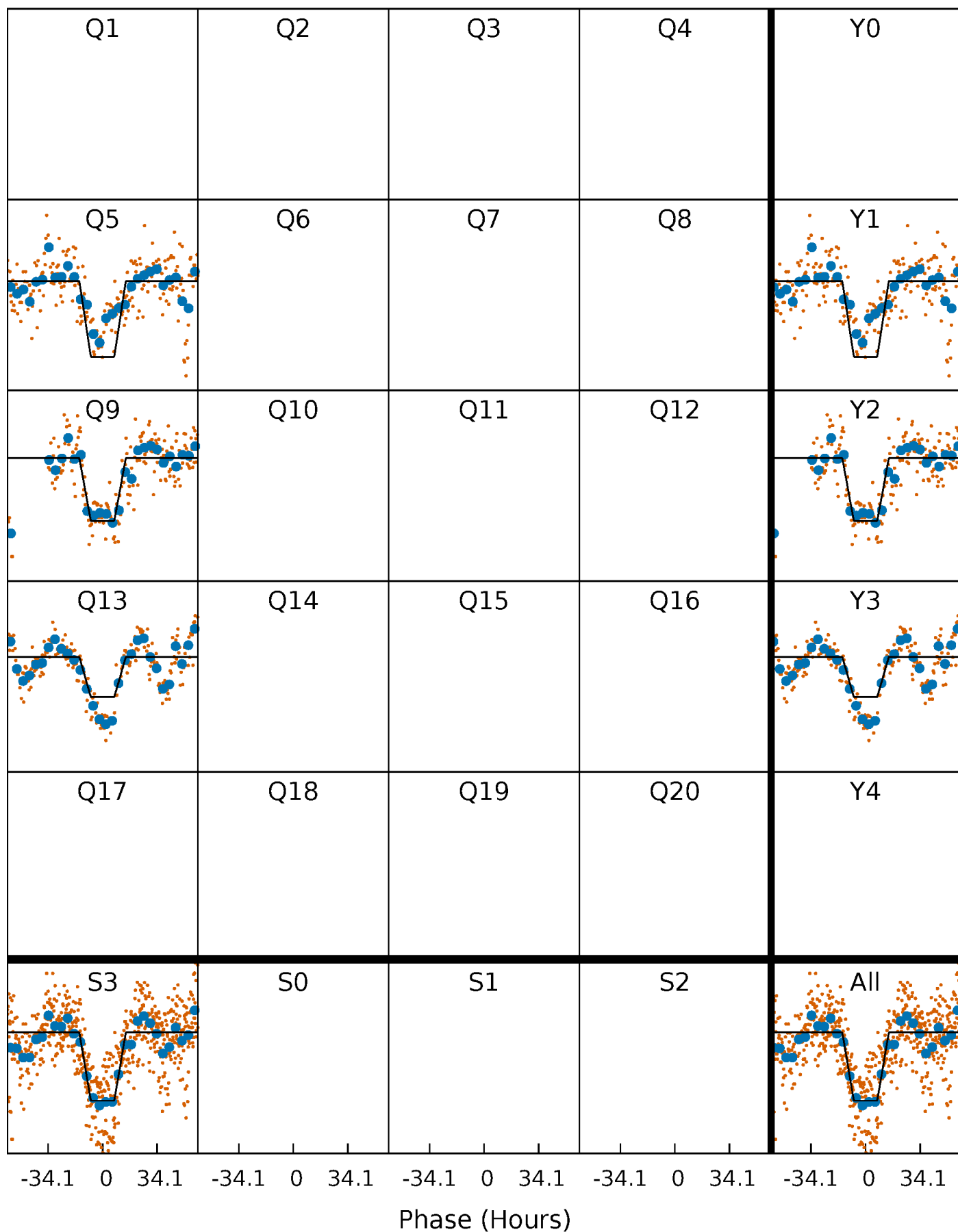
# DV Quarter-Phased Transit Curves

TCE 006039095-01 P=363.817321 Days  $T_0=161.374781$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

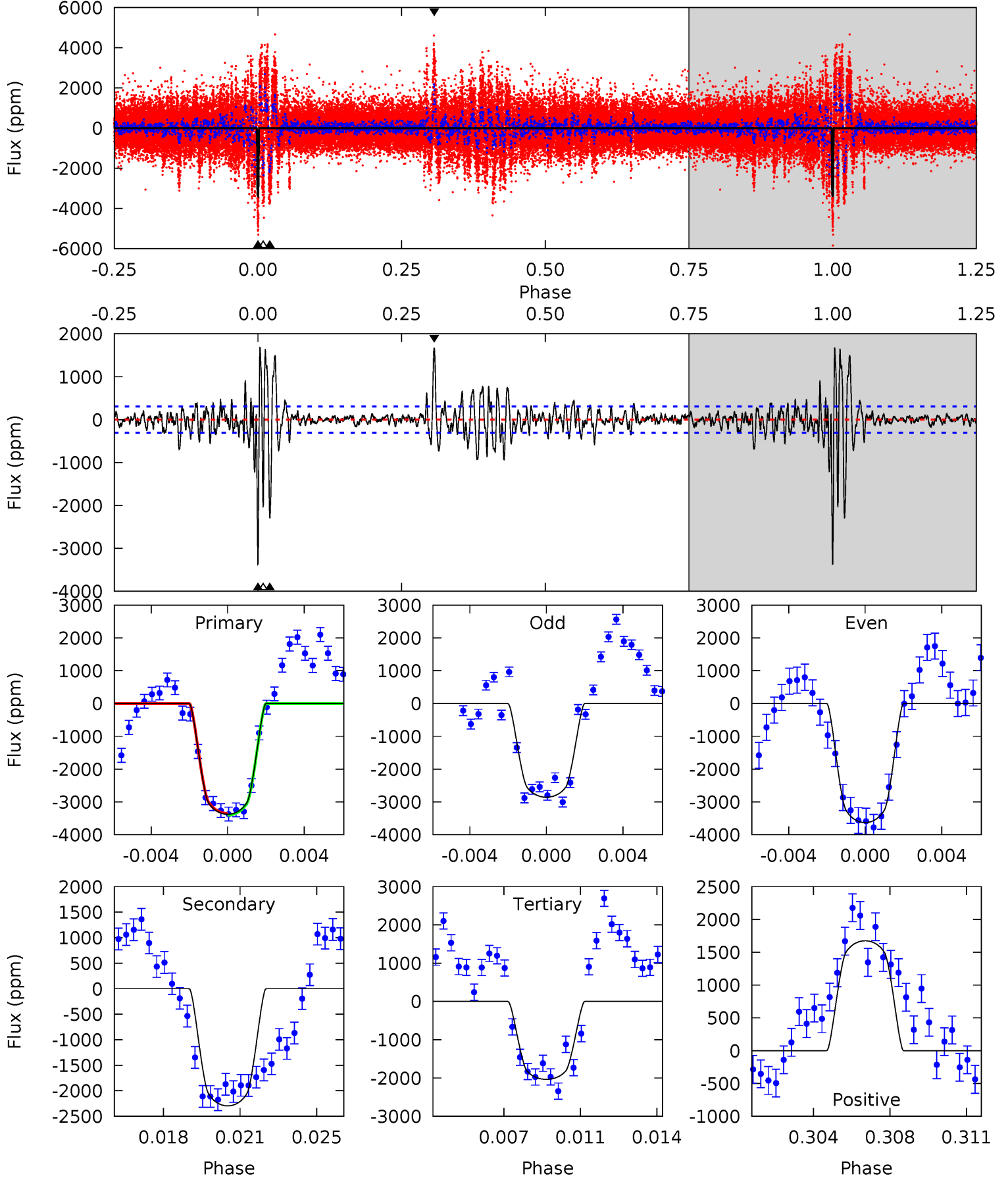
TCE 006039095-01 P=363.914892 Days  $T_0=161.156542$  (BKJD)



# DV Model-Shift Uniqueness Test

006039095-01, P = 363.817321 Days, E = 161.374781 Days

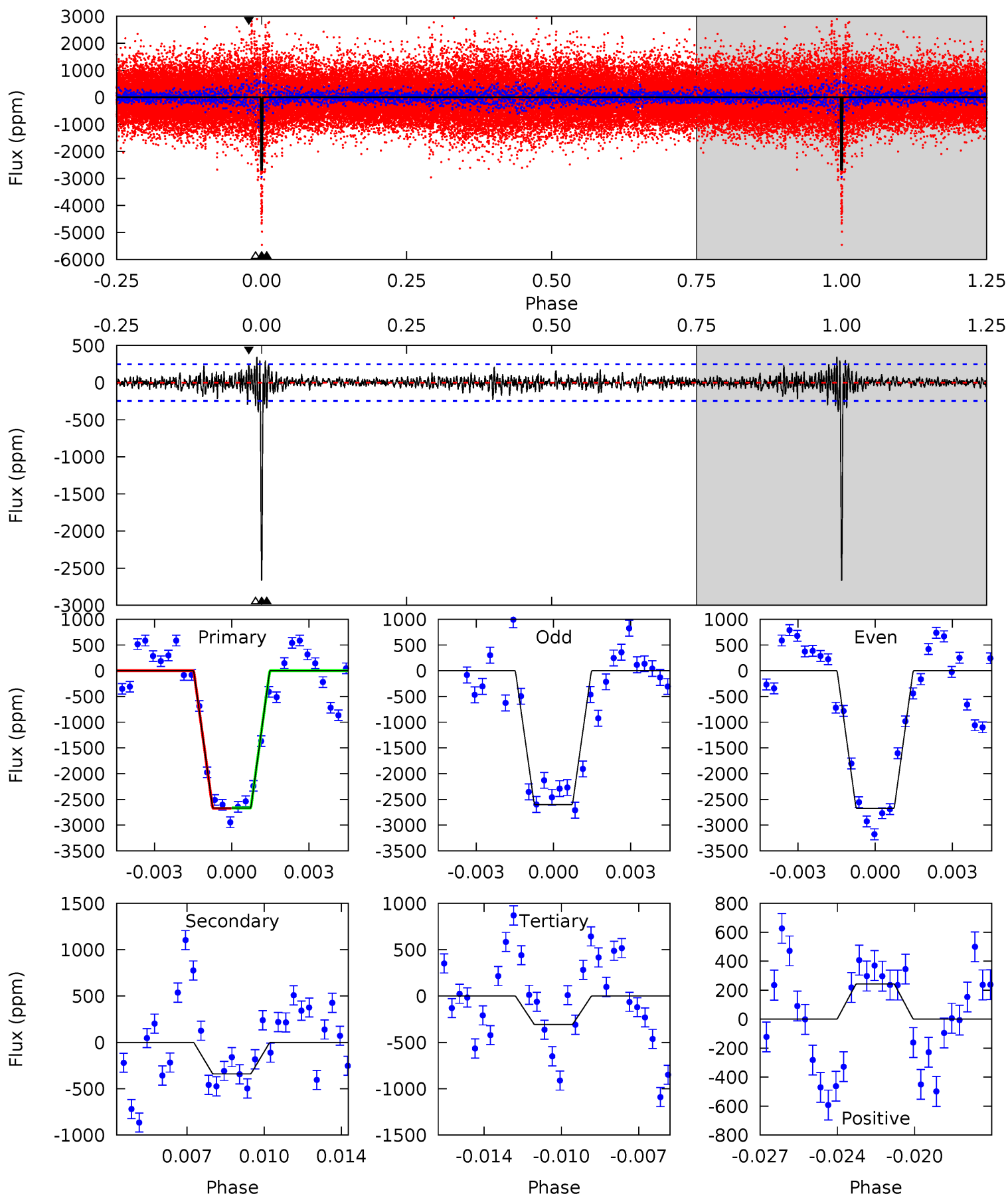
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.8	39.3	34.8	28.6	5.22	2.92	5.12	22.9	29.1	4.45	10.6	6.30	1.08	0.33	0.41



# Alt Model-Shift Uniqueness Test

006039095-01, P = 363.914892 Days, E = 161.156542 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
56.7	7.22	6.54	5.18	5.23	2.93	1.20	50.2	51.5	0.69	2.04	0.74	1.02	0.11	0.08



### Stellar Parameters For KIC 006039095

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5912^{+187}_{-208}$	$4.500^{+0.065}_{-0.195}$	$-0.260^{+0.300}_{-0.300}$	$0.902^{+0.267}_{-0.095}$	$0.940^{+0.120}_{-0.109}$	$1.803^{+0.498}_{-0.940}$
	+3%/-4%	+1%/-4%	+115%/-115%	+30%/-11%	+13%/-12%	+28%/-52%
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 006039095-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2296 \pm 58$	$6.00^{+0.96}_{-0.63}$	$356^{+26}_{-19}$	$5356^{+241}_{-222}$	$33389^{+7627}_{-8410}$
Alt.	$-340 \pm 47$	$5.20^{+0.85}_{-0.59}$	$356^{+25}_{-18}$	$3890^{+168}_{-151}$	$6448^{+2153}_{-1620}$

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

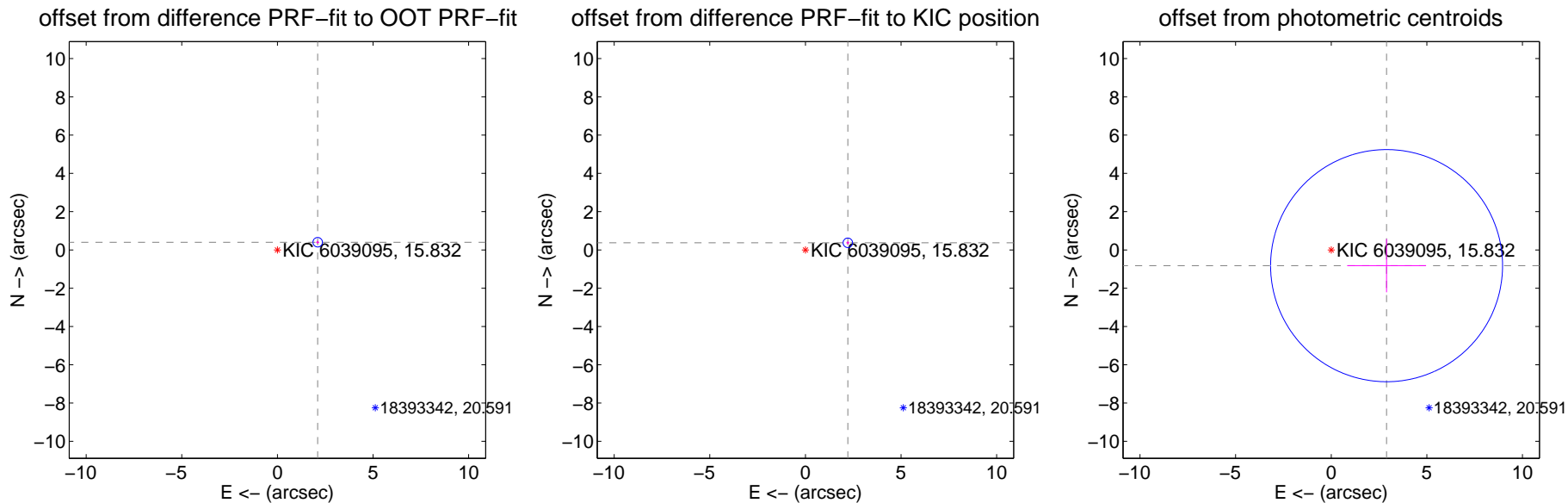
## DV Centroid Data

Supplemental centroid analysis for 006039095-01. Kepler magnitude: 15.83. Transit SNR 12.92

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.145 \pm 0.083$	25.95	$-2.107 \pm 0.083$	$0.402 \pm 0.081$
PRF-fit source offset from KIC position	$2.248 \pm 0.083$	27.20	$-2.217 \pm 0.083$	$0.372 \pm 0.081$
photometric centroid source offset	$3.01 \pm 2.02$	1.49	$-2.90 \pm 2.06$	$-0.82 \pm 1.39$



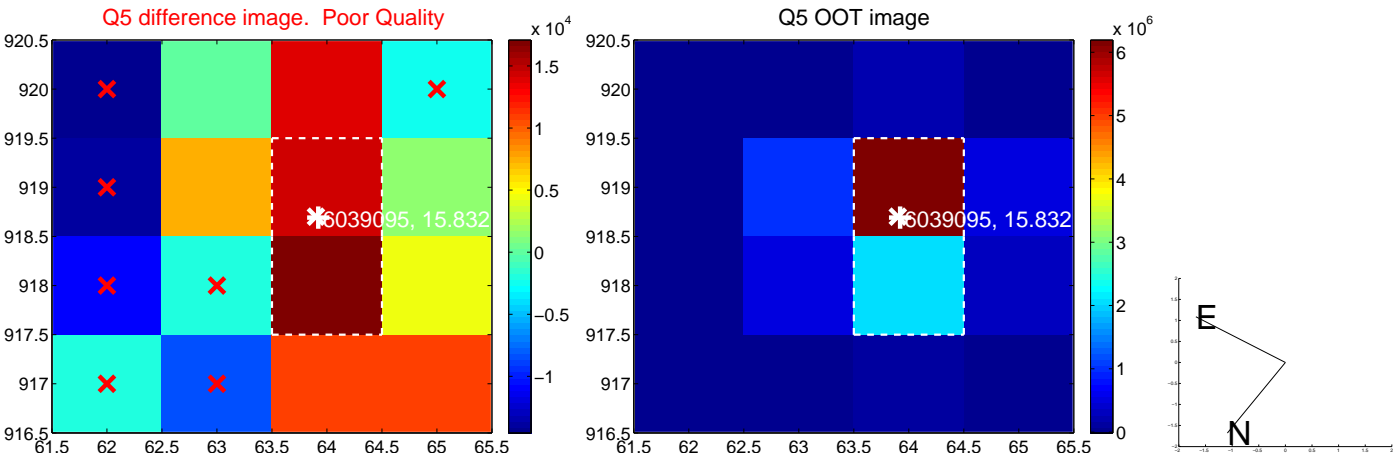
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





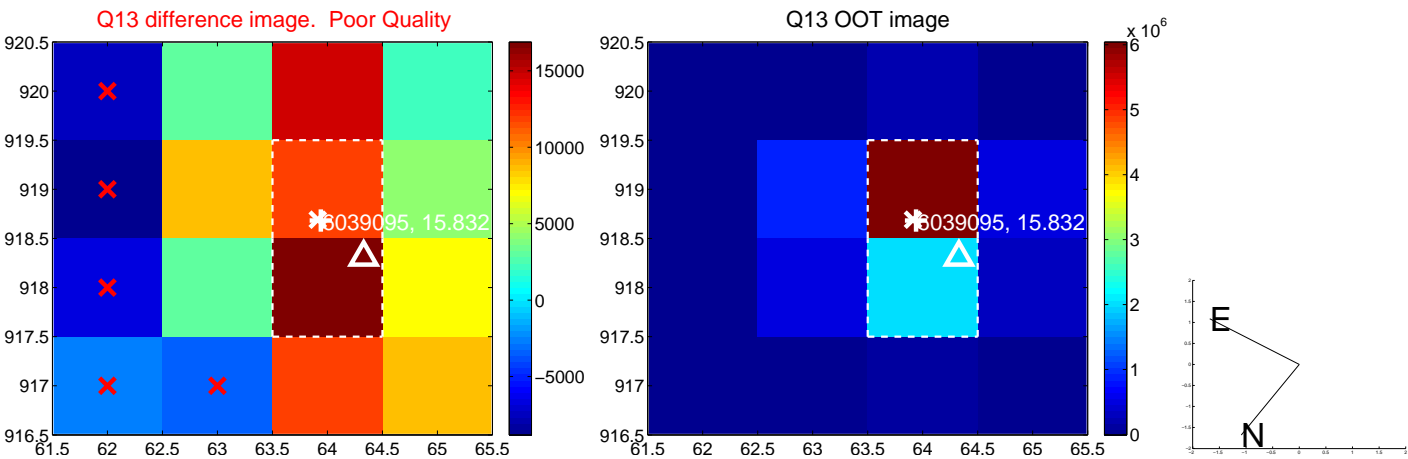
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



