

KIC 006039392

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})
006039392-01	OBS	No	353.317427	176.303890	4560.6	19.846	11.3	13.4	1.15	6257	13.36	1.64
006039392-02	OBS	No	377.741449	499.035569	3706.5	23.376	9.1	9.8	1.15	6257	12.85	1.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039392-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
006039392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

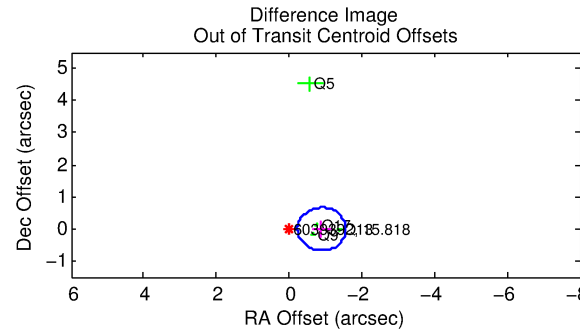
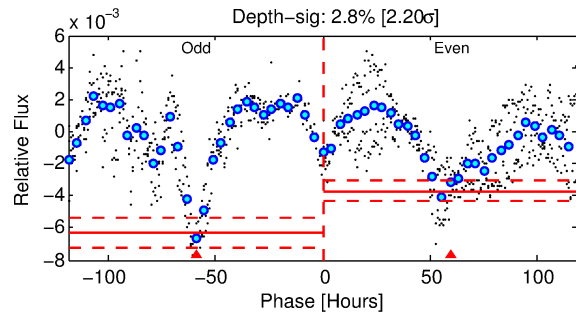
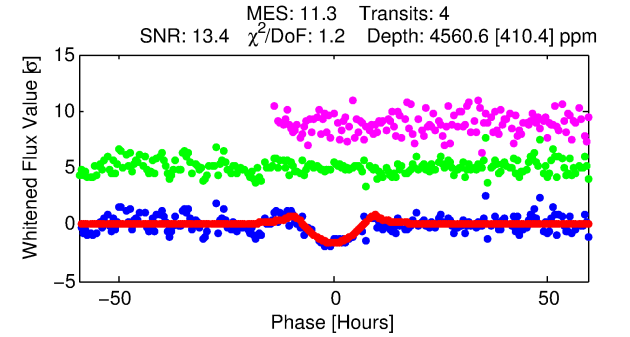
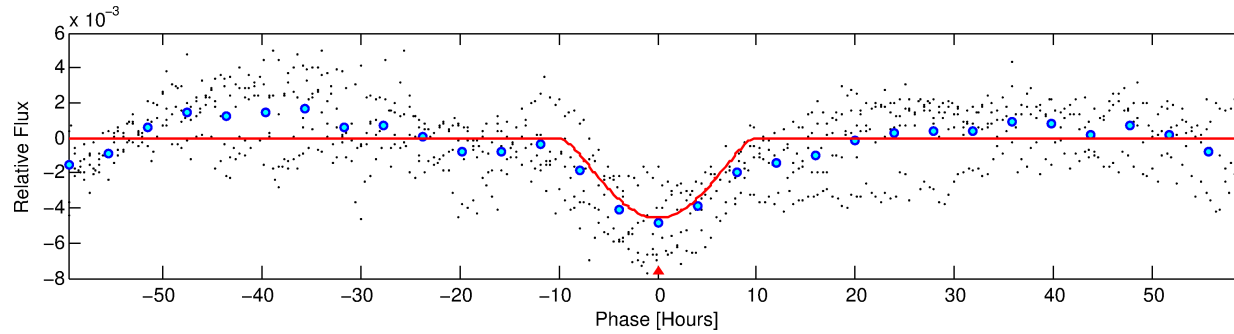
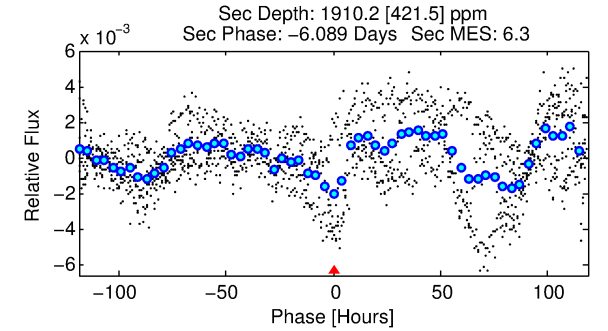
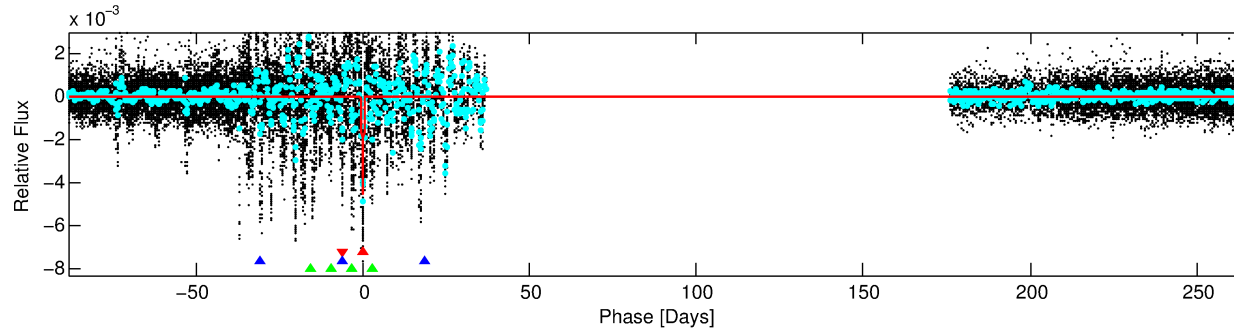
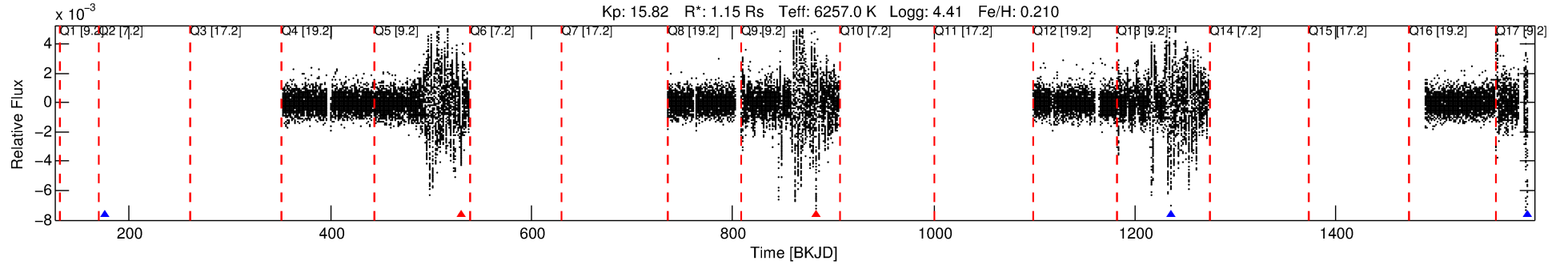
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039392-01

No Significant Match Found

DV One-Page Summary

KIC: 6039392 Candidate: 1 of 3 Period: 353.317 d



DV Fit Results:

Period = 353.31743 [0.01225] d
Epoch = 176.3039 [0.0350] BKJD
Rp/R* = 0.1068 [0.1265]
a/R* = 67.13 [16.35]
b = 0.99 [0.19]
Seff = 1.64 [0.70]
Teq = 289 [31] K
Rp = 13.36 [16.43] Re
a = 1.0492 [0.2849] AU
Ag = 6476.54 [15620.83] [0.41σ]
Teffp = 4003 [2388] K [1.56σ]

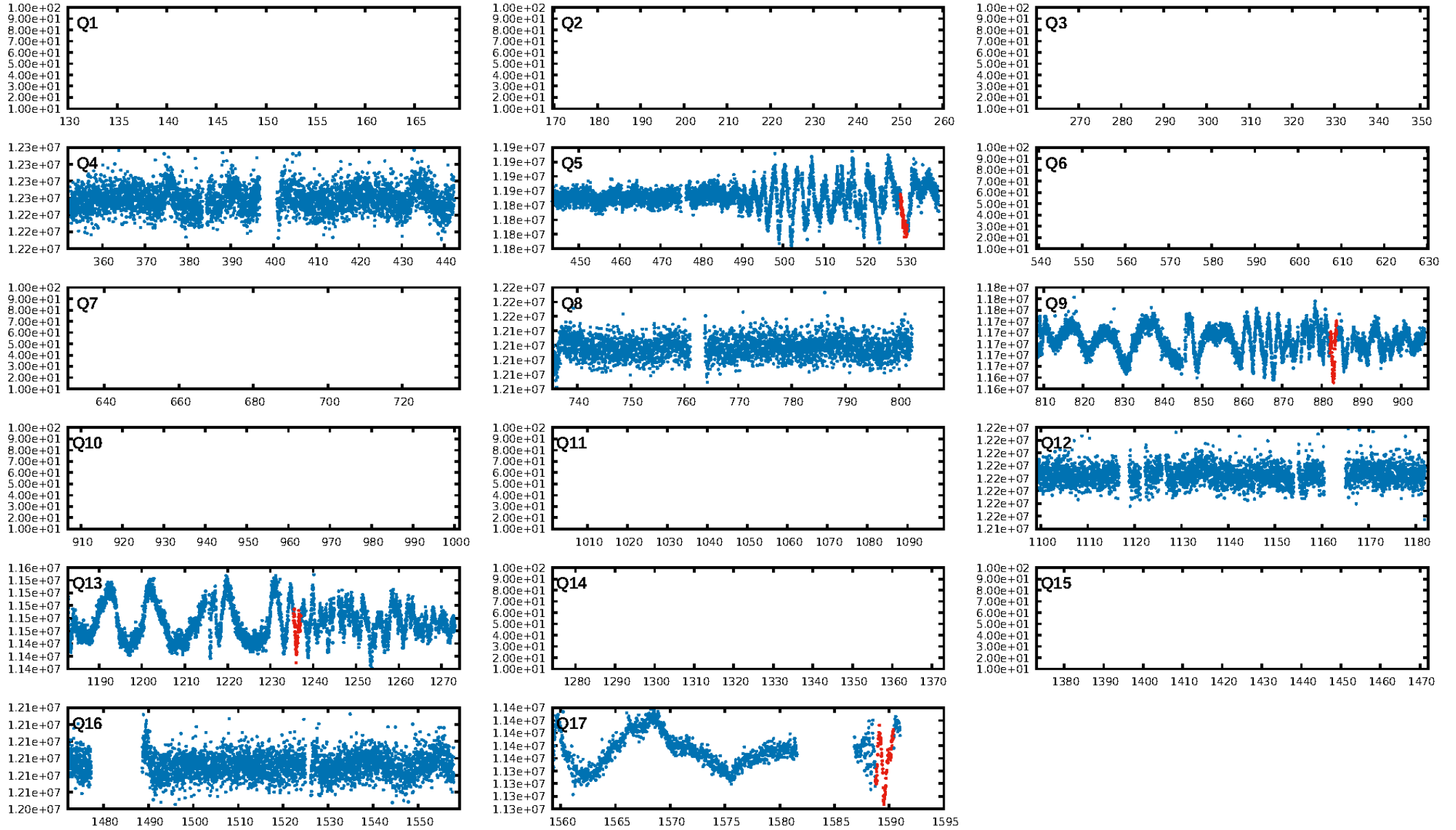
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [4.82σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 80.5%
Bootstrap-pfa: 4.03e-10
RollingBand-fgt: 0.33 [1/3]
GhostDiagnostic-chr: 0.5591
Centroid-sig: N/A
Centroid-so: 1.488 arcsec [1.05σ]
OotOffset-rm: 0.893 arcsec [4.00σ]
KicOffset-rm: 1.073 arcsec [4.24σ]
OotOffset-st: 0/0/0/4 [4]
KicOffset-st: 0/0/0/4 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 1.00 [4/4]

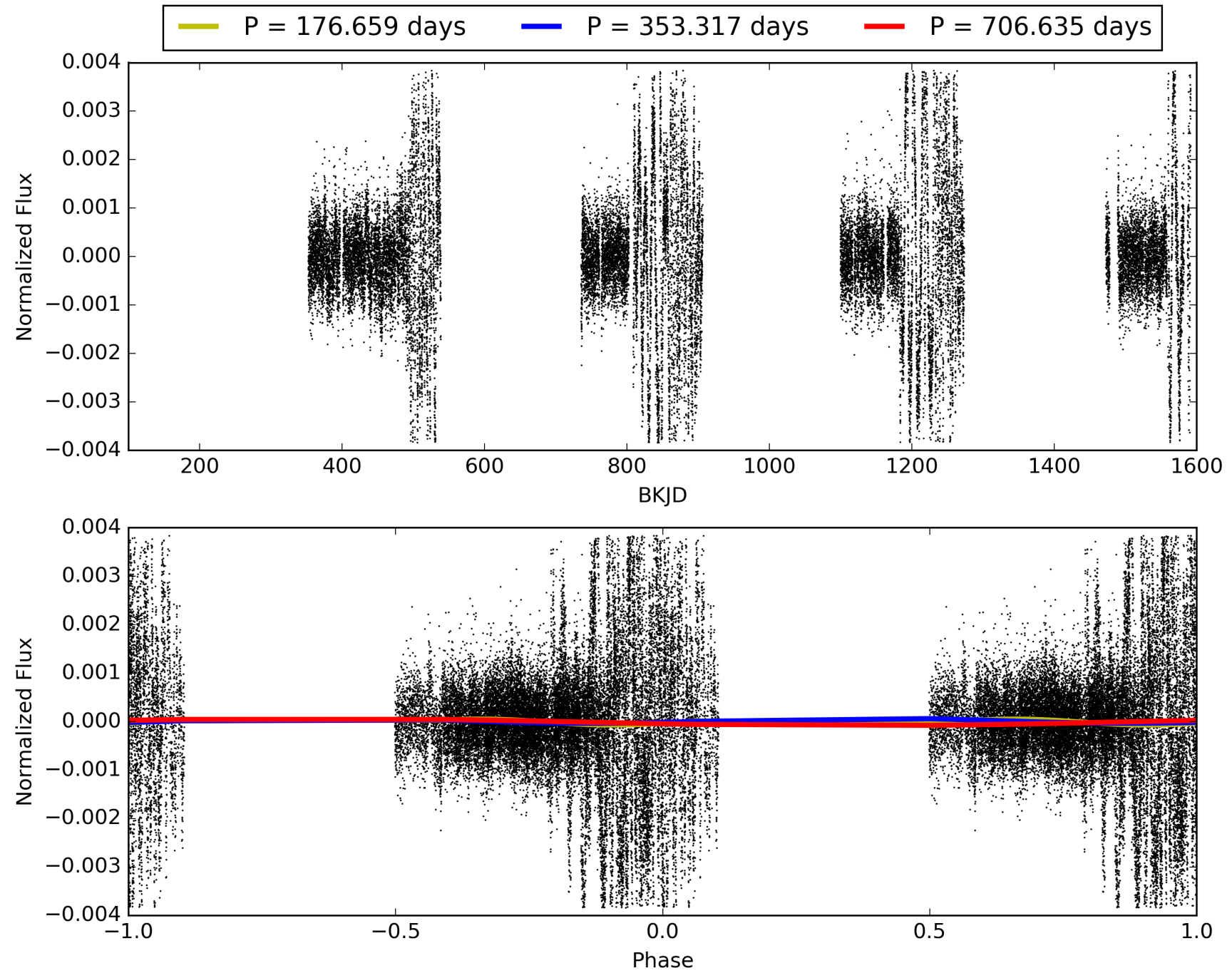
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:23:20 Z

