

KIC 009766608

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})
009766608-01	OBS	No	423.903231	262.698374	223.5	1.562	11.6	2.2	0.71	5151	1.09	0.34
009766608-02	OBS	No	571.160105	392.890095	750.0	5.028	9.7	6.7	0.71	5151	2.41	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009766608-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009766608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

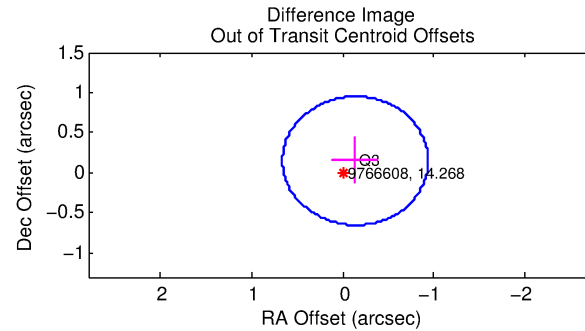
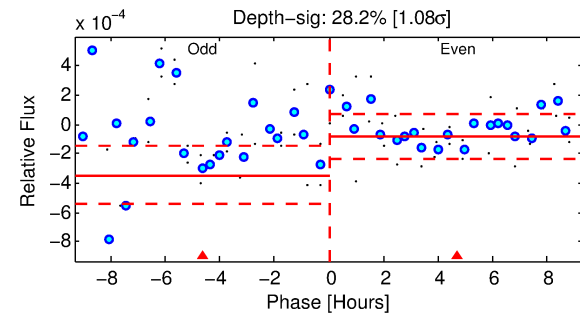
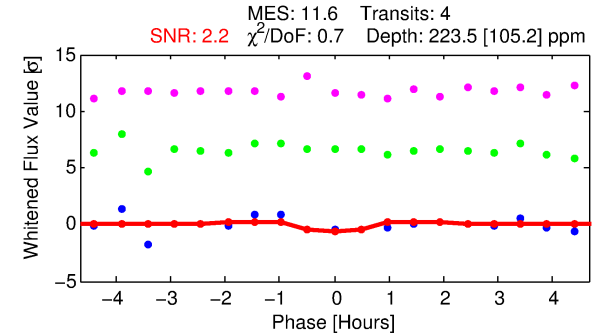
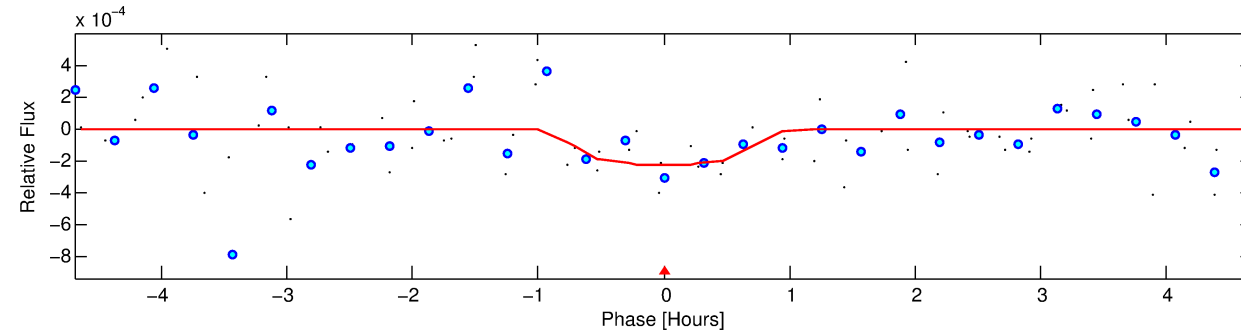
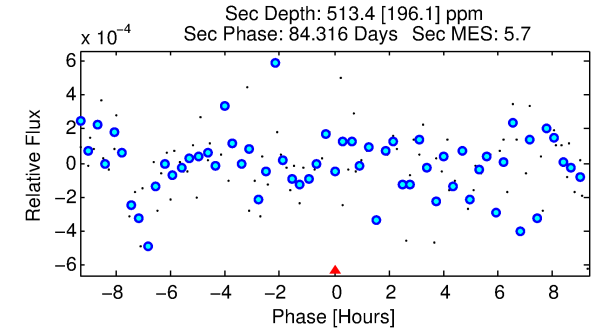
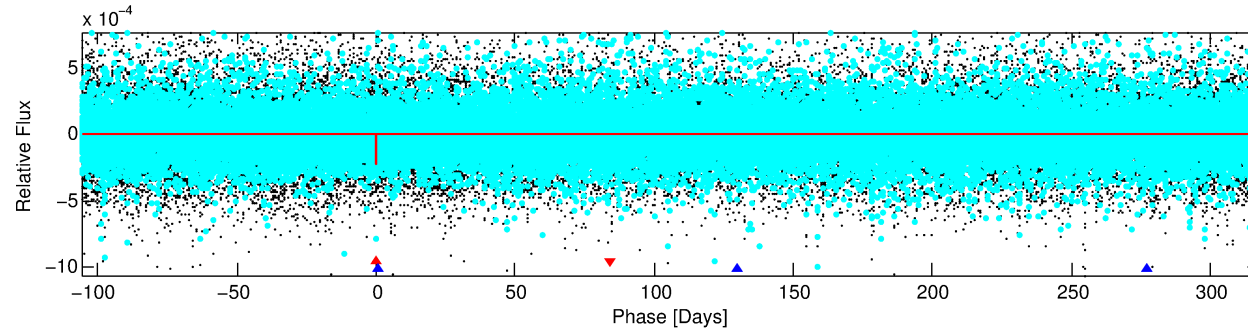
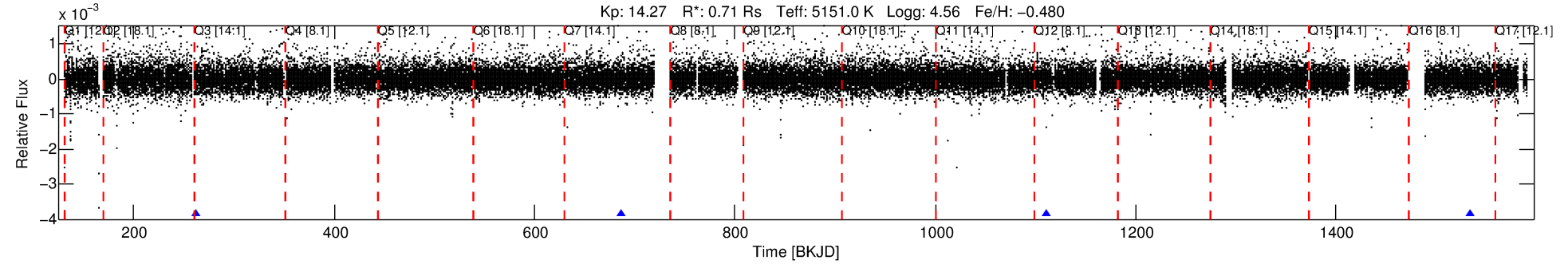
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009766608-01

No Significant Match Found

DV One-Page Summary

KIC: 9766608 Candidate: 1 of 2 Period: 423.903 d



DV Fit Results:

Period = 423.90323 [0.00969] d
Epoch = 262.6984 [0.0139] BKJD
Rp/R* = 0.0139 [0.1025]
a/R* = 1835.97 [51322.33]
b = 0.49 [43.48]
Seff = 0.34 [0.07]
Teq = 195 [10] K
Rp = 1.09 [8.00] Re
a = 0.9722 [0.1083] AU
Ag = 225482.70 [3316378.68] [0.07σ]
Teffp = 6566 [24142] K [0.26σ]

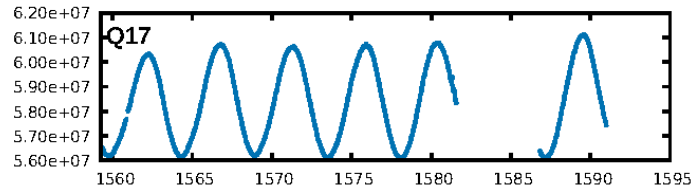
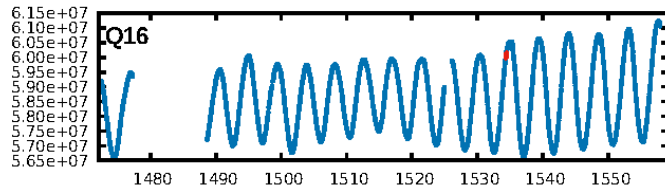
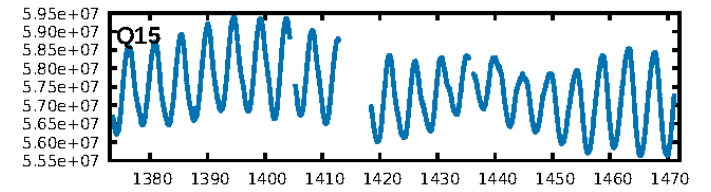
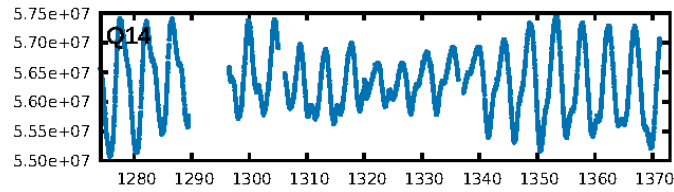
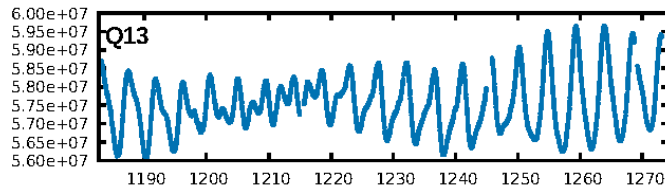
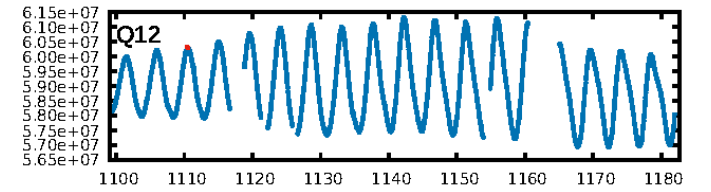
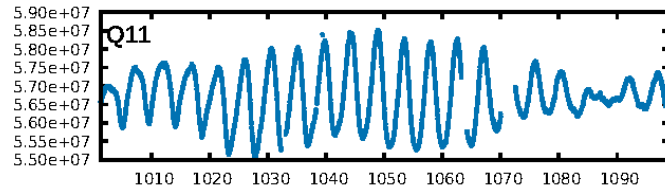
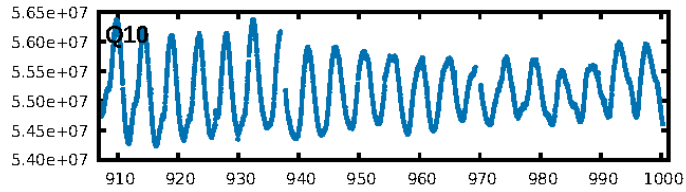
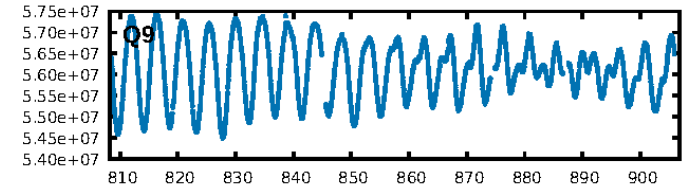
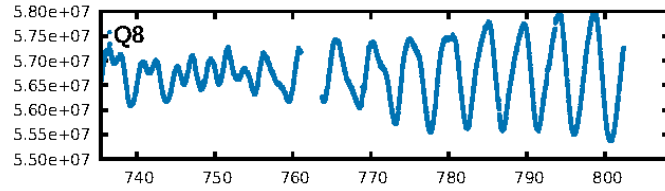
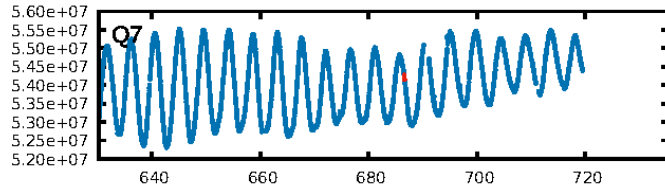
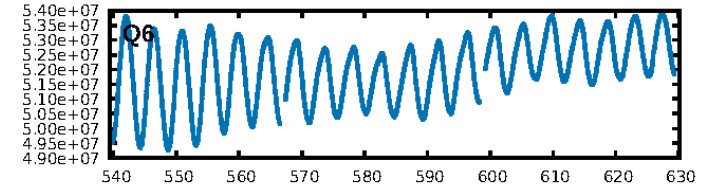
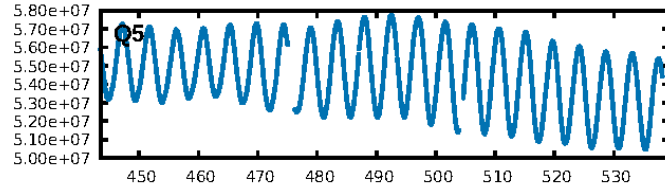
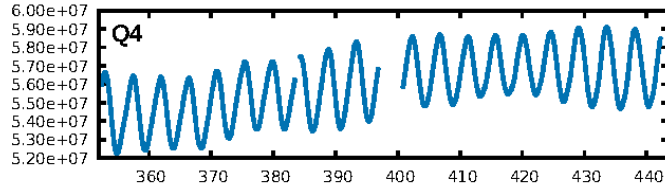
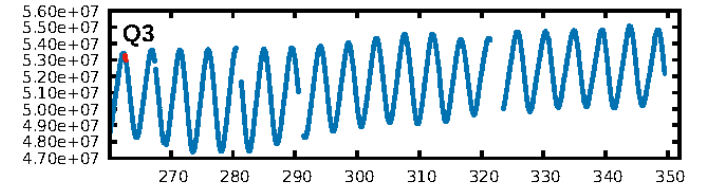
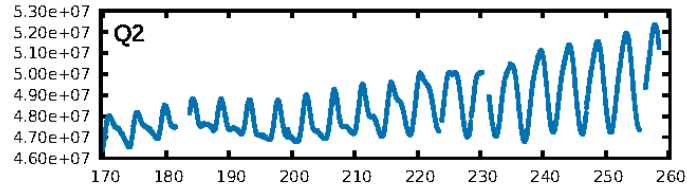
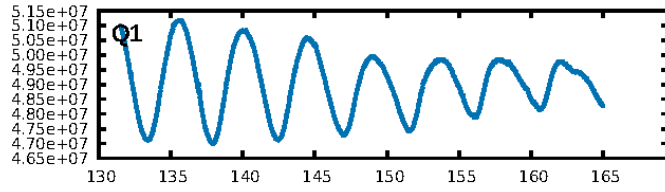
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [671.24σ]
ModelChiSquare2-sig: 55.3%
ModelChiSquareGoF-sig: 99.9%
Bootstrap-pfa: 8.92e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 4.409
Centroid-sig: 58.1%
Centroid-so: 3.188 arcsec [0.56σ]
OotOffset-rm: 0.203 arcsec [0.76σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-rm: 0.105 arcsec [0.41σ]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

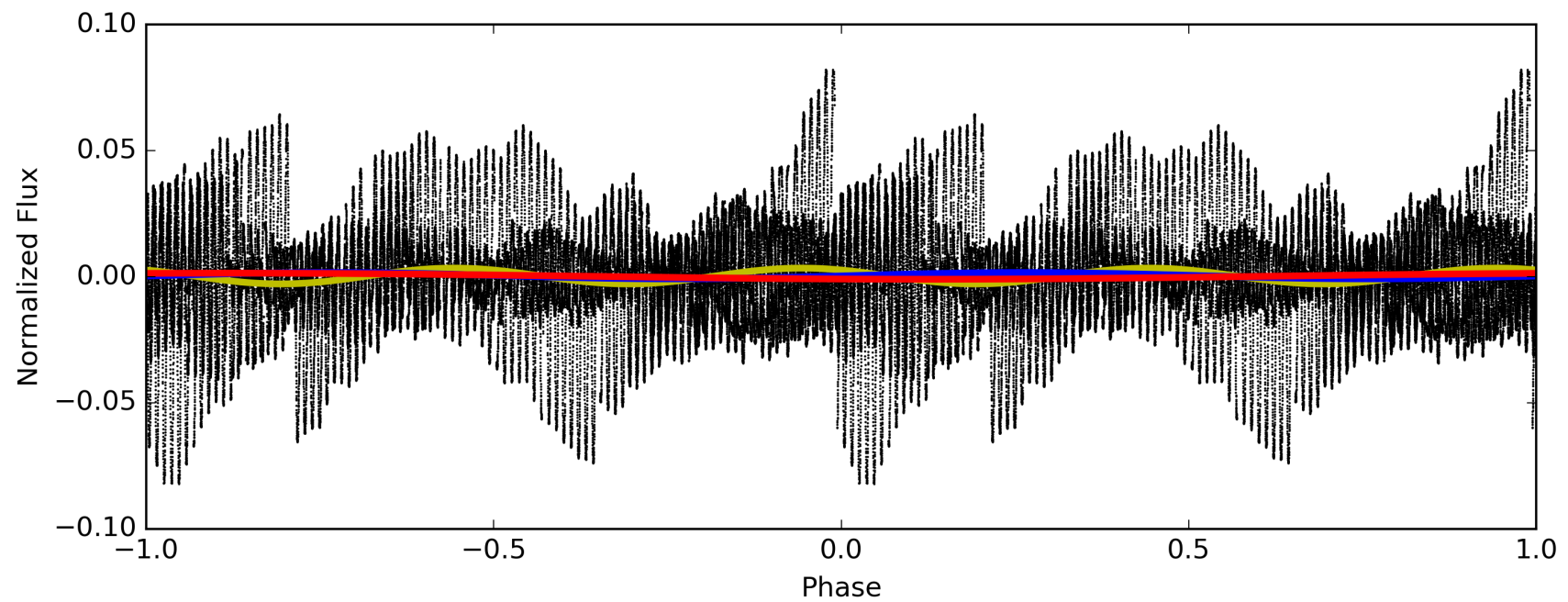
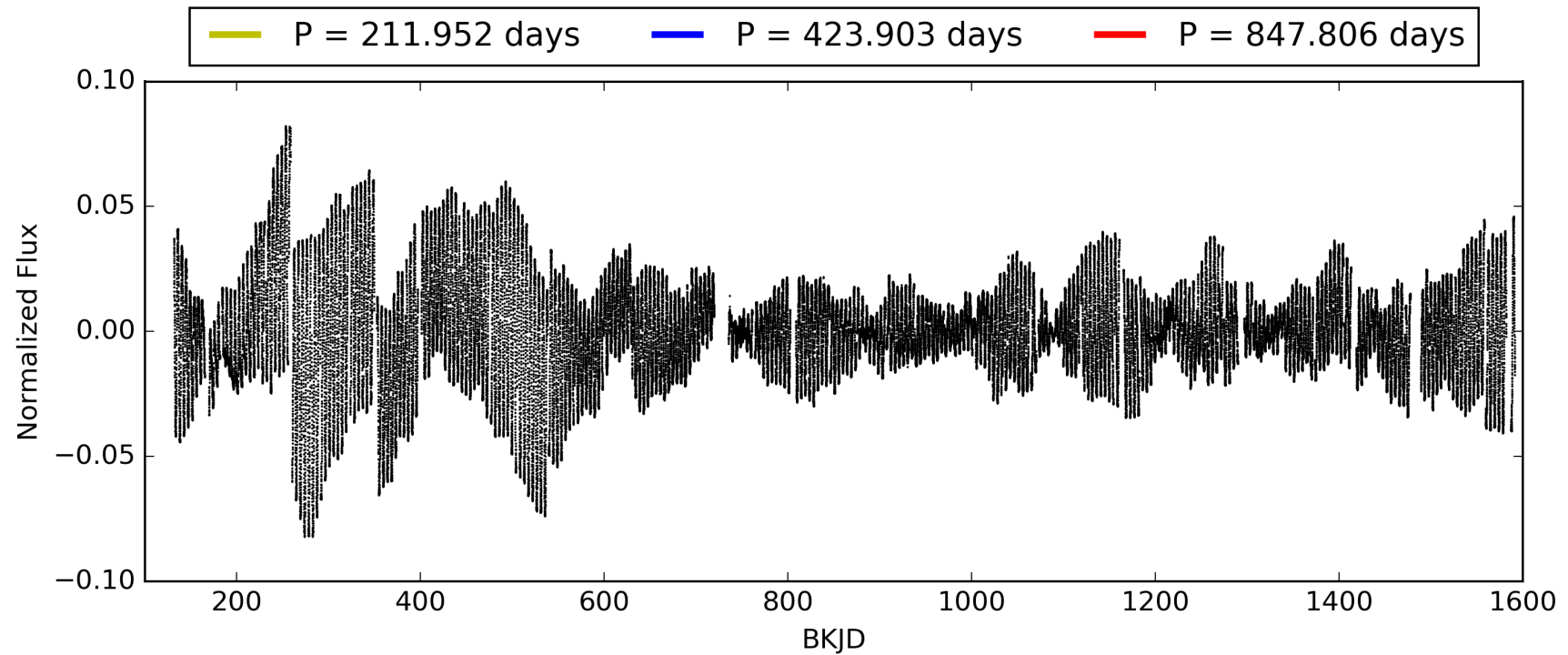
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:24:05 Z

