

KIC 003431126

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})
003431126-01	OBS	No	399.553823	340.436992	81.7	1.304	11.5	4.4	154.30	3274	143.23	2023.07
003431126-02	OBS	No	473.415916	147.245646	629.2	8.762	17.5	9.0	154.30	3274	570.54	1613.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003431126-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
003431126-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

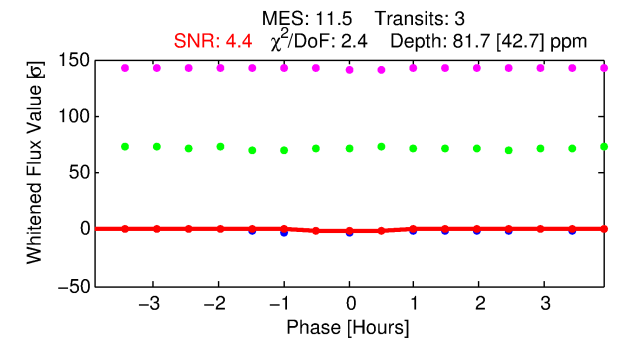
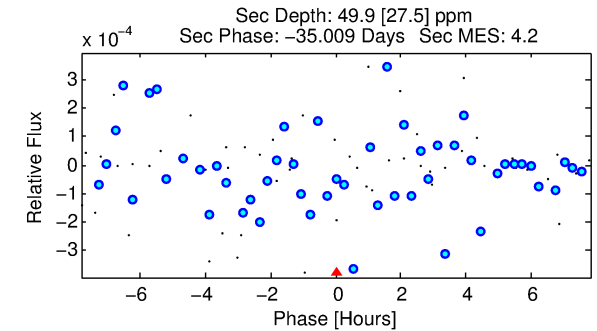
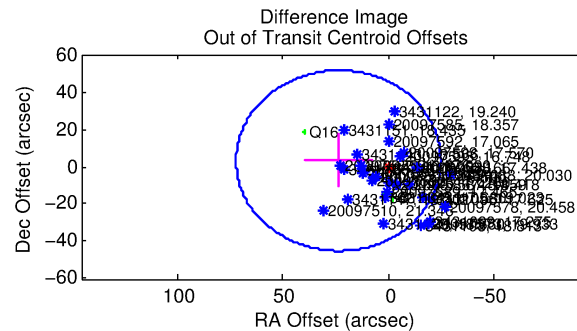
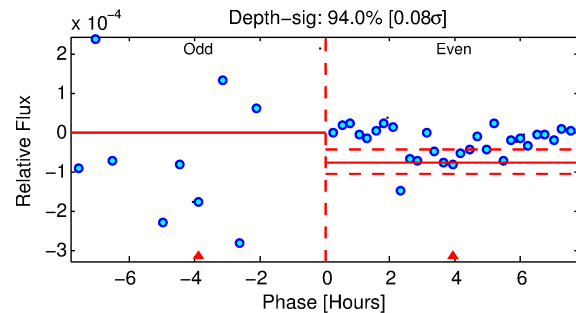
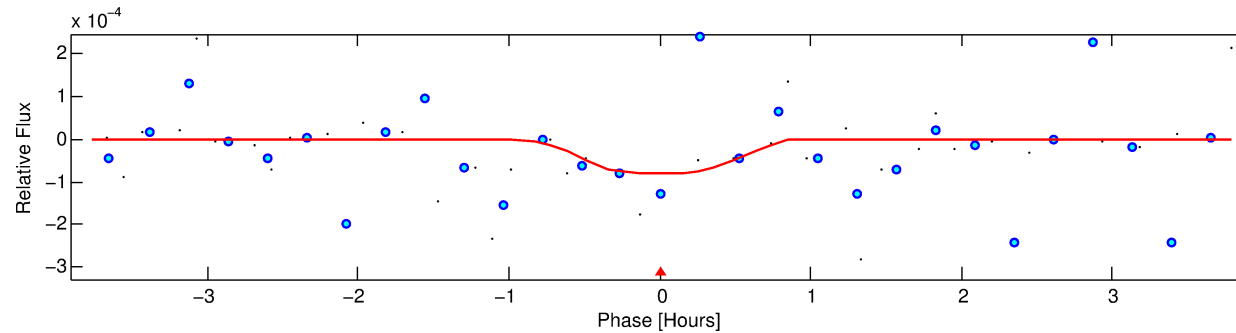
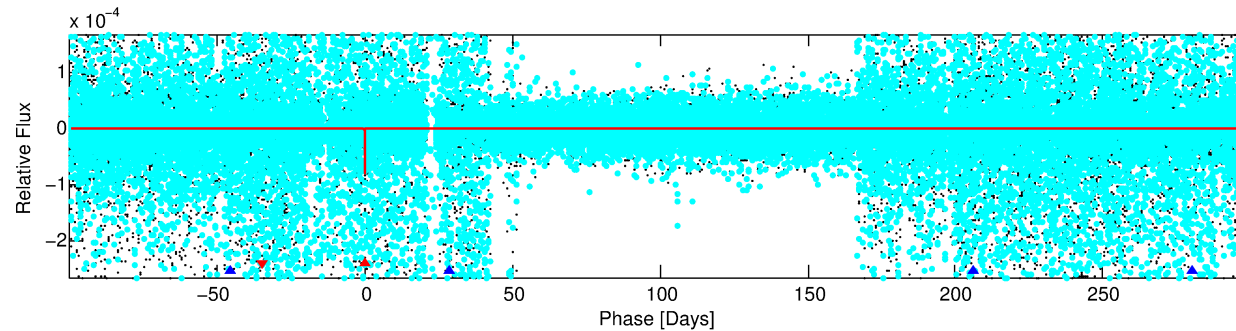
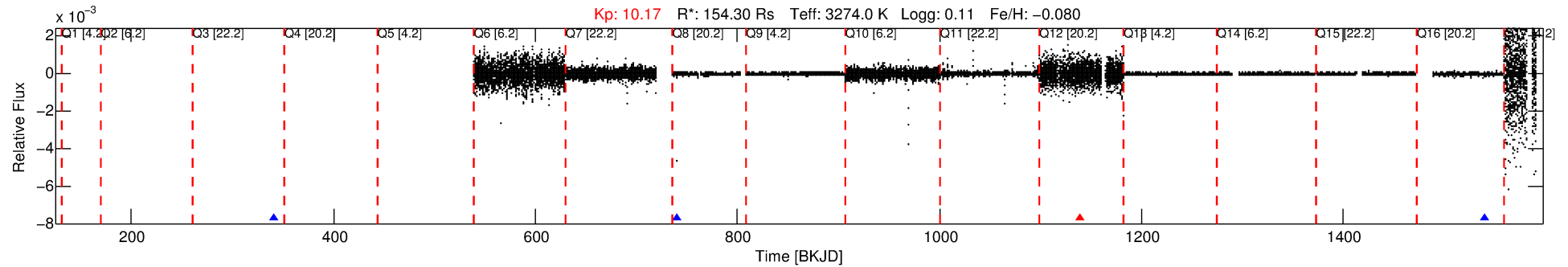
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003431126-01

No Significant Match Found

DV One-Page Summary

KIC: 3431126 Candidate: 1 of 2 Period: 399.554 d



DV Fit Results:

Period = 399.55382 [0.01887] d
Epoch = 340.4370 [0.0401] BKJD
Rp/R* = 0.0085 [0.0396]
a/R* = 1906.10 [19813.94]
b = 0.59 [11.79]
Seff = 2023.07 [747.65]
Teq = 1710 [158] K
Rp = 143.23 [667.47] Re
a = 1.1007 [0.2193] AU
Ag = 1.62 [15.13] [0.04 σ]
Teff = 2983 [6959] K [0.18 σ]

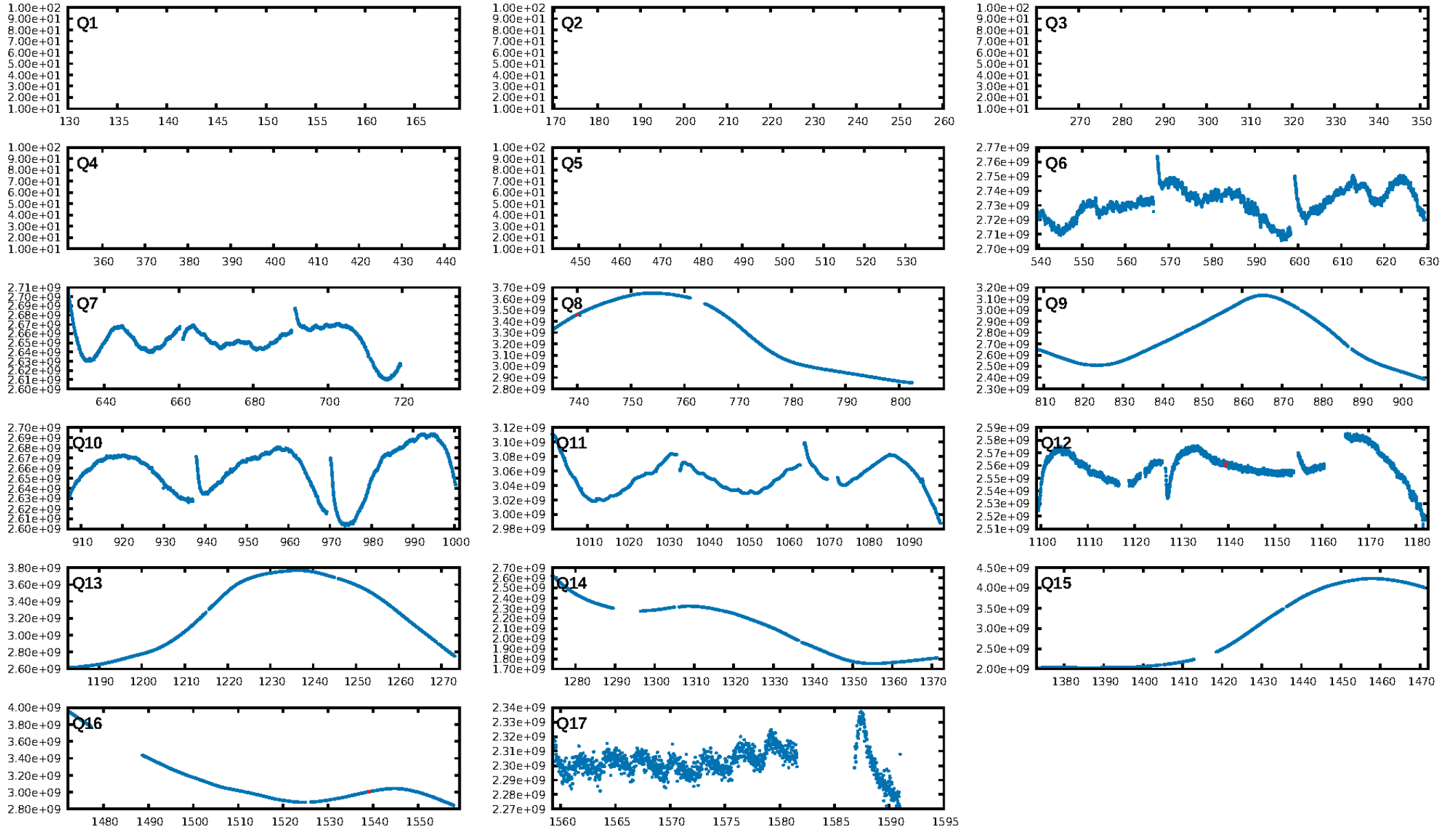
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [200.11 σ]
ModelChiSquare2-sig: 4.6%
ModelChiSquareGof-sig: 43.0%
Bootstrap-pfa: 1.33e-05
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: N/A
Centroid-sig: 72.9%
Centroid-so: 5.664 arcsec [0.49 σ]
OotOffset-rm: 23.979 arcsec [1.48 σ]
KicOffset-rm: 24.504 arcsec [1.52 σ]
OotOffset-st: 0/0/3/0 [3]
KicOffset-st: 0/0/3/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

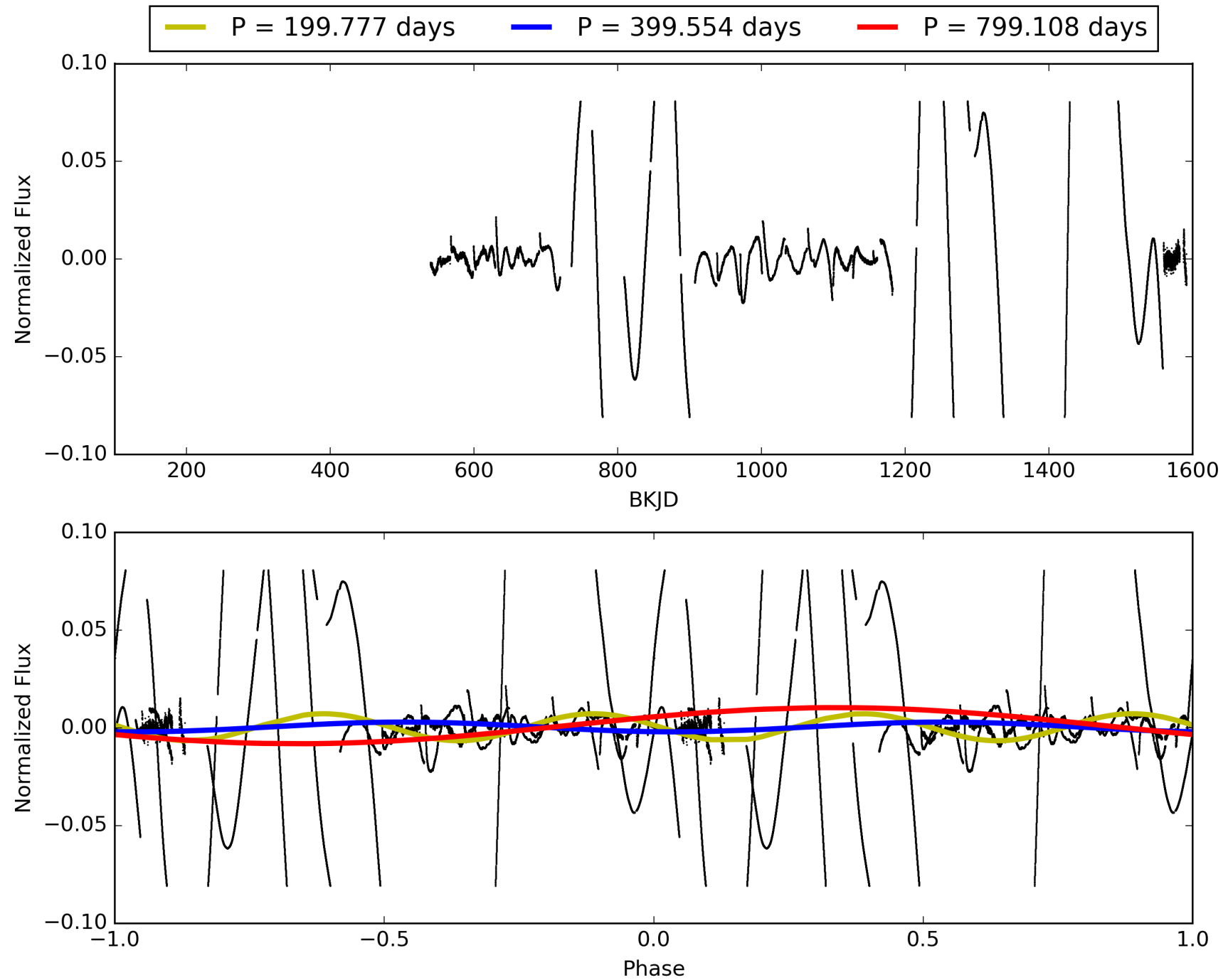
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:05:12 Z

