

KIC 008678594

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})
008678594-01	OBS	1261.01	133.460607	216.044961	5081.2	11.551	120.2	118.8	1.59	5588	11.37	8.31
008678594-02	OBS	1261.02	15.194182	142.738012	348.7	3.164	14.2	16.3	1.59	5588	3.65	150.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008678594-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008678594-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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

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

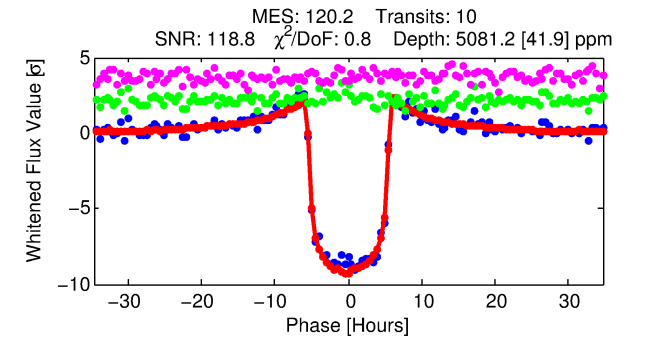
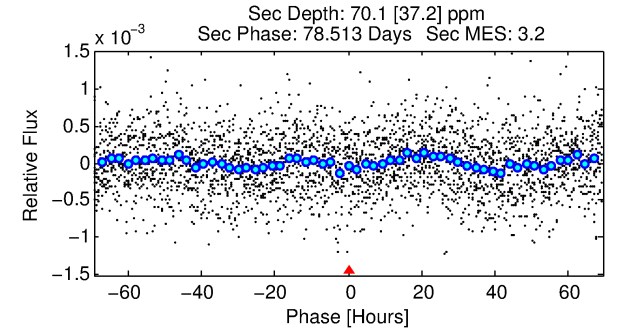
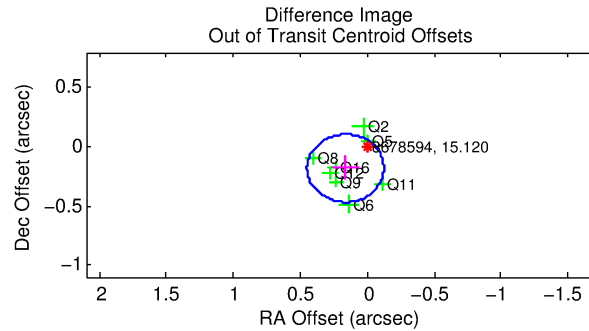
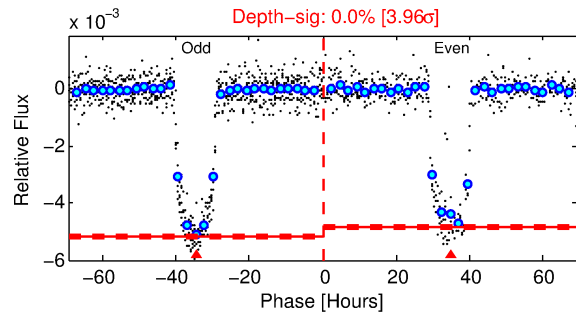
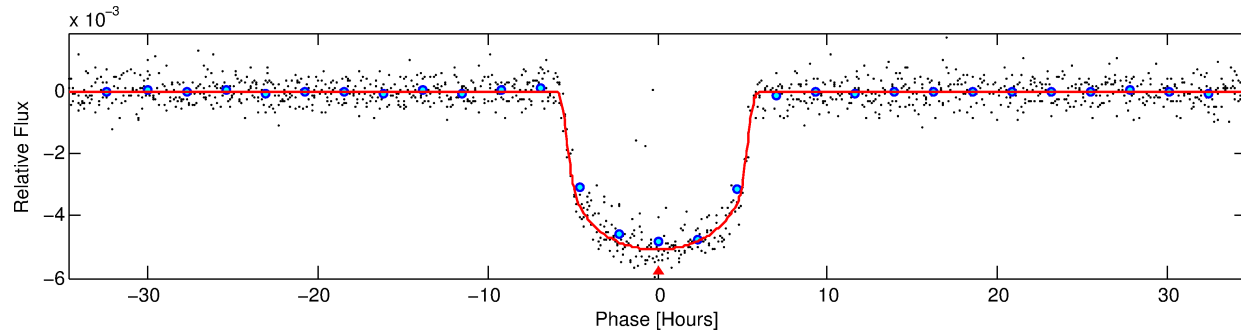
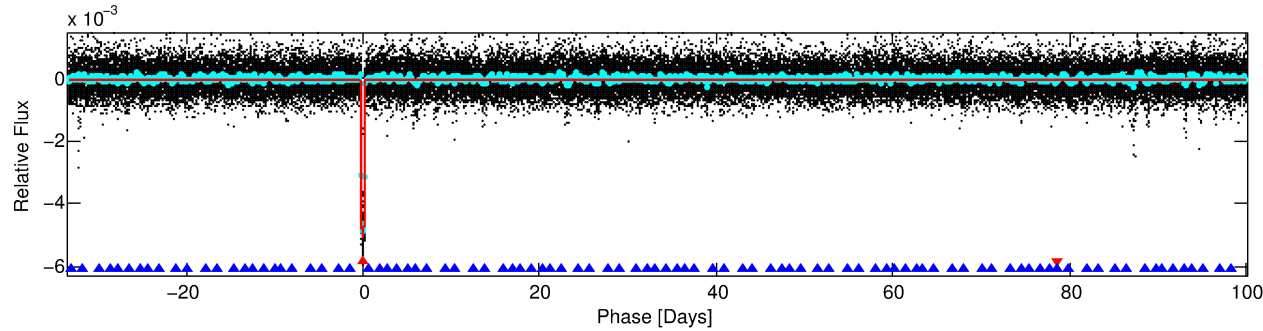
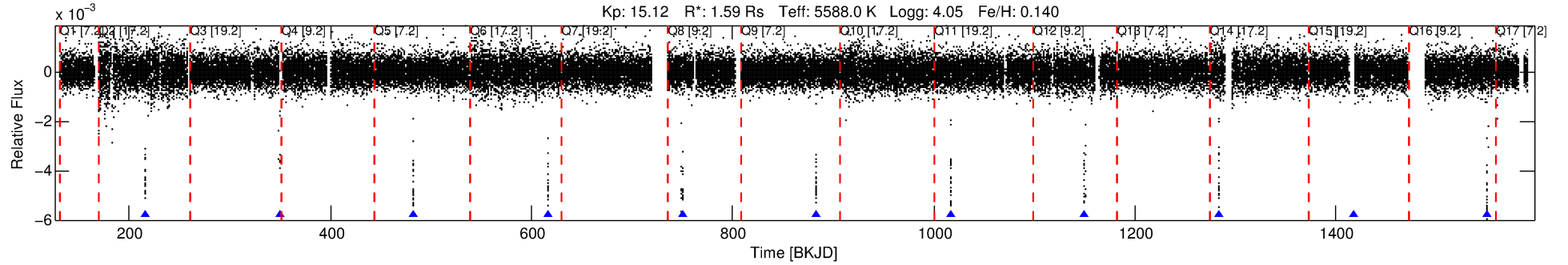
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008678594-01

No Significant Match Found

DV One-Page Summary

KIC: 8678594 Candidate: 1 of 2 Period: 133.461 d
KOI: K01261.01 Corr: 0.997



DV Fit Results:

Period = 133.46061 [0.00027] d
Epoch = 216.0450 [0.0015] BKJD
Rp/R* = 0.0654 [0.0014]
a/R* = 88.01 [7.01]
b = 0.38 [0.18]
Seff = 8.31 [2.93]
Teq = 433 [38] K
Rp = 11.37 [2.64] Re
a = 0.5165 [0.1132] AU
Ag = 79.63 [50.60] [1.55 σ]
Teffp = 2000 [268] K [5.80 σ]

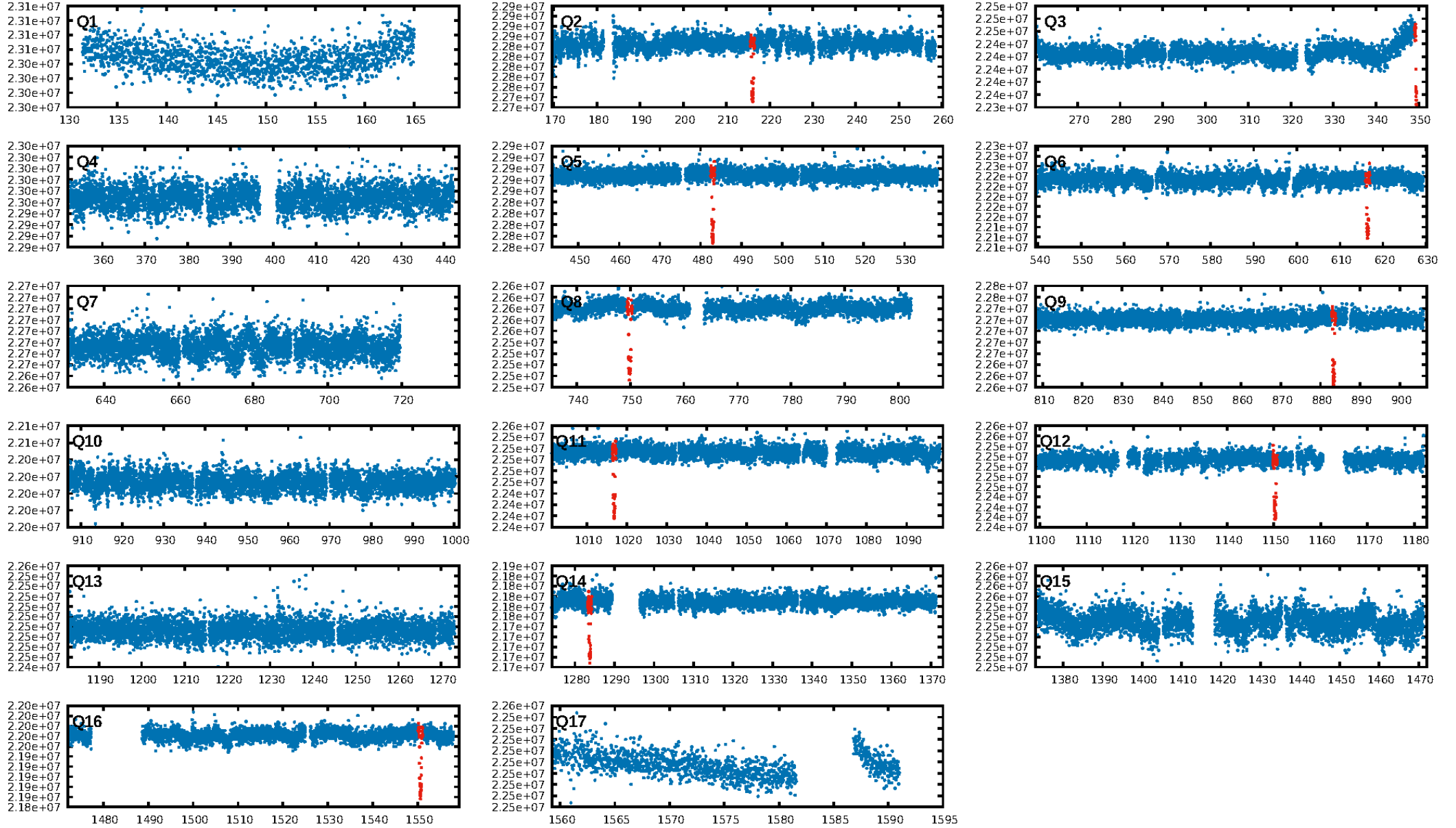
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [237.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 7.108
Centroid-sig: 1.4%
Centroid-so: 0.101 arcsec [0.81 σ]
OotOffset-rm: 0.244 arcsec [2.55 σ]
KicOffset-rm: 0.143 arcsec [1.20 σ]
OotOffset-st: 2/1/3/2 [8]
KicOffset-st: 2/1/3/2 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 0.88 [7/8]

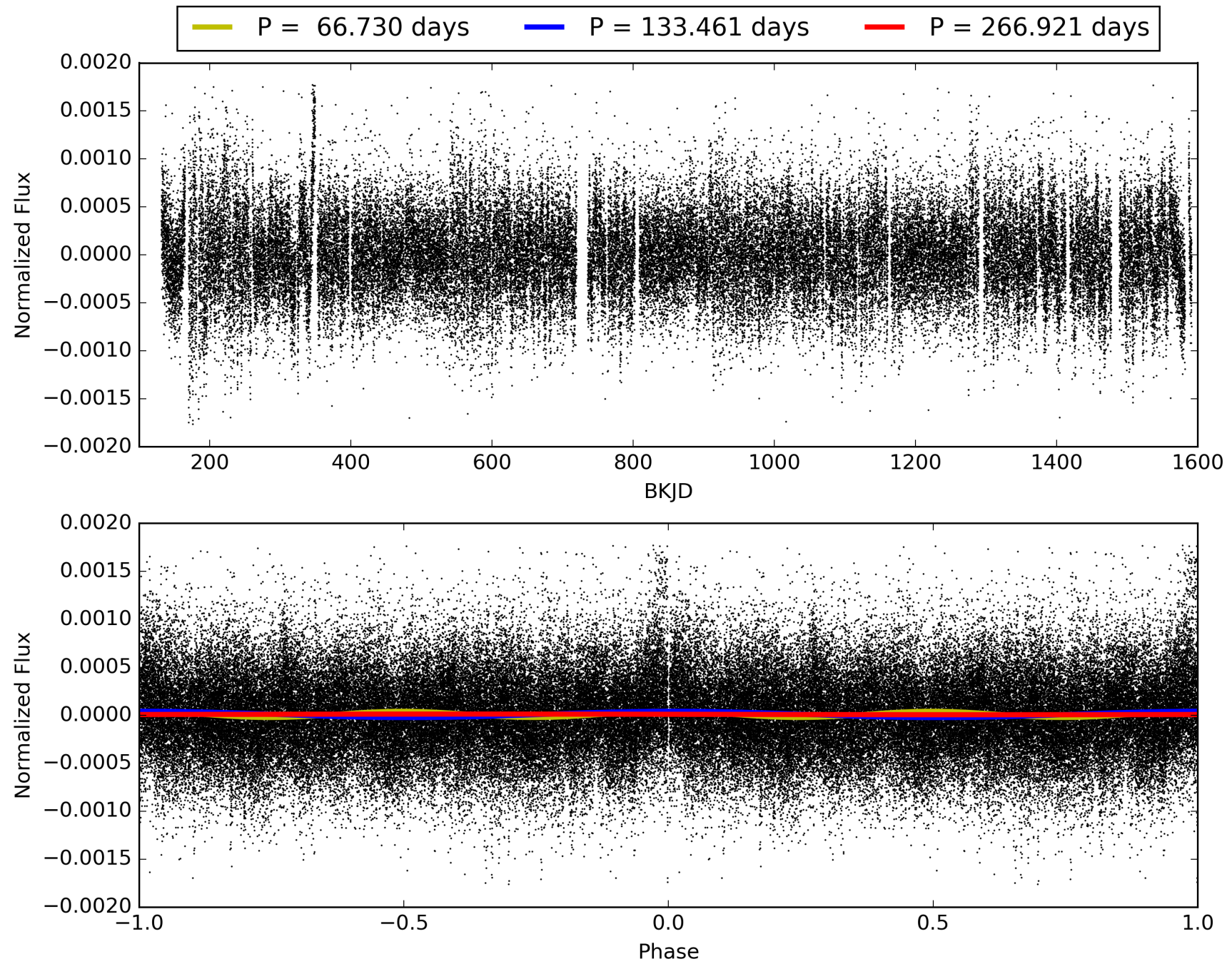
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:17:21 Z

