

KIC 007877818

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})
007877818-01	OBS	No	9.449454	136.023660	1343.1	6.161	84.6	63.2	2.66	5092	19.55	477.45
007877818-02	OBS	3816.01	9.449431	132.451503	1167.1	6.354	73.4	62.2	2.66	5092	18.30	477.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007877818-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
007877818-02	OBS	FP	0.00	1	0	1	1	SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—HALO_GHOST—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 007877818-01

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
007877818-01	7877818	3530.01	7877824	1:1	8.2	-1	-2	15.65	13.82	373.61	Direct-PRF	0	0.11	0.09

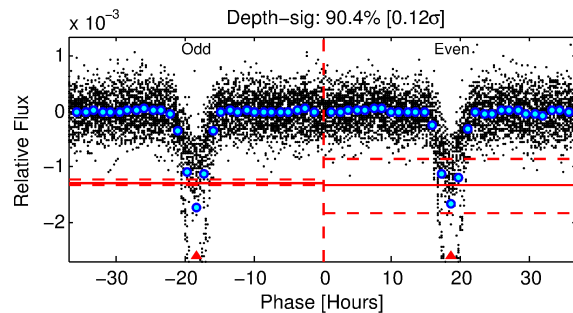
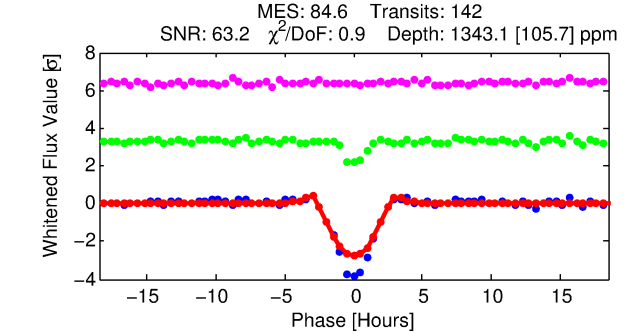
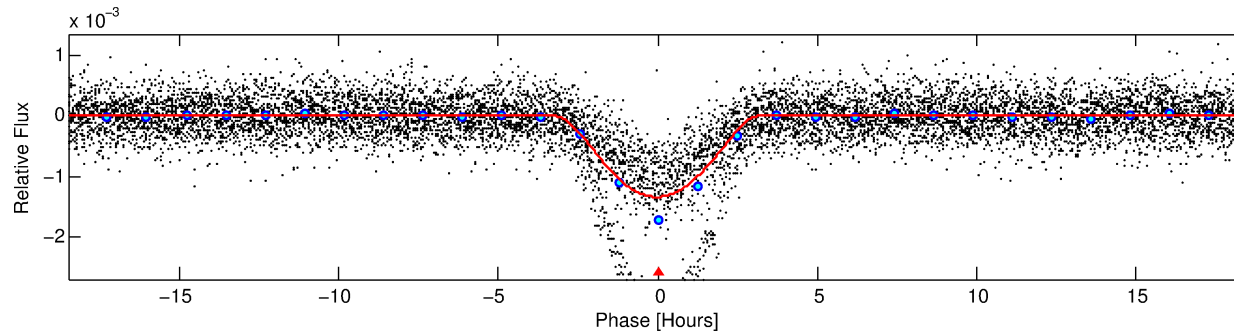
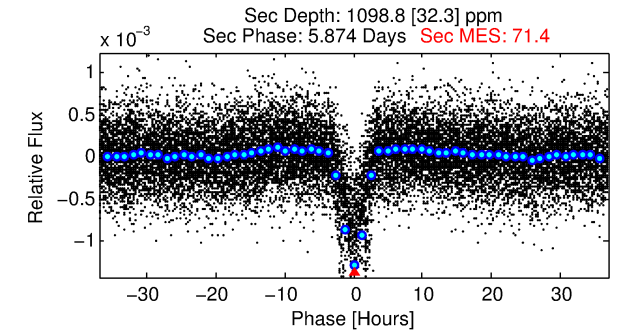
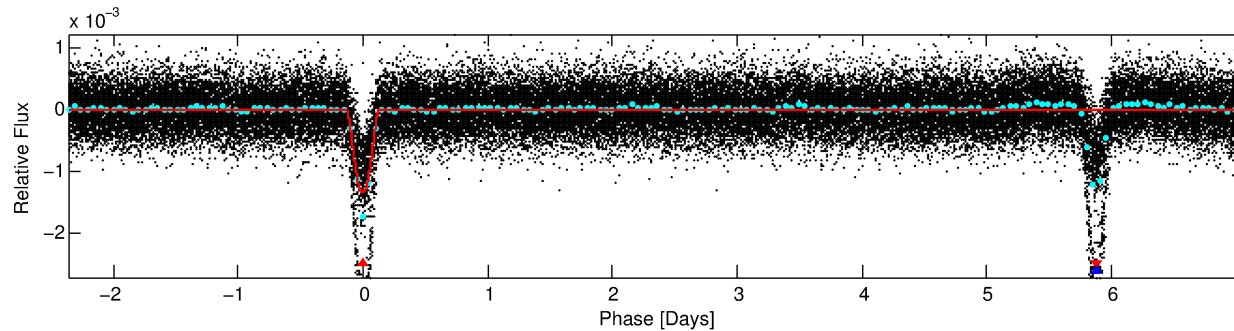
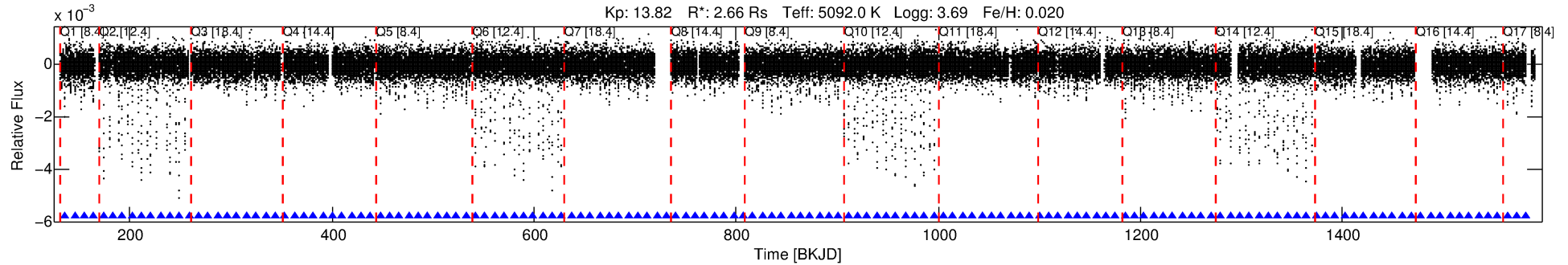
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 7877818 Candidate: 1 of 2 Period: 9.449 d

KOI: K03816 Corr: No Ephemeris Match

Kp: 13.82 R*: 2.66 Rs Teff: 5092.0 K Logg: 3.69 Fe/H: 0.020



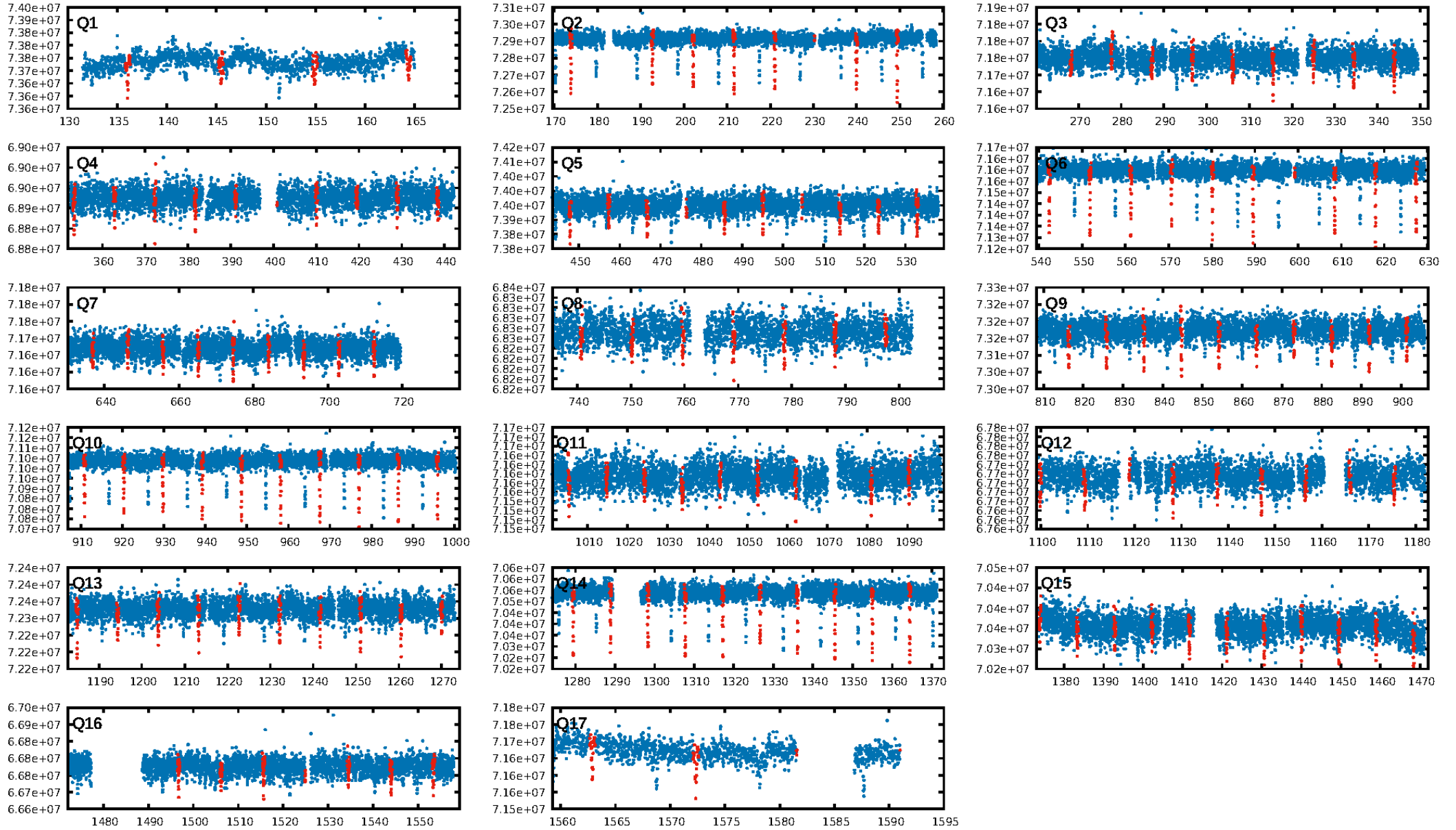
DV Fit Results:

Period = 9.44945 [0.00002] d
Epoch = 136.0237 [0.0018] BKJD
Rp/R* = 0.0672 [0.0260]
a/R* = 4.49 [0.36]
b = 1.00 [0.03]
Seff = 477.45 [661.74]
Teq = 1192 [413] K
Rp = 19.55 [15.39] Re
a = 0.0946 [0.0753] AU
Ag = 14.16 [22.40] [0.59σ]
Teffp = 3575 [701] K [2.93σ]

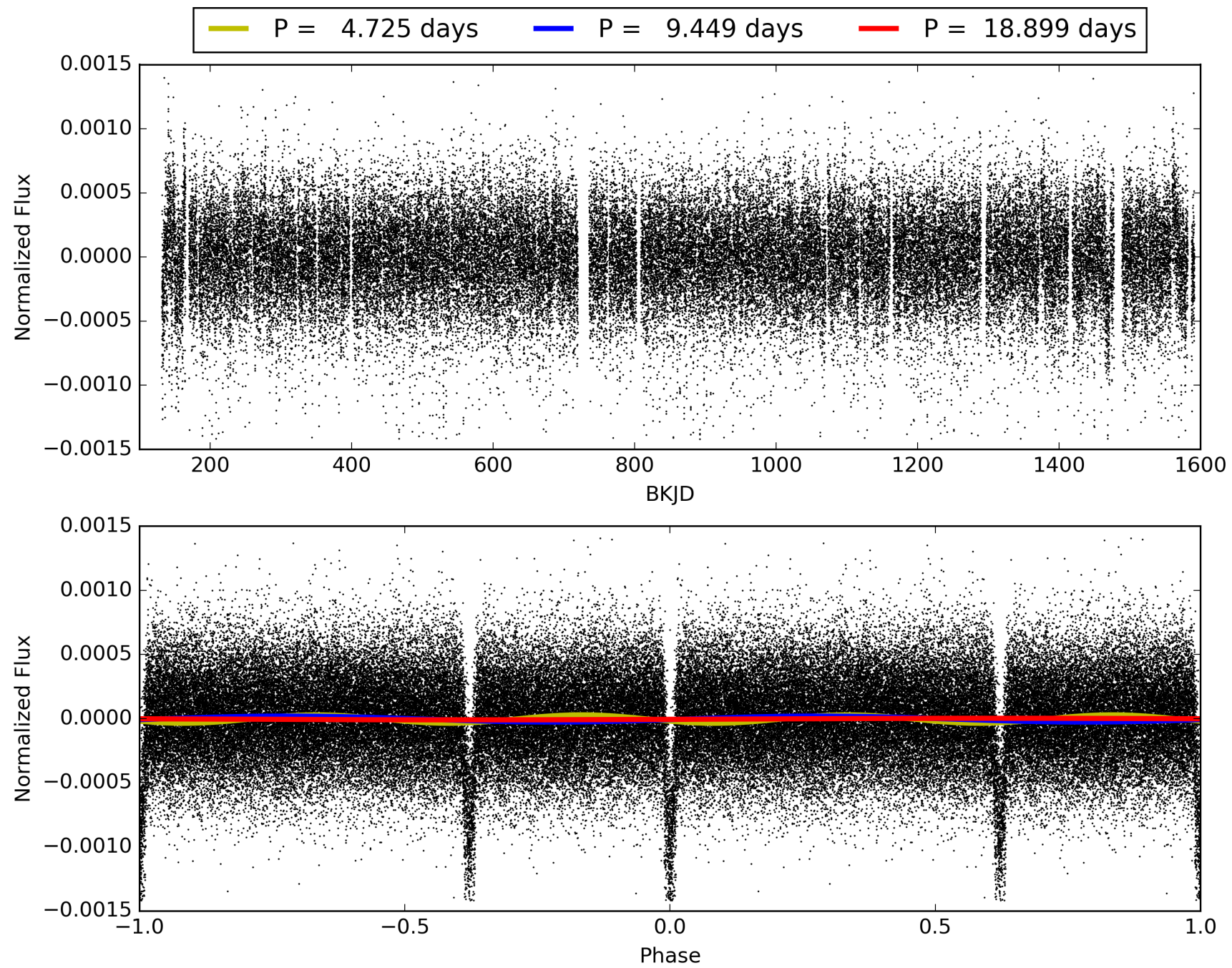
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [136/136]
GhostDiagnostic-chr: -0.1279
Centroid-sig: 0.0%
Centroid-so: 31.653 arcsec [627.52σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [17/17]

