

KIC 009347707

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})
009347707-01	OBS	No	355.121617	346.571104	1046.2	45.197	16.0	23.9	3.34	6243	20.61	11.17
009347707-02	OBS	No	493.037641	223.018404	579.5	30.468	10.9	13.1	3.34	6243	13.58	7.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009347707-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009347707-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

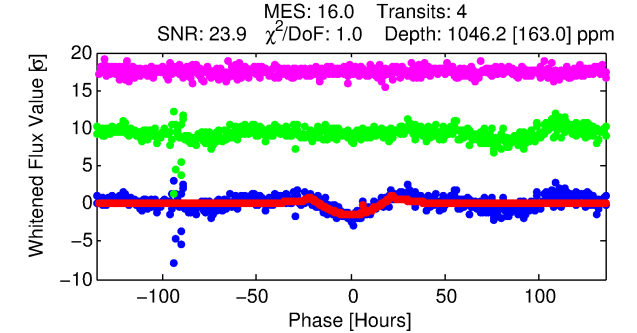
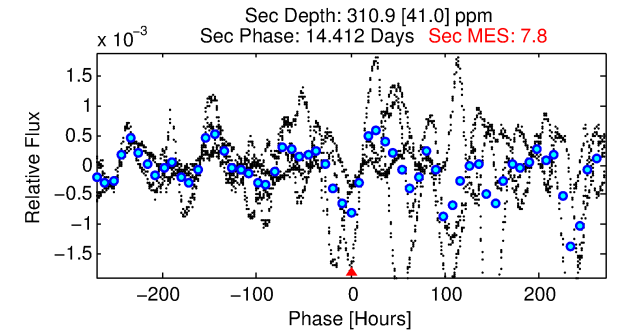
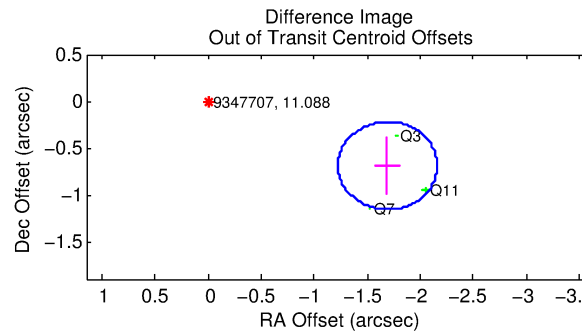
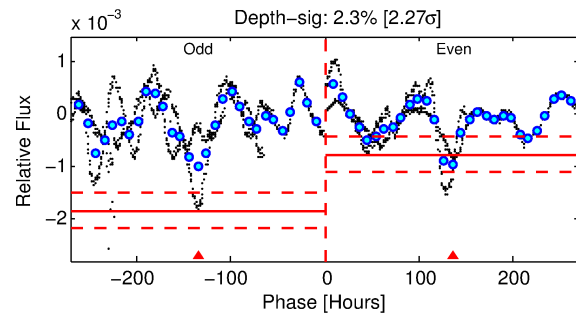
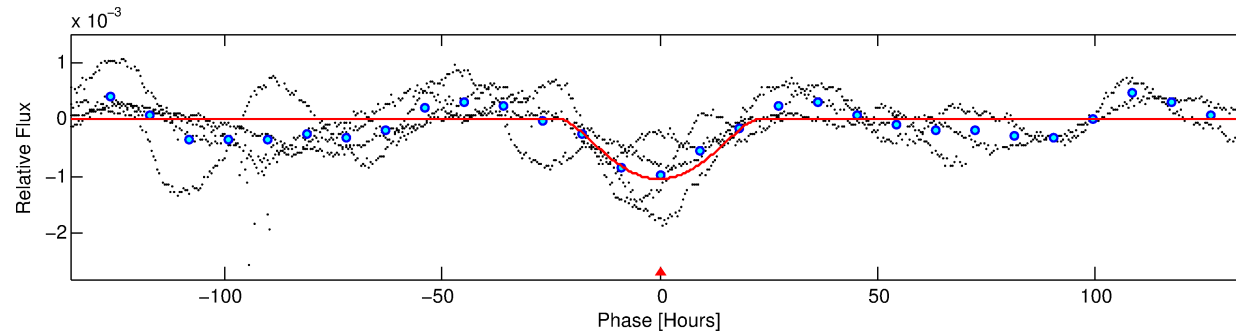
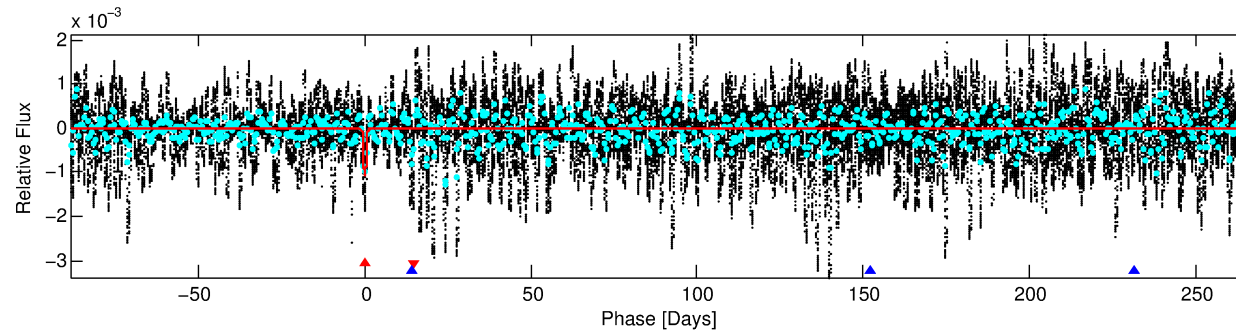
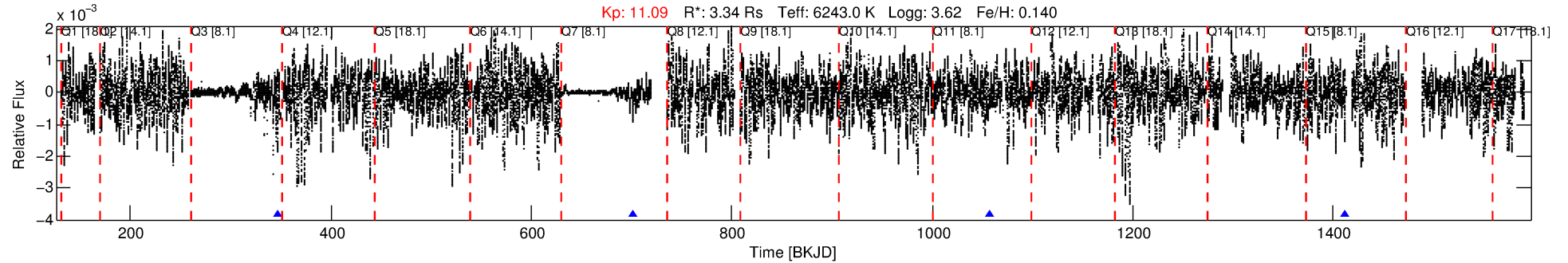
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009347707-01

No Significant Match Found

DV One-Page Summary

KIC: 9347707 Candidate: 1 of 2 Period: 355.122 d



DV Fit Results:

Period = 355.12162 [0.02767] d
Epoch = 346.5711 [0.0286] BKJD
Rp/R* = 0.0565 [0.0393]
a/R* = 20.49 [3.14]
b = 1.00 [0.05]
Seff = 11.17 [10.87]
Teq = 466 [113] K
Rp = 20.61 [18.43] Re
a = 1.1665 [0.6769] AU
Ag = 548.05 [930.53] [0.59 σ]
Teff = 3487 [1225] K [2.46 σ]

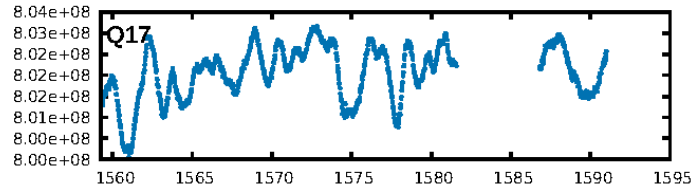
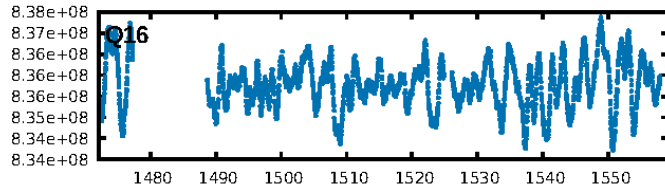
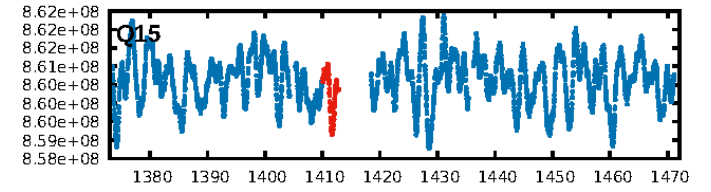
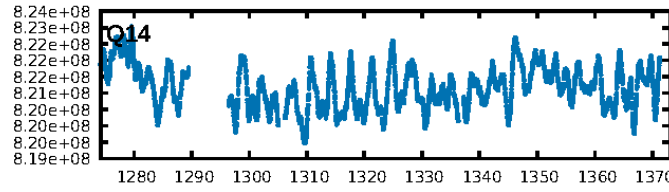
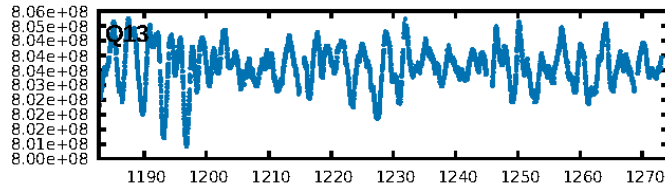
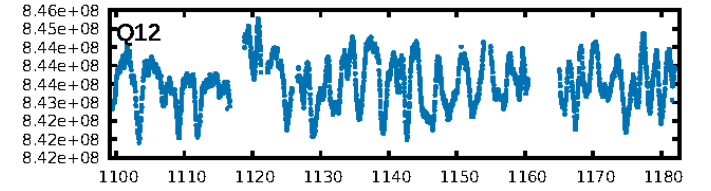
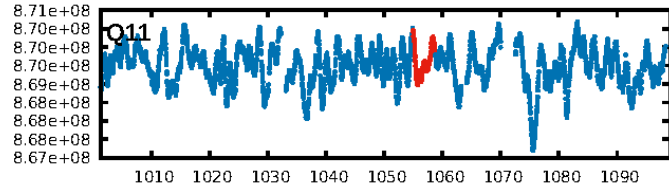
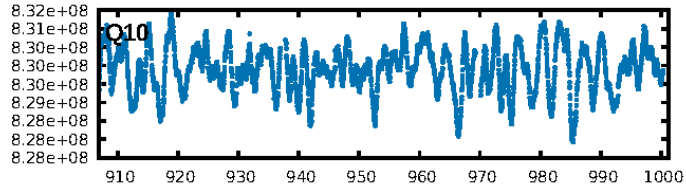
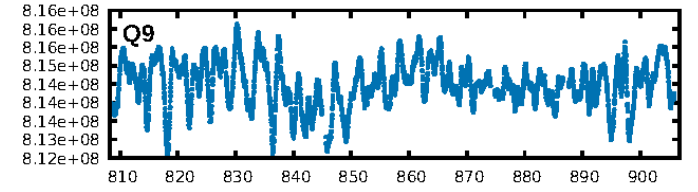
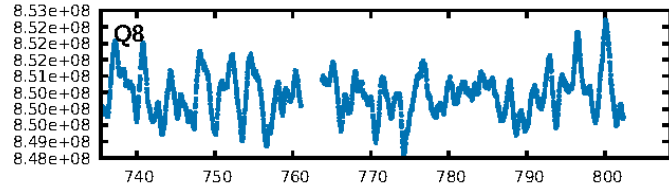
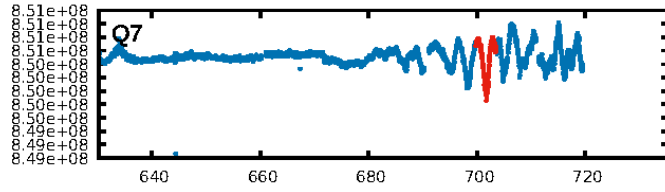
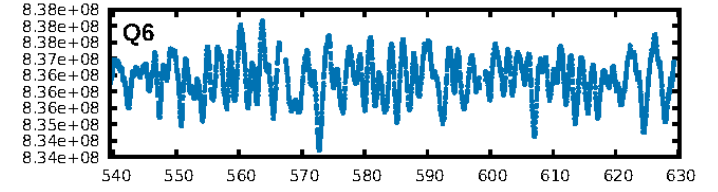
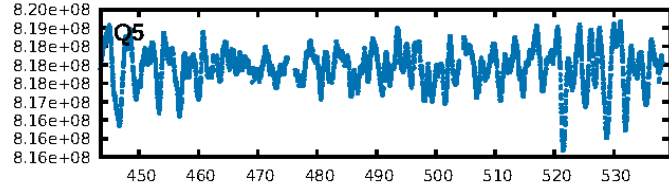
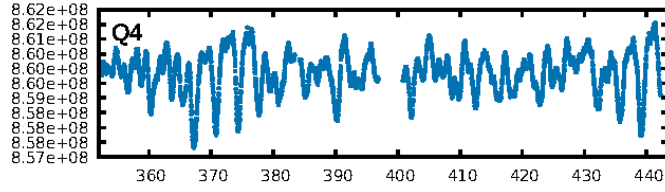
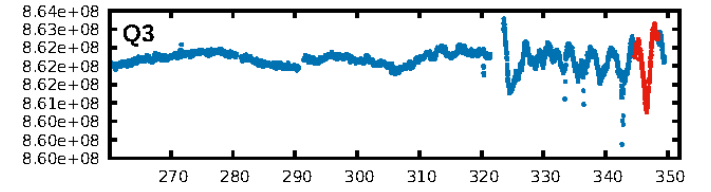
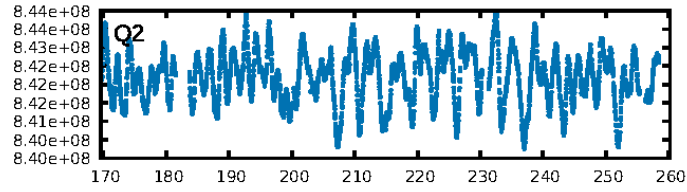
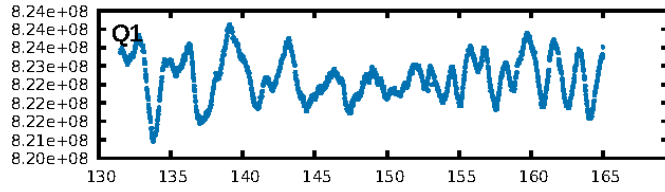
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [60.73 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.59e-18
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.3047
Centroid-sig: 0.1%
Centroid-so: 2.621 arcsec [2.98 σ]
OotOffset-rm: 1.825 arcsec [11.67 σ]
KicOffset-rm: 2.080 arcsec [11.97 σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

