

KIC 009468382

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})
009468382-01	OBS	3409.01	11.082562	136.658058	549.0	6.261	32.3	30.5	2.20	5125	7.03	356.37
009468382-02	OBS	No	11.082800	131.511430	168.6	5.588	10.6	10.9	2.20	5125	3.73	356.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009468382-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
009468382-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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 009468382-01

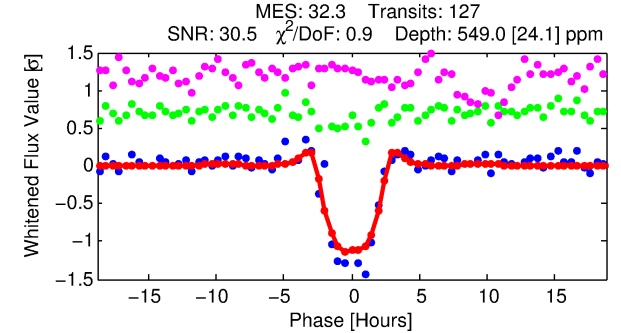
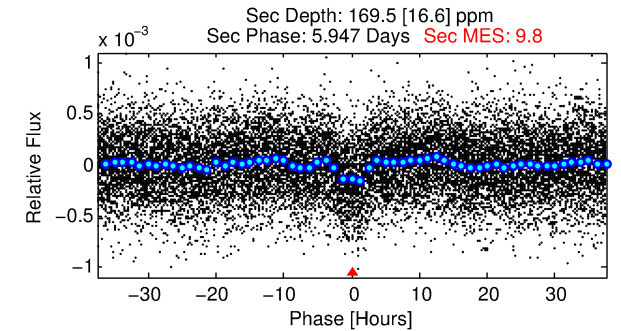
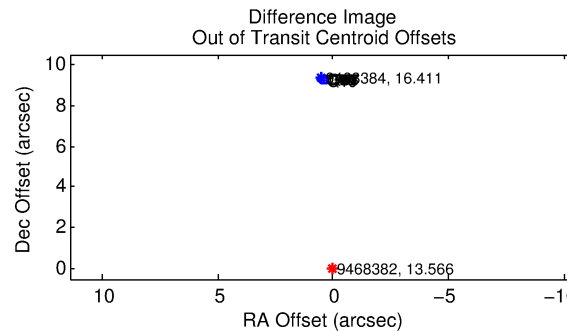
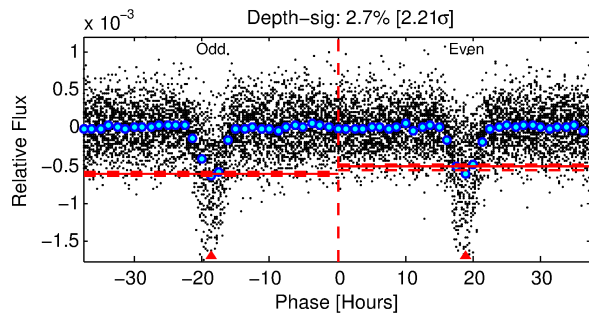
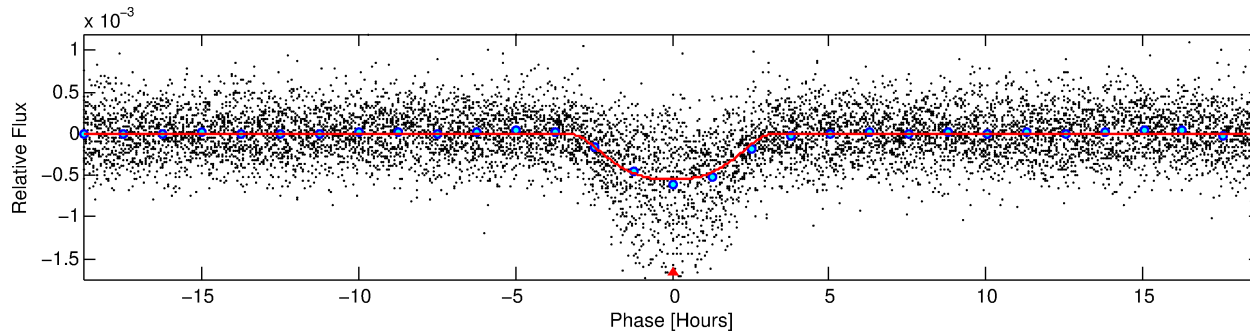
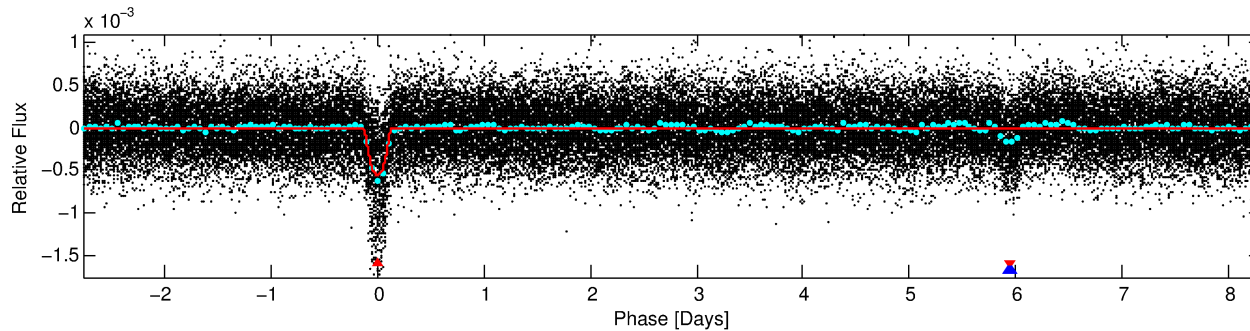
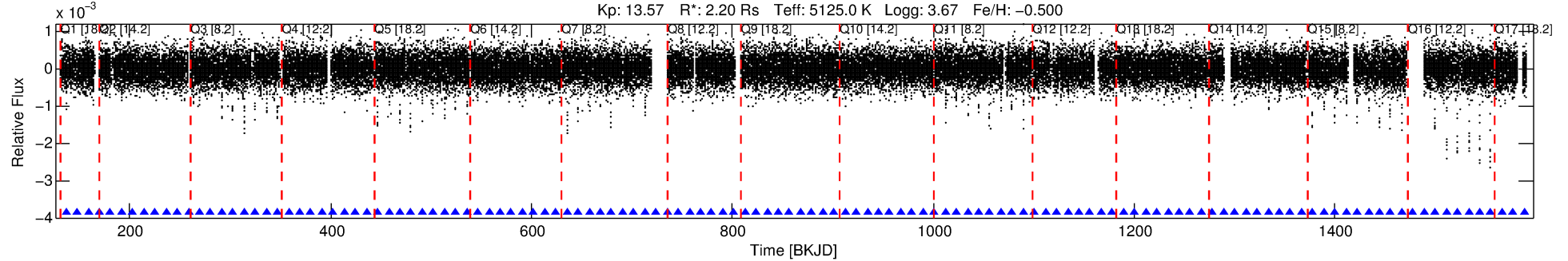
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009468382-01	9468382	3466.01	9468384	1:1	9.4	-1	2	16.41	13.56	549.20	Direct-PRF	0	0.22	0.07

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9468382 Candidate: 1 of 2 Period: 11.083 d
KOI: K03409.01 Corr: 0.986

Kp: 13.57 R*: 2.20 Rs Teff: 5125.0 K Logg: 3.67 Fe/H: -0.500



DV Fit Results:

Period = 11.08256 [0.00005] d
Epoch = 136.6581 [0.0040] BKJD
Rp/R* = 0.0293 [0.0009]
a/R* = 4.79 [0.20]
b = 0.97 [0.00]
Seff = 356.37 [561.57]
Teq = 1108 [436] K
Rp = 7.03 [5.05] Re
a = 0.0915 [0.0812] AU
Ag = 15.80 [24.89] [0.59σ]
Teffp = 3415 [141] K [5.03σ]

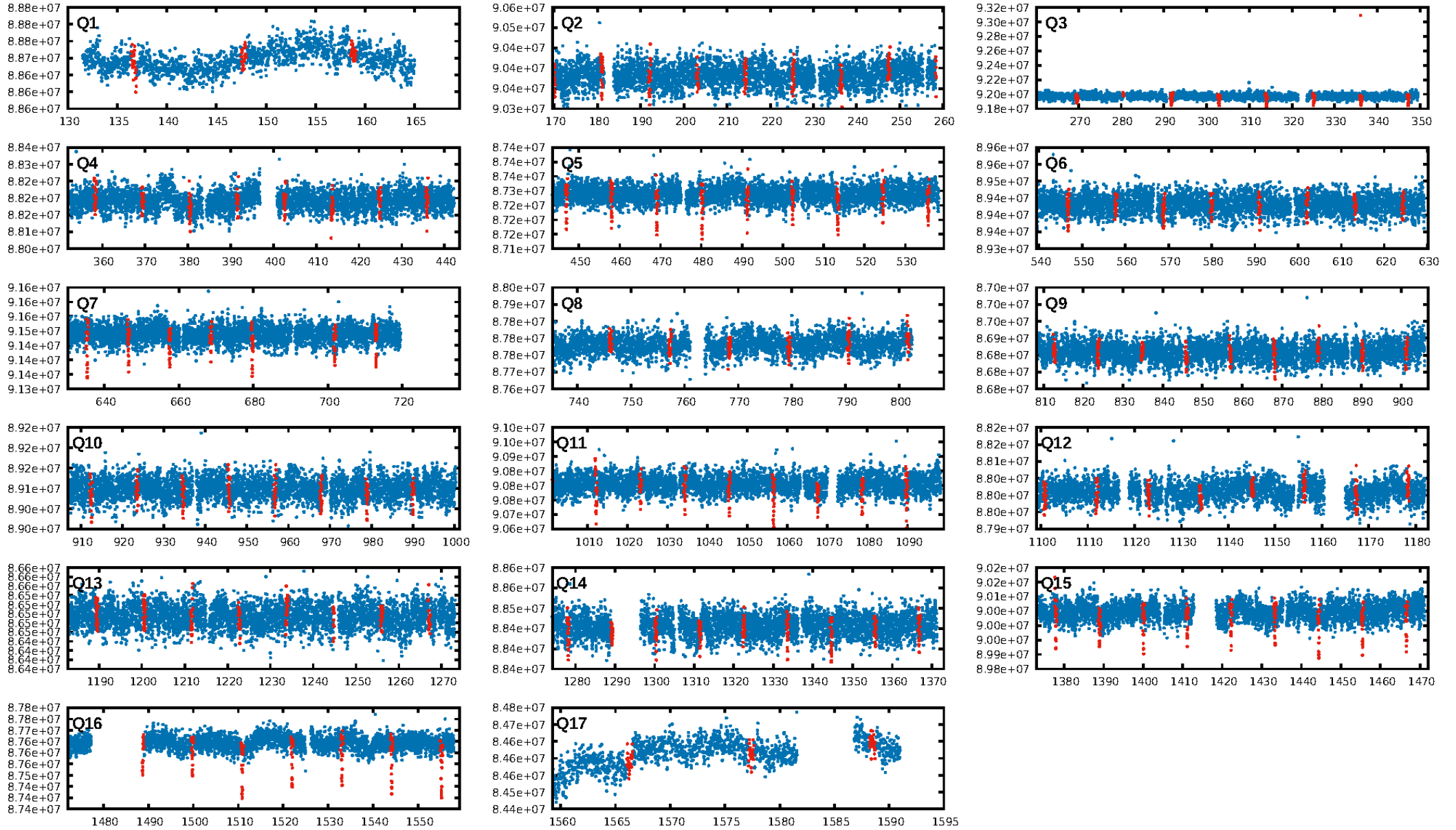
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.62e-186
RollingBand-fgt: 1.00 [121/121]
GhostDiagnostic-chr: -0.4617
Centroid-sig: 0.0%
Centroid-so: N/A
OotOffset-rm: 9.284 arcsec [138.43σ]
KicOffset-rm: 9.417 arcsec [139.77σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

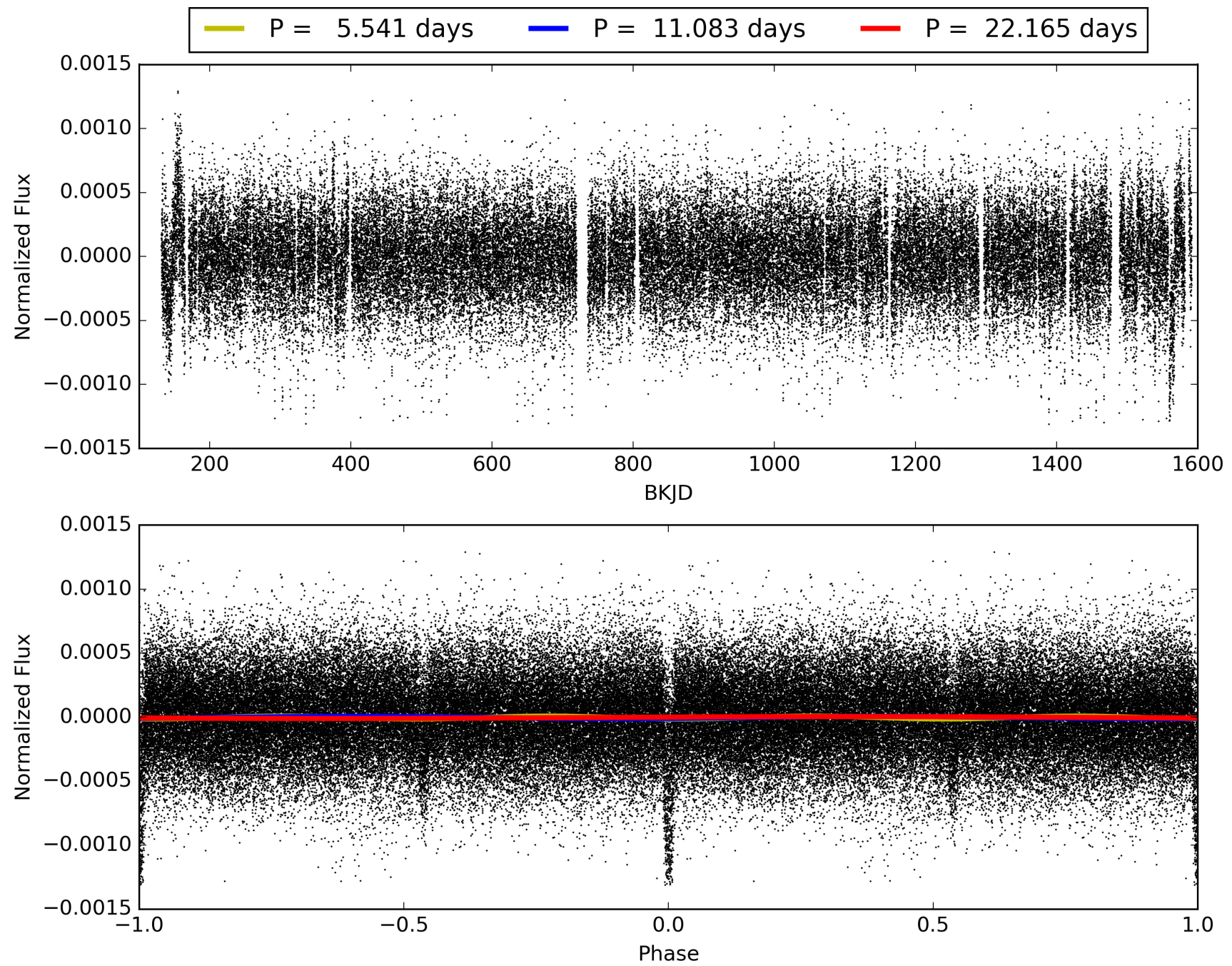
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:41:59 Z