TCE 007877818-01, PDC Light Curves

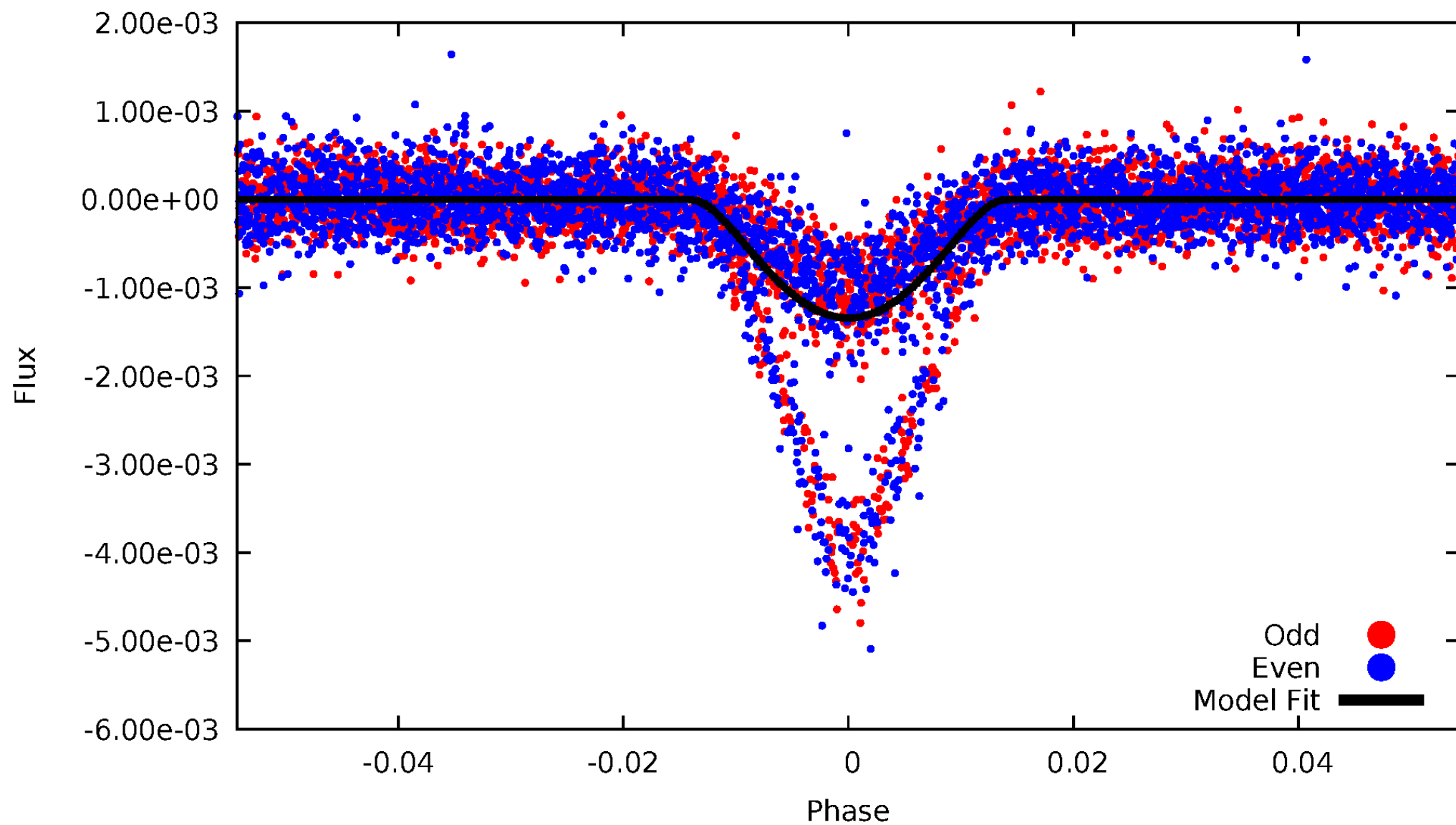


TCE 007877818-01



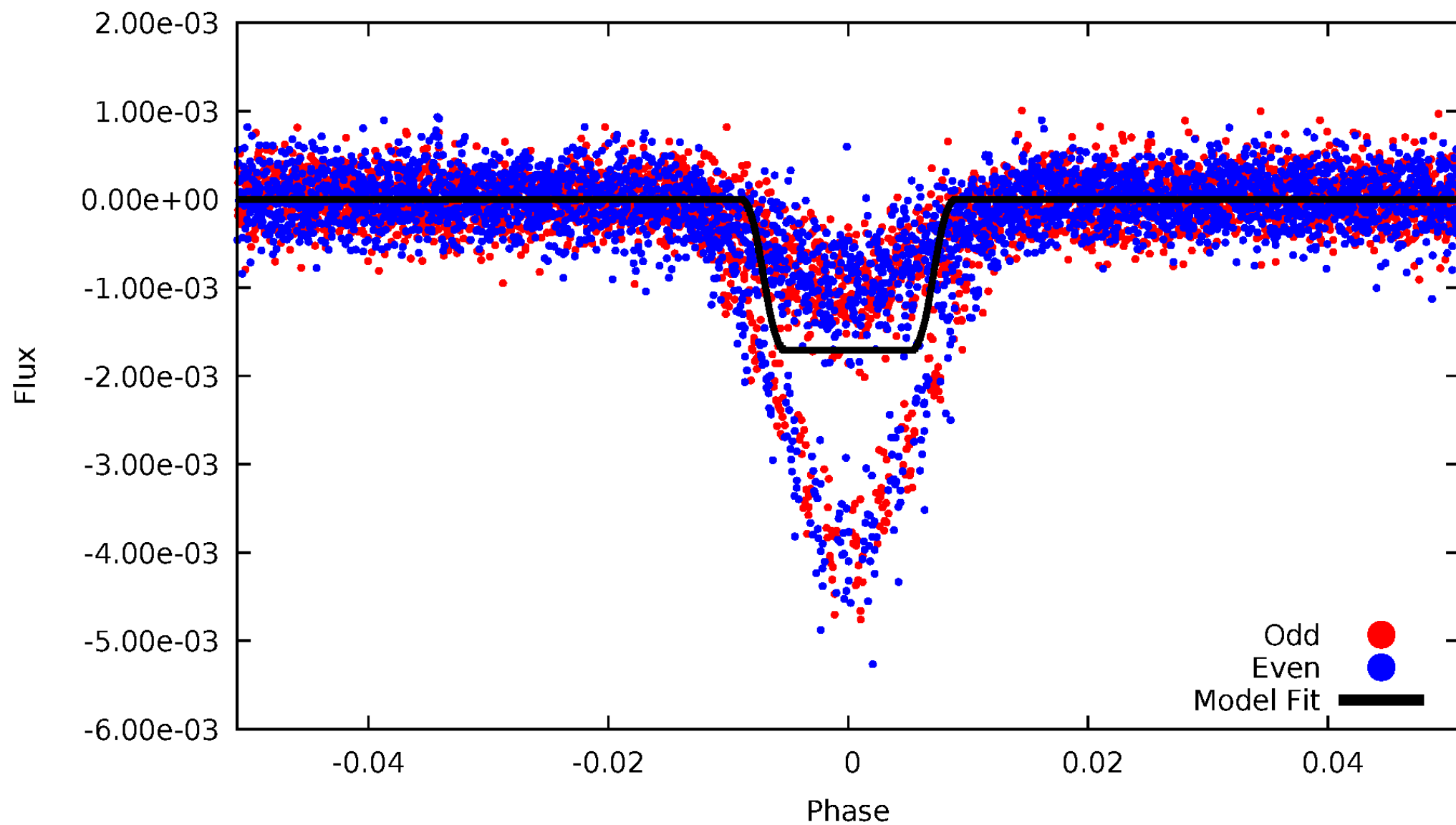
DV Odd/Even

TCE 007877818-01



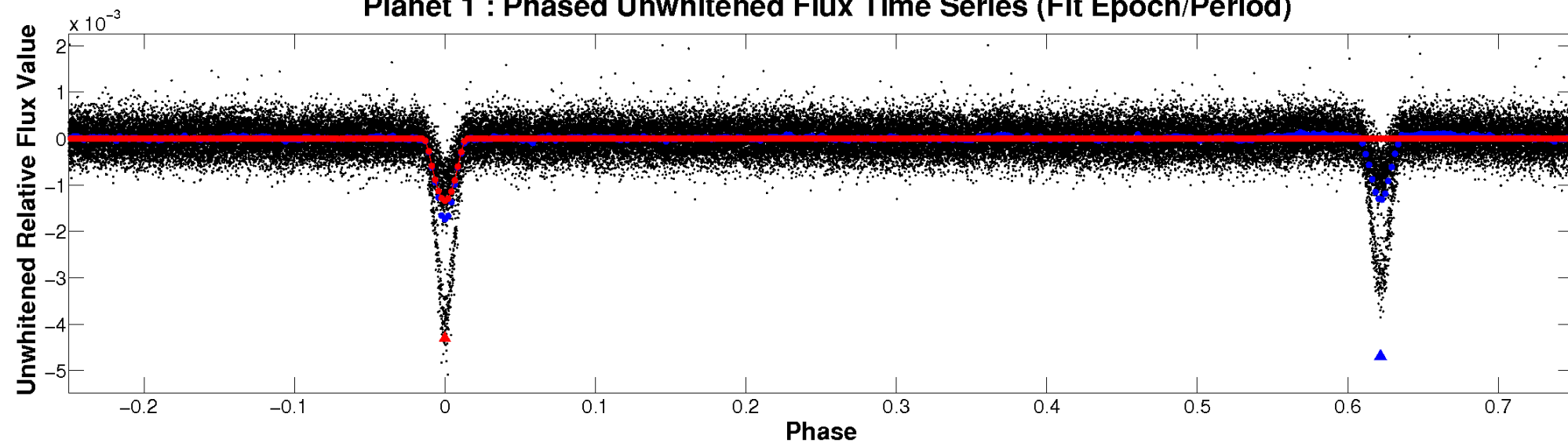
ALT Odd/Even

TCE 007877818-01

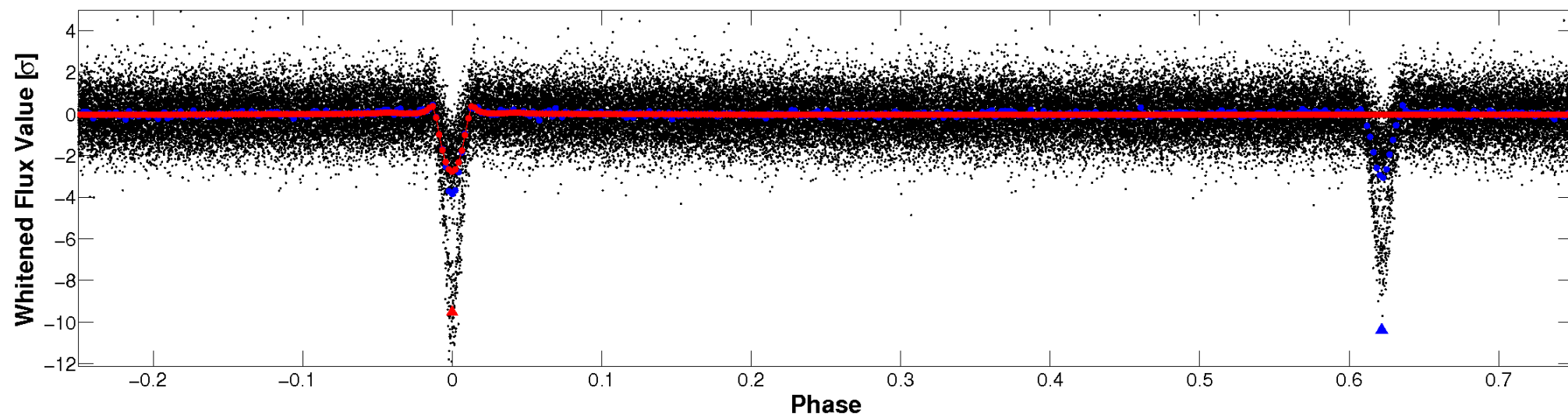


Non-Whitened Vs. Whitened Light Curve

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

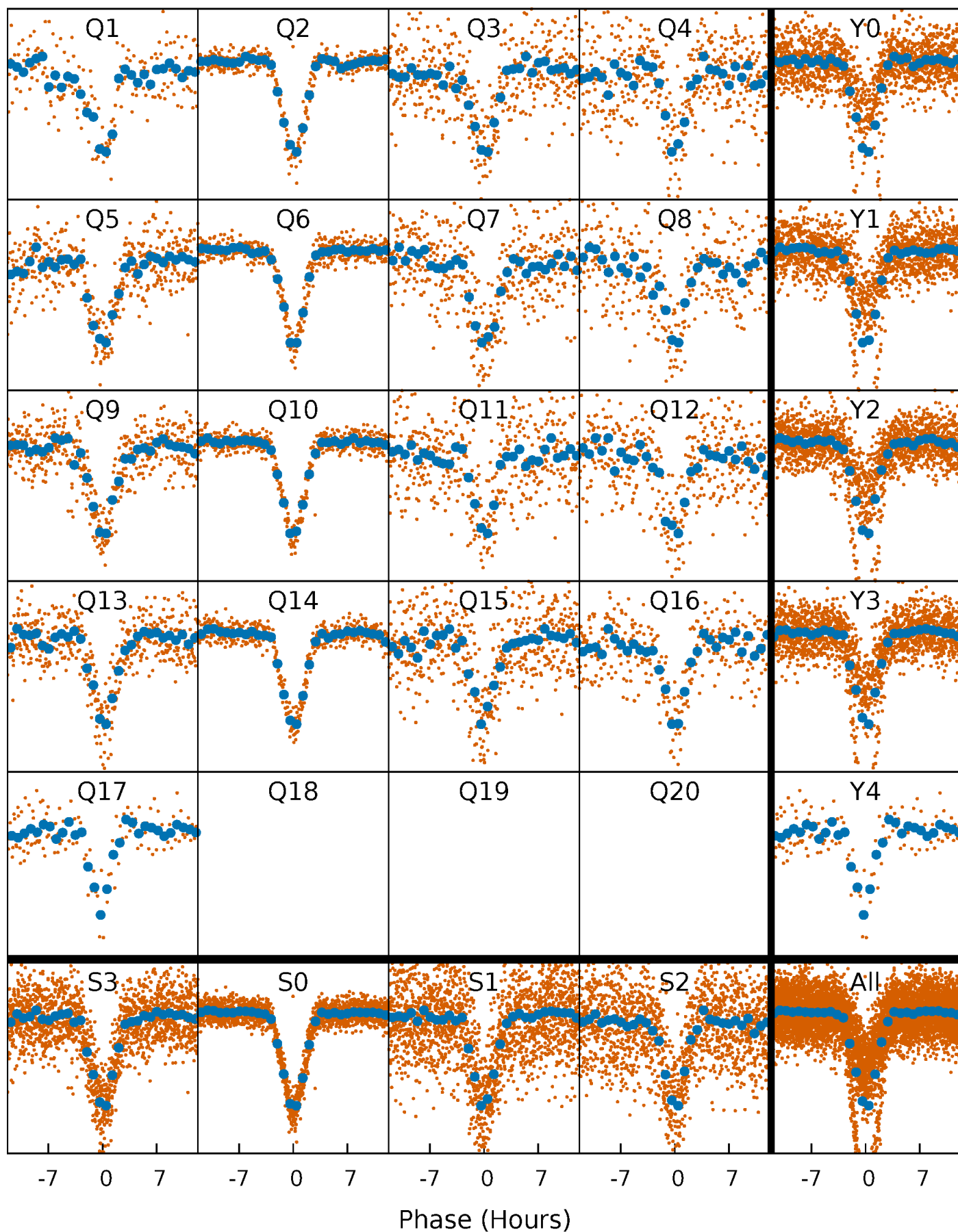


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



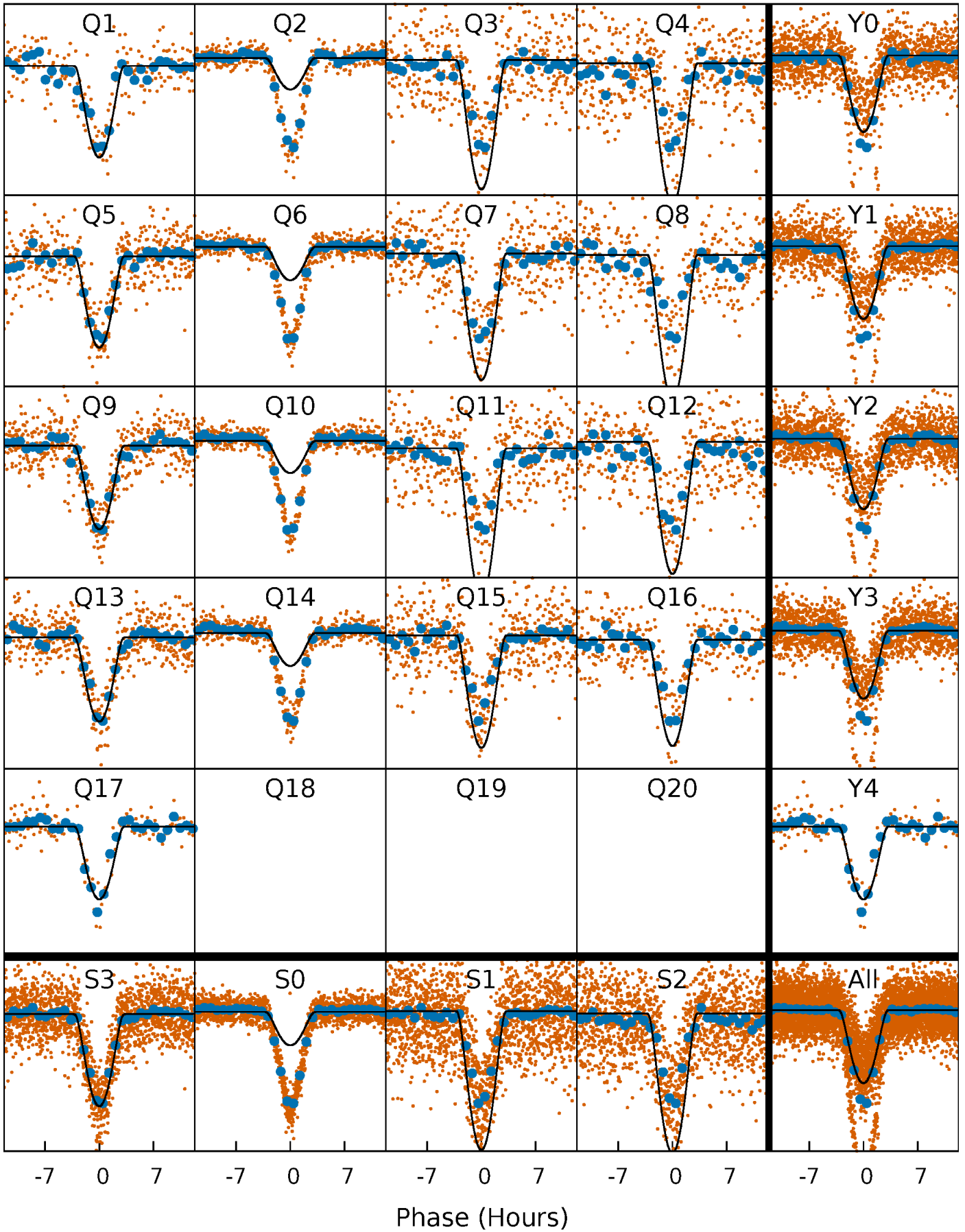
PDC Quarter-Phased Transit Curves

TCE 007877818-01 P= 9.449454 Days $T_0=136.023660$ (BKJD)



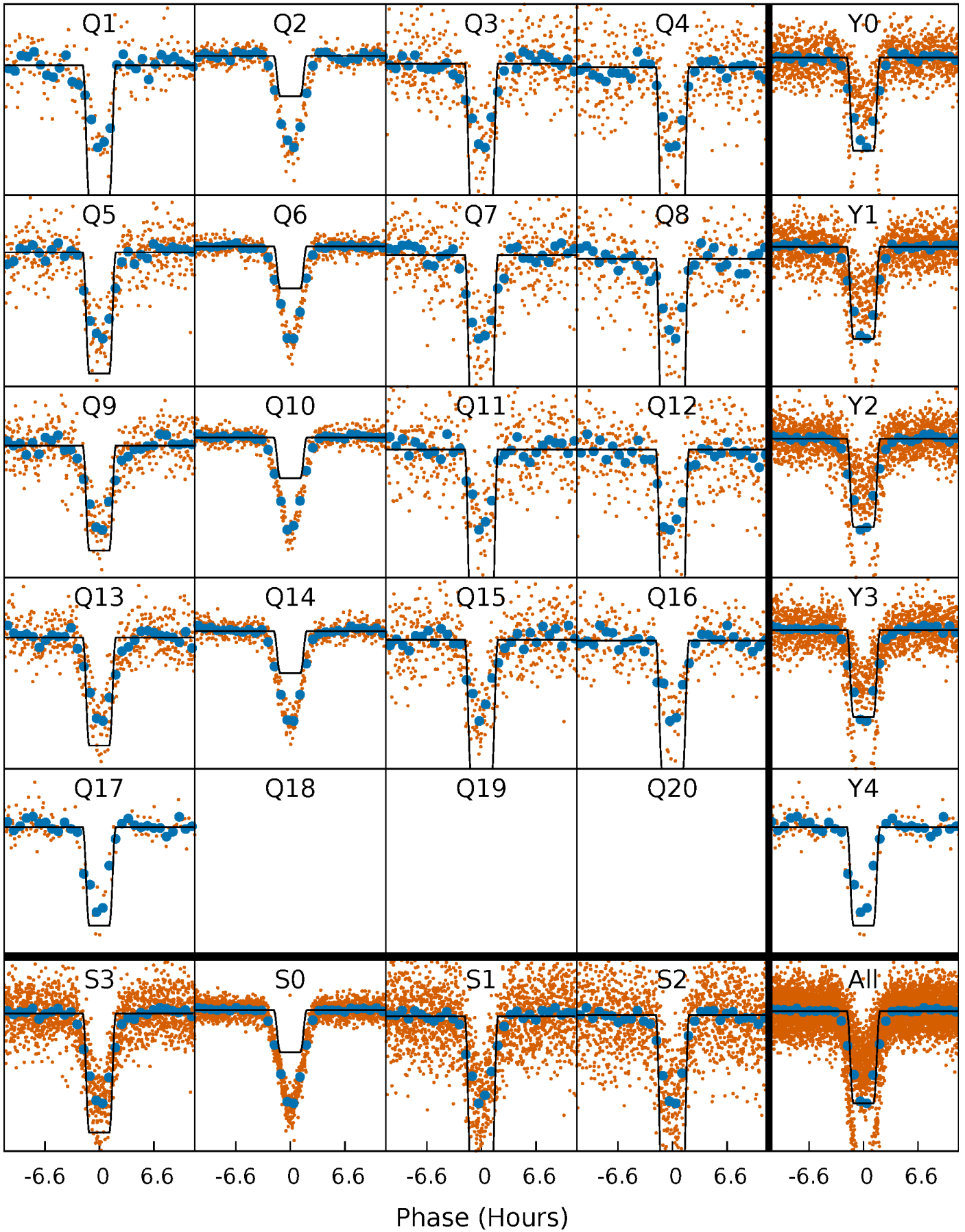
DV Quarter-Phased Transit Curves

TCE 007877818-01 P= 9.449454 Days $T_0=136.023660$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

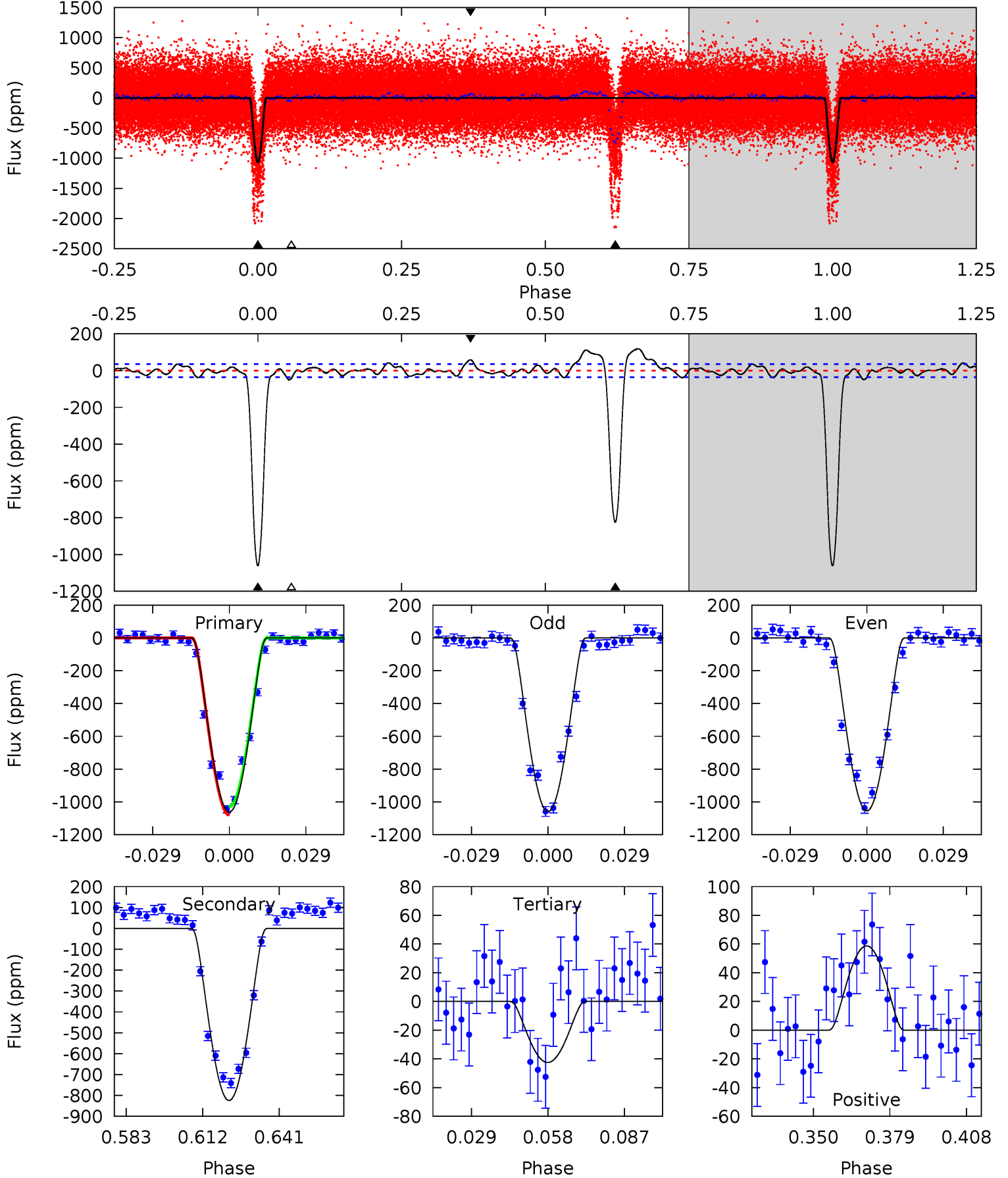
TCE 007877818-01 P= 9.449475 Days $T_0=136.022966$ (BKJD)



DV Model-Shift Uniqueness Test

007877818-01, P = 9.449454 Days, E = 126.574206 Days

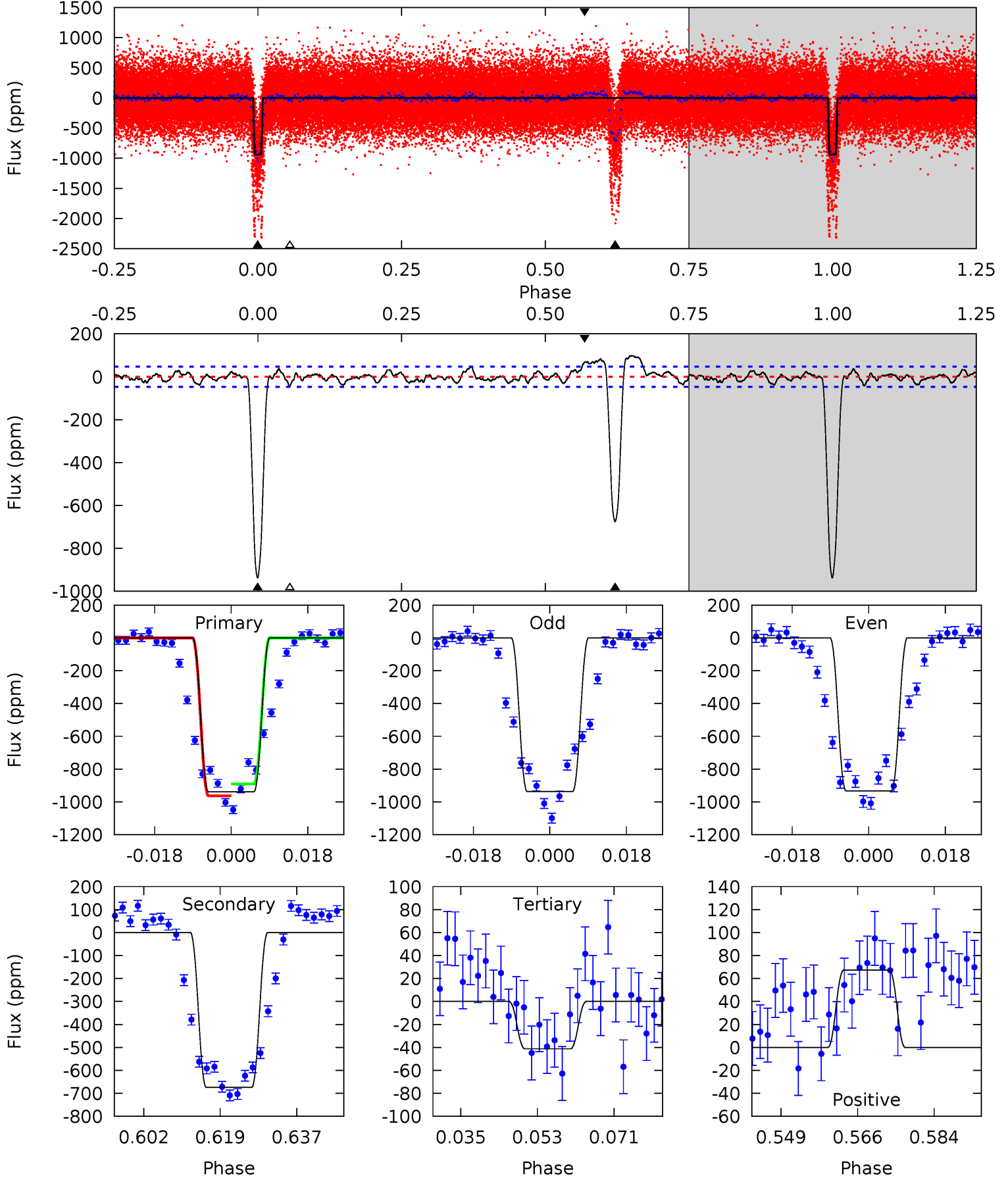
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
144.2	112.0	5.77	7.98	4.82	2.18	4.30	138.4	136.2	106.2	104.0	0.32	1.45	0.10	3.28



