

KIC 009946569

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})
009946569-01	OBS	No	313.398956	402.317611	1827.8	3.822	11.9	6.3	0.70	4671	3.26	0.33
009946569-02	OBS	No	343.248351	280.617826	2875.0	7.235	9.0	7.5	0.70	4671	7.39	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009946569-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009946569-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

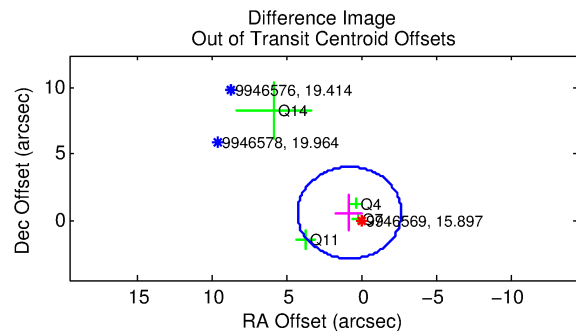
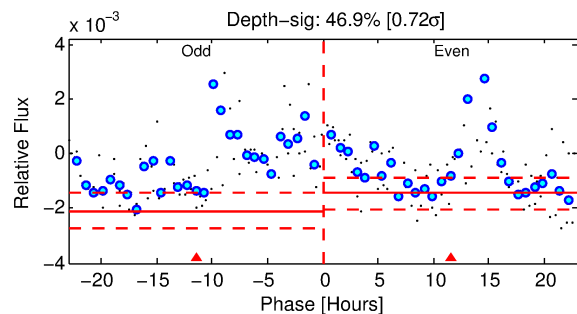
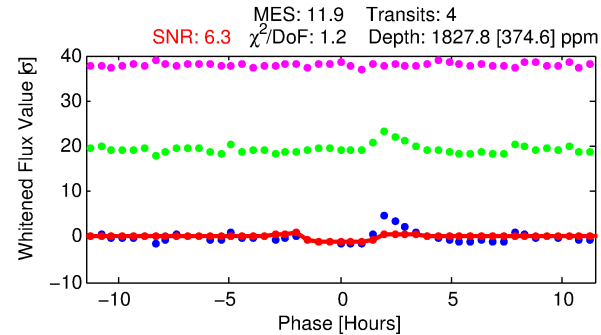
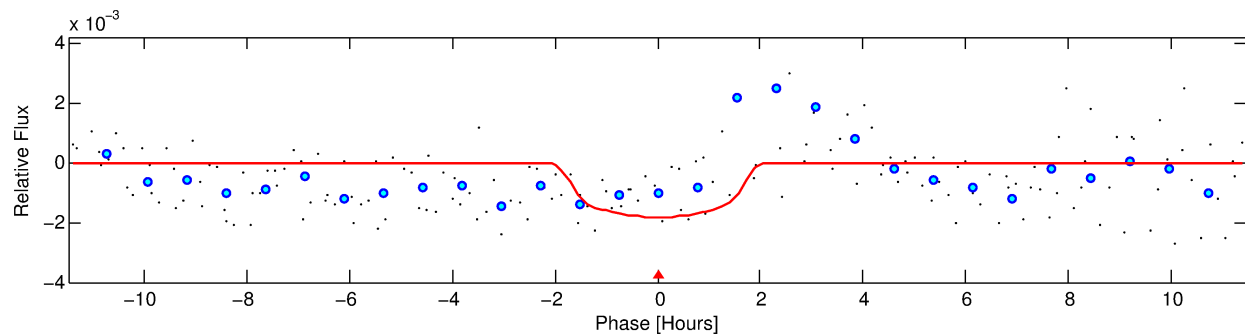
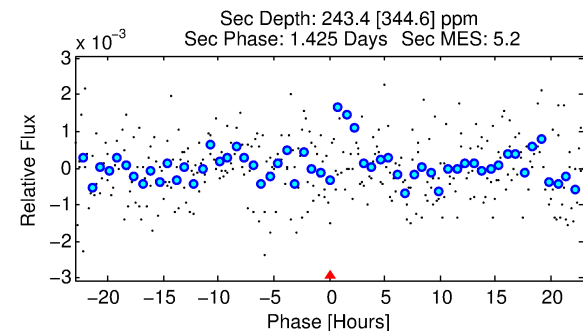
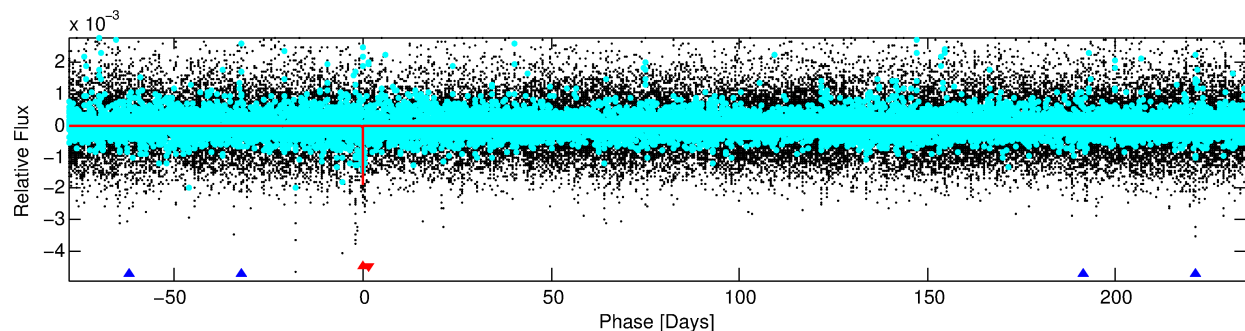
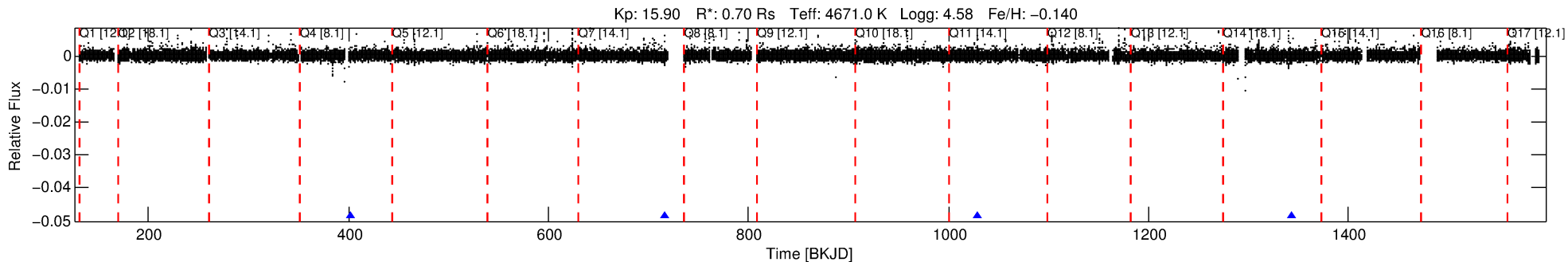
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009946569-01

No Significant Match Found

DV One-Page Summary

KIC: 9946569 Candidate: 1 of 2 Period: 313.399 d



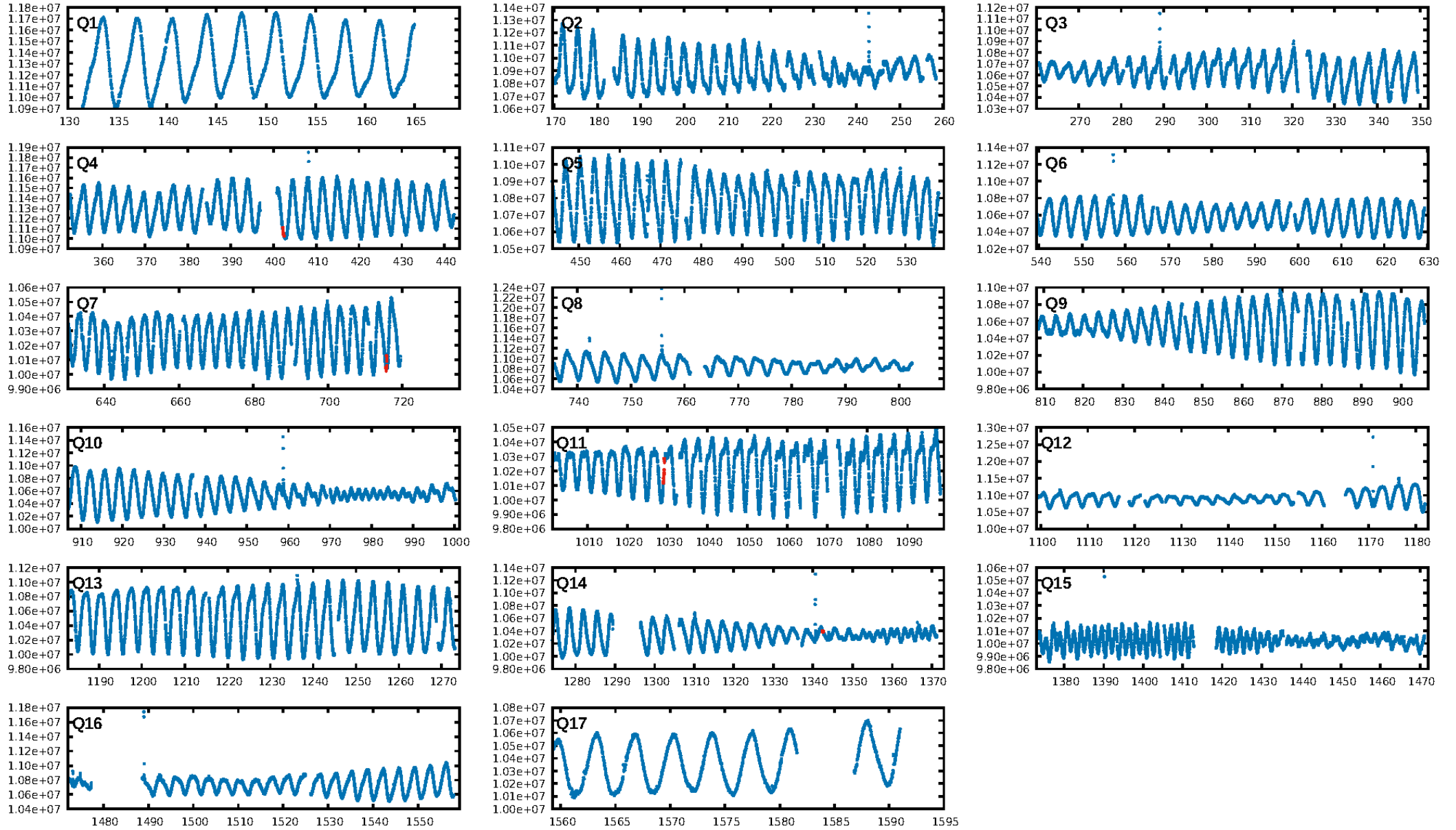
DV Fit Results:

Period = 313.39896 [0.00601] d
Epoch = 402.3176 [0.0098] BKJD
Rp/R* = 0.0429 [0.0315]
a/R* = 452.68 [1045.41]
b = 0.75 [1.37]
Seff = 0.33 [0.05]
Teq = 193 [8] K
Rp = 3.26 [2.42] Re
a = 0.7948 [0.0583] AU
Ag = 7957.71 [16271.58] [0.49σ]
Teffp = 2818 [1441] K [1.82σ]

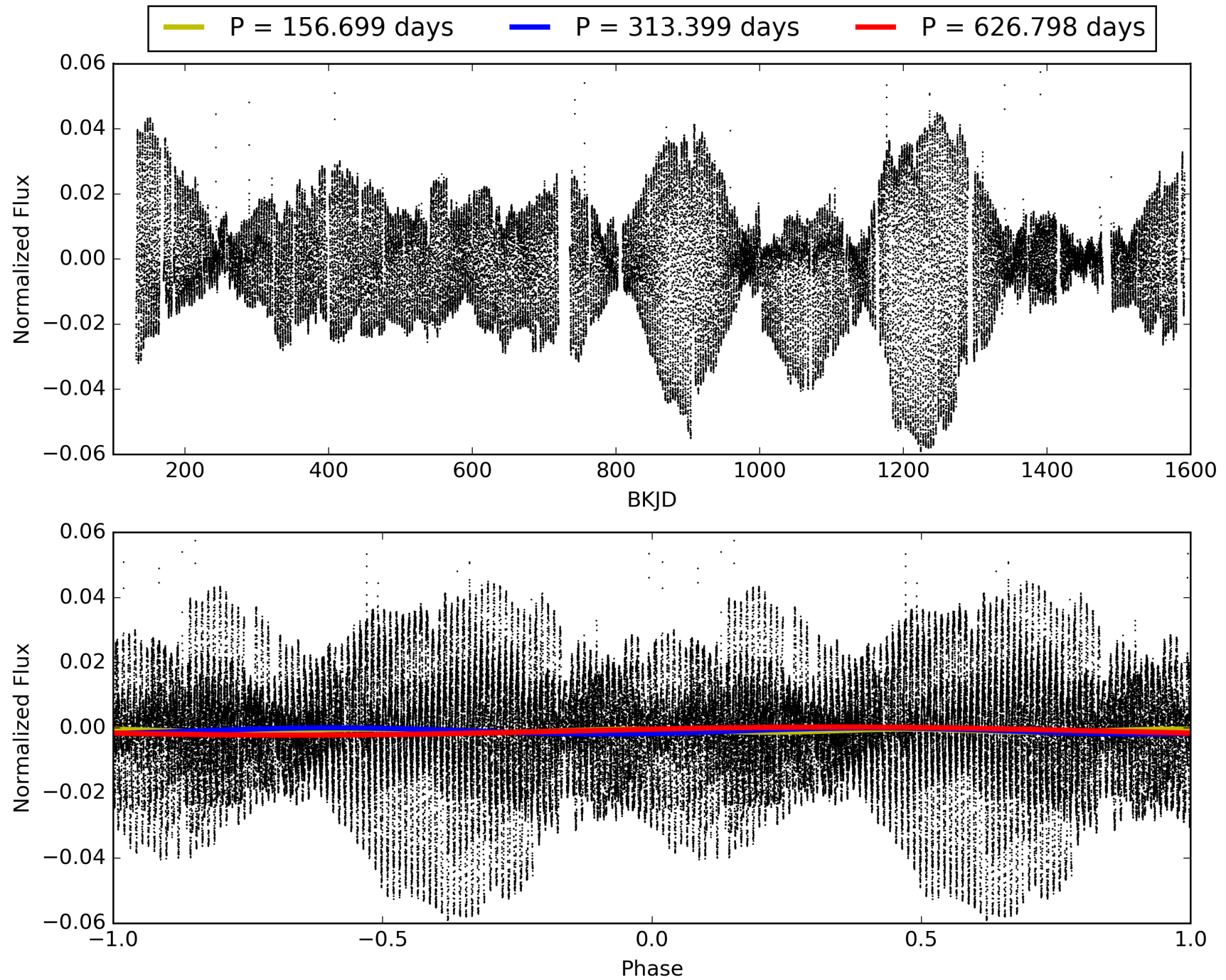
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [87.55σ]
ModelChiSquare2-sig: 1.1%
ModelChiSquareGof-sig: 85.0%
Bootstrap-pfa: 1.67e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.06967
Centroid-sig: 54.2%
Centroid-so: 0.740 arcsec [0.67σ]
OotOffset-rm: 0.972 arcsec [0.84σ]
KicOffset-rm: 0.949 arcsec [0.60σ]
OotOffset-st: 1/2/1/0 [4]
KicOffset-st: 1/2/1/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 009946569-01, PDC Light Curves