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

TCE 006039392-01, PDC Light Curves

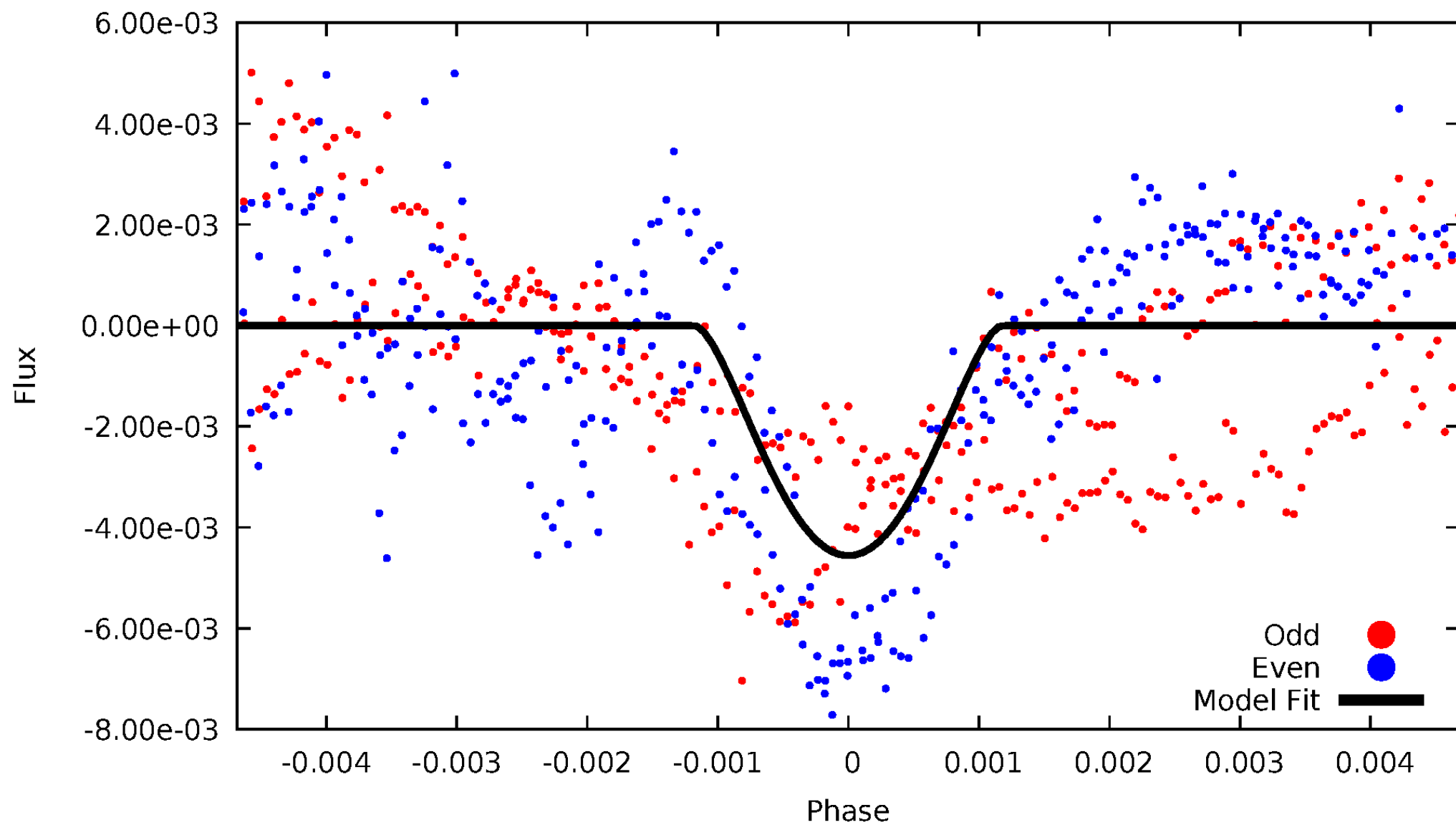


TCE 006039392-01



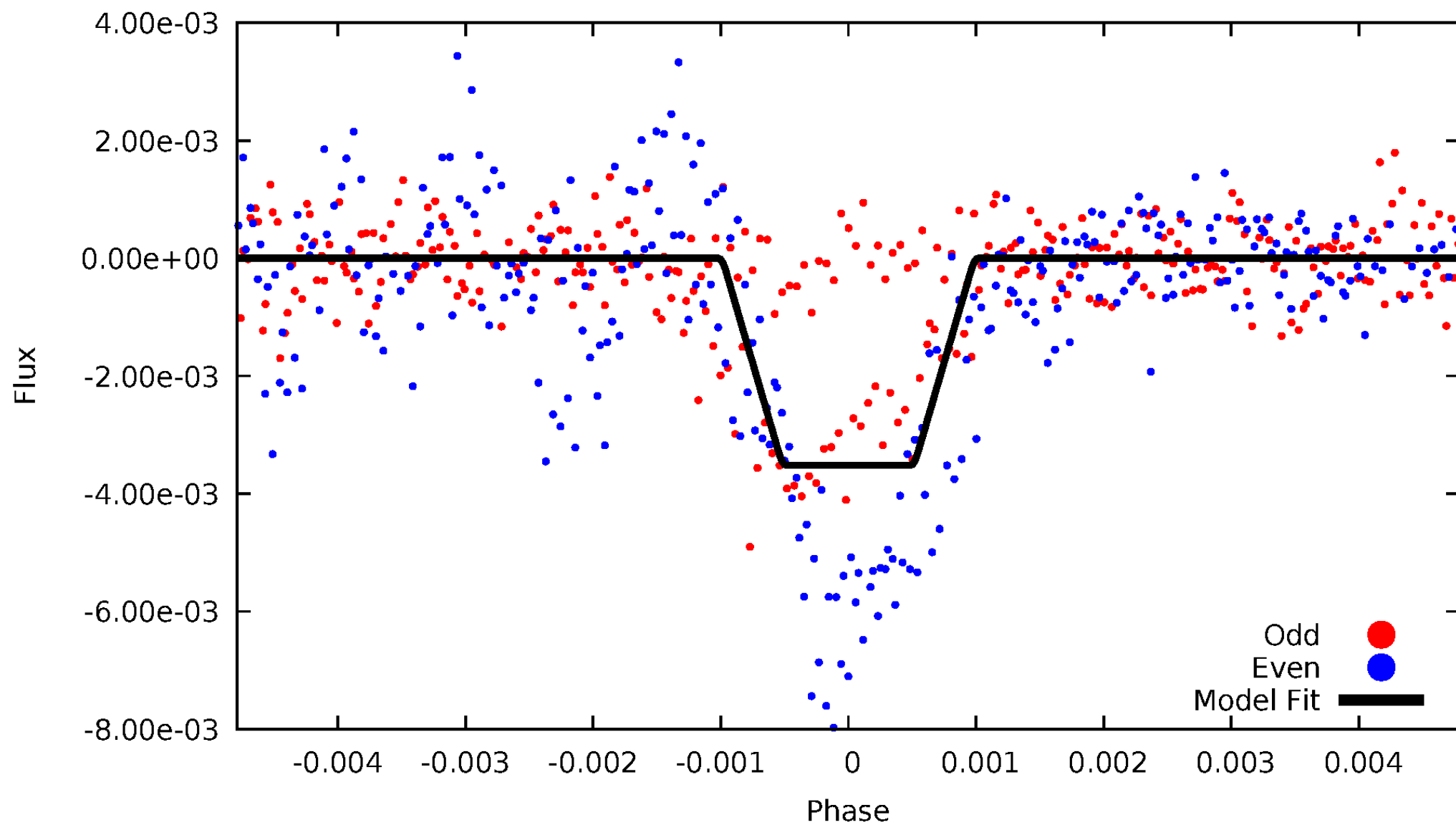
DV Odd/Even

TCE 006039392-01

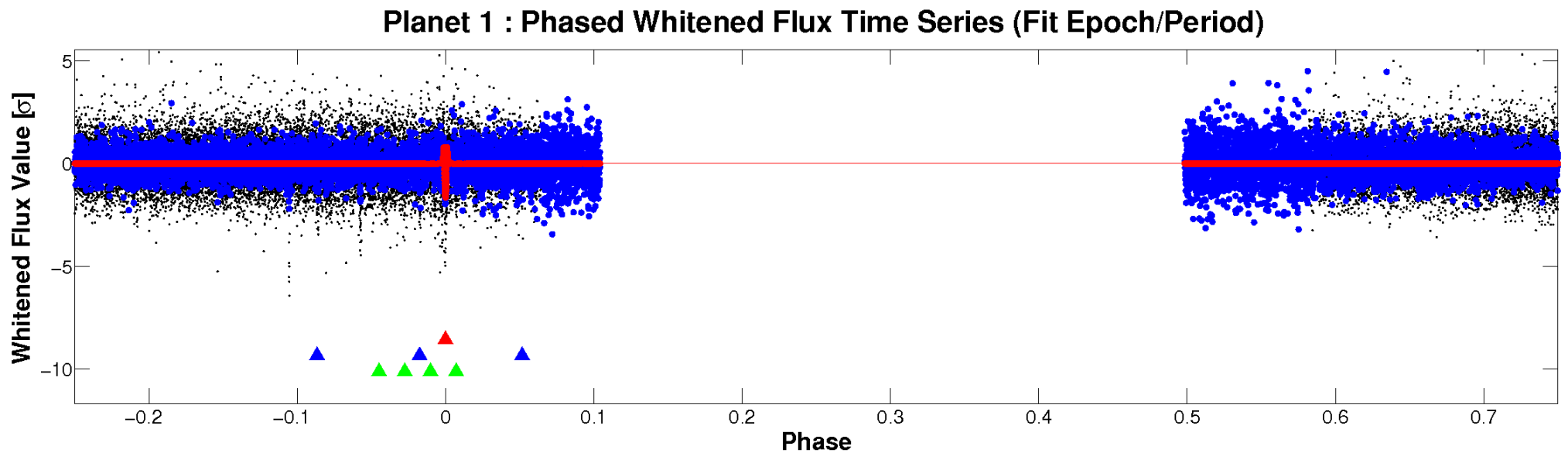
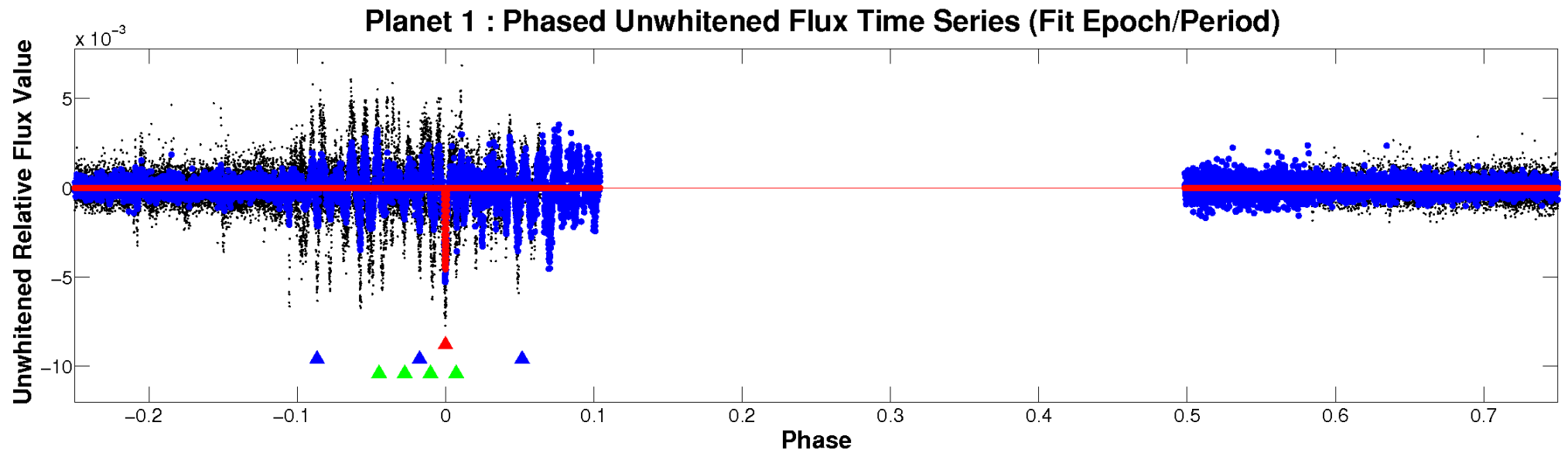


ALT Odd/Even

TCE 006039392-01

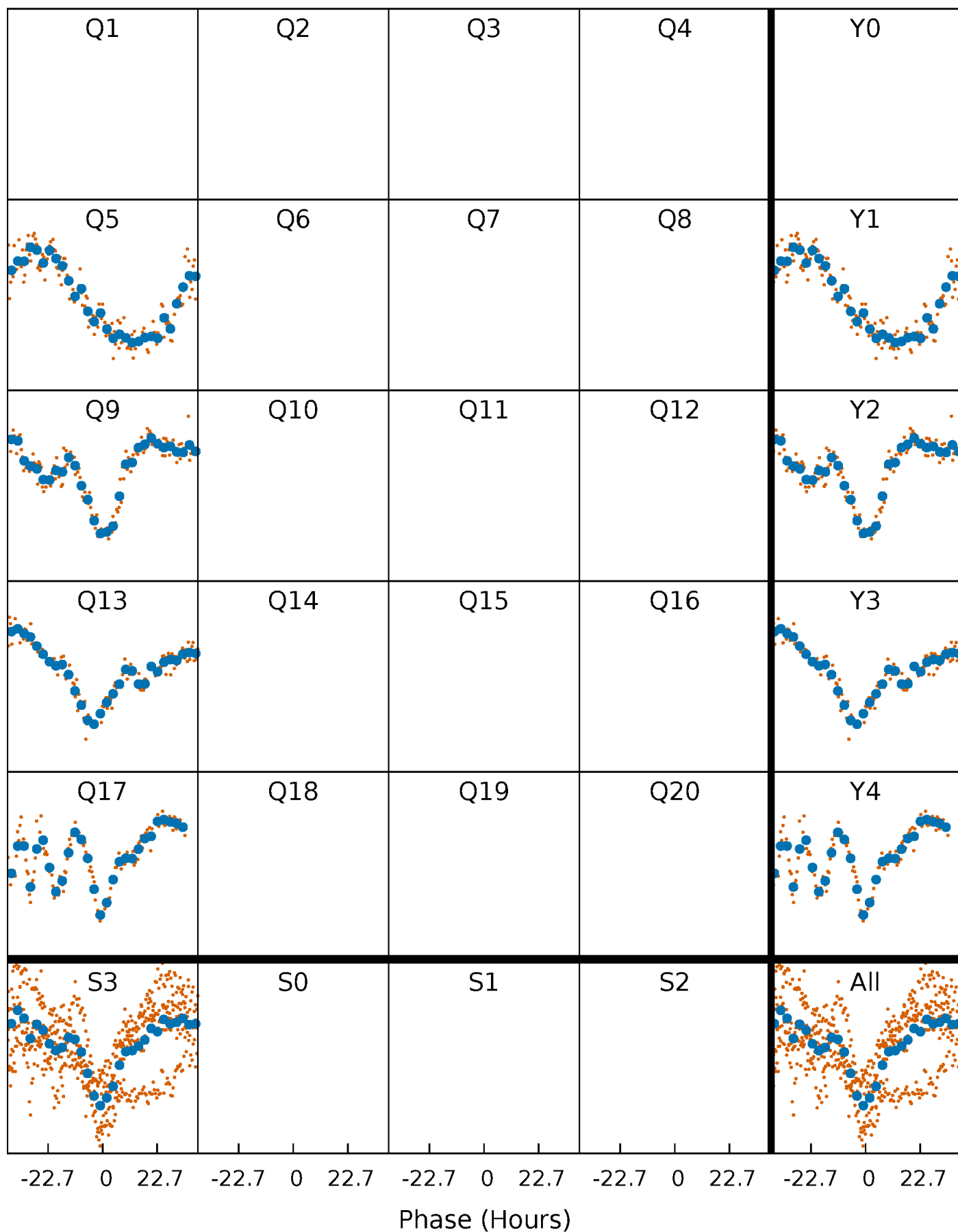


Non-Whitened Vs. Whitened Light Curve



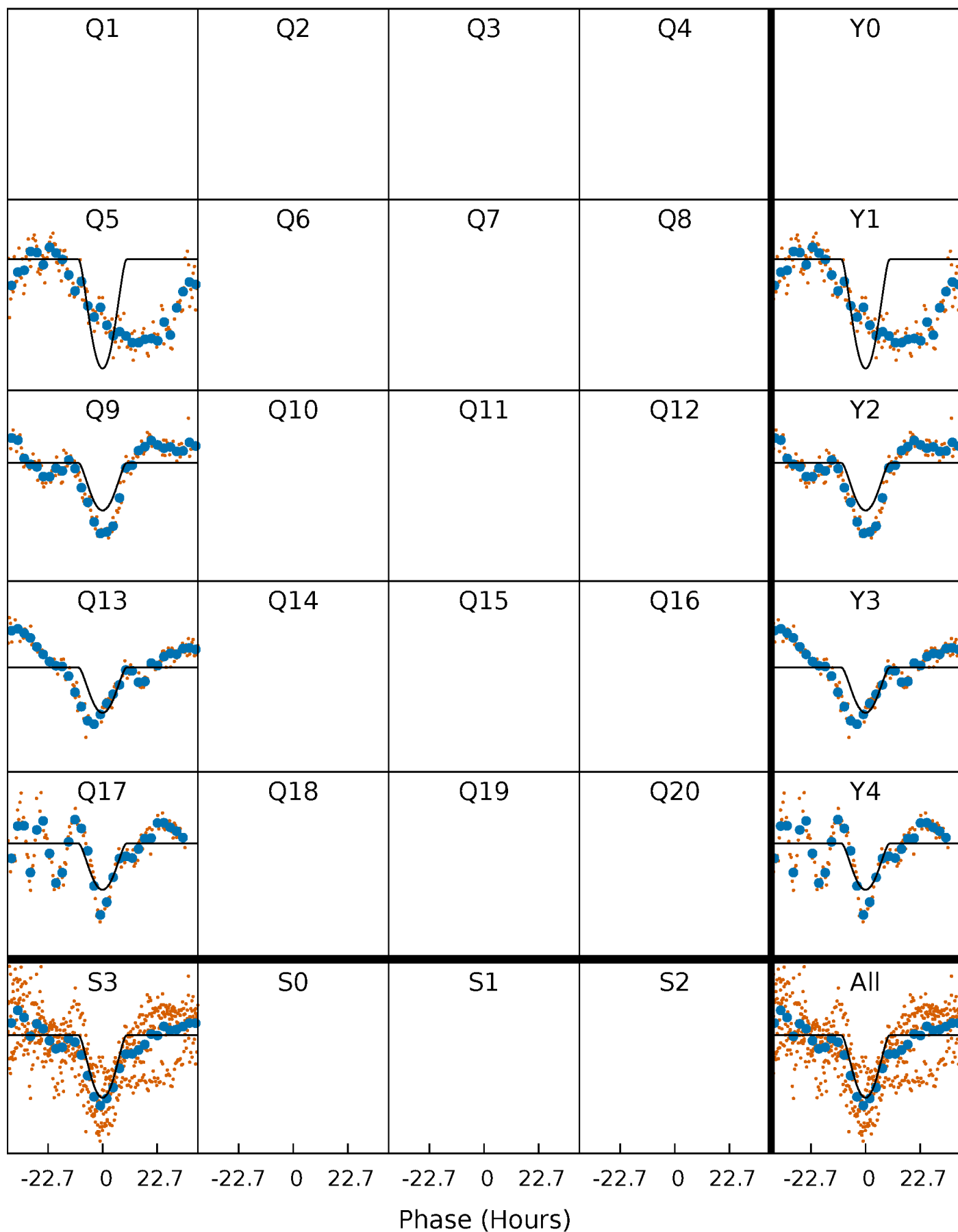
PDC Quarter-Phased Transit Curves

TCE 006039392-01 $P=353.317427$ Days $T_0=176.303890$ (BKJD)