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

TCE 008678594-01, PDC Light Curves

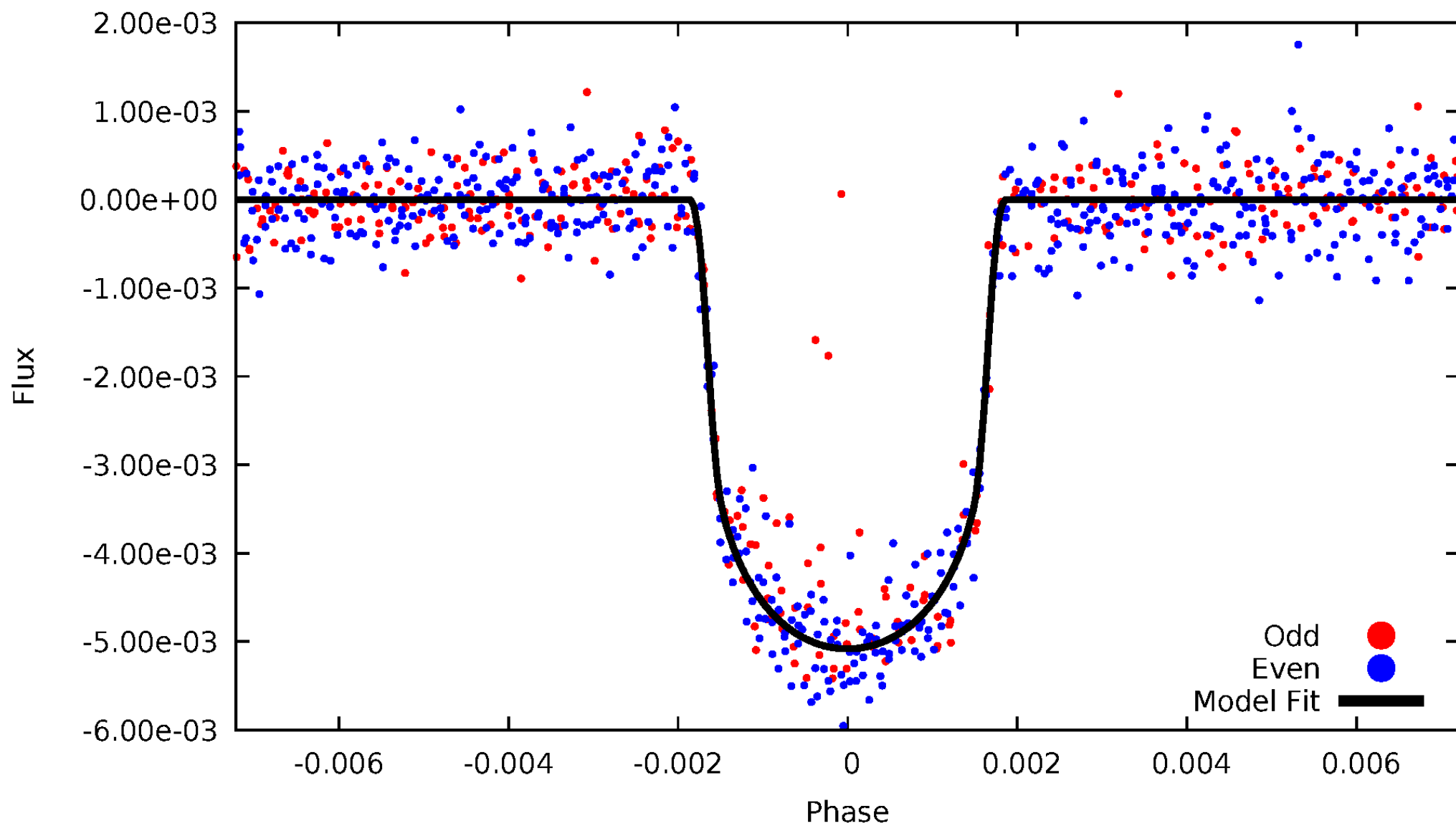


TCE 008678594-01



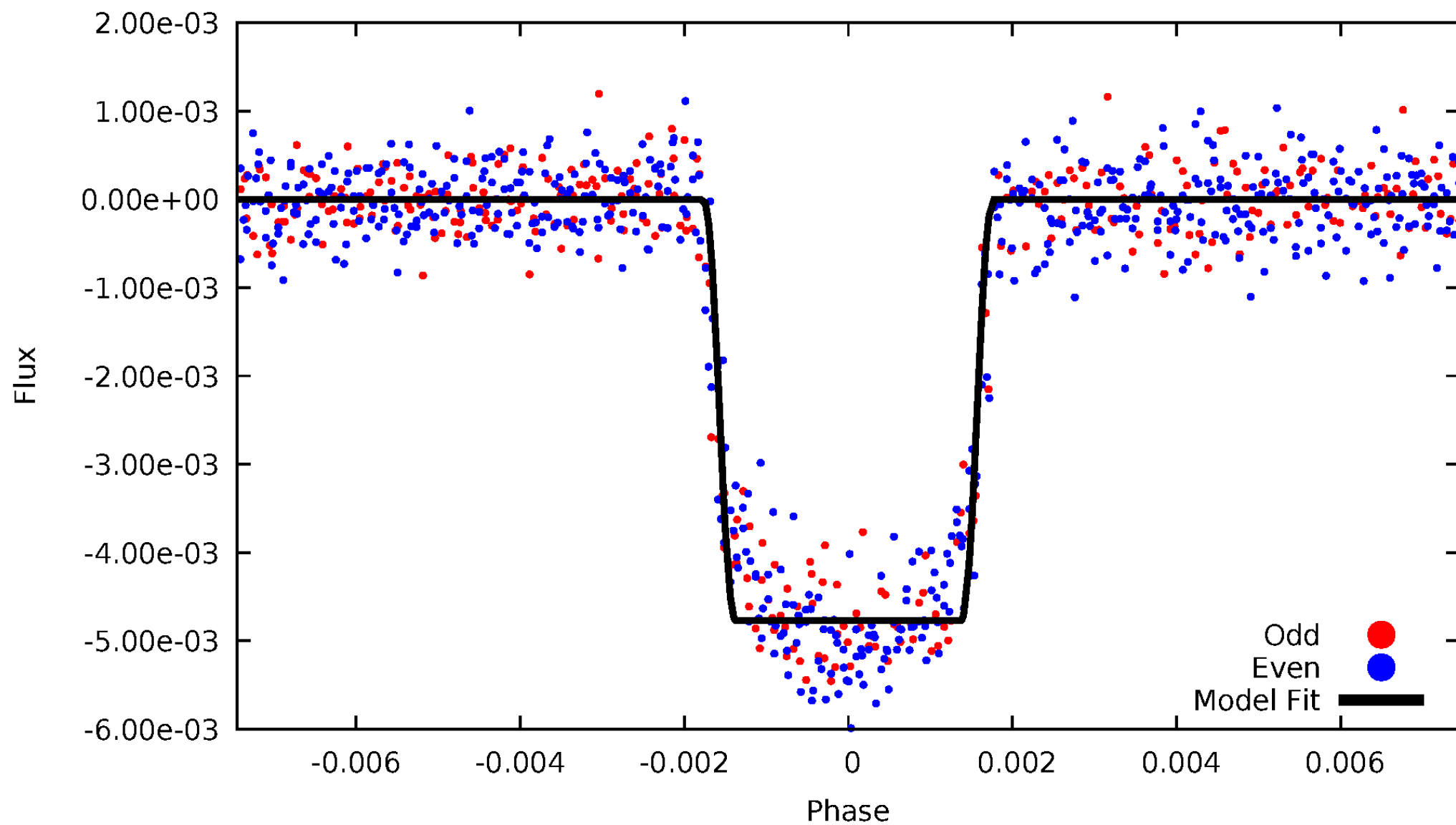
DV Odd/Even

TCE 008678594-01



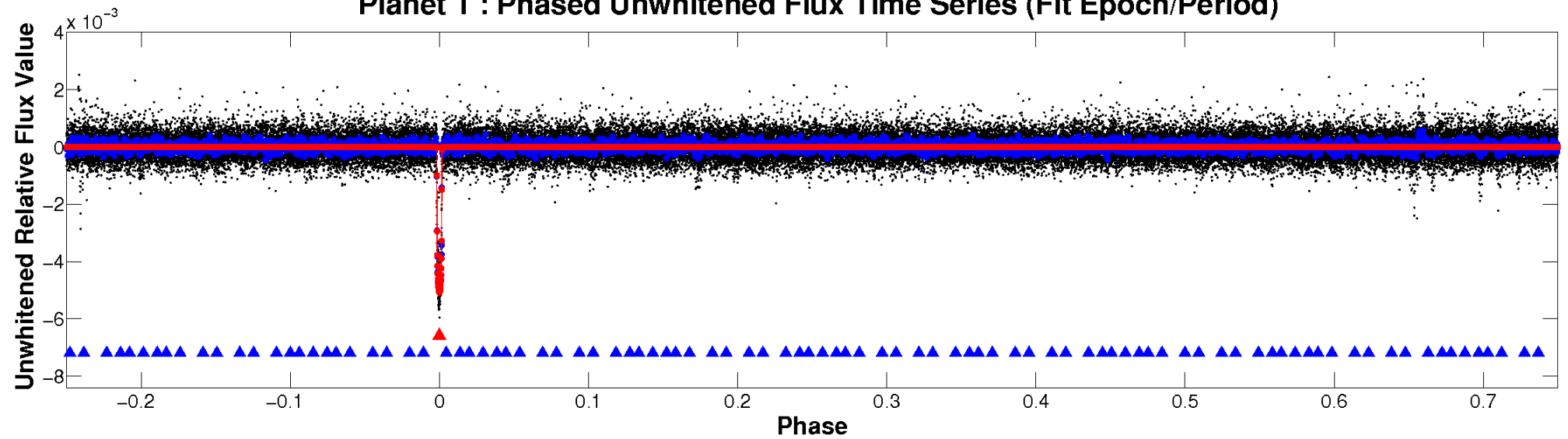
ALT Odd/Even

TCE 008678594-01

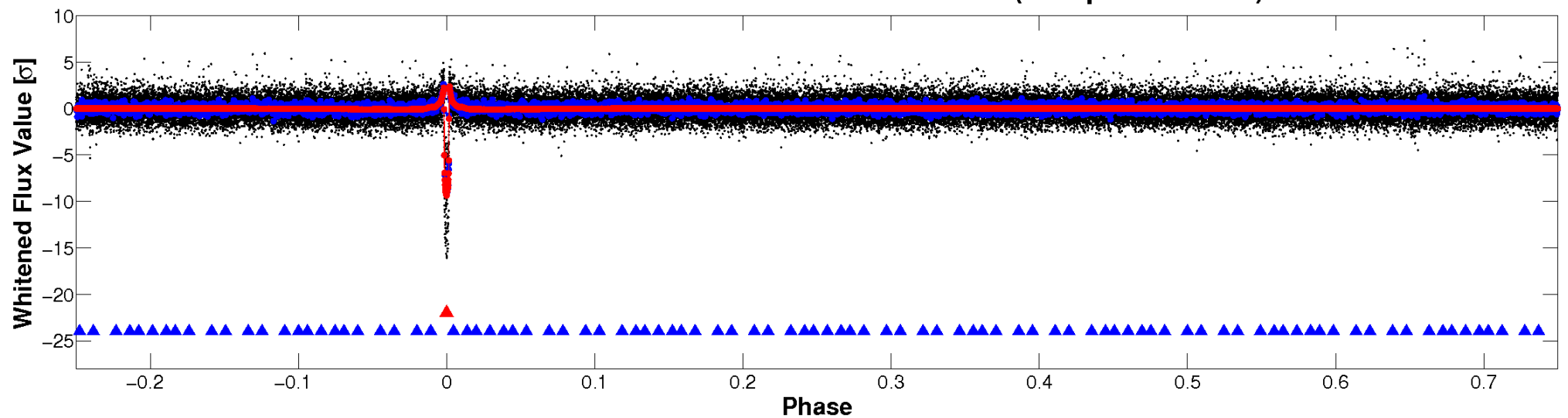


Non-Whitened Vs. Whitened Light Curve

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

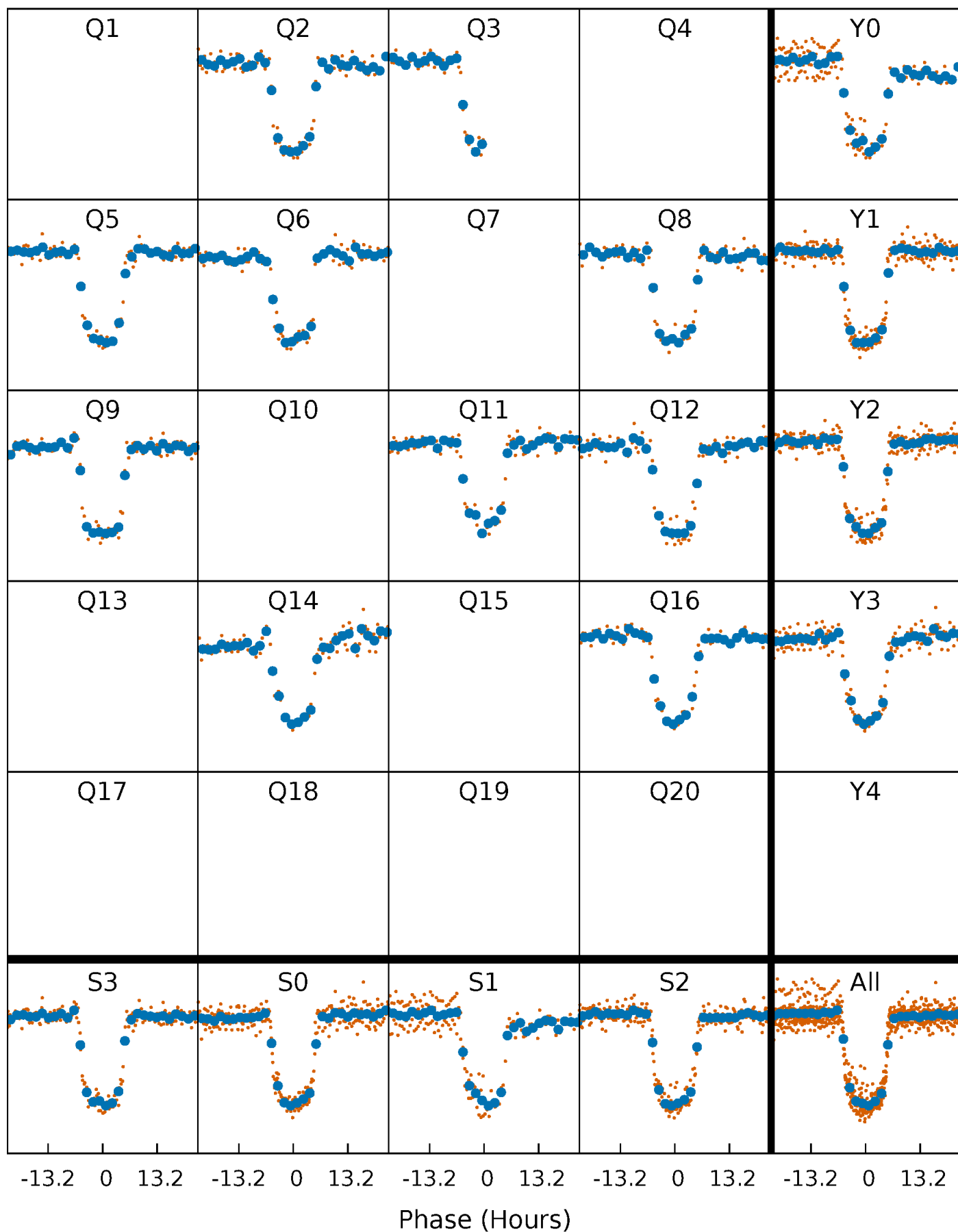


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



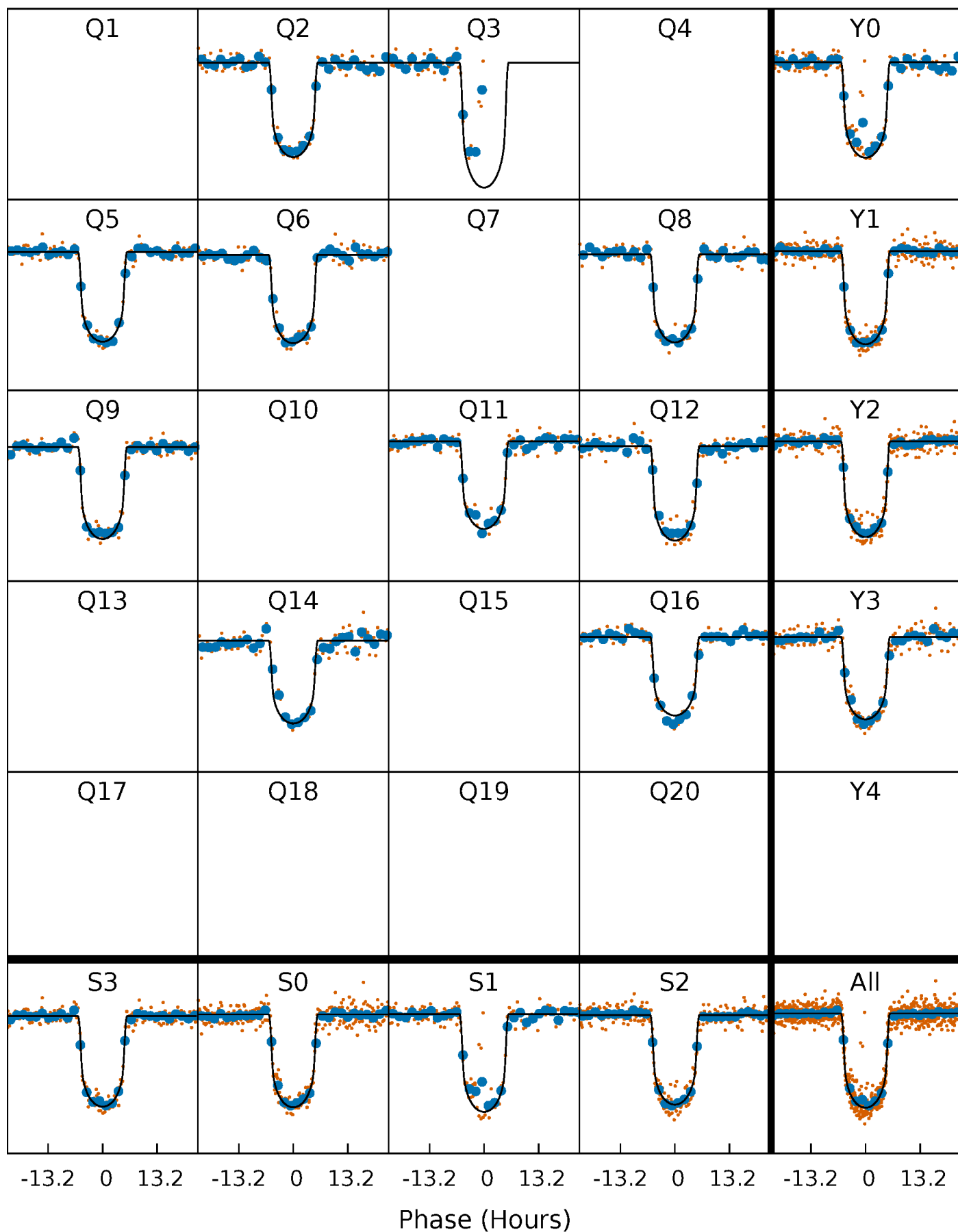
PDC Quarter-Phased Transit Curves

TCE 008678594-01 P=133.460607 Days $T_0=216.044961$ (BKJD)



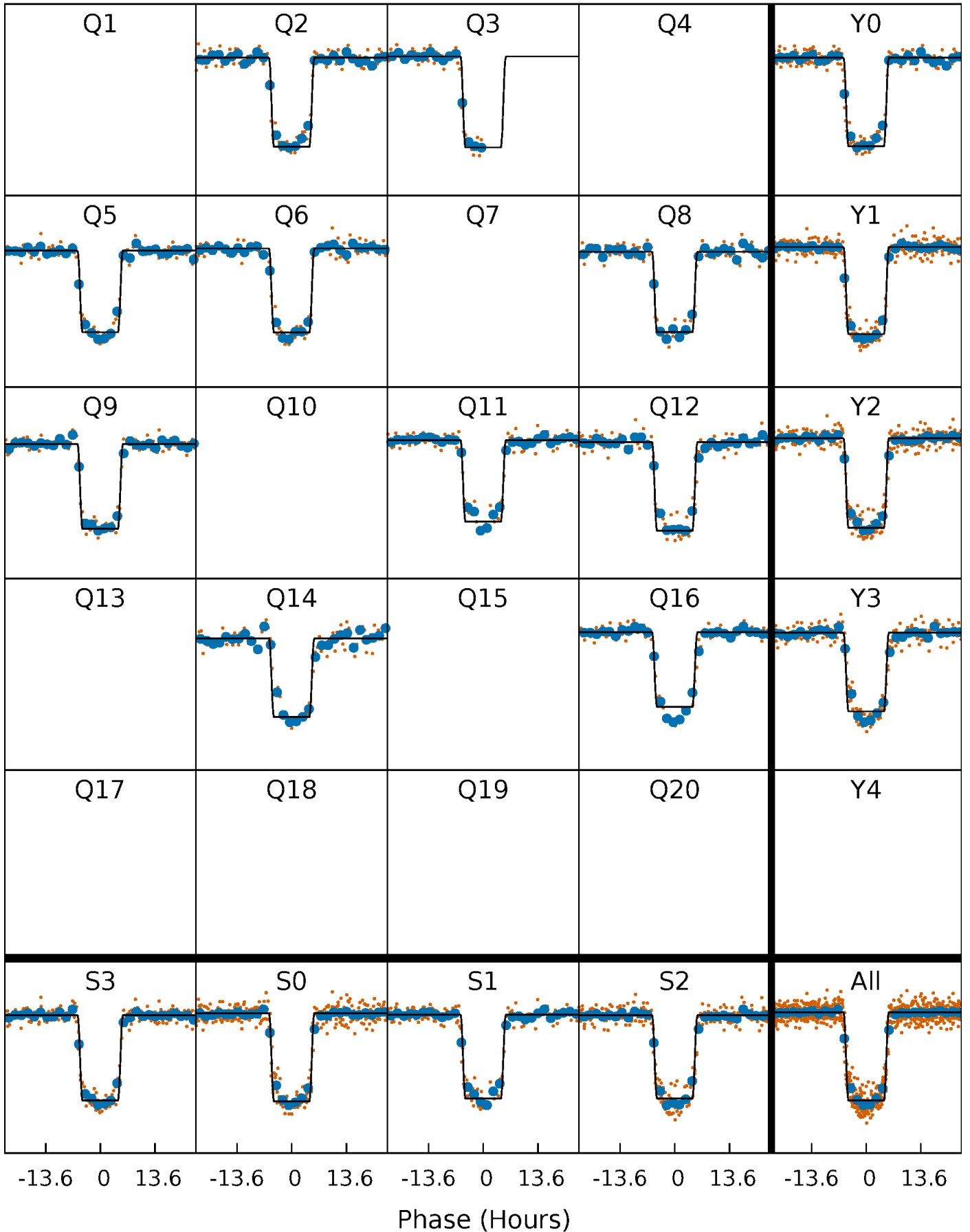
DV Quarter-Phased Transit Curves

TCE 008678594-01 P=133.460607 Days $T_0=216.044961$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

