

KIC 012307229

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})
012307229-01	OBS	No	206.589544	166.749345	1324.5	2.870	11.2	8.4	0.75	5257	2.76	1.04
012307229-02	OBS	No	497.574389	344.295918	1259.4	4.188	12.6	5.2	0.75	5257	2.78	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307229-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012307229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

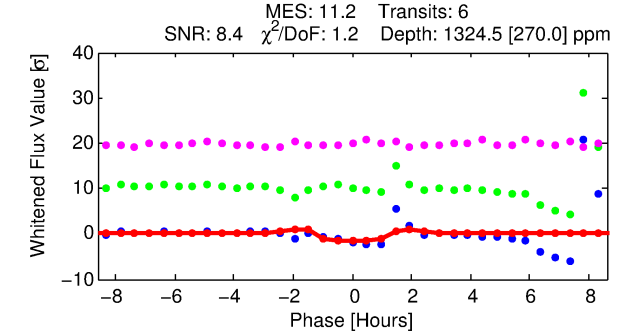
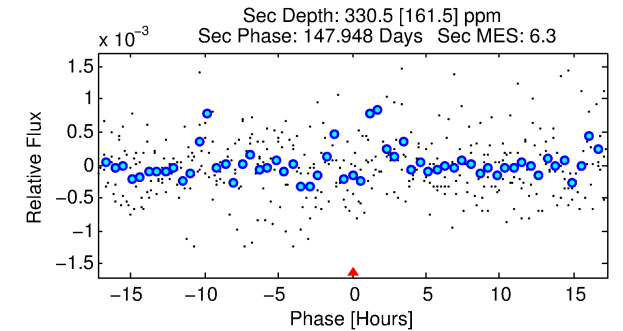
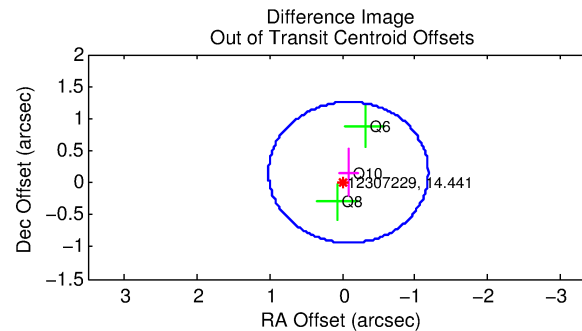
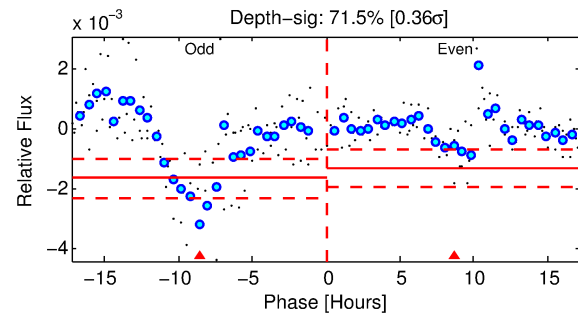
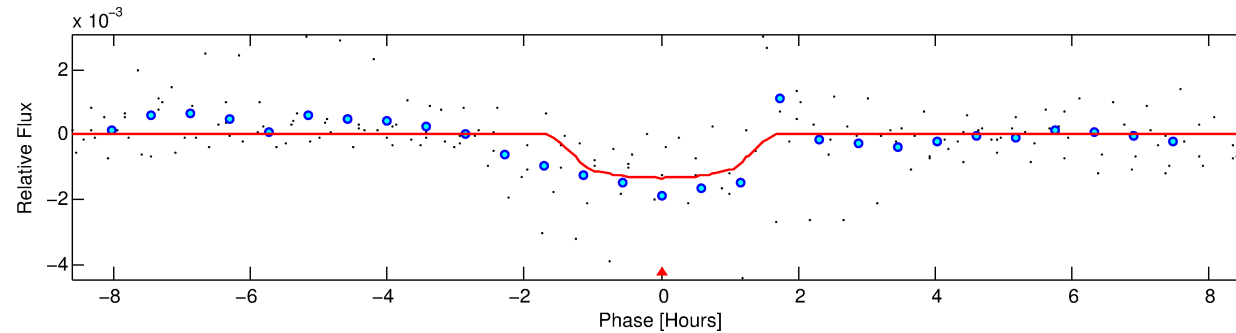
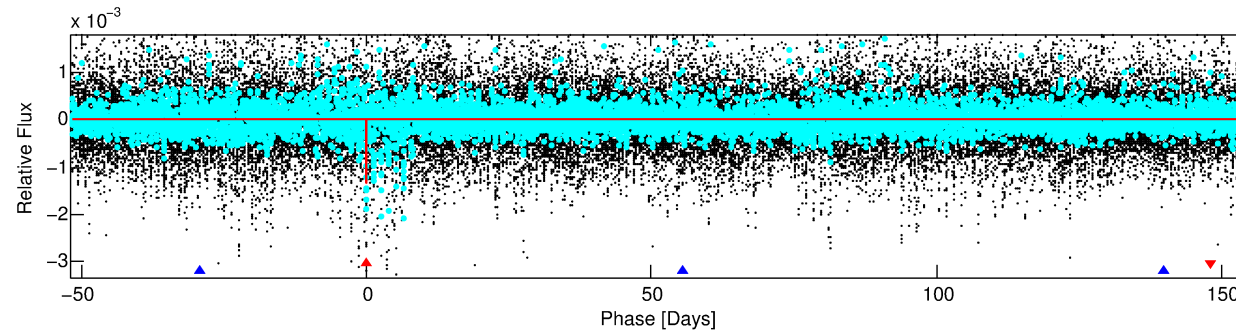
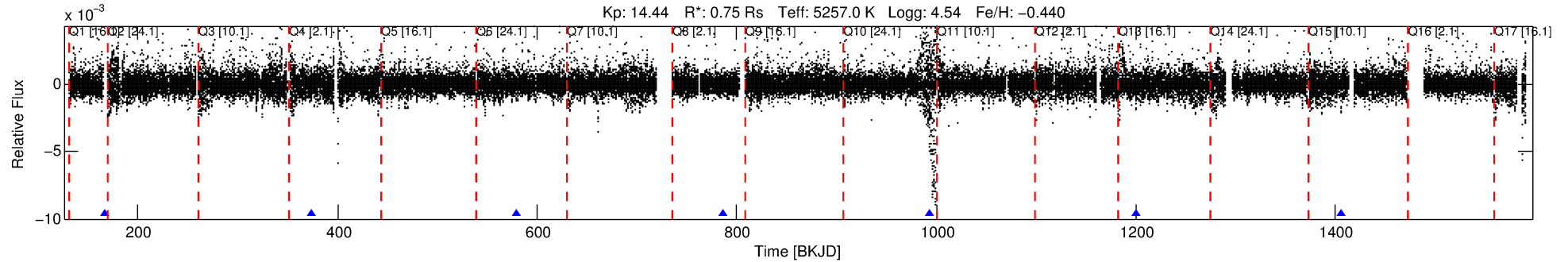
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012307229-01

No Significant Match Found

DV One-Page Summary

KIC: 12307229 Candidate: 1 of 2 Period: 206.590 d



DV Fit Results:

Period = 206.58954 [0.00217] d
Epoch = 166.7493 [0.0089] BKJD
Rp/R* = 0.0336 [0.2047]
a/R* = 514.54 [12389.91]
b = 0.44 [44.84]
Seff = 1.04 [0.21]
Teq = 258 [13] K
Rp = 2.76 [16.78] Re
a = 0.6089 [0.0645] AU
Ag = 8877.76 [108192.33] [0.08 σ]
Teffp = 3866 [11777] K [0.31 σ]

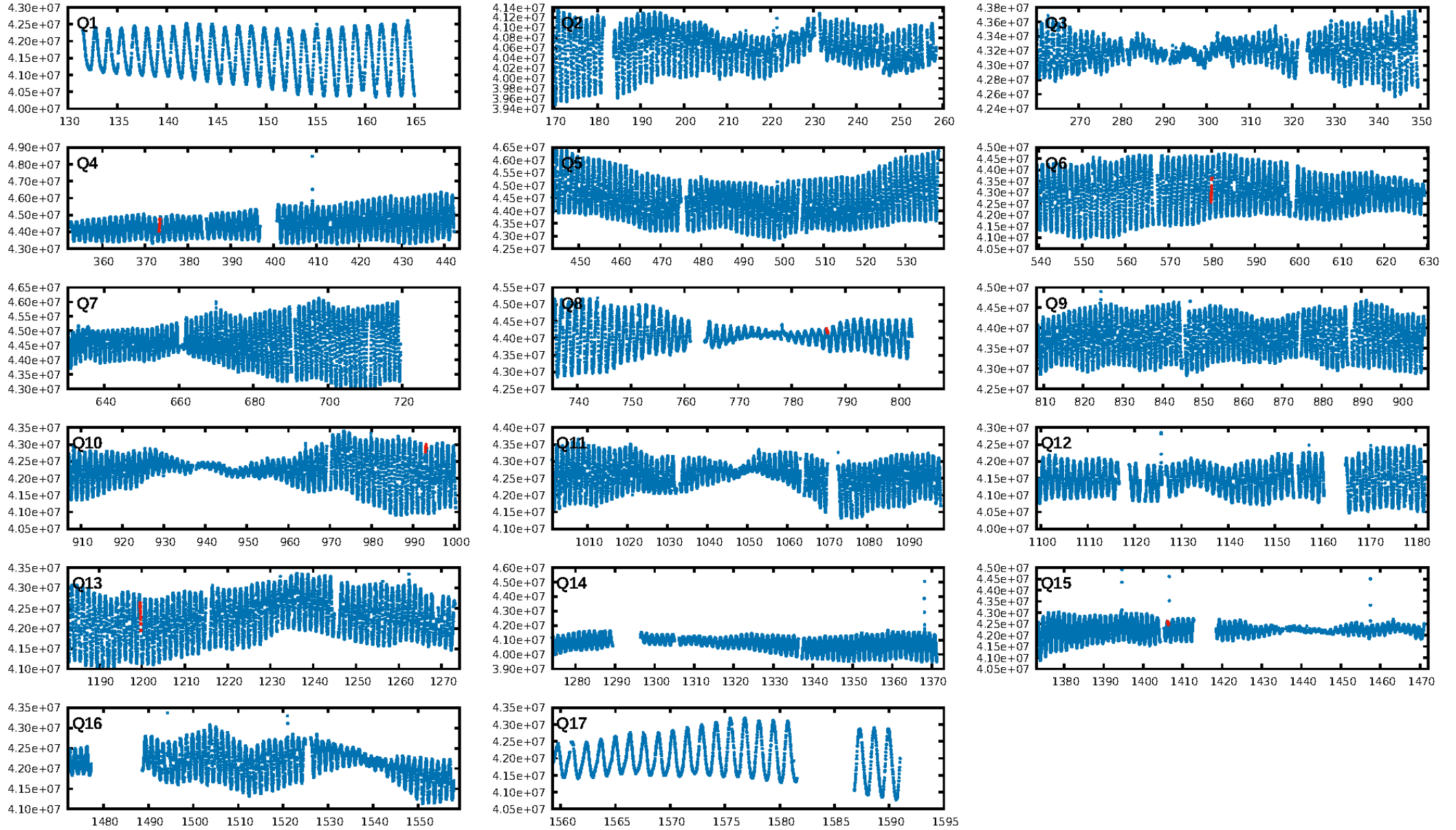
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1375.53 σ]
ModelChiSquare2-sig: 1.6%
ModelChiSquareGof-sig: 55.9%
Bootstrap-pfa: 6.88e-11
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.4226
Centroid-sig: 2.8%
Centroid-so: 1.052 arcsec [1.42 σ]
OotOffset-rm: 0.182 arcsec [0.50 σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.246 arcsec [1.58 σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

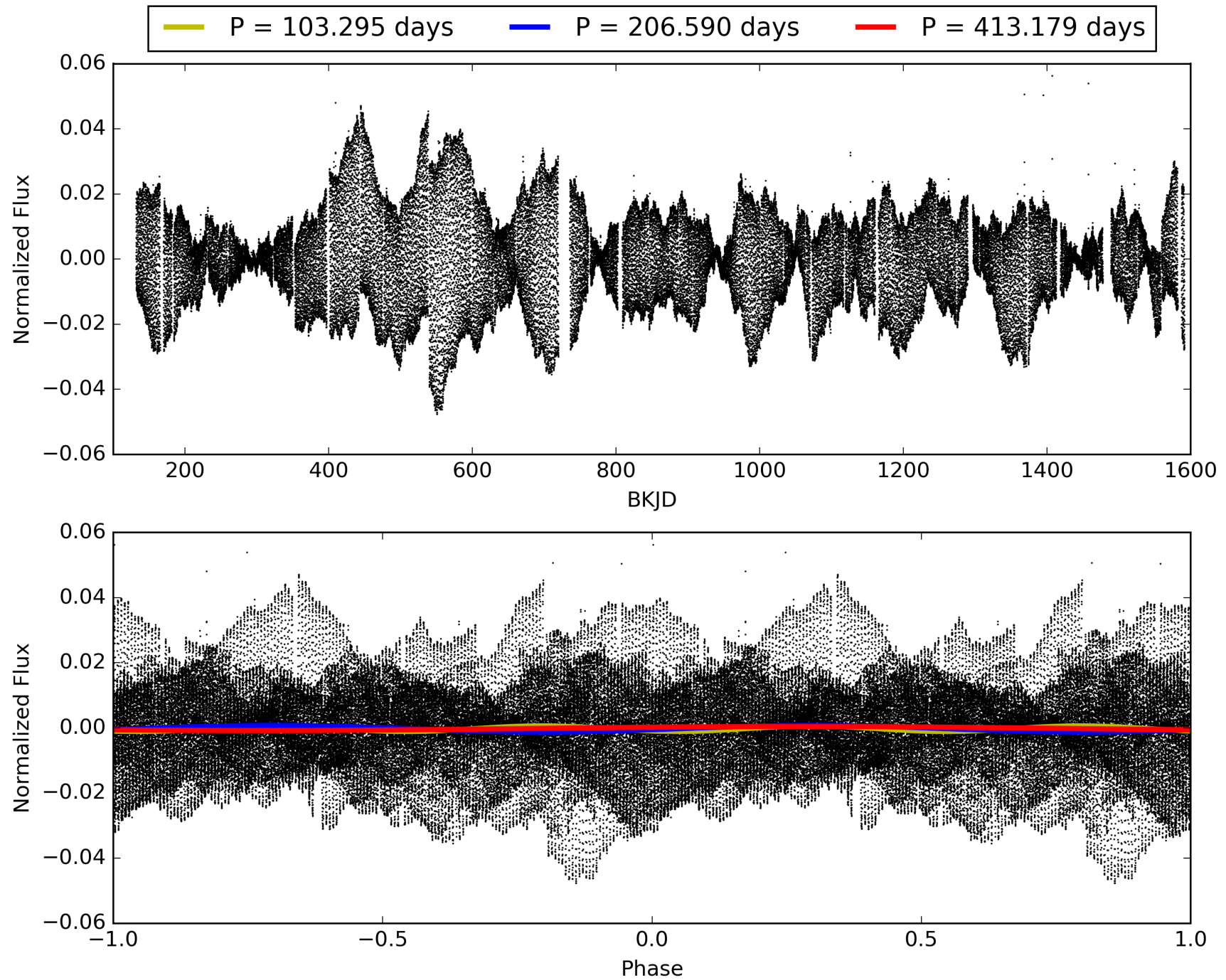
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:02:16 Z