Alt Model-Shift Uniqueness Test

007877818-01, P = 9.449475 Days, E = 126.573491 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.4	70.1	4.29	6.99	4.92	2.37	2.75	93.1	90.4	65.8	63.1	0.24	1.49	0.09	3.55



Stellar Parameters For KIC 007877818

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5092^{+168}_{-137}	$3.689^{+0.848}_{-0.283}$	$0.020^{+0.250}_{-0.250}$	$2.664^{+0.984}_{-1.827}$	$1.265^{+0.177}_{-0.414}$	$0.094^{+2.262}_{-0.050}$
	+3%/-3%	+23%/-8%	+1250%/-1250%	+37%/-69%	+14%/-33%	+2401%/-53%
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 007877818-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-824 ± 7	$17.12^{+10.77}_{-8.33}$	1638^{+208}_{-301}	3687^{+764}_{-400}	13^{+38}_{-8}
Alt.	-674 ± 10	$10.91^{+8.97}_{-6.50}$	1643^{+195}_{-280}	4128^{+1626}_{-626}	27^{+133}_{-19}

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

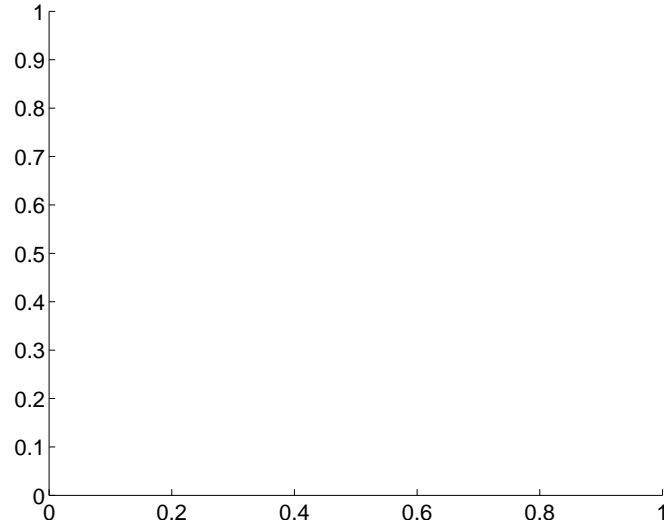
Supplemental centroid analysis for 007877818-01. Kepler magnitude: 13.82. Transit SNR 63.21

There are 0 quarters with good PRF difference image offsets

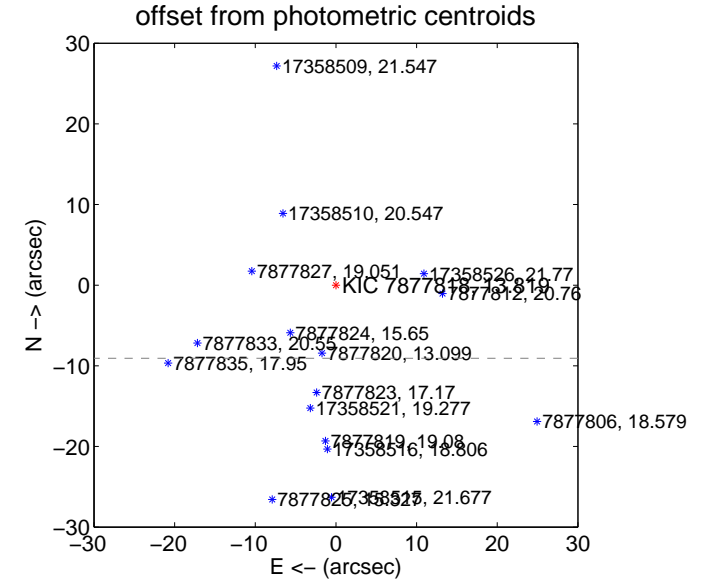
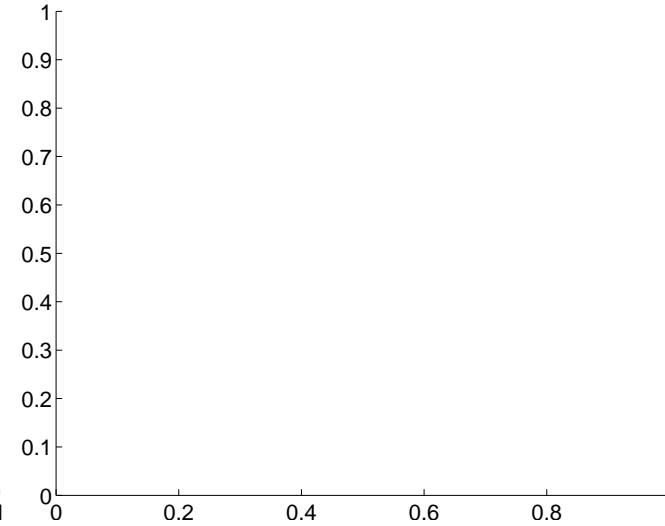
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	31.65 ± 0.05	627.52	30.33 ± 0.05	-9.07 ± 0.07

There is no PRF-fit offset from OOT-fit

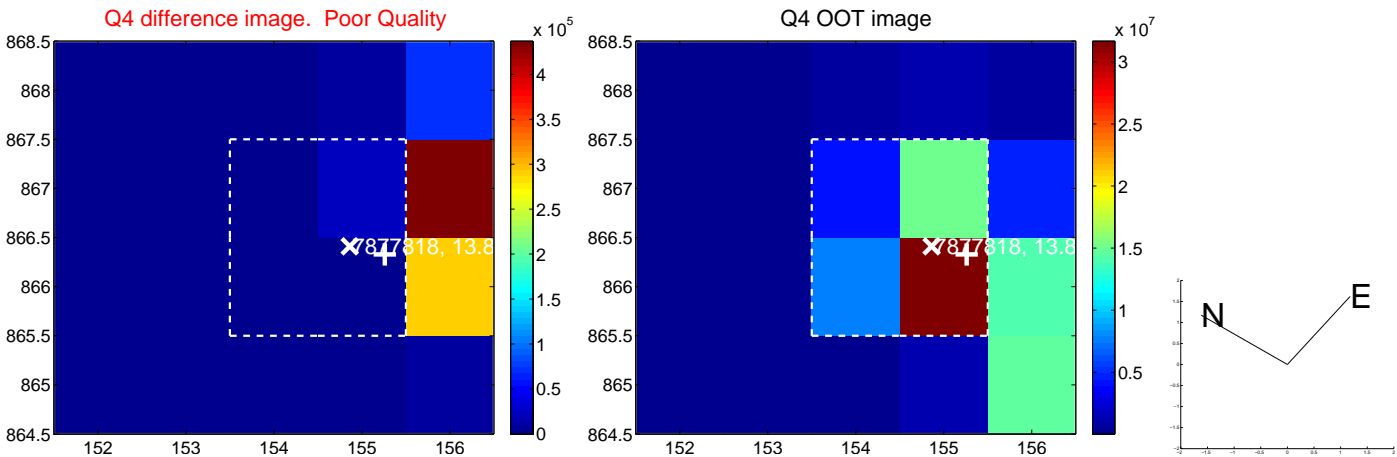
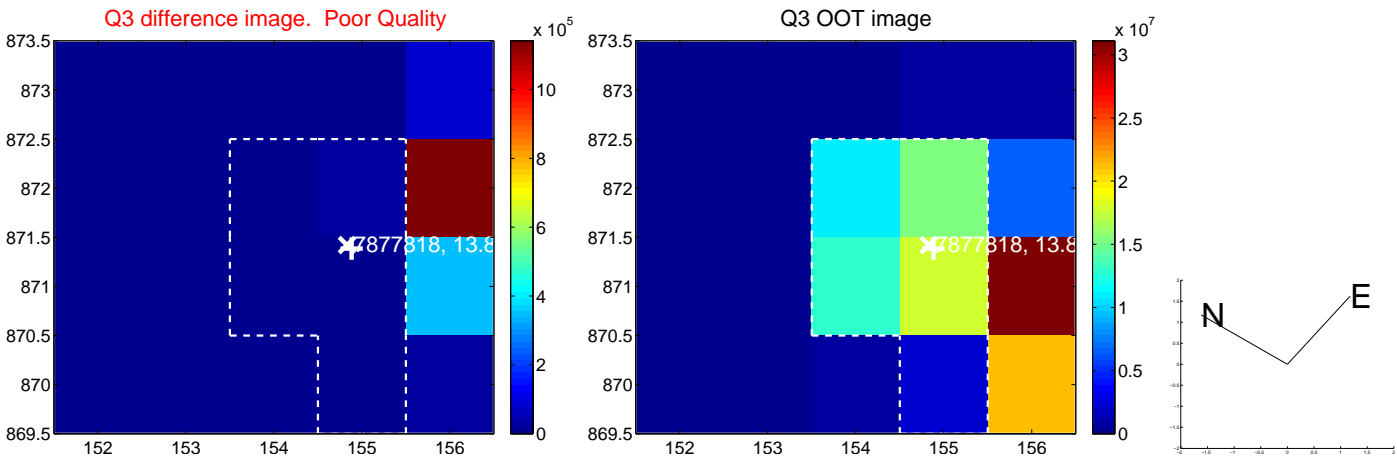
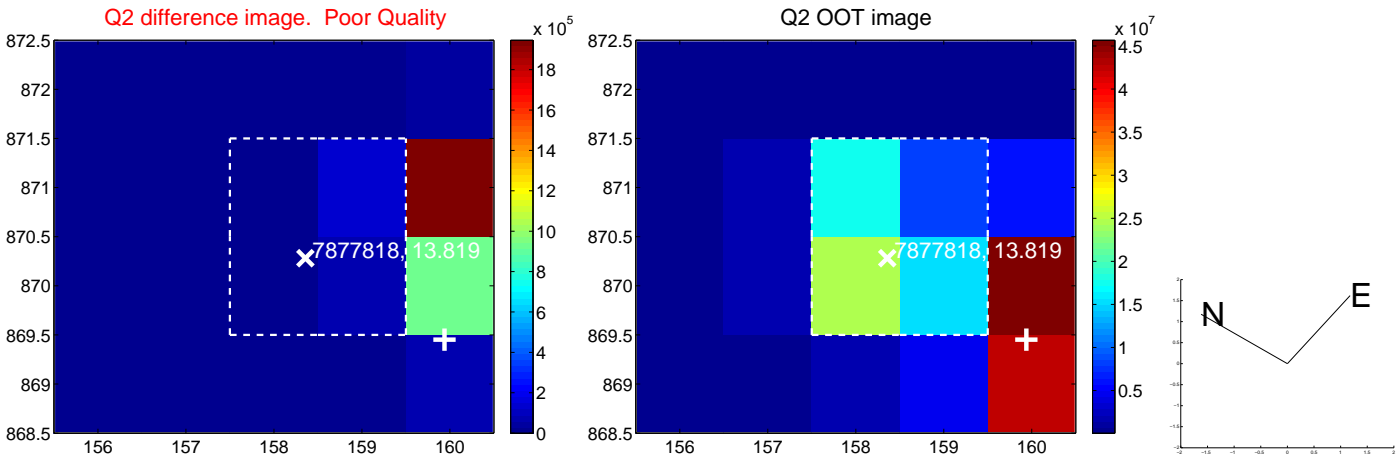
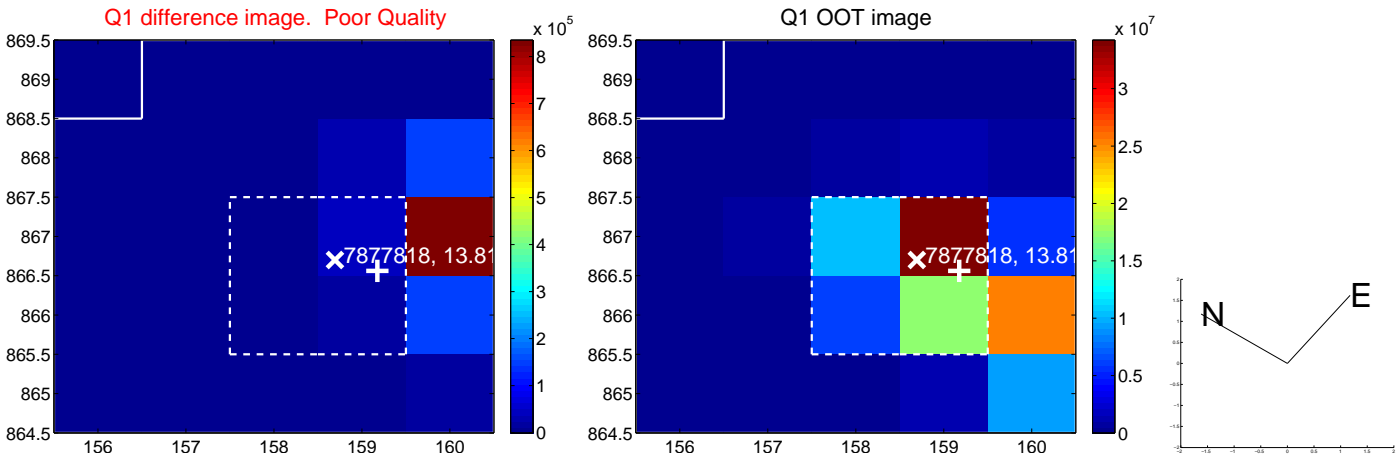


There is no PRF-fit offset from KIC

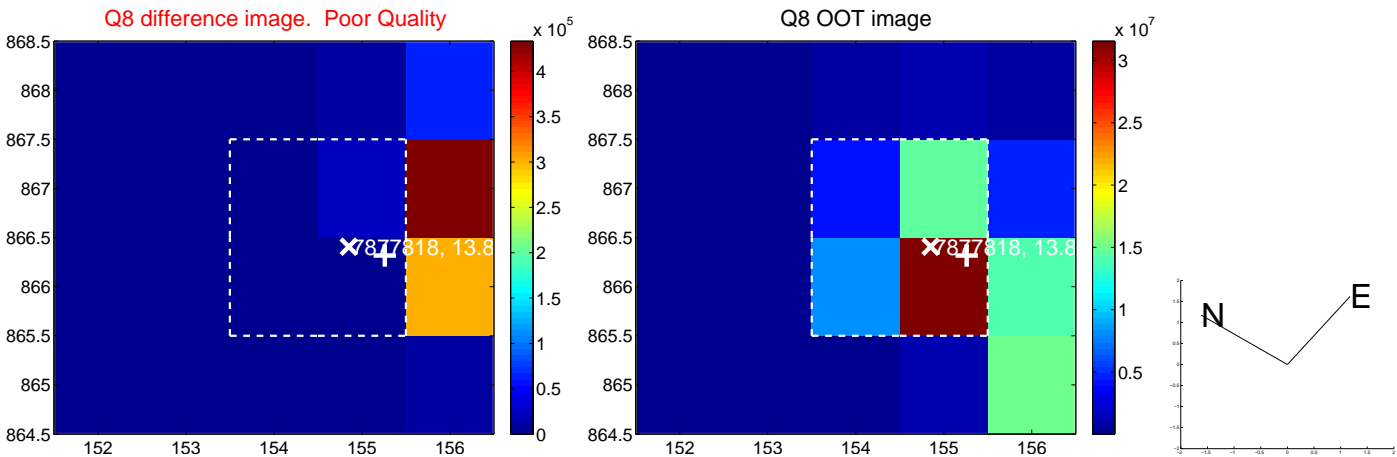
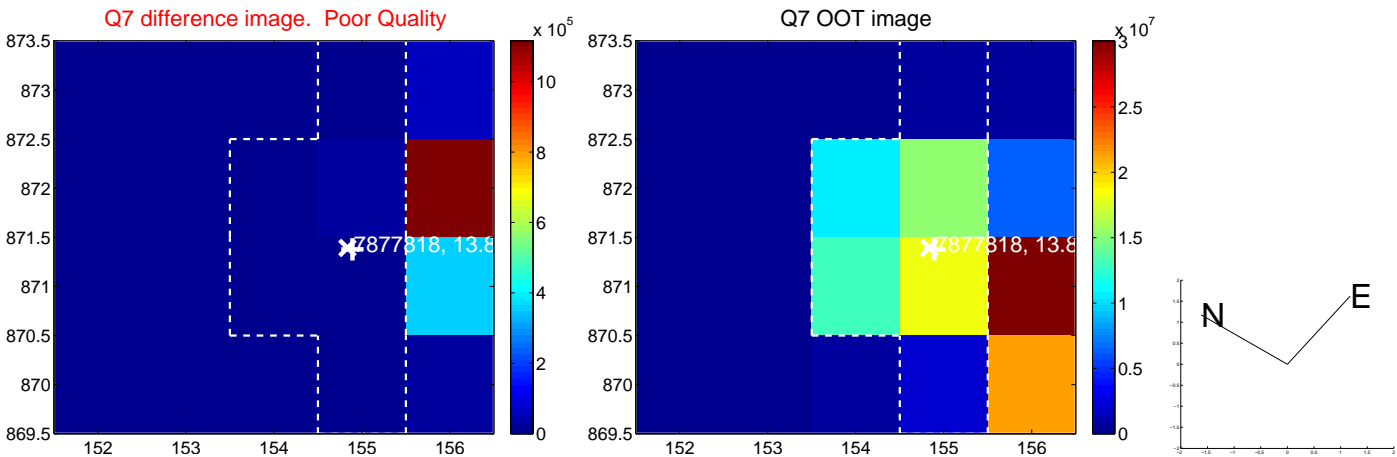
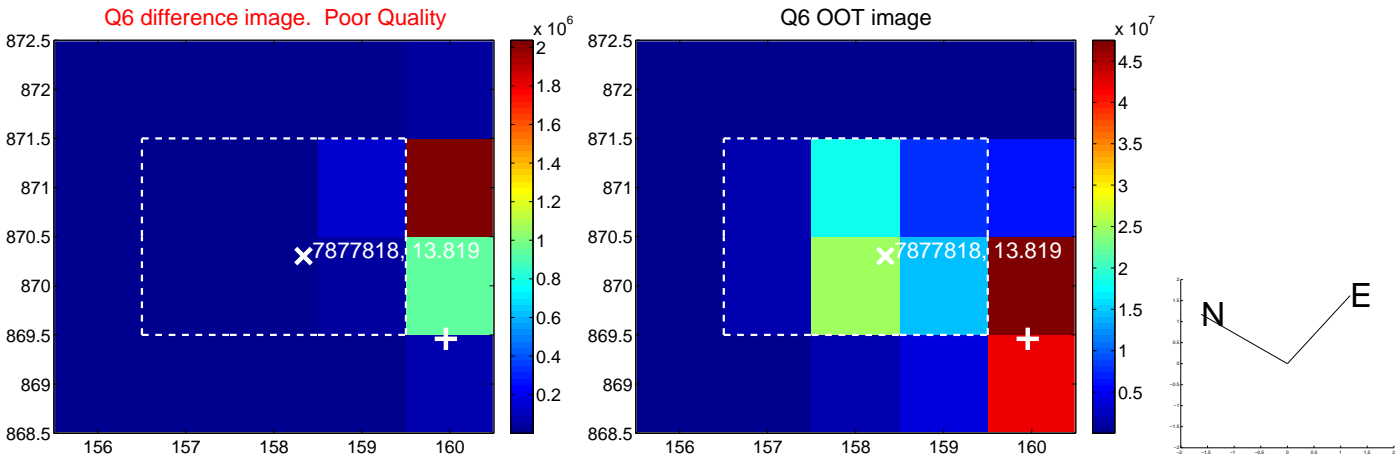
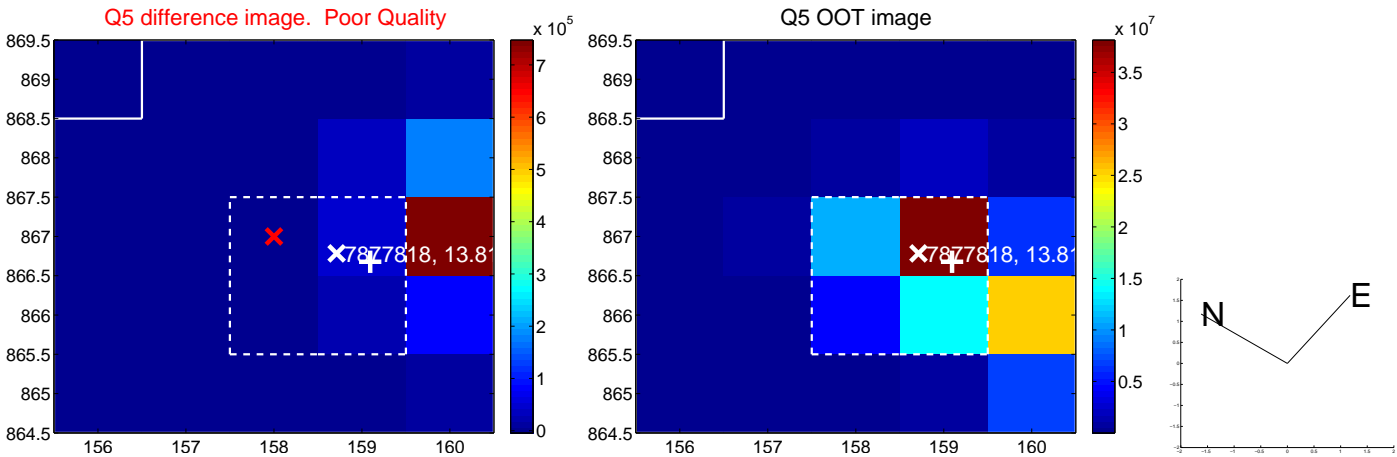


