

KIC 002437149

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})
002437149-01	OBS	3598.01	18.798720	138.025894	390006.3	6.000	1397.7	-1.0	0.80	5334	42.64	25.95
002437149-02	OBS	No	9.399311	137.830601	293630.6	7.707	1133.6	740.1	0.80	5334	63.31	65.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002437149-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
002437149-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

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.

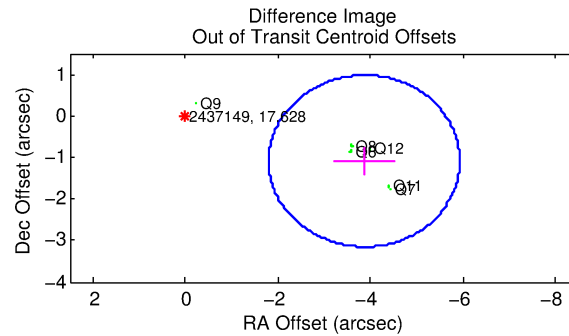
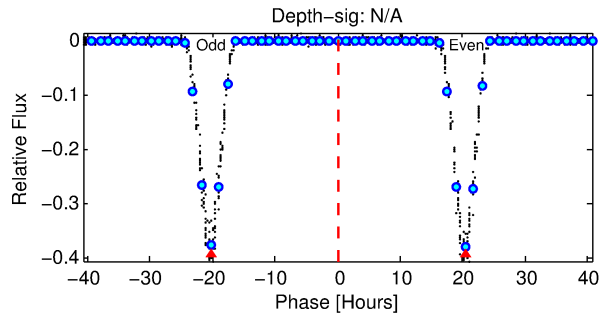
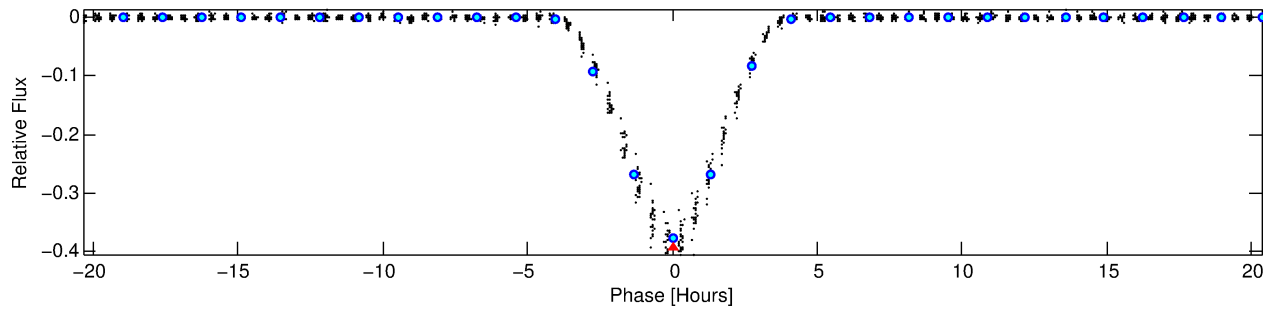
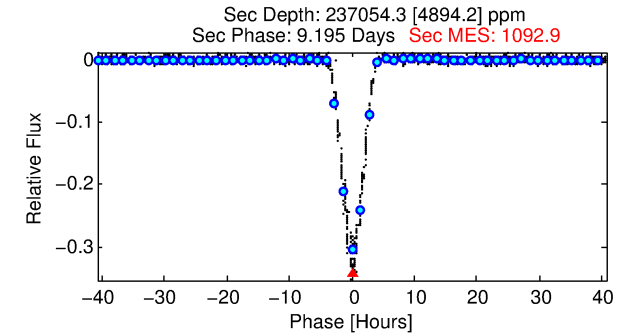
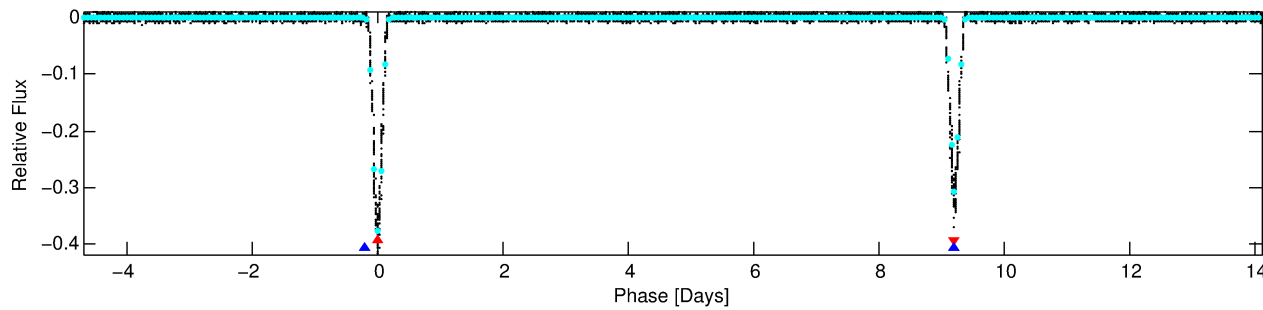
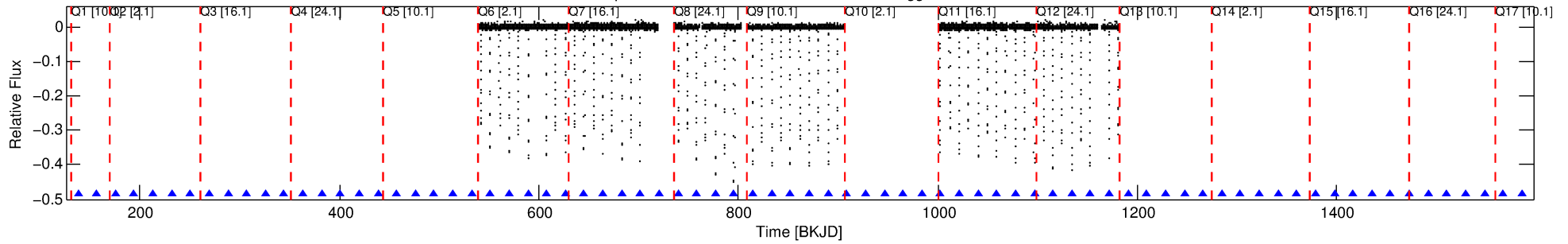
Ephemeris Match Information For 002437149-01

No Significant Match Found

DV One-Page Summary

KIC: 2437149 Candidate: 1 of 2 Period: 18.799 d
KOI: K03598.01 Corr: 0.884

Kp: 17.63 R*: 0.80 Rs Teff: 5334.0 K Logg: 4.58 Fe/H: -0.020



TPS TCE Results:

Period = 18.79872 d
Epoch = 138.0259 BKJD

DV fit results are unavailable

DV Diagnostic Results:

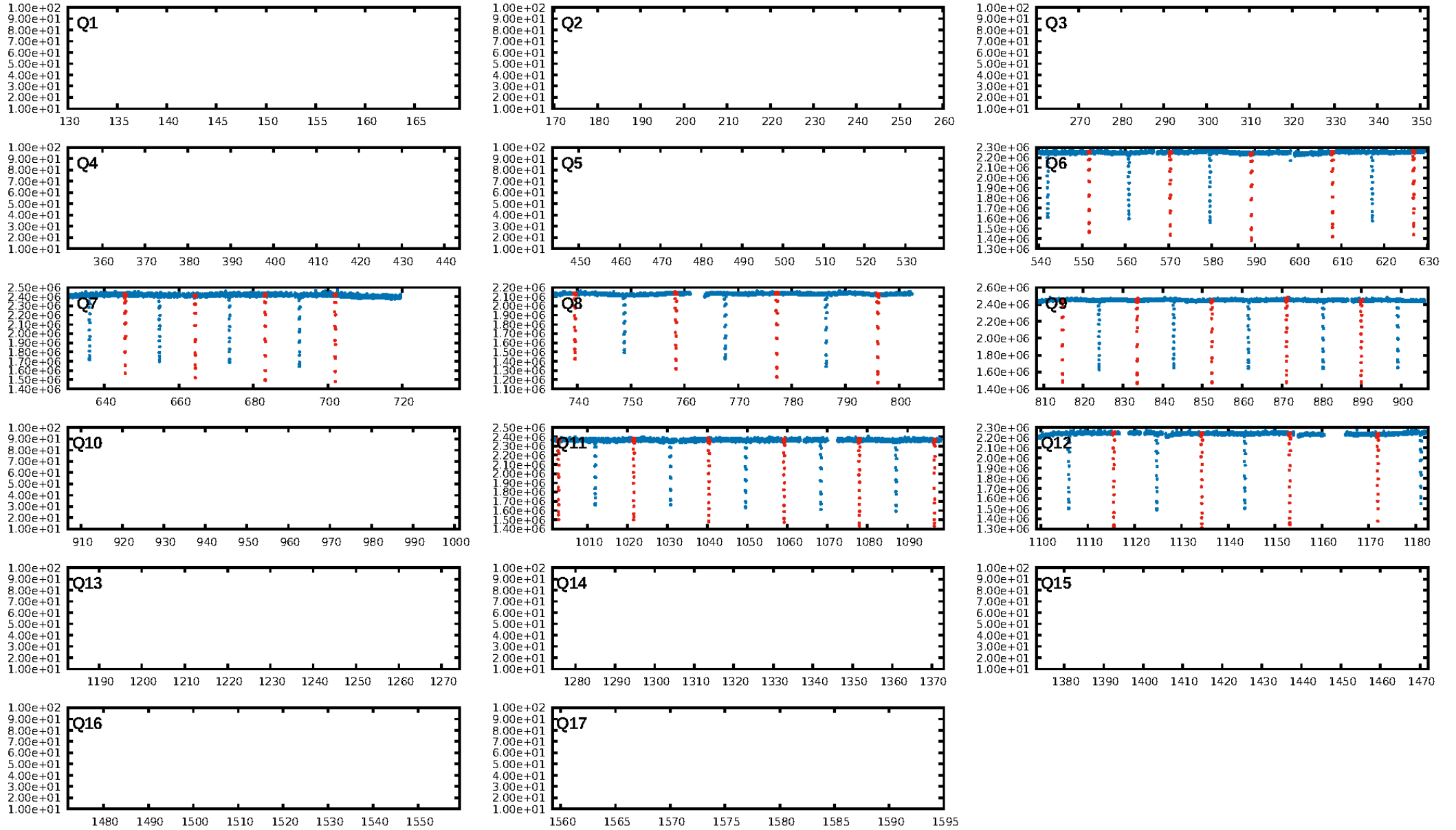
ShortPeriod-sig: 100.0% [23.10 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 2.432

Centroid-sig: 0.0%
Centroid-so: 0.458 arcsec [165.16 σ]
OotOffset-rm: 4.017 arcsec [5.83 σ]
KicOffset-rm: 0.108 arcsec [1.39 σ]
OotOffset-st: 1/2/2/1 [6]
KicOffset-st: 1/2/2/1 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.00 [0/6]

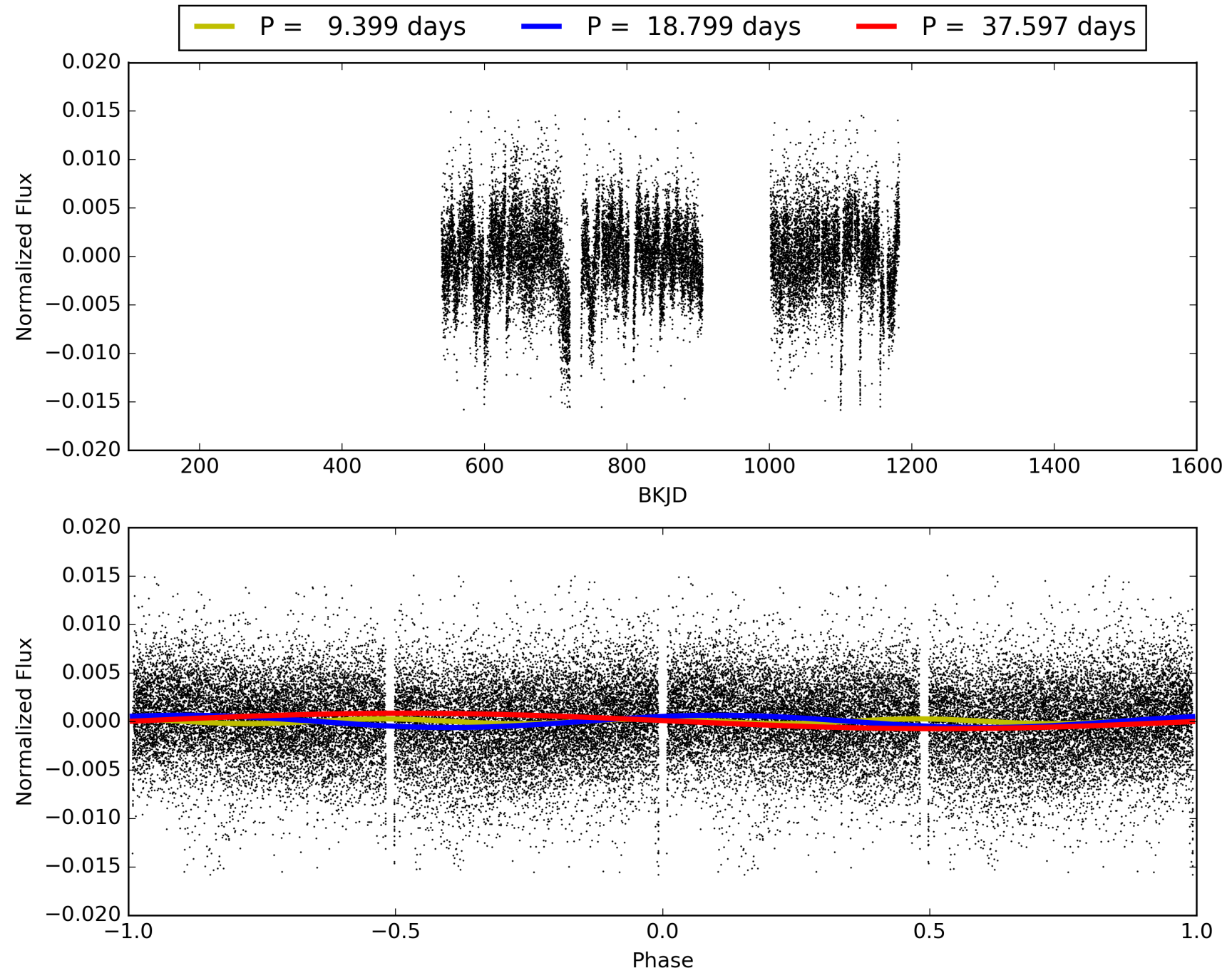
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:41:08 Z

