

KIC 011176166

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})
011176166-01	OBS	5875.01	9.878699	134.398217	465.1	3.494	12.8	12.9	1.15	6477	3.15	239.56
011176166-02	OBS	5875.02	8.548247	137.343673	232.0	2.985	7.1	7.1	1.15	6477	2.02	290.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011176166-01	OBS	PC	1.00	0	0	0	0	CENT_FEW_DIFFS
011176166-02	OBS	FP	0.04	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—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.

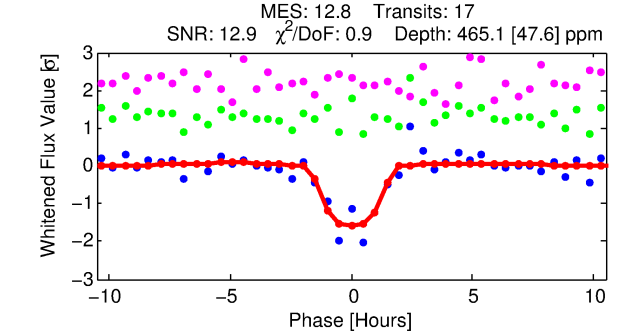
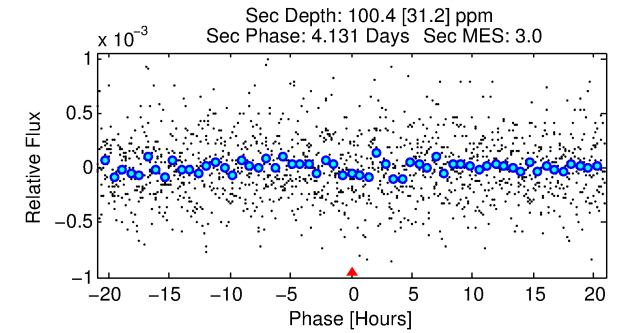
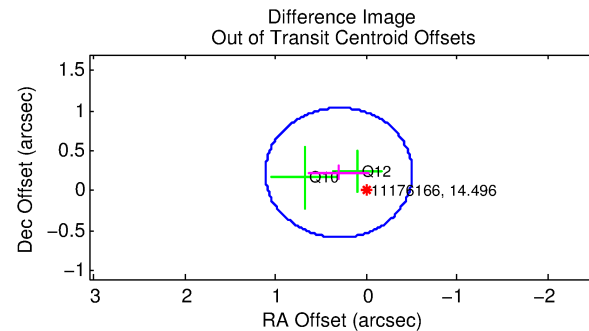
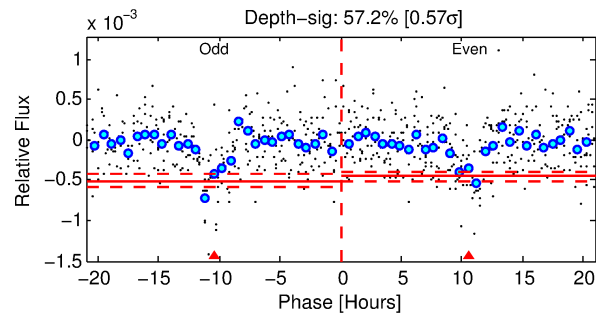
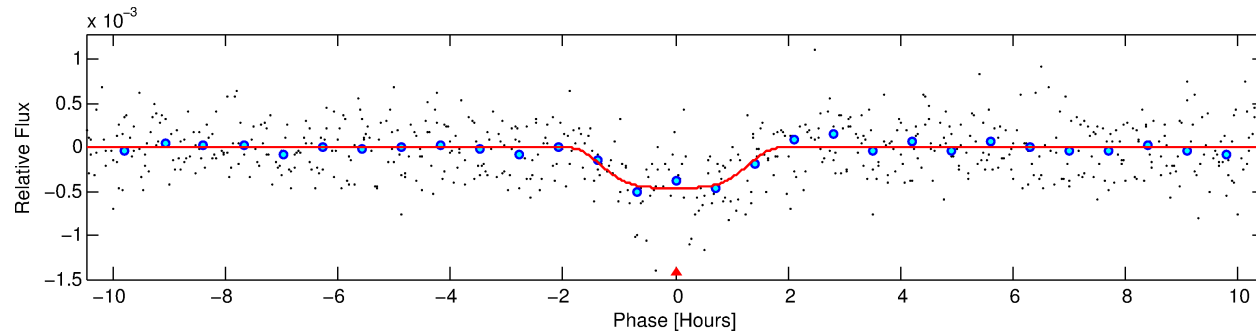
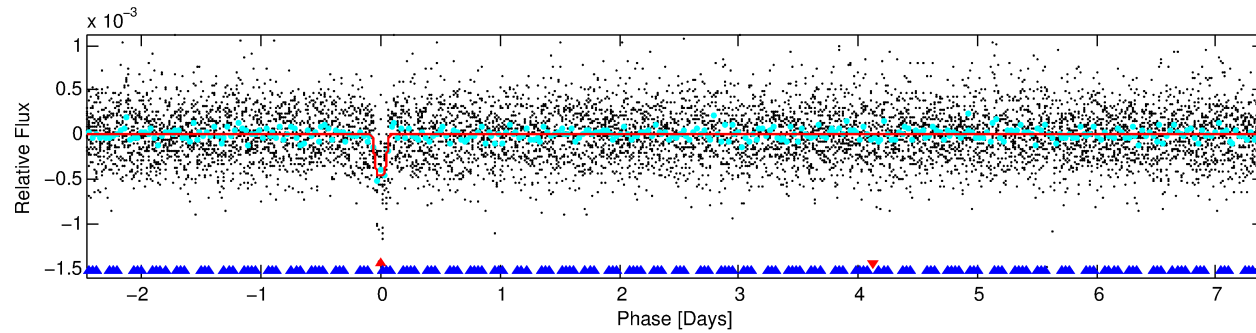
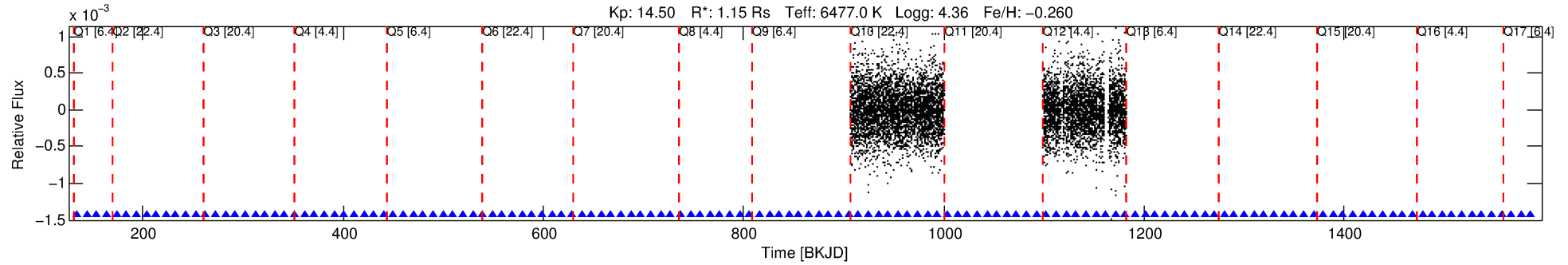
Ephemeris Match Information For 011176166-01

No Significant Match Found

DV One-Page Summary

KIC: 11176166 Candidate: 1 of 2 Period: 9.879 d

KOI: K05875.01 Corr: 0.925



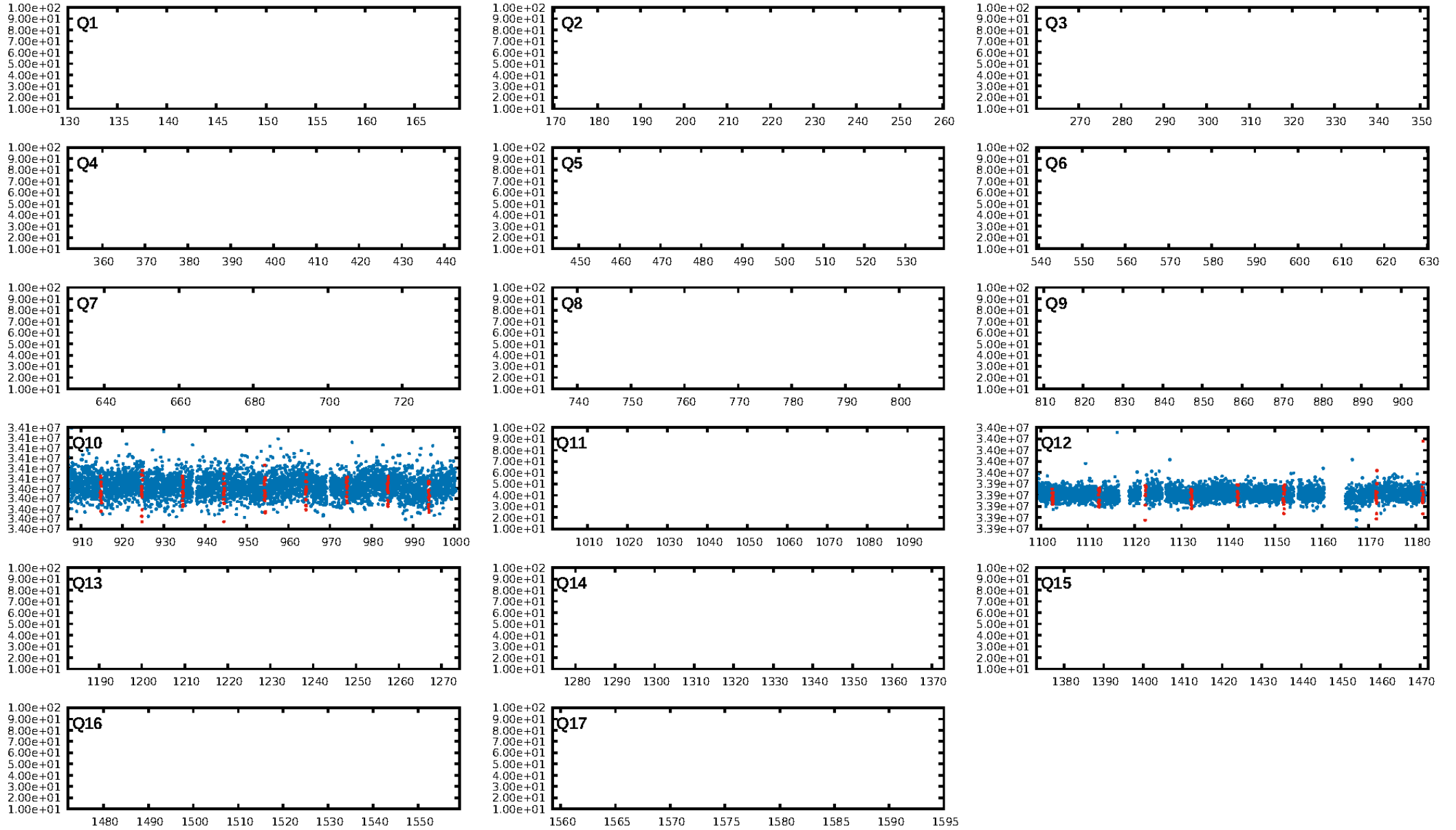
DV Fit Results:

Period = 9.87870 [0.00031] d
Epoch = 134.3982 [0.0276] BKJD
Rp/R* = 0.0251 [0.0022]
a/R* = 7.58 [2.42]
b = 0.96 [0.02]
Seff = 239.56 [97.35]
Teff = 1003 [102] K
Rp = 3.15 [1.03] Re
a = 0.0931 [0.0244] AU
Ag = 48.28 [25.00] [1.89σ]
Teffp = 4089 [397] K [7.53σ]

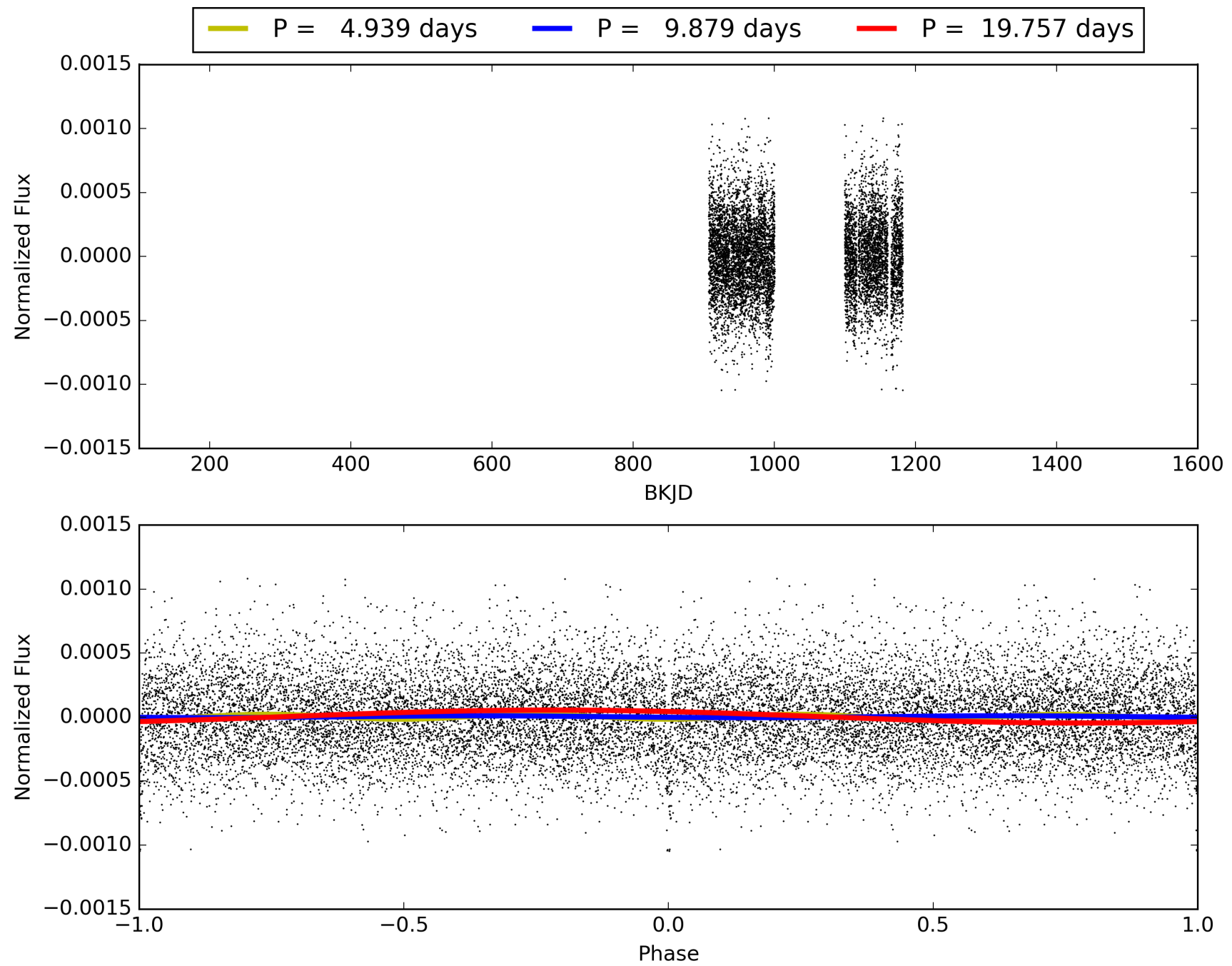
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.95σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 82.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.41e-36
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: 2.764
Centroid-sig: 6.8%
Centroid-so: 2.848 arcsec [2.06σ]
OotOffset-rm: 0.375 arcsec [1.39σ]
KicOffset-rm: 0.629 arcsec [2.45σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 011176166-01, PDC Light Curves

