

KIC 004638393

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})
004638393-01	OBS	No	284.789619	351.088287	144.1	9.258	7.3	7.3	1.67	5937	2.36	4.28
004638393-02	OBS	No	469.187691	554.956885	150.3	20.419	7.7	8.1	1.67	5937	2.23	2.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004638393-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004638393-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

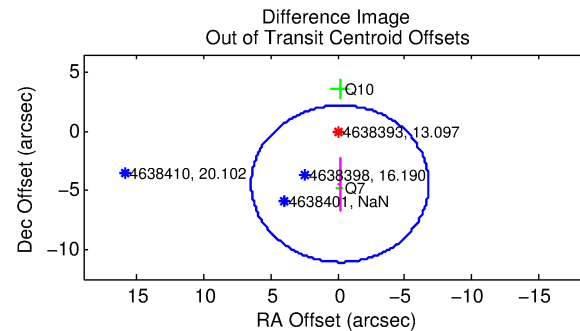
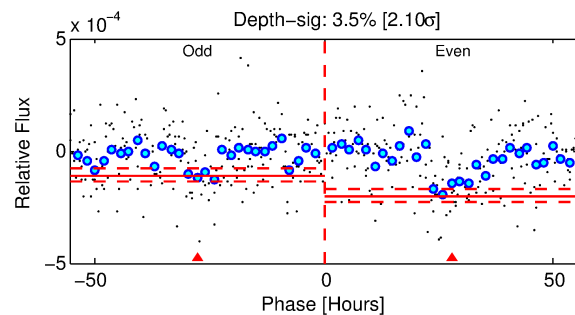
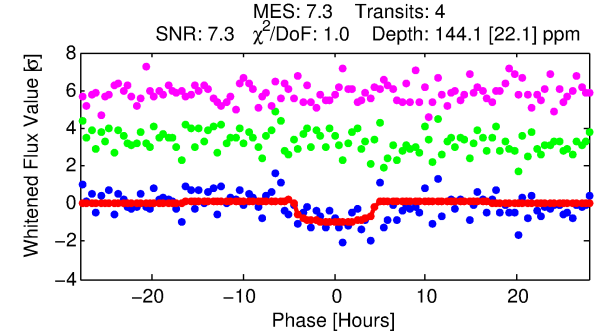
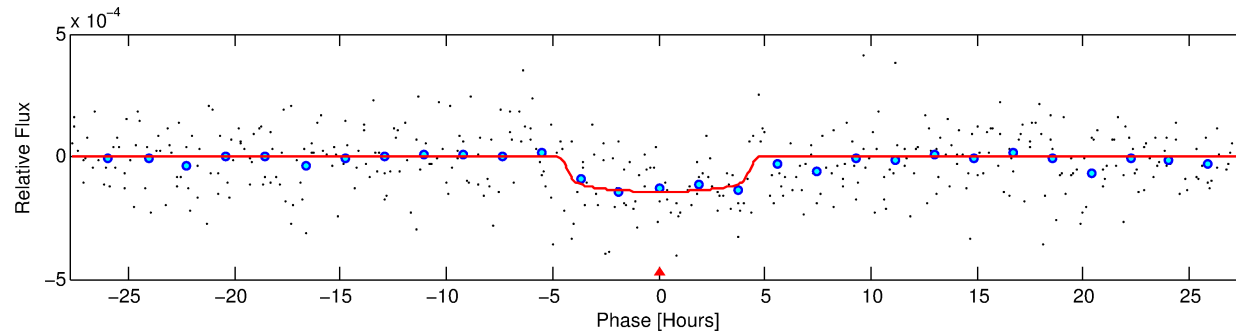
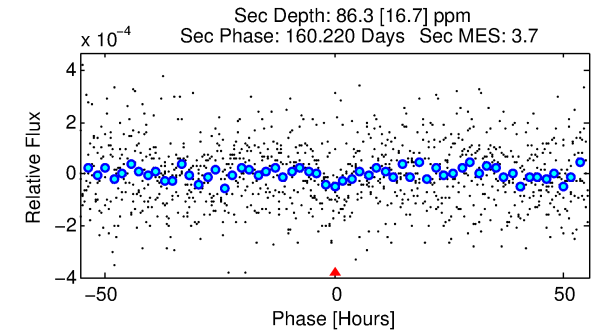
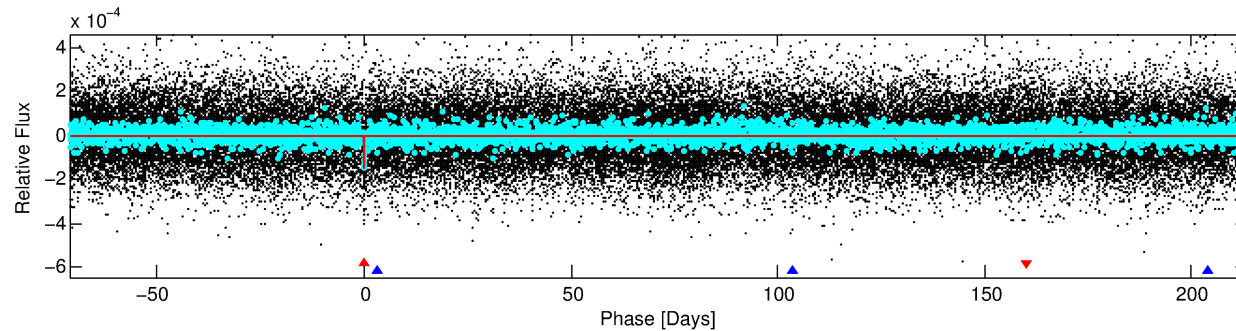
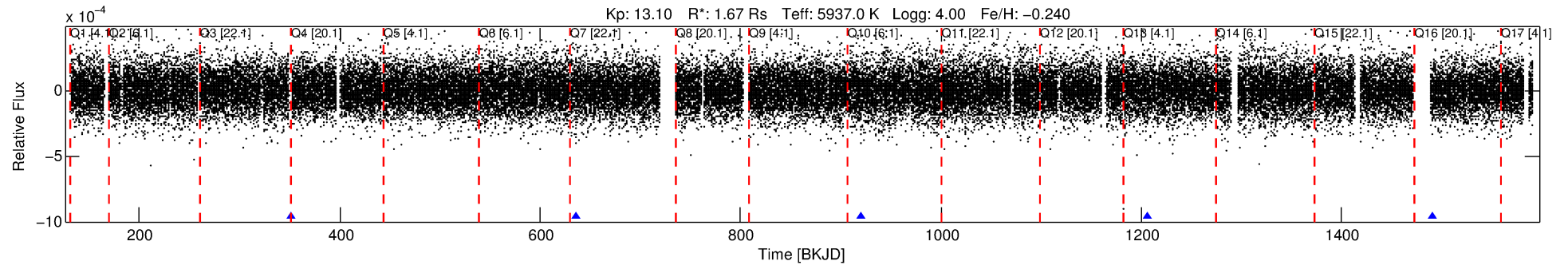
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004638393-01

No Significant Match Found

DV One-Page Summary

KIC: 4638393 Candidate: 1 of 2 Period: 284.790 d



DV Fit Results:

Period = 284.78962 [0.01010] d
Epoch = 351.0883 [0.0299] BKJD
Rp/R* = 0.0130 [0.0041]
a/R* = 109.30 [171.88]
b = 0.90 [0.34]
Seff = 4.28 [2.16]
Teq = 367 [46] K
Rp = 2.36 [1.05] Re
a = 0.8525 [0.2597] AU
Ag = 6172.99 [5092.22] [1.21σ]
Teffp = 5025 [842] K [5.53σ]

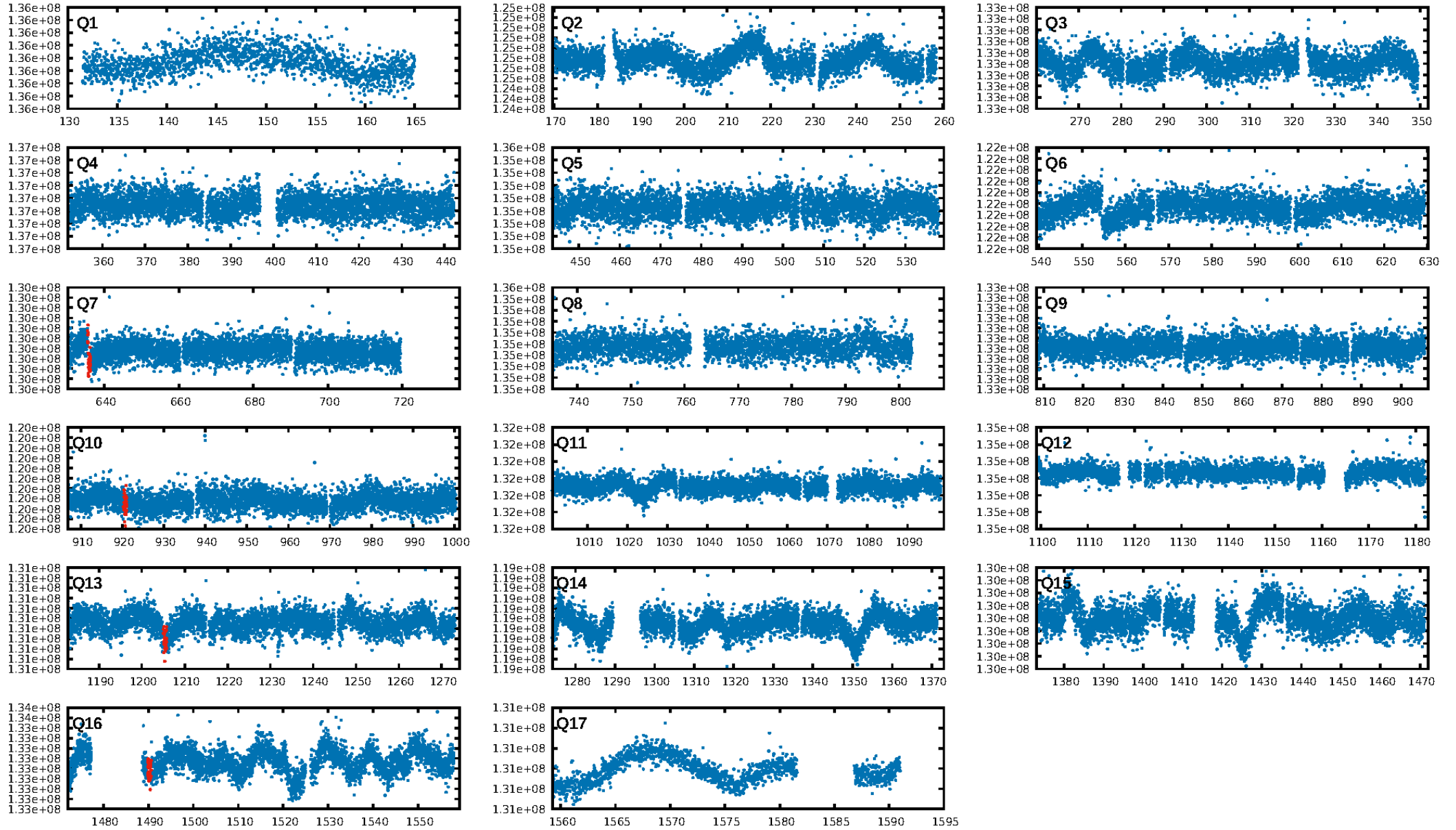
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [197.40σ]
ModelChiSquare2-sig: 3.5%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: 7.10e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.154
Centroid-sig: 3.1%
Centroid-so: 2.945 arcsec [1.63σ]
OotOffset-rm: 4.454 arcsec [2.02σ]
KicOffset-rm: 4.560 arcsec [1.87σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

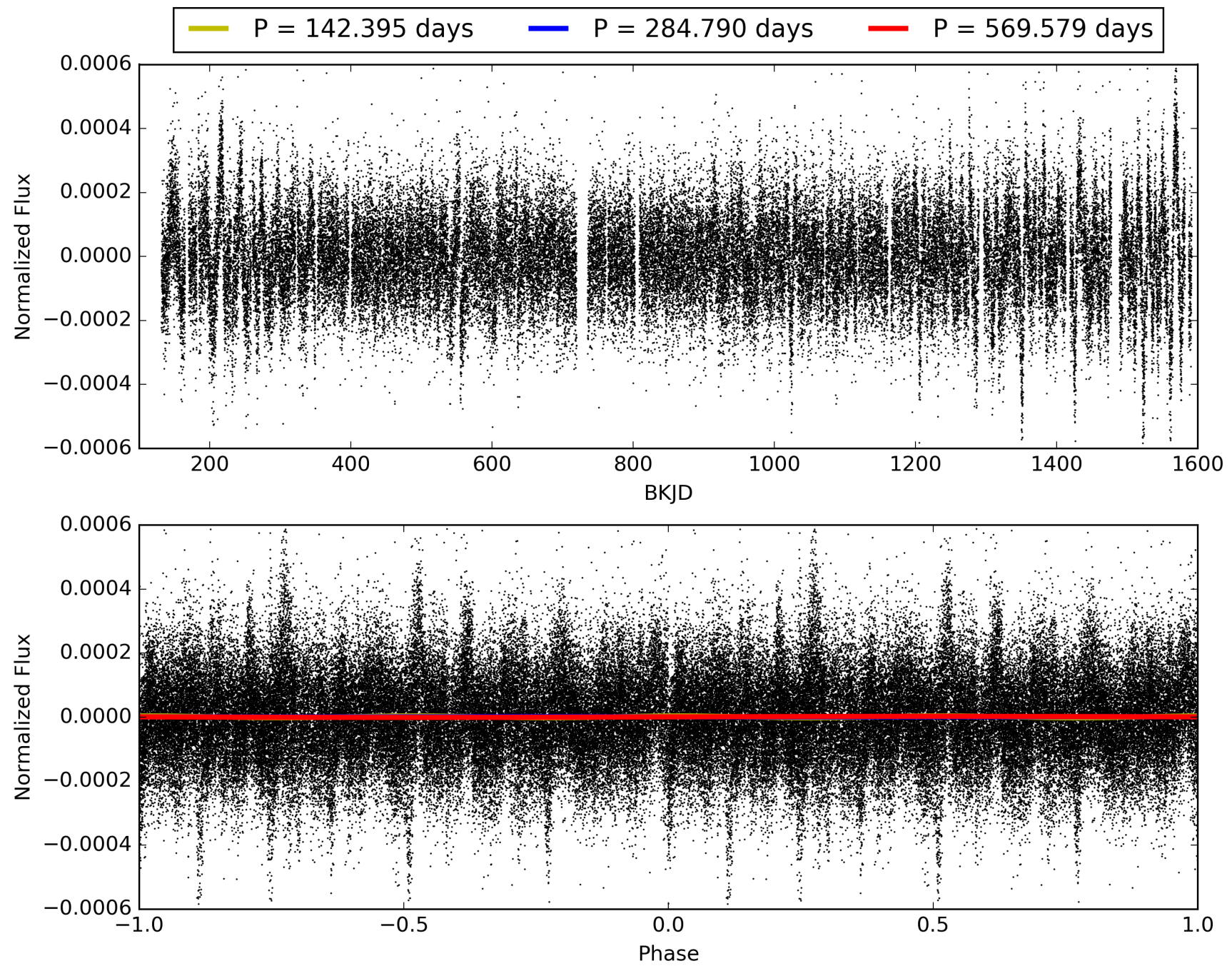
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:14:32 Z

