

KIC 004678919

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})
004678919-01	OBS	4219.01	1.878860	133.083339	132.6	4.633	19.9	21.4	0.86	5851	1.69	924.62
004678919-02	OBS	No	358.797194	317.319593	759.3	23.927	10.8	5.4	0.86	5851	2.67	0.84

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004678919-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
004678919-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—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 004678919-01

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
004678919-01	4678919	004678875-01	4678875	1:1	29.3	2	7	13.24	13.69	6026.40	Direct-PRF	0	0.29	0.34

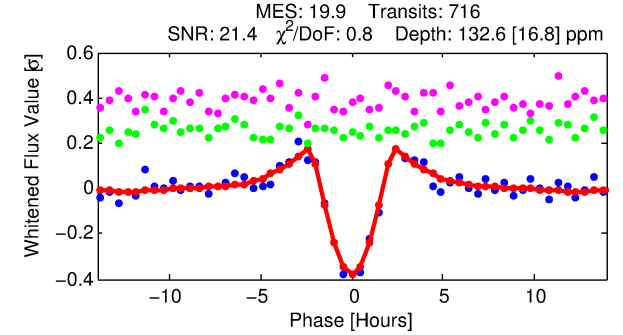
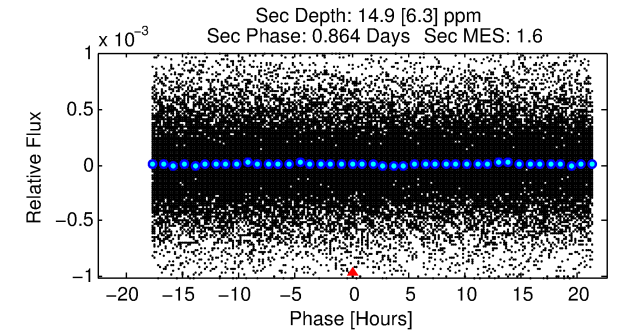
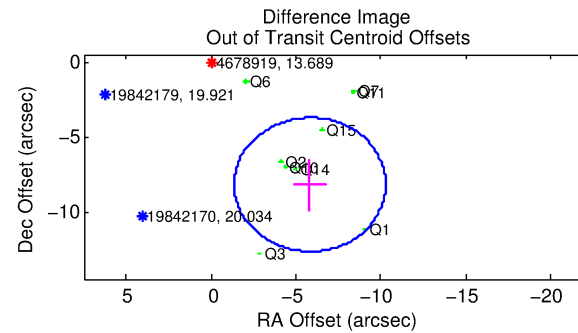
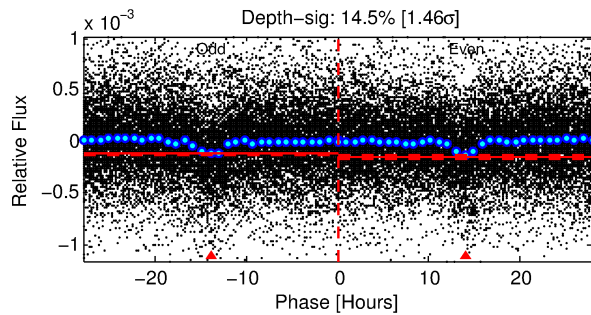
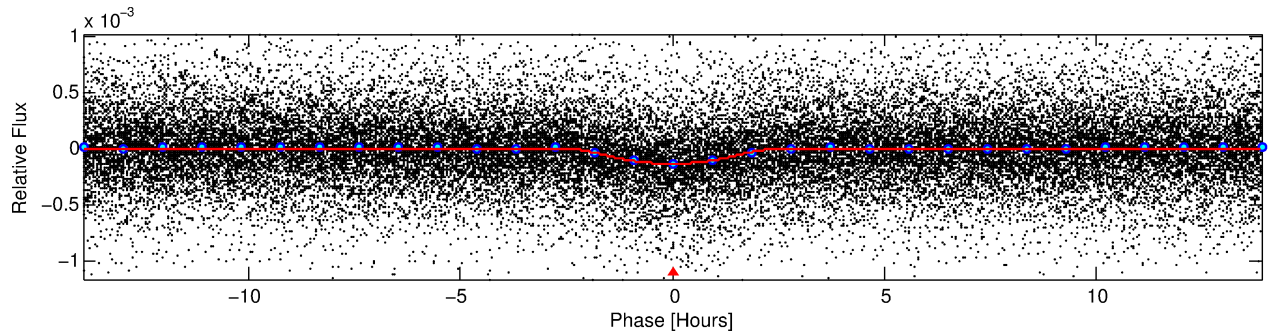
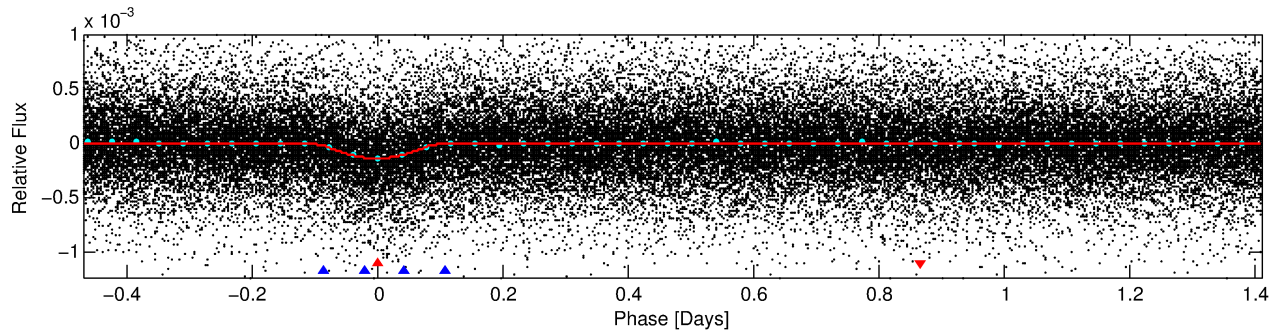
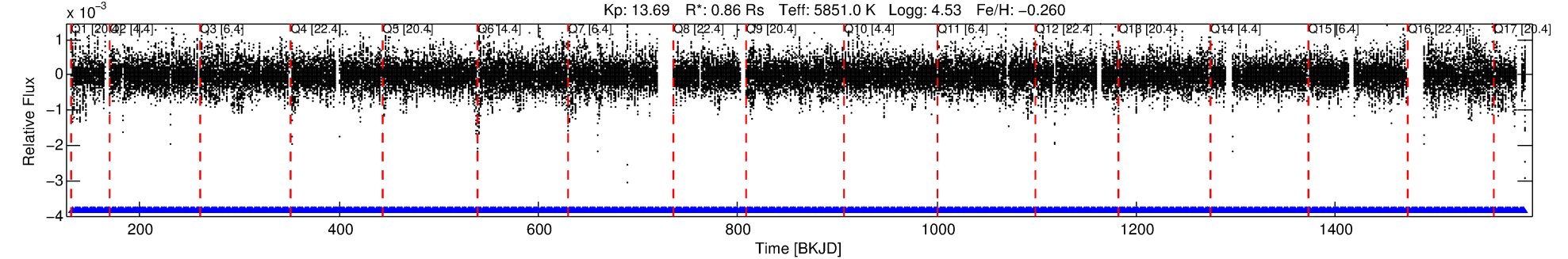
Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match 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: 4678919 Candidate: 1 of 2 Period: 1.879 d

KOI: K04219.01 Corr: 0.854

Kp: 13.69 R*: 0.86 Rs Teff: 5851.0 K Logg: 4.53 Fe/H: -0.260



DV Fit Results:

Period = 1.87886 [0.00001] d
Epoch = 133.0833 [0.0027] BKJD
Rp/R* = 0.0179 [0.0085]
a/R* = 1.21 [0.06]
b = 0.99 [0.02]
Seff = 924.62 [350.10]
Teq = 1406 [133] K
Rp = 1.69 [0.94] Re
a = 0.0291 [0.0072] AU
Ag = 2.42 [2.66] [0.53σ]
Teffp = 2713 [707] K [1.82σ]

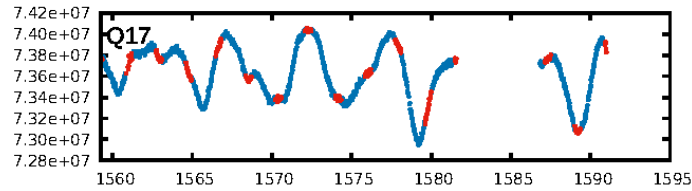
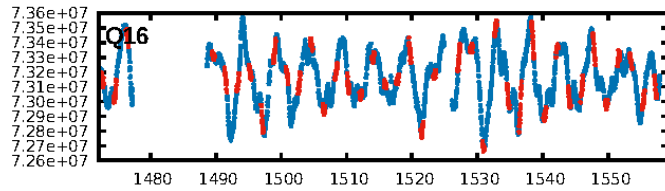
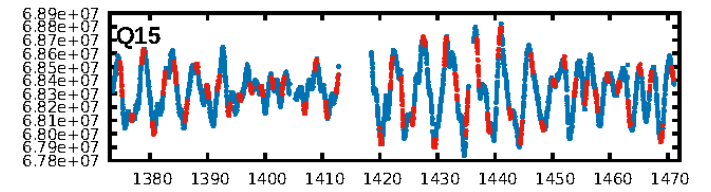
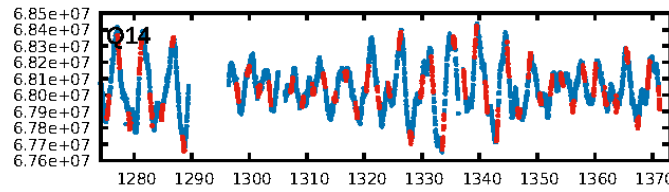
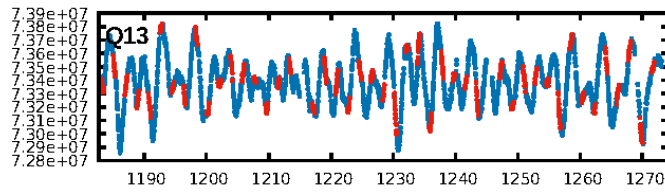
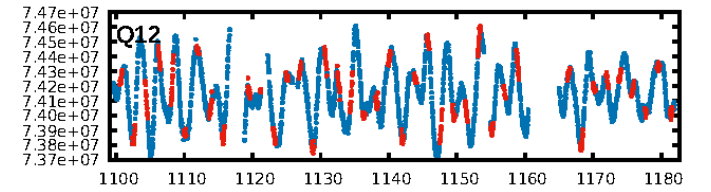
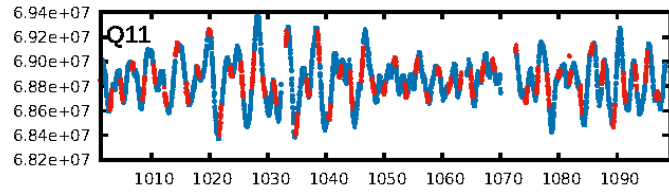
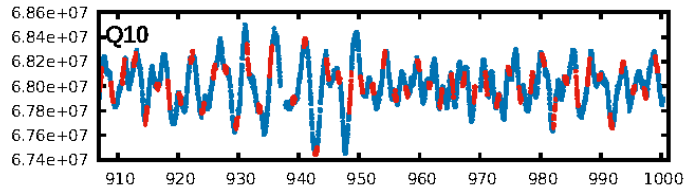
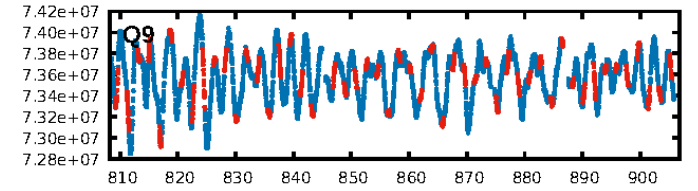
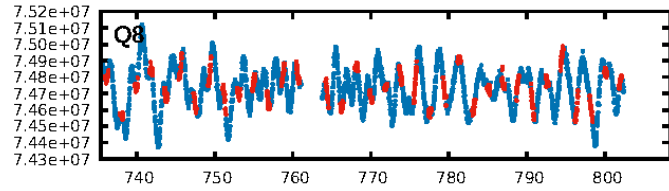
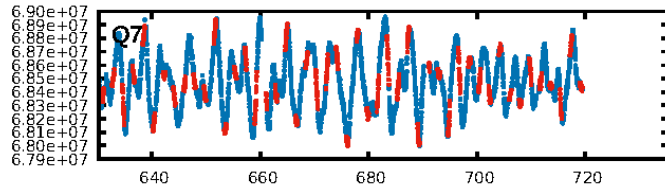
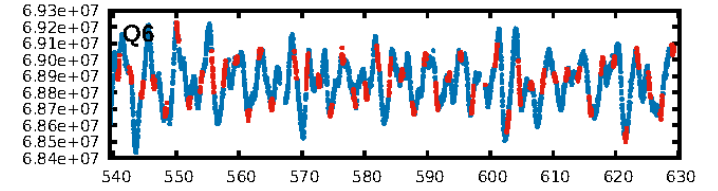
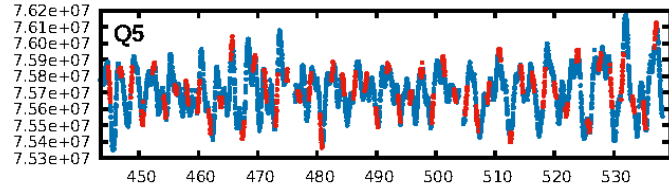
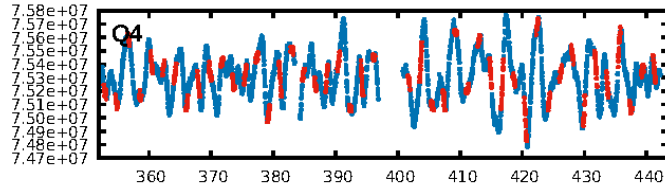
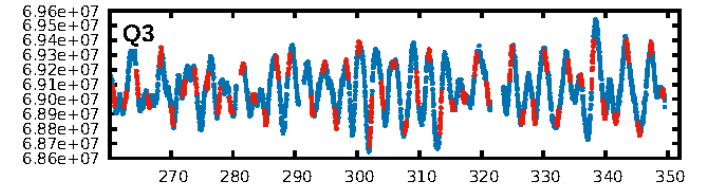
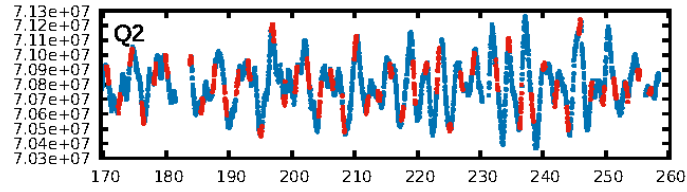
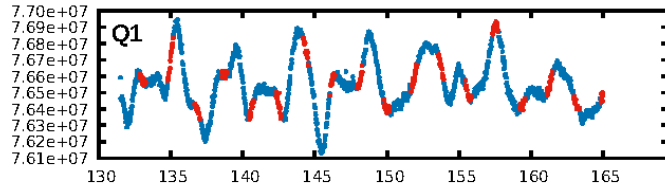
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [351.48σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.69e-79
RollingBand-fgt: 1.00 [683/683]
GhostDiagnostic-chr: 0.04677
Centroid-sig: 0.0%
Centroid-so: 5.797 arcsec [14.02σ]
OotOffset-rm: 10.061 arcsec [6.76σ]
KicOffset-rm: 9.963 arcsec [6.66σ]
OotOffset-st: 4/4/0/1 [9]
KicOffset-st: 4/4/0/1 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 1.00 [17/17]

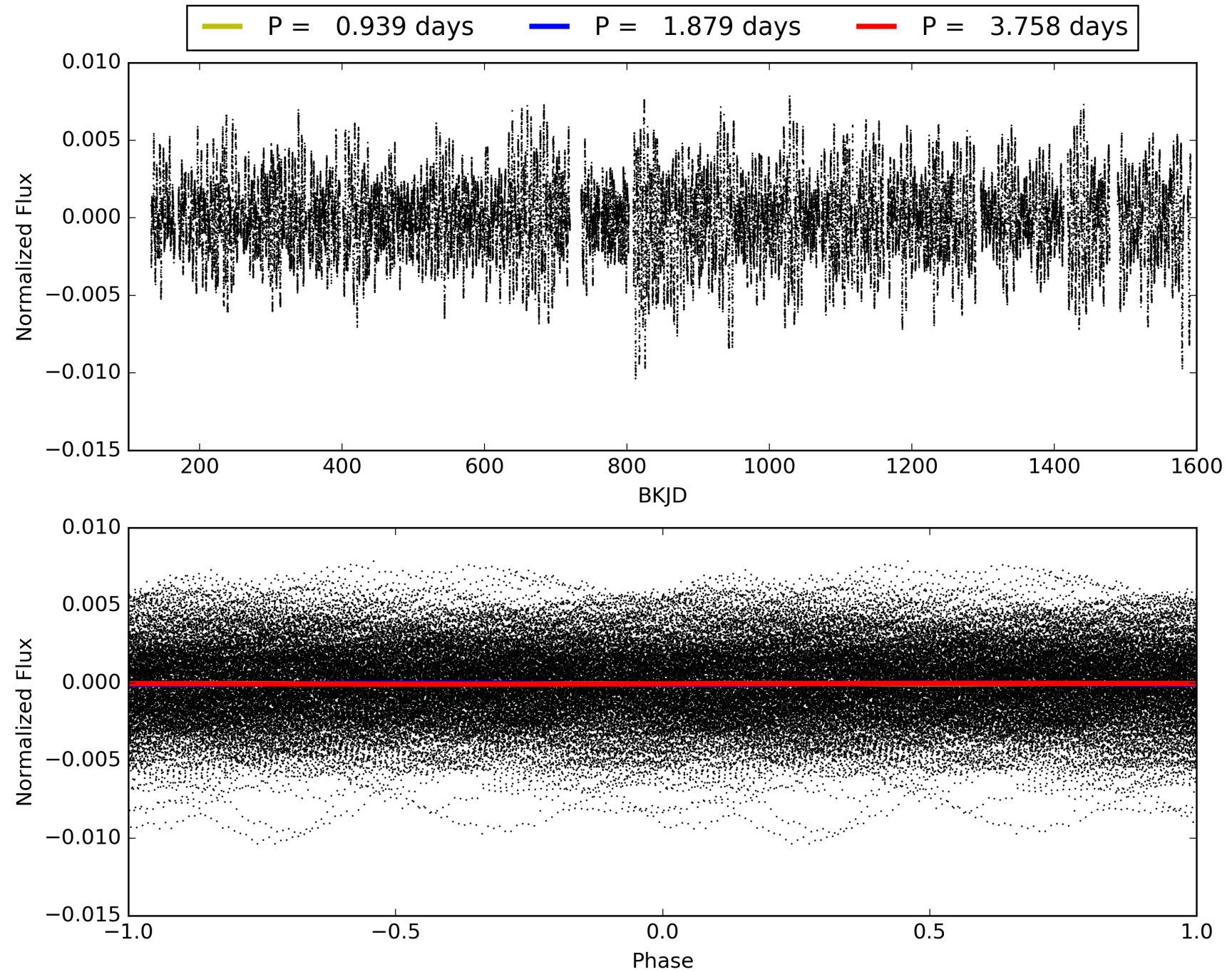
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:18:33 Z

