

KIC 002718778

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})
002718778-01	OBS	2489.01	3.924509	132.405325	419.7	3.832	22.7	22.6	0.85	5776	2.06	315.47
002718778-02	OBS	No	467.514706	461.291472	1003.6	25.004	8.0	9.7	0.85	5776	3.04	0.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002718778-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
002718778-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

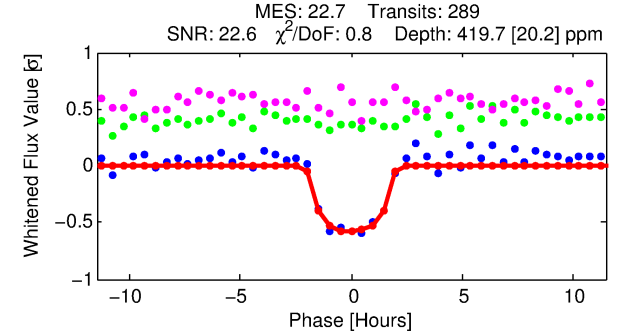
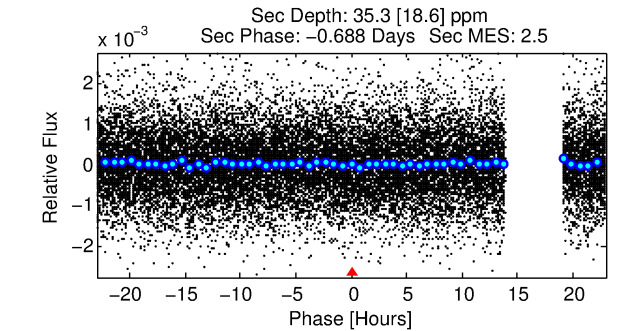
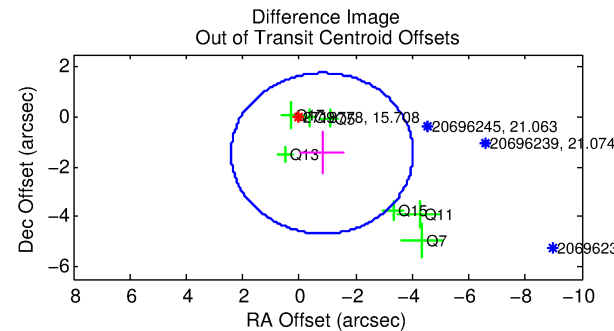
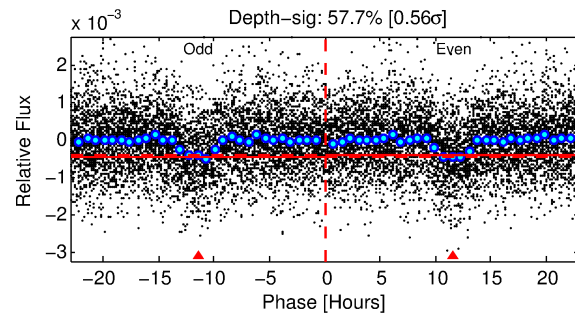
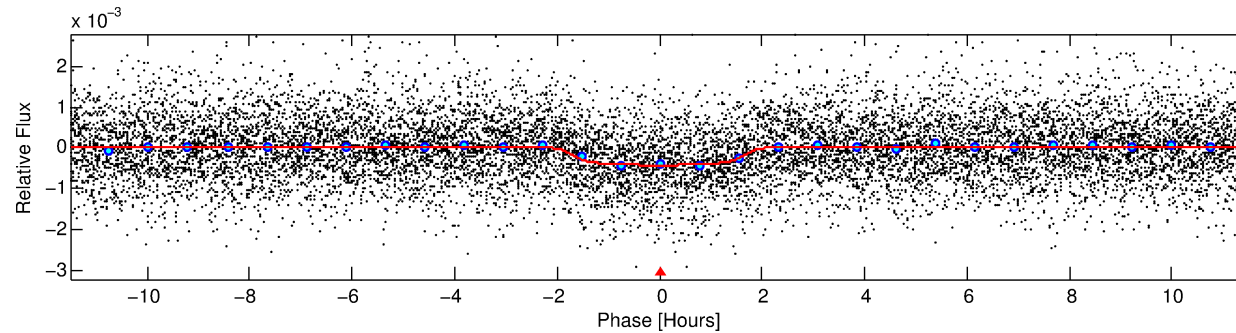
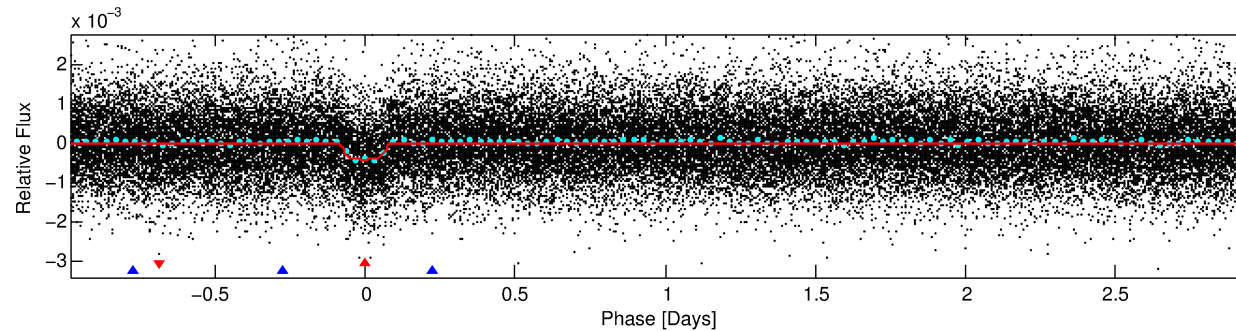
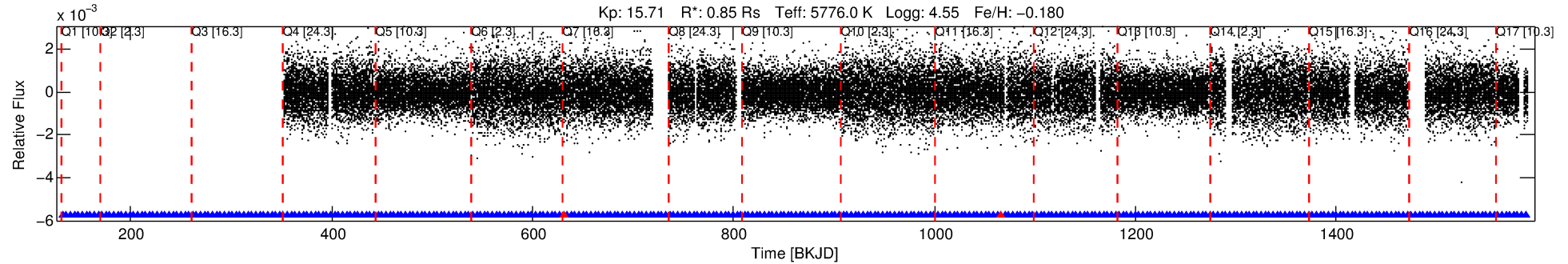
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 002718778-01

No Significant Match Found

KOI: K02489.01 Corr: 0.984



DV Fit Results:

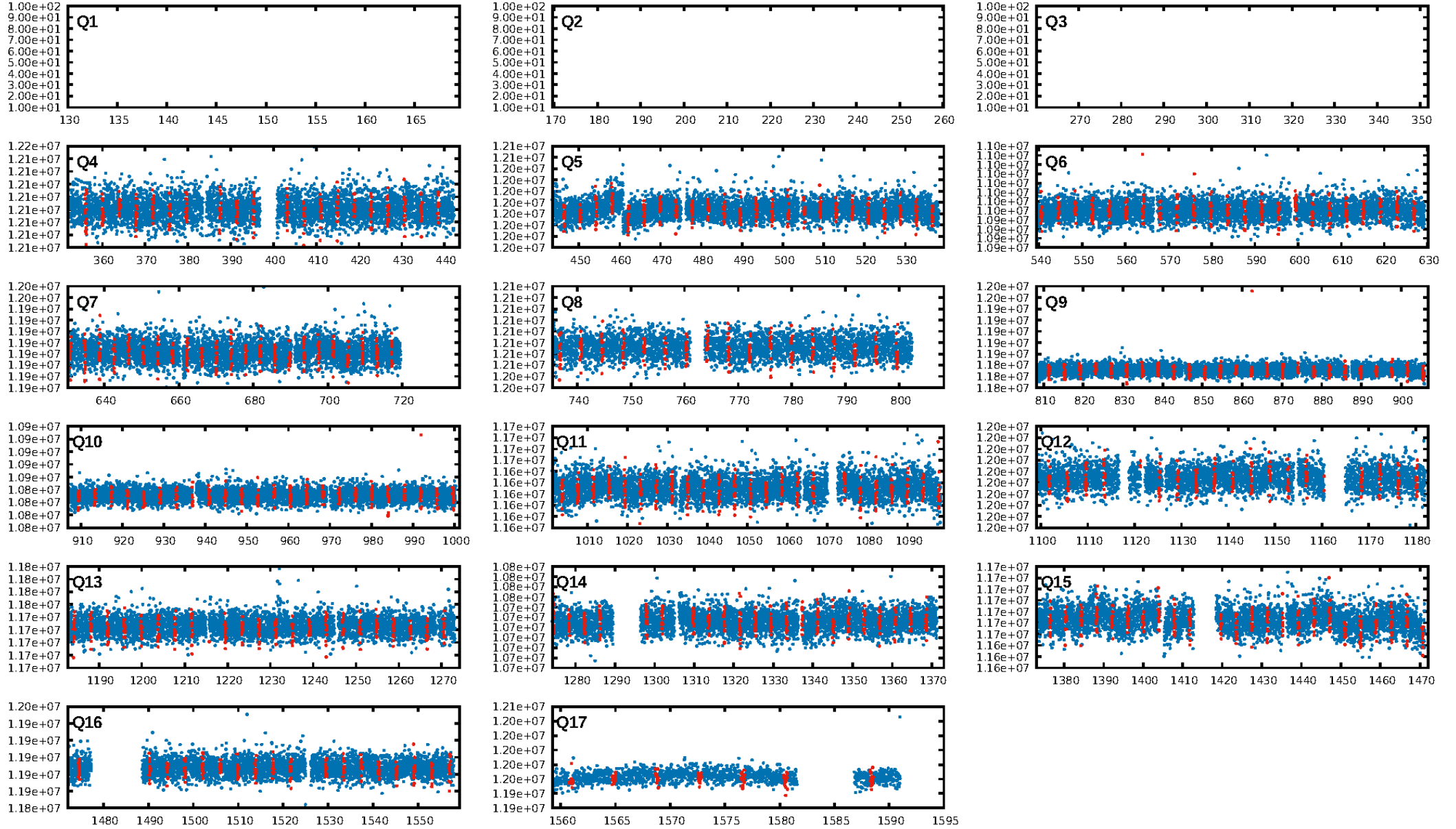
Period = 3.92451 [0.00002] d
 Epoch = 132.4053 [0.0030] BKJD
 Rp/R* = 0.0223 [0.0031]
 a/R* = 3.91 [2.44]
 b = 0.90 [0.14]
 Seff = 315.47 [105.96]
 Teq = 1075 [90] K
 Rp = 2.06 [0.58] Re
 a = 0.0477 [0.0100] AU
 Ag = 10.41 [6.99] [1.35σ]
 Teffp = 2984 [458] K [4.09σ]

DV Diagnostic Results:

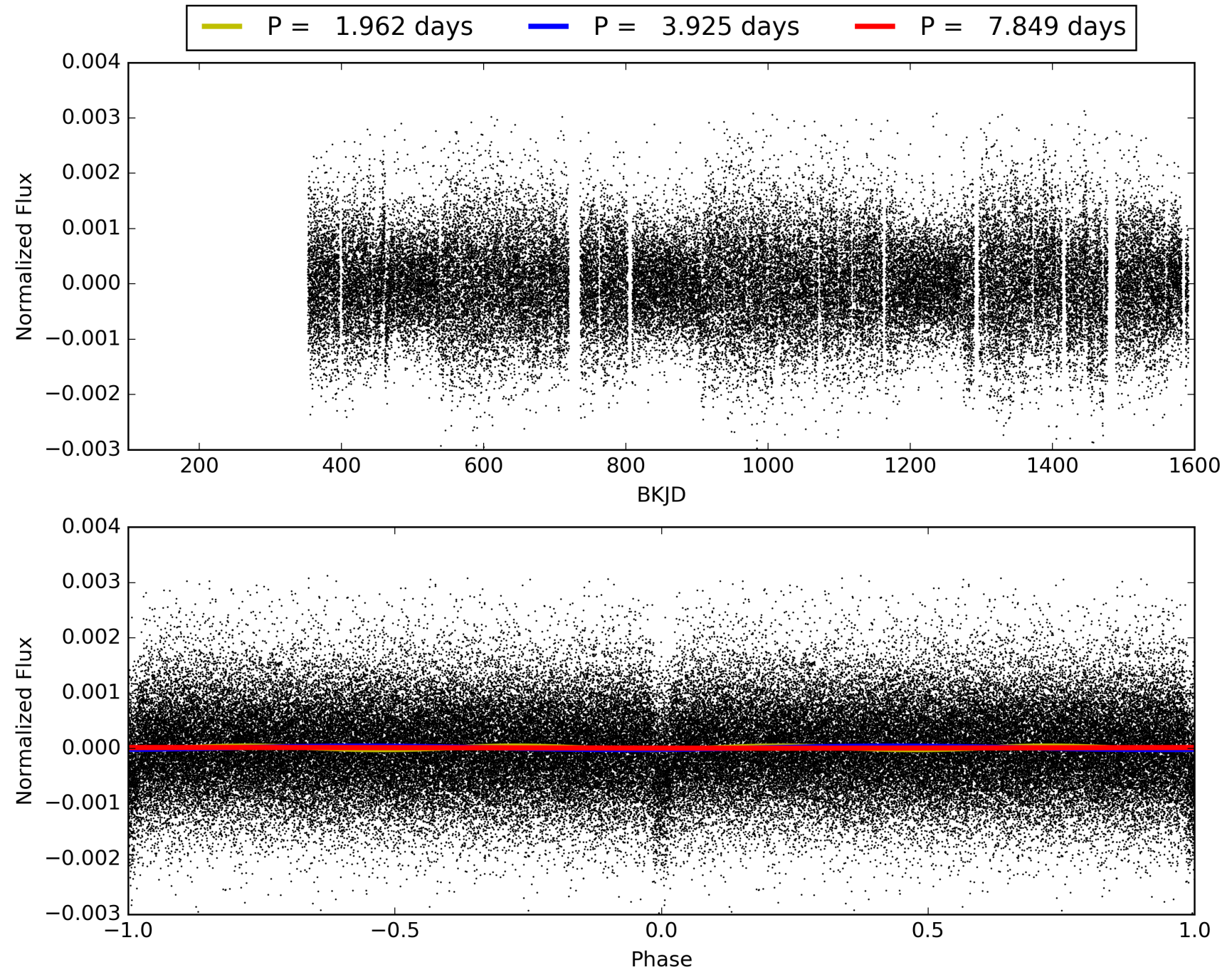
ShortPeriod-sig: N/A
 LongPeriod-sig: 100.0% [439.84σ]
 ModelChiSquare2-sig: N/A
 ModelChiSquareGof-sig: N/A
 Bootstrap-pfa: 5.02e-113
 RollingBand-fgt: 0.99 [280/282]
 GhostDiagnostic-chr: 6.715

Centroid-sig: 2.2%
 Centroid-so: 0.926 arcsec [1.92σ]
 OotOffset-rm: 1.674 arcsec [1.56σ]
 KicOffset-rm: 0.450 arcsec [1.48σ]
 OotOffset-st: 0/3/0/4 [7]
 KicOffset-st: 2/3/4/4 [13]
 DiffImageQuality-fgm: 0.77 [10/13]
 DiffImageOverlap-fno: 1.00 [14/14]

