

KIC 009823652

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})
009823652-01	OBS	No	0.845014	132.103914	32.9	4.050	13.9	14.6	2.58	7675	1.53	43676.19
009823652-02	OBS	No	155.856601	242.267494	454.1	5.116	8.4	7.9	2.58	7675	8.37	41.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823652-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009823652-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—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.

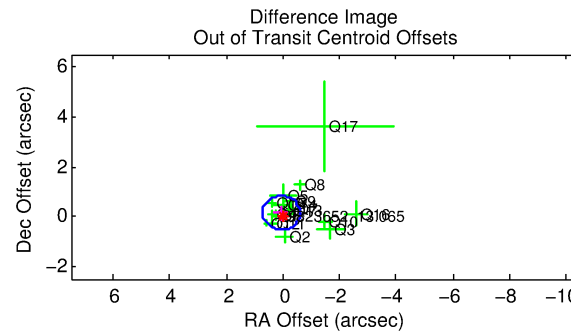
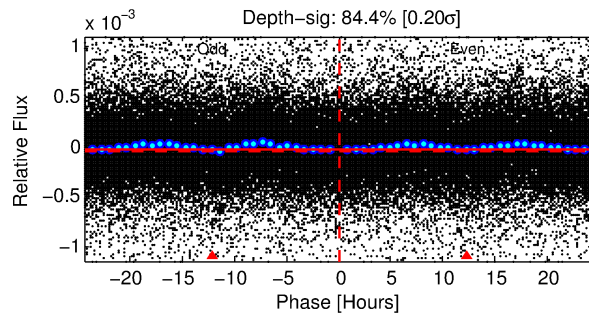
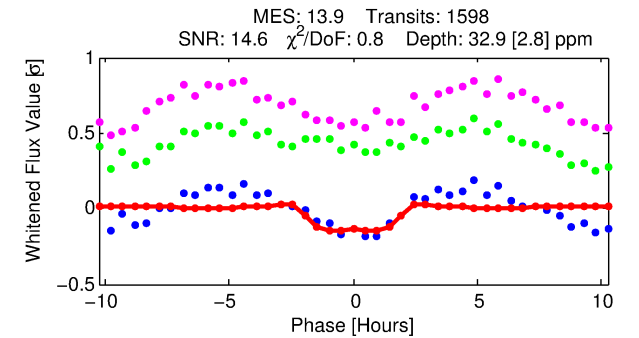
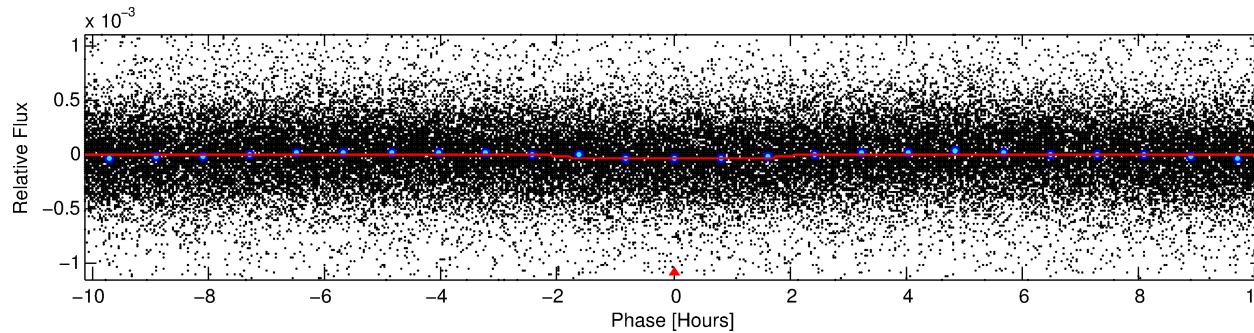
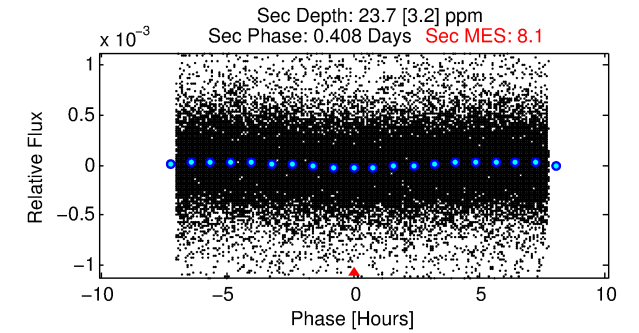
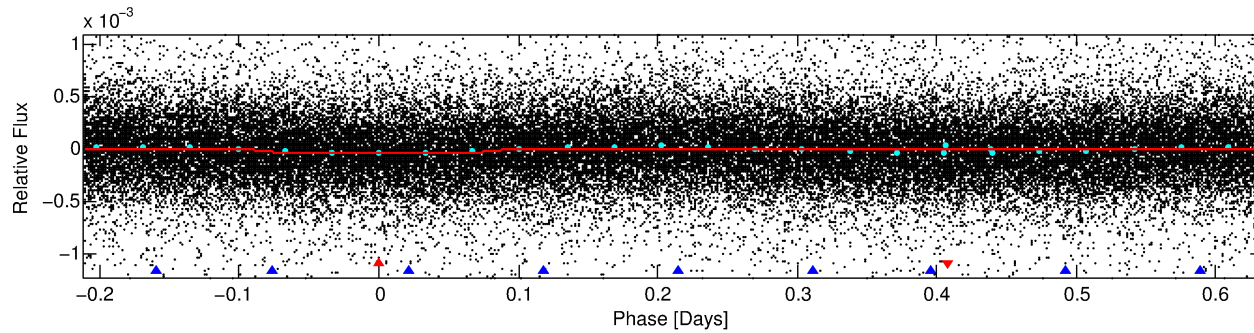
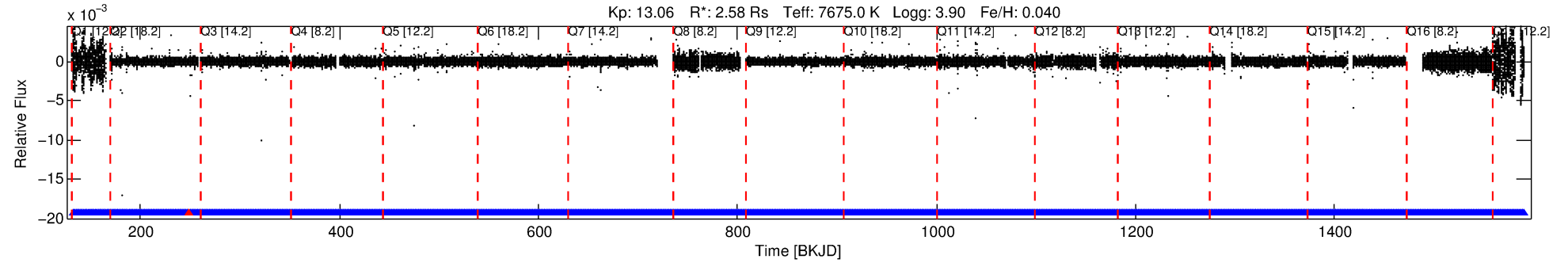
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823652-01

No Significant Match Found

DV One-Page Summary

KIC: 9823652 Candidate: 1 of 2 Period: 0.845 d



DV Fit Results:

Period = 0.84501 [0.00001] d
Epoch = 132.1039 [0.0032] BKJD
Rp/R* = 0.0054 [0.0019]
a/R* = 1.58 [1.98]
b = 0.47 [3.47]
Seff = 43676.19 [22420.06]
Teff = 3686 [473] K
Rp = 1.53 [0.78] Re
a = 0.0218 [0.0070] AU
Ag = 2.63 [2.27] [0.72σ]
Teffp = 7260 [1330] K [2.53σ]

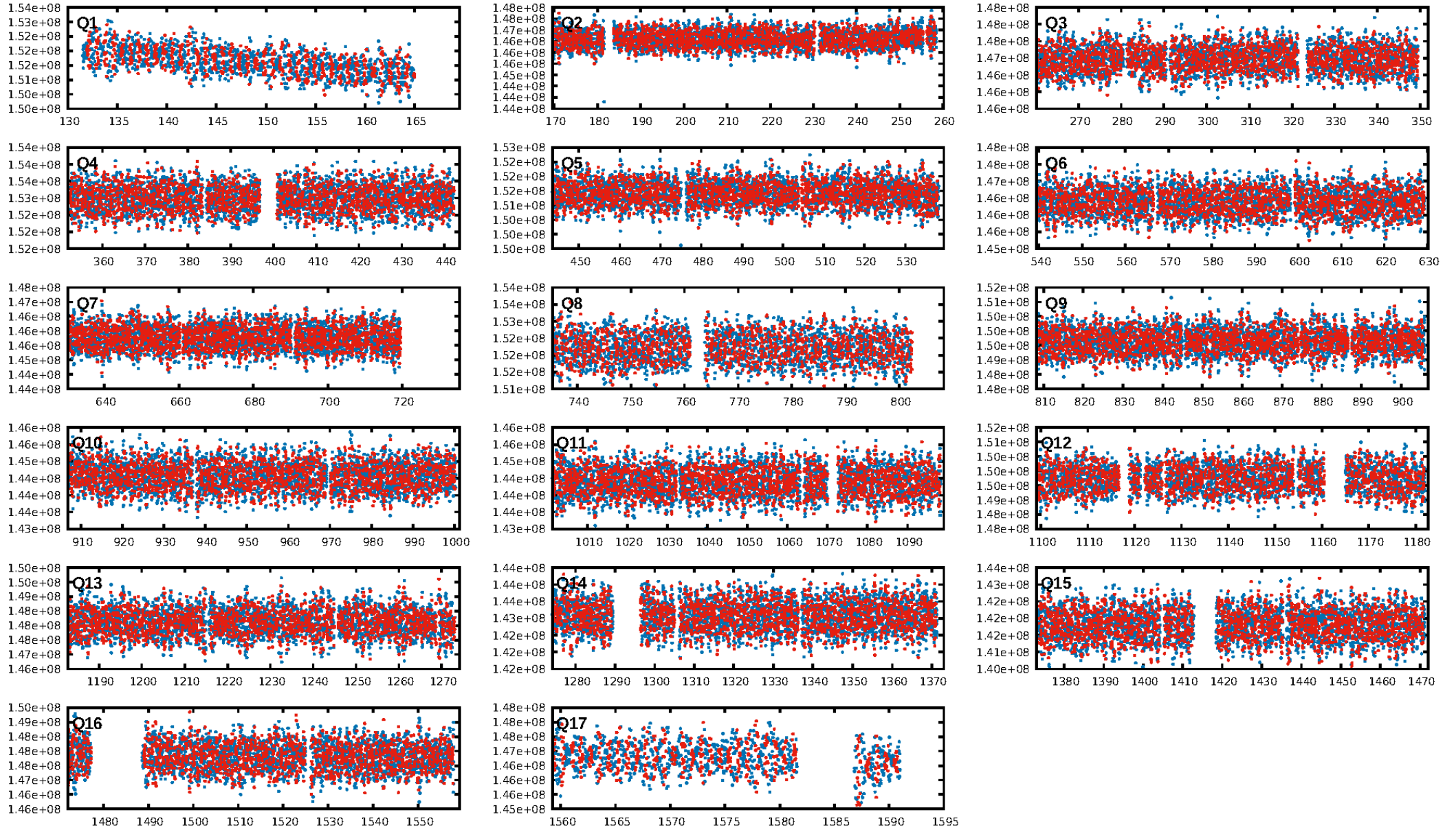
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [570.15σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.18e-35
RollingBand-fgt: 1.00 [1525/1526]
GhostDiagnostic-chr: 16.76
Centroid-sig: 18.6%
Centroid-so: 0.397 arcsec [0.84σ]
OotOffset-rm: 0.165 arcsec [0.74σ]
KicOffset-rm: 0.121 arcsec [0.57σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

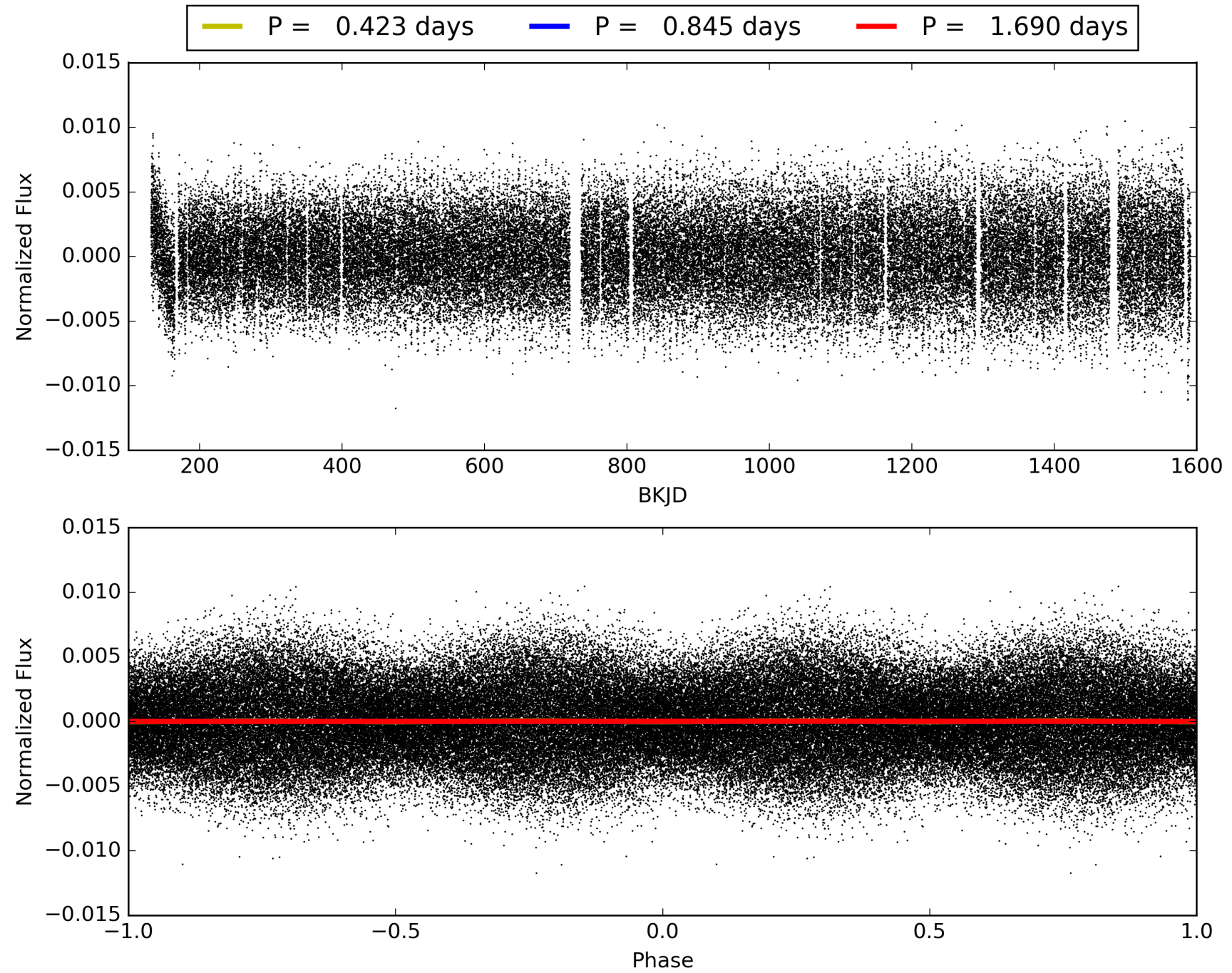
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:43:18 Z

