

KIC 006940640

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})
006940640-01	OBS	No	370.736779	309.544351	1691.1	19.462	8.5	9.1	0.87	5289	4.28	0.57
006940640-02	OBS	No	561.392582	305.793134	1878.3	30.929	8.0	8.5	0.87	5289	7.39	0.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006940640-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
006940640-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

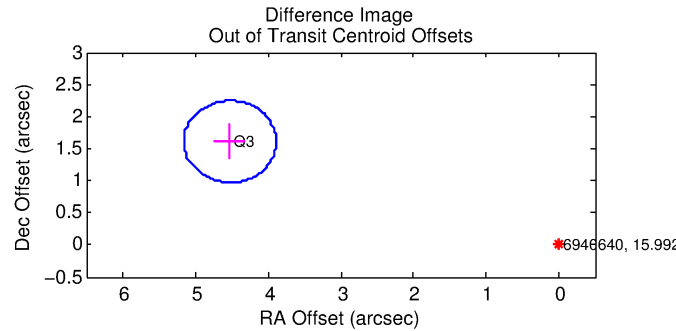
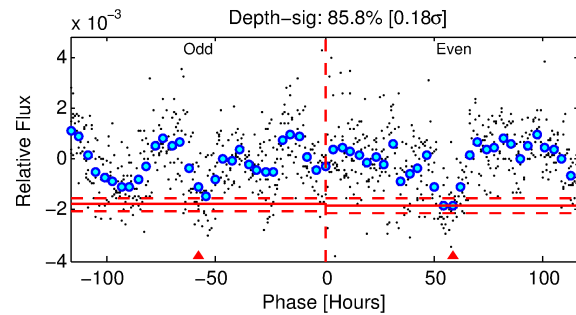
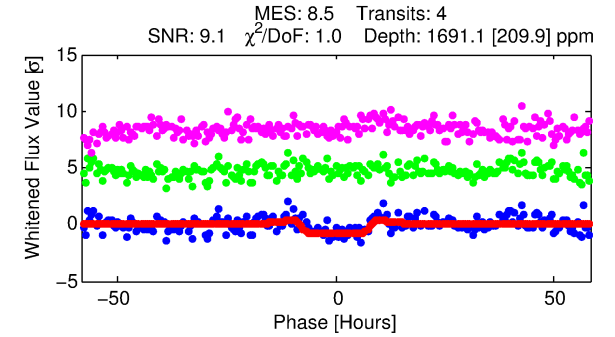
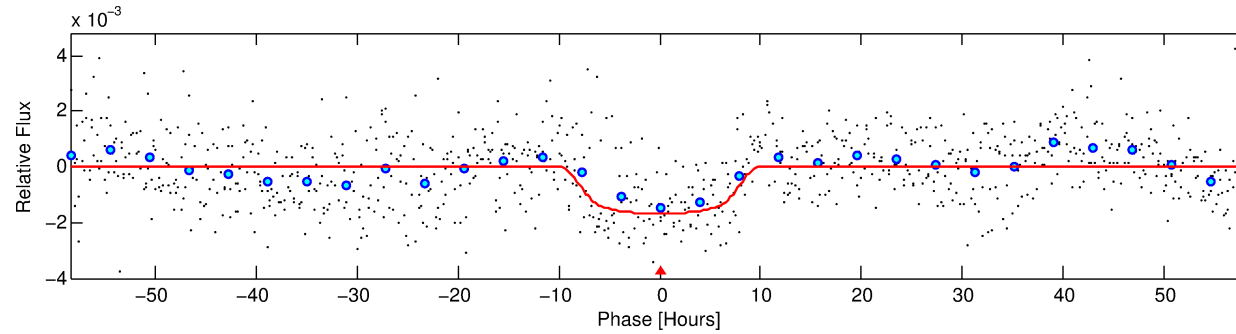
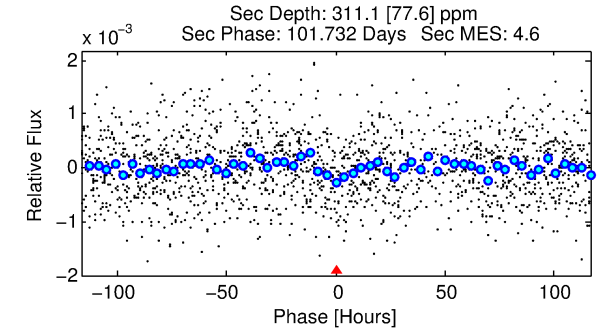
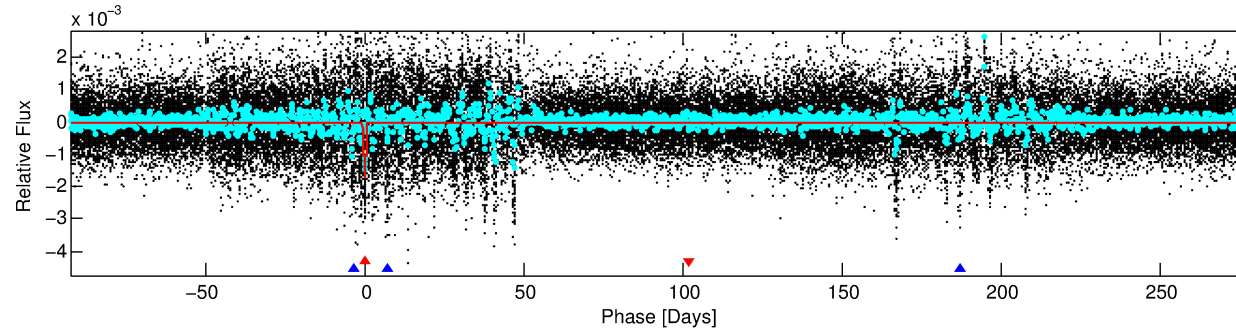
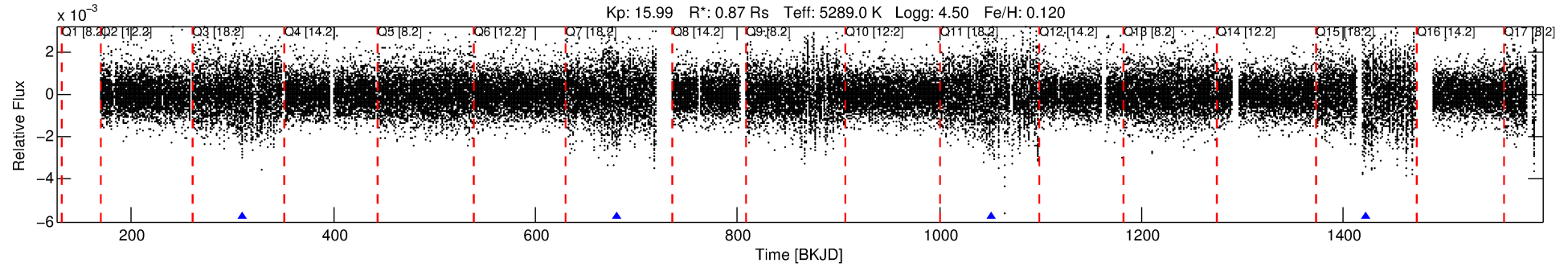
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006940640-01

No Significant Match Found

DV One-Page Summary

KIC: 6940640 Candidate: 1 of 2 Period: 370.737 d



DV Fit Results:

Period = 370.73678 [0.01511] d
Epoch = 309.5444 [0.0269] BKJD
Rp/R* = 0.0451 [0.0042]
a/R* = 79.66 [18.46]
b = 0.89 [0.06]
Seff = 0.57 [0.14]
Teq = 222 [14] K
Rp = 4.28 [0.83] Re
a = 0.9648 [0.1396] AU
Ag = 8682.25 [3266.99] [2.66σ]
Teff = 3307 [277] K [11.13σ]

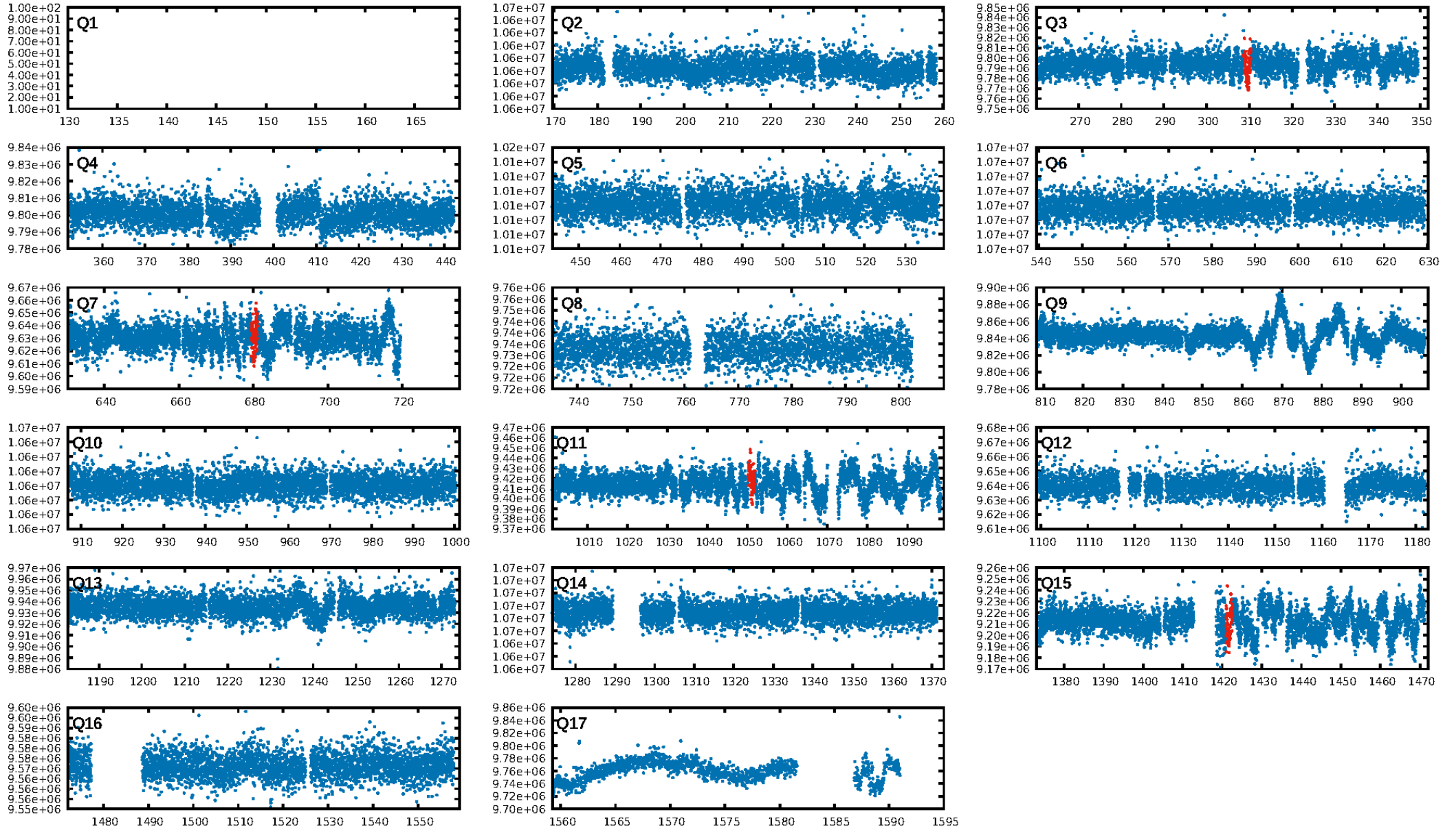
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [125.22σ]
ModelChiSquare2-sig: 32.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.27e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.535
Centroid-sig: 0.0%
Centroid-so: 4.664 arcsec [2.55σ]
OotOffset-rm: 4.801 arcsec [22.62σ]
KicOffset-rm: 4.891 arcsec [23.26σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [4/4]

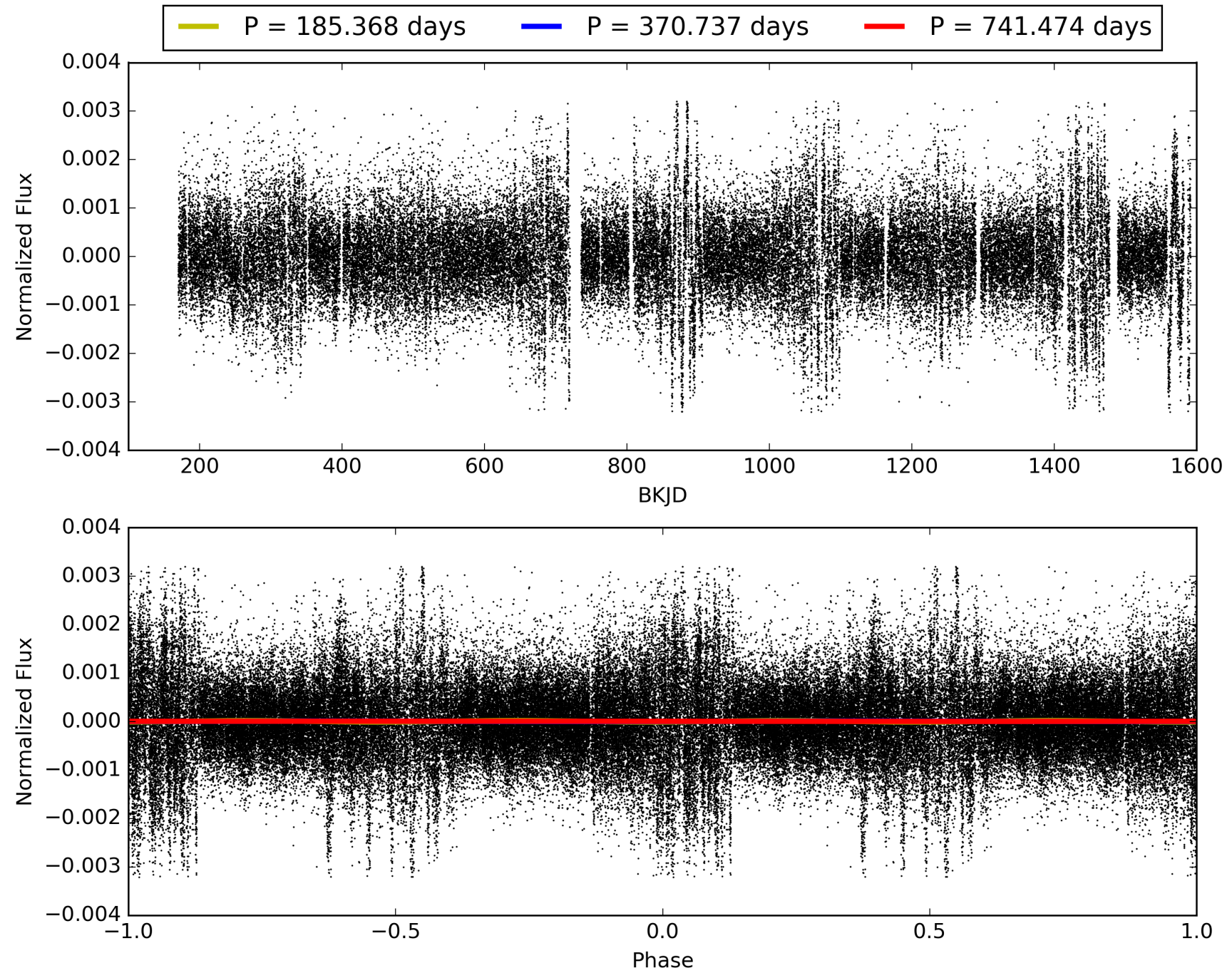
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:18:44 Z

