

KIC 009418994

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})
009418994-01	OBS	7172.01	32.003811	136.495138	17035.5	4.278	858.7	755.6	4.06	5260	95.82	201.56
009418994-02	OBS	No	32.003758	155.298584	2191.4	6.751	132.3	127.2	4.06	5260	36.87	201.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009418994-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009418994-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

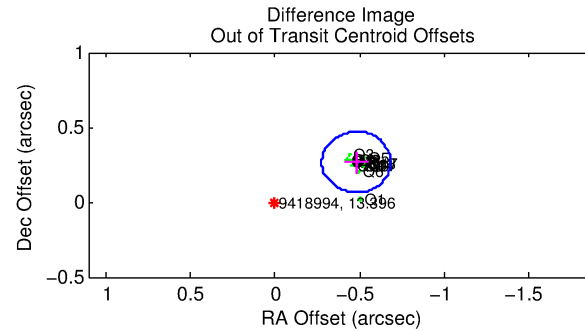
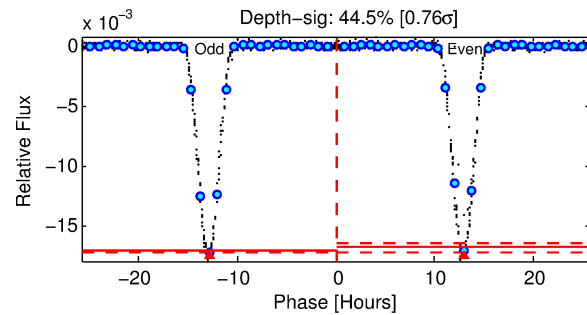
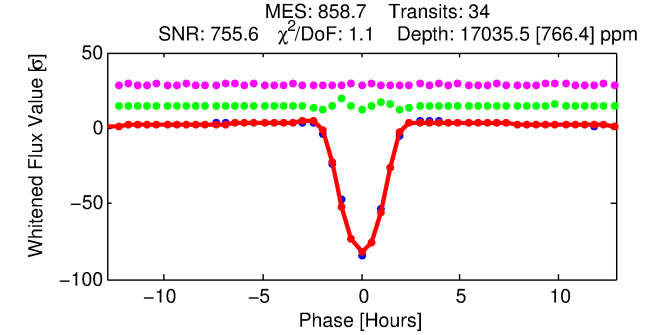
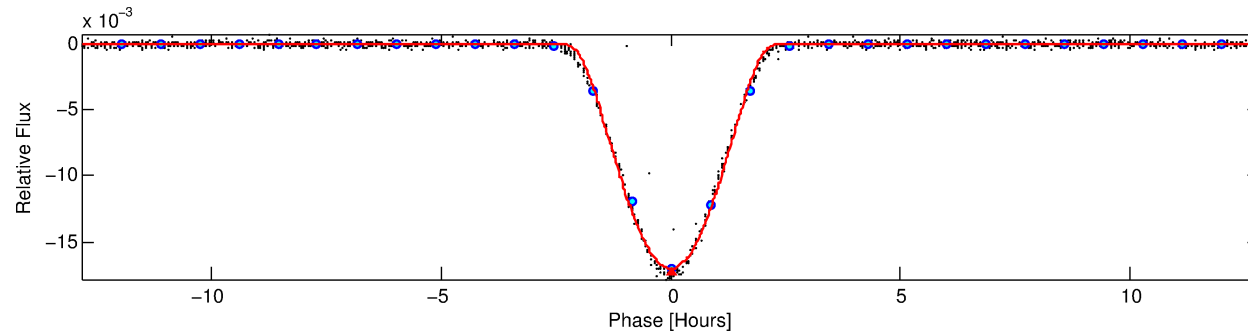
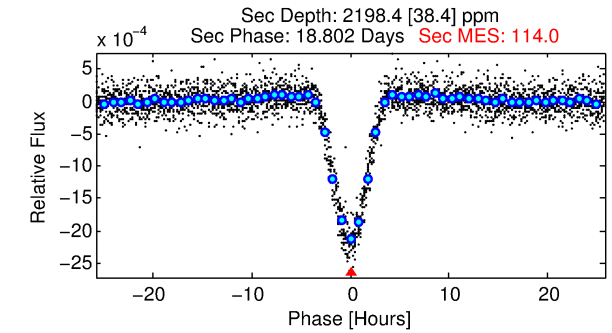
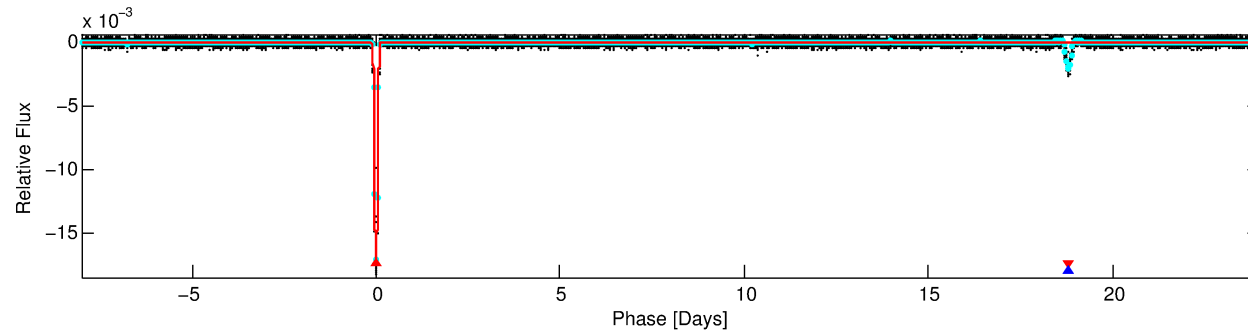
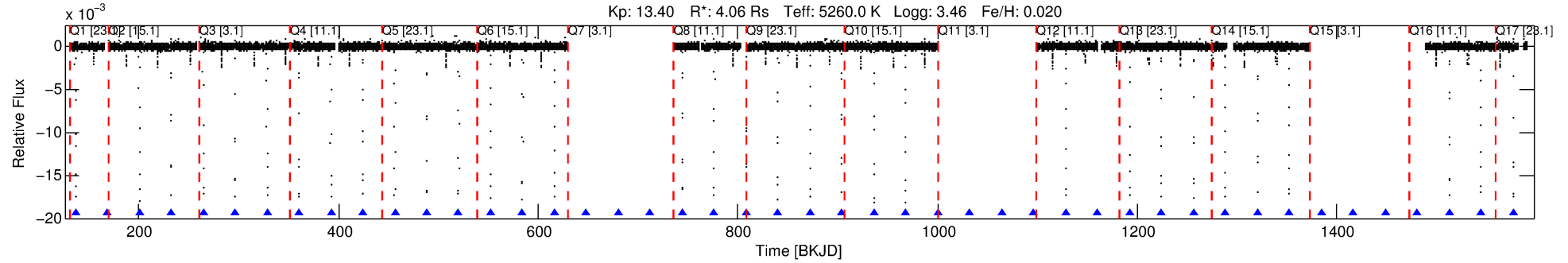
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009418994-01

No Significant Match Found

DV One-Page Summary

KIC: 9418994 Candidate: 1 of 2 Period: 32.004 d
KOI: K07172.01 Corr: 0.997



DV Fit Results:

Period = 32.00381 [0.00001] d
Epoch = 136.4951 [0.0001] BKJD
Rp/R* = 0.2162 [0.0221]
a/R* = 39.57 [0.41]
b = 1.00 [0.02]
Seff = 201.56 [268.60]
Teq = 961 [320] K
Rp = 95.82 [67.26] Re
a = 0.2370 [0.1834] AU
Ag = 7.40 [9.91] [0.65σ]
Teffp = 2450 [156] K [4.18σ]

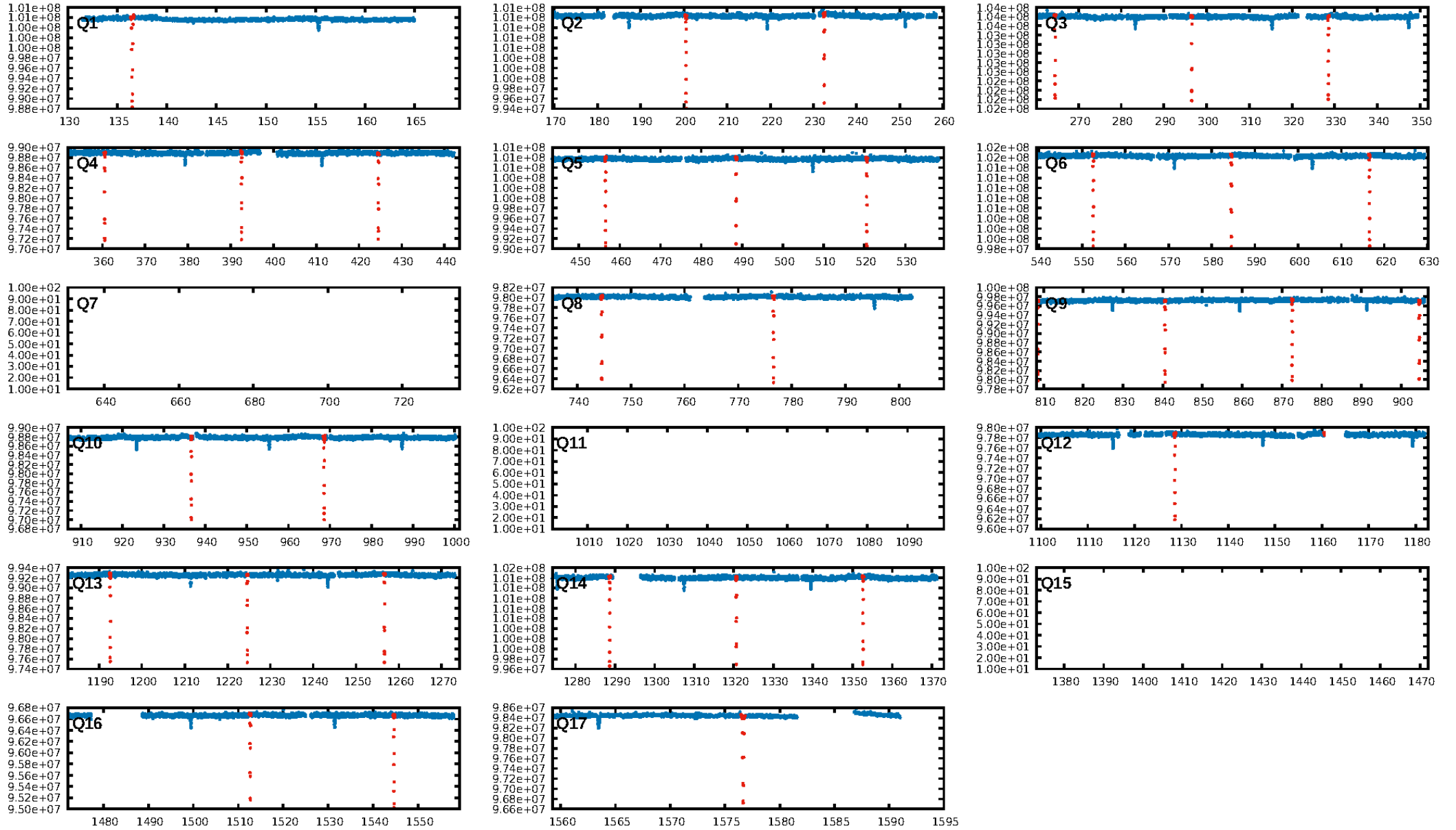
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 35.0%
ModelChiSquareGof-sig: 3.5%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [32/32]
GhostDiagnostic-chr: 4.883
Centroid-sig: 0.0%
Centroid-so: 0.614 arcsec [63.30σ]
OotOffset-rm: 0.549 arcsec [8.12σ]
KicOffset-rm: 0.581 arcsec [8.18σ]
OotOffset-st: 3/1/4/5 [13]
KicOffset-st: 3/1/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

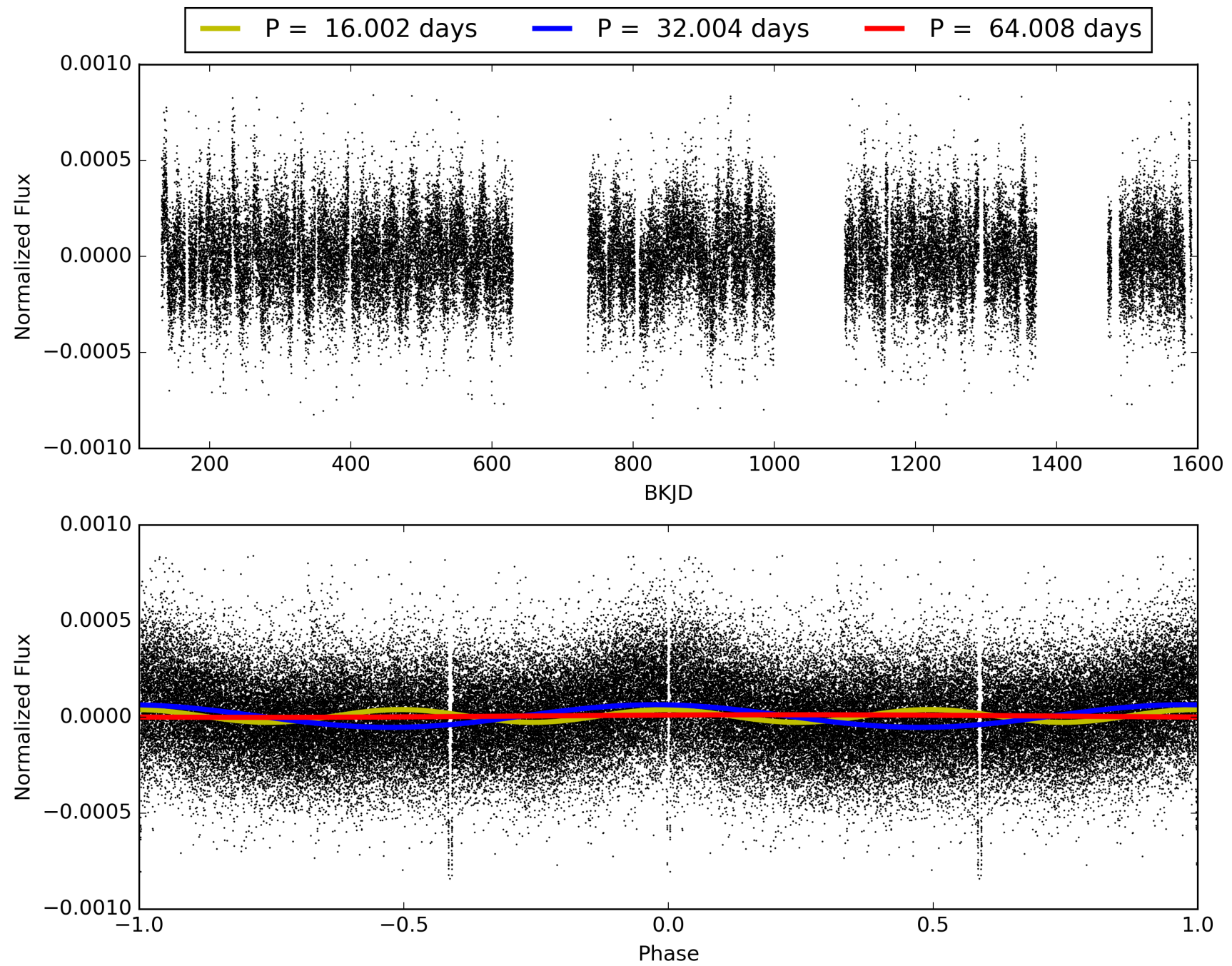
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:15:34 Z