TCE 002718778-01, PDC Light Curves

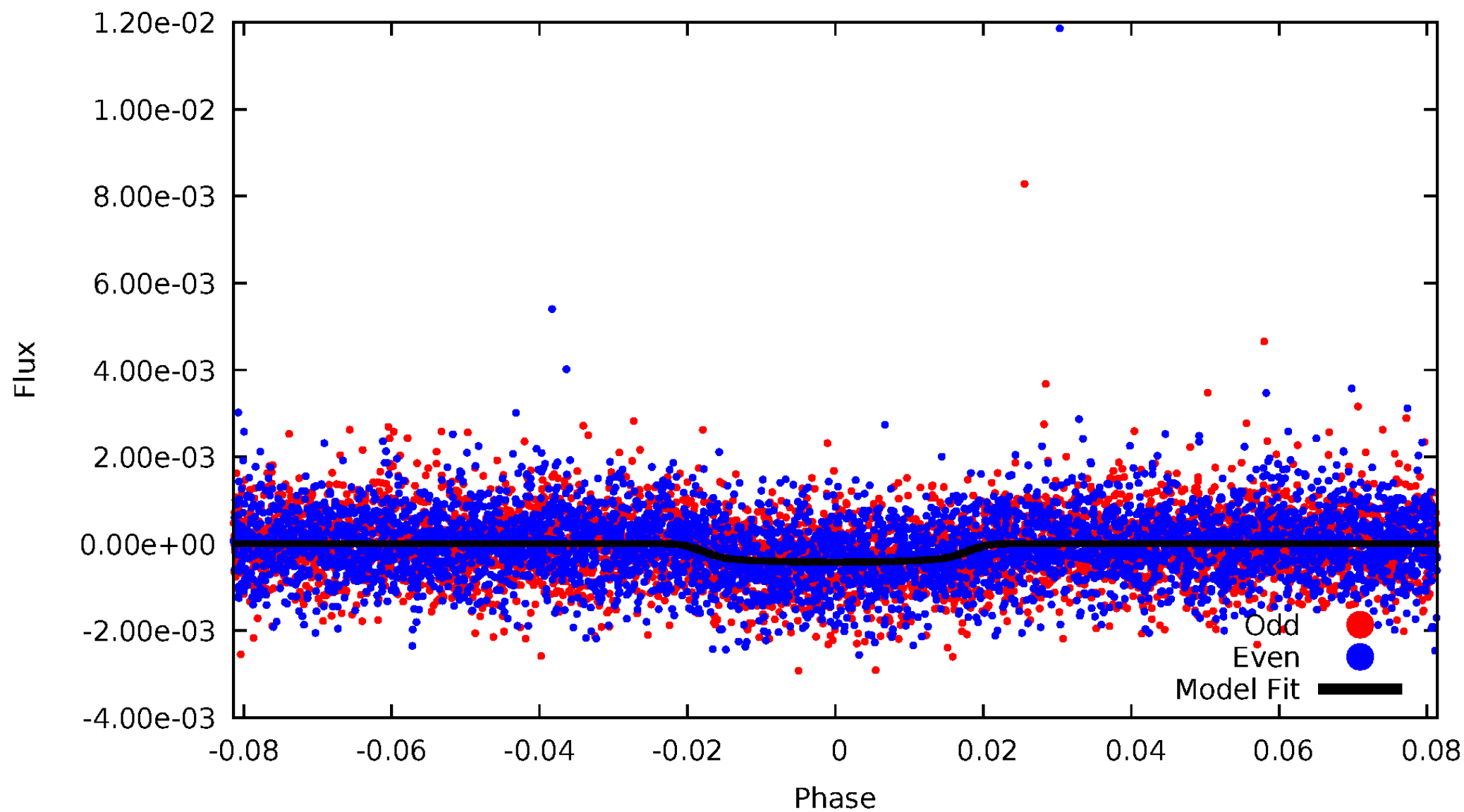


TCE 002718778-01



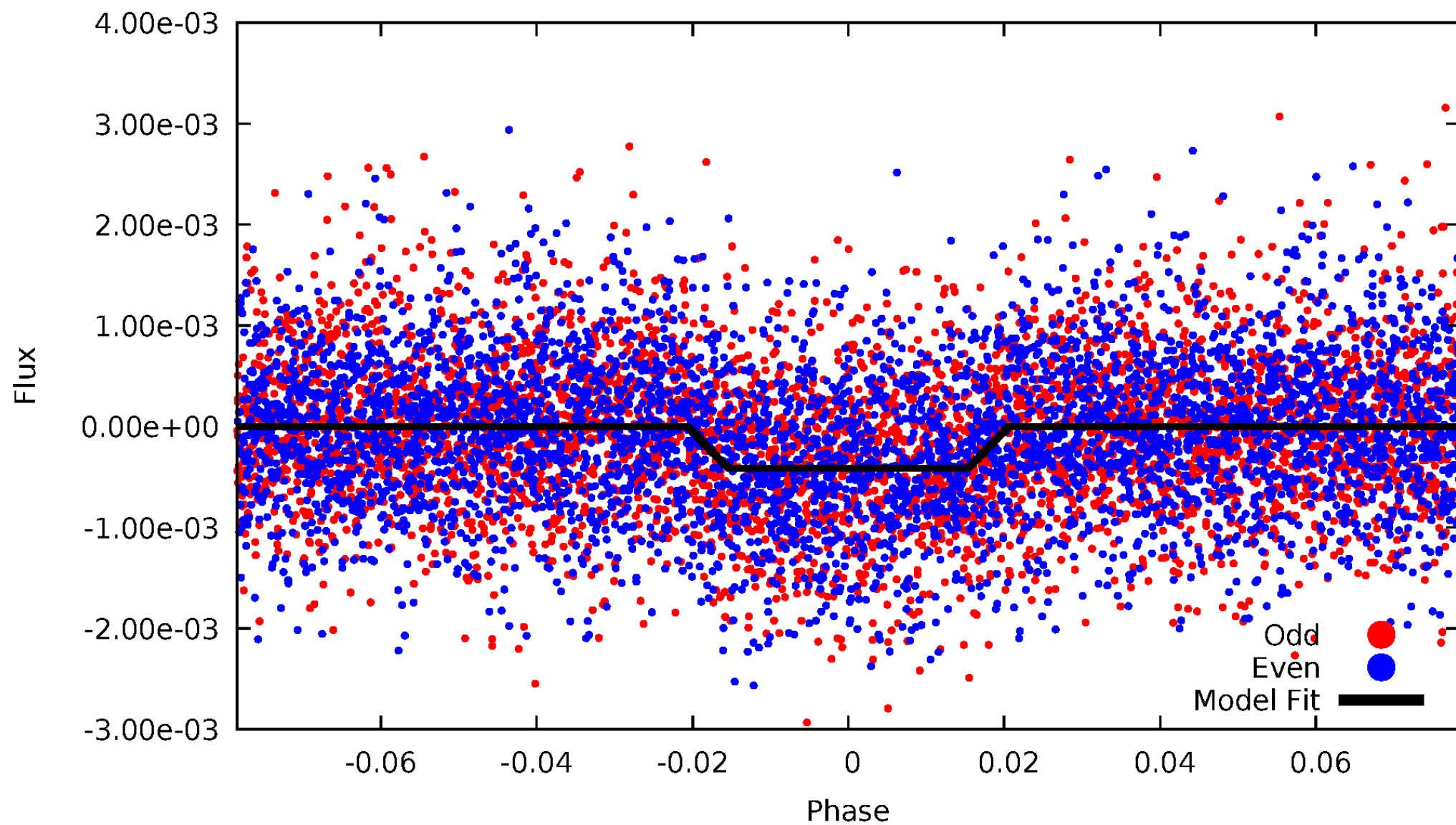
DV Odd/Even

TCE 002718778-01



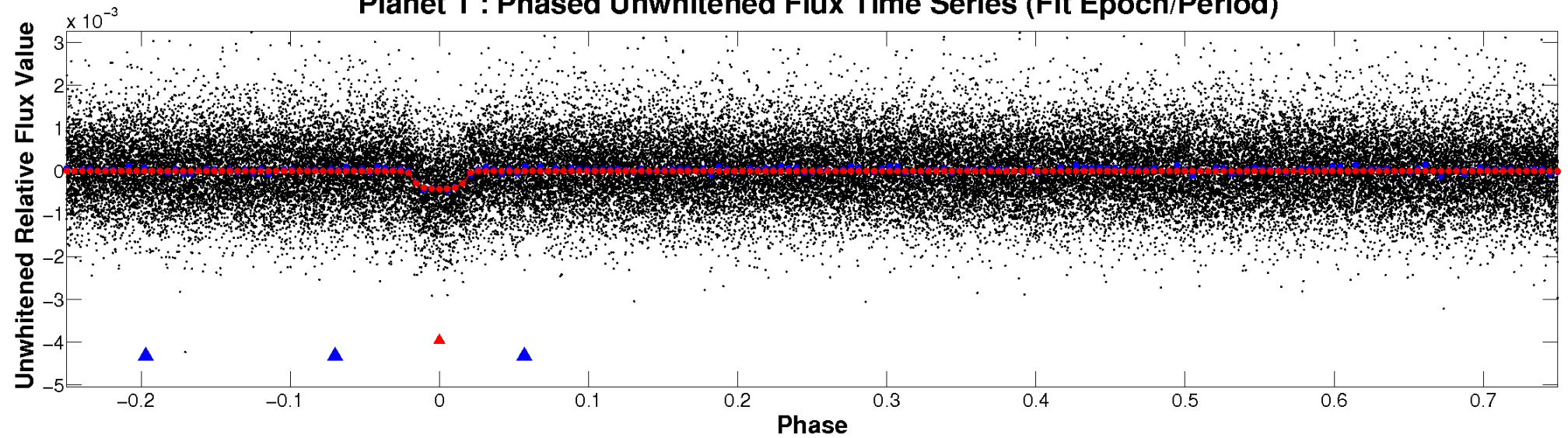
ALT Odd/Even

TCE 002718778-01

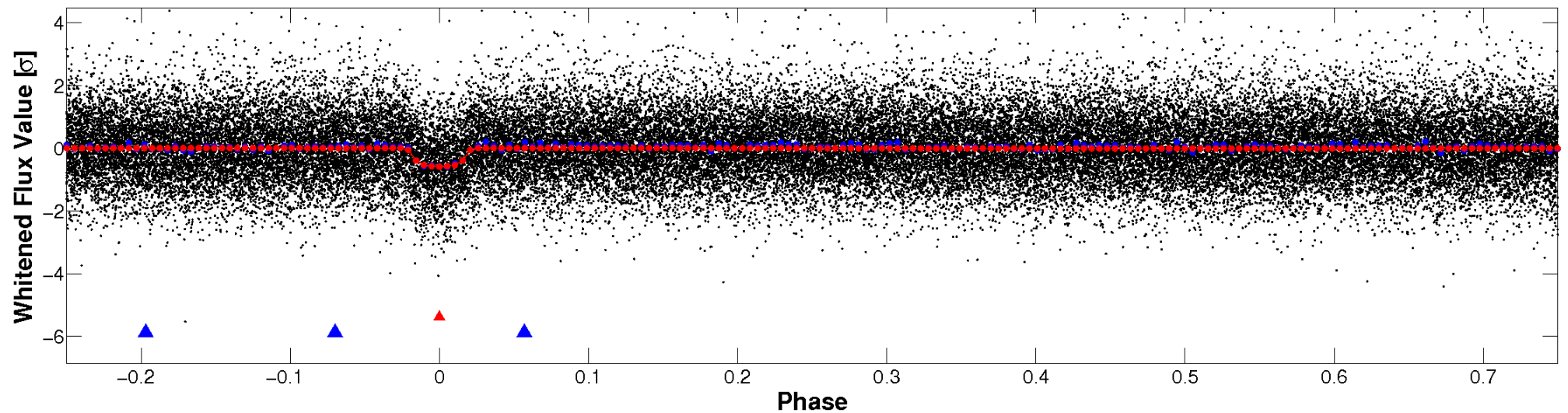


Non-Whitened Vs. Whitened Light Curve

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

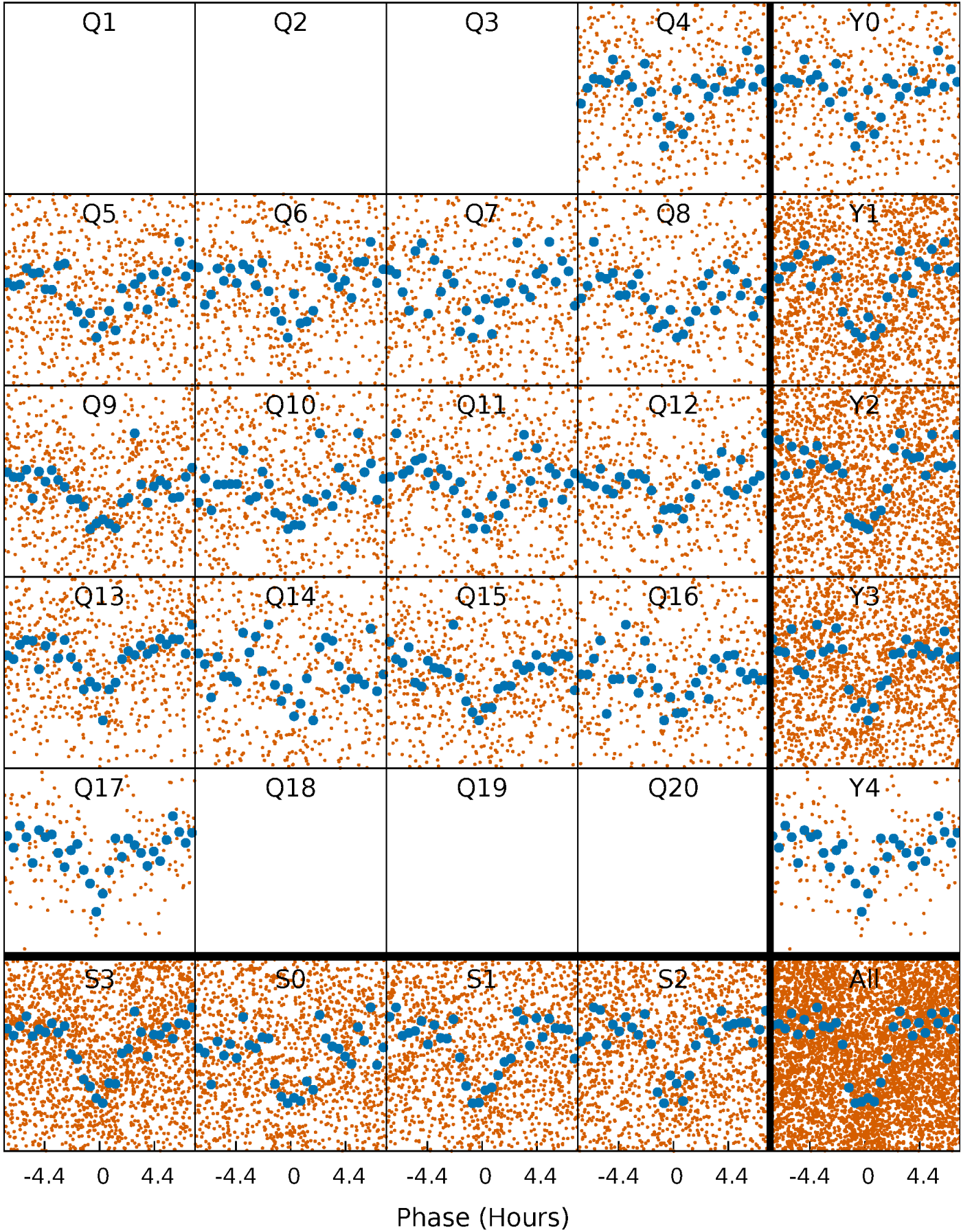


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



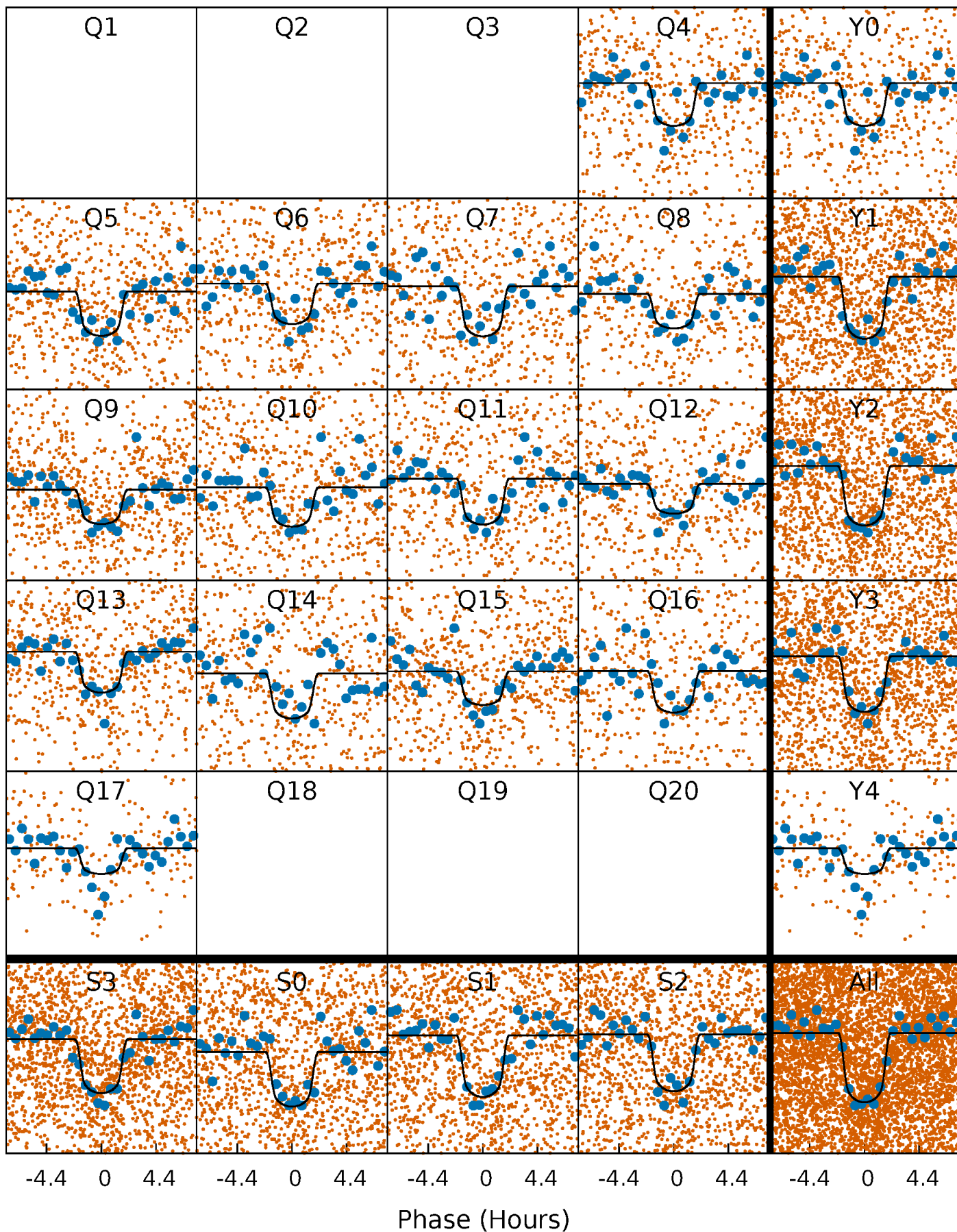
PDC Quarter-Phased Transit Curves

TCE 002718778-01 P= 3.924509 Days $T_0=132.405325$ (BKJD)



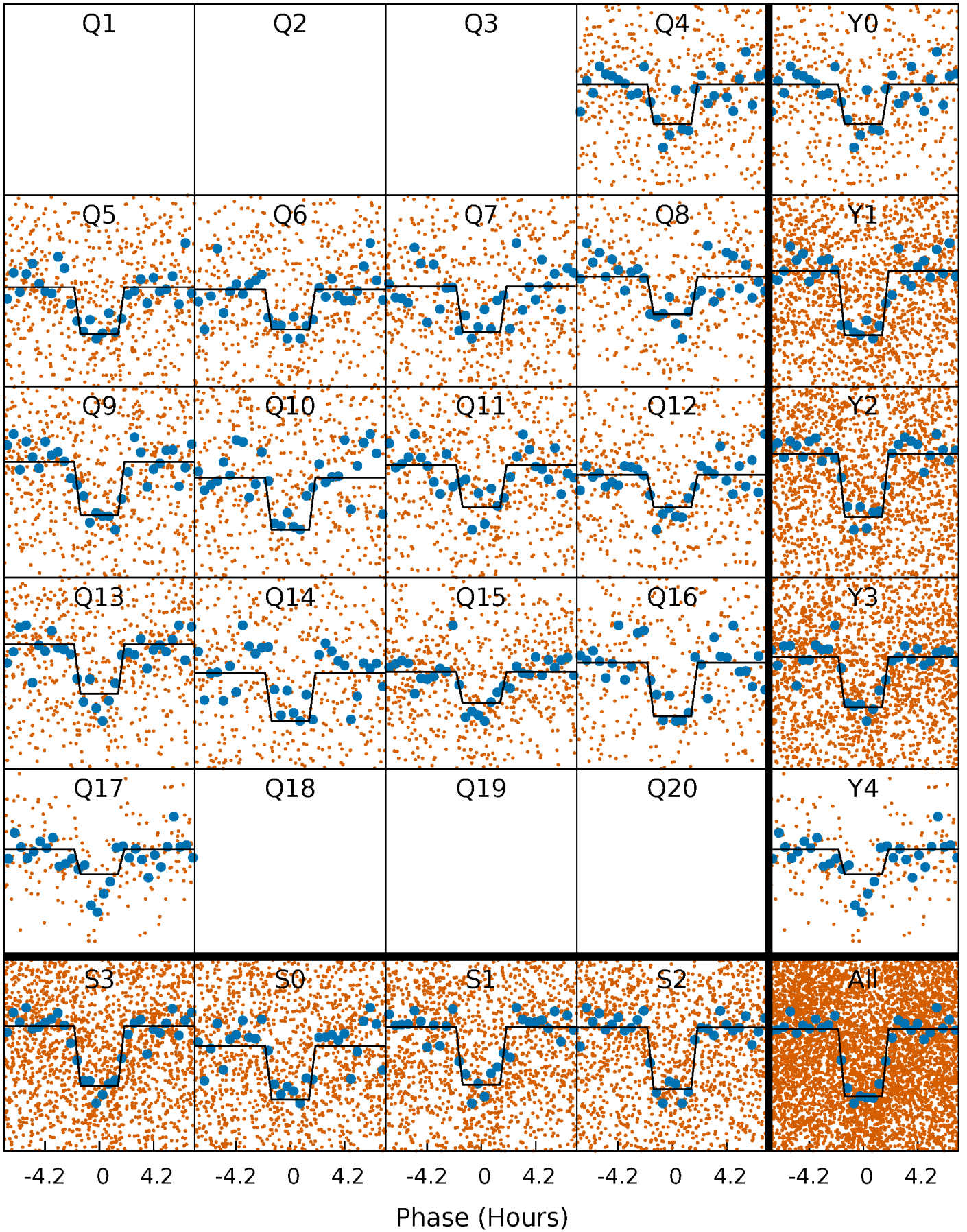
DV Quarter-Phased Transit Curves

TCE 002718778-01 P= 3.924509 Days $T_0=132.405325$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