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

TCE 009823652-01, PDC Light Curves

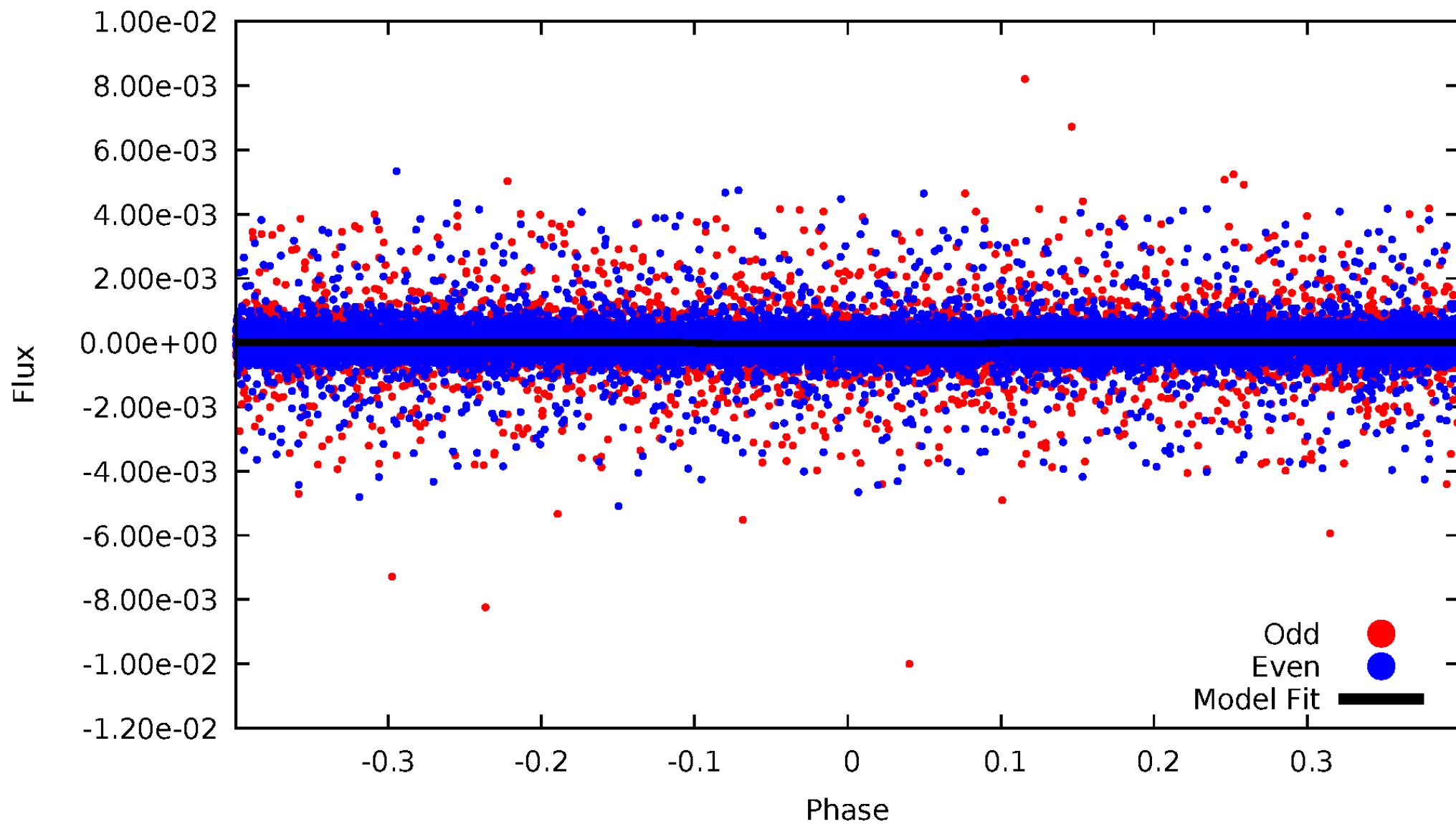


TCE 009823652-01



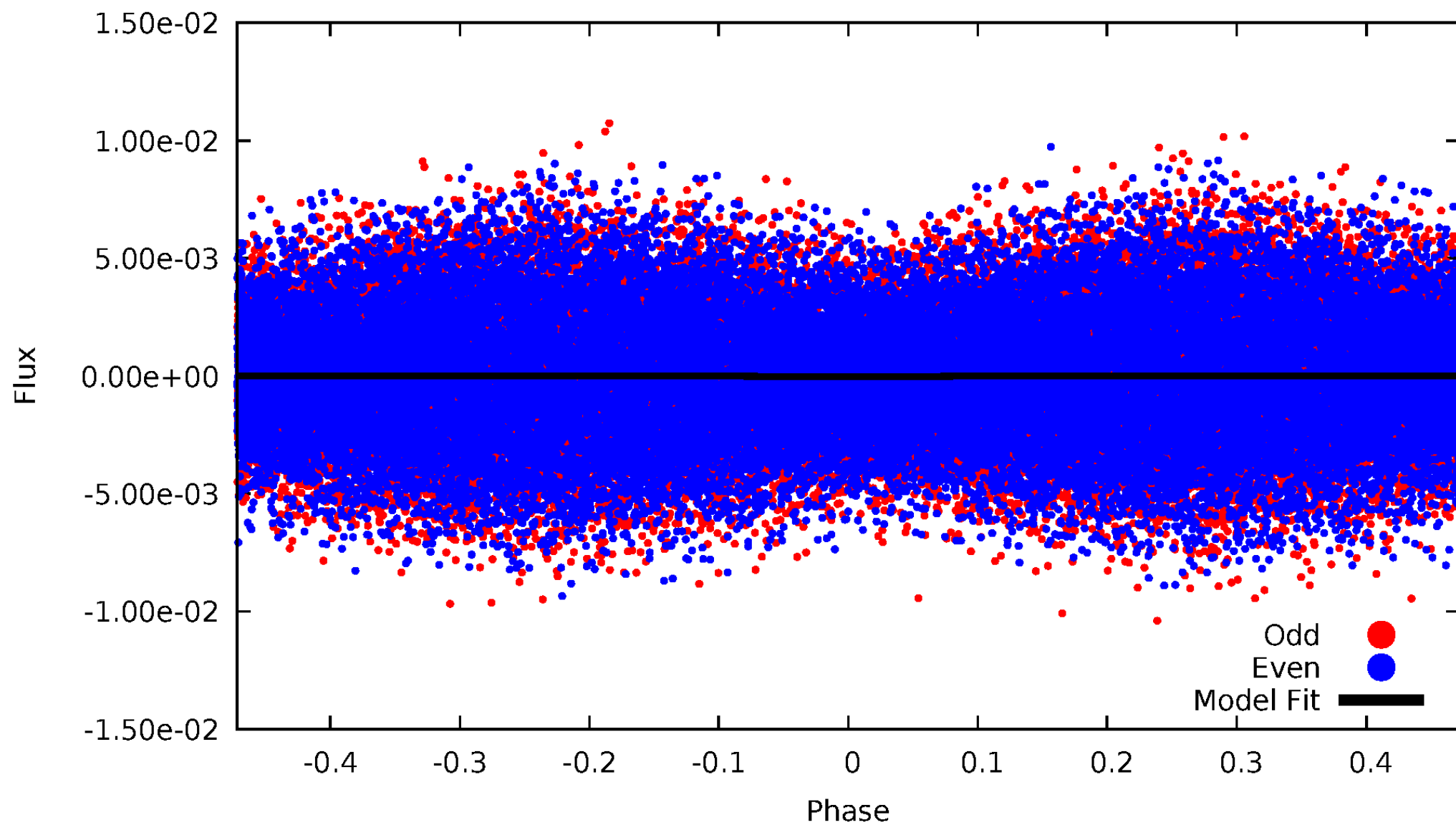
DV Odd/Even

TCE 009823652-01



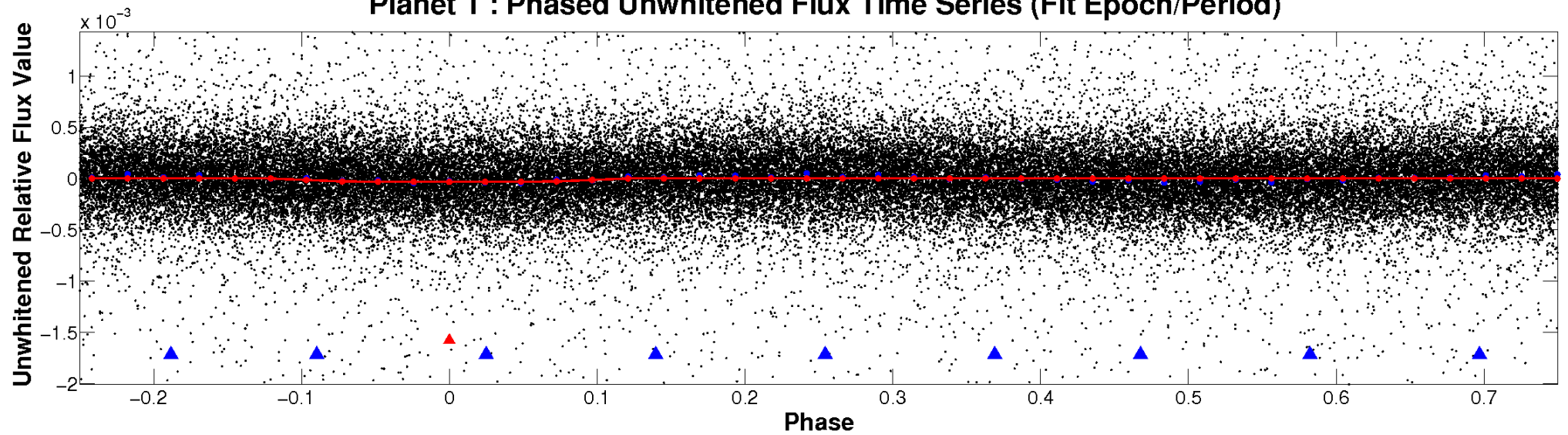
ALT Odd/Even

TCE 009823652-01

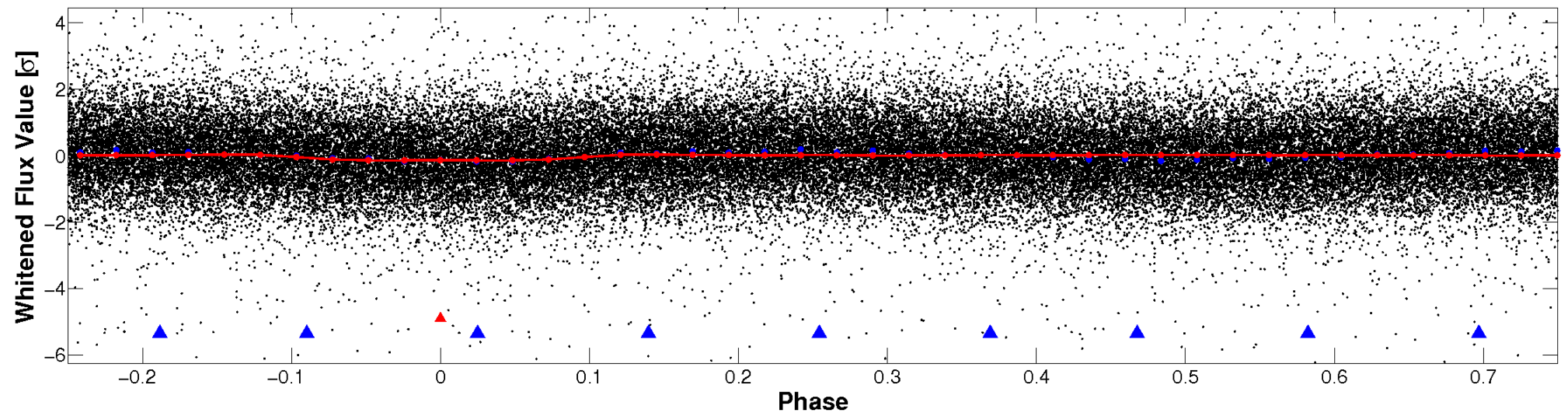


Non-Whitened Vs. Whitened Light Curve

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

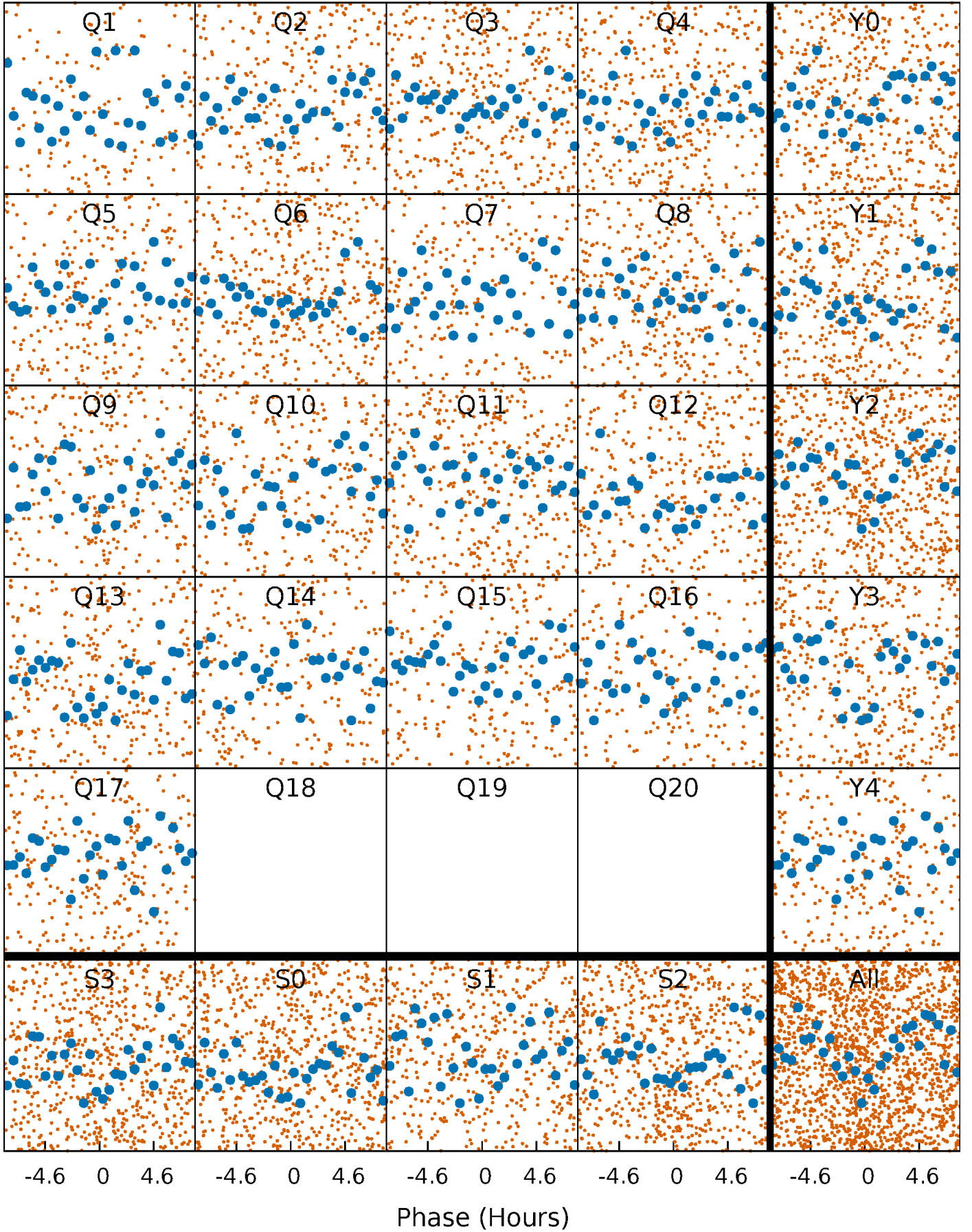


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



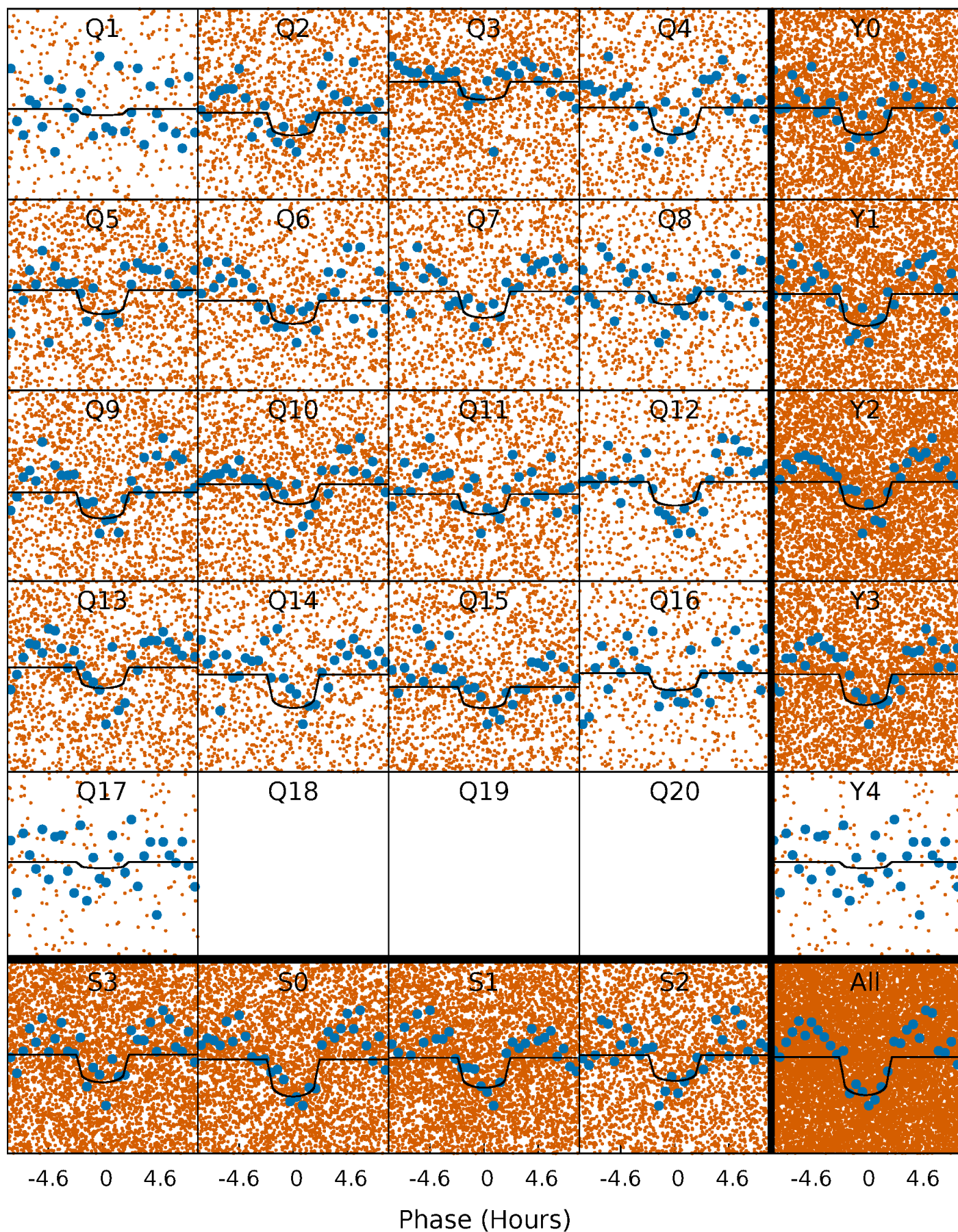
PDC Quarter-Phased Transit Curves

TCE 009823652-01 P= 0.845014 Days $T_0=132.103914$ (BKJD)



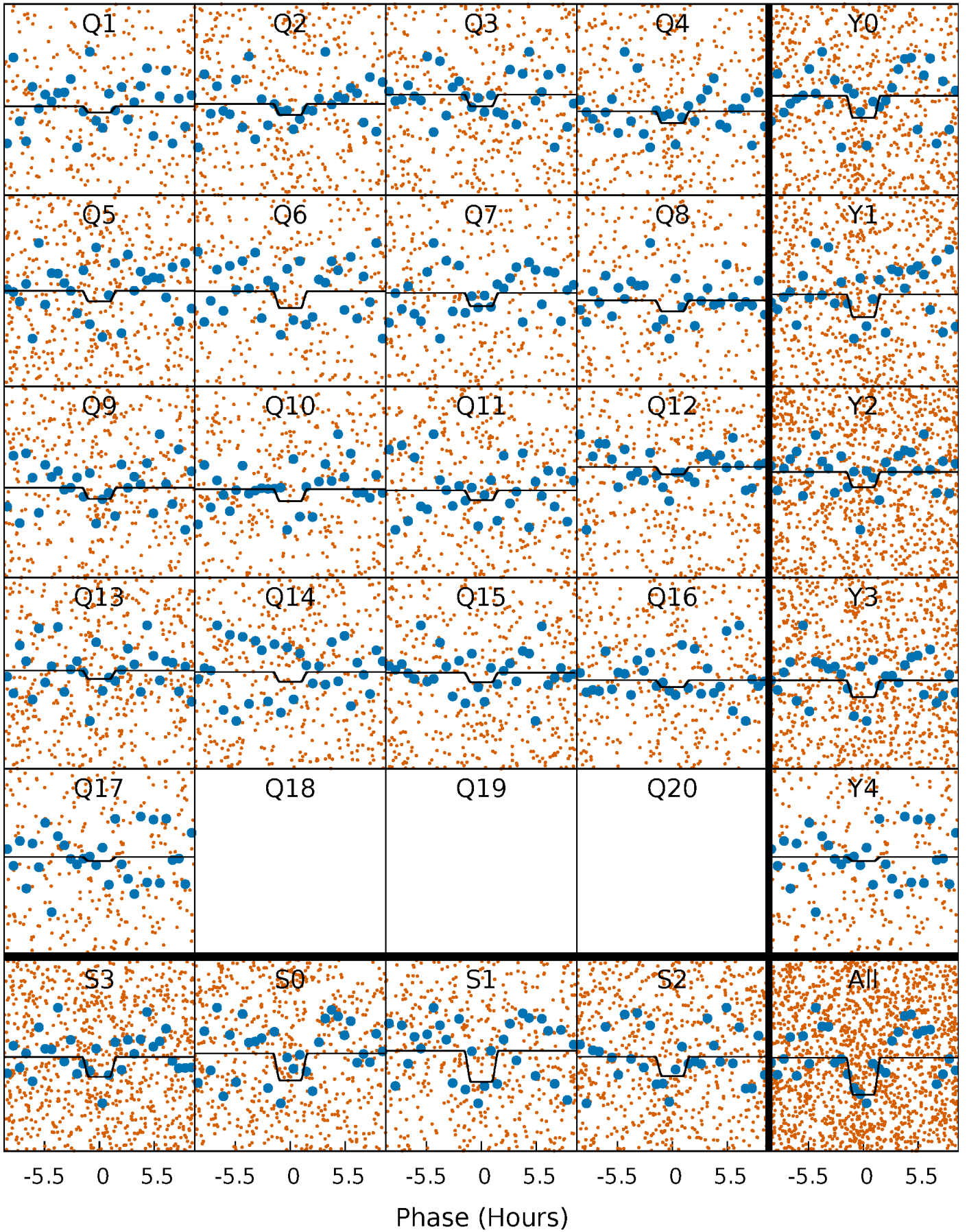
DV Quarter-Phased Transit Curves

TCE 009823652-01 P= 0.845014 Days $T_0=132.103914$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

