

KIC 005371102

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})
005371102-01	OBS	No	304.494830	206.165911	687.5	7.745	7.2	5.1	0.82	5435	2.30	0.71
005371102-02	OBS	No	493.726934	510.024835	1436.0	7.608	8.5	7.3	0.82	5435	3.71	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005371102-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
005371102-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

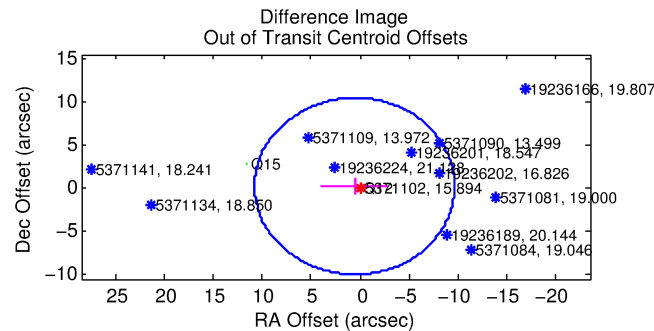
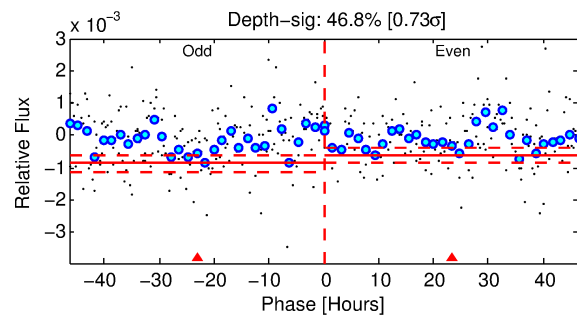
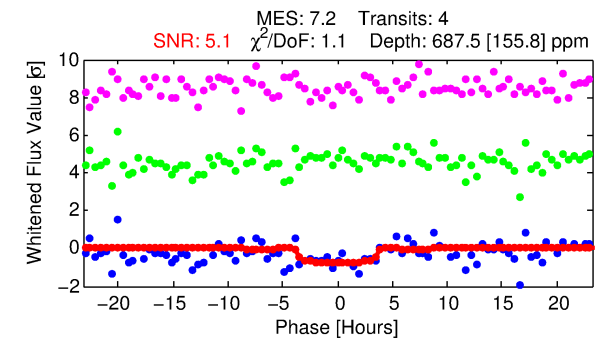
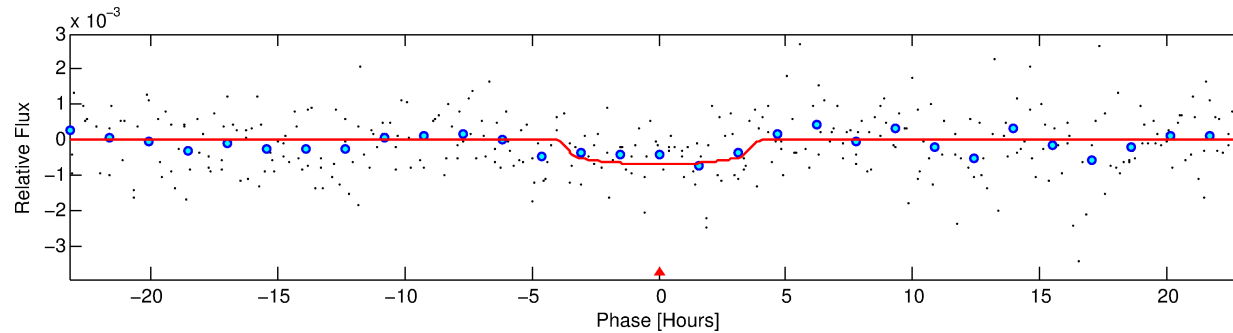
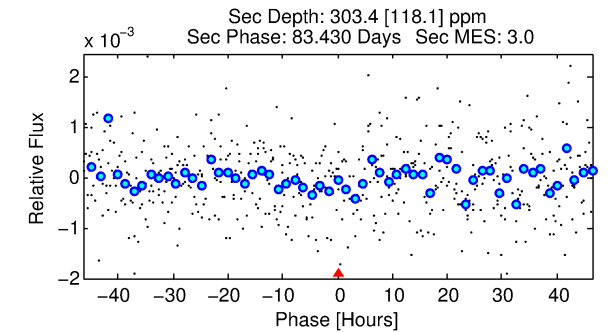
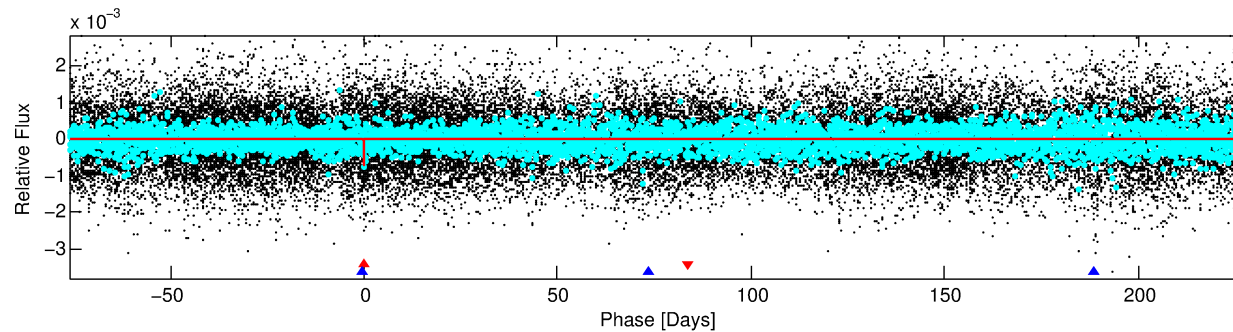
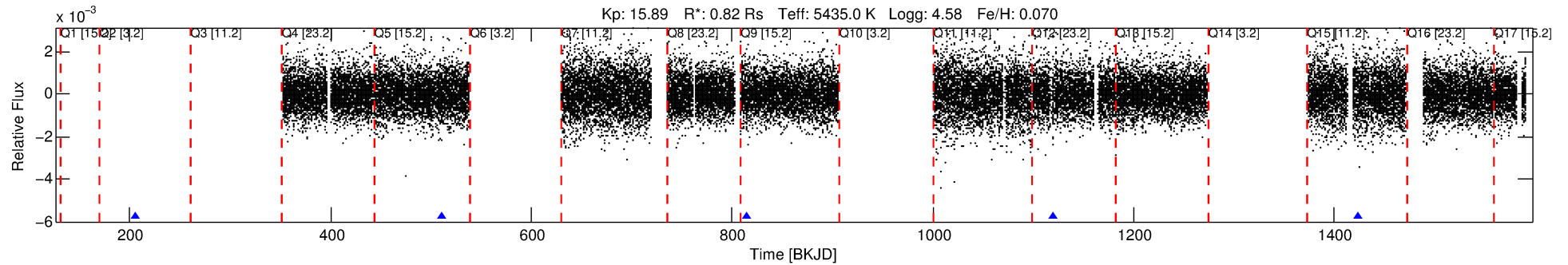
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005371102-01

No Significant Match Found

DV One-Page Summary

KIC: 5371102 Candidate: 1 of 2 Period: 304.495 d



DV Fit Results:

Period = 304.49483 [0.01465] d
Epoch = 206.1659 [0.0408] BKJD
Rp/R* = 0.0256 [0.0296]
a/R* = 225.88 [1022.71]
b = 0.70 [3.38]
Seff = 0.71 [0.23]
Teq = 234 [19] K
Rp = 2.30 [2.71] Re
a = 0.8670 [0.1698] AU
Ag = 23673.63 [55943.69] [0.42σ]
Teffp = 4483 [2633] K [1.61σ]

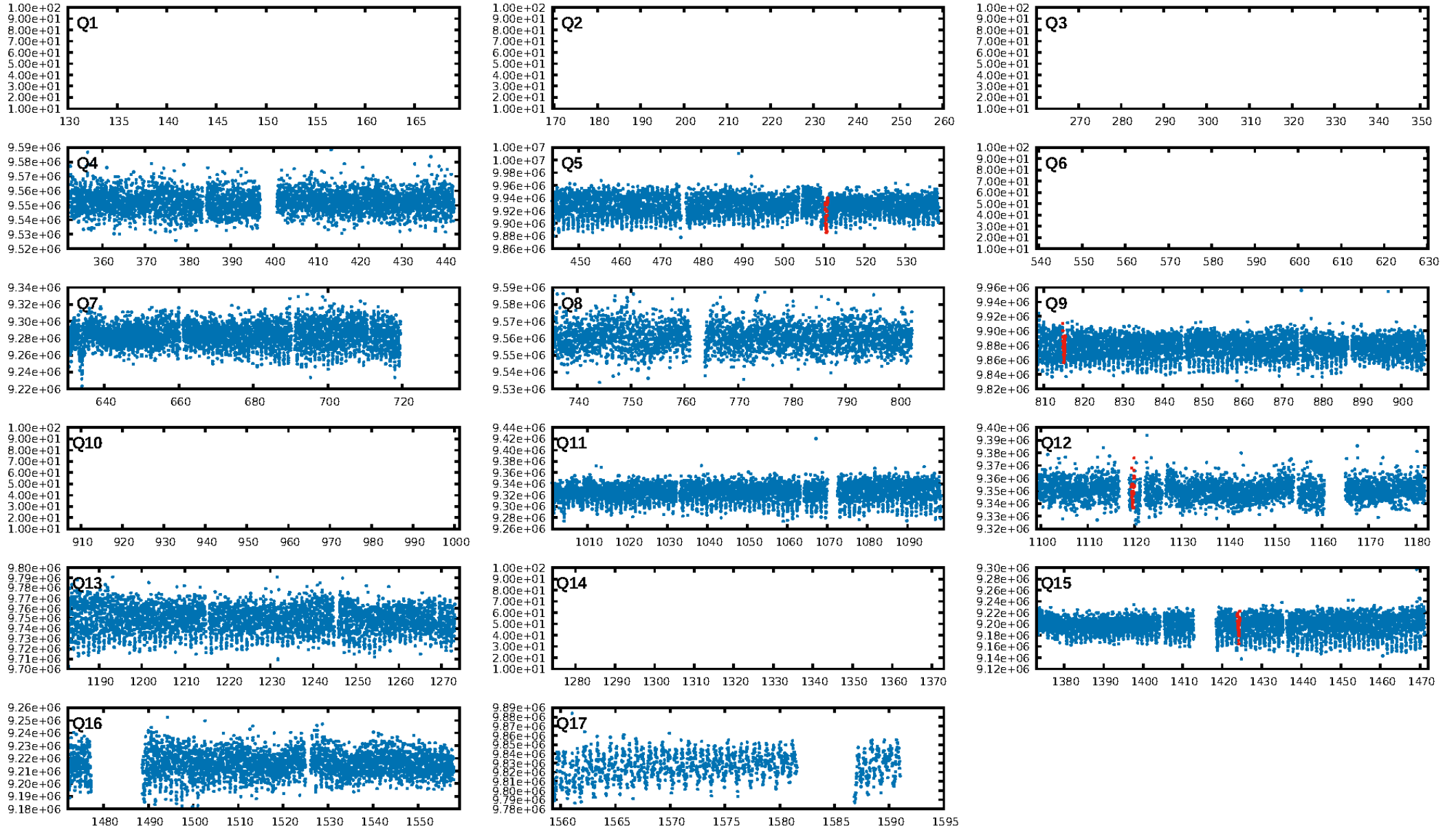
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [418.33σ]
ModelChiSquare2-sig: 12.9%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 8.23e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -16.46
Centroid-sig: 2.3%
Centroid-so: 3.523 arcsec [3.79σ]
OotOffset-rm: 0.607 arcsec [0.18σ]
KicOffset-rm: 7.966 arcsec [72.42σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.75 [3/4]

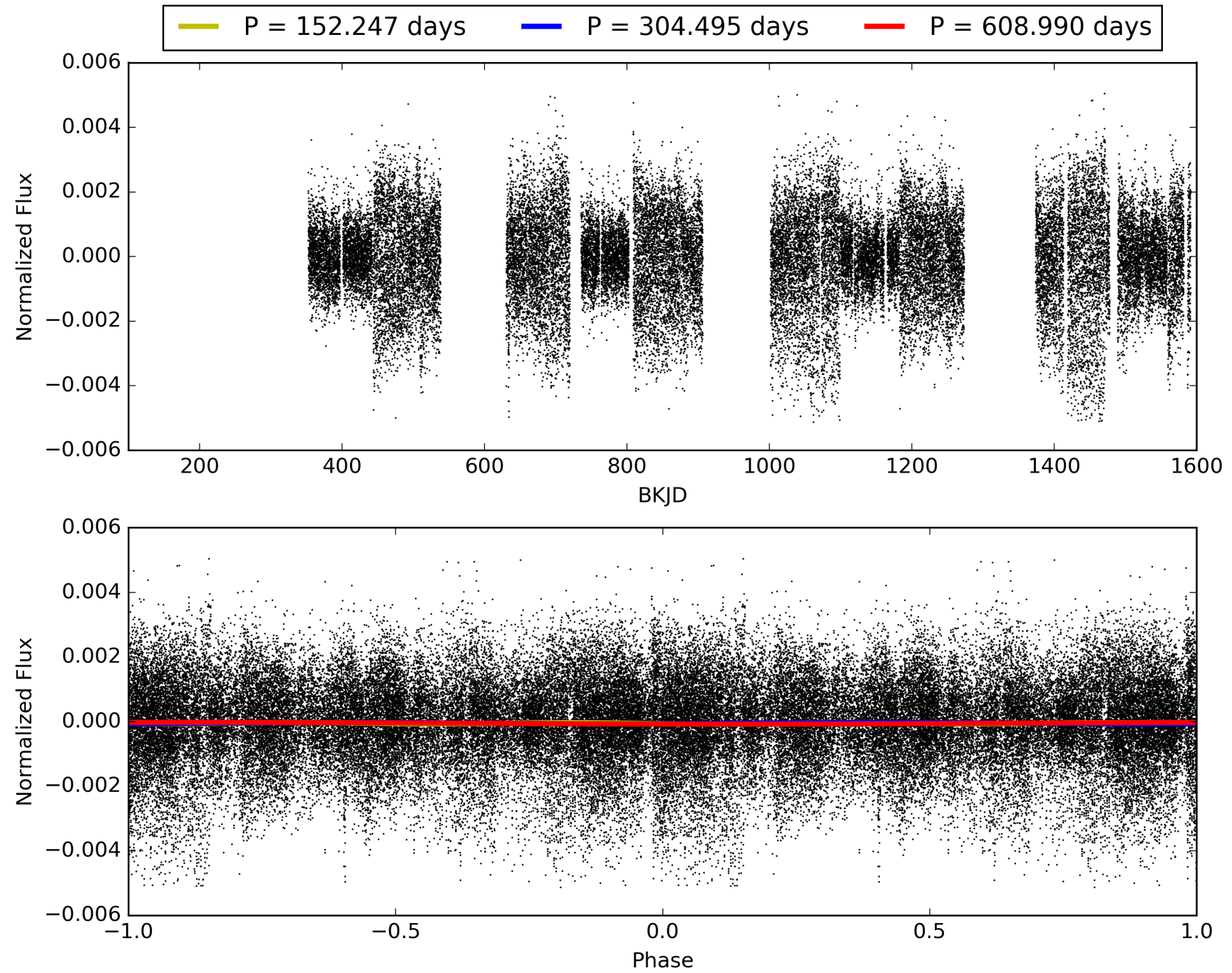
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:33:26 Z