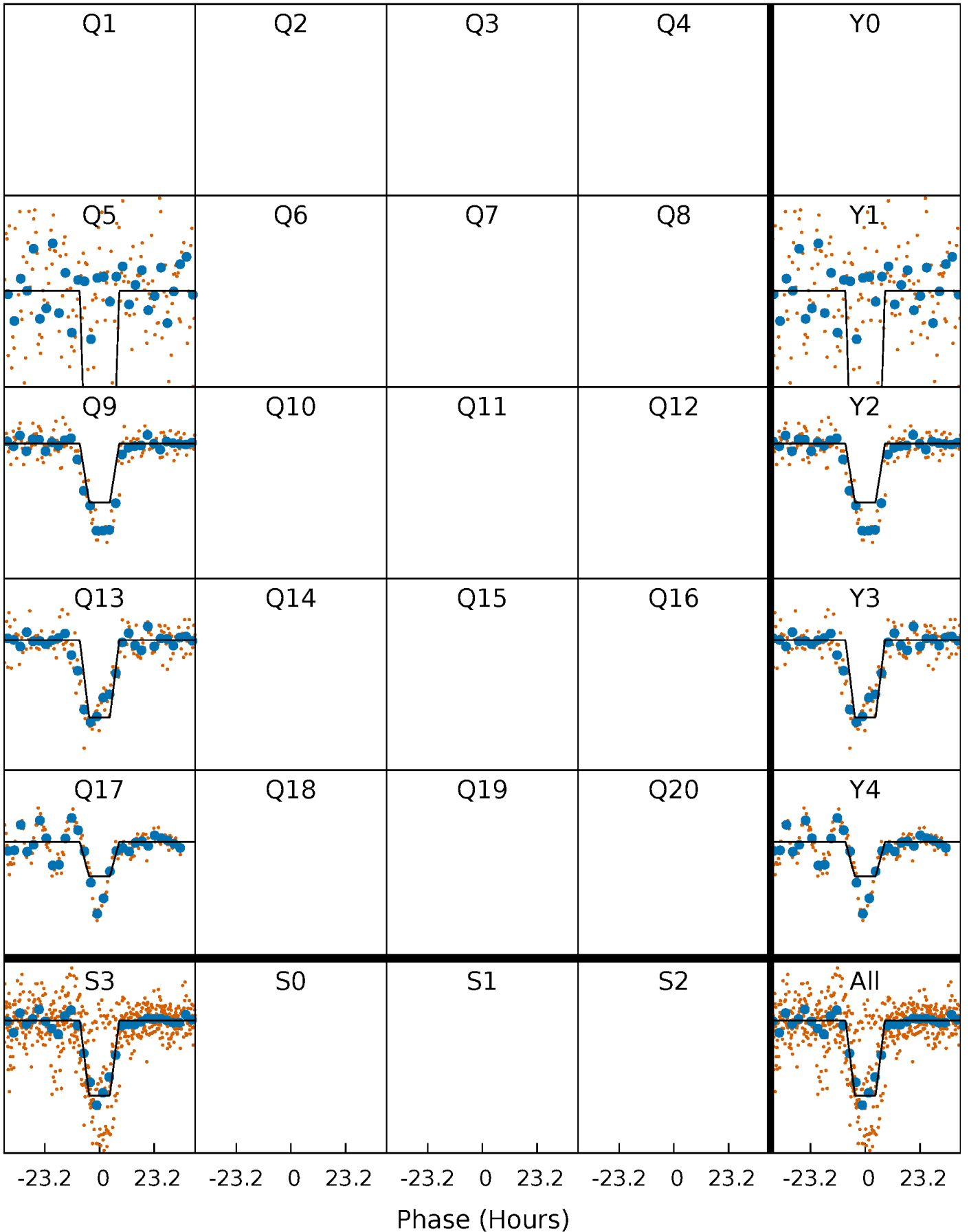
DV Quarter-Phased Transit Curves

TCE 006039392-01 P=353.317427 Days $T_0=176.303890$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

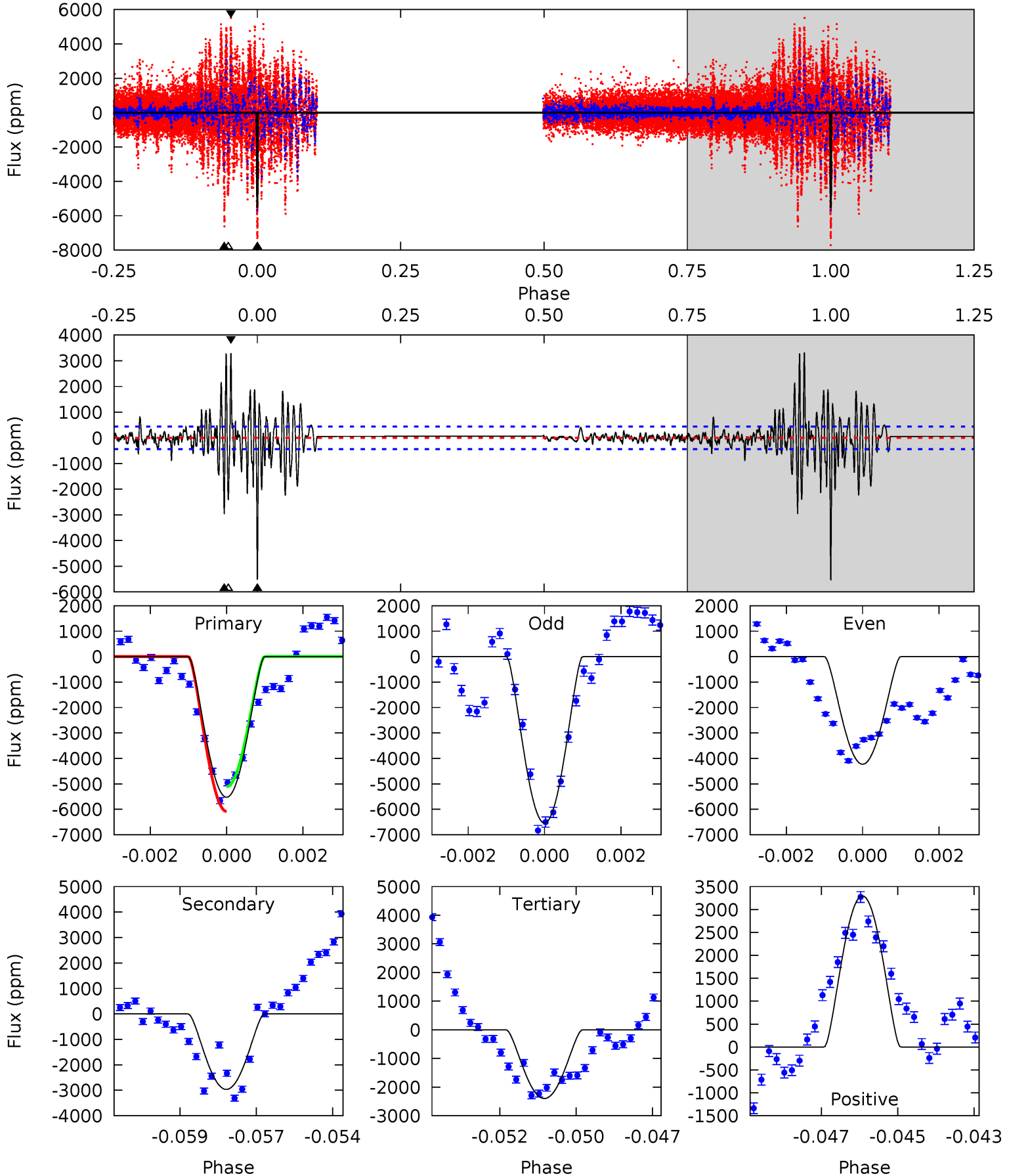
TCE 006039392-01 $P=353.330308$ Days $T_0=176.249731$ (BKJD)



DV Model-Shift Uniqueness Test

006039392-01, P = 353.317427 Days, E = 176.303890 Days

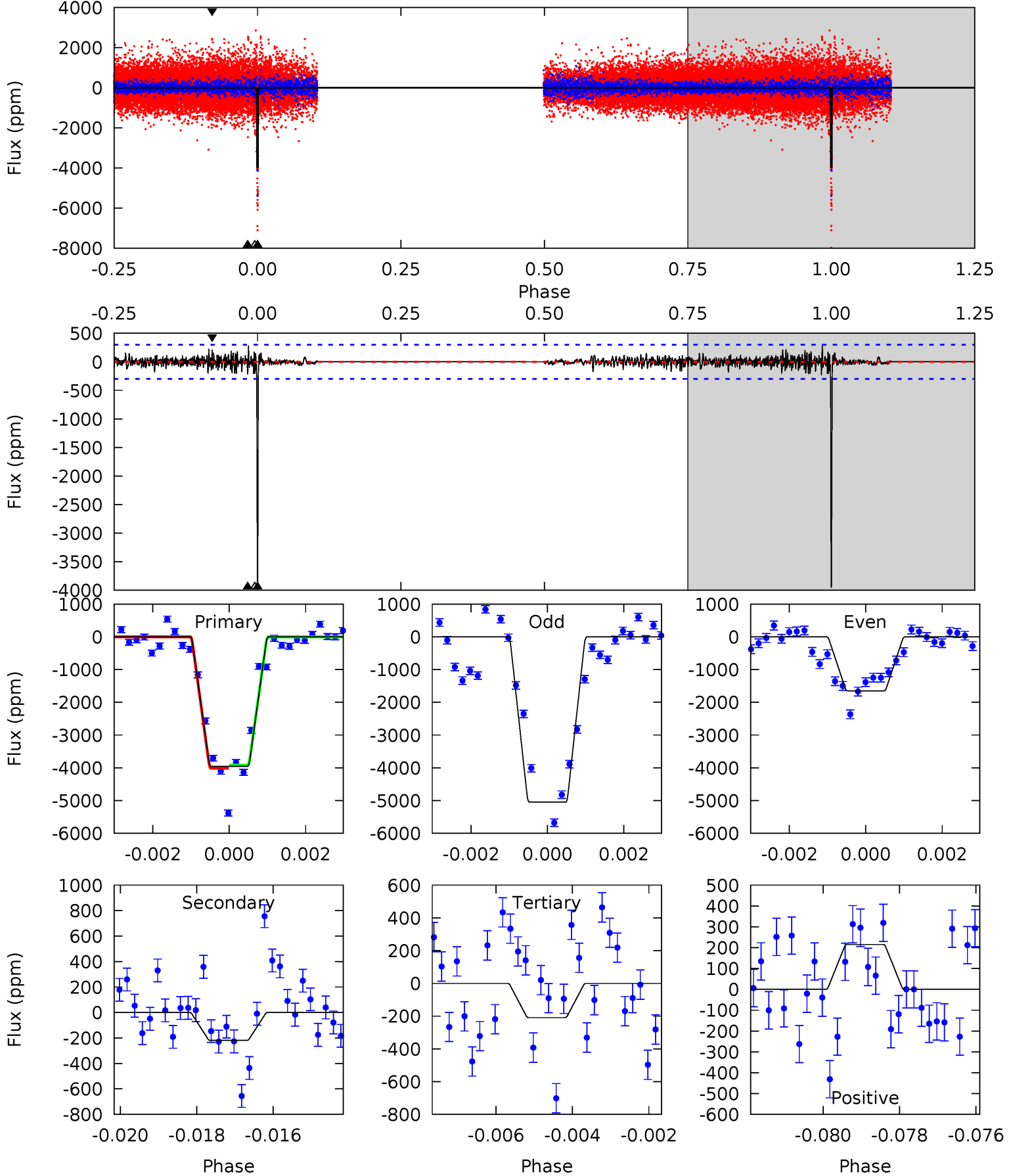
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
66.9	35.9	29.0	39.9	5.30	3.04	6.94	37.9	27.0	6.87	-4.02	12.8	0.99	0.37	4.63



Alt Model-Shift Uniqueness Test

006039392-01, P = 353.330308 Days, E = 176.249731 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.6	3.92	3.73	3.84	5.33	3.09	1.00	66.8	66.7	0.19	0.08	33.7	0.81	0.07	0.81



Stellar Parameters For KIC 006039392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6257^{+177}_{-265}	$4.410^{+0.056}_{-0.210}$	$0.210^{+0.200}_{-0.300}$	$1.147^{+0.376}_{-0.125}$	$1.233^{+0.154}_{-0.169}$	$1.152^{+0.328}_{-0.605}$
	+3%/-4%	+1%/-5%	+95%/-143%	+33%/-11%	+12%/-14%	+28%/-53%
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 006039392-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2966 ± 83	$17.95^{+14.67}_{-10.91}$	411^{+30}_{-24}	4195^{+1975}_{-761}	5553^{+28819}_{-3871}
Alt.	-220 ± 56	$15.06^{+13.89}_{-10.39}$	412^{+30}_{-24}	2934^{+1264}_{-462}	573^{+5092}_{-428}

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

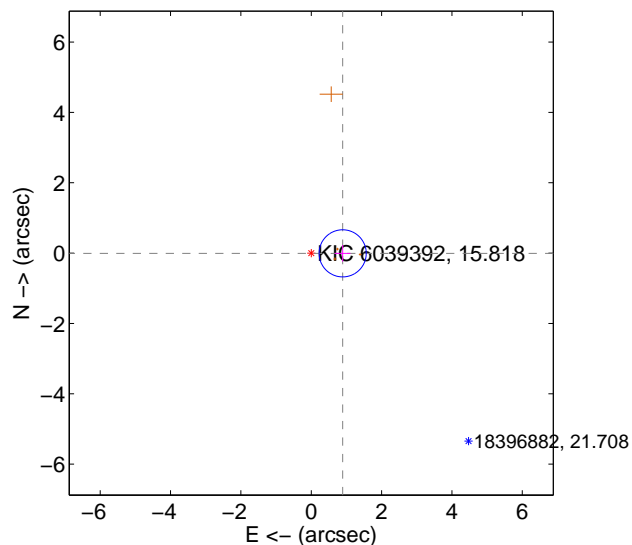
Supplemental centroid analysis for 006039392-01. Kepler magnitude: 15.82. Transit SNR 13.44

There are 0 quarters with good PRF difference image offsets

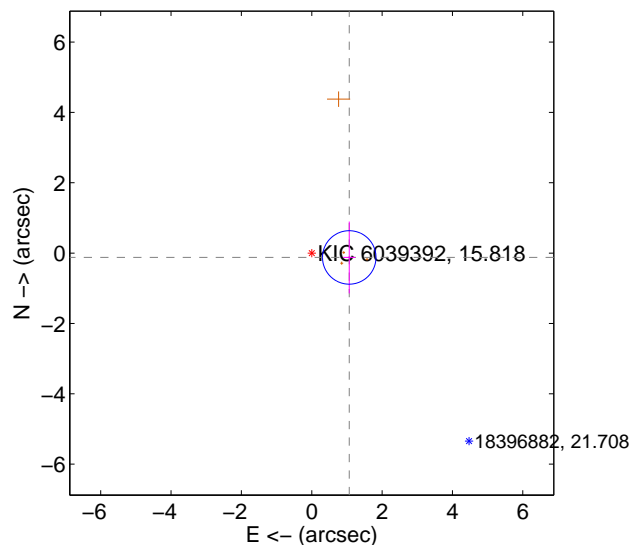
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.893 ± 0.223	4.00	-0.893 ± 0.223	-0.007 ± 0.236
PRF-fit source offset from KIC position	1.073 ± 0.253	4.24	-1.066 ± 0.173	-0.123 ± 1.020
photometric centroid source offset	1.49 ± 1.41	1.05	-0.89 ± 1.50	-1.19 ± 1.36