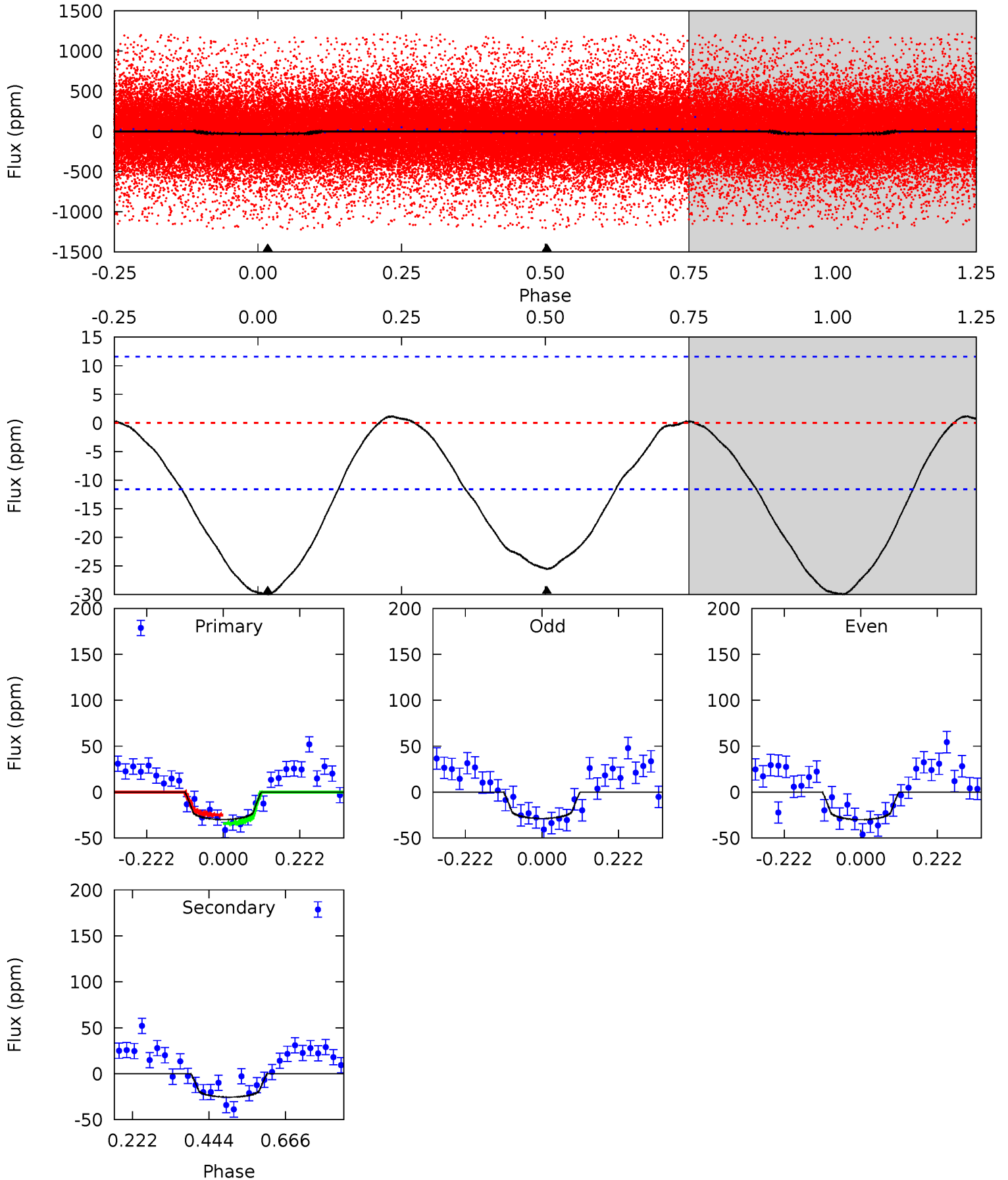
TCE 009823652-01 P= 0.845062 Days $T_0=132.061224$ (BKJD)



DV Model-Shift Uniqueness Test

009823652-01, P = 0.845014 Days, E = 131.258900 Days

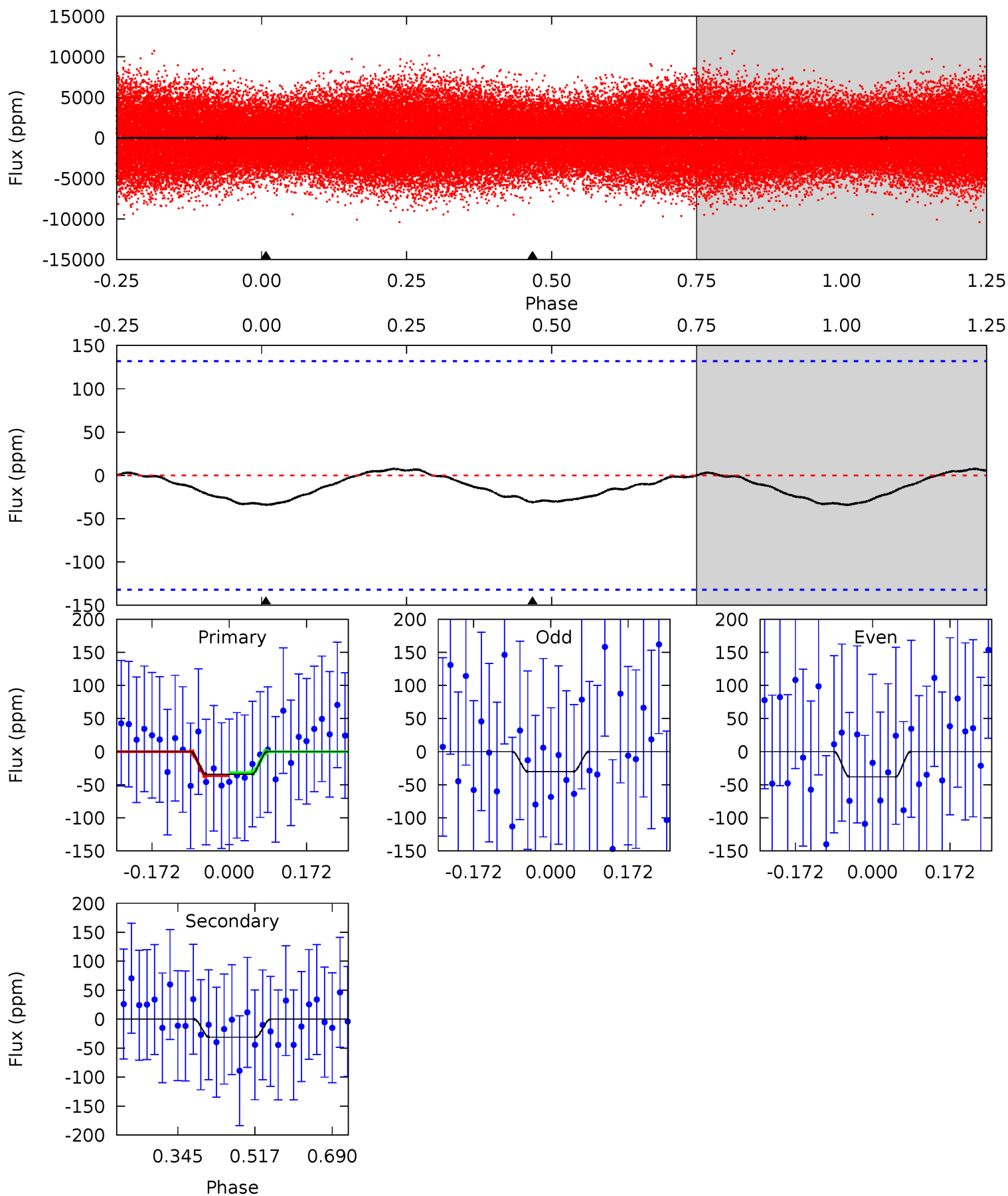
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	9.67	0	0	4.39	1.22	0.28	11.3	11.3	9.67	9.67	0.25	1.01	0.04	1.81



Alt Model-Shift Uniqueness Test

009823652-01, P = 0.845062 Days, E = 131.216162 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.15	1.05	0	0	4.45	1.36	0.18	1.15	1.15	1.05	1.05	0.13	0.88	0.19	0.07



Stellar Parameters For KIC 009823652

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7675^{+214}_{-322}	$3.899^{+0.273}_{-0.117}$	$0.040^{+0.200}_{-0.350}$	$2.578^{+0.472}_{-0.945}$	$1.920^{+0.103}_{-0.414}$	$0.158^{+0.296}_{-0.058}$
	+3%/-4%	+7%/-3%	+500%/-875%	+18%/-37%	+5%/-22%	+188%/-37%
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 009823652-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-26 ± 3	$1.44^{+0.59}_{-0.51}$	5076^{+359}_{-450}	7122^{+2295}_{-1226}	$3.084^{+4.406}_{-1.473}$
Alt.	-31 ± 30	$1.64^{+0.64}_{-0.52}$	5064^{+337}_{-489}	6852^{+2635}_{-9971}	$2.740^{+5.216}_{-2.485}$

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 $A_{obs} \gg 1.0$

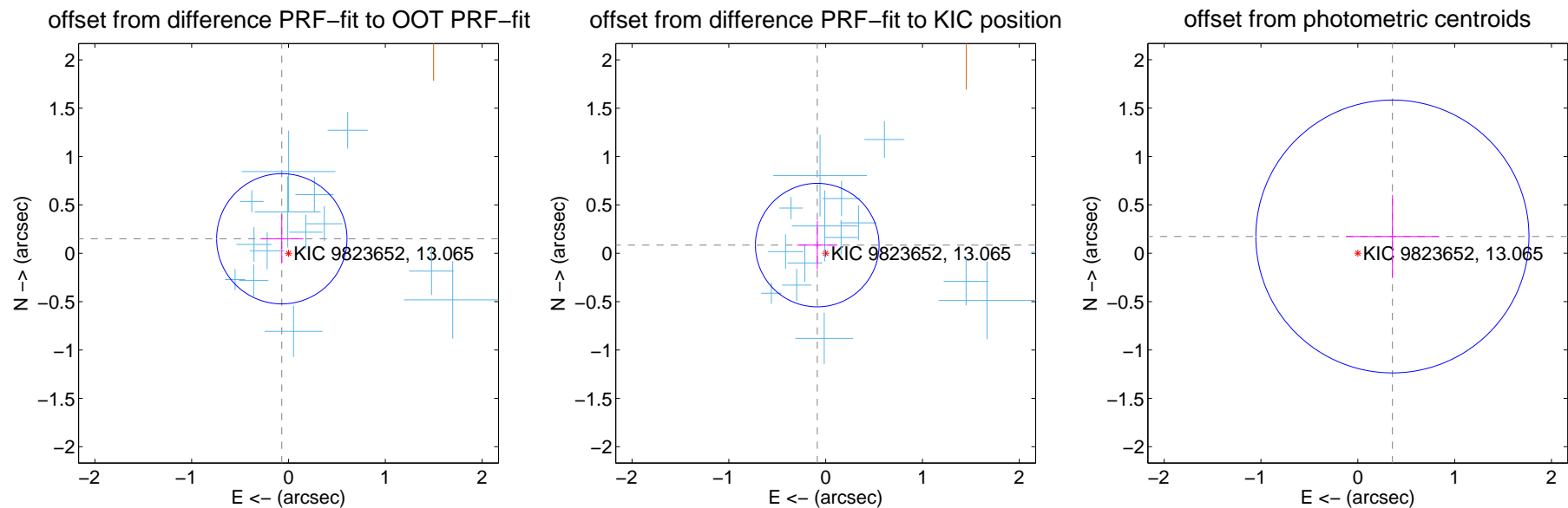
DV Centroid Data

Supplemental centroid analysis for 009823652-01. Kepler magnitude: 13.06. Transit SNR 14.56

There are 15 quarters with good PRF difference image offsets

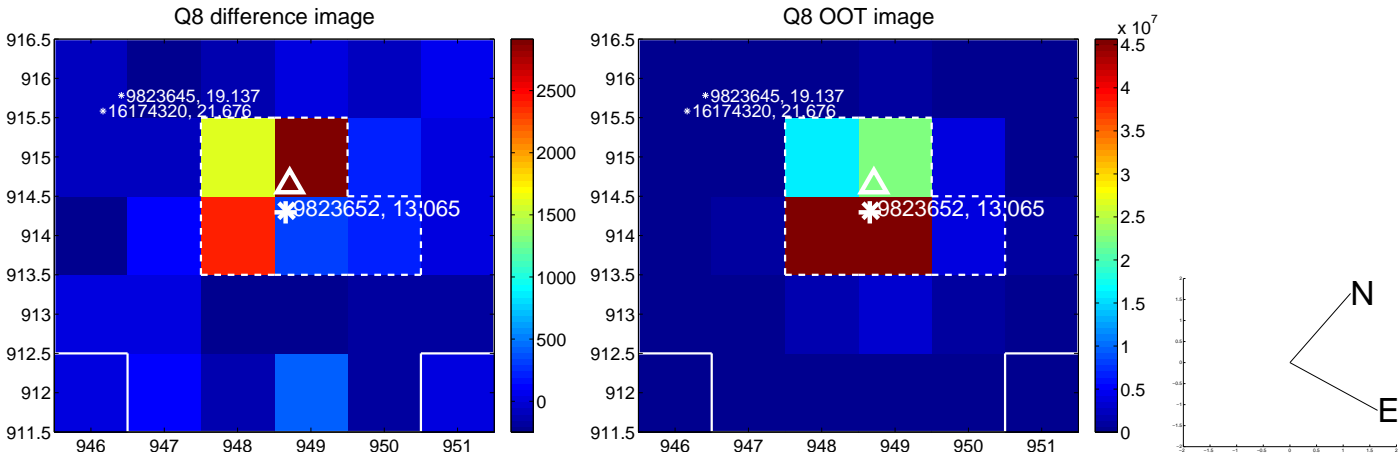
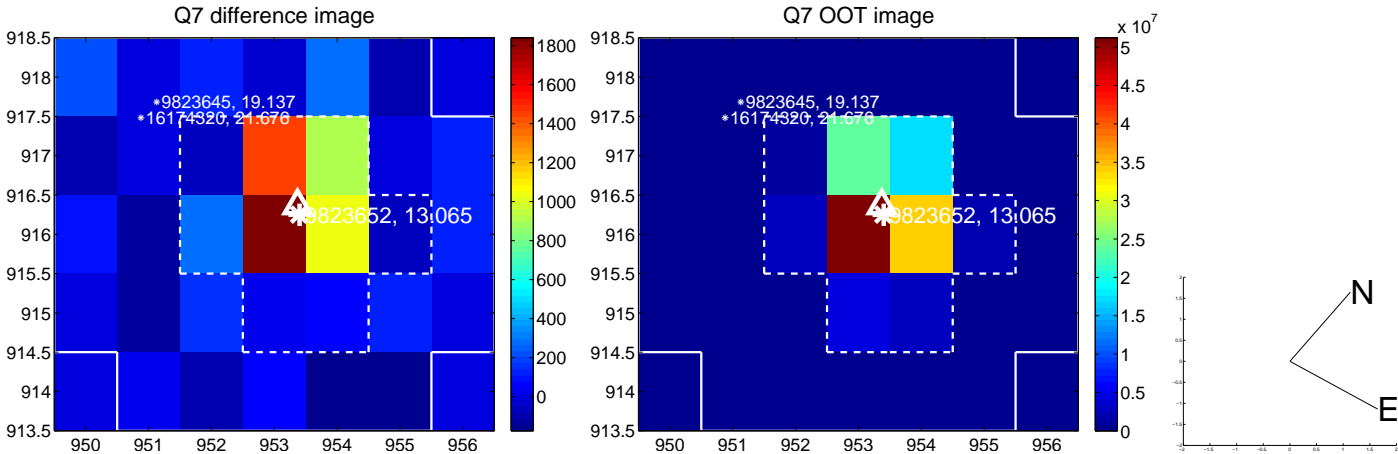
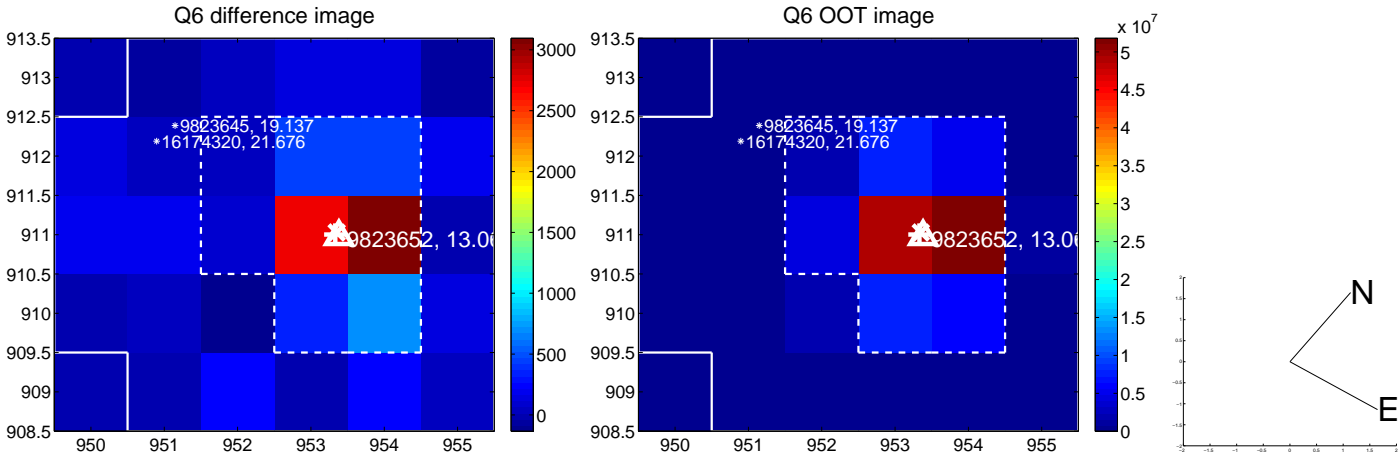
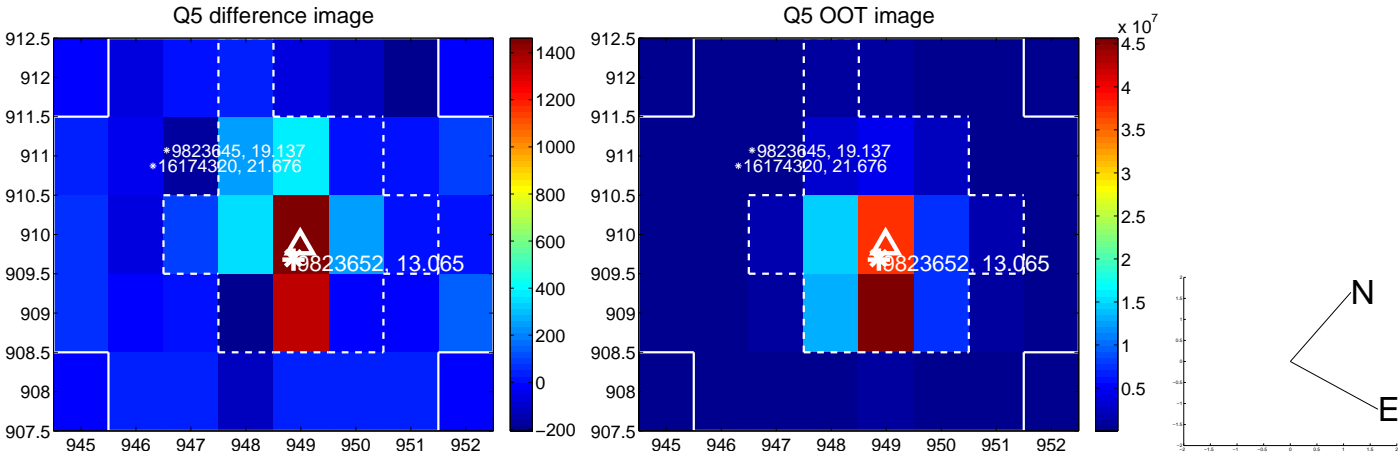
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.165 ± 0.224	0.74	0.069 ± 0.221	0.150 ± 0.252
PRF-fit source offset from KIC position	0.121 ± 0.213	0.57	0.087 ± 0.209	0.085 ± 0.249
photometric centroid source offset	0.40 ± 0.47	0.84	-0.36 ± 0.48	0.17 ± 0.43

