

KIC 009758089

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})
009758089-01	OBS	1871.01	92.729487	177.441135	1305.1	6.781	31.7	32.0	0.68	4580	2.81	1.38
009758089-02	OBS	1871.02	32.376052	150.417859	754.0	4.475	26.3	27.7	0.68	4580	2.29	5.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009758089-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
009758089-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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 009758089-01

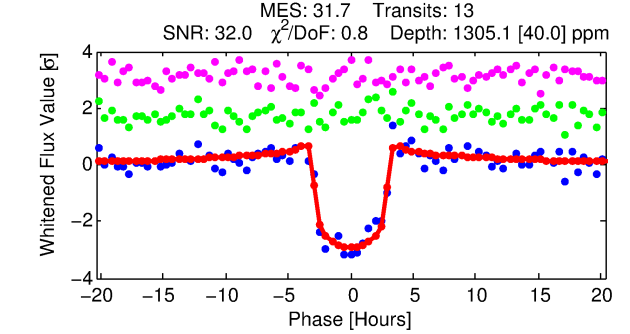
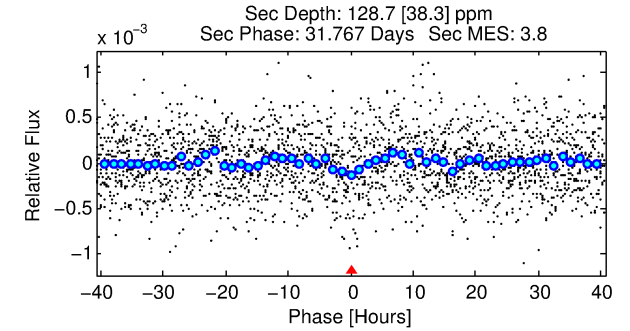
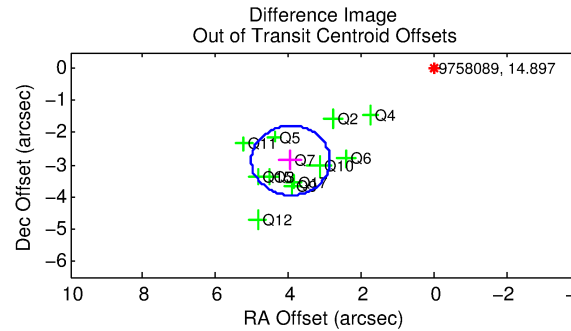
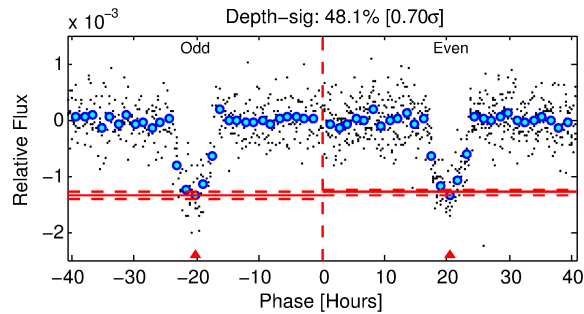
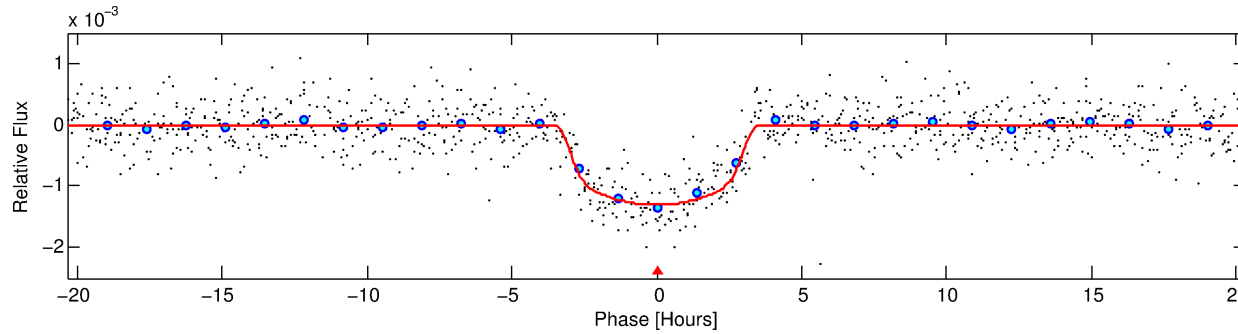
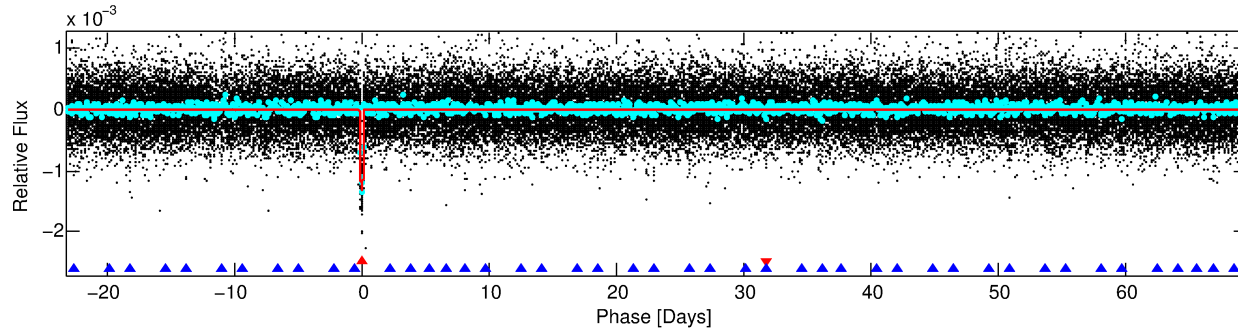
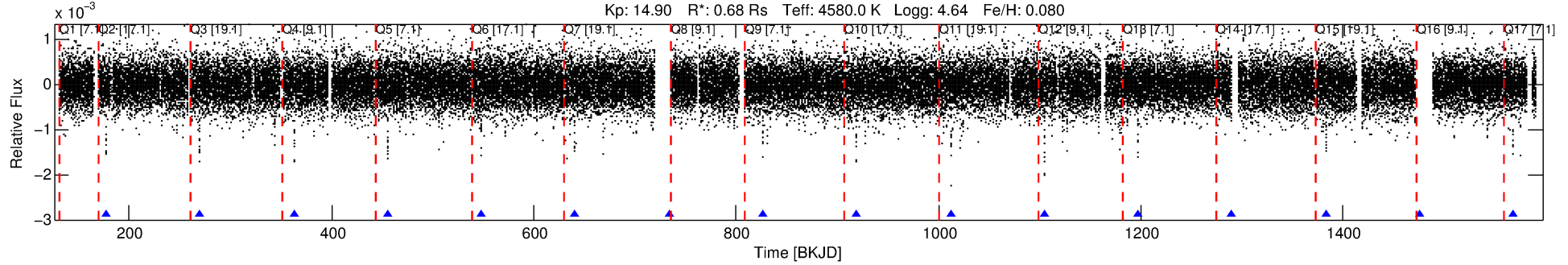
No Significant Match Found

DV One-Page Summary

KIC: 9758089 Candidate: 1 of 2 Period: 92.729 d

KOI: K01871.01 Corr: 0.968

Kp: 14.90 R*: 0.68 Rs Teff: 4580.0 K Logg: 4.64 Fe/H: 0.080



DV Fit Results:

Period = 92.72949 [0.00038] d
Epoch = 177.4411 [0.0033] BKJD
Rp/R* = 0.0382 [0.0026]
a/R* = 64.76 [14.20]
b = 0.83 [0.08]
Seff = 1.38 [0.16]
Teq = 276 [8] K
Rp = 2.81 [0.27] Re
a = 0.3606 [0.0206] AU
Ag = 1163.96 [393.27] [2.96σ]
Teff = 2496 [211] K [10.54σ]

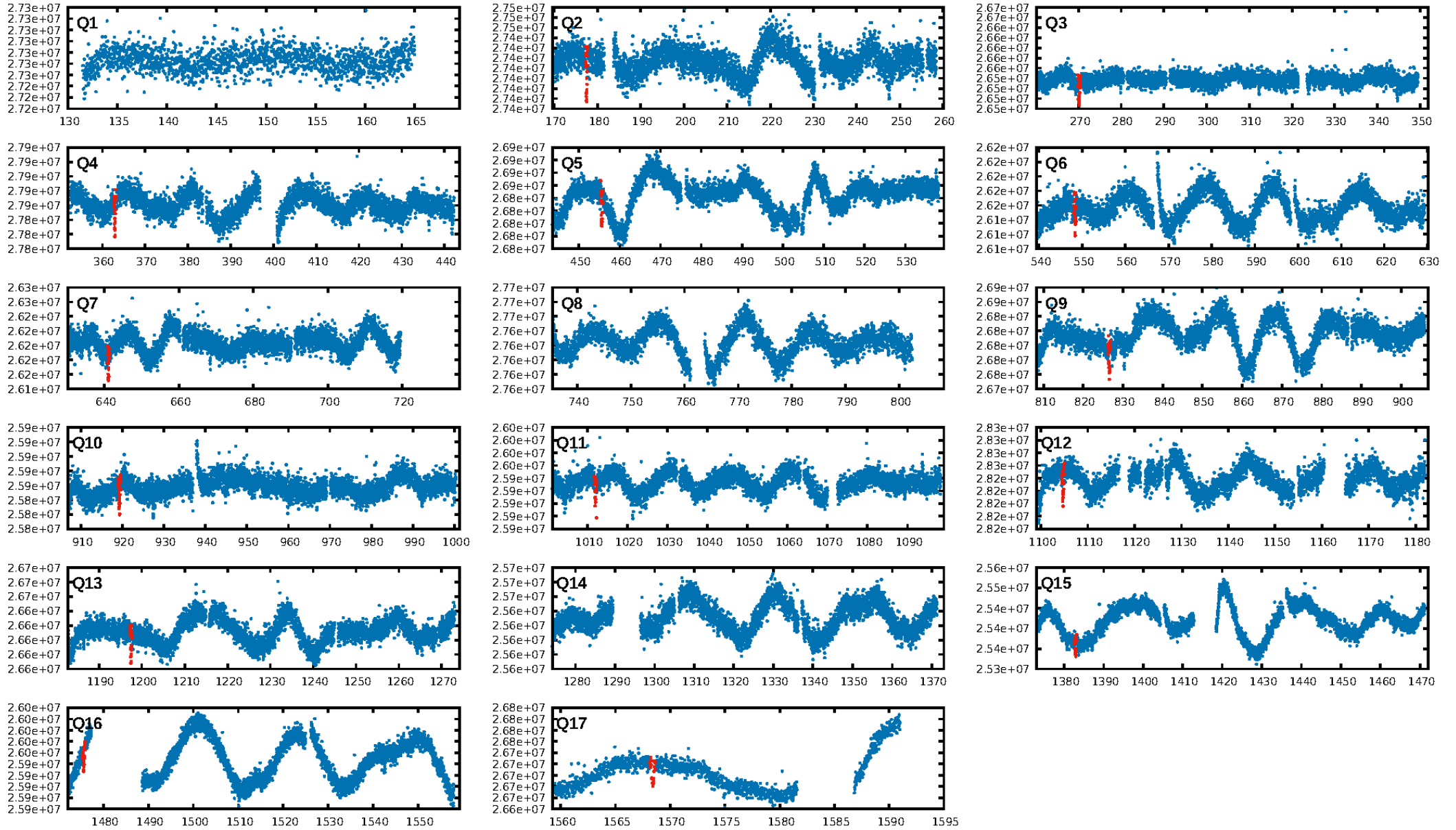
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [178.27σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 84.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.90e-183
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 12.51
Centroid-sig: 0.0%
Centroid-so: 1.350 arcsec [6.30σ]
OotOffset-rm: 4.874 arcsec [13.53σ]
KicOffset-rm: 0.465 arcsec [2.08σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 1.00 [12/12]

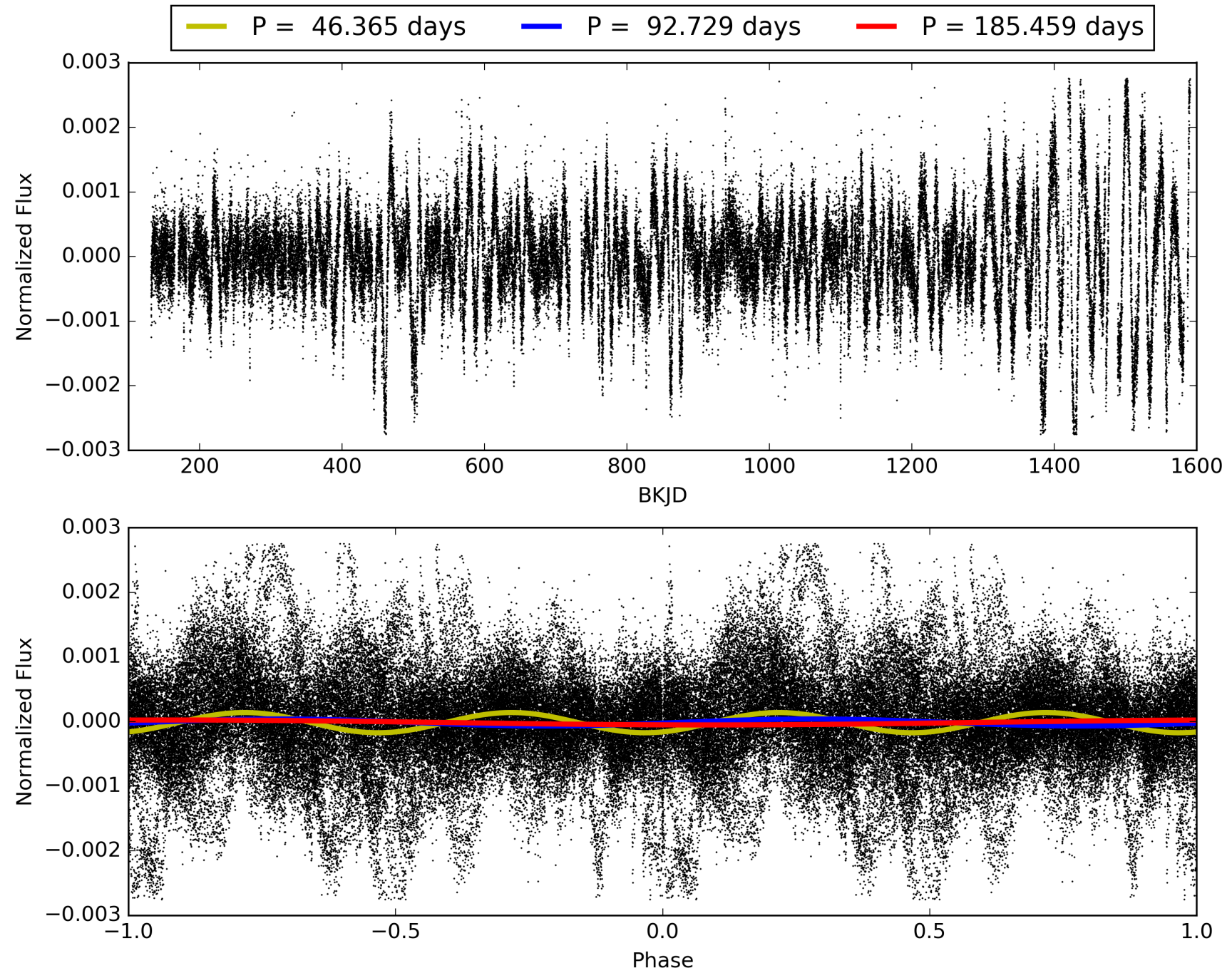
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:05:50 Z