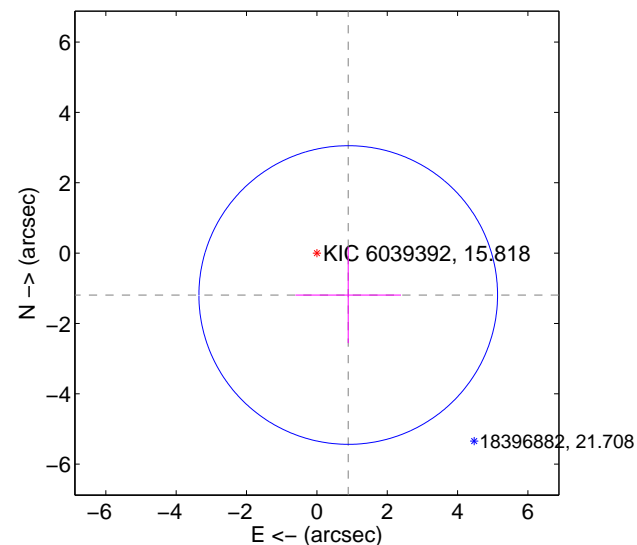
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

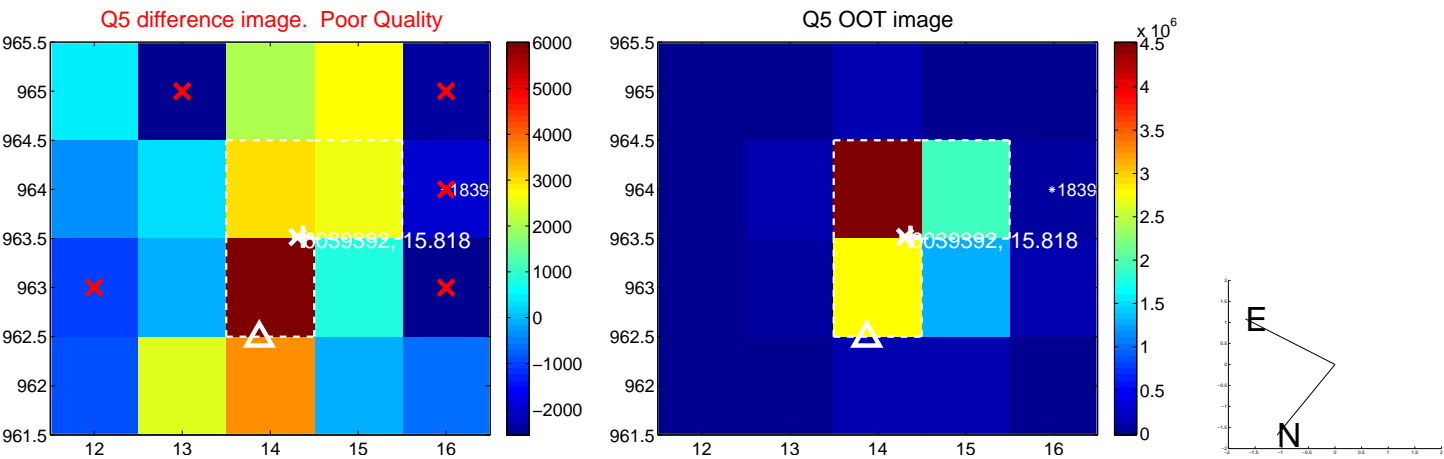


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

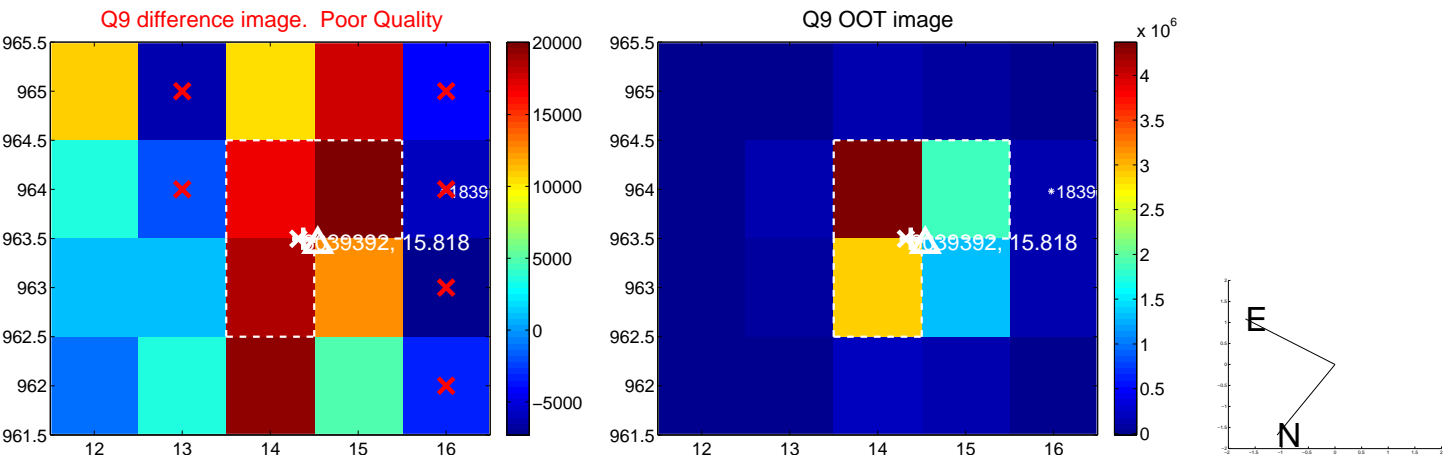
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



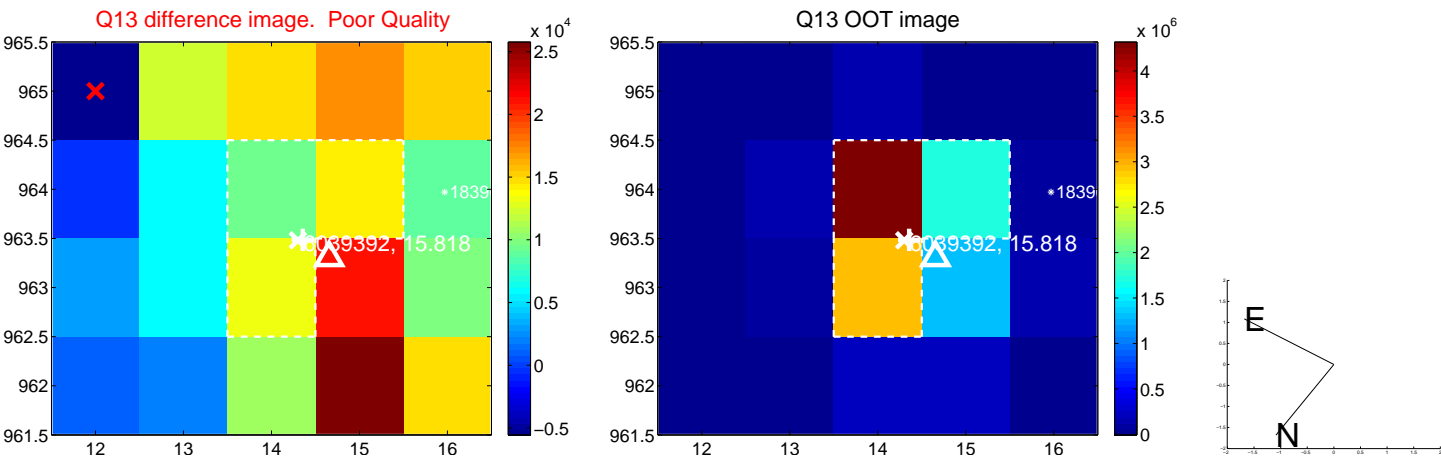
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



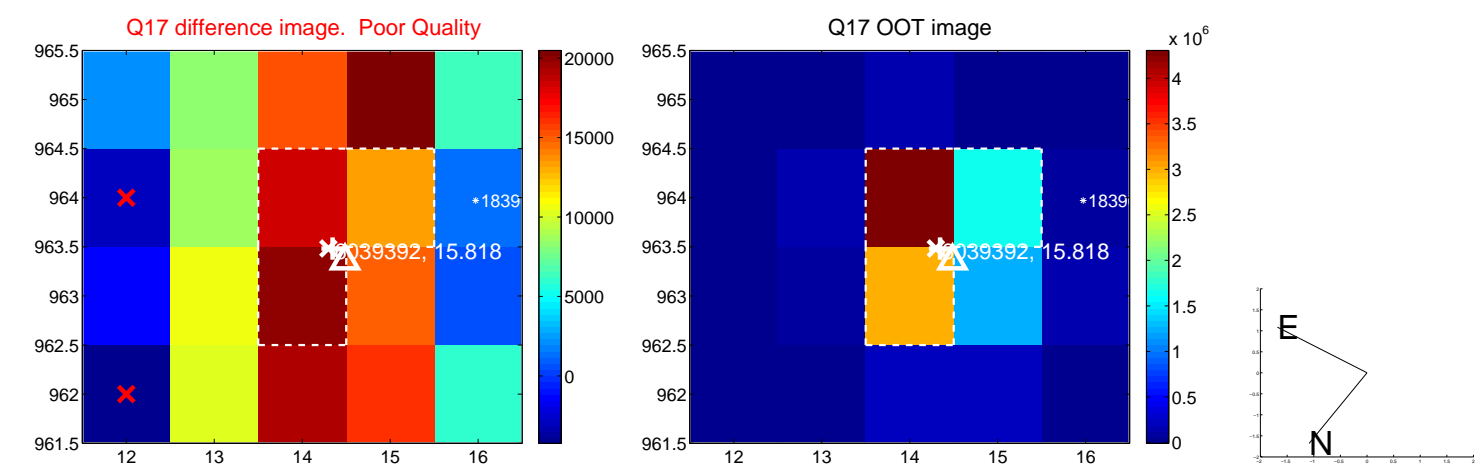
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



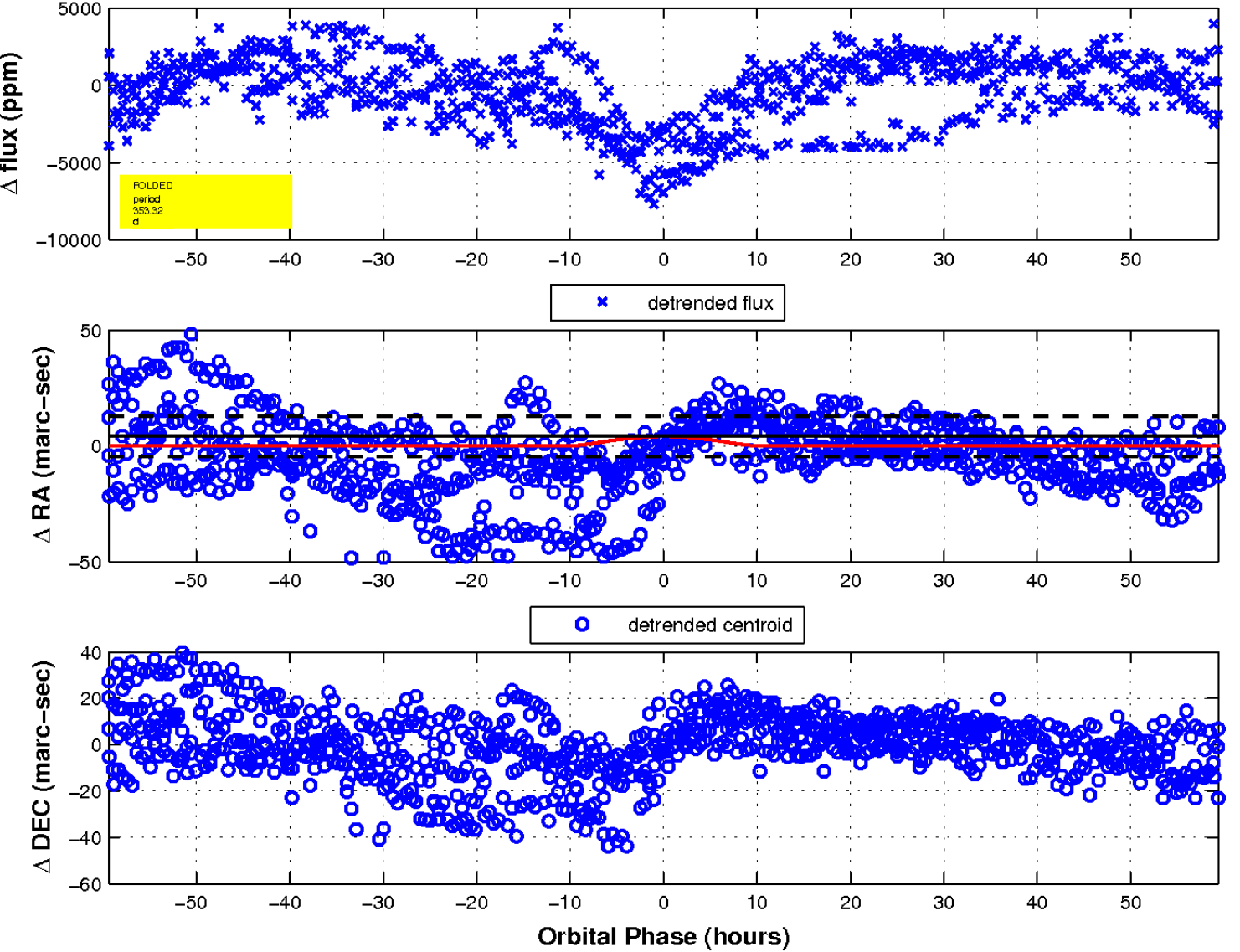
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

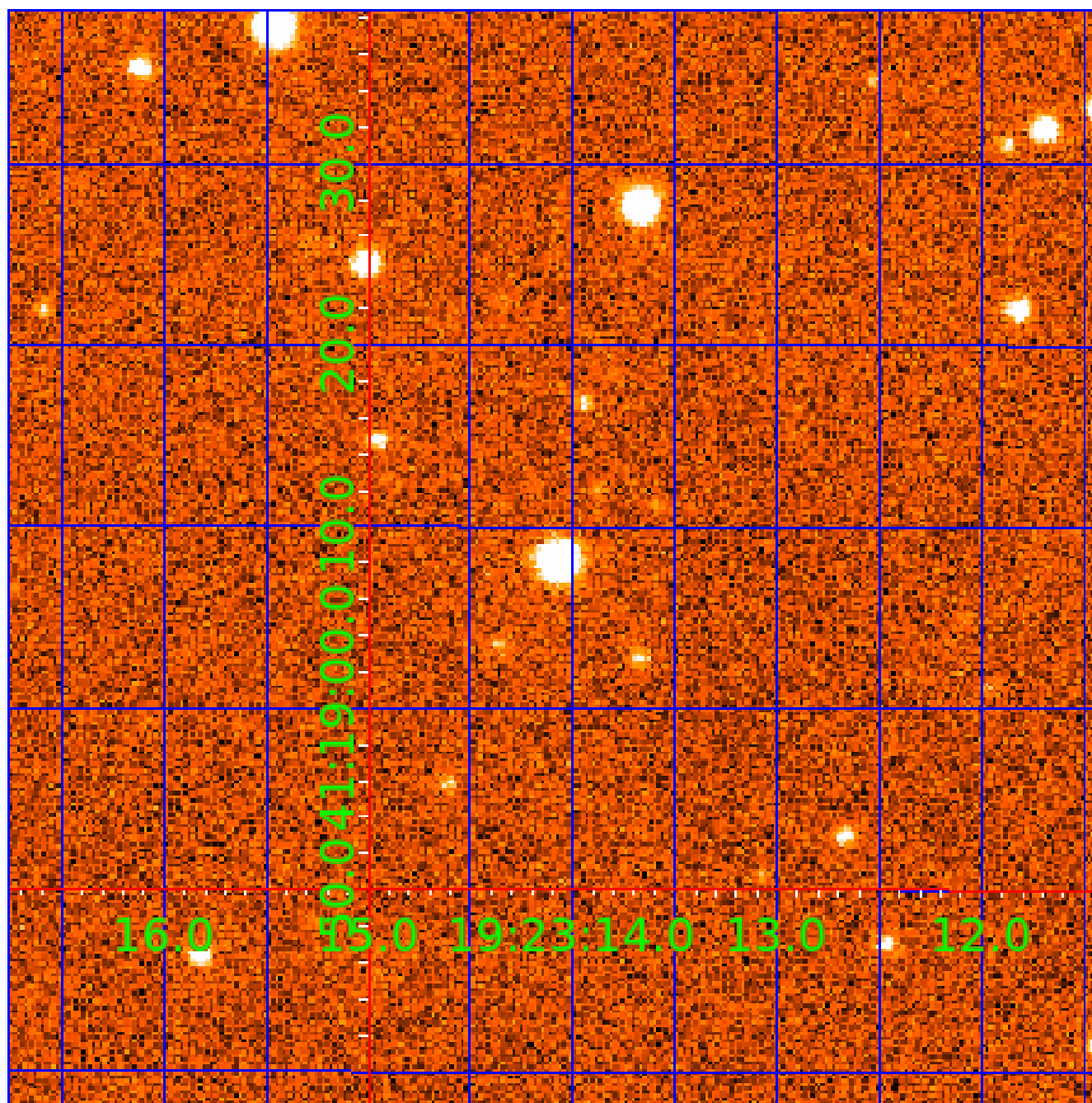


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 006039392

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})
006039392-01	OBS	No	353.317427	176.303890	4560.6	19.846	11.3	13.4	1.15	6257	13.36	1.64
006039392-02	OBS	No	377.741449	499.035569	3706.5	23.376	9.1	9.8	1.15	6257	12.85	1.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006039392-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
006039392-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