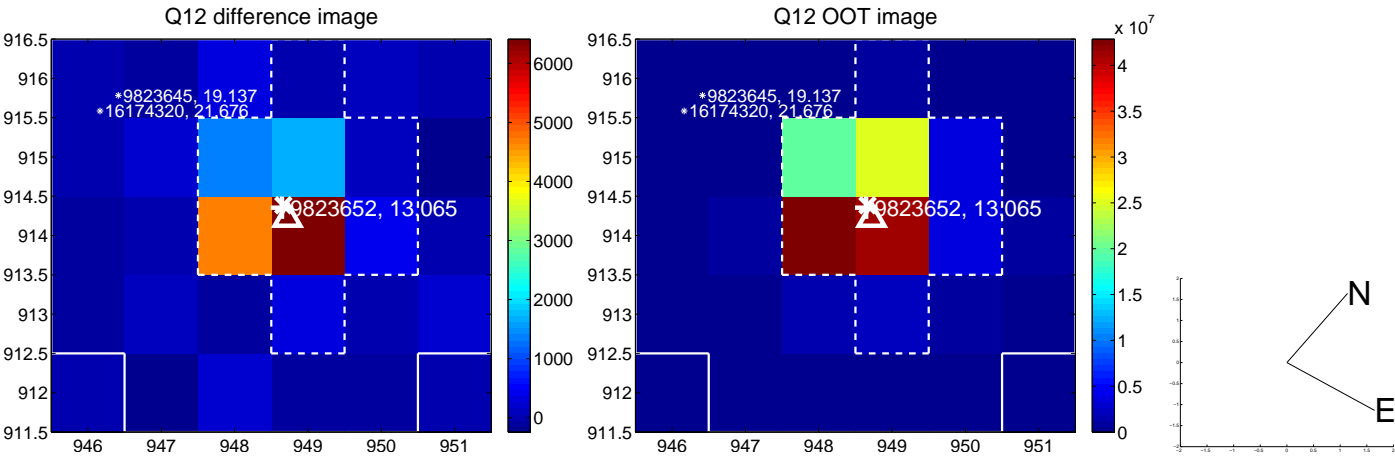
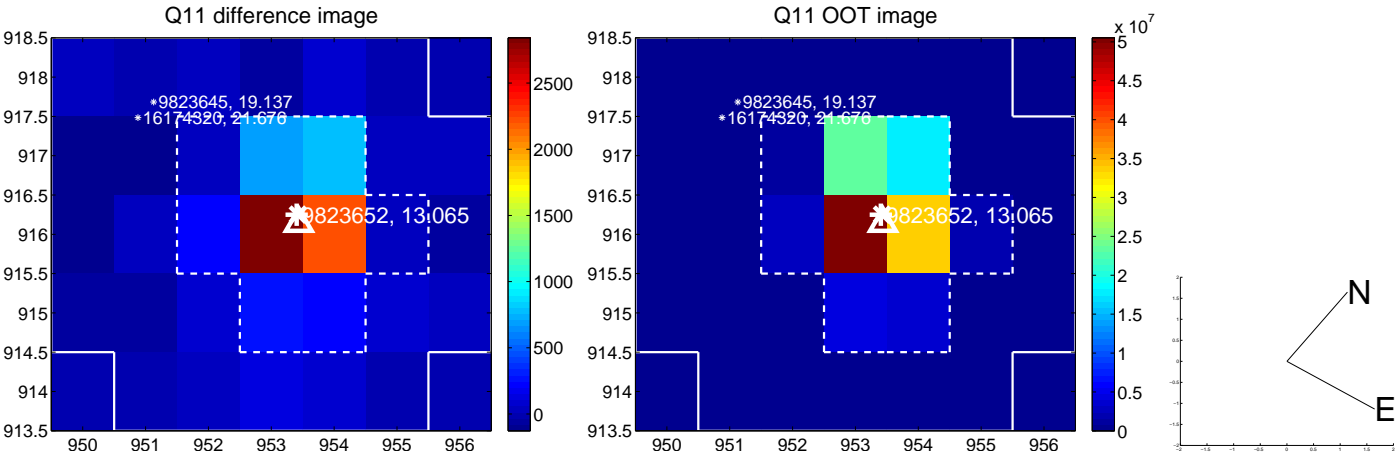
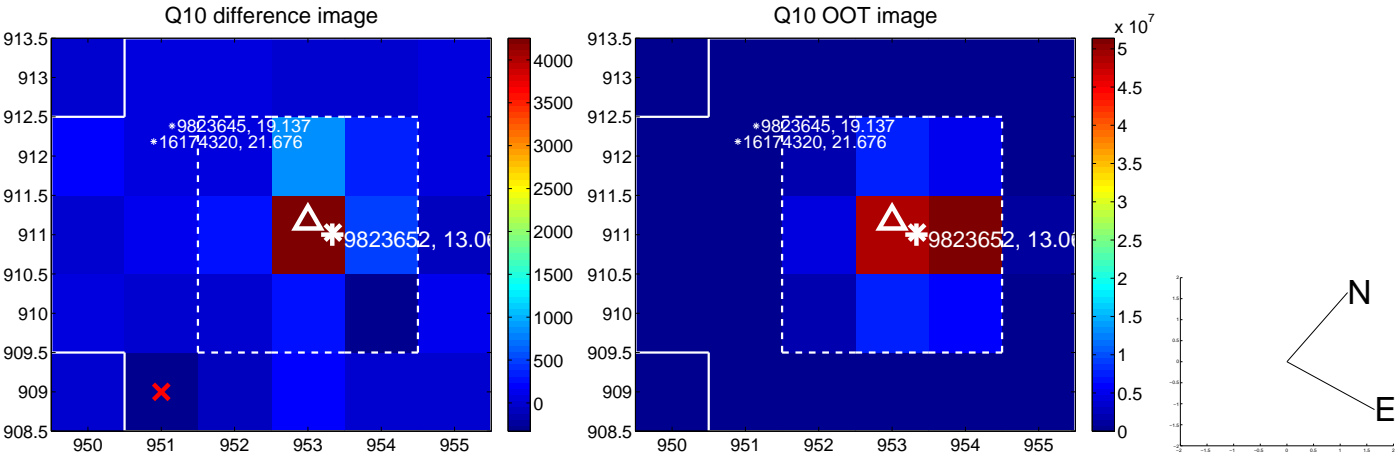
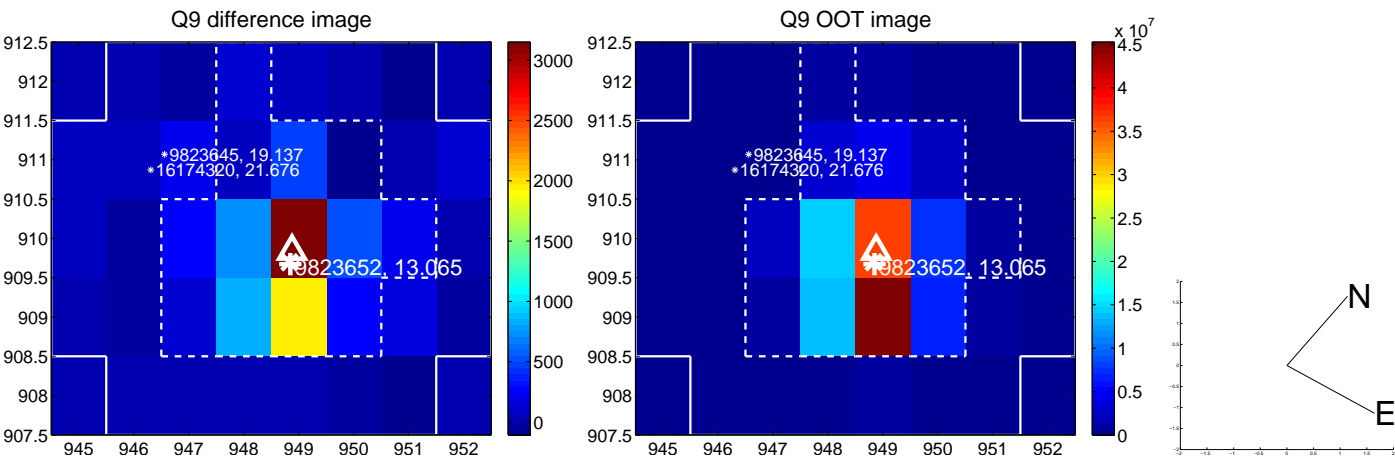


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

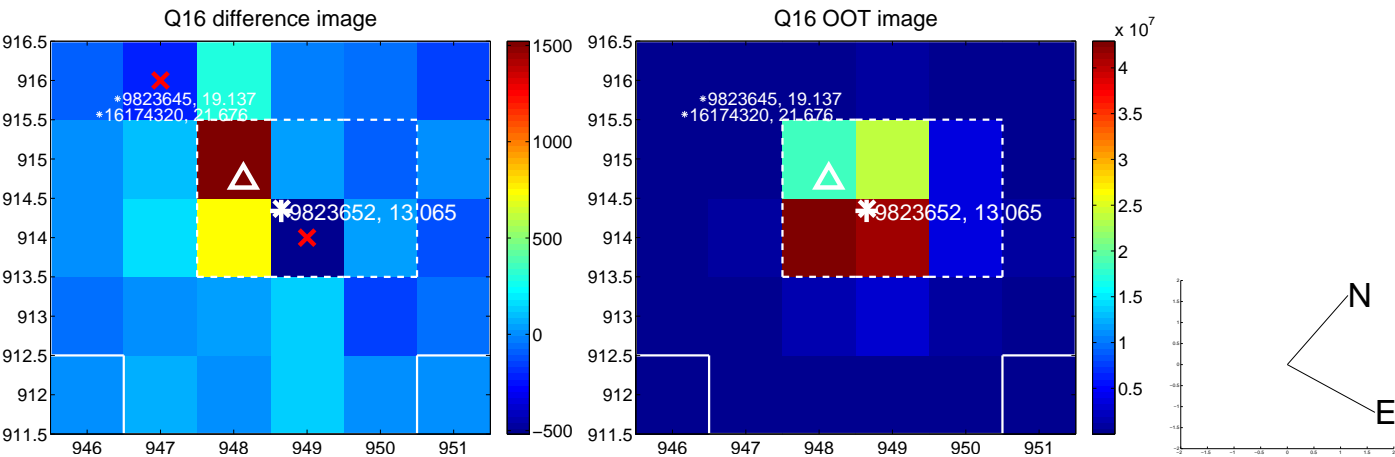
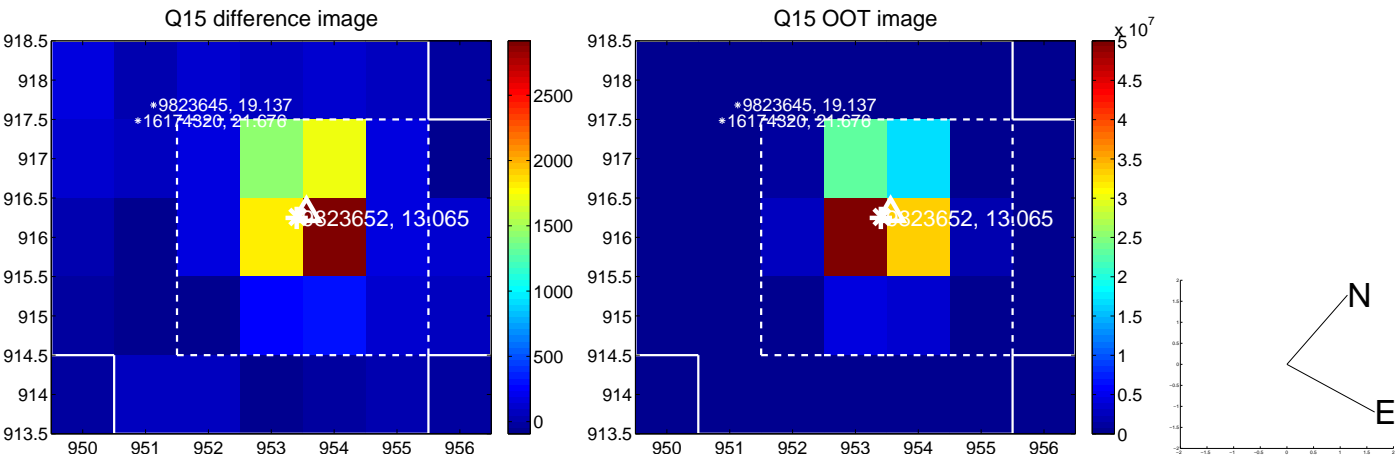
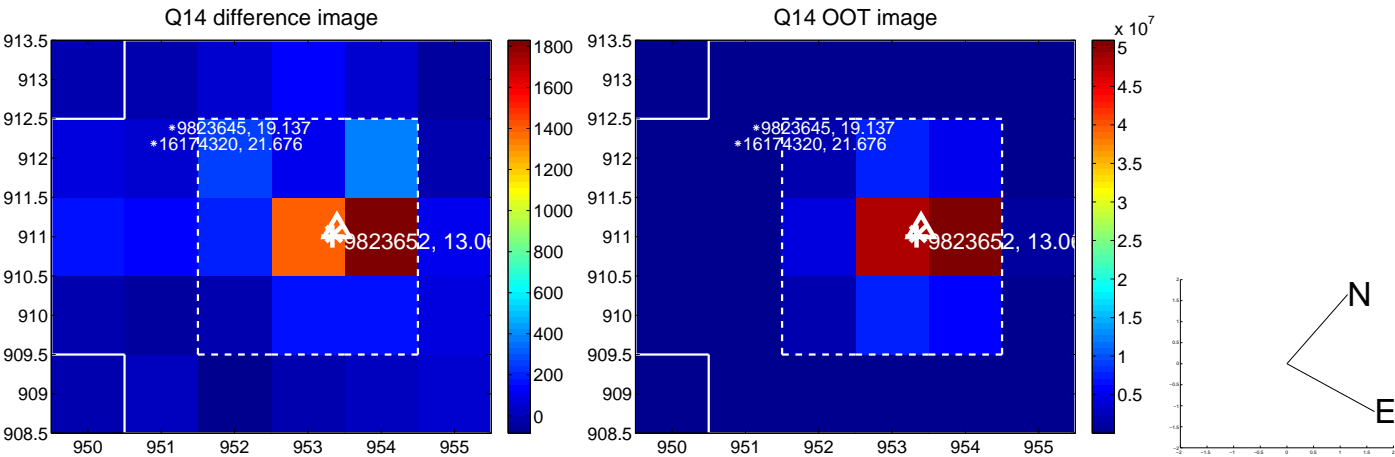
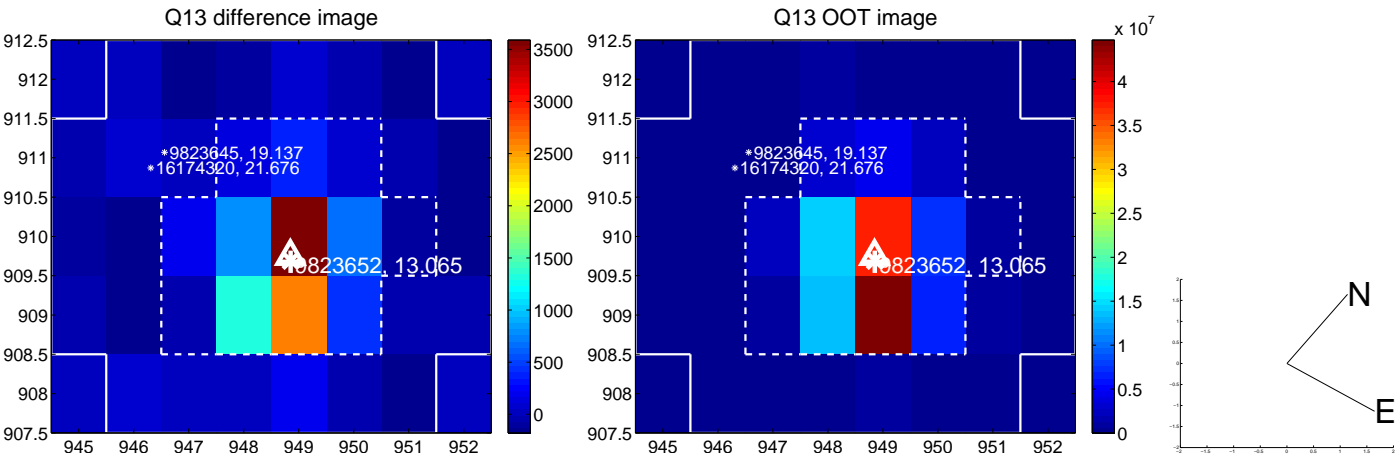
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



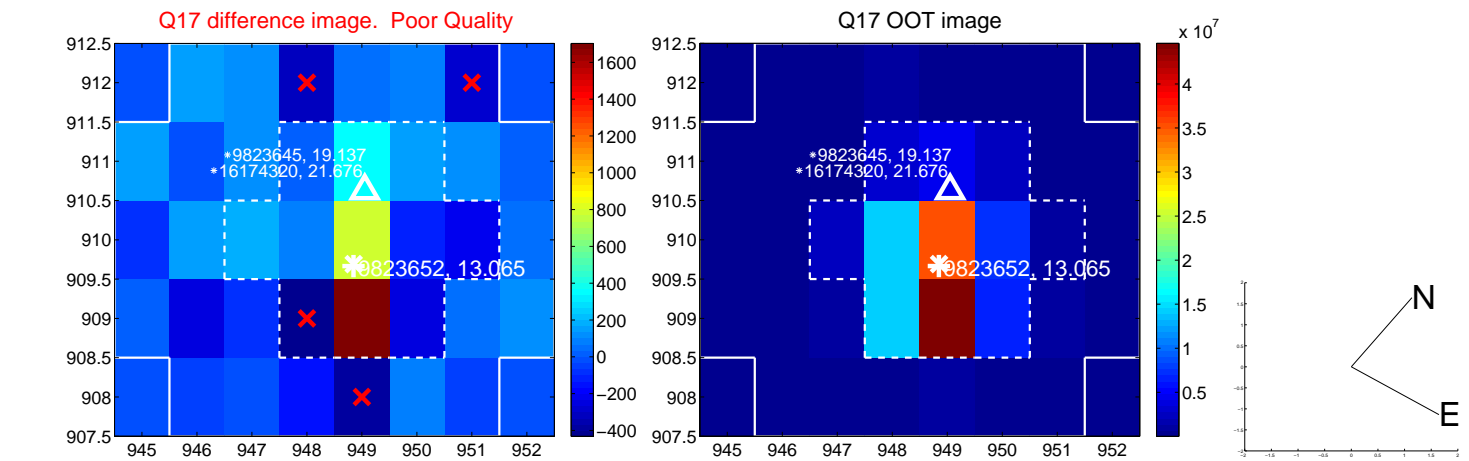
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



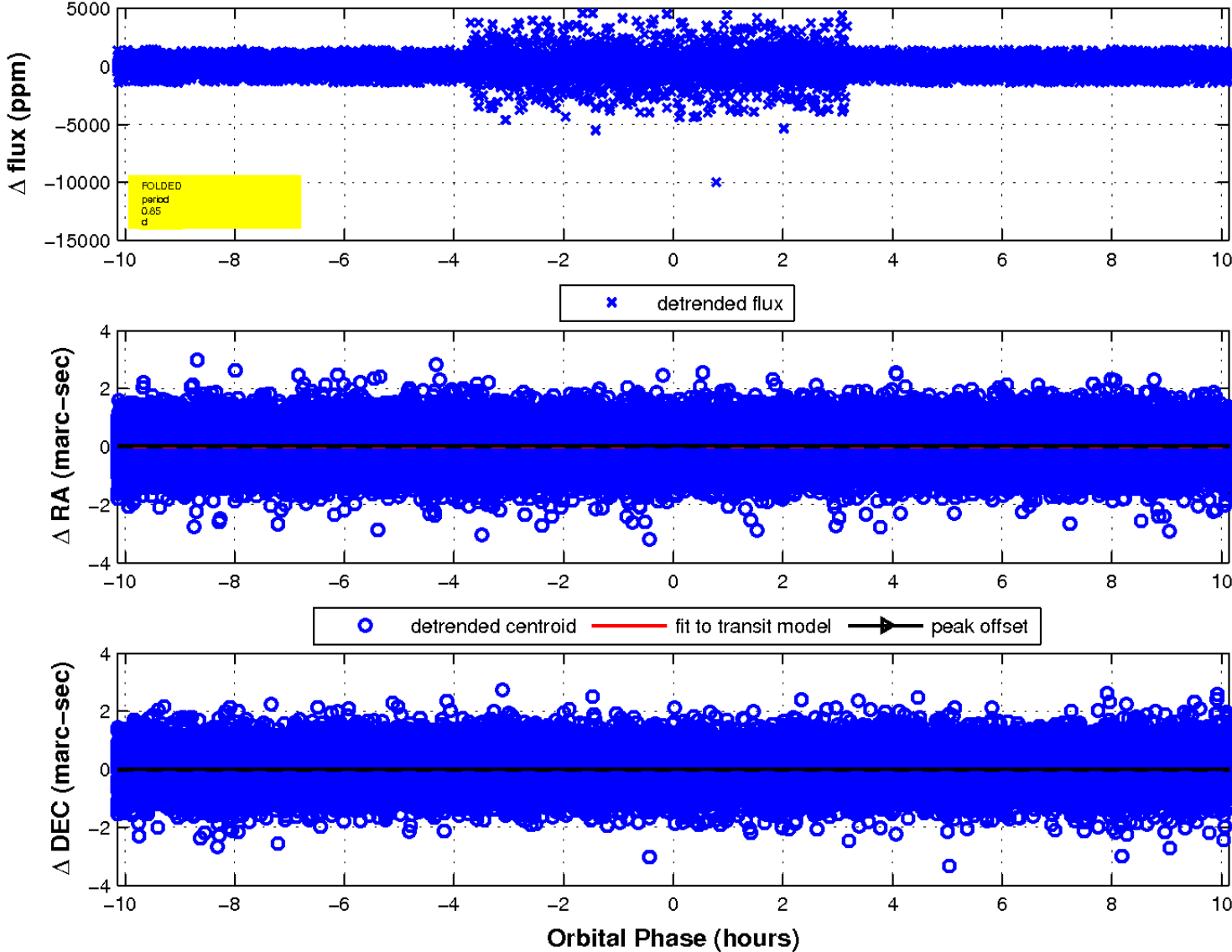
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