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

TCE 009758089-01, PDC Light Curves

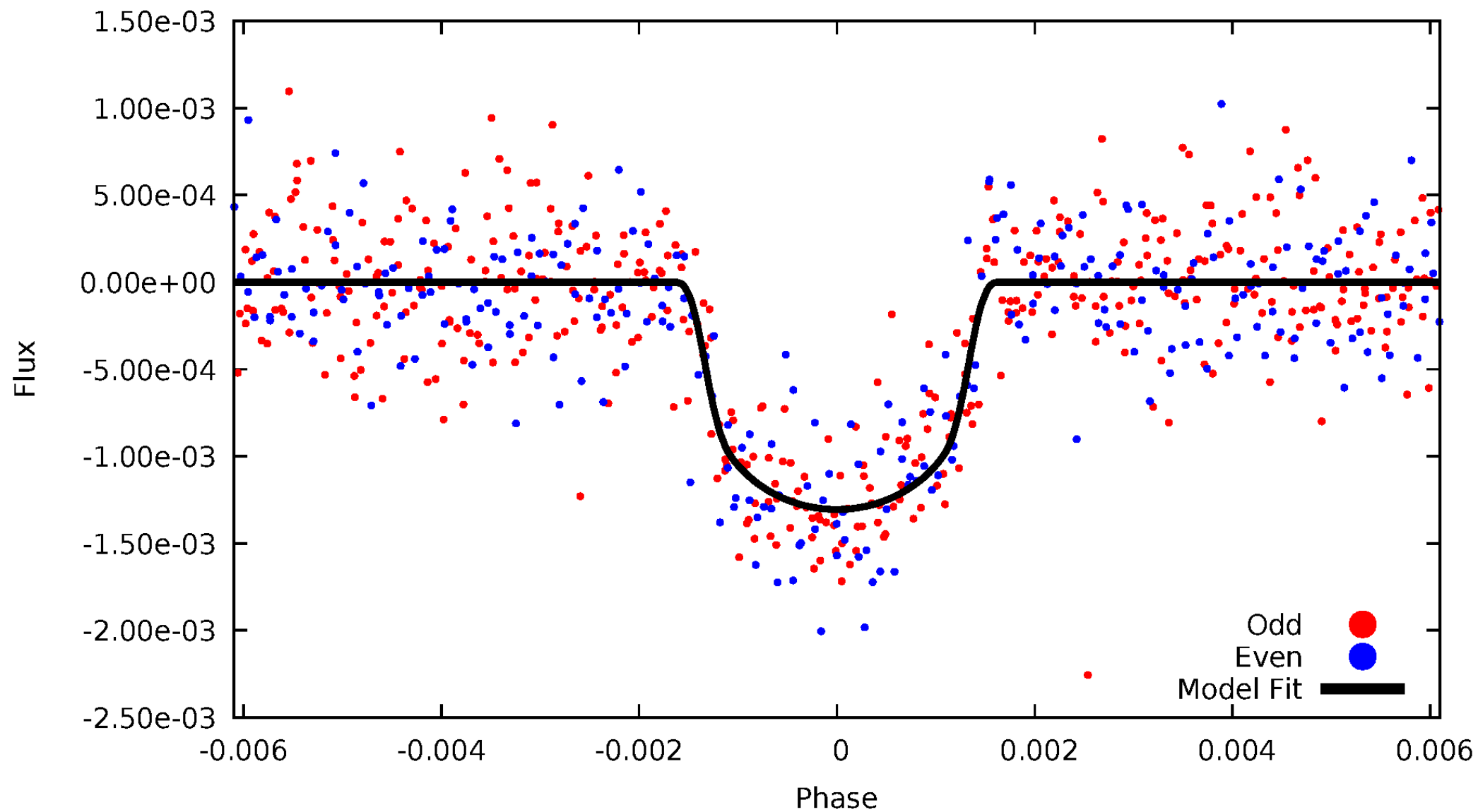


TCE 009758089-01



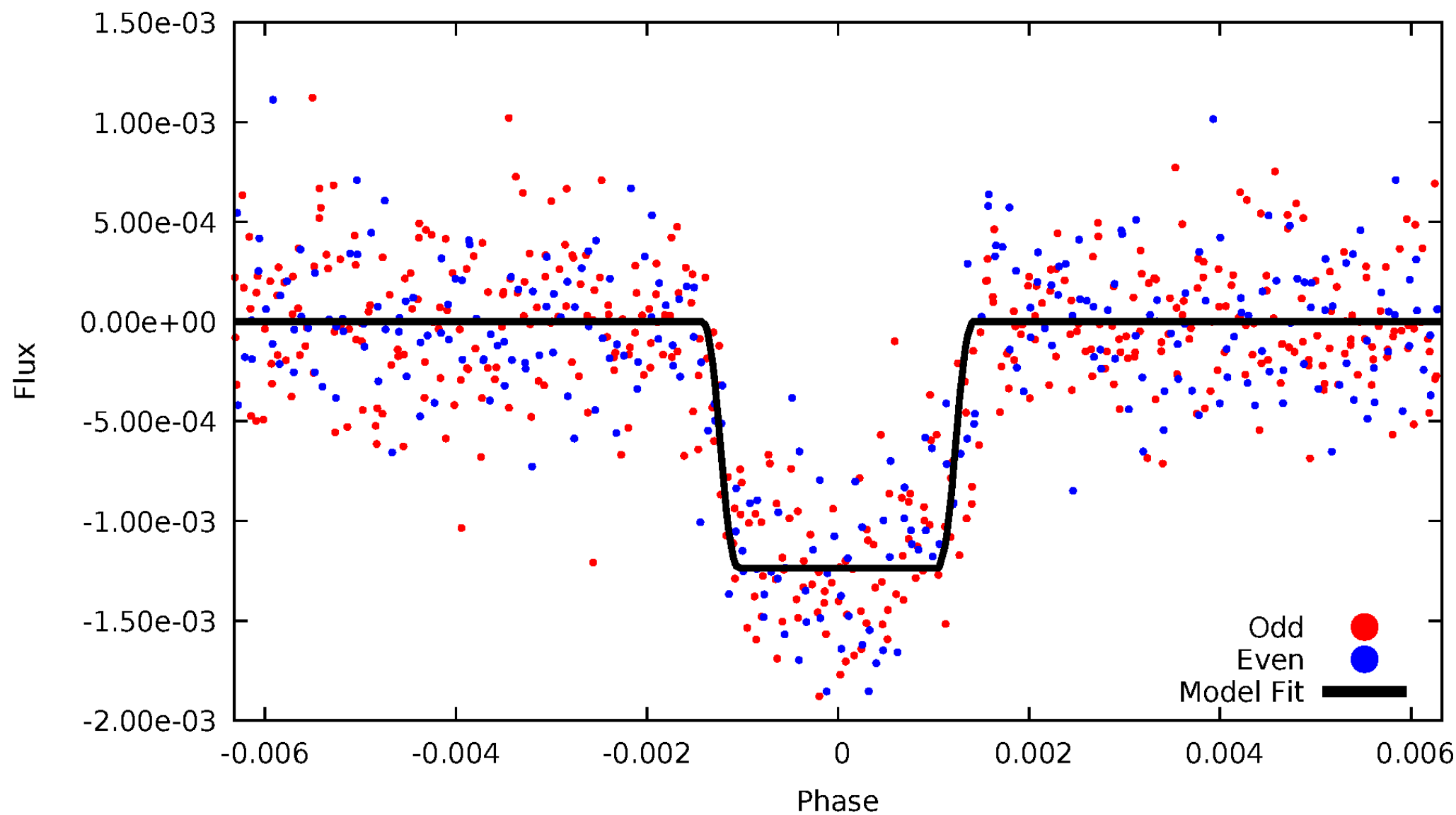
DV Odd/Even

TCE 009758089-01



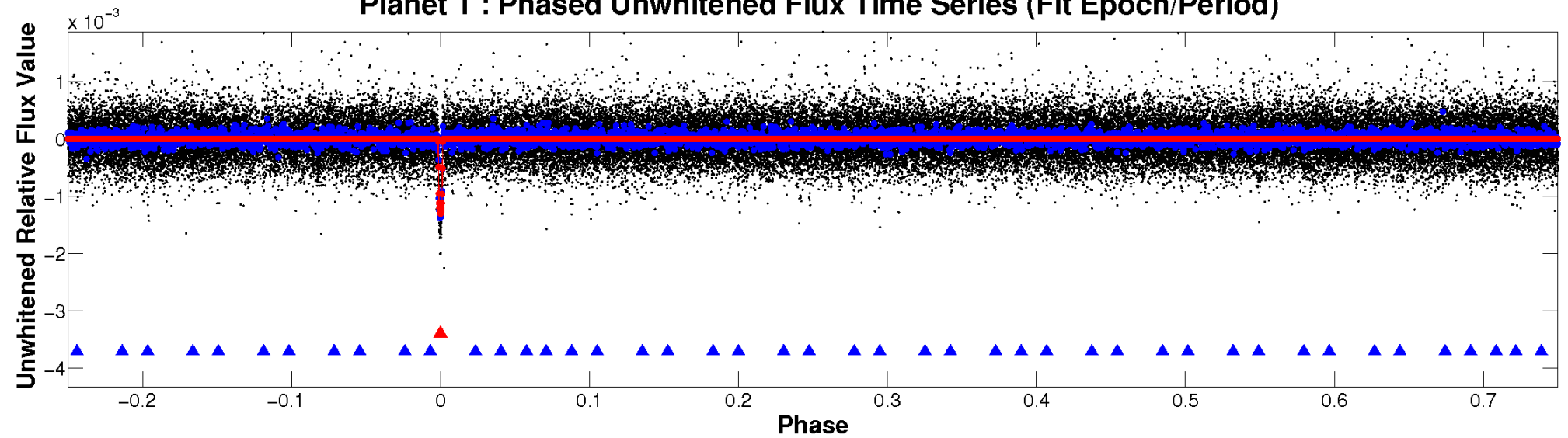
ALT Odd/Even

TCE 009758089-01

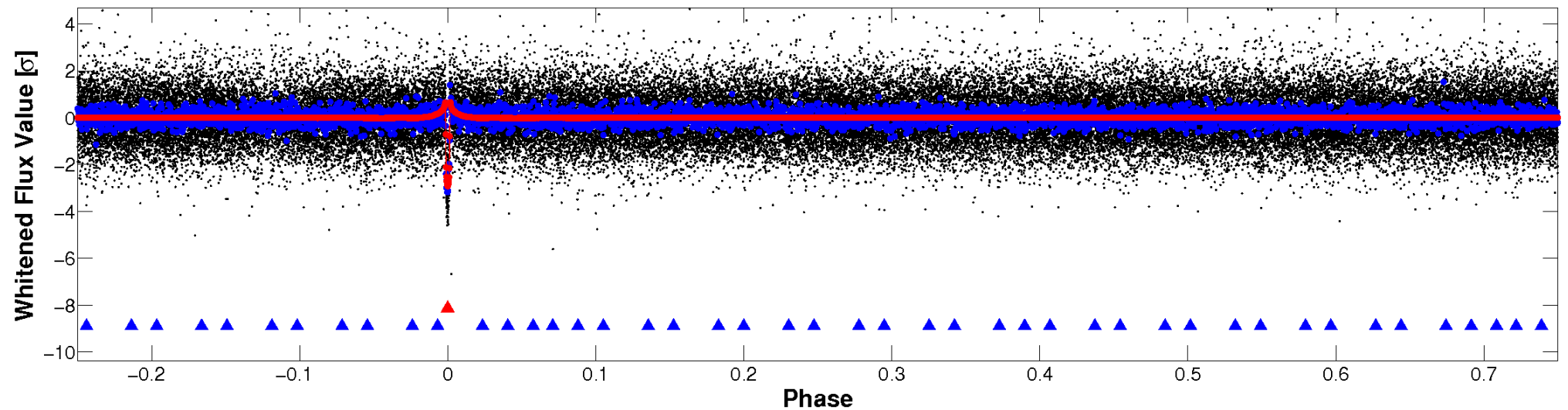


Non-Whitened Vs. Whitened Light Curve

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

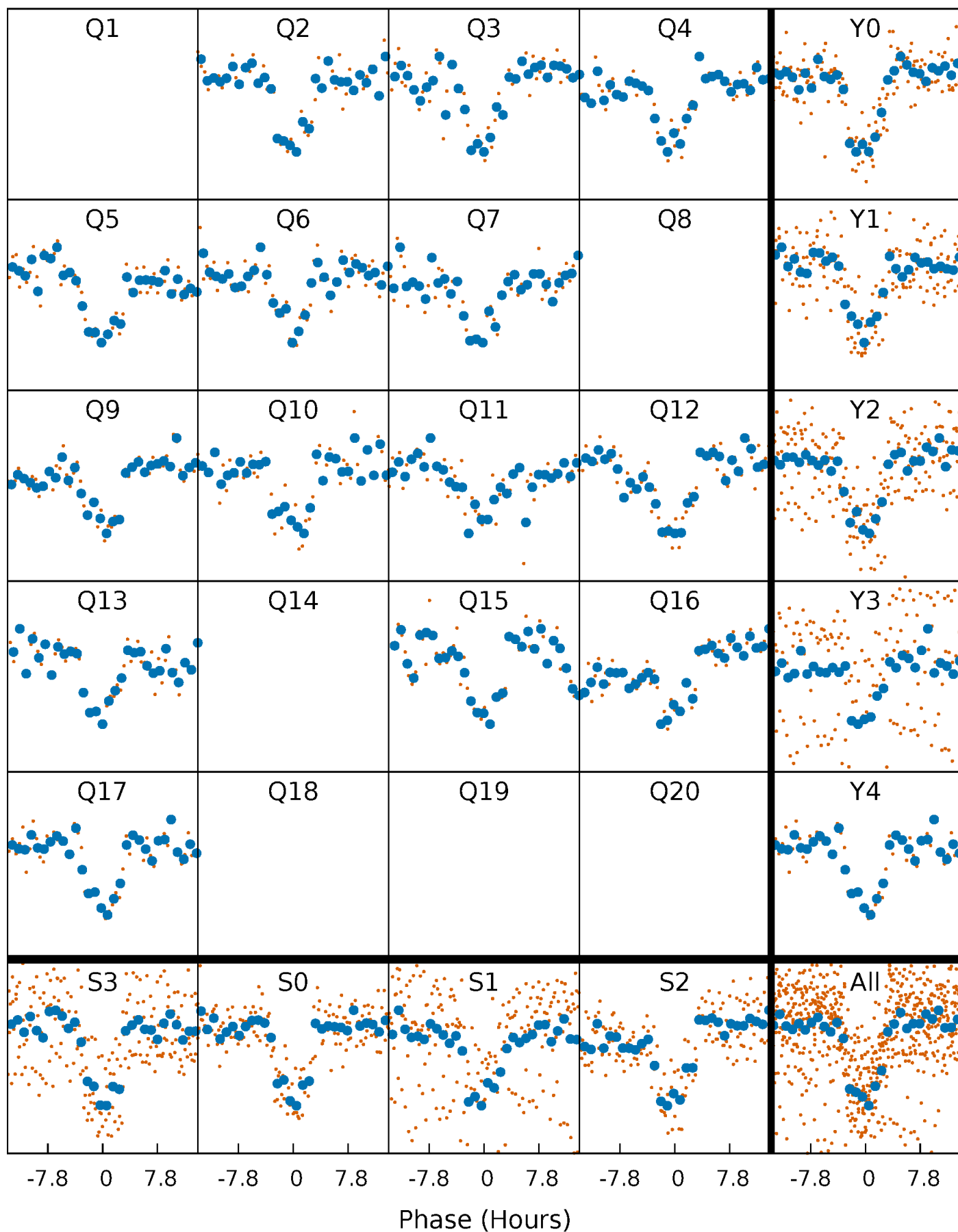


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



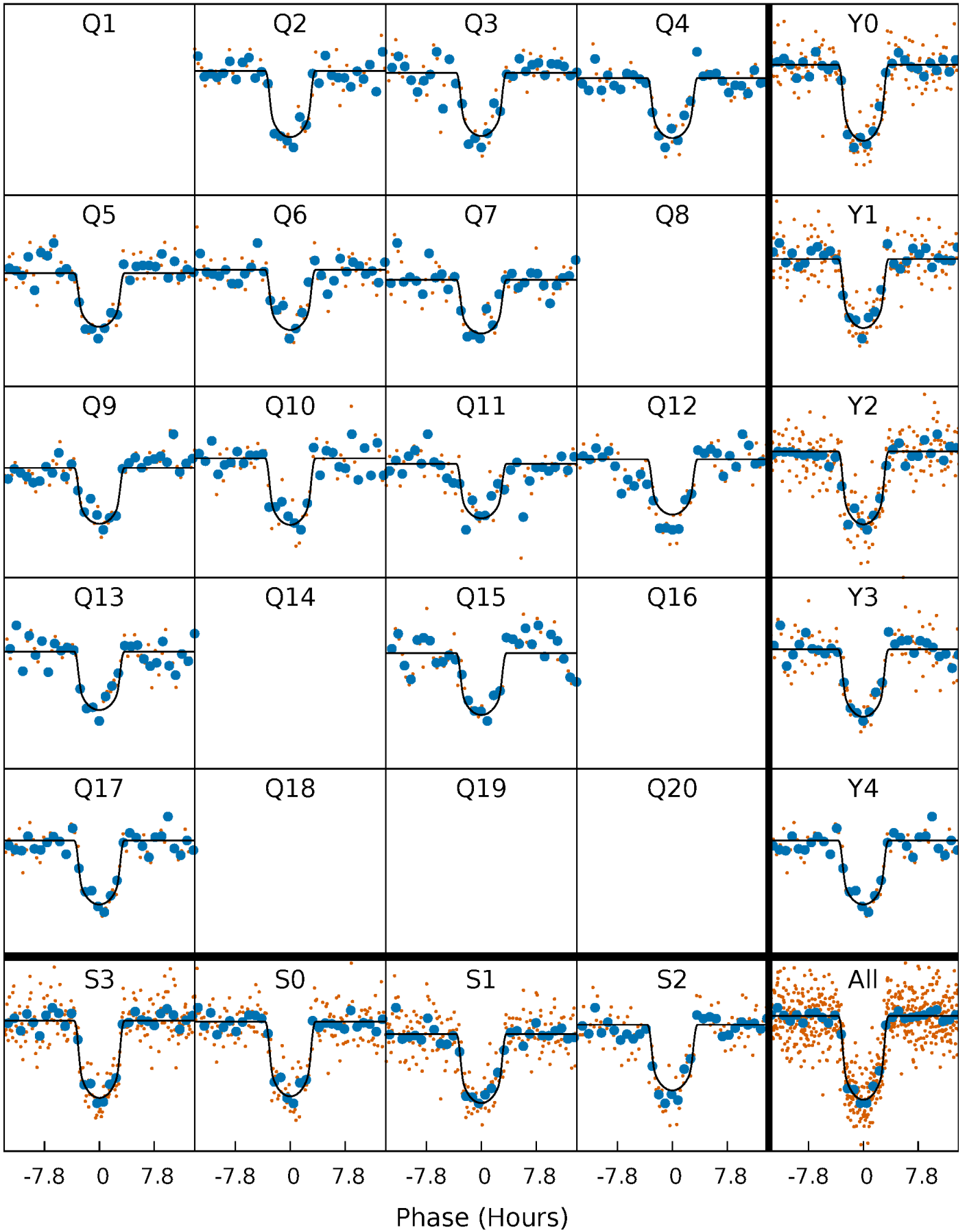
PDC Quarter-Phased Transit Curves

TCE 009758089-01 P= 92.729487 Days $T_0=177.441135$ (BKJD)



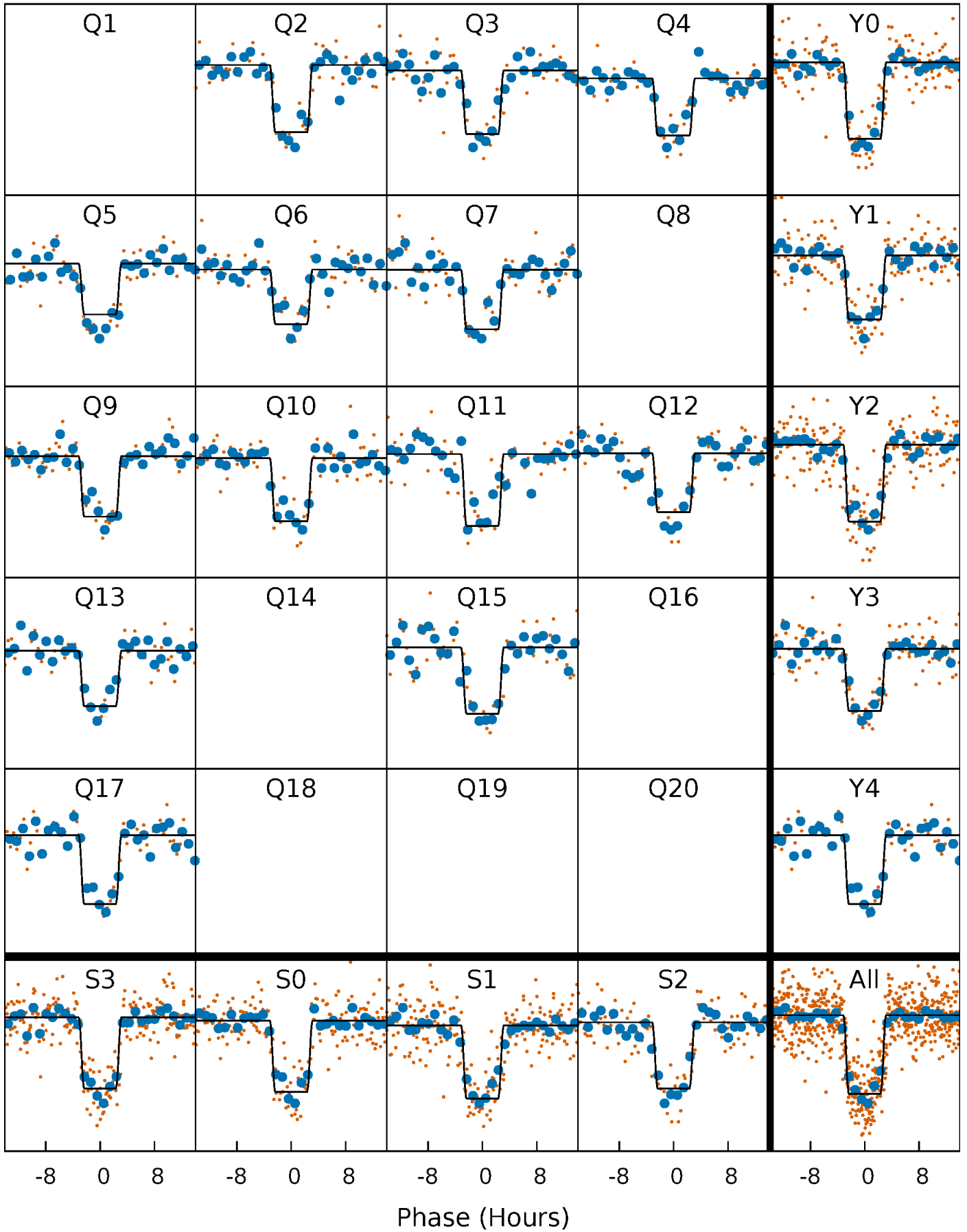
DV Quarter-Phased Transit Curves

TCE 009758089-01 P= 92.729487 Days $T_0=177.441135$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

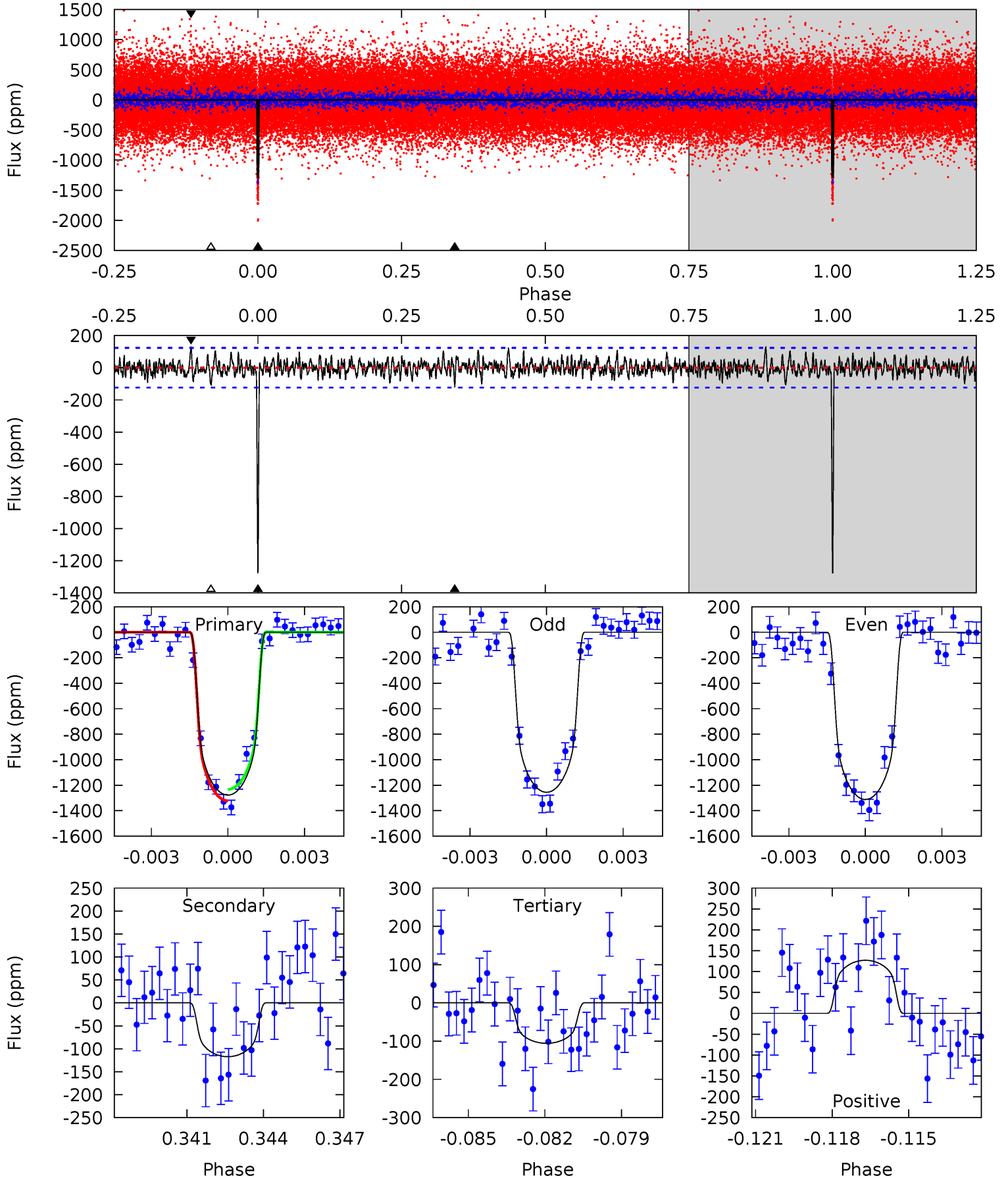
TCE 009758089-01 P= 92.729409 Days $T_0=177.438210$ (BKJD)