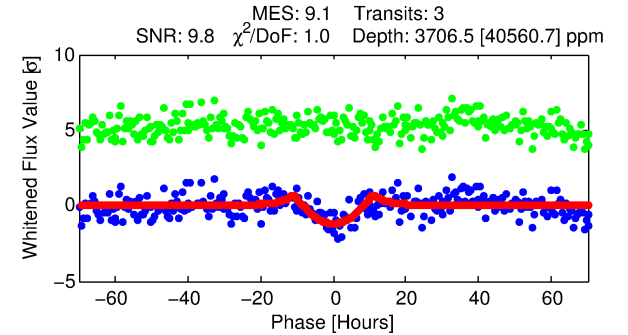
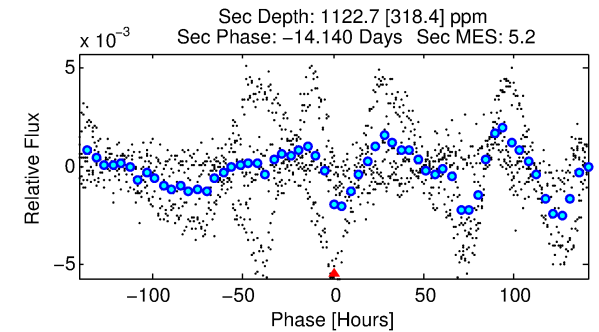
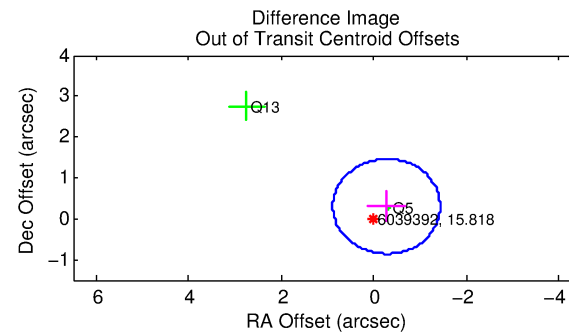
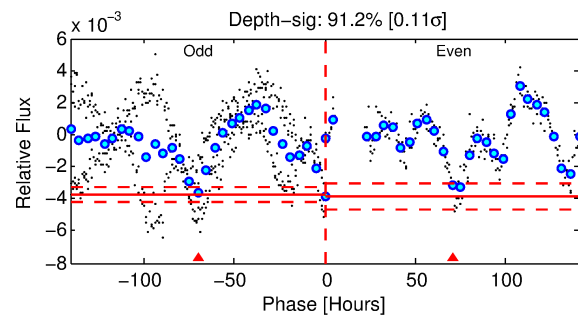
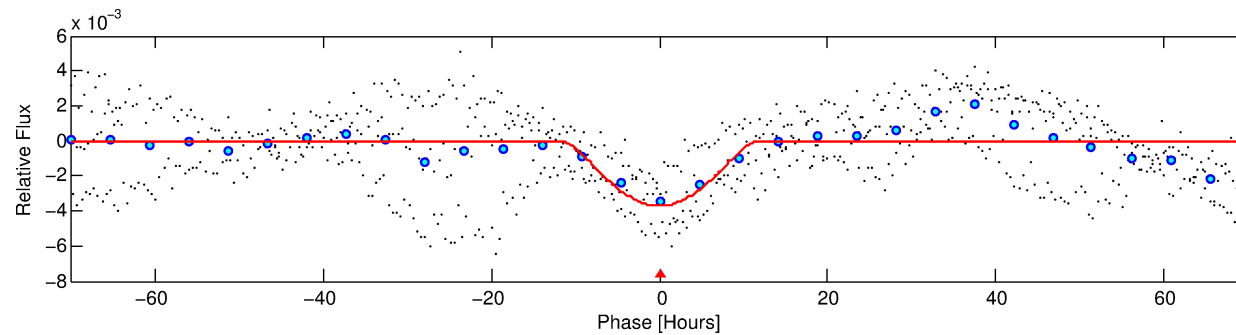
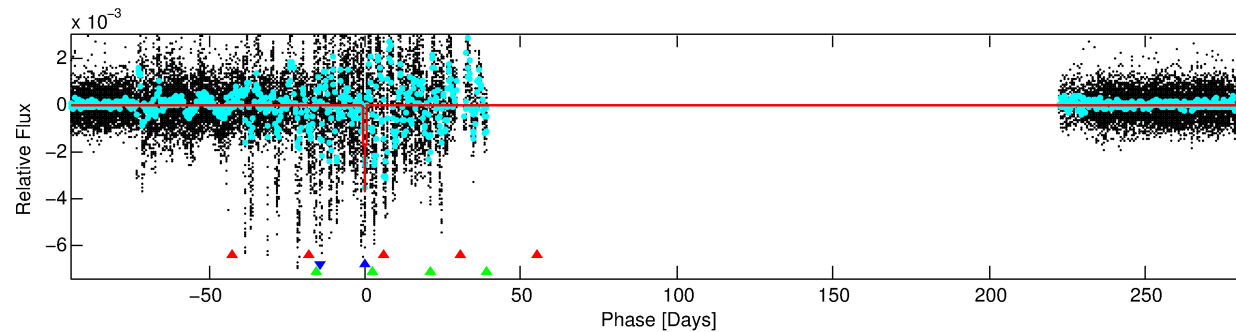
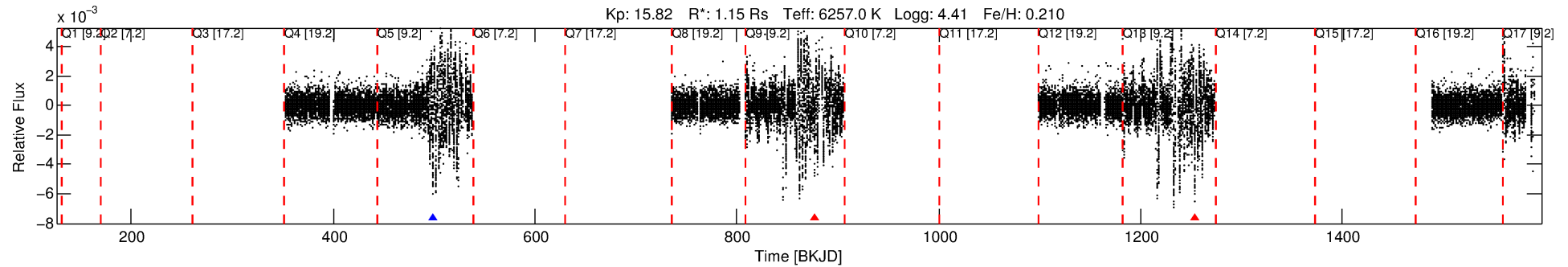
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006039392-02

No Significant Match Found

DV One-Page Summary

KIC: 6039392 Candidate: 2 of 3 Period: 377.741 d



DV Fit Results:

Period = 377.74145 [0.02522] d
Epoch = 499.0356 [0.0270] BKJD
Rp/R* = 0.1026 [0.1711]
a/R* = 57.36 [18.42]
b = 1.00 [0.51]
Seff = 1.50 [0.64]
Teq = 282 [30] K
Rp = 12.85 [21.82] Re
a = 1.0970 [0.2979] AU
Ag = 4502.98 [15165.30] [0.30 σ]
Teffp = 3575 [2994] K [1.10 σ]

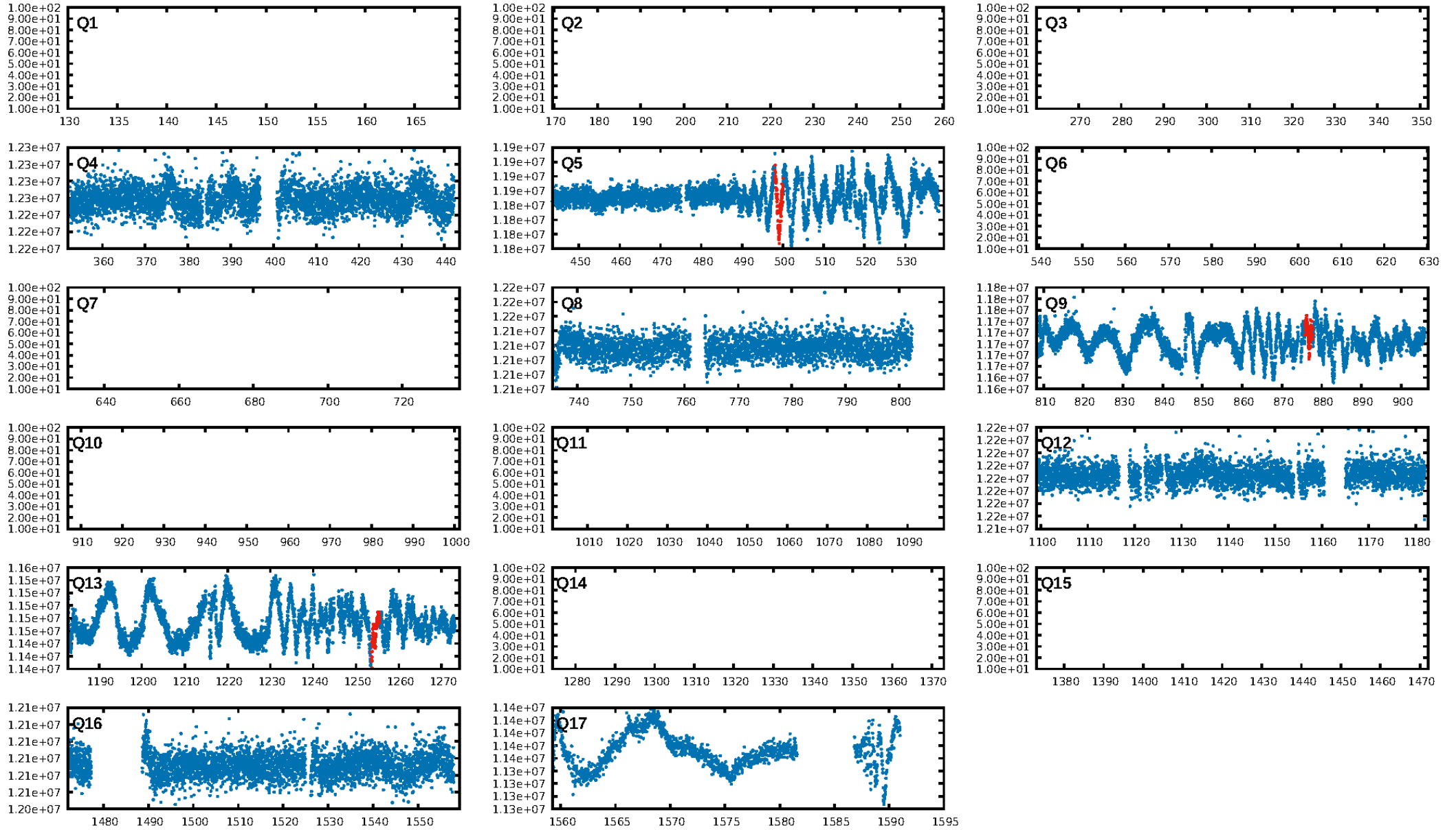
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.35 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.48e-07
RollingBand-fgt: 0.33 [1/3]
GhostDiagnostic-chr: 0.4039
Centroid-sig: N/A
Centroid-so: 5.456 arcsec [2.43 σ]
OotOffset-rm: 0.407 arcsec [1.05 σ]
KicOffset-rm: 0.433 arcsec [0.53 σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

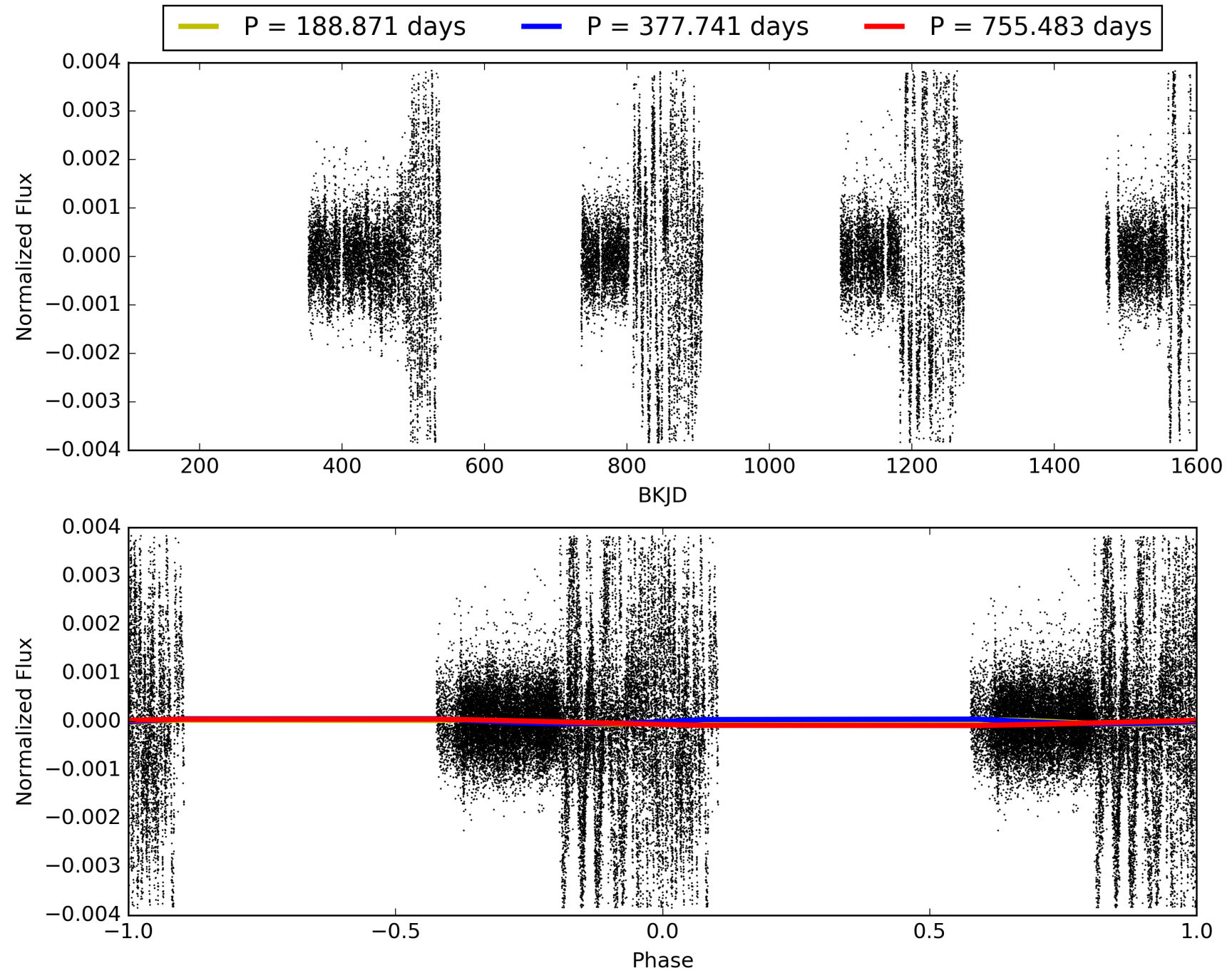
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:23:25 Z