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

TCE 005371102-01, PDC Light Curves

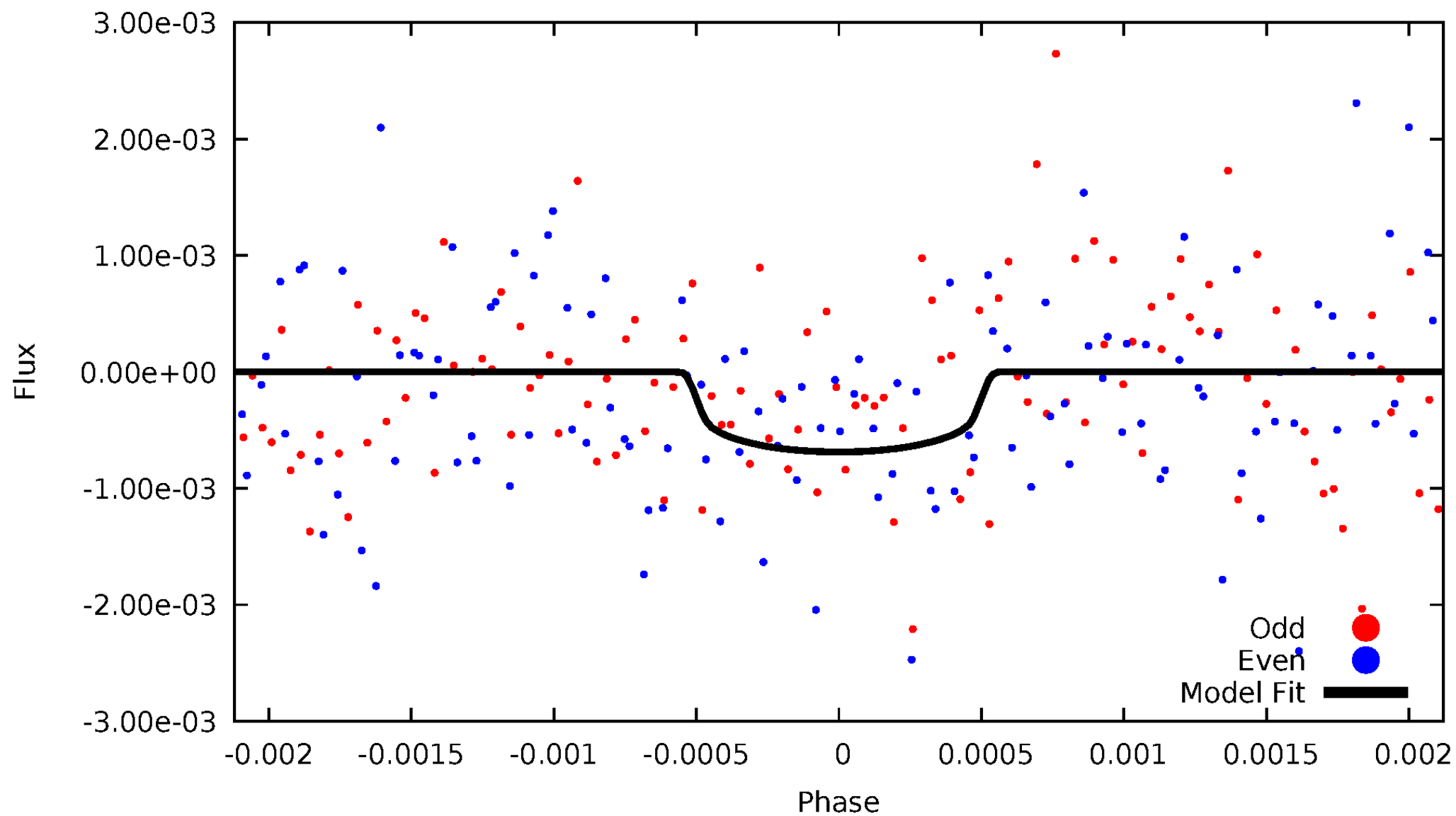


TCE 005371102-01



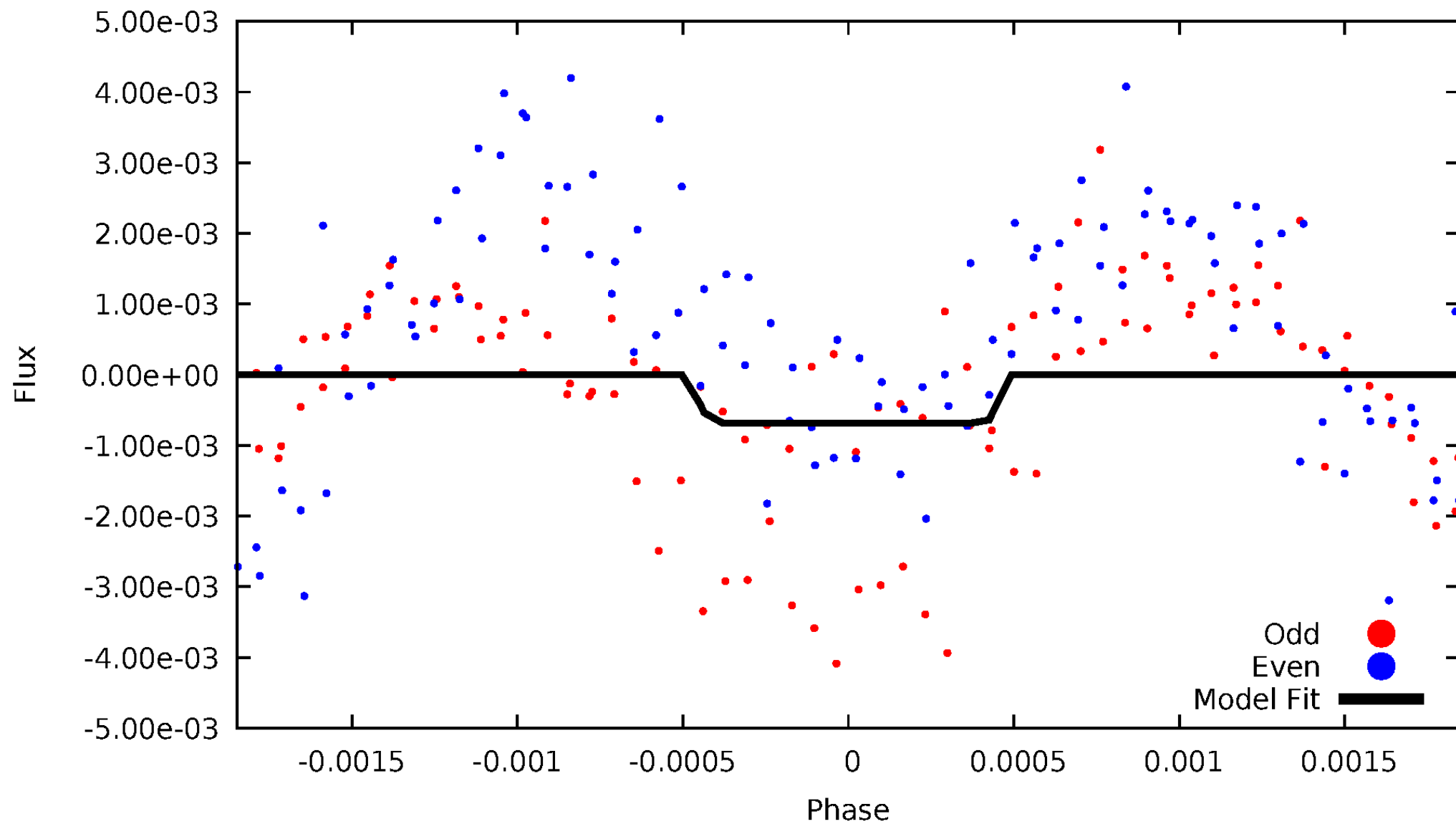
DV Odd/Even

TCE 005371102-01



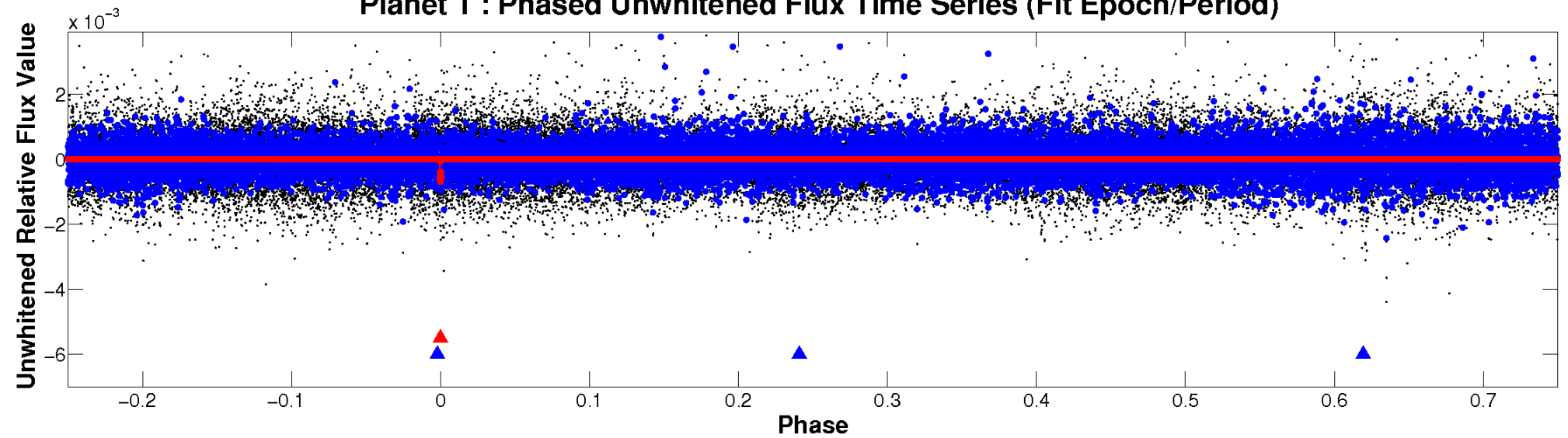
ALT Odd/Even

TCE 005371102-01

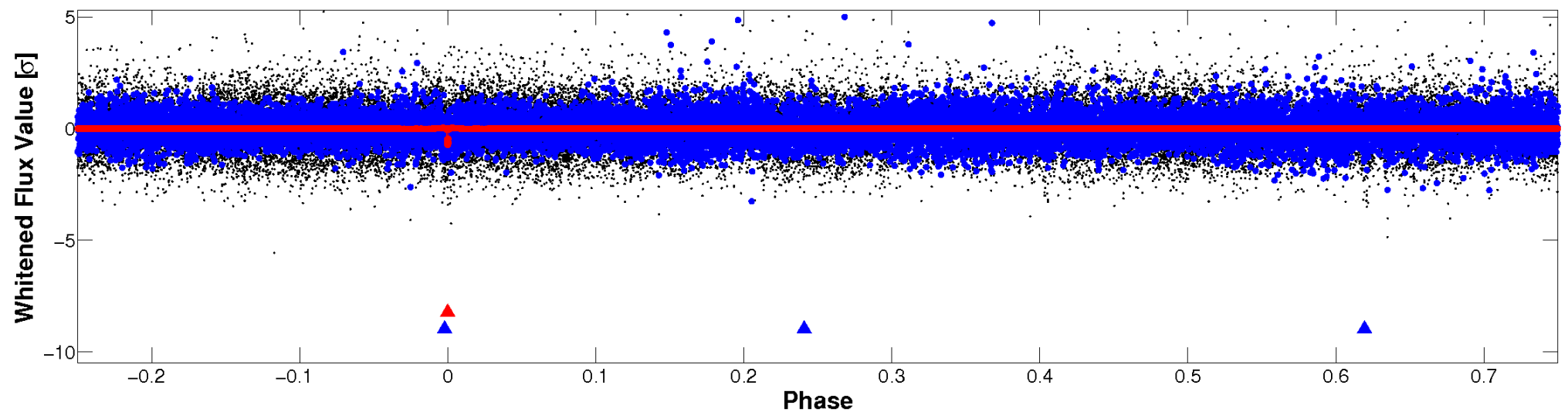


Non-Whitened Vs. Whitened Light Curve

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

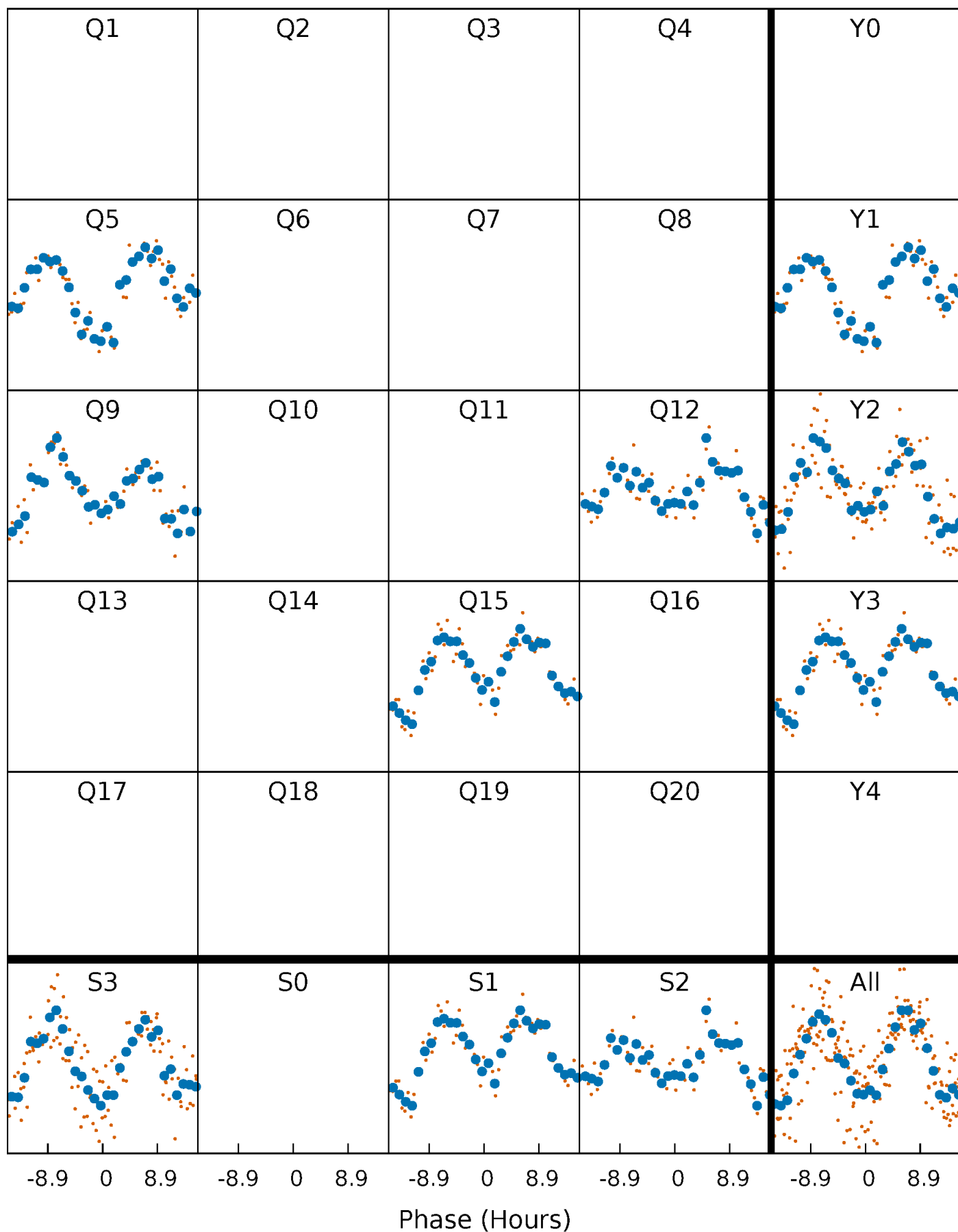


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



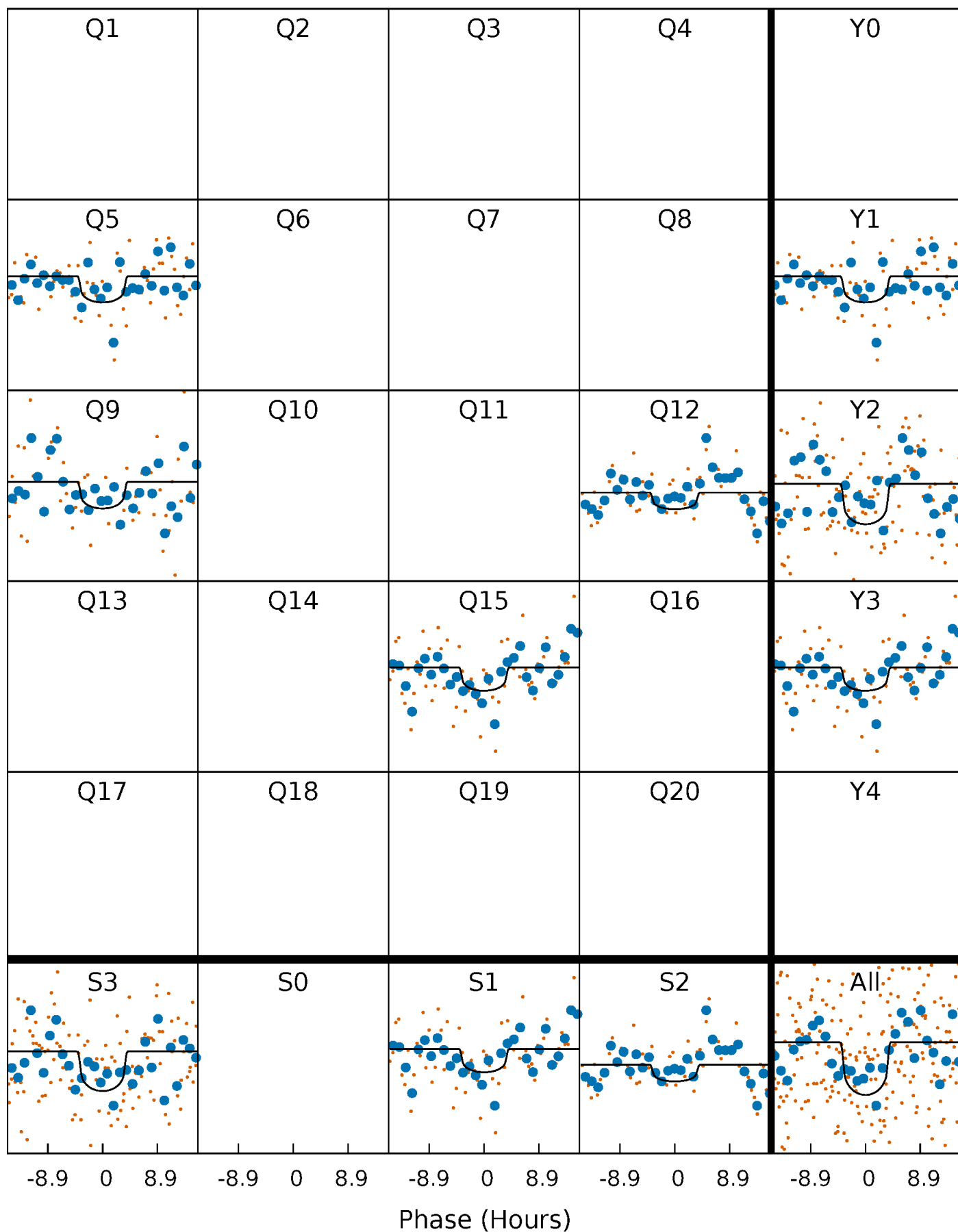
PDC Quarter-Phased Transit Curves

TCE 005371102-01 P=304.494830 Days $T_0=206.165911$ (BKJD)