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

TCE 009418994-01, PDC Light Curves

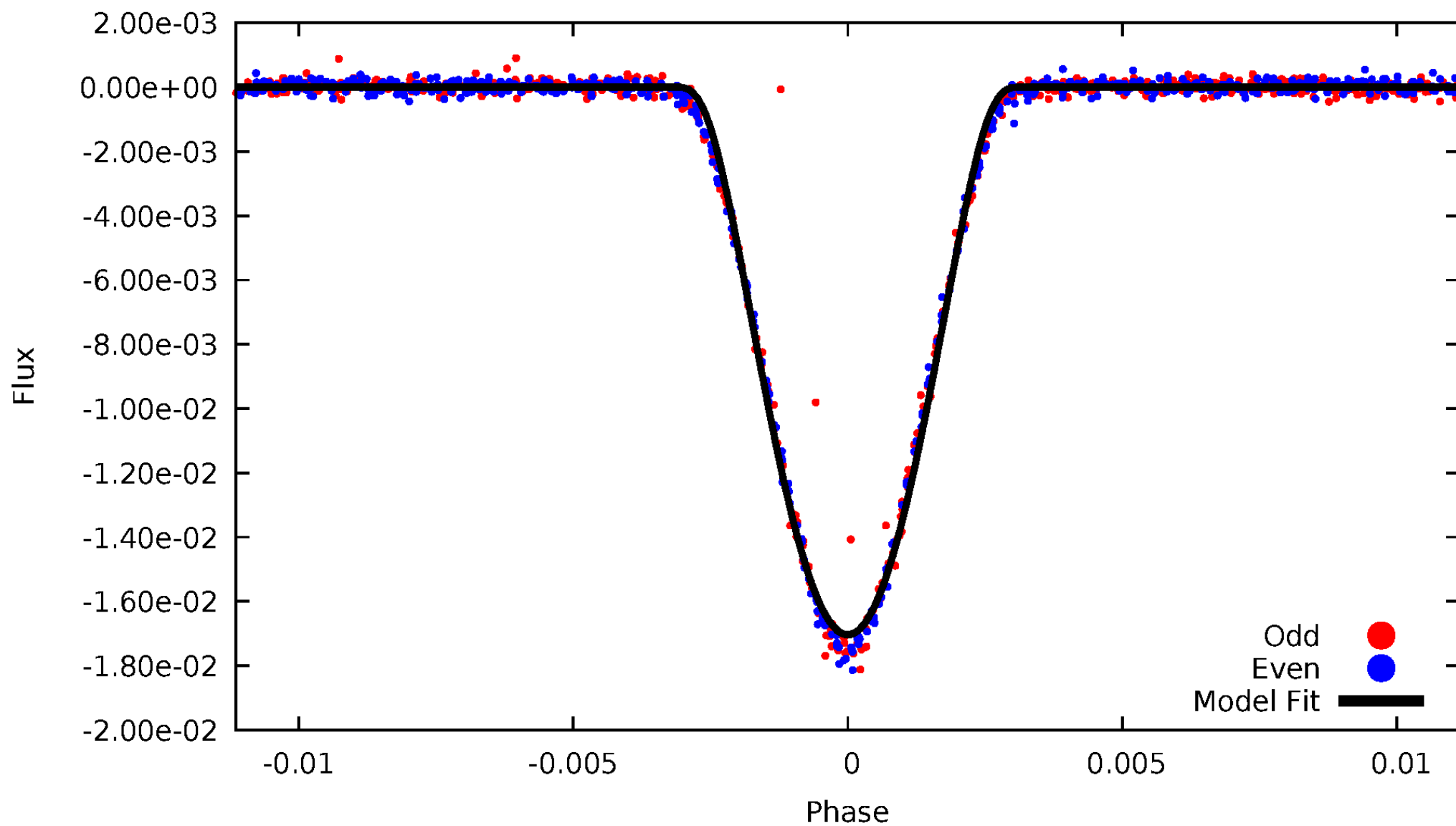


TCE 009418994-01



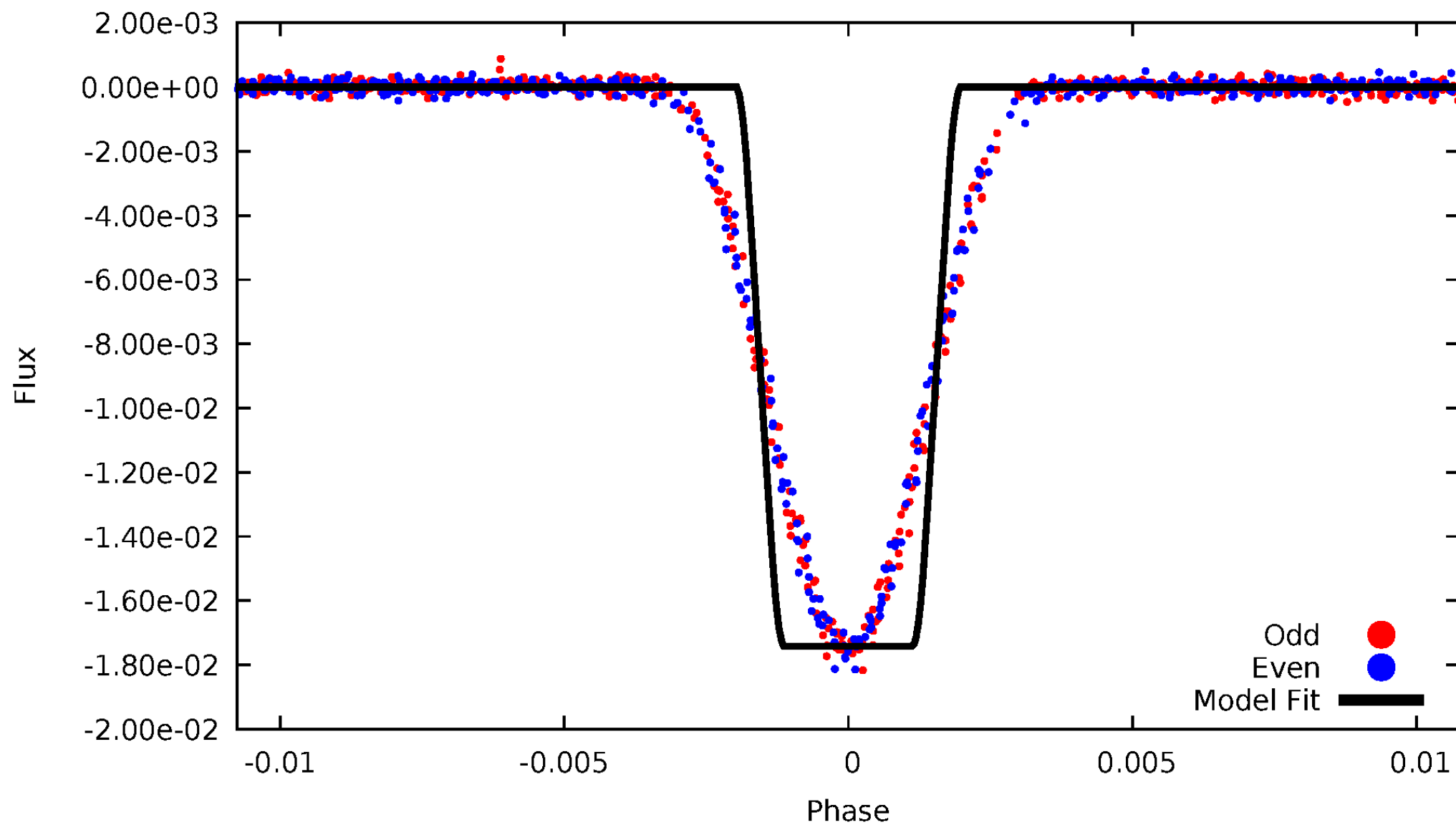
DV Odd/Even

TCE 009418994-01



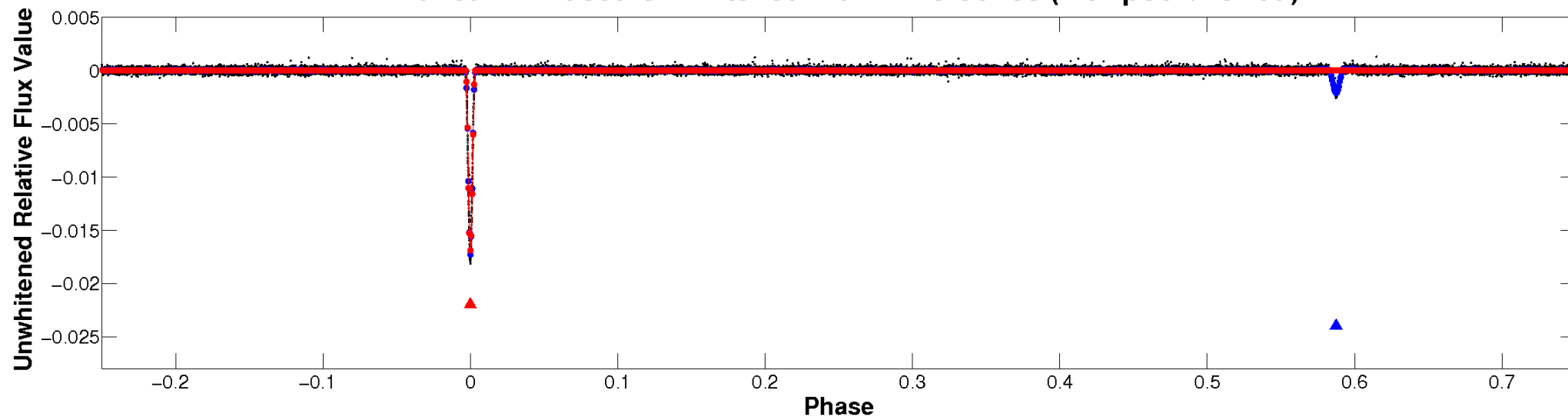
ALT Odd/Even

TCE 009418994-01

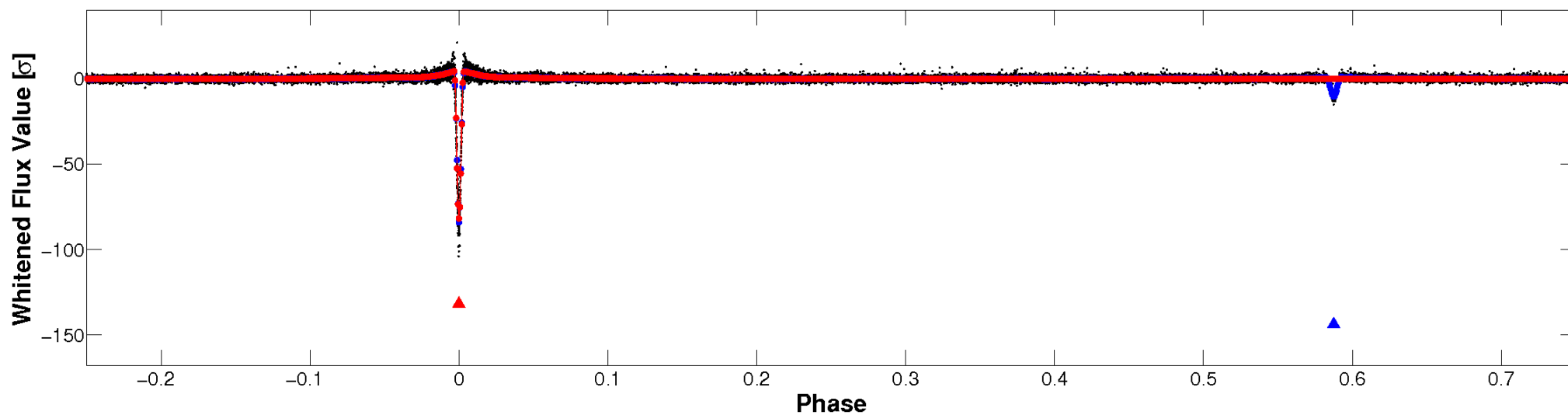


Non-Whitened Vs. Whitened Light Curve

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

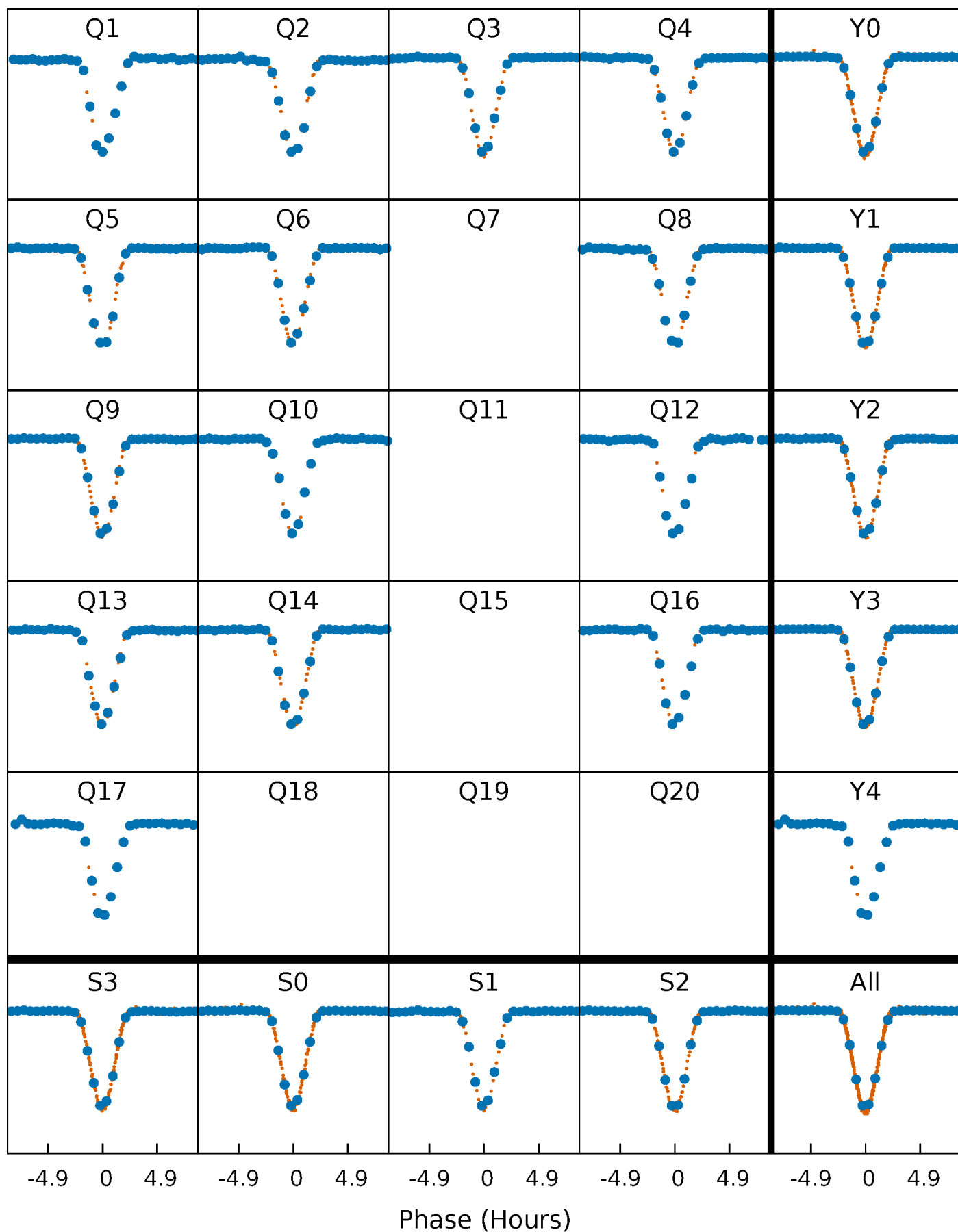


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



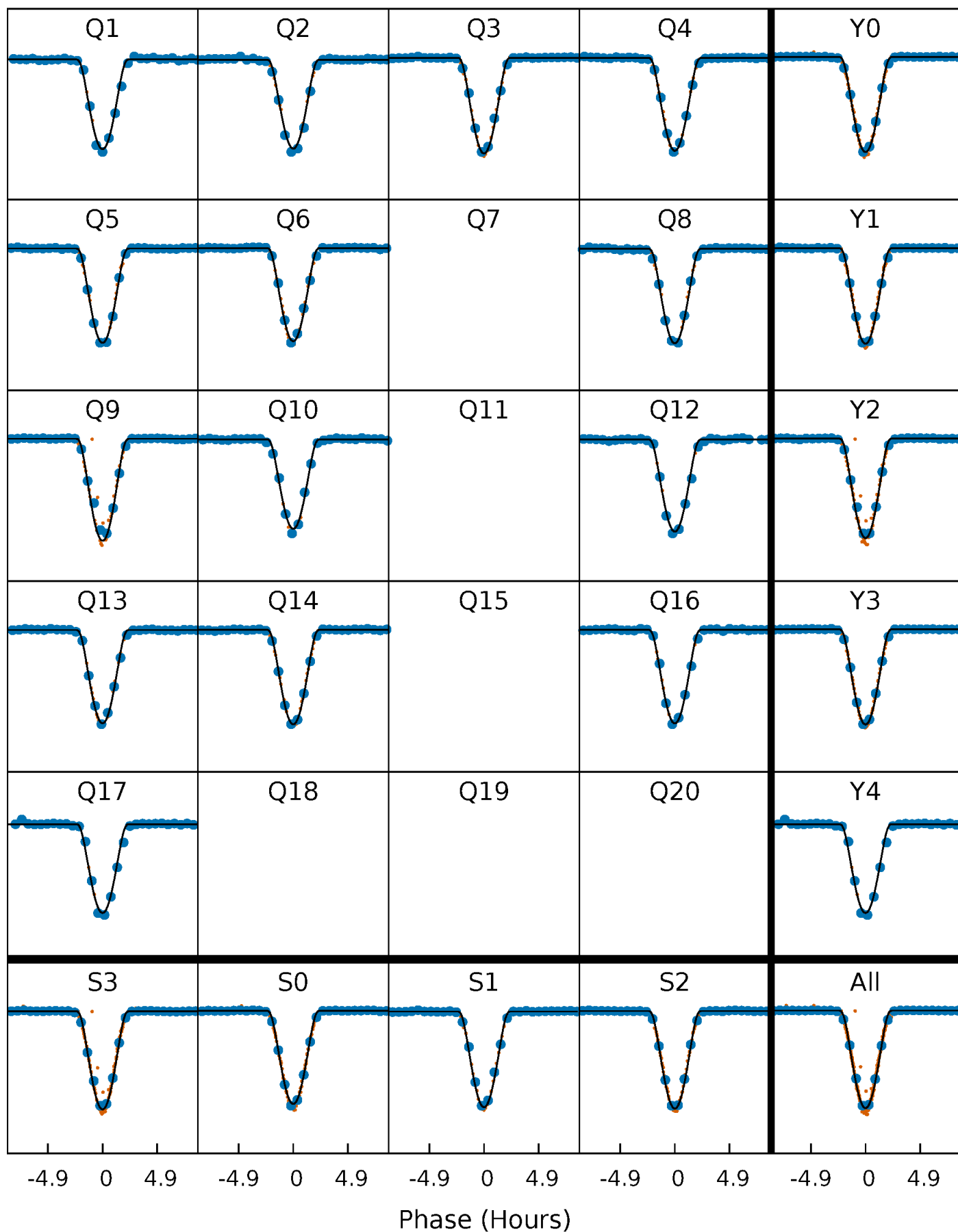
PDC Quarter-Phased Transit Curves

TCE 009418994-01 P= 32.003811 Days $T_0=136.495138$ (BKJD)



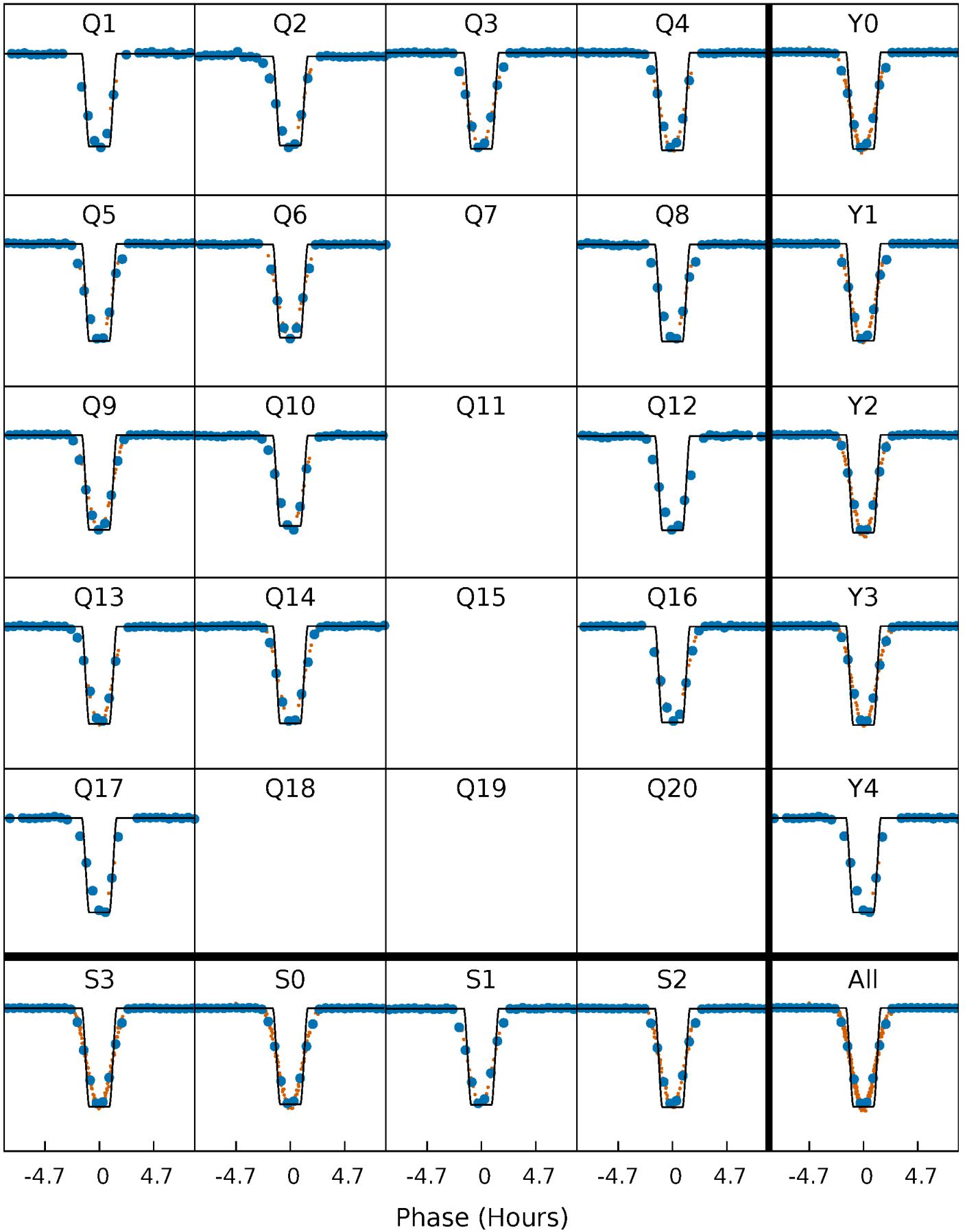
DV Quarter-Phased Transit Curves

TCE 009418994-01 P= 32.003811 Days $T_0=136.495138$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

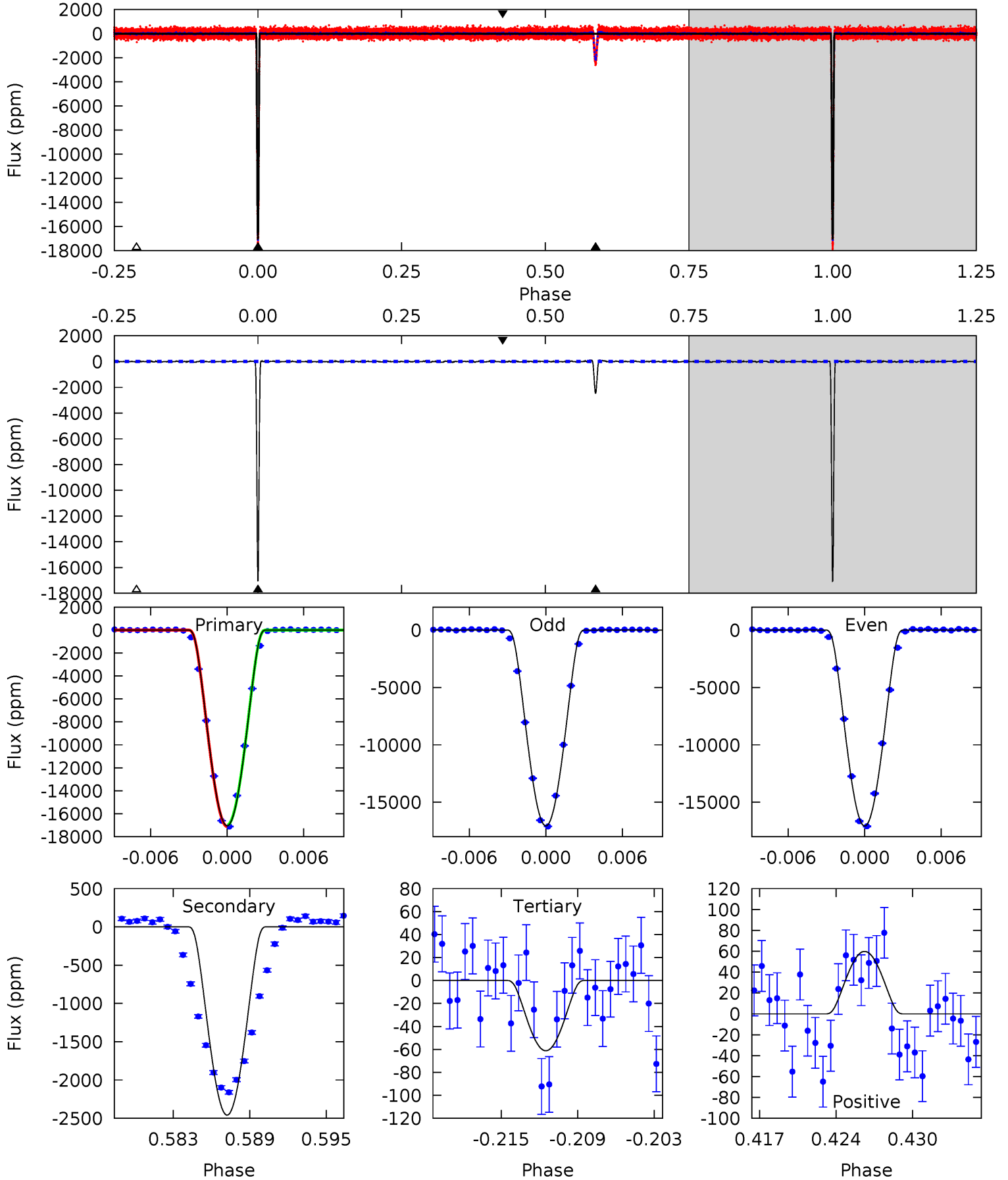
TCE 009418994-01 P= 32.003657 Days $T_0=136.498091$ (BKJD)