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

TCE 004678919-01, PDC Light Curves

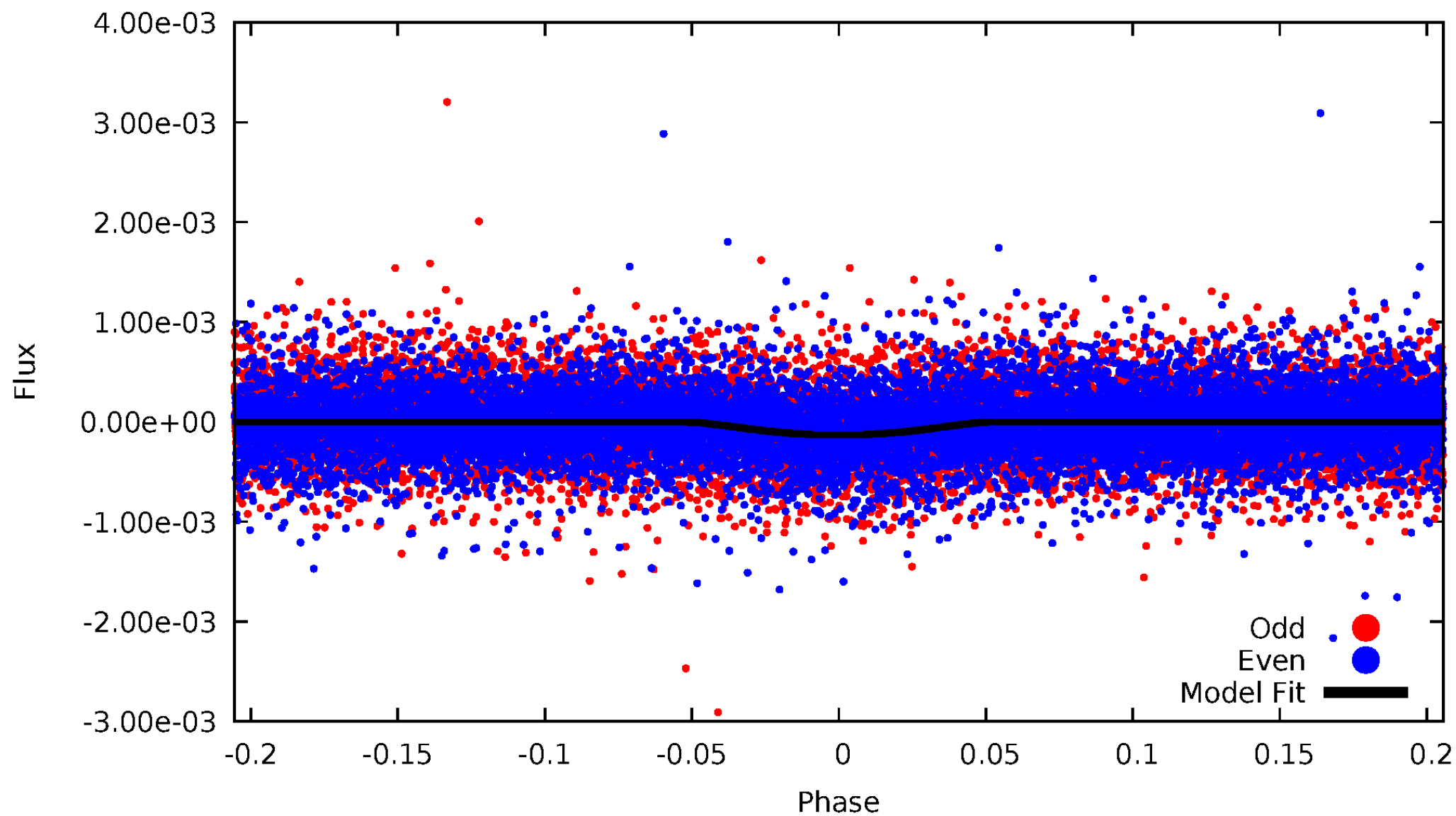


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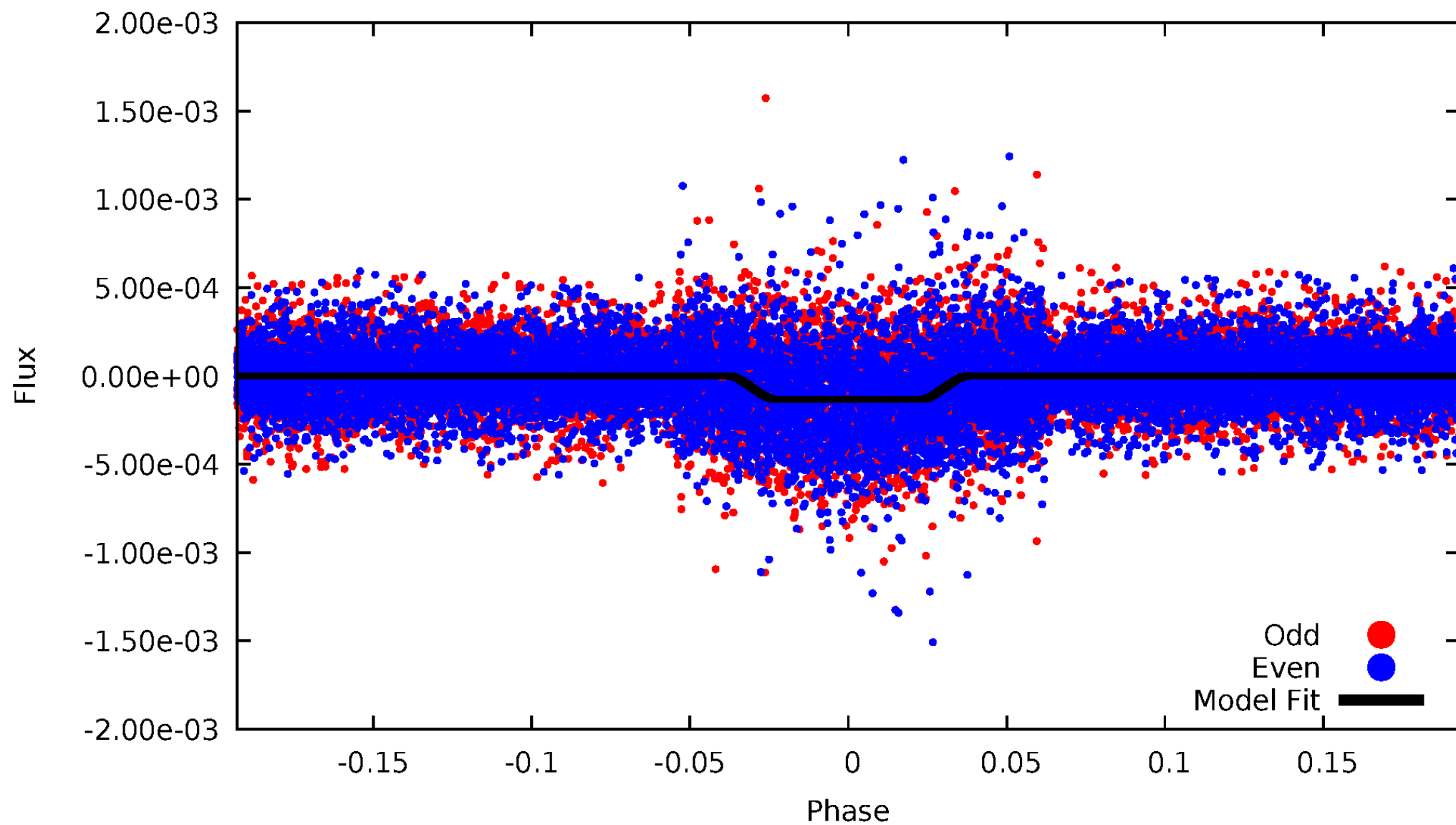
DV Odd/Even

TCE 004678919-01



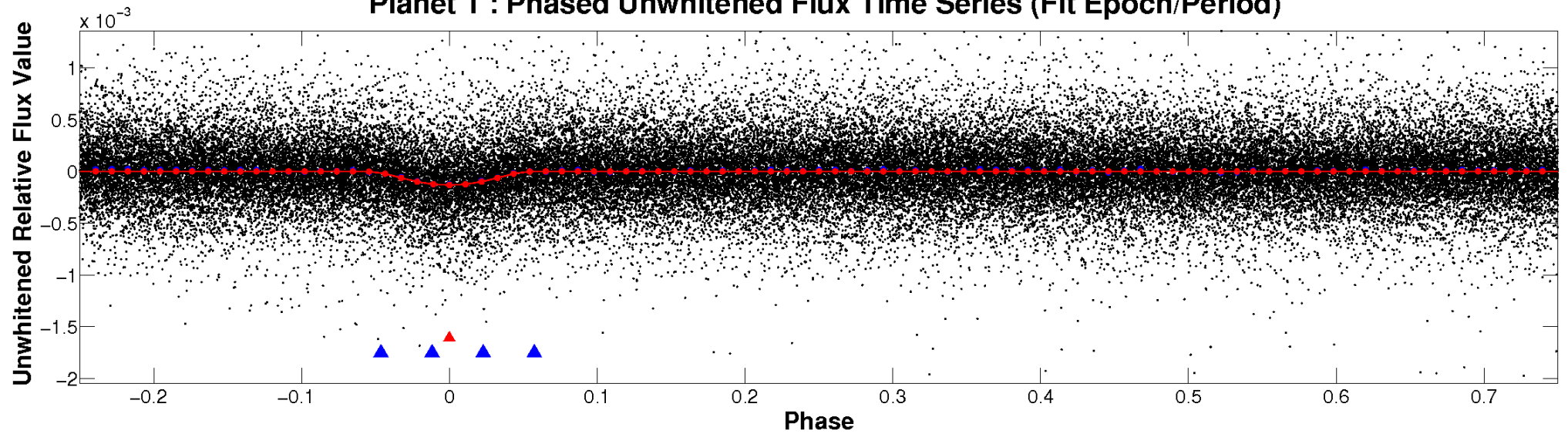
ALT Odd/Even

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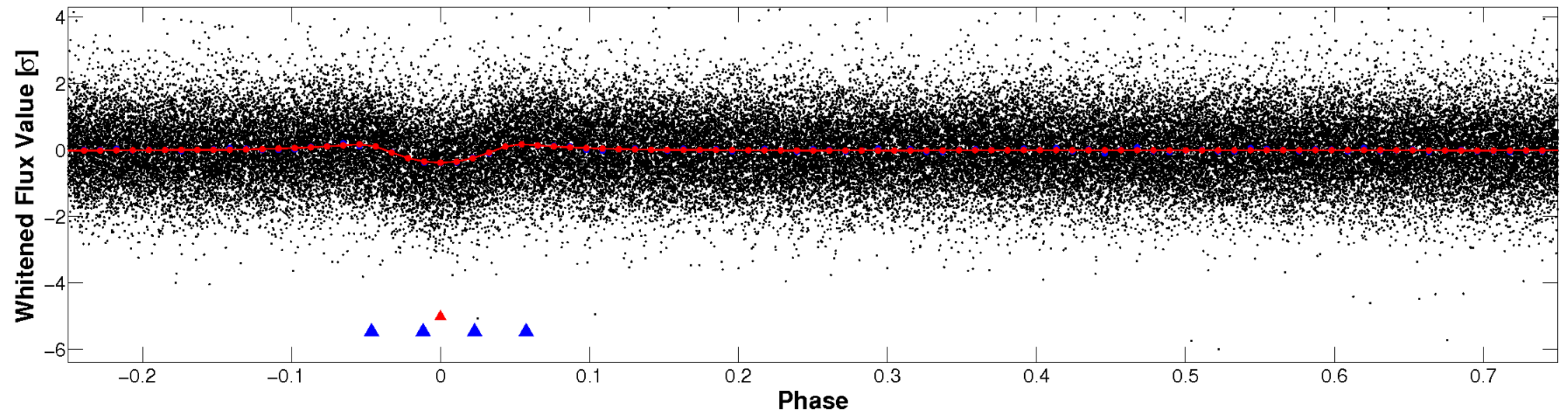


Non-Whitened Vs. Whitened Light Curve

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

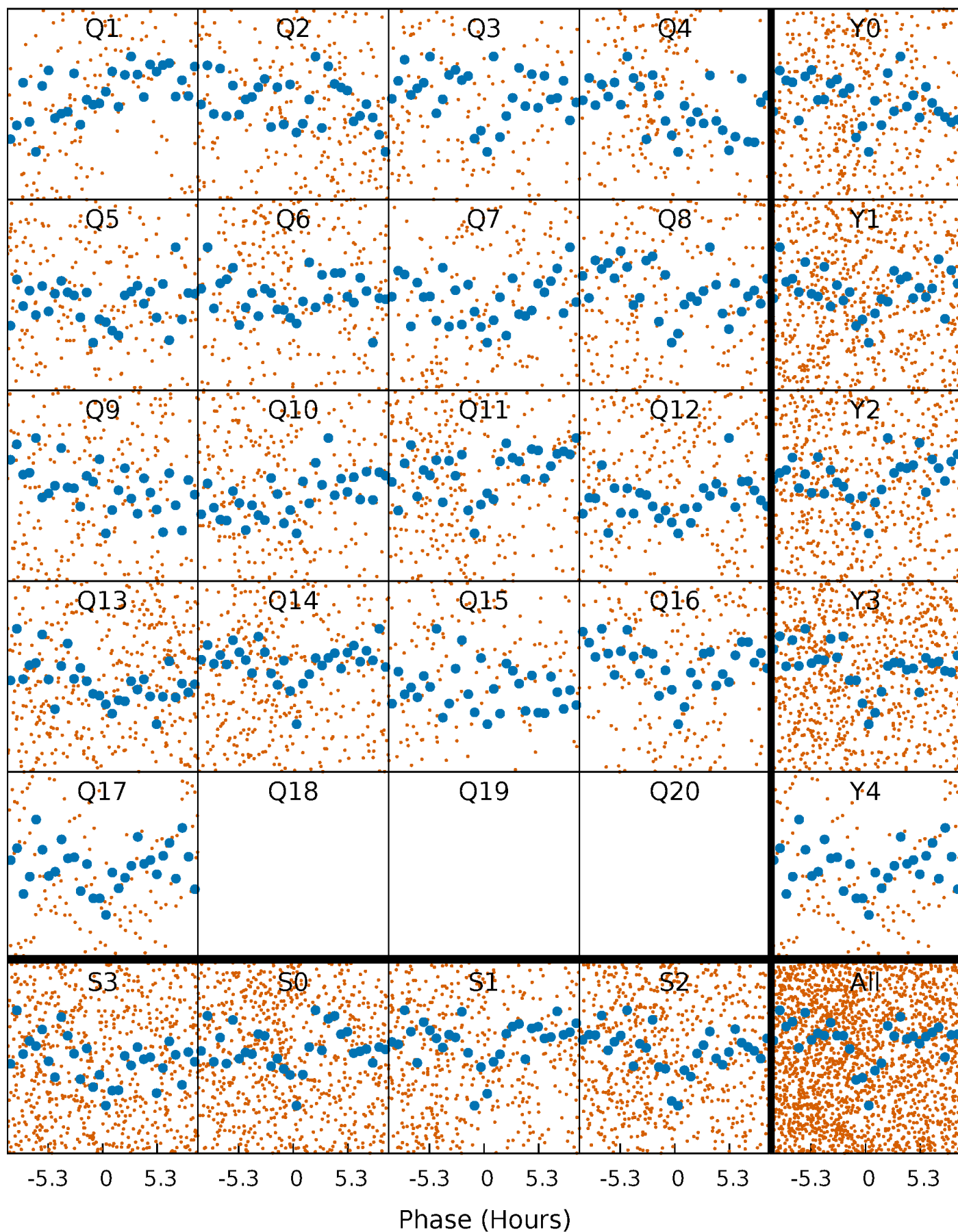


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



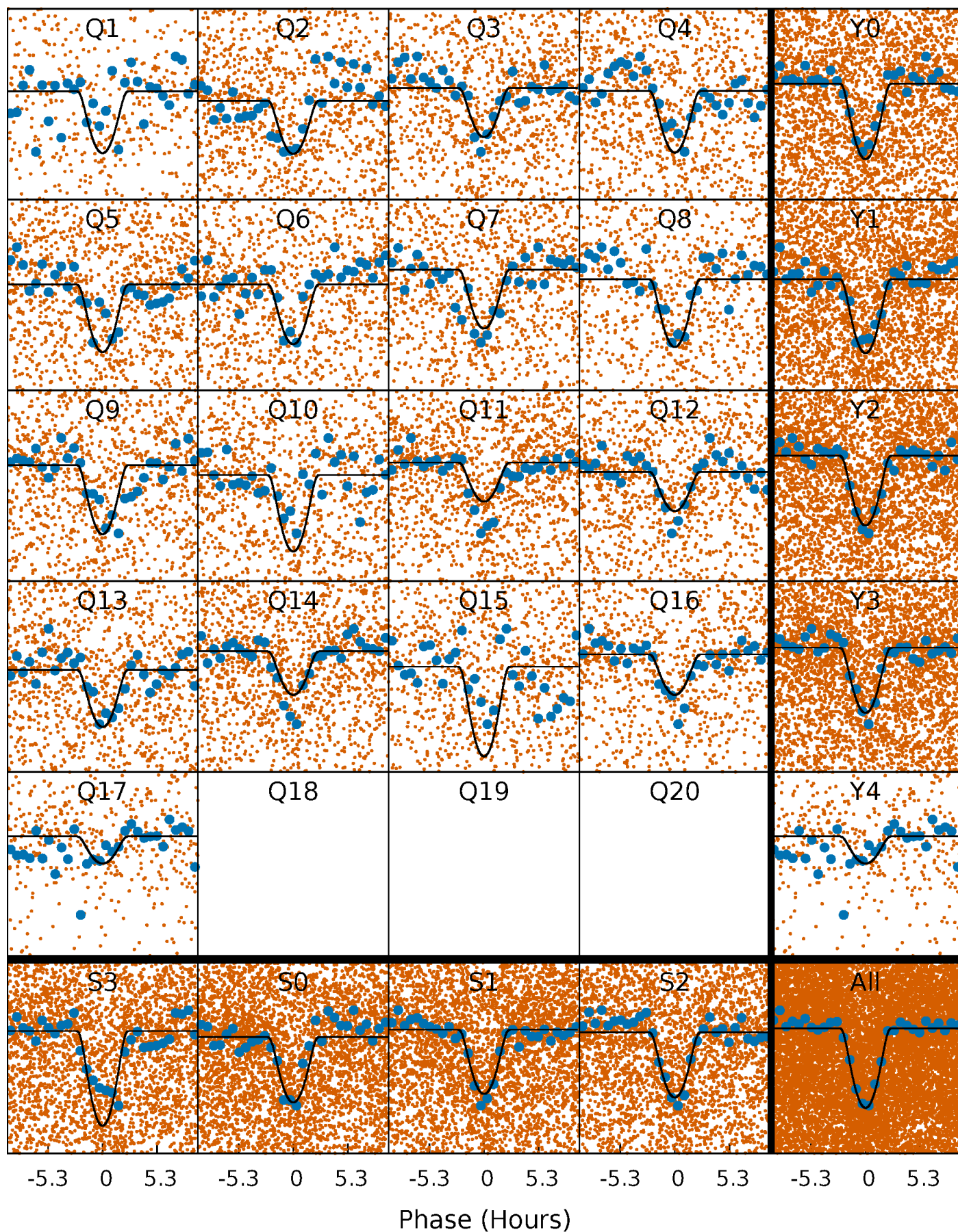
PDC Quarter-Phased Transit Curves

TCE 004678919-01 P= 1.878860 Days $T_0=133.083339$ (BKJD)