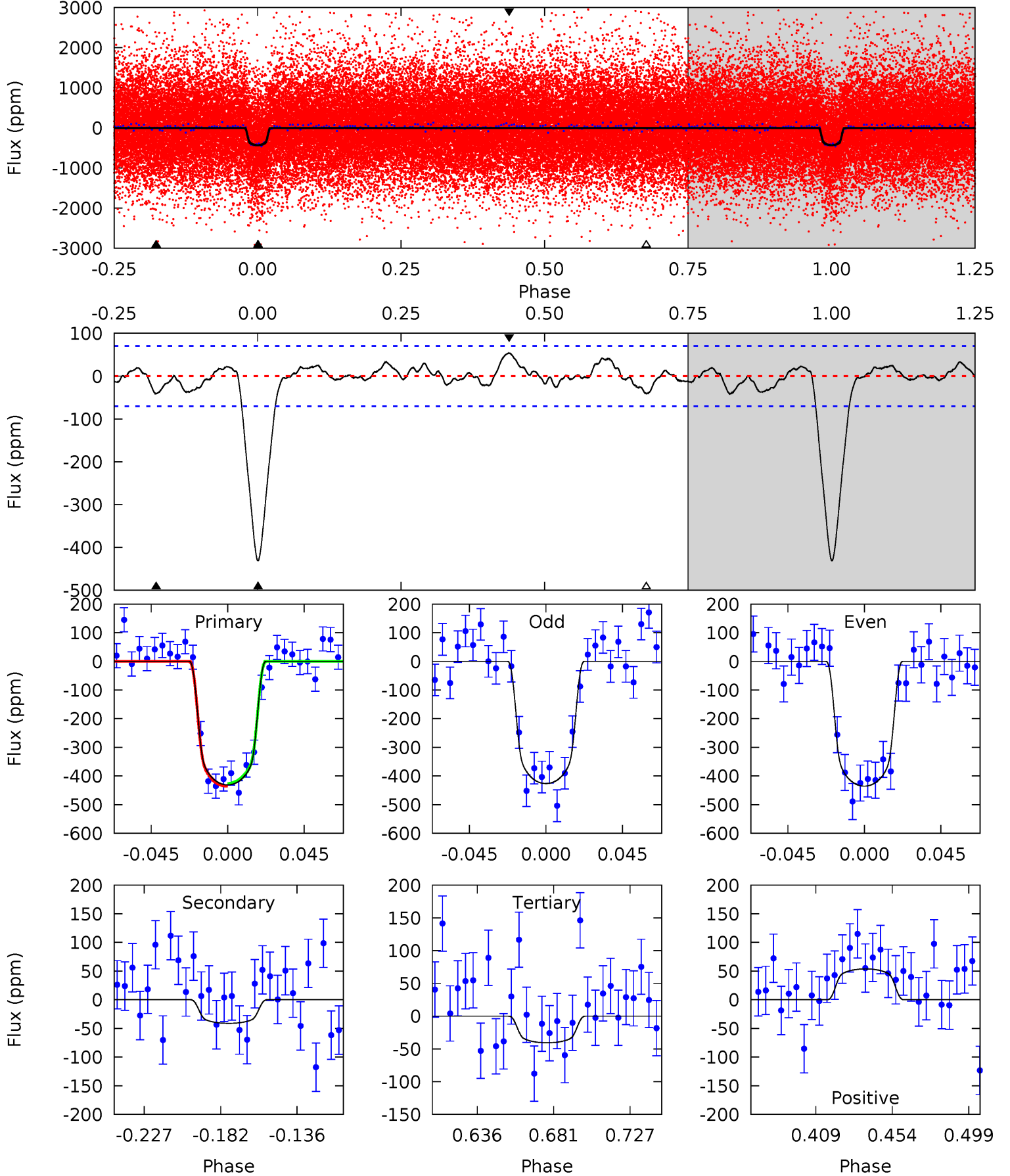
TCE 002718778-01 P= 3.924532 Days $T_0=132.401612$ (BKJD)



DV Model-Shift Uniqueness Test

002718778-01, P = 3.924509 Days, E = 132.405325 Days

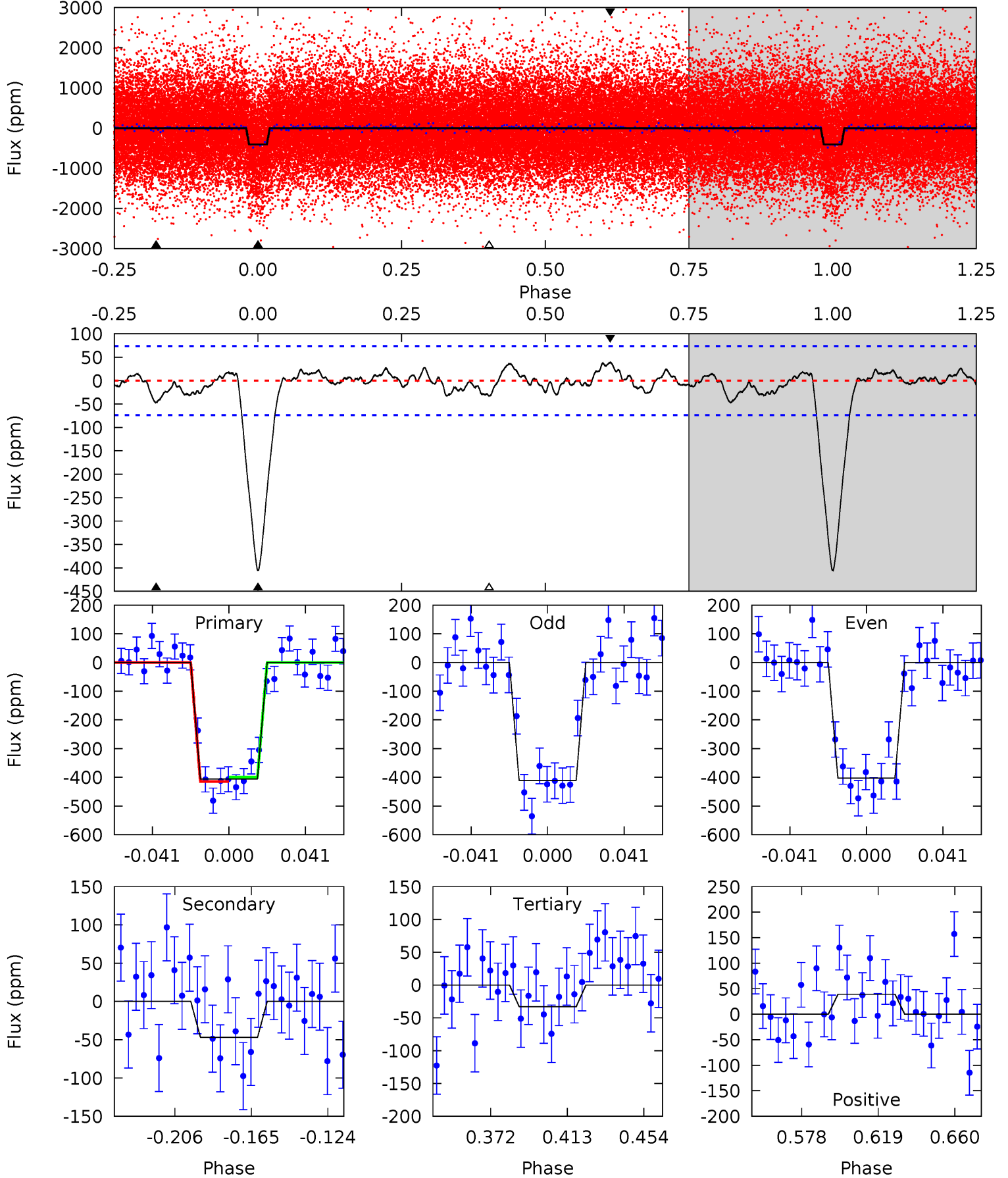
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	2.77	2.74	3.62	4.73	2.00	1.26	26.3	25.4	0.03	-0.85	0.30	1.02	0.11	0.32



Alt Model-Shift Uniqueness Test

002718778-01, P = 3.924532 Days, E = 132.401612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.2	3.03	2.11	2.51	4.75	2.04	1.03	24.0	23.6	0.91	0.52	0.27	0.99	0.09	0.48



Stellar Parameters For KIC 002718778

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5776^{+181}_{-201}	$4.554^{+0.042}_{-0.168}$	$-0.180^{+0.300}_{-0.300}$	$0.849^{+0.209}_{-0.075}$	$0.939^{+0.098}_{-0.120}$	$2.161^{+0.477}_{-0.970}$
	+3%/-3%	+1%/-4%	+167%/-167%	+25%/-9%	+10%/-13%	+22%/-45%
Source	KIC0	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 002718778-01 / KOI 2489.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-41 ± 15	$2.16^{+0.37}_{-0.34}$	1528^{+94}_{-73}	3497^{+280}_{-279}	10^{+7}_{-4}
Alt.	-47 ± 16	$1.97^{+0.33}_{-0.35}$	1526^{+96}_{-69}	3708^{+306}_{-321}	14^{+9}_{-6}

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

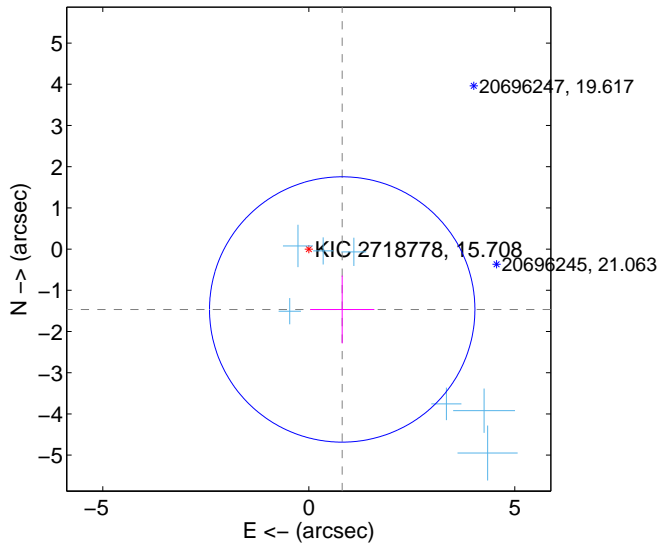
Supplemental centroid analysis for 002718778-01. Kepler magnitude: 15.71. Transit SNR 22.60

There are 10 quarters with good PRF difference image offsets

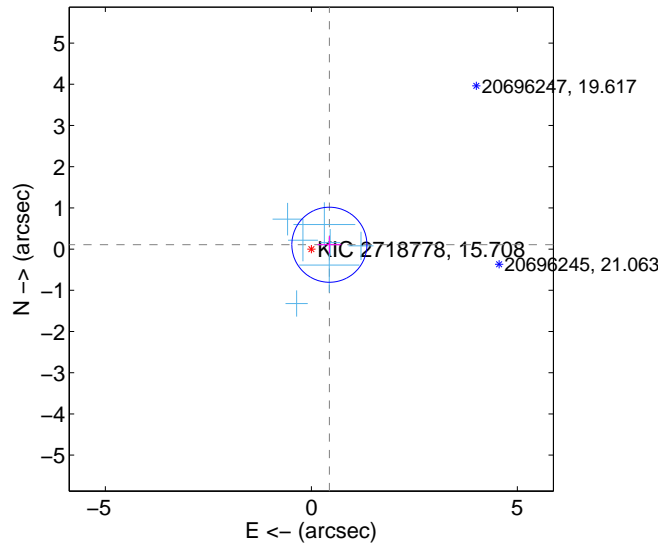
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.674 ± 1.073	1.56	-0.811 ± 0.780	-1.465 ± 0.823
PRF-fit source offset from KIC position	0.450 ± 0.304	1.48	-0.437 ± 0.290	0.106 ± 0.210
photometric centroid source offset	0.93 ± 0.48	1.92	0.83 ± 0.48	0.41 ± 0.47

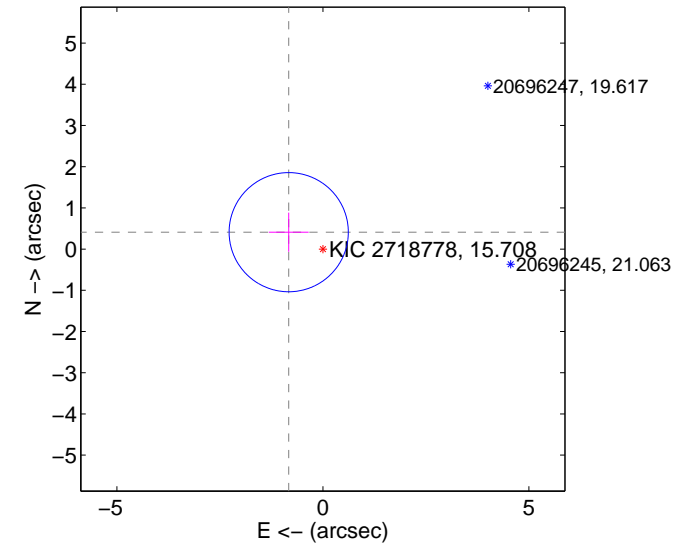
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

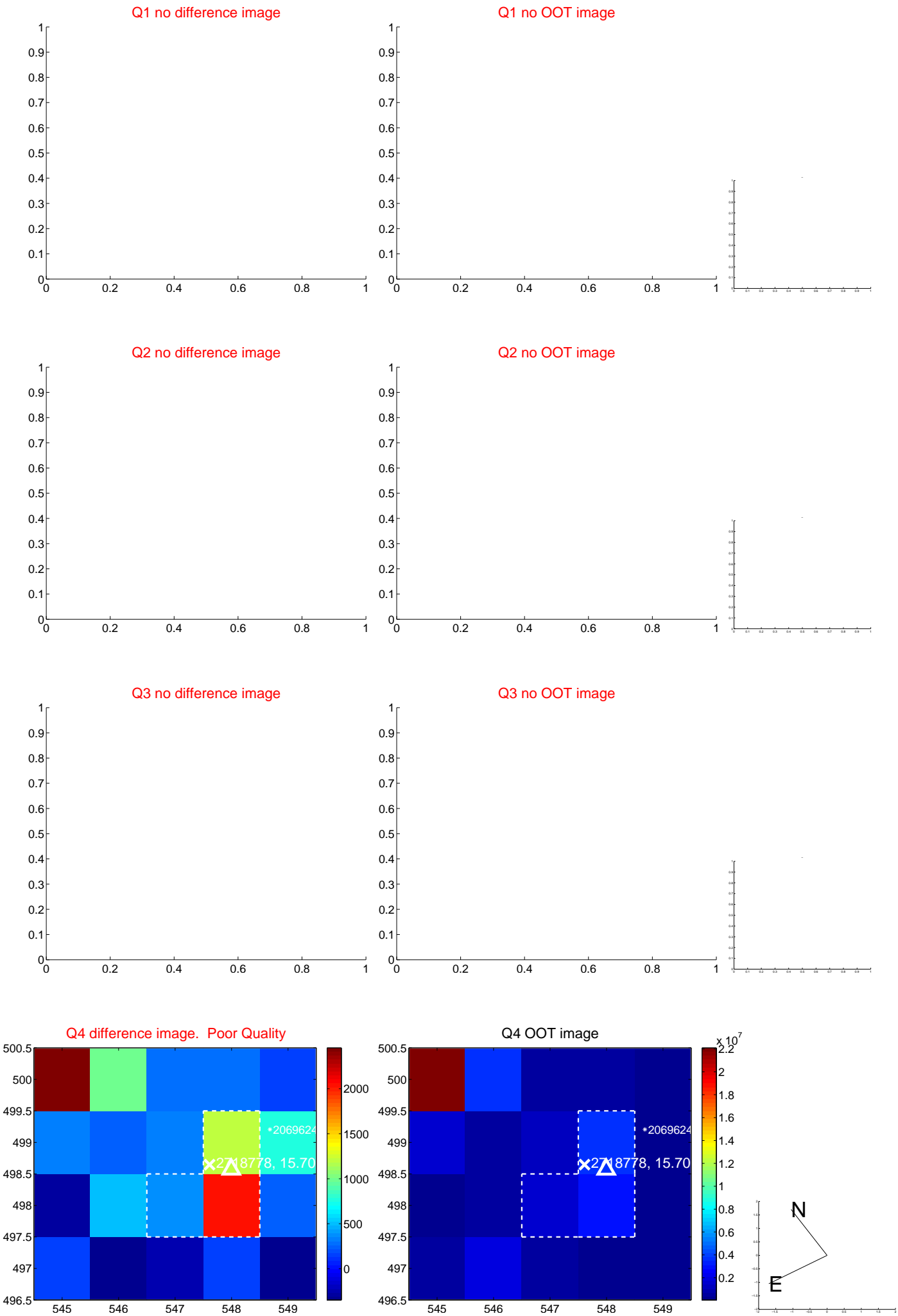


offset from photometric centroids

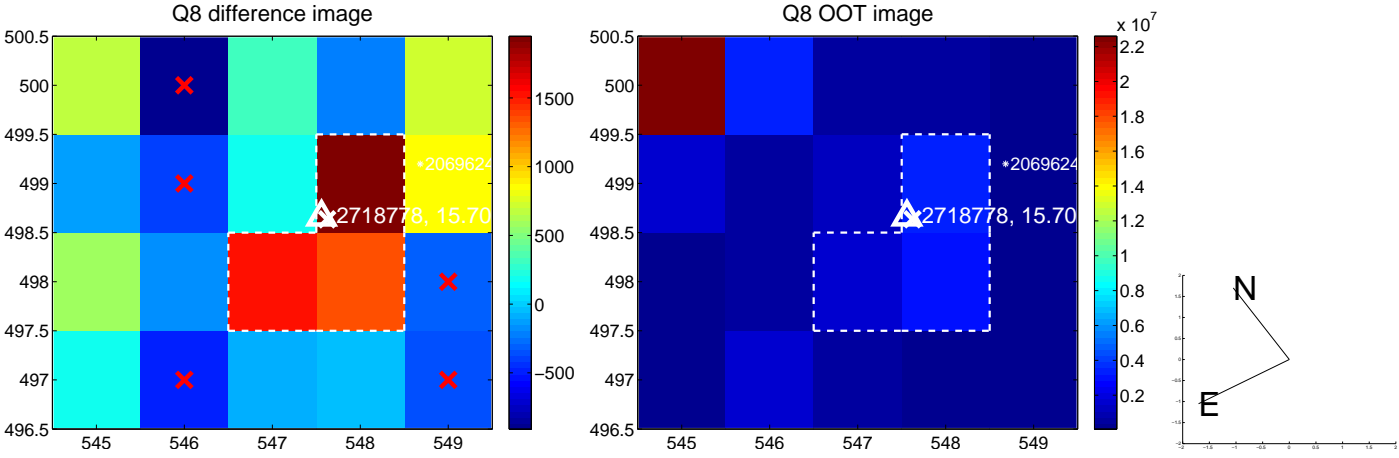
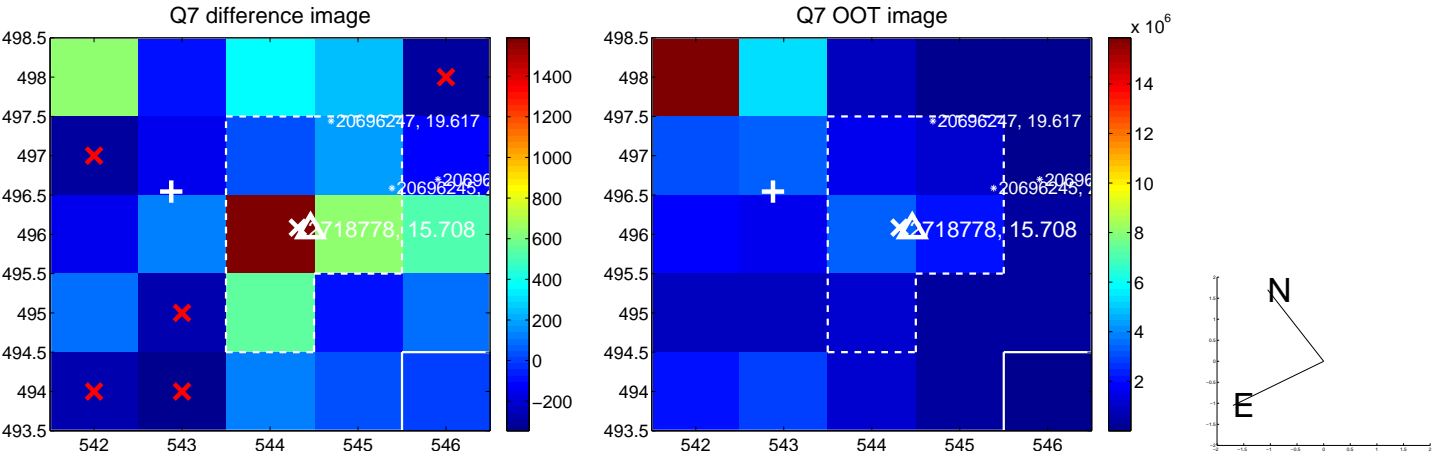
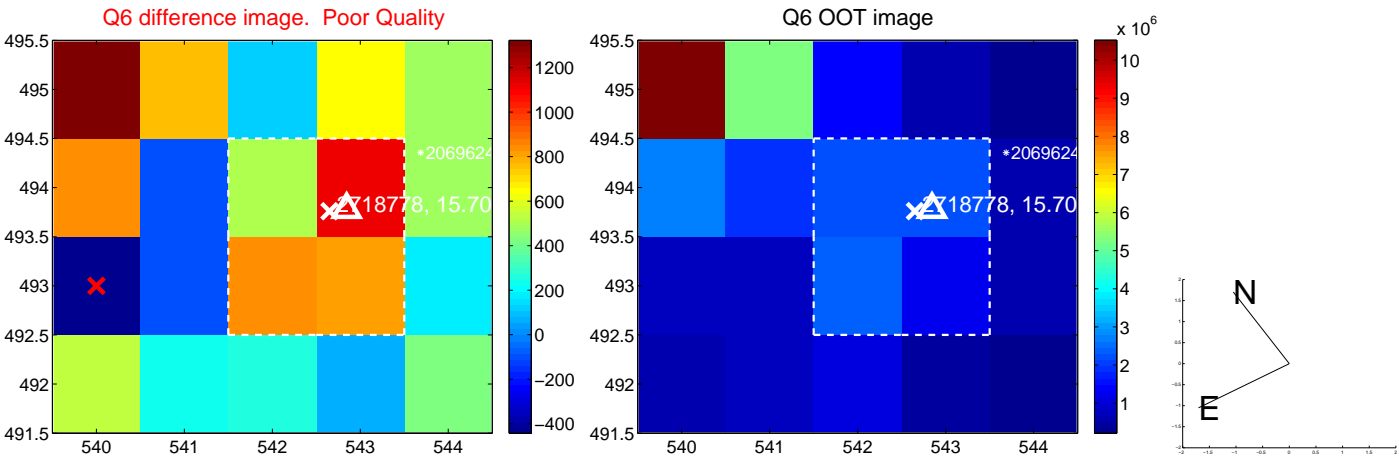
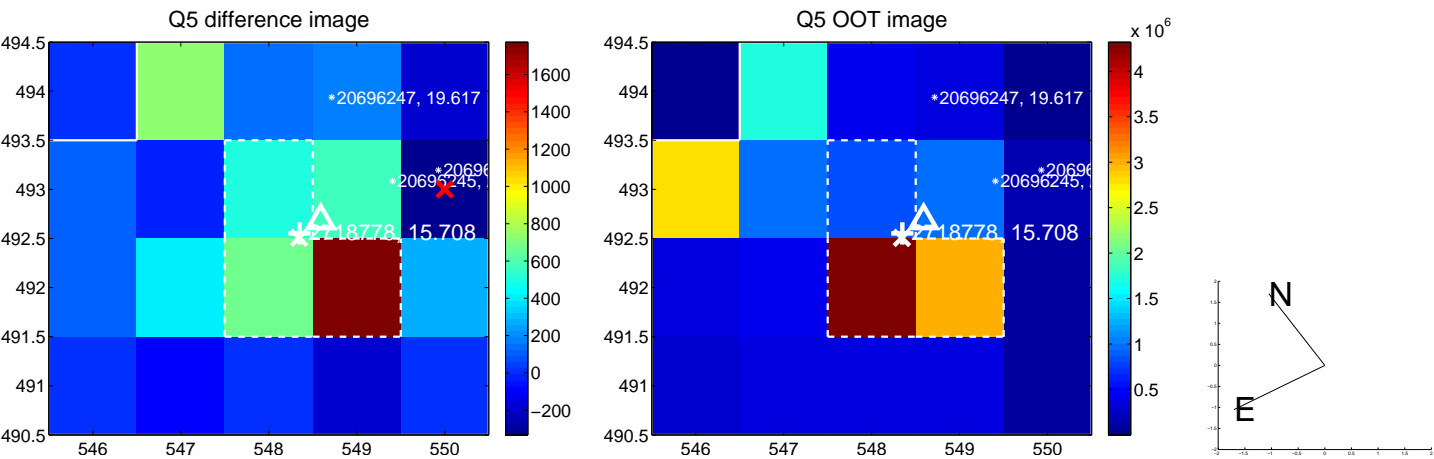


