

KIC 009301564

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})
009301564-01	OBS	No	383.874568	424.318862	211.0	19.527	8.2	8.1	1.29	5696	1.97	1.56
009301564-02	OBS	7157.01	47.966929	160.732977	71.8	18.617	7.4	7.9	1.29	5696	1.17	24.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009301564-01	OBS	PC	0.58	0	0	0	0	CENT_FEW_DIFFS
009301564-02	OBS	PC	0.55	0	0	0	0	CENT_FEW_MEAS

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

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

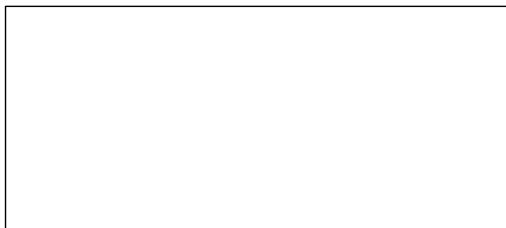
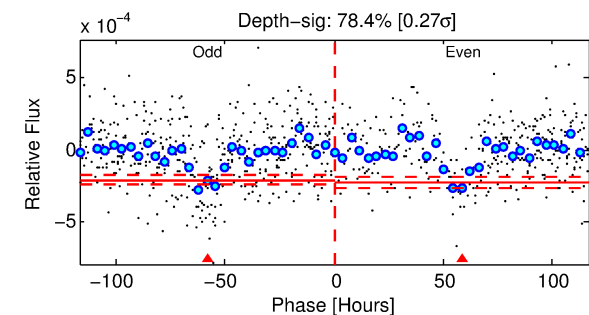
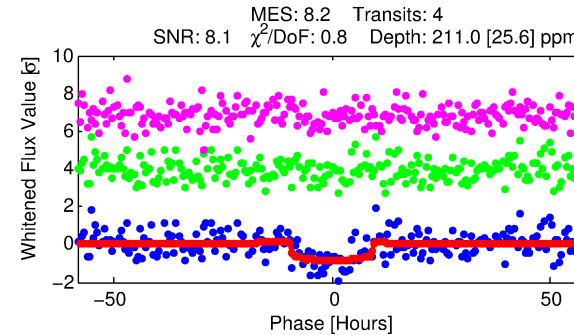
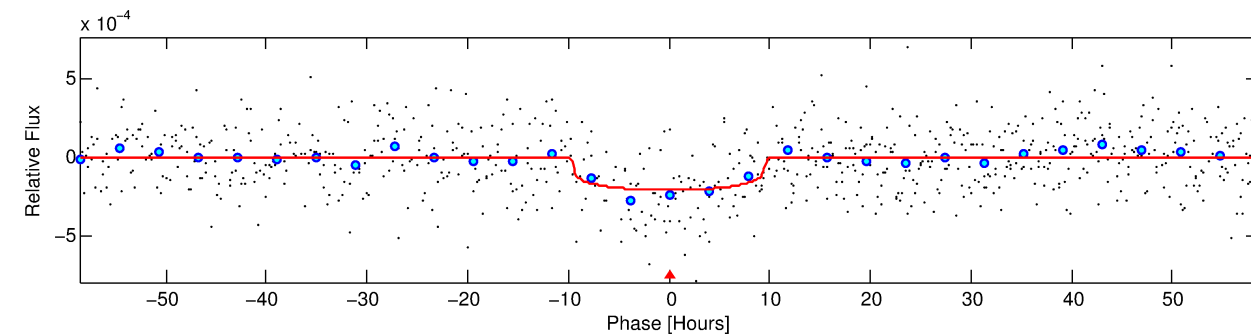
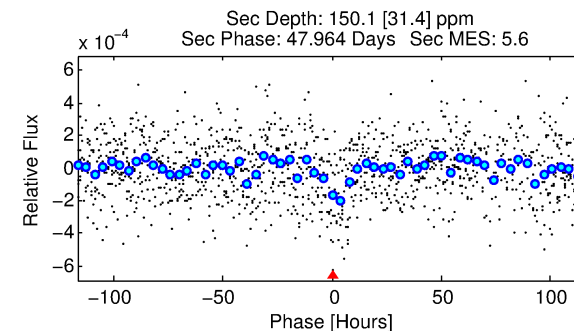
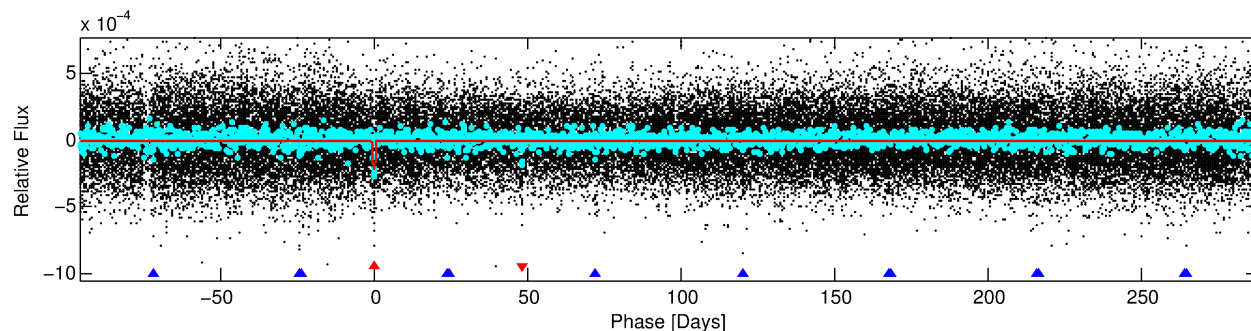
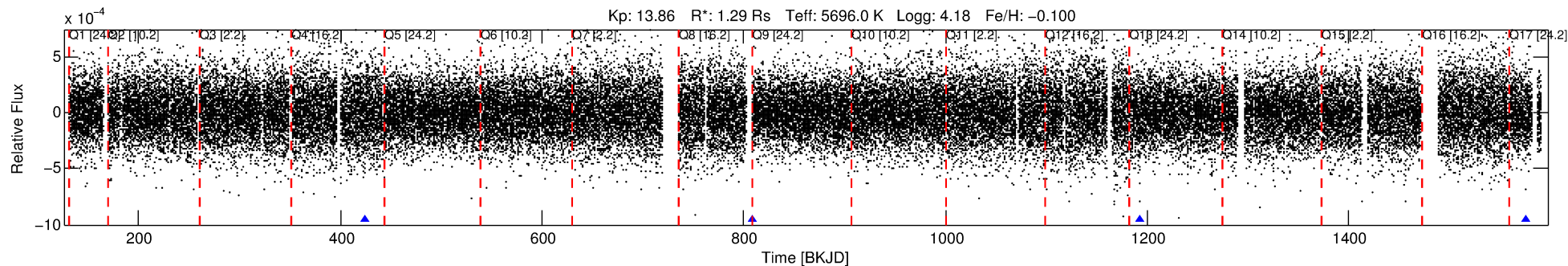
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009301564-01

No Significant Match Found

DV One-Page Summary

KIC: 9301564 Candidate: 1 of 2 Period: 383.875 d
KOI: K07157 Corr: No Ephemeris Match



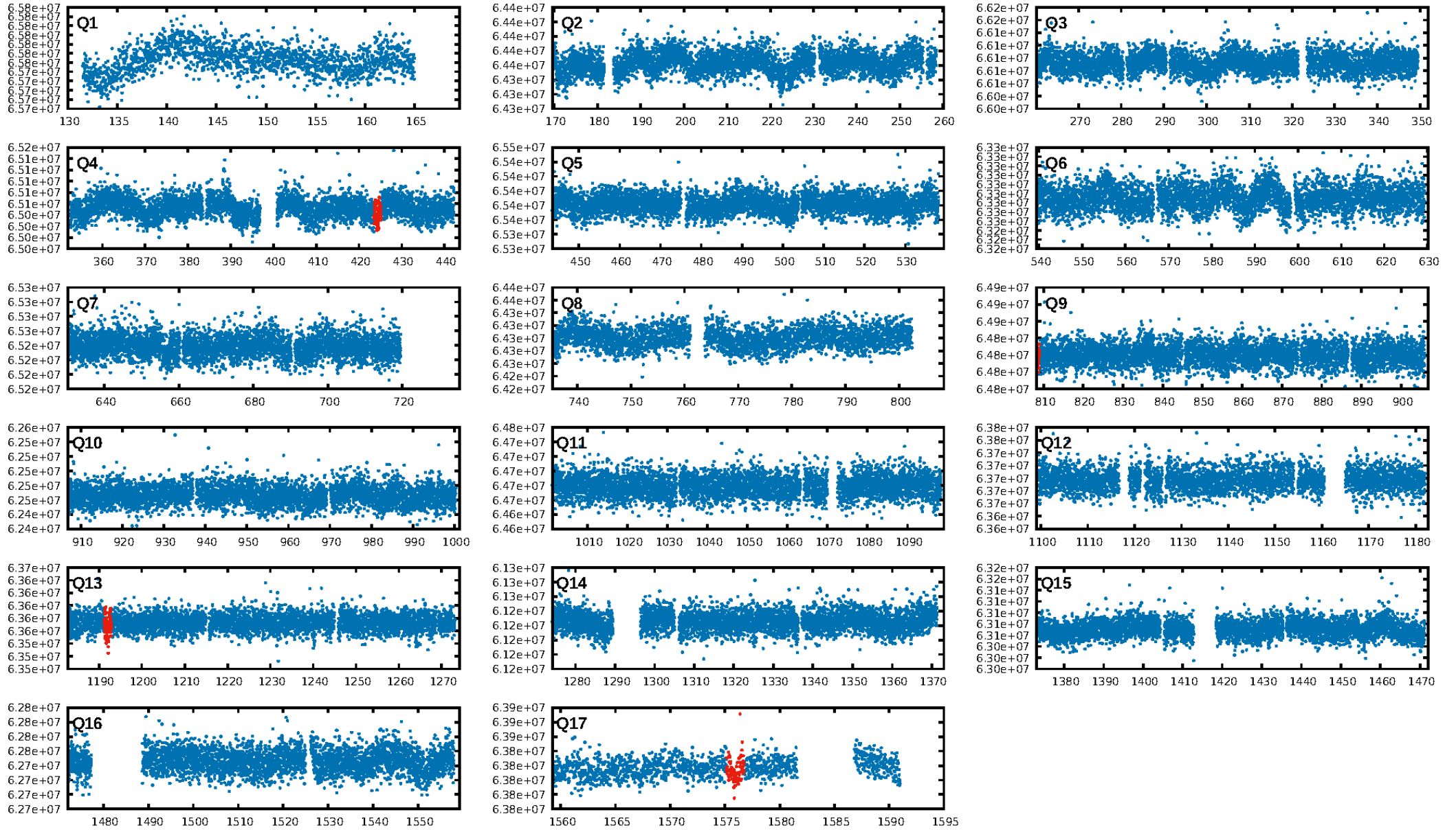
DV Fit Results:

Period = 383.87457 [0.01303] d
Epoch = 424.3189 [0.0275] BKJD
Rp/R* = 0.0140 [0.0060]
a/R* = 118.75 [221.86]
b = 0.63 [1.77]
Seff = 1.56 [0.83]
Teq = 285 [38] K
Rp = 1.97 [1.04] Re
a = 1.0046 [0.3173] AU
Ag = 21519.03 [22012.85] [0.98σ]
Teffp = 5336 [1185] K [4.26σ]

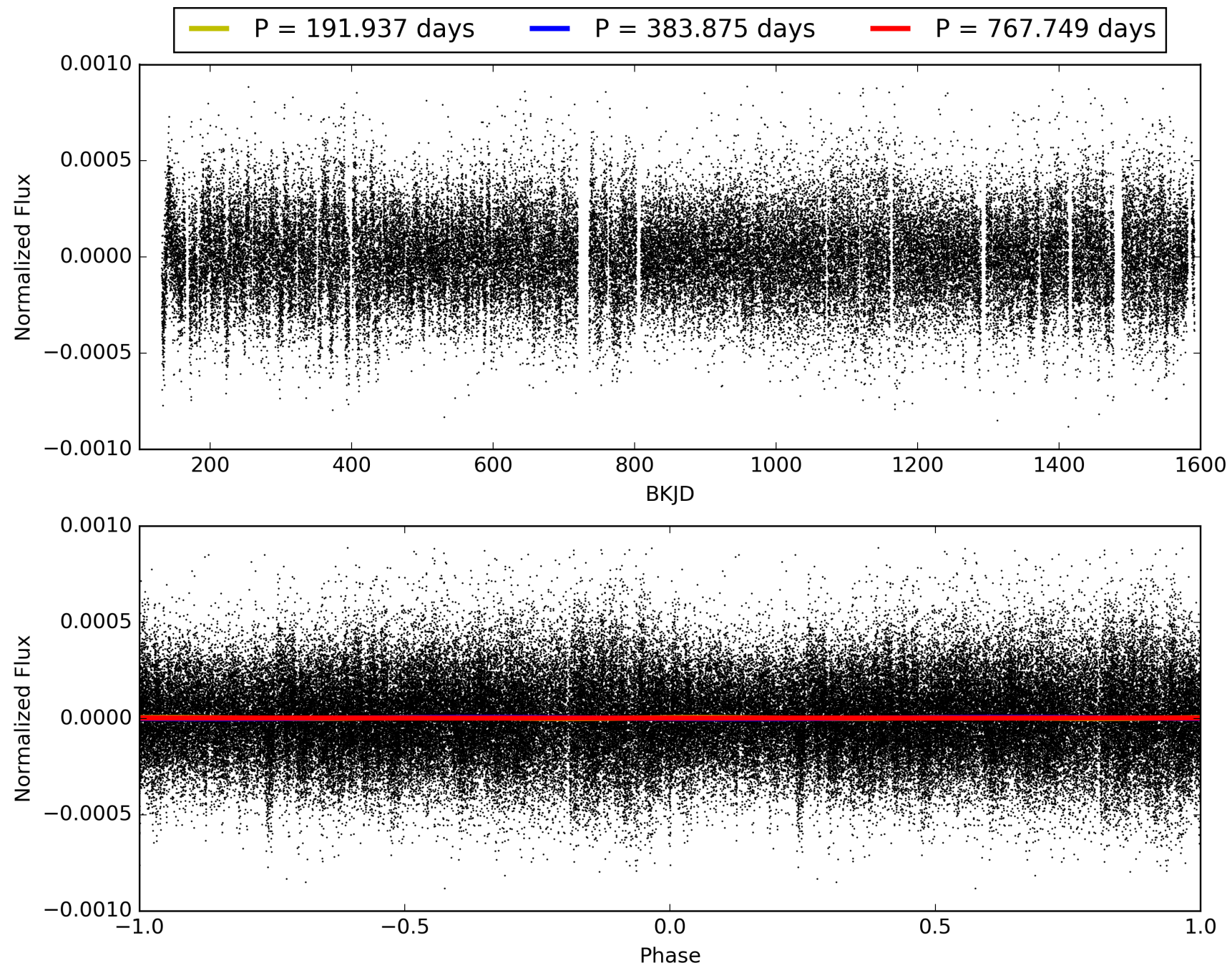
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [298.81σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 65.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.03e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.682
Centroid-sig: 3.2%
Centroid-so: 2.817 arcsec [1.70σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