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

TCE 006940640-01, PDC Light Curves

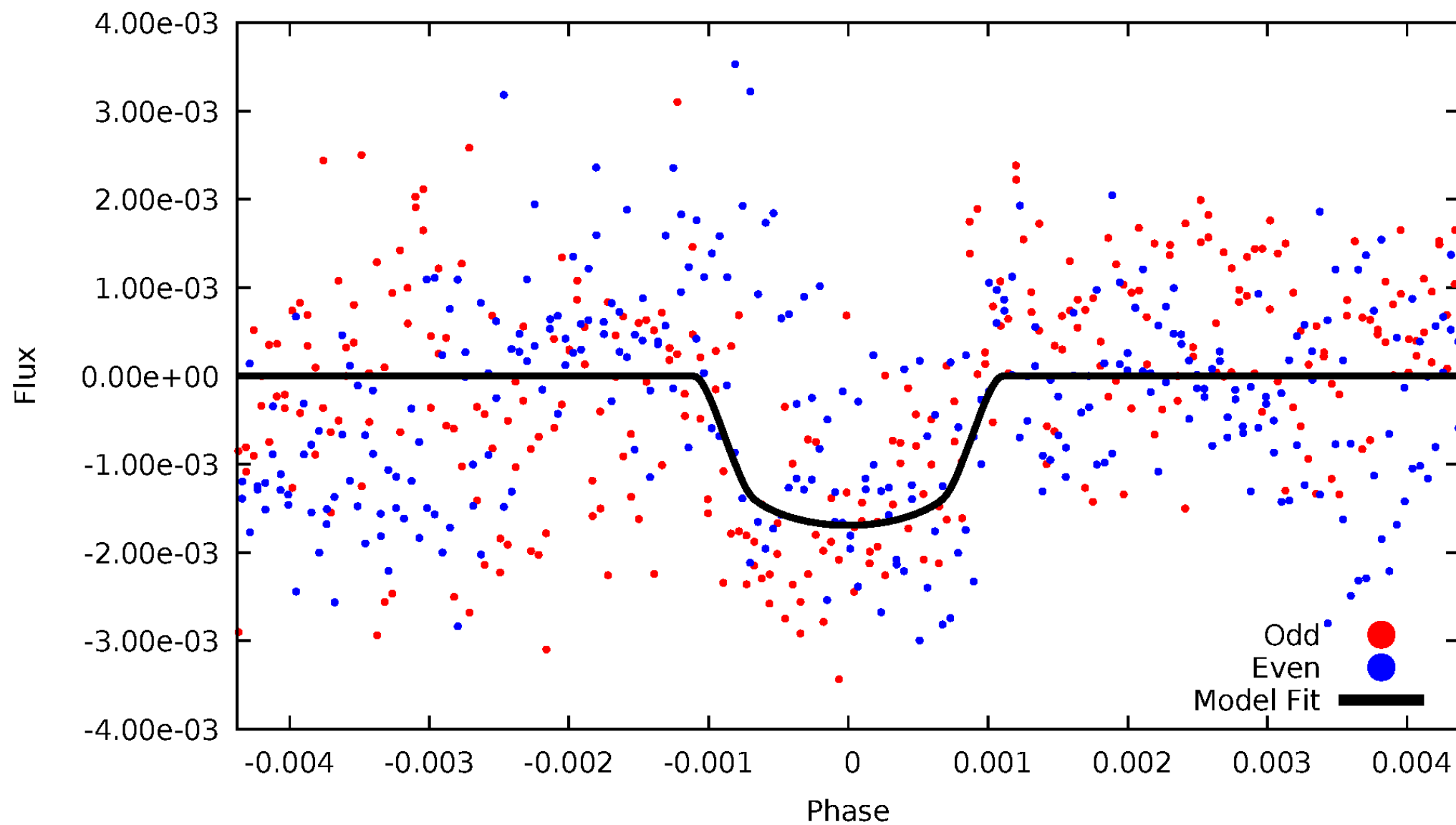


TCE 006940640-01



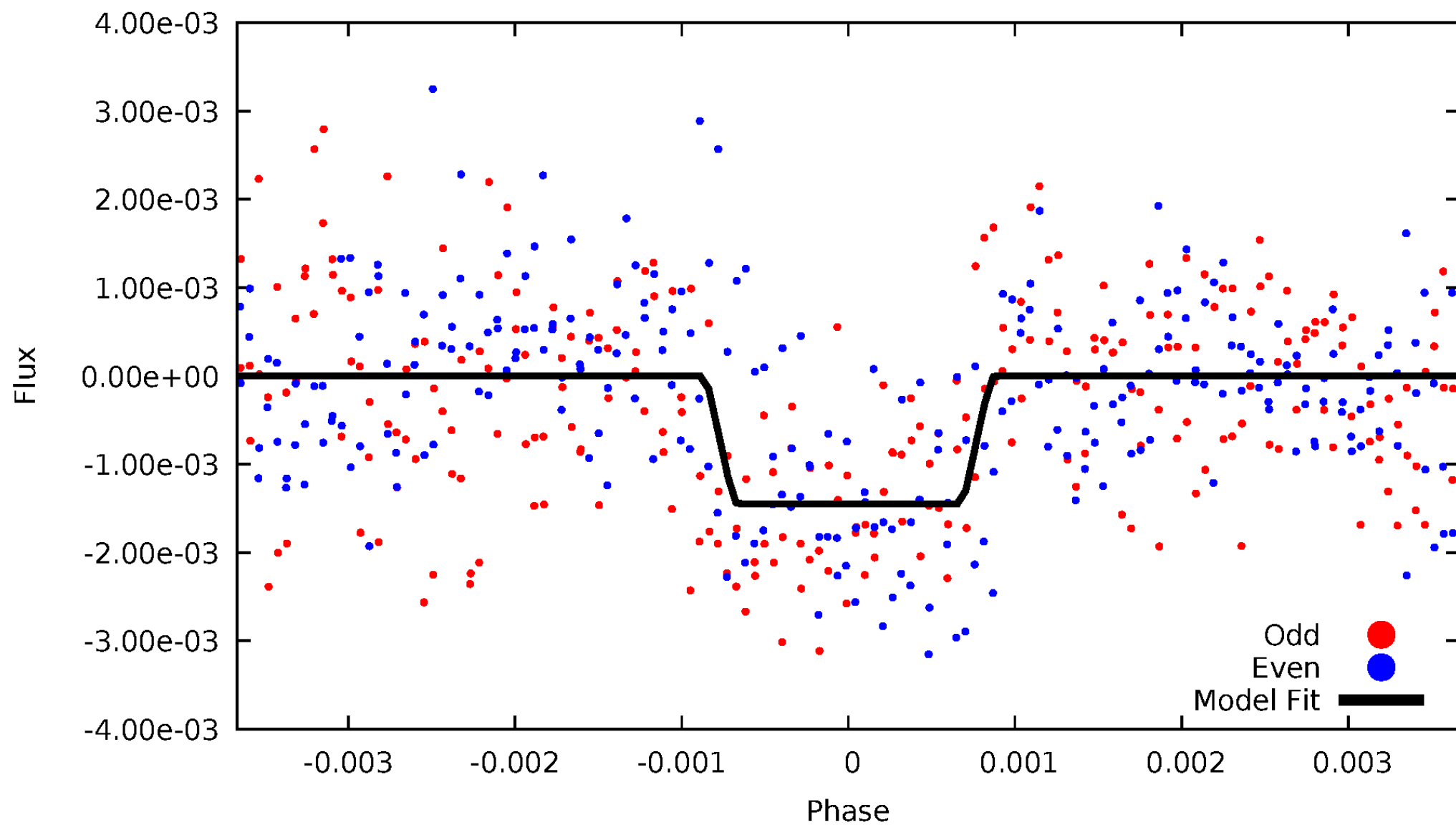
DV Odd/Even

TCE 006940640-01



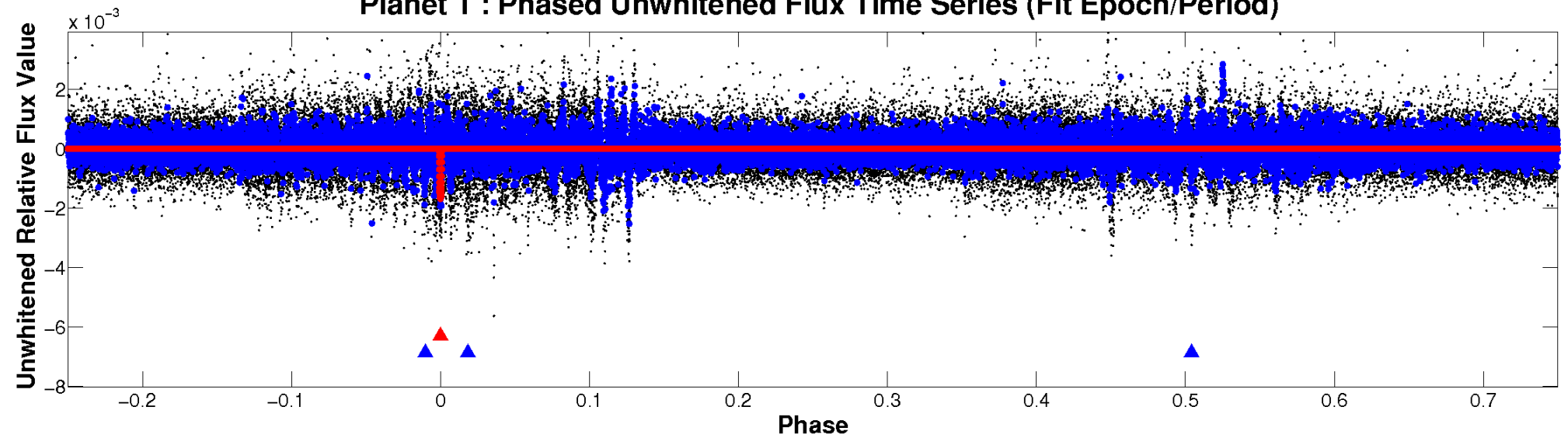
ALT Odd/Even

TCE 006940640-01

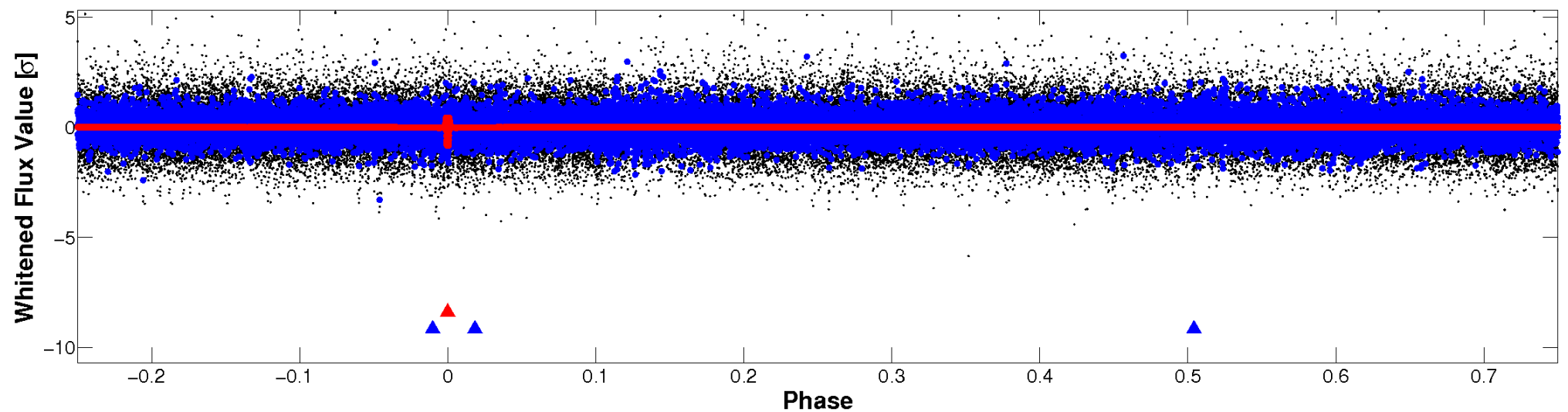


Non-Whitened Vs. Whitened Light Curve

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

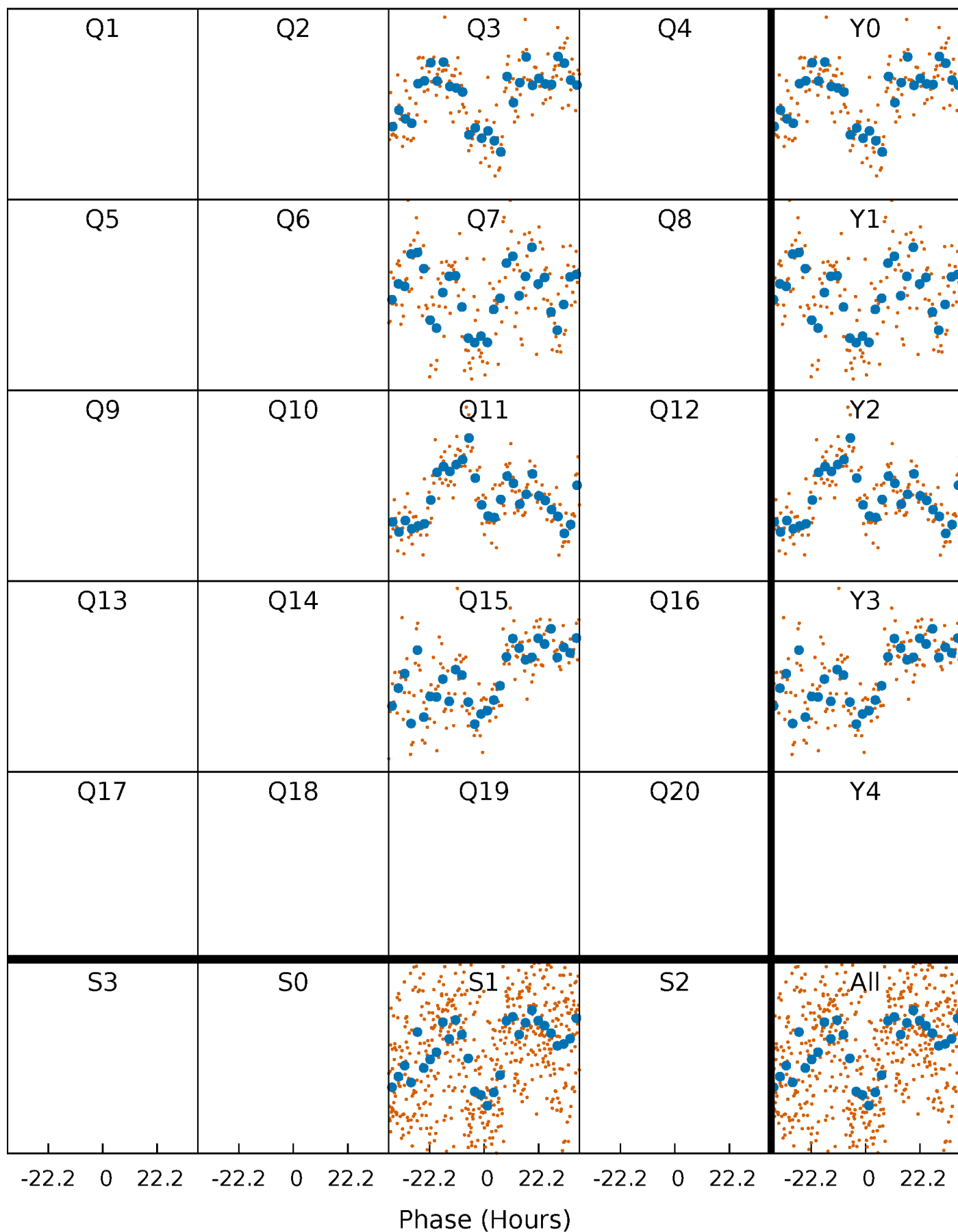


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



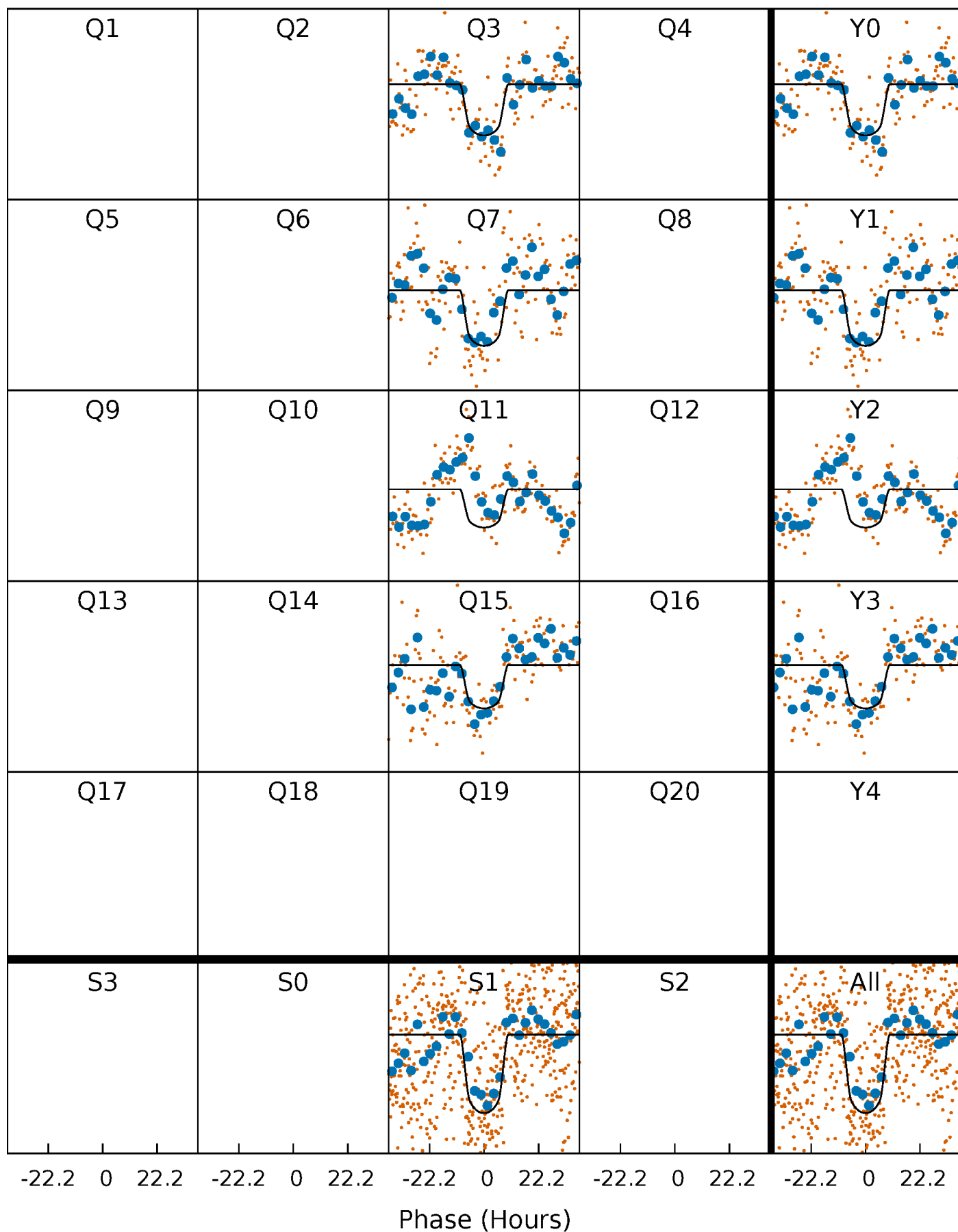
PDC Quarter-Phased Transit Curves

TCE 006940640-01 P=370.736779 Days $T_0=309.544351$ (BKJD)



