

KIC 006421937

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})
006421937-01	OBS	No	239.610140	338.854651	7543.0	31.233	137.7	92.9	5.90	5087	92.15	23.58
006421937-02	OBS	No	479.224484	218.434441	11749.2	8.148	104.1	65.4	5.90	5087	117.57	9.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421937-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS—HALO_GHOST
006421937-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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.

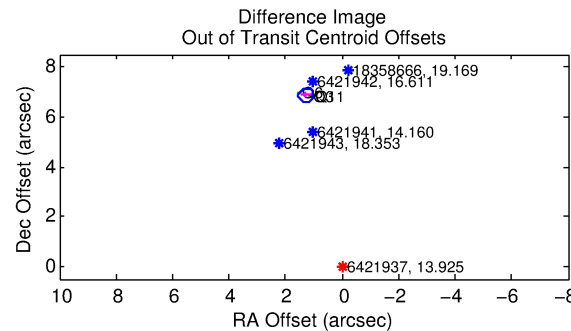
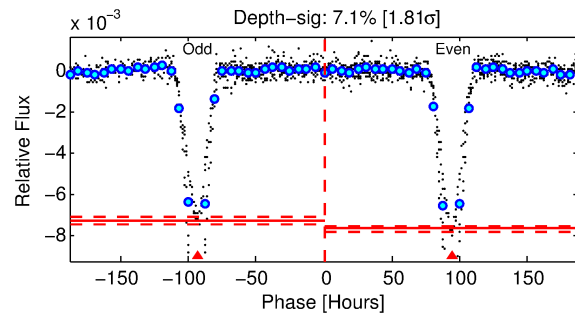
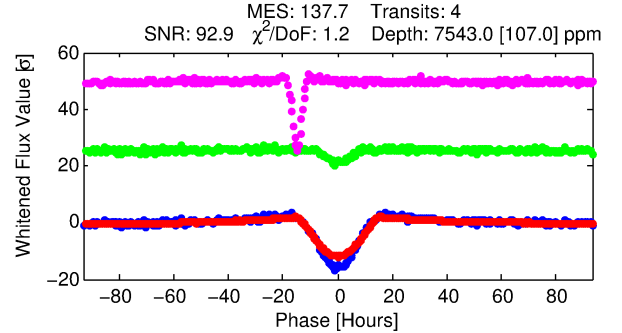
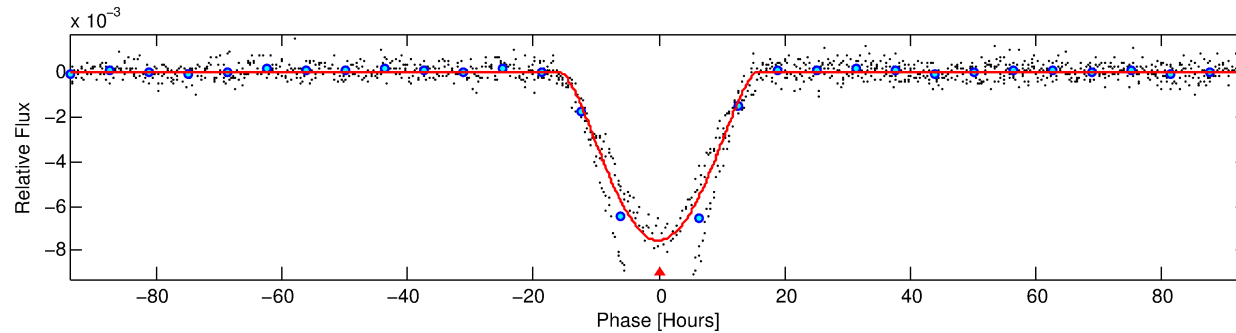
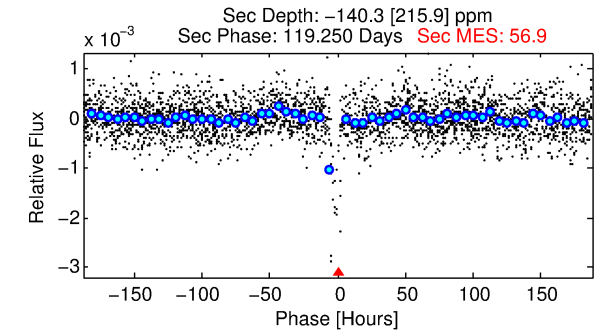
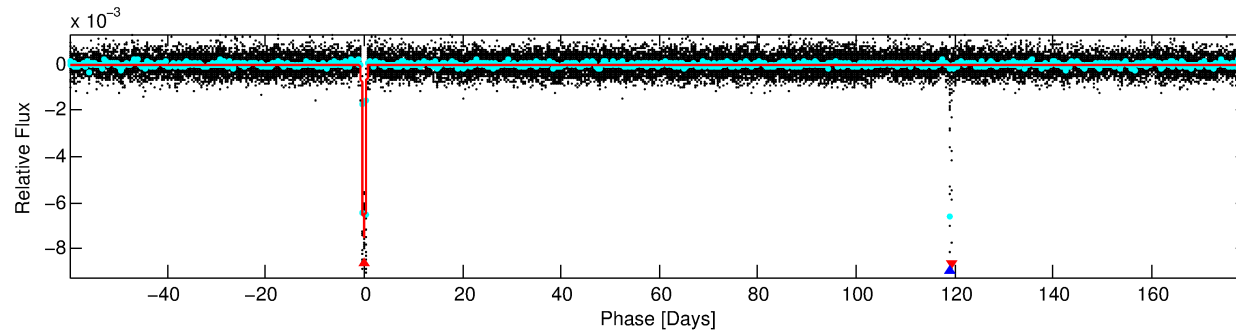
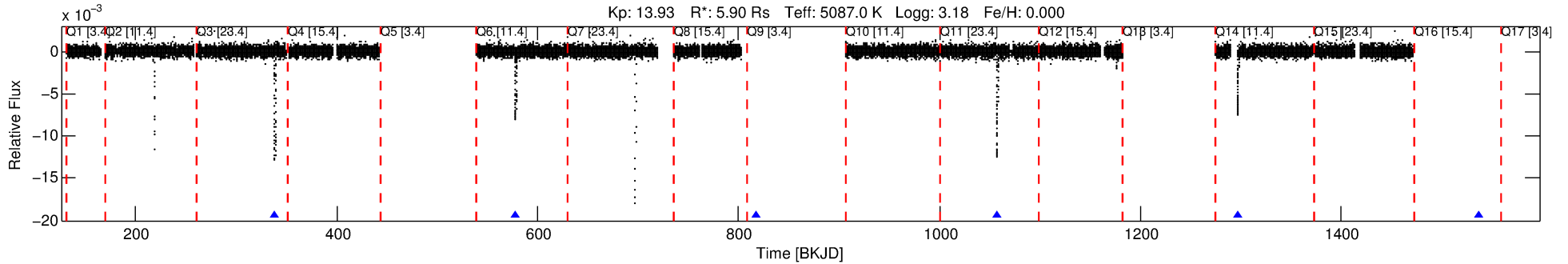
Ephemeris Match Information For 006421937-01

No Significant Match Found

DV One-Page Summary

KIC: 6421937 Candidate: 1 of 2 Period: 239.610 d
KOI: K06704 Corr: No Ephemeris Match

Kp: 13.93 R*: 5.90 Rs Teff: 5087.0 K Logg: 3.18 Fe/H: 0.000



DV Fit Results:

Period = 239.61014 [0.00208] d
Epoch = 338.8547 [0.0054] BKJD
Rp/R* = 0.1432 [0.0525]
a/R* = 33.30 [1.98]
b = 0.99 [0.08]
Seff = 23.58 [5.12]
Teq = 562 [31] K
Rp = 92.15 [41.06] Re
a = 0.9409 [0.1600] AU
Ag = N/A
Teffp = N/A

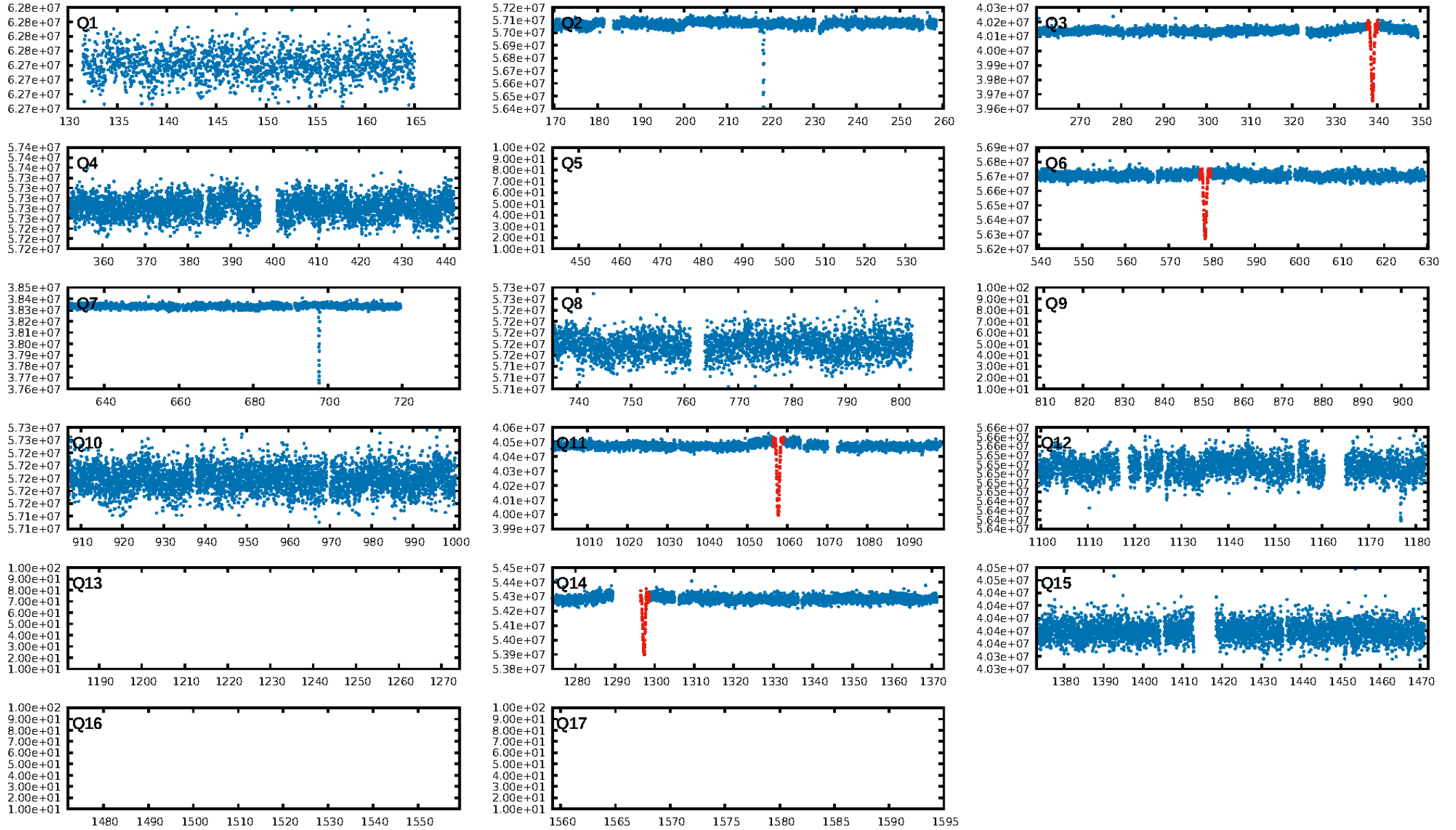
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [178.16σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 97.3%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.02553
Centroid-sig: 0.0%
Centroid-so: 18.255 arcsec [246.32σ]
OotOffset-rm: 6.980 arcsec [78.70σ]
KicOffset-rm: 6.927 arcsec [28.88σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

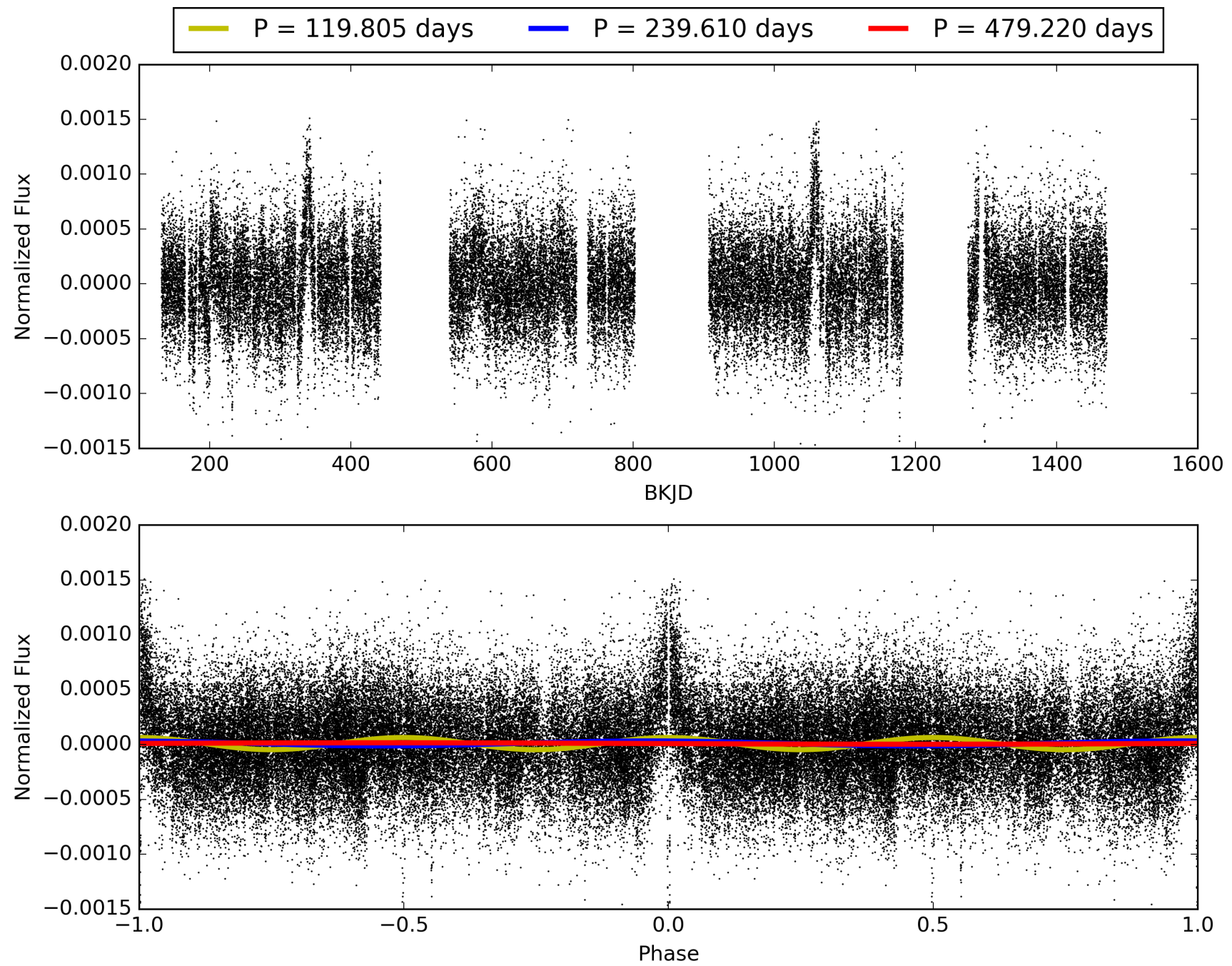
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:21 Z