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

TCE 003431126-01, PDC Light Curves

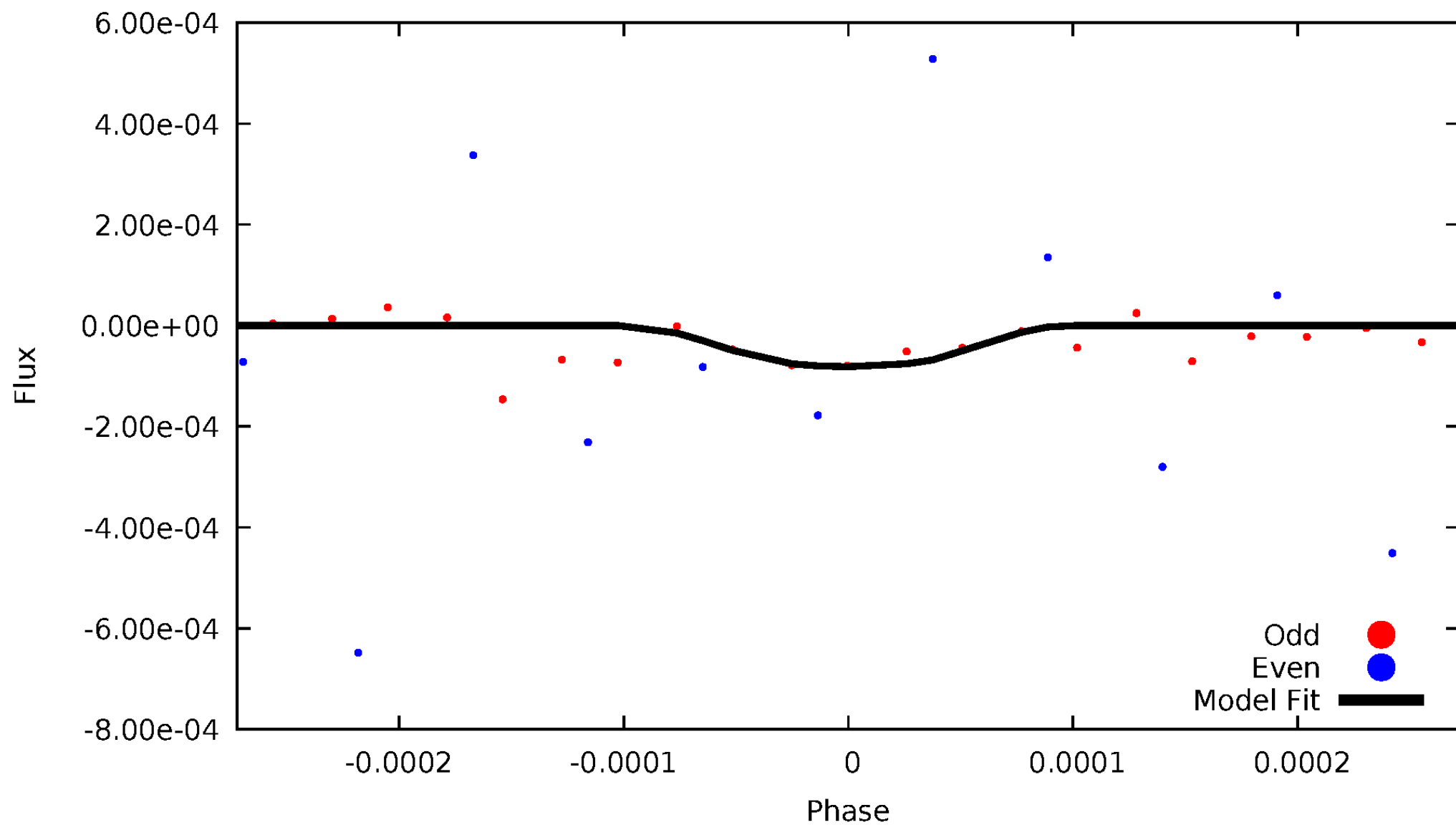


TCE 003431126-01



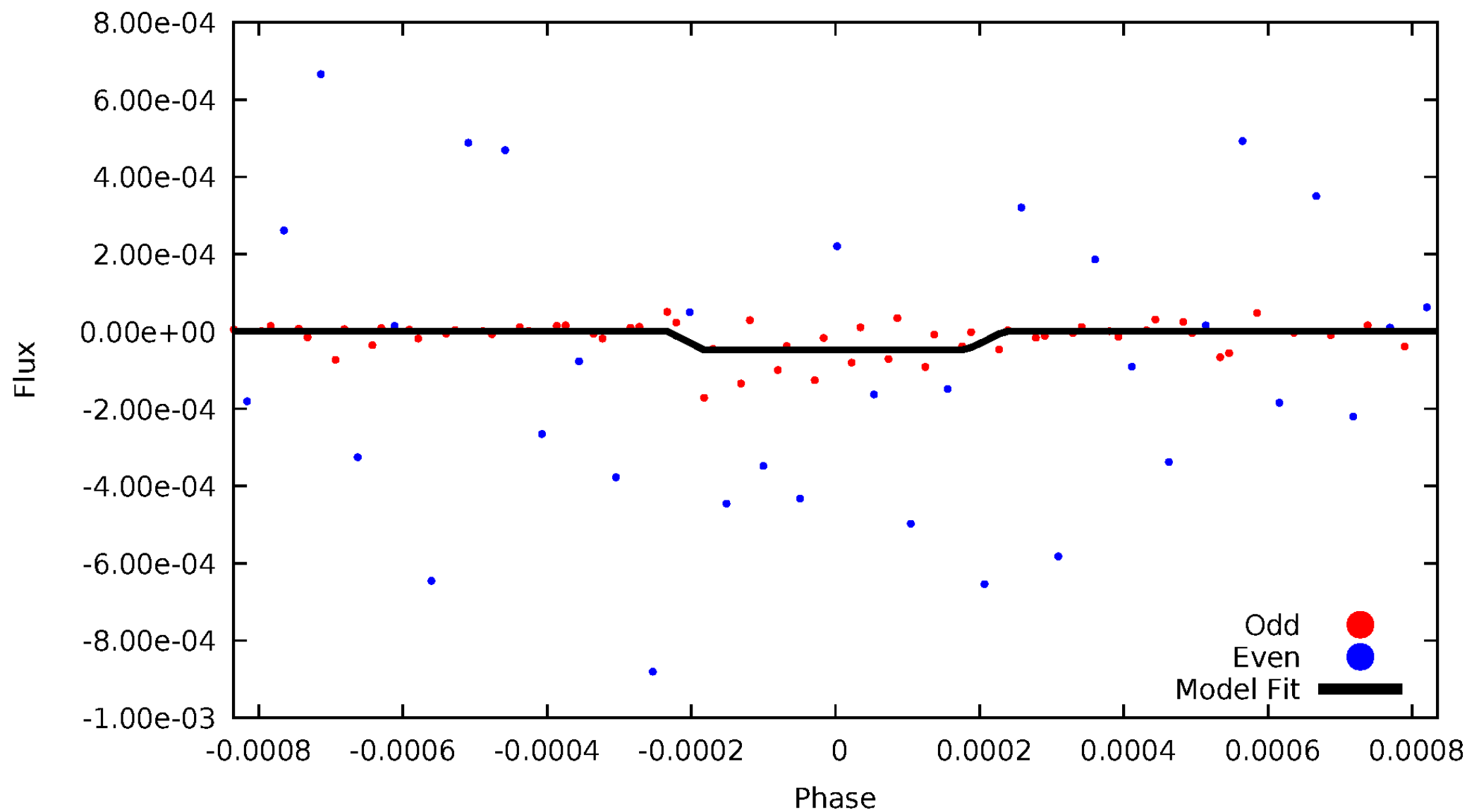
DV Odd/Even

TCE 003431126-01



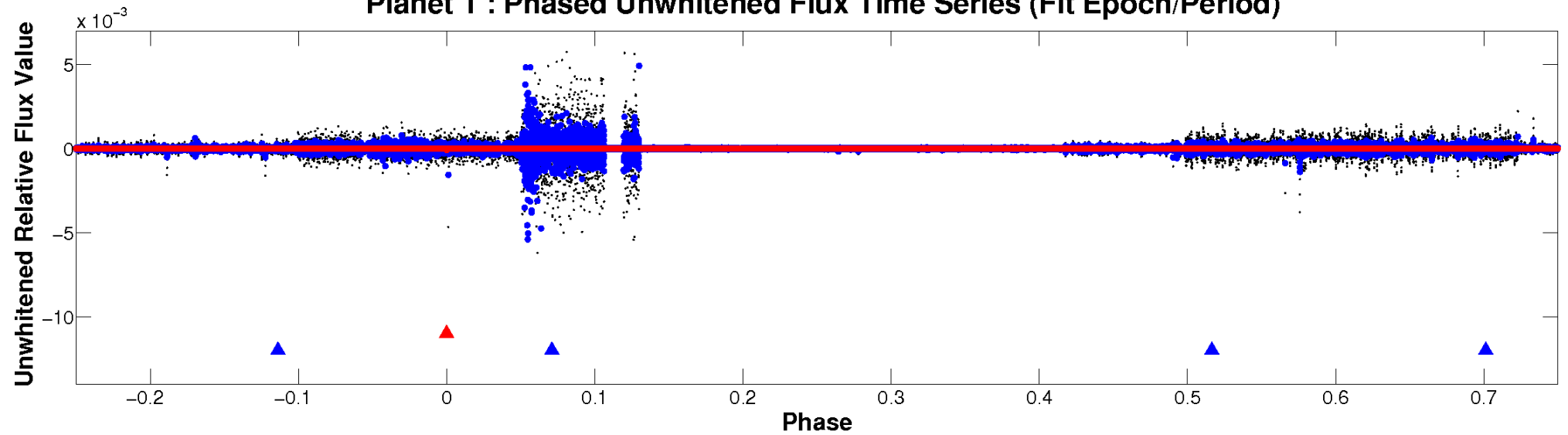
ALT Odd/Even

TCE 003431126-01

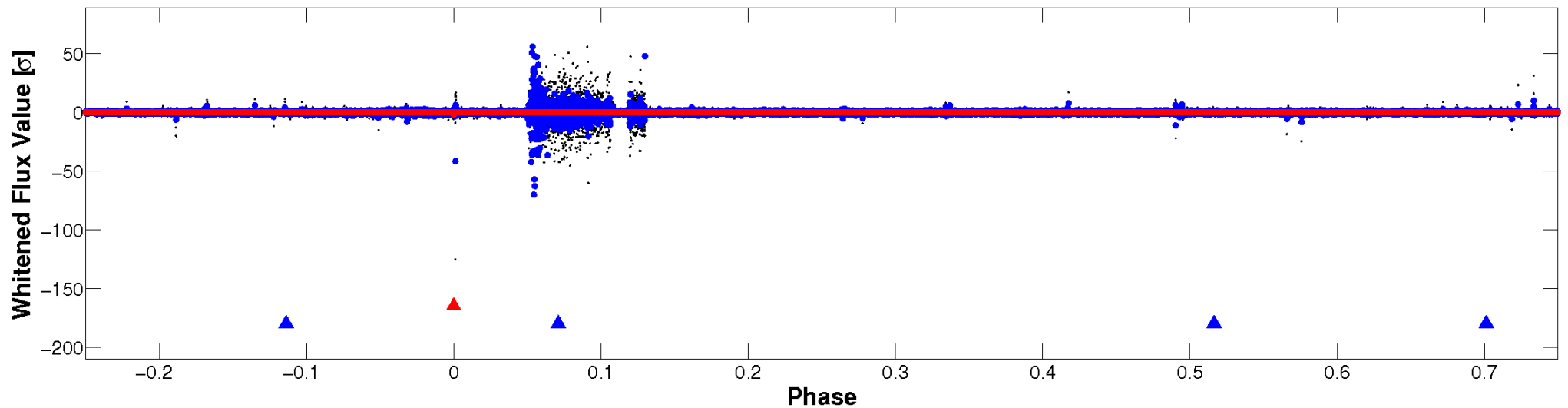


Non-Whitened Vs. Whitened Light Curve

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

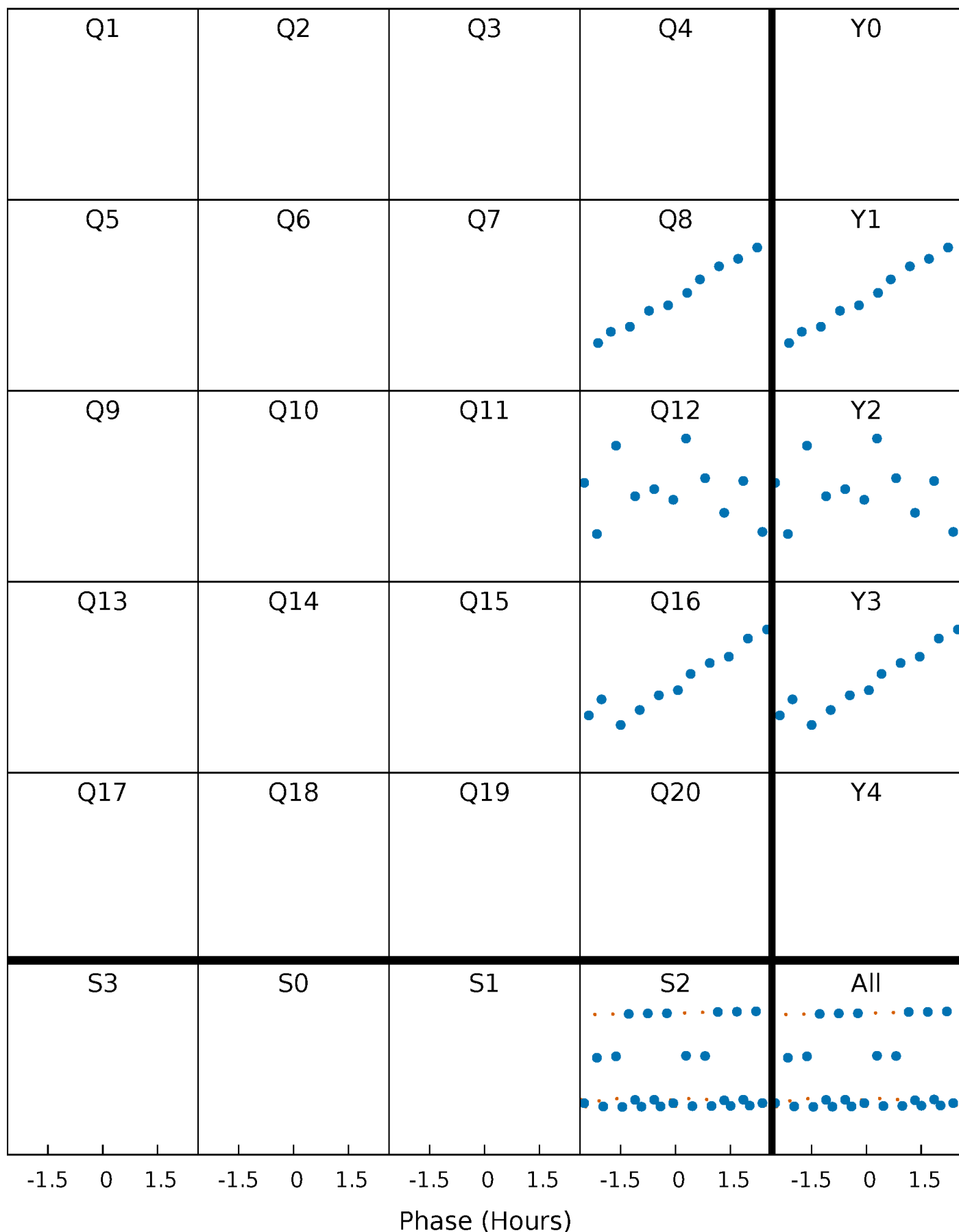


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



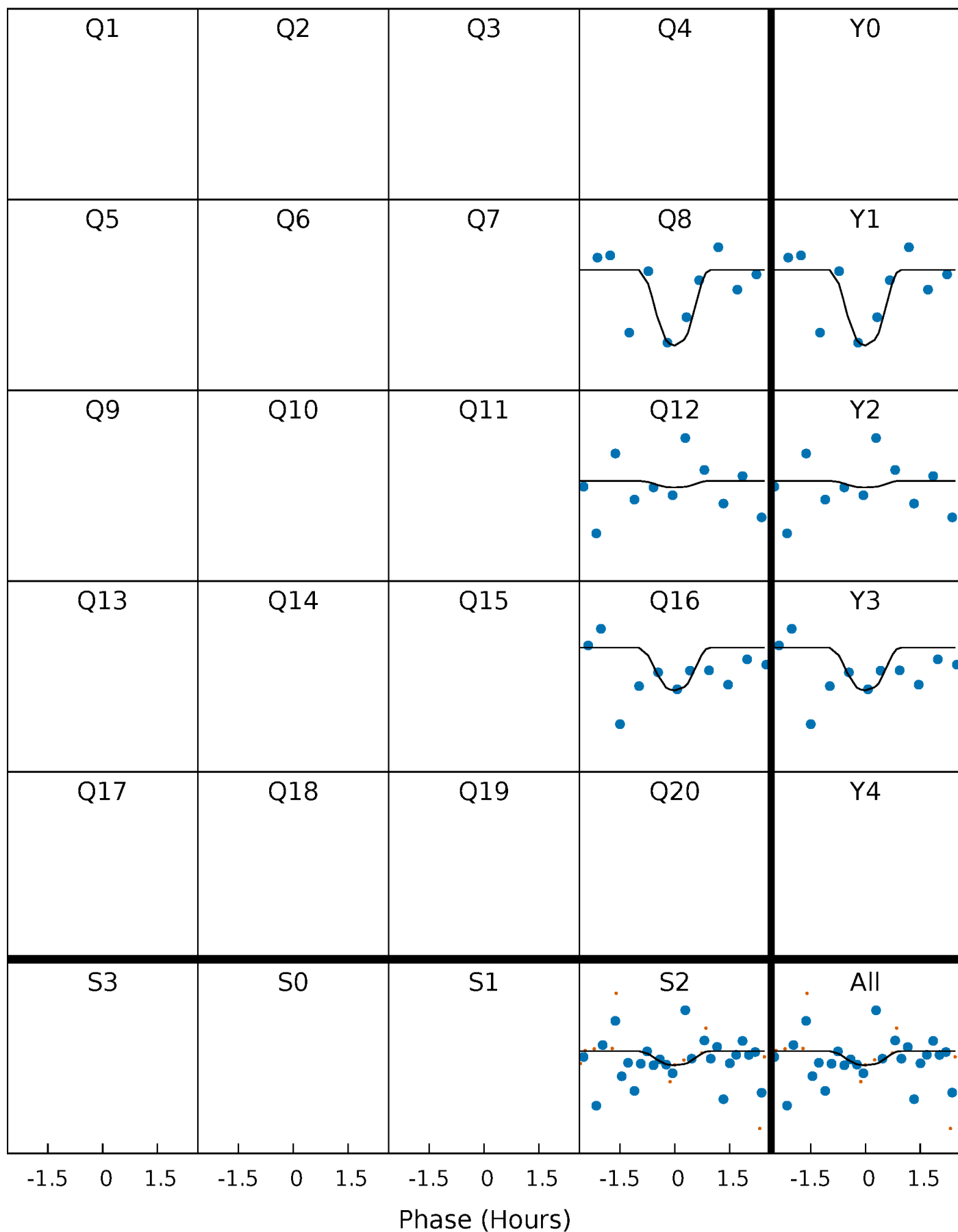
PDC Quarter-Phased Transit Curves

TCE 003431126-01 P=399.553823 Days $T_0=340.436992$ (BKJD)