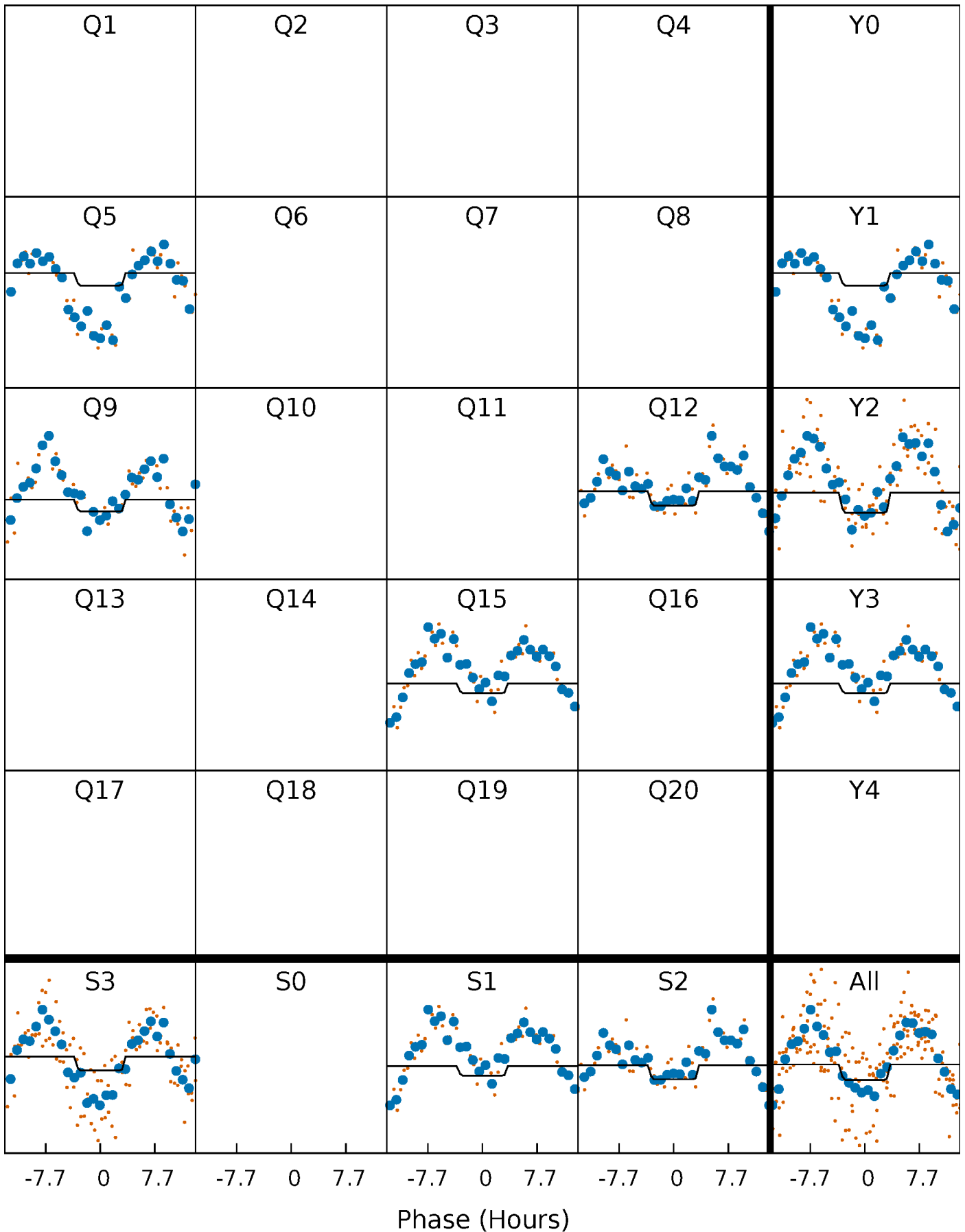
DV Quarter-Phased Transit Curves

TCE 005371102-01 P=304.494830 Days $T_0=206.165911$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

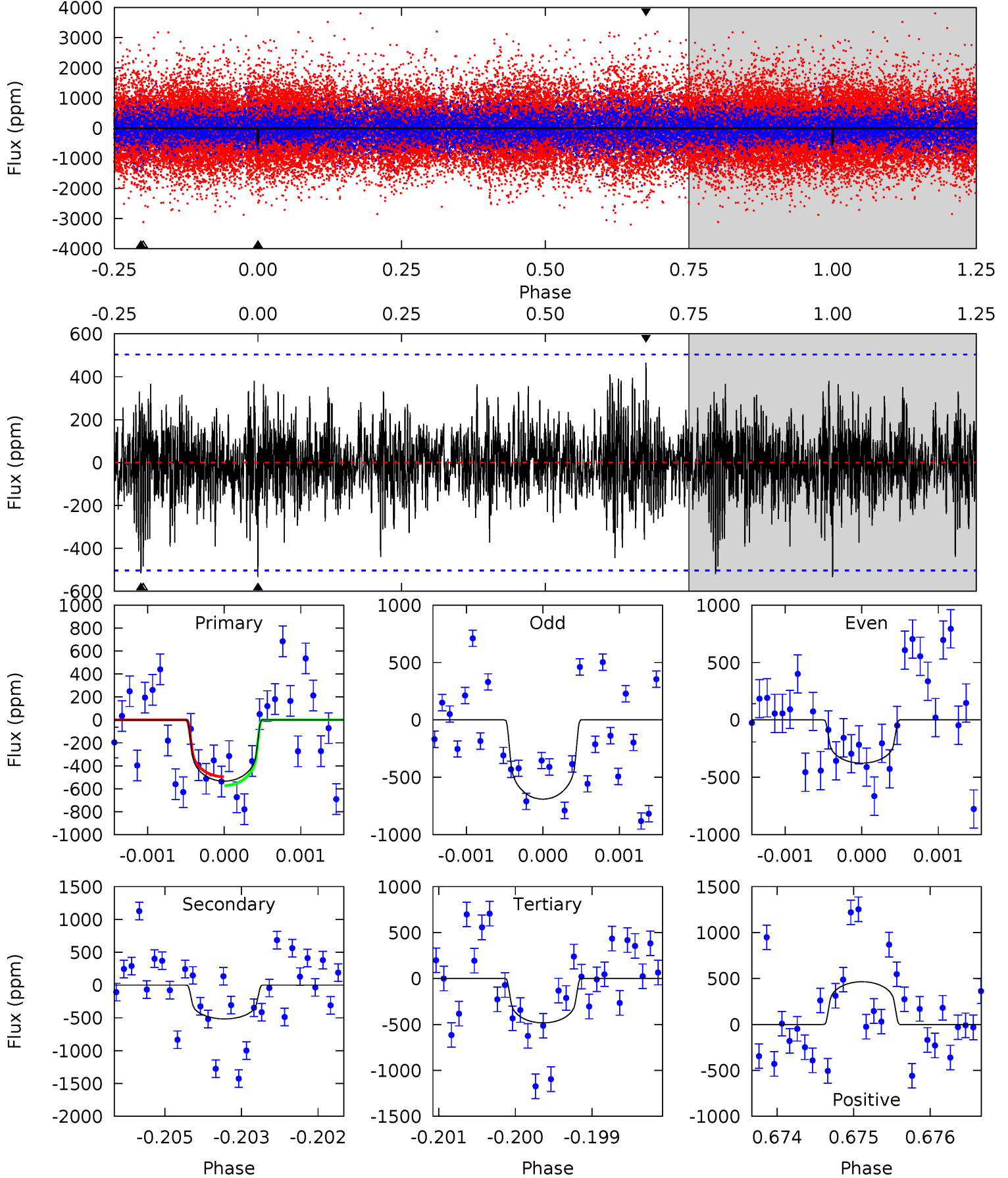
TCE 005371102-01 P=304.500911 Days $T_0=206.147759$ (BKJD)



DV Model-Shift Uniqueness Test

005371102-01, P = 304.494830 Days, E = 206.165911 Days

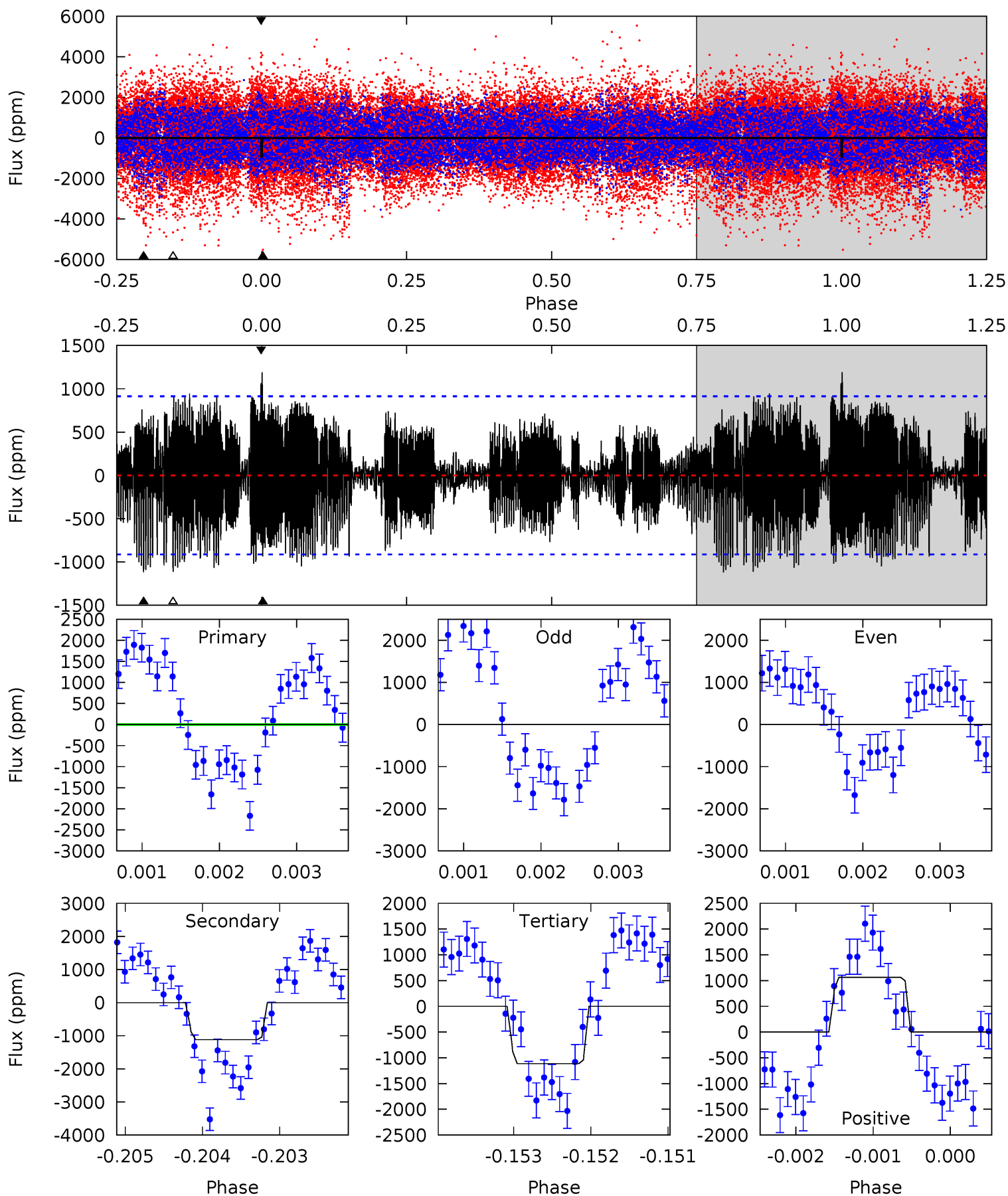
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.76	5.56	5.21	5.01	5.43	3.25	1.32	0.54	0.74	0.35	0.55	1.69	1.01	0.47	0.42



Alt Model-Shift Uniqueness Test

005371102-01, P = 304.500911 Days, E = 206.147759 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.59	6.69	6.67	6.37	5.46	3.31	2.27	-1.08	-0.78	0.02	0.32	4.40	1.82	0.52	0.03



Stellar Parameters For KIC 005371102

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5435^{+197}_{-180}	$4.578^{+0.029}_{-0.162}$	$0.070^{+0.250}_{-0.300}$	$0.824^{+0.187}_{-0.067}$	$0.937^{+0.074}_{-0.101}$	$2.358^{+0.347}_{-0.996}$
	+4%/-3%	+1%/-4%	+357%/-429%	+23%/-8%	+8%/-11%	+15%/-42%
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 005371102-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-516 ± 93	$3.11^{+2.37}_{-1.90}$	334^{+21}_{-14}	4633^{+2667}_{-882}	$22250^{+126249}_{-15668}$
Alt.	-1117 ± 167	$3.15^{+2.57}_{-2.04}$	335^{+20}_{-15}	5477^{+4456}_{-1219}	$46336^{+316635}_{-32190}$

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

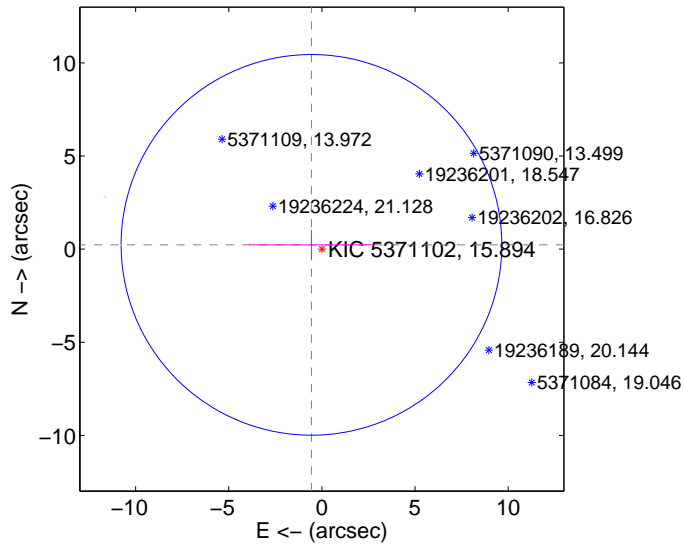
Supplemental centroid analysis for 005371102-01. Kepler magnitude: 15.89. Transit SNR 5.14

There are 2 quarters with good PRF difference image offsets

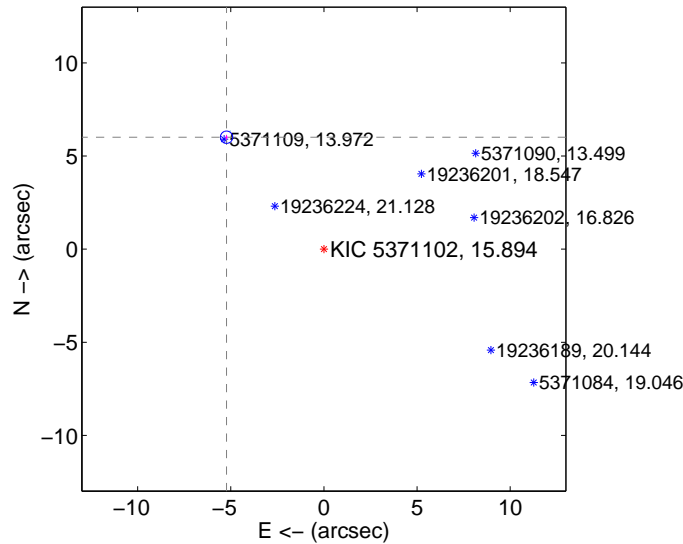
The OOT PRF centroid is offset from the target star catalog position by about 7.50 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.607 ± 3.406	0.18	0.561 ± 3.353	0.231 ± 0.805
PRF-fit source offset from KIC position	7.966 ± 0.110	72.42	5.227 ± 0.084	6.011 ± 0.126
photometric centroid source offset	3.52 ± 0.93	3.79	-0.43 ± 2.20	3.50 ± 0.90

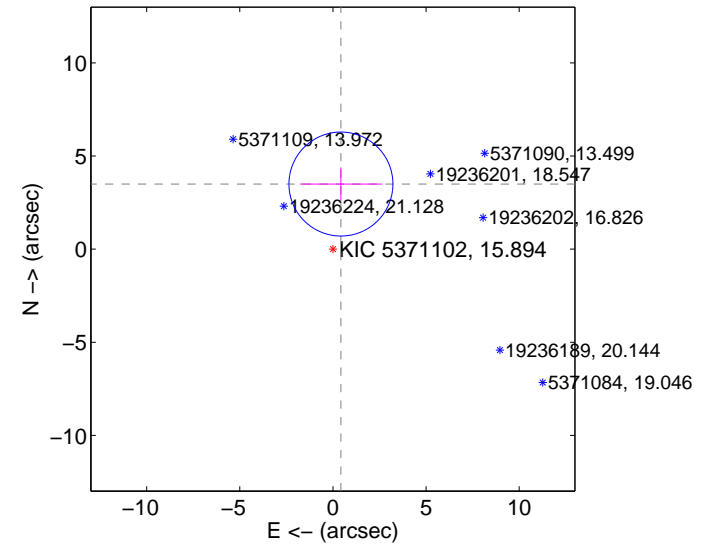
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