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

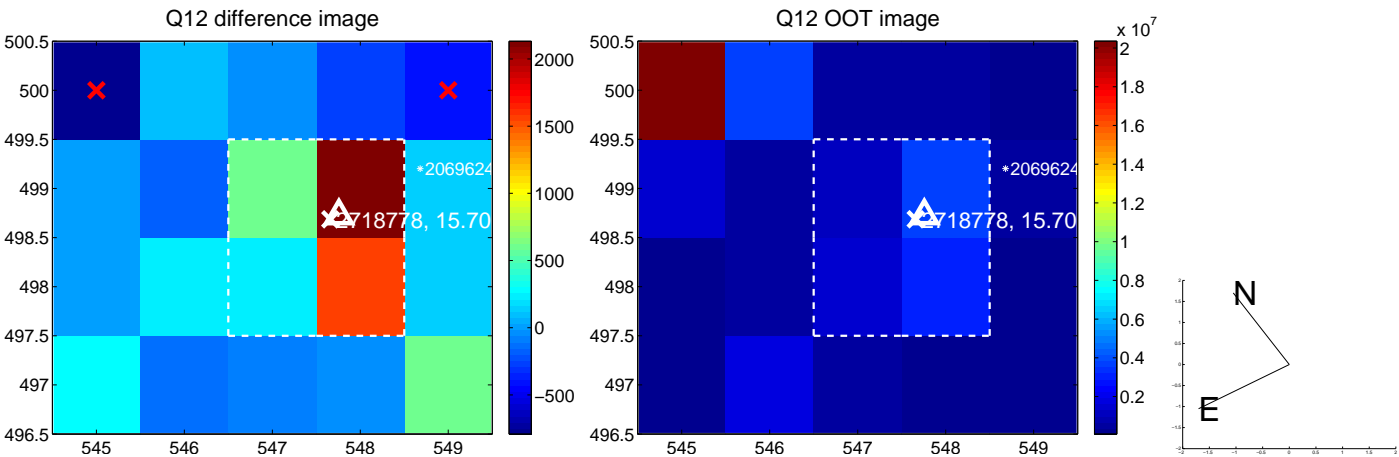
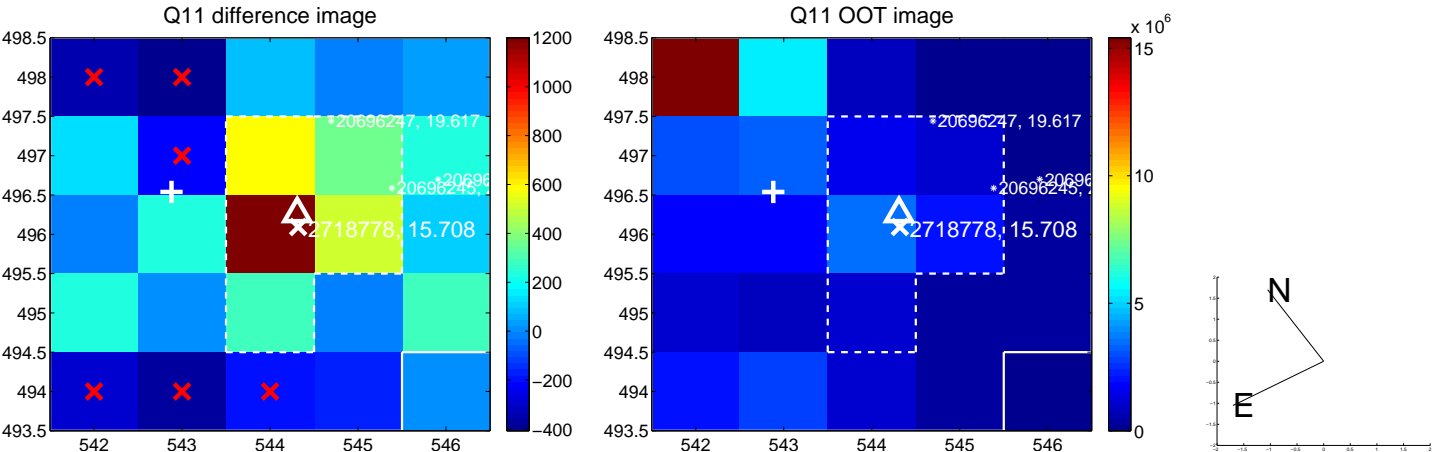
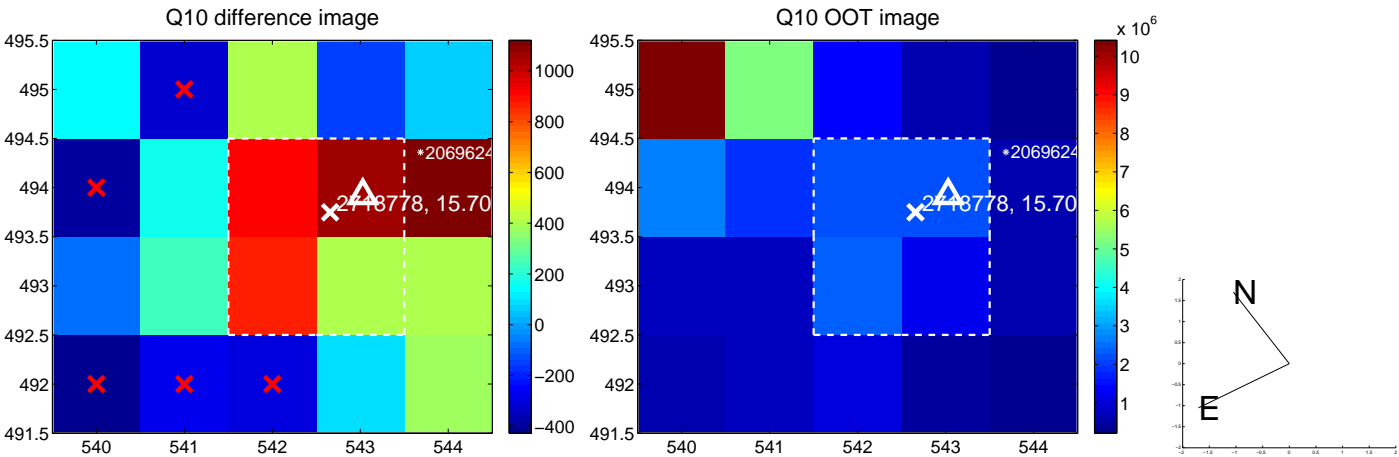
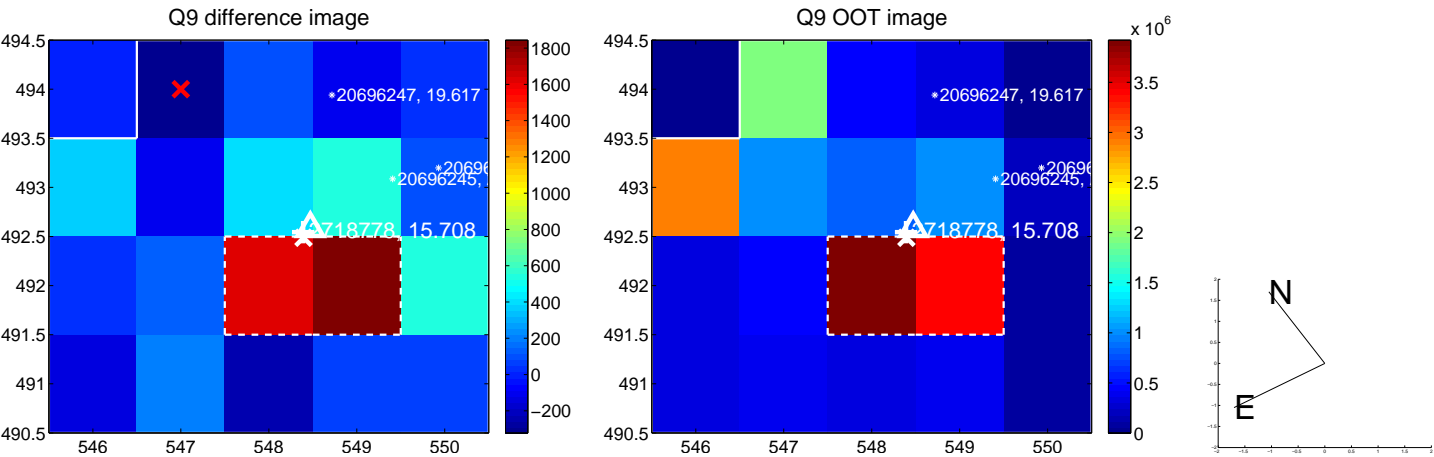
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



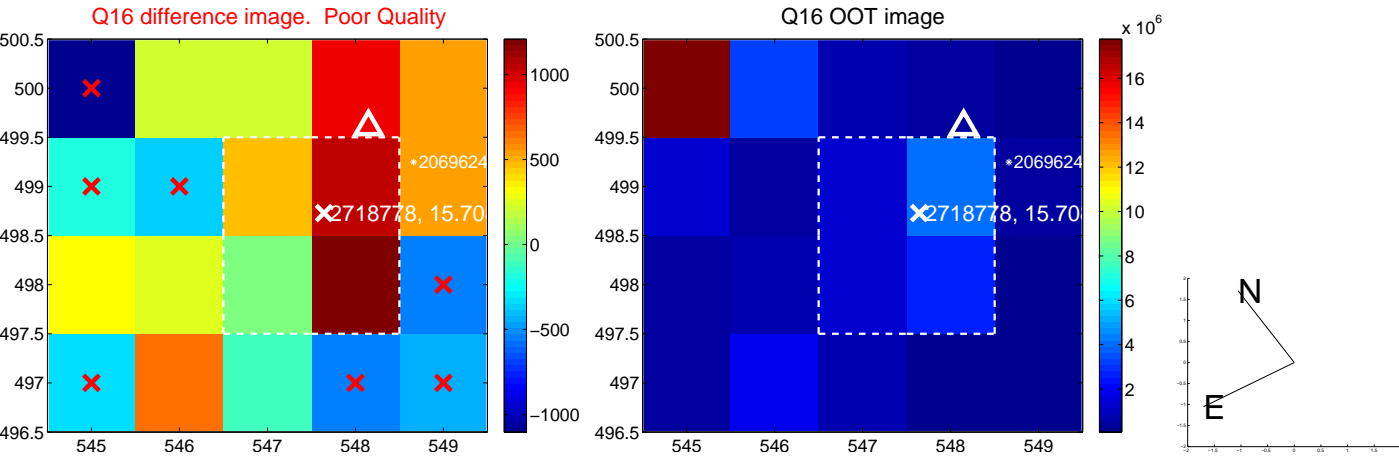
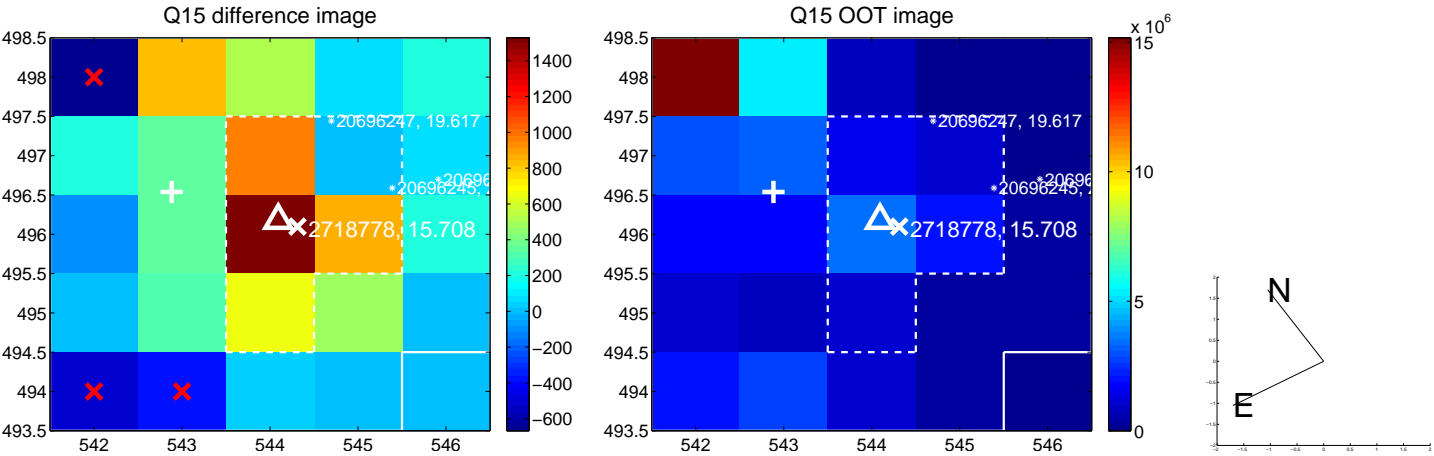
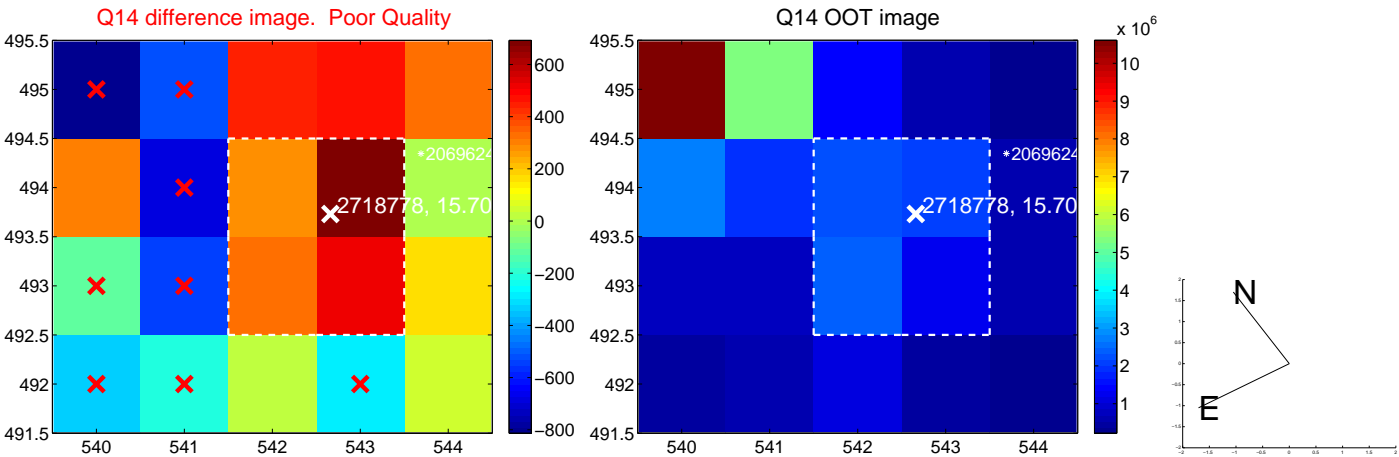
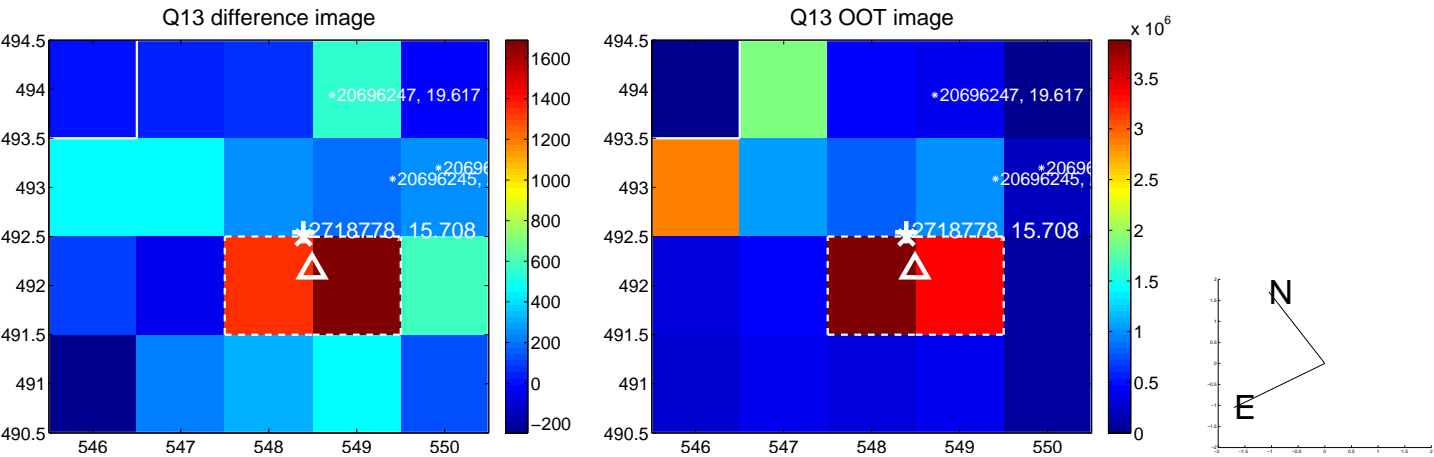
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