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

TCE 012307229-01, PDC Light Curves

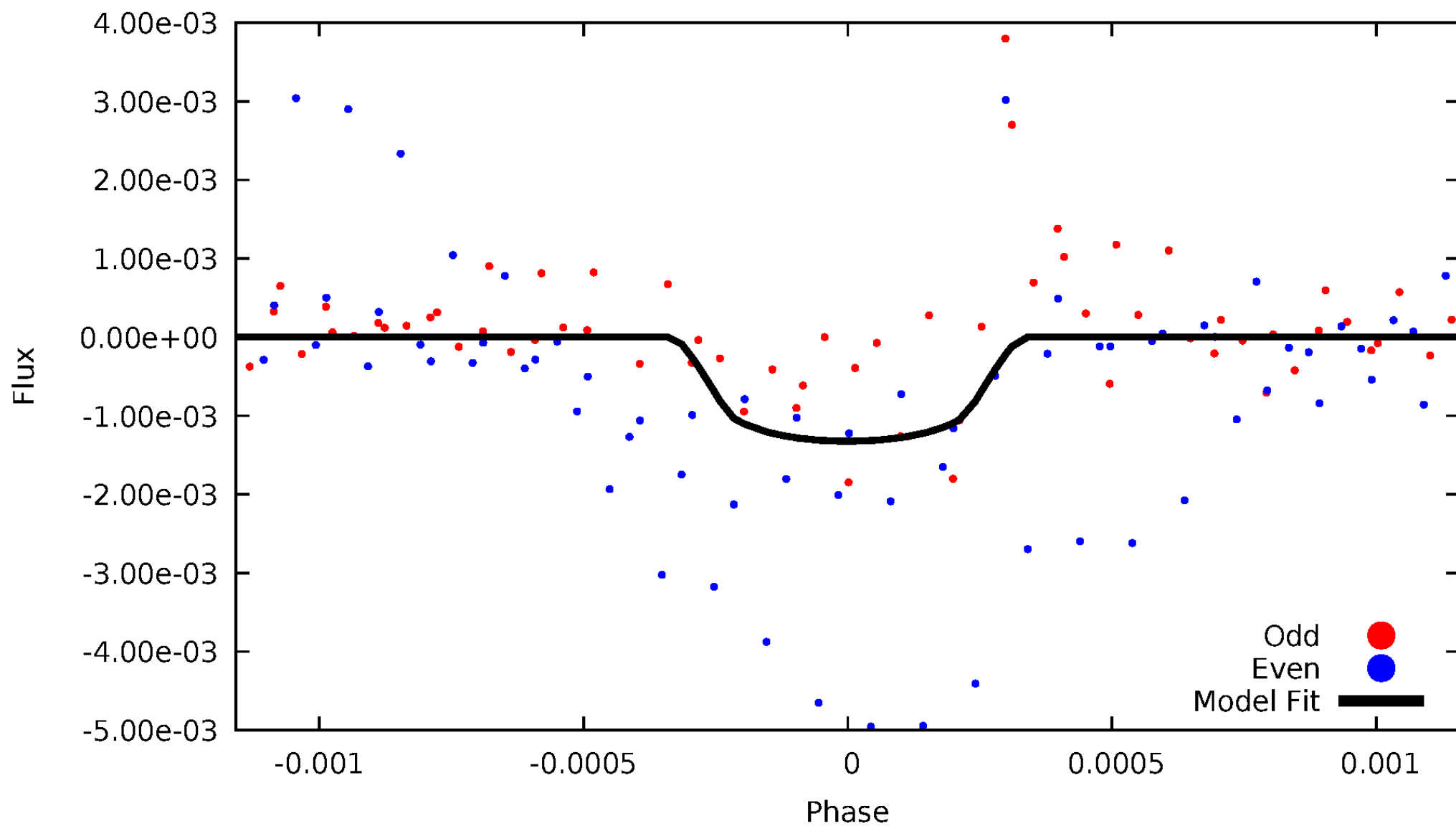


TCE 012307229-01



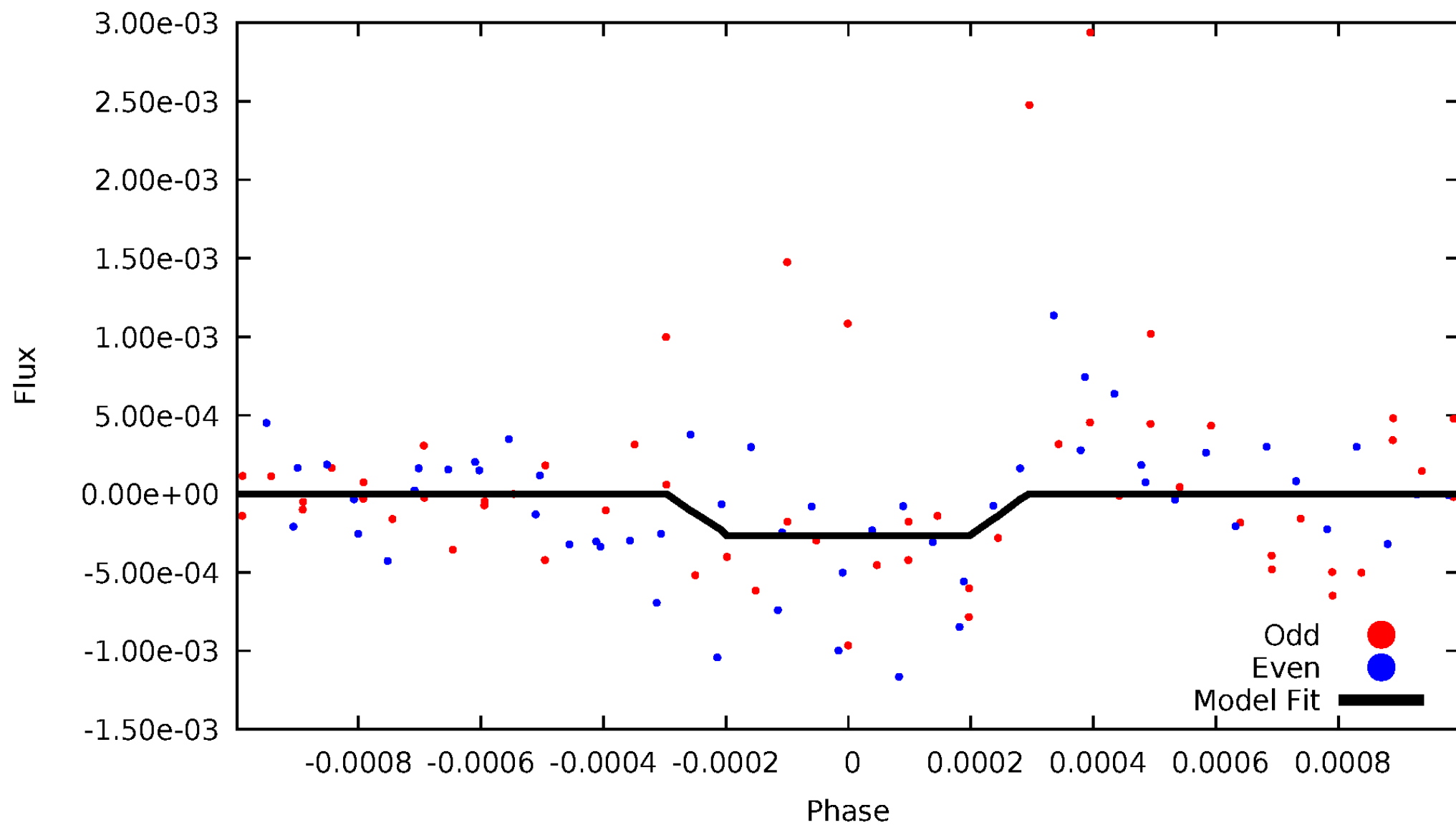
DV Odd/Even

TCE 012307229-01



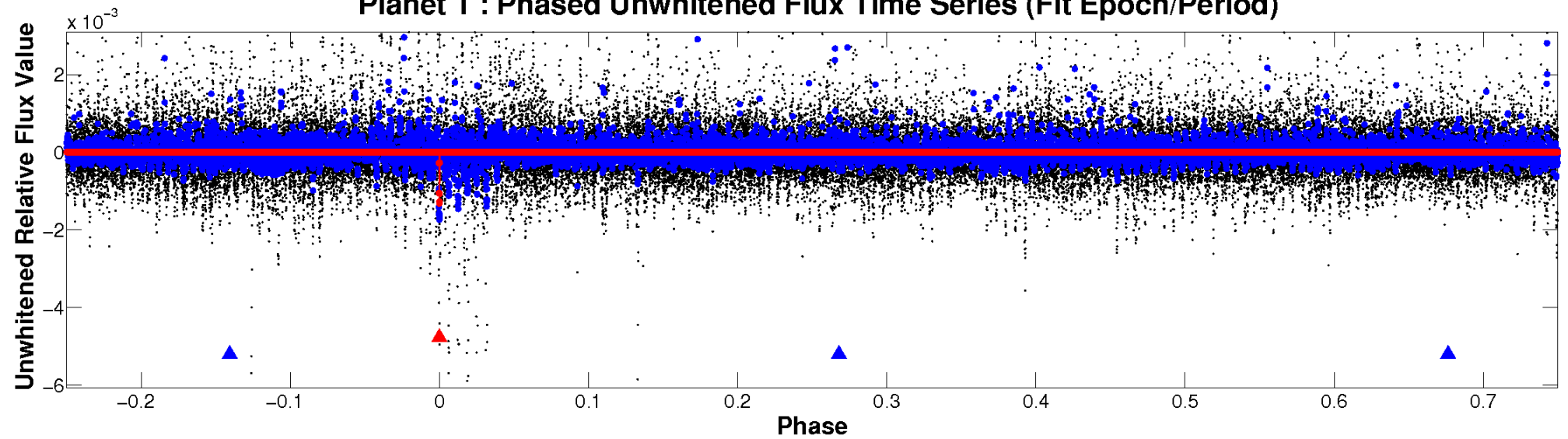
ALT Odd/Even

TCE 012307229-01

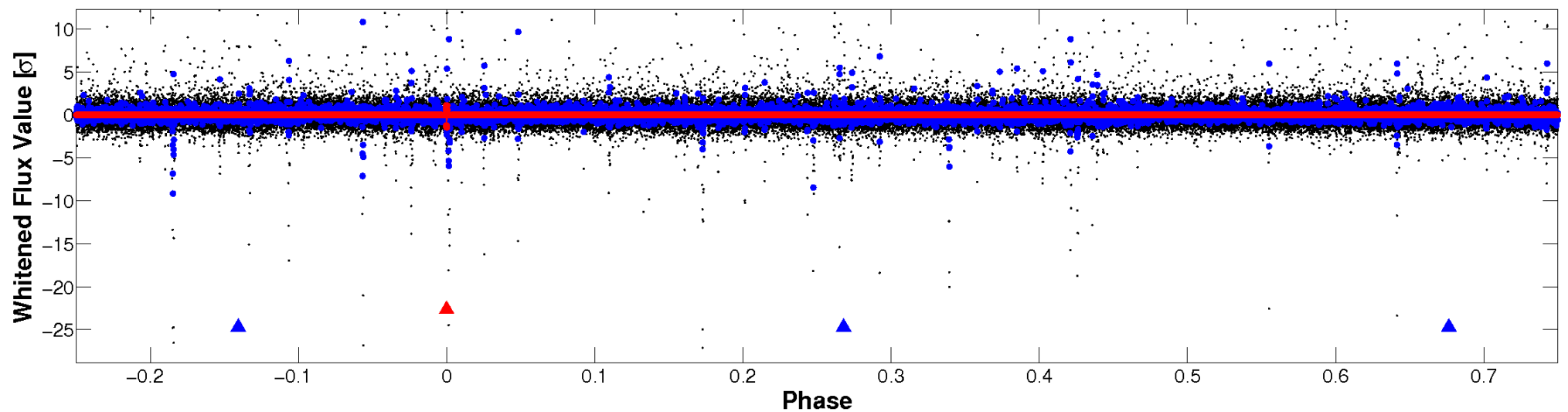


Non-Whitened Vs. Whitened Light Curve

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

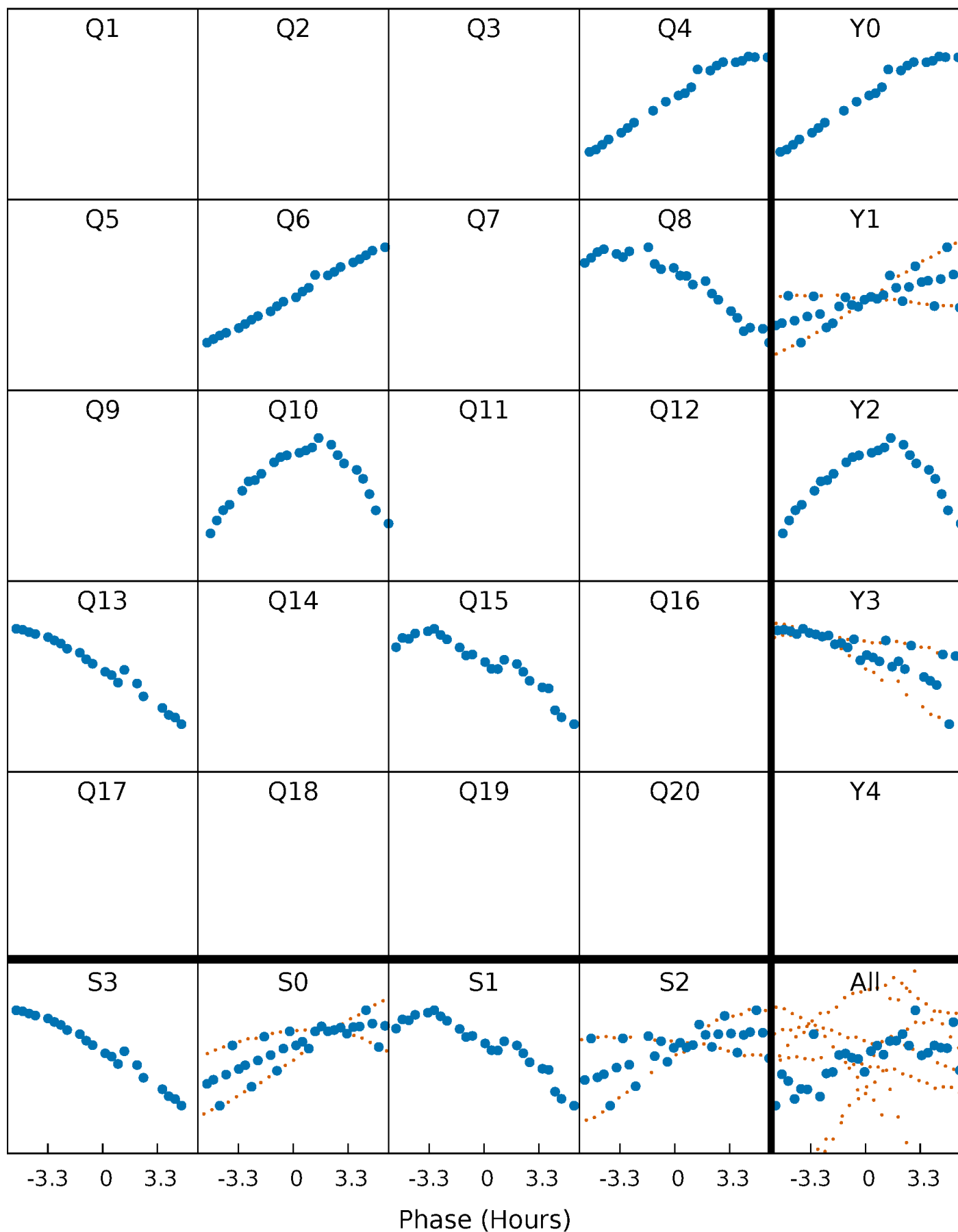


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



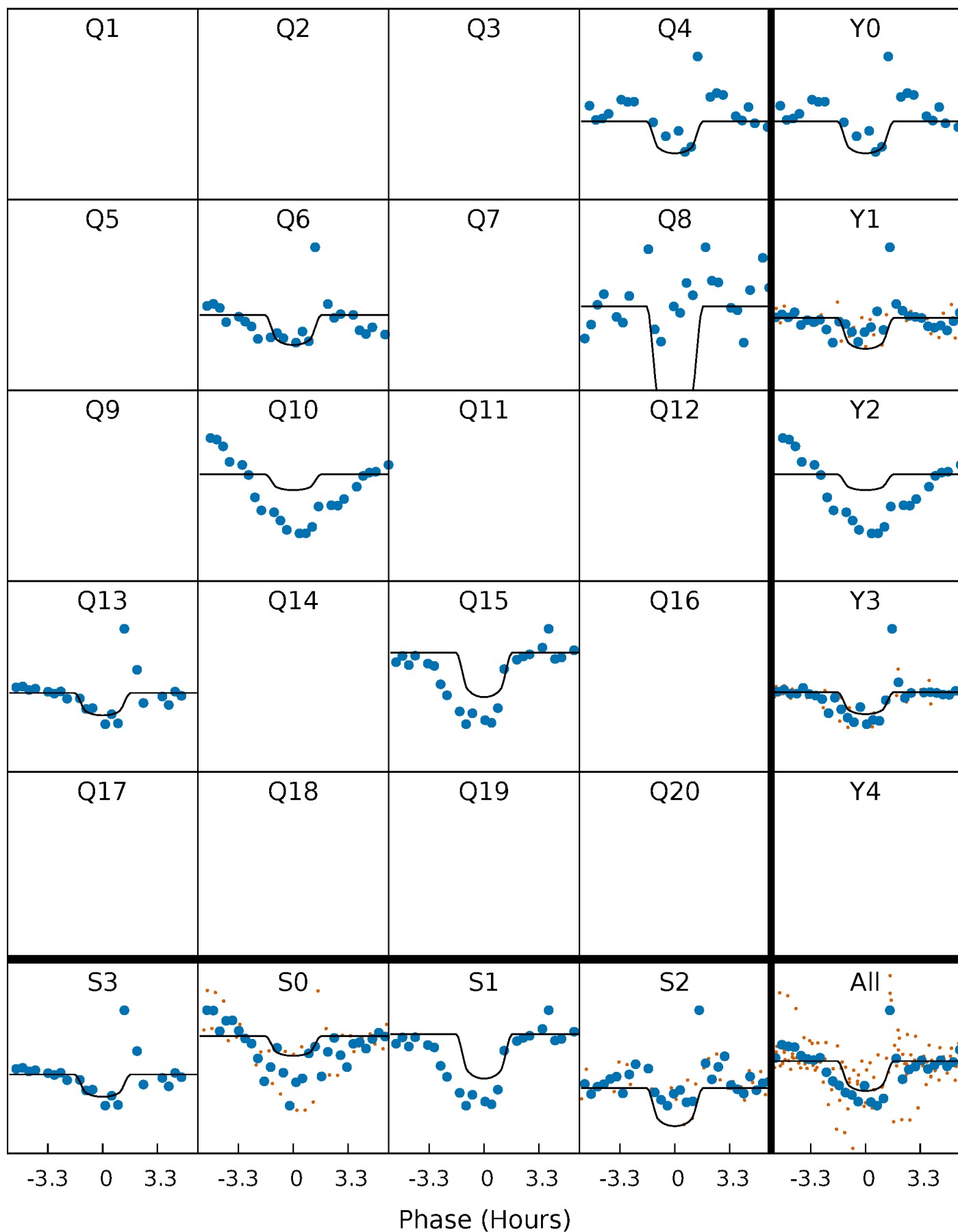
PDC Quarter-Phased Transit Curves

TCE 012307229-01 P=206.589544 Days $T_0=166.749345$ (BKJD)



