

KIC 009995771

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})
009995771-01	OBS	3470.02	25.433813	143.128370	307.2	6.663	12.2	13.4	1.16	5806	2.24	46.88
009995771-02	OBS	3470.01	15.061775	140.111829	182.4	6.427	9.9	10.4	1.16	5806	1.74	94.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009995771-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009995771-02	OBS	PC	0.73	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.

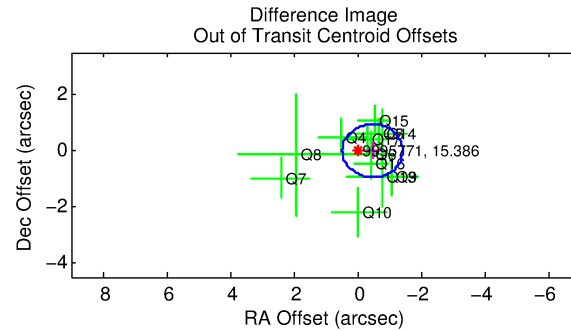
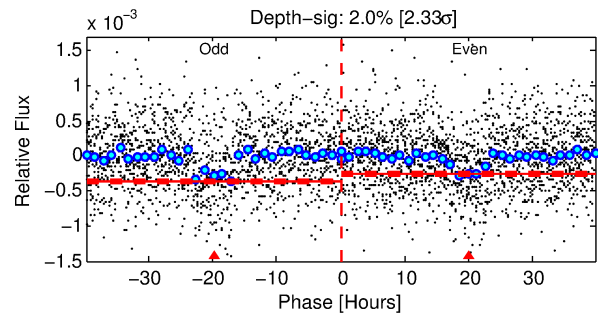
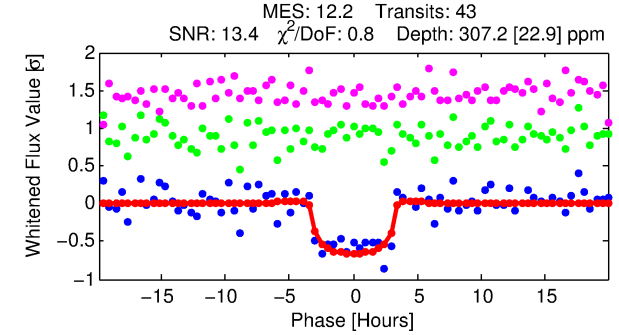
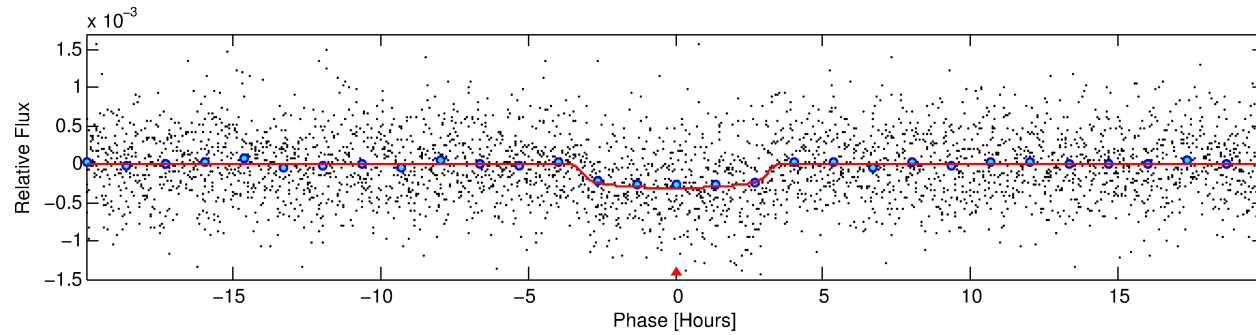
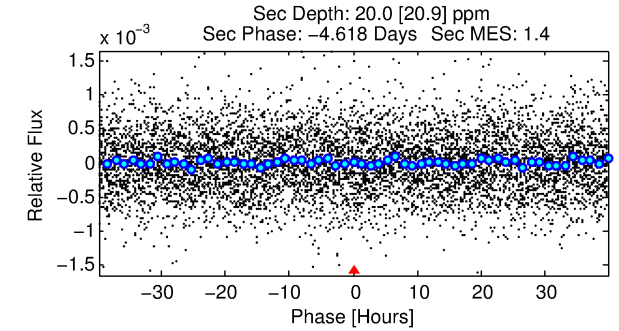
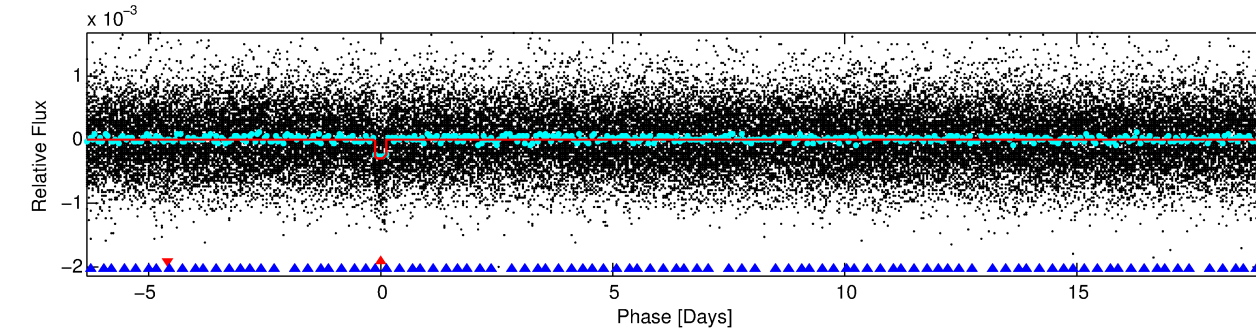
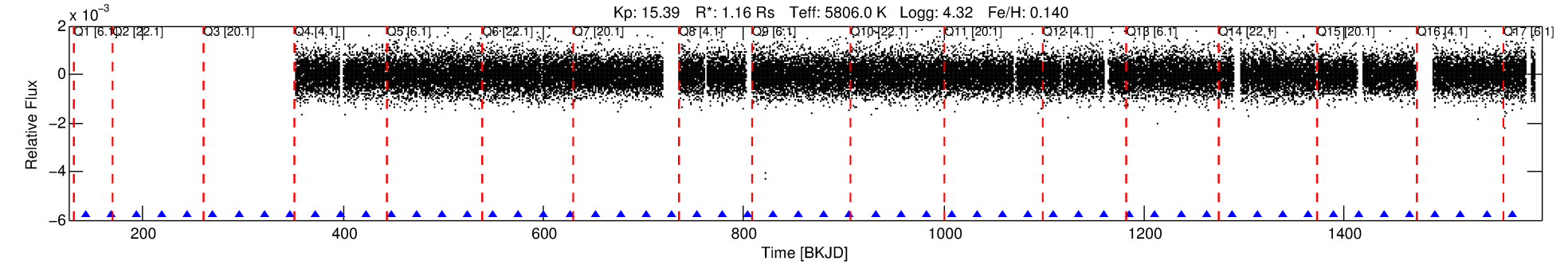
Ephemeris Match Information For 009995771-01

No Significant Match Found

DV One-Page Summary

KIC: 9995771 Candidate: 1 of 2 Period: 25.434 d

KOI: K03470.02 Corr: 0.982



DV Fit Results:

Period = 25.43381 [0.00035] d
Epoch = 143.1284 [0.0128] BKJD
Rp/R* = 0.0177 [0.0080]
a/R* = 18.75 [37.40]
b = 0.79 [0.97]
Seff = 46.88 [10.15]
Teq = 667 [36] K
Rp = 2.24 [1.08] Re
a = 0.1707 [0.0245] AU
Ag = 63.71 [88.70] [0.71σ]
Teffp = 2915 [1004] K [2.24σ]

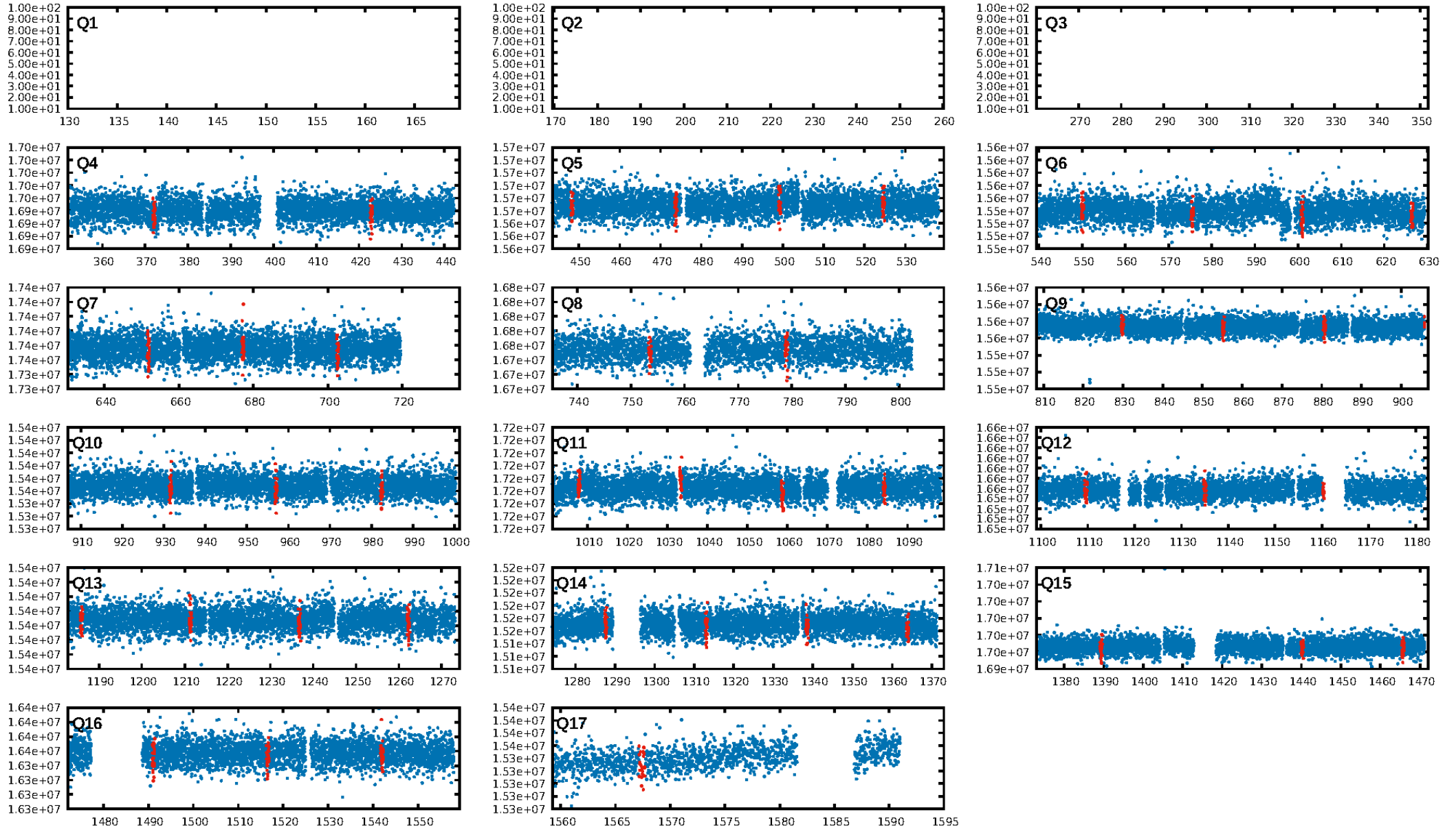
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [26.89σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 84.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.13e-30
RollingBand-fgt: 1.00 [42/42]
GhostDiagnostic-chr: 5.404
Centroid-sig: 0.6%
Centroid-so: 1.854 arcsec [1.96σ]
OotOffset-rm: 0.476 arcsec [1.51σ]
KicOffset-rm: 0.651 arcsec [2.07σ]
OotOffset-st: 3/2/3/4 [12]
KicOffset-st: 3/2/3/4 [12]
DiffImageQuality-fgm: 0.75 [9/12]
DiffImageOverlap-fno: 1.00 [14/14]

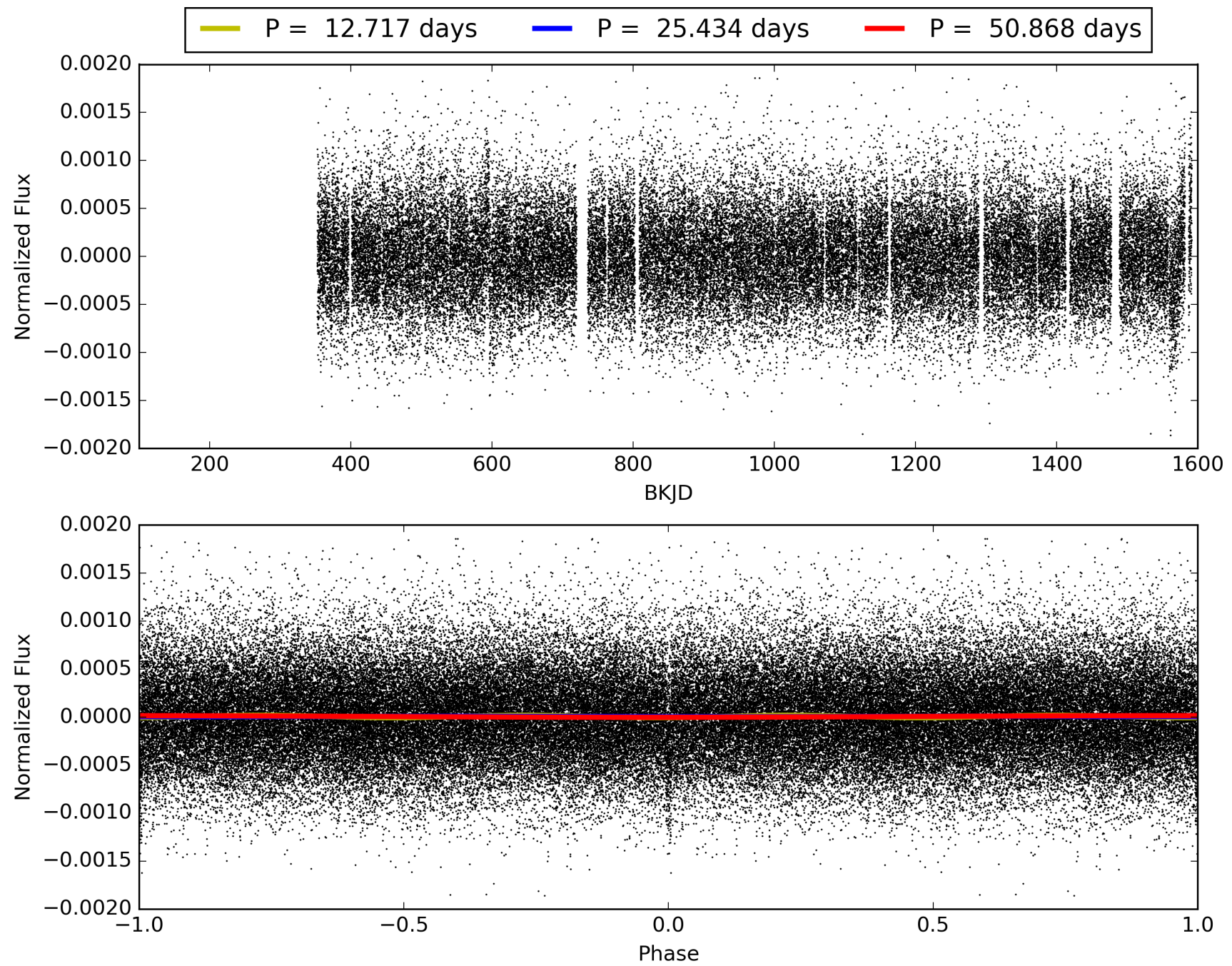
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:08:03 Z