DV Model-Shift Uniqueness Test

009418994-01, P = 32.003811 Days, E = 104.491327 Days

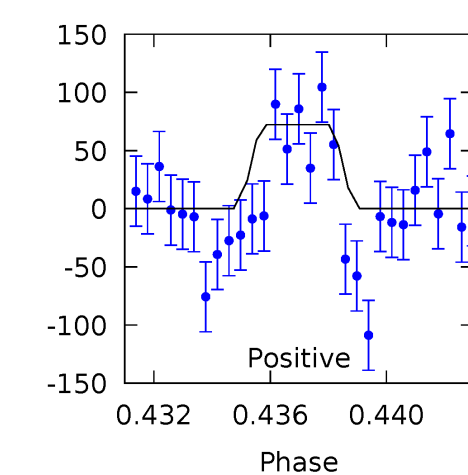
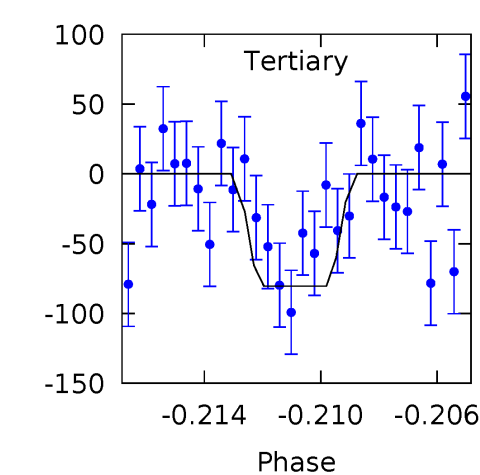
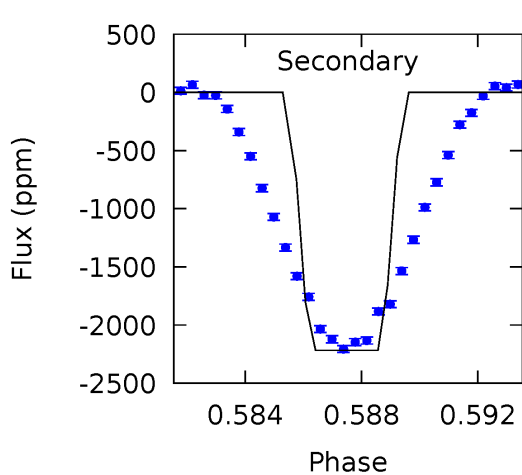
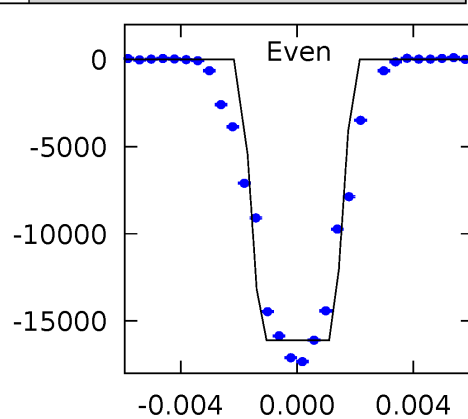
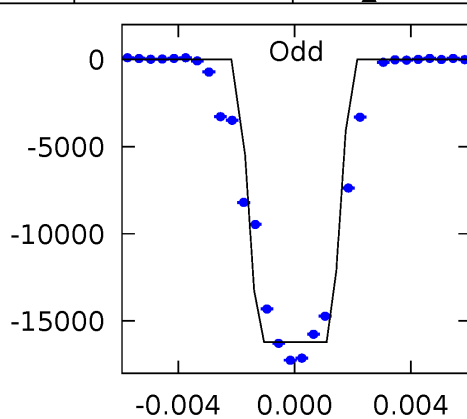
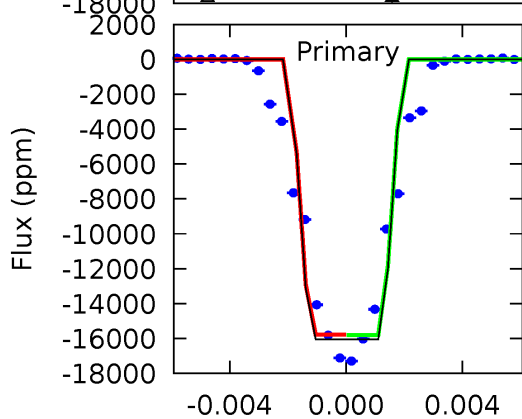
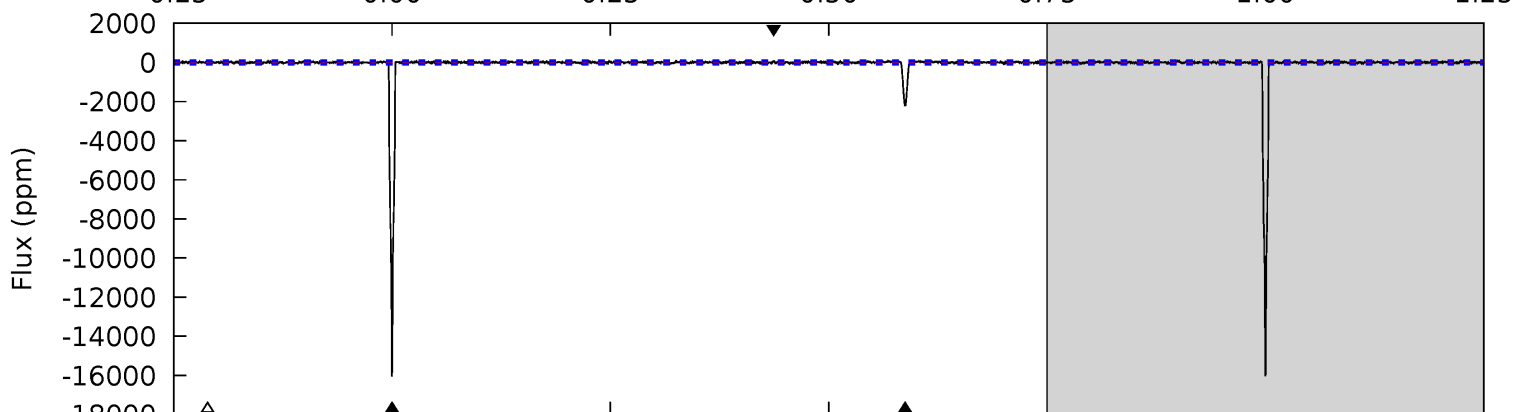
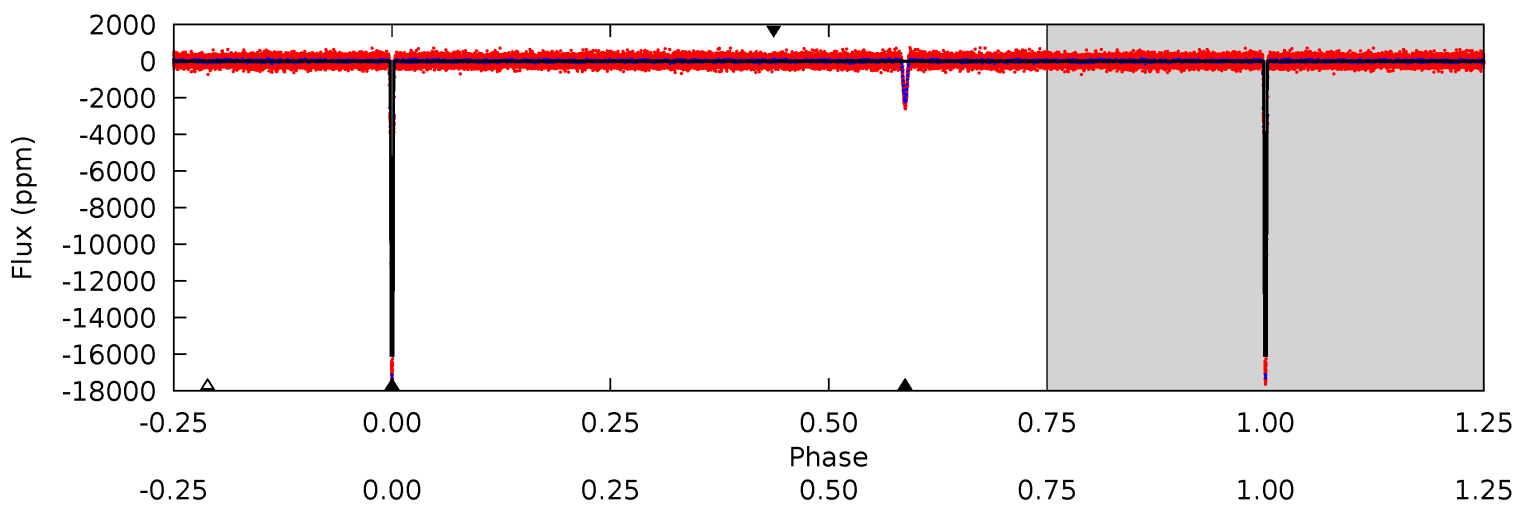
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1753	252.7	6.29	6.15	5.12	2.74	2.21	1747	1747	246.4	246.6	0.55	1.00	0.01	5.92



Alt Model-Shift Uniqueness Test

009418994-01, P = 32.003657 Days, E = 104.494434 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
985.9	136.2	4.94	4.44	5.20	2.89	1.32	980.9	981.4	131.2	131.7	2.89	1.00	0.00	0.64



Stellar Parameters For KIC 009418994

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5260^{+182}_{-200}	$3.459^{+0.808}_{-0.202}$	$0.020^{+0.300}_{-0.350}$	$4.062^{+1.128}_{-2.821}$	$1.730^{+0.201}_{-0.802}$	$0.036^{+0.617}_{-0.018}$
	+3%/-4%	+23%/-6%	+1500%/-1750%	+28%/-69%	+12%/-46%	+1697%/-51%
Source	PHO1	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 009418994-01 / KOI 7172.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2459 ± 10	$88.87^{+24.99}_{-32.38}$	1312^{+141}_{-256}	3099^{+142}_{-110}	$9.275^{+12.575}_{-3.365}$
Alt.	-2217 ± 16	$54.29^{+17.49}_{-19.89}$	1319^{+141}_{-229}	3556^{+254}_{-186}	23^{+31}_{-9}

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

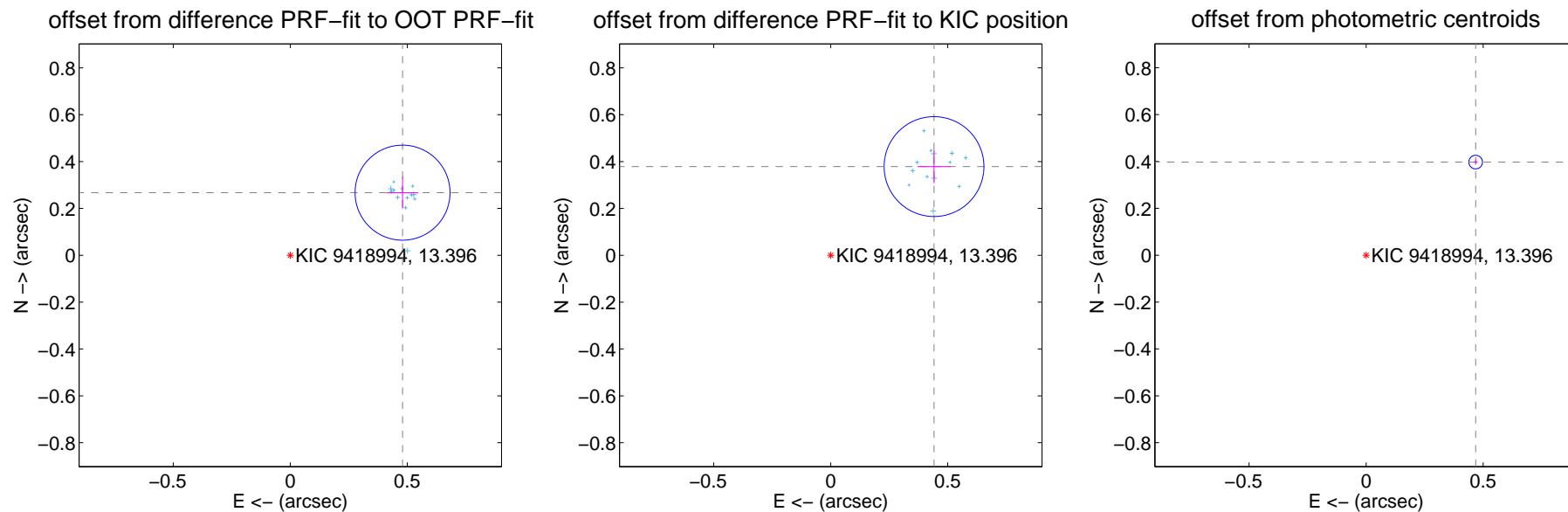
DV Centroid Data

Supplemental centroid analysis for 009418994-01. Kepler magnitude: 13.40. Transit SNR 755.64

There are 13 quarters with good PRF difference image offsets

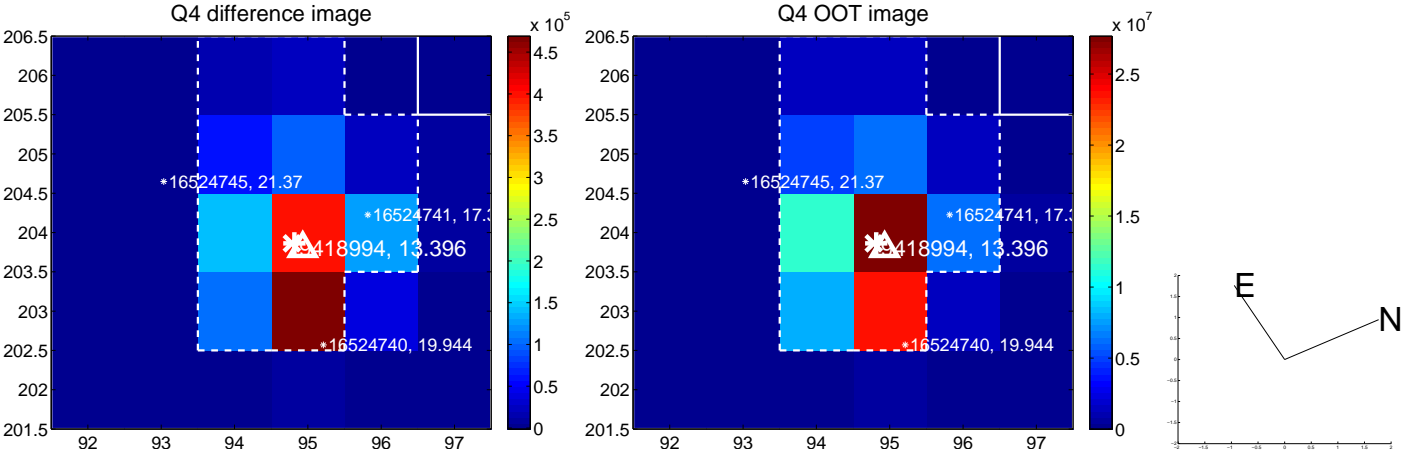
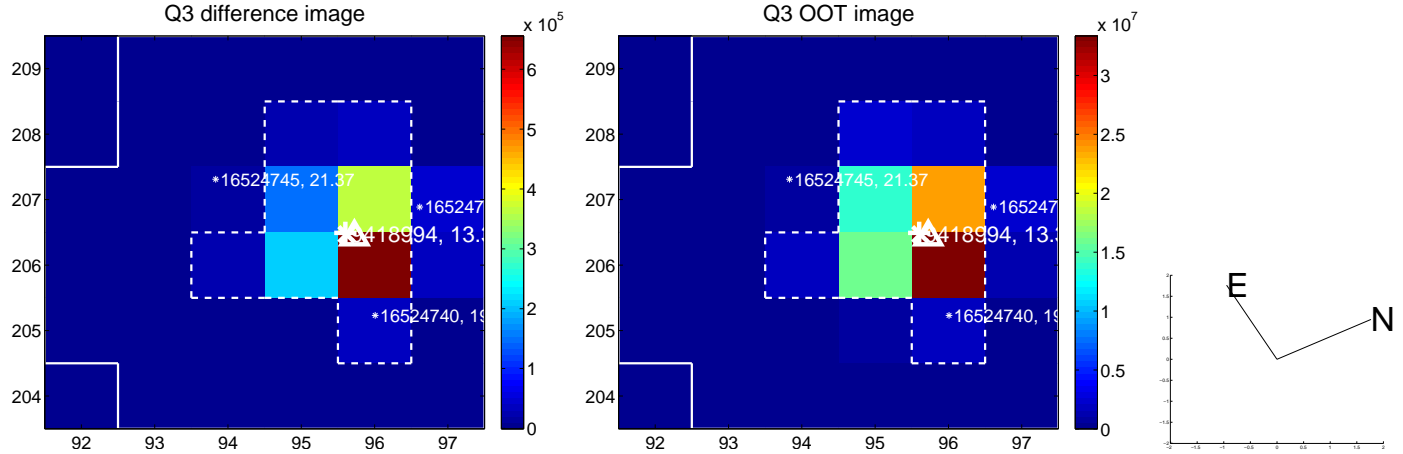
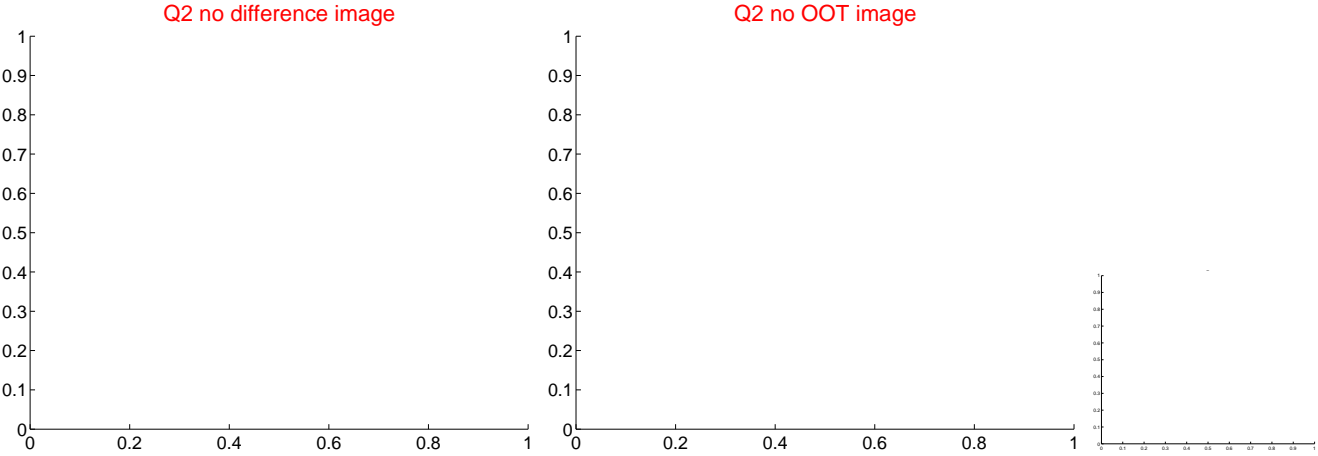
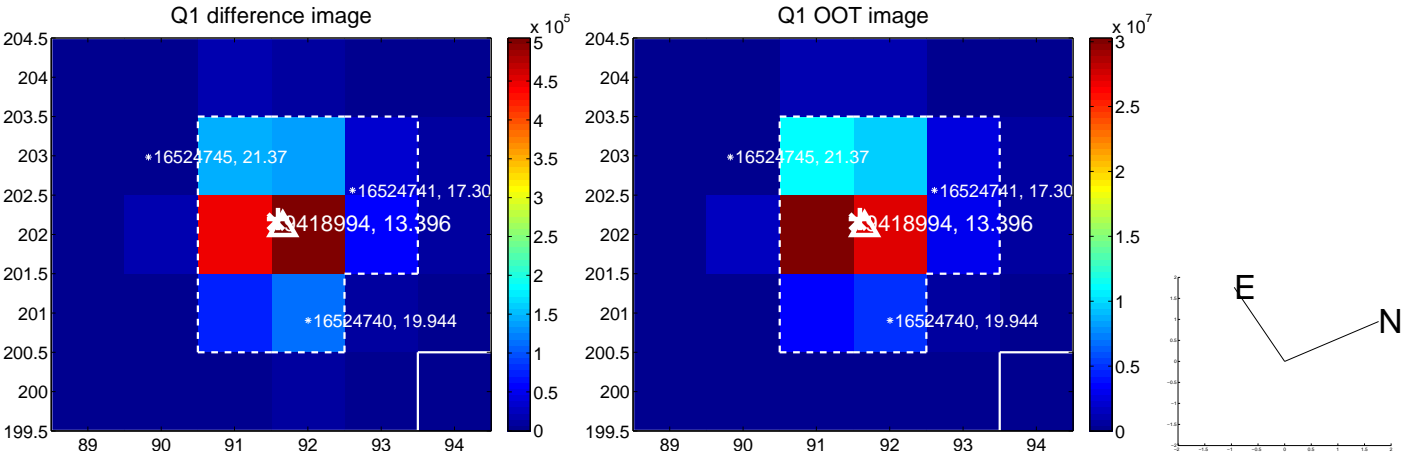
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.549 ± 0.068	8.12	-0.480 ± 0.068	0.267 ± 0.067
PRF-fit source offset from KIC position	0.581 ± 0.071	8.18	-0.441 ± 0.071	0.379 ± 0.071
photometric centroid source offset	0.61 ± 0.01	63.30	-0.47 ± 0.01	0.40 ± 0.01

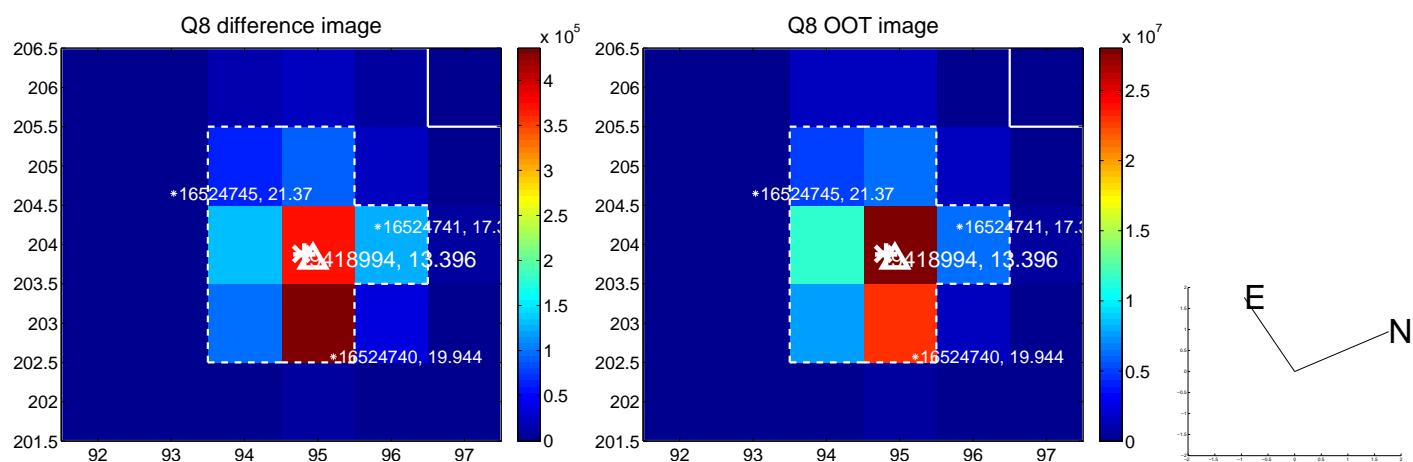
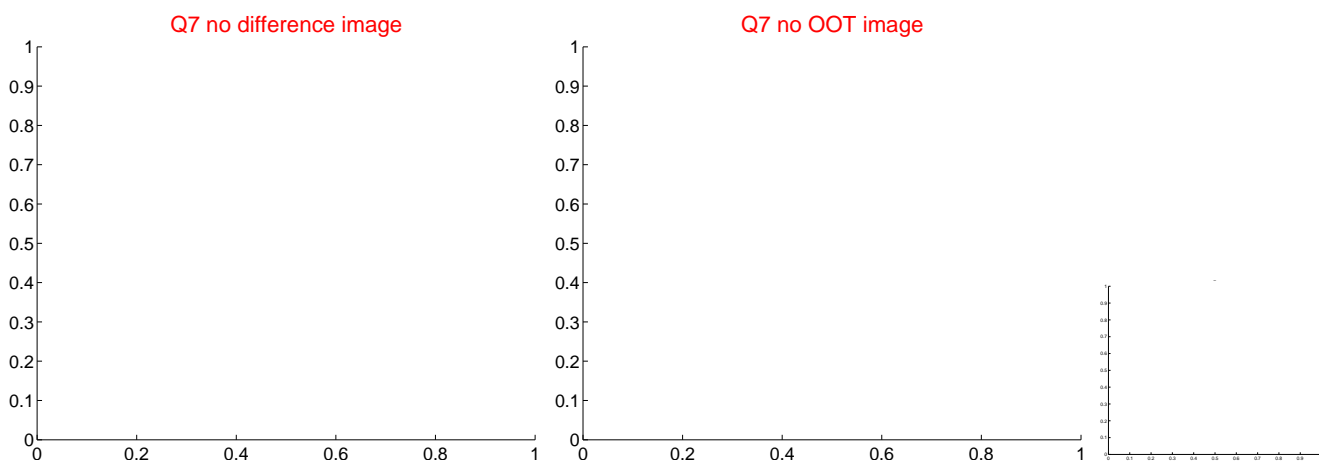
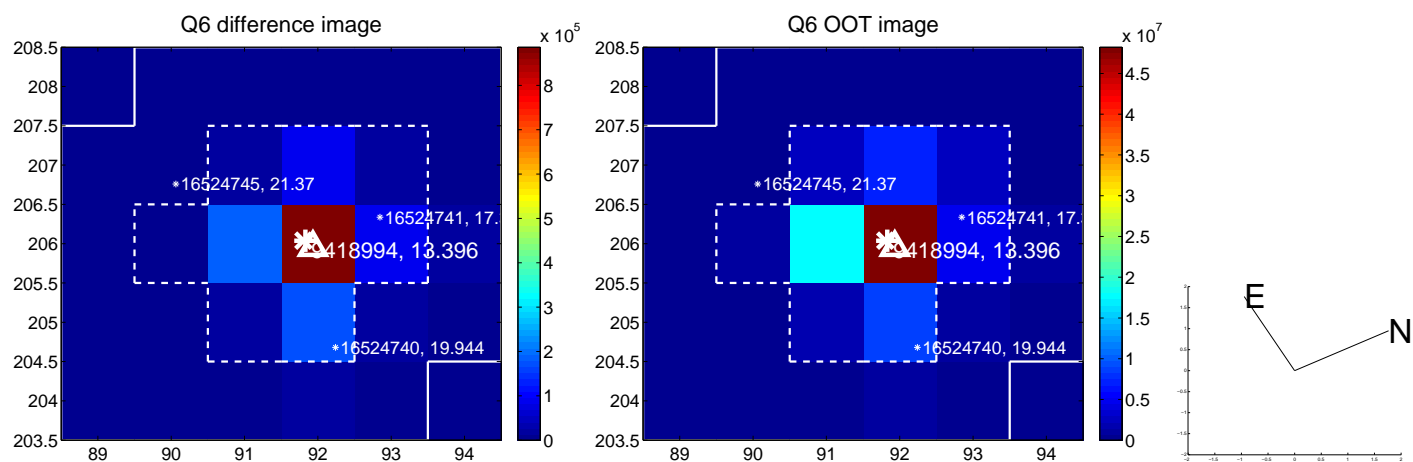
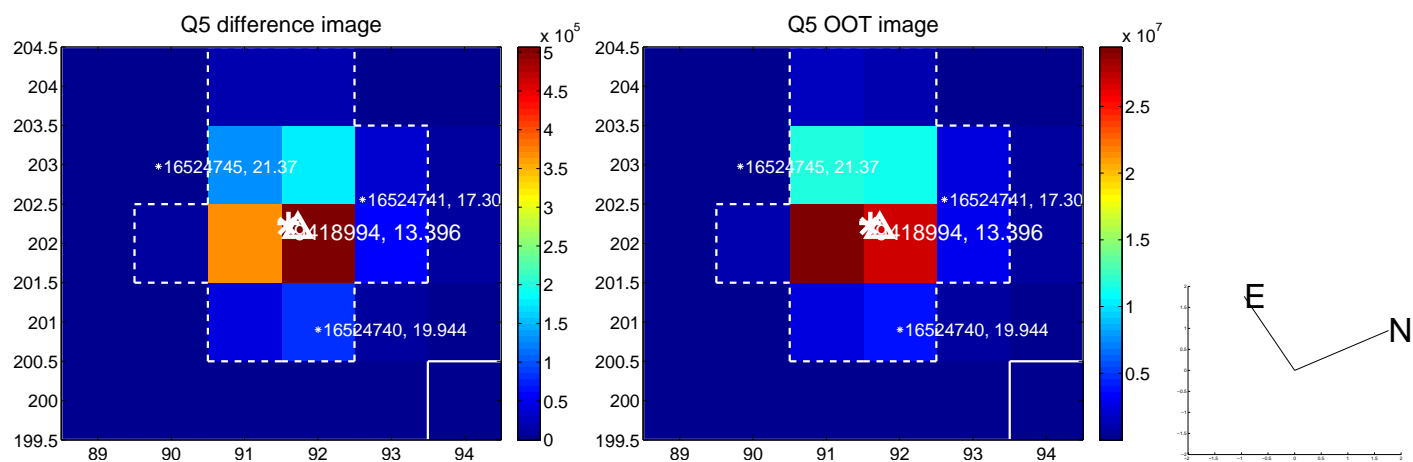