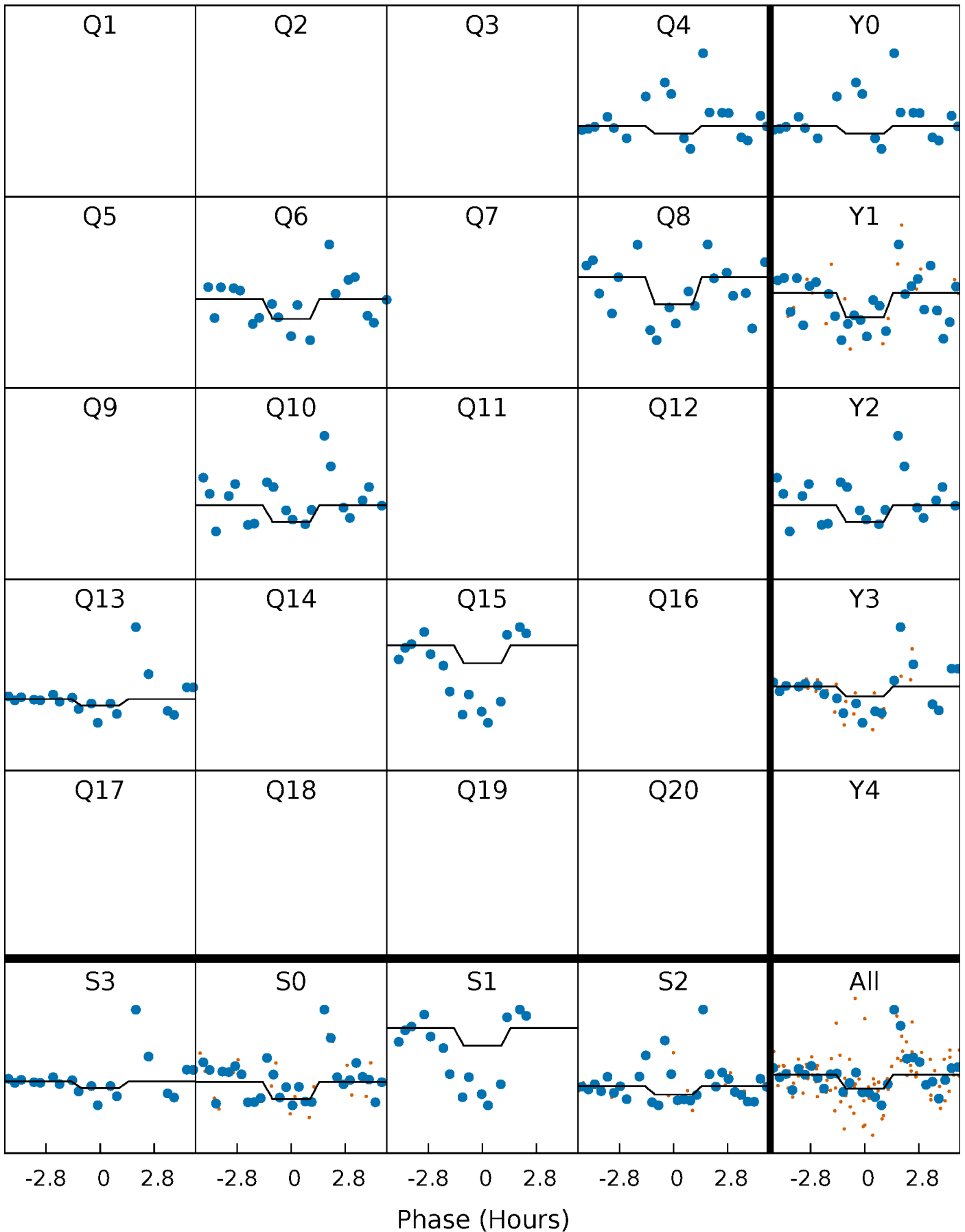
DV Quarter-Phased Transit Curves

TCE 012307229-01 $P=206.589544$ Days $T_0=166.749345$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

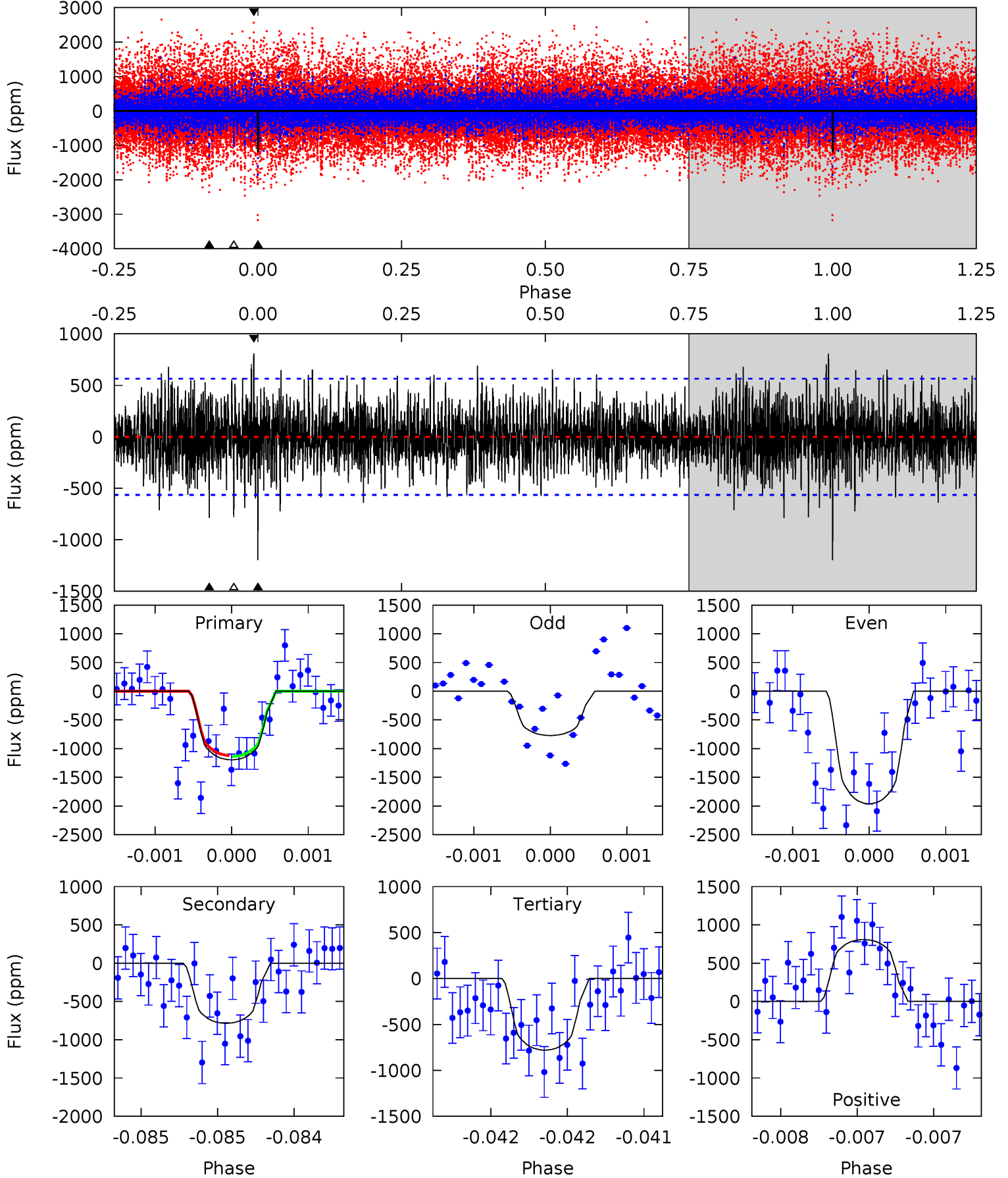
TCE 012307229-01 P=206.588868 Days $T_0=166.753115$ (BKJD)



DV Model-Shift Uniqueness Test

012307229-01, P = 206.589544 Days, E = 166.749345 Days

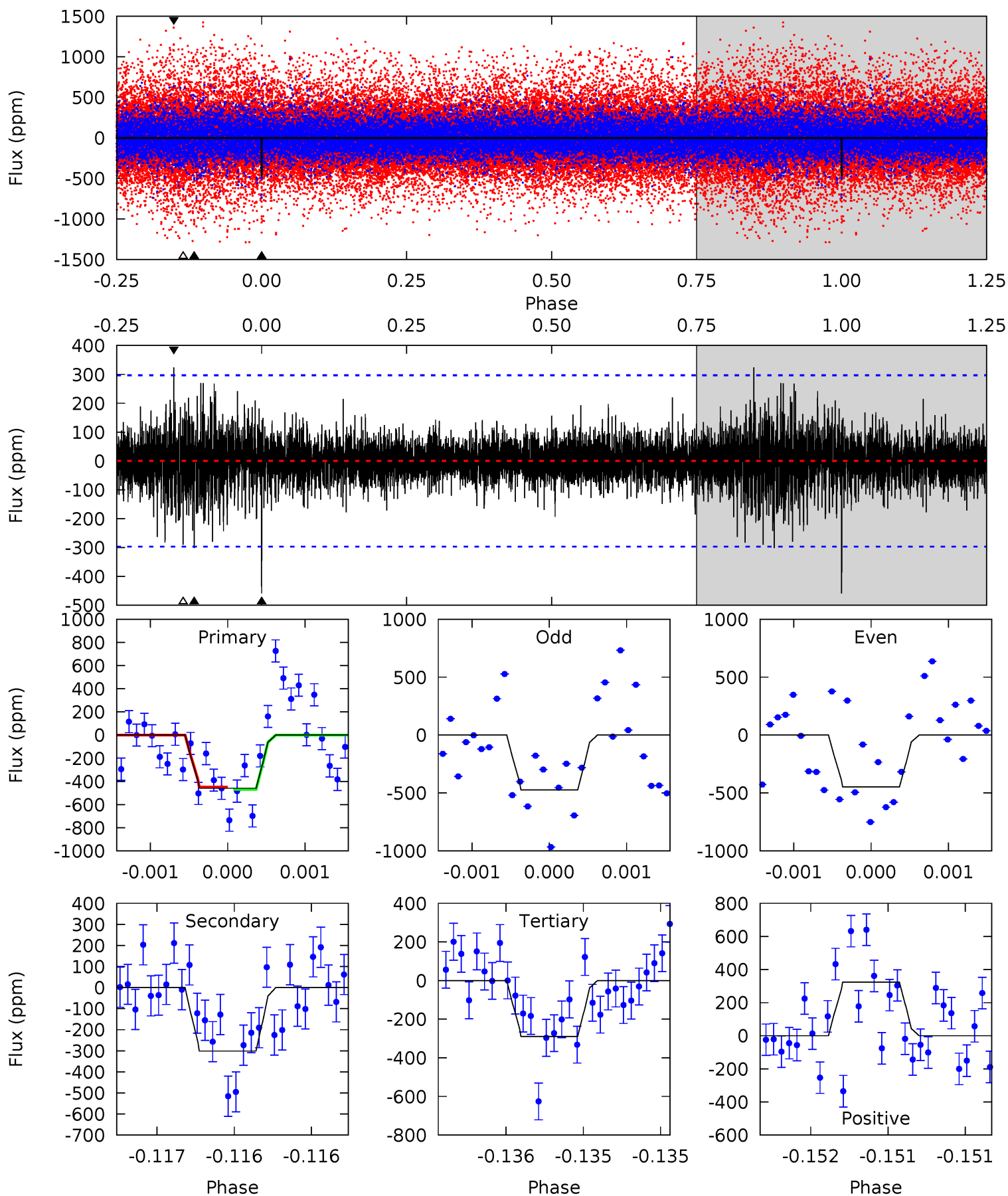
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	7.71	7.65	7.93	5.54	3.43	1.94	4.08	3.80	0.06	-0.22	5.81	1.51	0.40	0.08



Alt Model-Shift Uniqueness Test

012307229-01, P = 206.588868 Days, E = 166.753115 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.60	5.65	5.43	6.07	5.56	3.46	1.06	3.17	2.53	0.22	-0.42	0.23	0.86	0.41	0.21



Stellar Parameters For KIC 012307229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5257^{+158}_{-142}	$4.535^{+0.088}_{-0.072}$	$-0.440^{+0.350}_{-0.300}$	$0.751^{+0.092}_{-0.084}$	$0.705^{+0.103}_{-0.044}$	$2.343^{+0.955}_{-0.528}$
	+3%/-3%	+2%/-2%	+80%/-68%	+12%/-11%	+15%/-6%	+41%/-23%
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 012307229-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-786 ± 102	$12.62^{+13.90}_{-8.76}$	359^{+16}_{-14}	2926^{+1343}_{-505}	1047^{+9995}_{-820}
Alt.	-301 ± 53	$11.23^{+12.66}_{-8.05}$	359^{+15}_{-15}	2652^{+1233}_{-441}	485^{+5938}_{-376}

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

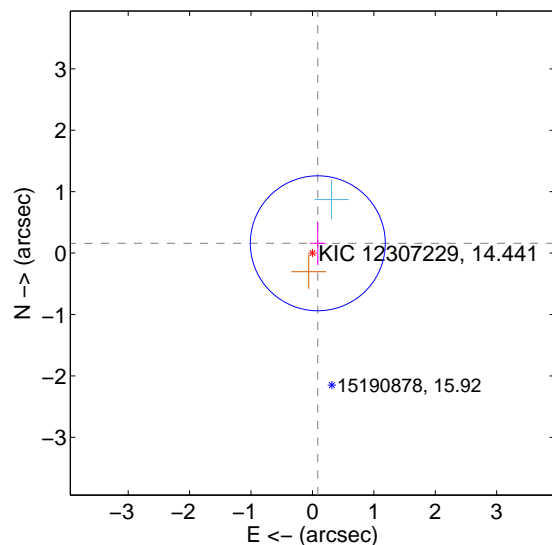
Supplemental centroid analysis for 012307229-01. Kepler magnitude: 14.44. Transit SNR 8.40

There are 1 quarters with good PRF difference image offsets

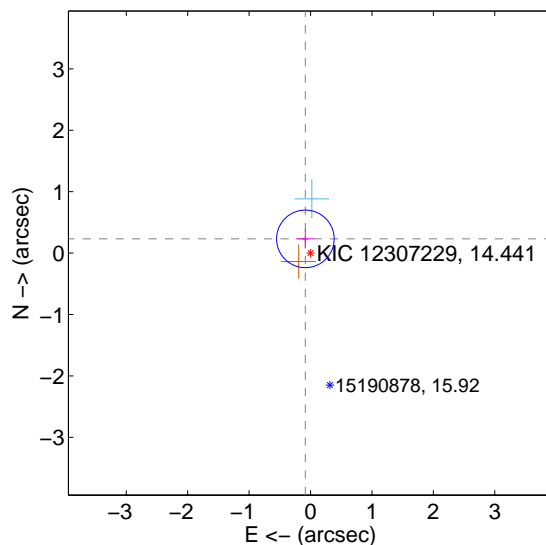
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.182 ± 0.366	0.50	-0.087 ± 0.129	0.160 ± 0.356
PRF-fit source offset from KIC position	0.246 ± 0.156	1.58	0.084 ± 0.149	0.232 ± 0.157
photometric centroid source offset	1.05 ± 0.74	1.42	-0.68 ± 0.65	-0.80 ± 0.80

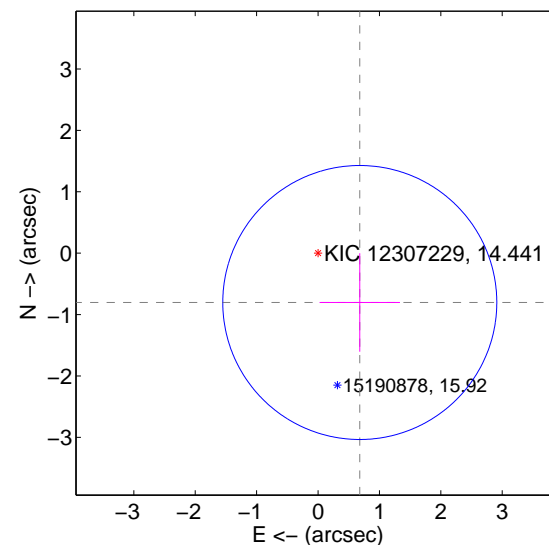
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