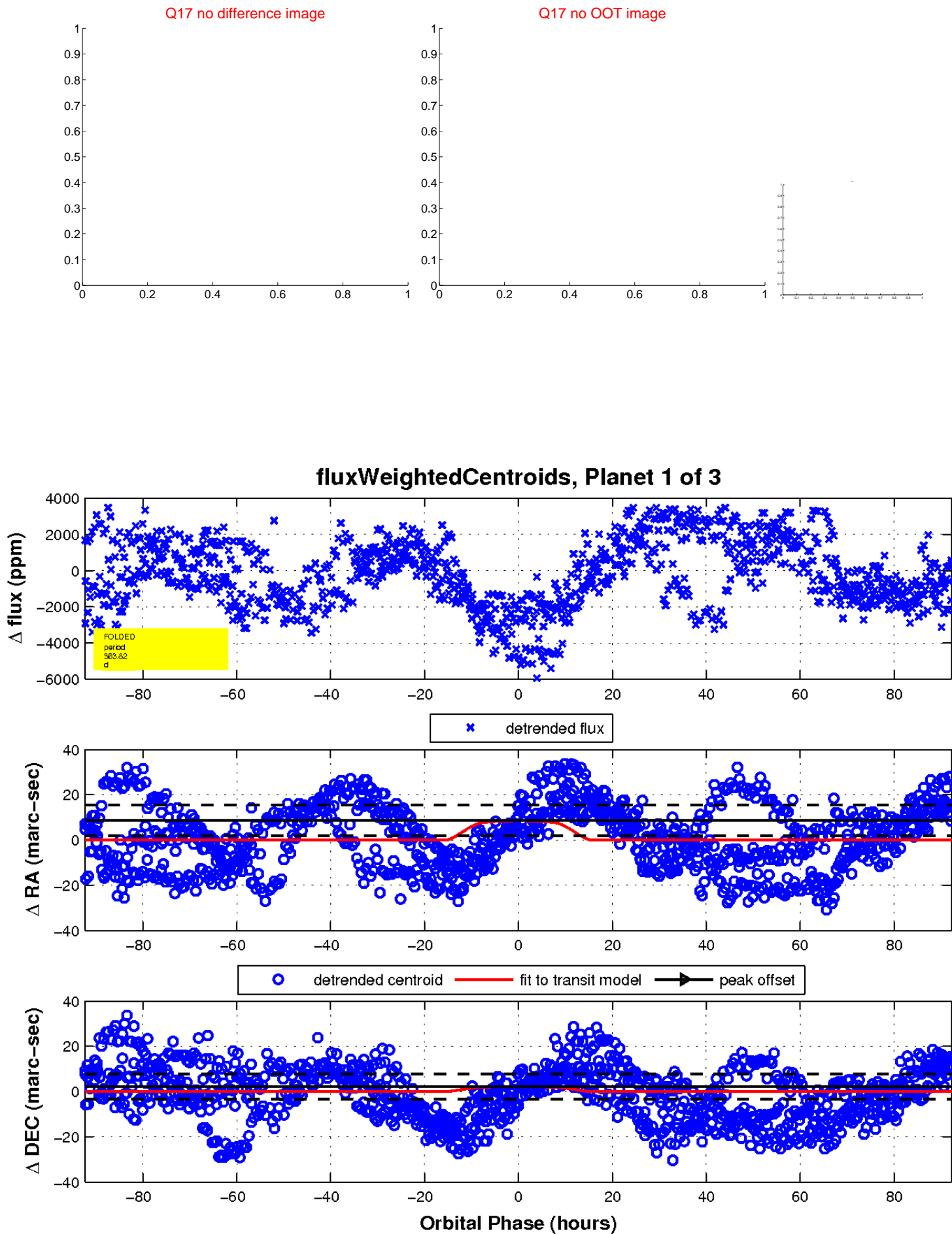
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

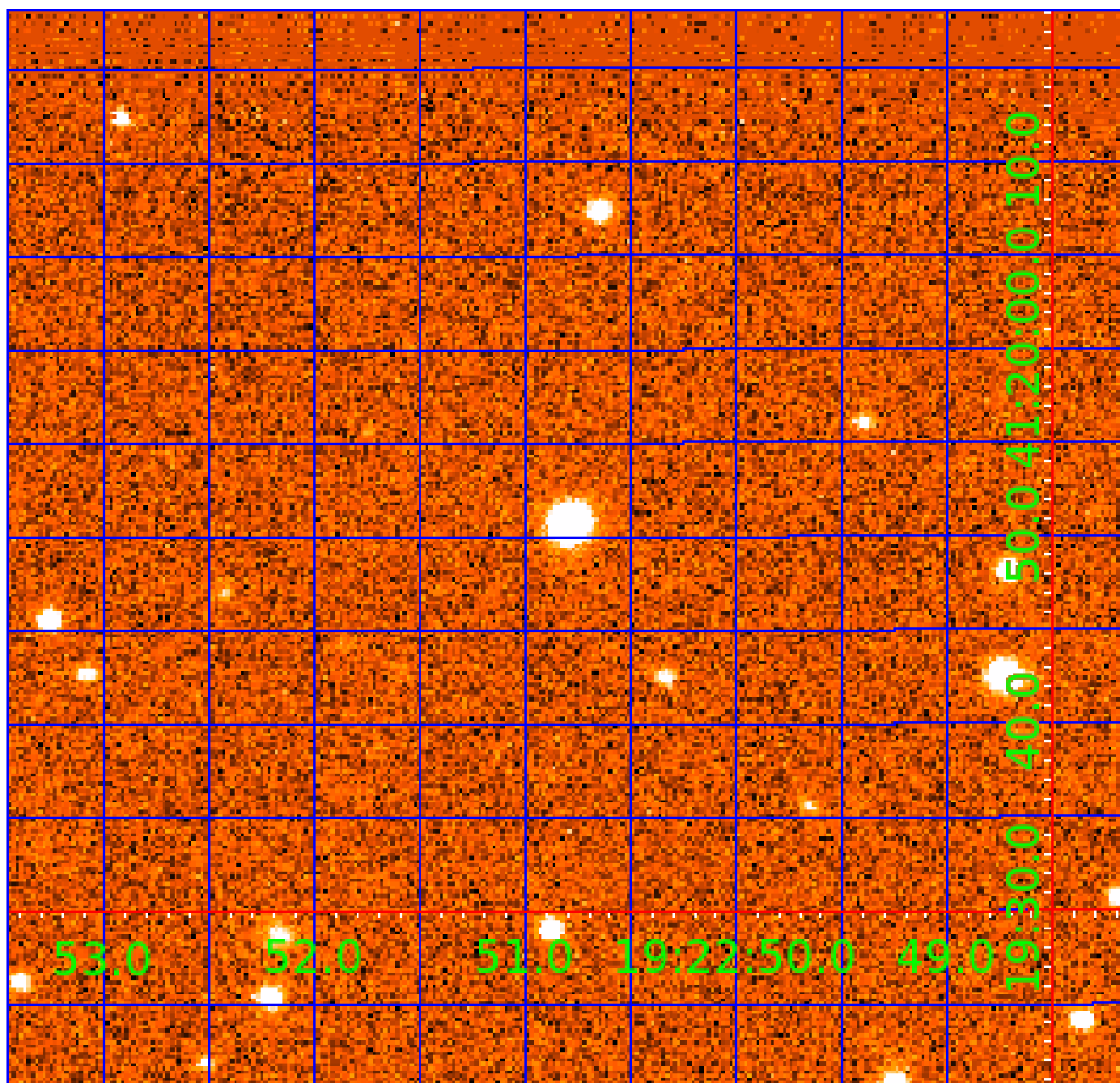


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 006039095

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006039095-01	OBS	No	363.817321	161.374781	3030.0	30.785	9.5	12.9	0.90	5912	5.84	0.93
006039095-02	OBS	No	375.421042	298.475328	1687.9	27.423	7.6	8.2	0.90	5912	4.56	0.90
006039095-03	OBS	No	359.797835	374.194841	1073.0	8.875	7.5	7.0	0.90	5912	3.08	0.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039095-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—MOD_TER_DV—MOD_NONUNIQ_ALT—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.

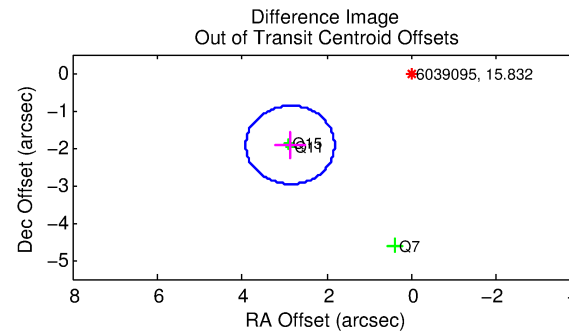
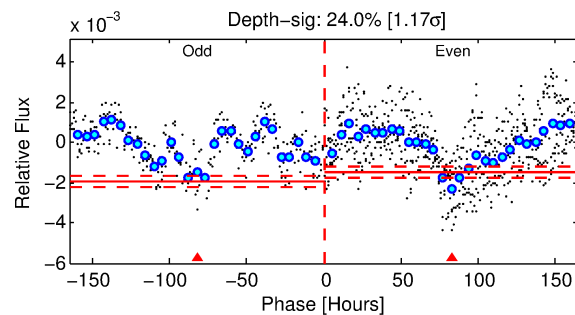
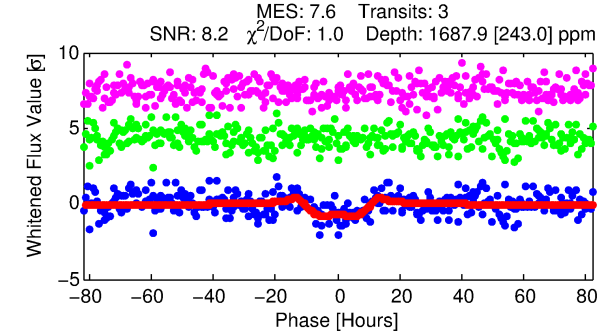
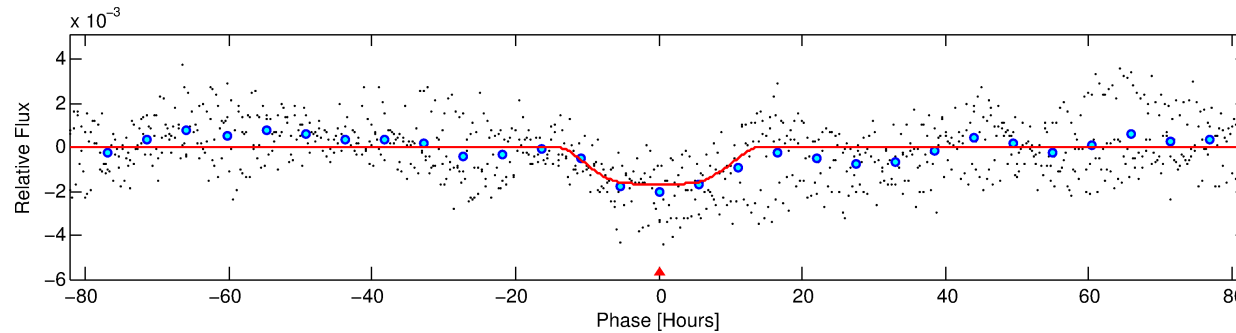
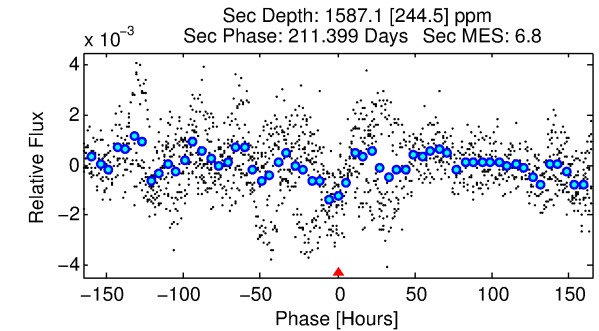
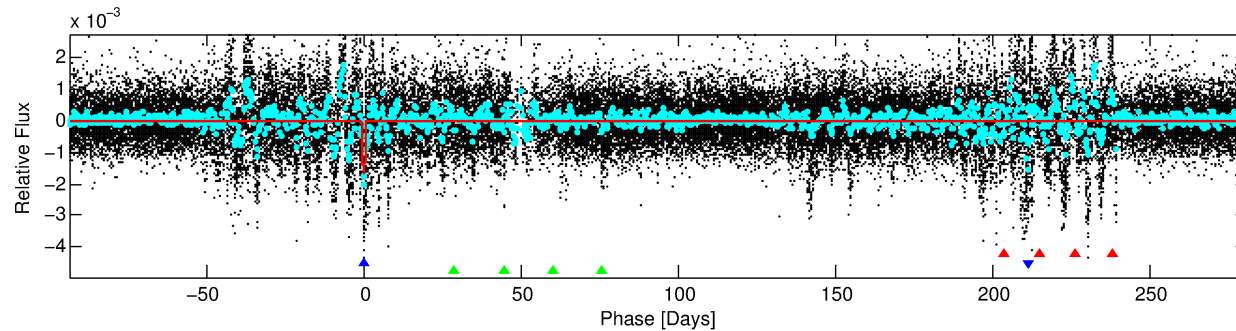
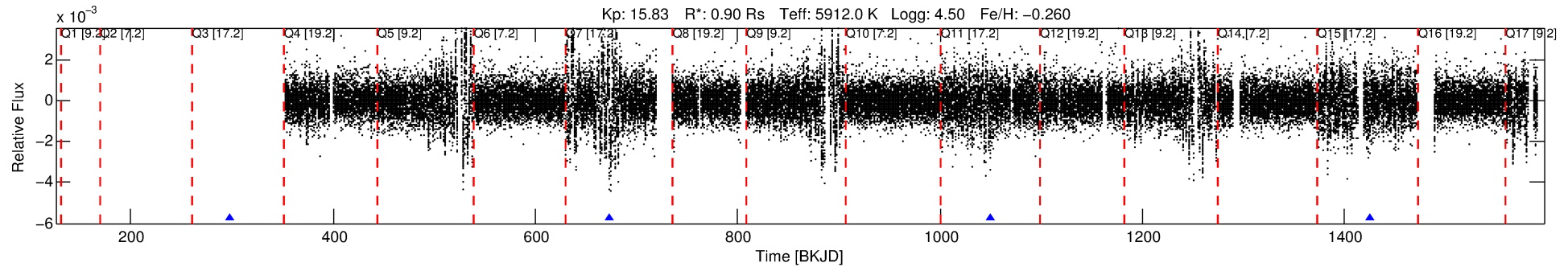
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006039095-02

No Significant Match Found

# DV One-Page Summary

KIC: 6039095 Candidate: 2 of 3 Period: 375.421 d



## DV Fit Results:

Period = 375.42104 [0.03662] d  
Epoch = 298.4753 [0.0757] BKJD  
Rp/R\* = 0.0463 [0.0040]  
a/R\* = 49.27 [7.29]  
b = 0.93 [0.02]  
Seff = 0.90 [0.34]  
Teq = 248 [24] K  
Rp = 4.56 [1.41] Re  
a = 0.9973 [0.2470] AU  
Ag = 41735.74 [17821.08] [2.34σ]  
Teff = 5481 [372] K [14.05σ]

## DV Diagnostic Results:

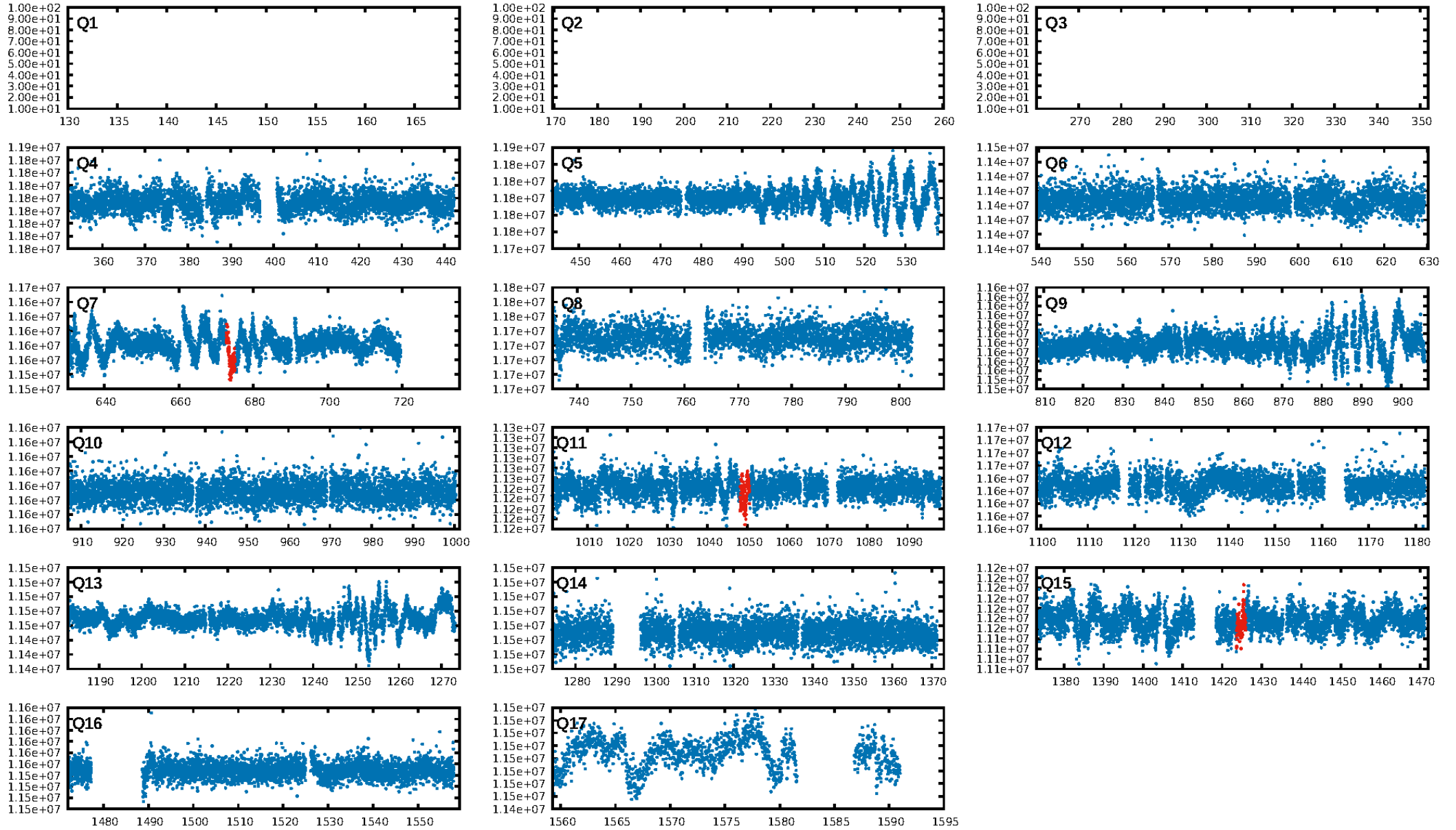
ShortPeriod-sig: 100.0% [6.75σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 19.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.73e-07**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.7101  
Centroid-sig: 49.6%  
Centroid-so: 2.010 arcsec [0.72σ]  
**OotOffset-rm: 3.448 arcsec [9.89σ]**  
**KicOffset-rm: 3.456 arcsec [10.03σ]**  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:39:47 Z