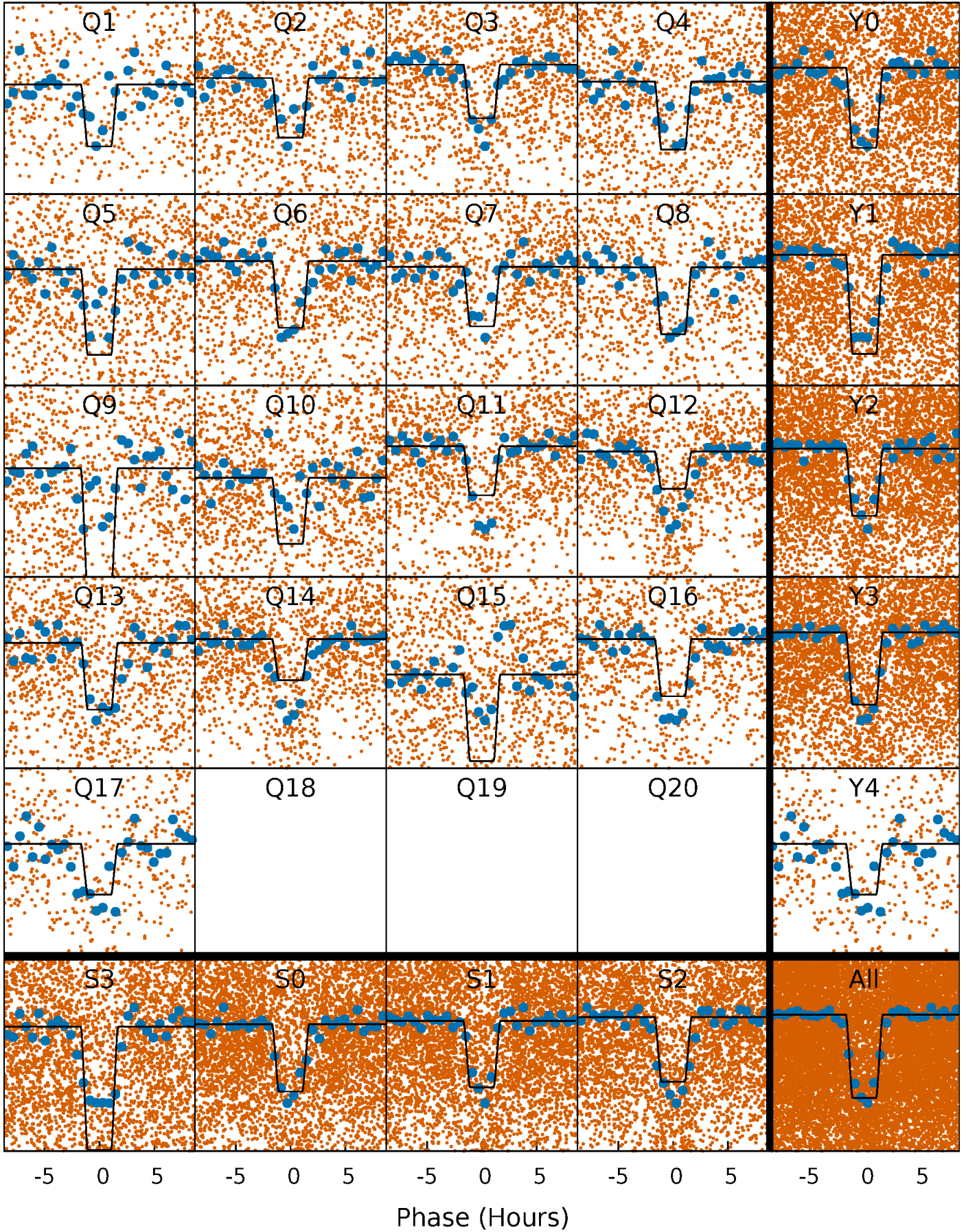
DV Quarter-Phased Transit Curves

TCE 004678919-01 P= 1.878860 Days $T_0=133.083339$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

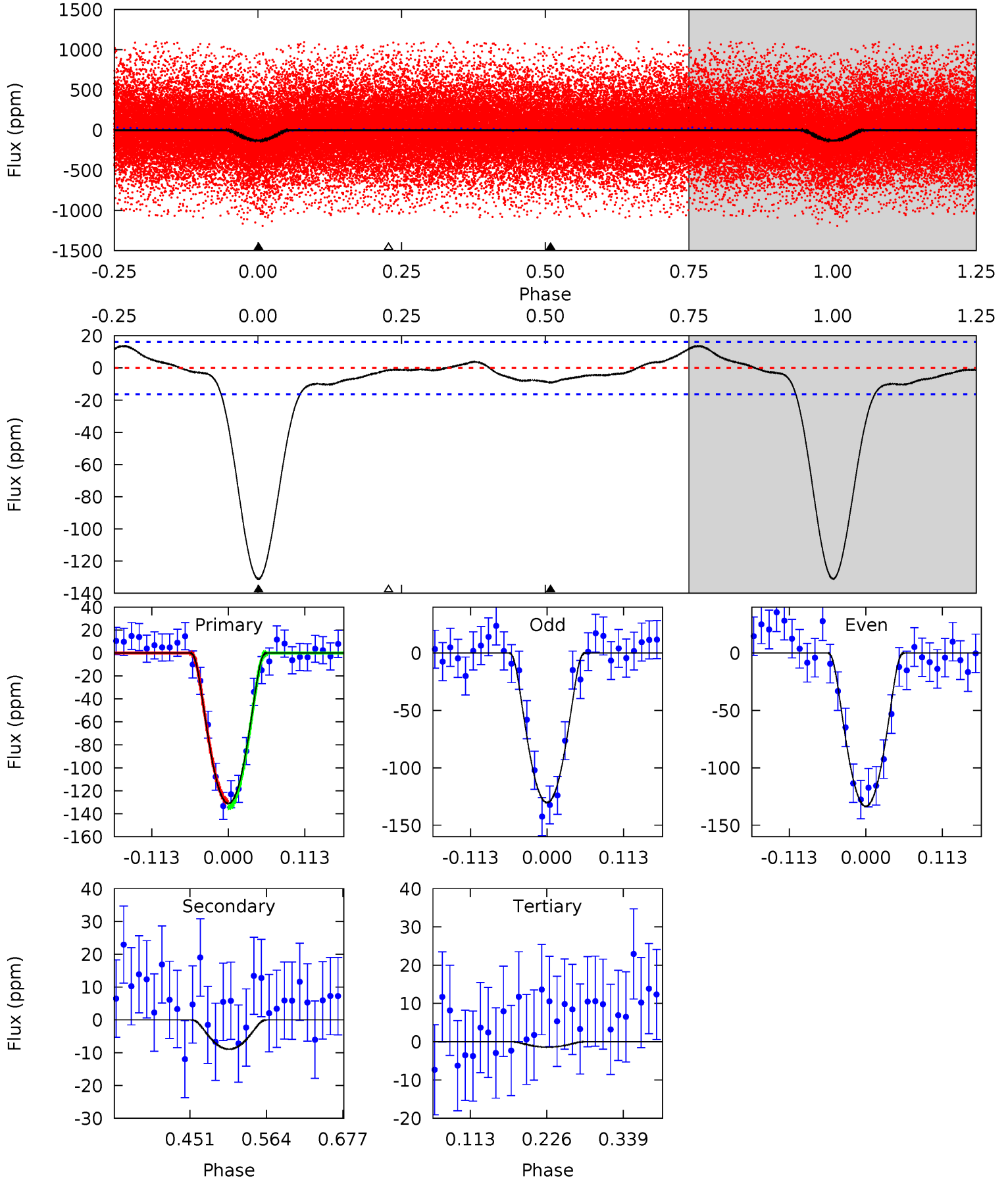
TCE 004678919-01 P= 1.878867 Days $T_0=133.078850$ (BKJD)



DV Model-Shift Uniqueness Test

004678919-01, P = 1.878860 Days, E = 131.204479 Days

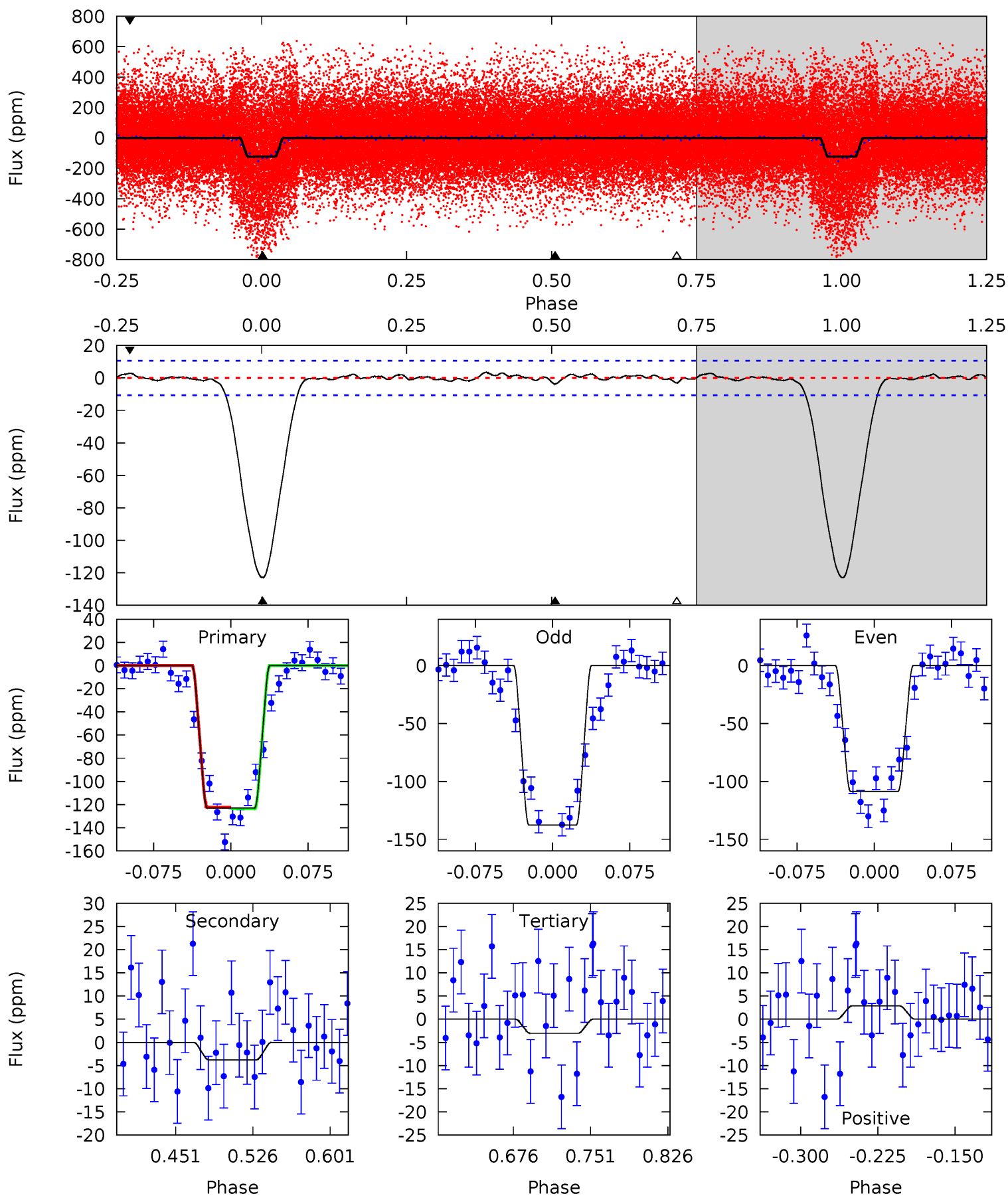
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.6	2.50	0.40	0	4.54	1.59	1.57	36.2	36.6	2.10	2.50	0.46	0.96	0.09	0.67



Alt Model-Shift Uniqueness Test

004678919-01, P = 1.878867 Days, E = 131.199983 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.4	1.64	1.33	1.24	4.62	1.78	0.55	52.1	52.1	0.31	0.40	6.28	1.08	0.03	0.25



Stellar Parameters For KIC 004678919

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5851^{+139}_{-157}	$4.534^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.863^{+0.251}_{-0.084}$	$0.930^{+0.110}_{-0.110}$	$2.037^{+0.518}_{-0.999}$
	+2%/-3%	+1%/-4%	+115%/-115%	+29%/-10%	+12%/-12%	+25%/-49%
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 004678919-01 / KOI 4219.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 4	$1.76^{+0.88}_{-0.83}$	2001^{+123}_{-92}	2902^{+758}_{-546}	$1.234^{+3.436}_{-0.767}$
Alt.	-4 ± 2	$1.21^{+0.86}_{-0.72}$	2005^{+127}_{-91}	2751^{+1188}_{-4699}	$0.954^{+5.944}_{-0.679}$

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

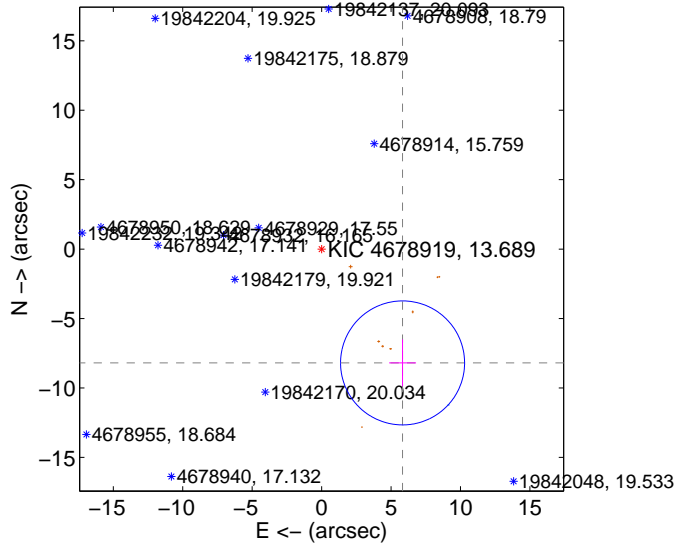
Supplemental centroid analysis for 004678919-01. Kepler magnitude: 13.69. Transit SNR 21.43

There are 1 quarters with good PRF difference image offsets

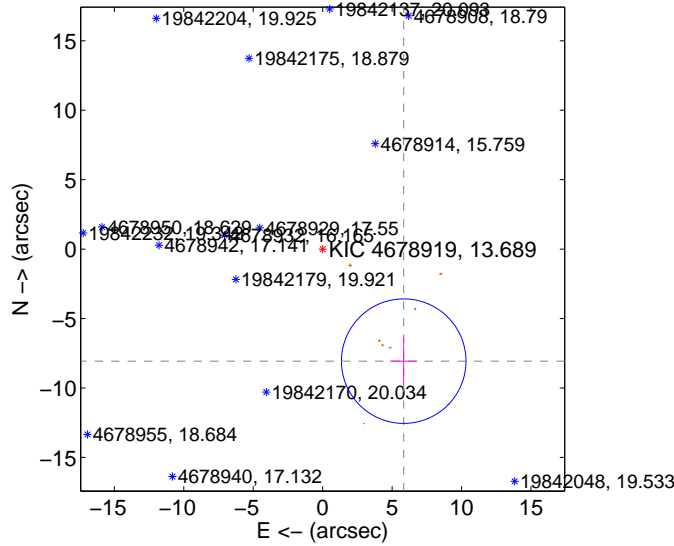
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	10.061 ± 1.489	6.76	-5.832 ± 0.972	-8.199 ± 1.691
PRF-fit source offset from KIC position	9.963 ± 1.495	6.66	-5.840 ± 0.980	-8.072 ± 1.704
photometric centroid source offset	5.80 ± 0.41	14.02	-4.41 ± 0.36	-3.76 ± 0.48

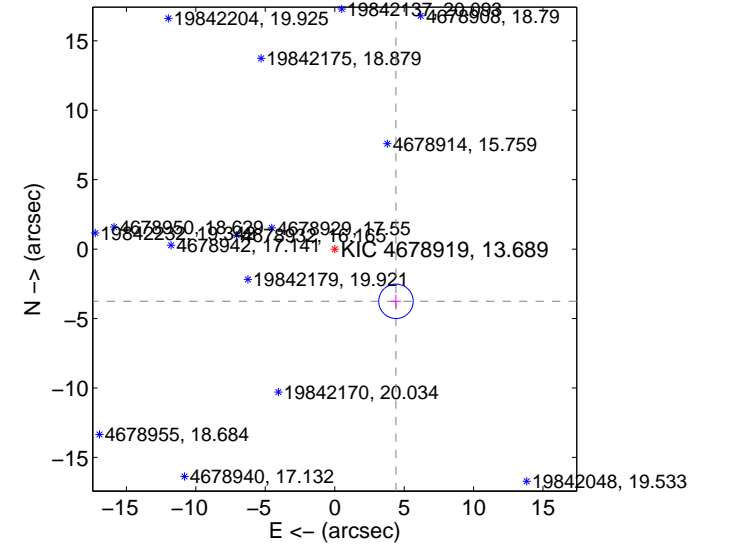
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