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

TCE 006421937-01, PDC Light Curves

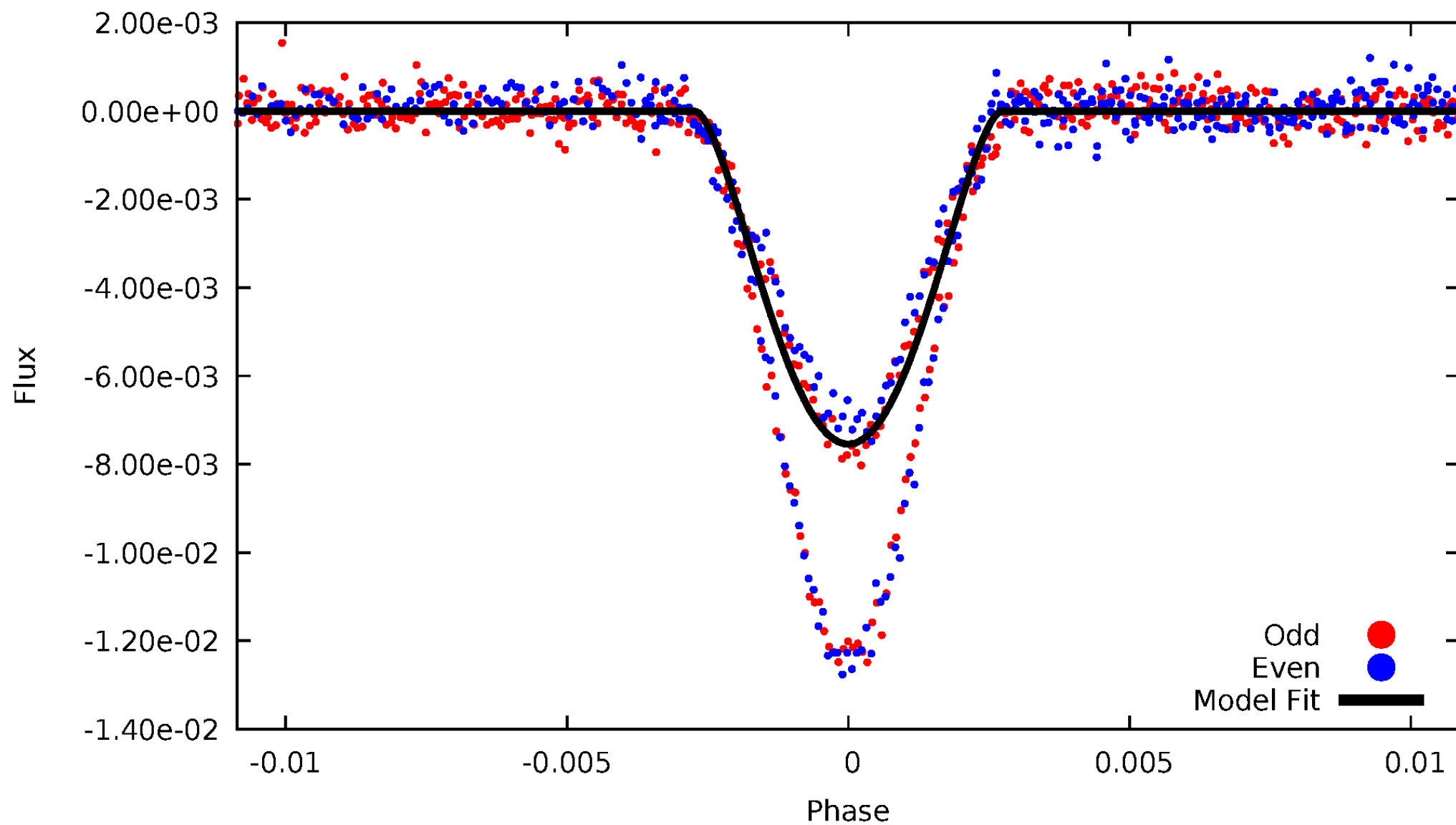


TCE 006421937-01



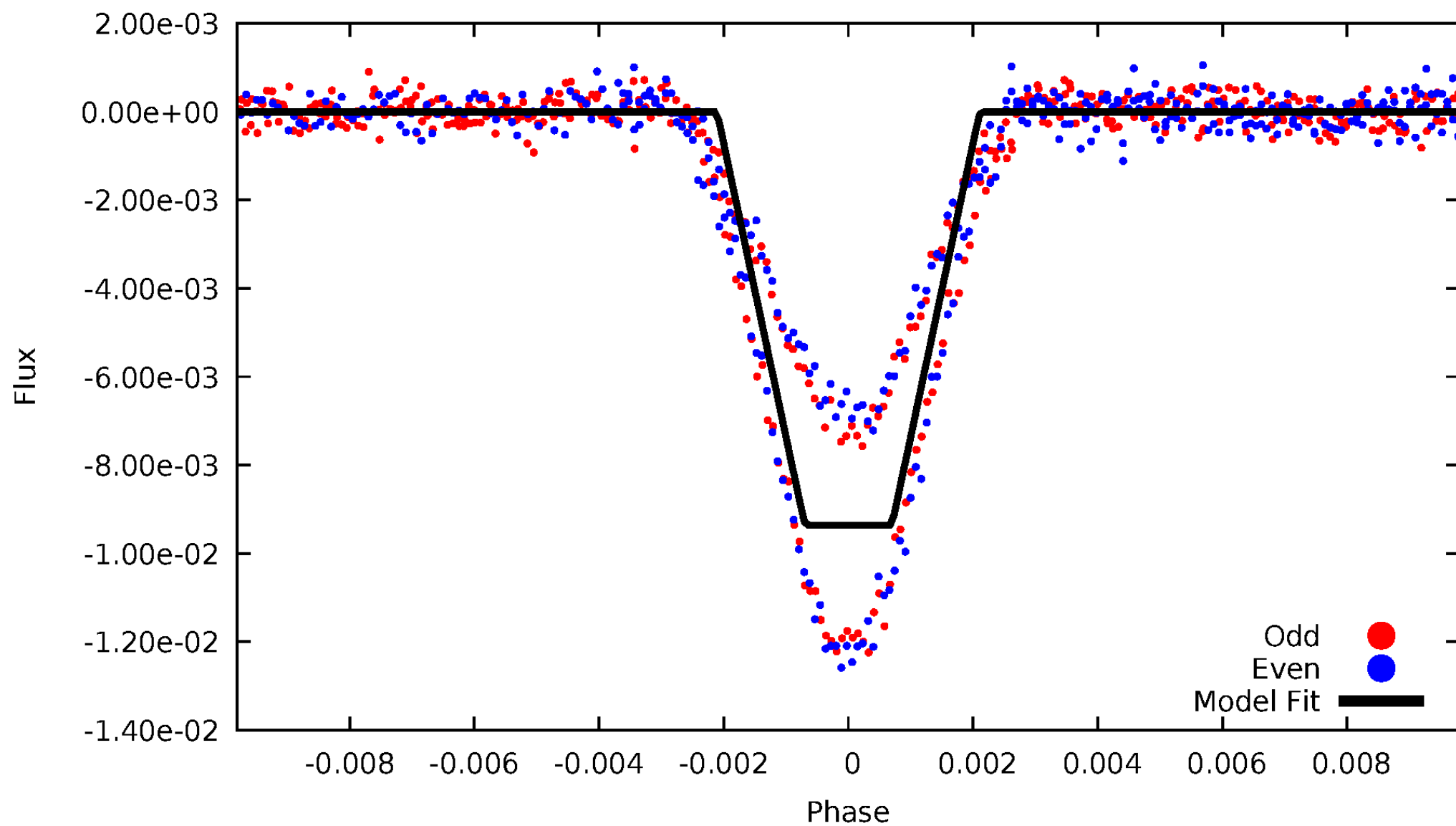
DV Odd/Even

TCE 006421937-01



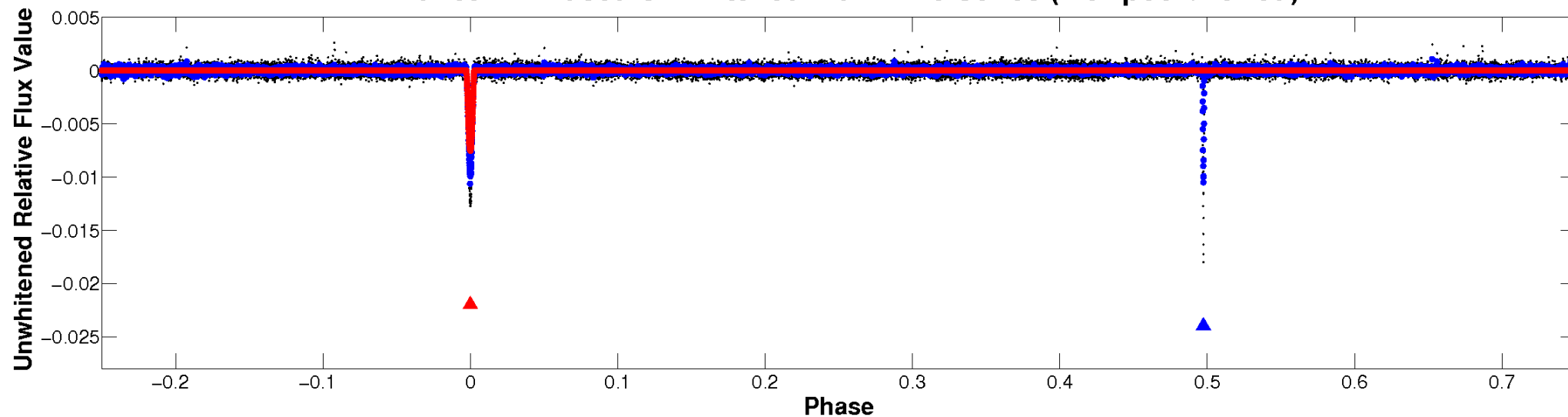
ALT Odd/Even

TCE 006421937-01

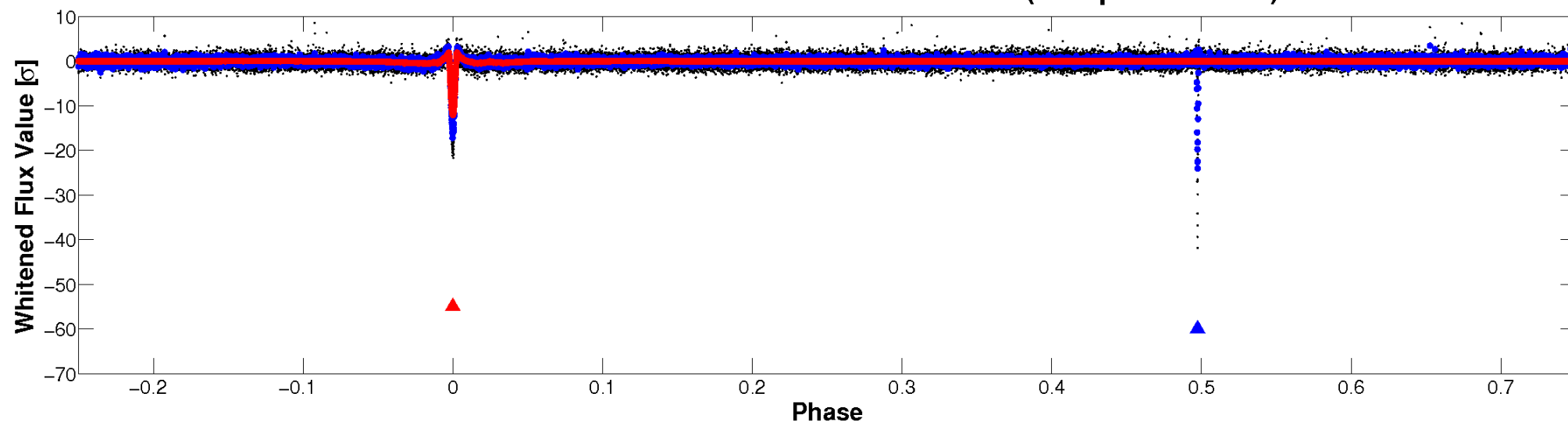


Non-Whitened Vs. Whitened Light Curve

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

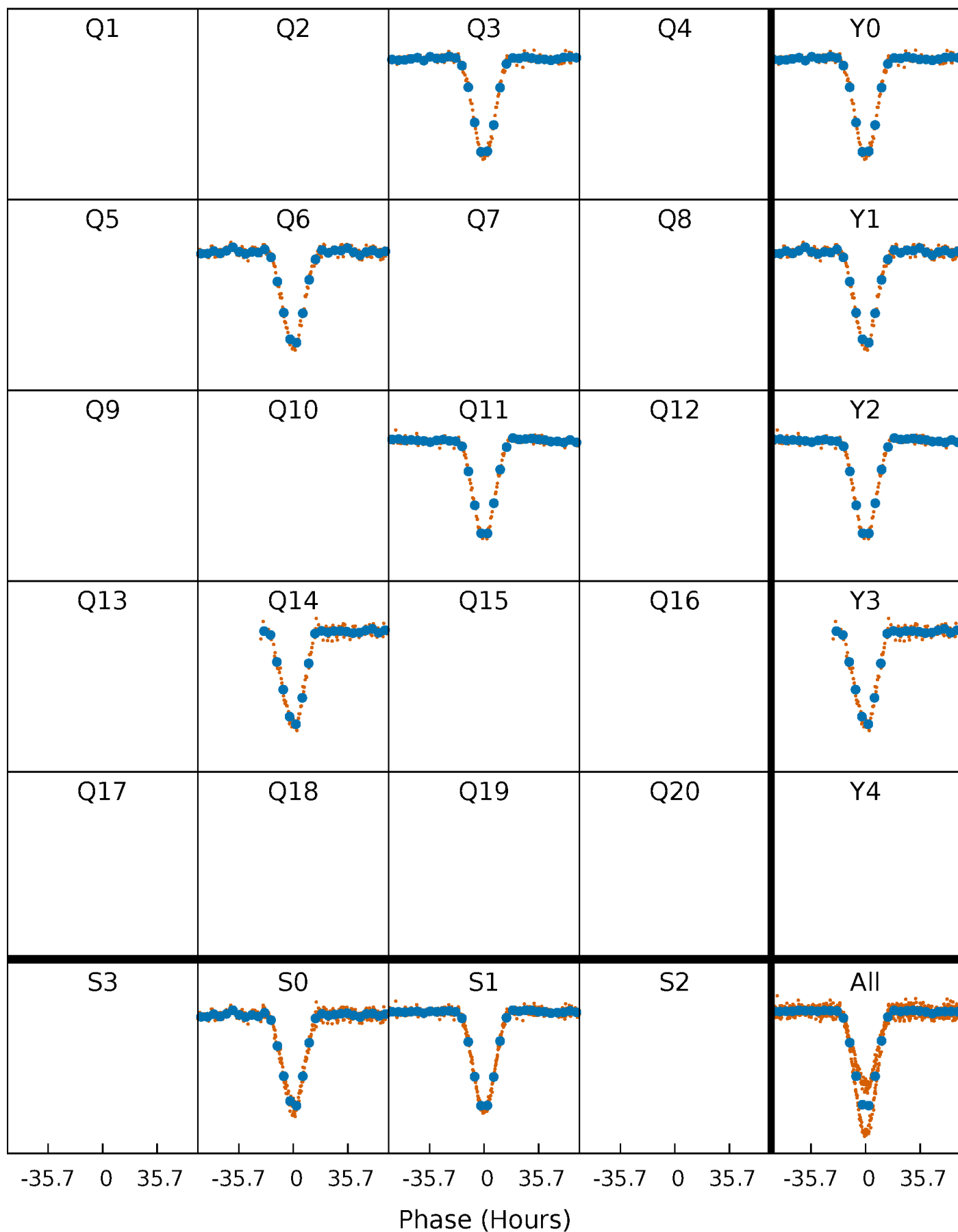


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



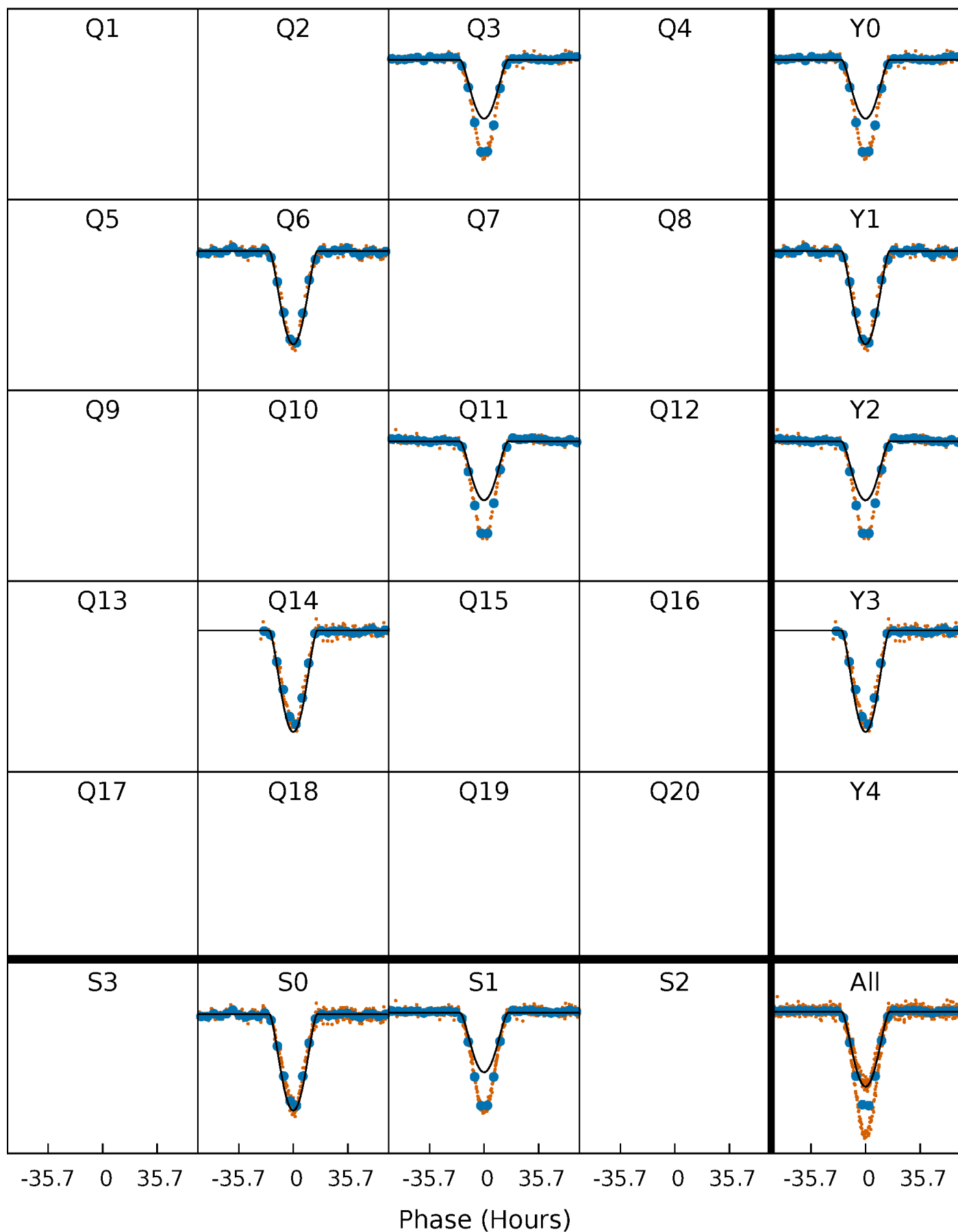
PDC Quarter-Phased Transit Curves

TCE 006421937-01 P=239.610140 Days $T_0=338.854651$ (BKJD)



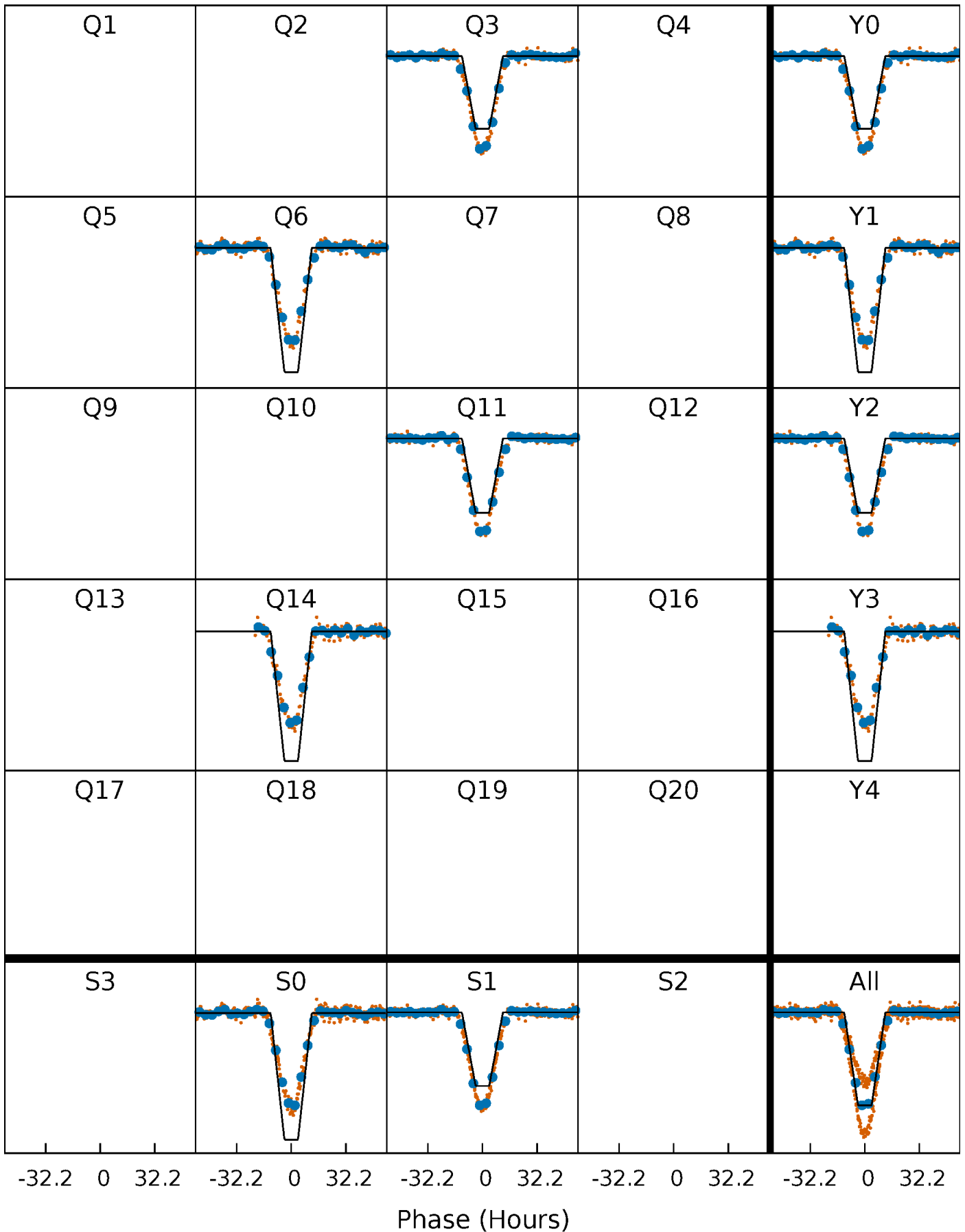
DV Quarter-Phased Transit Curves

TCE 006421937-01 P=239.610140 Days $T_0=338.854651$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

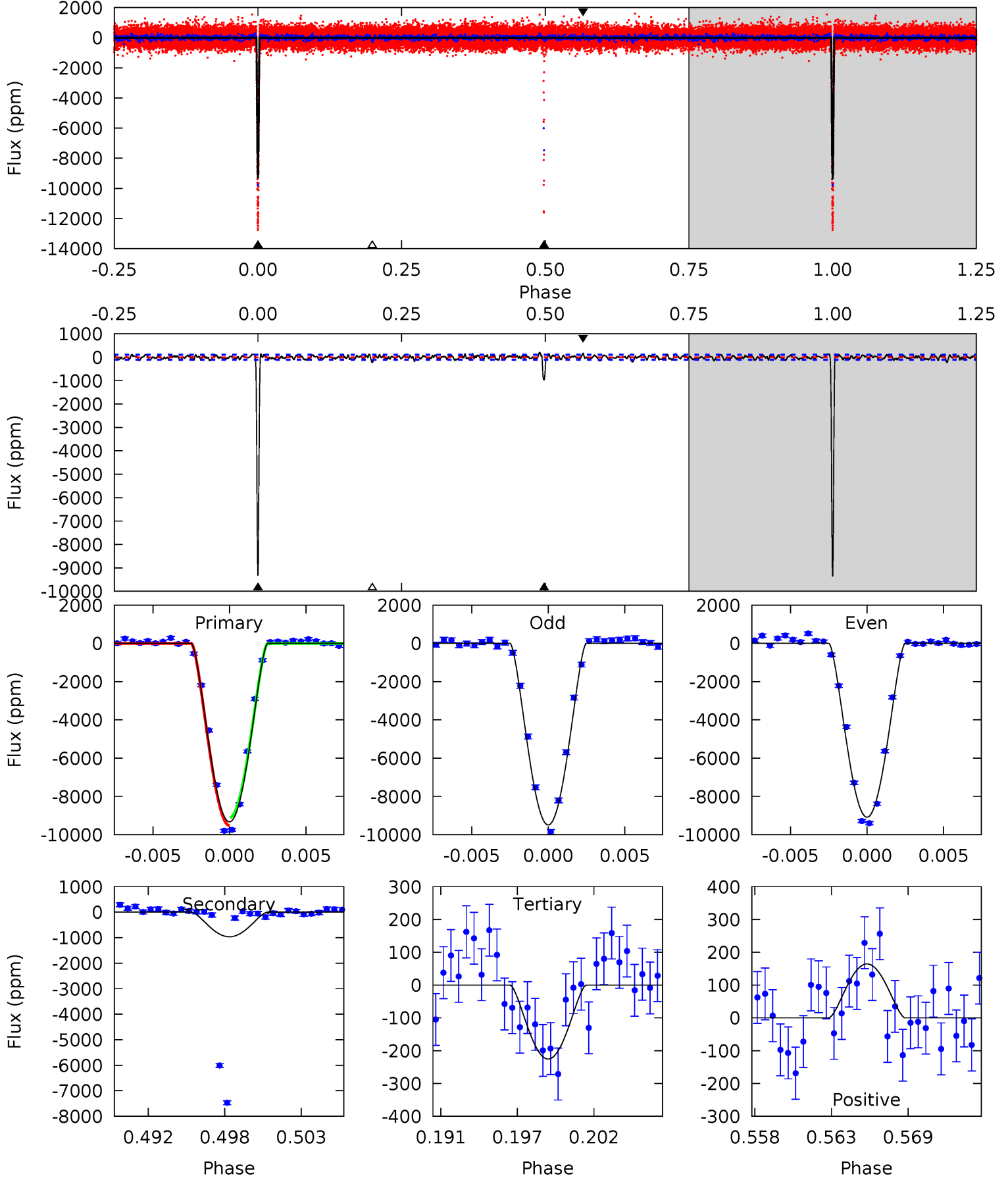
TCE 006421937-01 P=239.610736 Days $T_0=338.855610$ (BKJD)



DV Model-Shift Uniqueness Test

006421937-01, P = 239.610140 Days, E = 99.244511 Days