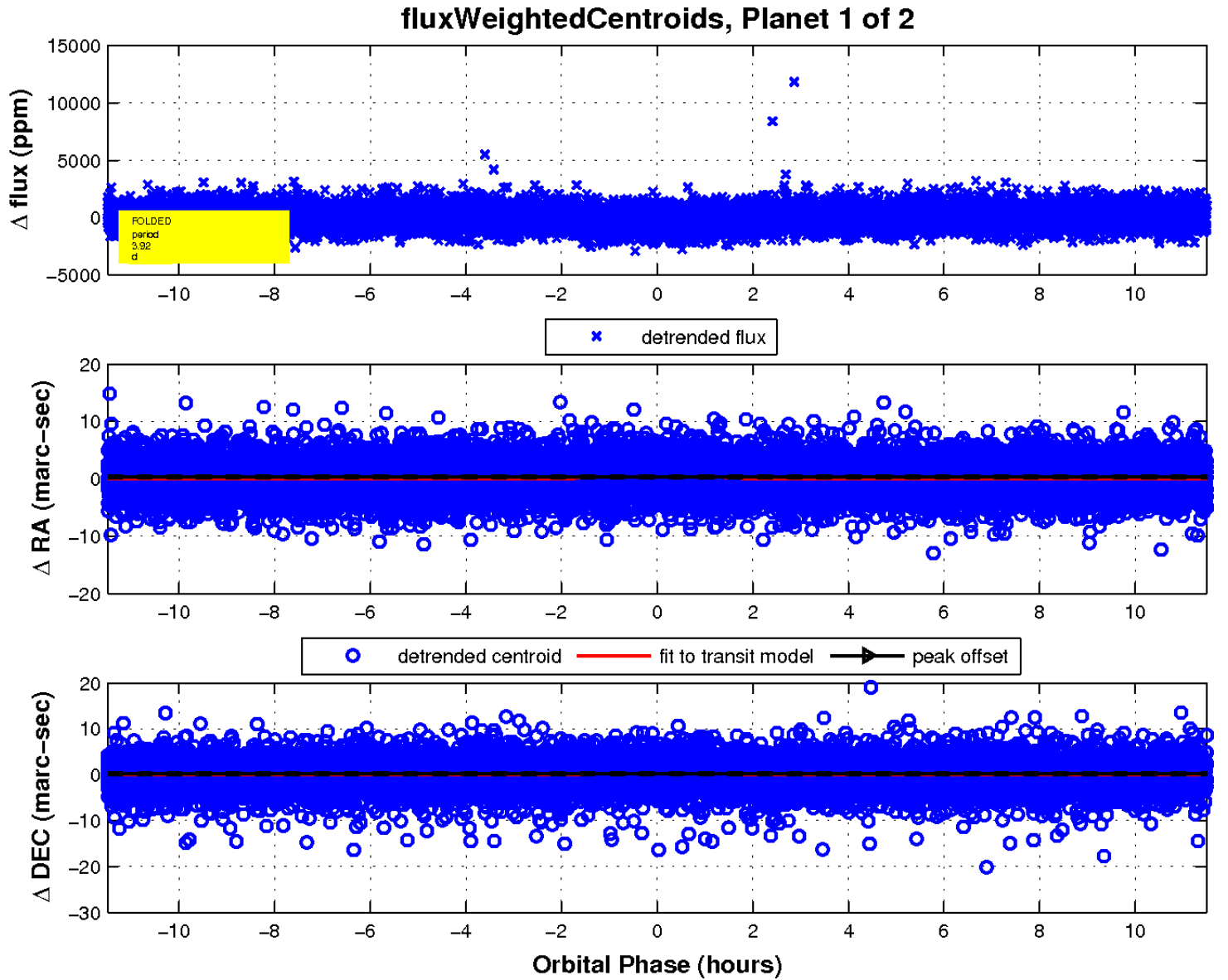
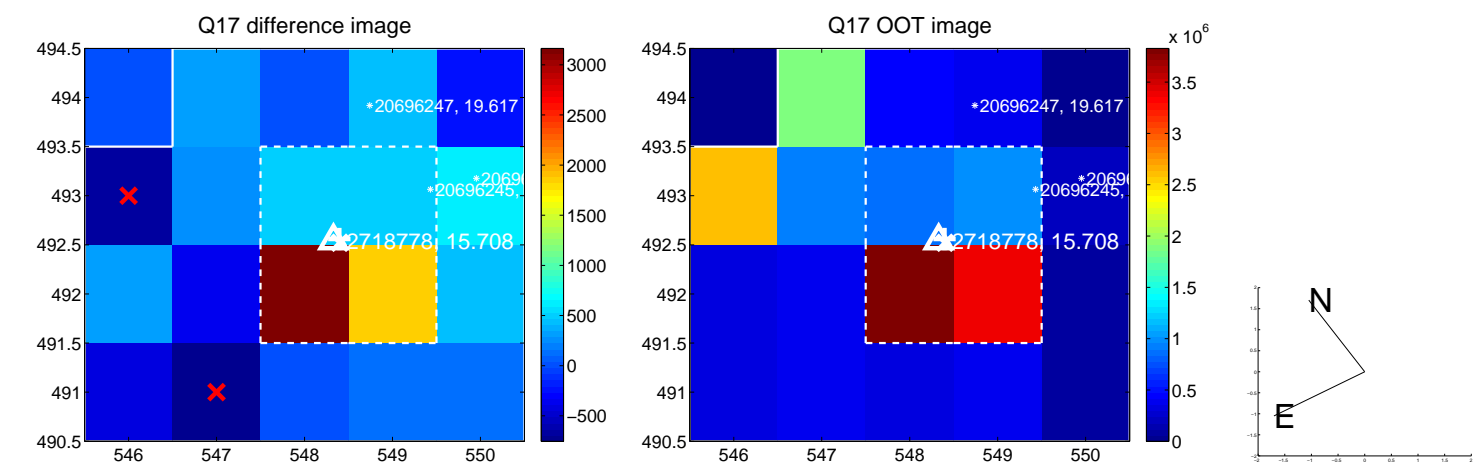
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

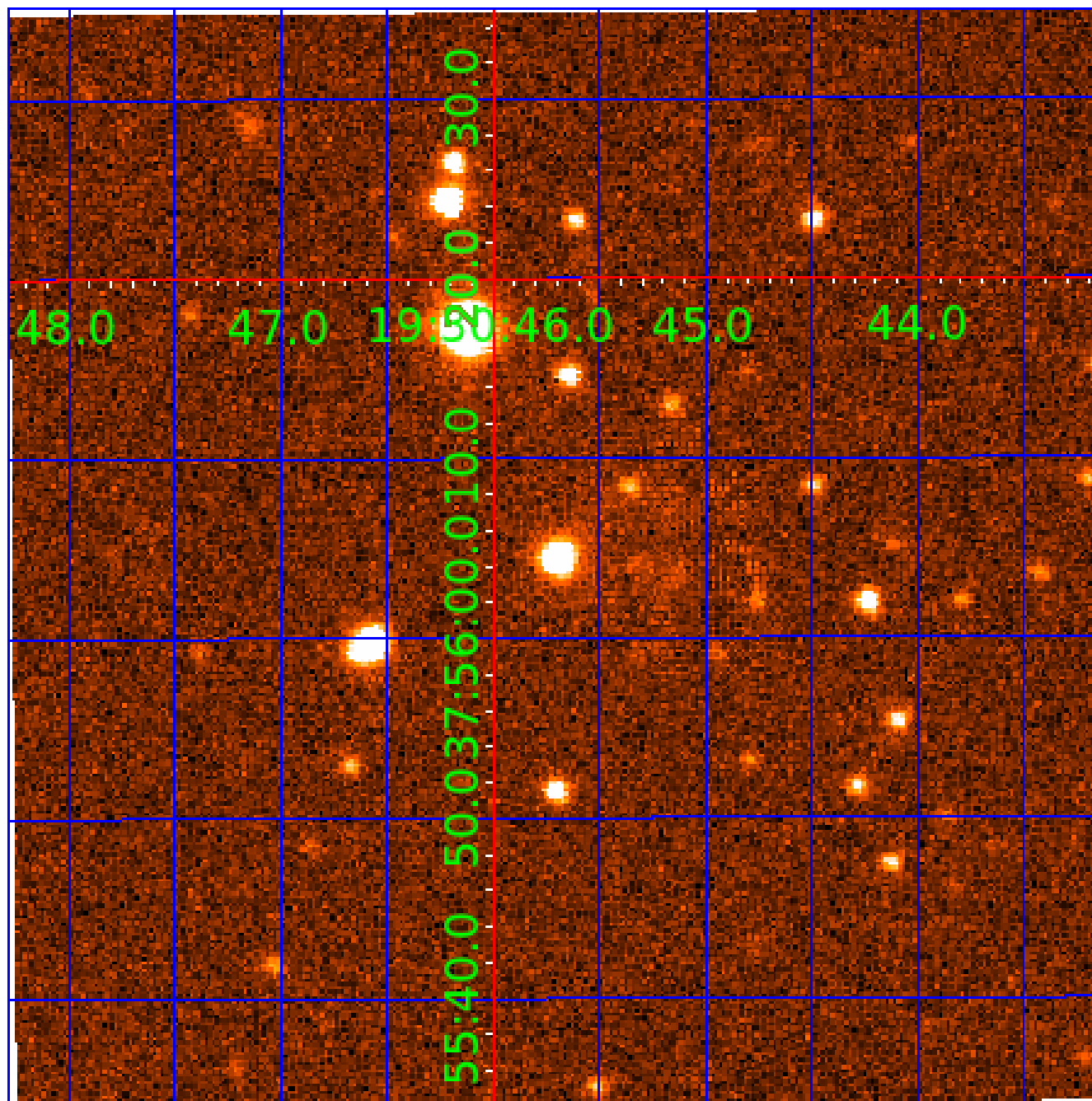


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002718778

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})
002718778-01	OBS	2489.01	3.924509	132.405325	419.7	3.832	22.7	22.6	0.85	5776	2.06	315.47
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002718778-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
002718778-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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.

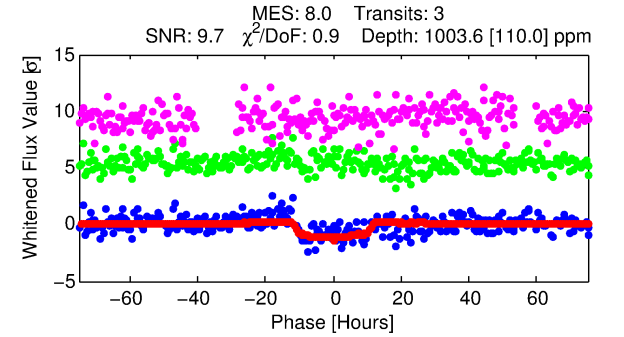
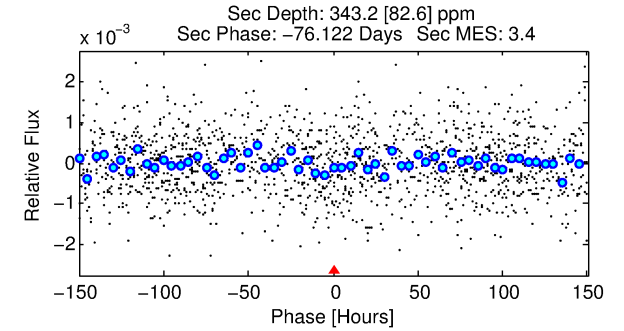
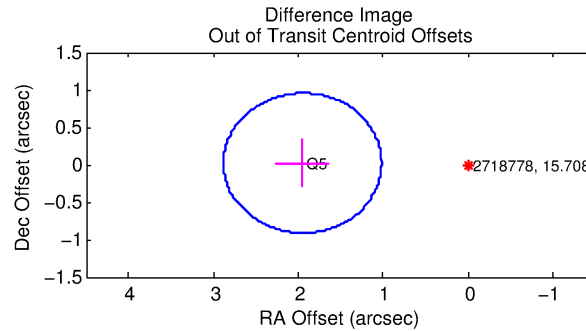
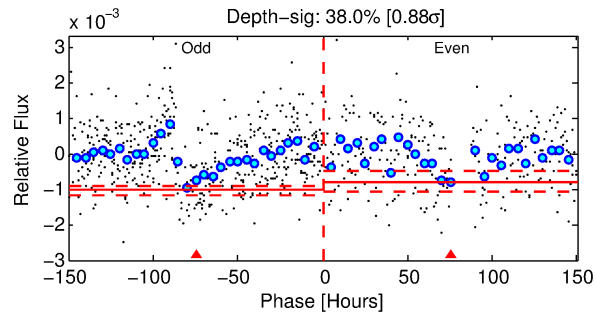
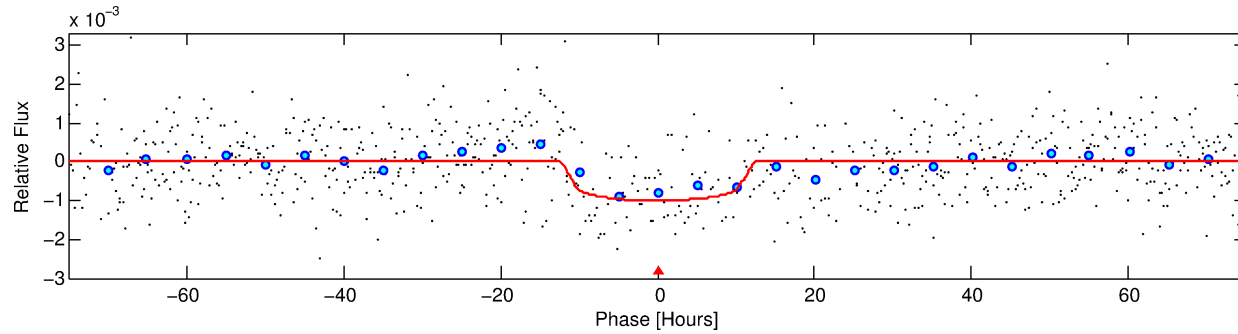
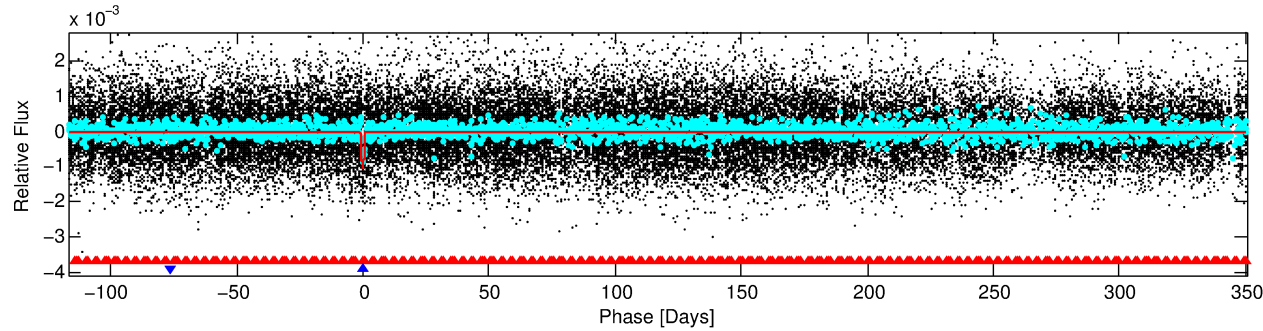
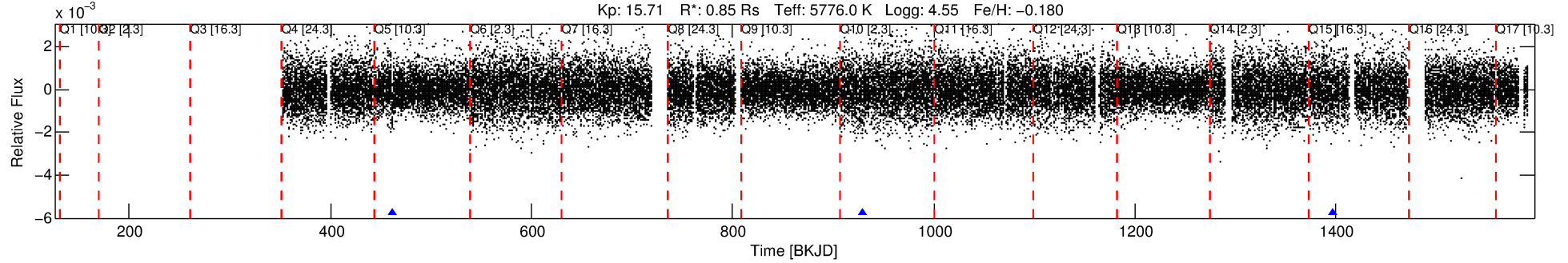
Ephemeris Match Information For 002718778-02

No Significant Match Found

DV One-Page Summary

KIC: 2718778 Candidate: 2 of 2 Period: 467.515 d
KOI: K02489 Corr: No Ephemeris Match

Kp: 15.71 R*: 0.85 Rs Teff: 5776.0 K Logg: 4.55 Fe/H: -0.180



DV Fit Results:

Period = 467.51471 [0.02621] d
Epoch = 461.2915 [0.0280] BKJD
Rp/R* = 0.0328 [0.0044]
a/R* = 86.48 [45.80]
b = 0.84 [0.19]
Seff = 0.54 [0.18]
Teq = 218 [18] K
Rp = 3.04 [0.85] Re
a = 1.1557 [0.2412] AU
Ag = 27244.26 [12842.50] [2.12σ]
Teffp = 4338 [417] K [9.86σ]

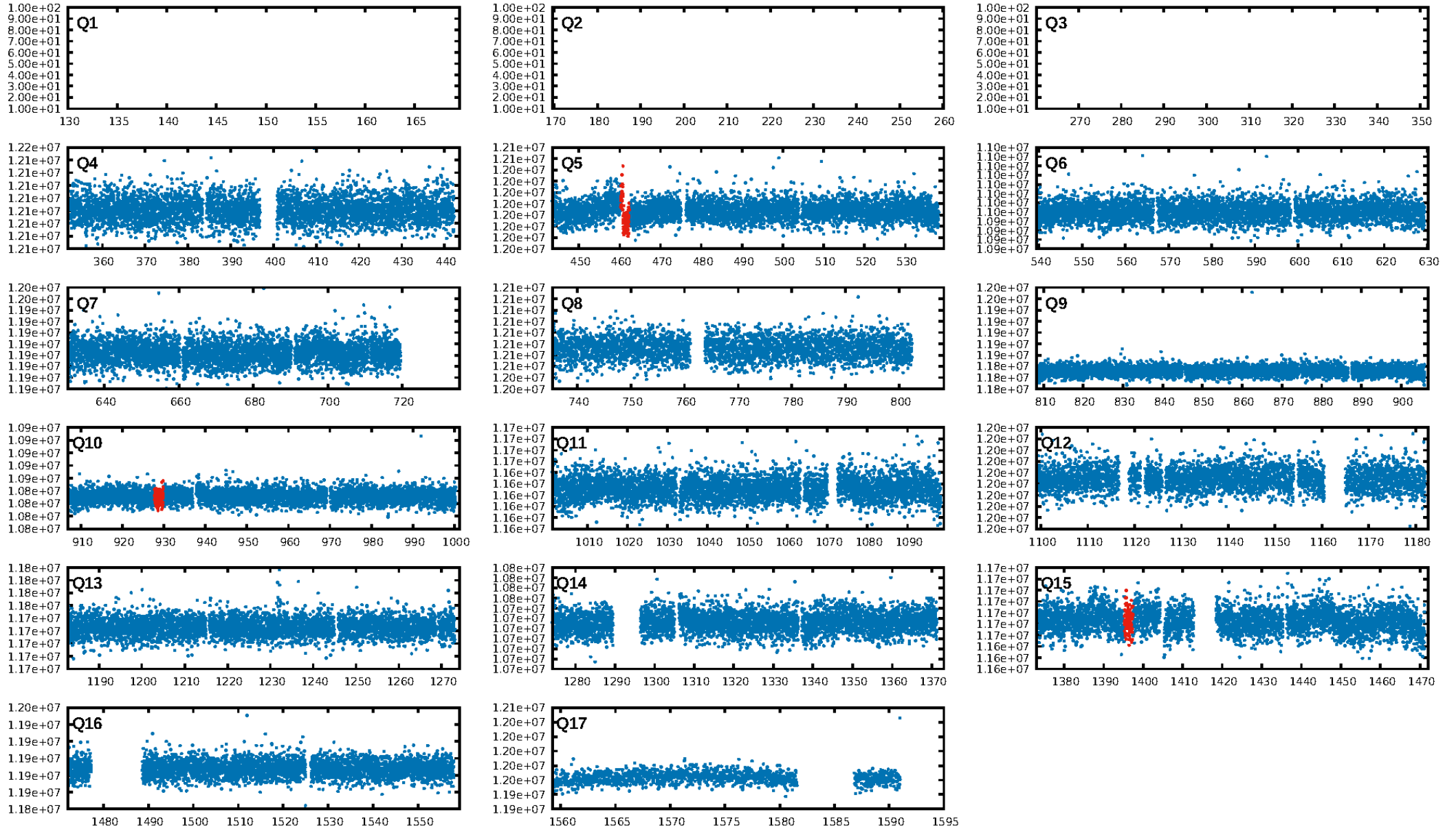
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [439.84σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 35.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.34e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.571
Centroid-sig: 0.0%
Centroid-so: 1.904 arcsec [1.84σ]
OotOffset-rm: 1.947 arcsec [6.26σ]
KicOffset-rm: 1.884 arcsec [6.06σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/1]