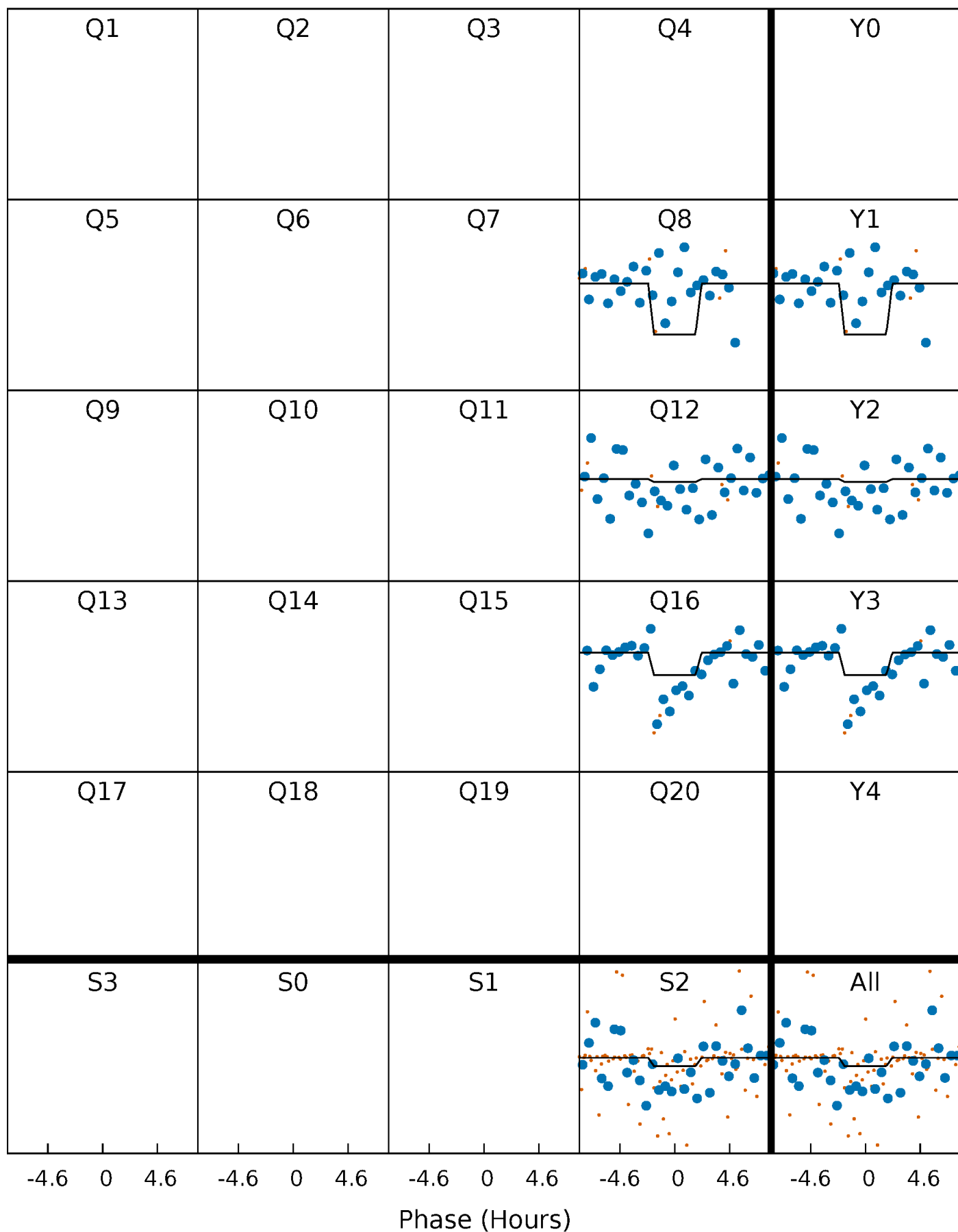
DV Quarter-Phased Transit Curves

TCE 003431126-01 P=399.553823 Days $T_0=340.436992$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

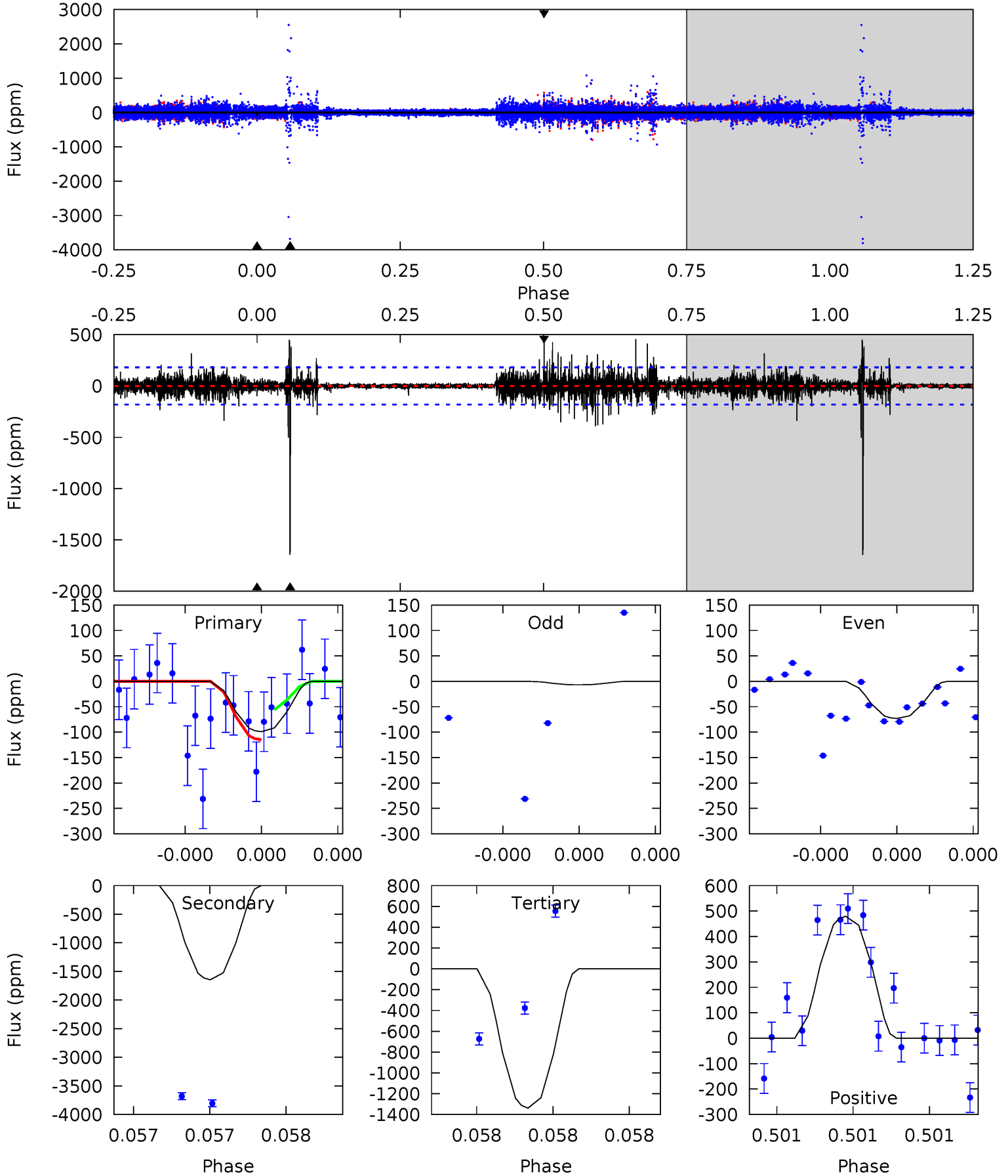
TCE 003431126-01 P=399.551021 Days $T_0=340.456716$ (BKJD)



DV Model-Shift Uniqueness Test

003431126-01, P = 399.553823 Days, E = 340.436992 Days

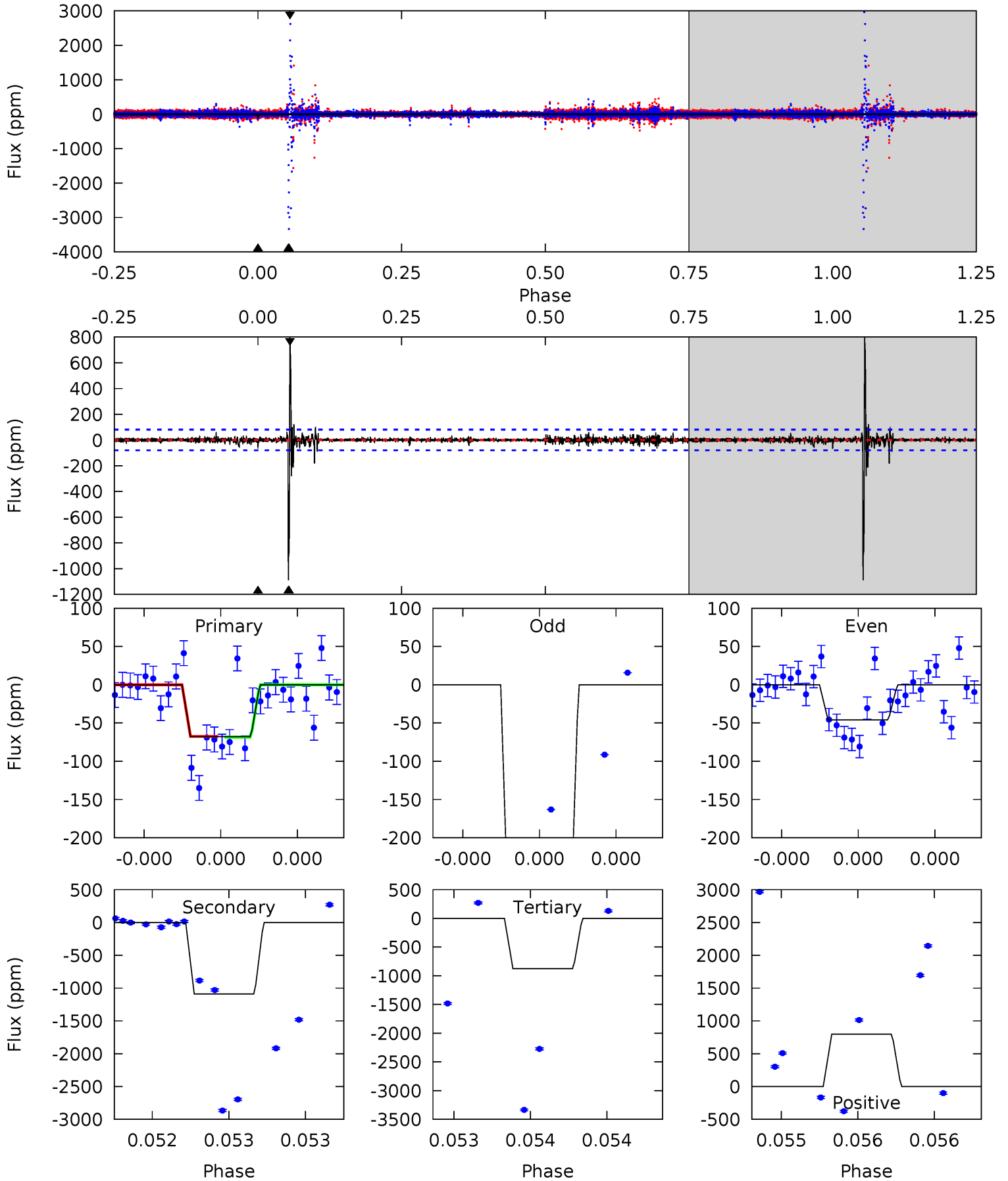
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.16	52.5	42.7	15.3	5.78	3.79	1.58	-39.5	-12.1	9.80	37.2	1.01	0.06	0.23	0.91



Alt Model-Shift Uniqueness Test

003431126-01, P = 399.551021 Days, E = 340.456716 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.70	75.5	60.8	55.3	5.59	3.50	1.35	-56.1	-50.6	14.7	20.2	6.32	1.25	0.42	0.03



Stellar Parameters For KIC 003431126

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3274^{+117}_{-78}	$0.108^{+0.208}_{-0.052}$	$-0.080^{+0.250}_{-0.150}$	$154.296^{+7.354}_{-27.576}$	$1.114^{+0.207}_{-0.128}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+193%/-48%	+312%/-188%	+5%/-18%	+19%/-11%	+93%/-14%
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 003431126-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1646 ± 31	$469.91^{+518.93}_{-340.39}$	2356^{+101}_{-114}	3622^{+2550}_{-826}	$5.109^{+62.343}_{-3.962}$
Alt.	-1088 ± 14	$479.33^{+439.53}_{-340.28}$	2355^{+101}_{-115}	3340^{+2087}_{-690}	$3.282^{+35.948}_{-2.397}$

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 $A_{obs} \gg 1.0$

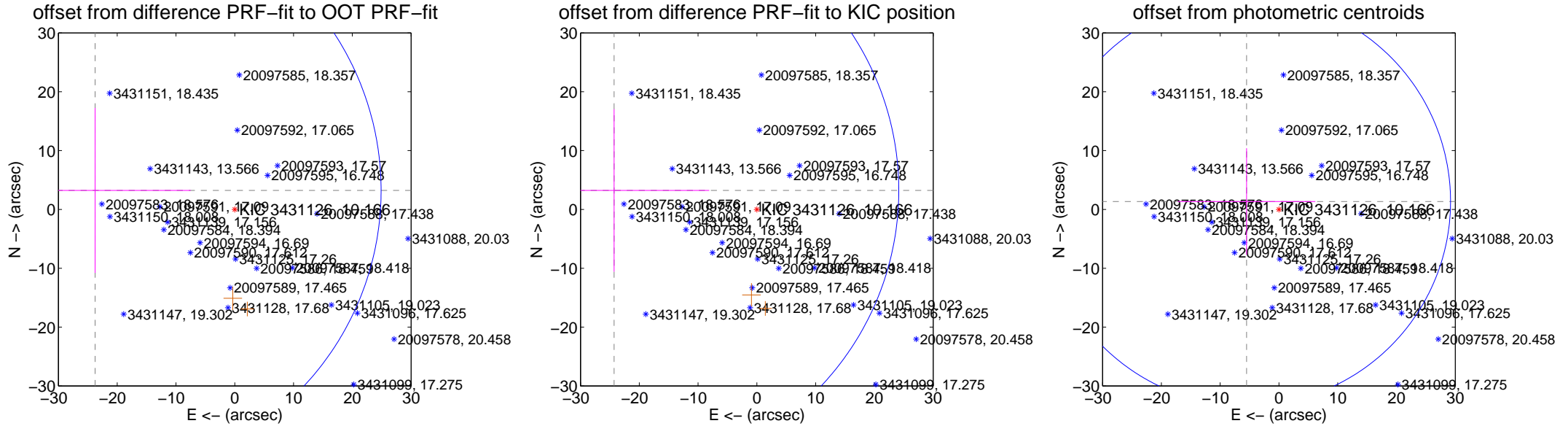
DV Centroid Data

Supplemental centroid analysis for 003431126-01. **Kepler magnitude: 10.17.** Transit SNR 4.36

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	23.979 ± 16.219	1.48	23.760 ± 16.257	3.229 ± 14.008
PRF-fit source offset from KIC position	24.504 ± 16.146	1.52	24.290 ± 16.184	3.235 ± 13.815
photometric centroid source offset	5.66 ± 11.57	0.49	5.50 ± 11.70	1.34 ± 9.06