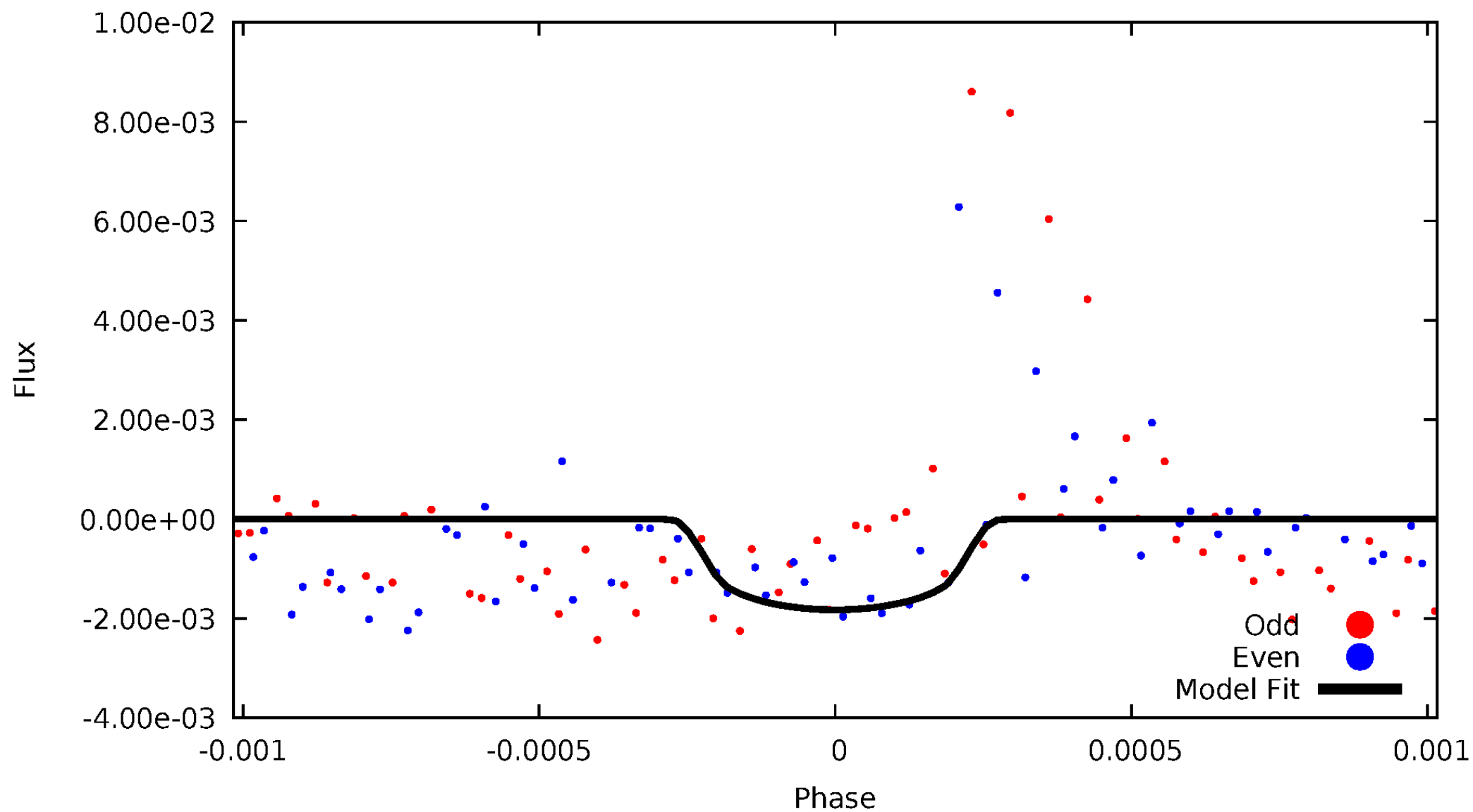


TCE 009946569-01



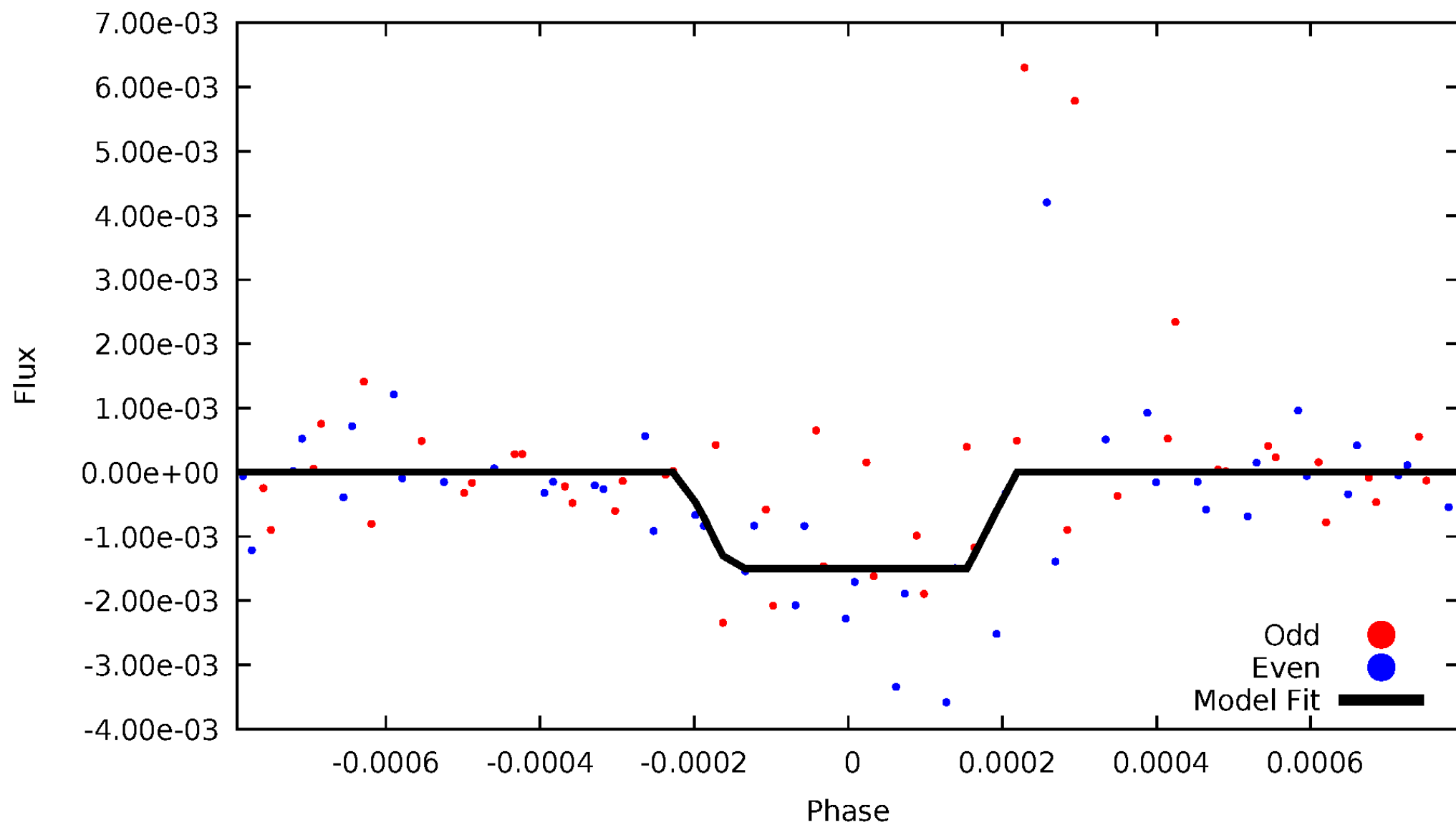
DV Odd/Even

TCE 009946569-01



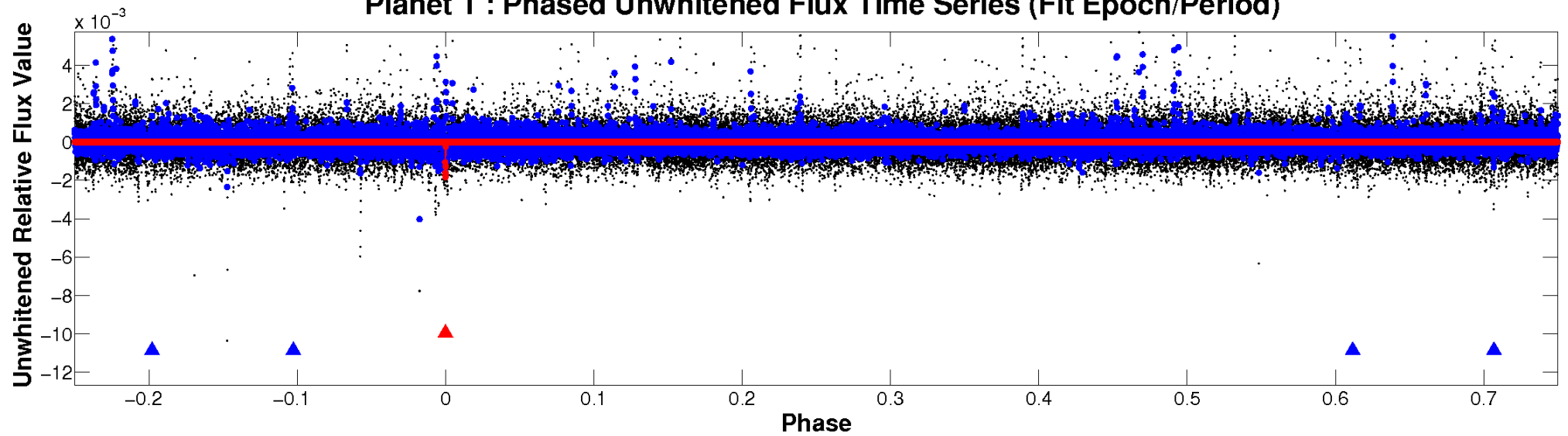
ALT Odd/Even

TCE 009946569-01

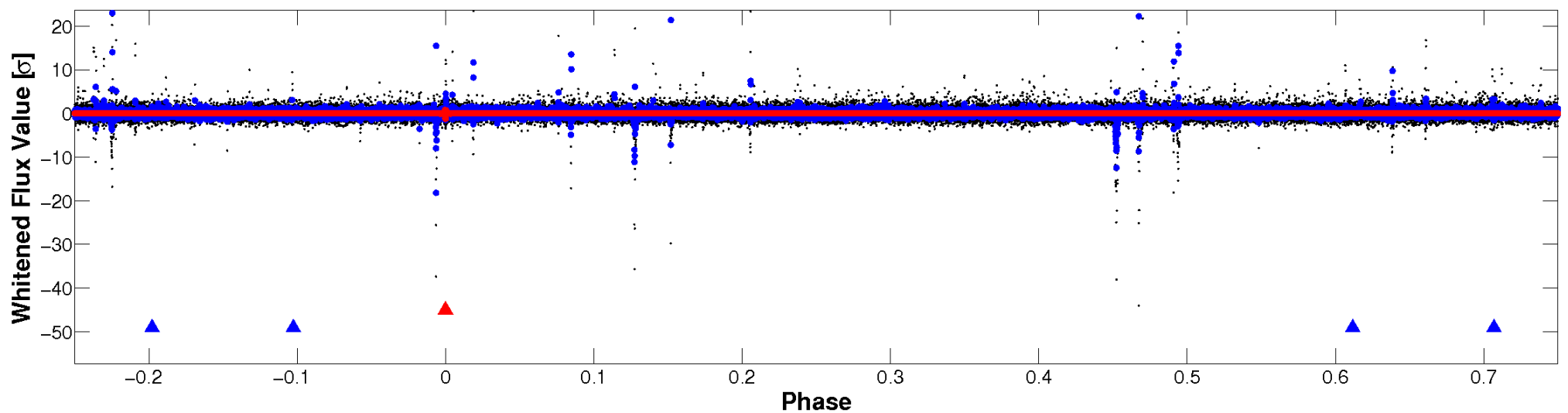


Non-Whitened Vs. Whitened Light Curve

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

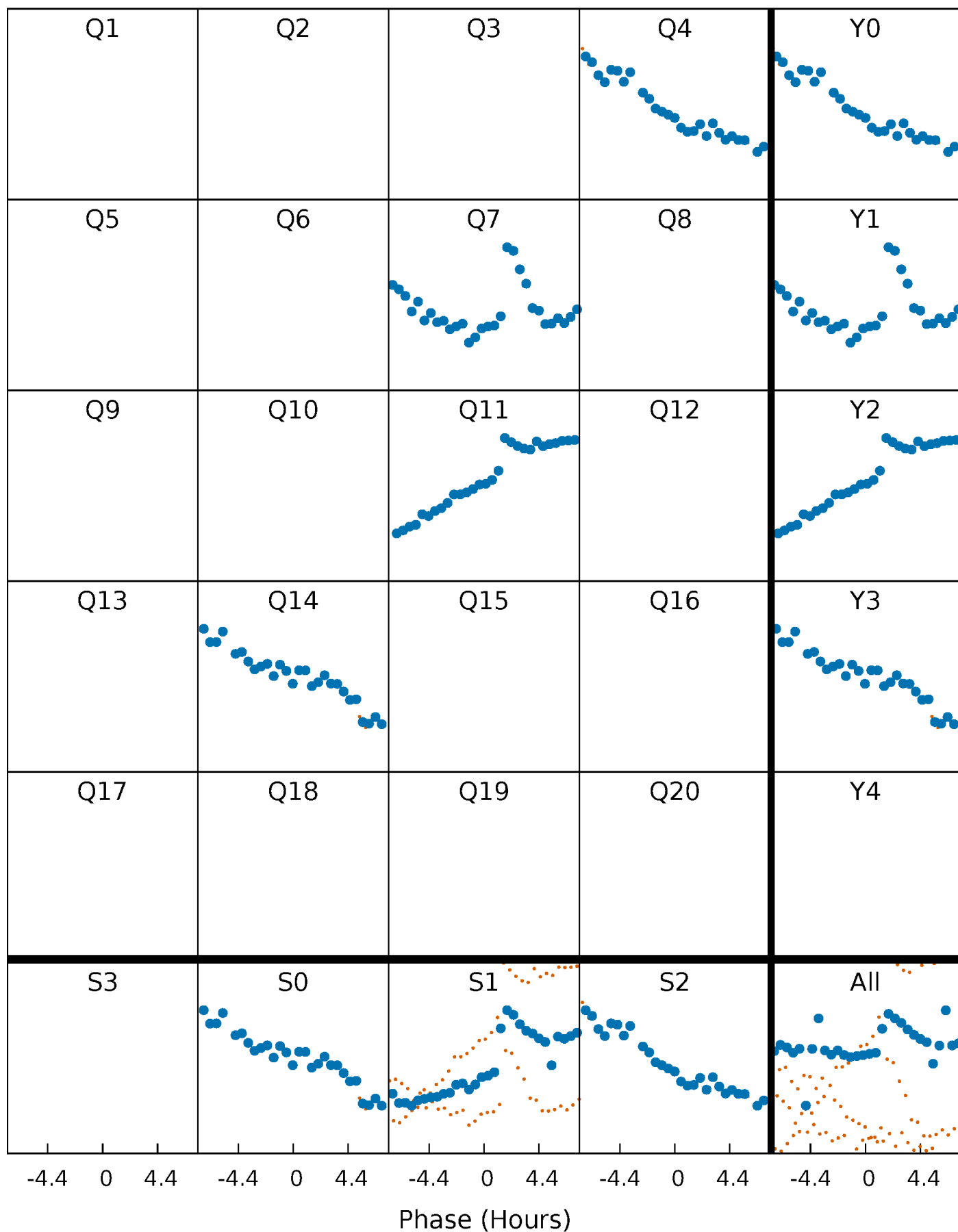


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



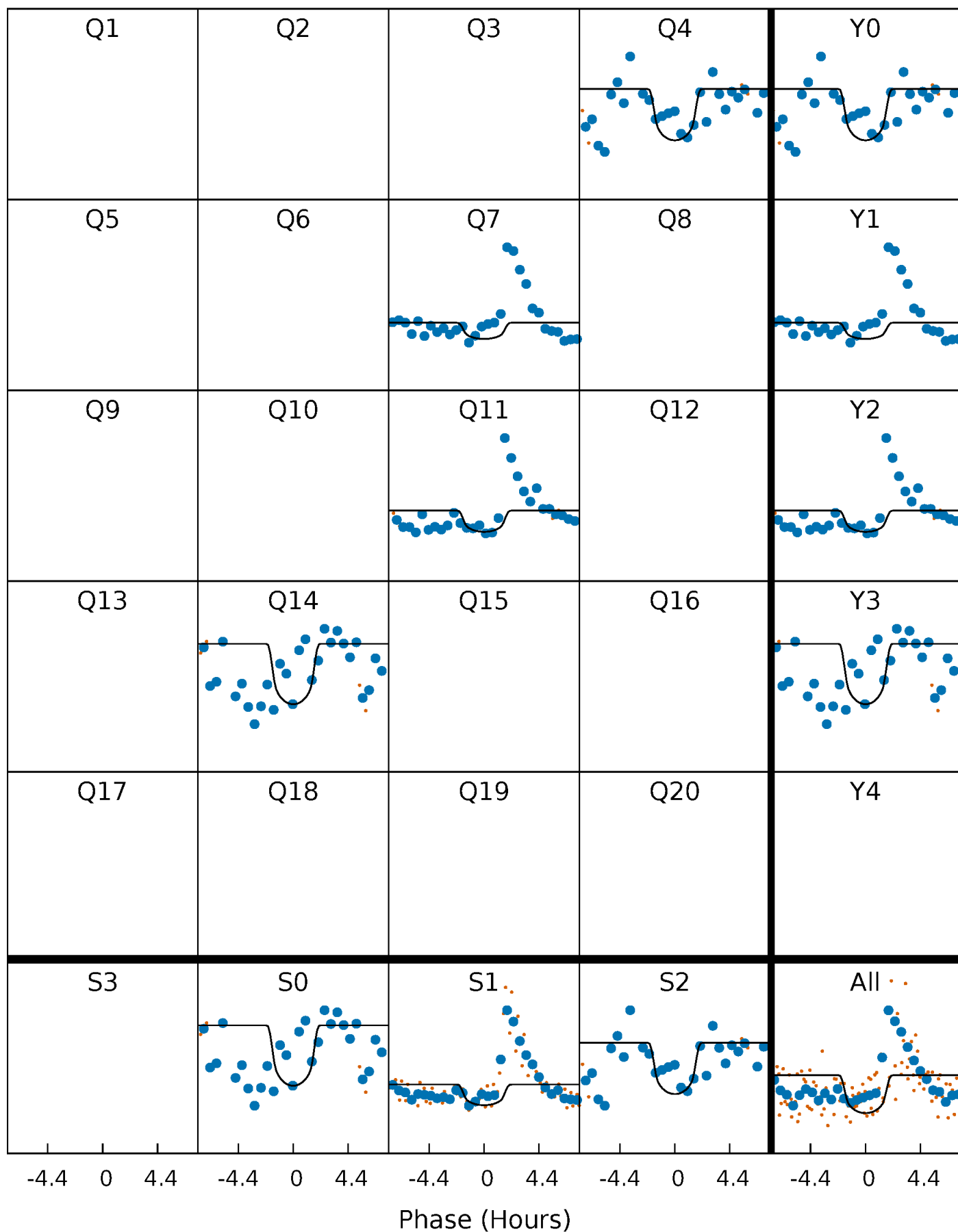
PDC Quarter-Phased Transit Curves

TCE 009946569-01 P=313.398956 Days $T_0=402.317611$ (BKJD)