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

TCE 009995771-01, PDC Light Curves

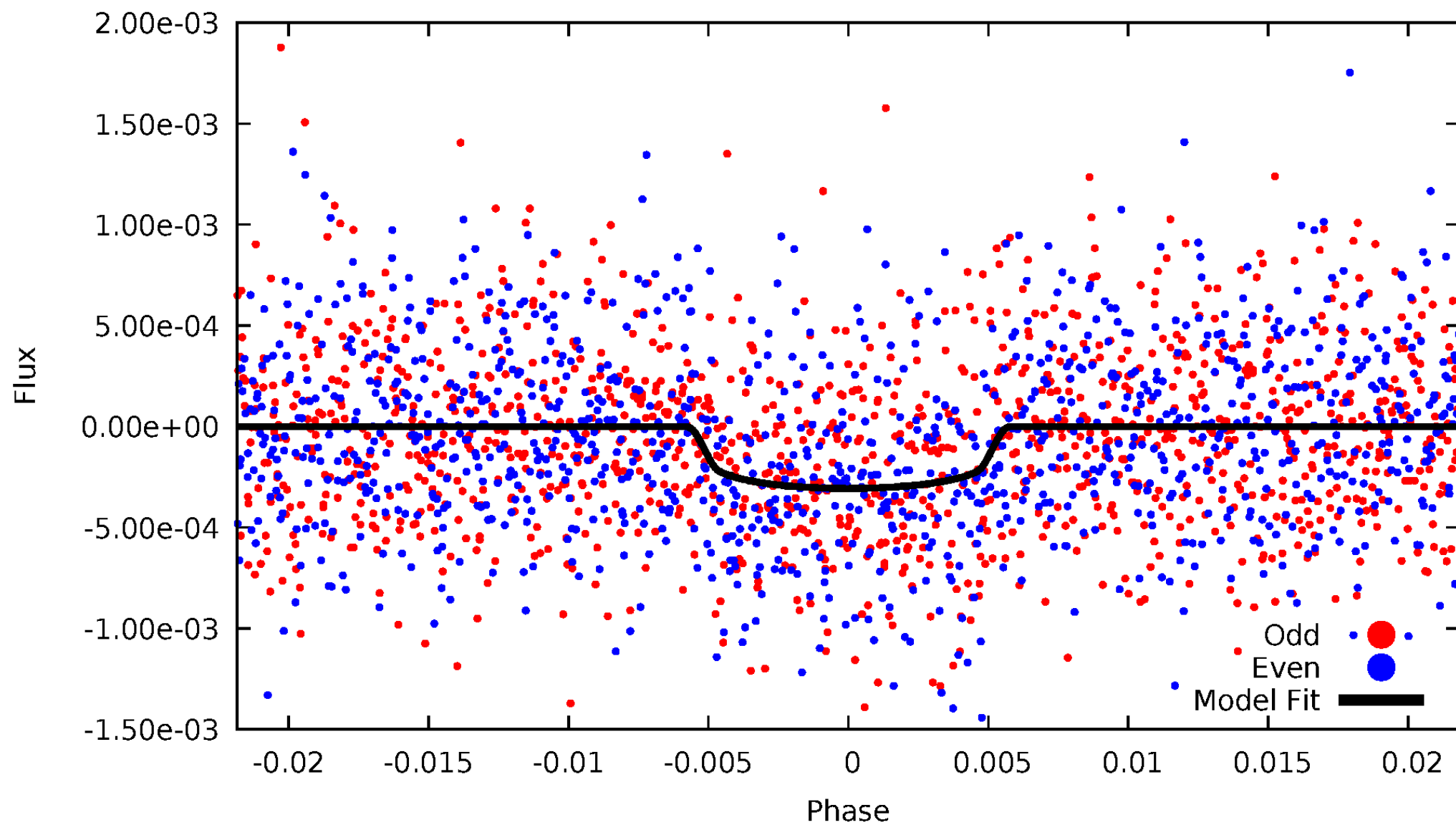


TCE 009995771-01



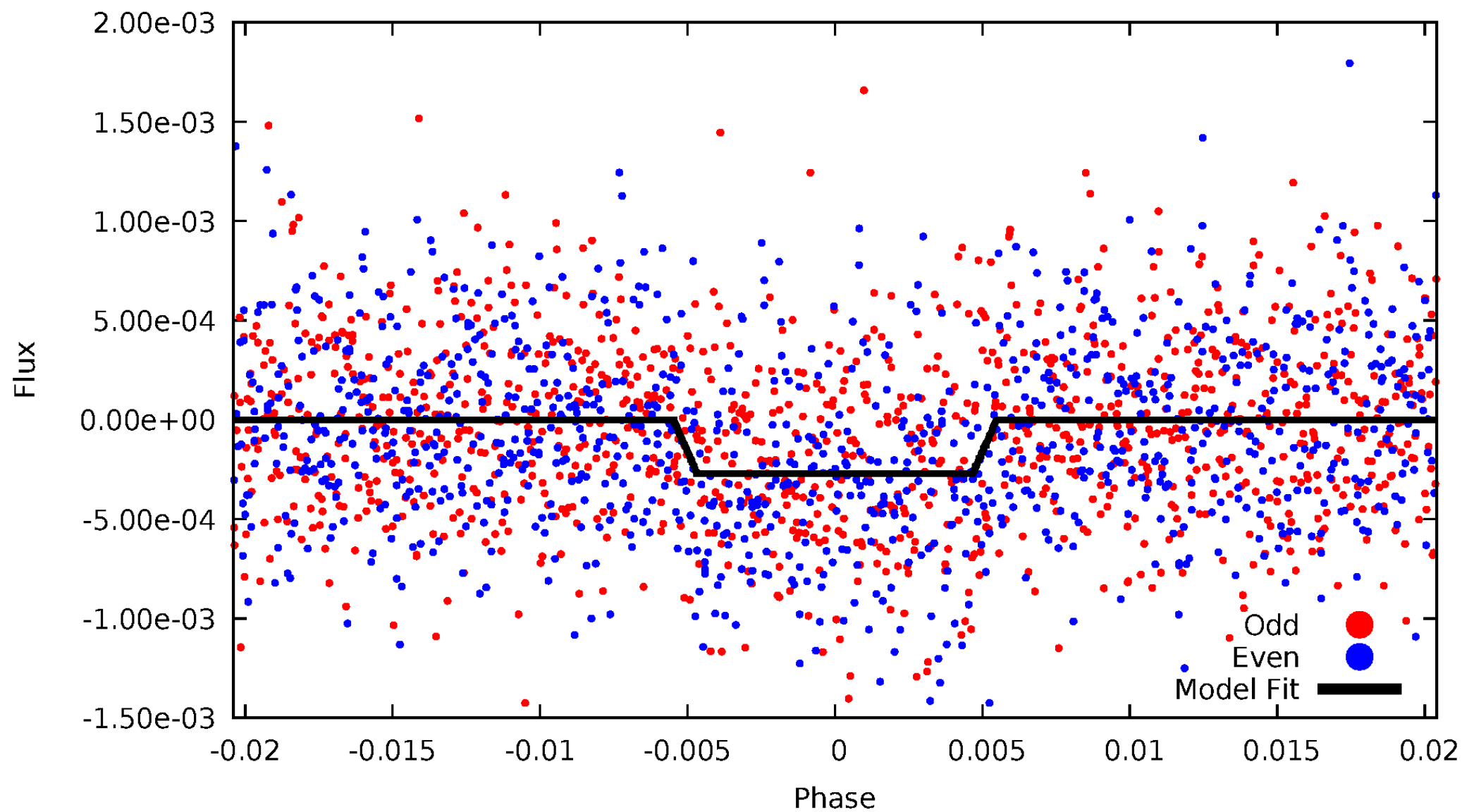
DV Odd/Even

TCE 009995771-01



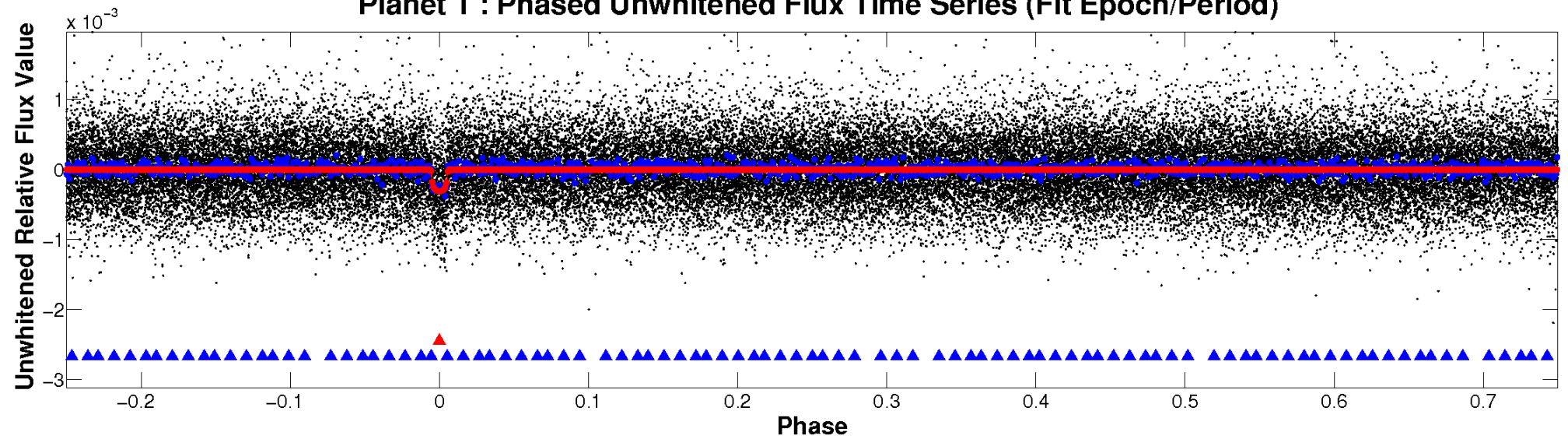
ALT Odd/Even

TCE 009995771-01

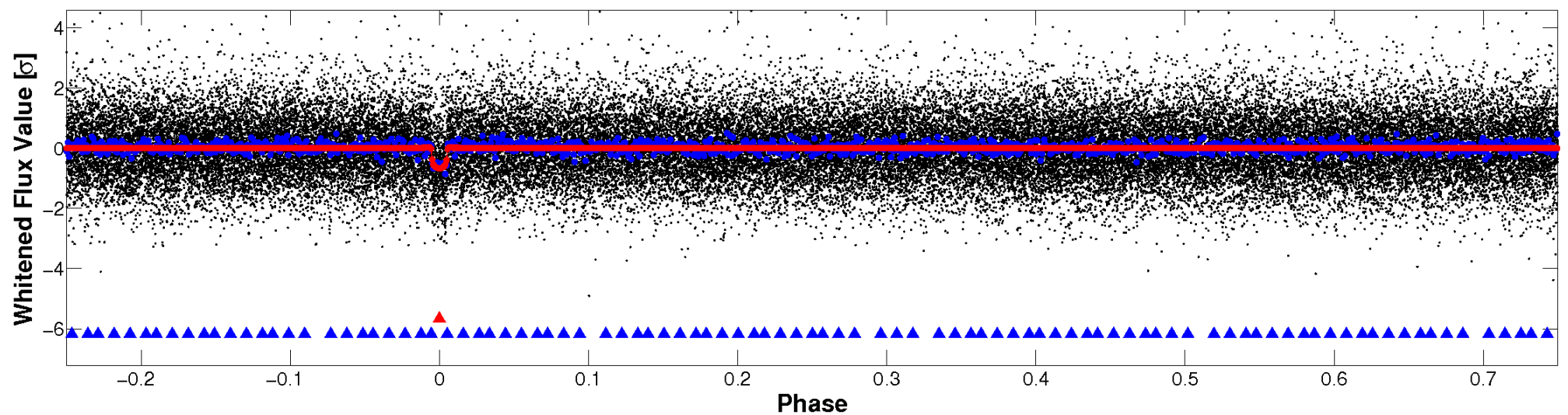


Non-Whitened Vs. Whitened Light Curve

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

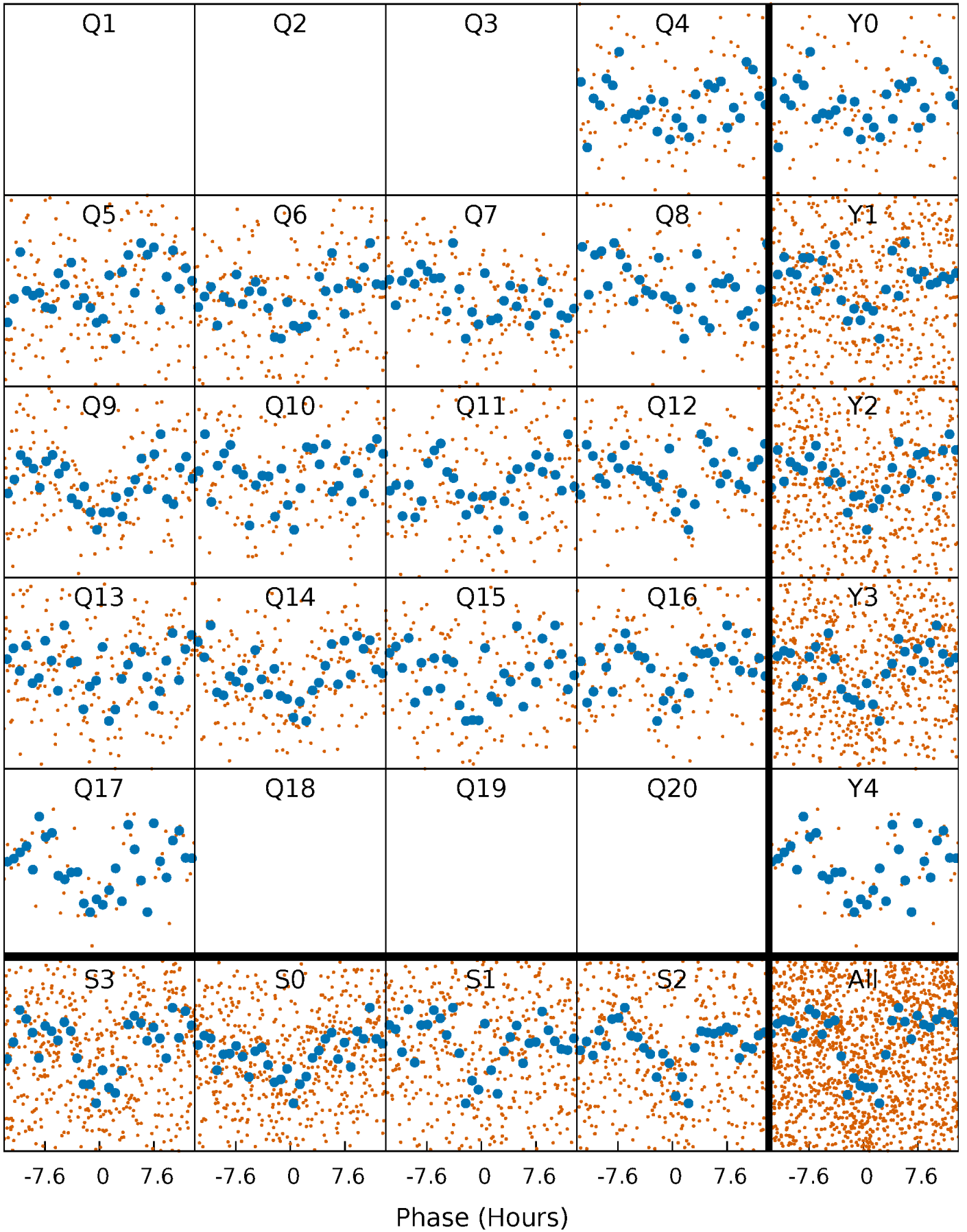


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



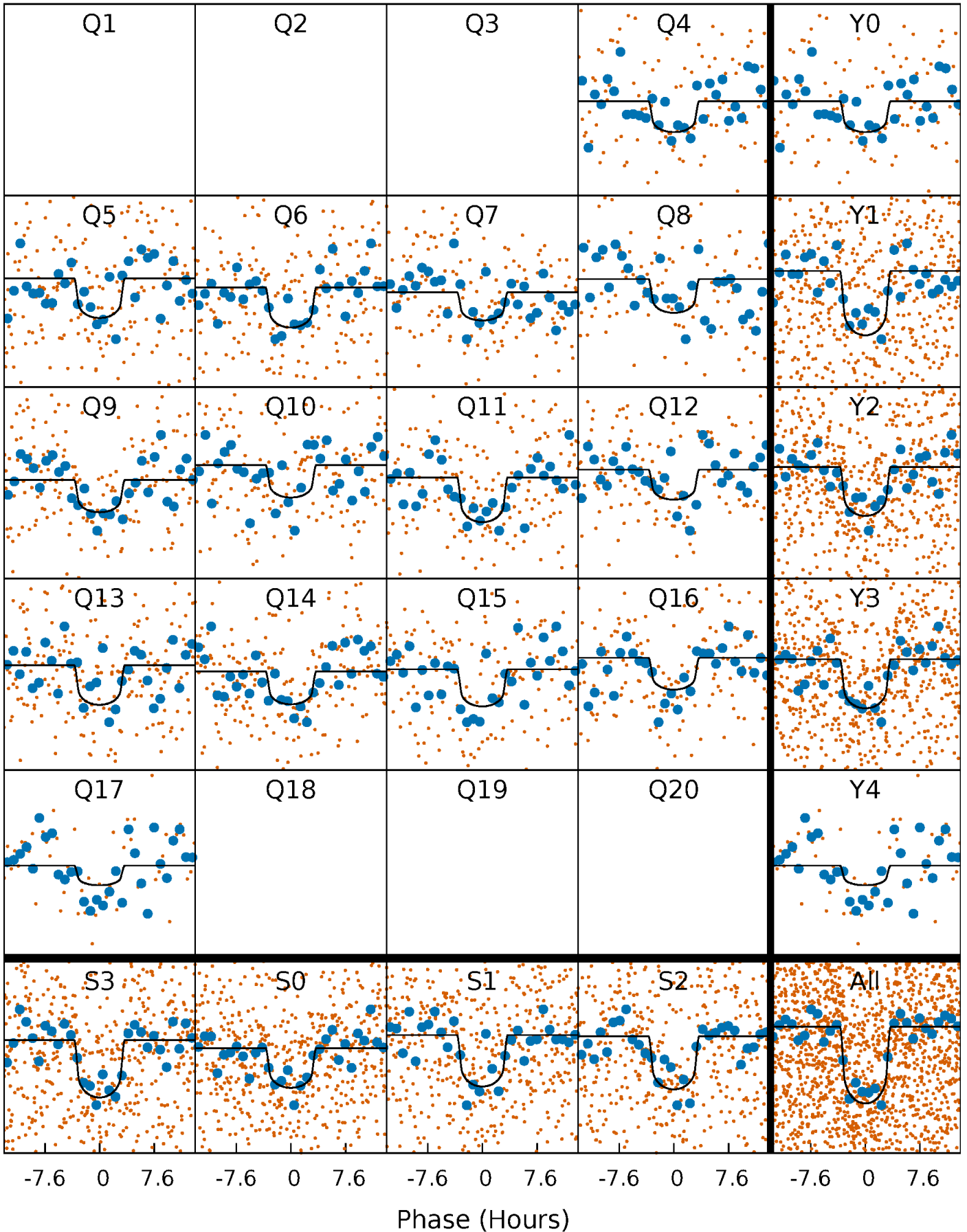
PDC Quarter-Phased Transit Curves

TCE 009995771-01 P= 25.433813 Days $T_0=143.128370$ (BKJD)



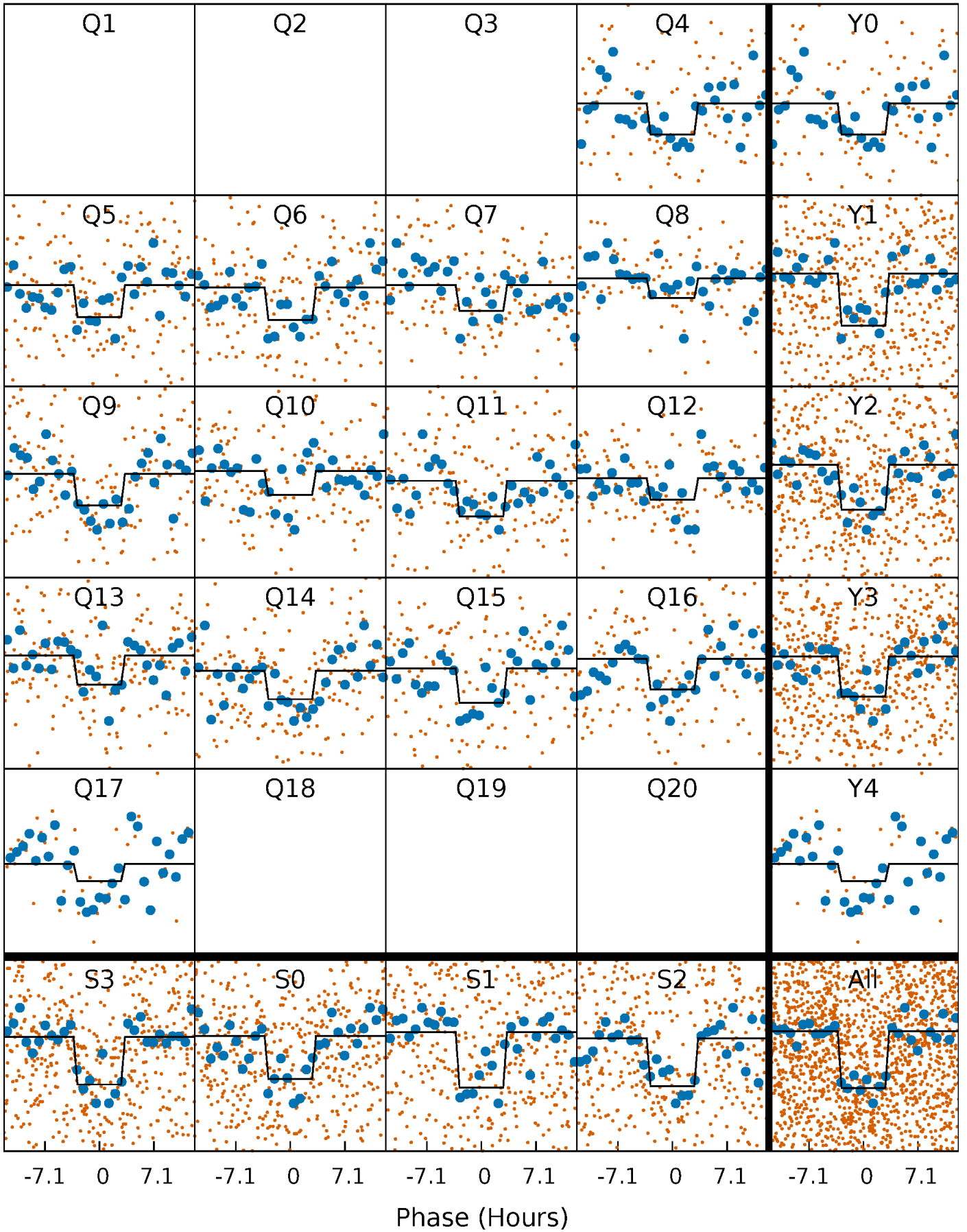
DV Quarter-Phased Transit Curves

TCE 009995771-01 P= 25.433813 Days $T_0=143.128370$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

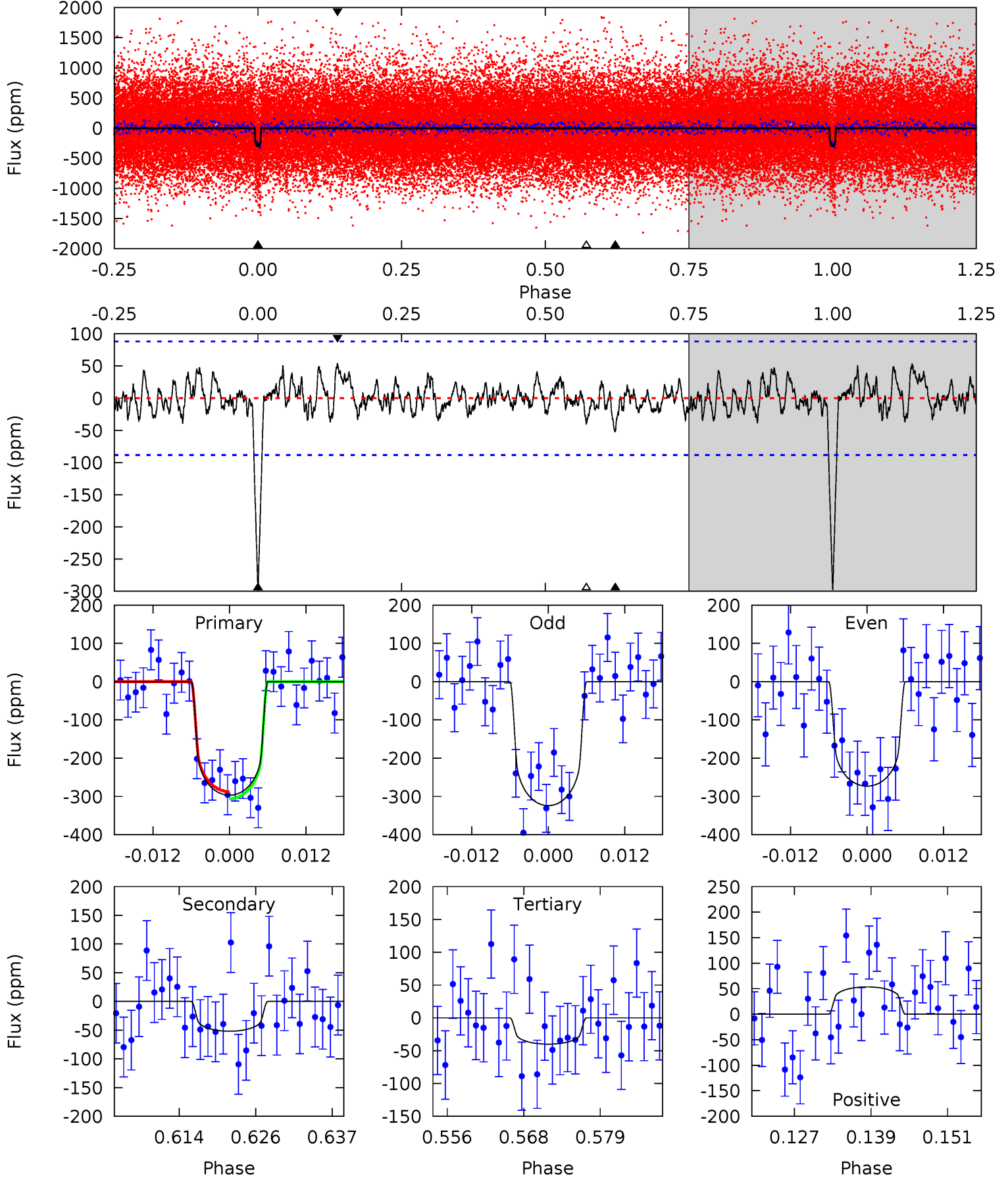
TCE 009995771-01 P= 25.433220 Days $T_0=143.149787$ (BKJD)