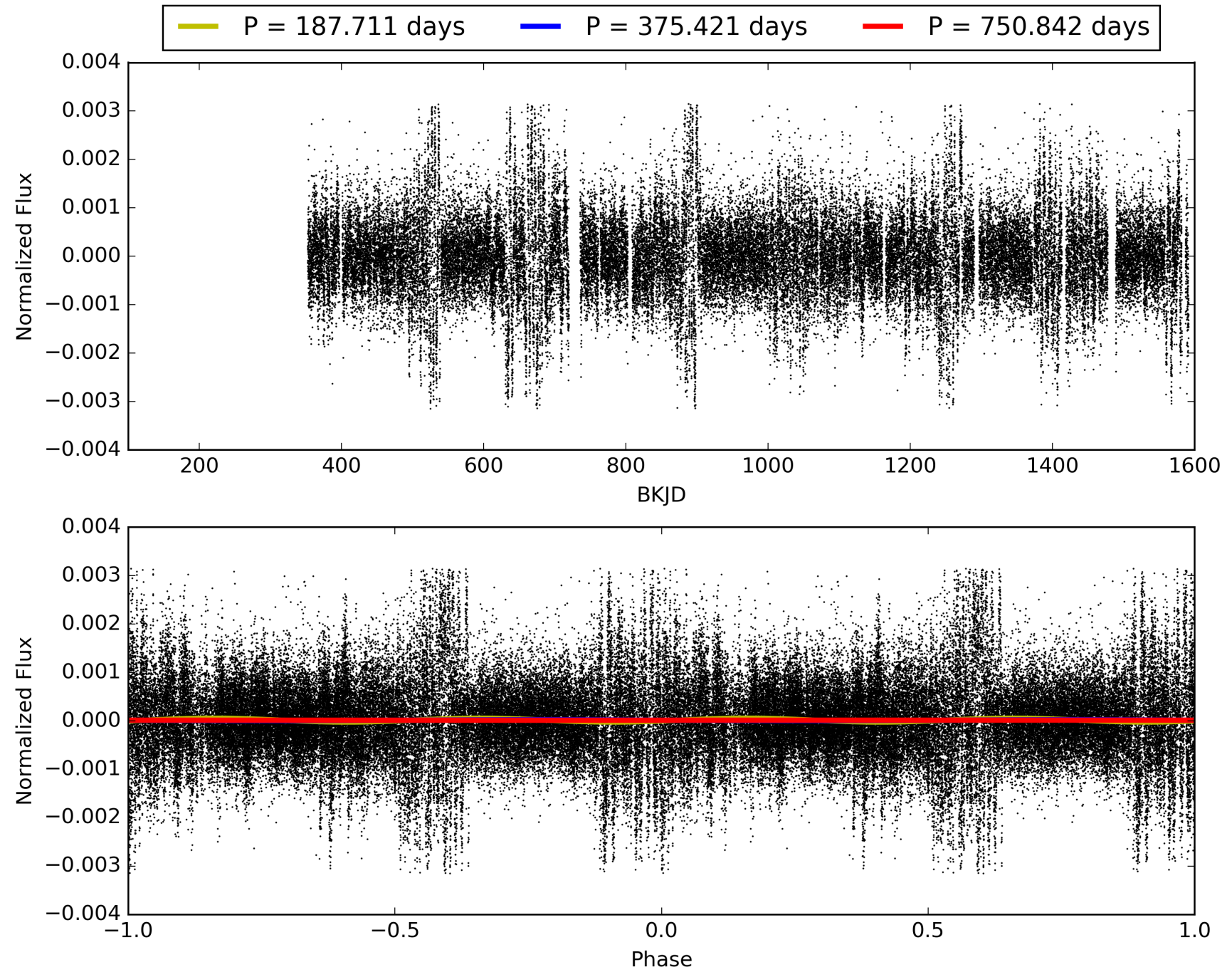
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 006039095-02, PDC Light Curves

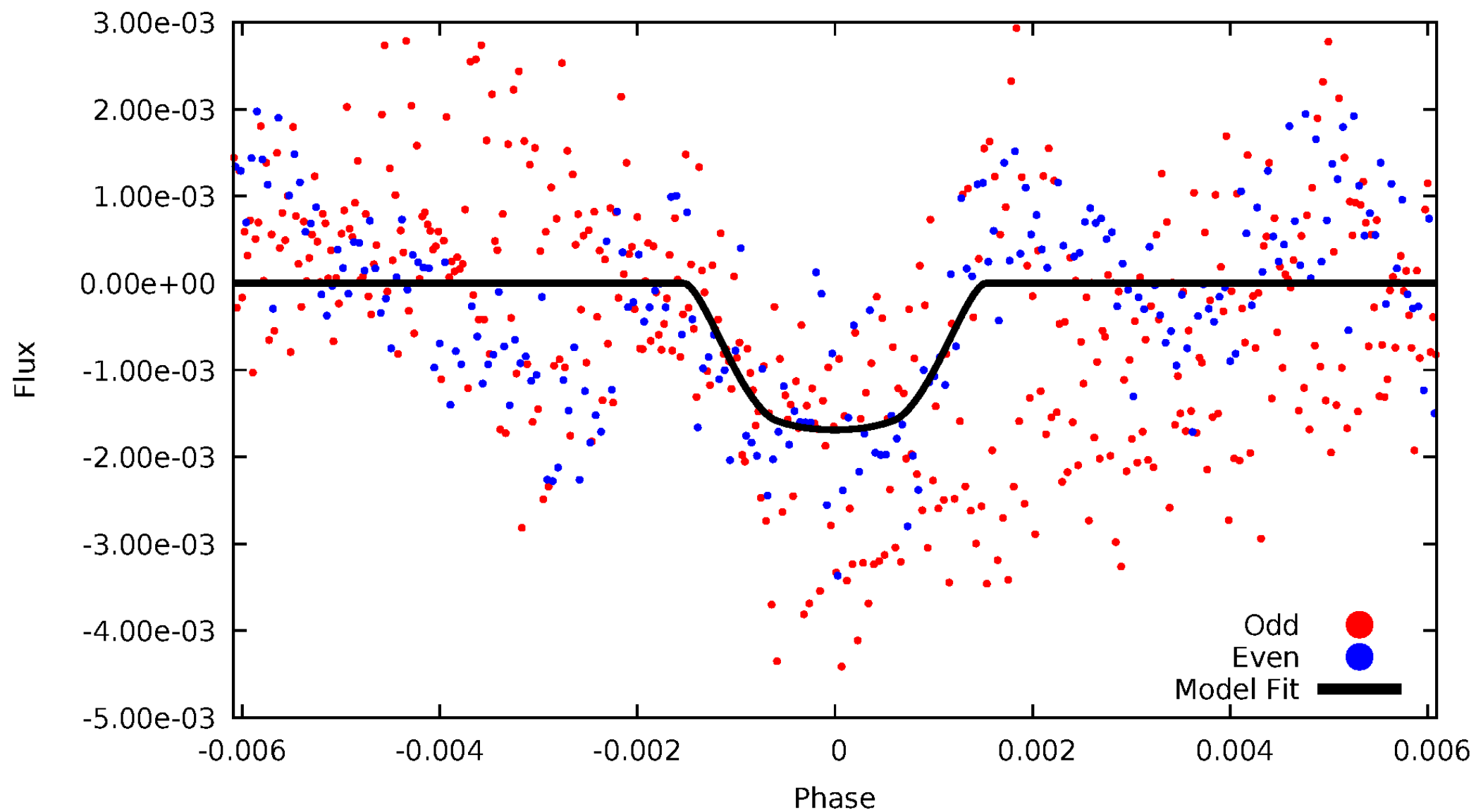


# TCE 006039095-02



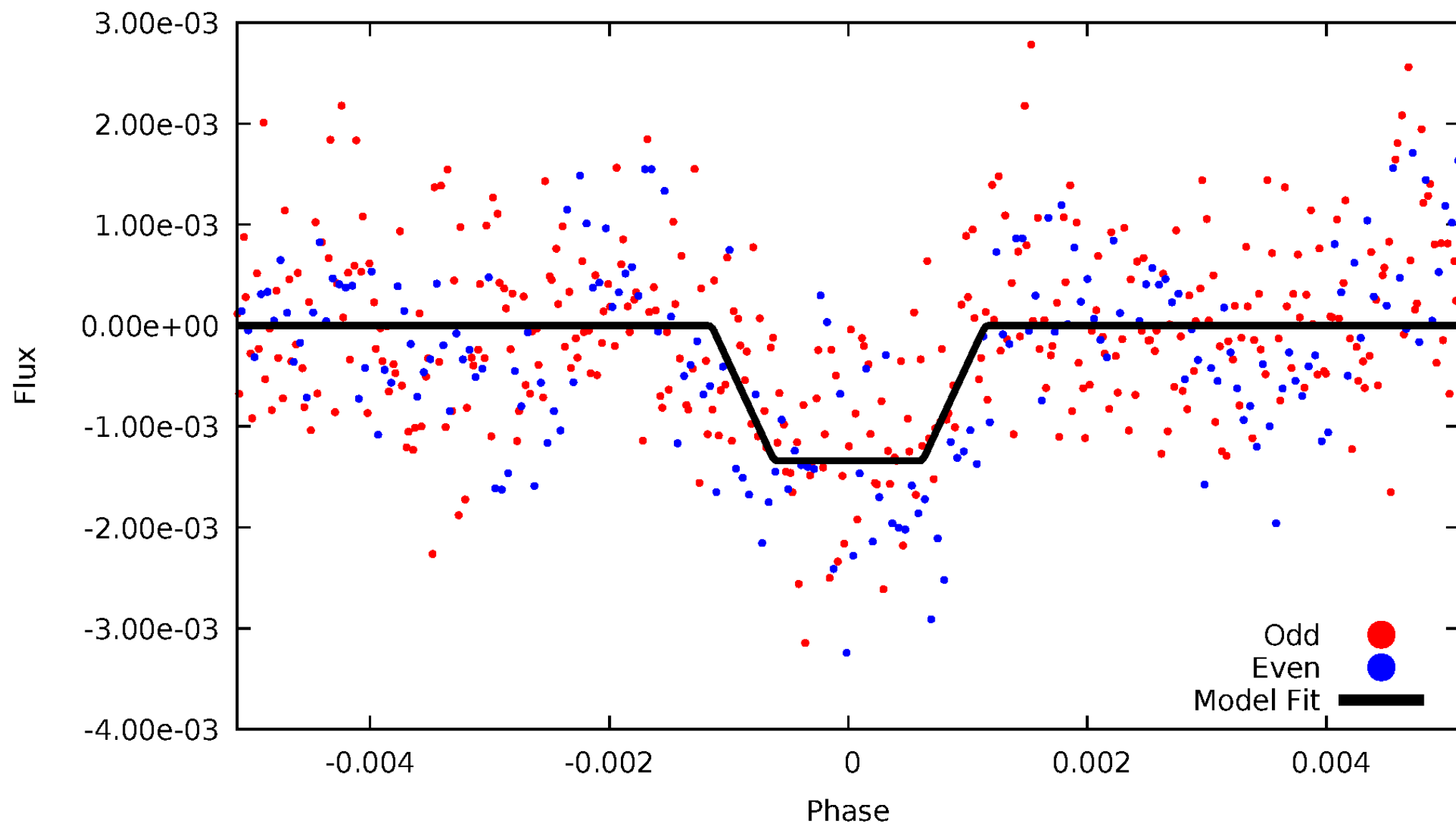
# DV Odd/Even

TCE 006039095-02



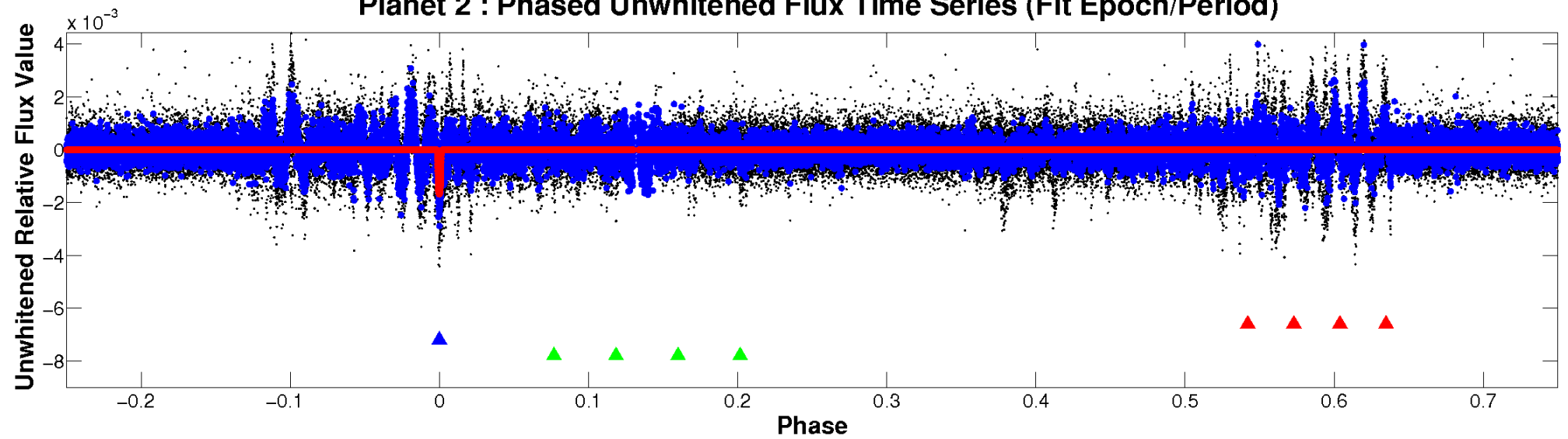
# ALT Odd/Even

TCE 006039095-02

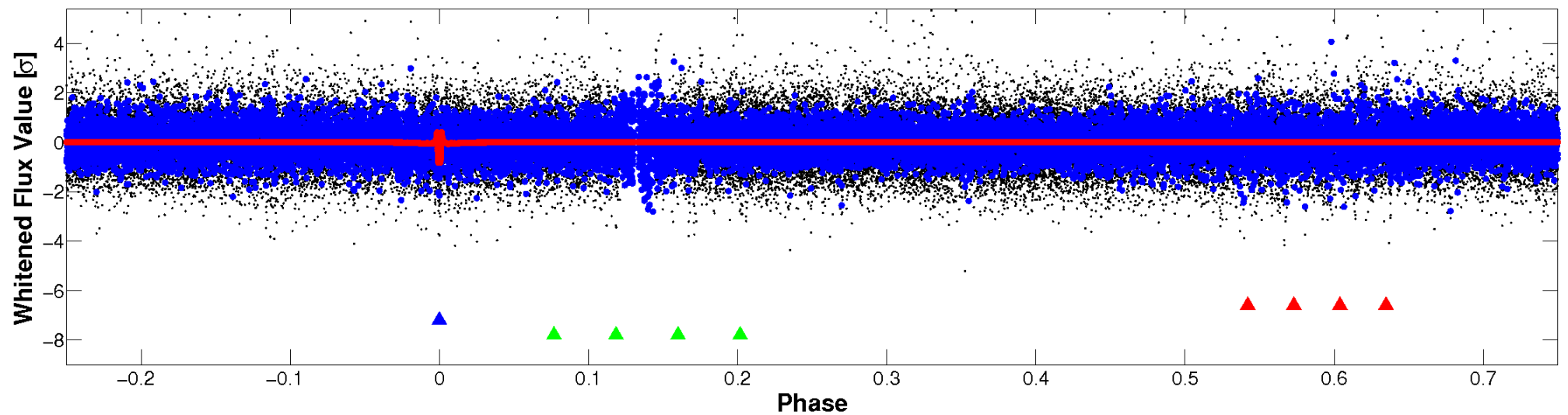


# Non-Whitened Vs. Whitened Light Curve

## 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 006039095-02     $P=375.421042$  Days     $T_0=298.475328$  (BKJD)



# DV Quarter-Phased Transit Curves

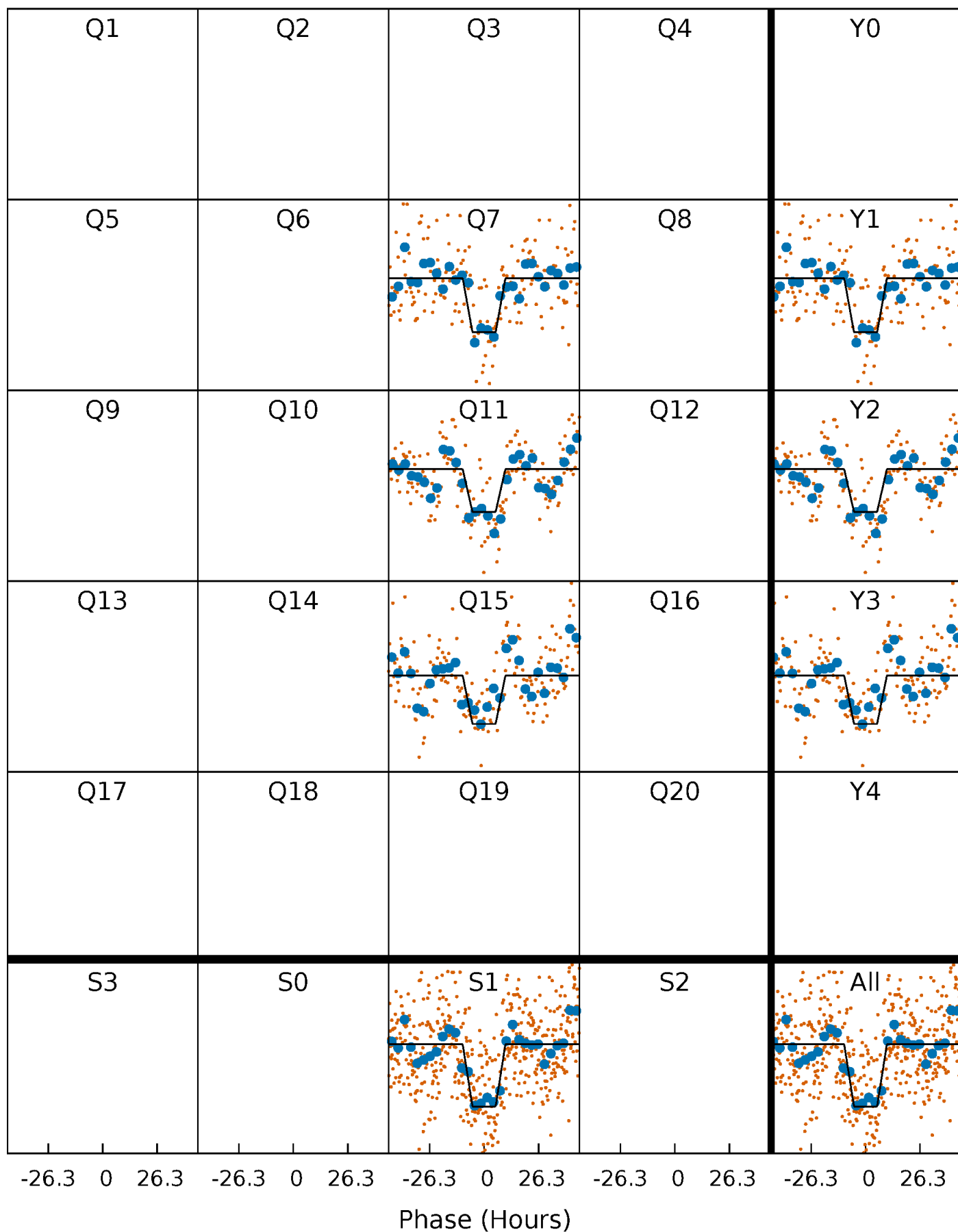
TCE 006039095-02     $P=375.421042$  Days     $T_0=298.475328$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