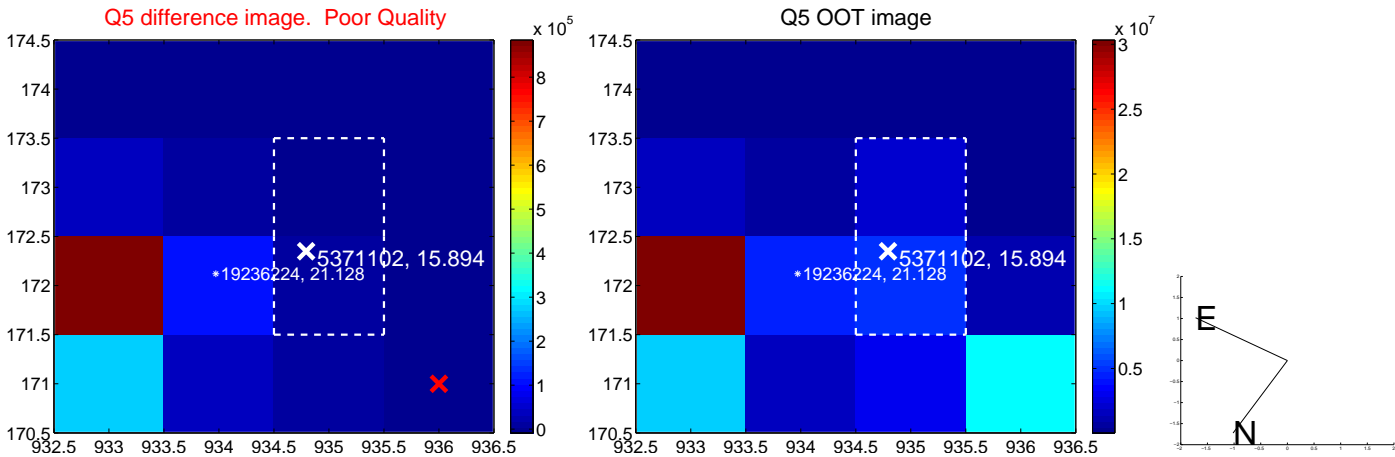


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

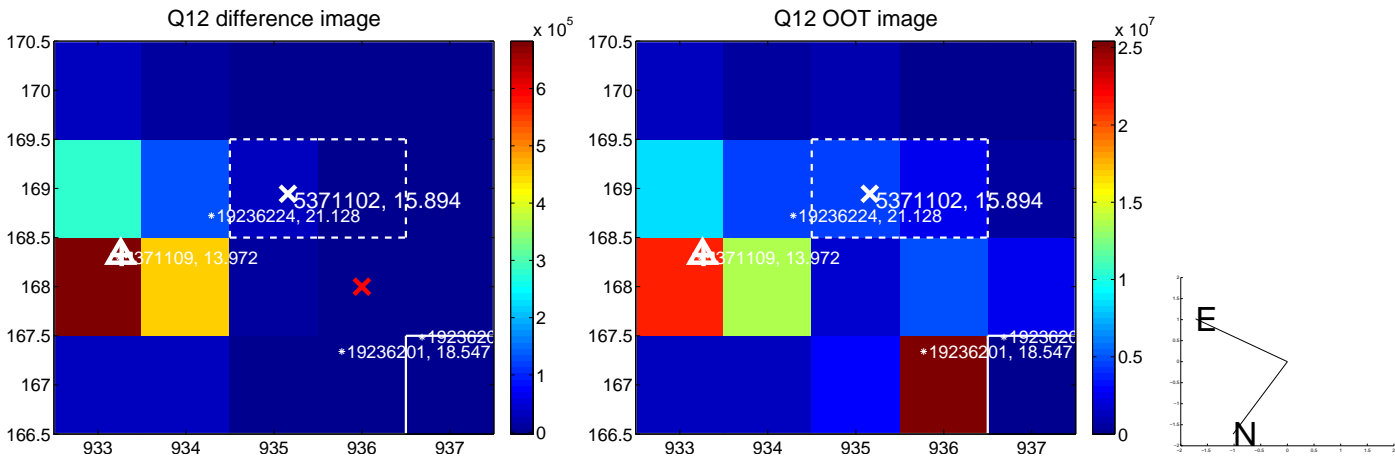
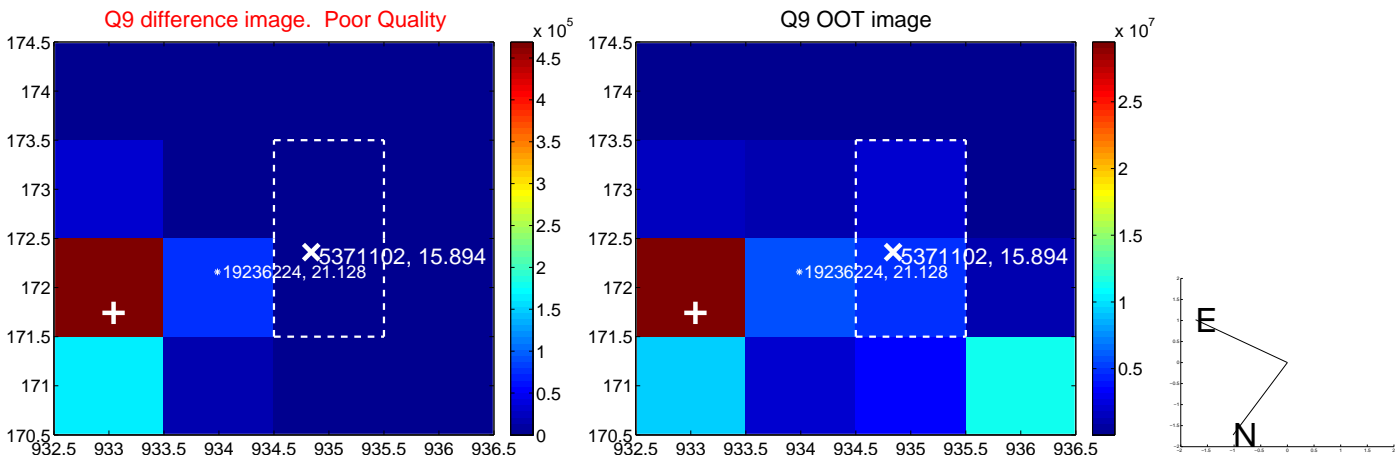
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

Q13 no difference image



Q13 no OOT image



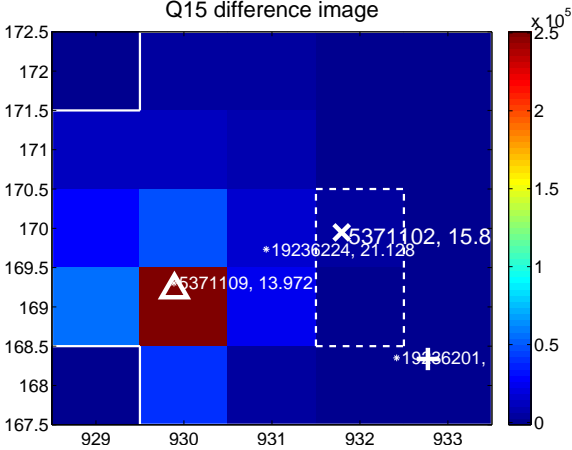
Q14 no difference image



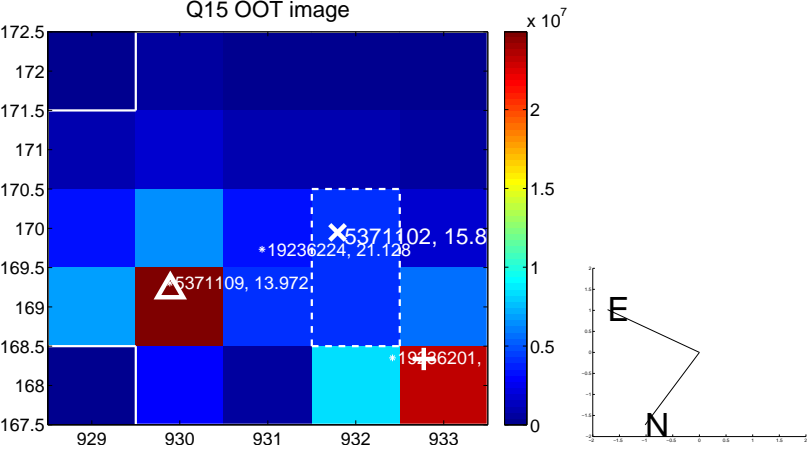
Q14 no OOT image



Q15 difference image



Q15 OOT image



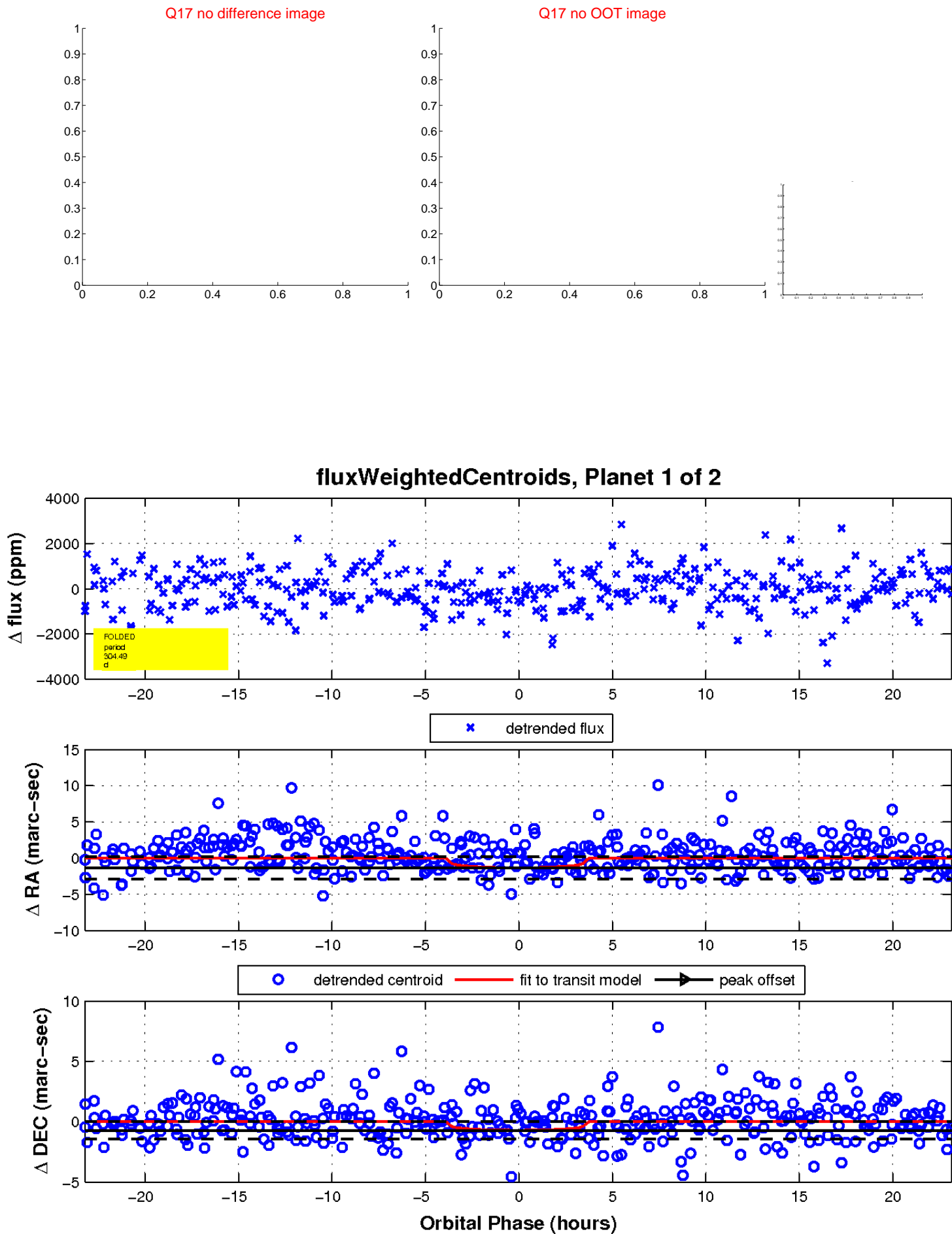
Q16 no difference image



Q16 no OOT image

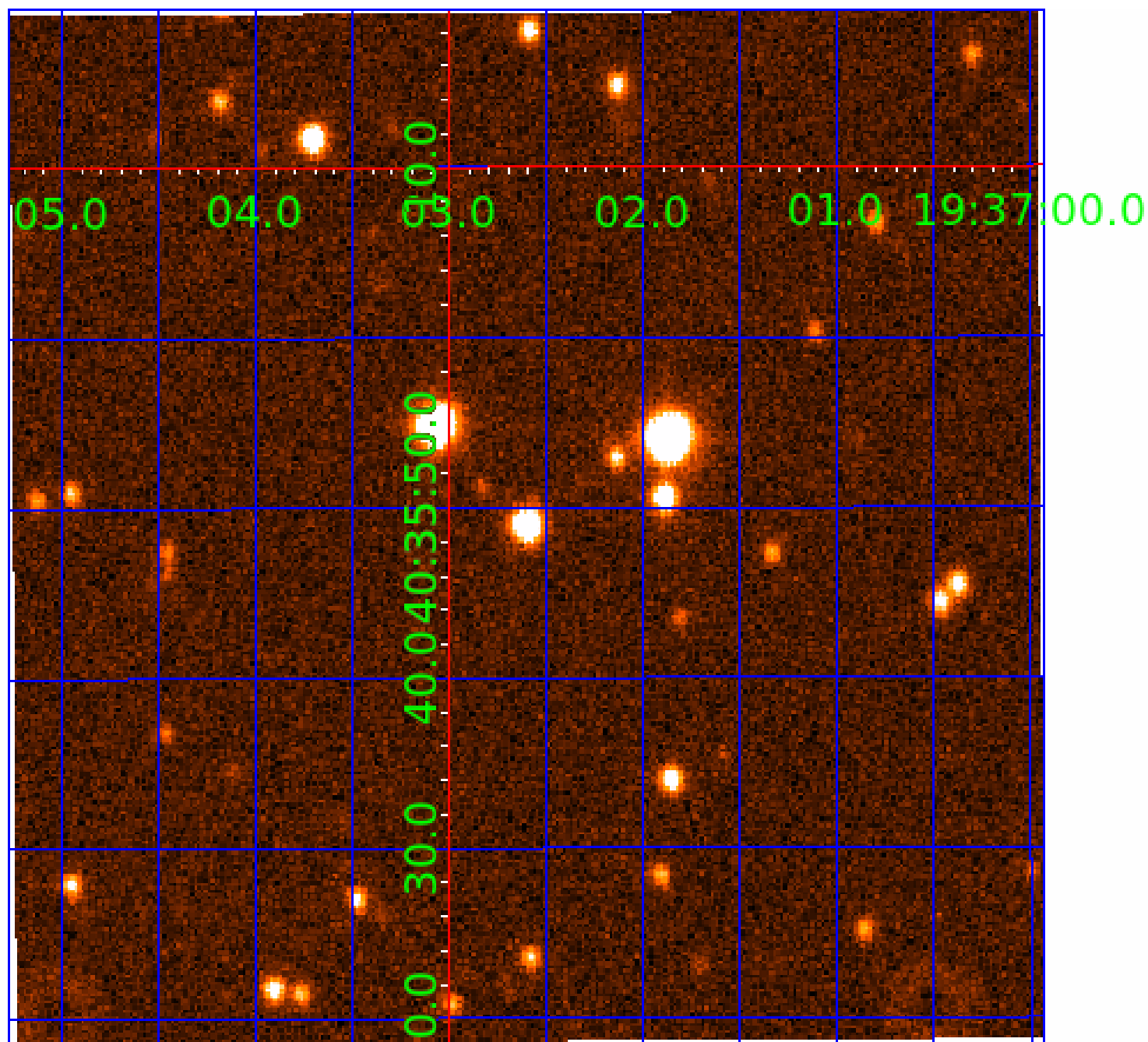


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005371102

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})
005371102-01	OBS	No	304.494830	206.165911	687.5	7.745	7.2	5.1	0.82	5435	2.30	0.71
005371102-02	OBS	No	493.726934	510.024835	1436.0	7.608	8.5	7.3	0.82	5435	3.71	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005371102-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
005371102-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