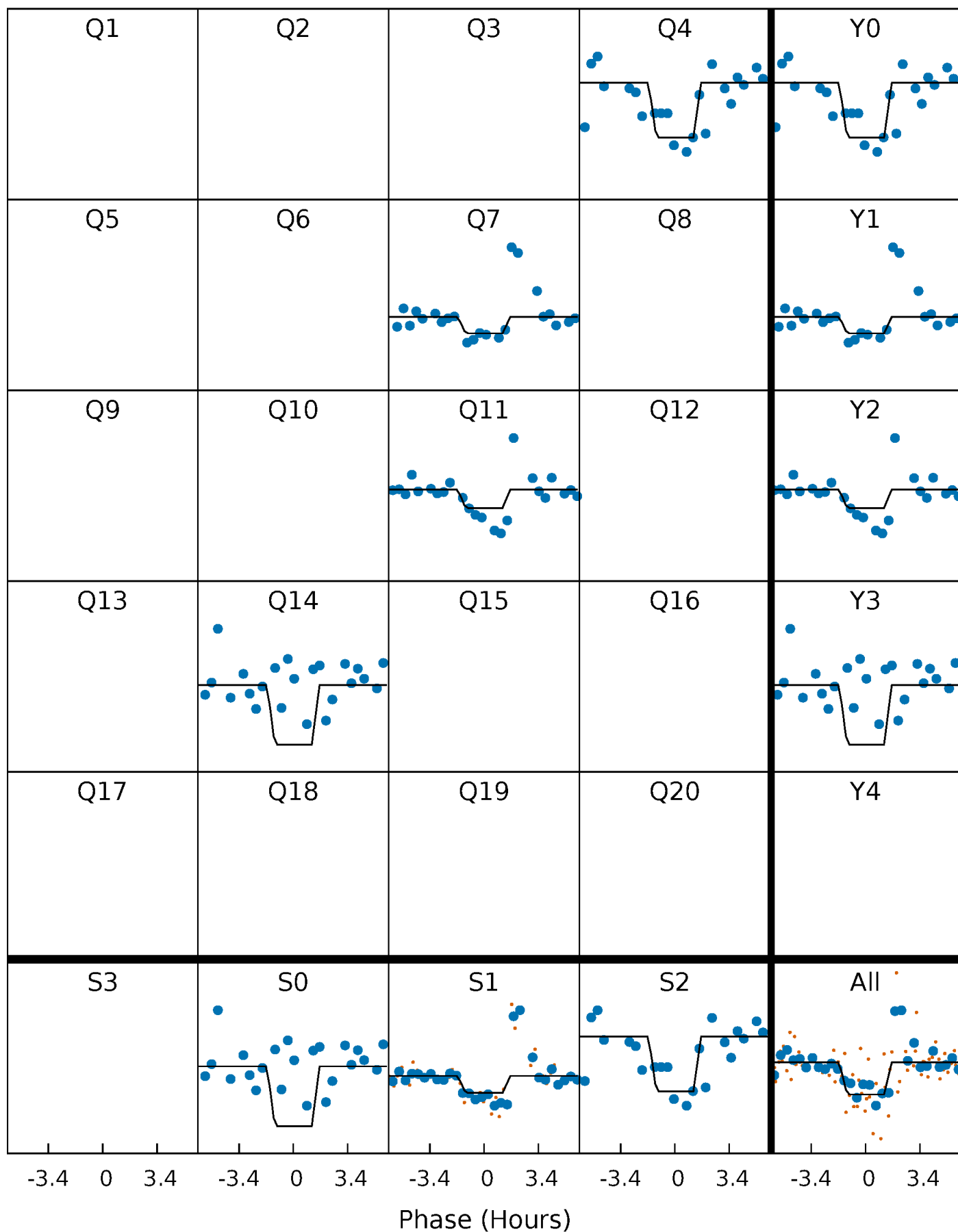
DV Quarter-Phased Transit Curves

TCE 009946569-01 P=313.398956 Days $T_0=402.317611$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

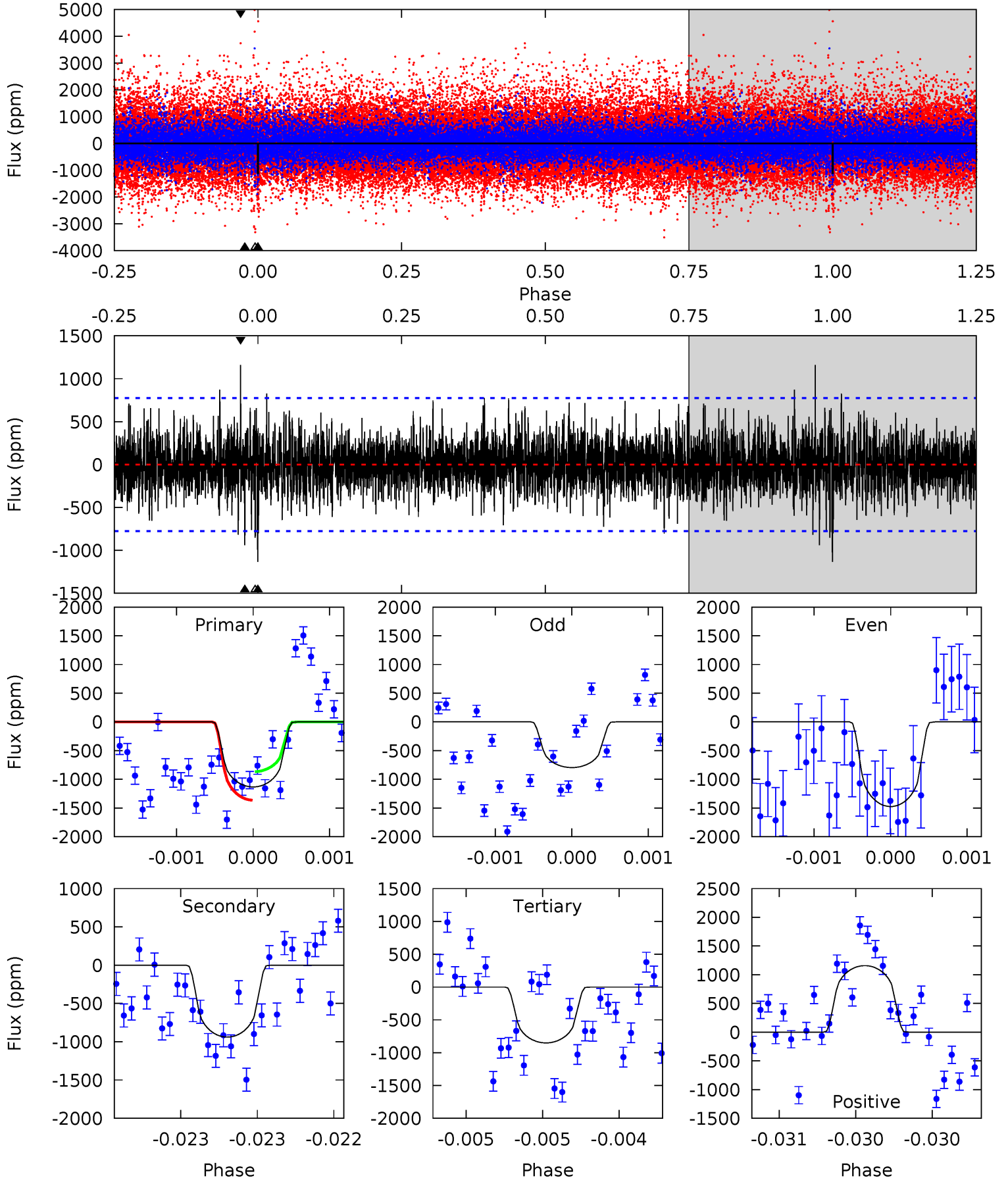
TCE 009946569-01 P=313.383174 Days $T_0=402.333919$ (BKJD)



DV Model-Shift Uniqueness Test

009946569-01, P = 313.398956 Days, E = 88.918655 Days

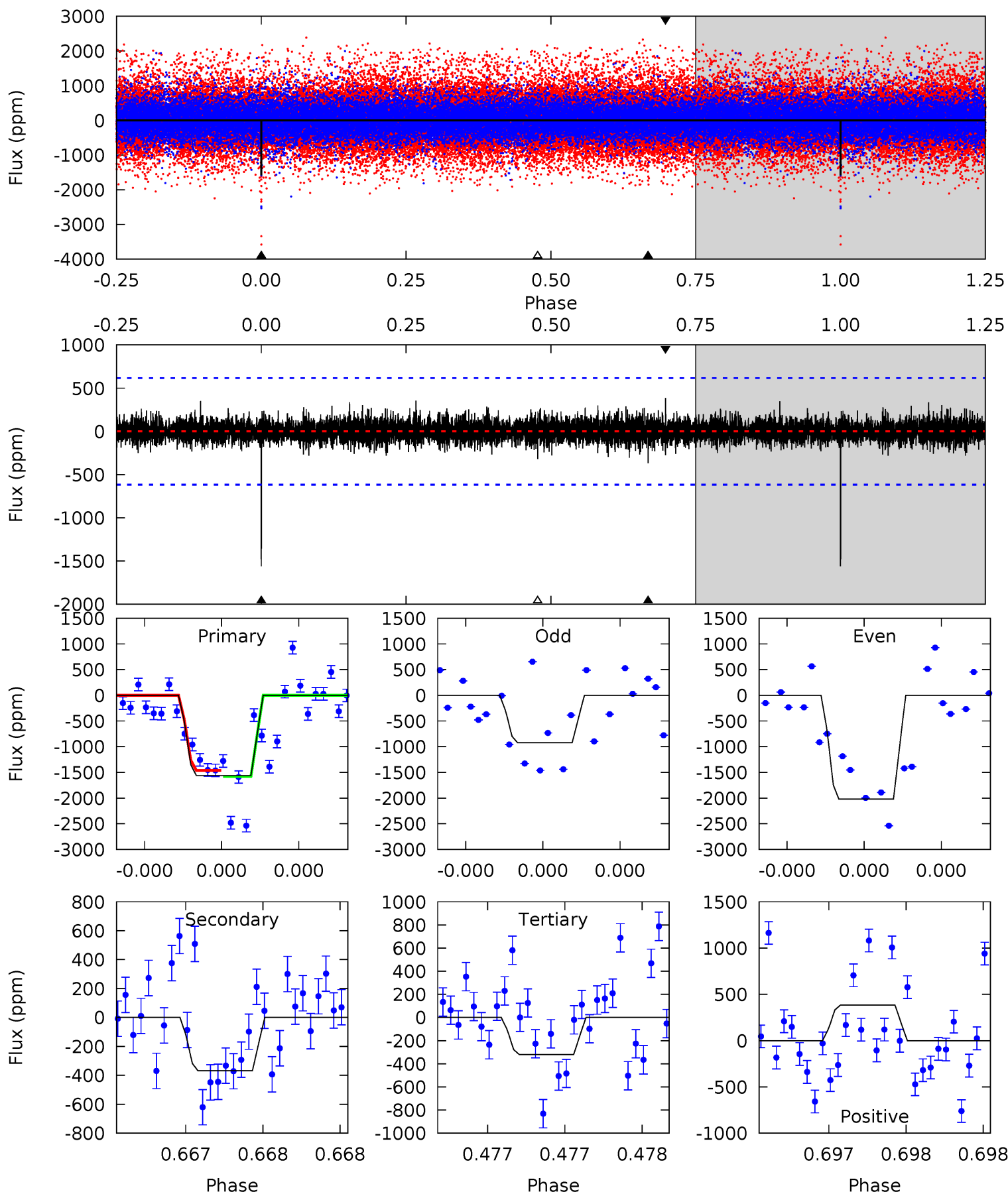
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.12	6.73	6.10	8.30	5.56	3.46	1.54	2.02	-0.18	0.63	-1.57	2.31	0.88	0.51	1.78



Alt Model-Shift Uniqueness Test

009946569-01, P = 313.383174 Days, E = 88.950745 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	3.35	2.91	3.50	5.61	3.54	0.71	11.3	10.7	0.44	-0.15	5.11	0.92	0.20	0.53



Stellar Parameters For KIC 009946569

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4671^{+140}_{-140}	$4.585^{+0.058}_{-0.027}$	$-0.140^{+0.300}_{-0.300}$	$0.697^{+0.049}_{-0.061}$	$0.681^{+0.077}_{-0.056}$	$2.839^{+0.775}_{-0.323}$
	+3%/-3%	+1%/-1%	+214%/-214%	+7%/-9%	+11%/-8%	+27%/-11%
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 009946569-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-939 ± 140	$3.52^{+2.22}_{-1.97}$	268^{+9}_{-10}	3965^{+1552}_{-593}	$25587^{+117592}_{-15615}$
Alt.	-368 ± 110	$3.21^{+2.39}_{-1.81}$	268^{+9}_{-9}	3471^{+1273}_{-519}	11956^{+51332}_{-8082}

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 $A_{obs} \gg 1.0$

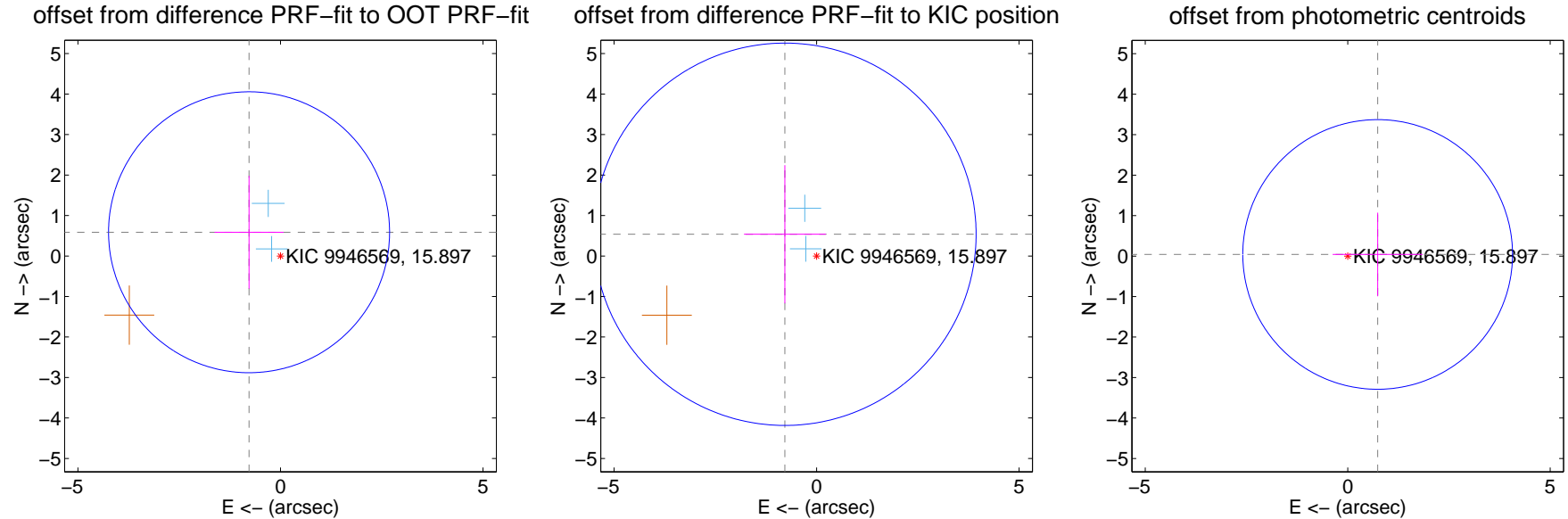
DV Centroid Data

Supplemental centroid analysis for 009946569-01. Kepler magnitude: 15.90. Transit SNR 6.25

There are 2 quarters with good PRF difference image offsets

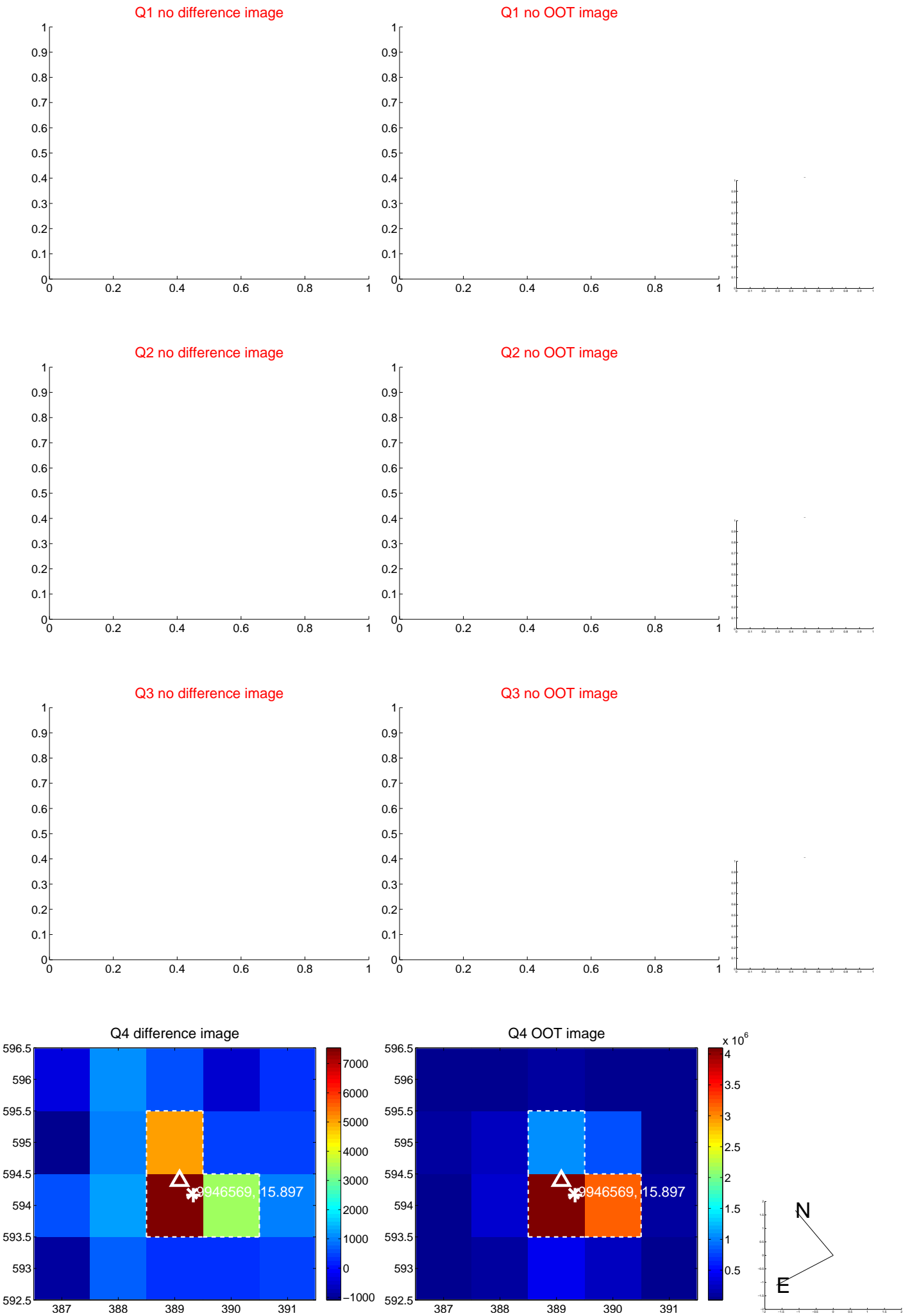
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.972 ± 1.156	0.84	0.775 ± 0.852	0.587 ± 1.392
PRF-fit source offset from KIC position	0.949 ± 1.574	0.60	0.782 ± 1.010	0.537 ± 1.707
photometric centroid source offset	0.74 ± 1.11	0.67	-0.74 ± 1.11	0.04 ± 1.03