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

TCE 009766608-01, PDC Light Curves

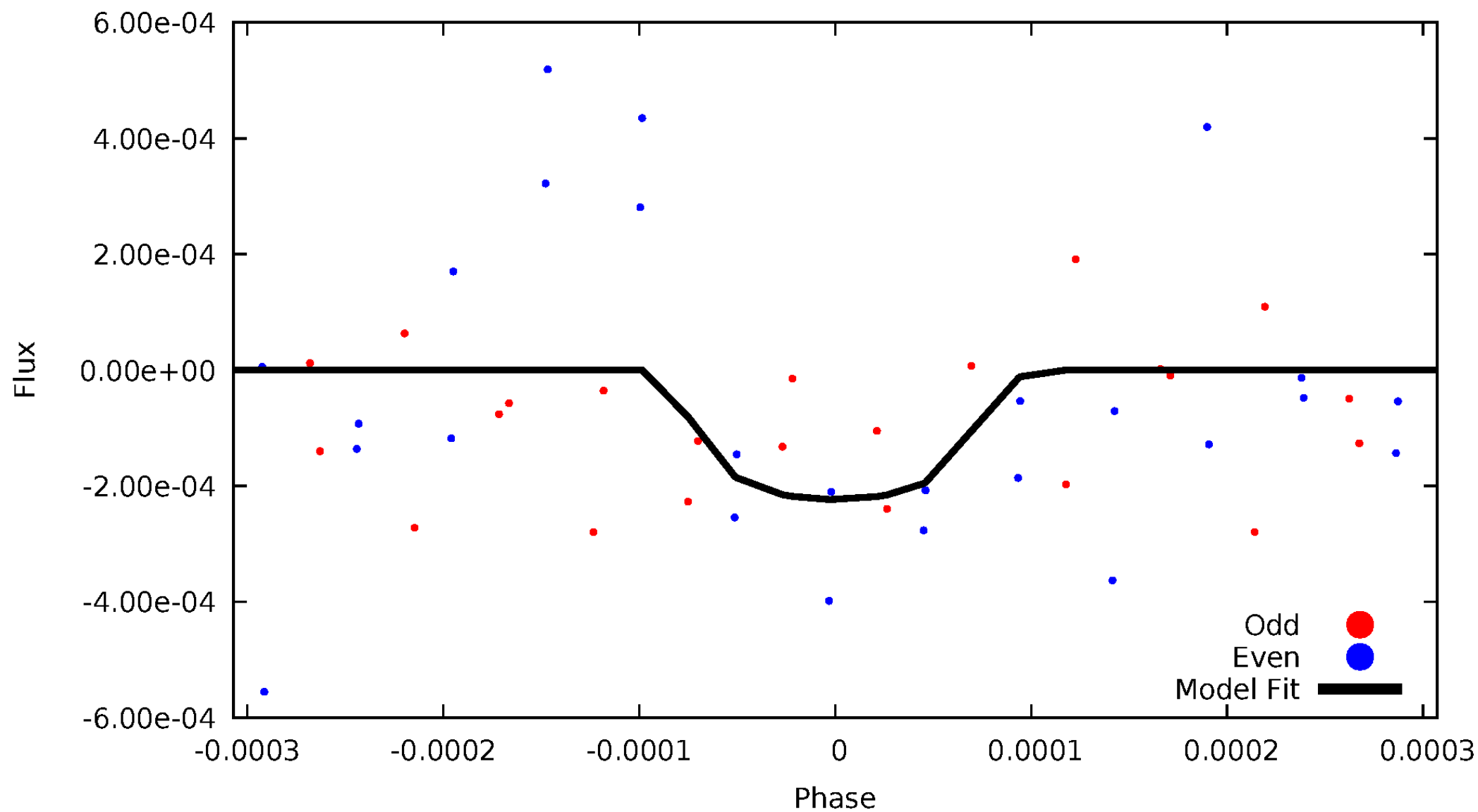


TCE 009766608-01



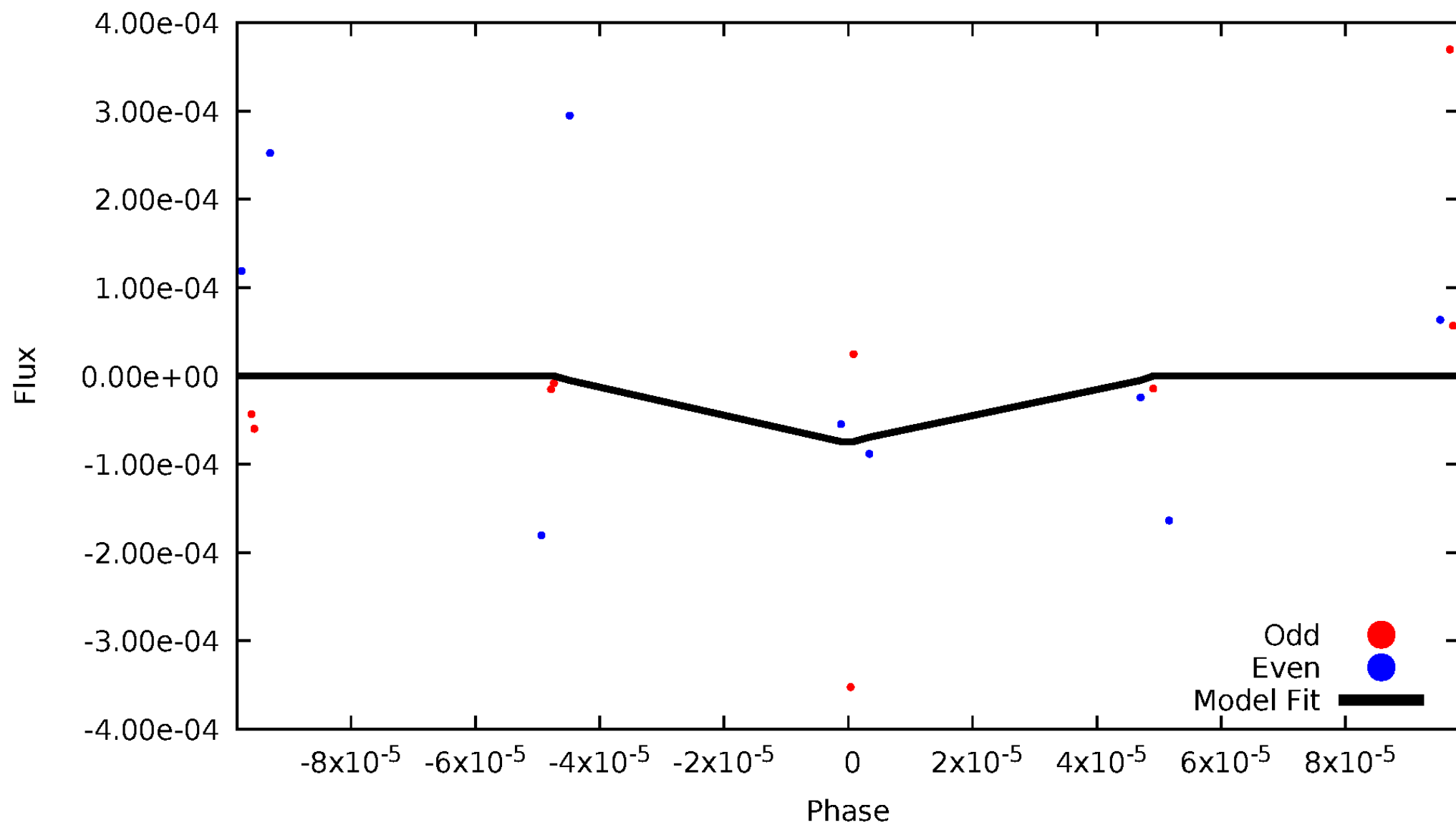
DV Odd/Even

TCE 009766608-01



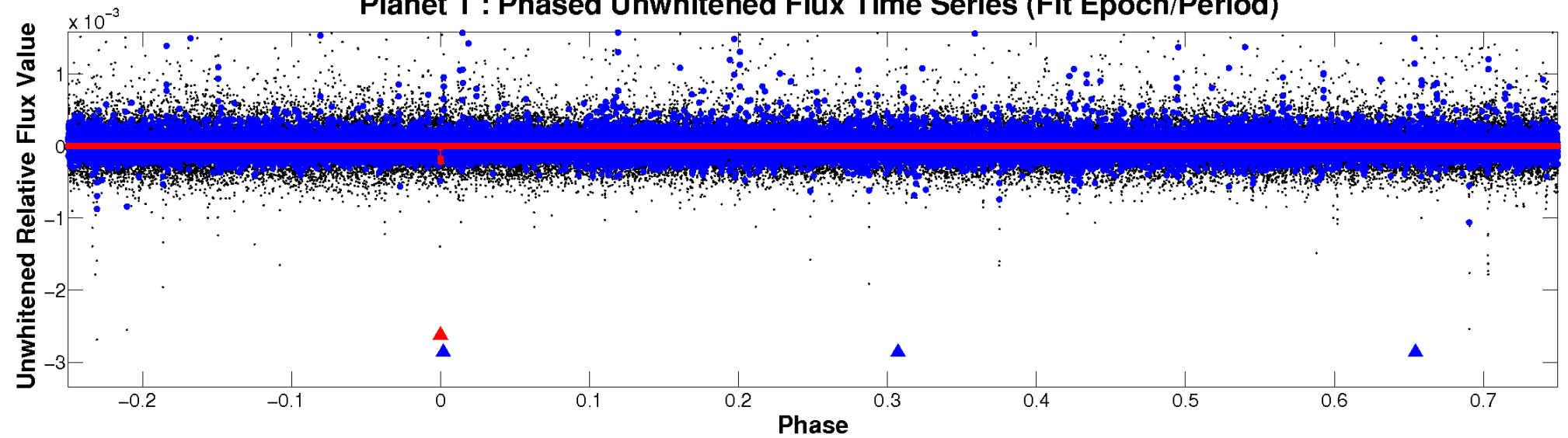
ALT Odd/Even

TCE 009766608-01

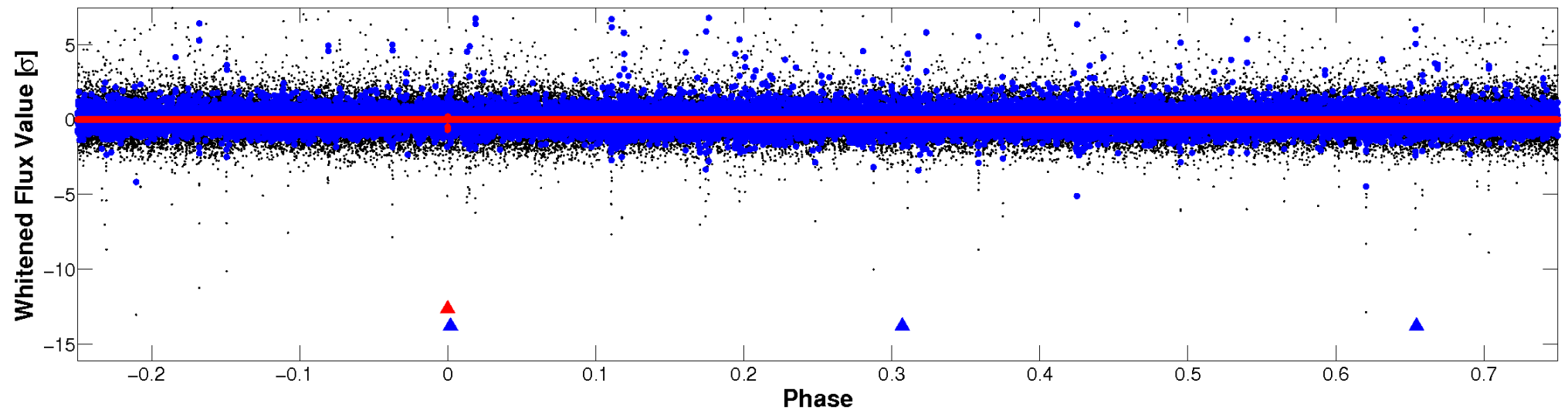


Non-Whitened Vs. Whitened Light Curve

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

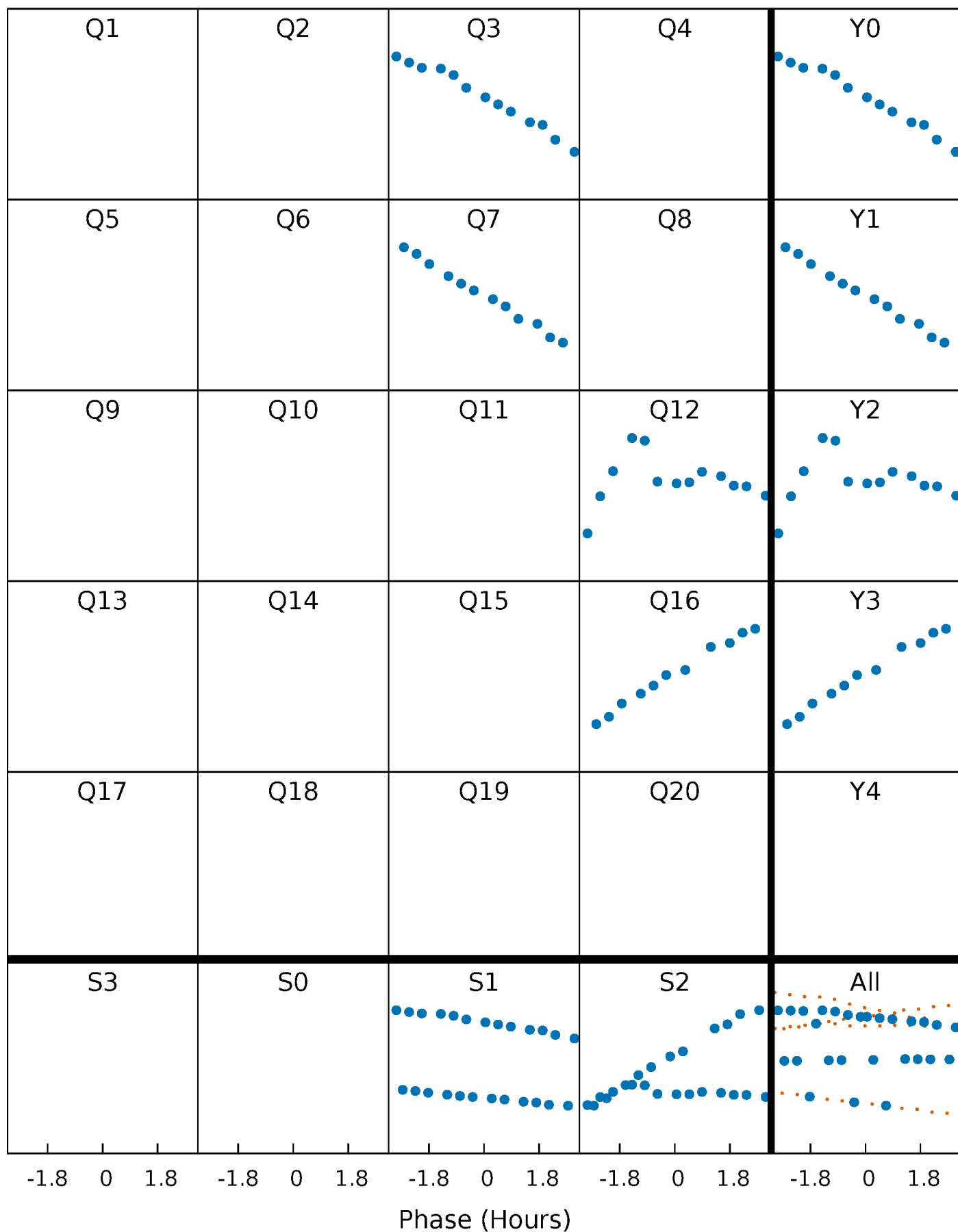


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



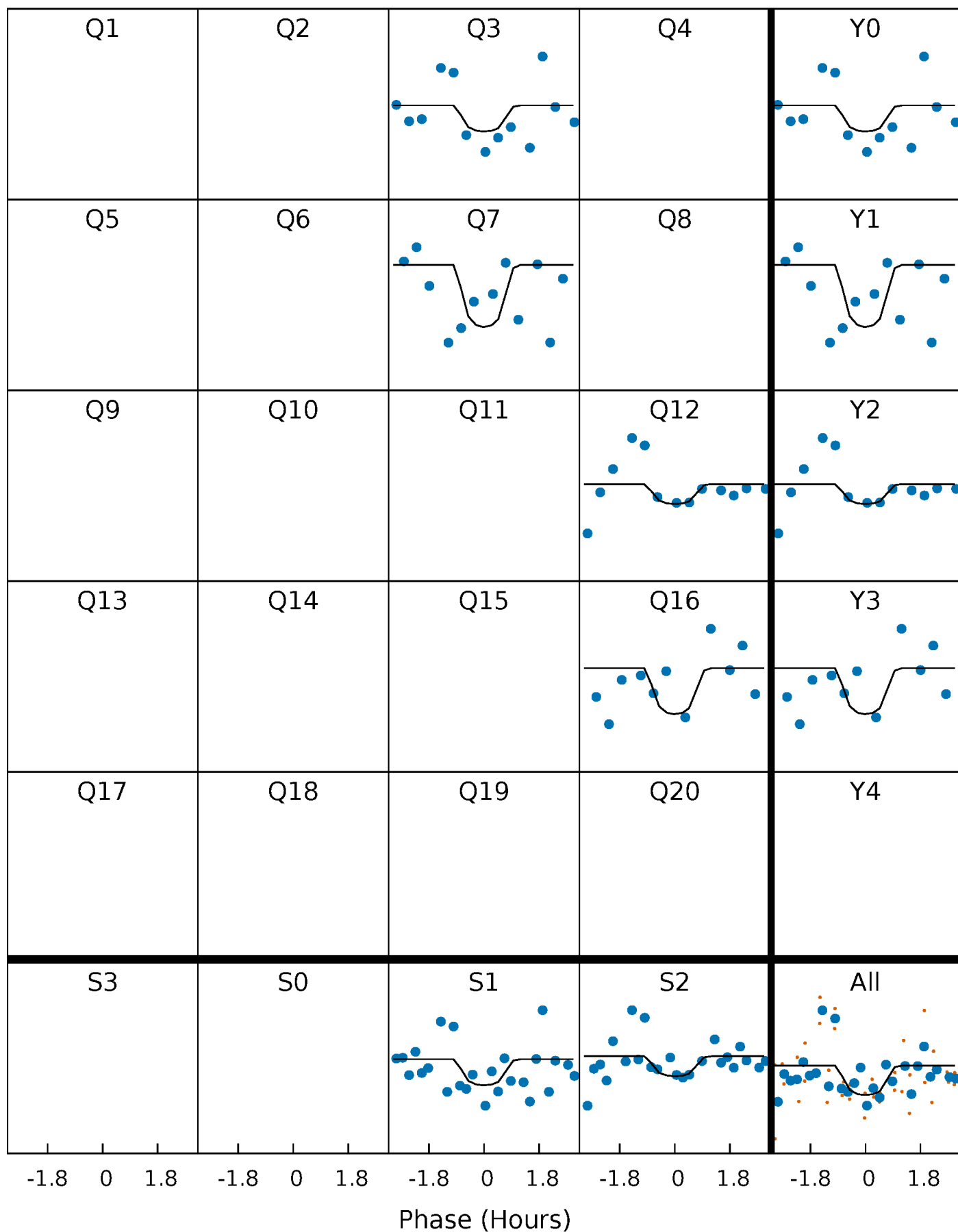
PDC Quarter-Phased Transit Curves

TCE 009766608-01 P=423.903231 Days $T_0=262.698374$ (BKJD)



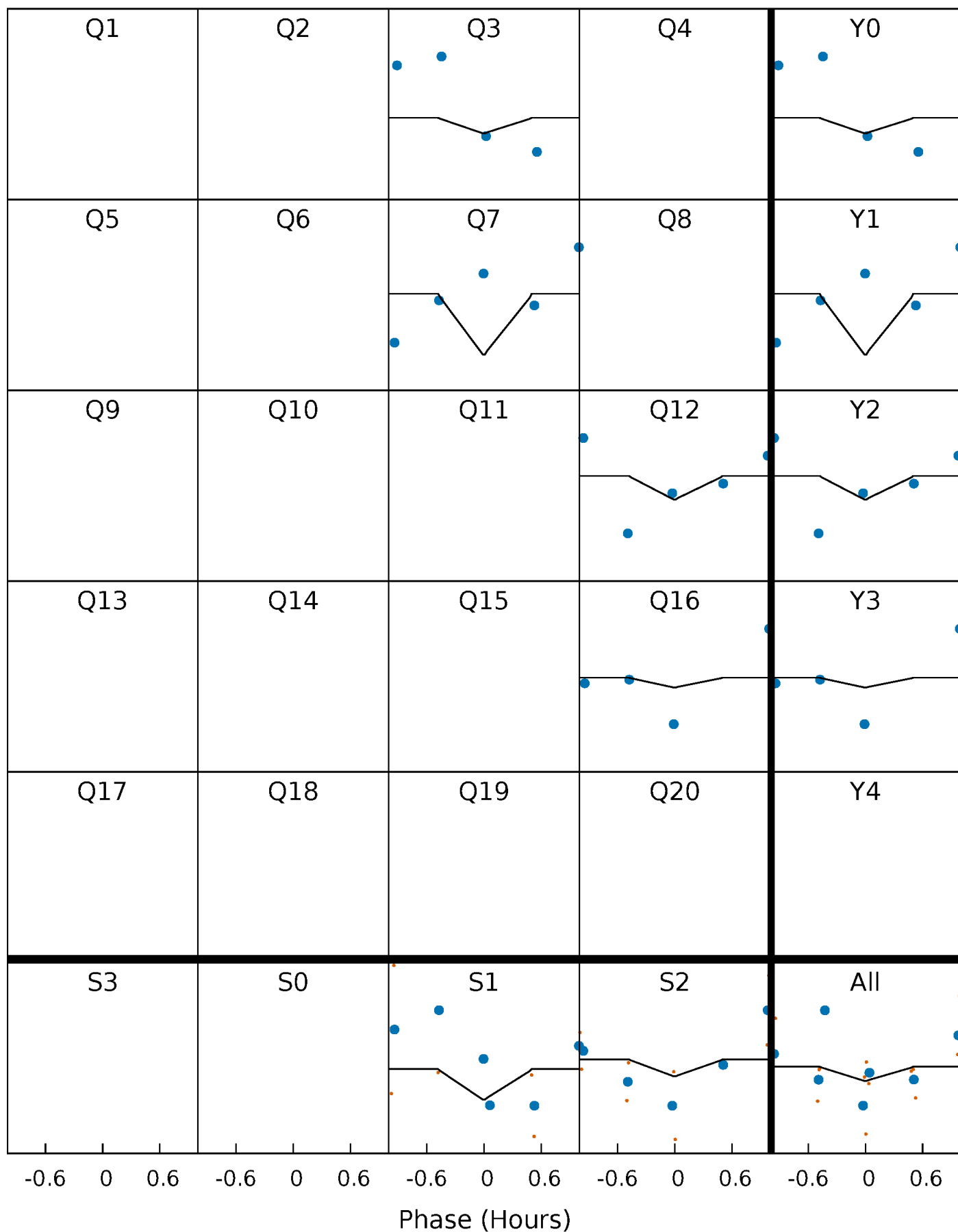
DV Quarter-Phased Transit Curves

TCE 009766608-01 P=423.903231 Days $T_0=262.698374$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

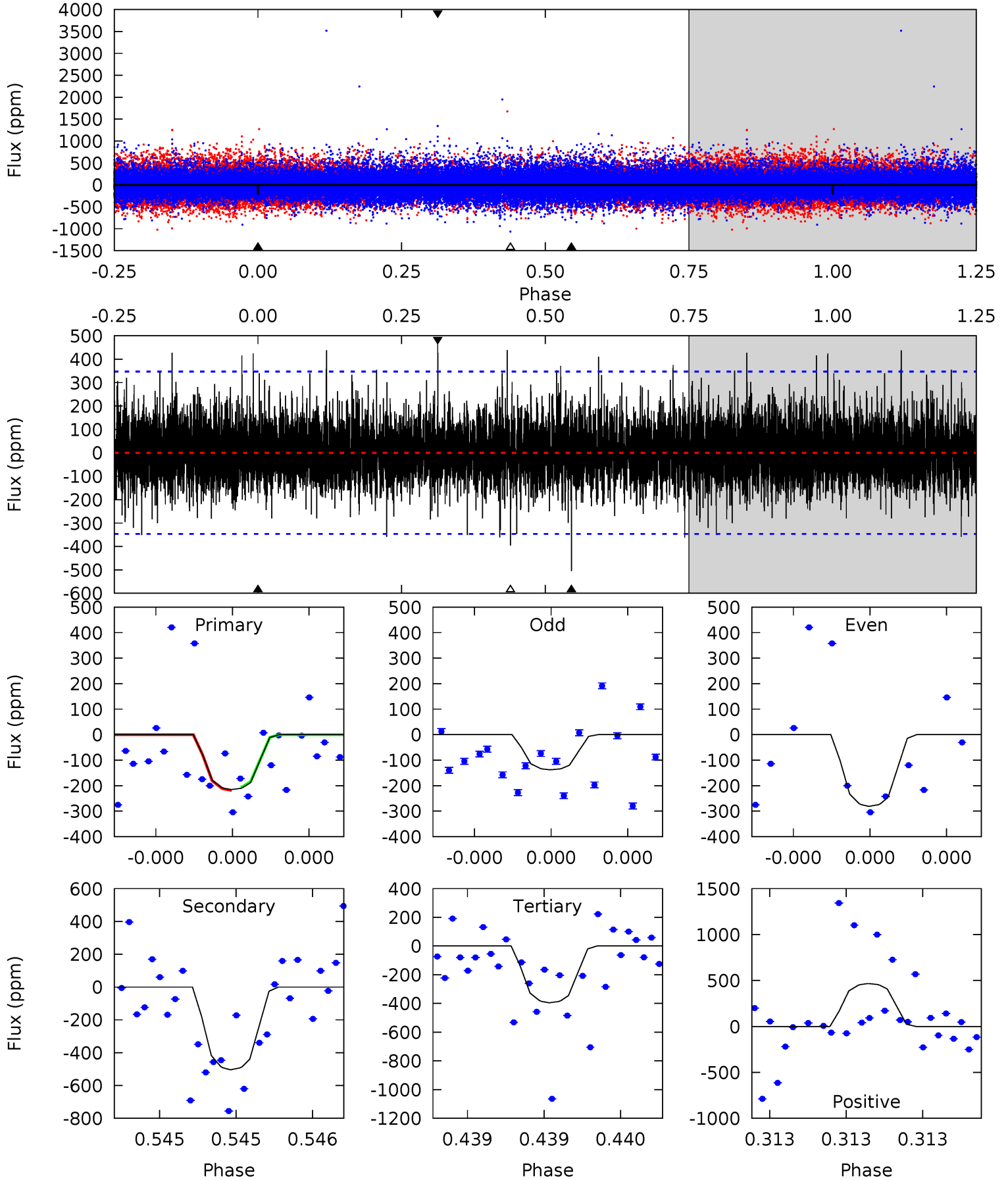
TCE 009766608-01 P=423.914636 Days $T_0=262.675181$ (BKJD)



DV Model-Shift Uniqueness Test

009766608-01, P = 423.903231 Days, E = 262.698374 Days

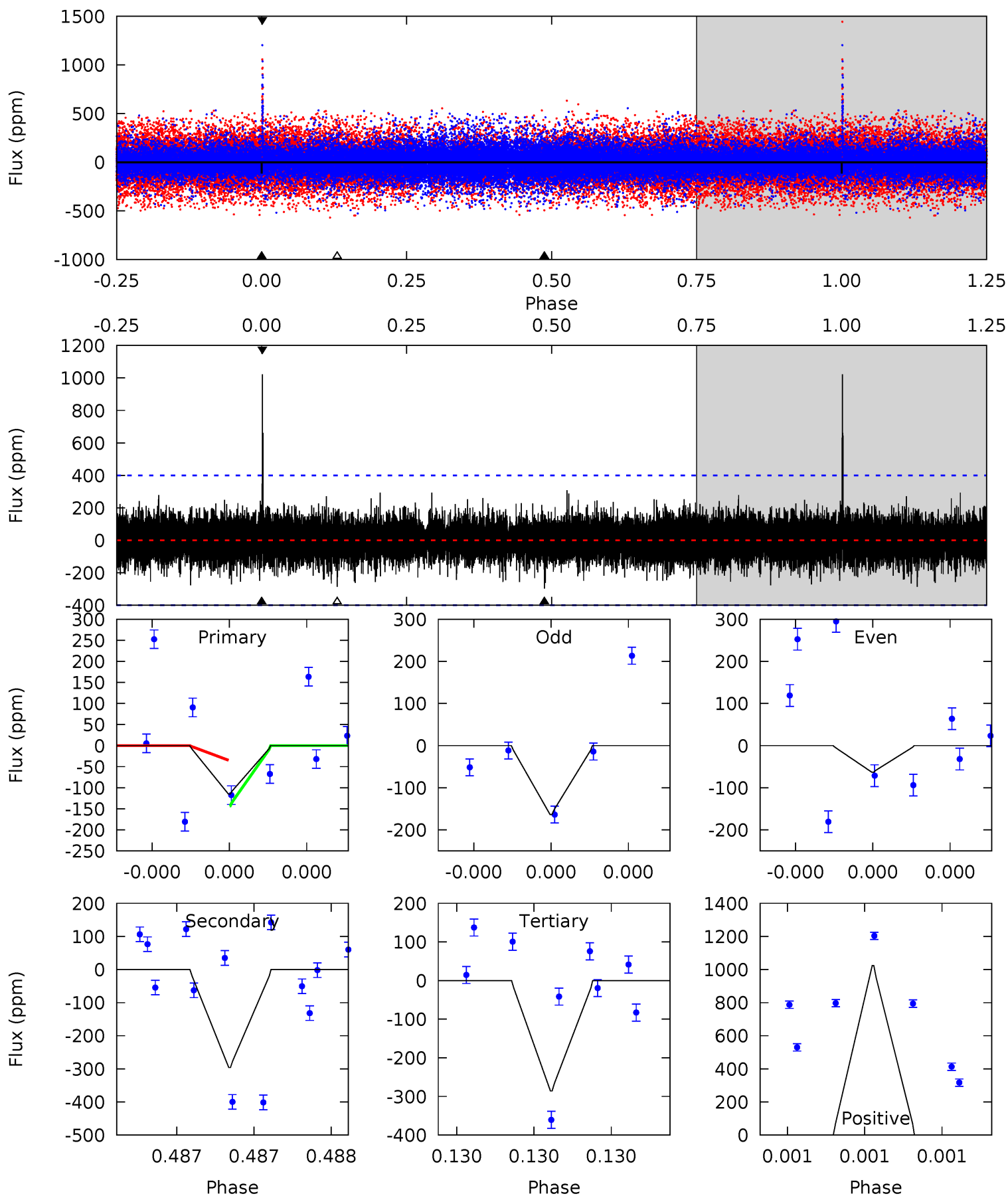
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.56	8.34	6.54	7.72	5.74	3.73	1.42	-2.98	-4.16	1.80	0.62	1.10	1.19	0.48	0.10



Alt Model-Shift Uniqueness Test