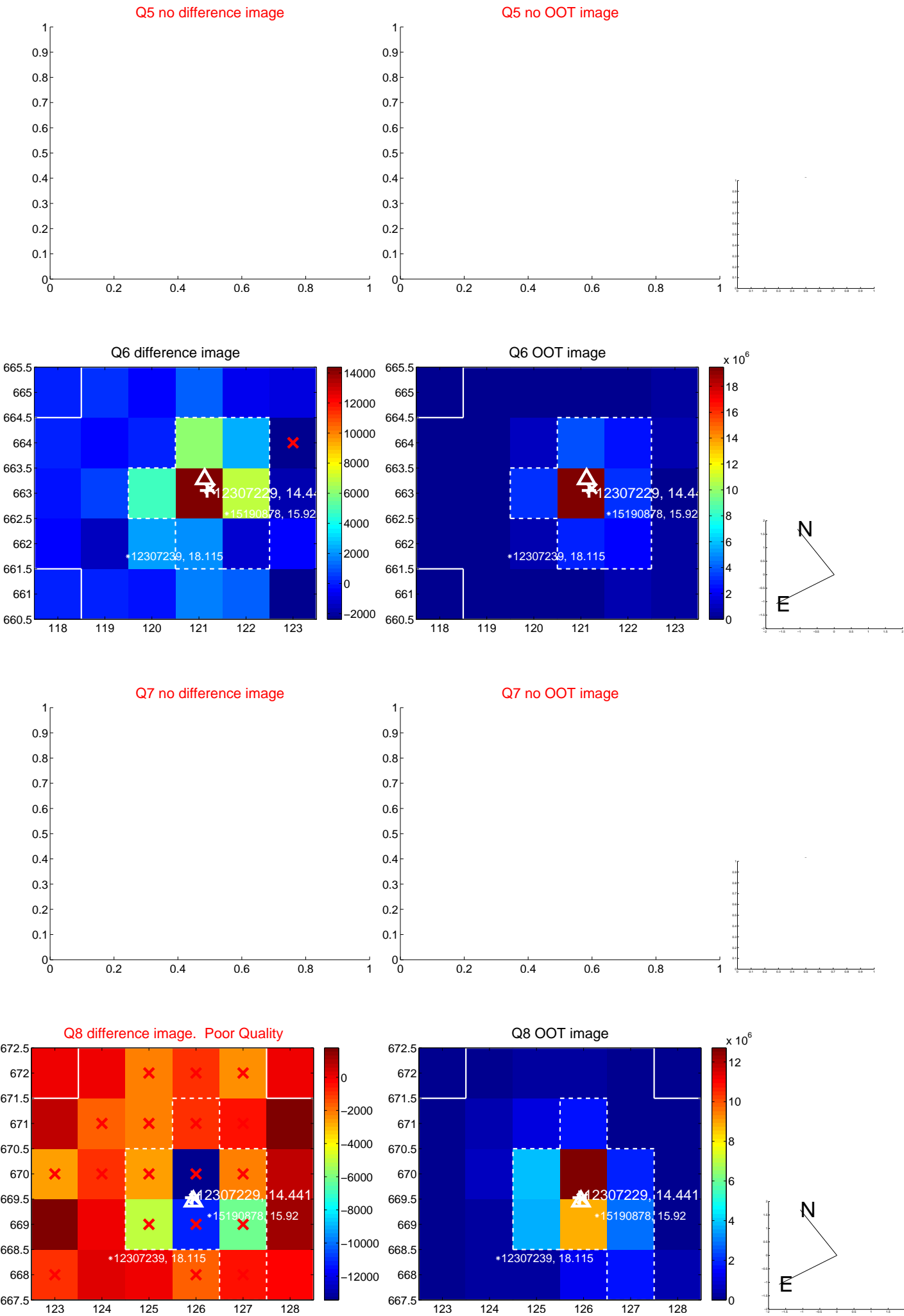


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

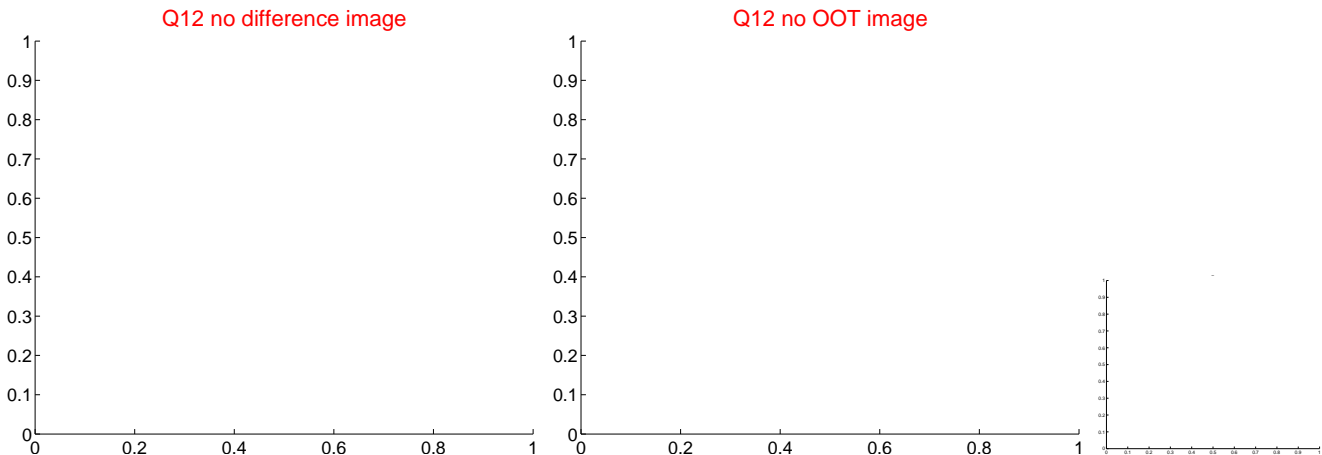
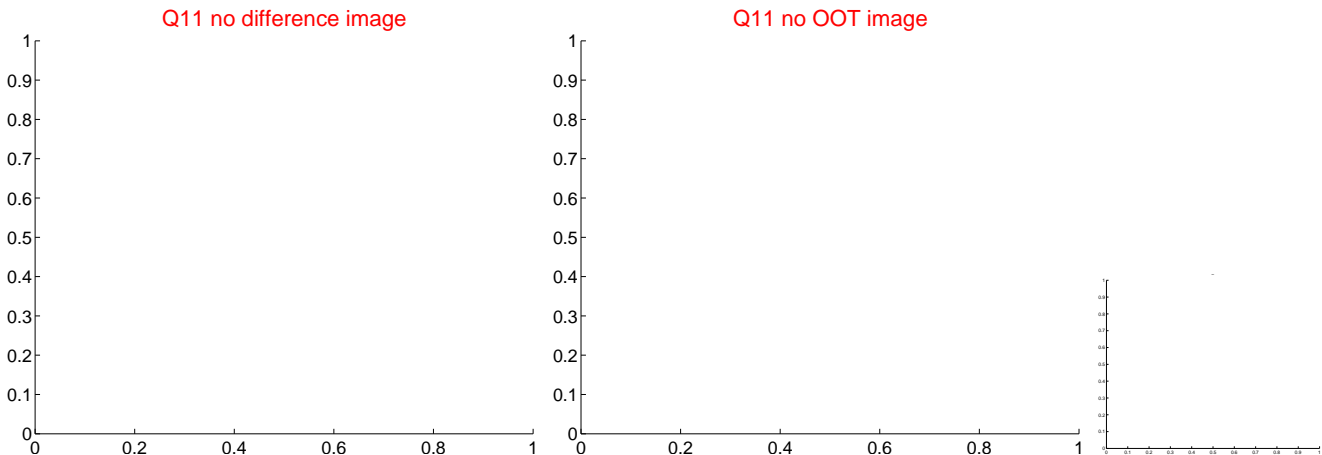
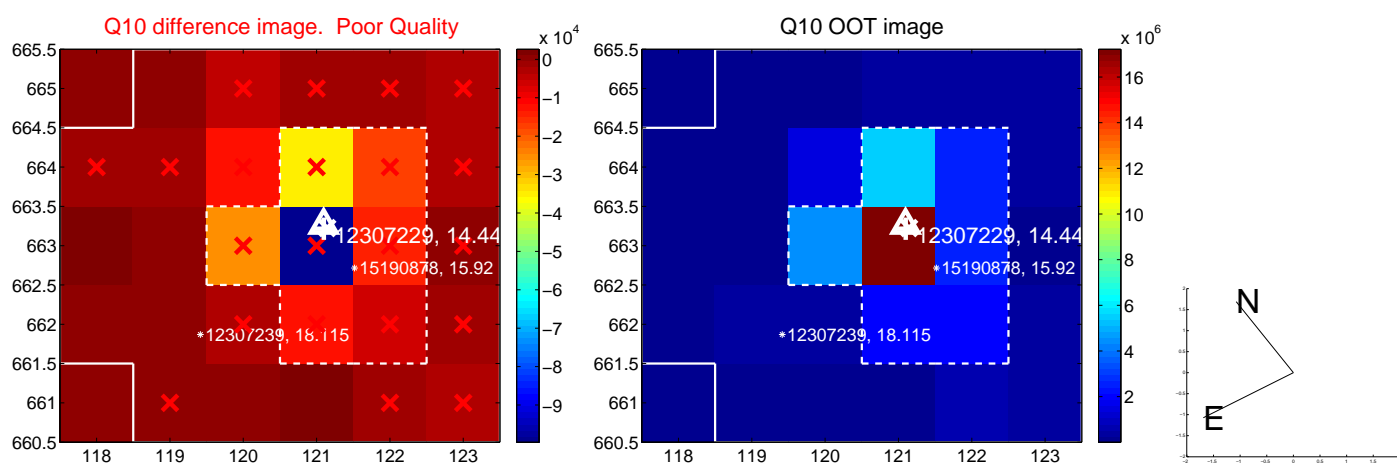
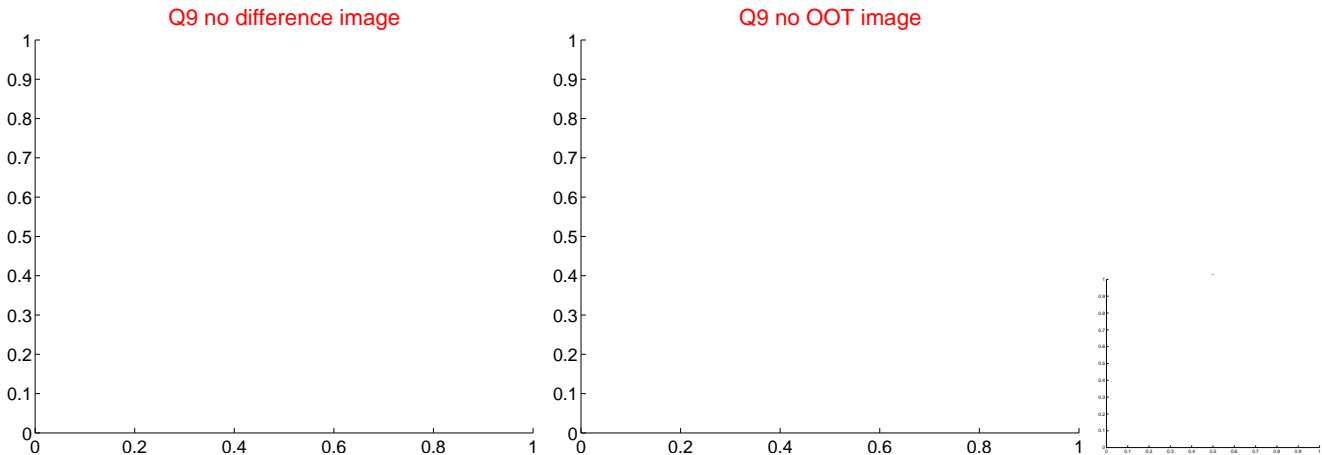
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



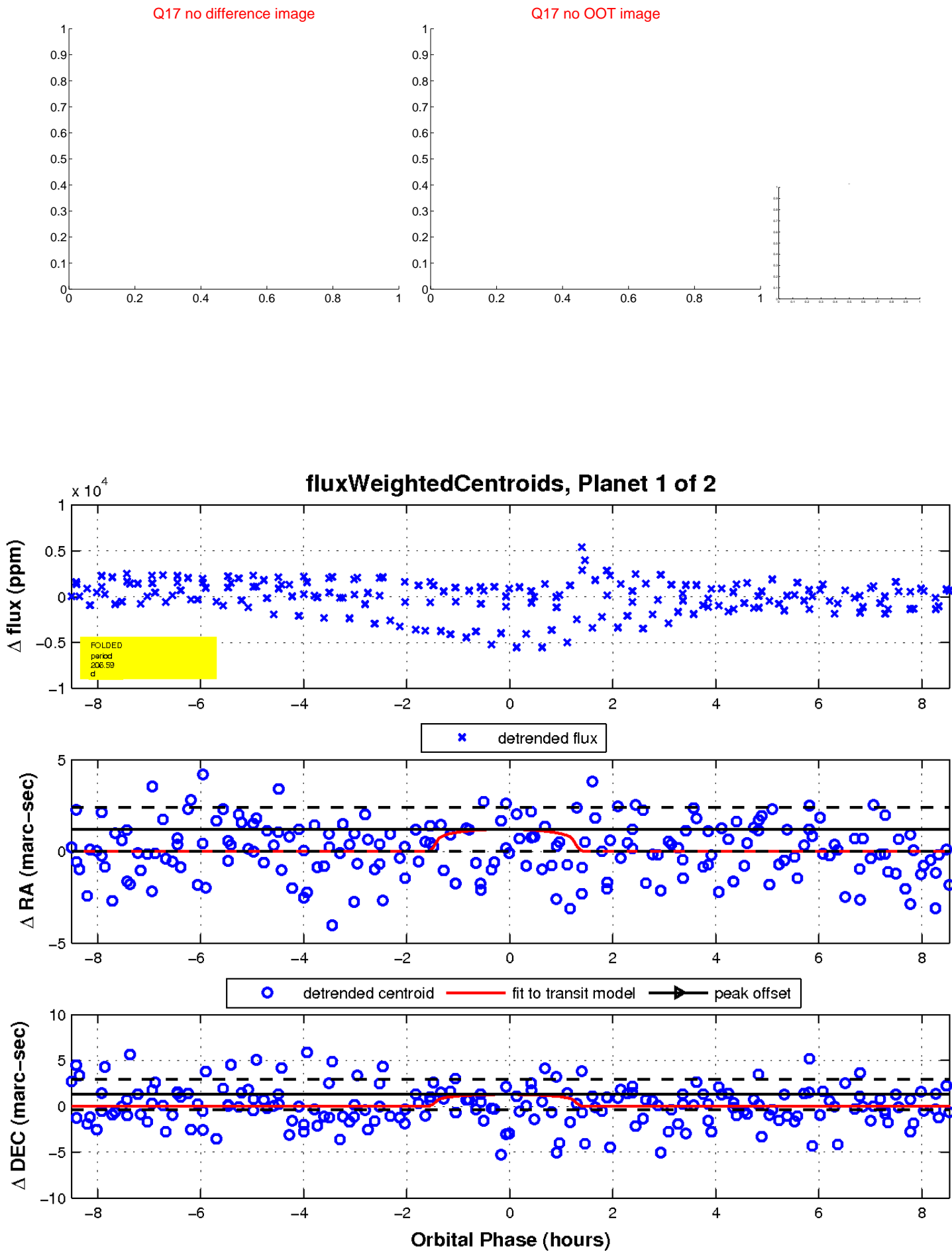
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

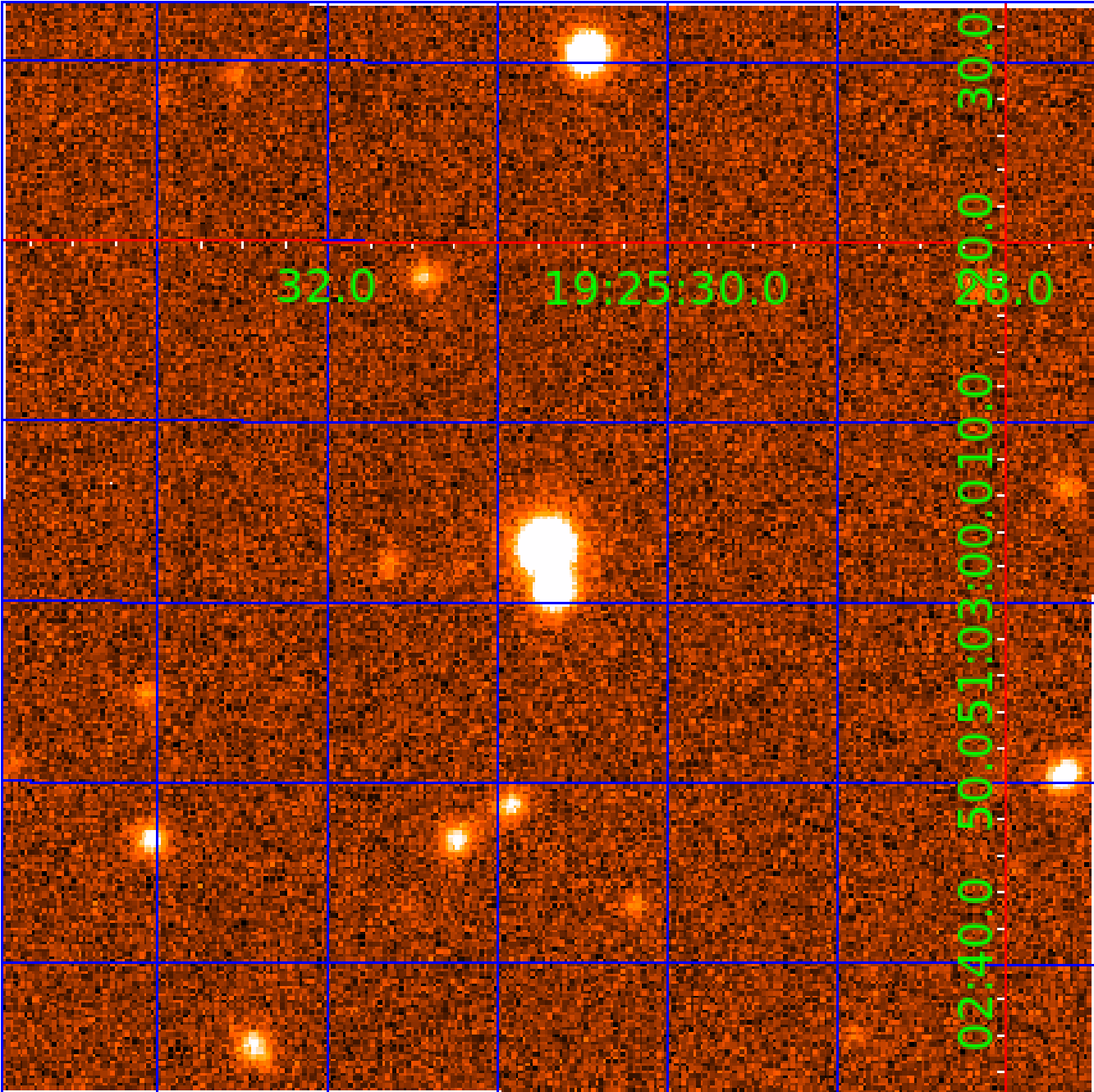


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012307229

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})
012307229-01	OBS	No	206.589544	166.749345	1324.5	2.870	11.2	8.4	0.75	5257	2.76	1.04
012307229-02	OBS	No	497.574389	344.295918	1259.4	4.188	12.6	5.2	0.75	5257	2.78	0.32

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307229-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
012307229-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