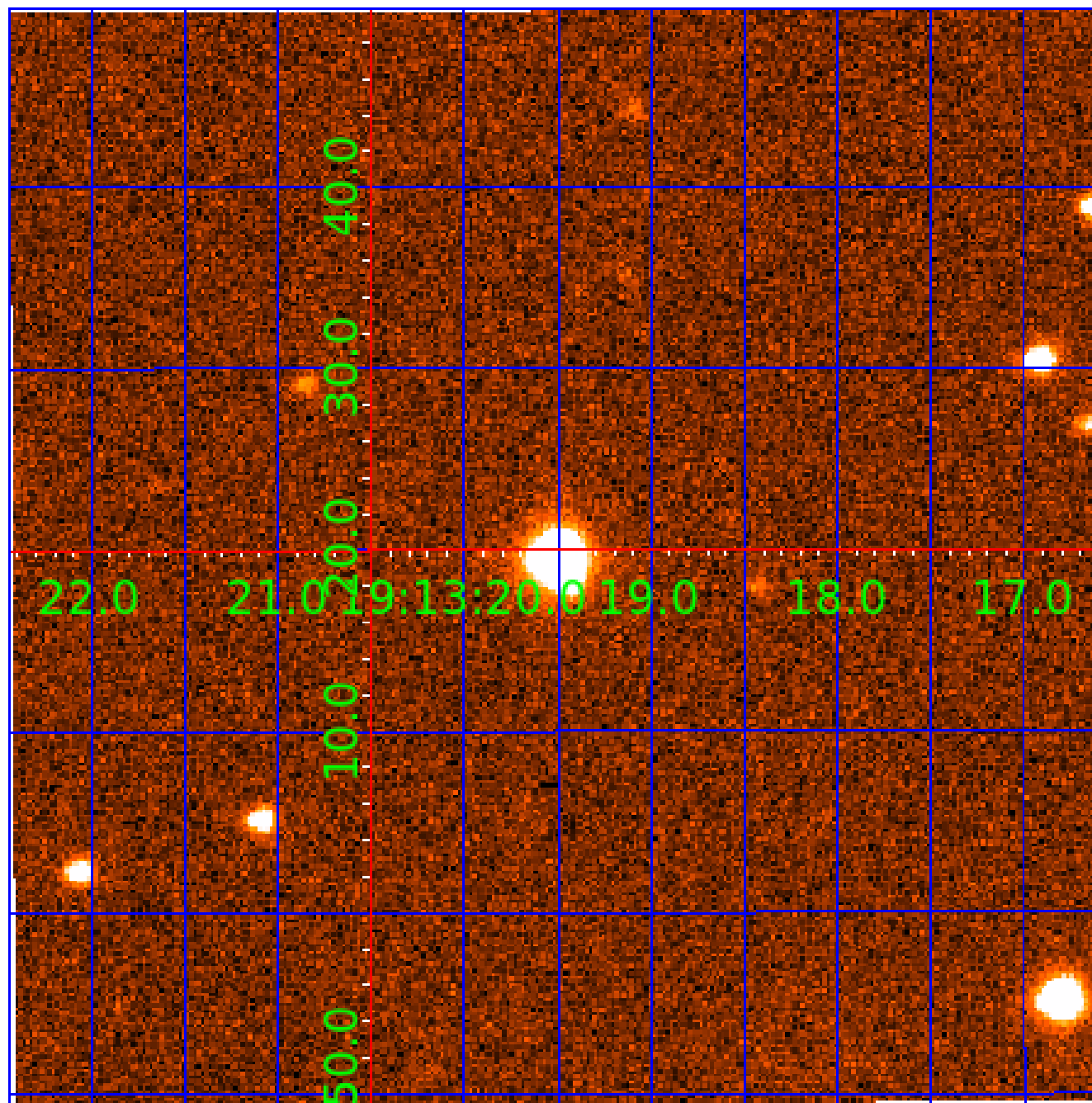


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009823652

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})
009823652-01	OBS	No	0.845014	132.103914	32.9	4.050	13.9	14.6	2.58	7675	1.53	43676.19
009823652-02	OBS	No	155.856601	242.267494	454.1	5.116	8.4	7.9	2.58	7675	8.37	41.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009823652-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009823652-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—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.

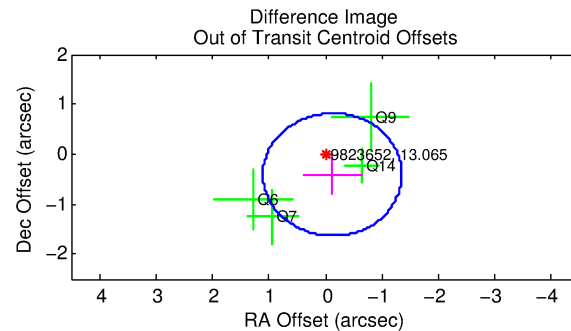
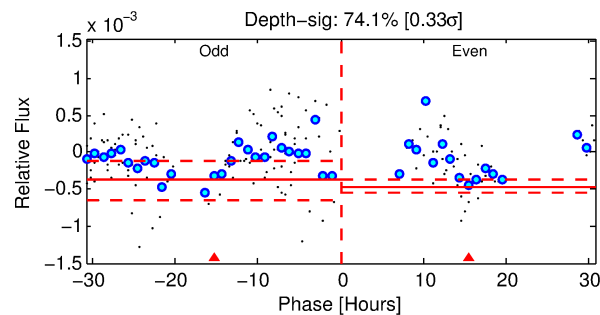
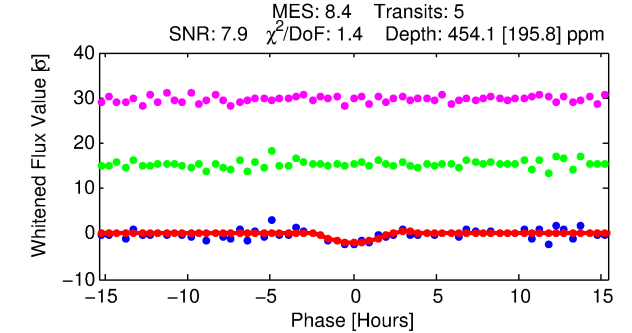
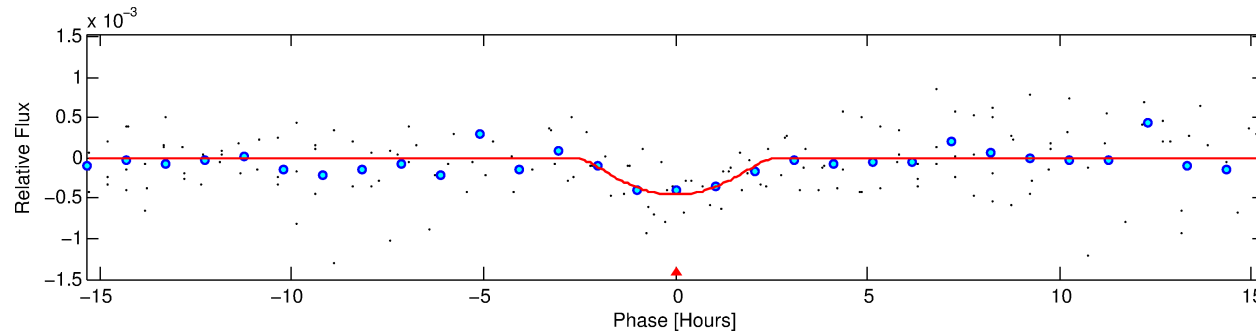
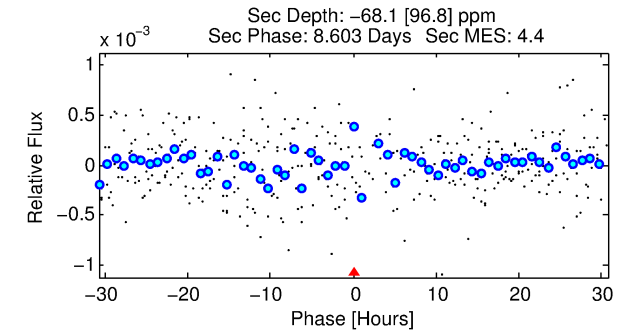
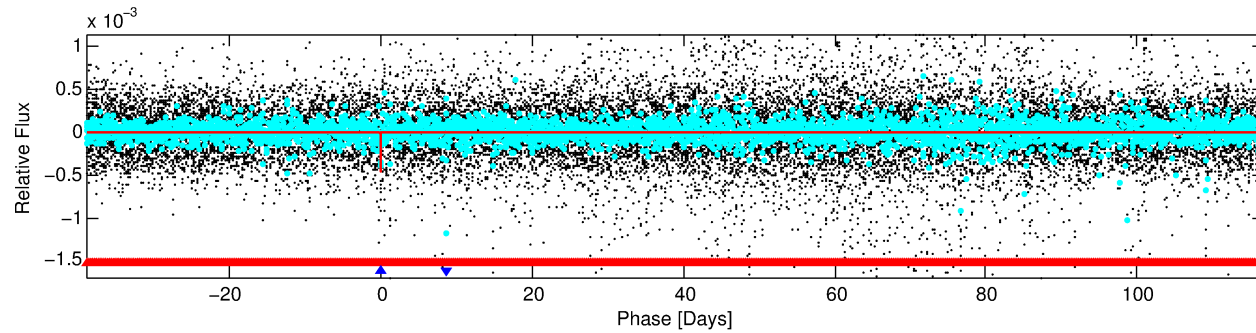
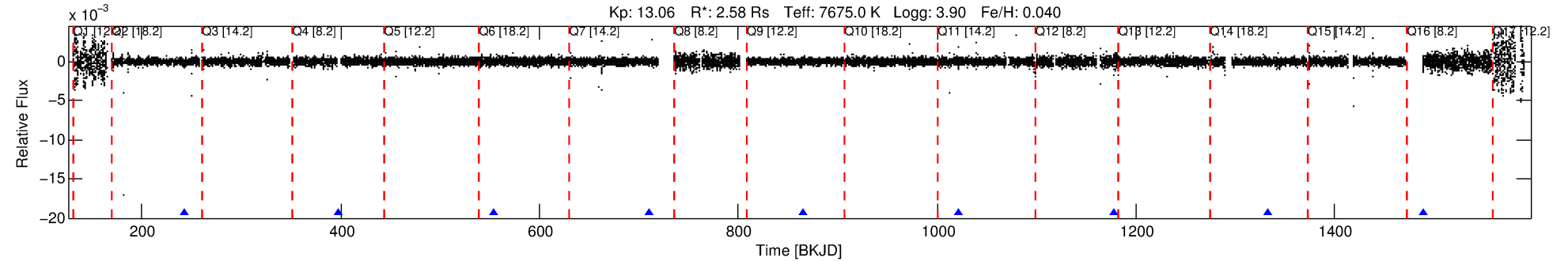
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009823652-02

No Significant Match Found

DV One-Page Summary

KIC: 9823652 Candidate: 2 of 2 Period: 155.857 d



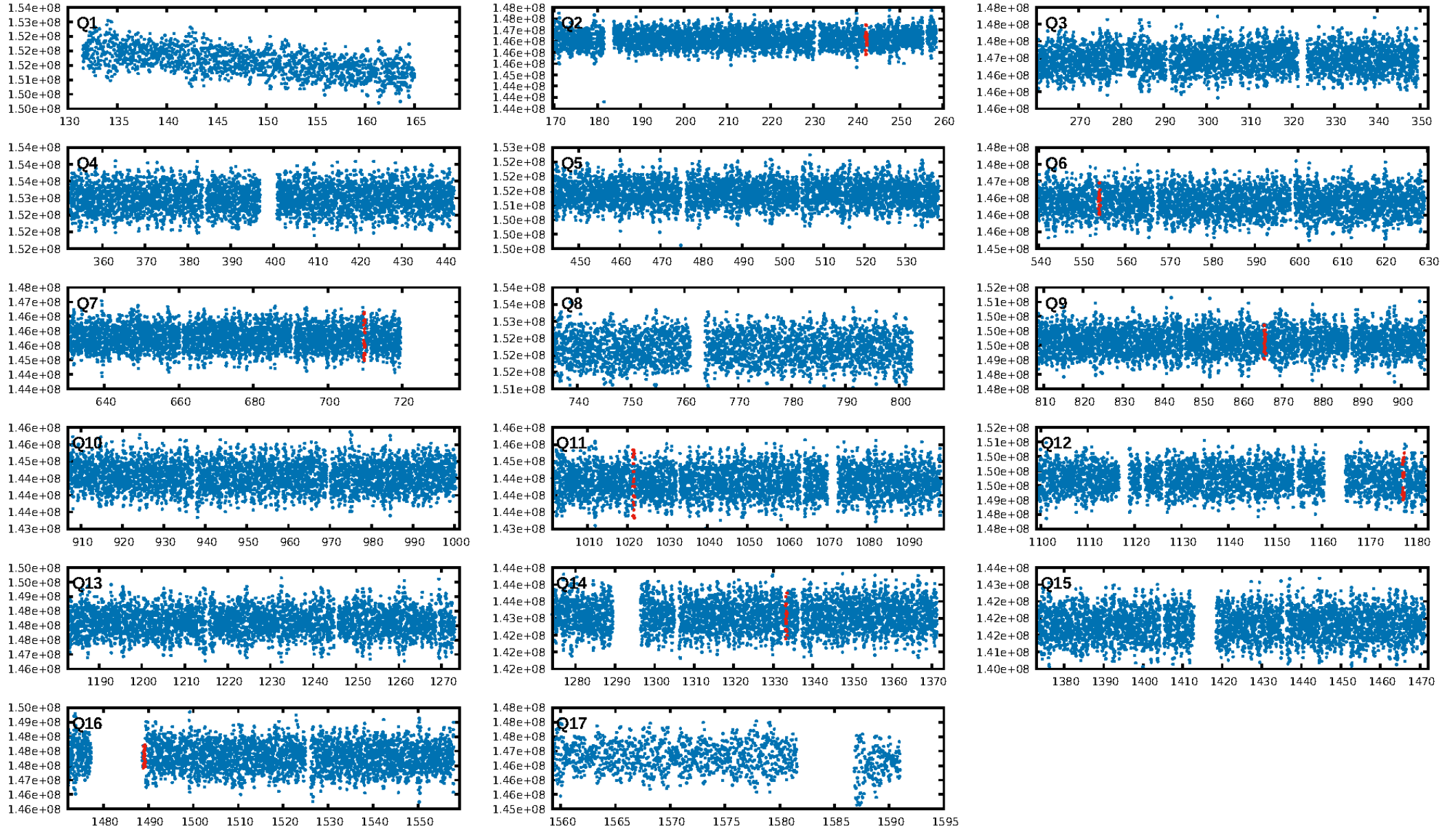
DV Fit Results:

Period = 155.85660 [0.00395] d
Epoch = 242.2675 [0.0176] BKJD
Rp/R* = 0.0298 [0.0742]
a/R* = 67.74 [69.70]
b = 0.99 [0.14]
Seff = 41.60 [21.35]
Teff = 648 [83] K
Rp = 8.37 [21.10] Re
a = 0.7048 [0.2269] AU
Ag = N/A
Teffp = N/A

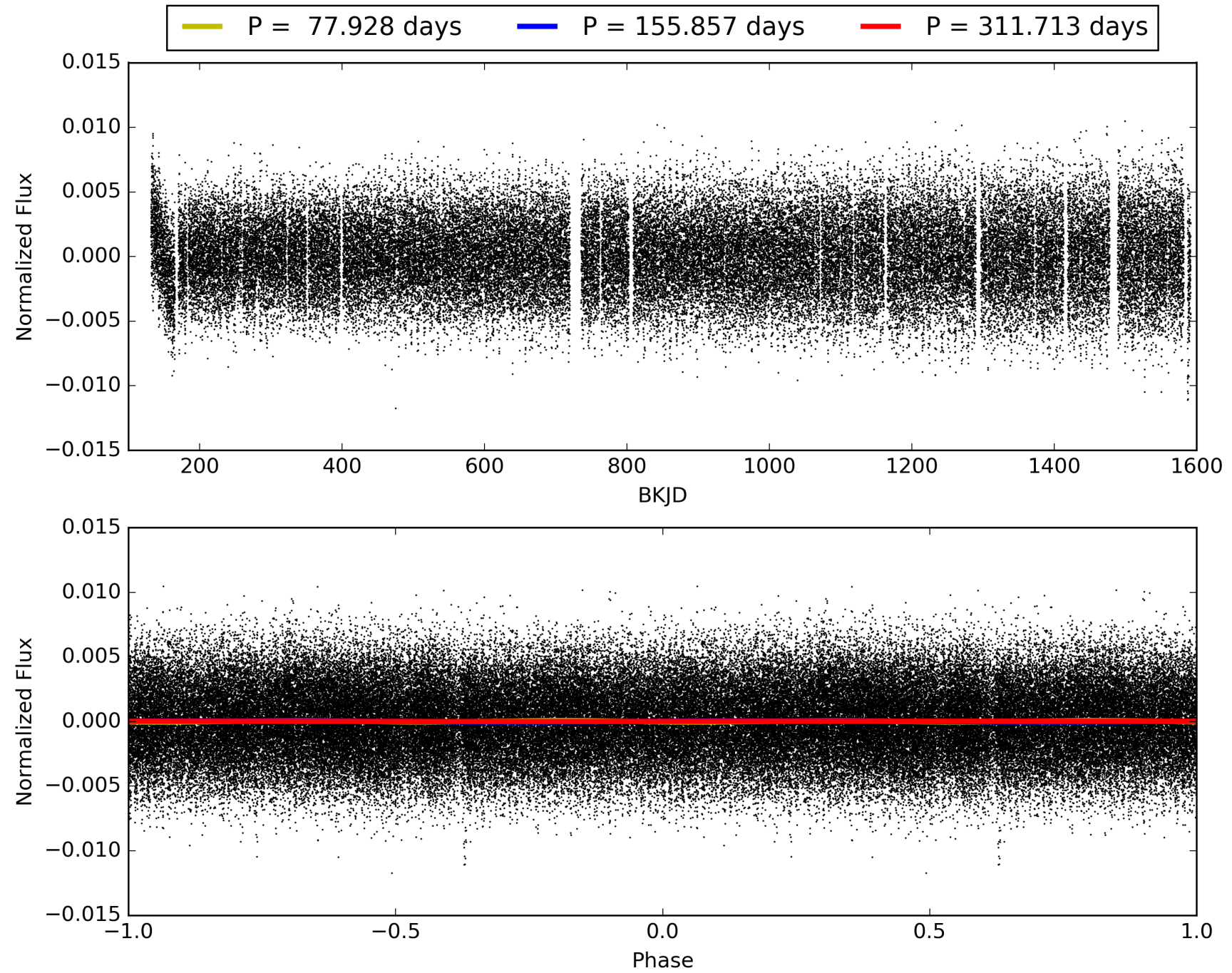
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [570.15σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 2.02e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.501
Centroid-sig: 68.3%
Centroid-so: 0.419 arcsec [0.74σ]
OotOffset-rm: 0.427 arcsec [1.04σ]
KicOffset-rm: 0.522 arcsec [1.32σ]
OotOffset-st: 2/1/0/1 [4]
KicOffset-st: 2/1/0/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/5]