DV Model-Shift Uniqueness Test

009995771-01, P = 25.433813 Days, E = 143.128370 Days

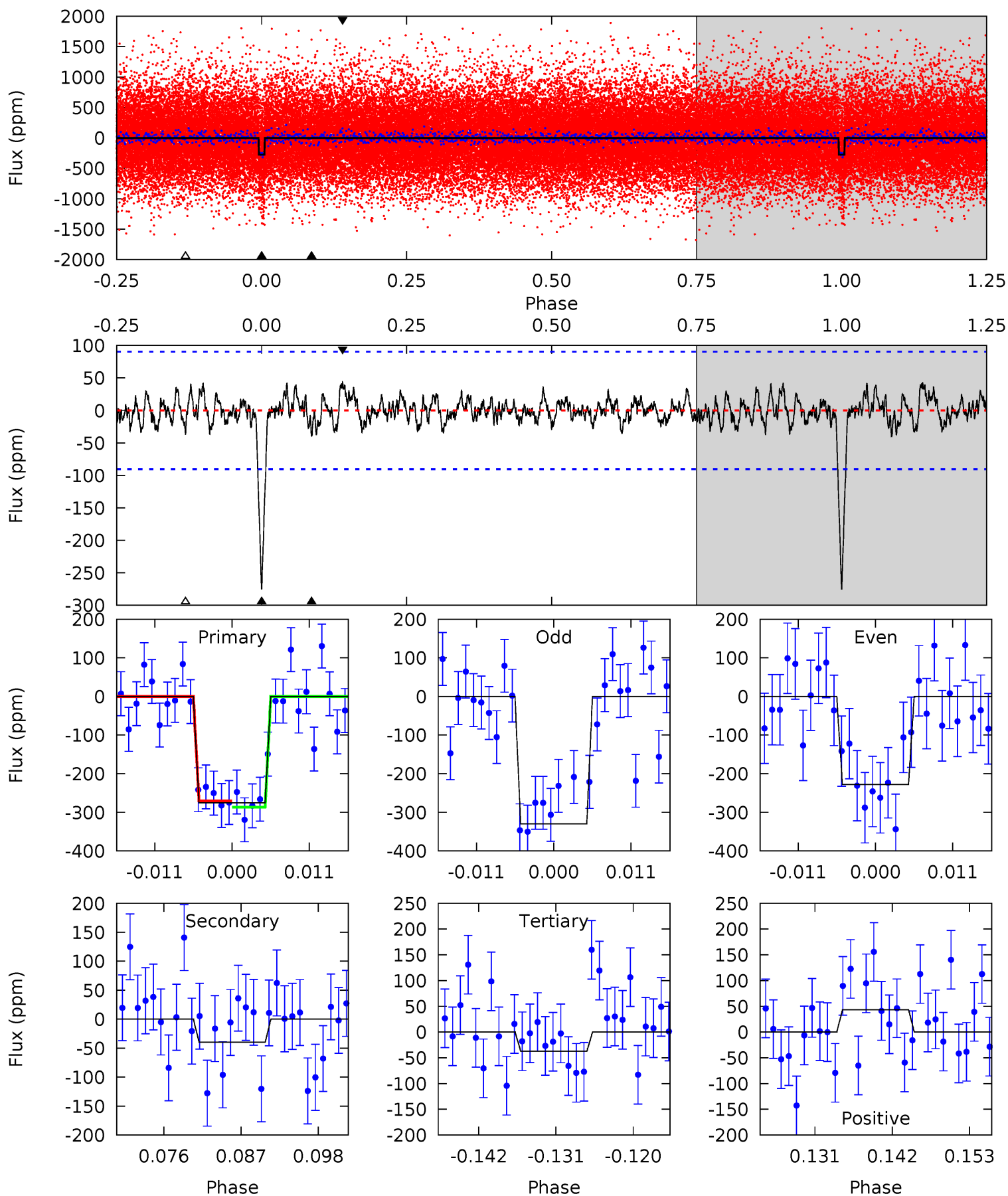
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	2.94	2.27	3.03	5.00	2.52	0.99	14.6	13.8	0.67	-0.09	1.45	1.00	0.15	0.52



Alt Model-Shift Uniqueness Test

009995771-01, $P = 25.433220$ Days, $E = 143.149787$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	2.20	2.07	2.41	5.01	2.55	0.82	13.2	12.8	0.14	-0.20	2.81	1.00	0.14	0.45



Stellar Parameters For KIC 009995771

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5806^{+78}_{-78}	$4.321^{+0.115}_{-0.115}$	$0.140^{+0.150}_{-0.150}$	$1.158^{+0.197}_{-0.148}$	$1.024^{+0.081}_{-0.059}$	$0.930^{+0.454}_{-0.304}$
	+1%/-1%	+3%/-3%	+107%/-107%	+17%/-13%	+8%/-6%	+49%/-33%
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 009995771-01 / KOI 3470.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-52 ± 18	$2.23^{+1.03}_{-0.88}$	935^{+44}_{-36}	3978^{+981}_{-538}	153^{+360}_{-90}
Alt.	-40 ± 18	$2.13^{+1.01}_{-0.98}$	930^{+42}_{-37}	3874^{+1045}_{-559}	134^{+358}_{-81}

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

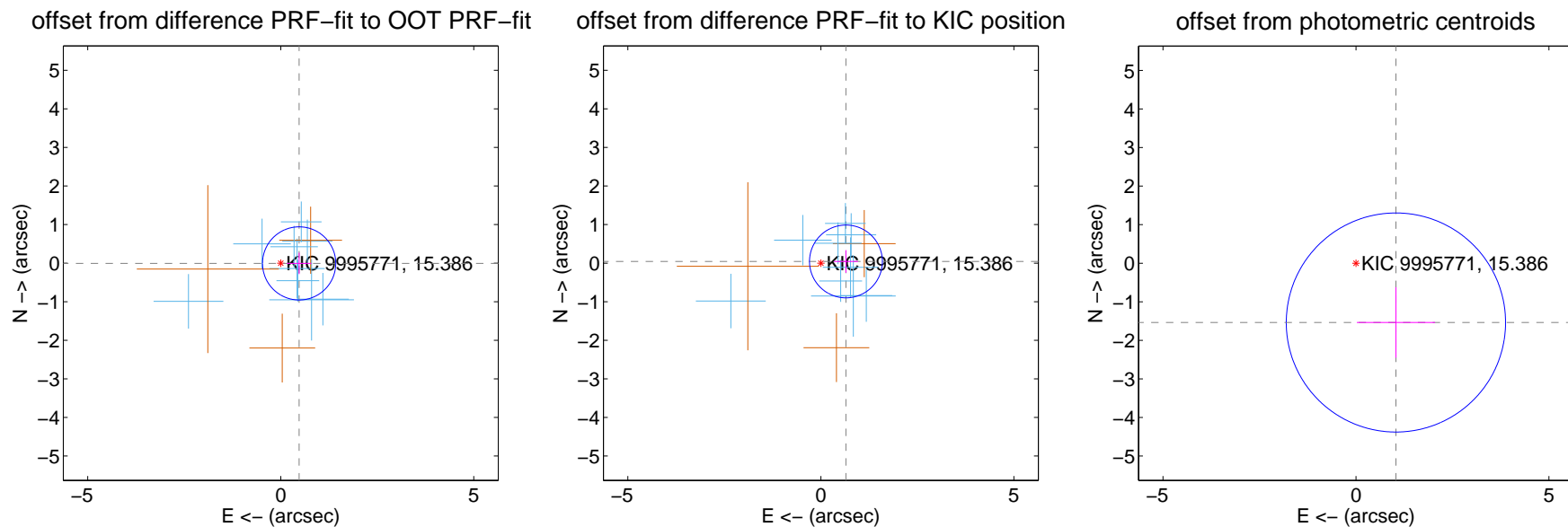
DV Centroid Data

Supplemental centroid analysis for 009995771-01. Kepler magnitude: 15.39. Transit SNR 13.37

There are 9 quarters with good PRF difference image offsets

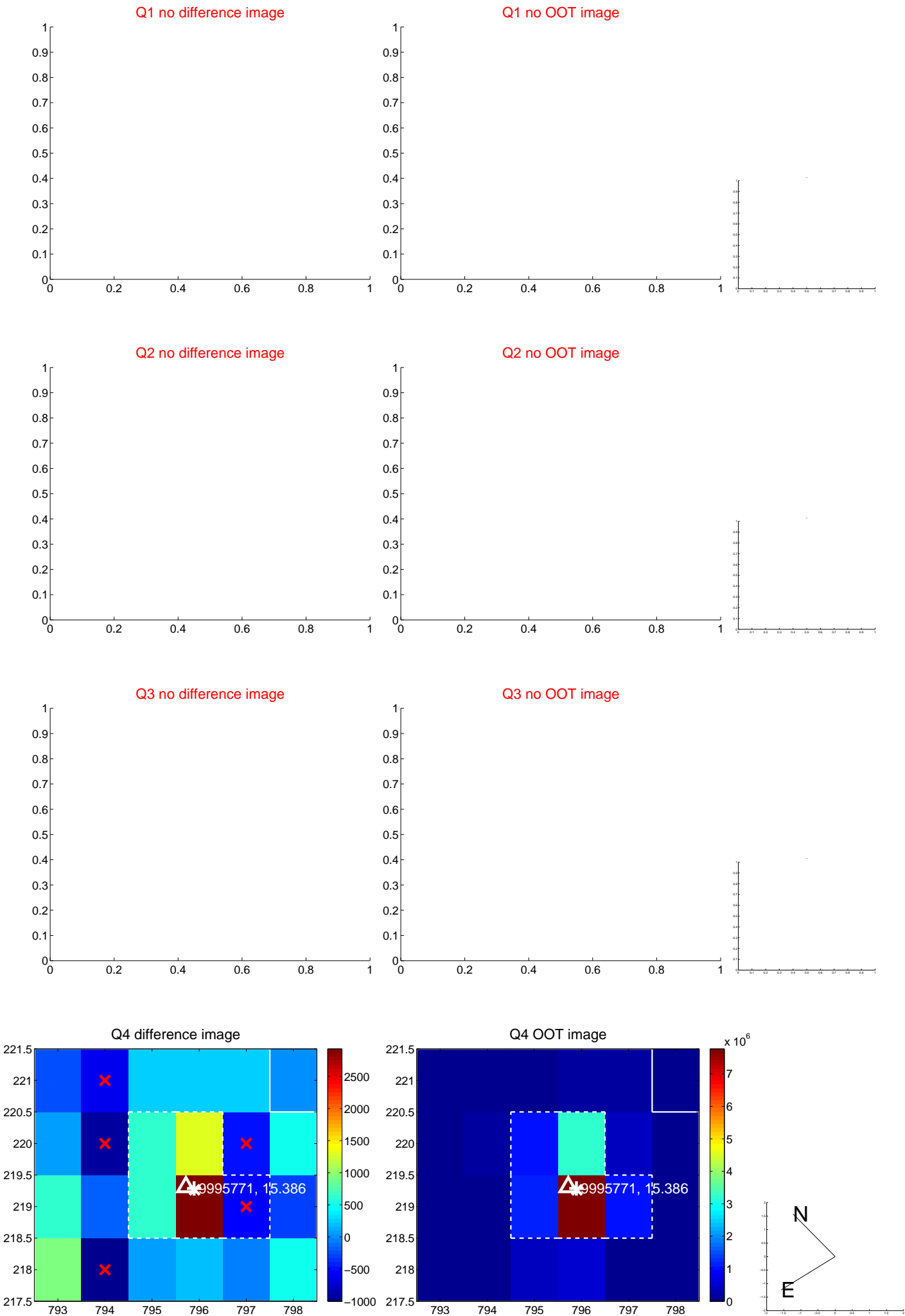
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.476 ± 0.316	1.51	-0.476 ± 0.317	-0.007 ± 0.277
PRF-fit source offset from KIC position	0.651 ± 0.315	2.07	-0.650 ± 0.311	0.044 ± 0.292
photometric centroid source offset	1.85 ± 0.95	1.96	-1.04 ± 1.01	-1.54 ± 0.92

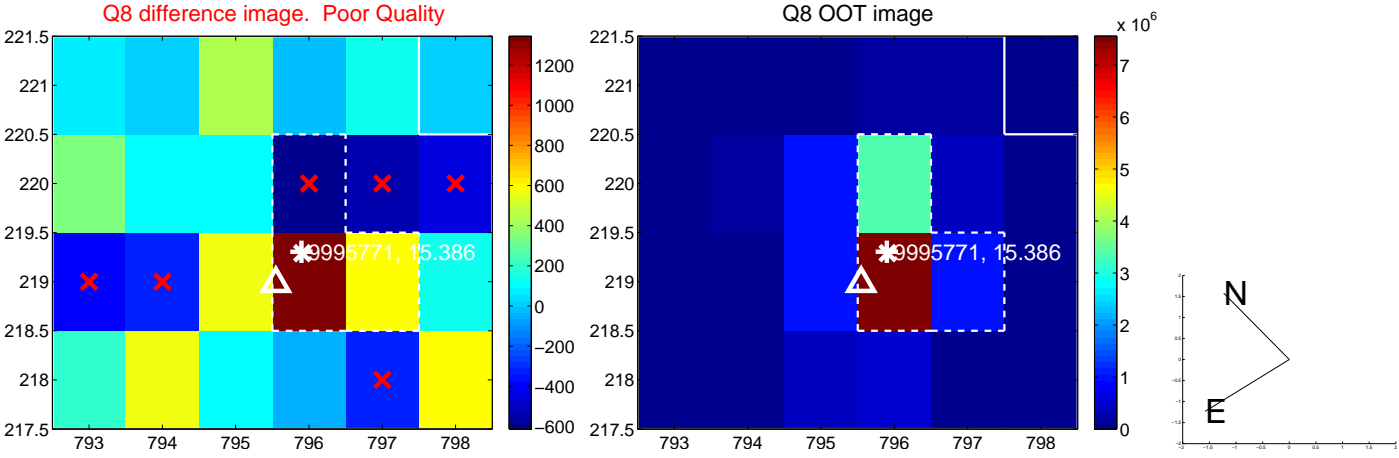
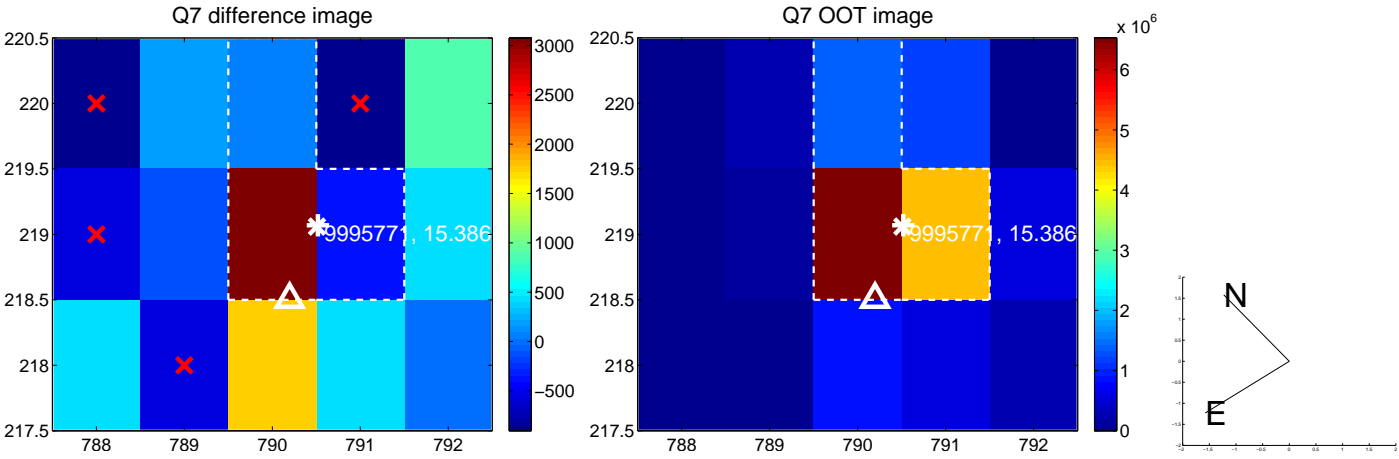
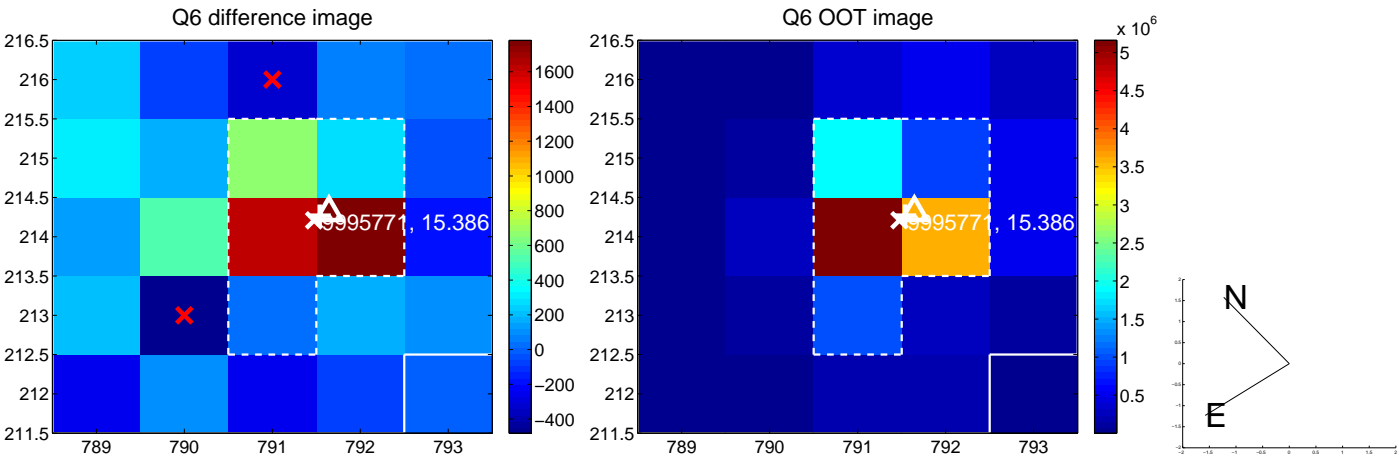
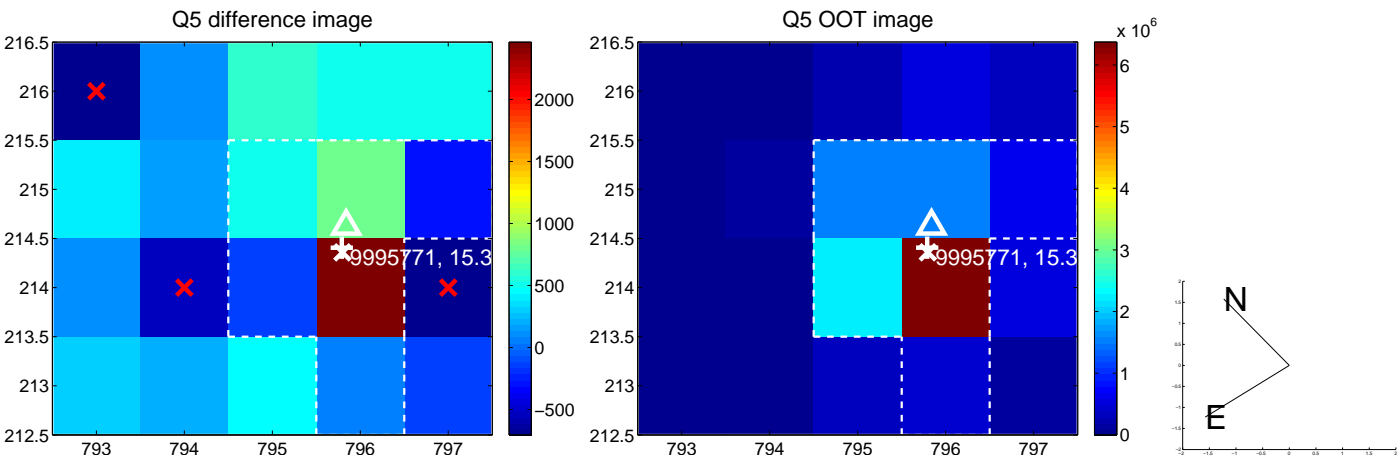