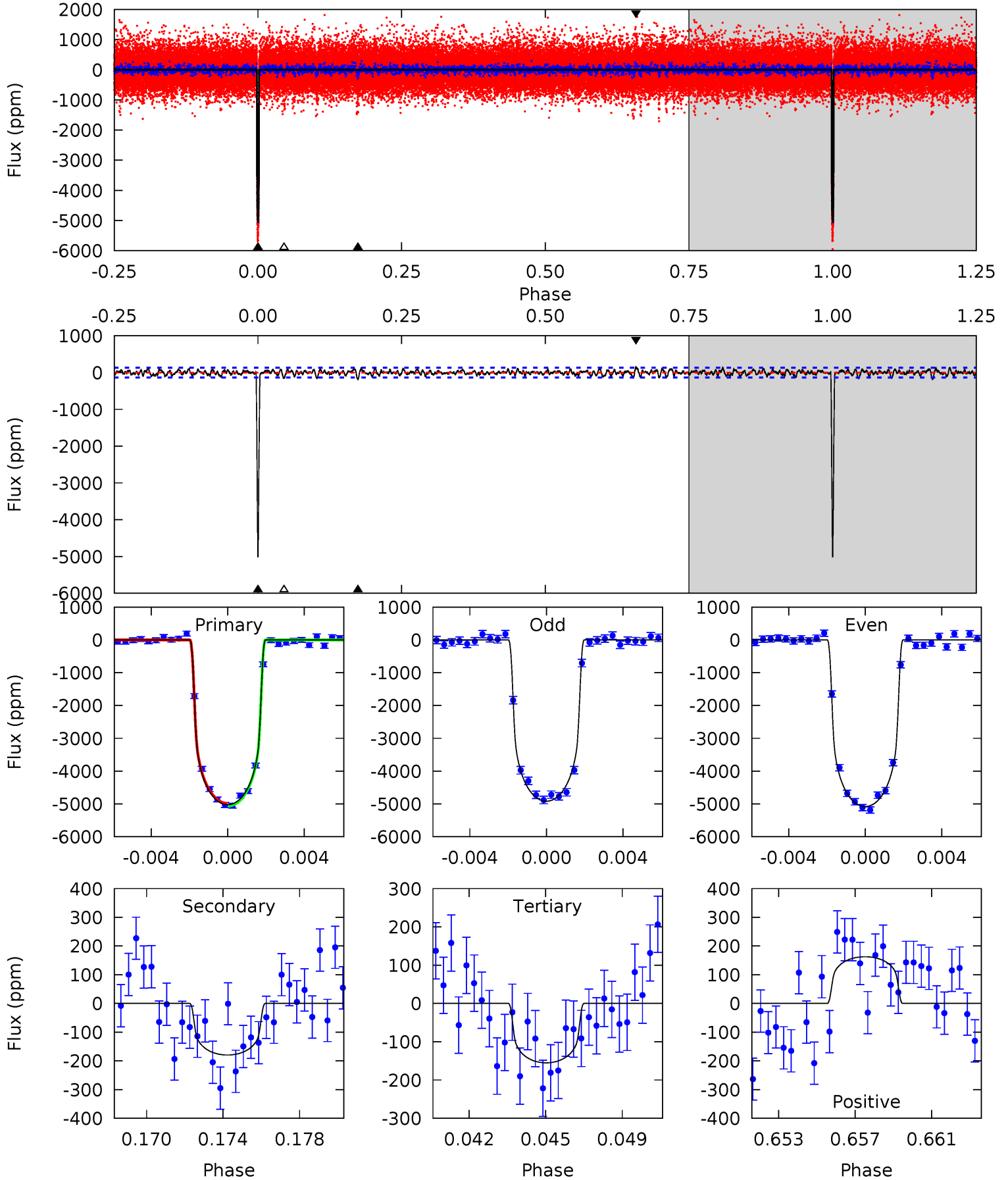
TCE 008678594-01 P=133.458392 Days $T_0=216.055721$ (BKJD)



DV Model-Shift Uniqueness Test

008678594-01, P = 133.460607 Days, E = 82.584354 Days

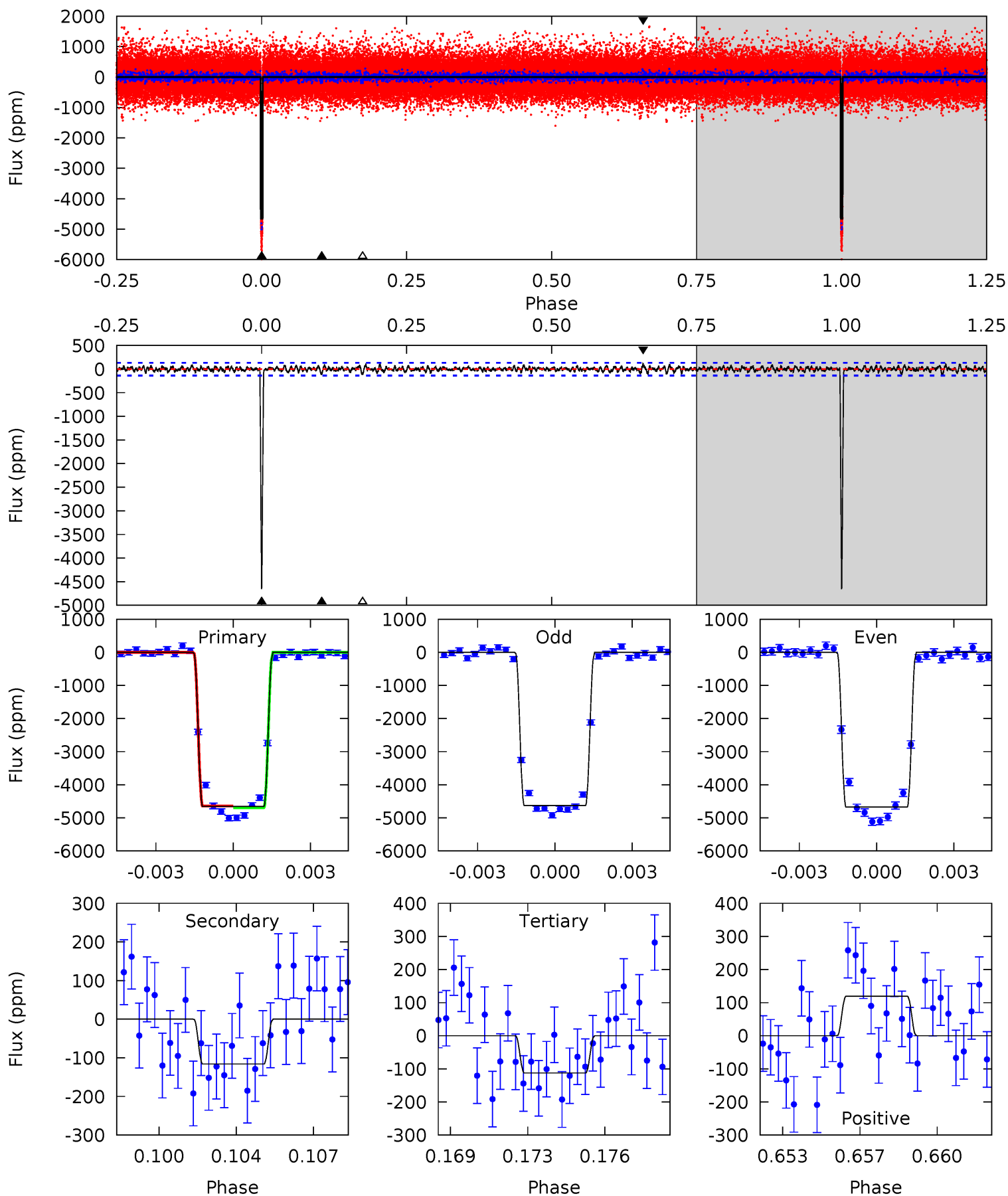
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
195.2	6.98	6.03	6.32	5.21	2.90	1.87	189.1	188.8	0.95	0.65	3.06	0.97	0.03	1.58



Alt Model-Shift Uniqueness Test

008678594-01, P = 133.458392 Days, E = 82.597329 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
180.2	4.49	4.36	4.61	5.23	2.92	1.27	175.9	175.6	0.13	-0.13	0.88	1.00	0.02	0.92



Stellar Parameters For KIC 008678594

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5588^{+83}_{-75}	$4.047^{+0.203}_{-0.087}$	$0.140^{+0.150}_{-0.150}$	$1.593^{+0.245}_{-0.368}$	$1.031^{+0.094}_{-0.094}$	$0.359^{+0.401}_{-0.098}$
	+1%/-1%	+5%/-2%	+107%/-107%	+15%/-23%	+9%/-9%	+111%/-27%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008678594-01 / KOI 1261.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-180 ± 26	$11.20^{+1.09}_{-1.40}$	600^{+26}_{-38}	3143^{+70}_{-78}	214^{+70}_{-44}
Alt.	-116 ± 26	$11.81^{+1.13}_{-1.46}$	599^{+27}_{-37}	2905^{+90}_{-100}	123^{+44}_{-31}

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 $A_{obs} \gg 1.0$

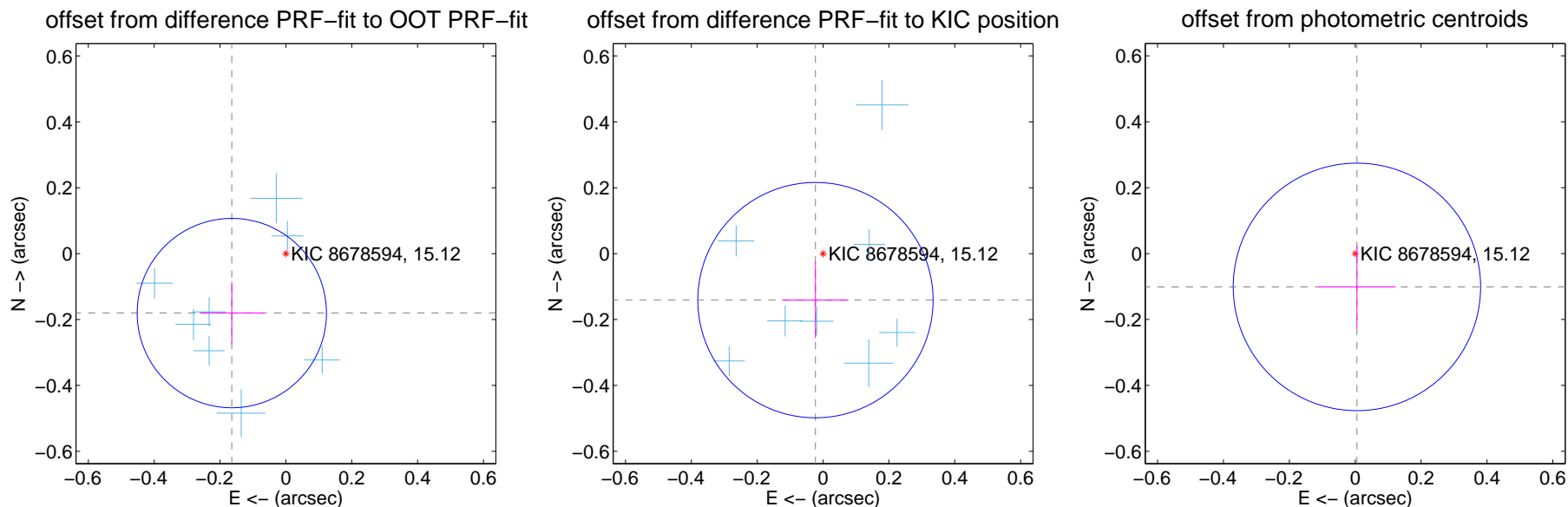
DV Centroid Data

Supplemental centroid analysis for 008678594-01. Kepler magnitude: 15.12. Transit SNR 118.84

There are 8 quarters with good PRF difference image offsets

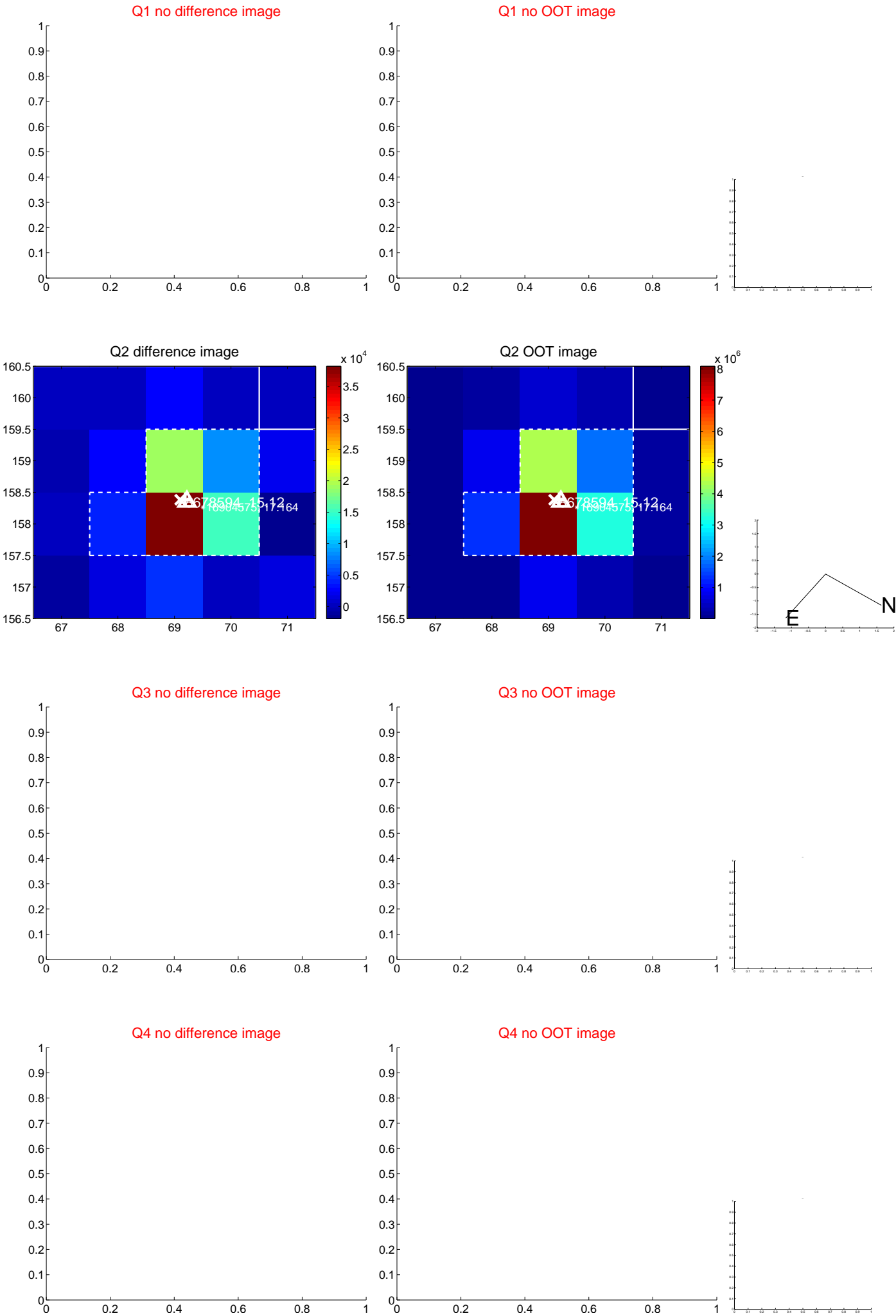
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.244 ± 0.096	2.55	0.164 ± 0.097	-0.180 ± 0.094
PRF-fit source offset from KIC position	0.143 ± 0.119	1.20	0.023 ± 0.100	-0.141 ± 0.116
photometric centroid source offset	0.10 ± 0.13	0.81	-0.01 ± 0.12	-0.10 ± 0.13

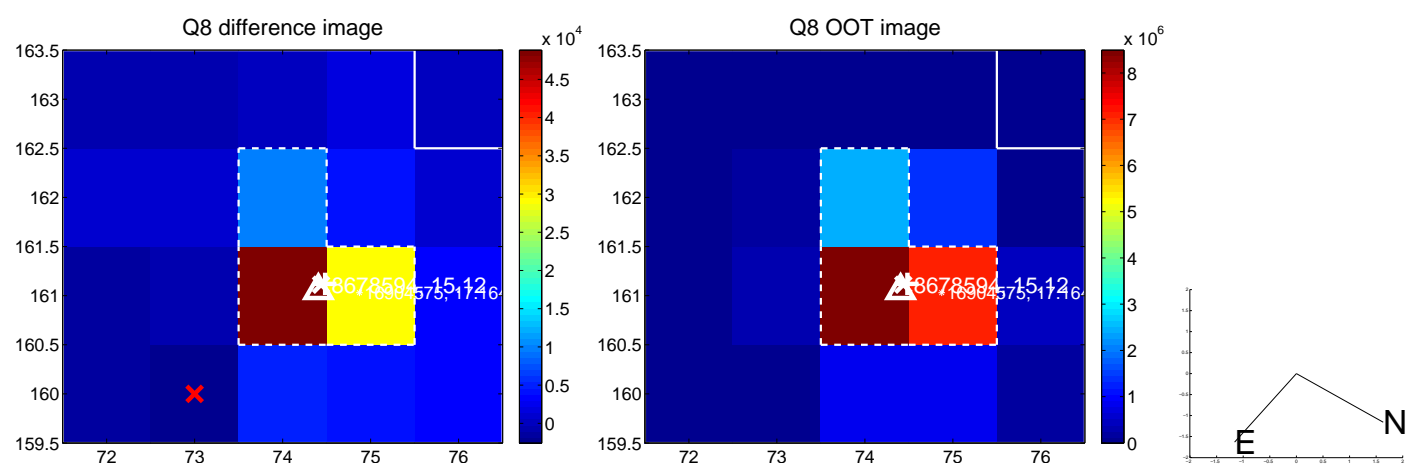
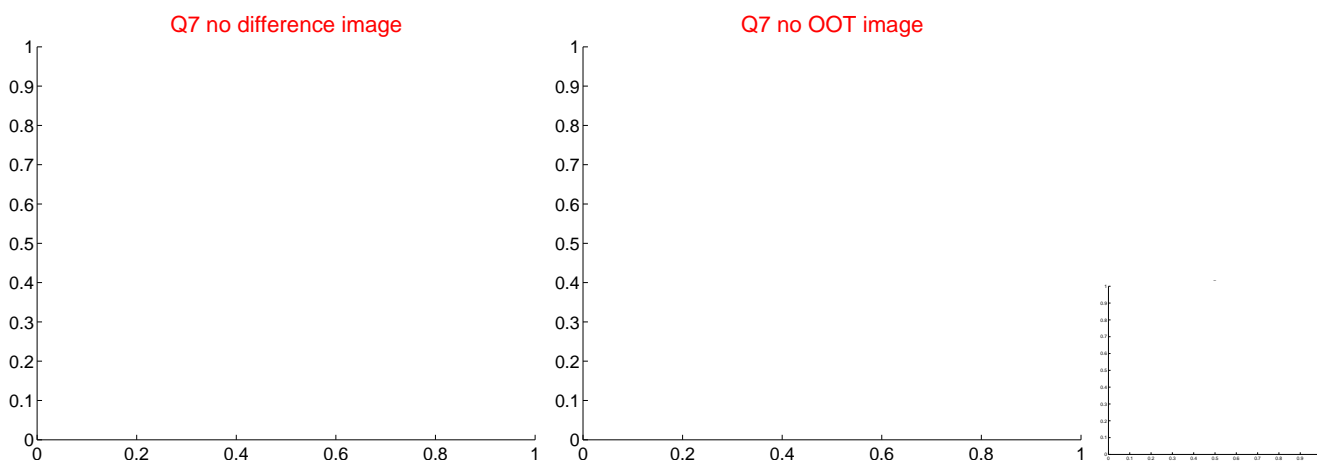
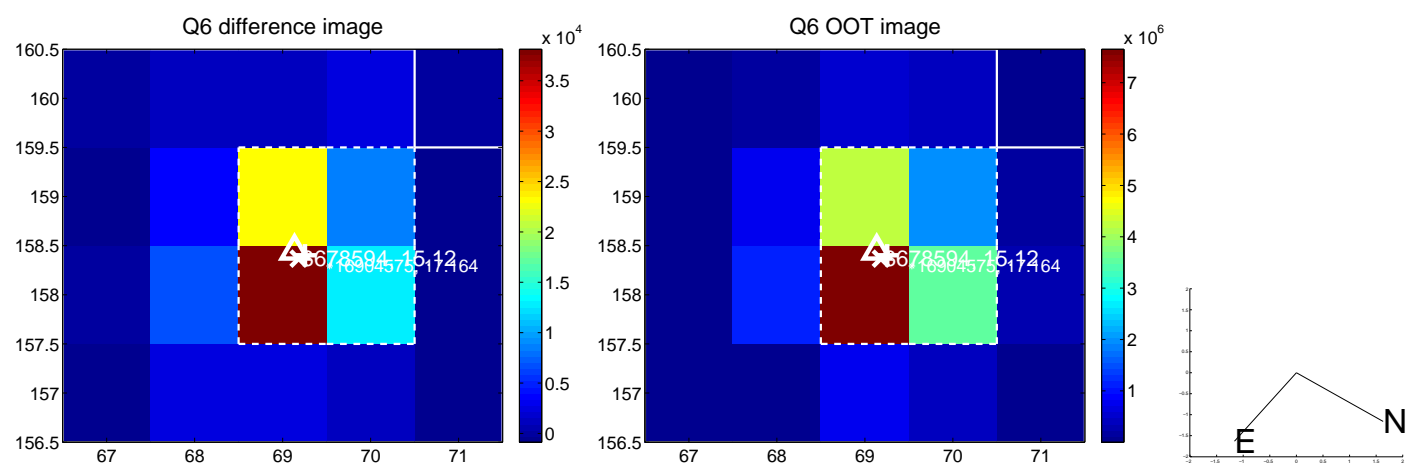
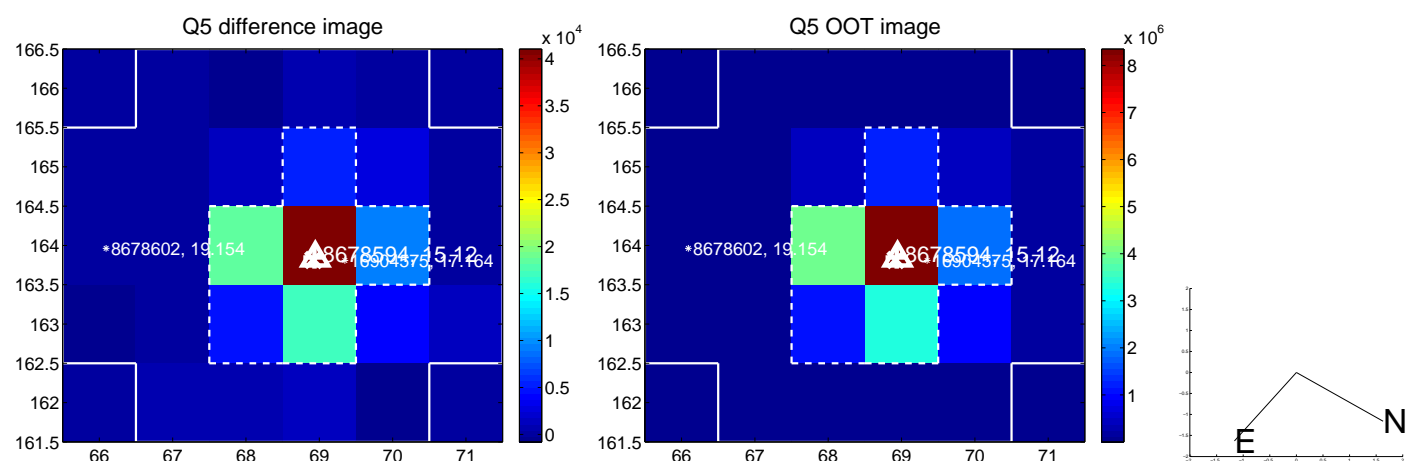