TCE 009301564-01, PDC Light Curves

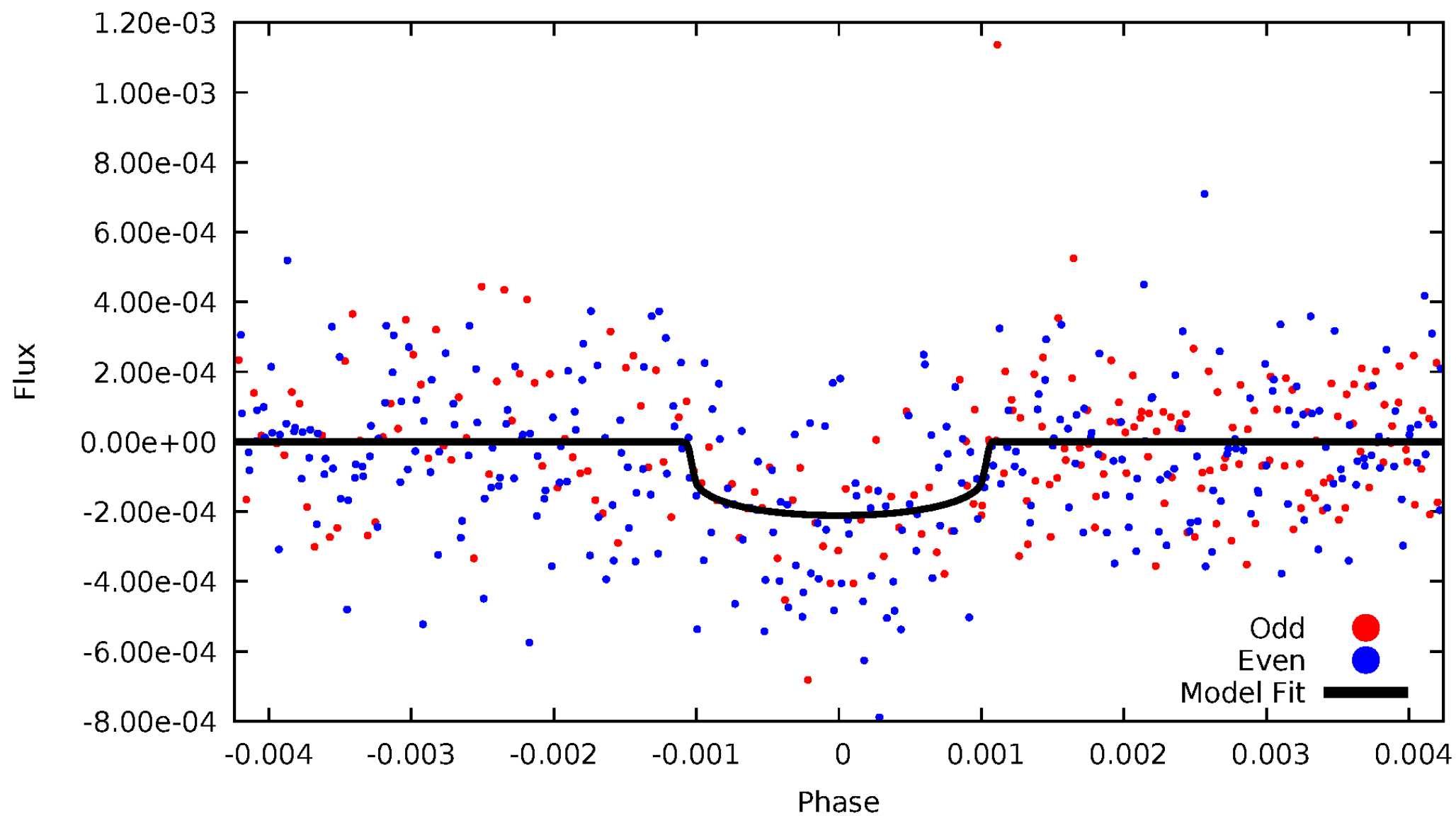


TCE 009301564-01



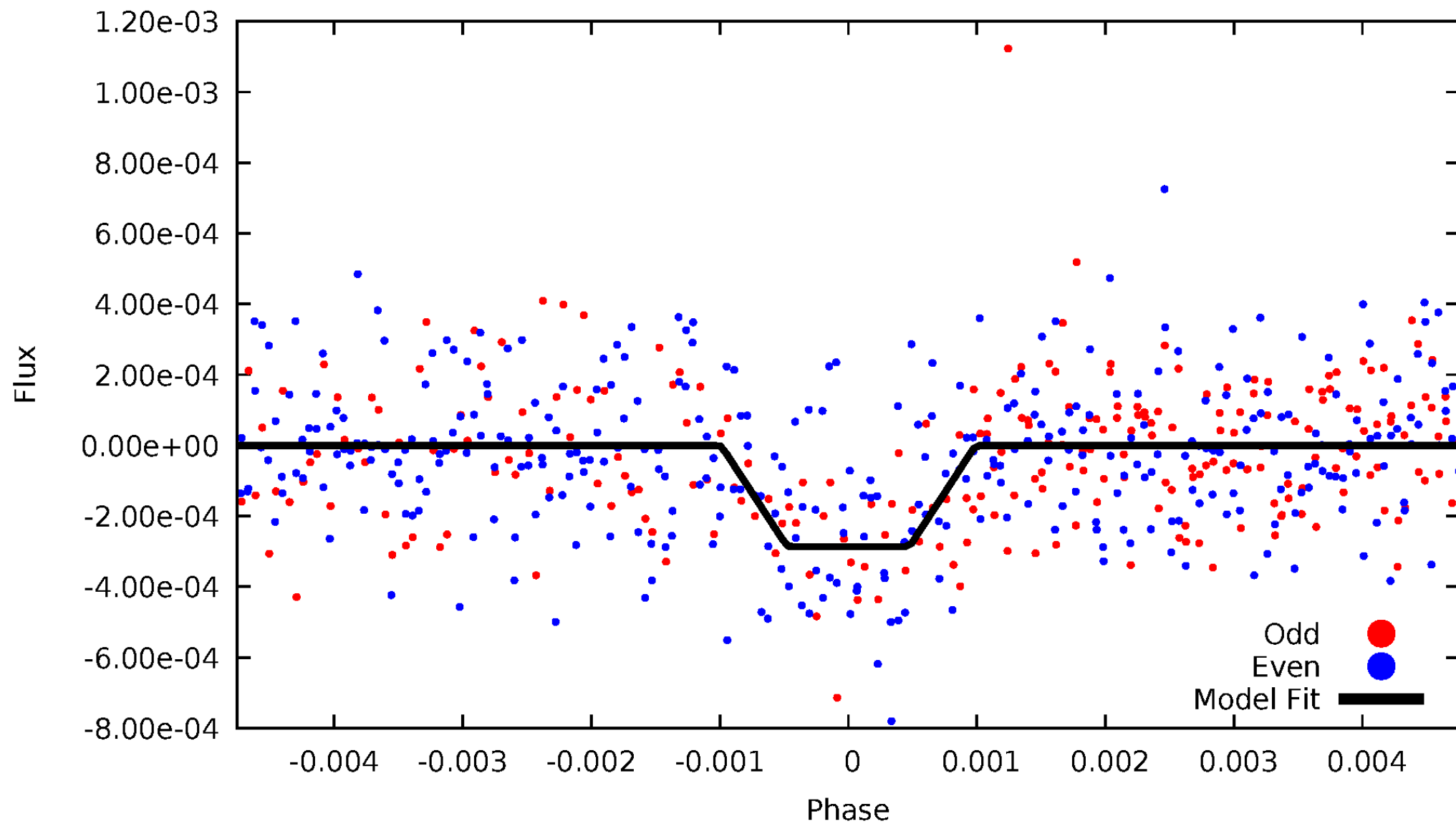
DV Odd/Even

TCE 009301564-01



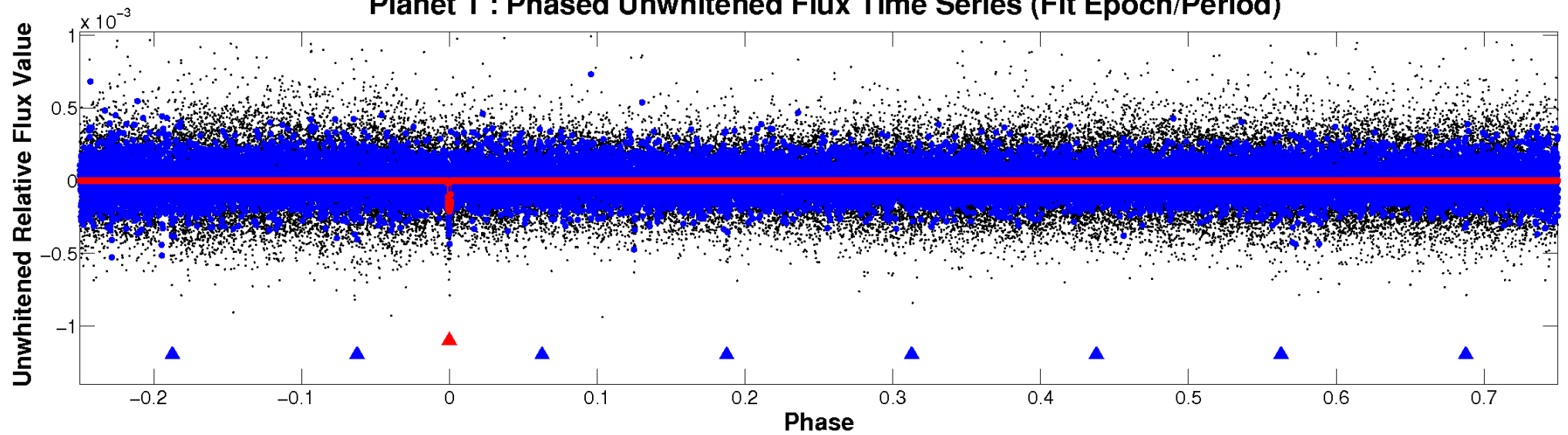
ALT Odd/Even

TCE 009301564-01

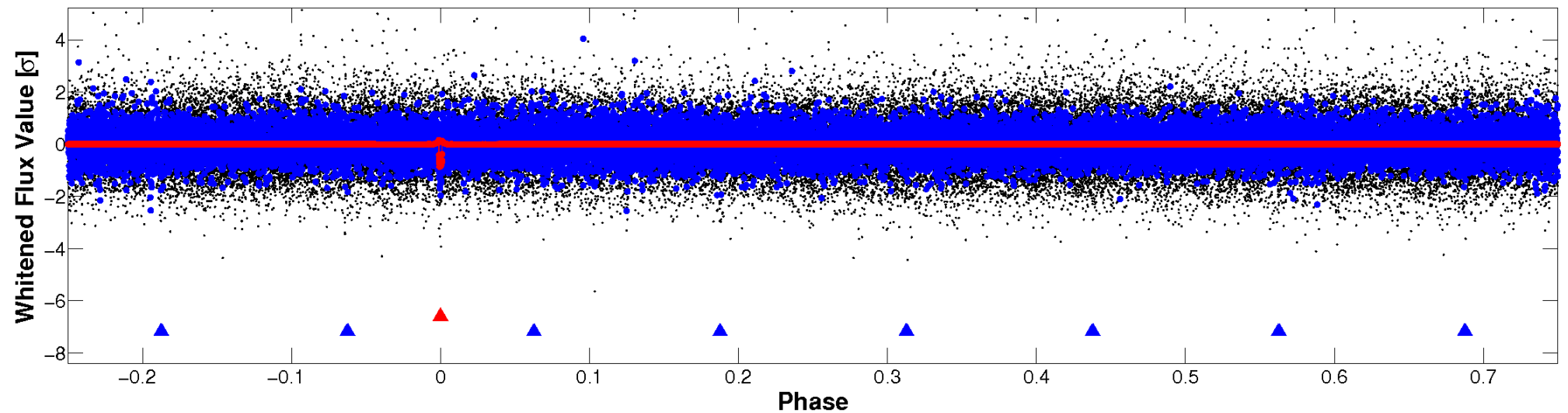


Non-Whitened Vs. Whitened Light Curve

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



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



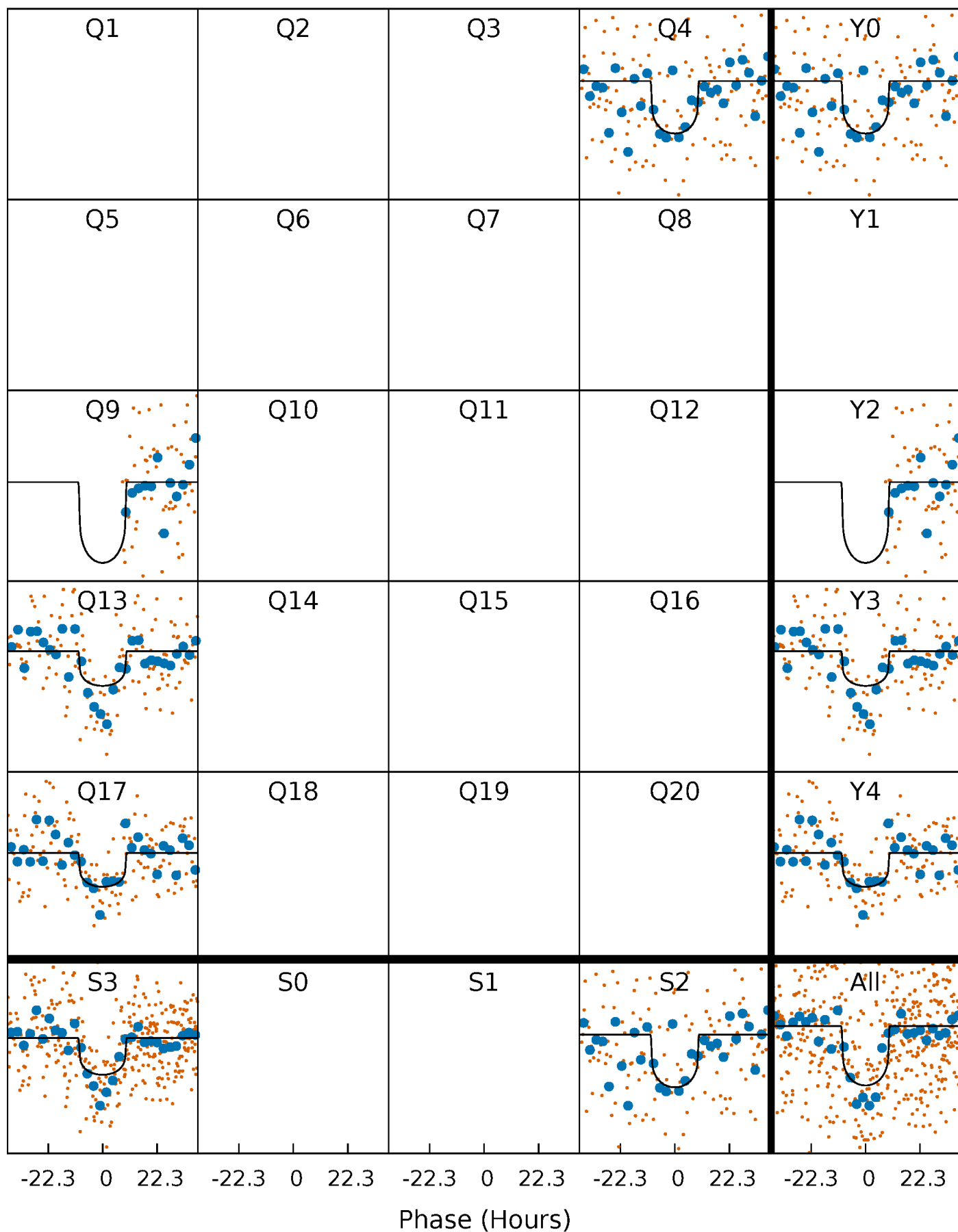
PDC Quarter-Phased Transit Curves

TCE 009301564-01 $P=383.874568$ Days $T_0=424.318862$ (BKJD)



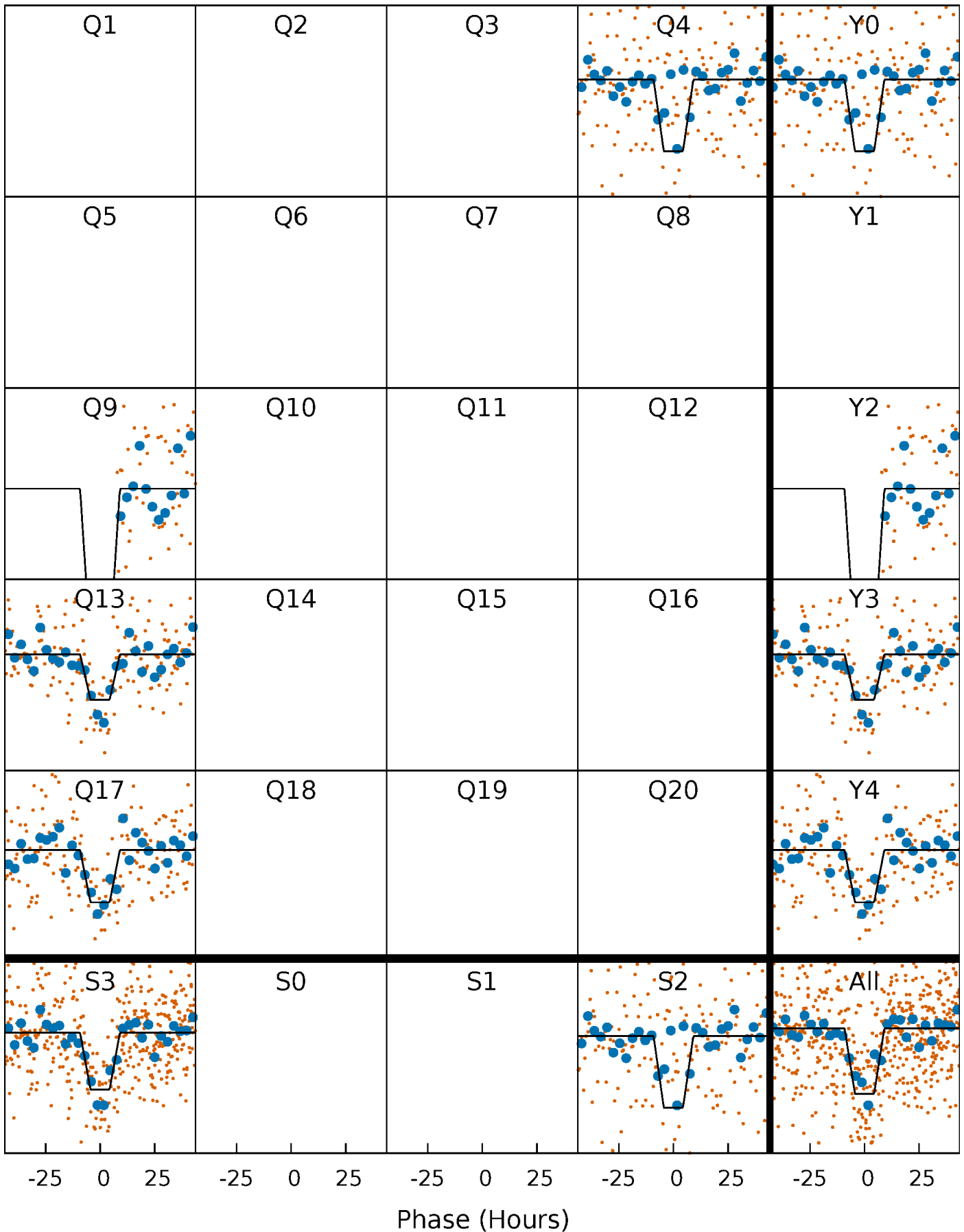
DV Quarter-Phased Transit Curves

TCE 009301564-01 P=383.874568 Days $T_0=424.318862$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