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

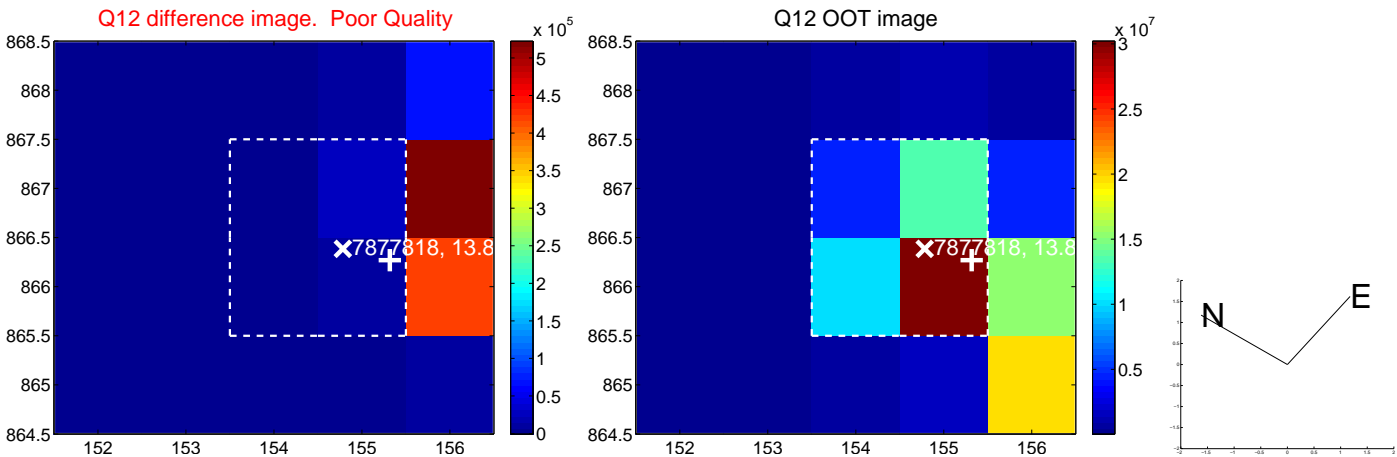
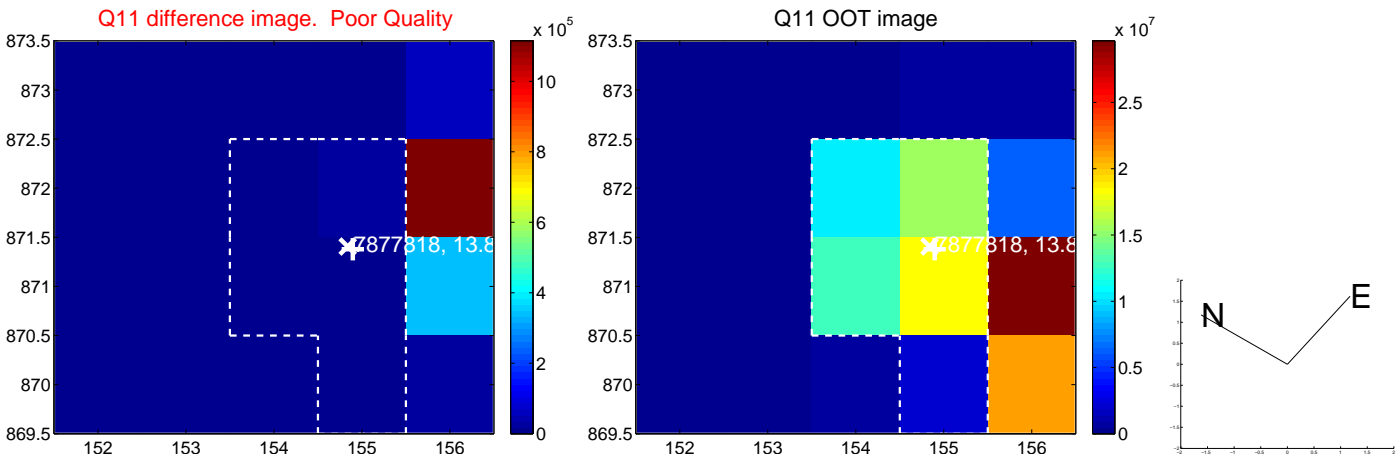
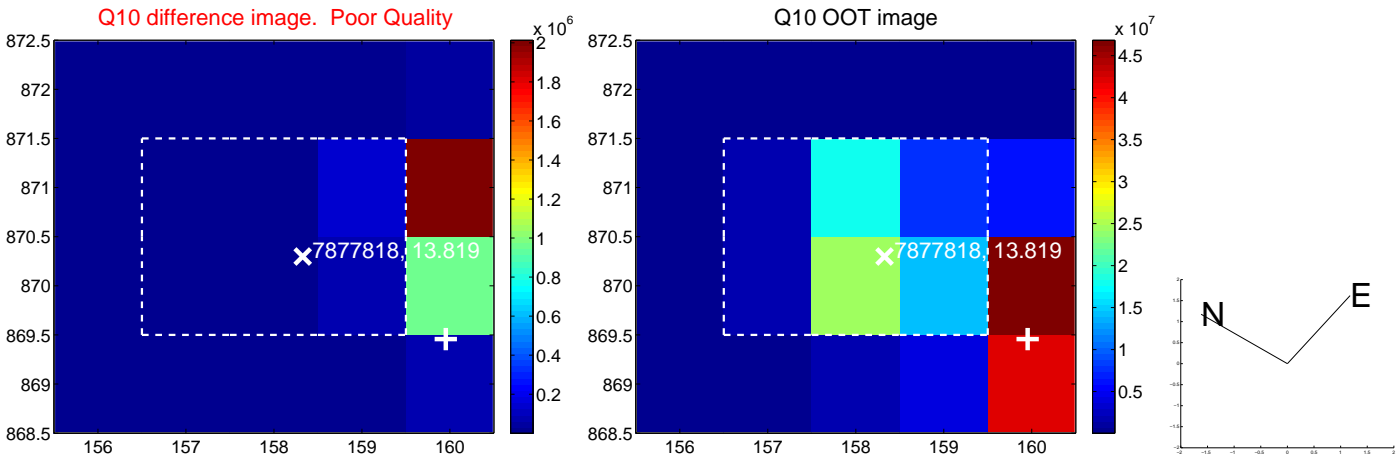
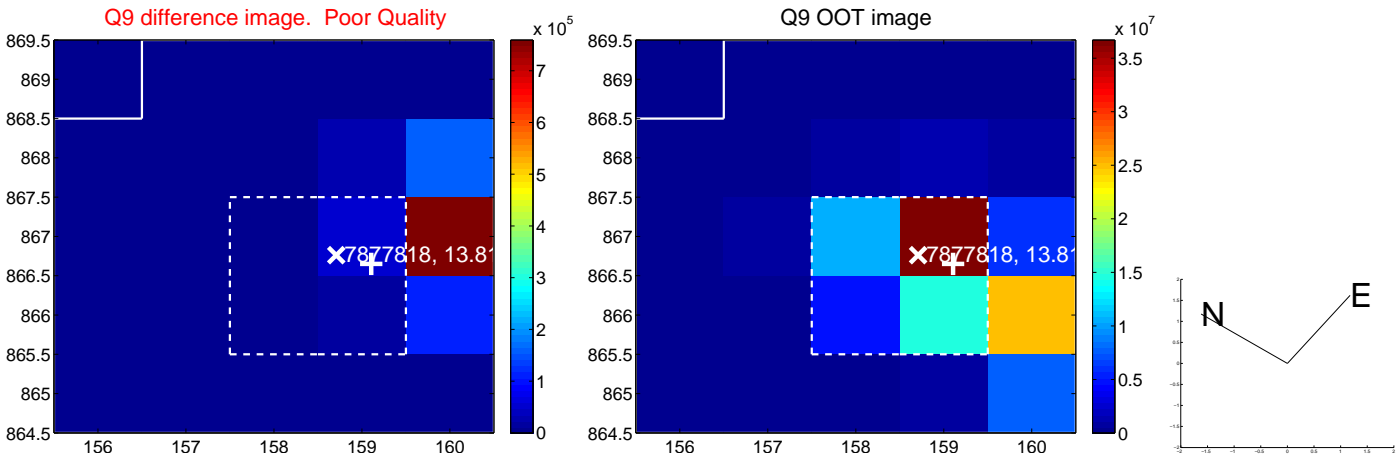
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



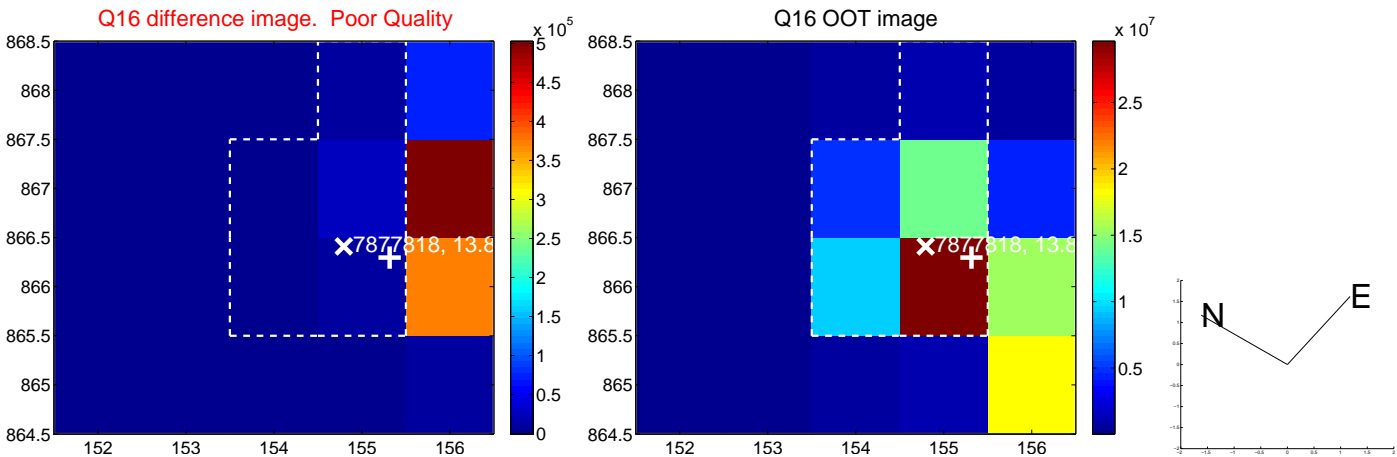
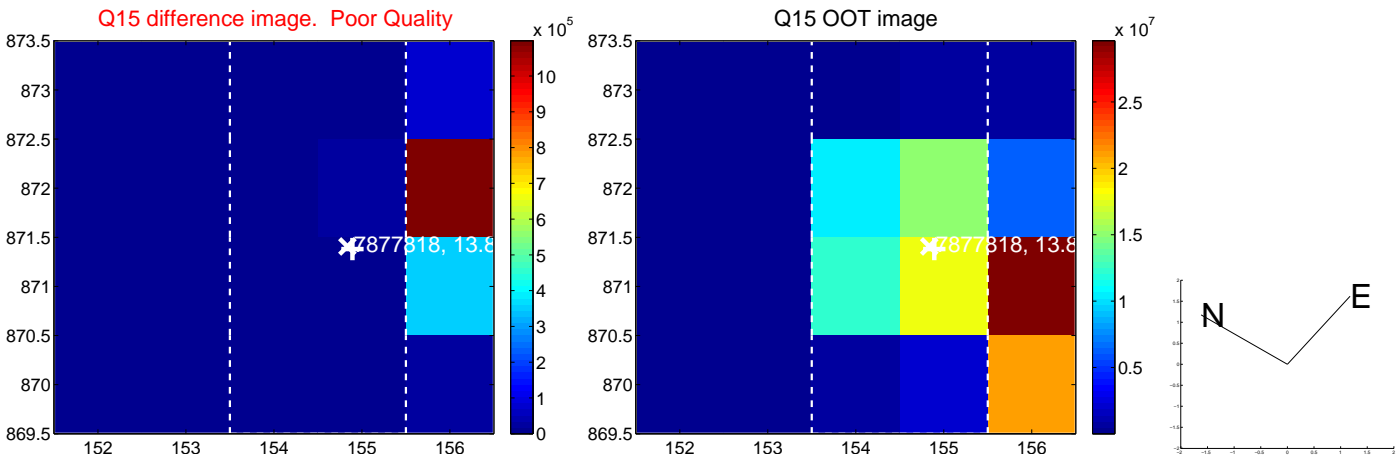
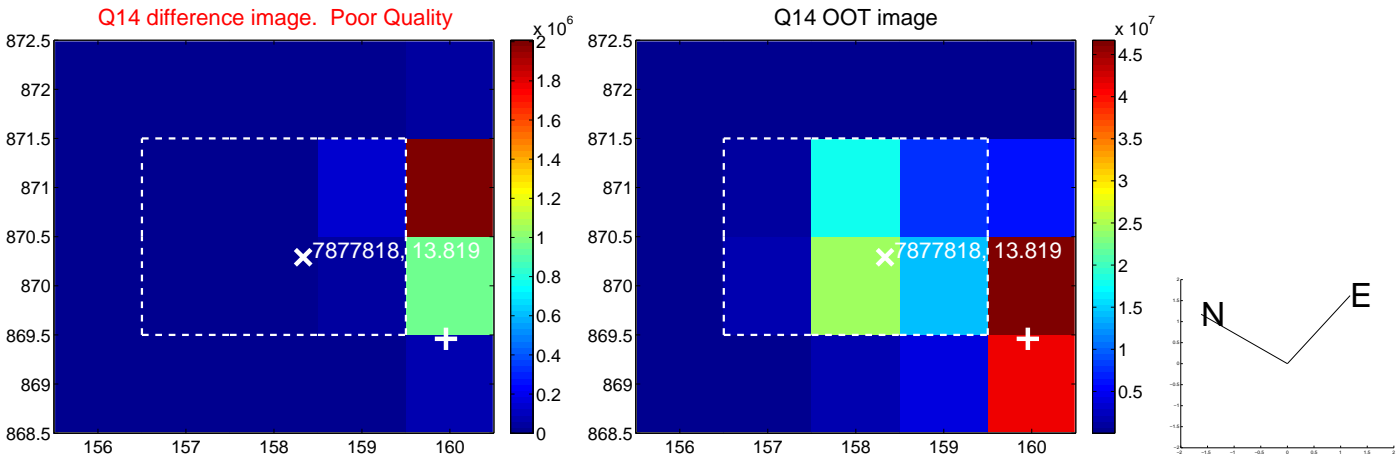
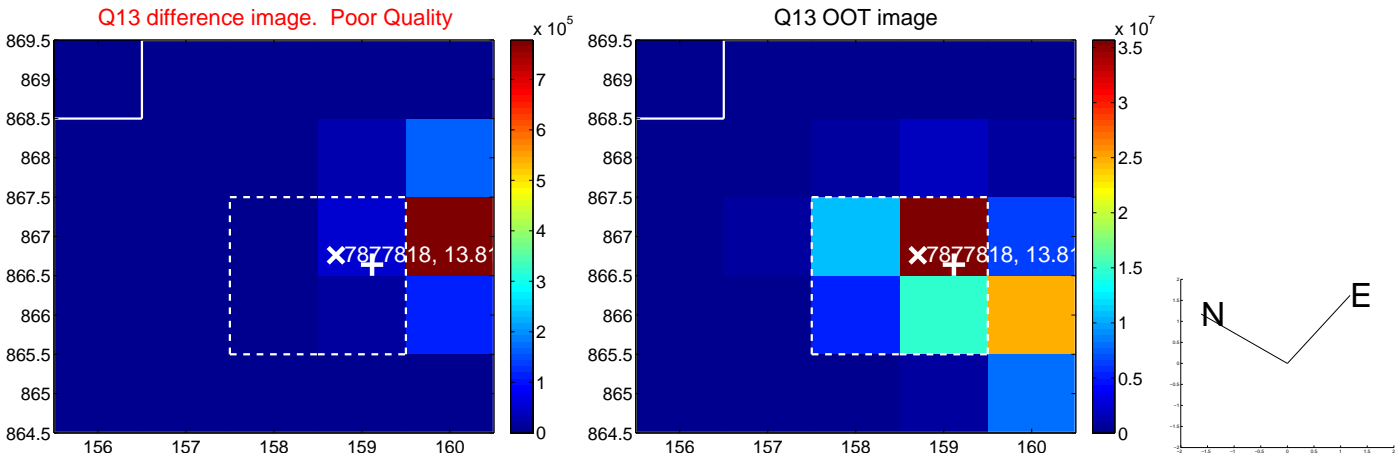
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



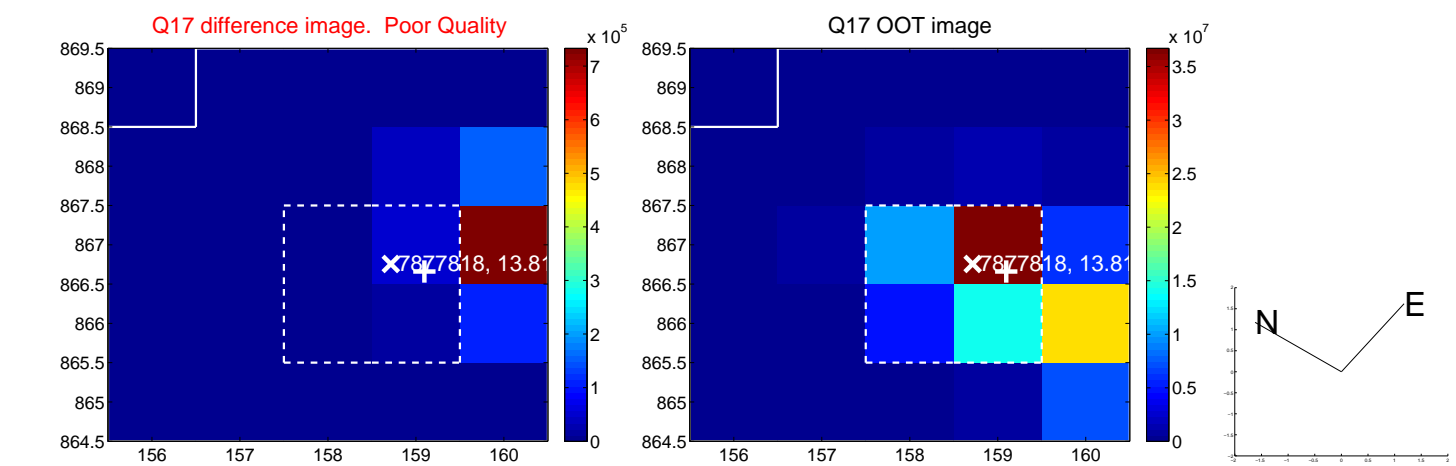
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



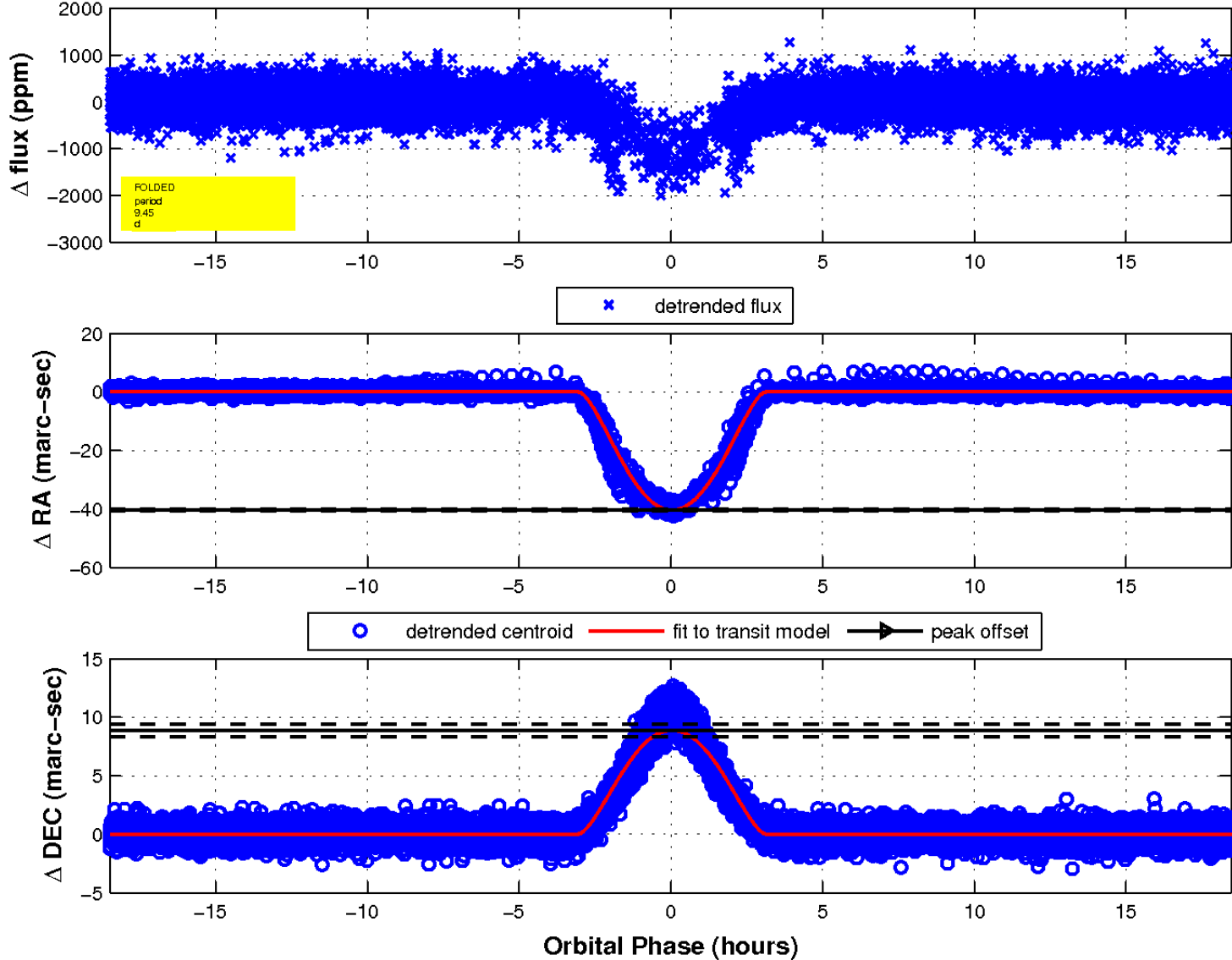
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

