

KIC 008869922

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})
008869922-01	OBS	No	61.724797	146.282833	2911.2	9.997	9.3	11.1	0.16	3100	0.86	0.09
008869922-02	OBS	No	130.932085	214.555406	3126.2	58.672	9.3	16.6	0.16	3100	1.00	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008869922-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008869922-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

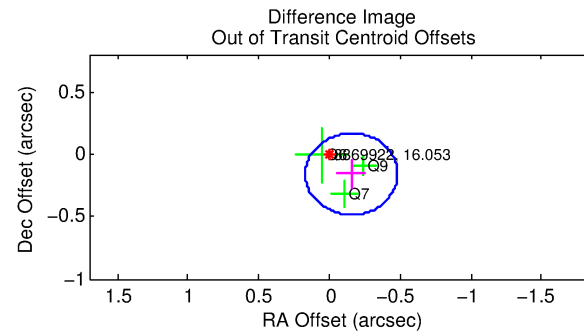
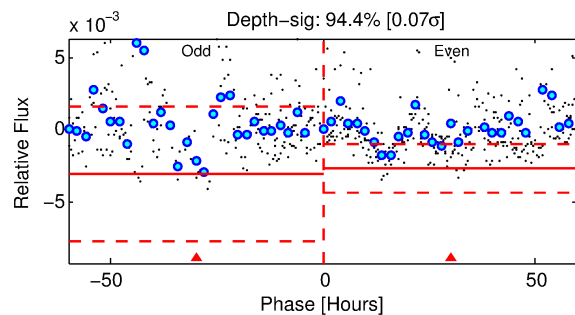
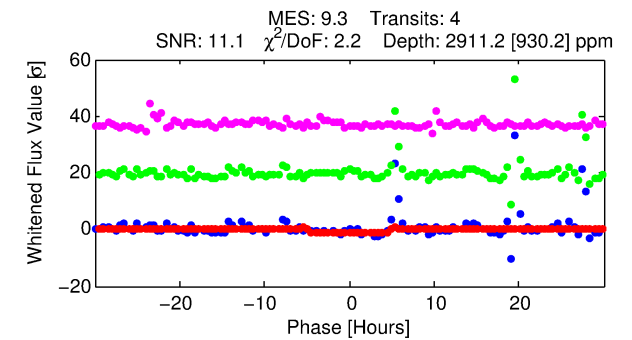
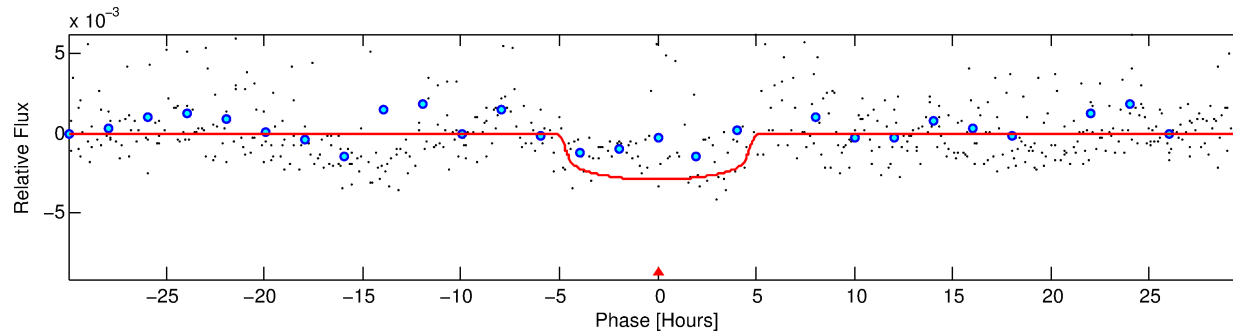
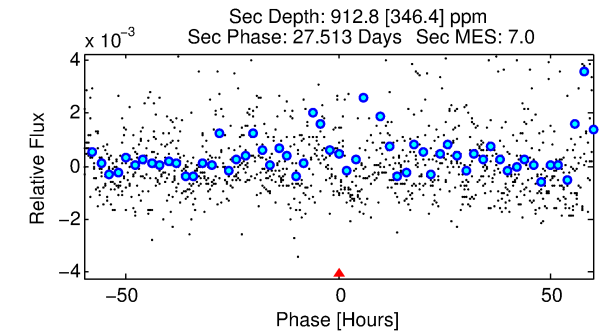
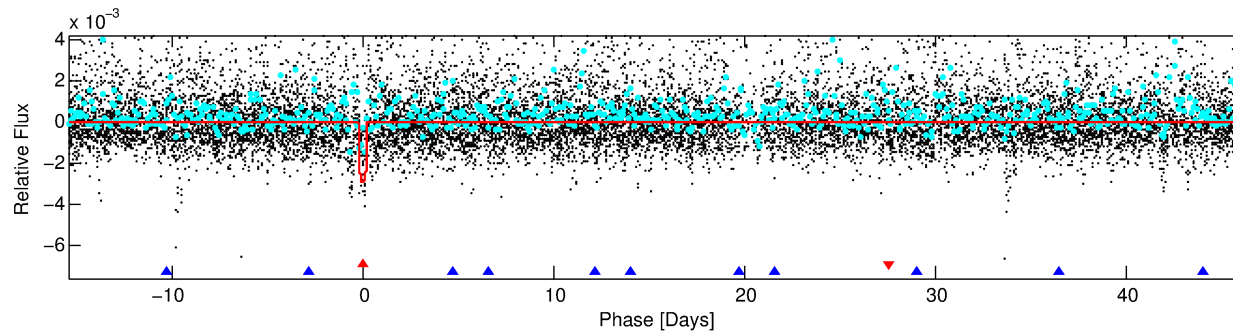
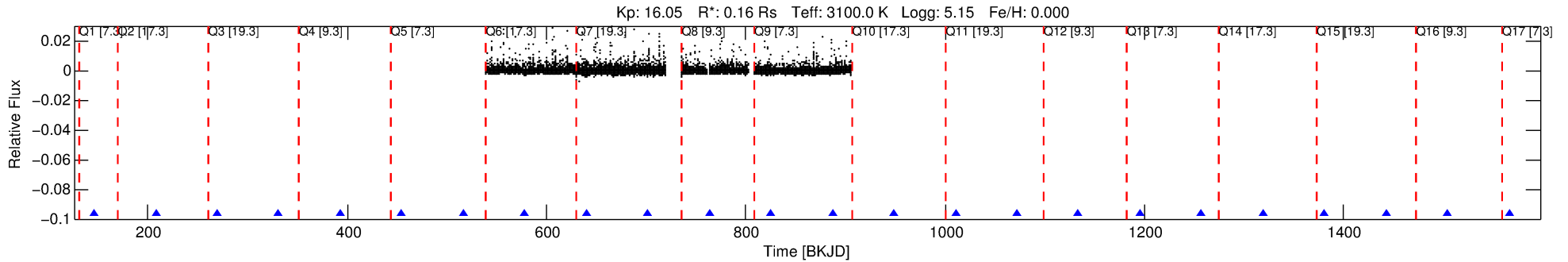
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008869922-01

No Significant Match Found

DV One-Page Summary

KIC: 8869922 Candidate: 1 of 2 Period: 61.725 d



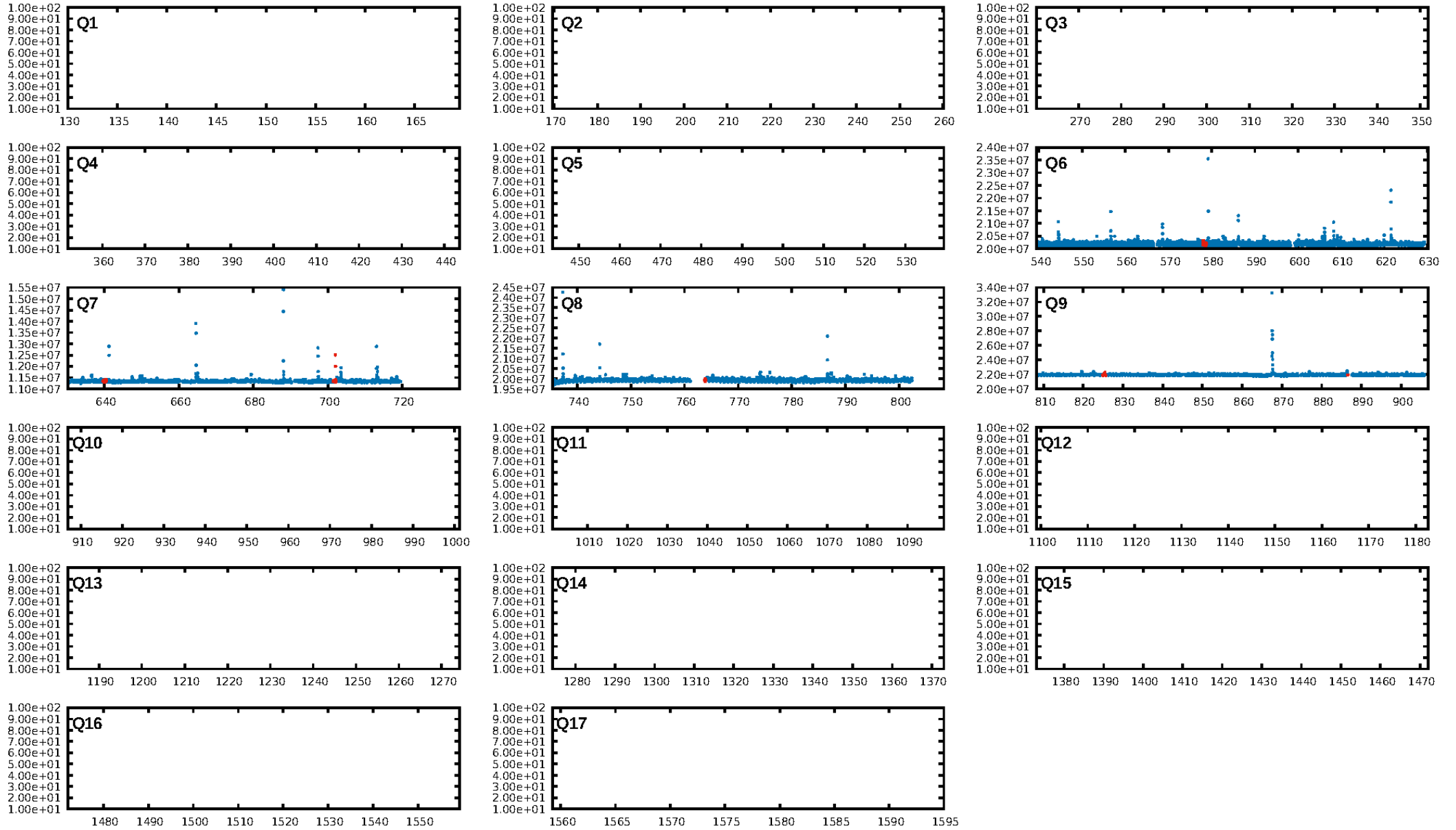
DV Fit Results:

Period = 61.72480 [0.01057] d
Epoch = 146.2828 [0.0988] BKJD
Rp/R* = 0.0489 [0.0389]
a/R* = 48.83 [161.09]
b = 0.17 [19.07]
Seff = 0.09 [0.00]
Teq = 139 [0] K
Rp = 0.86 [0.68] Re
a = 0.1568 [0.0000] AU
Ag = 16702.89 [27278.94] [0.61σ]
Teffp = 2436 [995] K [2.31σ]

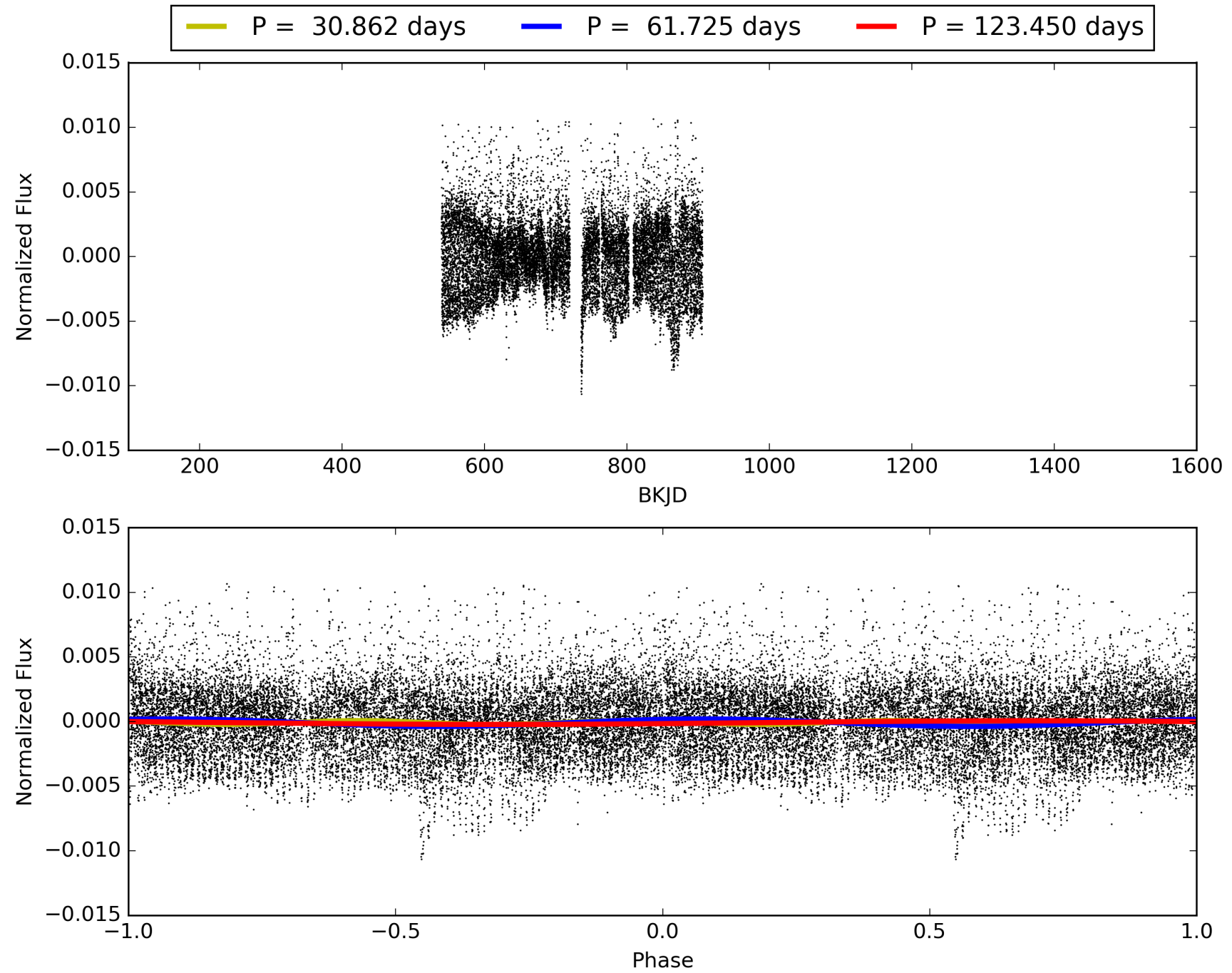
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [27.91σ]
ModelChiSquare2-sig: 8.4%
ModelChiSquareGof-sig: 17.8%
Bootstrap-pfa: 8.43e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.262
Centroid-sig: N/A
Centroid-so: 1.549 arcsec [5.05σ]
OotOffset-rm: 0.222 arcsec [2.04σ]
KicOffset-rm: 1.002 arcsec [6.71σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 008869922-01, PDC Light Curves