DV Model-Shift Uniqueness Test

009758089-01, P = 92.729487 Days, E = 84.711648 Days

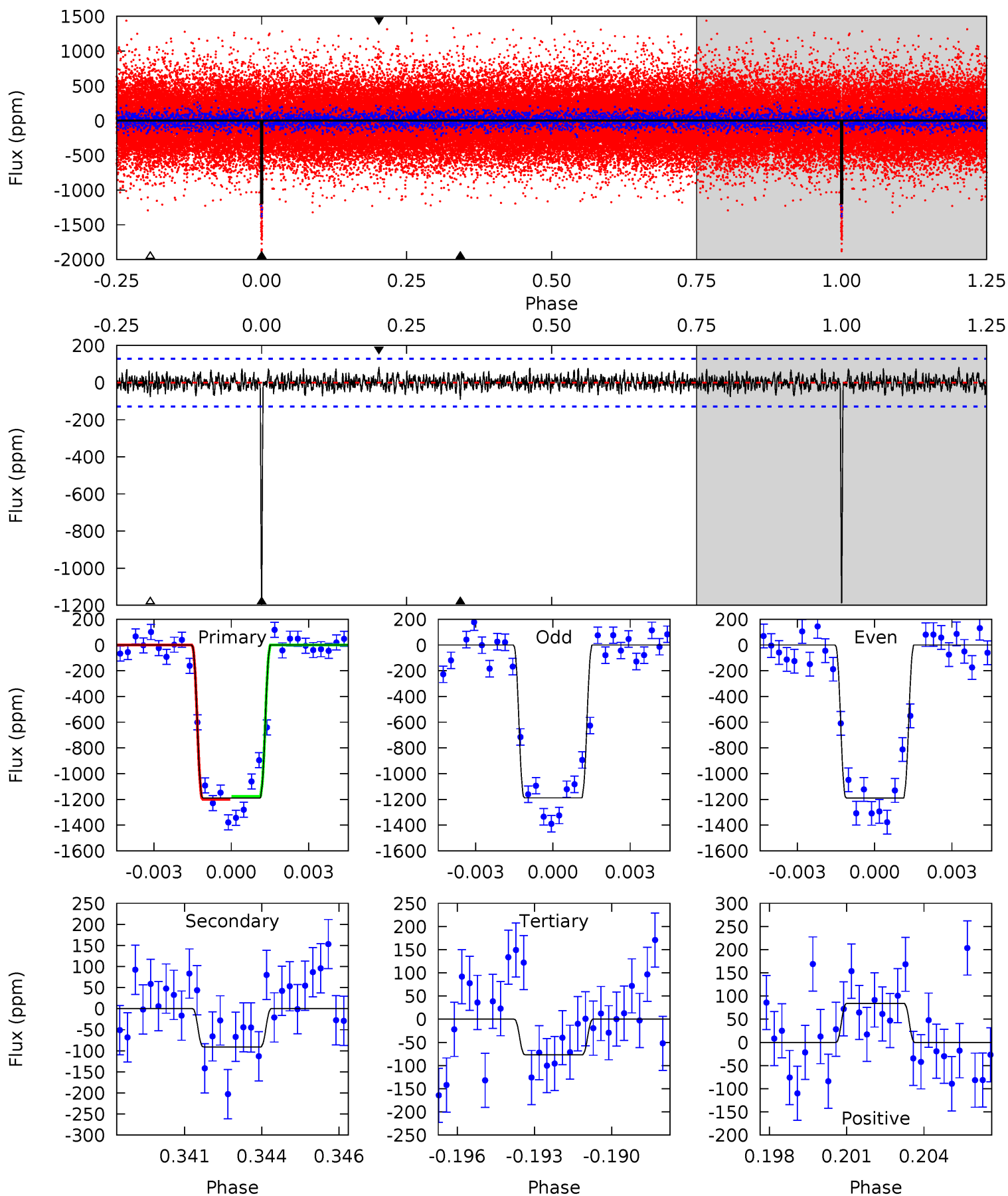
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.2	4.97	4.49	5.39	5.24	2.94	1.49	49.7	48.8	0.49	-0.42	1.17	1.03	0.09	1.90



Alt Model-Shift Uniqueness Test

009758089-01, P = 92.729409 Days, E = 84.708801 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.5	3.70	3.13	3.43	5.27	2.99	1.01	45.3	45.0	0.57	0.28	0.03	1.02	0.07	0.44



Stellar Parameters For KIC 009758089

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4580^{+92}_{-92}	$4.641^{+0.012}_{-0.045}$	$0.080^{+0.150}_{-0.150}$	$0.675^{+0.046}_{-0.021}$	$0.748^{+0.027}_{-0.043}$	$3.423^{+0.202}_{-0.607}$
	+2%/-2%	+0%/-1%	+188%/-188%	+7%/-3%	+4%/-6%	+6%/-18%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 009758089-01 / KOI 1871.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-117 ± 24	$2.87^{+0.22}_{-0.21}$	389^{+9}_{-9}	3007^{+113}_{-114}	1013^{+283}_{-233}
Alt.	-91 ± 25	$2.63^{+0.23}_{-0.20}$	389^{+9}_{-9}	2974^{+138}_{-147}	933^{+325}_{-279}

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 $A_{obs} \gg 1.0$

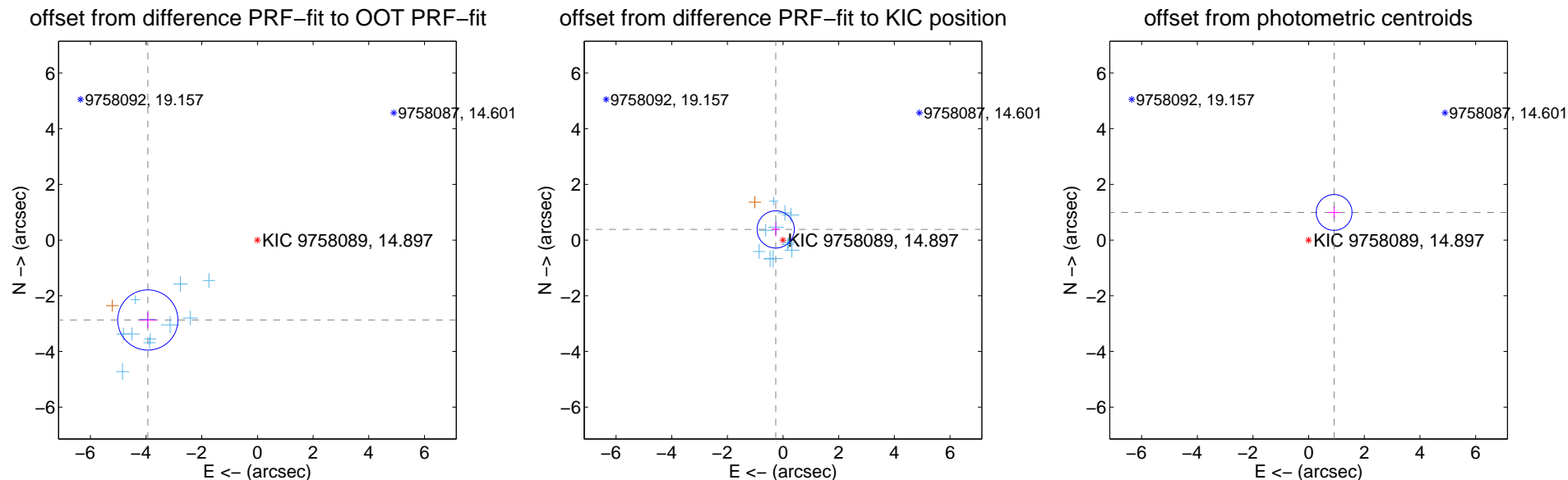
DV Centroid Data

Supplemental centroid analysis for 009758089-01. Kepler magnitude: 14.90. Transit SNR 31.95

There are 11 quarters with good PRF difference image offsets

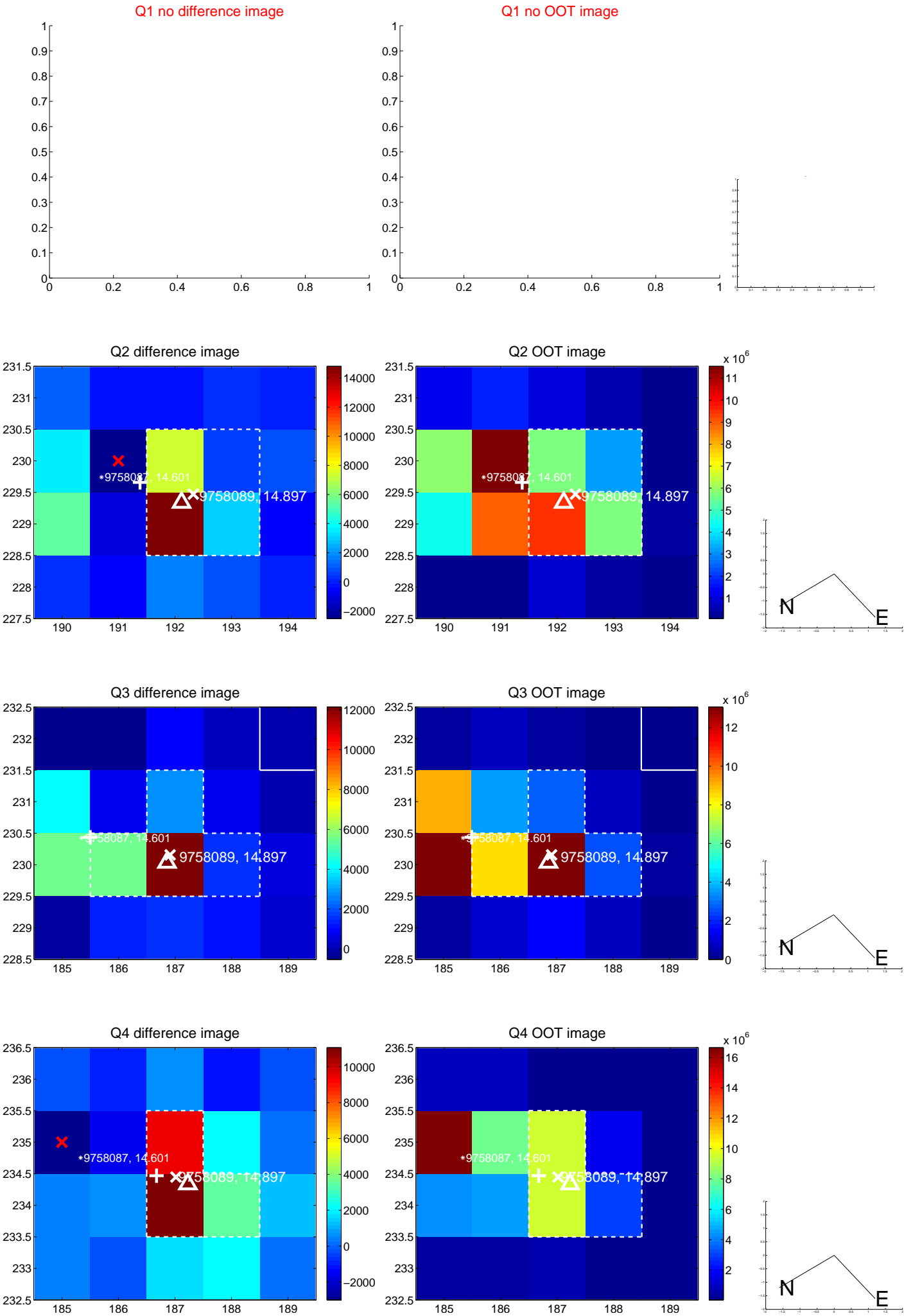
The OOT PRF centroid is offset from the target star catalog position by about 5.32 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.874 ± 0.360	13.53	3.938 ± 0.312	-2.871 ± 0.289
PRF-fit source offset from KIC position	0.465 ± 0.223	2.08	0.264 ± 0.155	0.383 ± 0.249
photometric centroid source offset	1.35 ± 0.21	6.30	-0.92 ± 0.22	0.99 ± 0.21

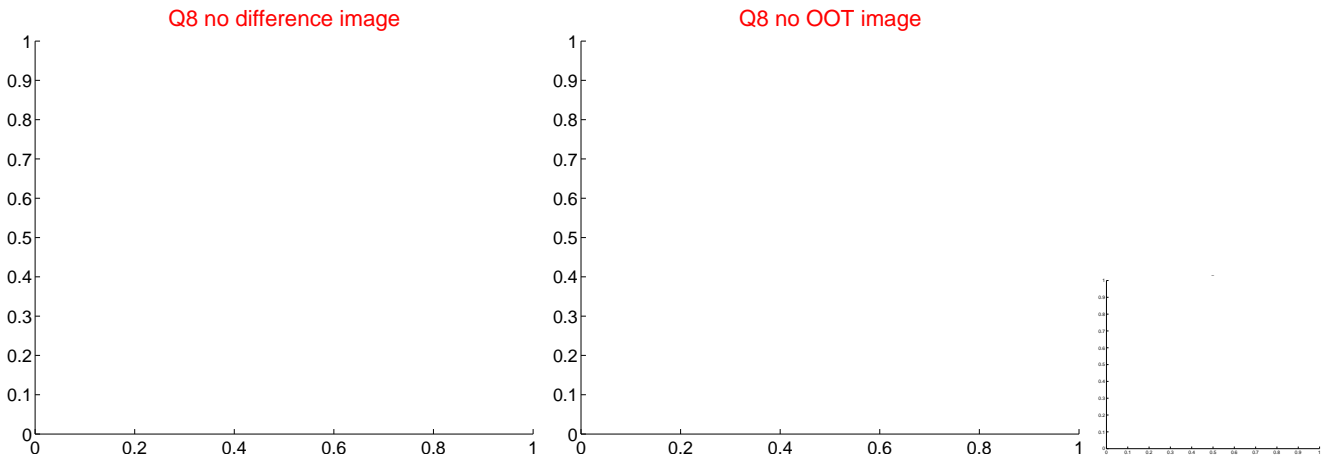
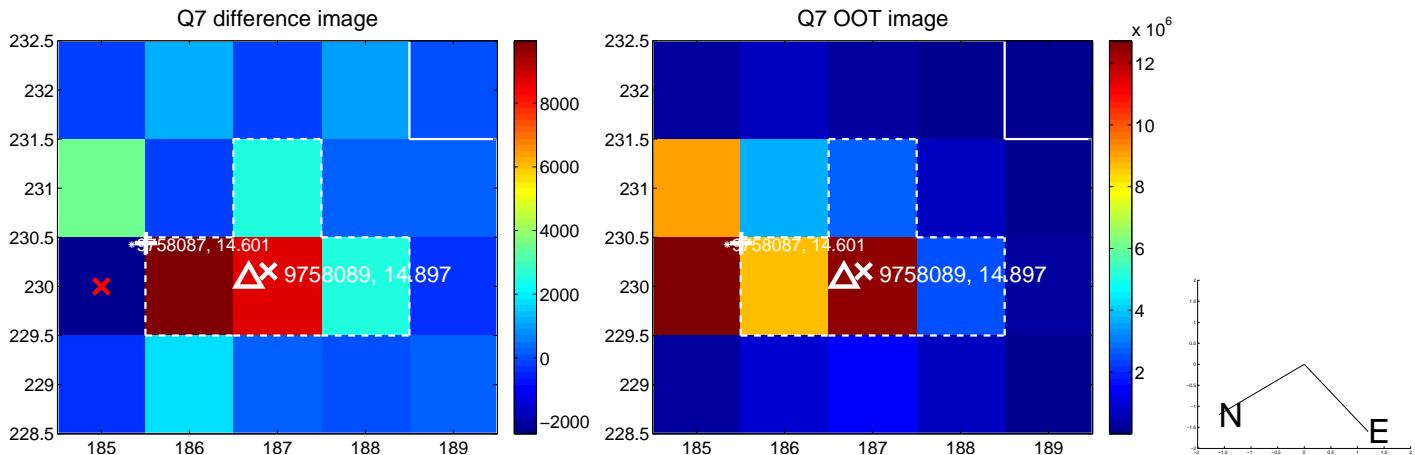
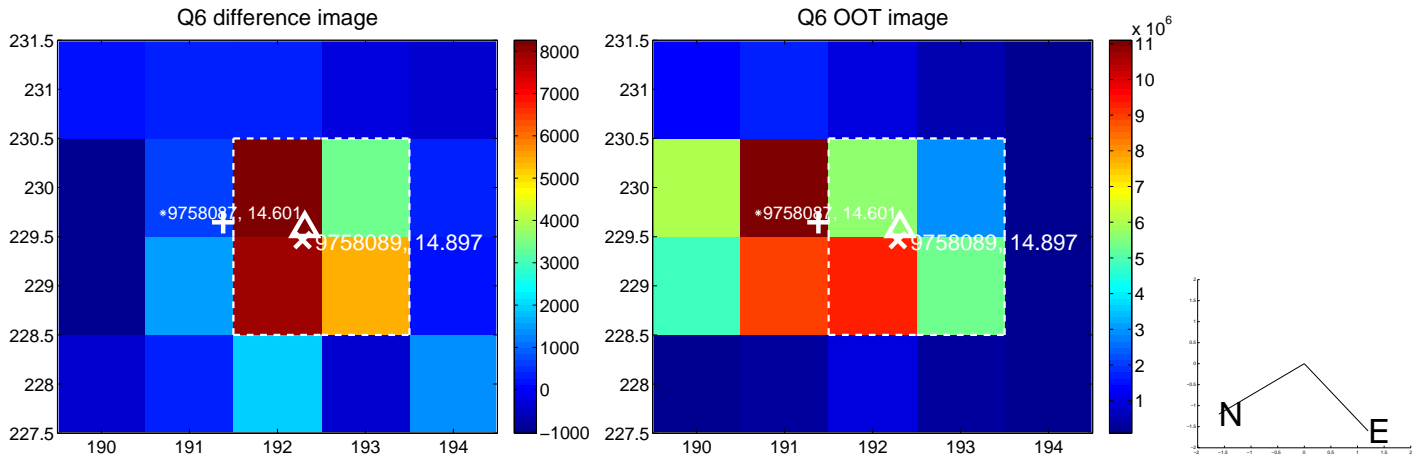
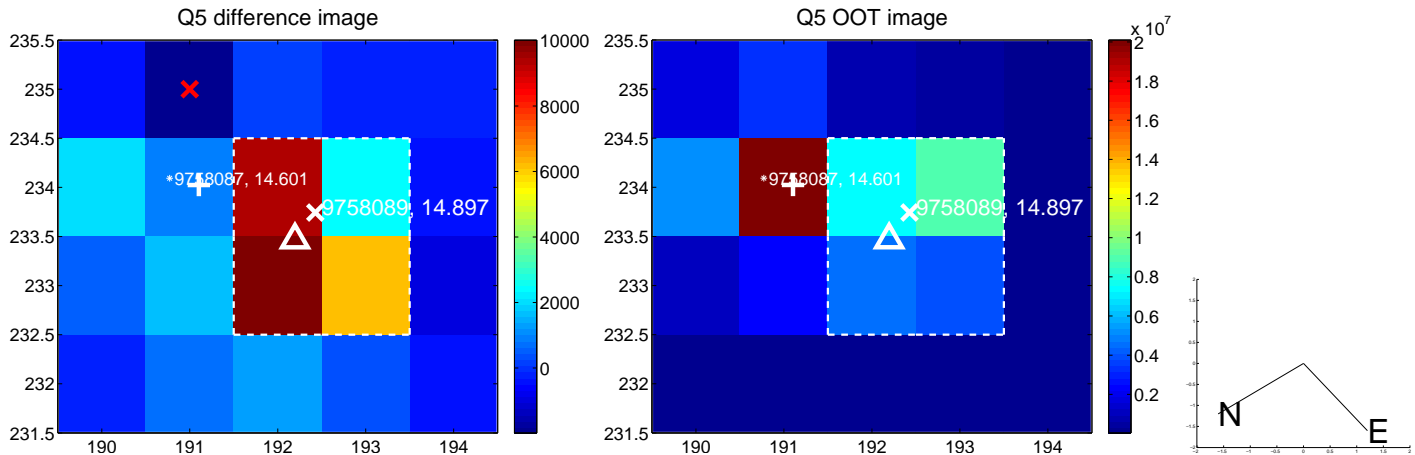