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

TCE 009468382-01, PDC Light Curves

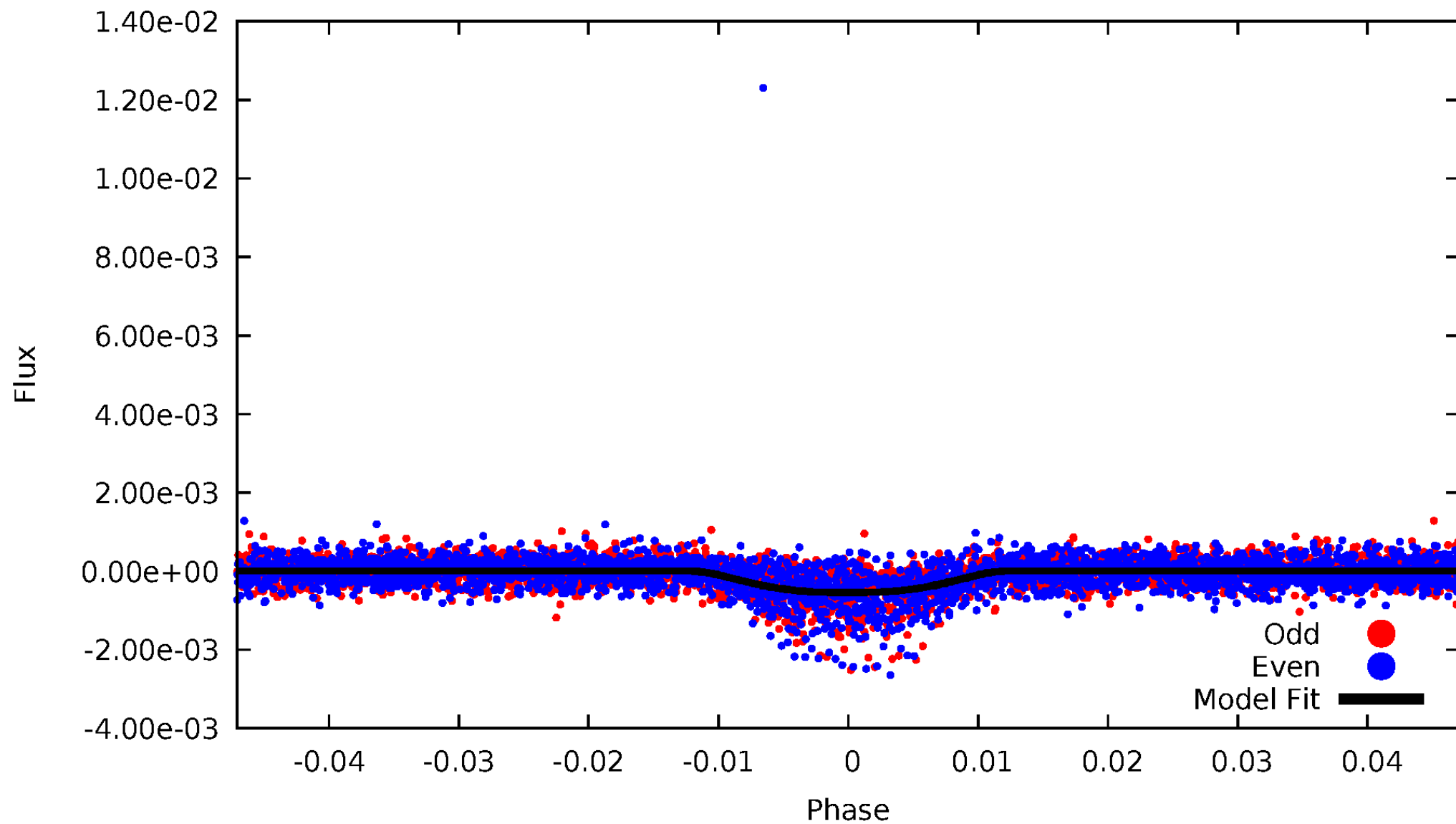


TCE 009468382-01



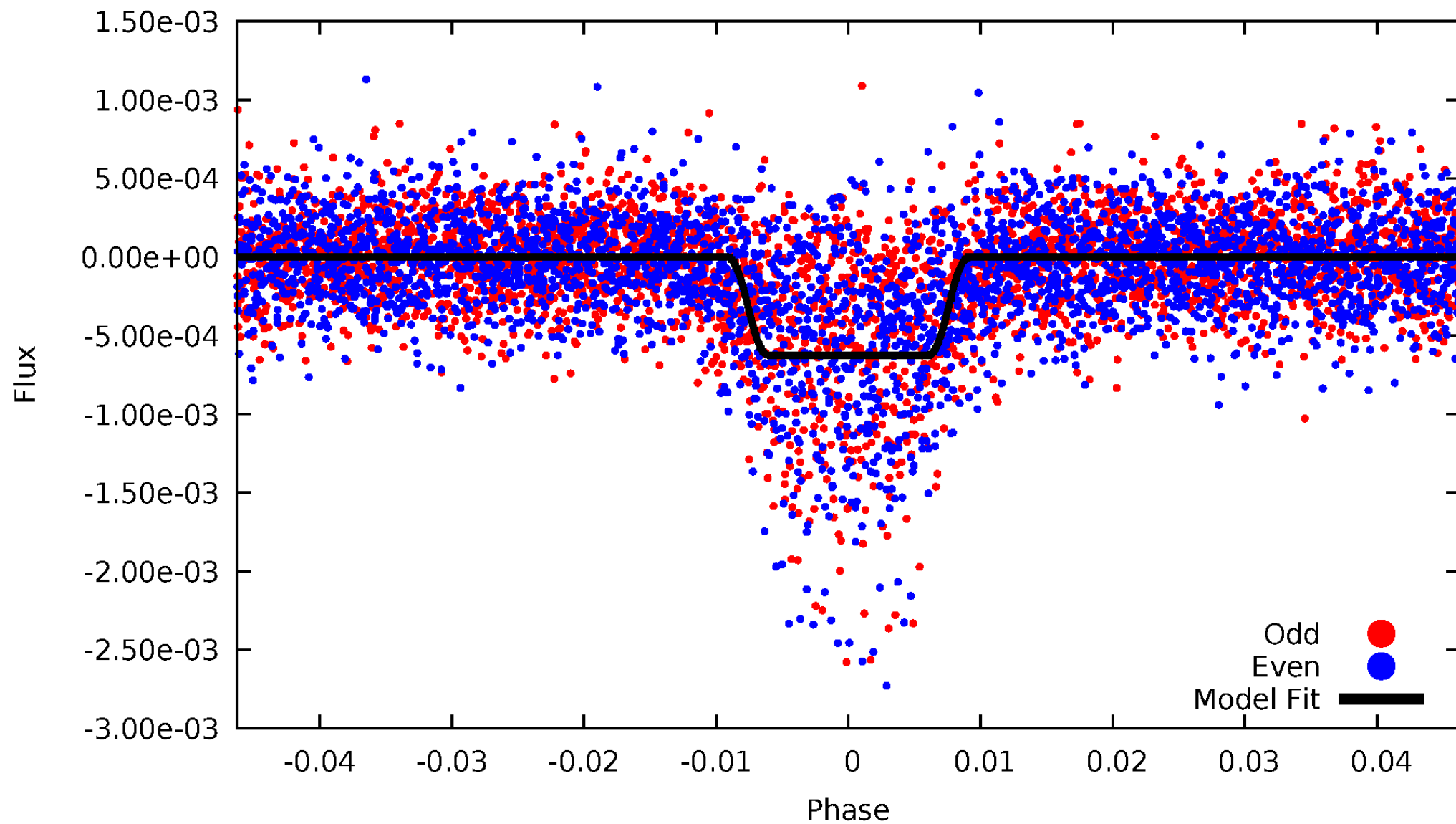
DV Odd/Even

TCE 009468382-01



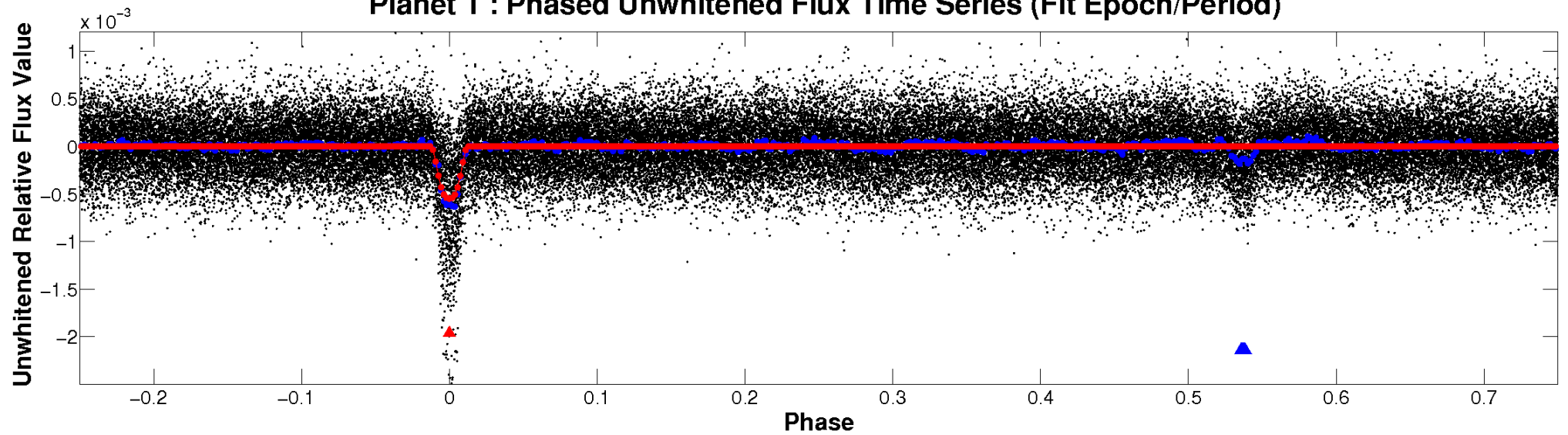
ALT Odd/Even

TCE 009468382-01

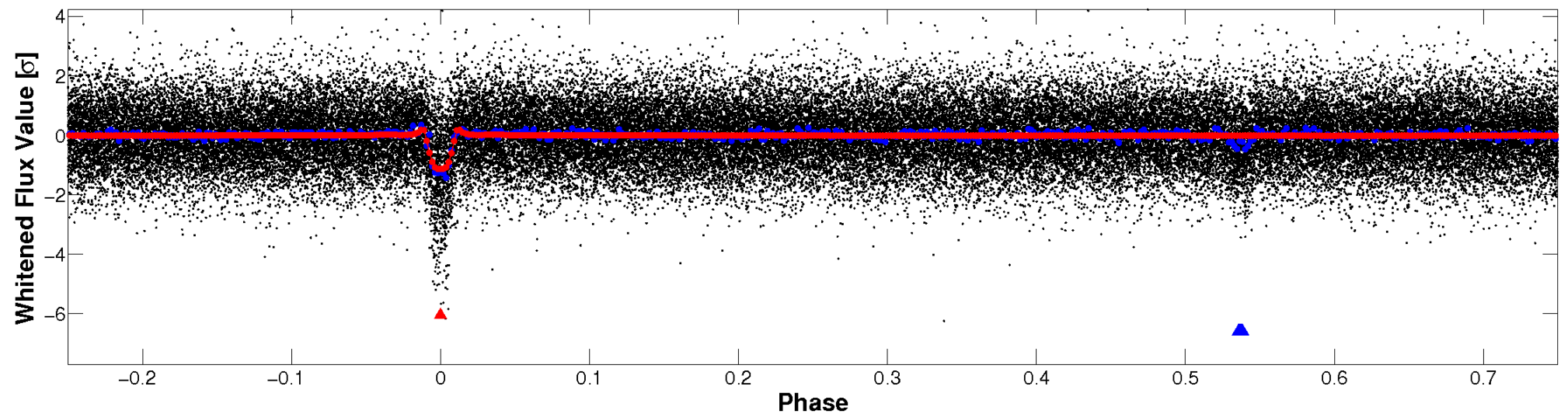


Non-Whitened Vs. Whitened Light Curve

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

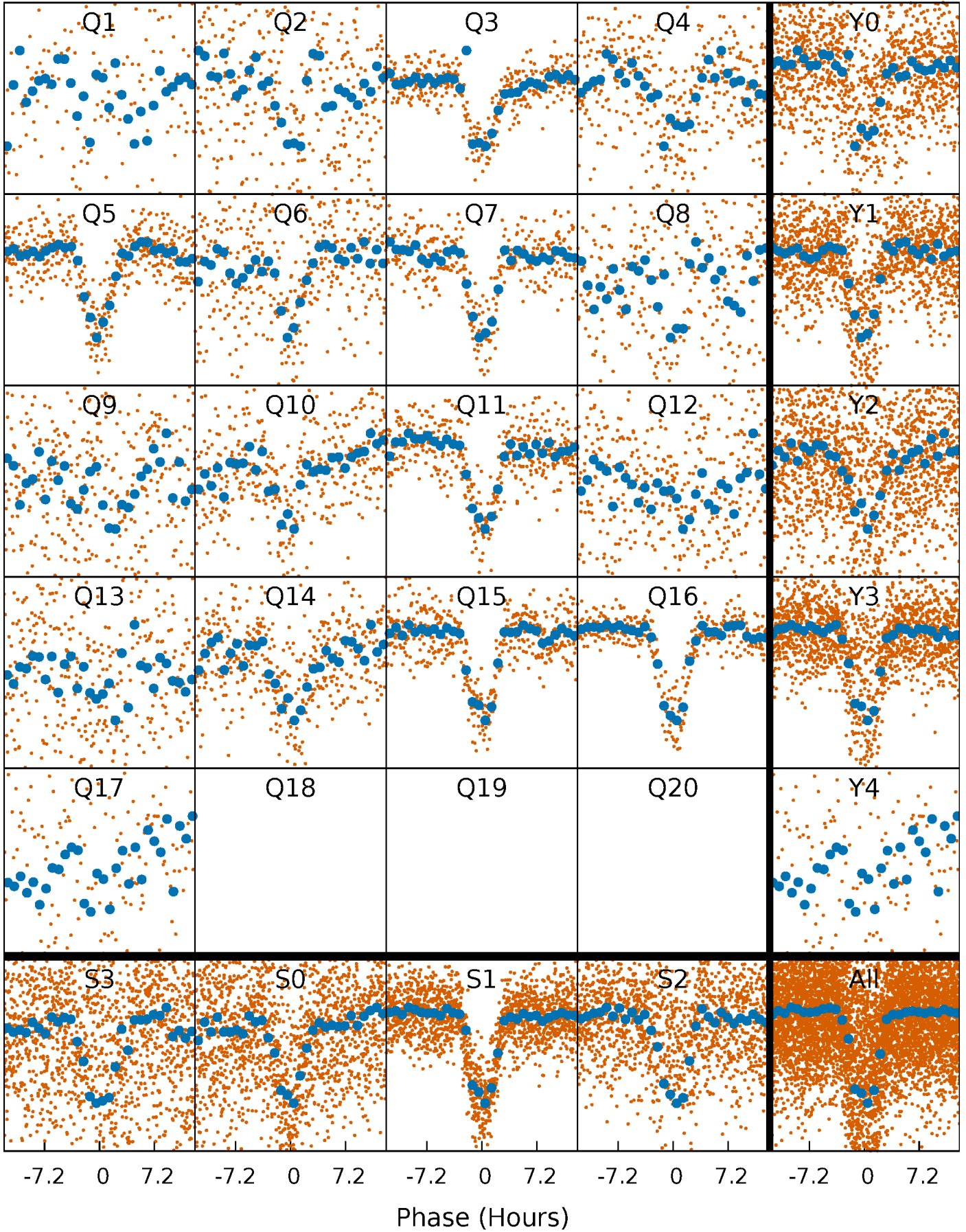


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



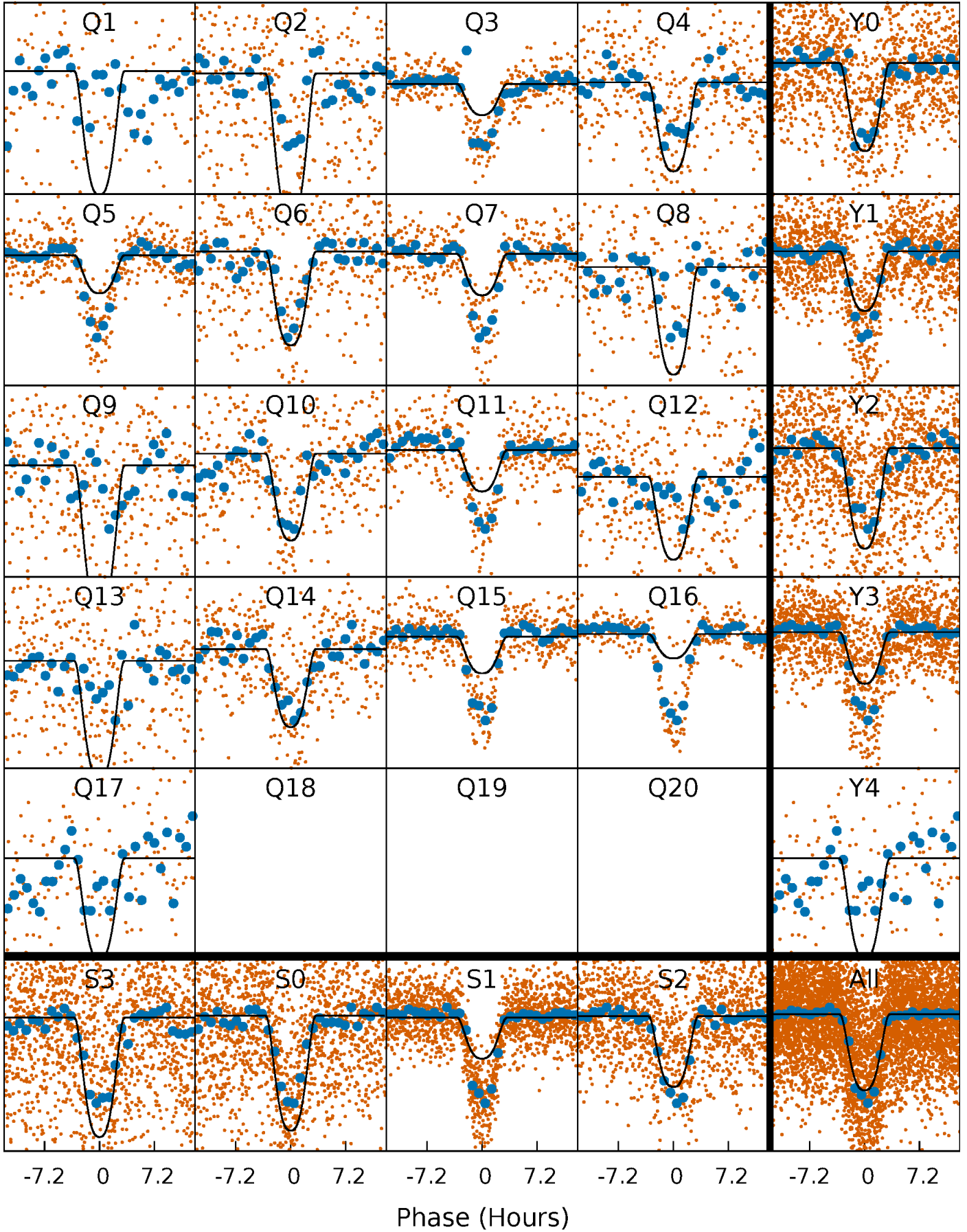
PDC Quarter-Phased Transit Curves

TCE 009468382-01 P= 11.082562 Days $T_0=136.658058$ (BKJD)



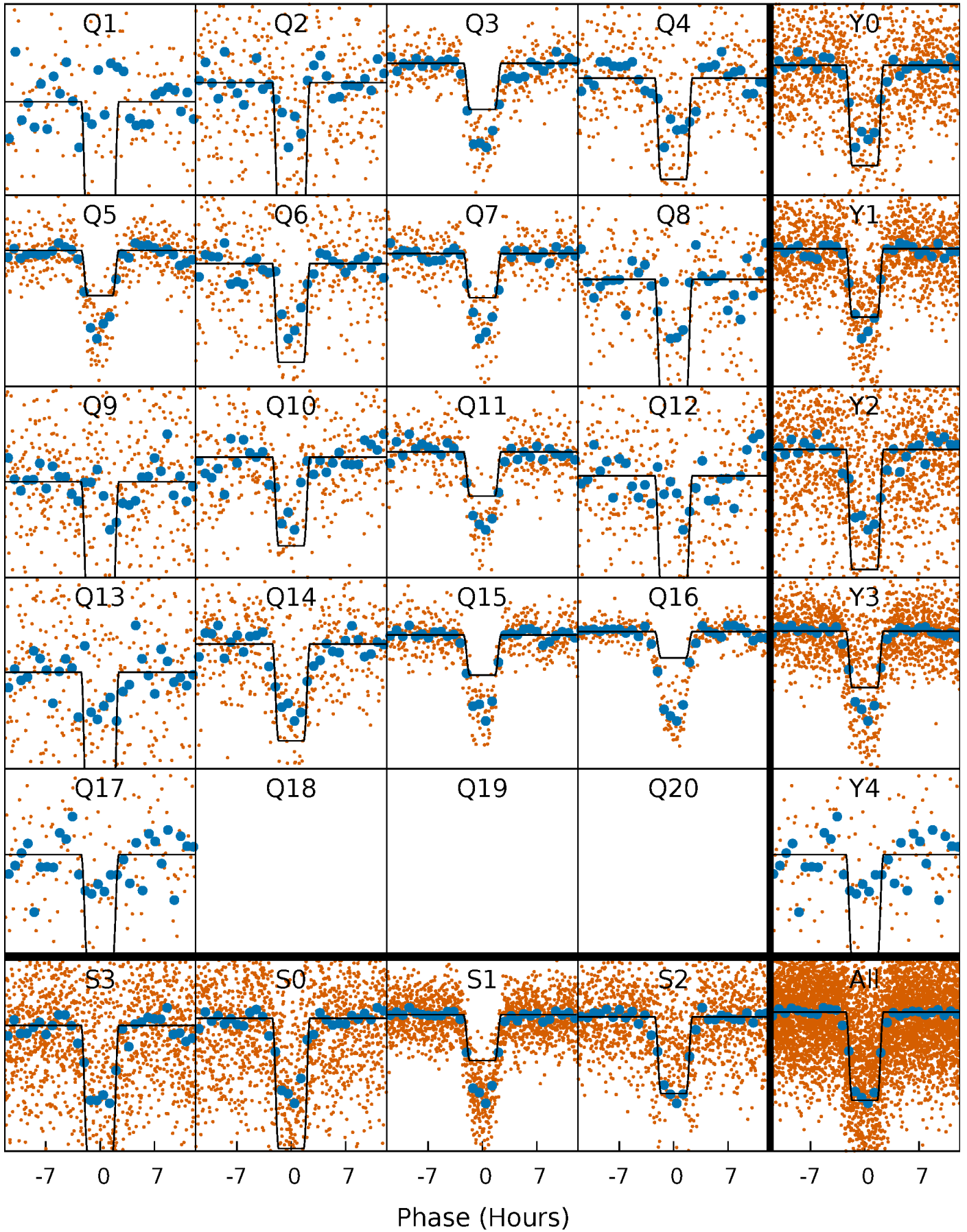
DV Quarter-Phased Transit Curves

TCE 009468382-01 P= 11.082562 Days $T_0=136.658058$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