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

TCE 006039392-02, PDC Light Curves

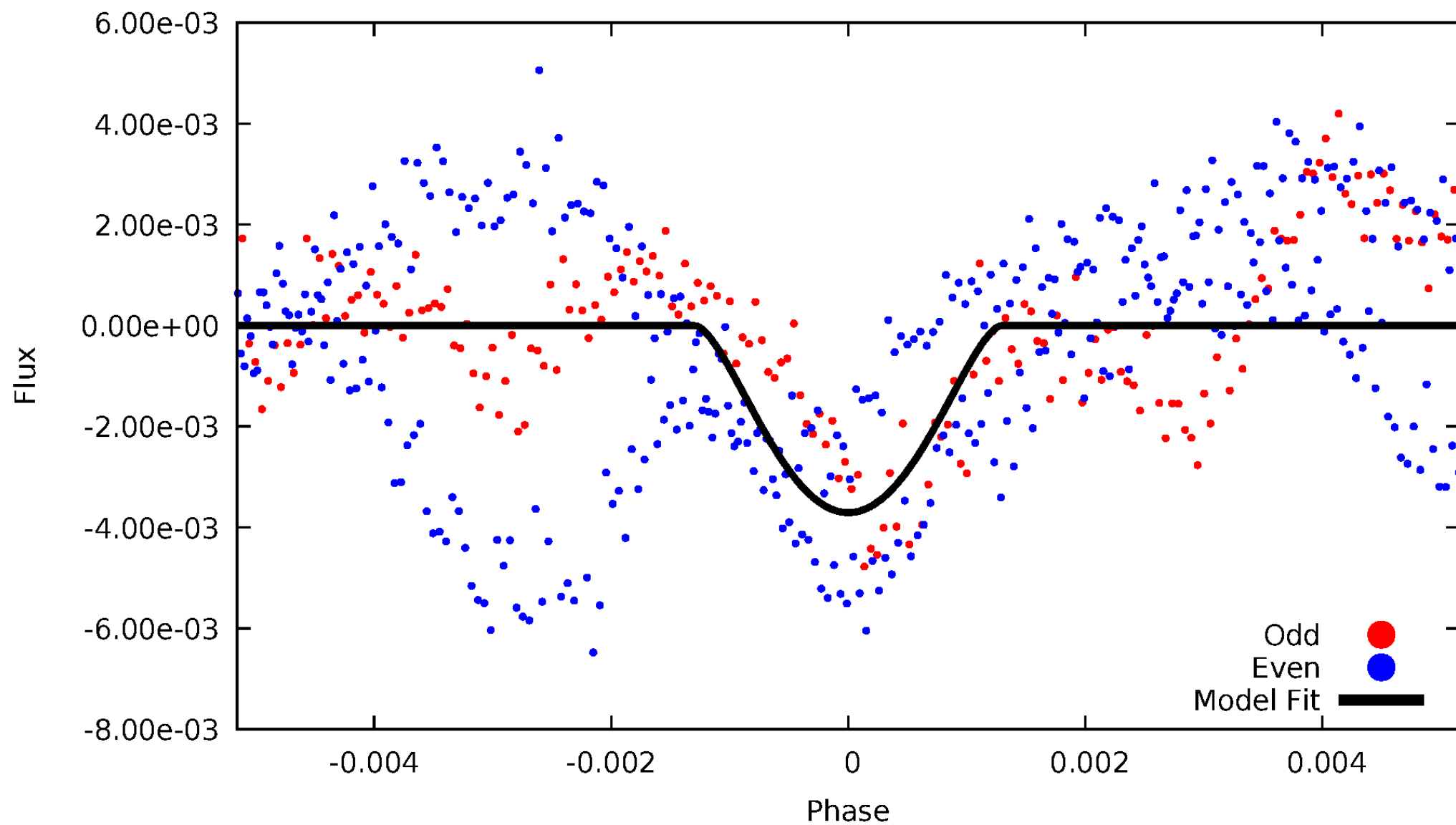


TCE 006039392-02



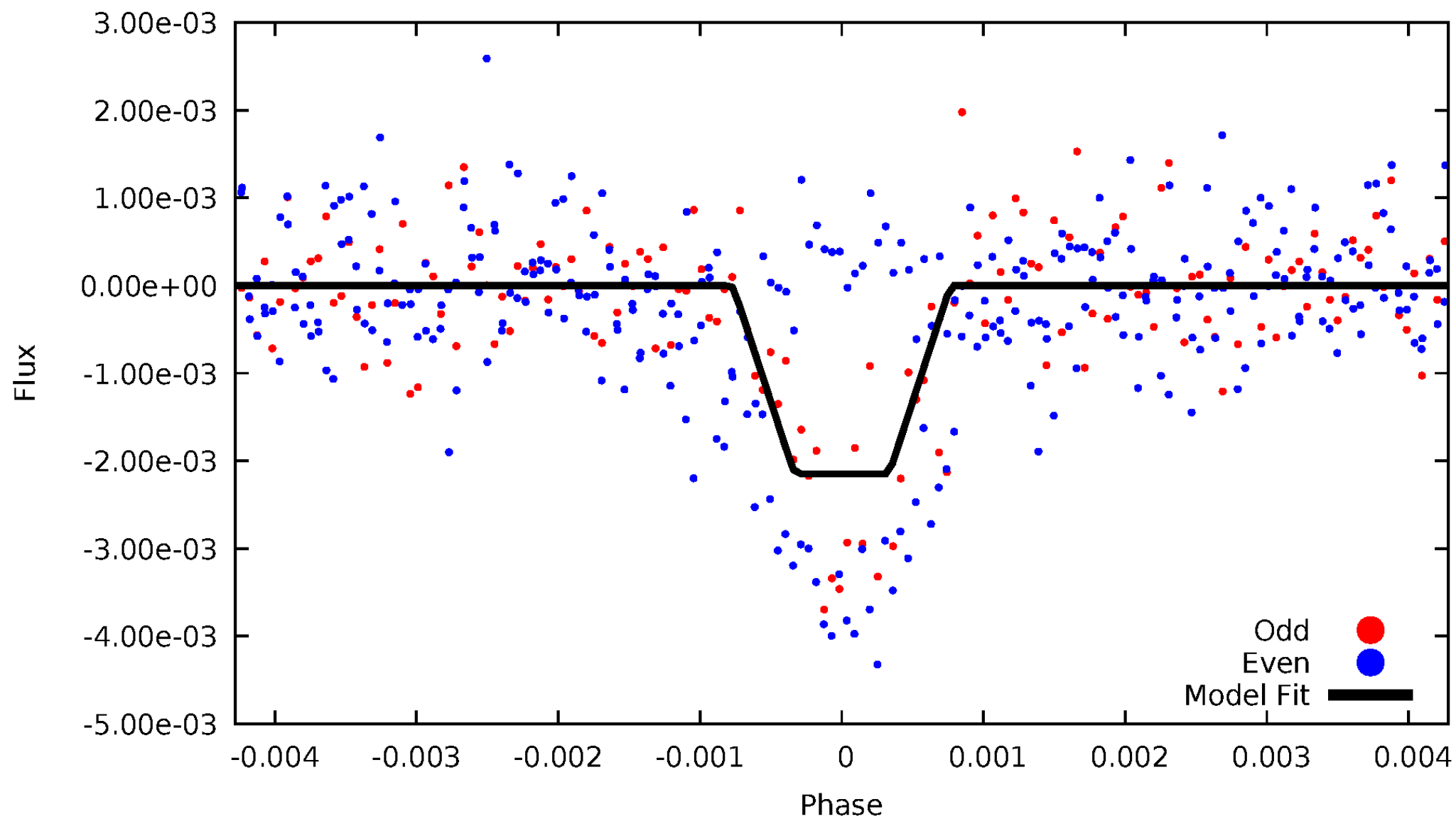
DV Odd/Even

TCE 006039392-02



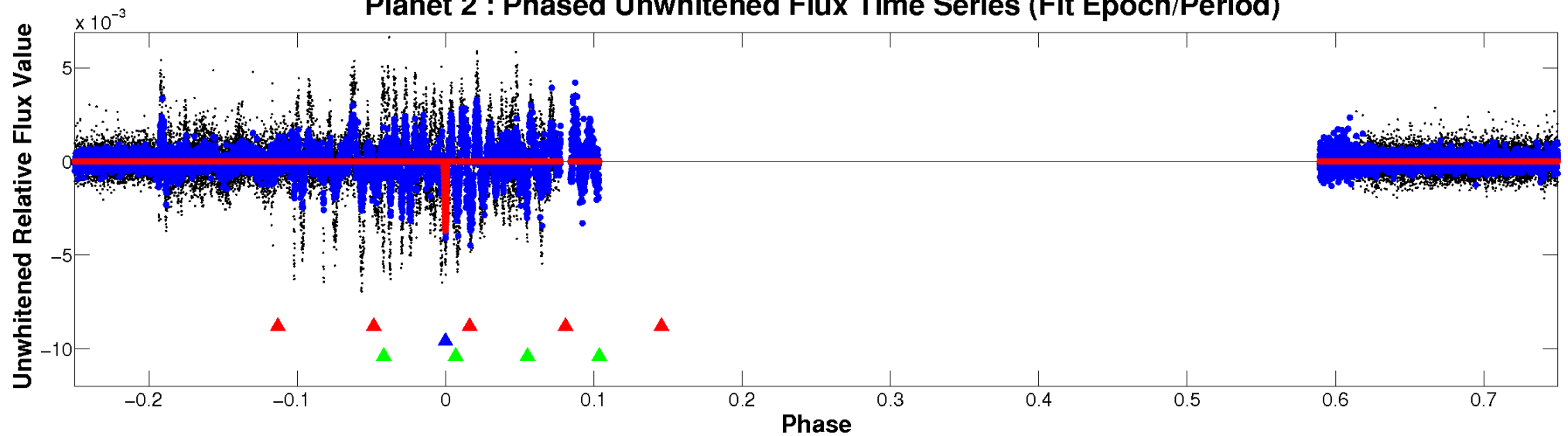
ALT Odd/Even

TCE 006039392-02

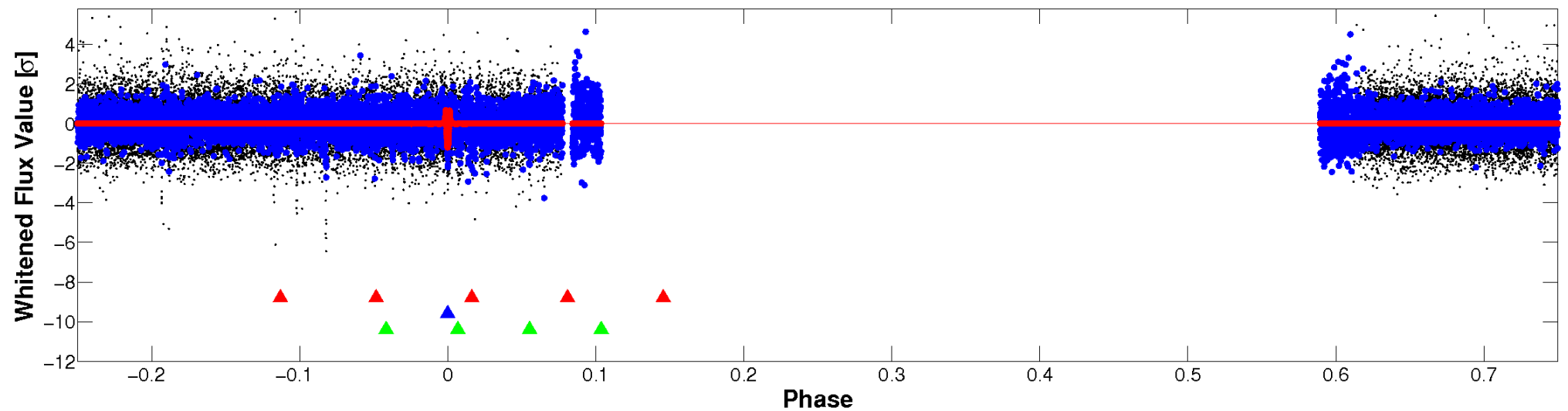


Non-Whitened Vs. Whitened Light Curve

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

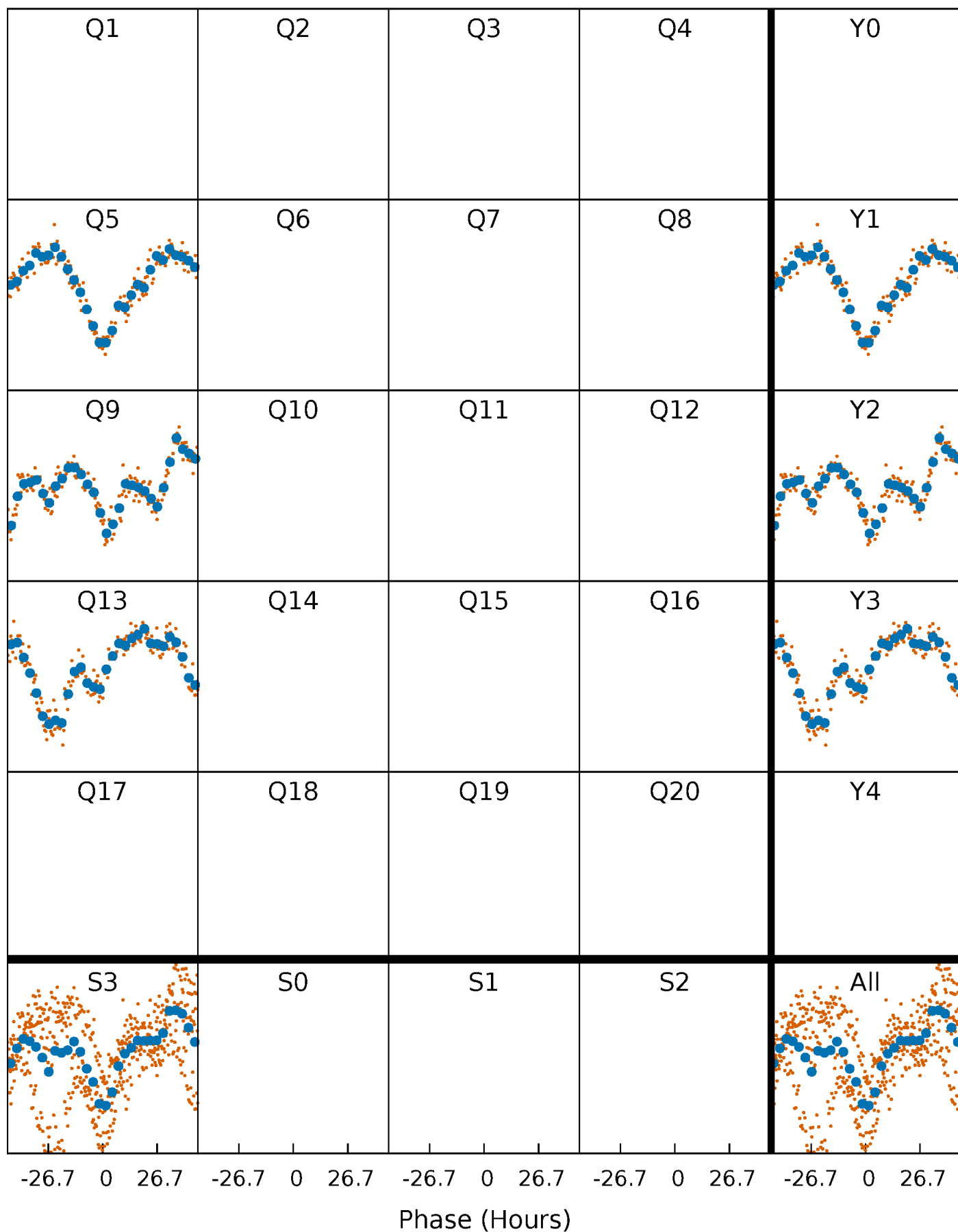


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



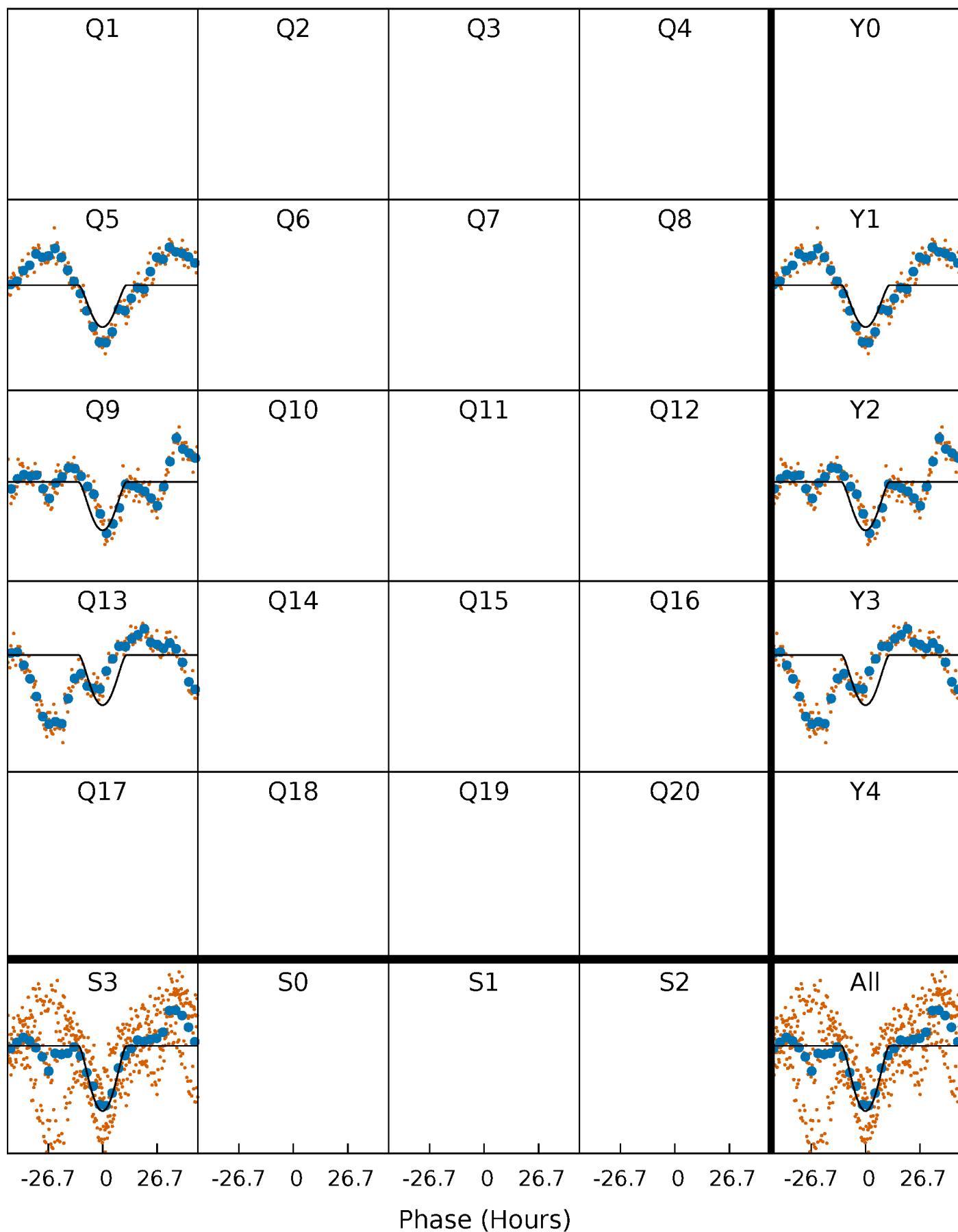
PDC Quarter-Phased Transit Curves

TCE 006039392-02 $P=377.741449$ Days $T_0=499.035570$ (BKJD)