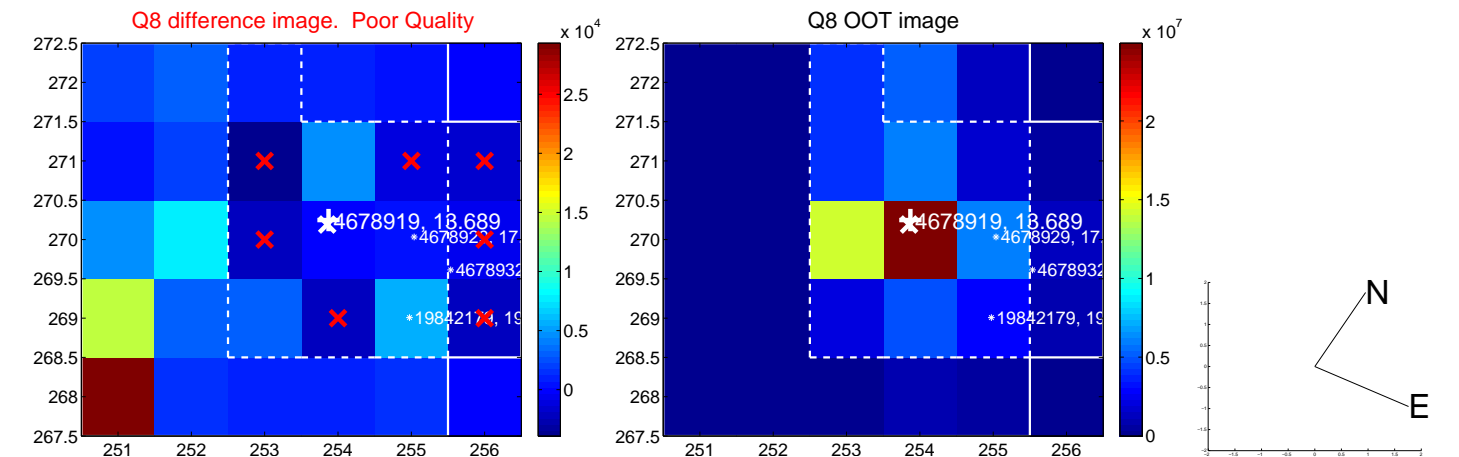
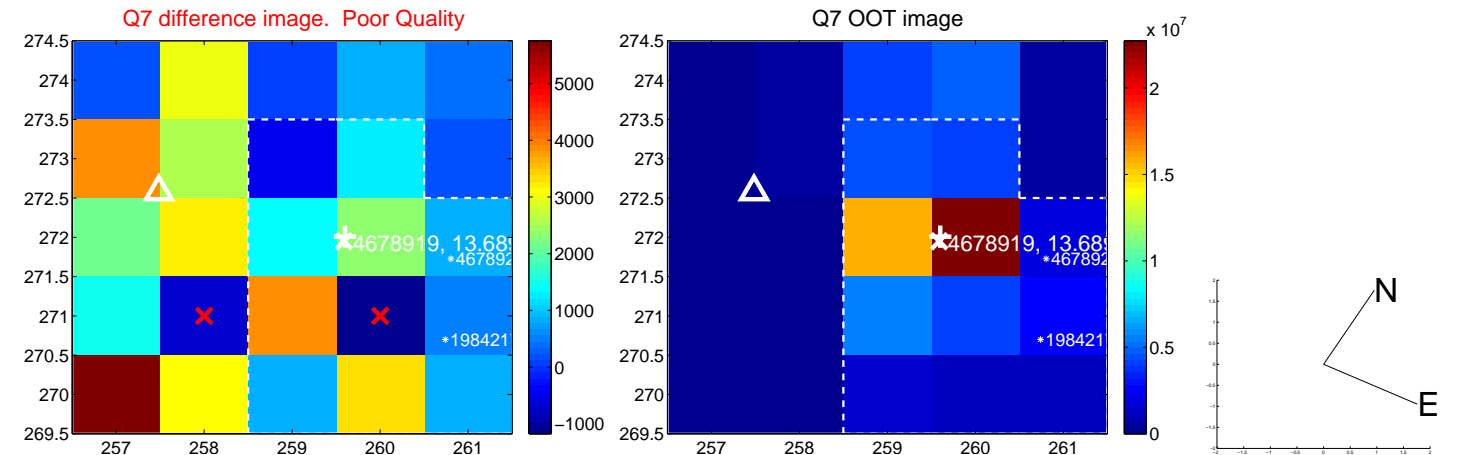
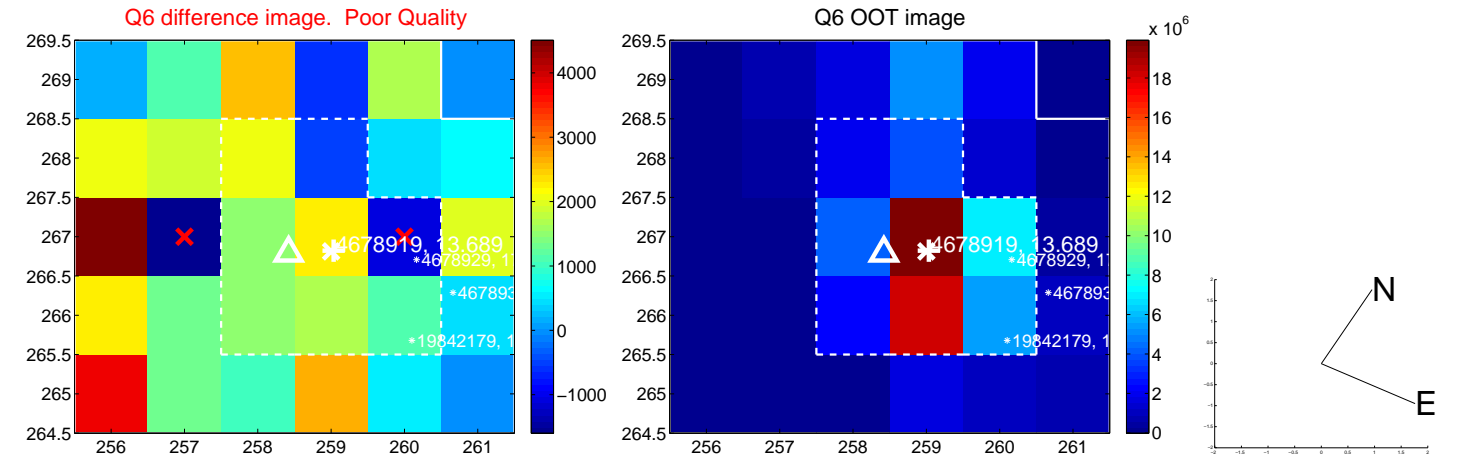
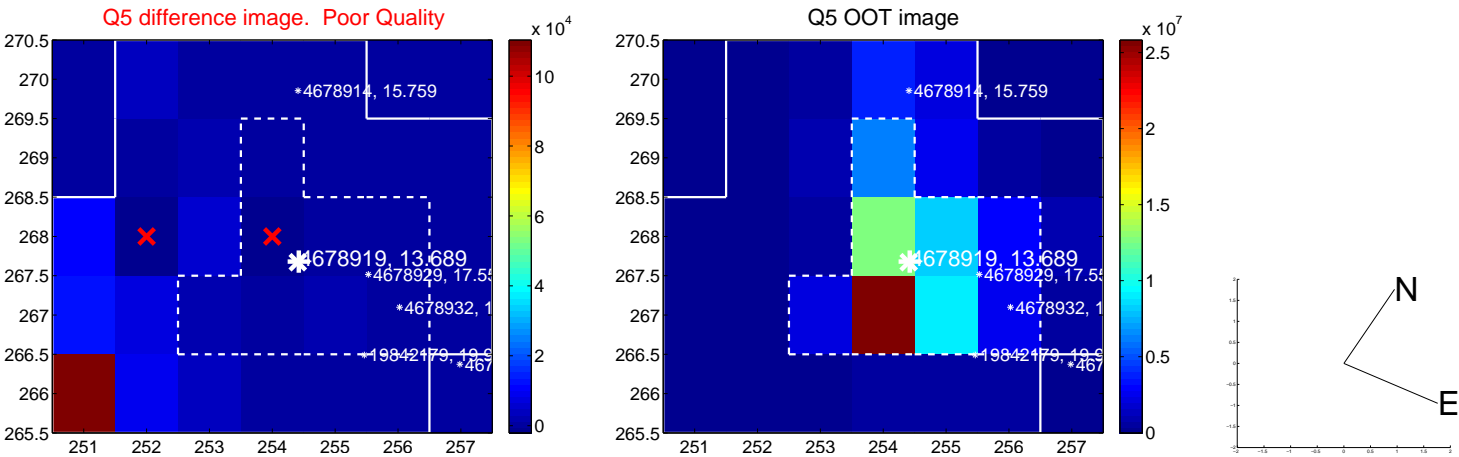


offset from photometric centroids

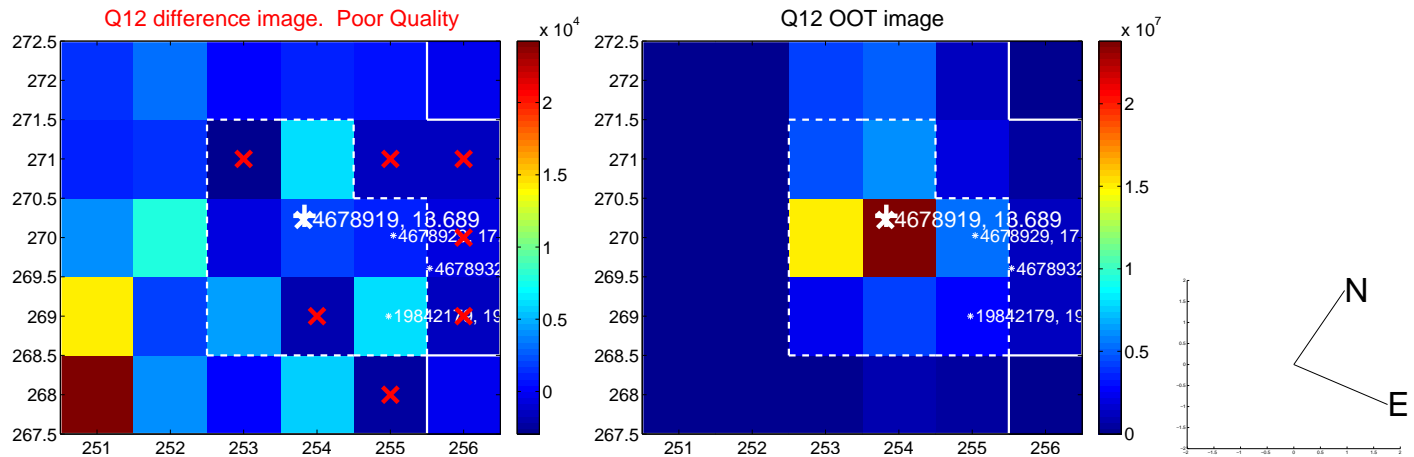
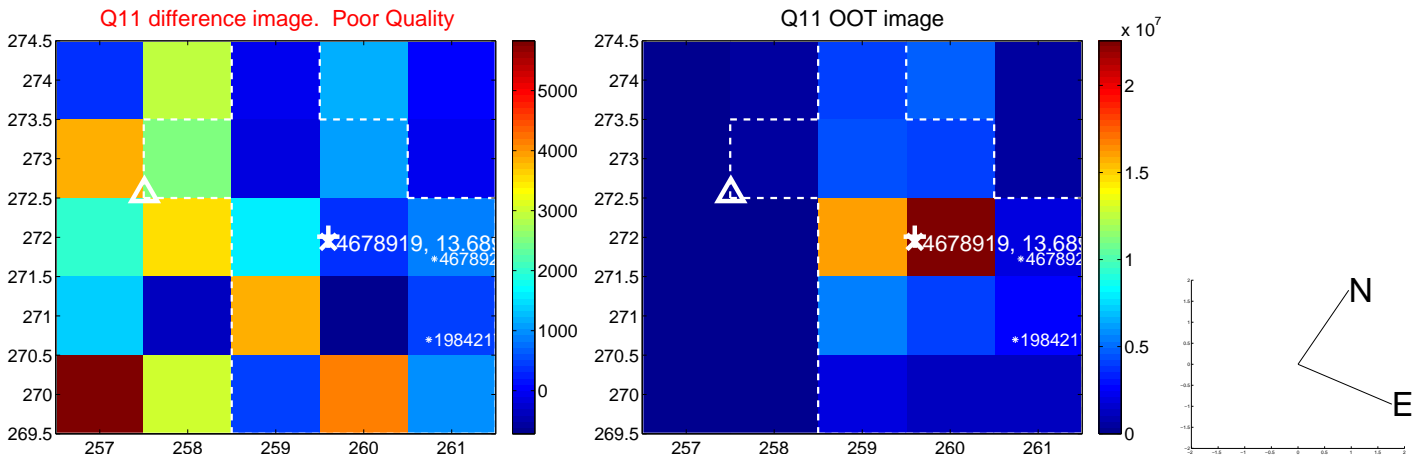
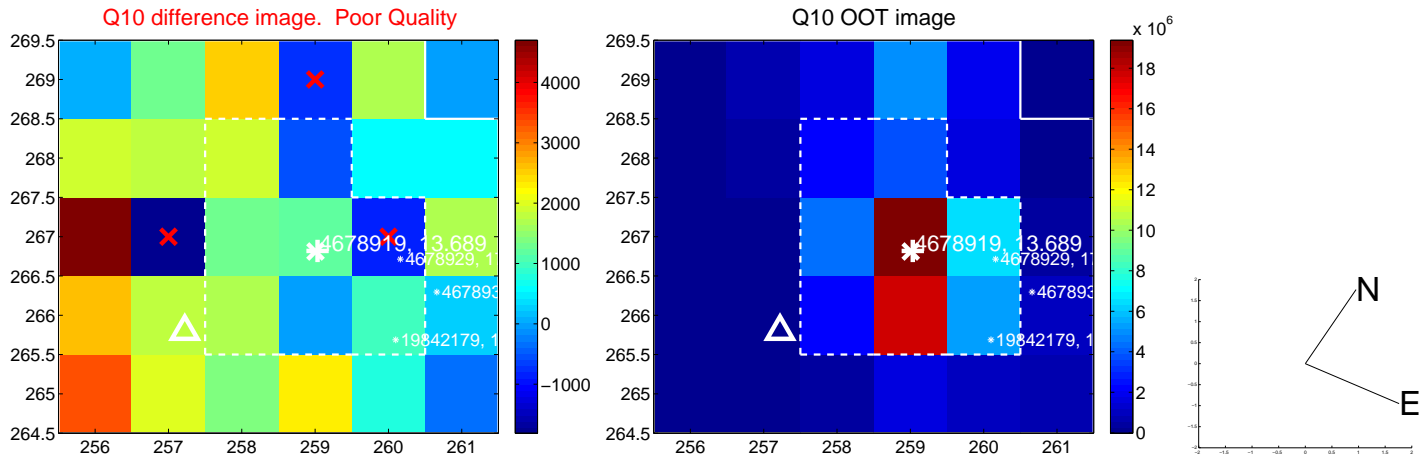
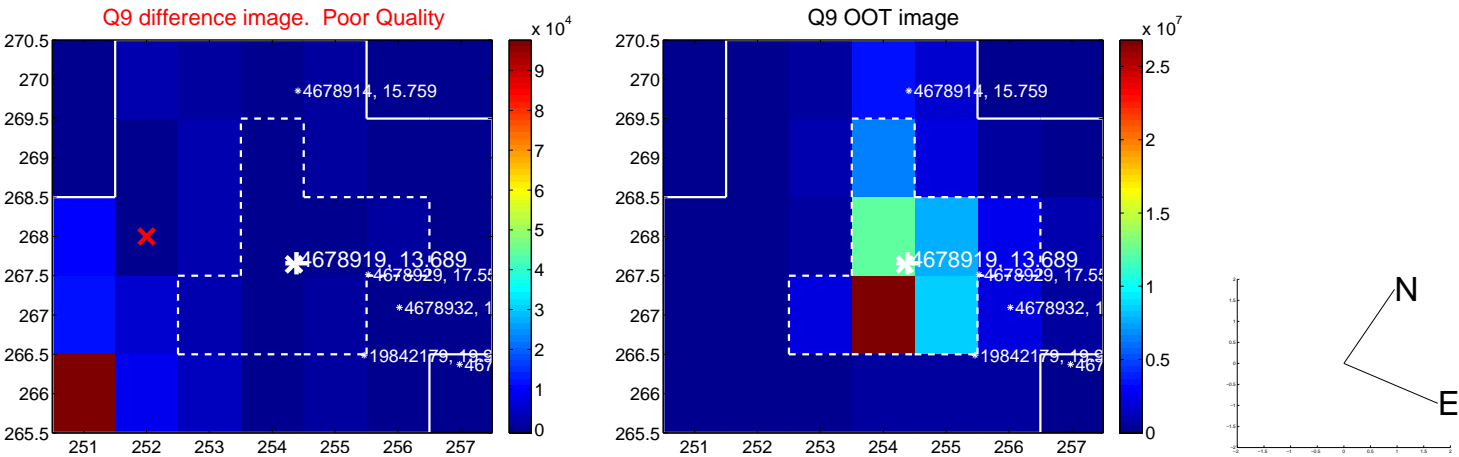


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

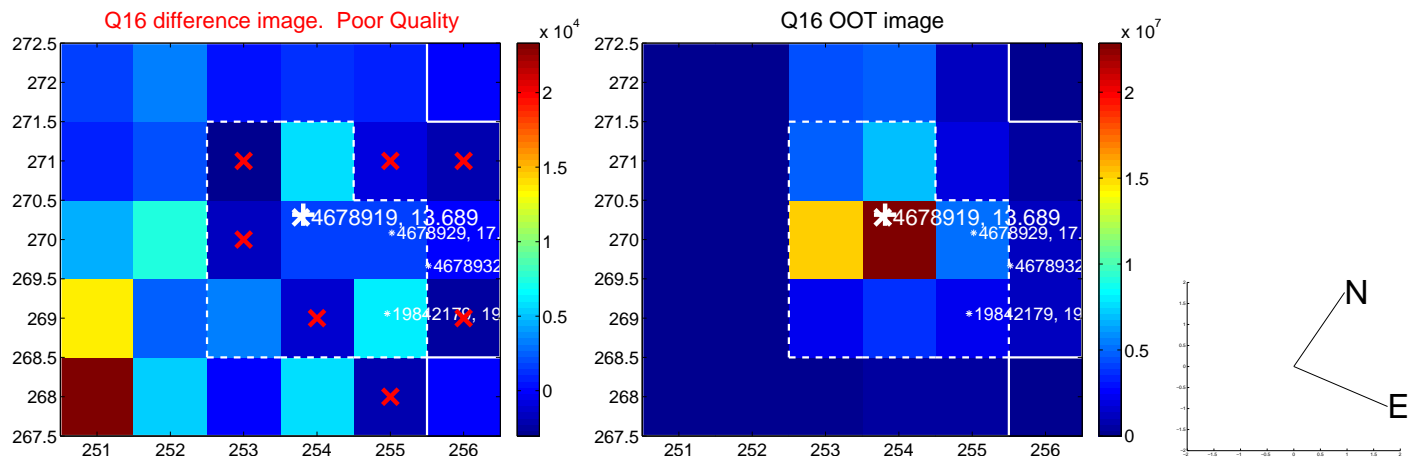
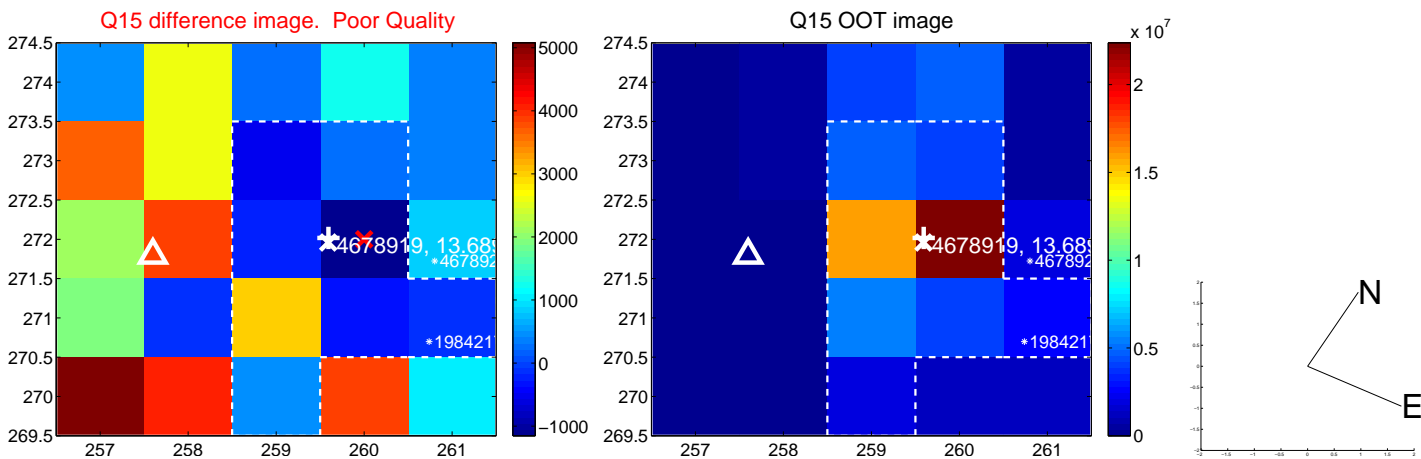
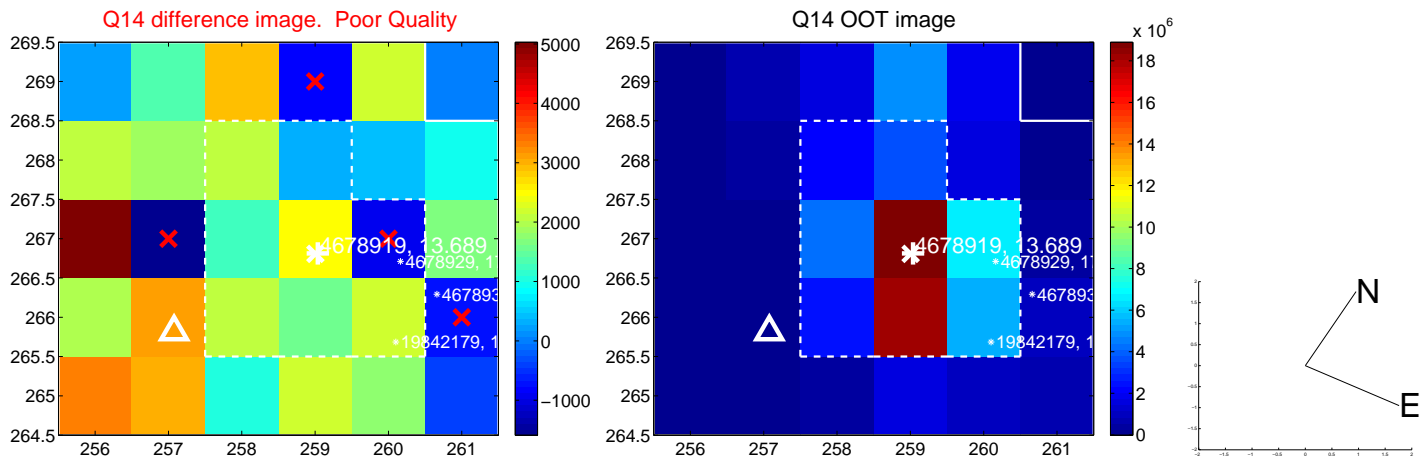
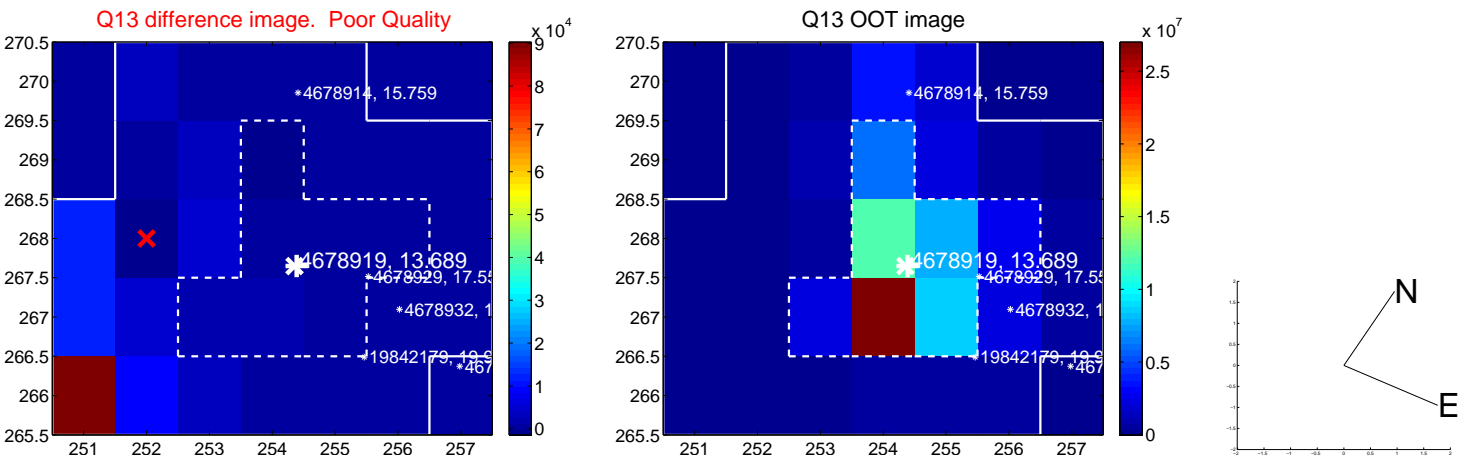
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