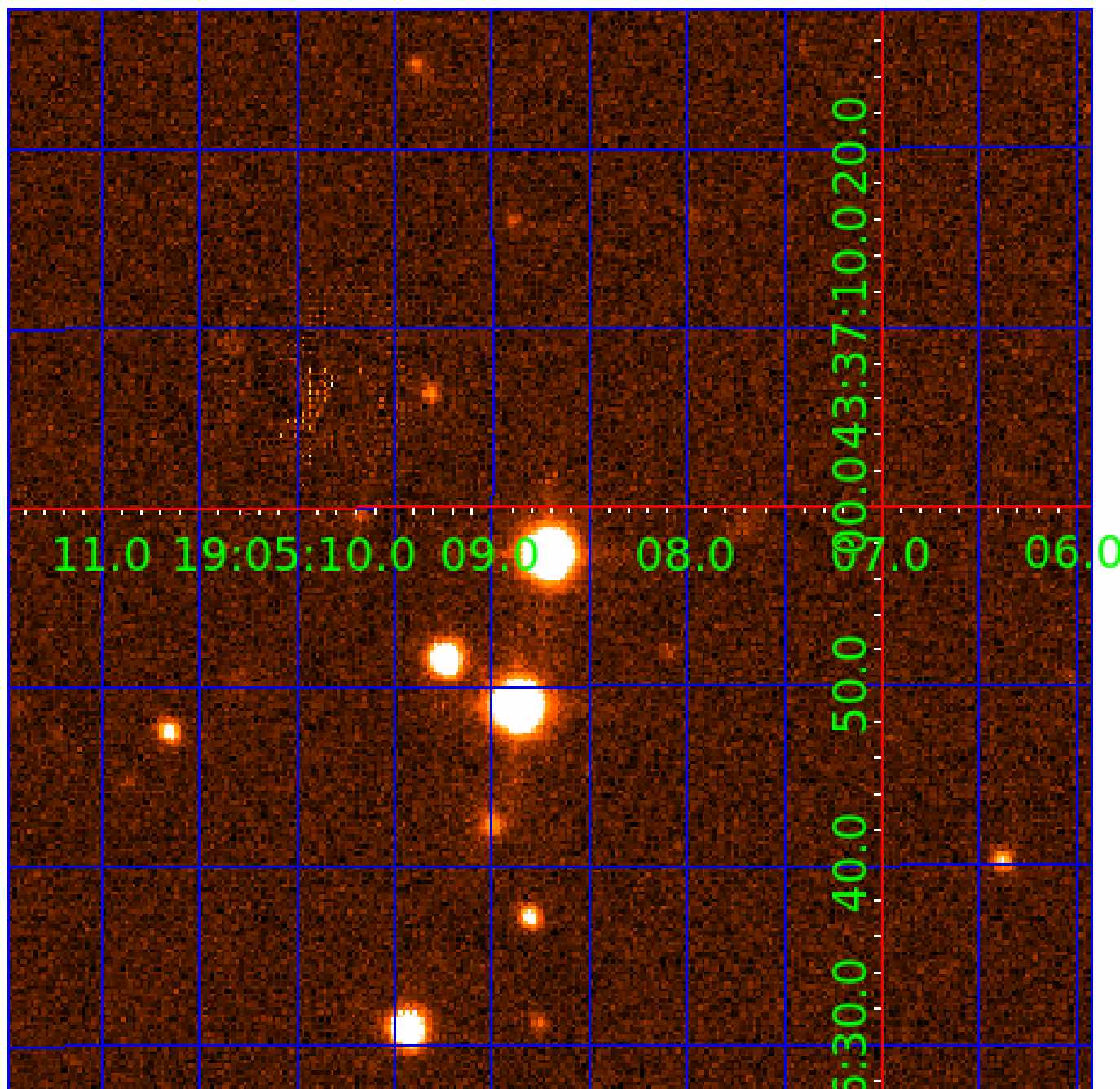


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 007877818

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})
007877818-01	OBS	No	9.449454	136.023660	1343.1	6.161	84.6	63.2	2.66	5092	19.55	477.45
007877818-02	OBS	3816.01	9.449431	132.451503	1167.1	6.354	73.4	62.2	2.66	5092	18.30	477.45

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007877818-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
007877818-02	OBS	FP	0.00	1	0	1	1	SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—HALO_GHOST—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 007877818-02

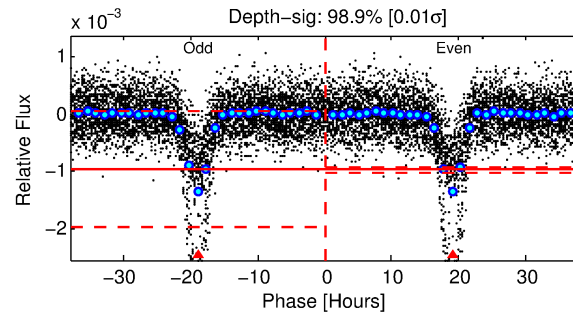
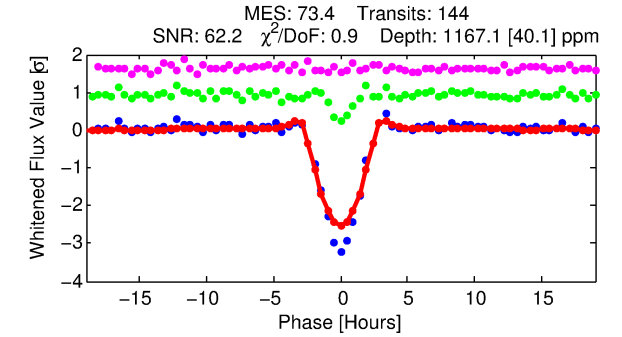
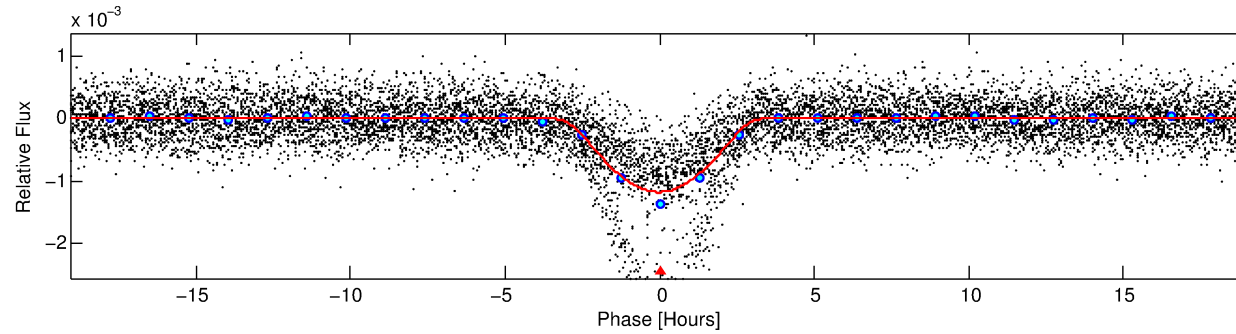
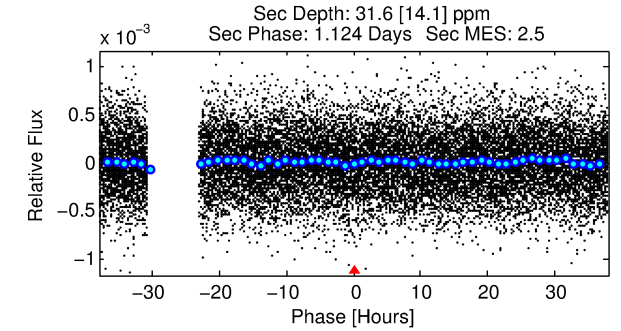
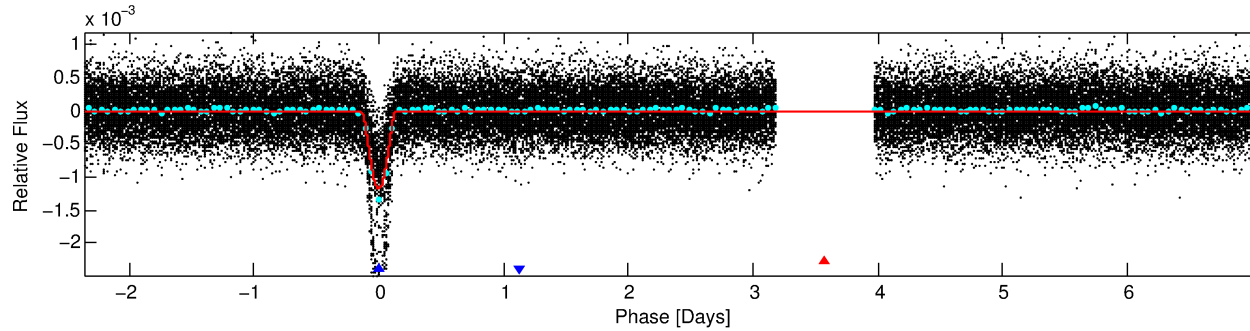
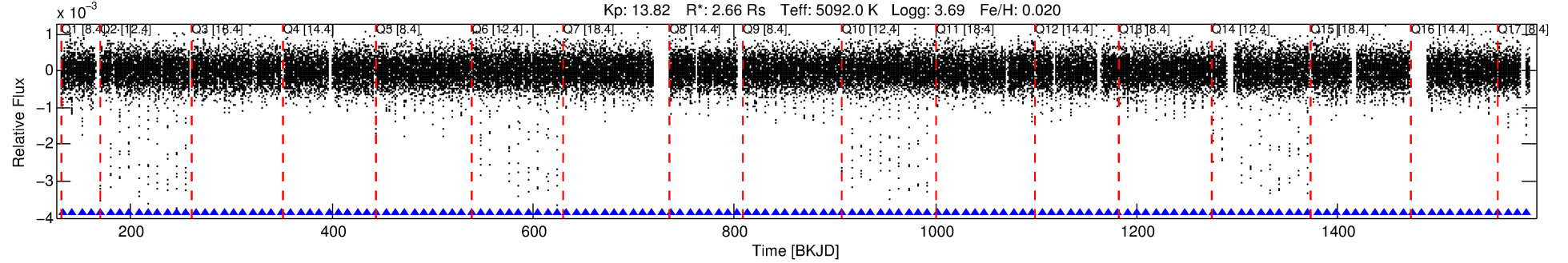
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
007877818-02	7877818	007877824-02	7877824	1:1	8.2	-1	-2	15.65	13.82	325.26	Direct-PRF	0	0.18	0.24

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: 7877818 Candidate: 2 of 2 Period: 9.449 d
KOI: K03816.01 Corr: 0.992

Kp: 13.82 R*: 2.66 Rs Teff: 5092.0 K Logg: 3.69 Fe/H: 0.020



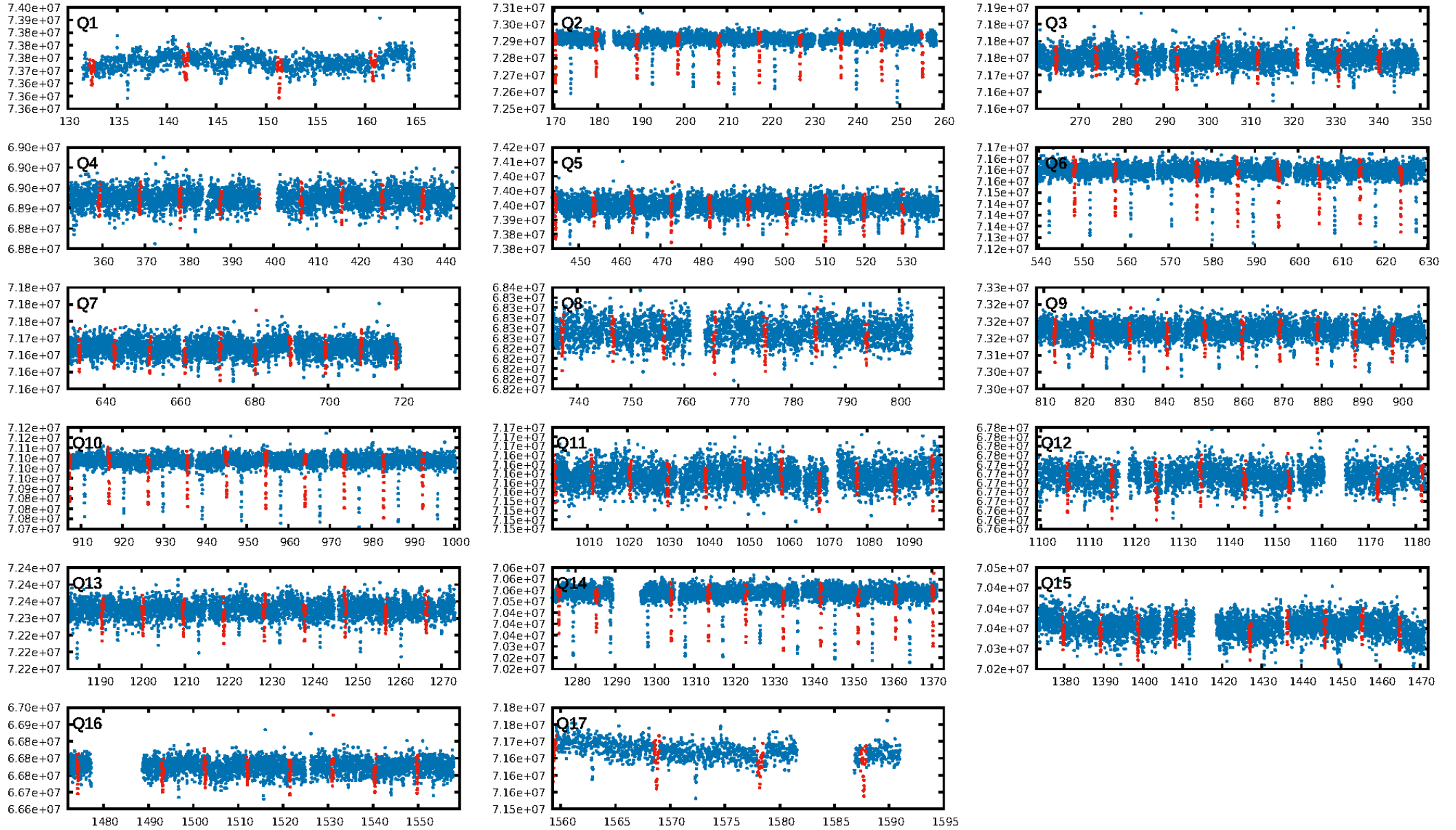
DV Fit Results:

Period = 9.44943 [0.00002] d
Epoch = 132.4515 [0.0021] BKJD
Rp/R* = 0.0629 [0.0275]
a/R* = 4.22 [0.38]
b = 1.00 [0.04]
Seff = 477.45 [661.74]
Teq = 1192 [413] K
Rp = 18.30 [14.88] Re
a = 0.0946 [0.0753] AU
Ag = 0.46 [0.79] [-0.68σ]
Teffp = 1521 [376] K [0.59σ]

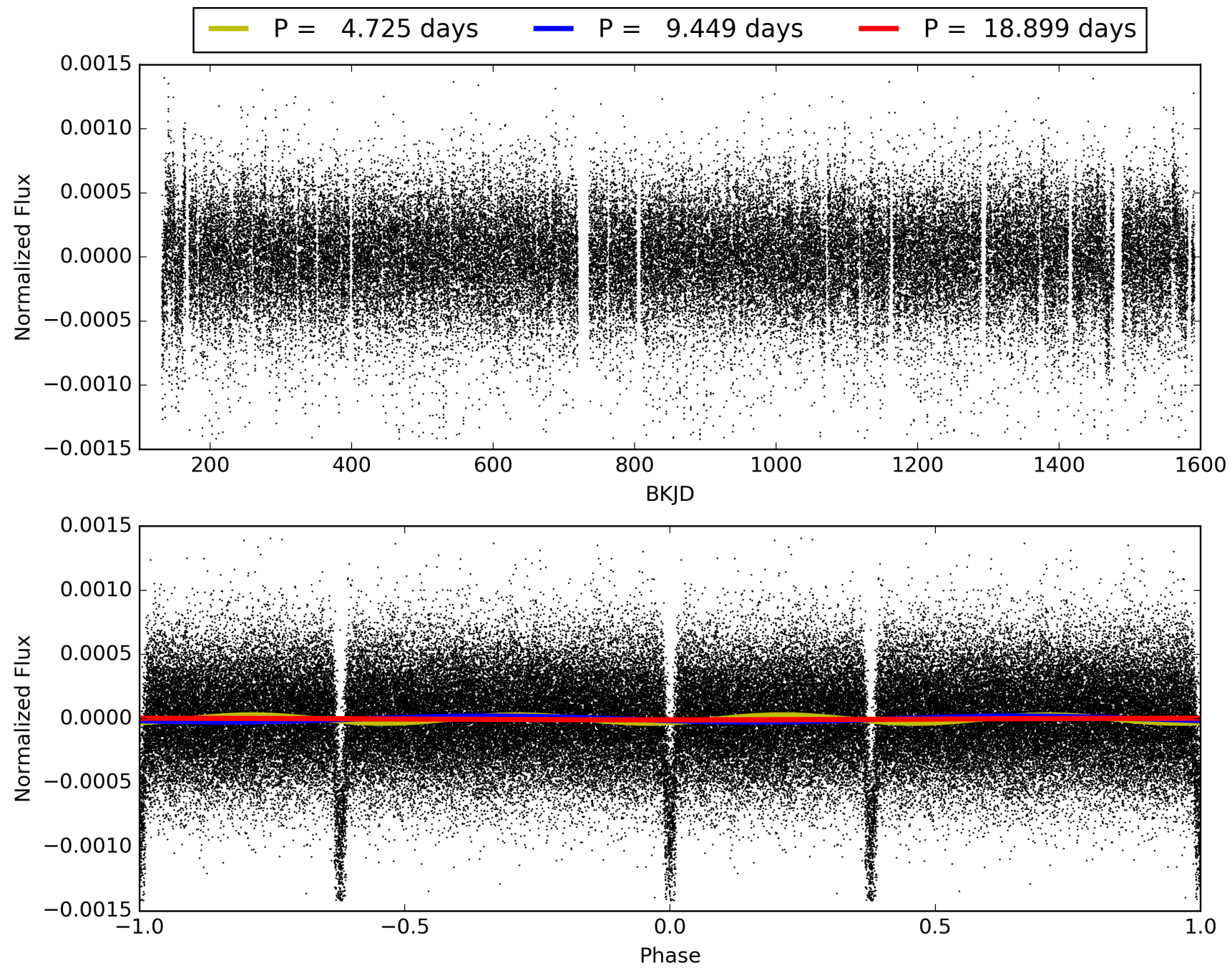
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [136/136]
GhostDiagnostic-chr: -0.1093
Centroid-sig: 0.0%
Centroid-so: 29.140 arcsec [513.09σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [17/17]