009766608-01, P = 423.914636 Days, E = 262.675181 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.69	4.35	4.20	15.0	5.86	3.91	0.97	-2.51	-13.3	0.15	-10.7	0.78	1.00	0.78	0.70



Stellar Parameters For KIC 009766608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5151^{+154}_{-138}	$4.563^{+0.080}_{-0.088}$	$-0.480^{+0.350}_{-0.250}$	$0.715^{+0.095}_{-0.078}$	$0.682^{+0.107}_{-0.038}$	$2.624^{+0.914}_{-0.677}$
	+3%/-3%	+2%/-2%	+73%/-52%	+13%/-11%	+16%/-6%	+35%/-26%
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 009766608-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-504 ± 60	$5.81^{+6.53}_{-3.95}$	273^{+11}_{-12}	3350^{+1769}_{-645}	7821^{+69228}_{-6117}
Alt.	-296 ± 68	$5.83^{+6.48}_{-3.93}$	273^{+11}_{-11}	3057^{+1452}_{-525}	4325^{+41606}_{-3282}

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

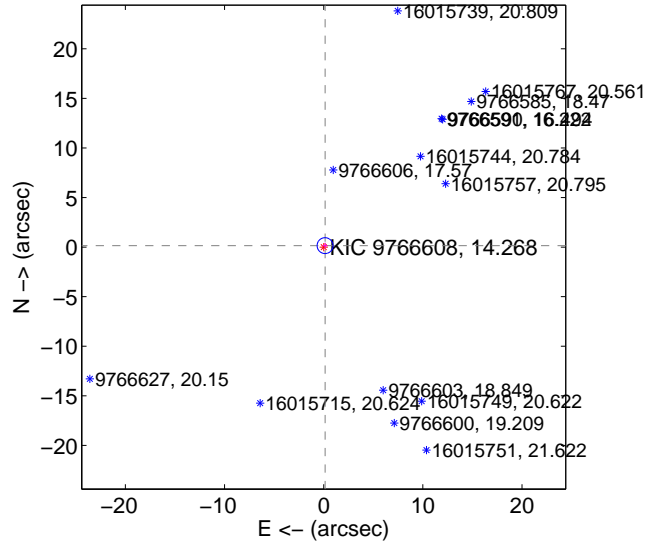
Supplemental centroid analysis for 009766608-01. Kepler magnitude: 14.27. Transit SNR 2.17

There are 0 quarters with good PRF difference image offsets

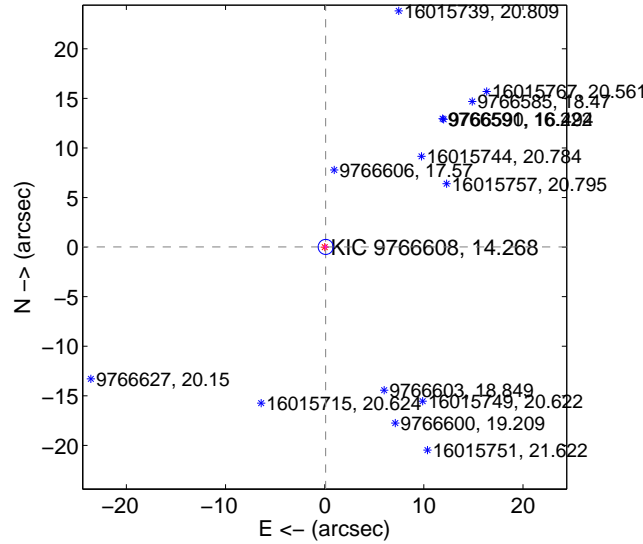
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.203 ± 0.267	0.76	-0.139 ± 0.252	0.148 ± 0.280
PRF-fit source offset from KIC position	0.105 ± 0.253	0.41	-0.103 ± 0.252	0.017 ± 0.280
photometric centroid source offset	3.19 ± 5.72	0.56	-0.68 ± 4.03	3.12 ± 5.79