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

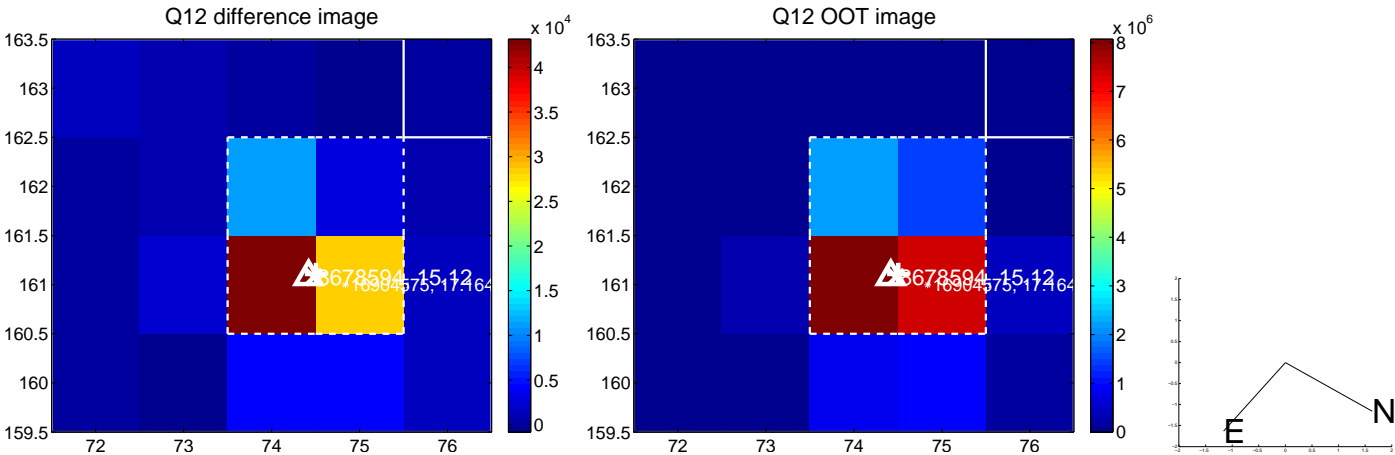
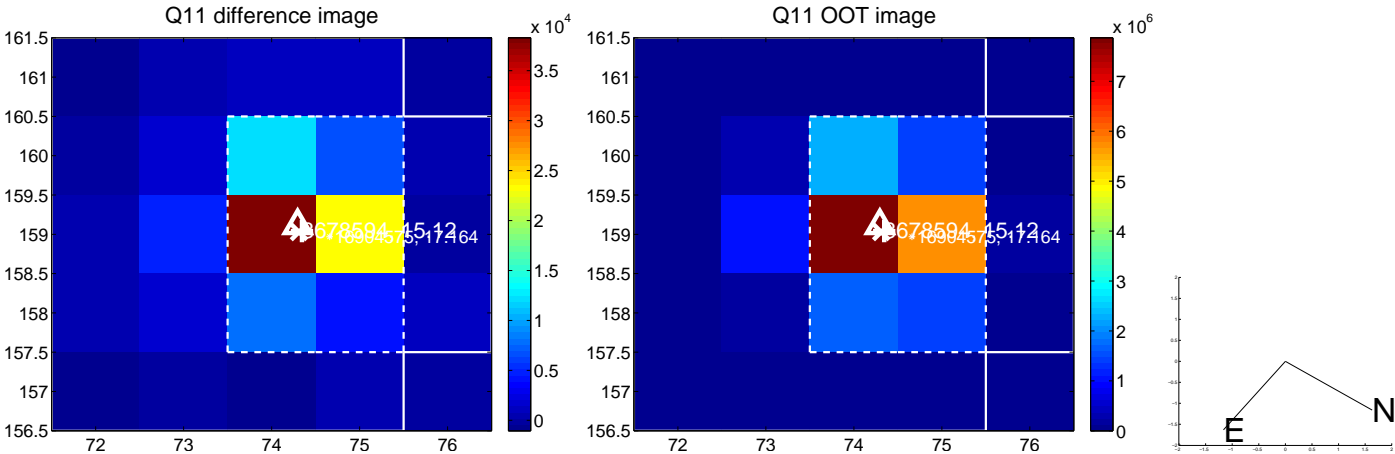
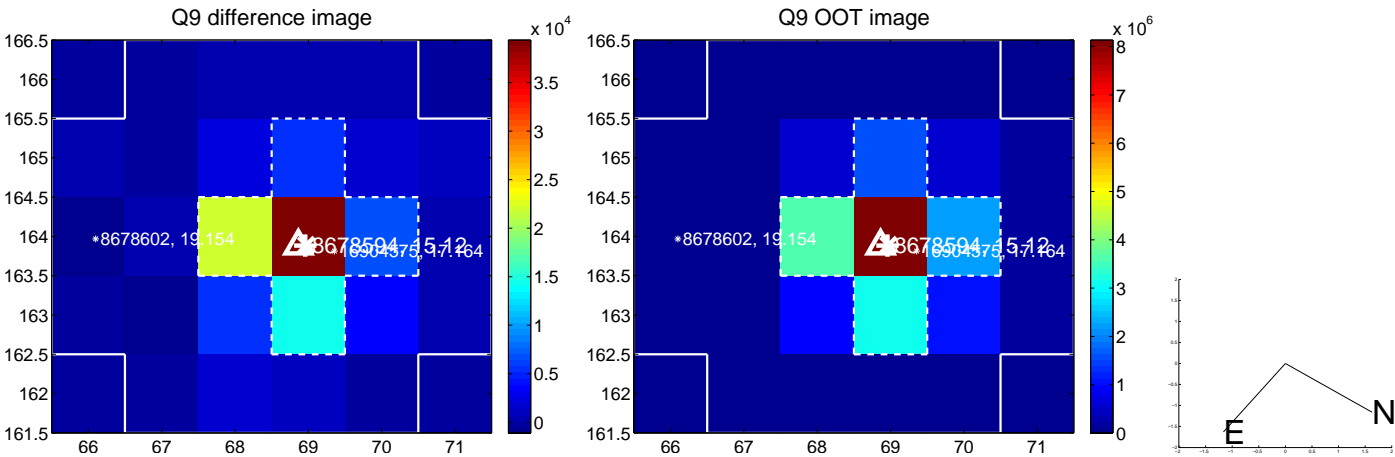
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



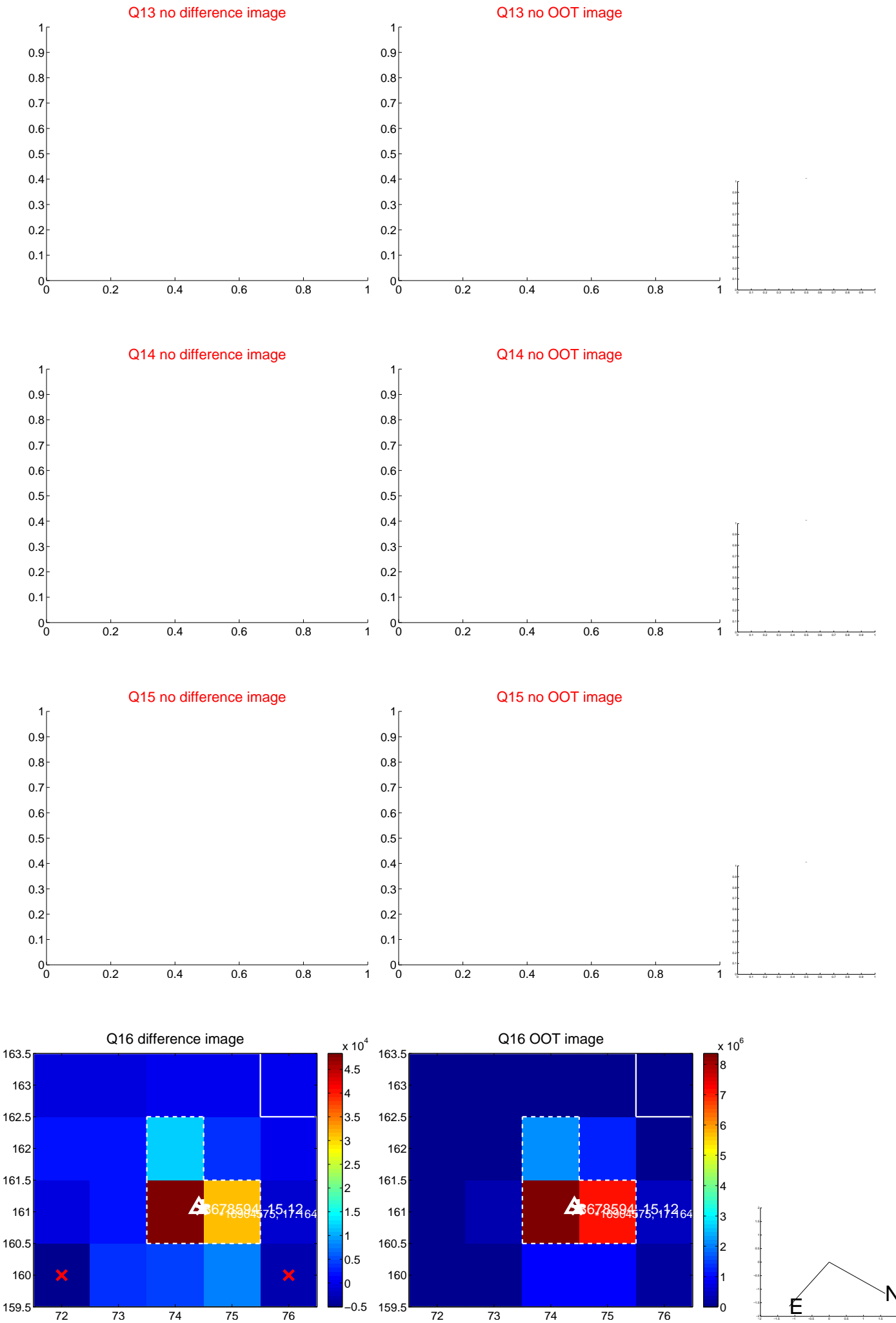
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



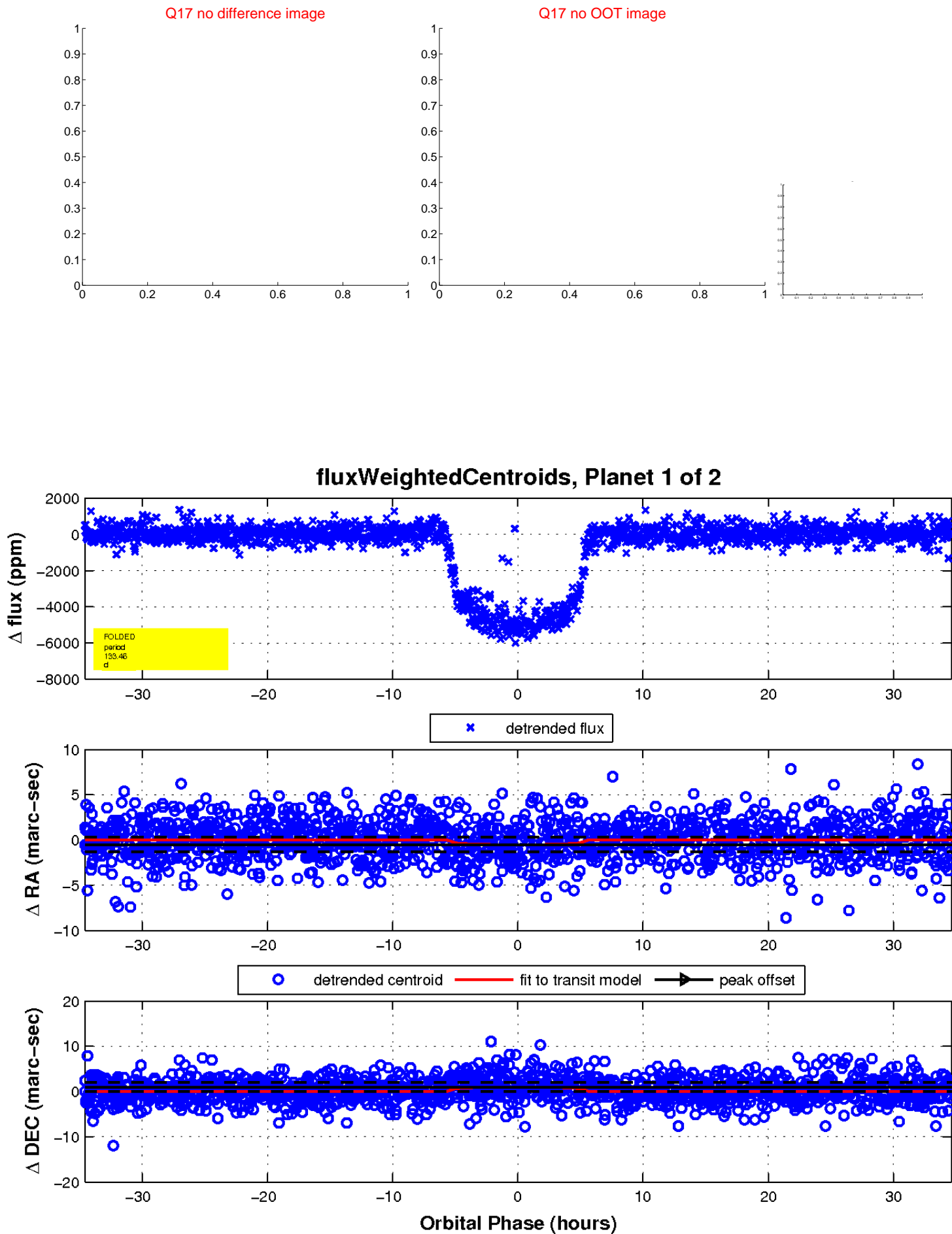
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

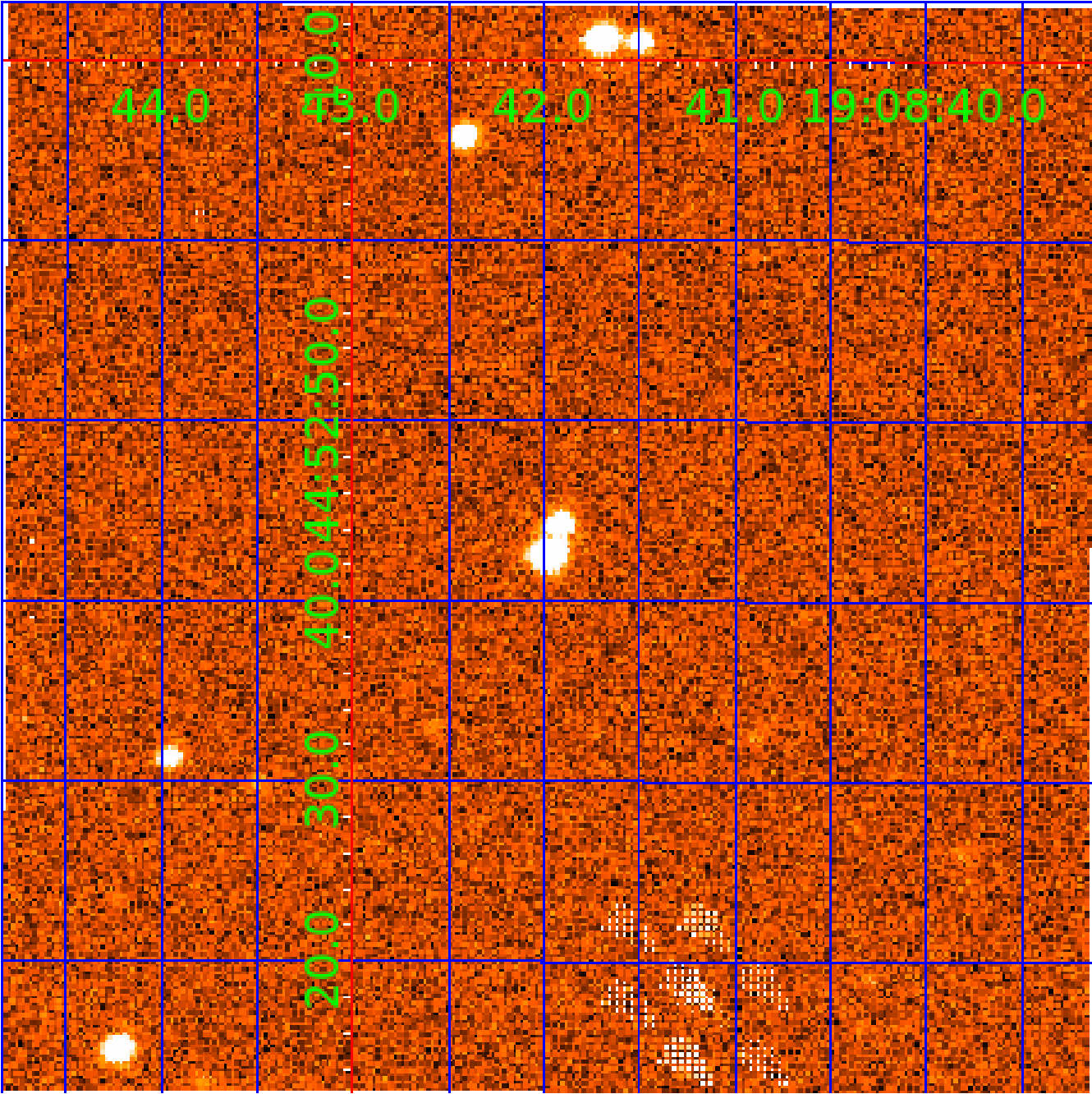


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008678594

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})
008678594-01	OBS	1261.01	133.460607	216.044961	5081.2	11.551	120.2	118.8	1.59	5588	11.37	8.31
008678594-02	OBS	1261.02	15.194182	142.738012	348.7	3.164	14.2	16.3	1.59	5588	3.65	150.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008678594-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008678594-02	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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.