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

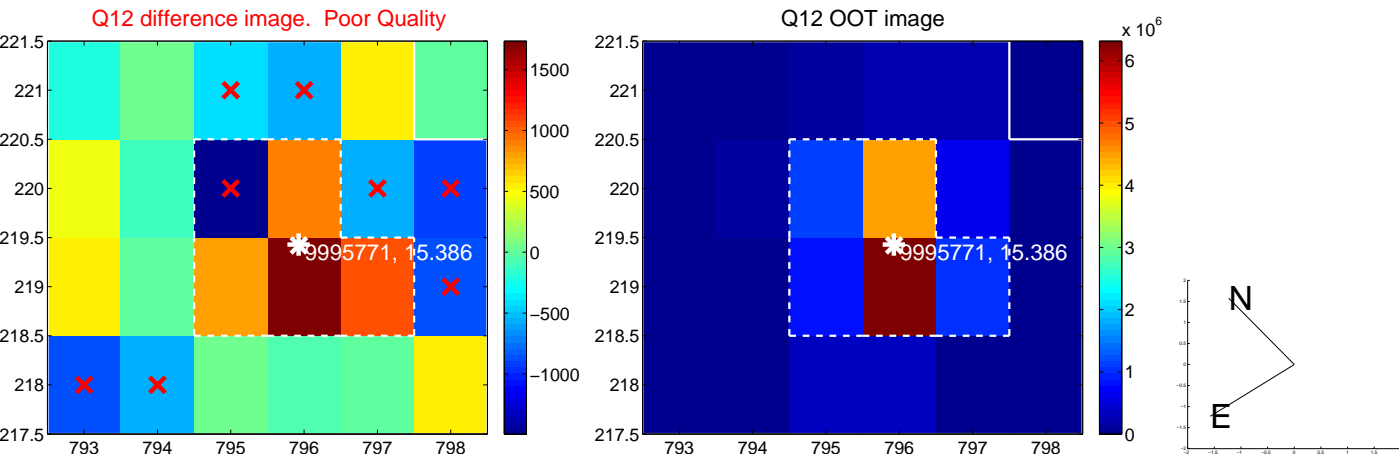
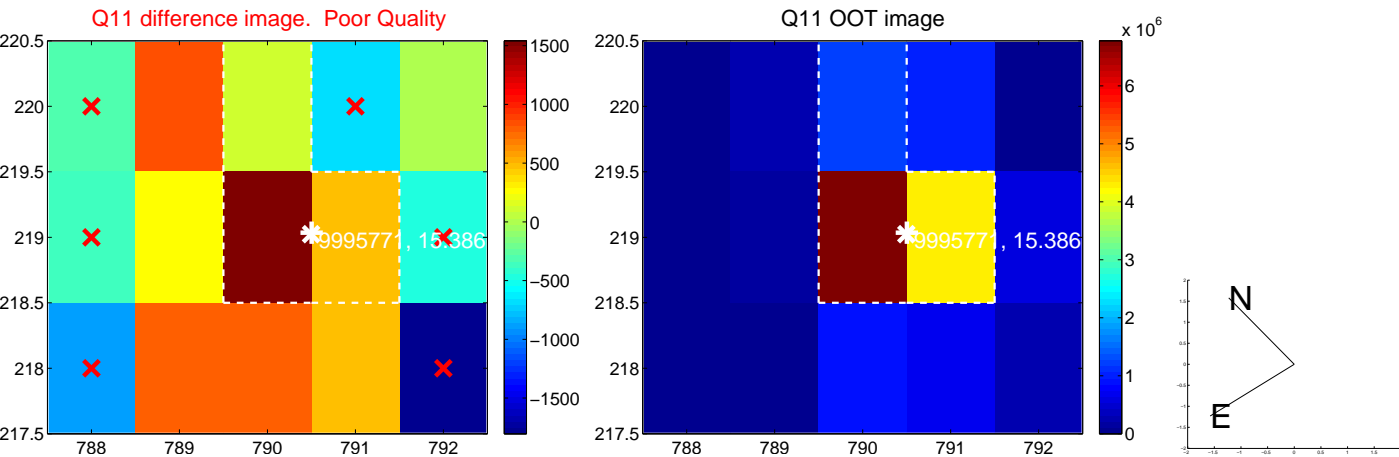
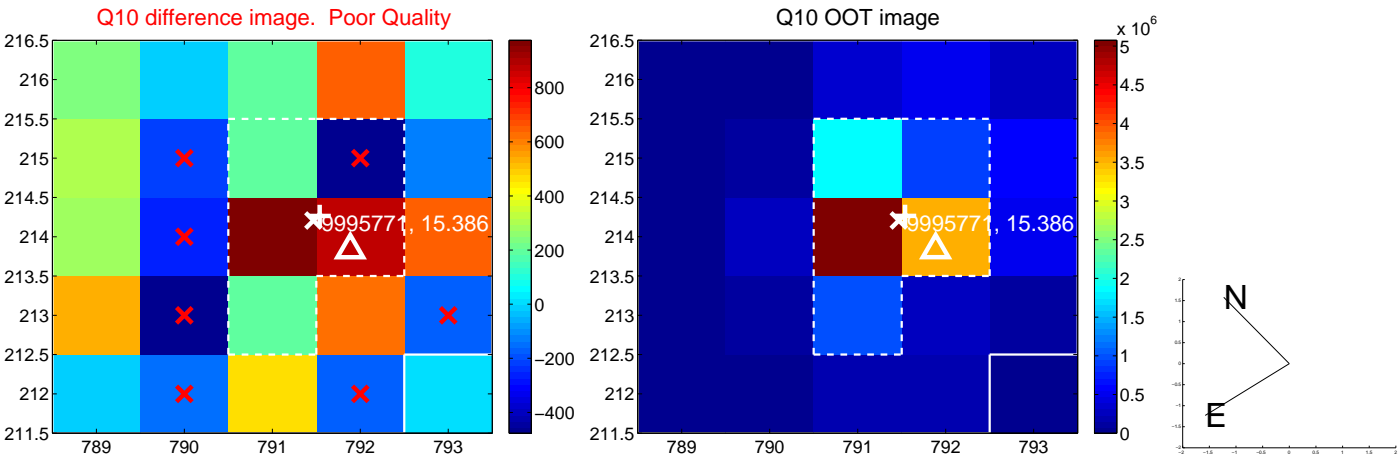
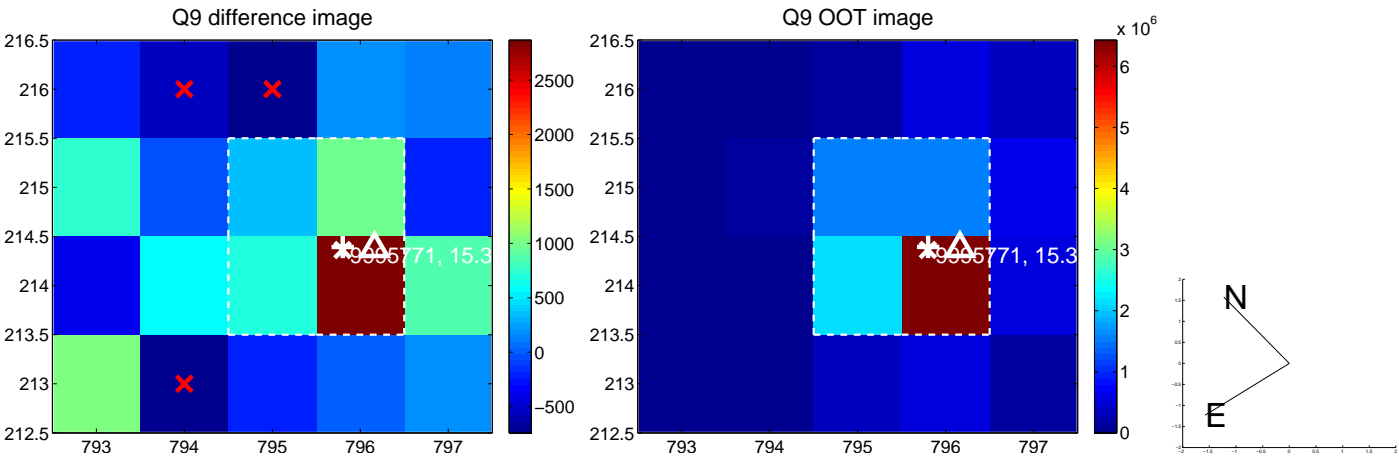
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



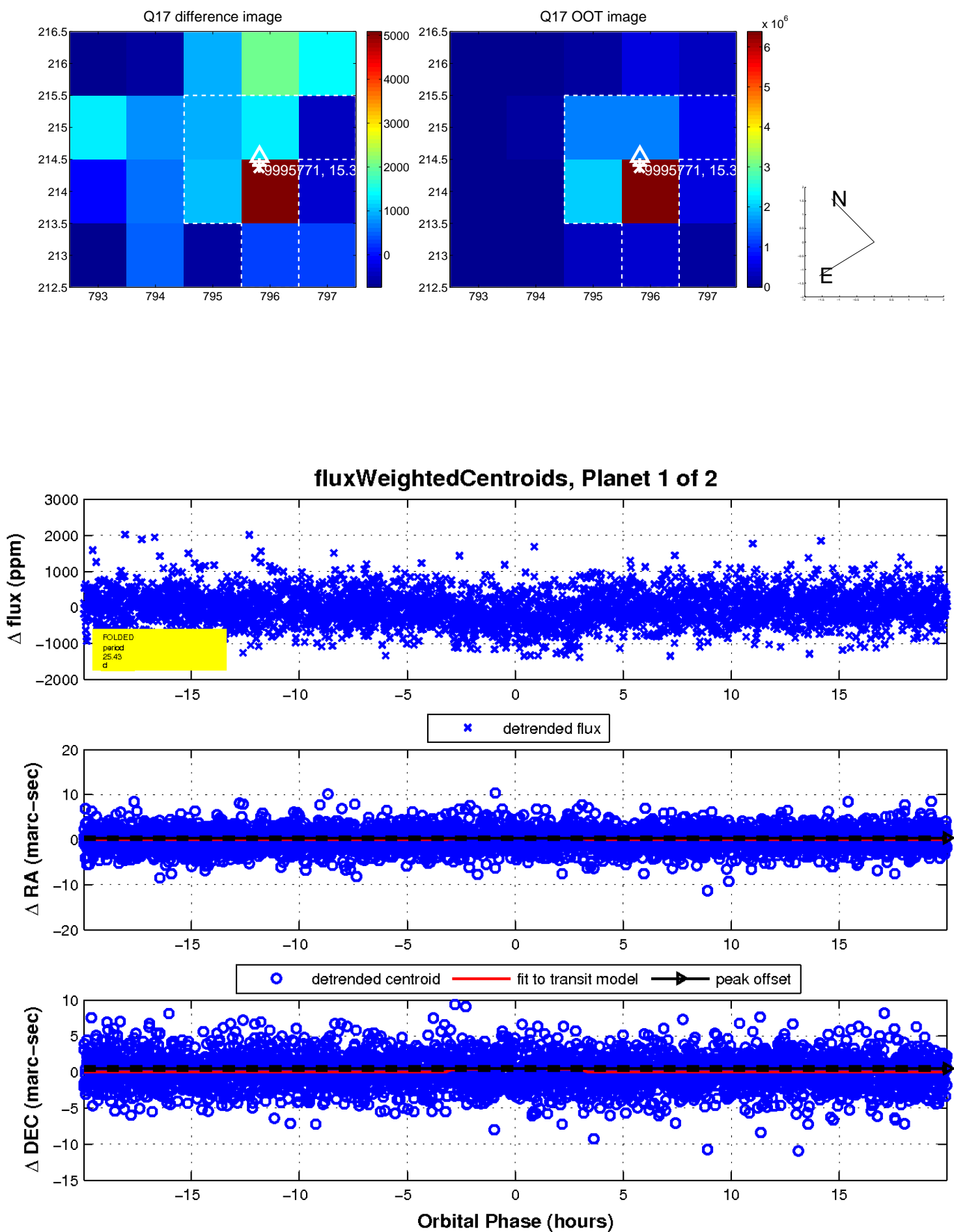
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

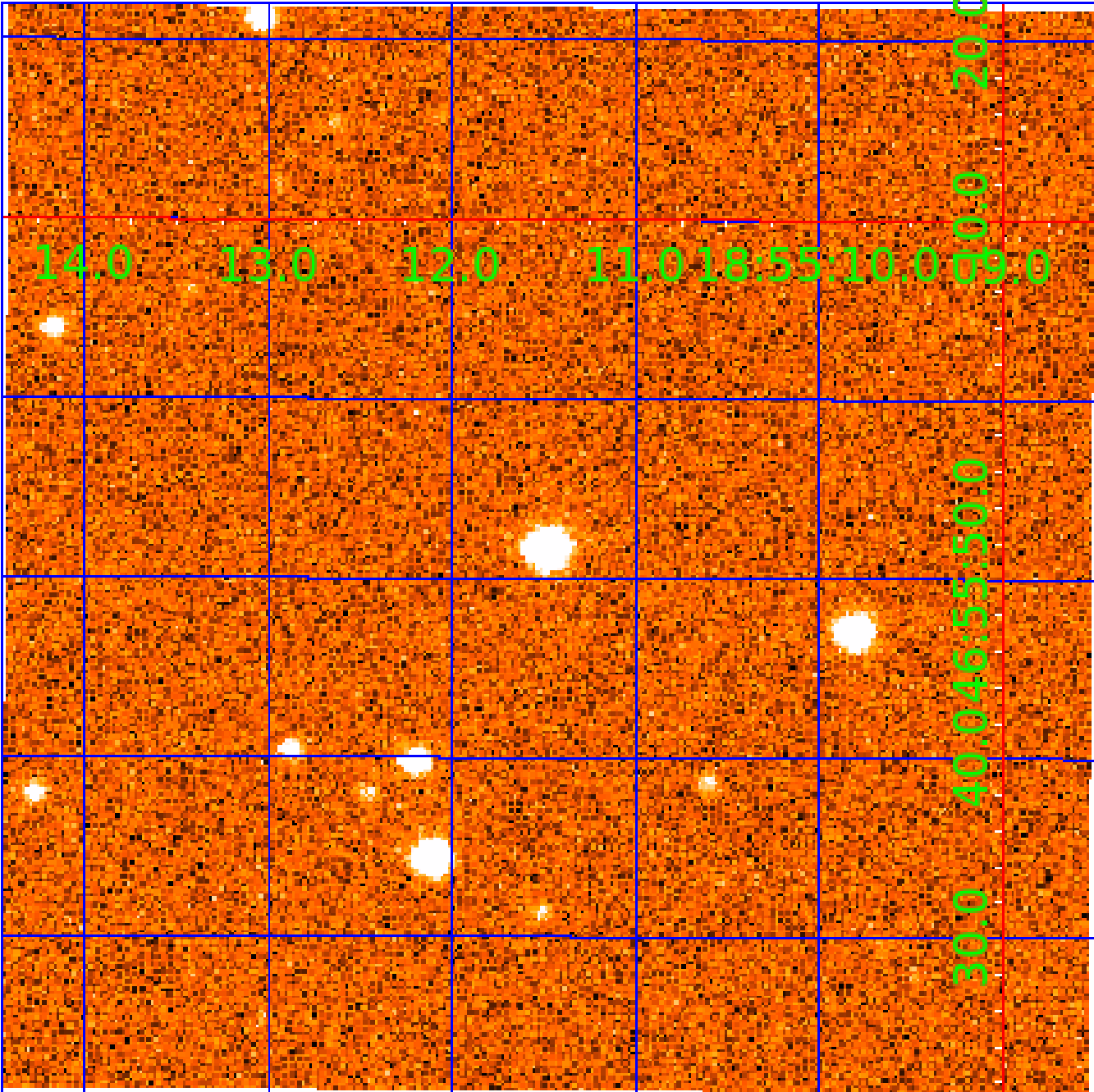


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009995771

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})
009995771-01	OBS	3470.02	25.433813	143.128370	307.2	6.663	12.2	13.4	1.16	5806	2.24	46.88
009995771-02	OBS	3470.01	15.061775	140.111829	182.4	6.427	9.9	10.4	1.16	5806	1.74	94.27

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009995771-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009995771-02	OBS	PC	0.73	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.

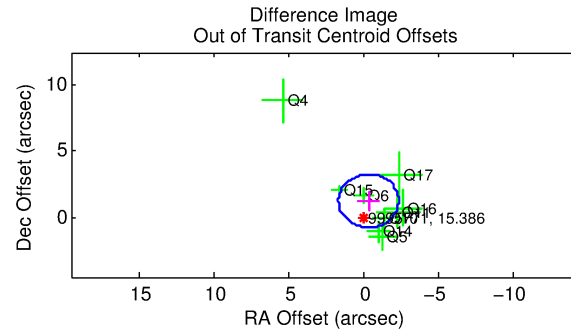
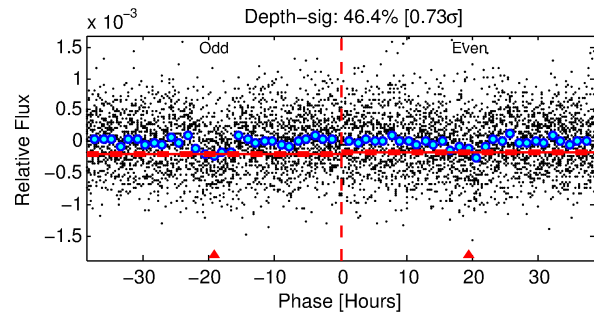
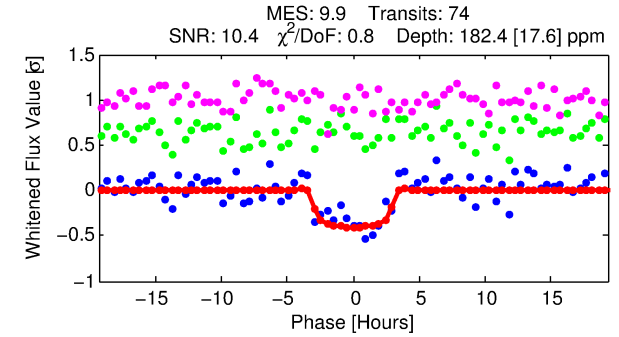
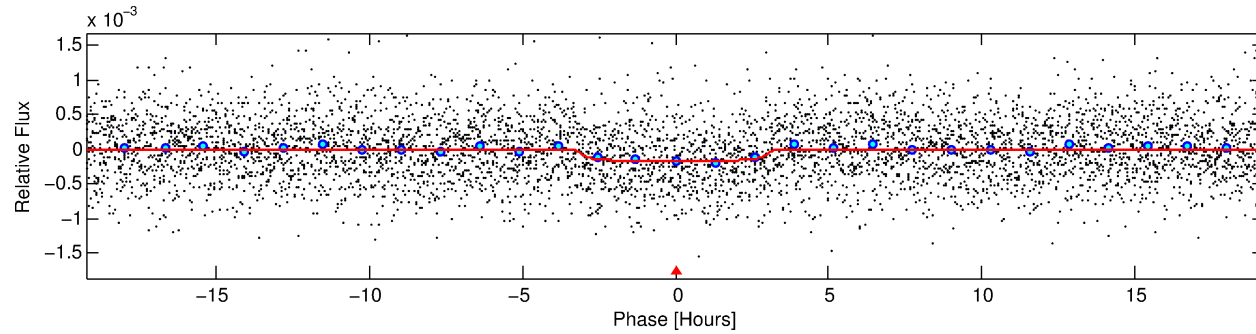
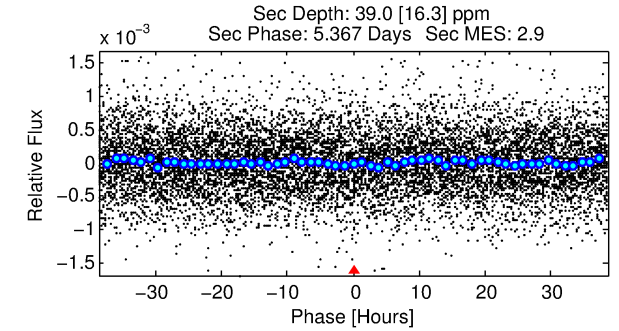
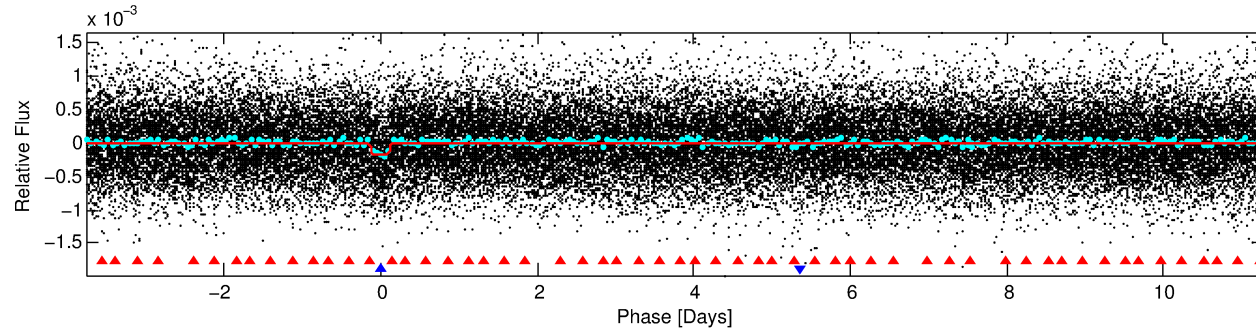
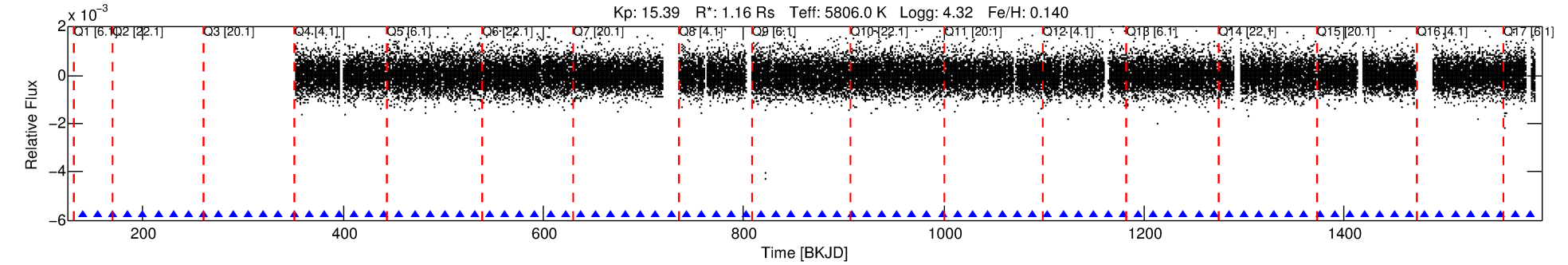
Ephemeris Match Information For 009995771-02