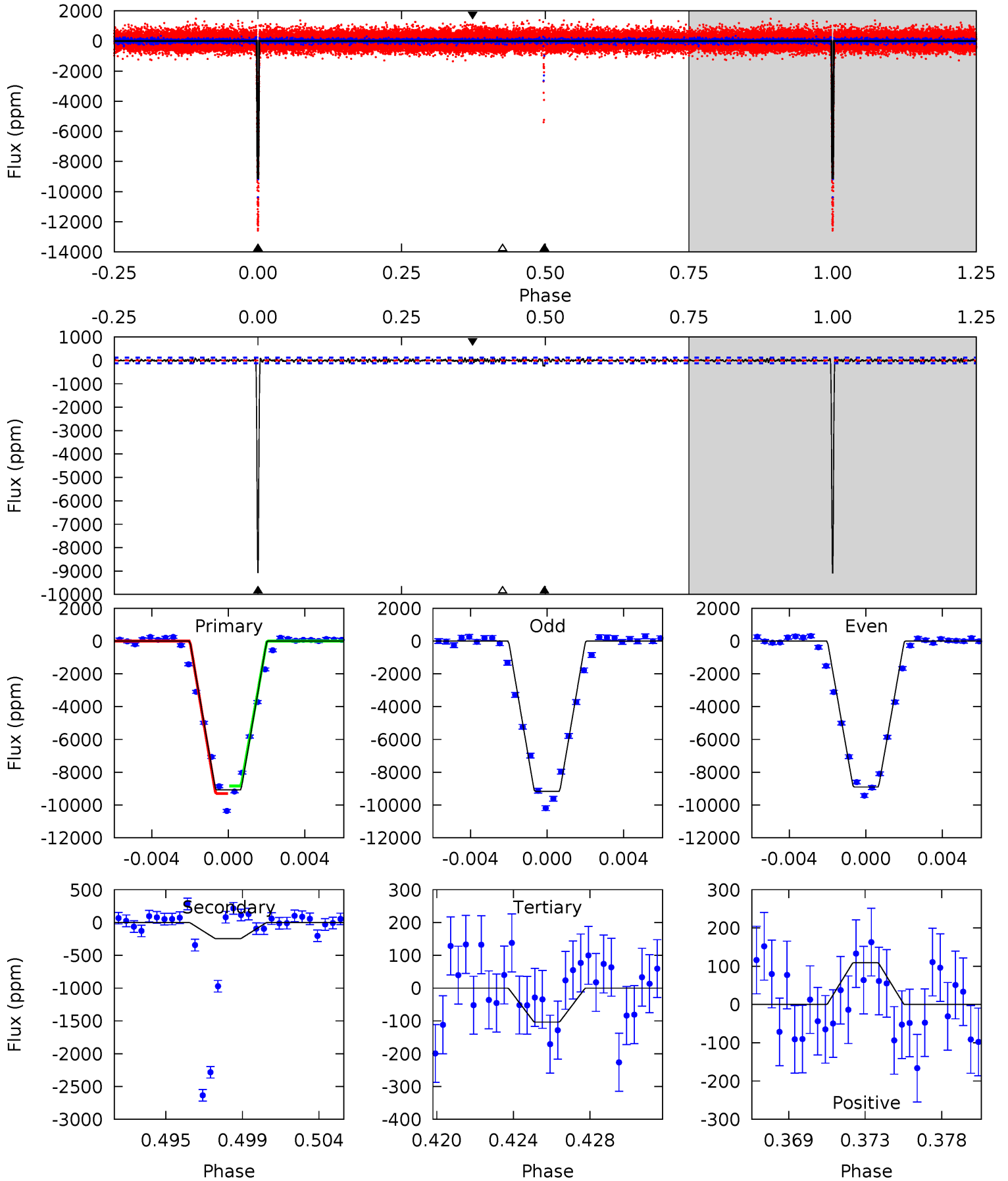
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
439.8	45.5	10.6	7.75	5.14	2.78	2.80	429.1	432.0	34.8	37.7	9.65	0.99	0.02	9.74



Alt Model-Shift Uniqueness Test

006421937-01, P = 239.610736 Days, E = 99.244874 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
391.3	10.7	4.47	4.71	5.19	2.86	1.26	386.9	386.6	6.19	5.95	5.80	1.00	0.01	9.84



Stellar Parameters For KIC 006421937

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5087^{+74}_{-164}	$3.183^{+0.030}_{-0.030}$	$0.000^{+0.150}_{-0.350}$	$5.899^{+0.263}_{-1.491}$	$1.935^{+0.152}_{-0.859}$	$0.013^{+0.005}_{-0.001}$
	+1%/-3%	+1%/-1%	+inf%/-inf%	+4%/-25%	+8%/-44%	+39%/-7%
Source	PHO1	AST9	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 006421937-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-965 ± 21	$94.60^{+35.21}_{-33.81}$	785^{+16}_{-28}	2962^{+447}_{-238}	53^{+74}_{-25}
Alt.	-247 ± 23	$63.95^{+34.98}_{-30.93}$	785^{+17}_{-28}	2751^{+562}_{-296}	29^{+82}_{-17}