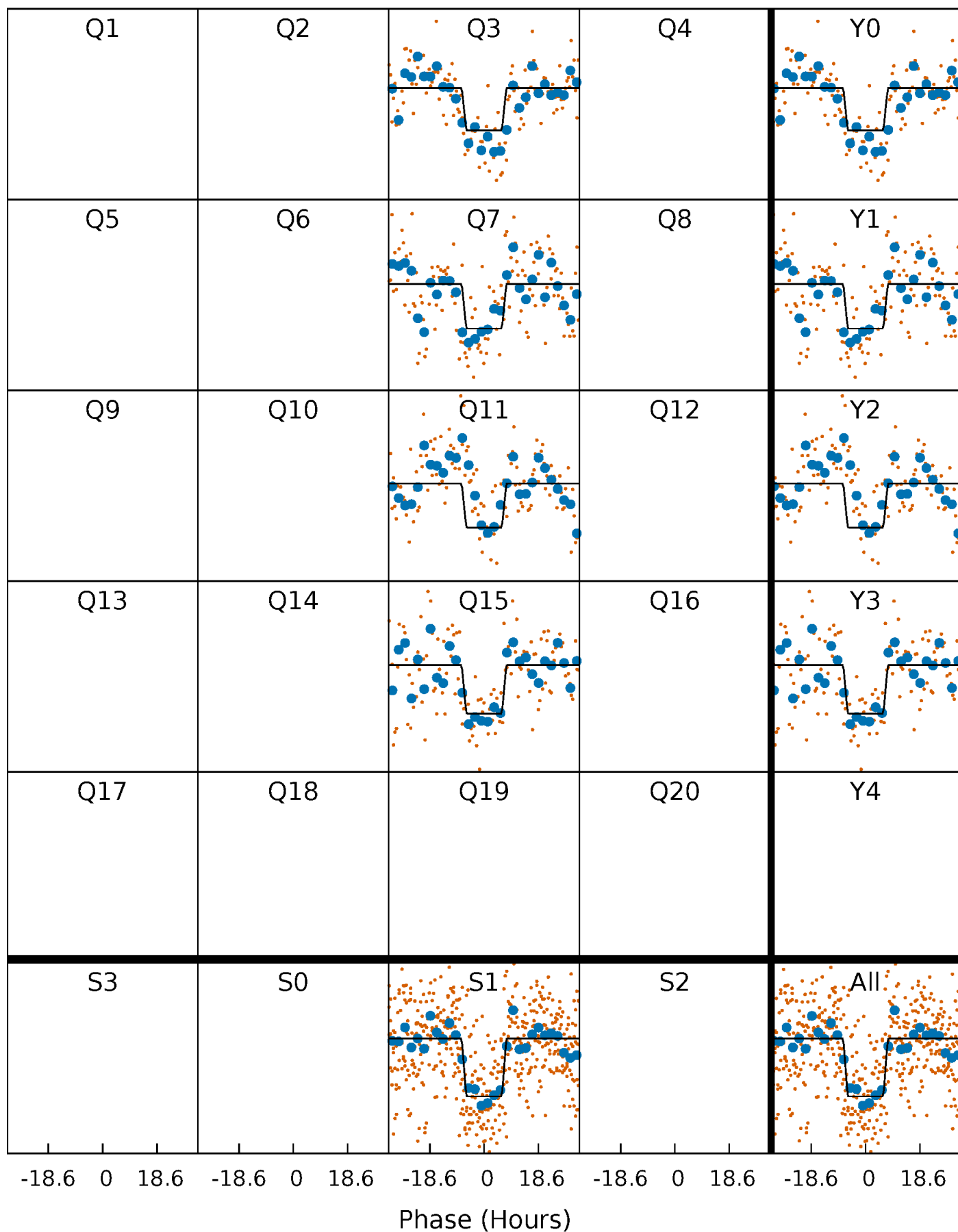
DV Quarter-Phased Transit Curves

TCE 006940640-01 P=370.736779 Days $T_0=309.544351$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

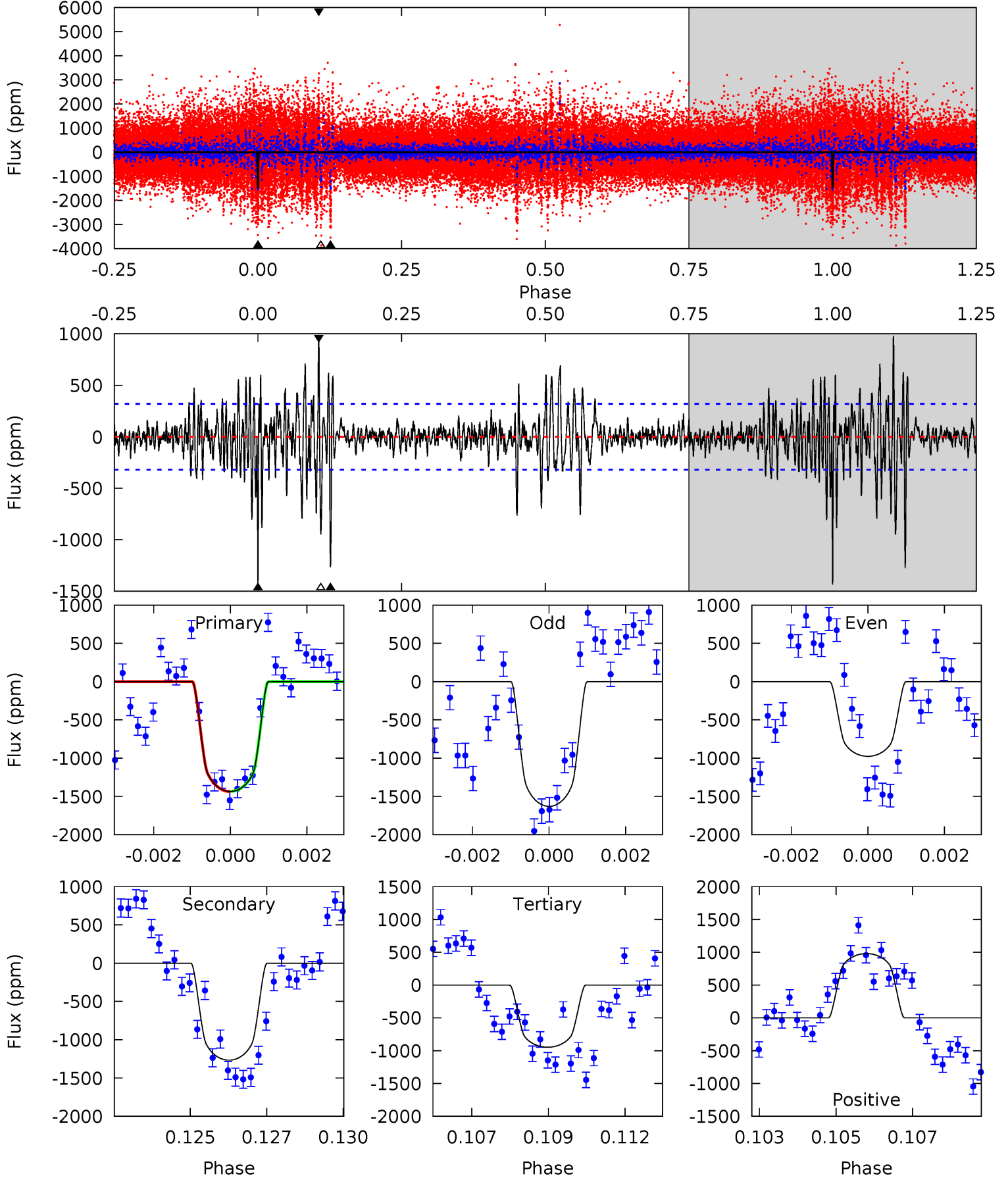
TCE 006940640-01 P=370.746513 Days $T_0=309.554420$ (BKJD)



DV Model-Shift Uniqueness Test

006940640-01, P = 370.736779 Days, E = 309.544351 Days

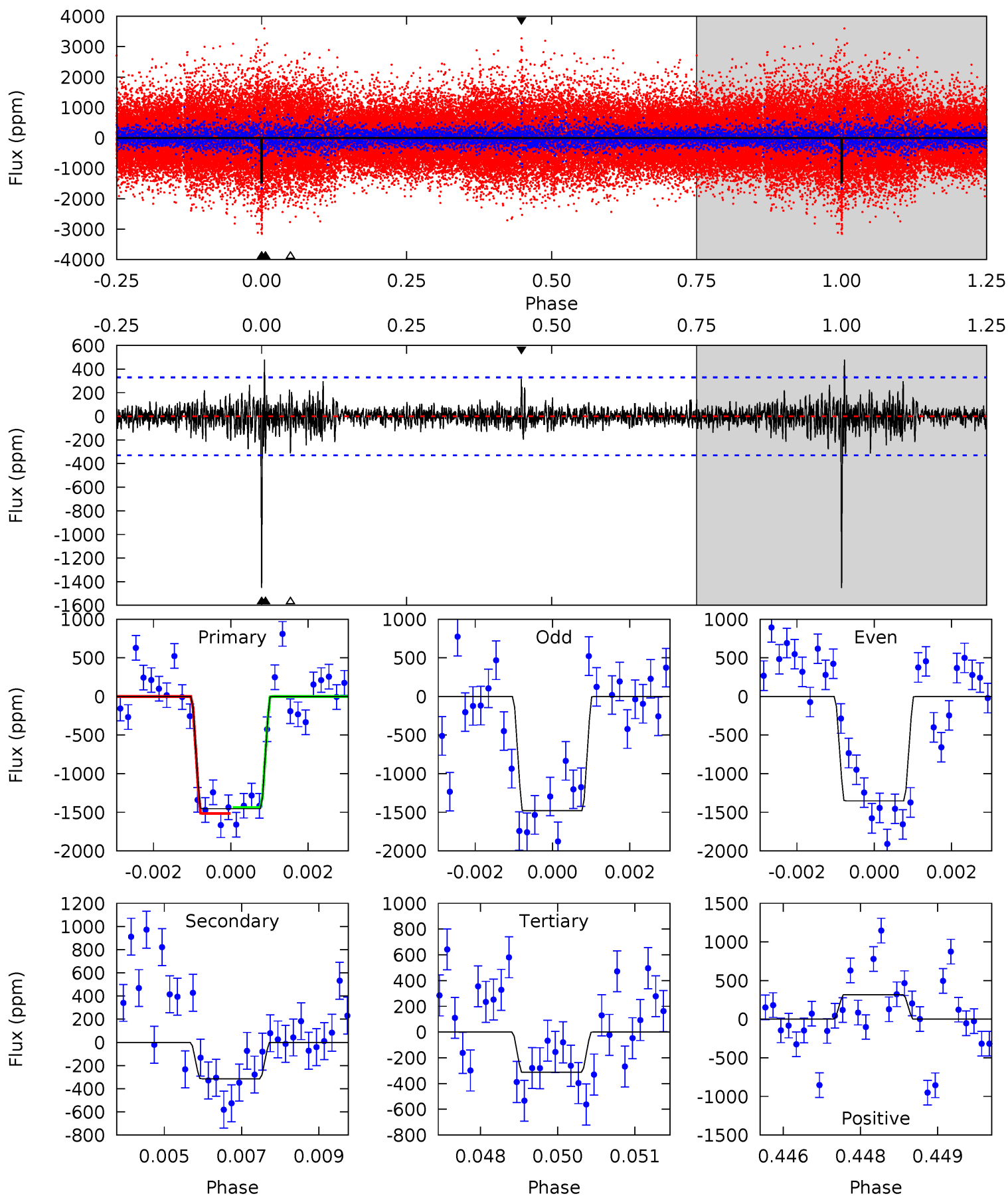
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.8	21.0	15.7	16.2	5.31	3.06	3.05	8.08	7.57	5.30	4.78	5.49	0.81	0.41	0.02



Alt Model-Shift Uniqueness Test

006940640-01, P = 370.746513 Days, E = 309.554420 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	5.09	5.07	5.14	5.35	3.14	1.00	18.5	18.4	0.03	-0.04	1.05	0.96	0.25	0.64



Stellar Parameters For KIC 006940640

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5289^{+166}_{-166}	$4.499^{+0.072}_{-0.117}$	$0.120^{+0.250}_{-0.300}$	$0.870^{+0.148}_{-0.091}$	$0.872^{+0.080}_{-0.073}$	$1.865^{+0.576}_{-0.662}$
	+3%/-3%	+2%/-3%	+208%/-250%	+17%/-10%	+9%/-8%	+31%/-36%
Source	PHO1	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 006940640-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1267 ± 60	$4.38^{+0.53}_{-0.46}$	313^{+15}_{-14}	4773^{+255}_{-222}	33647^{+8147}_{-6783}
Alt.	-314 ± 62	$3.69^{+0.52}_{-0.48}$	311^{+15}_{-13}	3917^{+212}_{-215}	11873^{+4521}_{-3487}

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

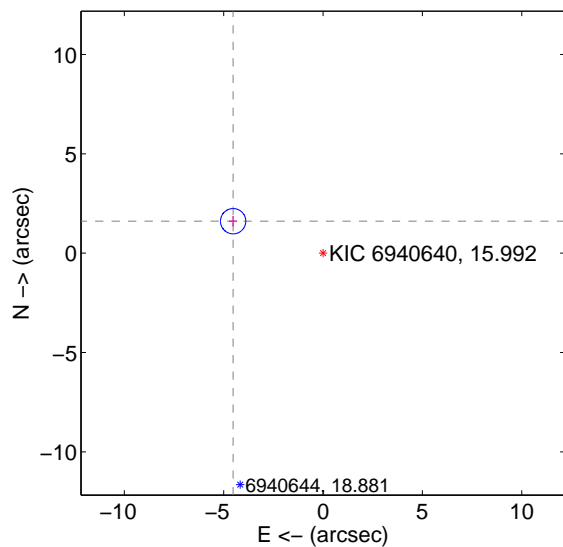
Supplemental centroid analysis for 006940640-01. Kepler magnitude: 15.99. Transit SNR 9.07

There are 0 quarters with good PRF difference image offsets

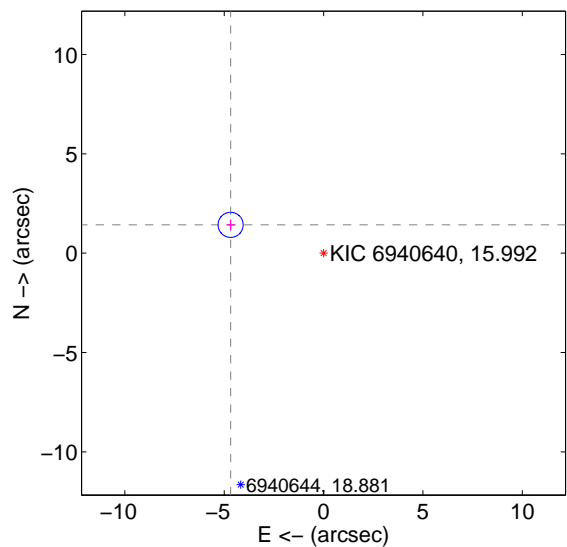
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.801 ± 0.212	22.62	4.524 ± 0.204	1.609 ± 0.268
PRF-fit source offset from KIC position	4.891 ± 0.210	23.26	4.679 ± 0.204	1.425 ± 0.268
photometric centroid source offset	4.66 ± 1.83	2.55	0.24 ± 1.57	4.66 ± 1.83

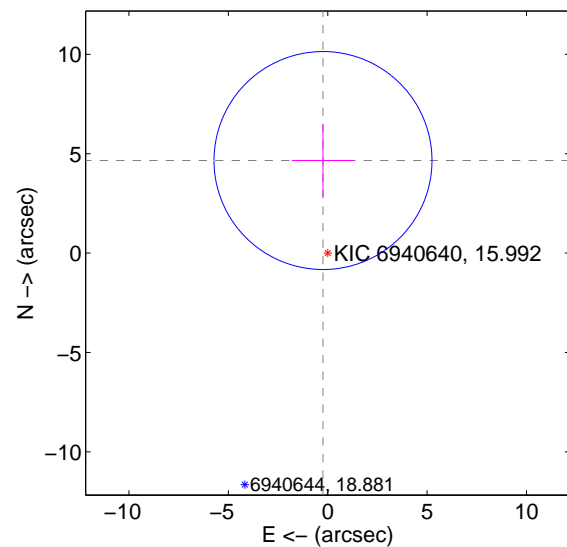
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