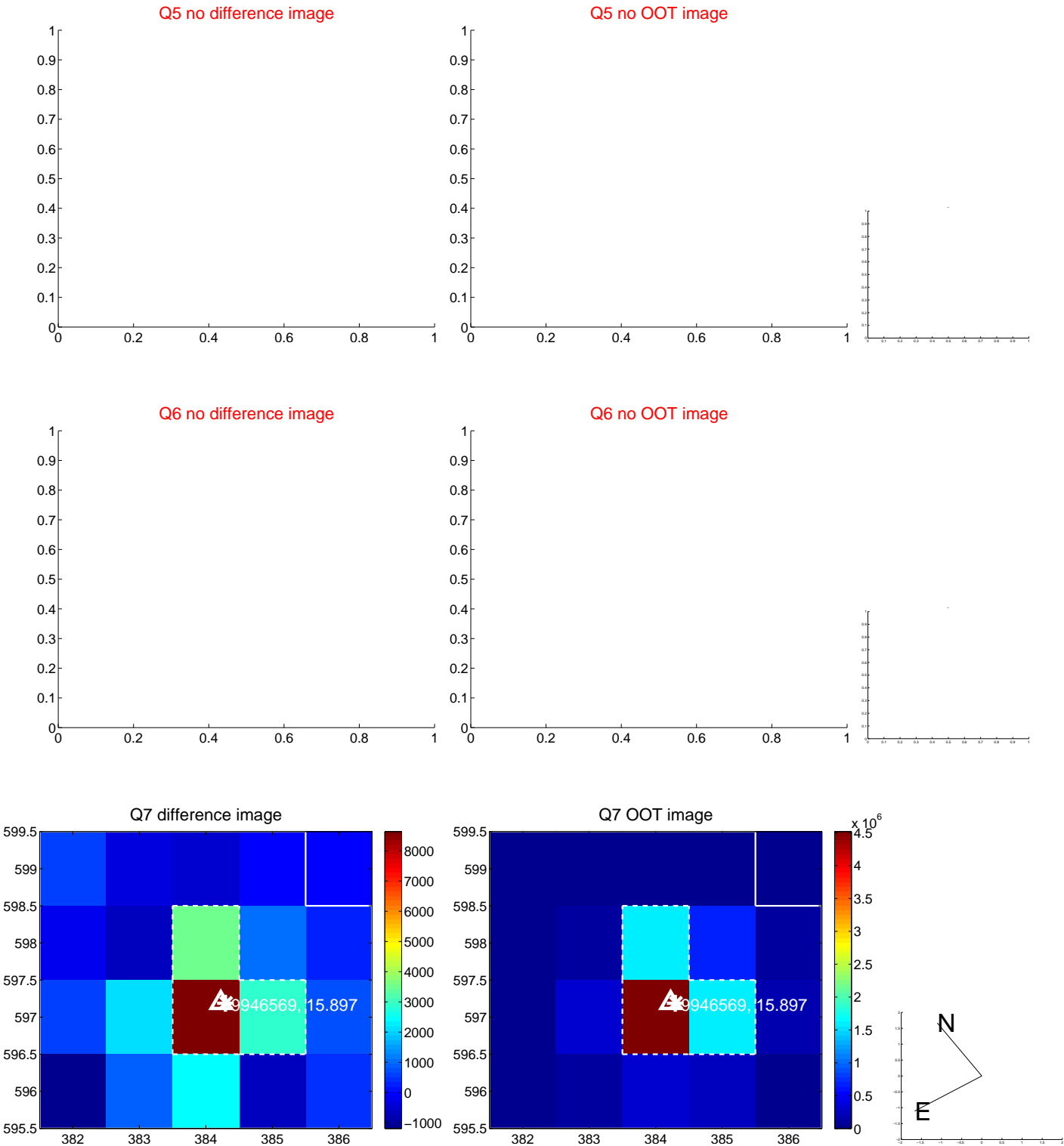


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

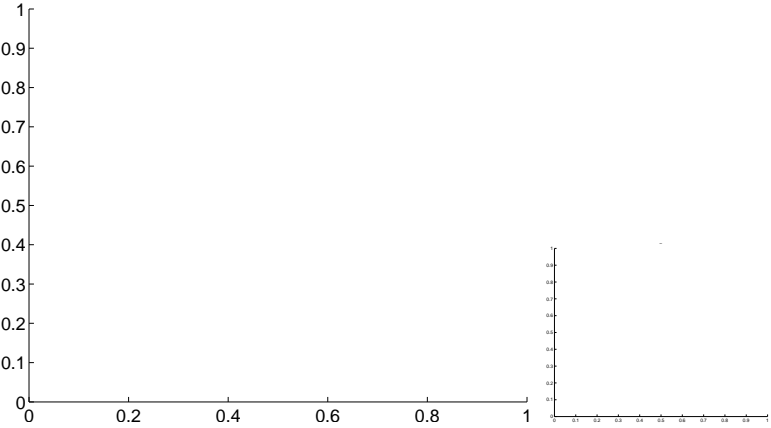


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q9 no difference image



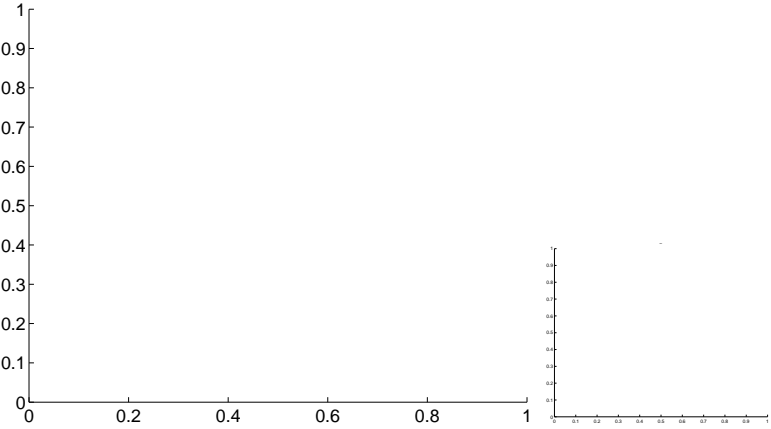
Q9 no OOT image



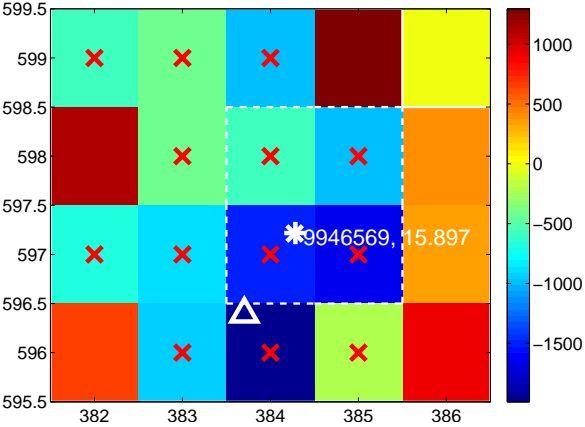
Q10 no difference image



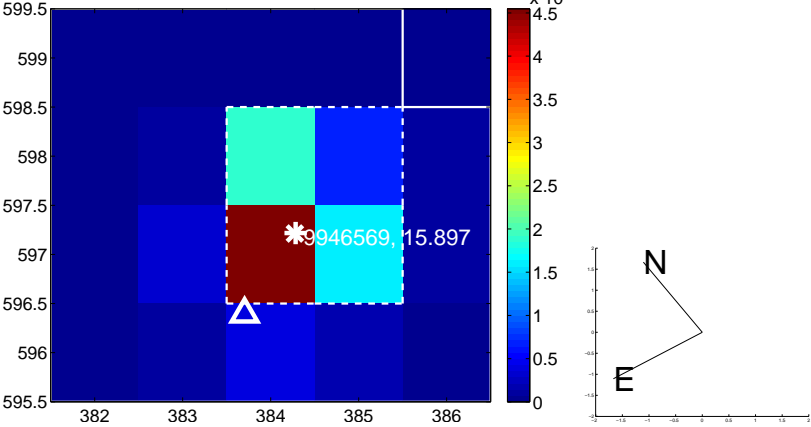
Q10 no OOT image



Q11 difference image. Poor Quality



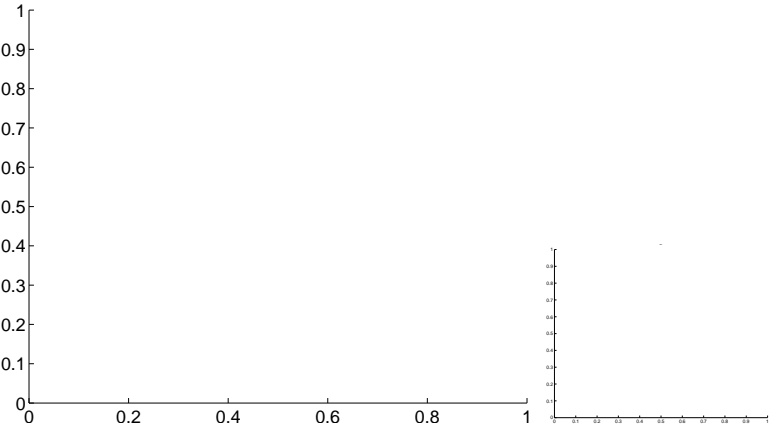
Q11 OOT image



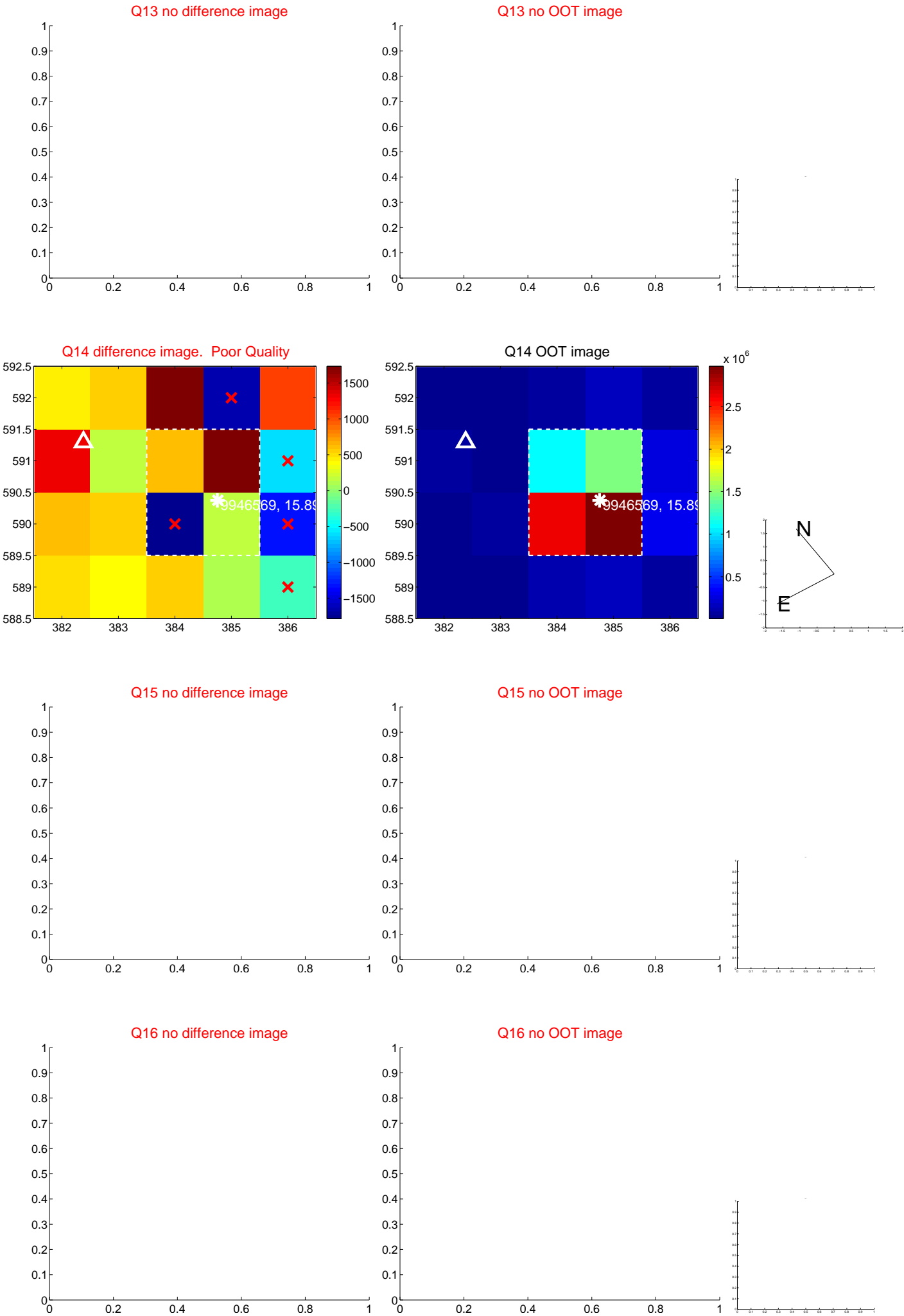
Q12 no difference image



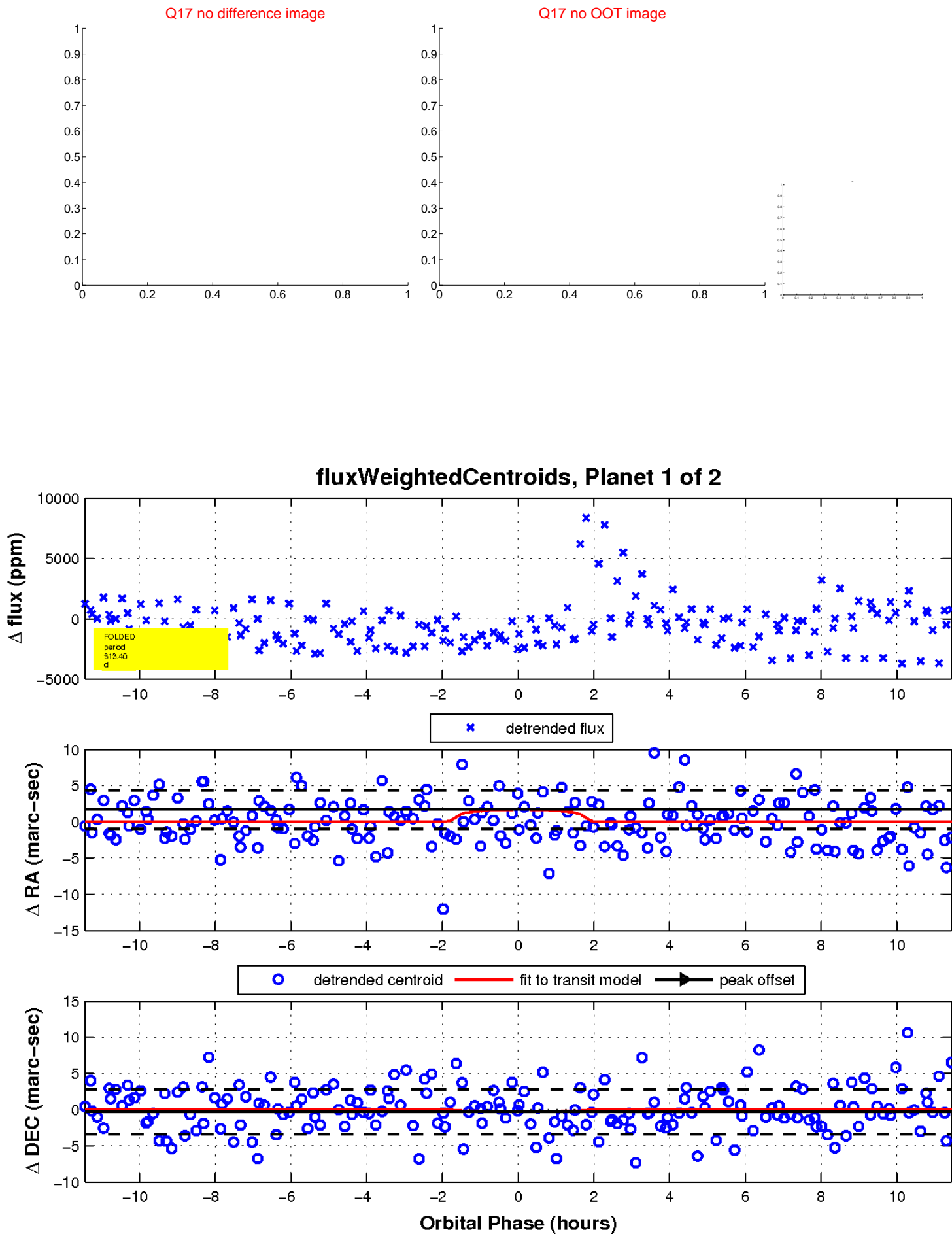
Q12 no OOT image



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

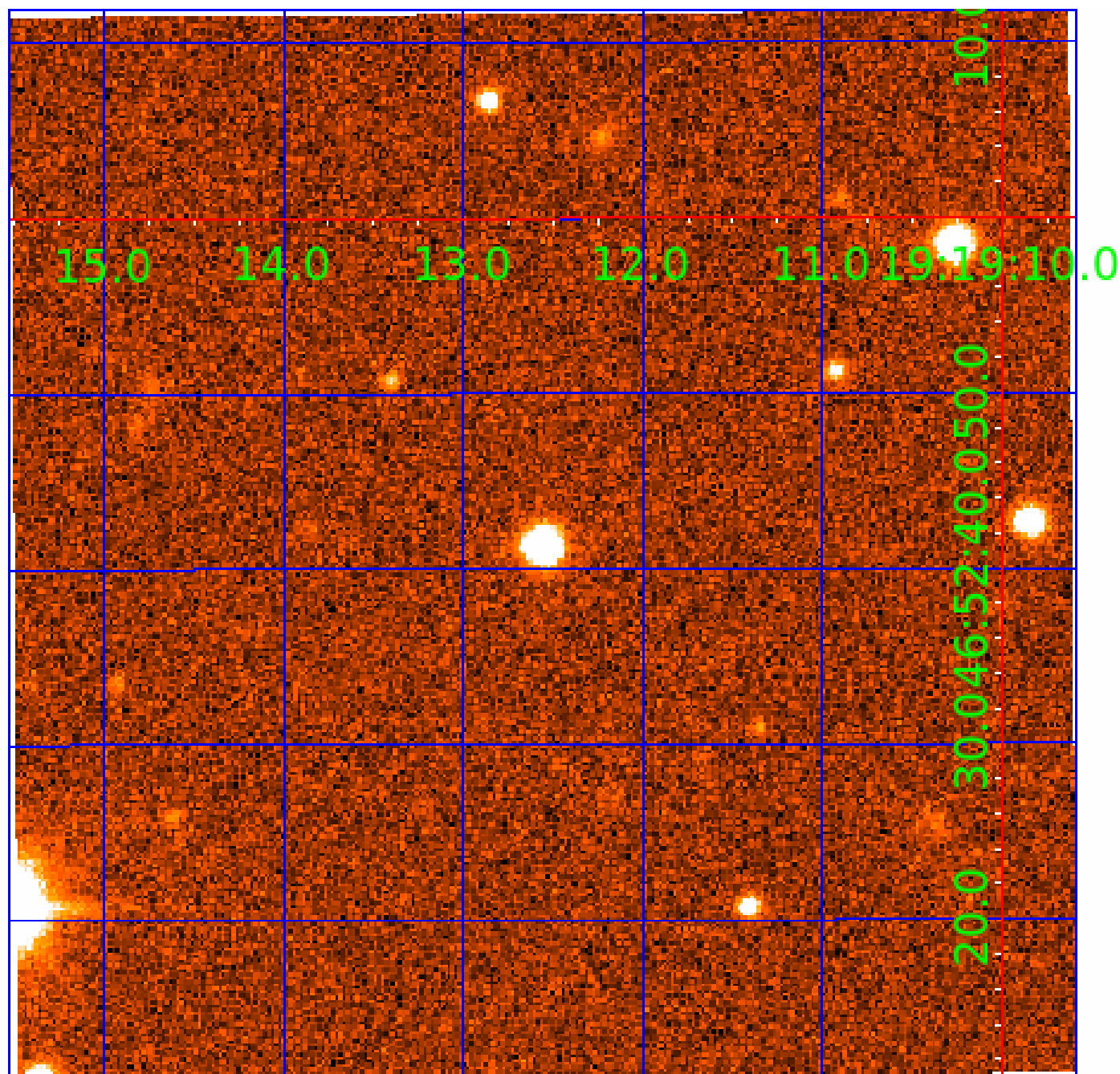


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009946569

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})
009946569-01	OBS	No	313.398956	402.317611	1827.8	3.822	11.9	6.3	0.70	4671	3.26	0.33
009946569-02	OBS	No	343.248351	280.617826	2875.0	7.235	9.0	7.5	0.70	4671	7.39	0.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009946569-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009946569-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