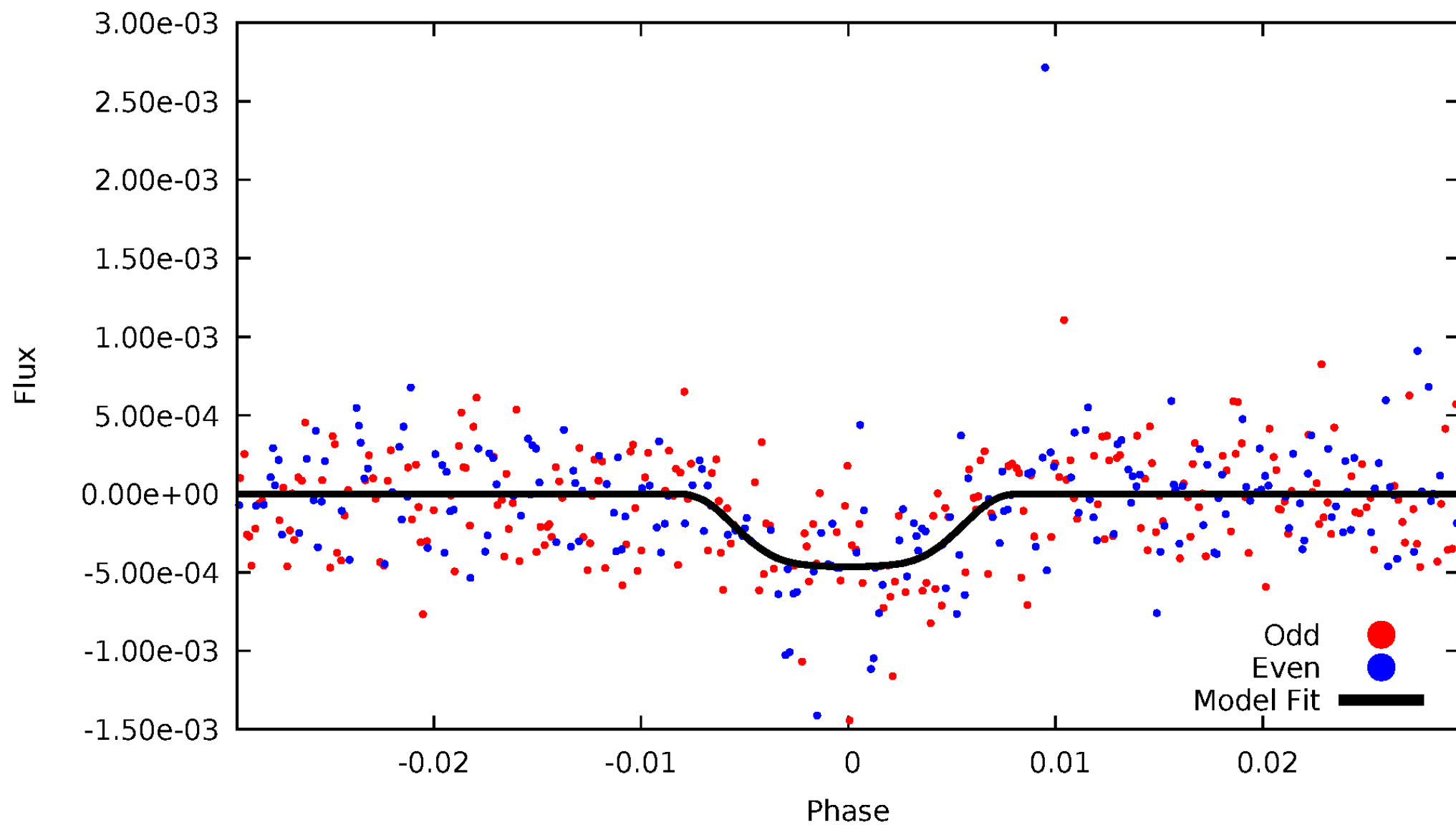


TCE 011176166-01



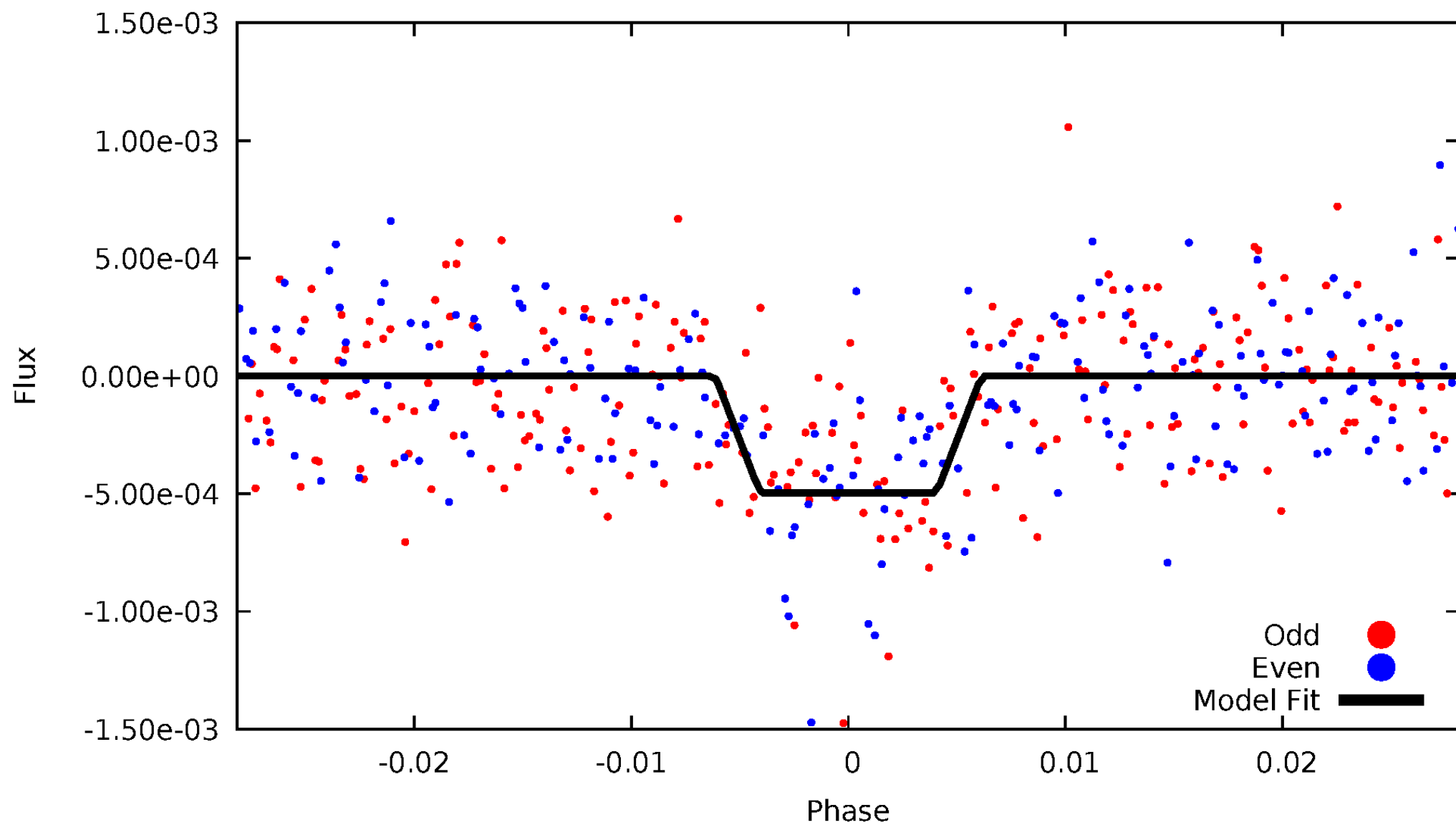
DV Odd/Even

TCE 011176166-01



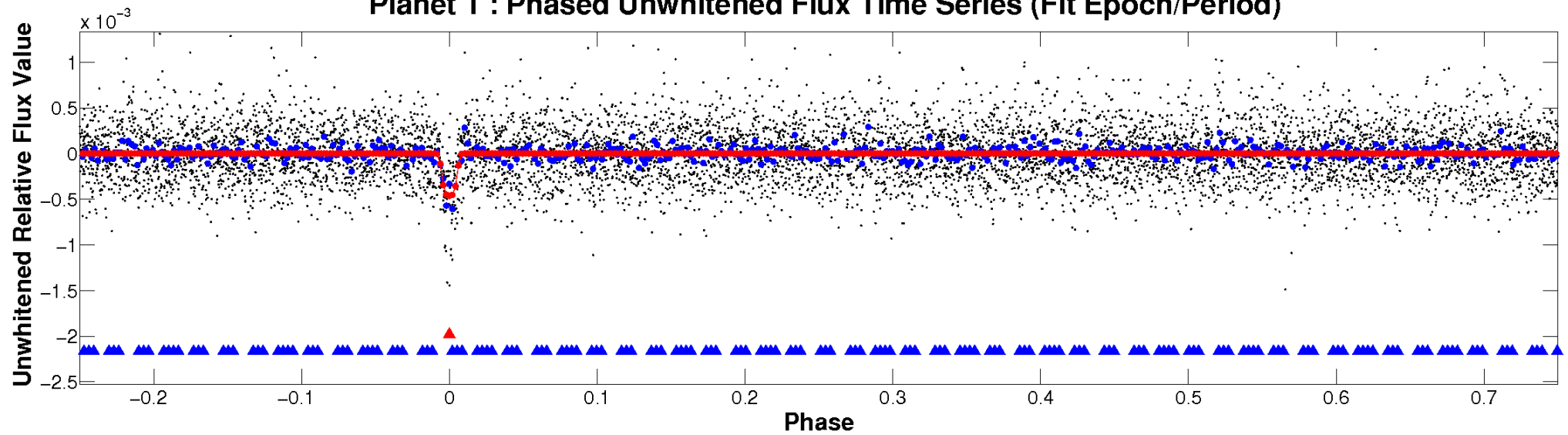
ALT Odd/Even

TCE 011176166-01

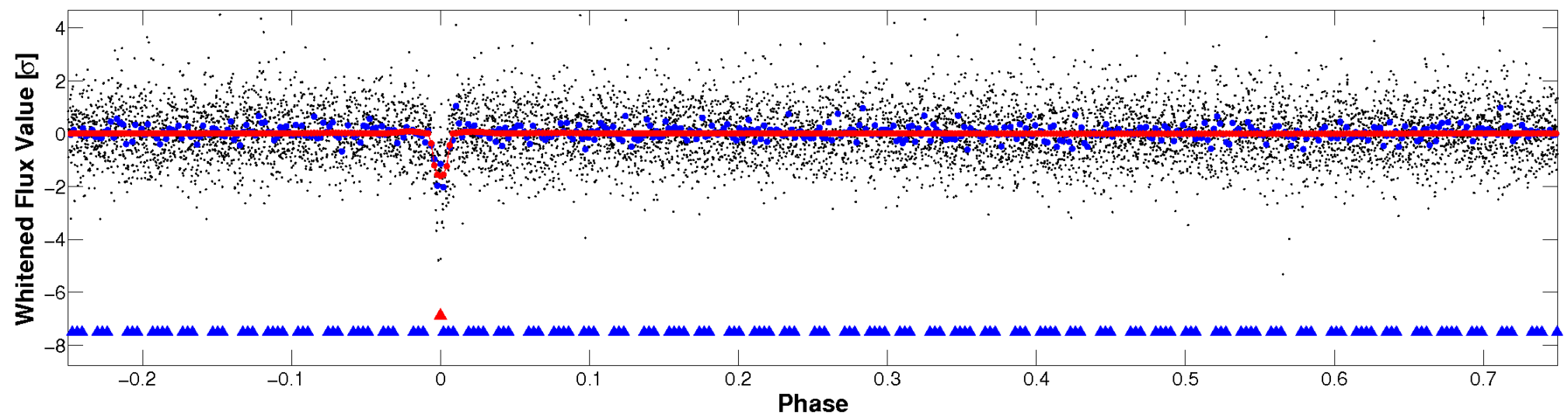


Non-Whitened Vs. Whitened Light Curve

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



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



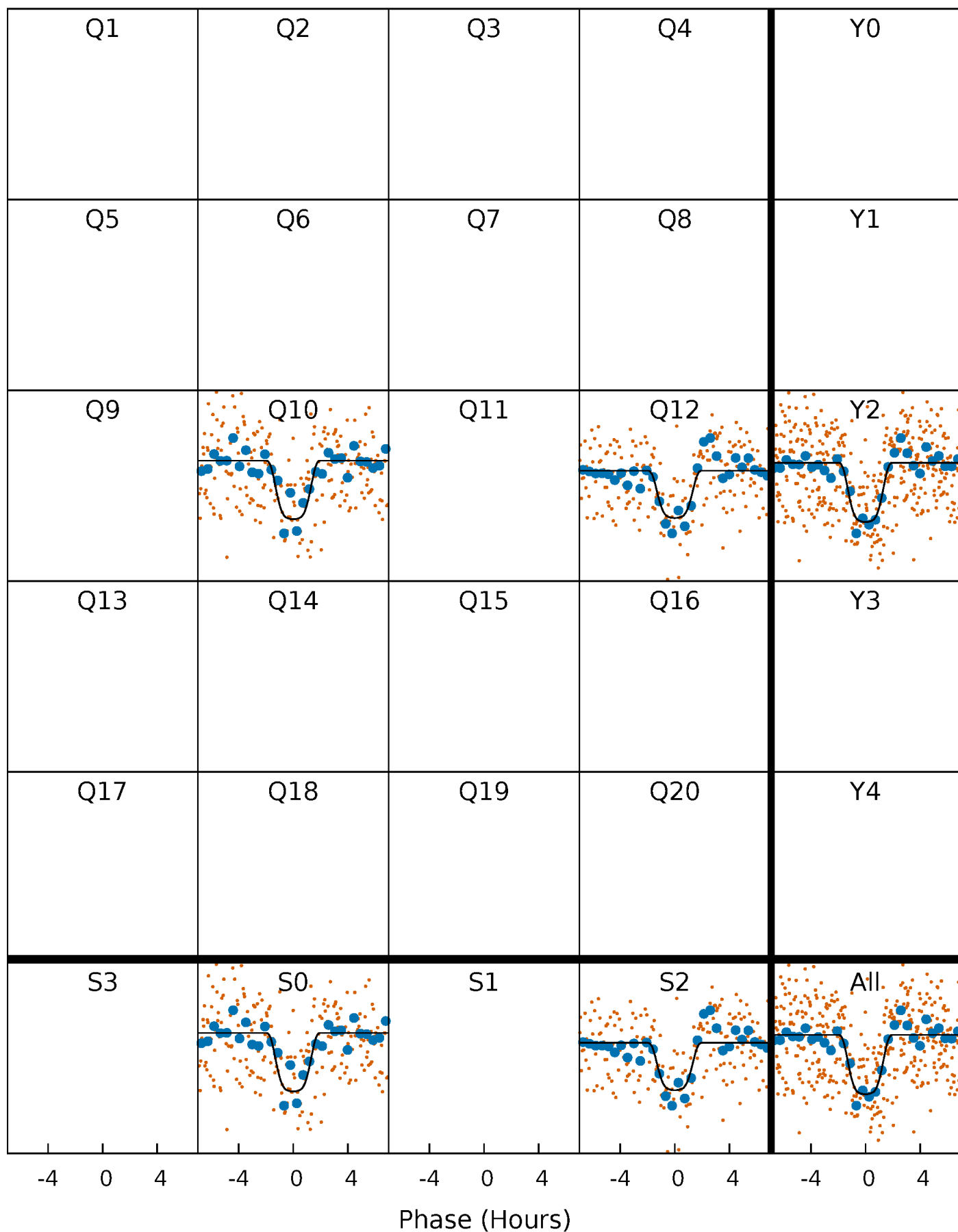
PDC Quarter-Phased Transit Curves

TCE 011176166-01 P= 9.878699 Days $T_0=134.398217$ (BKJD)