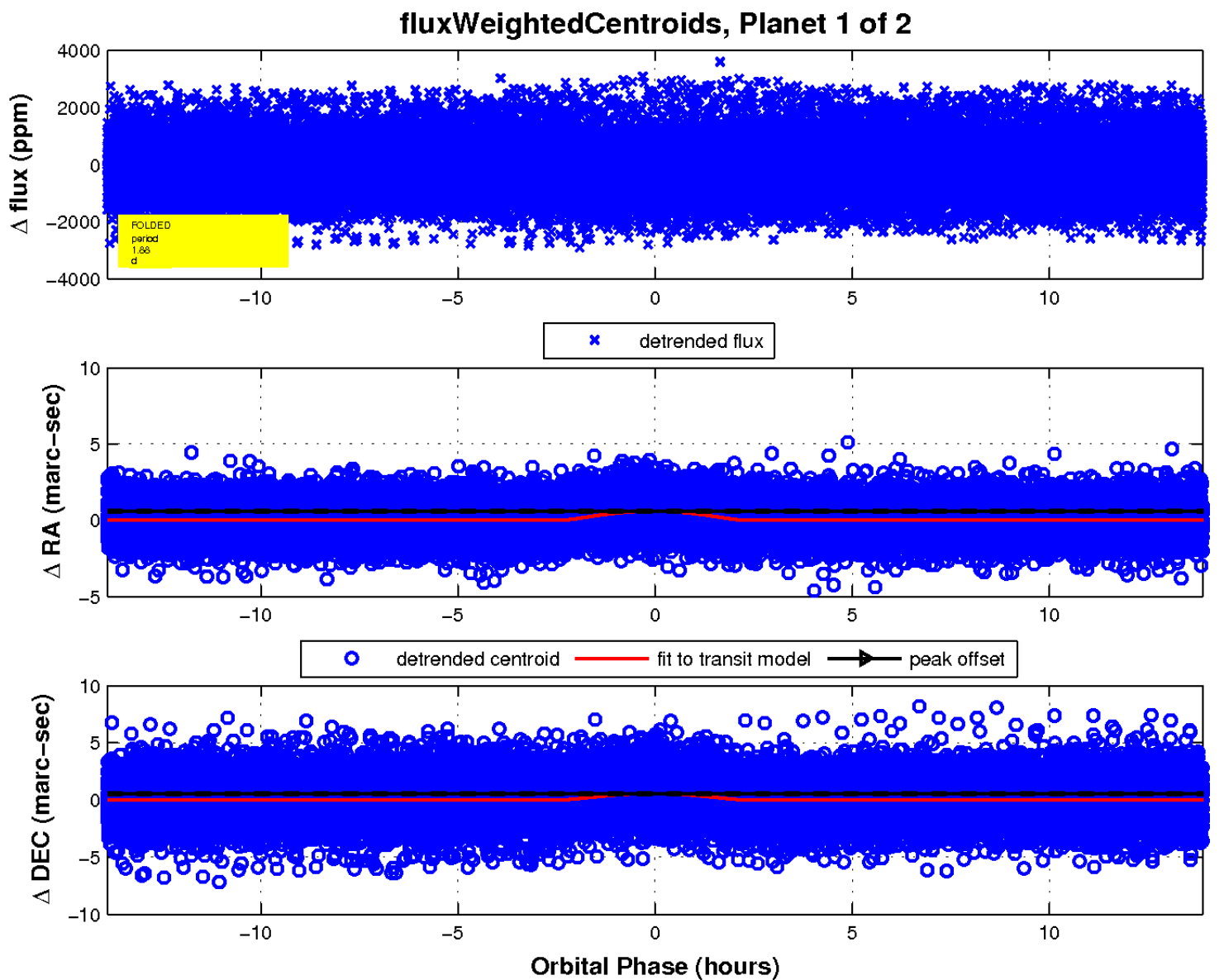
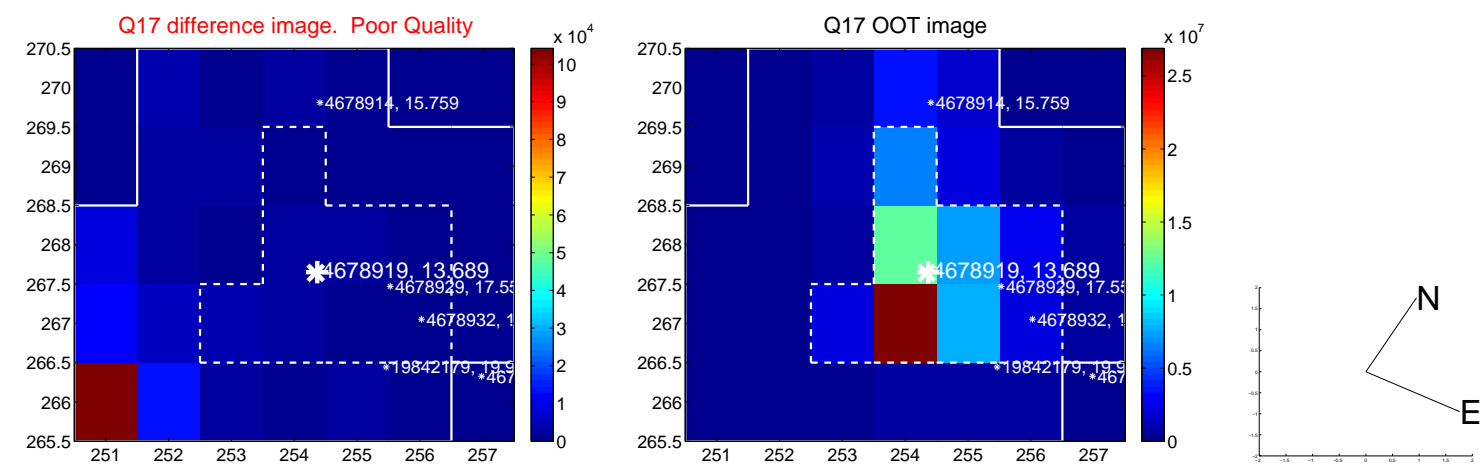
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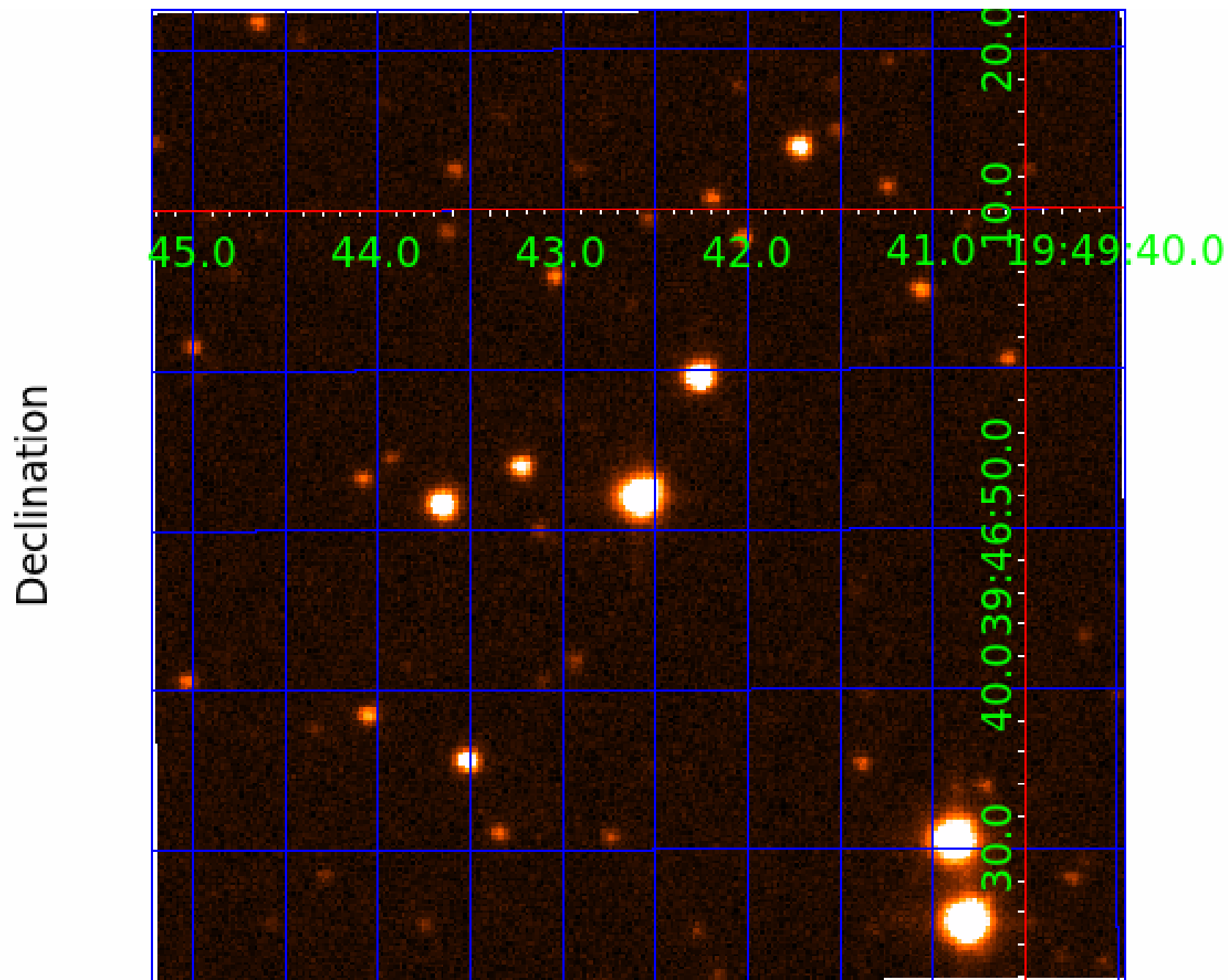
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



KIC 004678919

Q1-17 DR25 TCE Parameters

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Robovetter Results

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004678919-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
004678919-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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 004678919-02

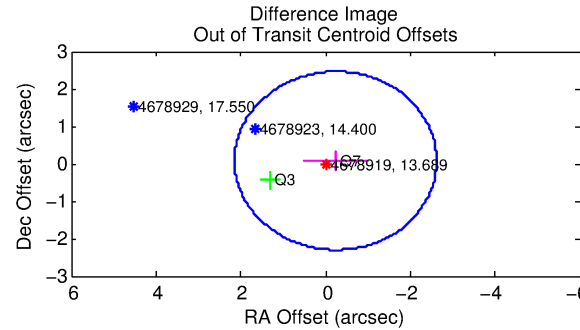
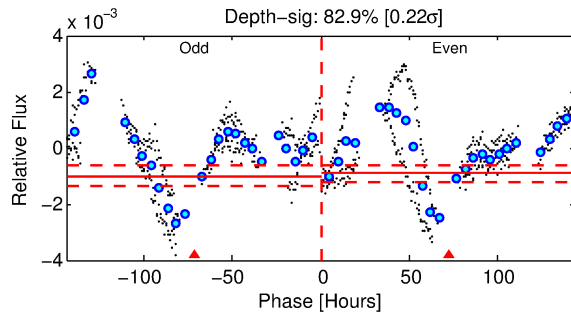
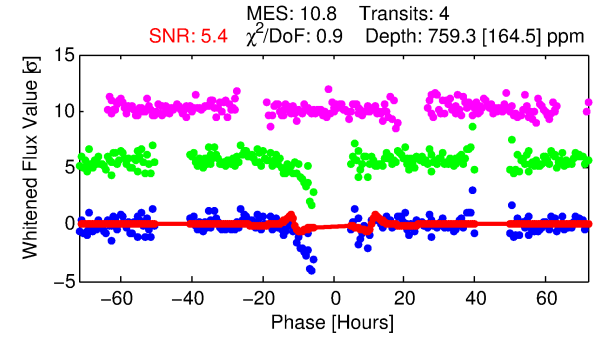
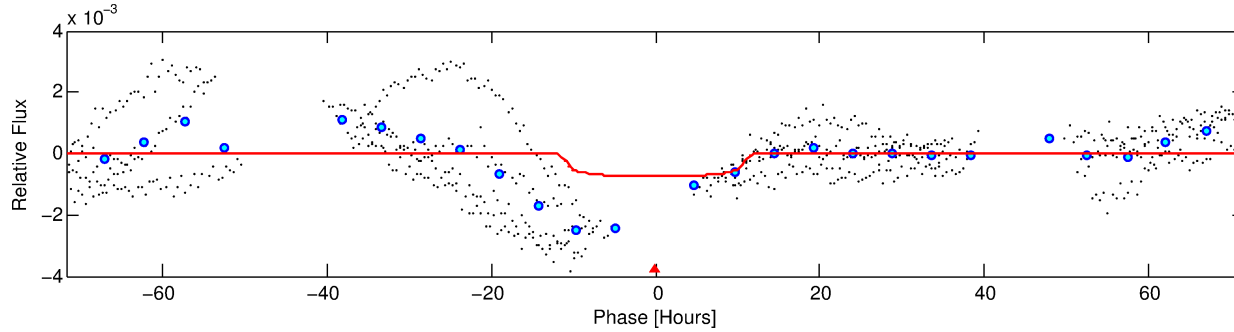
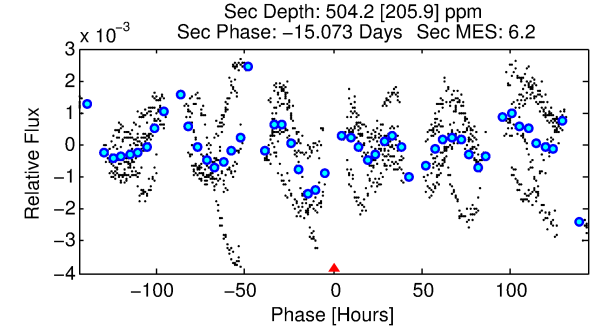
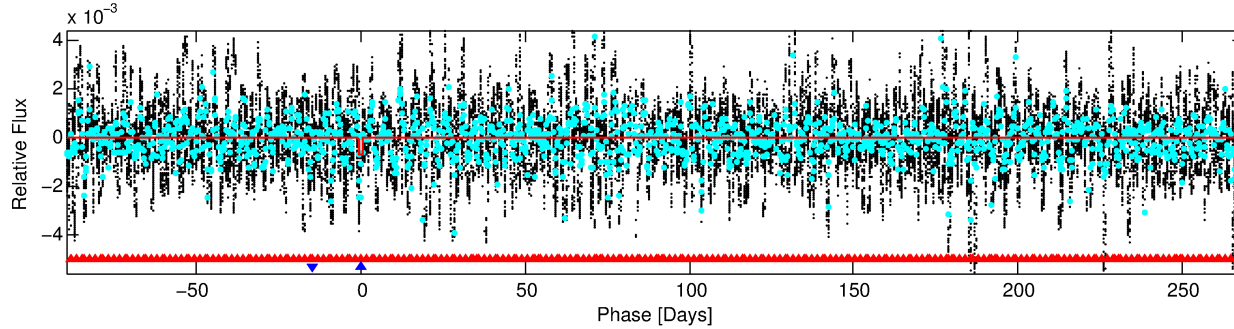
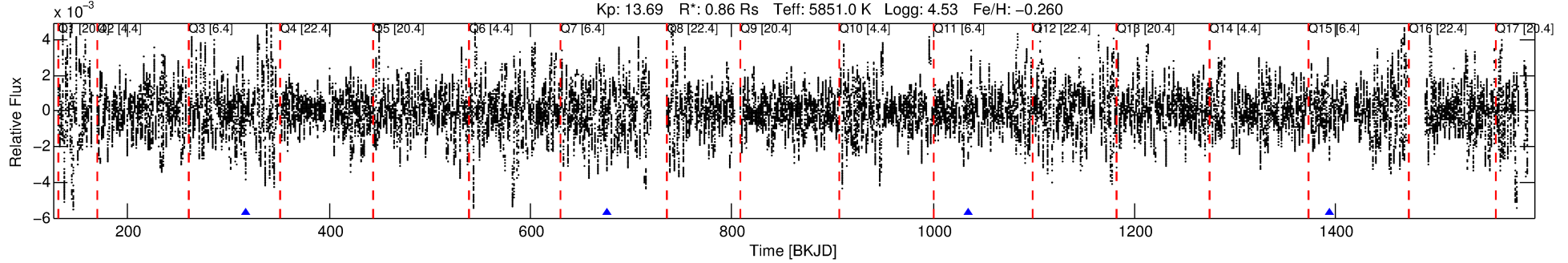
No Significant Match Found