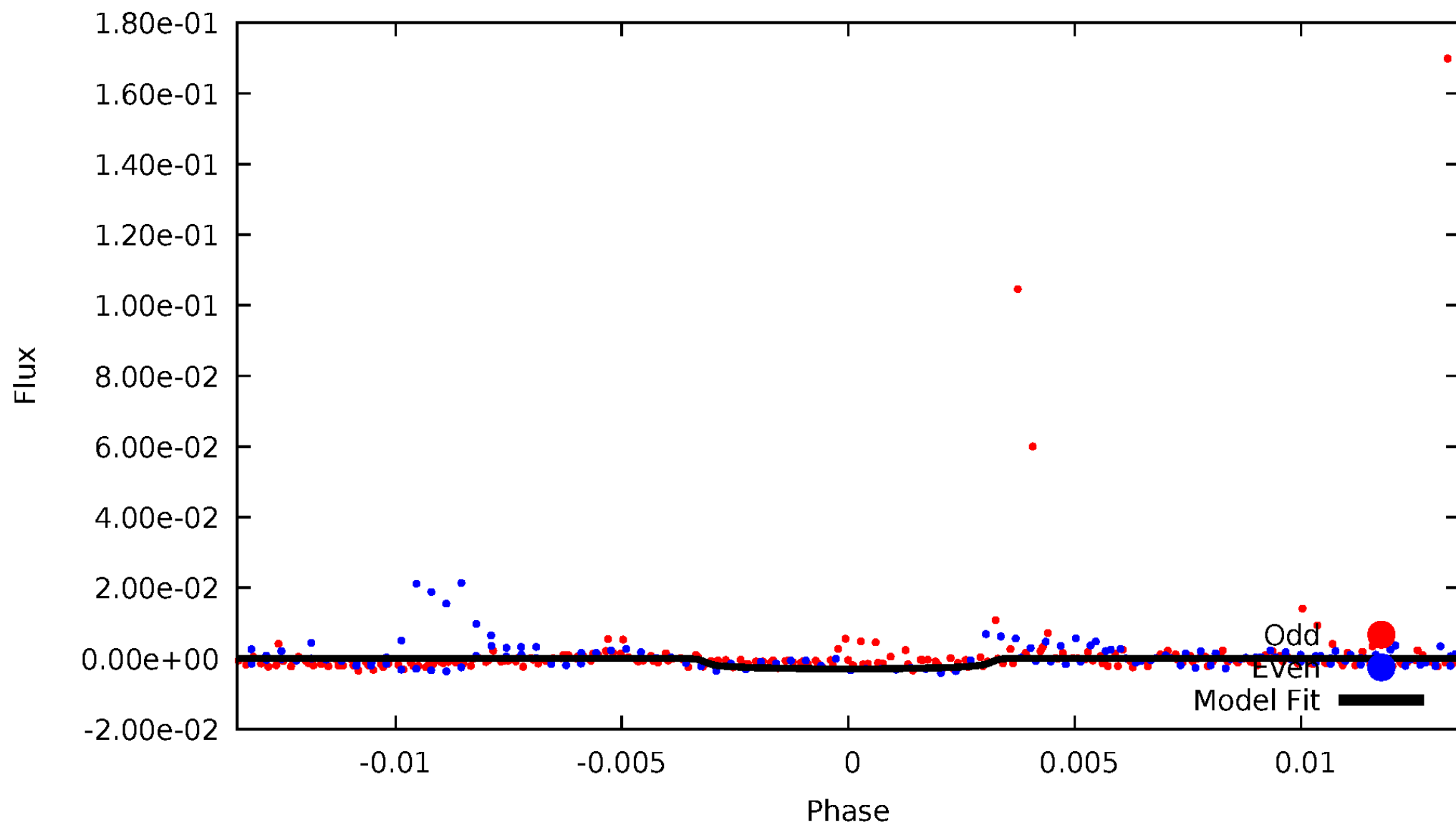


TCE 008869922-01



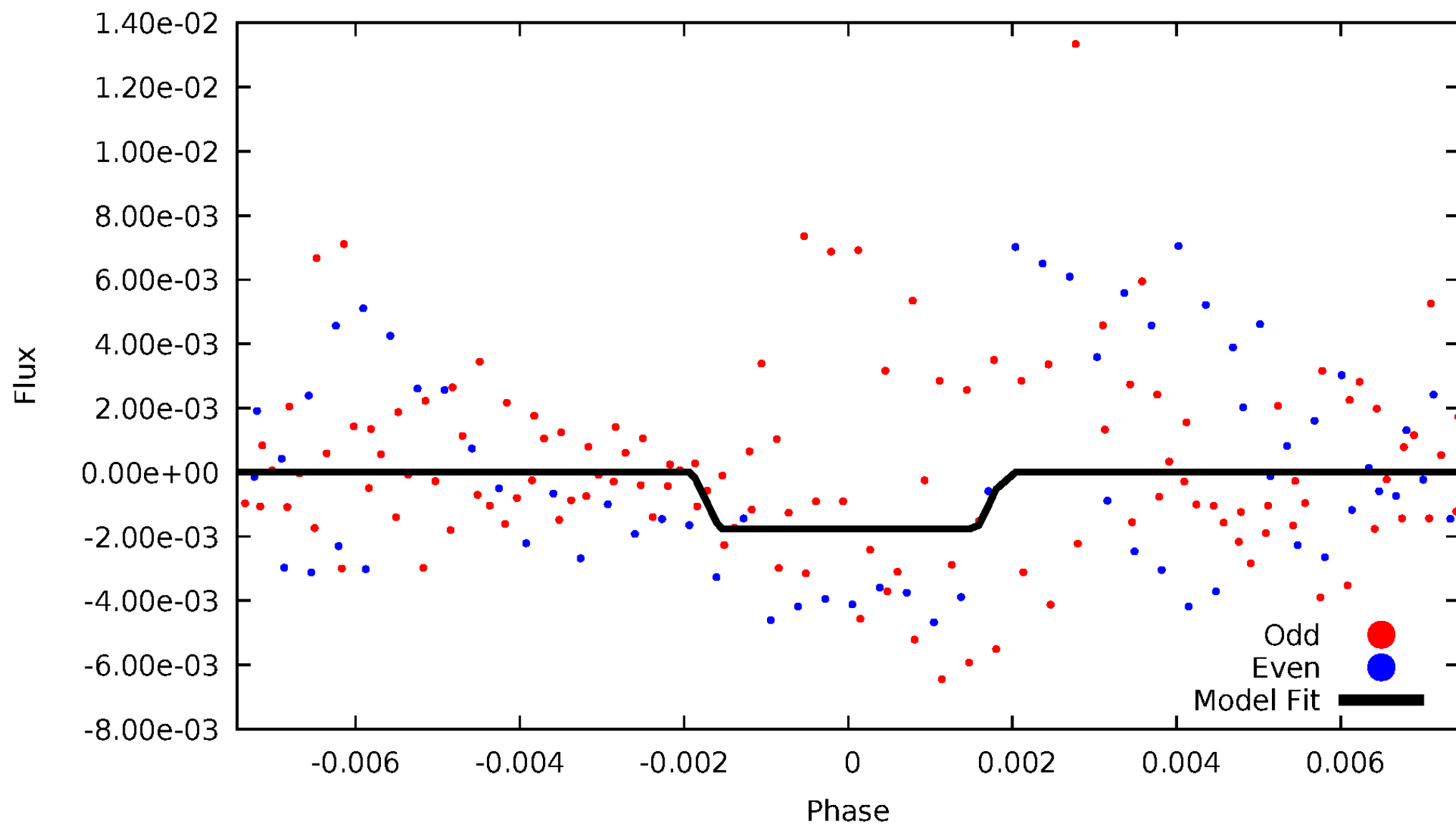
DV Odd/Even

TCE 008869922-01



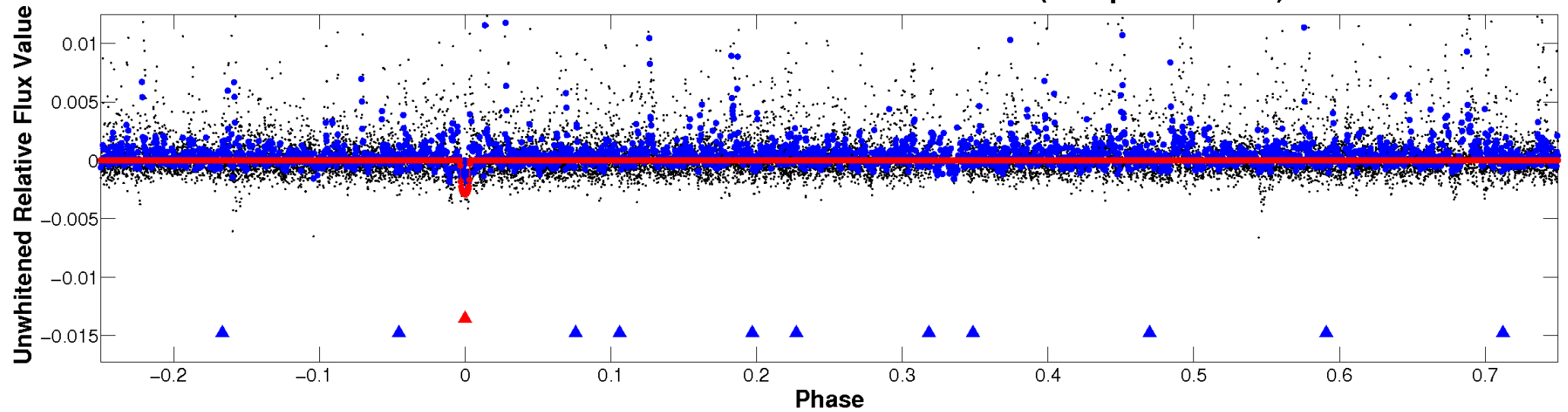
ALT Odd/Even

TCE 008869922-01

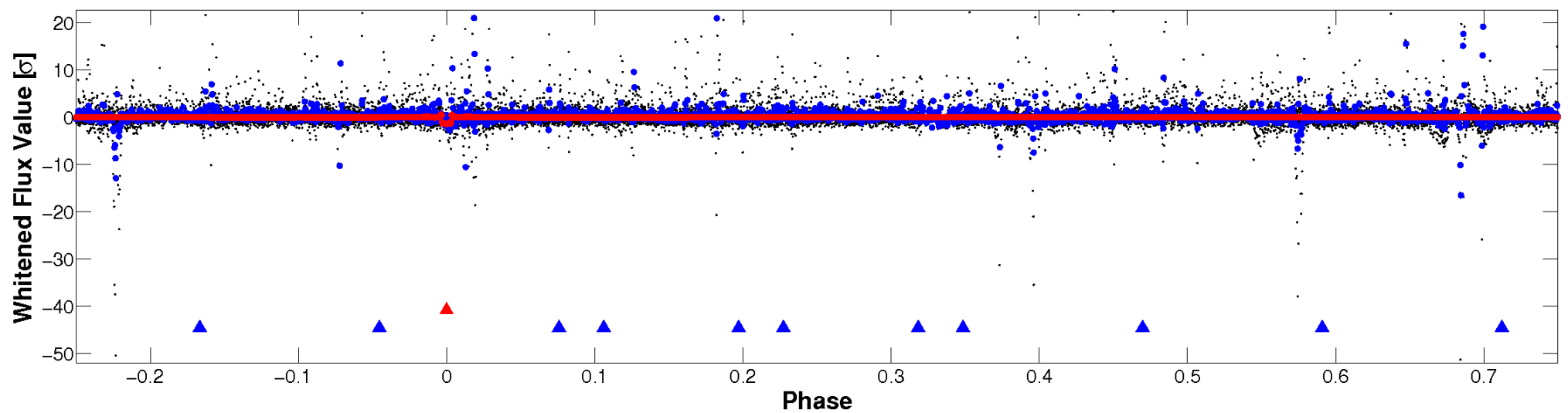


Non-Whitened Vs. Whitened Light Curve

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

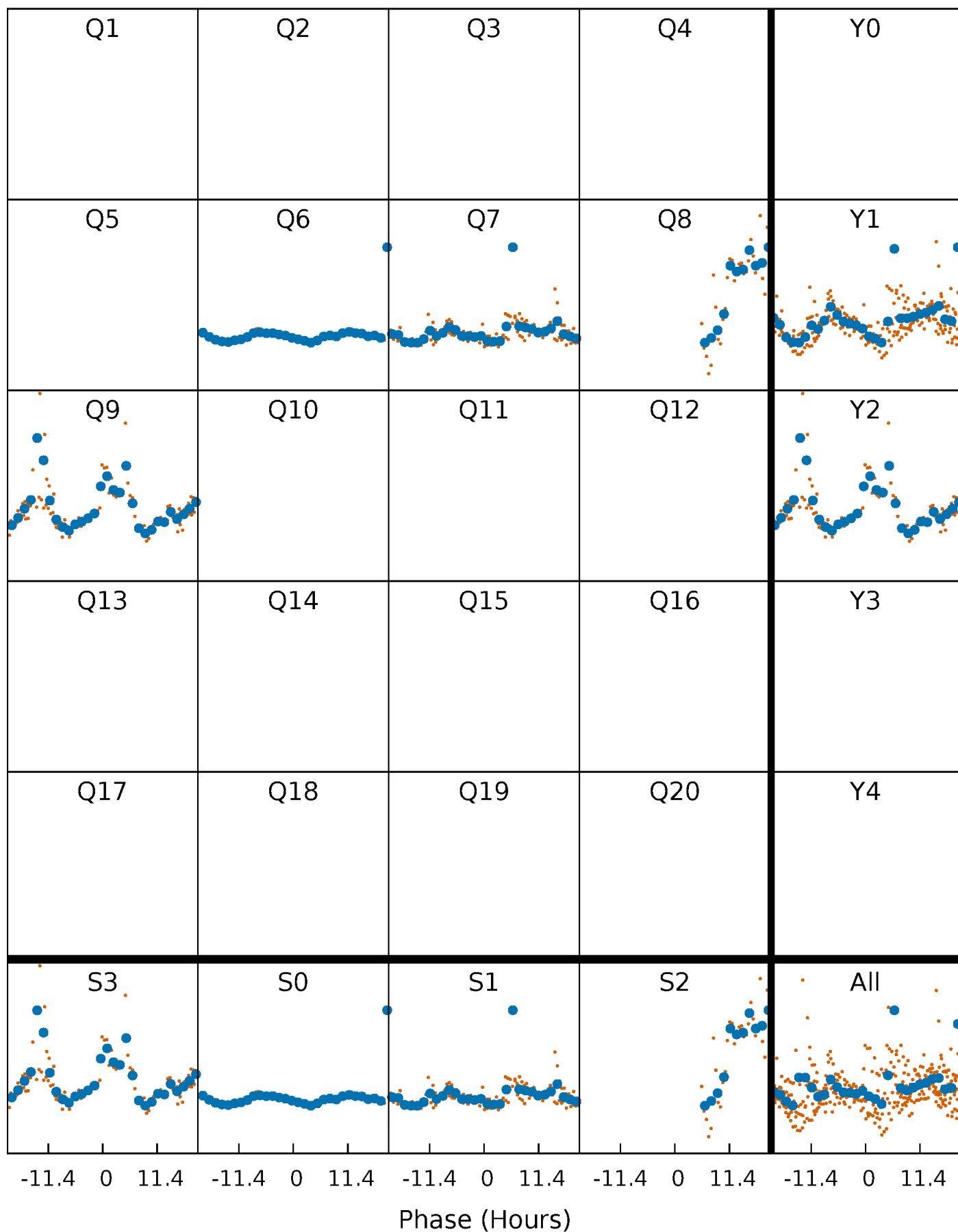


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



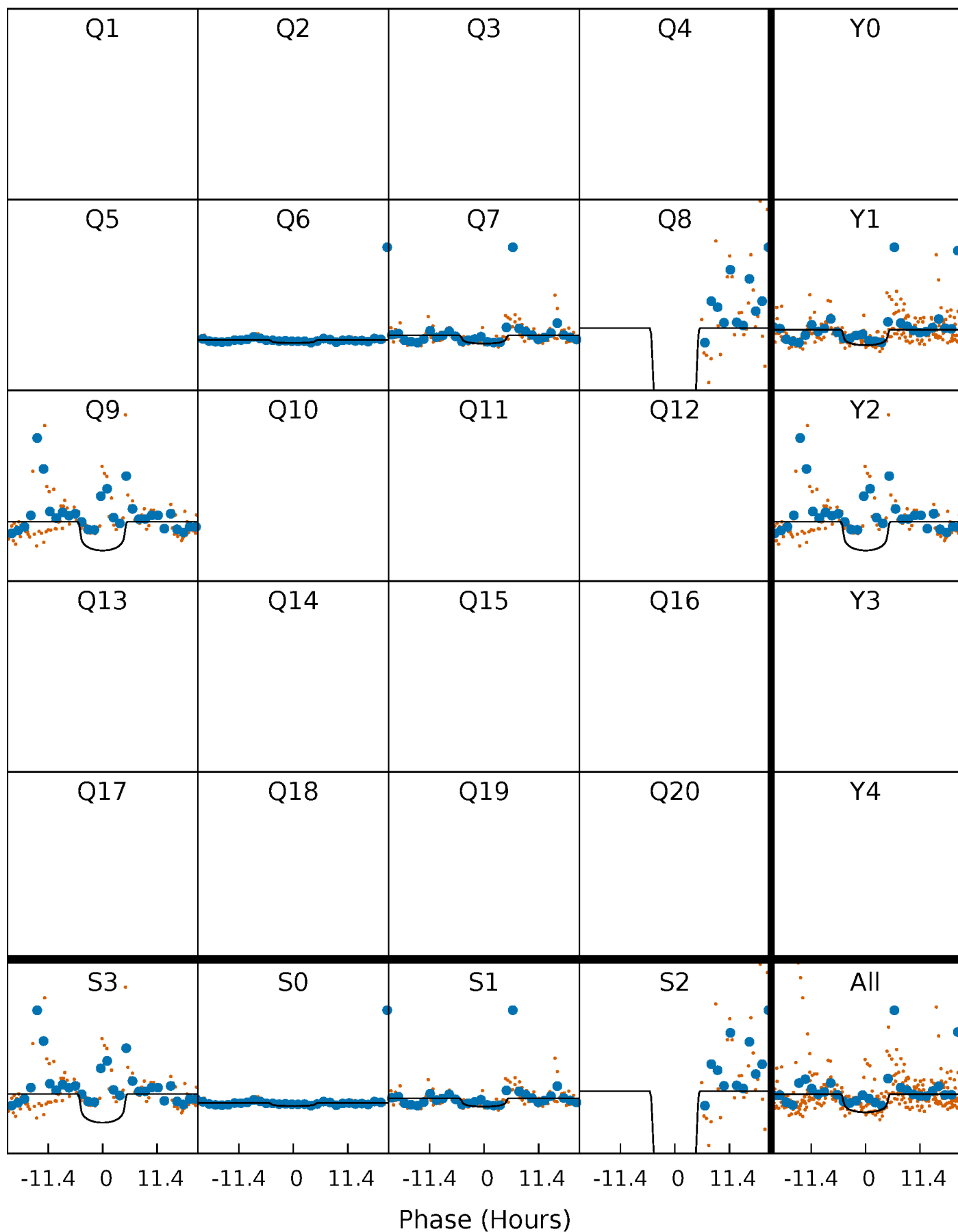
PDC Quarter-Phased Transit Curves

TCE 008869922-01 P= 61.724797 Days $T_0=146.282833$ (BKJD)



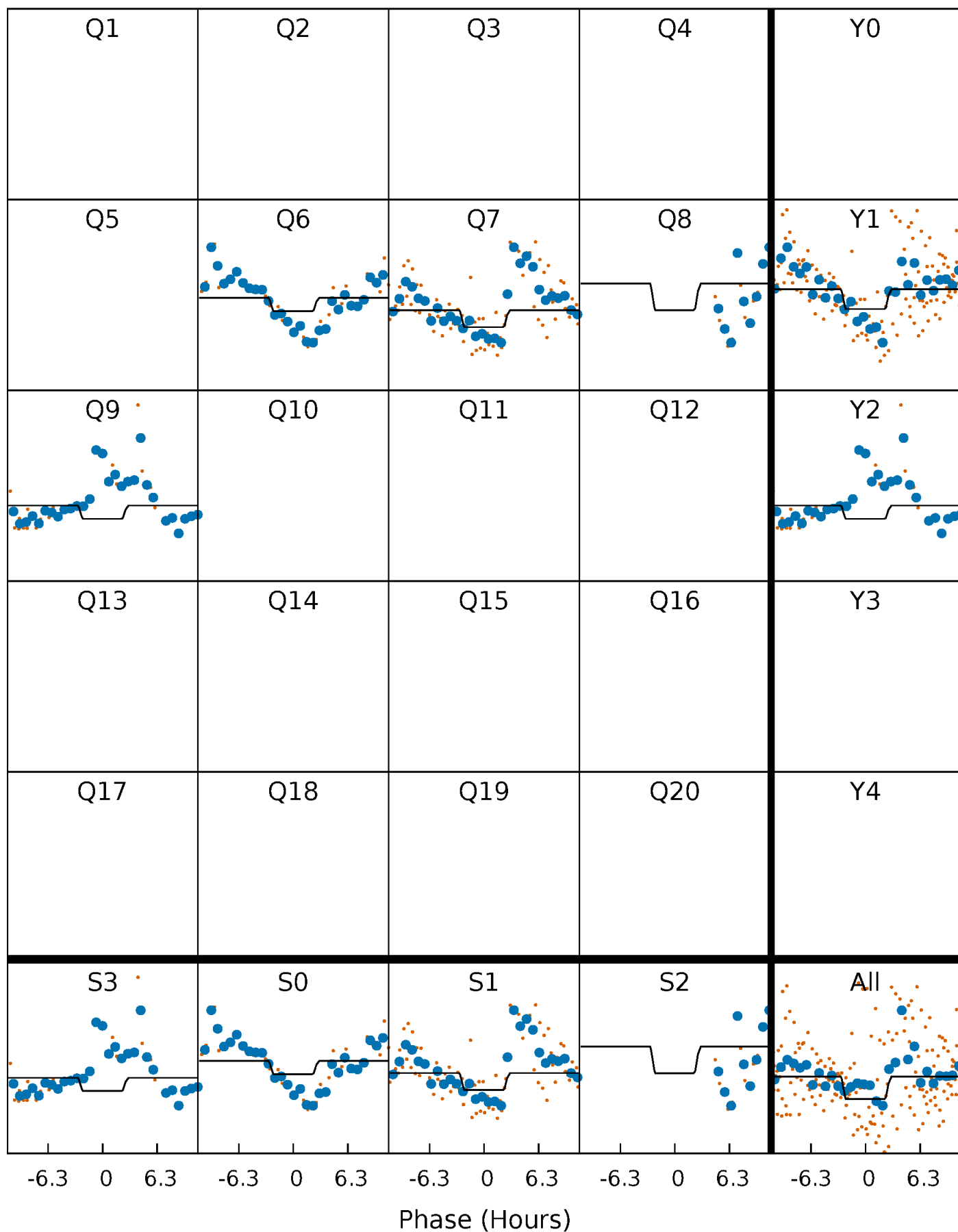
DV Quarter-Phased Transit Curves