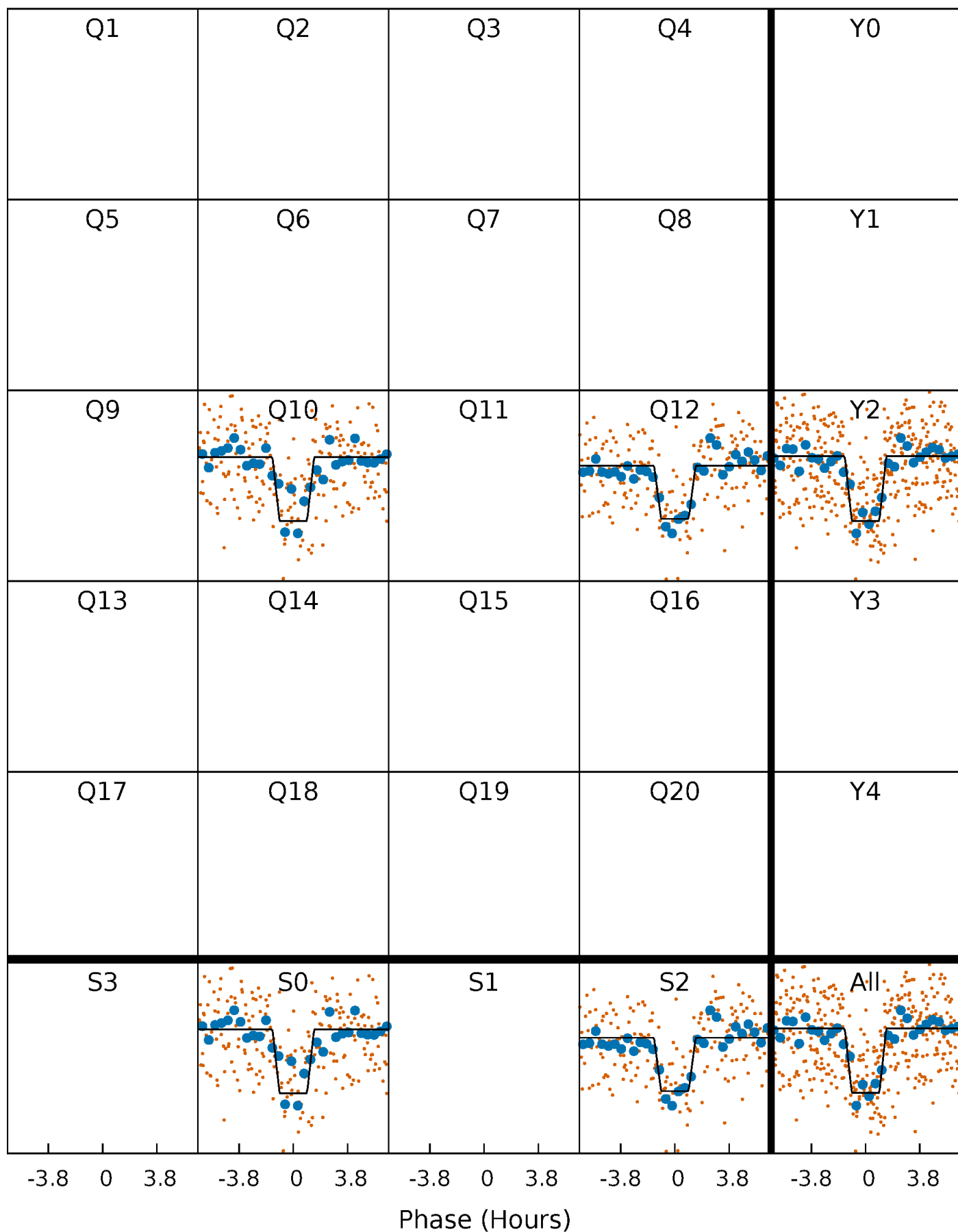
DV Quarter-Phased Transit Curves

TCE 011176166-01 P= 9.878699 Days $T_0=134.398217$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

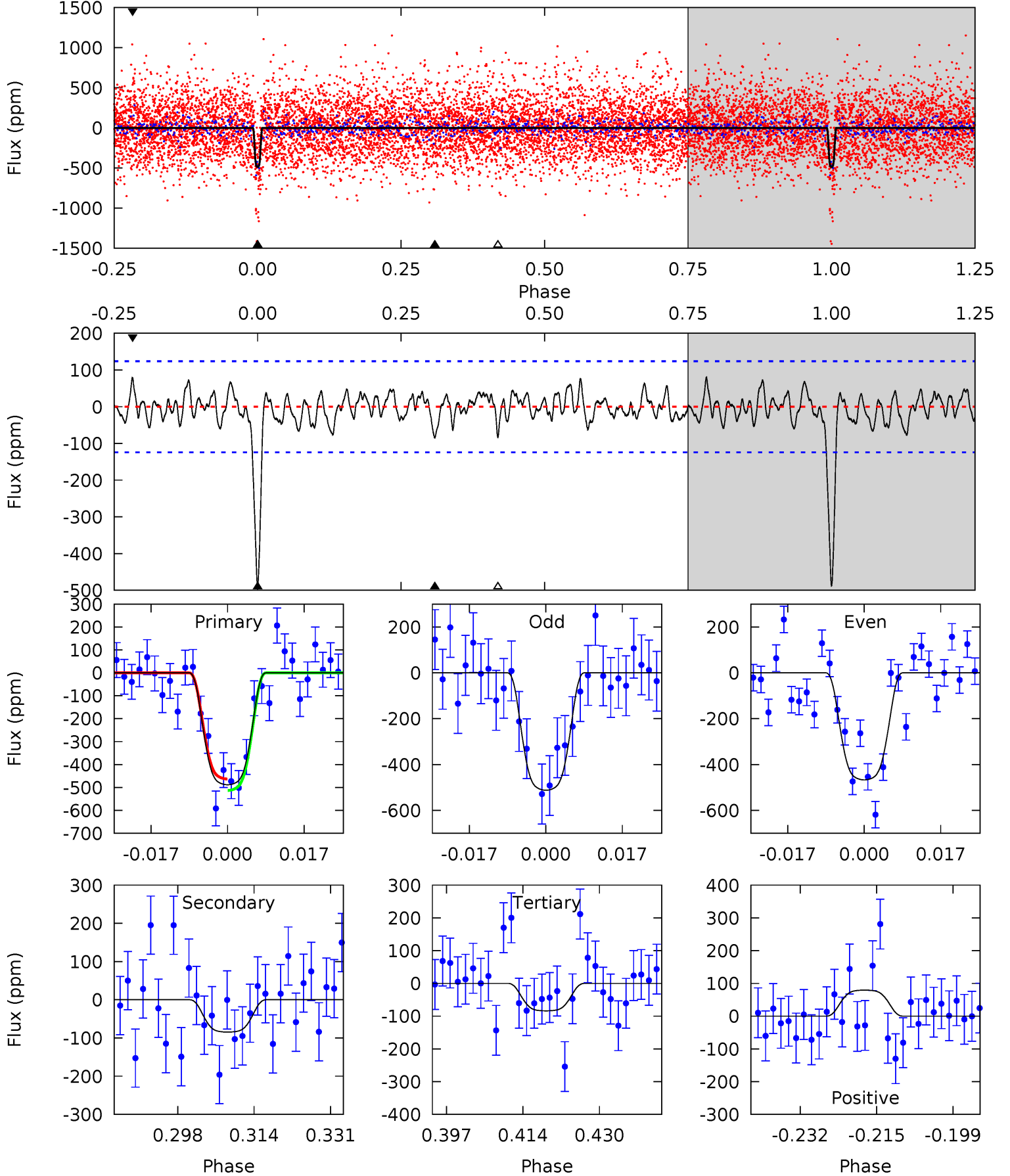
TCE 011176166-01 P= 9.878857 Days $T_0=134.384437$ (BKJD)



DV Model-Shift Uniqueness Test

011176166-01, P = 9.878699 Days, E = 134.398217 Days

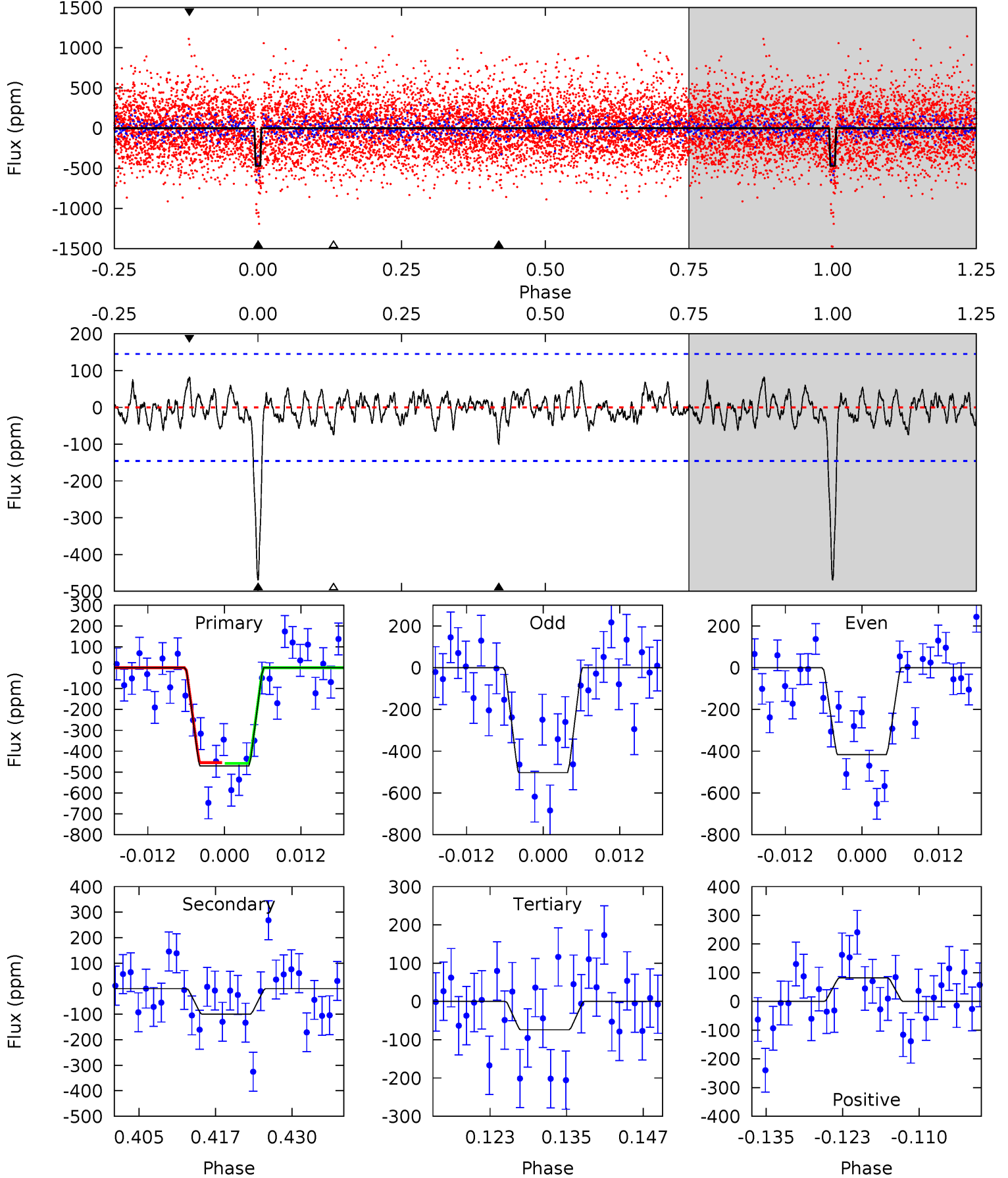
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.4	3.36	3.33	3.15	4.93	2.40	1.16	16.1	16.2	0.03	0.21	0.91	1.09	0.14	1.00



Alt Model-Shift Uniqueness Test

011176166-01, P = 9.878857 Days, E = 134.384437 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	3.40	2.53	2.81	4.99	2.50	0.96	13.6	13.3	0.87	0.59	1.48	1.01	0.15	0



Stellar Parameters For KIC 011176166

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6477^{+159}_{-250}	$4.361^{+0.087}_{-0.203}$	$-0.260^{+0.250}_{-0.300}$	$1.148^{+0.362}_{-0.155}$	$1.102^{+0.170}_{-0.139}$	$1.025^{+0.471}_{-0.517}$
	+2%/-4%	+2%/-5%	+96%/-115%	+32%/-14%	+15%/-13%	+46%/-50%
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 011176166-01 / KOI 5875.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-85 ± 25	$3.23^{+0.61}_{-0.42}$	1417^{+108}_{-80}	4178^{+272}_{-306}	37^{+18}_{-14}
Alt.	-99 ± 29	$2.87^{+0.51}_{-0.40}$	1413^{+106}_{-78}	4472^{+329}_{-339}	54^{+27}_{-19}

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

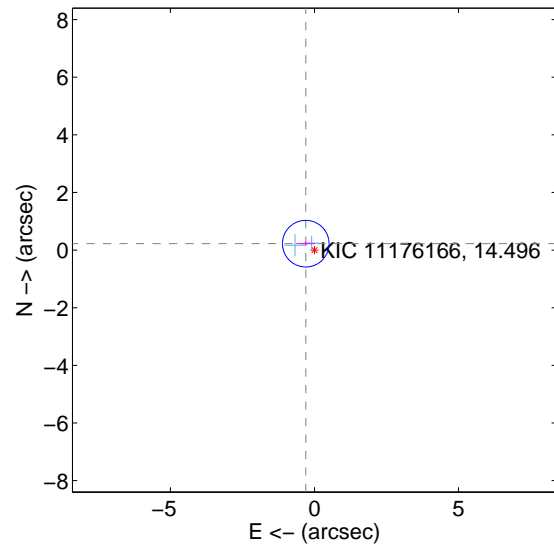
Supplemental centroid analysis for 011176166-01. Kepler magnitude: 14.50. Transit SNR 12.92

There are 2 quarters with good PRF difference image offsets

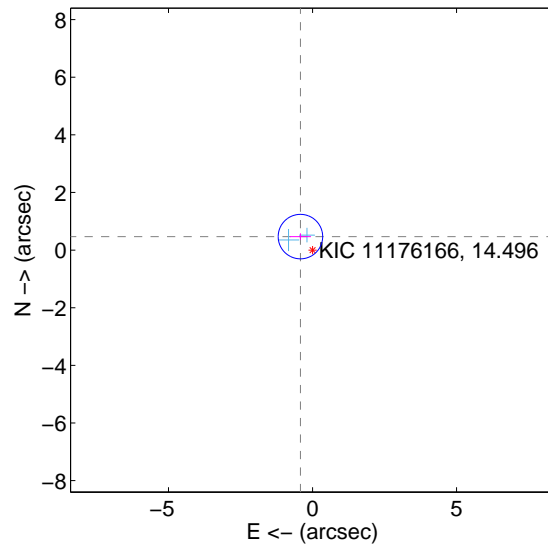
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.375 ± 0.270	1.39	0.302 ± 0.330	0.223 ± 0.078
PRF-fit source offset from KIC position	0.629 ± 0.257	2.45	0.420 ± 0.364	0.469 ± 0.113
photometric centroid source offset	2.85 ± 1.38	2.06	-2.71 ± 1.41	0.87 ± 1.11

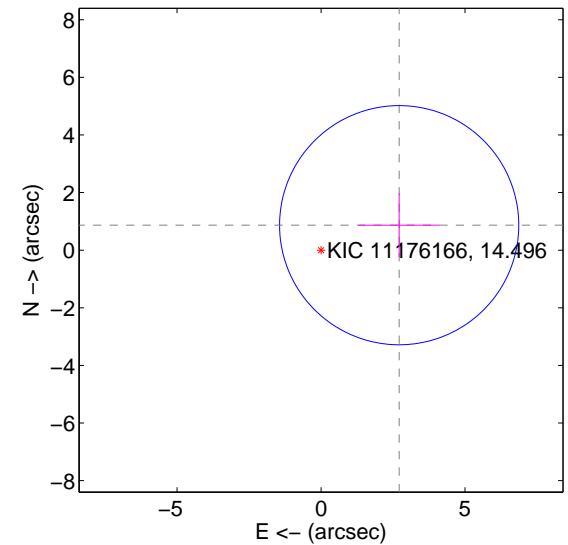
offset from difference PRF-fit to OOT PRF-fit



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.