No Significant Match Found

DV One-Page Summary

KIC: 9995771 Candidate: 2 of 2 Period: 15.062 d

KOI: K03470.01 Corr: 0.987



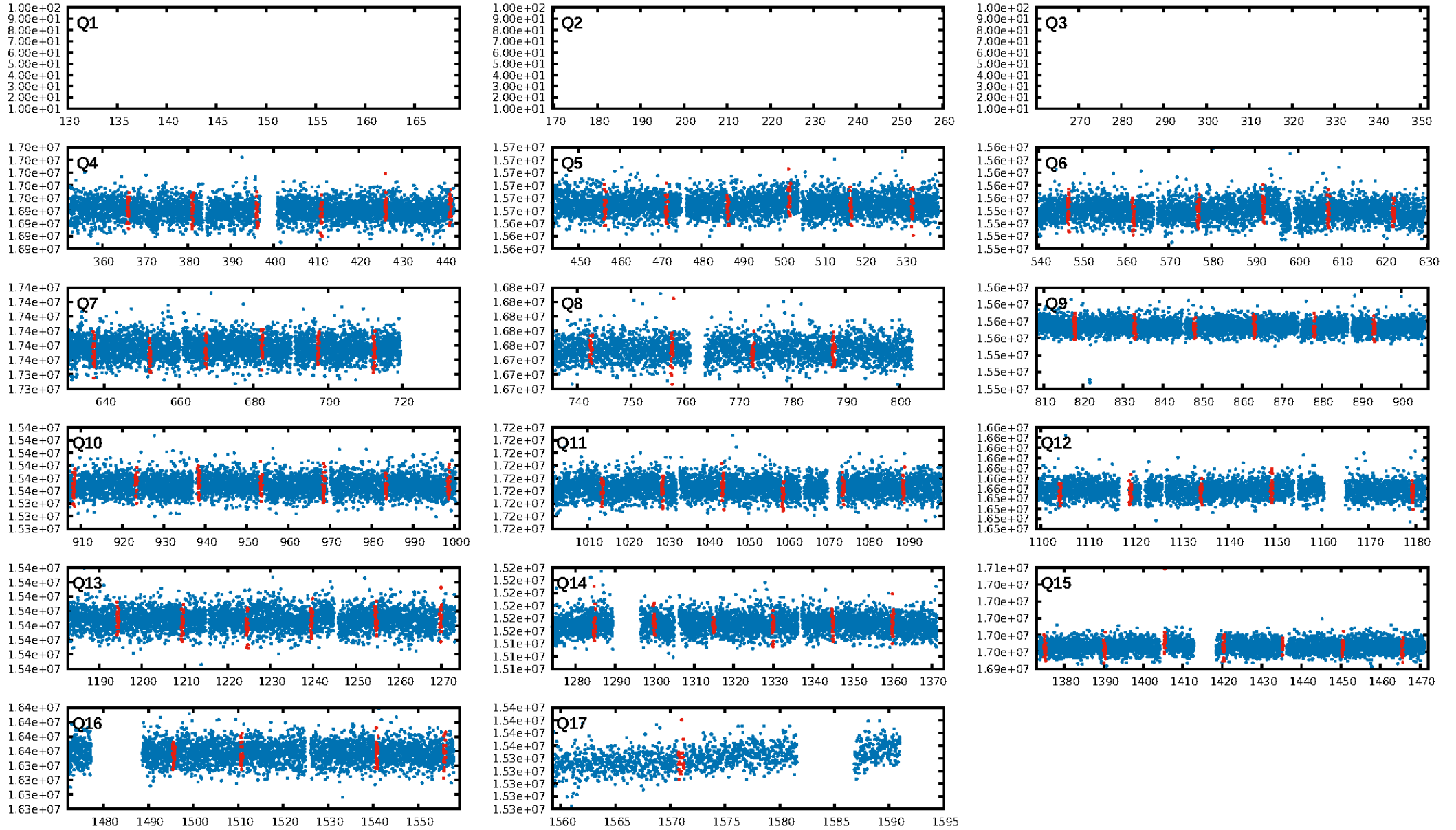
DV Fit Results:

Period = 15.06177 [0.00026] d
Epoch = 140.1118 [0.0149] BKJD
Rp/R* = 0.0138 [0.0085]
a/R* = 11.06 [30.55]
b = 0.81 [1.23]
Seff = 94.27 [20.42]
Teq = 795 [43] K
Rp = 1.74 [1.11] Re
a = 0.1203 [0.0173] AU
Ag = 102.54 [135.21] [0.75σ]
Teffp = 3909 [1273] K [2.44σ]

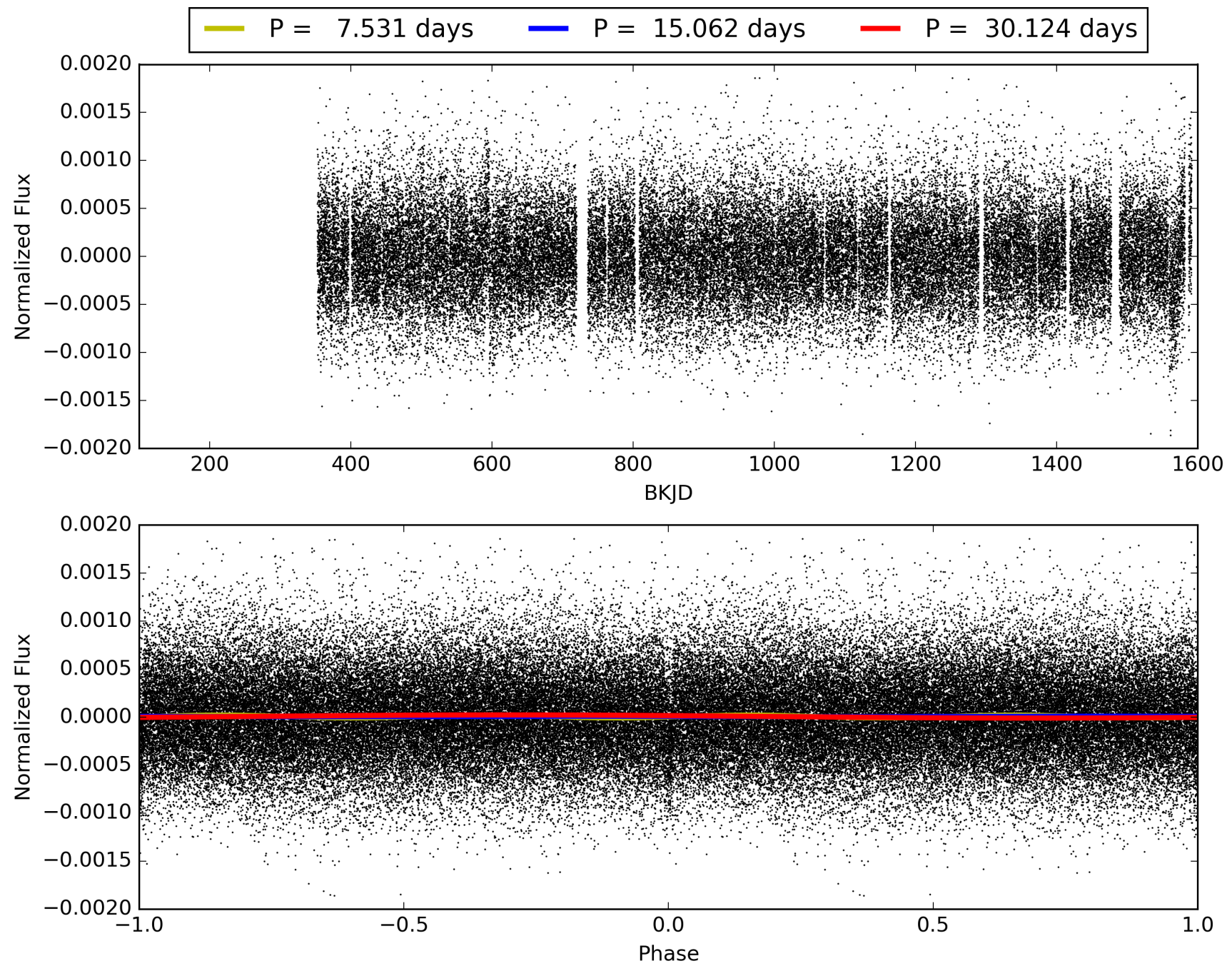
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [26.89σ]
ModelChiSquare2-sig: 98.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.63e-21
RollingBand-fgt: 1.00 [73/73]
GhostDiagnostic-chr: 4.58
Centroid-sig: 0.0%
Centroid-so: 3.699 arcsec [2.95σ]
OotOffset-rm: 1.314 arcsec [1.96σ]
KicOffset-rm: 1.959 arcsec [3.93σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.33 [3/9]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 009995771-02, PDC Light Curves