TCE 008869922-01 P= 61.724797 Days $T_0=146.282833$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

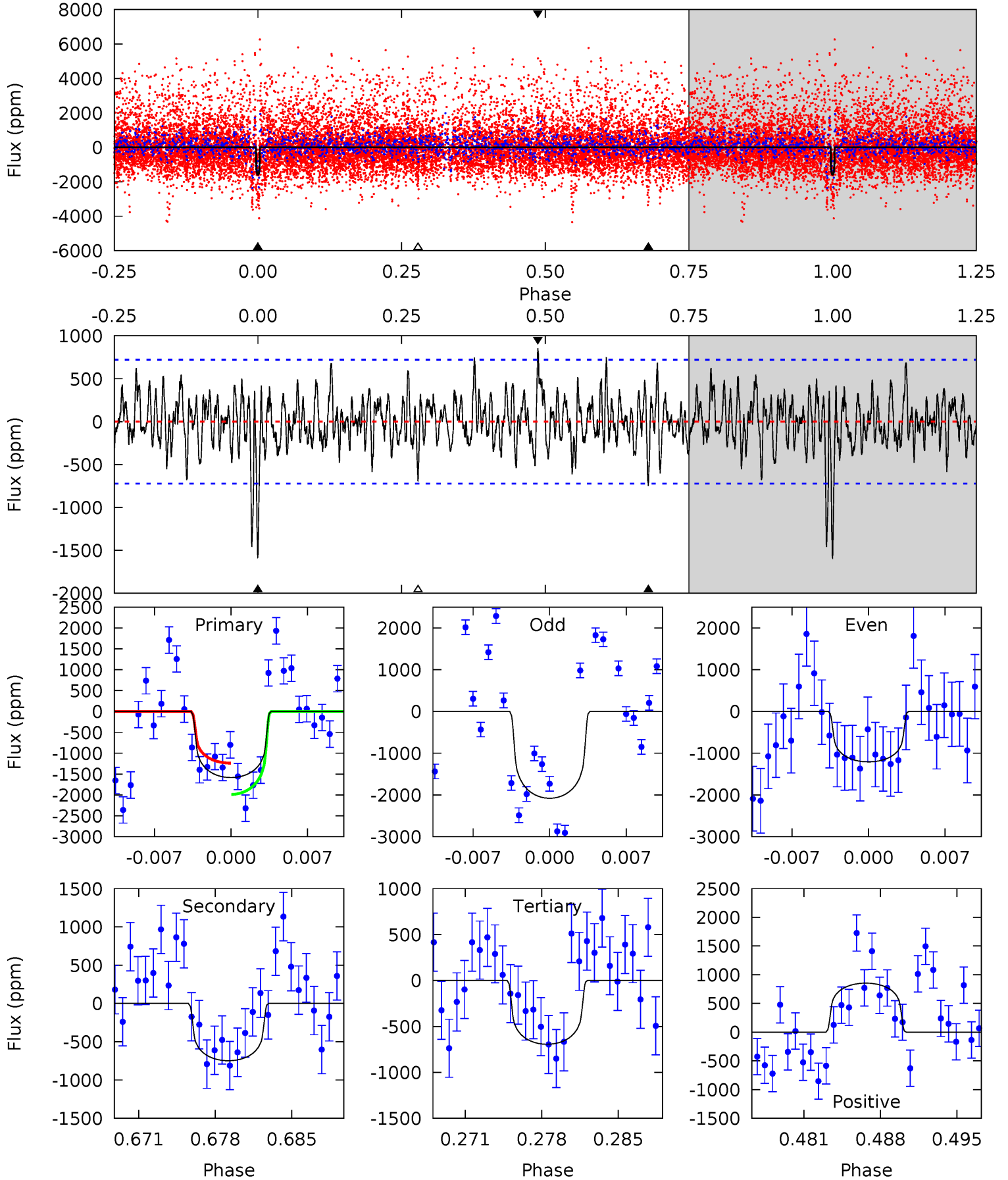
TCE 008869922-01 P= 61.714158 Days $T_0=146.429656$ (BKJD)



DV Model-Shift Uniqueness Test

008869922-01, P = 61.724797 Days, E = 146.282833 Days

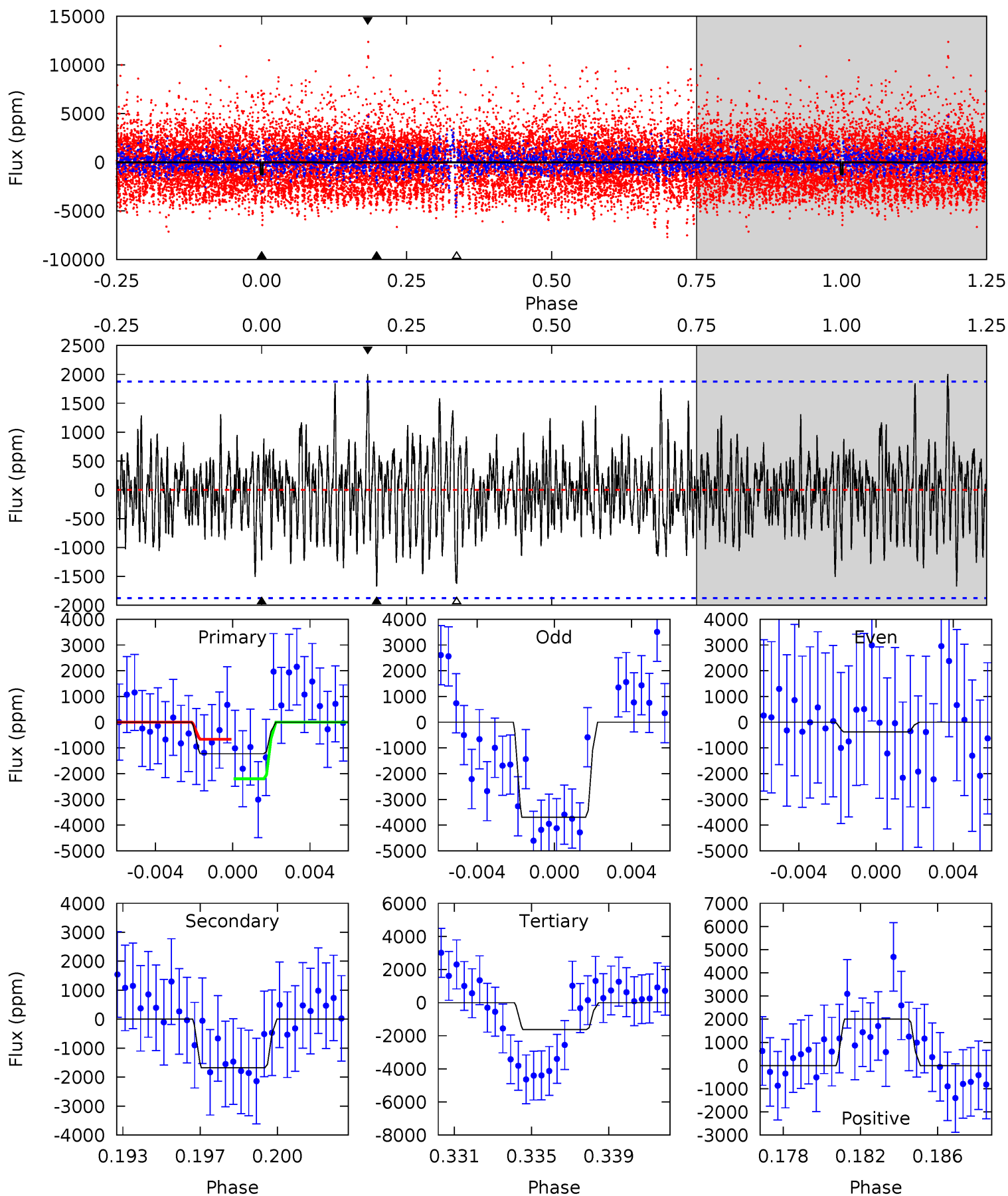
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	5.28	4.90	6.03	5.10	2.71	1.77	6.28	5.16	0.38	-0.74	2.42	0.69	0.35	2.69



Alt Model-Shift Uniqueness Test

008869922-01, P = 61.714158 Days, E = 146.429656 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.41	4.65	4.52	5.58	5.22	2.91	1.42	-1.11	-2.17	0.13	-0.93	4.03	0.53	0.55	2.12