TCE 007877818-02, PDC Light Curves

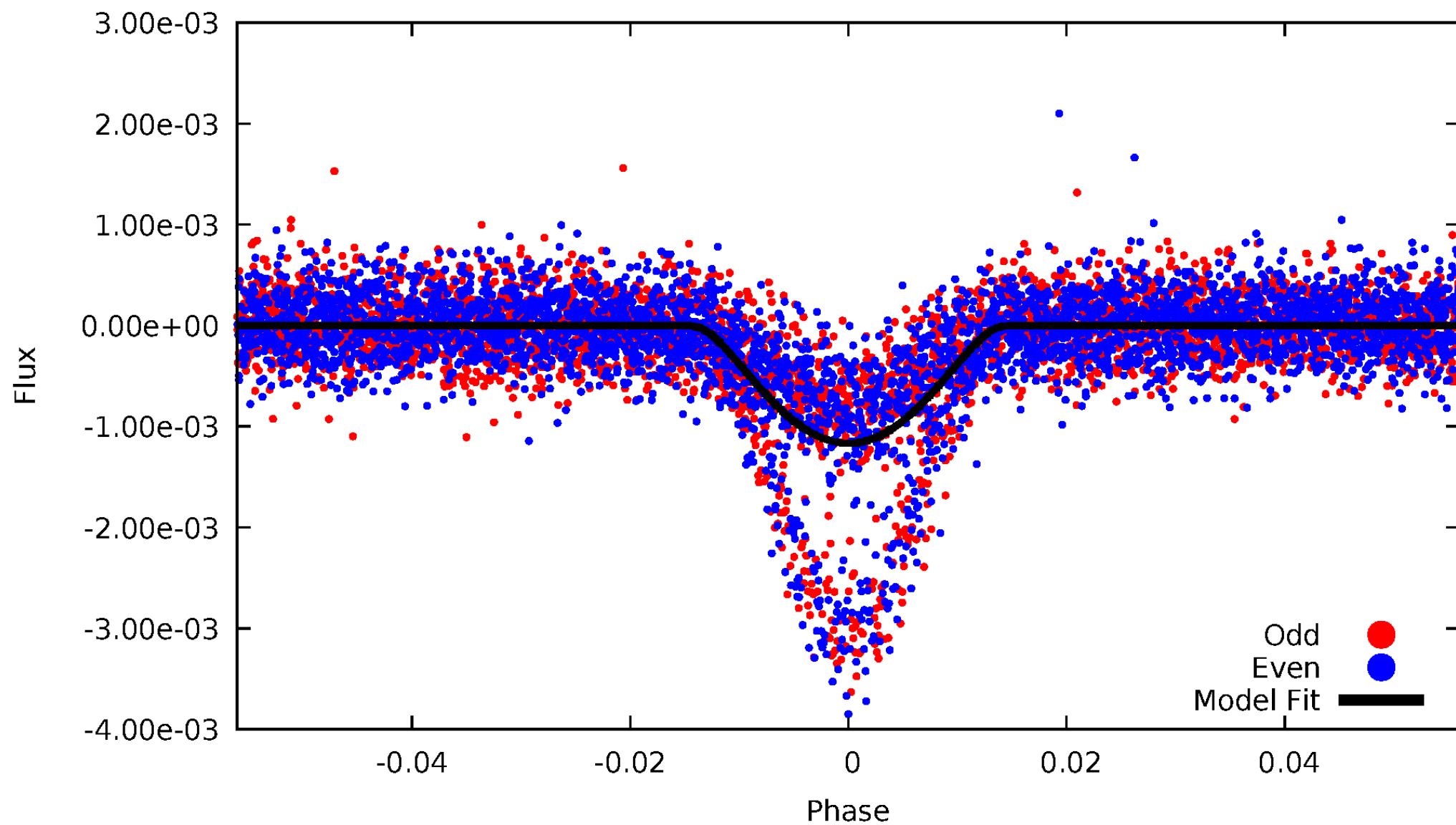


TCE 007877818-02



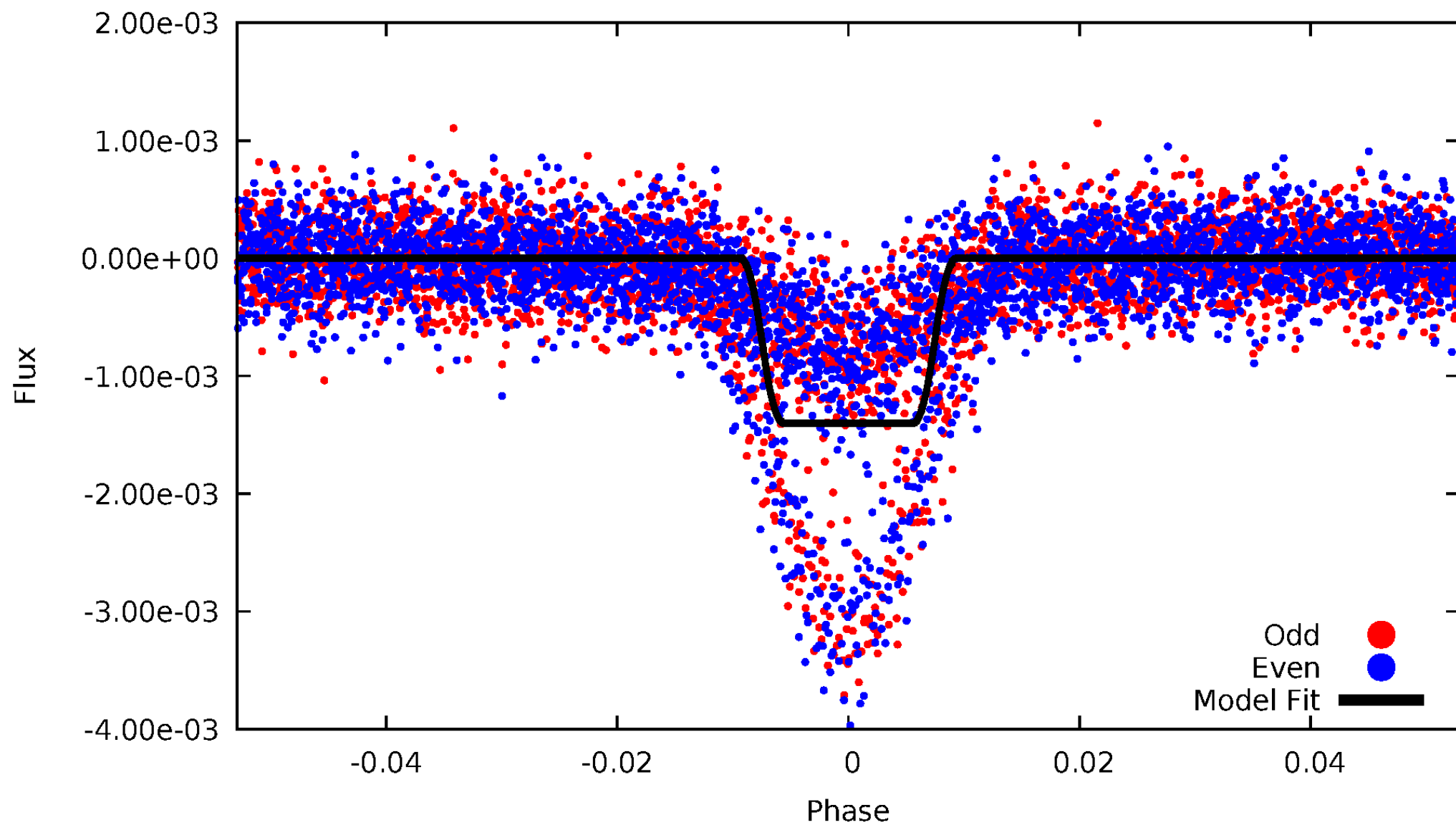
DV Odd/Even

TCE 007877818-02



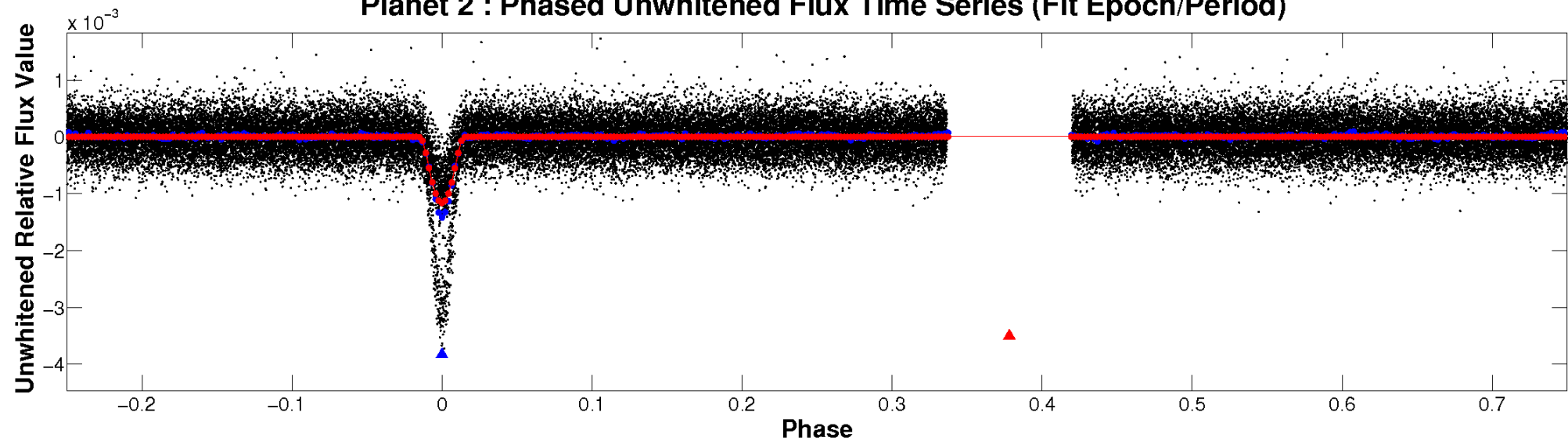
ALT Odd/Even

TCE 007877818-02

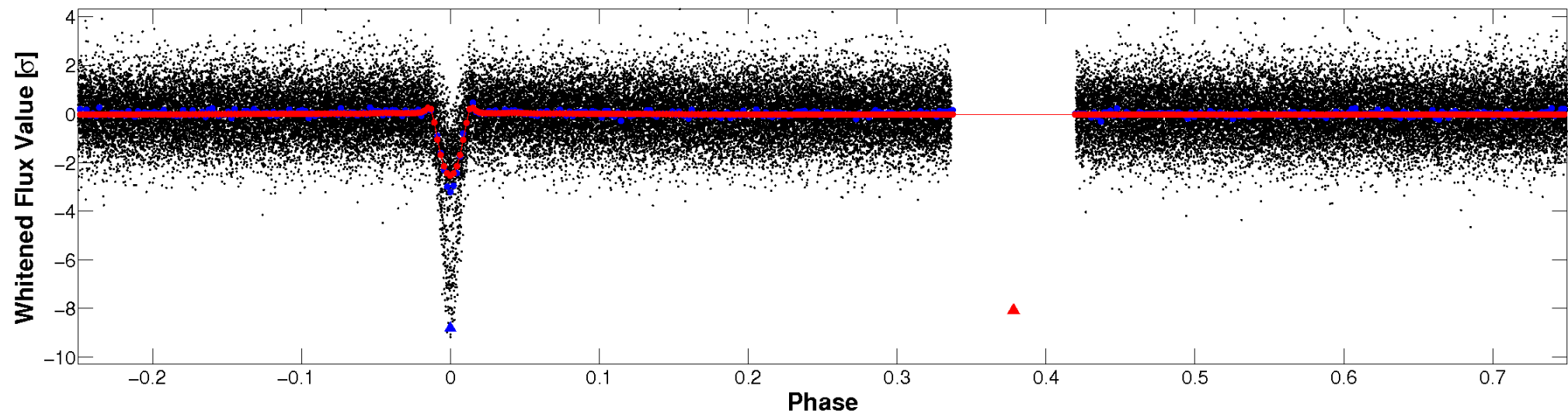


Non-Whitened Vs. Whitened Light Curve

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

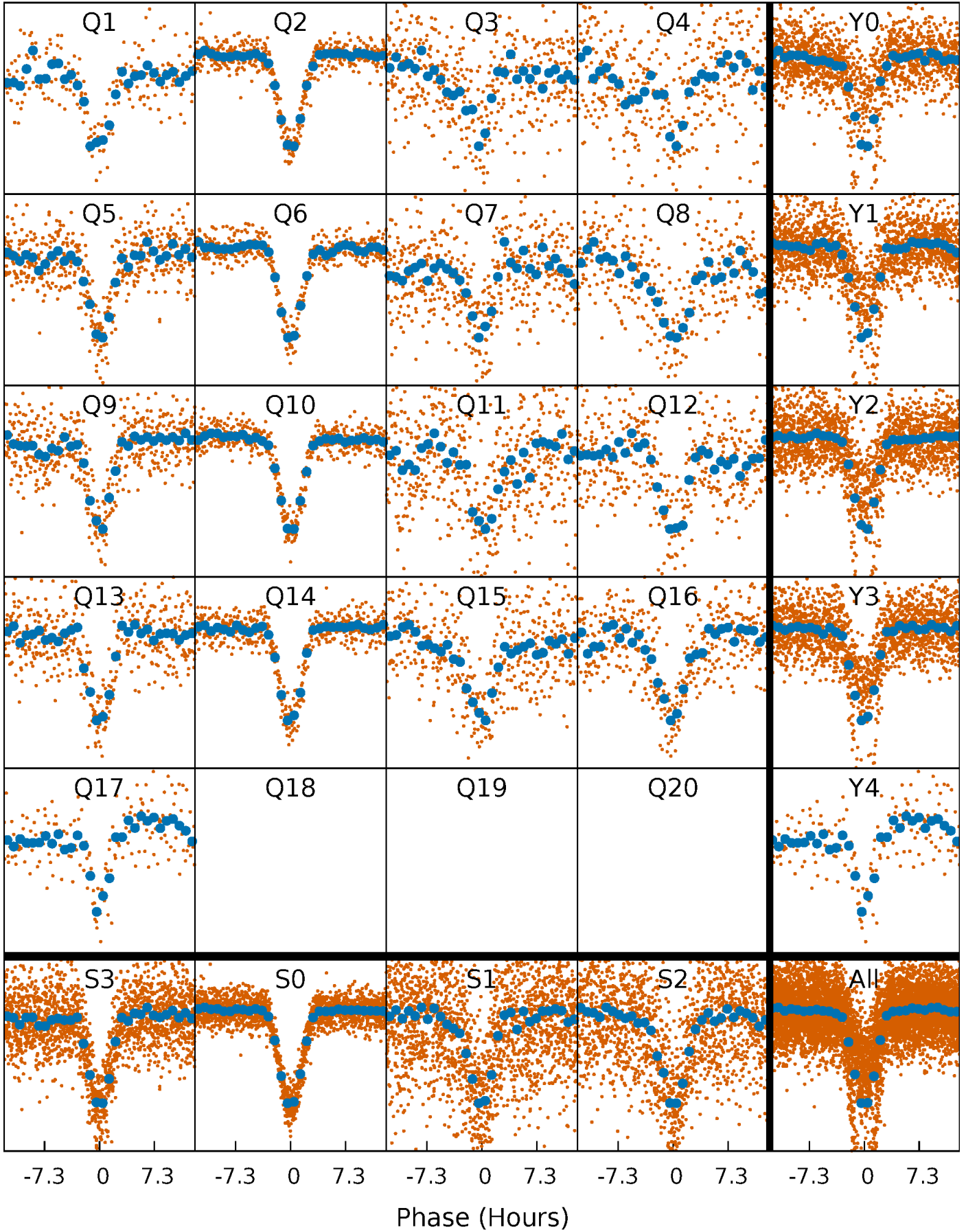


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



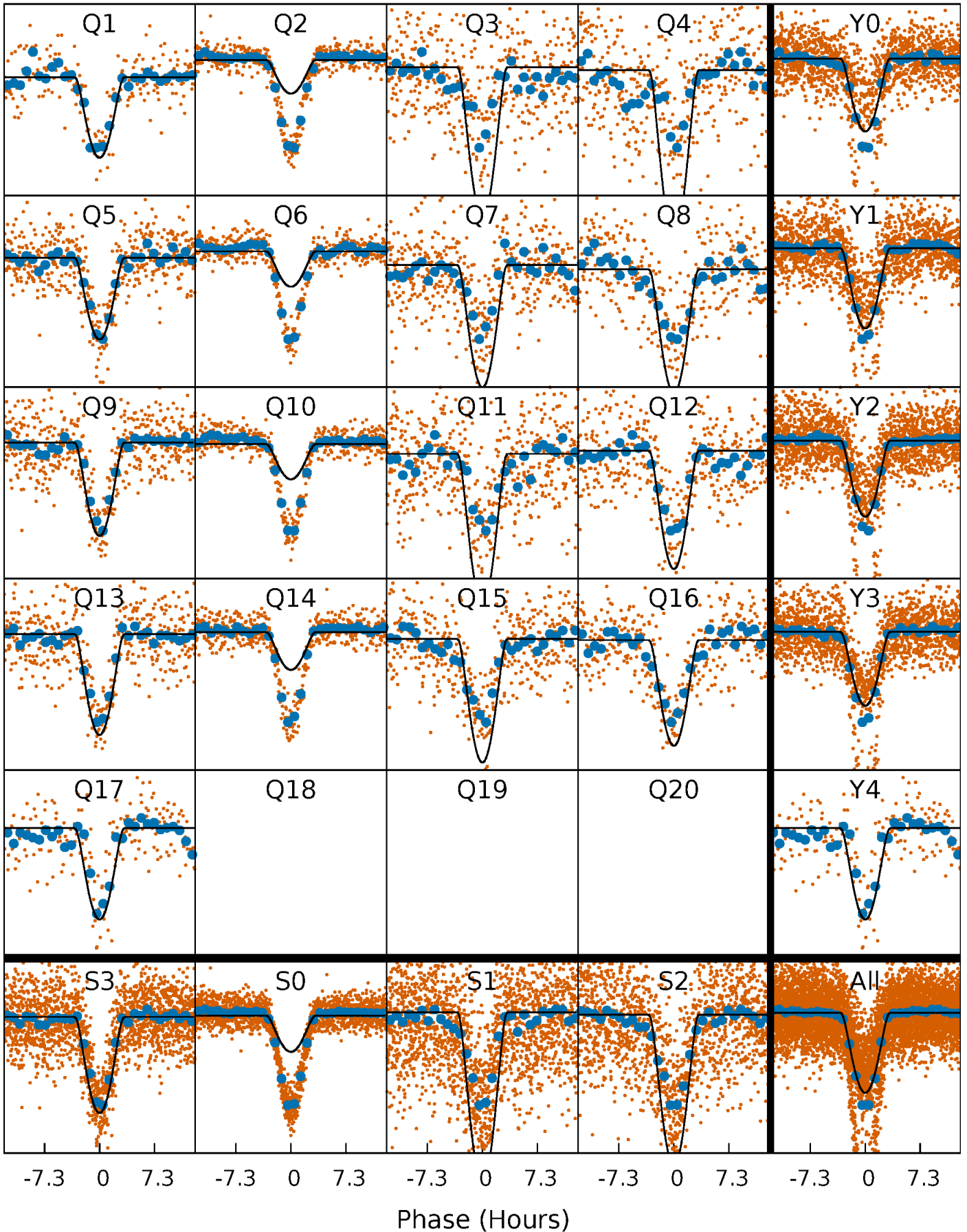
PDC Quarter-Phased Transit Curves

TCE 007877818-02 P= 9.449431 Days $T_0=132.451503$ (BKJD)



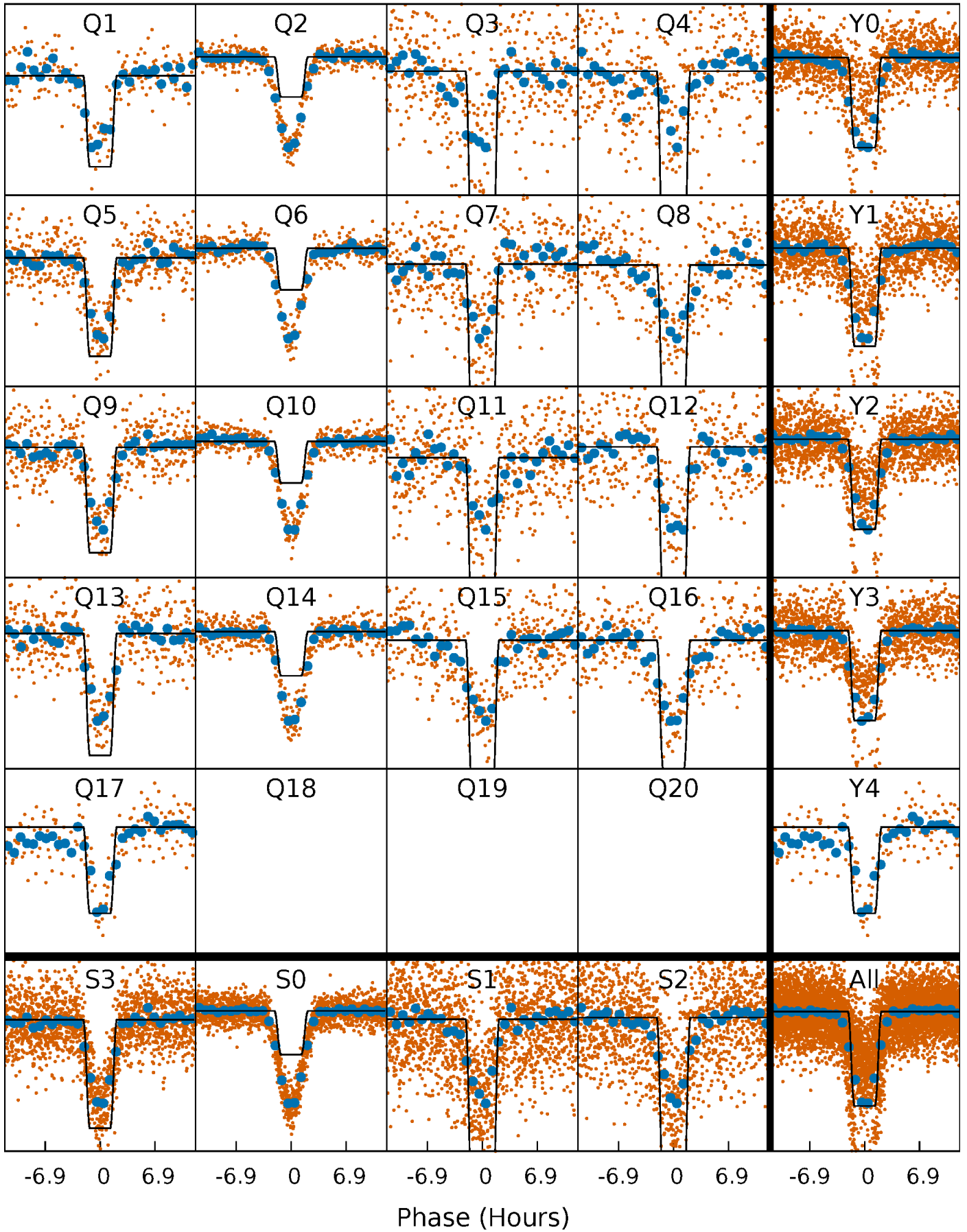
DV Quarter-Phased Transit Curves

TCE 007877818-02 P= 9.449431 Days $T_0=132.451503$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

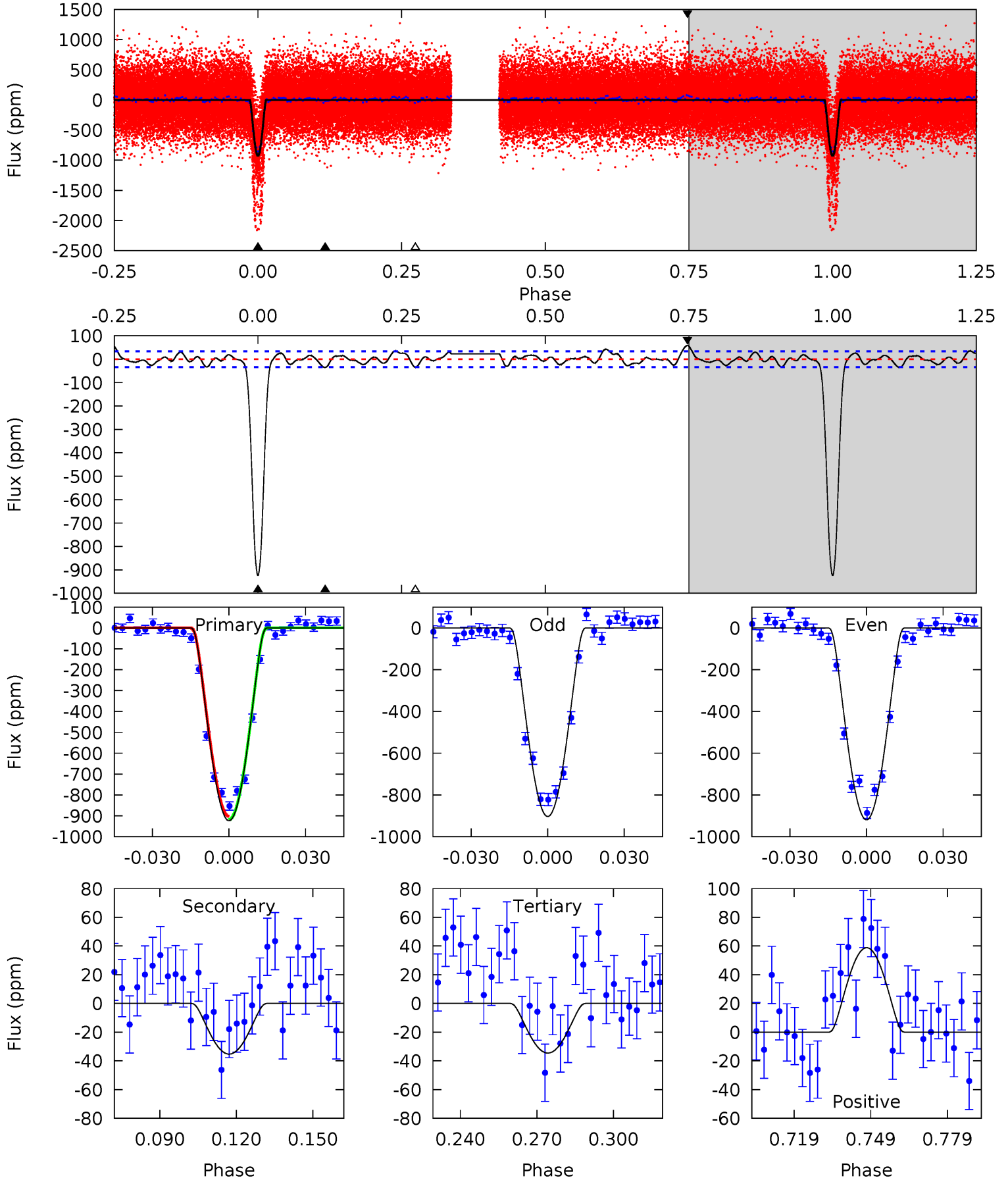
TCE 007877818-02 P= 9.449337 Days $T_0=132.458192$ (BKJD)