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

TCE 002437149-01, PDC Light Curves

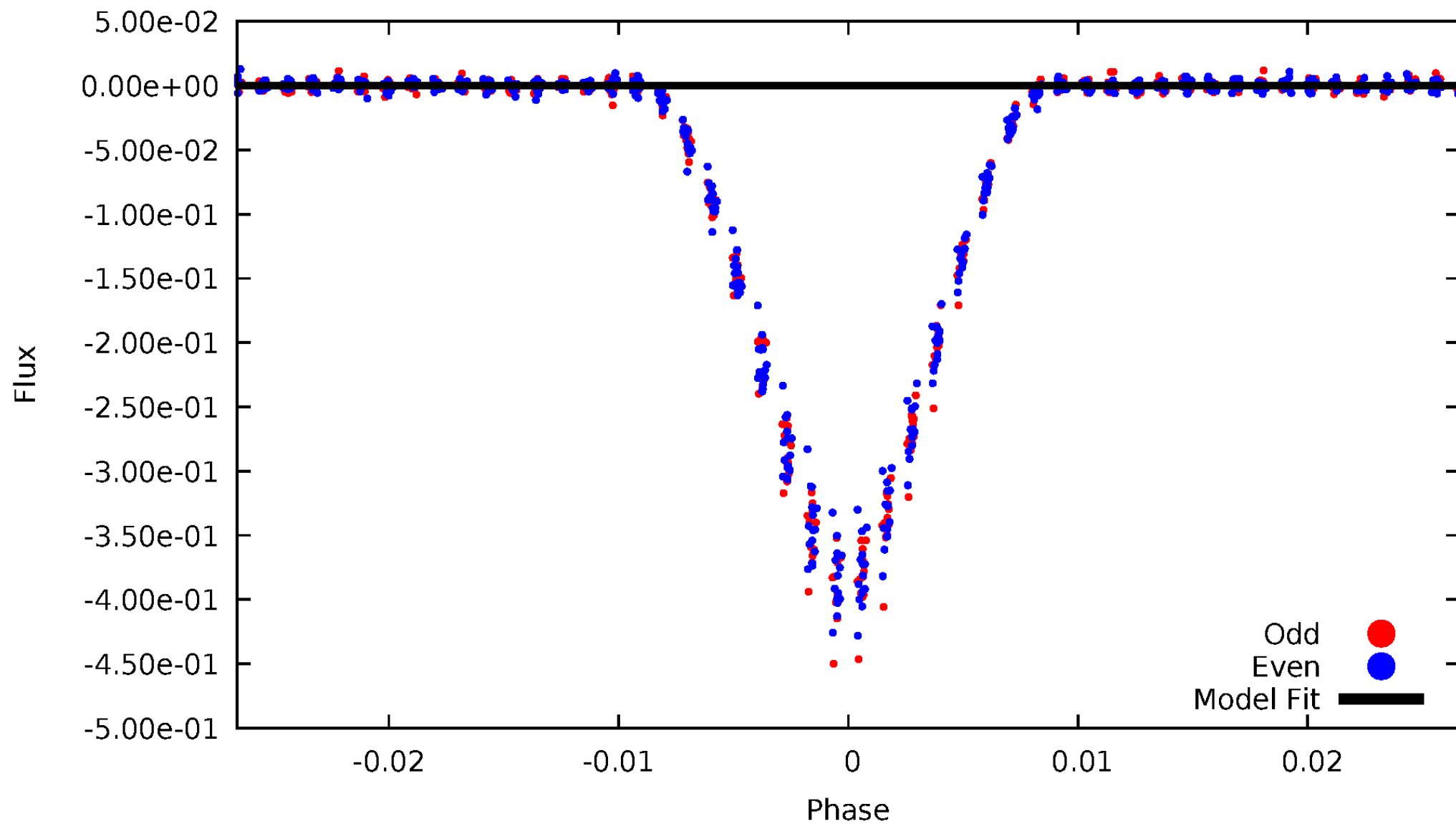


TCE 002437149-01



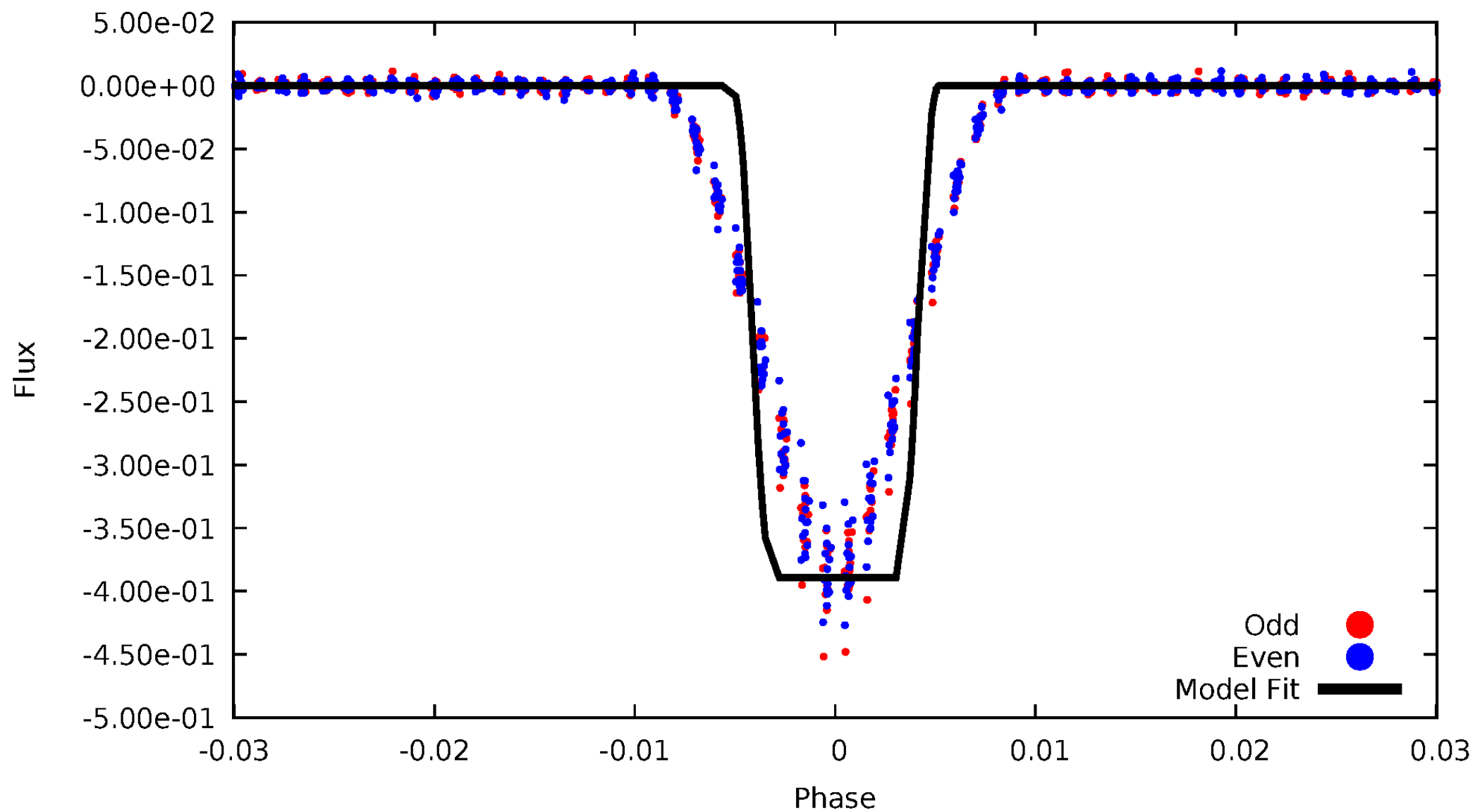
DV Odd/Even

TCE 002437149-01



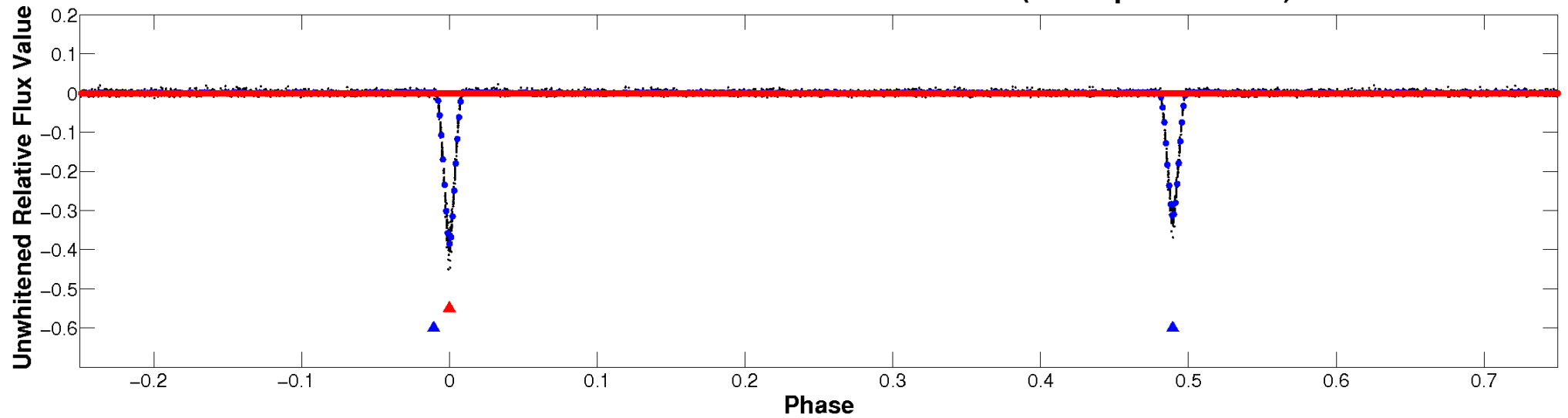
ALT Odd/Even

TCE 002437149-01



Non-Whitened Vs. Whitened Light Curve

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

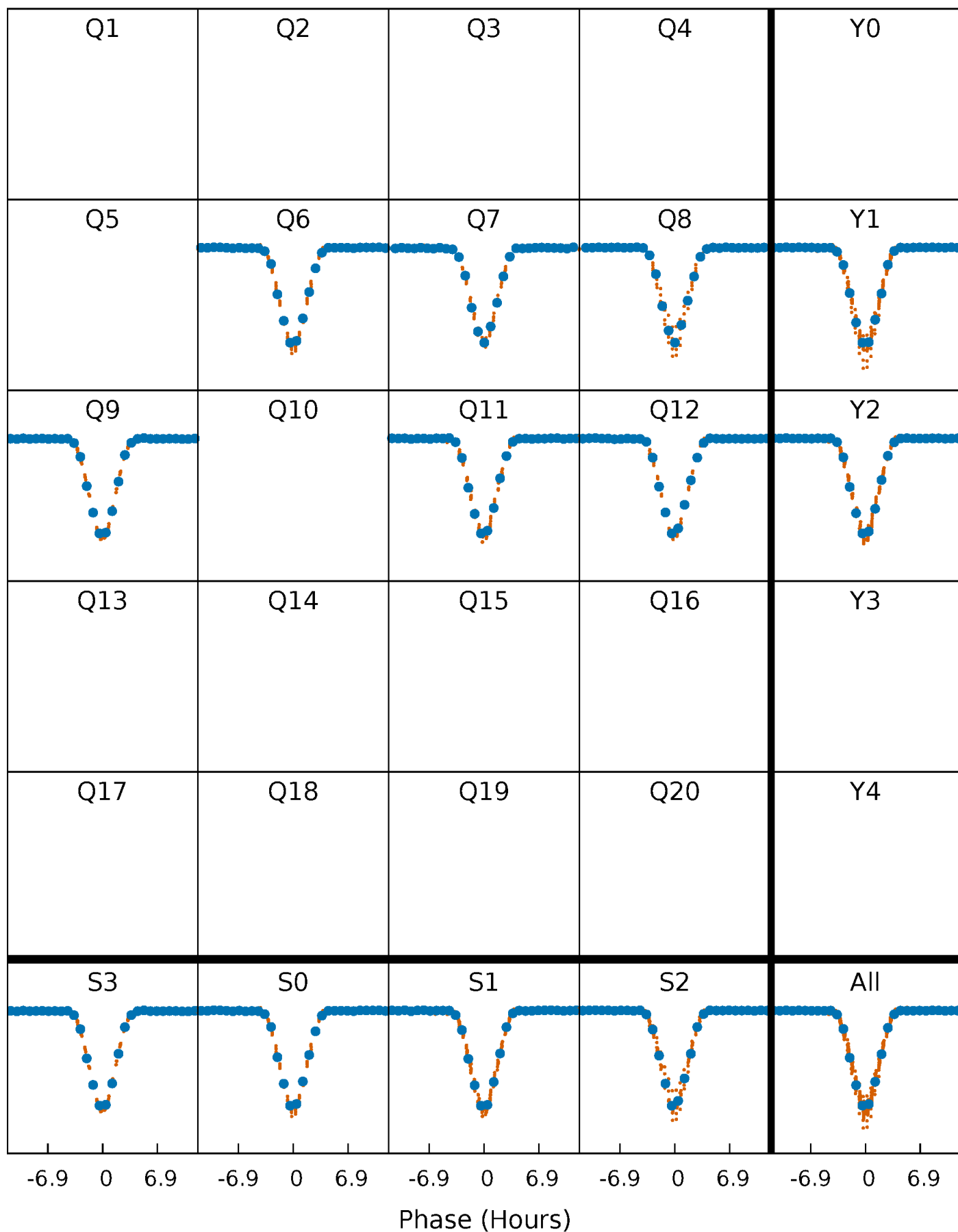


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



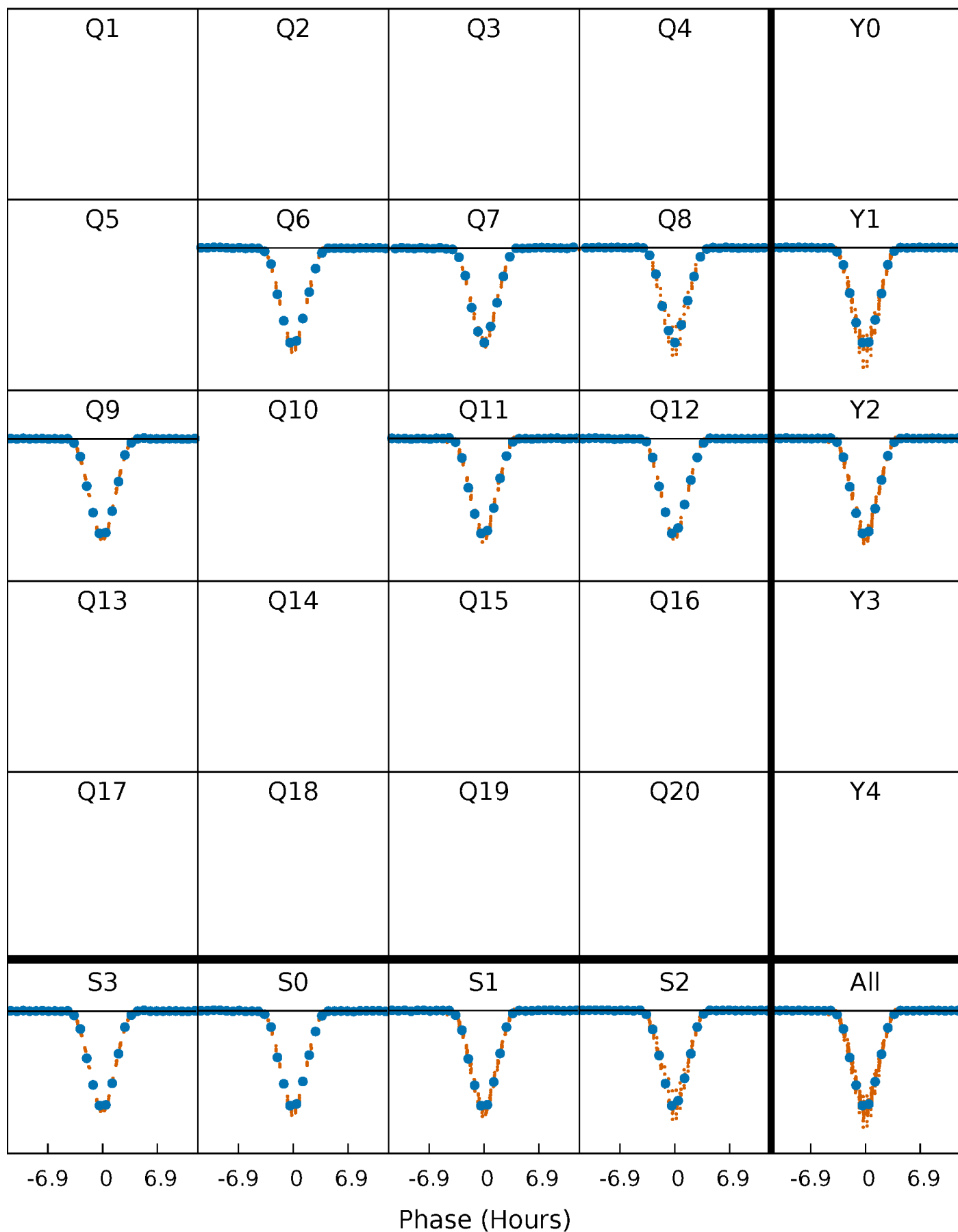
PDC Quarter-Phased Transit Curves

TCE 002437149-01 P= 18.798720 Days $T_0=138.025894$ (BKJD)