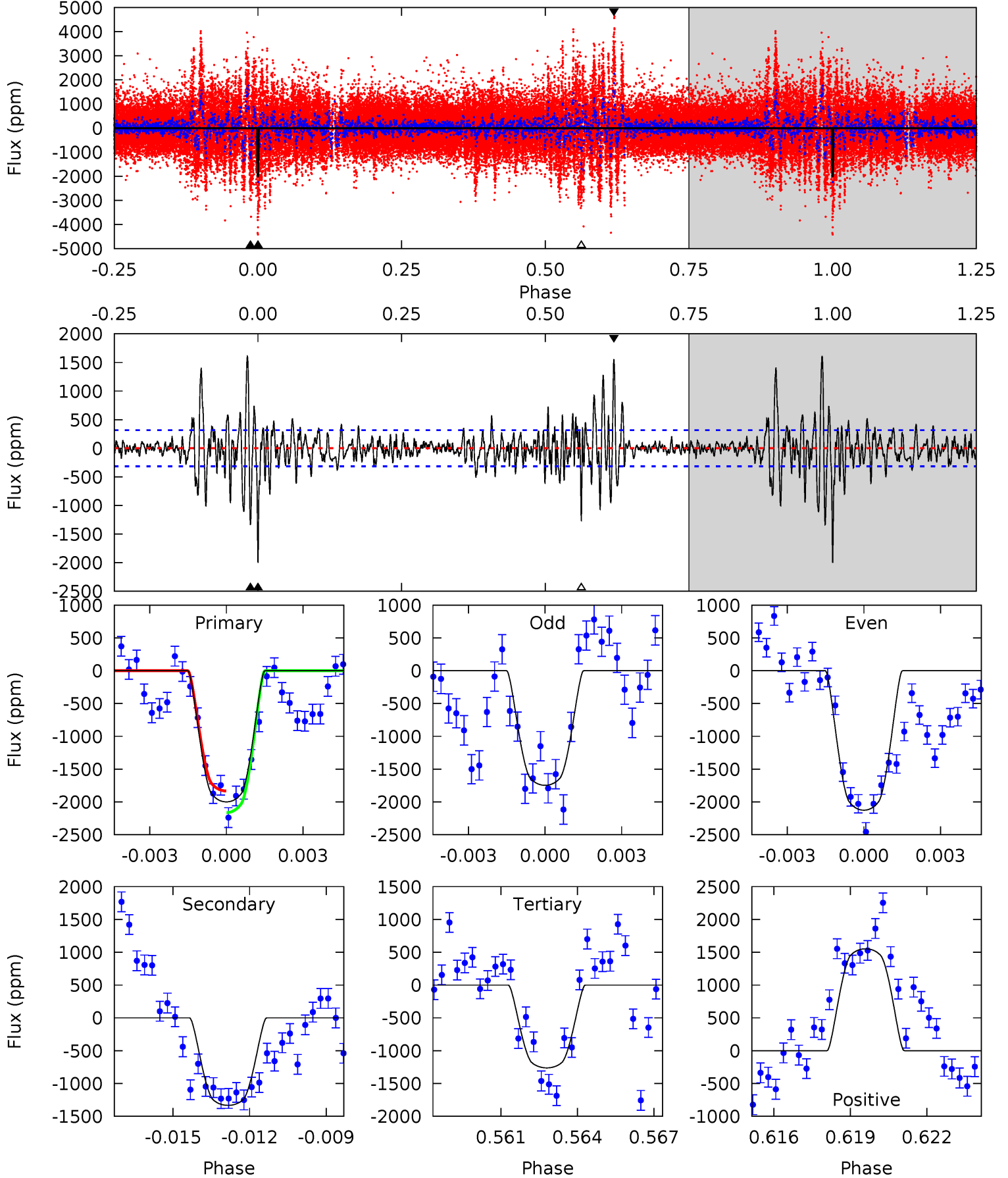
TCE 006039095-02     $P=375.521155$  Days     $T_0=298.290496$  (BKJD)



# DV Model-Shift Uniqueness Test

006039095-02, P = 375.421042 Days, E = 298.475328 Days

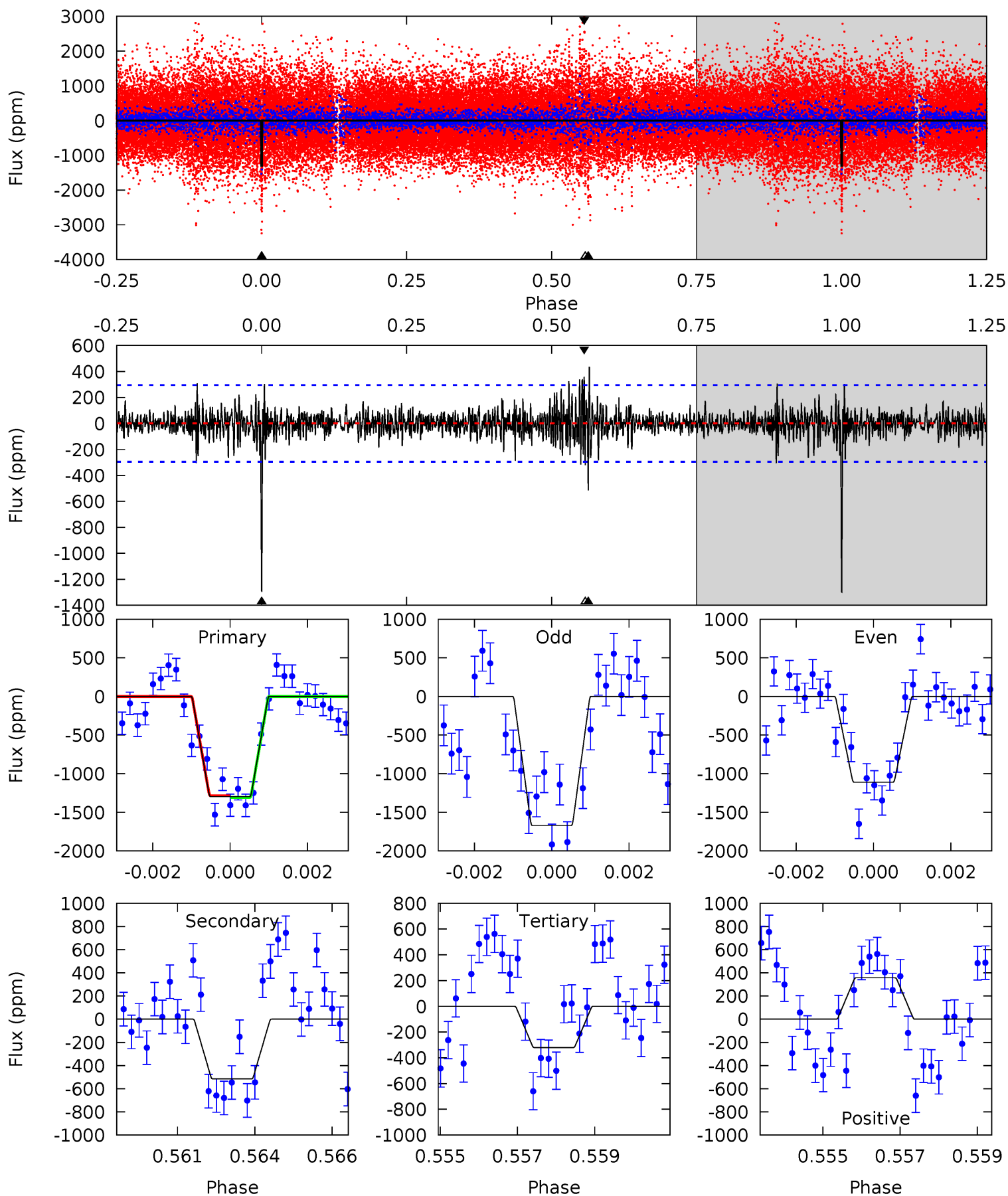
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	22.1	21.0	25.8	5.25	2.96	4.63	12.2	7.42	1.17	-3.64	3.06	1.14	0.45	2.68



# Alt Model-Shift Uniqueness Test

006039095-02, P = 375.521155 Days, E = 298.290496 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
23.3	9.24	5.75	6.40	5.30	3.05	1.34	17.5	16.9	3.48	2.83	4.76	1.02	0.25	0.18



### Stellar Parameters For KIC 006039095

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5912^{+187}_{-208}$	$4.500^{+0.065}_{-0.195}$	$-0.260^{+0.300}_{-0.300}$	$0.902^{+0.267}_{-0.095}$	$0.940^{+0.120}_{-0.109}$	$1.803^{+0.498}_{-0.940}$
	+3%/-4%	+1%/-4%	+115%/-115%	+30%/-11%	+13%/-12%	+28%/-52%
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 006039095-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1333 \pm 60$	$4.71^{+0.73}_{-0.59}$	$353^{+25}_{-19}$	$5288^{+297}_{-257}$	$32570^{+8620}_{-7503}$
Alt.	$-515 \pm 56$	$3.78^{+0.63}_{-0.54}$	$352^{+26}_{-19}$	$4758^{+292}_{-240}$	$19664^{+7033}_{-5410}$

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

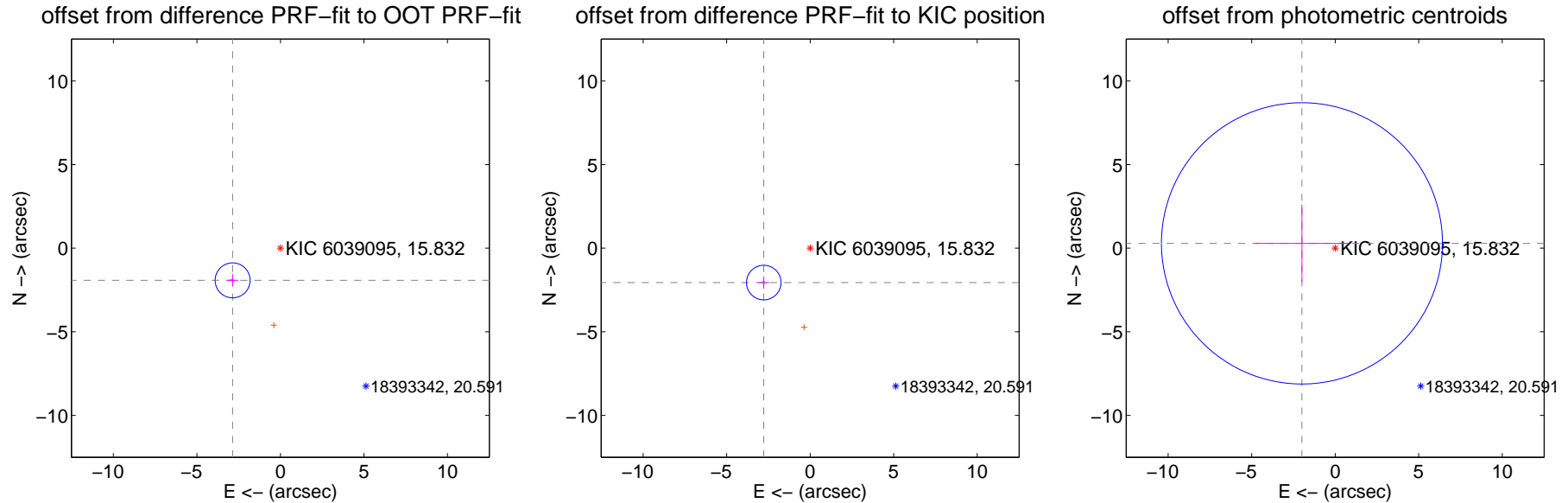
## DV Centroid Data

Supplemental centroid analysis for 006039095-02. Kepler magnitude: 15.83. Transit SNR 8.18

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.448 \pm 0.349$	9.89	$2.862 \pm 0.339$	$-1.922 \pm 0.369$
PRF-fit source offset from KIC position	$3.456 \pm 0.345$	10.03	$2.778 \pm 0.332$	$-2.056 \pm 0.367$
photometric centroid source offset	$2.01 \pm 2.80$	0.72	$1.99 \pm 2.81$	$0.29 \pm 2.32$

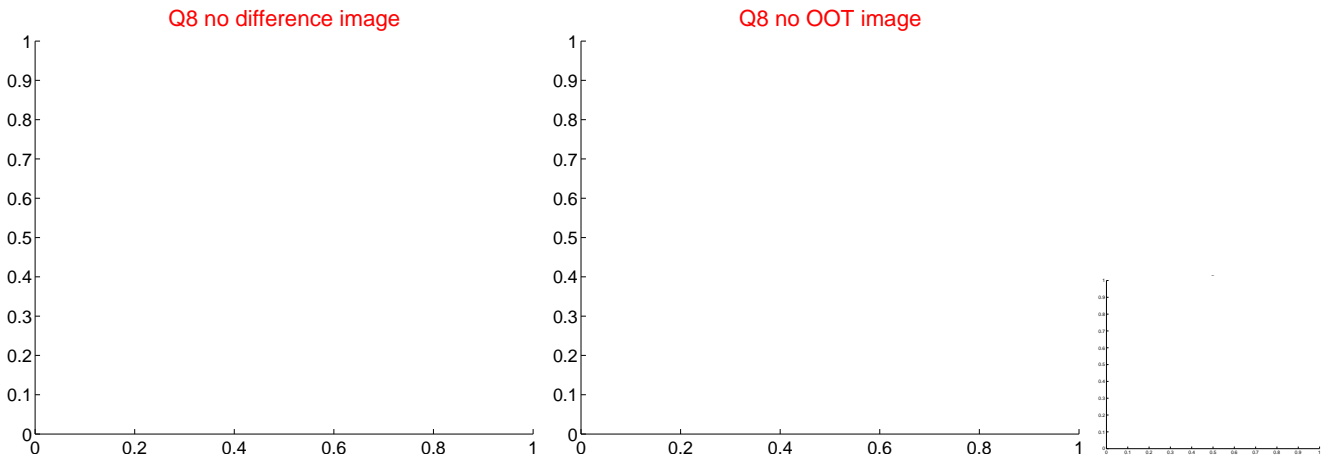
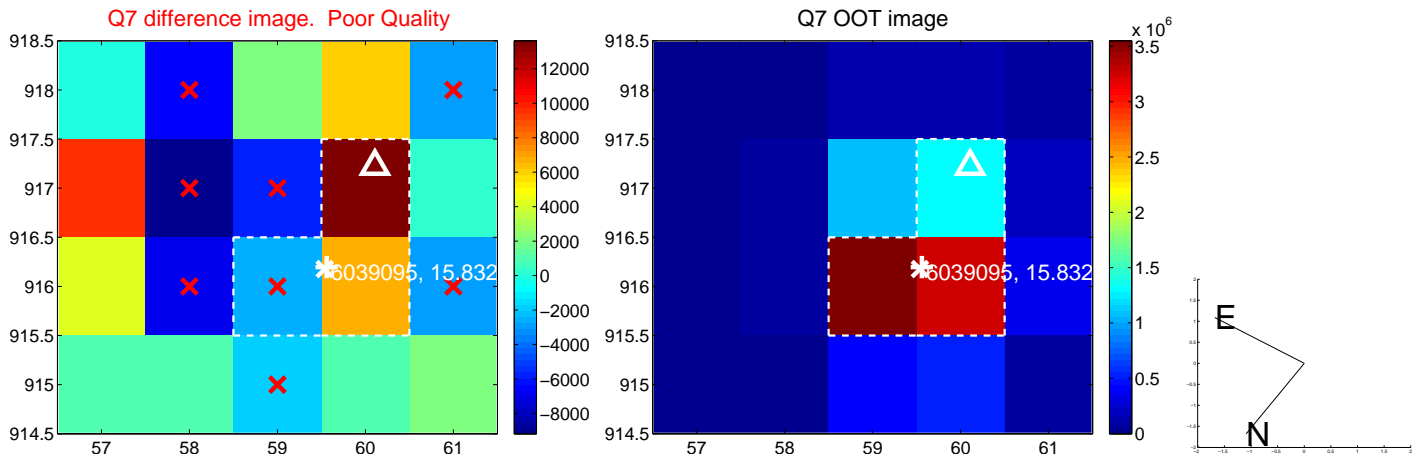
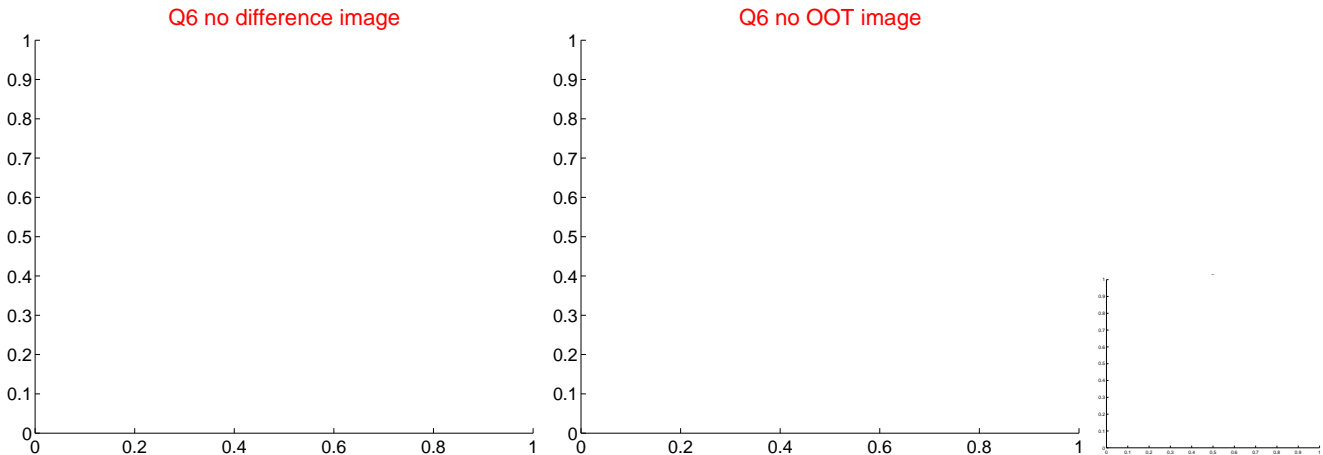
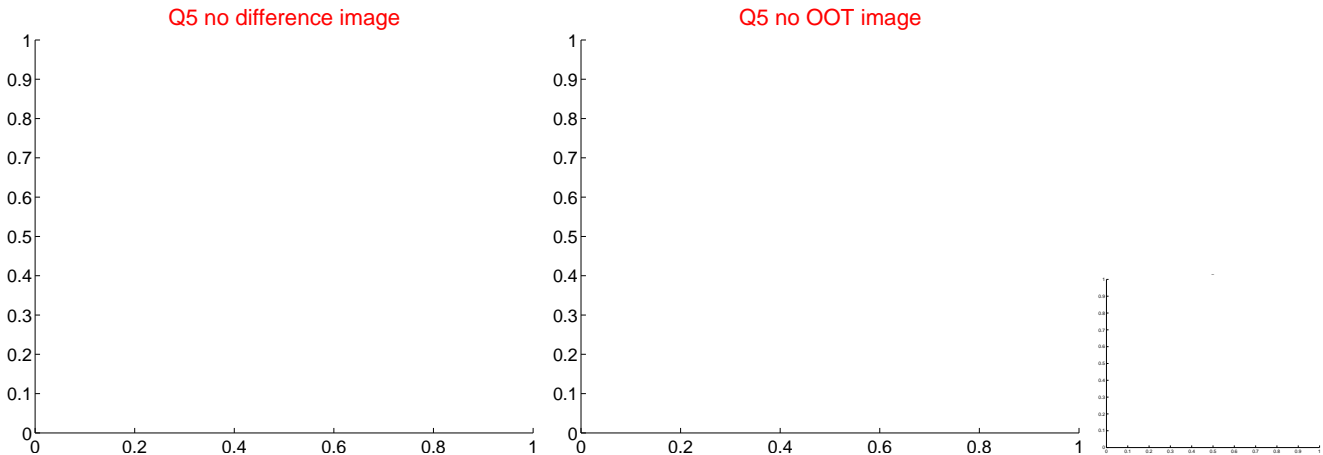