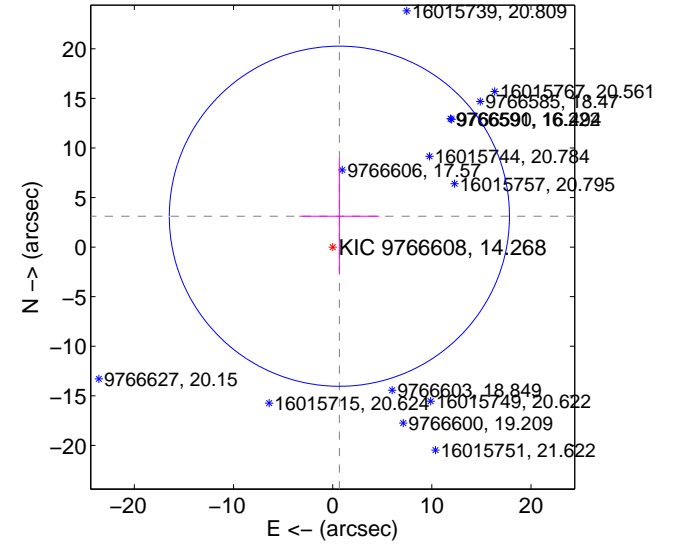
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

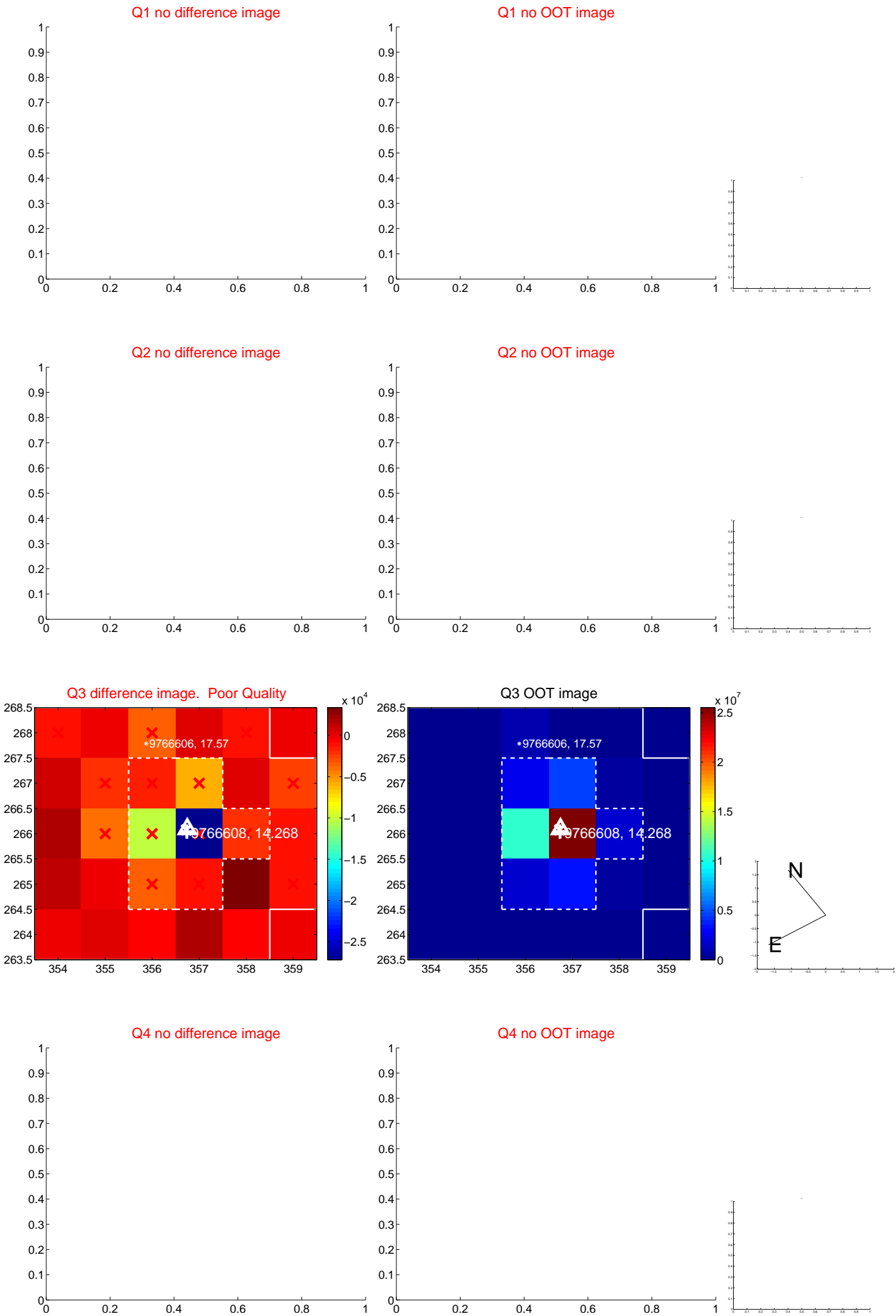


offset from photometric centroids

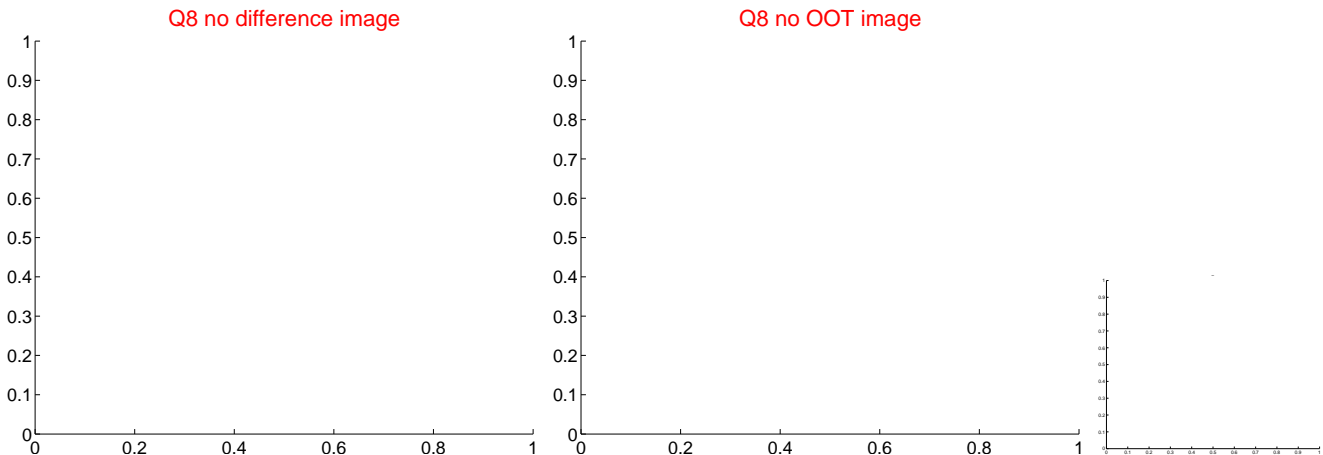
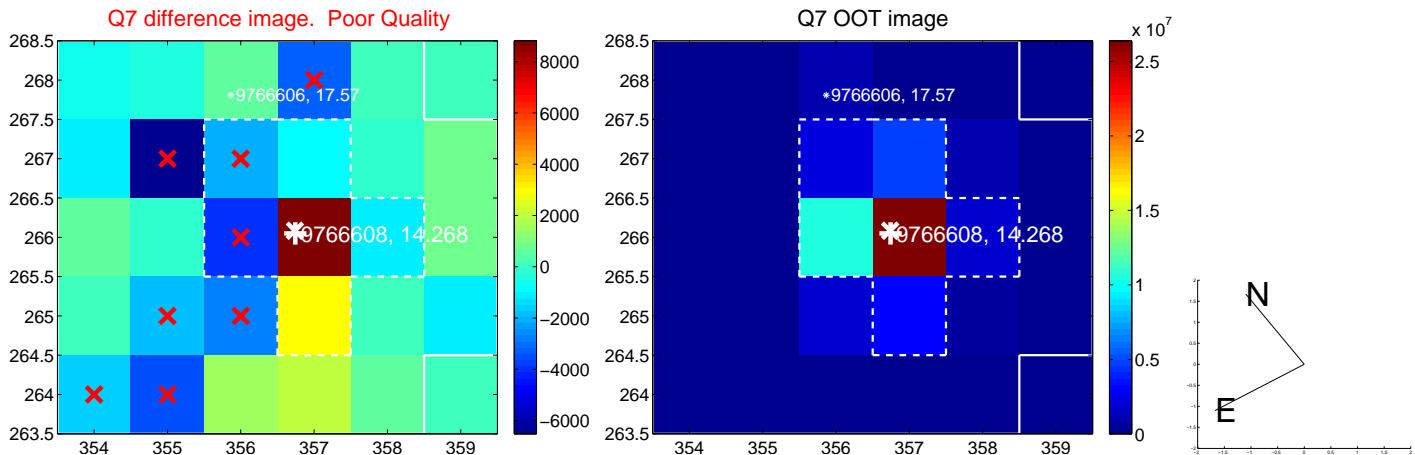


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



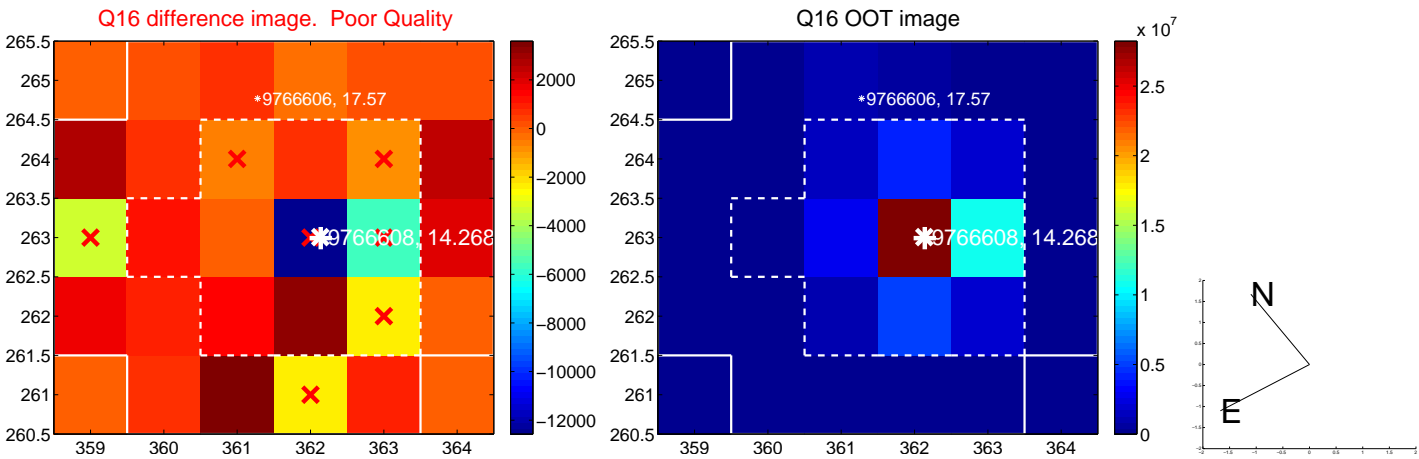
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



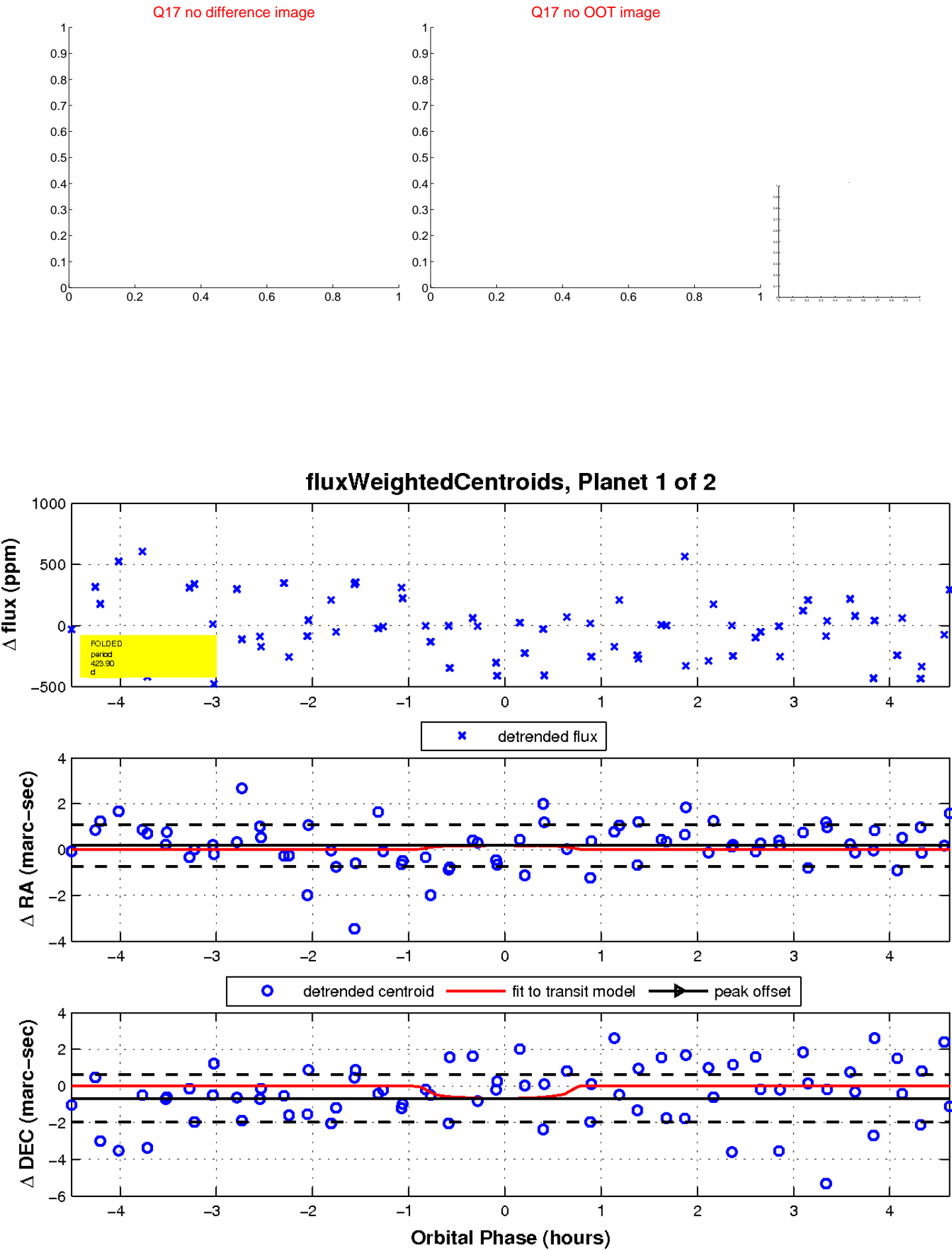
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

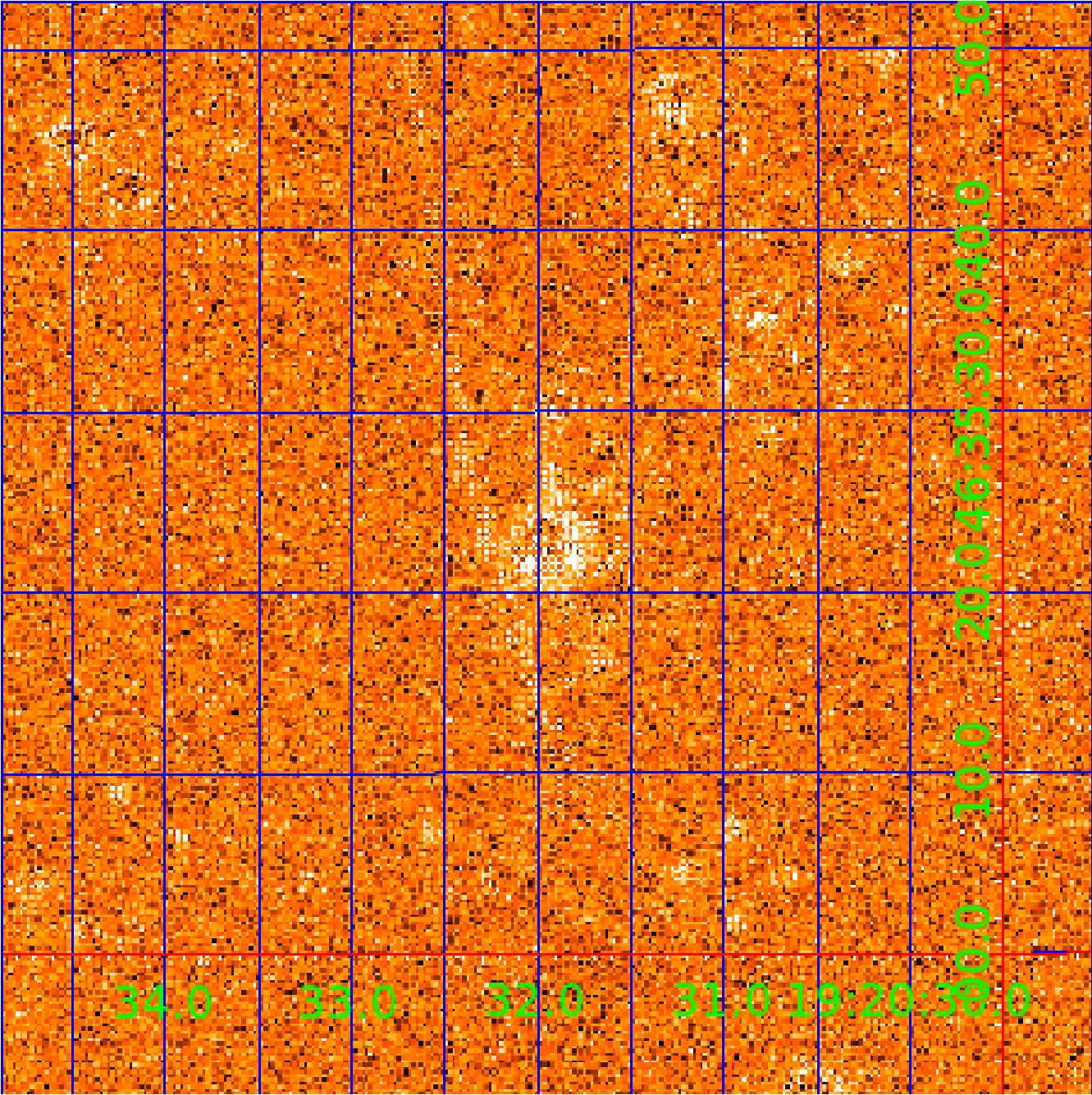


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009766608

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})
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009766608-02	OBS	No	571.160105	392.890095	750.0	5.028	9.7	6.7	0.71	5151	2.41	0.23

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009766608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