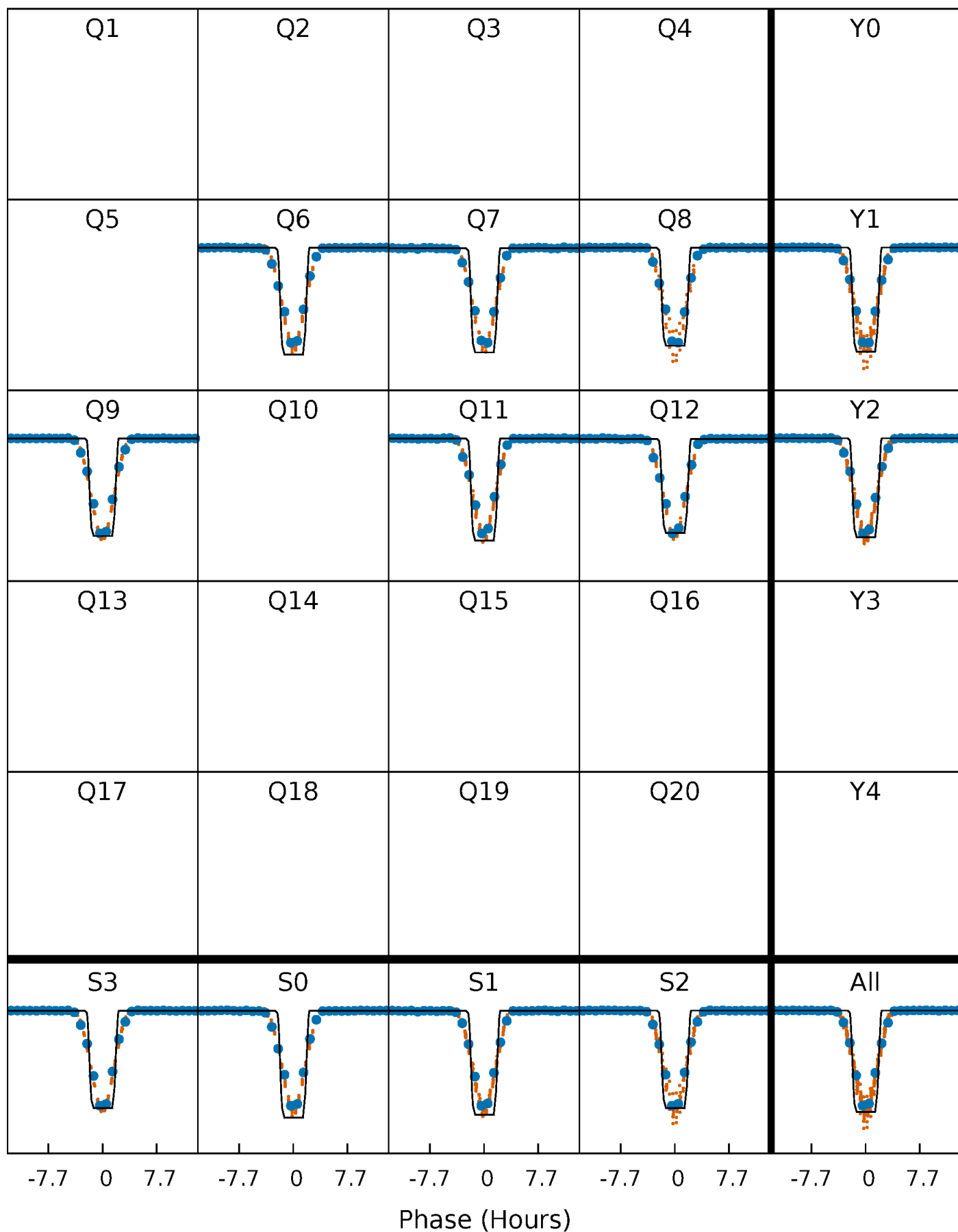
DV Quarter-Phased Transit Curves

TCE 002437149-01 P= 18.798720 Days $T_0=138.025894$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

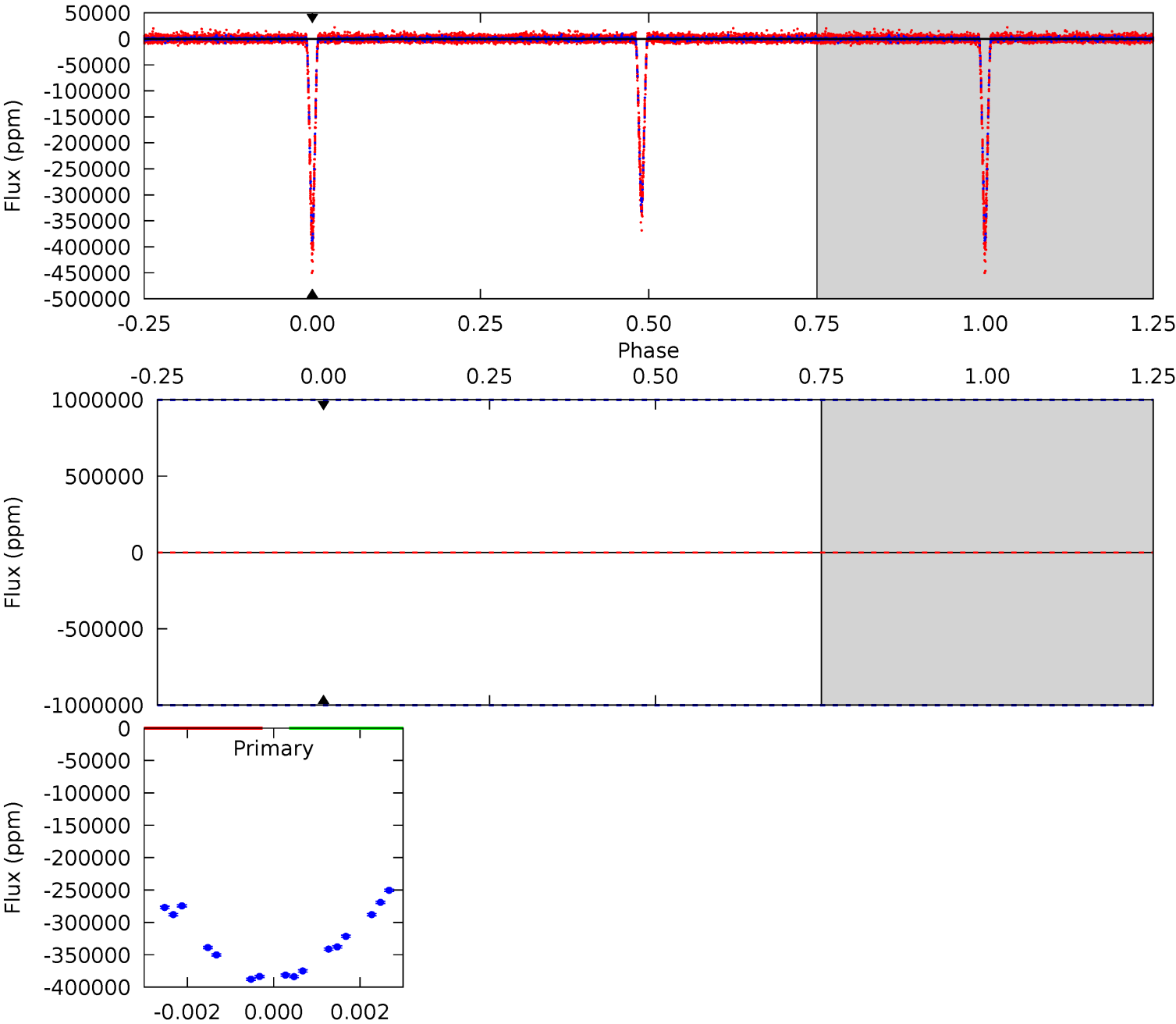
TCE 002437149-01 P= 18.798720 Days $T_0=138.024570$ (BKJD)



DV Model-Shift Uniqueness Test

002437149-01, P = 18.798720 Days, E = 138.025894 Days

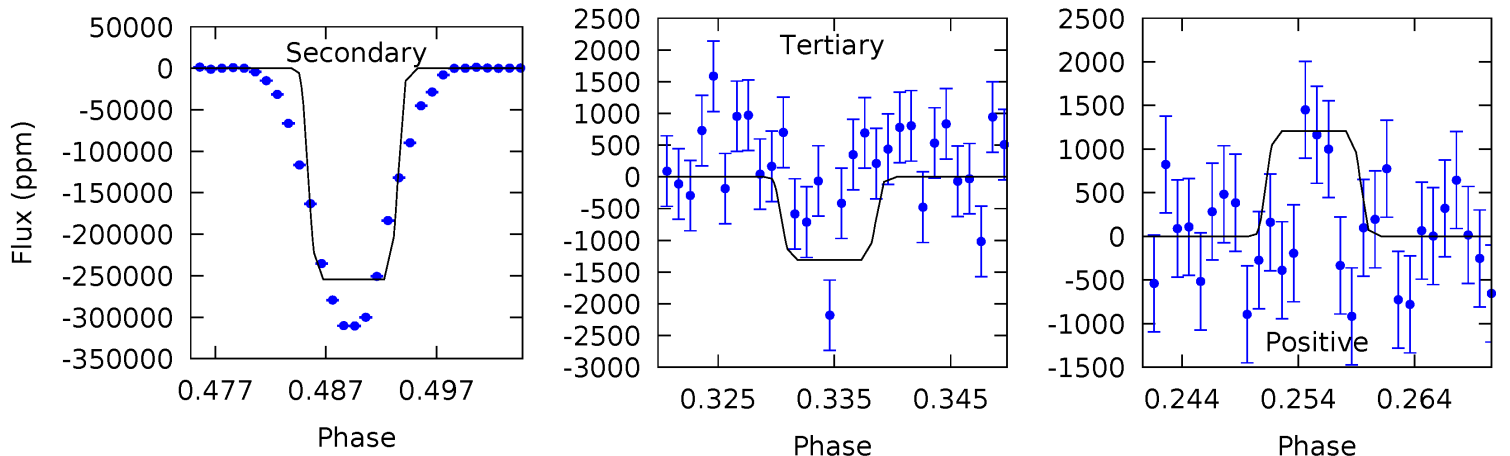
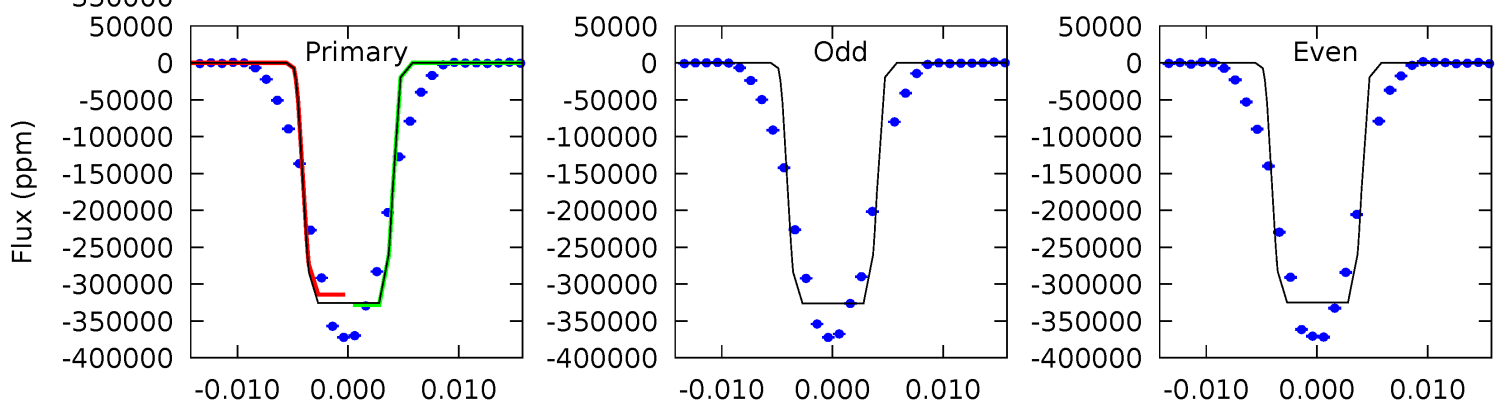
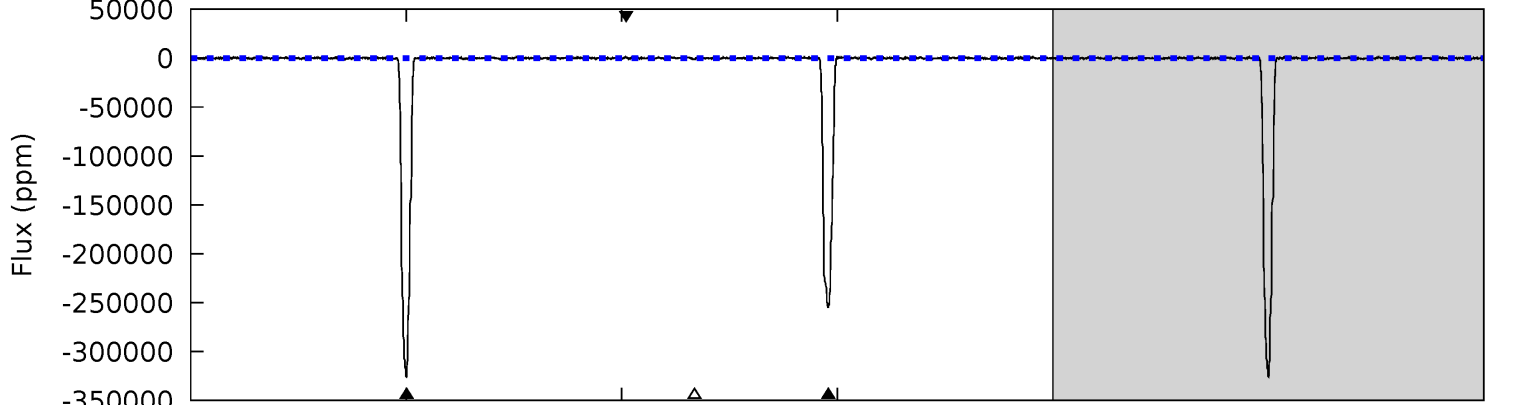
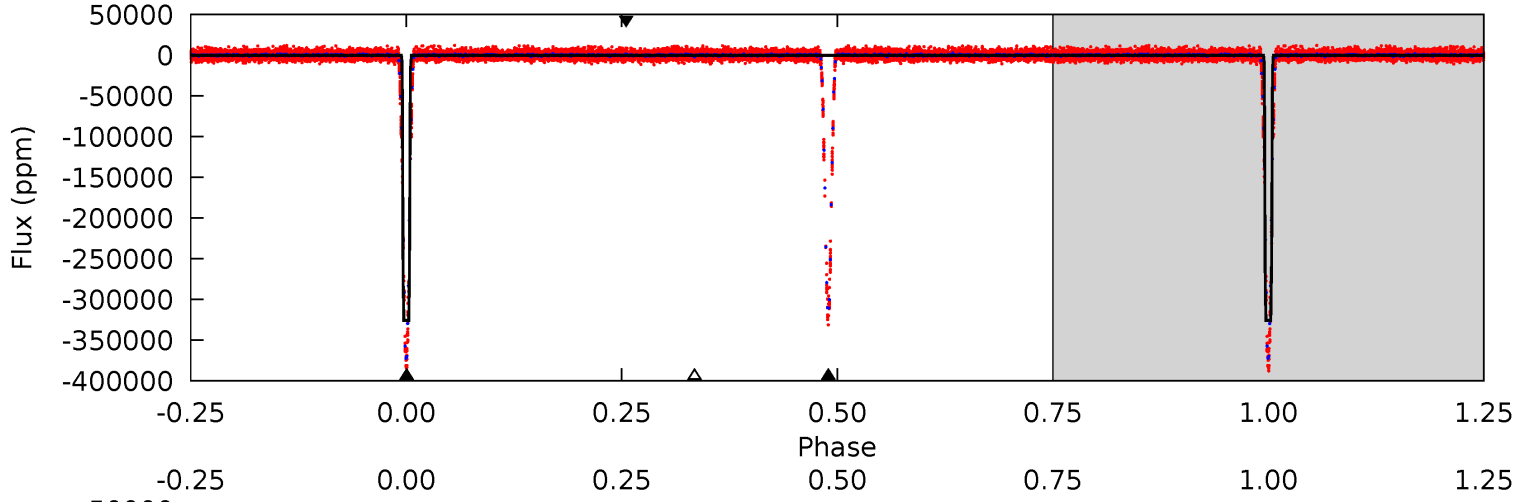
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002437149-01, P = 18.798720 Days, E = 138.024570 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1042	814.6	4.18	3.86	5.02	2.57	1.13	1038	1039	810.4	810.7	2.32	1.01	0.00	0



Stellar Parameters For KIC 002437149

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5334^{+185}_{-185}	$4.585^{+0.030}_{-0.128}$	$-0.020^{+0.300}_{-0.300}$	$0.796^{+0.154}_{-0.066}$	$0.893^{+0.070}_{-0.104}$	$2.497^{+0.415}_{-0.870}$
	+3%/-3%	+1%/-3%	+1500%/-1500%	+19%/-8%	+8%/-12%	+17%/-35%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002437149-01 / KOI 3598.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$44.24^{+9.54}_{-9.56}$	819^{+40}_{-37}	-2281^{+6909}_{-2180}	$-4.936^{+616.747}_{-487.770}$
Alt.	-254618 ± 313	$56.01^{+9.61}_{-9.73}$	818^{+40}_{-36}	5182^{+468}_{-360}	1035^{+459}_{-273}