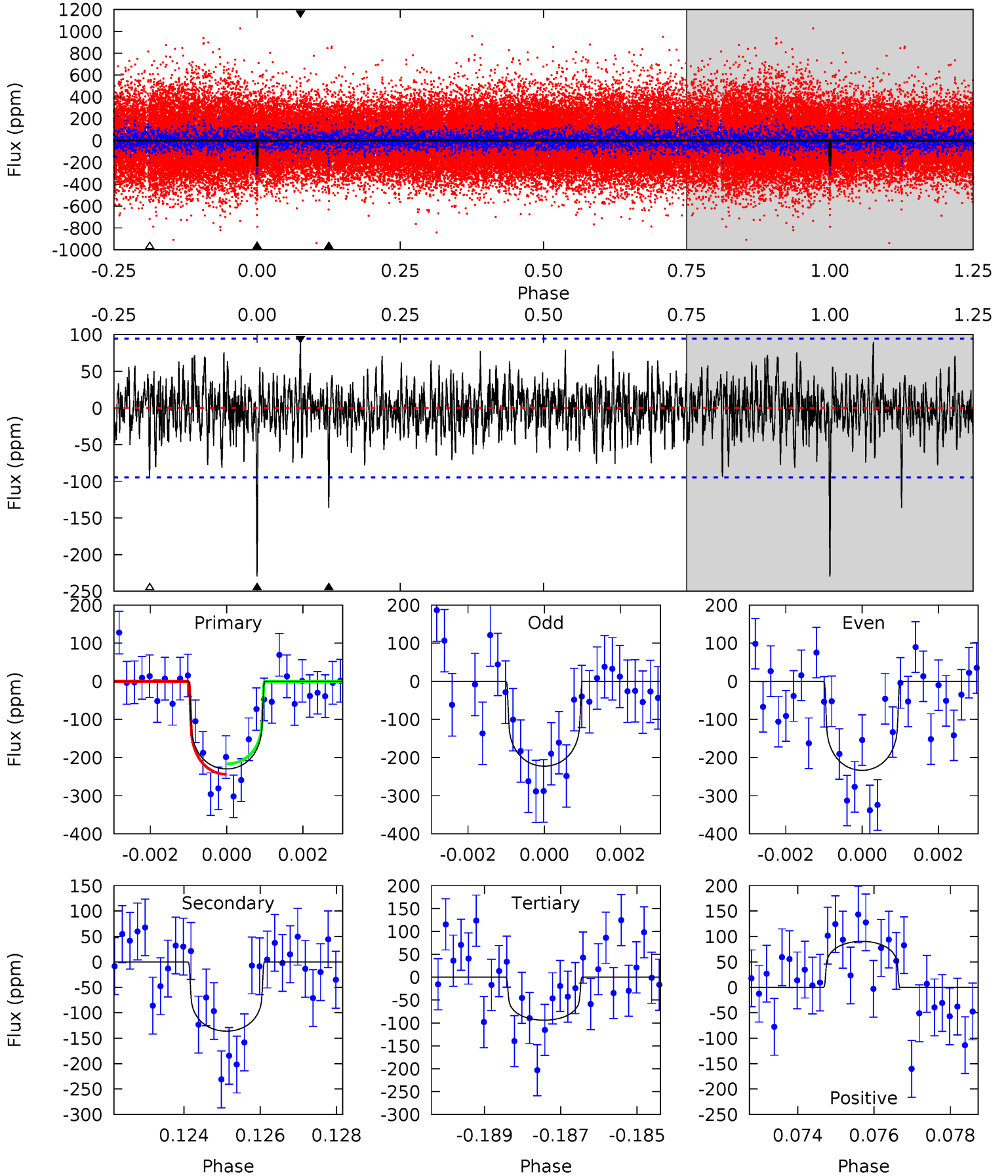
TCE 009301564-01 $P=383.844425$ Days $T_0=424.359255$ (BKJD)



DV Model-Shift Uniqueness Test

009301564-01, P = 383.874568 Days, E = 40.444294 Days

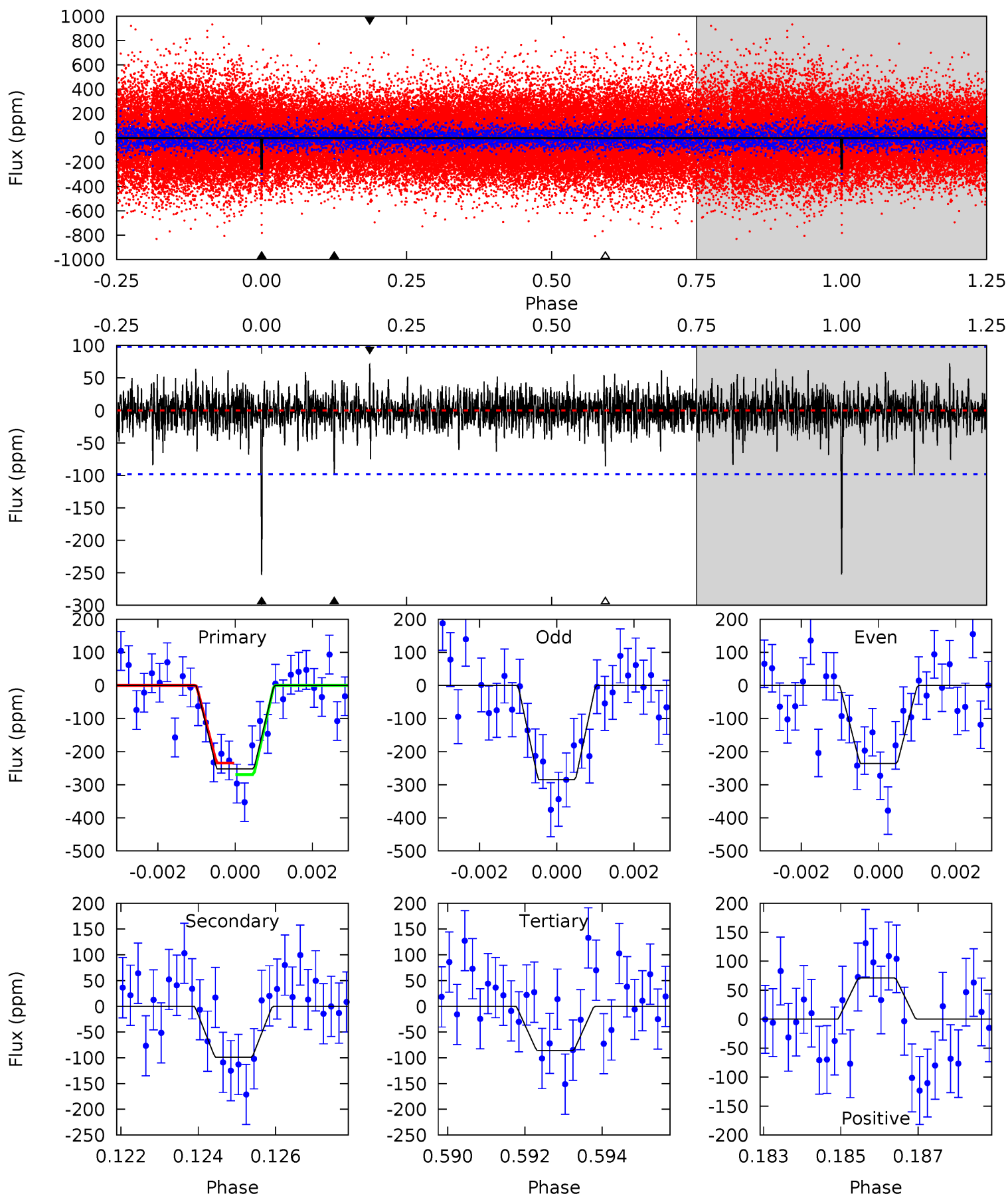
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	7.64	5.28	5.07	5.31	3.07	1.43	7.62	7.82	2.37	2.57	0.29	1.08	0.28	0.76



Alt Model-Shift Uniqueness Test

009301564-01, $P = 383.844425$ Days, $E = 40.514830$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	5.38	4.68	3.88	5.33	3.09	1.06	9.05	9.85	0.70	1.50	1.28	0.94	0.22	0.95



Stellar Parameters For KIC 009301564

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5696^{+169}_{-152}	$4.178^{+0.312}_{-0.168}$	$-0.100^{+0.300}_{-0.300}$	$1.292^{+0.362}_{-0.399}$	$0.916^{+0.125}_{-0.091}$	$0.599^{+1.051}_{-0.295}$
	+3%/-3%	+7%/-4%	+300%/-300%	+28%/-31%	+14%/-10%	+175%/-49%
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 009301564-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-136 ± 18	$1.89^{+0.89}_{-0.81}$	394^{+33}_{-37}	5261^{+1601}_{-741}	21370^{+46556}_{-11638}
Alt.	-99 ± 18	$2.30^{+0.98}_{-0.90}$	392^{+33}_{-33}	4528^{+901}_{-516}	10186^{+18435}_{-5240}

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

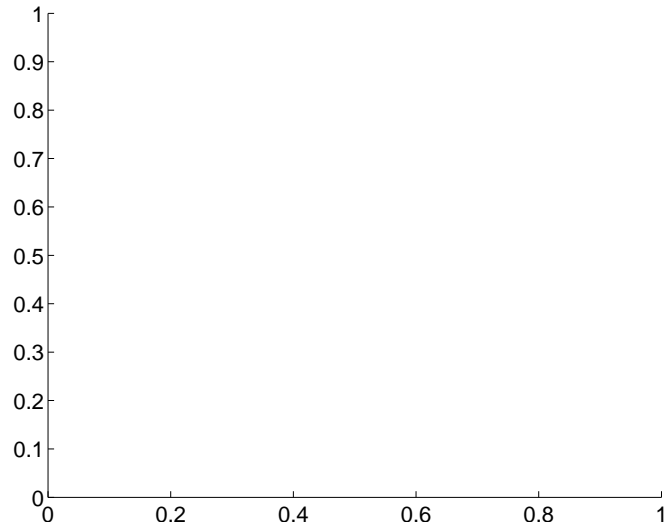
Supplemental centroid analysis for 009301564-01. Kepler magnitude: 13.86. Transit SNR 8.15

There are 0 quarters with good PRF difference image offsets

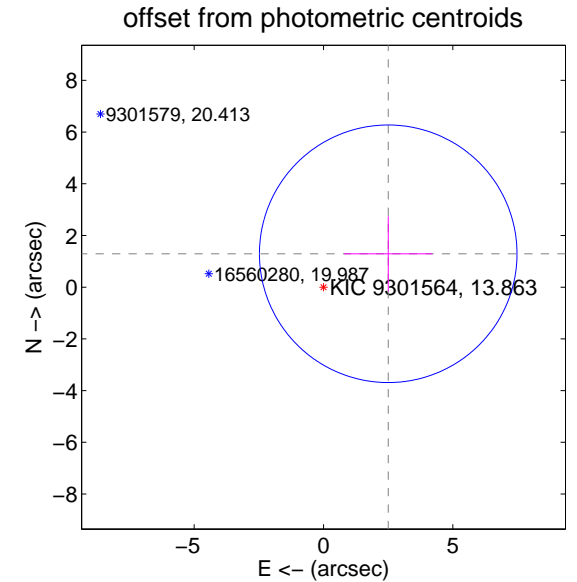
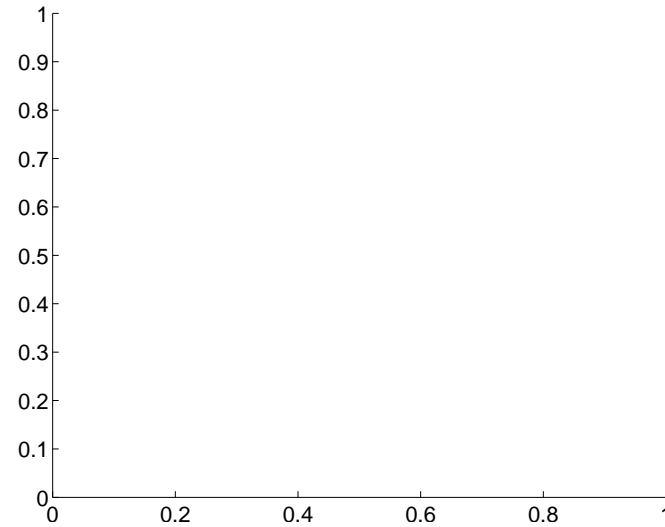
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	2.82 ± 1.66	1.70	-2.50 ± 1.71	1.29 ± 1.45

There is no PRF-fit offset from OOT-fit

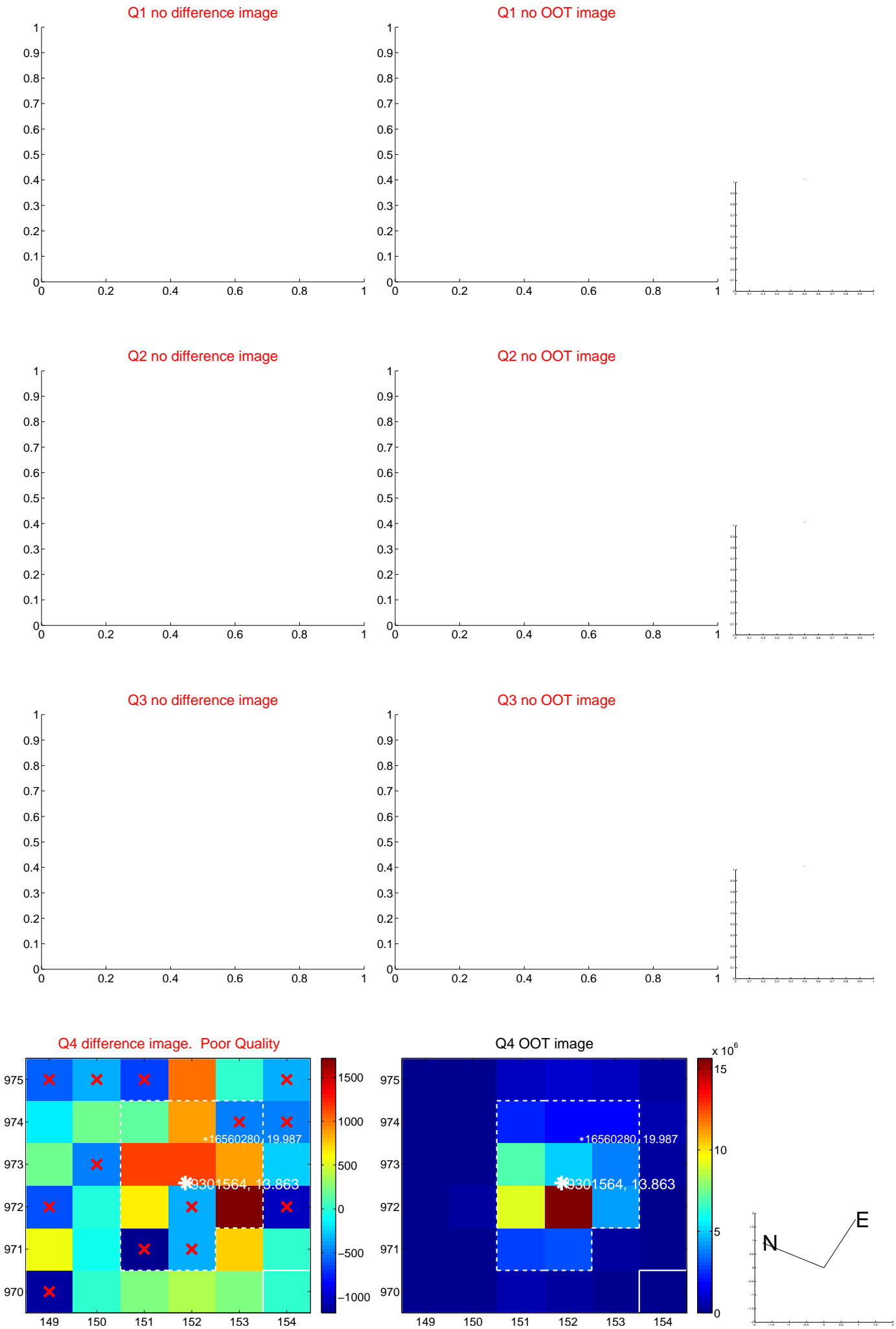


There is no PRF-fit offset from KIC



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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



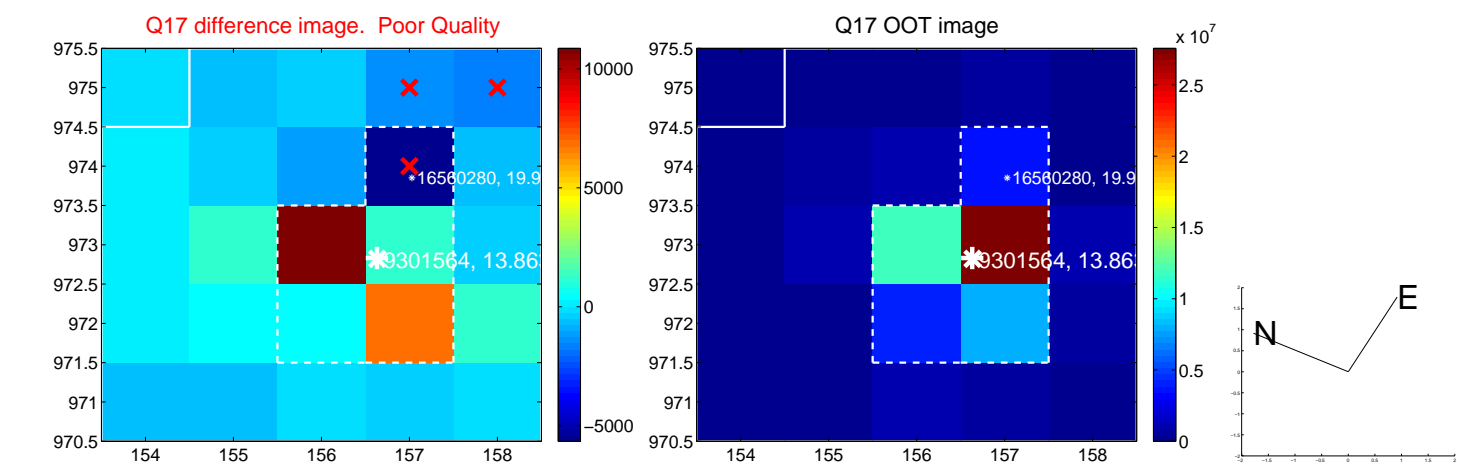
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