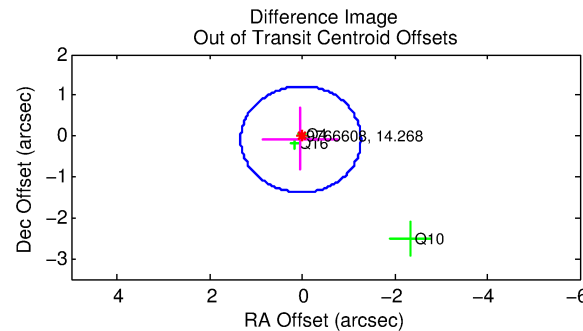
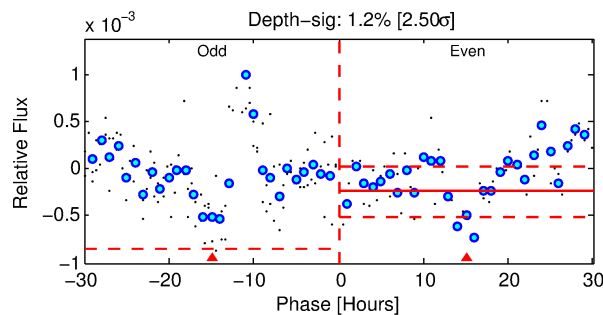
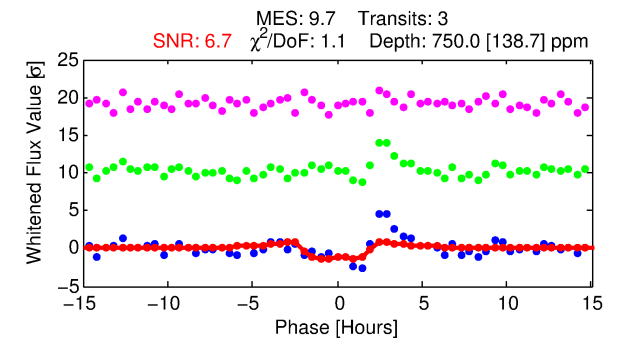
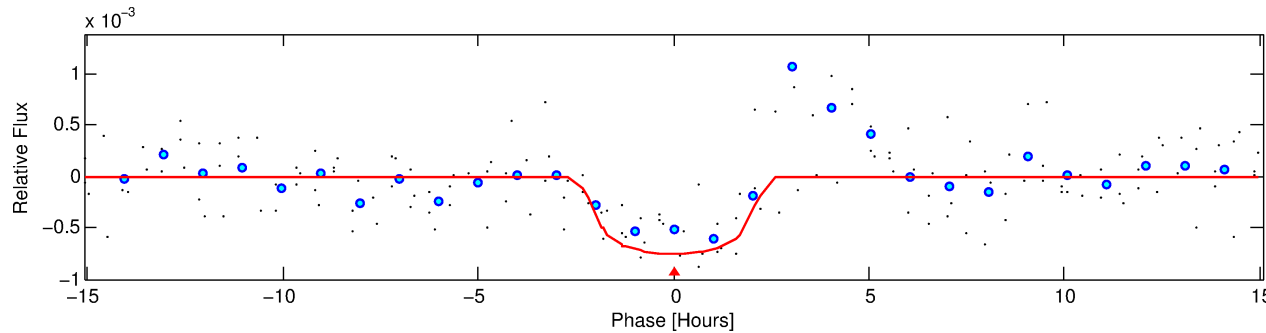
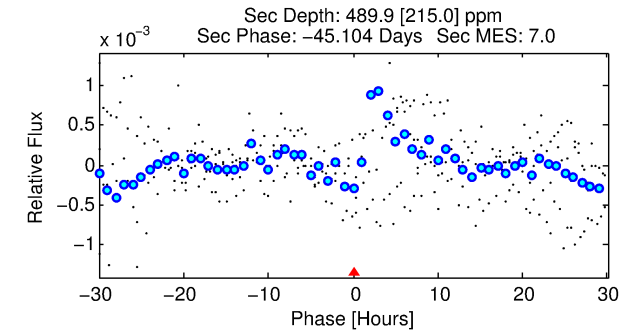
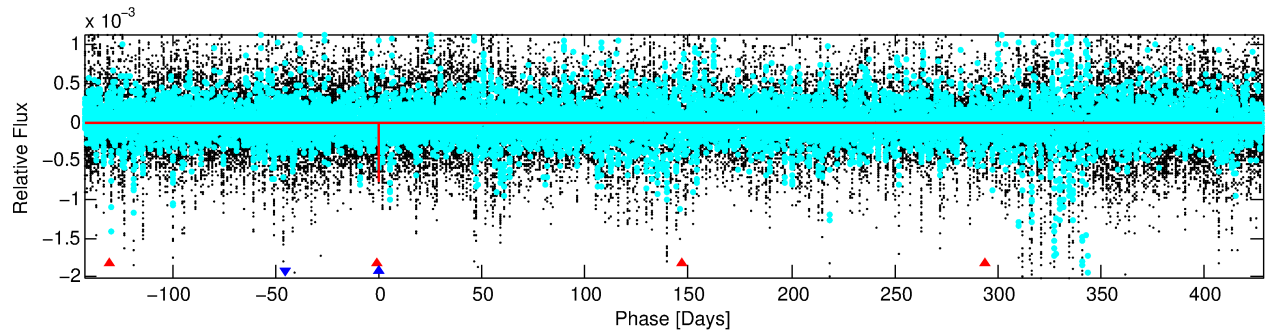
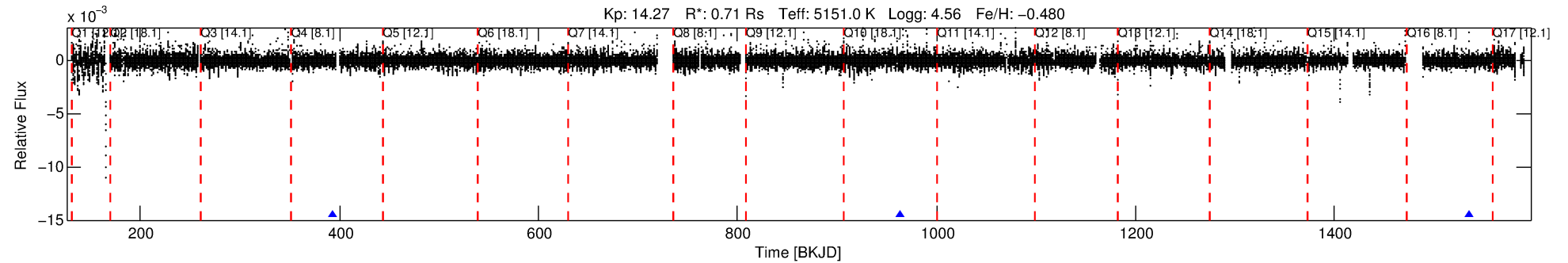
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009766608-02

No Significant Match Found

DV One-Page Summary

KIC: 9766608 Candidate: 2 of 2 Period: 571.160 d



DV Fit Results:

Period = 571.16011 [0.00715] d
Epoch = 392.8901 [0.0098] BKJD
Rp/R* = 0.0309 [0.0054]
a/R* = 407.10 [213.16]
b = 0.92 [0.09]
Seff = 0.23 [0.05]
Teq = 176 [9] K
Rp = 2.41 [0.53] Re
a = 1.1860 [0.1321] AU
Ag = 65174.20 [37922.34] [1.72σ]
Teffp = 4359 [623] K [6.71σ]

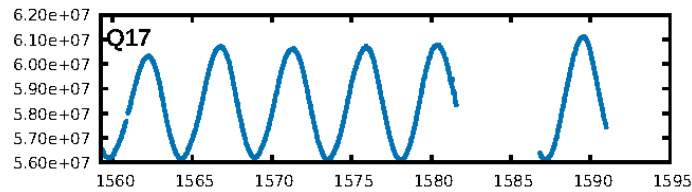
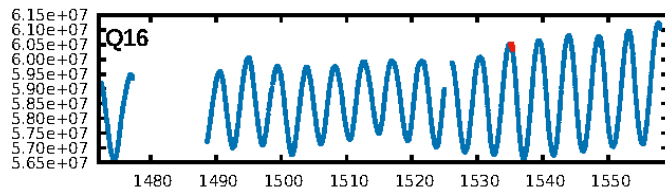
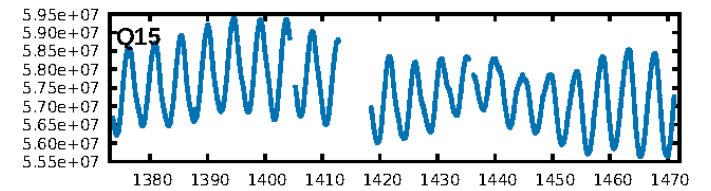
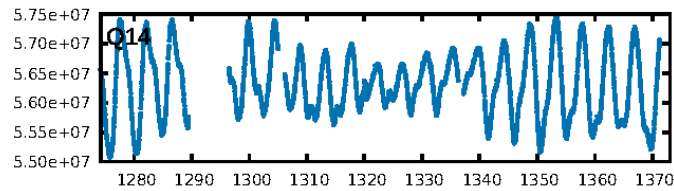
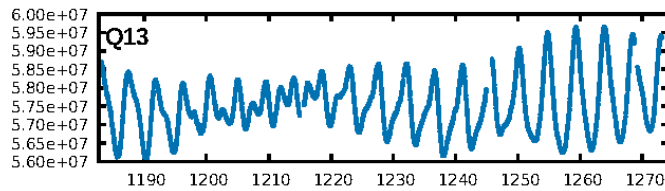
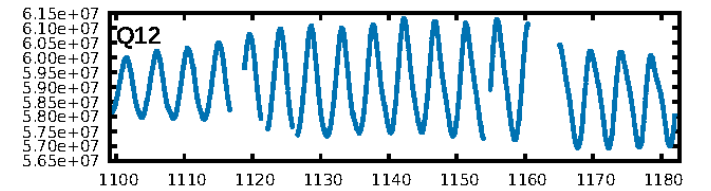
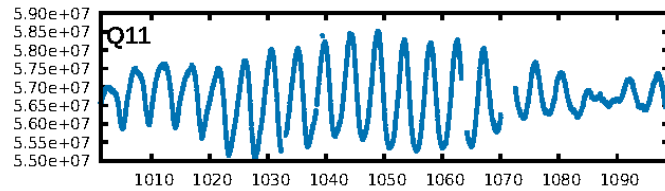
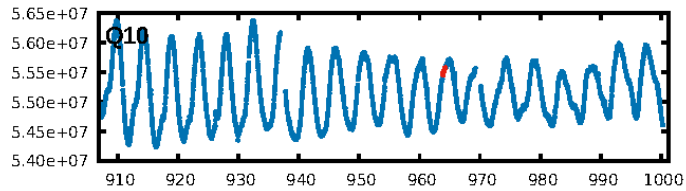
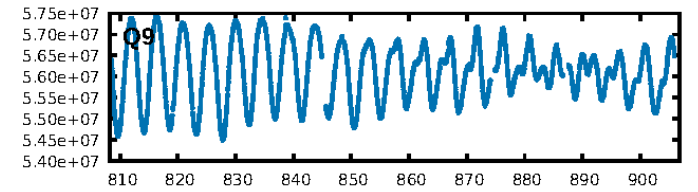
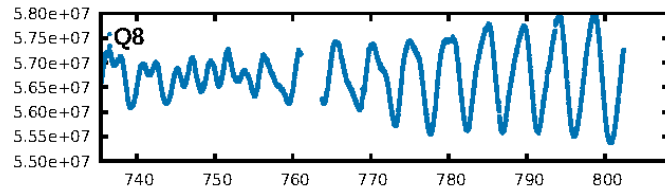
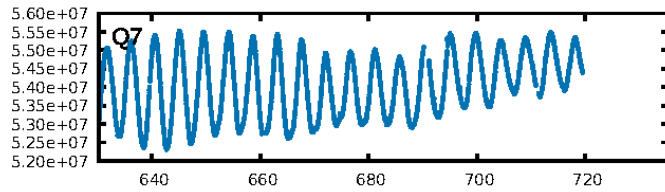
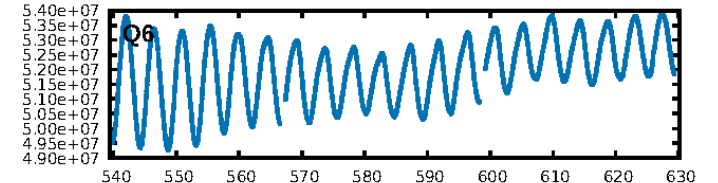
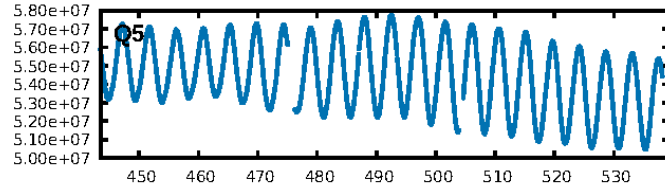
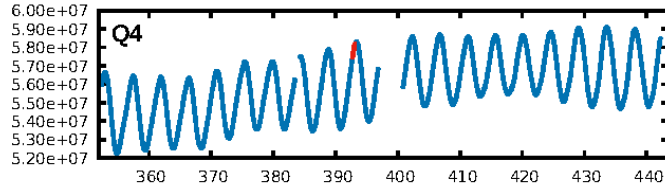
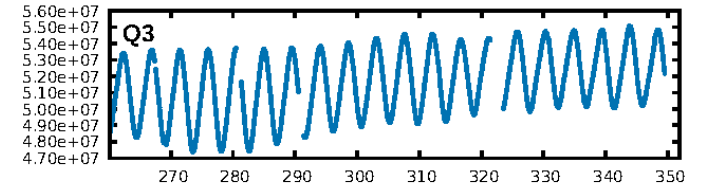
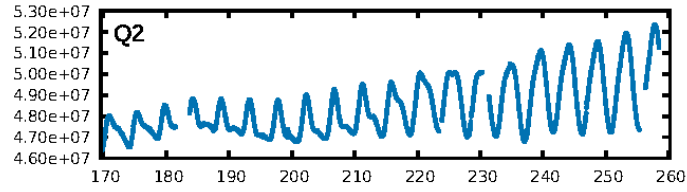
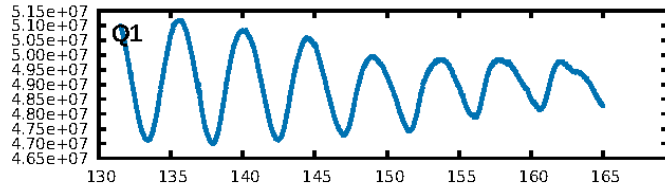
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [671.24σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.0%
ModelChiSquareGof-sig: 87.4%
Bootstrap-pfa: 1.60e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.833
Centroid-sig: 49.0%
Centroid-so: 1.087 arcsec [1.05σ]
OotOffset-rm: 0.087 arcsec [0.20σ]
KicOffset-rm: 0.126 arcsec [0.21σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 1.00 [3/3]

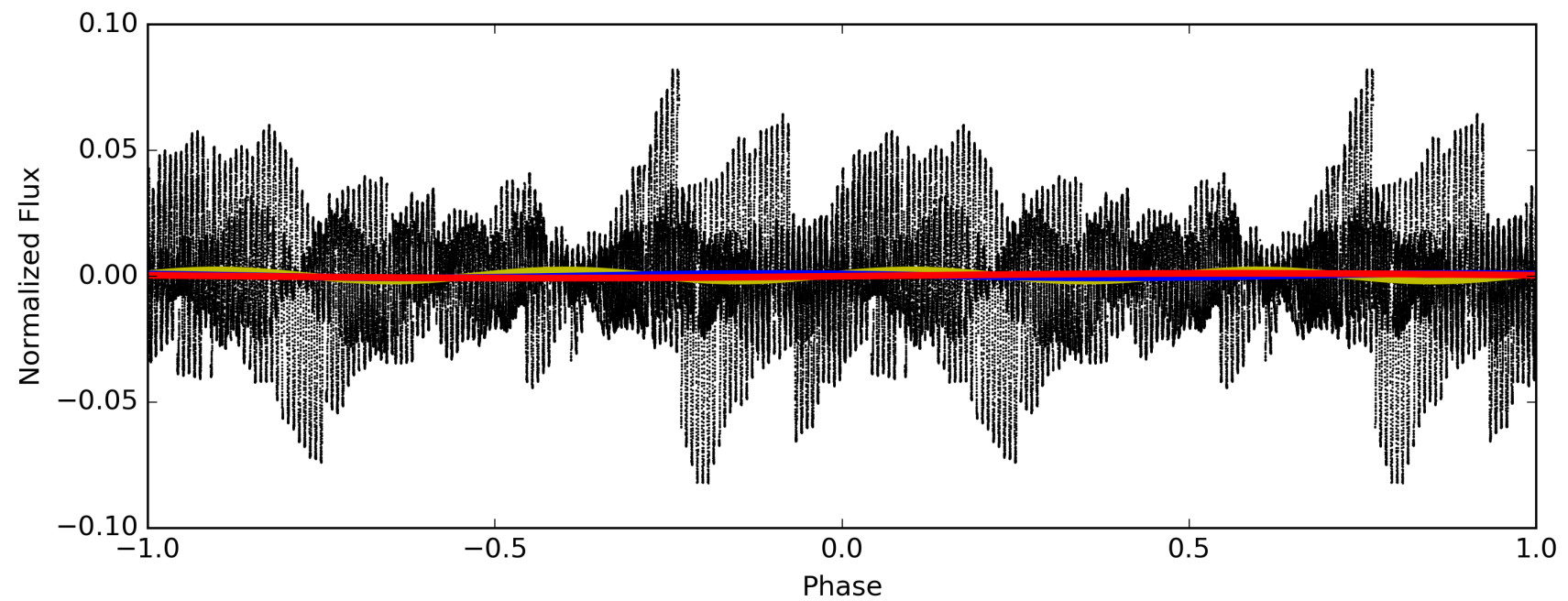
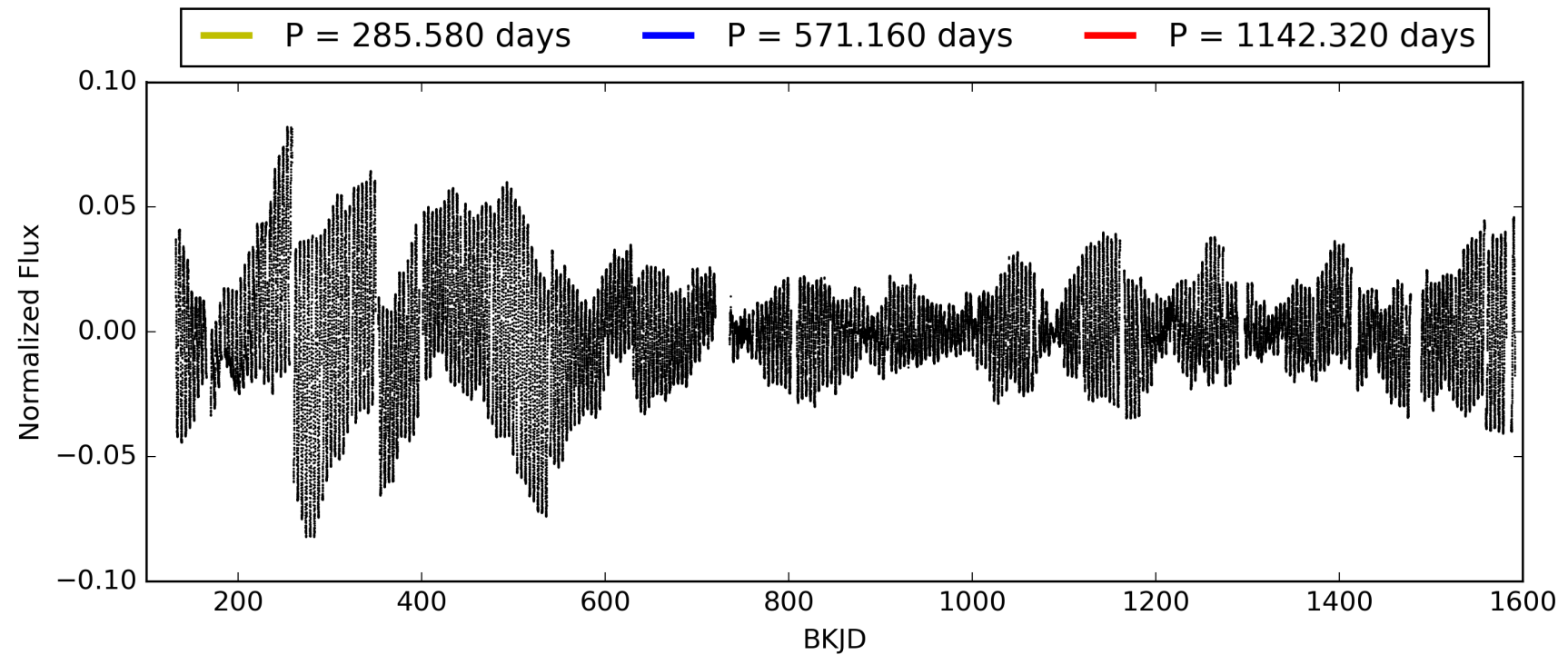
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:24:23 Z