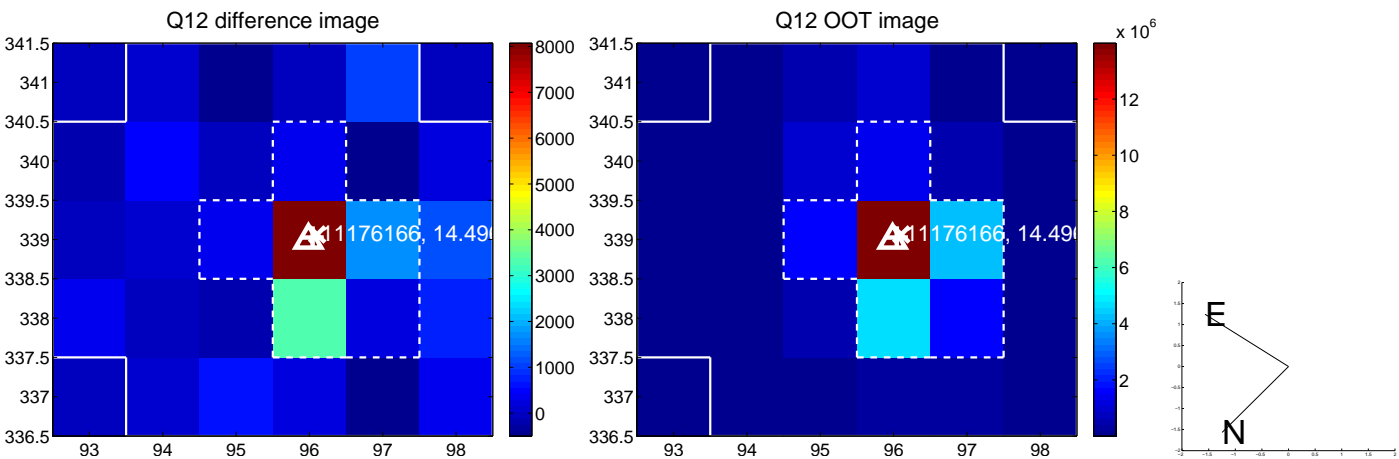
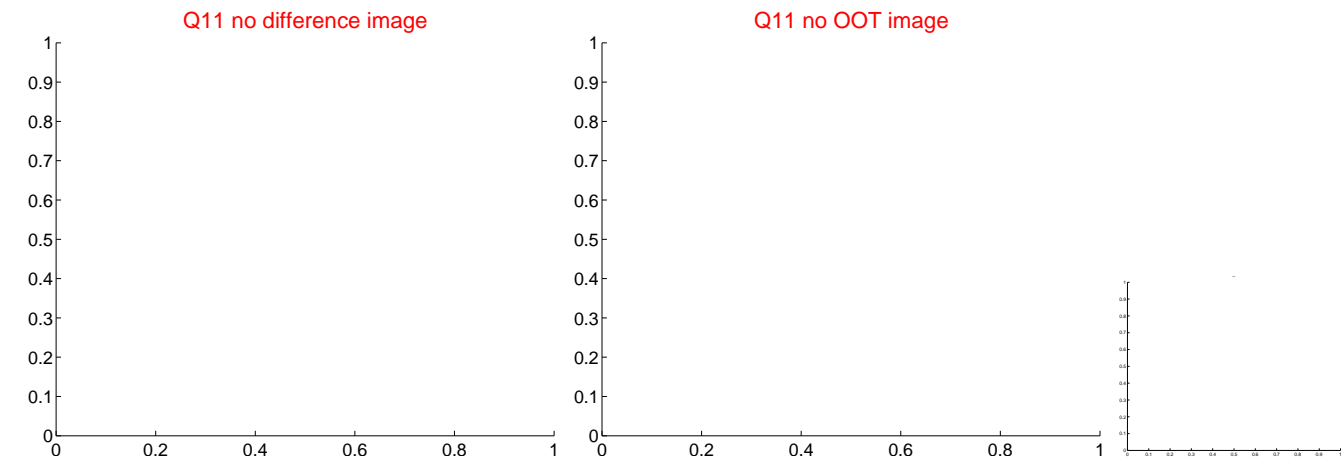
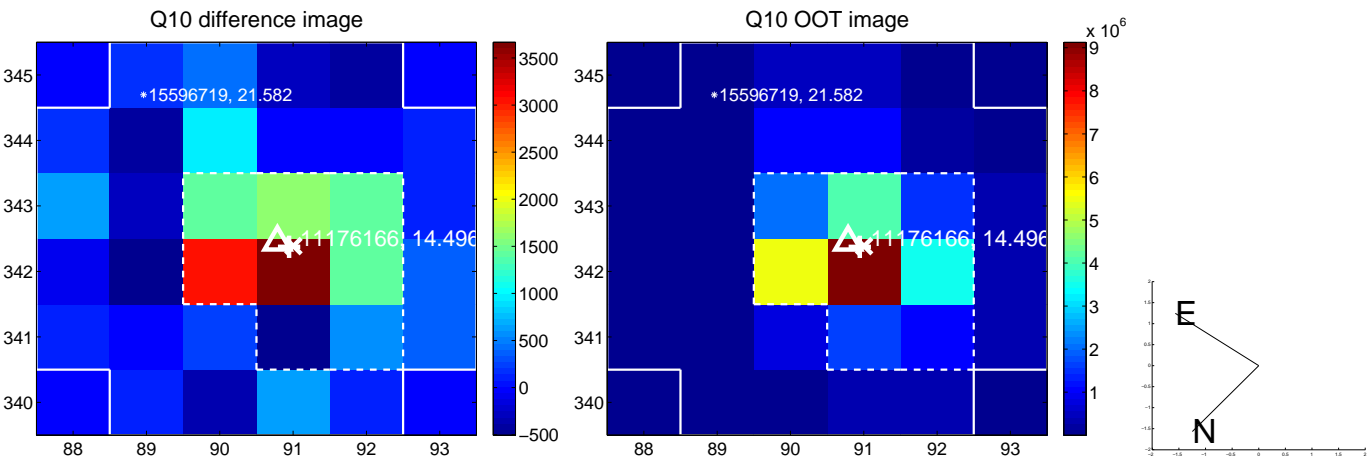
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



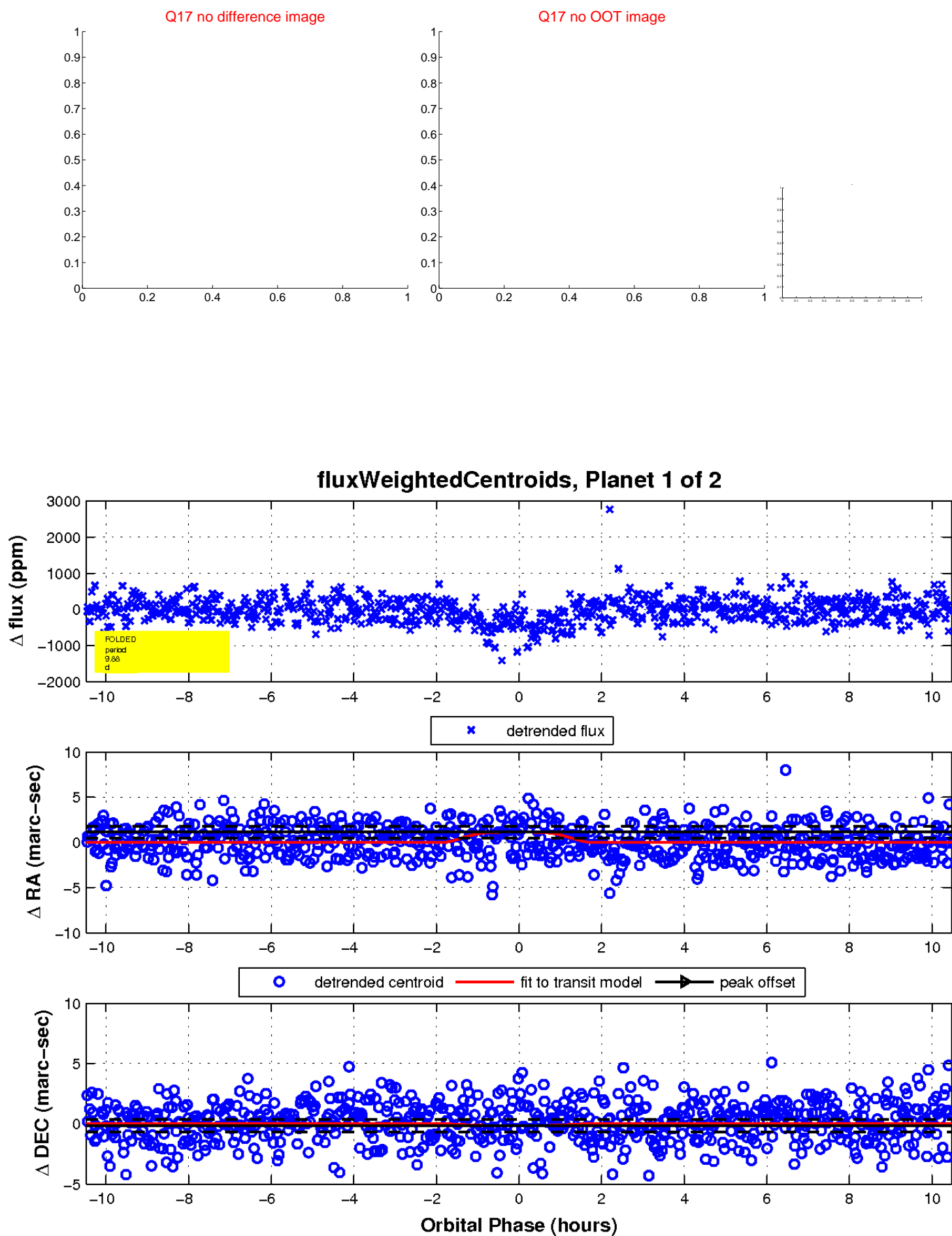
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

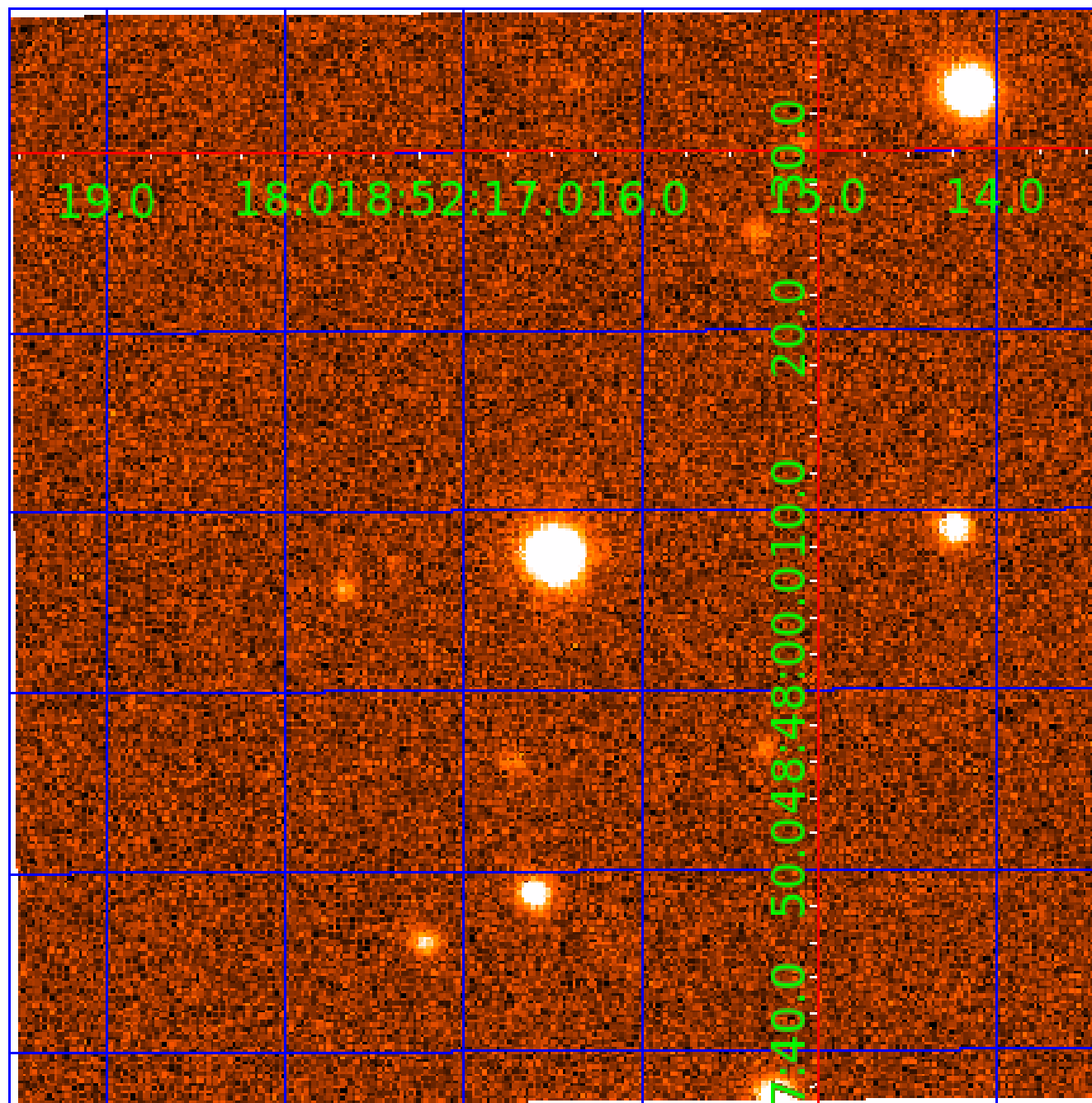


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011176166

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})
011176166-01	OBS	5875.01	9.878699	134.398217	465.1	3.494	12.8	12.9	1.15	6477	3.15	239.56
011176166-02	OBS	5875.02	8.548247	137.343673	232.0	2.985	7.1	7.1	1.15	6477	2.02	290.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011176166-01	OBS	PC	1.00	0	0	0	0	CENT_FEW_DIFFS
011176166-02	OBS	FP	0.04	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—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.