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

TCE 004638393-01, PDC Light Curves

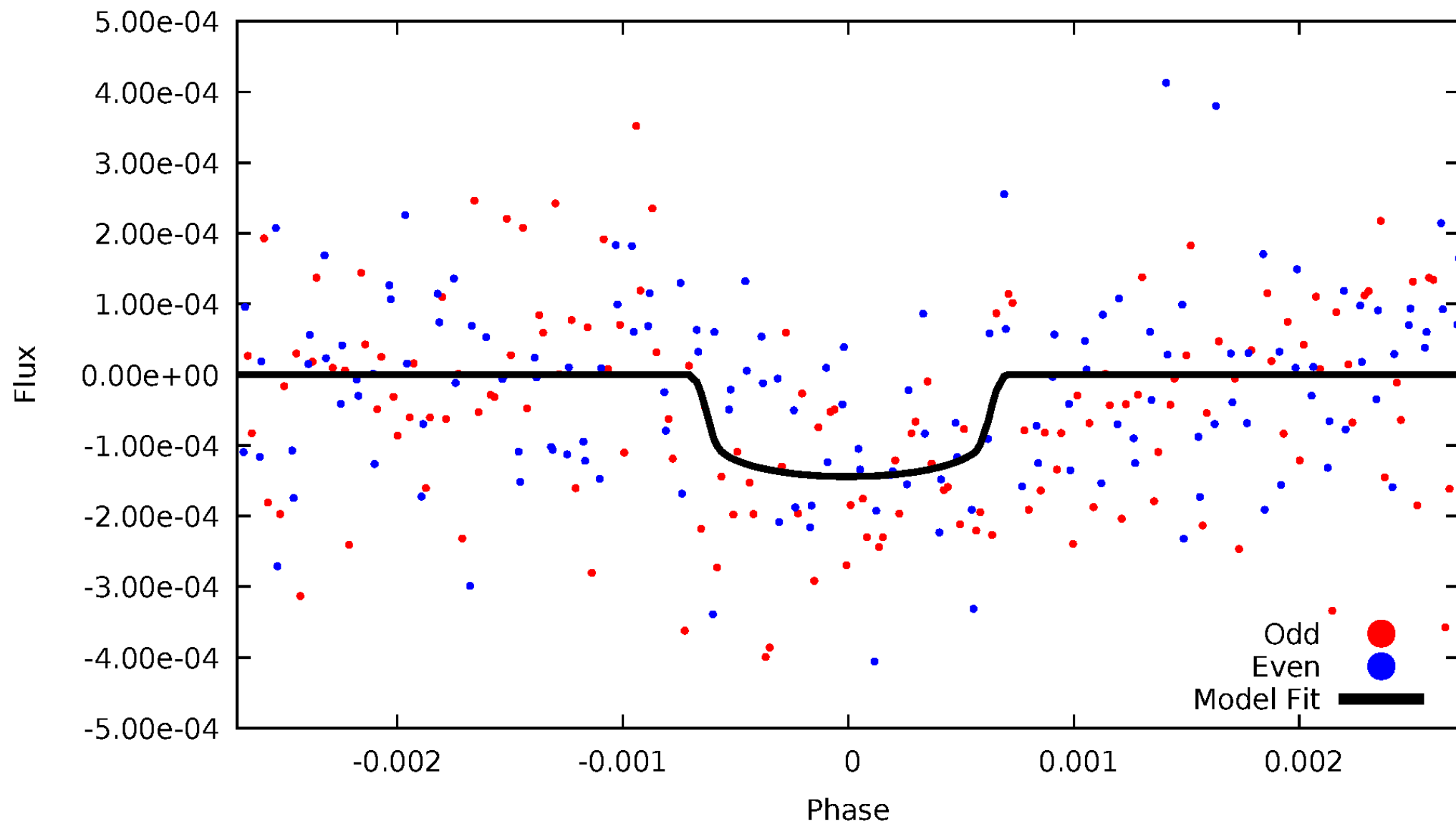


TCE 004638393-01



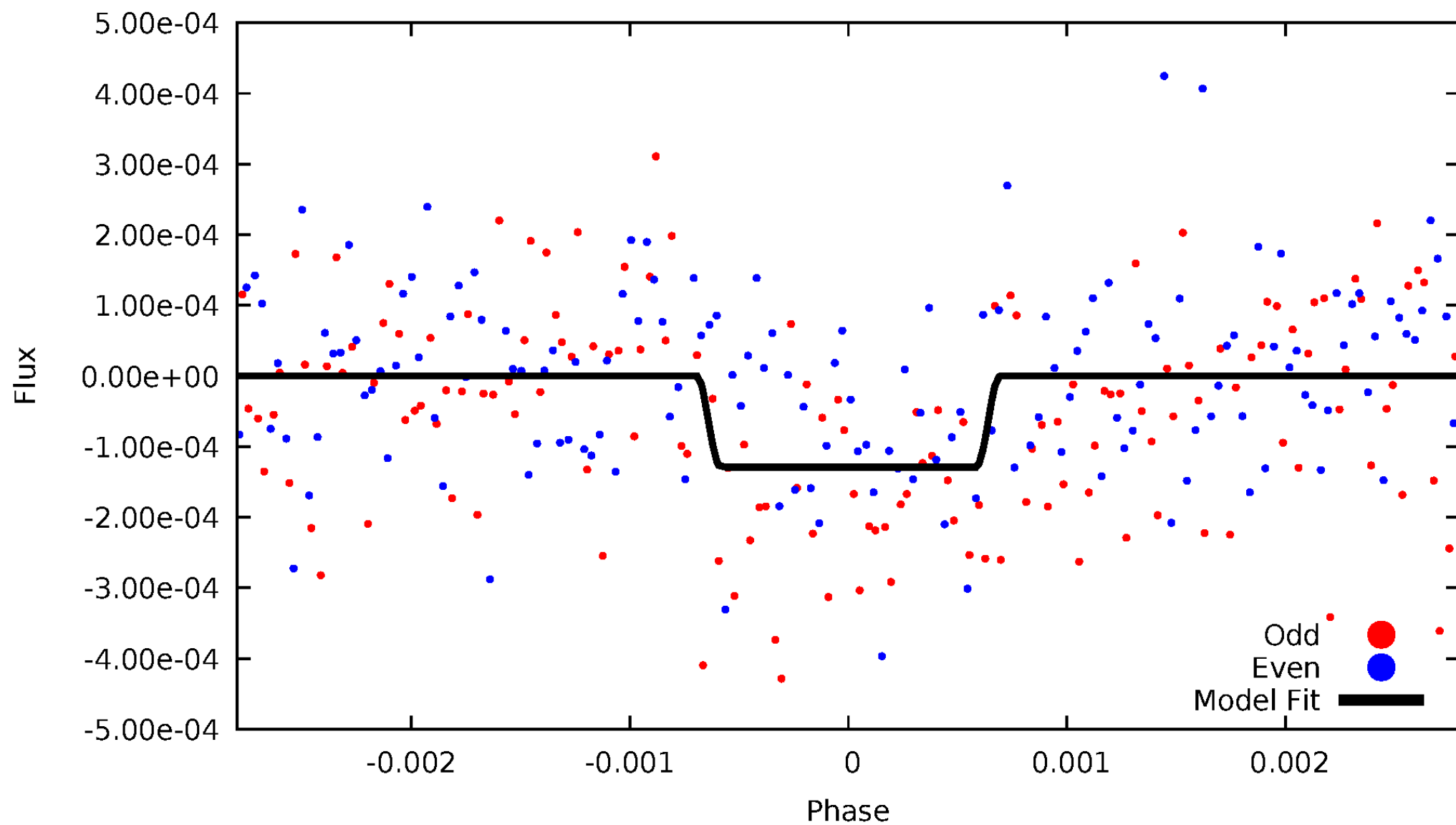
DV Odd/Even

TCE 004638393-01

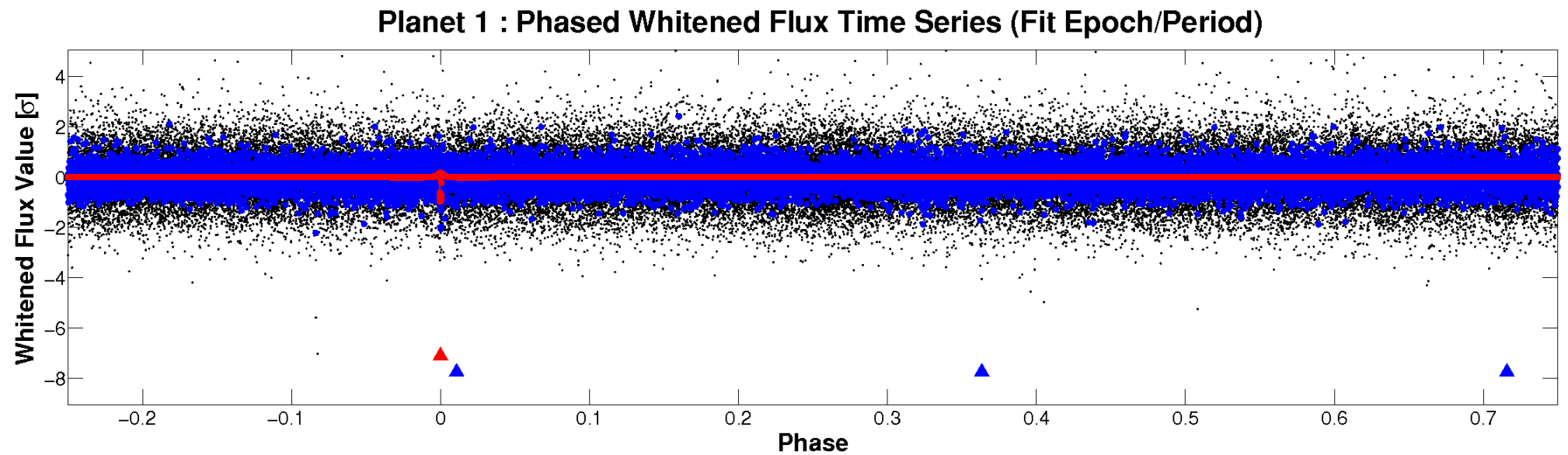
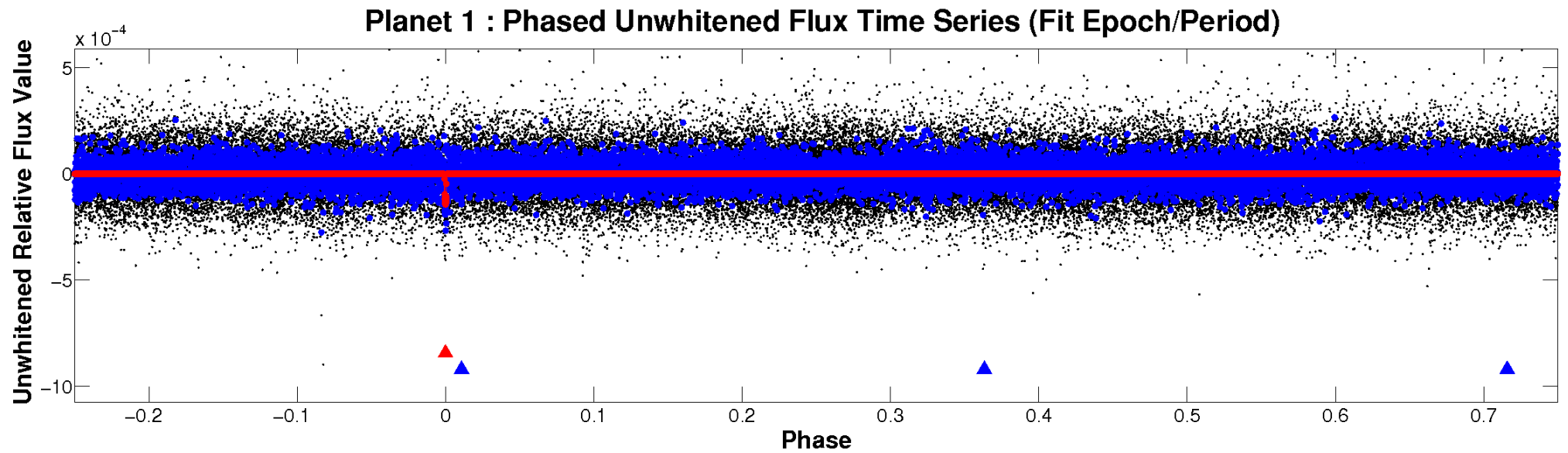


ALT Odd/Even

TCE 004638393-01

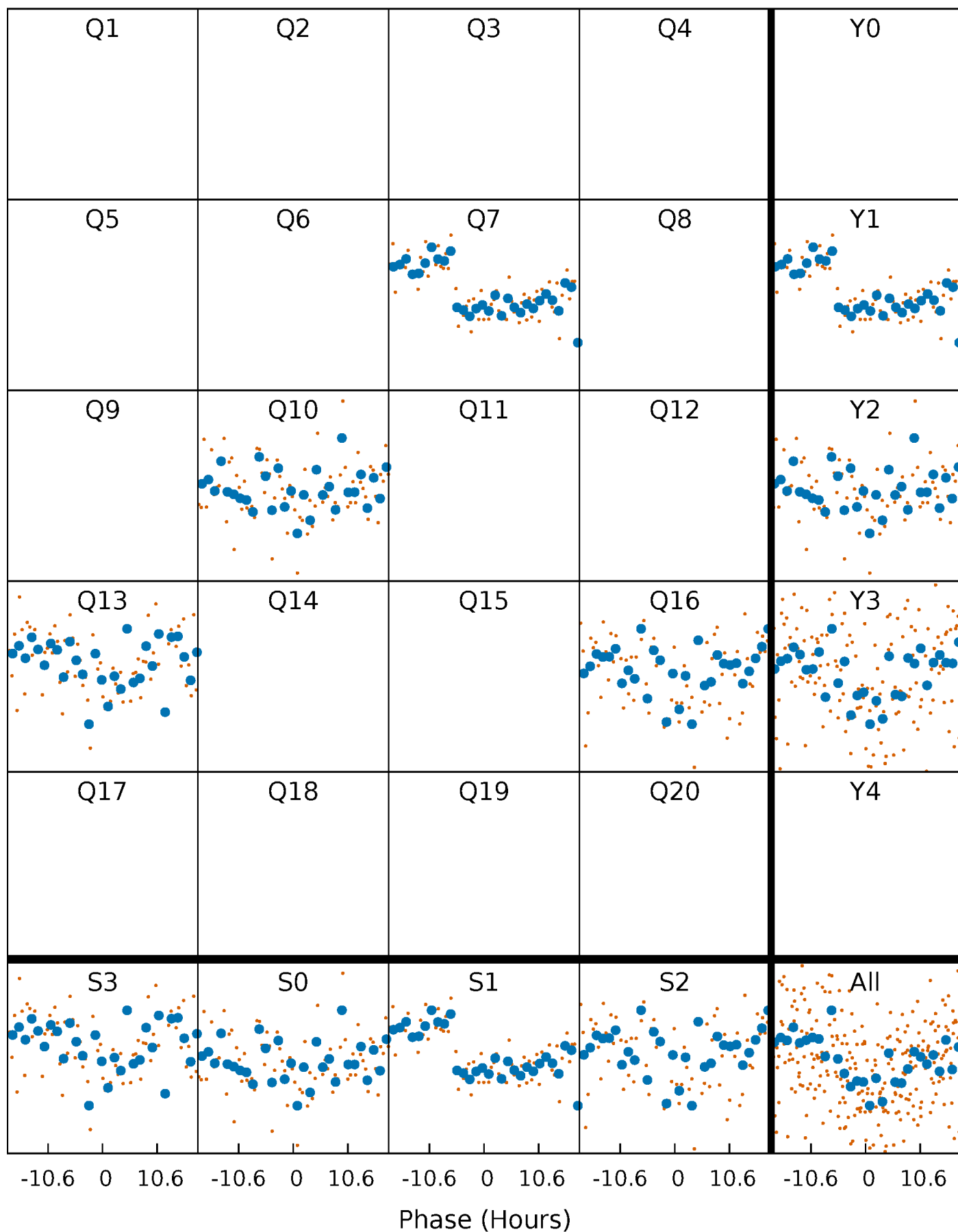


Non-Whitened Vs. Whitened Light Curve



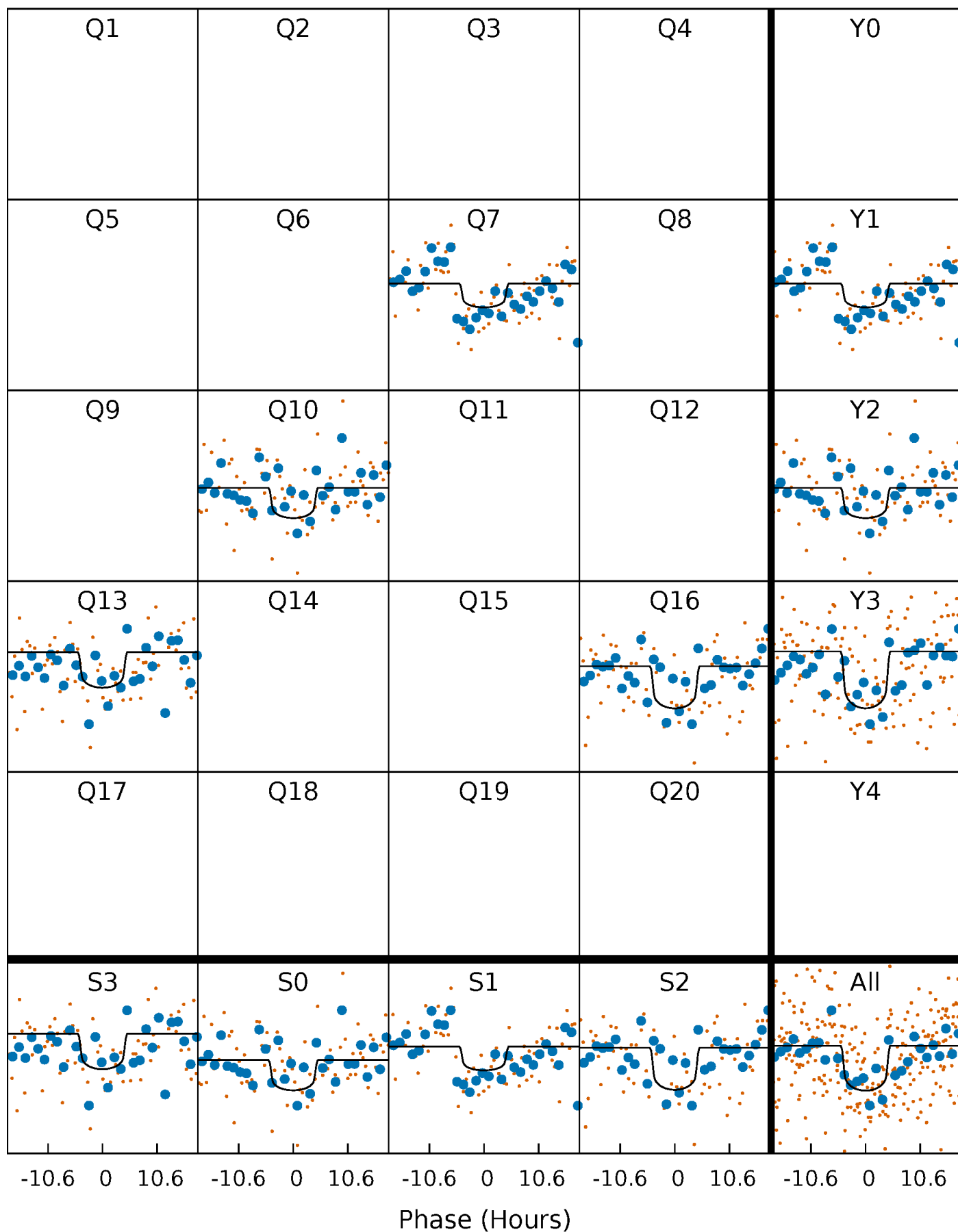
PDC Quarter-Phased Transit Curves

TCE 004638393-01 P=284.789619 Days $T_0=351.088287$ (BKJD)