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

TCE 009766608-02, PDC Light Curves

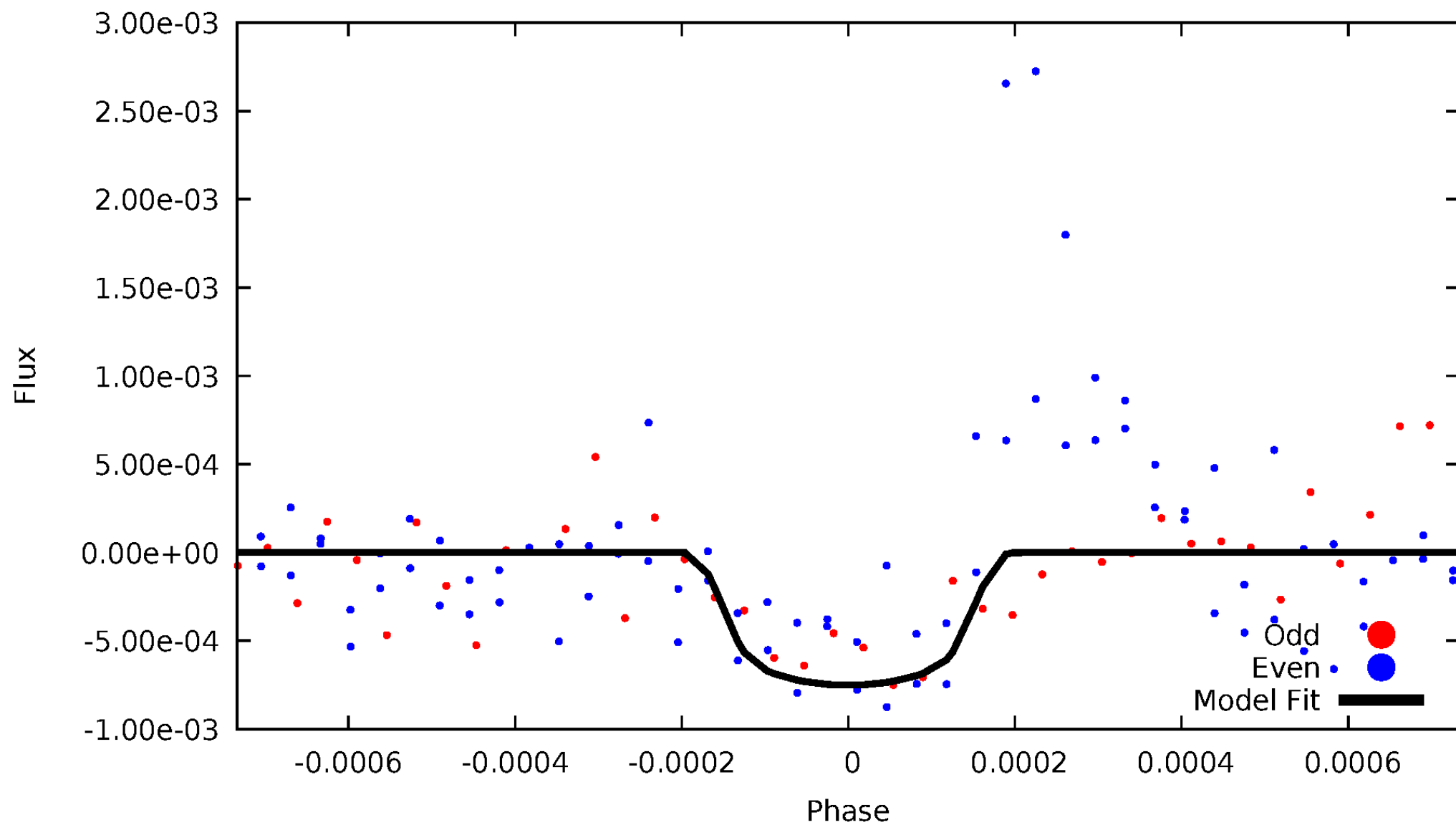


TCE 009766608-02



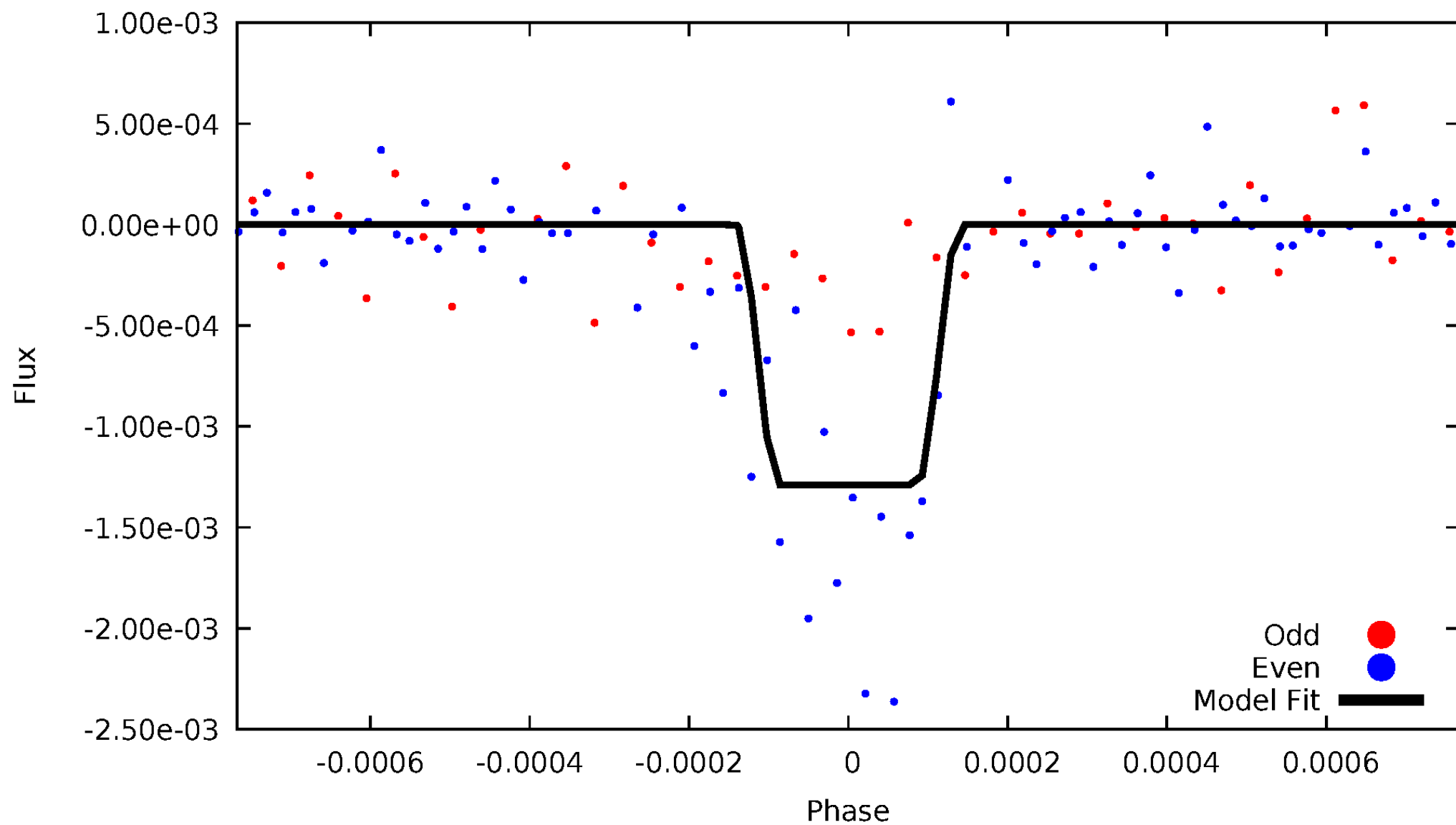
DV Odd/Even

TCE 009766608-02



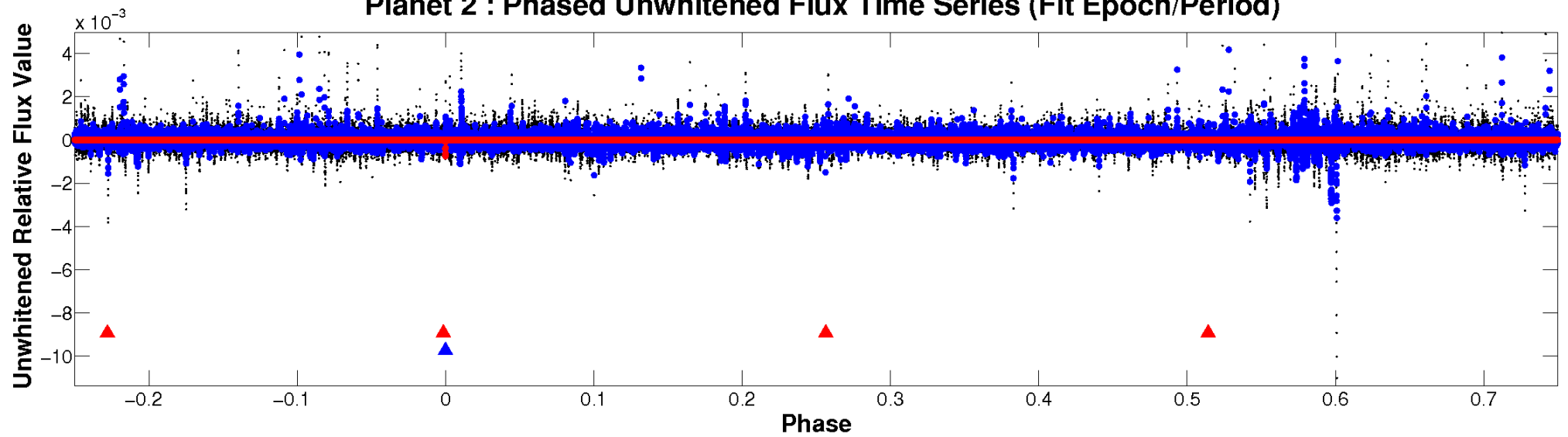
ALT Odd/Even

TCE 009766608-02

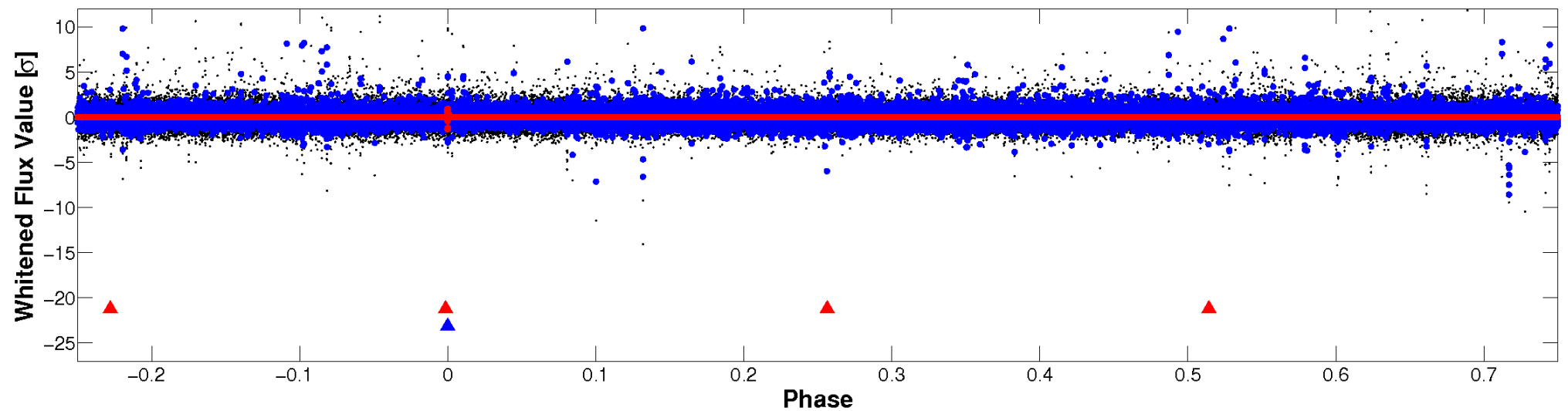


Non-Whitened Vs. Whitened Light Curve

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

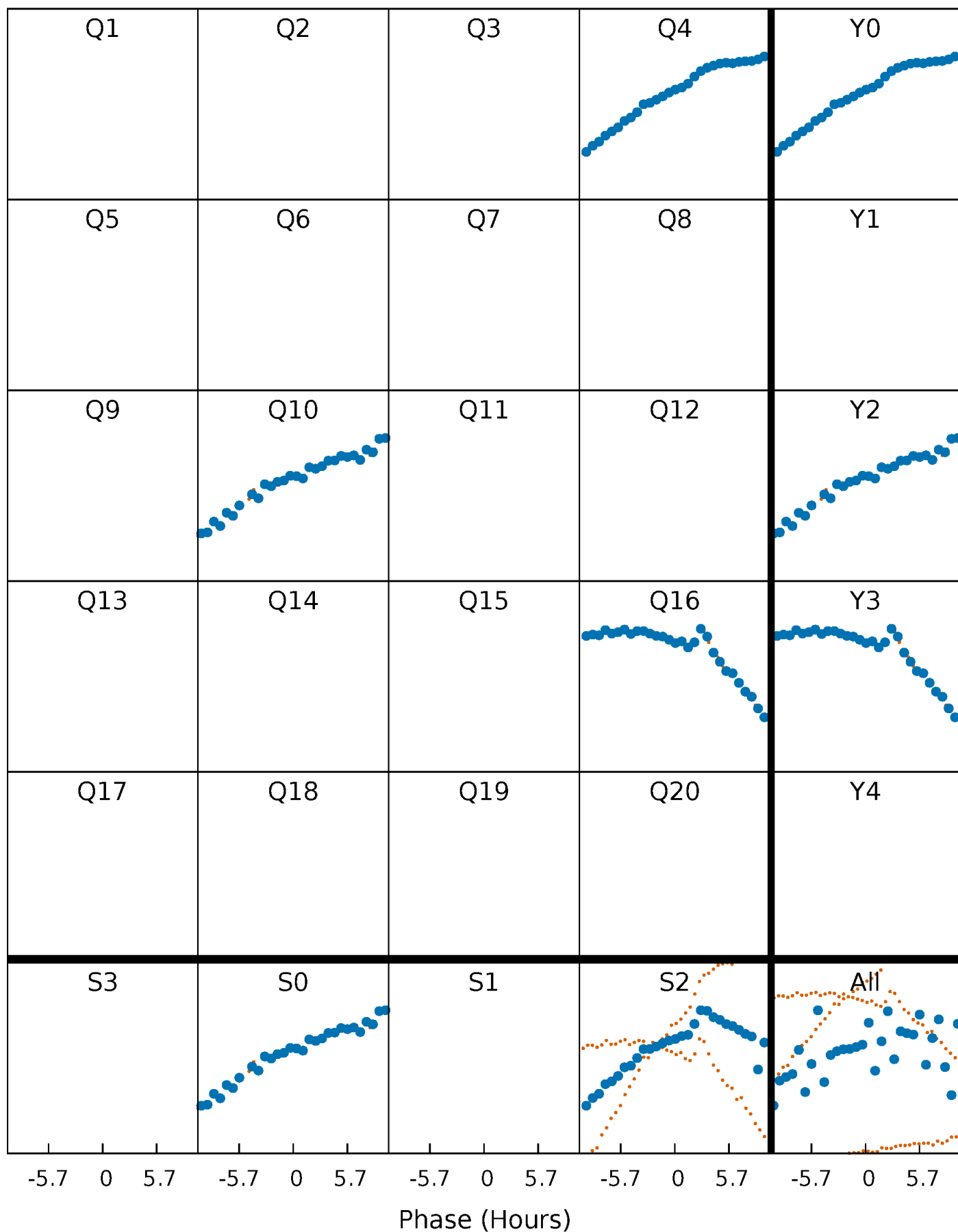


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



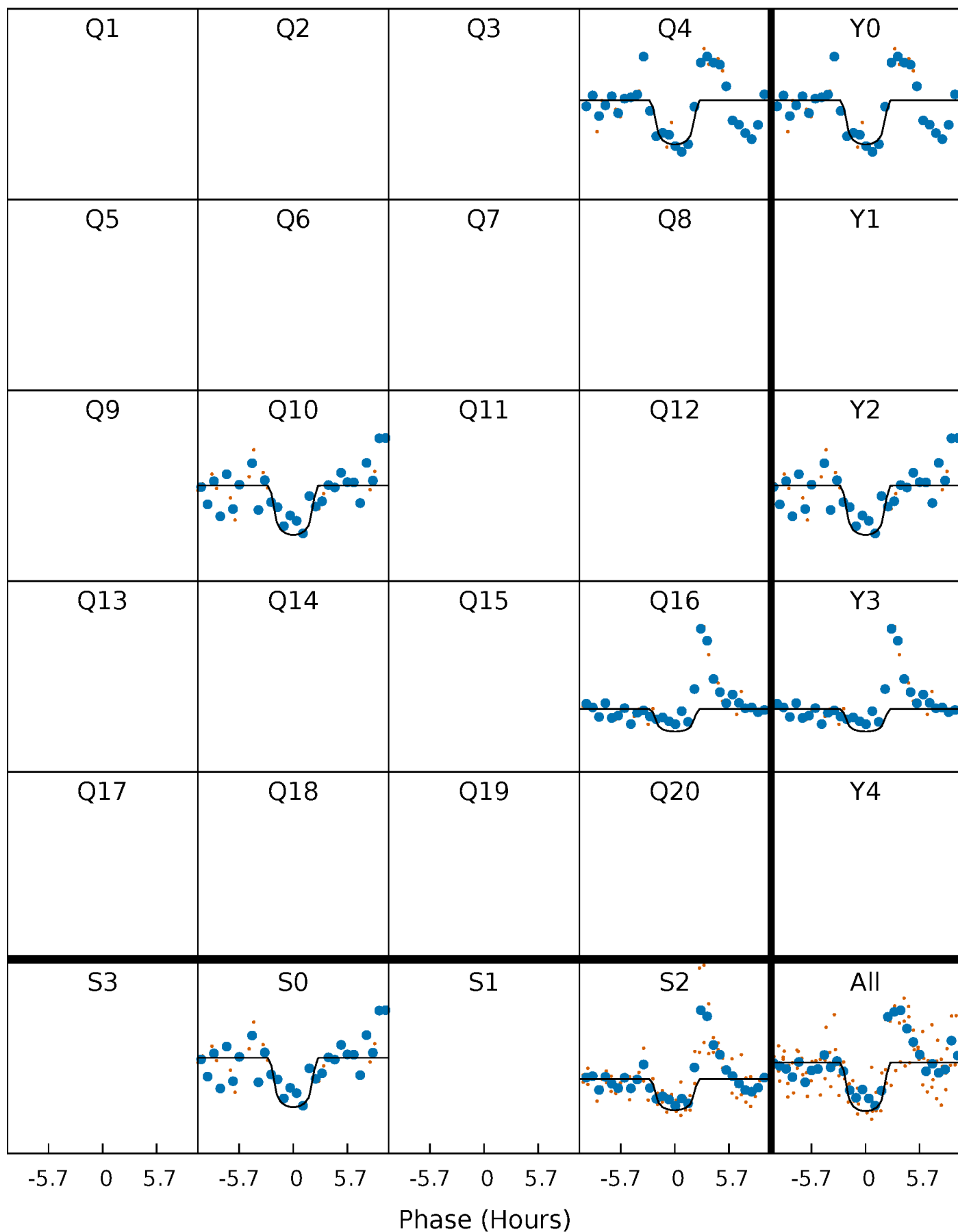
PDC Quarter-Phased Transit Curves

TCE 009766608-02 P=571.160105 Days $T_0=392.890095$ (BKJD)