DV Model-Shift Uniqueness Test

007877818-02, P = 9.449431 Days, E = 123.002072 Days

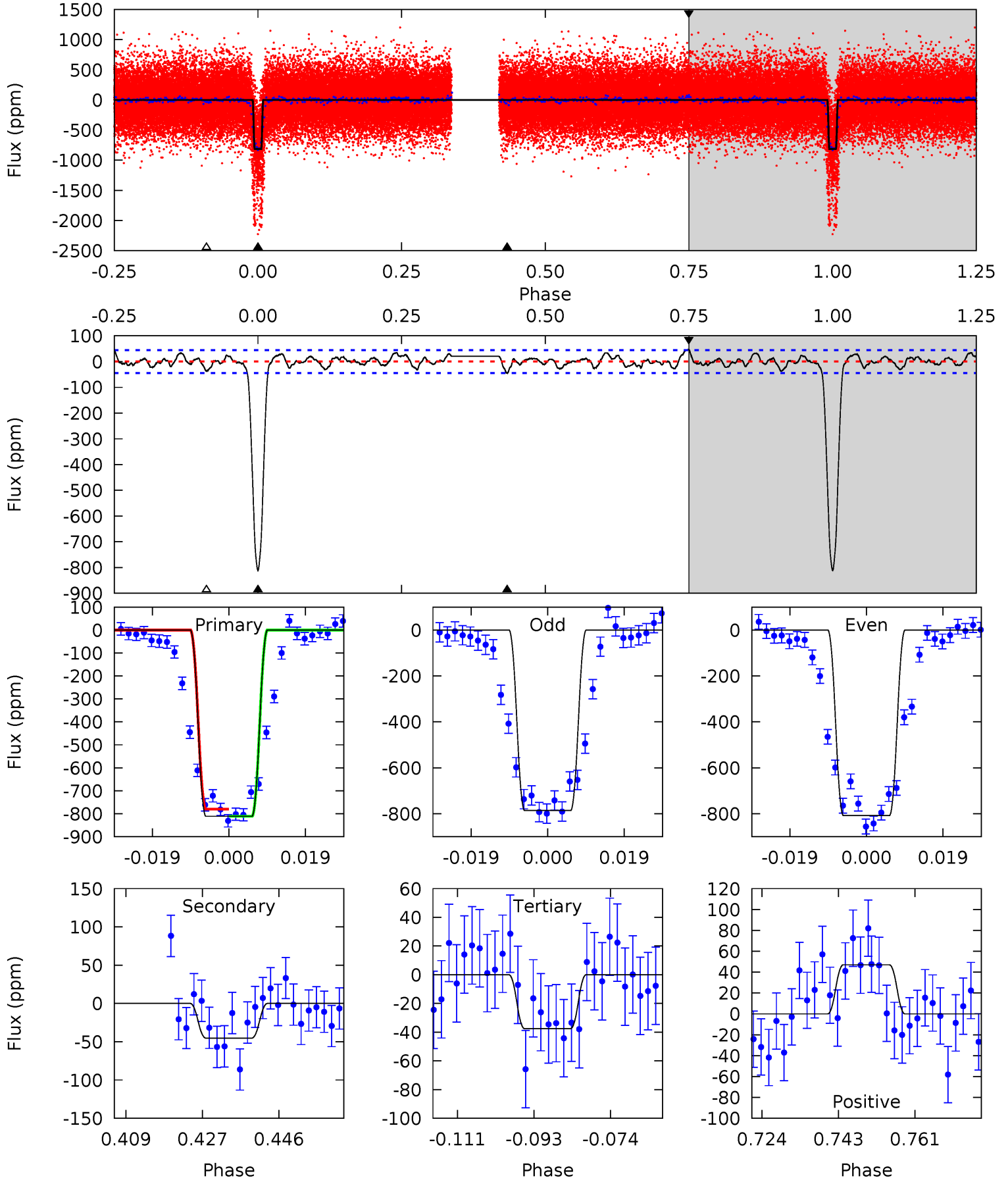
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
130.8	5.00	4.89	8.33	4.81	2.17	2.39	125.9	122.5	0.10	-3.33	1.15	1.44	0.06	0



Alt Model-Shift Uniqueness Test

007877818-02, P = 9.449337 Days, E = 123.008855 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
89.3	4.98	4.13	5.18	4.91	2.35	1.70	85.2	84.1	0.85	-0.20	1.20	1.51	0.05	1.71



Stellar Parameters For KIC 007877818

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5092^{+168}_{-137}	$3.689^{+0.848}_{-0.283}$	$0.020^{+0.250}_{-0.250}$	$2.664^{+0.984}_{-1.827}$	$1.265^{+0.177}_{-0.414}$	$0.094^{+2.262}_{-0.050}$
	+3%/-3%	+23%/-8%	+1250%/-1250%	+37%/-69%	+14%/-33%	+2401%/-53%
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 007877818-02 / KOI 3816.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-35 ± 7	$15.96^{+11.13}_{-8.32}$	1652^{+227}_{-310}	2255^{+512}_{-4284}	$0.667^{+2.154}_{-0.447}$
Alt.	-45 ± 9	$10.50^{+8.88}_{-6.64}$	1655^{+202}_{-283}	2709^{+877}_{-494}	$1.901^{+10.997}_{-1.370}$

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

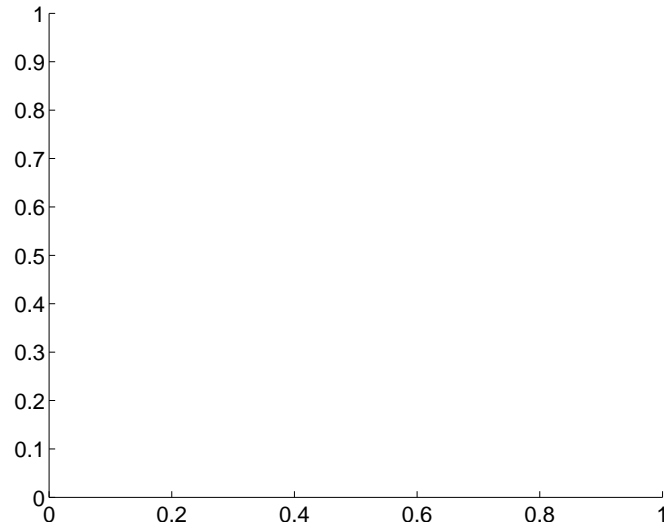
Supplemental centroid analysis for 007877818-02. Kepler magnitude: 13.82. Transit SNR 62.18

There are 0 quarters with good PRF difference image offsets

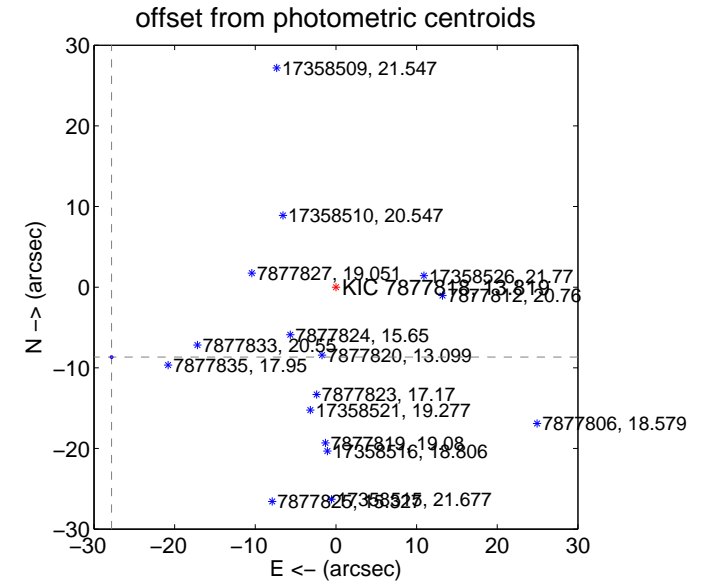
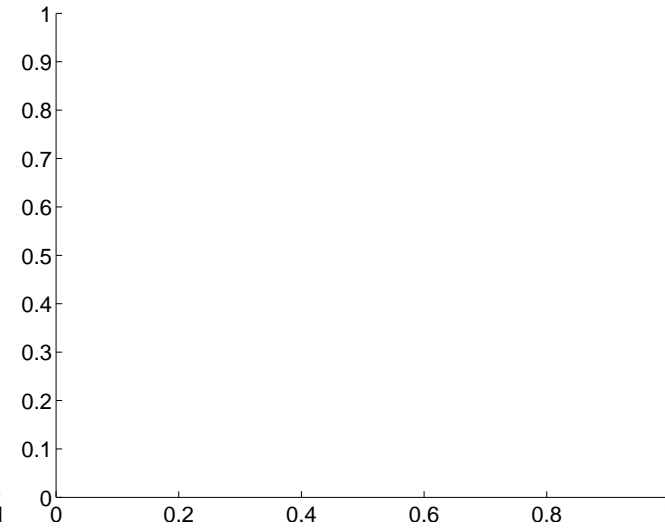
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	29.14 ± 0.06	513.09	27.82 ± 0.05	-8.67 ± 0.08

There is no PRF-fit offset from OOT-fit

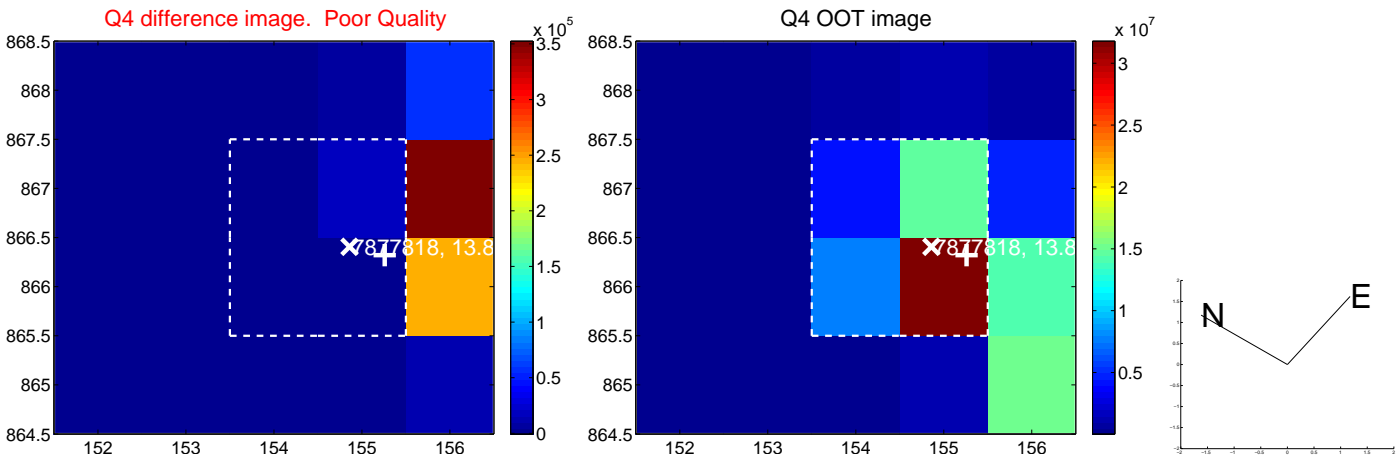
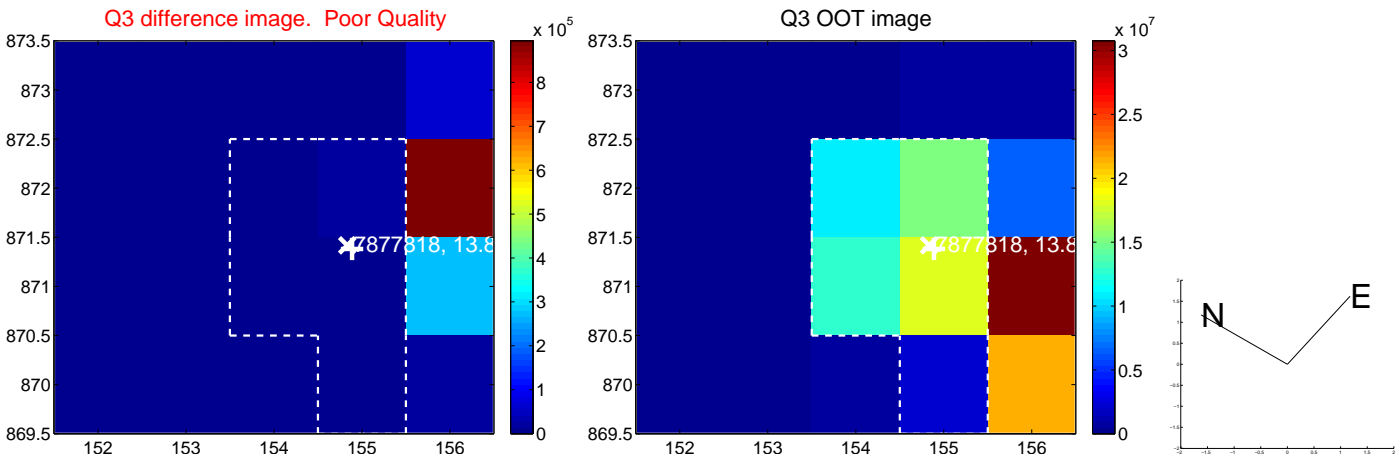
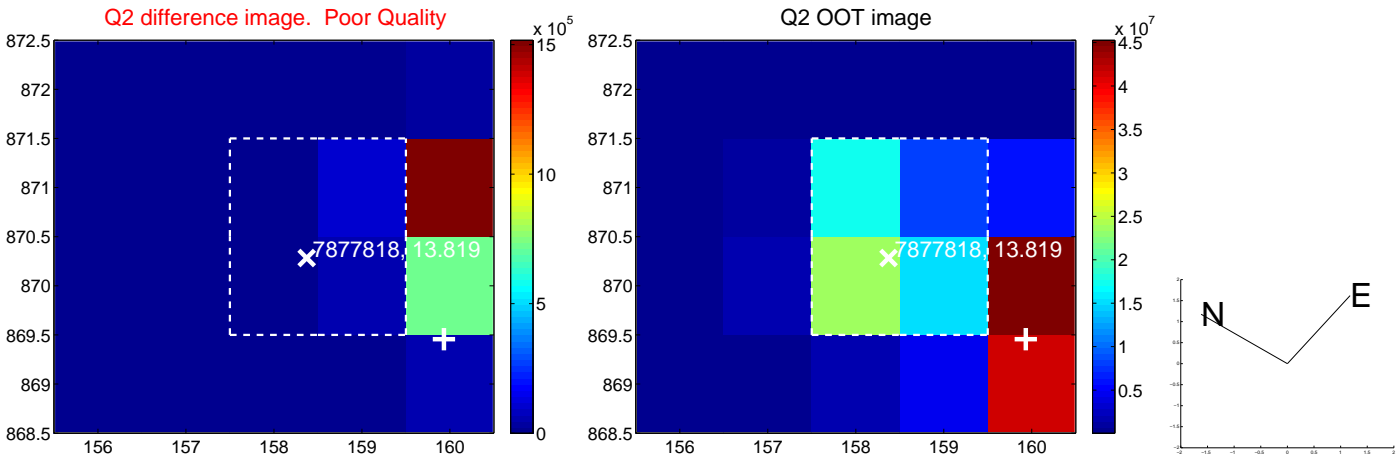
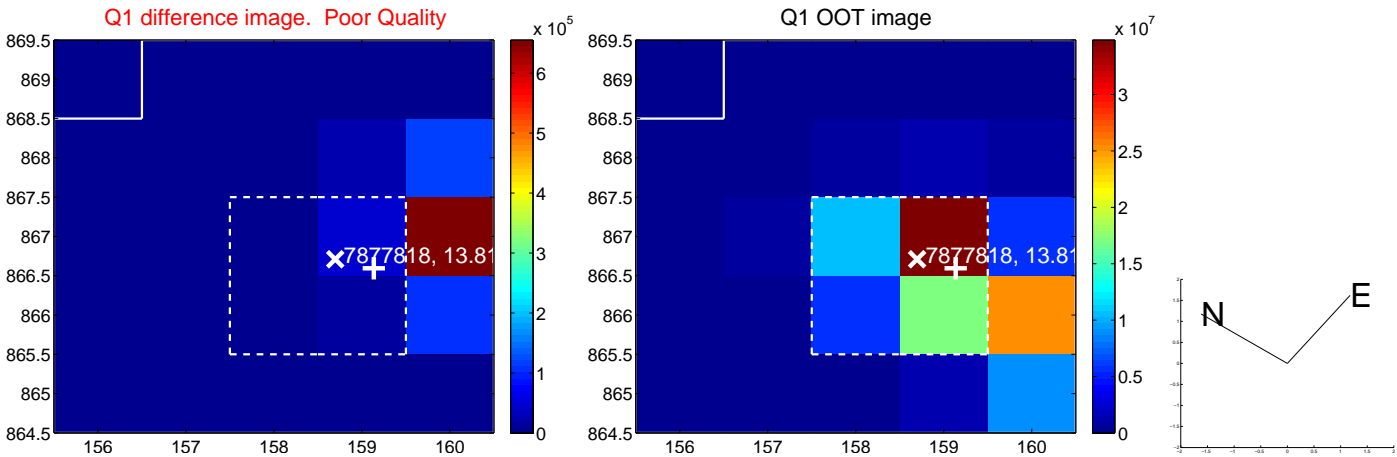


There is no PRF-fit offset from KIC

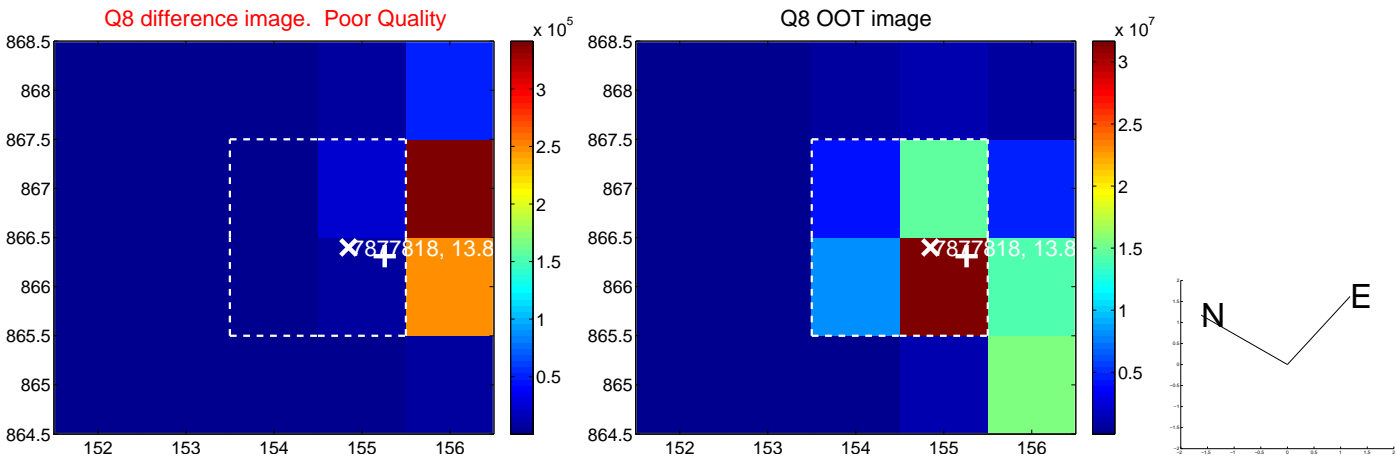
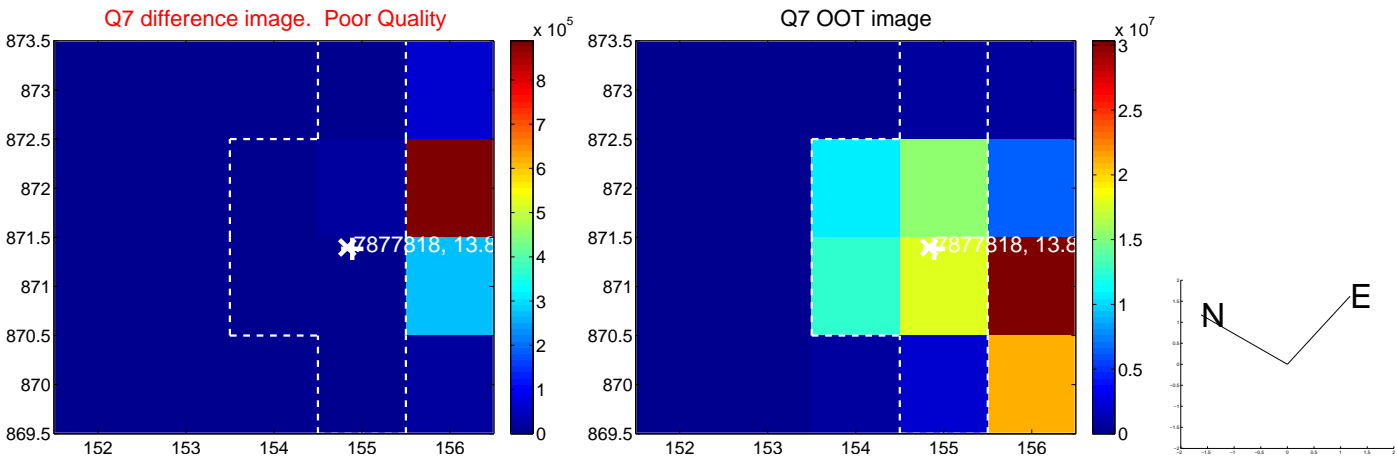
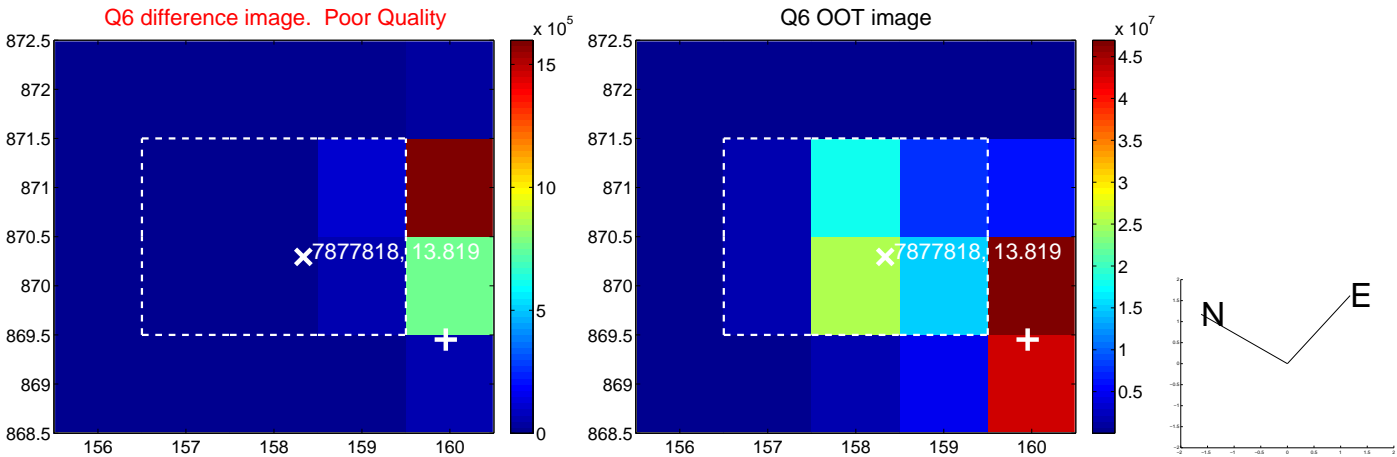
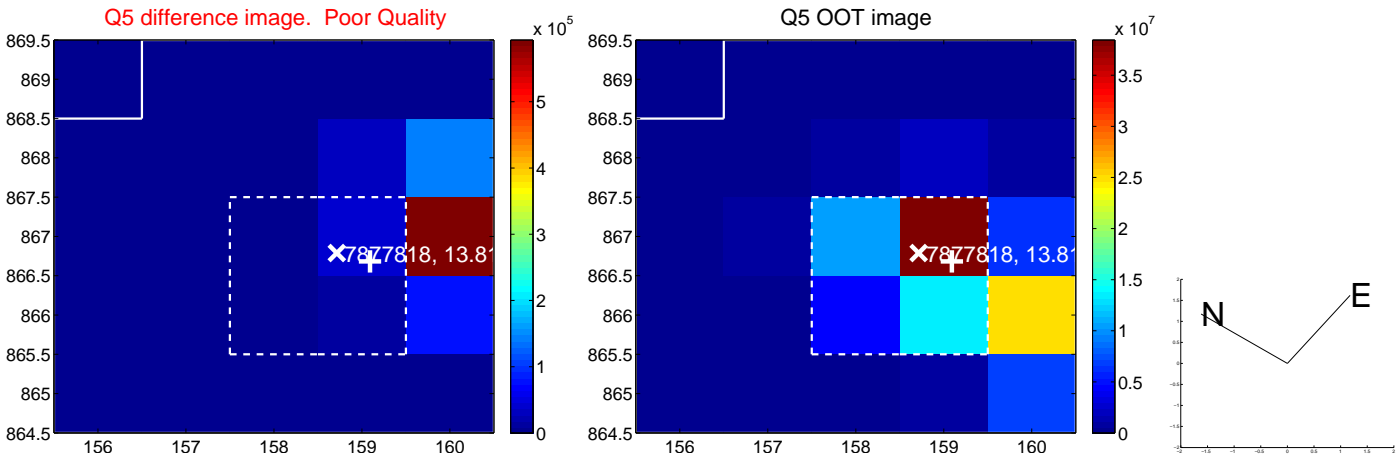