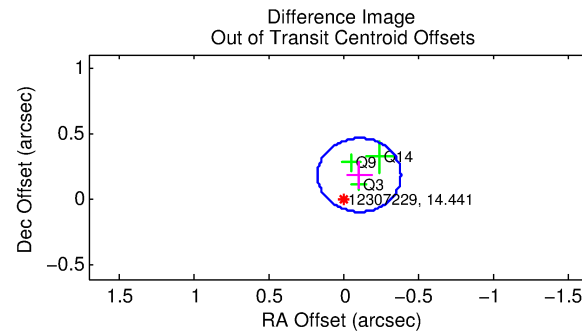
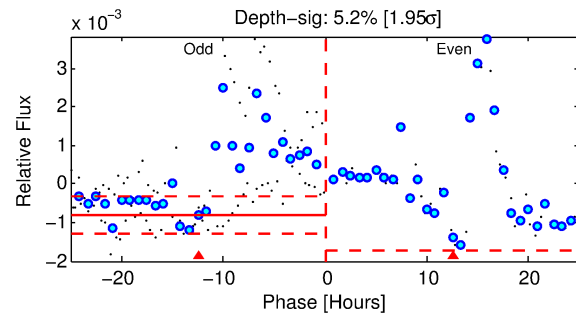
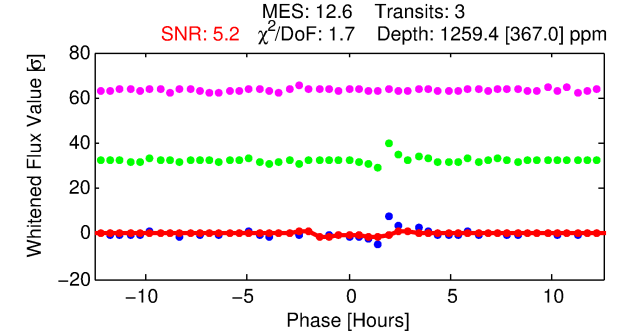
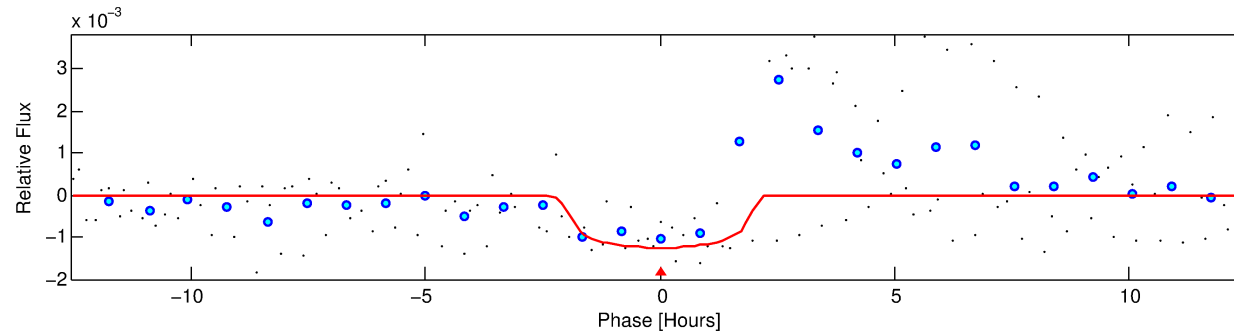
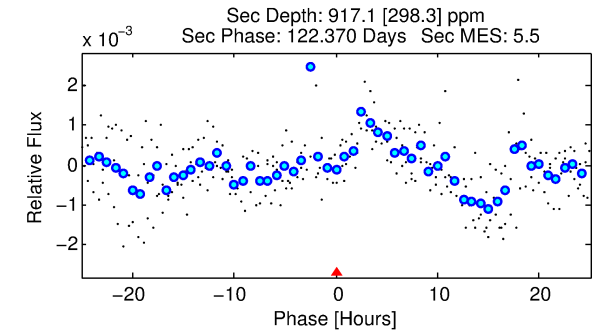
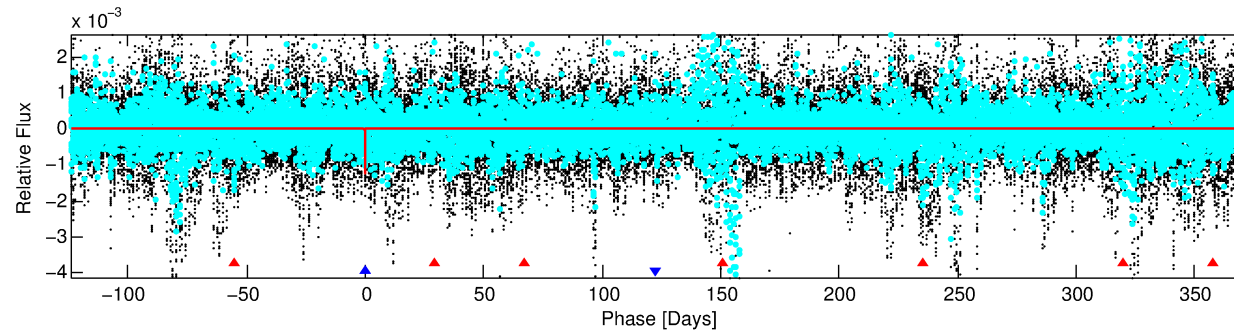
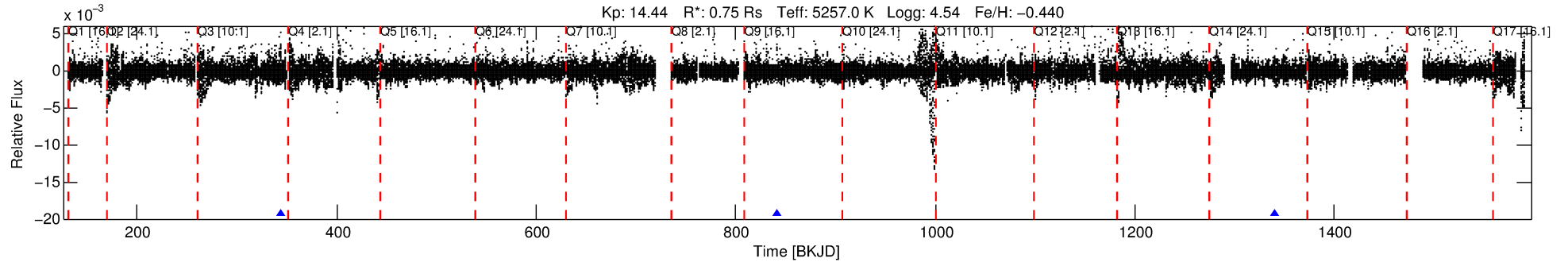
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012307229-02

No Significant Match Found

DV One-Page Summary

KIC: 12307229 Candidate: 2 of 2 Period: 497.574 d



DV Fit Results:

Period = 497.57439 [0.00818] d
Epoch = 344.2959 [0.0133] BKJD
Rp/R* = 0.0340 [0.0362]
a/R* = 744.45 [3021.34]
b = 0.63 [3.94]
Seff = 0.32 [0.06]
Teq = 192 [10] K
Rp = 2.78 [2.99] Re
a = 1.0940 [0.1159] AU
Ag = 77888.43 [168395.35] [0.46σ]
Teffp = 4963 [2680] K [1.78σ]

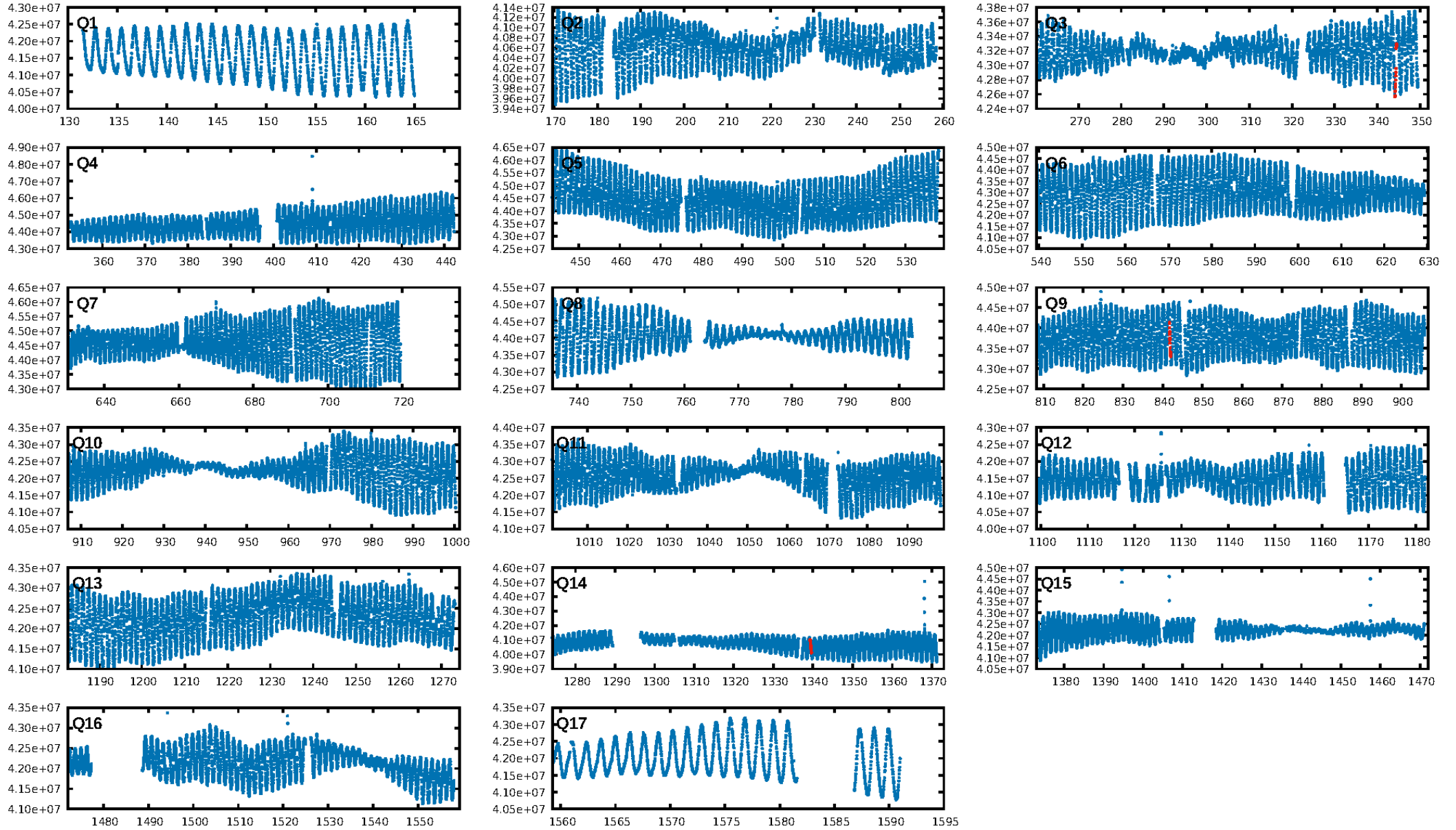
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1375.53σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 48.1%
Bootstrap-pfa: 6.53e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 7.186
Centroid-sig: 19.1%
Centroid-so: 0.922 arcsec [0.88σ]
OotOffset-rm: 0.216 arcsec [2.32σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.278 arcsec [2.85σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

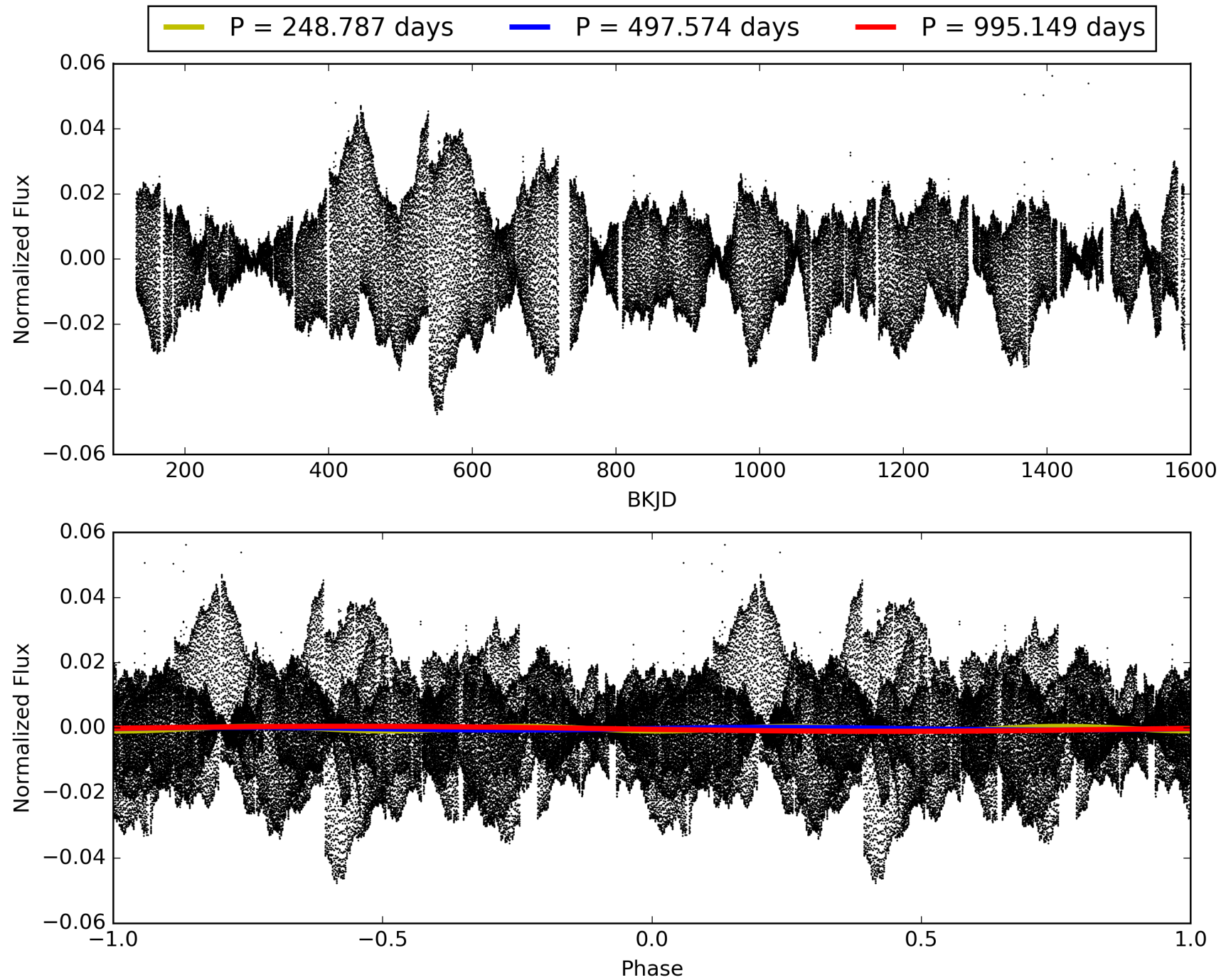
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:02:34 Z