TCE 009823652-02, PDC Light Curves

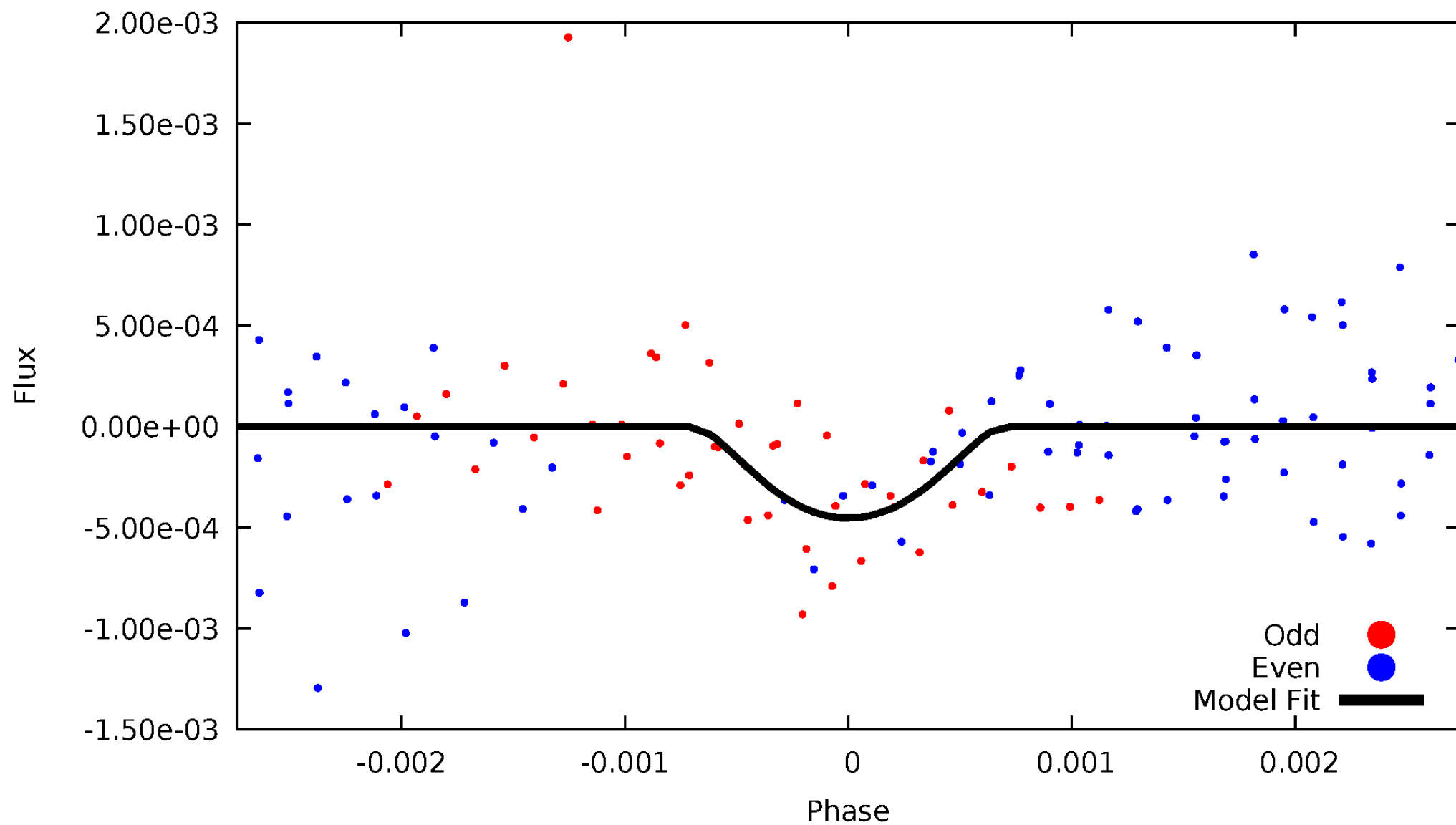


TCE 009823652-02



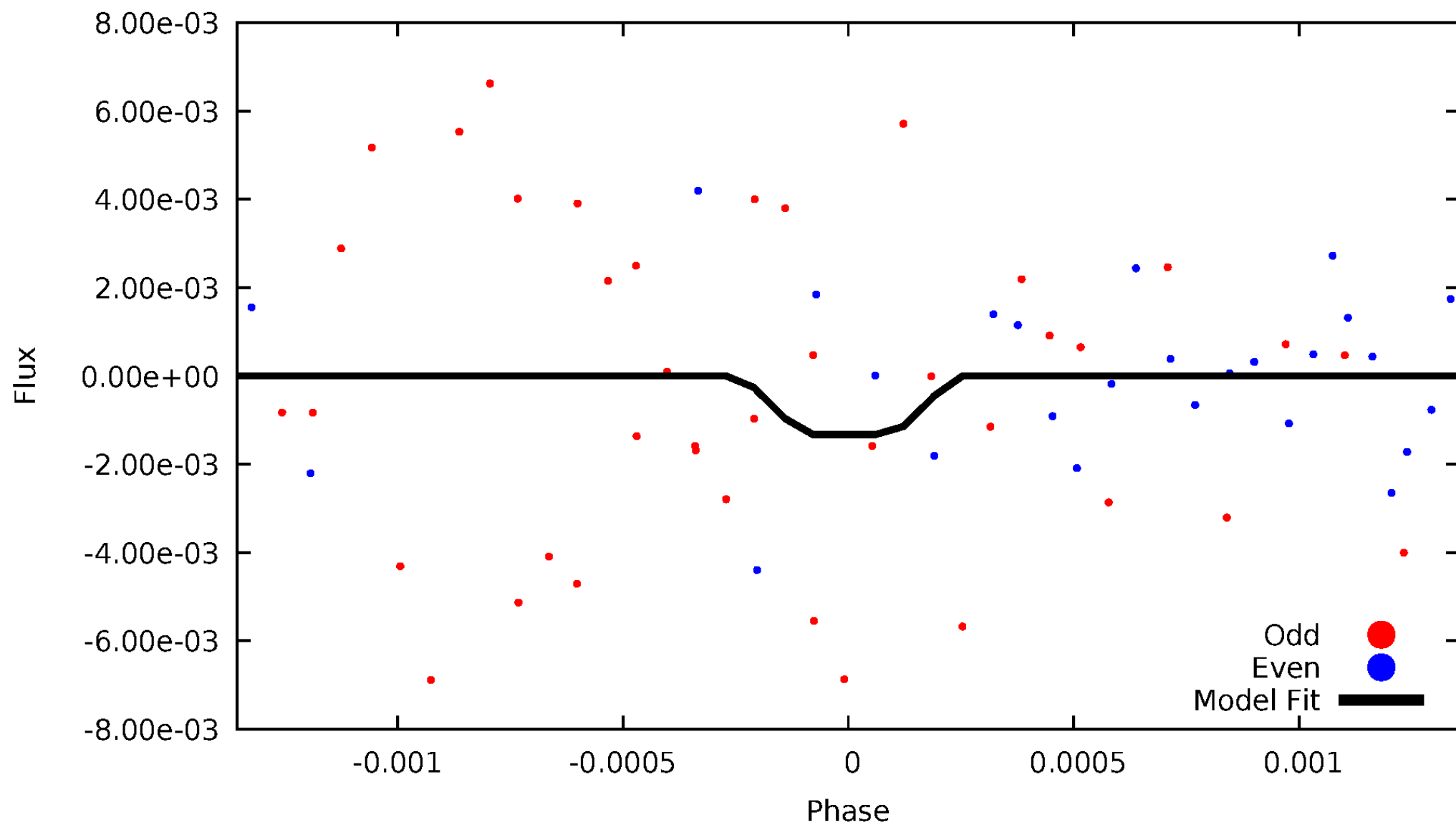
DV Odd/Even

TCE 009823652-02



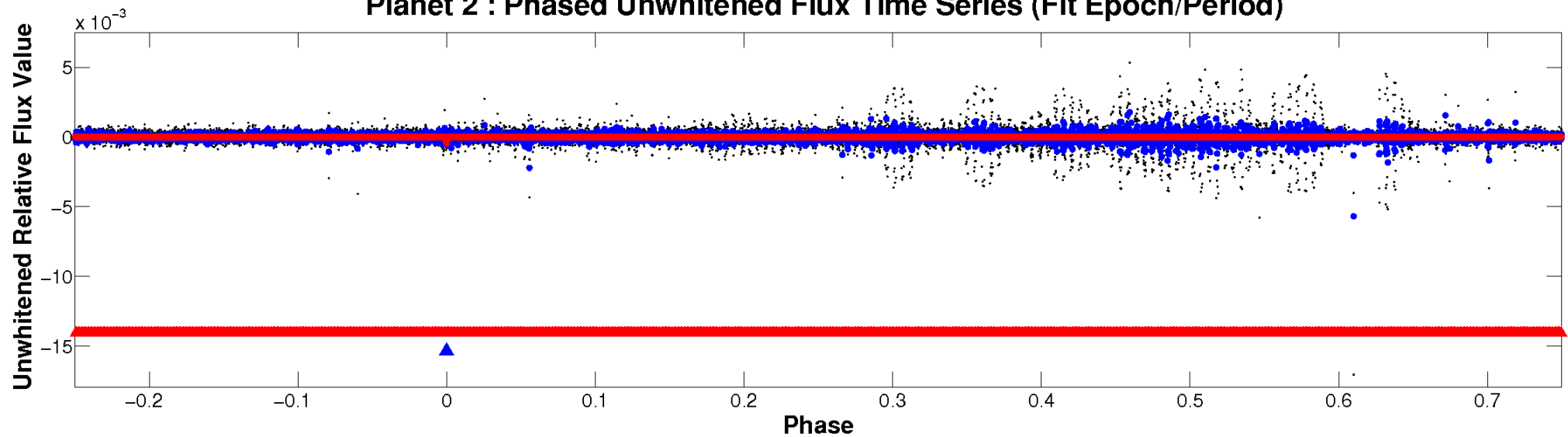
ALT Odd/Even

TCE 009823652-02

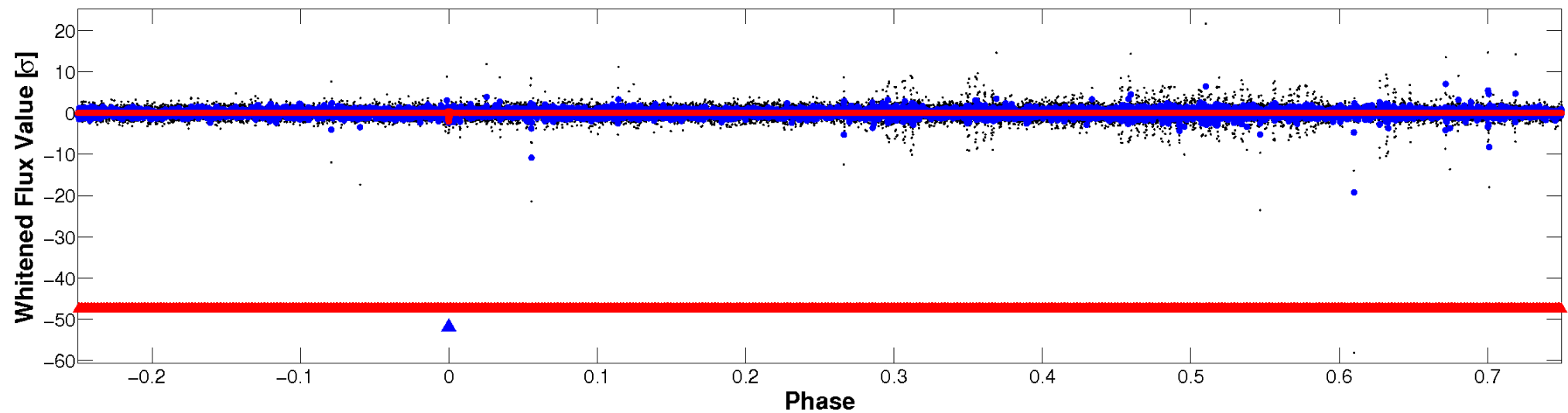


Non-Whitened Vs. Whitened Light Curve

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

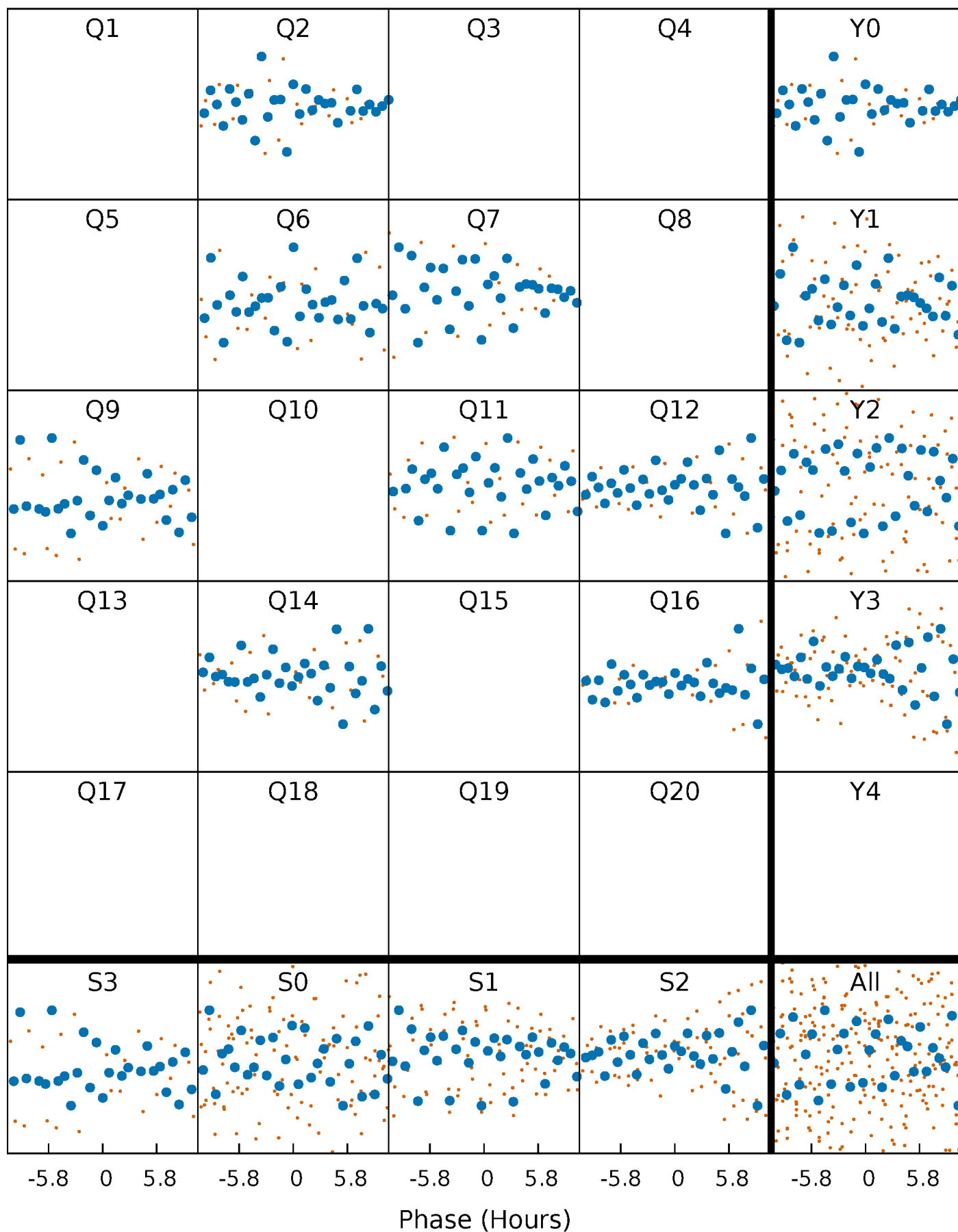


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



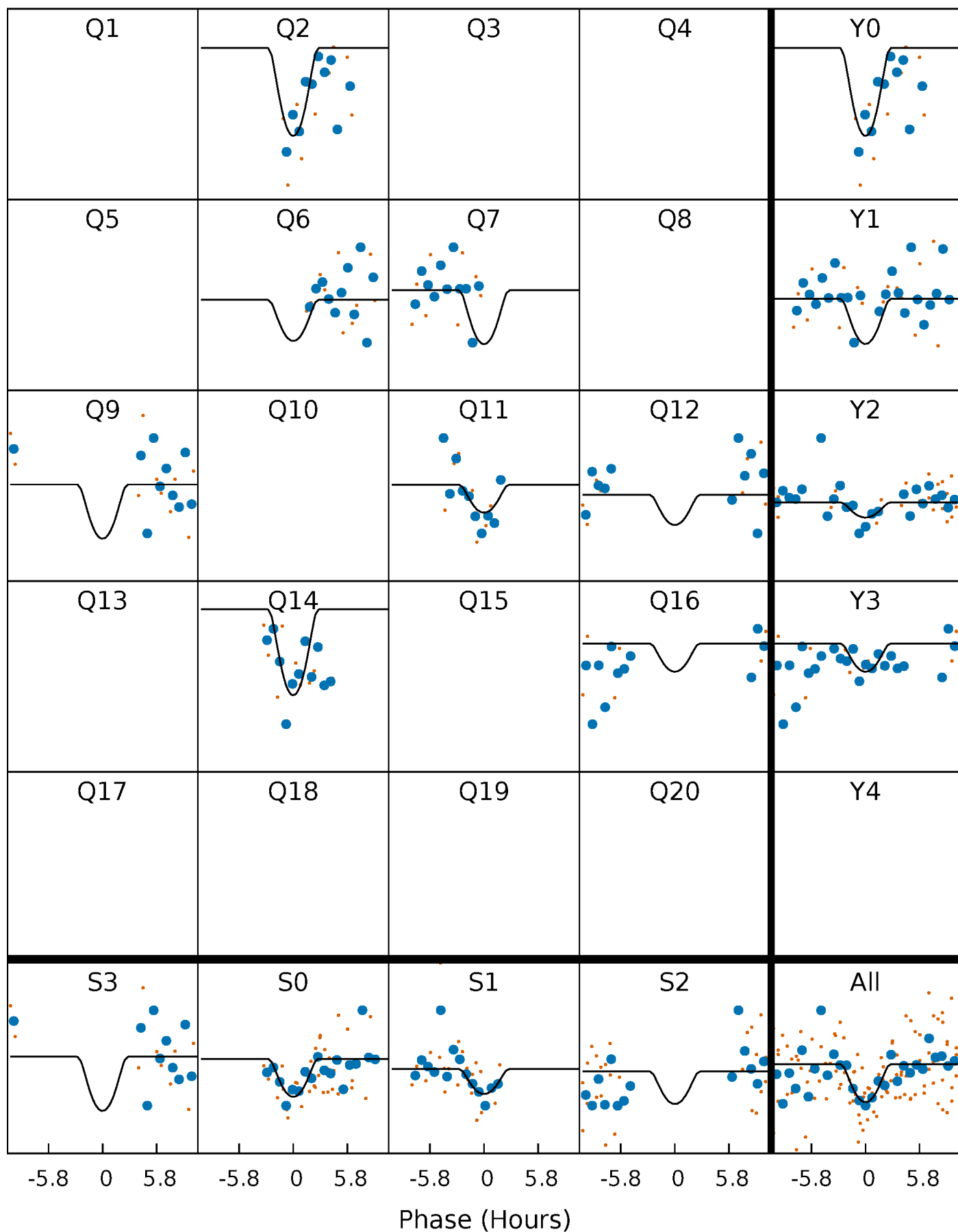
PDC Quarter-Phased Transit Curves

TCE 009823652-02 P=155.856601 Days $T_0=242.267494$ (BKJD)