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

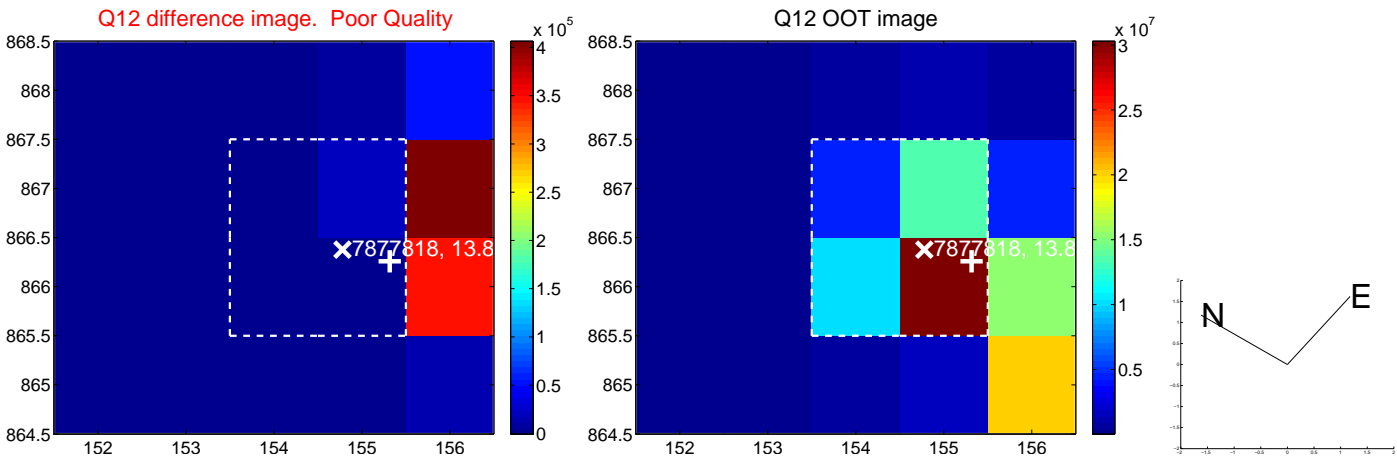
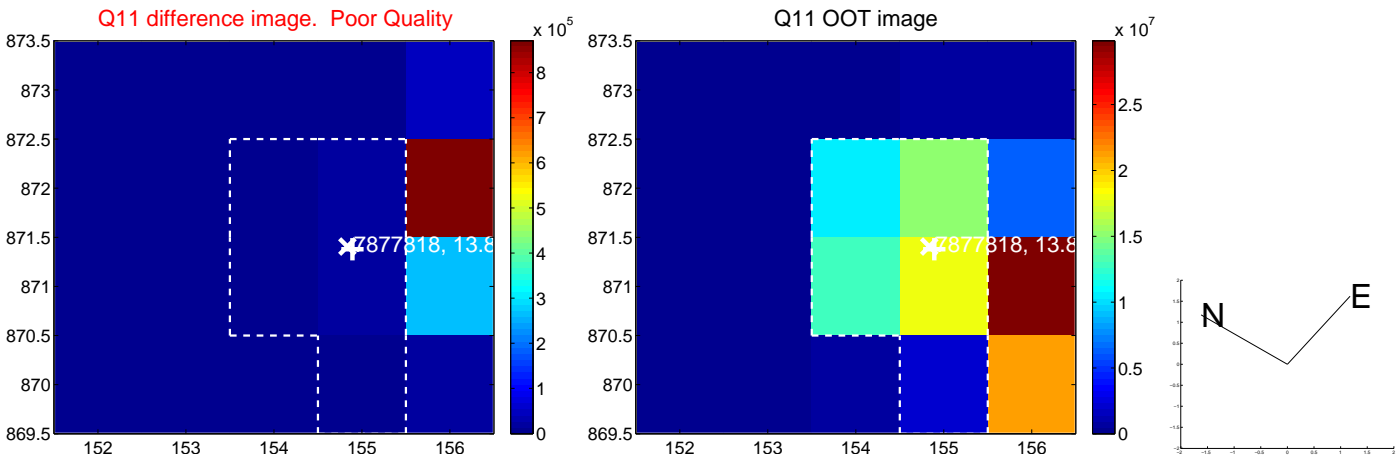
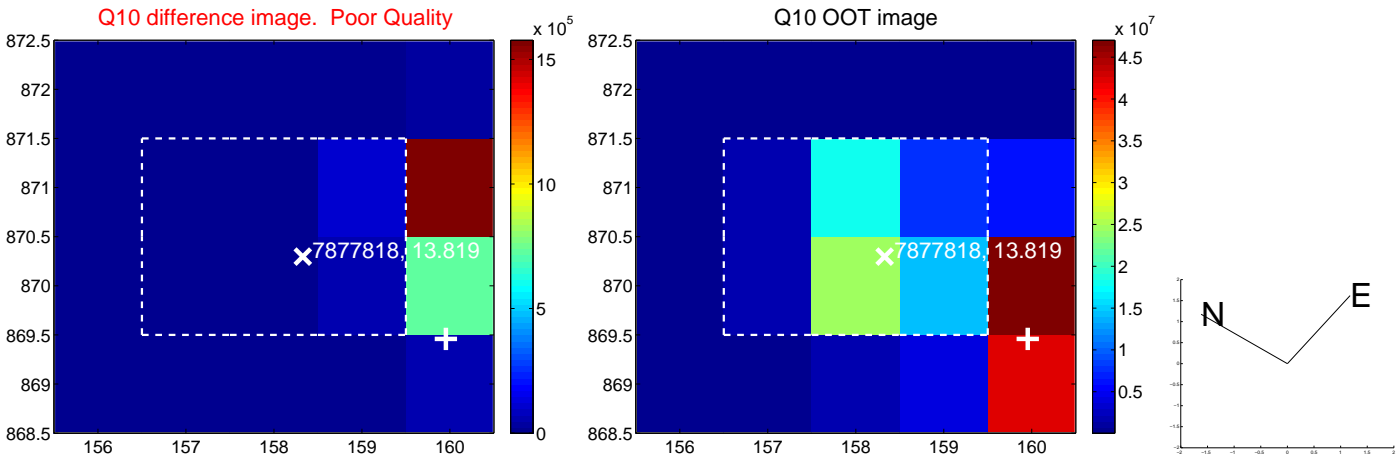
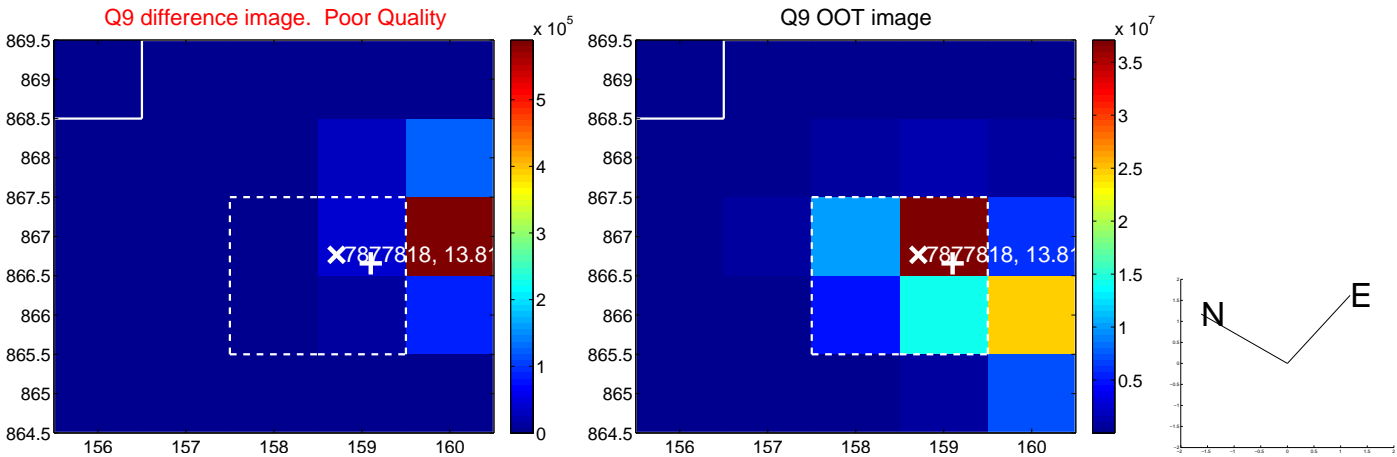
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



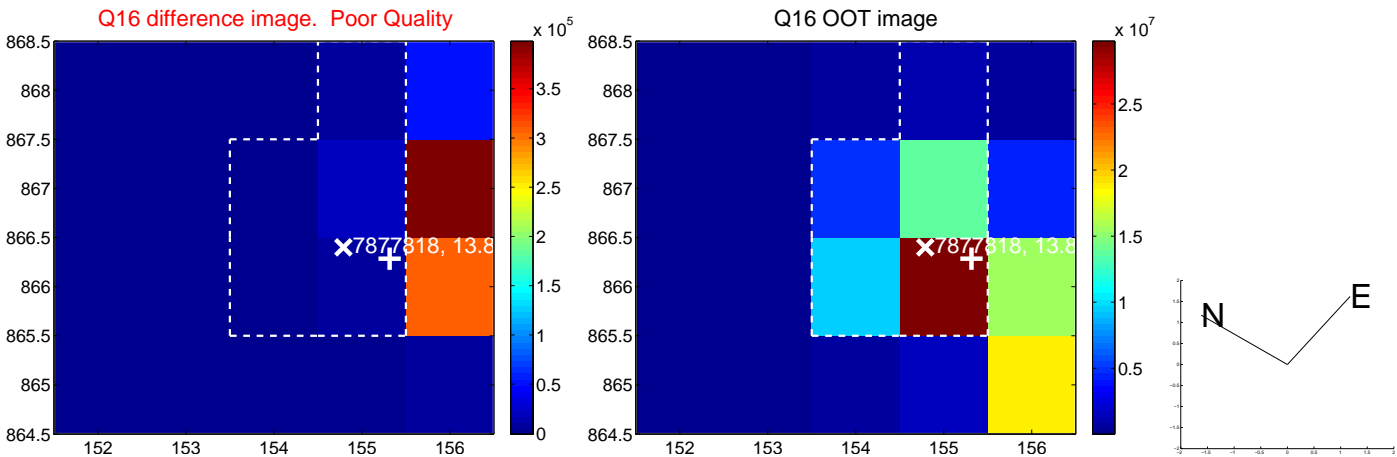
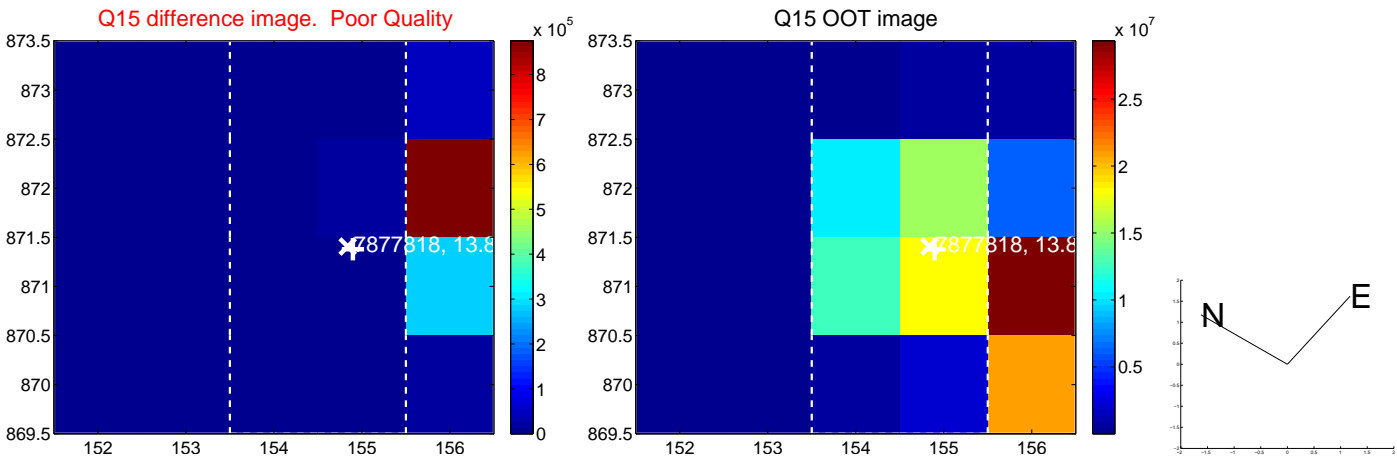
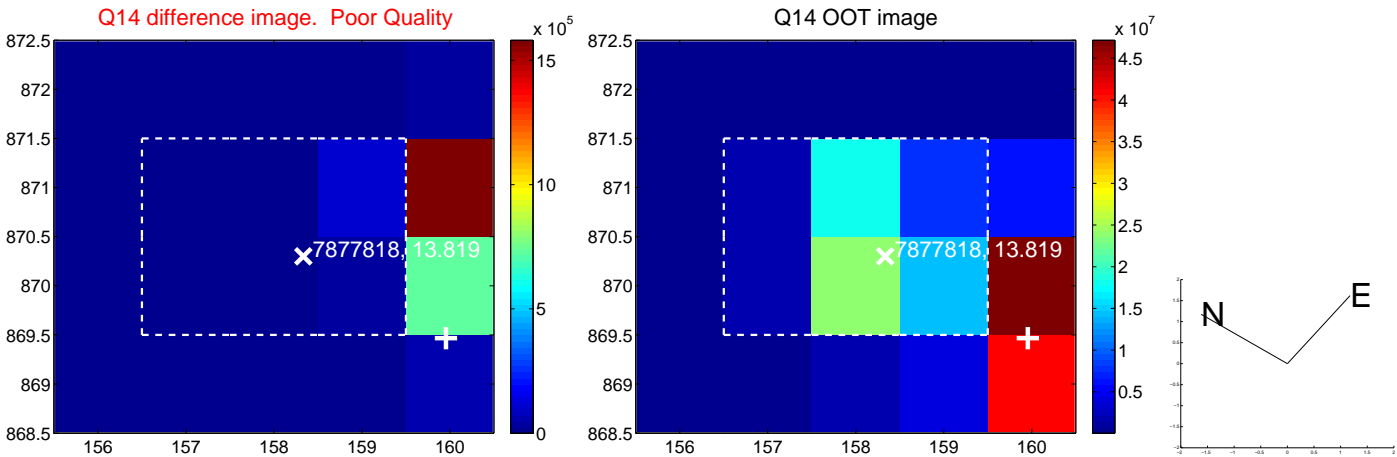
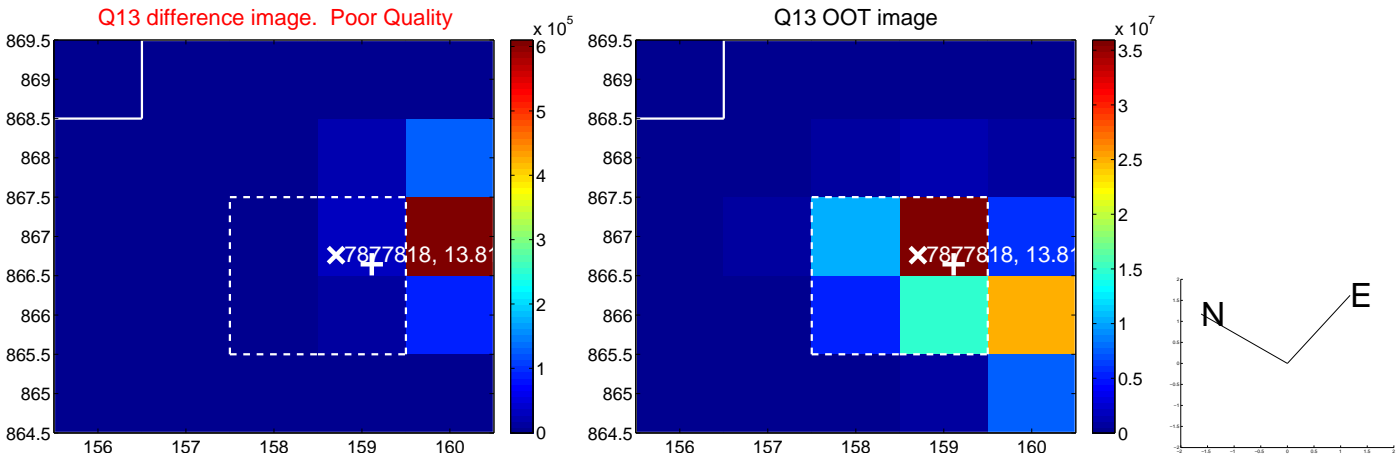
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



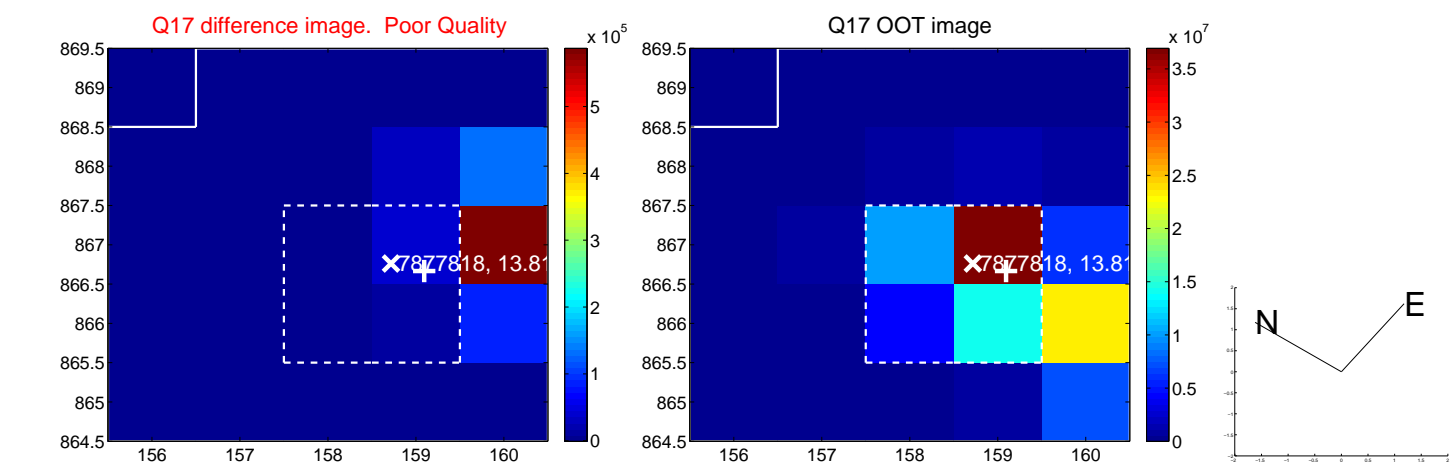
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



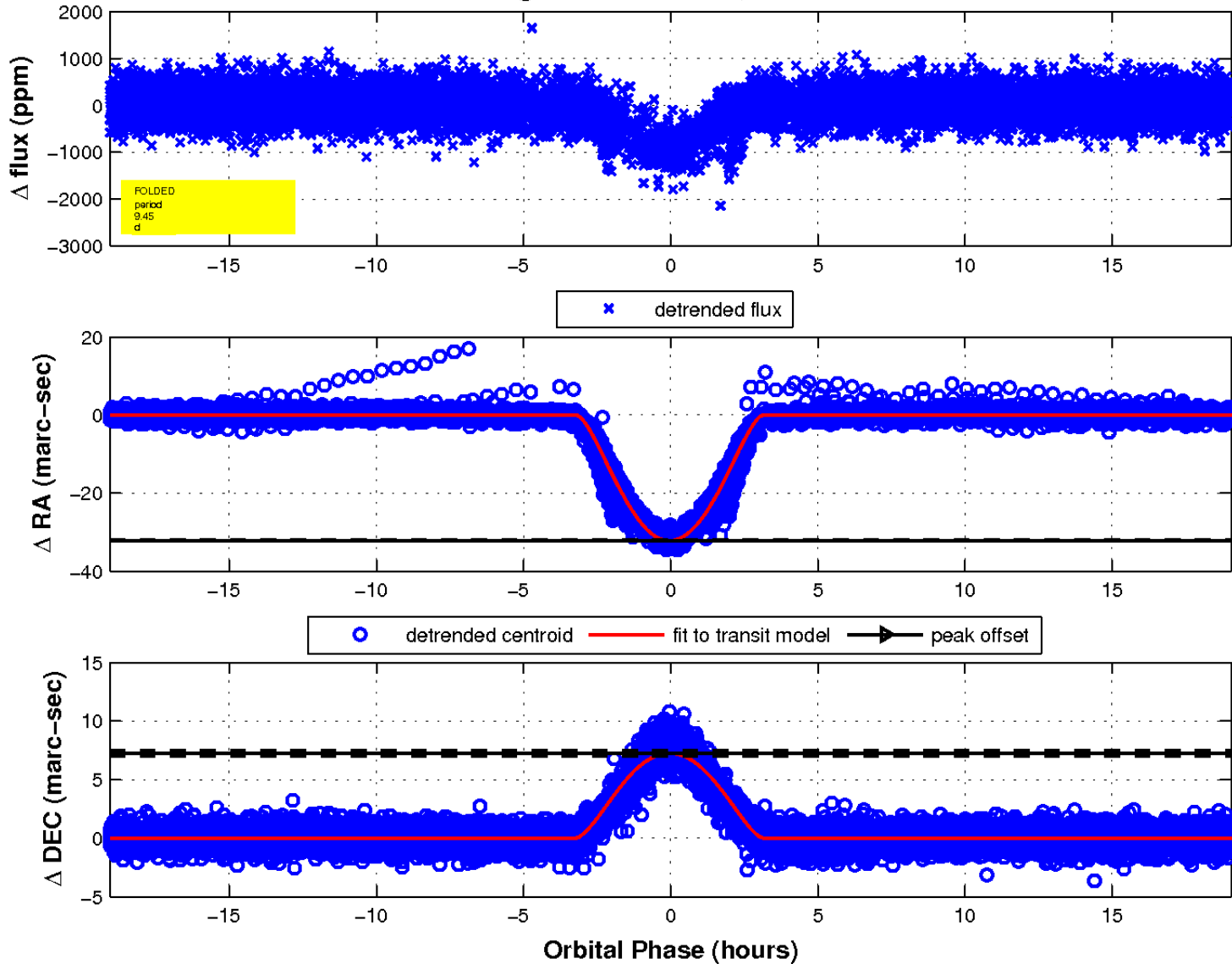
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