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

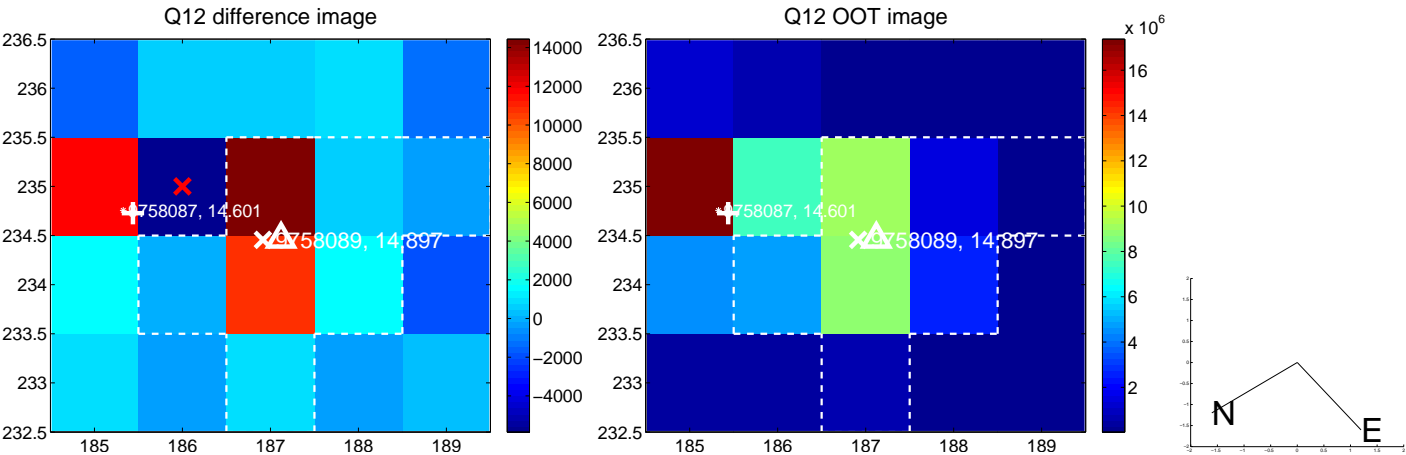
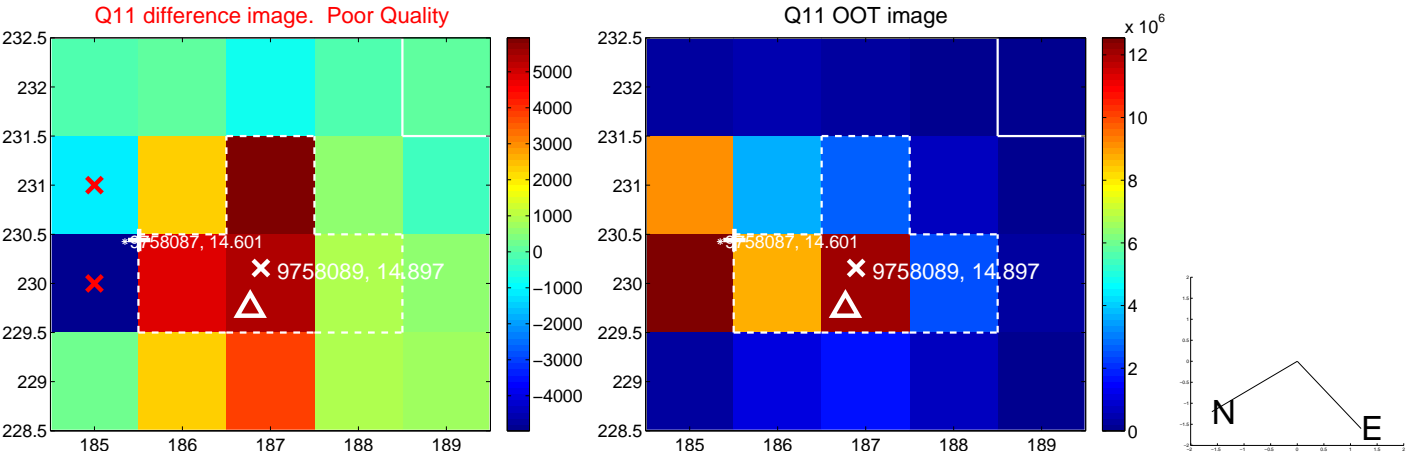
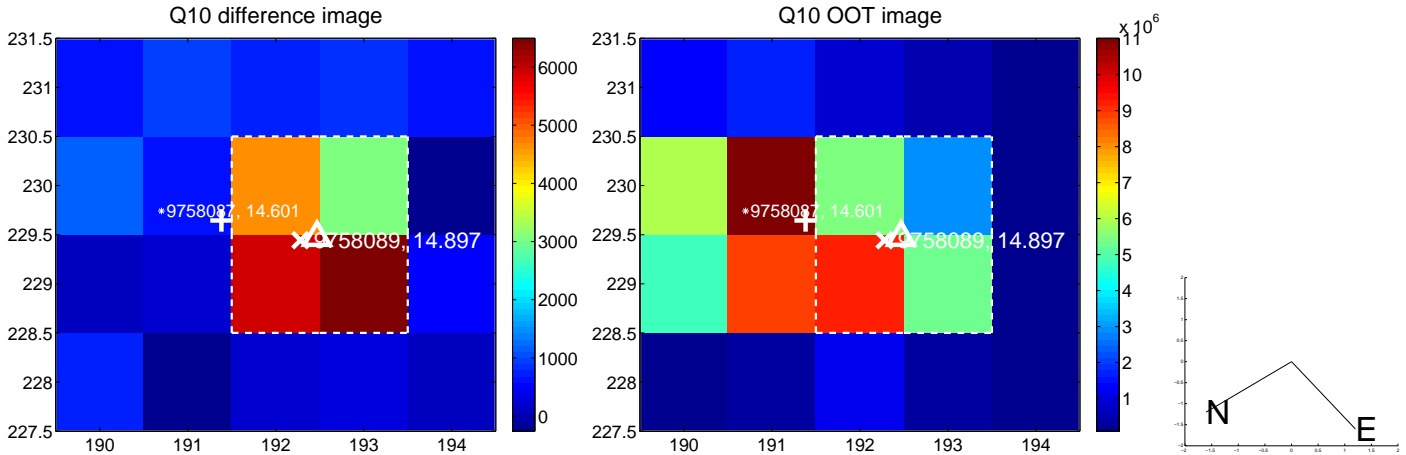
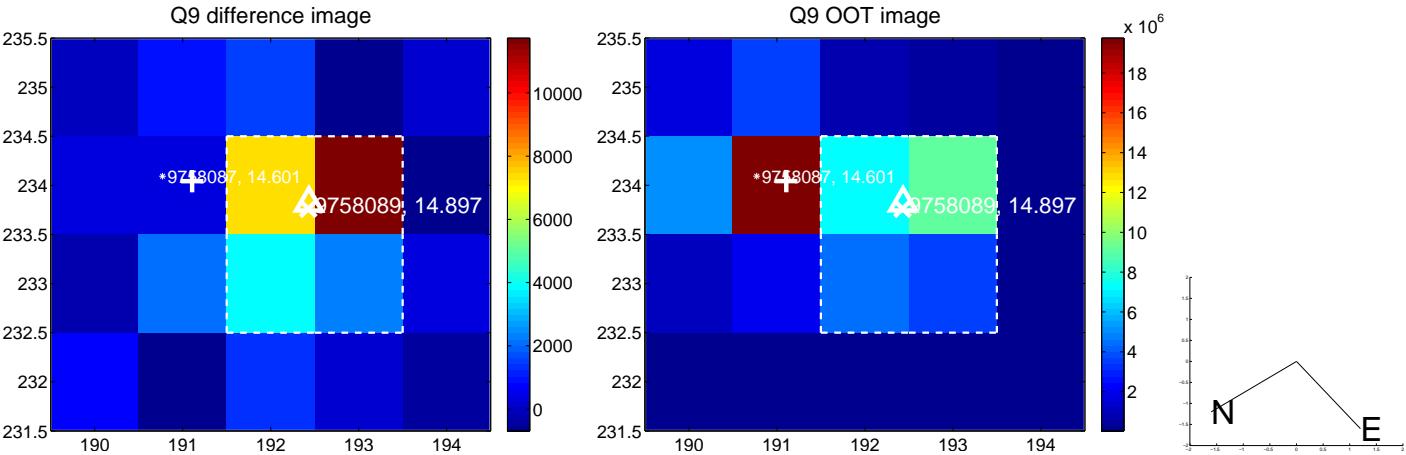
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



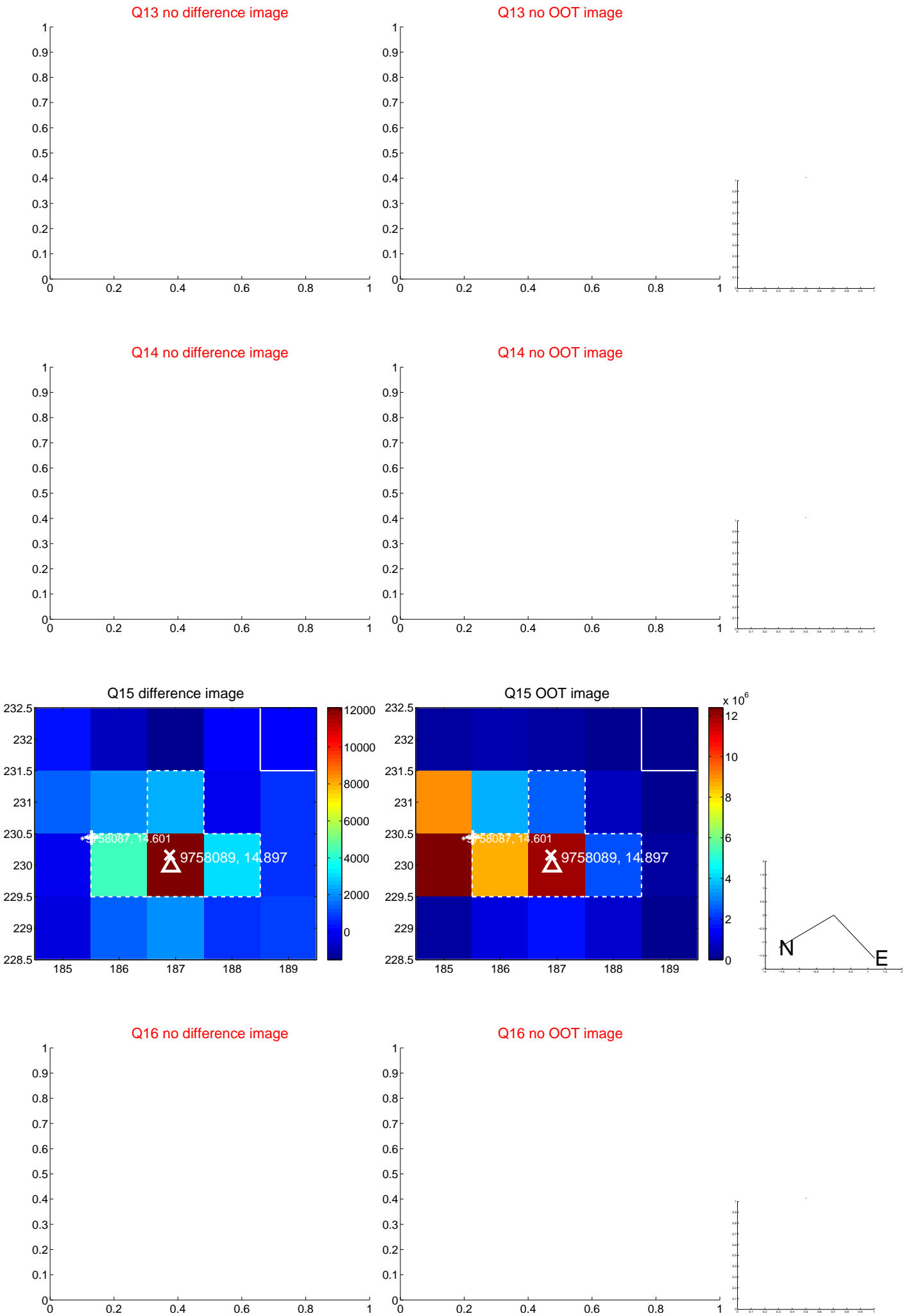
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



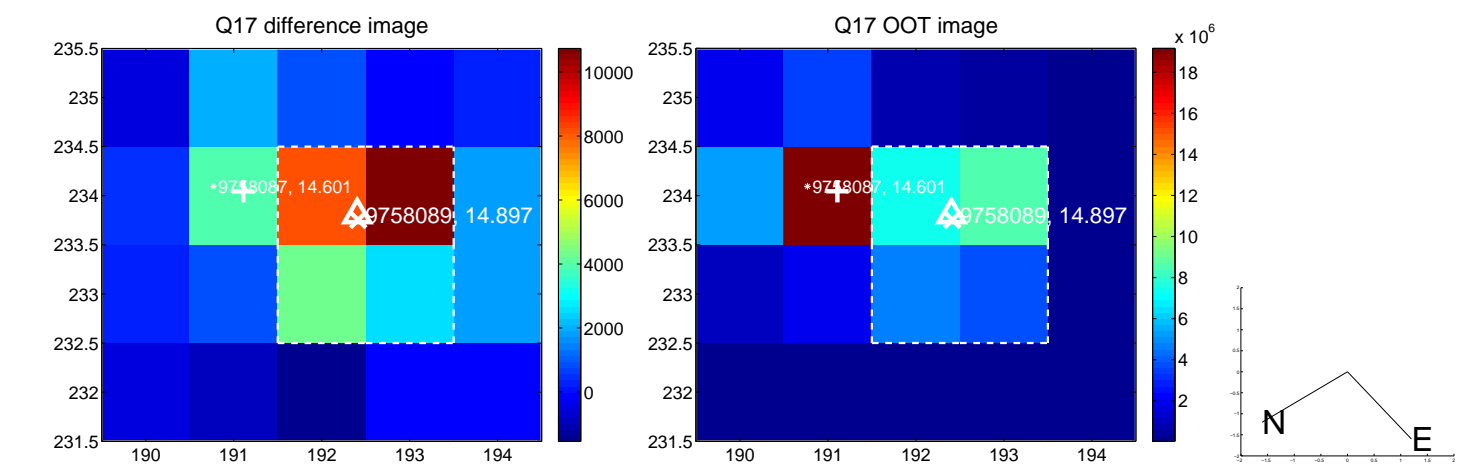
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



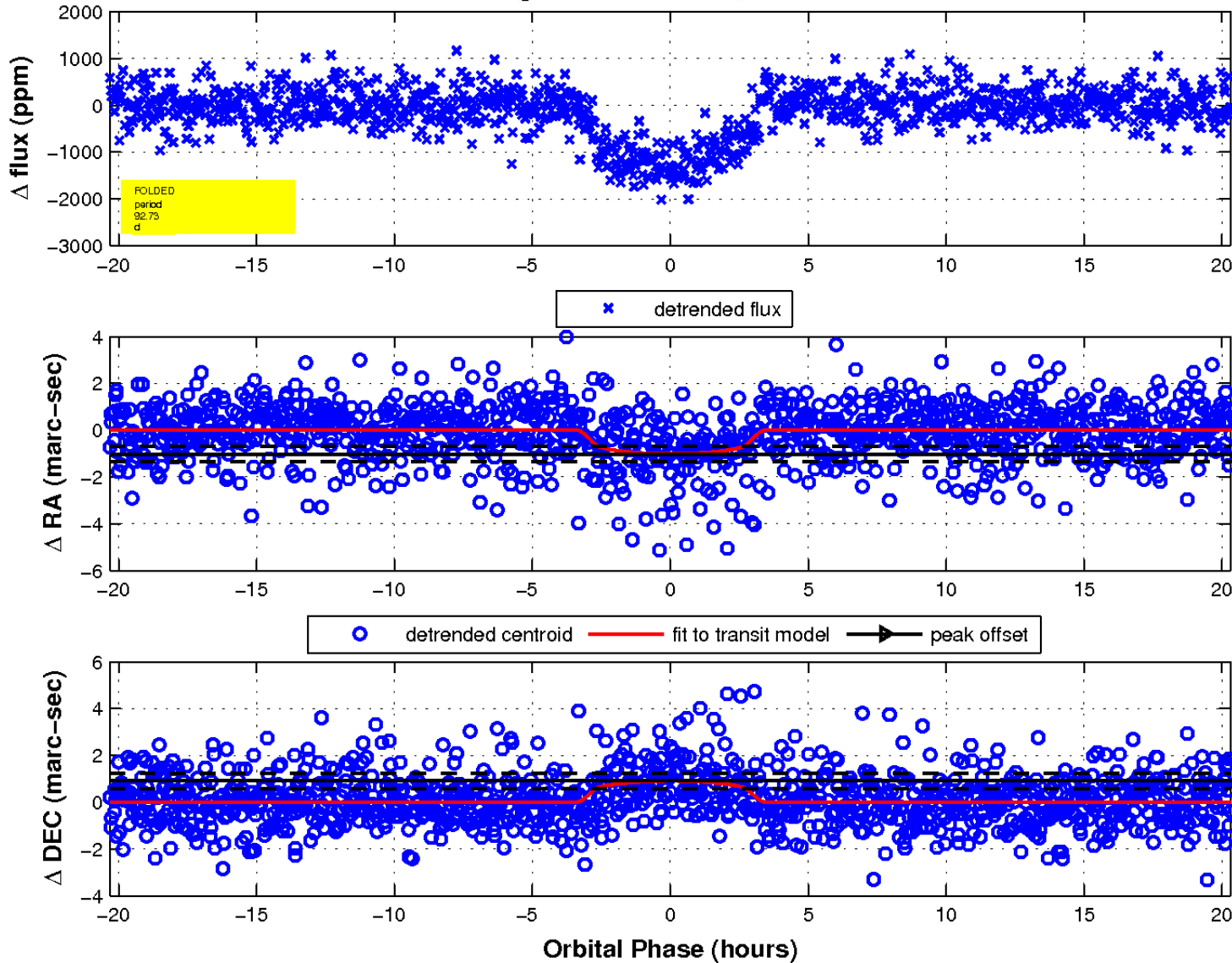
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

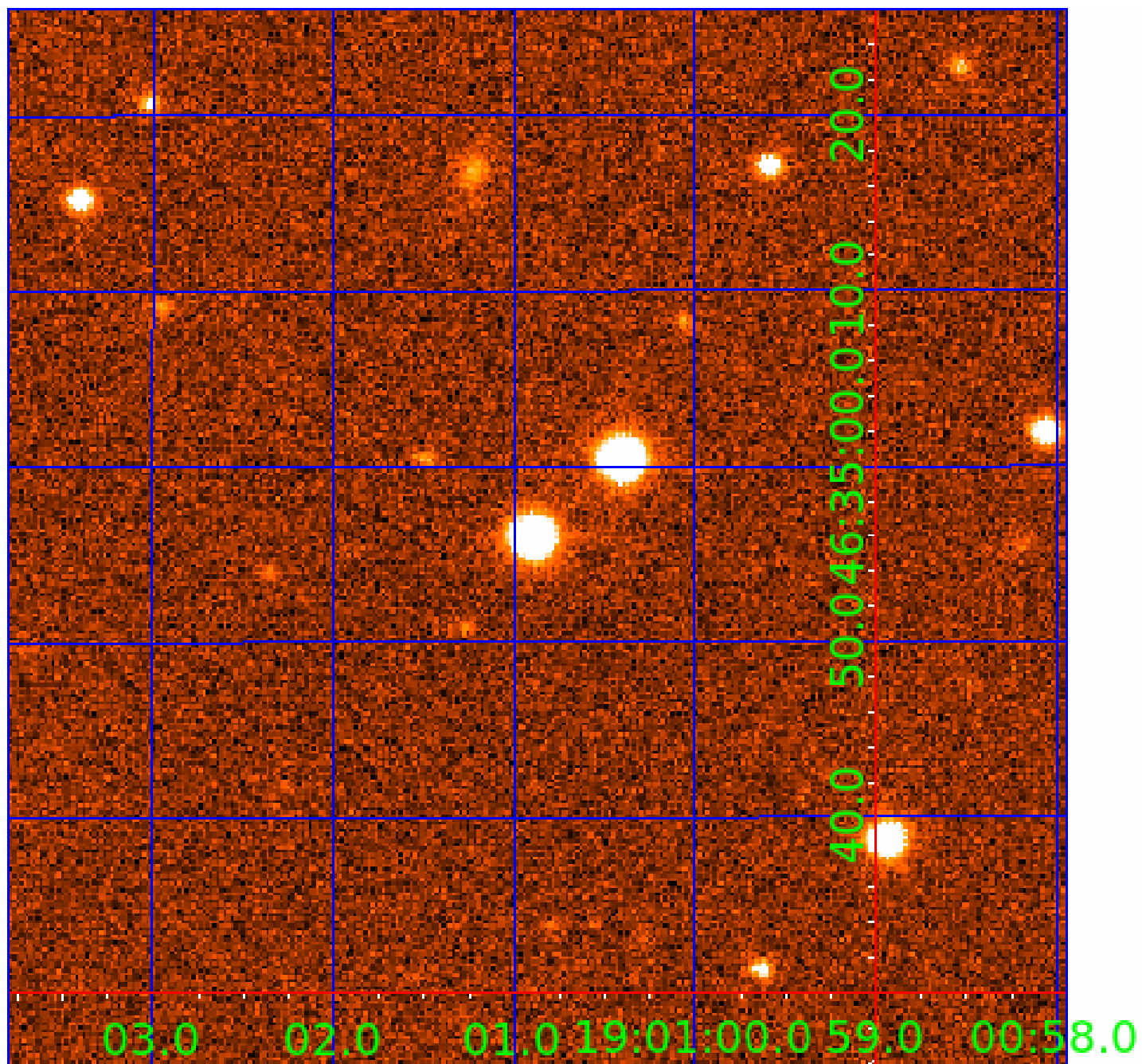


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009758089

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})
009758089-01	OBS	1871.01	92.729487	177.441135	1305.1	6.781	31.7	32.0	0.68	4580	2.81	1.38
009758089-02	OBS	1871.02	32.376052	150.417859	754.0	4.475	26.3	27.7	0.68	4580	2.29	5.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009758089-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
009758089-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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.