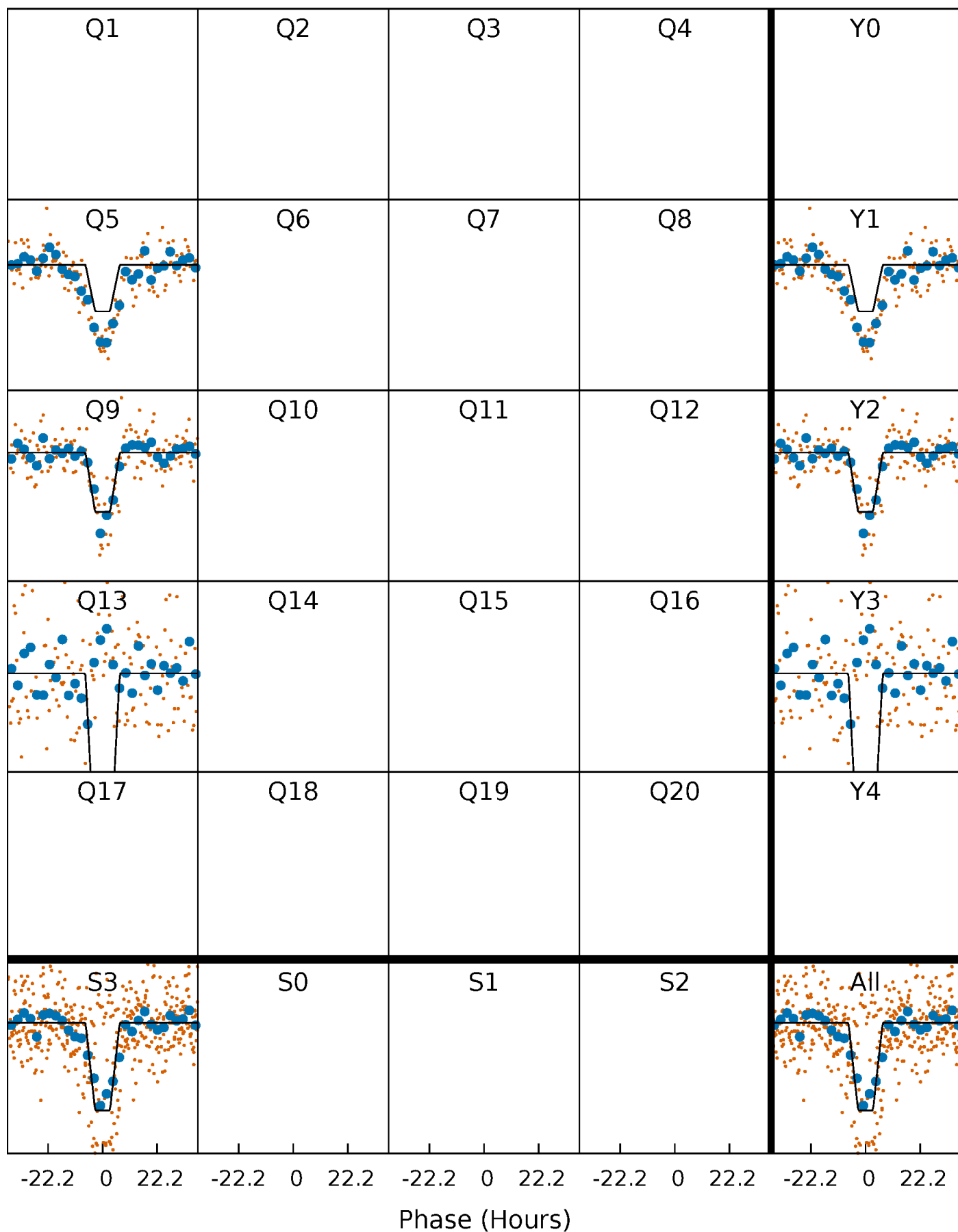
DV Quarter-Phased Transit Curves

TCE 006039392-02 $P=377.741449$ Days $T_0=499.035570$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

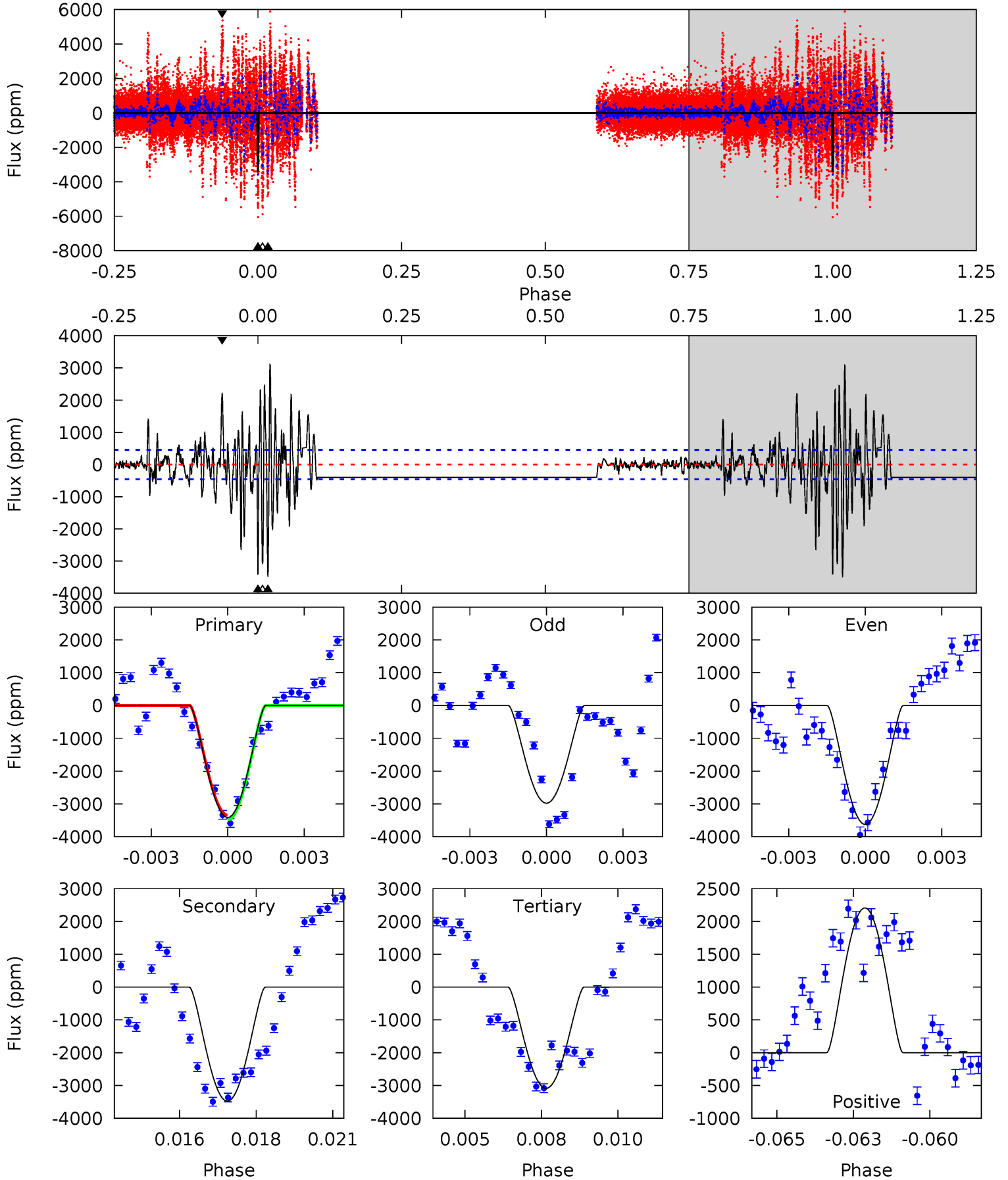
TCE 006039392-02 $P=377.877825$ Days $T_0=498.997148$ (BKJD)



DV Model-Shift Uniqueness Test

006039392-02, P = 377.741449 Days, E = 121.294121 Days

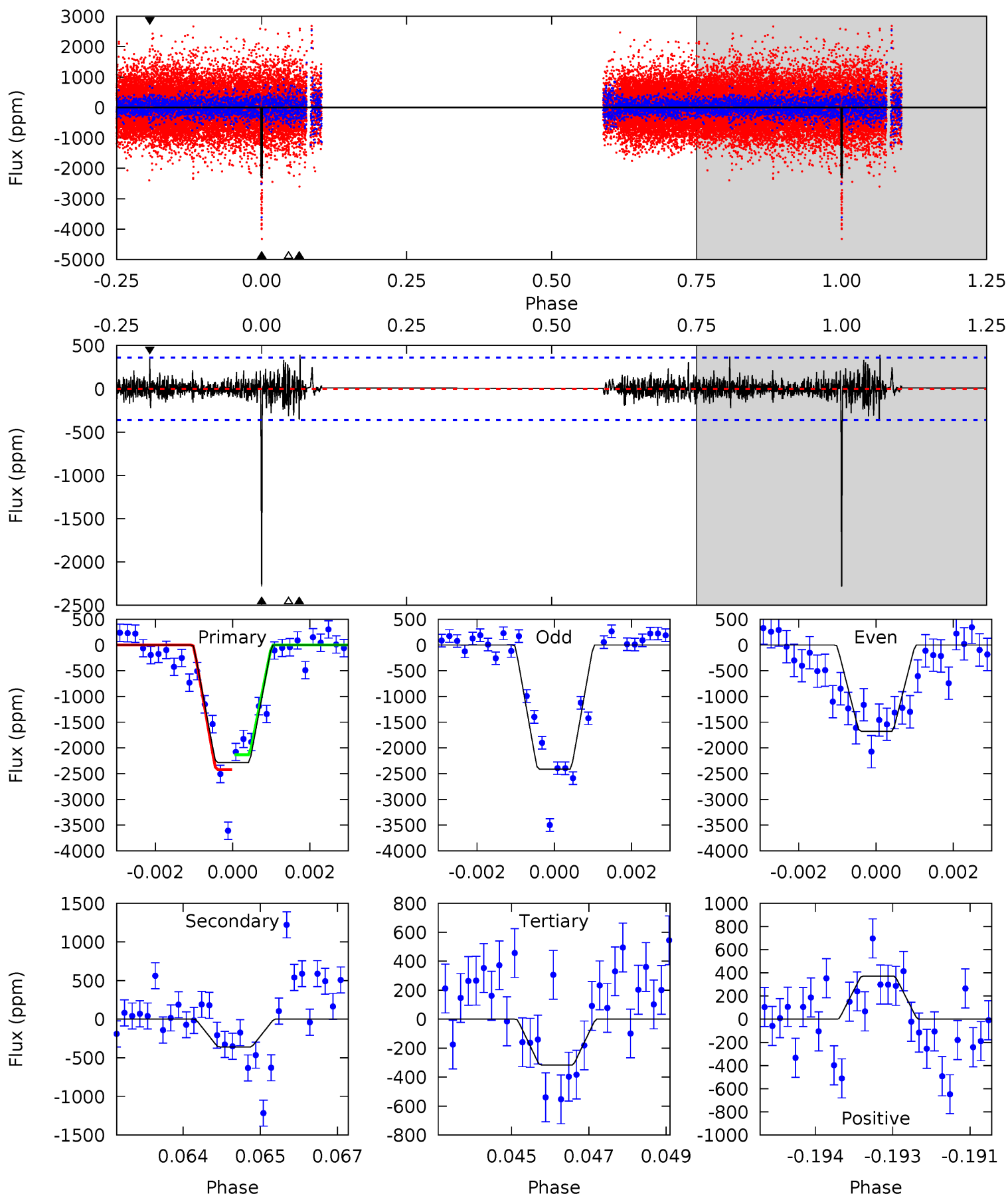
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.6	40.3	35.8	25.6	5.28	3.01	6.75	3.78	14.0	4.53	14.8	3.33	1.15	0.47	0.63



Alt Model-Shift Uniqueness Test

006039392-02, P = 377.877825 Days, E = 121.119323 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.0	5.34	4.71	5.54	5.38	3.17	1.11	29.3	28.5	0.63	-0.19	5.44	0.80	0.15	2.01



Stellar Parameters For KIC 006039392

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6257^{+177}_{-265}	$4.410^{+0.056}_{-0.210}$	$0.210^{+0.200}_{-0.300}$	$1.147^{+0.376}_{-0.125}$	$1.233^{+0.154}_{-0.169}$	$1.152^{+0.328}_{-0.605}$
	+3%/-4%	+1%/-5%	+95%/-143%	+33%/-11%	+12%/-14%	+28%/-53%
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 006039392-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3477 ± 86	$22.04^{+17.13}_{-14.22}$	401^{+31}_{-22}	3968^{+2317}_{-658}	4489^{+32995}_{-3061}
Alt.	-359 ± 67	$18.04^{+18.19}_{-12.36}$	401^{+29}_{-19}	2998^{+1309}_{-511}	717^{+6307}_{-546}

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

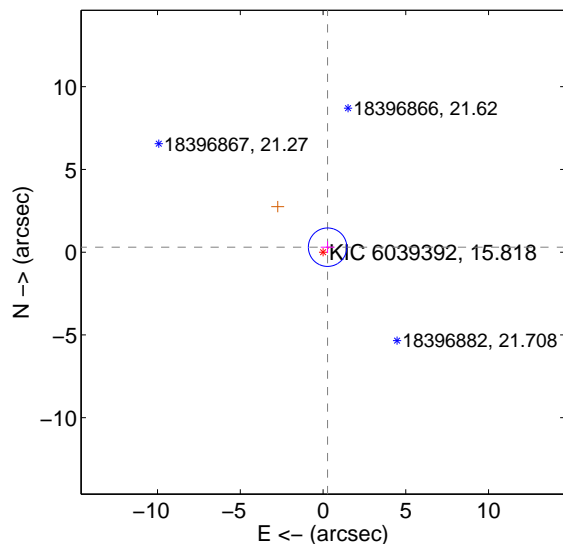
Supplemental centroid analysis for 006039392-02. Kepler magnitude: 15.82. Transit SNR 9.76

There are 0 quarters with good PRF difference image offsets

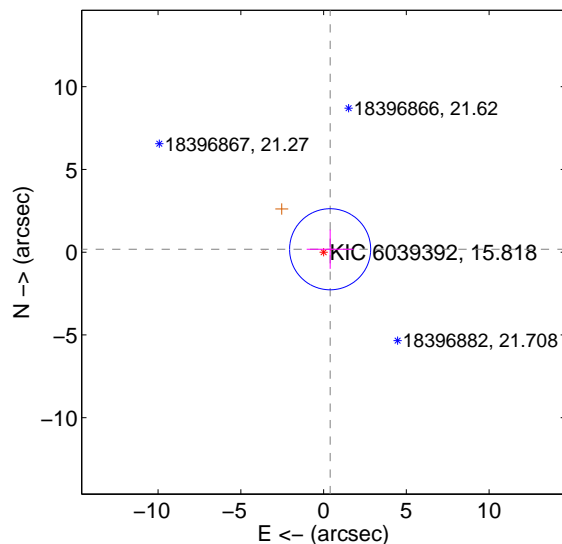
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.407 ± 0.387	1.05	-0.275 ± 0.416	0.301 ± 0.361
PRF-fit source offset from KIC position	0.433 ± 0.816	0.53	-0.395 ± 1.419	0.176 ± 1.184
photometric centroid source offset	5.46 ± 2.24	2.43	0.60 ± 2.47	5.42 ± 2.24