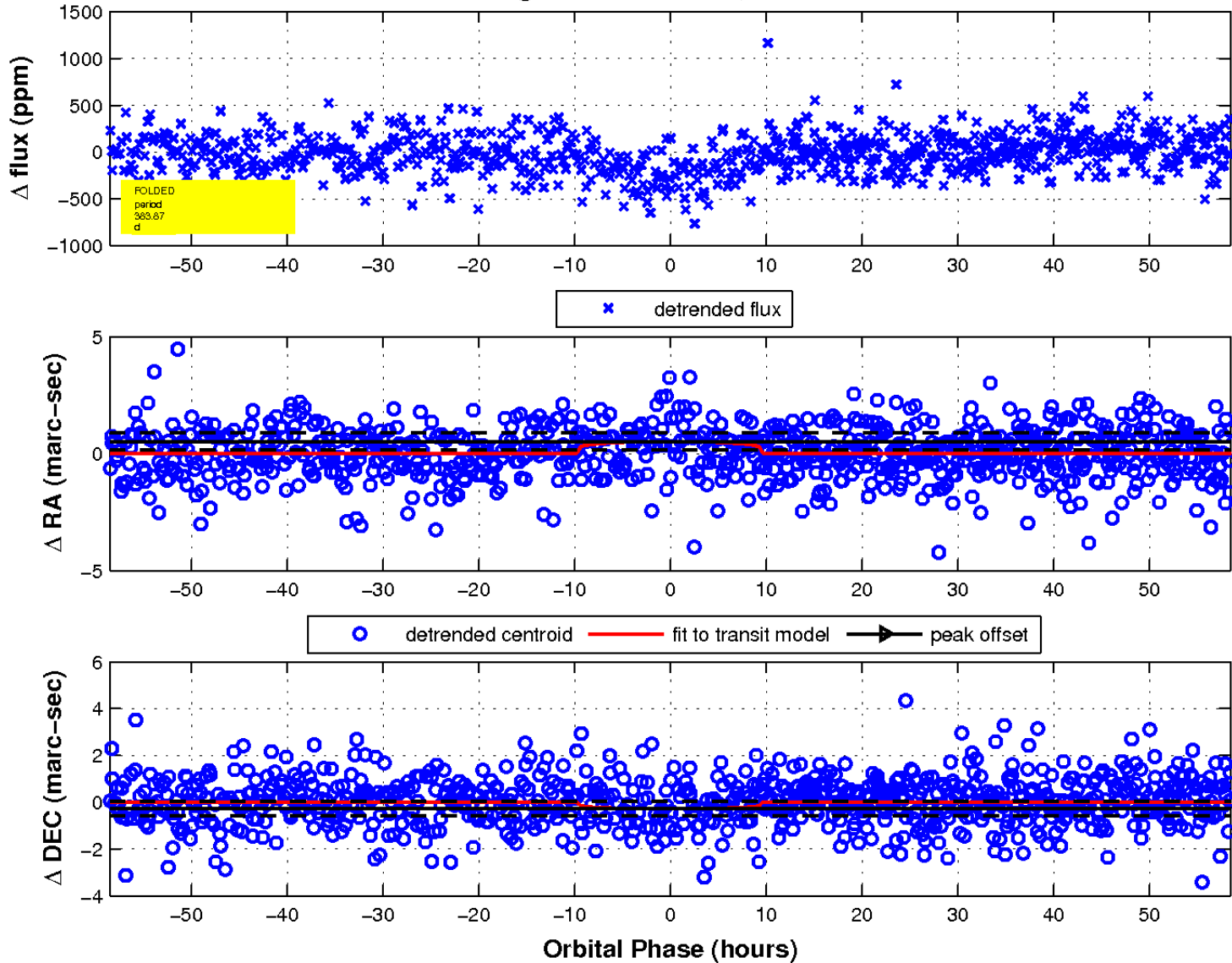
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

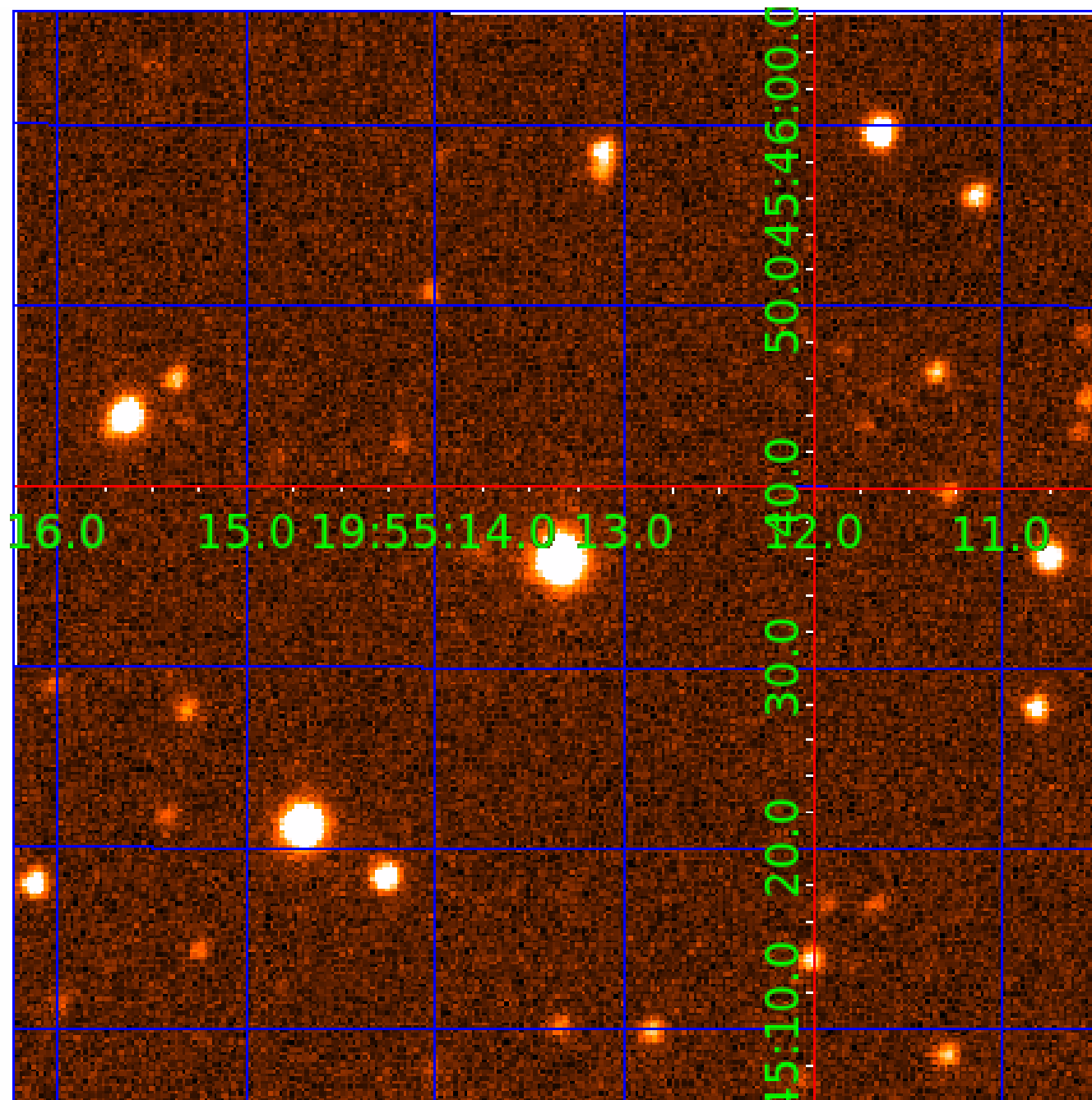


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009301564

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})
009301564-01	OBS	No	383.874568	424.318862	211.0	19.527	8.2	8.1	1.29	5696	1.97	1.56
009301564-02	OBS	7157.01	47.966929	160.732977	71.8	18.617	7.4	7.9	1.29	5696	1.17	24.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009301564-01	OBS	PC	0.58	0	0	0	0	CENT_FEW_DIFFS
009301564-02	OBS	PC	0.55	0	0	0	0	CENT_FEW_MEAS

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 009301564-02

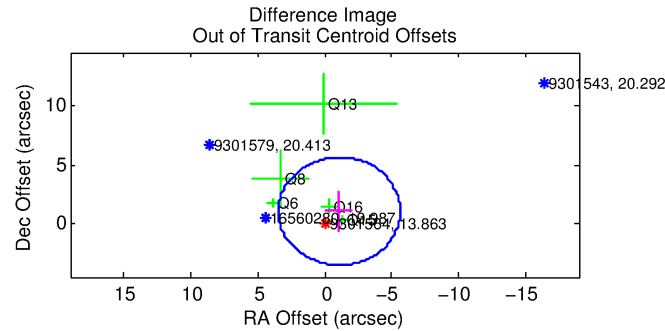
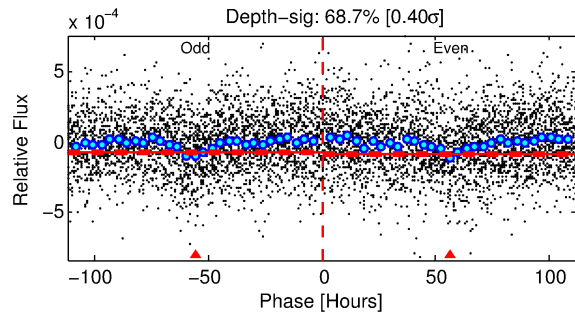
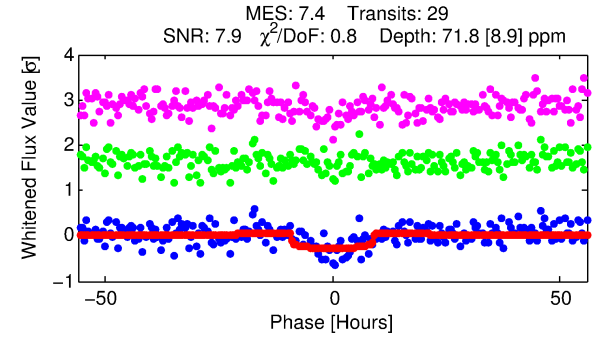
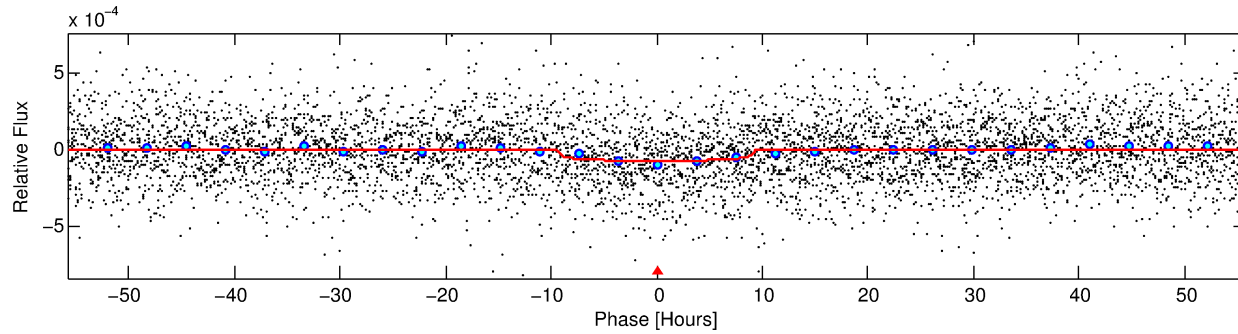
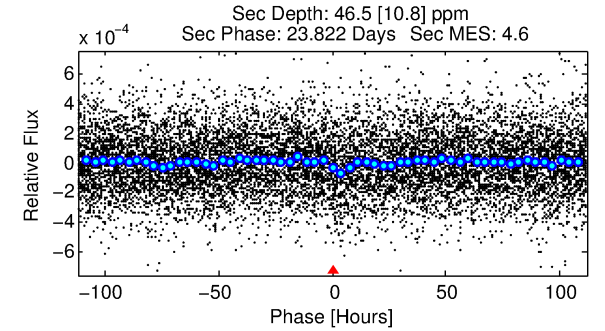
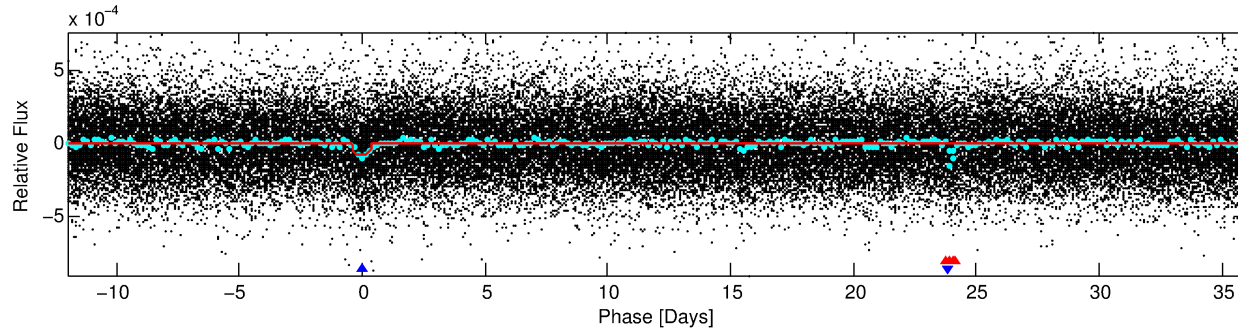
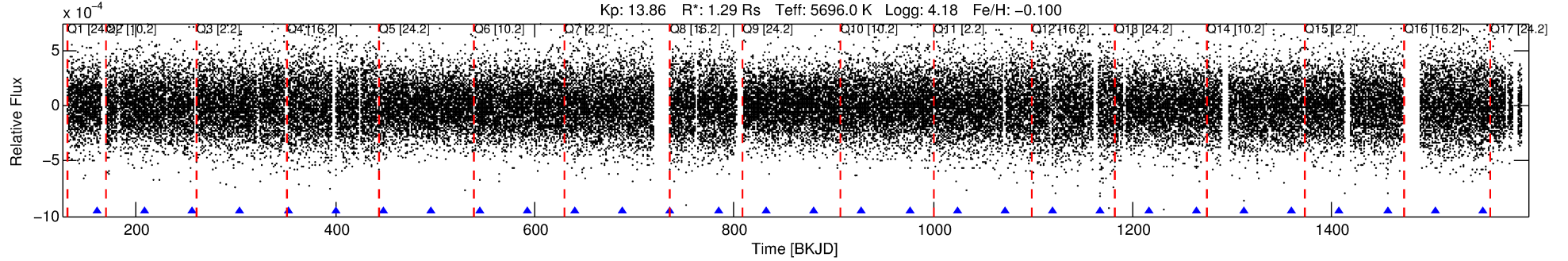
No Significant Match Found

DV One-Page Summary

KIC: 9301564 Candidate: 2 of 2 Period: 47.967 d

KOI: K07157 Corr: No Ephemeris Match

Kp: 13.86 R*: 1.29 Rs Teff: 5696.0 K Logg: 4.18 Fe/H: -0.100



DV Fit Results:

Period = 47.96693 [0.00169] d
Epoch = 160.7330 [0.0292] BKJD
Rp/R* = 0.0083 [0.0039]
a/R* = 14.28 [29.37]
b = 0.70 [1.51]
Seff = 24.97 [13.35]
Teff = 570 [76] K
Rp = 1.17 [0.65] Re
a = 0.2511 [0.0793] AU
Ag = 1181.00 [1293.63] [0.91σ]
Teffp = 5166 [1254] K [3.66σ]

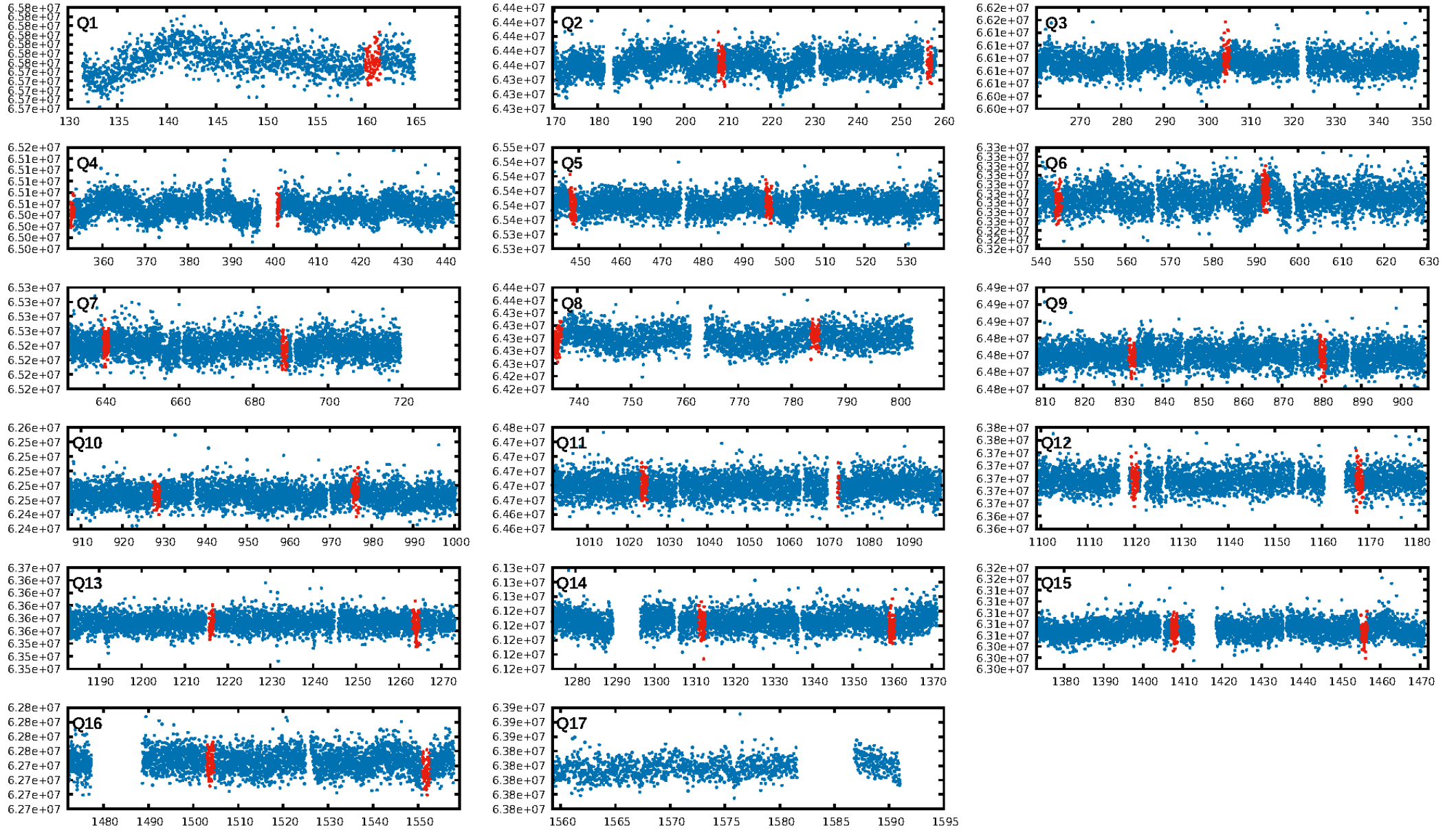
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [298.81σ]
ModelChiSquare2-sig: 81.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.12e-11
RollingBand-fgt: 1.00 [28/28]
GhostDiagnostic-chr: 3.221
Centroid-sig: 20.8%
Centroid-so: 1.674 arcsec [0.96σ]
OotOffset-rm: 1.522 arcsec [1.00σ]
KicOffset-rm: 1.586 arcsec [1.09σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 1.00 [15/15]