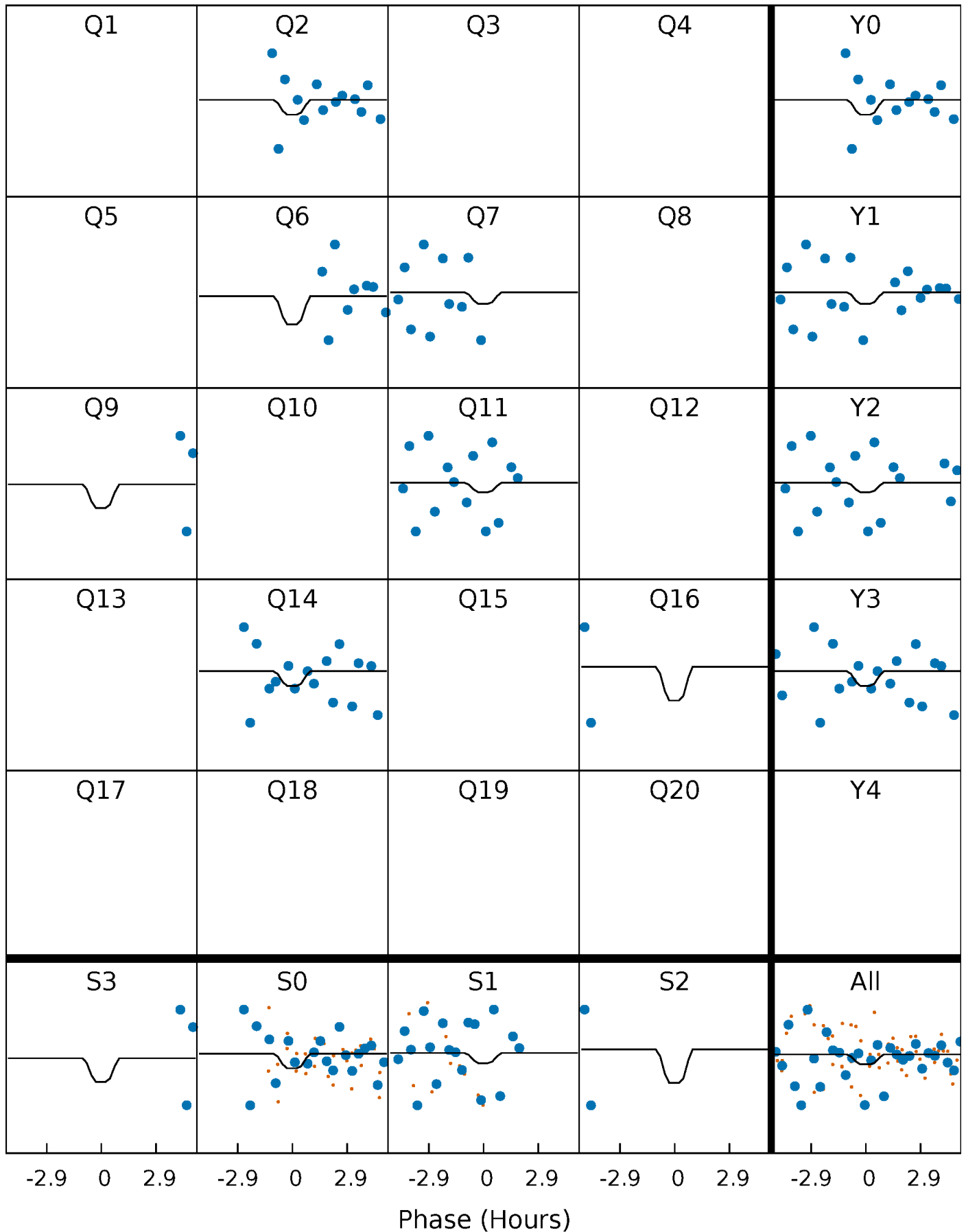
DV Quarter-Phased Transit Curves

TCE 009823652-02 P=155.856601 Days $T_0=242.267494$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

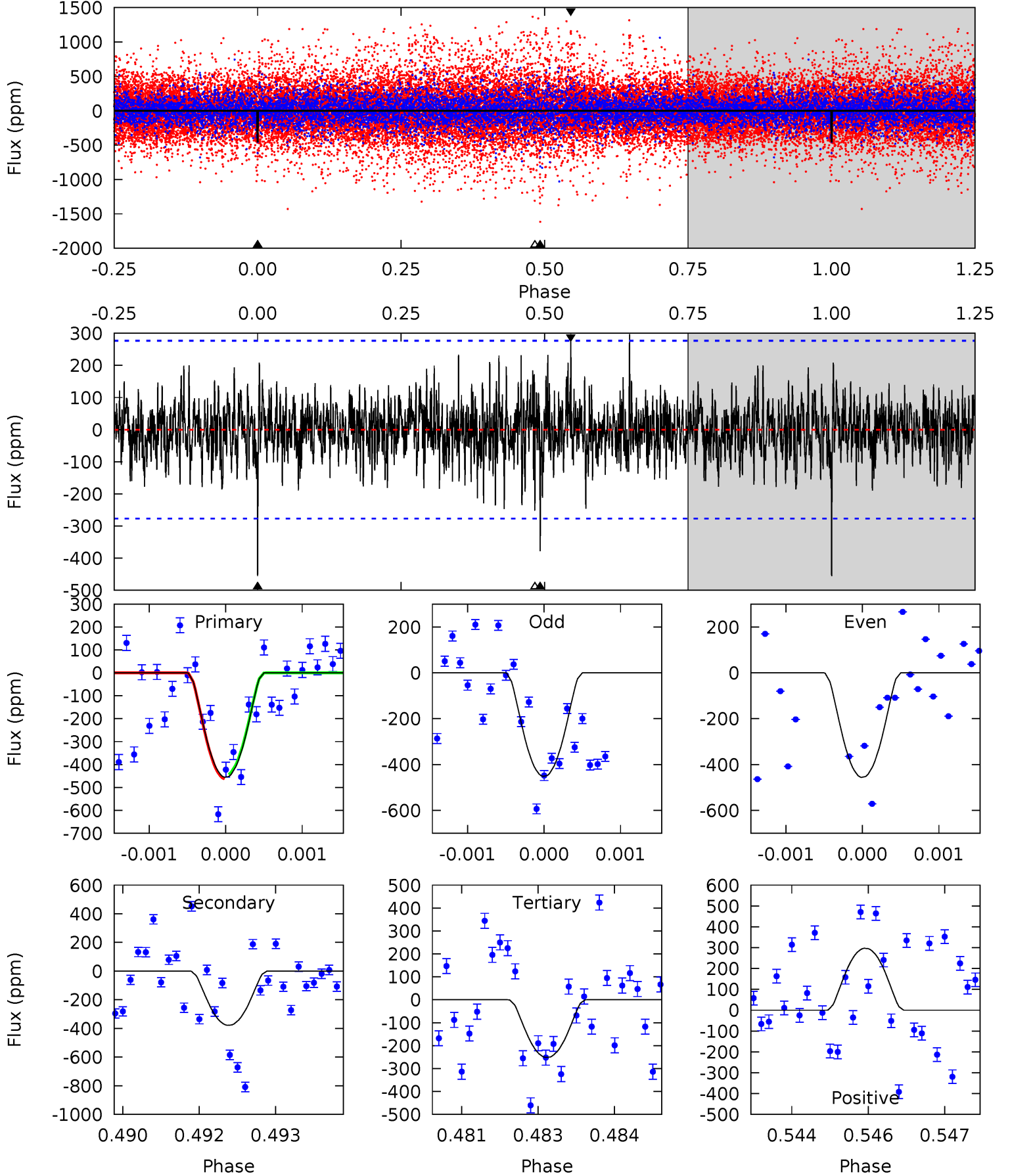
TCE 009823652-02 P=155.853089 Days $T_0=242.274918$ (BKJD)



DV Model-Shift Uniqueness Test

009823652-02, P = 155.856601 Days, E = 86.410893 Days

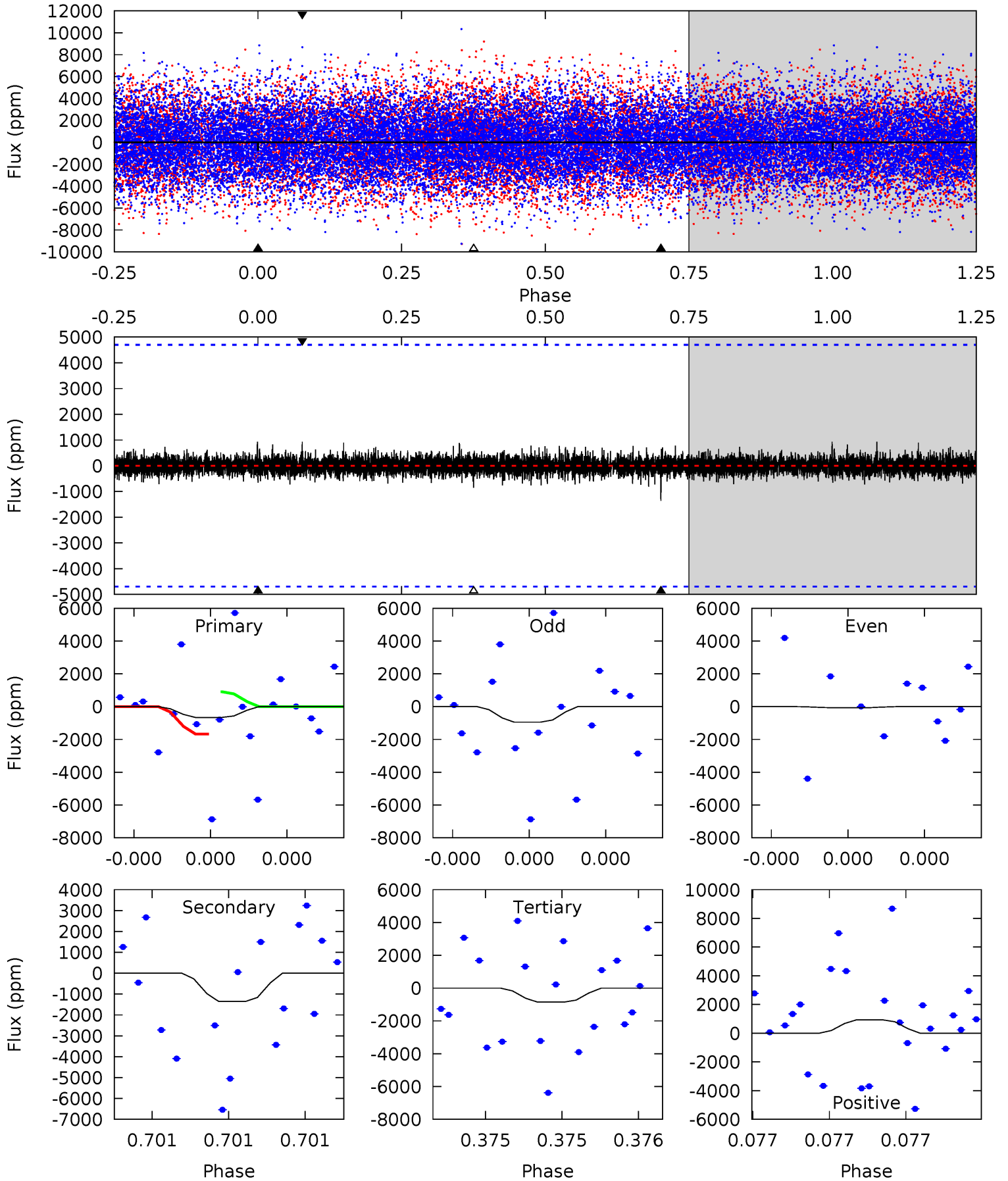
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.86	7.36	4.89	5.78	5.38	3.18	1.33	3.96	3.08	2.46	1.58	0.04	0.83	0.39	0.19



Alt Model-Shift Uniqueness Test

009823652-02, P = 155.853089 Days, E = 86.421829 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.79	1.62	1.02	1.11	5.61	3.54	0.24	-0.23	-0.32	0.60	0.51	0.48	4.45	0.41	0.44



Stellar Parameters For KIC 009823652

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7675^{+214}_{-322}	$3.899^{+0.273}_{-0.117}$	$0.040^{+0.200}_{-0.350}$	$2.578^{+0.472}_{-0.945}$	$1.920^{+0.103}_{-0.414}$	$0.158^{+0.296}_{-0.058}$
	+3%/-4%	+7%/-3%	+500%/-875%	+18%/-37%	+5%/-22%	+188%/-37%
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 009823652-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-378 ± 51	$16.48^{+16.60}_{-11.09}$	895^{+57}_{-80}	4421^{+3030}_{-920}	364^{+3075}_{-275}
Alt.	-1356 ± 837	$17.33^{+17.41}_{-11.65}$	894^{+54}_{-82}	5369^{+4359}_{-1557}	962^{+7435}_{-797}

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 $A_{obs} \gg 1.0$

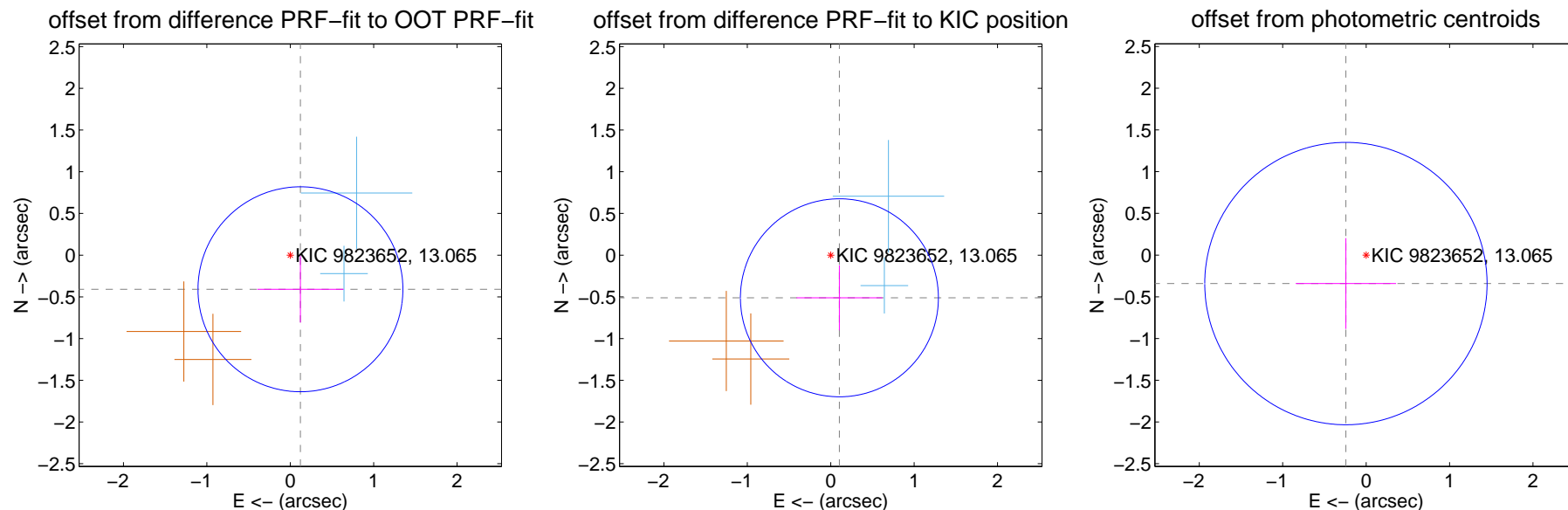
DV Centroid Data

Supplemental centroid analysis for 009823652-02. Kepler magnitude: 13.06. Transit SNR 7.94

There are 2 quarters with good PRF difference image offsets

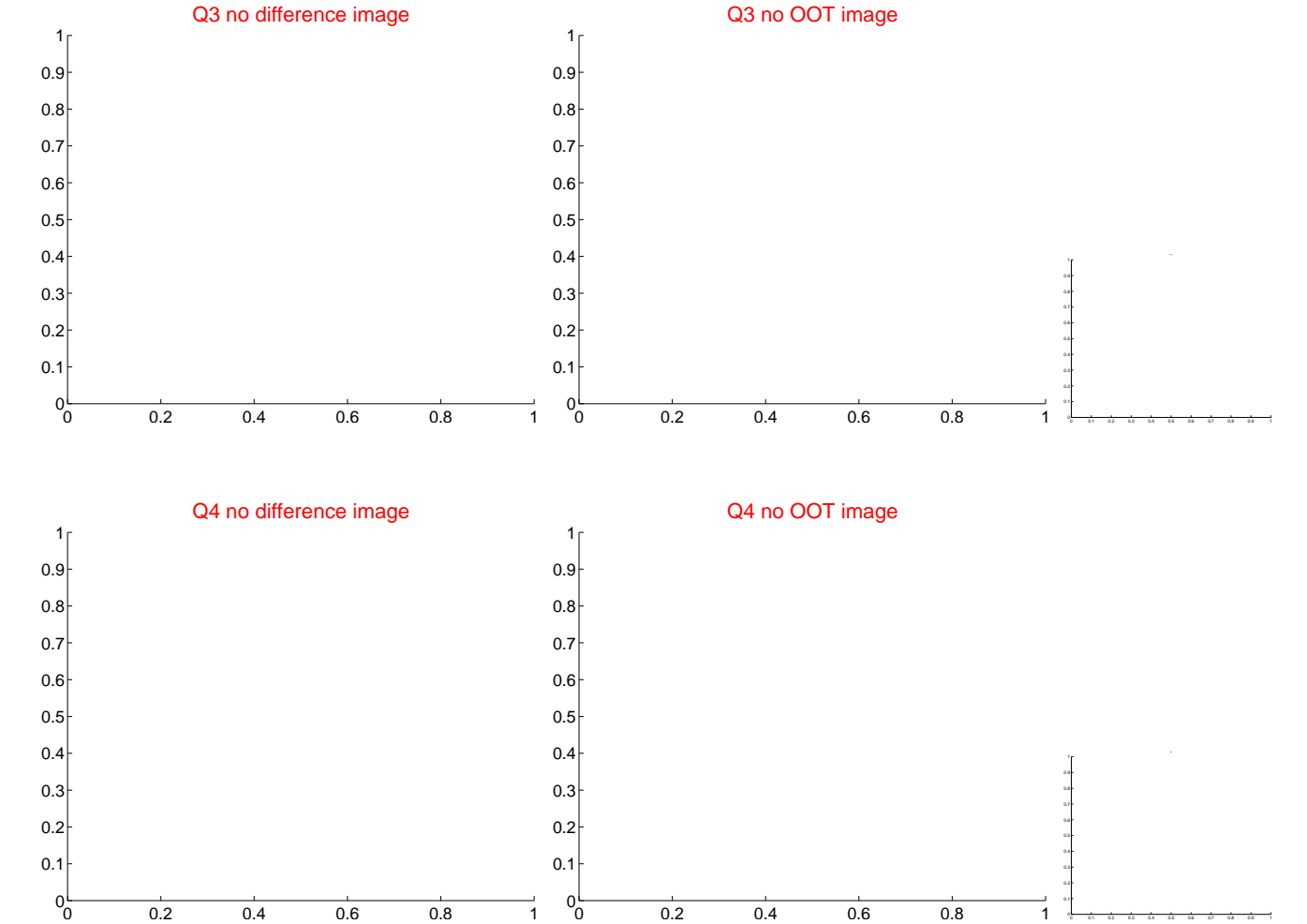
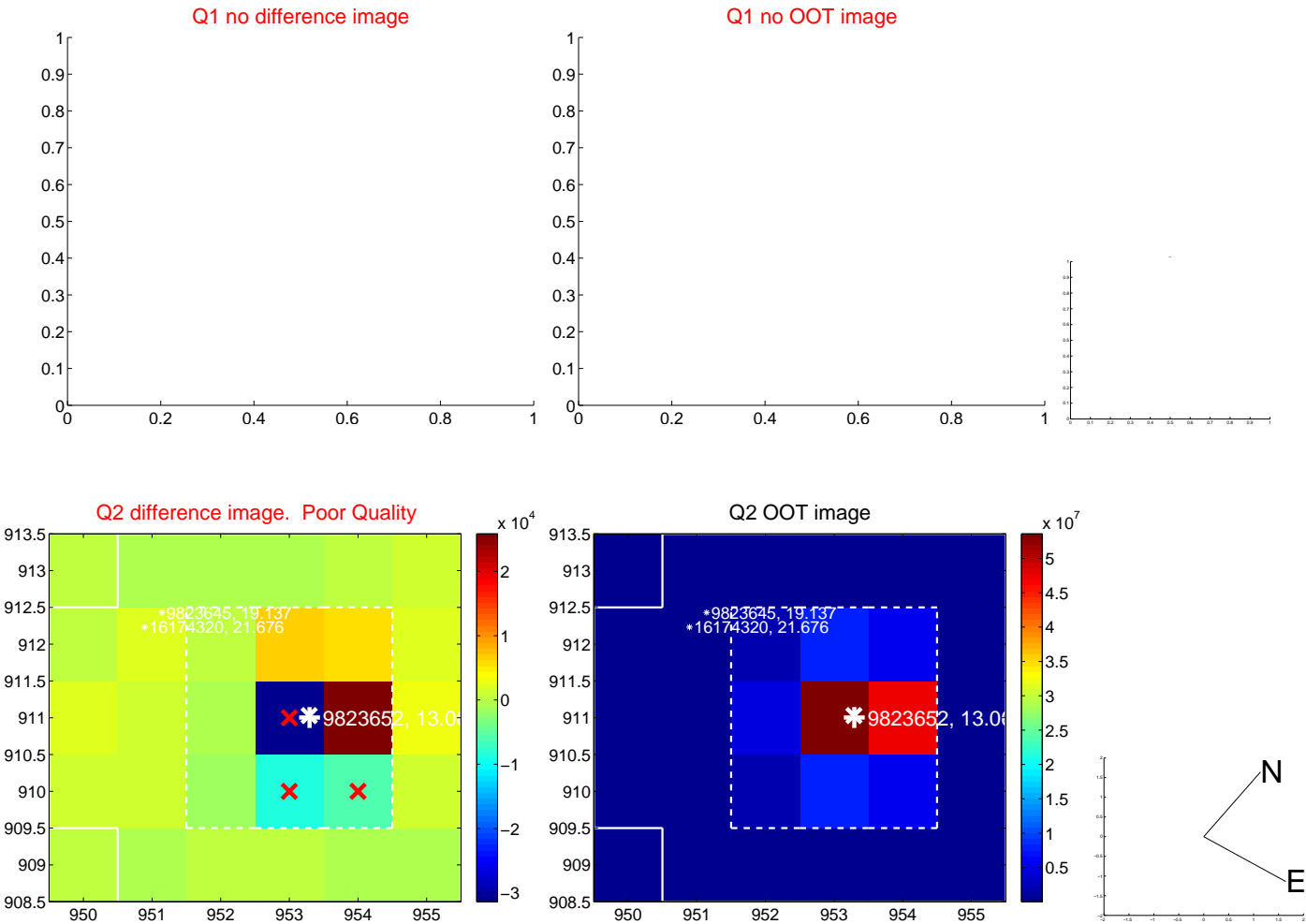
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.427 ± 0.409	1.04	-0.122 ± 0.517	-0.409 ± 0.398
PRF-fit source offset from KIC position	0.522 ± 0.396	1.32	-0.104 ± 0.515	-0.511 ± 0.390
photometric centroid source offset	0.42 ± 0.56	0.74	0.24 ± 0.60	-0.34 ± 0.54