DV One-Page Summary

KIC: 4678919 Candidate: 2 of 2 Period: 358.797 d

KOI: K04219 Corr: No Ephemeris Match

Kp: 13.69 R*: 0.86 Rs Teff: 5851.0 K Logg: 4.53 Fe/H: -0.260



DV Fit Results:

Period = 358.79719 [0.00769] d
Epoch = 317.3196 [0.0152] BKJD
Rp/R* = 0.0283 [0.0035]
a/R* = 70.58 [13.23]
b = 0.82 [0.07]
Seff = 0.84 [0.32]
Teq = 244 [23] K
Rp = 2.67 [0.84] Re
a = 0.9644 [0.2385] AU
Ag = 36322.32 [21837.10] [1.66σ]
Teffp = 5212 [640] K [7.76σ]

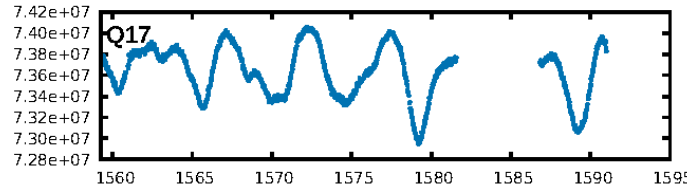
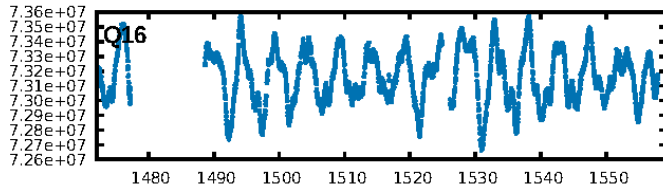
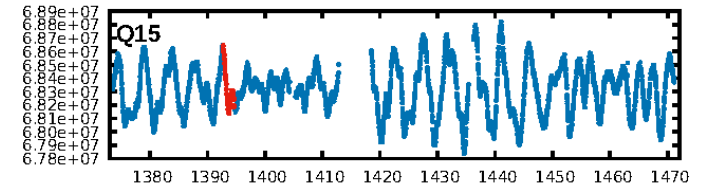
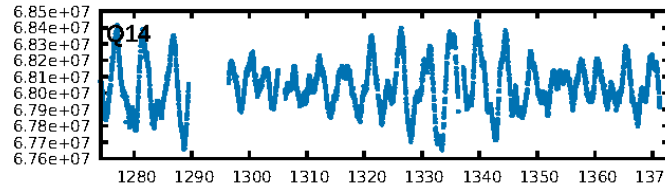
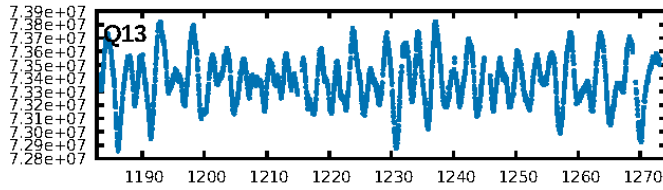
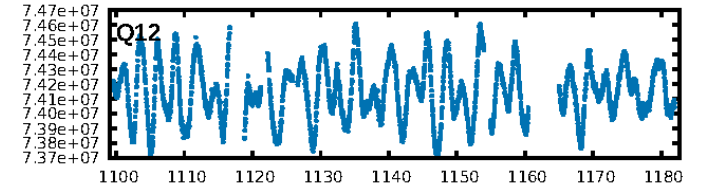
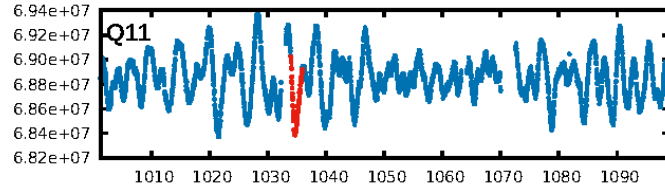
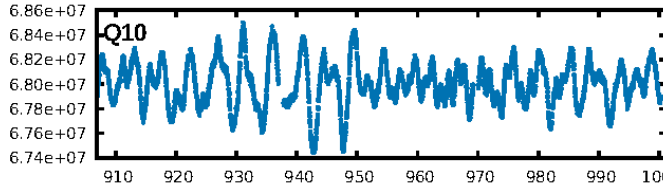
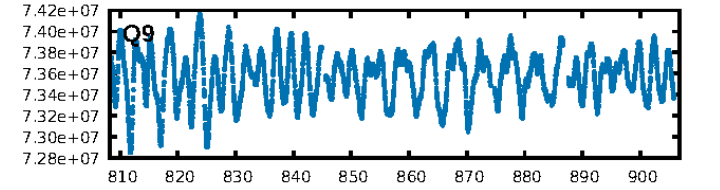
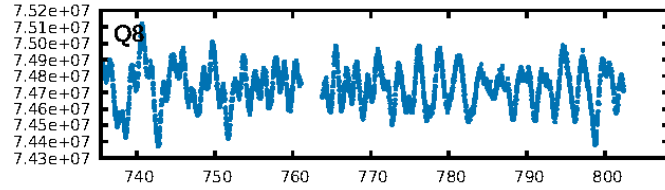
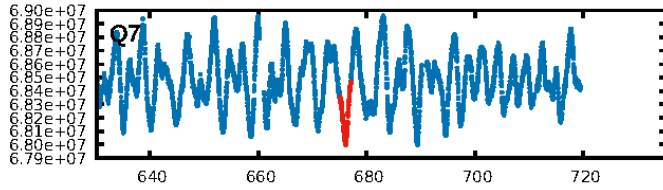
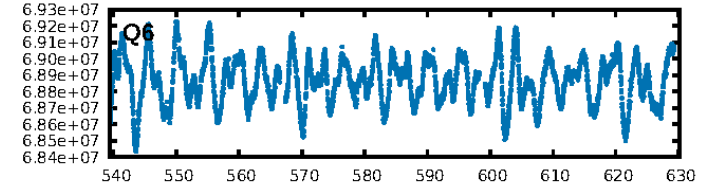
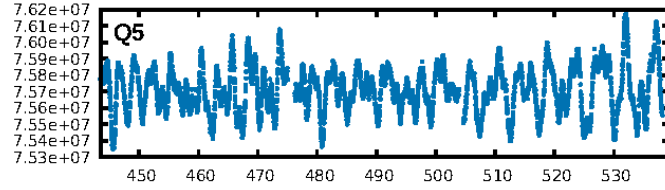
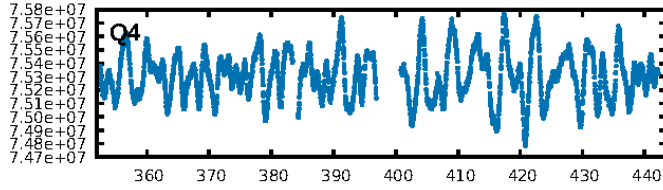
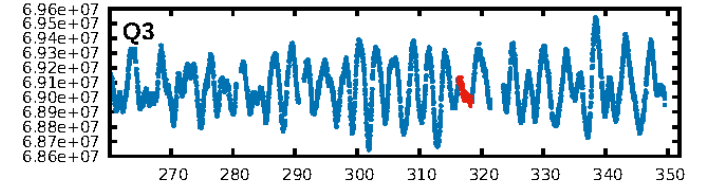
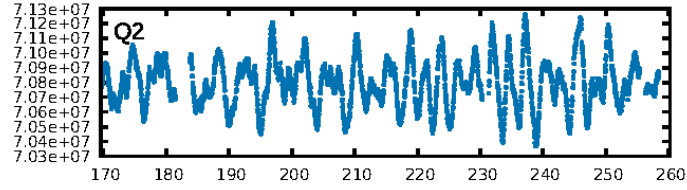
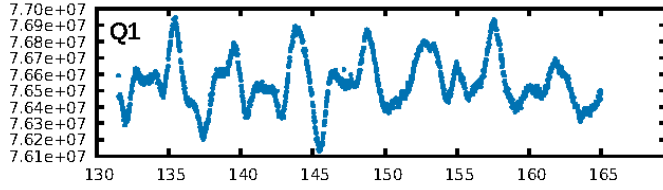
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [351.48σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 22.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.88e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6274
Centroid-sig: 0.6%
Centroid-so: 1.802 arcsec [1.75σ]
OotOffset-rm: 0.250 arcsec [0.31σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-rm: 0.415 arcsec [1.00σ]
KicOffset-st: 0/2/0/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

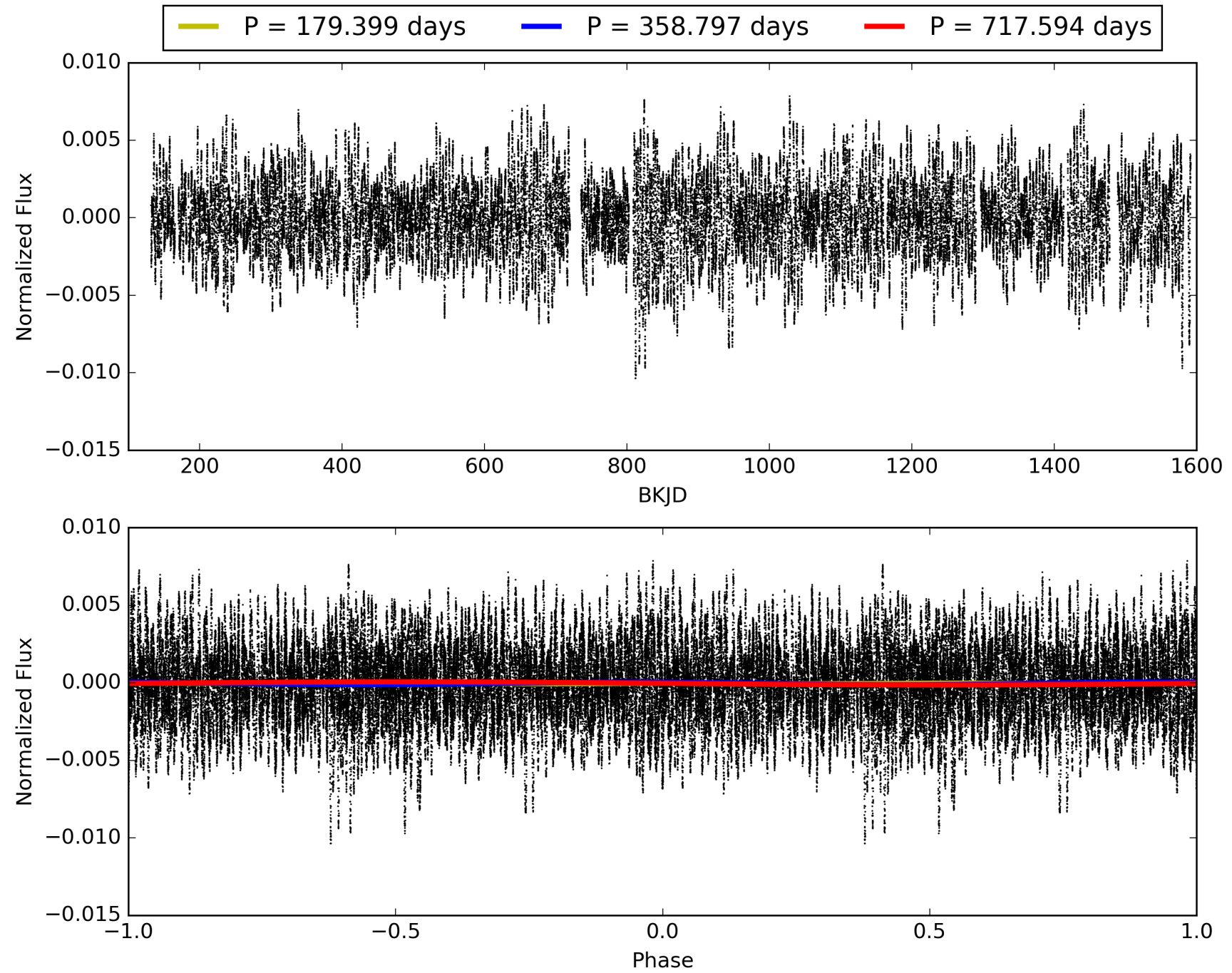
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:18:46 Z