Stellar Parameters For KIC 008869922

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3100^{+1}_{-1}	$5.154^{+-1.000}_{-1.000}$	$0.000^{+-1.000}_{-1.000}$	$0.161^{+-1.000}_{-1.000}$	$0.134^{+-1.000}_{-1.000}$	$45.610^{+-1.000}_{-1.000}$
	+0%/-0%	+19%/-19%	+inf%/-inf%	+621%/-621%	+746%/-746%	+2%/-2%
Source	SPE17	SPE17	SPE17	BTSL		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008869922-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-748 ± 142	$1.00^{+0.82}_{-0.58}$	196^{+18}_{-17}	2580^{+683}_{-346}	10370^{+49813}_{-6700}
Alt.	-1672 ± 360	$0.88^{+0.77}_{-0.53}$	196^{+17}_{-18}	2928^{+961}_{-407}	$30304^{+165841}_{-21347}$

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 $A_{obs} \gg 1.0$

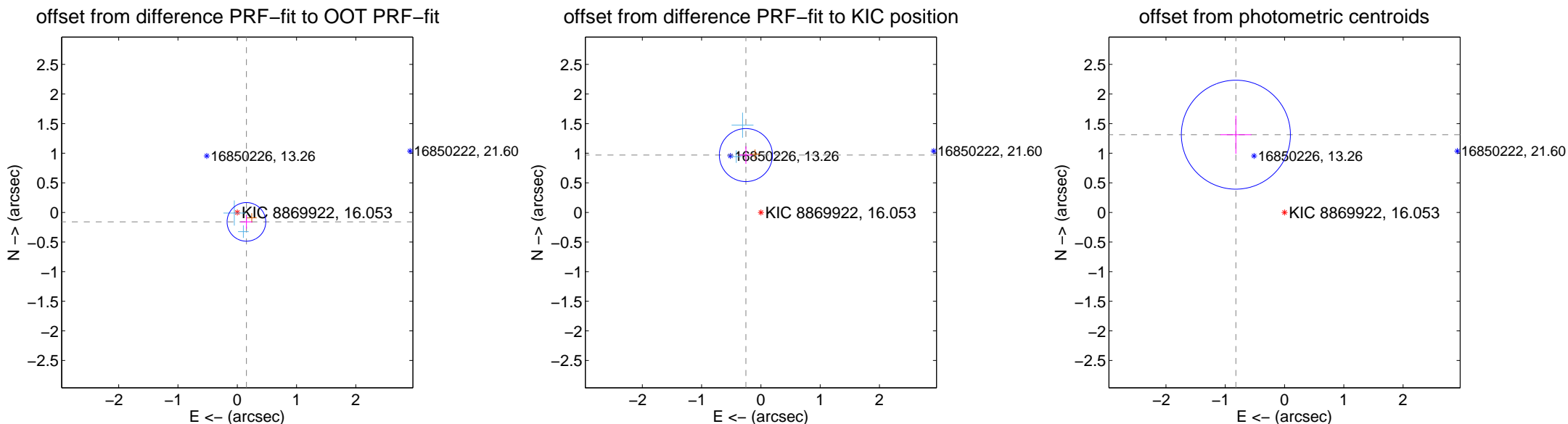
DV Centroid Data

Supplemental centroid analysis for 008869922-01. Kepler magnitude: 16.05. Transit SNR 11.09

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.222 ± 0.109	2.04	-0.154 ± 0.102	-0.159 ± 0.115
PRF-fit source offset from KIC position	1.002 ± 0.149	6.71	0.253 ± 0.110	0.969 ± 0.148
photometric centroid source offset	1.55 ± 0.31	5.05	0.82 ± 0.26	1.31 ± 0.32

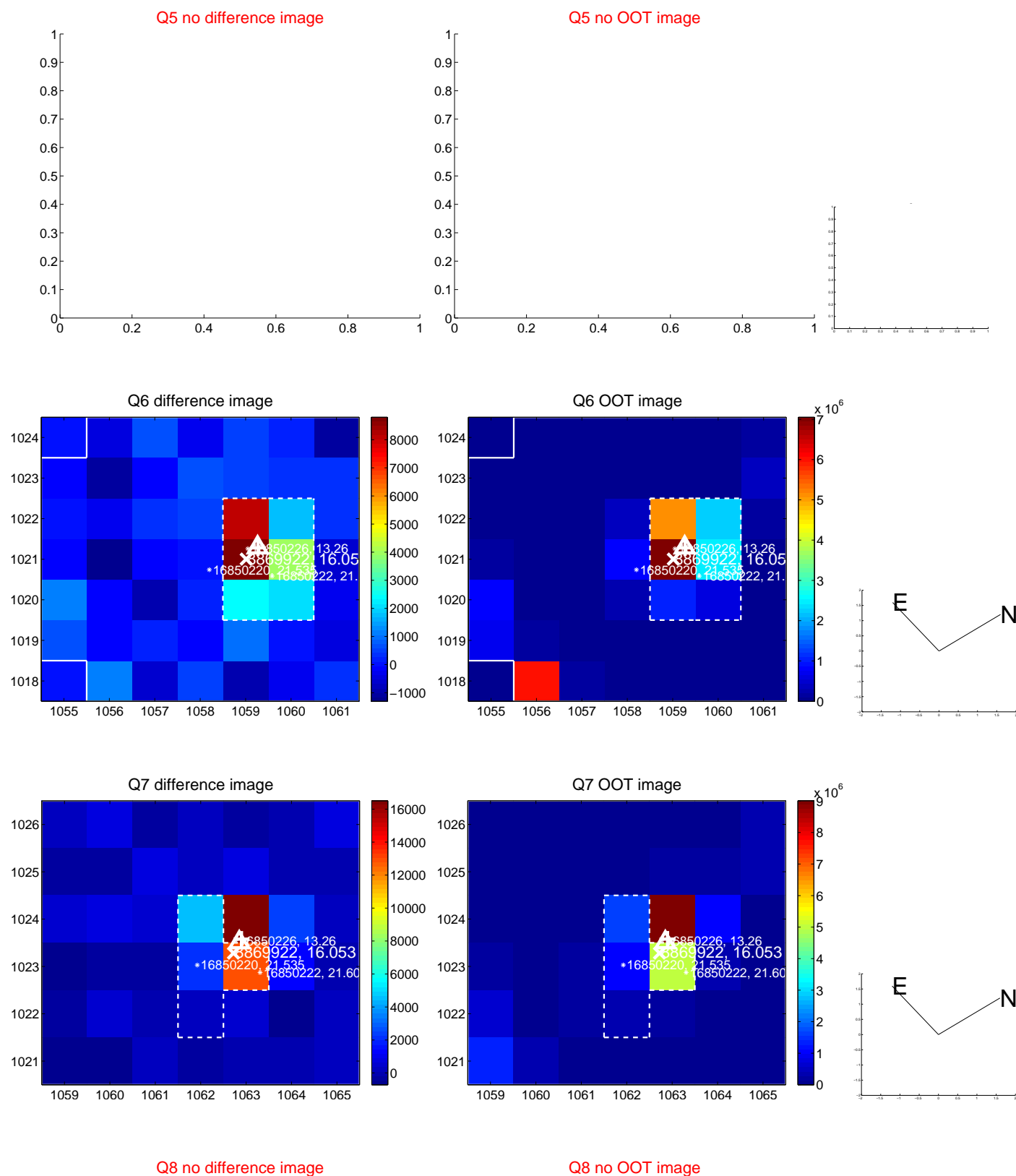


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

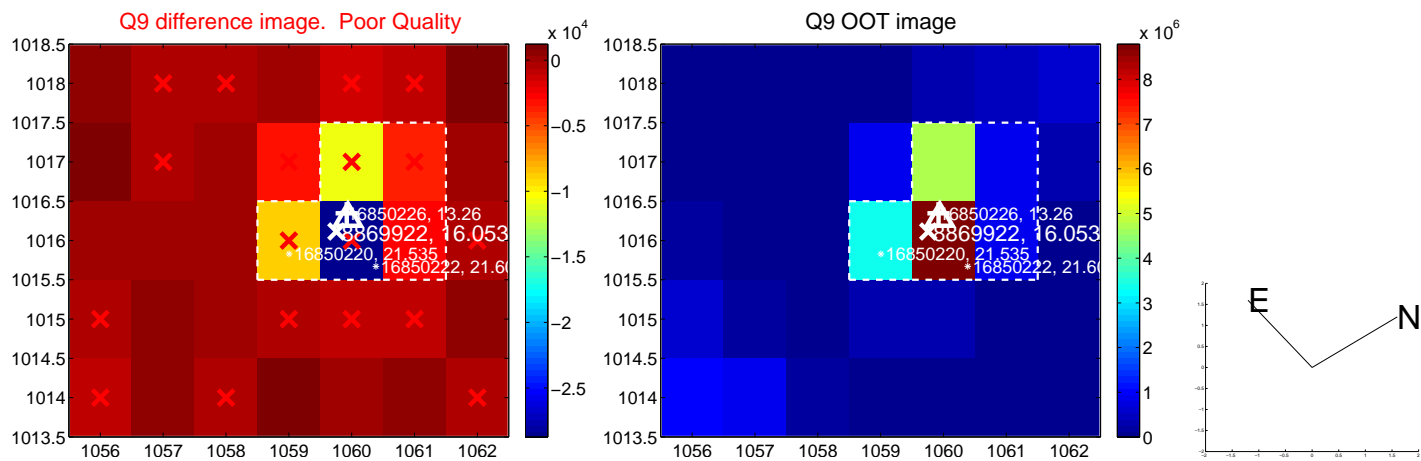
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



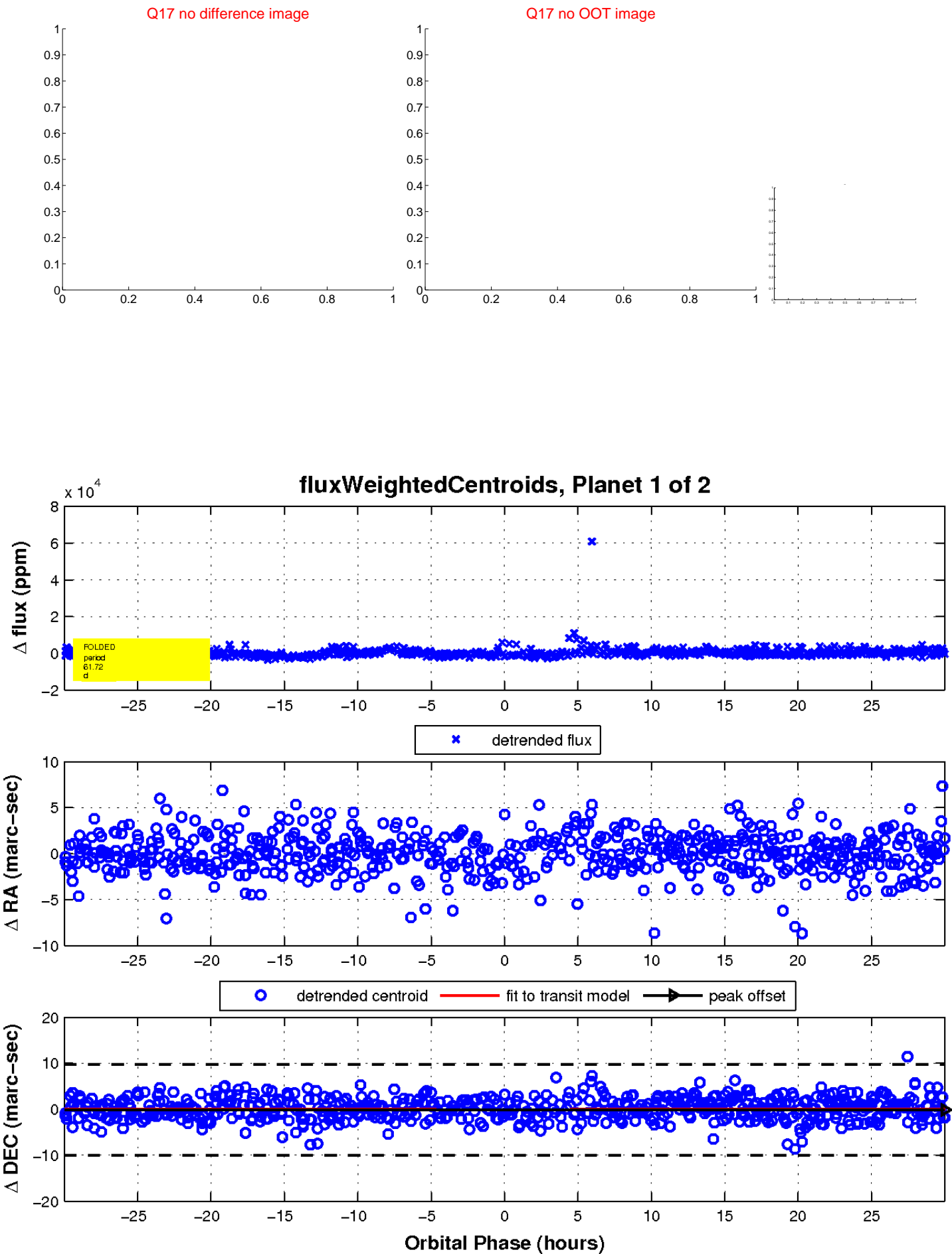
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

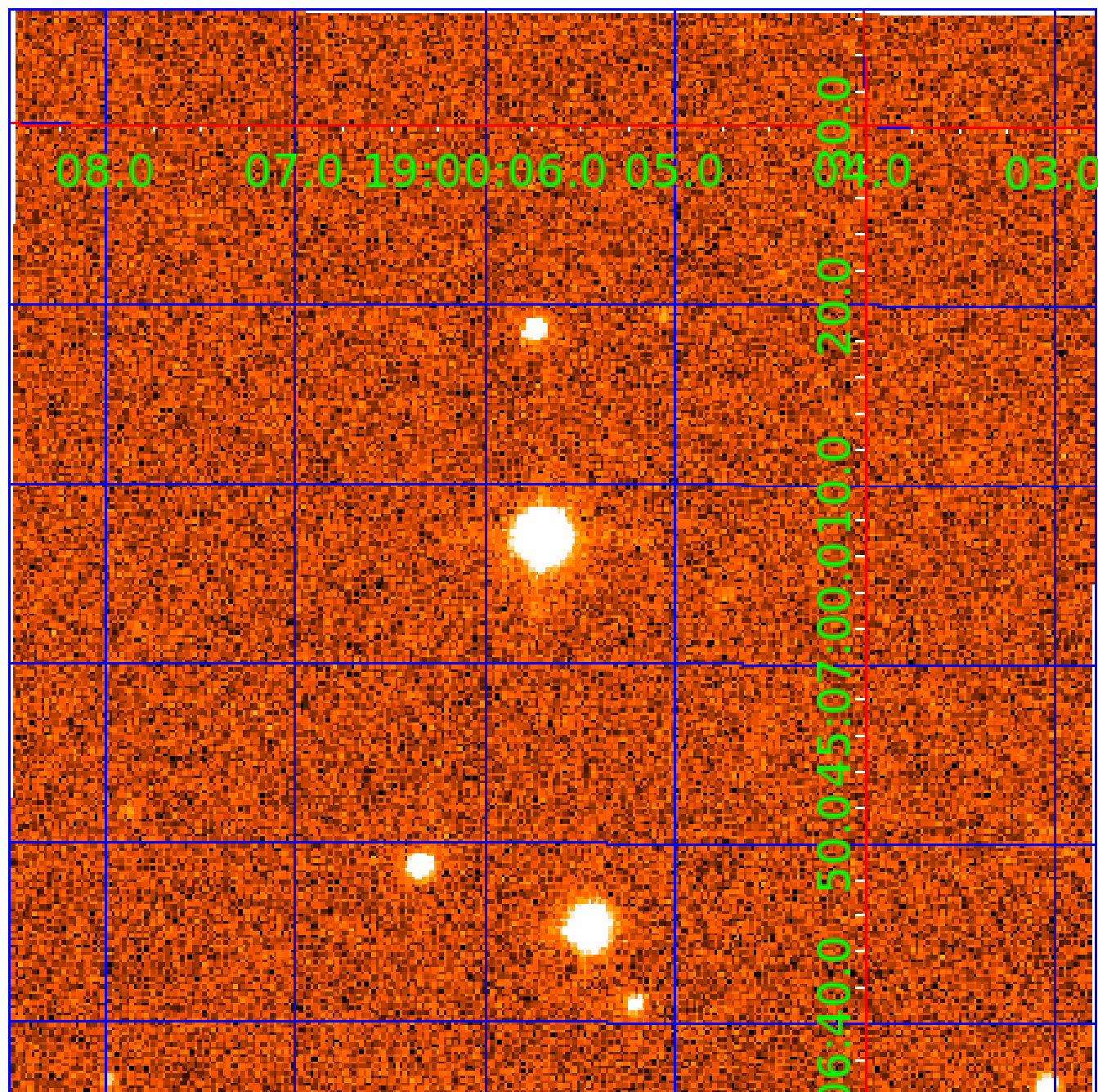


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008869922

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})
008869922-01	OBS	No	61.724797	146.282833	2911.2	9.997	9.3	11.1	0.16	3100	0.86	0.09
008869922-02	OBS	No	130.932085	214.555406	3126.2	58.672	9.3	16.6	0.16	3100	1.00	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008869922-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
008869922-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