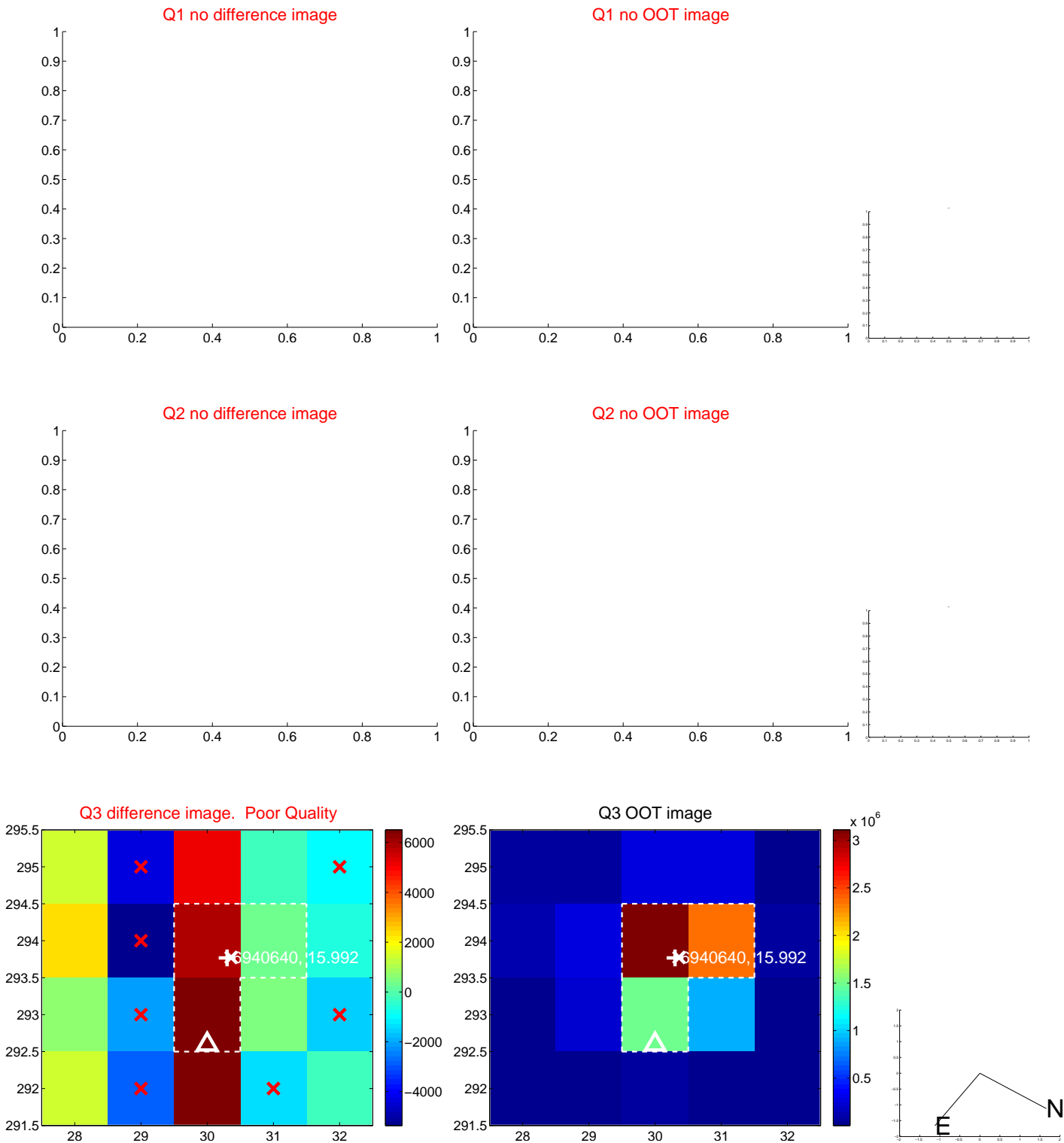


offset from photometric centroids

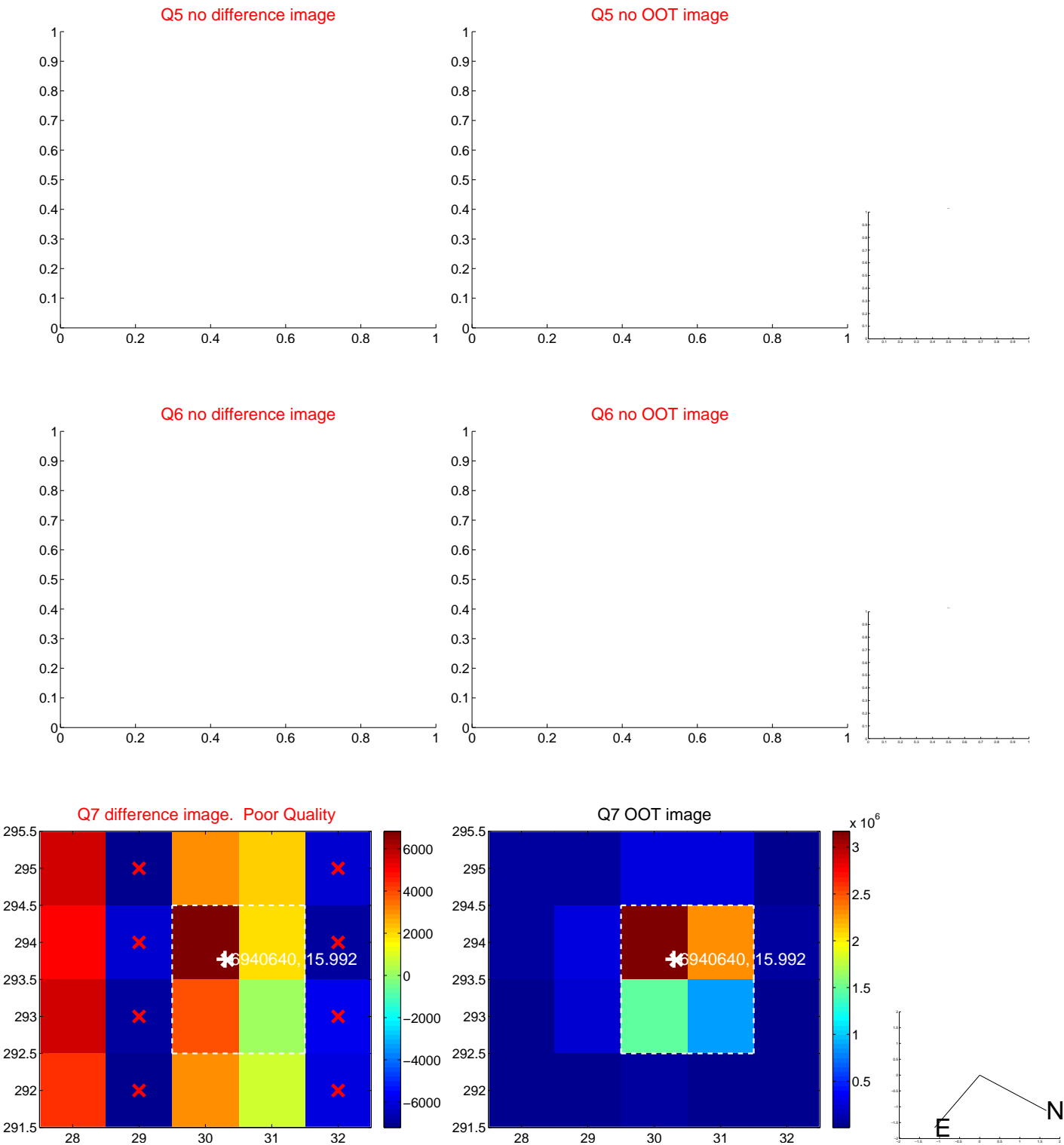


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

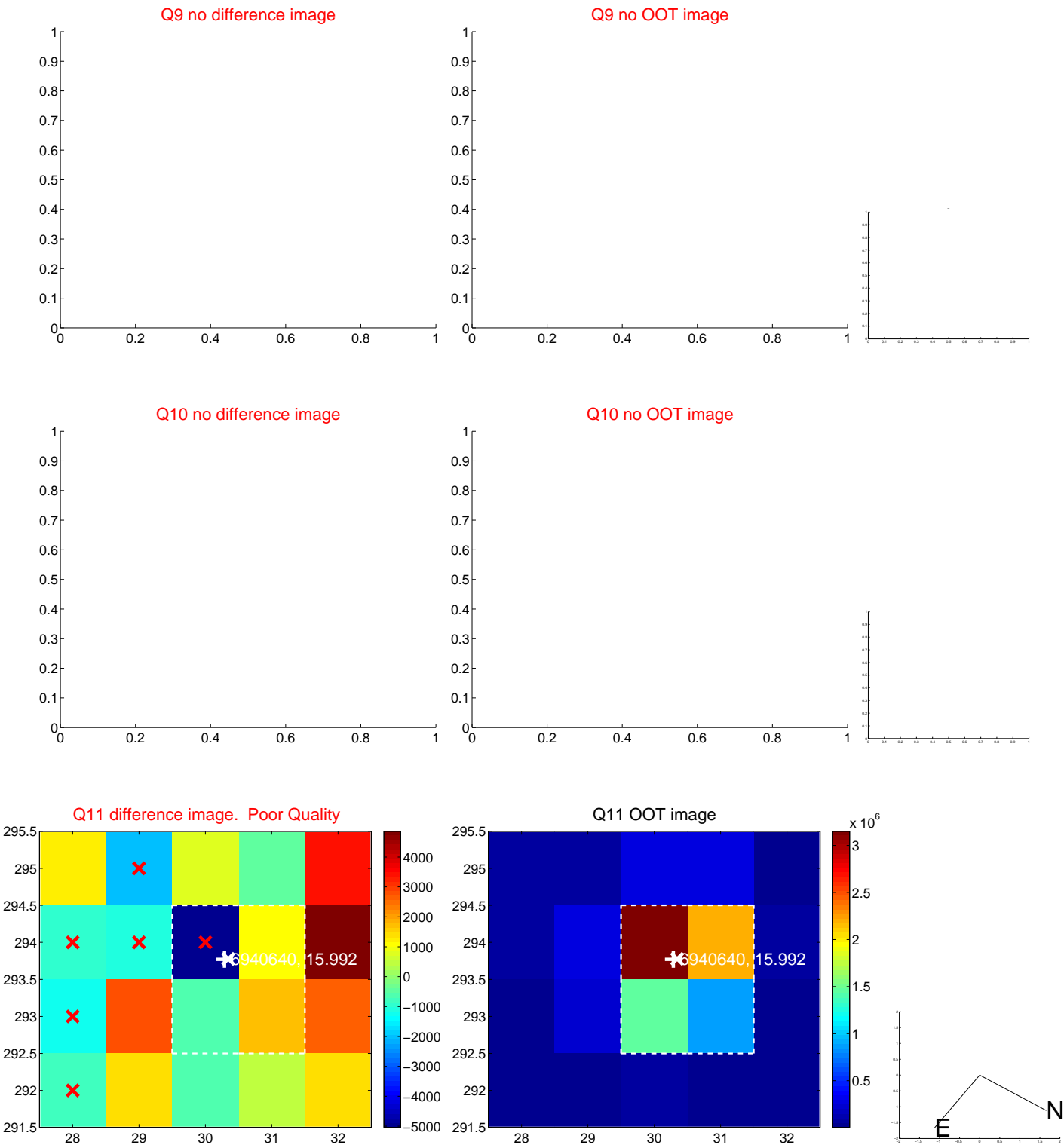
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



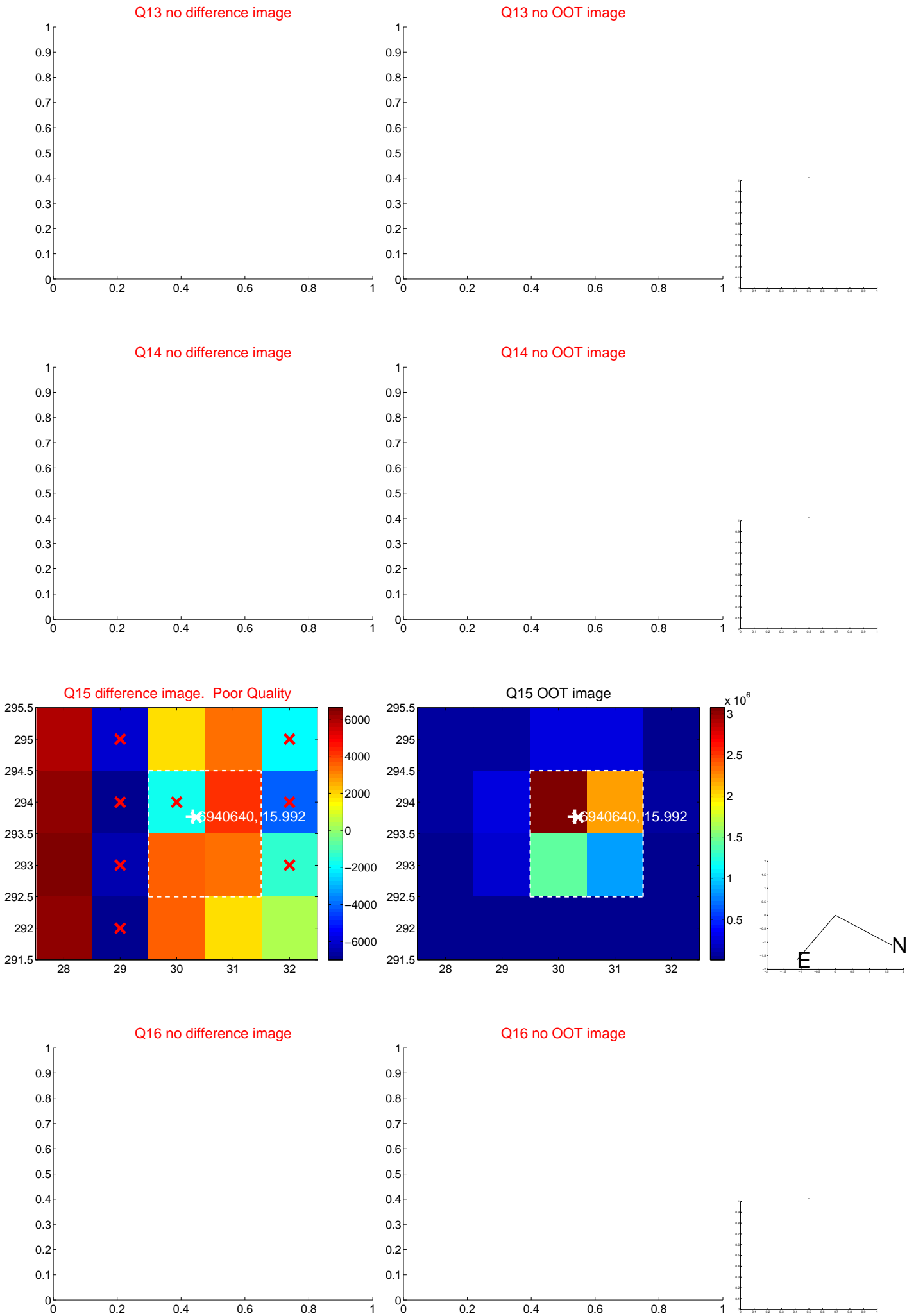
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



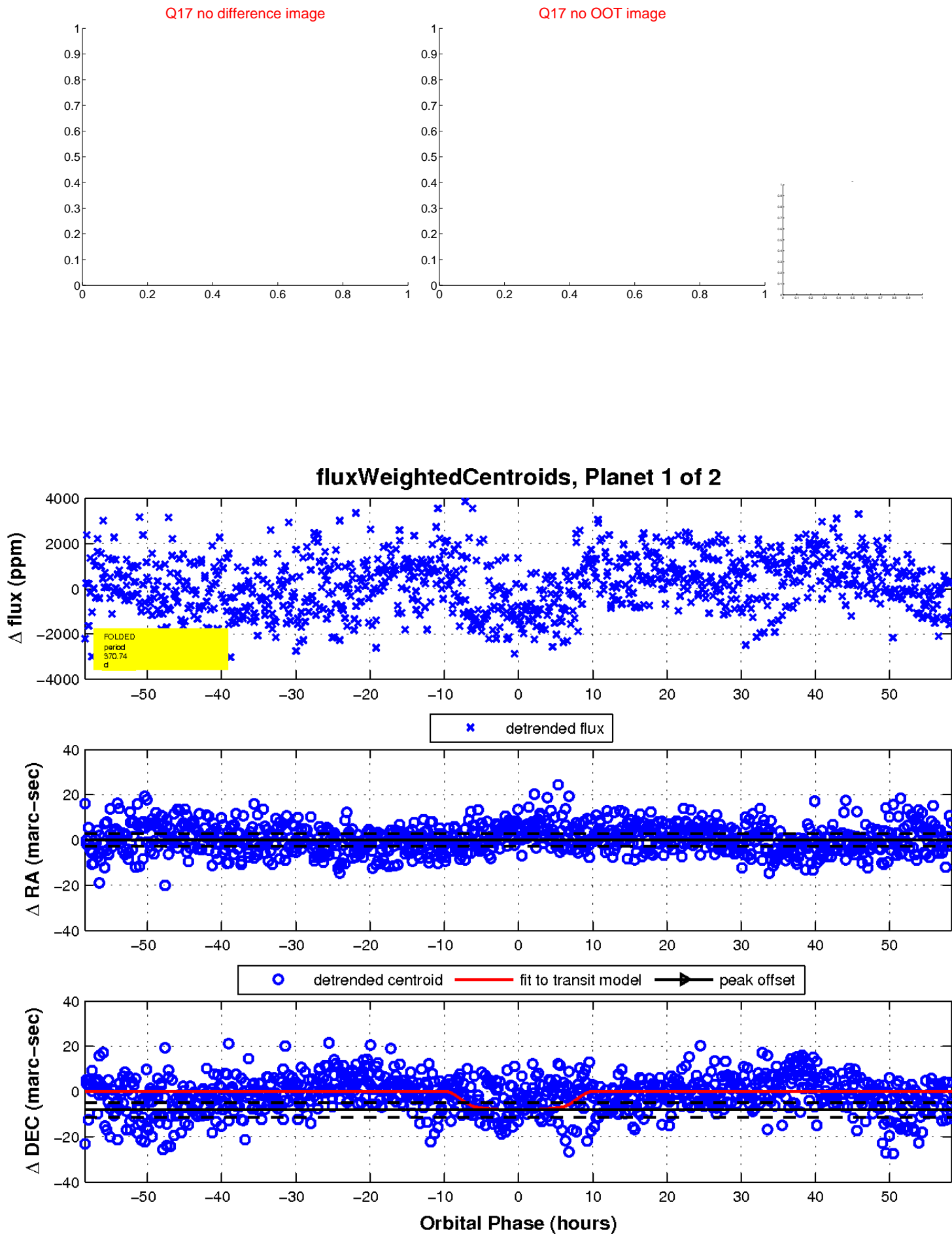
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