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

TCE 012307229-02, PDC Light Curves

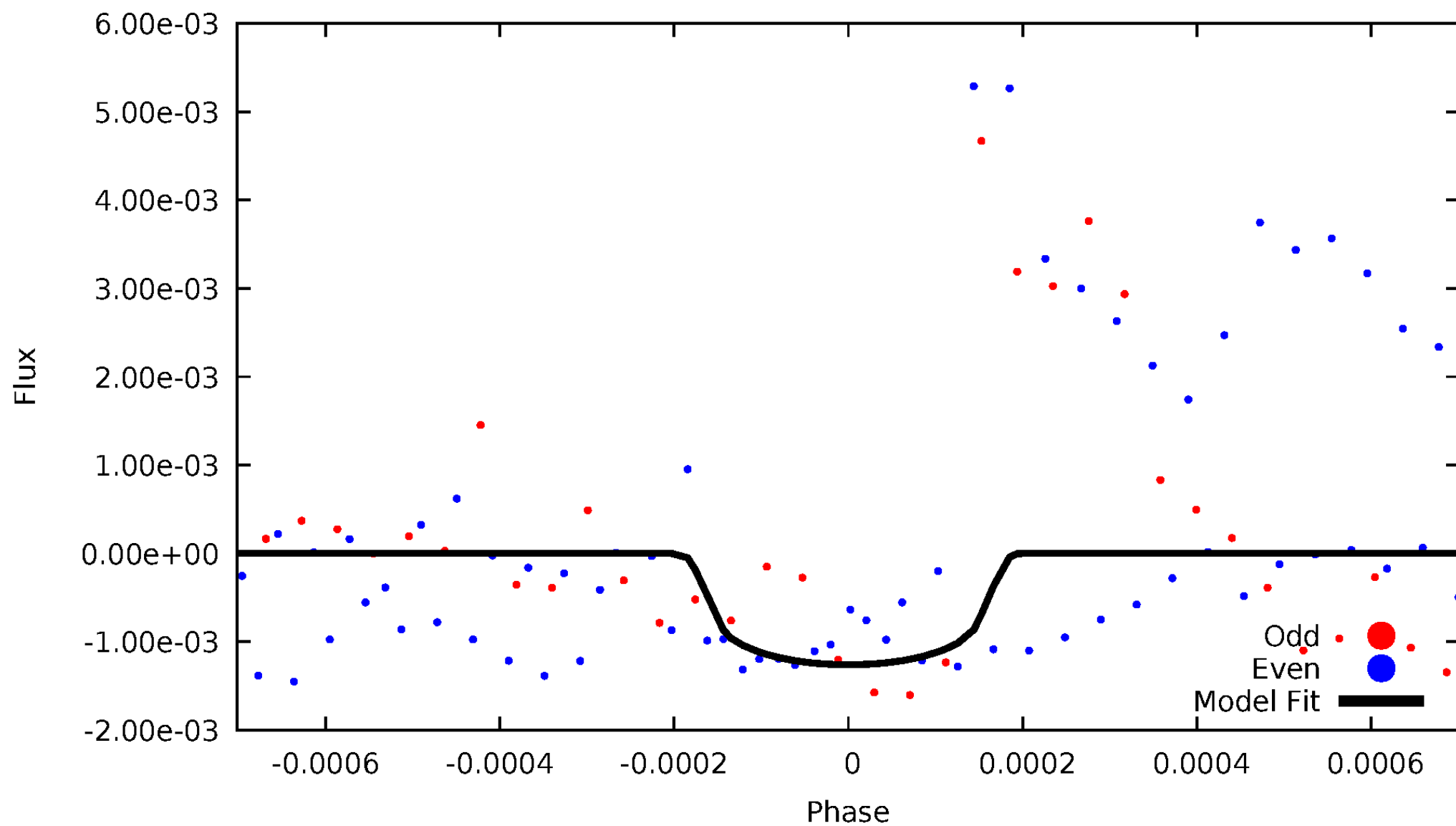


TCE 012307229-02



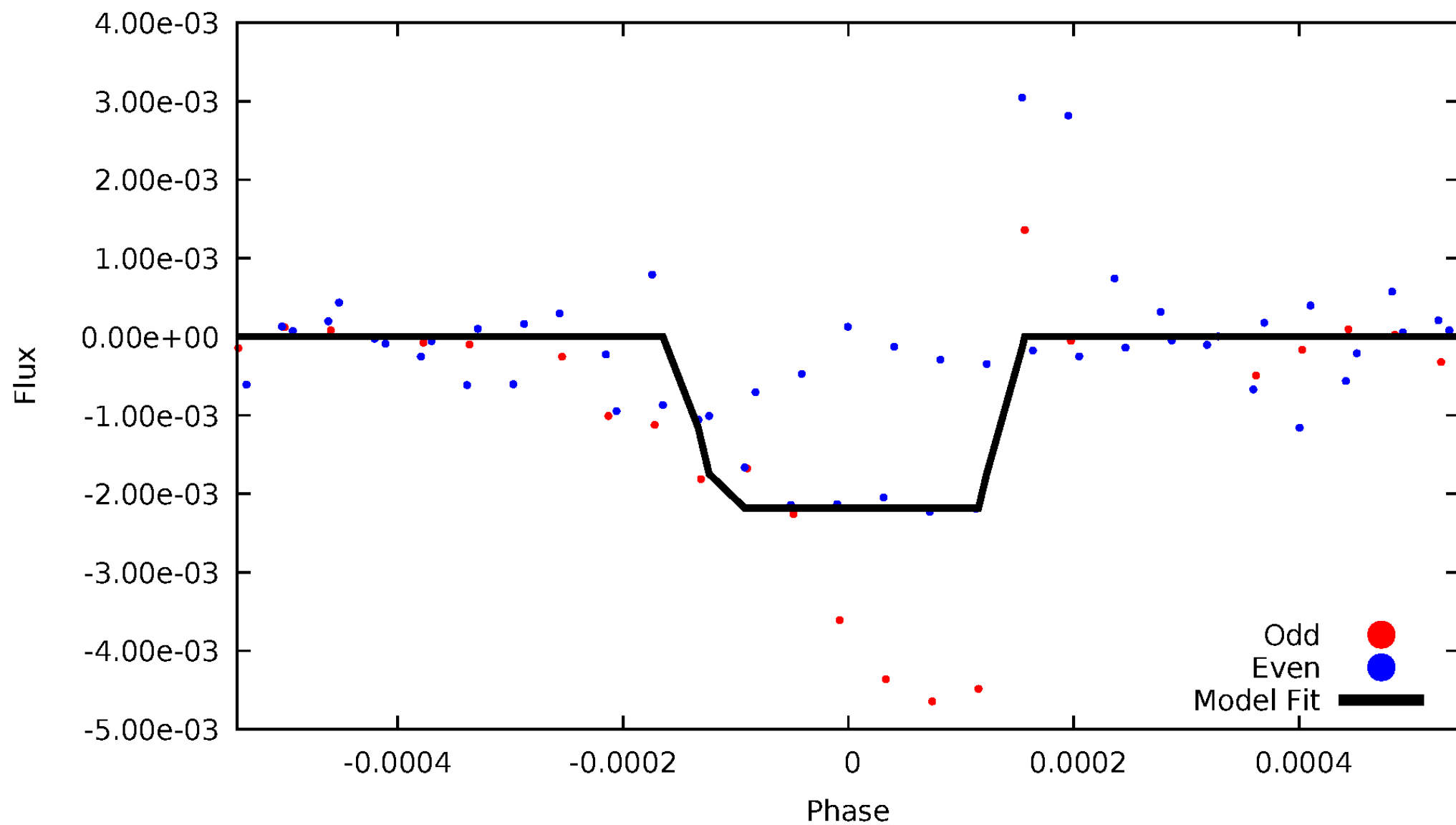
DV Odd/Even

TCE 012307229-02



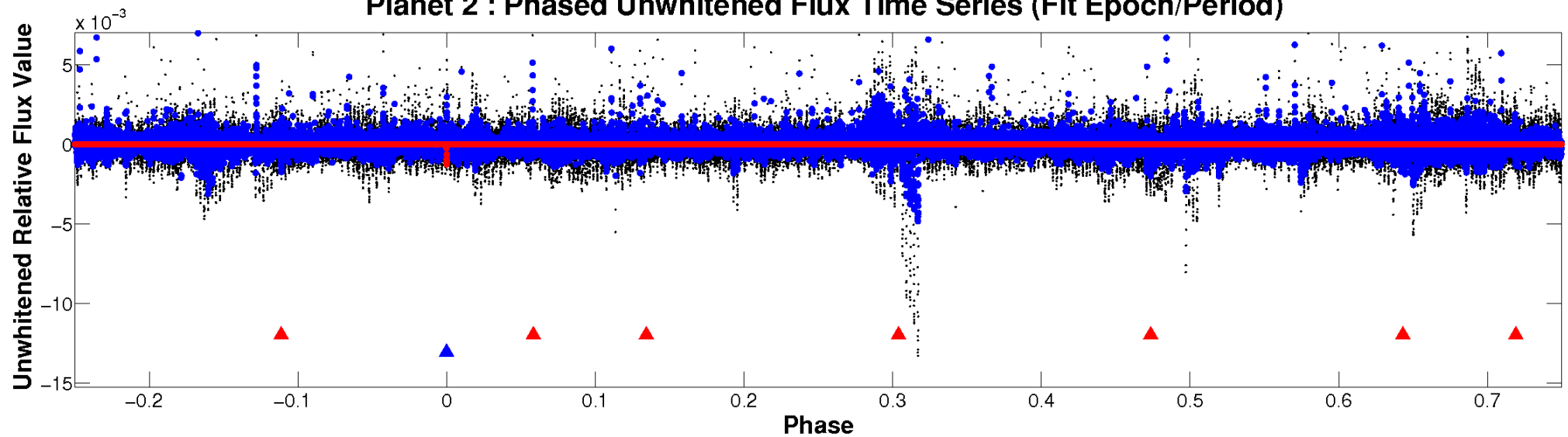
ALT Odd/Even

TCE 012307229-02

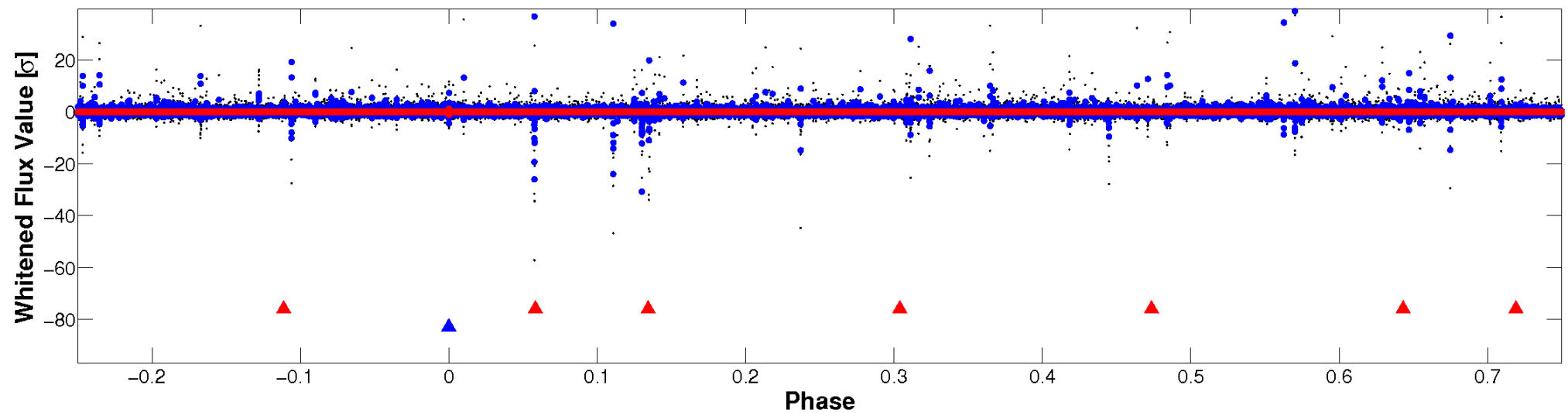


Non-Whitened Vs. Whitened Light Curve

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

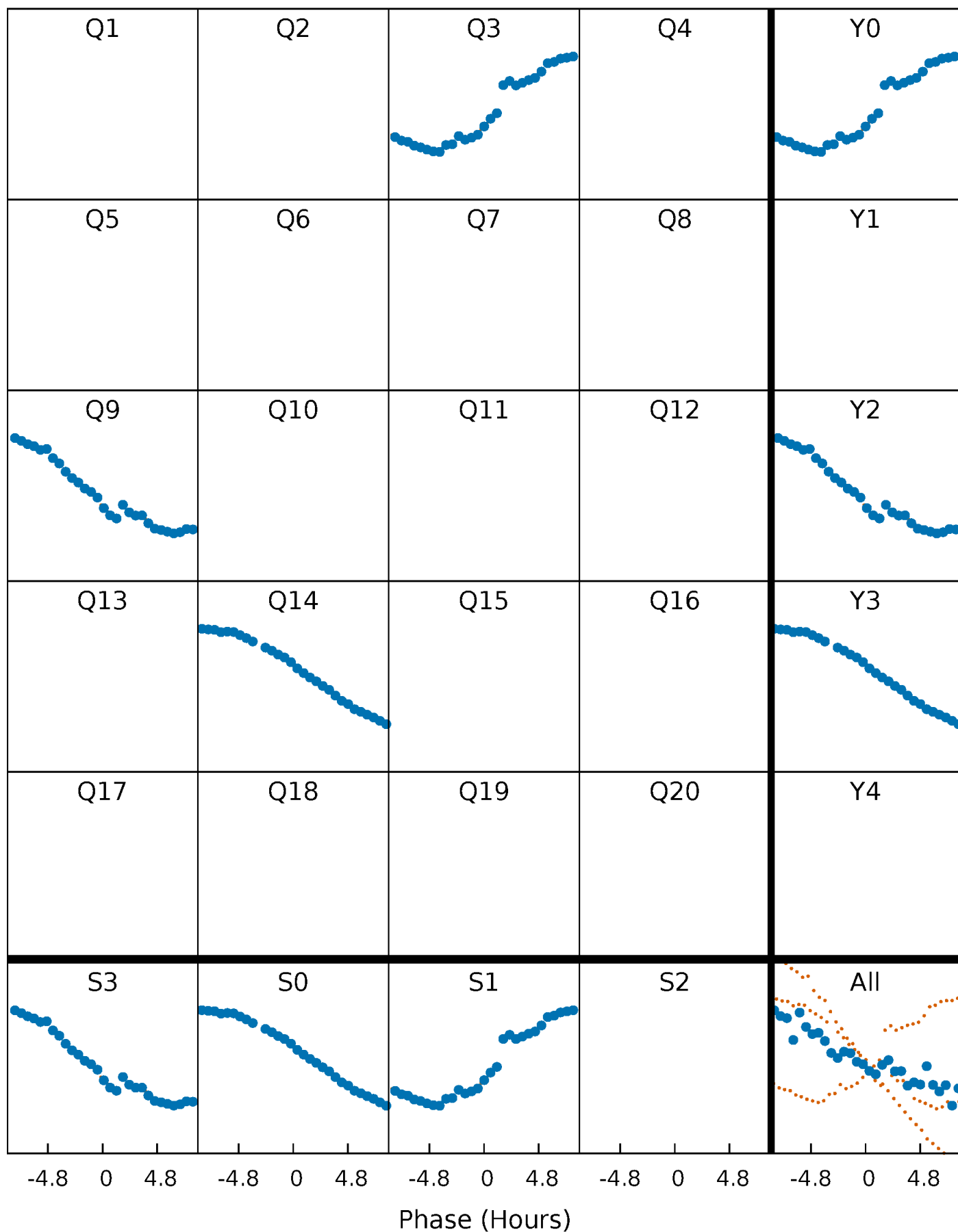


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



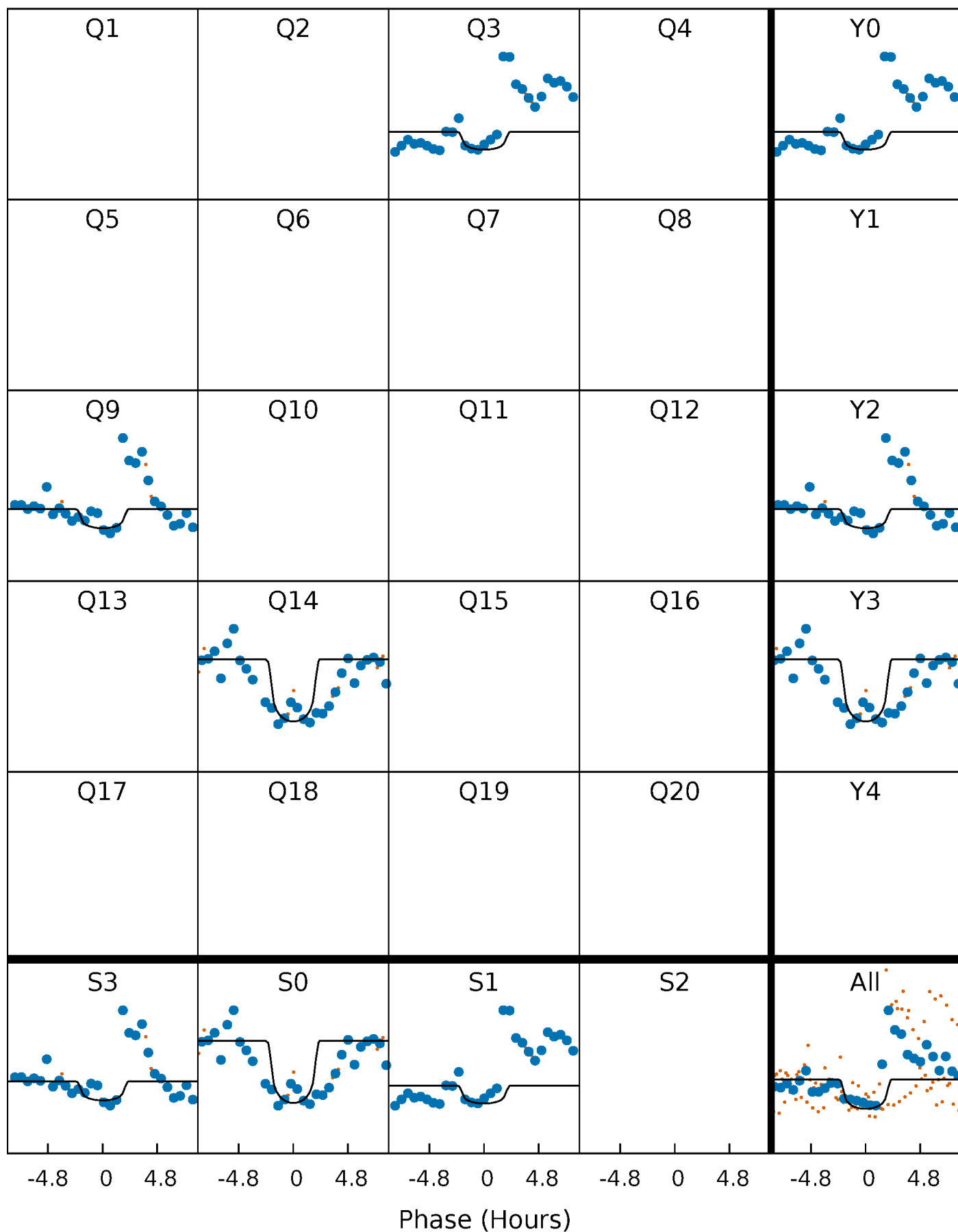
PDC Quarter-Phased Transit Curves

TCE 012307229-02 $P=497.574389$ Days $T_0=344.295918$ (BKJD)