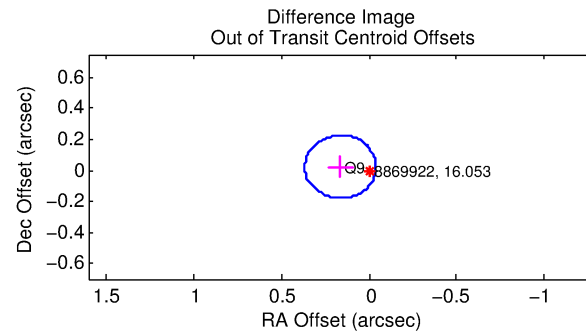
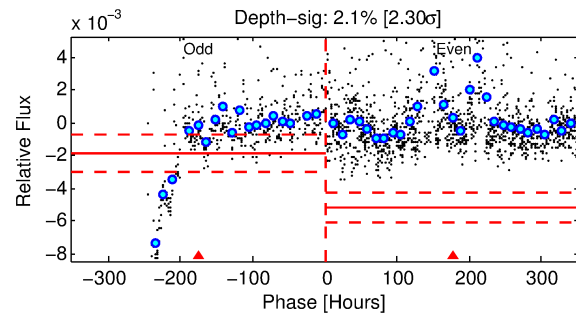
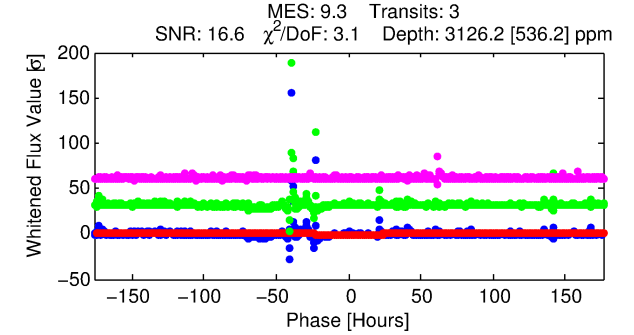
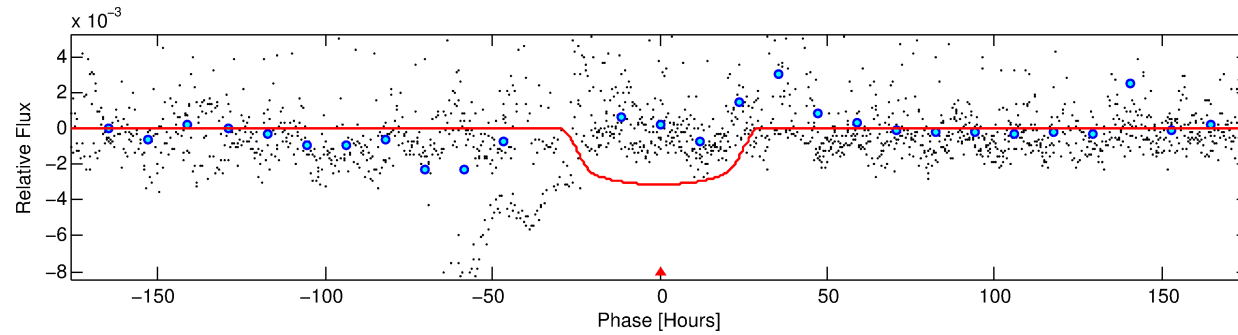
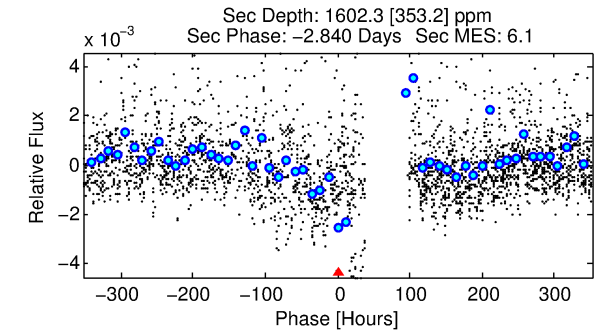
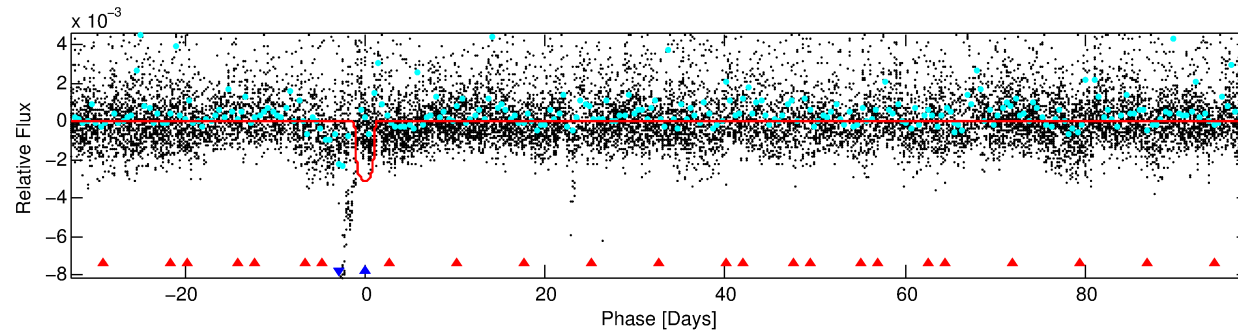
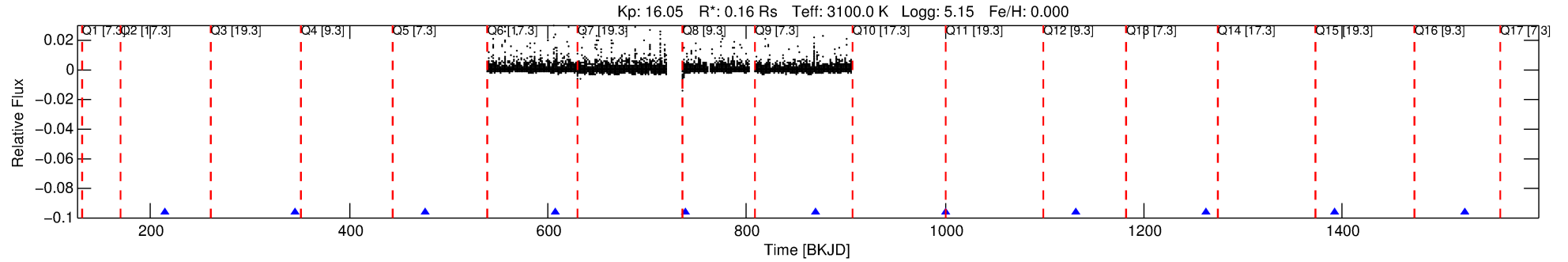
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008869922-02

No Significant Match Found

DV One-Page Summary

KIC: 8869922 Candidate: 2 of 2 Period: 130.932 d



DV Fit Results:

Period = 130.93209 [0.09384] d
Epoch = 214.5554 [0.3763] BKJD
Rp/R* = 0.0569 [0.0083]
a/R* = 11.73 [5.24]
b = 0.80 [0.20]
Seff = 0.03 [0.00]
Teq = 108 [0] K
Rp = 1.00 [0.15] Re
a = 0.2588 [0.0001] AU
Ag = 59000.30 [21524.99] [2.74σ]
Teffp = 2599 [237] K [10.51σ]

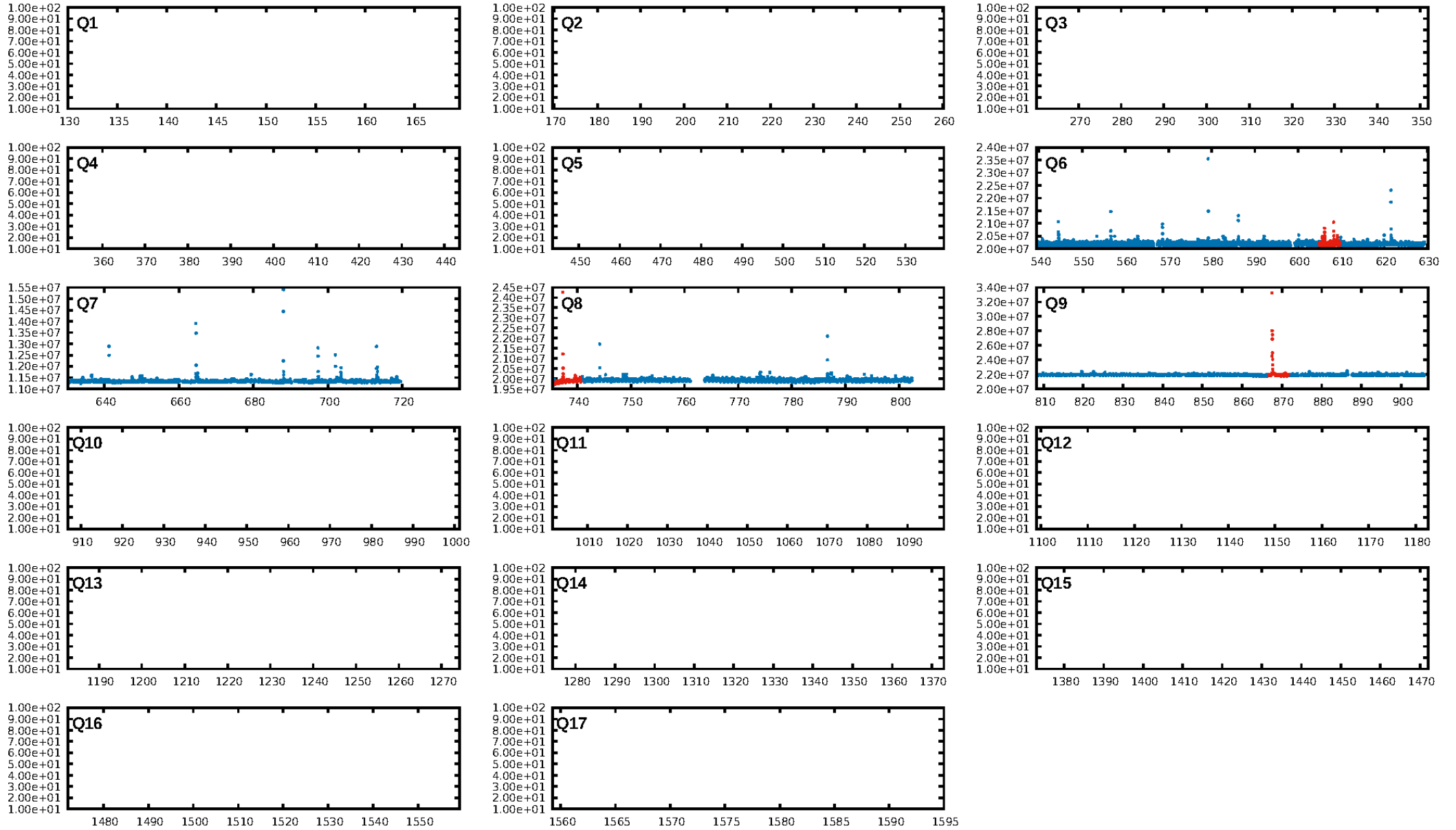
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.91σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 0.0%
Bootstrap-pfa: 4.74e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.5282
Centroid-sig: N/A
Centroid-so: 1.113 arcsec [7.88σ]
OotOffset-rm: 0.165 arcsec [2.44σ]
KicOffset-rm: 1.236 arcsec [18.22σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

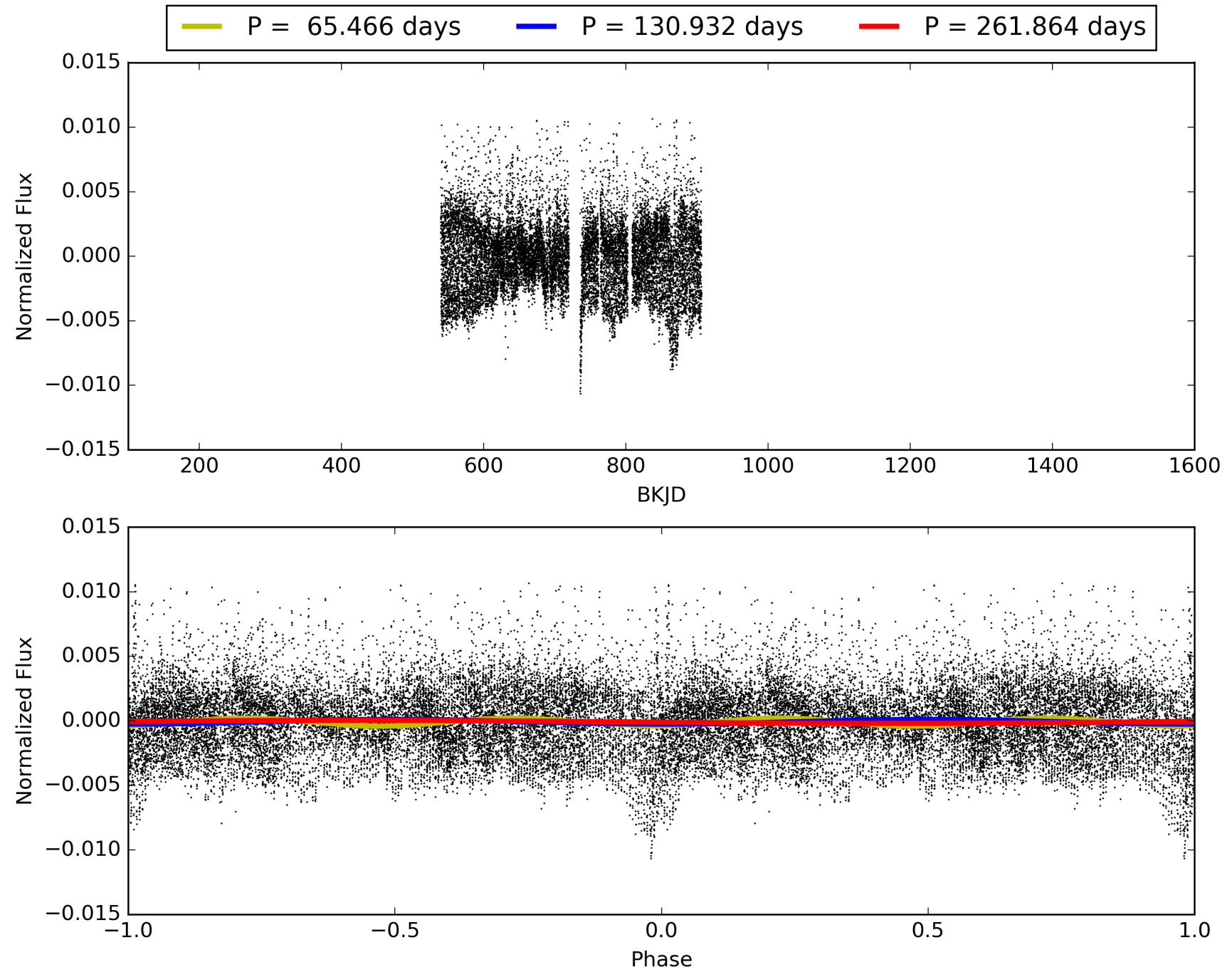
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:55:11 Z