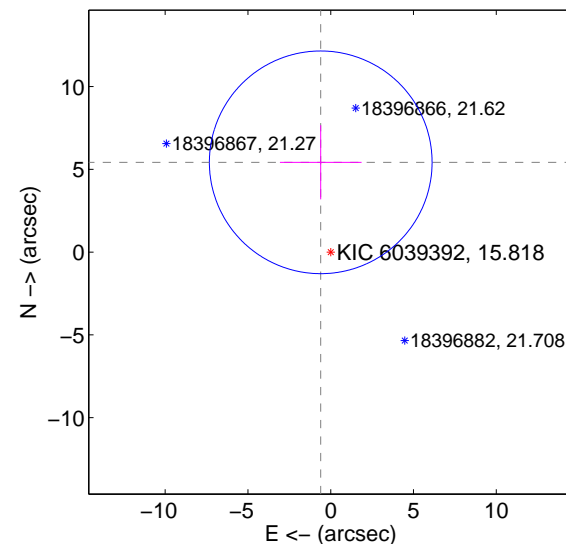
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

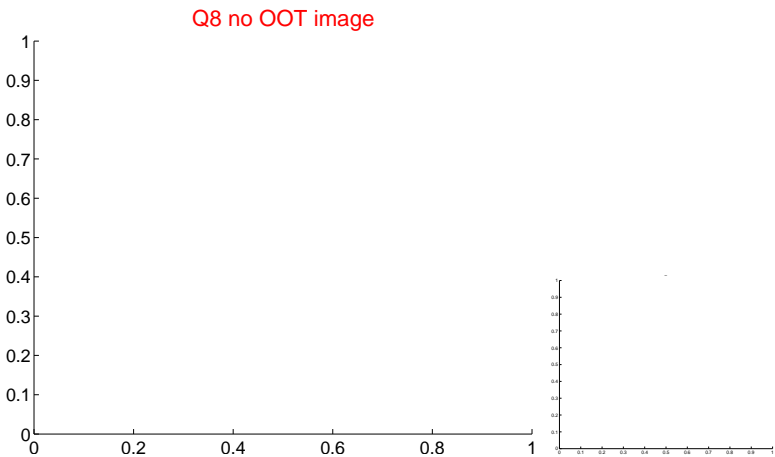
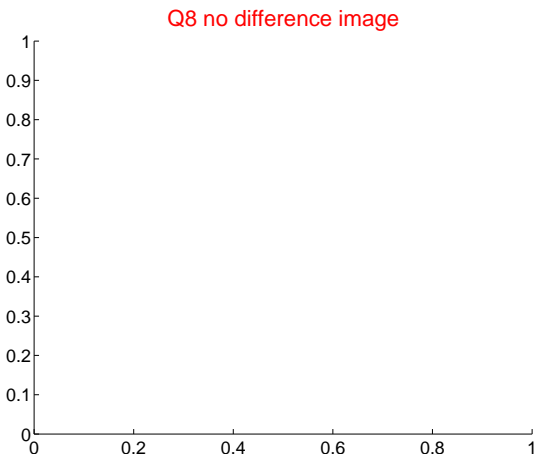
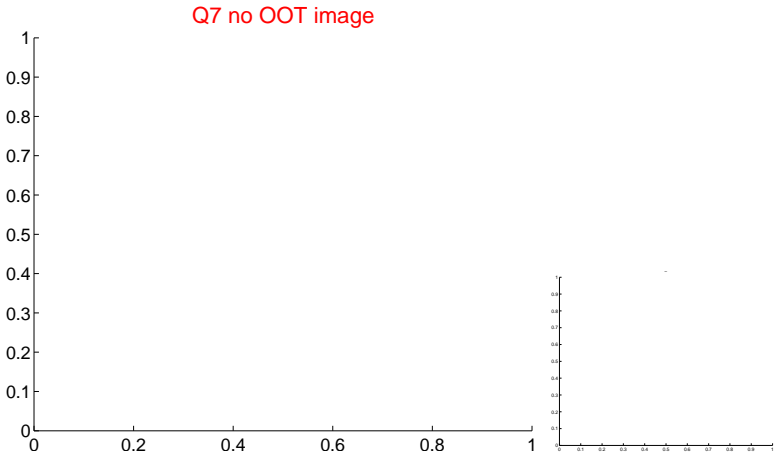
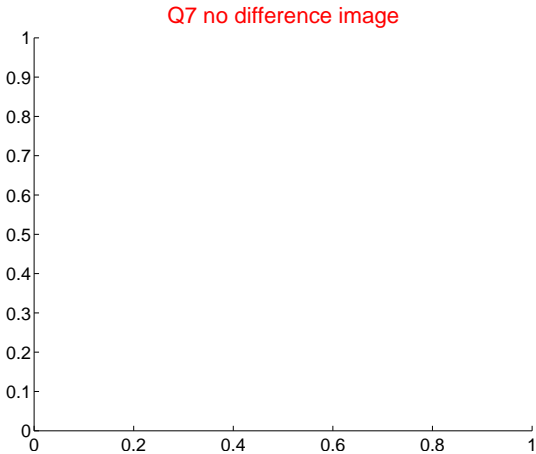
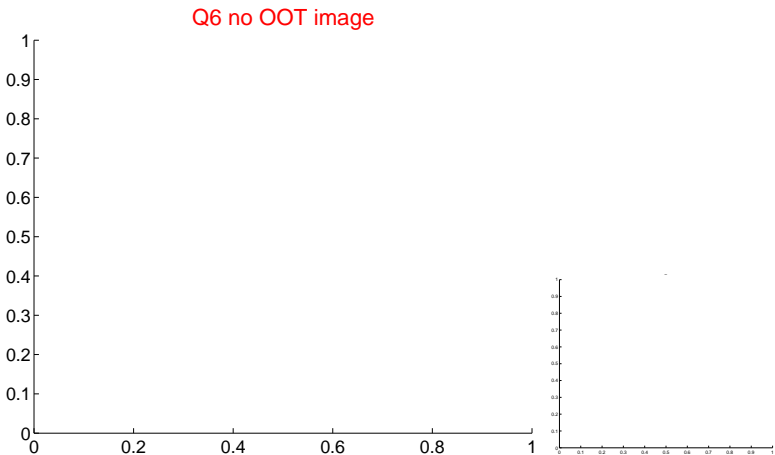
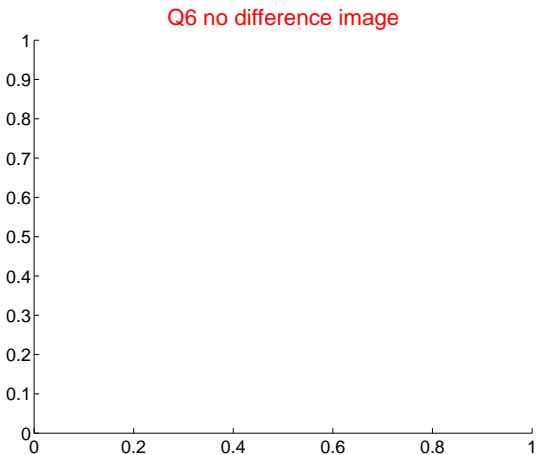
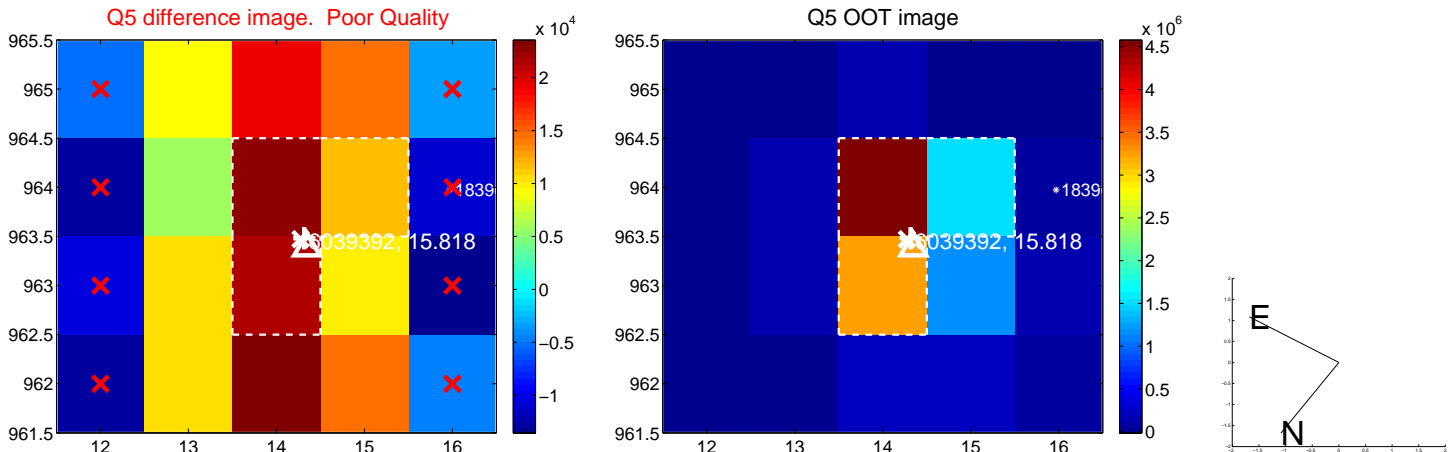


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



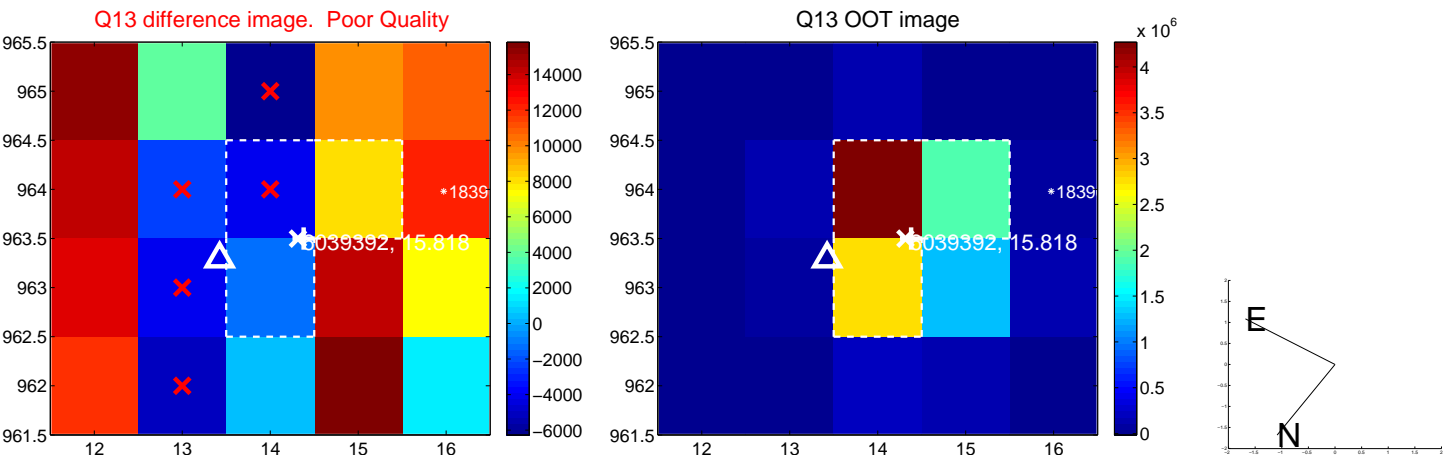
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

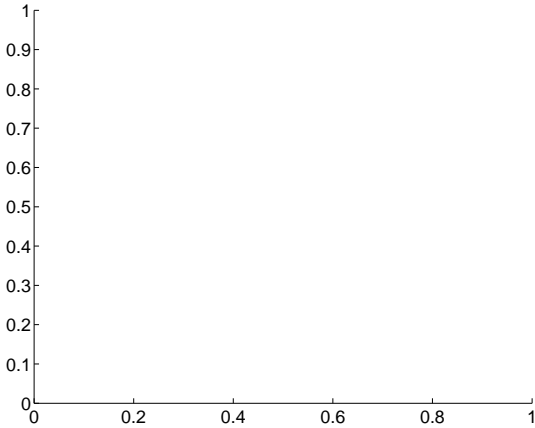


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

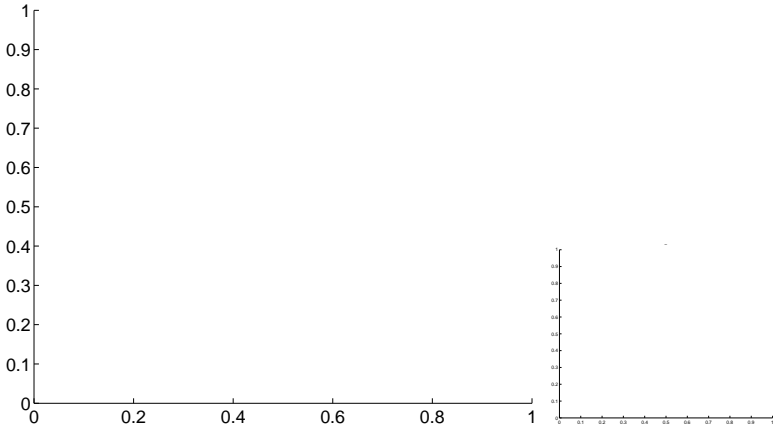


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

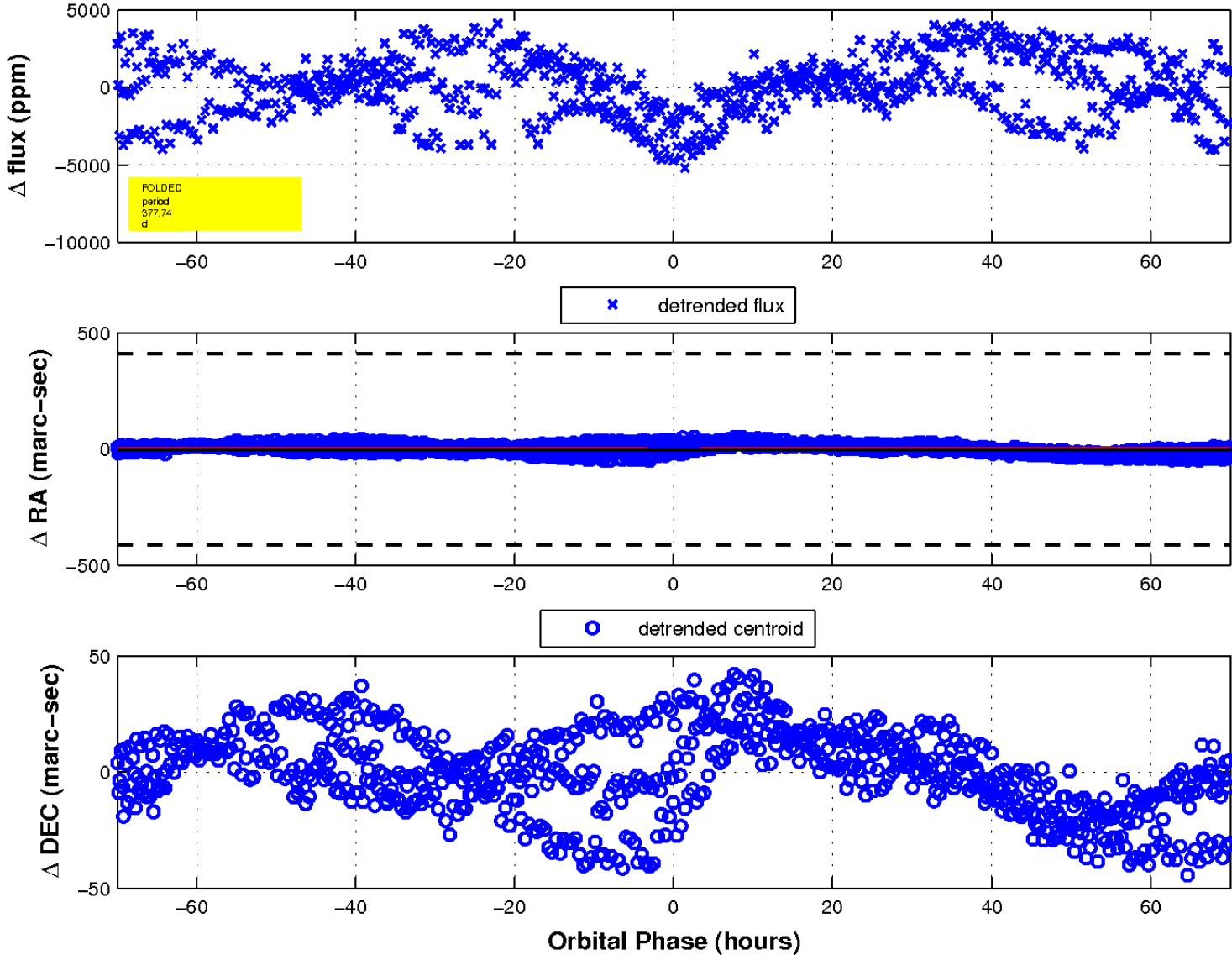
Q17 no difference image



Q17 no OOT image



fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination