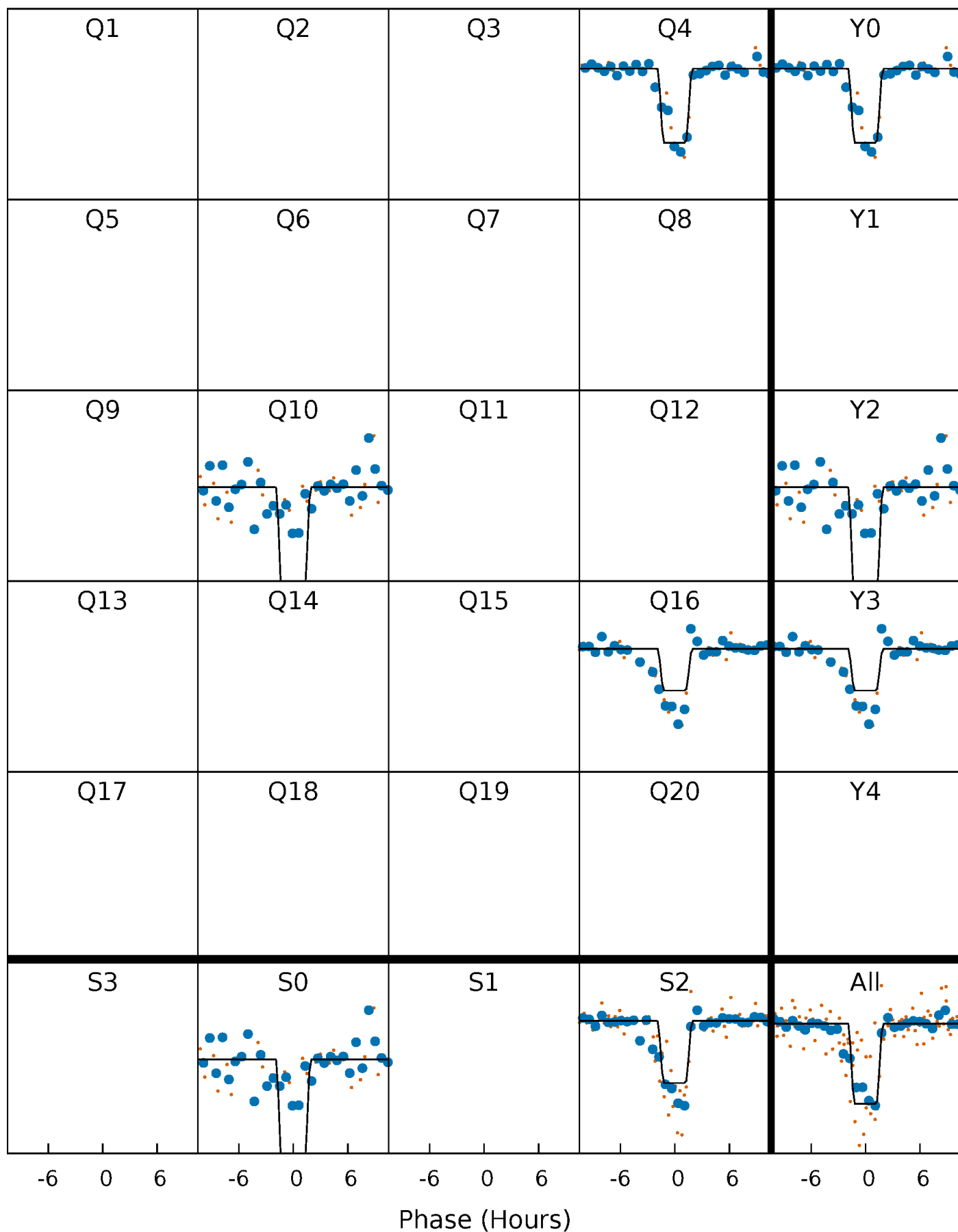
DV Quarter-Phased Transit Curves

TCE 009766608-02 P=571.160105 Days $T_0=392.890095$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

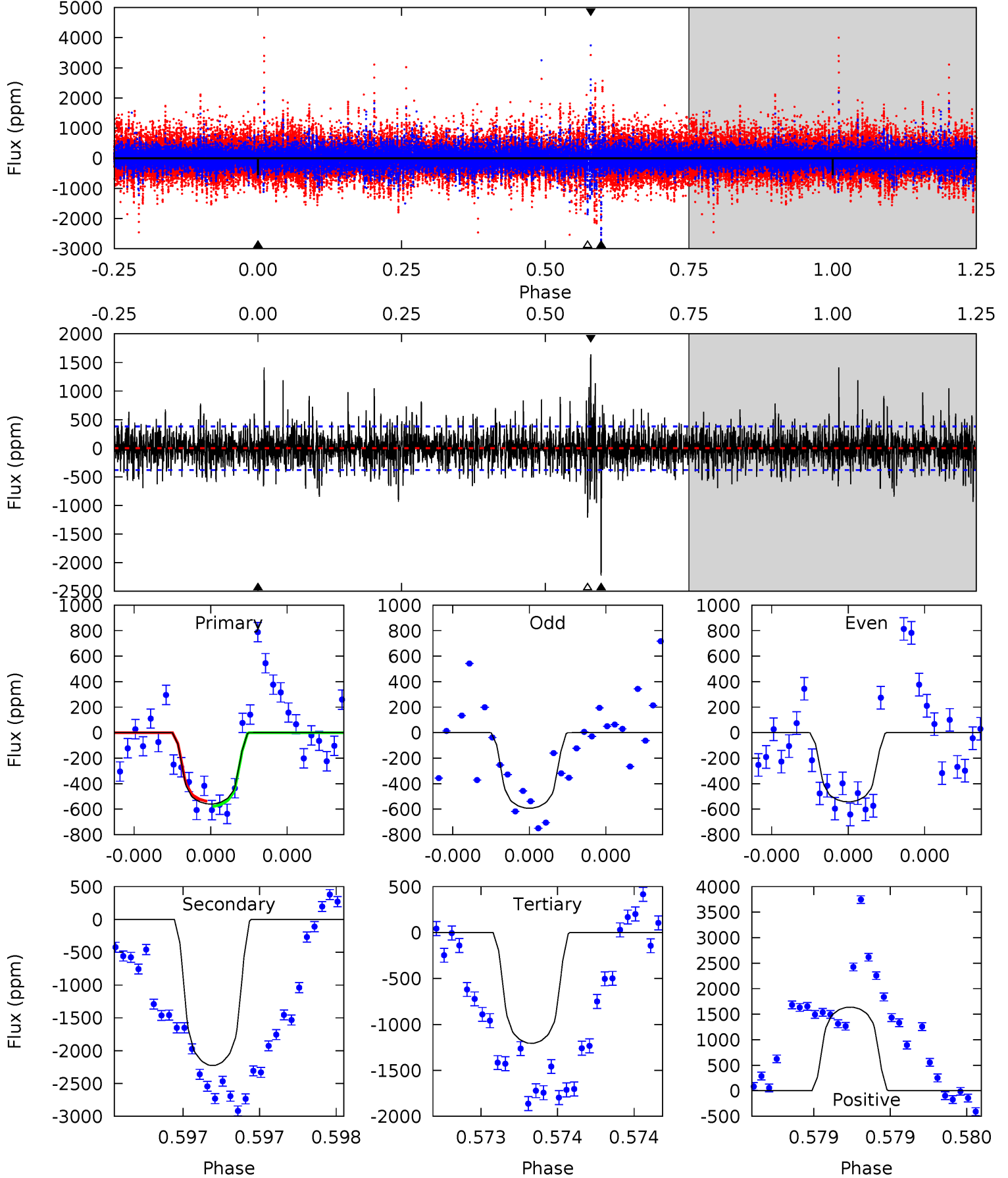
TCE 009766608-02 P=571.165680 Days $T_0=392.913414$ (BKJD)



DV Model-Shift Uniqueness Test

009766608-02, P = 571.160105 Days, E = 392.890095 Days

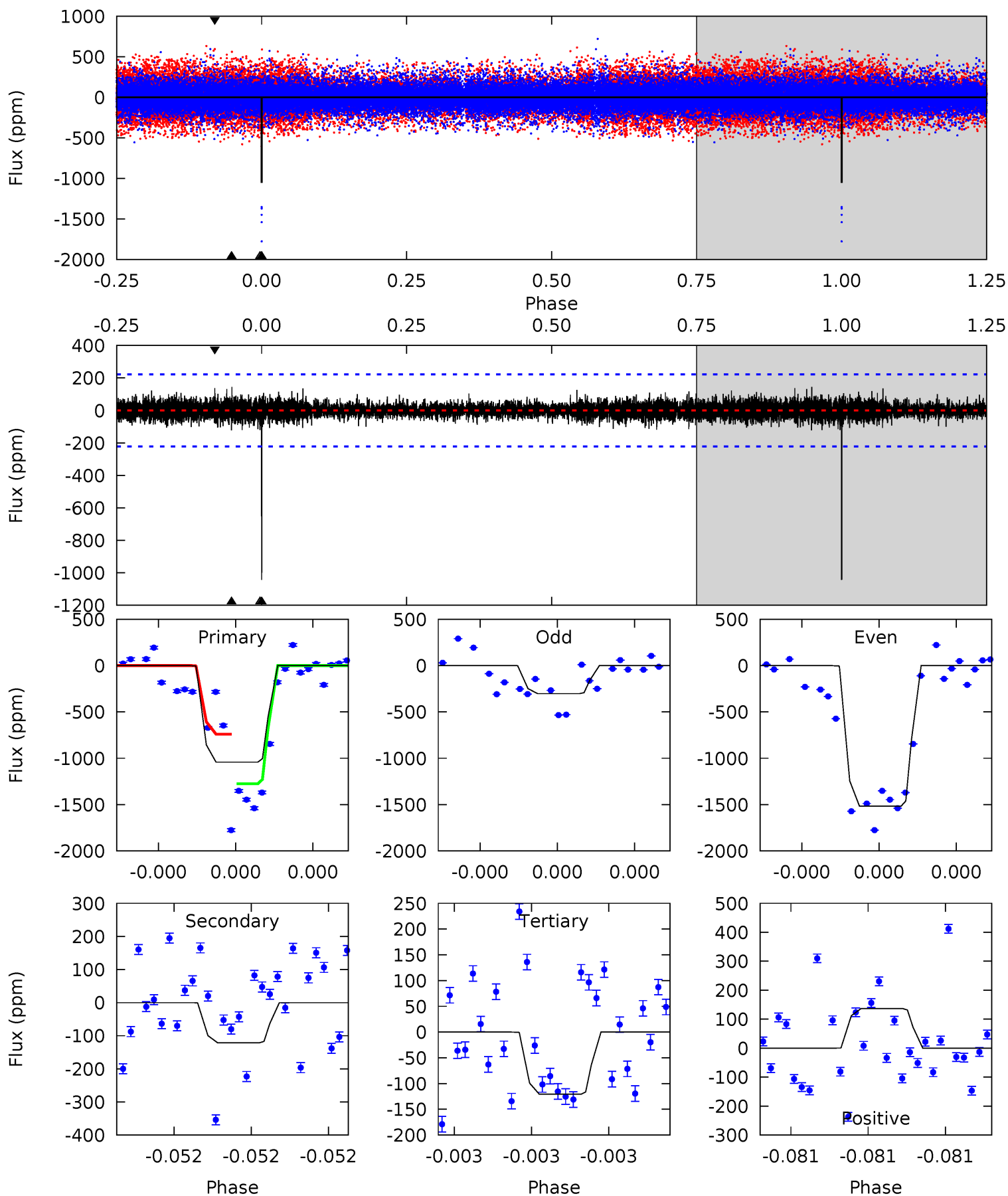
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.26	32.8	17.8	24.2	5.61	3.54	3.11	-9.53	-15.9	15.0	8.65	0.33	0.94	0.42	0.30



Alt Model-Shift Uniqueness Test

009766608-02, P = 571.165680 Days, E = 392.913414 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.7	3.11	3.09	3.50	5.68	3.64	0.67	23.6	23.2	0.02	-0.39	18.3	0.98	0.12	7.27



Stellar Parameters For KIC 009766608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5151^{+154}_{-138}	$4.563^{+0.080}_{-0.088}$	$-0.480^{+0.350}_{-0.250}$	$0.715^{+0.095}_{-0.078}$	$0.682^{+0.107}_{-0.038}$	$2.624^{+0.914}_{-0.677}$
	+3%/-3%	+2%/-2%	+73%/-52%	+13%/-11%	+16%/-6%	+35%/-26%
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 009766608-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2225 ± 68	$2.46^{+0.49}_{-0.46}$	248^{+10}_{-11}	6319^{+703}_{-542}	$295782^{+146956}_{-90476}$
Alt.	-121 ± 39	$2.83^{+0.51}_{-0.48}$	247^{+11}_{-10}	3348^{+257}_{-244}	11969^{+6946}_{-5075}

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

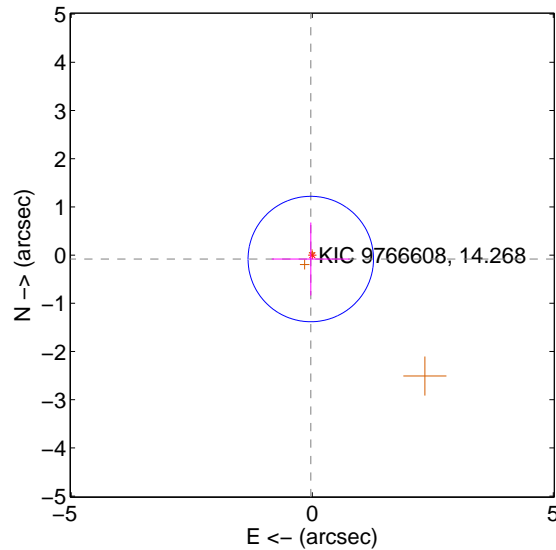
Supplemental centroid analysis for 009766608-02. Kepler magnitude: 14.27. Transit SNR 6.66

There are 0 quarters with good PRF difference image offsets

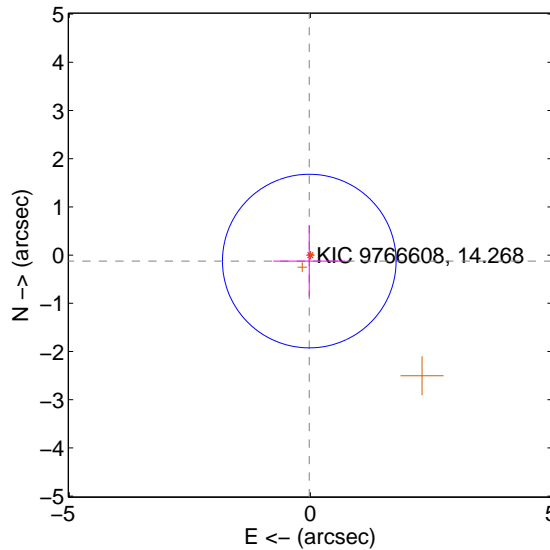
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.087 ± 0.434	0.20	0.030 ± 0.809	-0.082 ± 0.757
PRF-fit source offset from KIC position	0.126 ± 0.600	0.21	0.022 ± 0.748	-0.124 ± 0.738
photometric centroid source offset	1.09 ± 1.03	1.05	1.08 ± 1.03	-0.10 ± 1.51

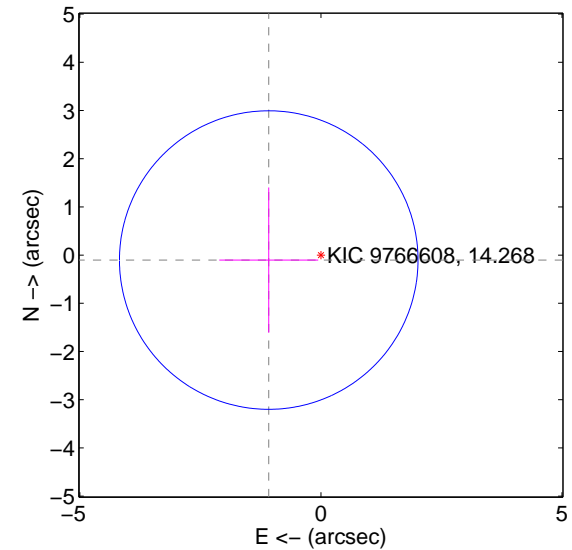
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