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

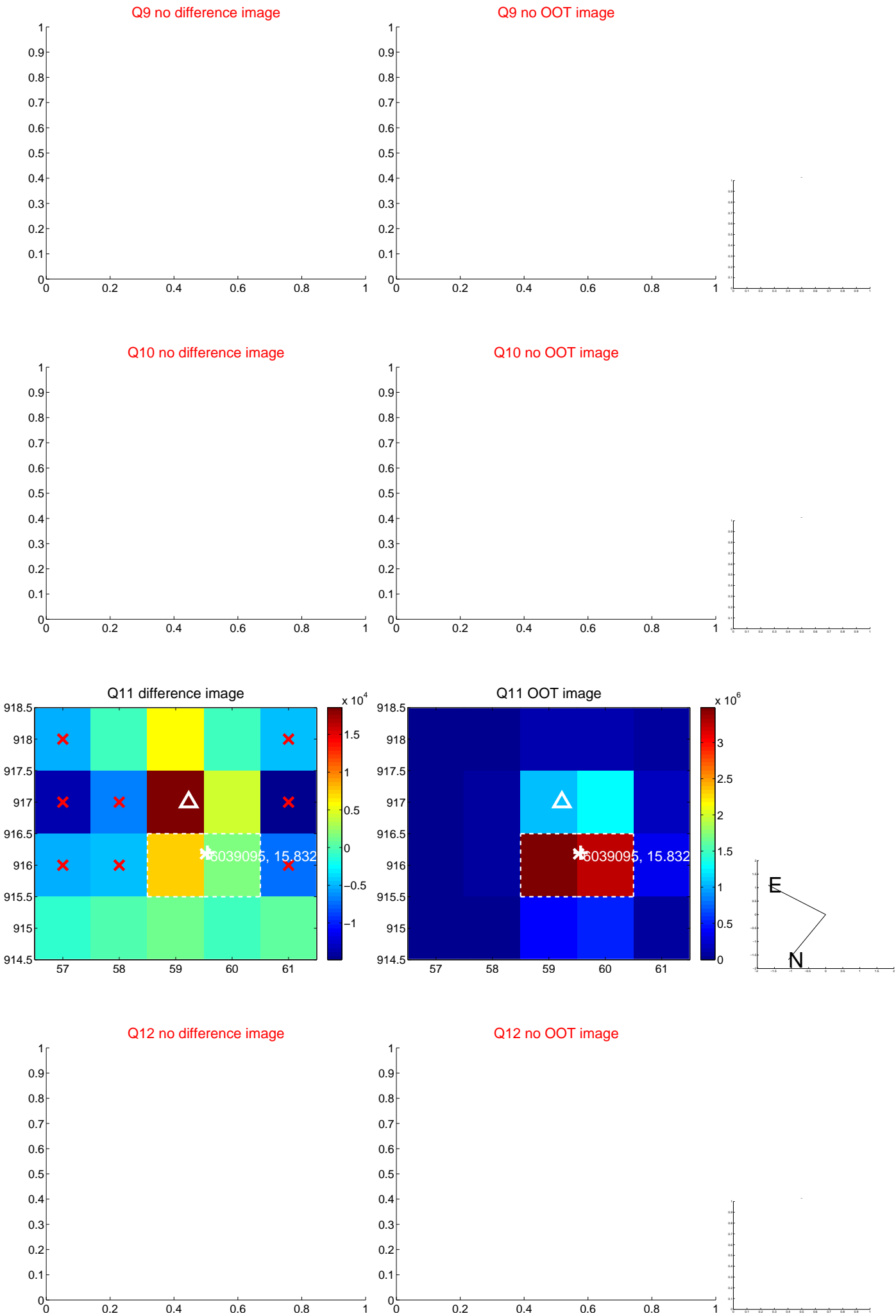


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value

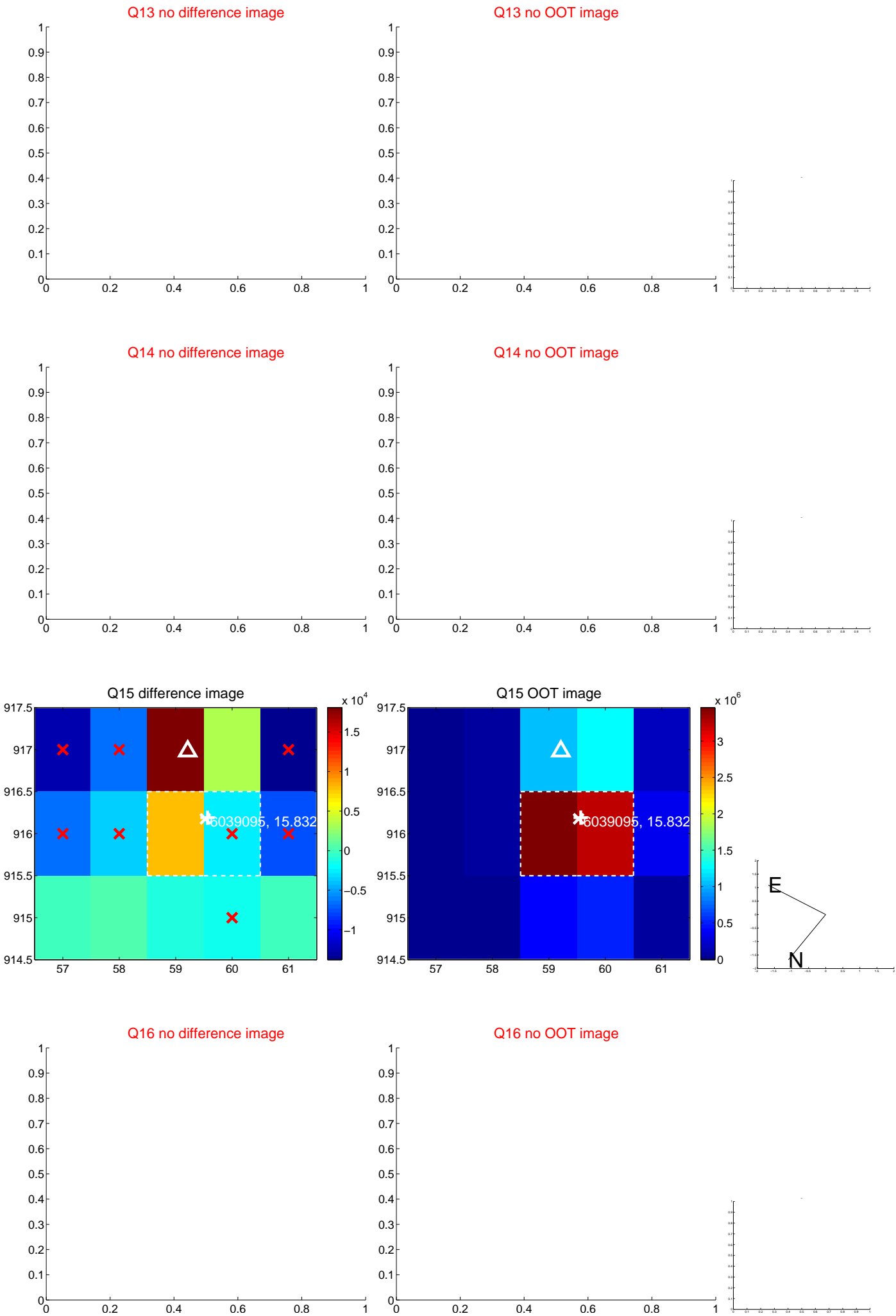




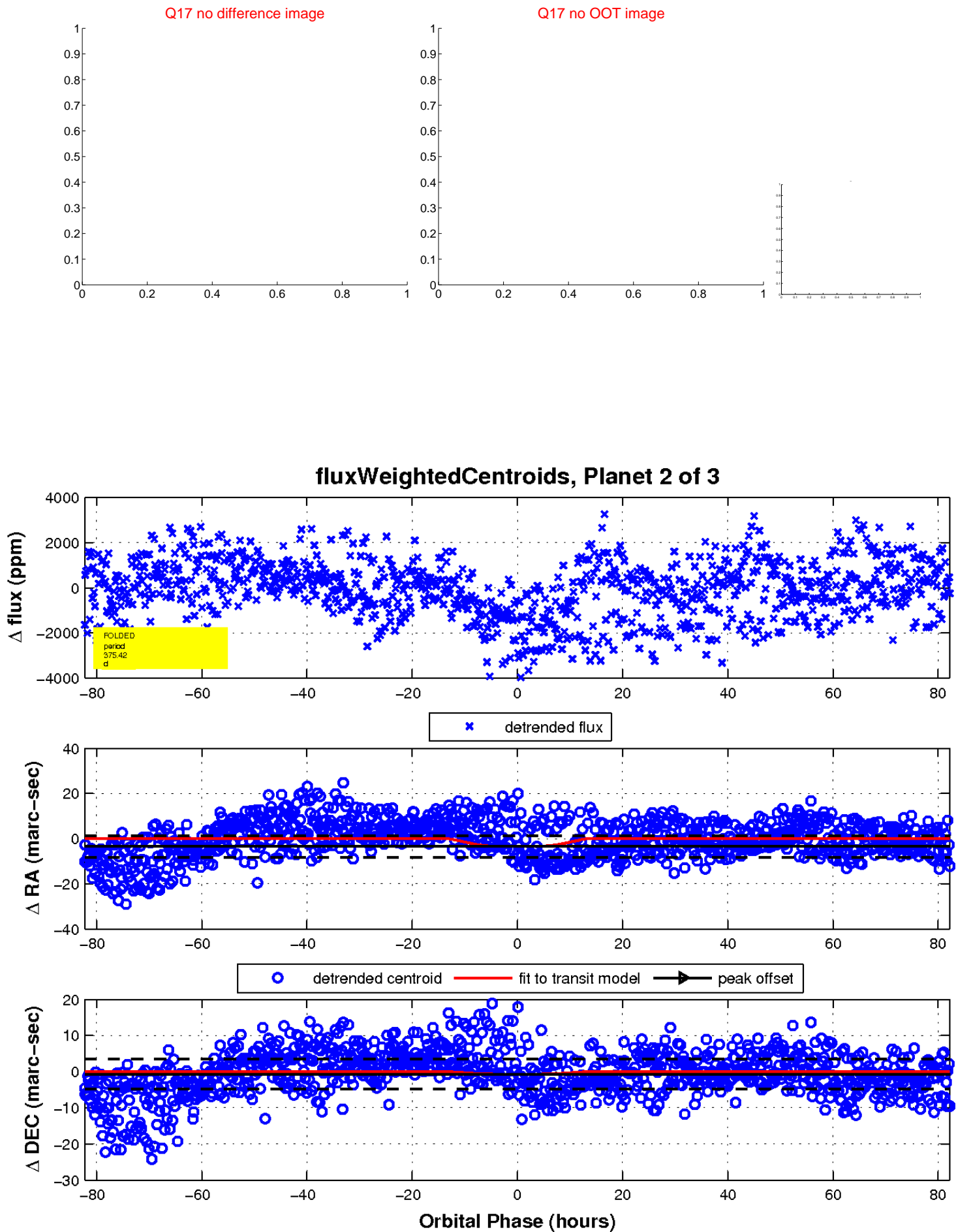
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

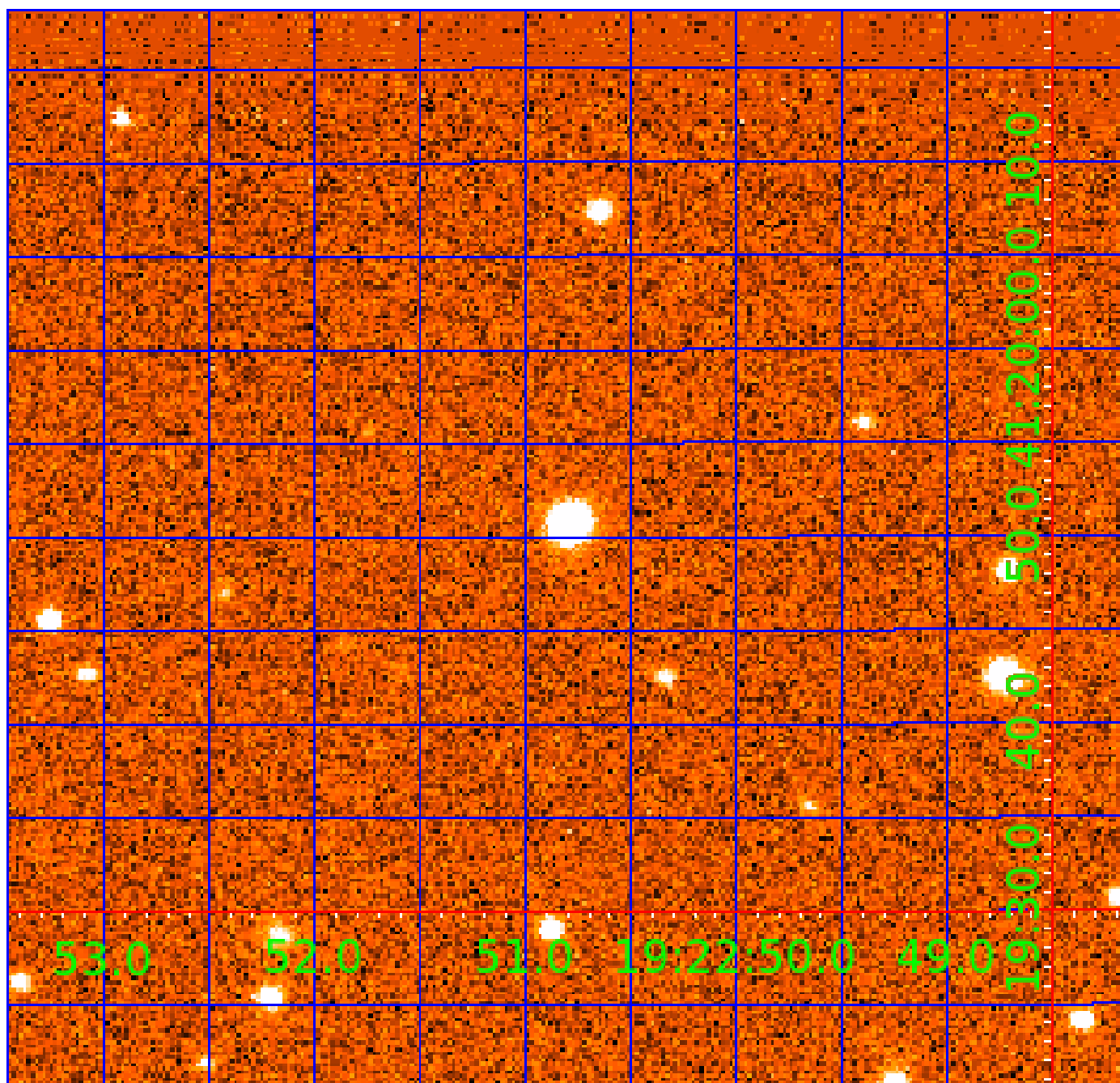


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 006039095

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006039095-01	OBS	No	363.817321	161.374781	3030.0	30.785	9.5	12.9	0.90	5912	5.84	0.93
006039095-02	OBS	No	375.421042	298.475328	1687.9	27.423	7.6	8.2	0.90	5912	4.56	0.90
006039095-03	OBS	No	359.797835	374.194841	1073.0	8.875	7.5	7.0	0.90	5912	3.08	0.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039095-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
006039095-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—MOD_TER_DV—MOD_NONUNIQ_ALT—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.

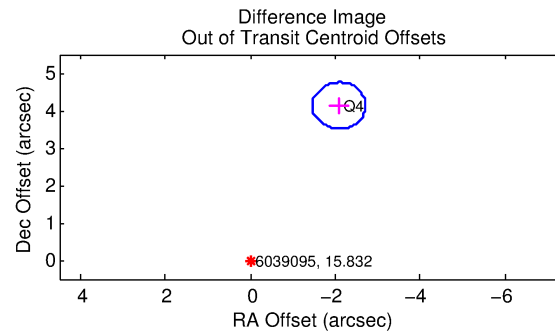
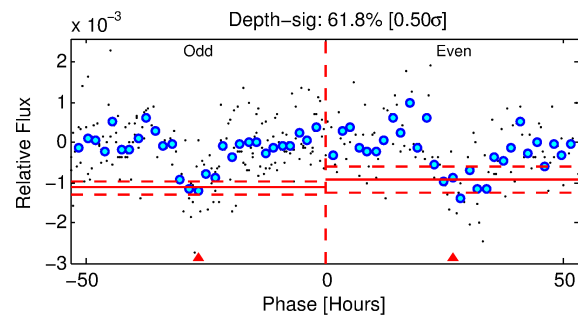
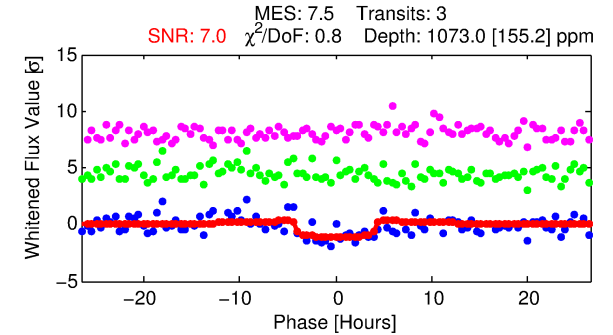
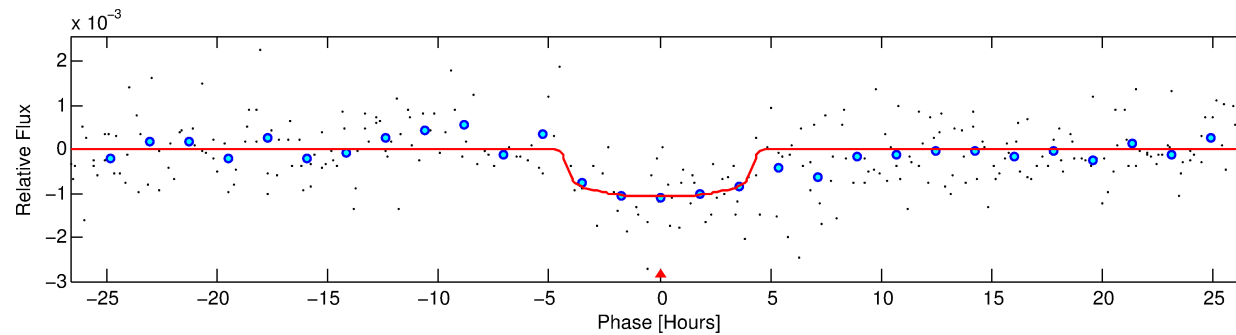
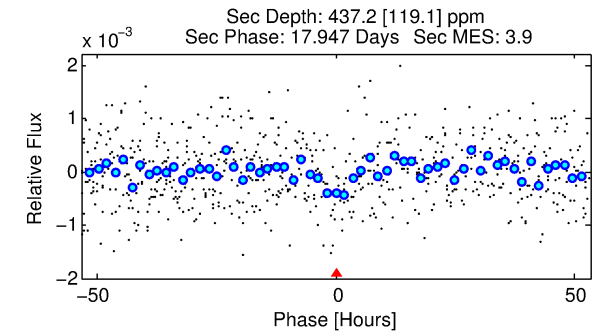
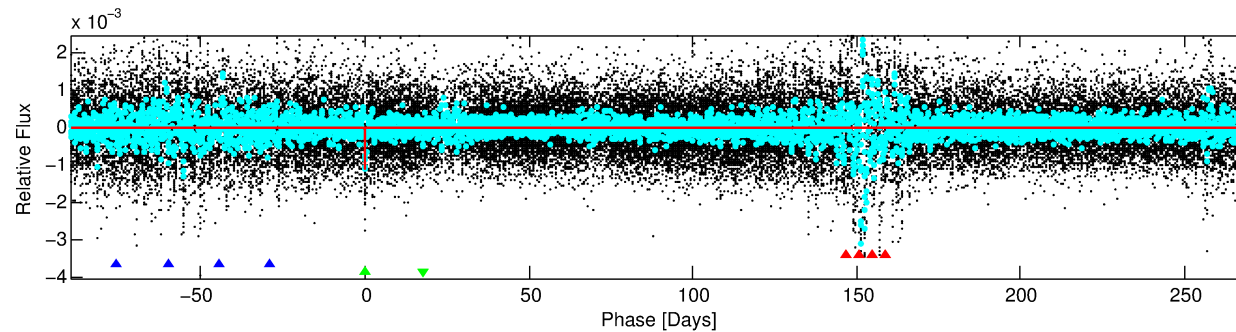
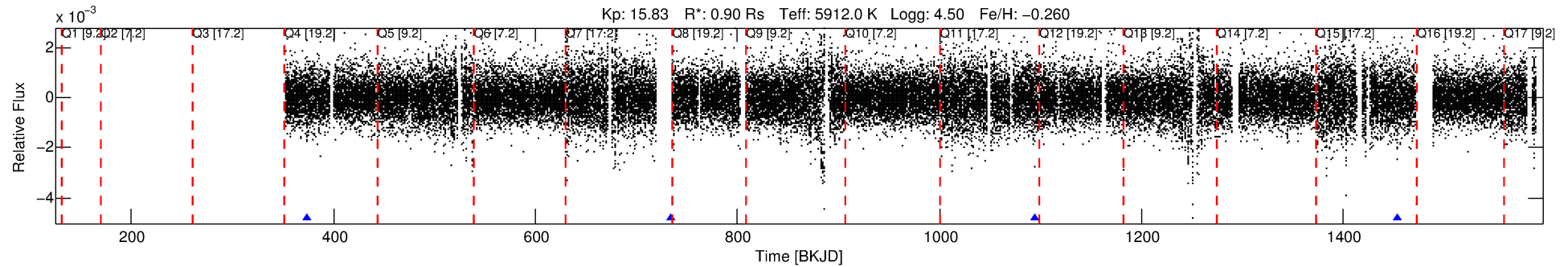
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006039095-03