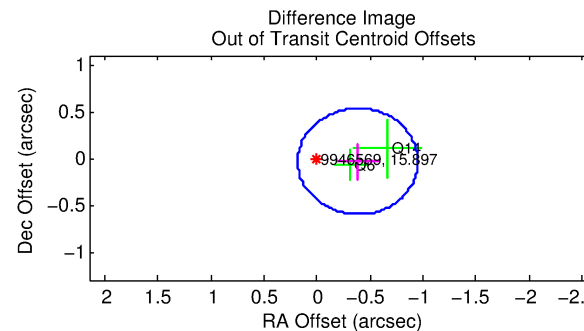
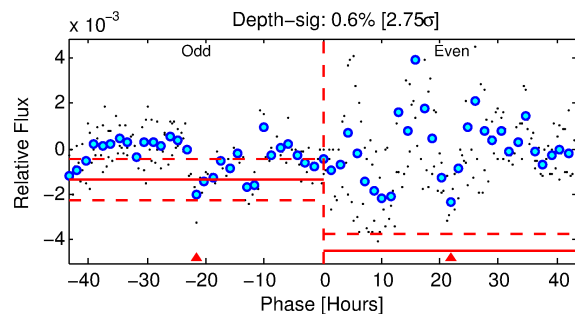
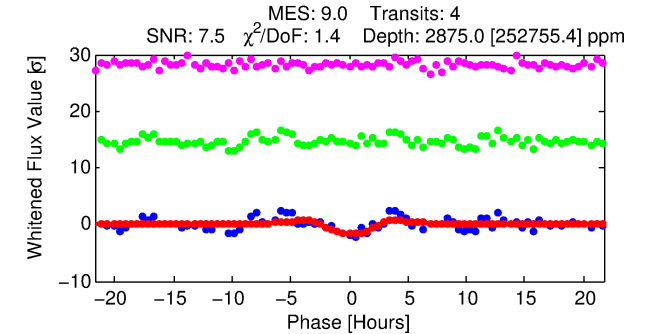
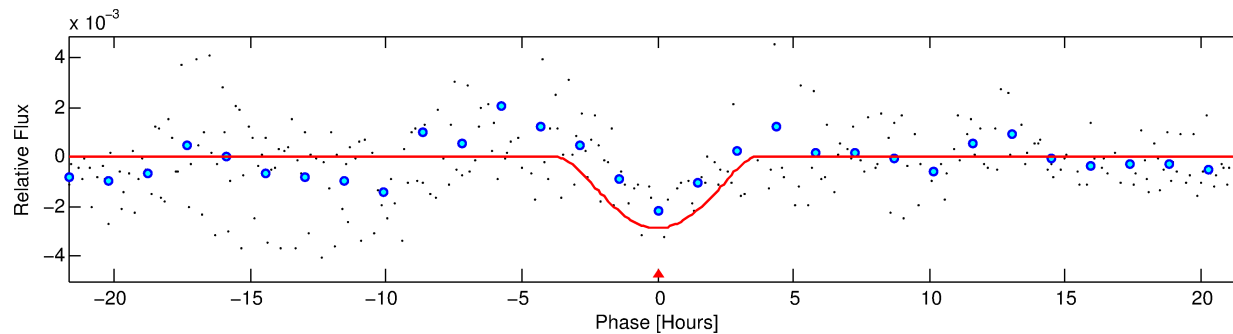
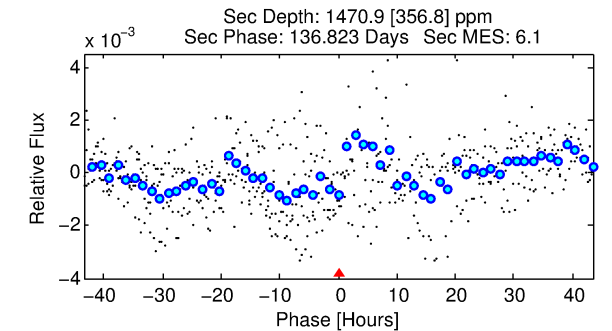
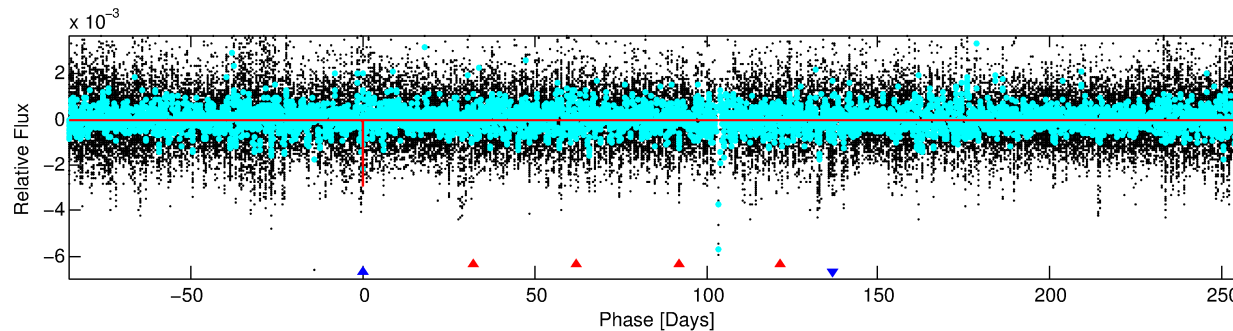
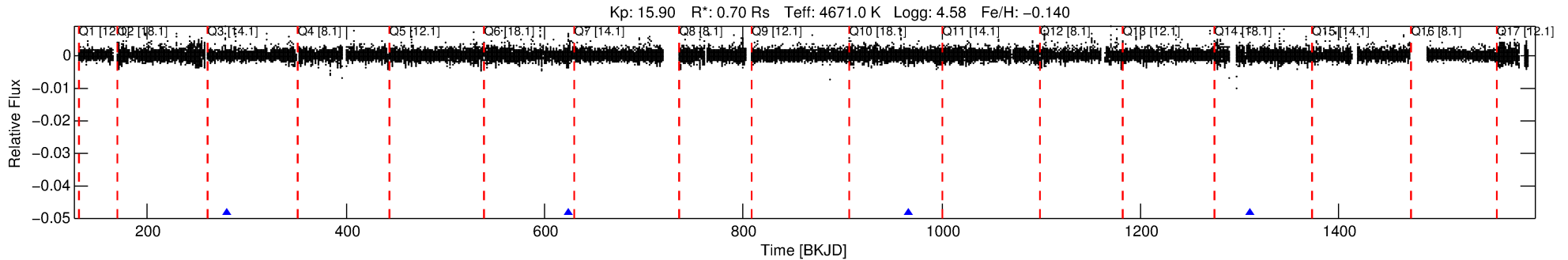
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009946569-02

No Significant Match Found

DV One-Page Summary

KIC: 9946569 Candidate: 2 of 2 Period: 343.248 d



DV Fit Results:

Period = 343.24835 [0.01021] d
Epoch = 280.6178 [0.0184] BKJD
Rp/R* = 0.0971 [0.4102]
a/R* = 163.56 [131.58]
b = 1.00 [4.94]
Seff = 0.29 [0.05]
Teff = 187 [8] K
Rp = 7.39 [31.20] Re
a = 0.8445 [0.0620] AU
Ag = 10579.32 [89416.43] [0.12σ]
Teffp = 2936 [6203] K [0.44σ]

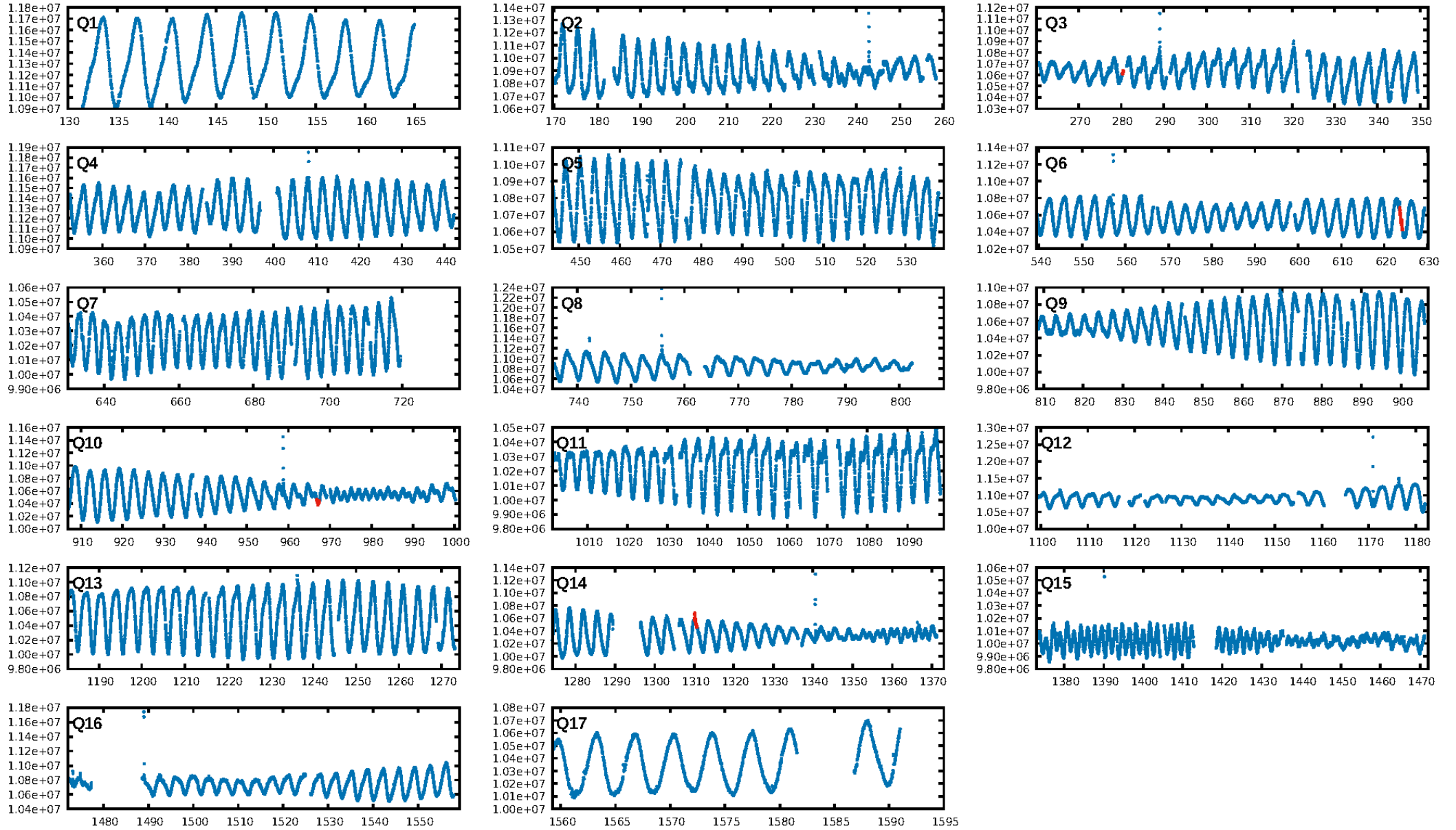
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.55σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 19.8%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 2.53e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.758
Centroid-sig: 79.1%
Centroid-so: 0.420 arcsec [0.58σ]
OotOffset-rm: 0.386 arcsec [2.05σ]
KicOffset-rm: 0.342 arcsec [1.81σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

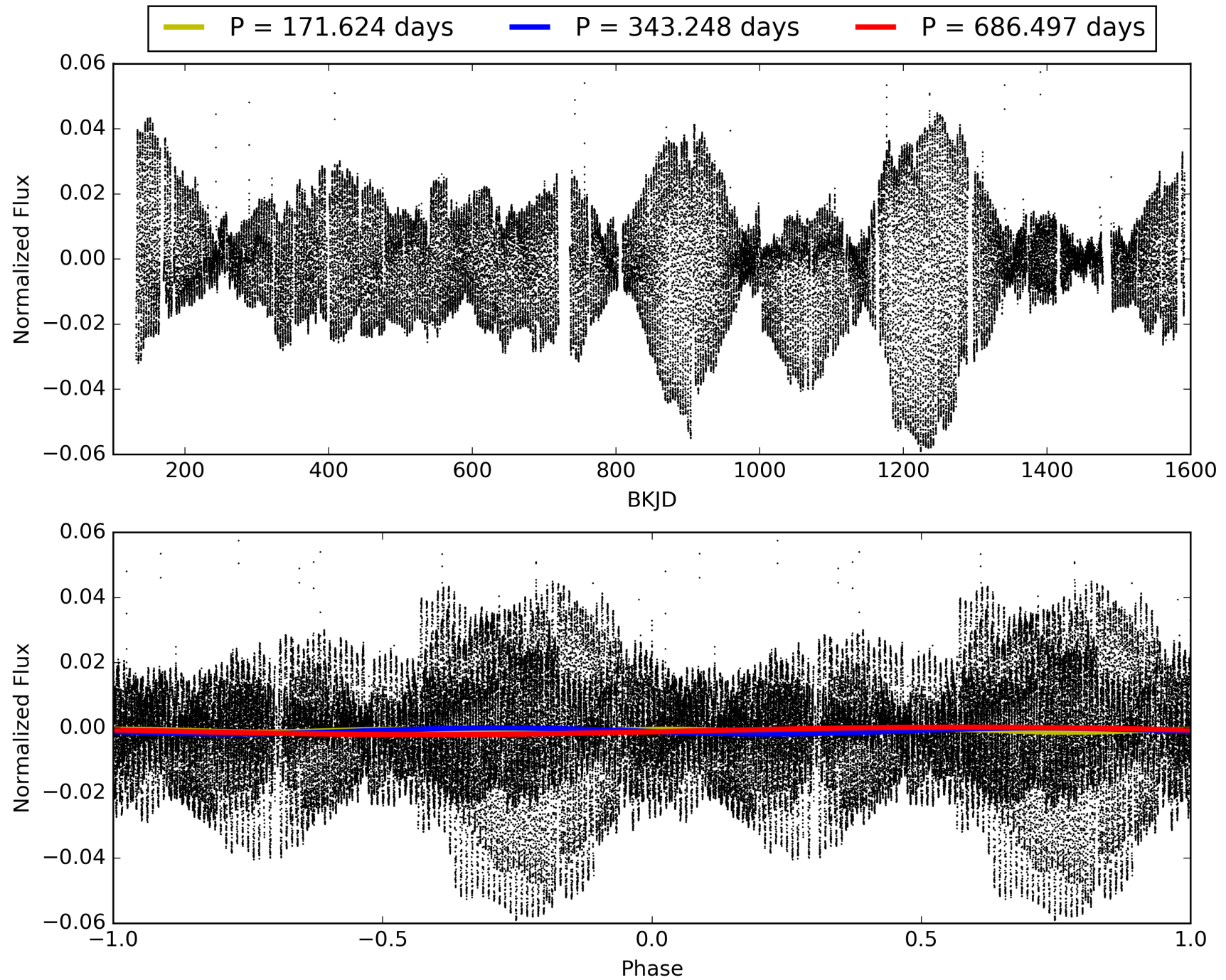
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:37:05 Z