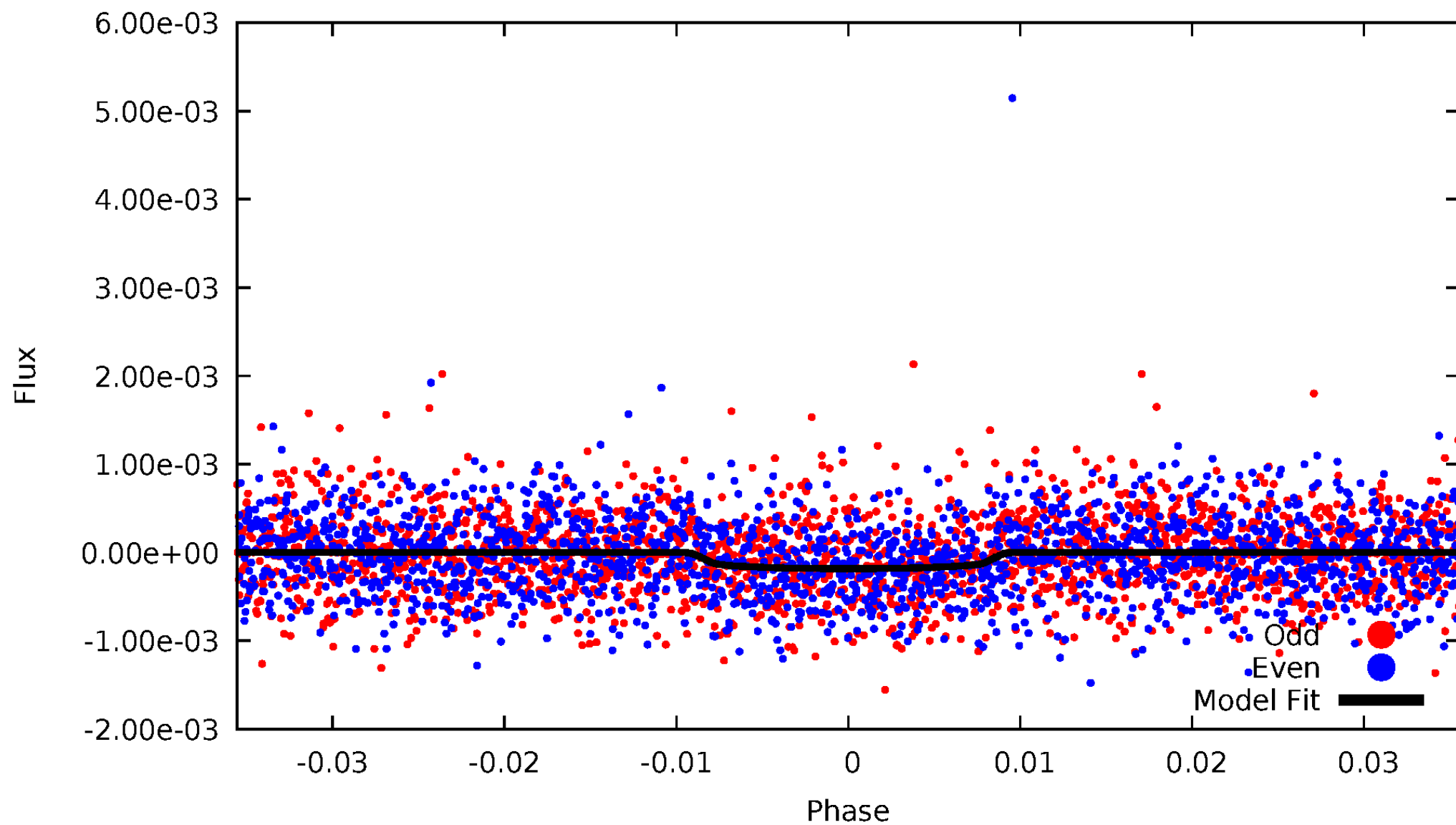


TCE 009995771-02



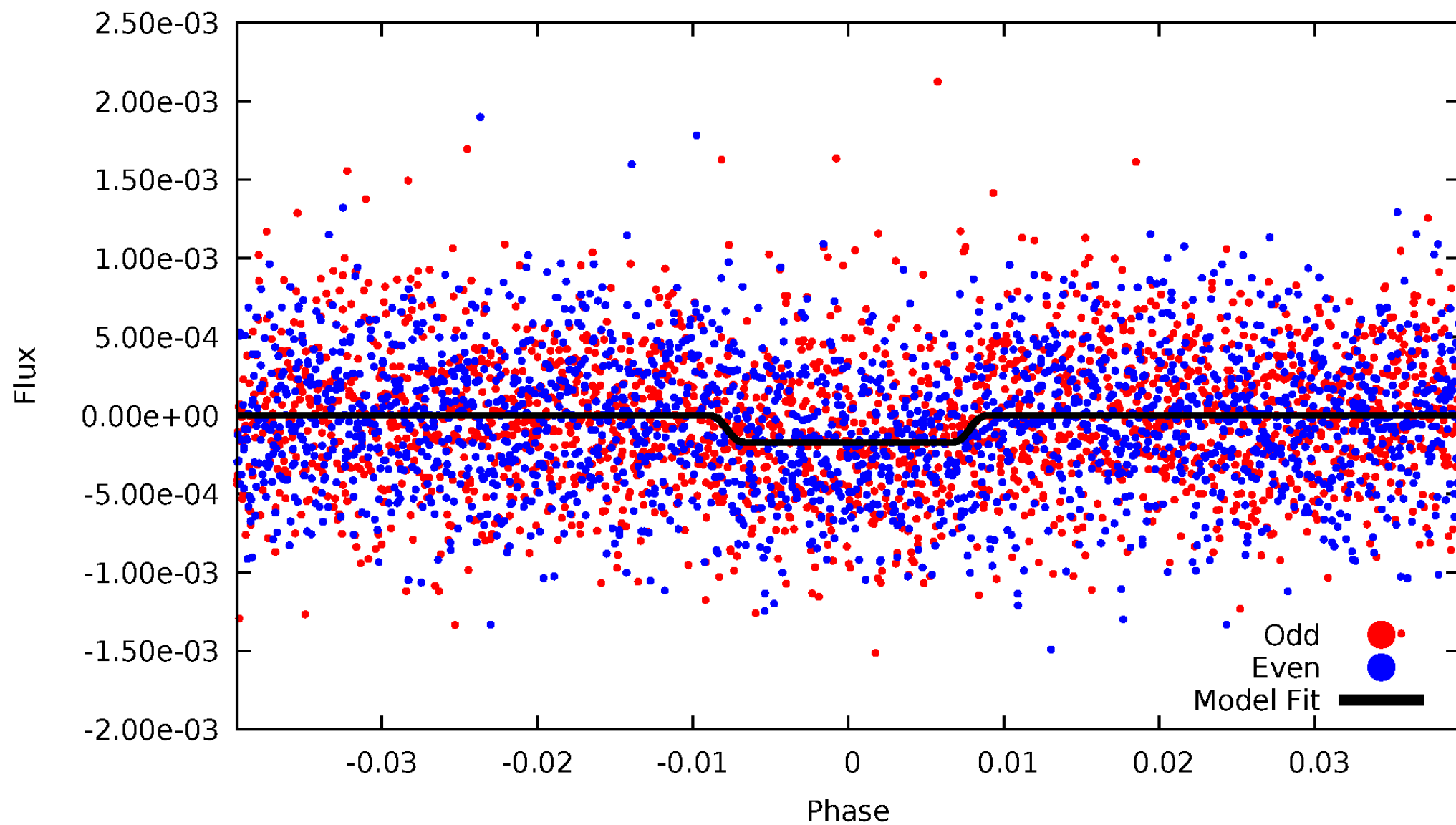
DV Odd/Even

TCE 009995771-02



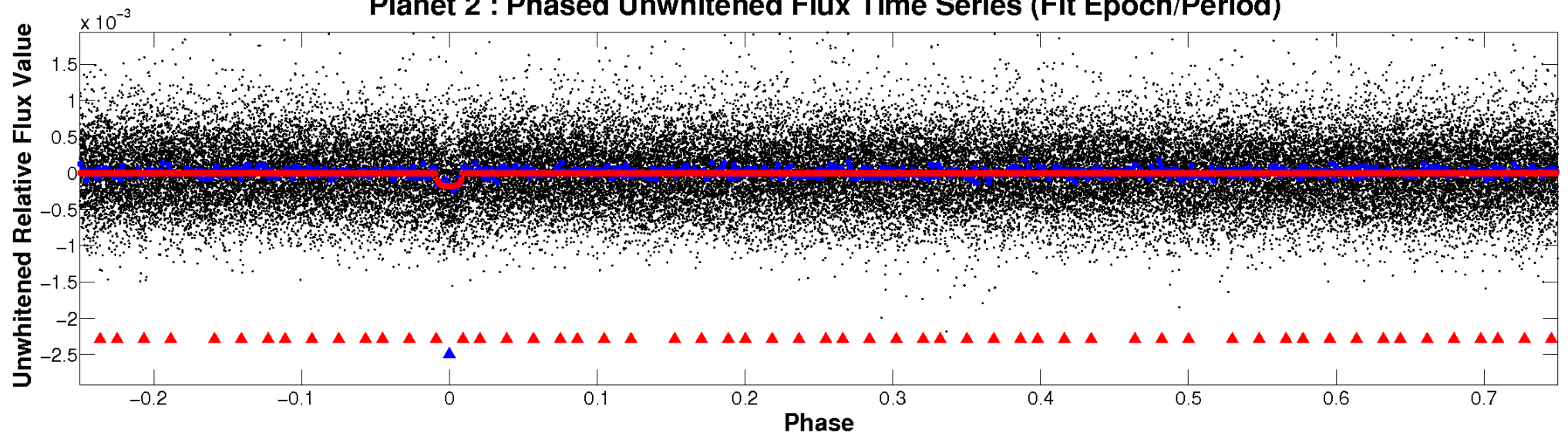
ALT Odd/Even

TCE 009995771-02

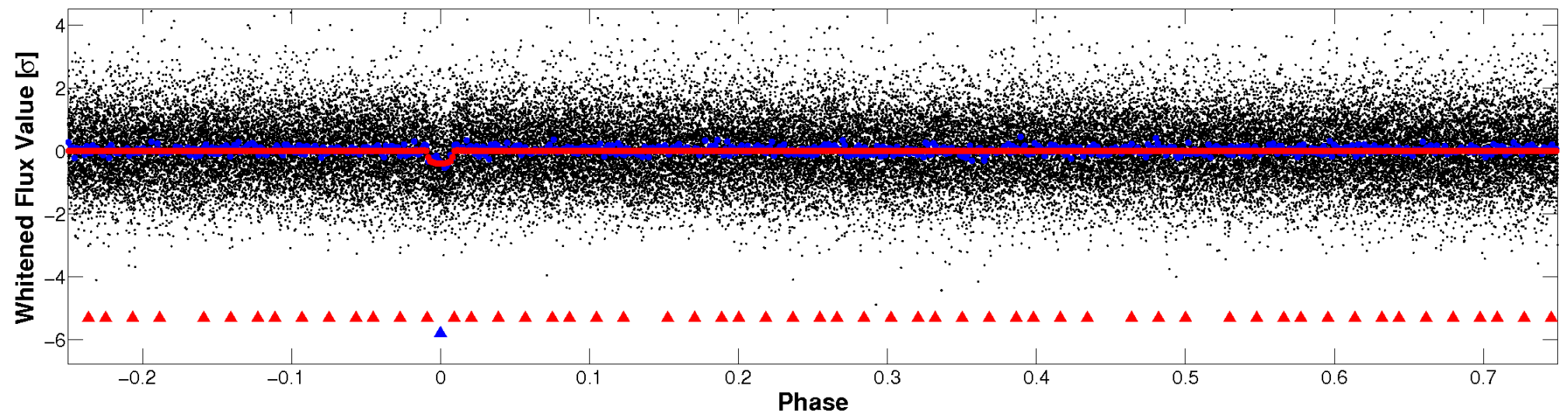


Non-Whitened Vs. Whitened Light Curve

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

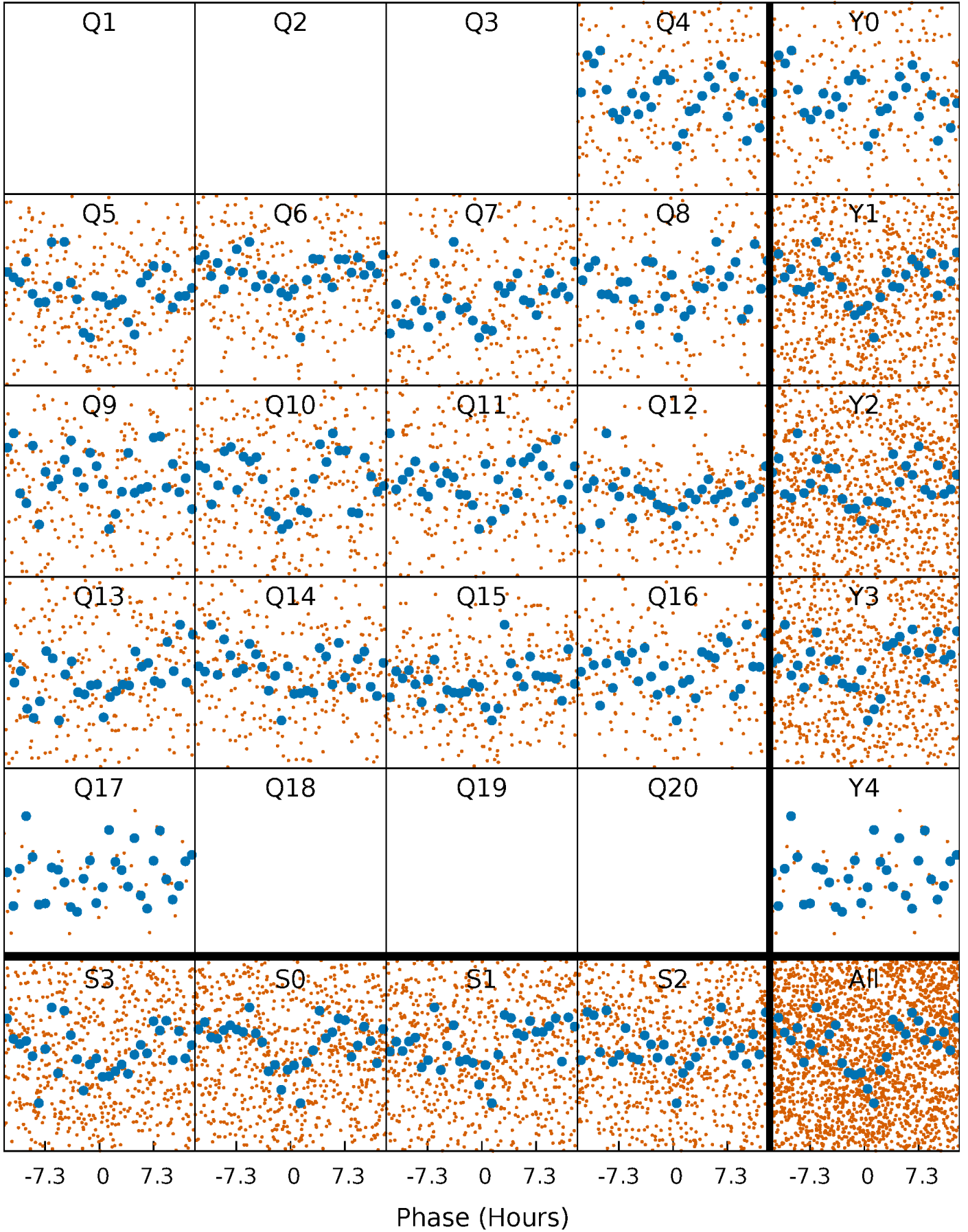


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



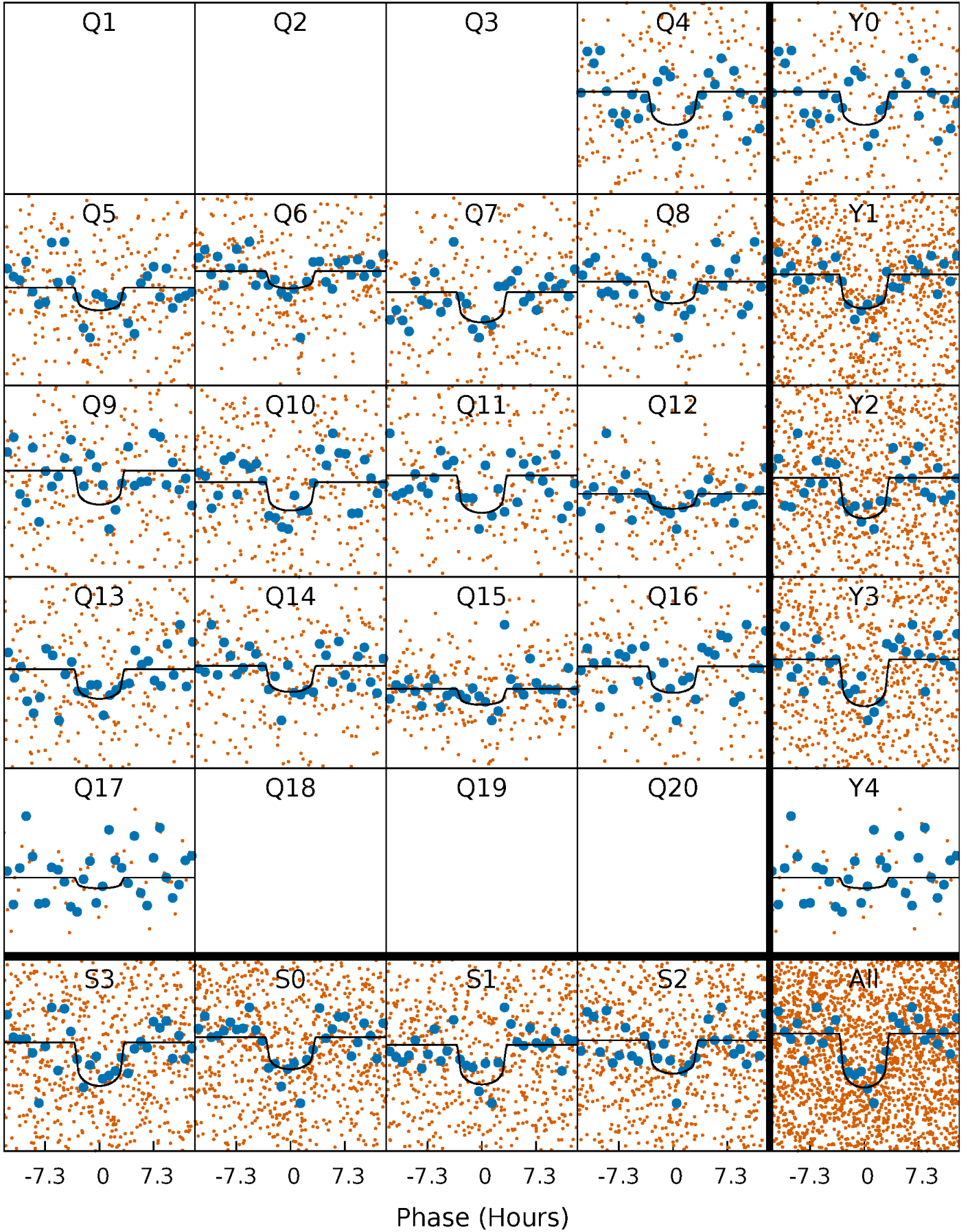
PDC Quarter-Phased Transit Curves

TCE 009995771-02 P= 15.061775 Days $T_0=140.111829$ (BKJD)



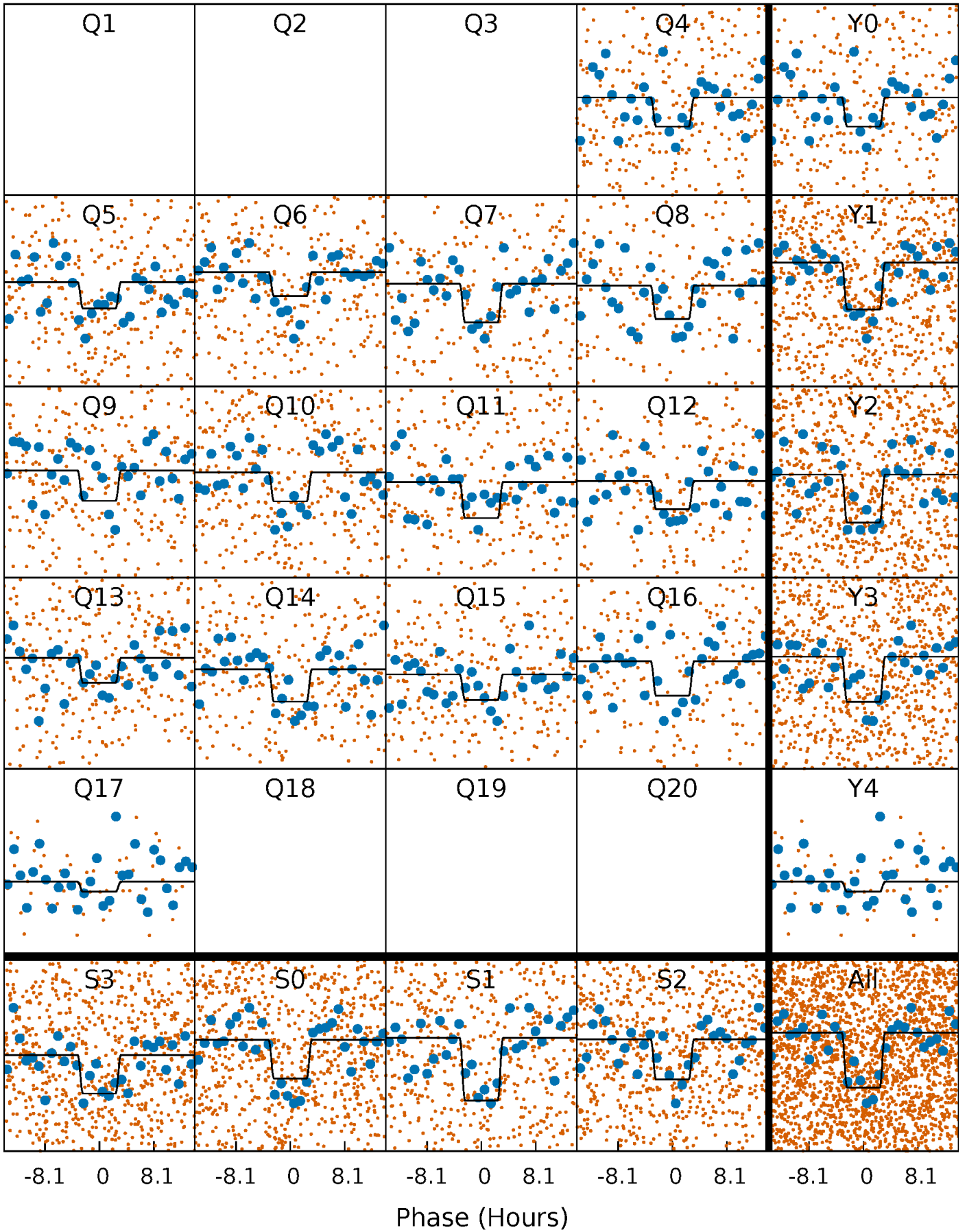
DV Quarter-Phased Transit Curves

TCE 009995771-02 P= 15.061775 Days $T_0=140.111829$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

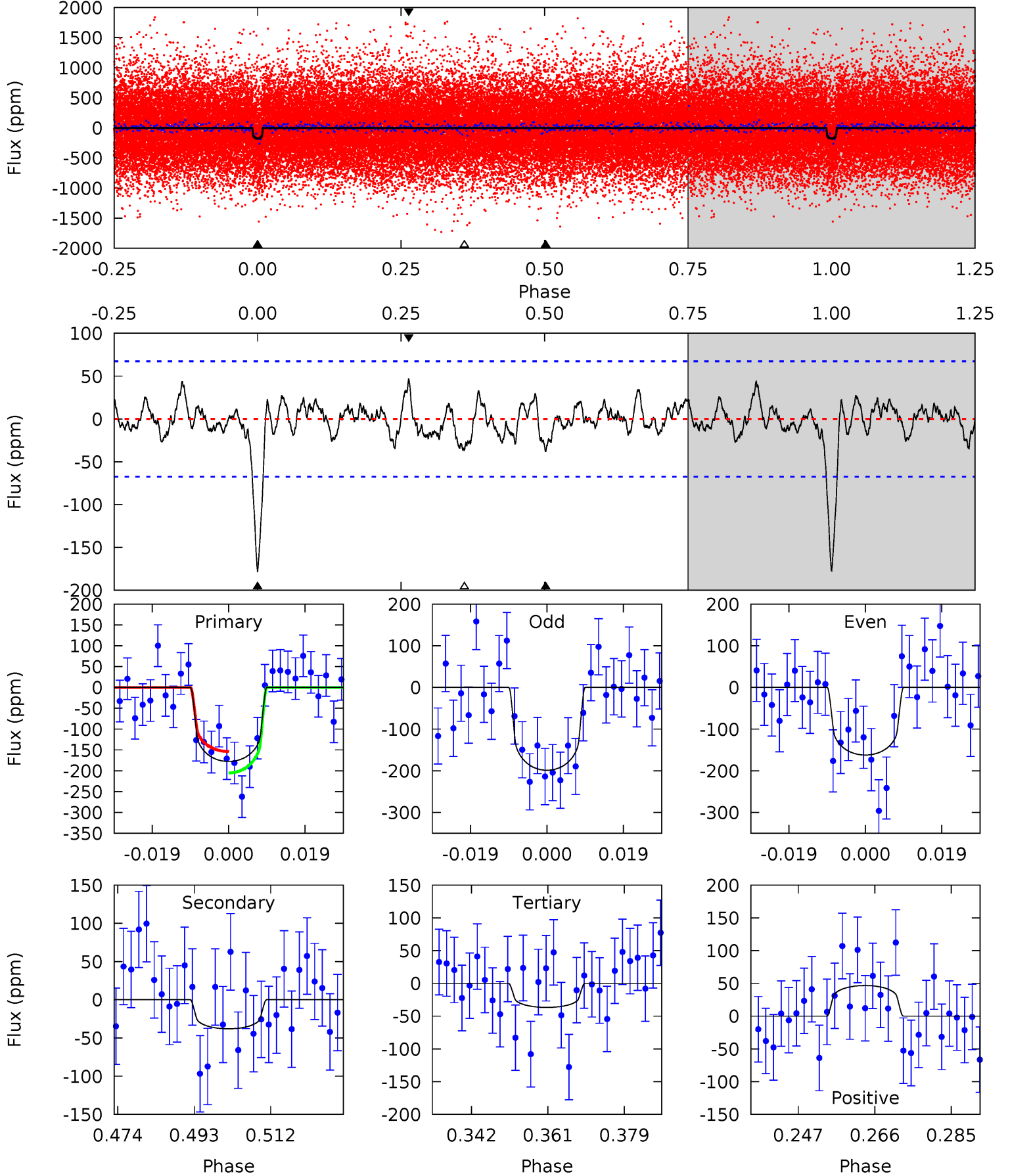
TCE 009995771-02 P= 15.061118 Days $T_0=140.144721$ (BKJD)



DV Model-Shift Uniqueness Test

009995771-02, P = 15.061775 Days, E = 140.111829 Days

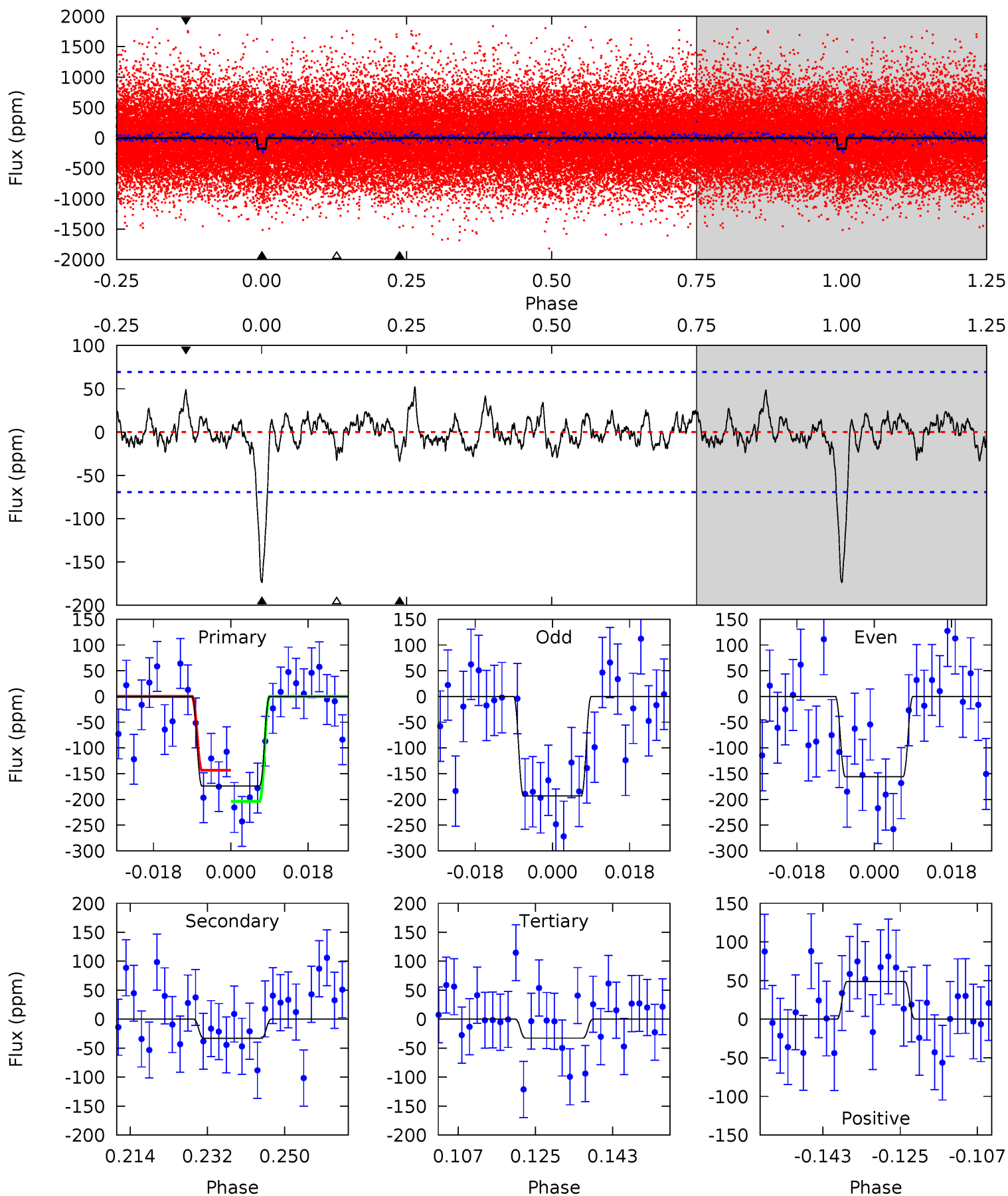
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	2.77	2.67	3.40	4.90	2.35	1.08	10.3	9.54	0.10	-0.64	1.33	0.98	0.21	1.88



Alt Model-Shift Uniqueness Test

009995771-02, P = 15.061118 Days, E = 140.144721 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	2.35	2.31	3.44	4.91	2.37	0.96	10.00	8.87	0.04	-1.09	1.33	0.95	0.23	2.14



Stellar Parameters For KIC 009995771

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5806^{+78}_{-78}	$4.321^{+0.115}_{-0.115}$	$0.140^{+0.150}_{-0.150}$	$1.158^{+0.197}_{-0.148}$	$1.024^{+0.081}_{-0.059}$	$0.930^{+0.454}_{-0.304}$
	+1%/-1%	+3%/-3%	+107%/-107%	+17%/-13%	+8%/-6%	+49%/-33%
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 009995771-02 / KOI 3470.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-38 ± 14	$1.83^{+1.10}_{-0.97}$	1108^{+50}_{-44}	4031^{+1481}_{-641}	84^{+327}_{-53}
Alt.	-33 ± 14	$1.79^{+0.96}_{-0.99}$	1110^{+48}_{-45}	3954^{+1587}_{-587}	73^{+336}_{-45}