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

TCE 008869922-02, PDC Light Curves

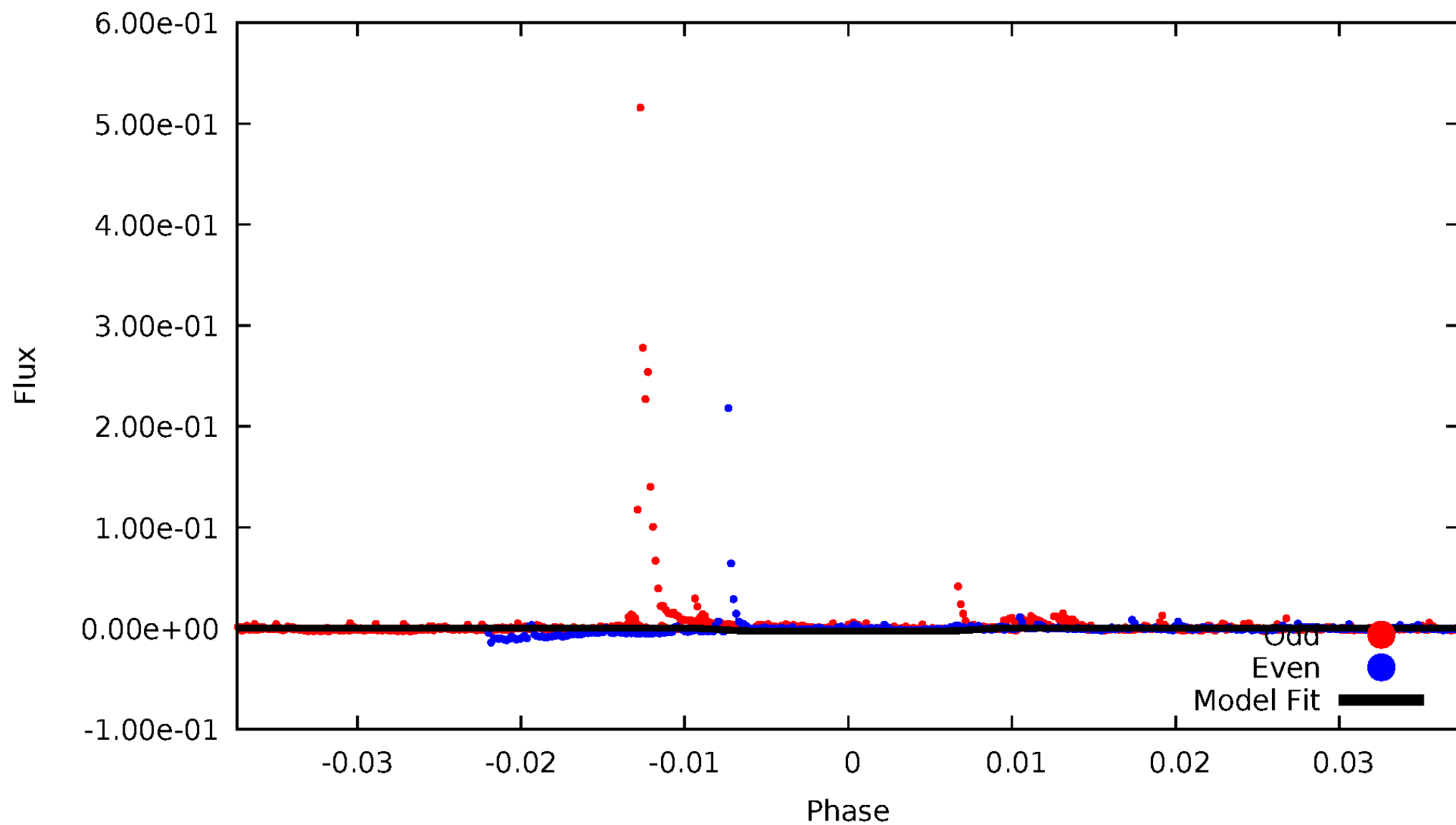


TCE 008869922-02



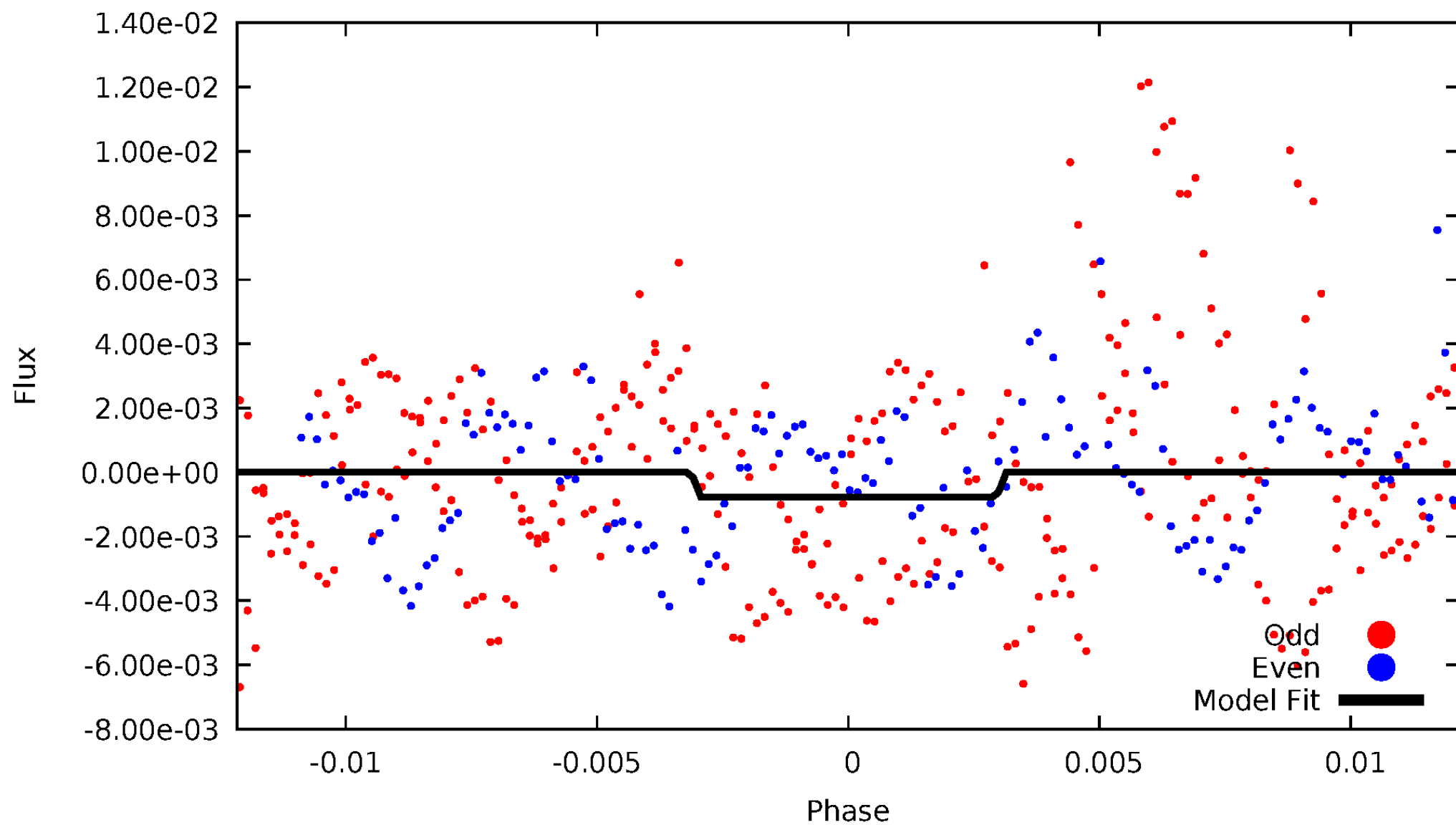
DV Odd/Even

TCE 008869922-02



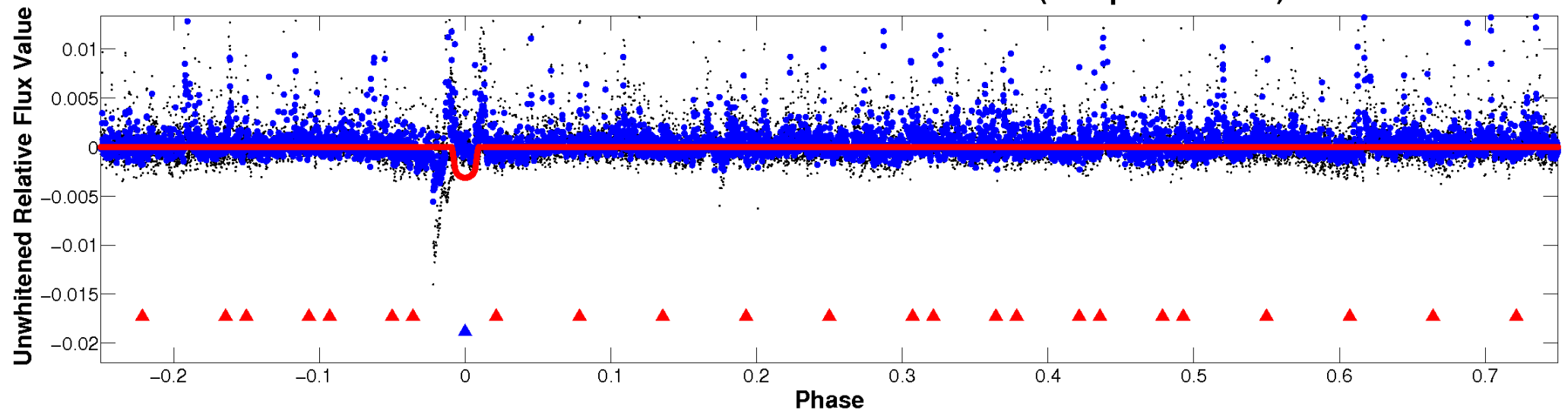
ALT Odd/Even

TCE 008869922-02

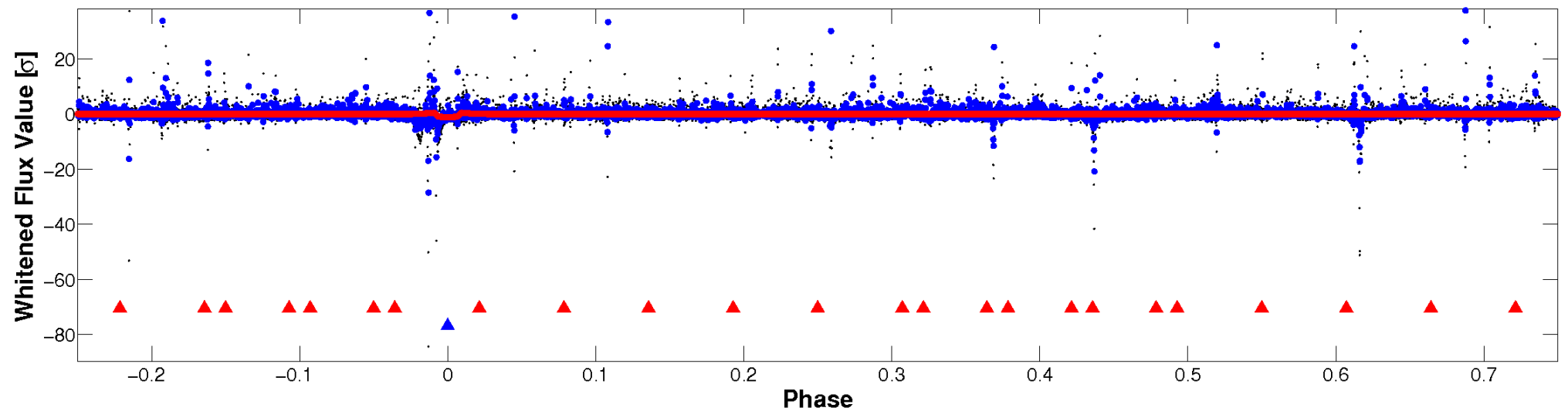


Non-Whitened Vs. Whitened Light Curve

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



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



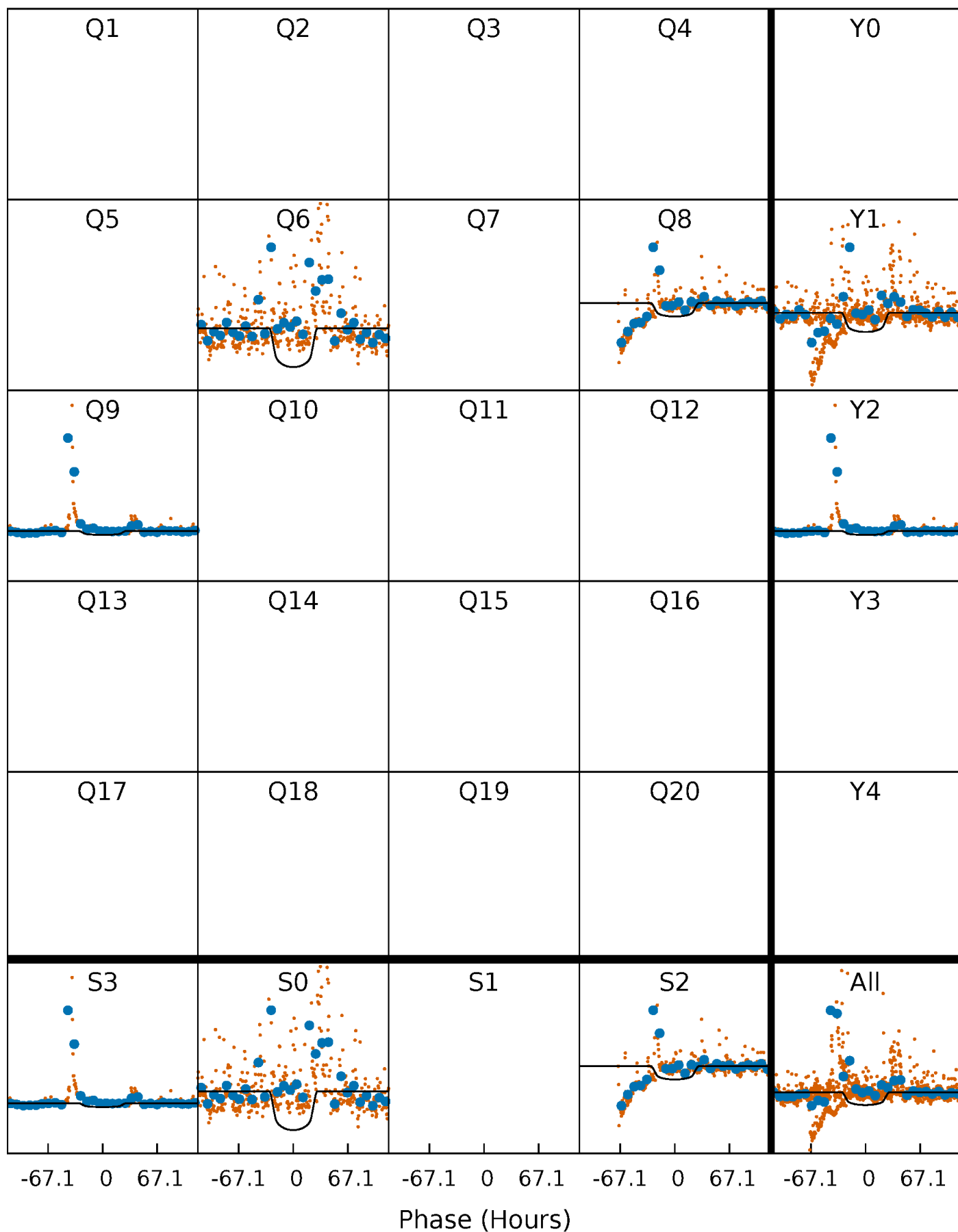
PDC Quarter-Phased Transit Curves

TCE 008869922-02 $P=130.932085$ Days $T_0=214.555406$ (BKJD)