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

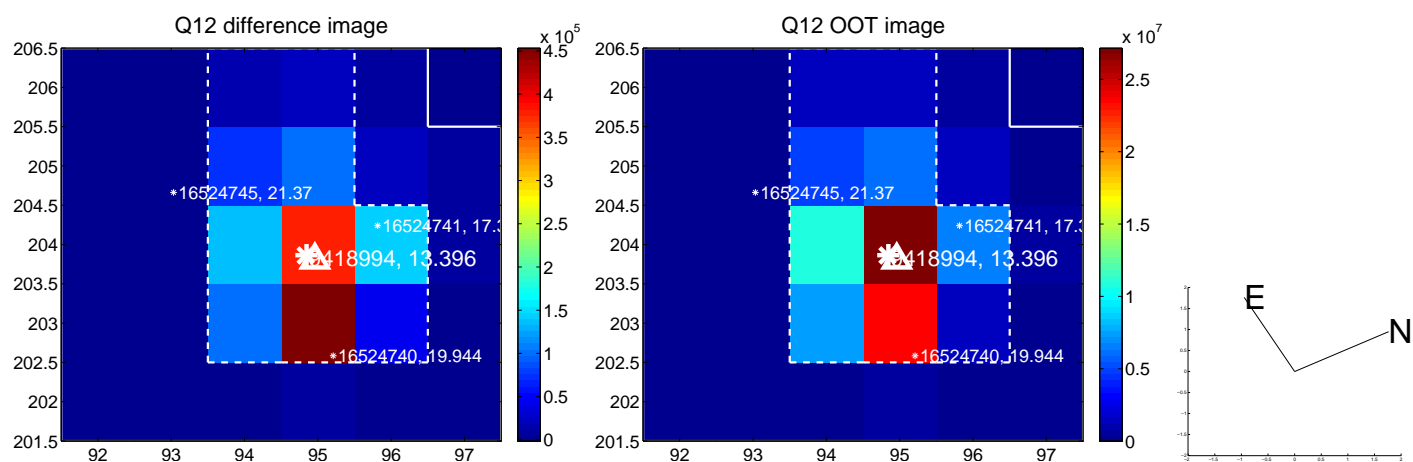
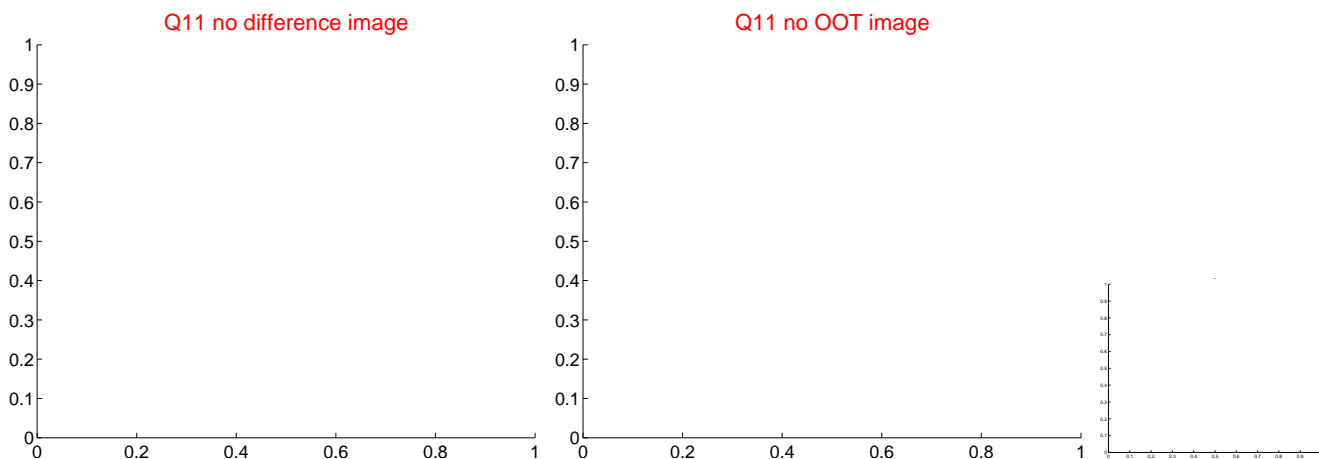
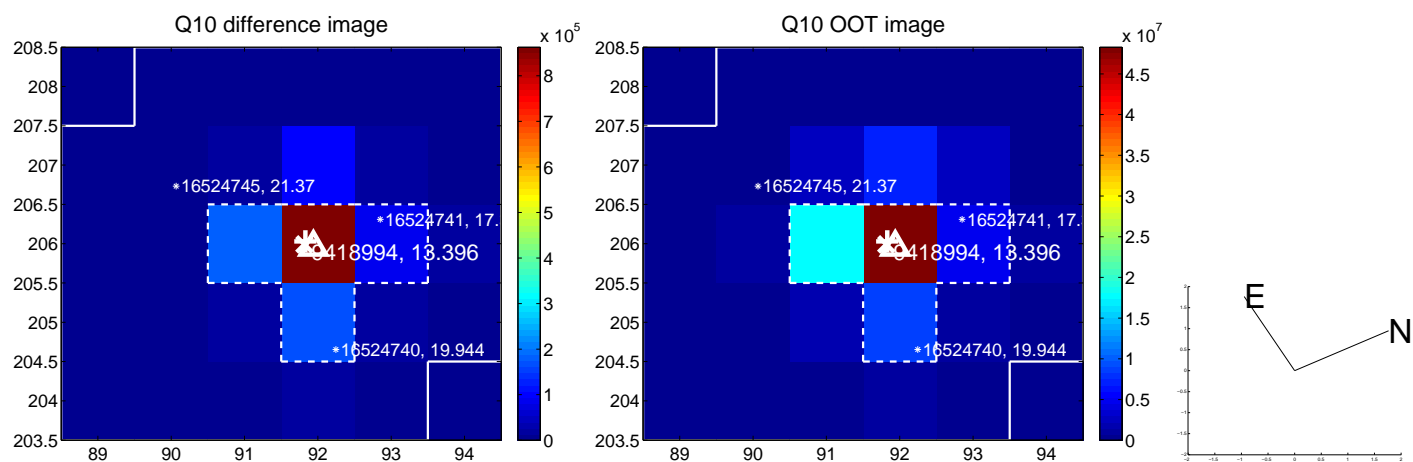
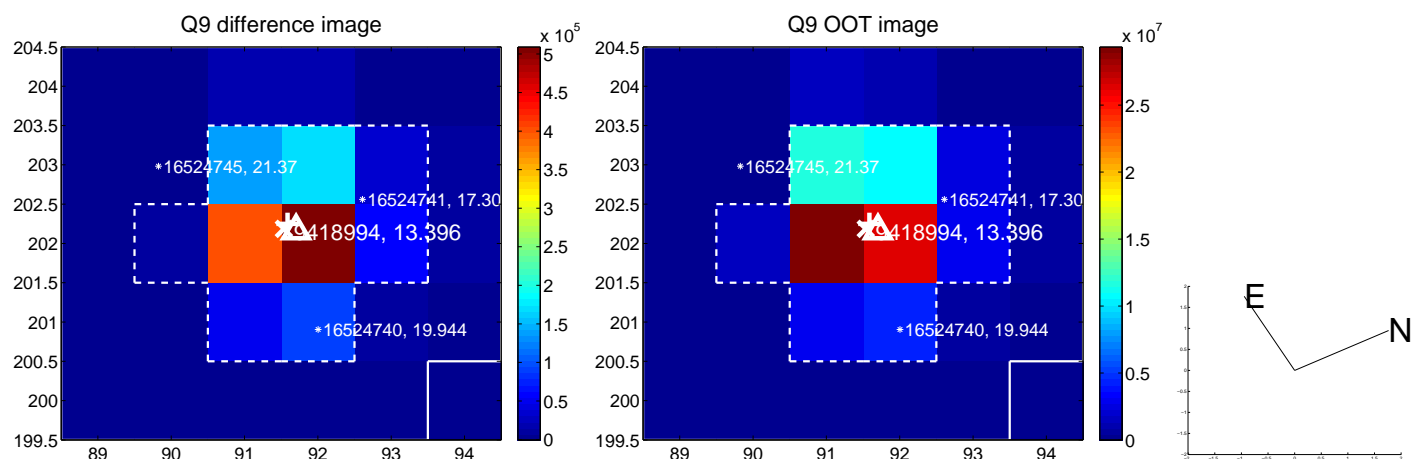
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



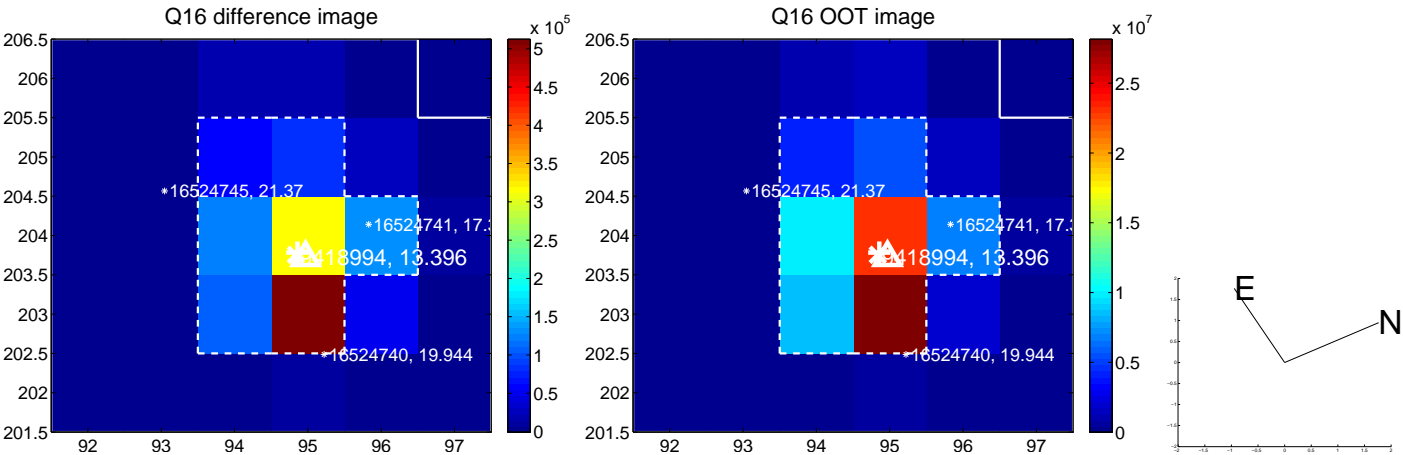
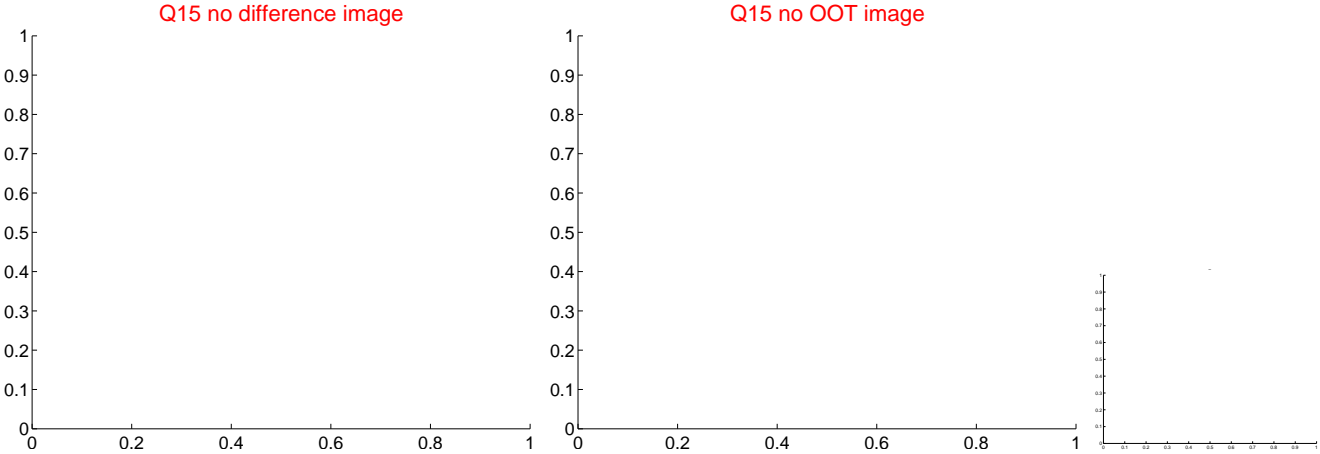
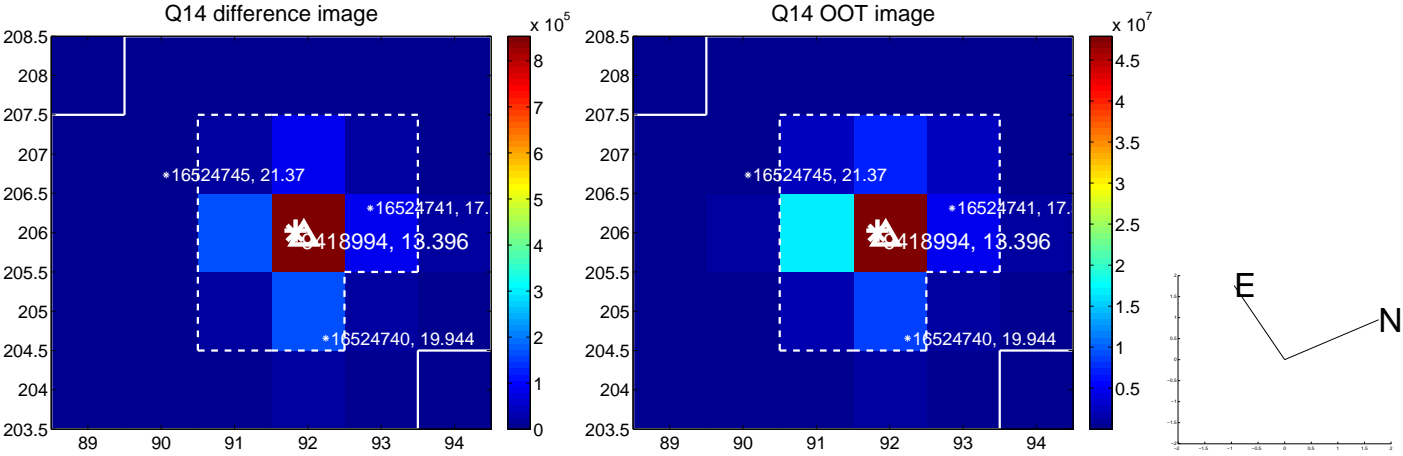
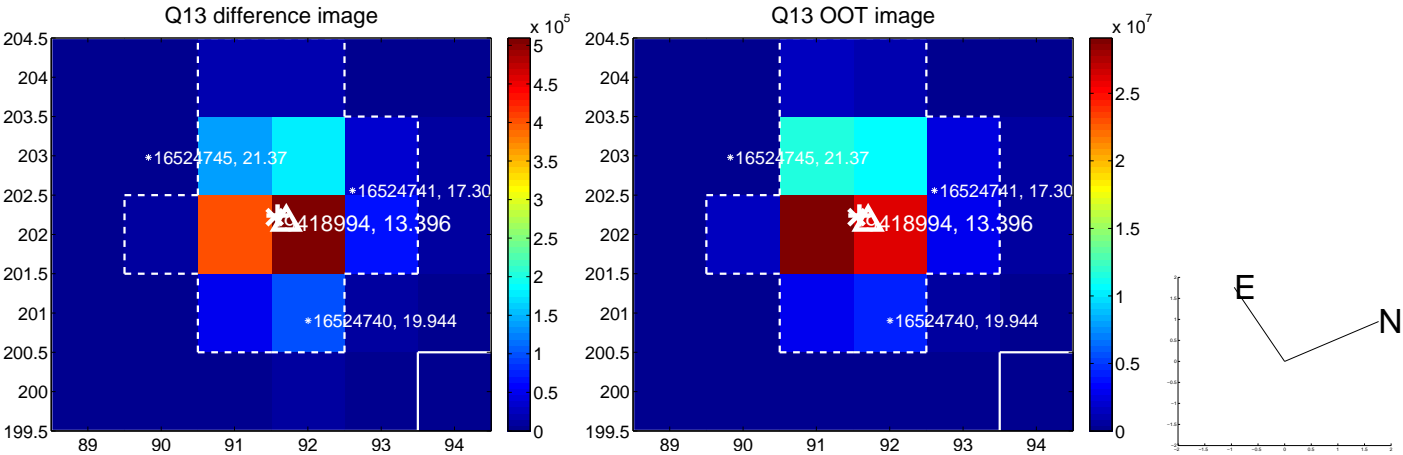
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



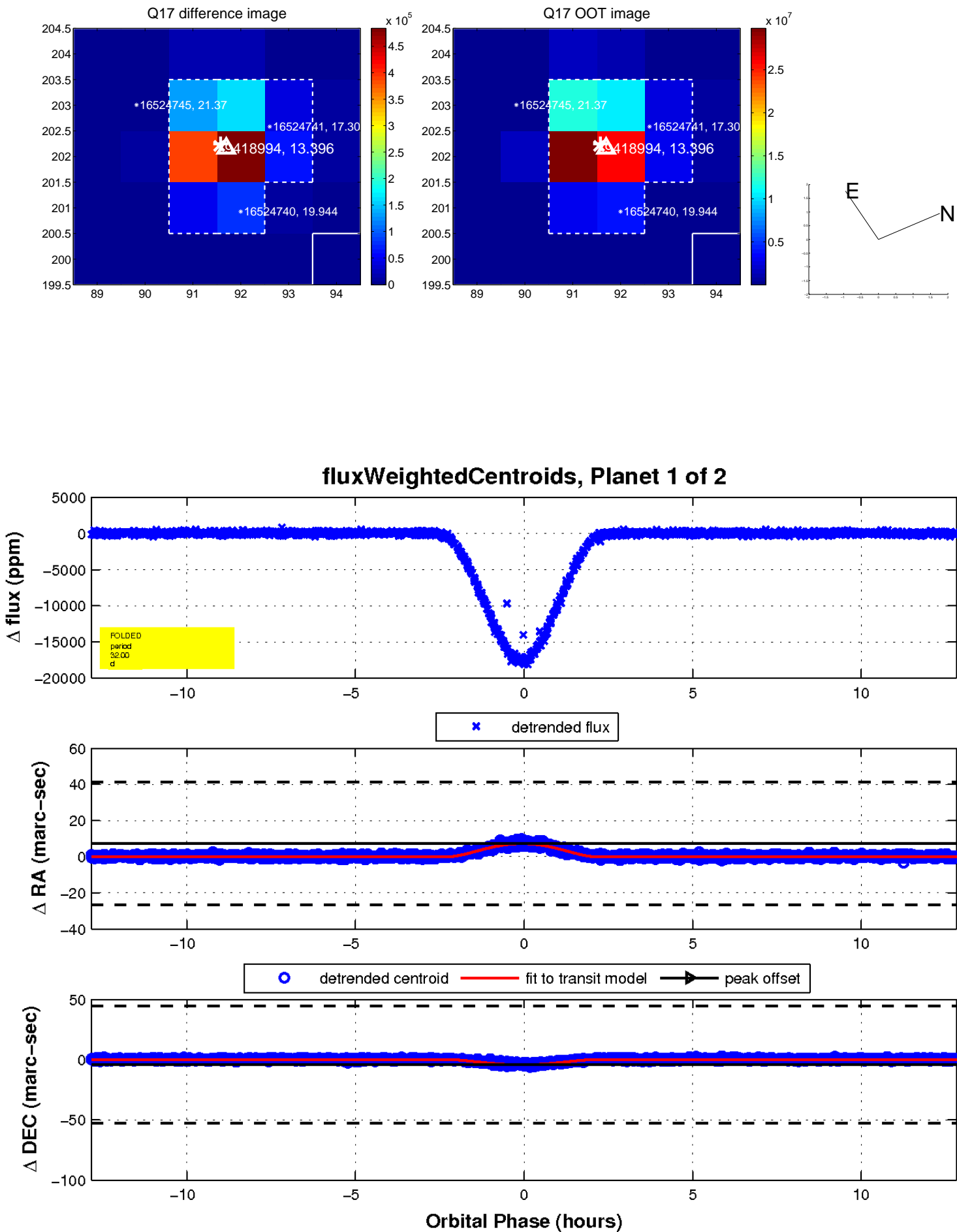
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