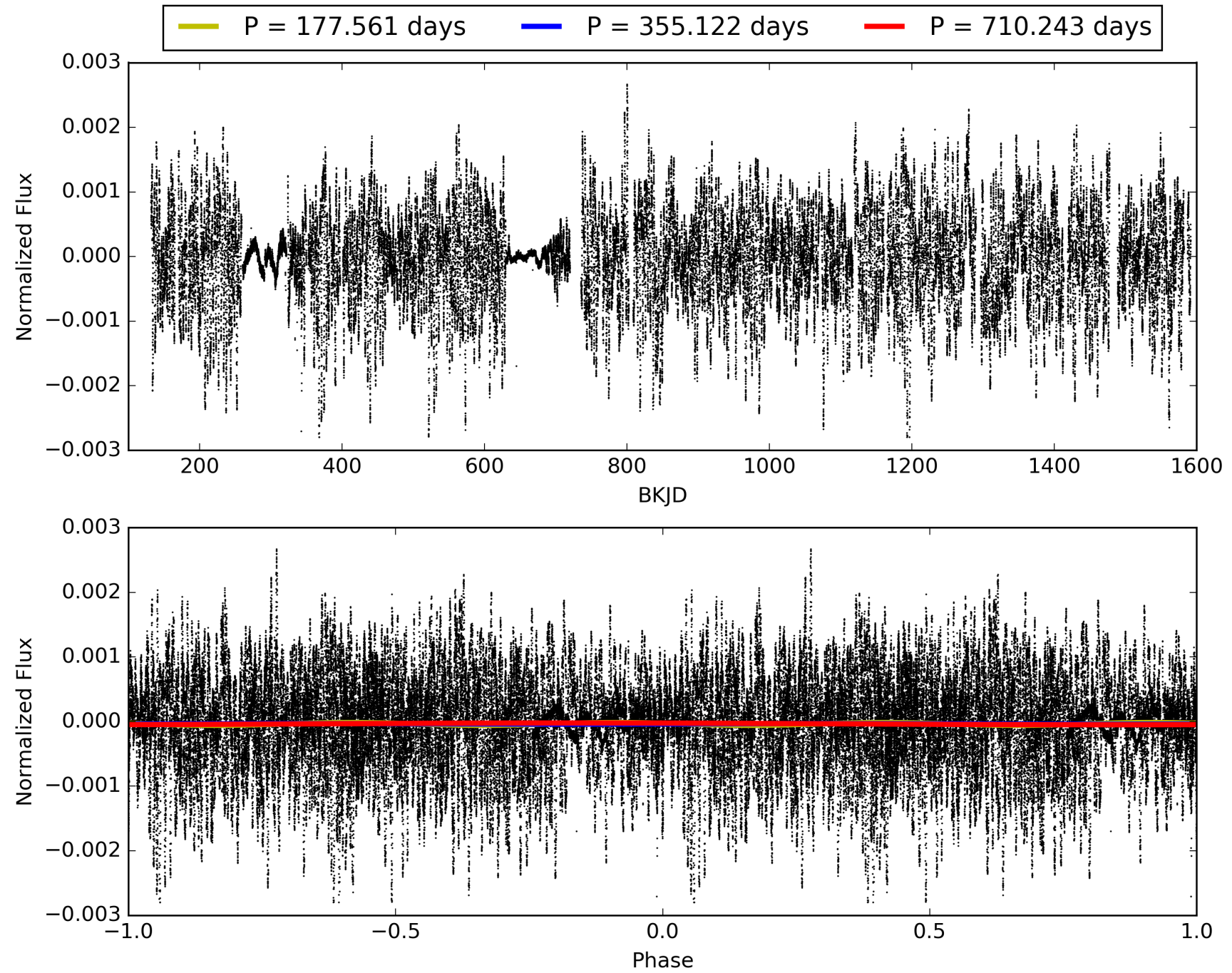
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:54:10 Z