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 $A_{\text{obs}} \gg 1.0$

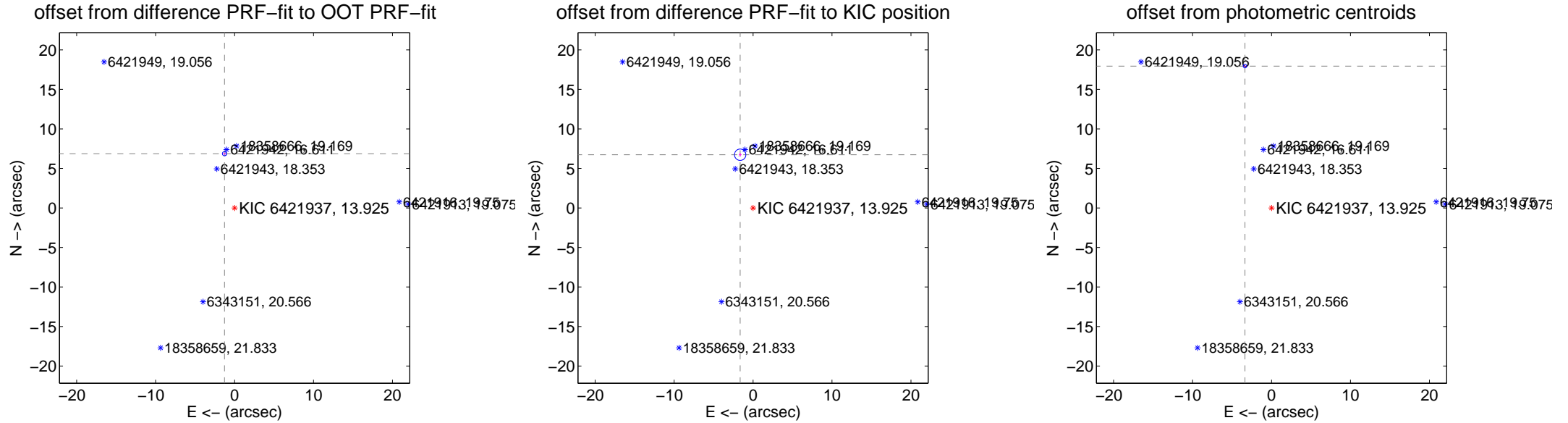
DV Centroid Data

Supplemental centroid analysis for 006421937-01. Kepler magnitude: 13.93. Transit SNR 92.87

There are 3 quarters with good PRF difference image offsets

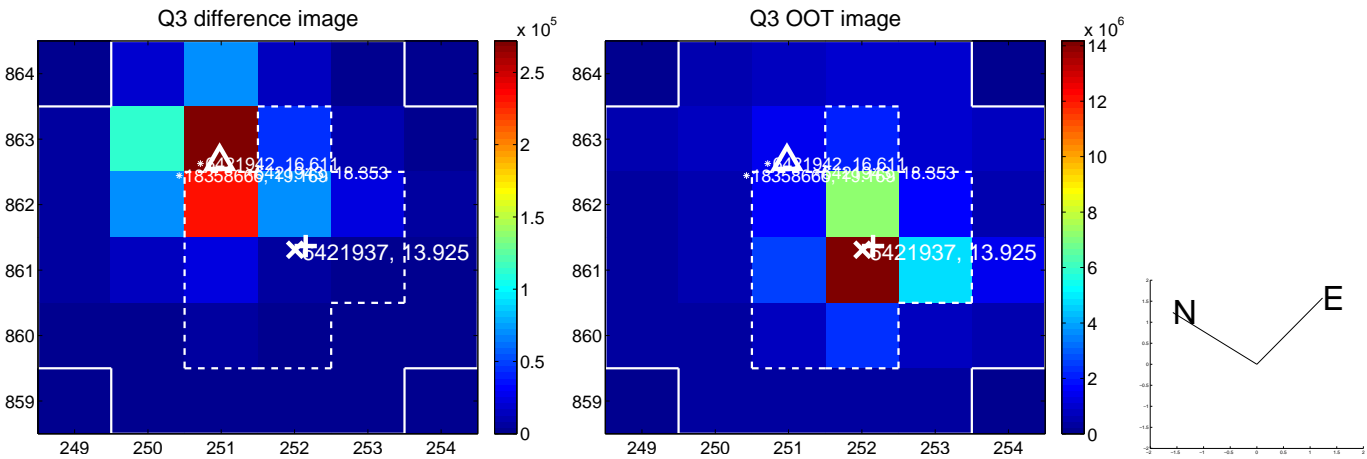
The direct PRF centroid is offset from the target star catalog position by about 0.74 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.980 ± 0.089	78.70	1.279 ± 0.173	6.862 ± 0.084
PRF-fit source offset from KIC position	6.927 ± 0.240	28.88	1.630 ± 0.172	6.732 ± 0.243
photometric centroid source offset	18.26 ± 0.07	246.32	3.36 ± 0.08	17.94 ± 0.07

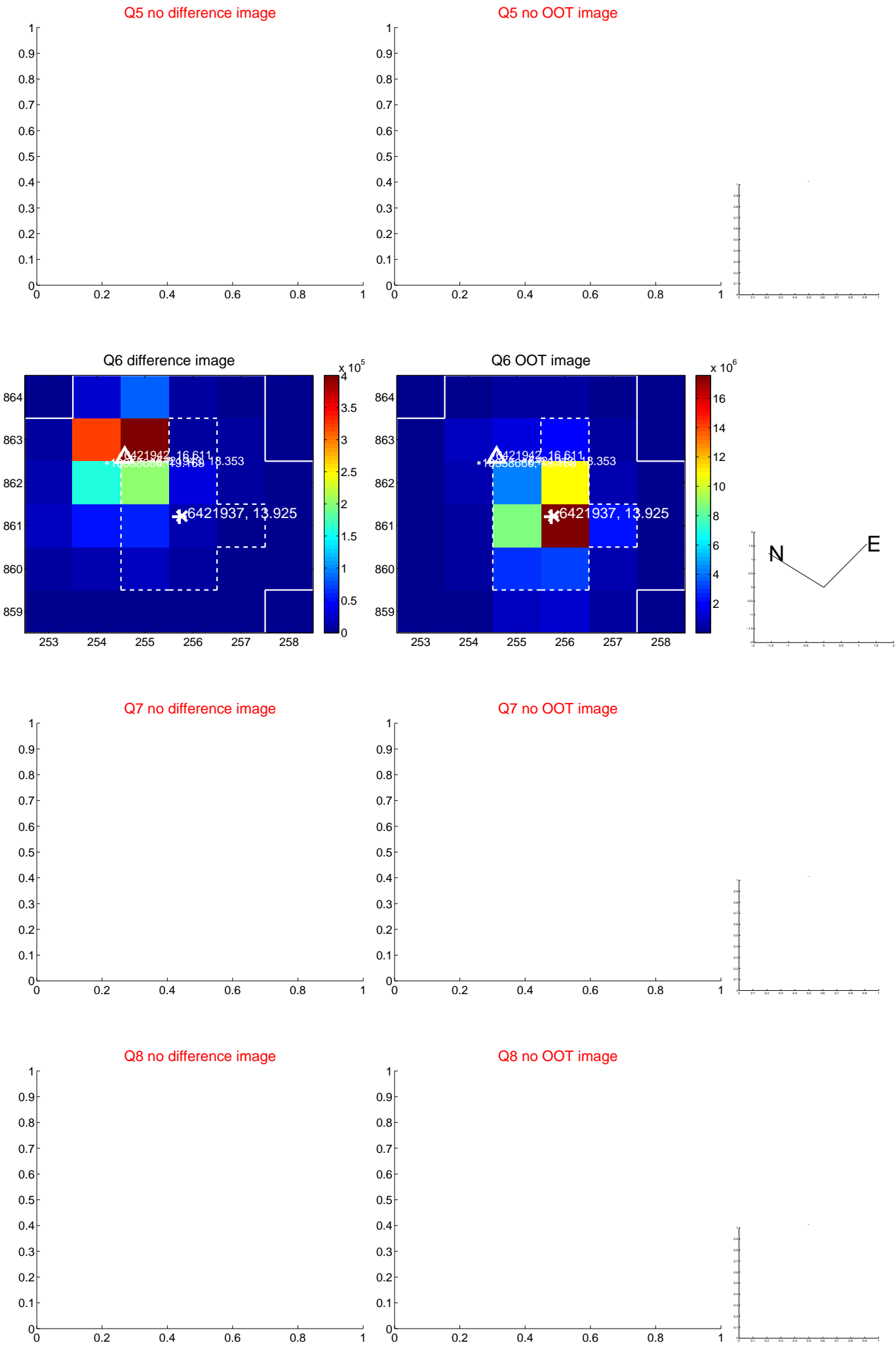


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

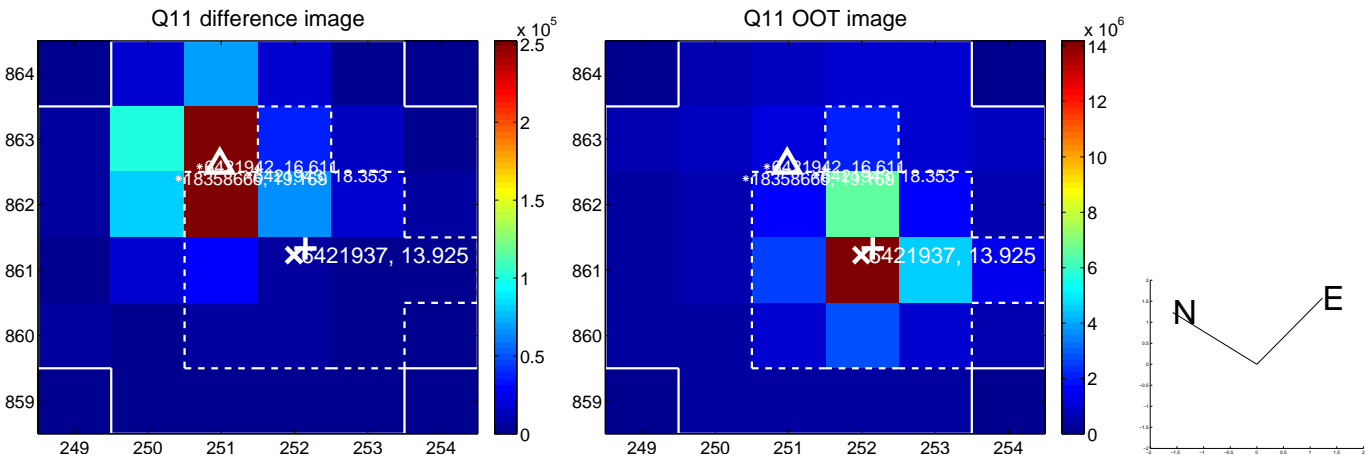
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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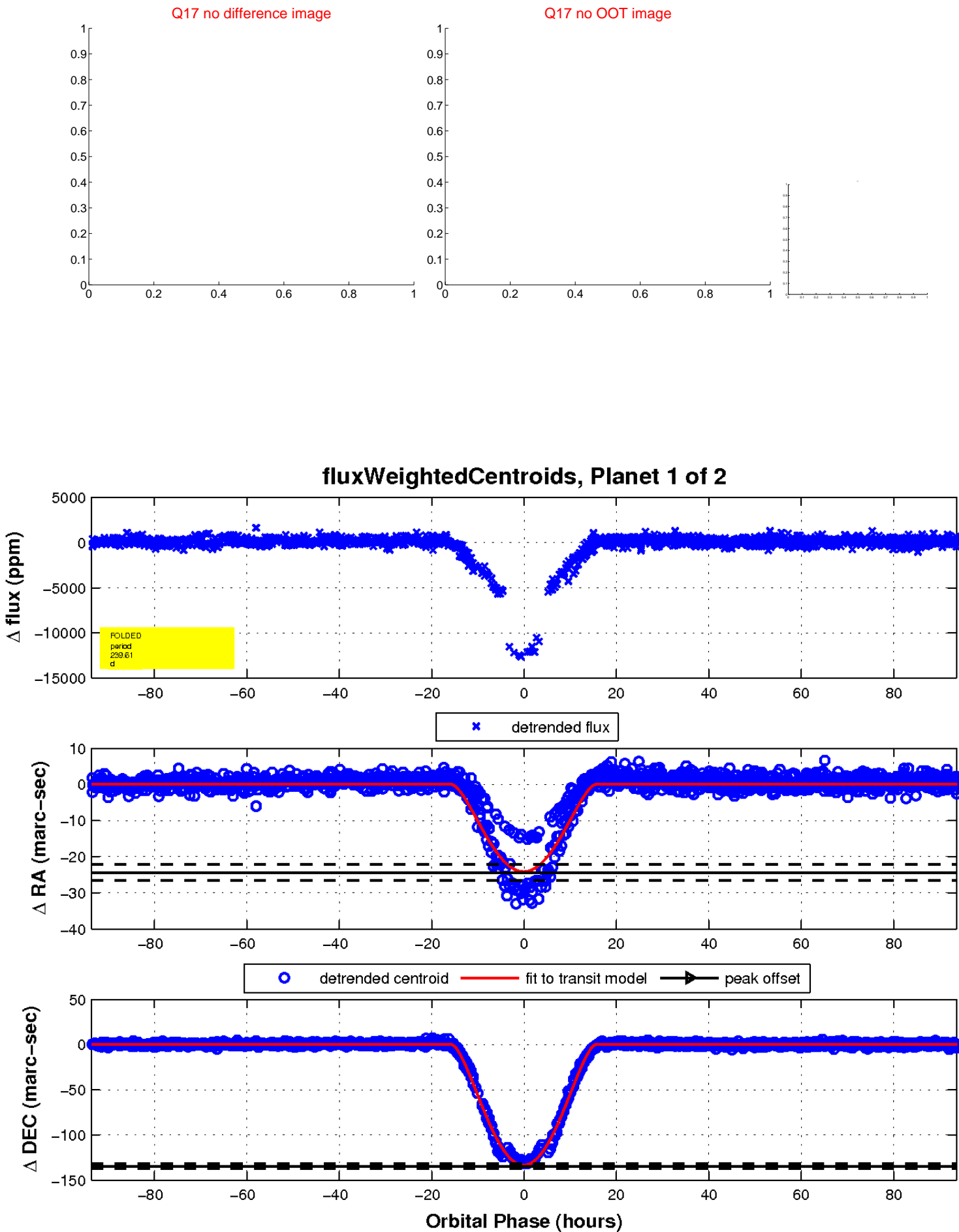
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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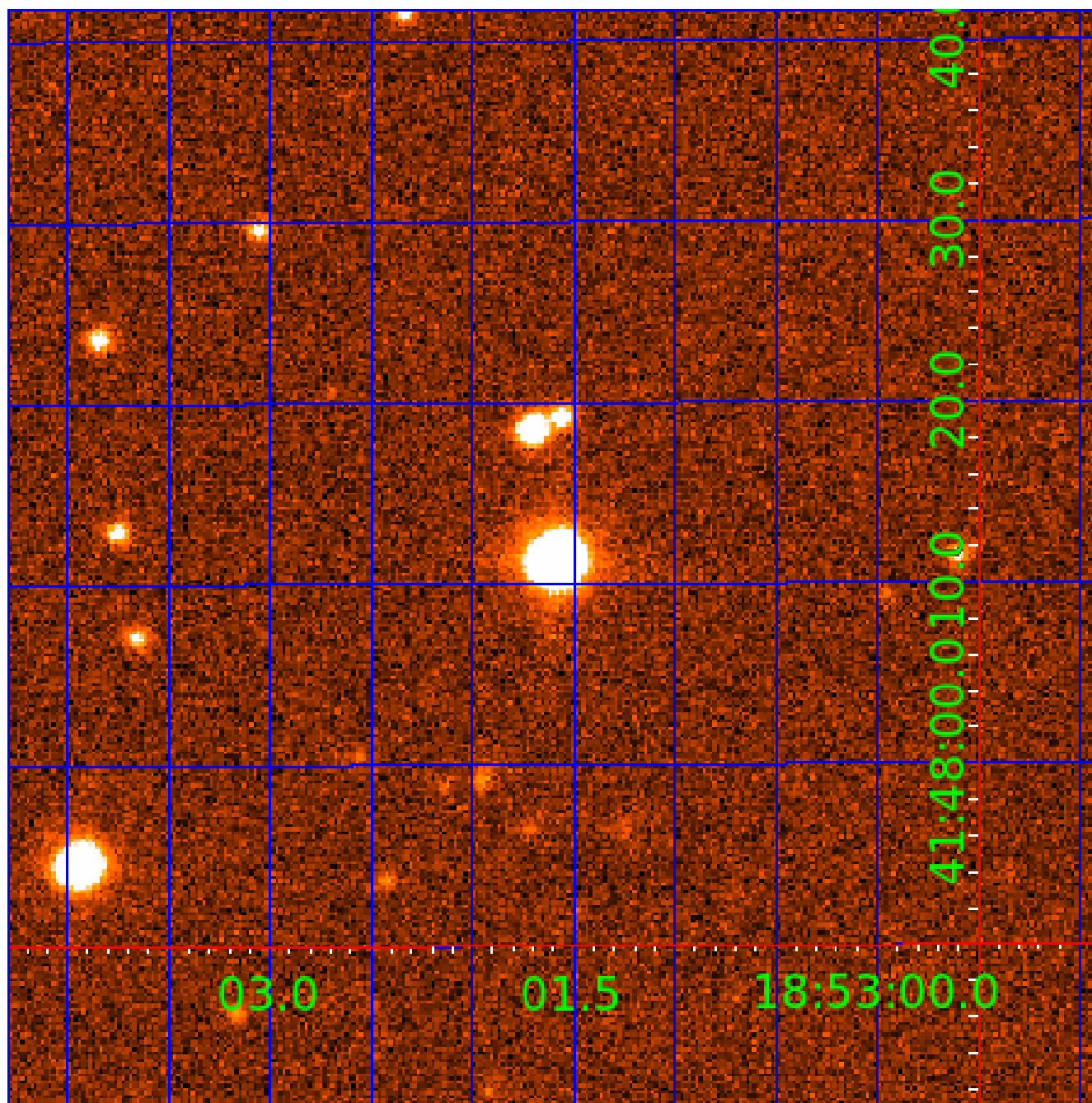


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006421937

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})
006421937-01	OBS	No	239.610140	338.854651	7543.0	31.233	137.7	92.9	5.90	5087	92.15	23.58
006421937-02	OBS	No	479.224484	218.434441	11749.2	8.148	104.1	65.4	5.90	5087	117.57	9.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421937-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS—HALO_GHOST
006421937-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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.