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 $A_{obs} \gg 1.0$

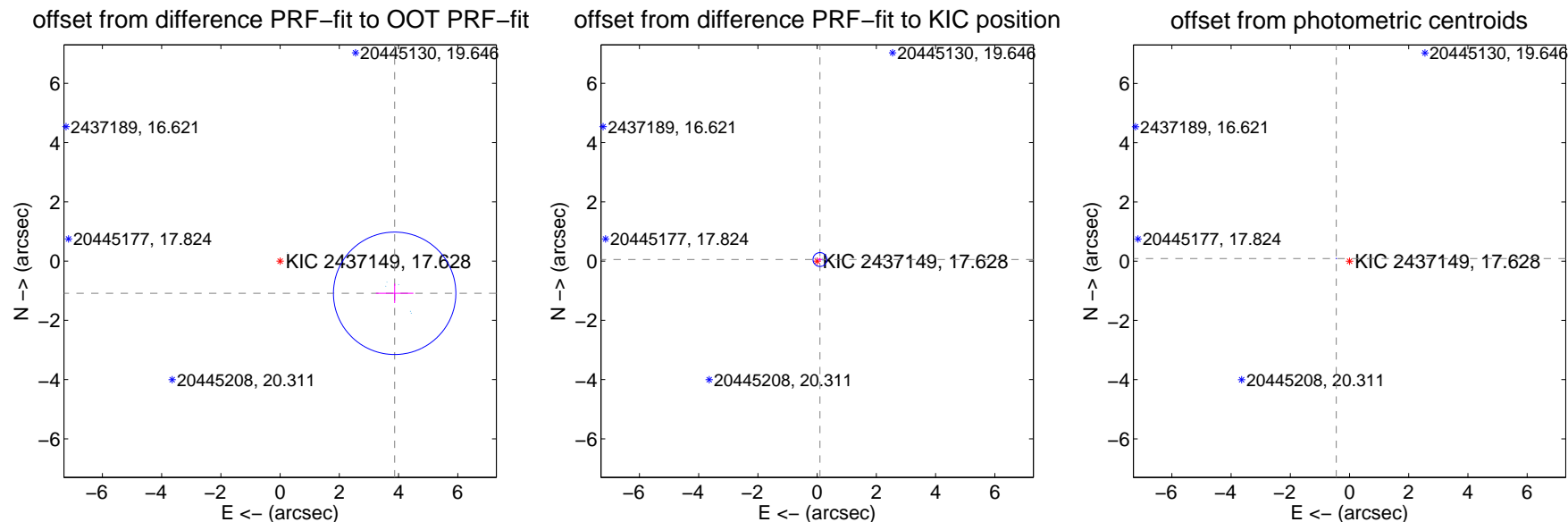
DV Centroid Data

Supplemental centroid analysis for 002437149-01. Kepler magnitude: 17.63. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.017 ± 0.689	5.83	-3.867 ± 0.632	-1.087 ± 0.329
PRF-fit source offset from KIC position	0.108 ± 0.078	1.39	-0.094 ± 0.081	0.053 ± 0.068
photometric centroid source offset	0.46 ± 0.00	165.16	0.45 ± 0.00	0.09 ± 0.00

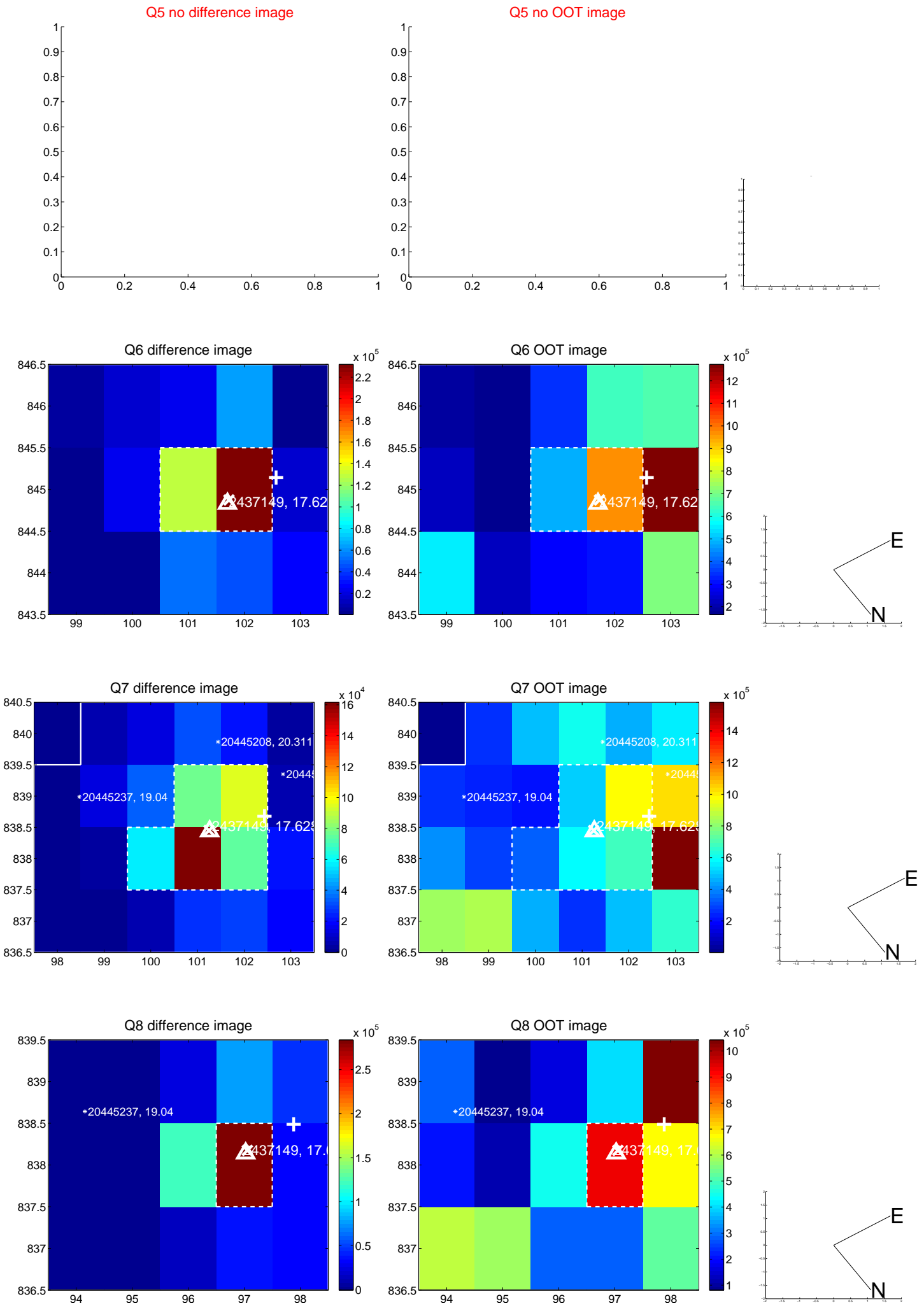


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

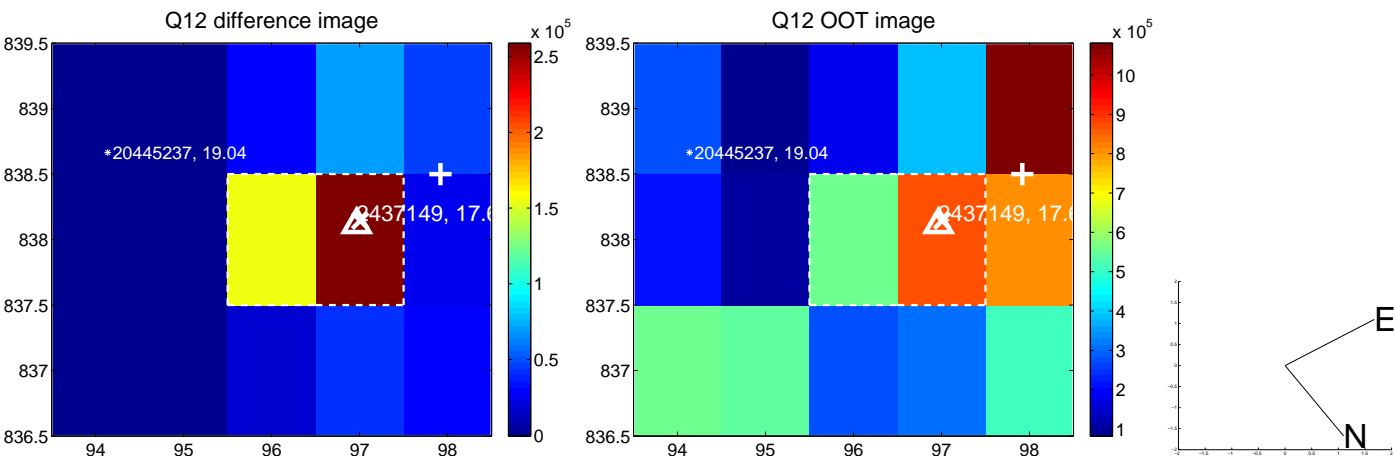
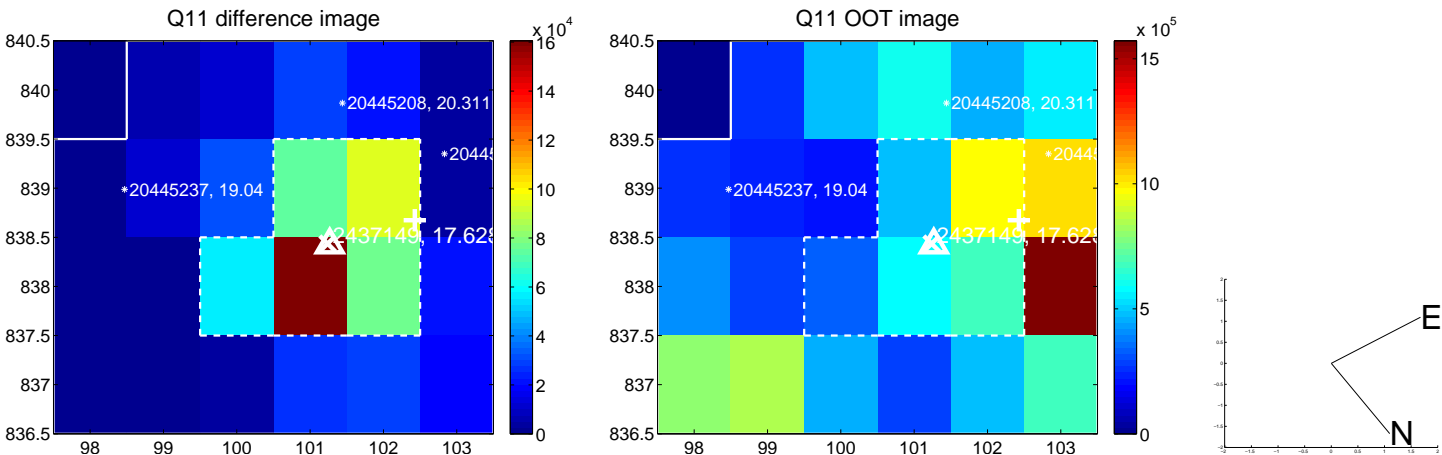
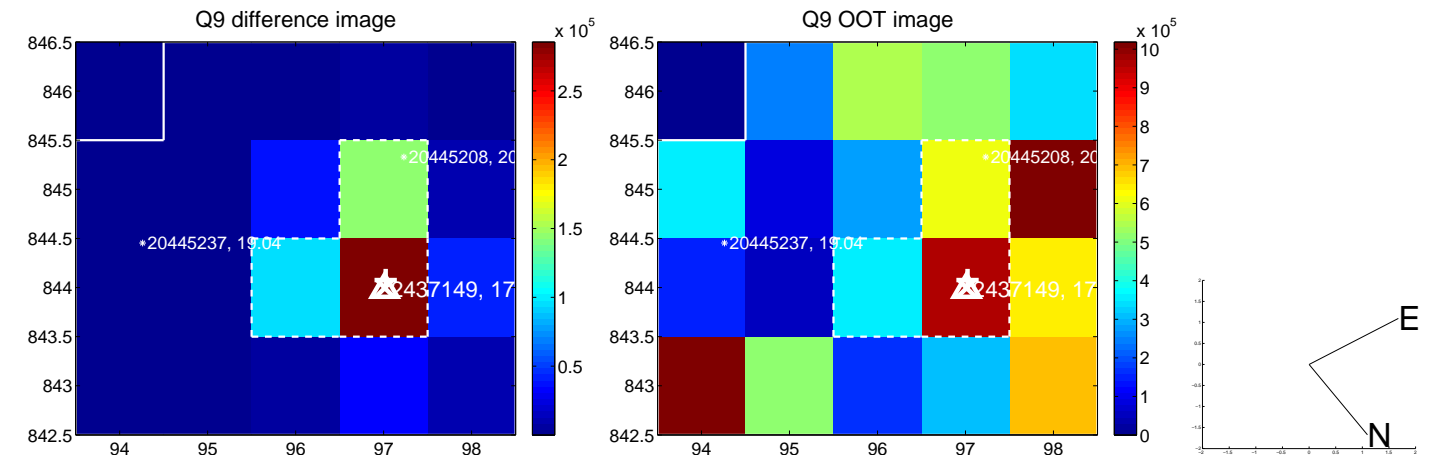
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



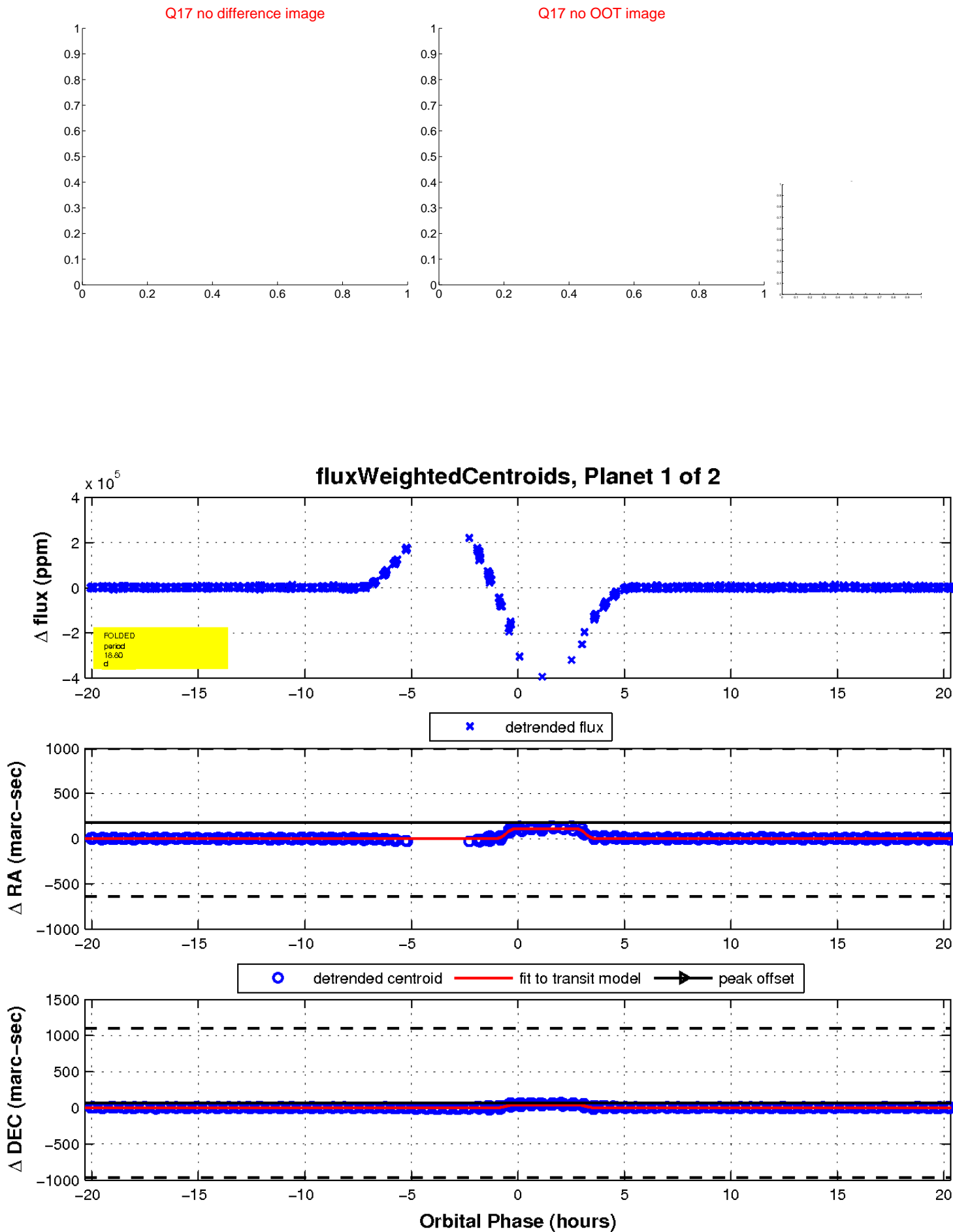
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