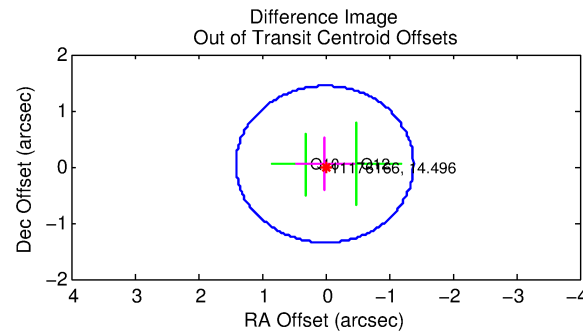
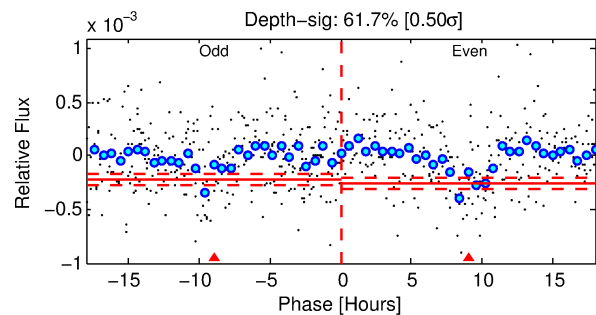
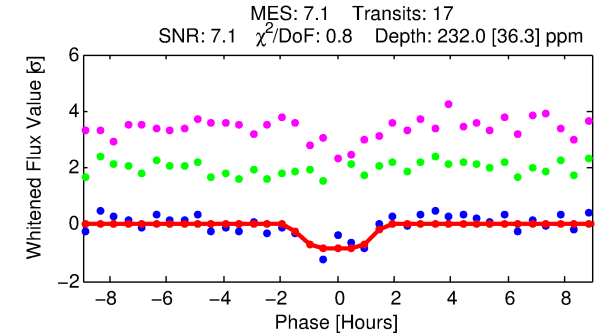
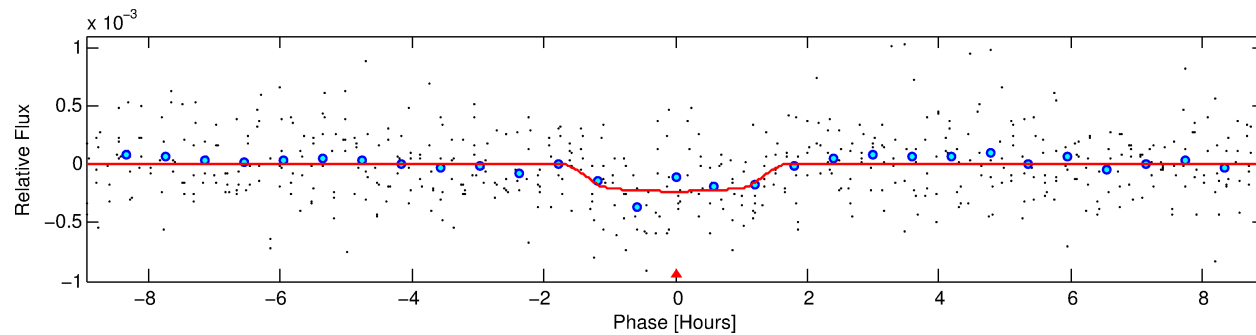
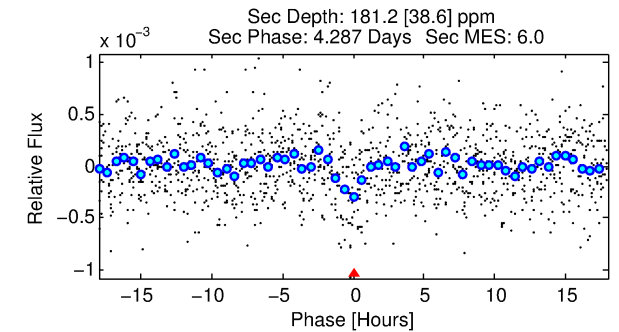
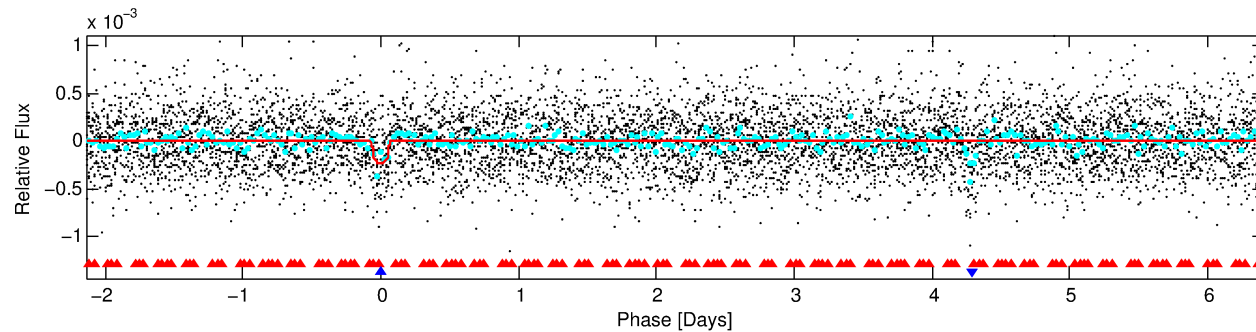
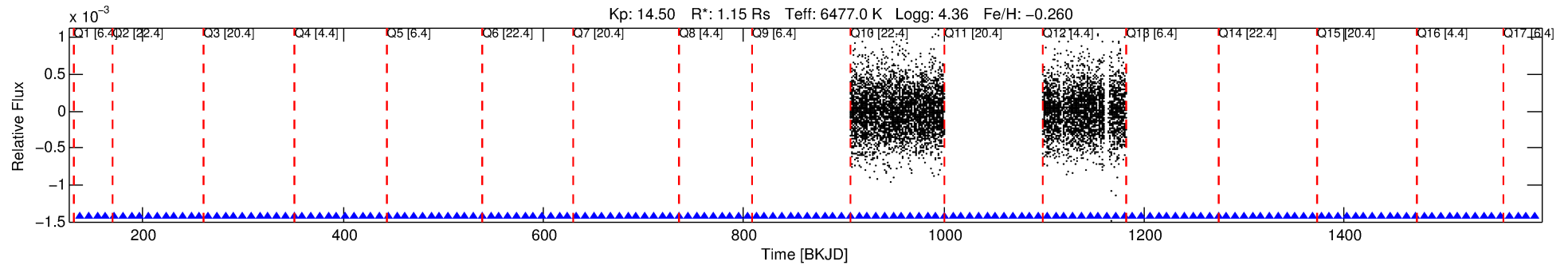
Ephemeris Match Information For 011176166-02

No Significant Match Found

DV One-Page Summary

KIC: 11176166 Candidate: 2 of 2 Period: 8.548 d

KOI: K05875 Corr: No Ephemeris Match



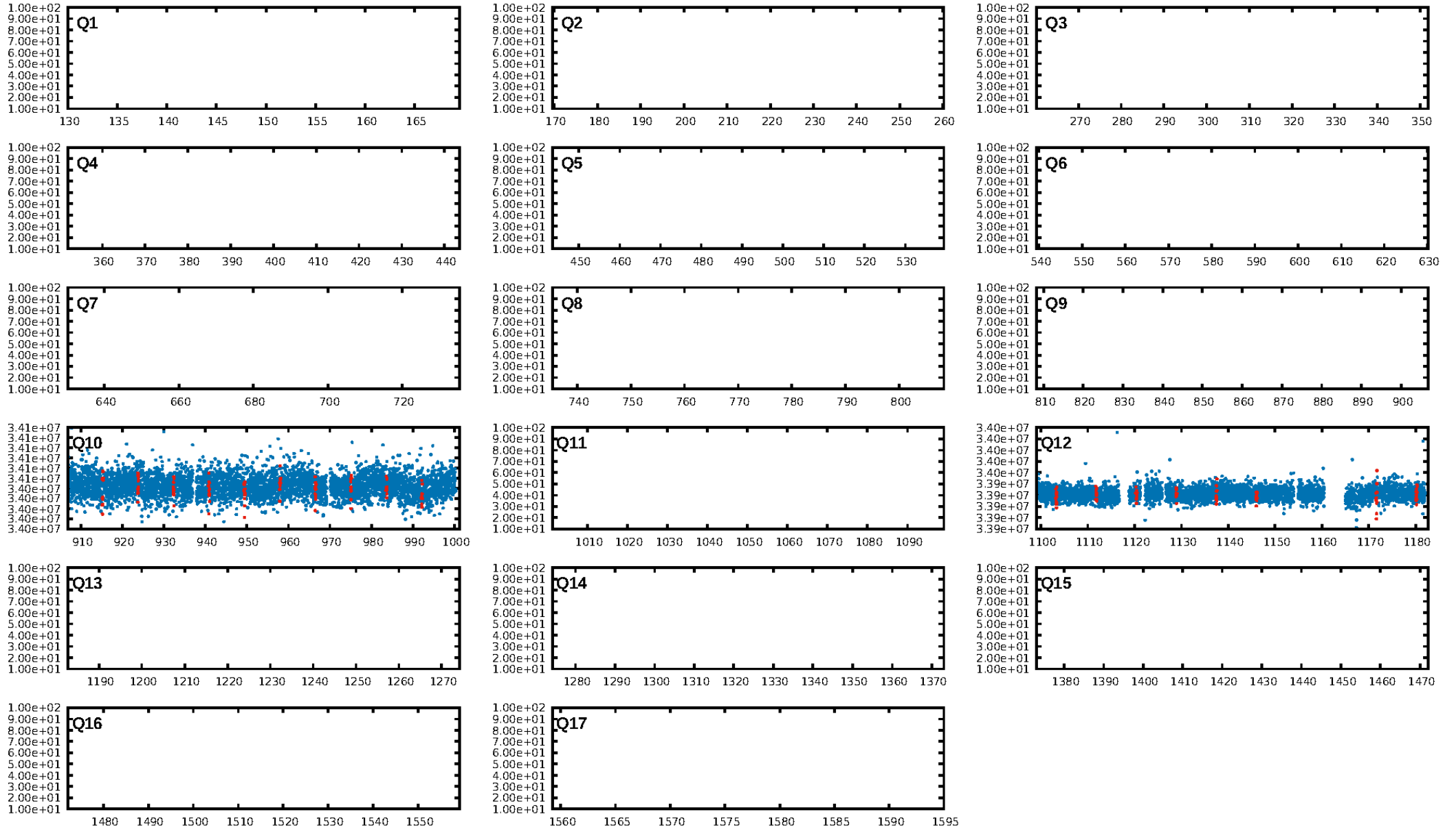
DV Fit Results:

Period = 8.54825 [0.00025] d
Epoch = 137.3437 [0.0251] BKJD
Rp/R* = 0.0161 [0.0152]
a/R* = 10.90 [59.06]
b = 0.89 [1.33]
Seff = 290.52 [118.06]
Teq = 1053 [107] K
Rp = 2.02 [2.01] Re
a = 0.0846 [0.0221] AU
Ag = 174.29 [337.23] [0.51 σ]
Teff = 5914 [2815] K [1.73 σ]

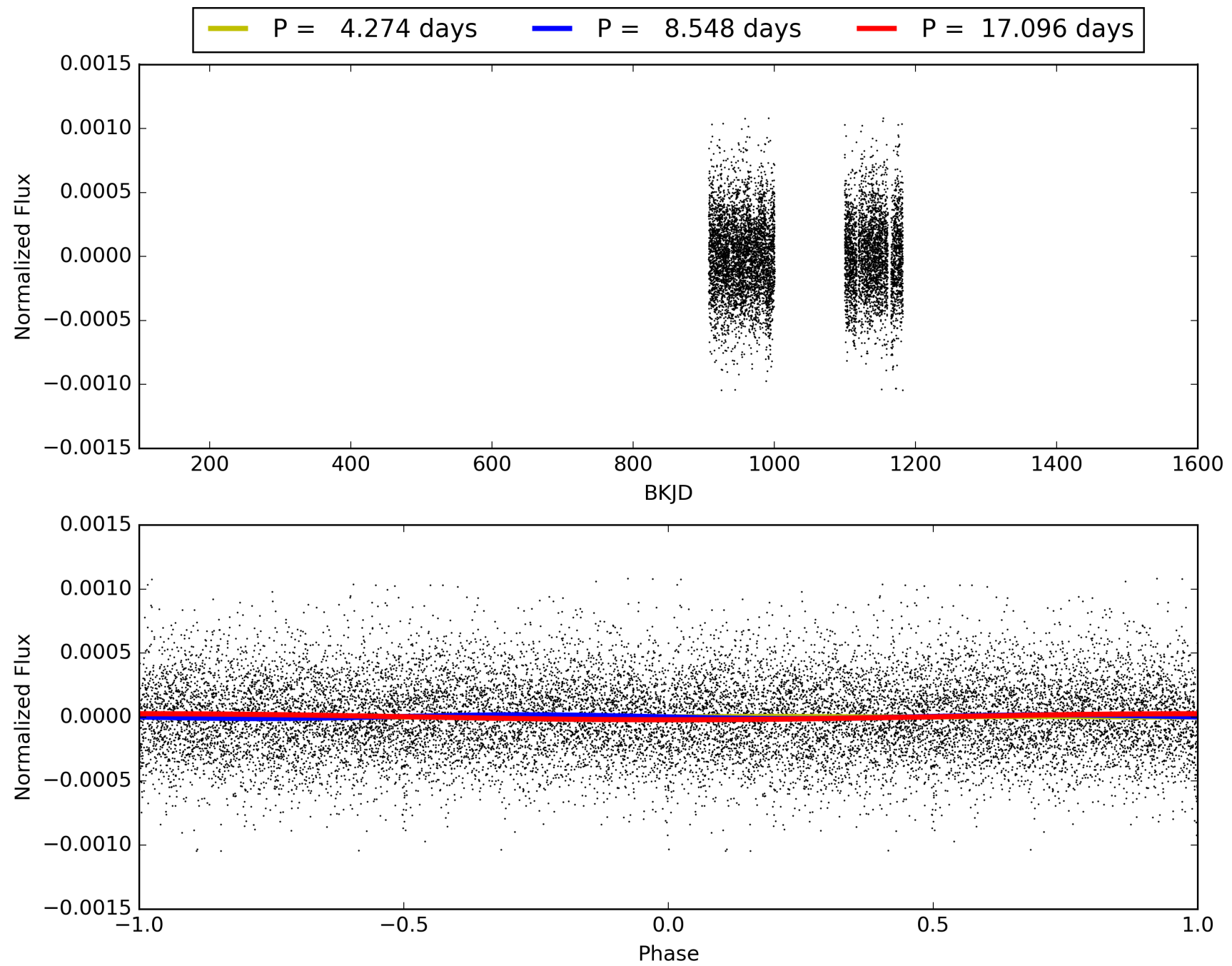
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [6.95 σ]
ModelChiSquare2-sig: 76.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.81e-13
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: 1.016
Centroid-sig: 41.1%
Centroid-so: 2.027 arcsec [0.98 σ]
OotOffset-rm: 0.043 arcsec [0.09 σ]
KicOffset-rm: 0.290 arcsec [0.63 σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 011176166-02, PDC Light Curves