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

TCE 009946569-02, PDC Light Curves

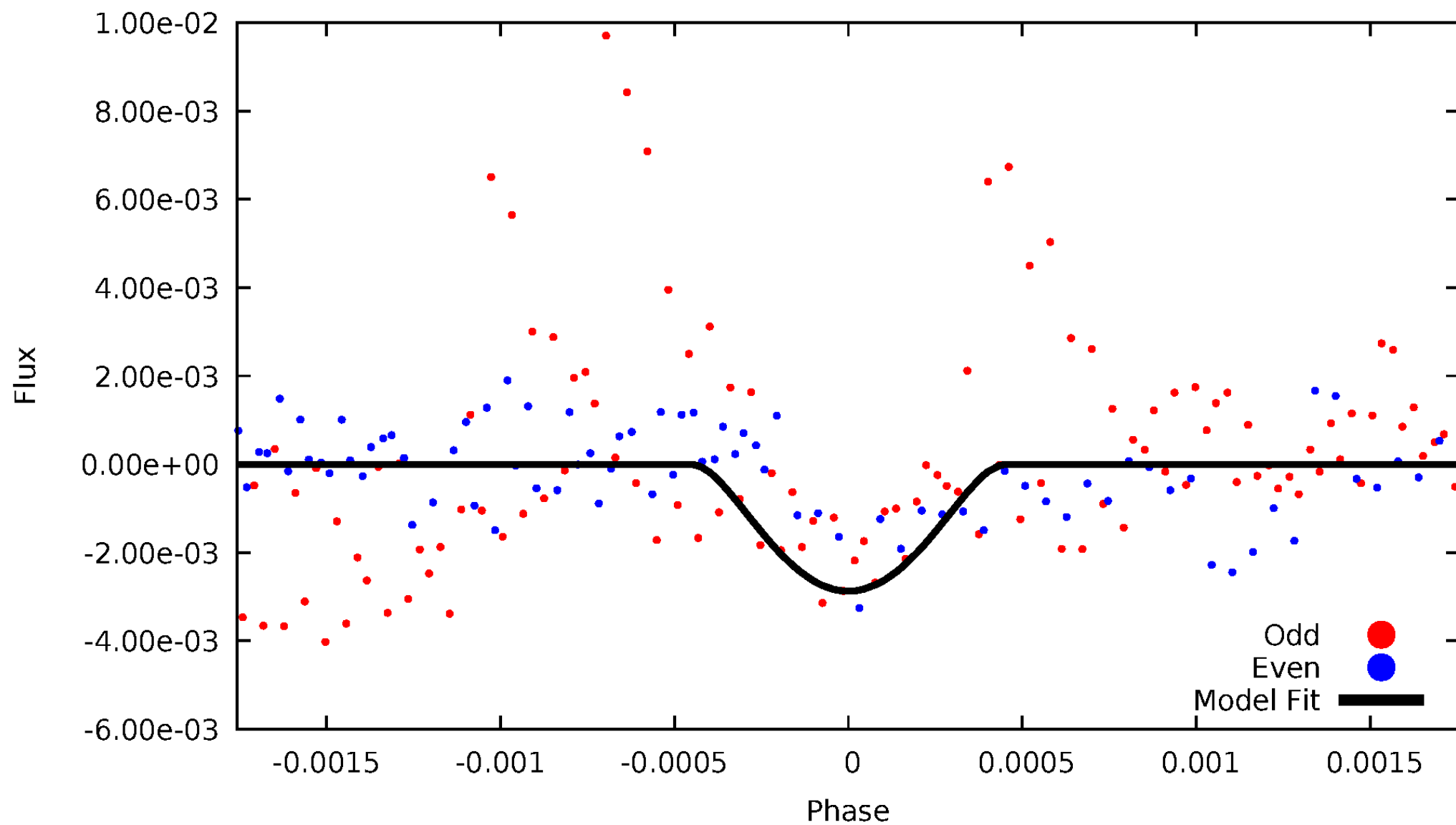


TCE 009946569-02



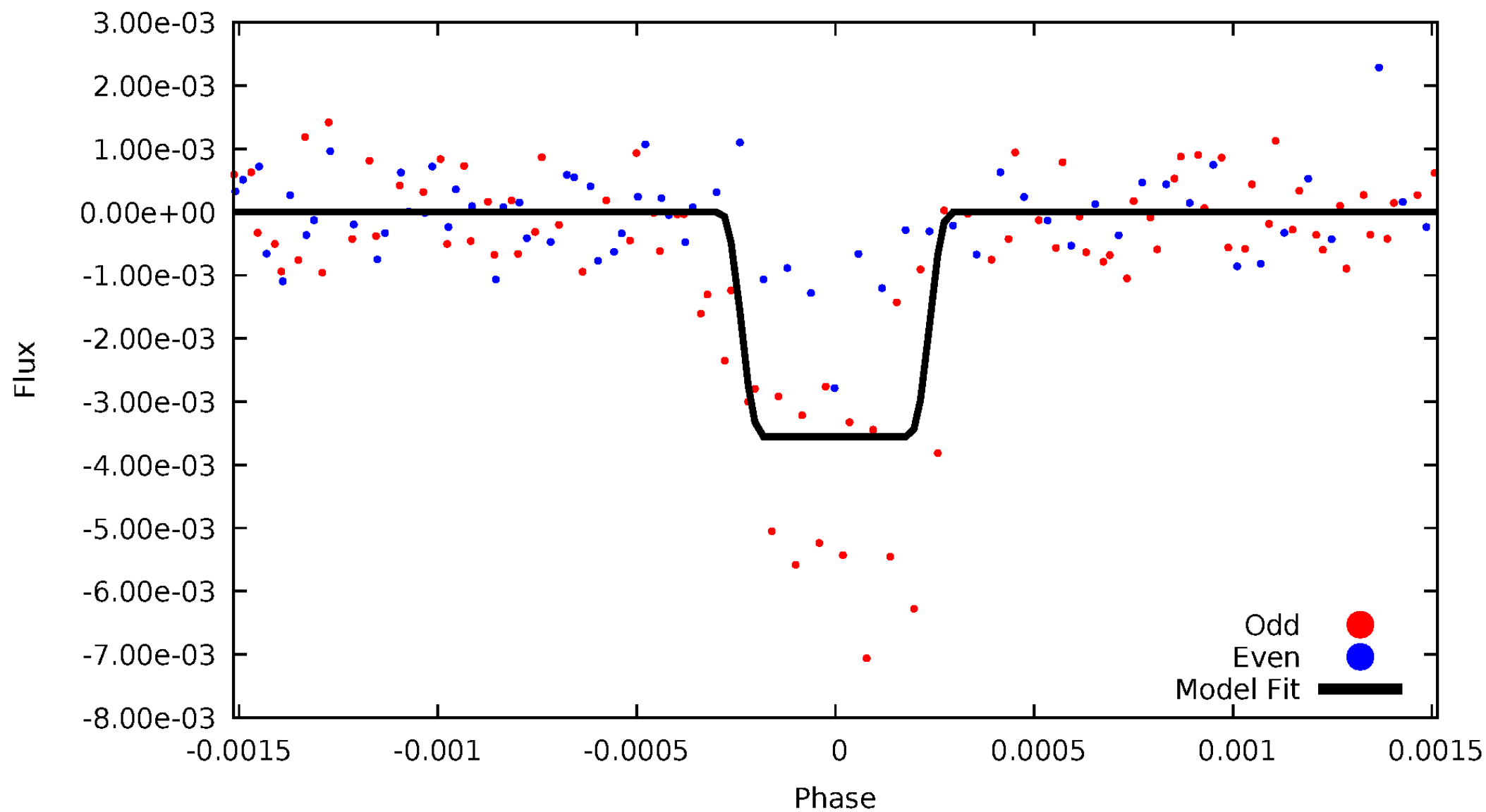
DV Odd/Even

TCE 009946569-02



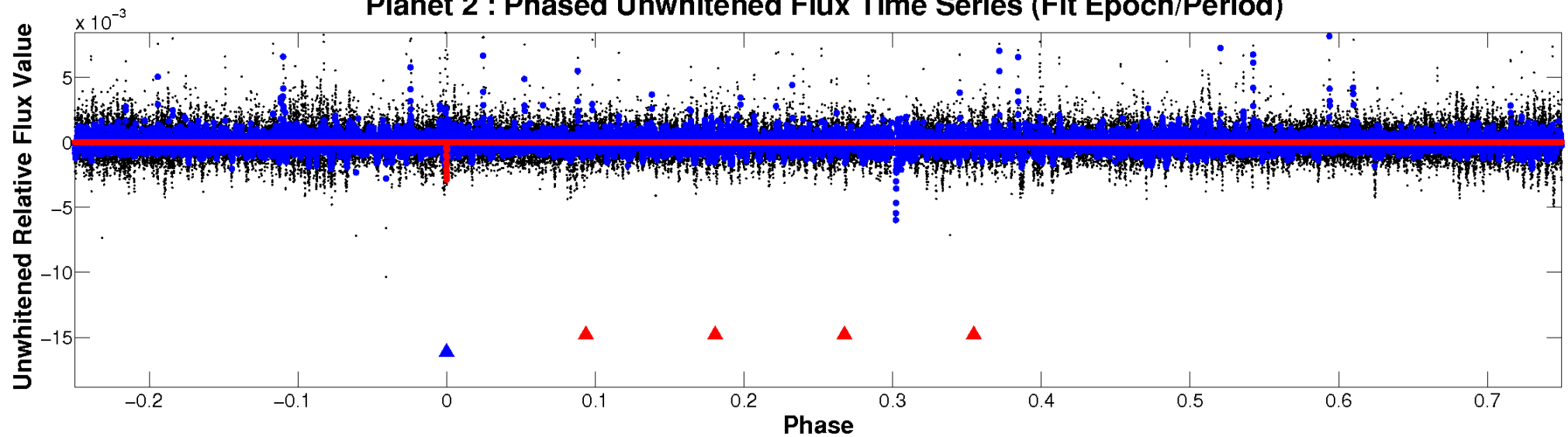
ALT Odd/Even

TCE 009946569-02

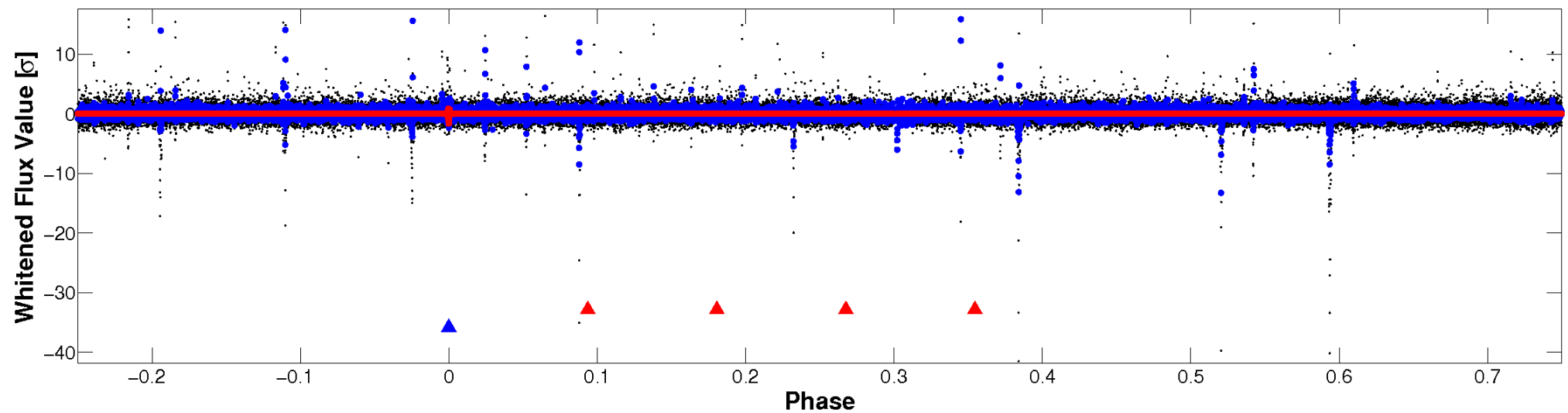


Non-Whitened Vs. Whitened Light Curve

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

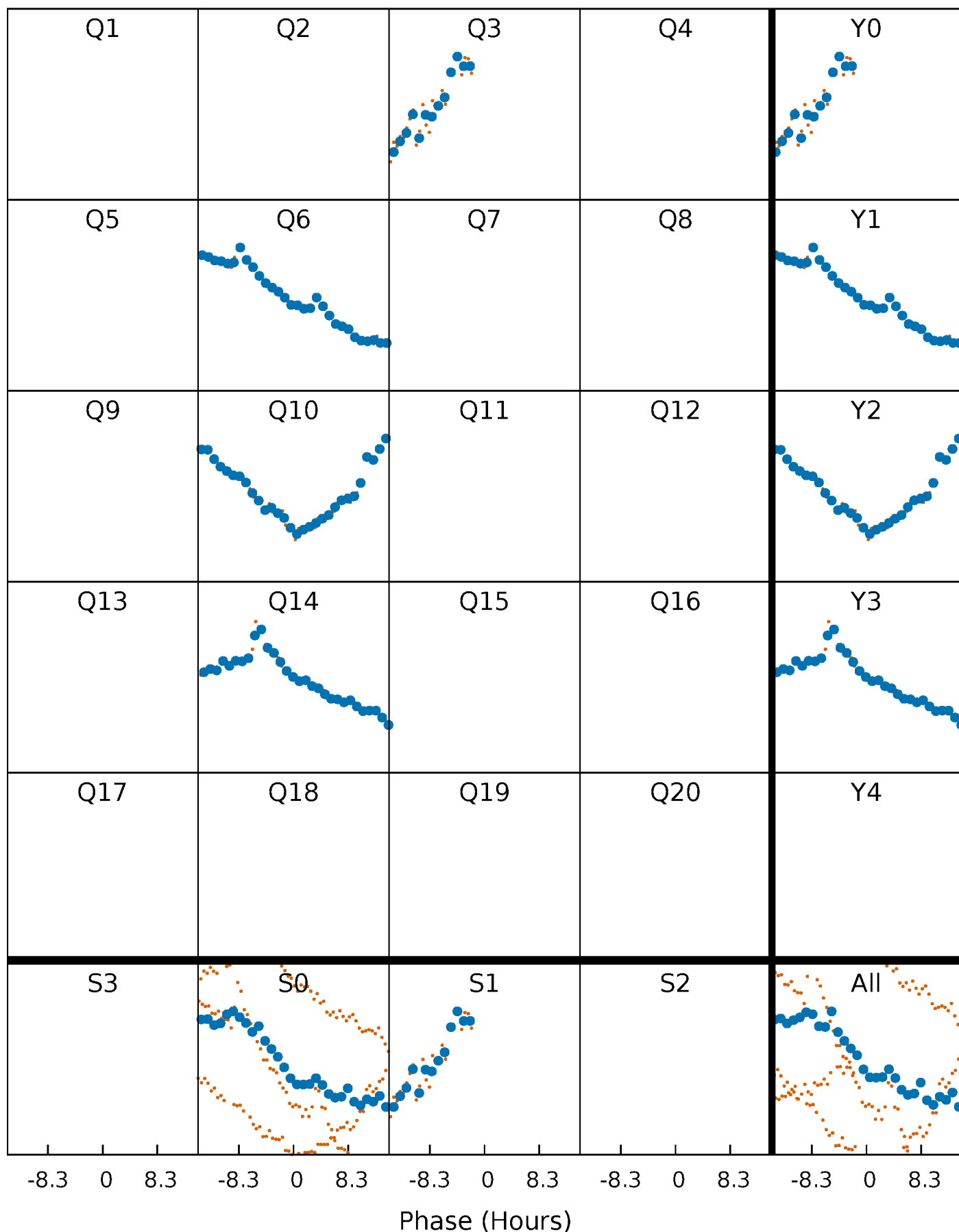


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



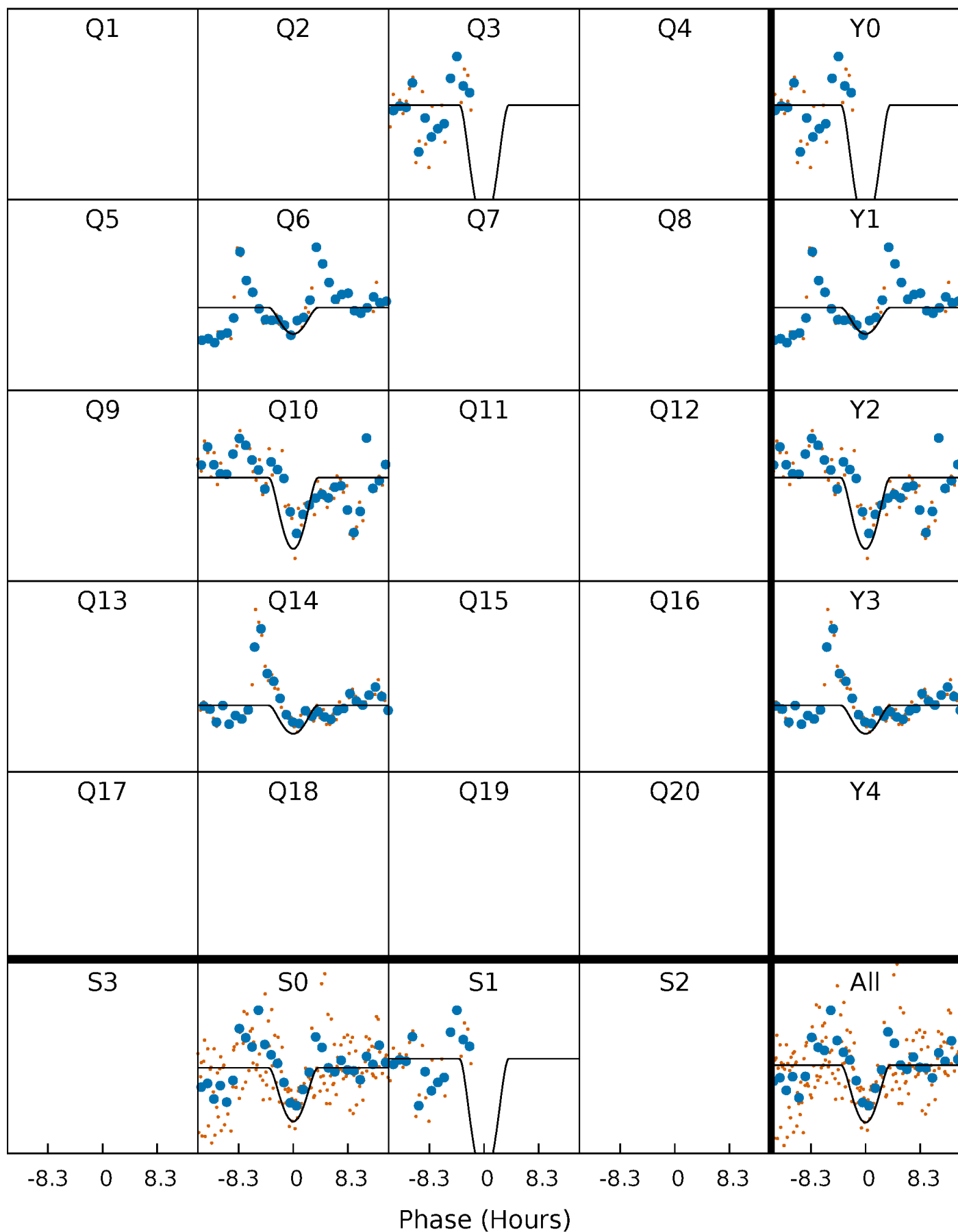
PDC Quarter-Phased Transit Curves

TCE 009946569-02 P=343.248351 Days $T_0=280.617826$ (BKJD)