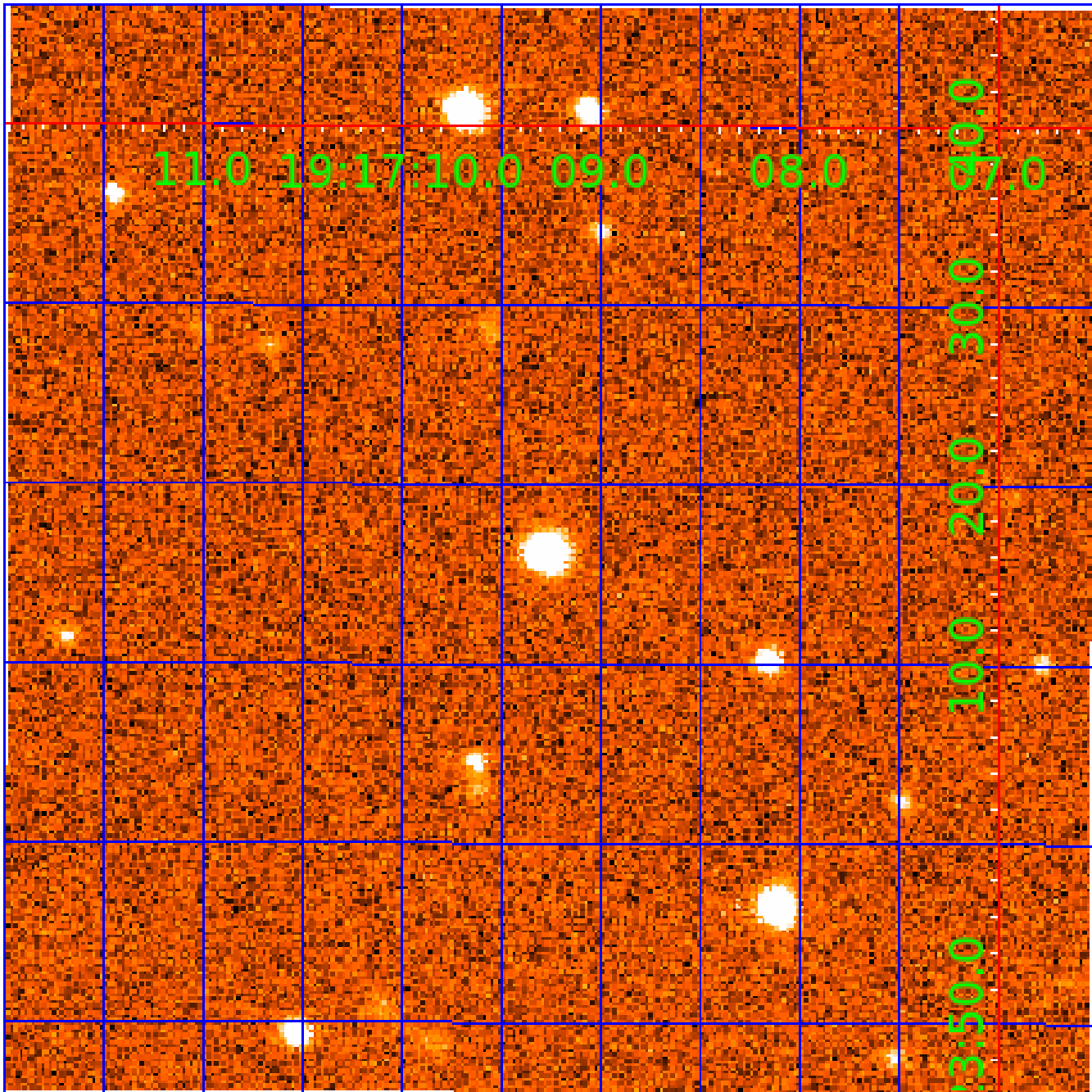


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006940640

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})
006940640-01	OBS	No	370.736779	309.544351	1691.1	19.462	8.5	9.1	0.87	5289	4.28	0.57
006940640-02	OBS	No	561.392582	305.793134	1878.3	30.929	8.0	8.5	0.87	5289	7.39	0.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006940640-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
006940640-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

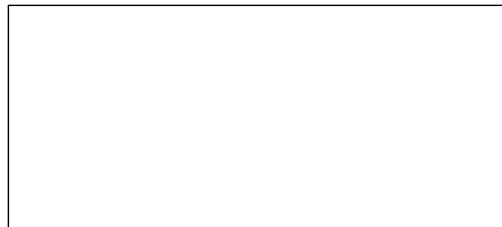
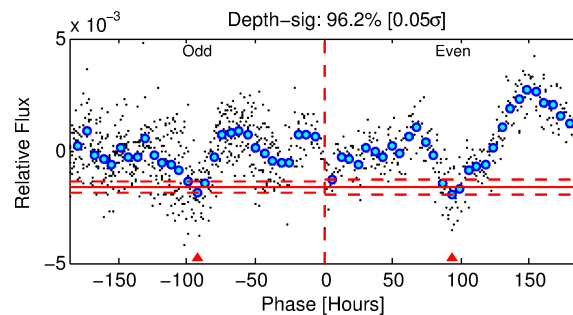
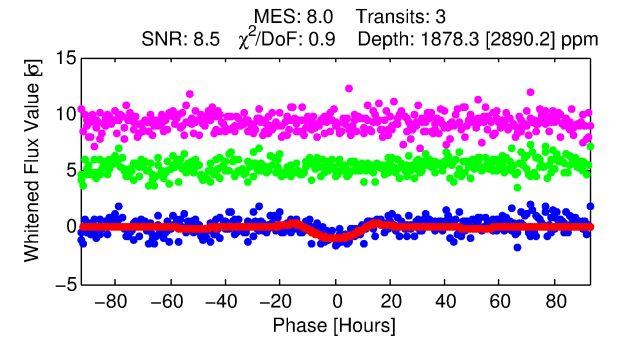
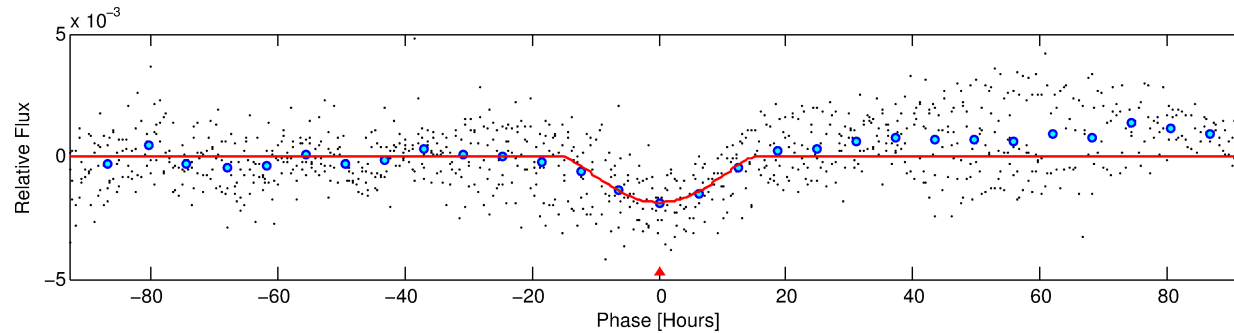
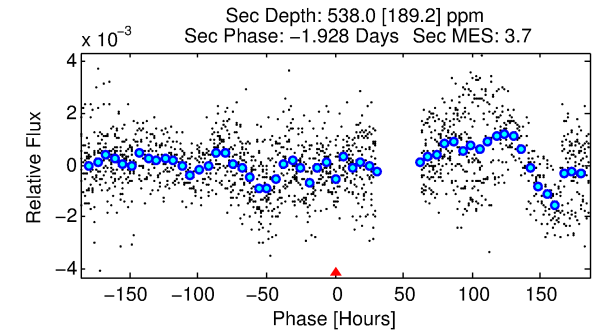
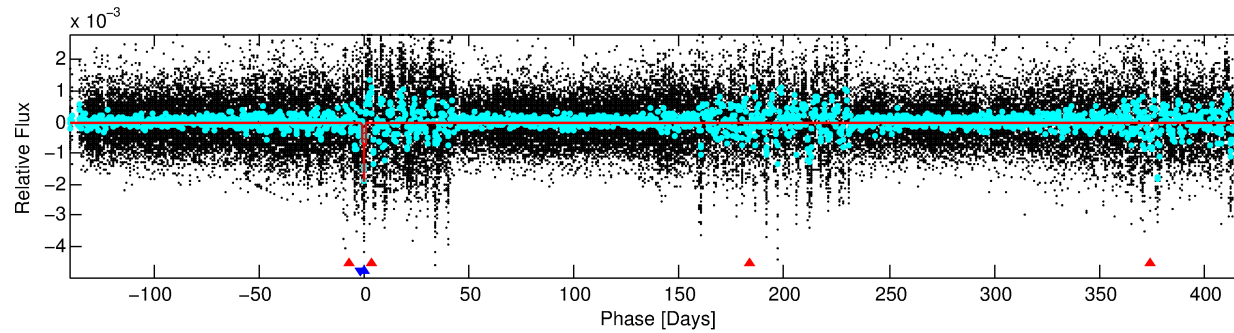
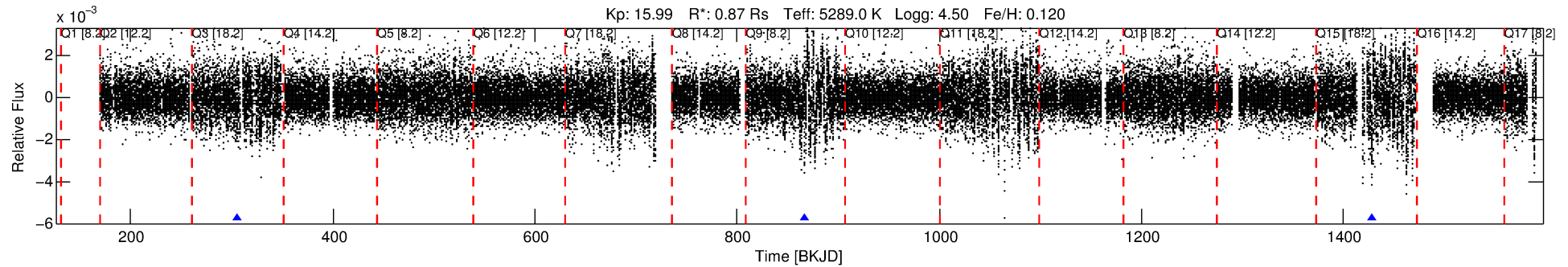
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006940640-02

No Significant Match Found

DV One-Page Summary

KIC: 6940640 Candidate: 2 of 2 Period: 561.393 d



DV Fit Results:

Period = 561.39258 [0.04507] d
Epoch = 305.7931 [0.0498] BKJD
Rp/R* = 0.0779 [0.1980]
a/R* = 55.79 [29.81]
b = 1.00 [0.20]
Seff = 0.33 [0.08]
Teq = 193 [12] K
Rp = 7.39 [18.84] Re
a = 1.2722 [0.1840] AU
Ag = 8761.39 [44679.61] [0.20σ]
Teffp = 2886 [3678] K [0.73σ]

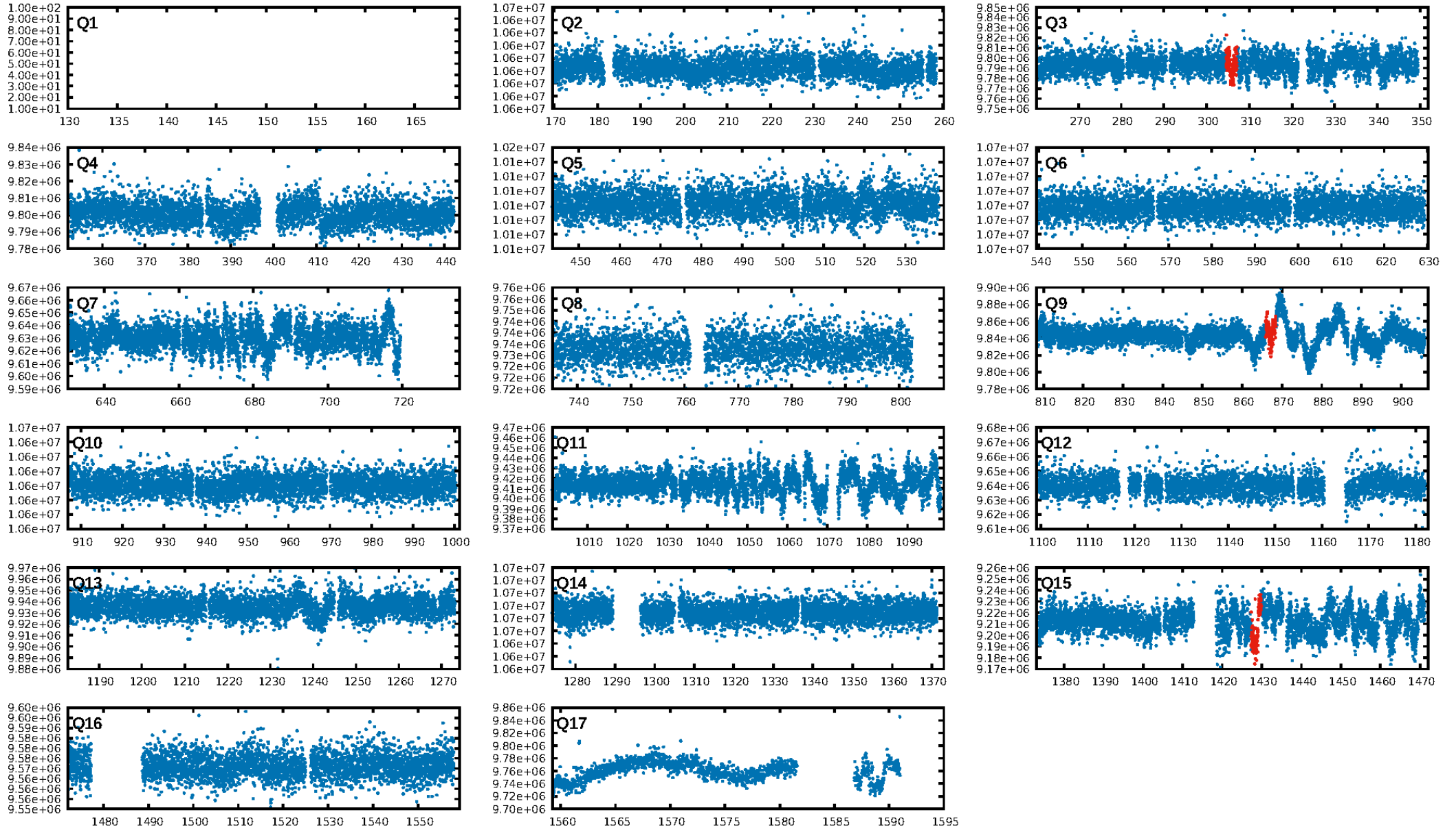
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [125.22σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 23.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.67e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.072
Centroid-sig: 33.5%
Centroid-so: 1.770 arcsec [0.88σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