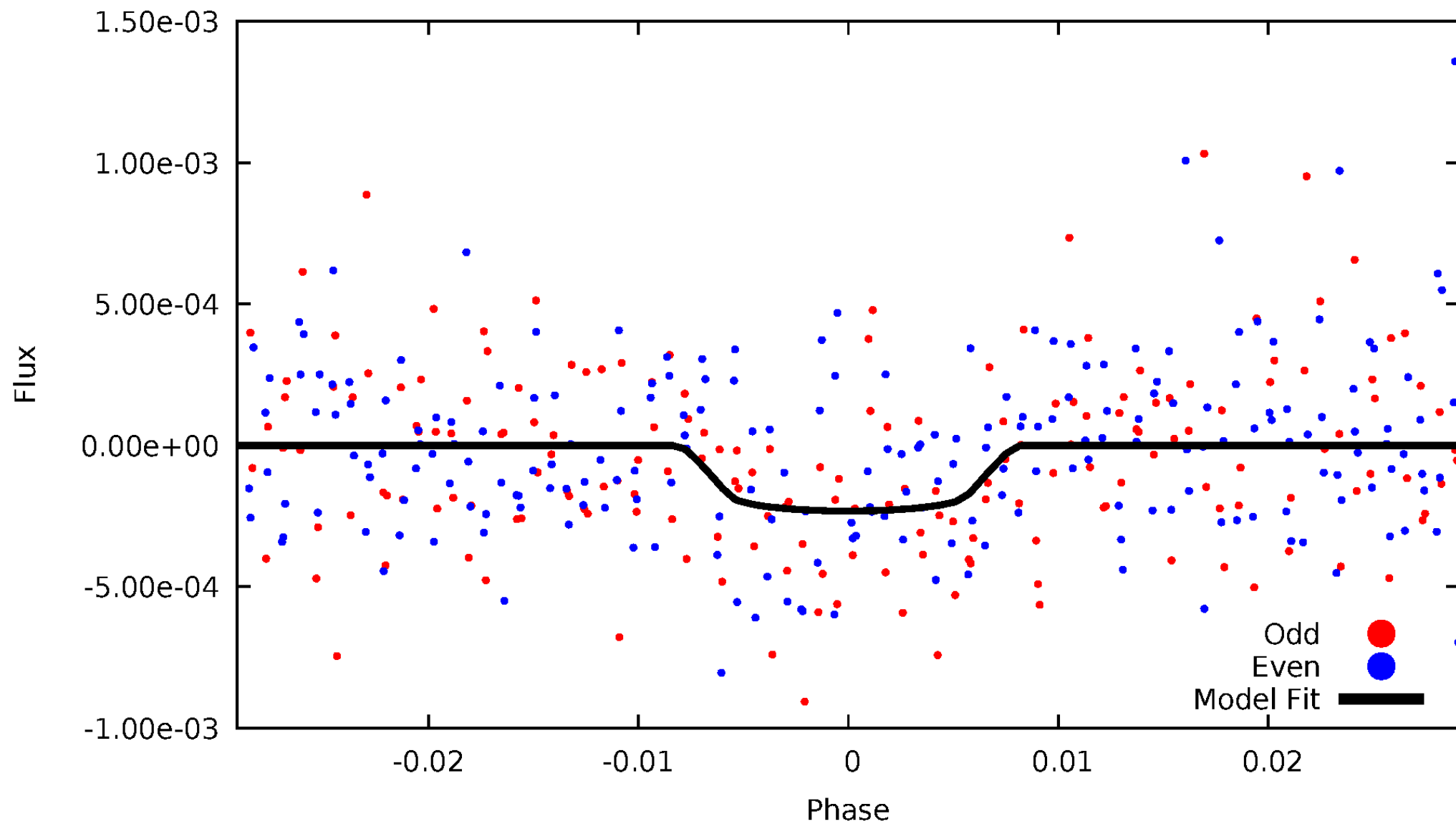


TCE 011176166-02



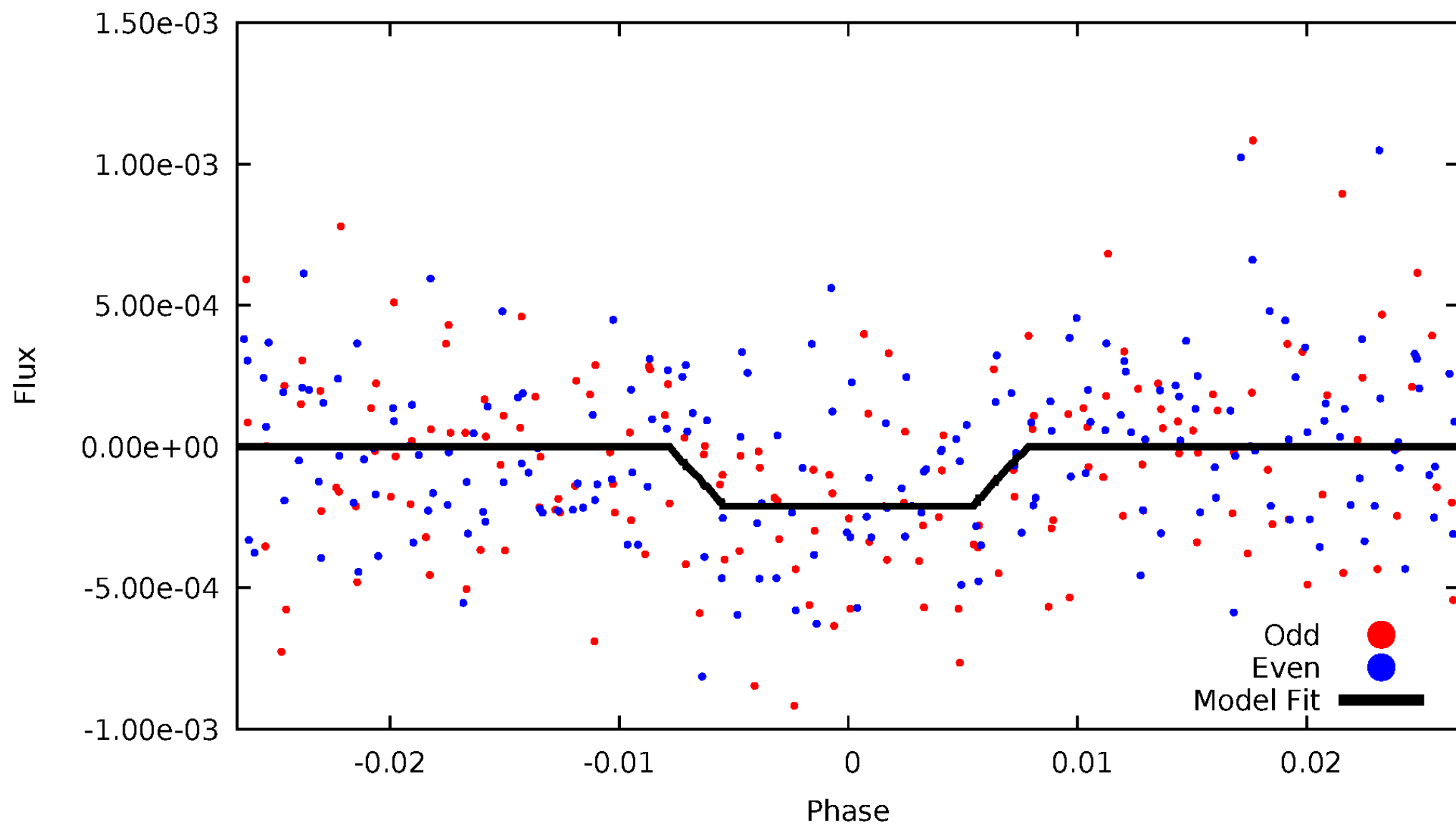
DV Odd/Even

TCE 011176166-02



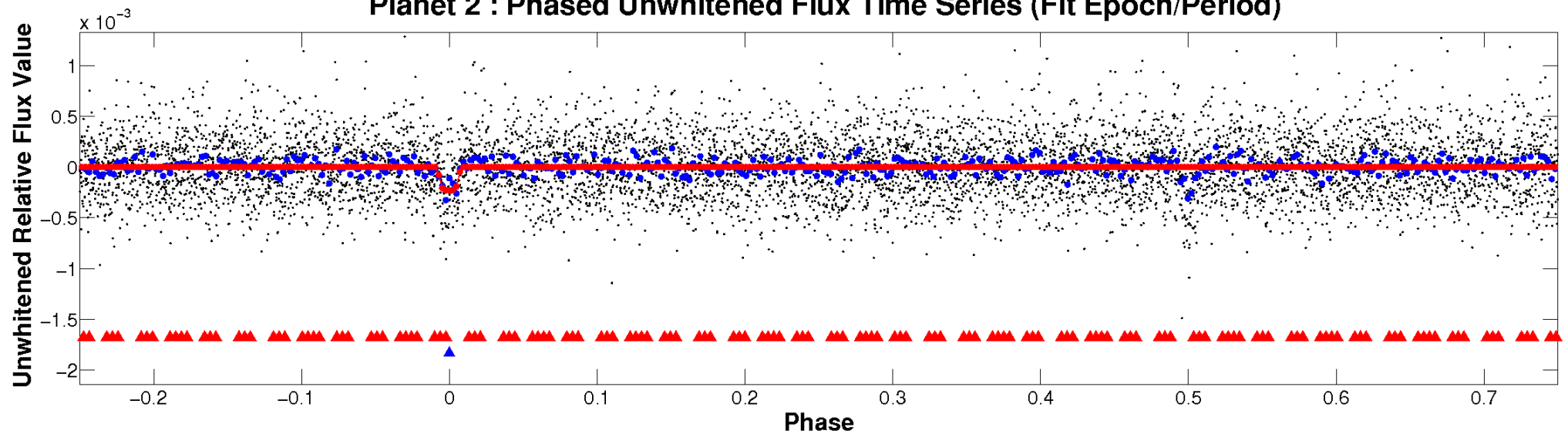
ALT Odd/Even

TCE 011176166-02

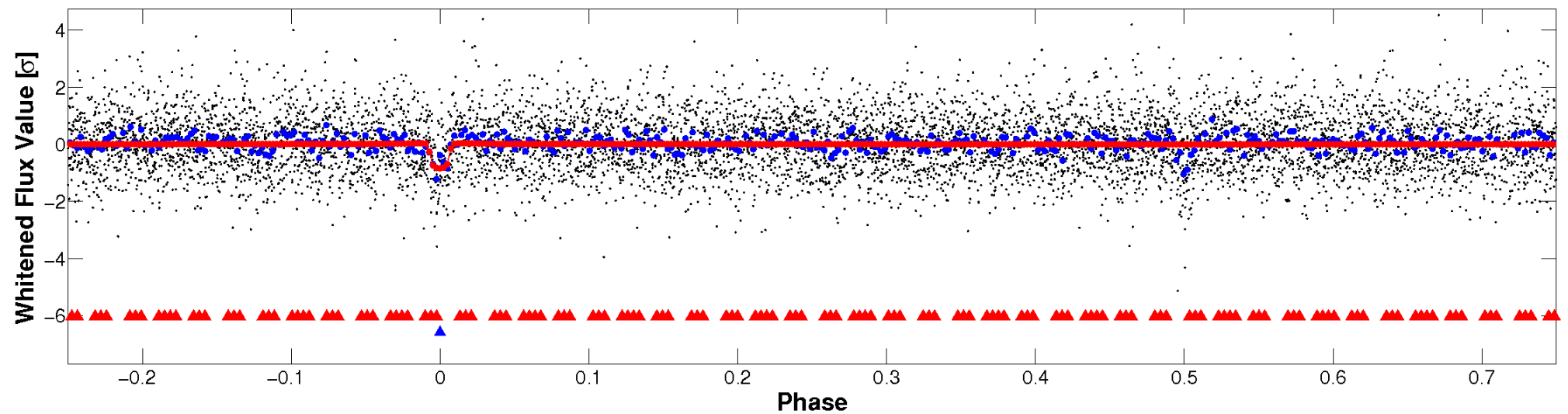


Non-Whitened Vs. Whitened Light Curve

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

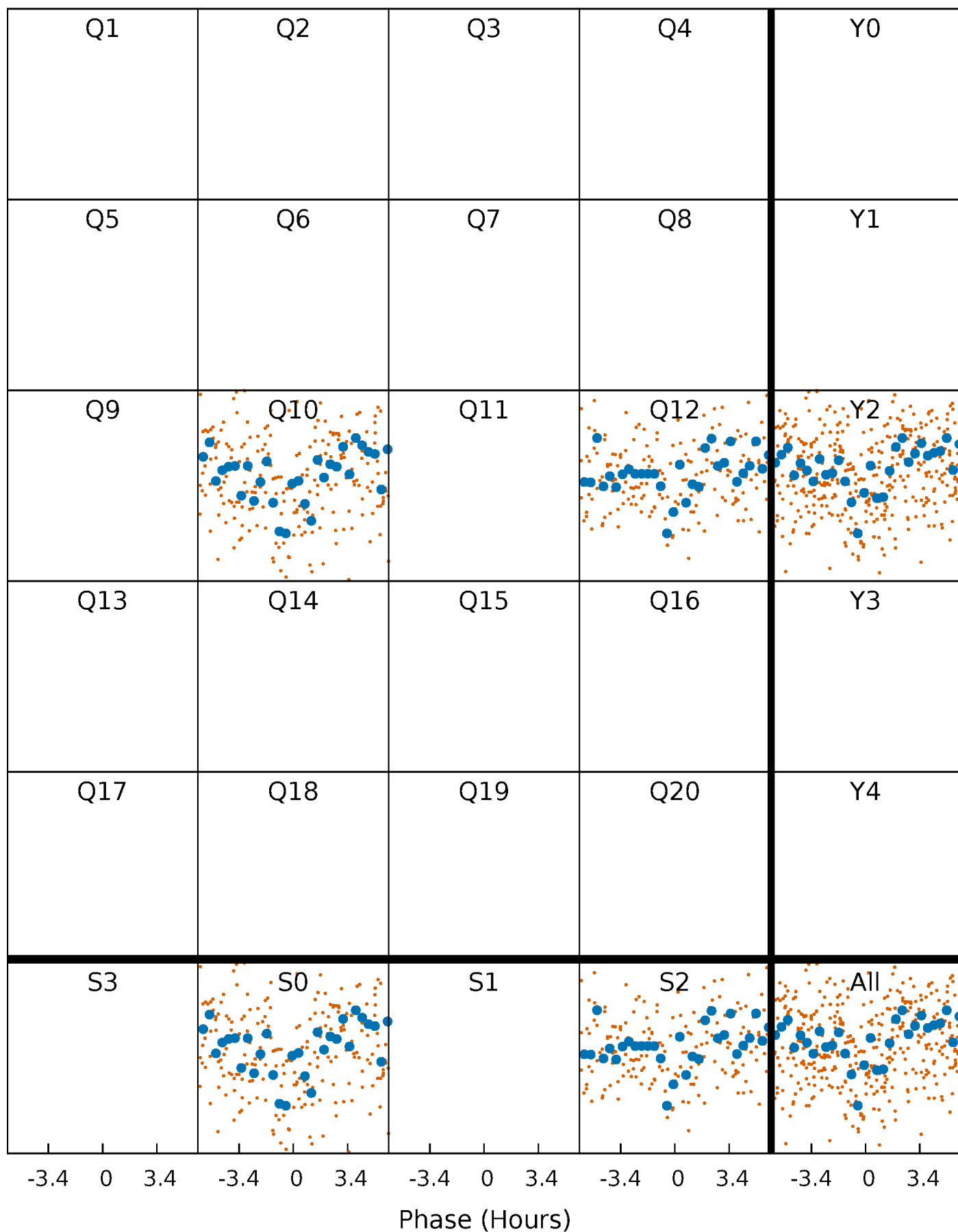


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



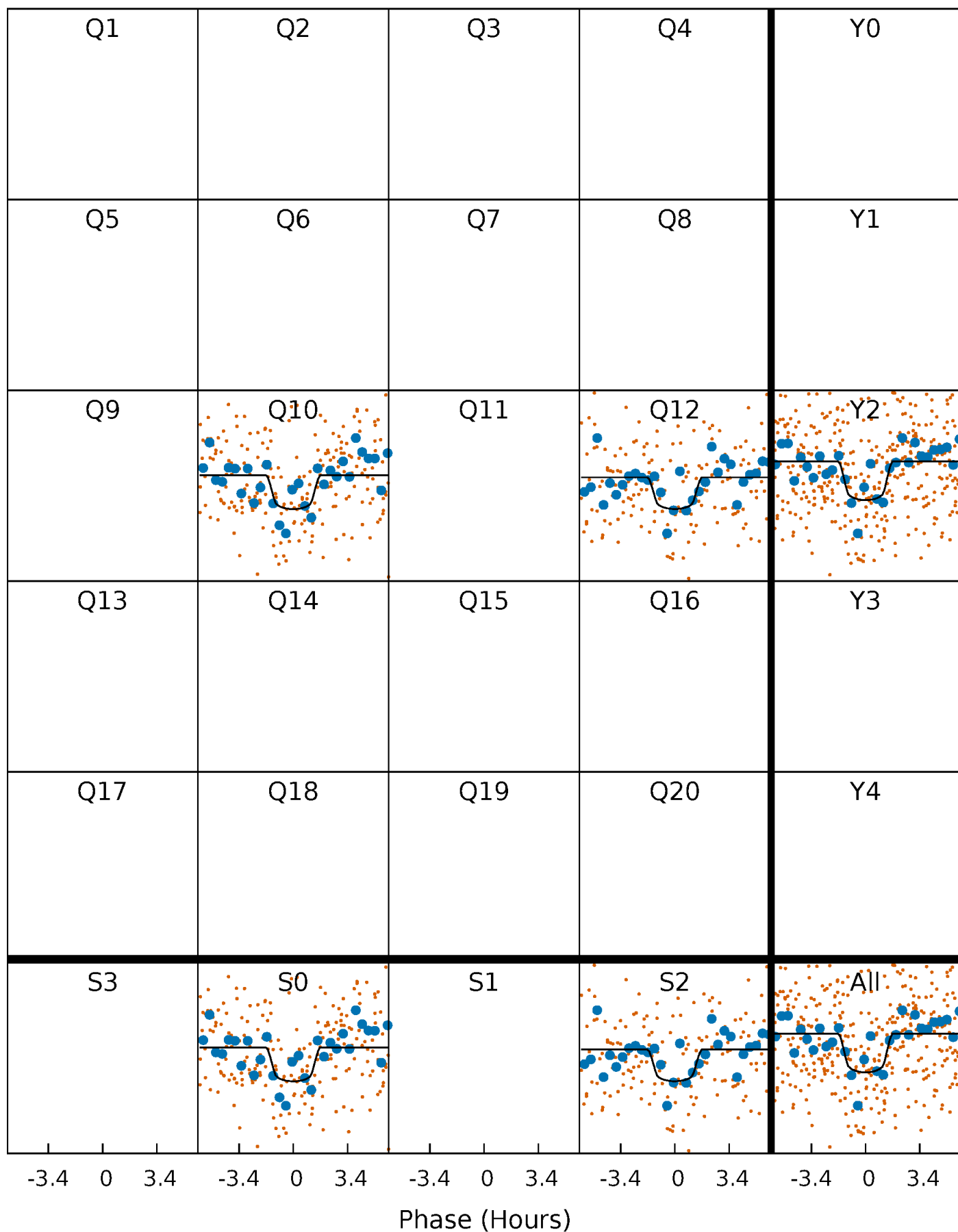
PDC Quarter-Phased Transit Curves

TCE 011176166-02 P= 8.548247 Days $T_0=137.343673$ (BKJD)