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

TCE 009347707-01, PDC Light Curves

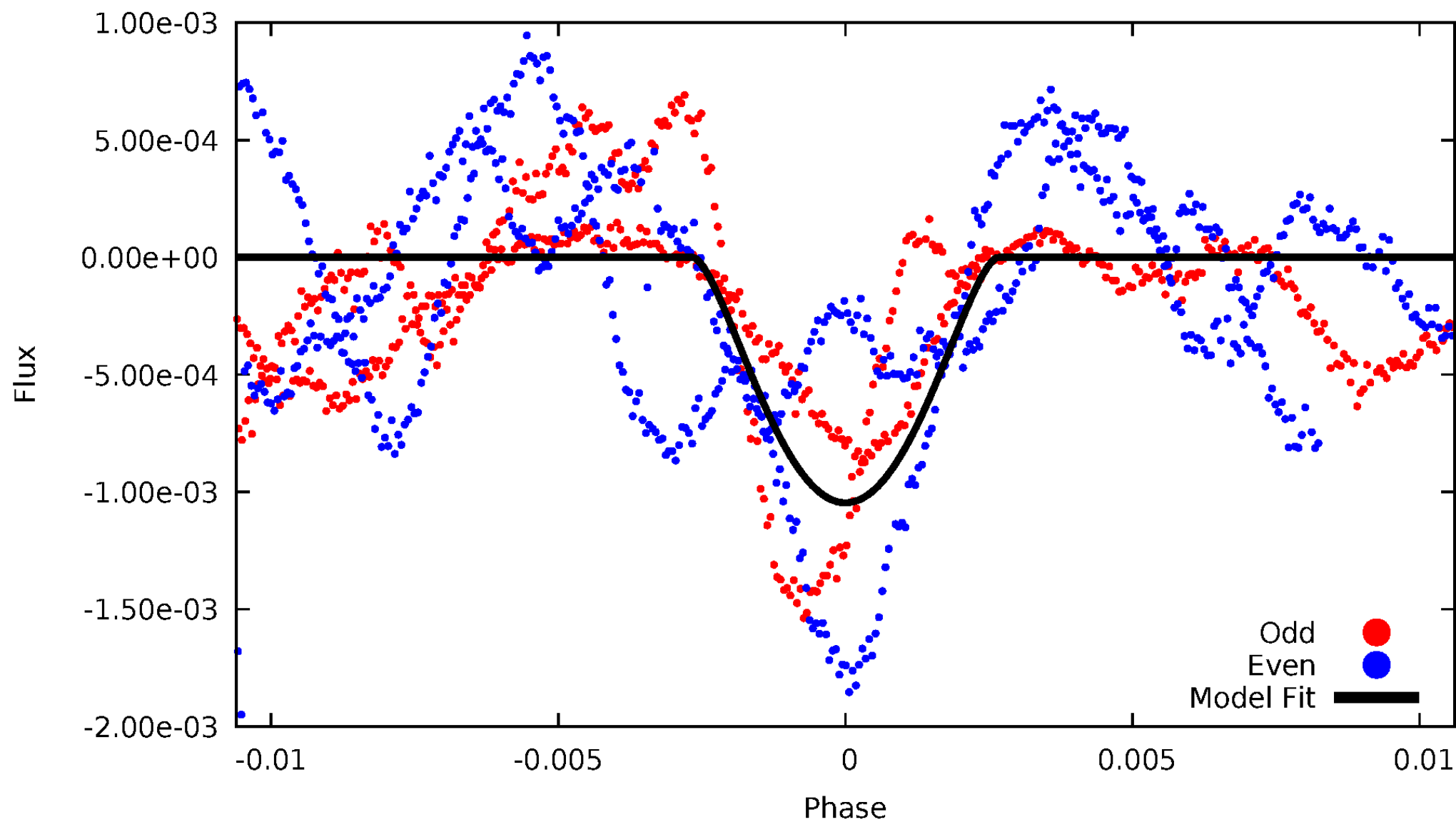


TCE 009347707-01



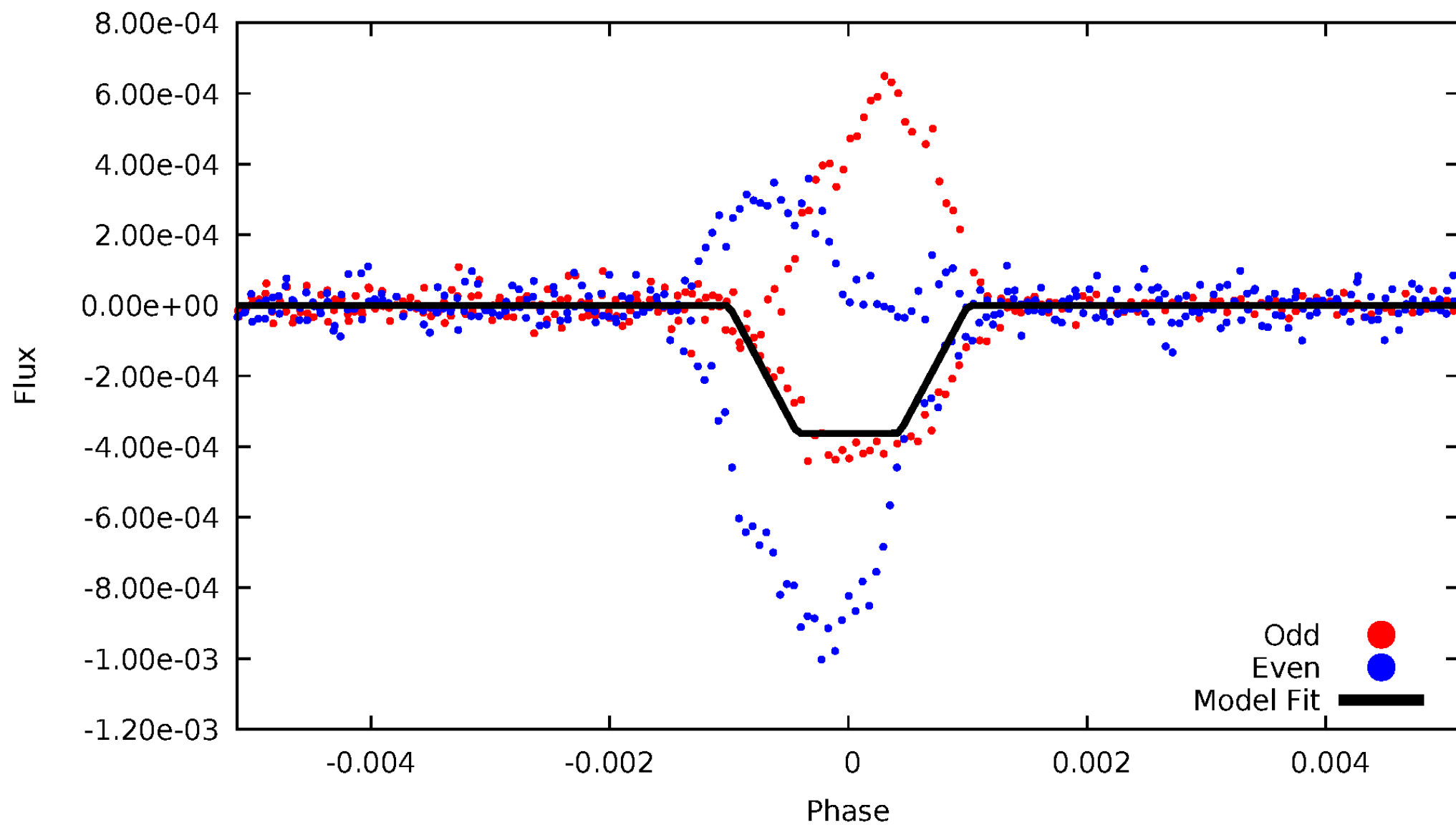
DV Odd/Even

TCE 009347707-01



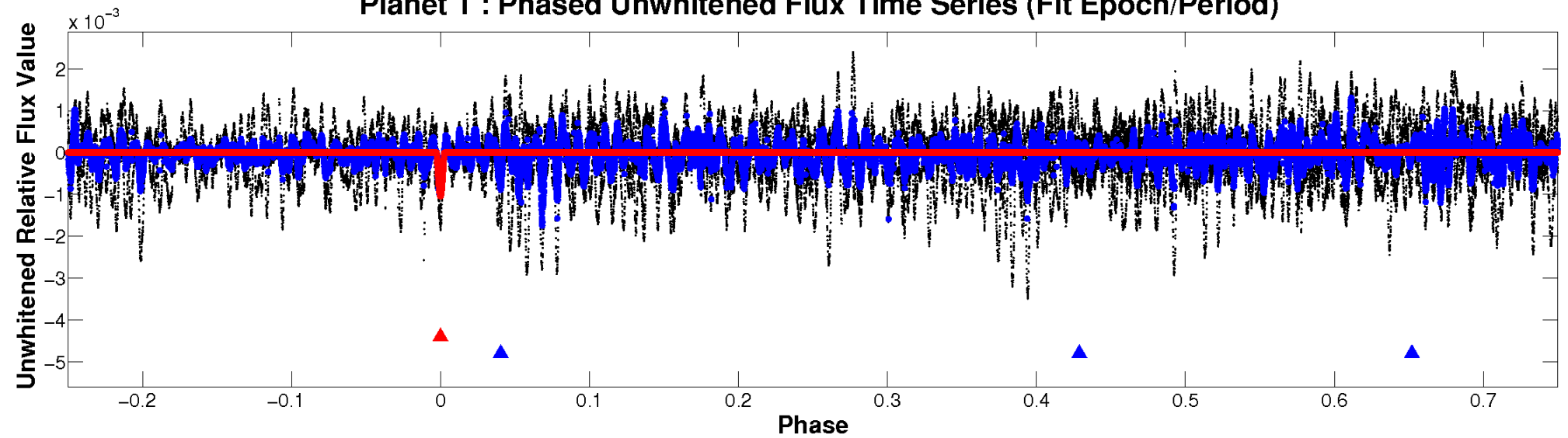
ALT Odd/Even

TCE 009347707-01

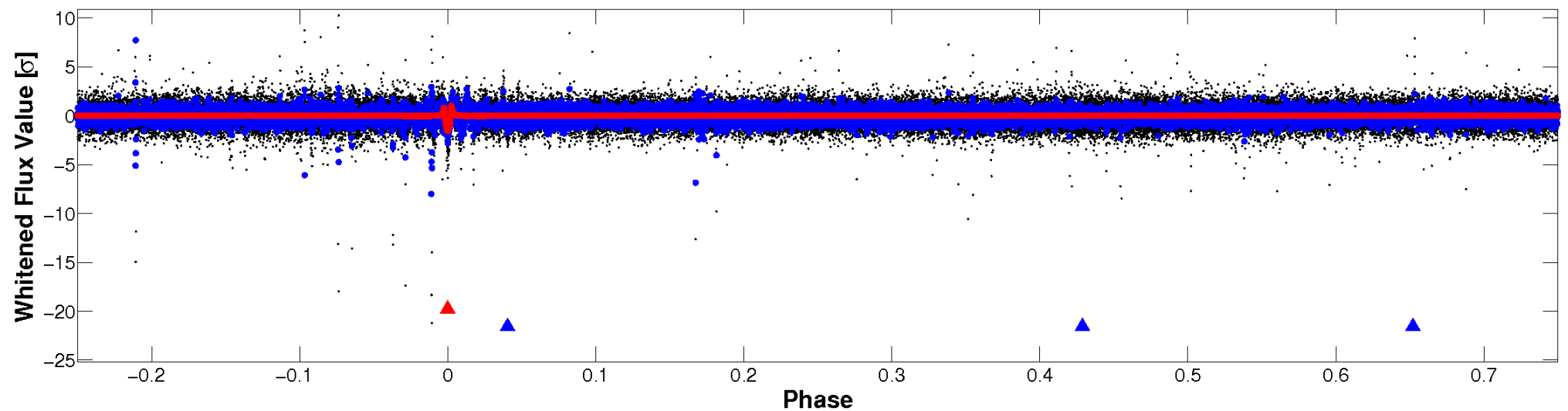


Non-Whitened Vs. Whitened Light Curve

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

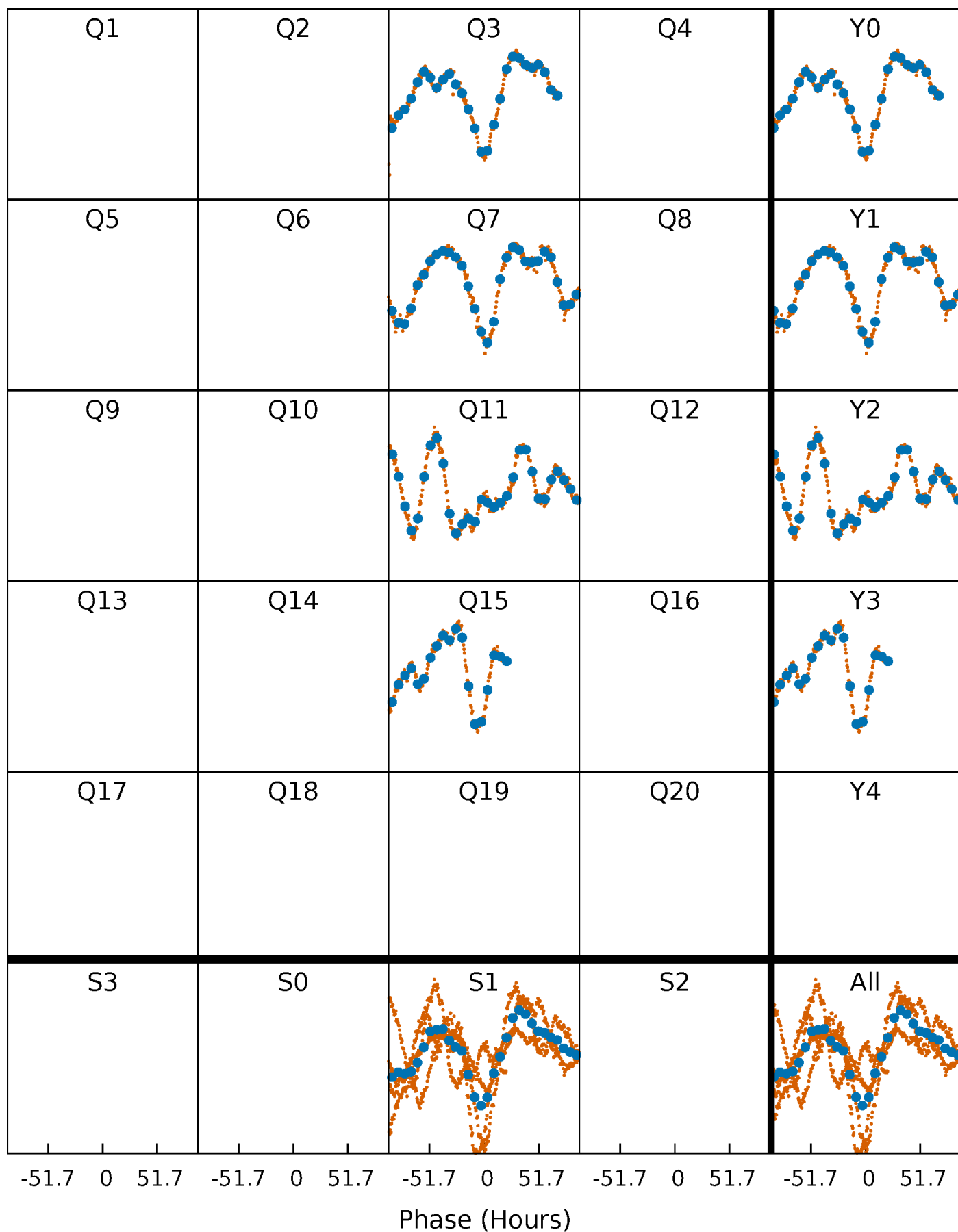


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



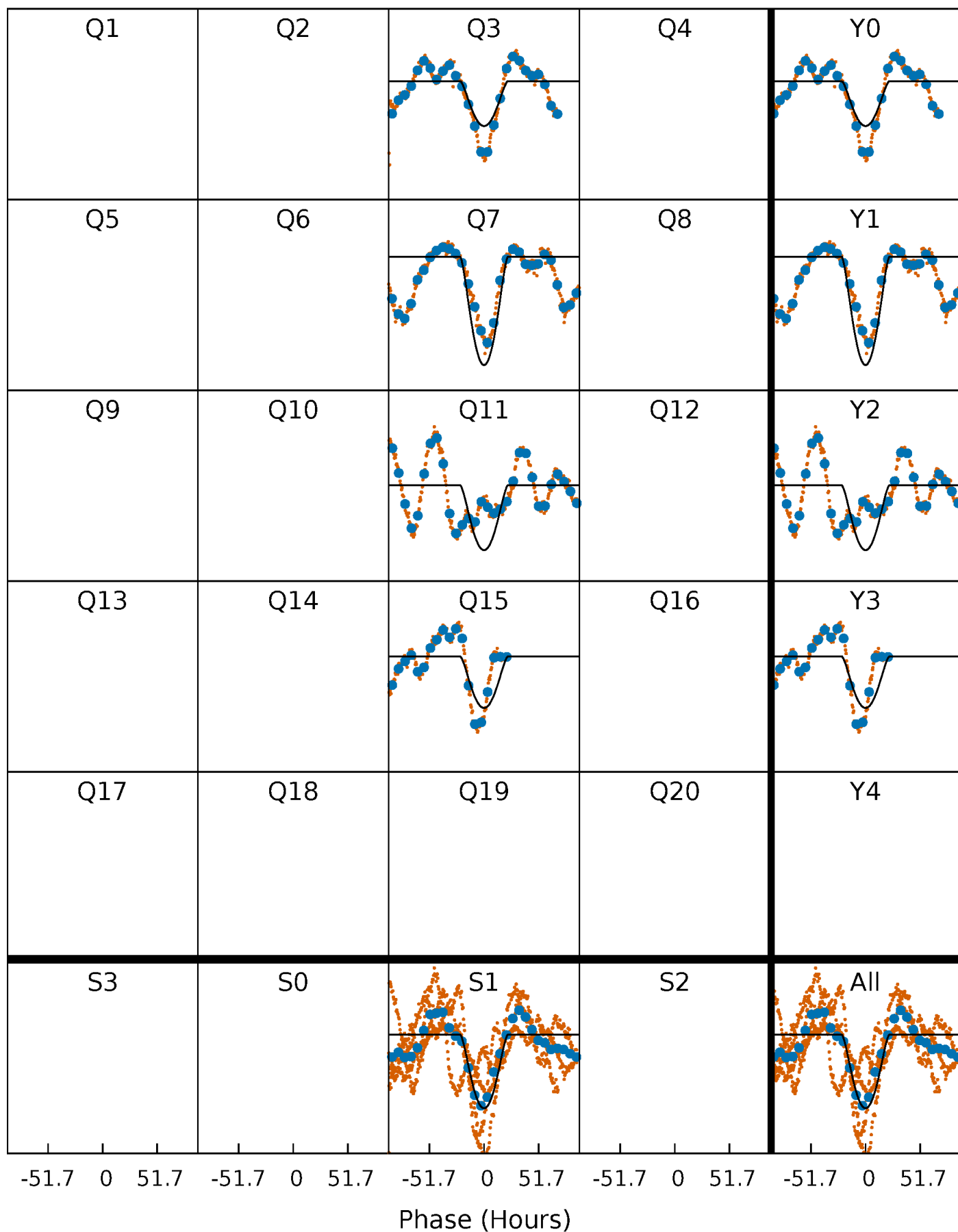
PDC Quarter-Phased Transit Curves

TCE 009347707-01 P=355.121617 Days $T_0=346.571104$ (BKJD)



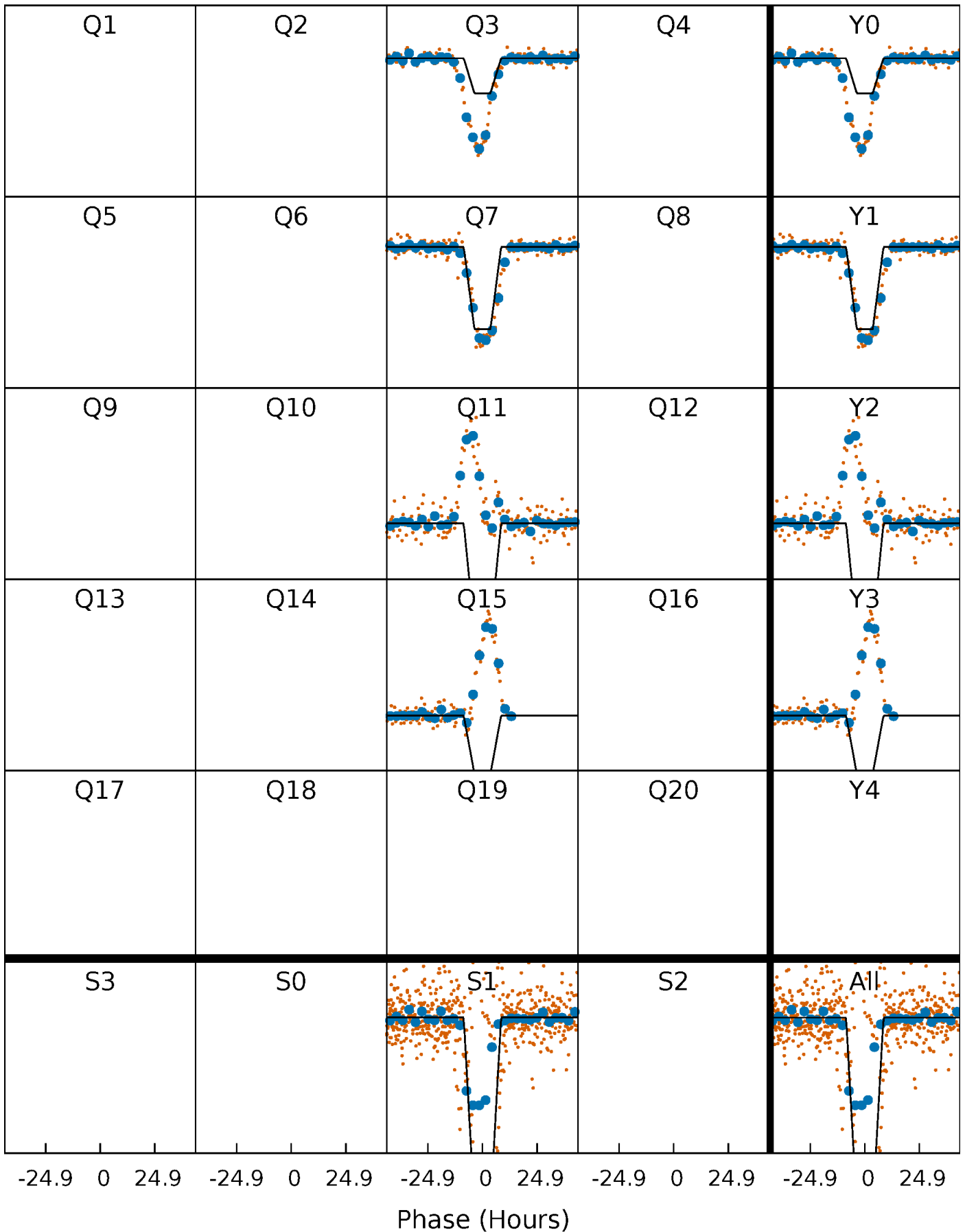
DV Quarter-Phased Transit Curves

TCE 009347707-01 P=355.121617 Days $T_0=346.571104$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

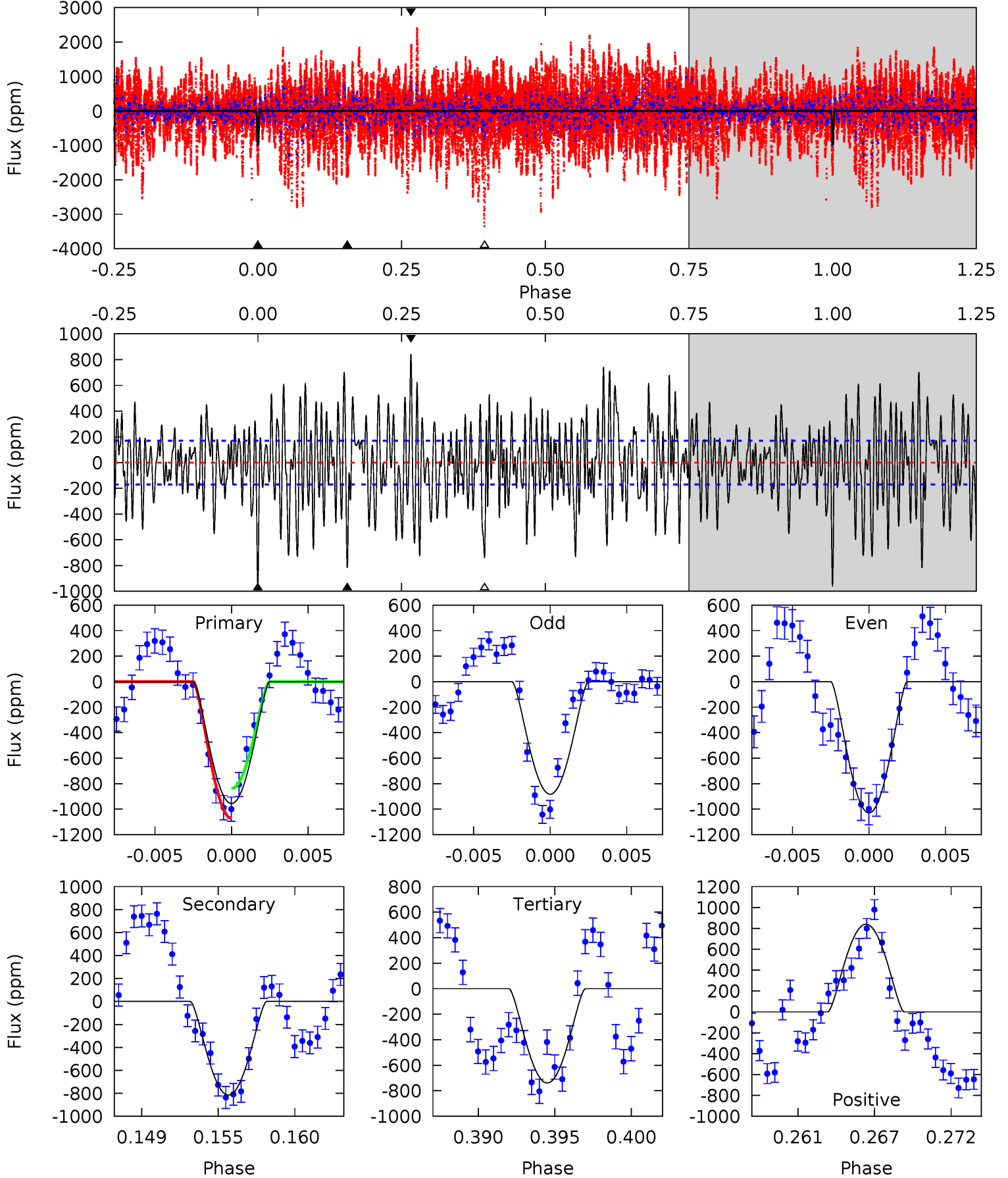
TCE 009347707-01 P=355.176140 Days $T_0=346.674758$ (BKJD)



DV Model-Shift Uniqueness Test

009347707-01, P = 355.121617 Days, E = 346.571104 Days

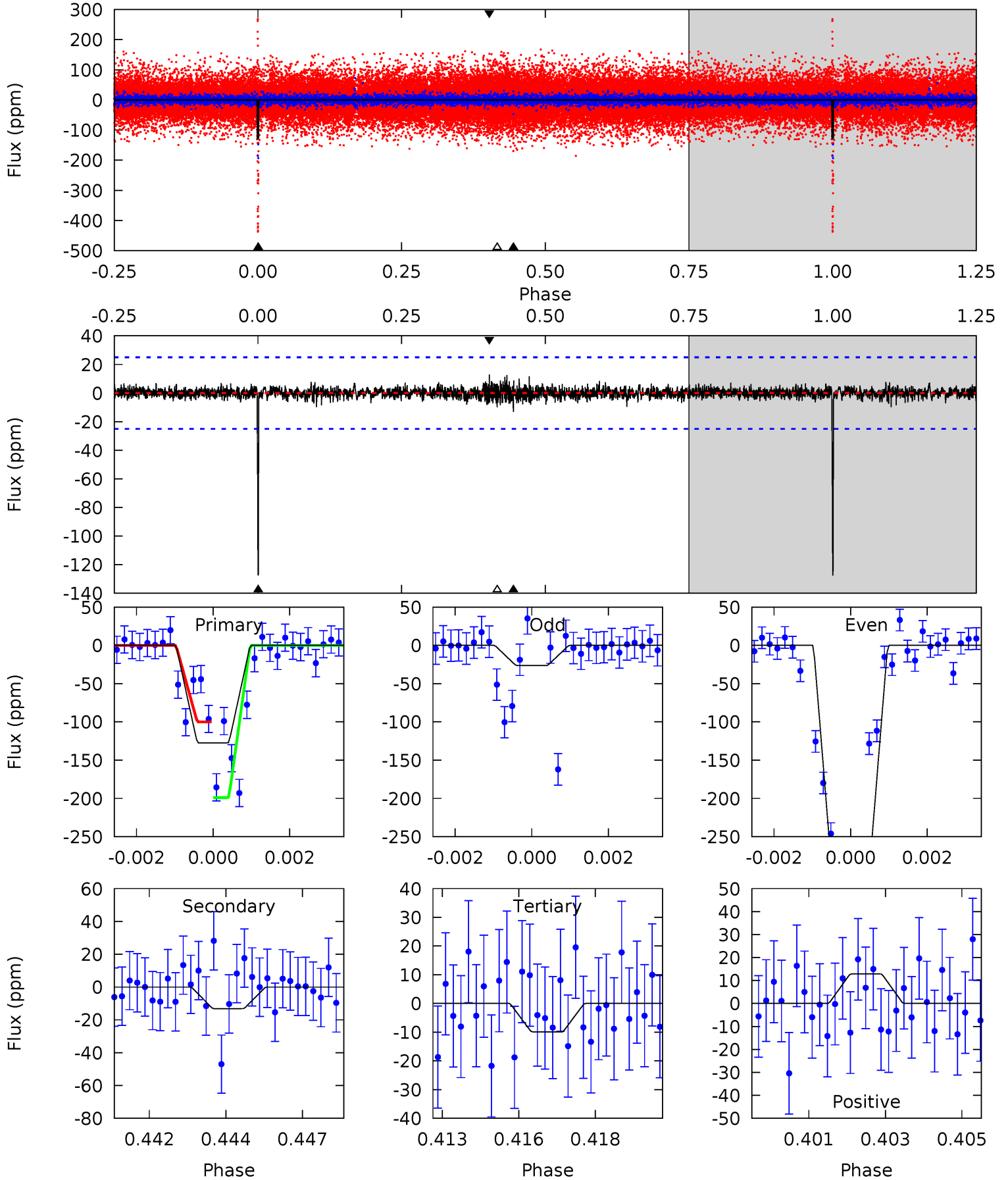
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.9	24.6	22.3	25.3	5.15	2.79	7.98	6.55	3.51	2.29	-0.75	2.16	1.08	0.47	3.53