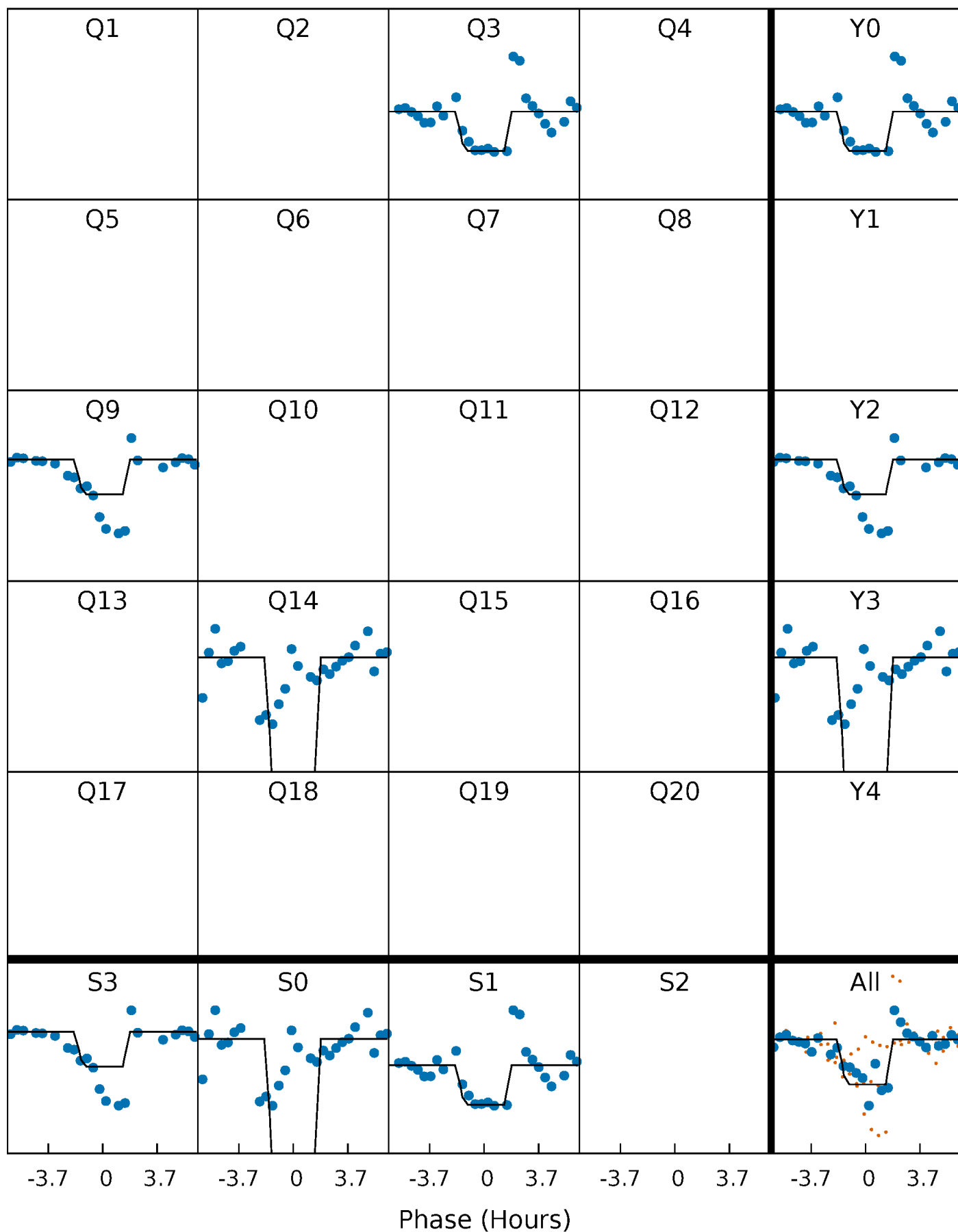
DV Quarter-Phased Transit Curves

TCE 012307229-02 $P=497.574389$ Days $T_0=344.295918$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

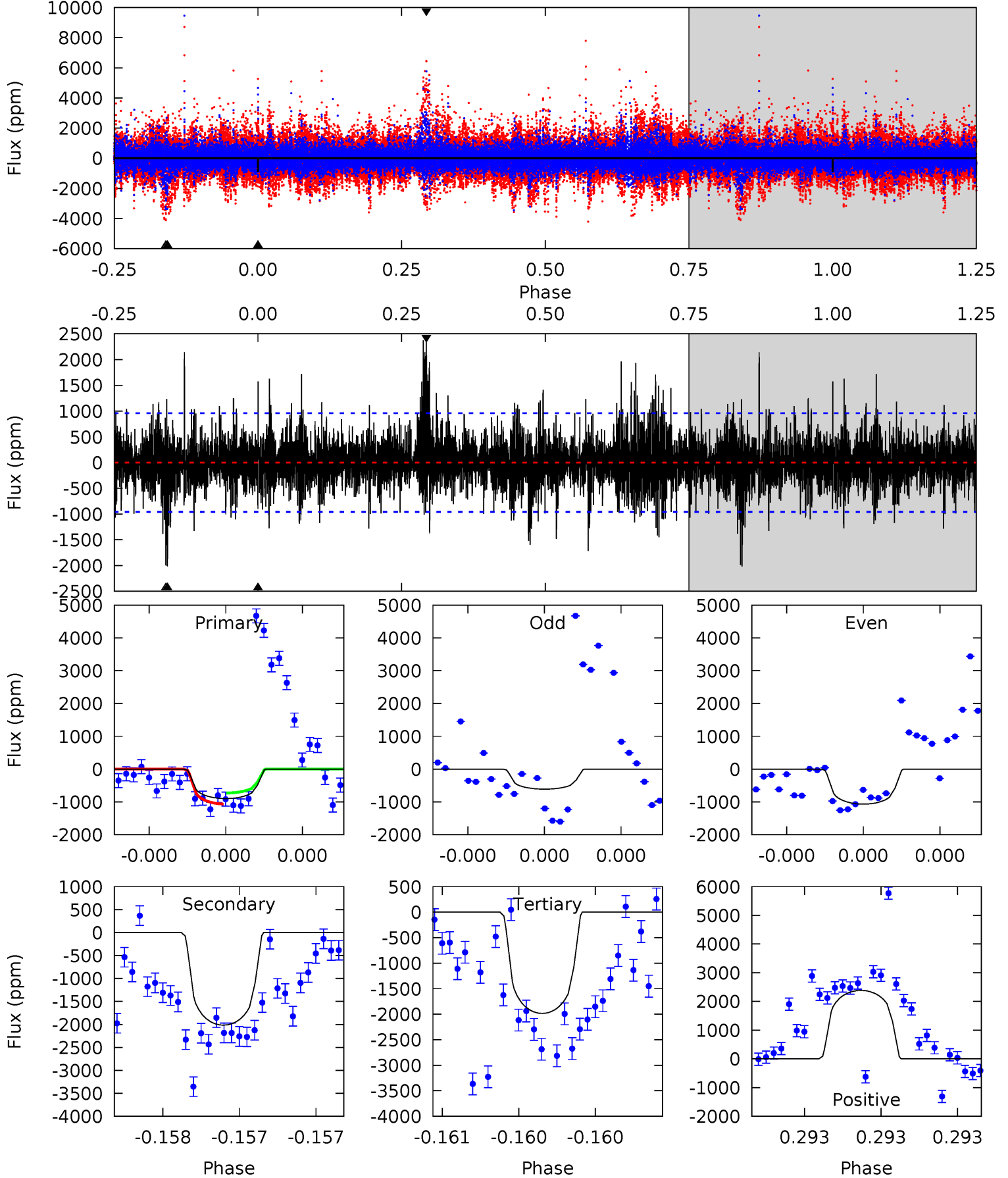
TCE 012307229-02 P=497.577620 Days $T_0=344.290800$ (BKJD)



DV Model-Shift Uniqueness Test

012307229-02, P = 497.574389 Days, E = 344.295918 Days

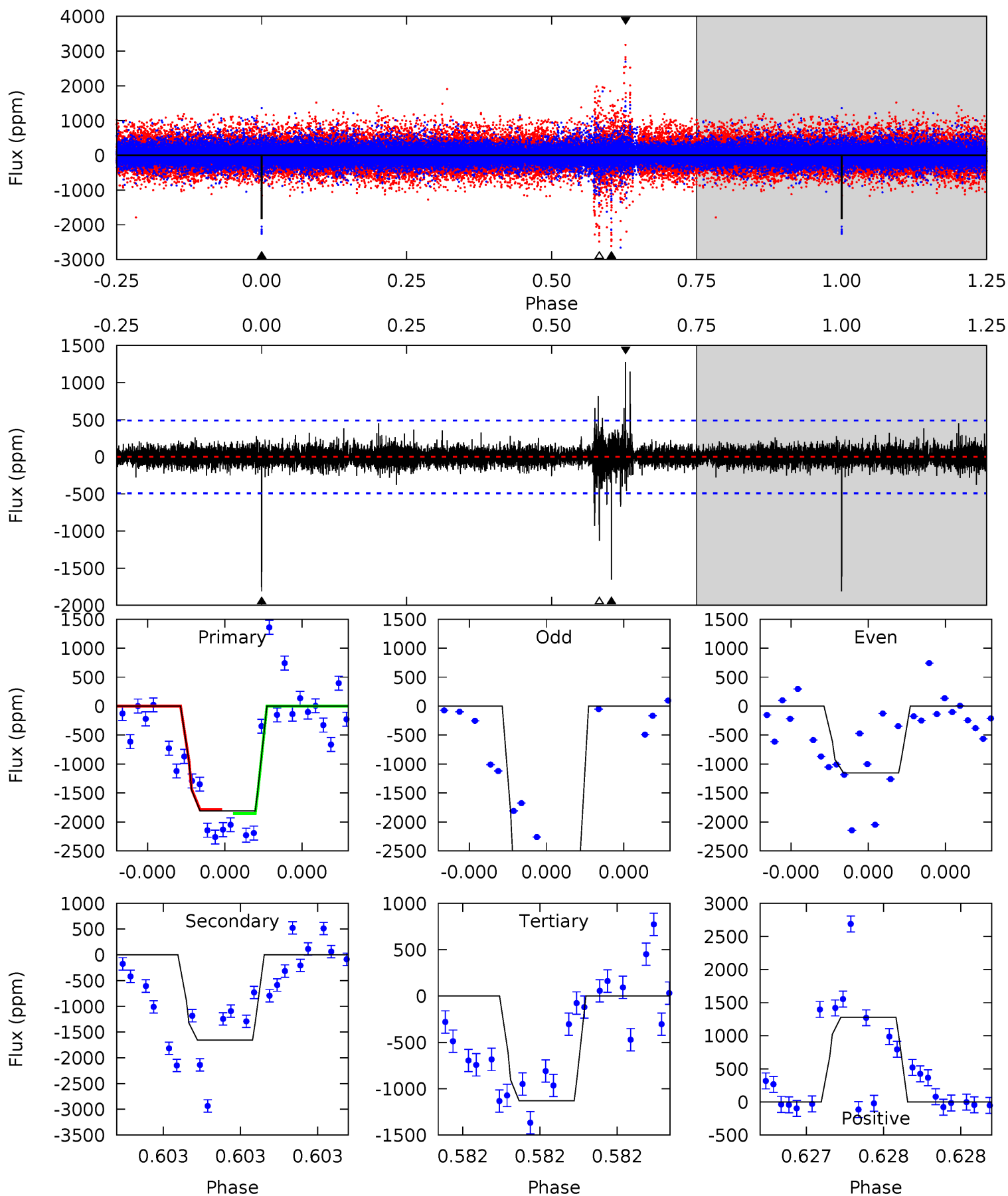
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.28	11.8	11.6	14.0	5.63	3.56	2.36	-6.37	-8.72	0.18	-2.17	1.10	1.15	0.54	0.99



Alt Model-Shift Uniqueness Test

012307229-02, P = 497.577620 Days, E = 344.290800 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	19.1	13.1	14.8	5.67	3.63	0.97	7.88	6.17	6.07	4.35	15.0	0.97	0.41	0



Stellar Parameters For KIC 012307229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5257^{+158}_{-142}	$4.535^{+0.088}_{-0.072}$	$-0.440^{+0.350}_{-0.300}$	$0.751^{+0.092}_{-0.084}$	$0.705^{+0.103}_{-0.044}$	$2.343^{+0.955}_{-0.528}$
	+3%/-3%	+2%/-2%	+80%/-68%	+12%/-11%	+15%/-6%	+41%/-23%
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 012307229-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2016 ± 170	$3.63^{+2.66}_{-2.39}$	268^{+11}_{-11}	5274^{+4142}_{-1043}	$101030^{+768027}_{-67452}$
Alt.	-1654 ± 87	$4.14^{+3.05}_{-2.46}$	269^{+11}_{-11}	4795^{+2563}_{-860}	$64134^{+310934}_{-42859}$

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

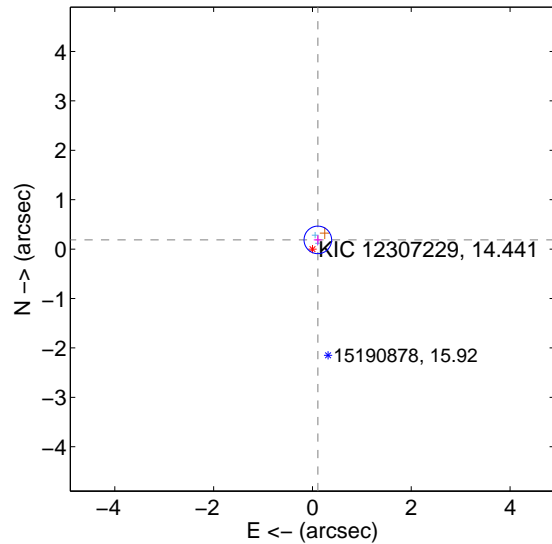
Supplemental centroid analysis for 012307229-02. Kepler magnitude: 14.44. Transit SNR 5.20

There are 2 quarters with good PRF difference image offsets

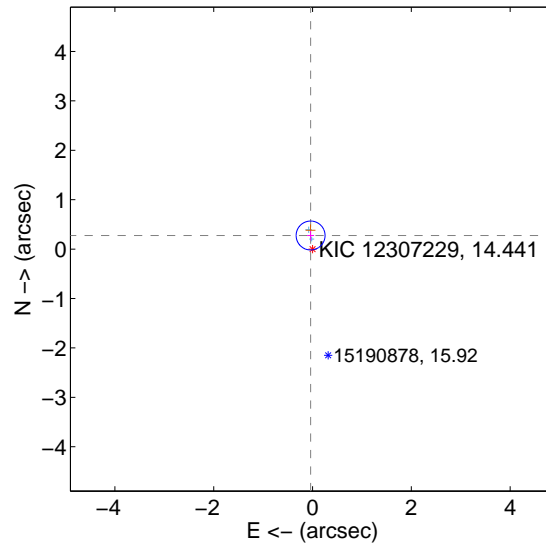
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.216 ± 0.093	2.32	-0.109 ± 0.082	0.186 ± 0.096
PRF-fit source offset from KIC position	0.278 ± 0.098	2.85	0.039 ± 0.070	0.275 ± 0.098
photometric centroid source offset	0.92 ± 1.05	0.88	-0.03 ± 0.87	-0.92 ± 1.05

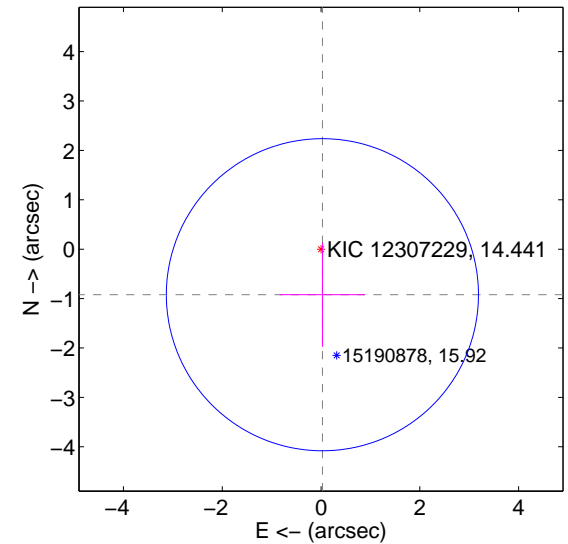
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