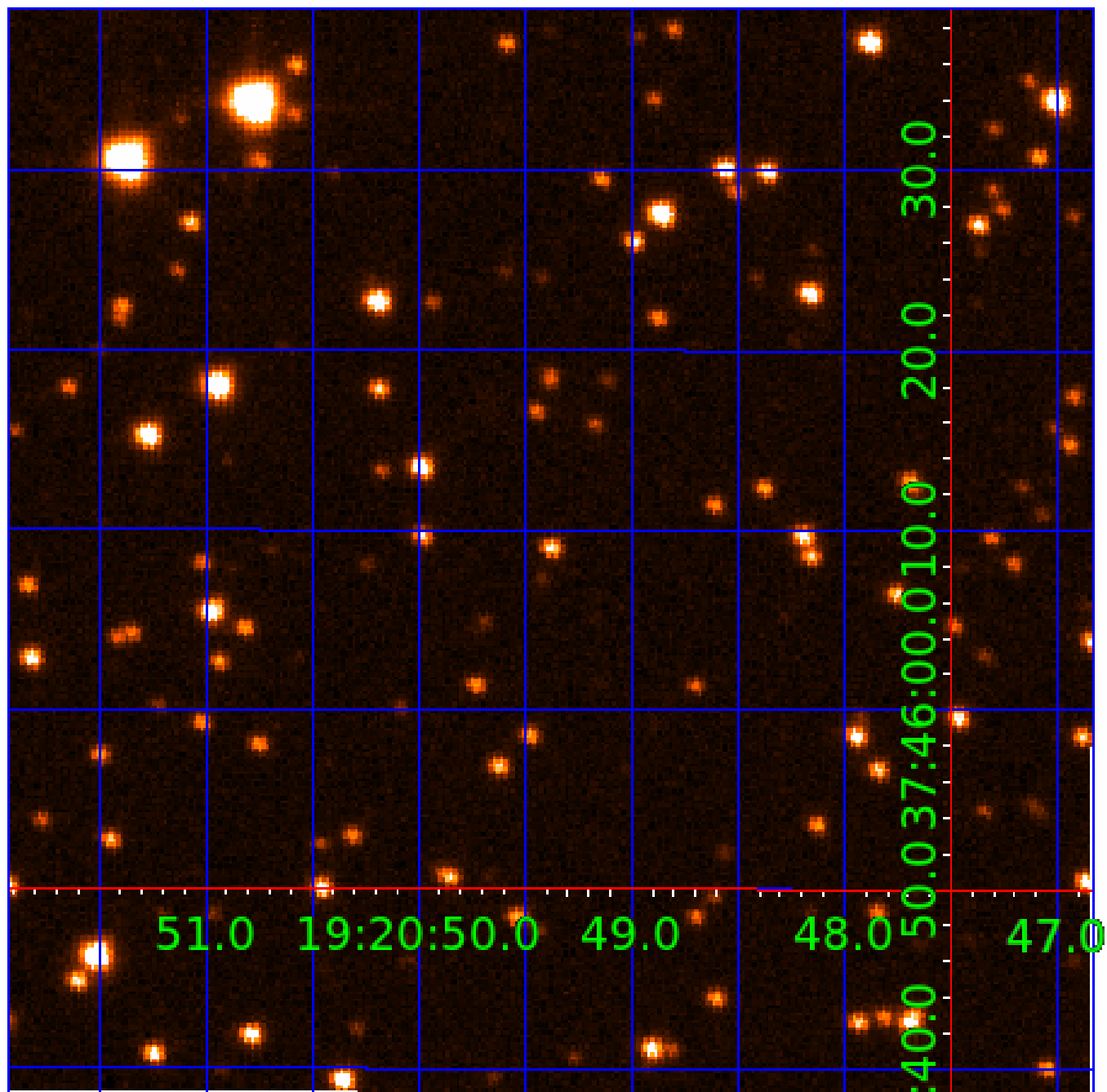


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002437149

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})
002437149-01	OBS	3598.01	18.798720	138.025894	390006.3	6.000	1397.7	-1.0	0.80	5334	42.64	25.95
002437149-02	OBS	No	9.399311	137.830601	293630.6	7.707	1133.6	740.1	0.80	5334	63.31	65.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002437149-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
002437149-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS

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.

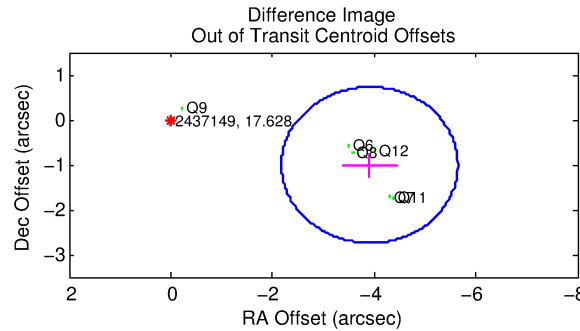
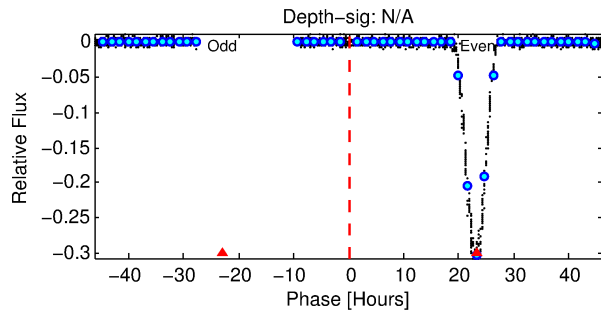
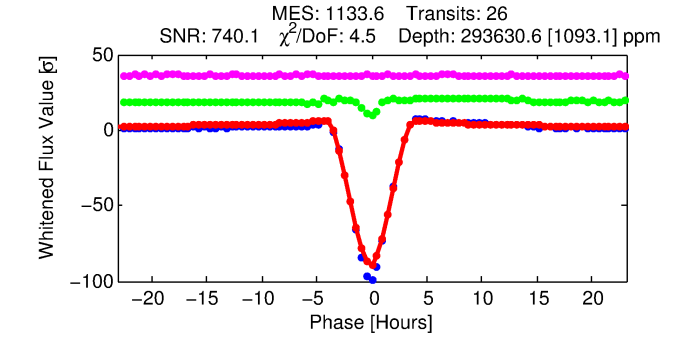
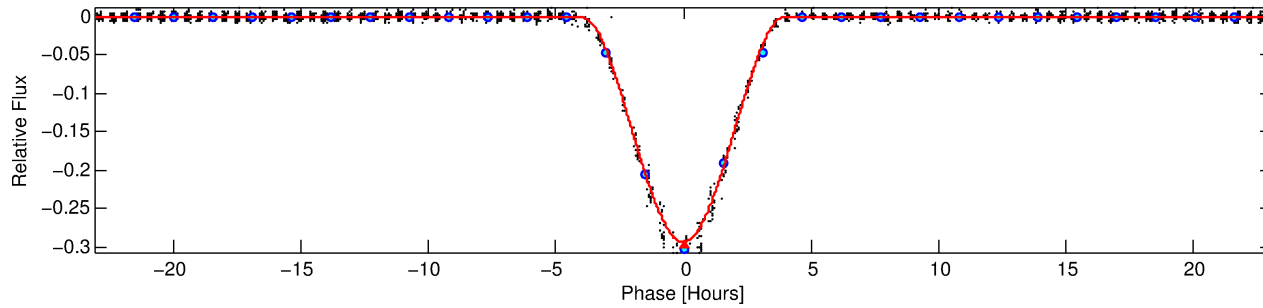
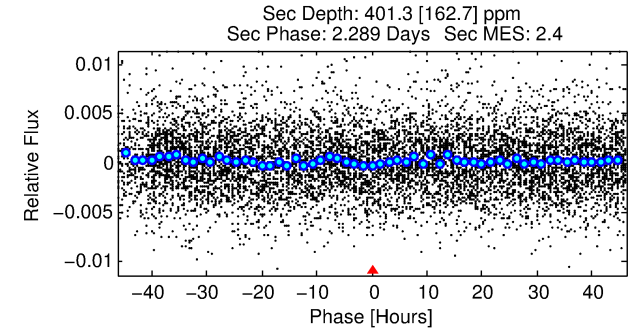
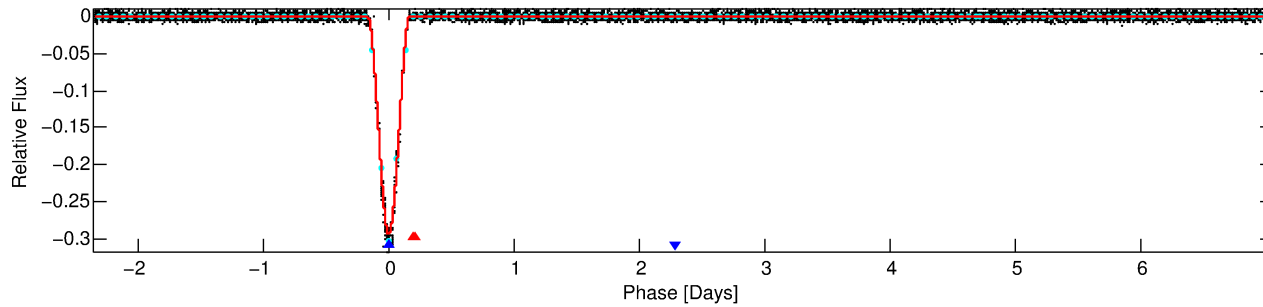
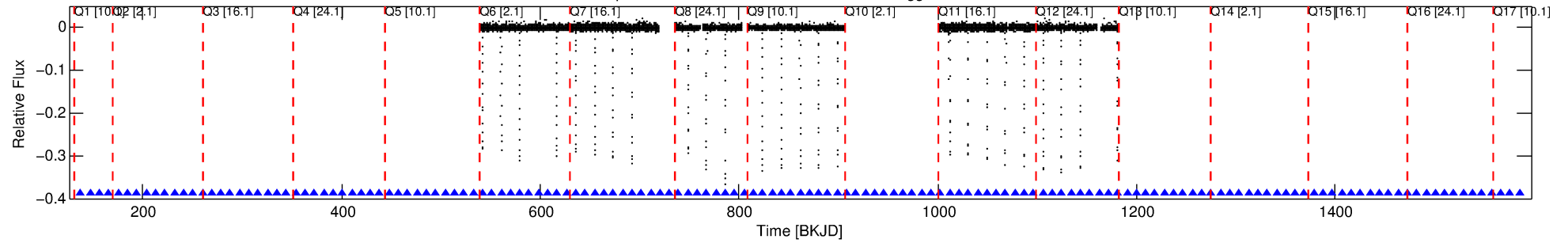
Ephemeris Match Information For 002437149-02

No Significant Match Found

DV One-Page Summary

KIC: 2437149 Candidate: 2 of 2 Period: 9.399 d
KOI: K03598 Corr: No Ephemeris Match

Kp: 17.63 R*: 0.80 Rs Teff: 5334.0 K Logg: 4.58 Fe/H: -0.020



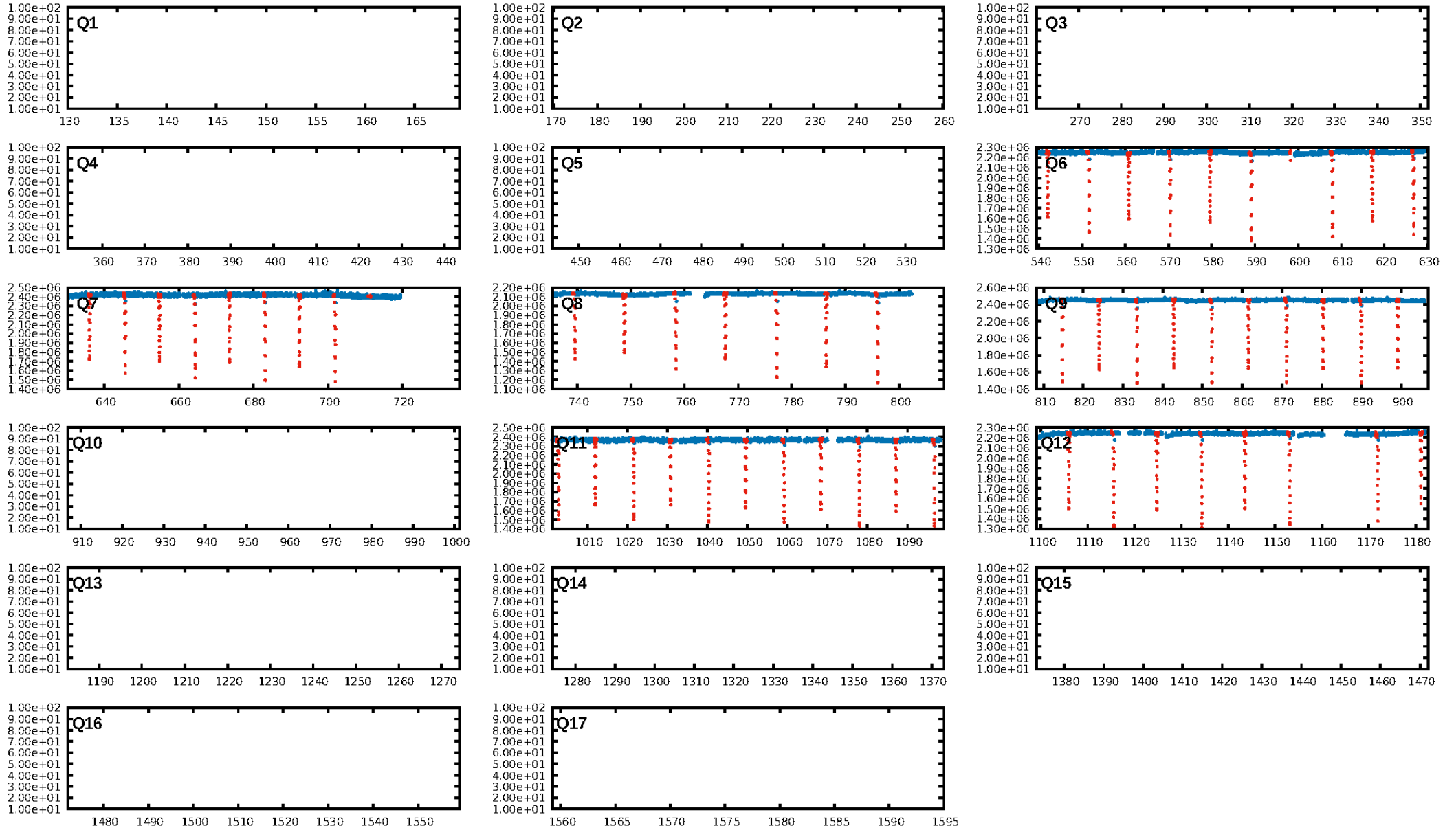
DV Fit Results:

Period = 9.39931 [0.00001] d
Epoch = 137.8306 [0.0007] BKJD
Rp/R* = 0.7289 [0.0719]
a/R* = 14.10 [0.34]
b = 0.85 [0.10]
Seff = 65.40 [17.85]
Teff = 725 [49] K
Rp = 63.31 [13.75] Re
a = 0.0838 [0.0136] AU
Ag = 0.39 [0.20] [-3.12σ]
Teffp = 884 [104] K [1.38σ]

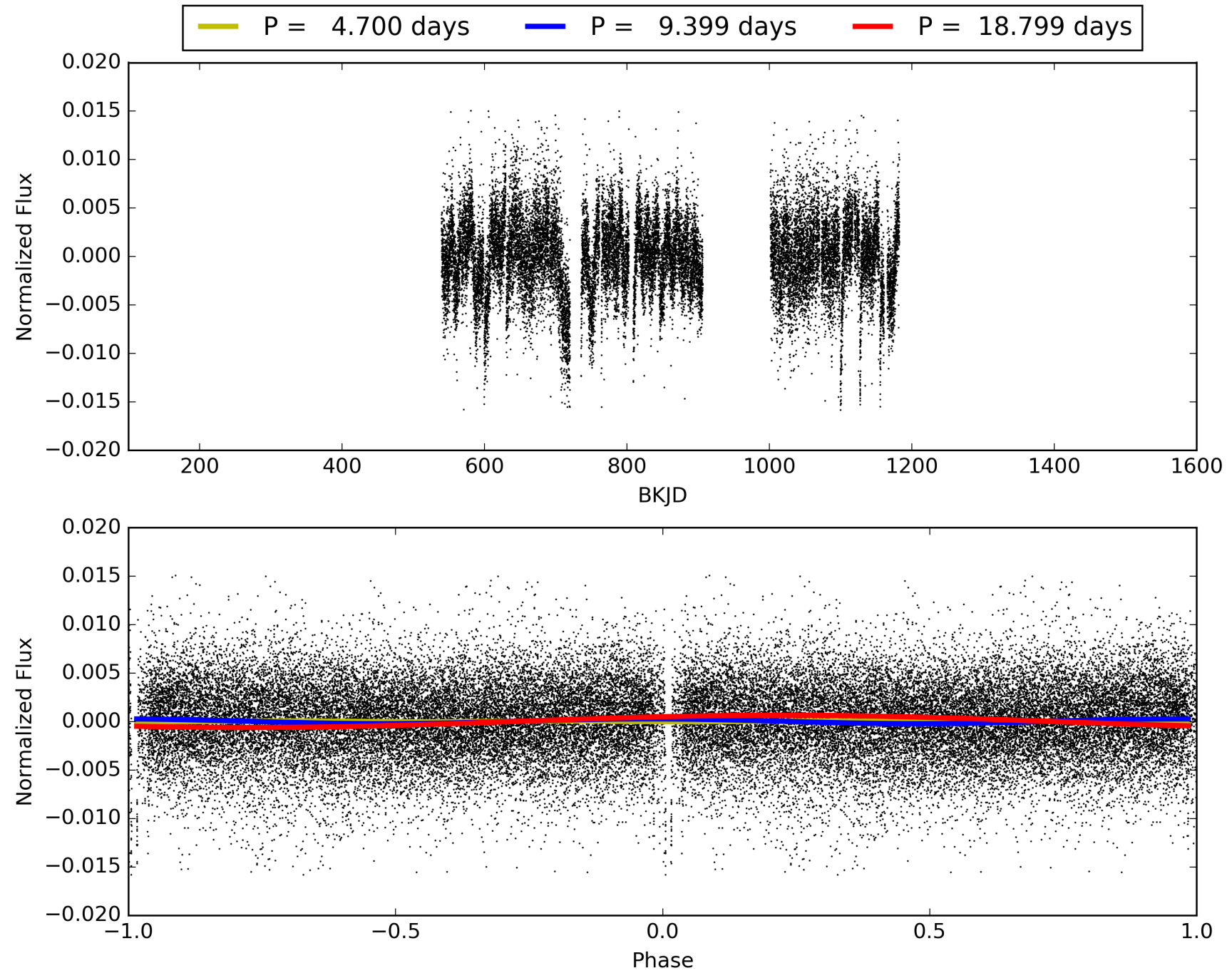
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [23.10σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 1.027
Centroid-sig: 0.0%
Centroid-so: 0.557 arcsec [193.00σ]
OotOffset-rm: 4.040 arcsec [6.99σ]
OotOffset-st: 1/2/2/1 [6]
KicOffset-rm: 0.108 arcsec [1.28σ]
KicOffset-st: 1/2/2/1 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [6/6]