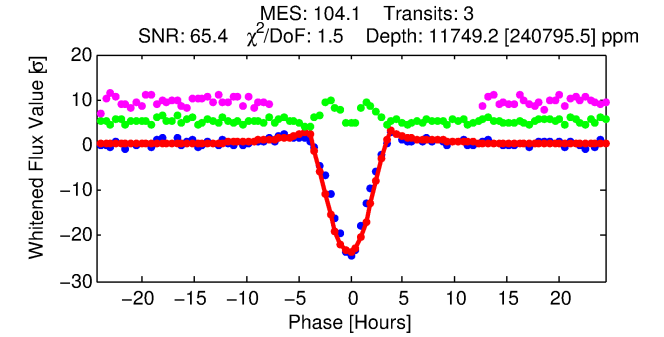
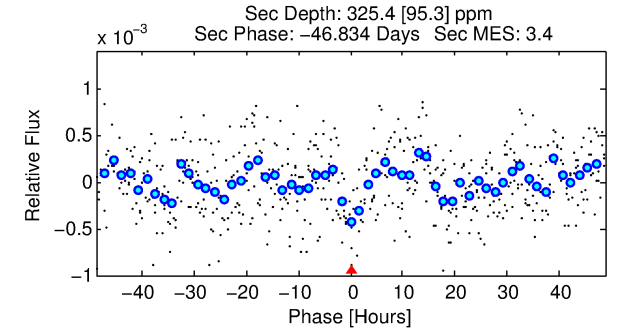
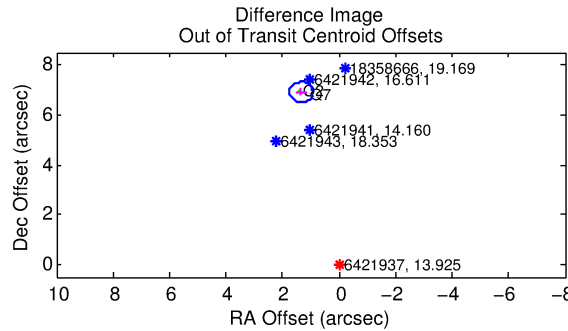
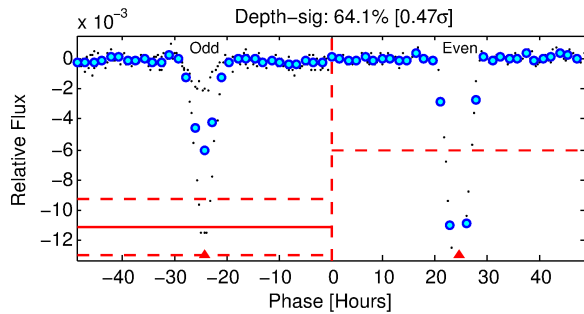
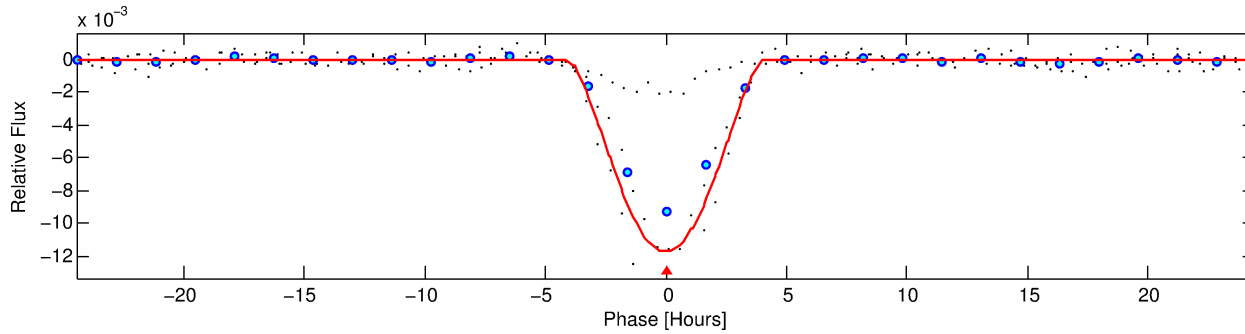
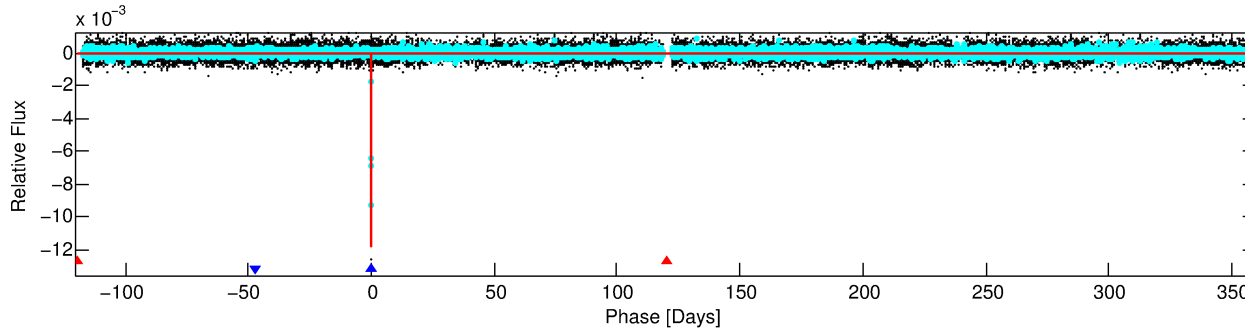
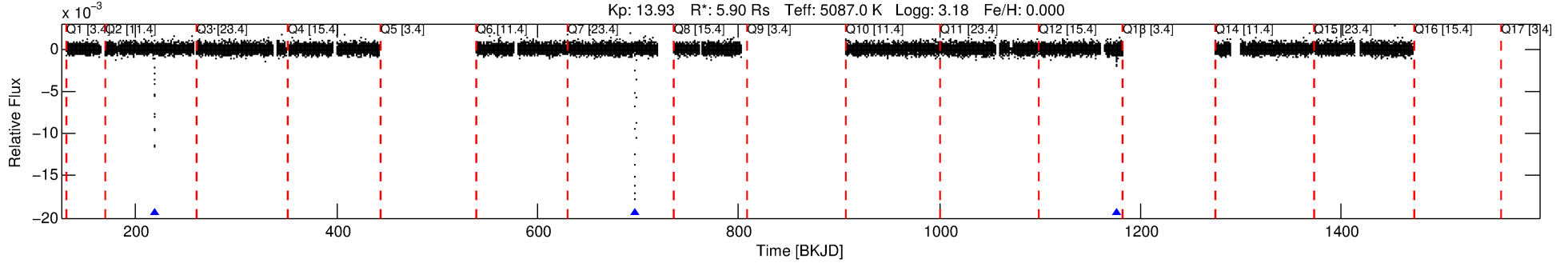
Ephemeris Match Information For 006421937-02

No Significant Match Found

DV One-Page Summary

KIC: 6421937 Candidate: 2 of 2 Period: 479.224 d
KOI: K06704 Corr: No Ephemeris Match

Kp: 13.93 R*: 5.90 Rs Teff: 5087.0 K Logg: 3.18 Fe/H: 0.000



DV Fit Results:

Period = 479.22448 [0.00188] d
Epoch = 218.4344 [0.0020] BKJD
Rp/R* = 0.1826 [0.1284]
a/R* = 283.69 [24.73]
b = 1.00 [2.56]
Seff = 9.36 [2.03]
Teq = 446 [24] K
Rp = 117.57 [87.84] Re
a = 1.4936 [0.2540] AU
Ag = 28.89 [41.80] [0.67σ]
Teff = 1599 [576] K [2.00σ]

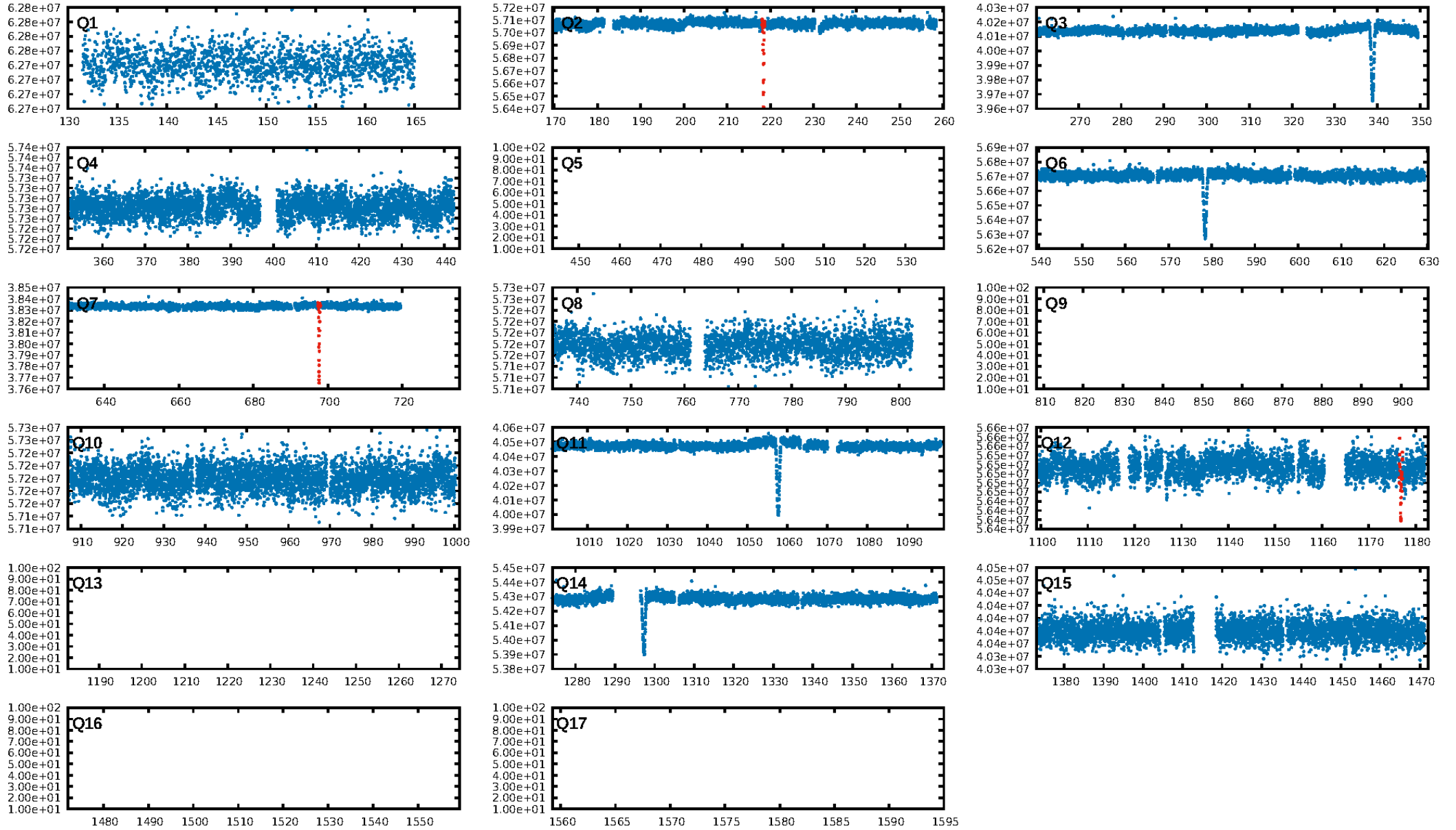
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [178.16σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 11.2%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.05273
Centroid-sig: 0.0%
Centroid-so: 15.267 arcsec [190.15σ]
OotOffset-rm: 7.037 arcsec [51.51σ]
KicOffset-rm: 6.976 arcsec [25.24σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

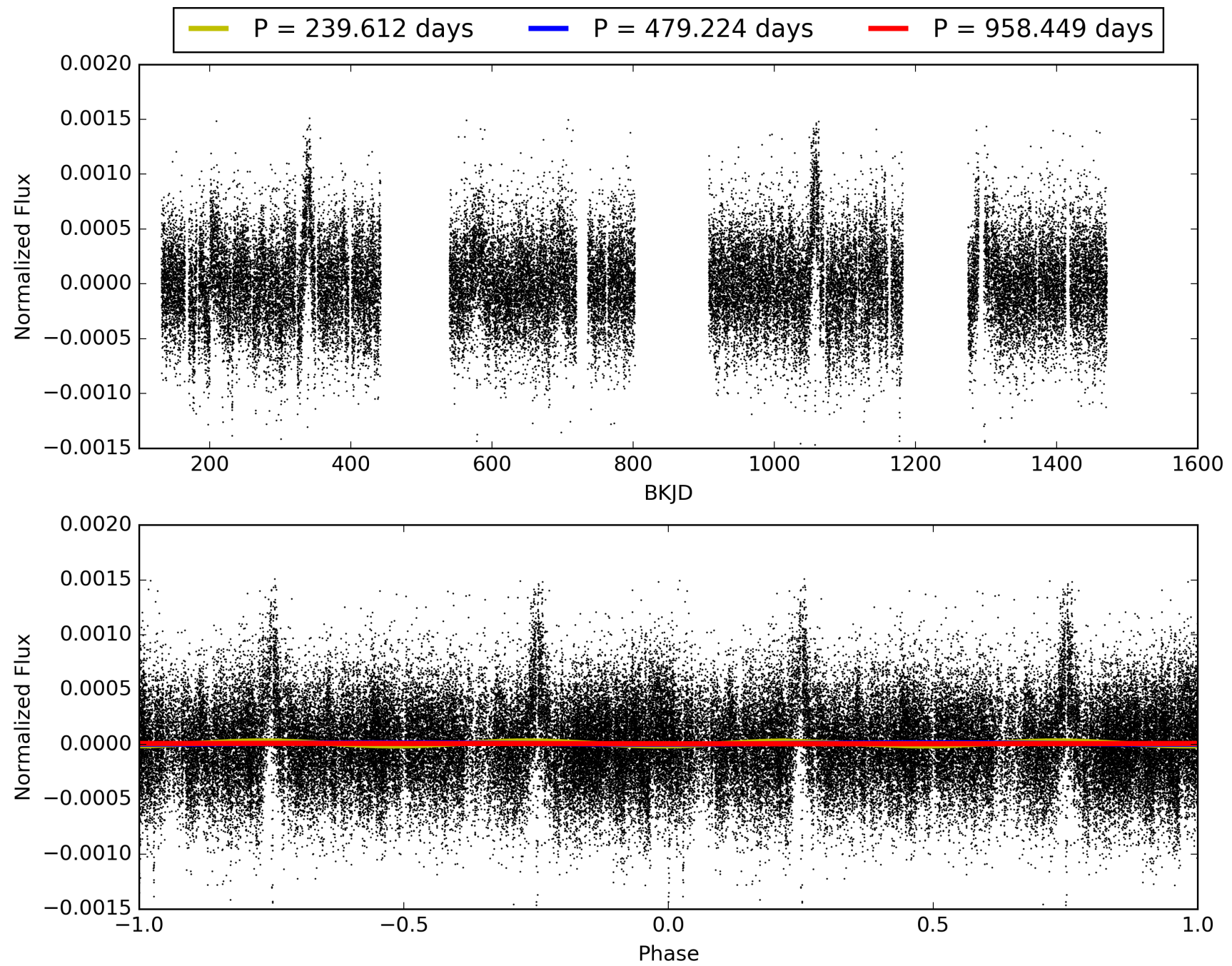
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:02:42 Z