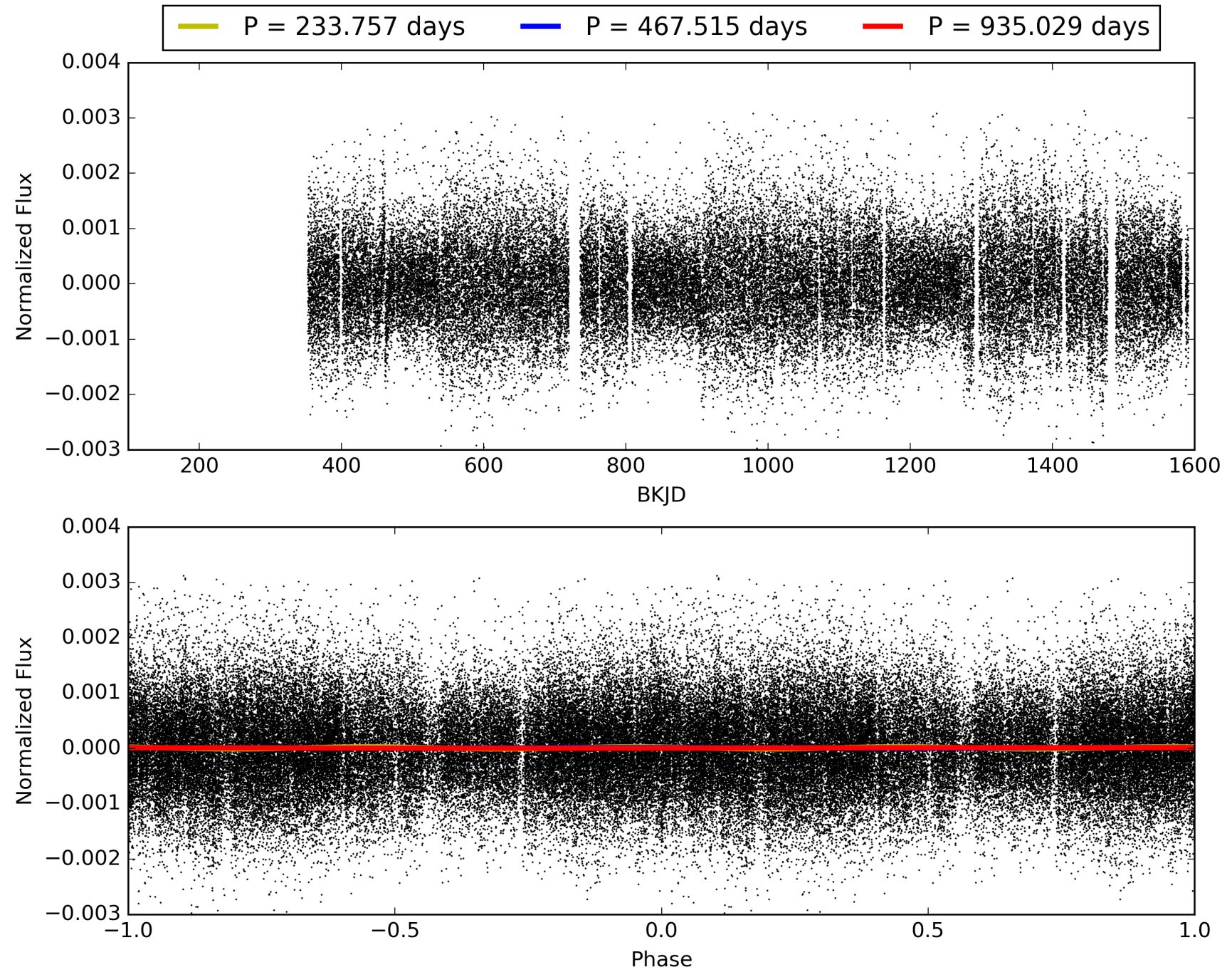
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:24:00 Z

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

TCE 002718778-02, PDC Light Curves

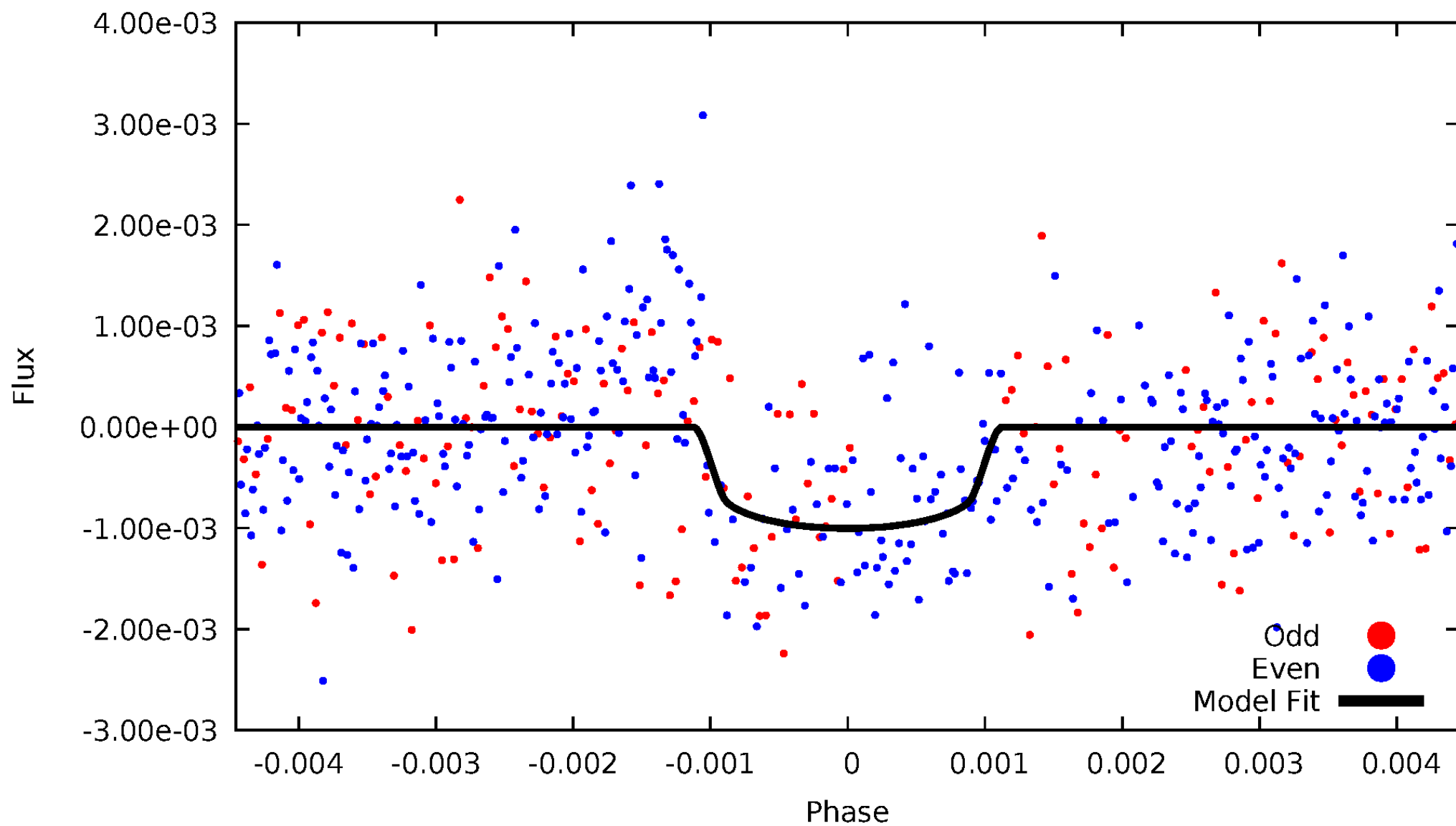


TCE 002718778-02



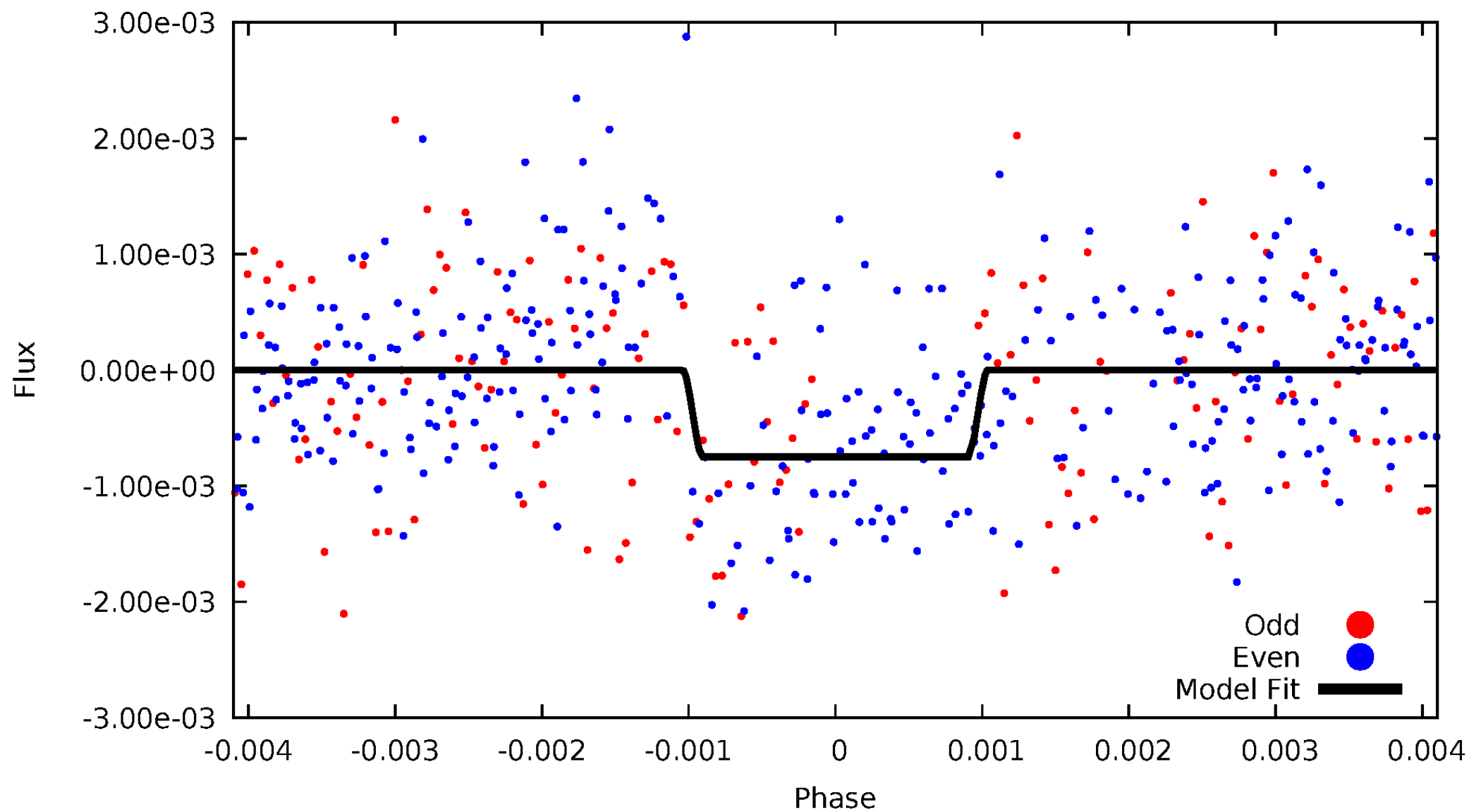
DV Odd/Even

TCE 002718778-02



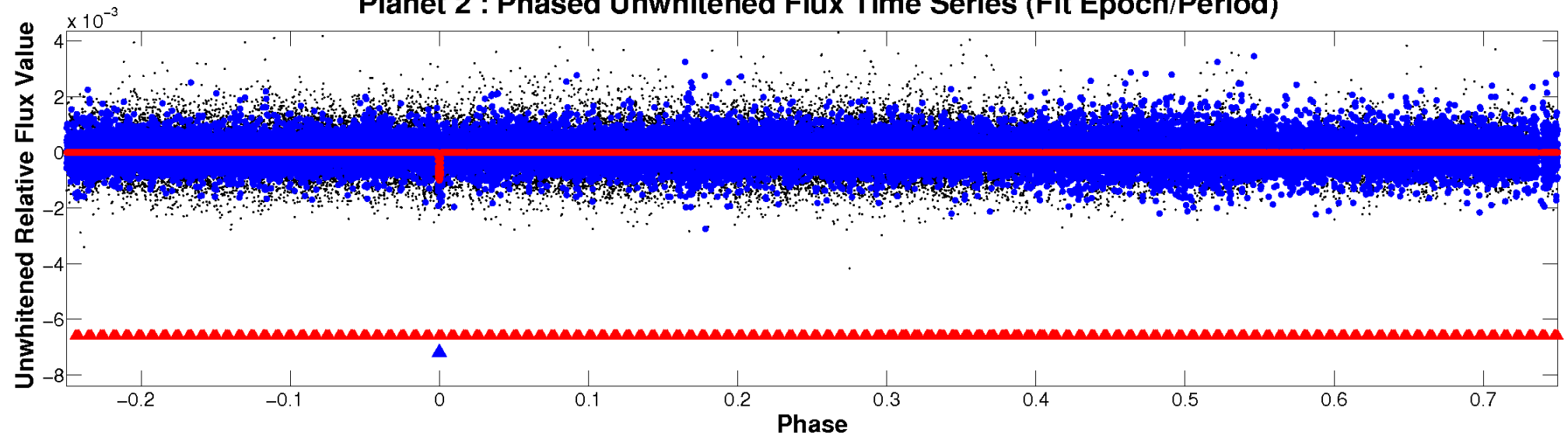
ALT Odd/Even

TCE 002718778-02

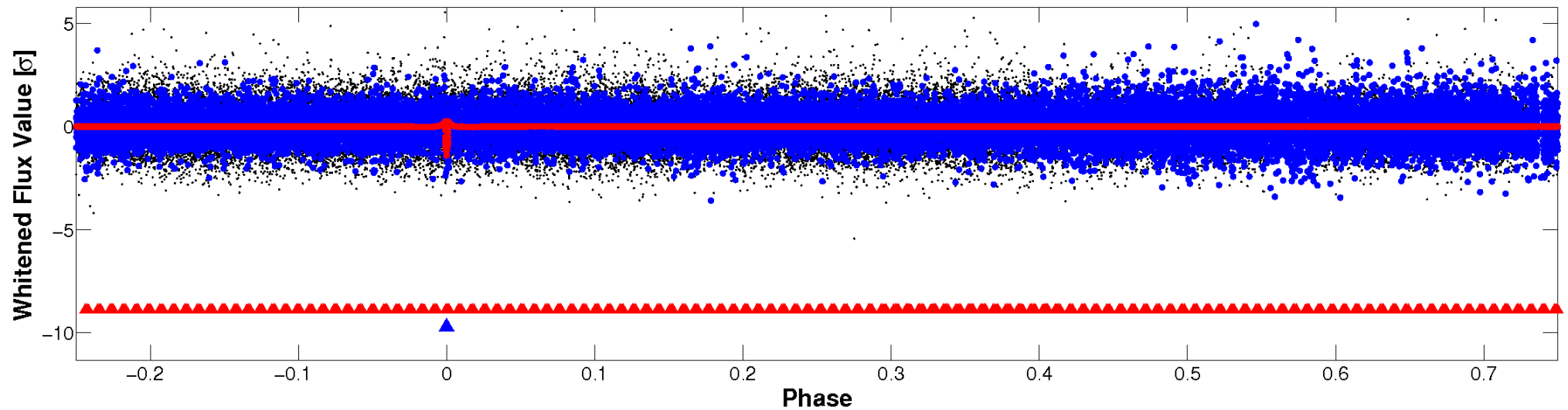


Non-Whitened Vs. Whitened Light Curve

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 002718778-02 P=467.514706 Days $T_0=461.291472$ (BKJD)



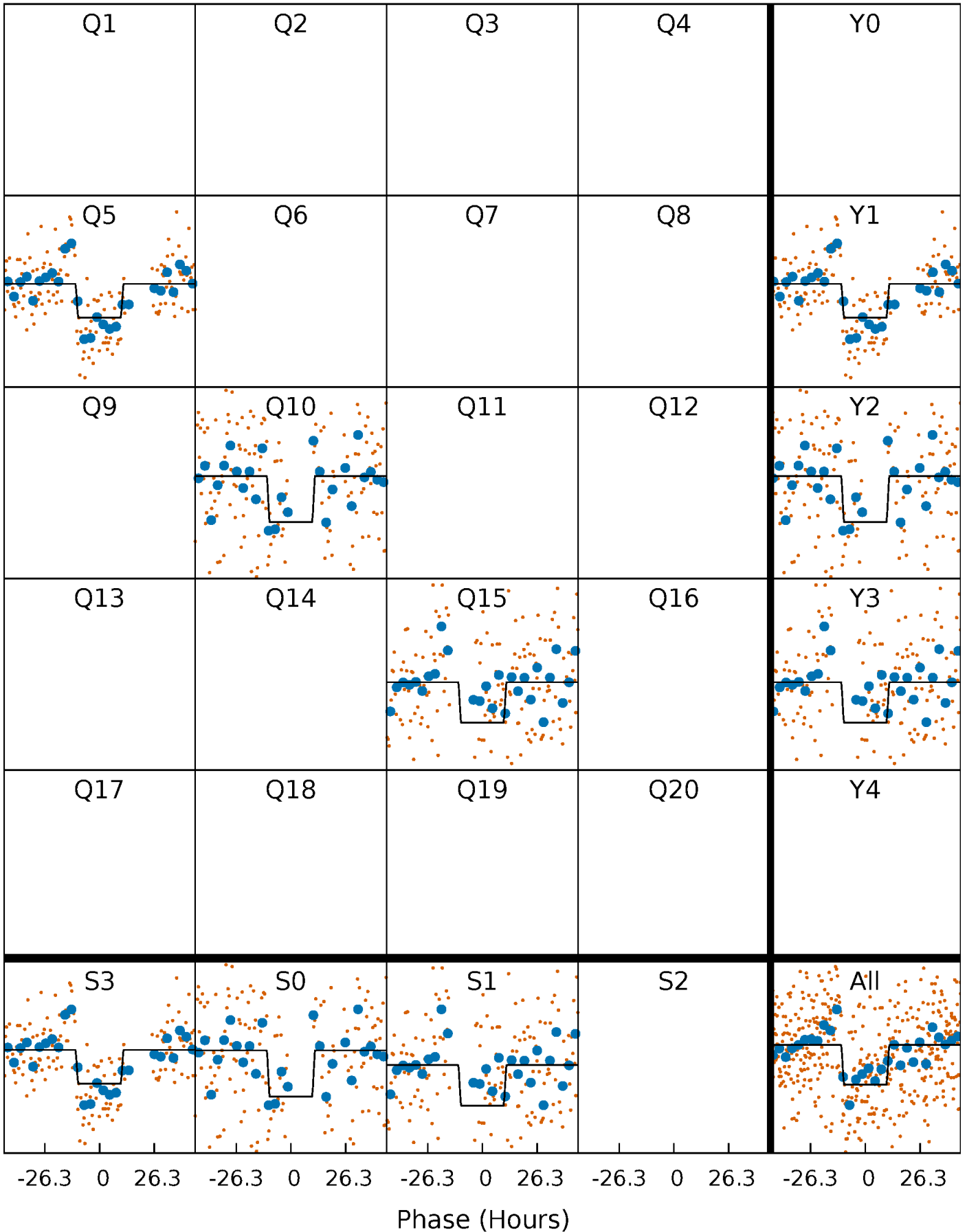
DV Quarter-Phased Transit Curves

TCE 002718778-02 $P=467.514706$ Days $T_0=461.291472$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