No Significant Match Found

# DV One-Page Summary

KIC: 6039095 Candidate: 3 of 3 Period: 359.798 d



## DV Fit Results:

Period = 359.79783 [0.00757] d  
Epoch = 374.1948 [0.0138] BKJD  
Rp/R\* = 0.0313 [0.0160]  
a/R\* = 259.37 [608.65]  
b = 0.60 [2.50]  
Seff = 0.95 [0.36]  
Teq = 252 [24] K  
Rp = 3.08 [1.82] Re  
a = 0.9695 [0.2401] AU  
Ag = 23771.47 [26510.30] [0.90σ]  
Teff = 4830 [1286] K [3.56σ]

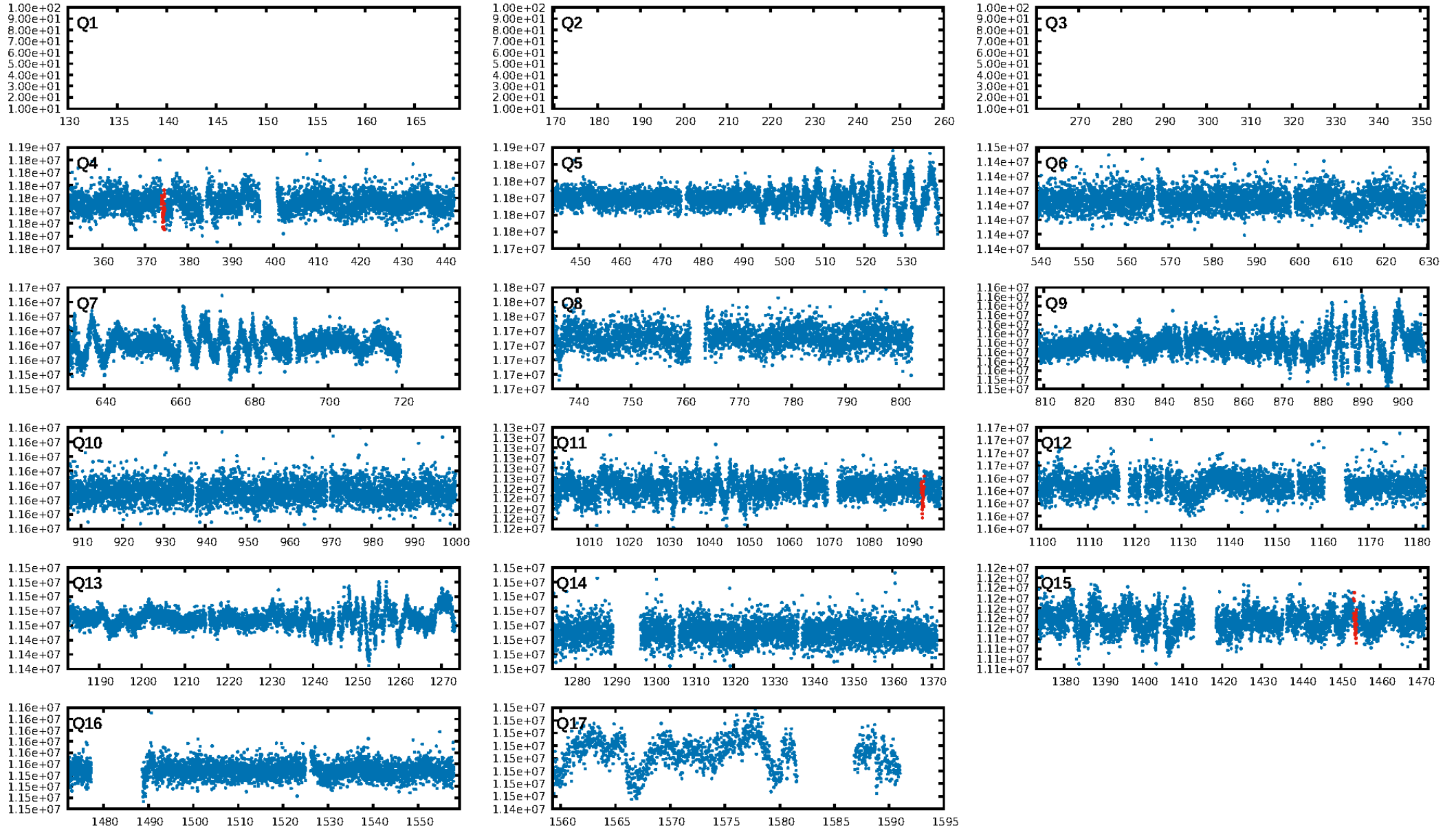
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.7% [3.01σ]  
ModelChiSquare2-sig: 78.9%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 1.32e-08  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 5.588  
Centroid-sig: 25.2%  
Centroid-so: 2.466 arcsec [0.89σ]  
OotOffset-rm: 4.631 arcsec [22.31σ]  
KicOffset-rm: 4.588 arcsec [22.08σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:39:56 Z

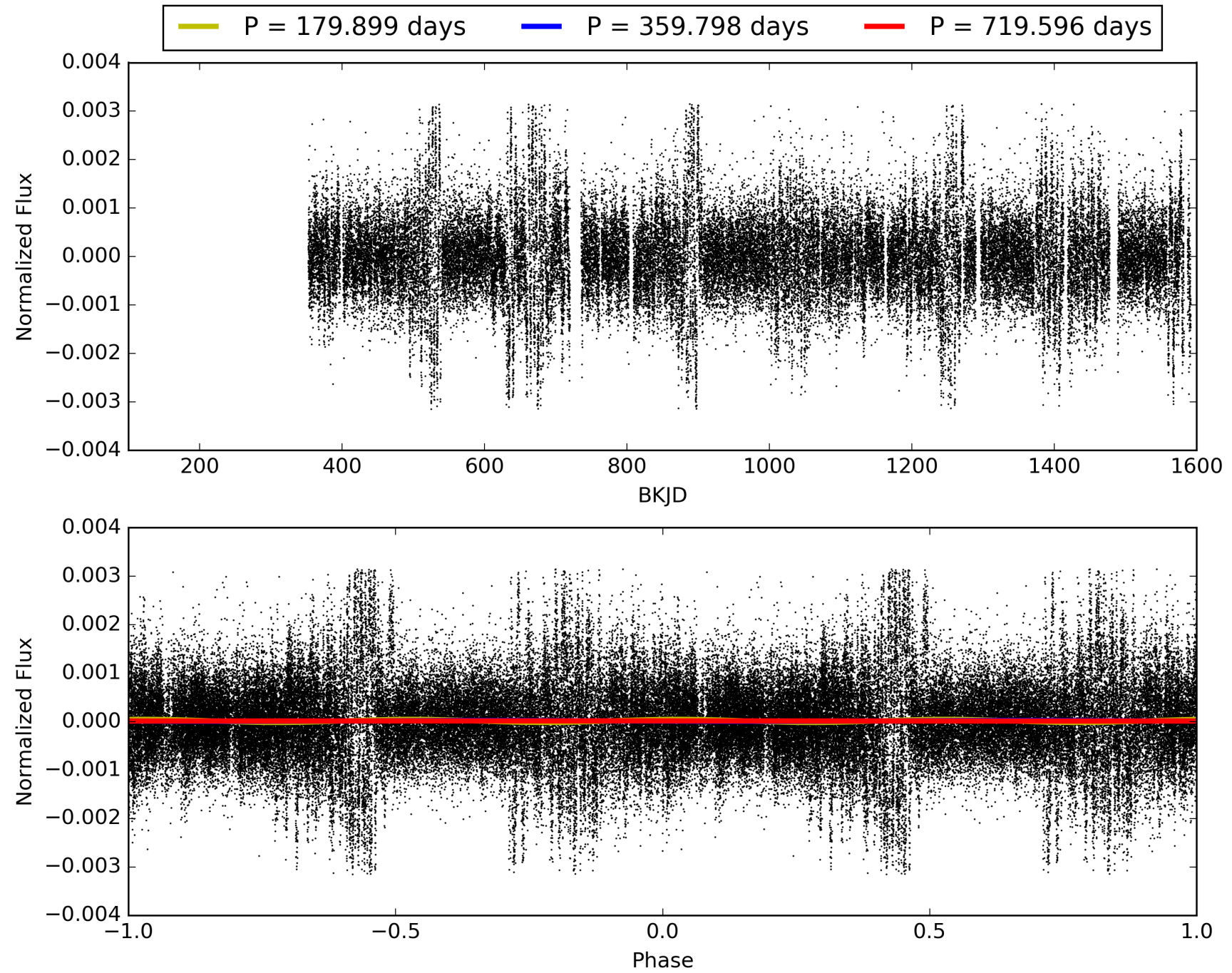
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006039095-03, PDC Light Curves