Alt Model-Shift Uniqueness Test

009347707-01, P = 355.176140 Days, E = 346.674758 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.1	2.79	2.11	2.74	5.32	3.08	0.50	25.0	24.4	0.68	0.05	45.3	1.29	0.09	0



Stellar Parameters For KIC 009347707

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6243^{+197}_{-219}	$3.615^{+0.578}_{-0.102}$	$0.140^{+0.200}_{-0.300}$	$3.341^{+0.469}_{-1.875}$	$1.678^{+0.173}_{-0.519}$	$0.063^{+0.554}_{-0.014}$
	+3%/-4%	+16%/-3%	+143%/-214%	+14%/-56%	+10%/-31%	+874%/-22%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009347707-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-815 ± 33	$18.83^{+13.71}_{-10.83}$	633^{+47}_{-88}	4509^{+2066}_{-718}	1725^{+7500}_{-1145}
Alt.	-13 ± 5	$11.37^{+10.96}_{-7.92}$	635^{+46}_{-93}	2737^{+1090}_{-419}	71^{+660}_{-54}

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

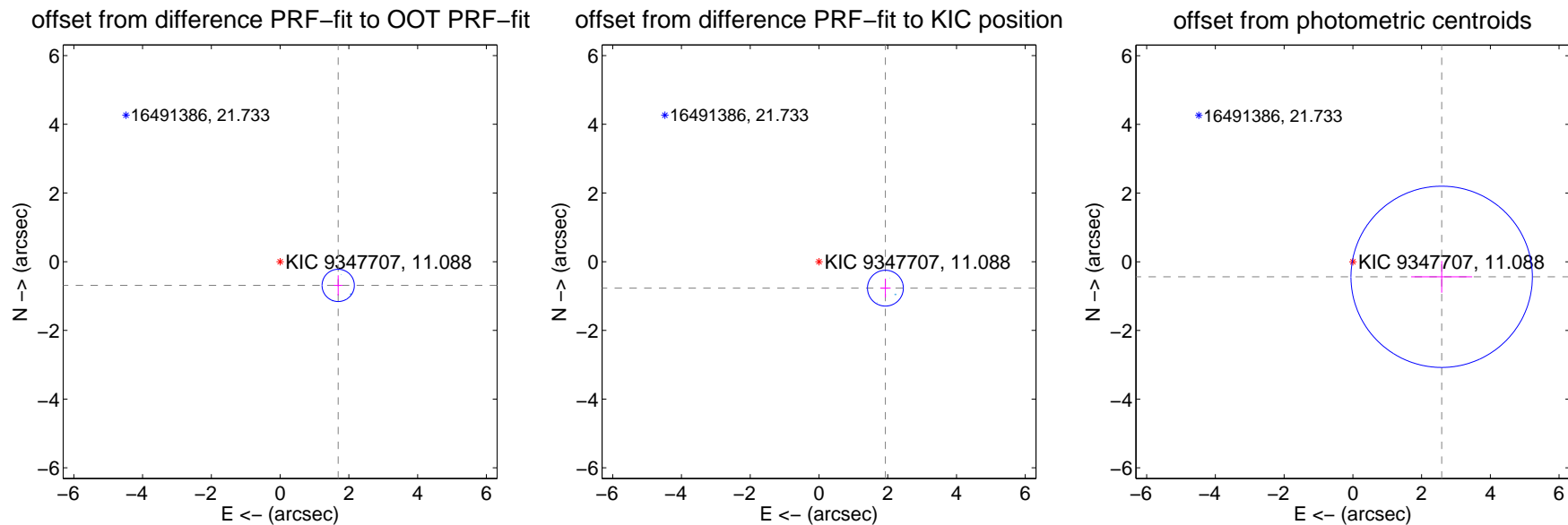
DV Centroid Data

Supplemental centroid analysis for 009347707-01. **Kepler magnitude: 11.09.** Transit SNR 23.85

There are 3 quarters with good PRF difference image offsets

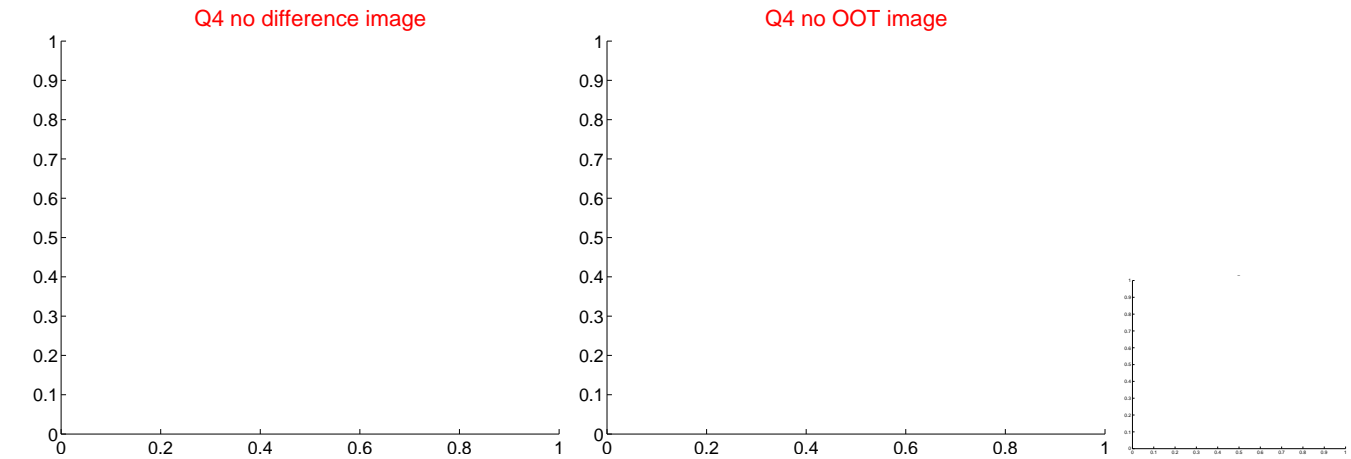
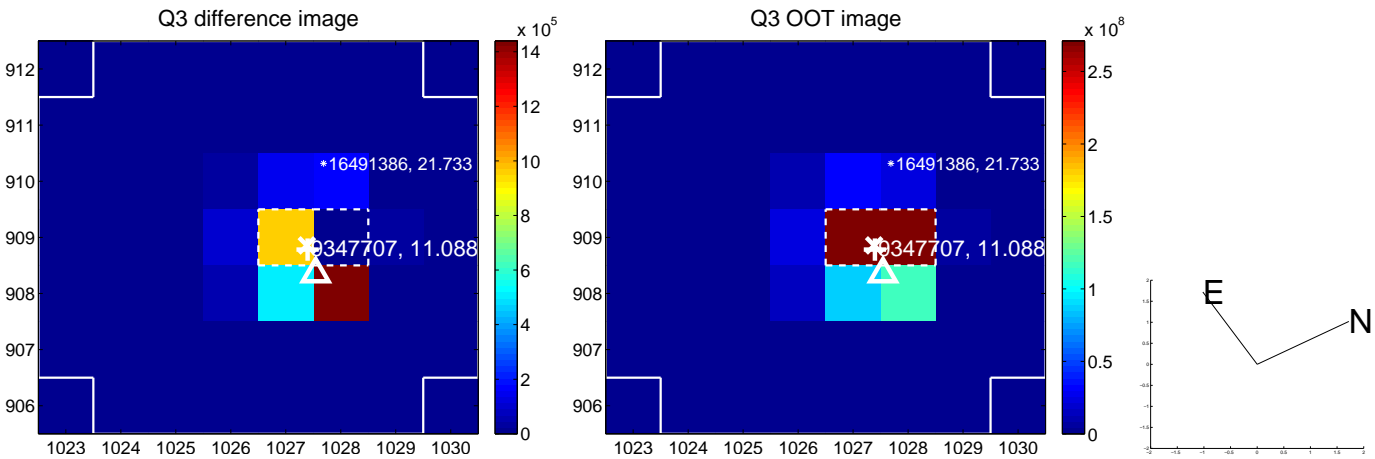
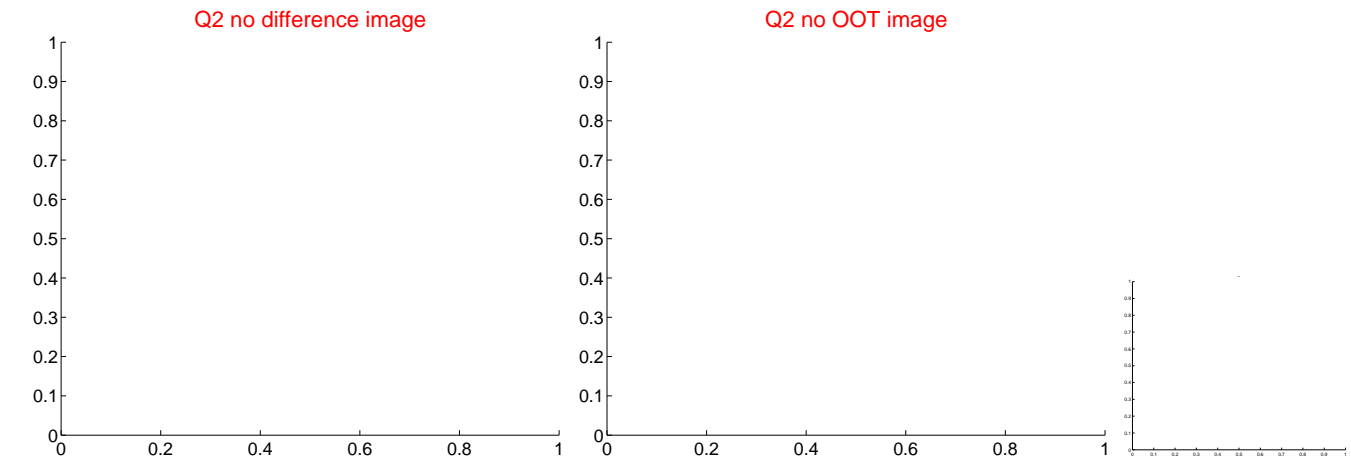
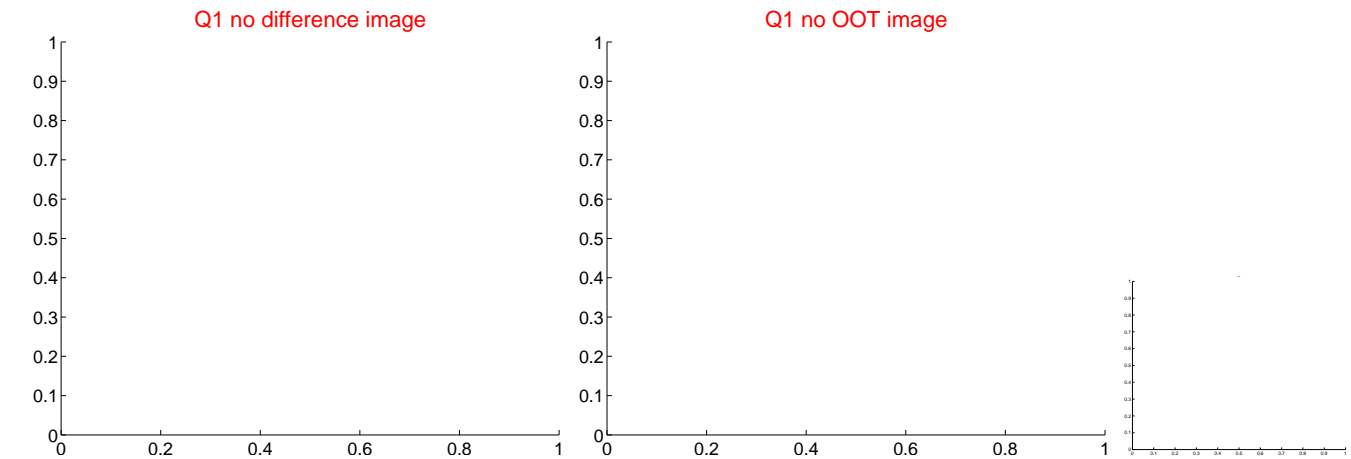
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.825 ± 0.156	11.67	-1.690 ± 0.119	-0.690 ± 0.295
PRF-fit source offset from KIC position	2.080 ± 0.174	11.97	-1.932 ± 0.152	-0.771 ± 0.275
photometric centroid source offset	2.62 ± 0.88	2.98	-2.58 ± 0.89	-0.44 ± 0.46