TCE 002437149-02, PDC Light Curves

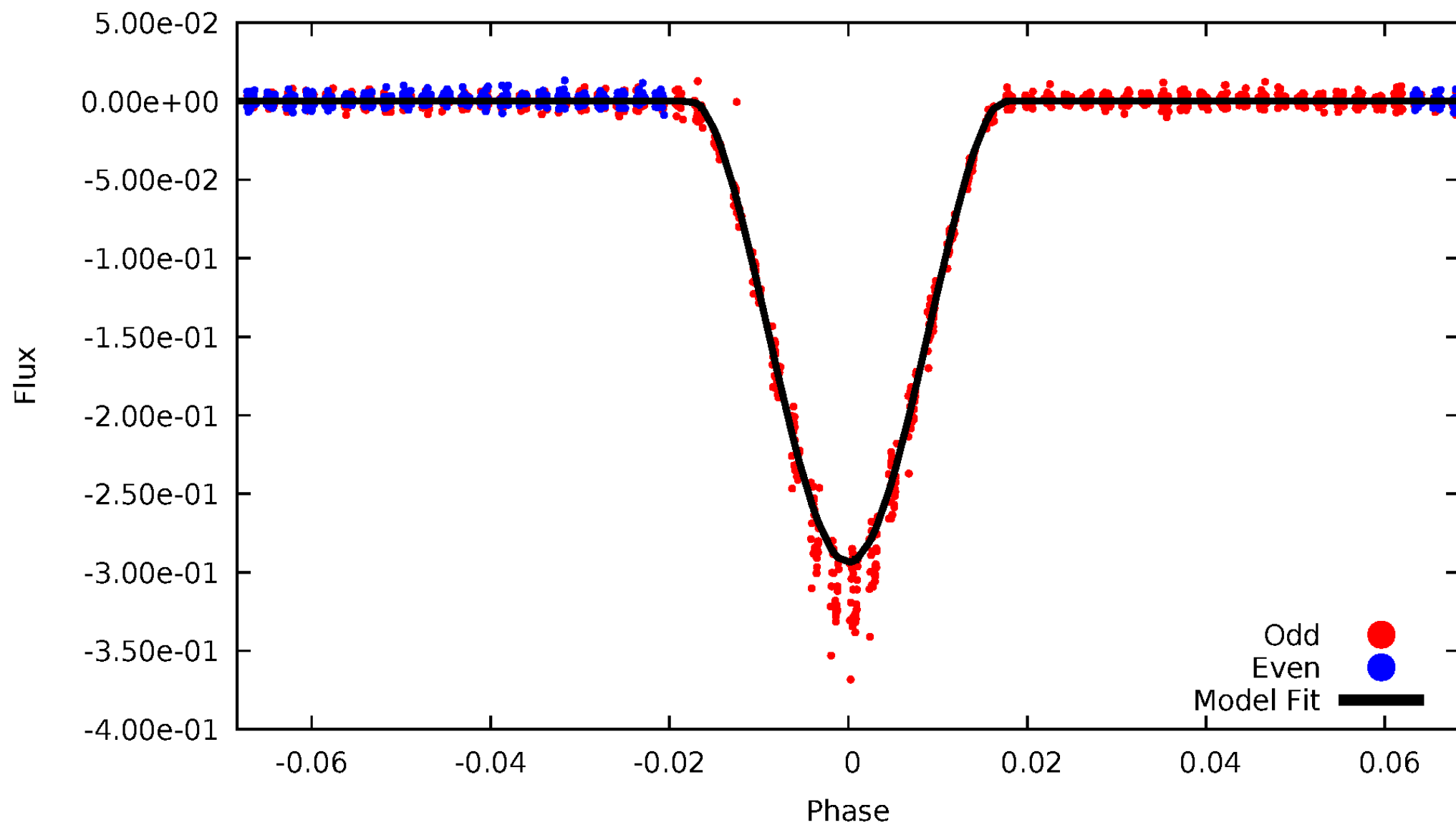


TCE 002437149-02



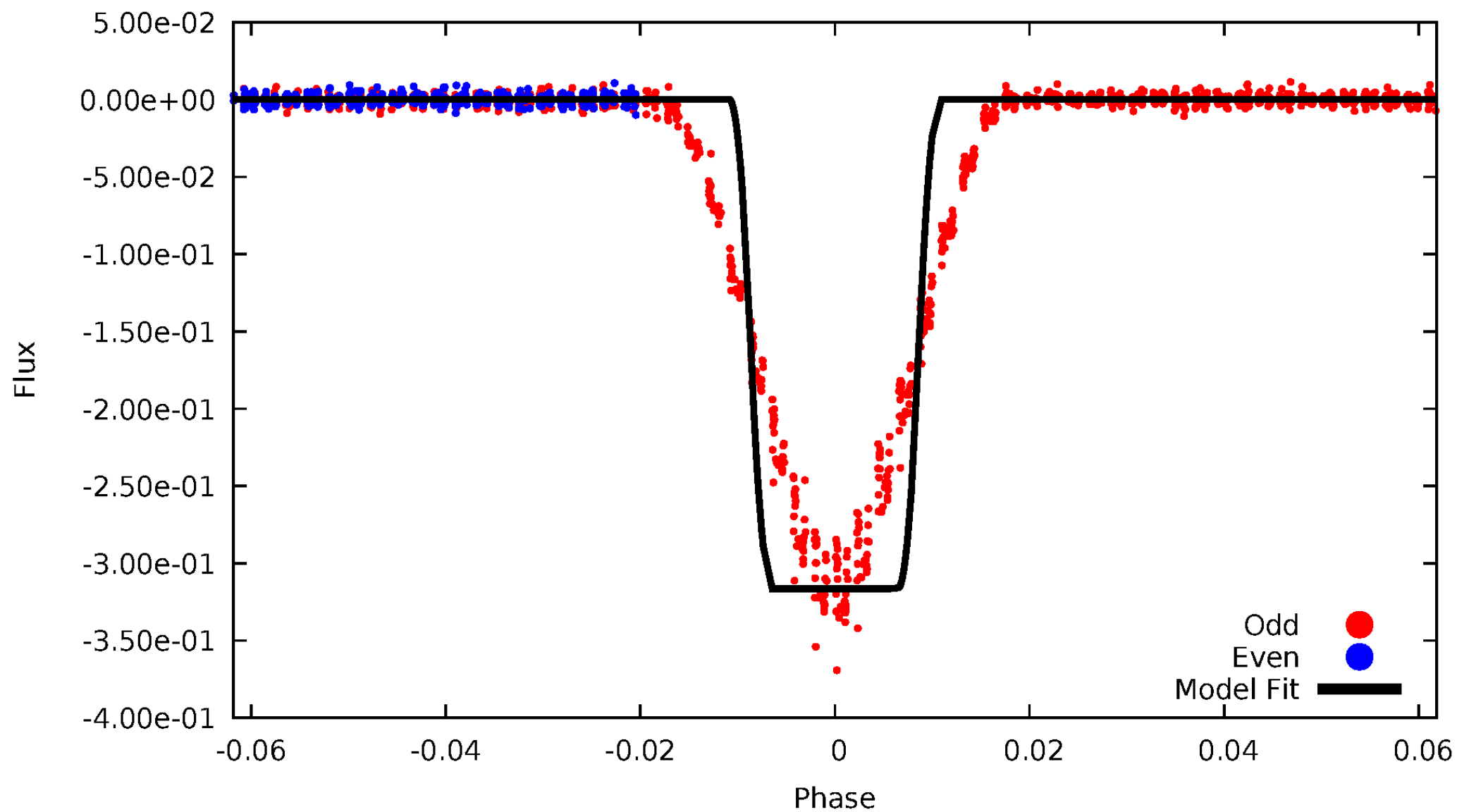
DV Odd/Even

TCE 002437149-02



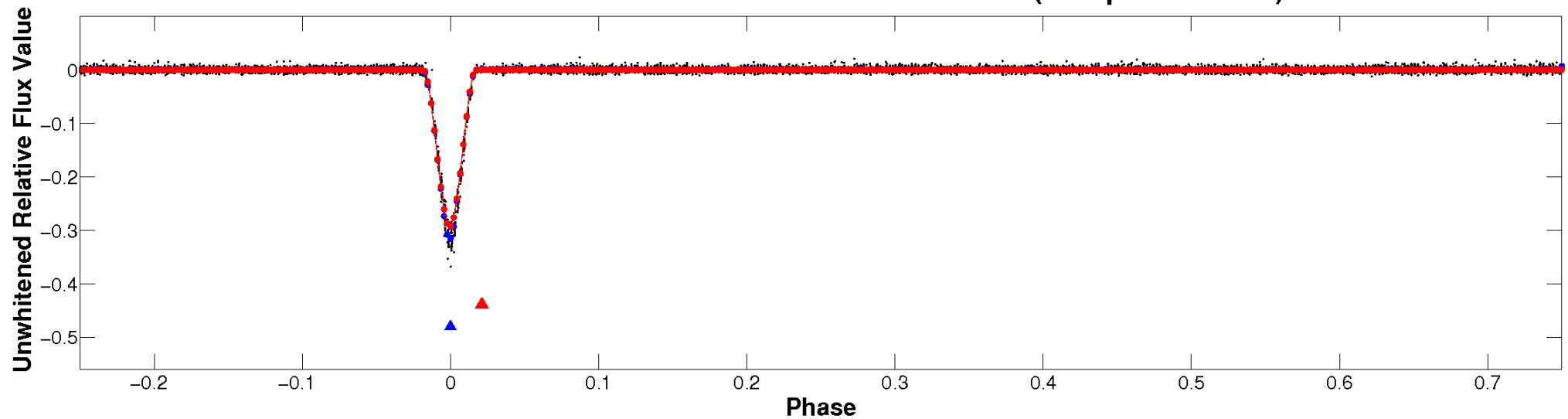
ALT Odd/Even

TCE 002437149-02

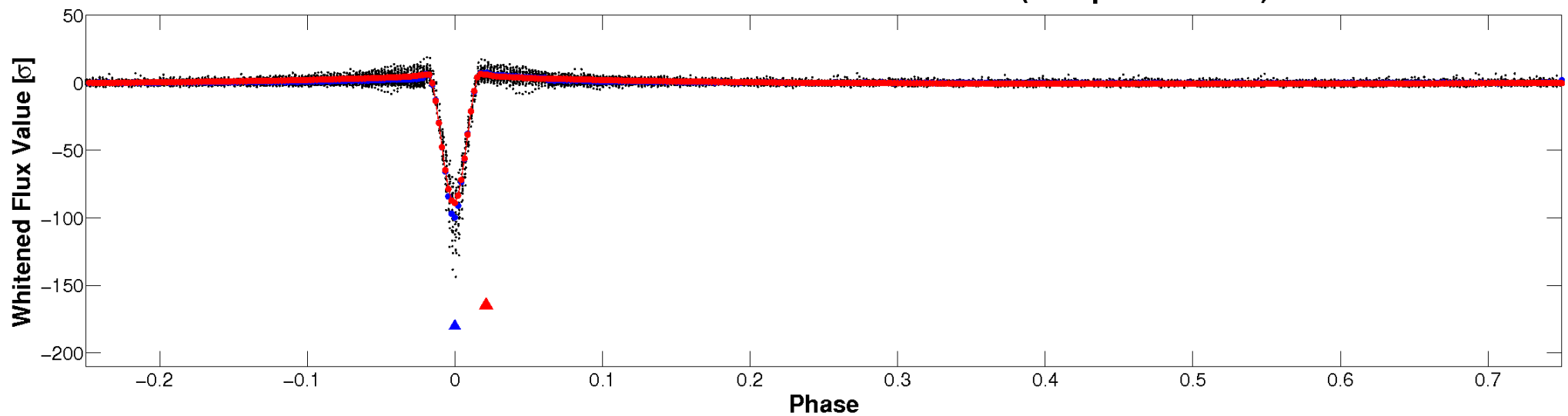


Non-Whitened Vs. Whitened Light Curve

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

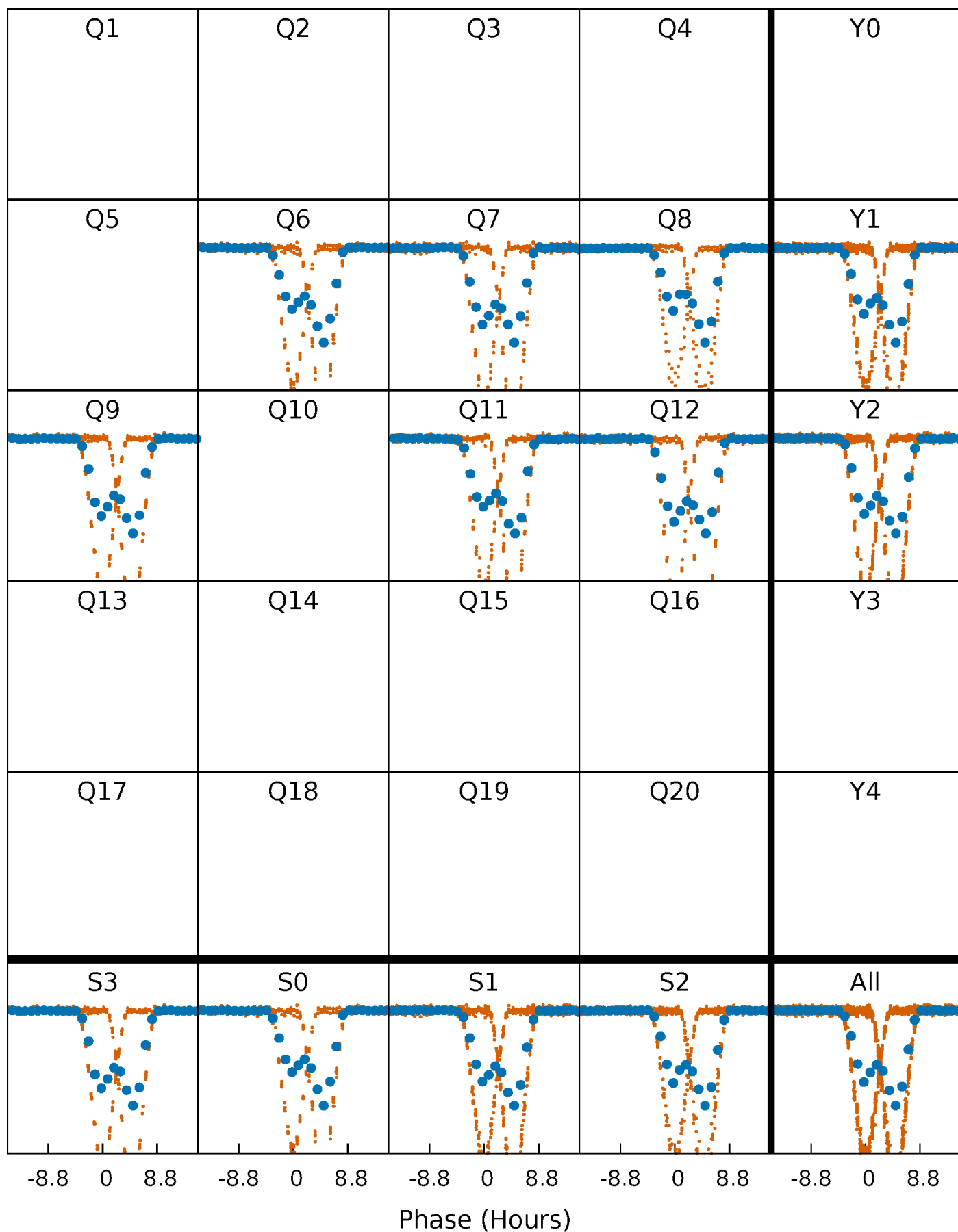


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



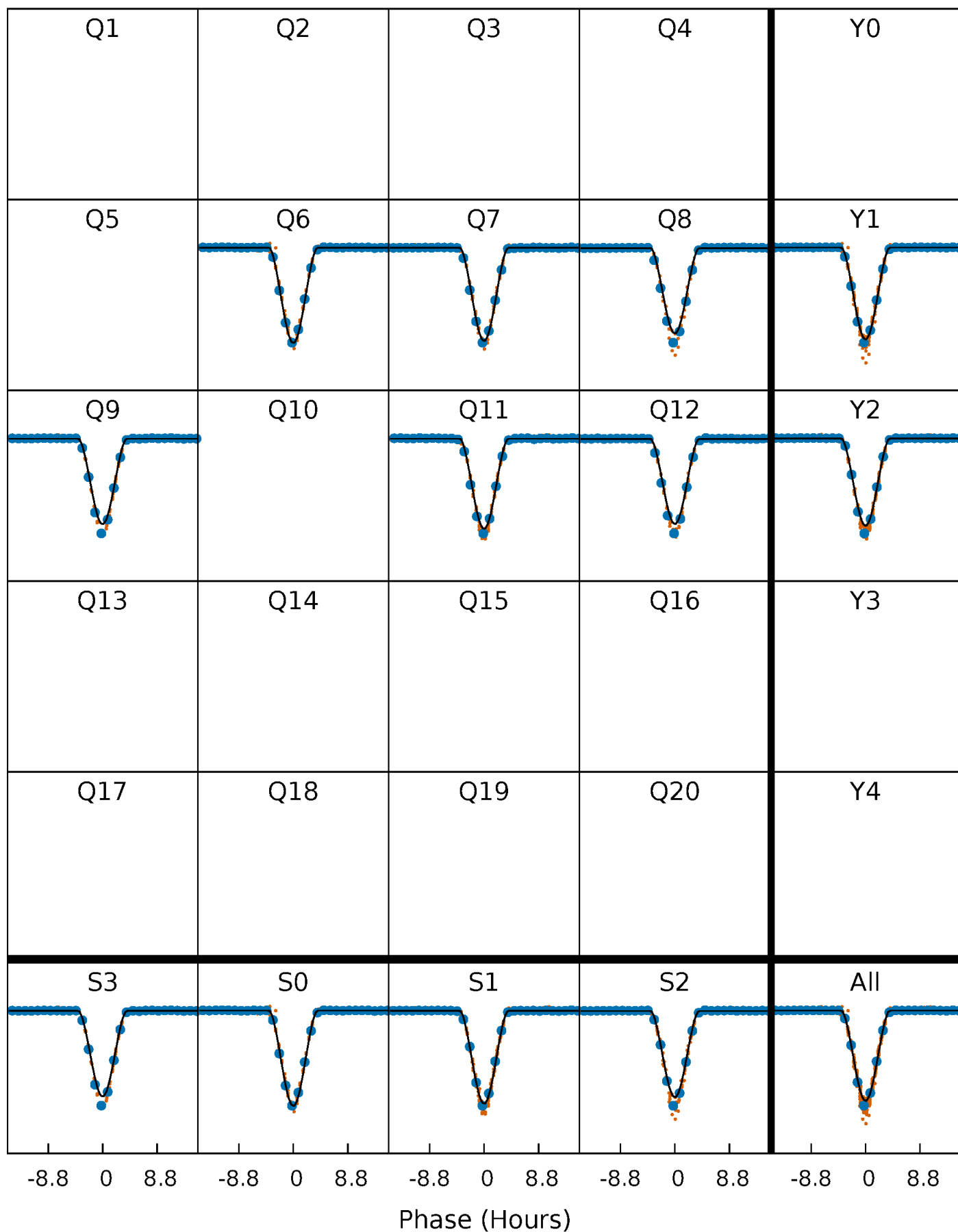
PDC Quarter-Phased Transit Curves

TCE 002437149-02 P= 9.399311 Days $T_0=137.830601$ (BKJD)



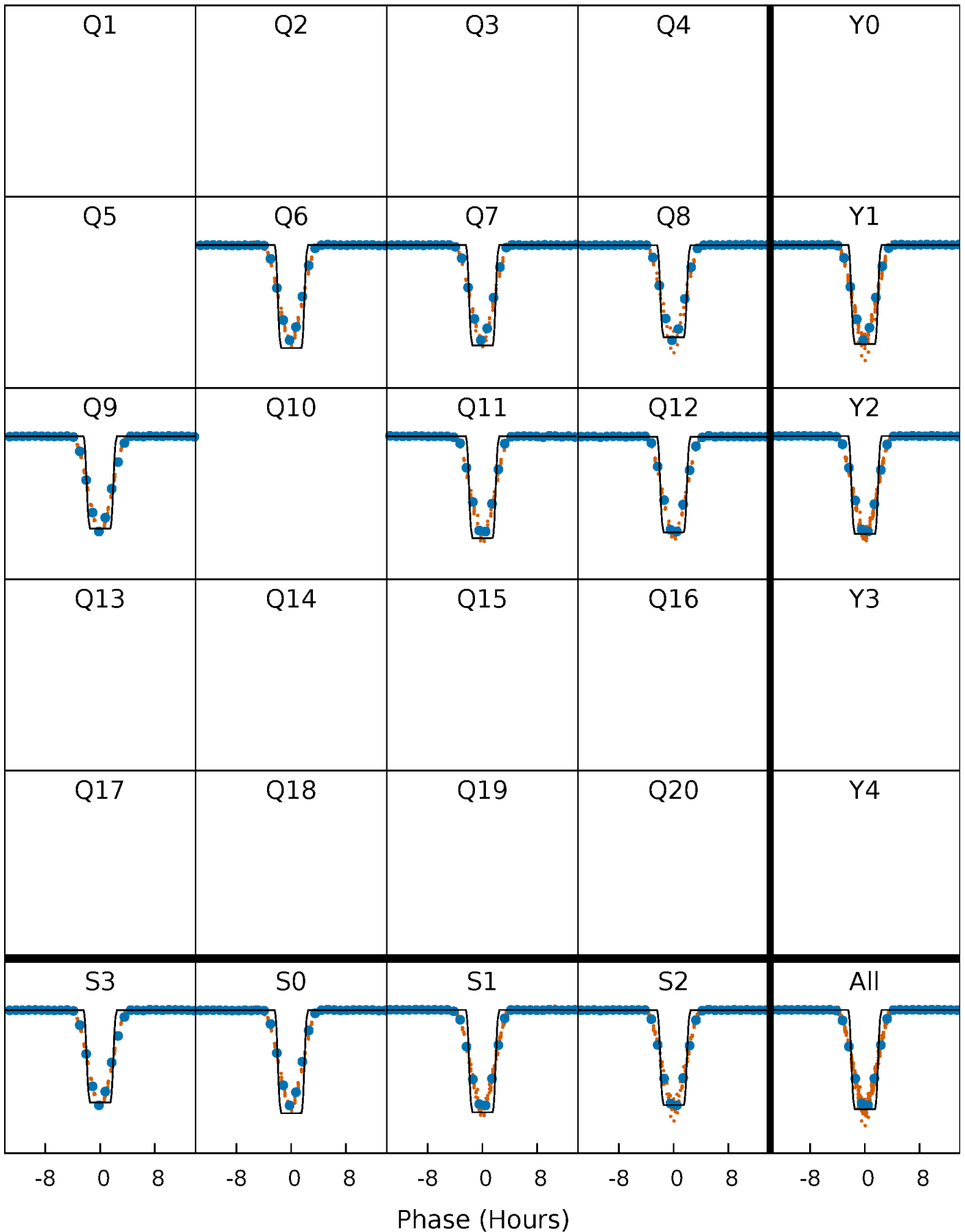
DV Quarter-Phased Transit Curves

TCE 002437149-02 P= 9.399311 Days $T_0=137.830601$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

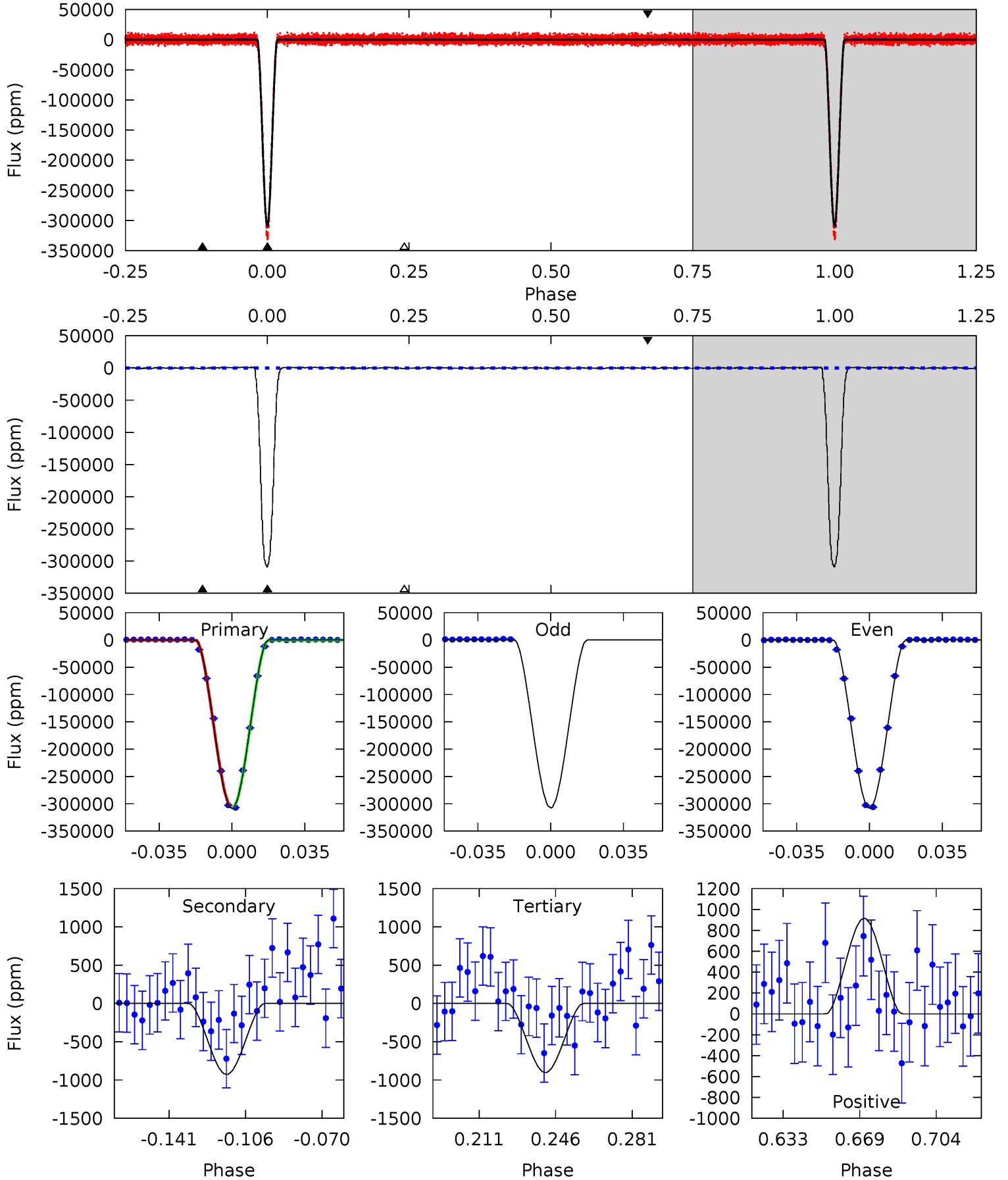
TCE 002437149-02 P= 9.399220 Days $T_0=137.837401$ (BKJD)



DV Model-Shift Uniqueness Test

002437149-02, P = 9.399311 Days, E = 137.830601 Days