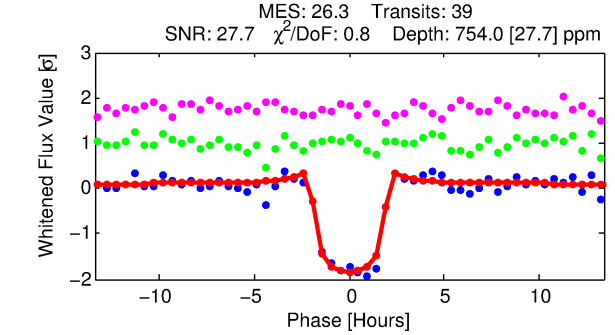
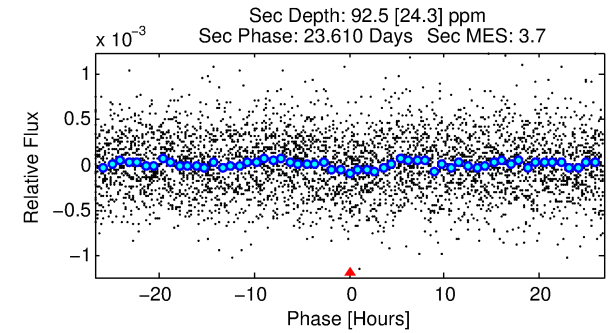
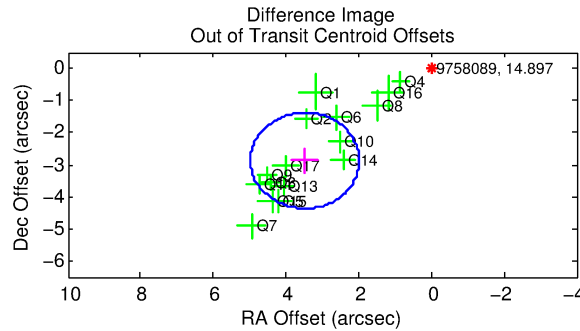
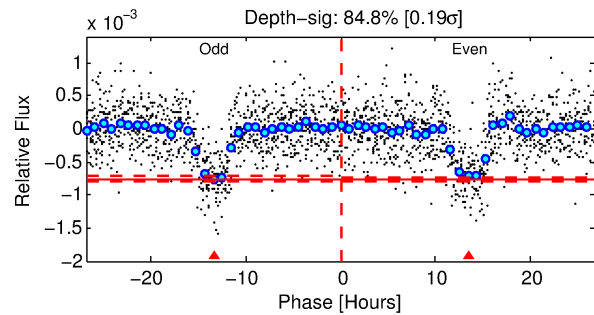
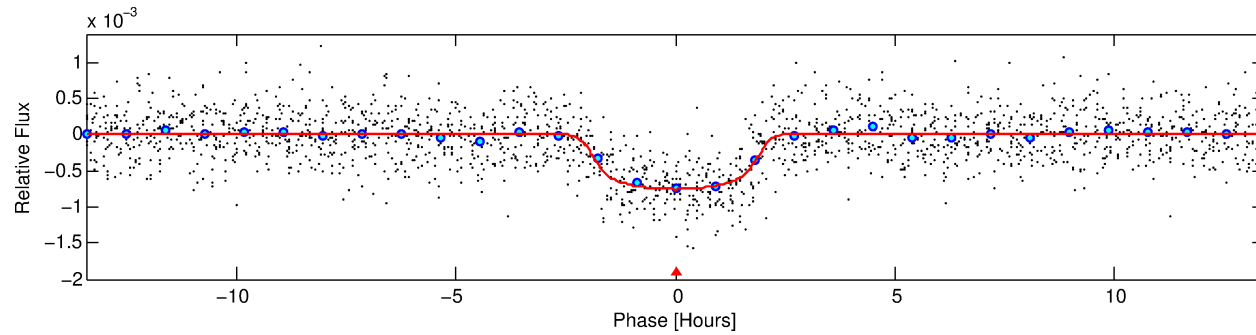
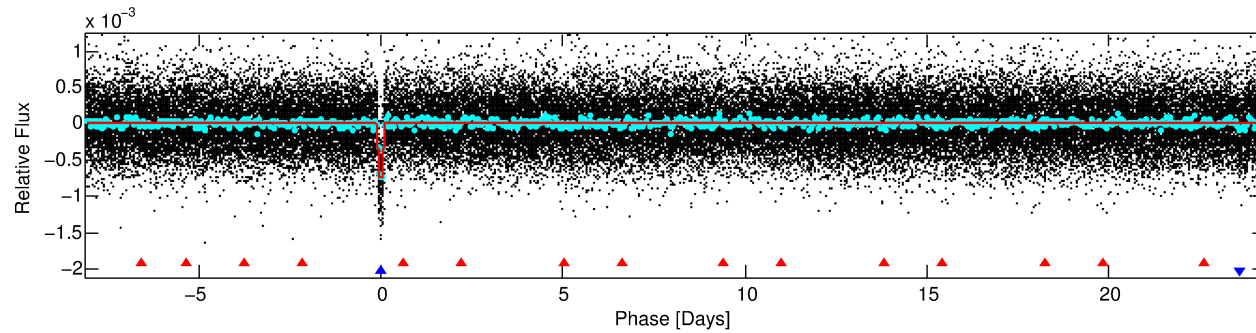
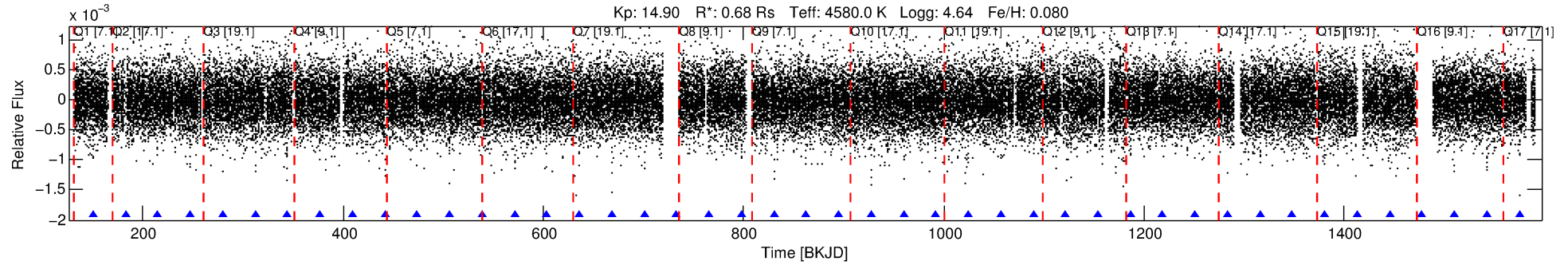
Ephemeris Match Information For 009758089-02

No Significant Match Found

DV One-Page Summary

KIC: 9758089 Candidate: 2 of 2 Period: 32.376 d

KOI: K01871.02 Corr: 0.951



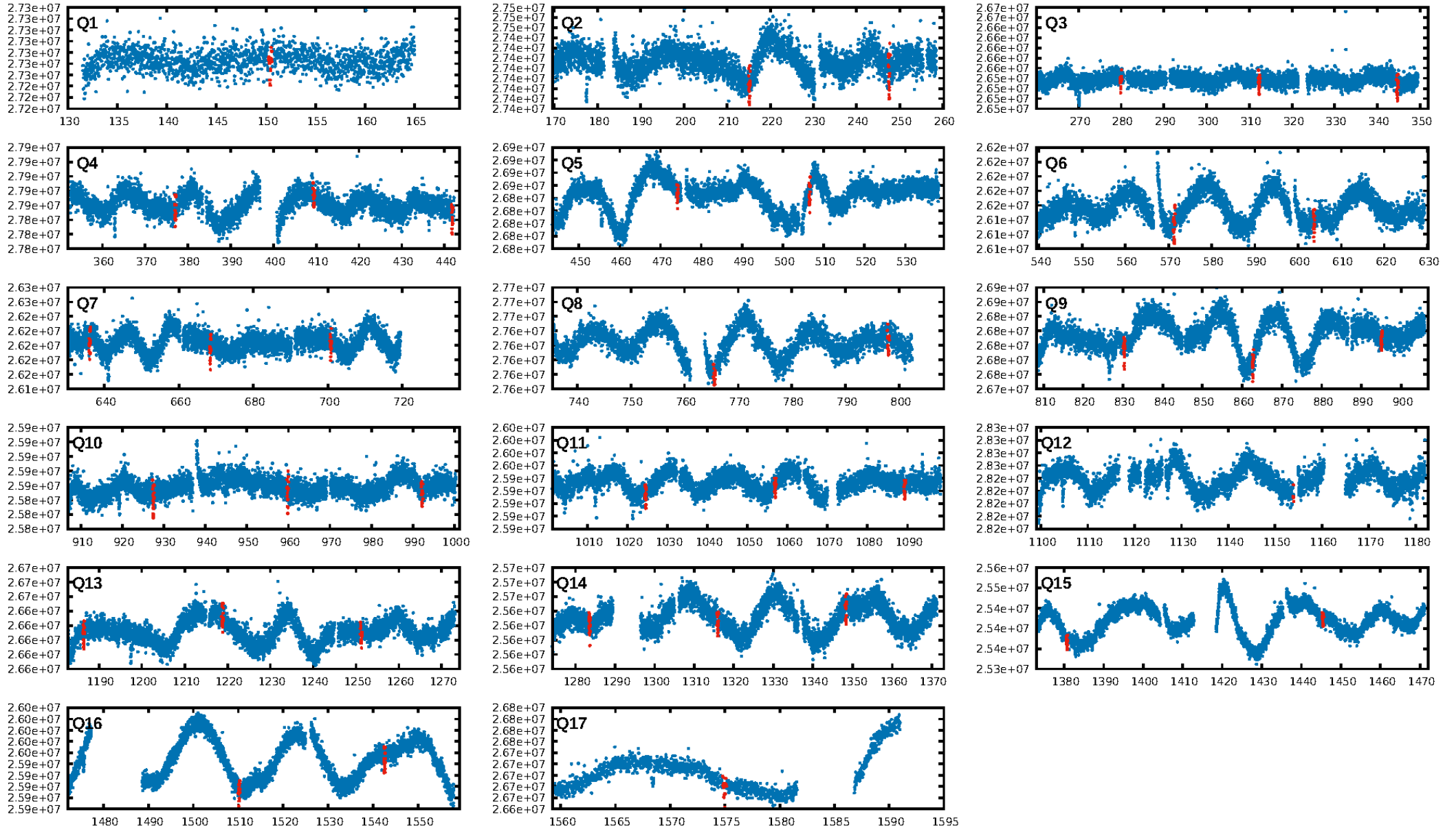
DV Fit Results:

Period = 32.37605 [0.00012] d
Epoch = 150.4179 [0.0031] BKJD
Rp/R* = 0.0311 [0.0020]
a/R* = 27.59 [5.80]
b = 0.90 [0.04]
Seff = 5.62 [0.65]
Teff = 393 [11] K
Rp = 2.29 [0.21] Re
a = 0.1788 [0.0102] AU
Ag = 309.27 [93.82] [3.29 σ]
Teffp = 2545 [193] K [11.16 σ]

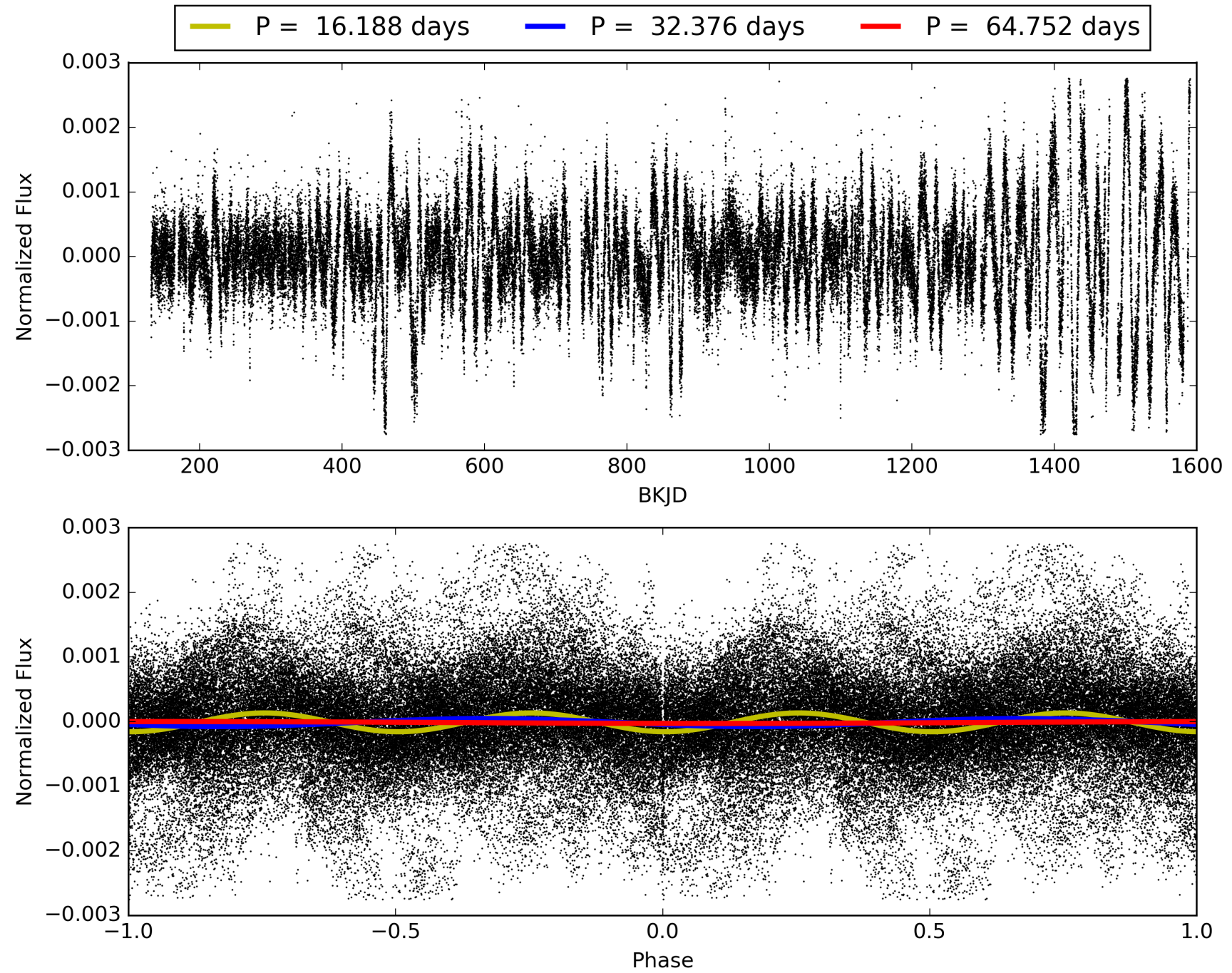
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [178.27 σ]
ModelChiSquare2-sig: 92.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.18e-140
RollingBand-fgt: 1.00 [37/37]
GhostDiagnostic-chr: 3.305
Centroid-sig: 0.0%
Centroid-so: 1.014 arcsec [3.97 σ]
OotOffset-rm: 4.518 arcsec [9.07 σ]
KicOffset-rm: 0.211 arcsec [1.33 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