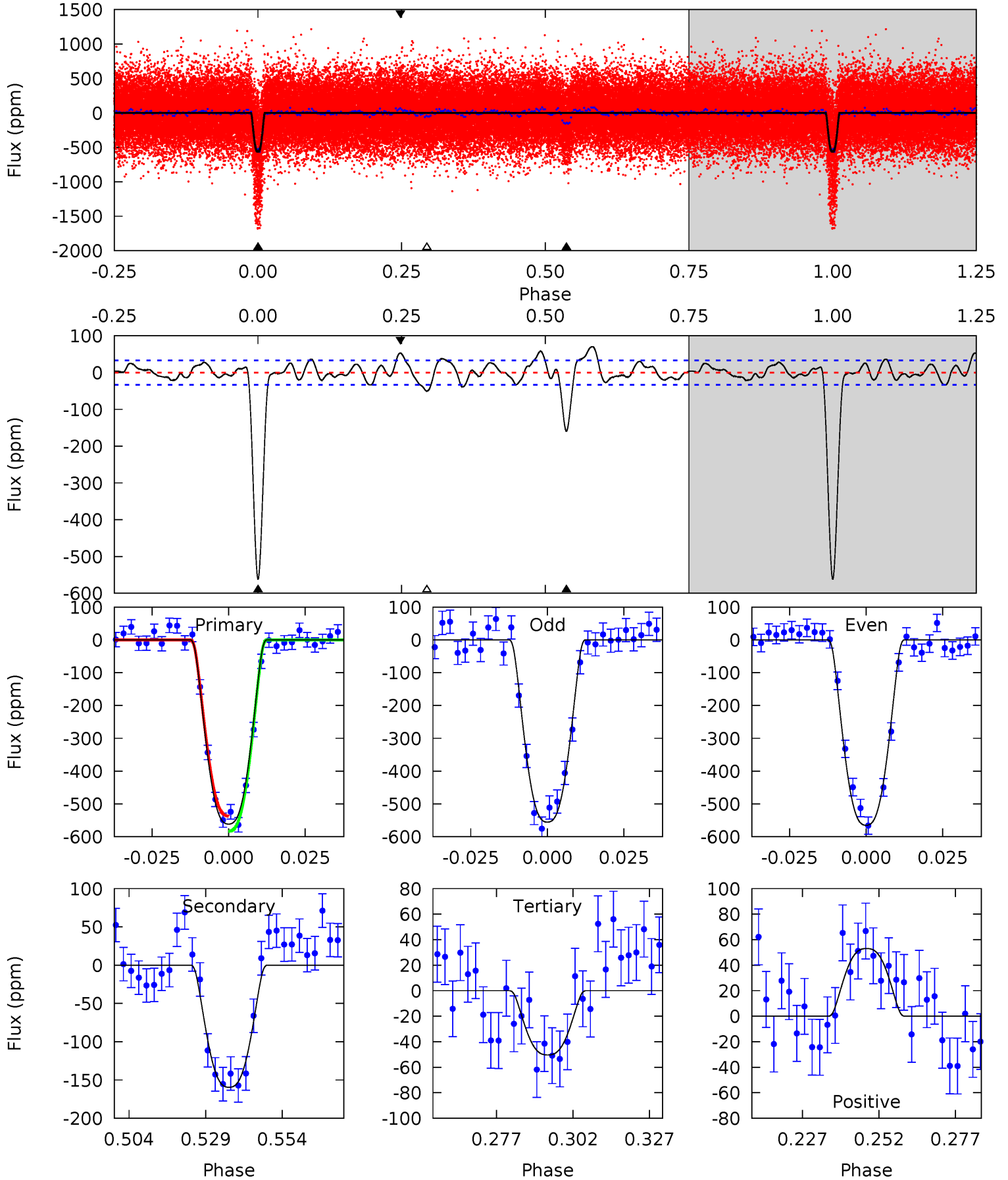
TCE 009468382-01 P= 11.082607 Days $T_0=136.655997$ (BKJD)



DV Model-Shift Uniqueness Test

009468382-01, P = 11.082562 Days, E = 125.575496 Days

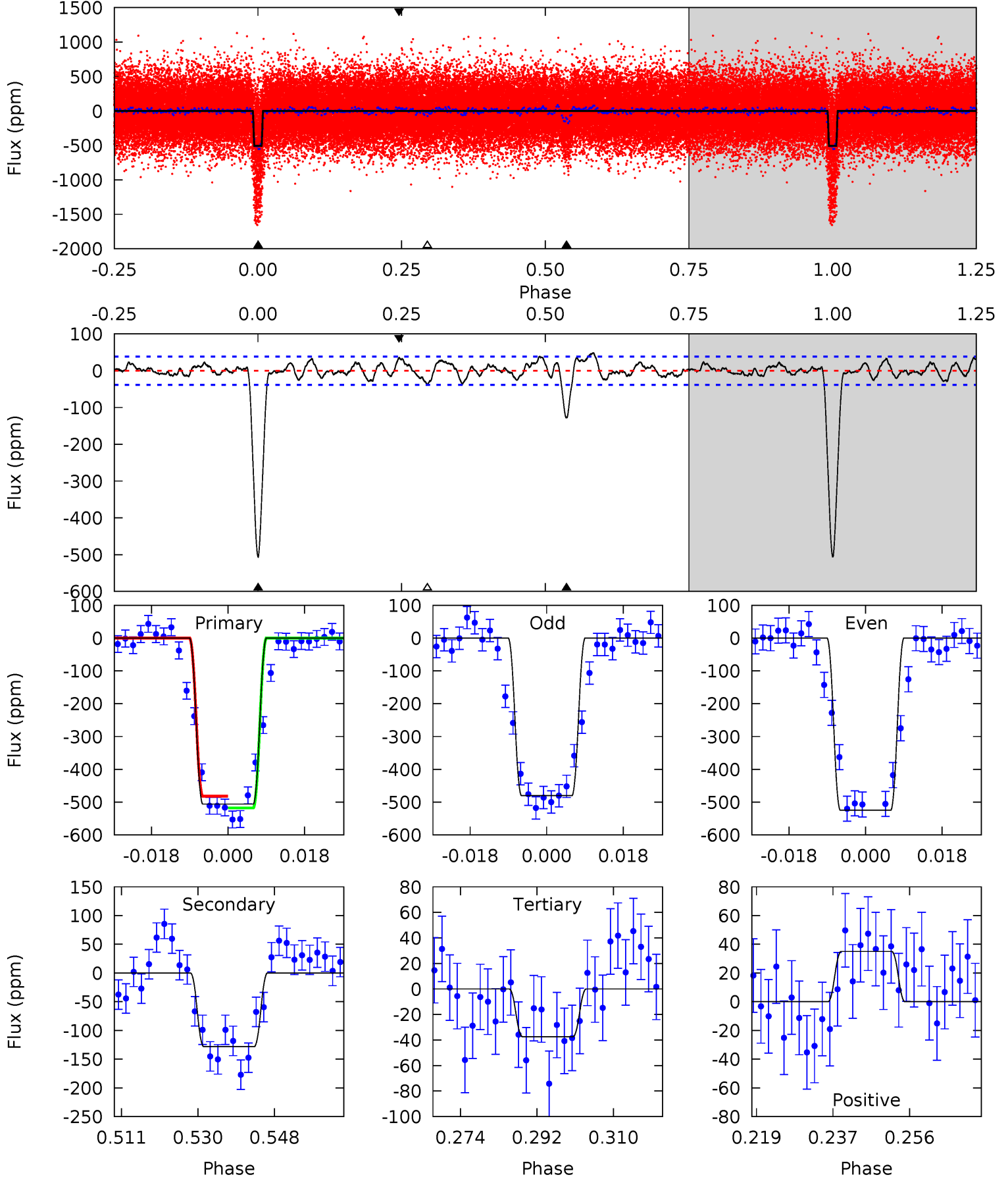
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
81.8	23.2	7.34	7.73	4.85	2.24	3.14	74.5	74.1	15.9	15.5	0.70	1.40	0.11	3.38



Alt Model-Shift Uniqueness Test

009468382-01, P = 11.082607 Days, E = 125.573390 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
64.5	16.4	4.77	4.46	4.91	2.36	1.97	59.8	60.1	11.6	11.9	2.83	1.46	0.09	2.27



Stellar Parameters For KIC 009468382

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5125^{+136}_{-151}	$3.674^{+0.975}_{-0.325}$	$-0.500^{+0.300}_{-0.300}$	$2.196^{+1.290}_{-1.577}$	$0.831^{+0.230}_{-0.167}$	$0.111^{+3.366}_{-0.072}$
	+3%/-3%	+27%/-9%	+60%/-60%	+59%/-72%	+28%/-20%	+3046%/-65%
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 009468382-01 / KOI 3409.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-160 ± 7	$6.73^{+2.40}_{-2.42}$	1505^{+228}_{-306}	3710^{+96}_{-102}	16^{+24}_{-7}
Alt.	-128 ± 8	$5.76^{+2.05}_{-2.19}$	1505^{+248}_{-312}	3773^{+107}_{-103}	18^{+26}_{-8}

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

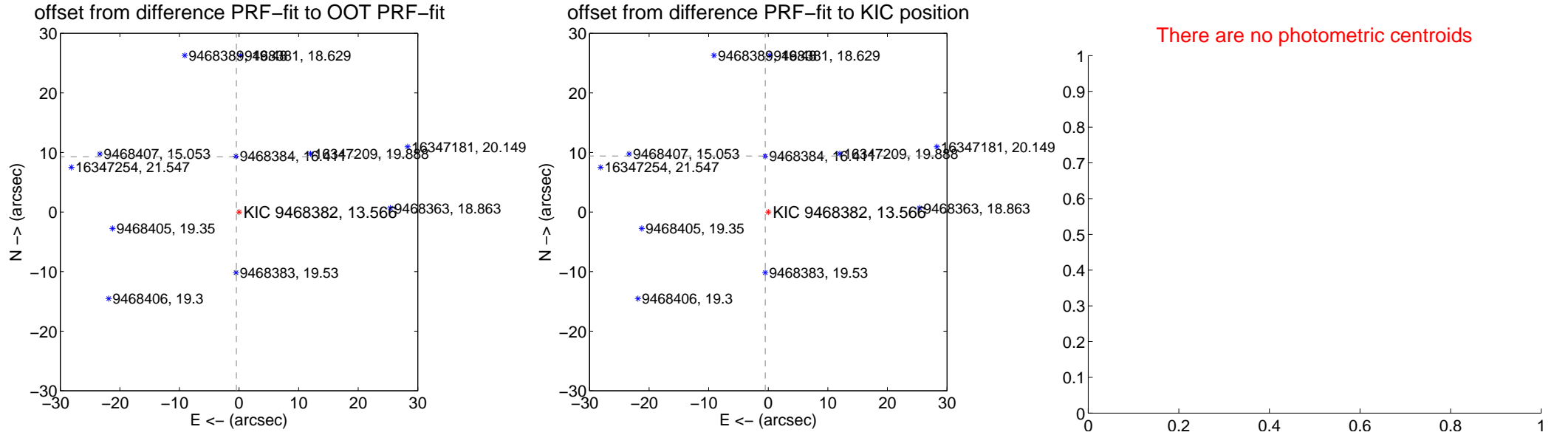
DV Centroid Data

Supplemental centroid analysis for 009468382-01. Kepler magnitude: 13.57. Transit SNR 30.47

There are 17 quarters with good PRF difference image offsets

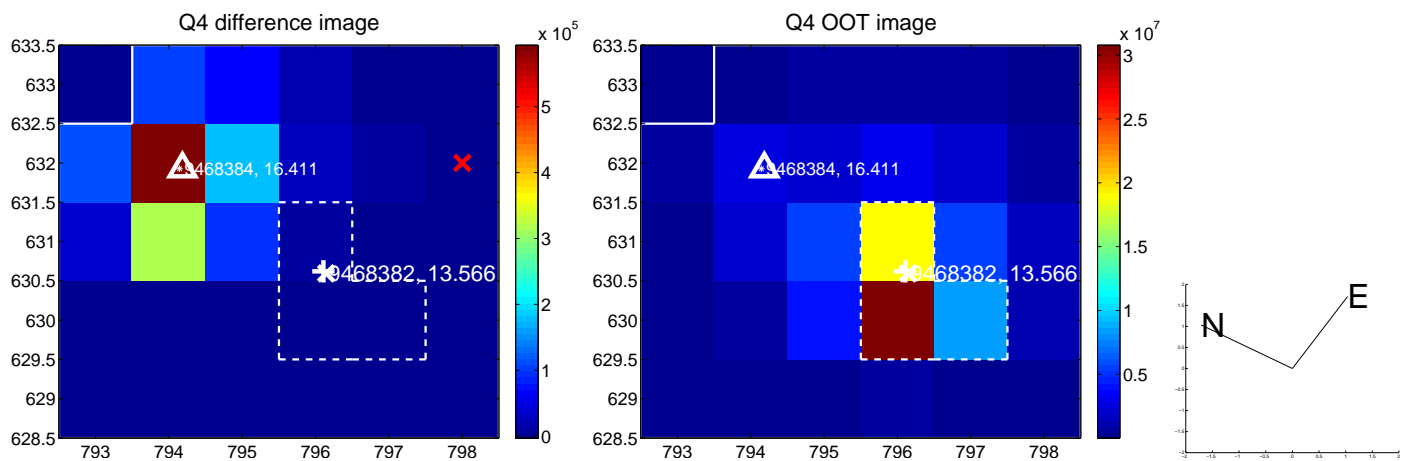
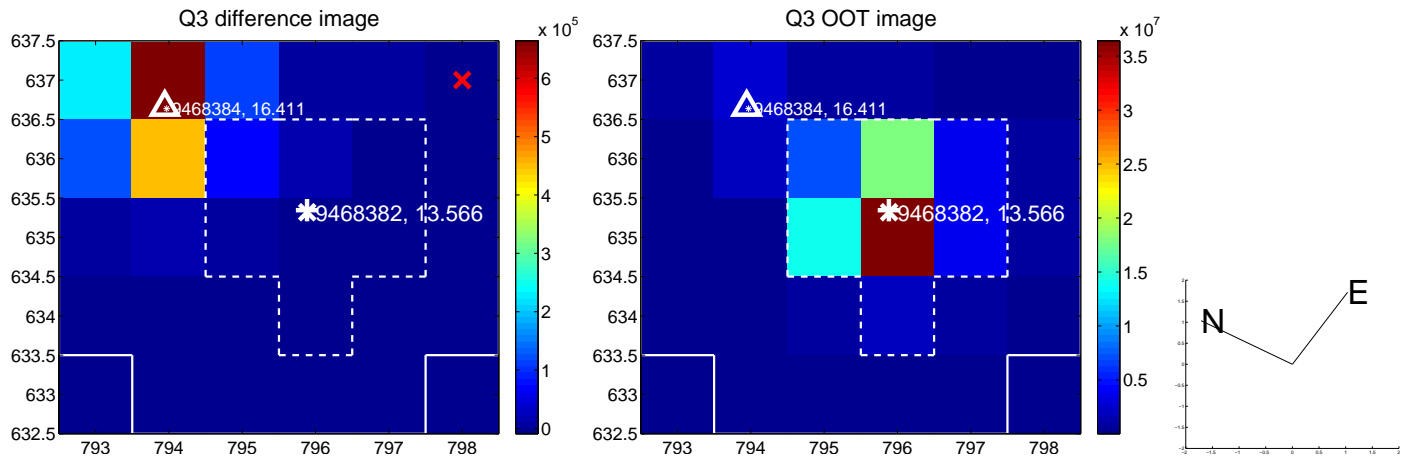
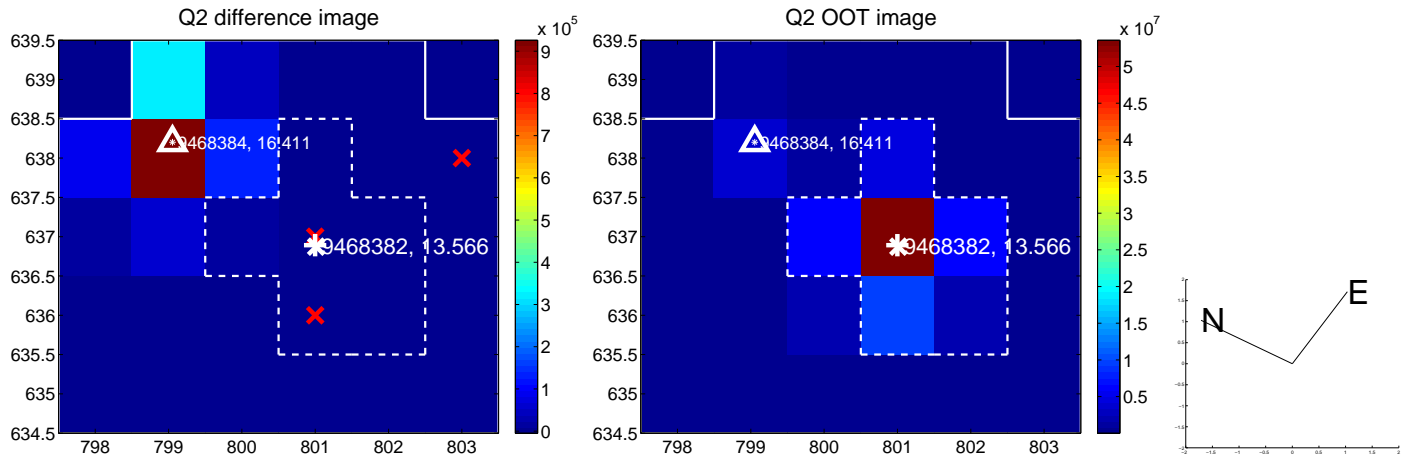
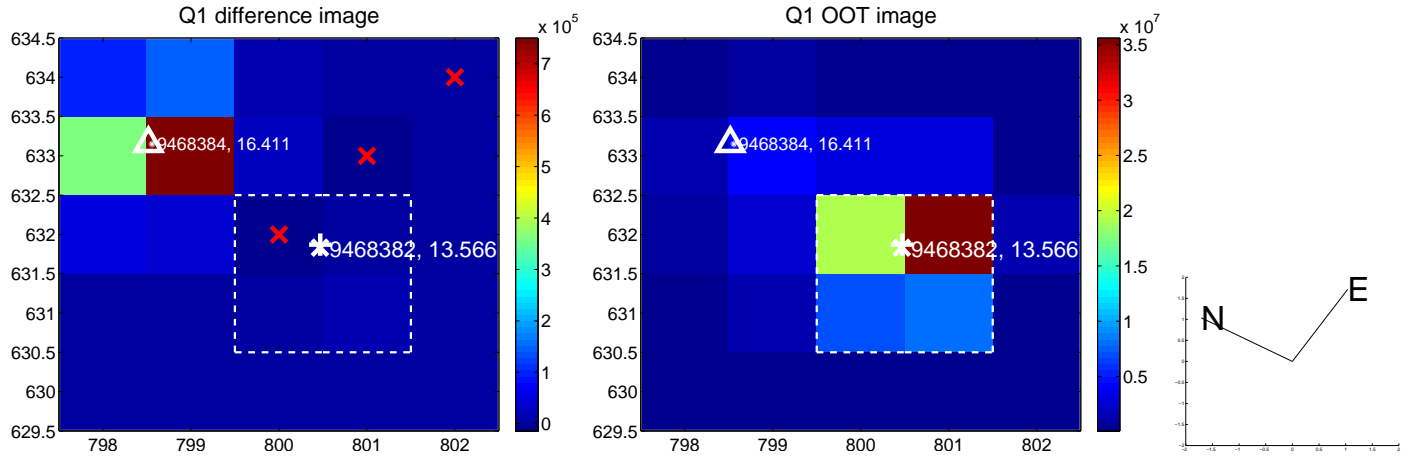
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.284 \pm 0.067	138.43	0.442 \pm 0.068	9.273 \pm 0.067
PRF-fit source offset from KIC position	9.417 \pm 0.067	139.77	0.506 \pm 0.067	9.403 \pm 0.067
photometric centroid source offset	—	—	—	—