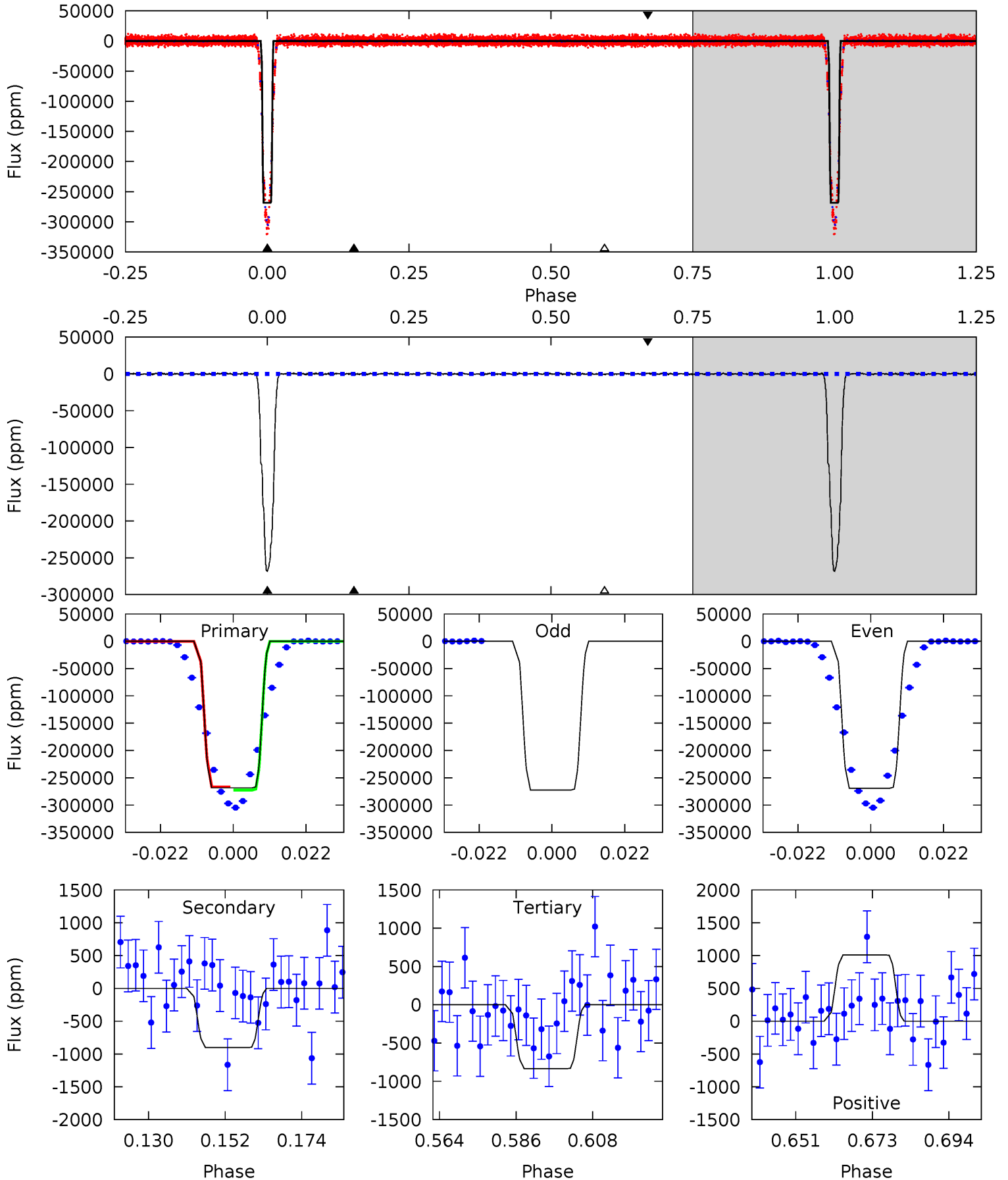
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1819	5.46	5.32	5.39	4.78	2.11	2.30	1814	1813	0.14	0.07	2.78	0.96	0.00	0



Alt Model-Shift Uniqueness Test

002437149-02, P = 9.399220 Days, E = 137.837401 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
923.4	3.10	2.87	3.48	4.88	2.30	1.12	920.5	919.9	0.23	-0.37	6.25	0.99	0.00	9.57



Stellar Parameters For KIC 002437149

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5334^{+185}_{-185}	$4.585^{+0.030}_{-0.128}$	$-0.020^{+0.300}_{-0.300}$	$0.796^{+0.154}_{-0.066}$	$0.893^{+0.070}_{-0.104}$	$2.497^{+0.415}_{-0.870}$
	+3%/-3%	+1%/-3%	+1500%/-1500%	+19%/-8%	+8%/-12%	+17%/-35%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002437149-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-928 ± 170	$65.46^{+8.89}_{-7.63}$	1035^{+52}_{-49}	1972^{+84}_{-94}	$0.822^{+0.281}_{-0.225}$
Alt.	-902 ± 291	$49.99^{+8.08}_{-6.34}$	1032^{+54}_{-47}	2122^{+121}_{-130}	$1.363^{+0.692}_{-0.484}$