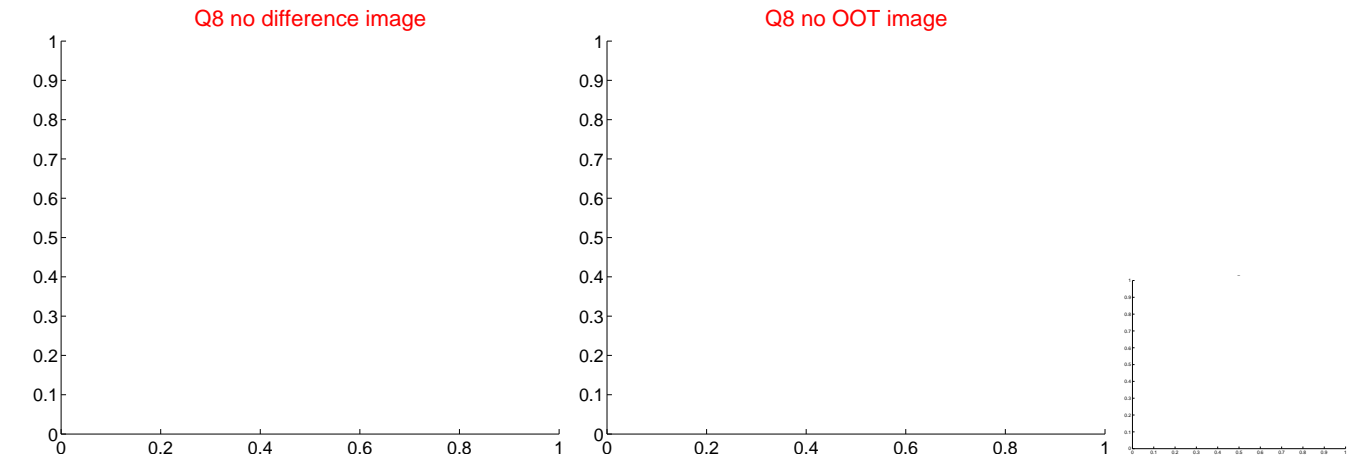
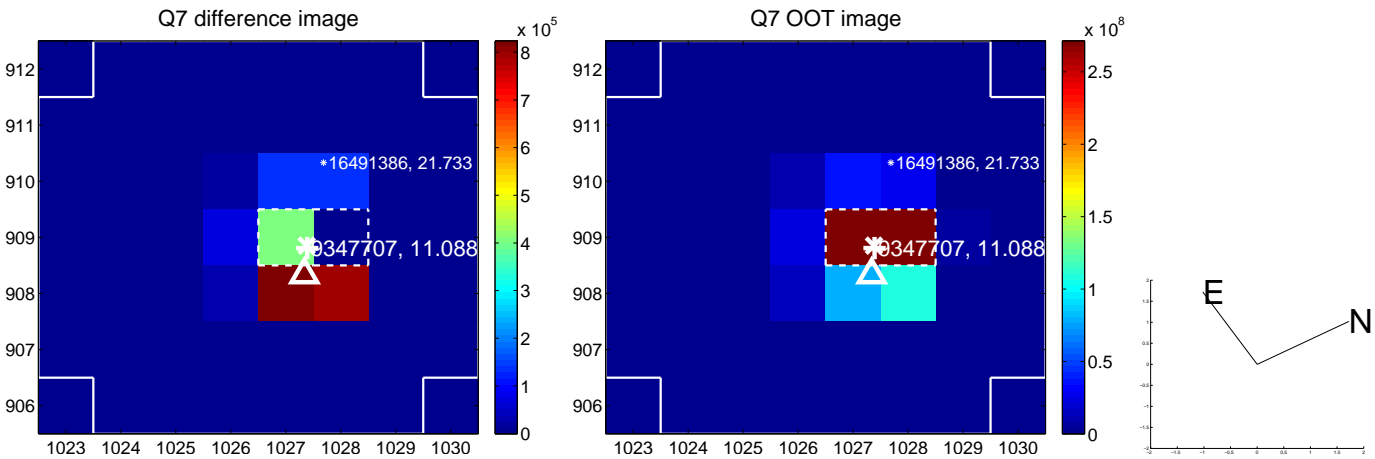
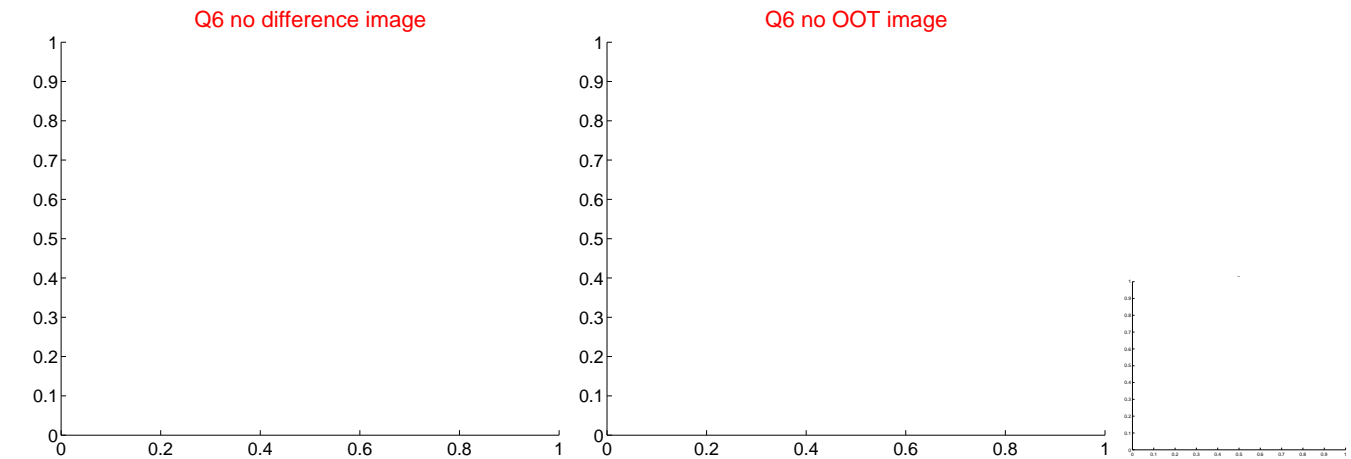
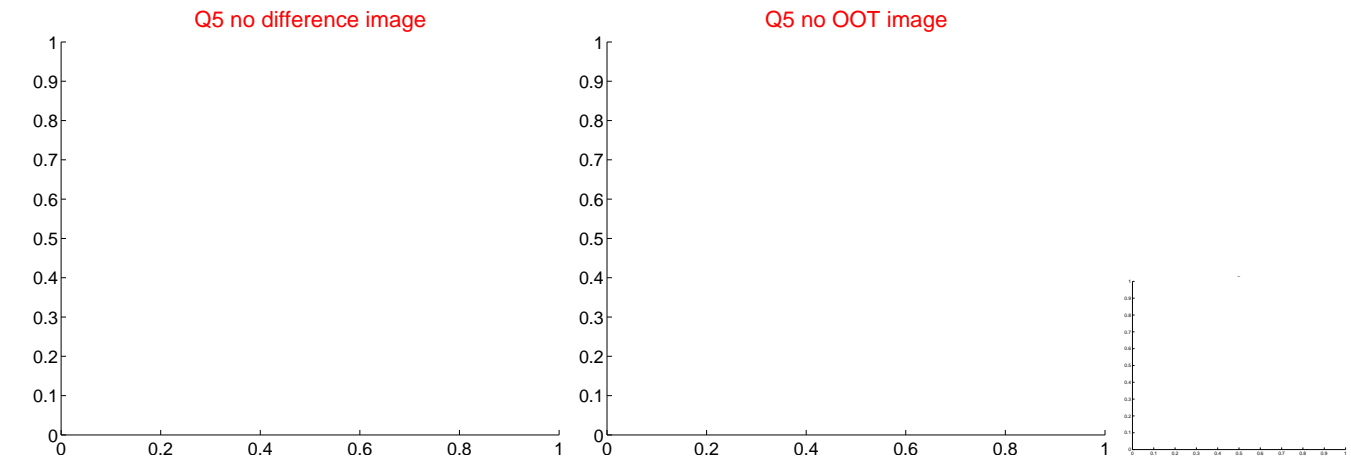


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

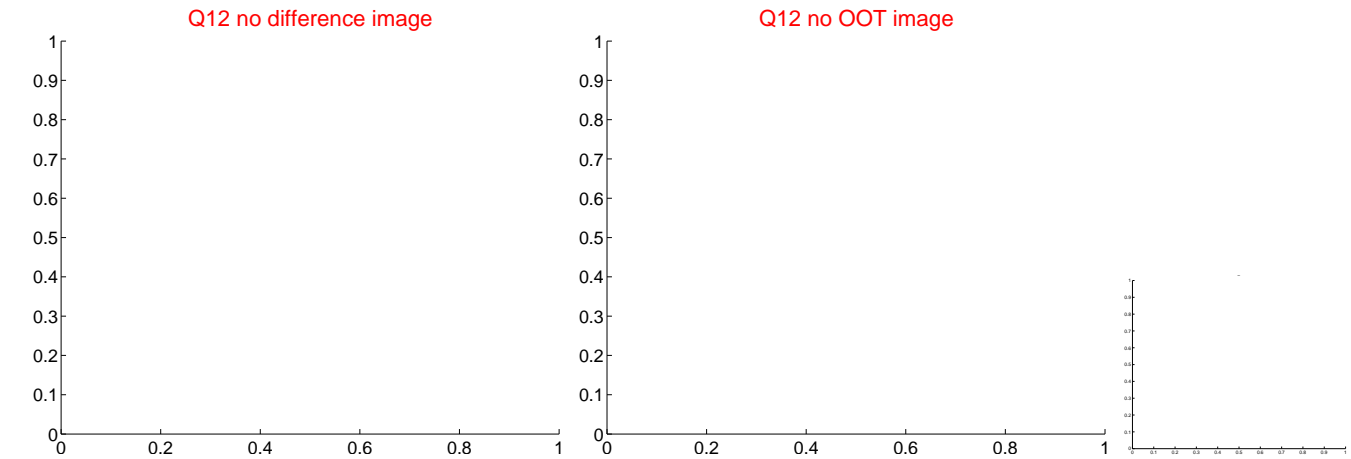
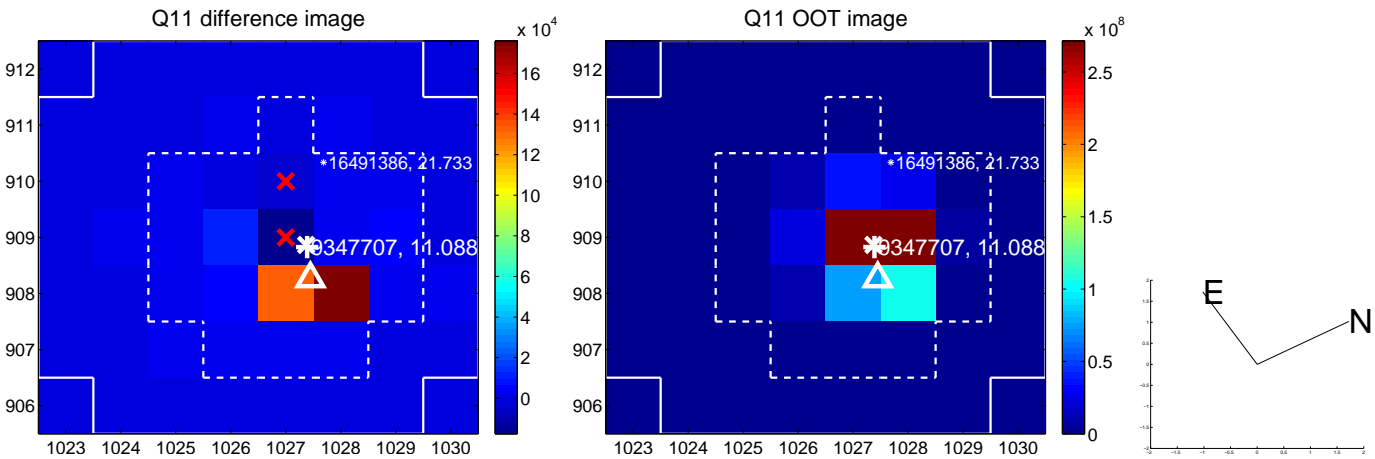
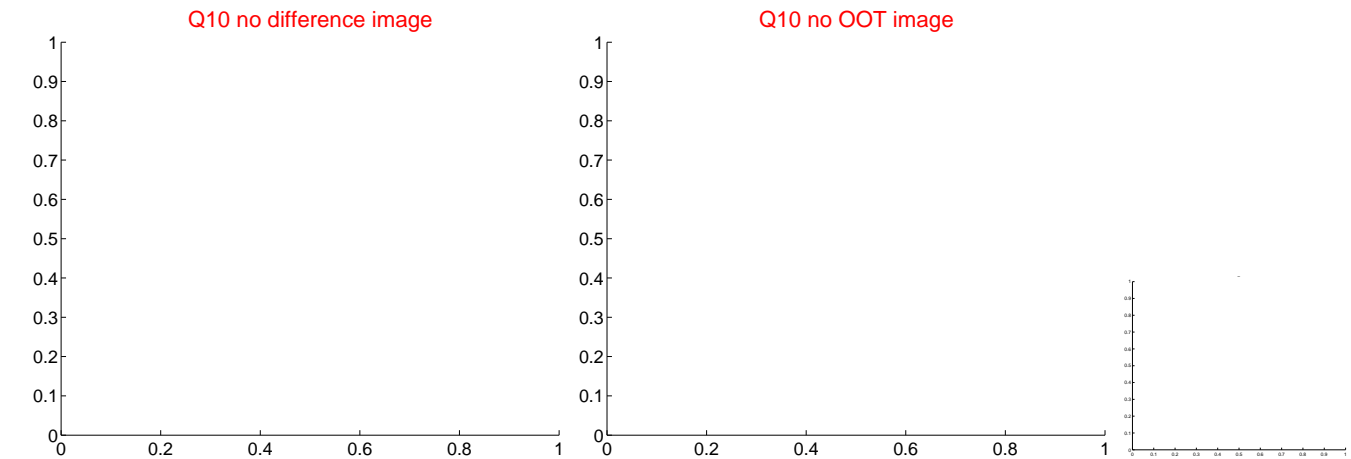
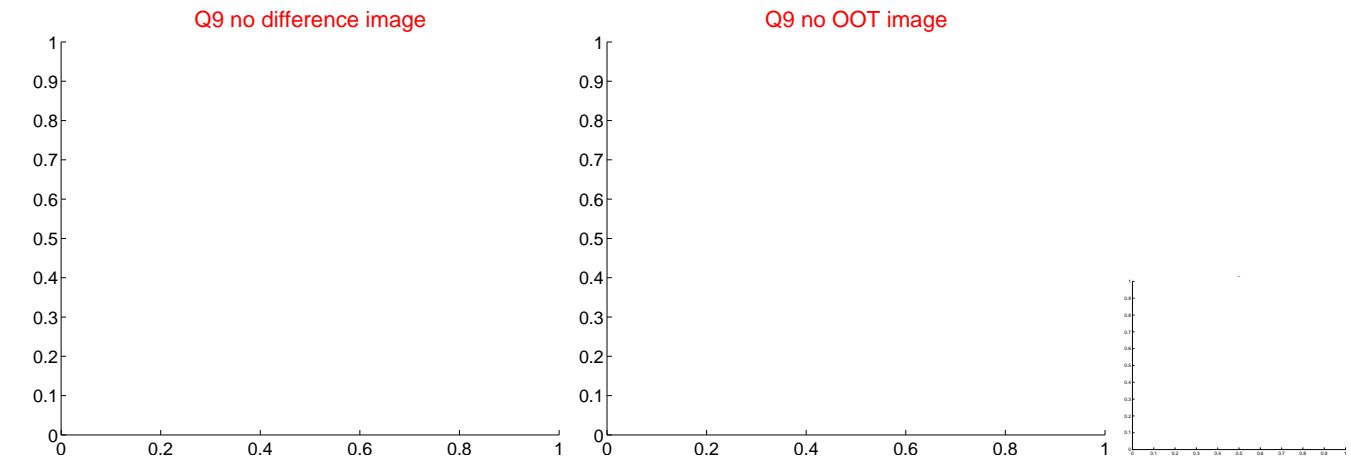
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



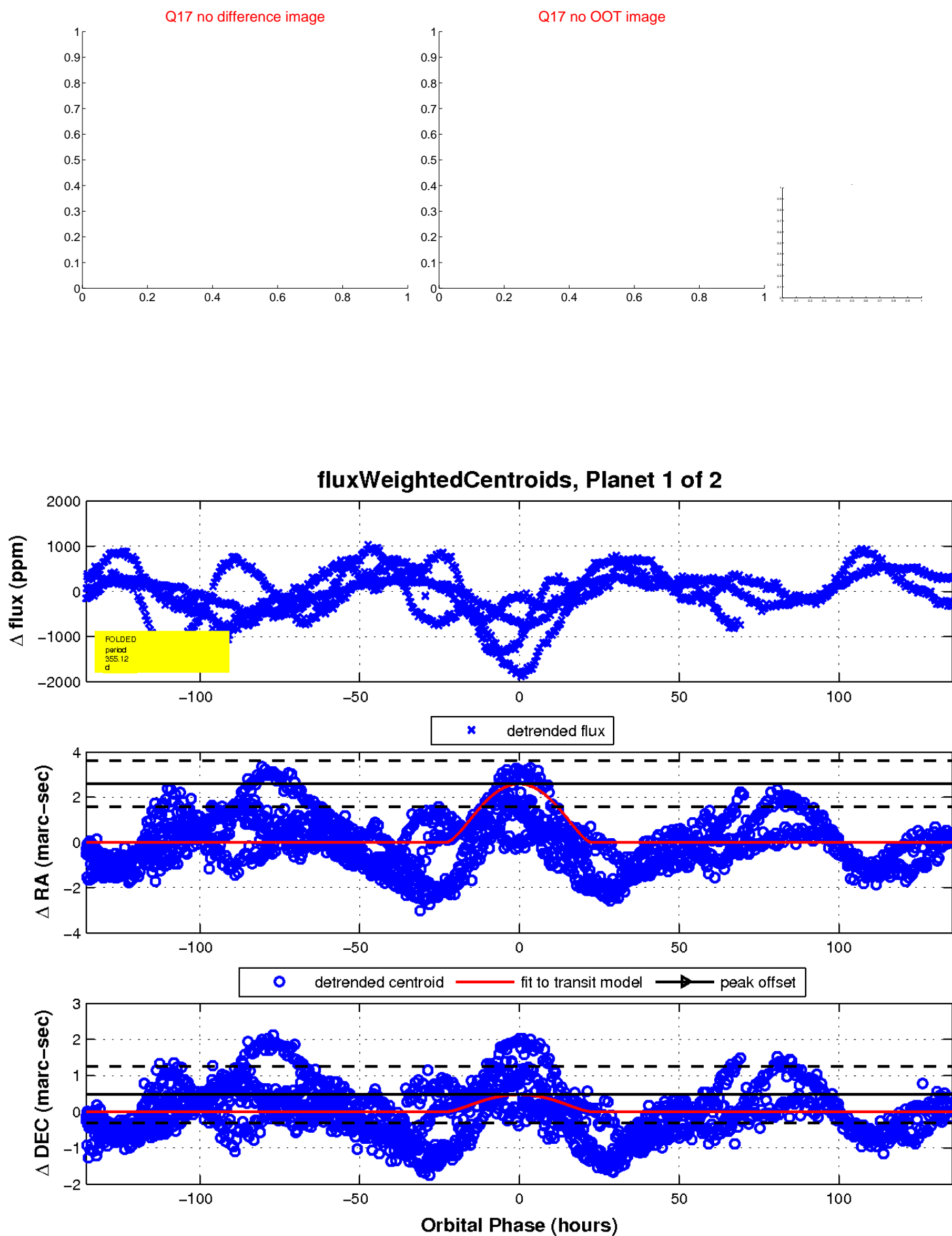
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