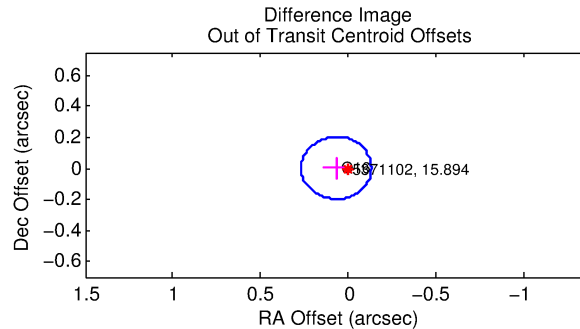
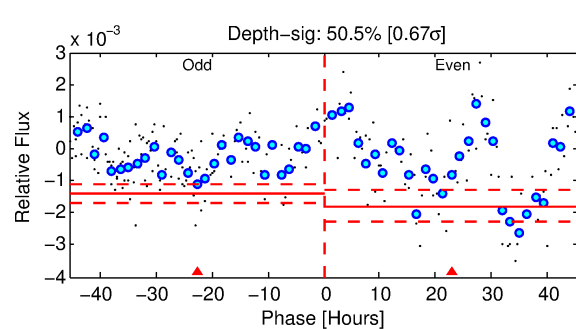
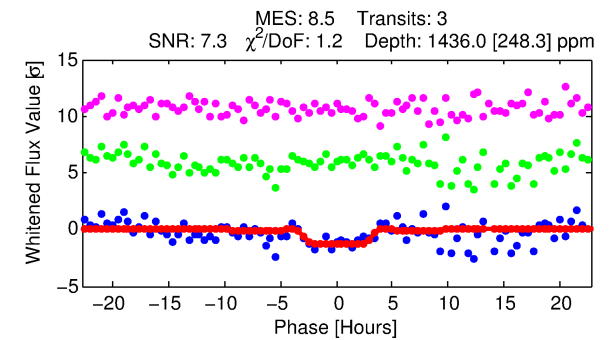
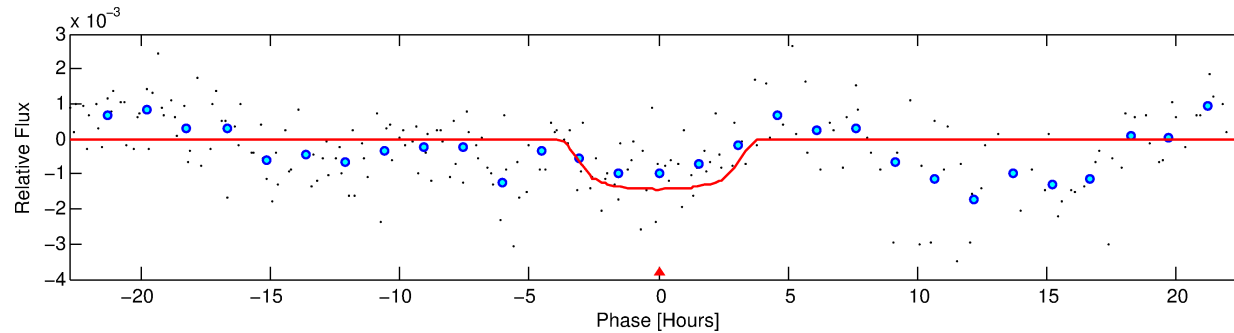
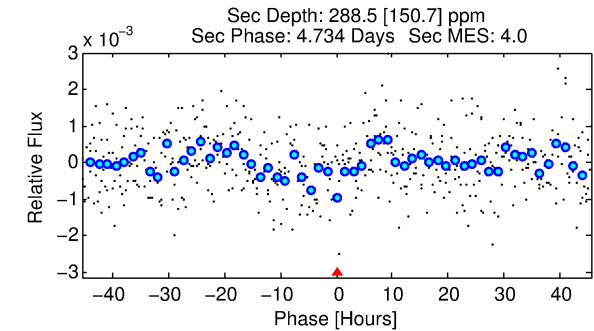
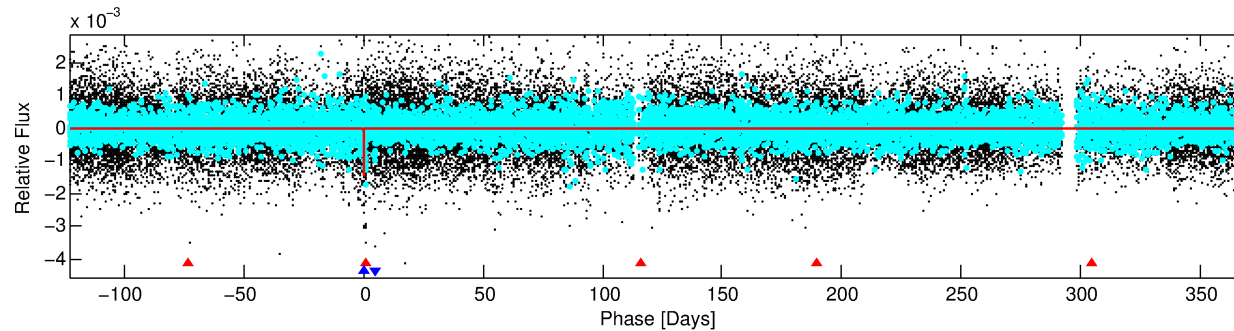
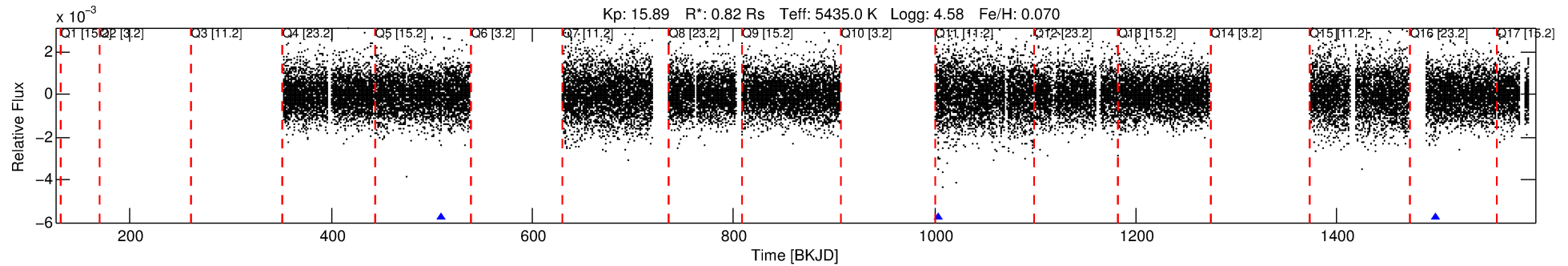
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005371102-02

No Significant Match Found

DV One-Page Summary

KIC: 5371102 Candidate: 2 of 2 Period: 493.727 d



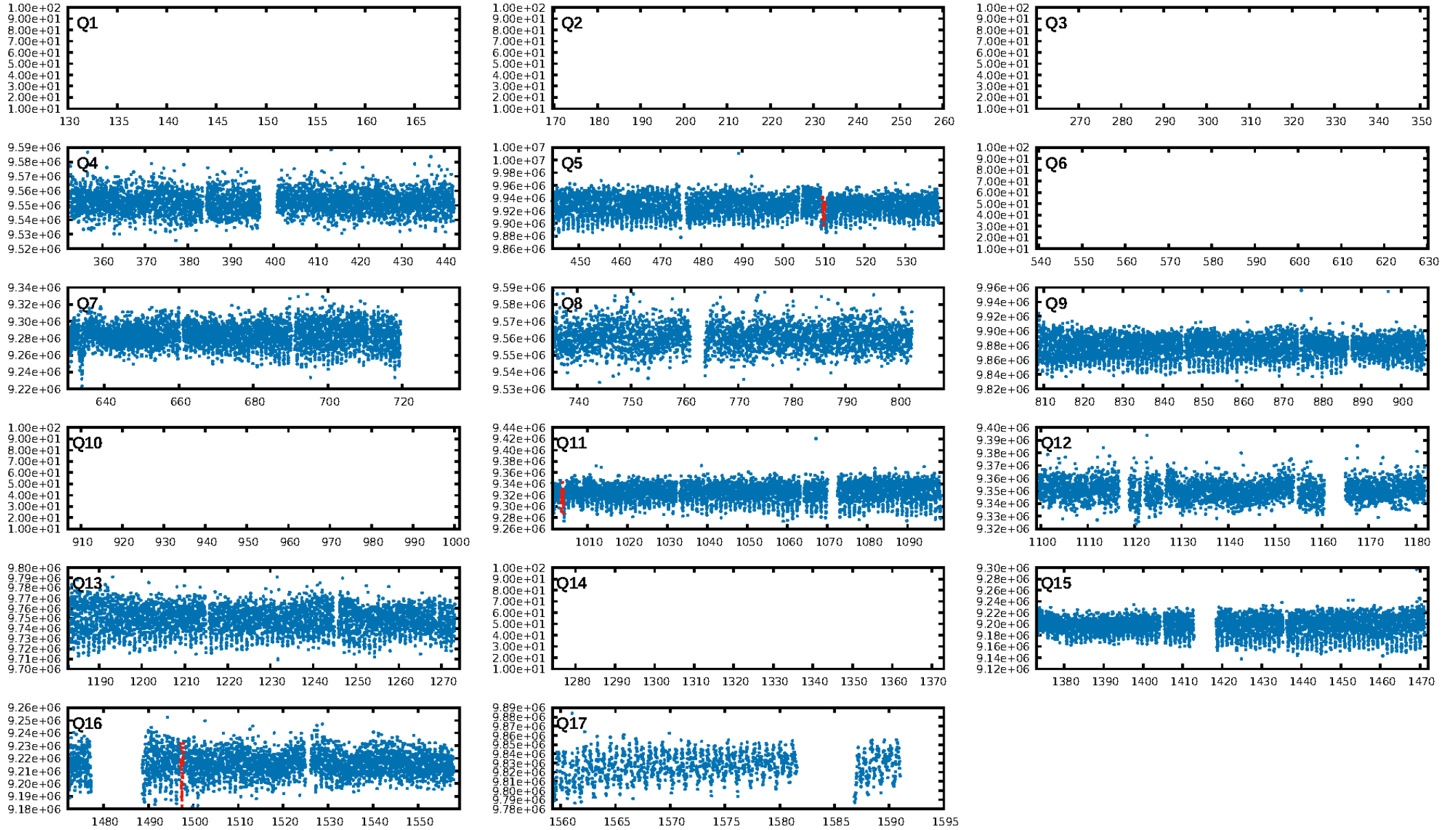
DV Fit Results:

Period = 493.72693 [0.01478] d
Epoch = 510.0248 [0.0209] BKJD
Rp/R* = 0.0413 [0.0072]
a/R* = 270.05 [155.02]
b = 0.89 [0.14]
Seff = 0.37 [0.12]
Teq = 199 [16] K
Rp = 3.71 [1.06] Re
a = 1.1967 [0.2343] AU
Ag = 16513.00 [11416.60] [1.45 σ]
Teff = 3487 [561] K [5.86 σ]

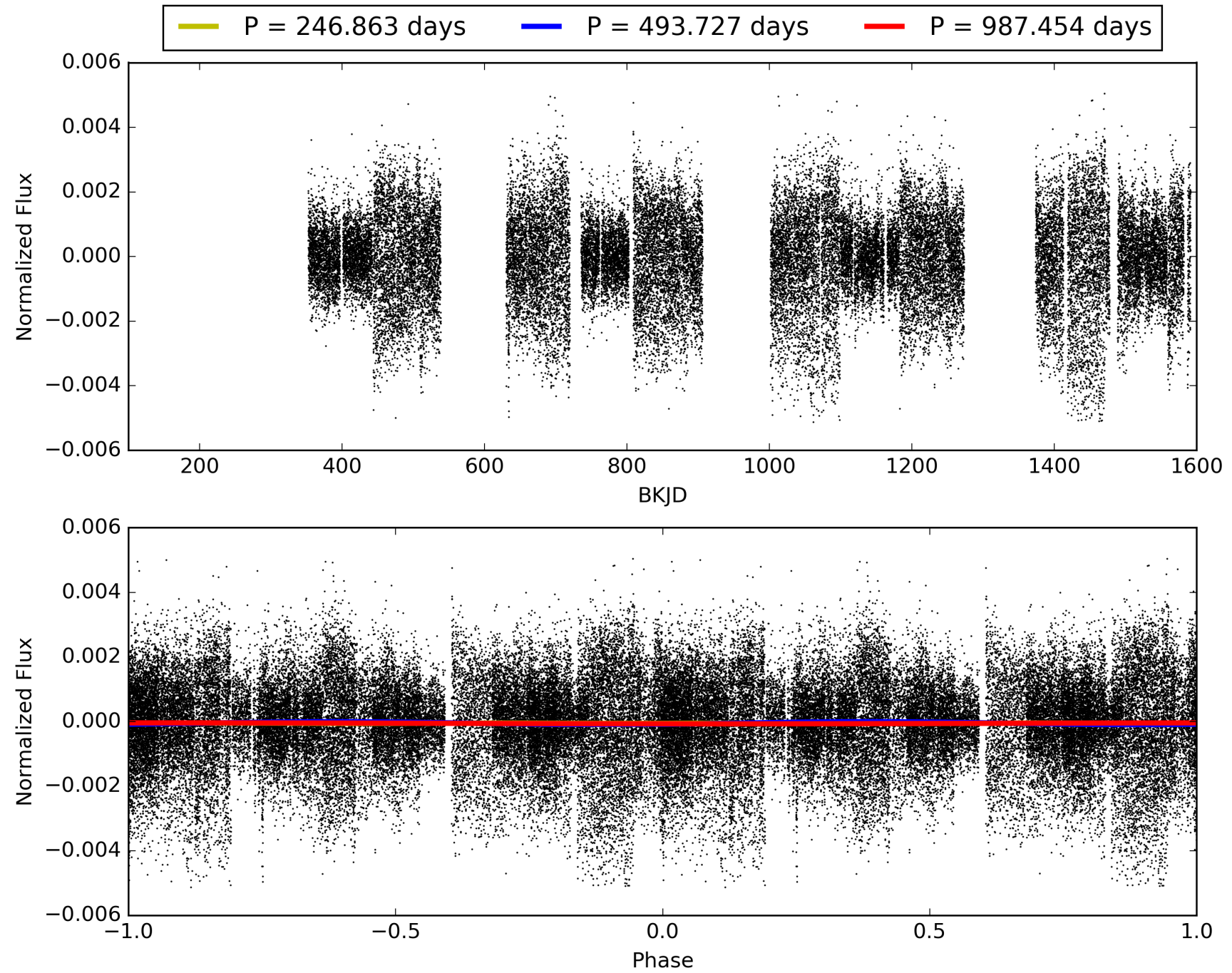
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [418.33 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 52.5%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 7.39e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.0002631
Centroid-sig: 0.3%
Centroid-so: 3.394 arcsec [5.56 σ]
OotOffset-rm: 0.069 arcsec [1.04 σ]
KicOffset-rm: 7.971 arcsec [119.24 σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.50 [1/2]