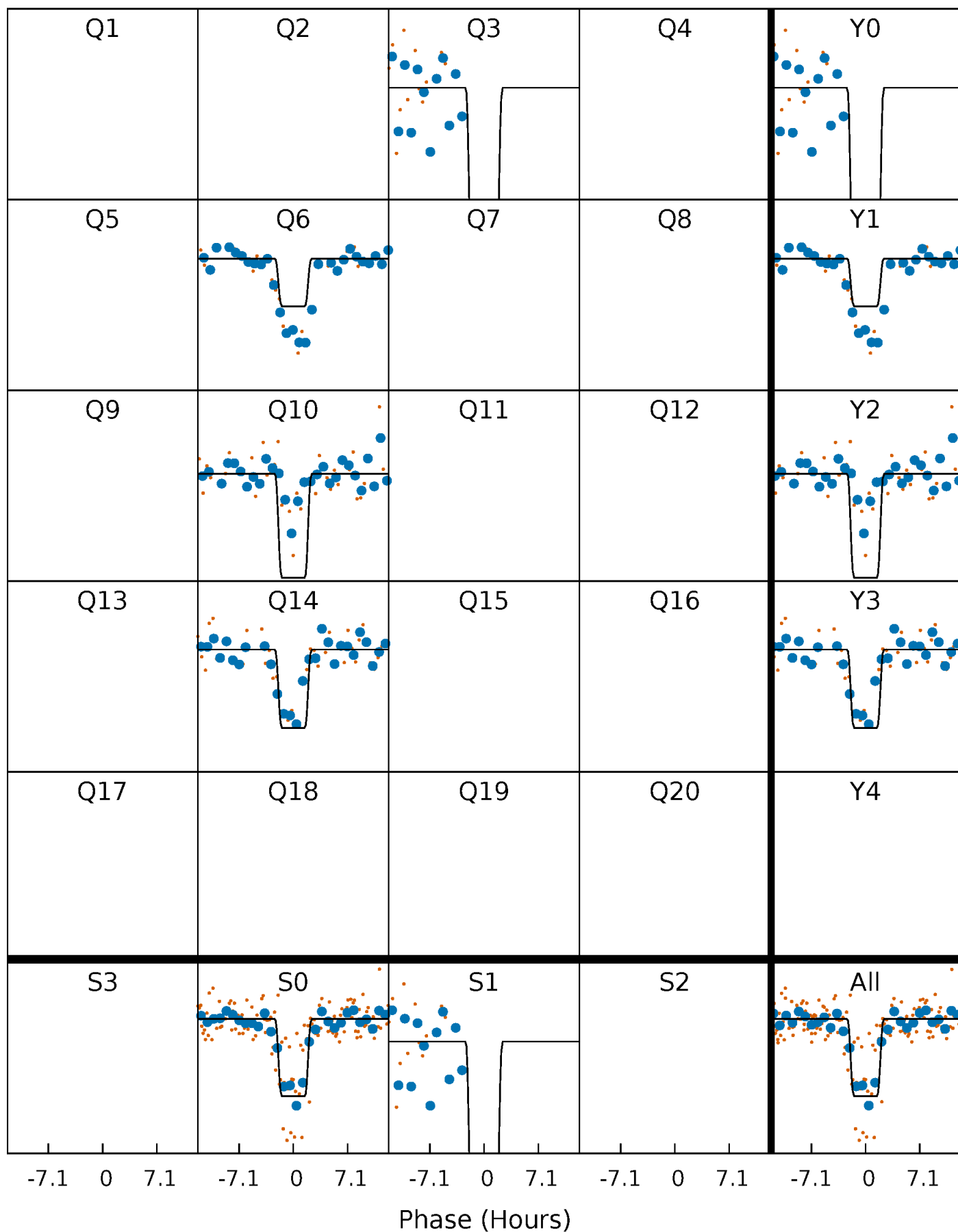
DV Quarter-Phased Transit Curves

TCE 009946569-02 P=343.248351 Days $T_0=280.617826$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

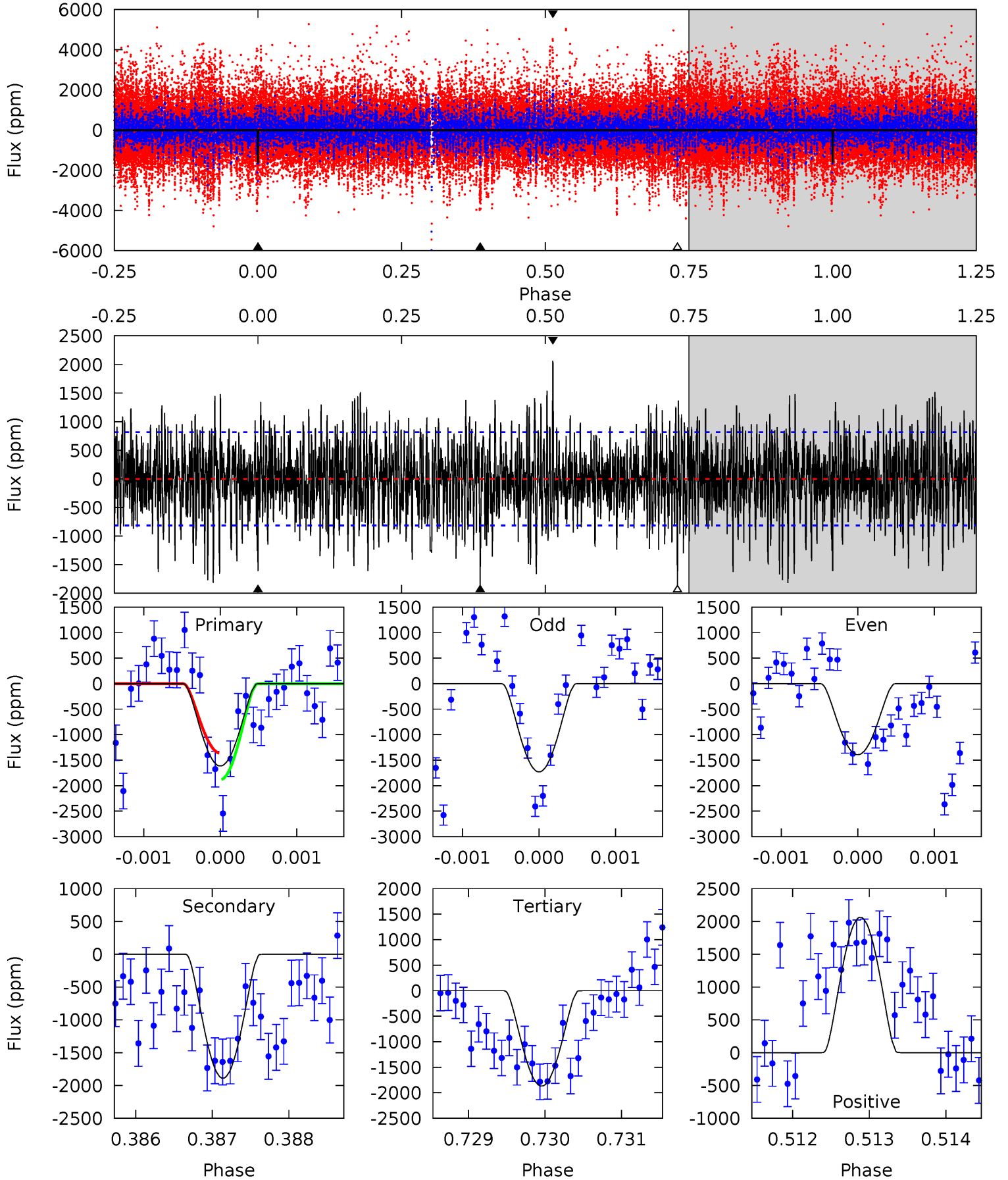
TCE 009946569-02 P=343.230742 Days $T_0=280.664744$ (BKJD)



DV Model-Shift Uniqueness Test

009946569-02, P = 343.248351 Days, E = 280.617826 Days

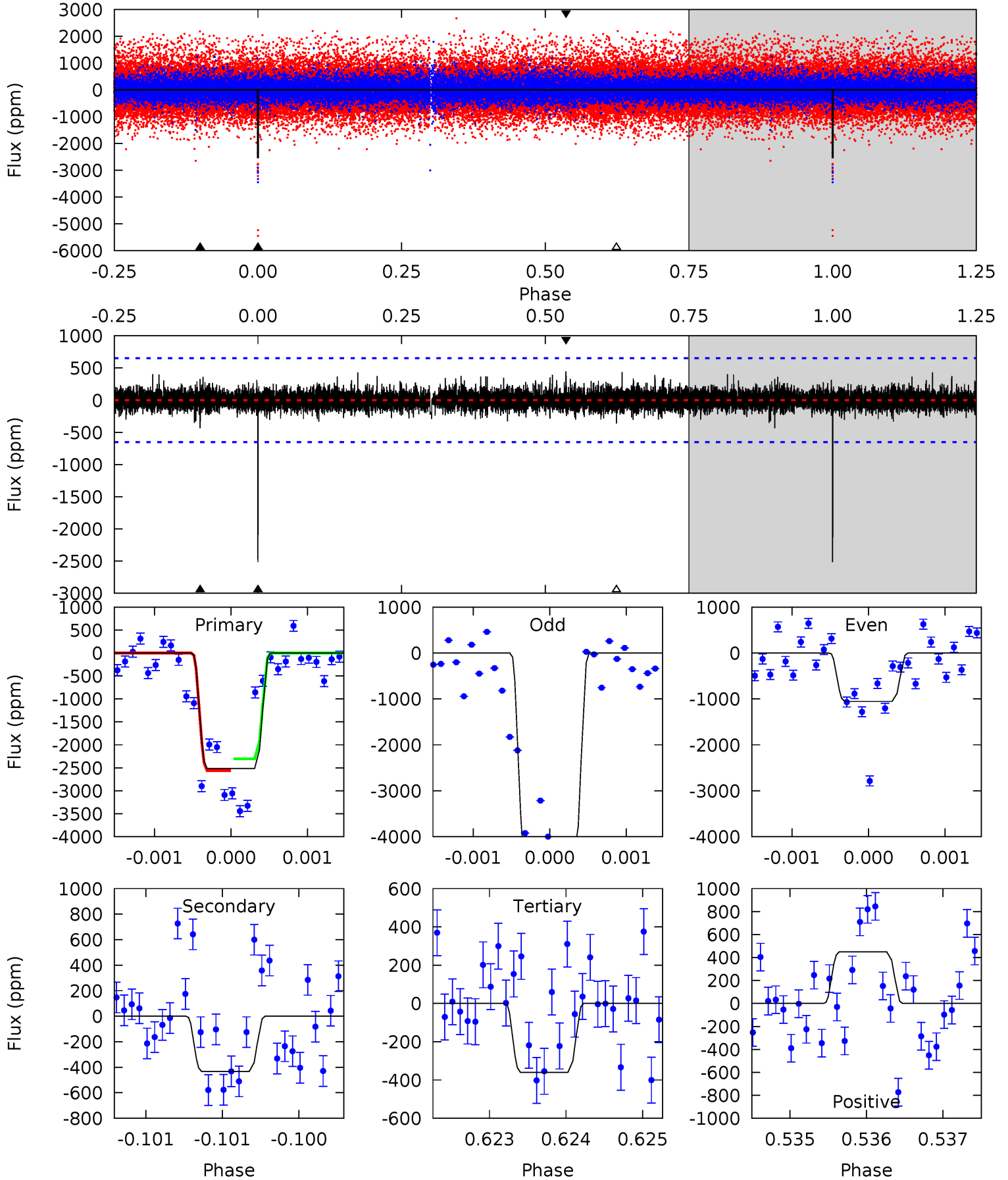
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	12.6	12.5	13.8	5.46	3.31	3.42	-1.70	-3.00	0.13	-1.17	1.02	0.75	0.52	1.74



Alt Model-Shift Uniqueness Test

009946569-02, P = 343.230742 Days, E = 280.664744 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	3.70	3.06	3.83	5.55	3.44	0.75	18.4	17.6	0.63	-0.14	15.9	1.16	0.15	1.04



Stellar Parameters For KIC 009946569

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	4671^{+140}_{-140}	$4.585^{+0.058}_{-0.027}$	$-0.140^{+0.300}_{-0.300}$	$0.697^{+0.049}_{-0.061}$	$0.681^{+0.077}_{-0.056}$	$2.839^{+0.775}_{-0.323}$
	+3%/-3%	+1%/-1%	+214%/-214%	+7%/-9%	+11%/-8%	+27%/-11%
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 009946569-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1886 ± 149	$23.56^{+23.51}_{-17.03}$	260^{+10}_{-9}	2536^{+1114}_{-375}	1351^{+15790}_{-1023}
Alt.	-434 ± 117	$21.45^{+25.03}_{-14.87}$	260^{+9}_{-9}	2164^{+736}_{-309}	340^{+3462}_{-263}

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

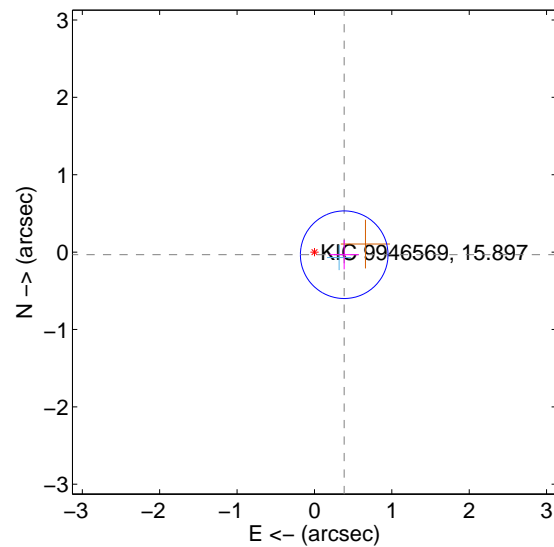
Supplemental centroid analysis for 009946569-02. Kepler magnitude: 15.90. Transit SNR 7.53

There are 1 quarters with good PRF difference image offsets

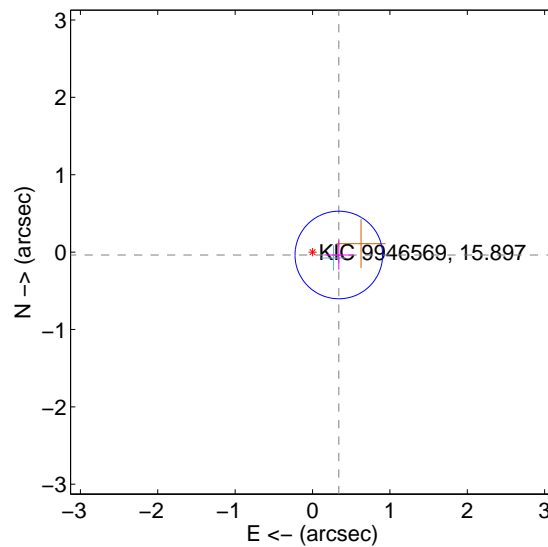
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.386 ± 0.189	2.05	-0.385 ± 0.189	-0.034 ± 0.189
PRF-fit source offset from KIC position	0.342 ± 0.189	1.81	-0.340 ± 0.189	-0.037 ± 0.189
photometric centroid source offset	0.42 ± 0.73	0.58	0.09 ± 0.83	-0.41 ± 0.72

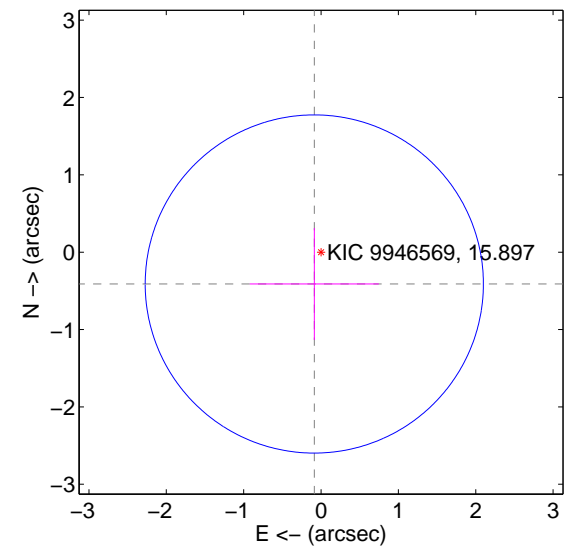
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