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

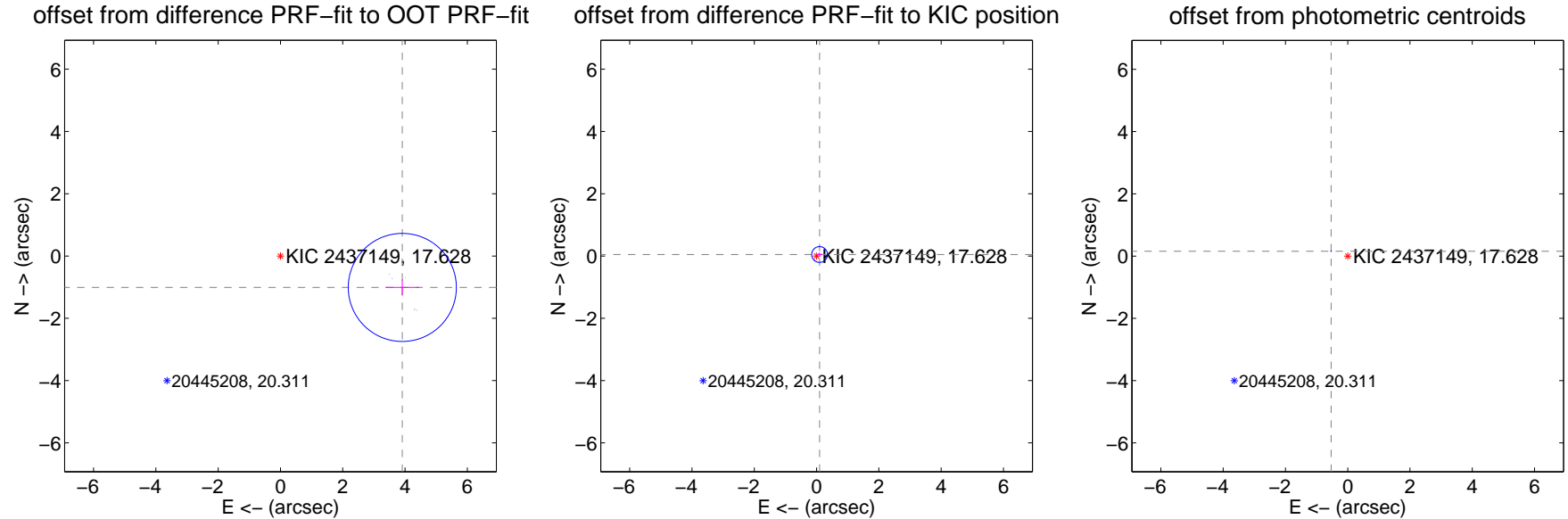
DV Centroid Data

Supplemental centroid analysis for 002437149-02. Kepler magnitude: 17.63. Transit SNR 740.10

There are 6 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 3.84 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.040 ± 0.578	6.99	-3.912 ± 0.544	-1.009 ± 0.258
PRF-fit source offset from KIC position	0.108 ± 0.085	1.28	-0.097 ± 0.088	0.048 ± 0.067
photometric centroid source offset	0.56 ± 0.00	193.00	0.53 ± 0.00	0.16 ± 0.00



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.

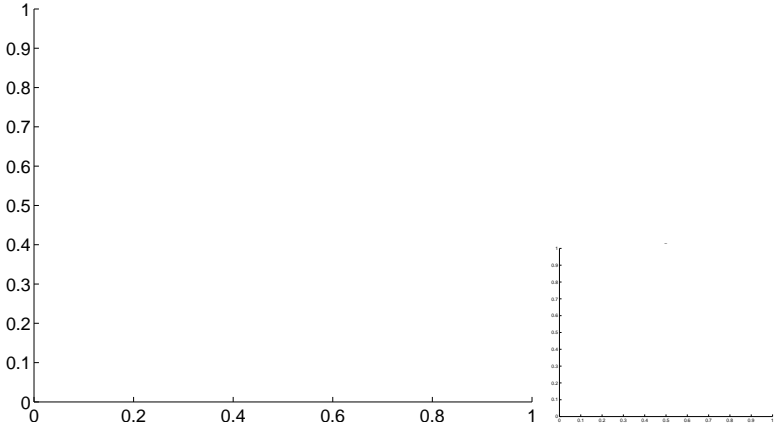


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

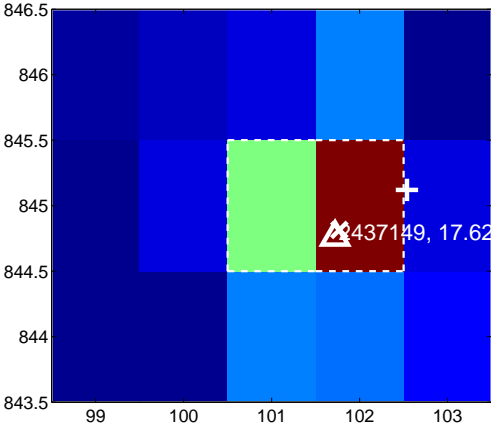
Q5 no difference image



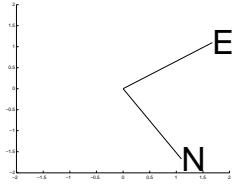
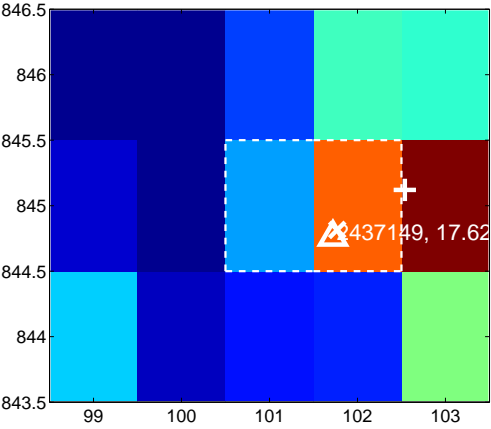
Q5 no OOT image



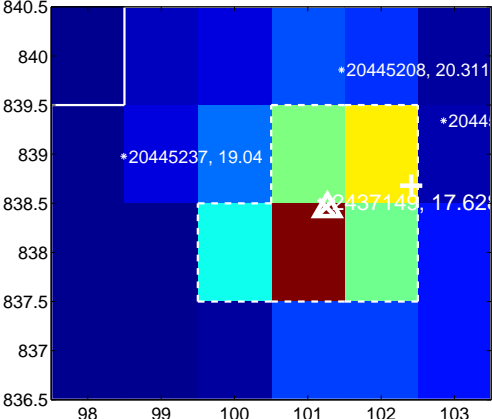
Q6 difference image



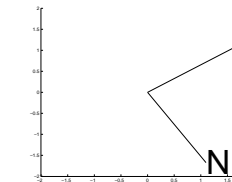
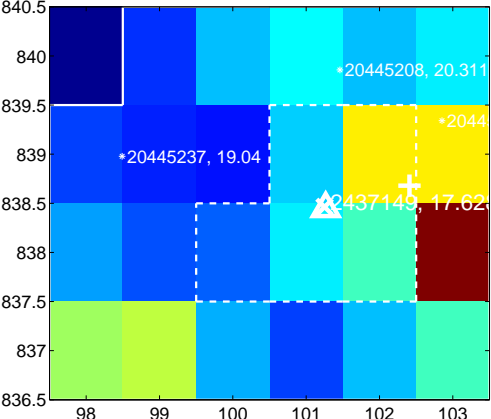
Q6 OOT image



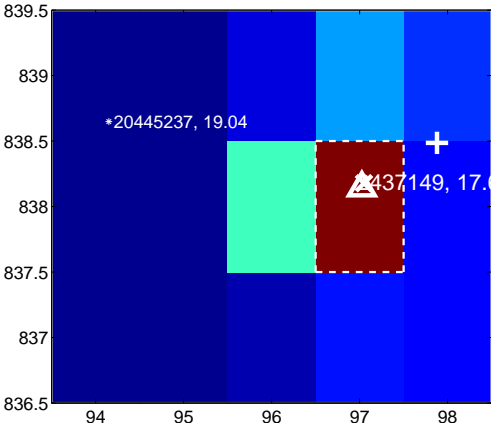
Q7 difference image



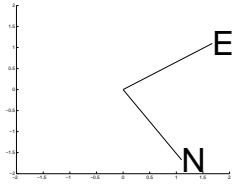
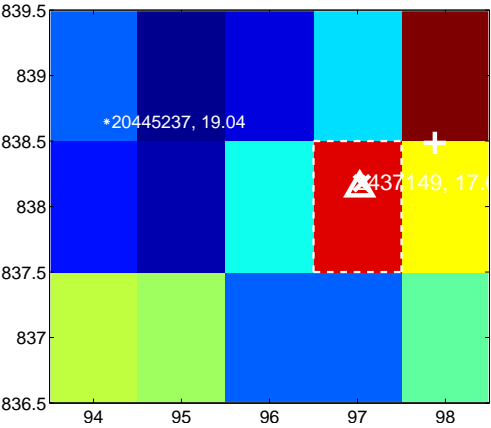
Q7 OOT image



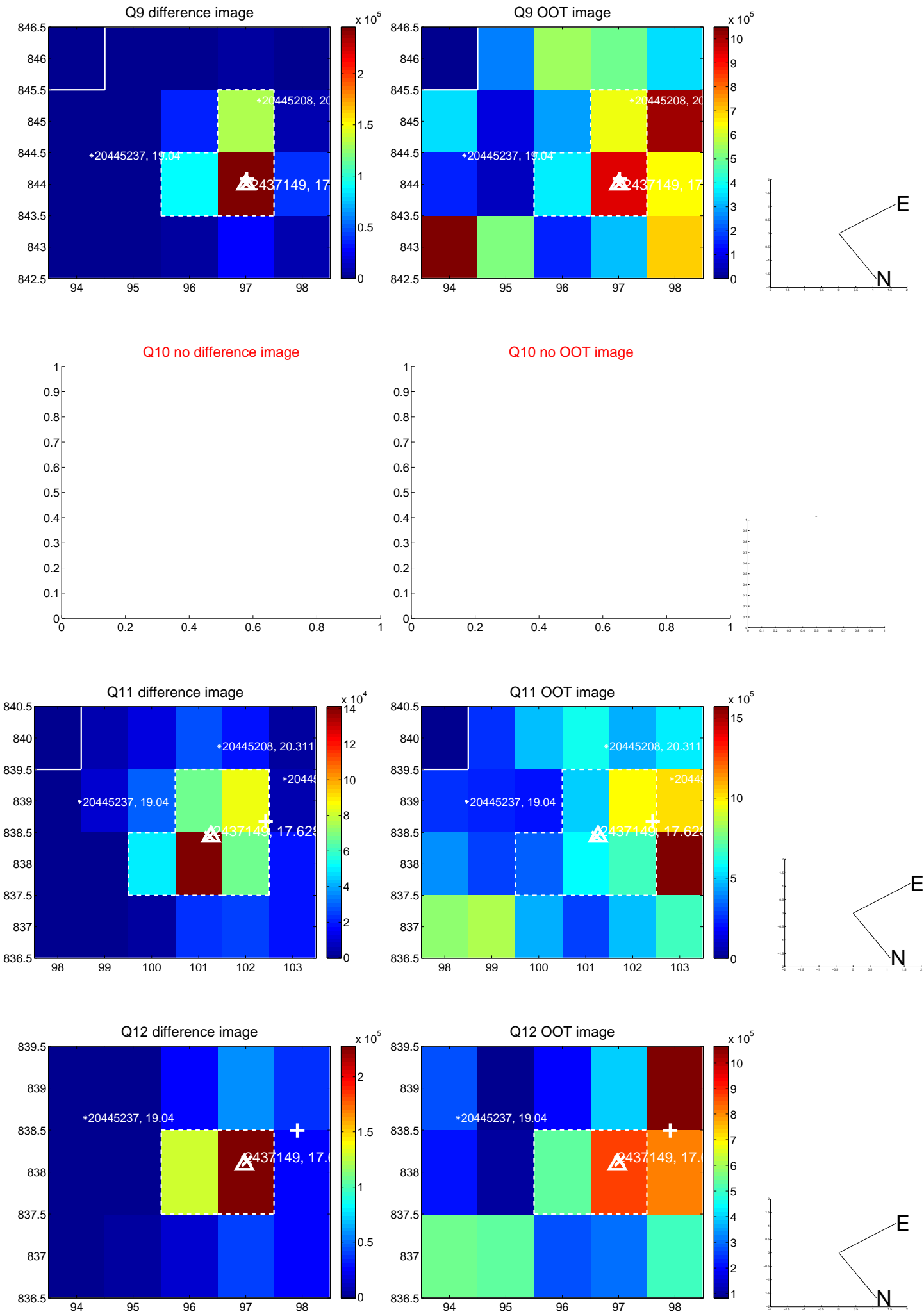
Q8 difference image



Q8 OOT image



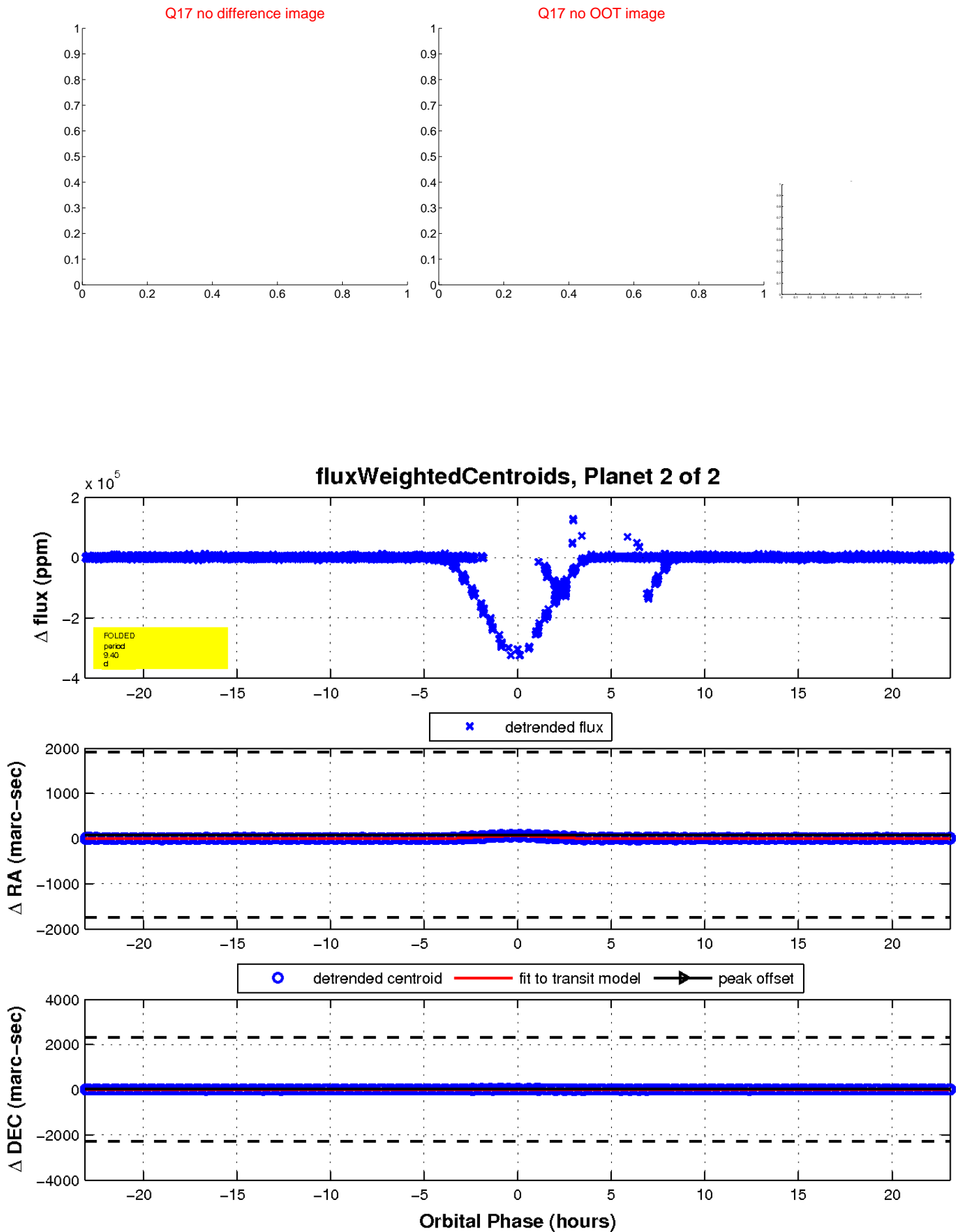
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