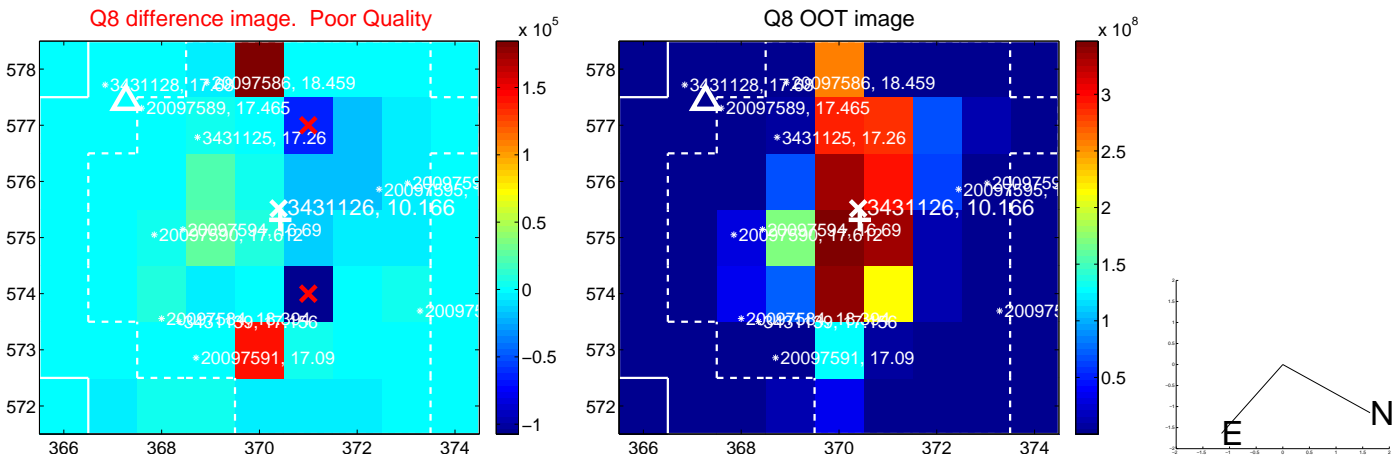
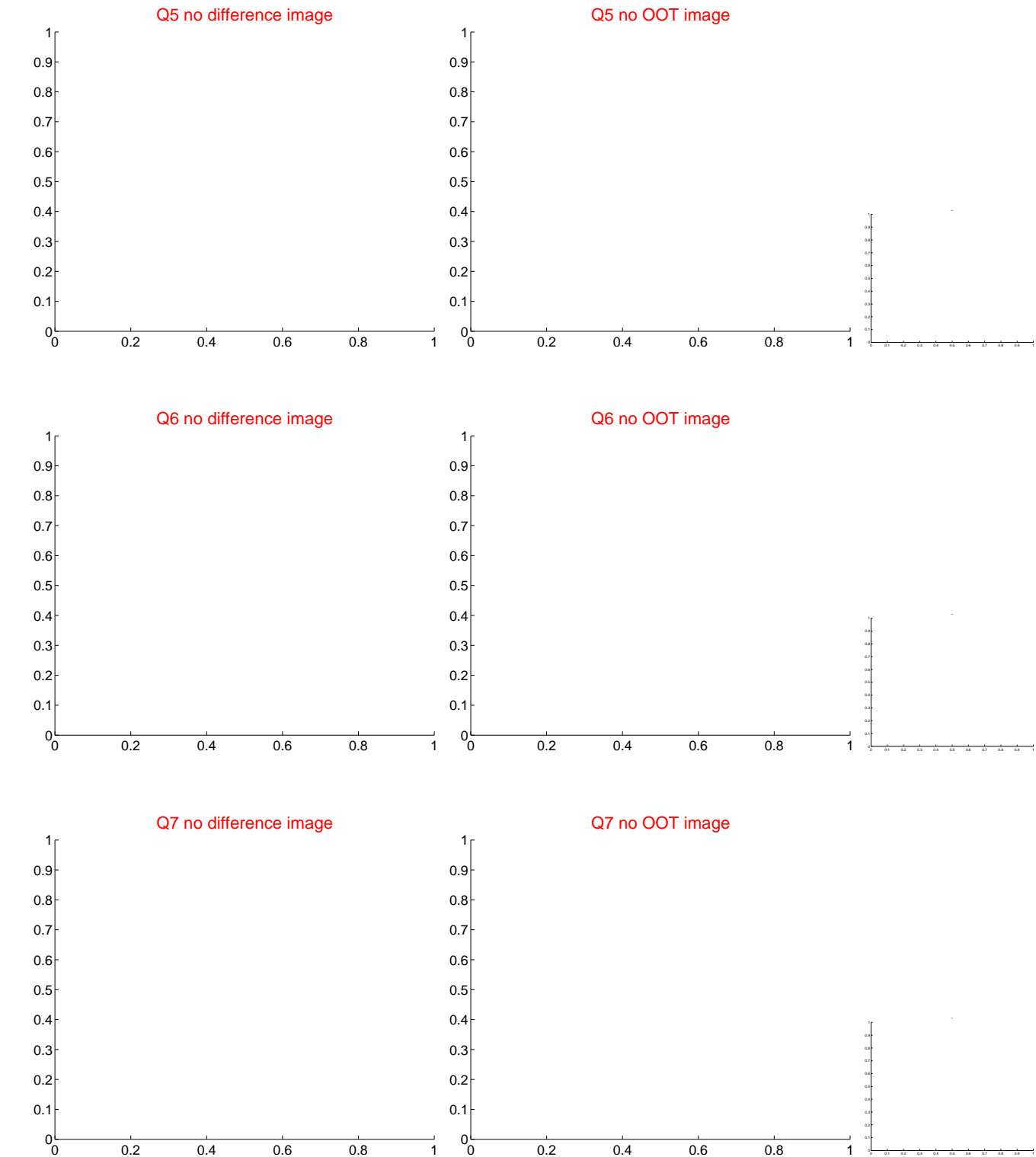


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

Q9 no difference image



Q9 no OOT image



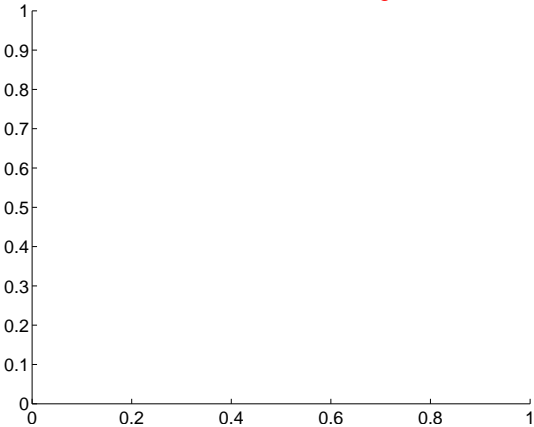
Q10 no difference image



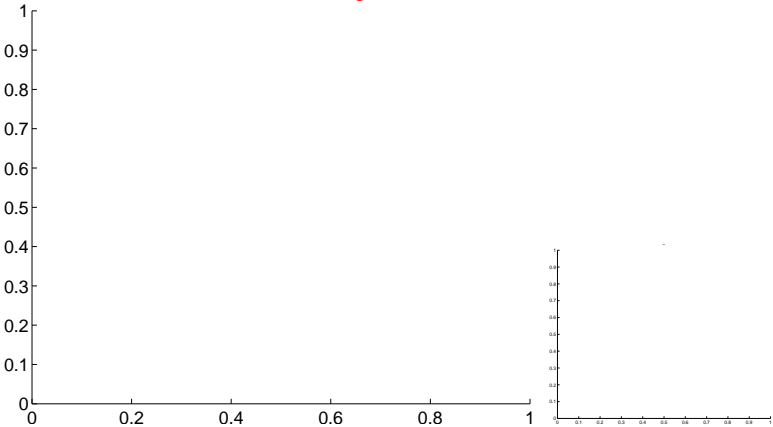
Q10 no OOT image



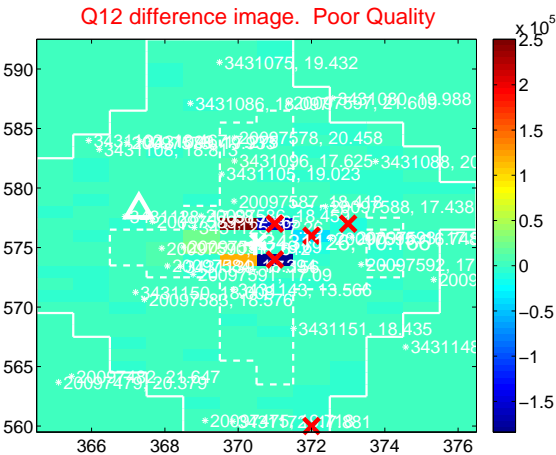
Q11 no difference image



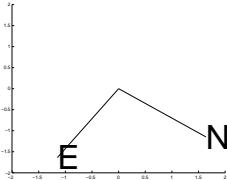
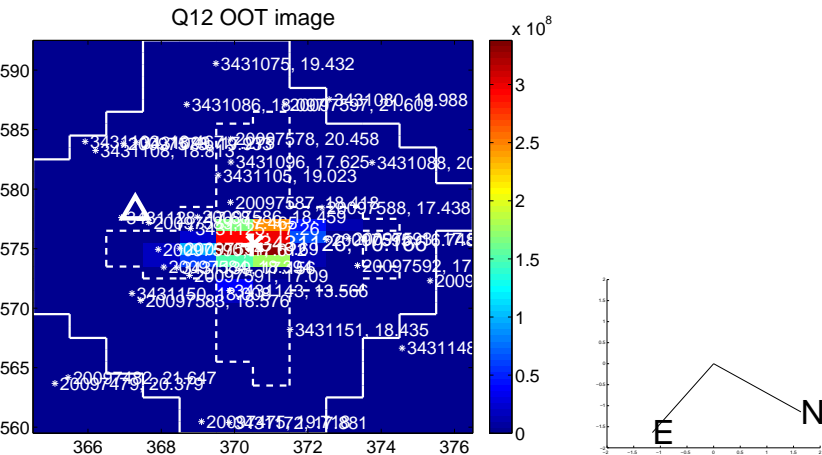
Q11 no OOT image