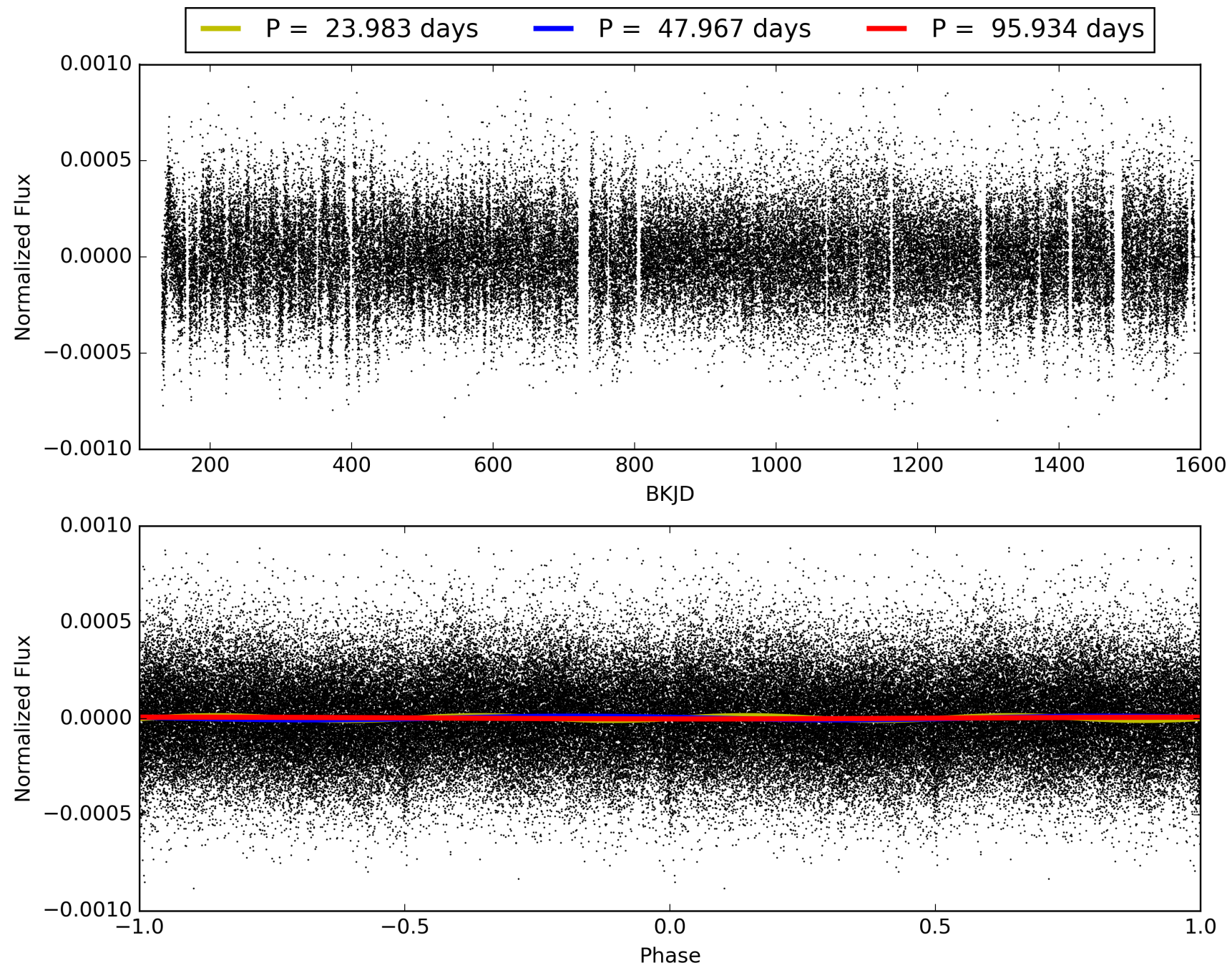
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:57:25 Z