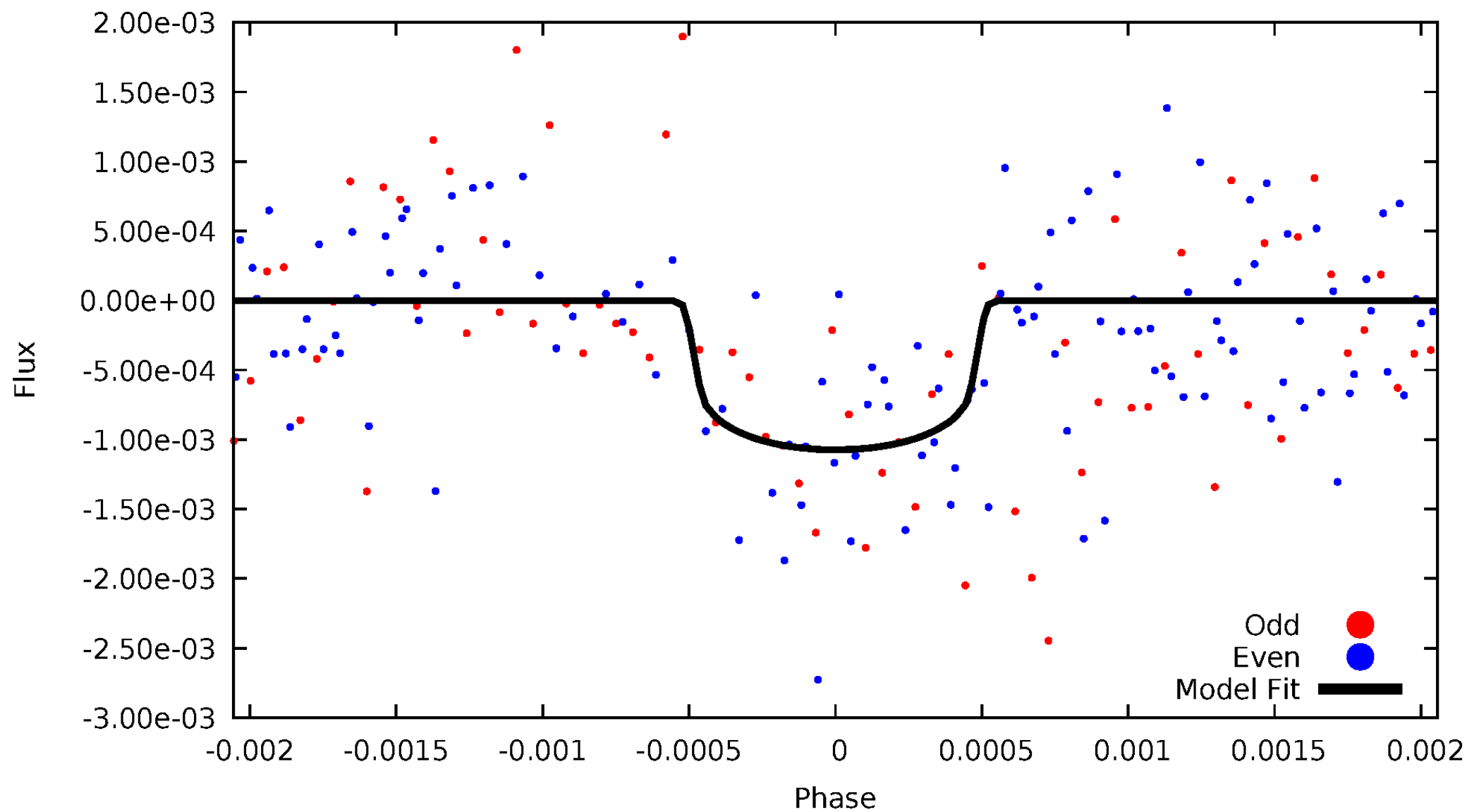
TCE 006039095-03





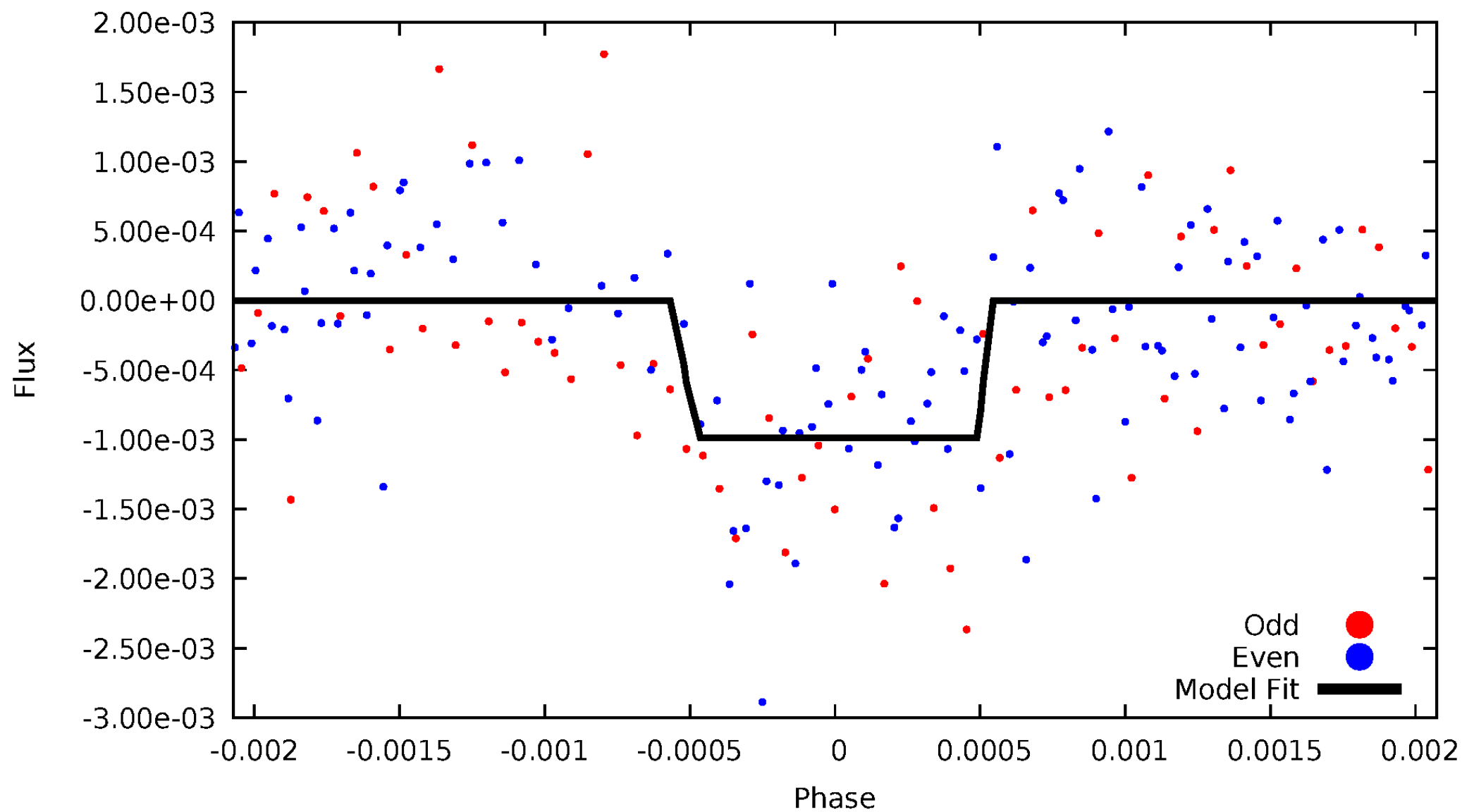
# DV Odd/Even

TCE 006039095-03



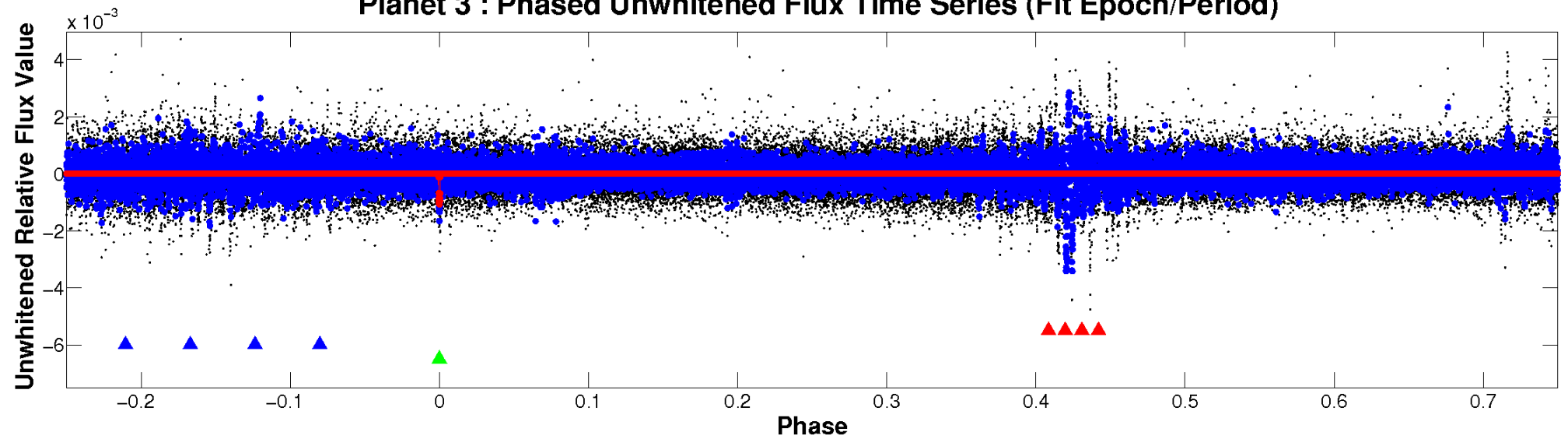
# ALT Odd/Even

TCE 006039095-03

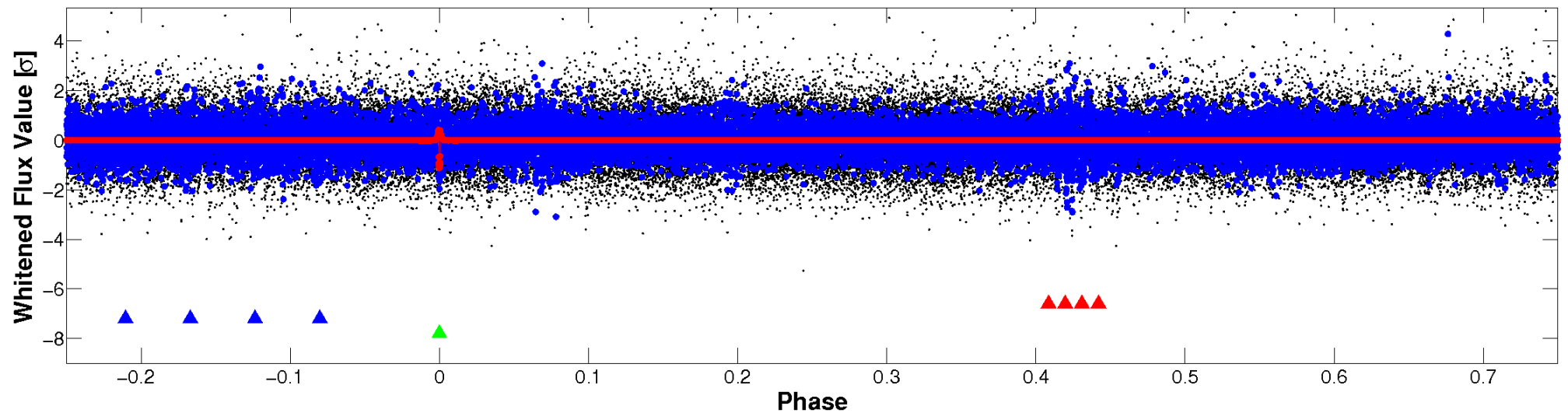


# Non-Whitened Vs. Whitened Light Curve

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

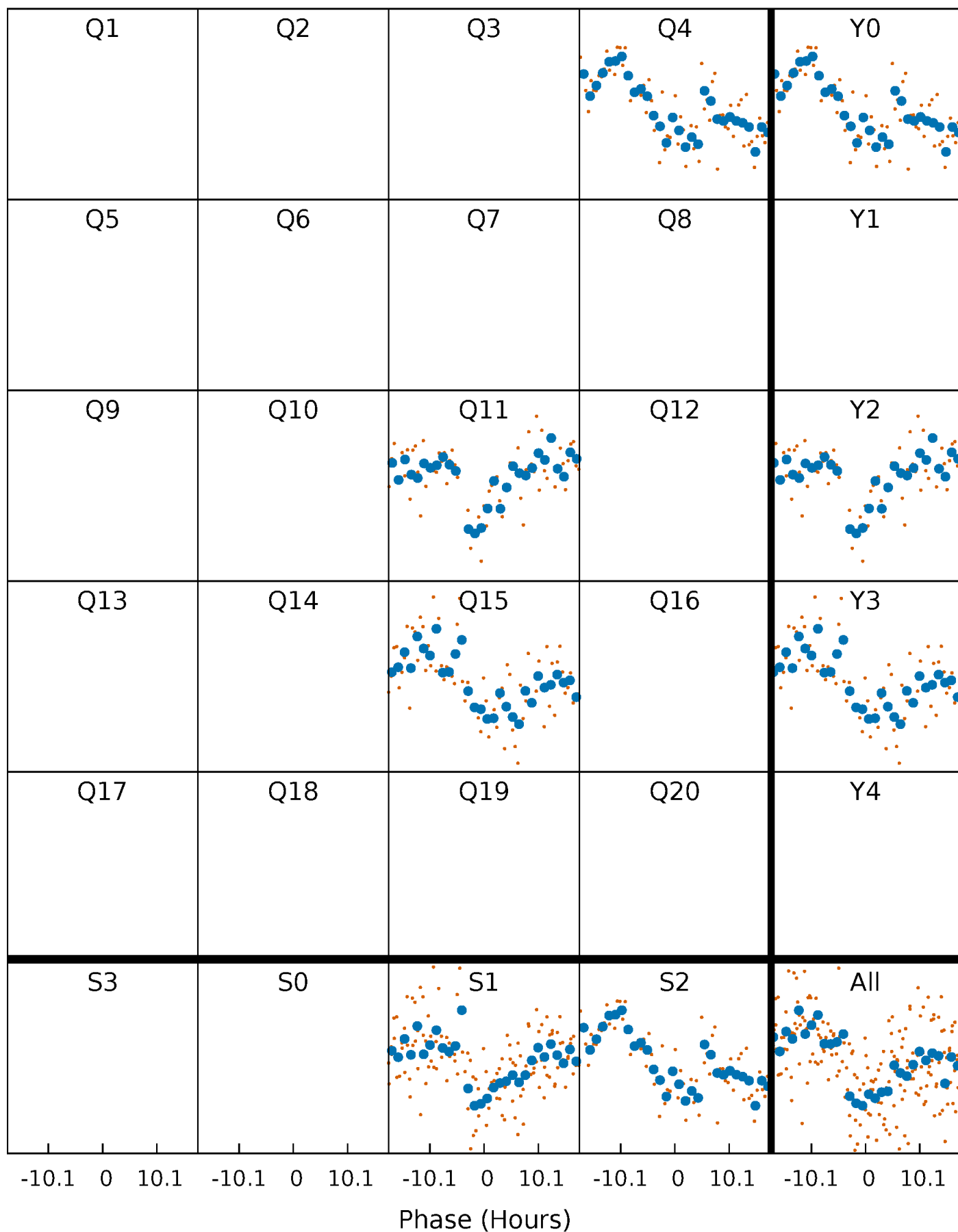


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



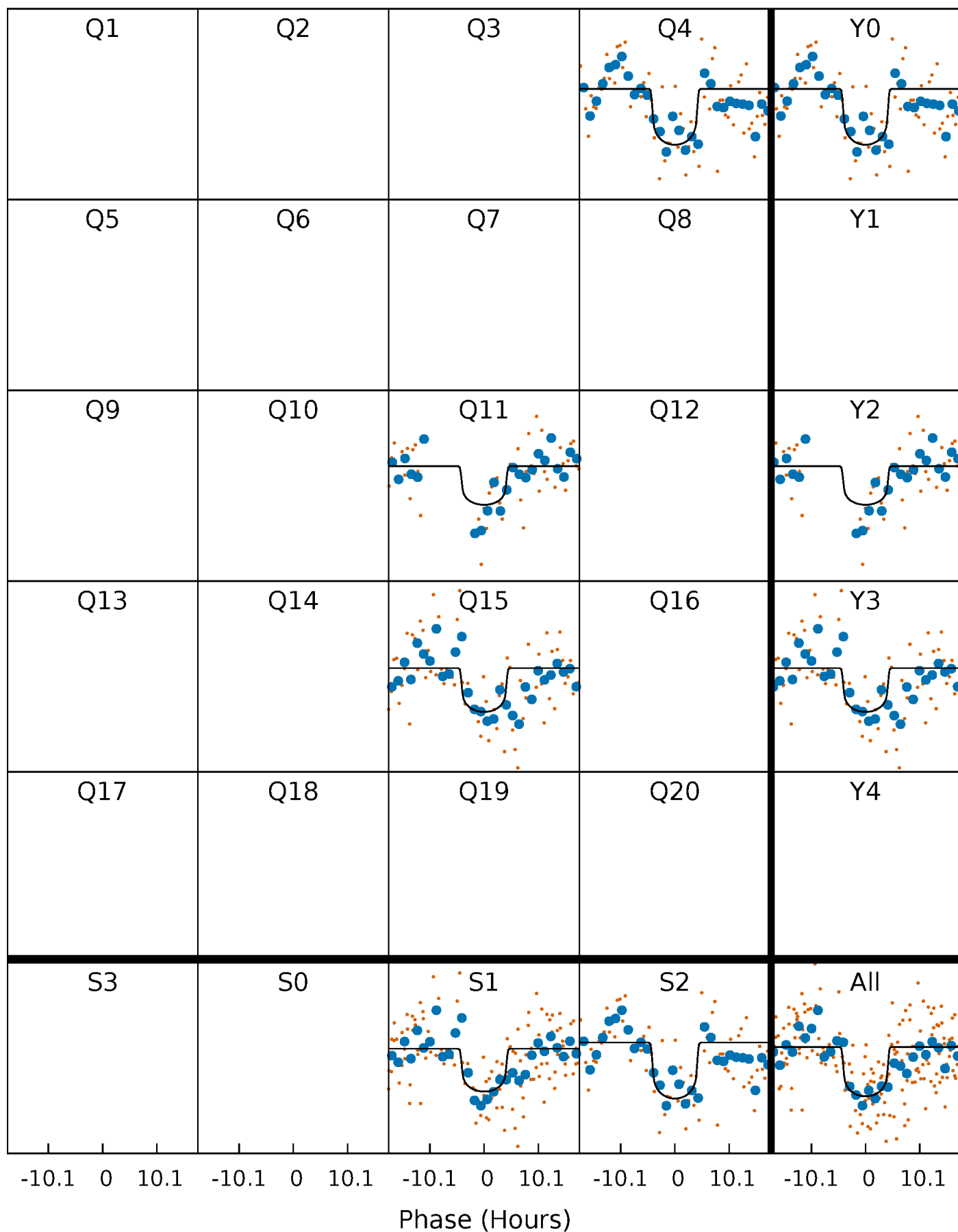
# PDC Quarter-Phased Transit Curves

TCE 006039095-03 P=359.797835 Days  $T_0=374.194841$  (BKJD)



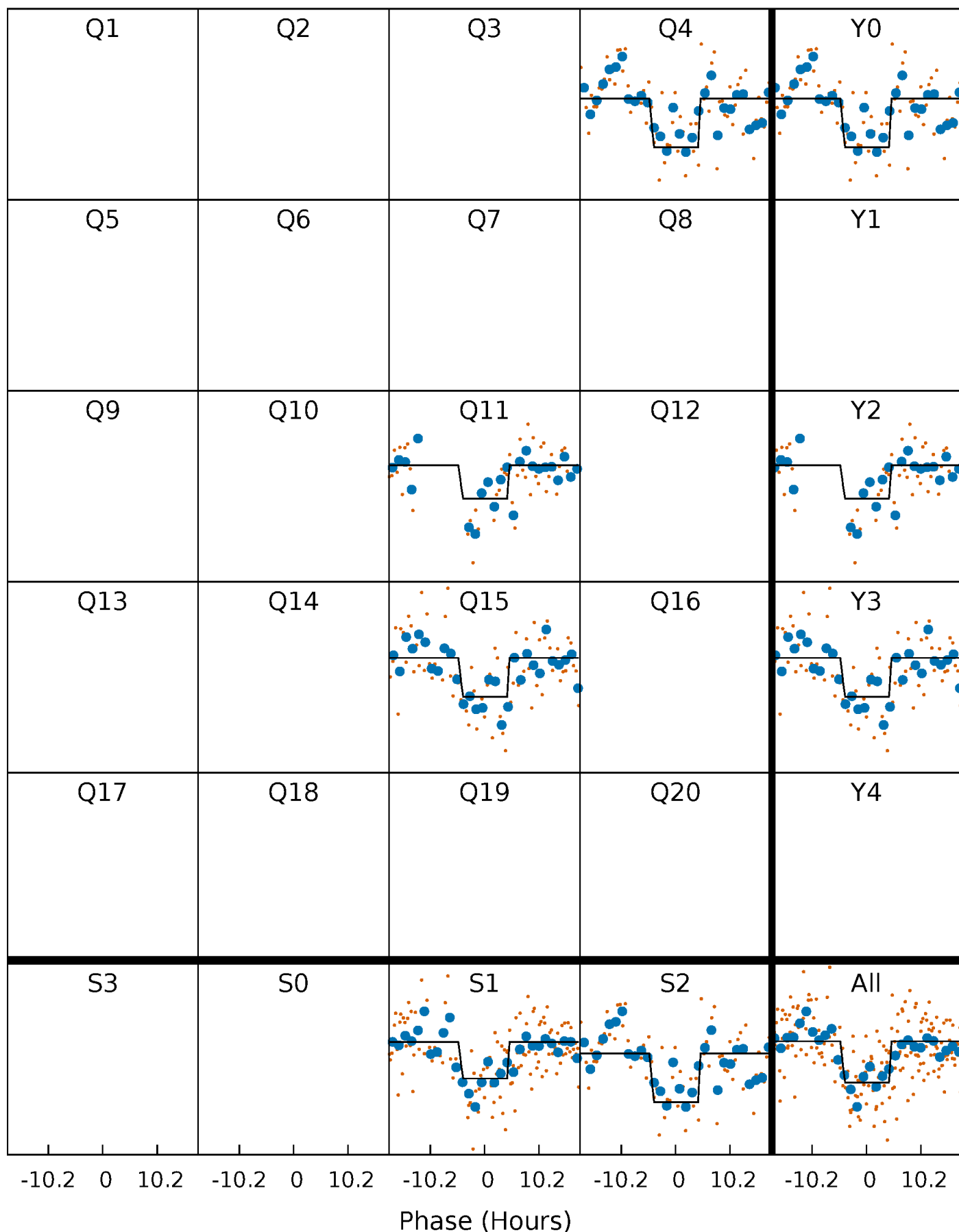
# DV Quarter-Phased Transit Curves

TCE 006039095-03     $P=359.797835$  Days     $T_0=374.194841$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

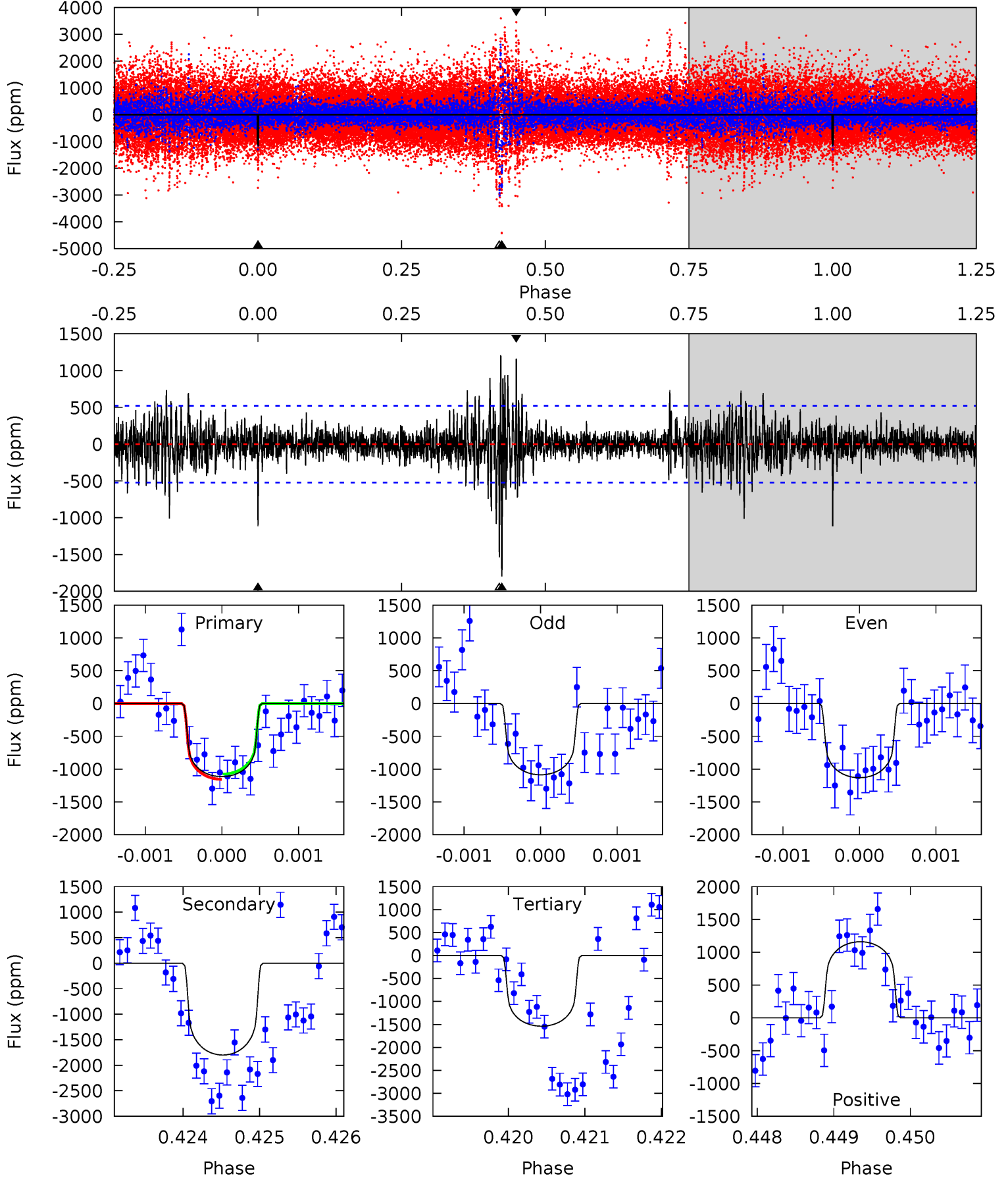
TCE 006039095-03 P=359.828180 Days  $T_0=374.202339$  (BKJD)