Q12 difference image. Poor Quality



Q12 OOT image

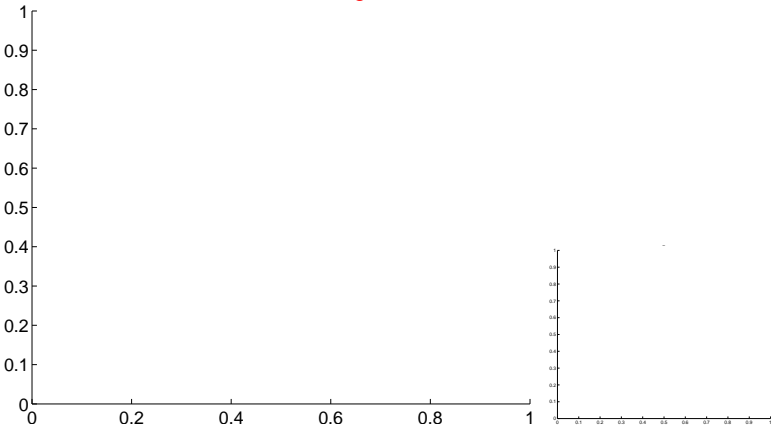


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q13 no difference image



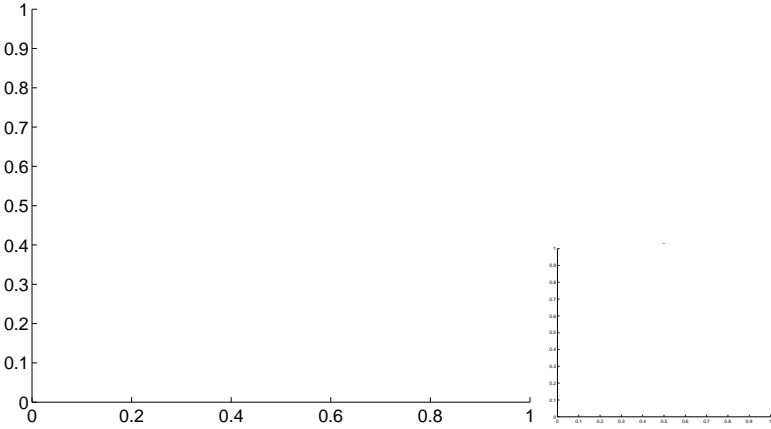
Q13 no OOT image



Q14 no difference image



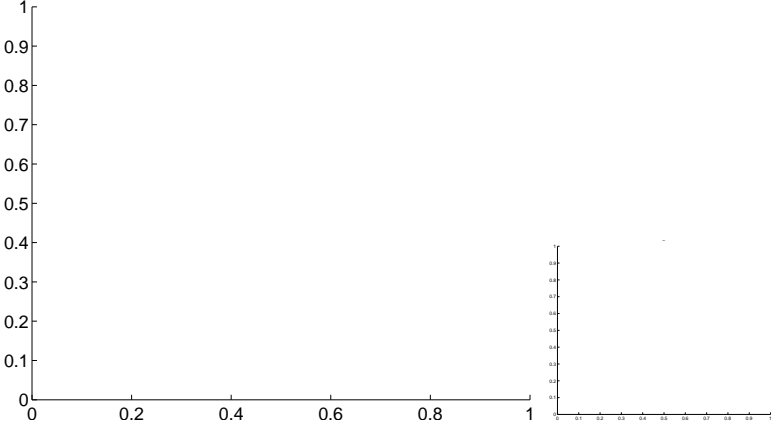
Q14 no OOT image



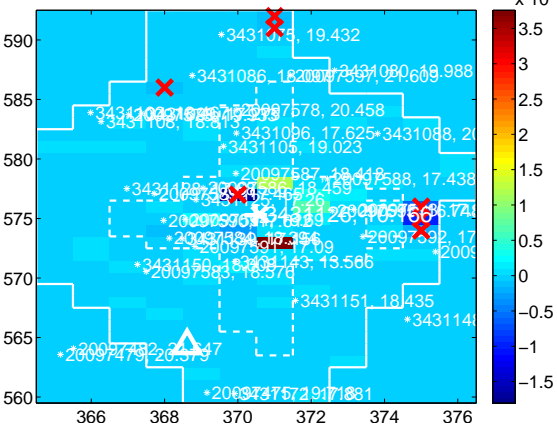
Q15 no difference image



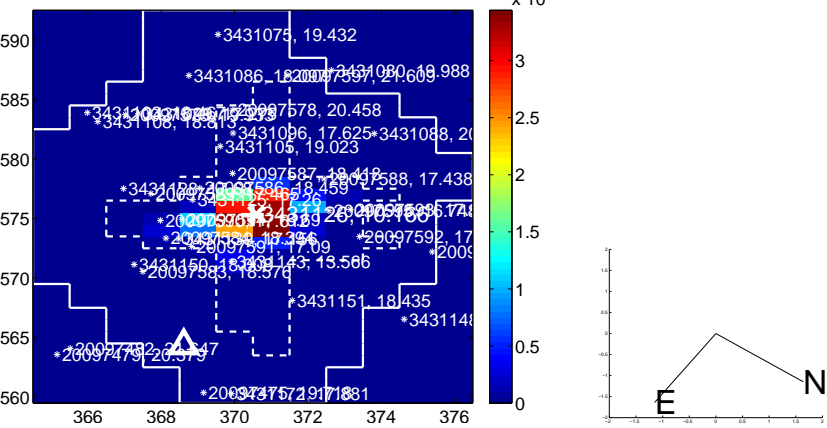
Q15 no OOT image



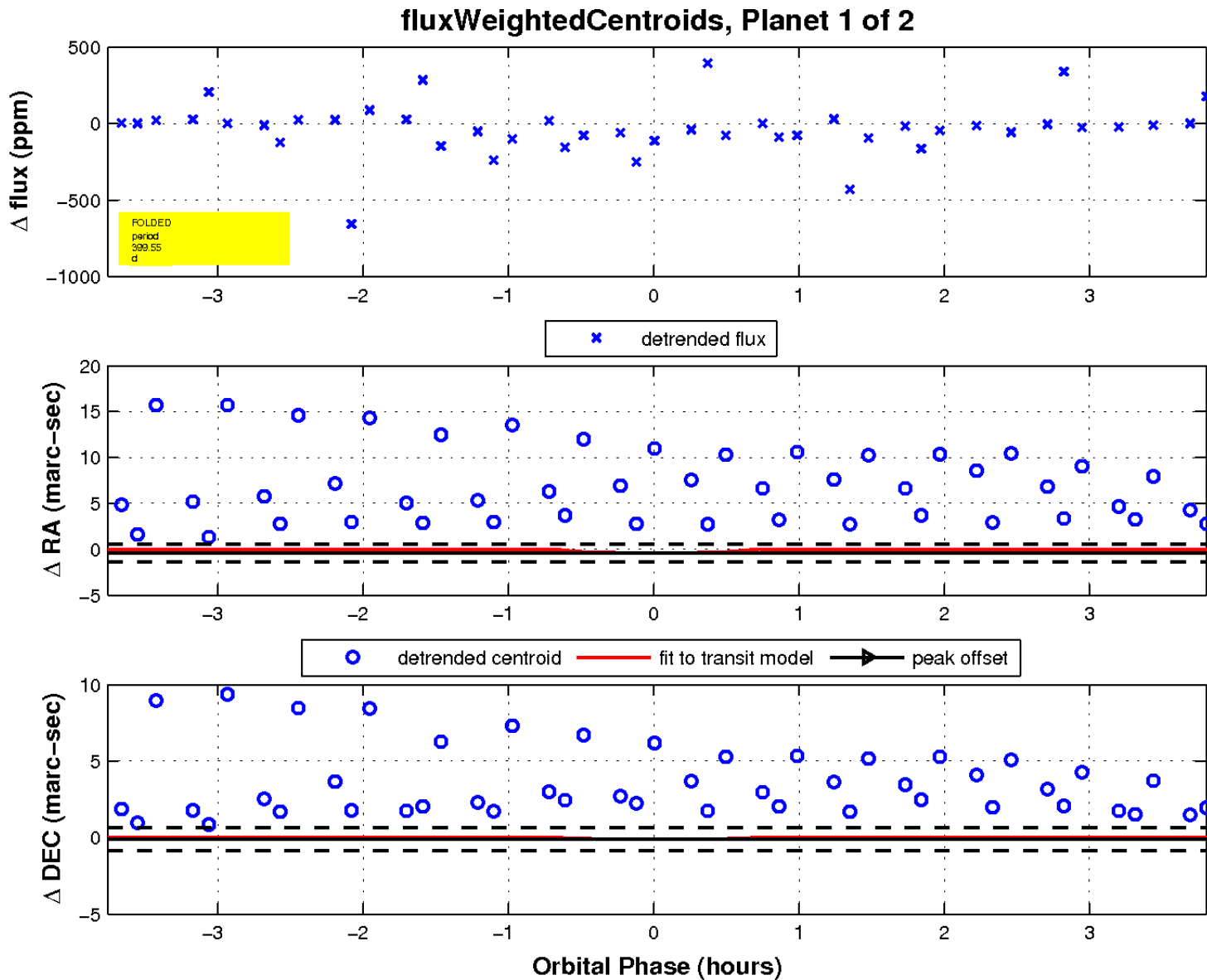
Q16 difference image. Poor Quality



Q16 OOT image

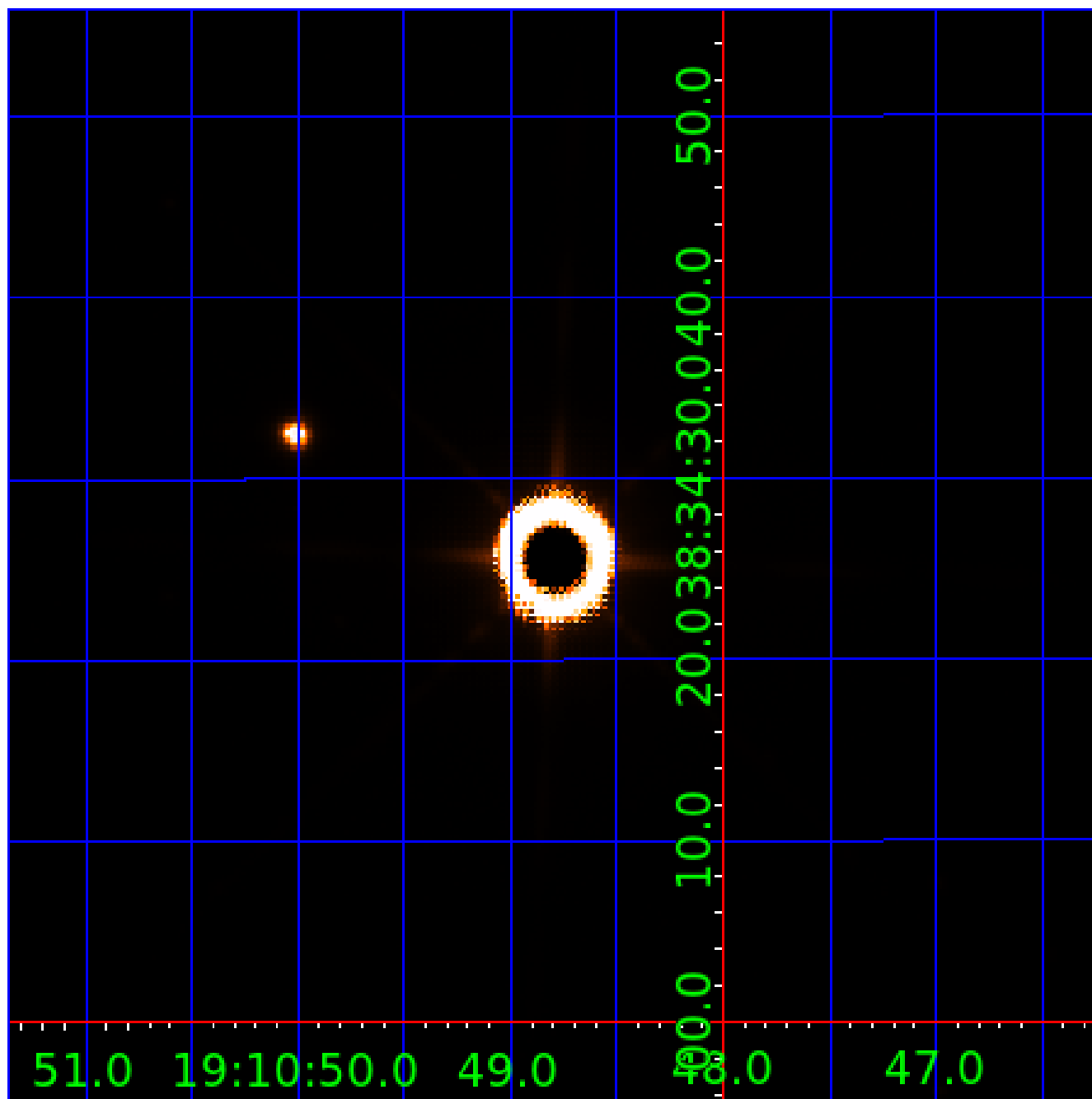


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003431126

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})
003431126-01	OBS	No	399.553823	340.436992	81.7	1.304	11.5	4.4	154.30	3274	143.23	2023.07
003431126-02	OBS	No	473.415916	147.245646	629.2	8.762	17.5	9.0	154.30	3274	570.54	1613.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003431126-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
003431126-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

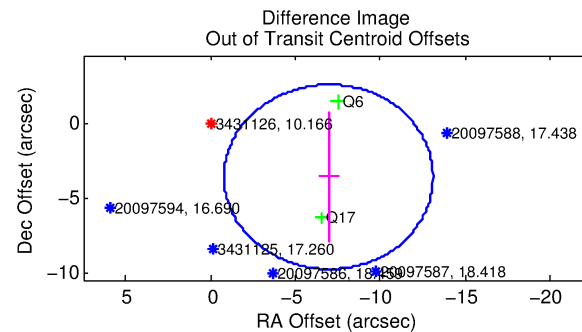
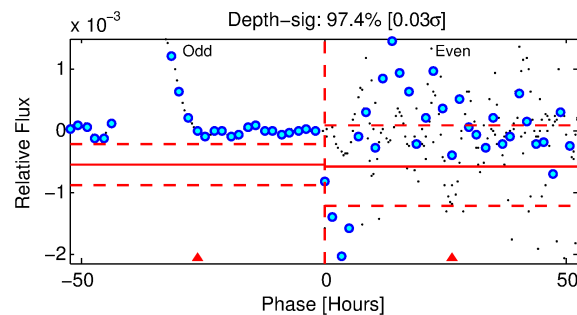
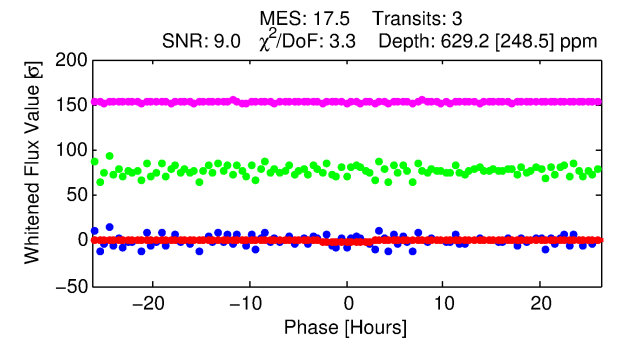
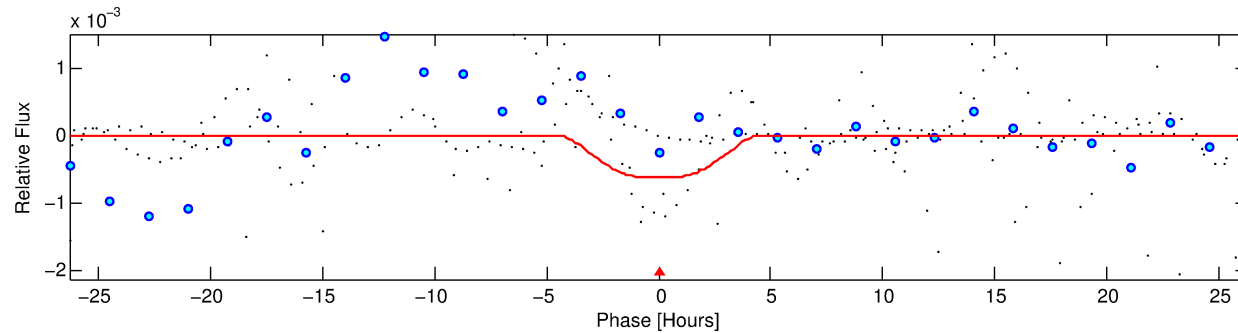
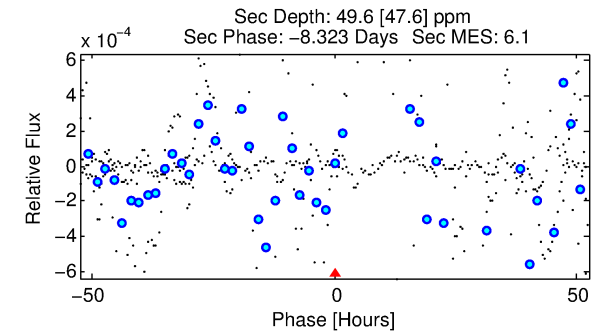
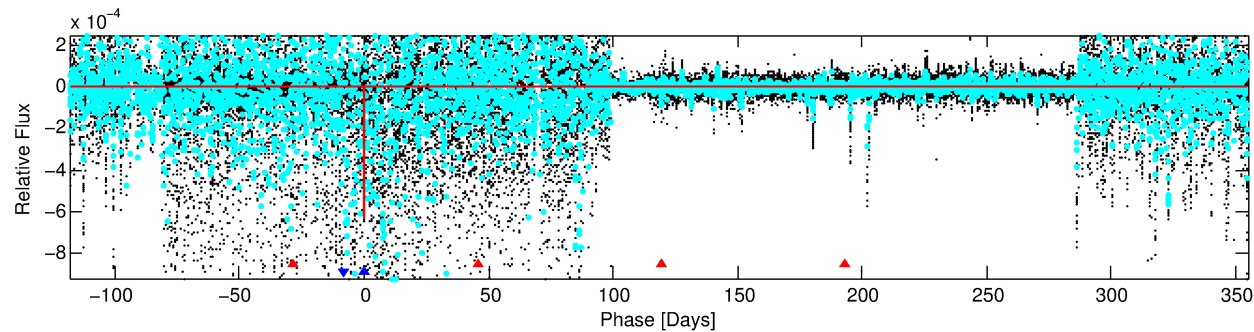
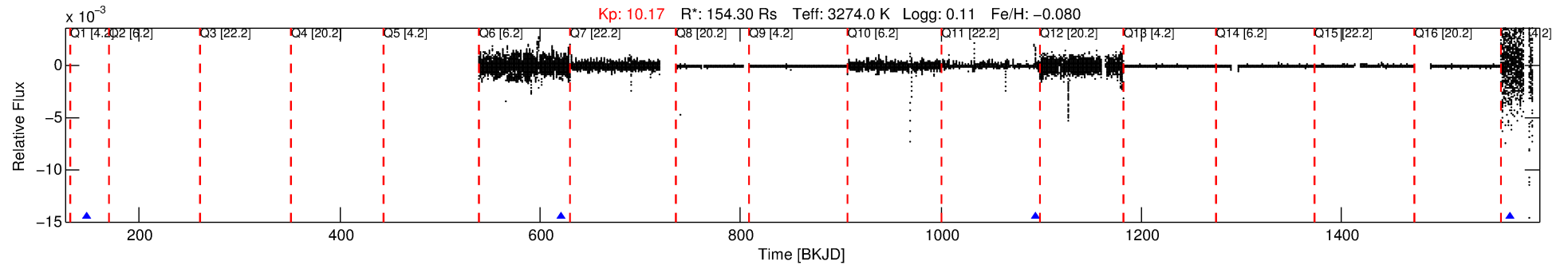
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003431126-02

No Significant Match Found

DV One-Page Summary

KIC: 3431126 Candidate: 2 of 2 Period: 473.416 d



DV Fit Results:

Period = 473.41592 [0.04399] d
Epoch = 147.2456 [0.0916] BKJD
Rp/R* = 0.0339 [0.0080]
a/R* = 157.04 [31.34]
b = 0.96 [0.02]
Seff = 1613.57 [596.32]
Teq = 1616 [149] K
Rp = 570.55 [169.05] Re
a = 1.2324 [0.2455] AU
Ag = 0.13 [0.14] [-6.10 σ]
Teff = 1492 [403] K [-0.29 σ]

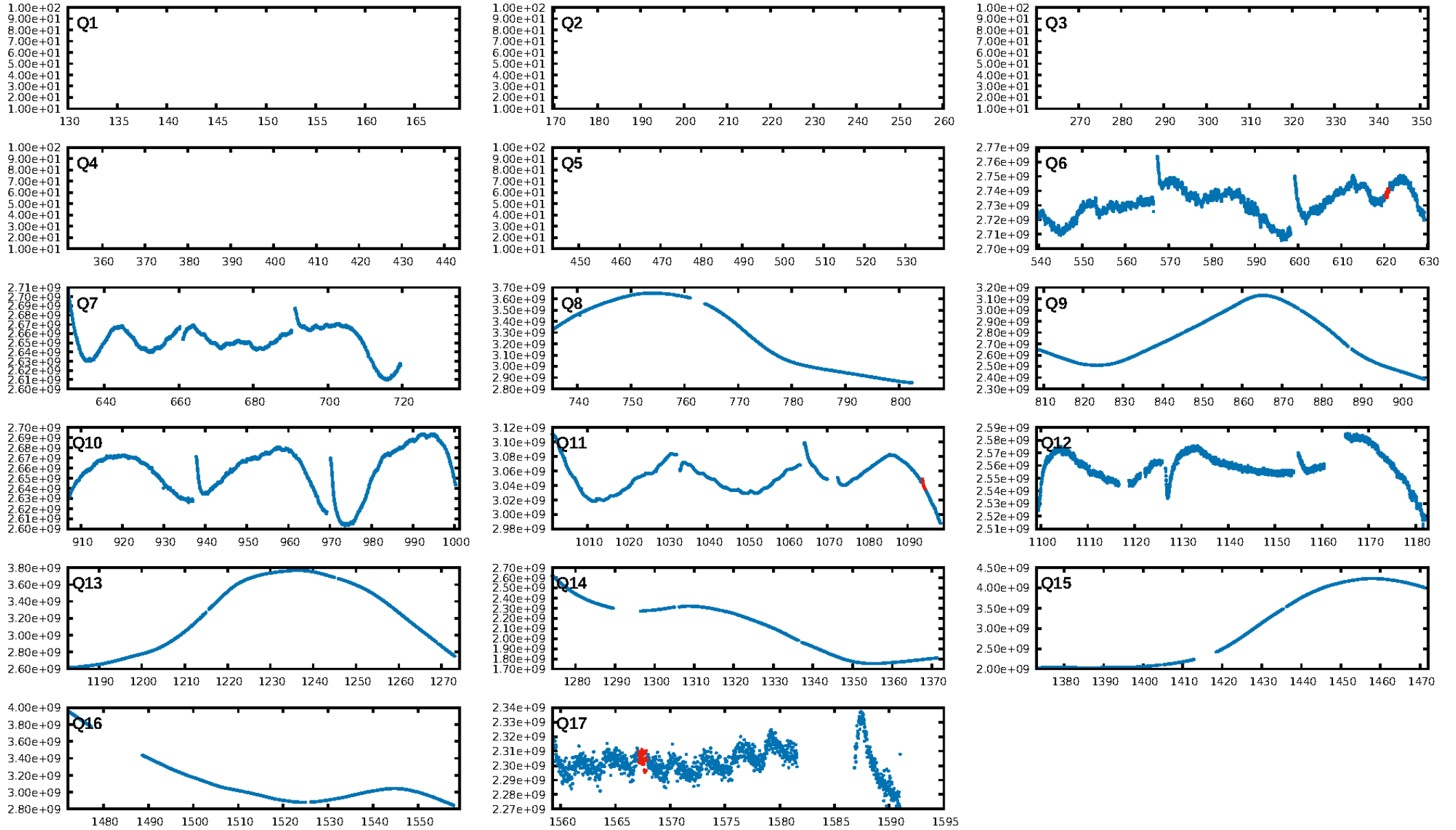
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [200.11 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 22.3%
Bootstrap-pfa: 1.01e-05
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: N/A
Centroid-sig: 5.8%
Centroid-so: 1.444 arcsec [1.25 σ]
OotOffset-rm: 7.858 arcsec [3.83 σ]
KicOffset-rm: 6.928 arcsec [4.04 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [2/2]