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 $A_{obs} \gg 1.0$

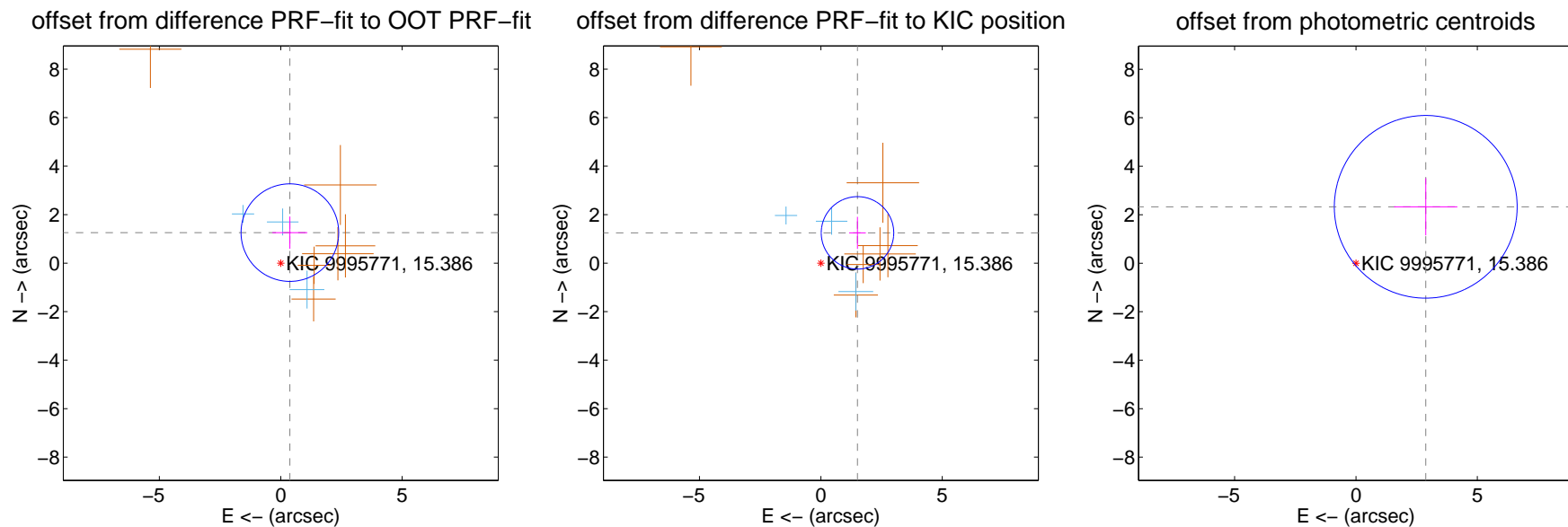
DV Centroid Data

Supplemental centroid analysis for 009995771-02. Kepler magnitude: 15.39. Transit SNR 10.44

There are 3 quarters with good PRF difference image offsets

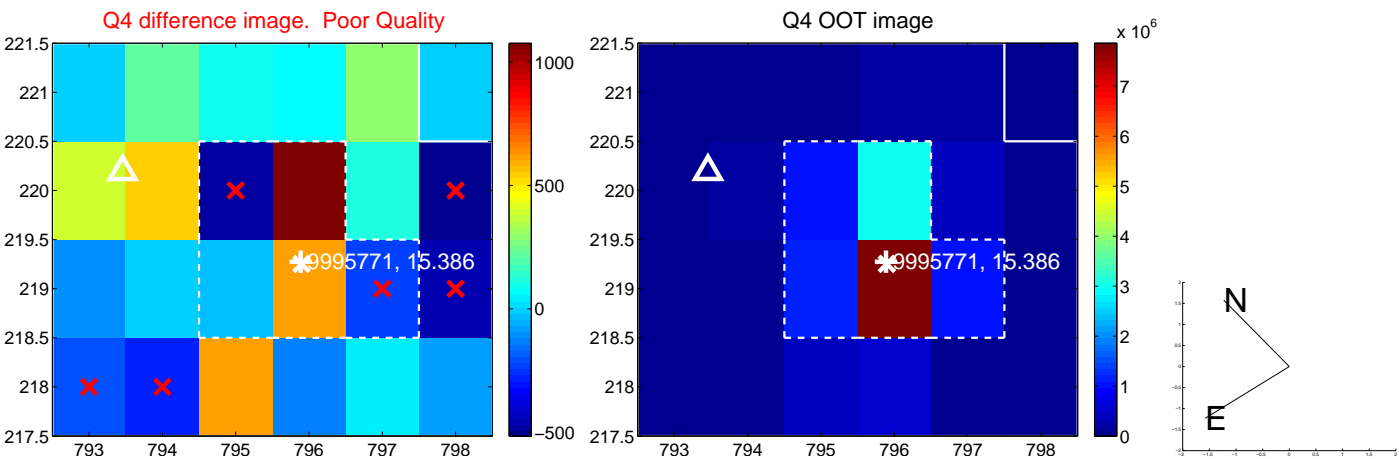
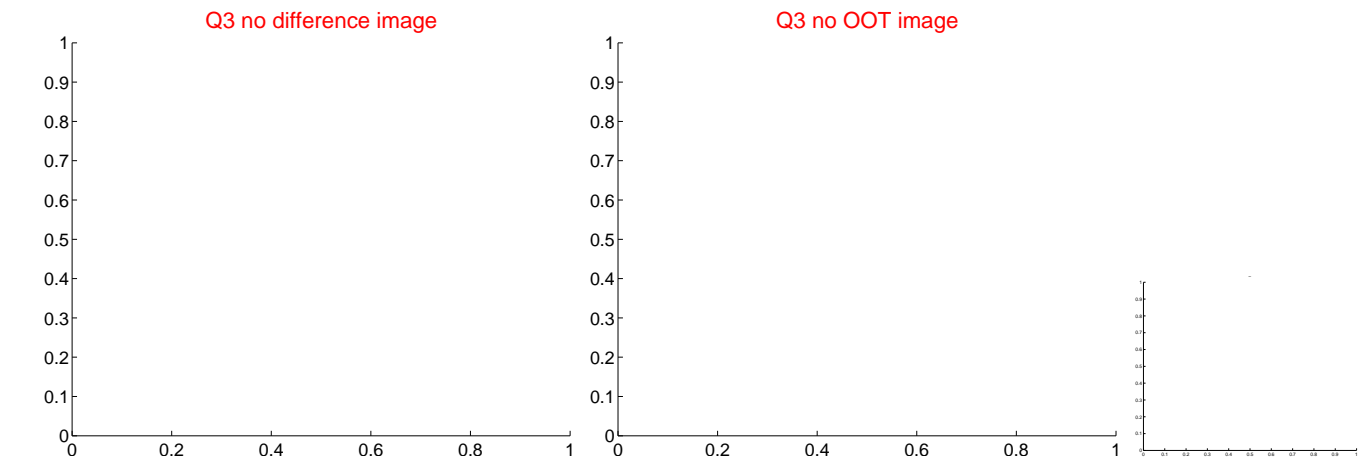
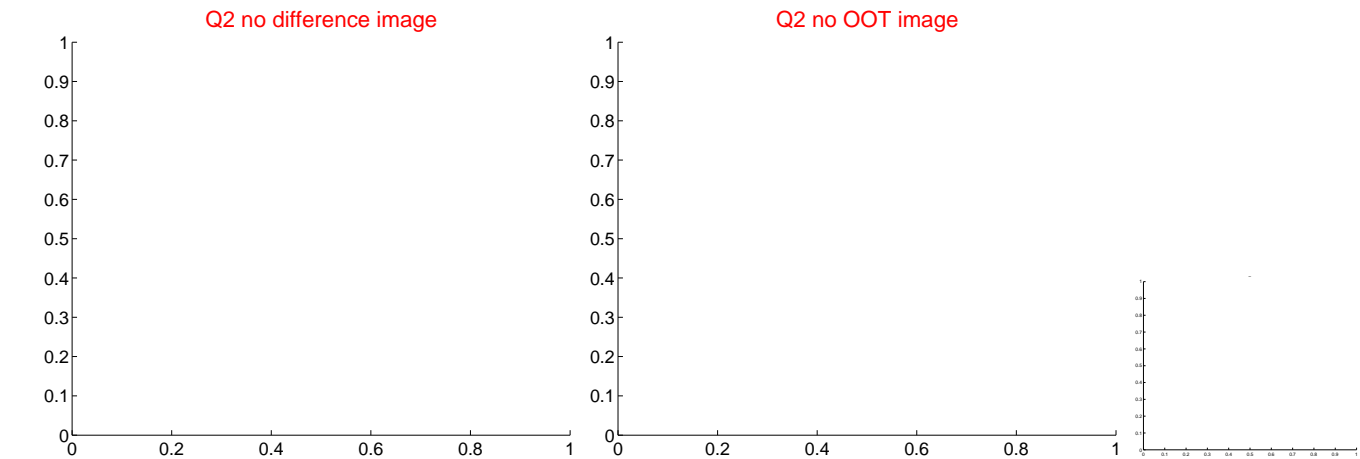
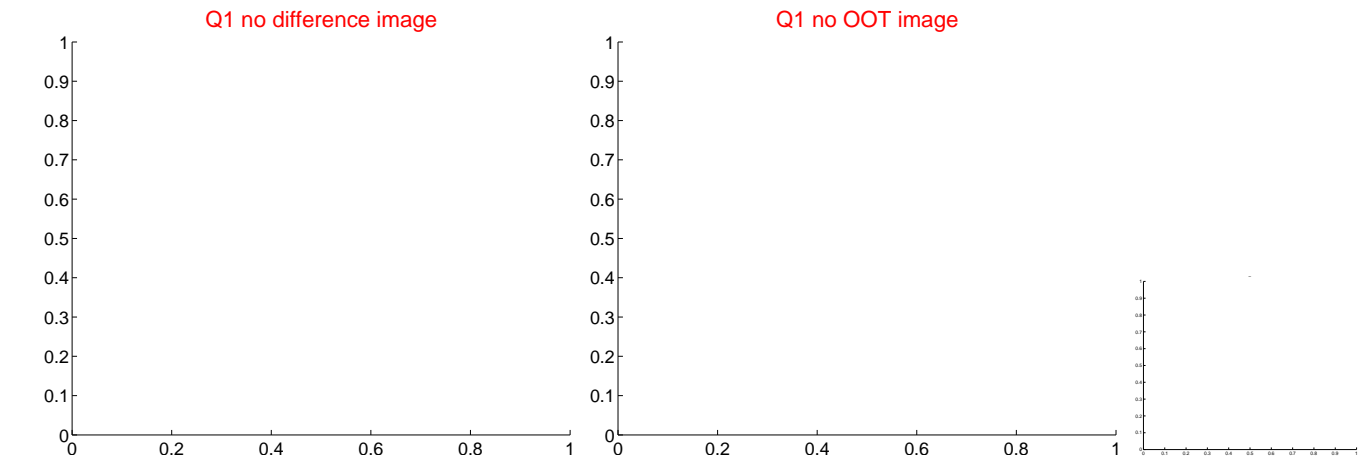
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.314 ± 0.671	1.96	-0.376 ± 0.721	1.259 ± 0.666
PRF-fit source offset from KIC position	1.959 ± 0.498	3.93	-1.509 ± 0.343	1.249 ± 0.661
photometric centroid source offset	3.70 ± 1.26	2.95	-2.88 ± 1.30	2.33 ± 1.18

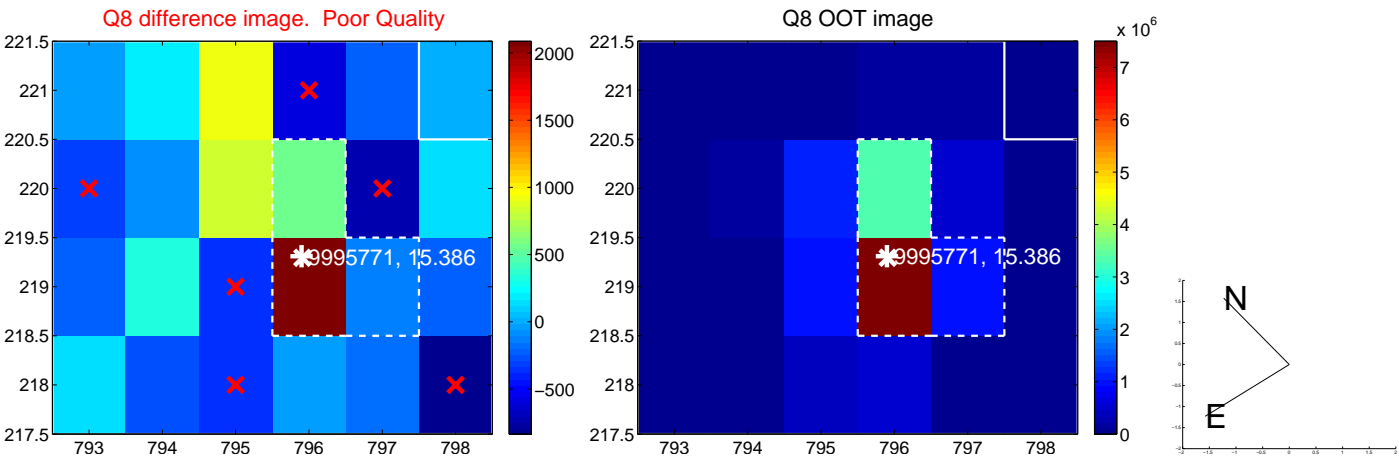
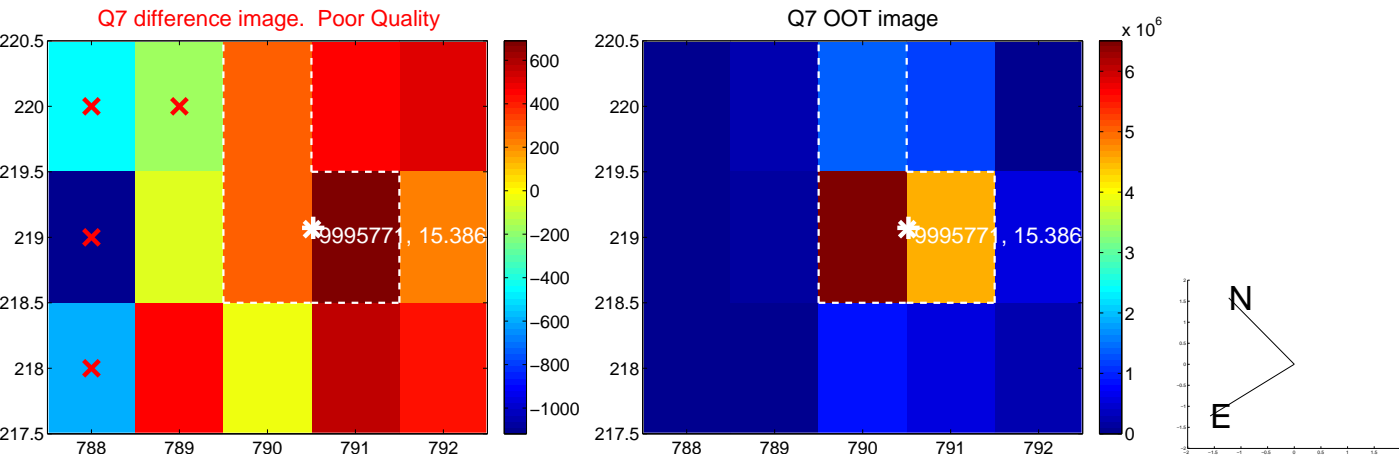
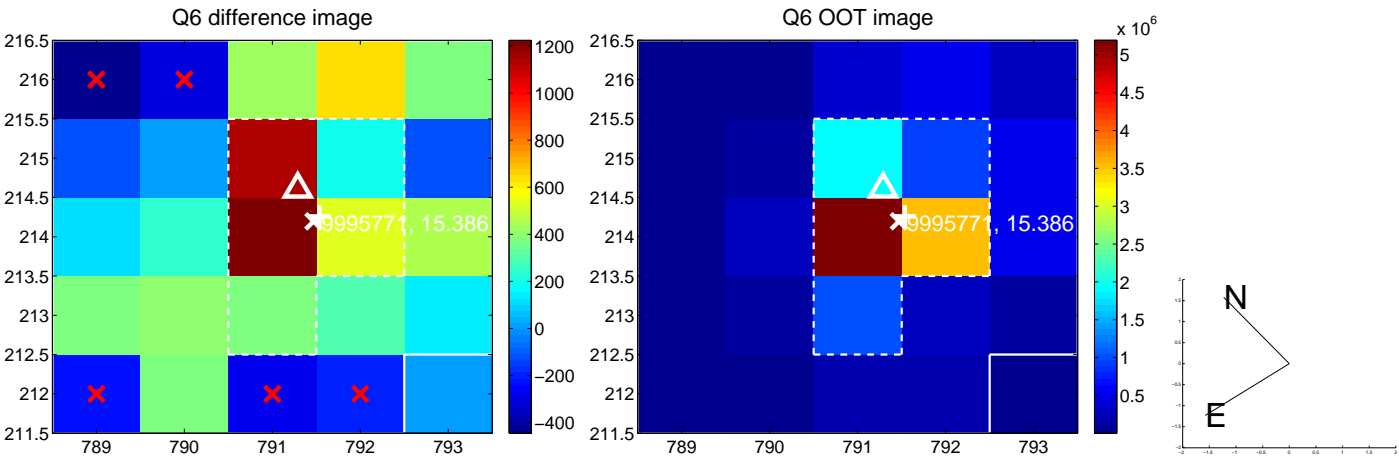
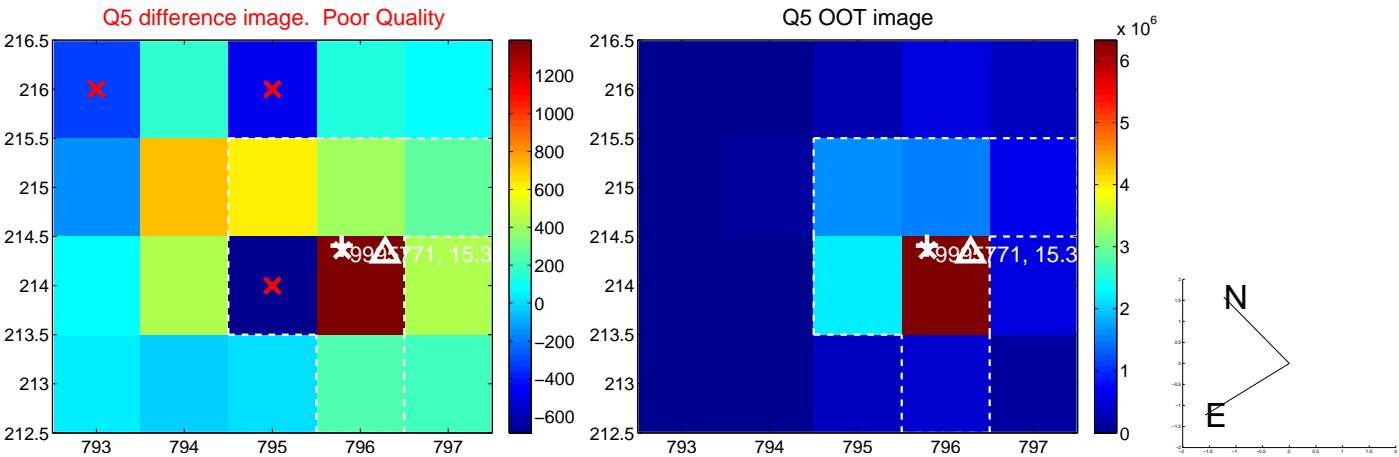