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

TCE 006421937-02, PDC Light Curves

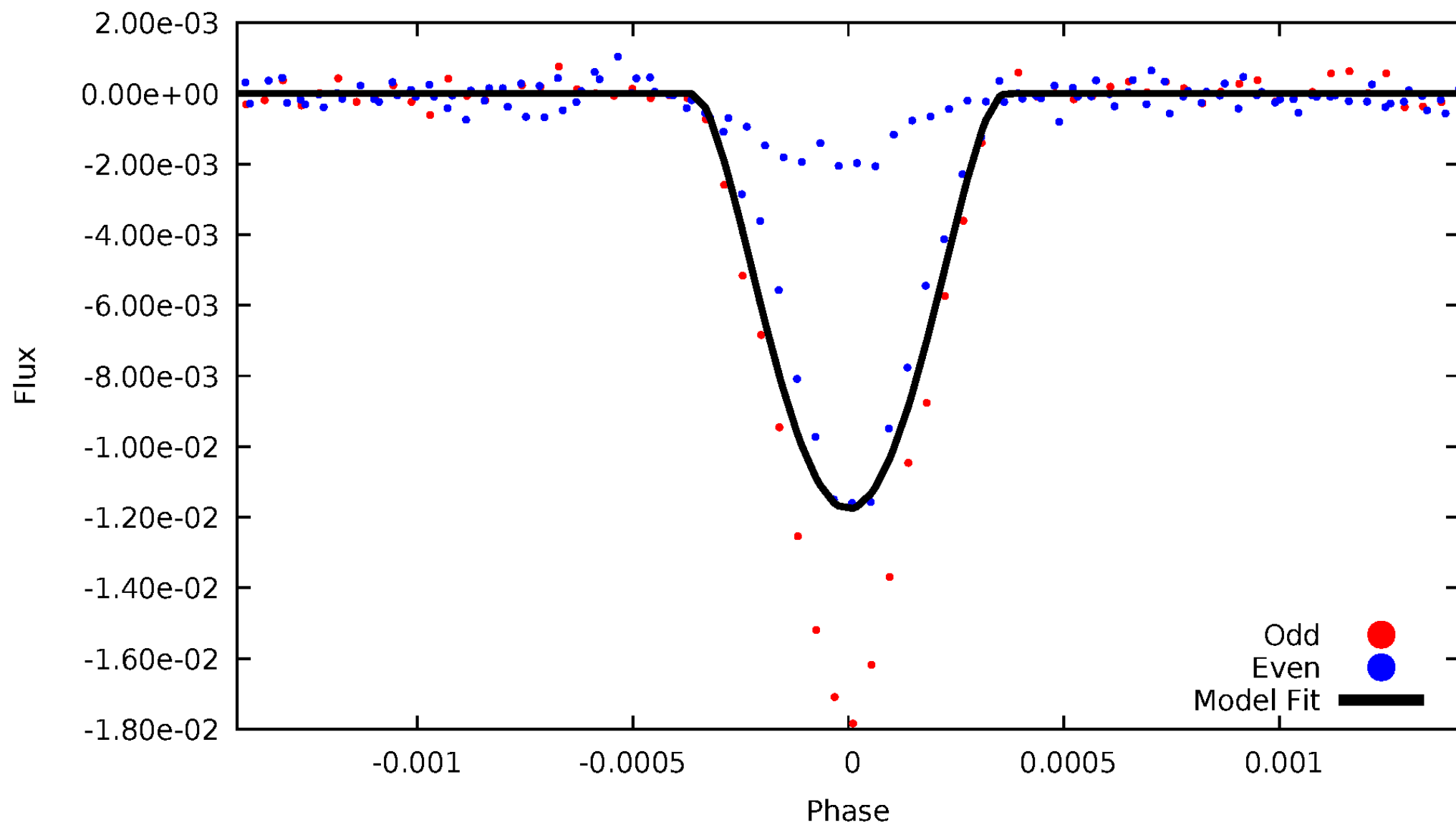


TCE 006421937-02



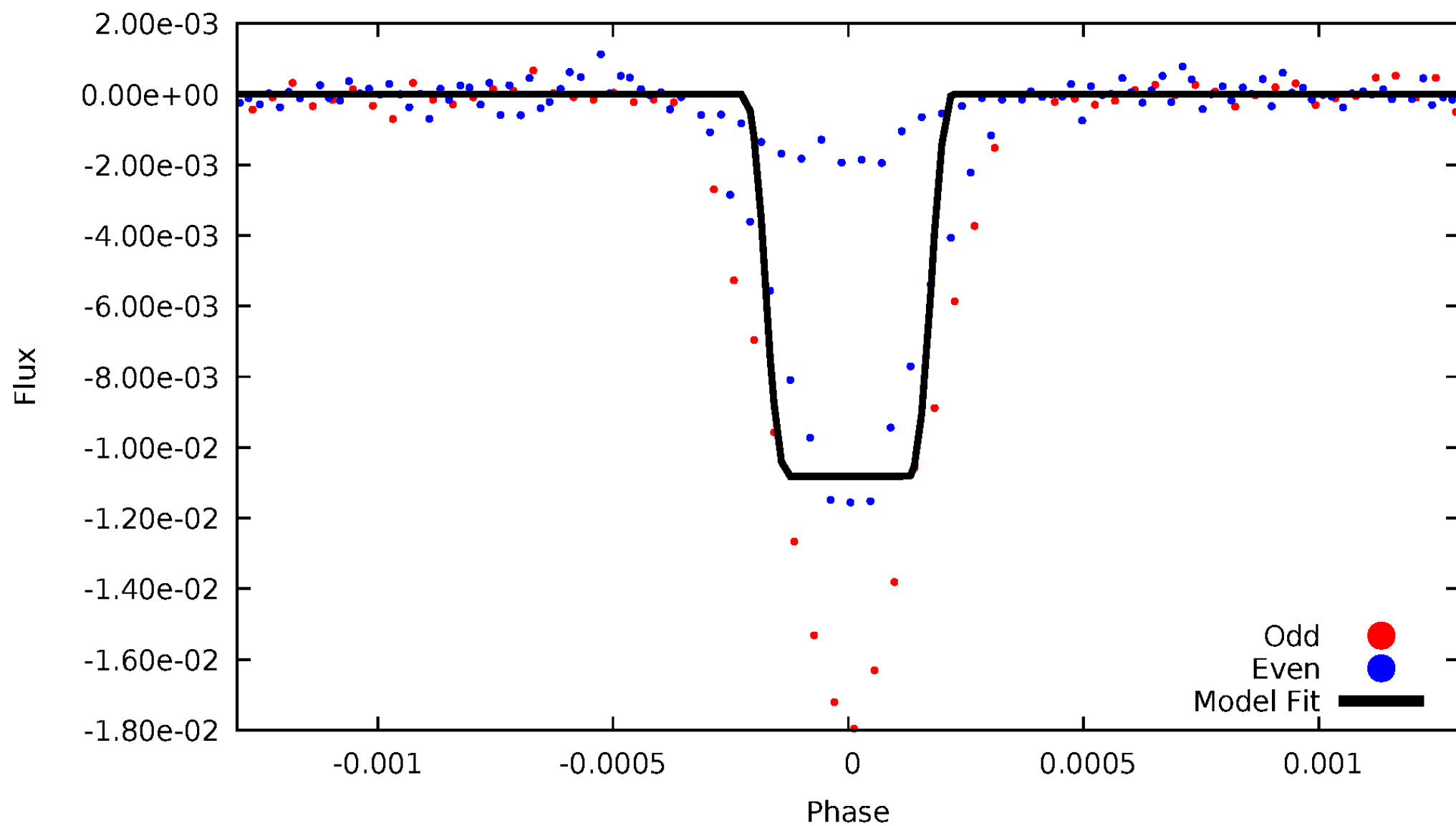
DV Odd/Even

TCE 006421937-02



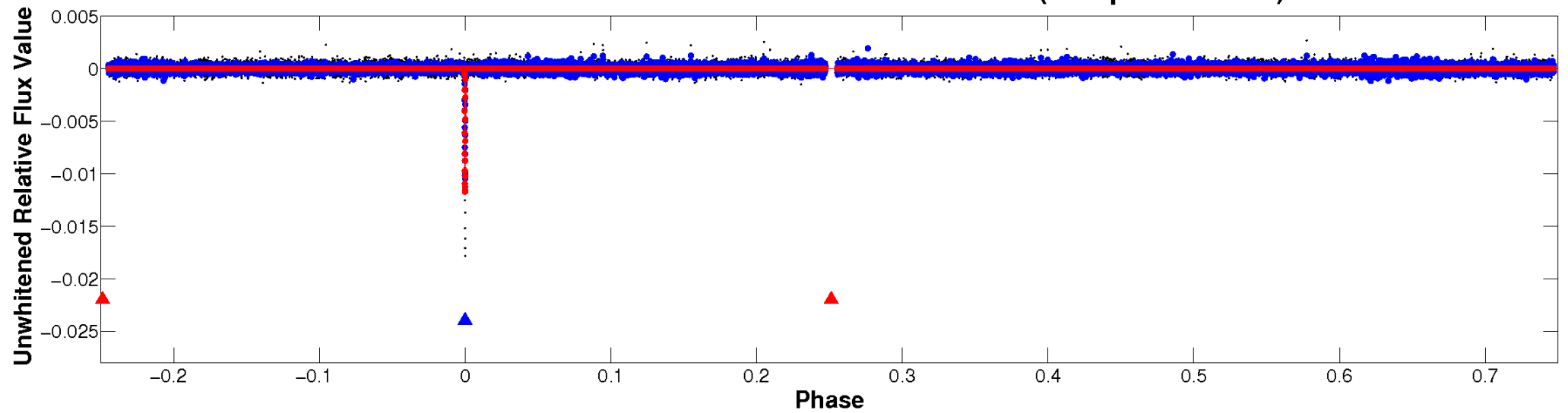
ALT Odd/Even

TCE 006421937-02

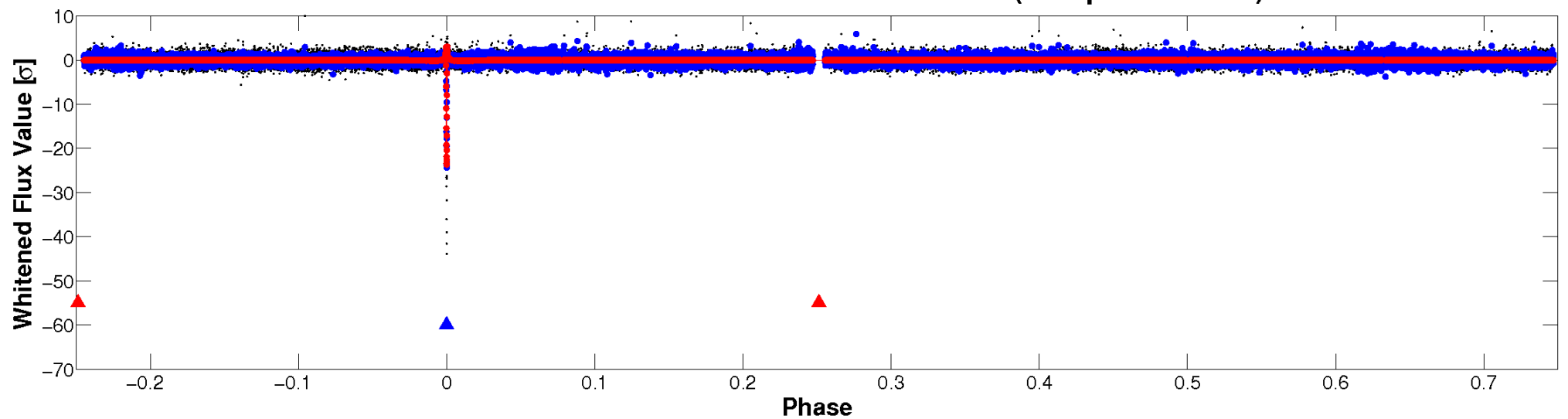


Non-Whitened Vs. Whitened Light Curve

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

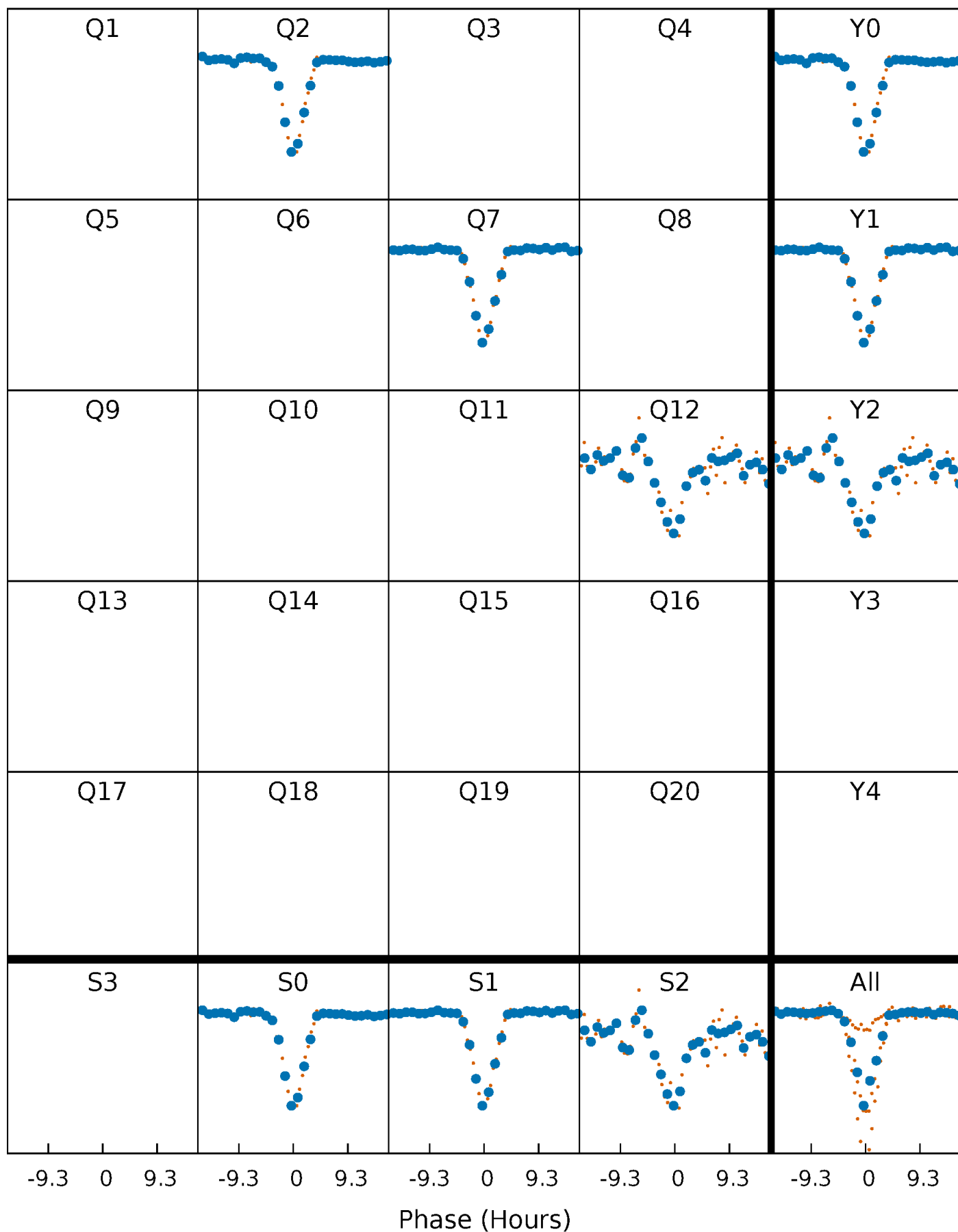


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



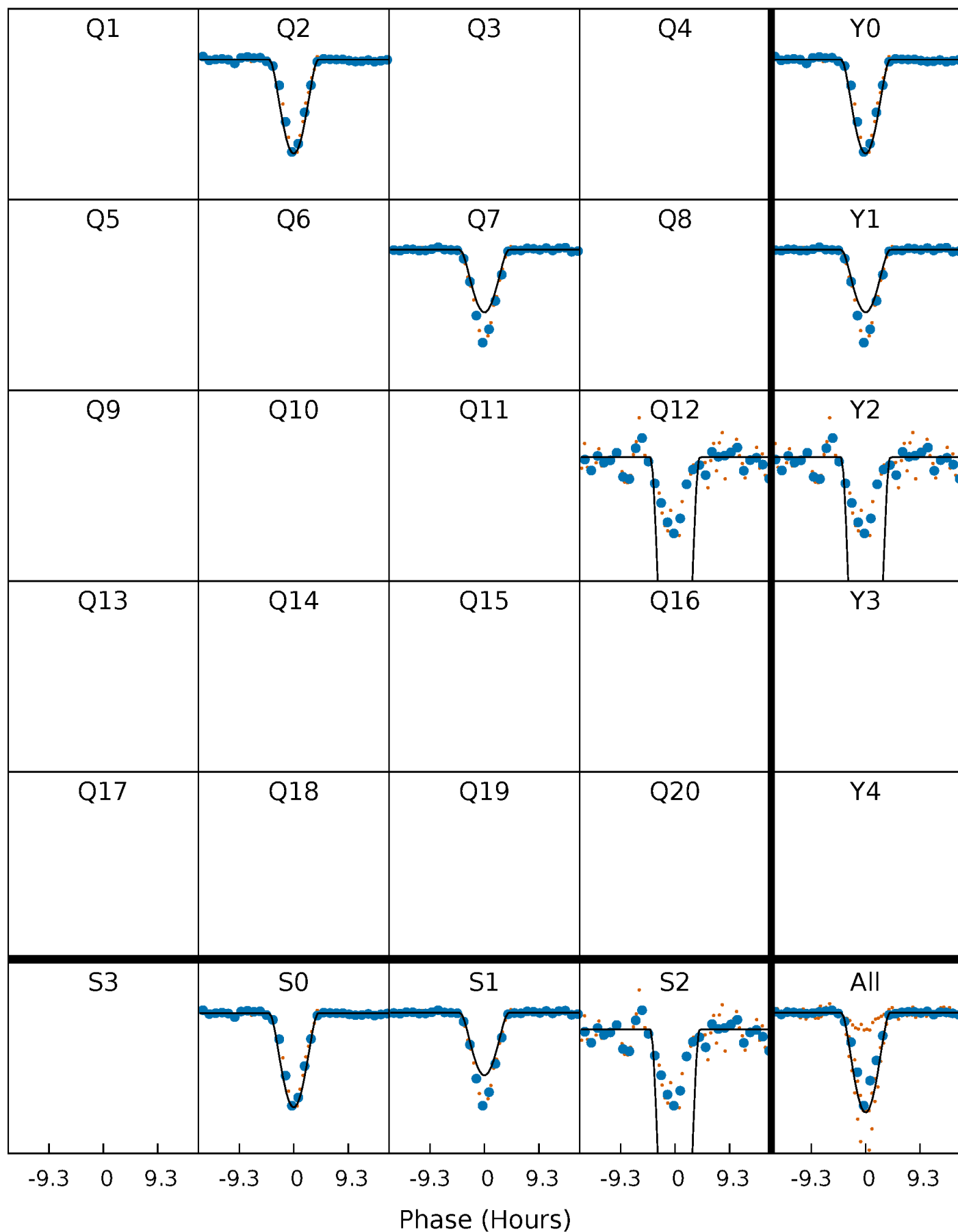
PDC Quarter-Phased Transit Curves