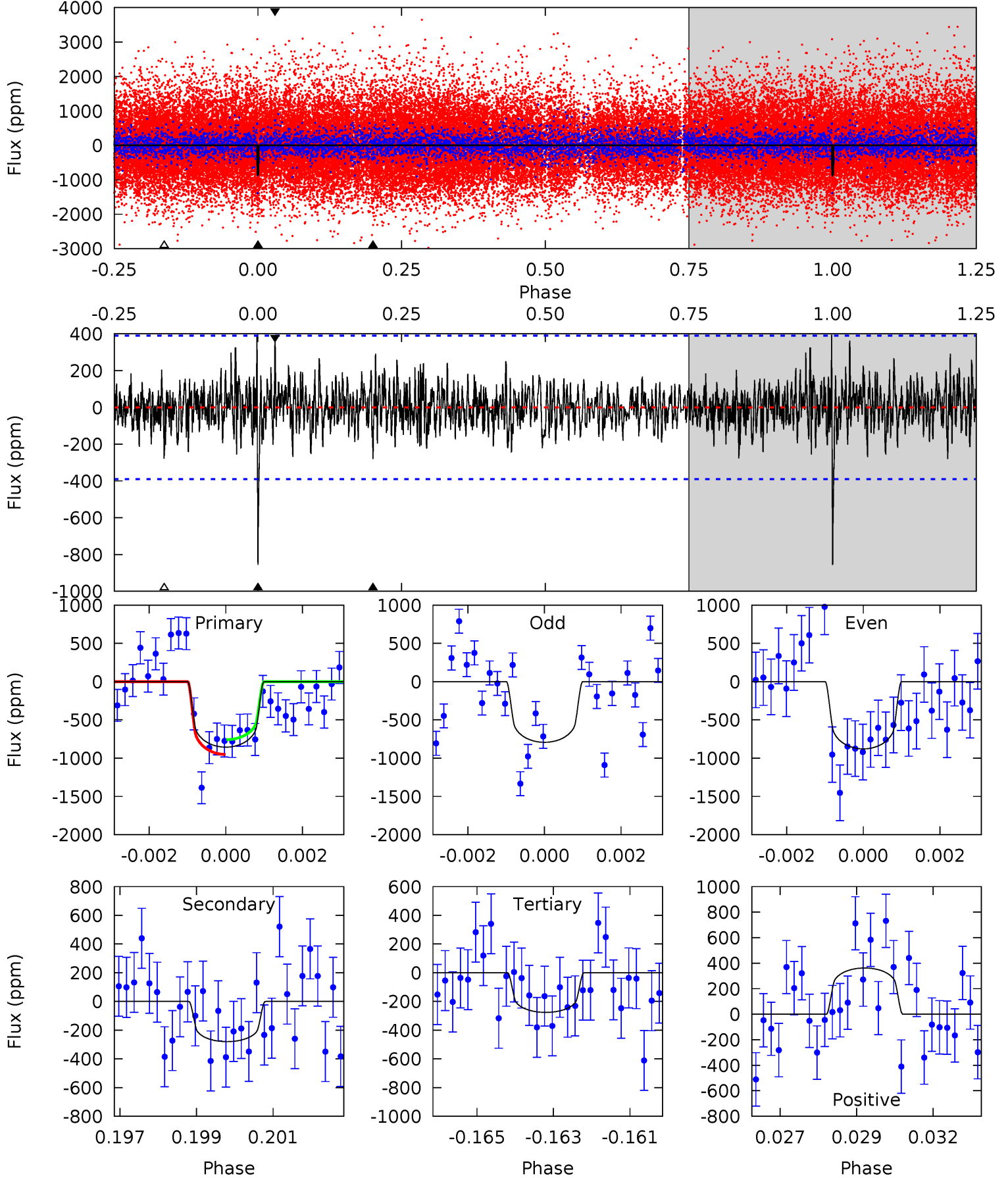
TCE 002718778-02 P=467.615209 Days $T_0=461.273059$ (BKJD)



DV Model-Shift Uniqueness Test

002718778-02, P = 467.514706 Days, E = 461.291472 Days

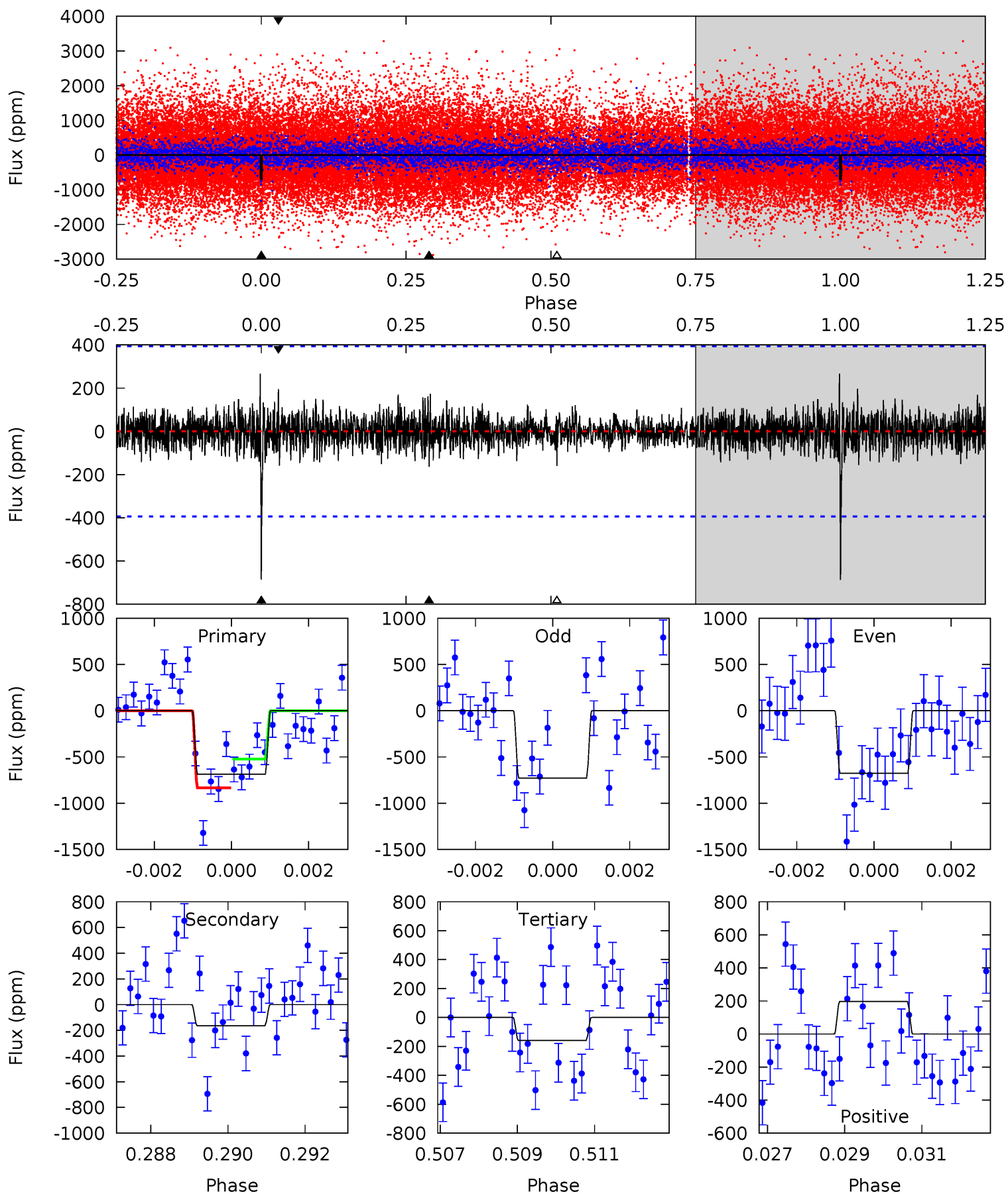
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	3.80	3.75	4.92	5.30	3.05	1.21	7.88	6.71	0.05	-1.12	0.51	0.97	0.32	1.32



Alt Model-Shift Uniqueness Test

002718778-02, P = 467.615209 Days, E = 461.273059 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.30	2.21	2.15	2.66	5.32	3.08	0.64	7.15	6.64	0.06	-0.45	0.29	0.89	0.28	2.11



Stellar Parameters For KIC 002718778

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5776^{+181}_{-201}	$4.554^{+0.042}_{-0.168}$	$-0.180^{+0.300}_{-0.300}$	$0.849^{+0.209}_{-0.075}$	$0.939^{+0.098}_{-0.120}$	$2.161^{+0.477}_{-0.970}$
	+3%/-3%	+1%/-4%	+167%/-167%	+25%/-9%	+10%/-13%	+22%/-45%
Source	KIC0	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 002718778-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-280 ± 74	$3.17^{+0.54}_{-0.48}$	311^{+19}_{-14}	4303^{+378}_{-310}	19175^{+10534}_{-6640}
Alt.	-163 ± 74	$2.62^{+0.51}_{-0.45}$	311^{+17}_{-14}	4177^{+470}_{-444}	16910^{+11859}_{-8660}

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 $A_{obs} \gg 1.0$

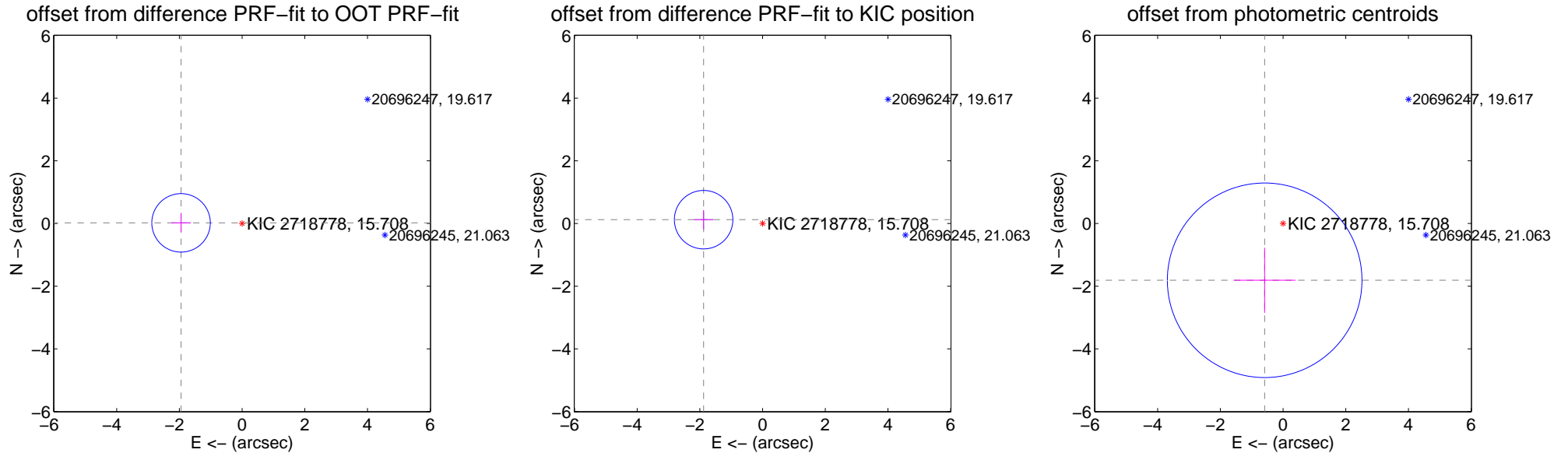
DV Centroid Data

Supplemental centroid analysis for 002718778-02. Kepler magnitude: 15.71. Transit SNR 9.73

There are 1 quarters with good PRF difference image offsets

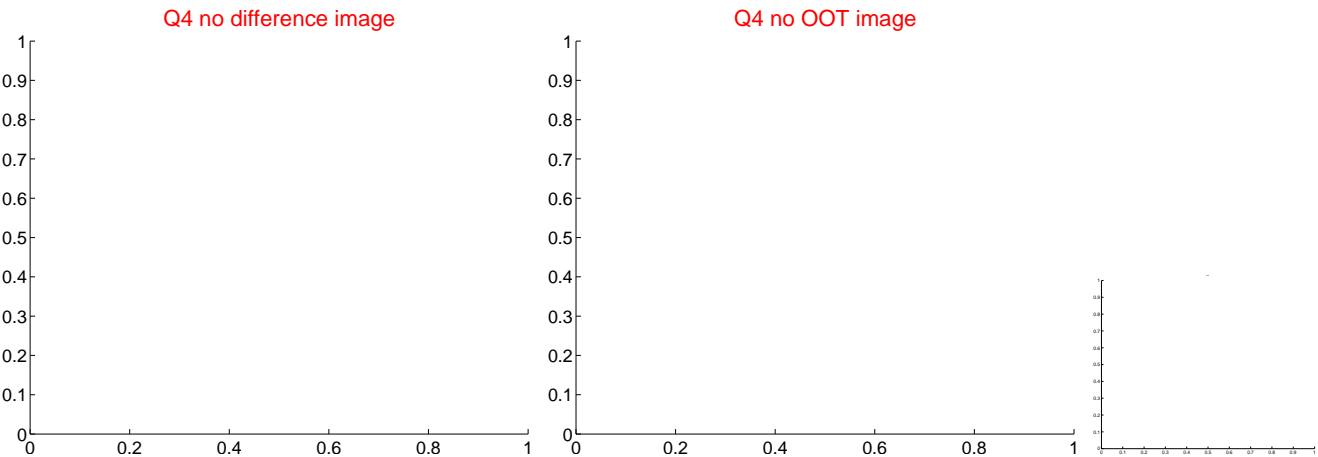
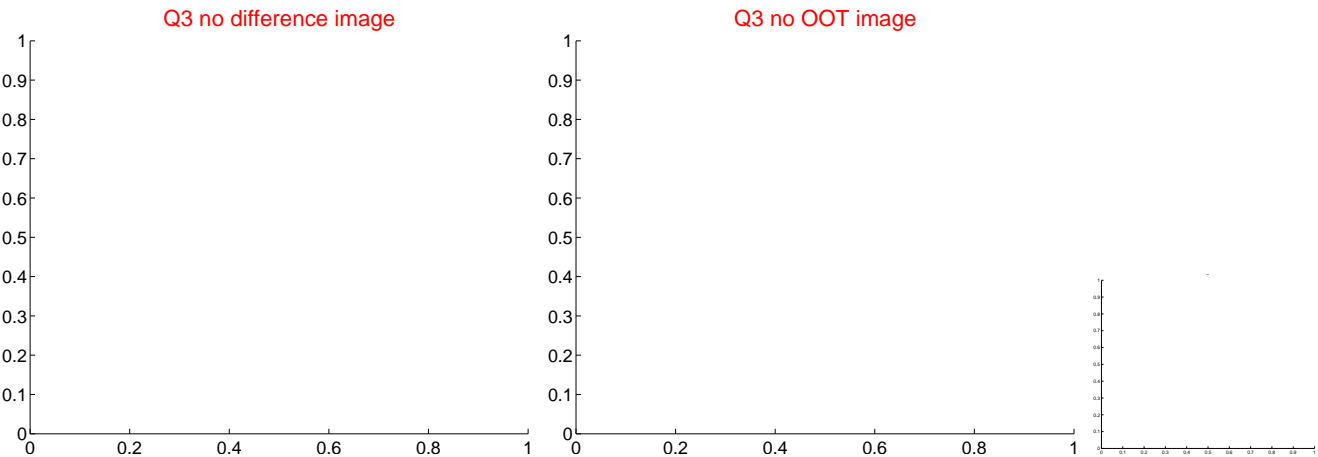
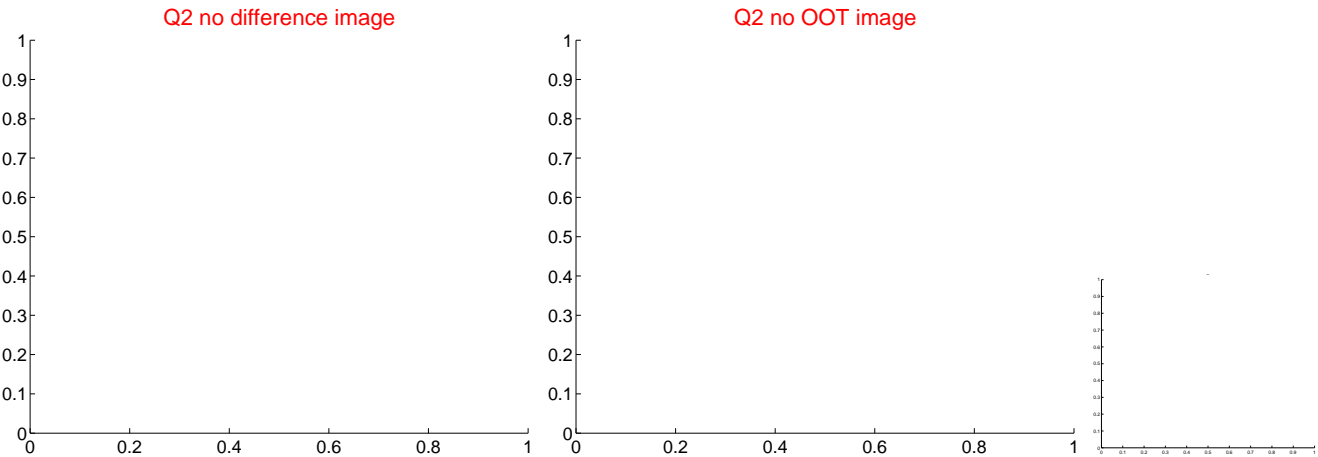
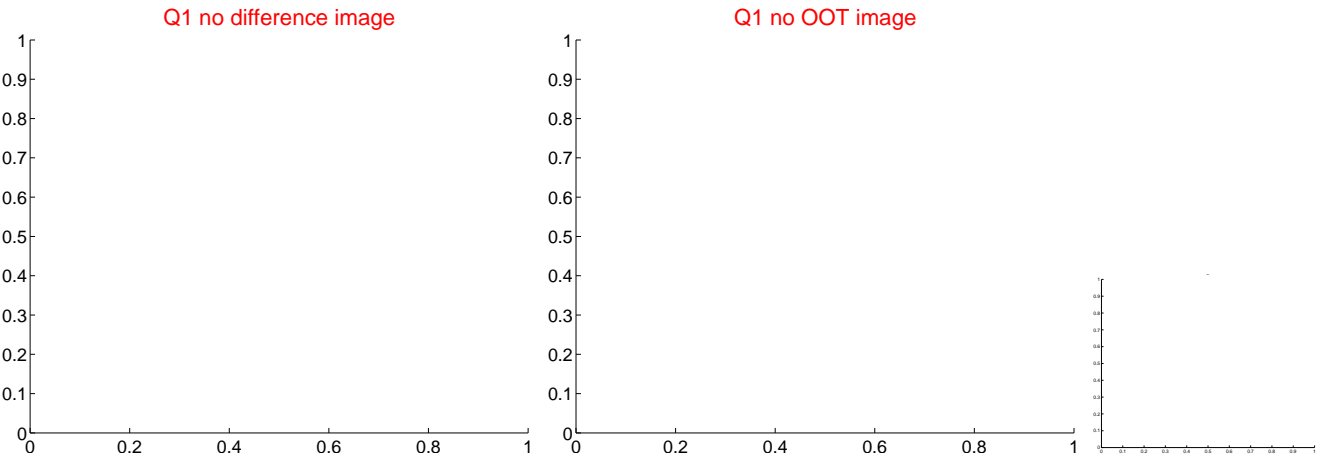
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.947 ± 0.311	6.26	1.947 ± 0.311	0.021 ± 0.306
PRF-fit source offset from KIC position	1.884 ± 0.311	6.06	1.880 ± 0.311	0.122 ± 0.306
photometric centroid source offset	1.90 ± 1.03	1.84	0.59 ± 0.98	-1.81 ± 1.04