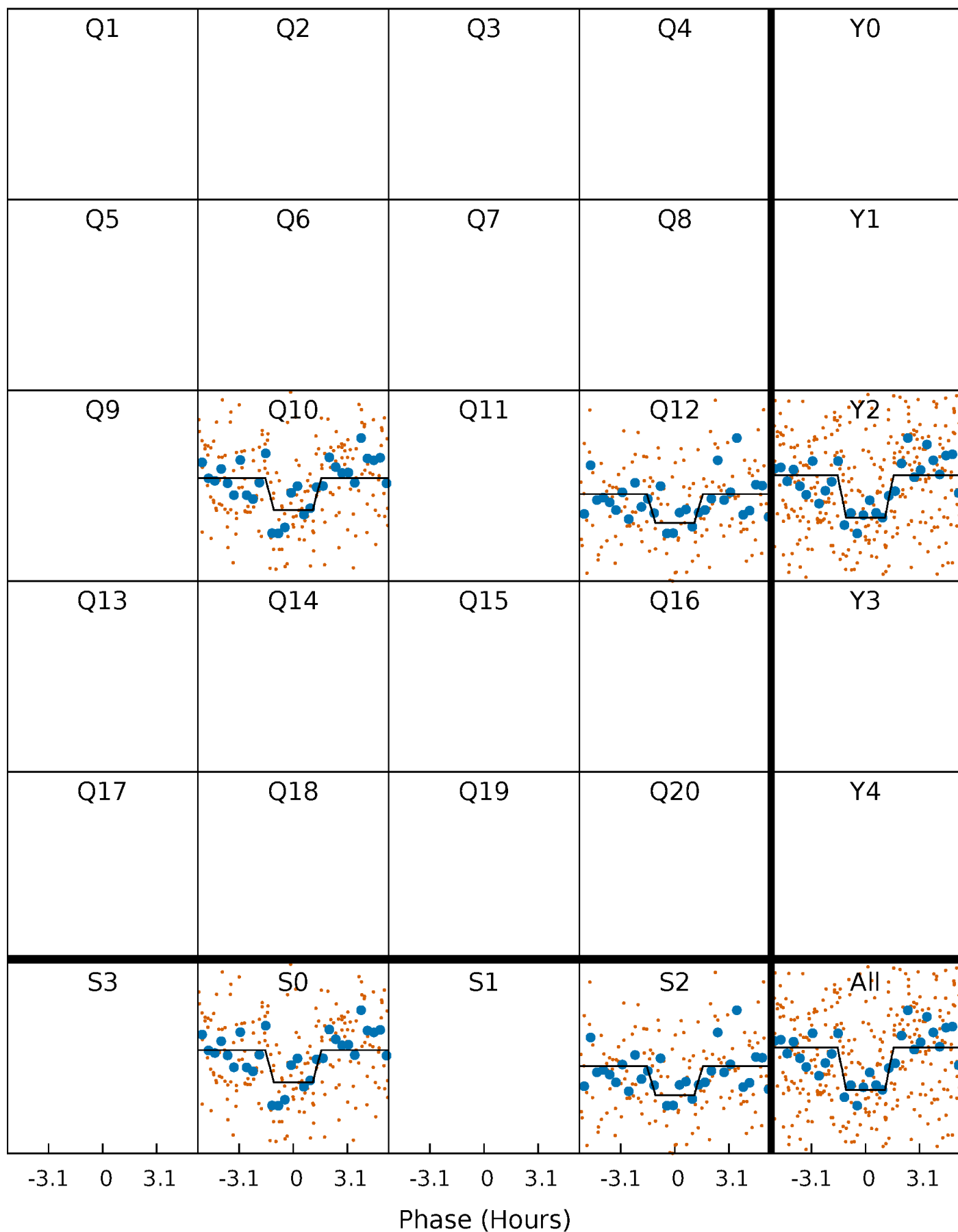
DV Quarter-Phased Transit Curves

TCE 011176166-02 P= 8.548247 Days $T_0=137.343673$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

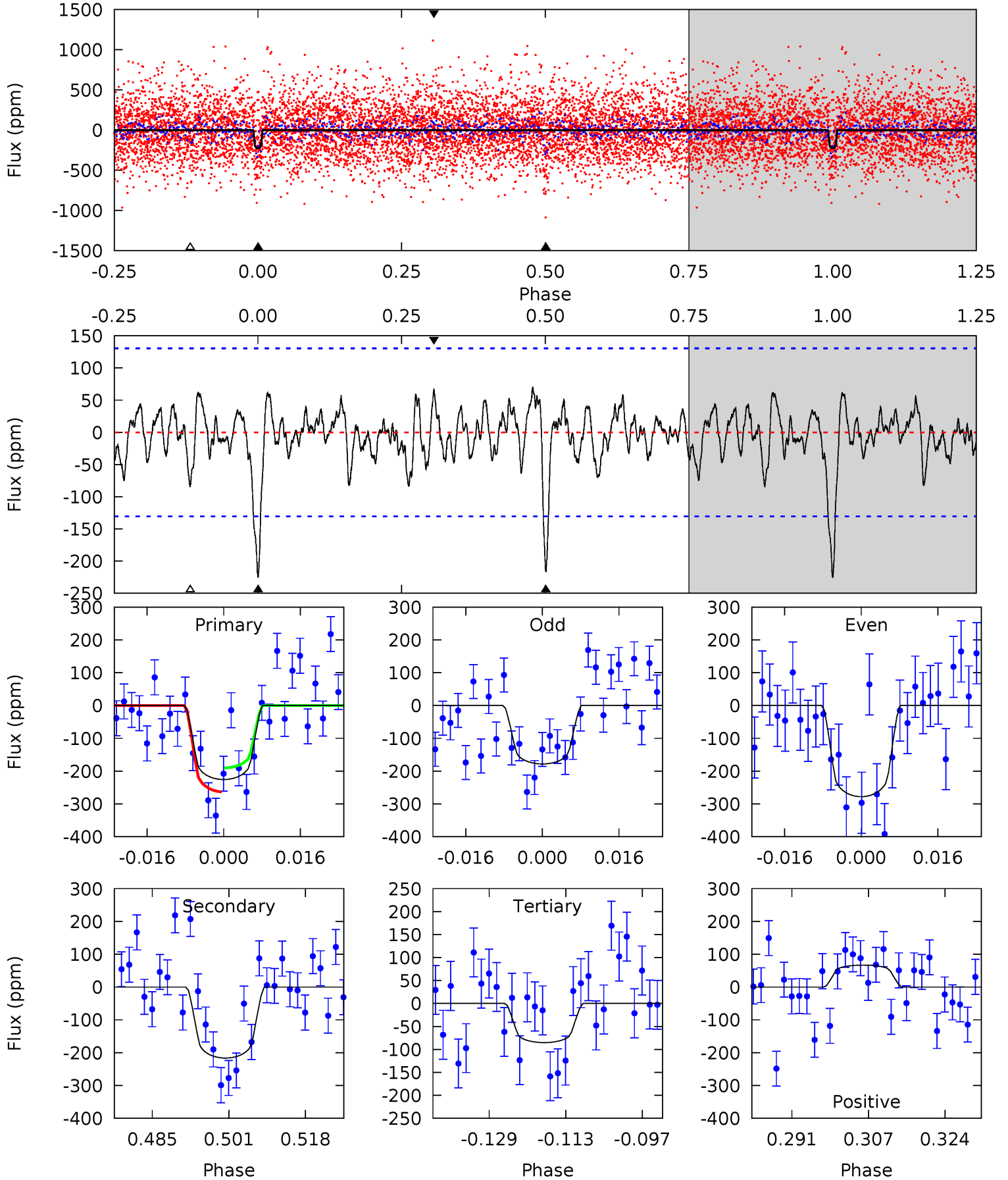
TCE 011176166-02 P= 8.547825 Days $T_0=137.386134$ (BKJD)



DV Model-Shift Uniqueness Test

011176166-02, P = 8.548247 Days, E = 137.343673 Days

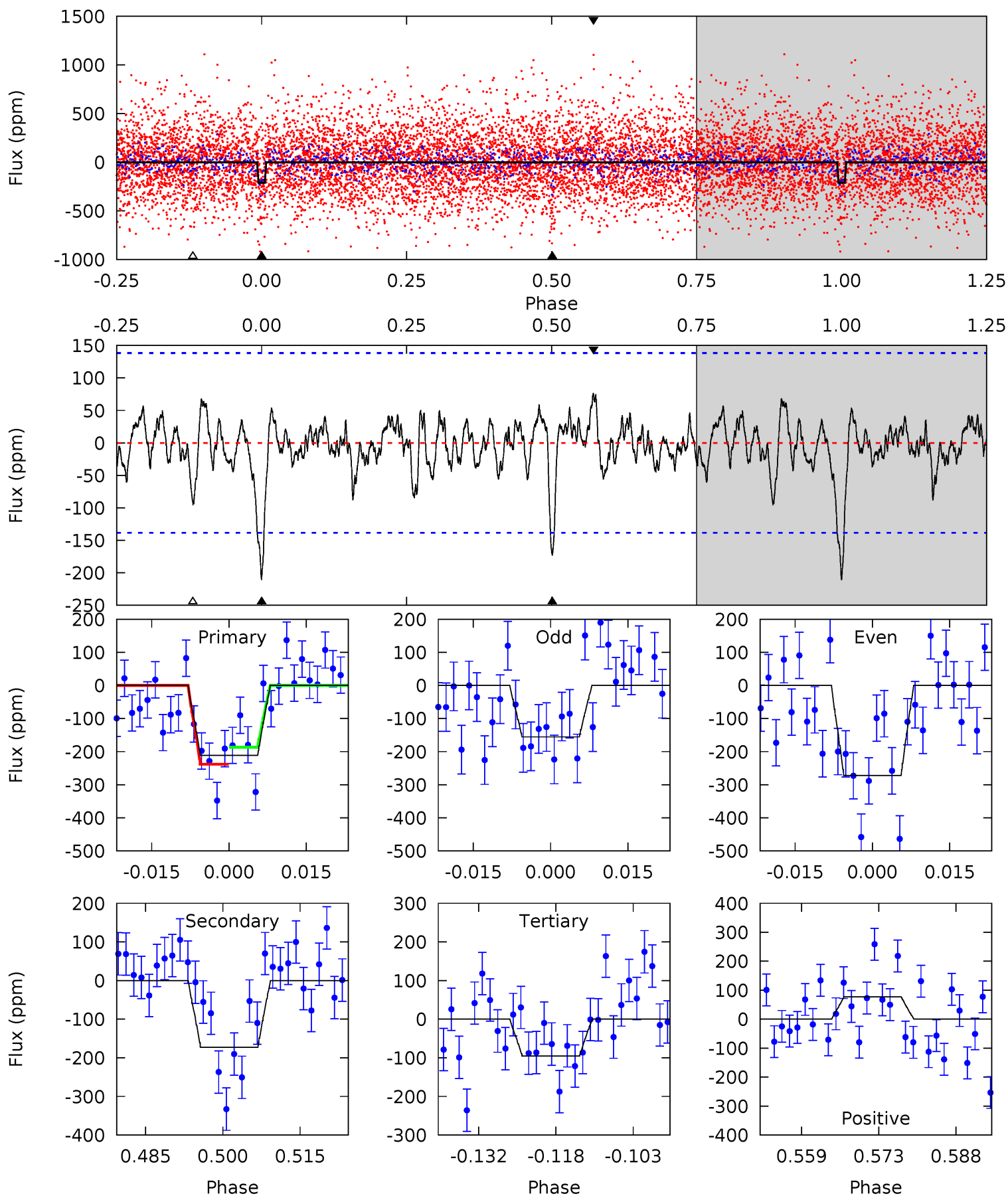
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.53	8.17	3.22	2.52	4.93	2.40	1.12	5.31	6.00	4.96	5.65	1.89	0.90	0.24	1.38