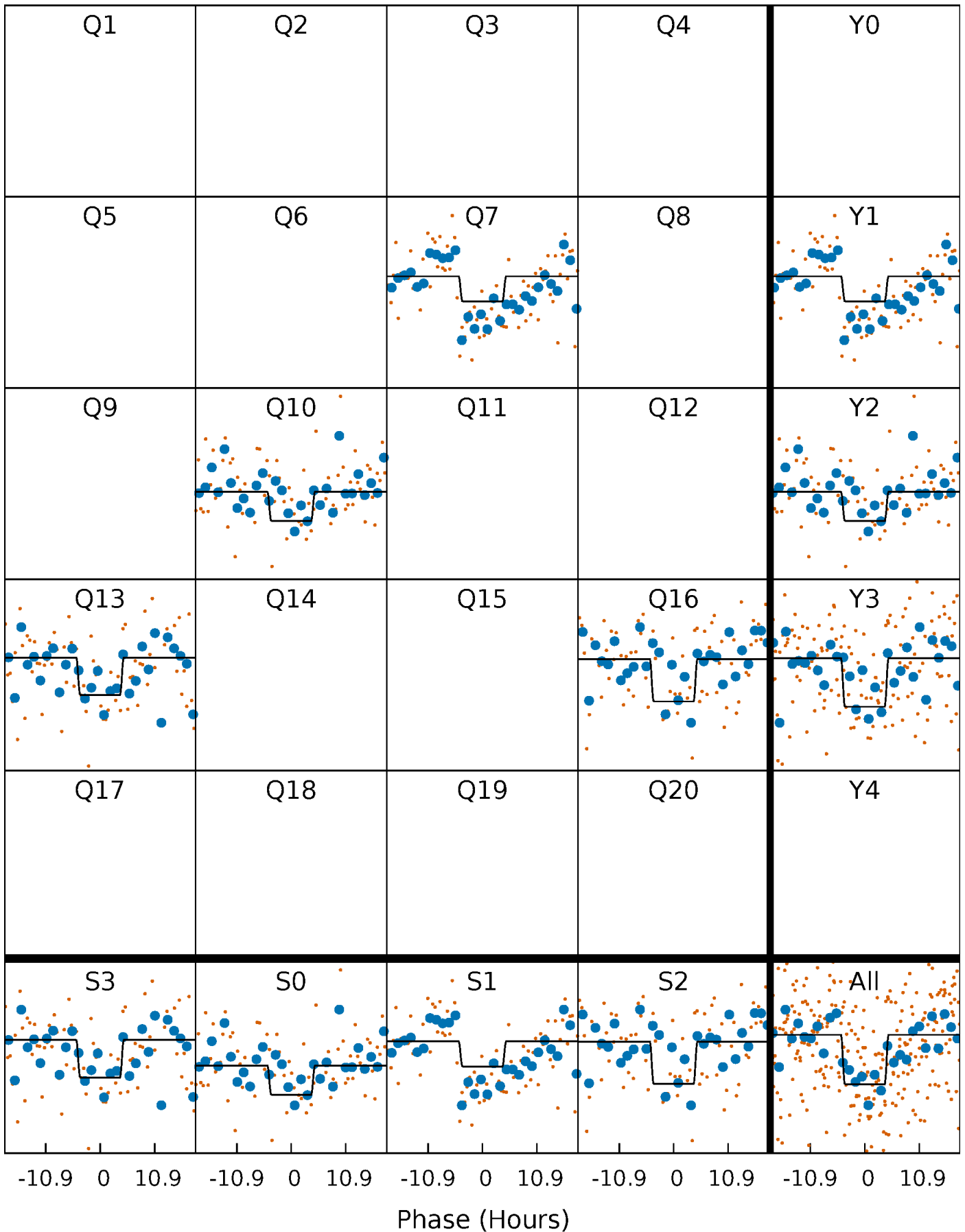
DV Quarter-Phased Transit Curves

TCE 004638393-01 P=284.789619 Days $T_0=351.088287$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

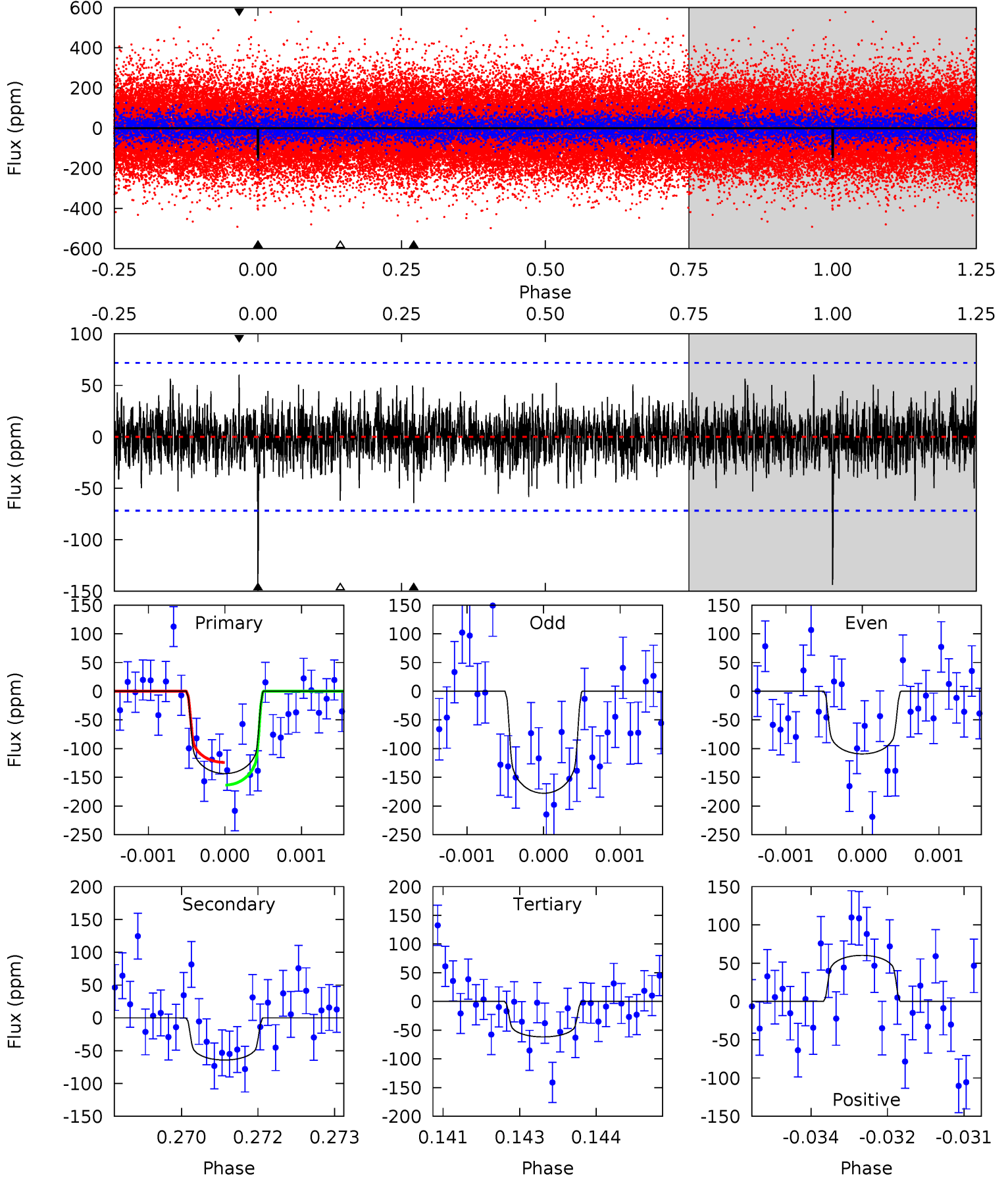
TCE 004638393-01 $P=284.796148$ Days $T_0=351.064679$ (BKJD)



DV Model-Shift Uniqueness Test

004638393-01, P = 284.789619 Days, E = 66.298668 Days

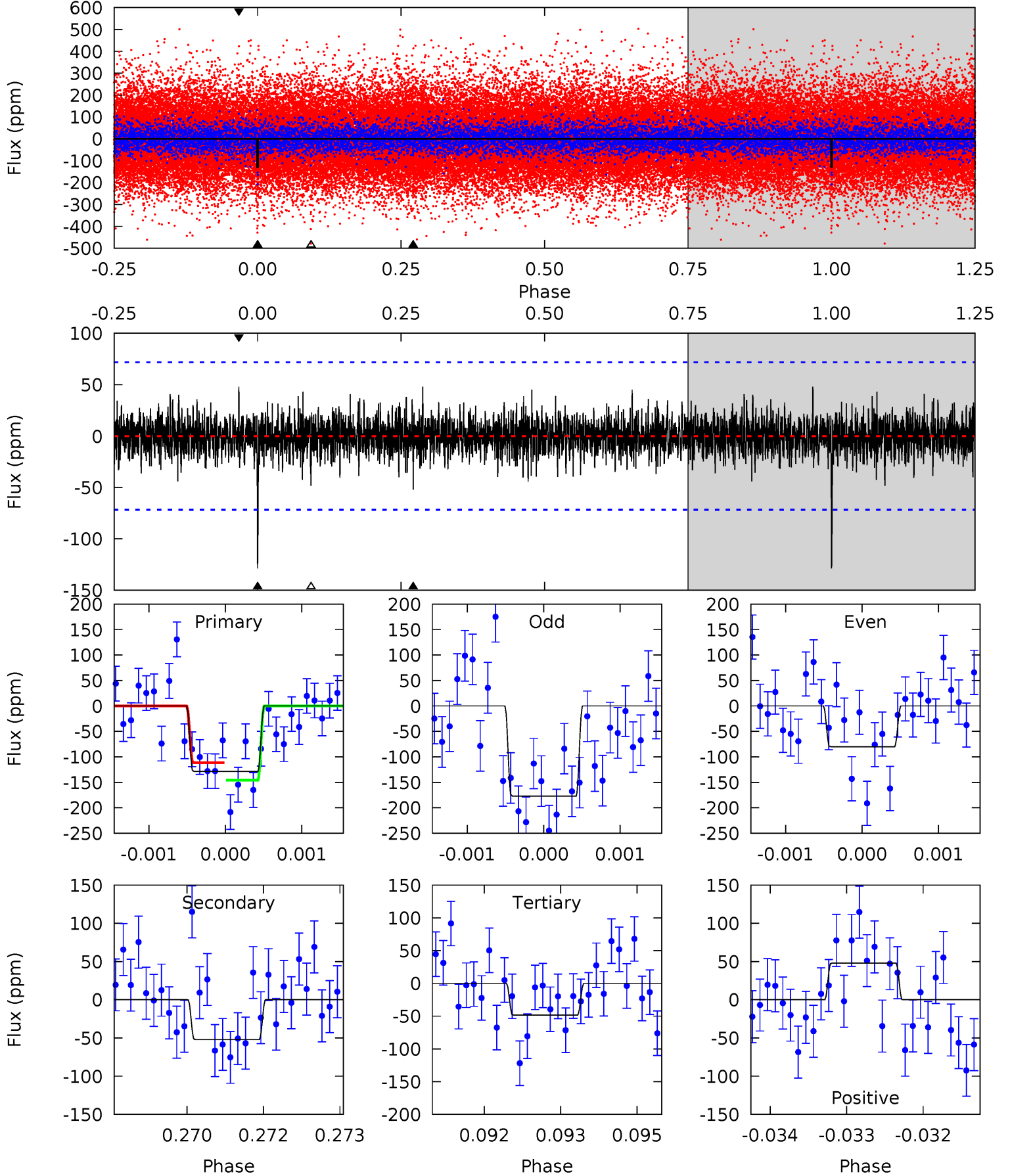
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	4.83	4.64	4.52	5.39	3.19	1.22	6.14	6.25	0.19	0.31	2.59	1.09	0.30	1.48



Alt Model-Shift Uniqueness Test

004638393-01, $P = 284.796148$ Days, $E = 66.268531$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.68	3.92	3.64	3.61	5.39	3.20	0.95	6.04	6.07	0.28	0.30	3.65	1.22	0.27	1.29



Stellar Parameters For KIC 004638393

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5937^{+160}_{-142}	$4.000^{+0.292}_{-0.117}$	$-0.240^{+0.300}_{-0.250}$	$1.671^{+0.345}_{-0.517}$	$1.021^{+0.169}_{-0.139}$	$0.308^{+0.550}_{-0.109}$
	+3%/-2%	+7%/-3%	+125%/-104%	+21%/-31%	+17%/-14%	+178%/-35%
Source	PHO1	FLK73	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 004638393-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-64 ± 13	$2.24^{+0.90}_{-0.72}$	508^{+30}_{-43}	4788^{+919}_{-532}	5093^{+6939}_{-2517}
Alt.	-52 ± 13	$2.02^{+0.84}_{-0.79}$	506^{+32}_{-38}	4787^{+1088}_{-572}	5012^{+8367}_{-2504}

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

DV Centroid Data

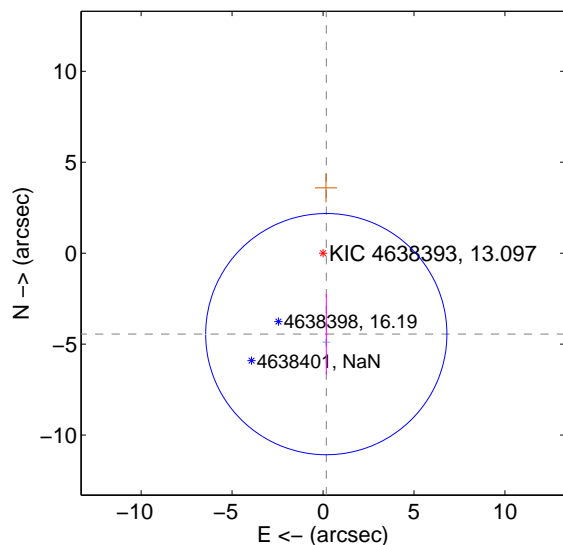
Supplemental centroid analysis for 004638393-01. Kepler magnitude: 13.10. Transit SNR 7.34