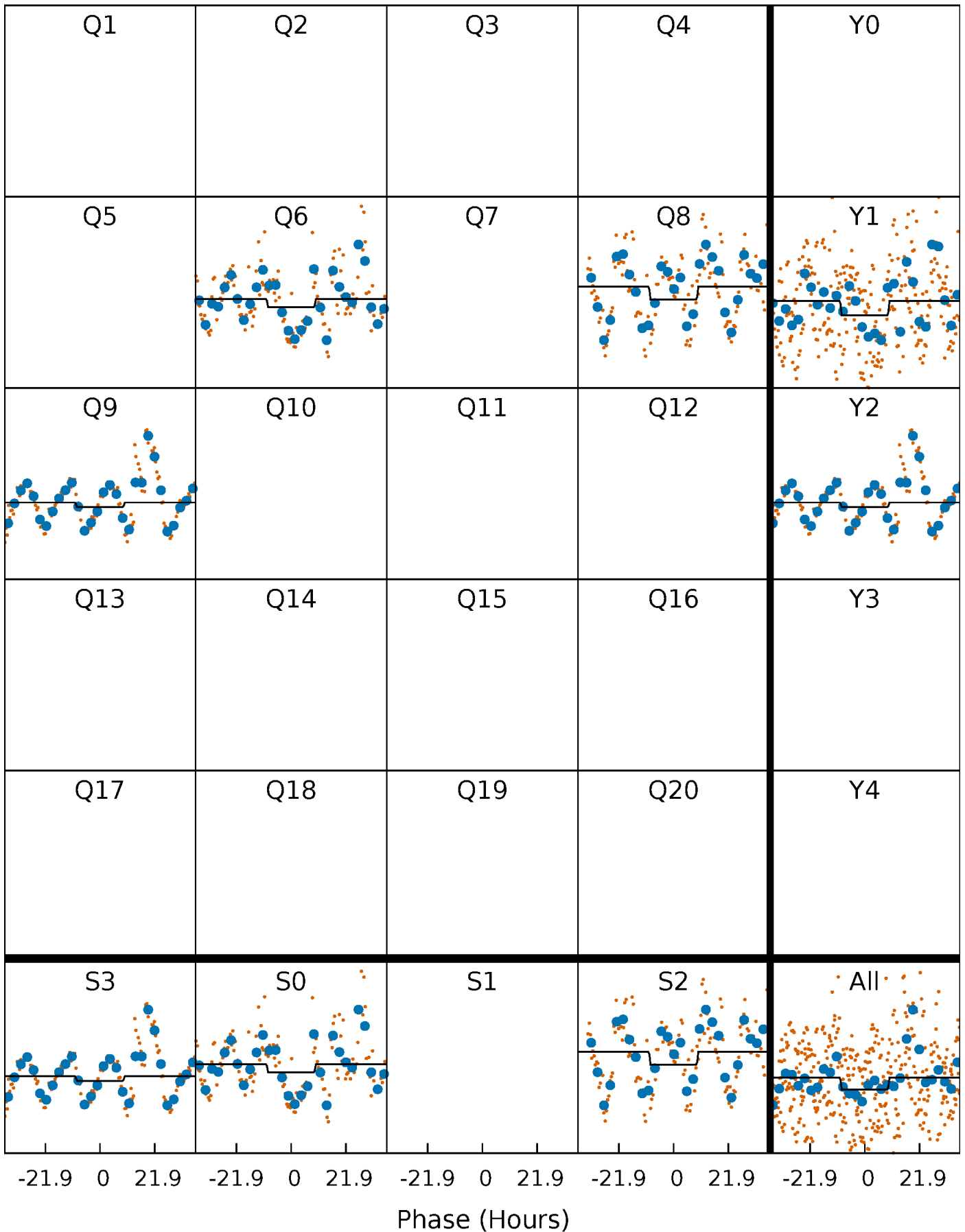
DV Quarter-Phased Transit Curves

TCE 008869922-02 P=130.932085 Days $T_0=214.555406$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

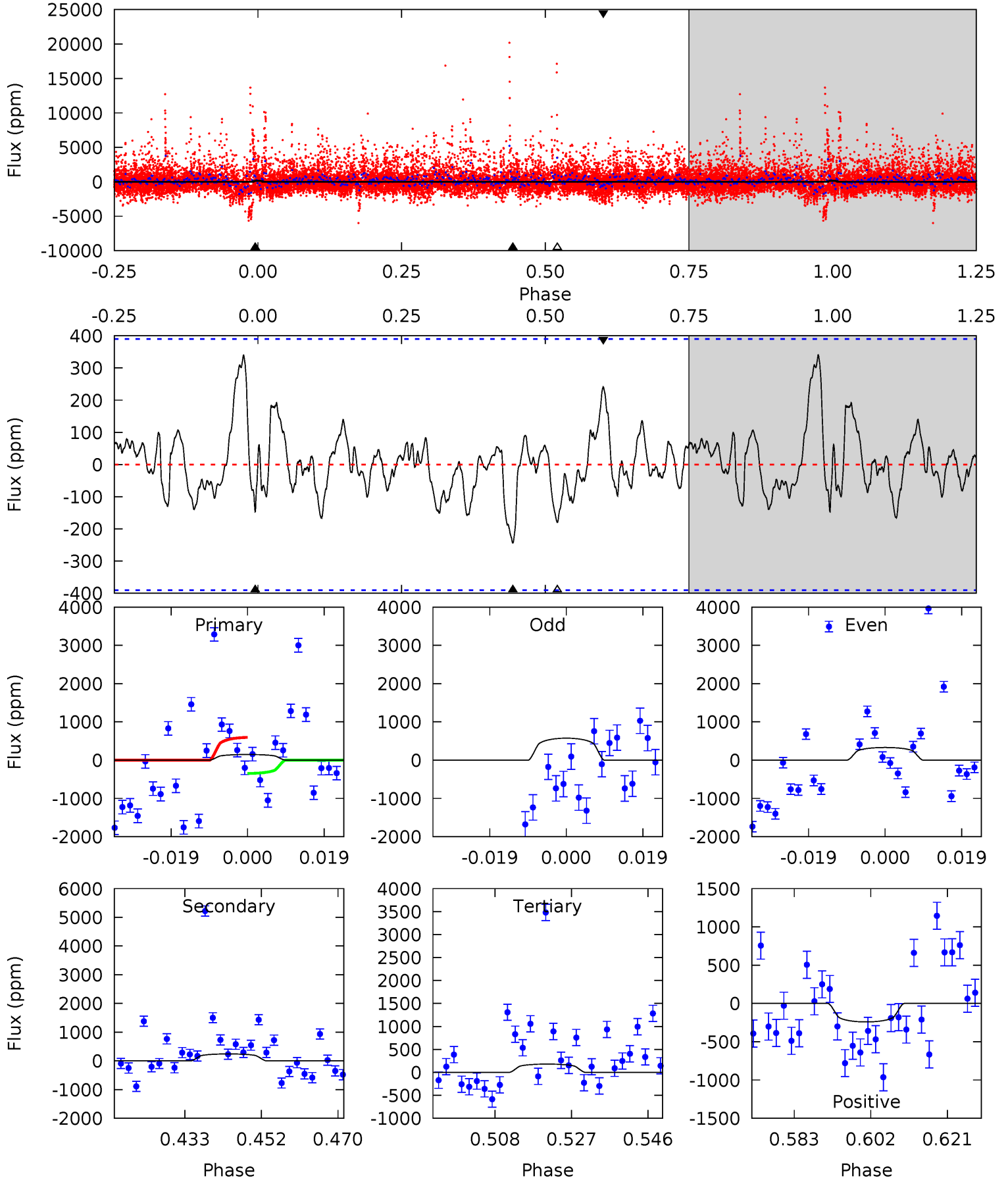
TCE 008869922-02 P=131.081287 Days $T_0=214.692308$ (BKJD)



DV Model-Shift Uniqueness Test

008869922-02, P = 130.932085 Days, E = 214.555406 Days

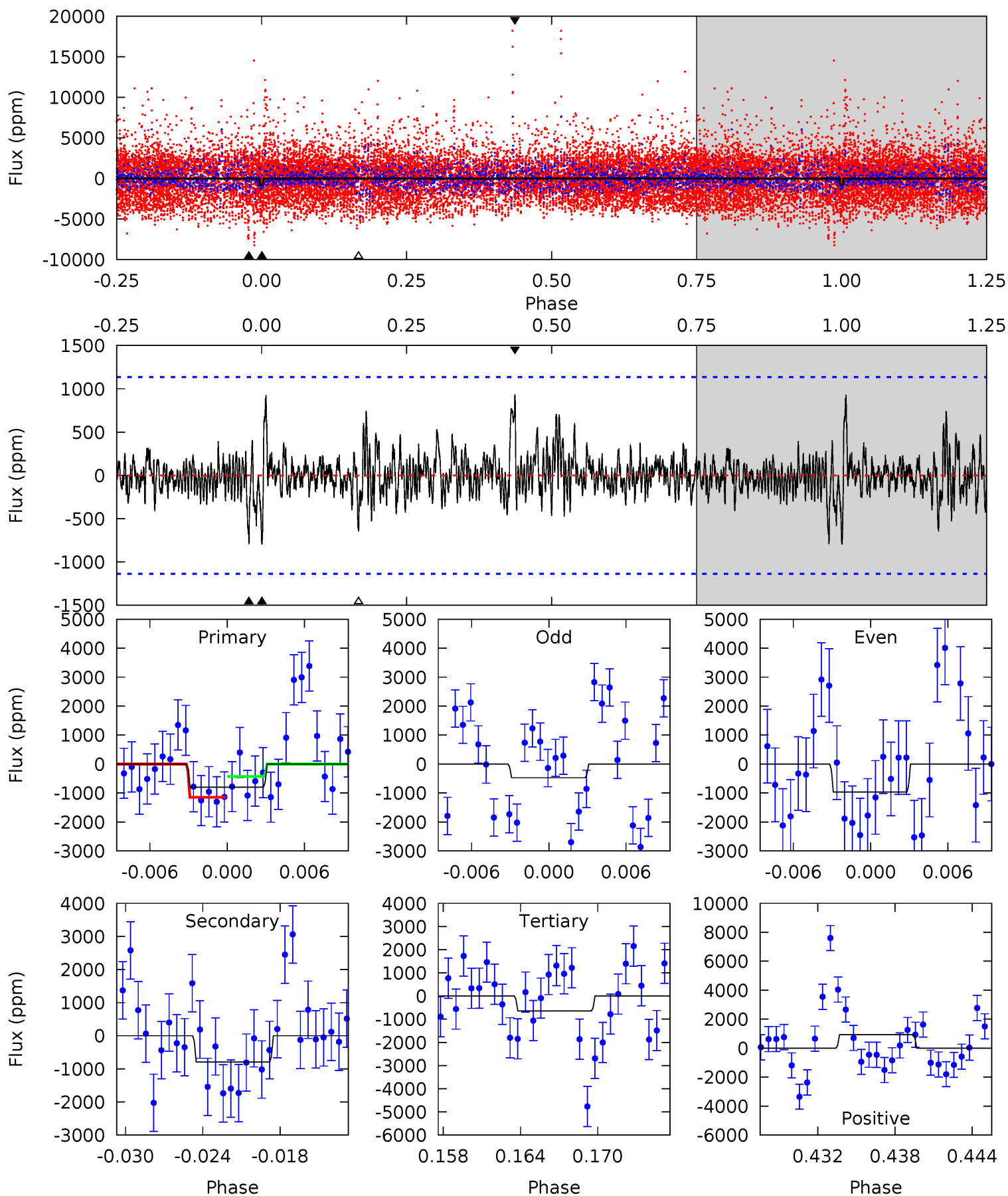
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.85	3.06	2.26	3.03	4.90	2.35	1.06	-0.42	-1.19	0.79	0.03	0.81	1.24	0.58	1.54



Alt Model-Shift Uniqueness Test

008869922-02, P = 131.081287 Days, E = 214.692308 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.59	3.57	2.91	4.20	5.12	2.74	0.86	0.68	-0.61	0.66	-0.63	1.03	1.15	0.54	1.62



Stellar Parameters For KIC 008869922

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3100^{+1}_{-1}	$5.154^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$0.161^{+1.000}_{-1.000}$	$0.134^{+1.000}_{-1.000}$	$45.610^{+1.000}_{-1.000}$
	+0%/-0%	+19%/-19%	+inf%/-inf%	+621%/-621%	+746%/-746%	+2%/-2%
Source	SPE17	SPE17	SPE17	BTSL		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 008869922-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-243 ± 80	$1.08^{+0.36}_{-0.30}$	152^{+13}_{-13}	2219^{+163}_{-155}	8321^{+5546}_{-3520}
Alt.	-793 ± 222	$0.53^{+0.23}_{-0.19}$	153^{+14}_{-14}	3089^{+397}_{-294}	$114122^{+127413}_{-55312}$

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

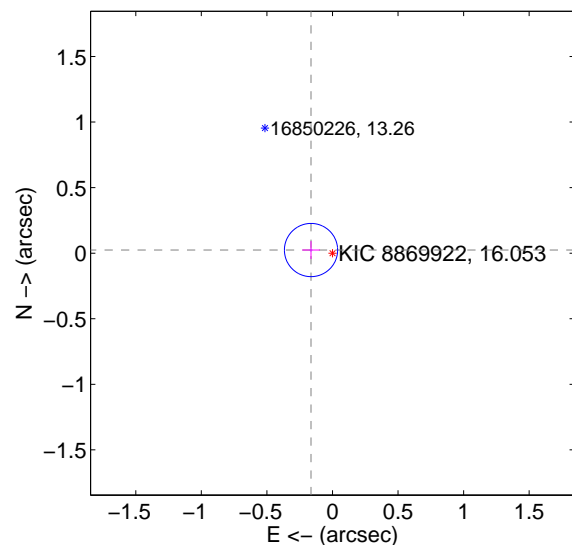
Supplemental centroid analysis for 008869922-02. Kepler magnitude: 16.05. Transit SNR 16.55

There are 1 quarters with good PRF difference image offsets

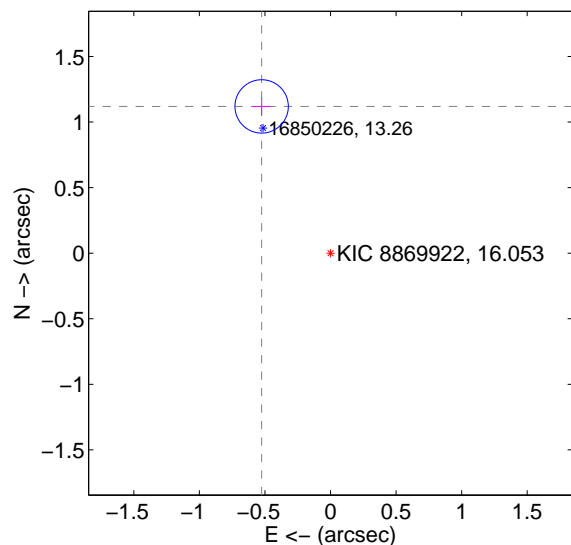
The direct PRF centroid is offset from the target star catalog position by about 1.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.165 ± 0.068	2.44	0.164 ± 0.068	0.024 ± 0.068
PRF-fit source offset from KIC position	1.236 ± 0.068	18.22	0.525 ± 0.068	1.119 ± 0.068
photometric centroid source offset	1.11 ± 0.14	7.88	0.50 ± 0.12	0.99 ± 0.15

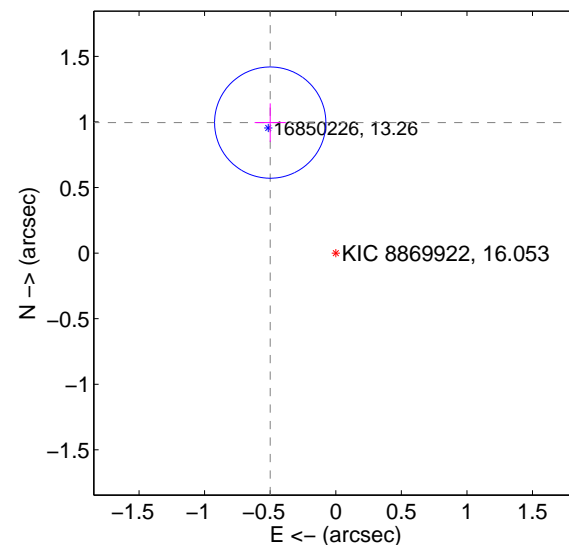
offset from difference PRF-fit to OOT PRF-fit



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.