TCE 009758089-02, PDC Light Curves

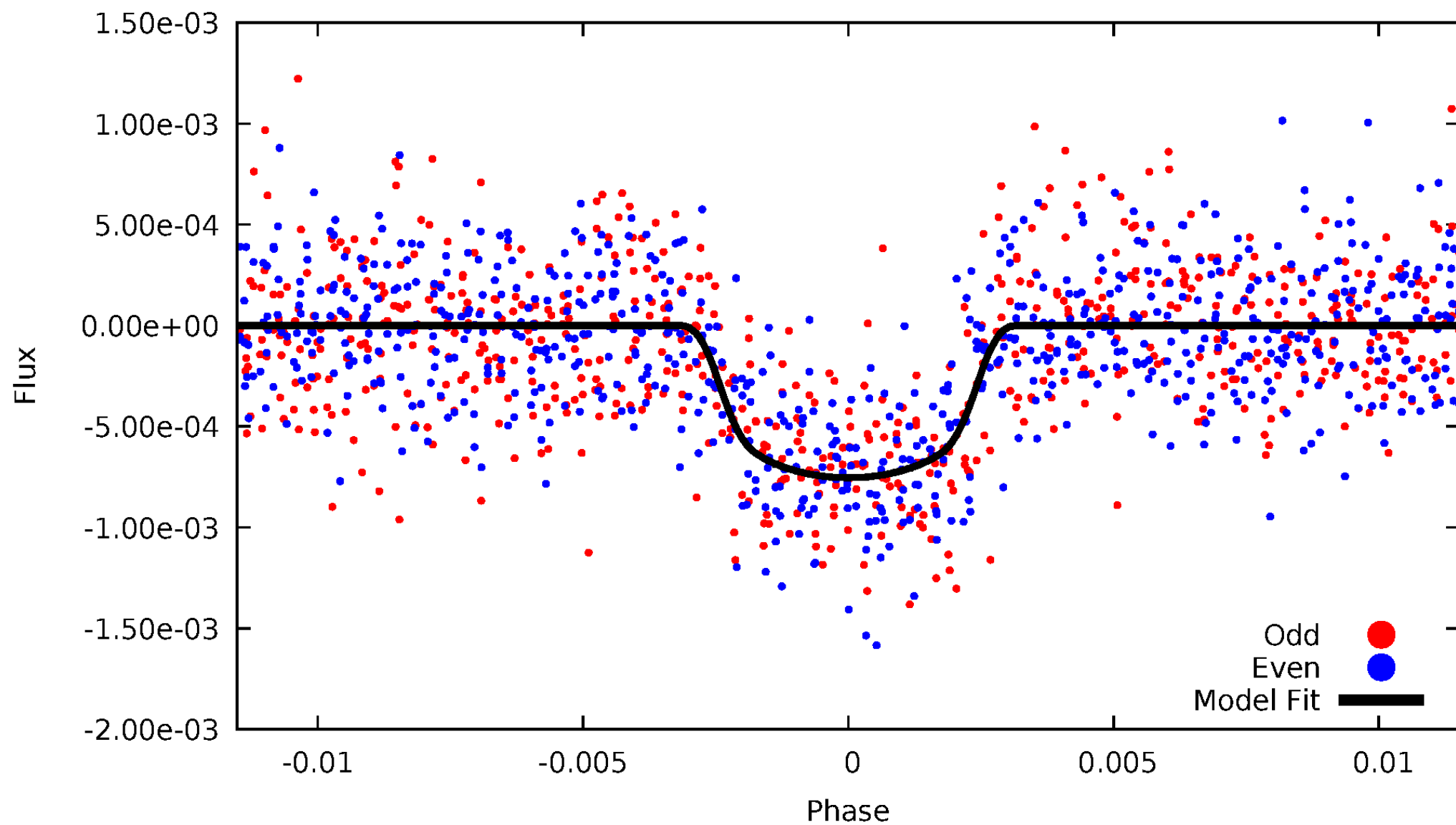


TCE 009758089-02



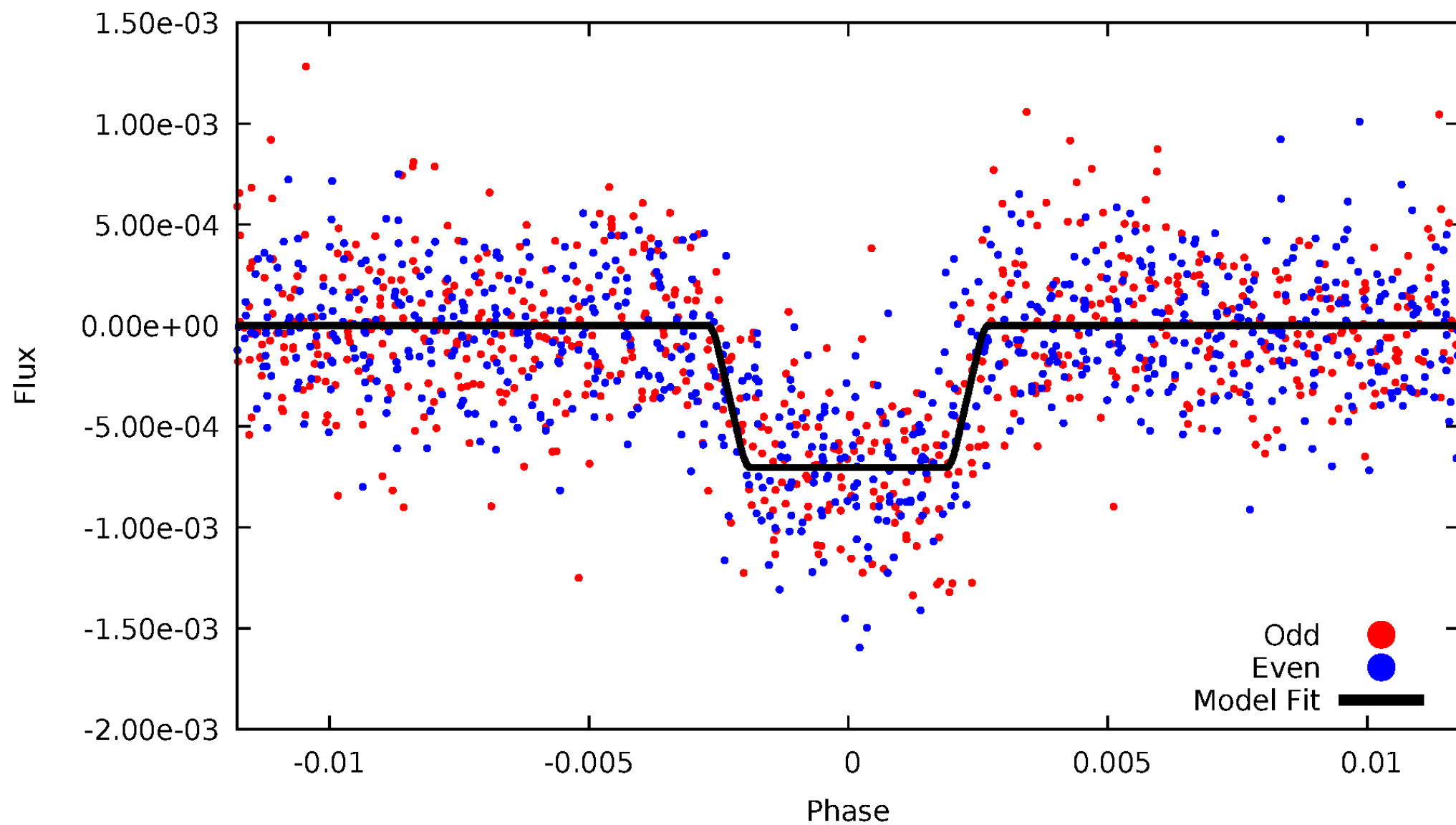
DV Odd/Even

TCE 009758089-02



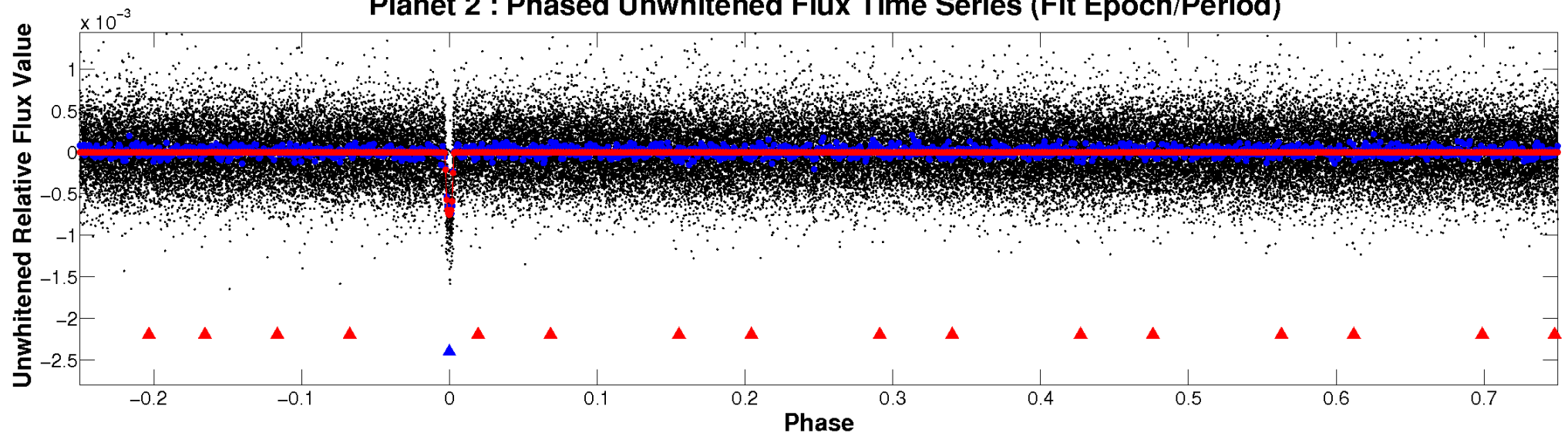
ALT Odd/Even

TCE 009758089-02

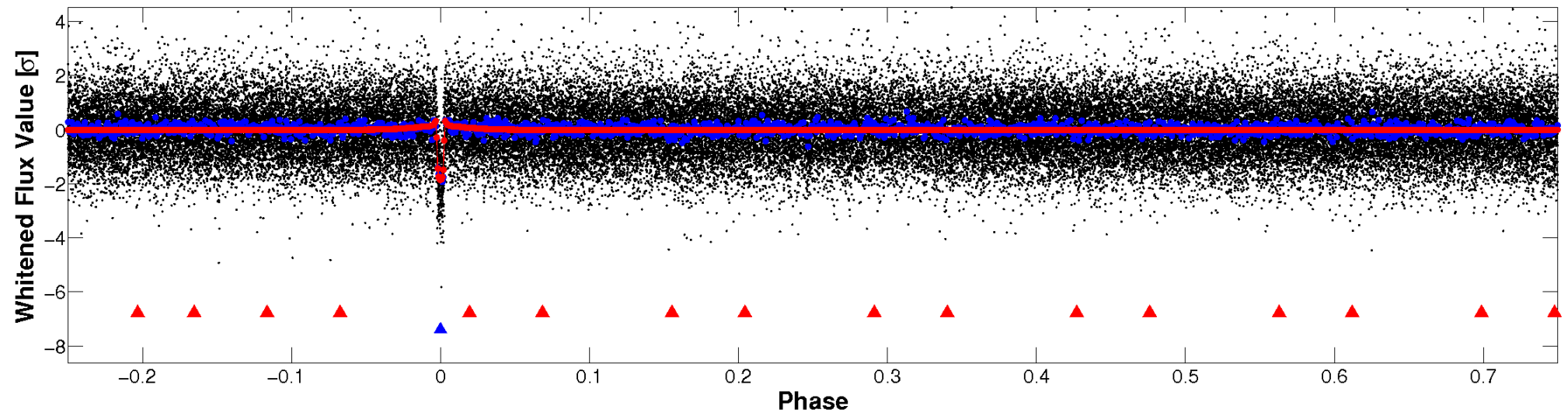


Non-Whitened Vs. Whitened Light Curve

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

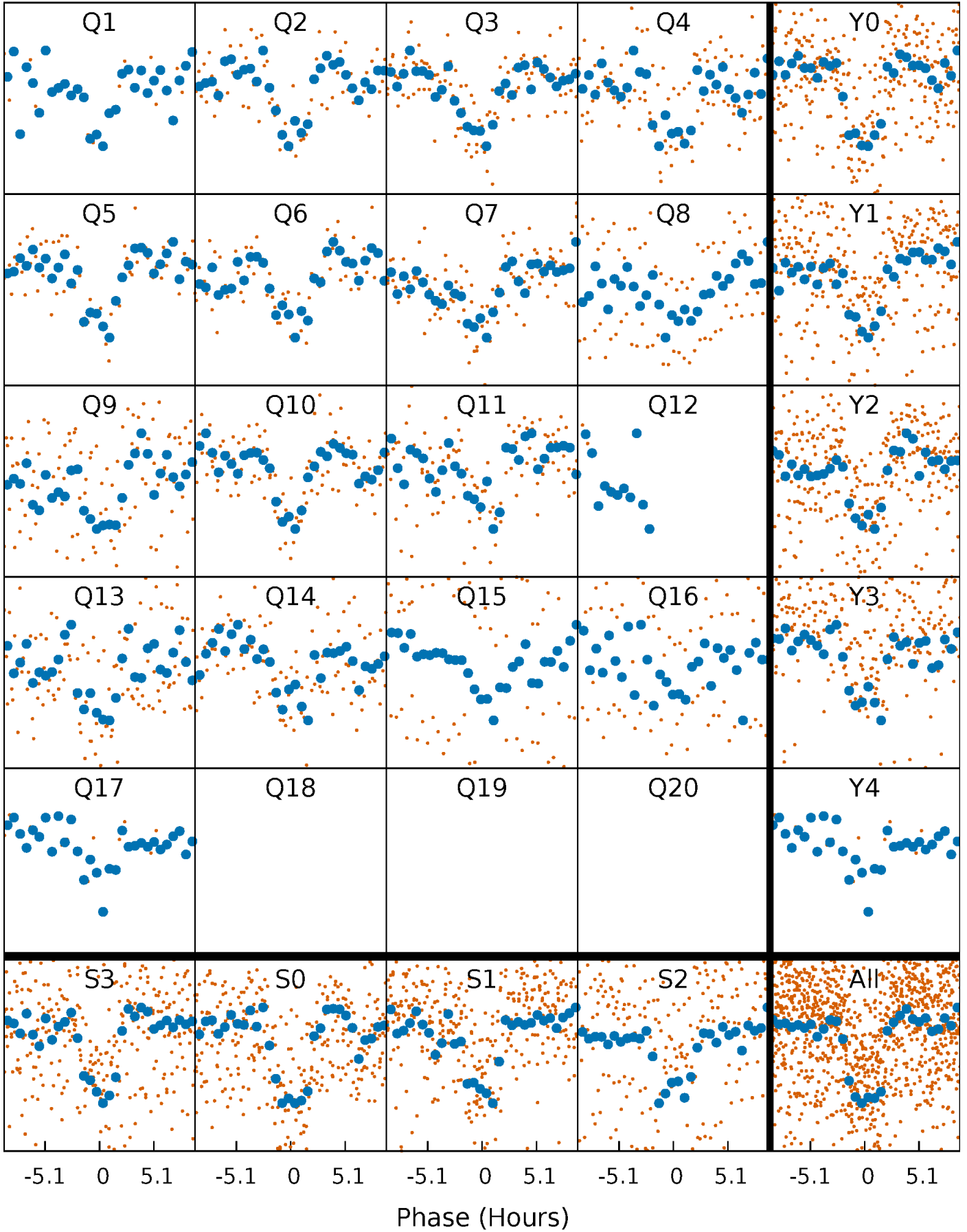


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



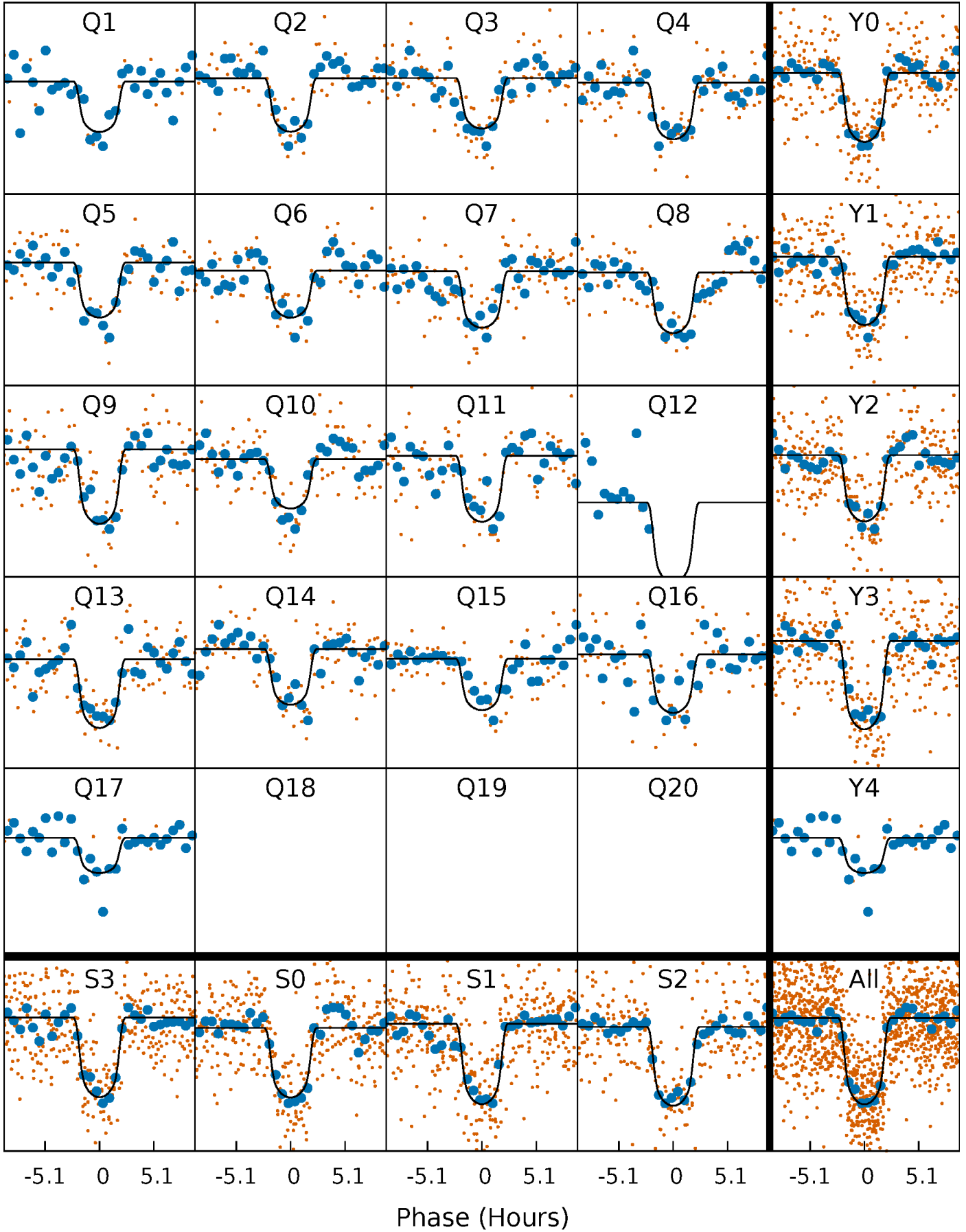
PDC Quarter-Phased Transit Curves

TCE 009758089-02 P= 32.376052 Days $T_0=150.417859$ (BKJD)



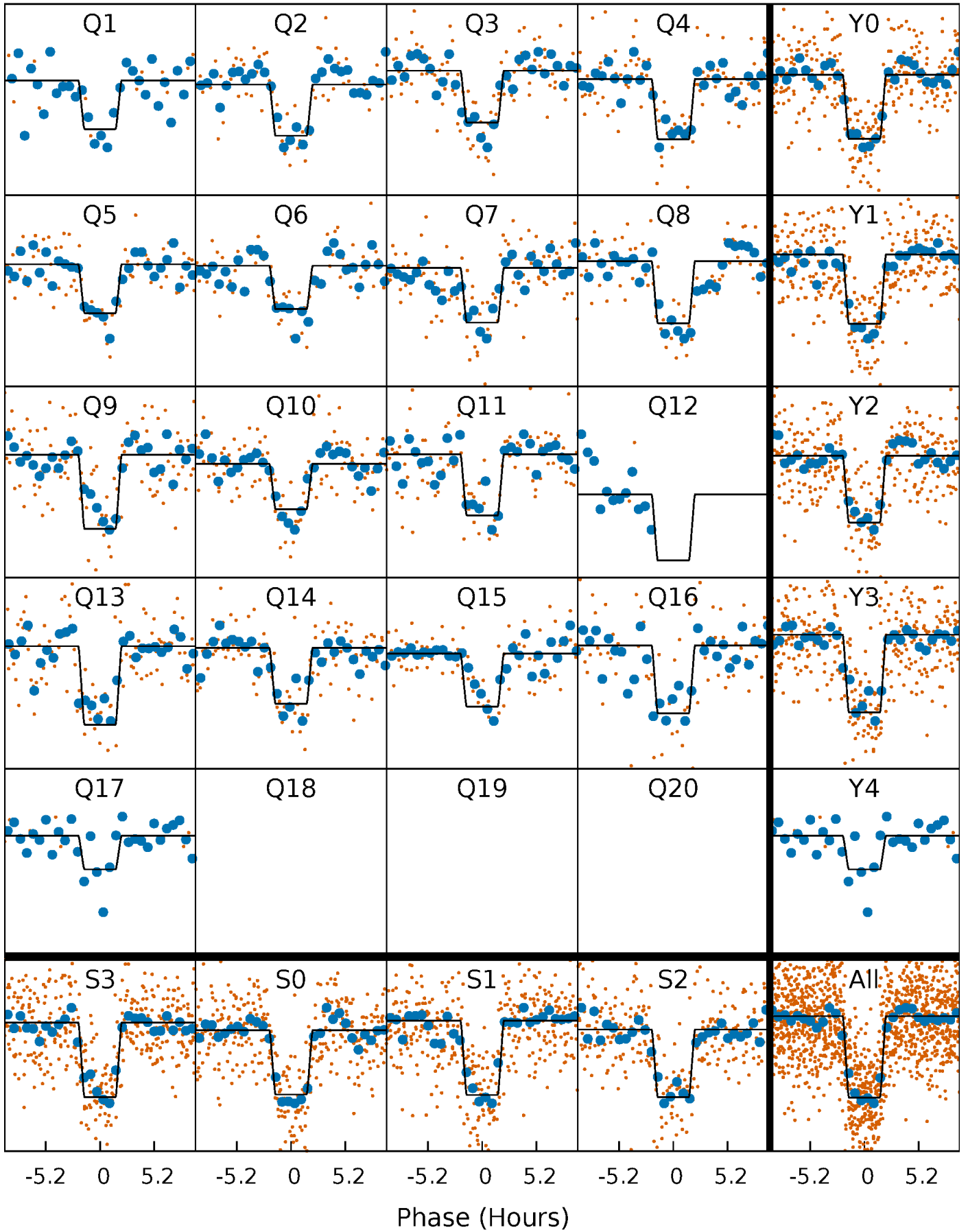
DV Quarter-Phased Transit Curves

TCE 009758089-02 P= 32.376052 Days $T_0=150.417859$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

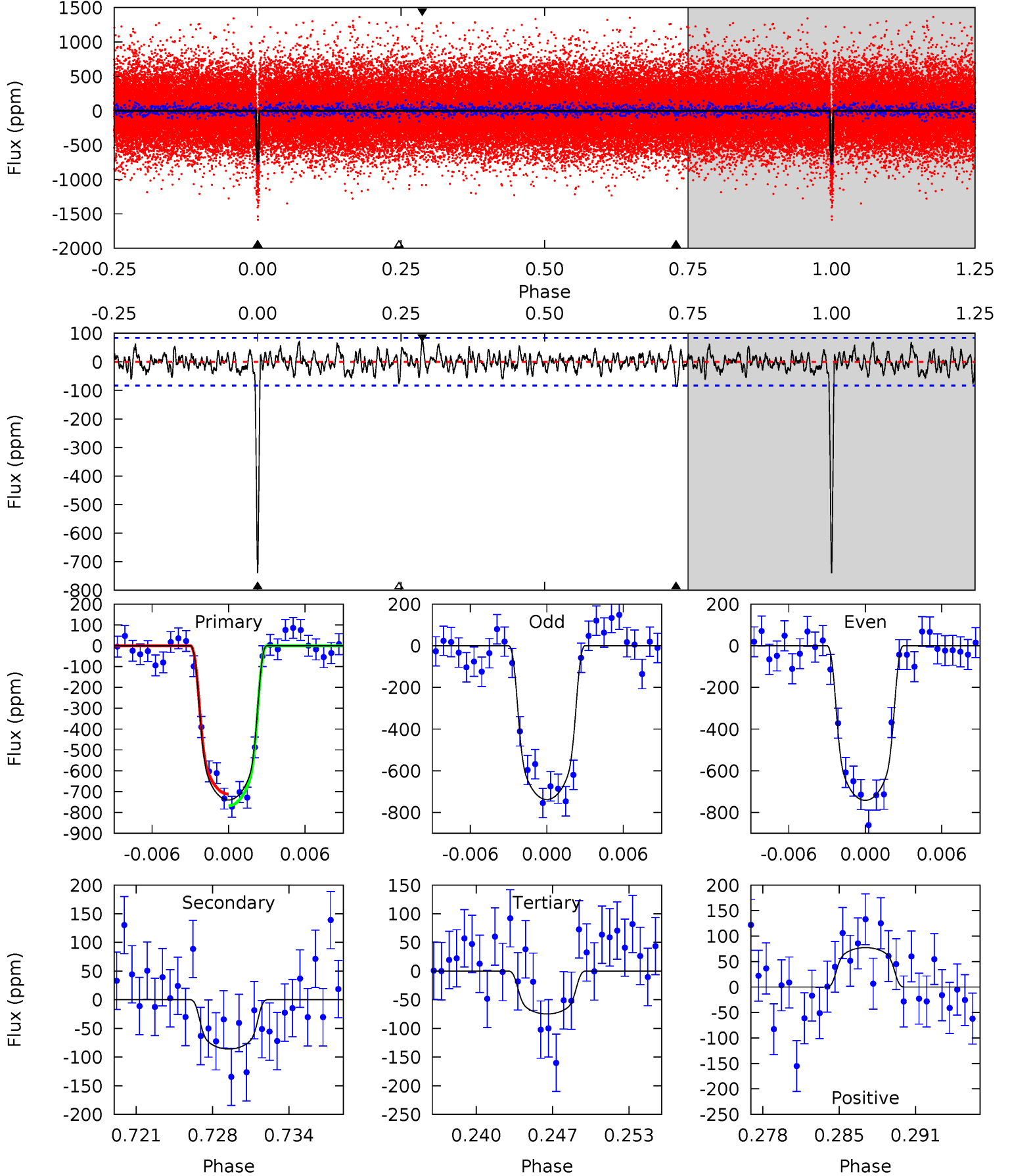
TCE 009758089-02 P= 32.376442 Days $T_0=150.410751$ (BKJD)



DV Model-Shift Uniqueness Test

009758089-02, $P = 32.376052$ Days, $E = 118.041807$ Days

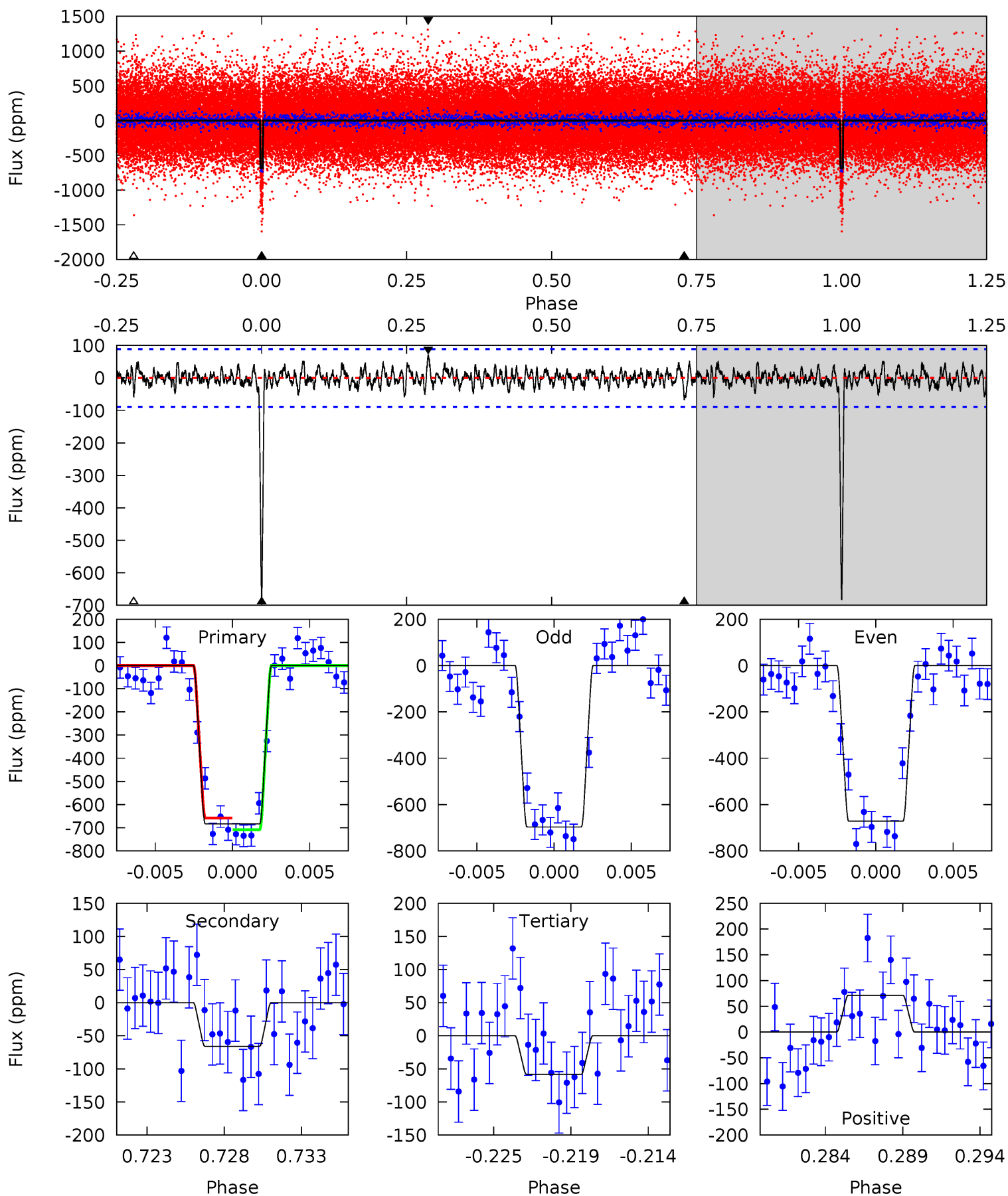
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.2	5.26	4.57	4.73	5.11	2.73	1.43	40.7	40.5	0.69	0.53	0.13	1.02	0.09	1.71