There are 1 quarters with good PRF difference image offsets

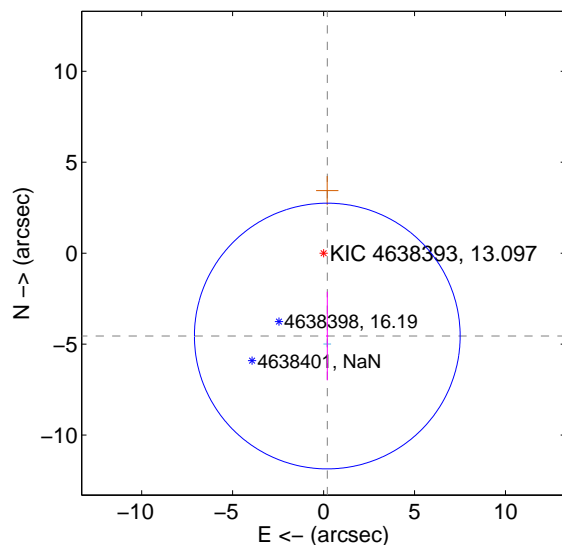
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.454 ± 2.210	2.02	-0.179 ± 0.067	-4.451 ± 2.212
PRF-fit source offset from KIC position	4.560 ± 2.435	1.87	-0.204 ± 0.067	-4.556 ± 2.437
photometric centroid source offset	2.94 ± 1.80	1.63	1.98 ± 1.61	-2.18 ± 1.95

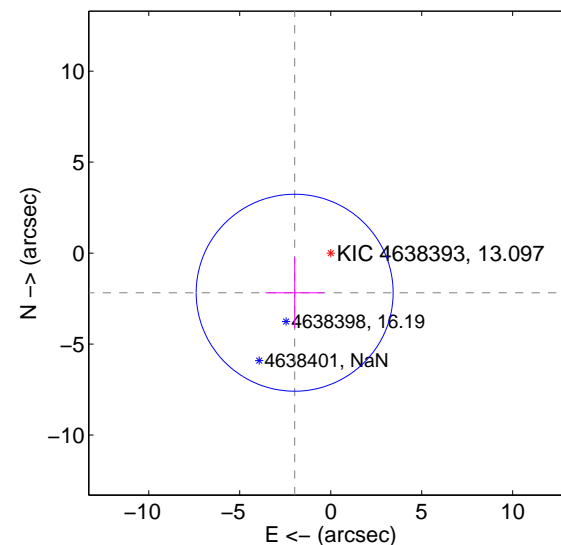
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

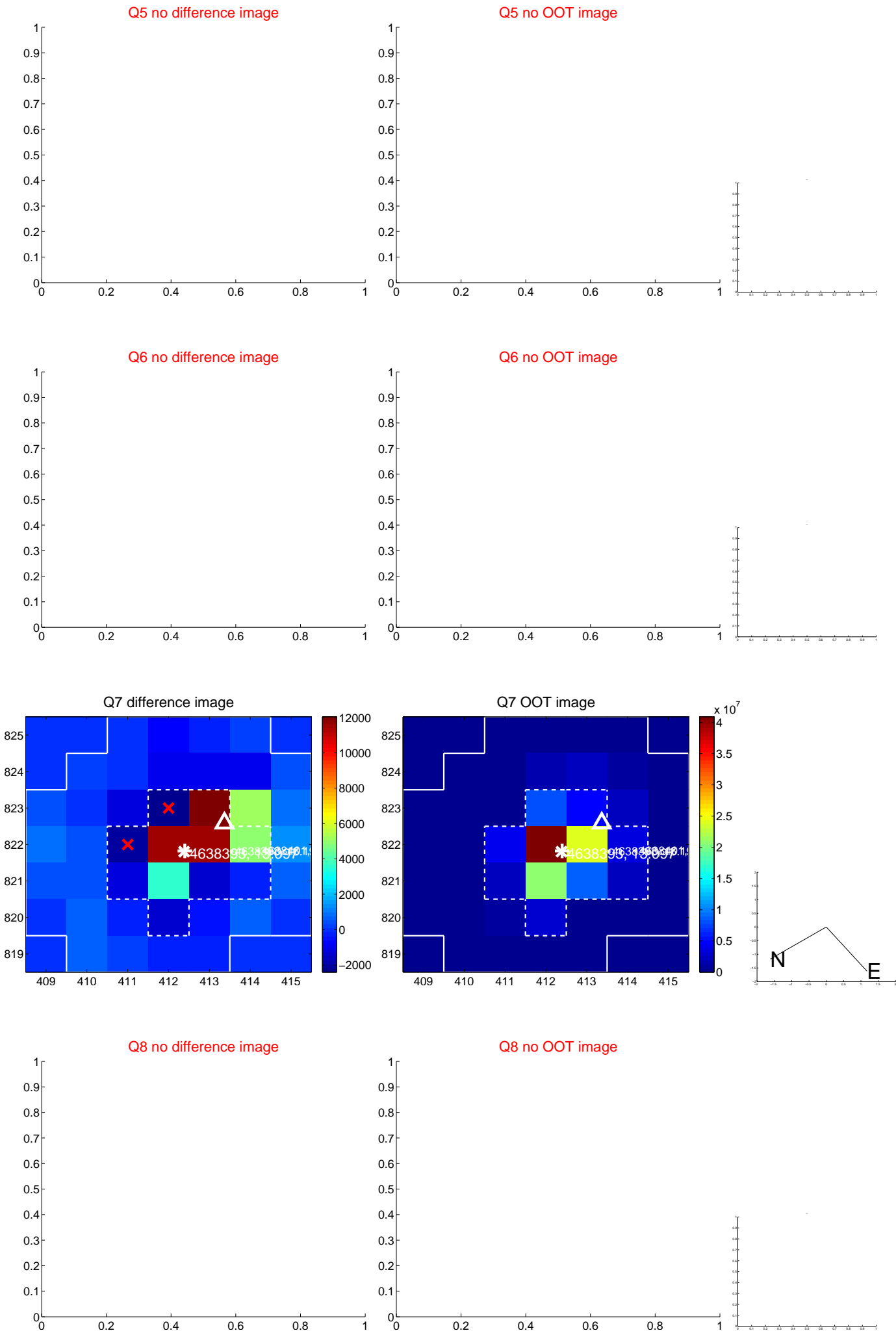


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

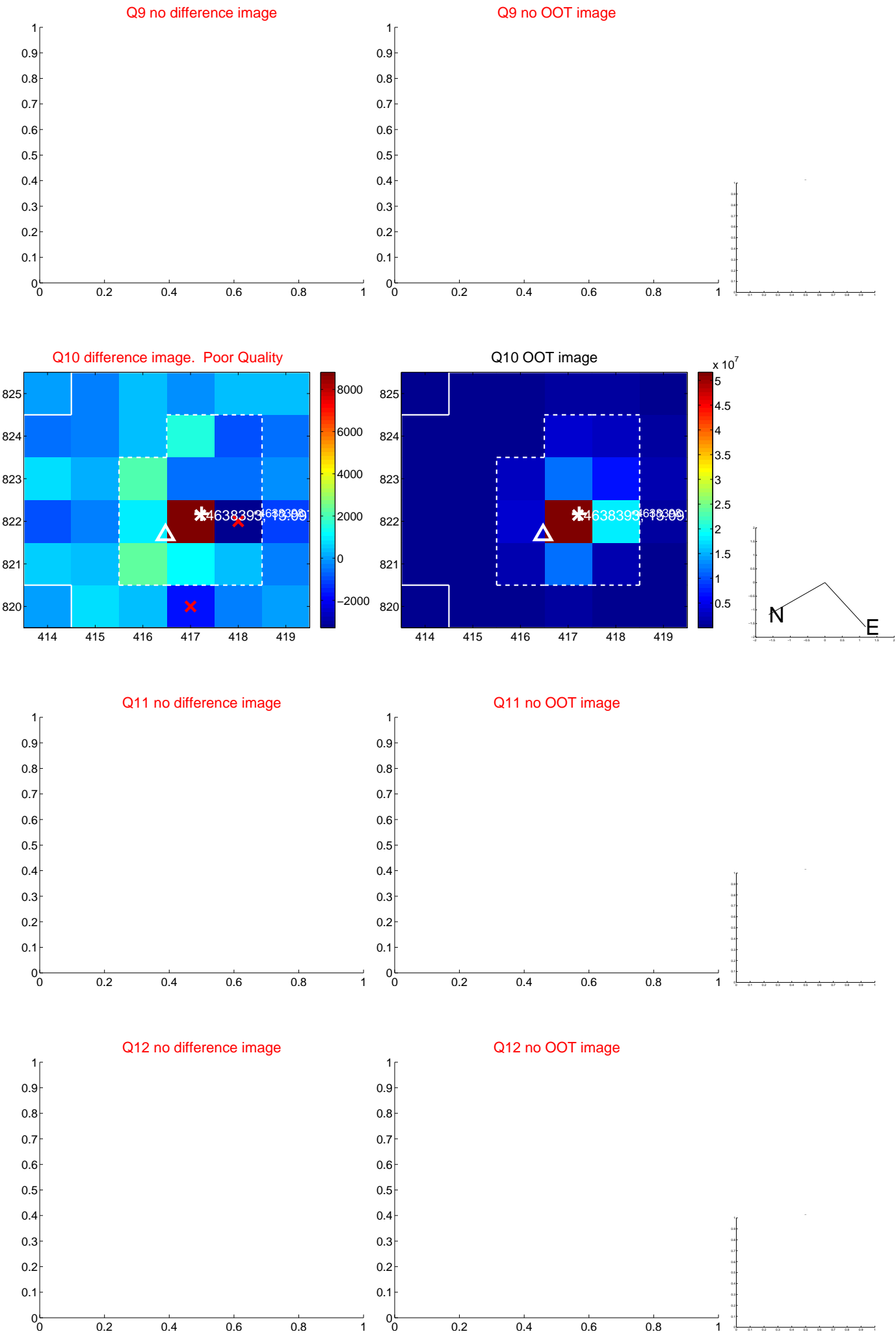
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



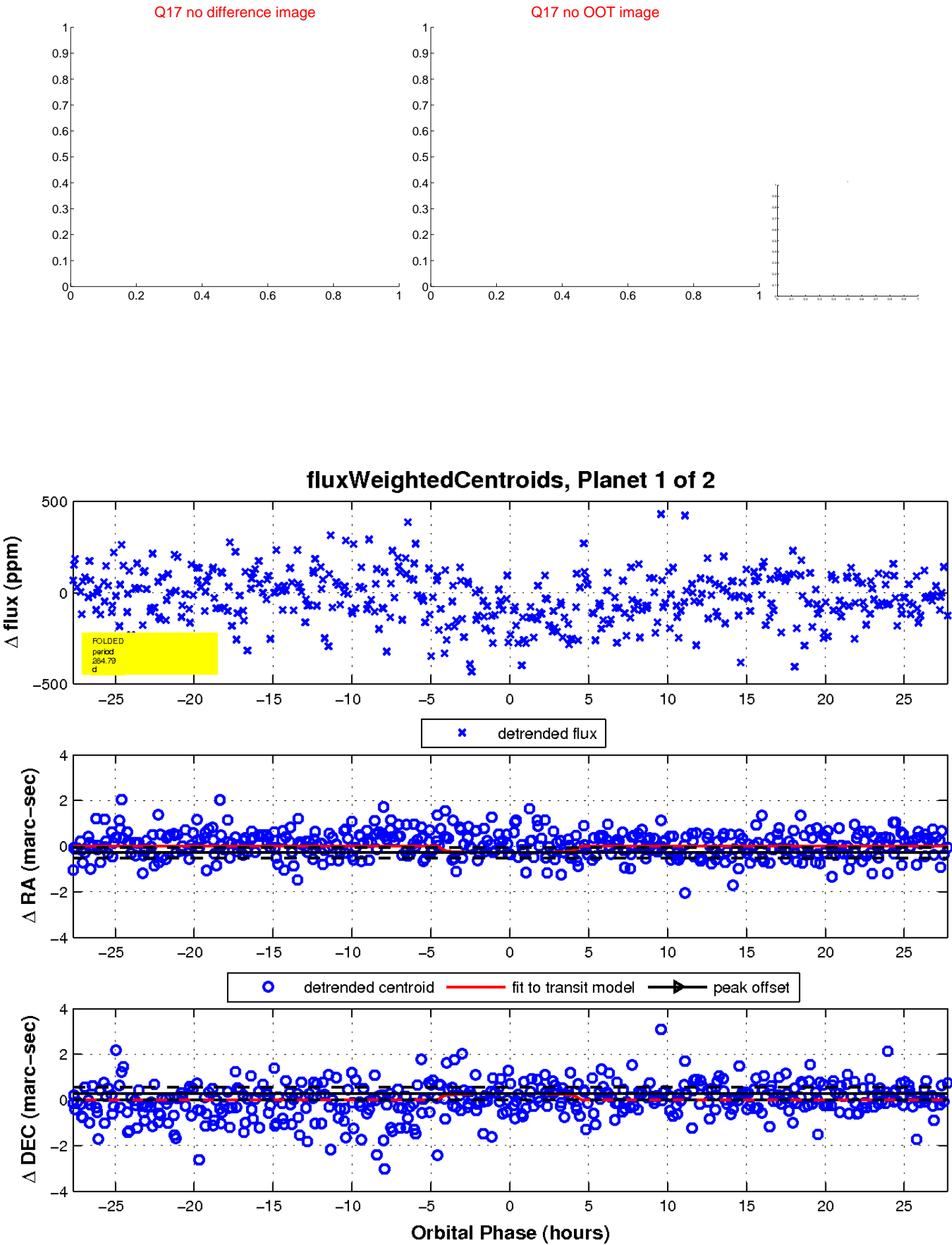
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



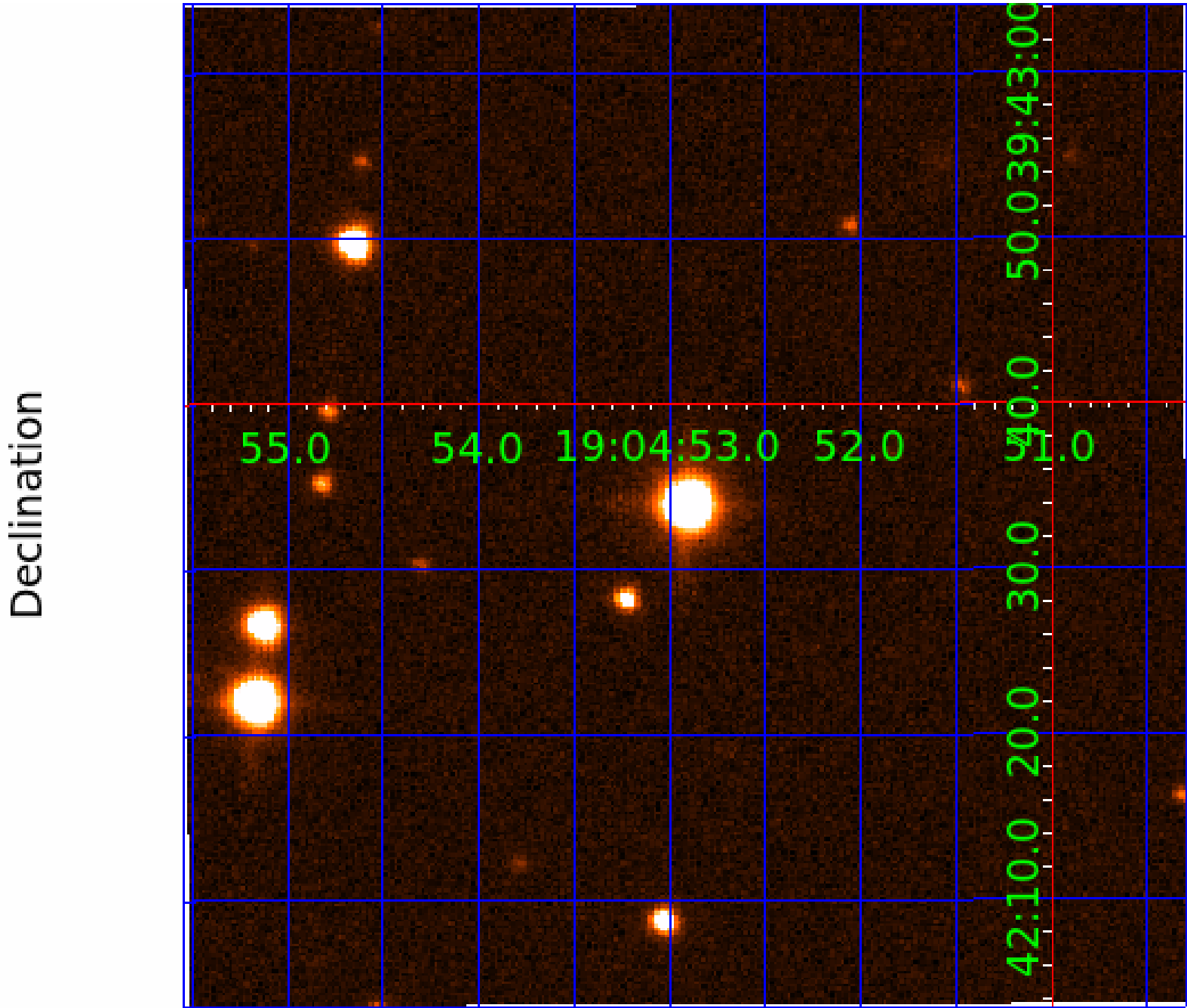
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004638393