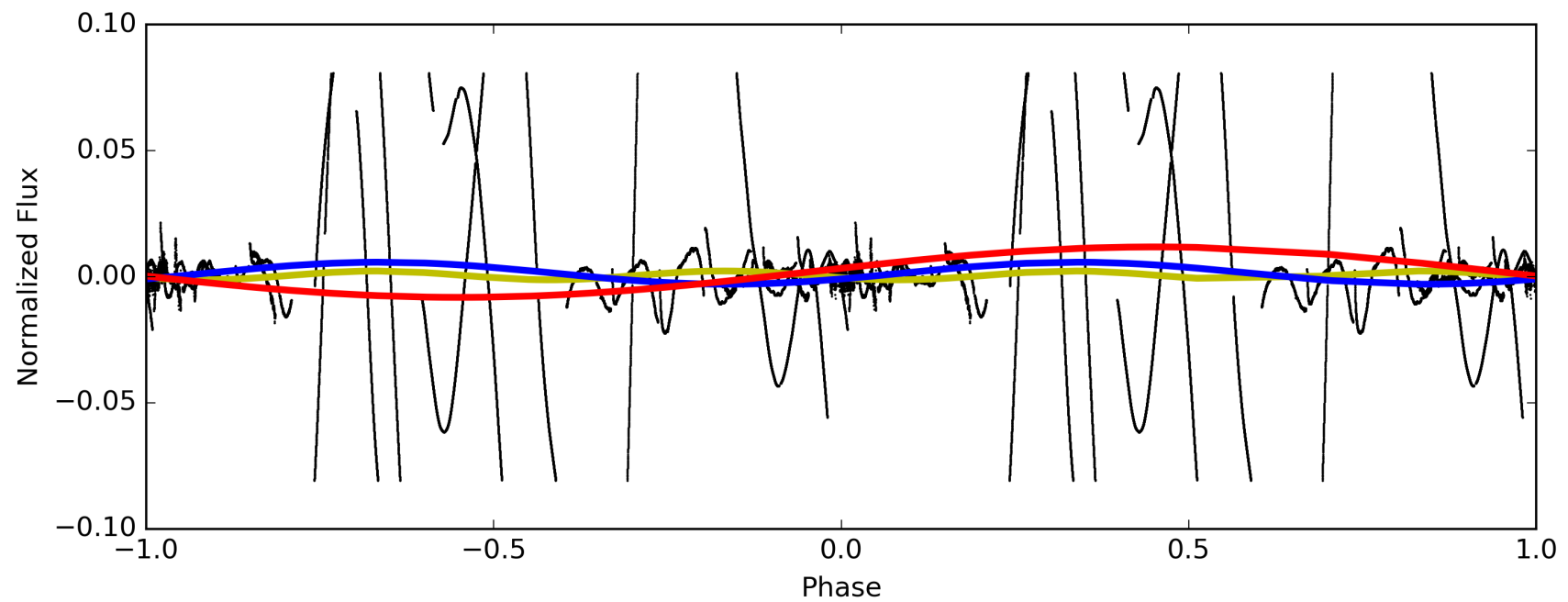
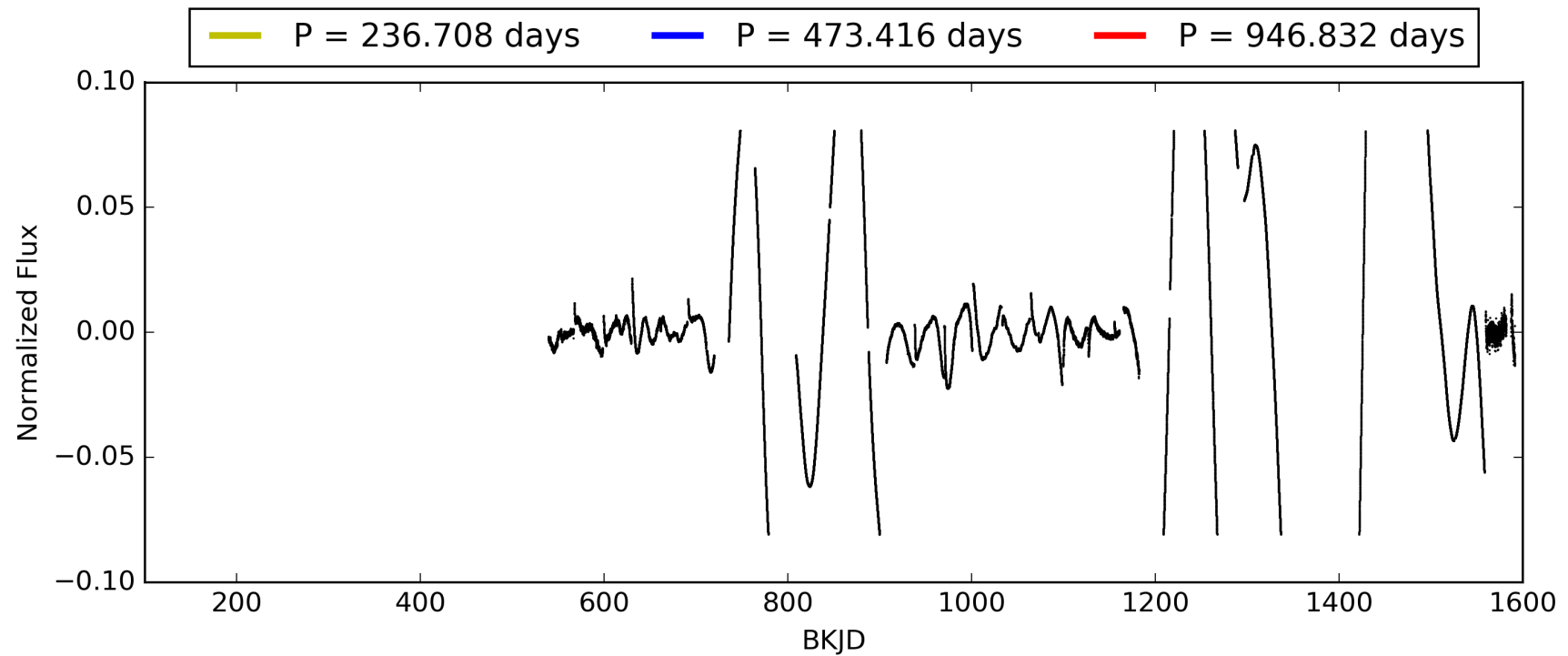
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:05:22 Z