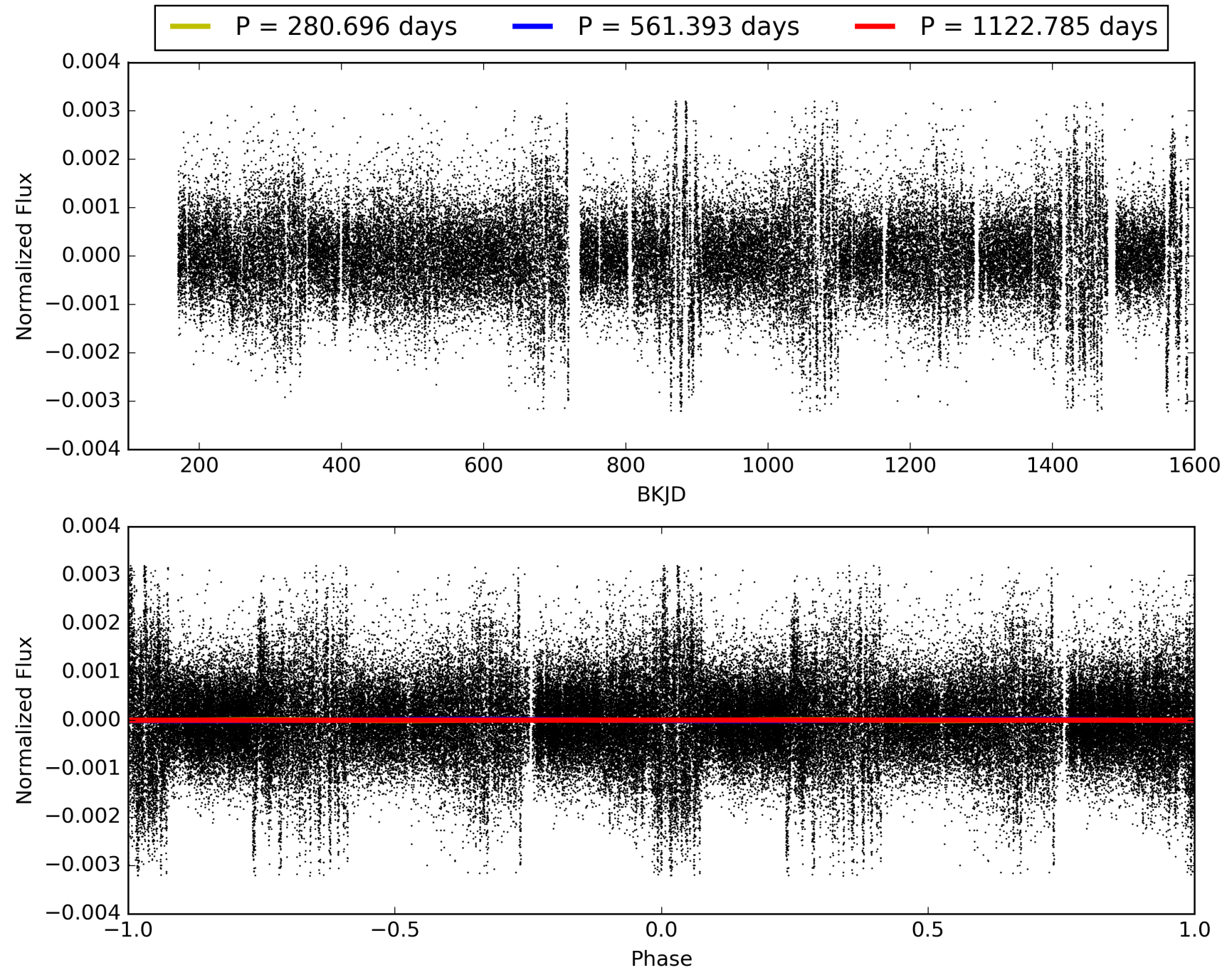
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:18:52 Z