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})
004638393-01	OBS	No	284.789619	351.088287	144.1	9.258	7.3	7.3	1.67	5937	2.36	4.28
004638393-02	OBS	No	469.187691	554.956885	150.3	20.419	7.7	8.1	1.67	5937	2.23	2.20

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004638393-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004638393-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

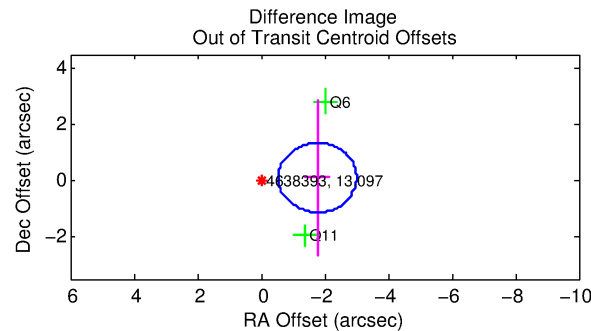
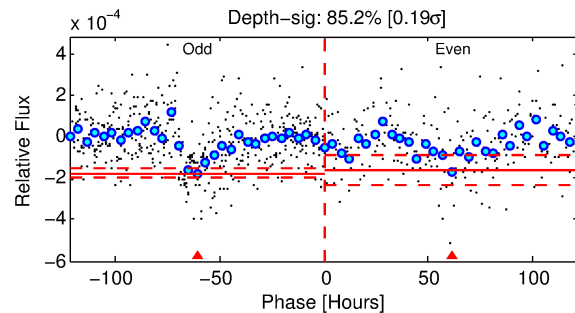
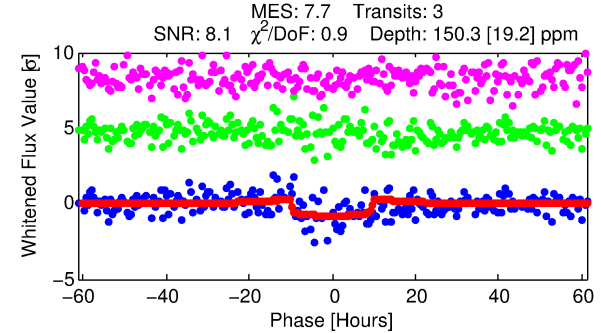
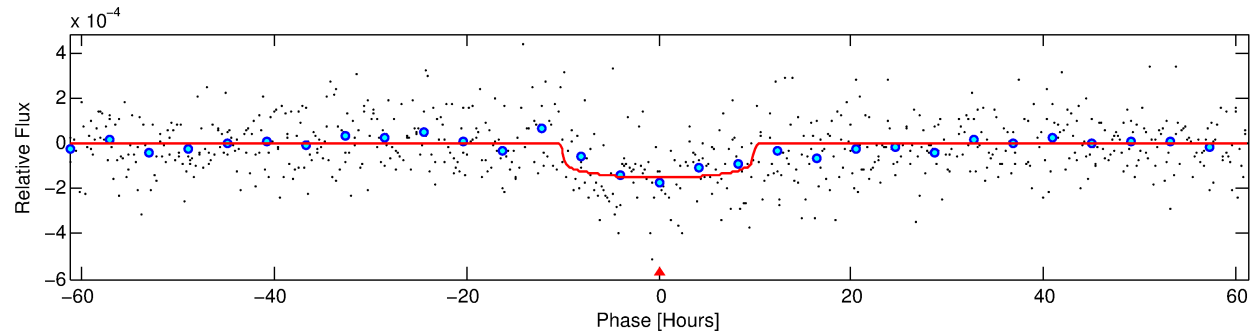
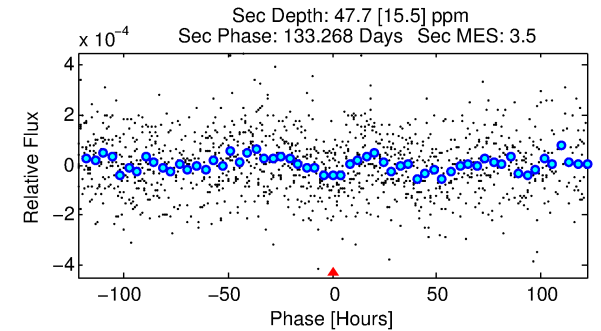
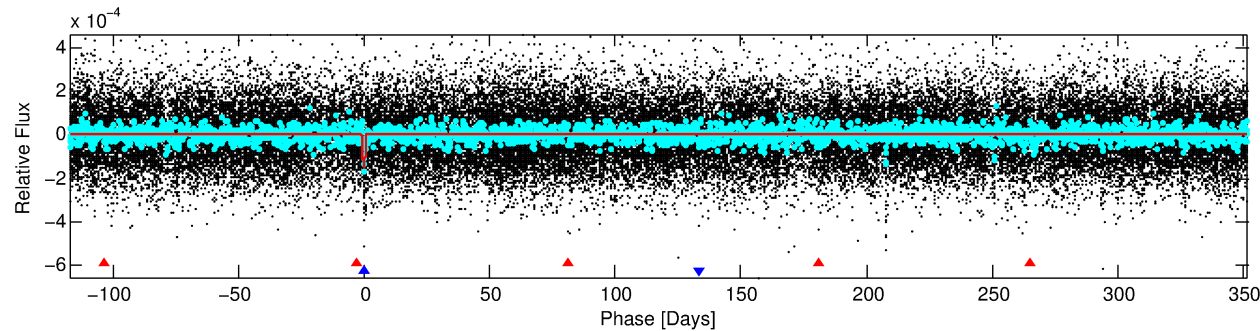
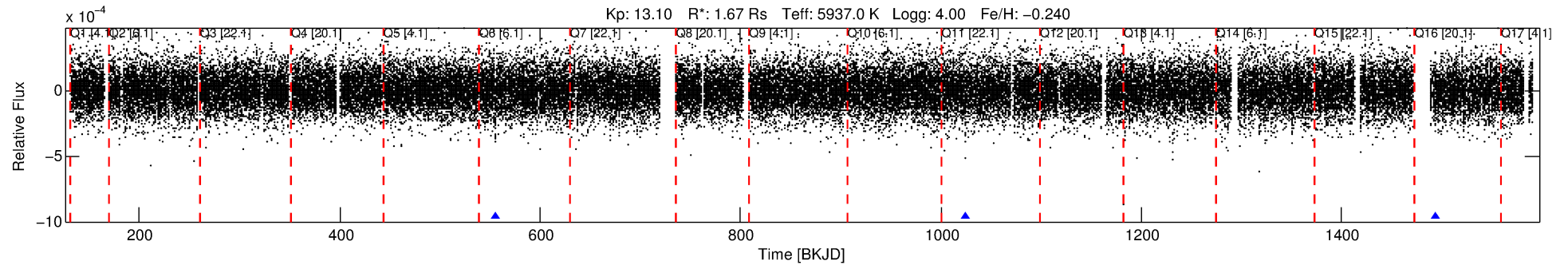
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004638393-02

No Significant Match Found

DV One-Page Summary

KIC: 4638393 Candidate: 2 of 2 Period: 469.188 d



DV Fit Results:

Period = 469.18769 [0.01628] d
Epoch = 554.9569 [0.0226] BKJD
Rp/R* = 0.0122 [0.0032]
a/R* = 118.67 [147.63]
b = 0.75 [0.72]
Seff = 2.20 [1.11]
Teq = 310 [39] K
Rp = 2.23 [0.90] Re
a = 1.1892 [0.3622] AU
Ag = 7488.38 [5928.23] [1.26σ]
Teffp = 4465 [702] K [5.91σ]

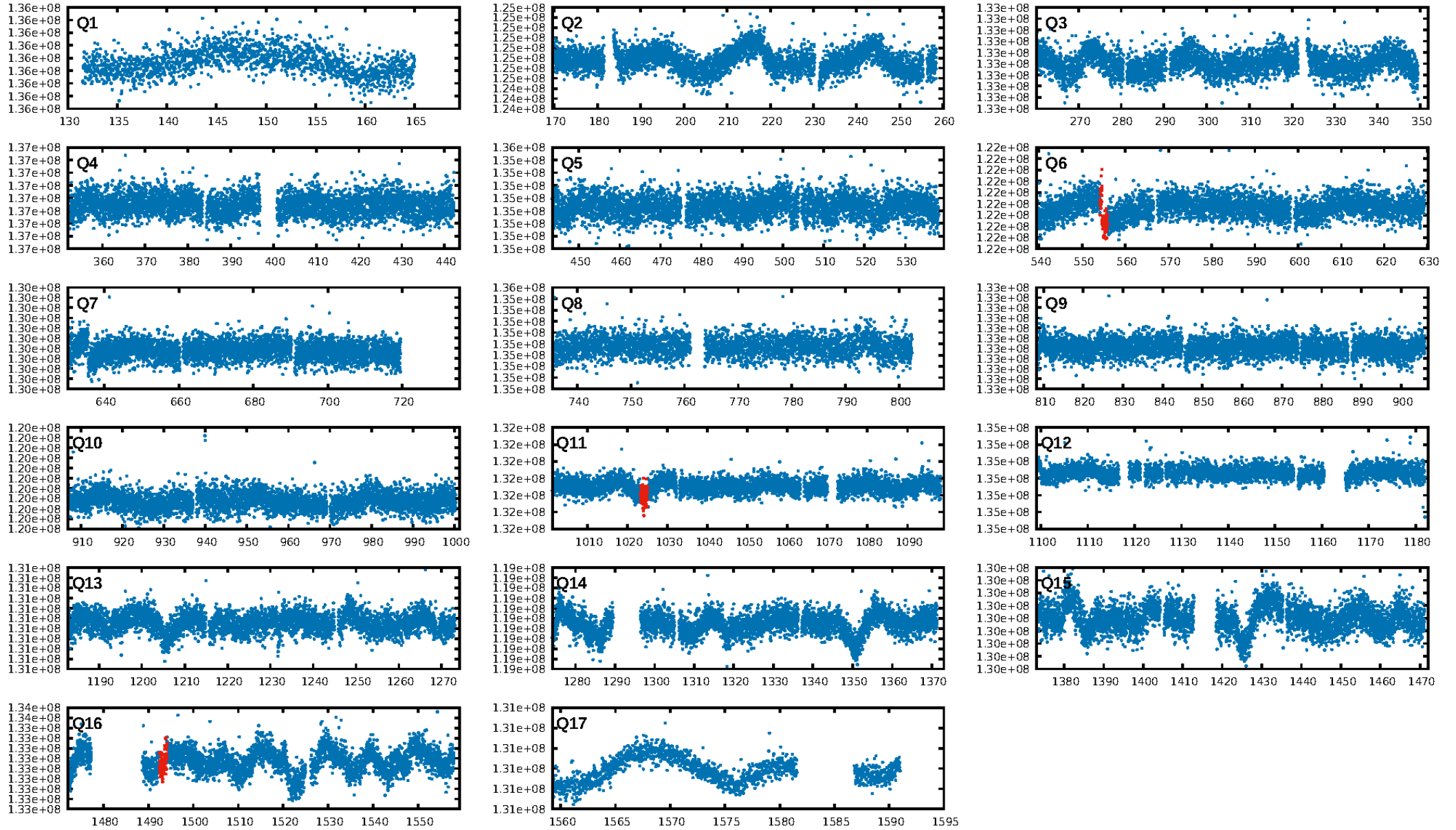
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [197.40σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.38e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.1411
Centroid-sig: 82.9%
Centroid-so: 0.373 arcsec [0.20σ]
OotOffset-rm: 1.775 arcsec [4.32σ]
KicOffset-rm: 1.818 arcsec [5.02σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

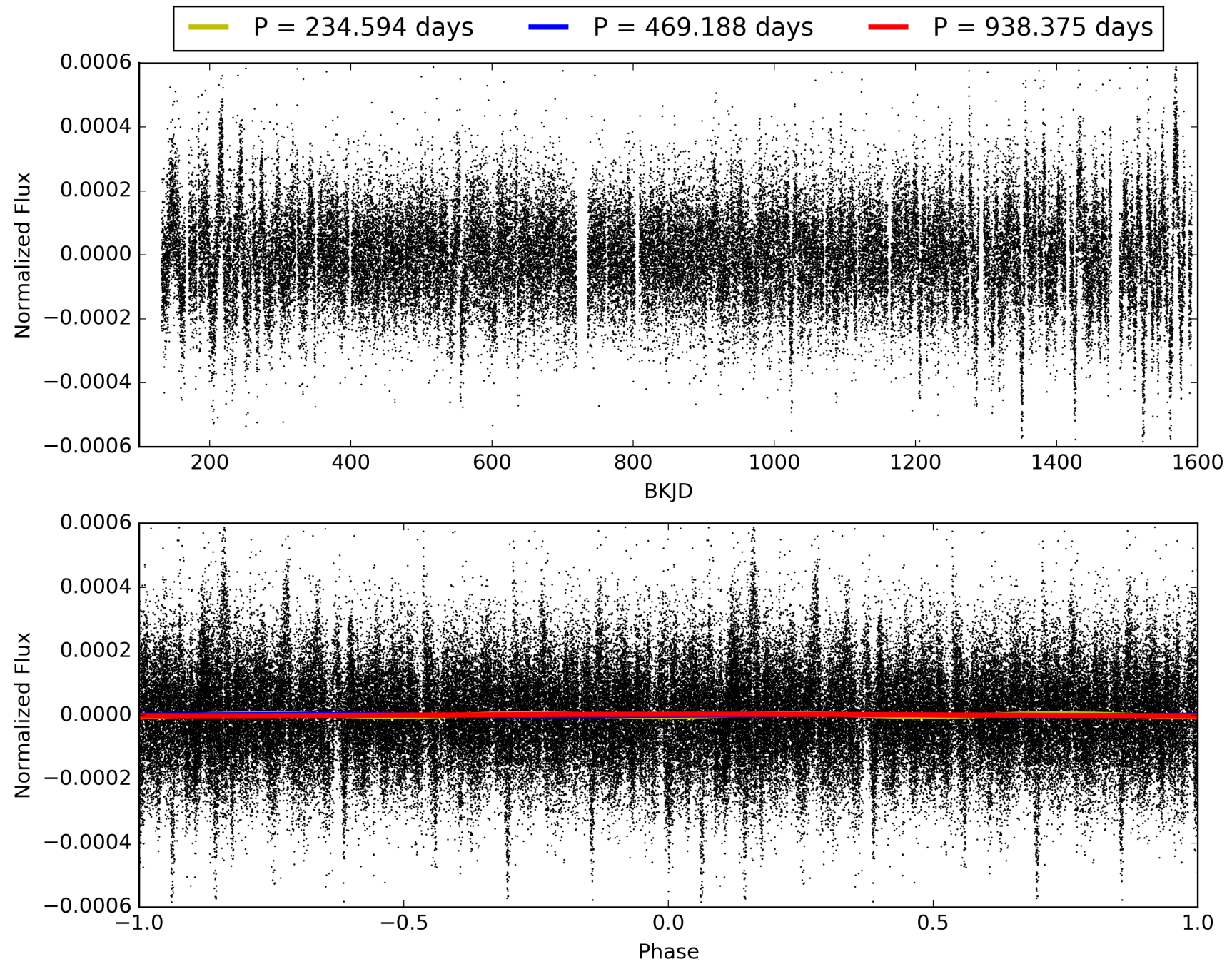
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:14:41 Z