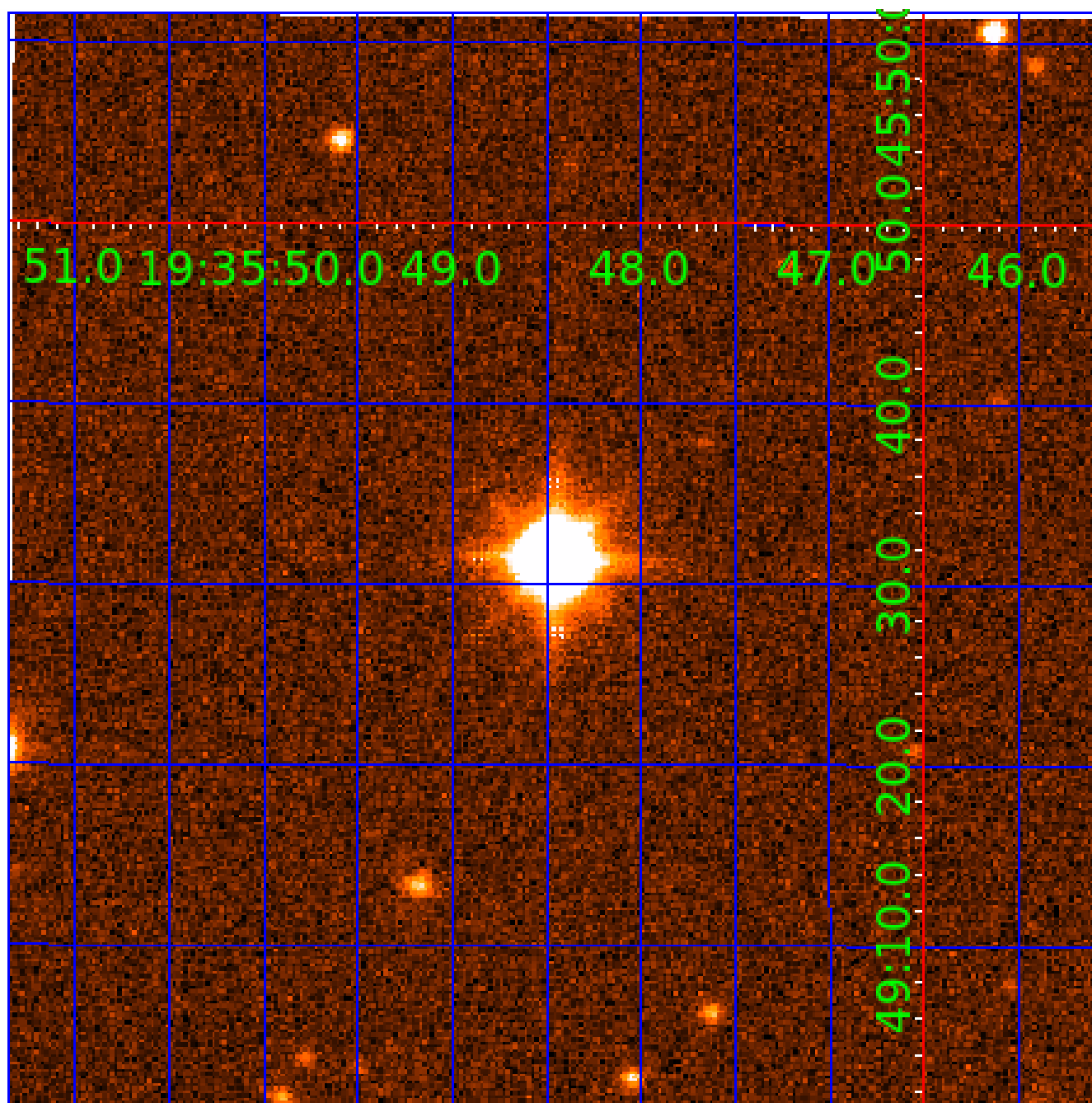


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009347707

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})
009347707-01	OBS	No	355.121617	346.571104	1046.2	45.197	16.0	23.9	3.34	6243	20.61	11.17
009347707-02	OBS	No	493.037641	223.018404	579.5	30.468	10.9	13.1	3.34	6243	13.58	7.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009347707-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
009347707-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

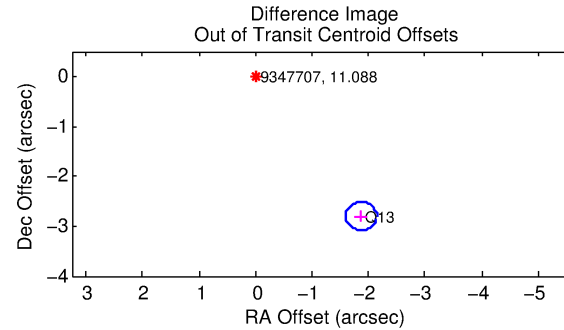
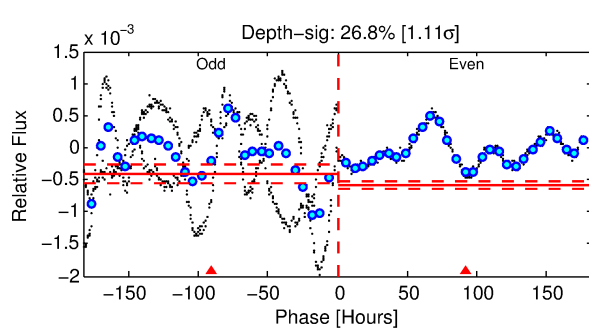
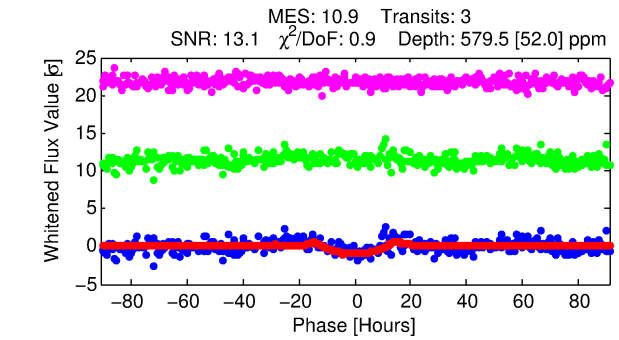
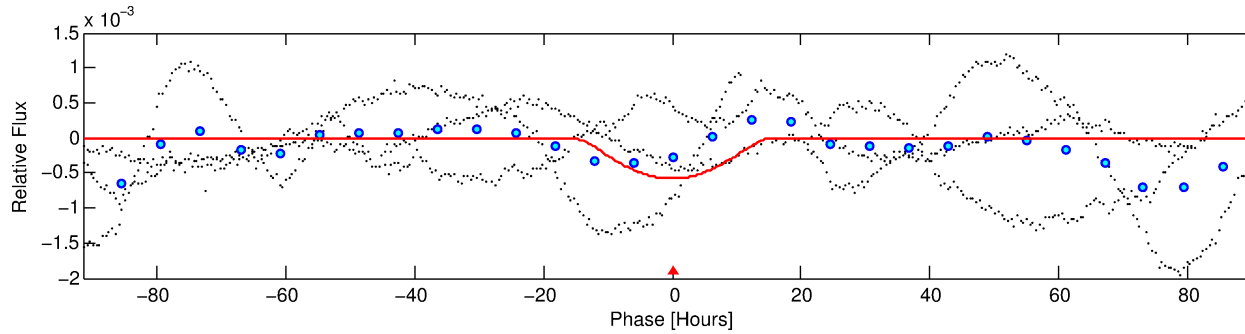
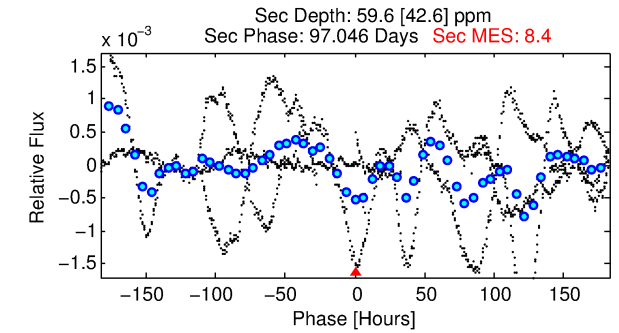
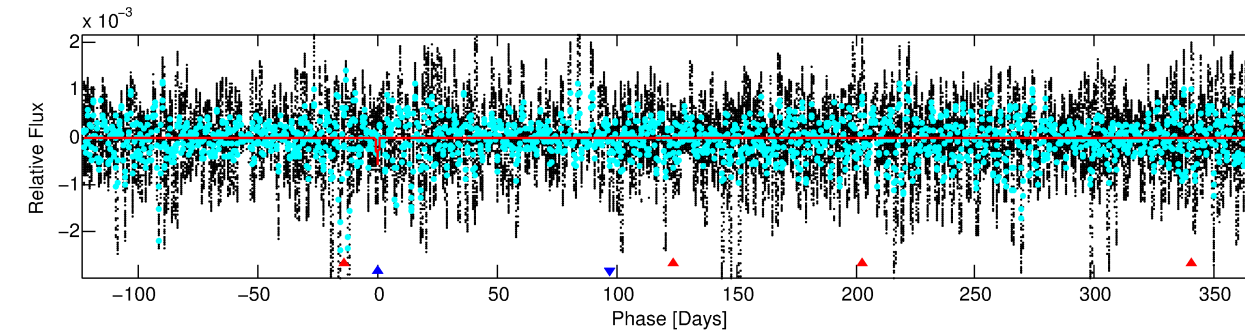
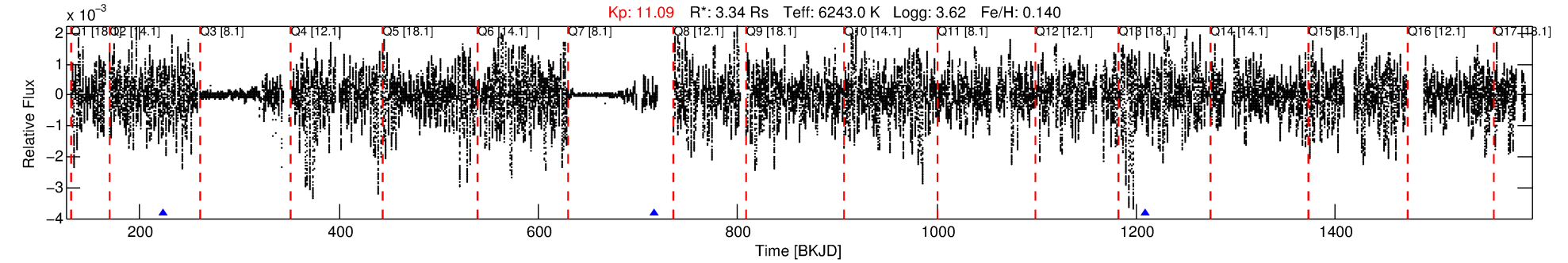
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009347707-02

No Significant Match Found

DV One-Page Summary

KIC: 9347707 Candidate: 2 of 2 Period: 493.038 d



DV Fit Results:

Period = 493.03764 [0.06460] d
Epoch = 223.0184 [0.0685] BKJD
Rp/R* = 0.0373 [0.0255]
a/R* = 37.82 [7.12]
b = 0.99 [0.04]
Seff = 7.21 [7.02]
Teq = 418 [102] K
Rp = 13.58 [12.01] Re
a = 1.4517 [0.8425] AU
Ag = 374.82 [681.62] [0.55σ]
Teffp = 2842 [1101] K [2.19σ]

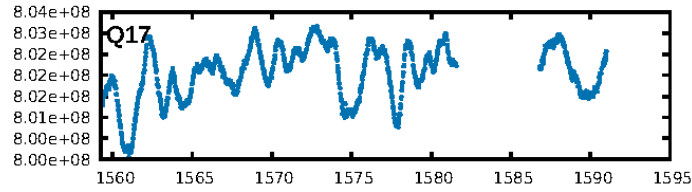
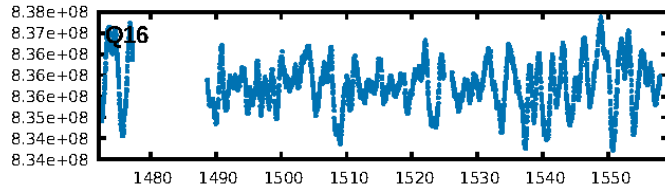
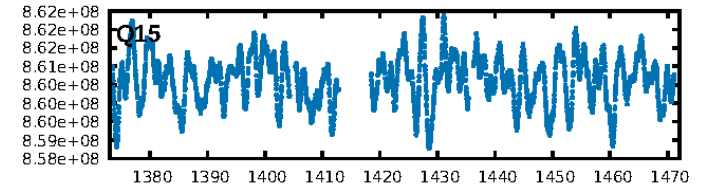
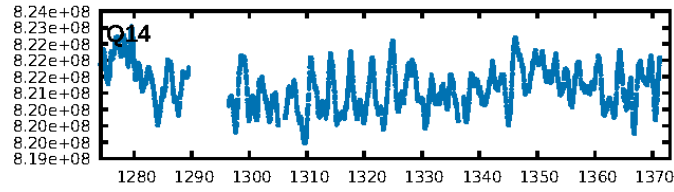
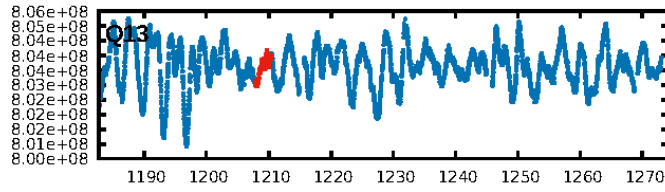
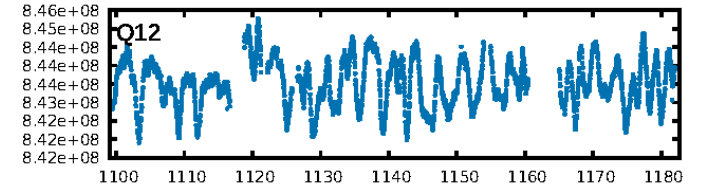
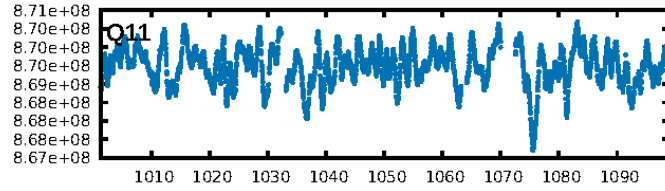
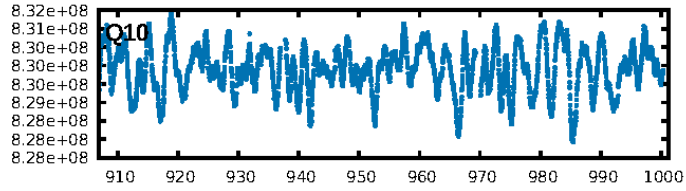
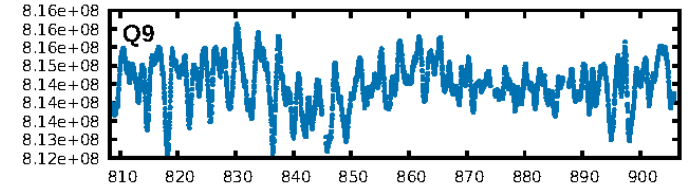
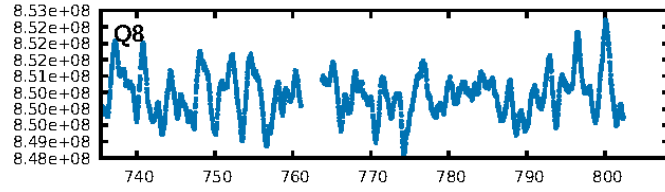
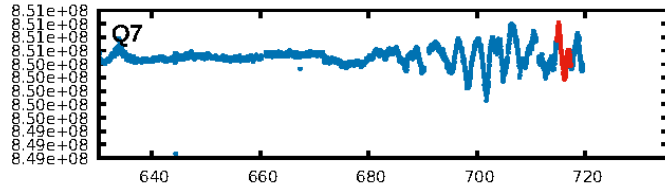
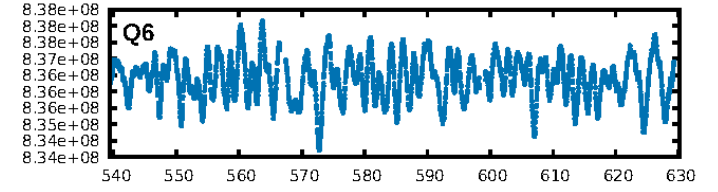
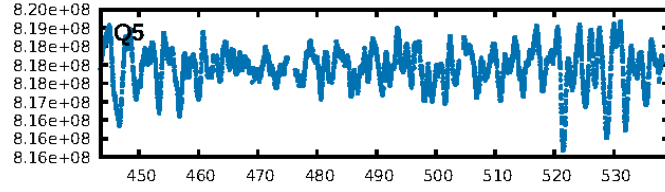
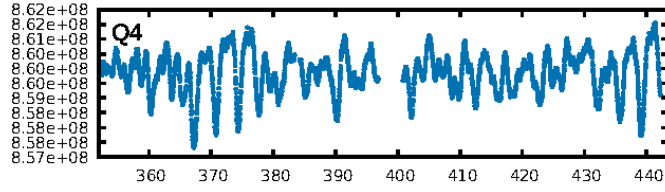
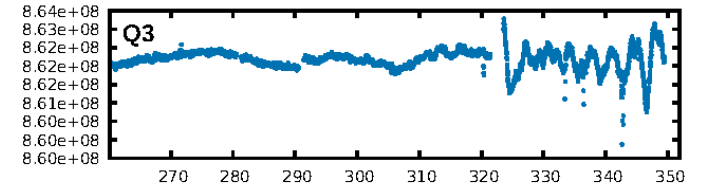
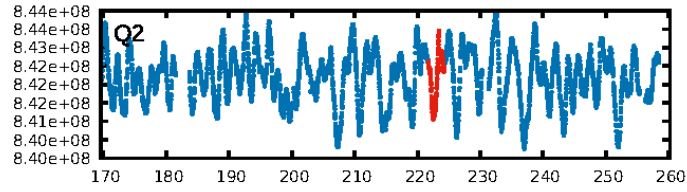
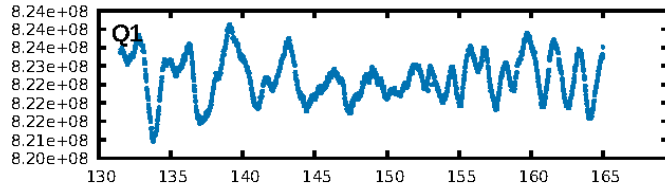
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.73σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 88.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.35e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.073
Centroid-sig: 20.4%
Centroid-so: 2.227 arcsec [1.28σ]
OotOffset-rm: 3.364 arcsec [35.61σ]
KicOffset-rm: 3.243 arcsec [34.27σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [1/1]