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

TCE 004678919-02, PDC Light Curves

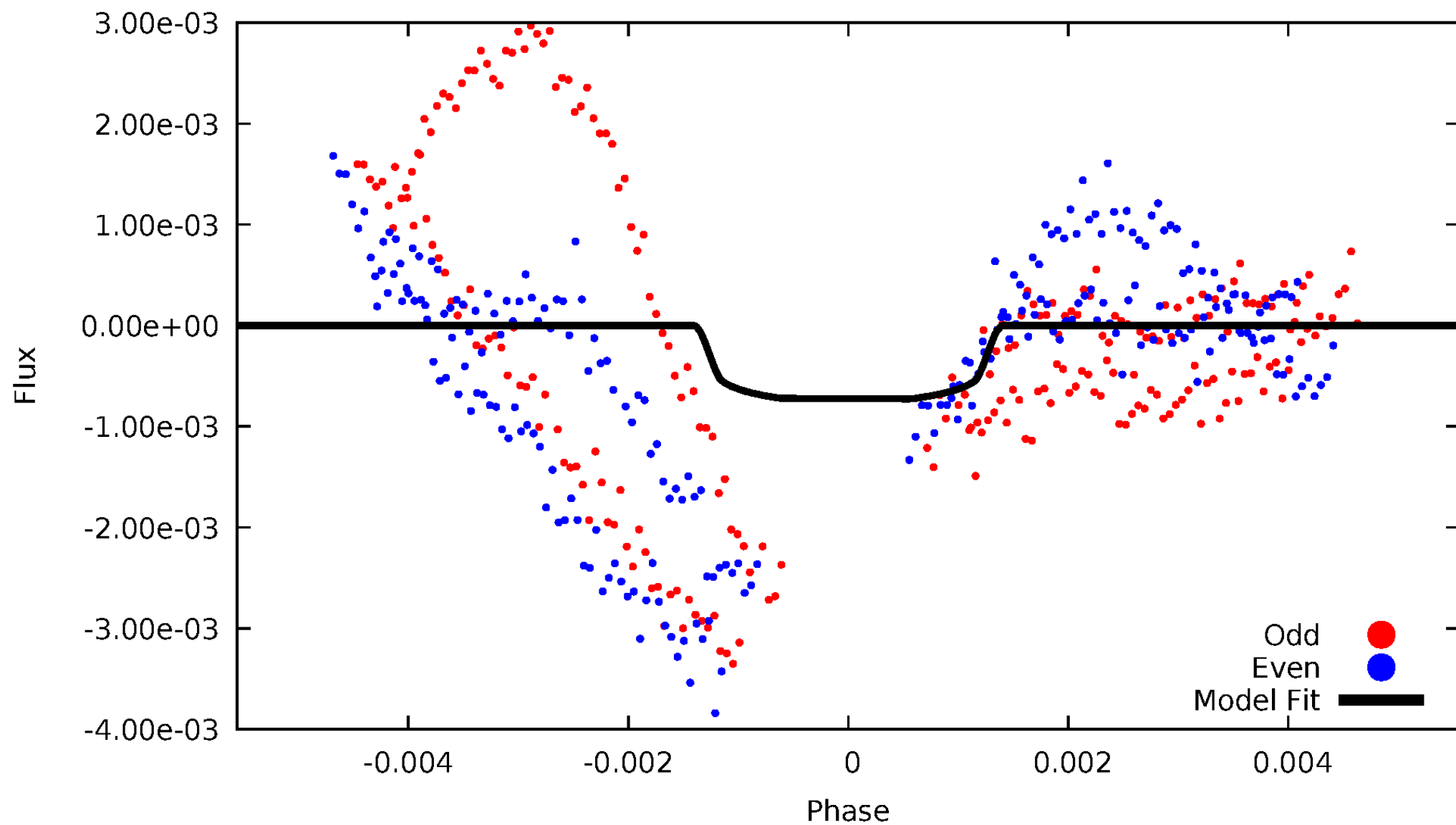


TCE 004678919-02



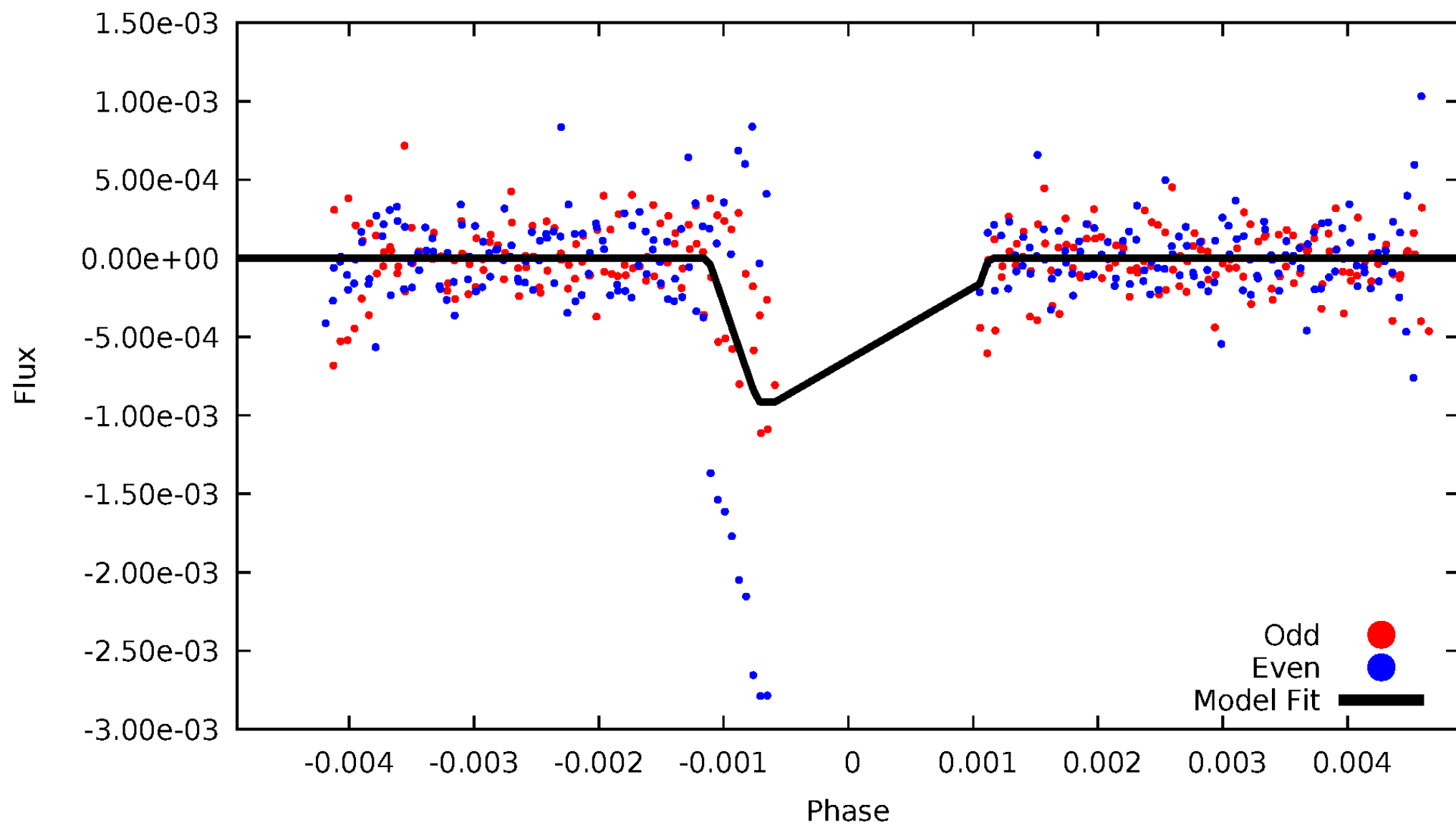
DV Odd/Even

TCE 004678919-02



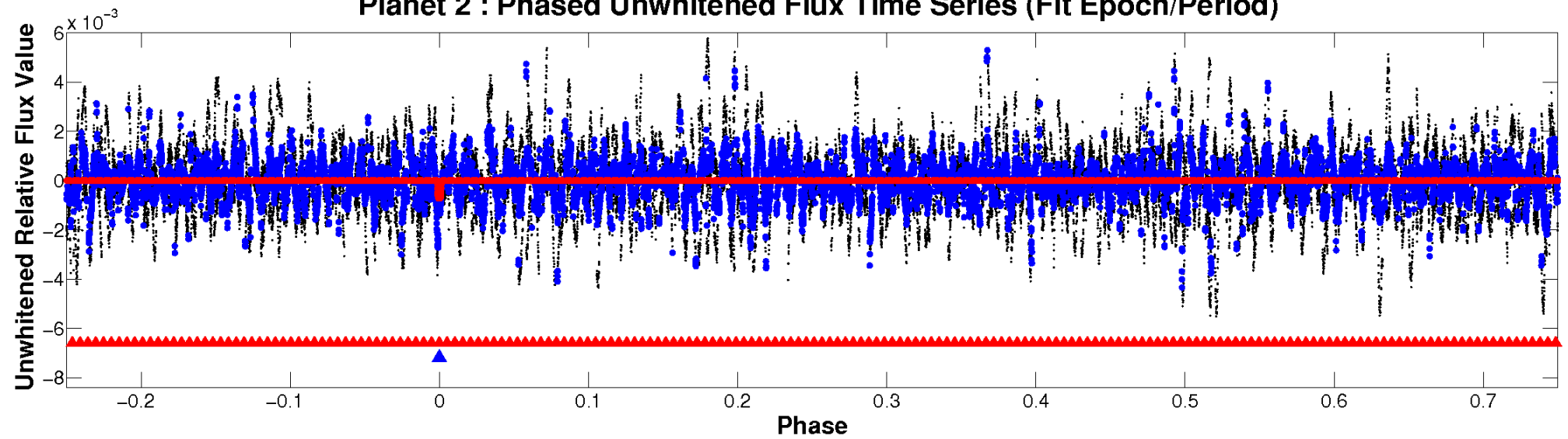
ALT Odd/Even

TCE 004678919-02

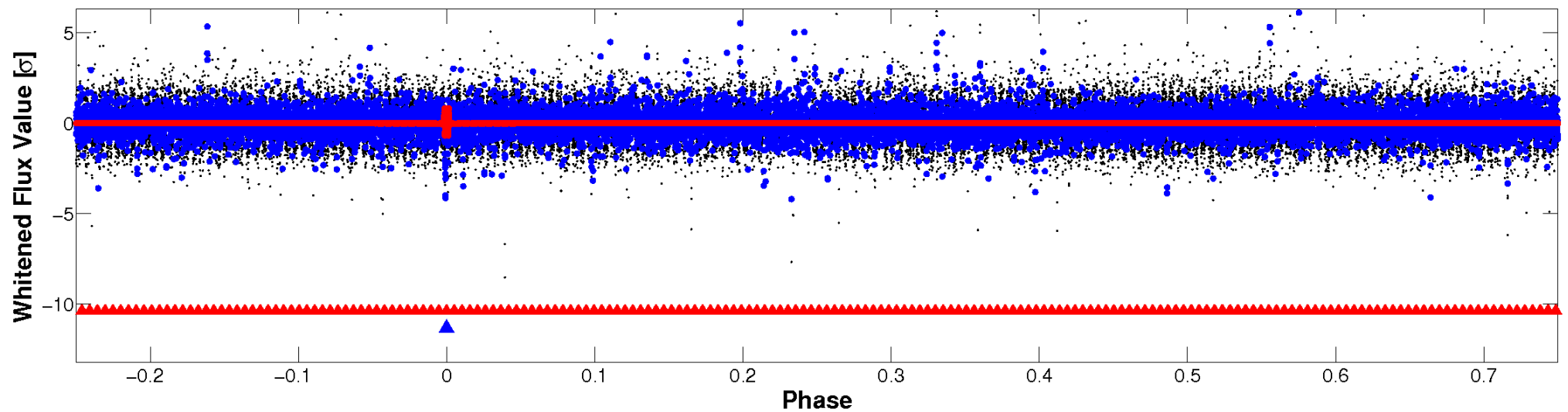


Non-Whitened Vs. Whitened Light Curve

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

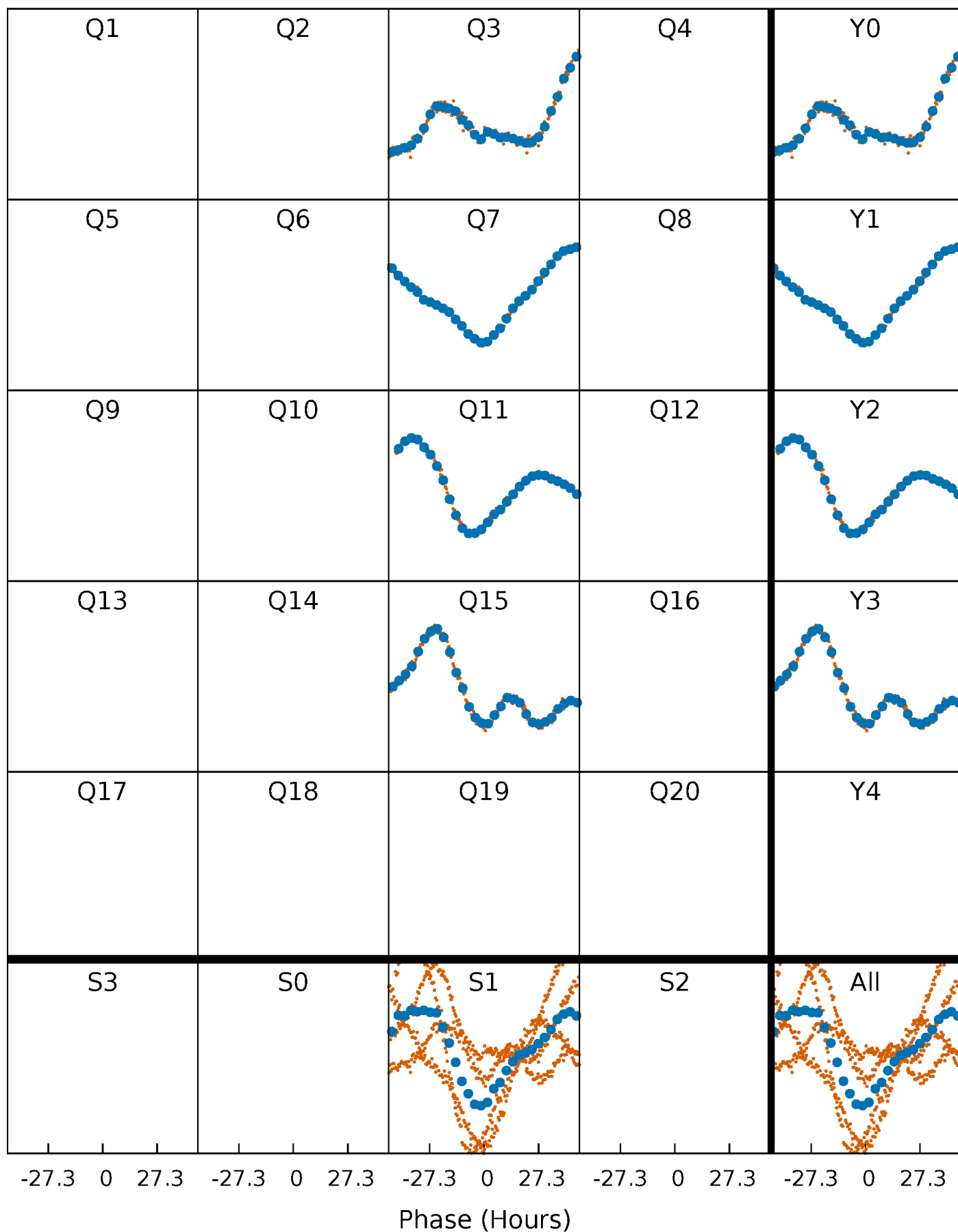


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



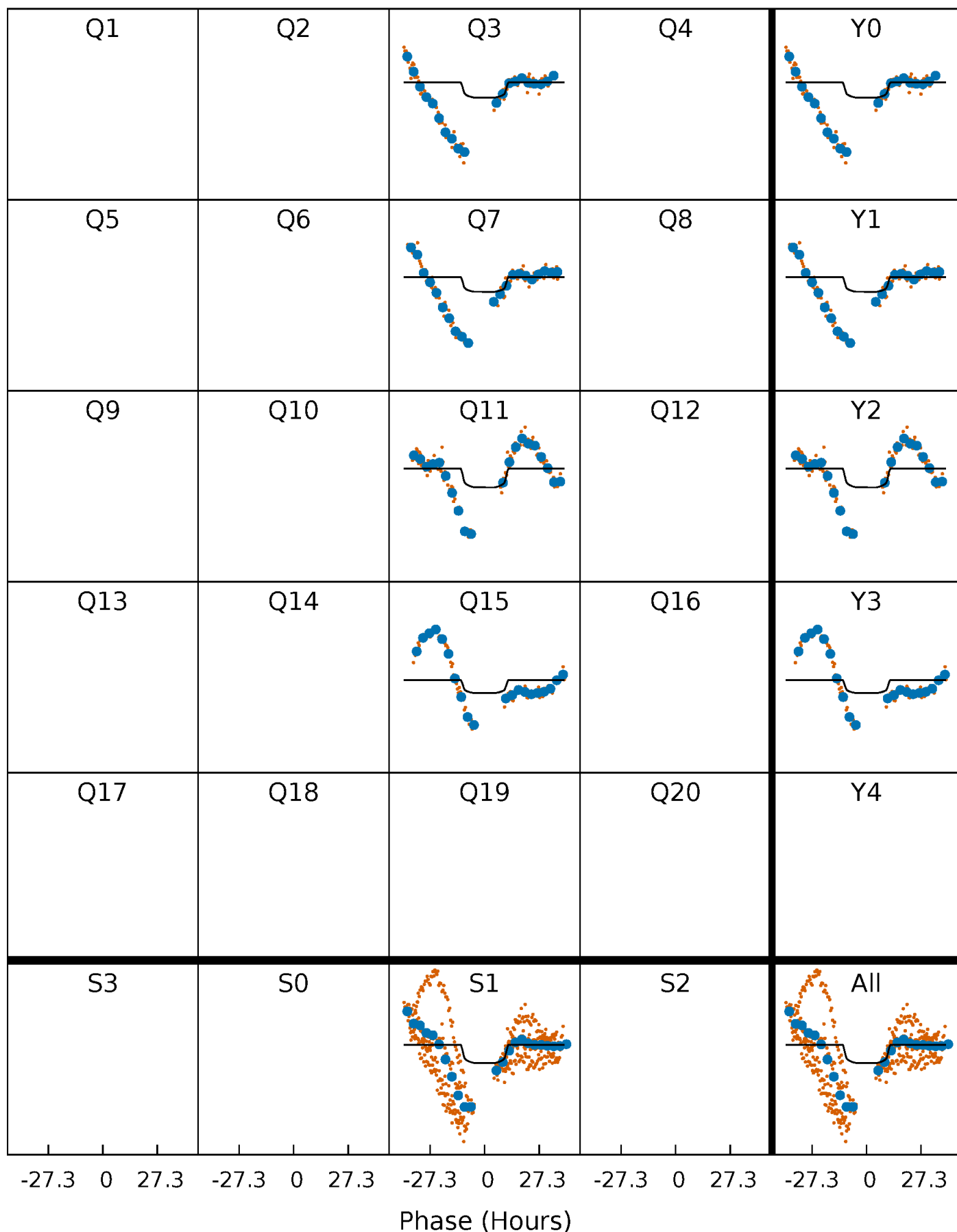
PDC Quarter-Phased Transit Curves

TCE 004678919-02 P=358.797194 Days $T_0=317.319593$ (BKJD)



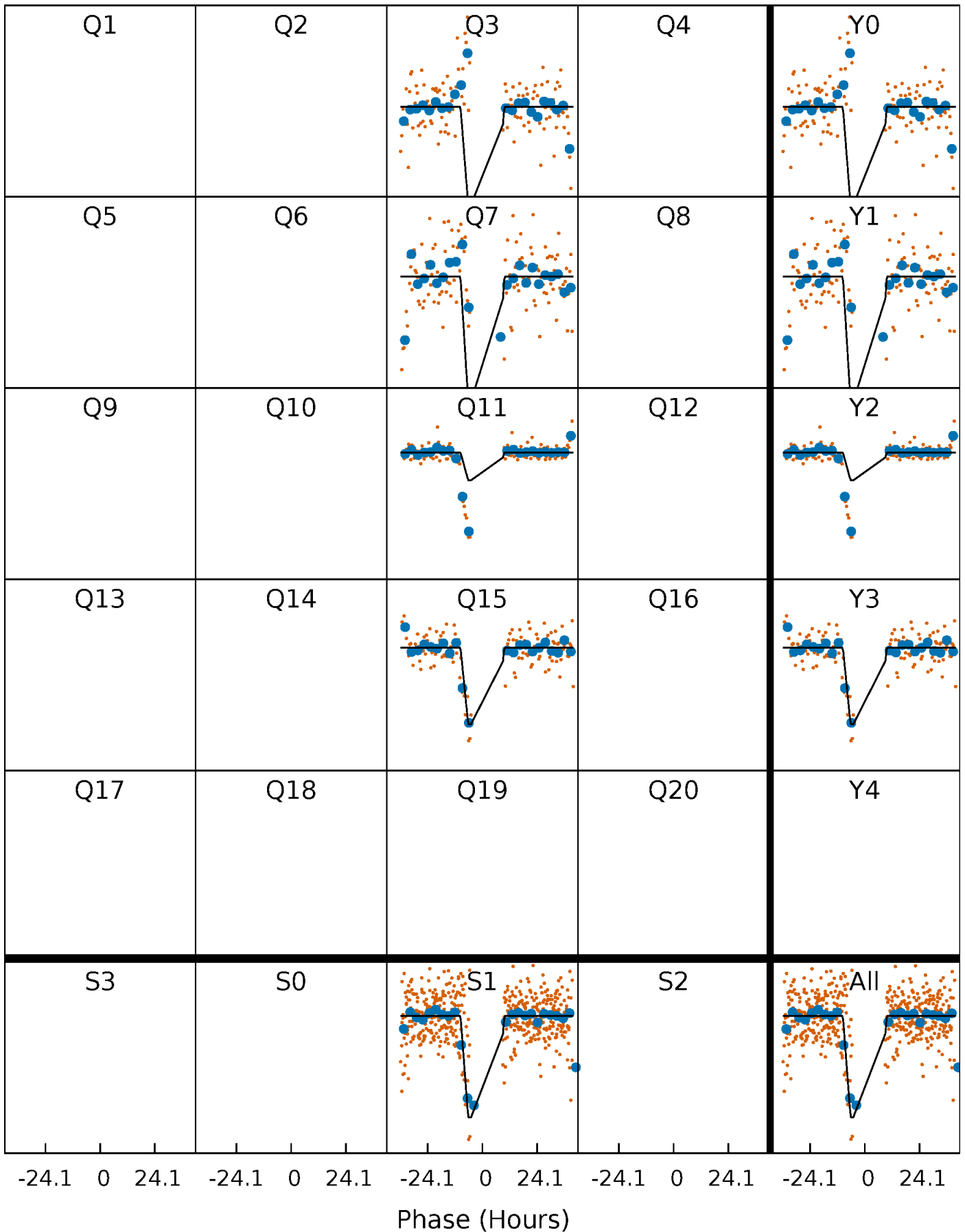
DV Quarter-Phased Transit Curves

TCE 004678919-02 P=358.797194 Days $T_0=317.319593$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

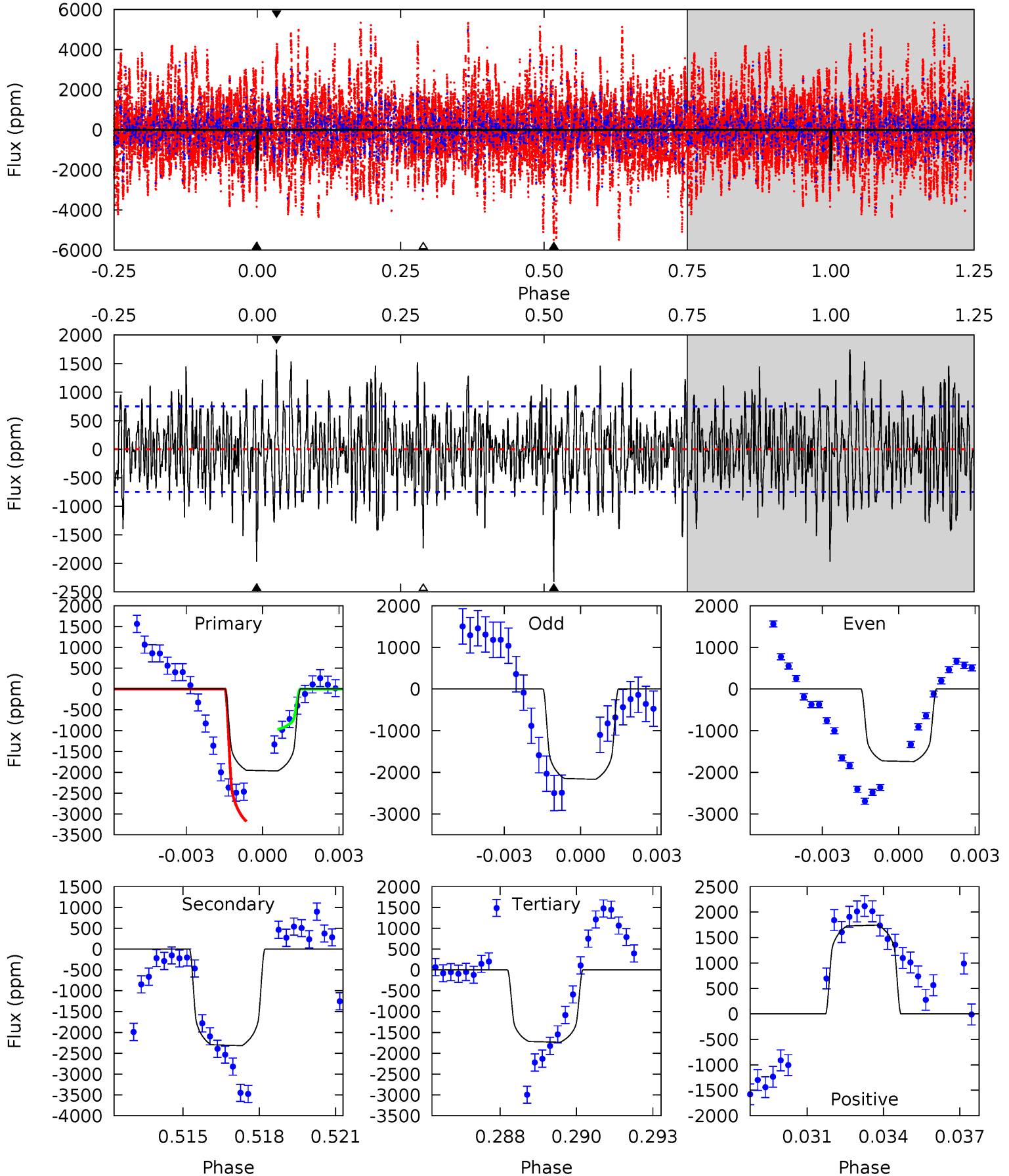
TCE 004678919-02 P=358.854181 Days $T_0=317.140772$ (BKJD)