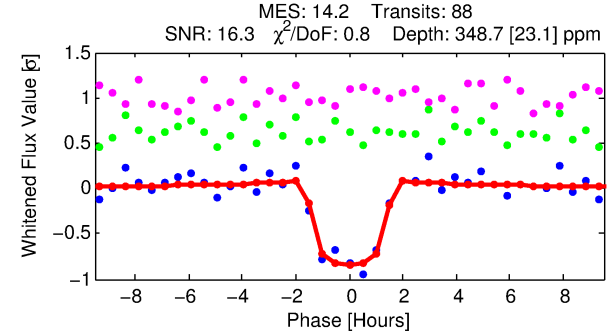
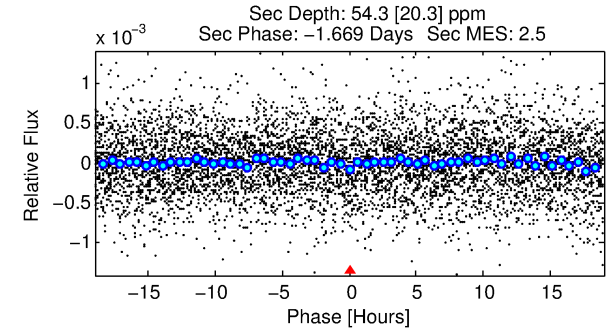
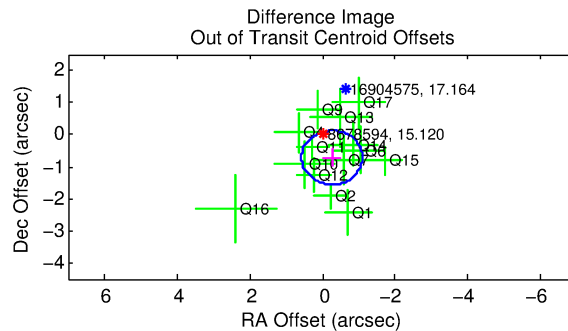
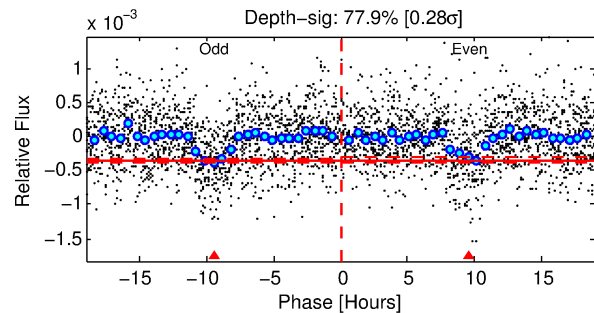
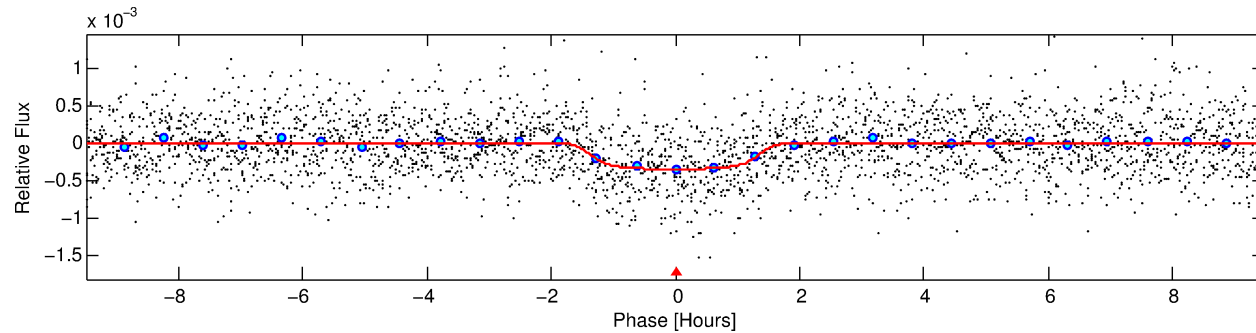
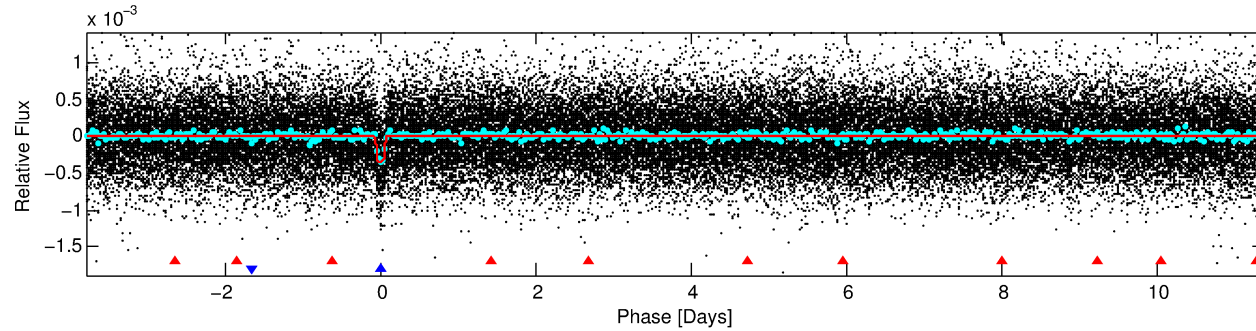
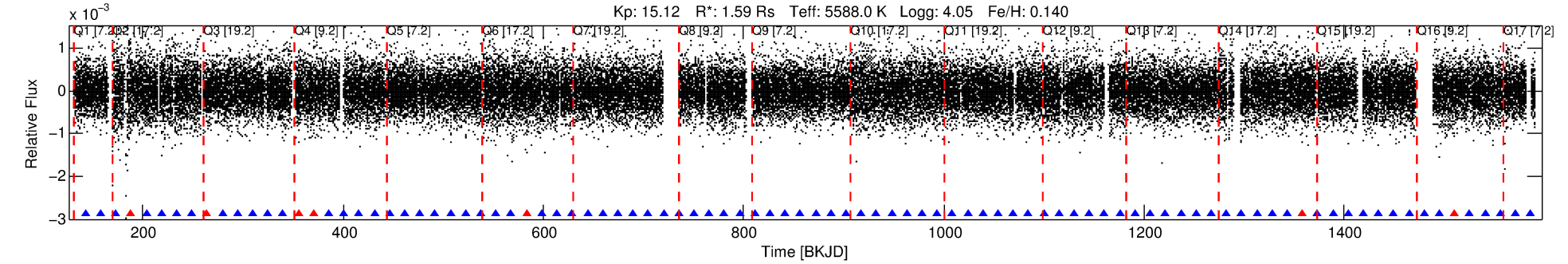
Ephemeris Match Information For 008678594-02

No Significant Match Found

DV One-Page Summary

KIC: 8678594 Candidate: 2 of 2 Period: 15.194 d

KOI: K01261.02 Corr: 0.967



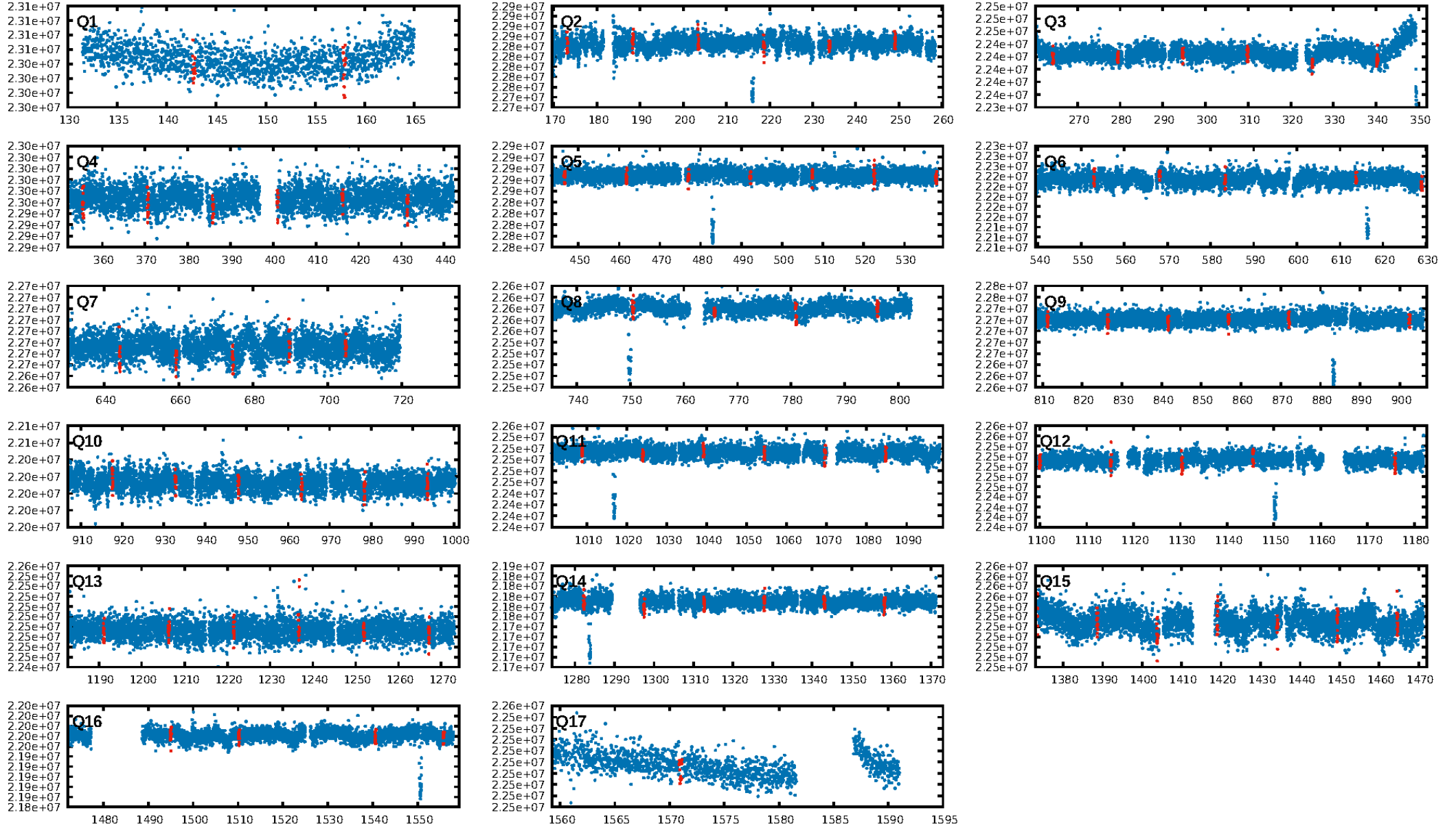
DV Fit Results:

Period = 15.19418 [0.00008] d
Epoch = 142.7380 [0.0044] BKJD
Rp/R* = 0.0210 [0.0036]
a/R* = 16.19 [12.24]
b = 0.92 [0.13]
Seff = 150.60 [53.11]
Teff = 893 [79] K
Rp = 3.65 [1.05] Re
a = 0.1213 [0.0266] AU
Ag = 33.00 [20.34] [1.57 σ]
Teffp = 3310 [424] K [5.60 σ]

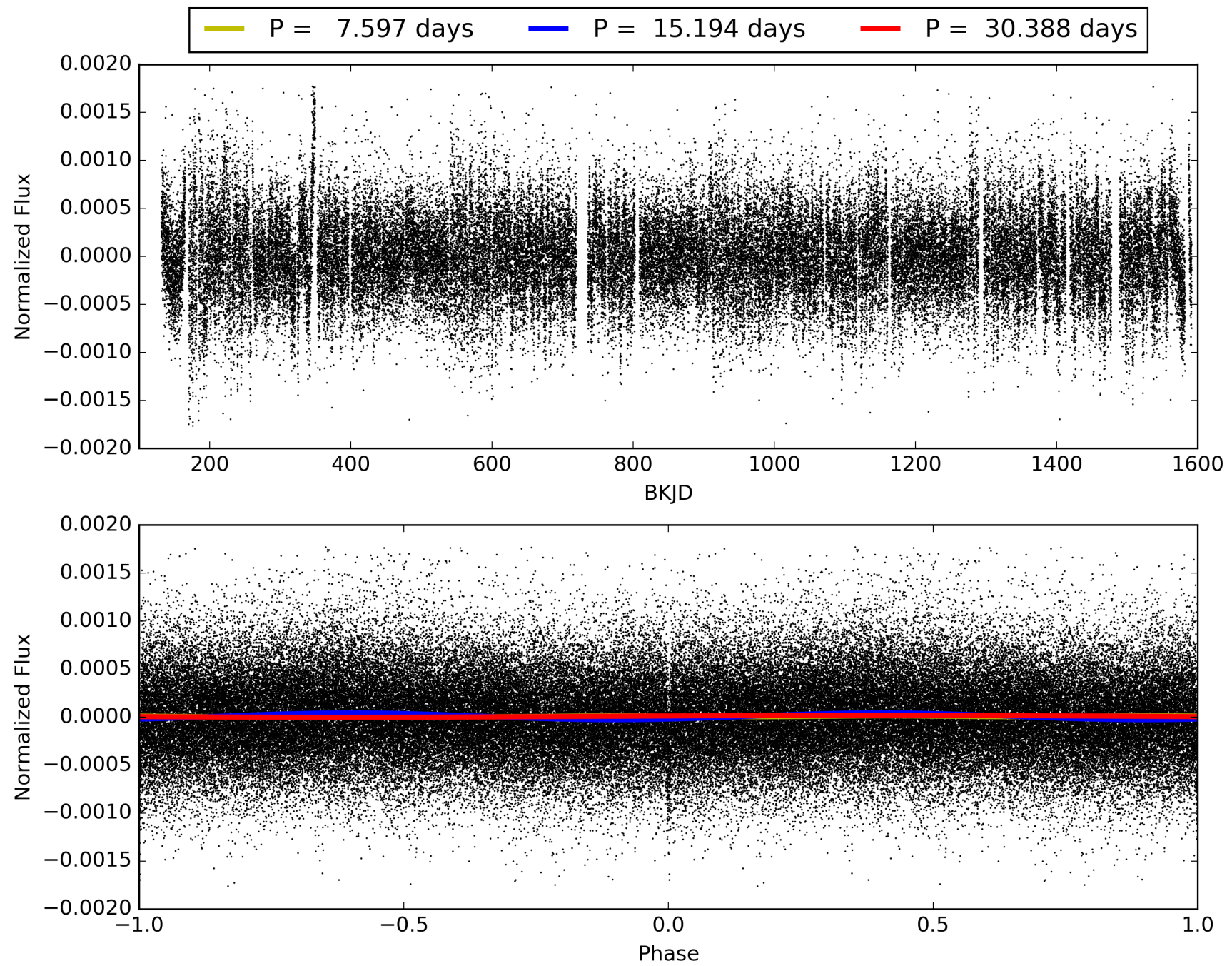
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [237.00 σ]
ModelChiSquare2-sig: 95.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.72e-44
RollingBand-fgt: 0.92 [78/85]
GhostDiagnostic-chr: -9.985
Centroid-sig: 13.7%
Centroid-so: 1.009 arcsec [1.07 σ]
OotOffset-rm: 0.760 arcsec [2.72 σ]
KicOffset-rm: 0.757 arcsec [2.83 σ]
OotOffset-st: 4/3/3/4 [14]
KicOffset-st: 4/3/3/4 [14]
DiffImageQuality-fgm: 0.86 [12/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008678594-02, PDC Light Curves