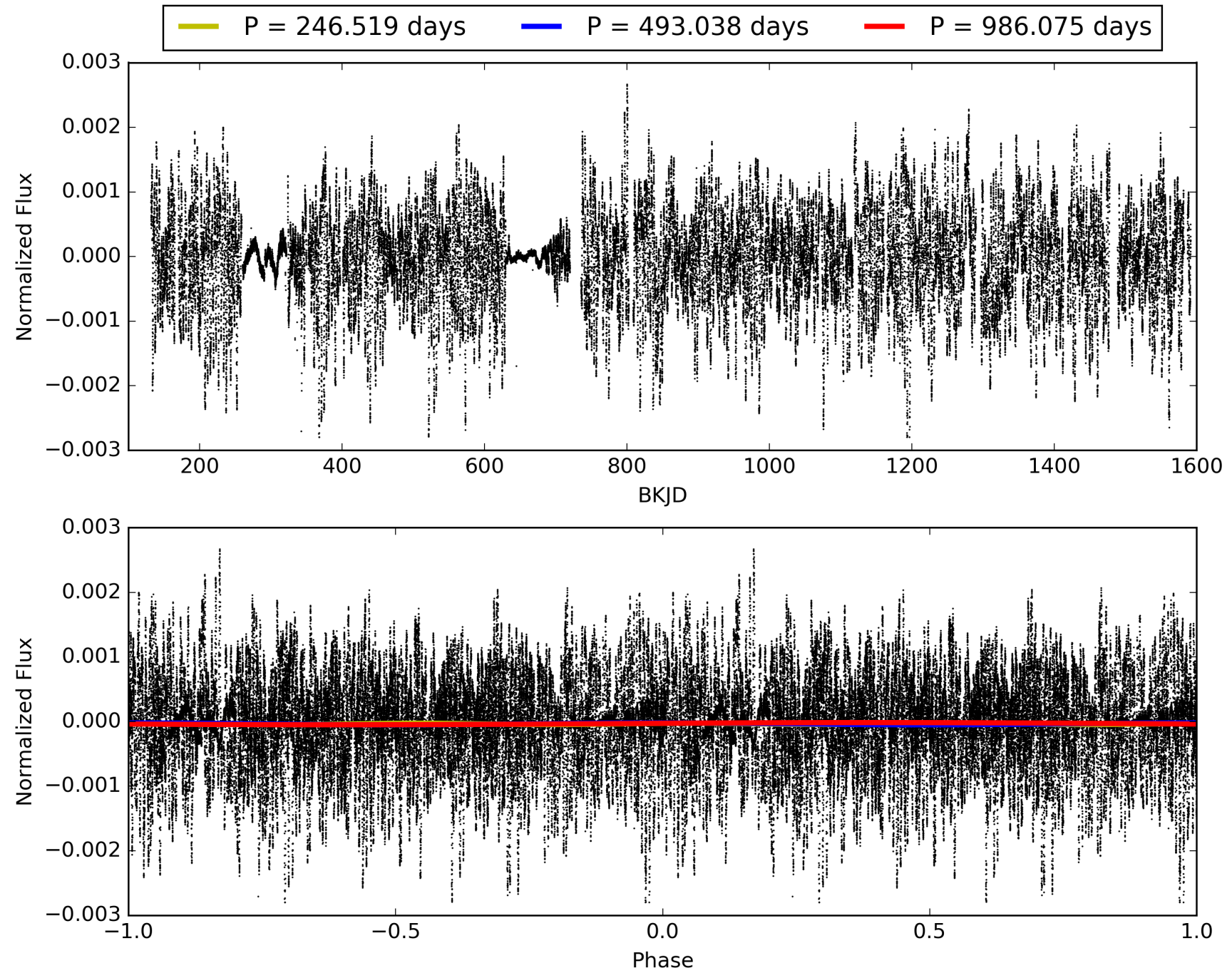
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:54:18 Z