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

TCE 003431126-02, PDC Light Curves

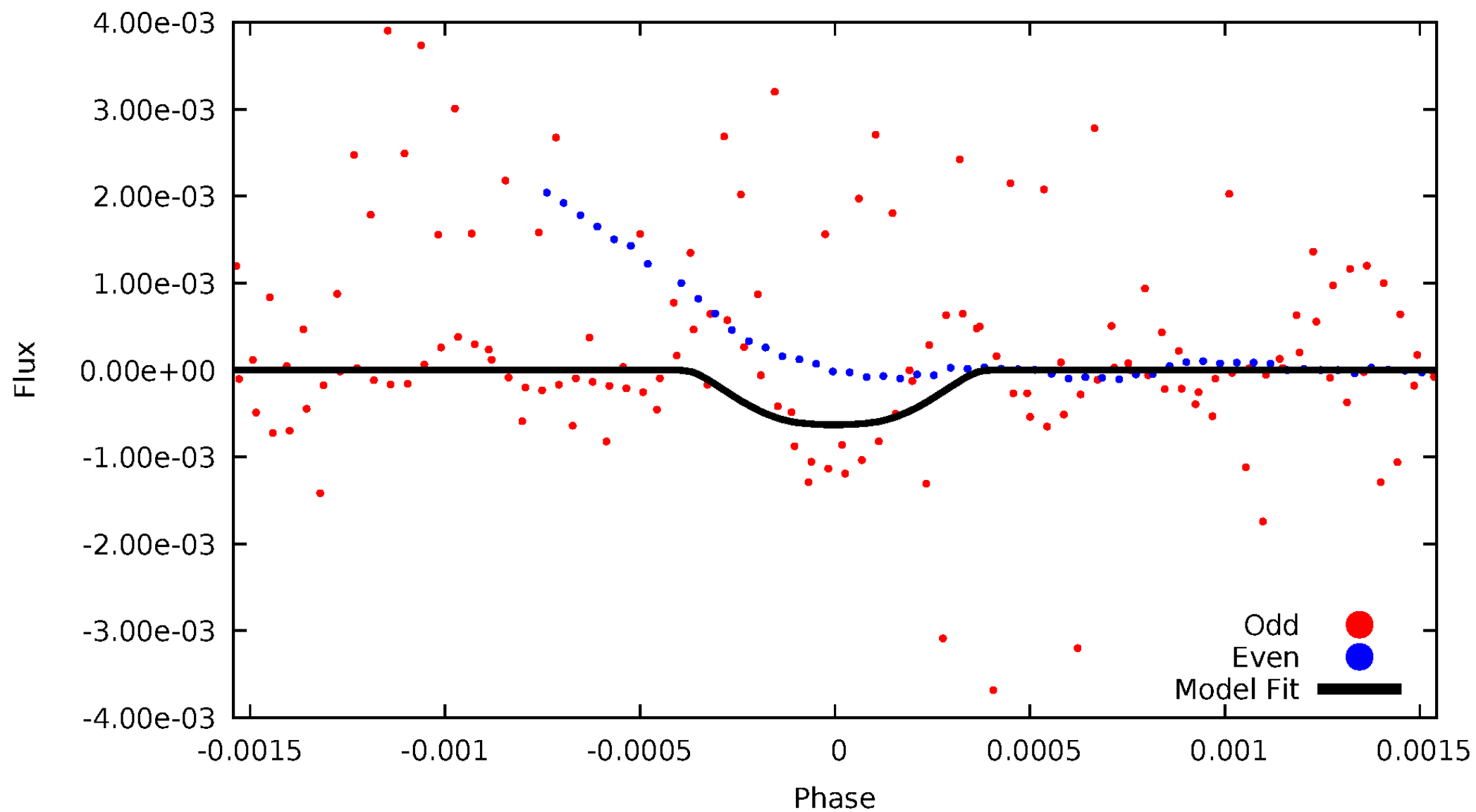


TCE 003431126-02



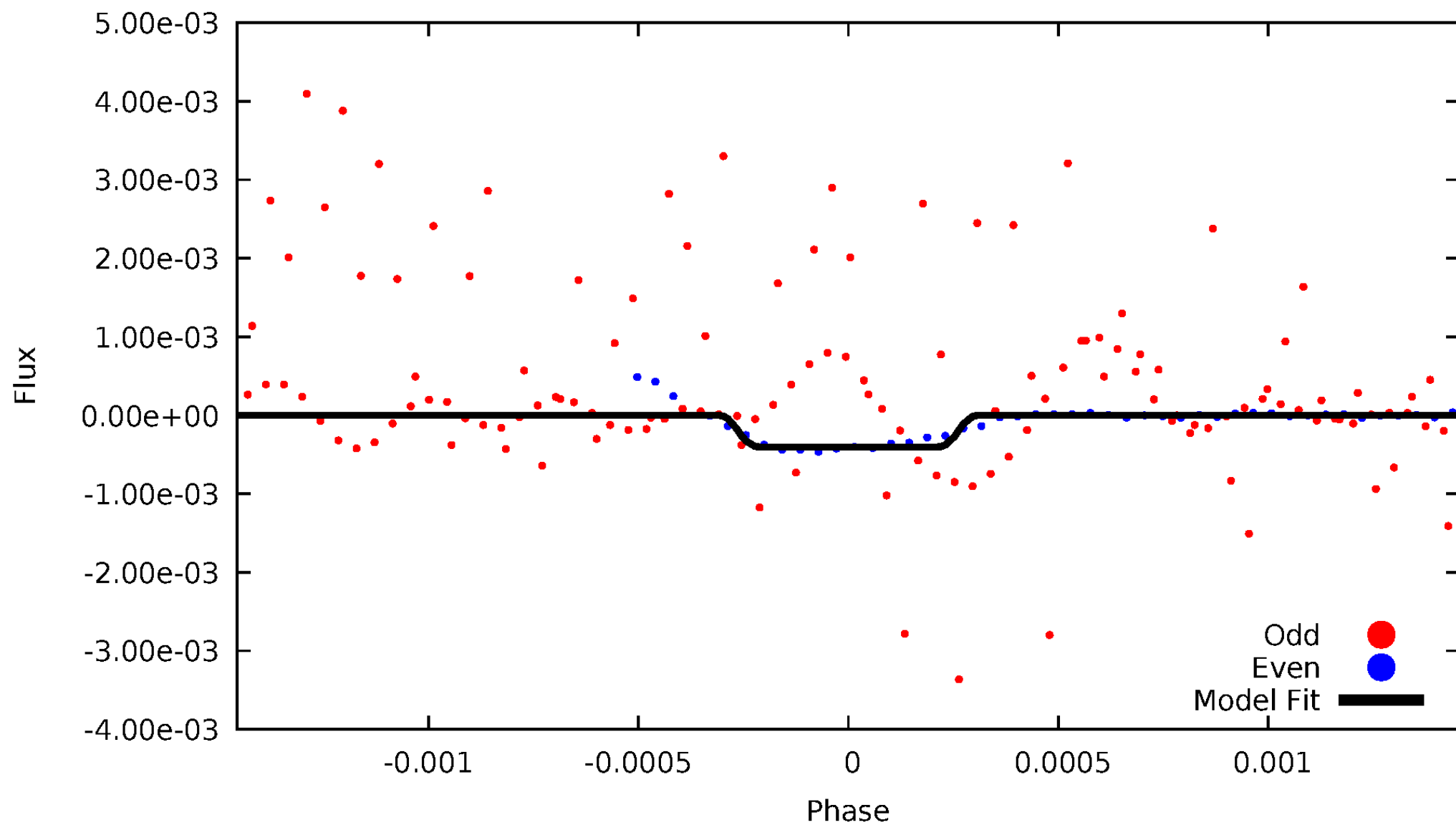
DV Odd/Even

TCE 003431126-02



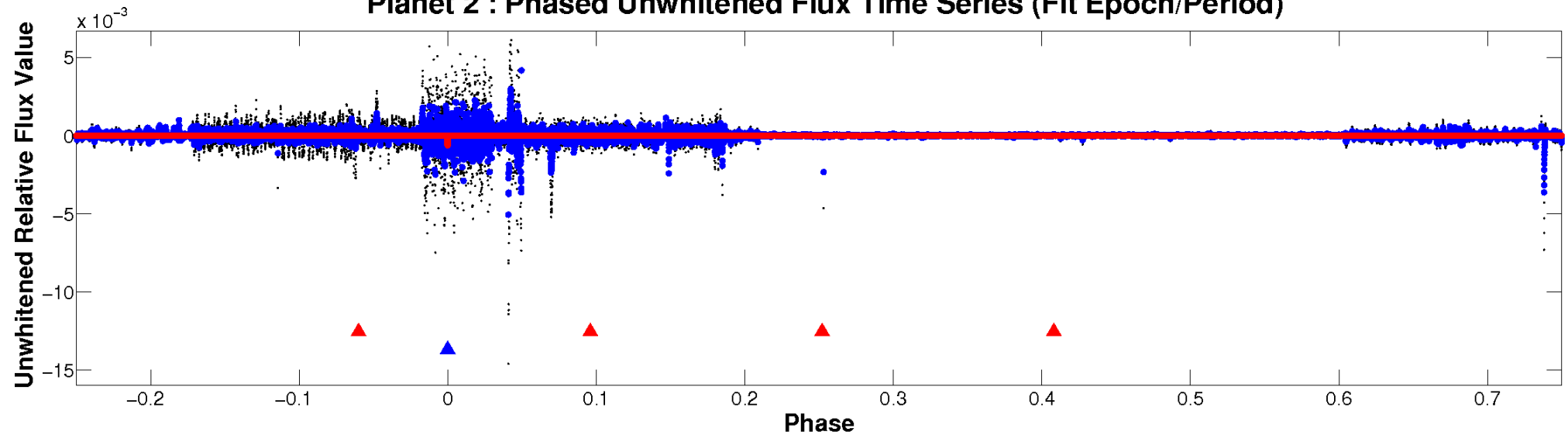
ALT Odd/Even

TCE 003431126-02

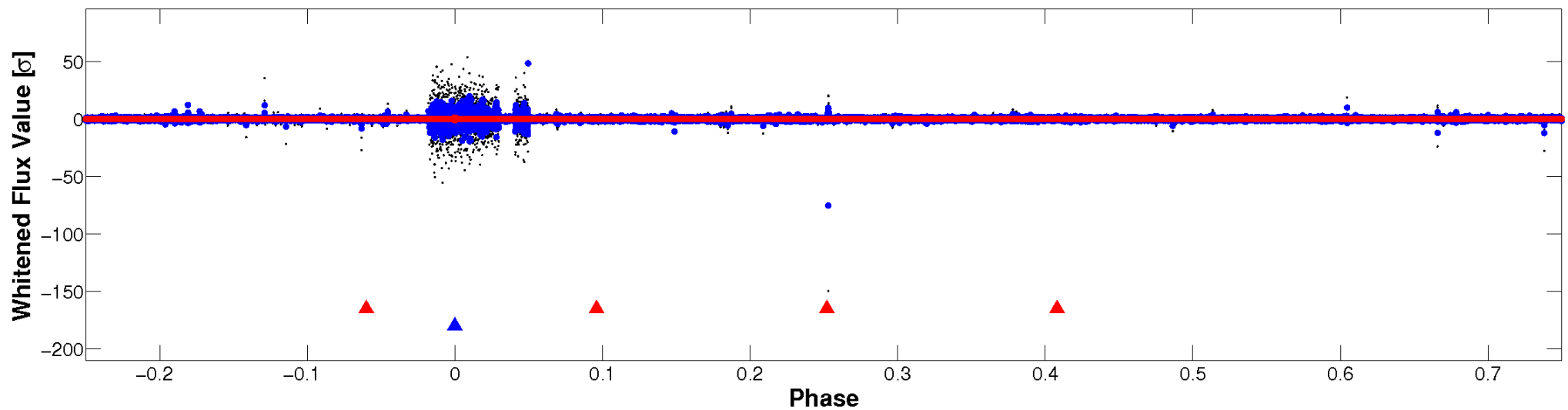


Non-Whitened Vs. Whitened Light Curve

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

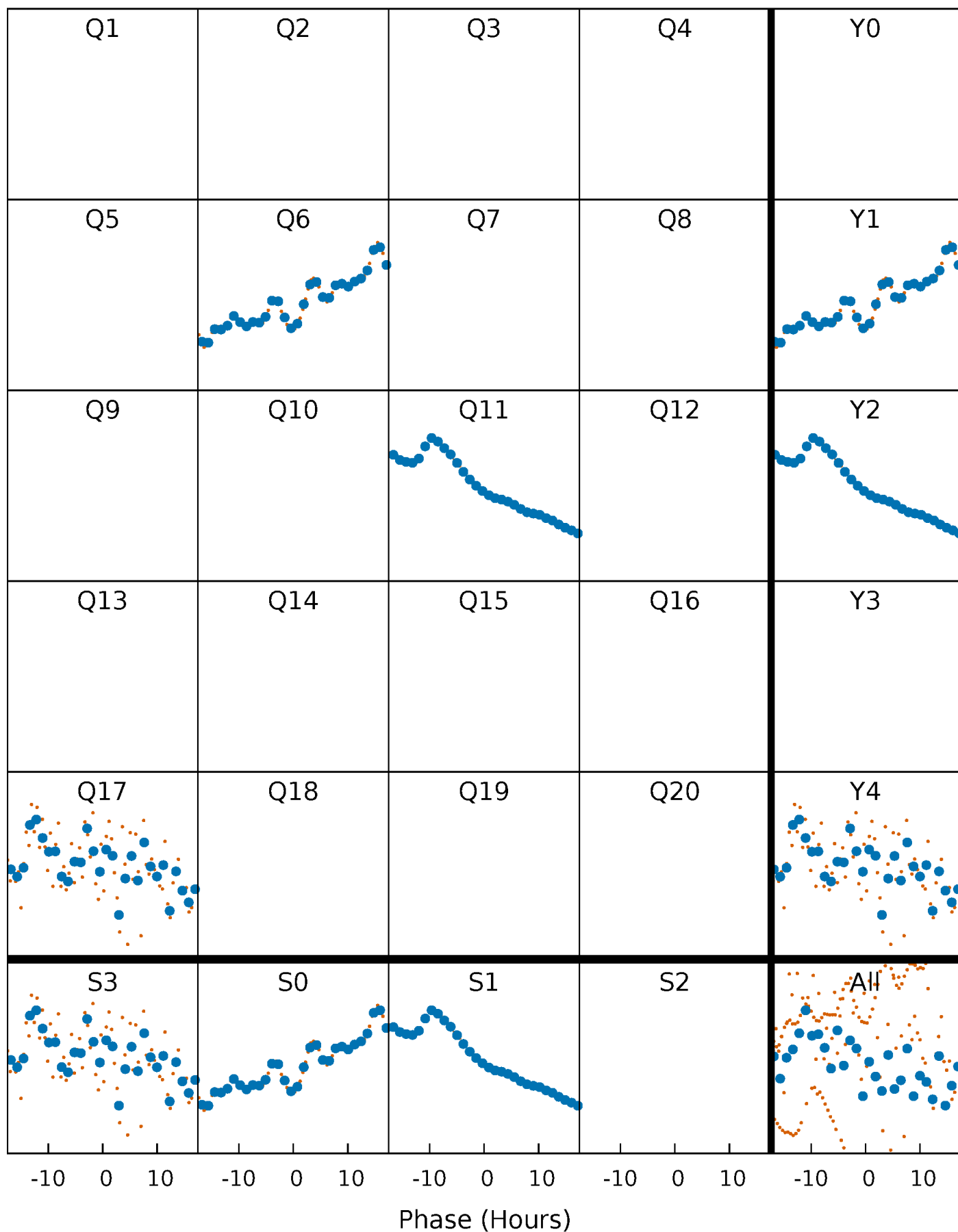


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



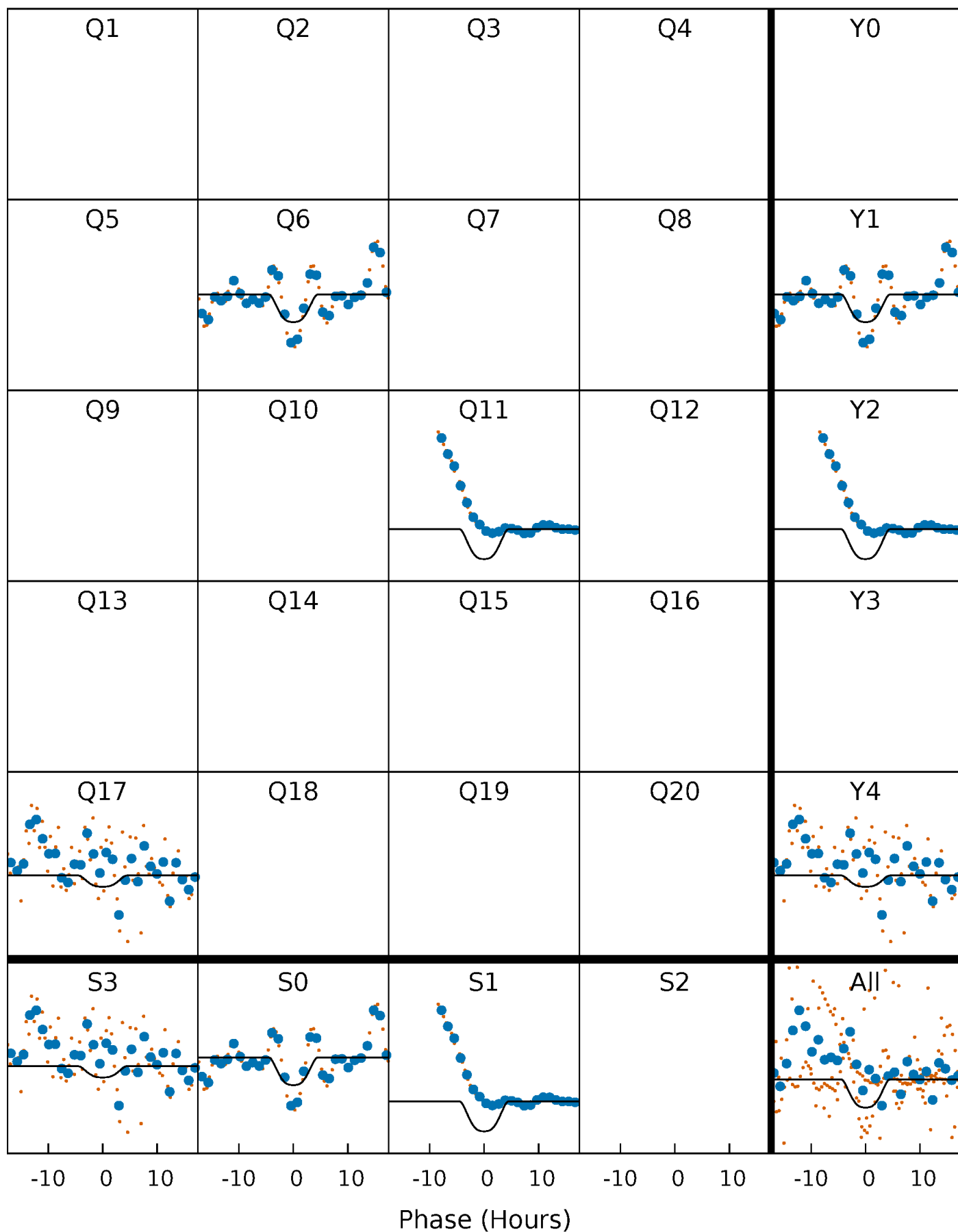
PDC Quarter-Phased Transit Curves

TCE 003431126-02 P=473.415916 Days $T_0=147.245646$ (BKJD)



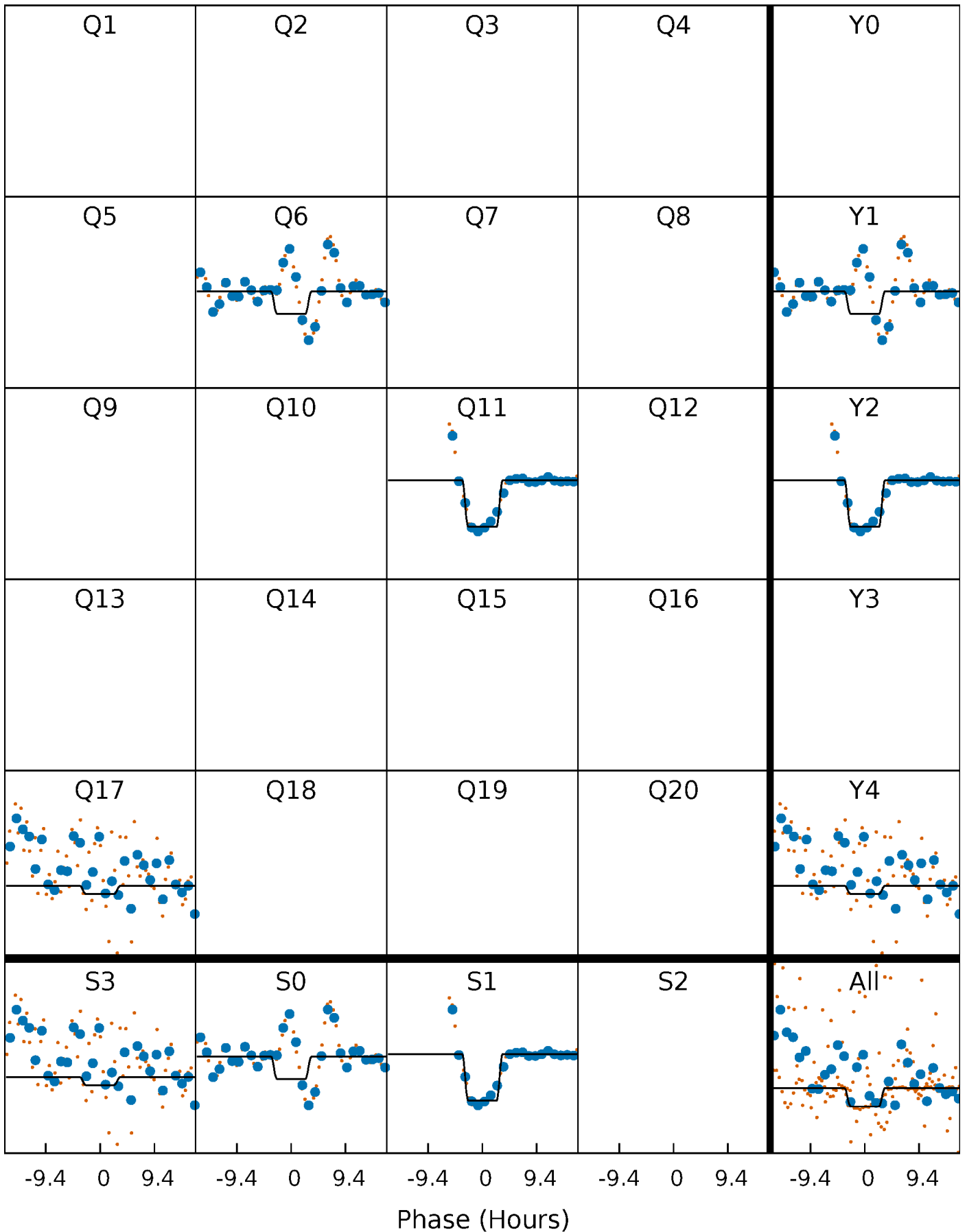
DV Quarter-Phased Transit Curves

TCE 003431126-02 P=473.415916 Days $T_0=147.245646$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

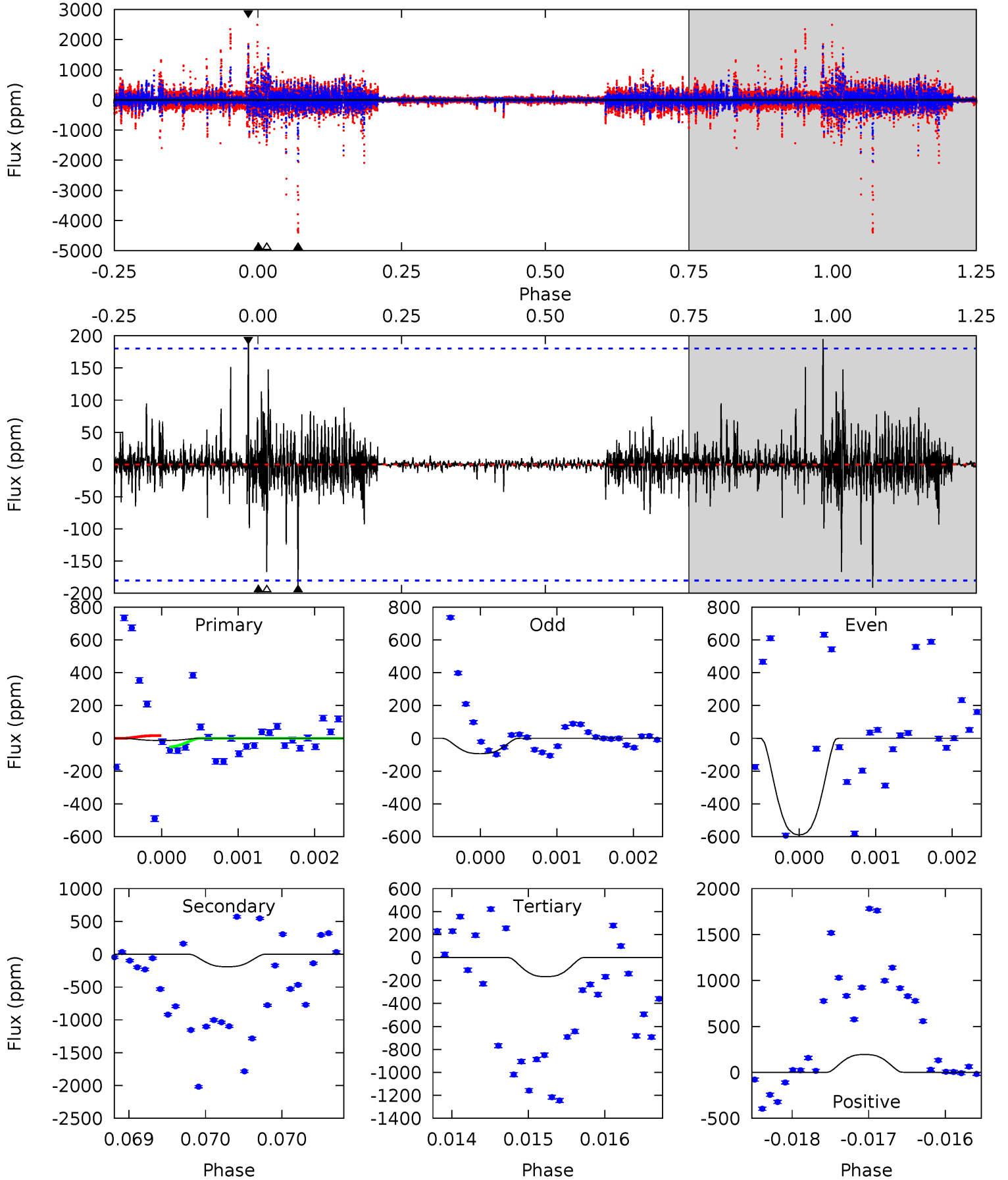
TCE 003431126-02 P=473.513697 Days $T_0=147.020030$ (BKJD)



DV Model-Shift Uniqueness Test

003431126-02, P = 473.415916 Days, E = 147.245646 Days

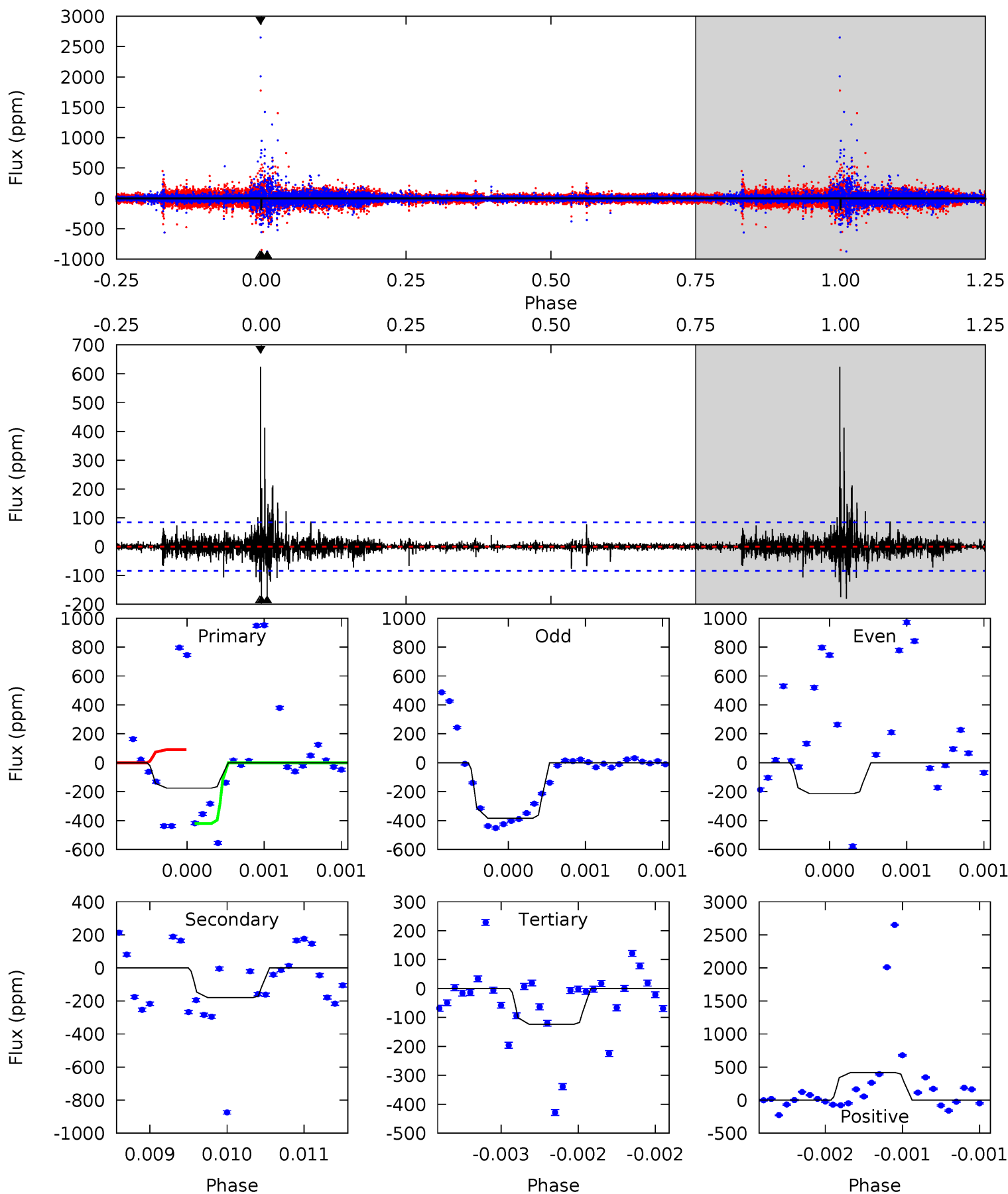
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.41	5.82	5.09	5.93	5.49	3.35	0.53	-4.68	-5.53	0.73	-0.11	5.74	1.55	0.50	0.55