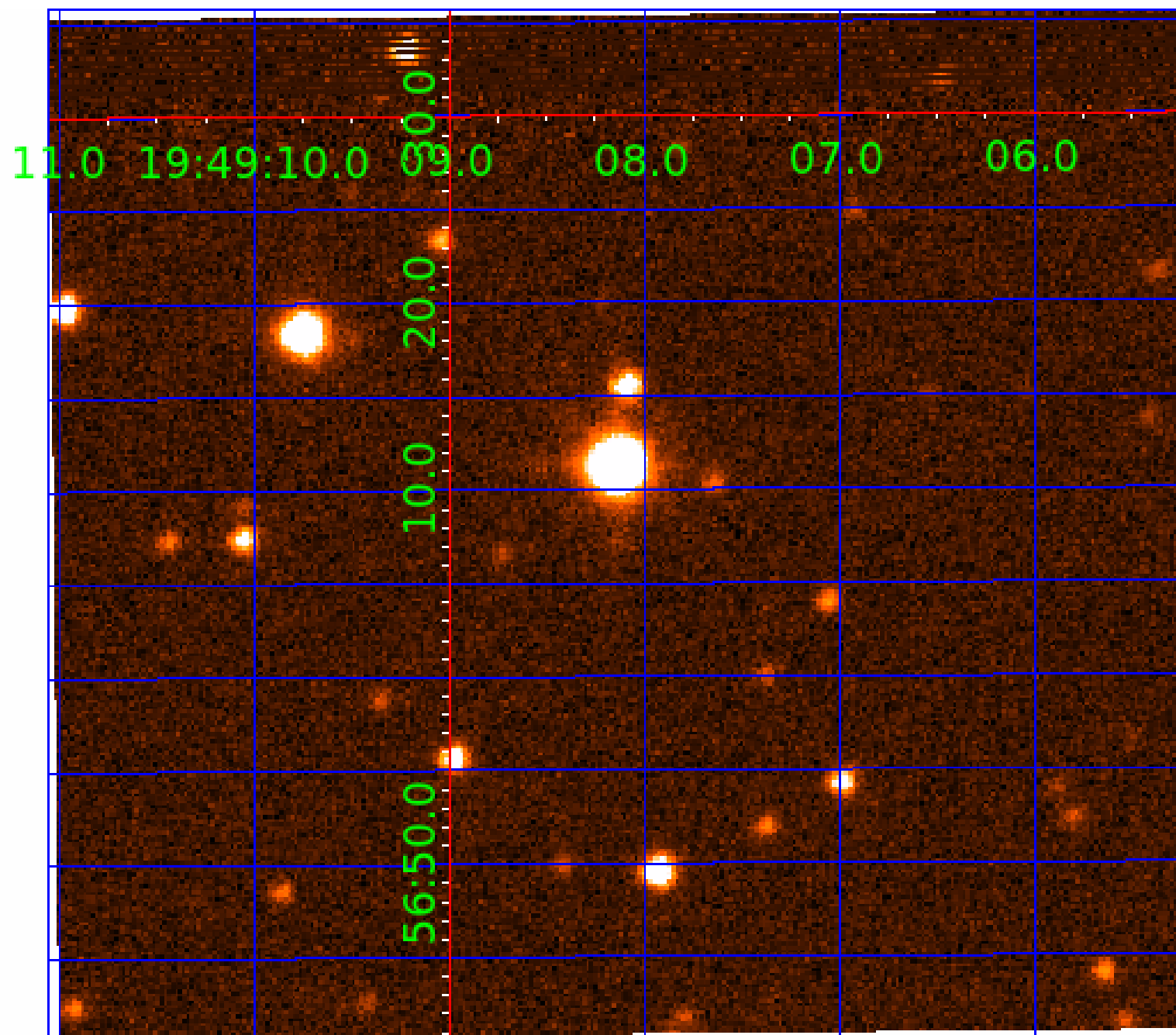


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009418994

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})
009418994-01	OBS	7172.01	32.003811	136.495138	17035.5	4.278	858.7	755.6	4.06	5260	95.82	201.56
009418994-02	OBS	No	32.003758	155.298584	2191.4	6.751	132.3	127.2	4.06	5260	36.87	201.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009418994-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009418994-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

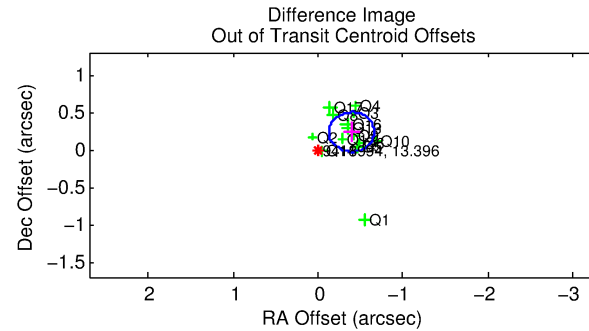
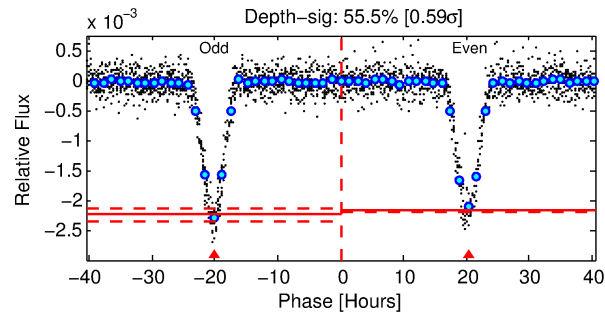
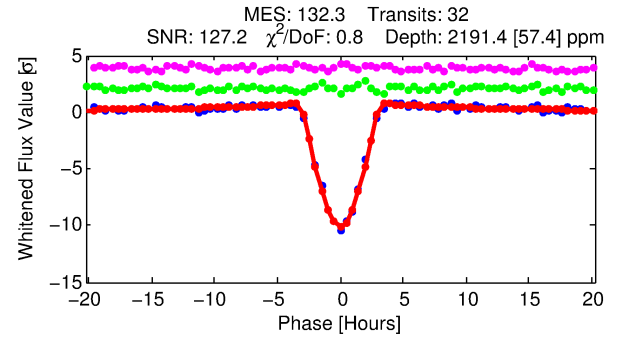
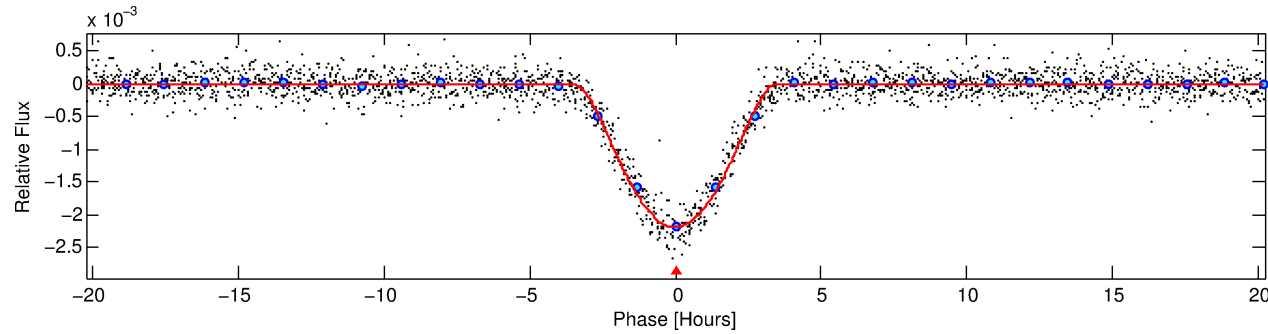
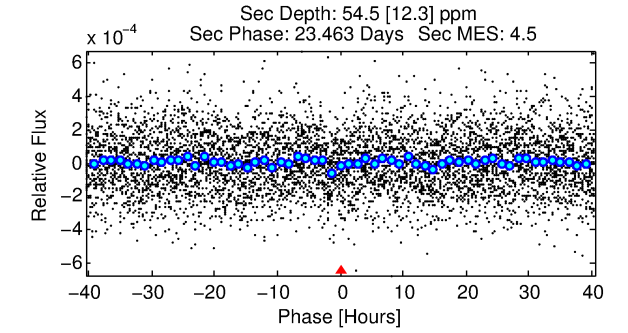
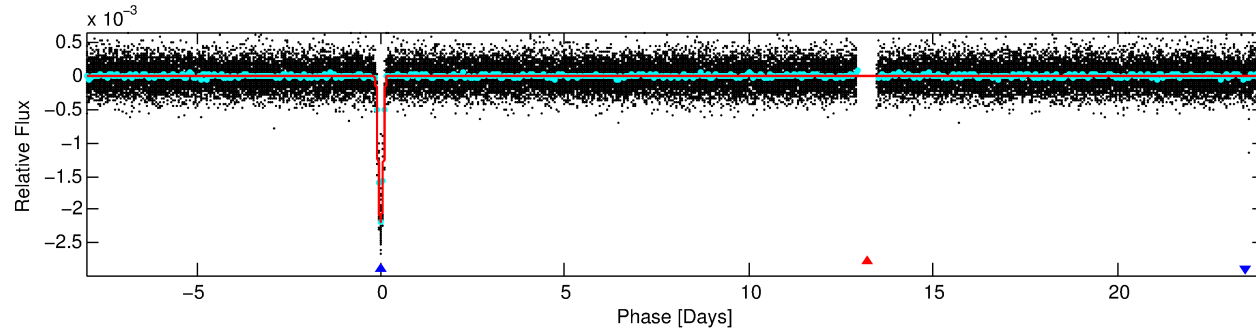
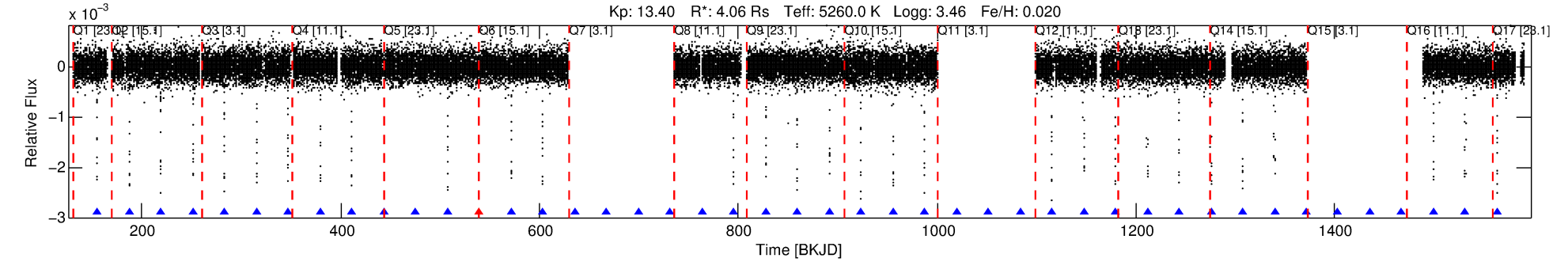
Ephemeris Match Information For 009418994-02

No Significant Match Found

DV One-Page Summary

KIC: 9418994 Candidate: 2 of 2 Period: 32.004 d

KOI: K07172 Corr: No Ephemeris Match



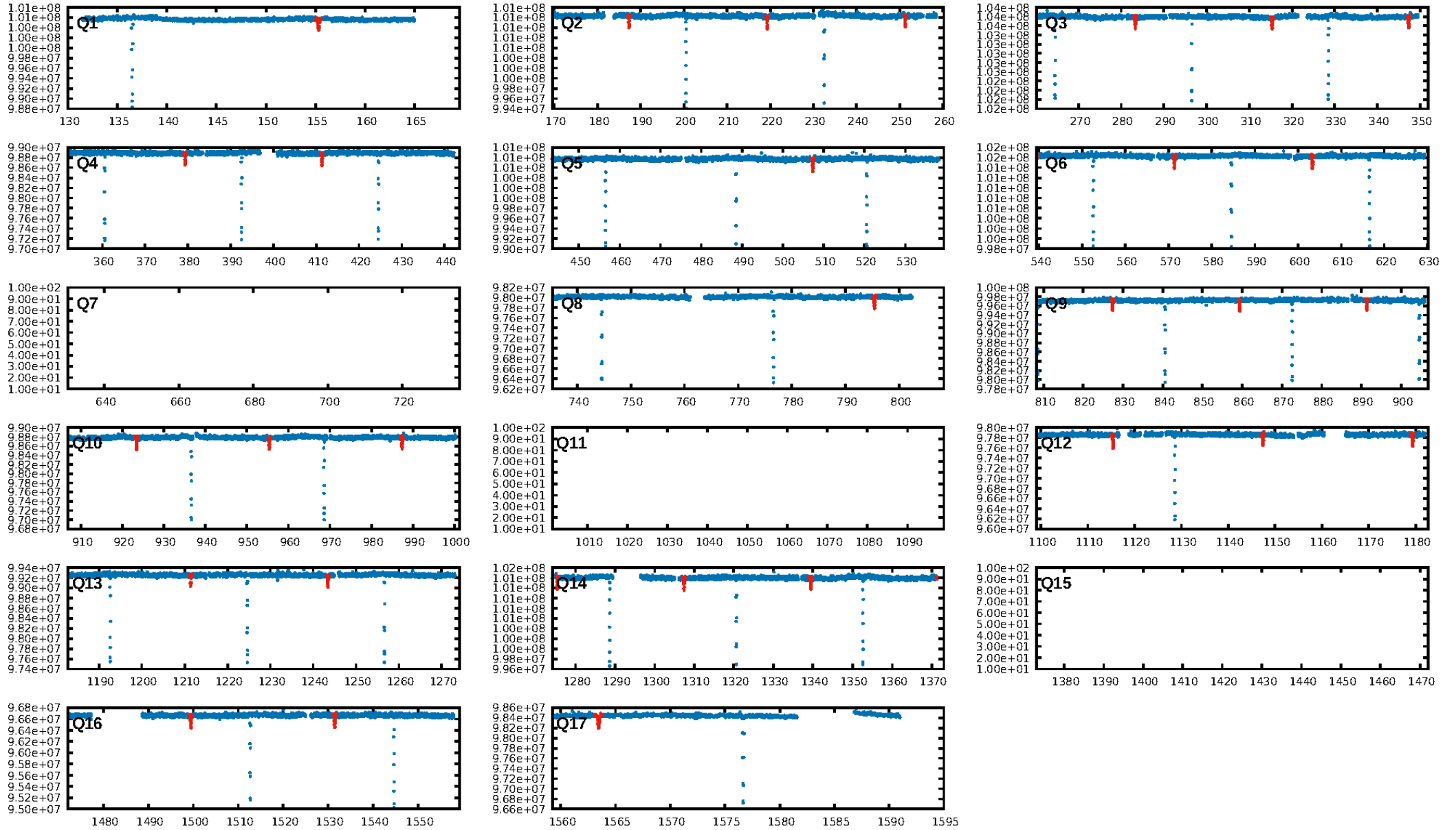
DV Fit Results:

Period = 32.00376 [0.00004] d
Epoch = 155.2986 [0.0011] BKJD
Rp/R* = 0.0832 [0.0247]
a/R* = 15.15 [0.93]
b = 1.00 [0.04]
Seff = 201.56 [268.60]
Teff = 961 [320] K
Rp = 36.87 [27.84] Re
a = 0.2370 [0.1834] AU
Ag = 1.24 [1.82] [0.13σ]
Teffp = 1567 [256] K [1.48σ]

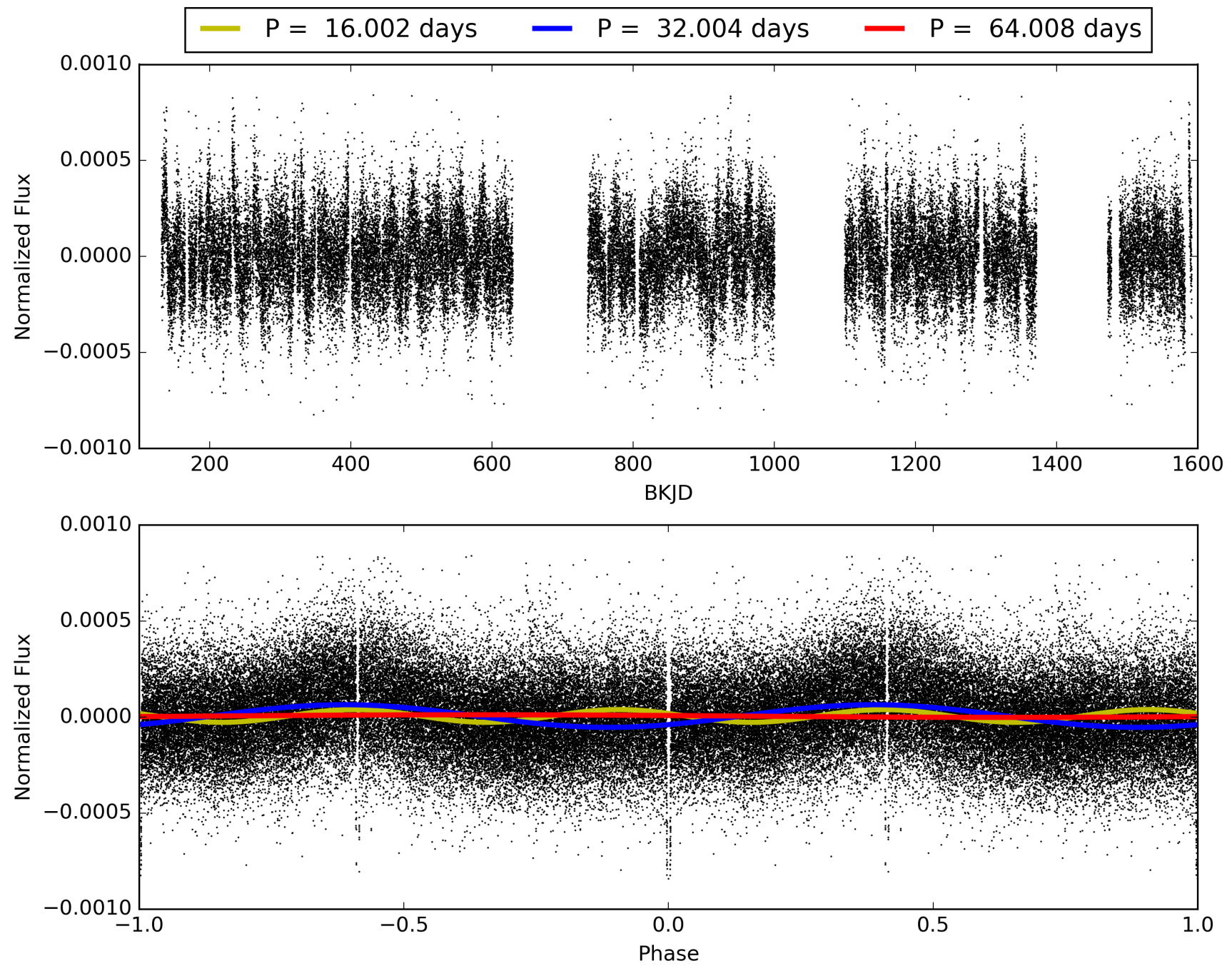
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 87.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.97 [29/30]
GhostDiagnostic-chr: 4.926
Centroid-sig: 0.0%
Centroid-so: 0.549 arcsec [8.81σ]
OotOffset-rm: 0.460 arcsec [5.22σ]
KicOffset-rm: 0.499 arcsec [5.09σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
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TCE 009418994-02, PDC Light Curves