DV Model-Shift Uniqueness Test

004678919-02, P = 358.797194 Days, E = 317.319593 Days

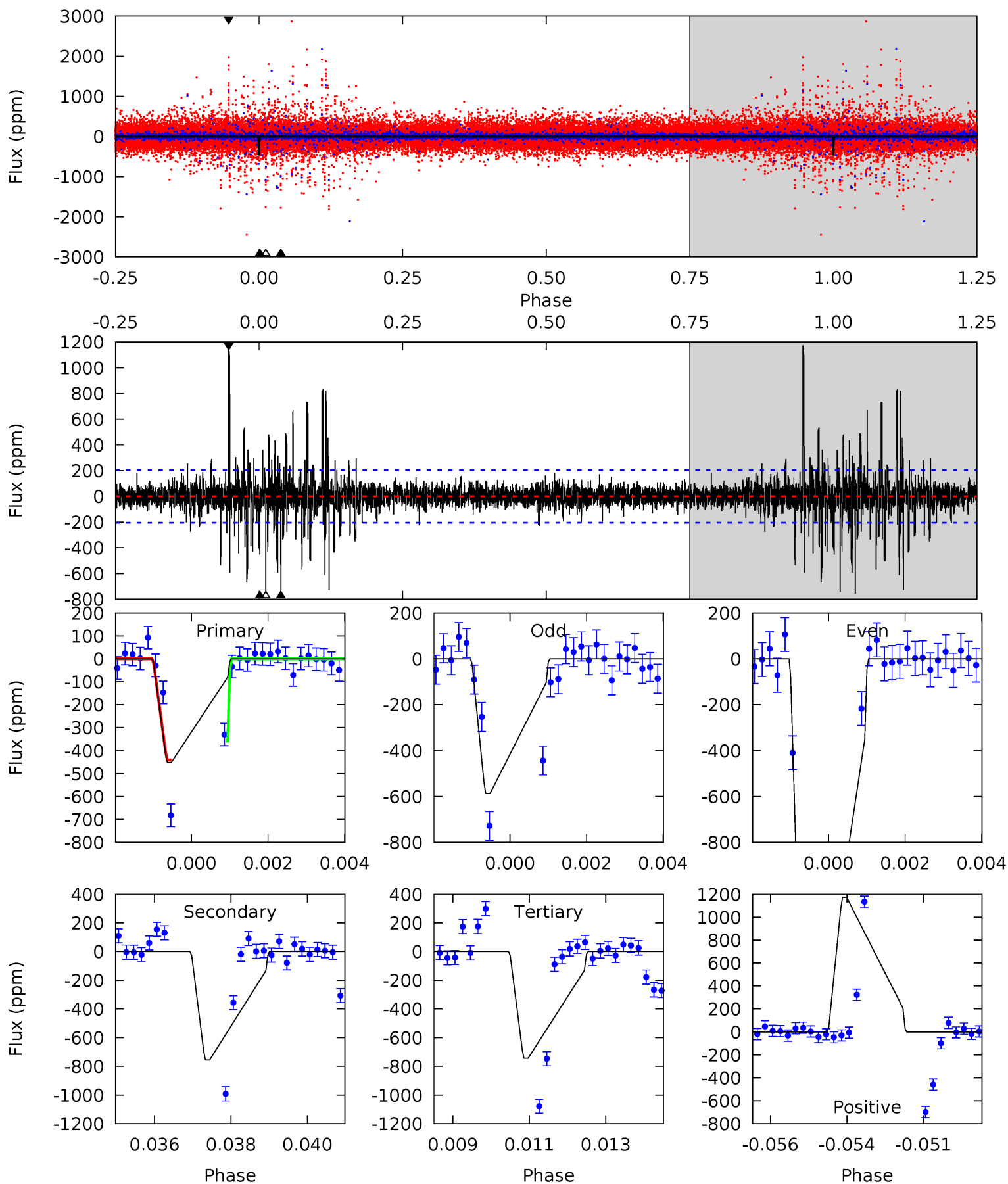
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	16.2	12.1	12.2	5.26	2.98	3.77	1.64	1.58	4.07	4.01	1.49	0.94	0.43	7.72



Alt Model-Shift Uniqueness Test

004678919-02, P = 358.854181 Days, E = 317.140772 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	19.6	19.3	30.4	5.31	3.06	1.76	-7.61	-18.7	0.31	-10.8	18.1	1.61	0.61	0.76



Stellar Parameters For KIC 004678919

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5851^{+139}_{-157}	$4.534^{+0.050}_{-0.200}$	$-0.260^{+0.300}_{-0.300}$	$0.863^{+0.251}_{-0.084}$	$0.930^{+0.110}_{-0.110}$	$2.037^{+0.518}_{-0.999}$
	+2%/-3%	+1%/-4%	+115%/-115%	+29%/-10%	+12%/-12%	+25%/-49%
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 004678919-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2318 ± 143	$2.77^{+0.55}_{-0.43}$	349^{+24}_{-16}	7772^{+780}_{-585}	150803^{+59665}_{-44314}
Alt.	-756 ± 39	$2.95^{+0.57}_{-0.43}$	347^{+25}_{-15}	5583^{+396}_{-307}	43341^{+16502}_{-12167}

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 $A_{obs} \gg 1.0$

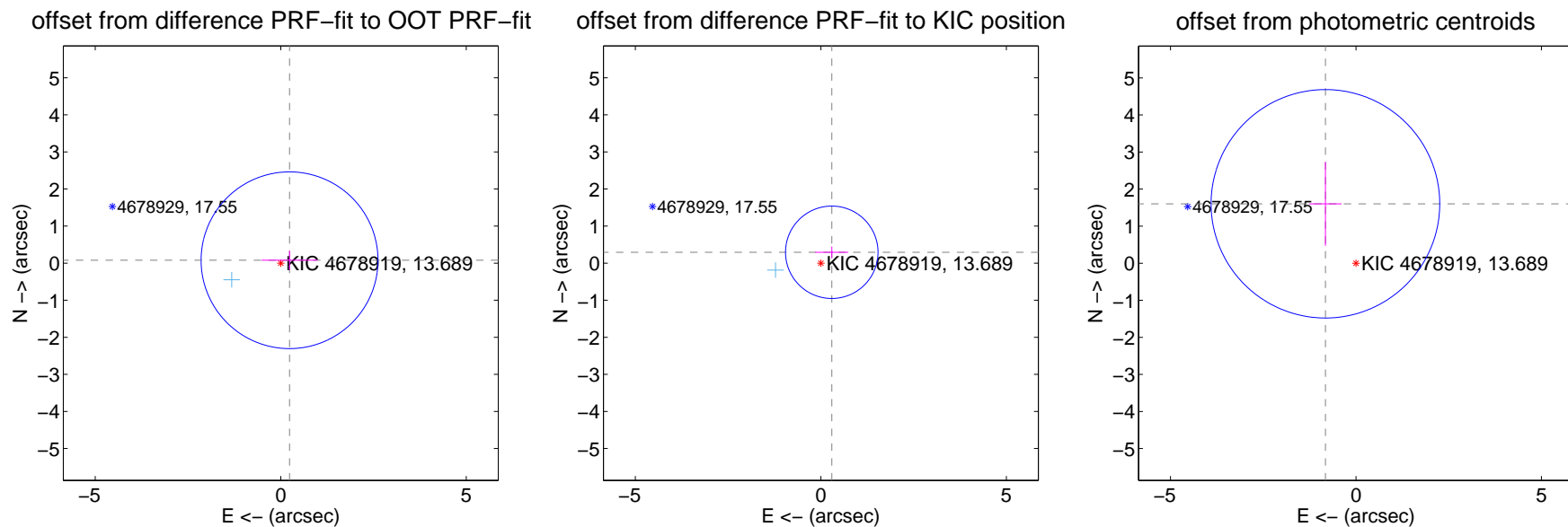
DV Centroid Data

Supplemental centroid analysis for 004678919-02. Kepler magnitude: 13.69. Transit SNR 5.39

There are 2 quarters with good PRF difference image offsets

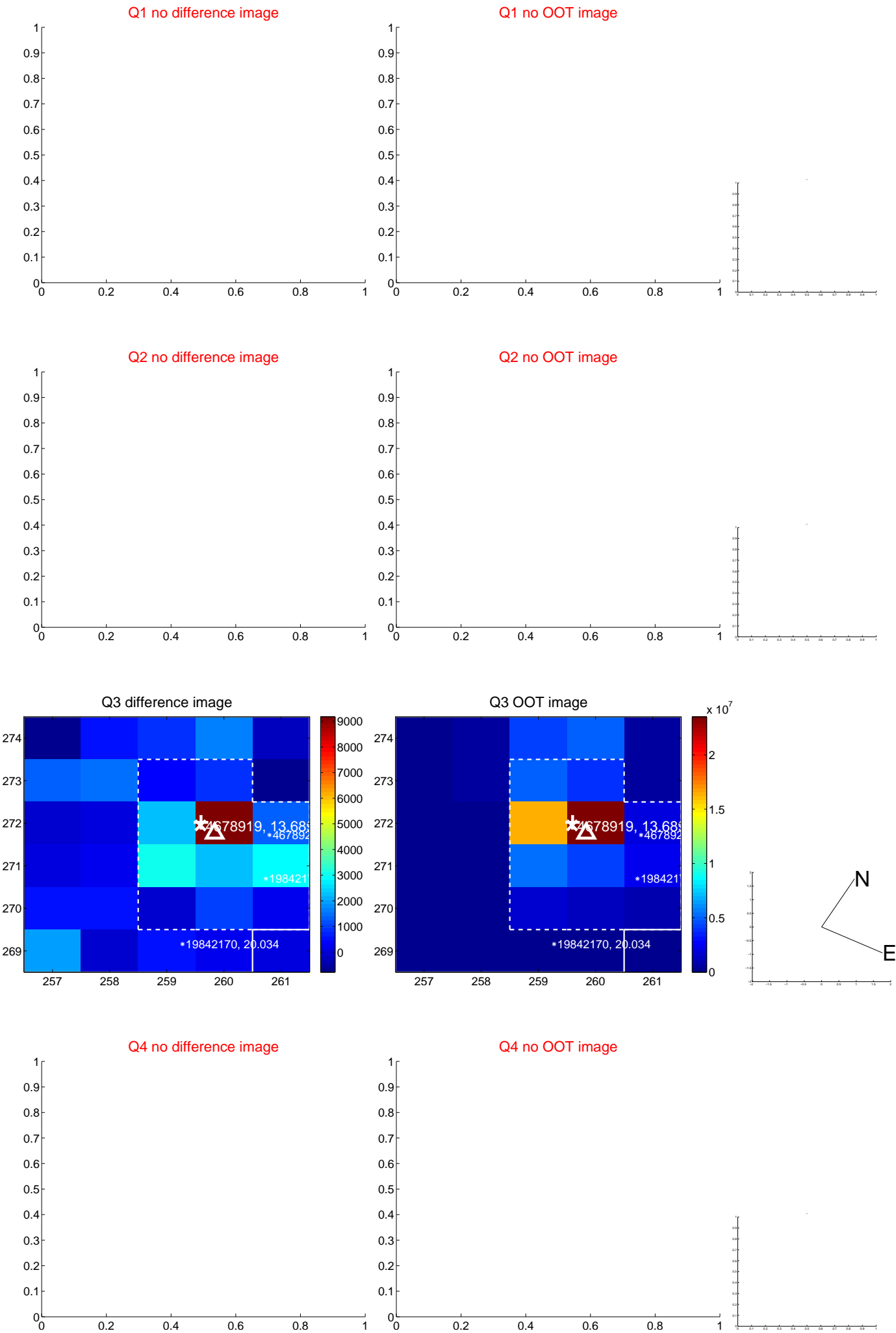
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.250 ± 0.795	0.31	-0.237 ± 0.753	0.078 ± 0.263
PRF-fit source offset from KIC position	0.415 ± 0.415	1.00	-0.294 ± 0.444	0.293 ± 0.155
photometric centroid source offset	1.80 ± 1.03	1.75	0.82 ± 0.44	1.60 ± 1.13

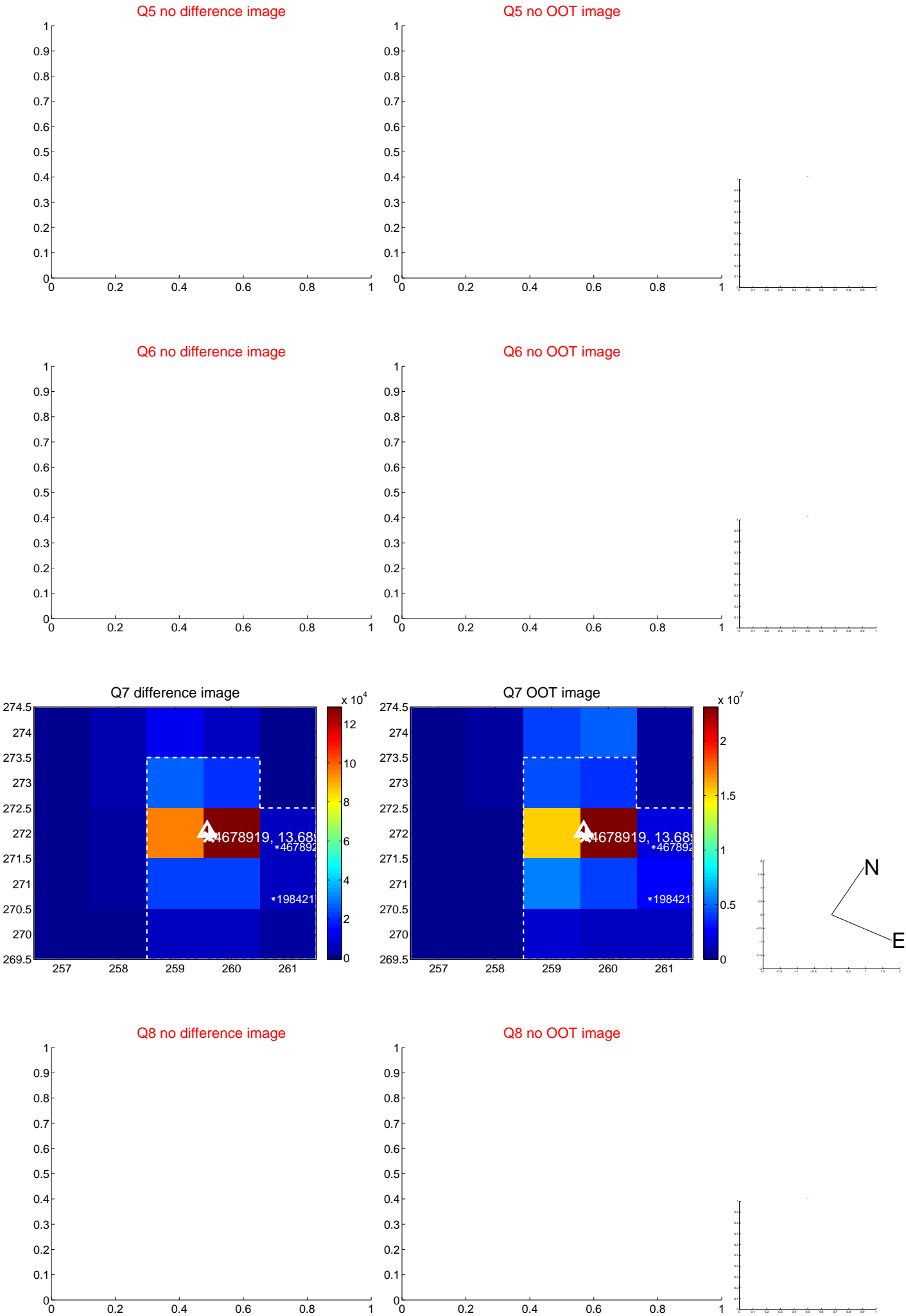


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



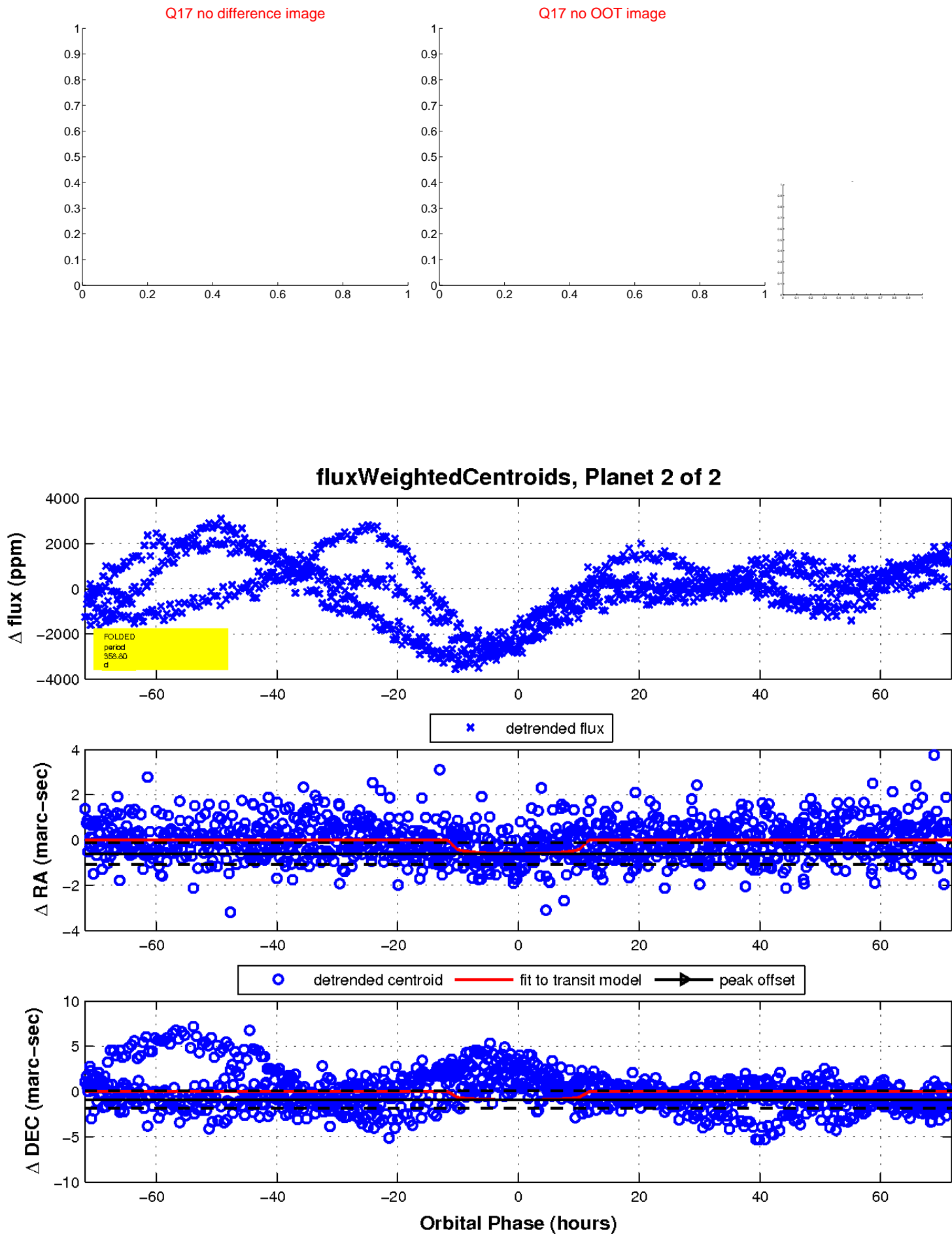
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