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

TCE 009301564-02, PDC Light Curves

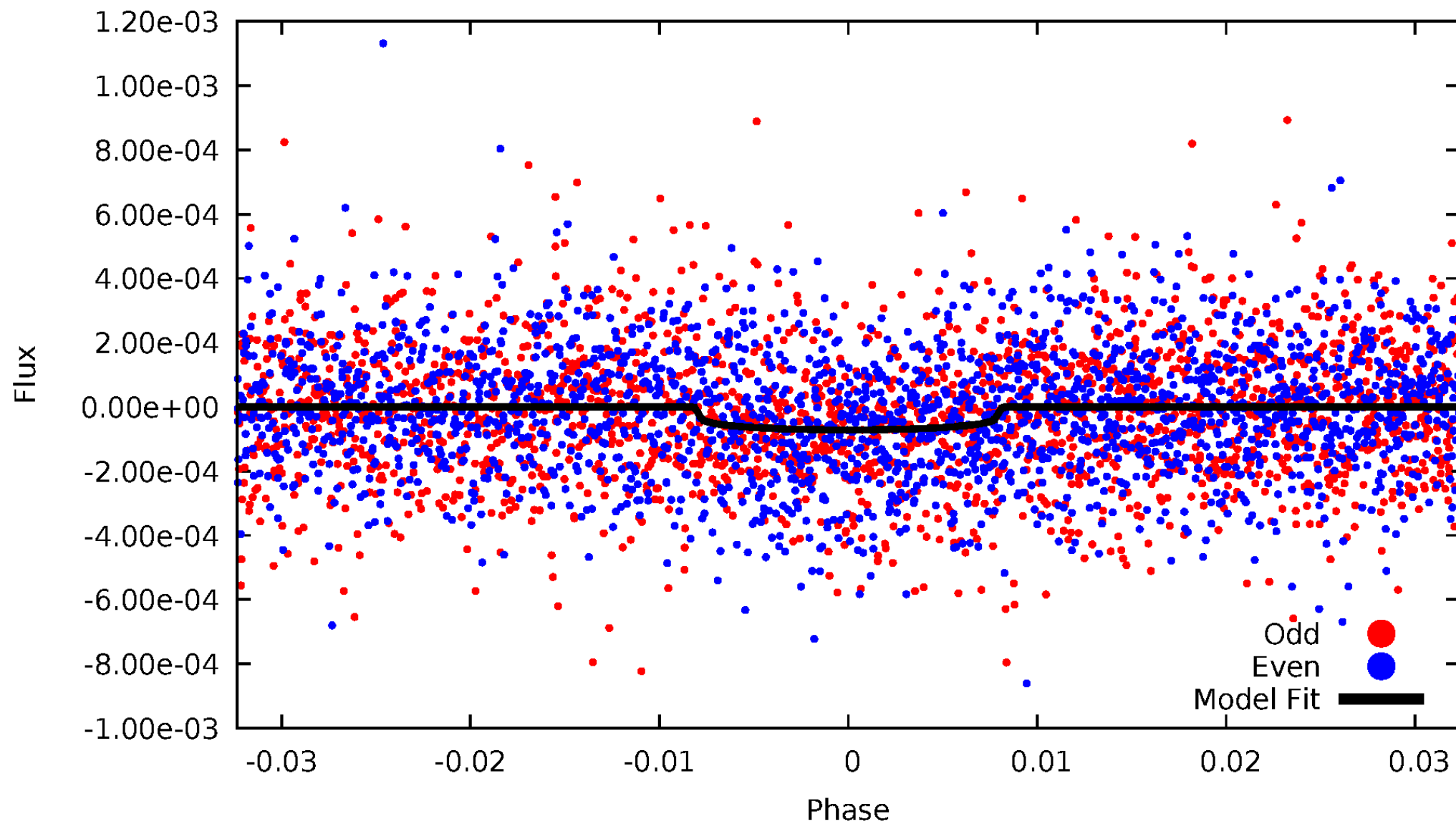


TCE 009301564-02



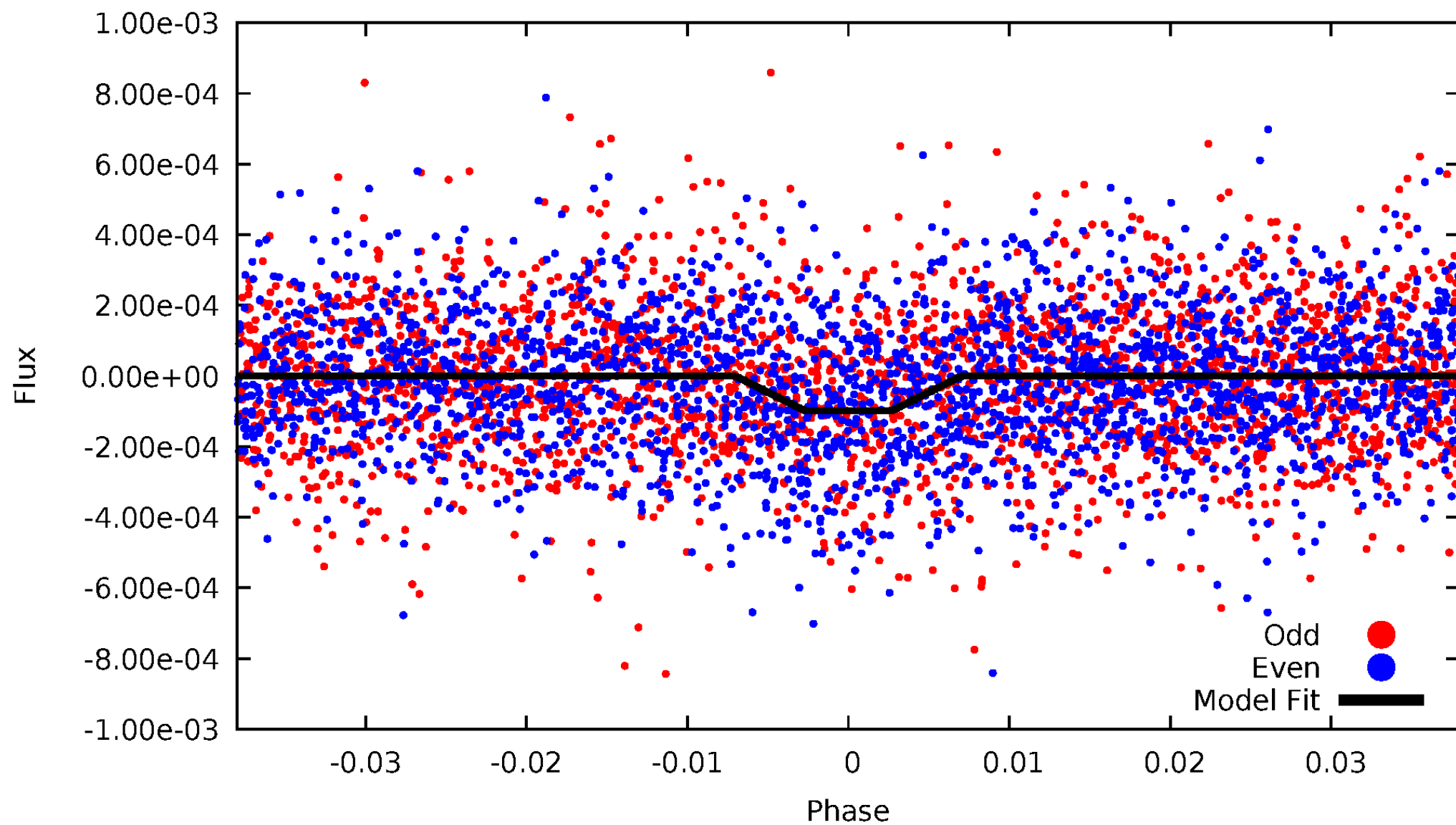
DV Odd/Even

TCE 009301564-02



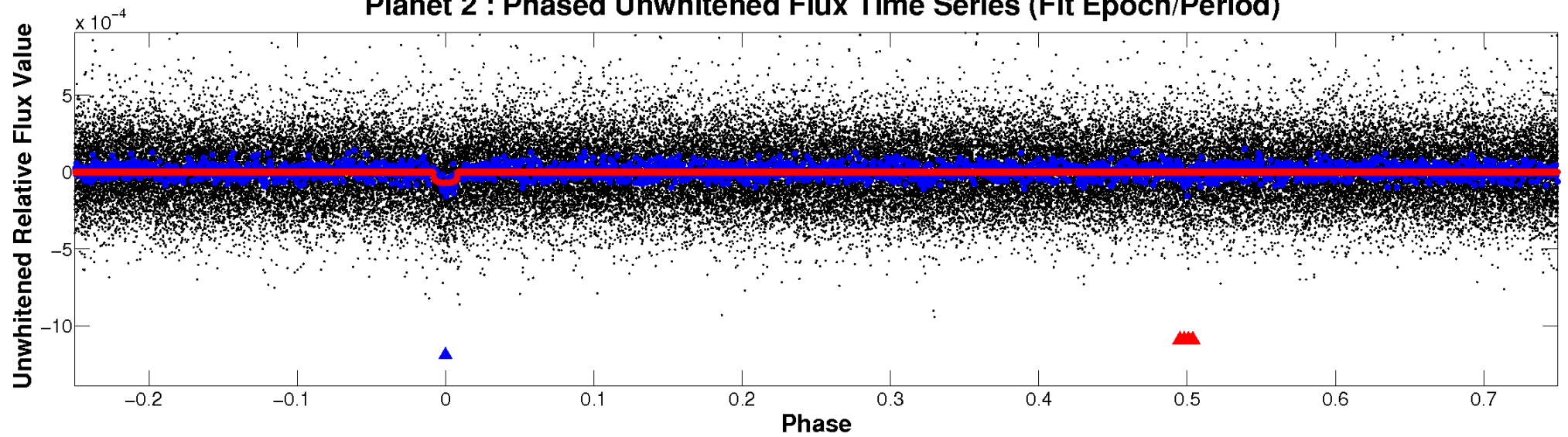
ALT Odd/Even

TCE 009301564-02

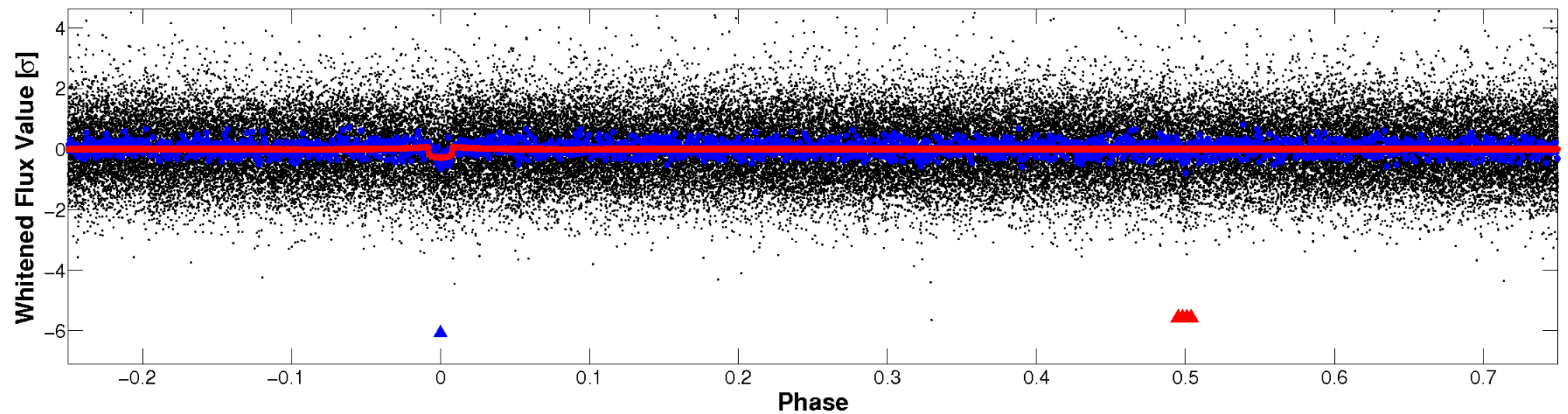


Non-Whitened Vs. Whitened Light Curve

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

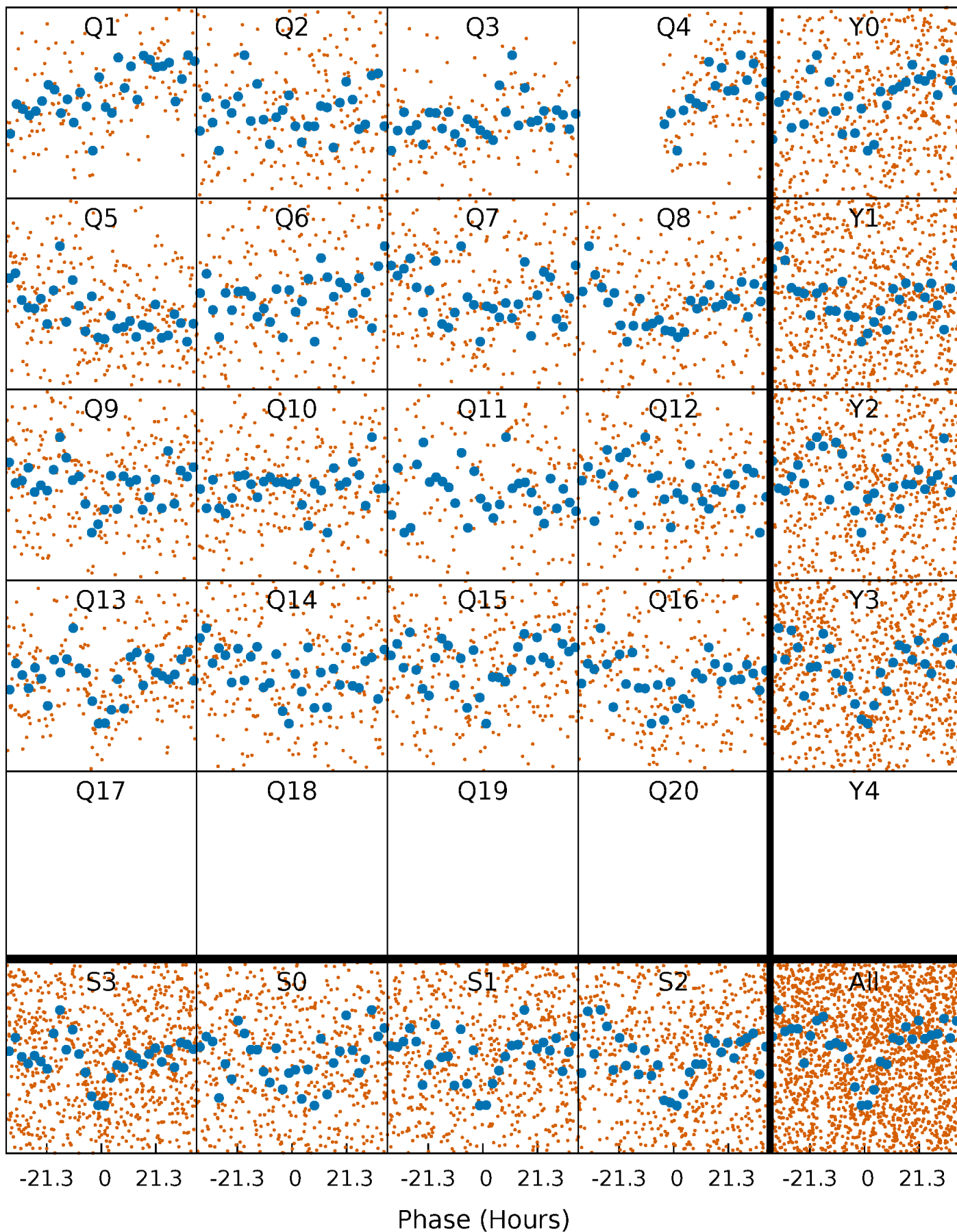


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



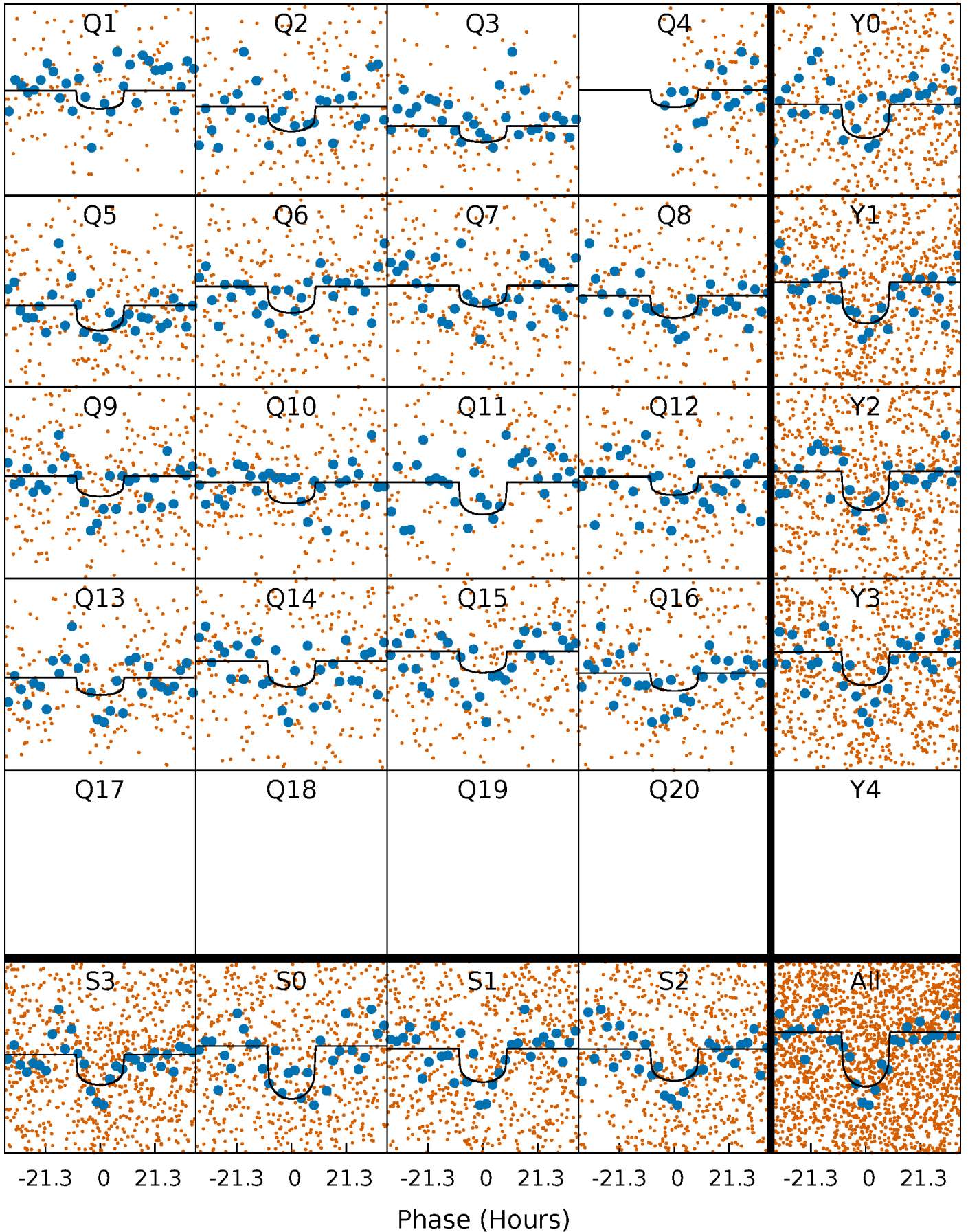
PDC Quarter-Phased Transit Curves

TCE 009301564-02 P= 47.966929 Days $T_0=160.732977$ (BKJD)



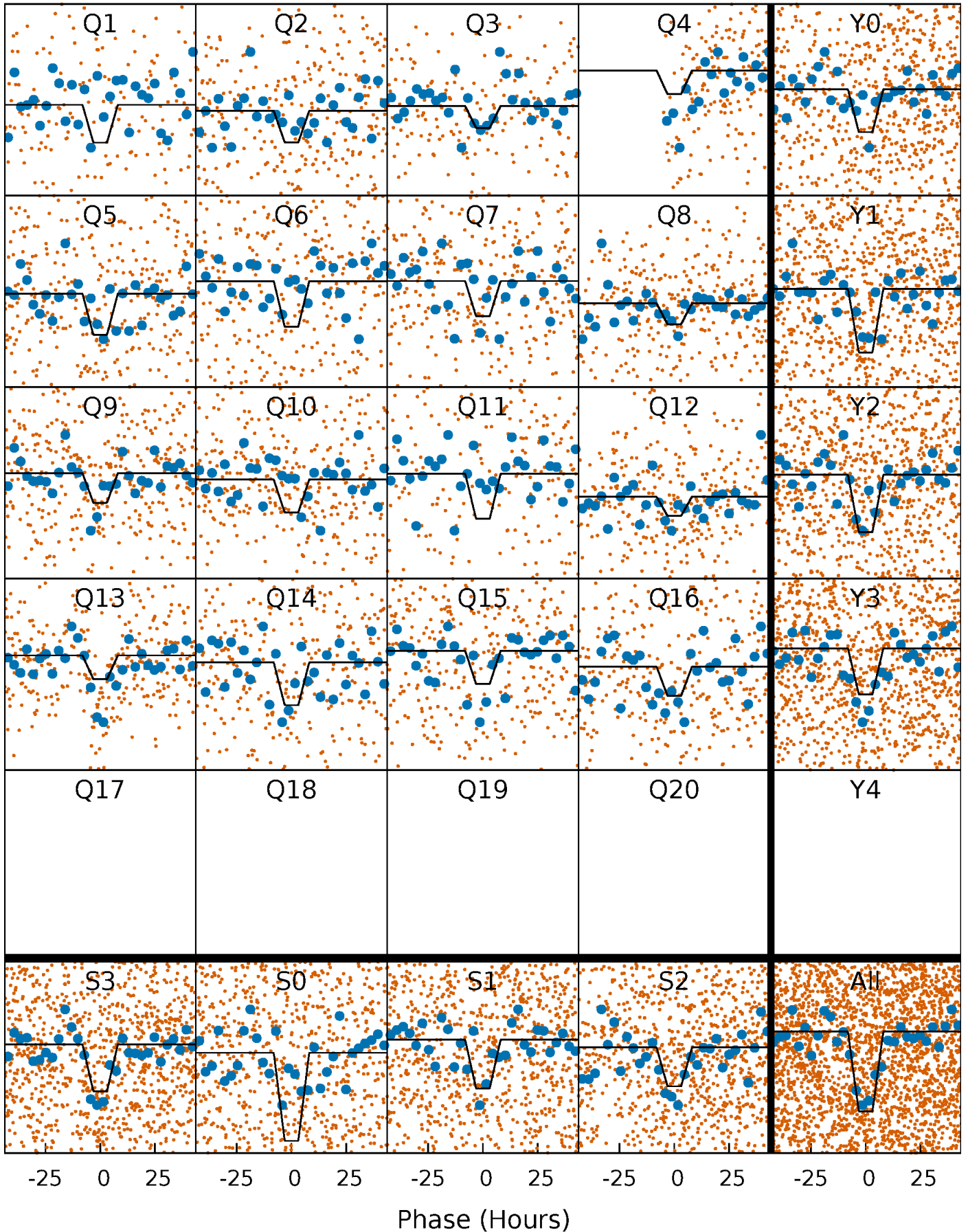
DV Quarter-Phased Transit Curves

TCE 009301564-02 P= 47.966929 Days $T_0=160.732977$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

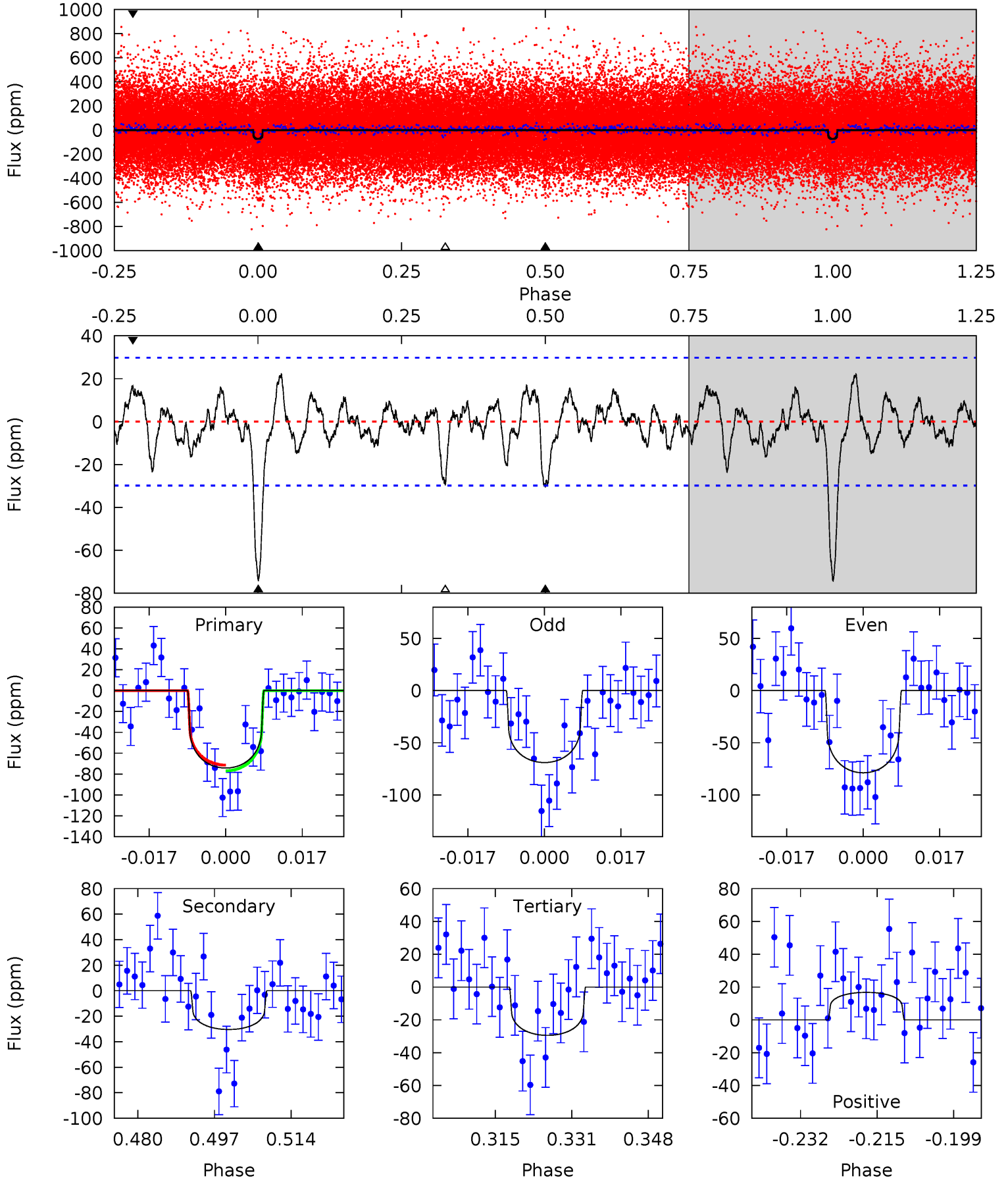
TCE 009301564-02 P= 47.968031 Days $T_0=160.728521$ (BKJD)



DV Model-Shift Uniqueness Test

009301564-02, P = 47.966929 Days, E = 112.766048 Days

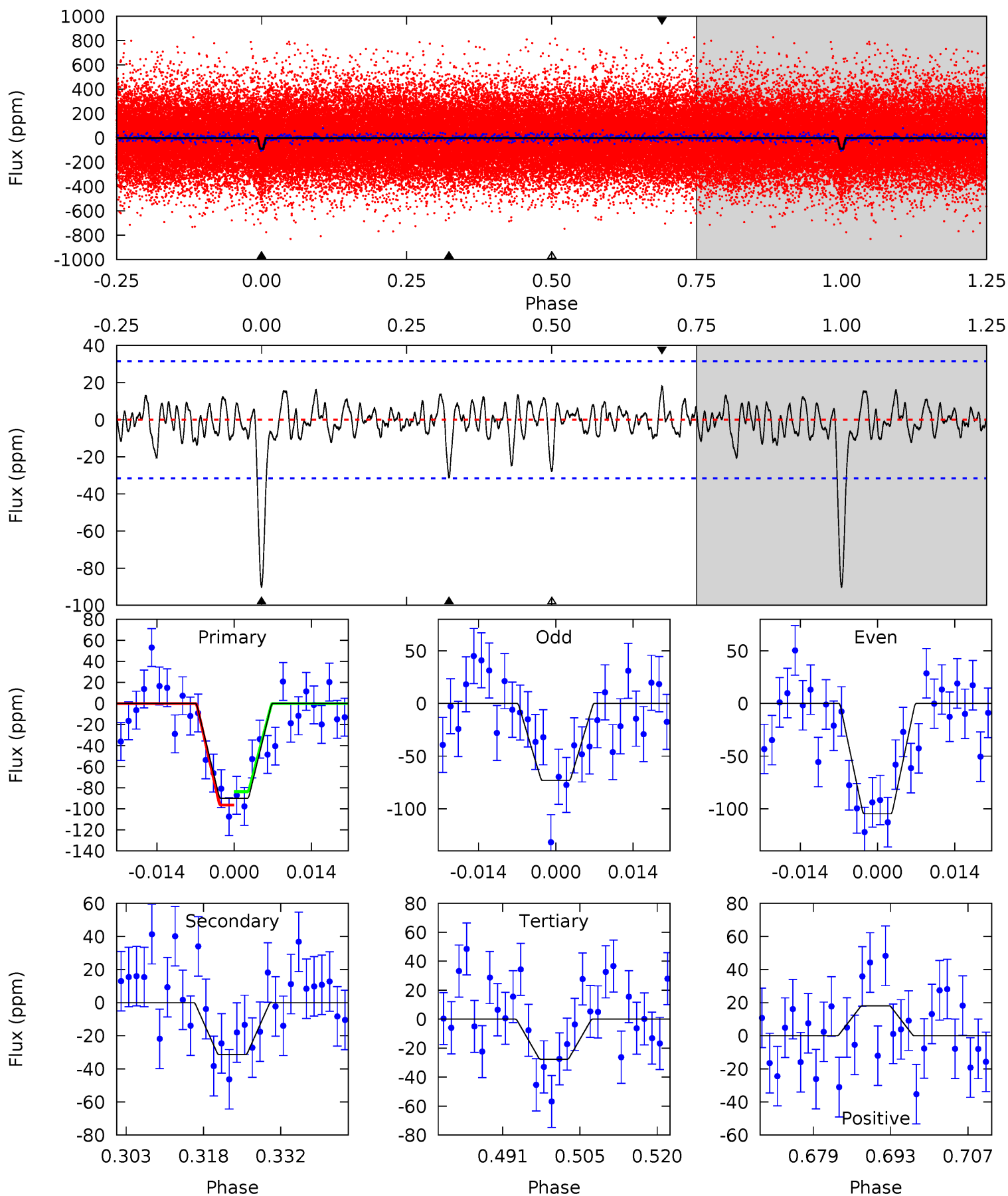
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	5.03	4.87	2.77	4.93	2.40	1.33	7.40	9.50	0.16	2.26	0.81	1.08	0.23	0.46