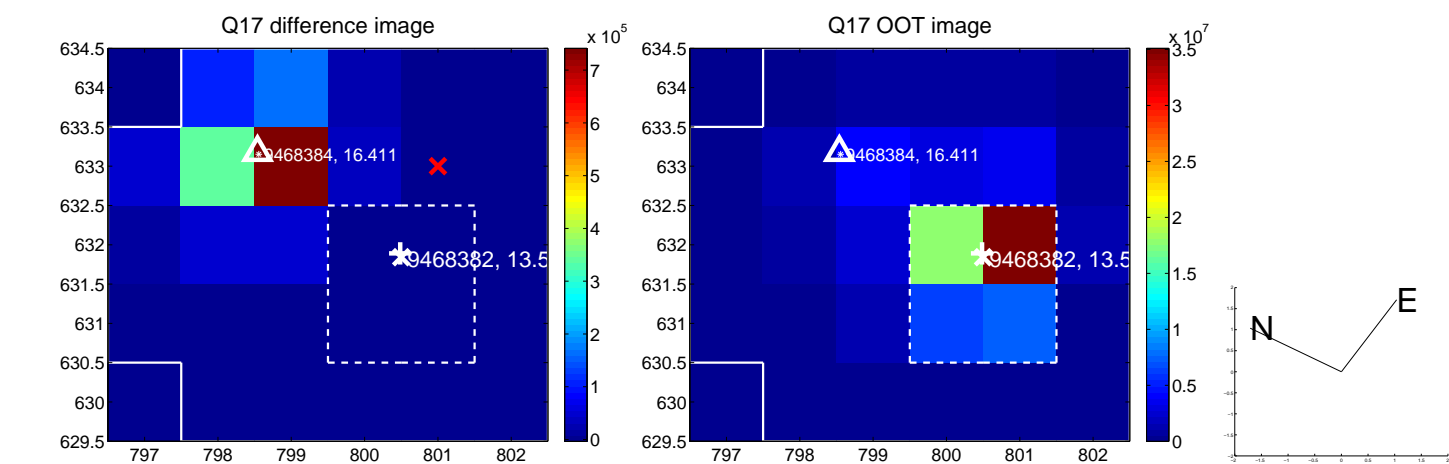


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

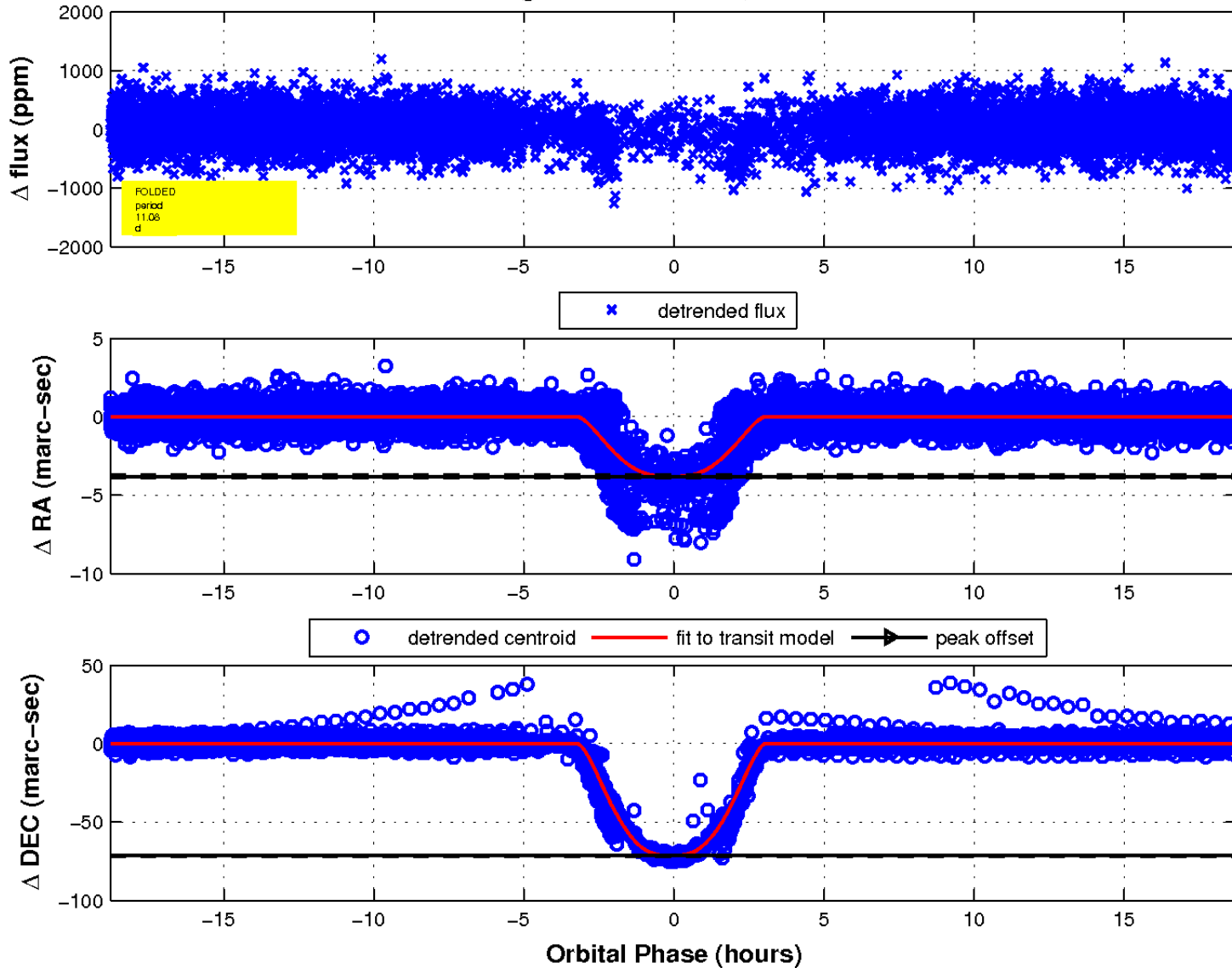
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

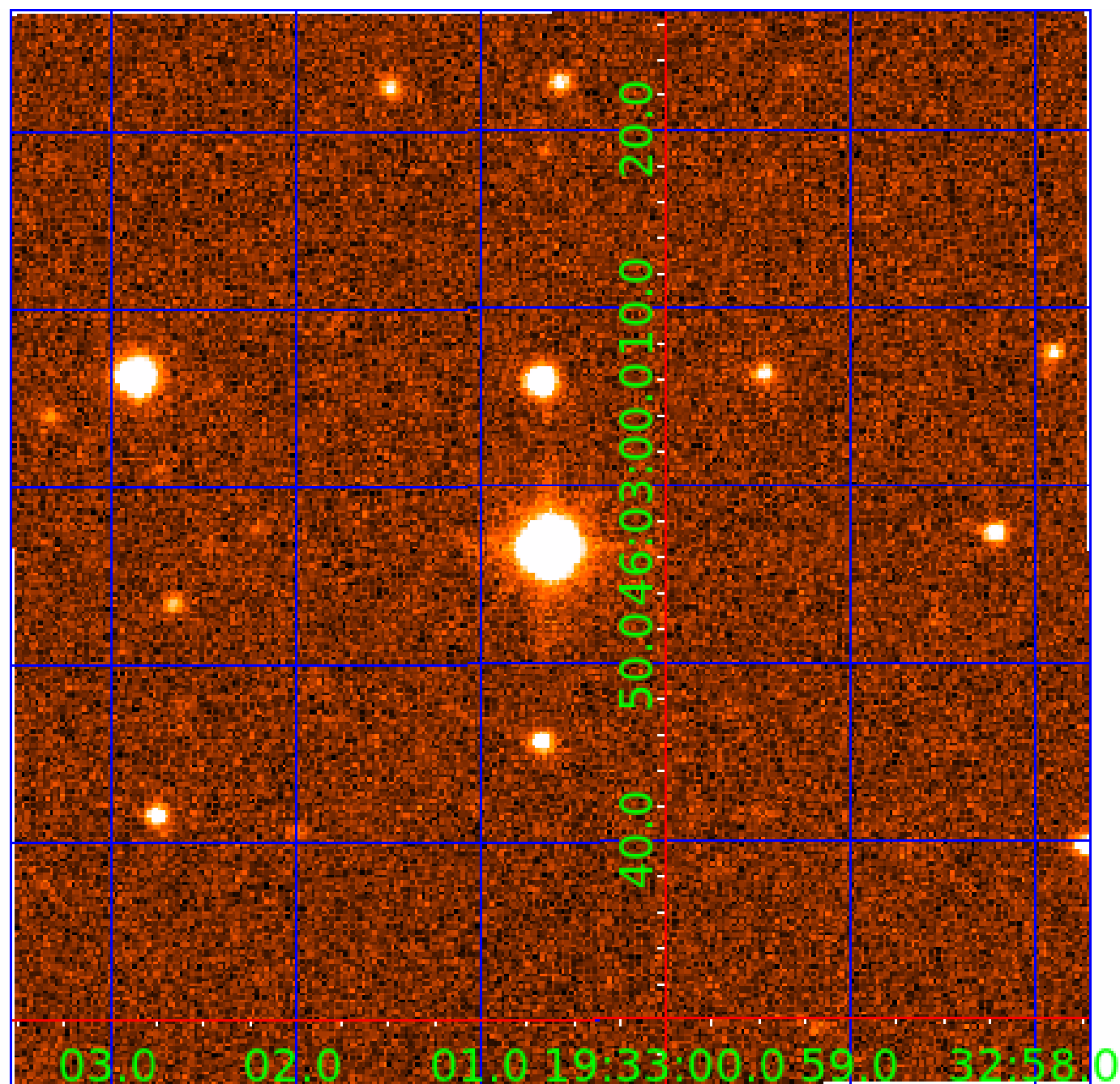


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009468382

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})
009468382-01	OBS	3409.01	11.082562	136.658058	549.0	6.261	32.3	30.5	2.20	5125	7.03	356.37
009468382-02	OBS	No	11.082800	131.511430	168.6	5.588	10.6	10.9	2.20	5125	3.73	356.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009468382-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH
009468382-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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 009468382-02

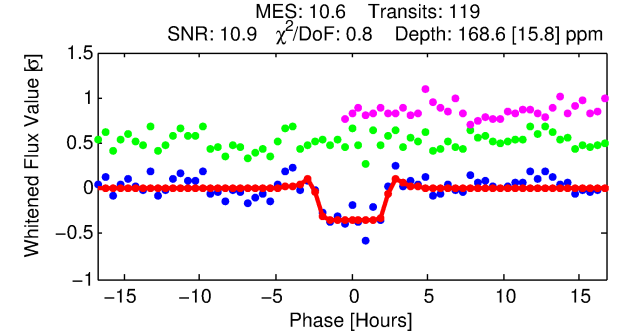
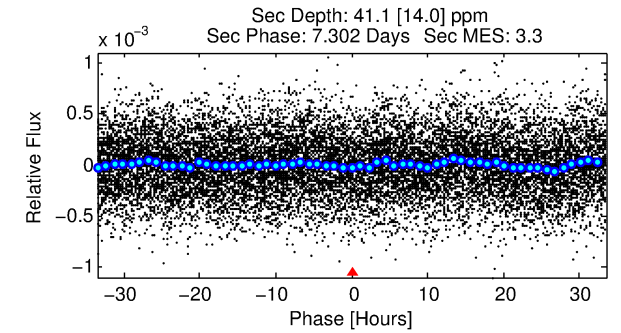
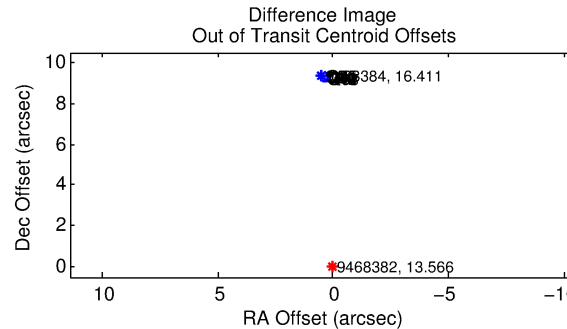
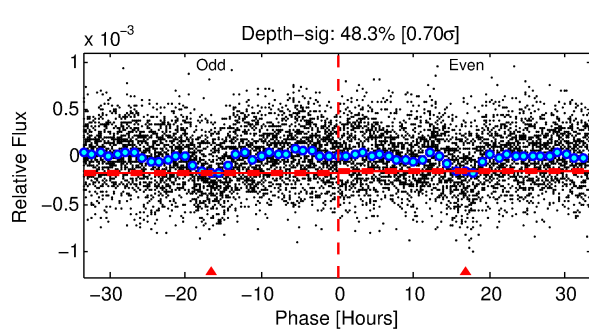
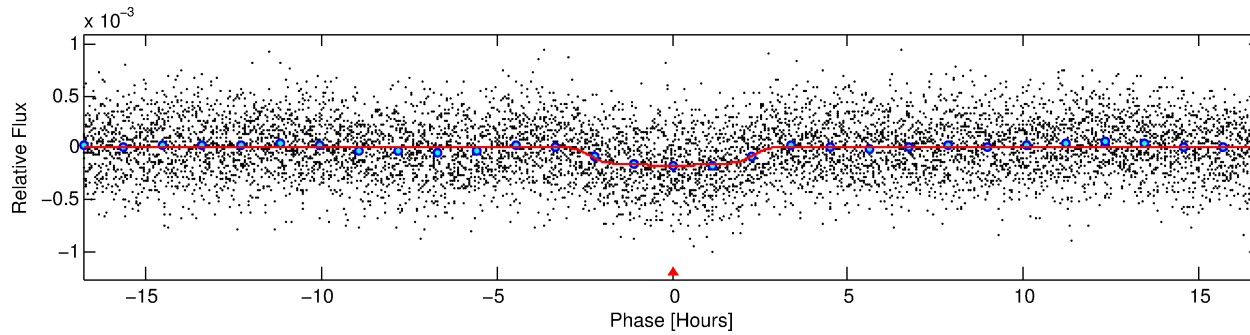
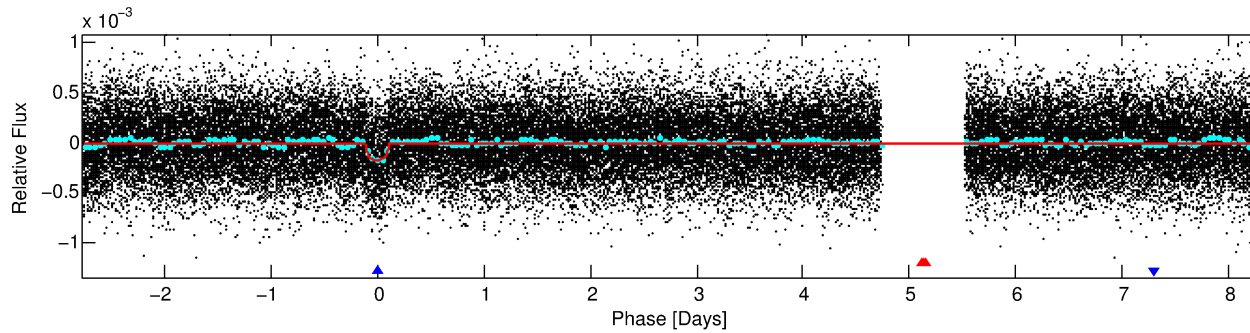
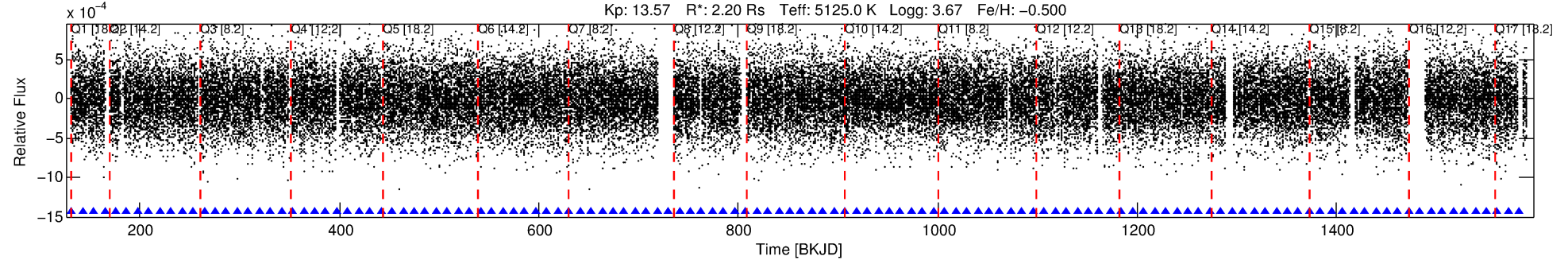
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009468382-02	9468382	009468384-sec	9468384	1:1	9.4	-1	2	16.41	13.56	394.67	Direct-PRF	0	0.75	0.25

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9468382 Candidate: 2 of 2 Period: 11.083 d
KOI: K03409 Corr: No Ephemeris Match