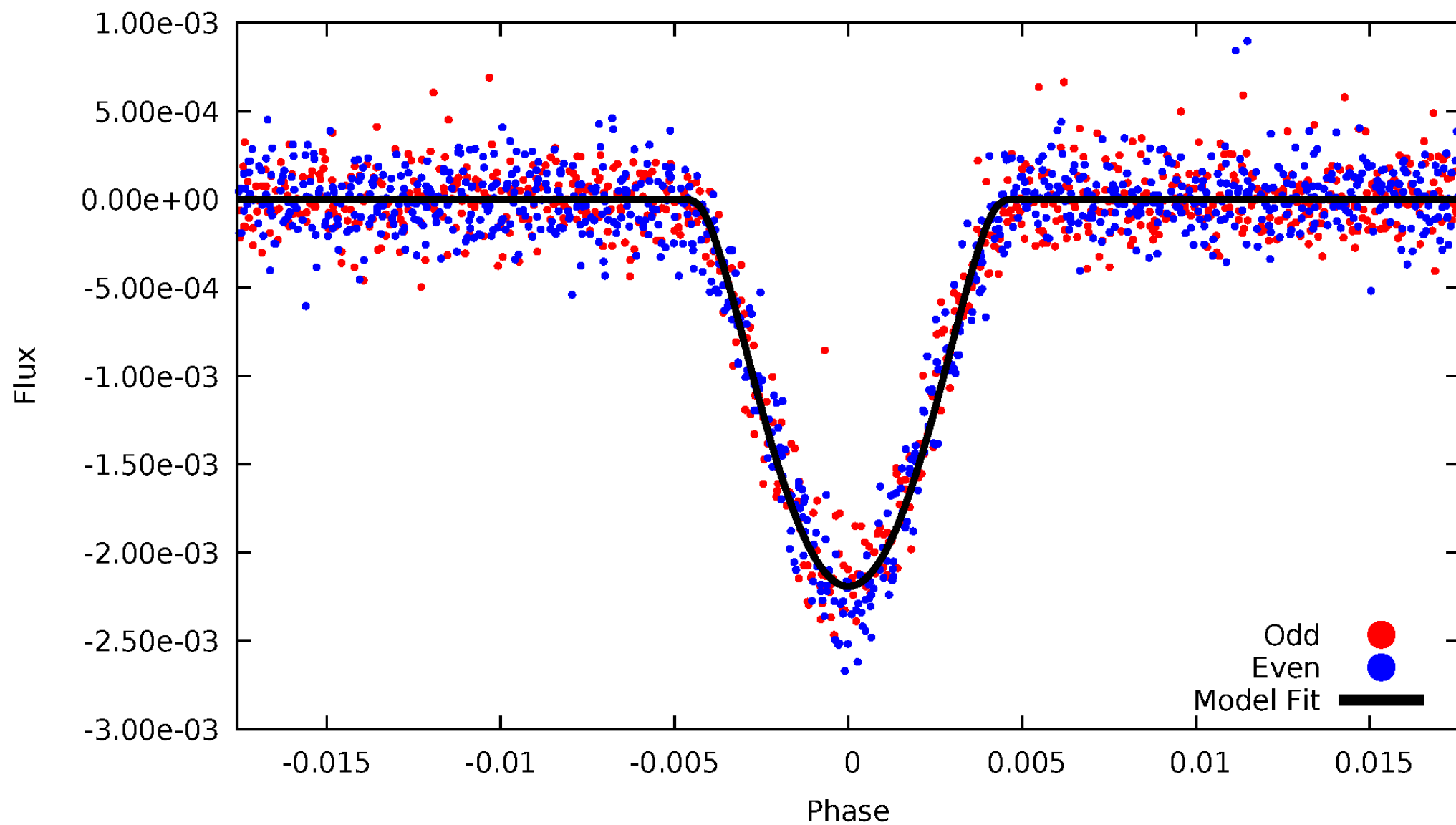


TCE 009418994-02



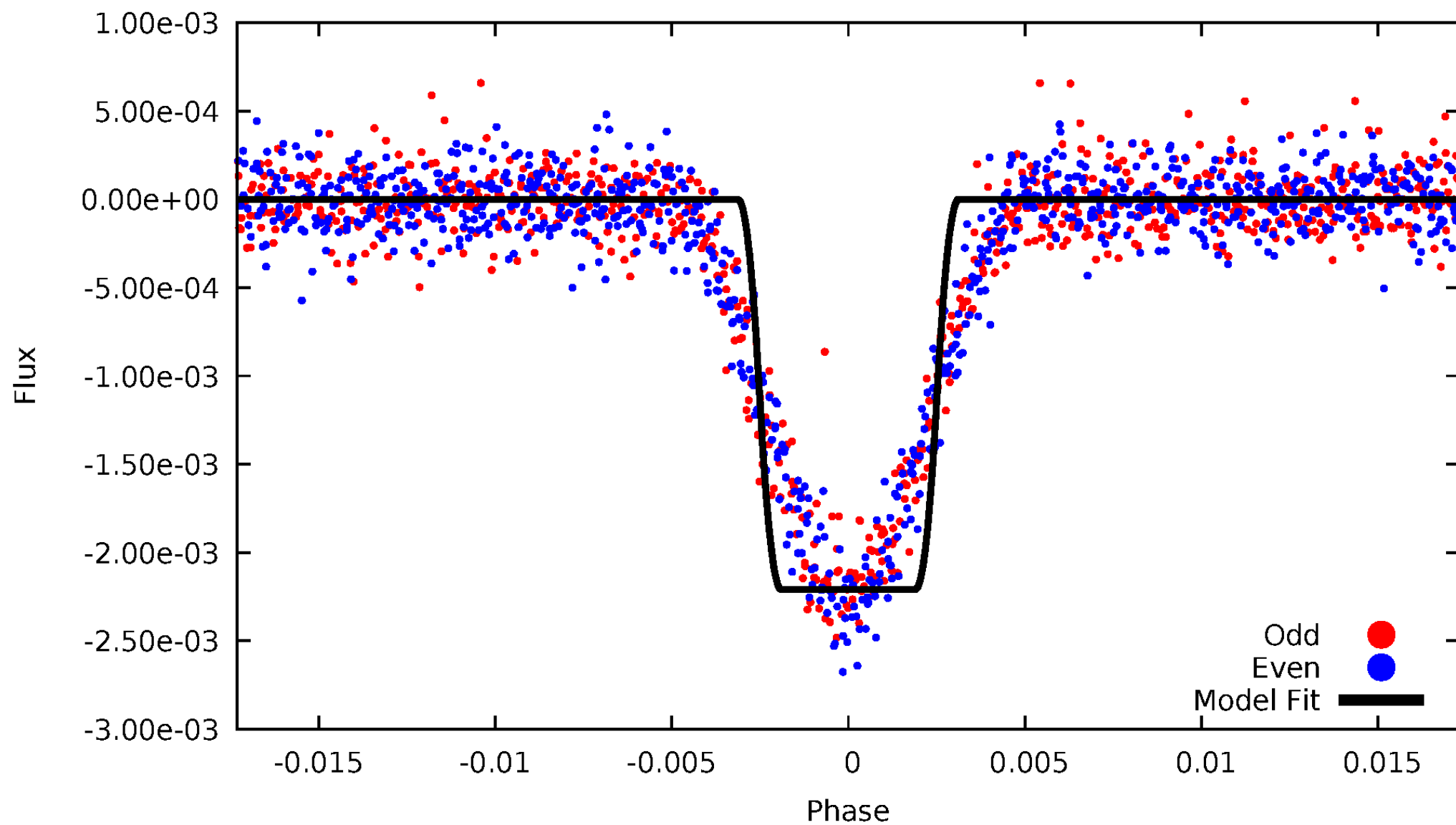
DV Odd/Even

TCE 009418994-02



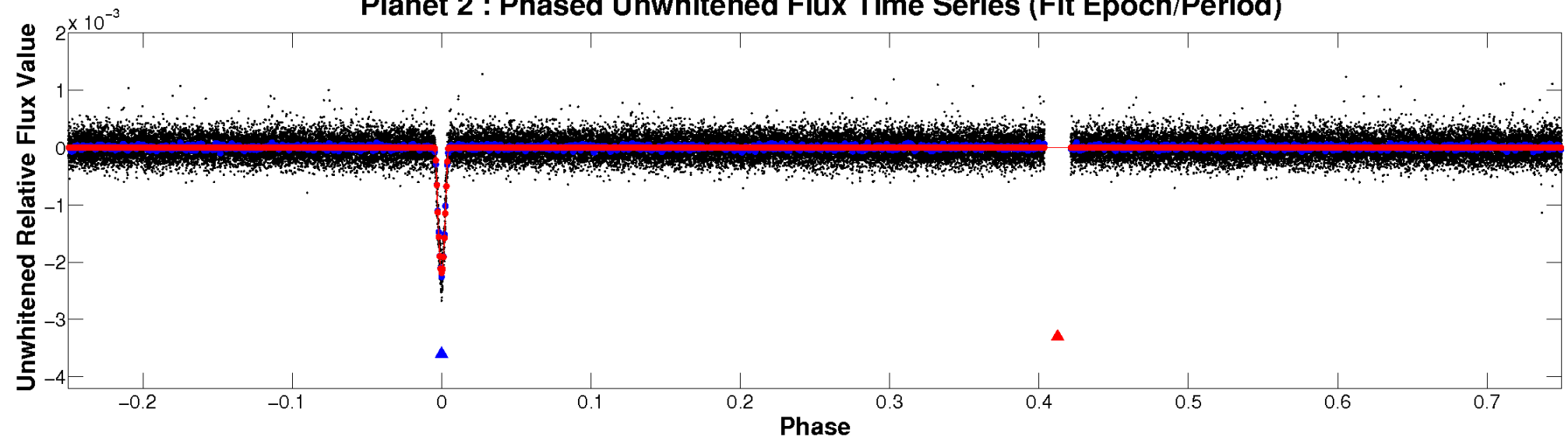
ALT Odd/Even

TCE 009418994-02

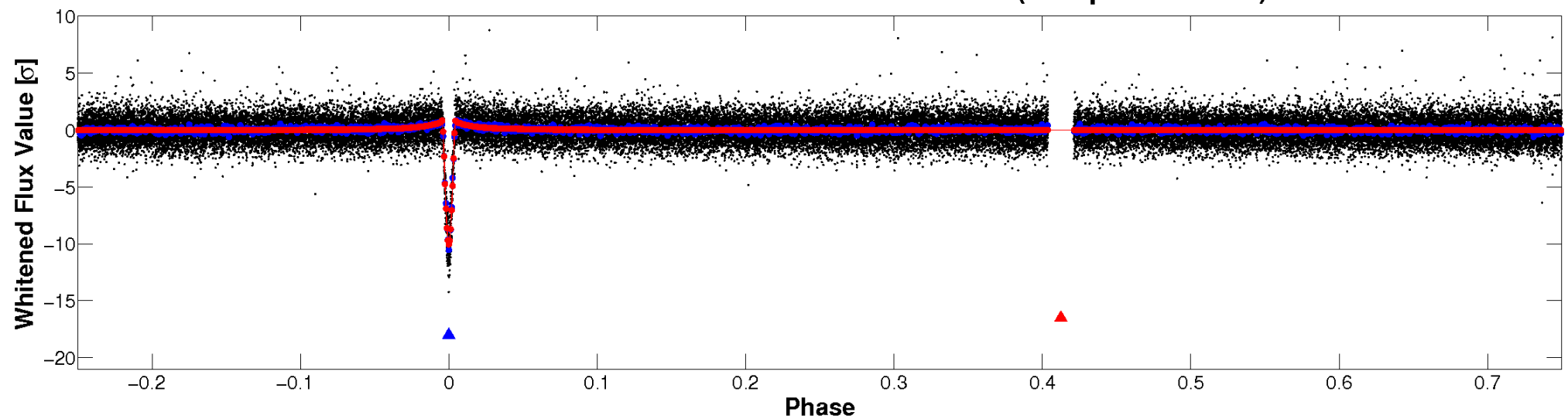


Non-Whitened Vs. Whitened Light Curve

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

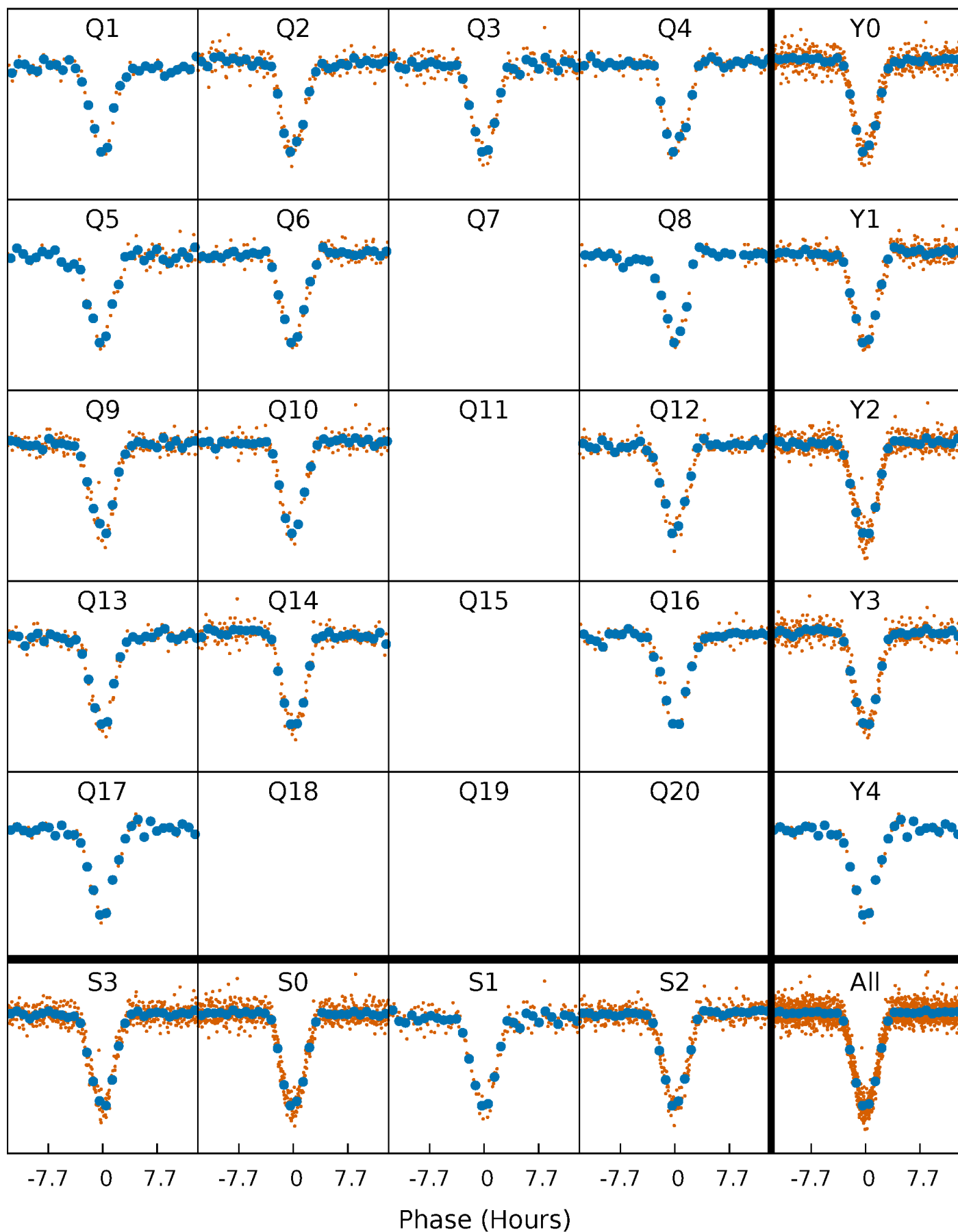


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



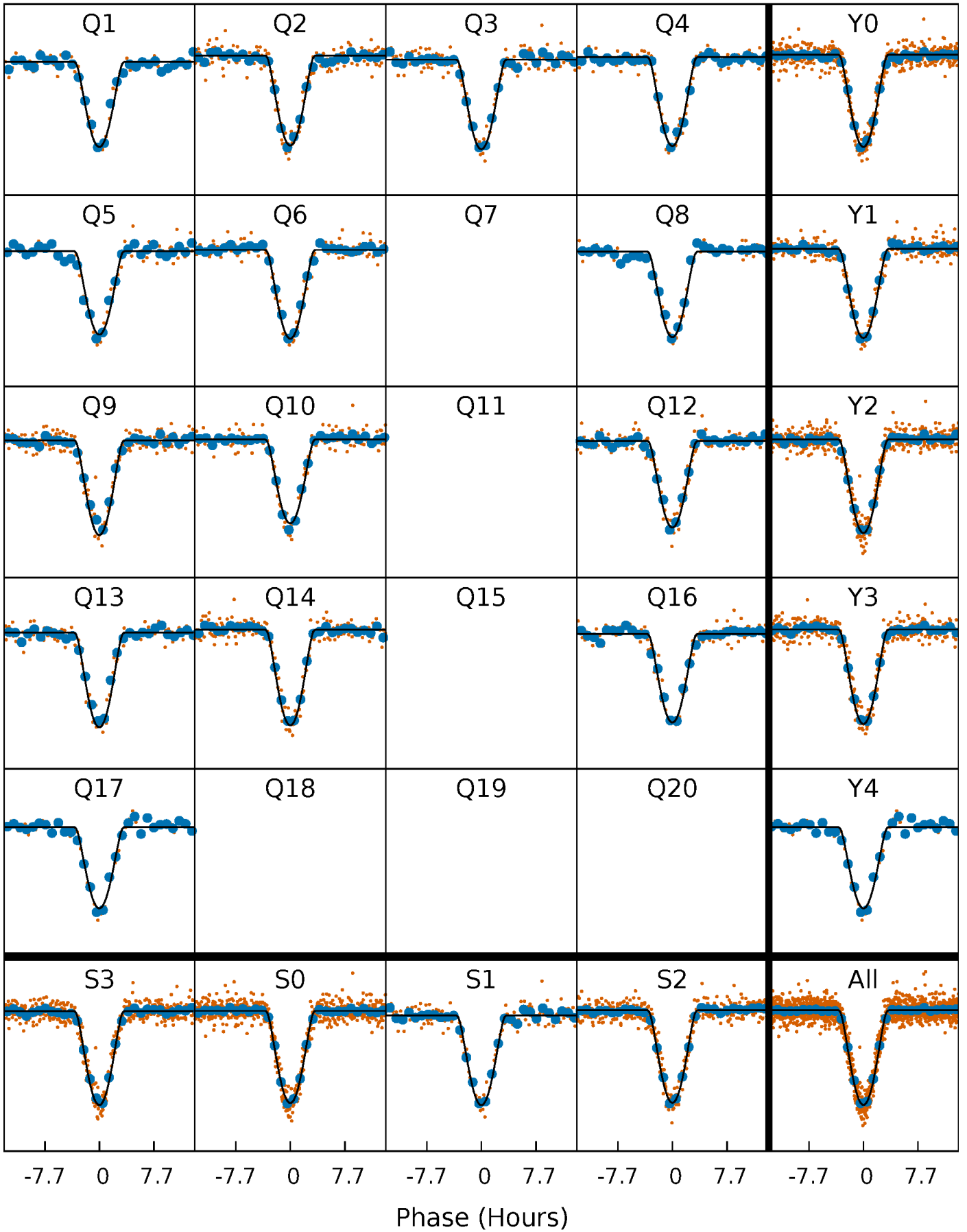
PDC Quarter-Phased Transit Curves

TCE 009418994-02 P= 32.003758 Days $T_0=155.298584$ (BKJD)



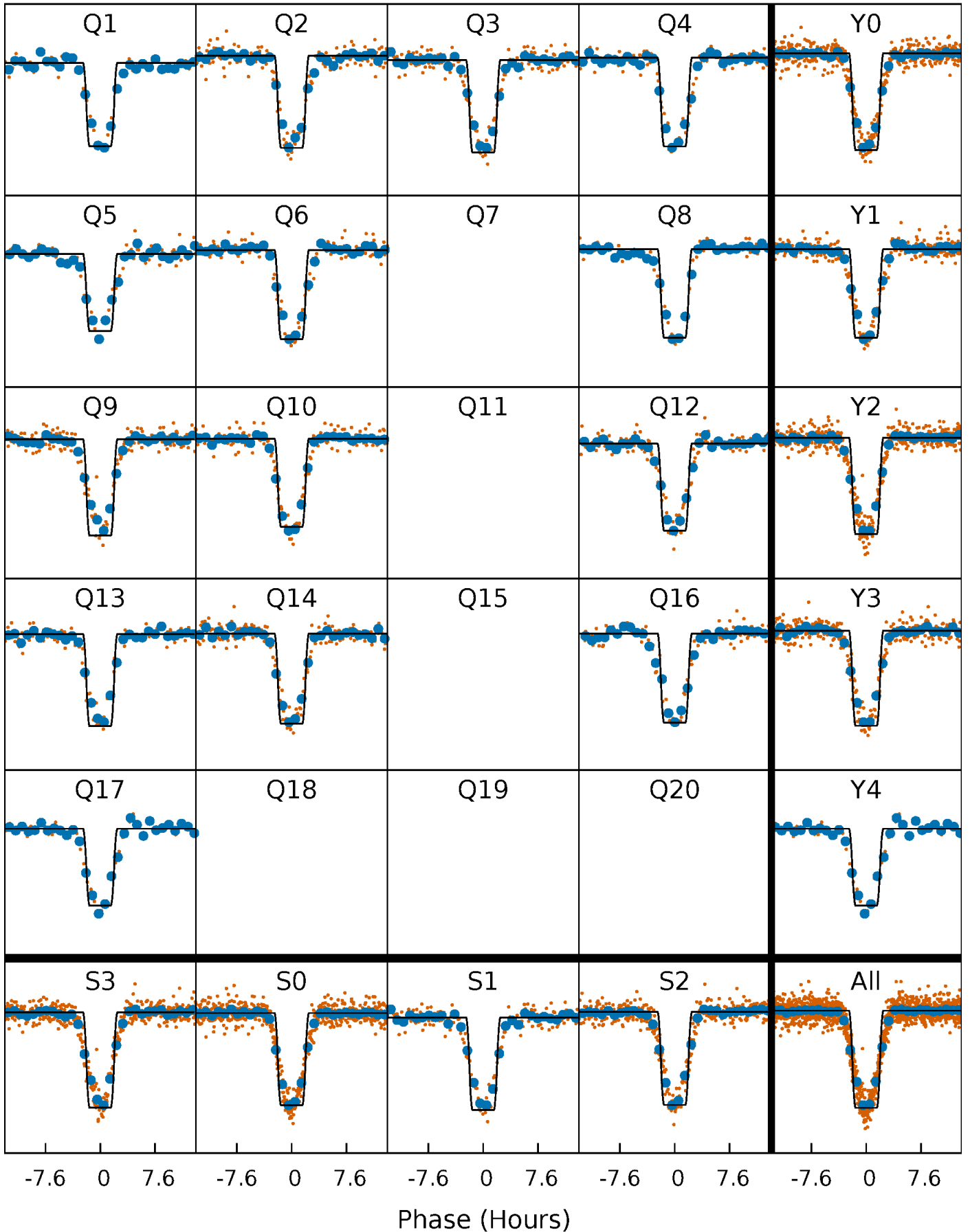
DV Quarter-Phased Transit Curves

TCE 009418994-02 P= 32.003758 Days $T_0=155.298584$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

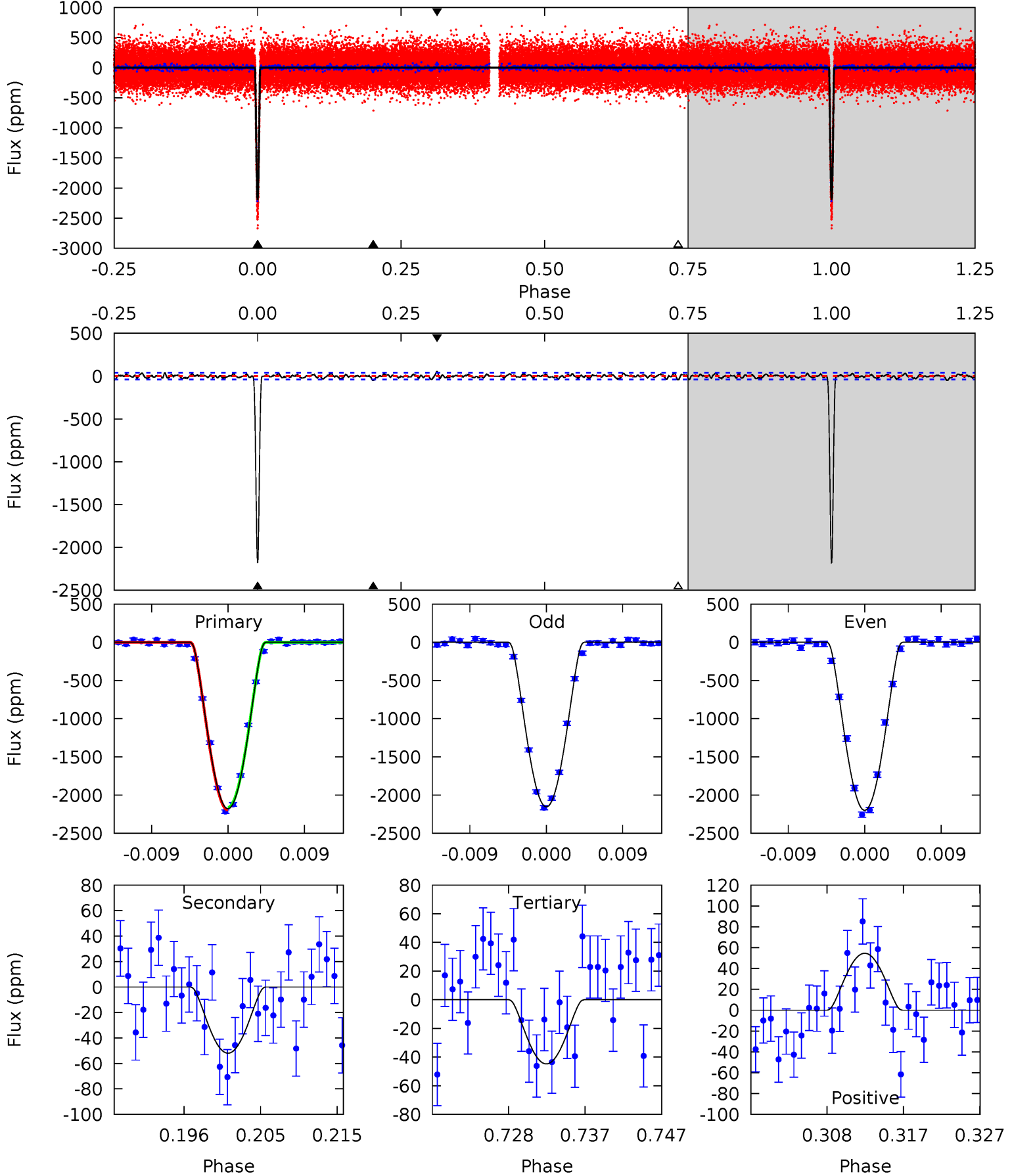
TCE 009418994-02 P= 32.003970 Days $T_0=155.293827$ (BKJD)