TCE 005371102-02, PDC Light Curves

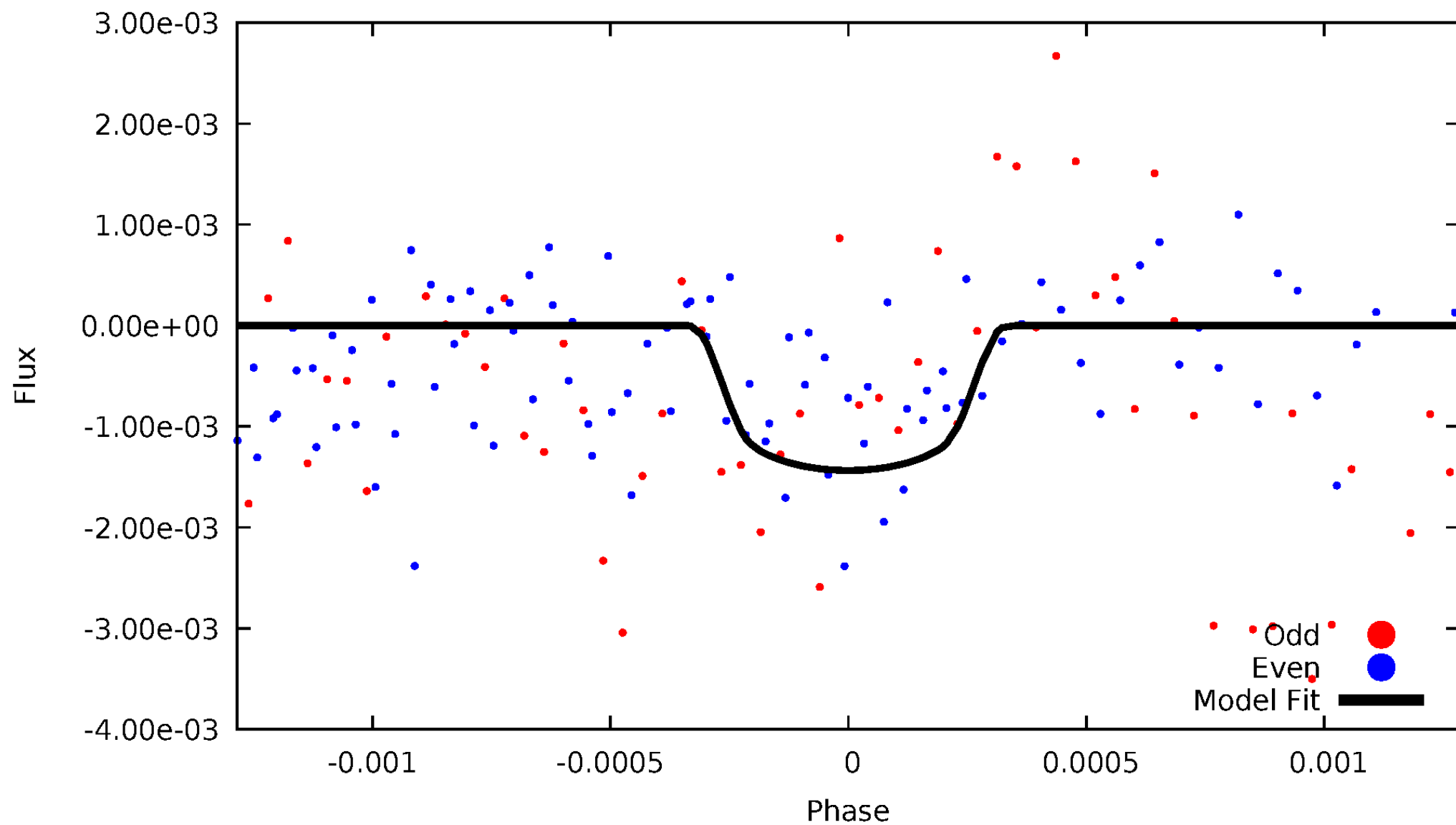


TCE 005371102-02



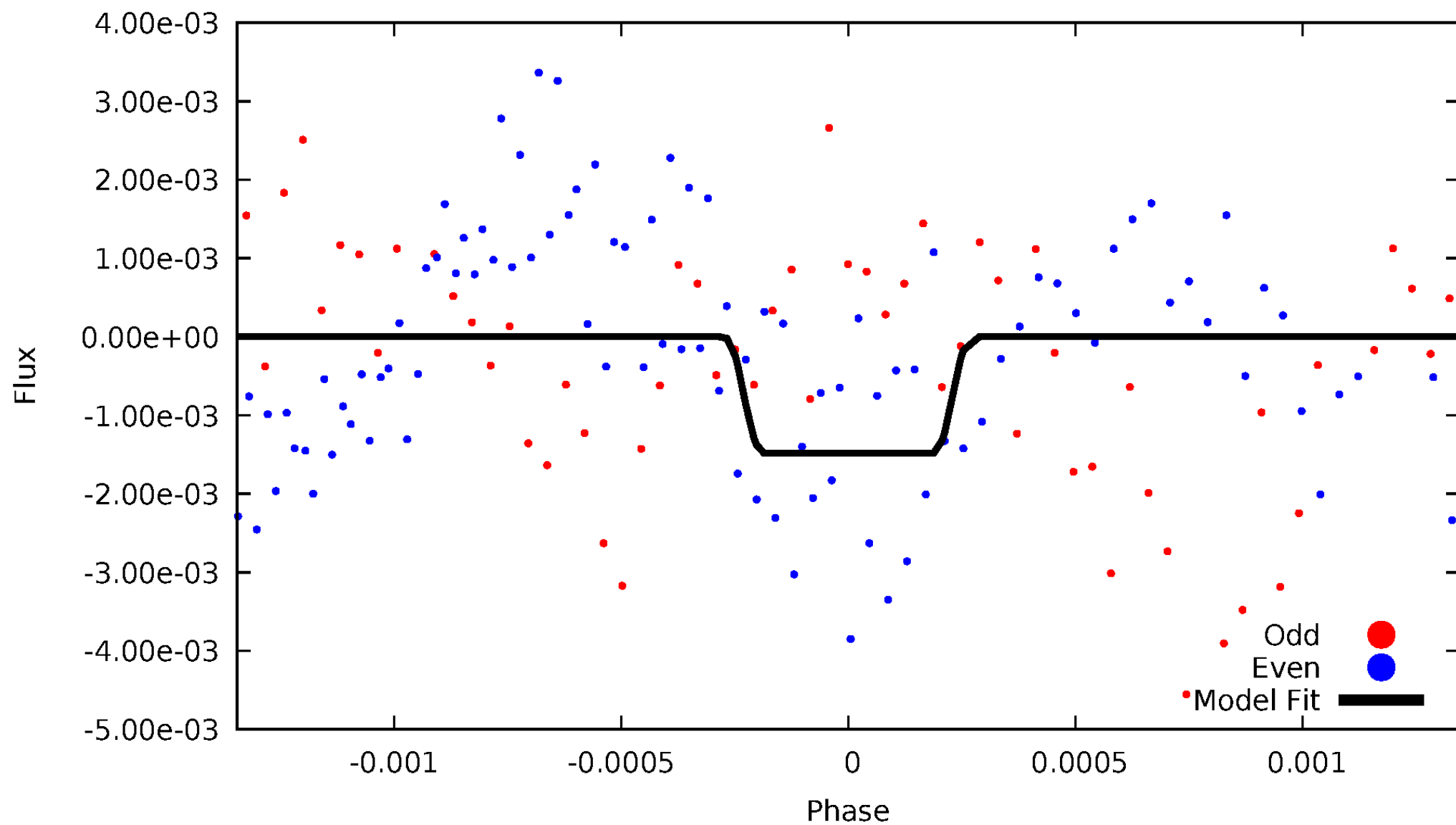
DV Odd/Even

TCE 005371102-02



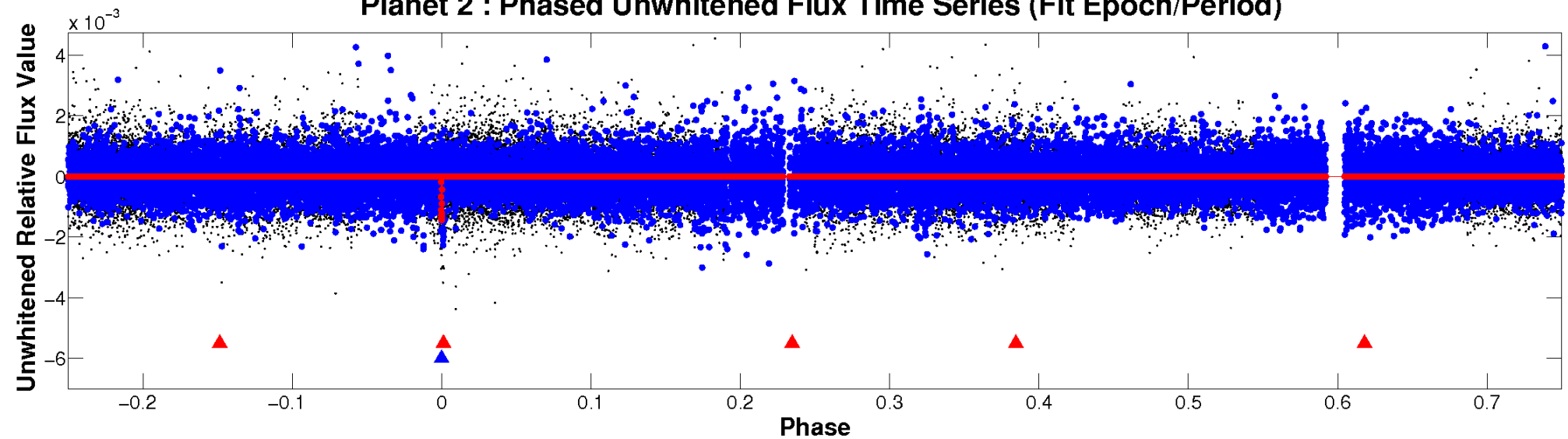
ALT Odd/Even

TCE 005371102-02

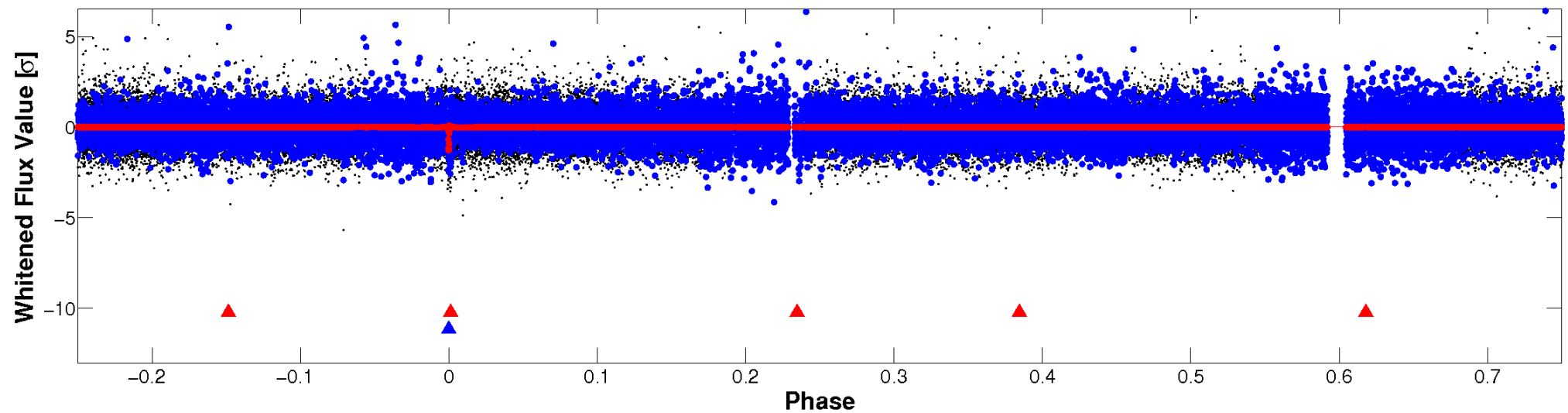


Non-Whitened Vs. Whitened Light Curve

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

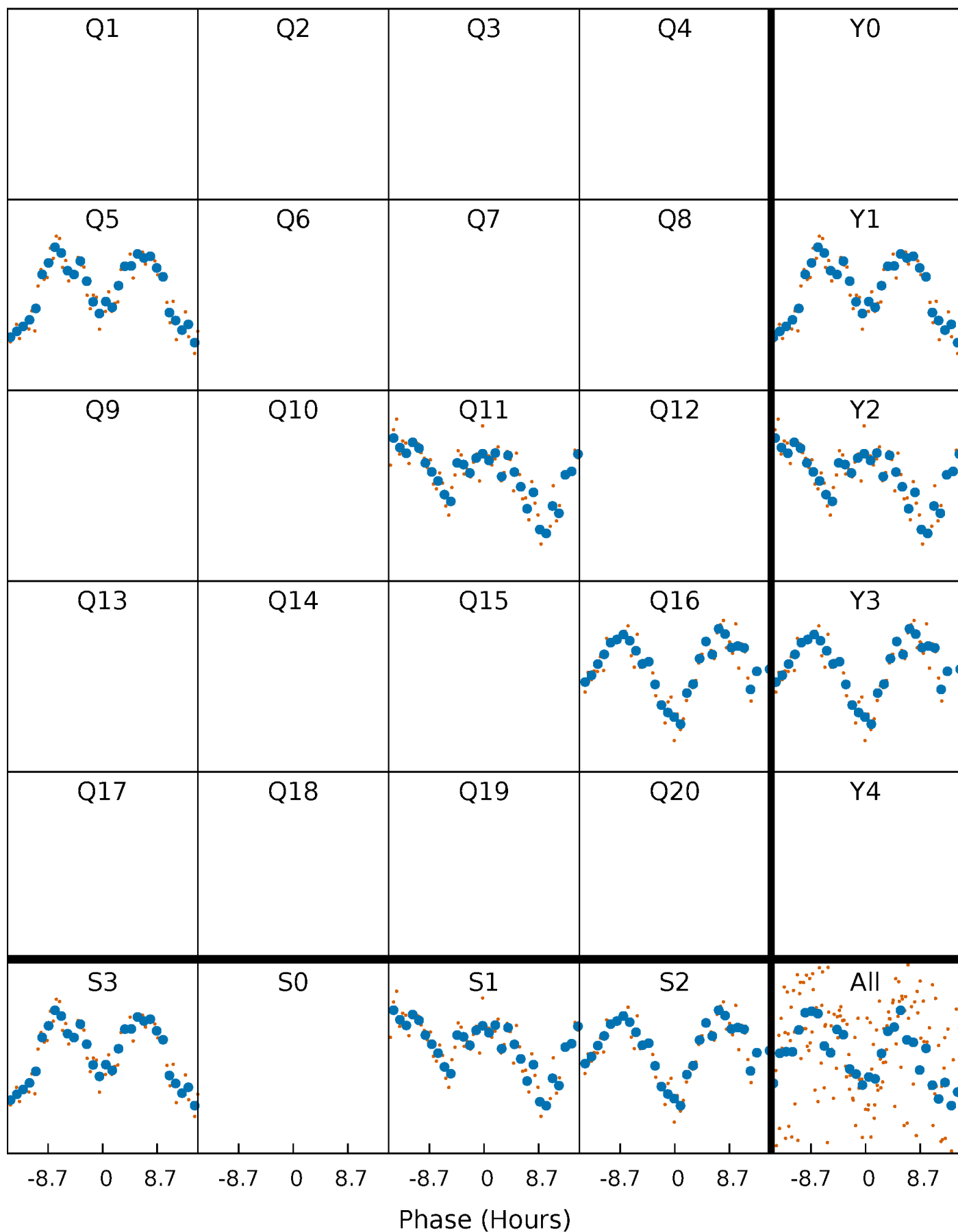


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



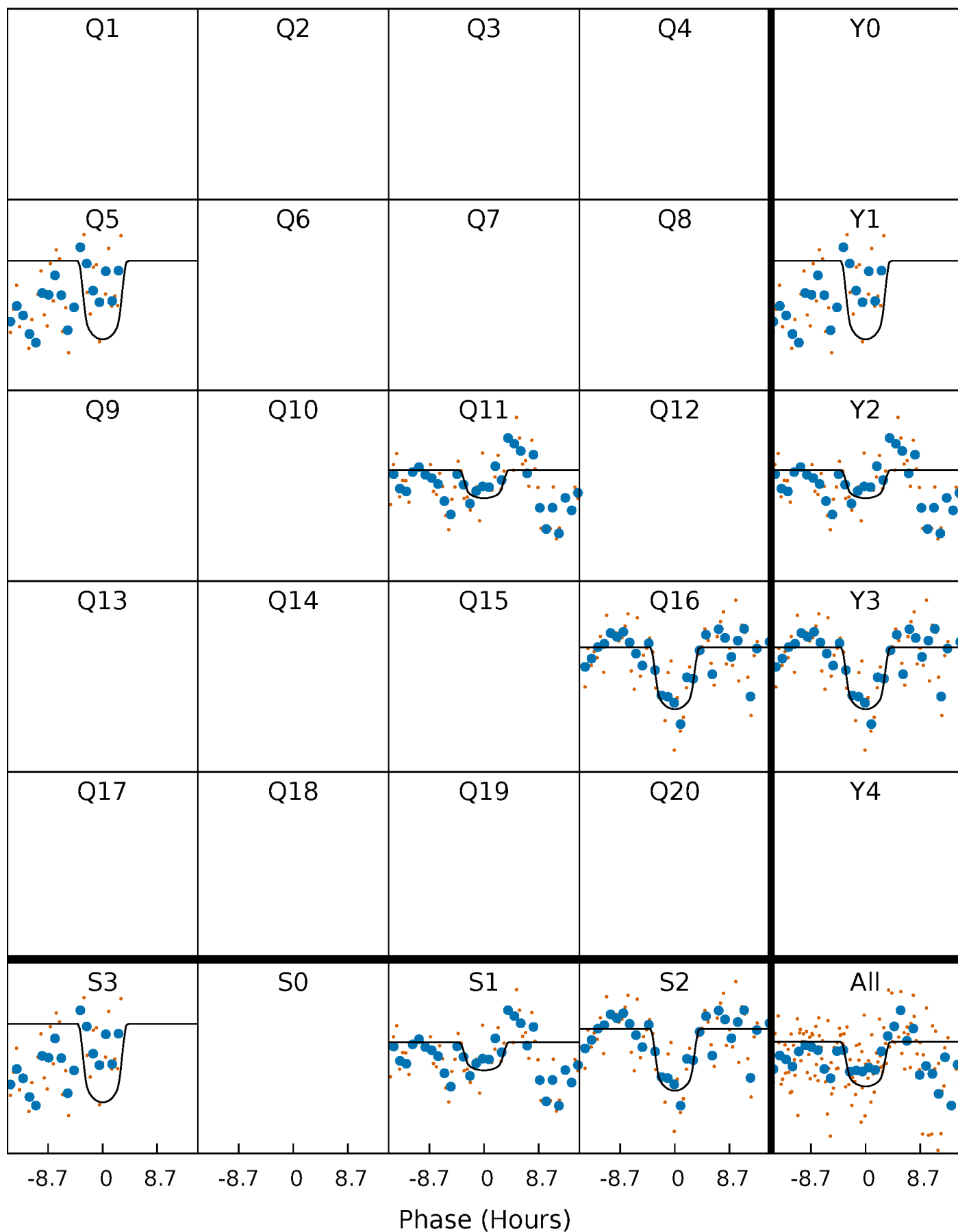
PDC Quarter-Phased Transit Curves

TCE 005371102-02 $P=493.726934$ Days $T_0=510.024835$ (BKJD)