Kp: 13.57 R*: 2.20 Rs Teff: 5125.0 K Logg: 3.67 Fe/H: -0.500



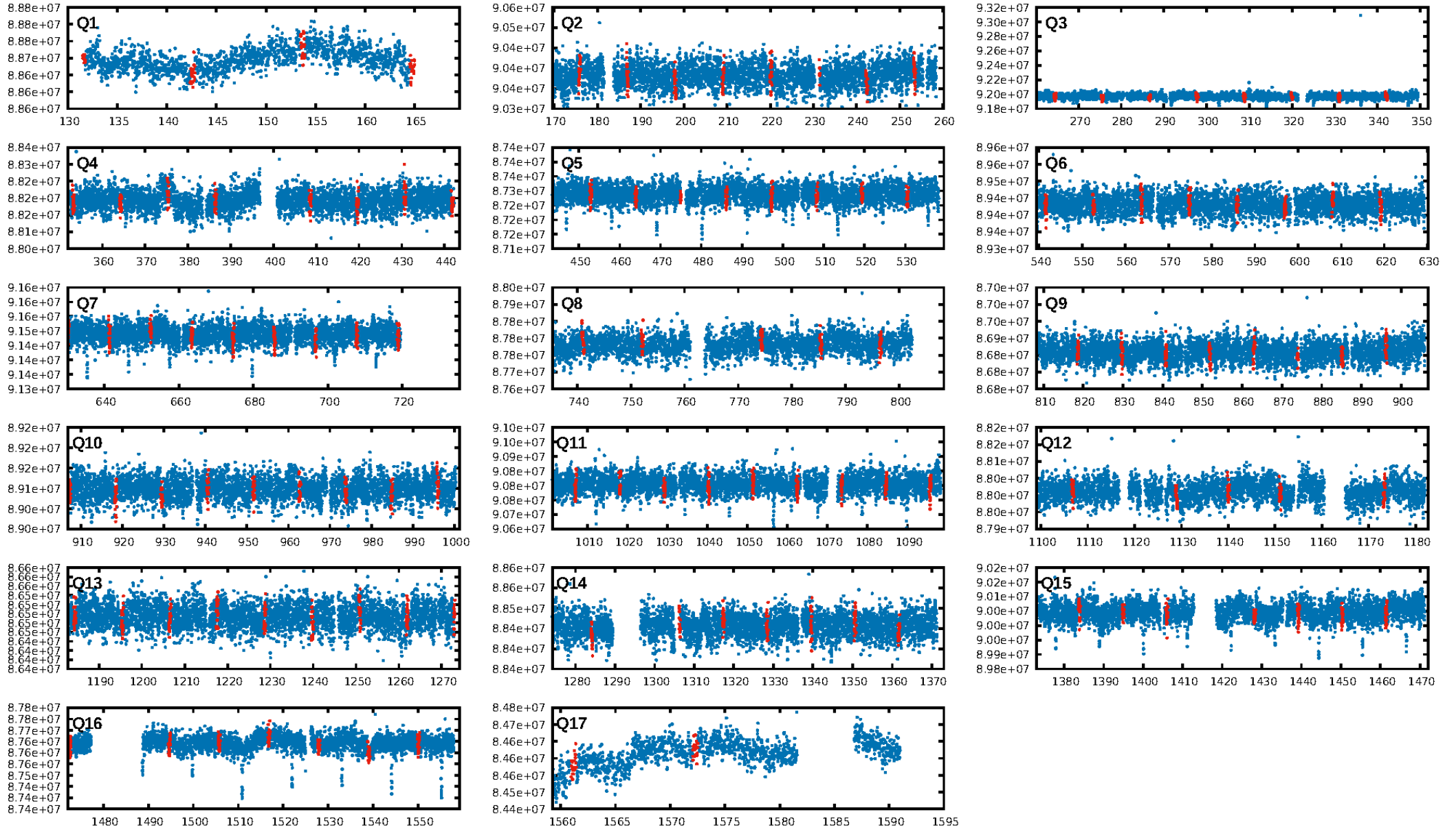
DV Fit Results:

Period = 11.08280 [0.00010] d
Epoch = 131.5114 [0.0071] BKJD
Rp/R* = 0.0155 [0.0012]
a/R* = 5.33 [1.25]
b = 0.95 [0.02]
Seff = 356.36 [561.56]
Teq = 1108 [436] K
Rp = 3.73 [2.69] Re
a = 0.0915 [0.0812] AU
Ag = 13.61 [21.97] [0.57σ]
Teffp = 3290 [321] K [4.03σ]

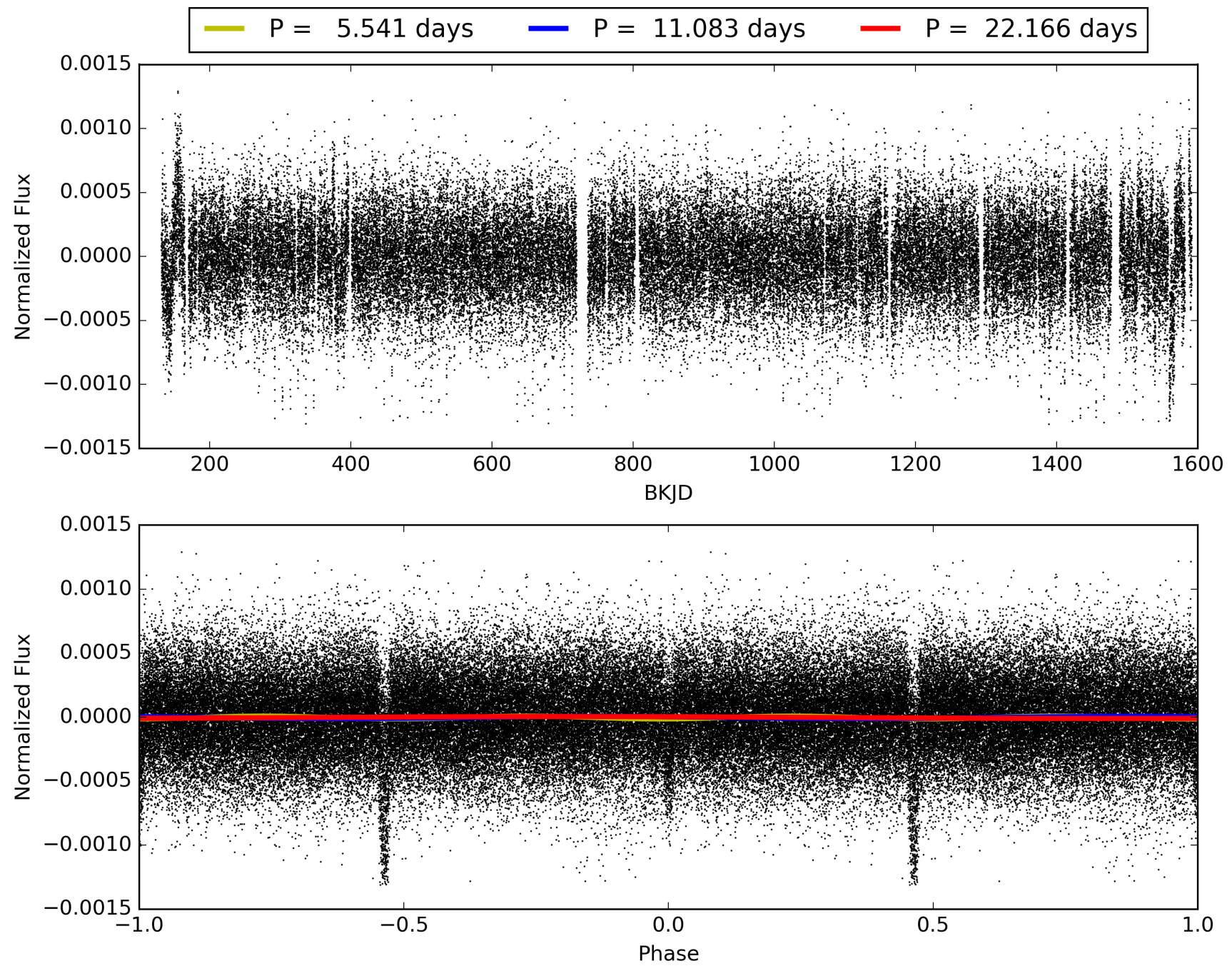
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 83.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.23e-22
RollingBand-fgt: 1.00 [113/113]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 9.301 arcsec [136.61σ]
KicOffset-rm: 9.451 arcsec [135.75σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009468382-02, PDC Light Curves