Alt Model-Shift Uniqueness Test

009301564-02, P = 47.968031 Days, E = 112.760490 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	4.93	4.34	2.84	4.96	2.45	1.09	9.80	11.3	0.59	2.08	2.49	1.18	0.17	1.00



Stellar Parameters For KIC 009301564

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5696^{+169}_{-152}	$4.178^{+0.312}_{-0.168}$	$-0.100^{+0.300}_{-0.300}$	$1.292^{+0.362}_{-0.399}$	$0.916^{+0.125}_{-0.091}$	$0.599^{+1.051}_{-0.295}$
	+3%/-3%	+7%/-4%	+300%/-300%	+28%/-31%	+14%/-10%	+175%/-49%
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 009301564-02 / KOI 7157.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-30 ± 6	$1.15^{+0.59}_{-0.51}$	786^{+63}_{-66}	4709^{+1337}_{-658}	806^{+1870}_{-458}
Alt.	-31 ± 6	$1.32^{+0.63}_{-0.59}$	787^{+63}_{-74}	4496^{+1124}_{-574}	638^{+1296}_{-358}

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

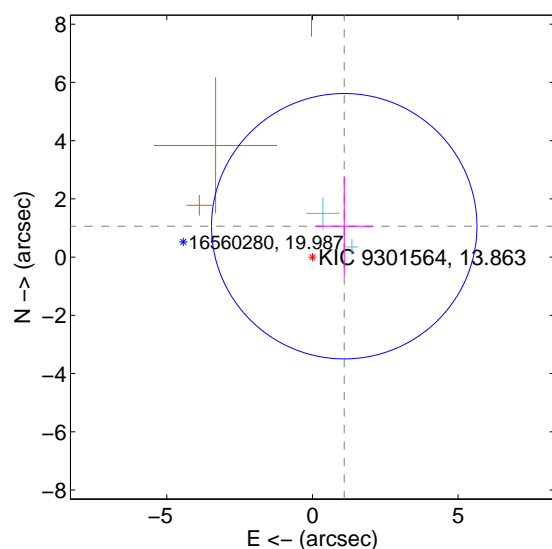
Supplemental centroid analysis for 009301564-02. Kepler magnitude: 13.86. Transit SNR 7.91

There are 2 quarters with good PRF difference image offsets

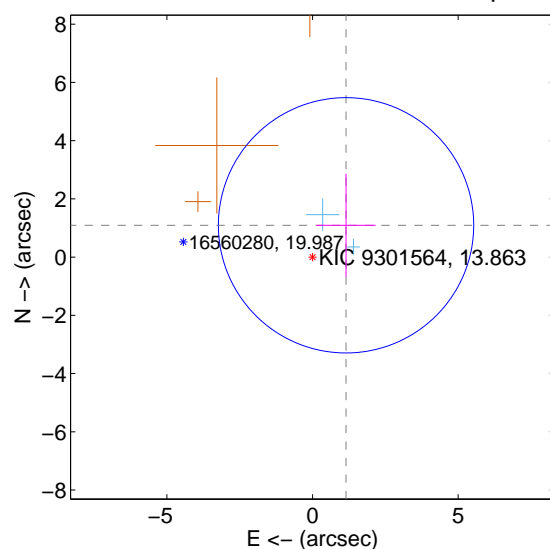
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.522 ± 1.519	1.00	-1.092 ± 0.994	1.061 ± 1.717
PRF-fit source offset from KIC position	1.586 ± 1.461	1.09	-1.151 ± 1.016	1.092 ± 1.771
photometric centroid source offset	1.67 ± 1.75	0.96	-0.52 ± 1.90	-1.59 ± 1.73

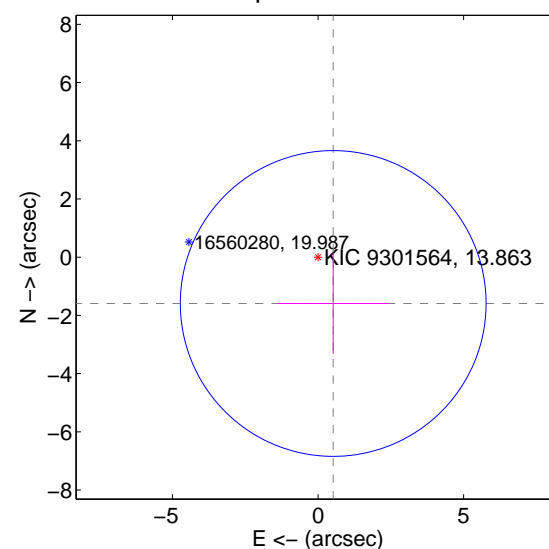
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

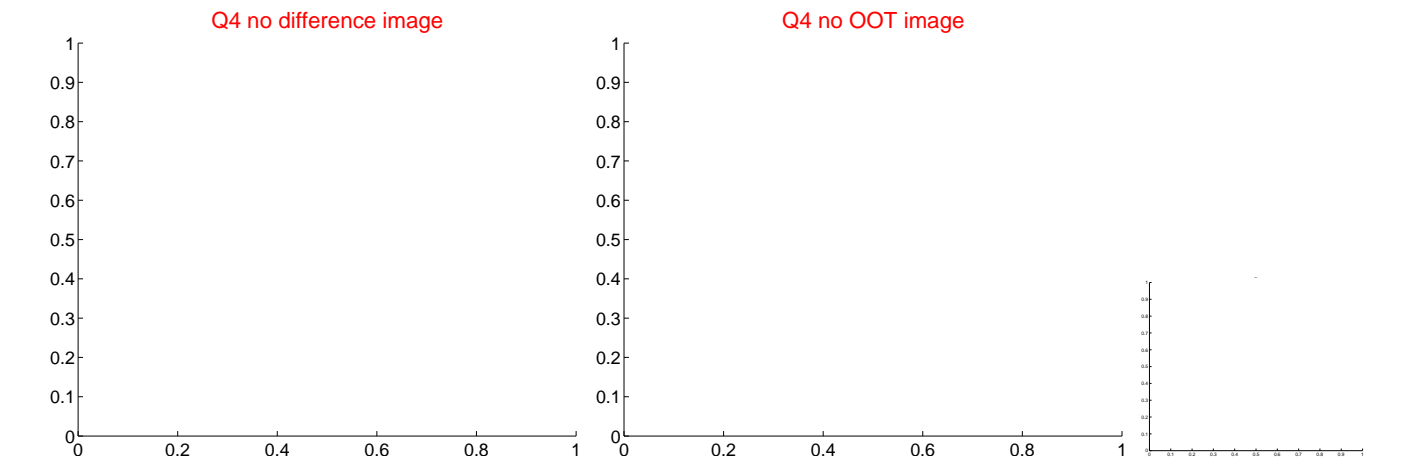
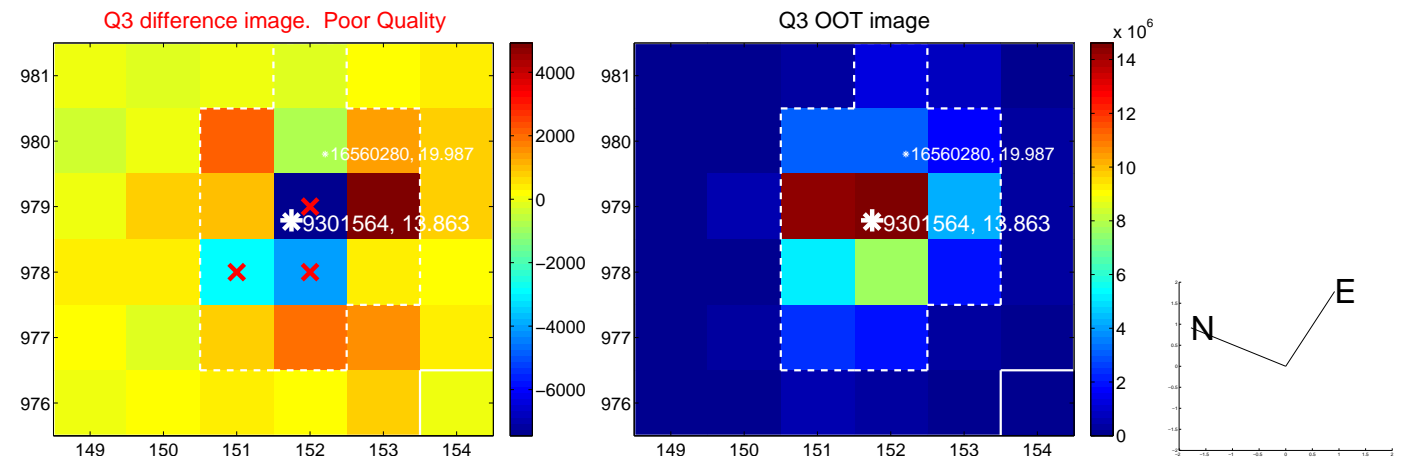
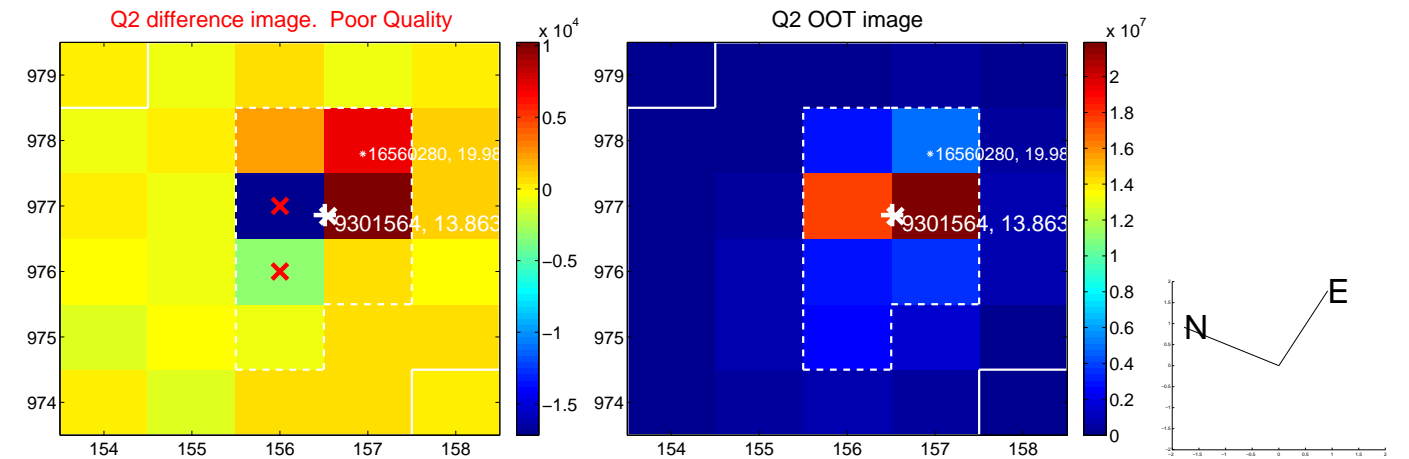
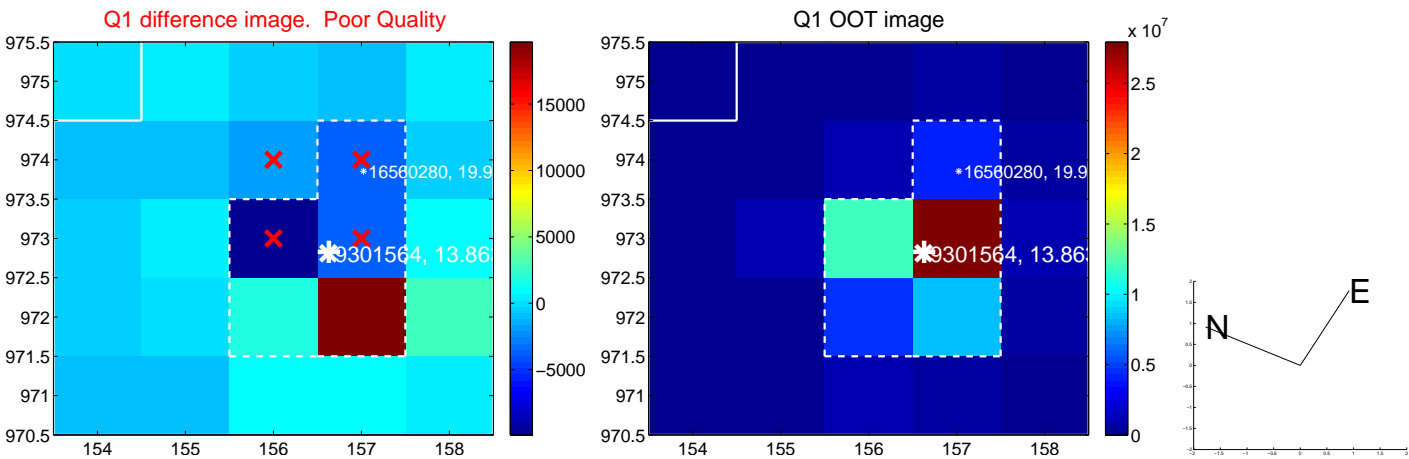