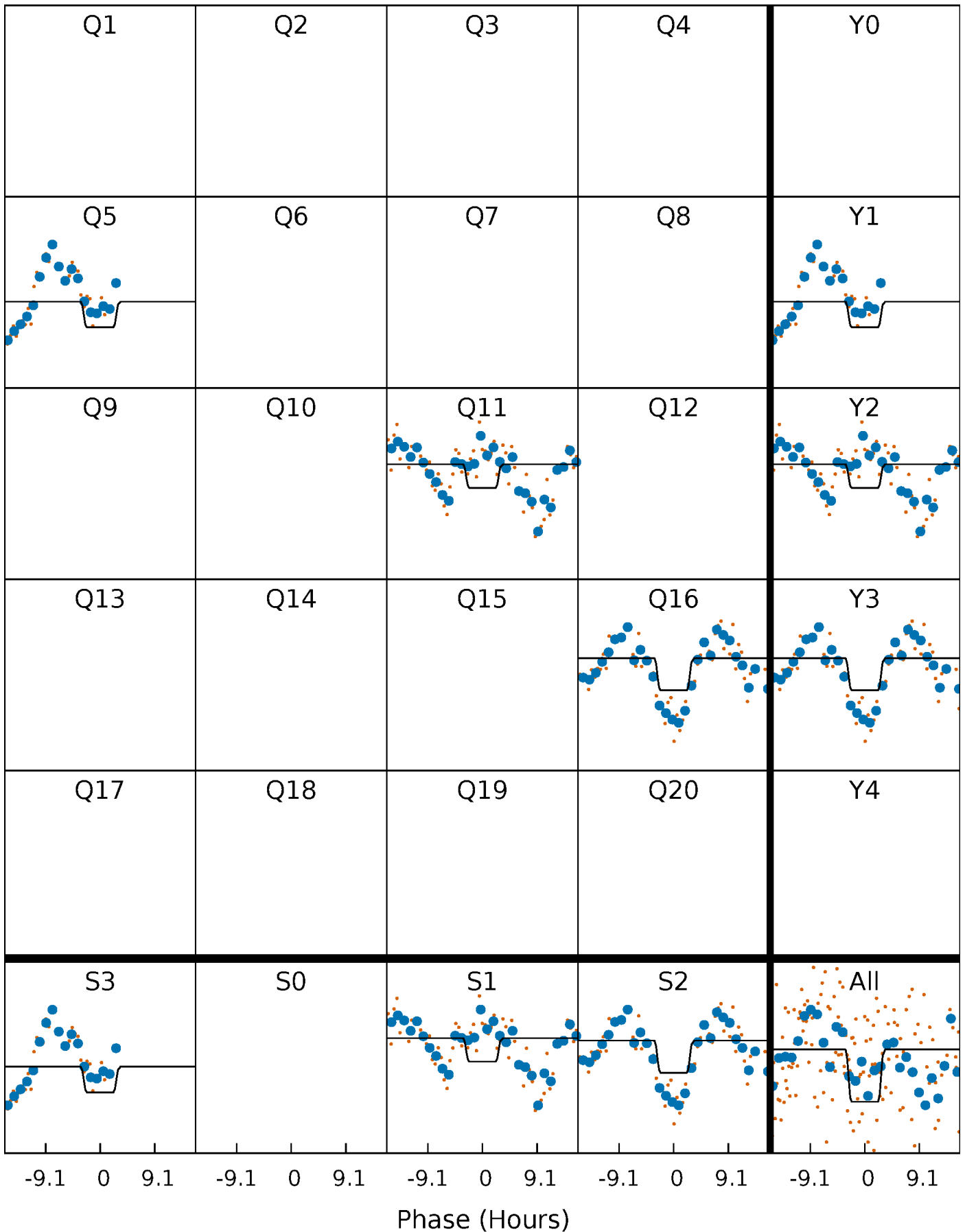
DV Quarter-Phased Transit Curves

TCE 005371102-02 P=493.726934 Days $T_0=510.024835$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

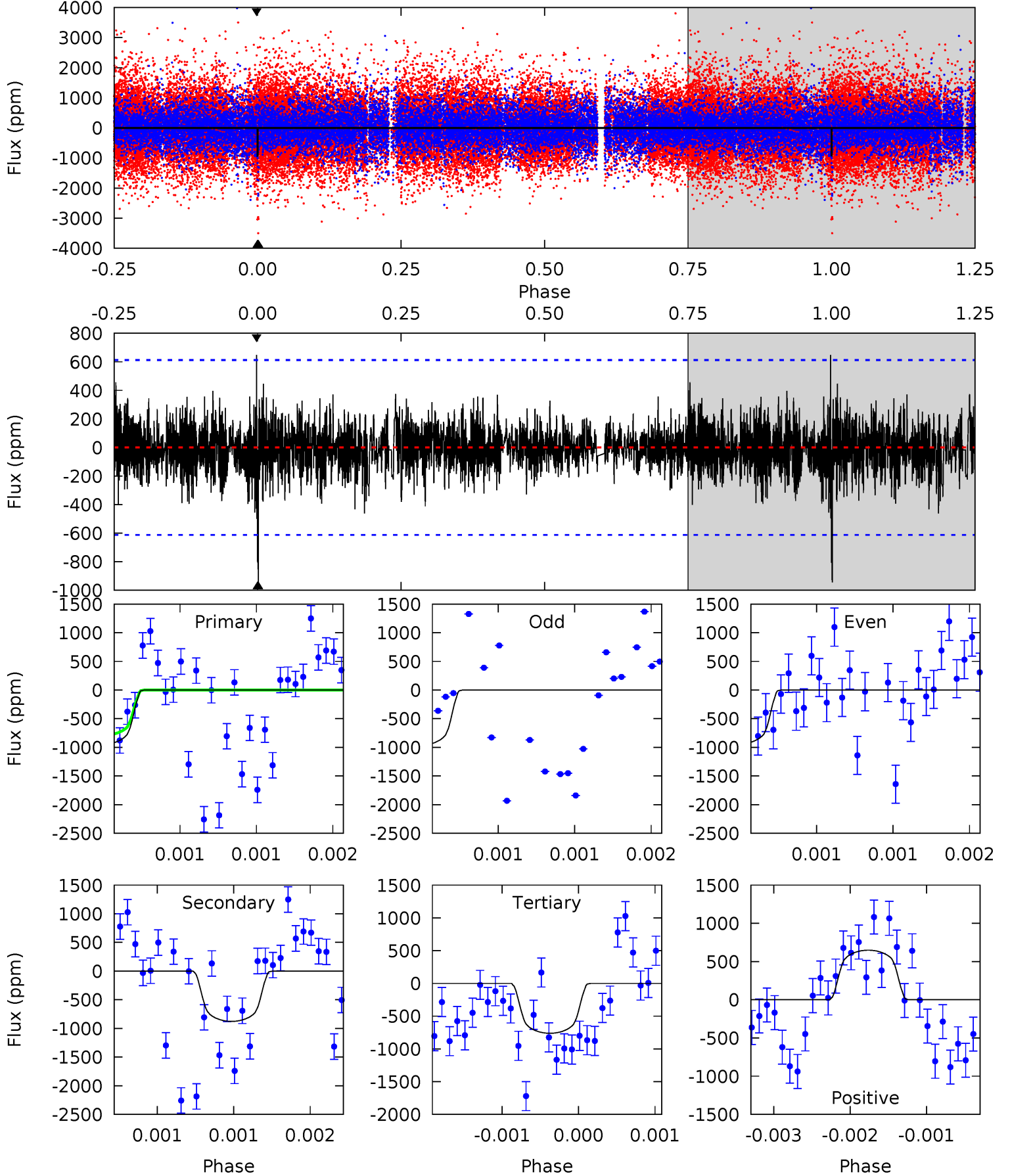
TCE 005371102-02 P=493.708866 Days $T_0=510.054538$ (BKJD)



DV Model-Shift Uniqueness Test

005371102-02, P = 493.726934 Days, E = 16.297901 Days

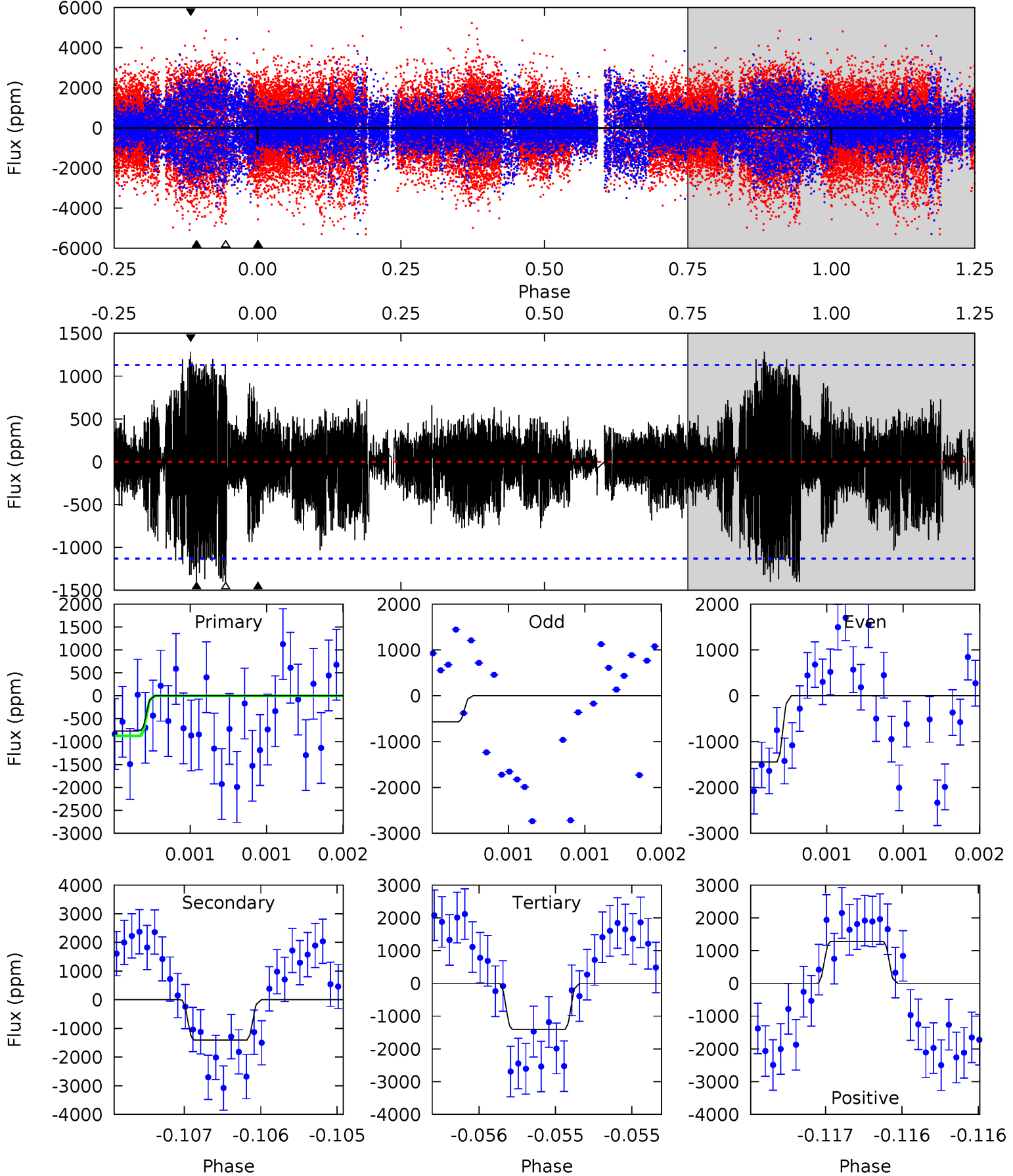
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.52	7.91	6.87	5.85	5.52	3.40	1.18	1.65	2.67	1.04	2.06	0.09	0.98	0.41	1.34



Alt Model-Shift Uniqueness Test

005371102-02, $P = 493.708866$ Days, $E = 16.345672$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.77	6.91	6.90	6.32	5.56	3.46	1.68	-3.13	-2.55	0.00	0.59	2.04	2.88	0.48	0.53



Stellar Parameters For KIC 005371102

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5435^{+197}_{-180}	$4.578^{+0.029}_{-0.162}$	$0.070^{+0.250}_{-0.300}$	$0.824^{+0.187}_{-0.067}$	$0.937^{+0.074}_{-0.101}$	$2.358^{+0.347}_{-0.996}$
	+4%/-3%	+1%/-4%	+357%/-429%	+23%/-8%	+8%/-11%	+15%/-42%
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 005371102-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-877 ± 111	$3.86^{+0.77}_{-0.76}$	284^{+17}_{-13}	4739^{+425}_{-360}	45897^{+25195}_{-14636}
Alt.	-1404 ± 203	$3.62^{+0.80}_{-0.74}$	283^{+19}_{-12}	5373^{+580}_{-470}	82518^{+47298}_{-27874}

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

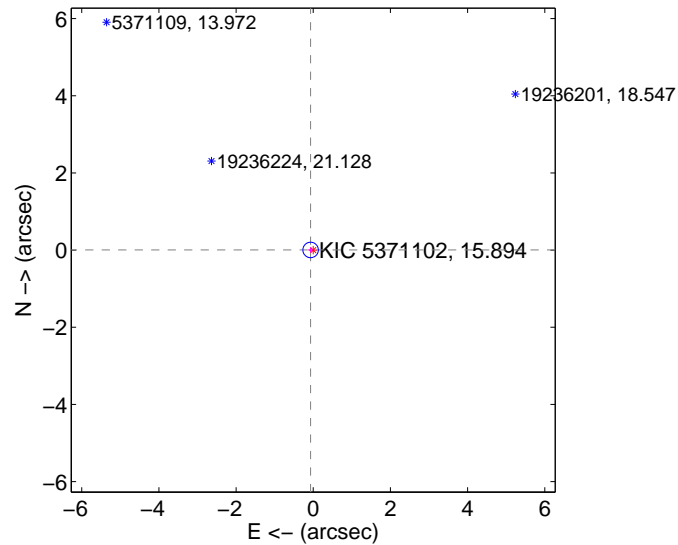
Supplemental centroid analysis for 005371102-02. Kepler magnitude: 15.89. Transit SNR 7.34

There are 1 quarters with good PRF difference image offsets

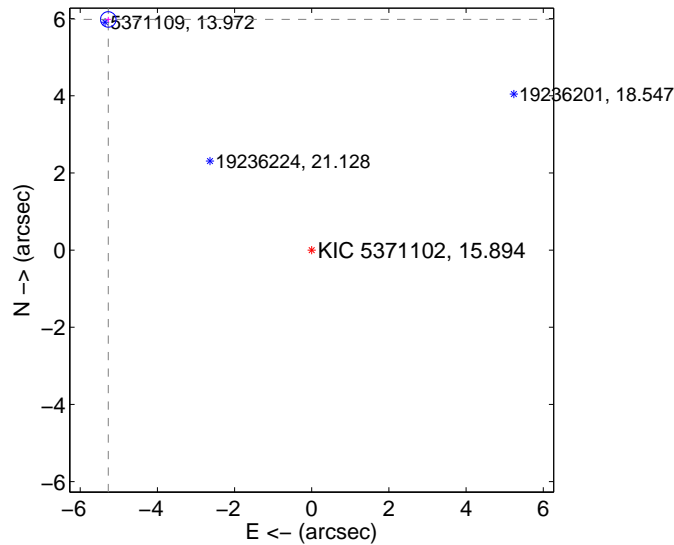
The OOT PRF centroid is offset from the target star catalog position by about 7.92 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.069 ± 0.067	1.04	0.069 ± 0.067	0.004 ± 0.067
PRF-fit source offset from KIC position	7.971 ± 0.067	119.24	5.273 ± 0.067	5.978 ± 0.067
photometric centroid source offset	3.39 ± 0.61	5.56	-1.11 ± 1.30	3.21 ± 0.46

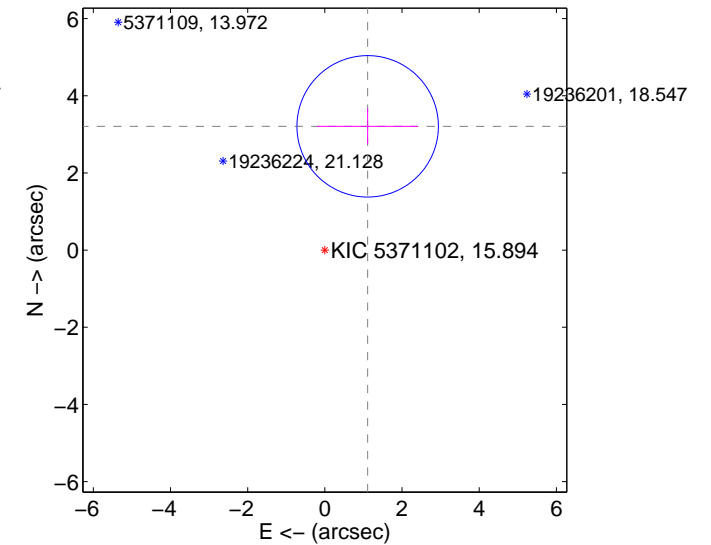
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