Alt Model-Shift Uniqueness Test

009758089-02, $P = 32.376442$ Days, $E = 118.034309$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.5	3.82	3.38	4.13	5.14	2.79	1.10	36.2	35.4	0.44	-0.31	0.73	1.05	0.09	1.44



Stellar Parameters For KIC 009758089

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4580^{+92}_{-92}	$4.641^{+0.012}_{-0.045}$	$0.080^{+0.150}_{-0.150}$	$0.675^{+0.046}_{-0.021}$	$0.748^{+0.027}_{-0.043}$	$3.423^{+0.202}_{-0.607}$
	+2%/-2%	+0%/-1%	+188%/-188%	+7%/-3%	+4%/-6%	+6%/-18%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 009758089-02 / KOI 1871.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-86 ± 16	$2.34^{+0.17}_{-0.17}$	553^{+13}_{-13}	3051^{+105}_{-107}	274^{+71}_{-57}
Alt.	-66 ± 17	$1.99^{+0.16}_{-0.16}$	554^{+13}_{-15}	3081^{+139}_{-146}	292^{+97}_{-80}

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 $A_{\text{obs}} \gg 1.0$

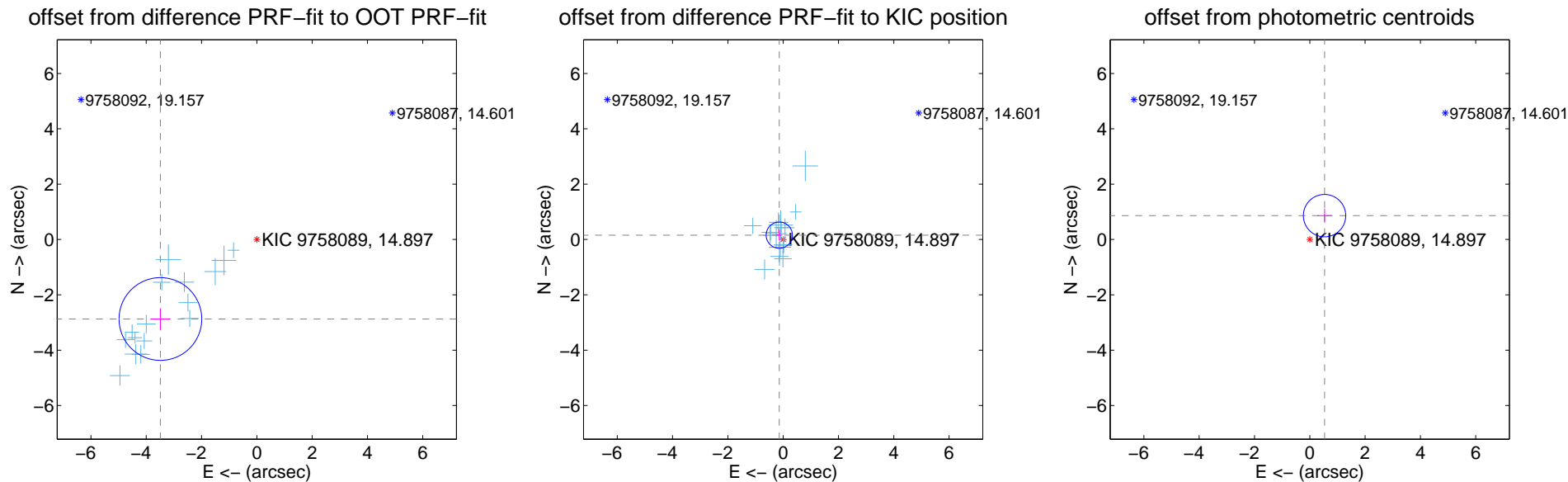
DV Centroid Data

Supplemental centroid analysis for 009758089-02. Kepler magnitude: 14.90. Transit SNR 27.74

There are 16 quarters with good PRF difference image offsets

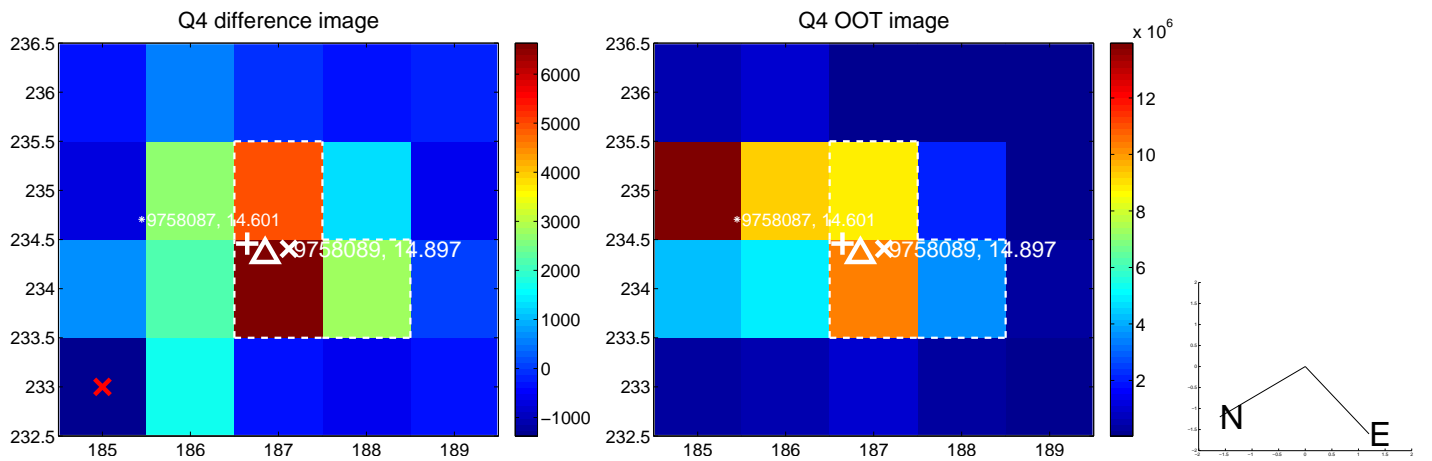
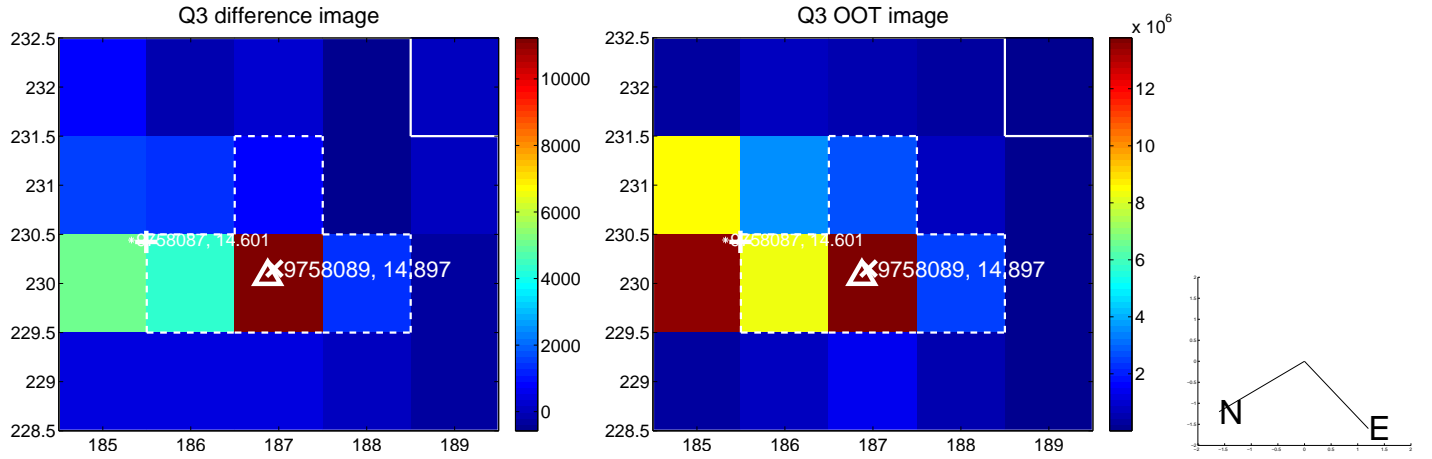
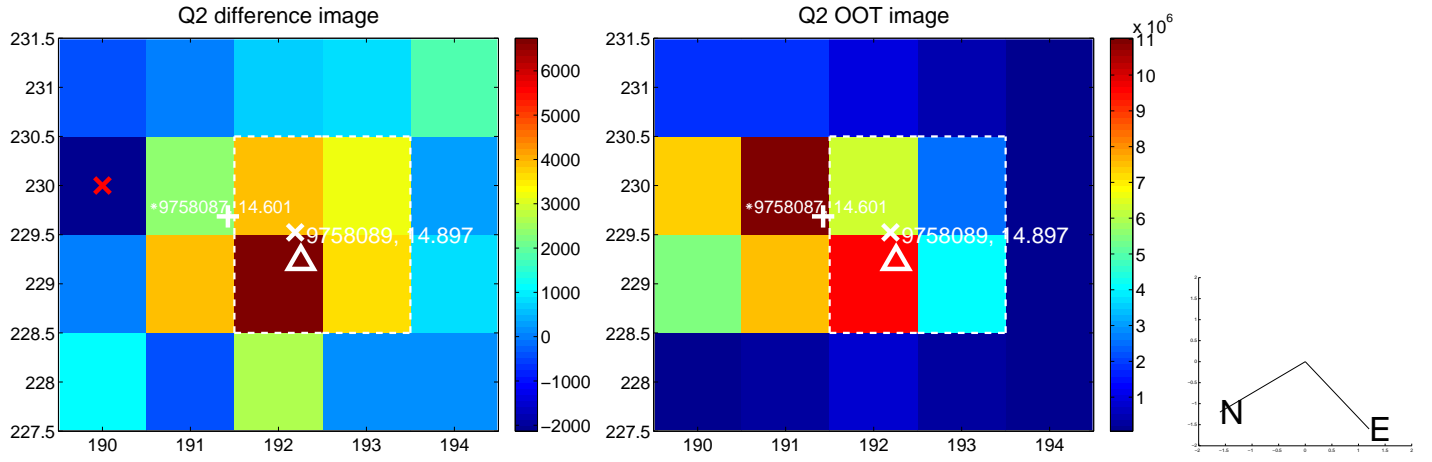
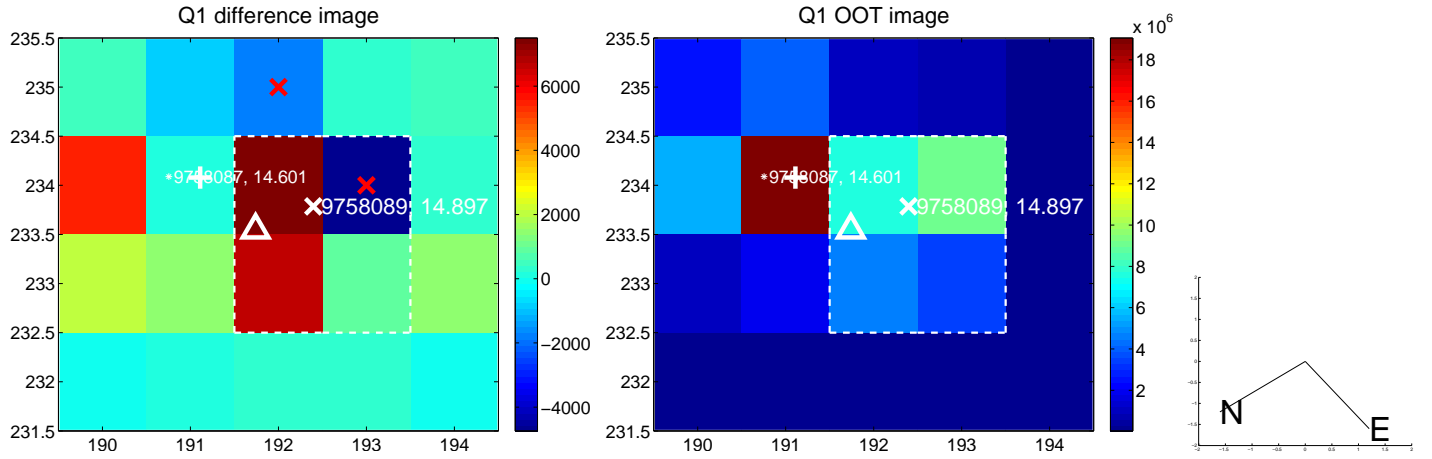
The OOT PRF centroid is offset from the target star catalog position by about 5.35 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.518 ± 0.498	9.07	3.487 ± 0.355	-2.873 ± 0.382
PRF-fit source offset from KIC position	0.211 ± 0.158	1.33	0.141 ± 0.110	0.157 ± 0.189
photometric centroid source offset	1.01 ± 0.26	3.97	-0.53 ± 0.26	0.86 ± 0.25

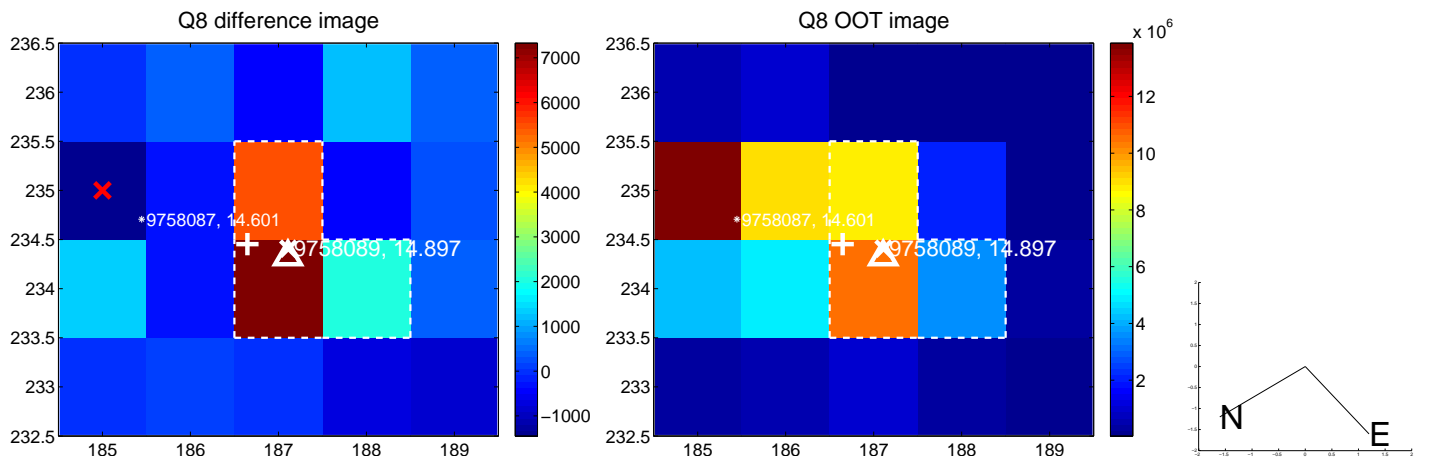
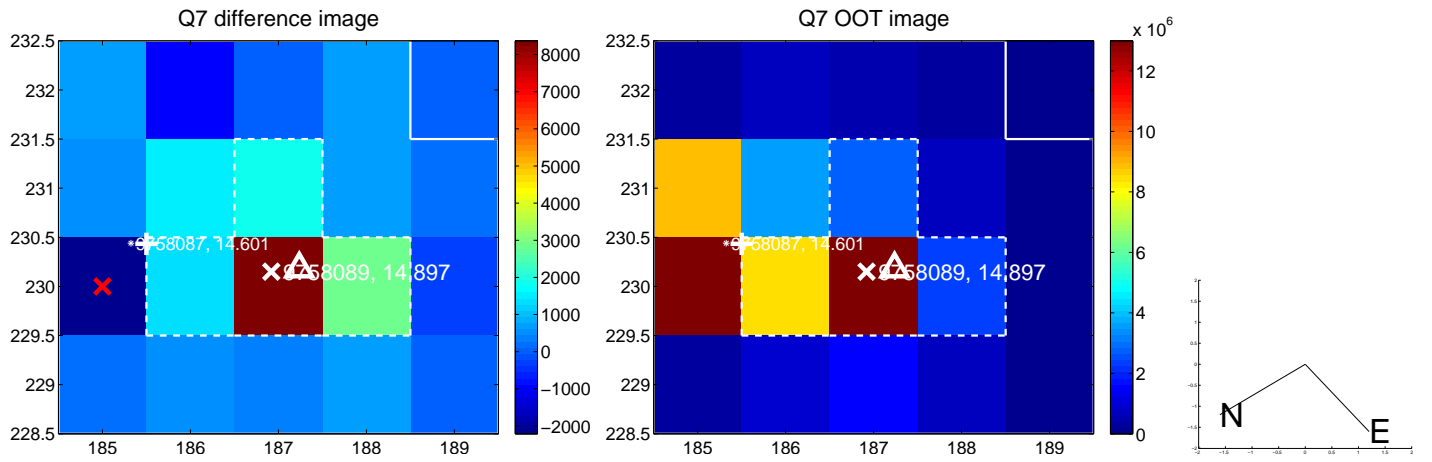
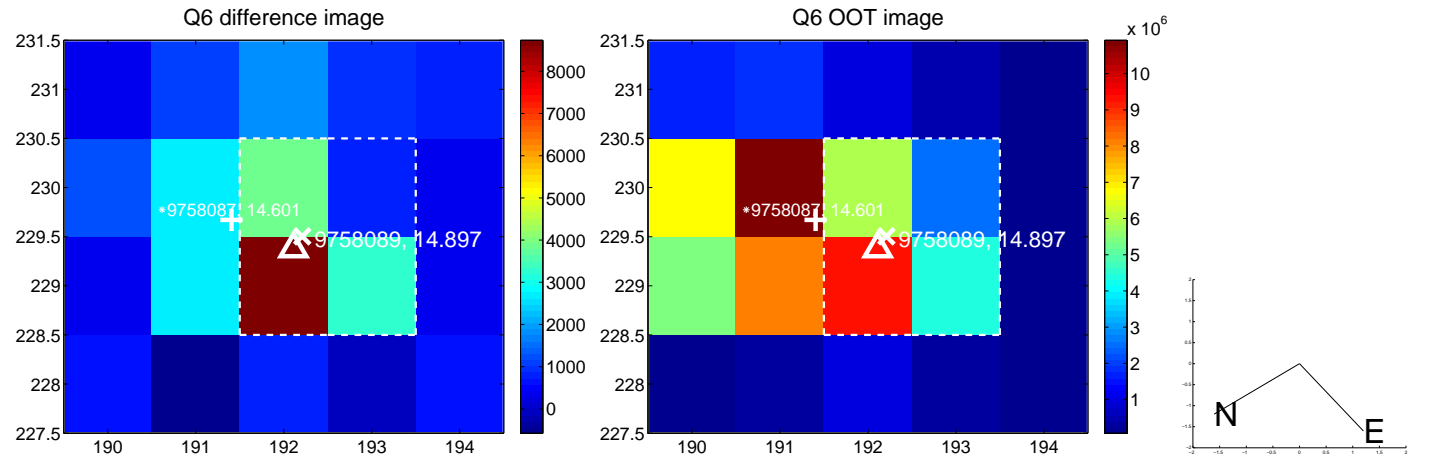
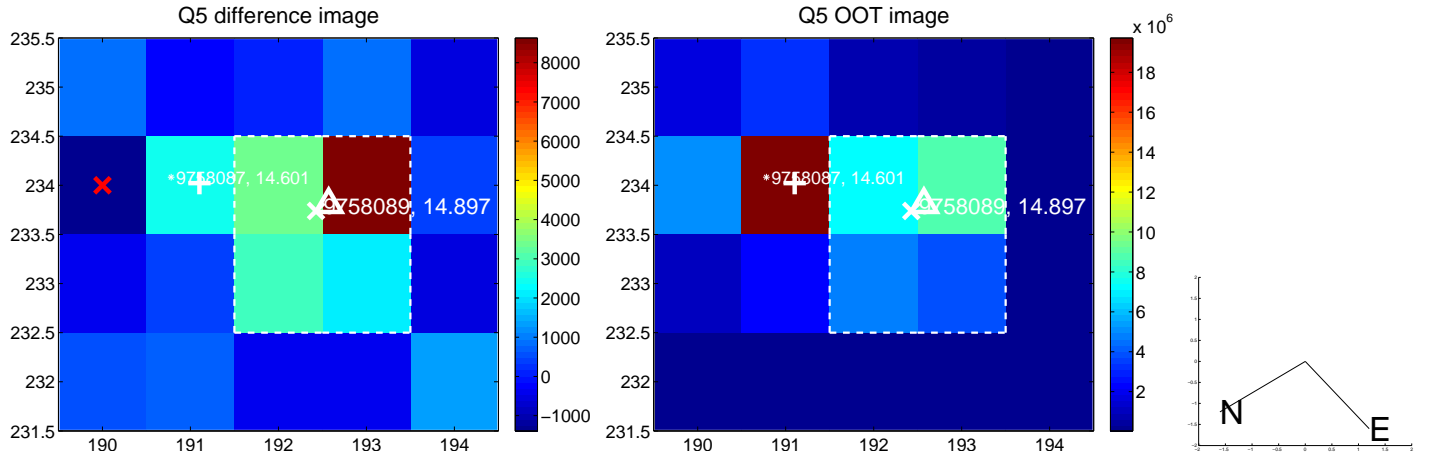