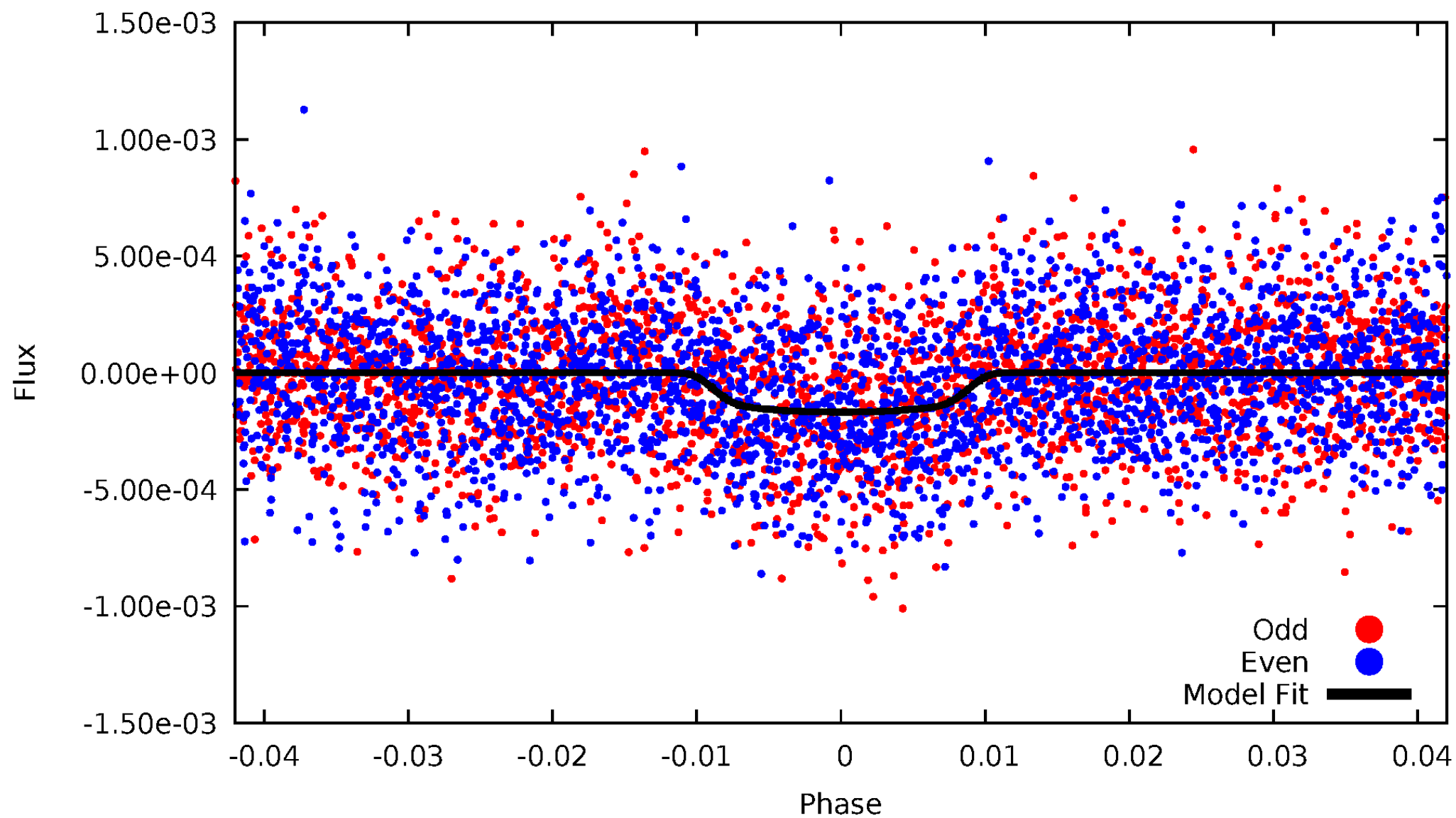


TCE 009468382-02



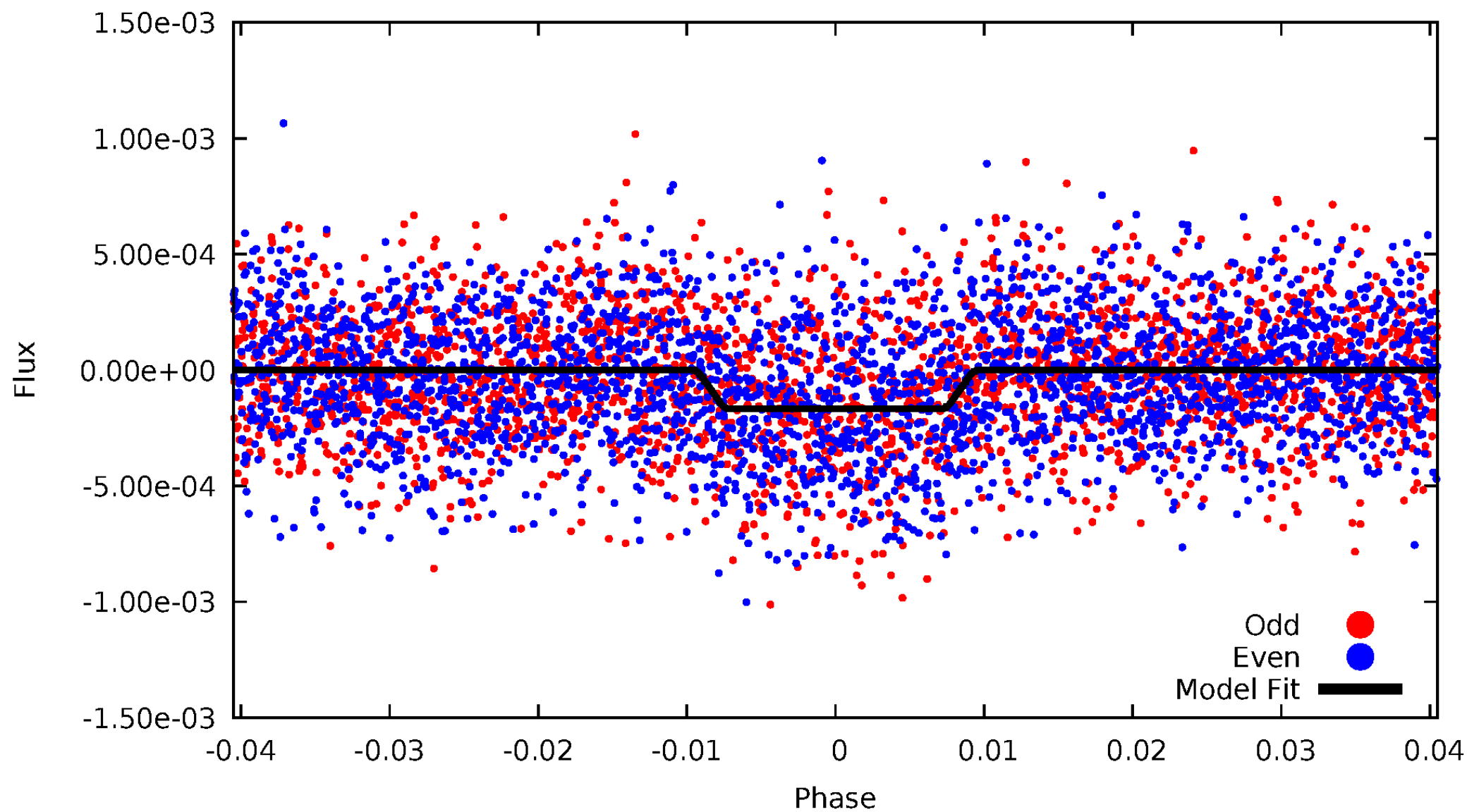
DV Odd/Even

TCE 009468382-02



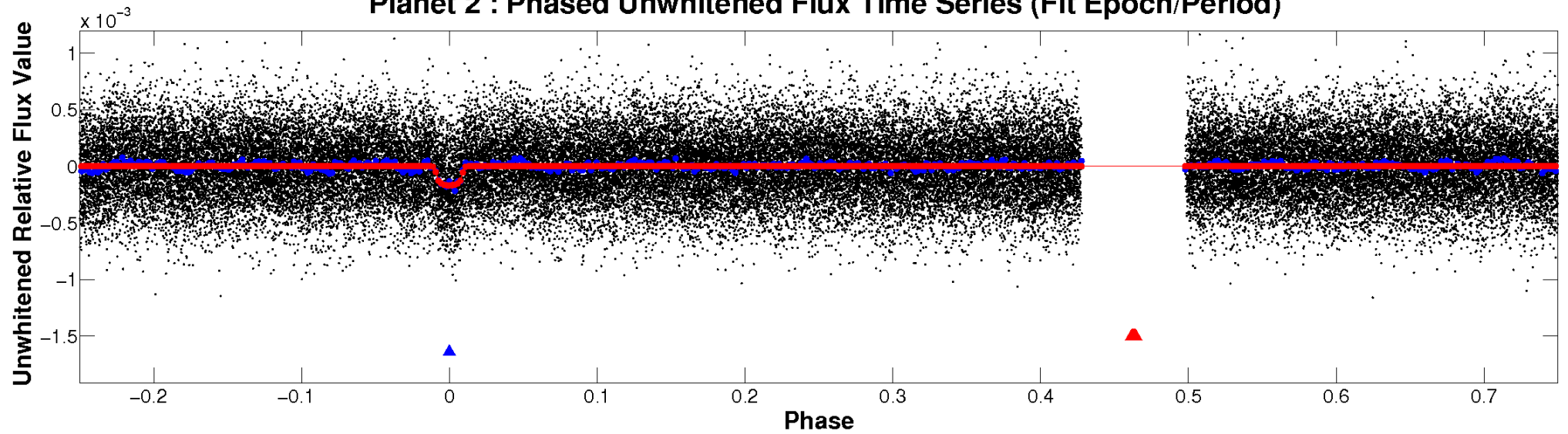
ALT Odd/Even

TCE 009468382-02

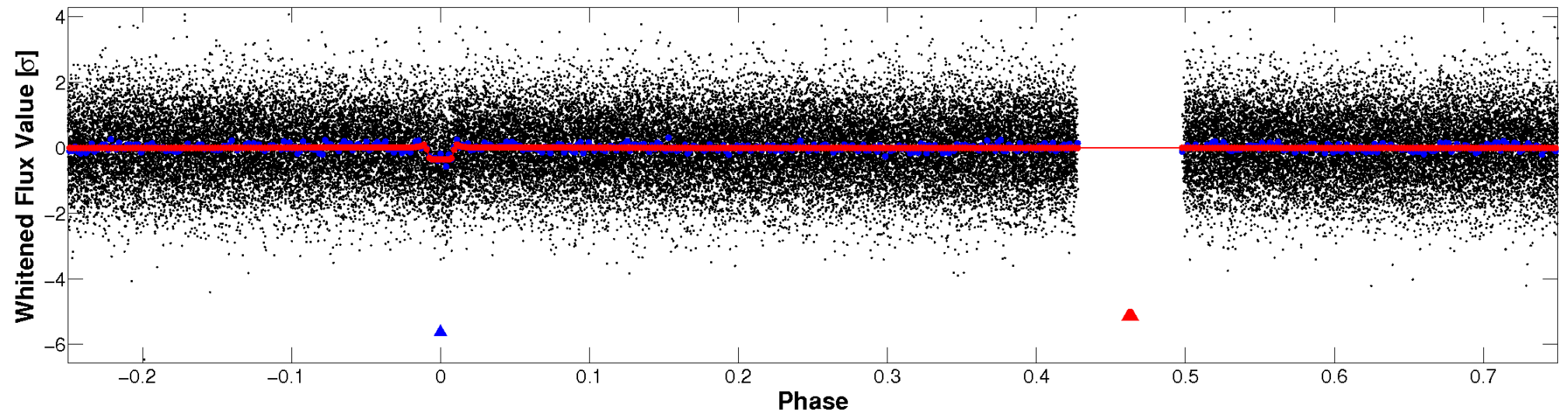


Non-Whitened Vs. Whitened Light Curve

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

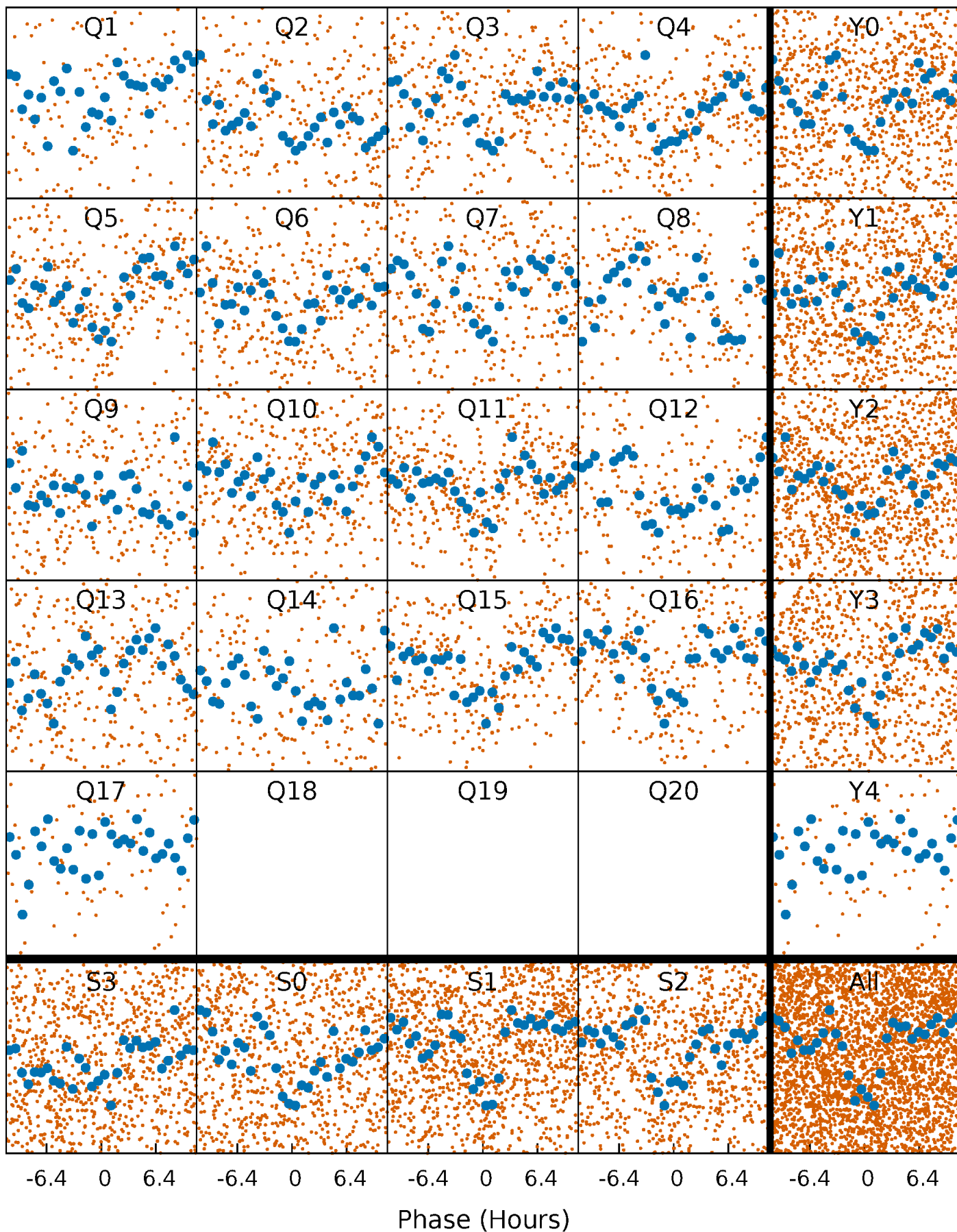


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



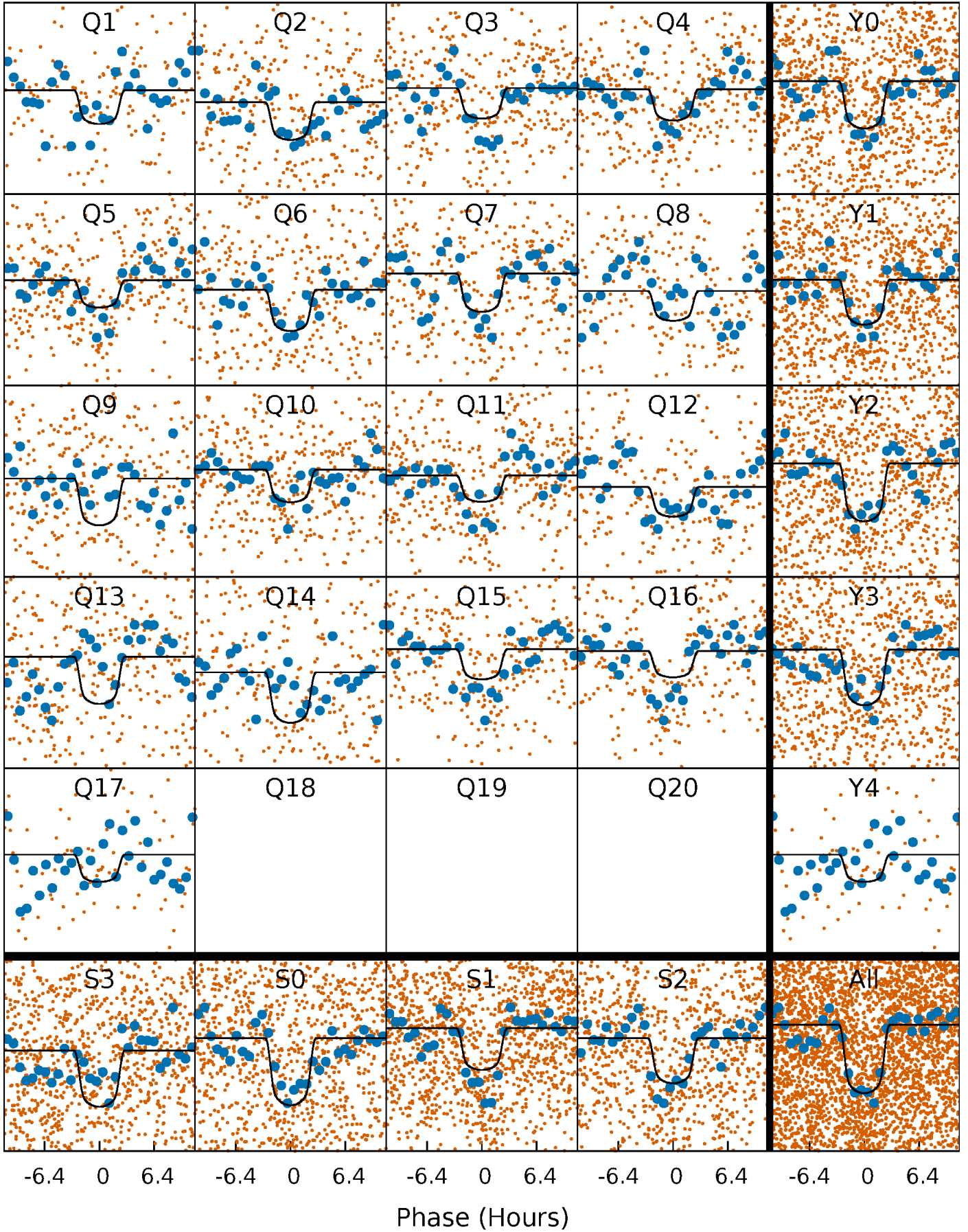
PDC Quarter-Phased Transit Curves

TCE 009468382-02 P= 11.082800 Days $T_0=131.511430$ (BKJD)



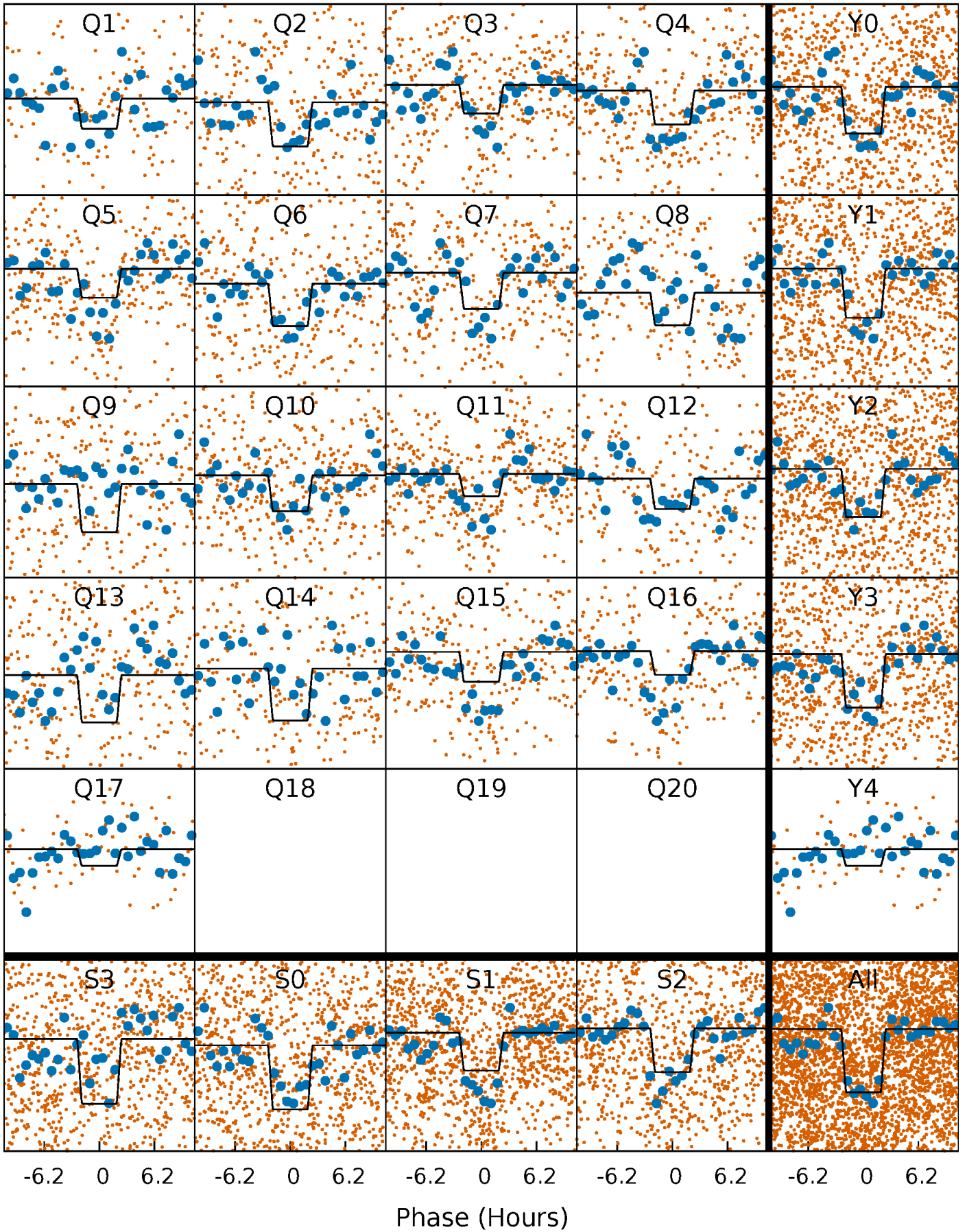
DV Quarter-Phased Transit Curves

TCE 009468382-02 P= 11.082800 Days $T_0=131.511430$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

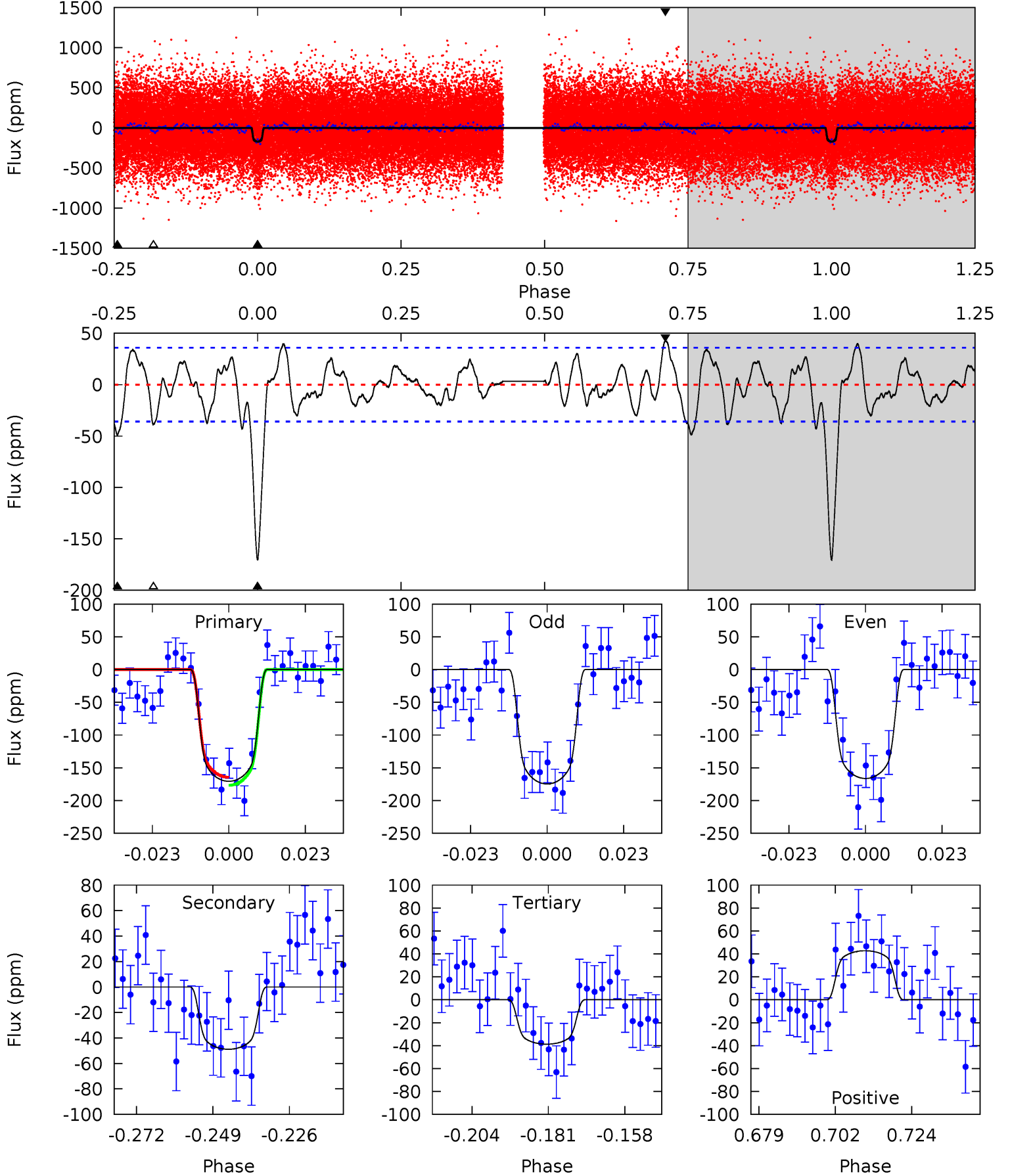
TCE 009468382-02 P= 11.082878 Days $T_0=131.507708$ (BKJD)



DV Model-Shift Uniqueness Test

009468382-02, $P = 11.082800$ Days, $E = 131.511430$ Days

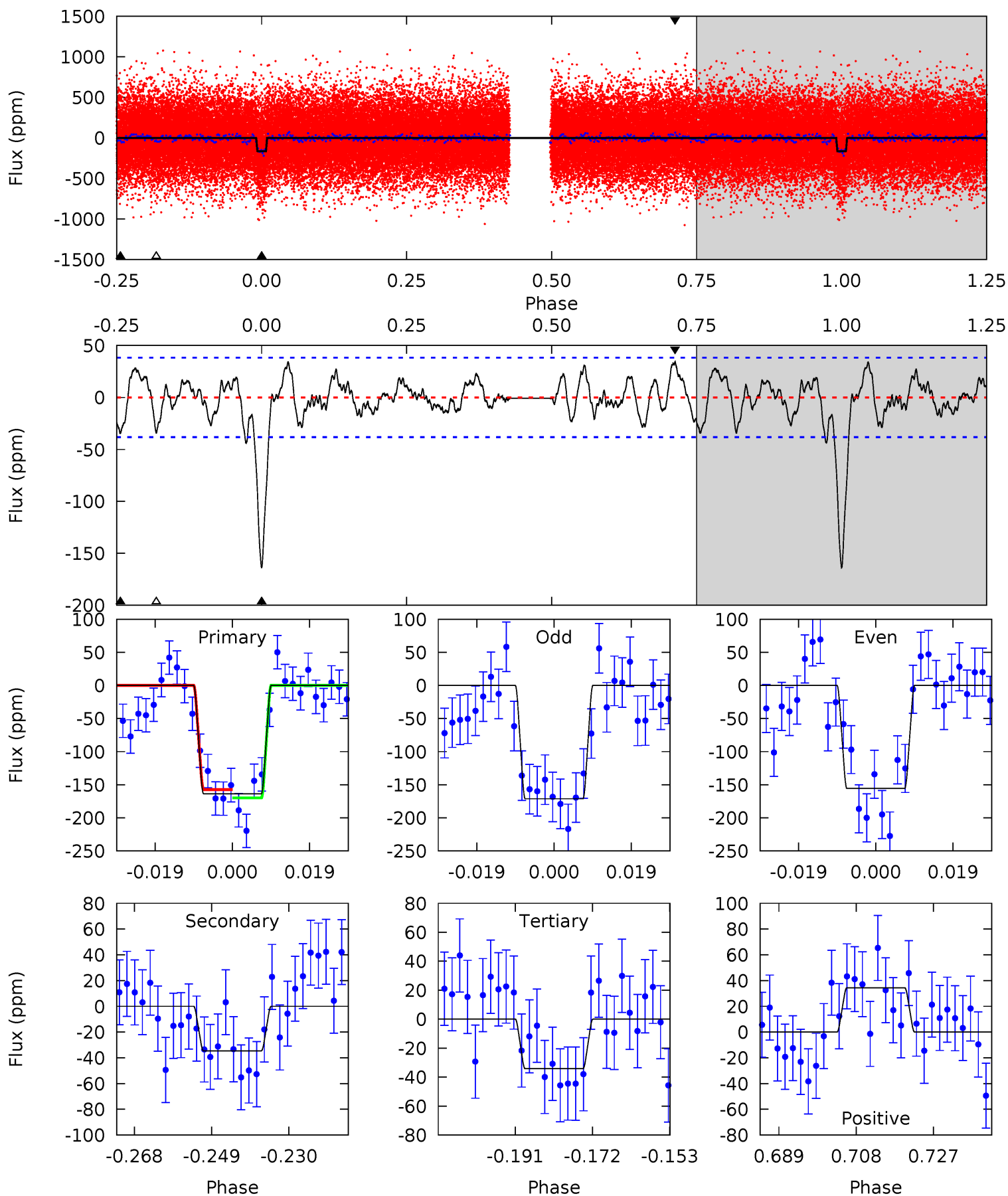
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	6.62	5.25	5.79	4.87	2.28	2.25	17.9	17.3	1.37	0.83	0.57	1.03	0.20	0.83



Alt Model-Shift Uniqueness Test

009468382-02, $P = 11.082878$ Days, $E = 131.507708$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	4.44	4.39	4.42	4.90	2.34	1.80	16.6	16.6	0.05	0.02	0.99	0.95	0.17	0.81