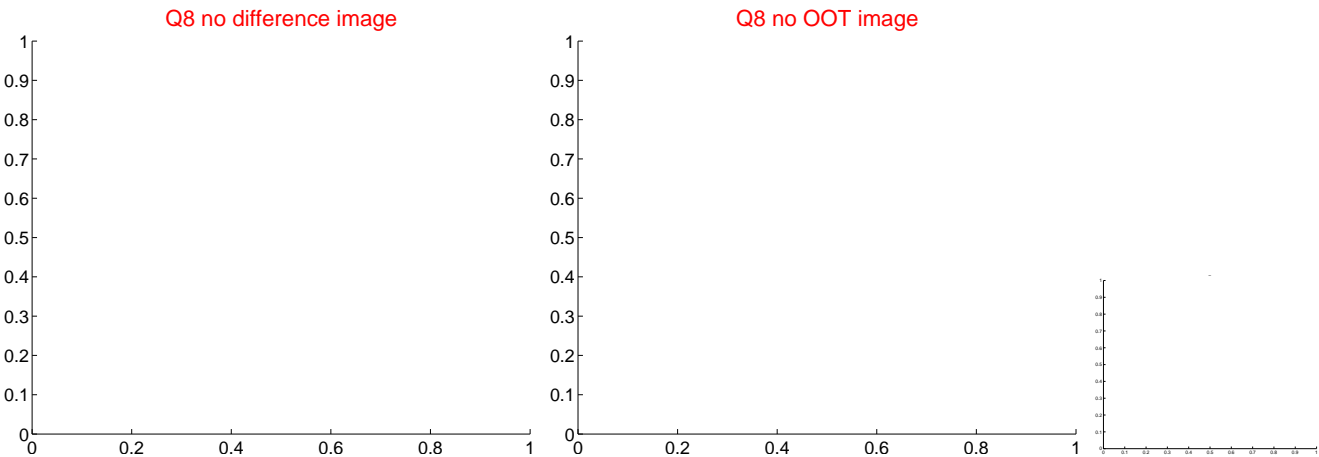
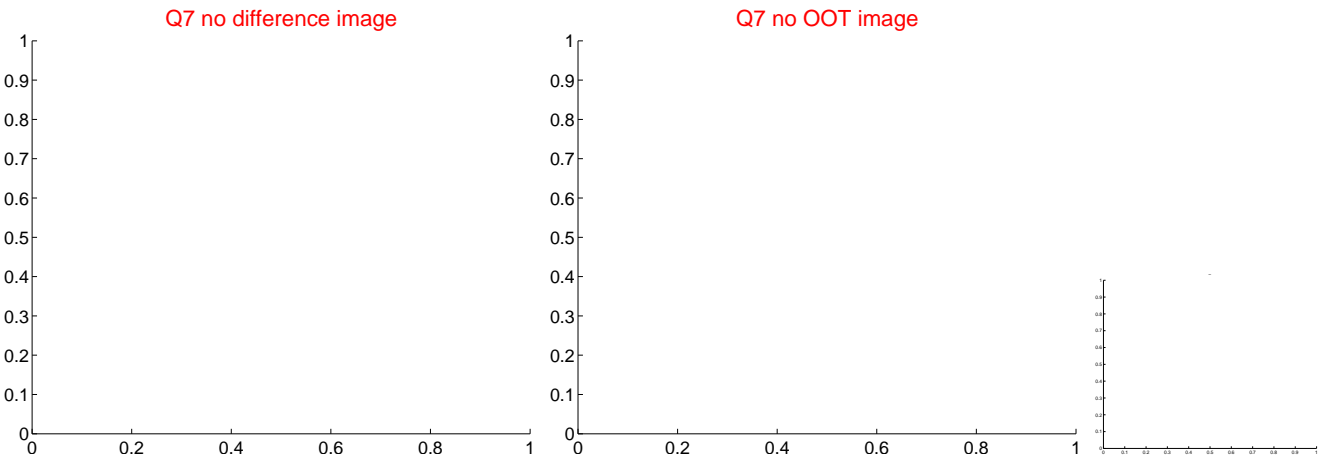
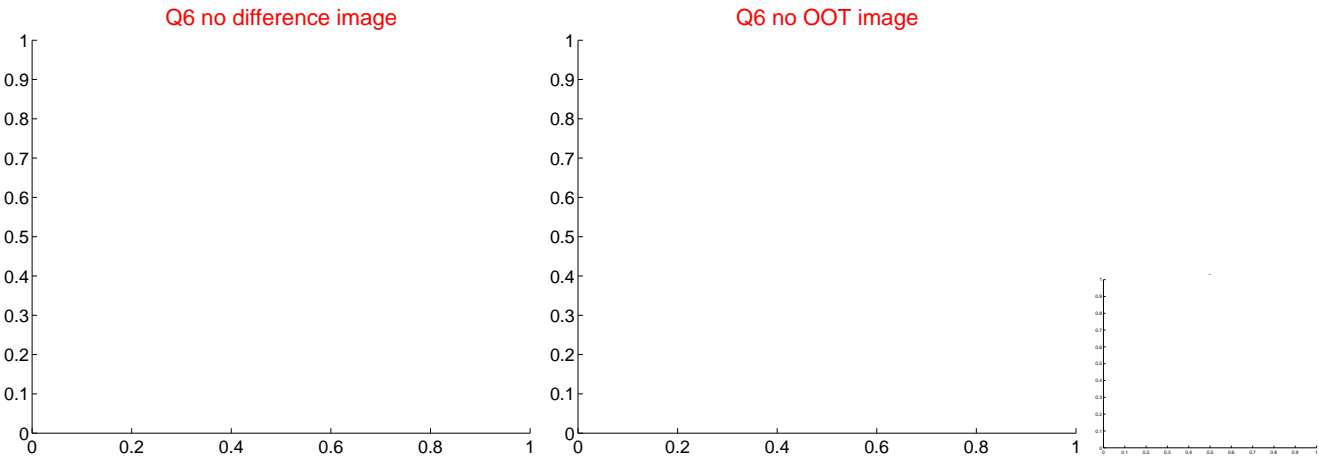
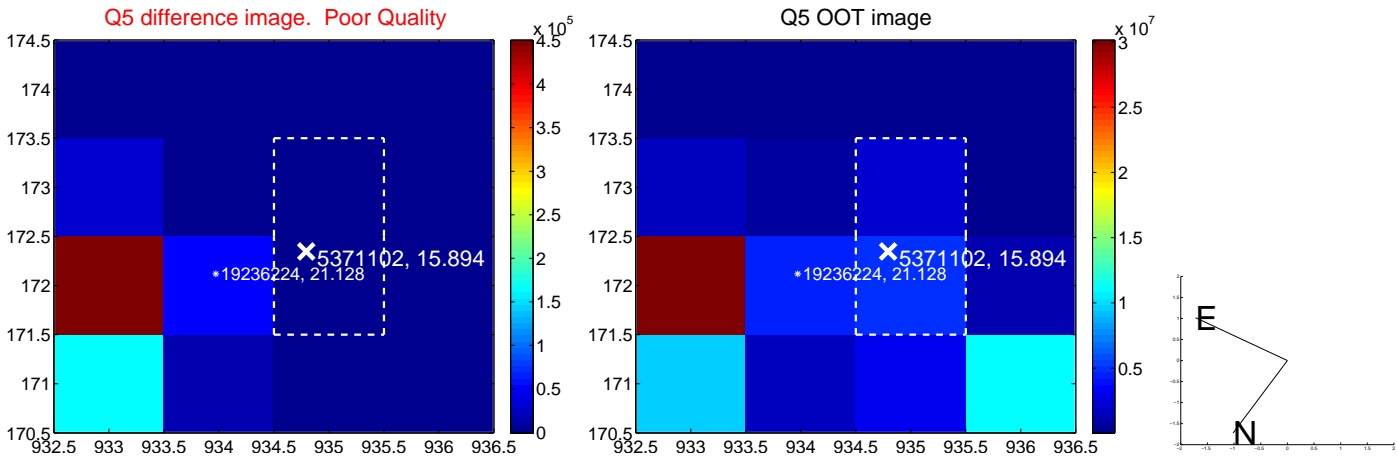


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

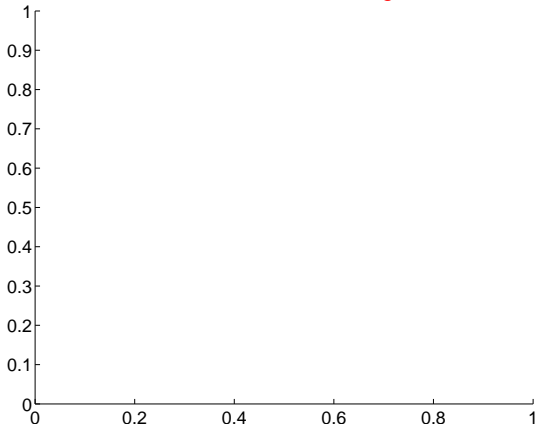


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

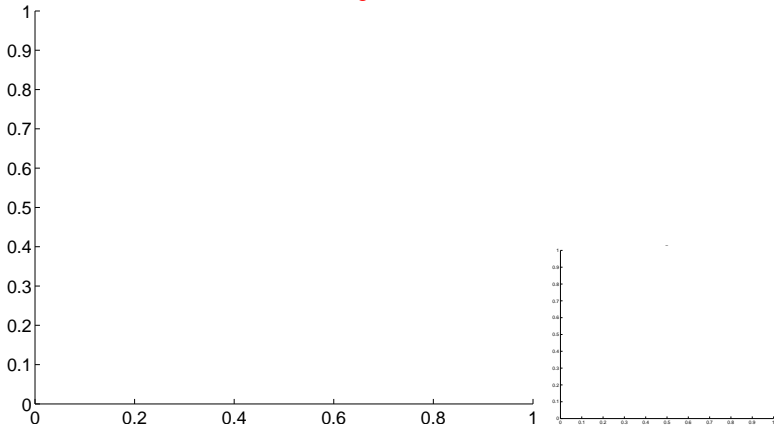


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

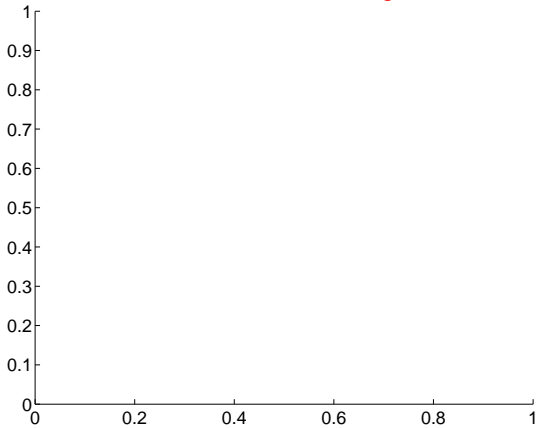
Q13 no difference image



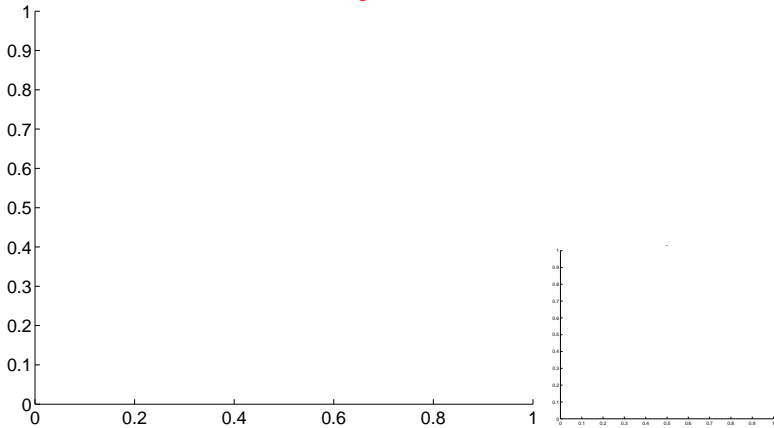
Q13 no OOT image



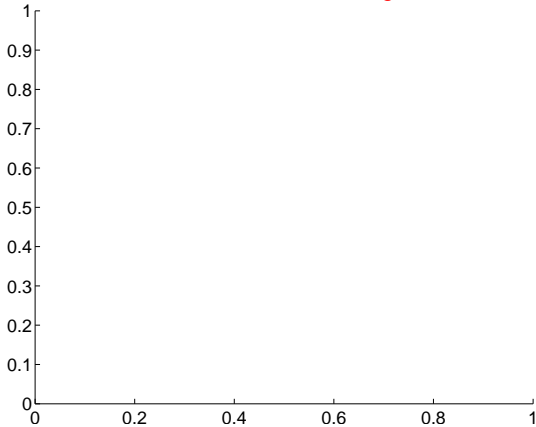
Q14 no difference image



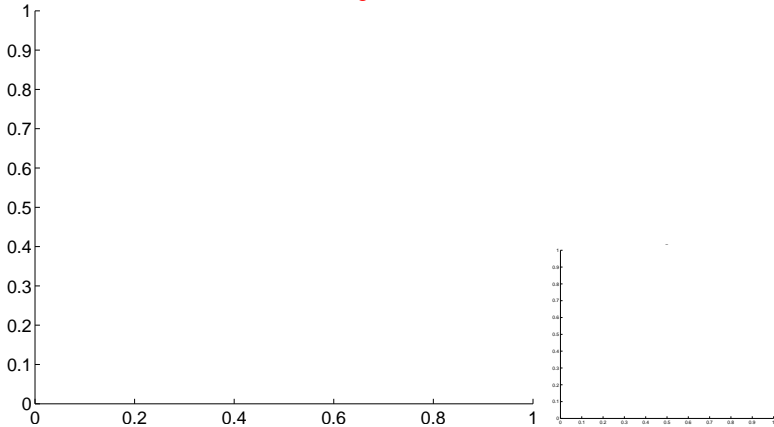
Q14 no OOT image



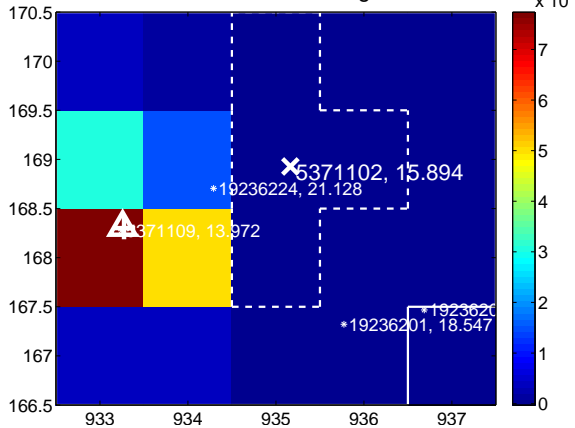
Q15 no difference image



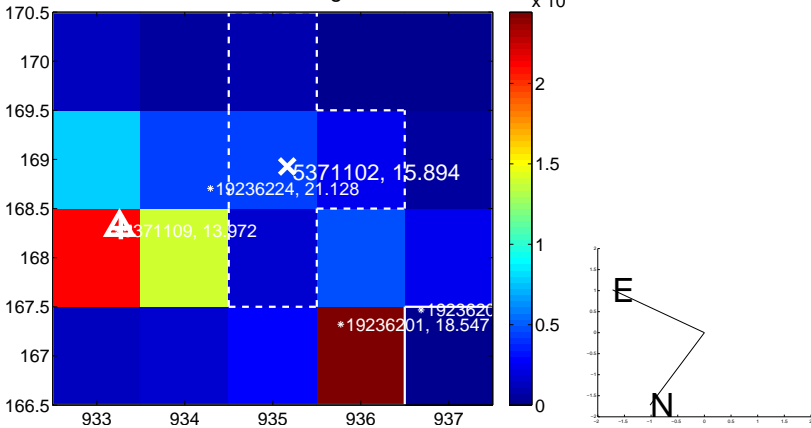
Q15 no OOT image



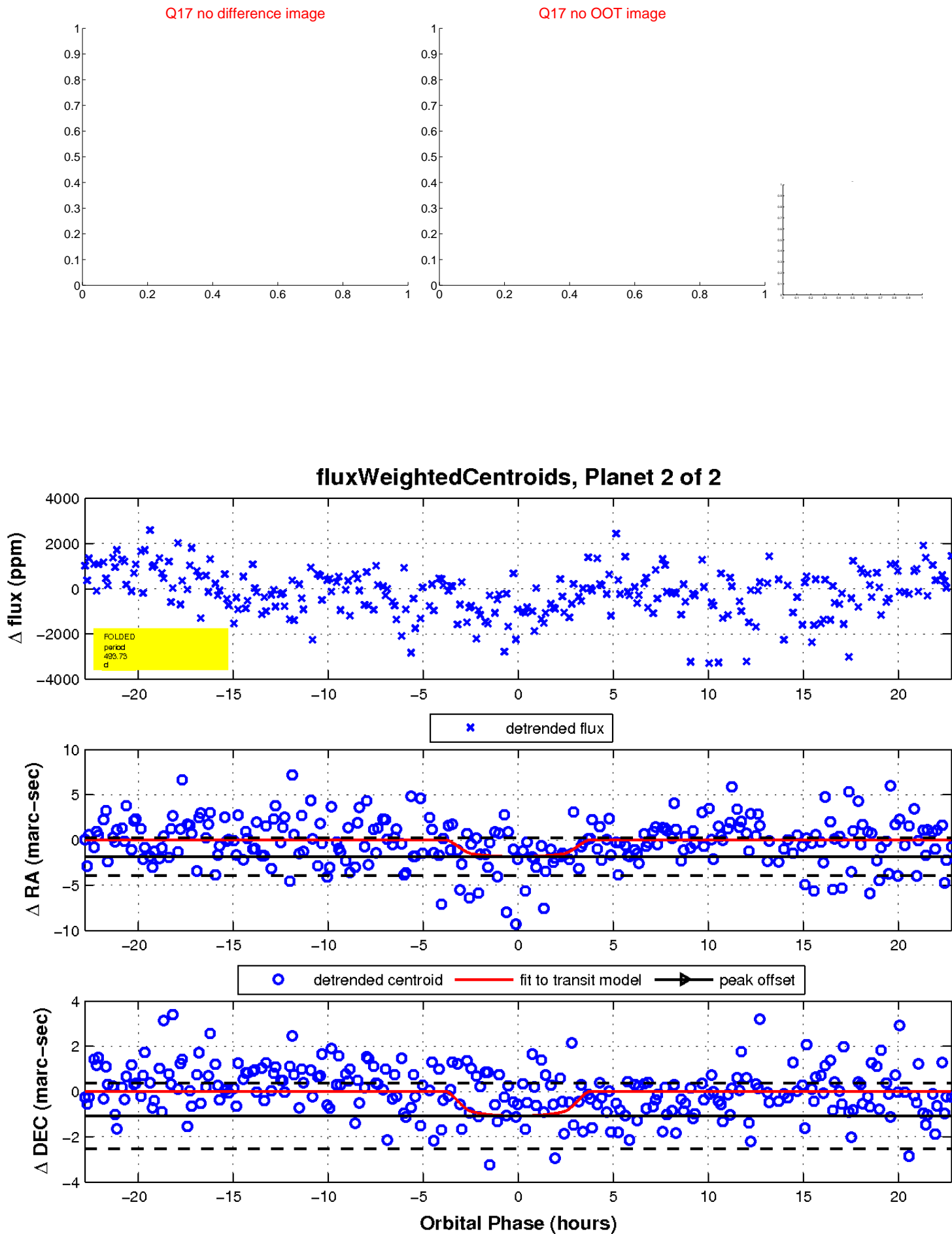
Q16 difference image



Q16 OOT image



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



UKIRT Image

Declination