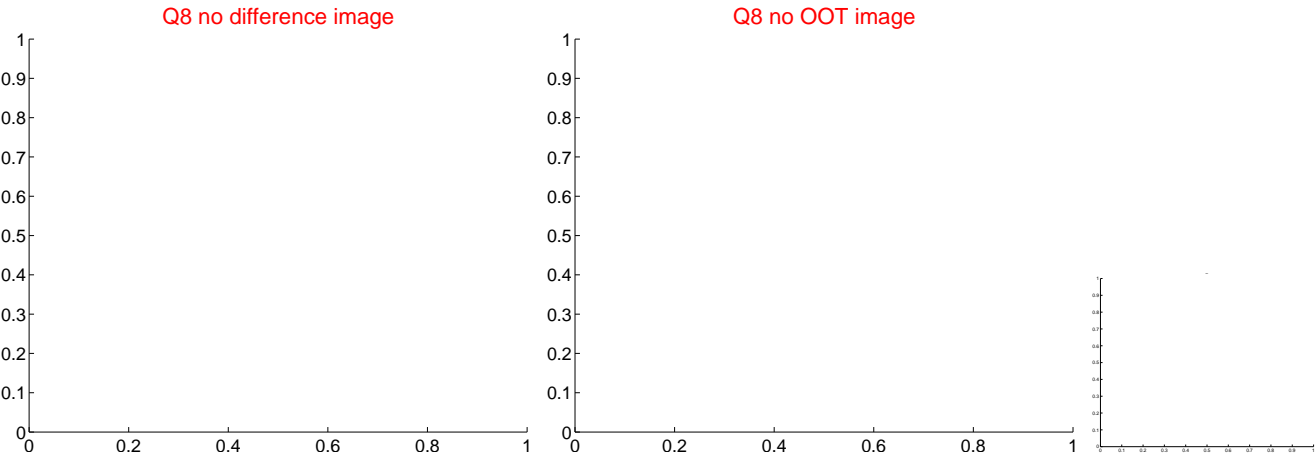
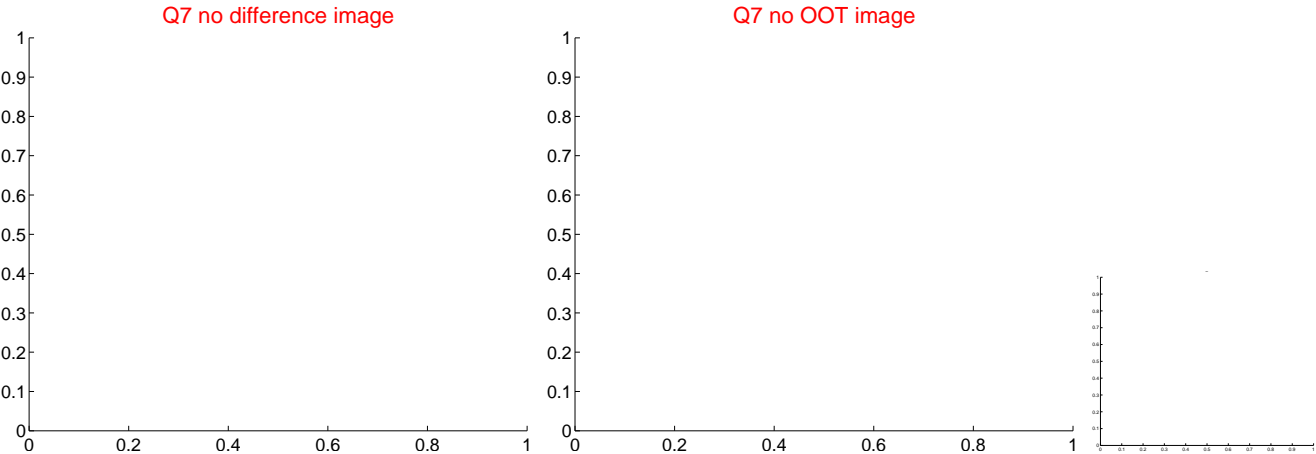
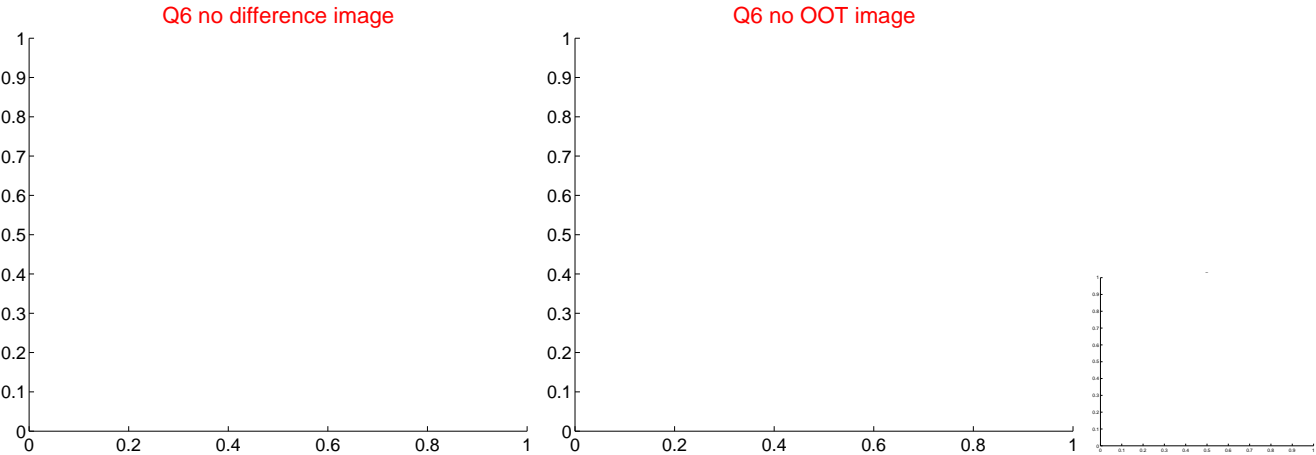
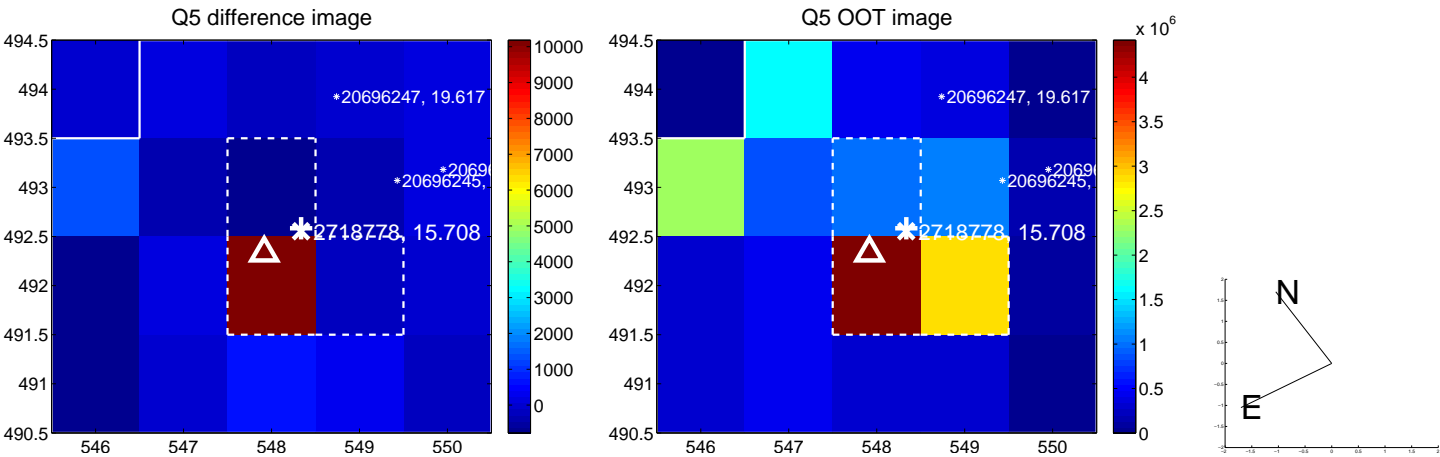


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

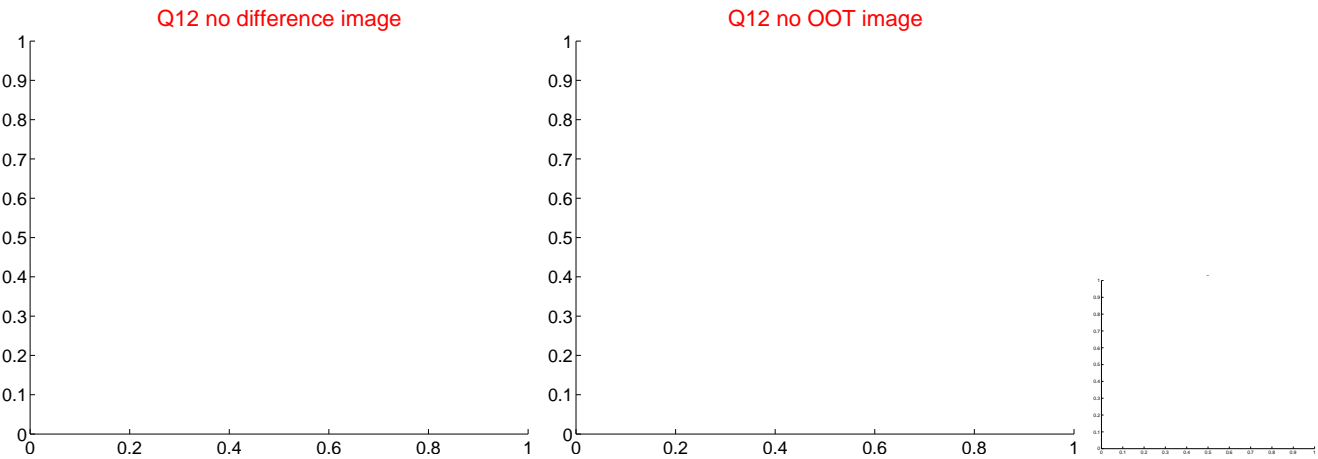
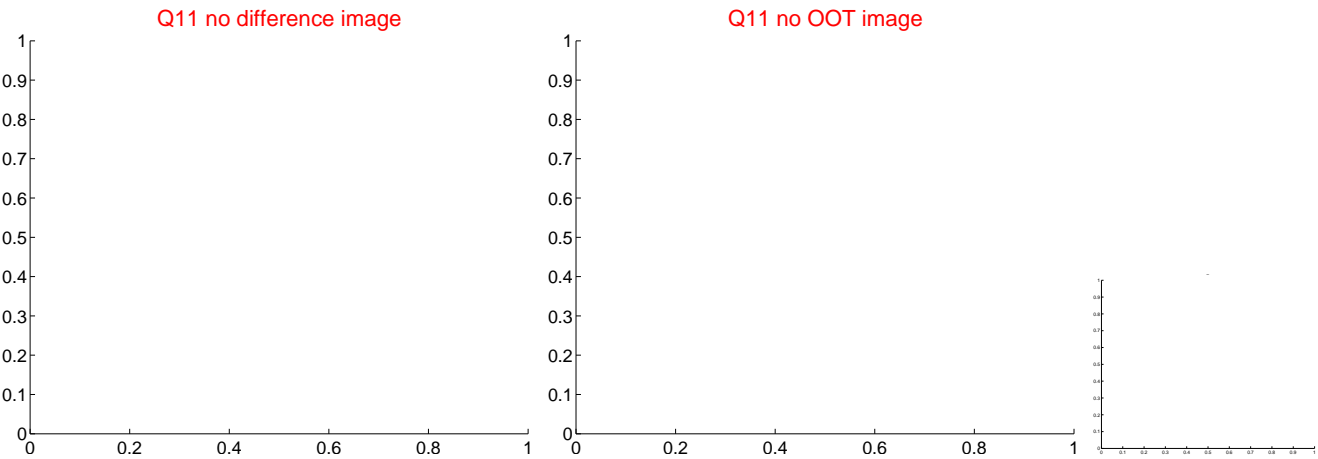
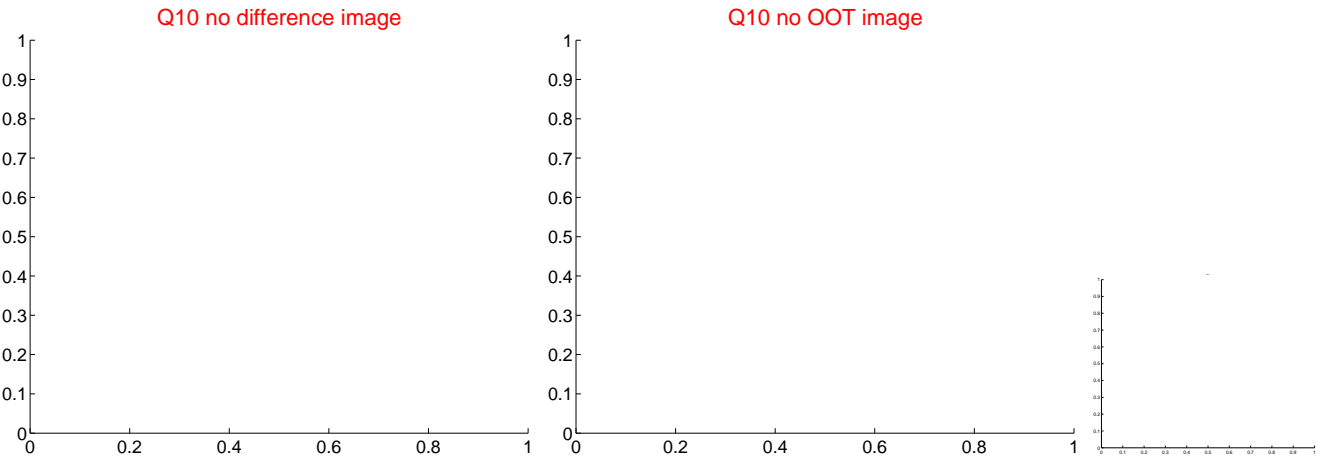
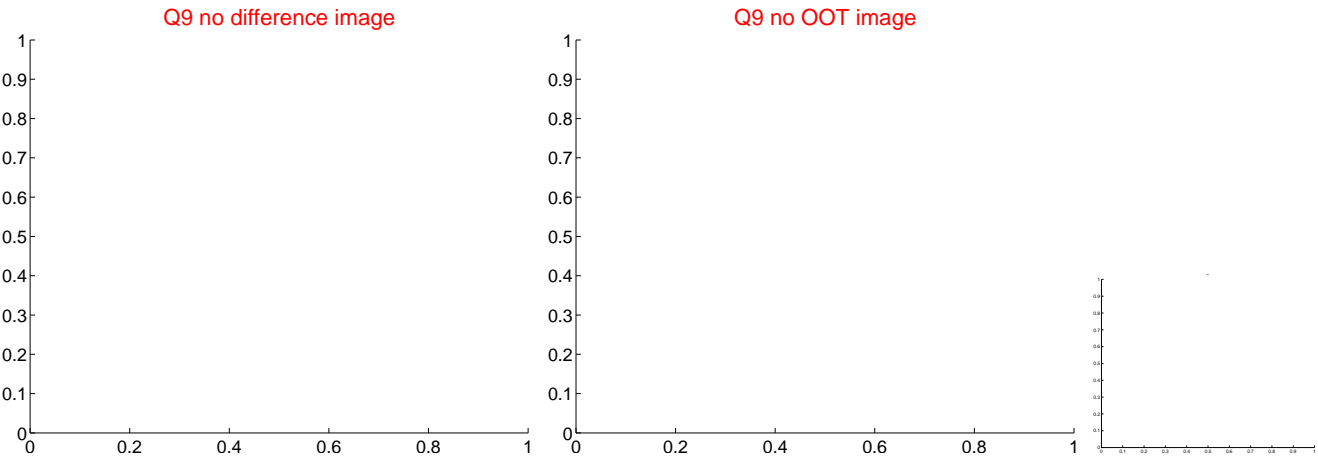
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



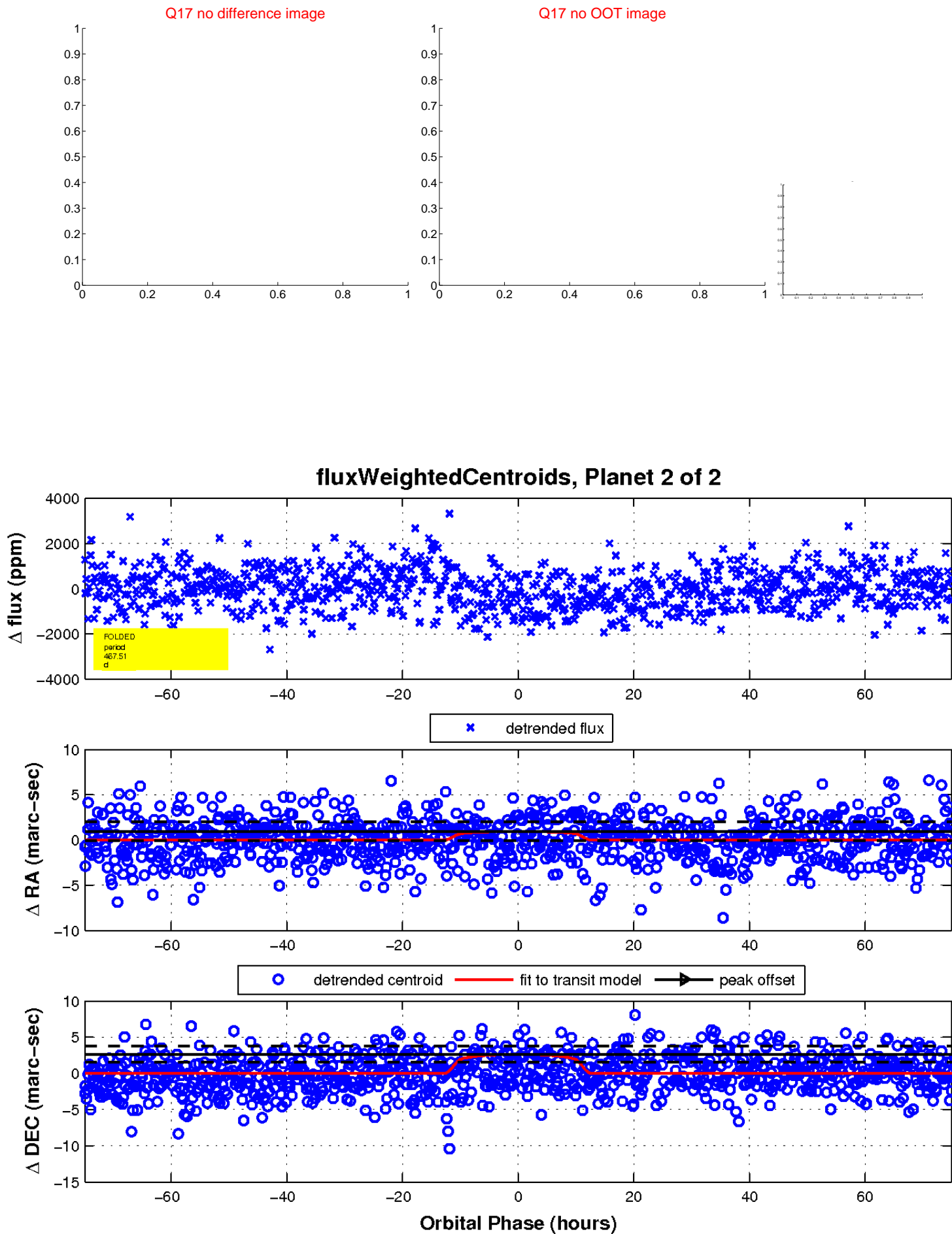
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