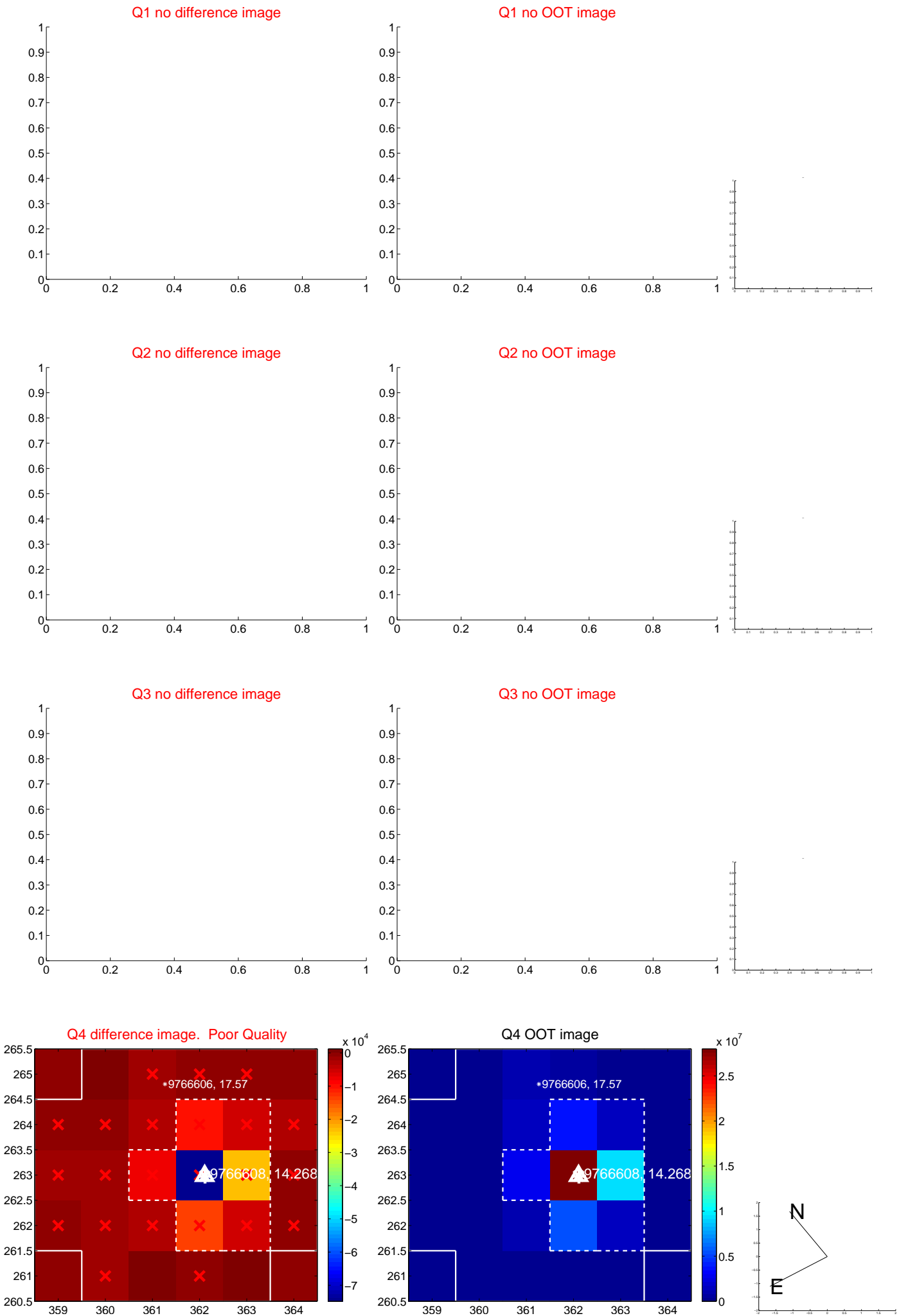


offset from photometric centroids



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.

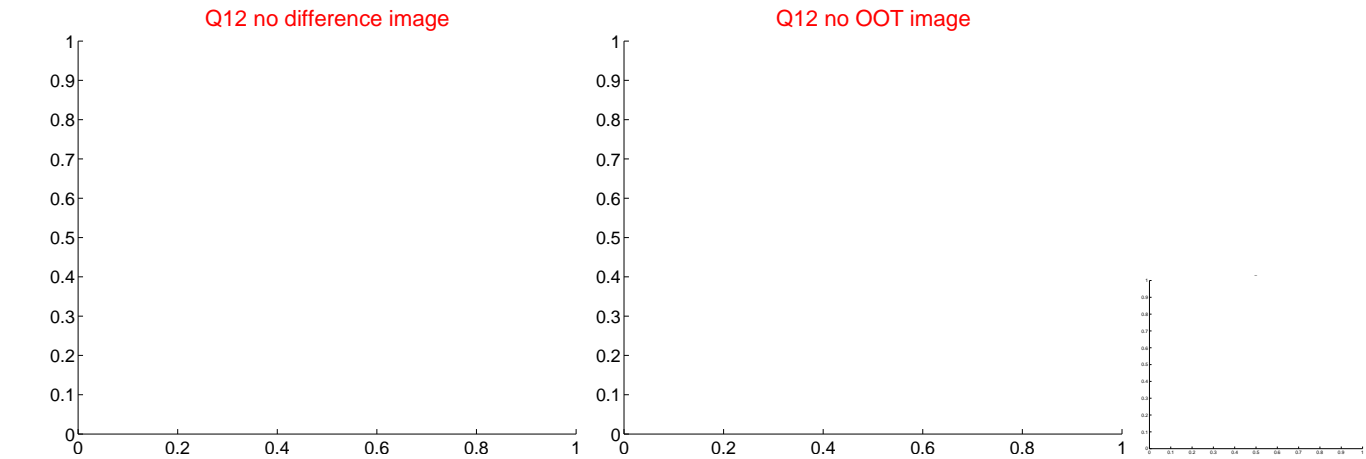
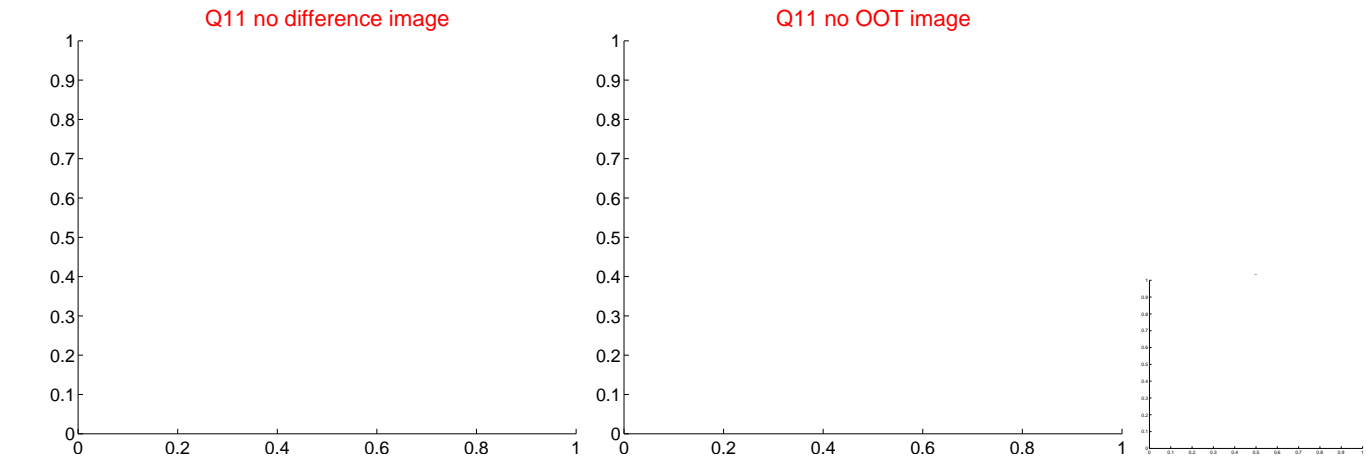
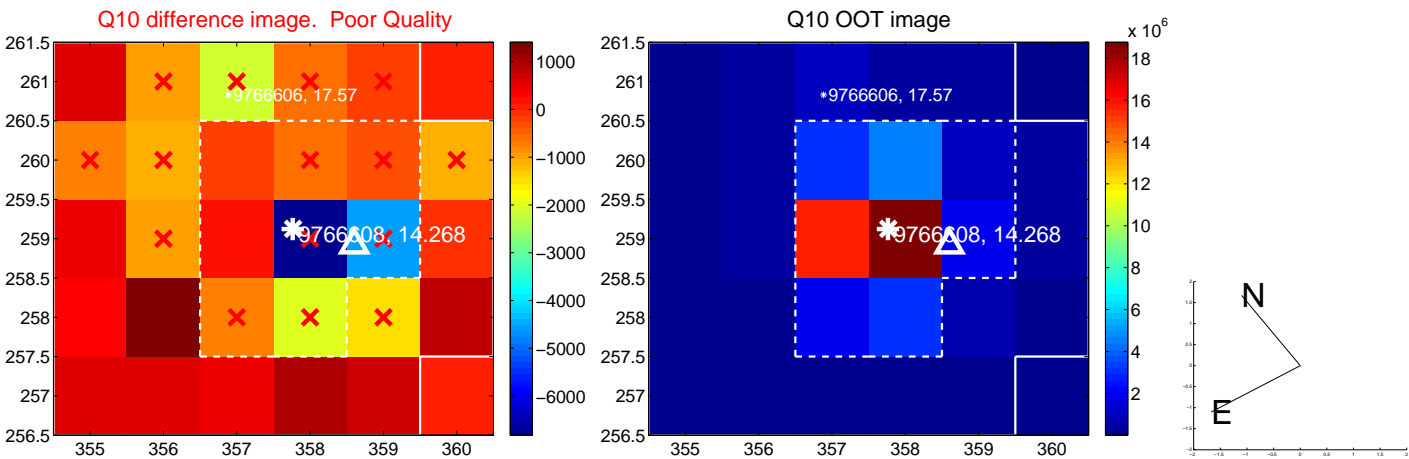
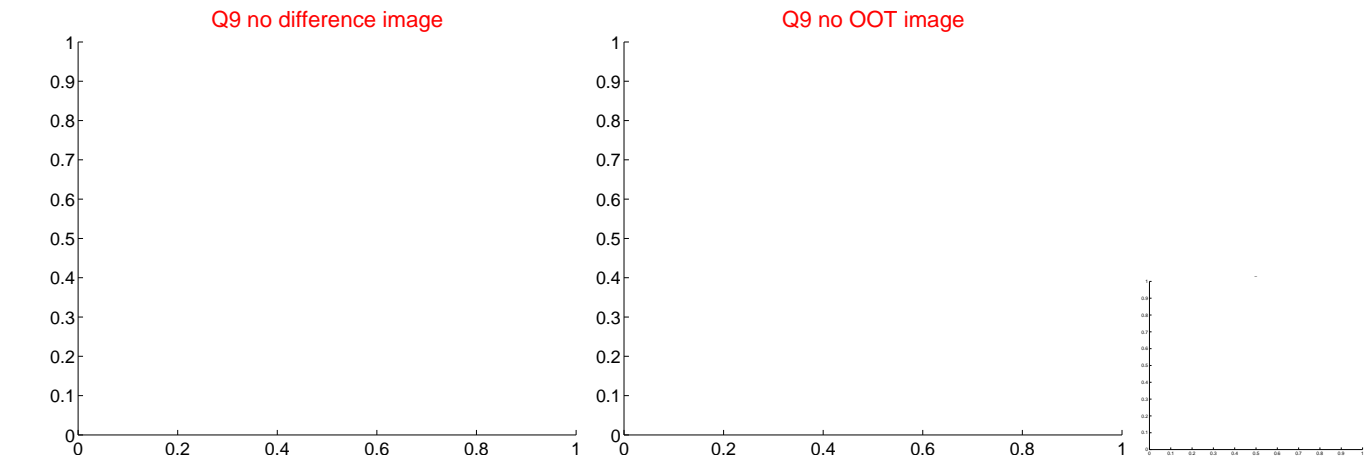
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



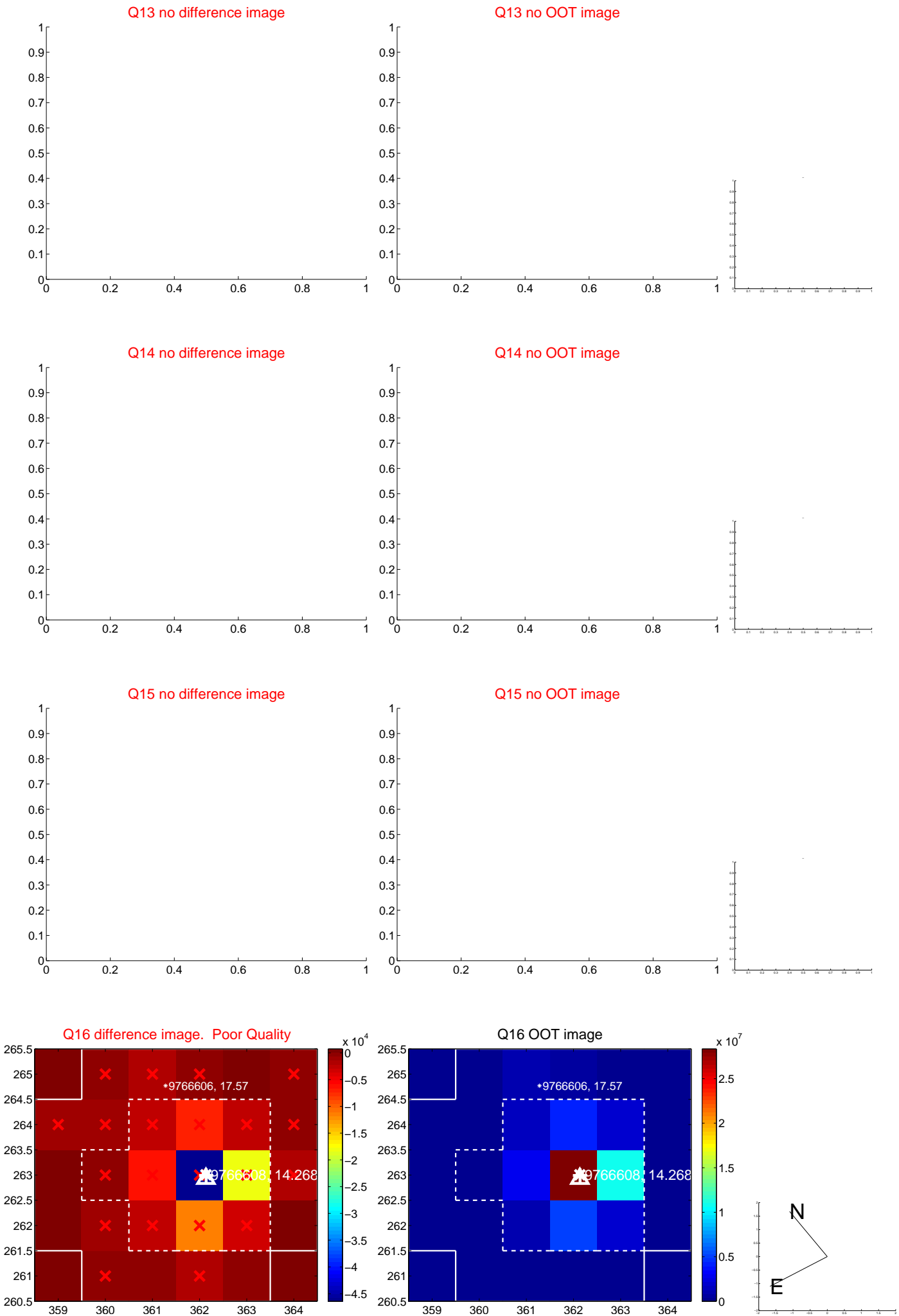
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



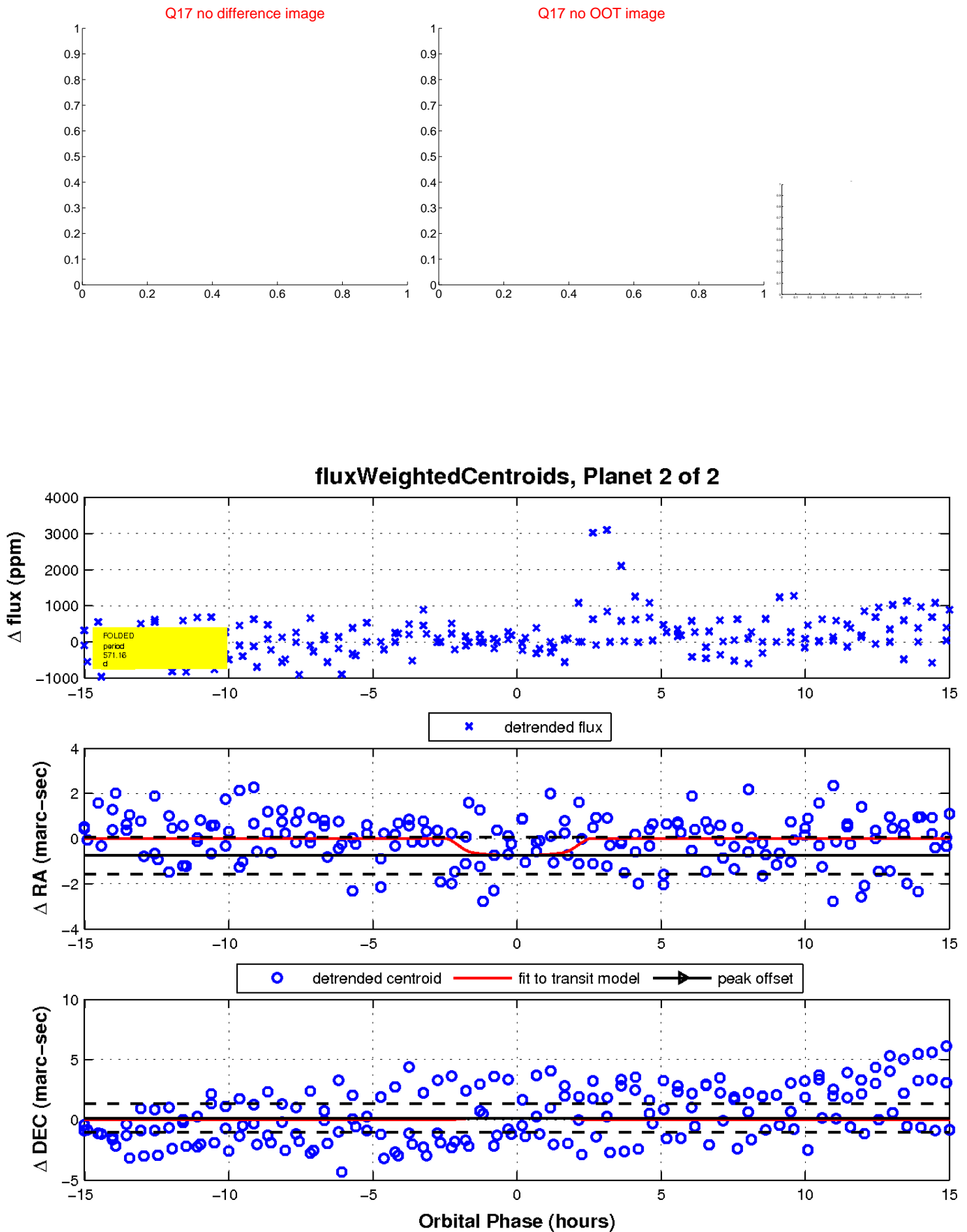
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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.



UKIRT Image

Declination