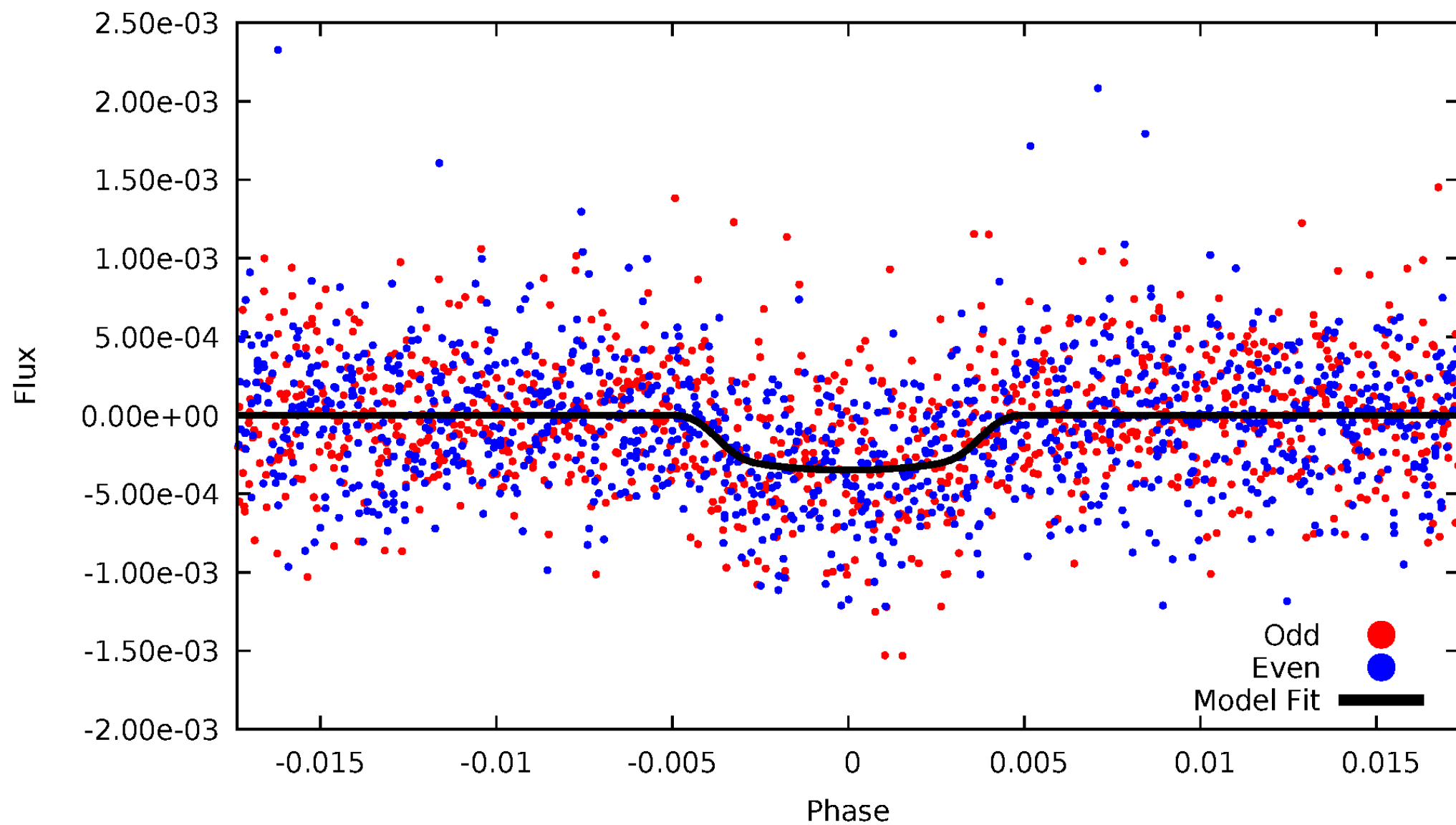


TCE 008678594-02



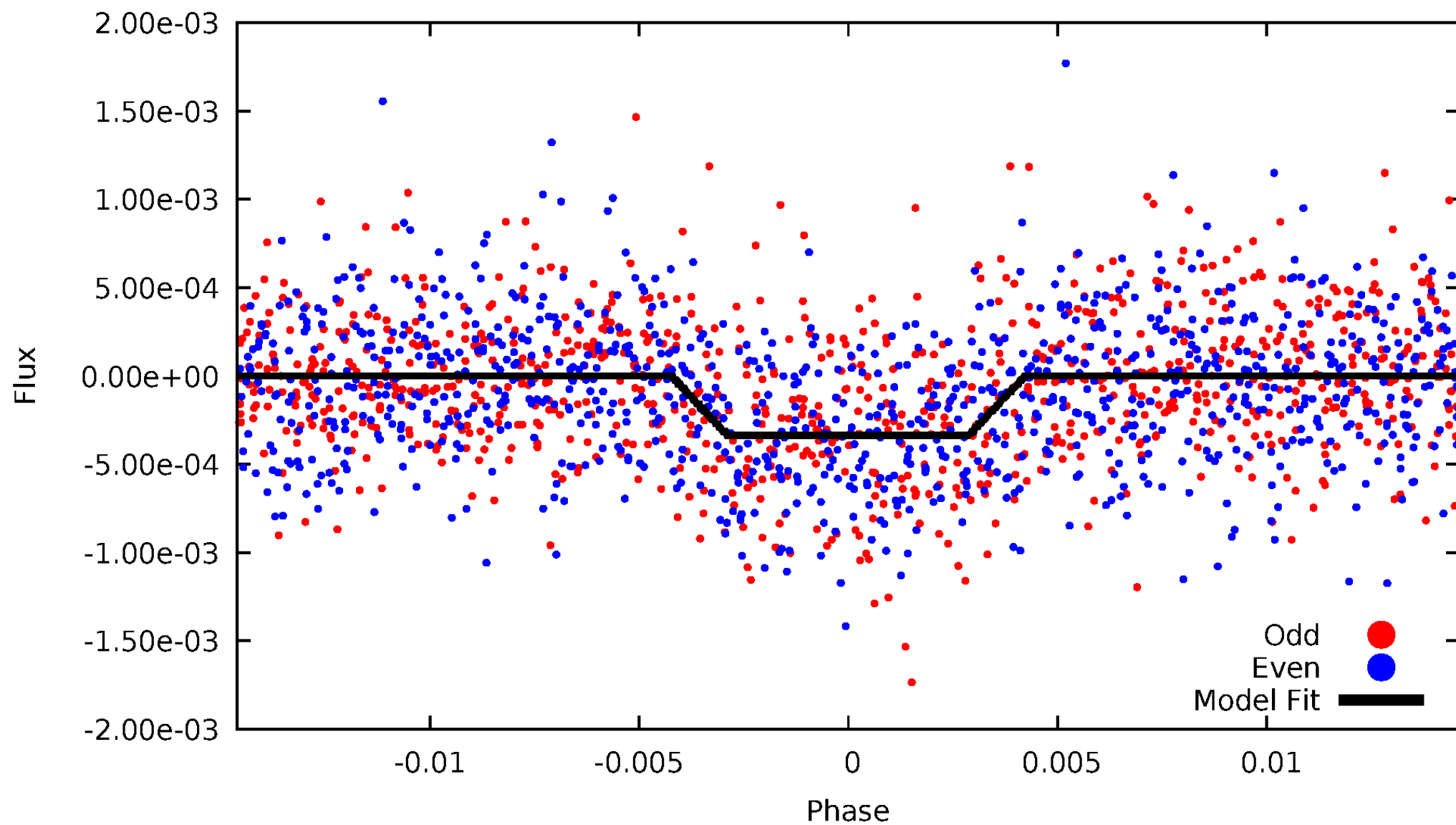
DV Odd/Even

TCE 008678594-02



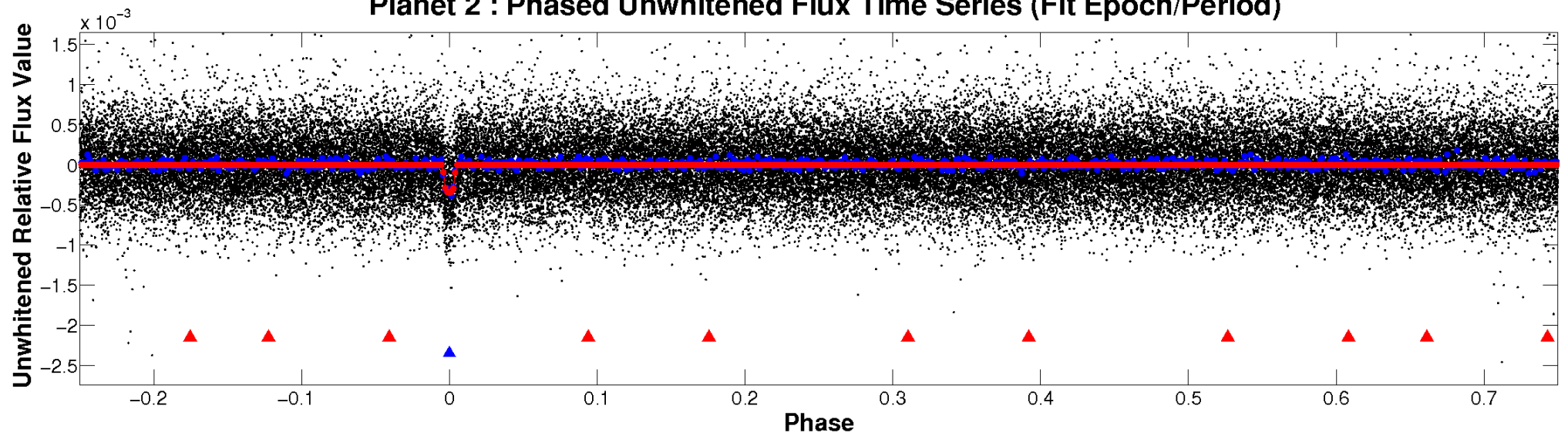
ALT Odd/Even

TCE 008678594-02

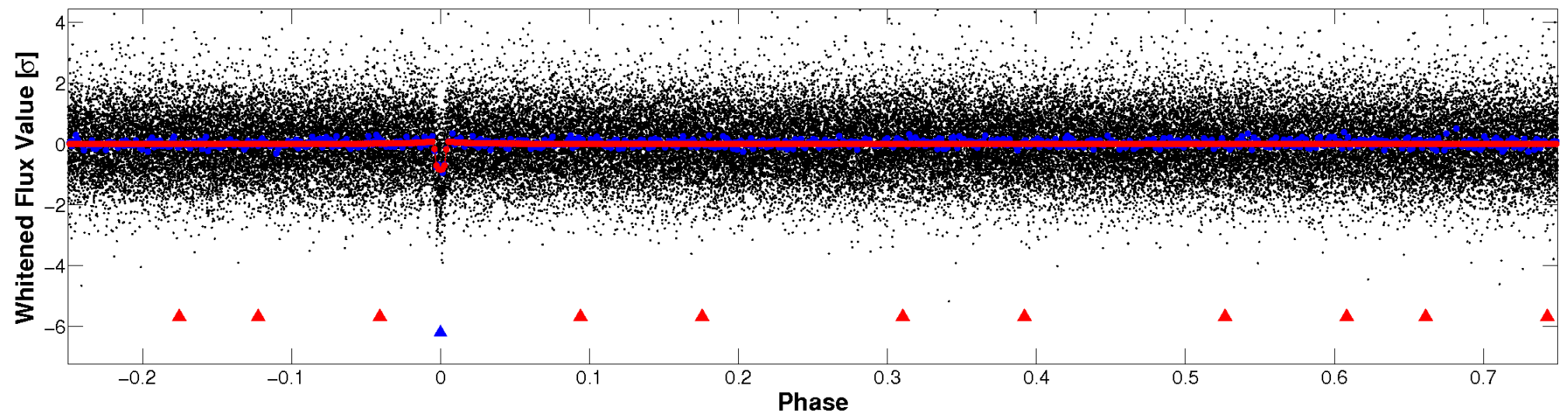


Non-Whitened Vs. Whitened Light Curve

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

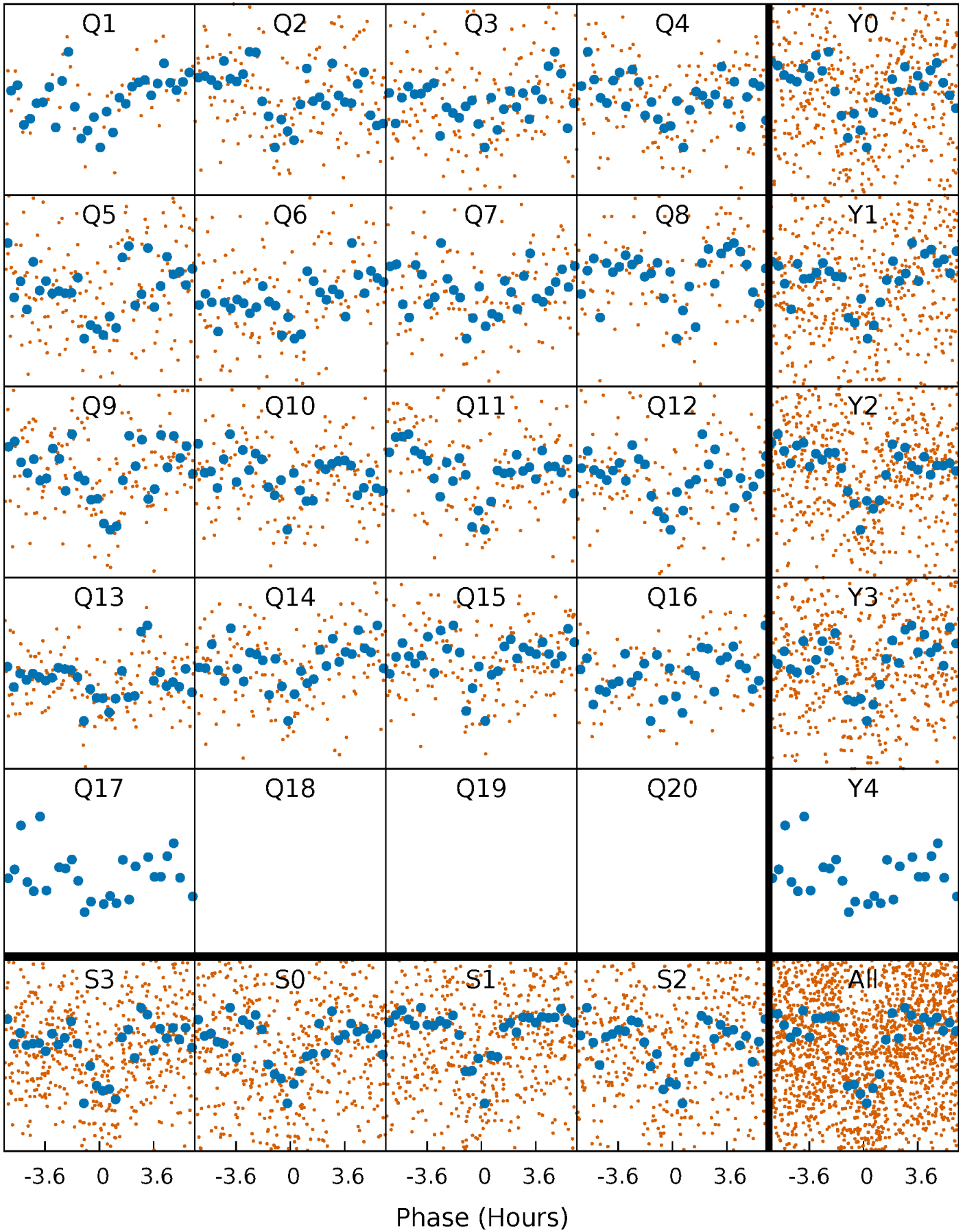


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



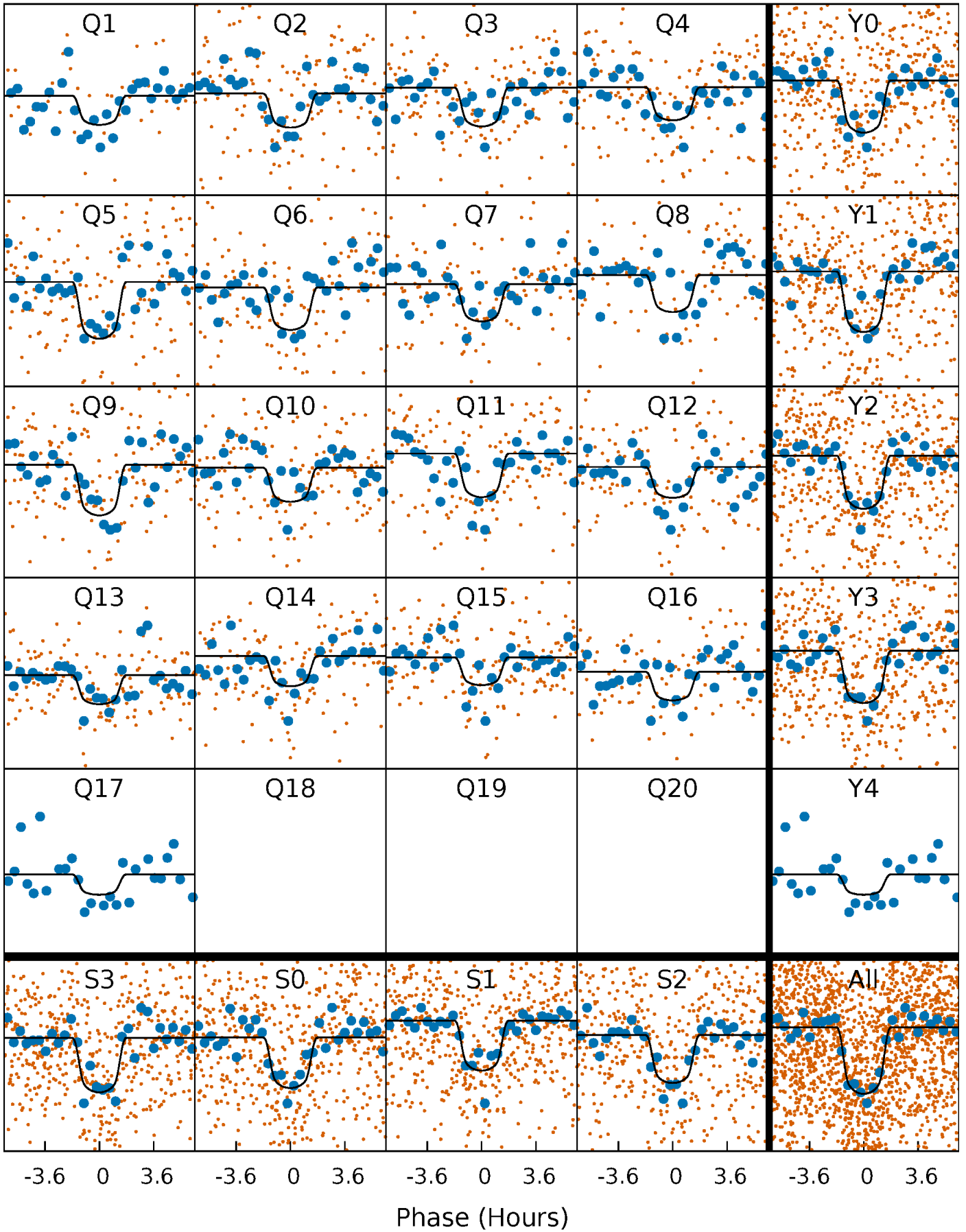
PDC Quarter-Phased Transit Curves

TCE 008678594-02 P= 15.194182 Days $T_0=142.738012$ (BKJD)



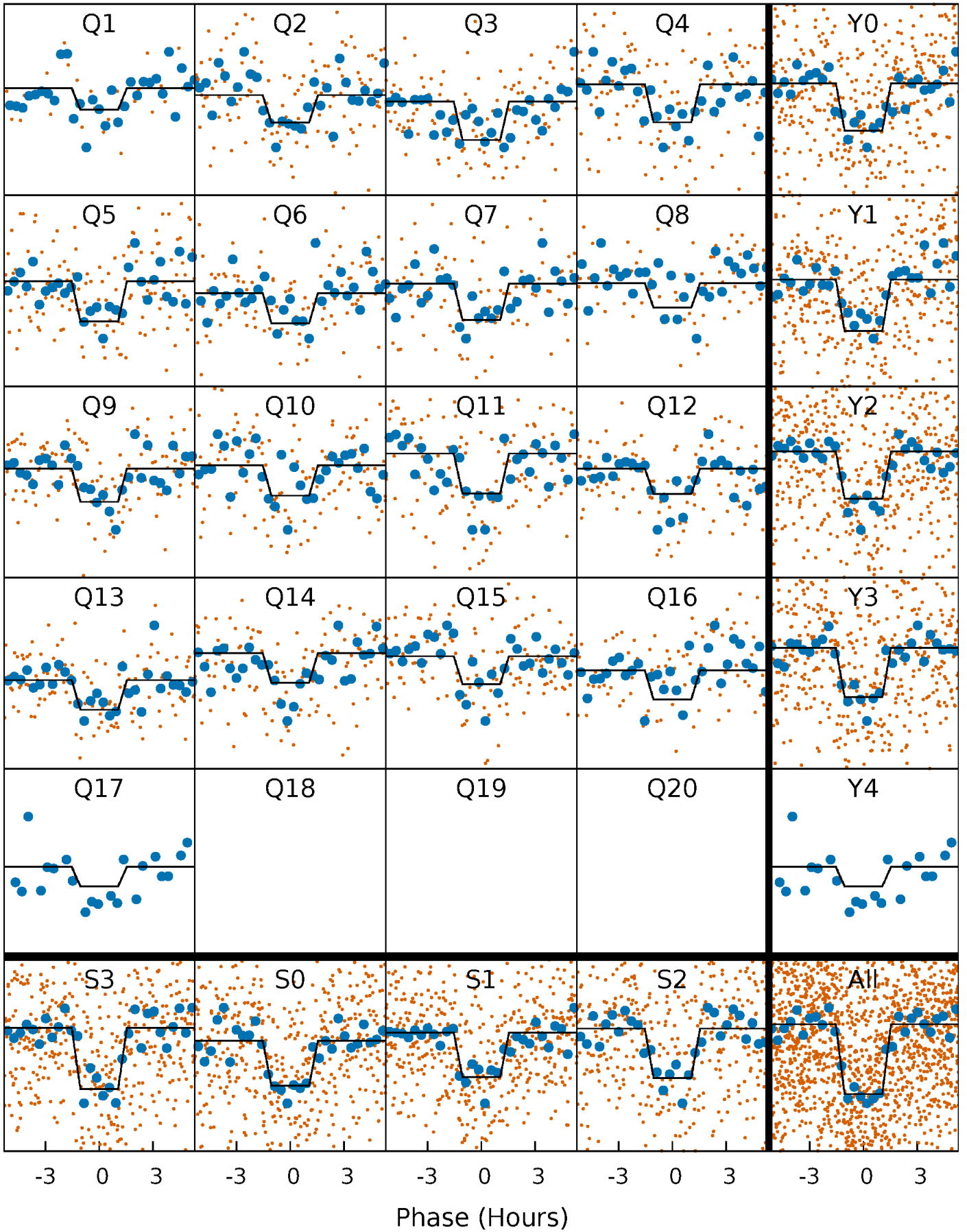
DV Quarter-Phased Transit Curves

TCE 008678594-02 P= 15.194182 Days $T_0=142.738012$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

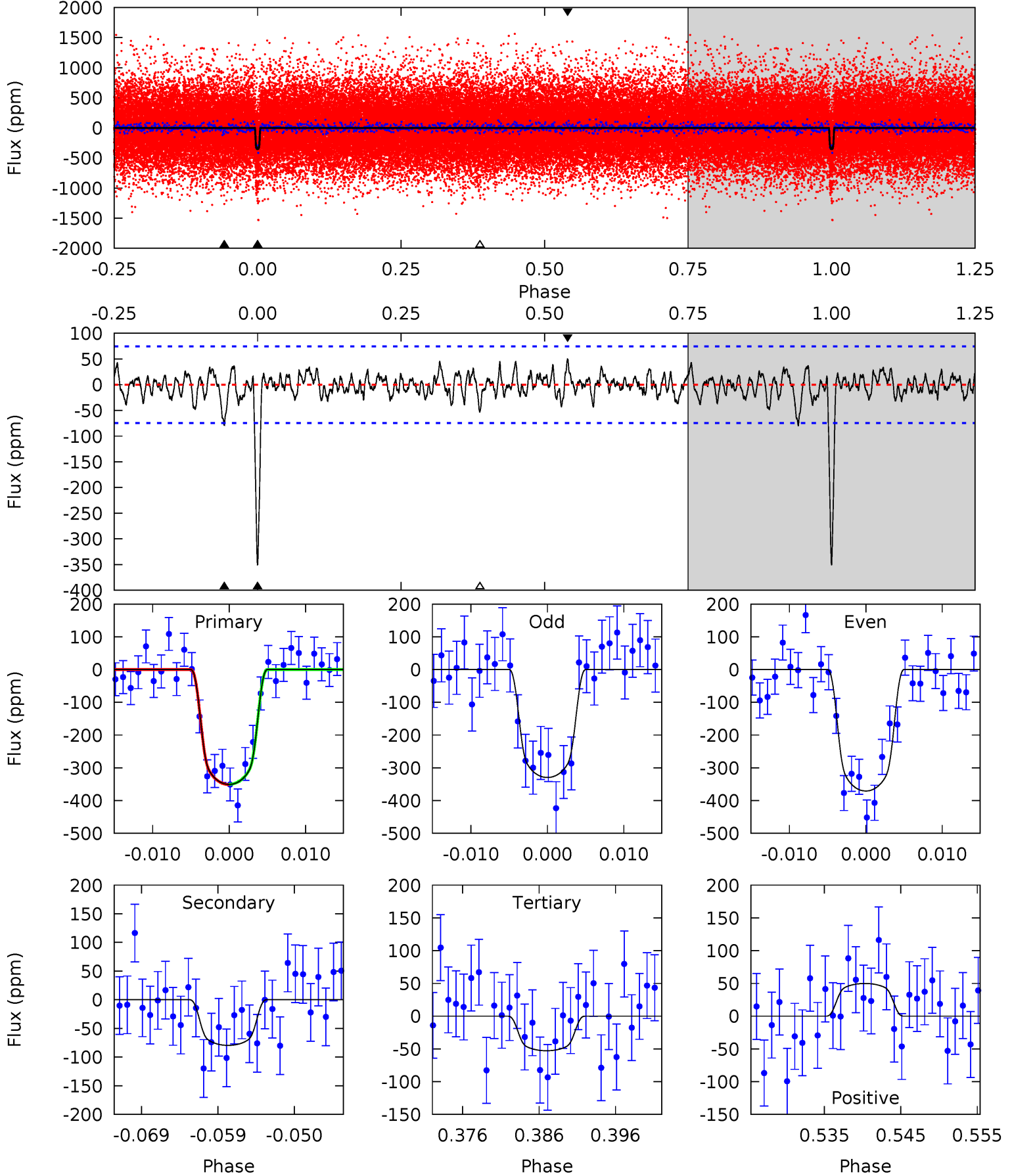
TCE 008678594-02 P= 15.194300 Days $T_0=142.730093$ (BKJD)