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

TCE 004638393-02, PDC Light Curves

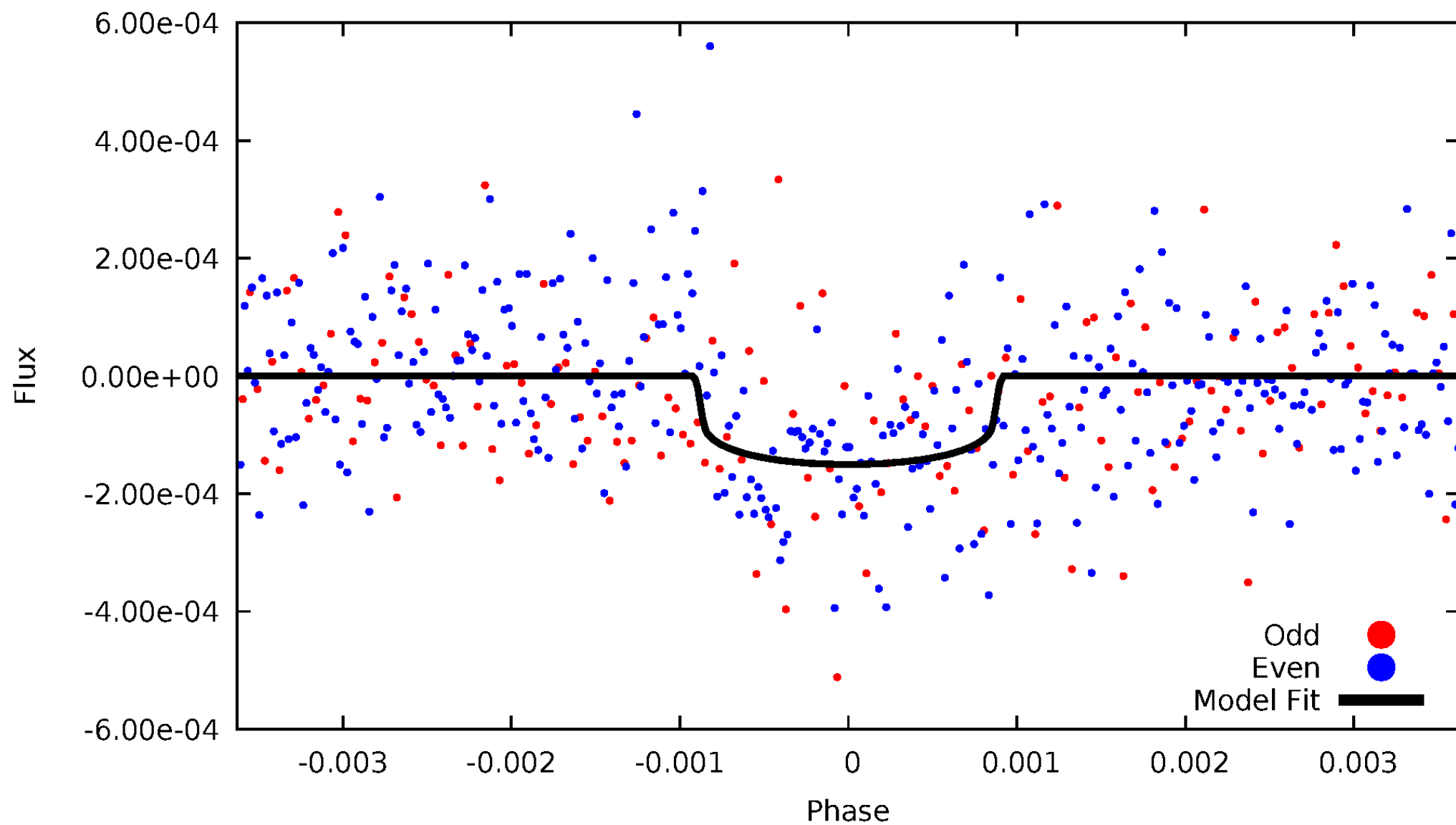


TCE 004638393-02



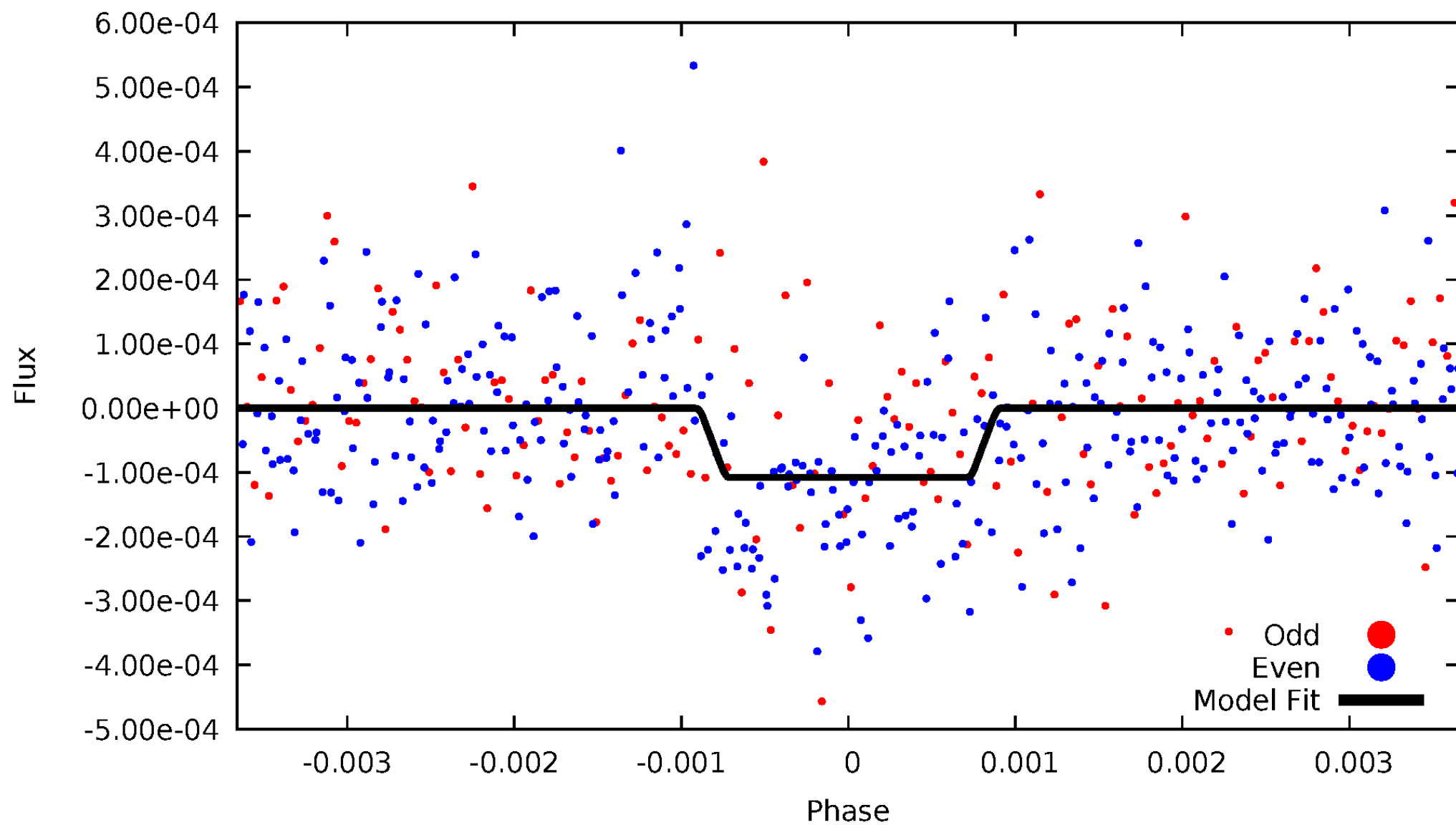
DV Odd/Even

TCE 004638393-02



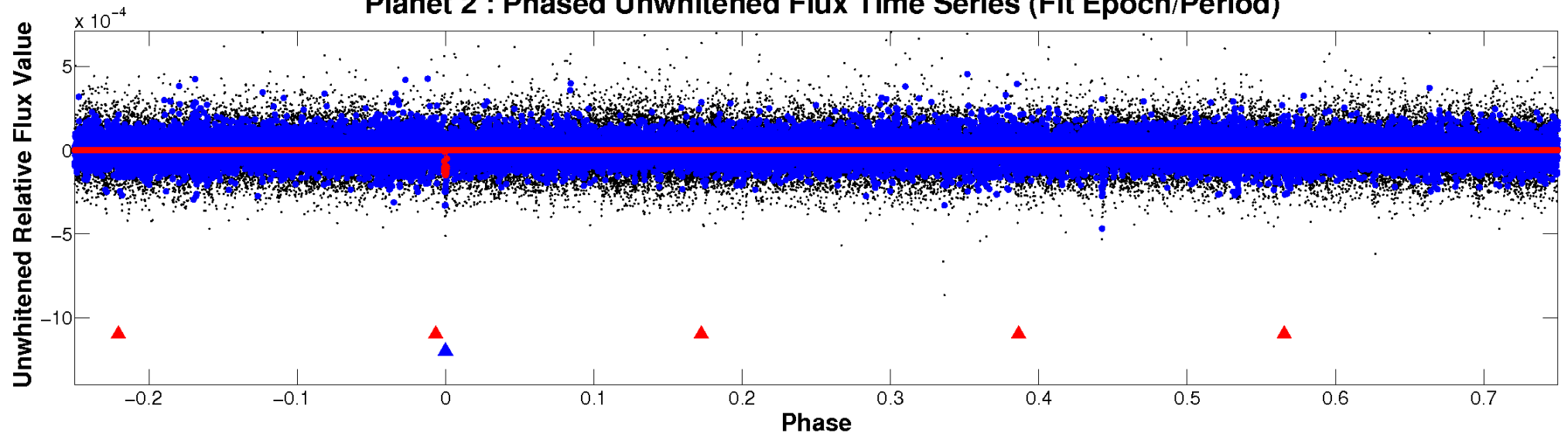
ALT Odd/Even

TCE 004638393-02

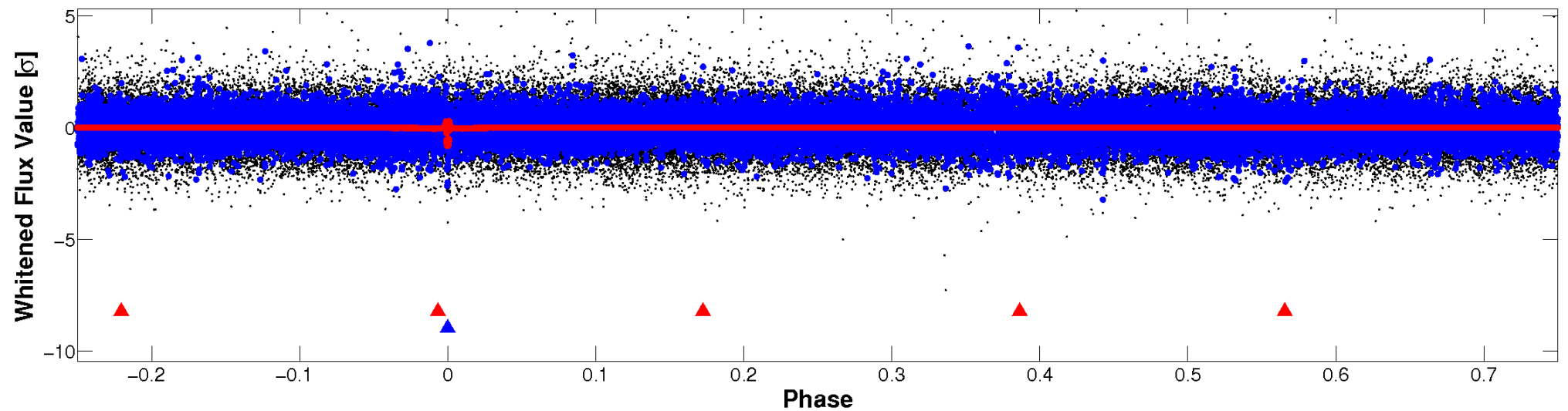


Non-Whitened Vs. Whitened Light Curve

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

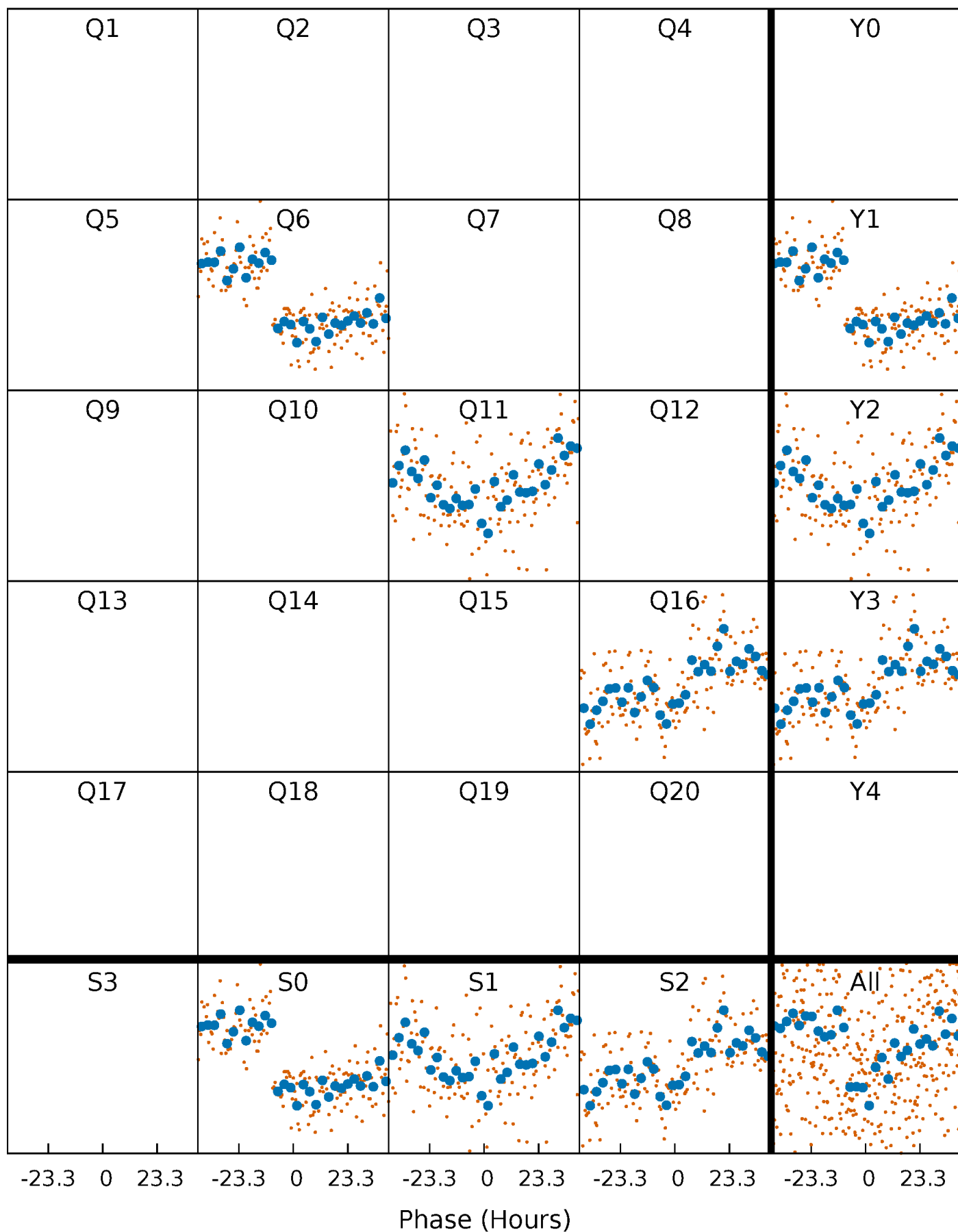


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



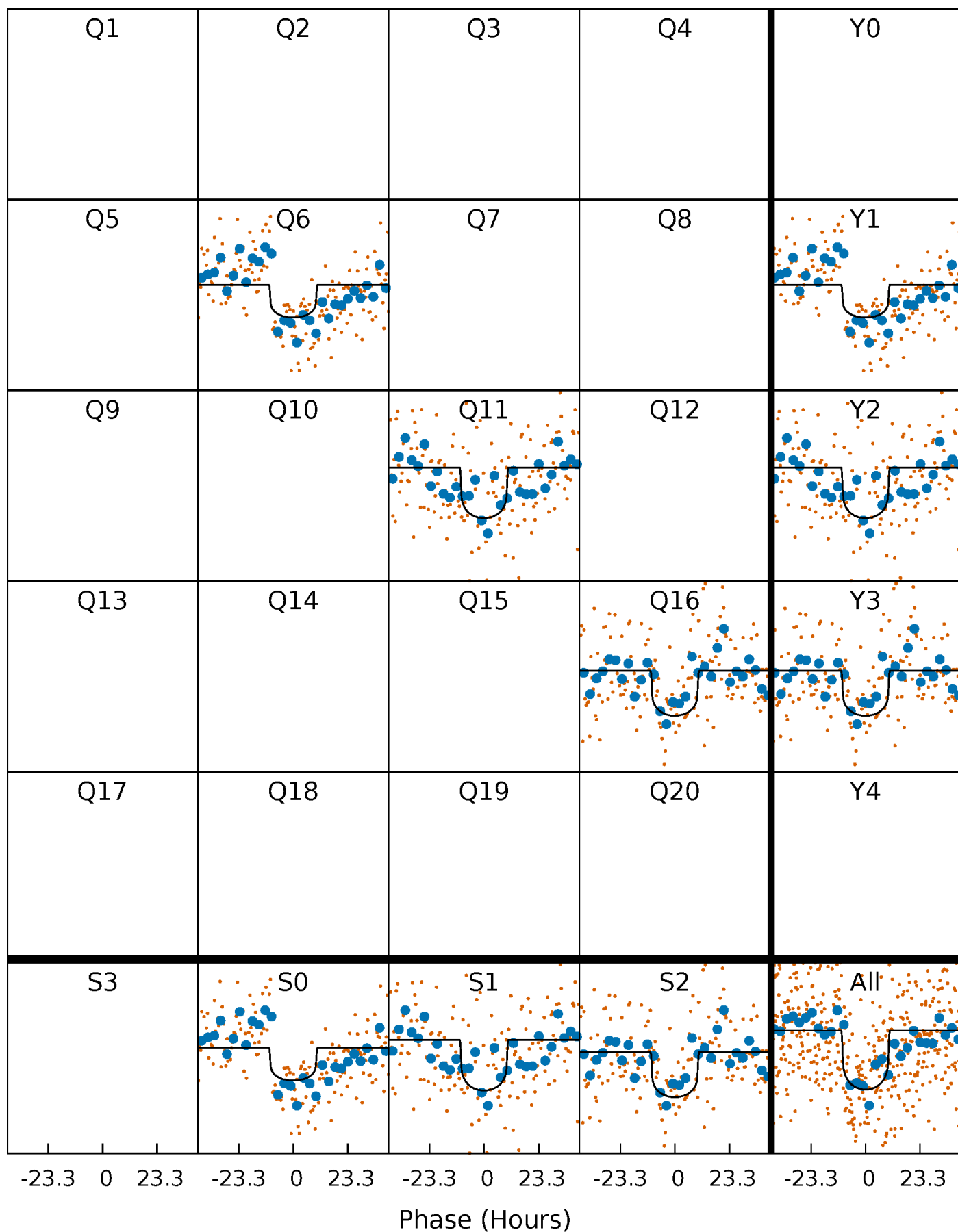
PDC Quarter-Phased Transit Curves

TCE 004638393-02 P=469.187691 Days $T_0=554.956885$ (BKJD)