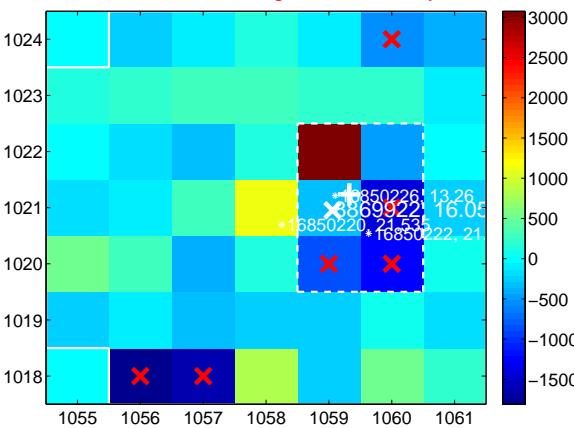
Q5 no difference image



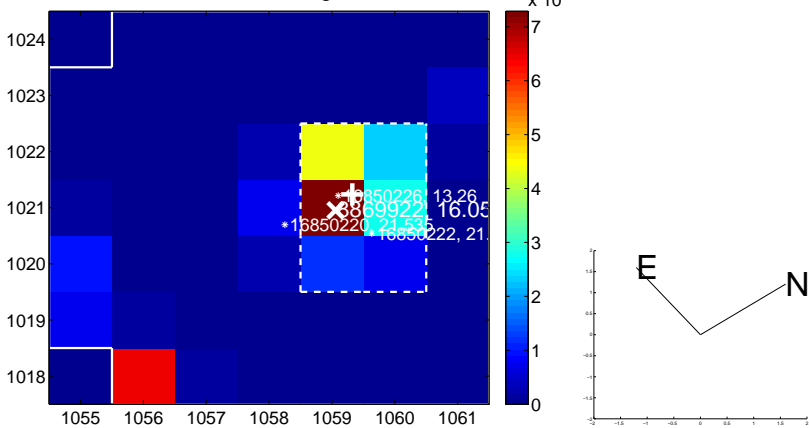
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



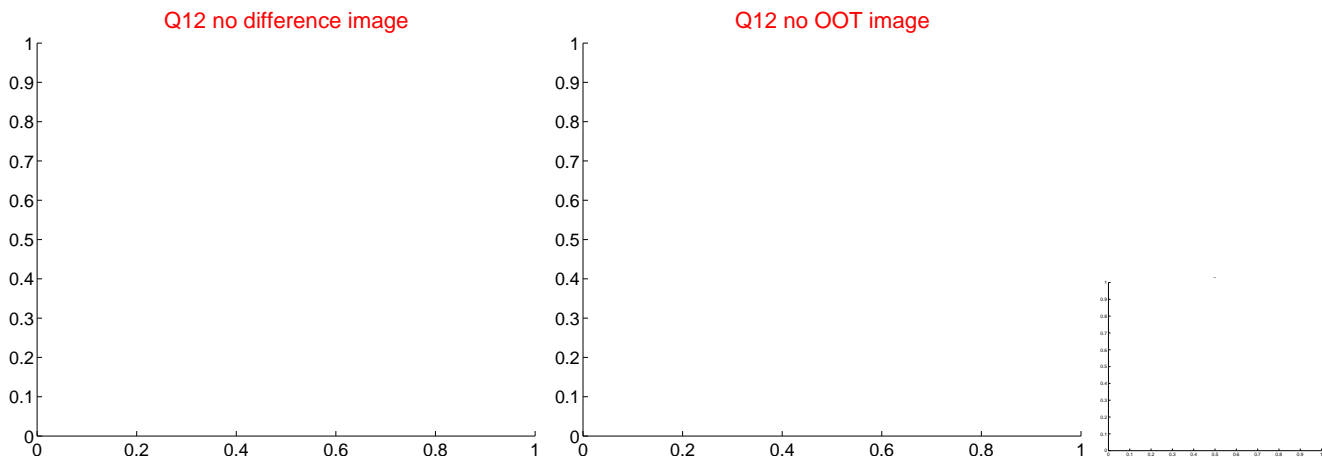
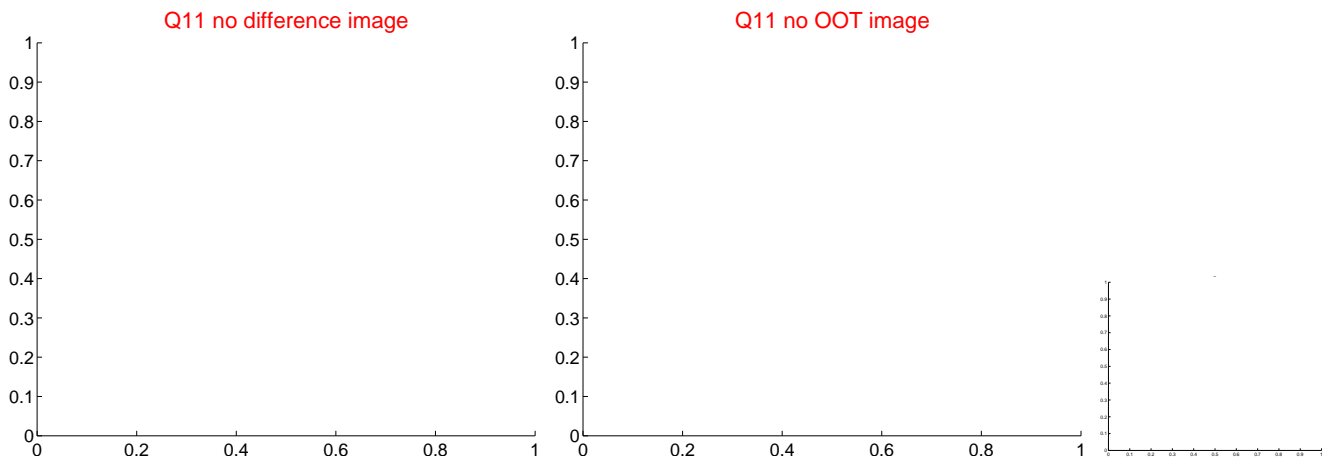
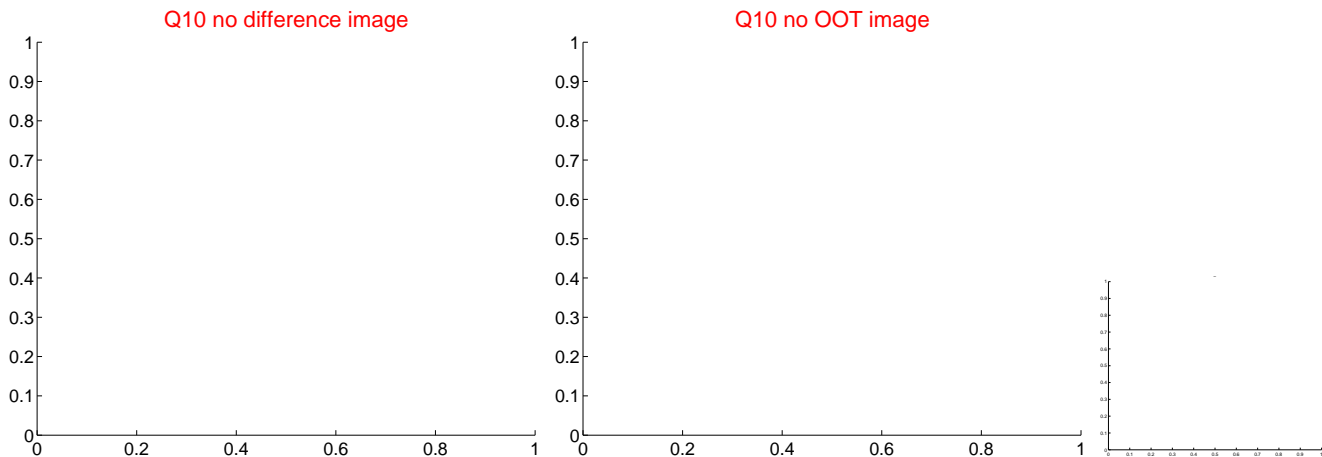
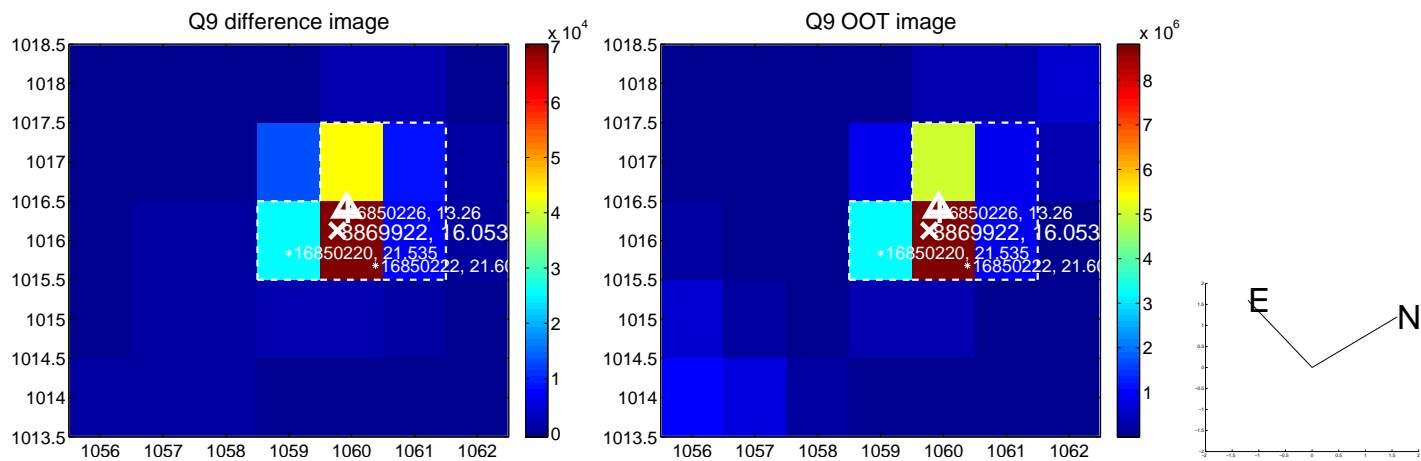
Q8 no difference image



Q8 no OOT image



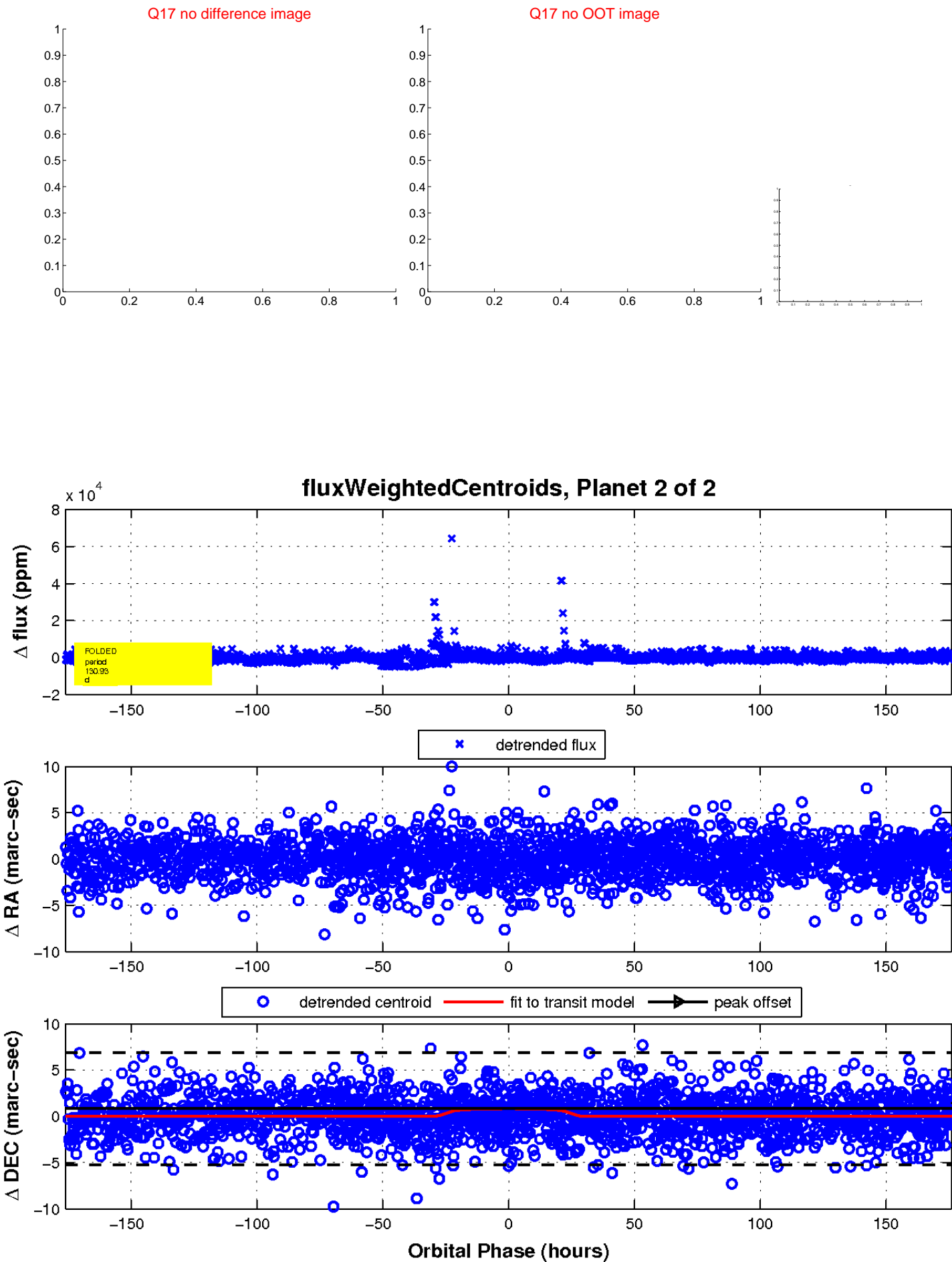
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