offset from photometric centroids

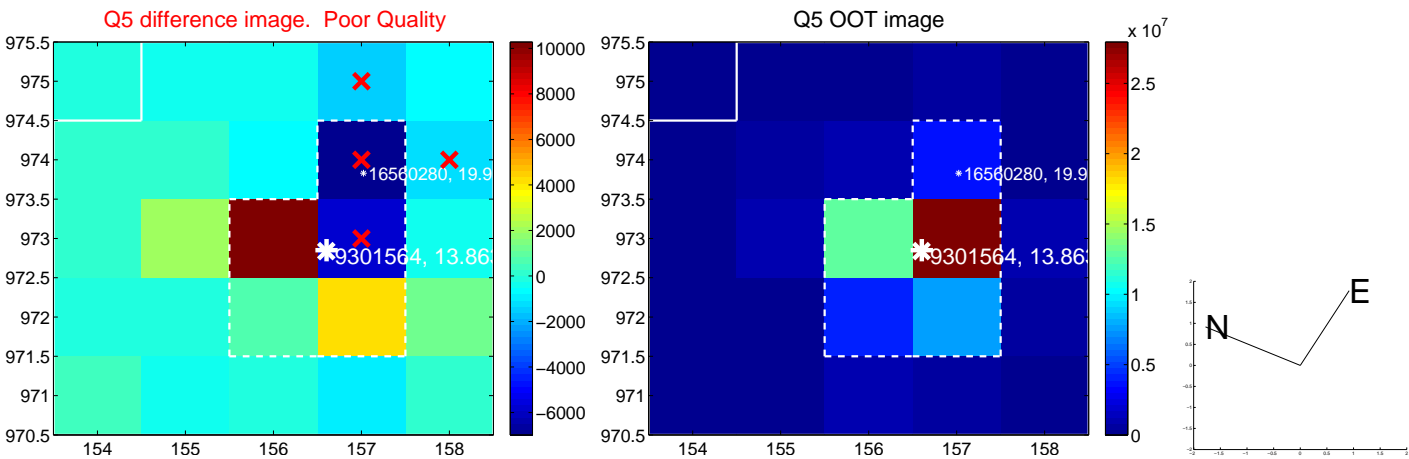


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

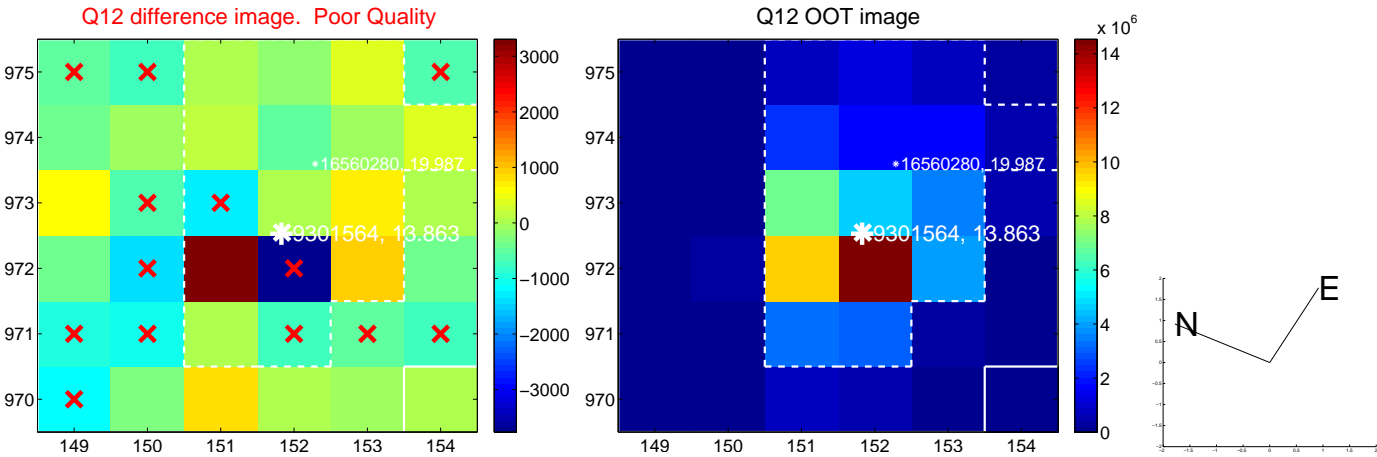
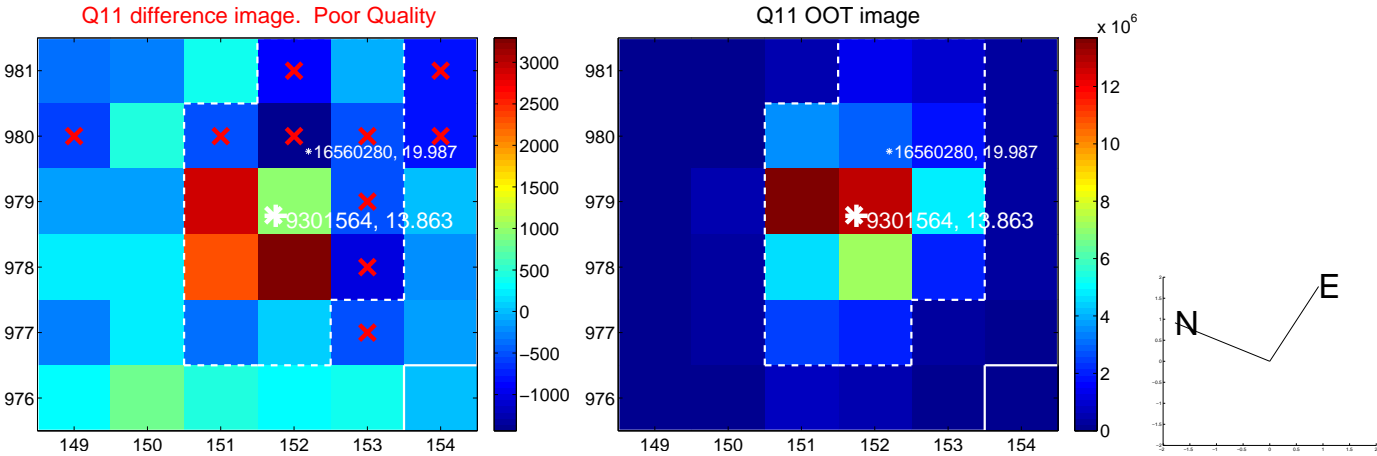
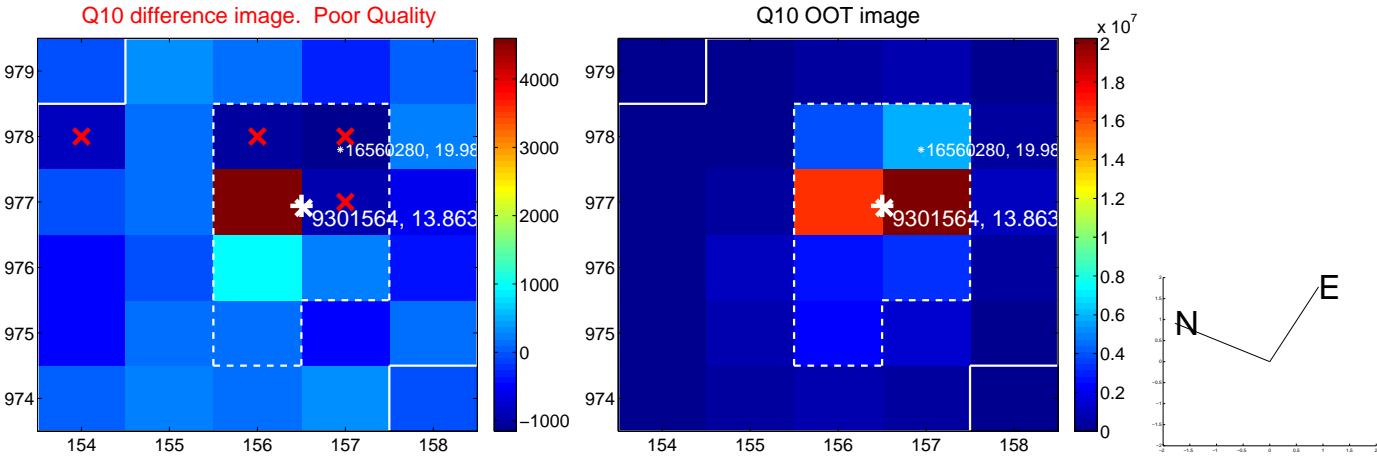
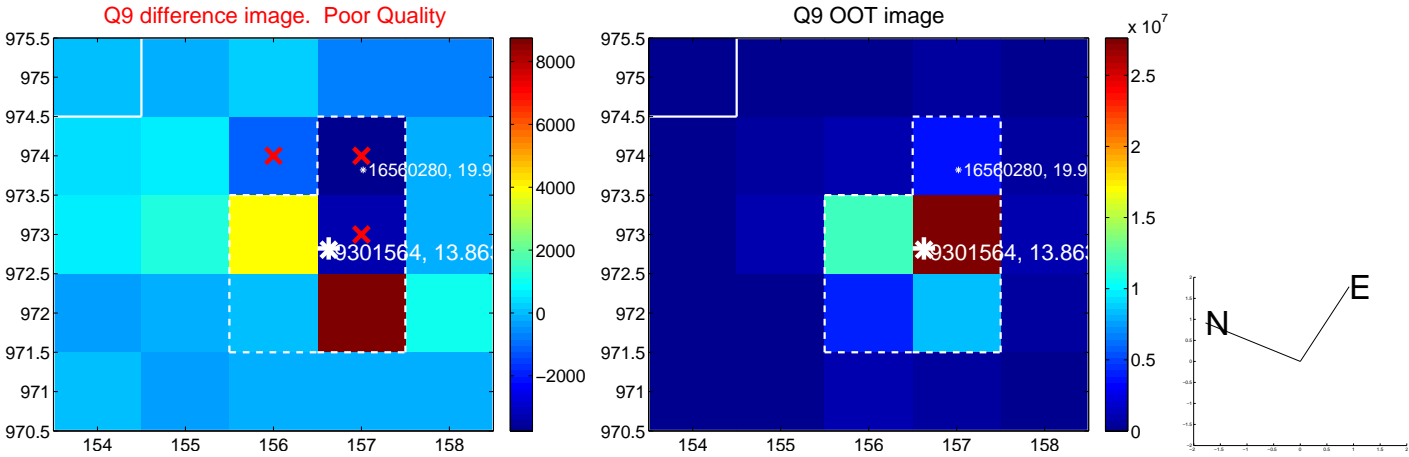
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



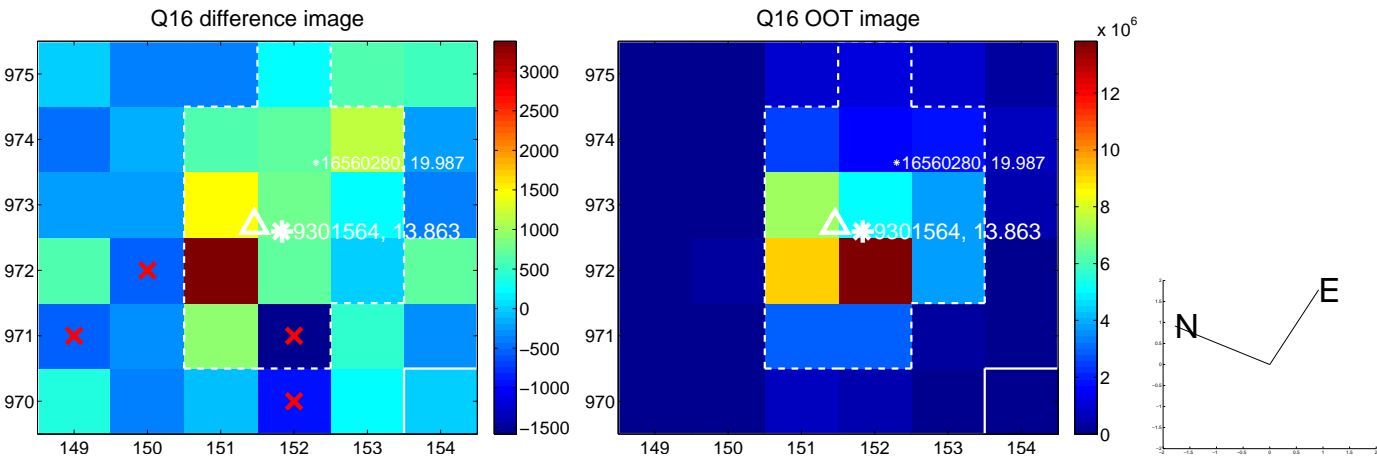
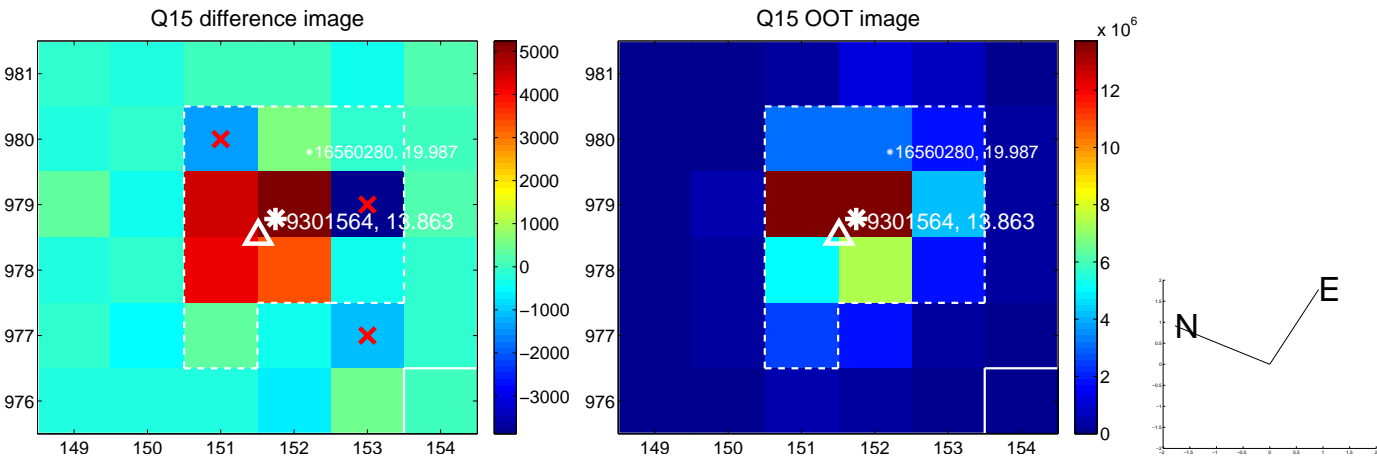
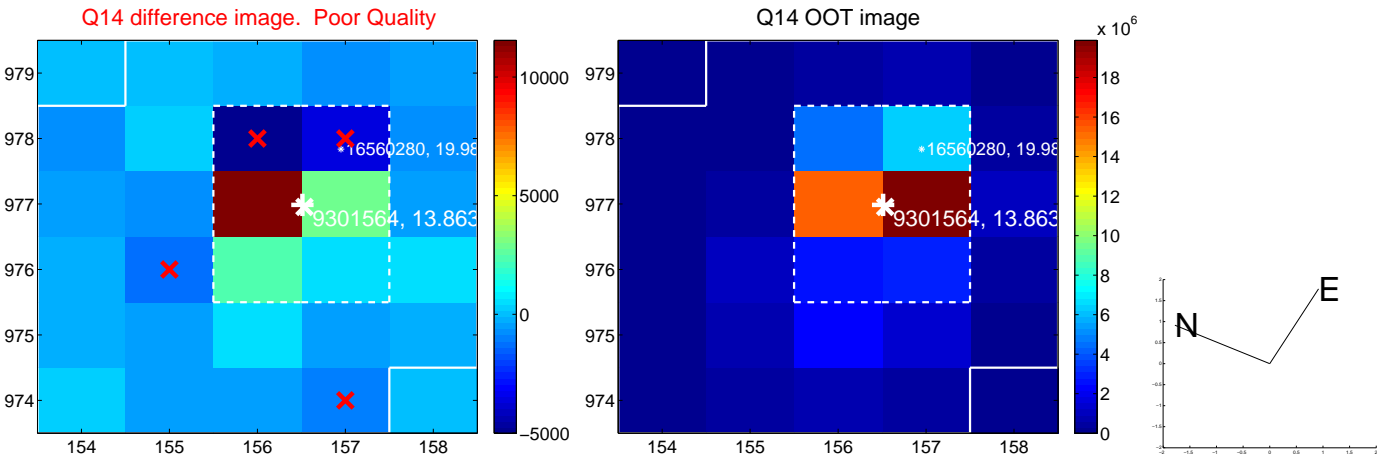
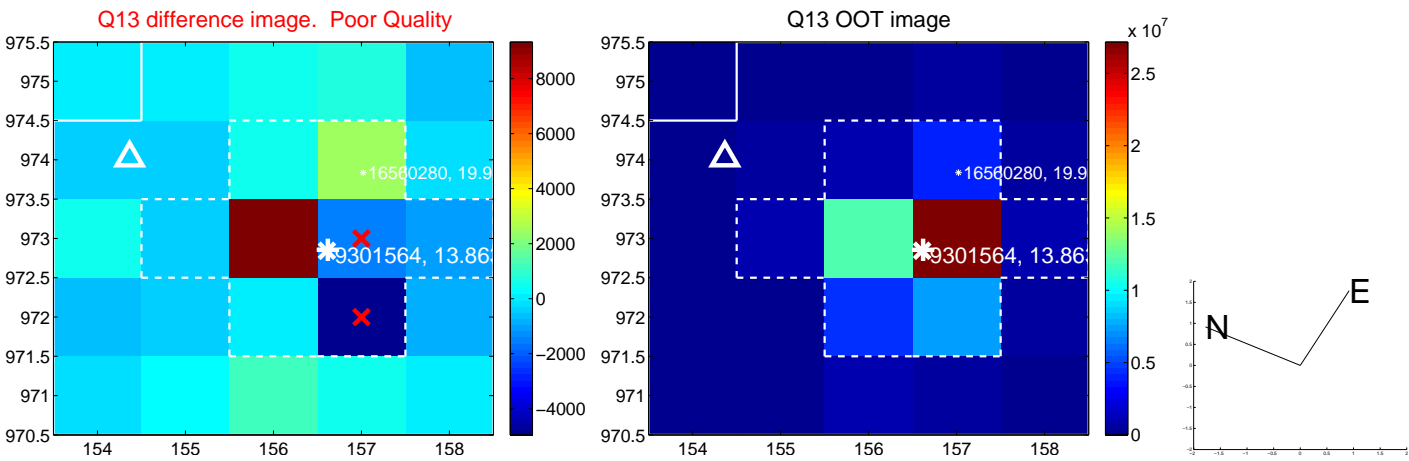
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



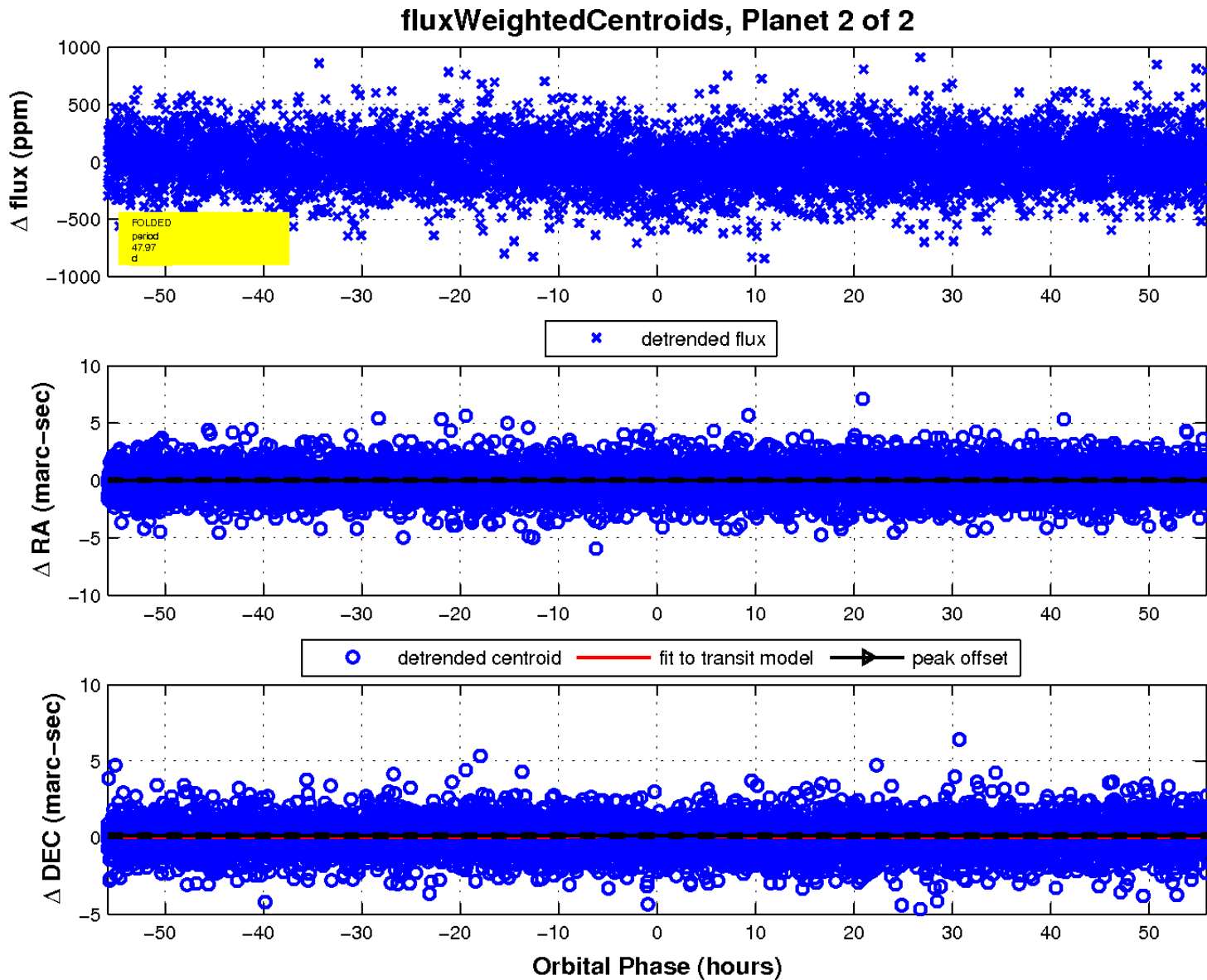
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