DV Model-Shift Uniqueness Test

008678594-02, P = 15.194182 Days, E = 127.543830 Days

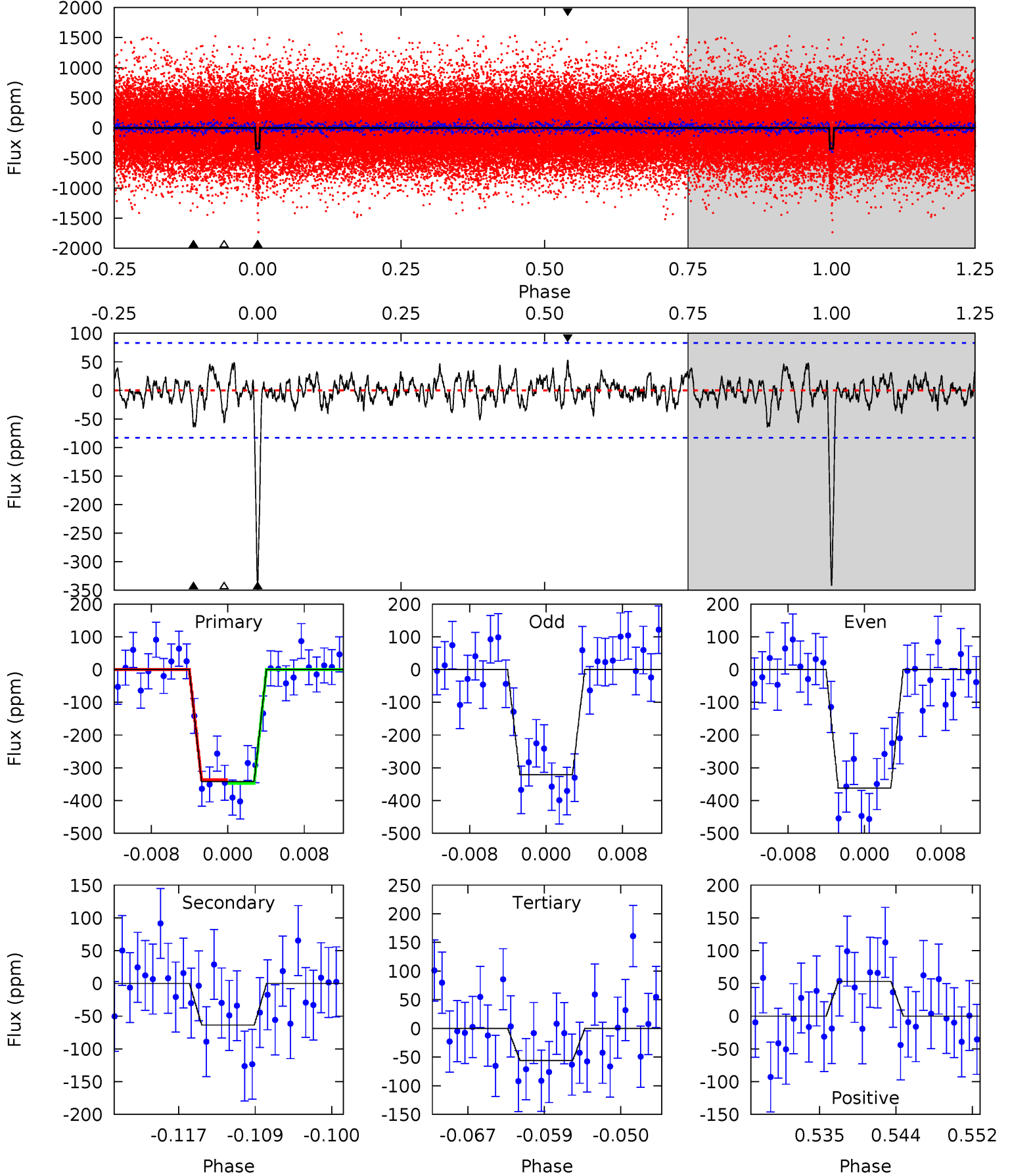
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	5.36	3.56	3.36	5.03	2.58	1.16	20.1	20.3	1.80	2.01	1.39	1.03	0.12	0.03



Alt Model-Shift Uniqueness Test

008678594-02, P = 15.194300 Days, E = 127.535793 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	3.88	3.42	3.24	5.06	2.64	1.05	17.4	17.6	0.46	0.64	1.26	1.04	0.13	0.36



Stellar Parameters For KIC 008678594

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5588^{+83}_{-75}	$4.047^{+0.203}_{-0.087}$	$0.140^{+0.150}_{-0.150}$	$1.593^{+0.245}_{-0.368}$	$1.031^{+0.094}_{-0.094}$	$0.359^{+0.401}_{-0.098}$
	+1%/-1%	+5%/-2%	+107%/-107%	+15%/-23%	+9%/-9%	+111%/-27%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008678594-02 / KOI 1261.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-80 ± 15	$3.51^{+0.77}_{-0.69}$	1236^{+57}_{-80}	3958^{+342}_{-249}	53^{+31}_{-19}
Alt.	-64 ± 16	$3.05^{+0.71}_{-0.68}$	1238^{+51}_{-78}	3996^{+378}_{-307}	55^{+38}_{-21}

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

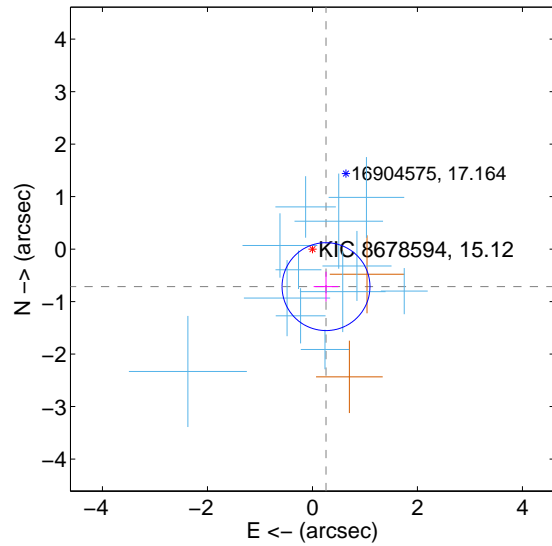
Supplemental centroid analysis for 008678594-02. Kepler magnitude: 15.12. Transit SNR 16.25

There are 12 quarters with good PRF difference image offsets

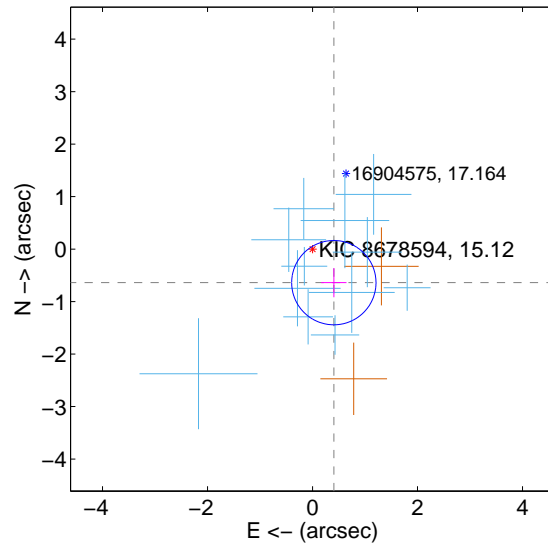
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.760 ± 0.279	2.72	-0.258 ± 0.236	-0.715 ± 0.284
PRF-fit source offset from KIC position	0.757 ± 0.268	2.83	-0.406 ± 0.241	-0.639 ± 0.278
photometric centroid source offset	1.01 ± 0.94	1.07	-0.01 ± 0.90	-1.01 ± 0.94

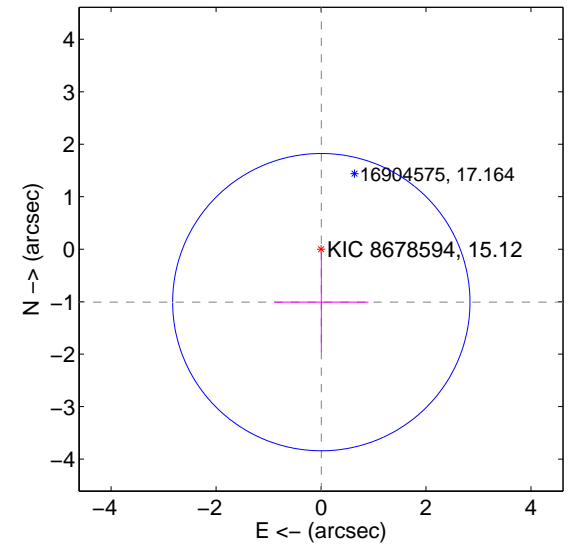
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

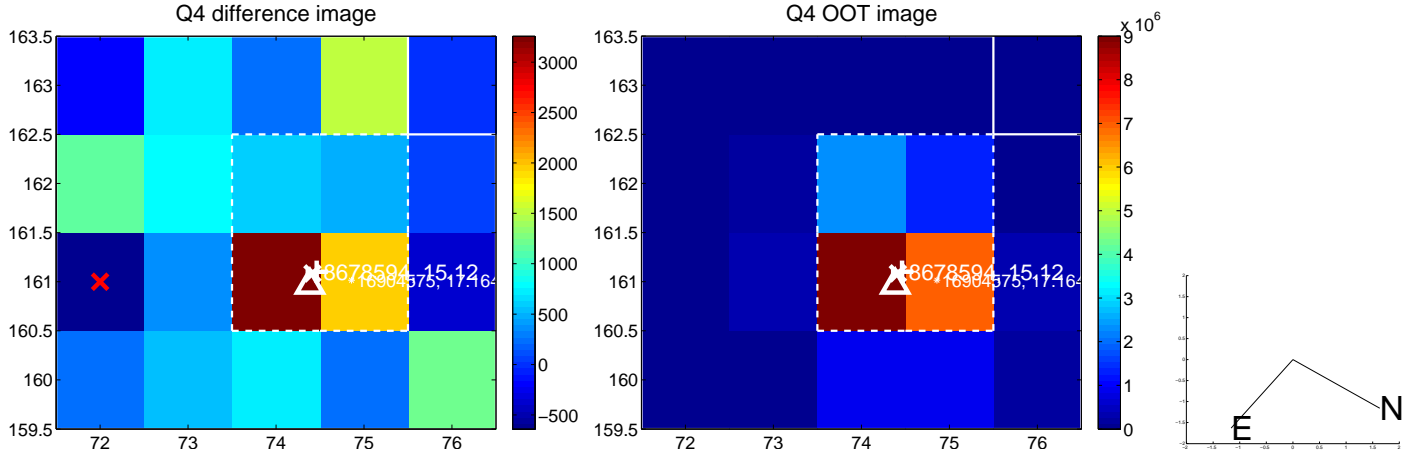
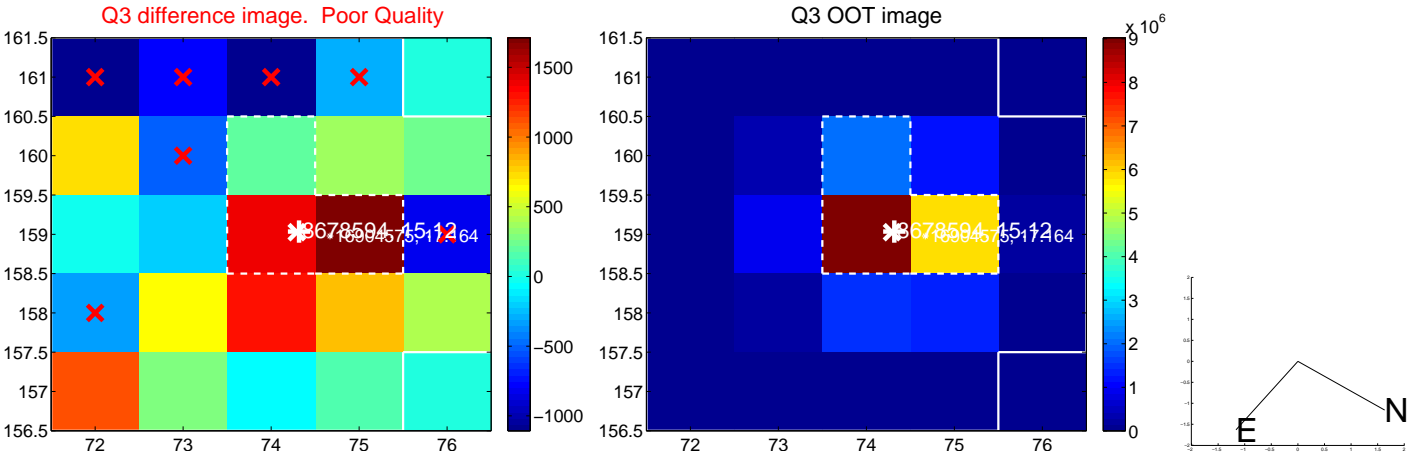
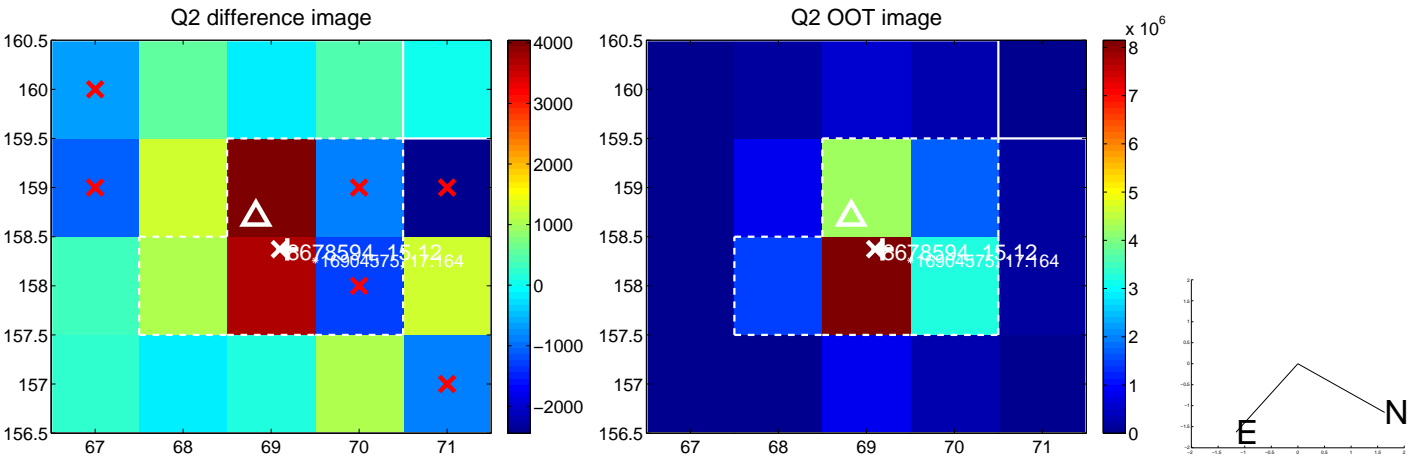
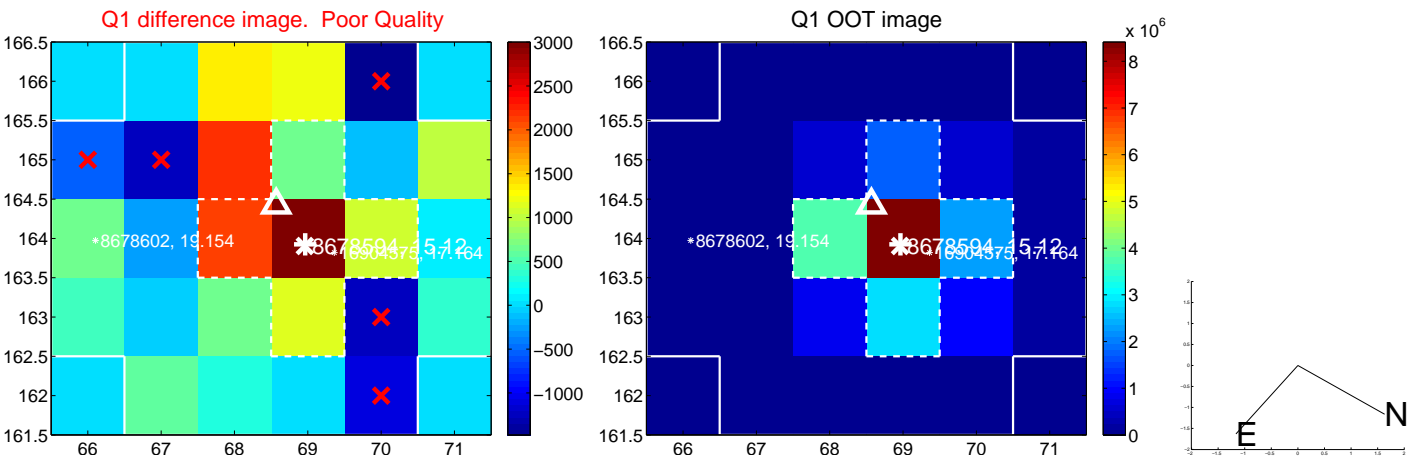