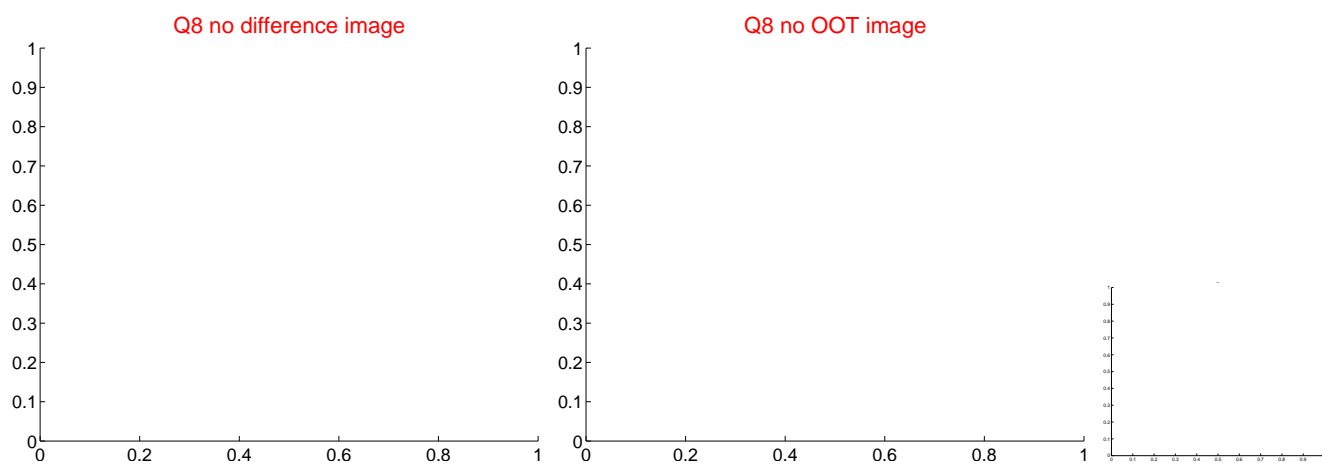
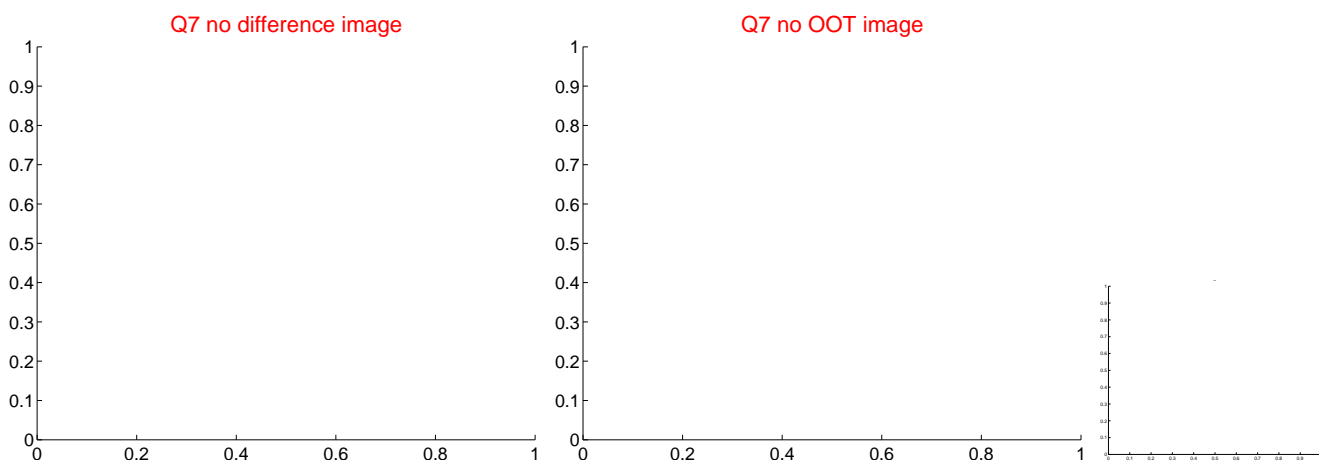
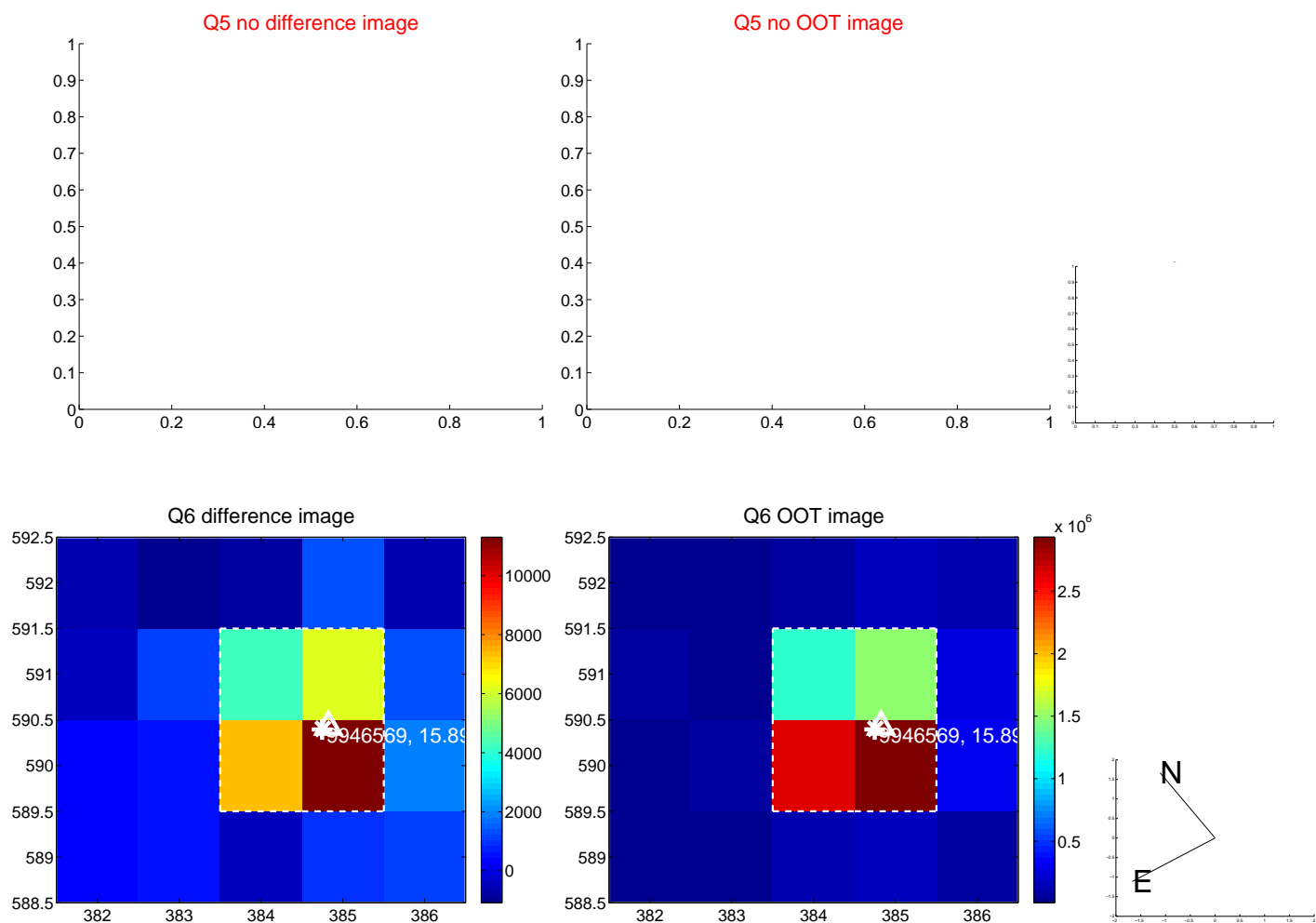


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



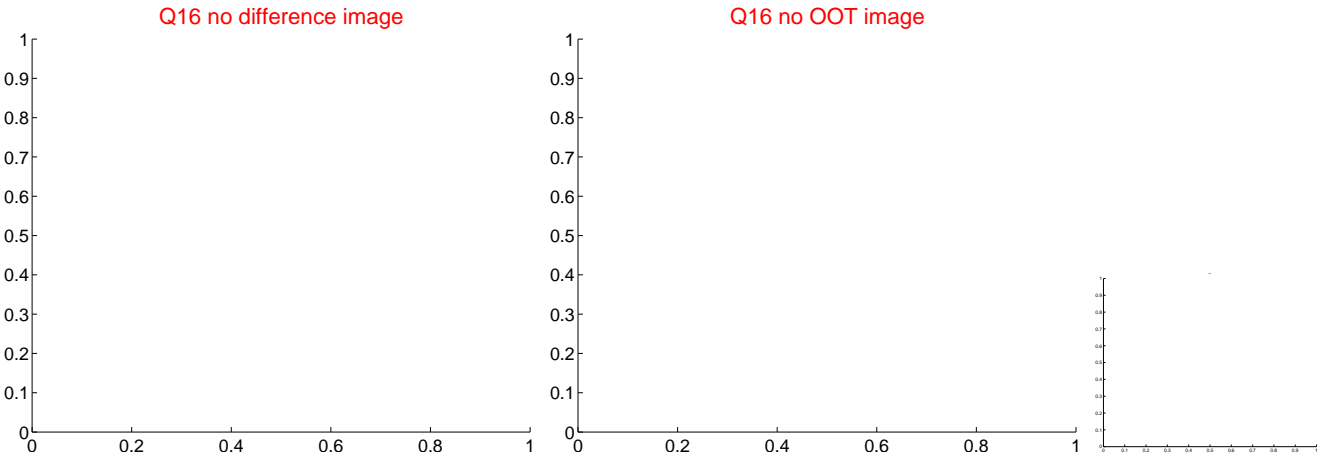
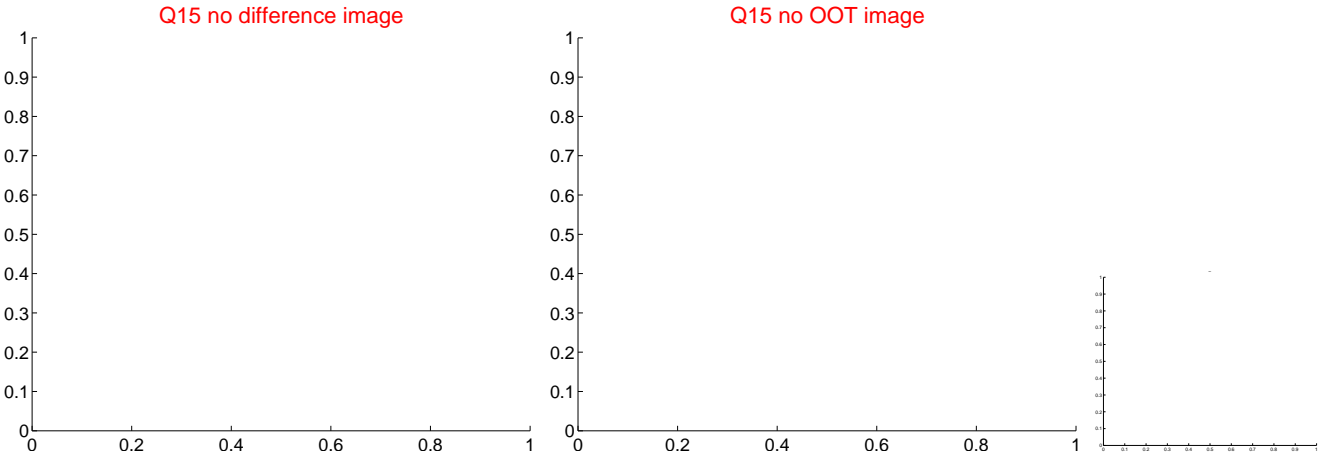
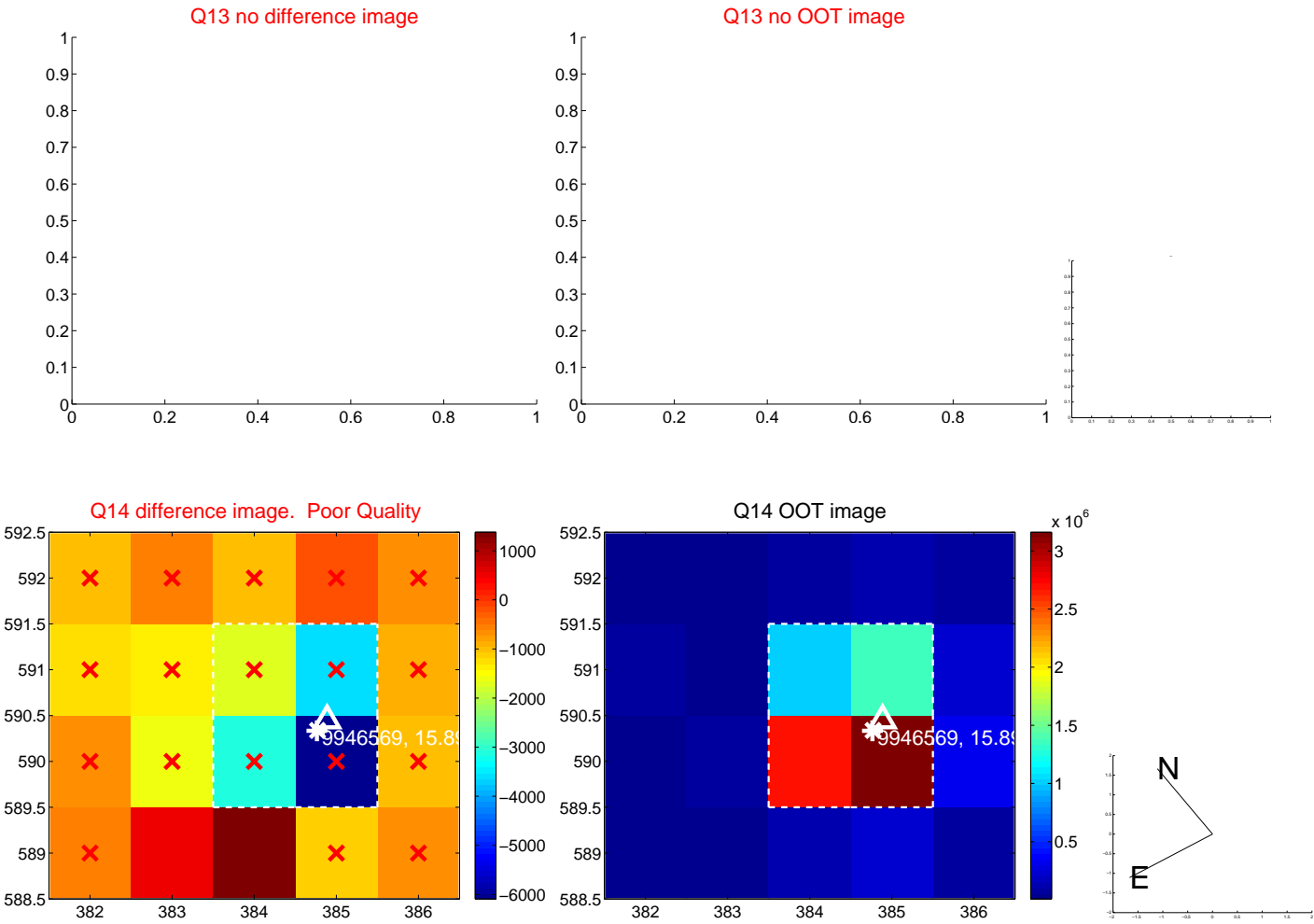
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



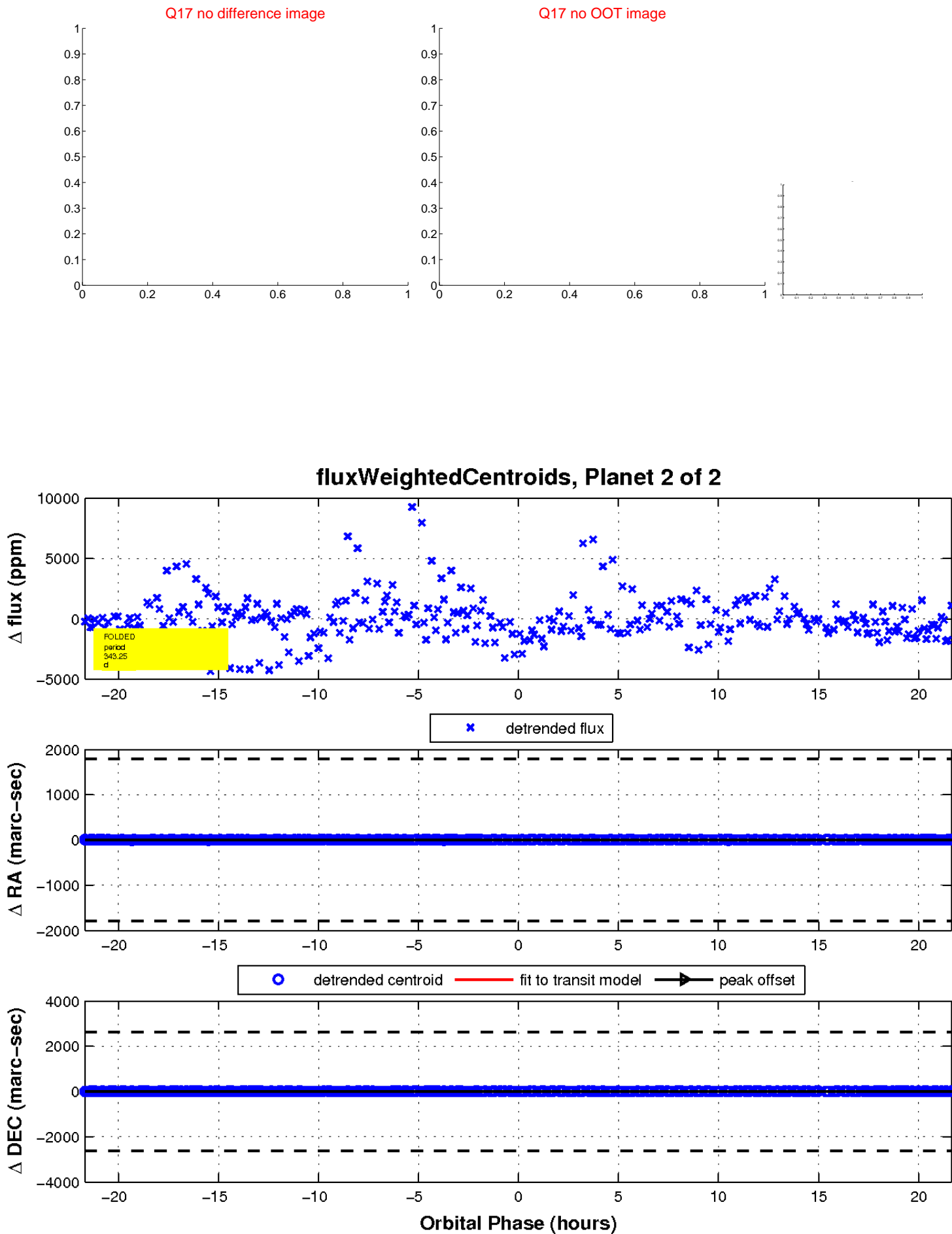
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