Stellar Parameters For KIC 009468382

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5125^{+136}_{-151}	$3.674^{+0.975}_{-0.325}$	$-0.500^{+0.300}_{-0.300}$	$2.196^{+1.290}_{-1.577}$	$0.831^{+0.230}_{-0.167}$	$0.111^{+3.366}_{-0.072}$
	+3%/-3%	+27%/-9%	+60%/-60%	+59%/-72%	+28%/-20%	+3046%/-65%
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 009468382-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-49 ± 7	$3.63^{+1.38}_{-1.33}$	1521^{+259}_{-306}	3764^{+173}_{-160}	17^{+25}_{-8}
Alt.	-35 ± 8	$2.99^{+1.14}_{-1.13}$	1505^{+259}_{-296}	3778^{+216}_{-208}	19^{+29}_{-10}

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

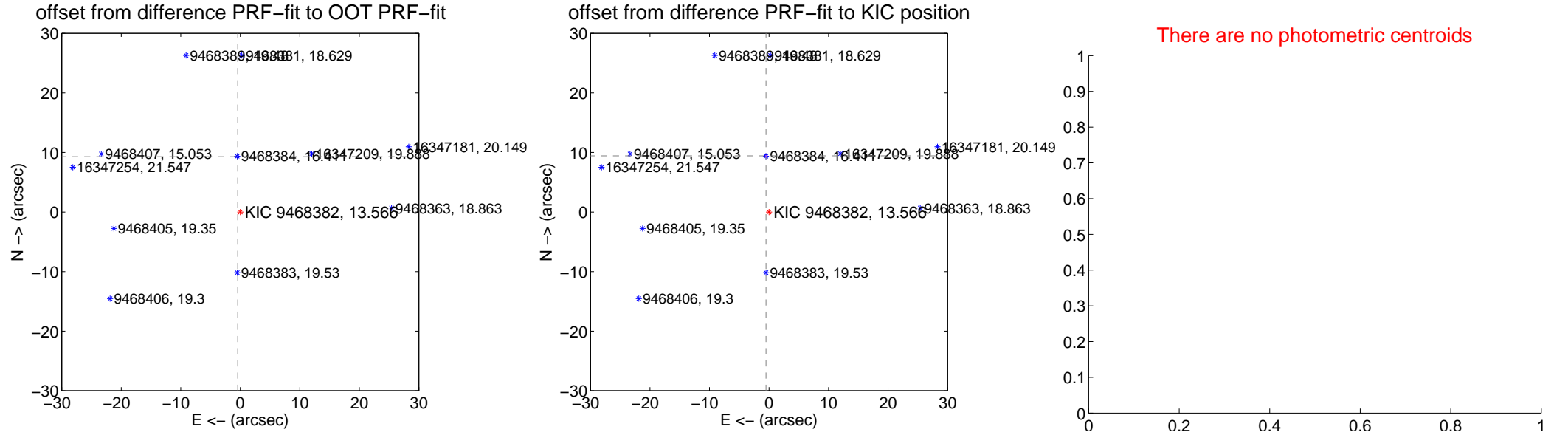
DV Centroid Data

Supplemental centroid analysis for 009468382-02. Kepler magnitude: 13.57. Transit SNR 10.91

There are 17 quarters with good PRF difference image offsets

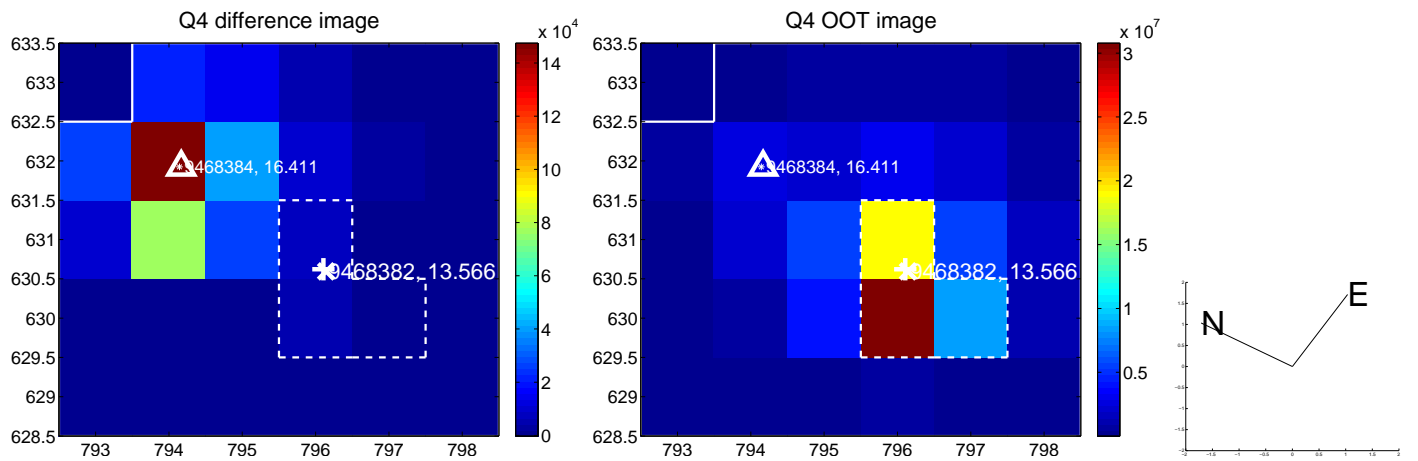
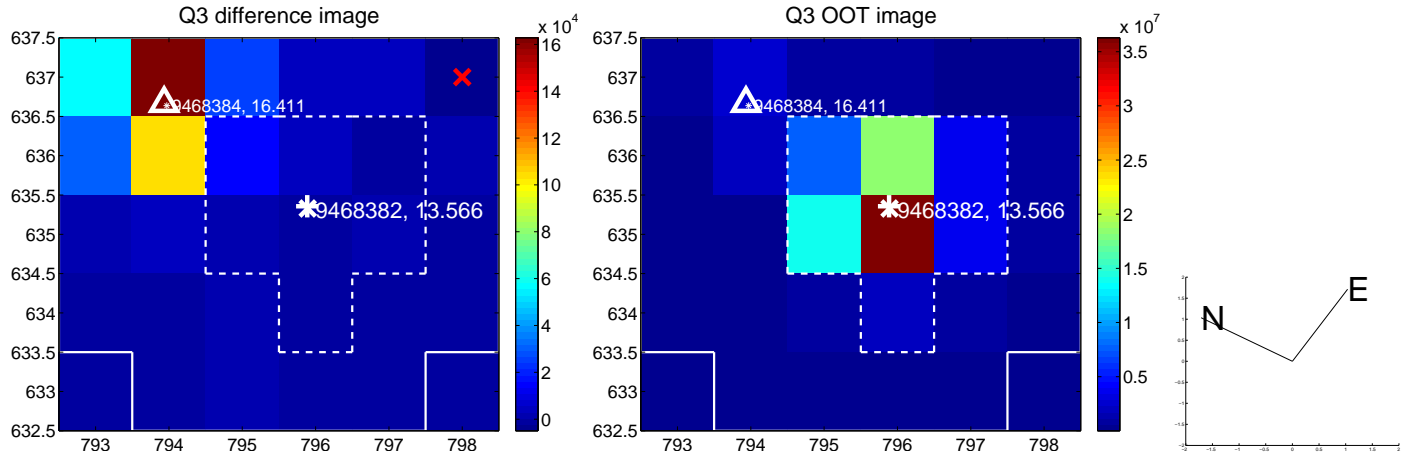
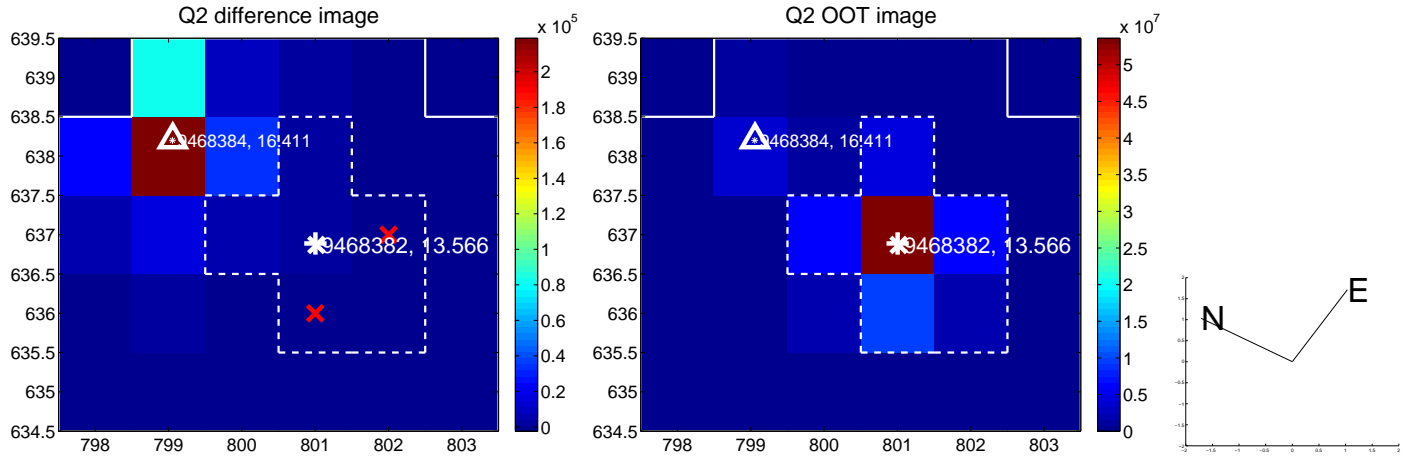
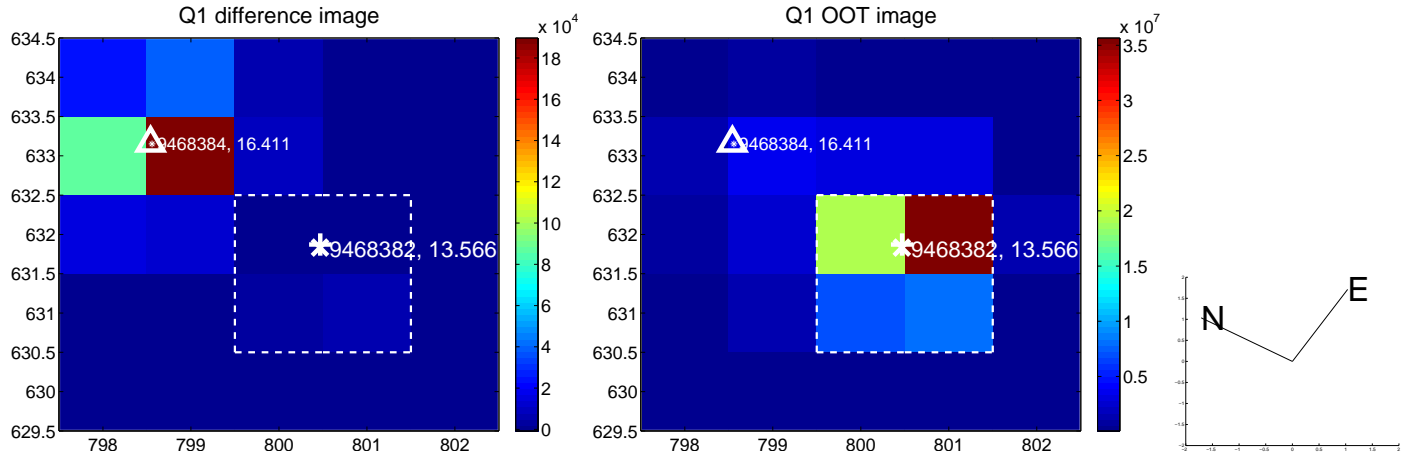
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.301 \pm 0.068	136.61	0.435 \pm 0.068	9.291 \pm 0.068
PRF-fit source offset from KIC position	9.451 \pm 0.070	135.75	0.508 \pm 0.067	9.437 \pm 0.070
photometric centroid source offset	—	—	—	—

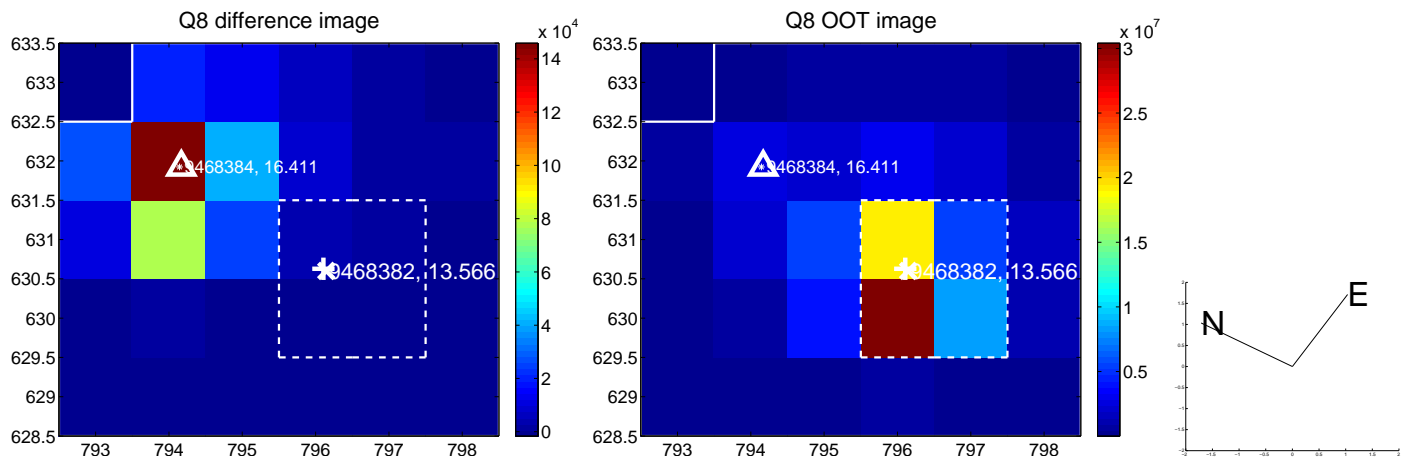
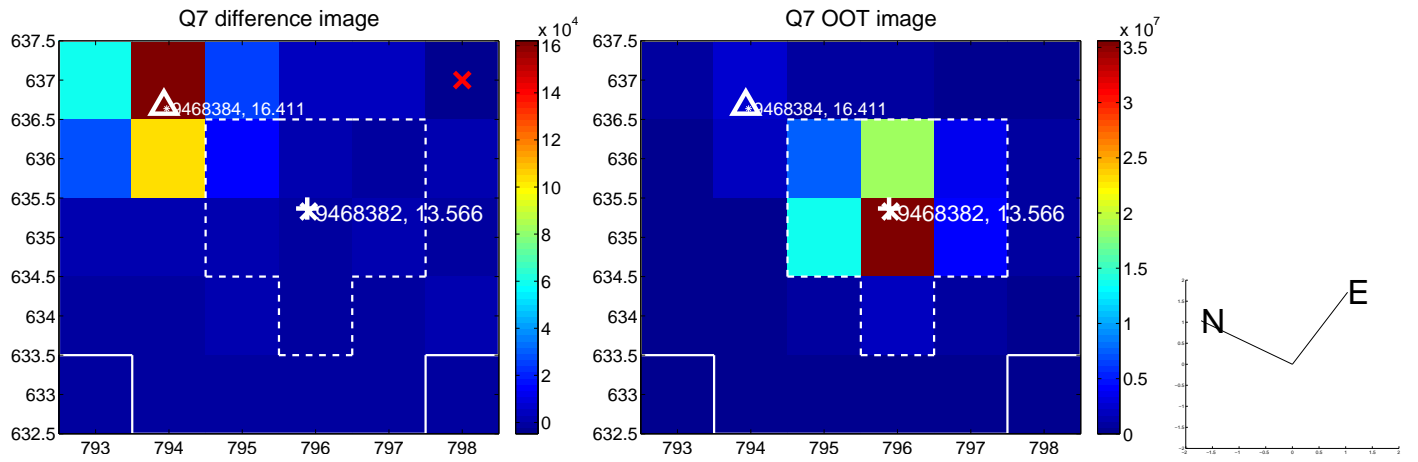
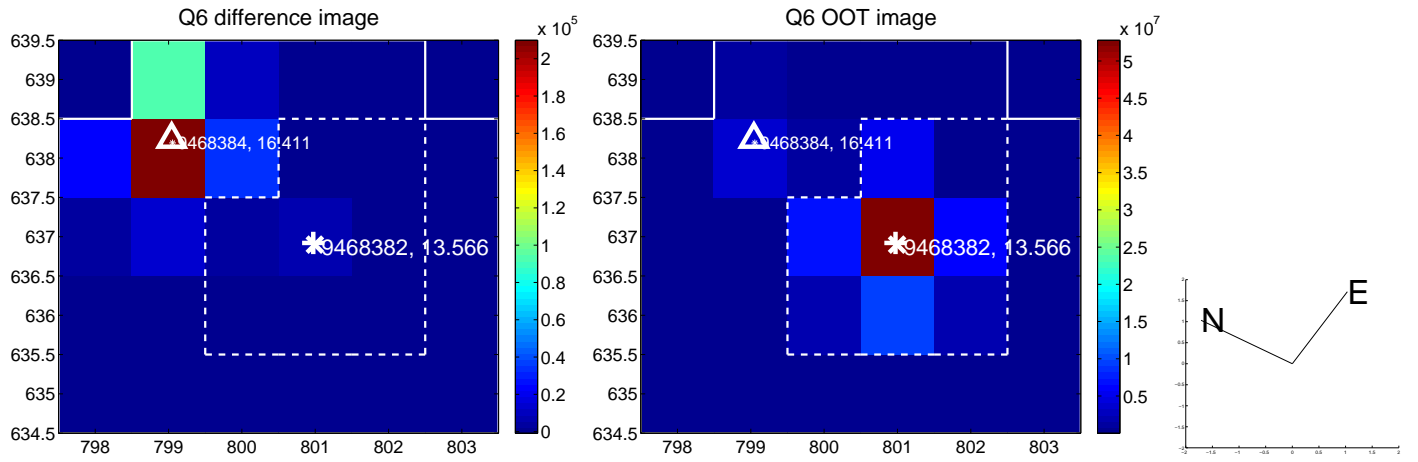
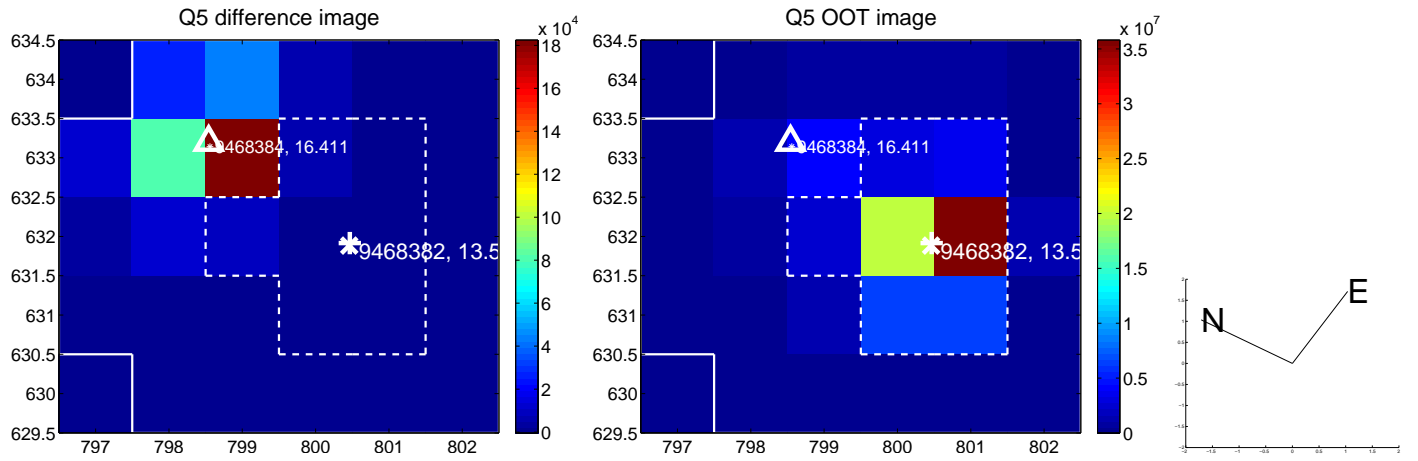