TCE 006421937-02 $P=479.224484$ Days $T_0=218.434441$ (BKJD)



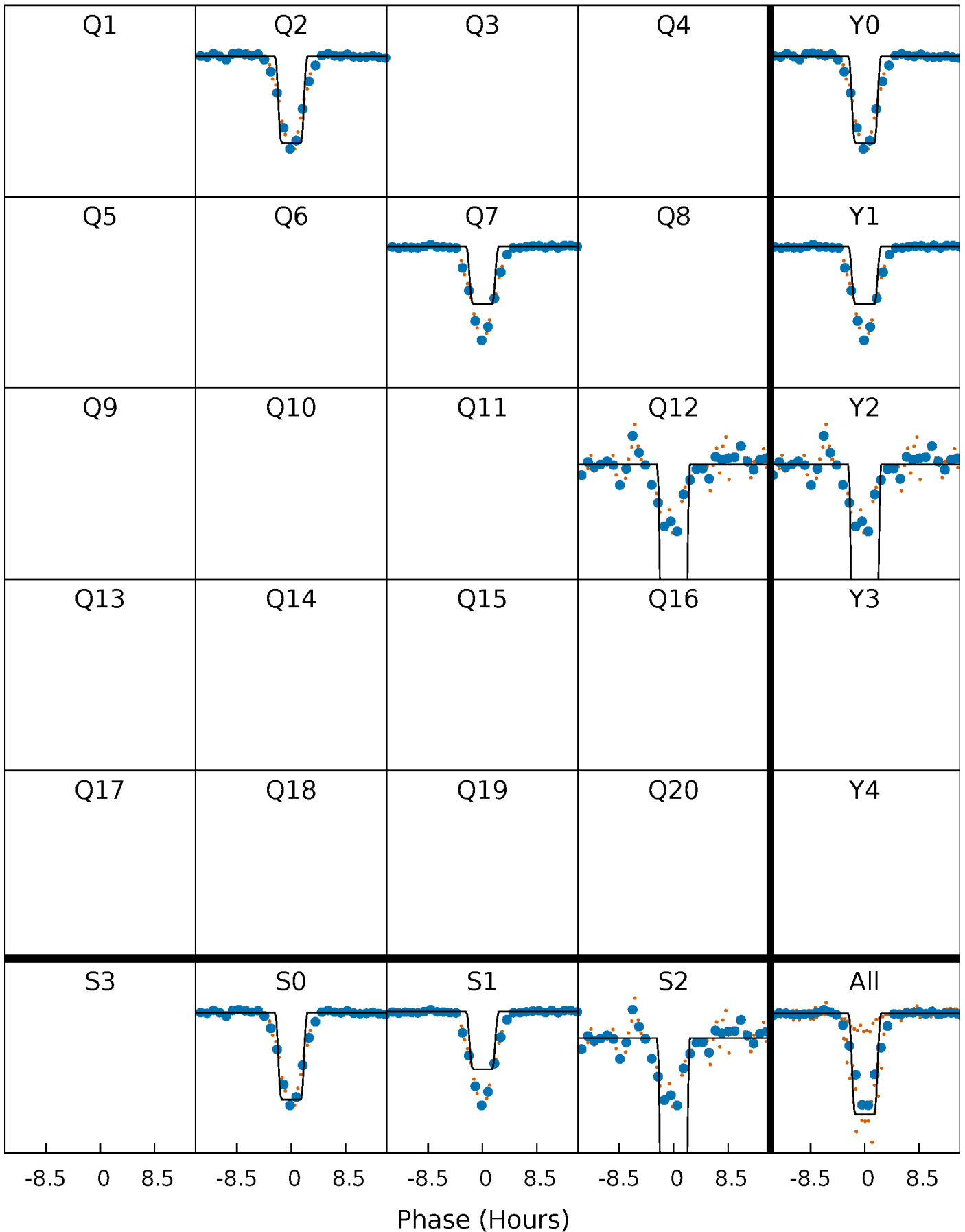
DV Quarter-Phased Transit Curves

TCE 006421937-02 P=479.224484 Days $T_0=218.434441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

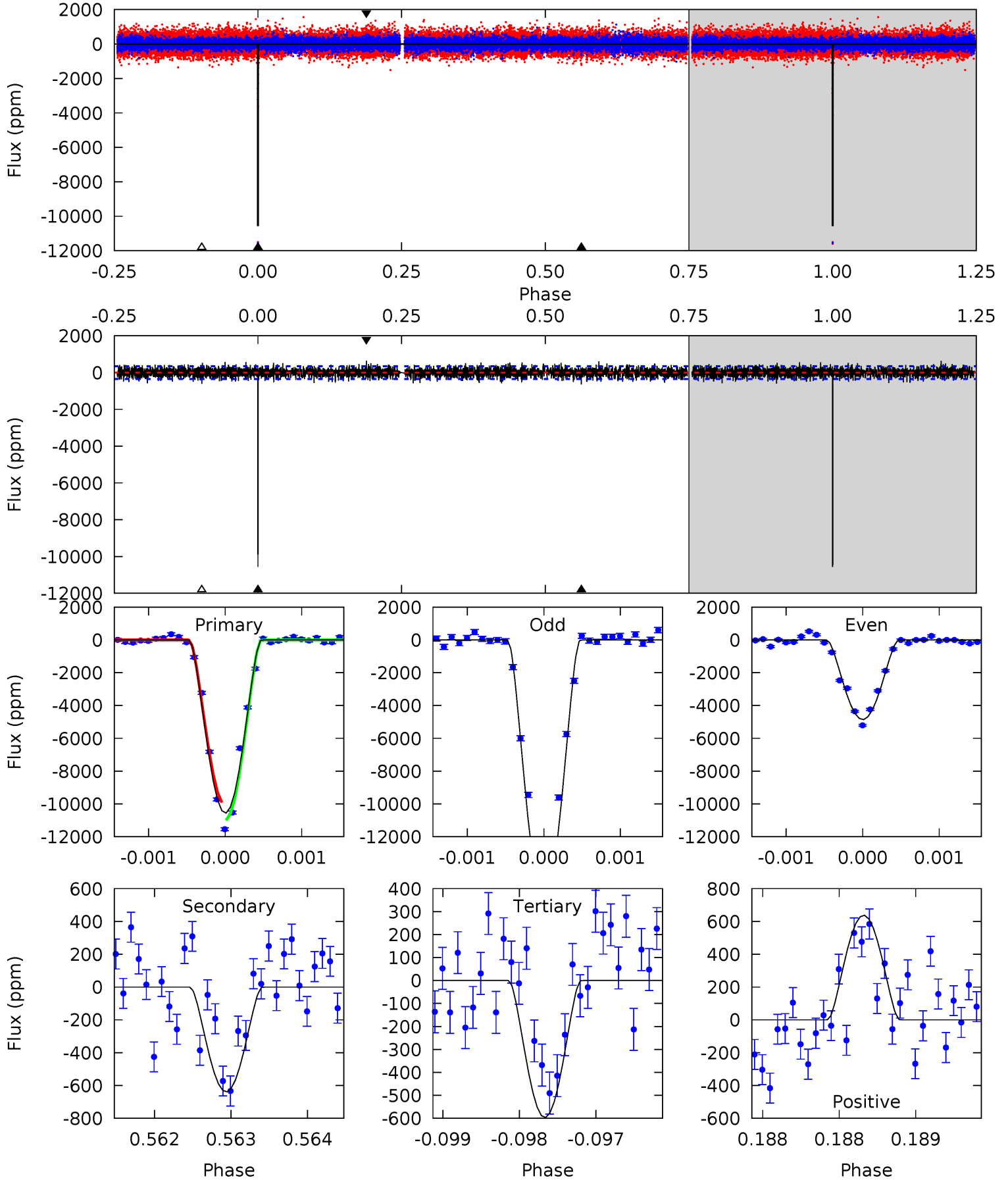
TCE 006421937-02 P=479.221472 Days $T_0=218.436611$ (BKJD)



DV Model-Shift Uniqueness Test

006421937-02, P = 479.224484 Days, E = 218.434441 Days

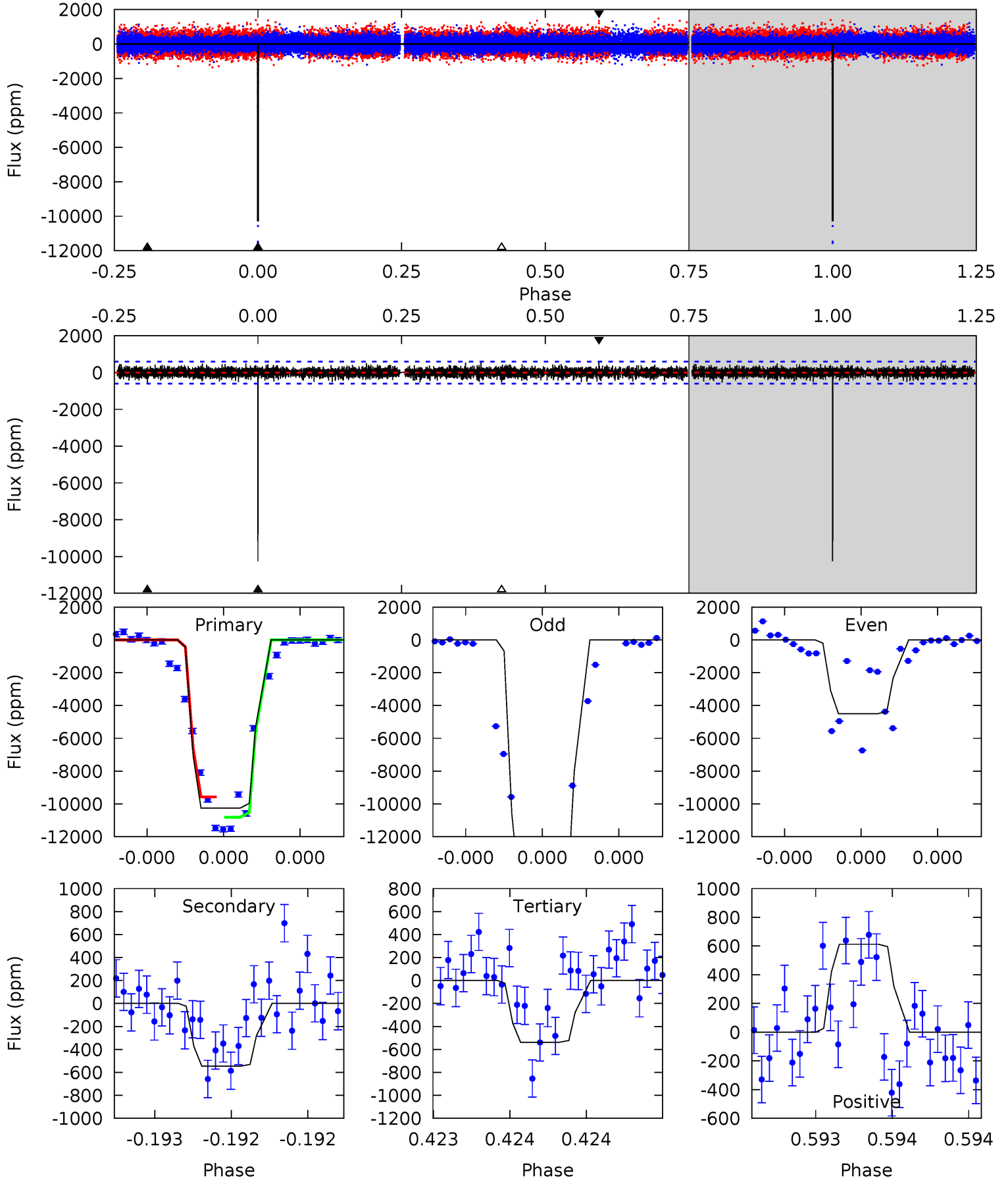
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
167.8	10.1	9.48	10.1	5.50	3.36	2.58	158.4	157.7	0.67	0.01	112.8	0.90	0.06	0