DV Model-Shift Uniqueness Test

009418994-02, P = 32.003758 Days, E = 123.294826 Days

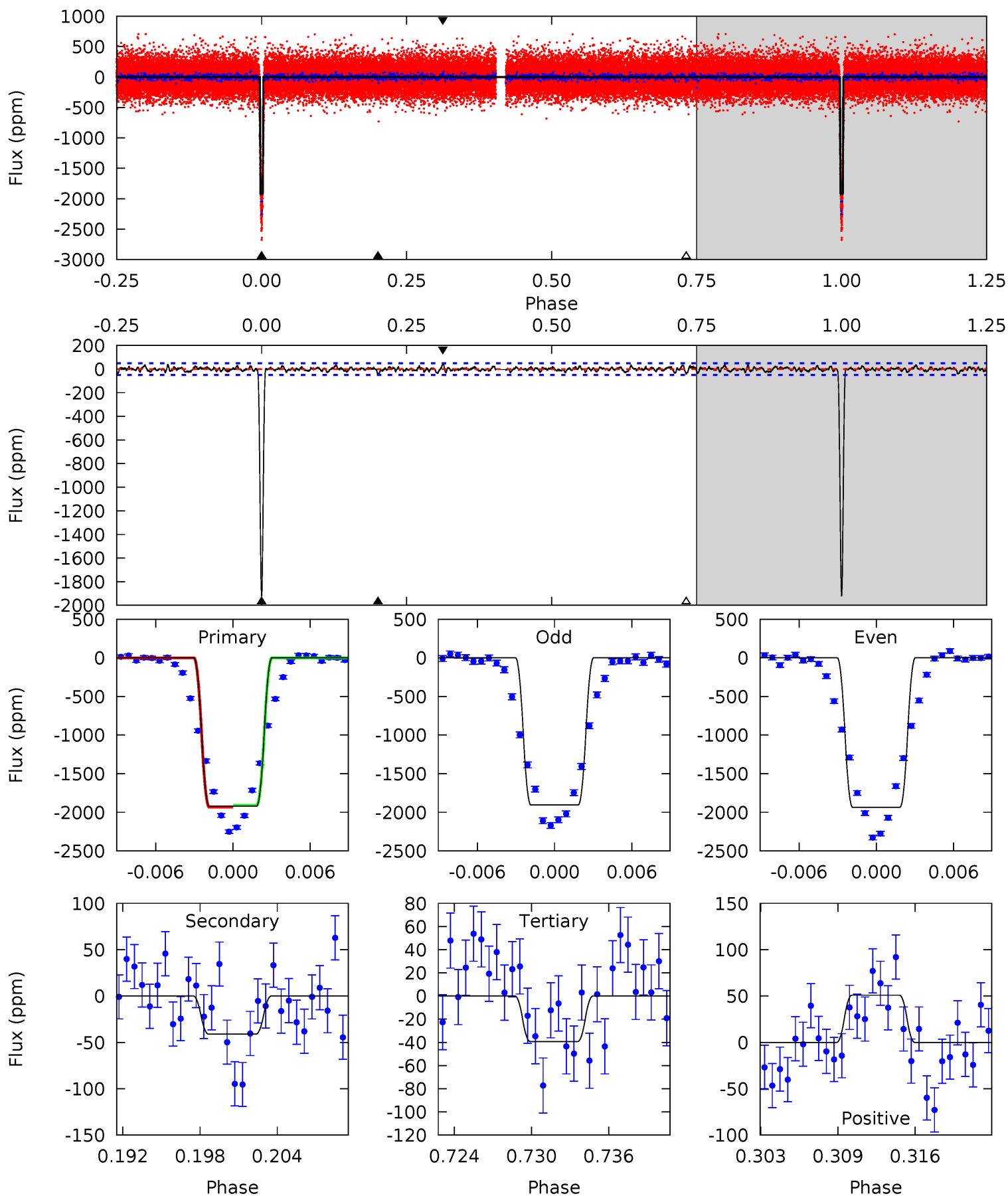
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
270.4	6.45	5.56	6.78	5.04	2.60	1.74	264.8	263.6	0.89	-0.33	2.79	1.09	0.02	2.13



Alt Model-Shift Uniqueness Test

009418994-02, $P = 32.003970$ Days, $E = 123.289857$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
195.4	4.18	4.00	5.18	5.12	2.74	1.25	191.4	190.2	0.18	-1.00	1.53	1.00	0.03	1.13



Stellar Parameters For KIC 009418994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5260^{+182}_{-200}	$3.459^{+0.808}_{-0.202}$	$0.020^{+0.300}_{-0.350}$	$4.062^{+1.128}_{-2.821}$	$1.730^{+0.201}_{-0.802}$	$0.036^{+0.617}_{-0.018}$
	+3%/-4%	+23%/-6%	+1500%/-1750%	+28%/-69%	+12%/-46%	+1697%/-51%
Source	PHO1	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 009418994-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-52 ± 8	$32.80^{+14.33}_{-14.91}$	1312^{+143}_{-240}	2350^{+260}_{-200}	$1.431^{+3.163}_{-0.744}$
Alt.	-41 ± 10	$18.35^{+12.95}_{-10.05}$	1312^{+141}_{-249}	2647^{+591}_{-315}	$3.597^{+14.177}_{-2.387}$

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

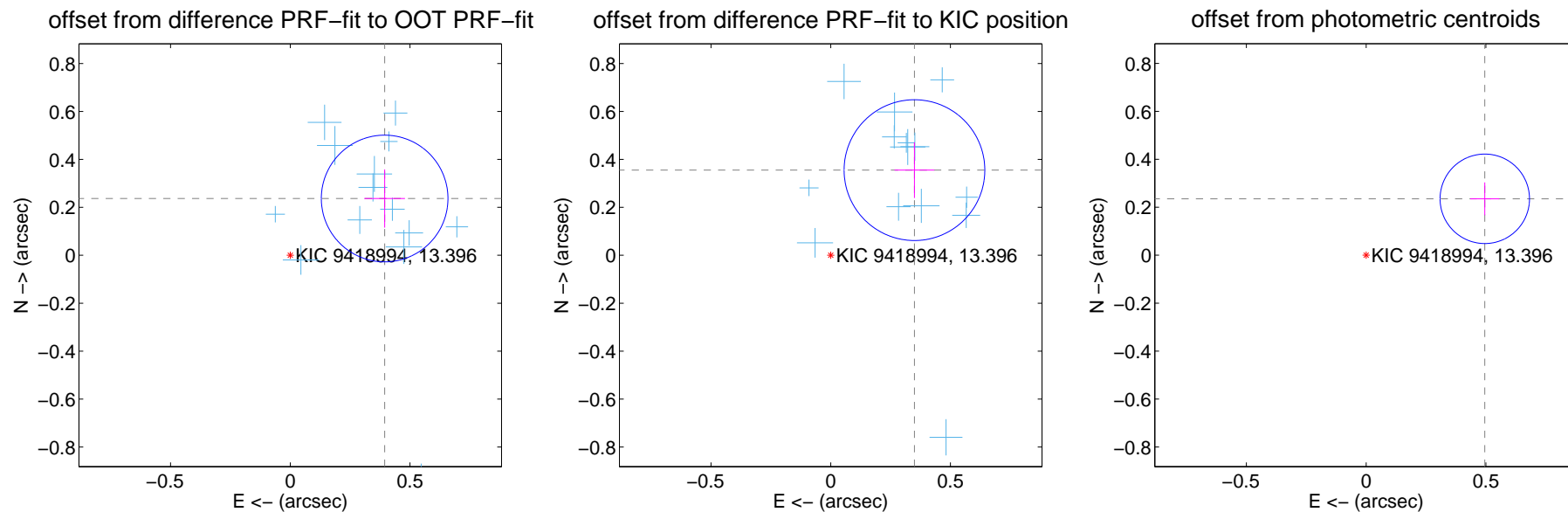
DV Centroid Data

Supplemental centroid analysis for 009418994-02. Kepler magnitude: 13.40. Transit SNR 127.20

There are 14 quarters with good PRF difference image offsets

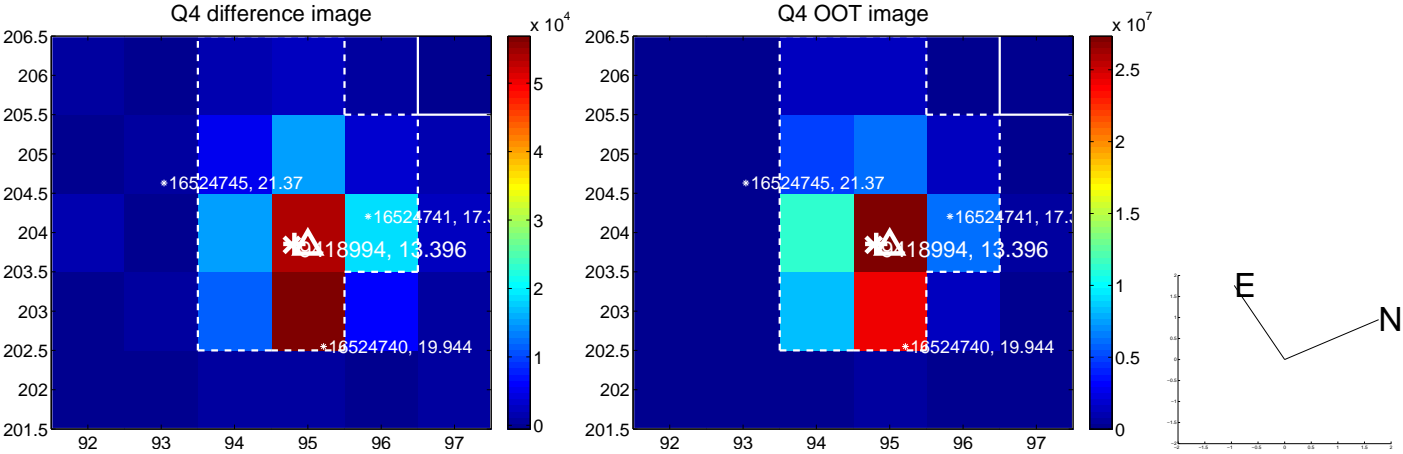
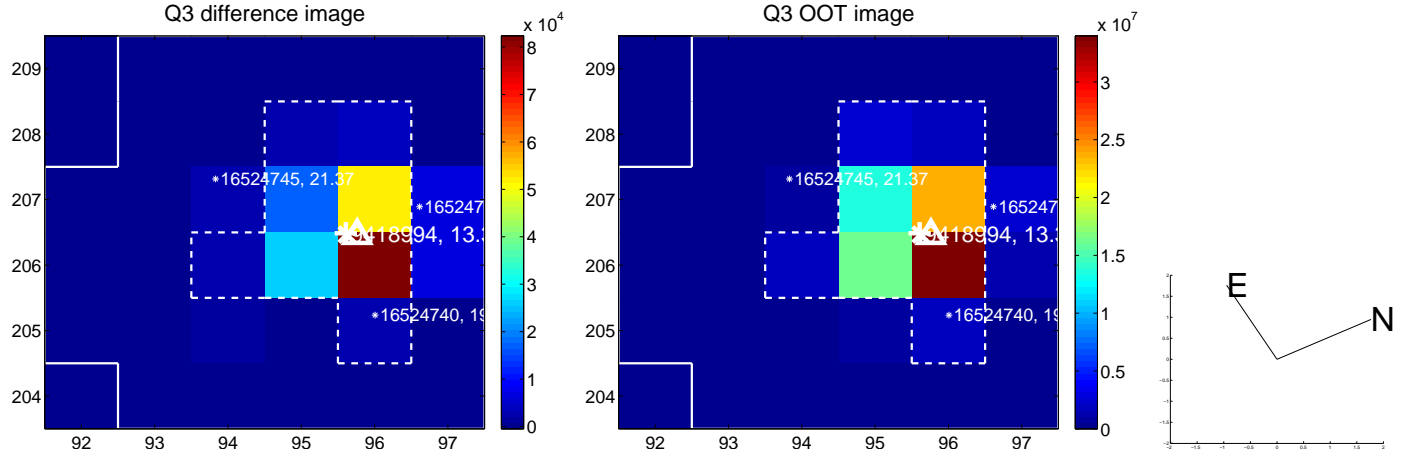
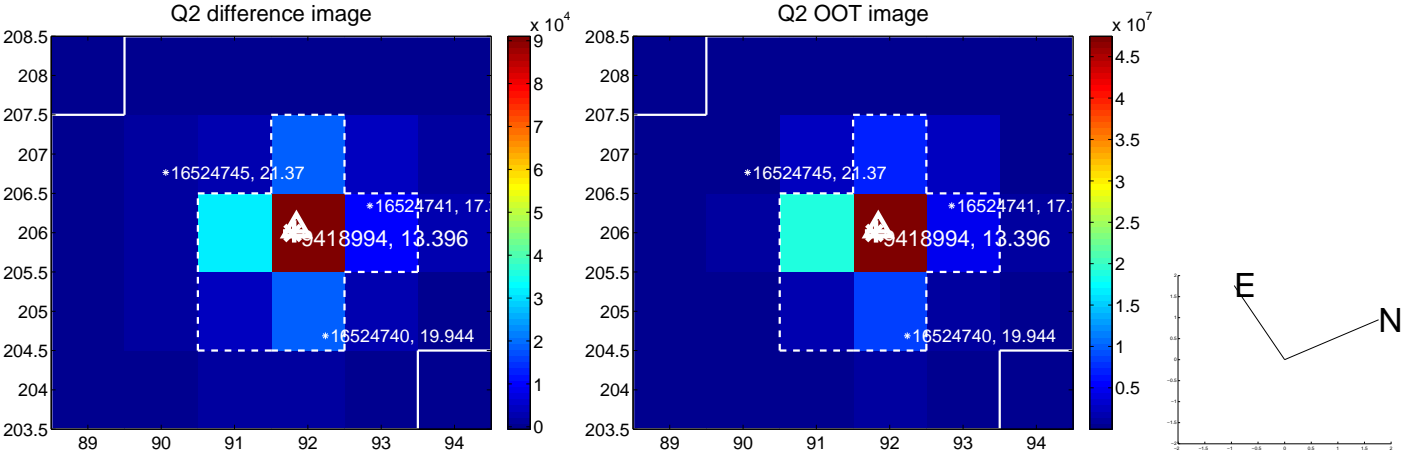
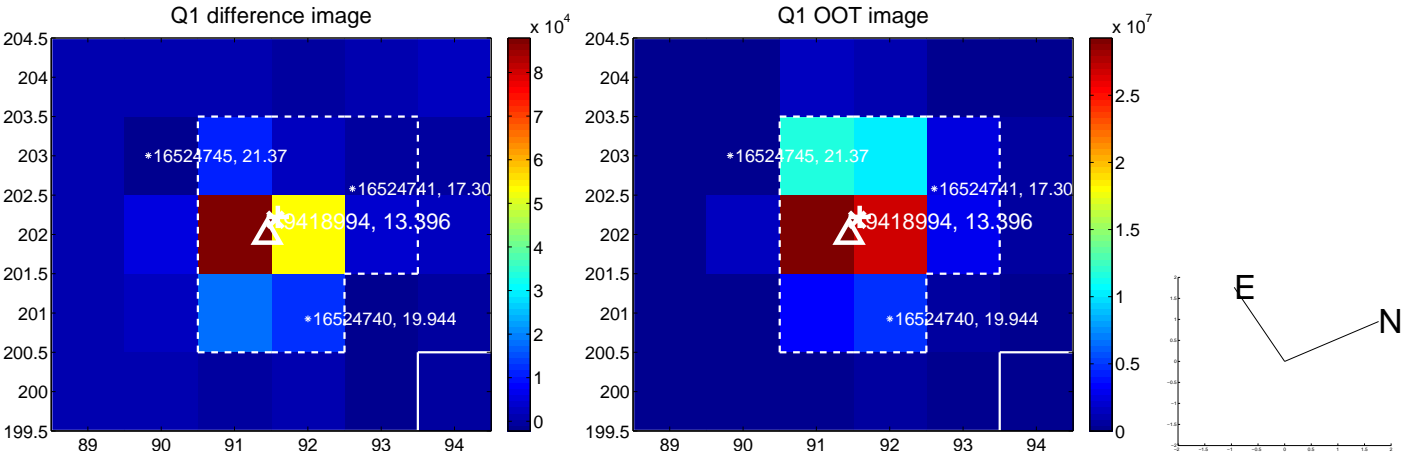
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.460 ± 0.088	5.22	-0.394 ± 0.085	0.237 ± 0.121
PRF-fit source offset from KIC position	0.499 ± 0.098	5.09	-0.350 ± 0.083	0.355 ± 0.116
photometric centroid source offset	0.55 ± 0.06	8.81	-0.50 ± 0.06	0.24 ± 0.07

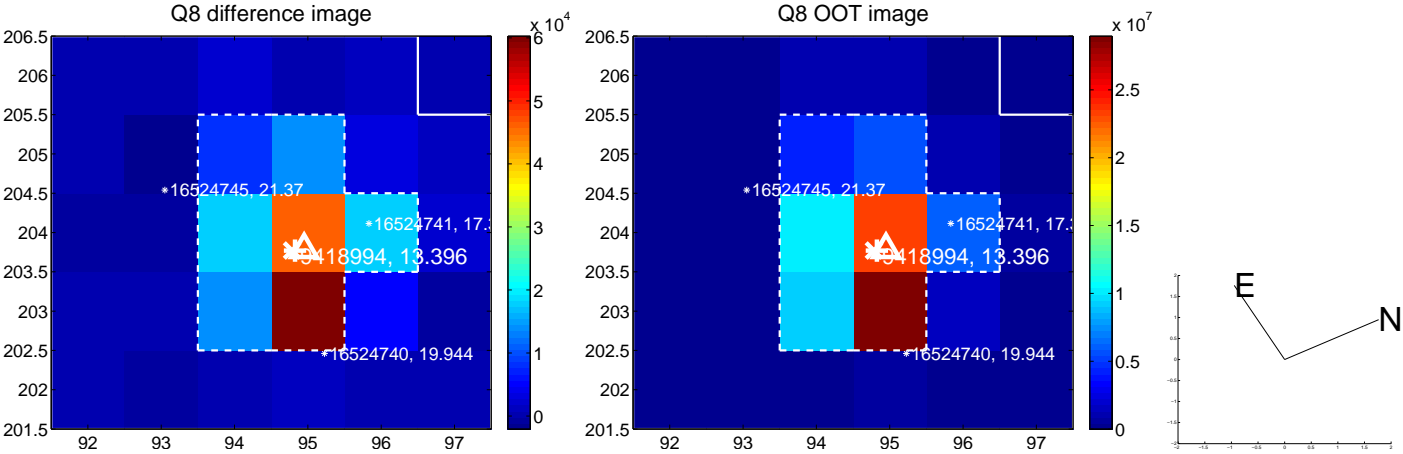
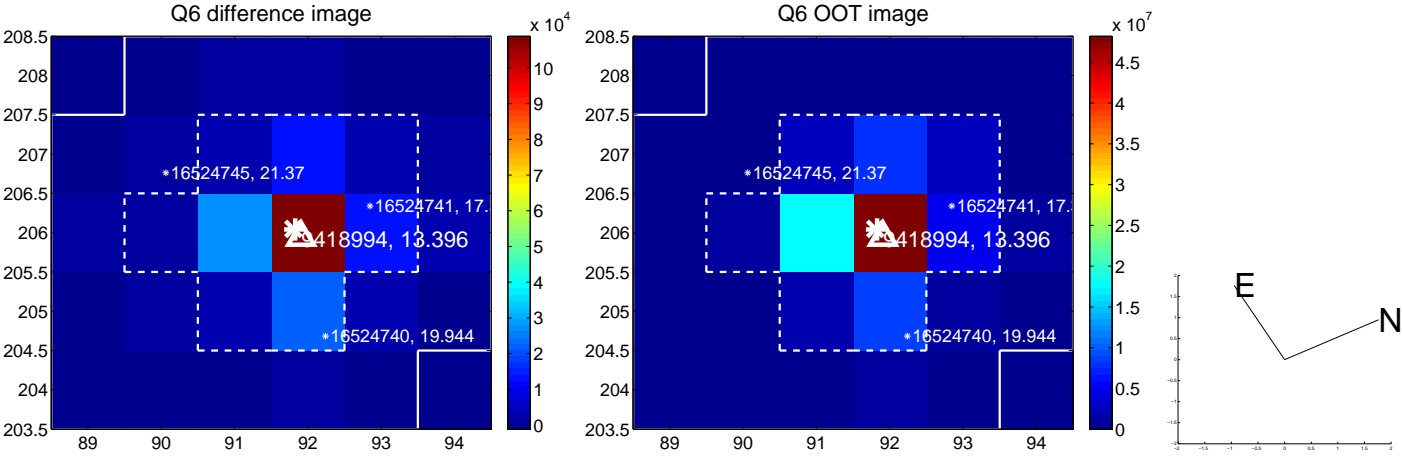
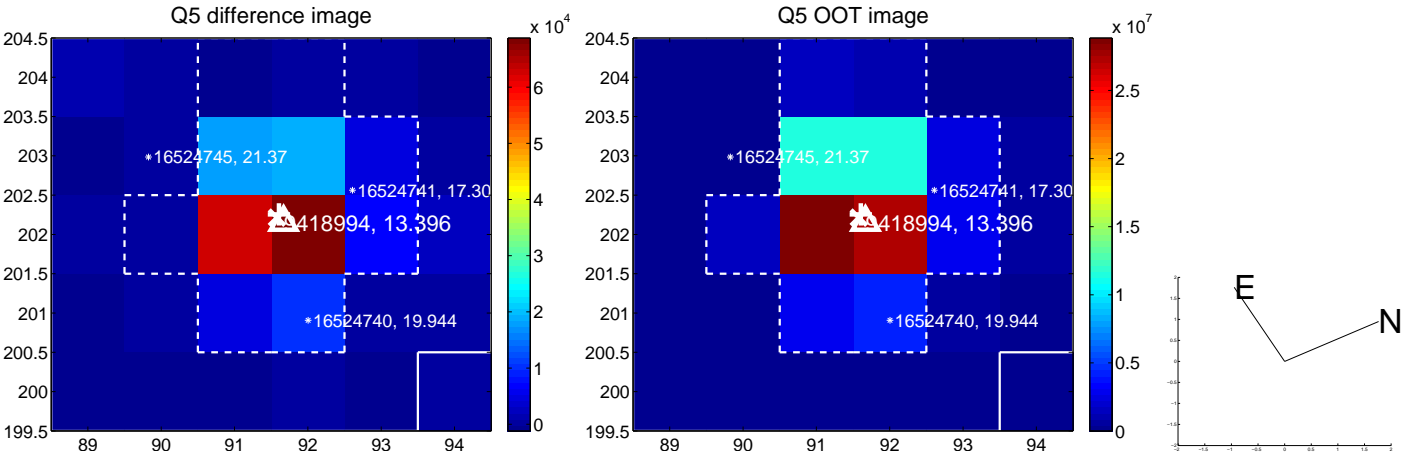