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

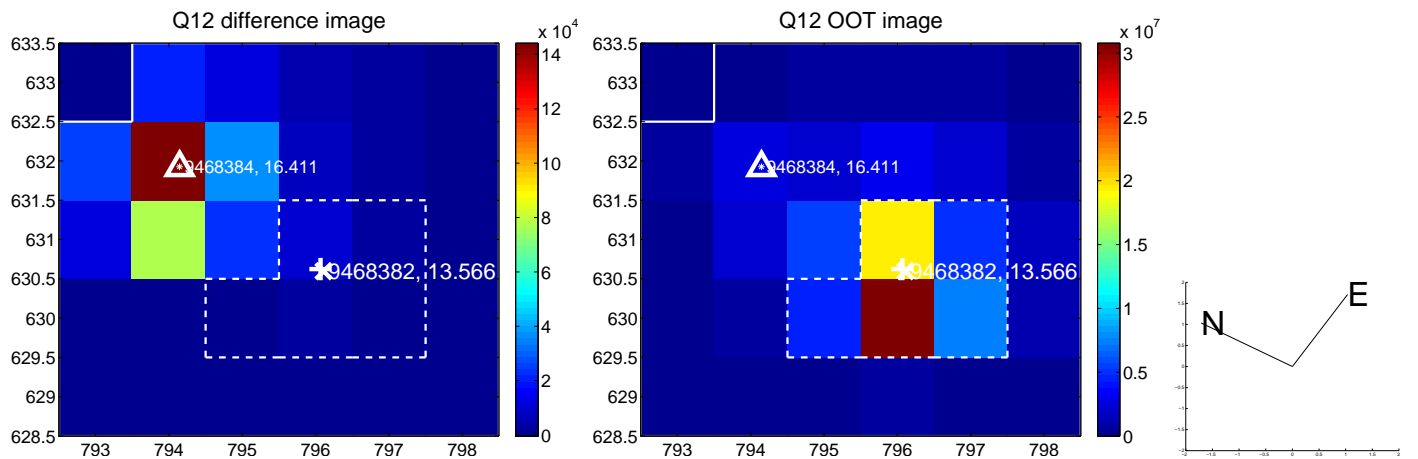
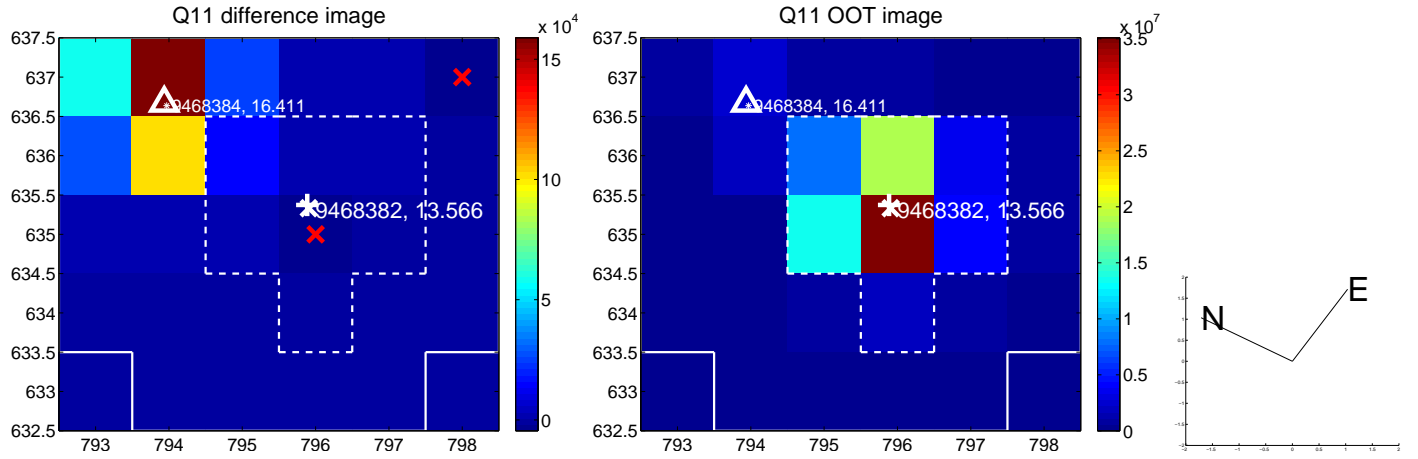
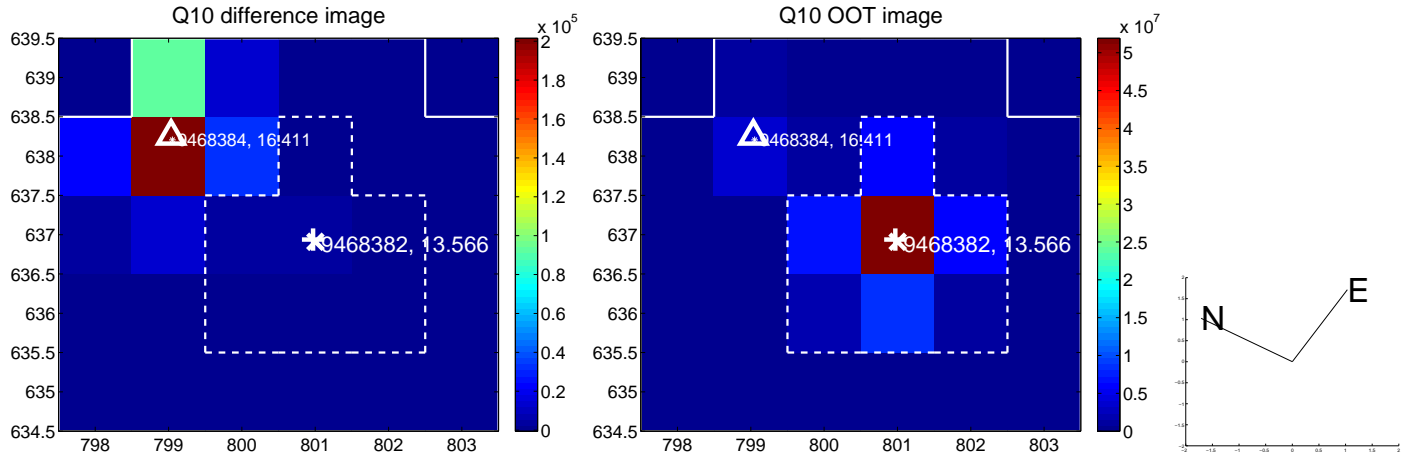
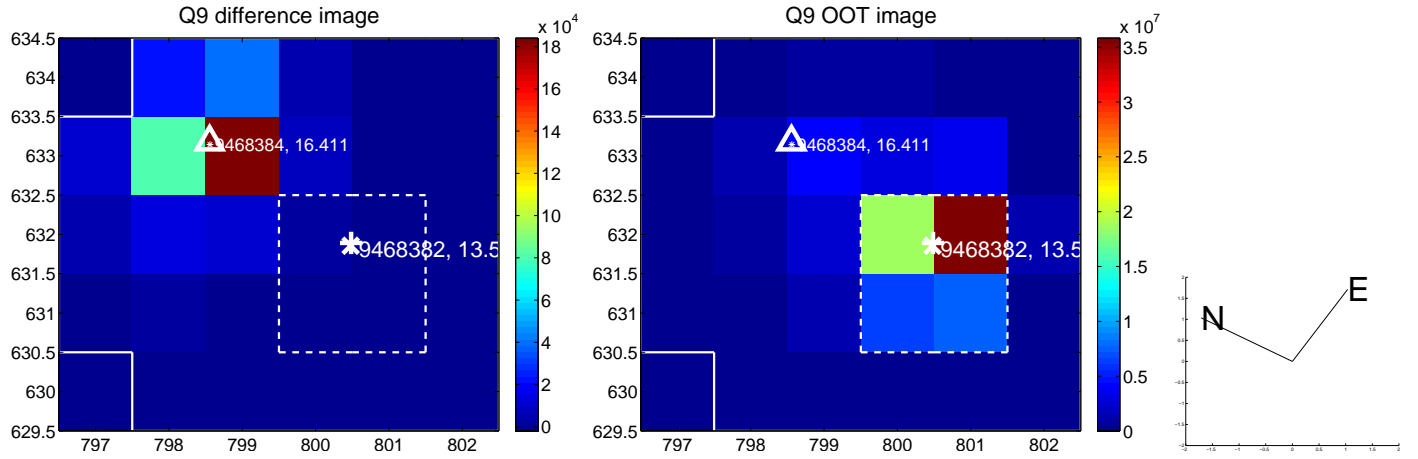
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



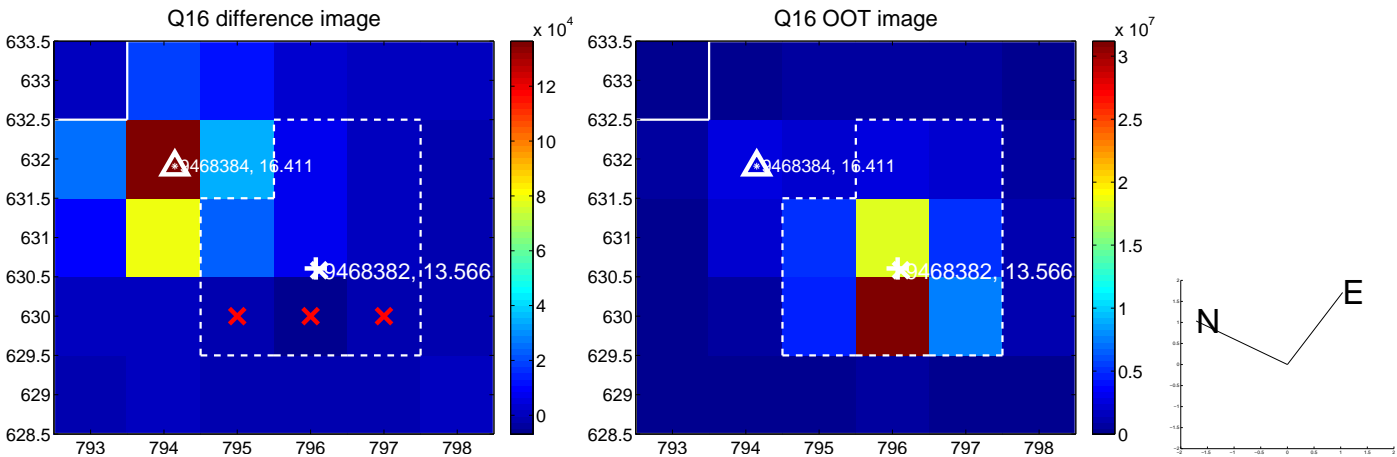
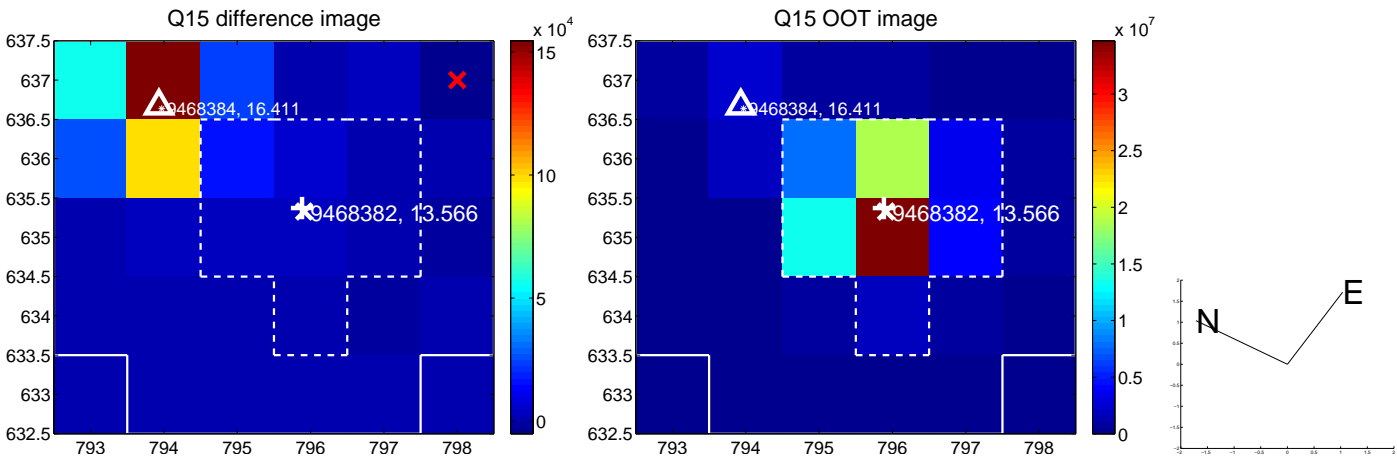
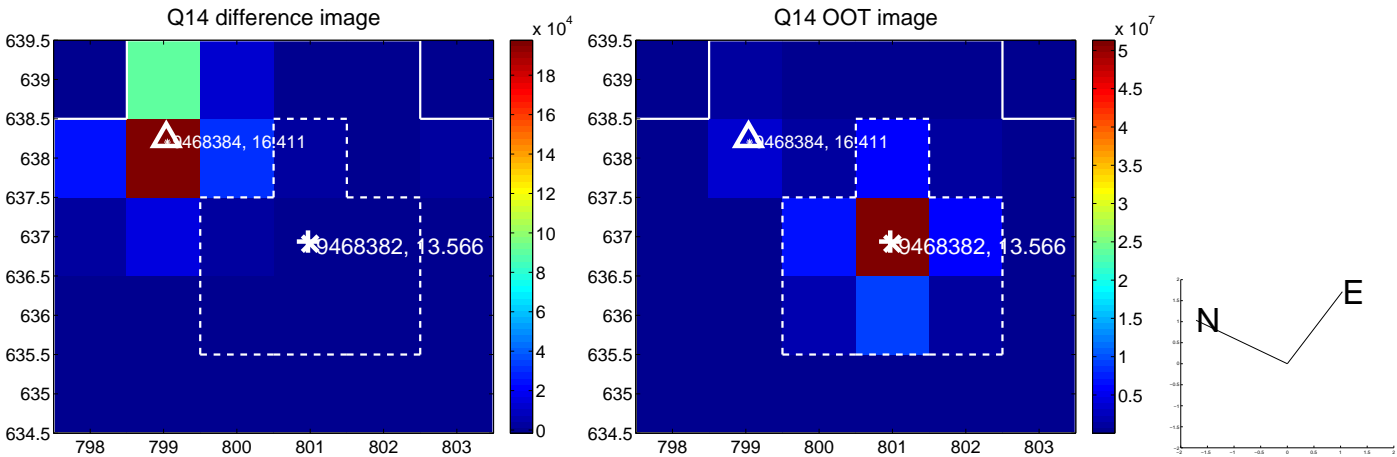
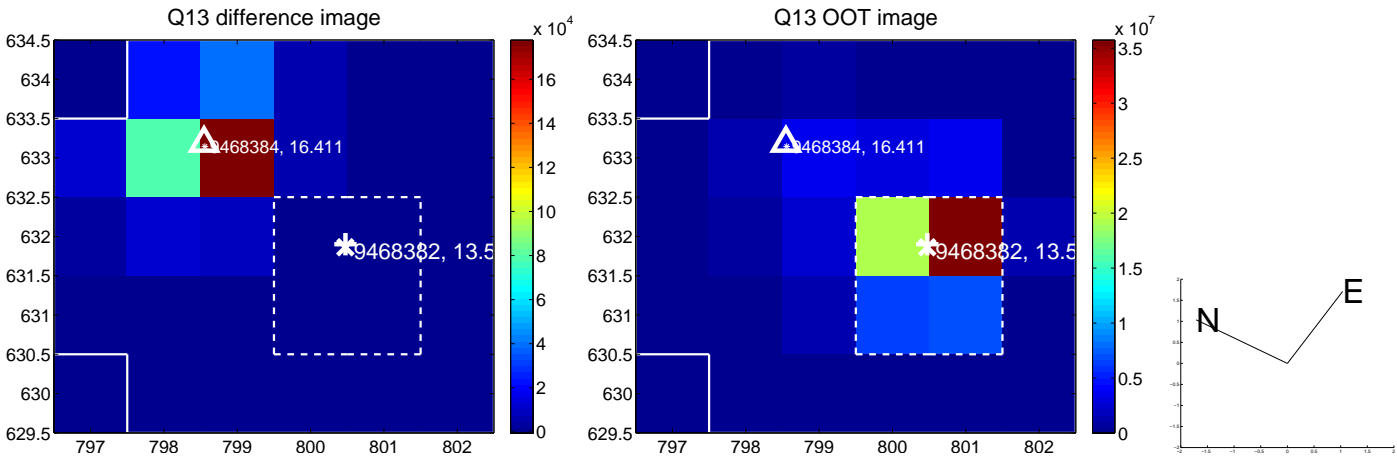
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



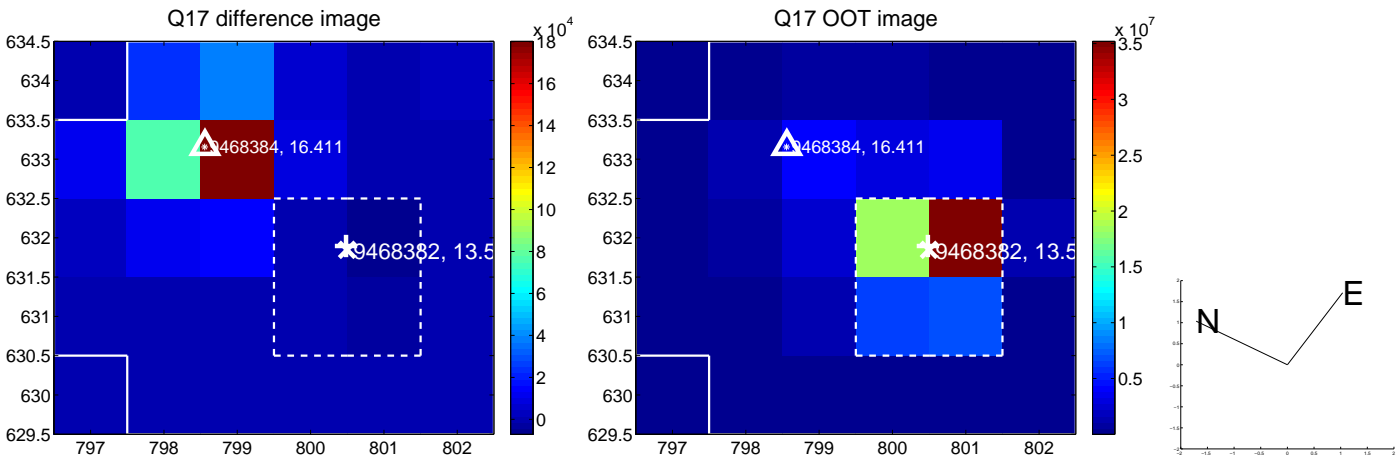
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



folded centroid time series figure for this object.

UKIRT Image

Declination