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

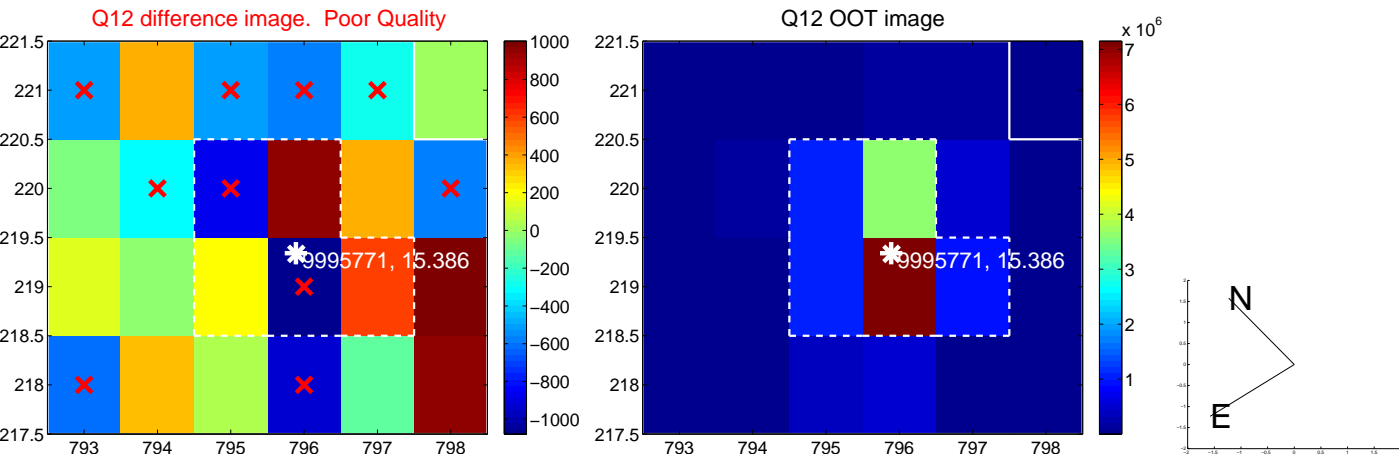
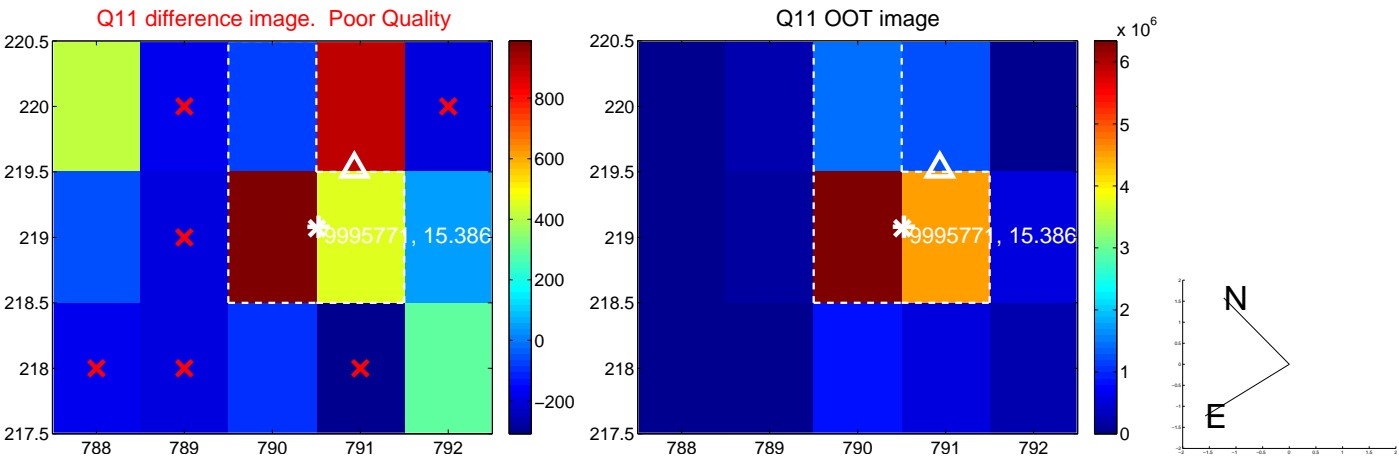
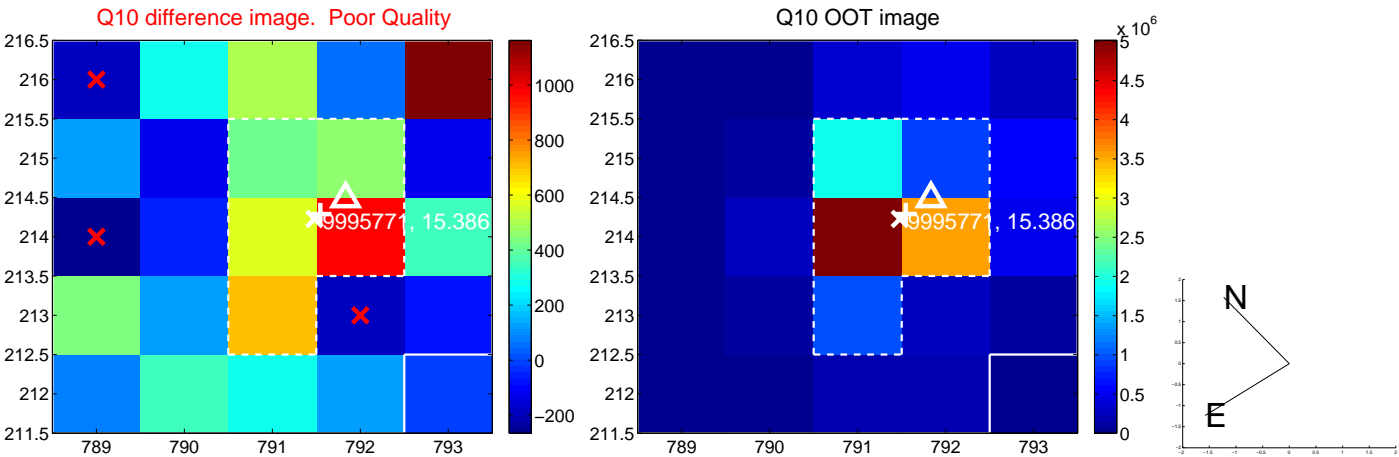
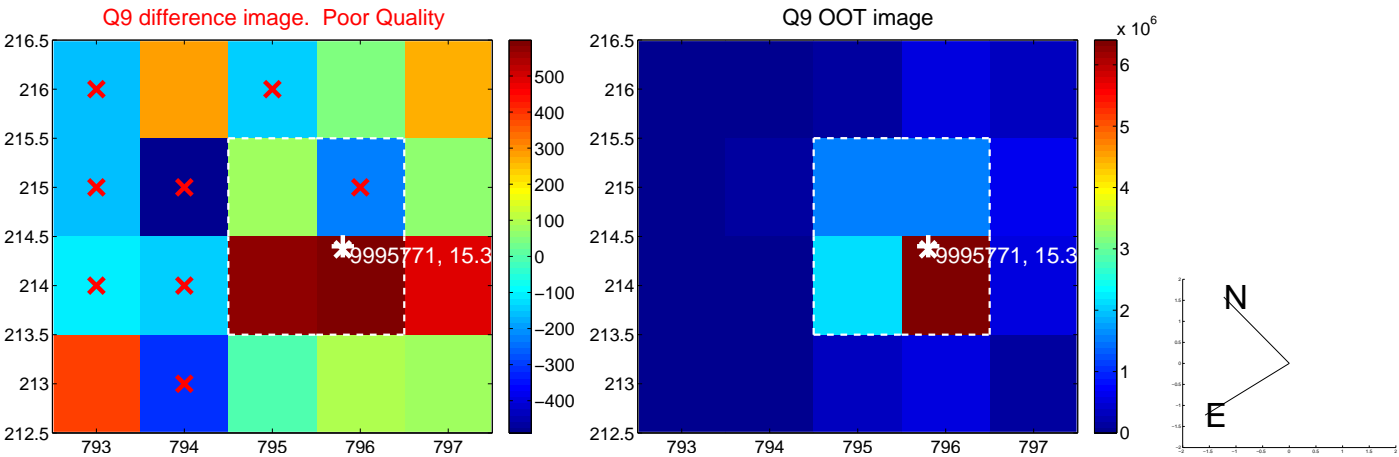
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



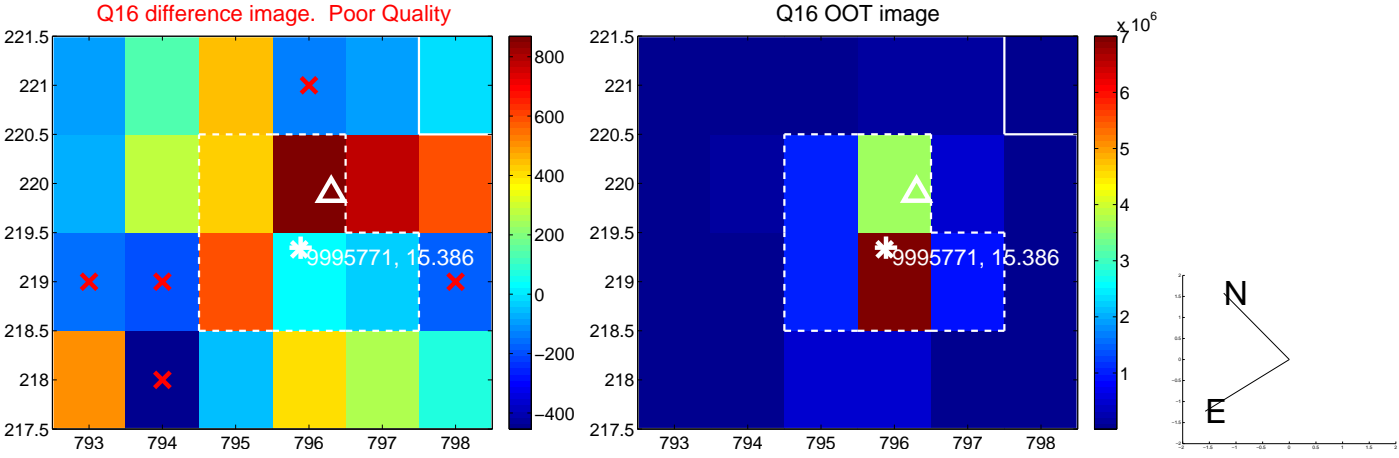
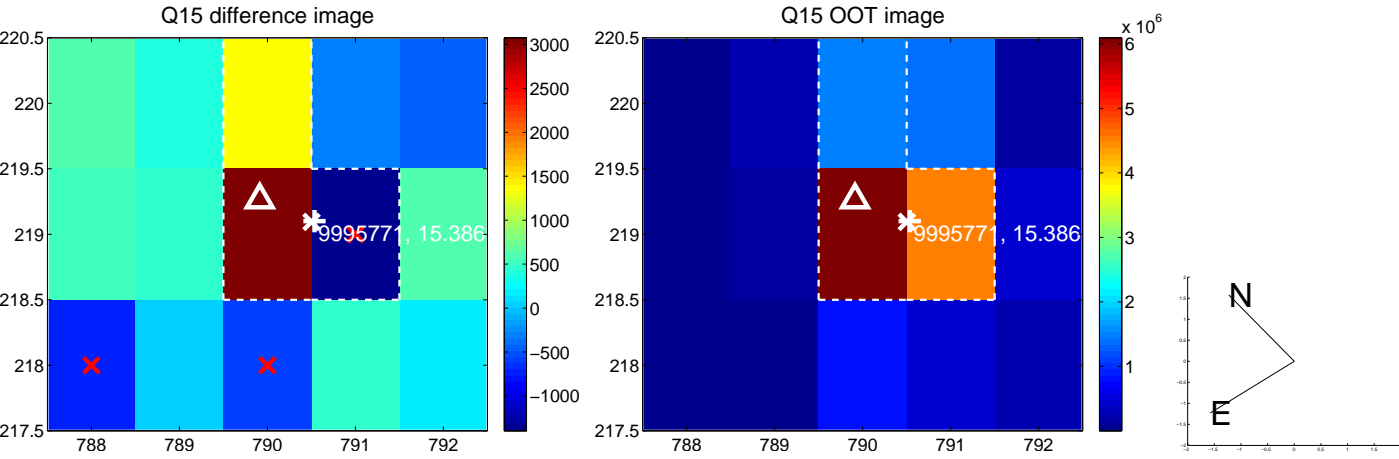
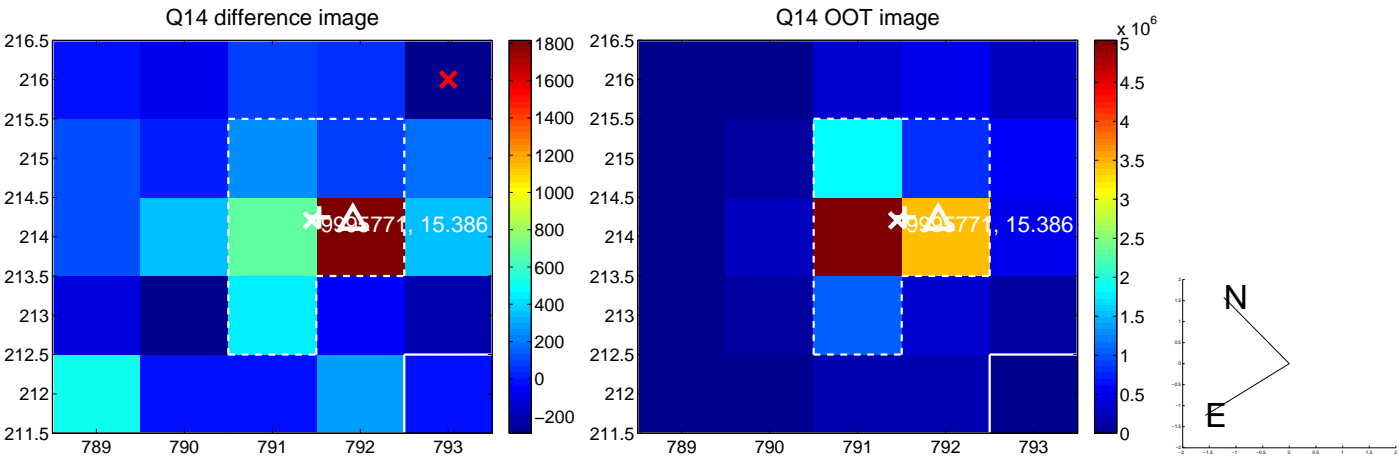
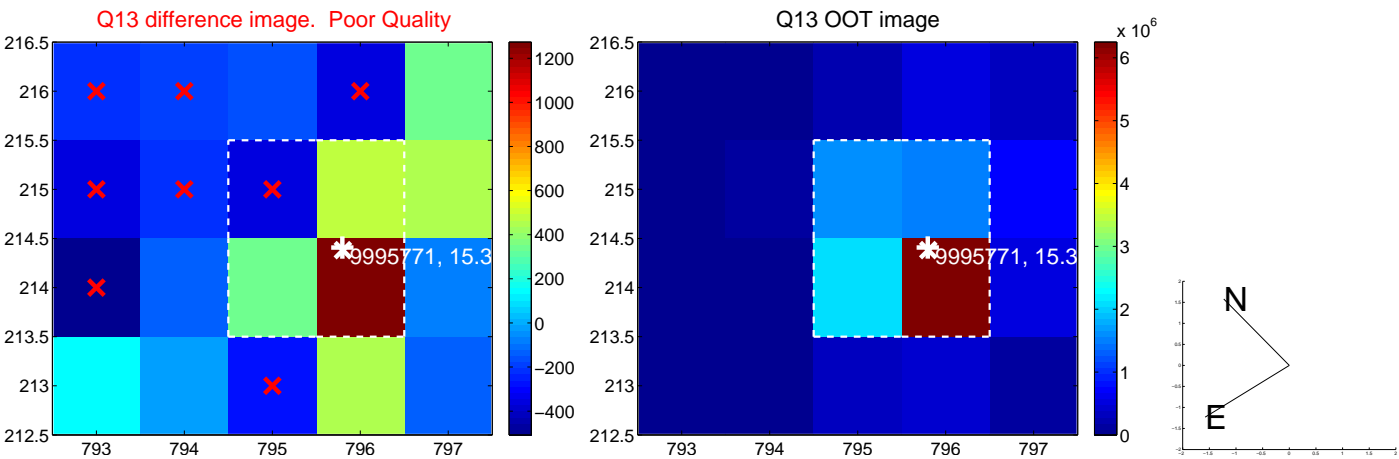
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



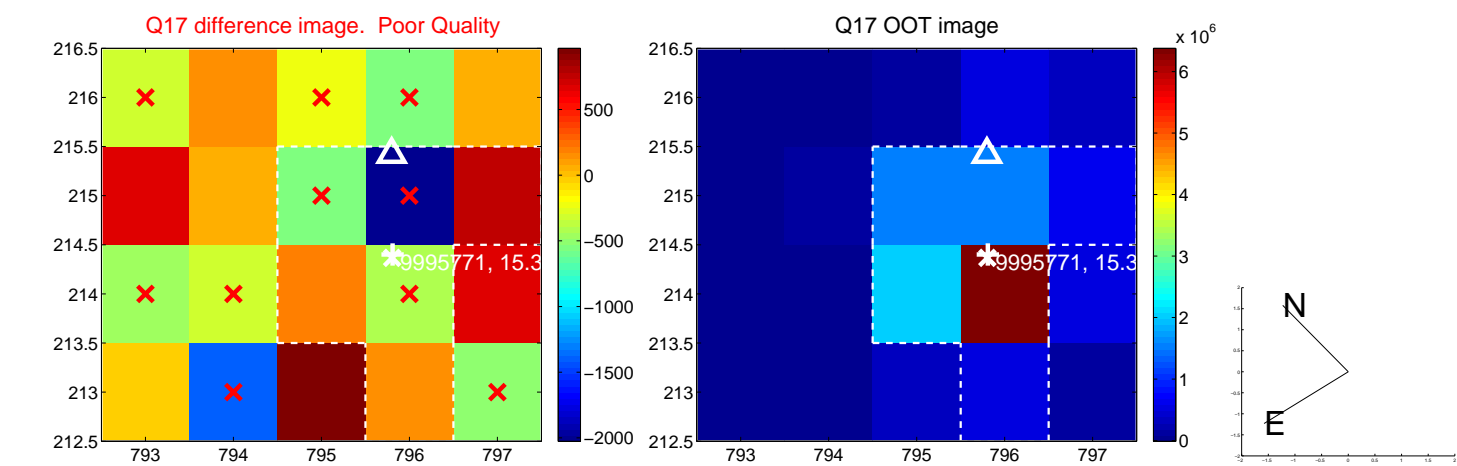
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



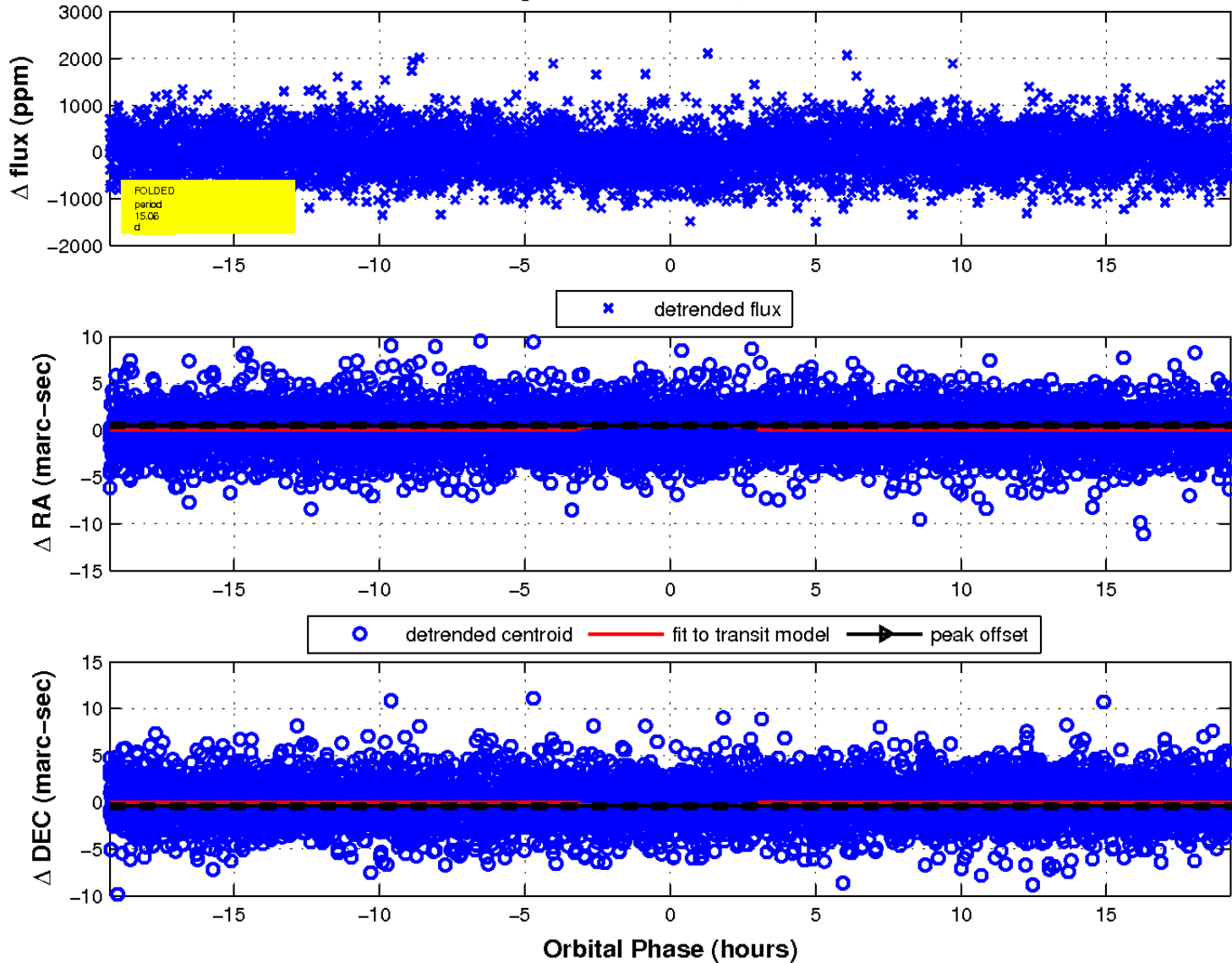
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