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

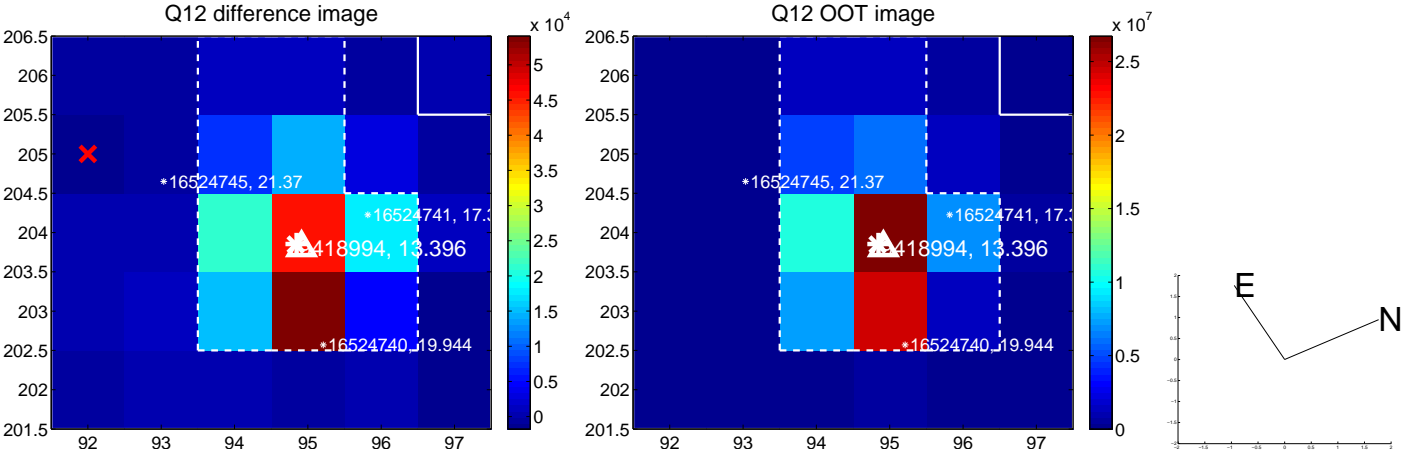
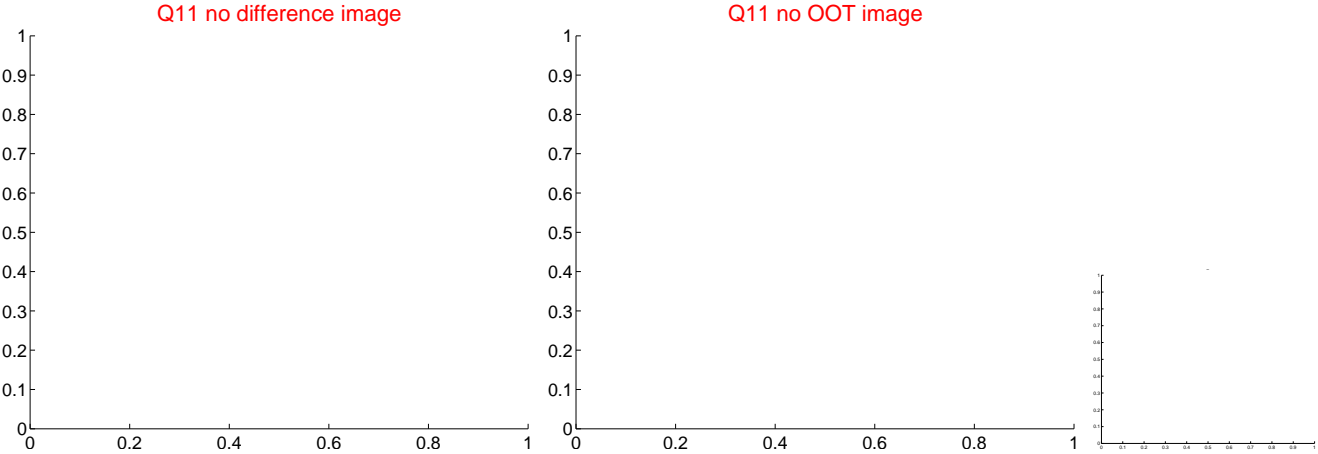
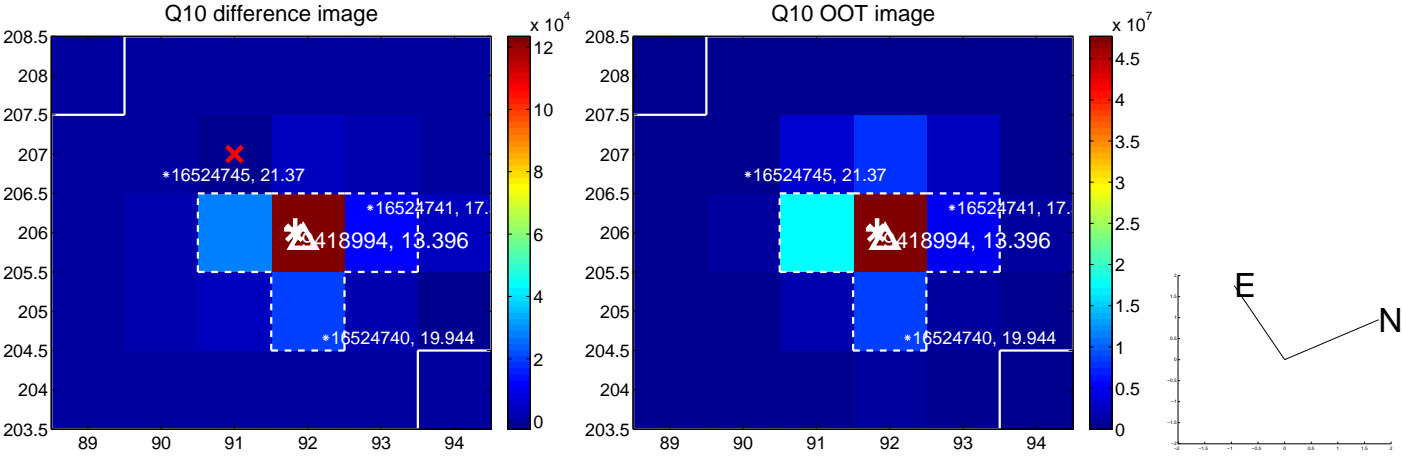
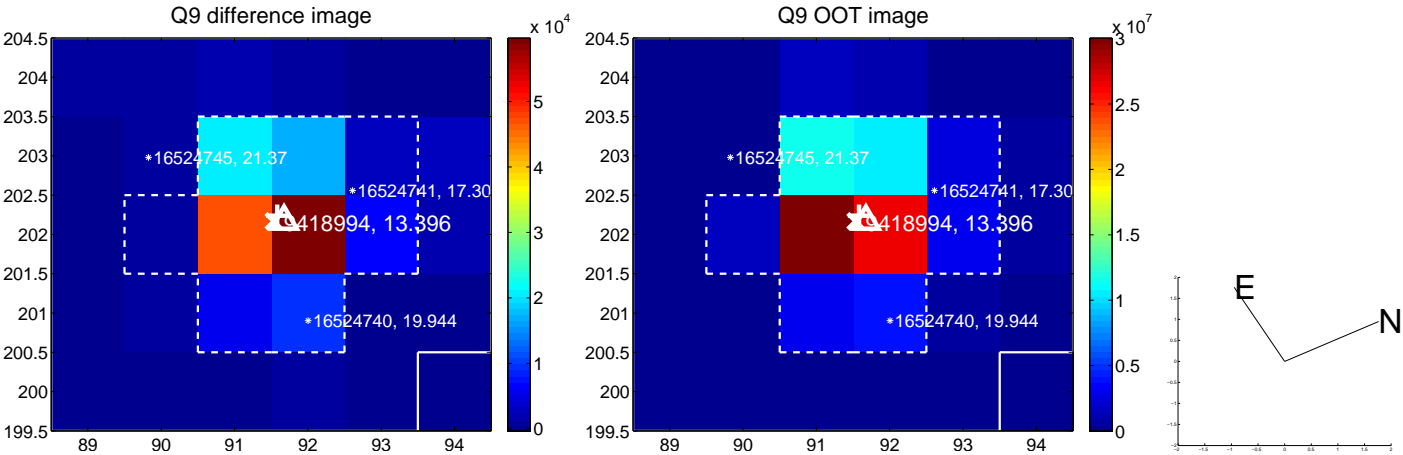
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



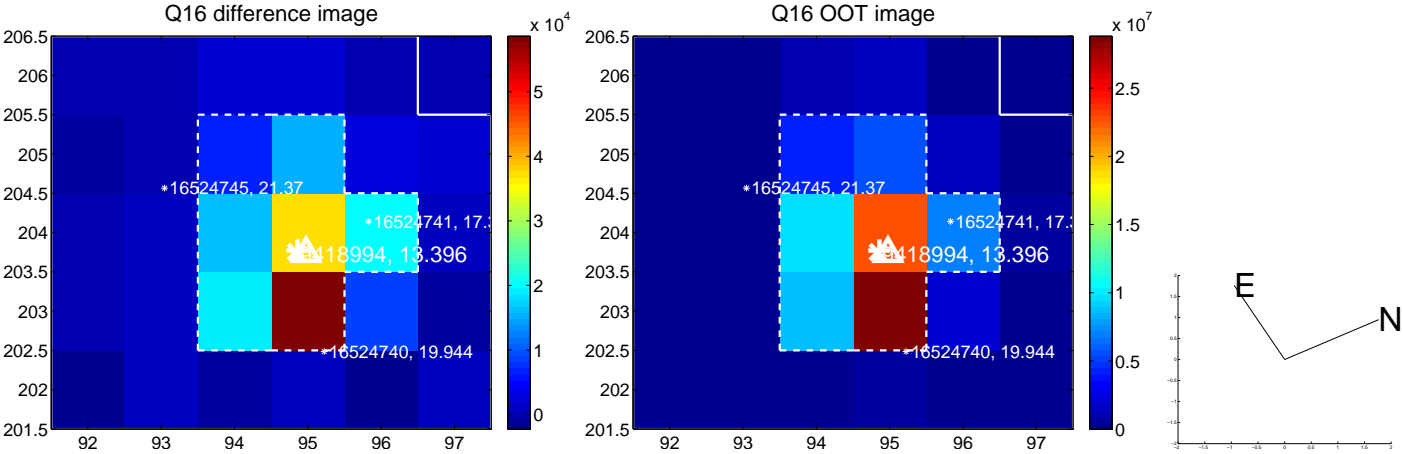
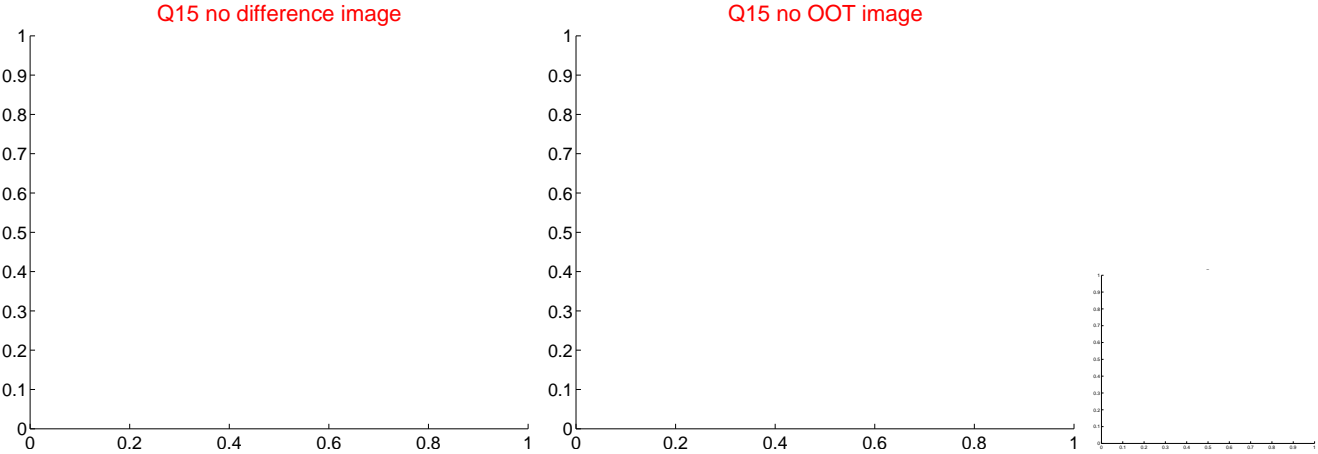
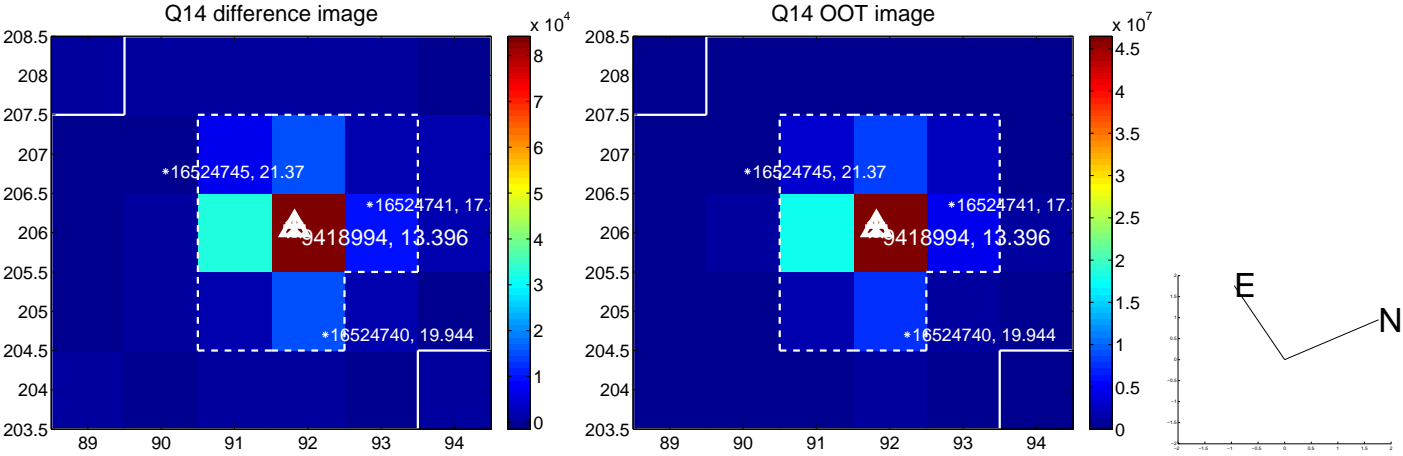
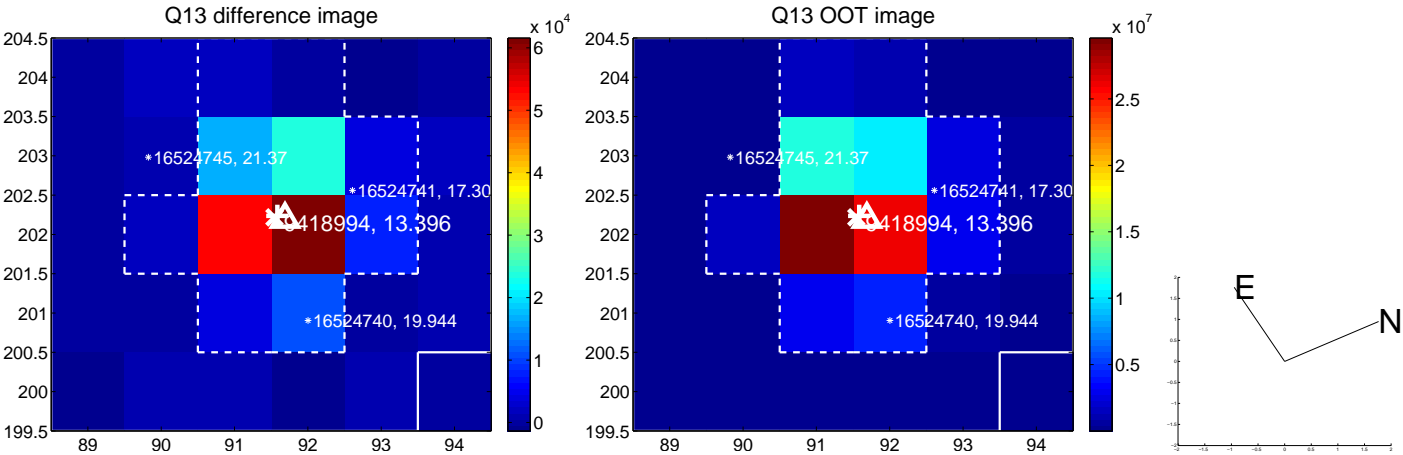
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



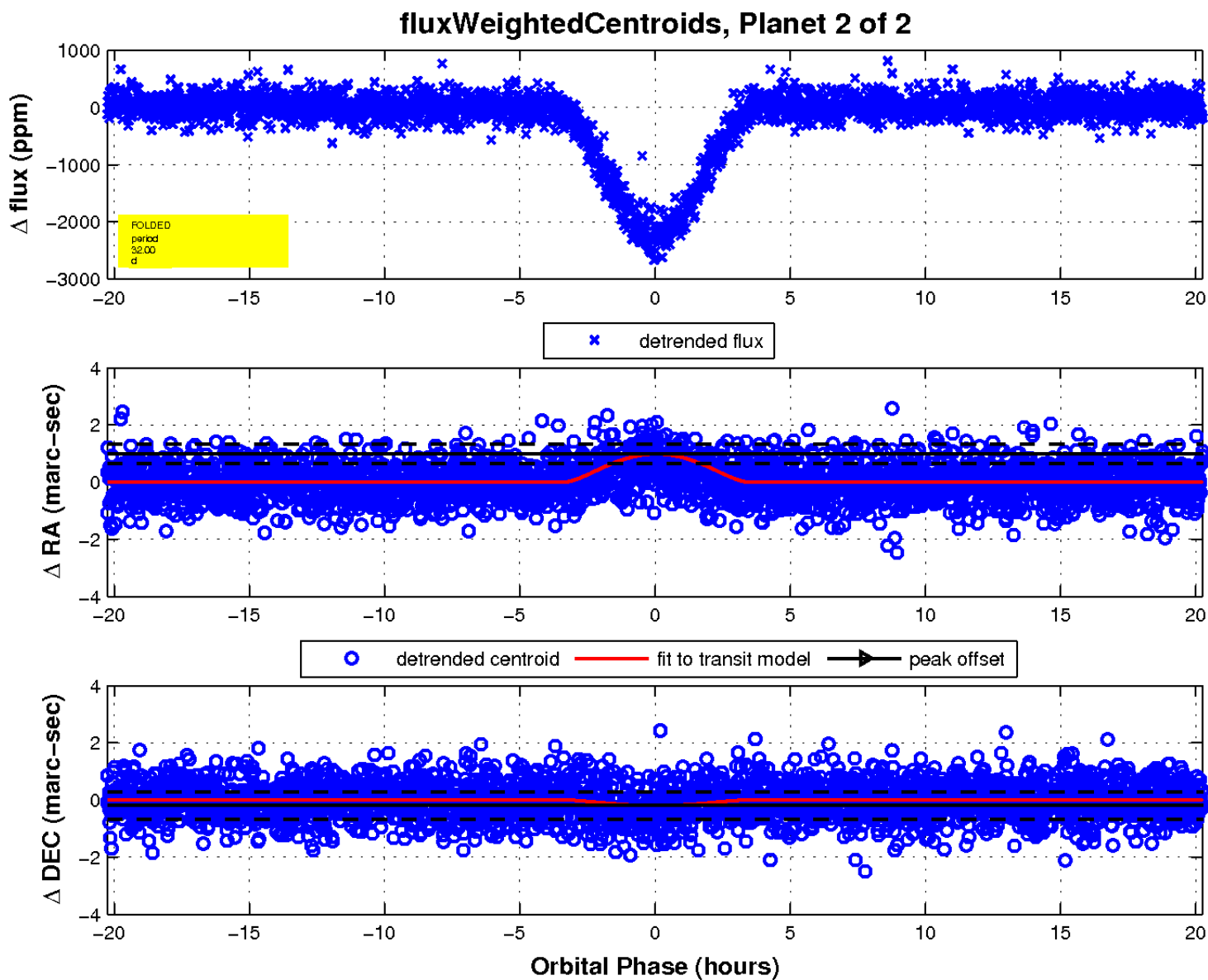
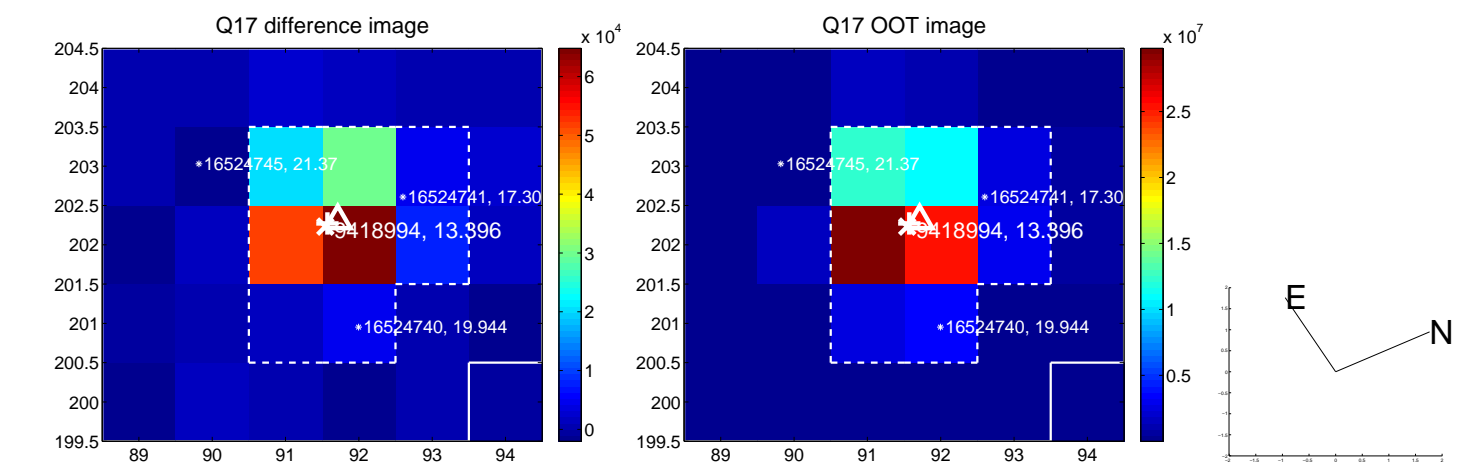
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