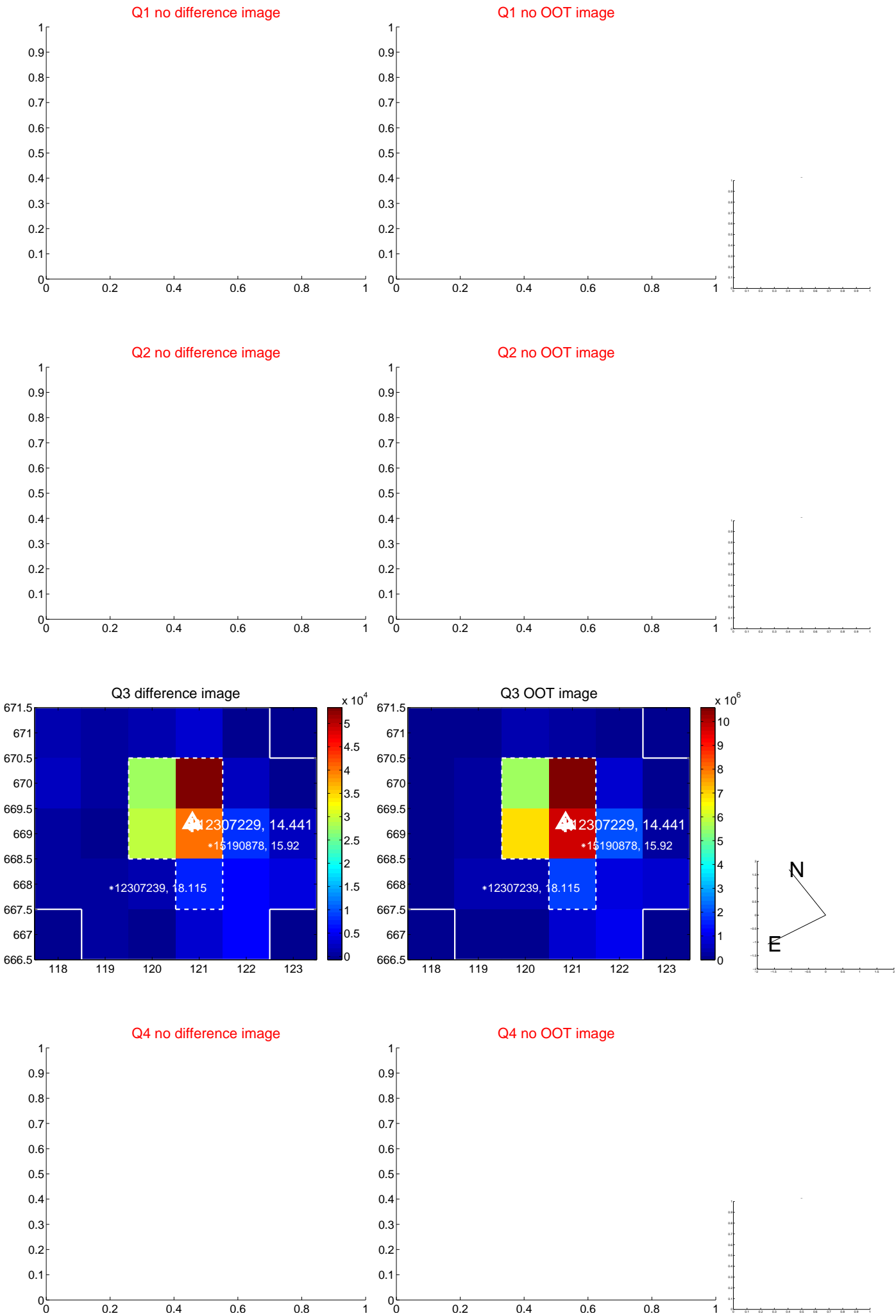


offset from photometric centroids

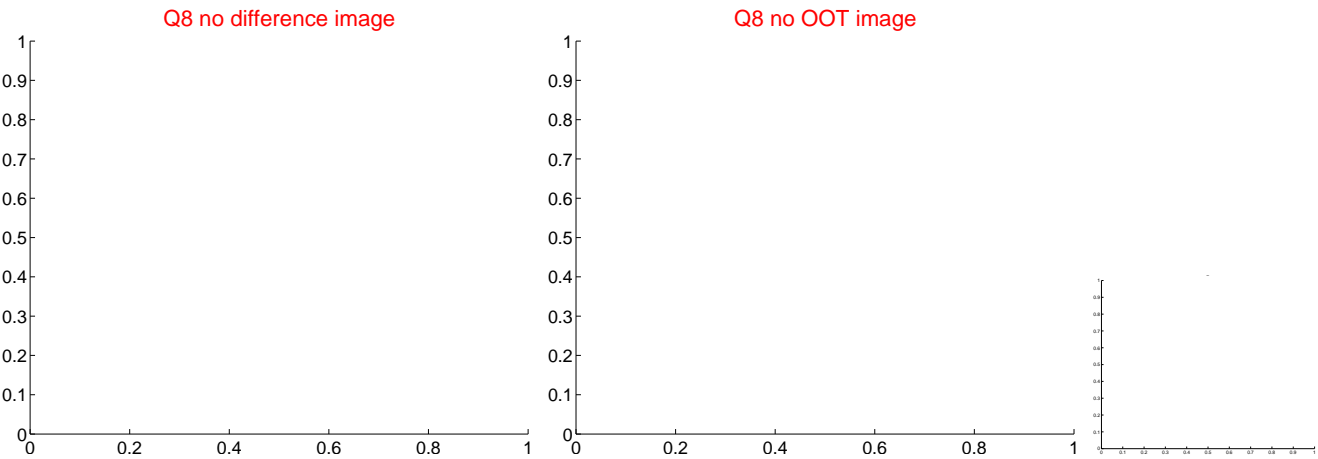
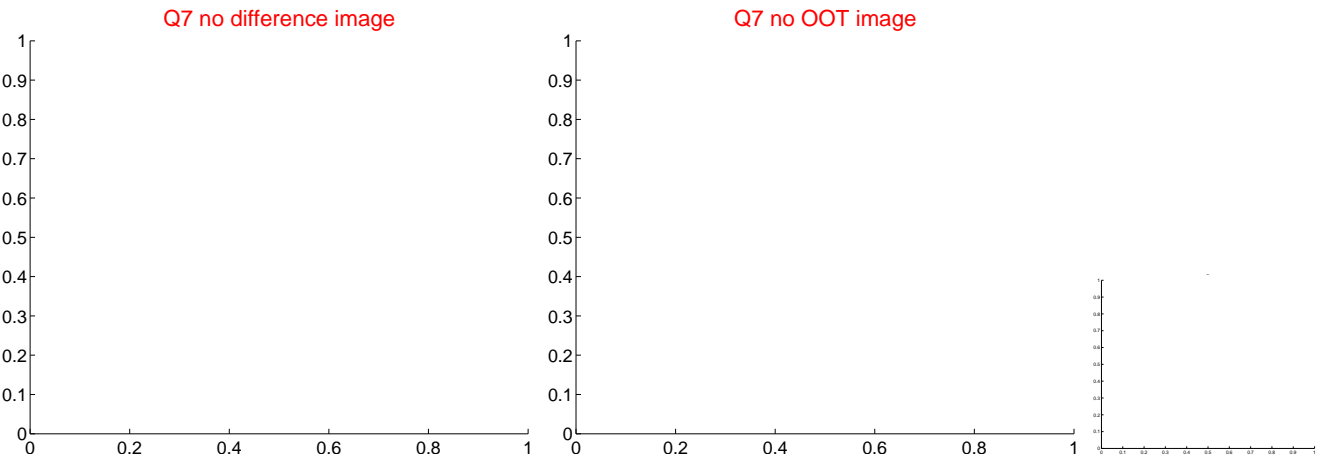
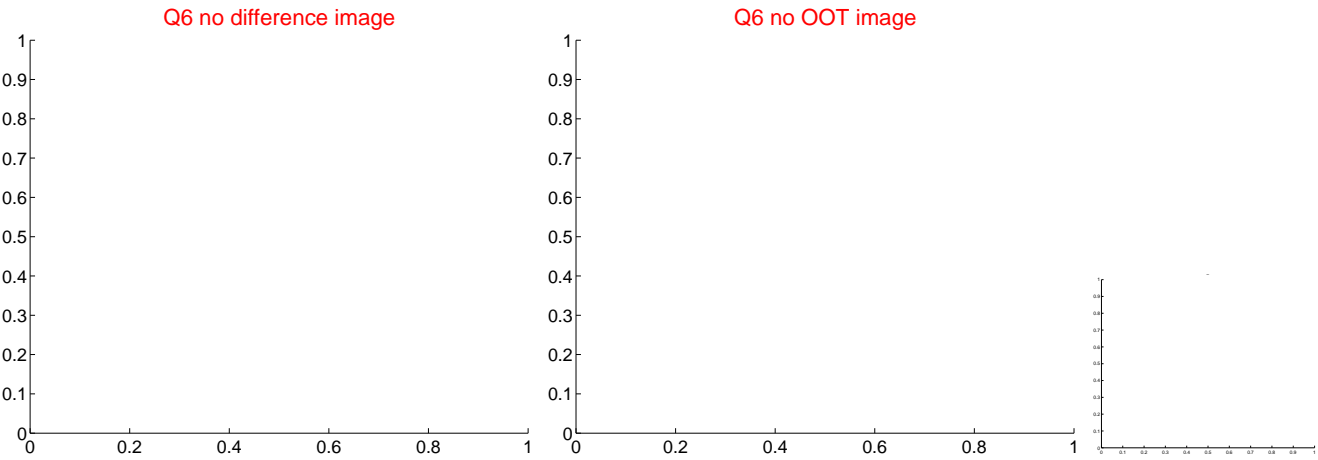
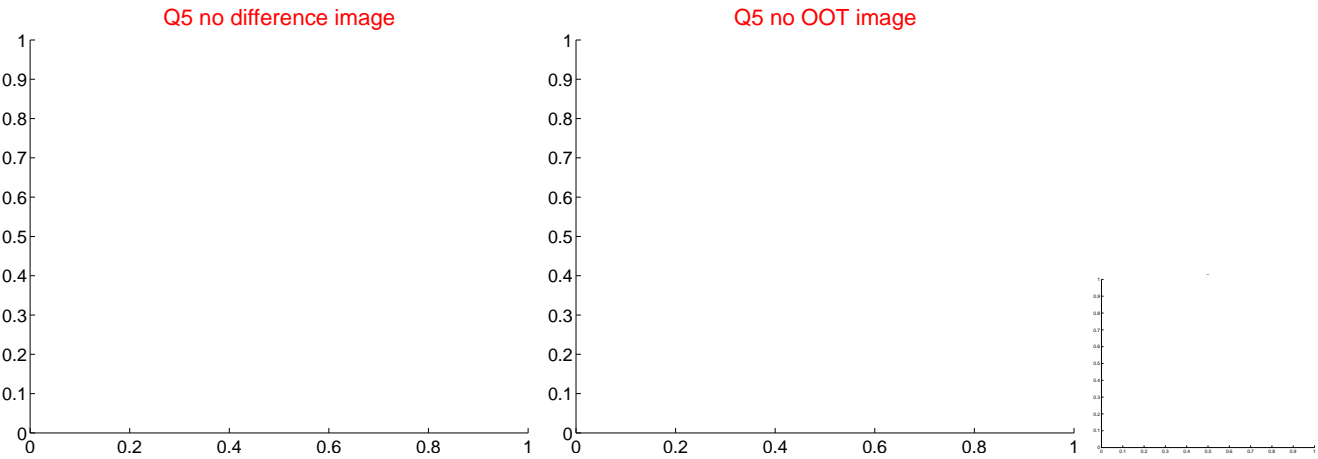


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

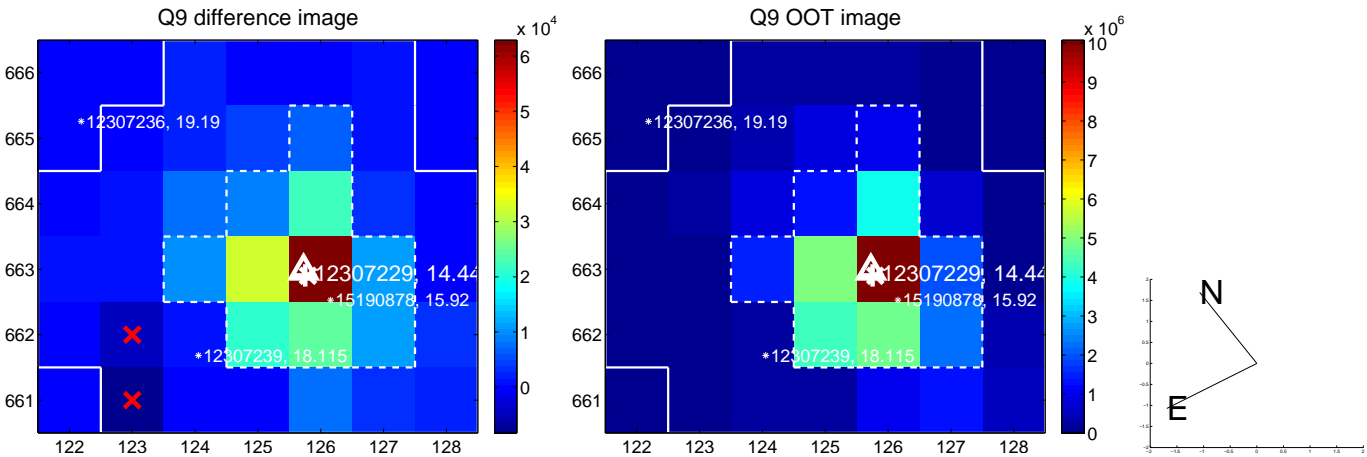
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



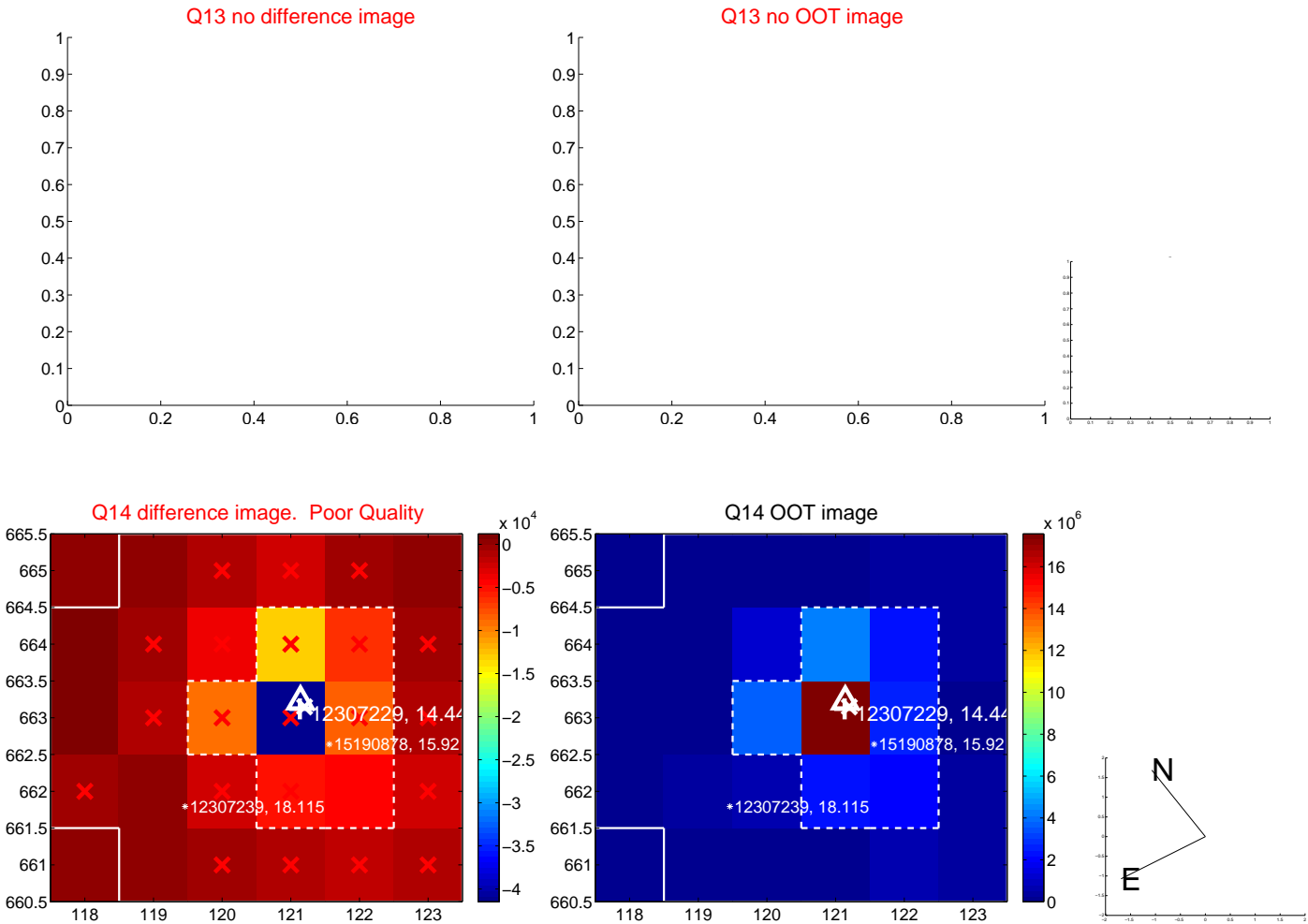
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



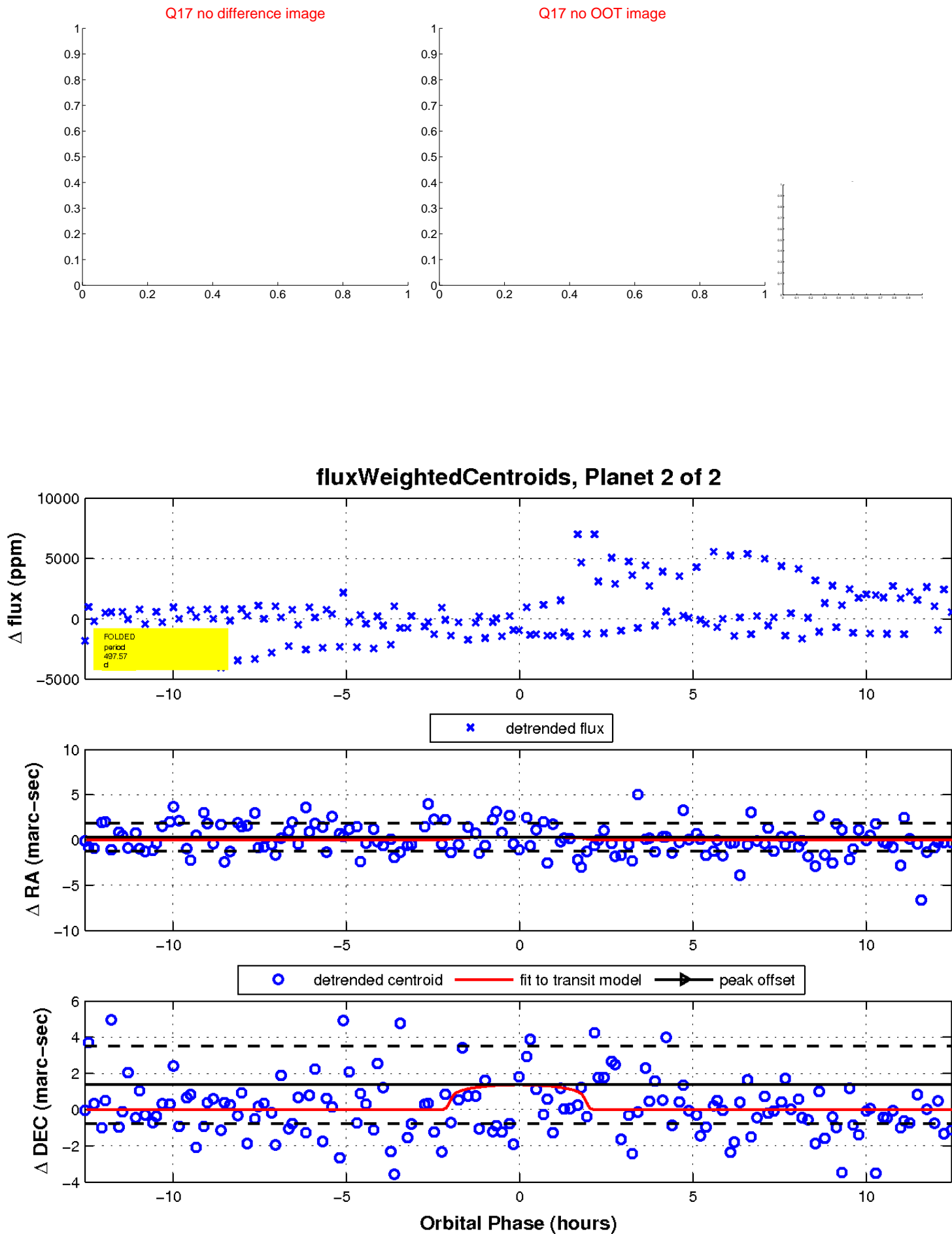
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