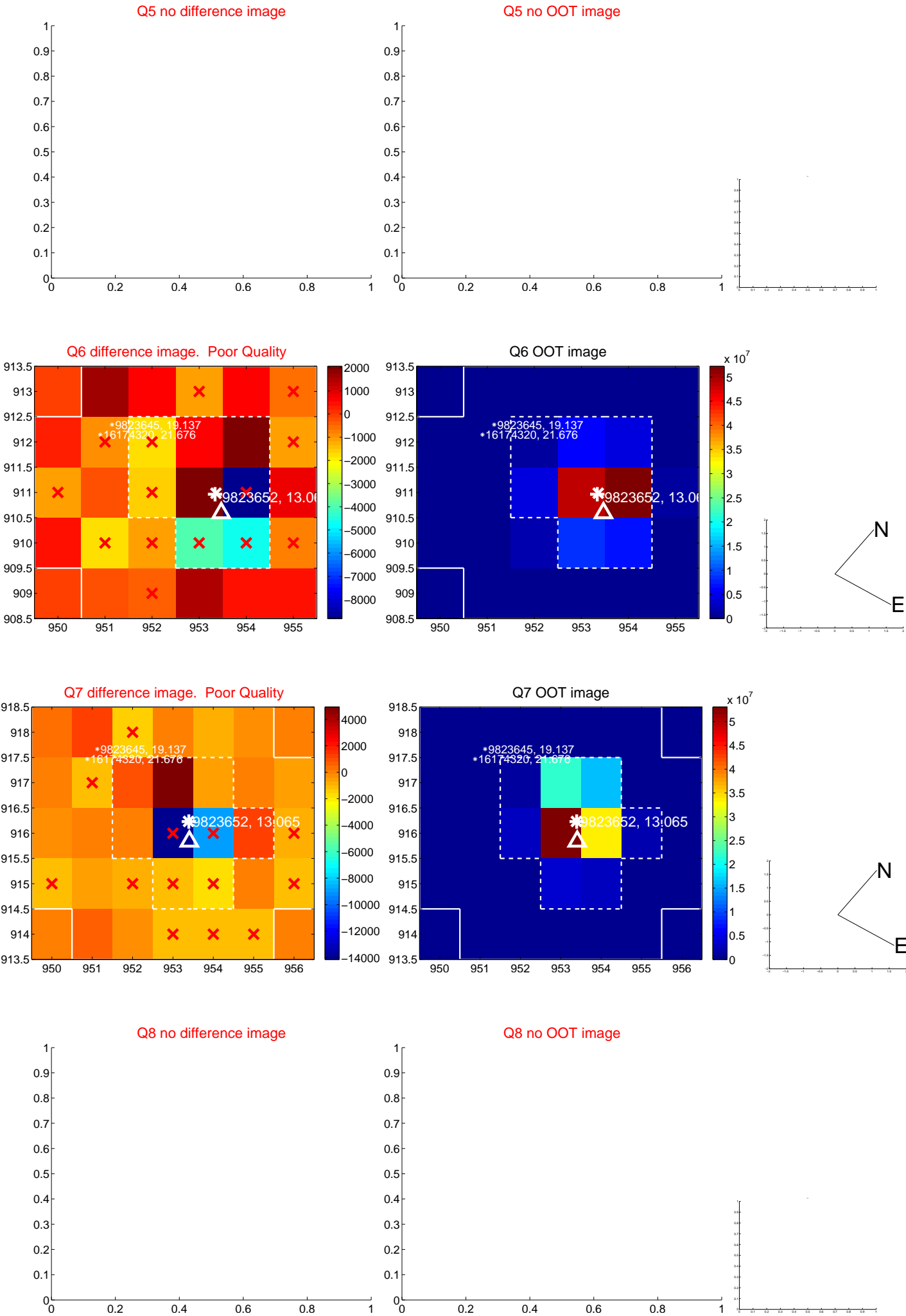


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

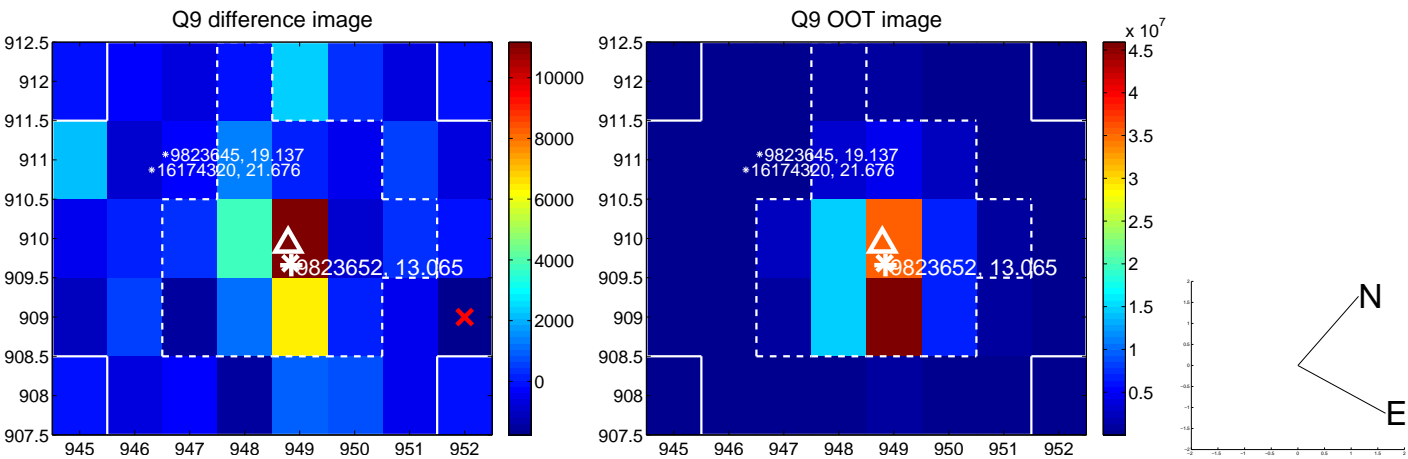
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



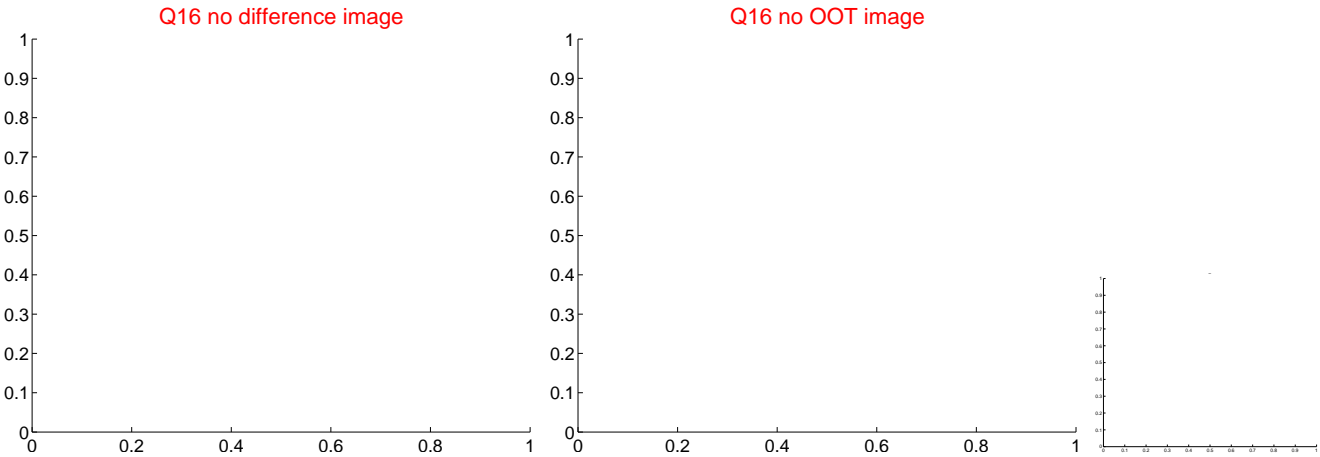
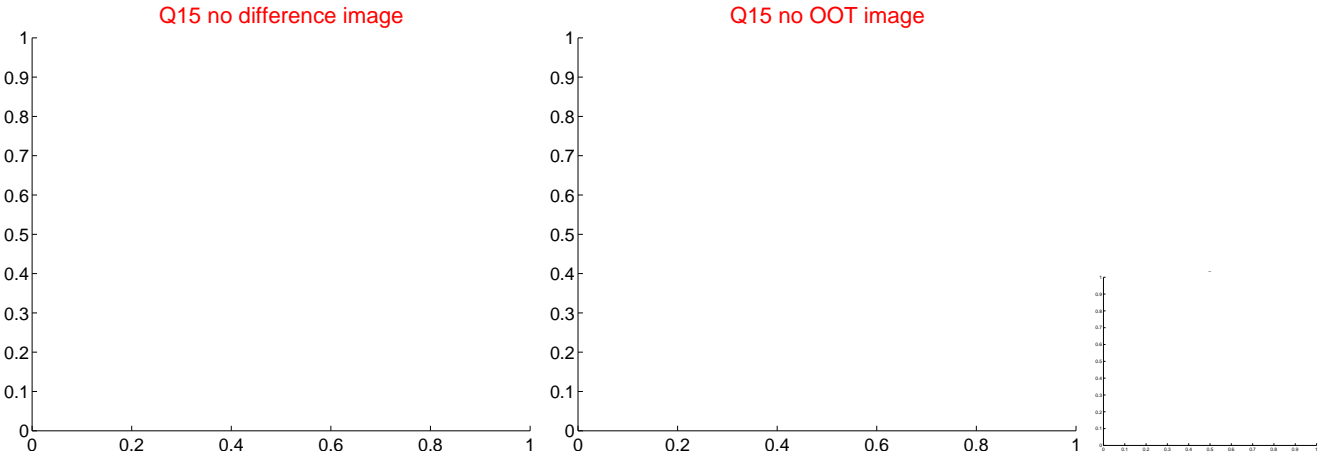
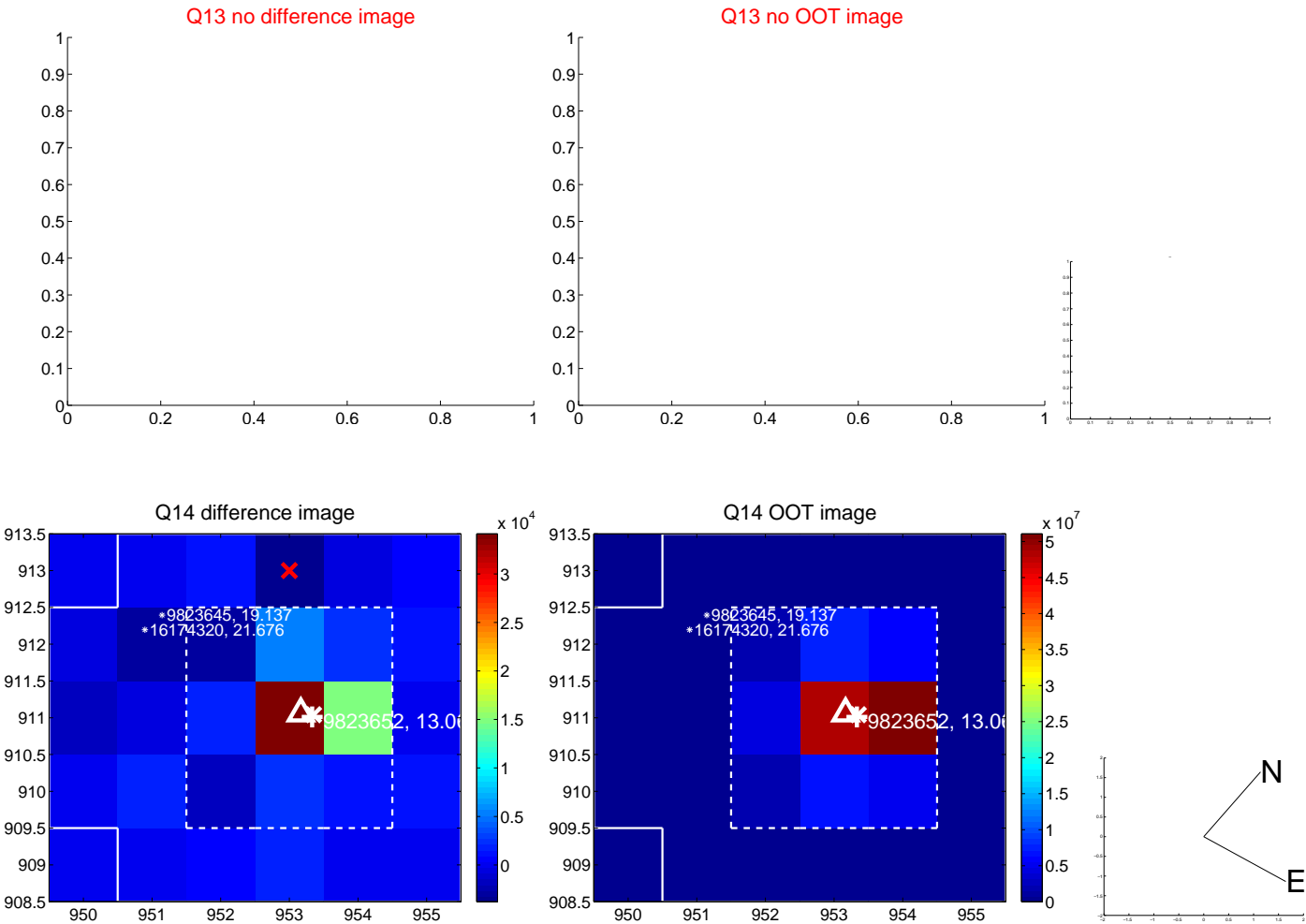
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



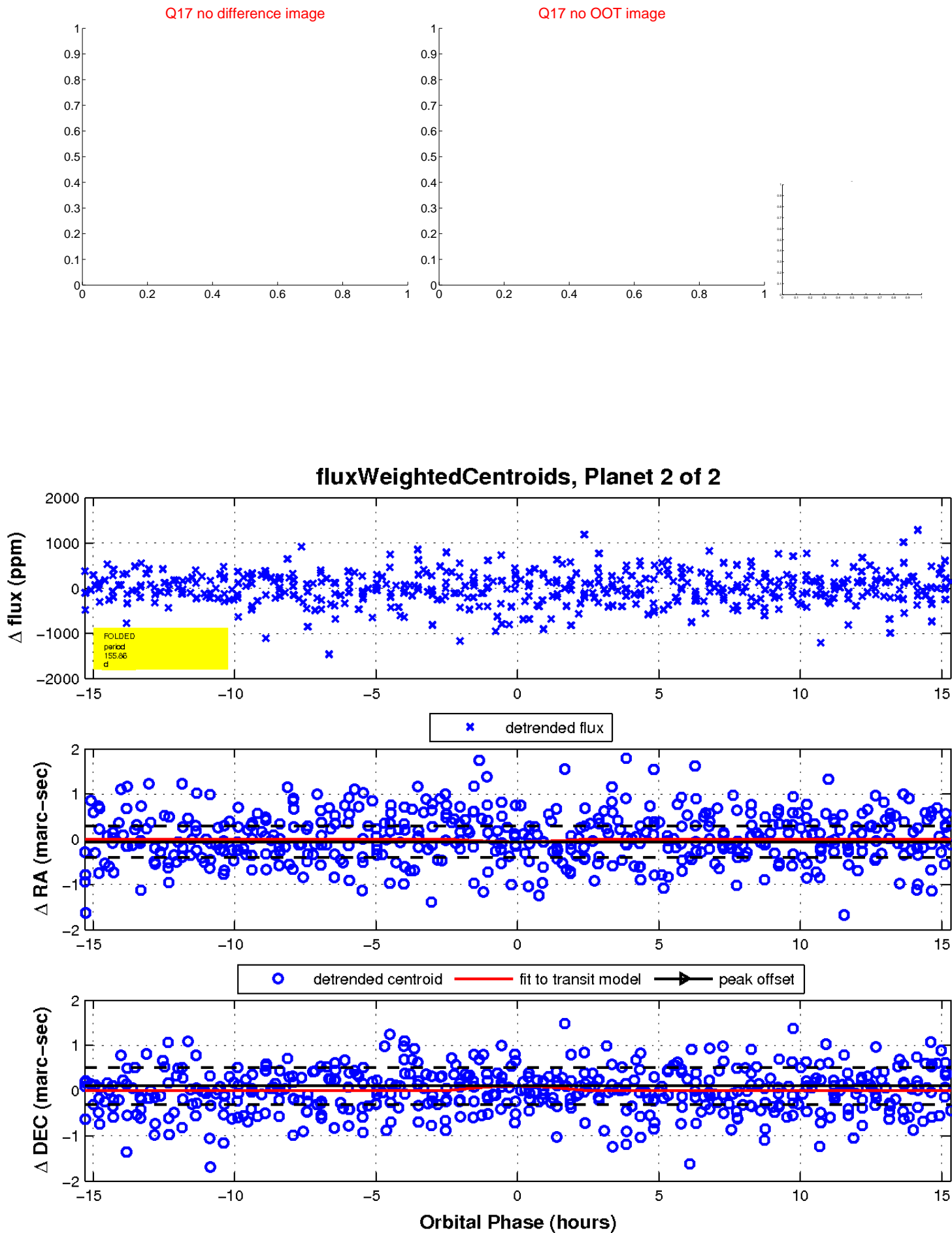
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