offset from photometric centroids

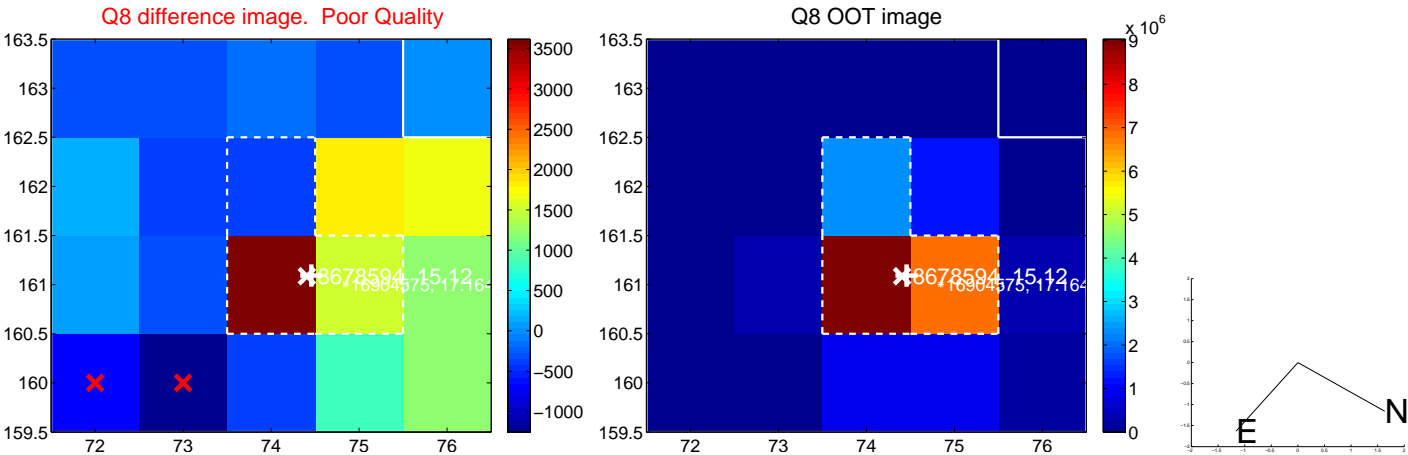
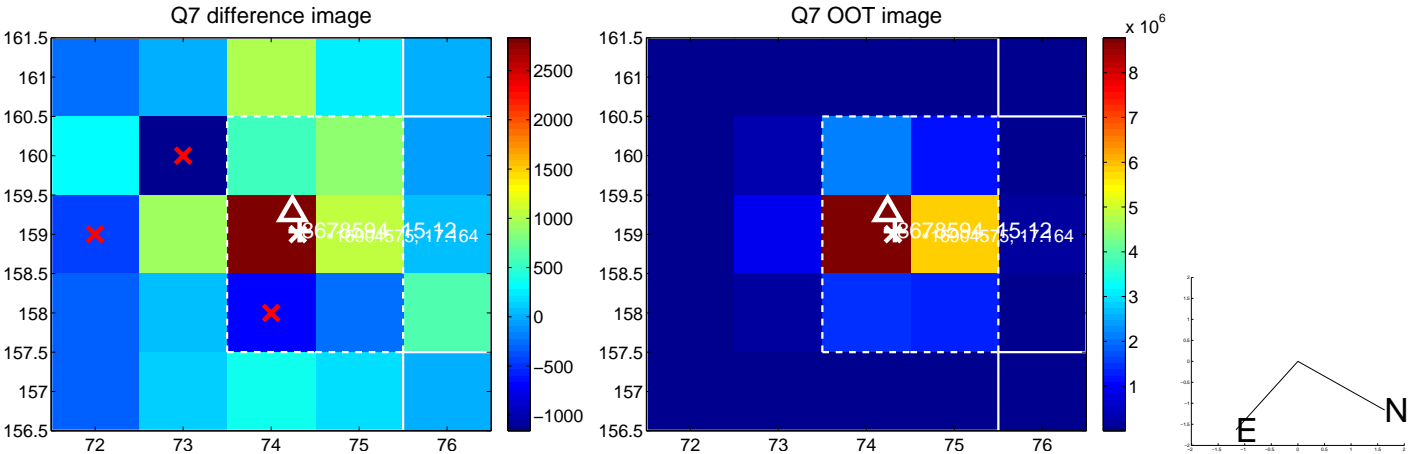
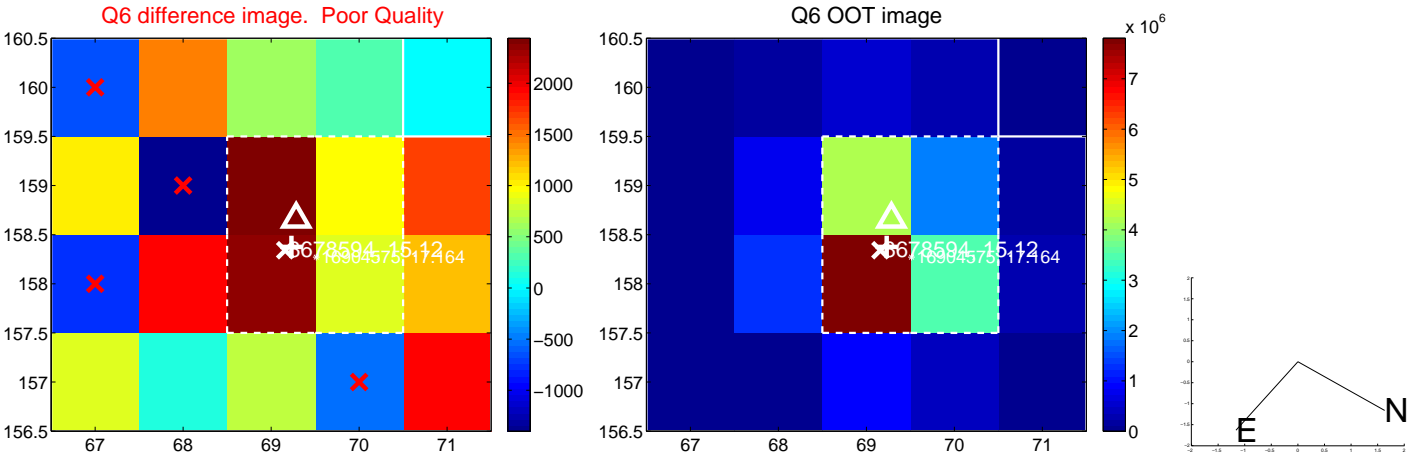
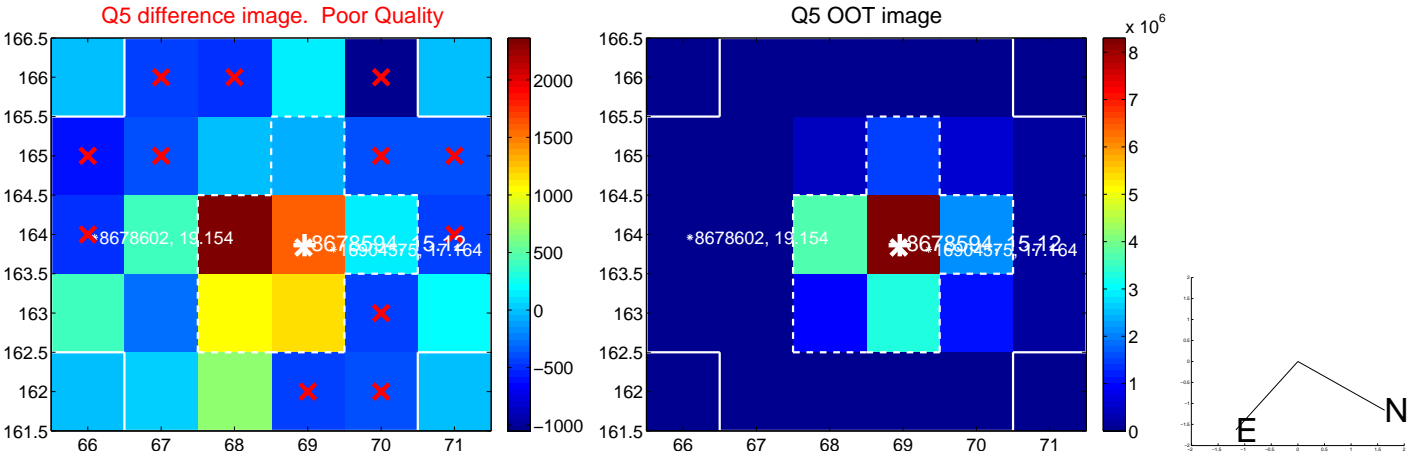


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

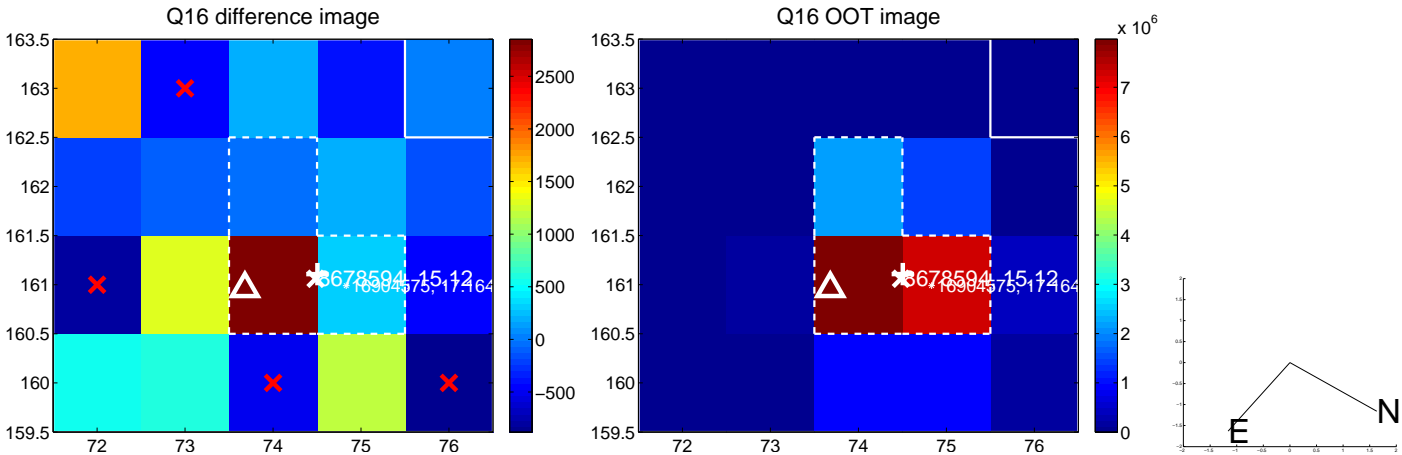
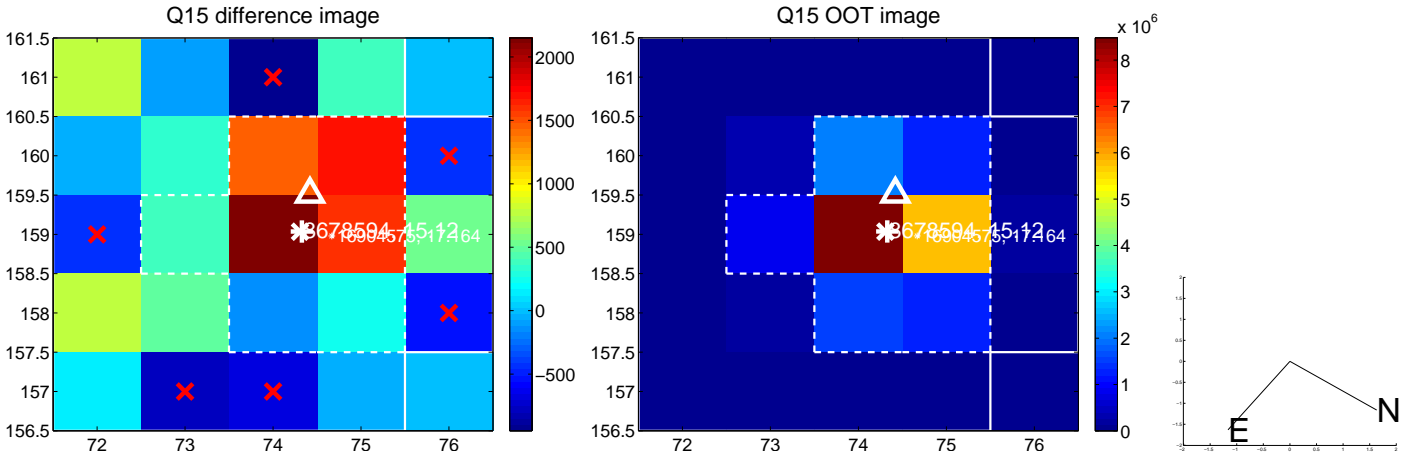
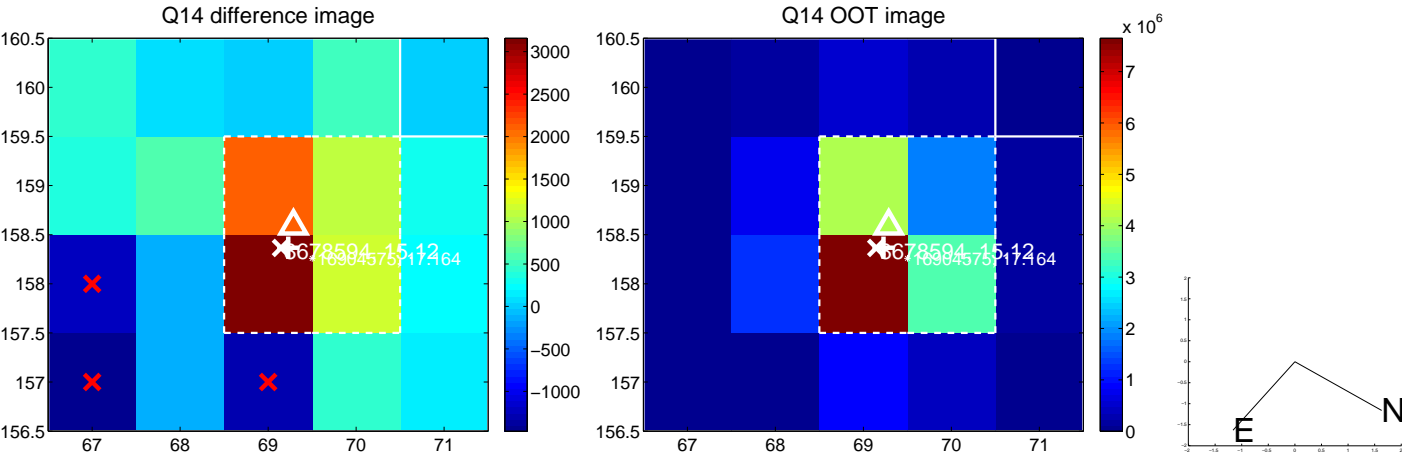
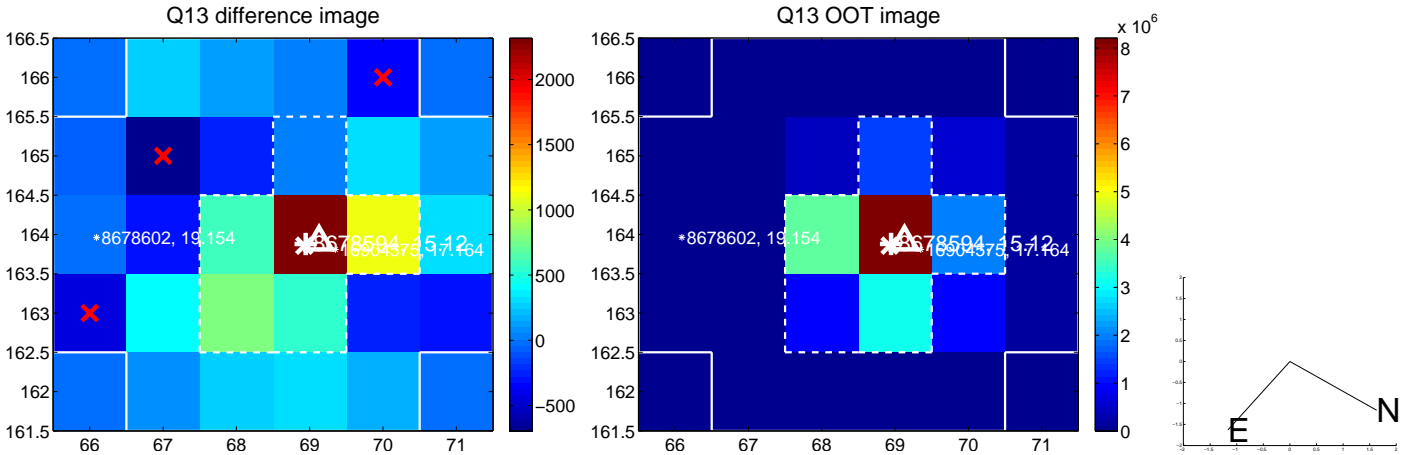
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



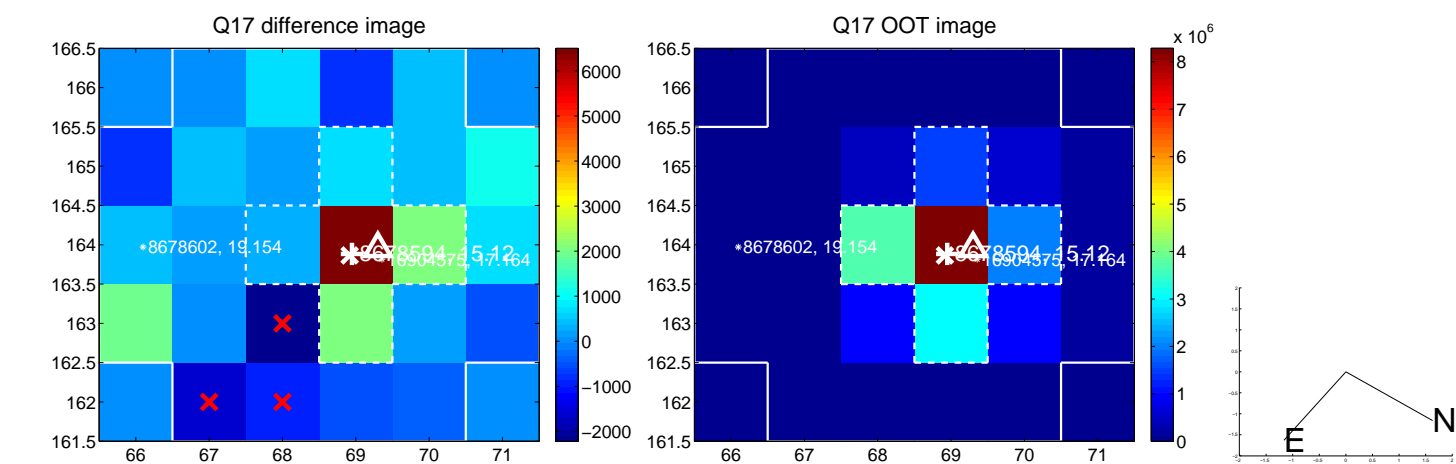
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



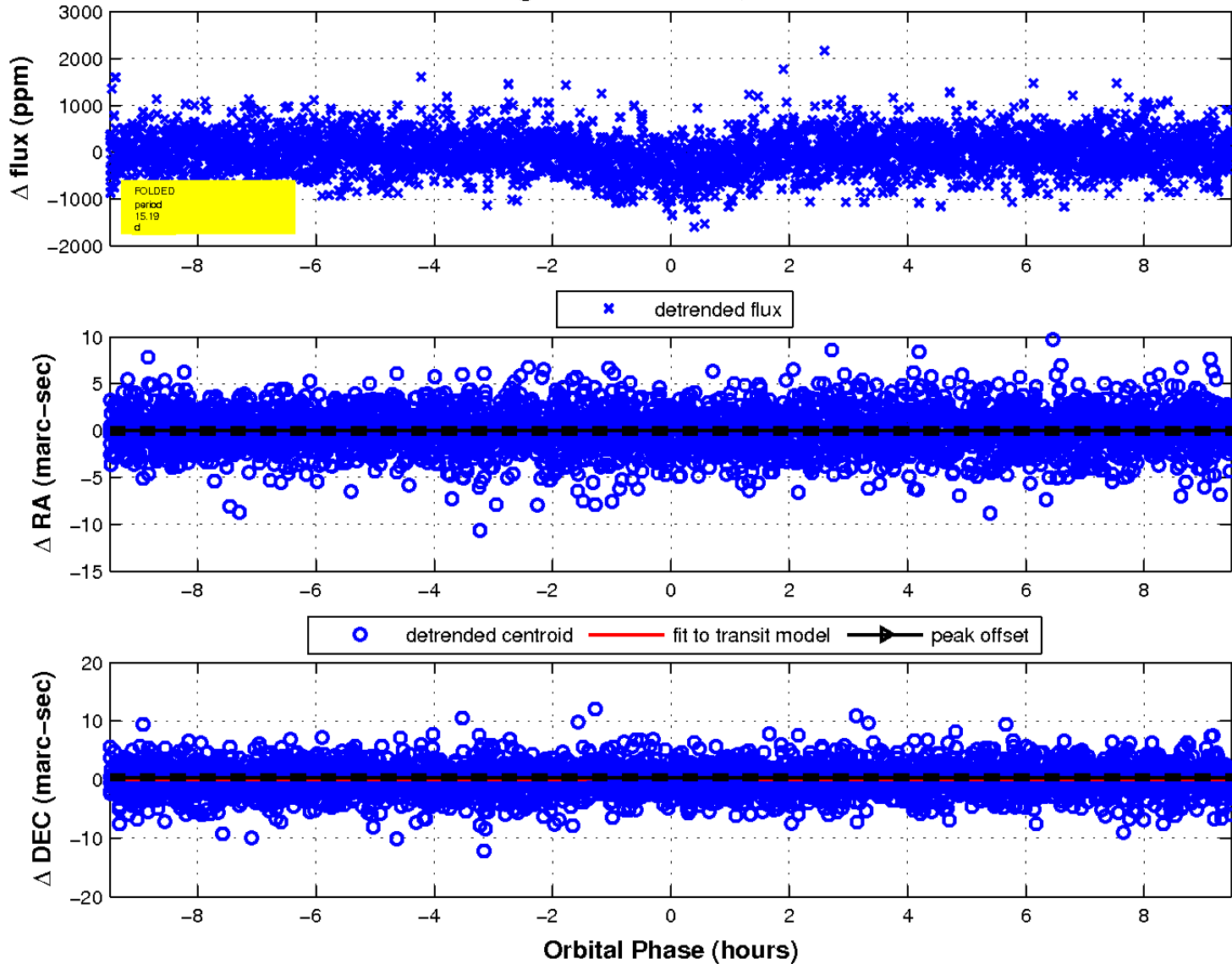
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