# DV Model-Shift Uniqueness Test

006039095-03, P = 359.797835 Days, E = 14.397006 Days

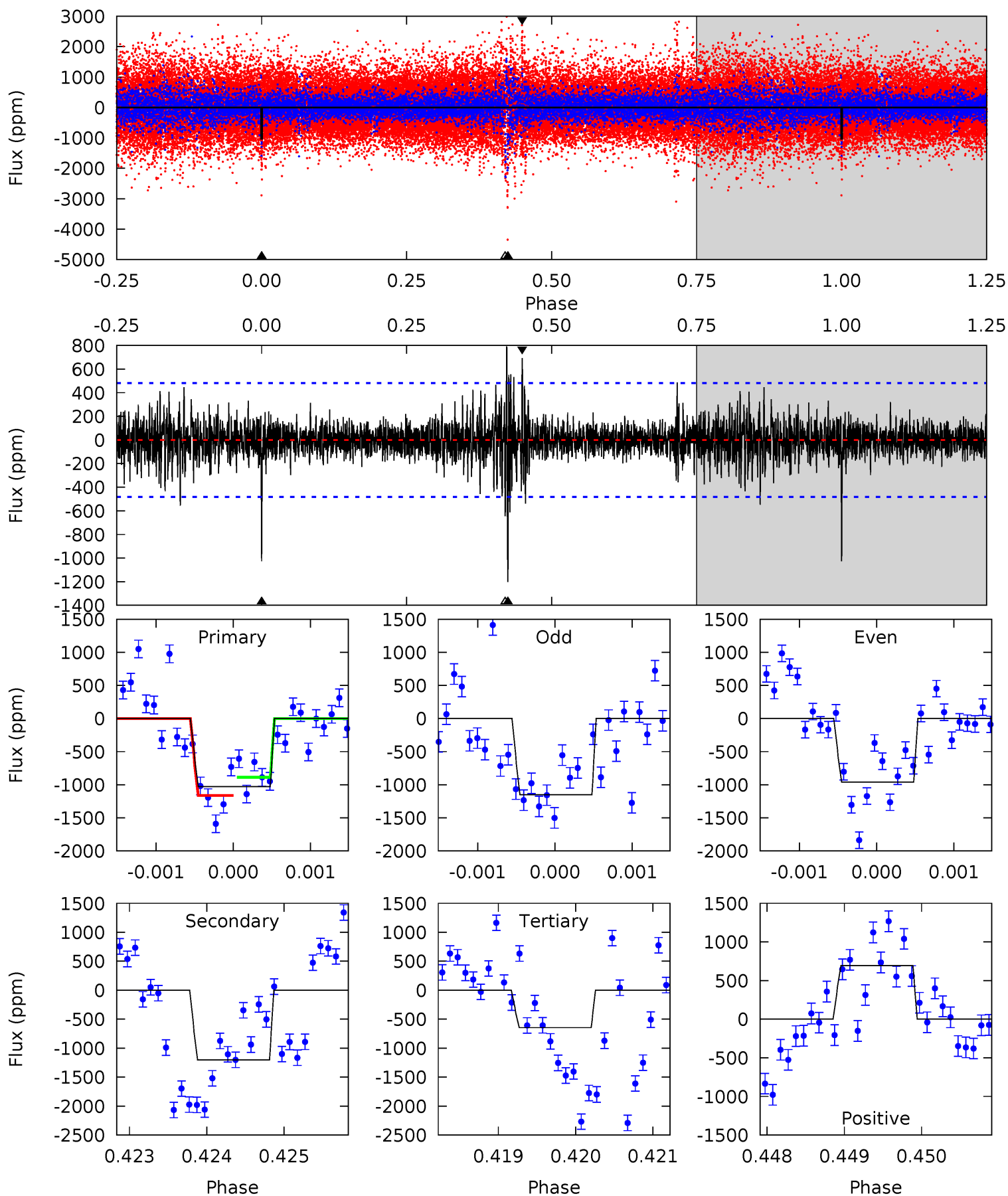
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	18.8	16.0	12.1	5.44	3.27	1.92	-4.42	-0.47	2.72	6.67	0.22	1.05	0.40	0.41



# Alt Model-Shift Uniqueness Test

006039095-03, P = 359.828180 Days, E = 14.374159 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	13.6	7.29	7.83	5.45	3.28	1.28	4.32	3.78	6.30	5.76	1.00	0.91	0.40	1.55





### Stellar Parameters For KIC 006039095

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5912^{+187}_{-208}$	$4.500^{+0.065}_{-0.195}$	$-0.260^{+0.300}_{-0.300}$	$0.902^{+0.267}_{-0.095}$	$0.940^{+0.120}_{-0.109}$	$1.803^{+0.498}_{-0.940}$
	+3%/-4%	+1%/-4%	+115%/-115%	+30%/-11%	+13%/-12%	+28%/-52%
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 006039095-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1799 \pm 96$	$3.26^{+1.68}_{-1.64}$	$358^{+27}_{-18}$	$6937^{+3696}_{-1312}$	$88317^{+261888}_{-50030}$
Alt.	$-1203 \pm 89$	$3.30^{+1.56}_{-1.65}$	$358^{+25}_{-19}$	$6140^{+2934}_{-1020}$	$57277^{+164345}_{-31764}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

## DV Centroid Data

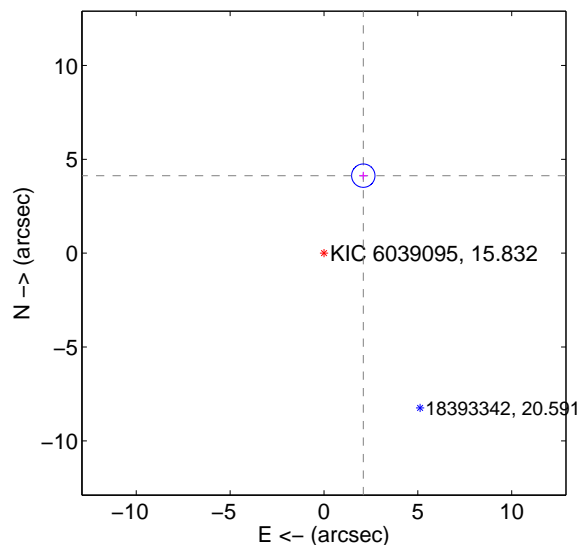
Supplemental centroid analysis for 006039095-03. Kepler magnitude: 15.83. Transit SNR 7.01

There are 1 quarters with good PRF difference image offsets

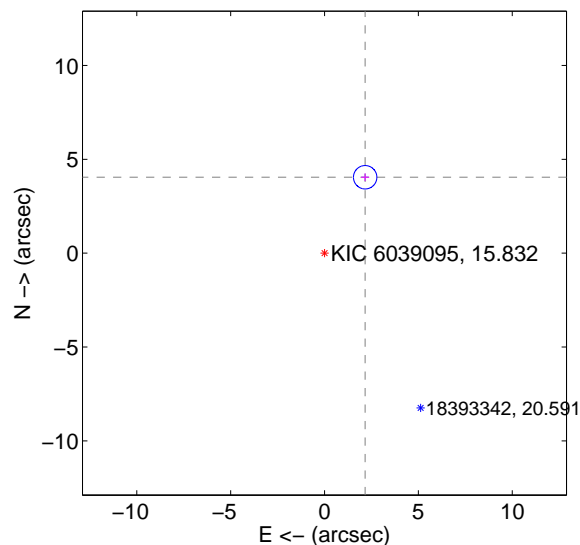
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.631 \pm 0.208$	22.31	$-2.095 \pm 0.217$	$4.130 \pm 0.205$
PRF-fit source offset from KIC position	$4.588 \pm 0.208$	22.08	$-2.165 \pm 0.217$	$4.045 \pm 0.205$
photometric centroid source offset	$2.47 \pm 2.76$	0.89	$0.06 \pm 3.01$	$-2.47 \pm 2.76$

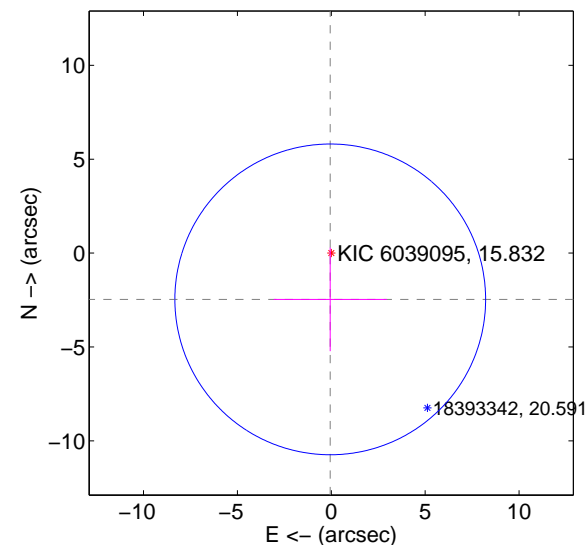
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

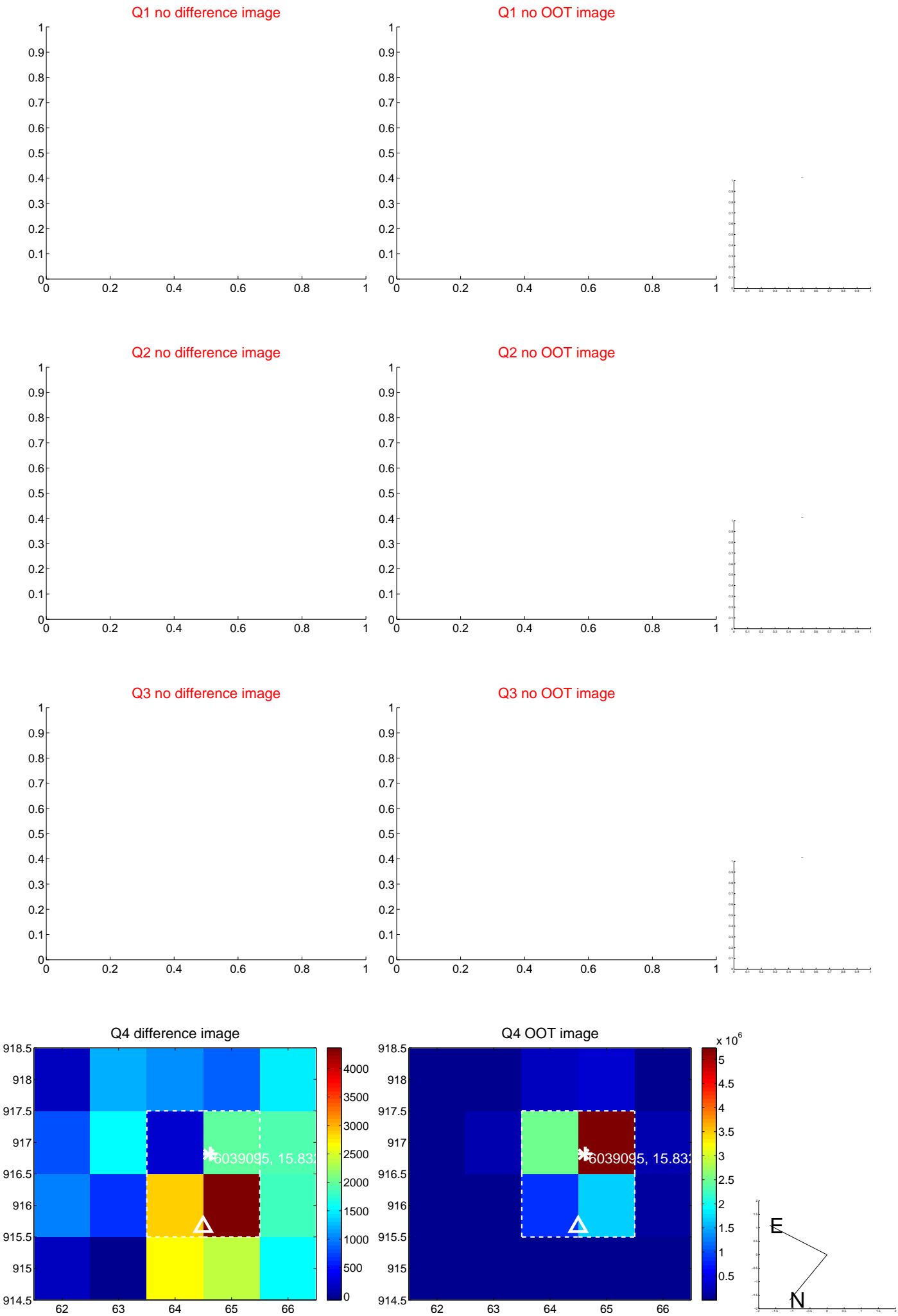


offset from photometric centroids



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

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



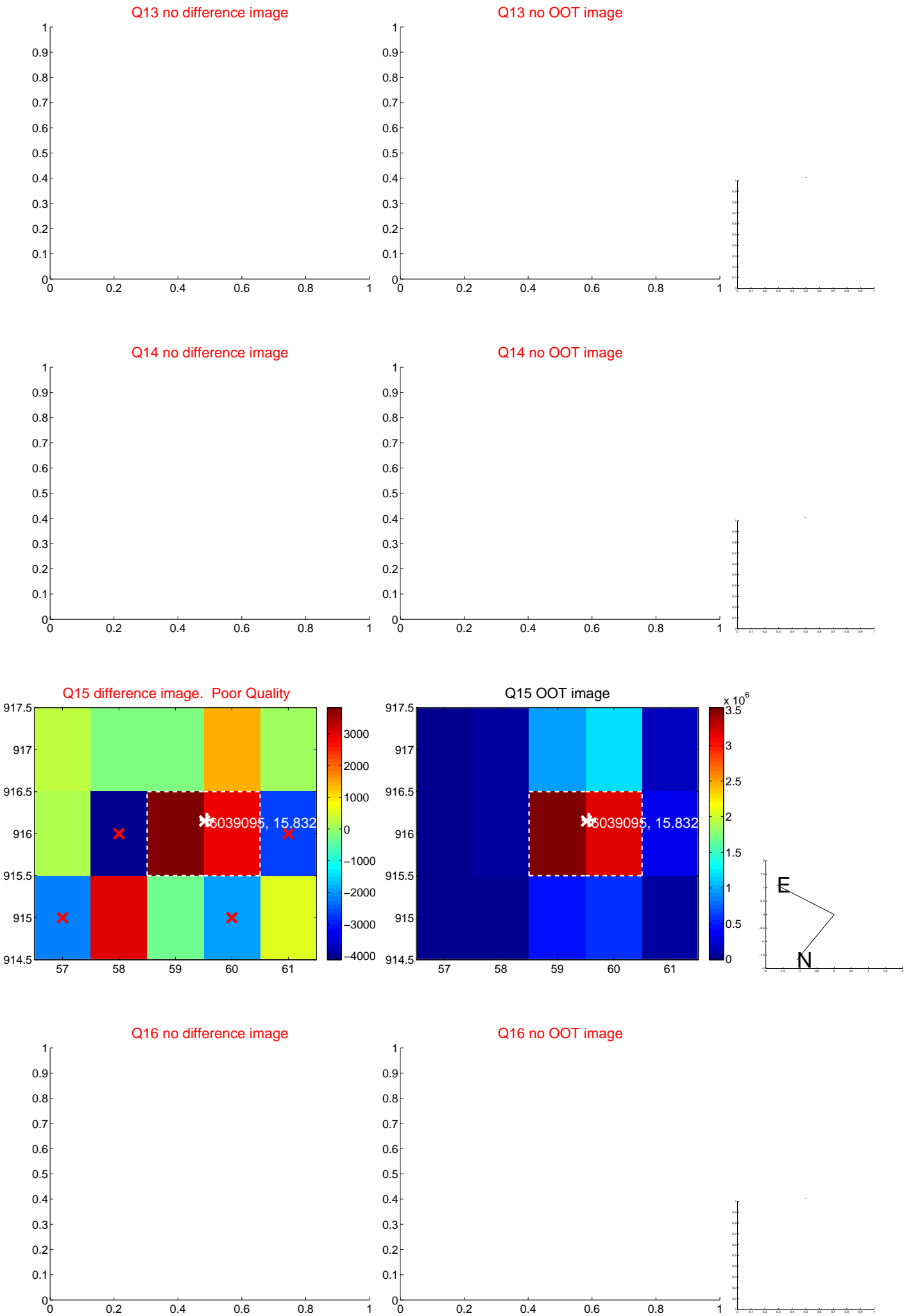
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



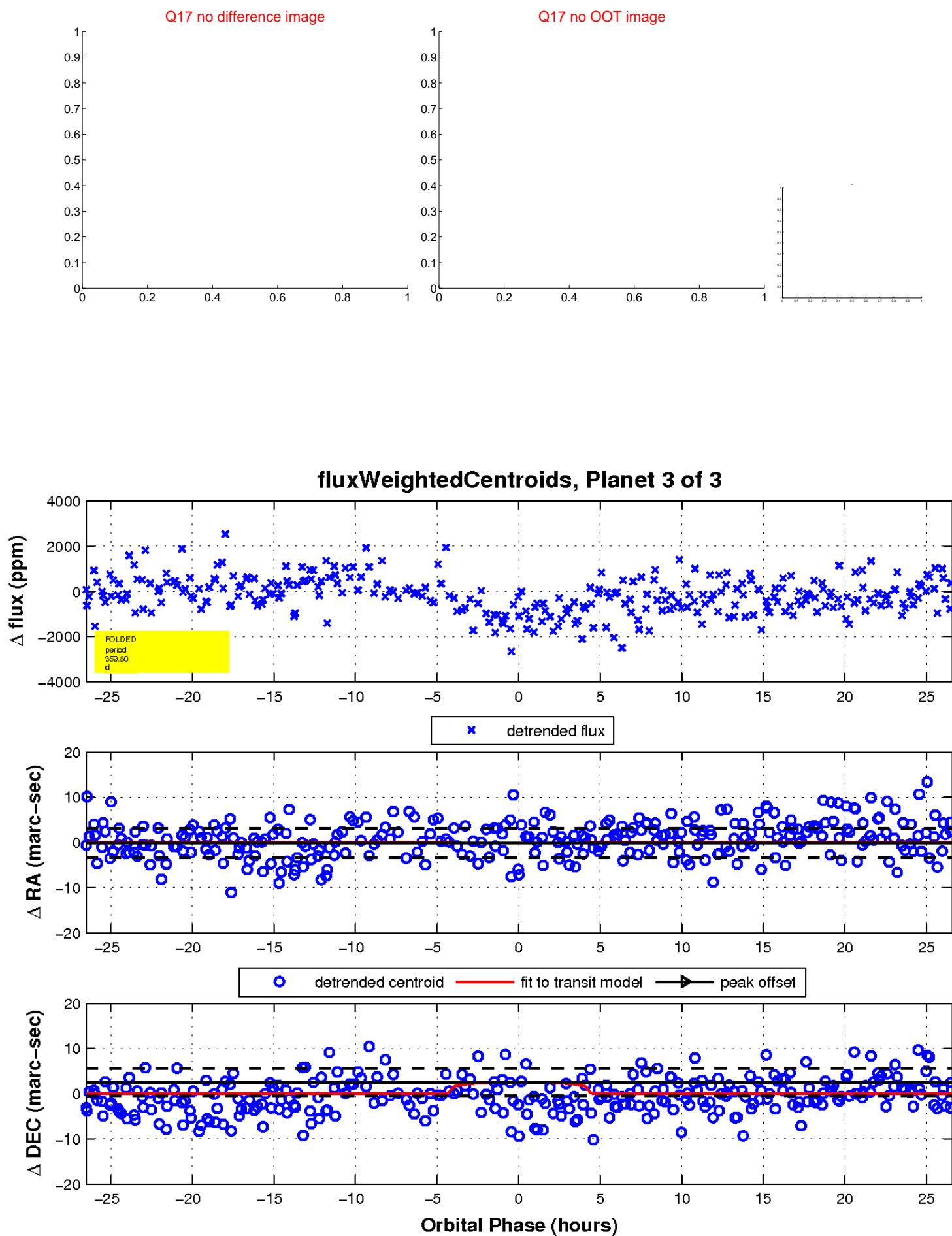
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