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

TCE 006940640-02, PDC Light Curves

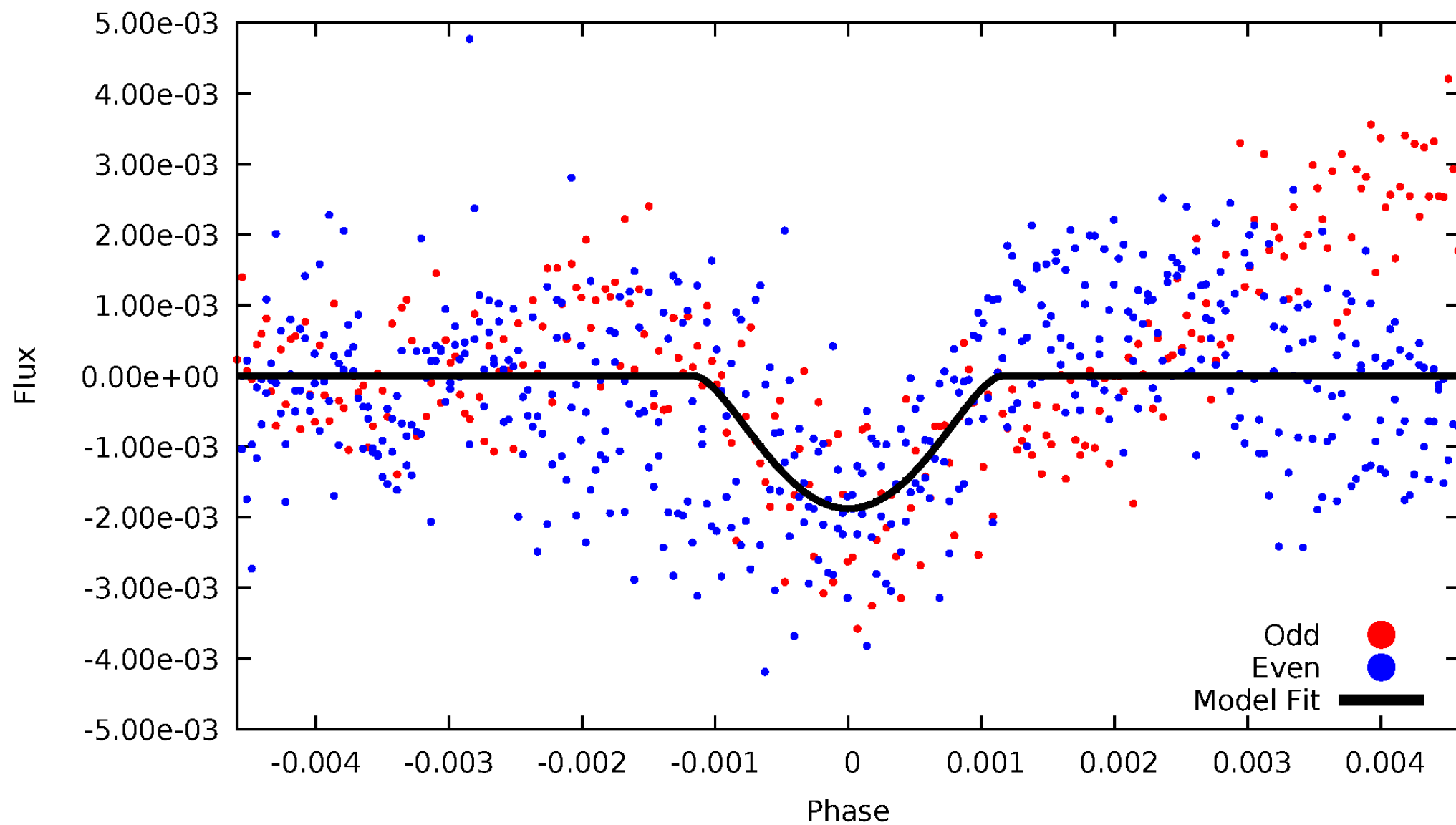


TCE 006940640-02



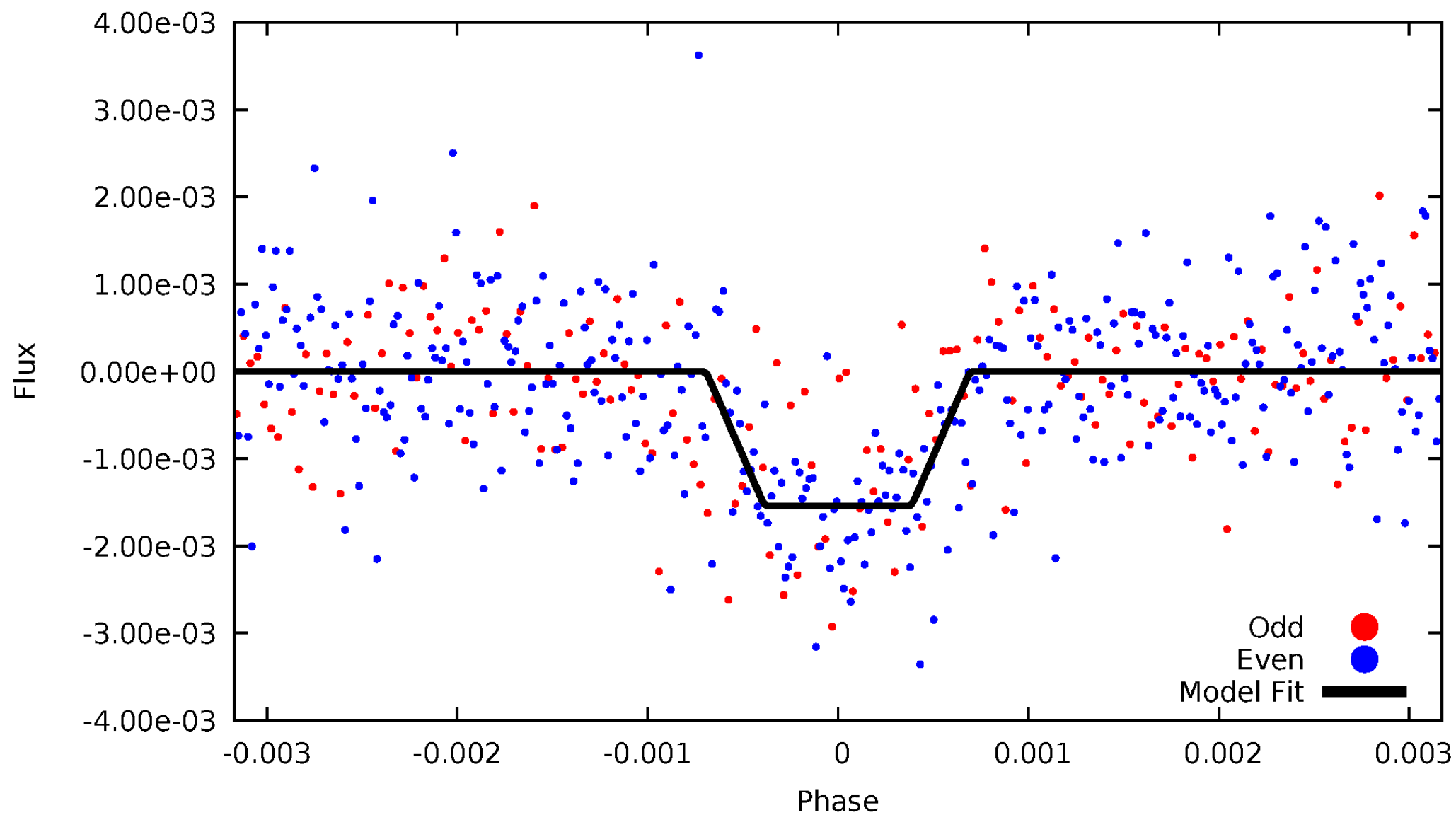
DV Odd/Even

TCE 006940640-02



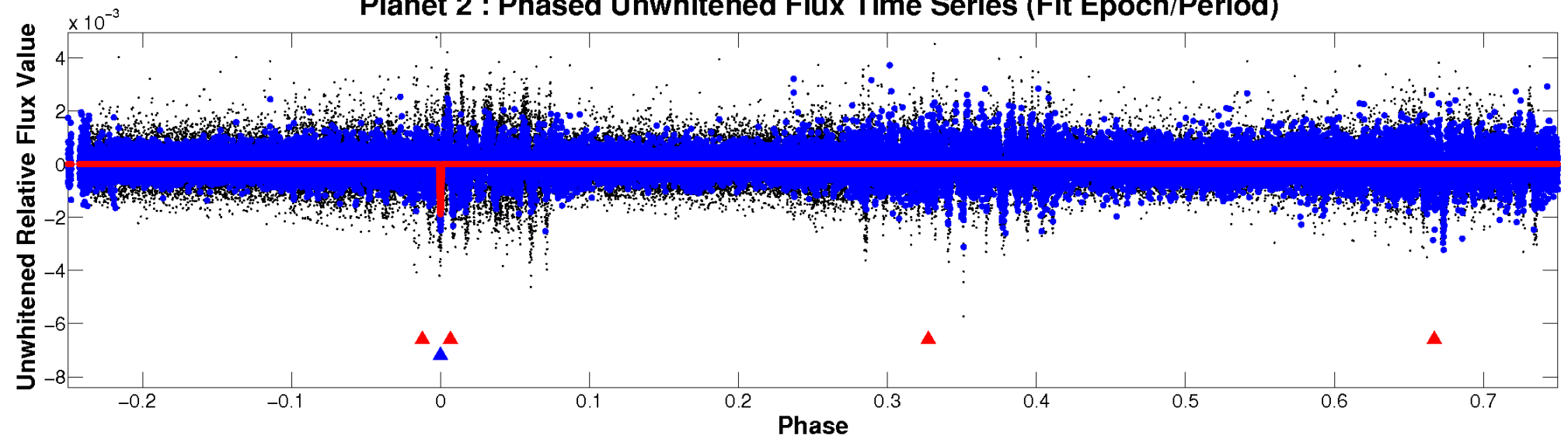
ALT Odd/Even

TCE 006940640-02

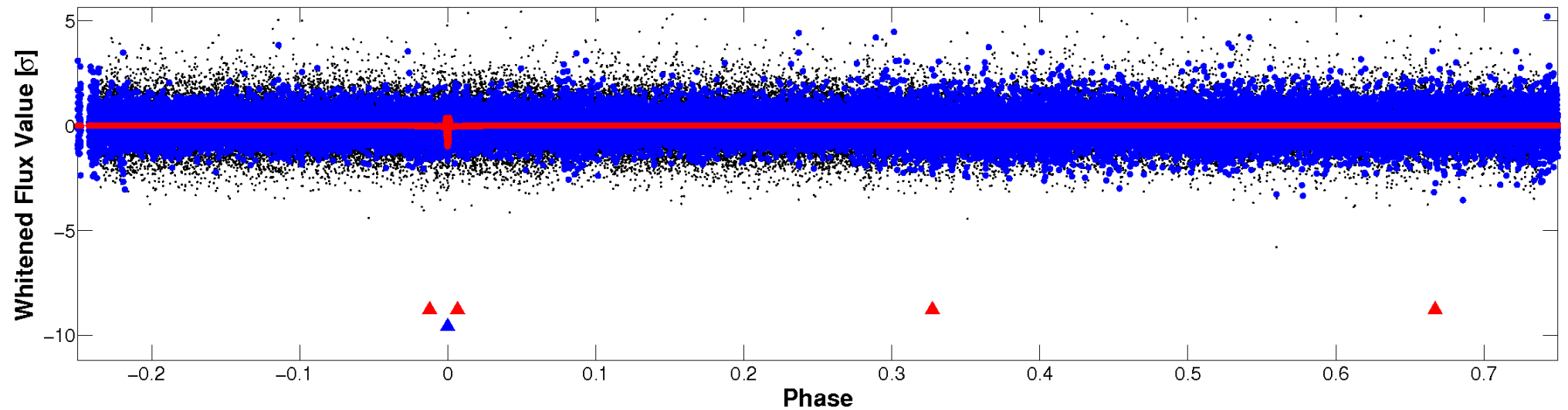


Non-Whitened Vs. Whitened Light Curve

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

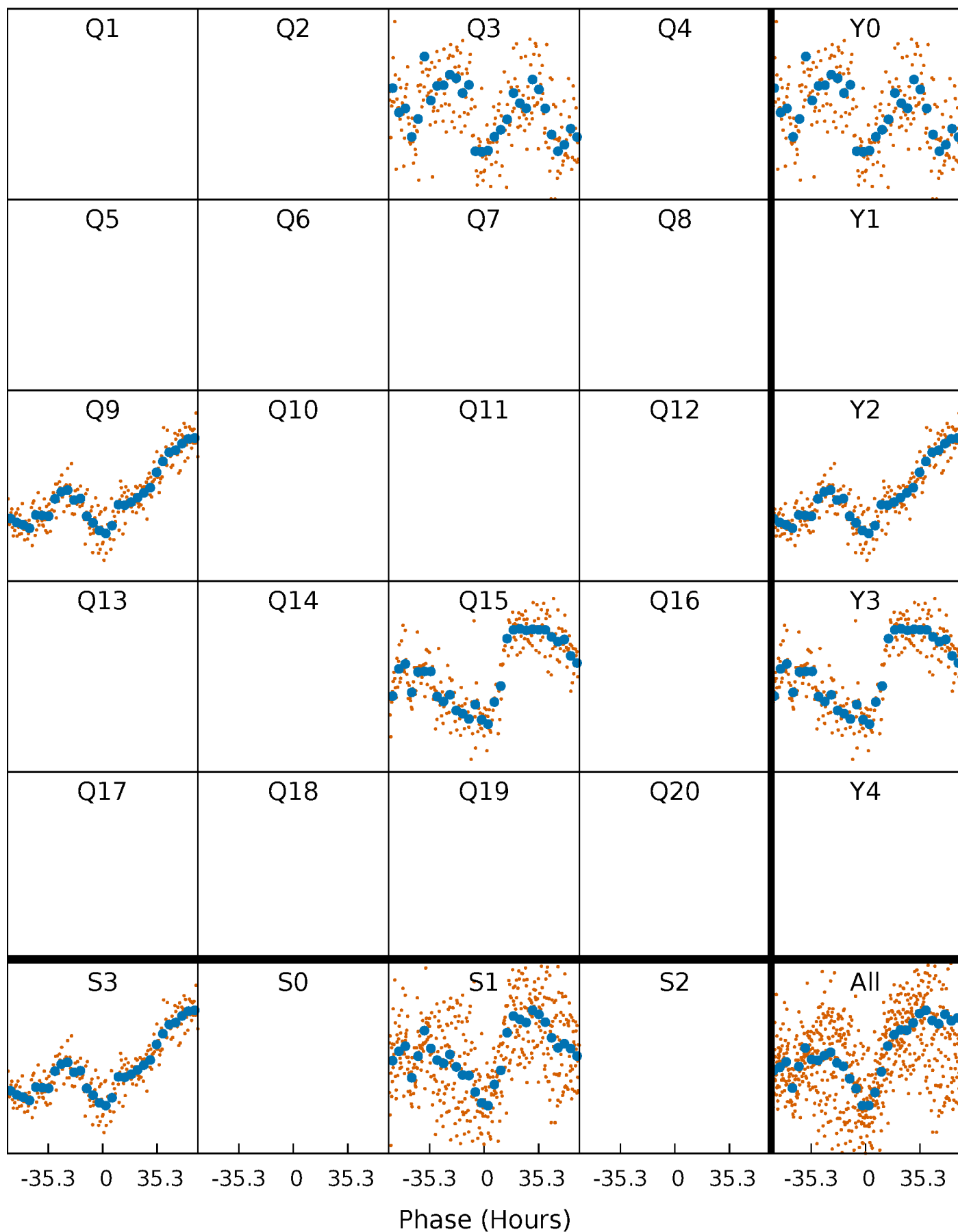


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



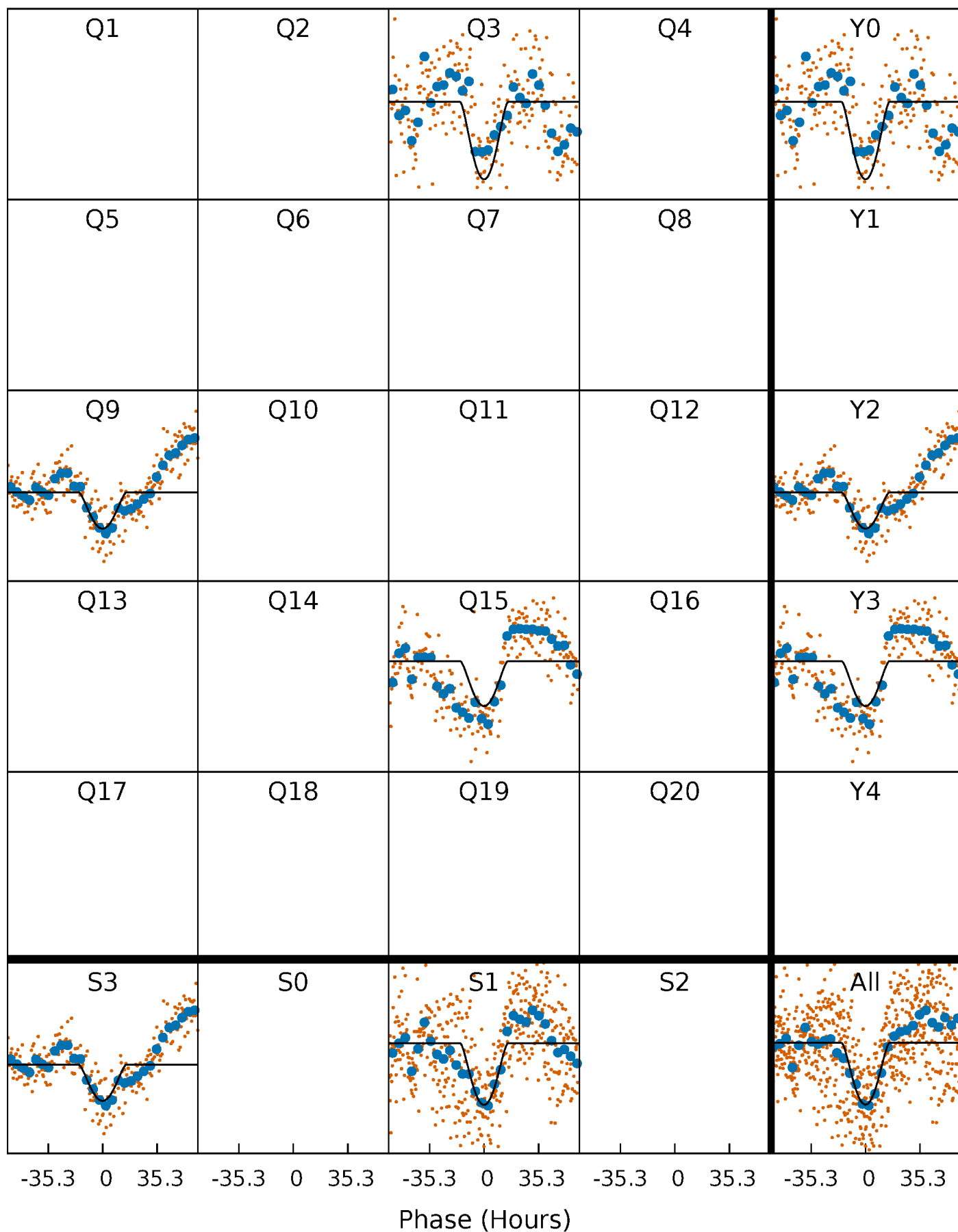
PDC Quarter-Phased Transit Curves

TCE 006940640-02 P=561.392582 Days $T_0=305.793134$ (BKJD)



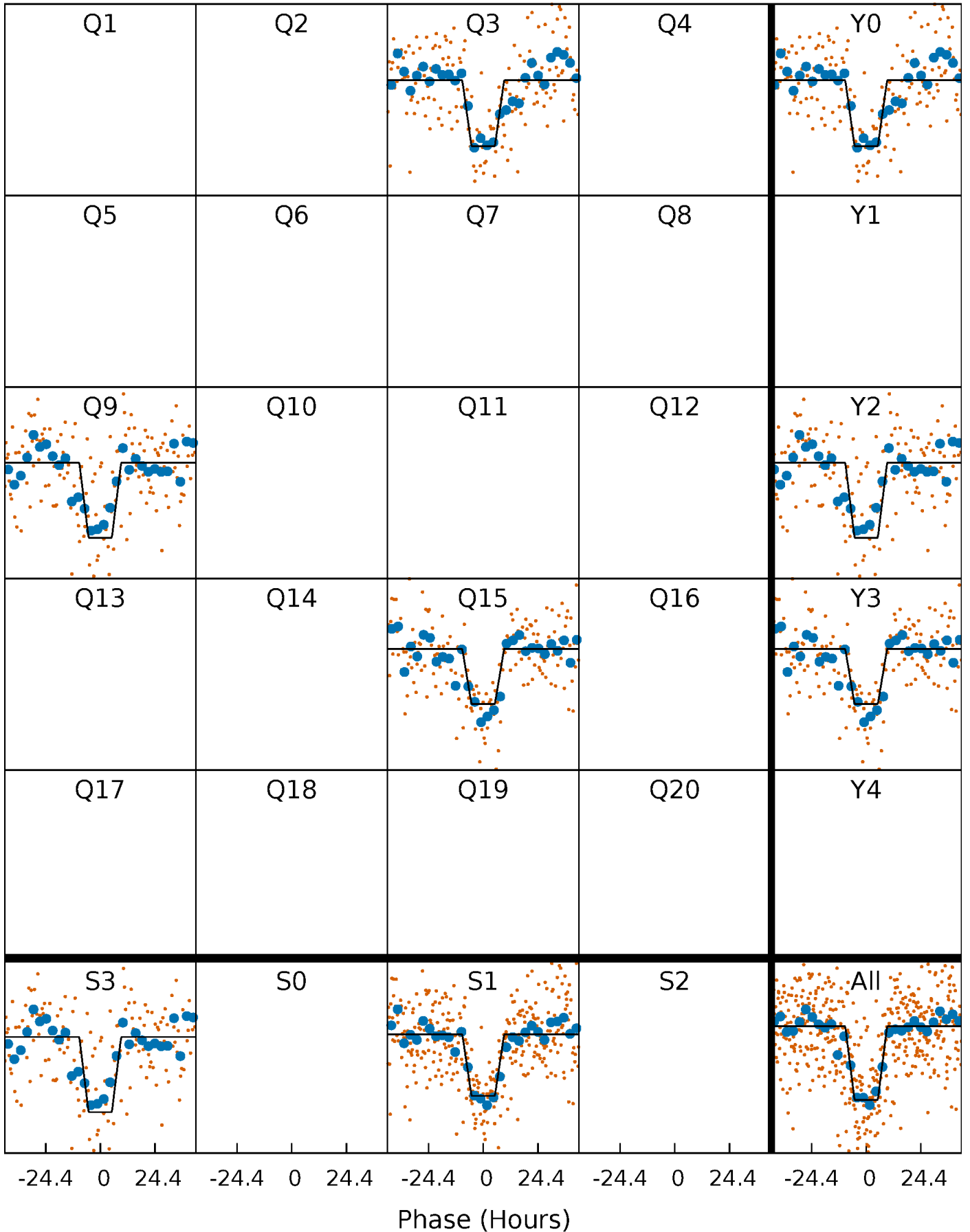
DV Quarter-Phased Transit Curves

TCE 006940640-02 $P=561.392582$ Days $T_0=305.793134$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

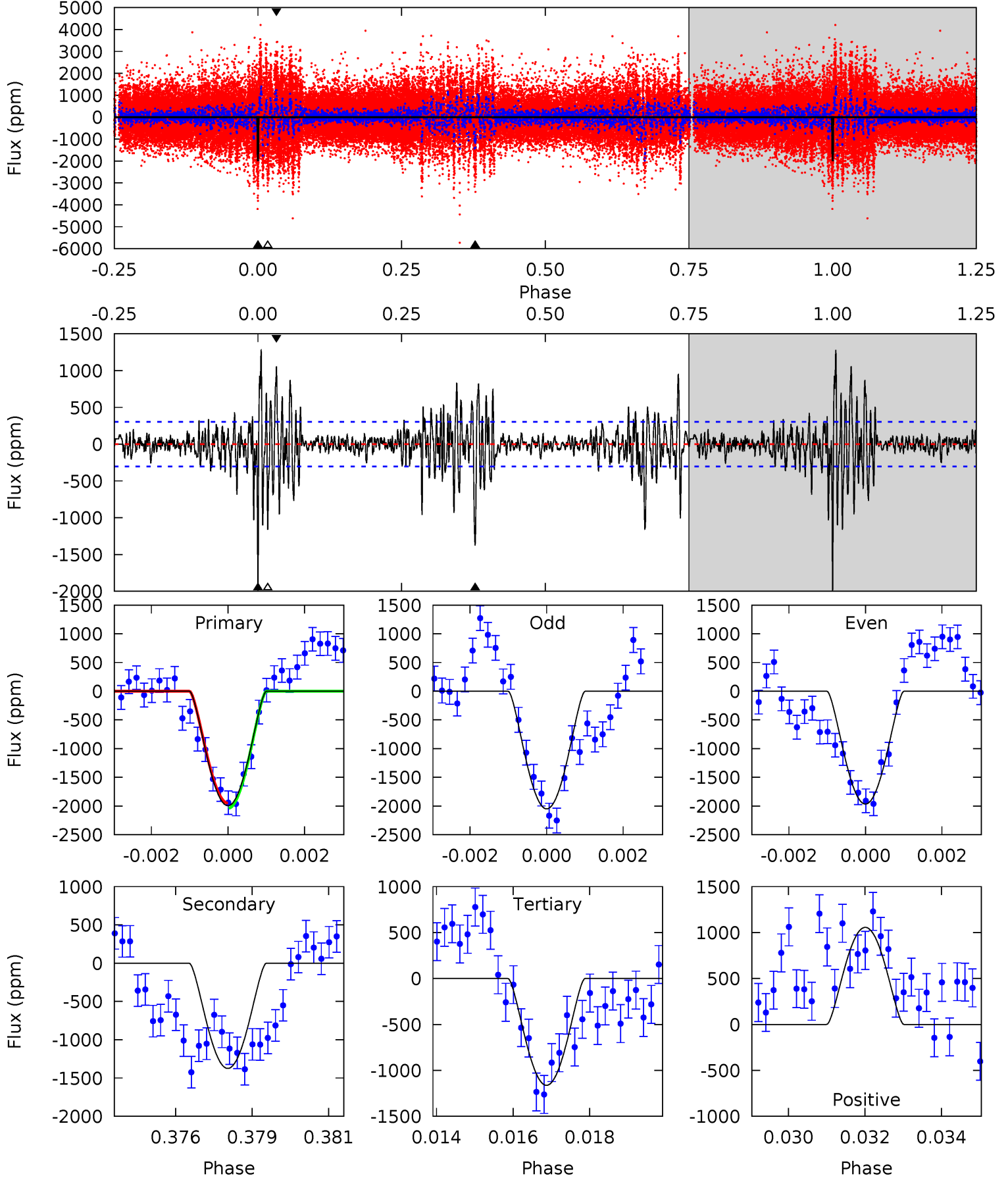
TCE 006940640-02 $P=561.480173$ Days $T_0=305.760940$ (BKJD)



DV Model-Shift Uniqueness Test

006940640-02, P = 561.392582 Days, E = 305.793134 Days

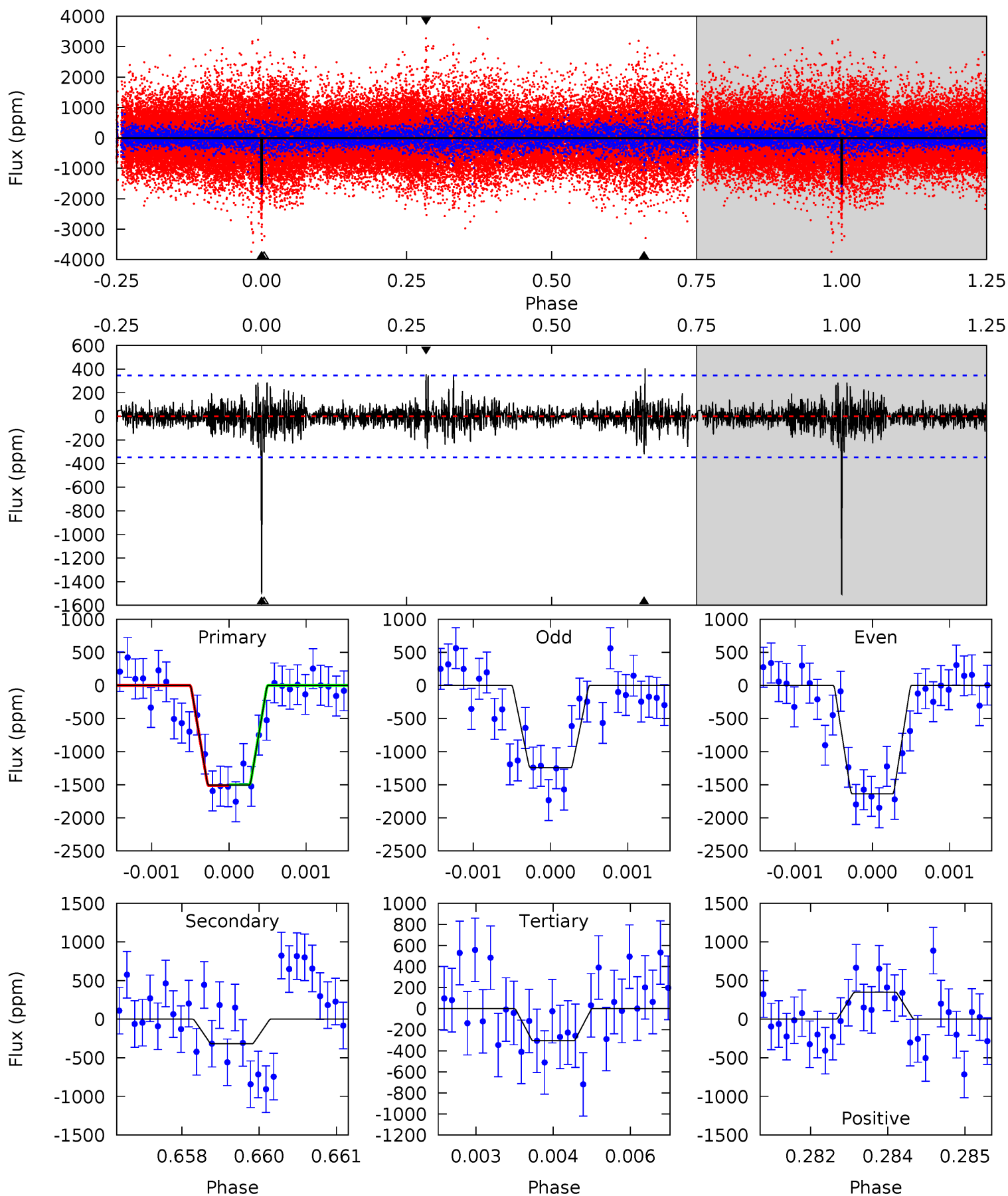
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.9	24.0	20.3	18.5	5.30	3.05	4.33	14.5	16.4	3.71	5.56	0.68	0.96	0.39	0.79



Alt Model-Shift Uniqueness Test

006940640-02, P = 561.480173 Days, E = 305.760940 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	4.95	4.73	5.43	5.39	3.19	1.06	18.7	18.0	0.22	-0.48	2.92	1.04	0.21	0.10



Stellar Parameters For KIC 006940640

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5289^{+166}_{-166}	$4.499^{+0.072}_{-0.117}$	$0.120^{+0.250}_{-0.300}$	$0.870^{+0.148}_{-0.091}$	$0.872^{+0.080}_{-0.073}$	$1.865^{+0.576}_{-0.662}$
	+3%/-3%	+2%/-3%	+208%/-250%	+17%/-10%	+9%/-8%	+31%/-36%
Source	PHO1	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 006940640-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1375 ± 57	$16.00^{+15.67}_{-10.57}$	272^{+14}_{-12}	3124^{+1319}_{-536}	4838^{+36638}_{-3609}
Alt.	-319 ± 64	$14.04^{+15.31}_{-9.66}$	271^{+12}_{-13}	2627^{+1045}_{-433}	1413^{+13291}_{-1112}