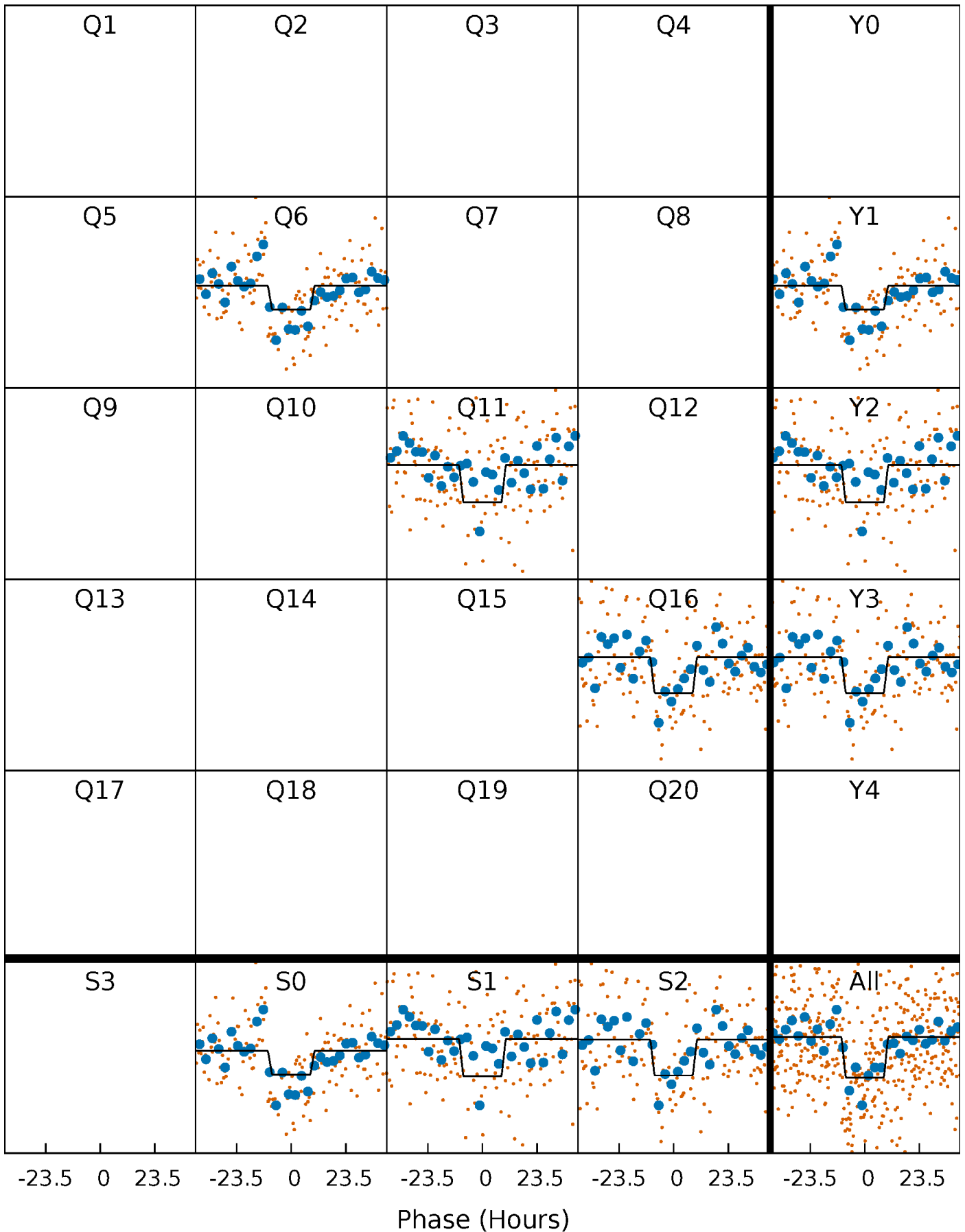
DV Quarter-Phased Transit Curves

TCE 004638393-02 P=469.187691 Days $T_0=554.956885$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

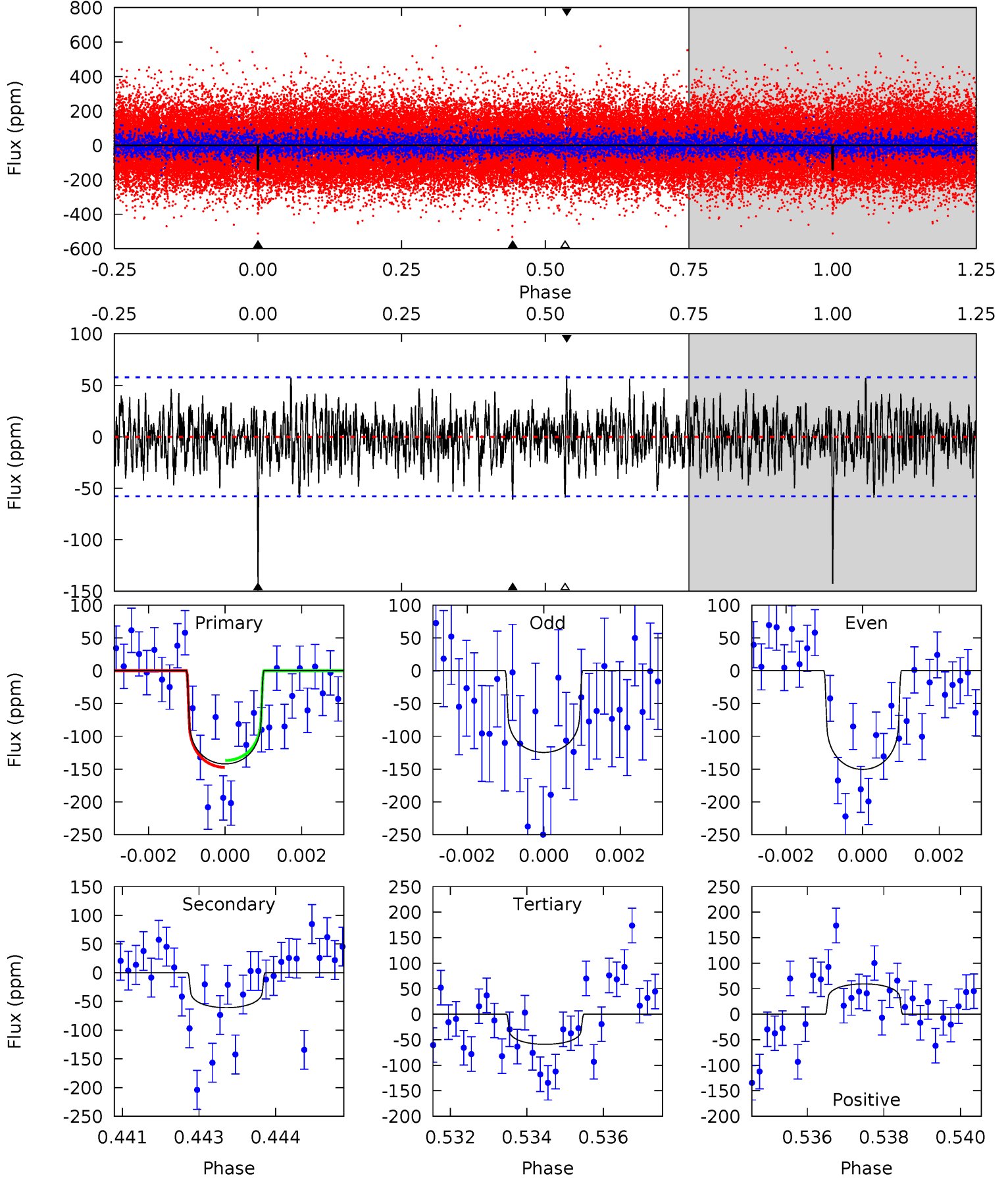
TCE 004638393-02 $P=469.181782$ Days $T_0=555.006324$ (BKJD)



DV Model-Shift Uniqueness Test

004638393-02, $P = 469.187691$ Days, $E = 85.769194$ Days

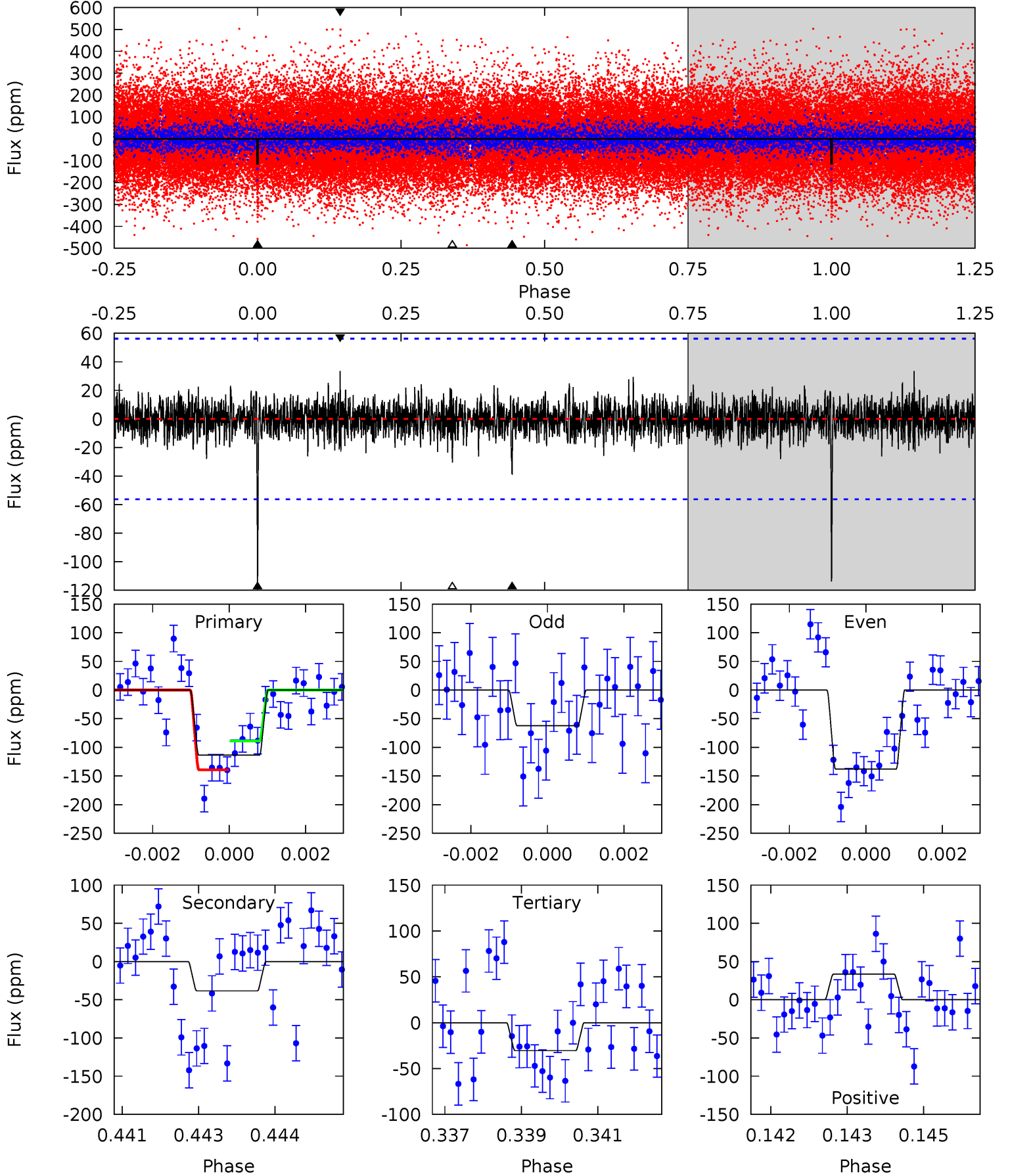
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	5.63	5.46	5.50	5.34	3.12	1.66	7.69	7.65	0.18	0.14	1.11	1.19	0.29	0.48



Alt Model-Shift Uniqueness Test

004638393-02, $P = 469.181782$ Days, $E = 85.824542$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	3.64	2.89	3.18	5.35	3.12	0.75	7.92	7.62	0.75	0.46	3.35	1.08	0.23	2.38



Stellar Parameters For KIC 004638393

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5937^{+160}_{-142}	$4.000^{+0.292}_{-0.117}$	$-0.240^{+0.300}_{-0.250}$	$1.671^{+0.345}_{-0.517}$	$1.021^{+0.169}_{-0.139}$	$0.308^{+0.550}_{-0.109}$
	+3%/-2%	+7%/-3%	+125%/-104%	+21%/-31%	+17%/-14%	+178%/-35%
Source	PHO1	FLK73	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 004638393-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-61 ± 11	$2.16^{+0.69}_{-0.61}$	430^{+26}_{-35}	4860^{+650}_{-505}	10223^{+10418}_{-4486}
Alt.	-38 ± 11	$1.80^{+0.69}_{-0.62}$	429^{+27}_{-35}	4710^{+917}_{-531}	8908^{+12295}_{-4216}

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

DV Centroid Data

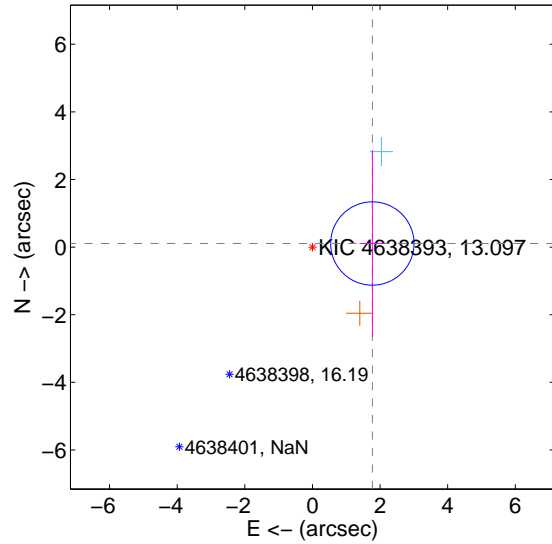
Supplemental centroid analysis for 004638393-02. Kepler magnitude: 13.10. Transit SNR 8.06

There are 1 quarters with good PRF difference image offsets

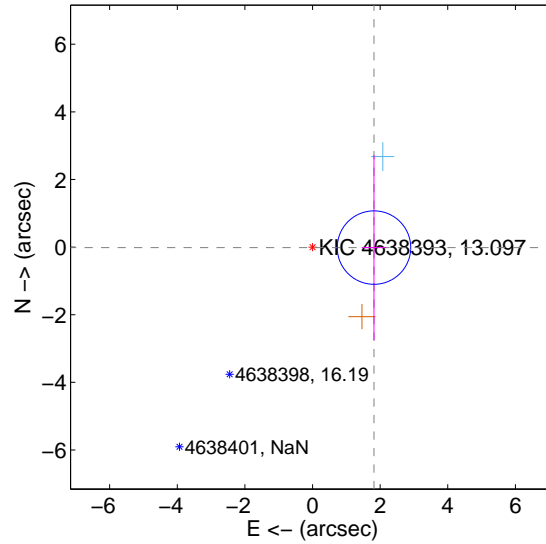
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.775 ± 0.411	4.32	-1.772 ± 0.377	0.106 ± 2.768
PRF-fit source offset from KIC position	1.818 ± 0.362	5.02	-1.818 ± 0.361	-0.014 ± 2.740
photometric centroid source offset	0.37 ± 1.86	0.20	0.02 ± 1.72	0.37 ± 1.86