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

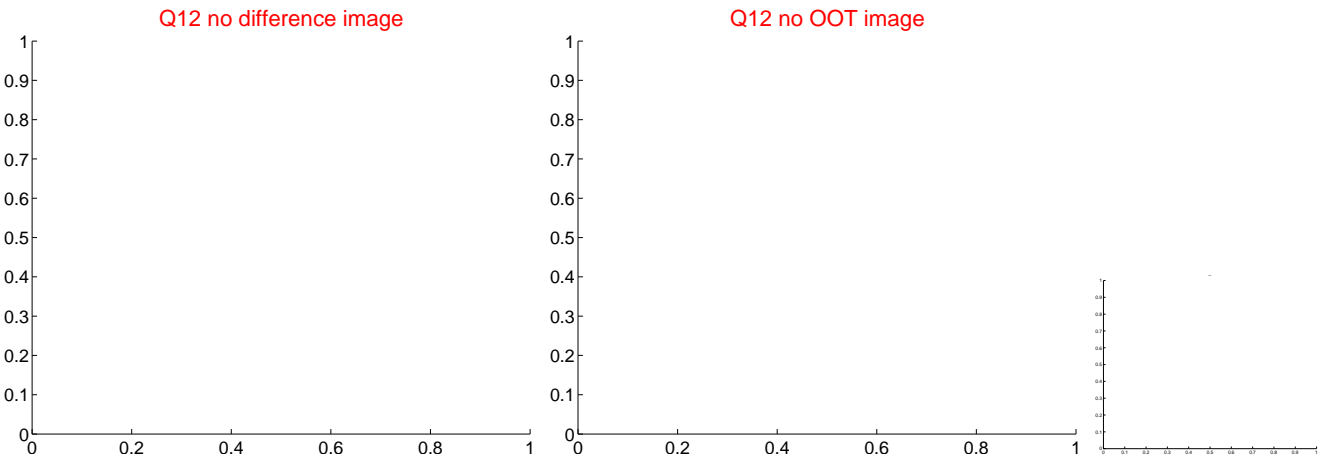
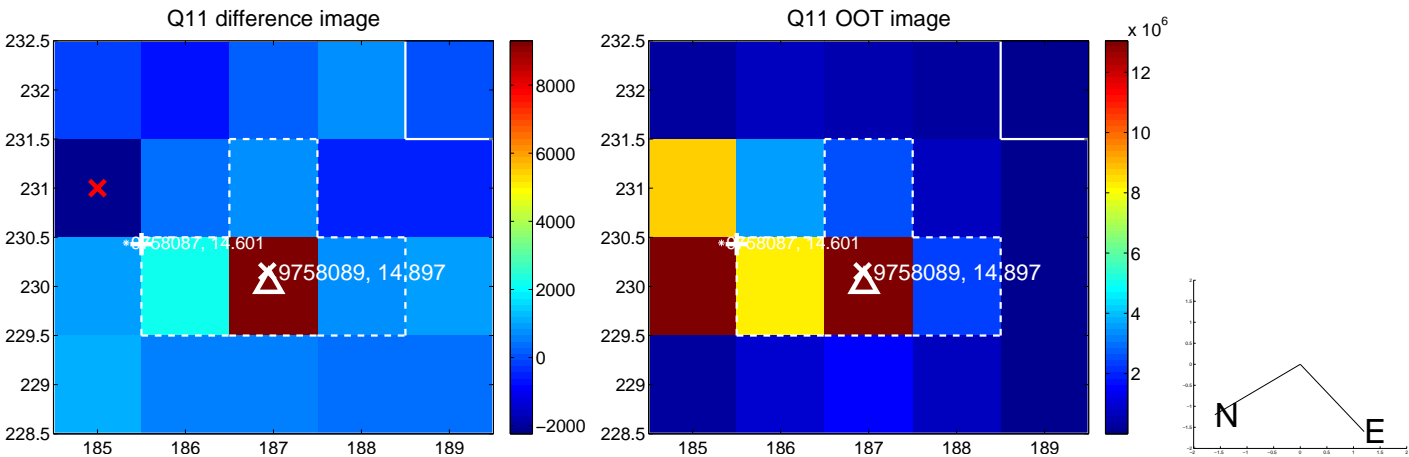
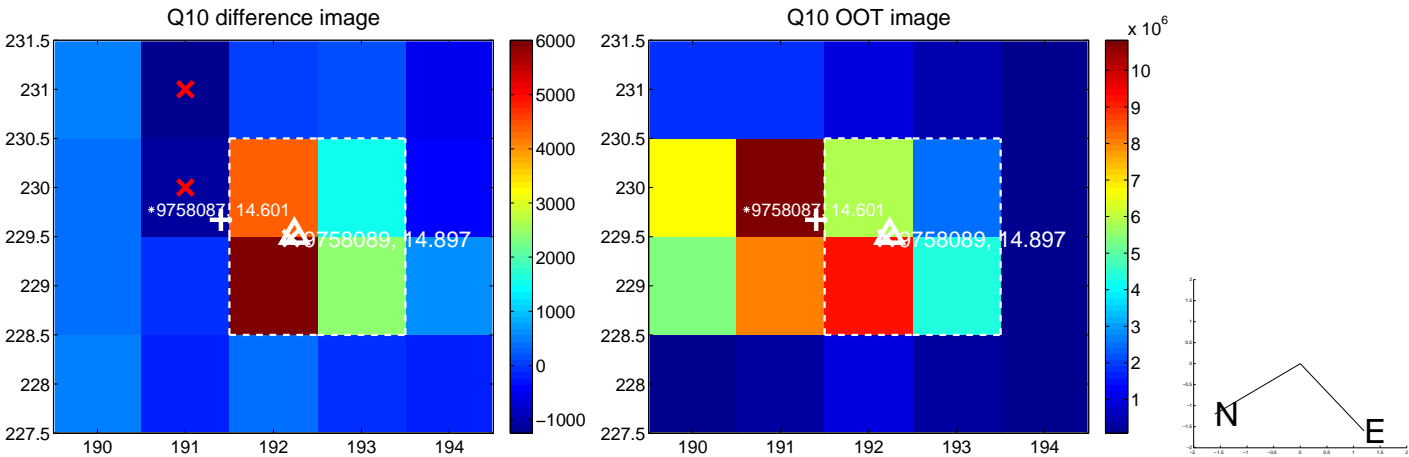
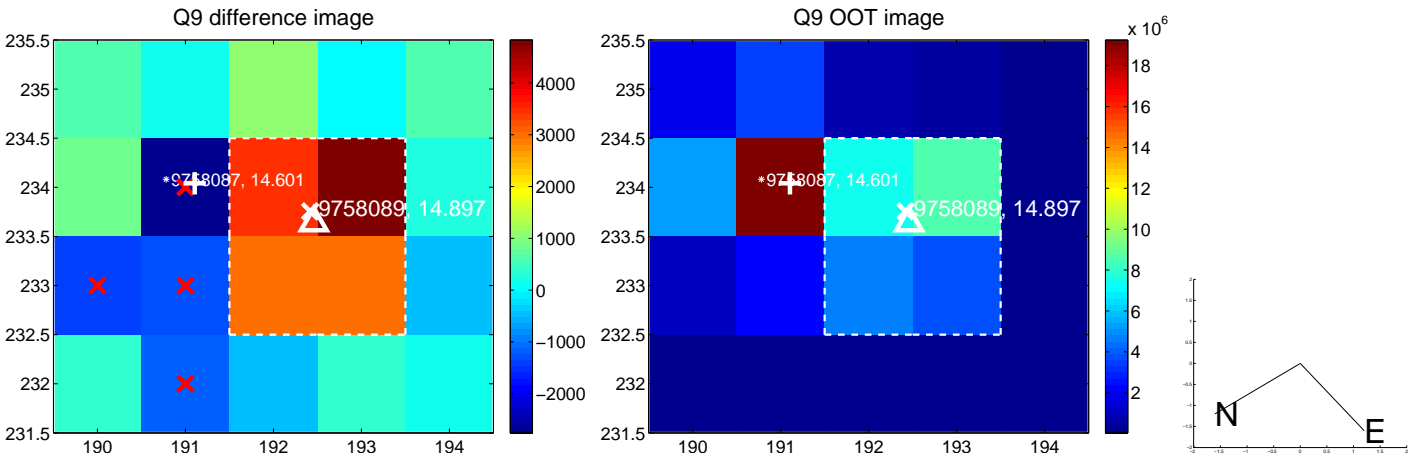
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



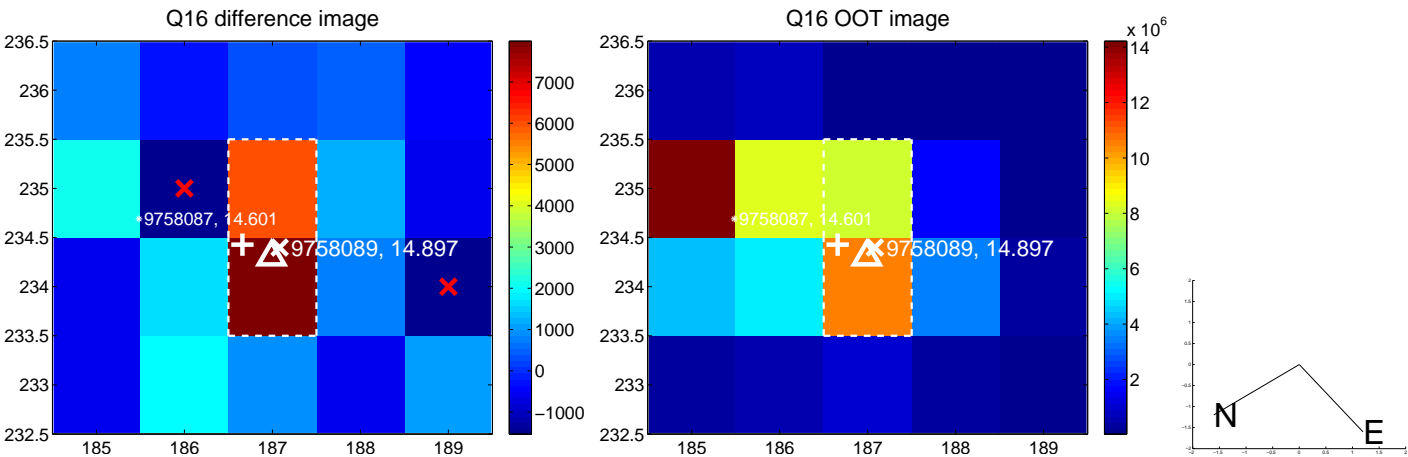
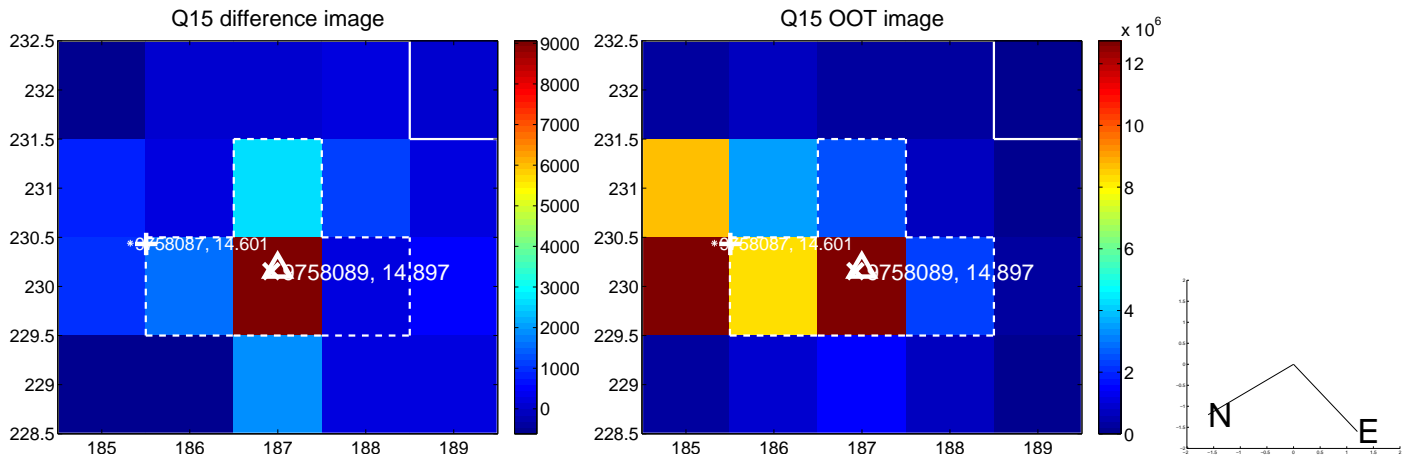
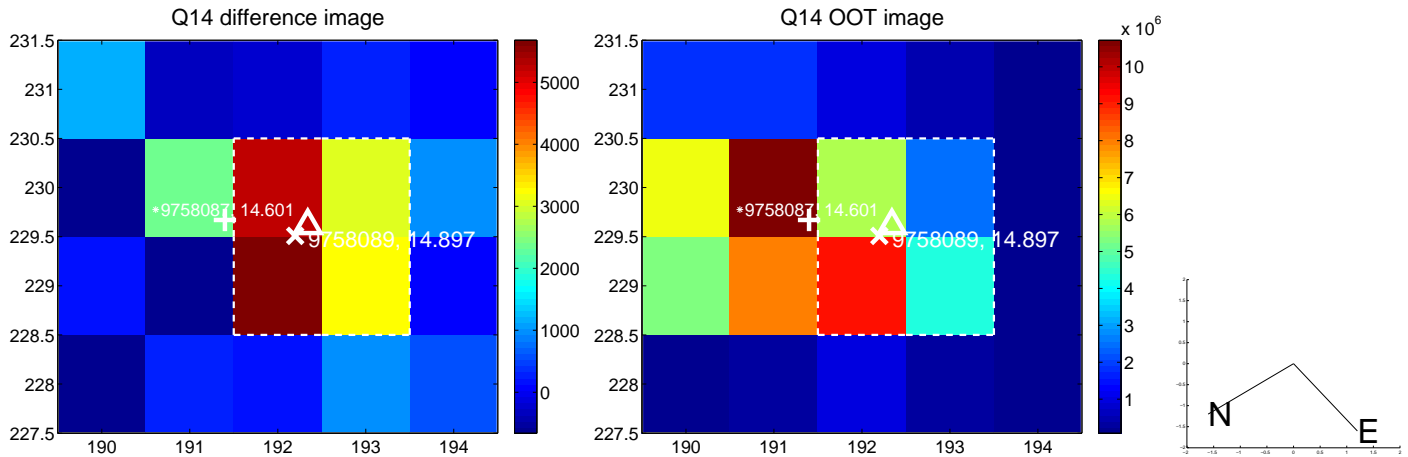
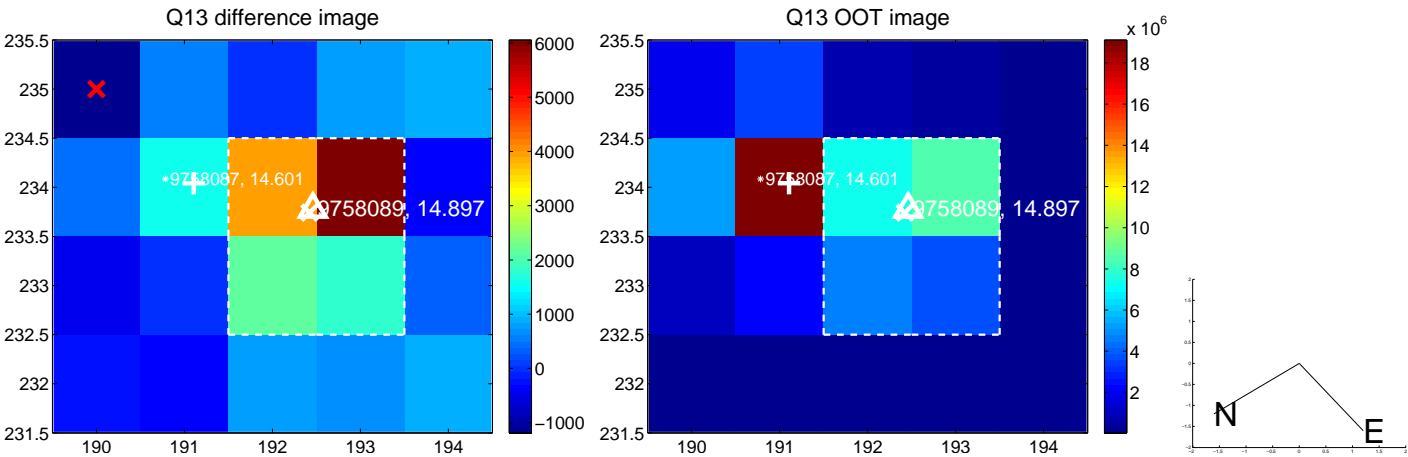
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



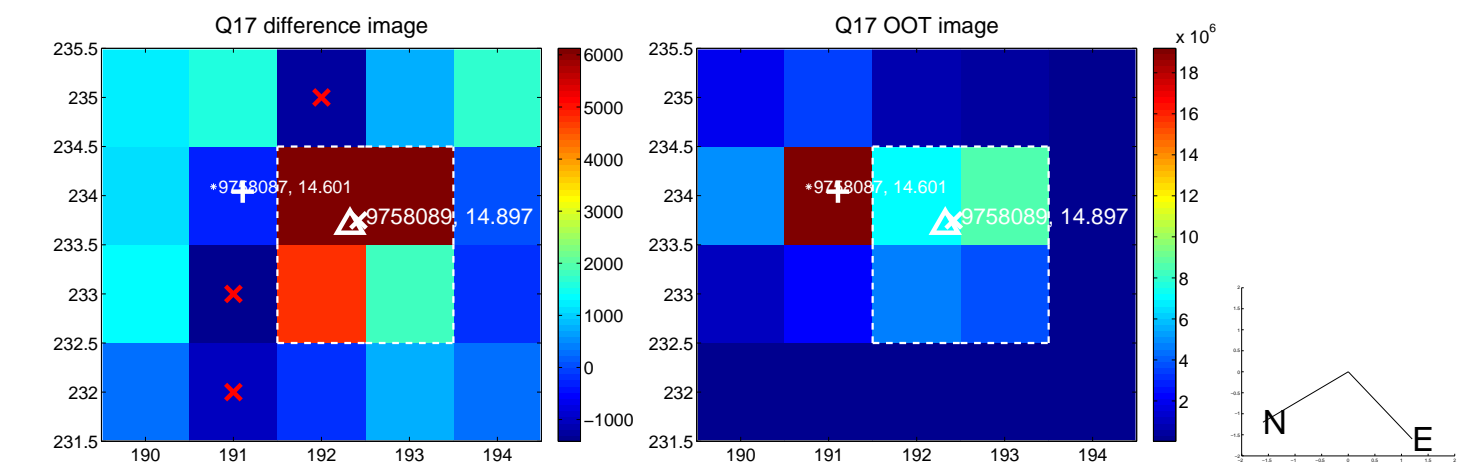
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



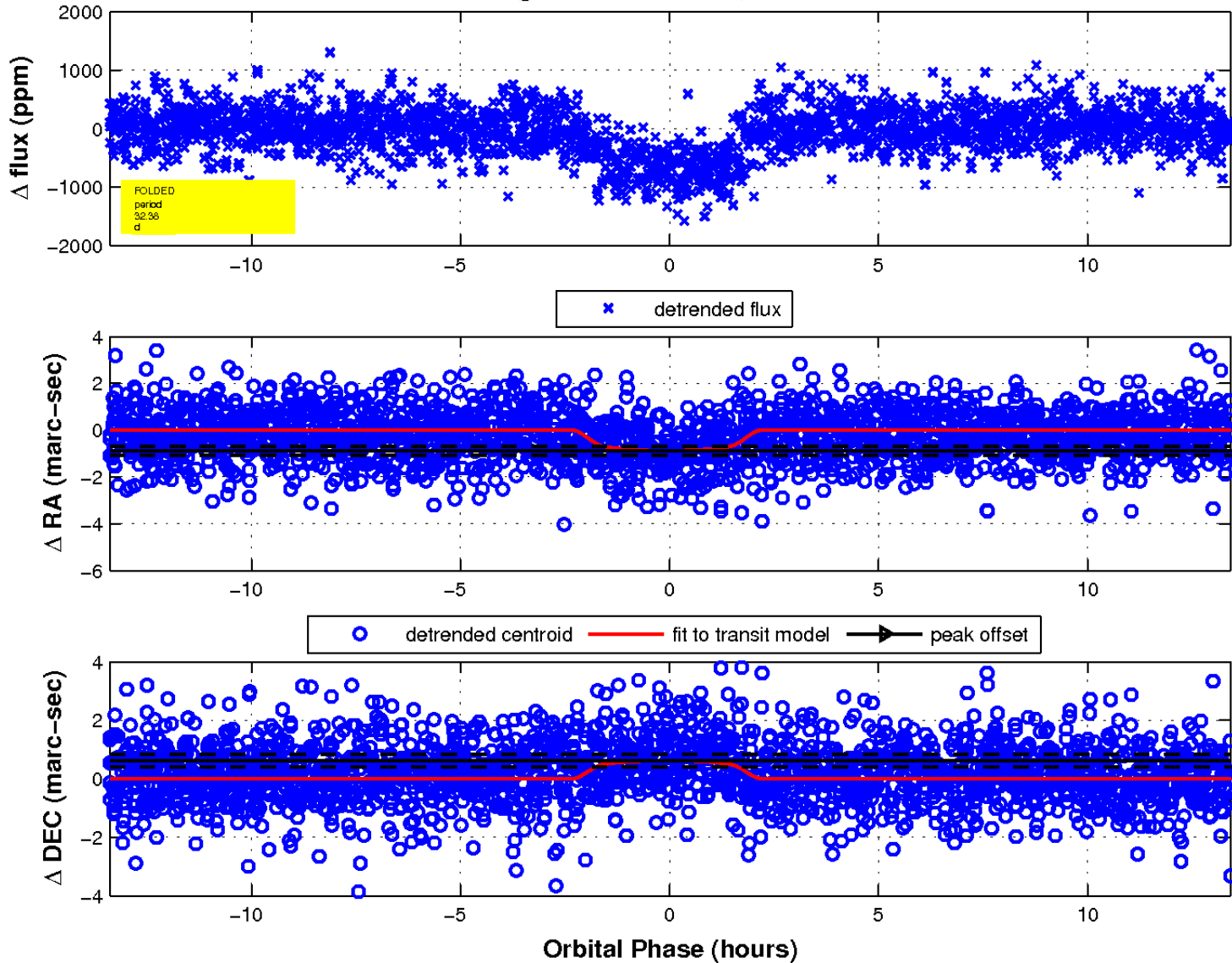
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