Alt Model-Shift Uniqueness Test

006421937-02, P = 479.221472 Days, E = 218.436611 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.9	5.11	5.03	5.73	5.60	3.53	1.31	90.9	90.2	0.08	-0.62	74.7	0.89	0.06	0



Stellar Parameters For KIC 006421937

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5087^{+74}_{-164}	$3.183^{+0.030}_{-0.030}$	$0.000^{+0.150}_{-0.350}$	$5.899^{+0.263}_{-1.491}$	$1.935^{+0.152}_{-0.859}$	$0.013^{+0.005}_{-0.001}$
	+1%/-3%	+1%/-1%	+inf%/-inf%	+4%/-25%	+8%/-44%	+39%/-7%
Source	PHO1	AST9	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 006421937-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-639 ± 63	$118.25^{+88.60}_{-71.15}$	622^{+13}_{-20}	2647^{+785}_{-331}	57^{+303}_{-38}
Alt.	-546 ± 107	$88.87^{+69.09}_{-56.72}$	623^{+13}_{-23}	2809^{+954}_{-390}	86^{+586}_{-59}

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 $A_{\text{obs}} \gg 1.0$

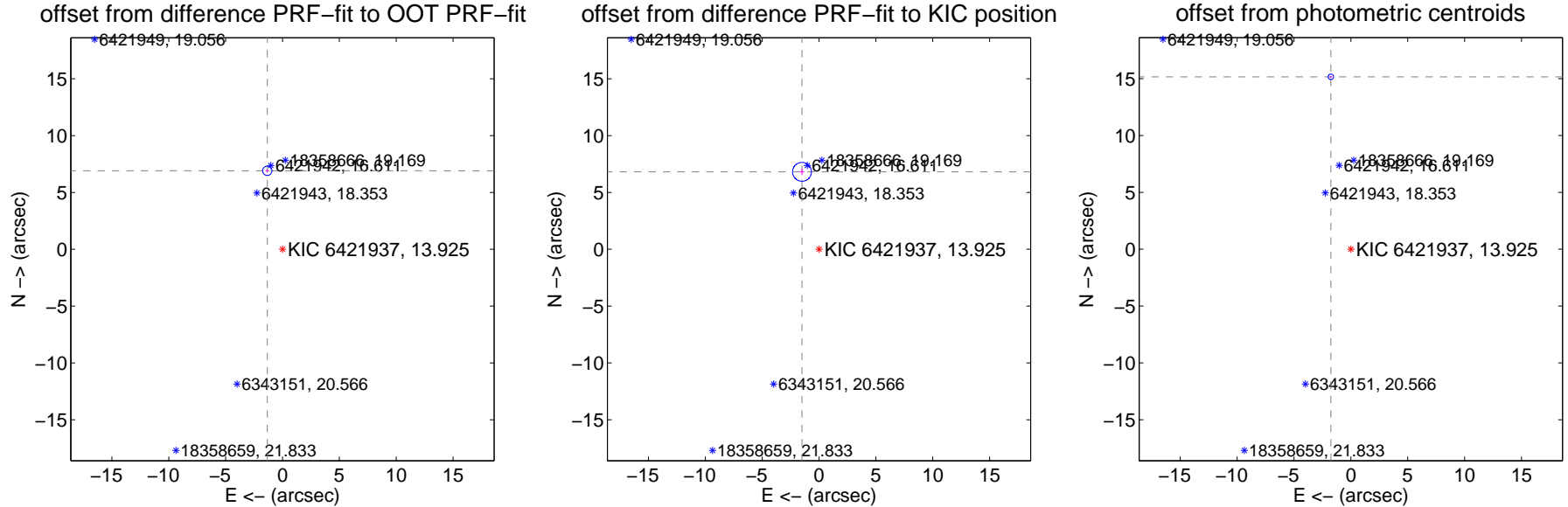
DV Centroid Data

Supplemental centroid analysis for 006421937-02. Kepler magnitude: 13.93. Transit SNR 65.43

There are 2 quarters with good PRF difference image offsets

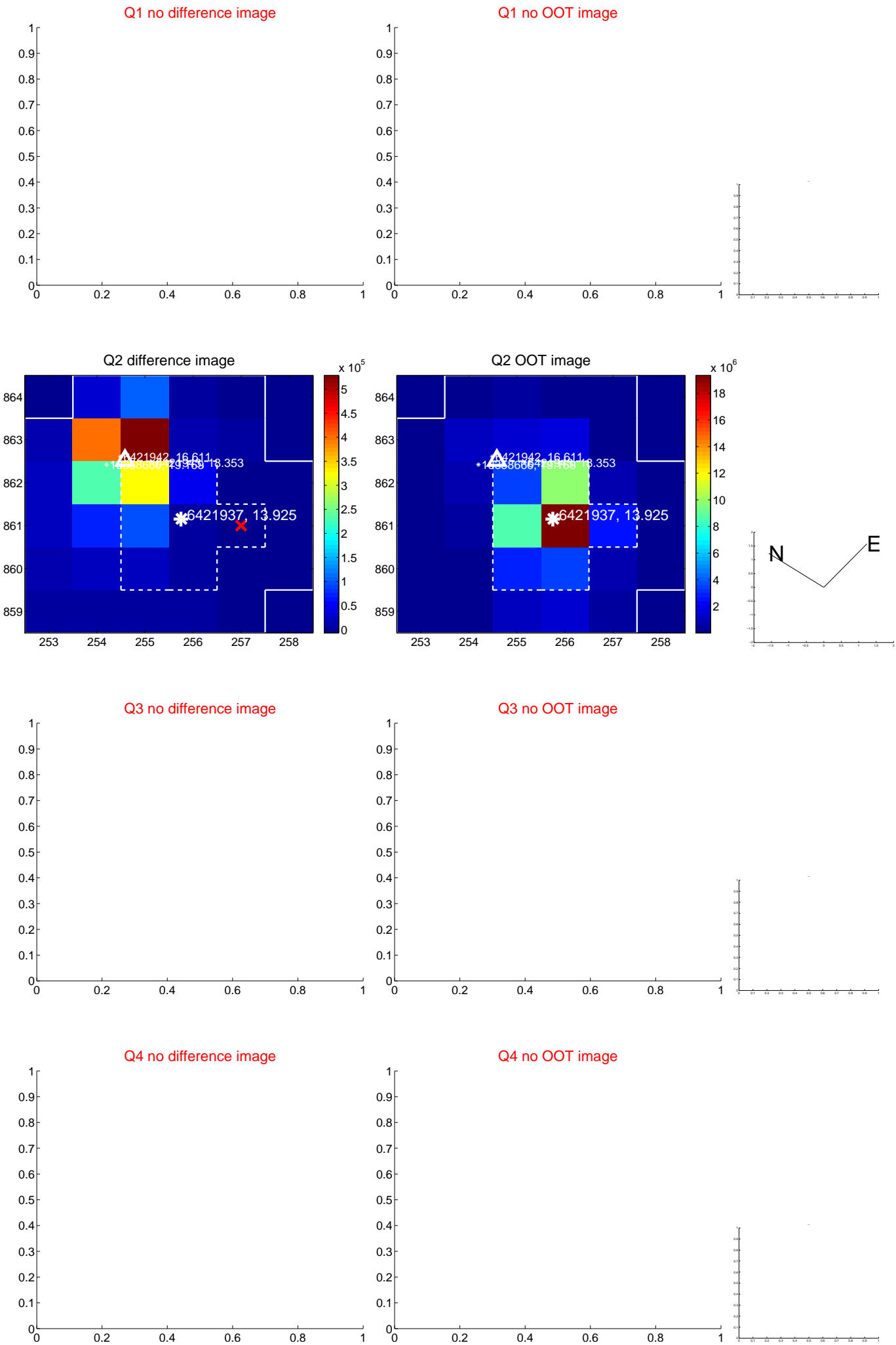
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.037 ± 0.137	51.51	1.336 ± 0.154	6.908 ± 0.116
PRF-fit source offset from KIC position	6.976 ± 0.276	25.24	1.500 ± 0.203	6.813 ± 0.280
photometric centroid source offset	15.27 ± 0.08	190.15	1.76 ± 0.07	15.17 ± 0.08

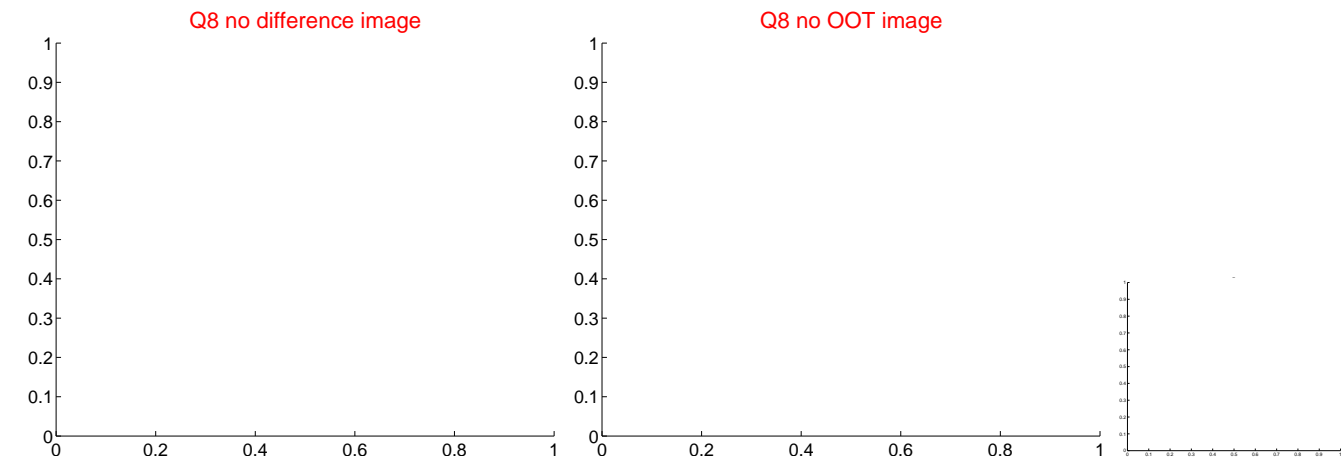
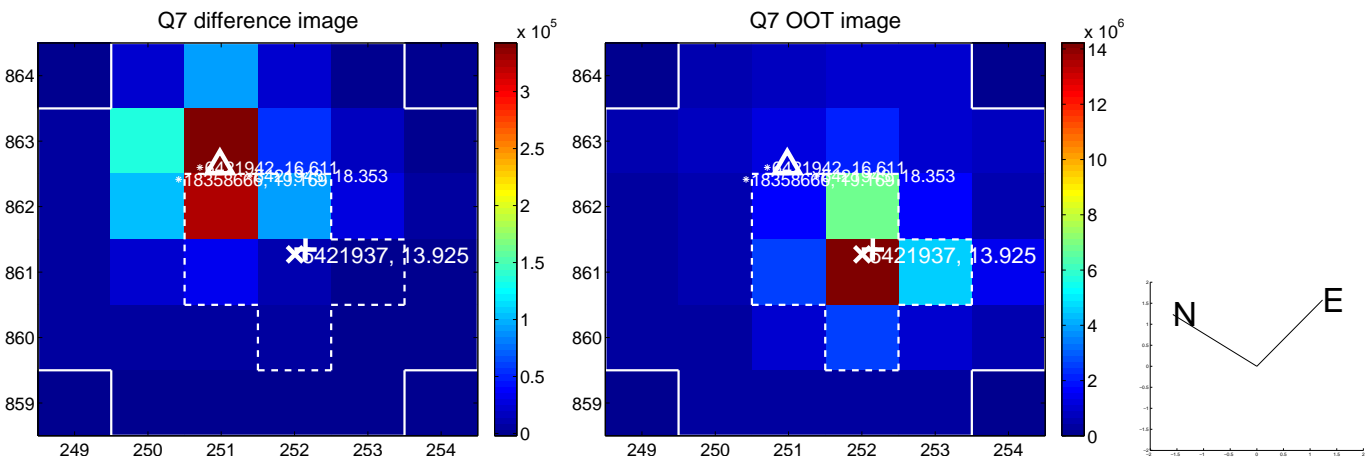


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



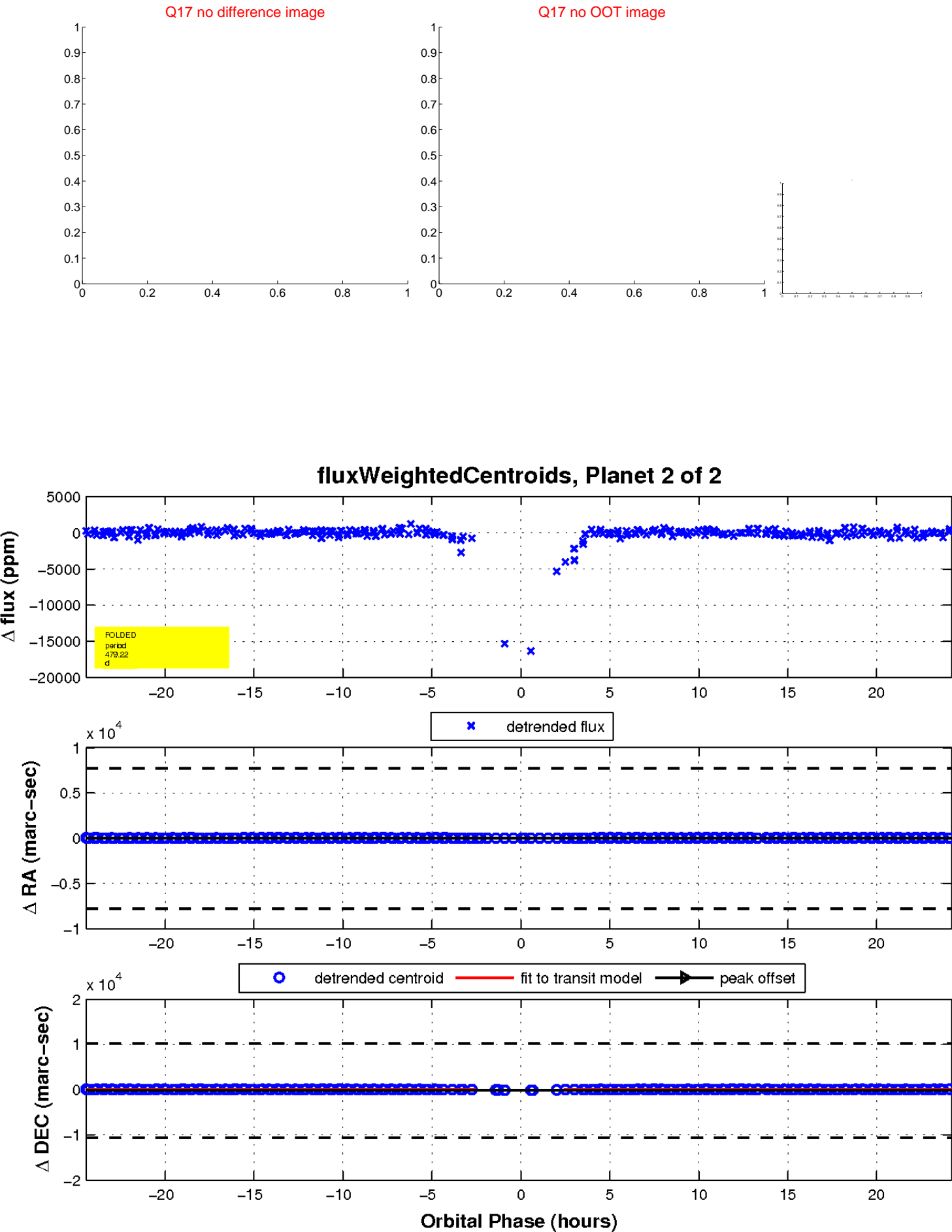
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