Alt Model-Shift Uniqueness Test

011176166-02, P = 8.547825 Days, E = 137.386134 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.56	6.18	3.42	2.75	4.95	2.44	1.03	4.14	4.80	2.77	3.43	2.09	0.95	0.27	0.91



Stellar Parameters For KIC 011176166

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6477^{+159}_{-250}	$4.361^{+0.087}_{-0.203}$	$-0.260^{+0.250}_{-0.300}$	$1.148^{+0.362}_{-0.155}$	$1.102^{+0.170}_{-0.139}$	$1.025^{+0.471}_{-0.517}$
	+2%/-4%	+2%/-5%	+96%/-115%	+32%/-14%	+15%/-13%	+46%/-50%
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 011176166-02 / KOI 5875.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-216 ± 26	$2.43^{+1.98}_{-1.56}$	1489^{+109}_{-87}	5724^{+4881}_{-1261}	141^{+994}_{-97}
Alt.	-173 ± 28	$2.26^{+1.91}_{-1.42}$	1491^{+112}_{-80}	5604^{+4346}_{-1264}	131^{+810}_{-93}

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 $A_{obs} \gg 1.0$

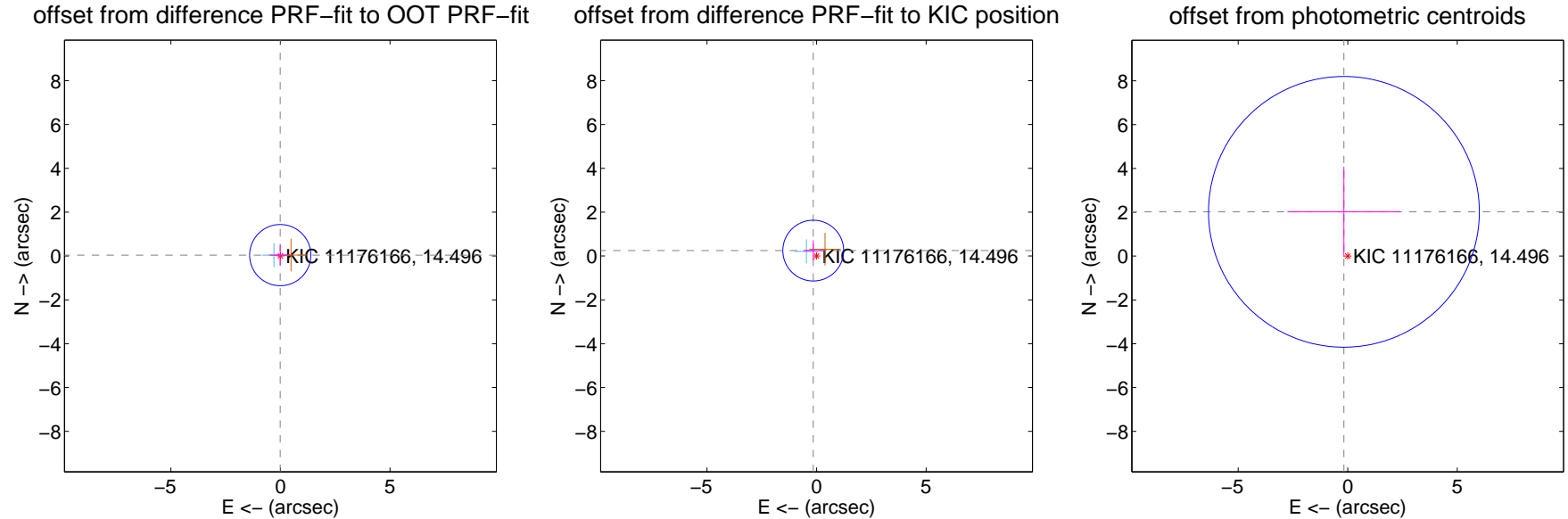
DV Centroid Data

Supplemental centroid analysis for 011176166-02. Kepler magnitude: 14.50. Transit SNR 7.12

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.043 ± 0.465	0.09	0.010 ± 0.452	0.042 ± 0.466
PRF-fit source offset from KIC position	0.290 ± 0.462	0.63	0.152 ± 0.452	0.247 ± 0.466
photometric centroid source offset	2.03 ± 2.06	0.98	0.17 ± 2.58	2.02 ± 2.06



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.

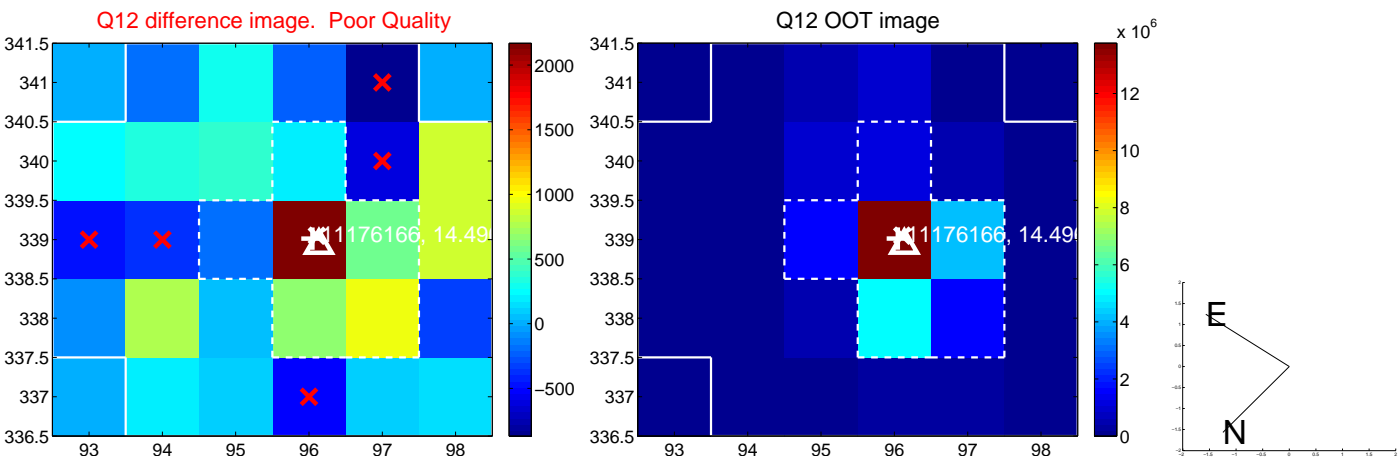
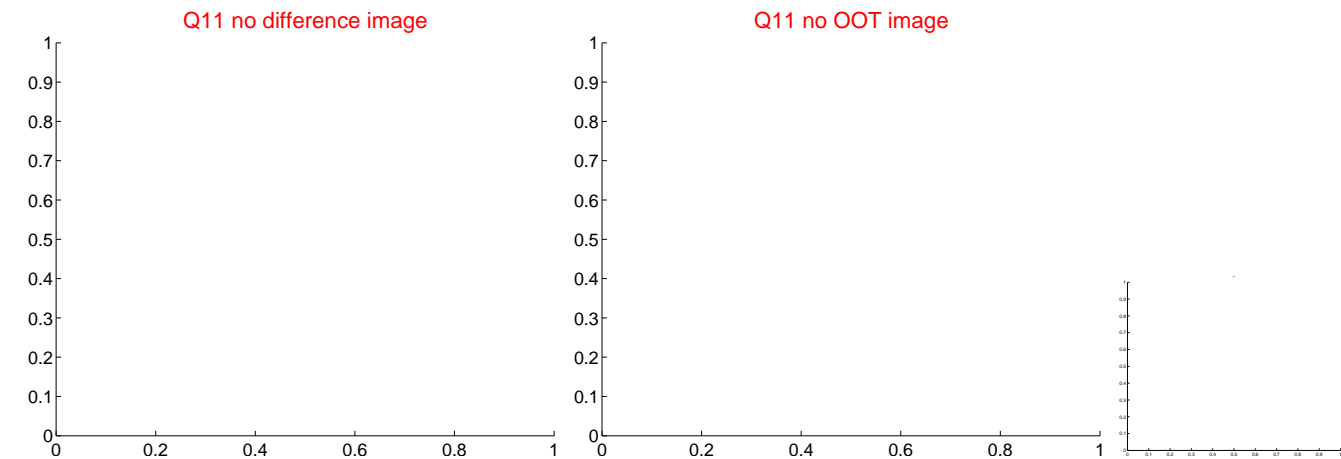
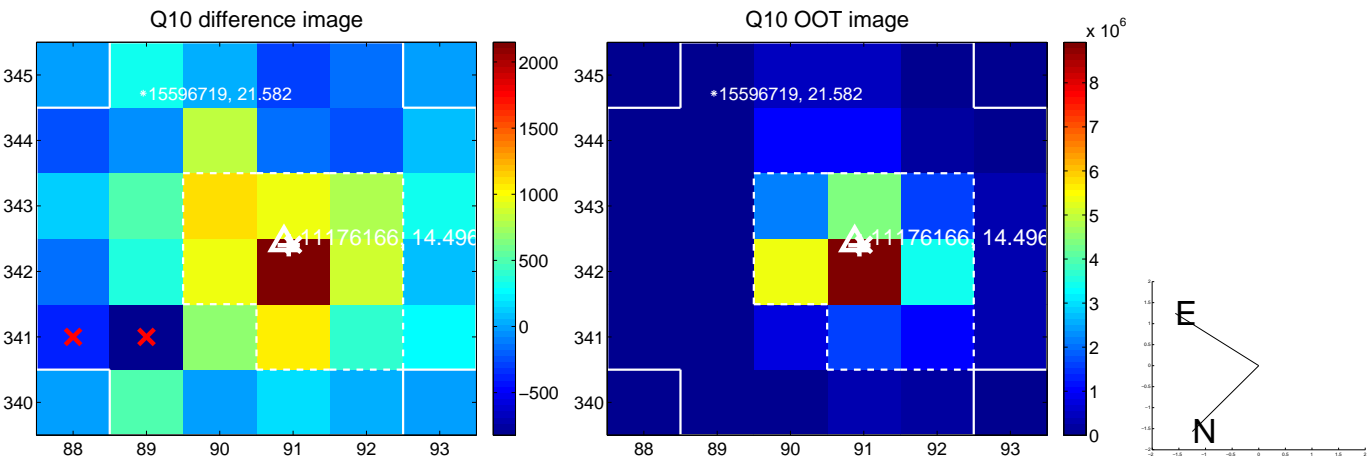
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



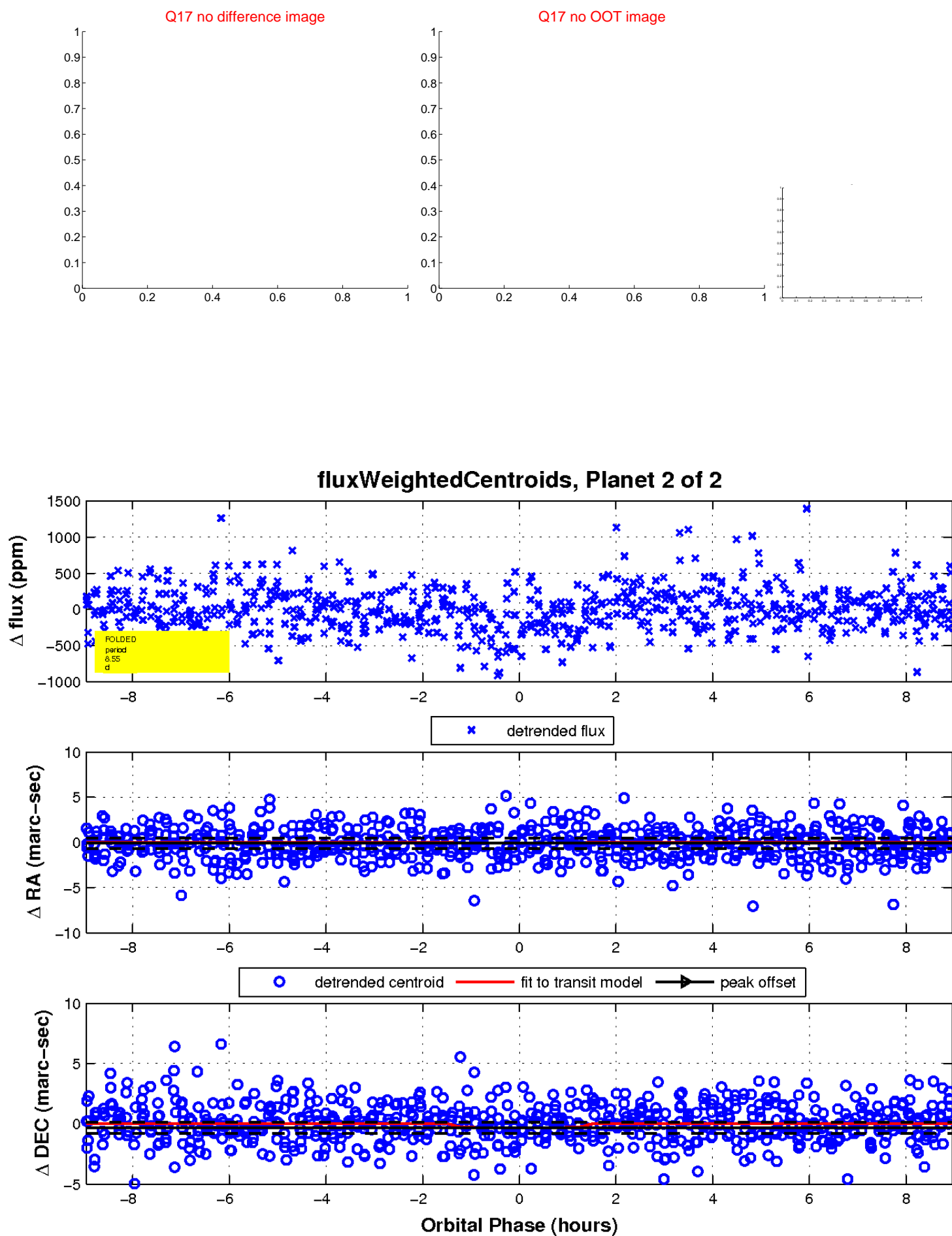
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