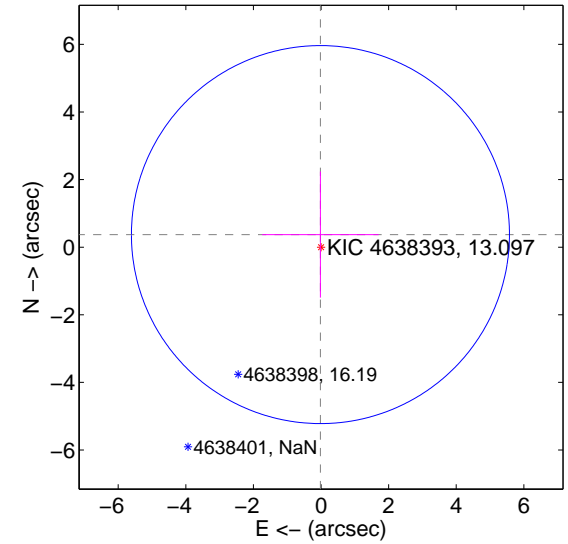
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

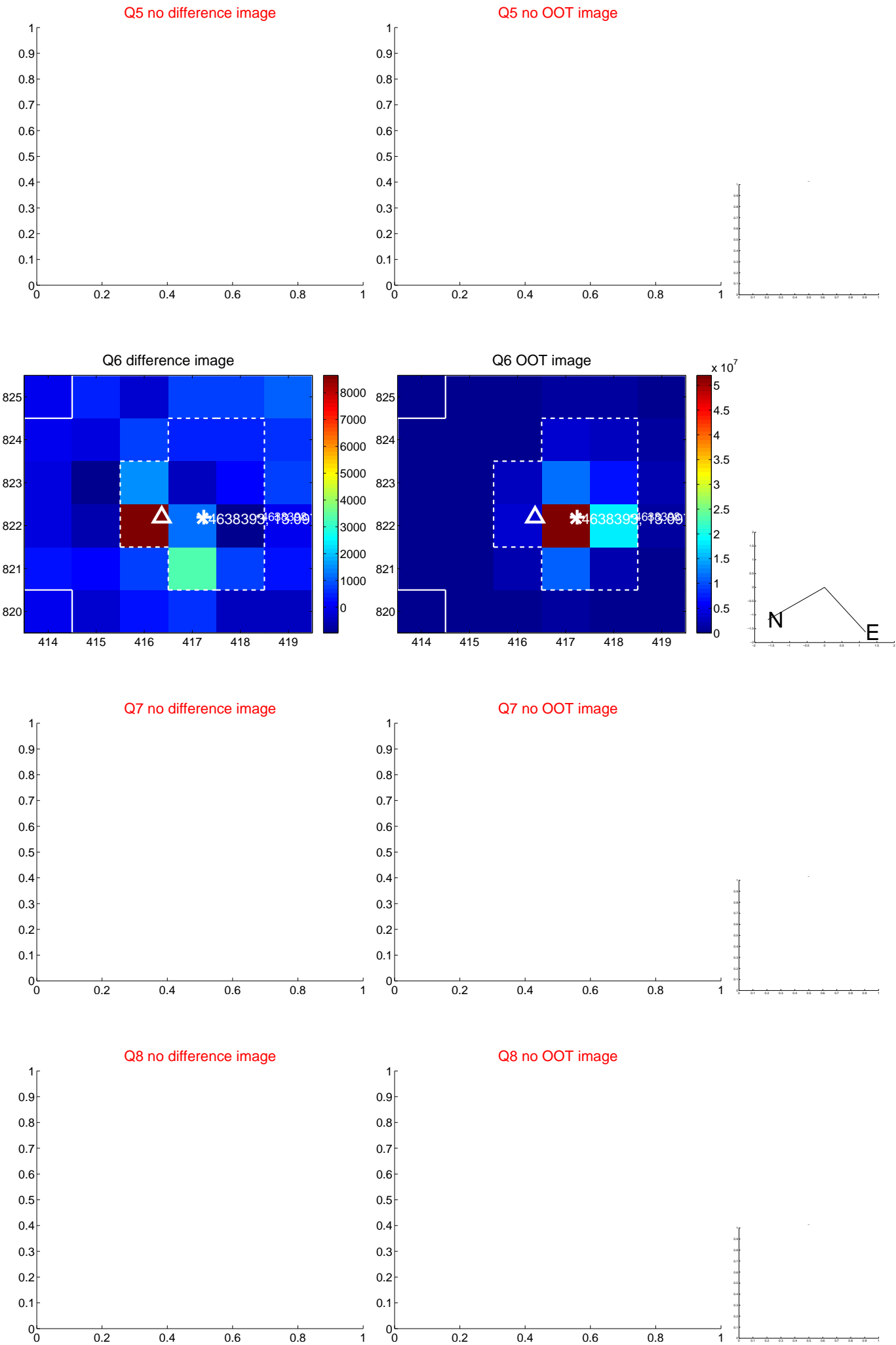


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

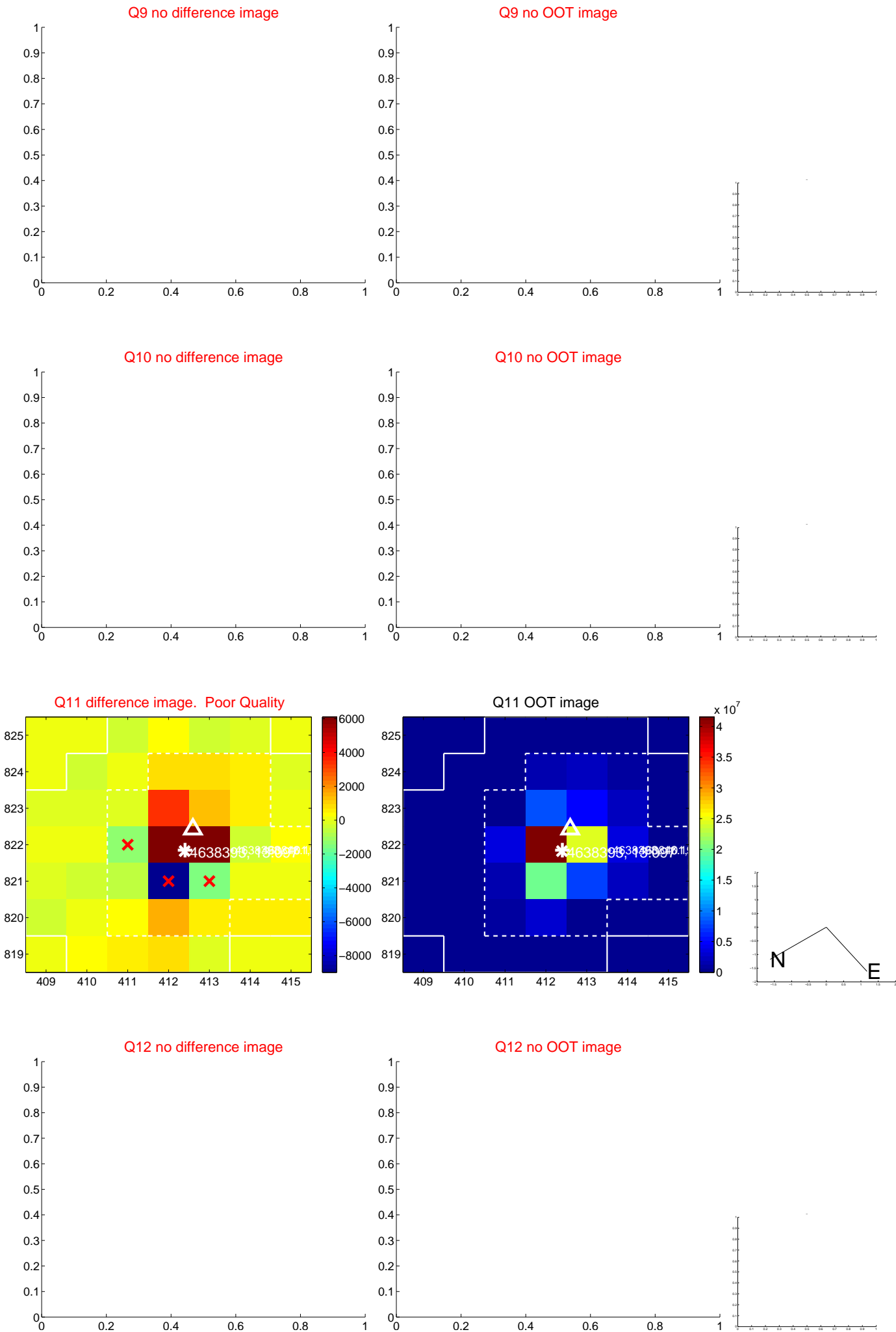
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



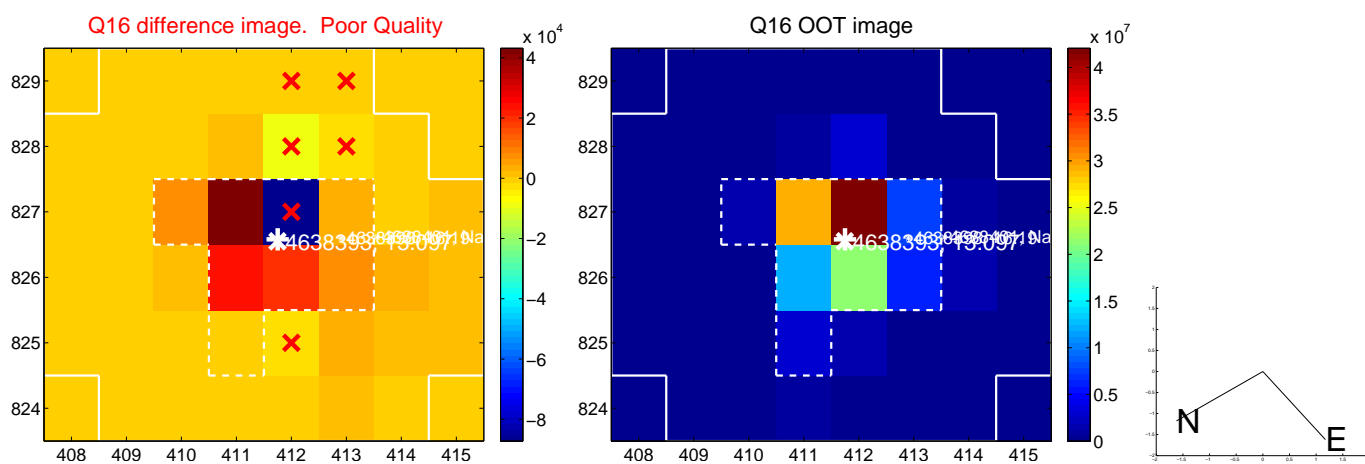
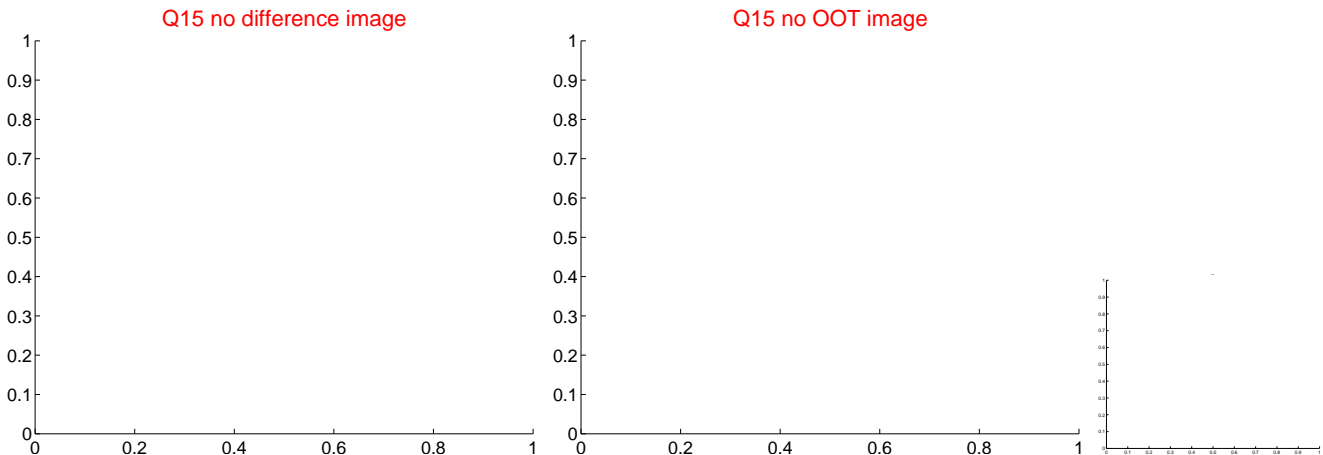
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



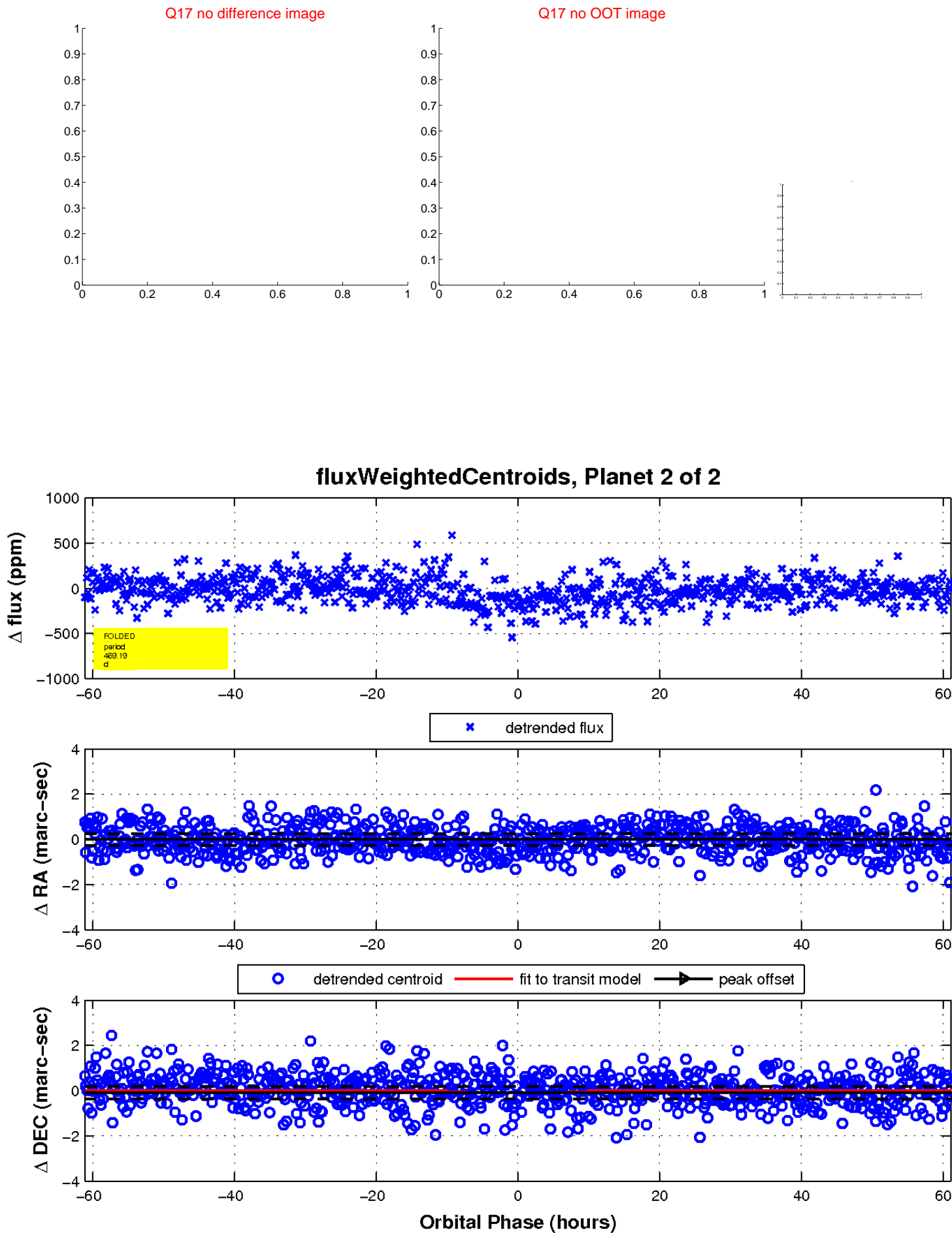
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \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