Alt Model-Shift Uniqueness Test

003431126-02, P = 473.513697 Days, E = 147.020030 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	11.8	8.14	27.4	5.54	3.43	1.15	3.40	-15.9	3.70	-15.6	4.25	0.50	0.78	11.7



Stellar Parameters For KIC 003431126

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3274^{+117}_{-78}	$0.108^{+0.208}_{-0.052}$	$-0.080^{+0.250}_{-0.150}$	$154.296^{+7.354}_{-27.576}$	$1.114^{+0.207}_{-0.128}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+193%/-48%	+312%/-188%	+5%/-18%	+19%/-11%	+93%/-14%
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 003431126-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-191 ± 33	$546.08^{+136.66}_{-133.06}$	2231^{+89}_{-120}	2338^{+315}_{-410}	$0.550^{+0.460}_{-0.212}$
Alt.	-180 ± 15	$317.13^{+134.82}_{-134.37}$	2224^{+99}_{-117}	2863^{+555}_{-326}	$1.552^{+2.905}_{-0.801}$

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

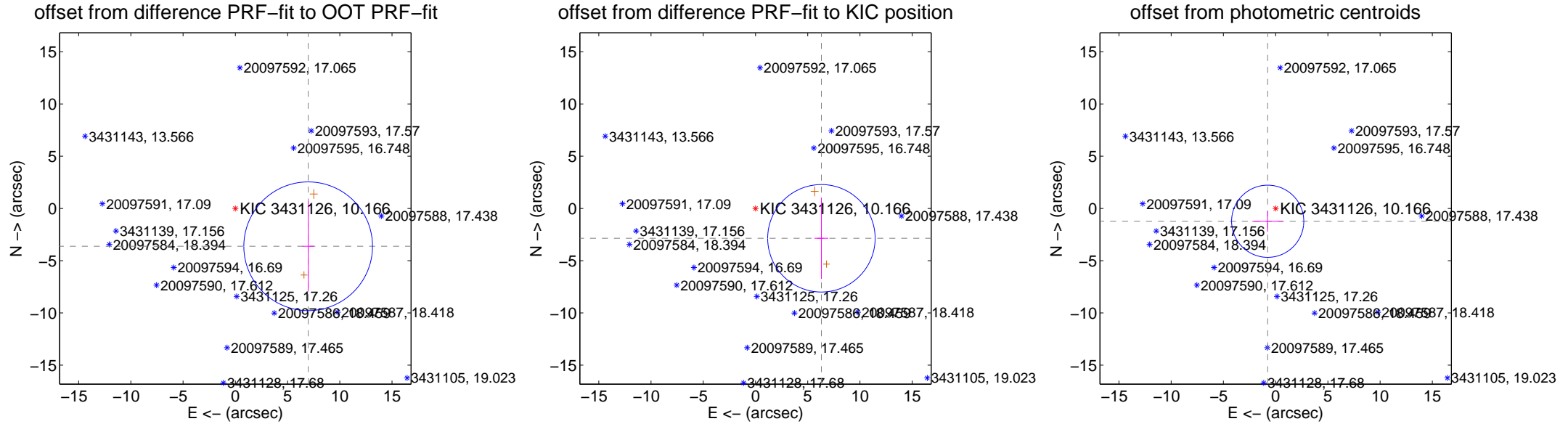
DV Centroid Data

Supplemental centroid analysis for 003431126-02. **Kepler magnitude: 10.17.** Transit SNR 8.98

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.858 ± 2.053	3.83	-6.974 ± 0.545	-3.620 ± 4.331
PRF-fit source offset from KIC position	6.928 ± 1.715	4.04	-6.312 ± 0.661	-2.858 ± 3.893
photometric centroid source offset	1.44 ± 1.15	1.25	0.76 ± 1.48	-1.23 ± 1.00

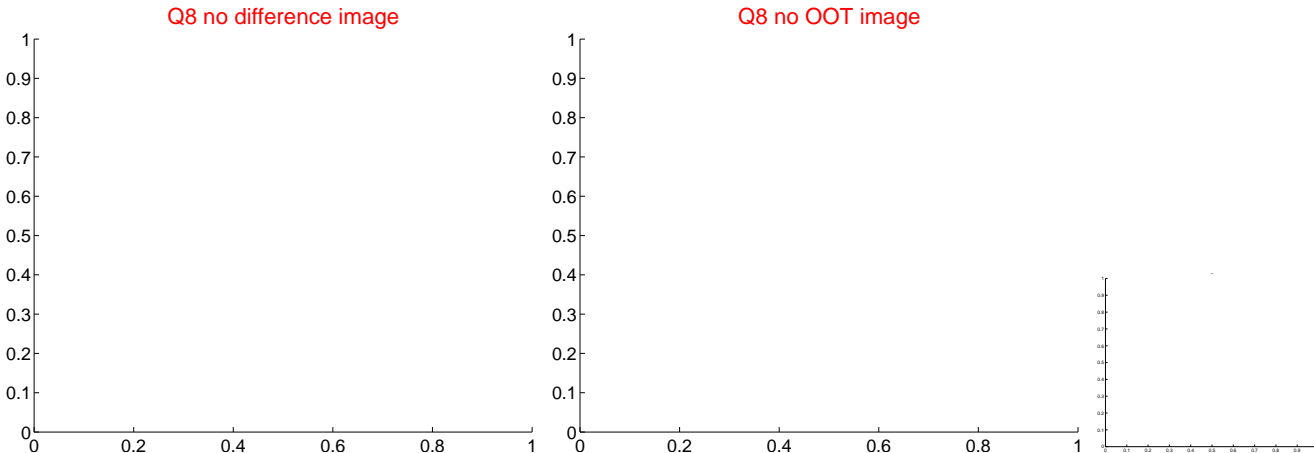
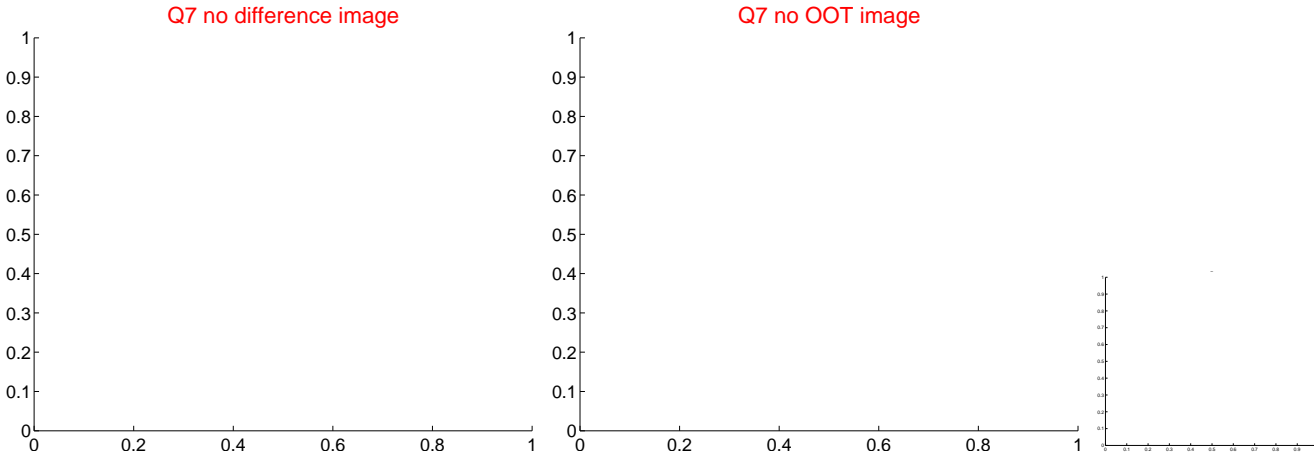
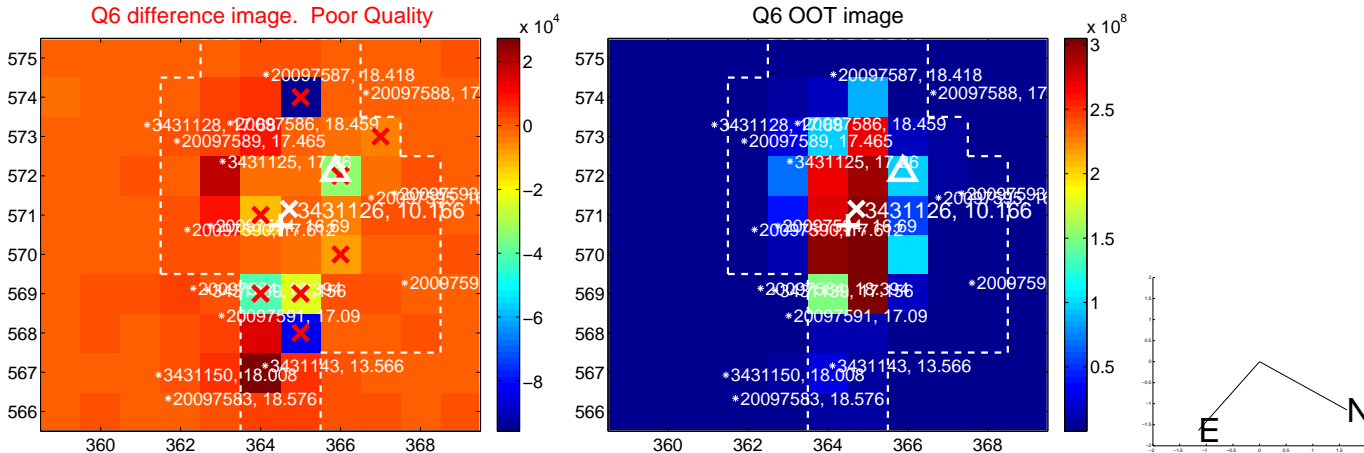
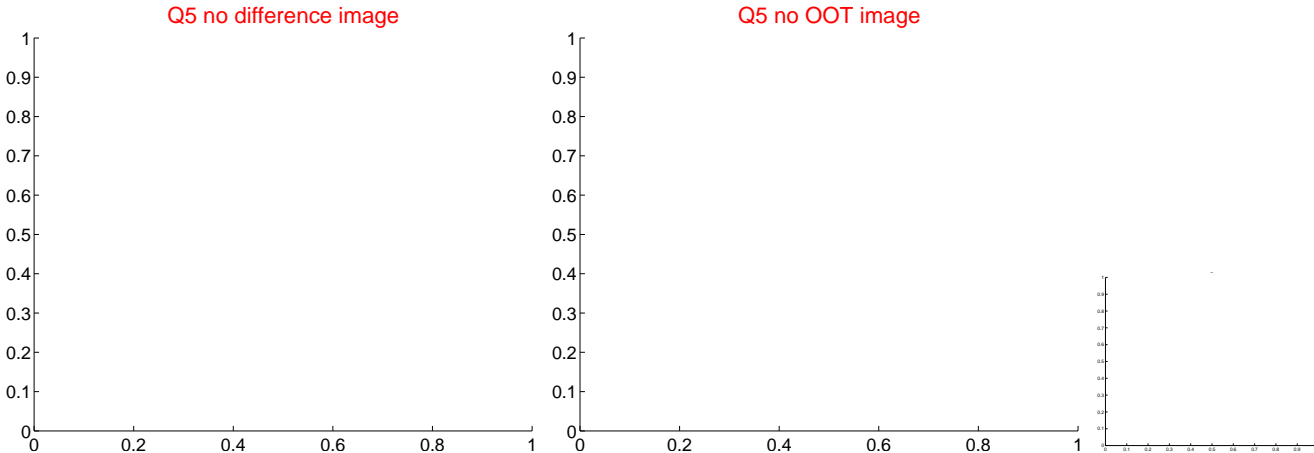


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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



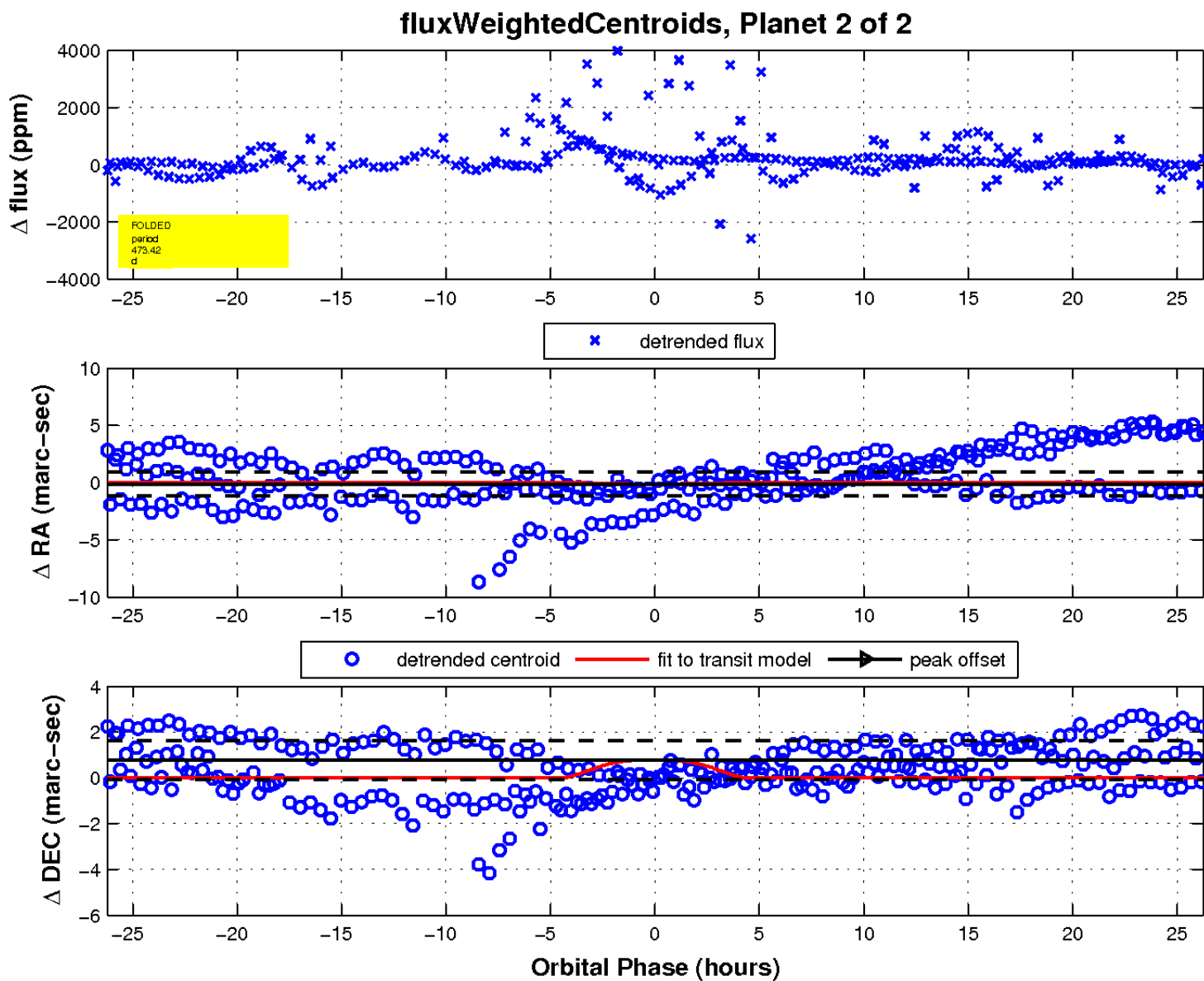
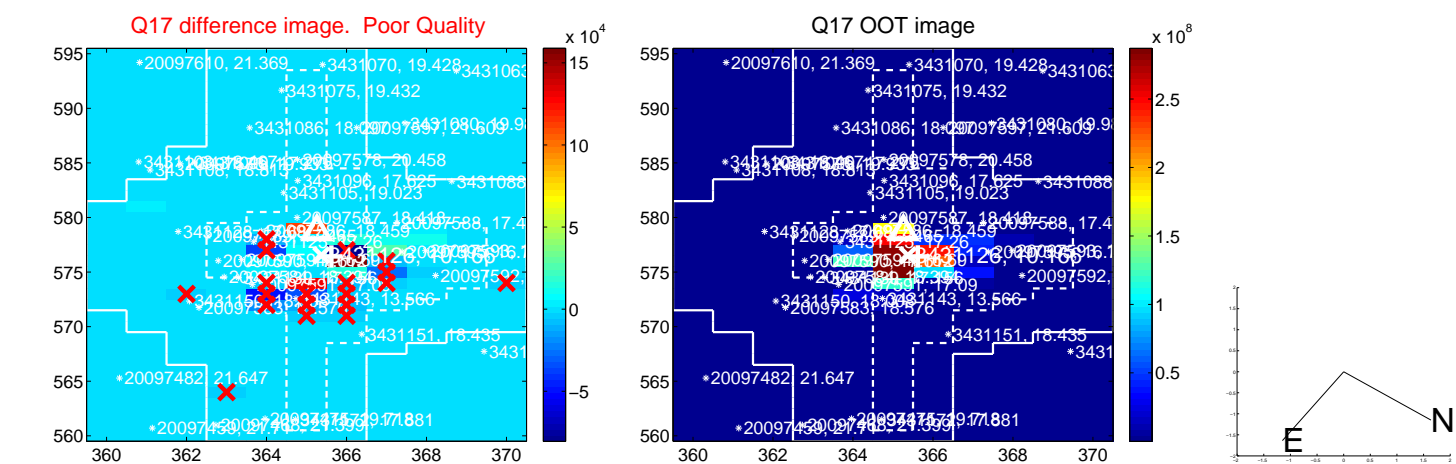
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