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

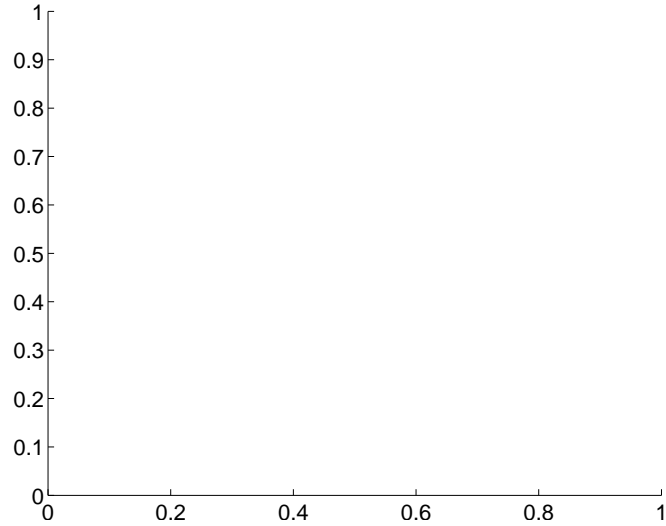
Supplemental centroid analysis for 006940640-02. Kepler magnitude: 15.99. Transit SNR 8.54

There are 0 quarters with good PRF difference image offsets

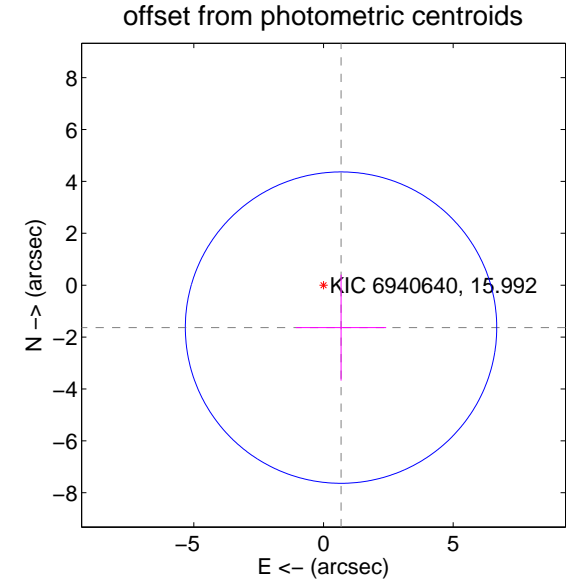
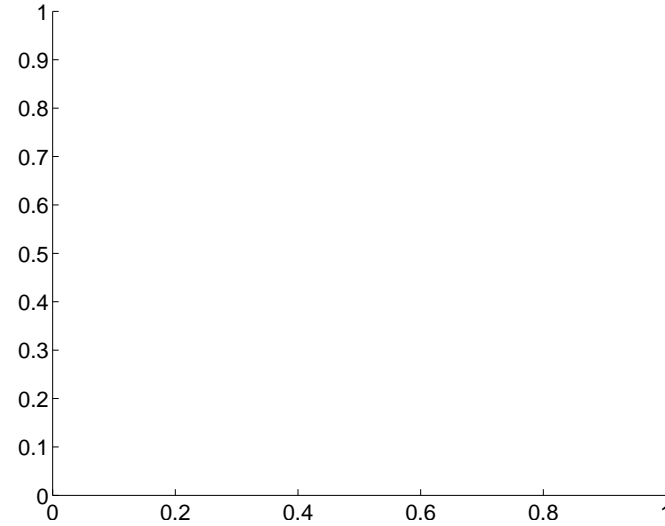
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	1.77 ± 2.00	0.88	-0.68 ± 1.74	-1.64 ± 2.04

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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.

Q1 no difference image



Q1 no OOT image



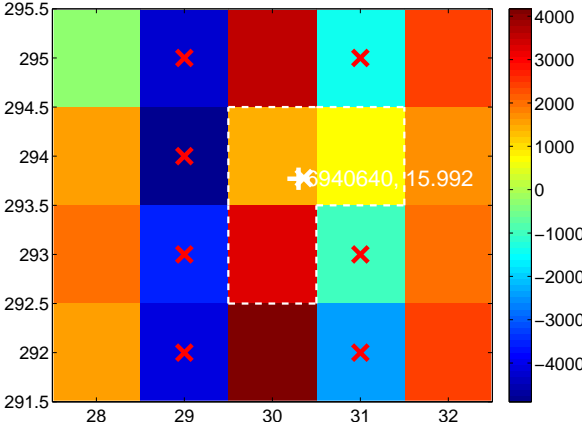
Q2 no difference image



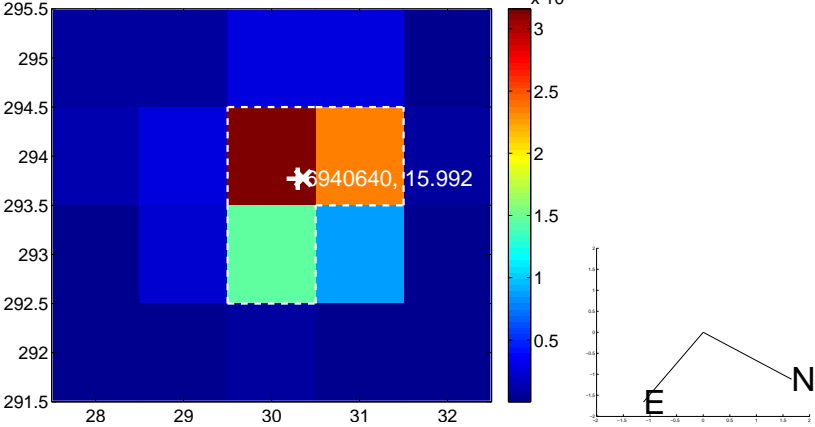
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



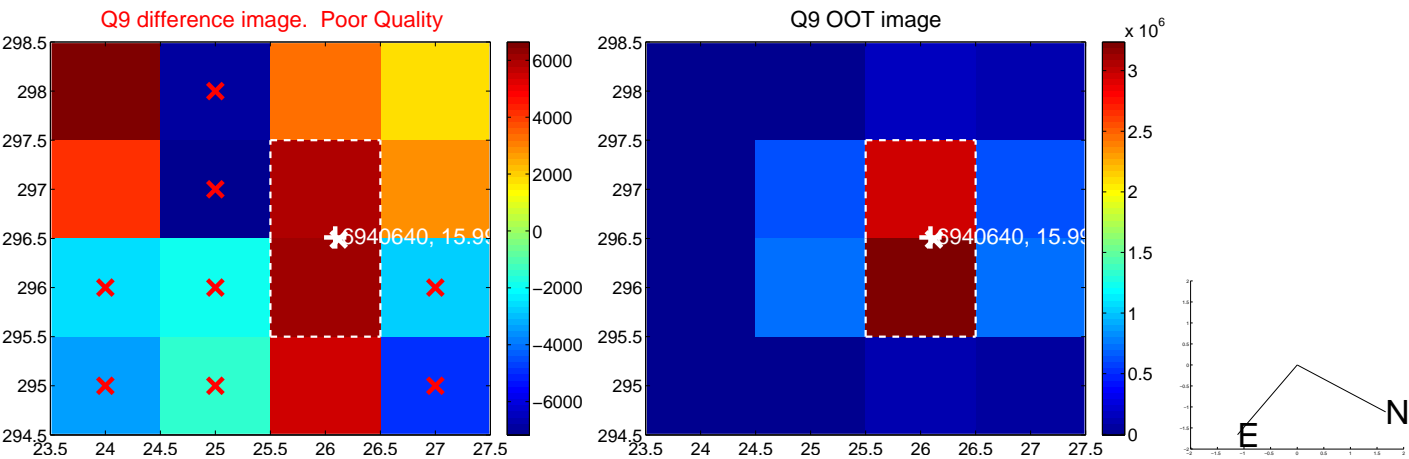
Q4 no OOT image



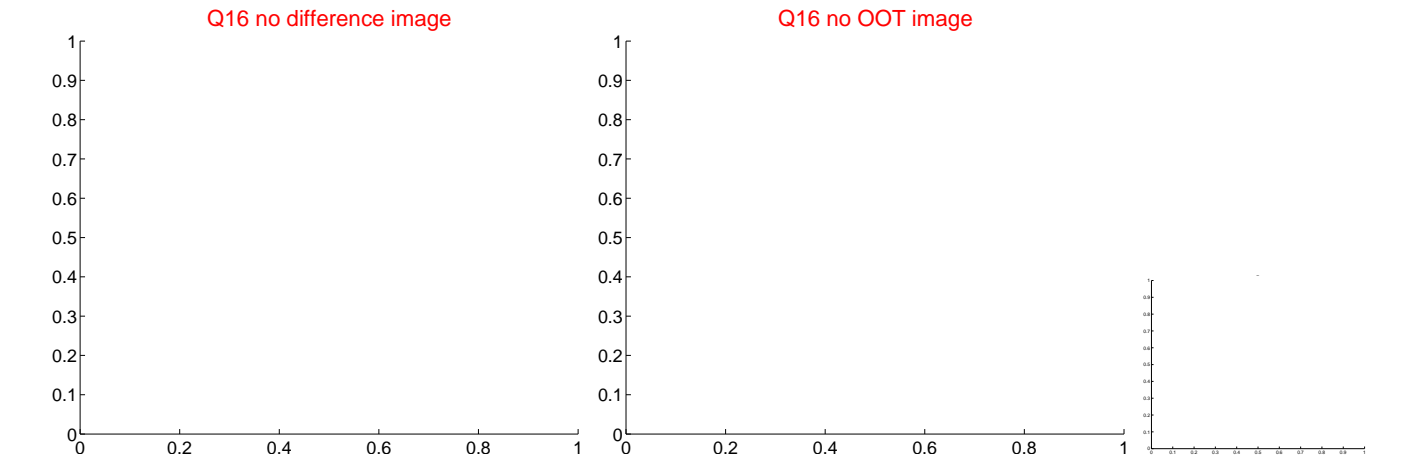
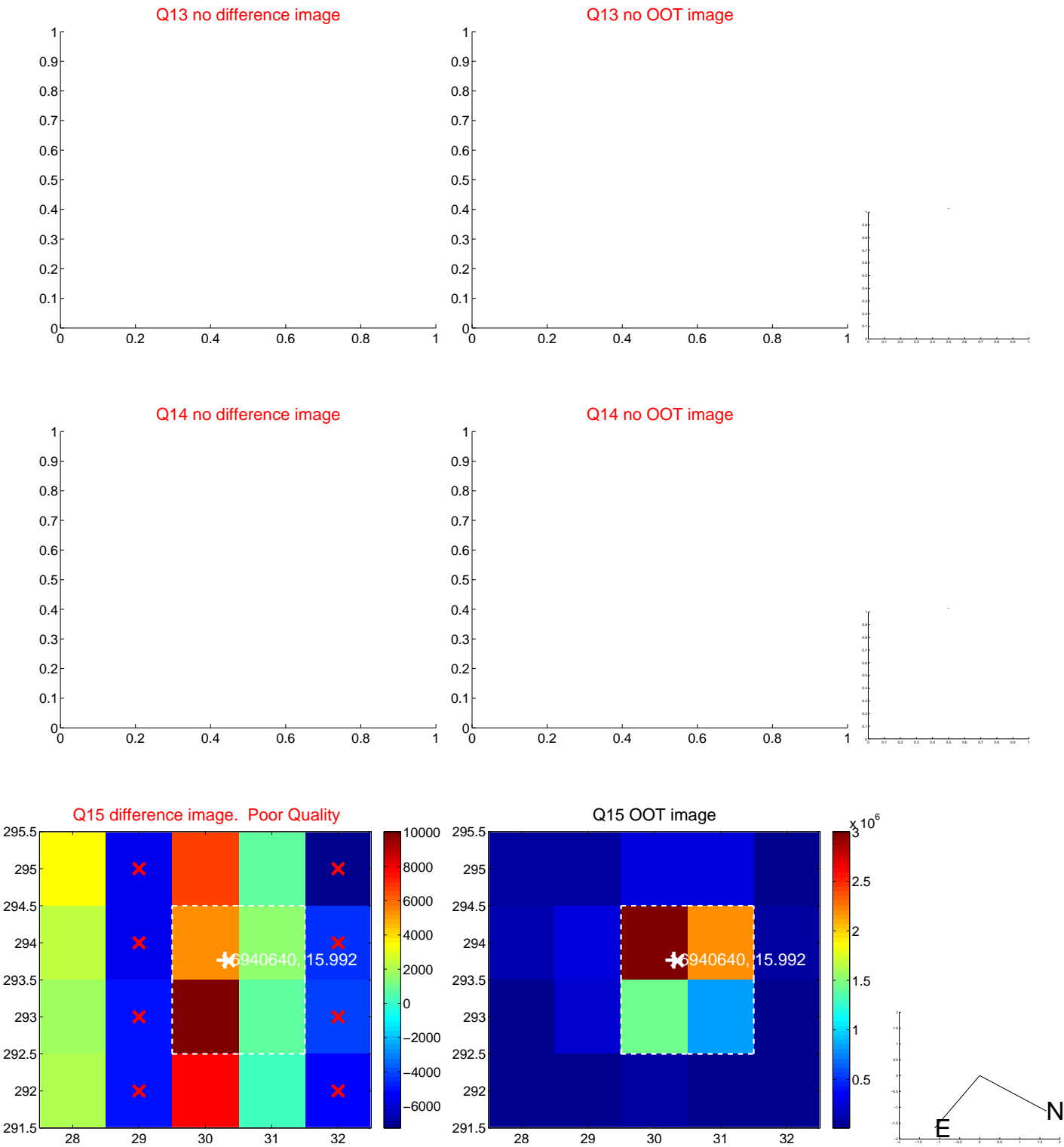
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



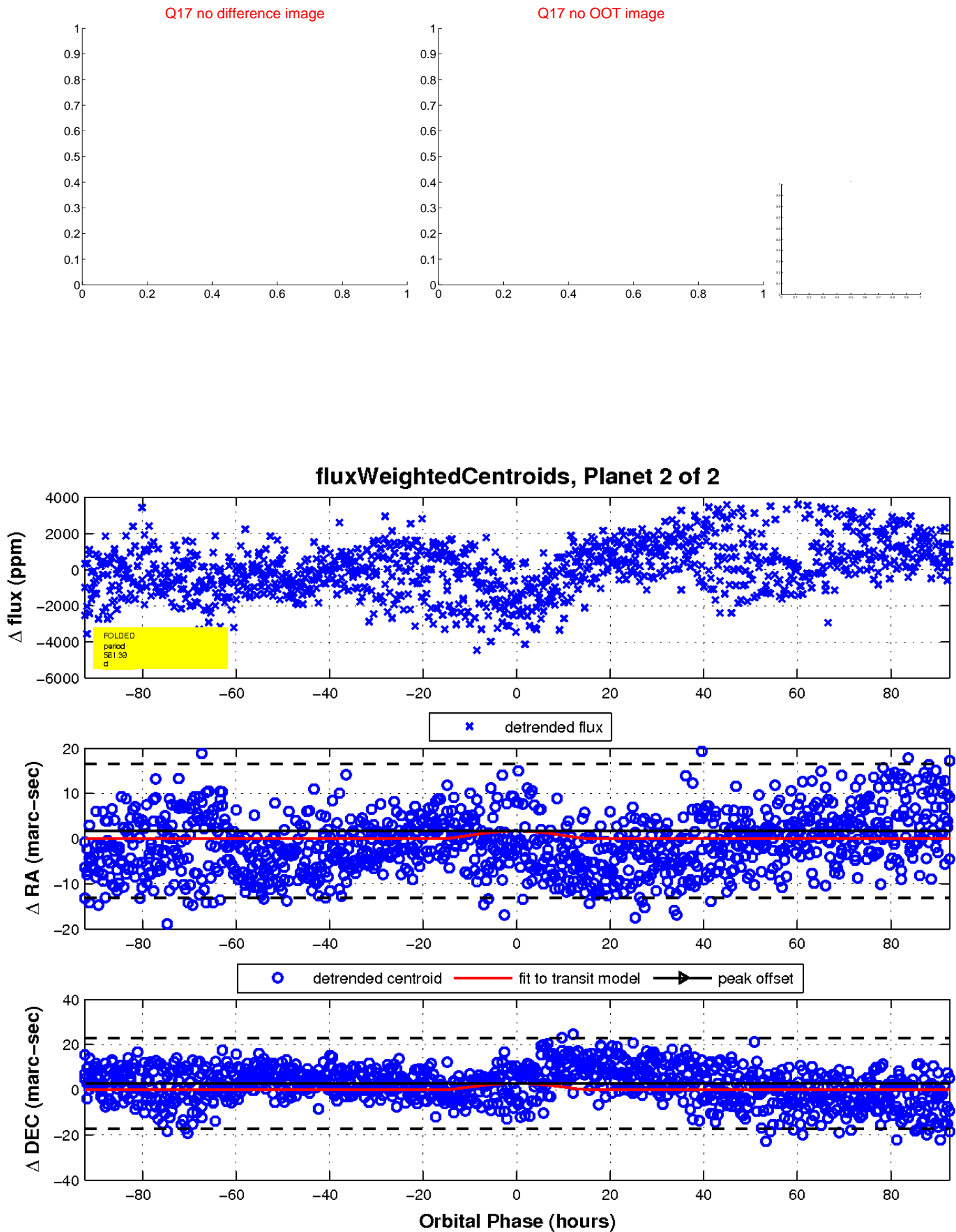
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