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

TCE 009347707-02, PDC Light Curves

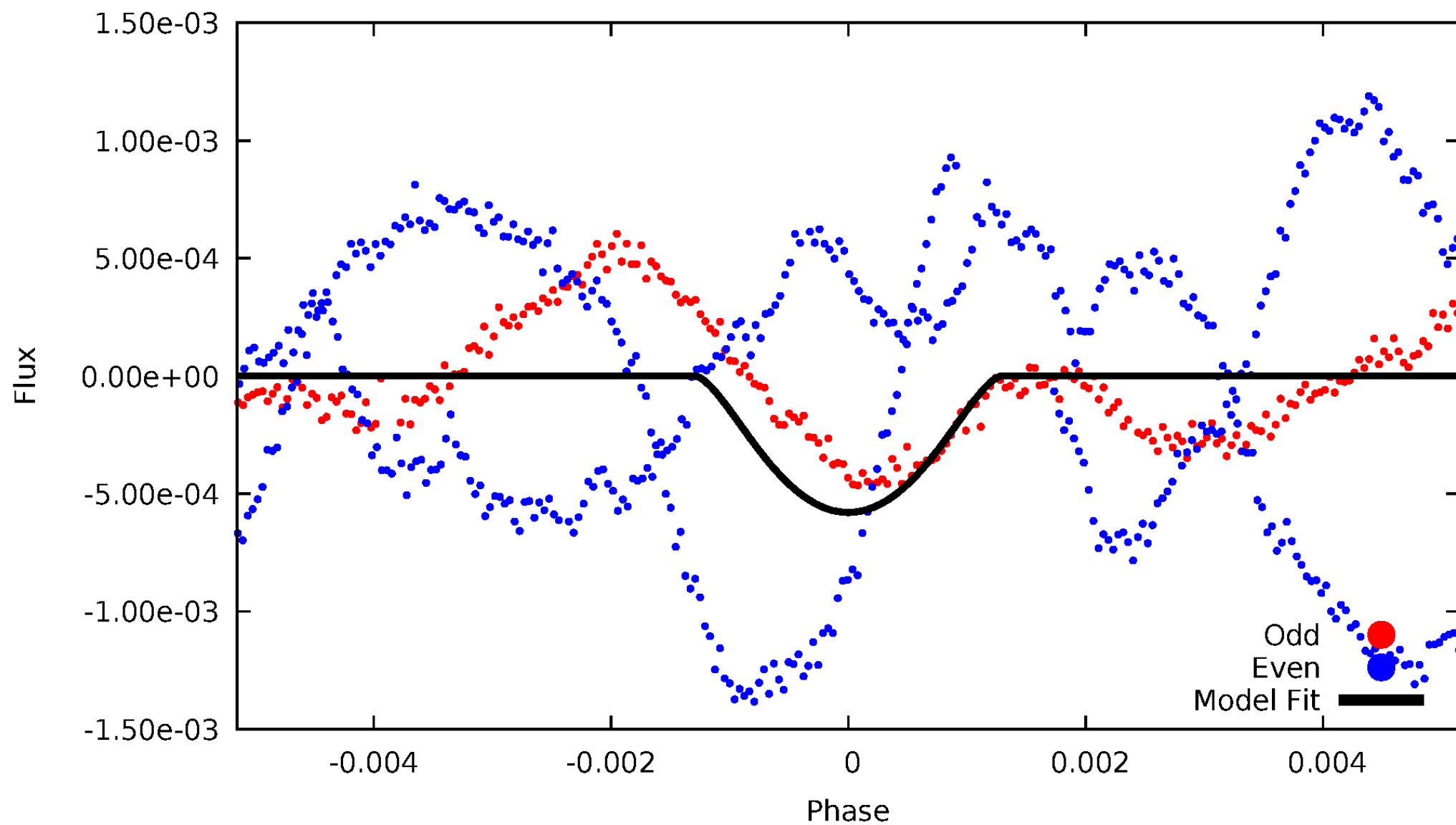


TCE 009347707-02



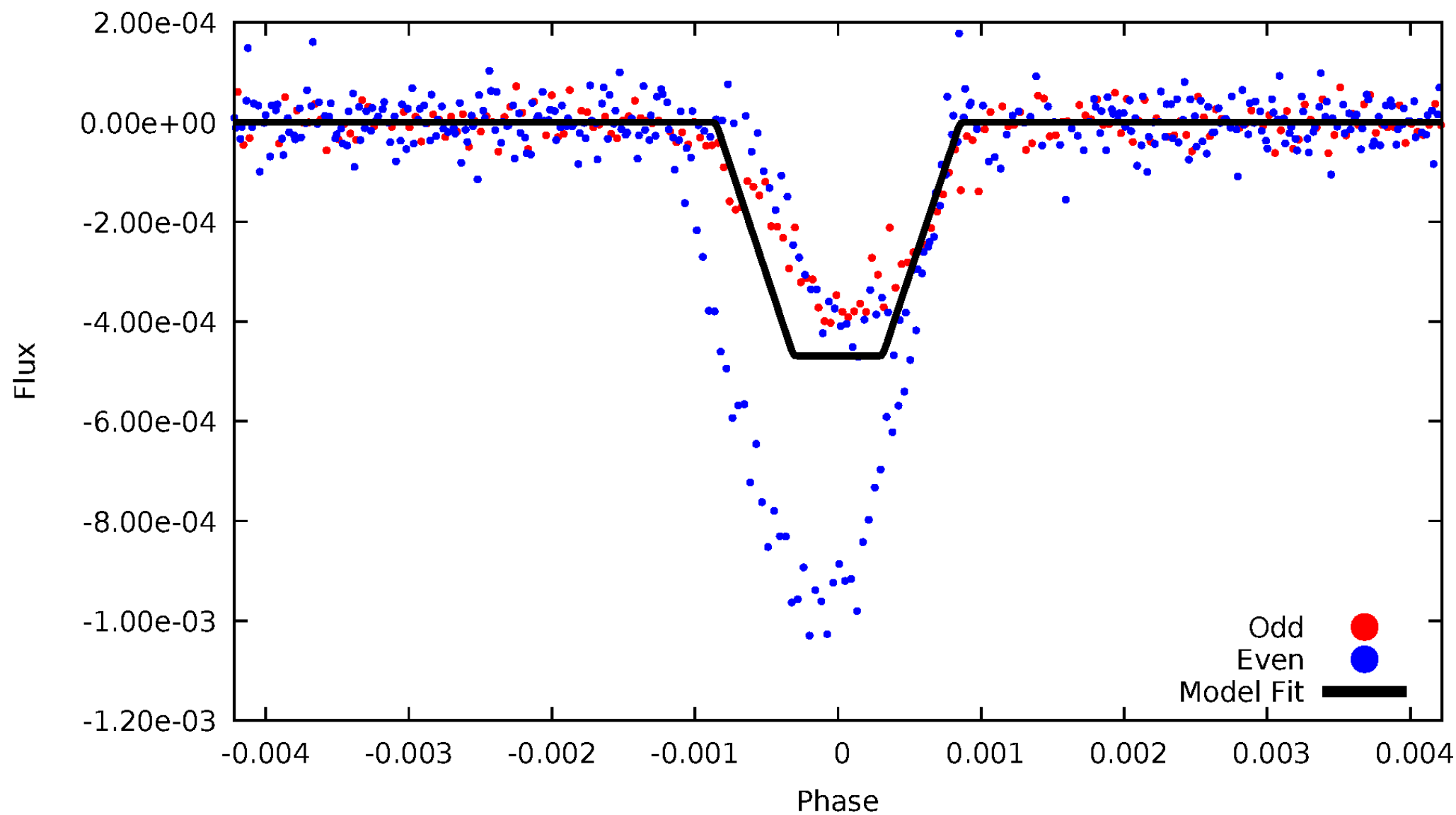
DV Odd/Even

TCE 009347707-02



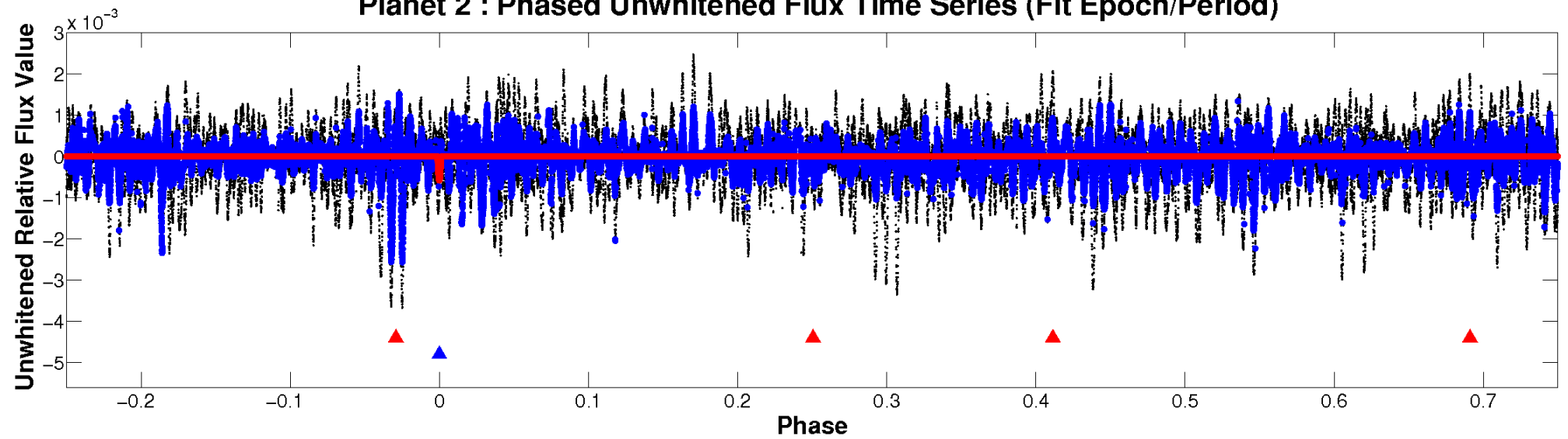
ALT Odd/Even

TCE 009347707-02

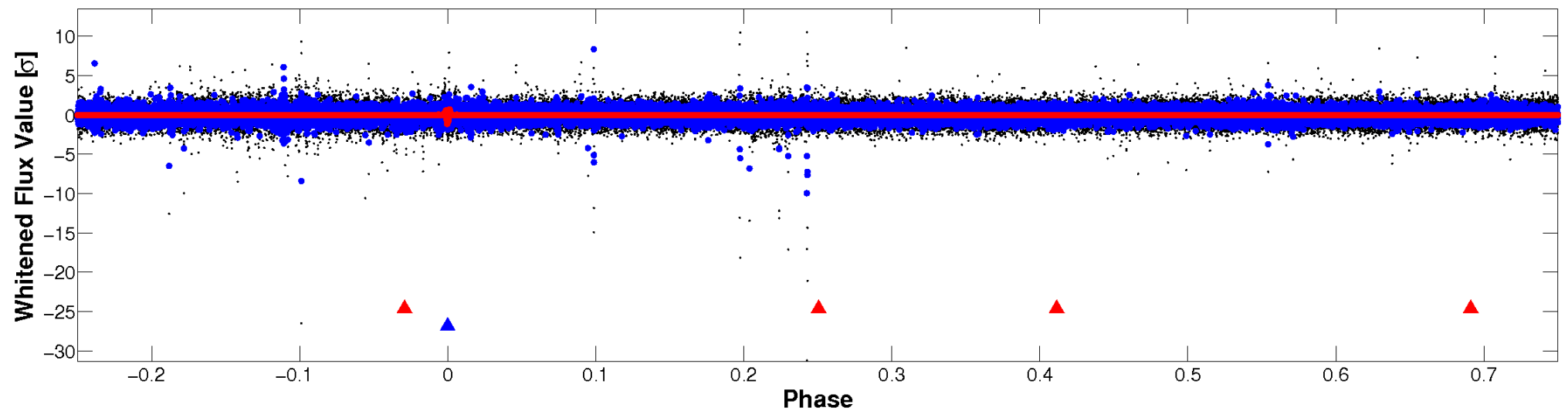


Non-Whitened Vs. Whitened Light Curve

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

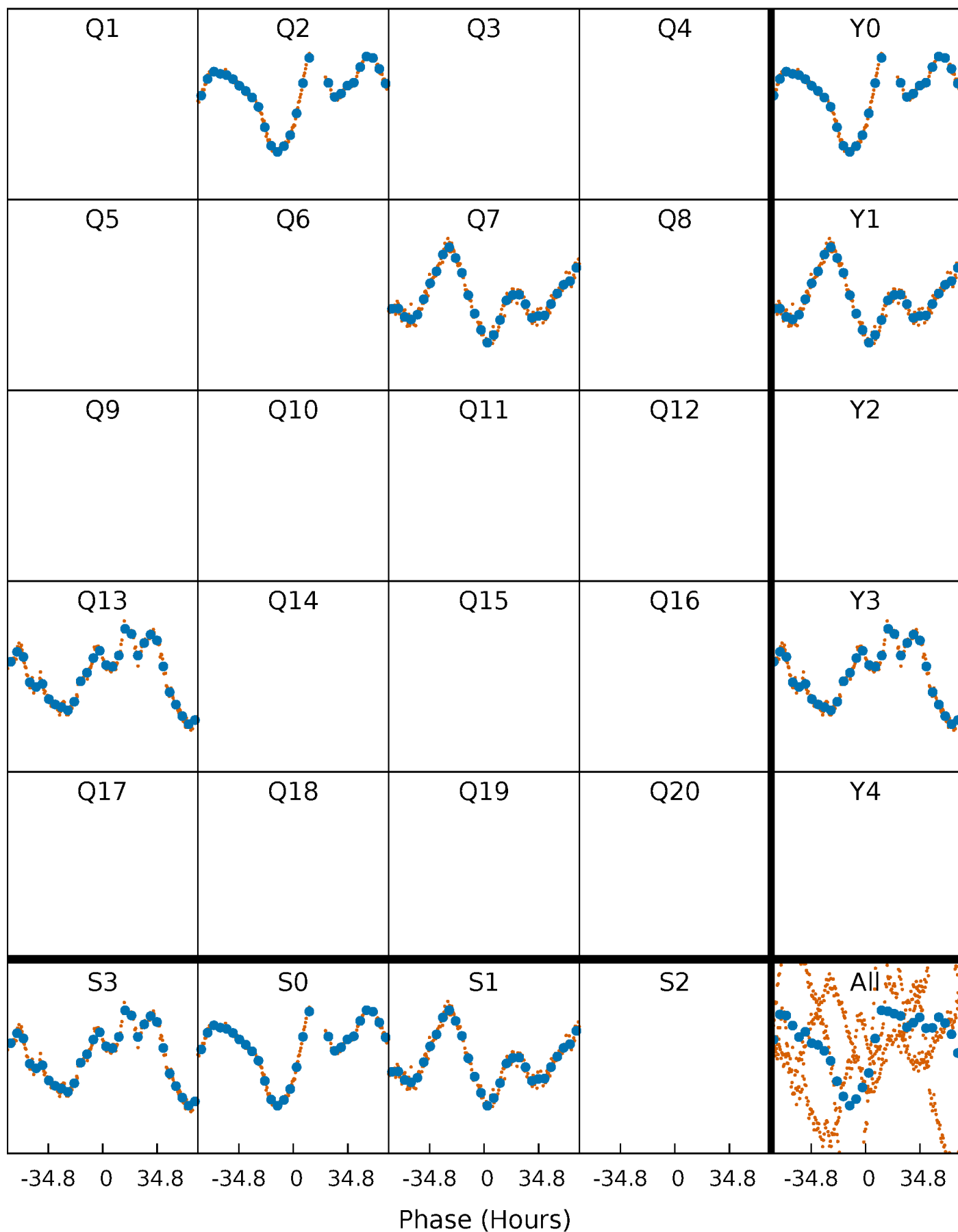


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



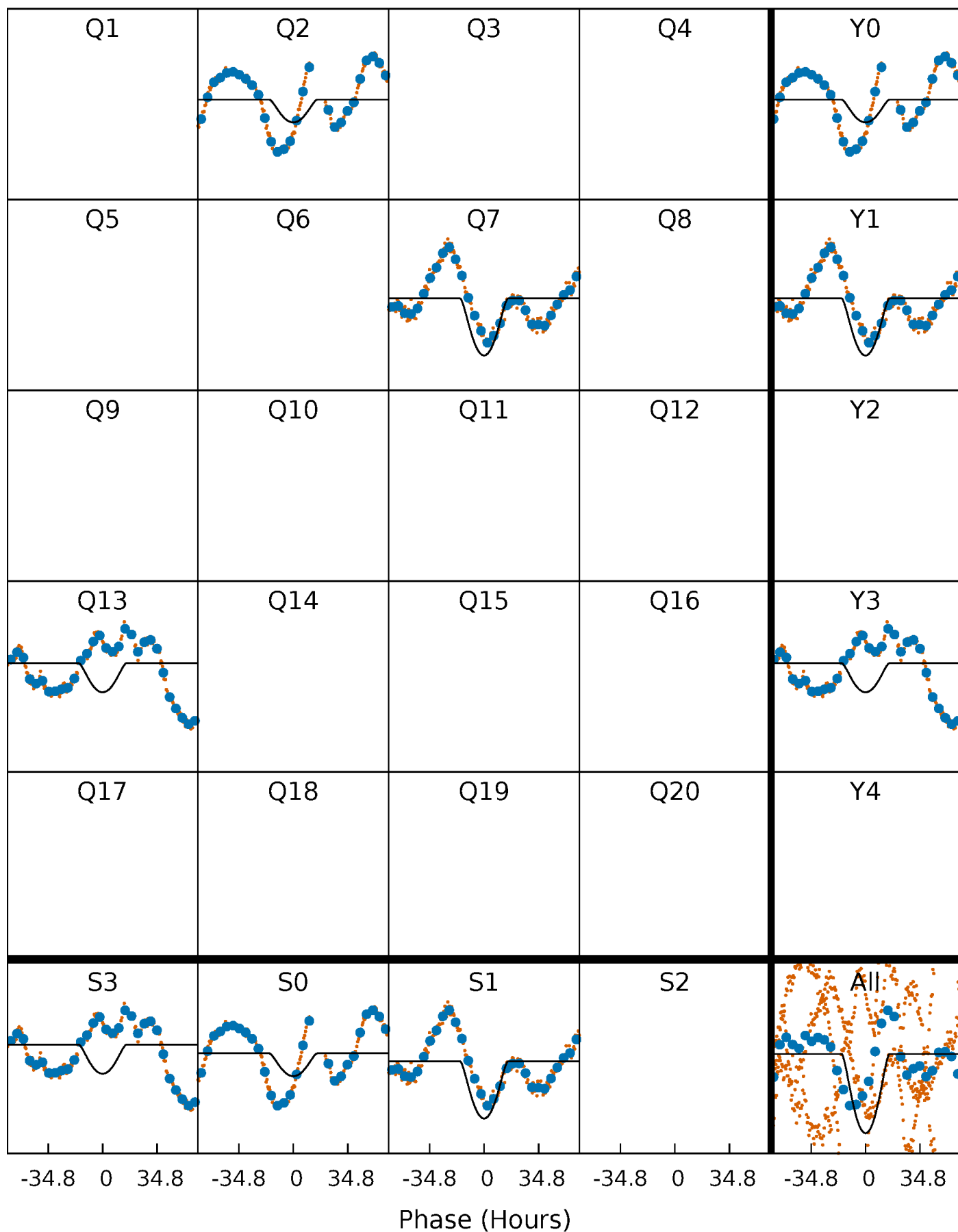
PDC Quarter-Phased Transit Curves

TCE 009347707-02 $P=493.037641$ Days $T_0=223.018404$ (BKJD)



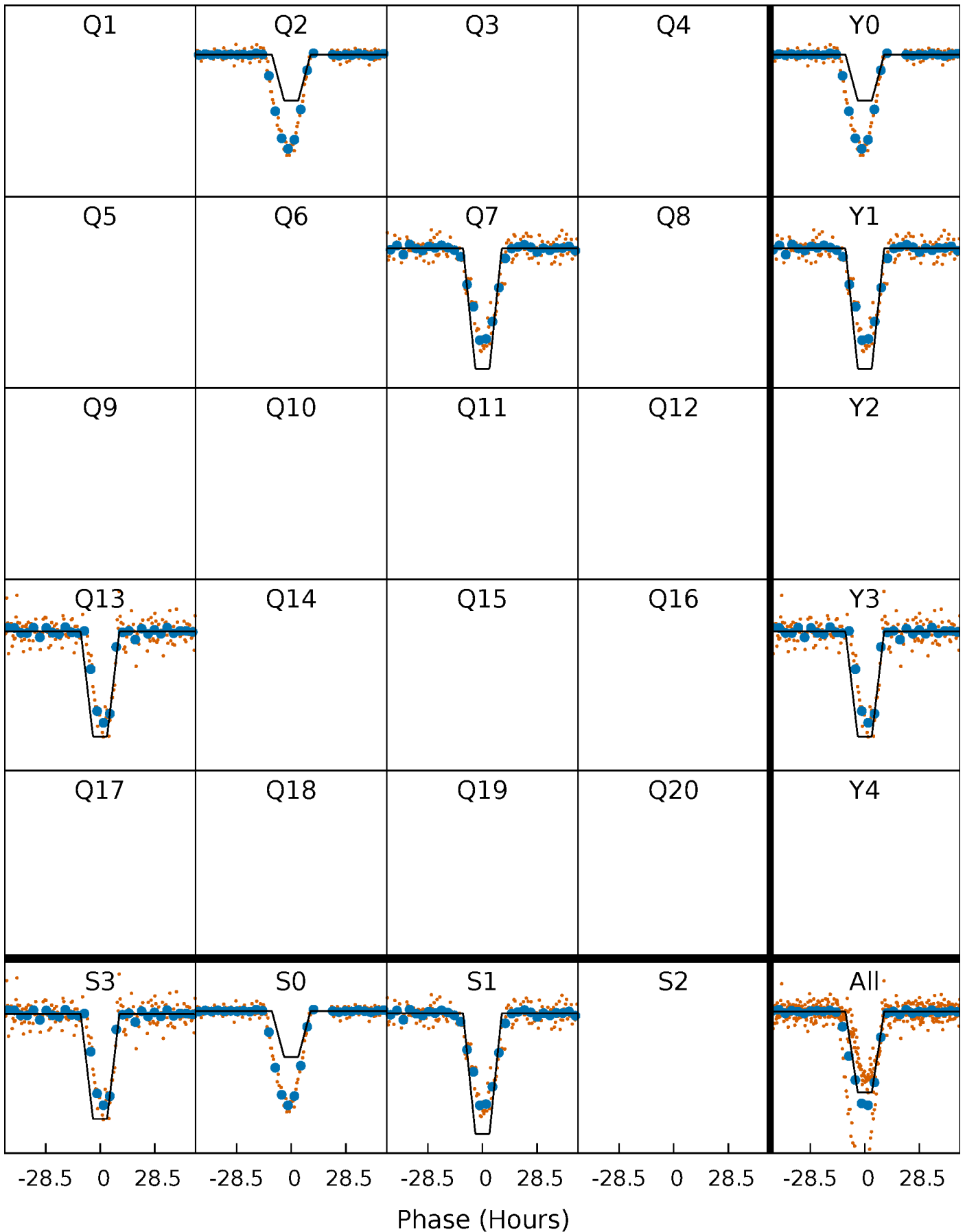
DV Quarter-Phased Transit Curves

TCE 009347707-02 P=493.037641 Days $T_0=223.018404$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

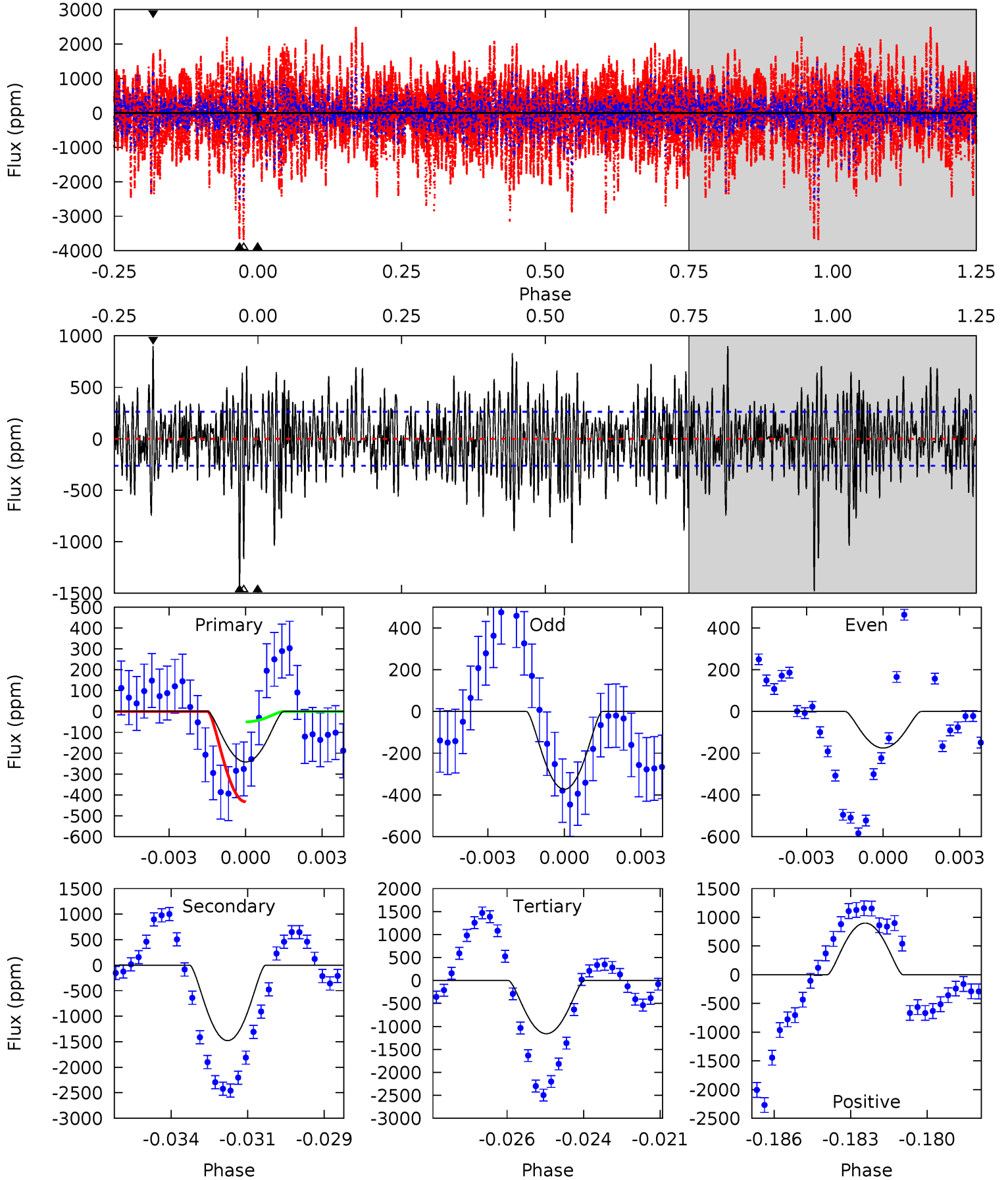
TCE 009347707-02 P=493.129915 Days $T_0=222.991521$ (BKJD)



DV Model-Shift Uniqueness Test

009347707-02, P = 493.037641 Days, E = 223.018404 Days

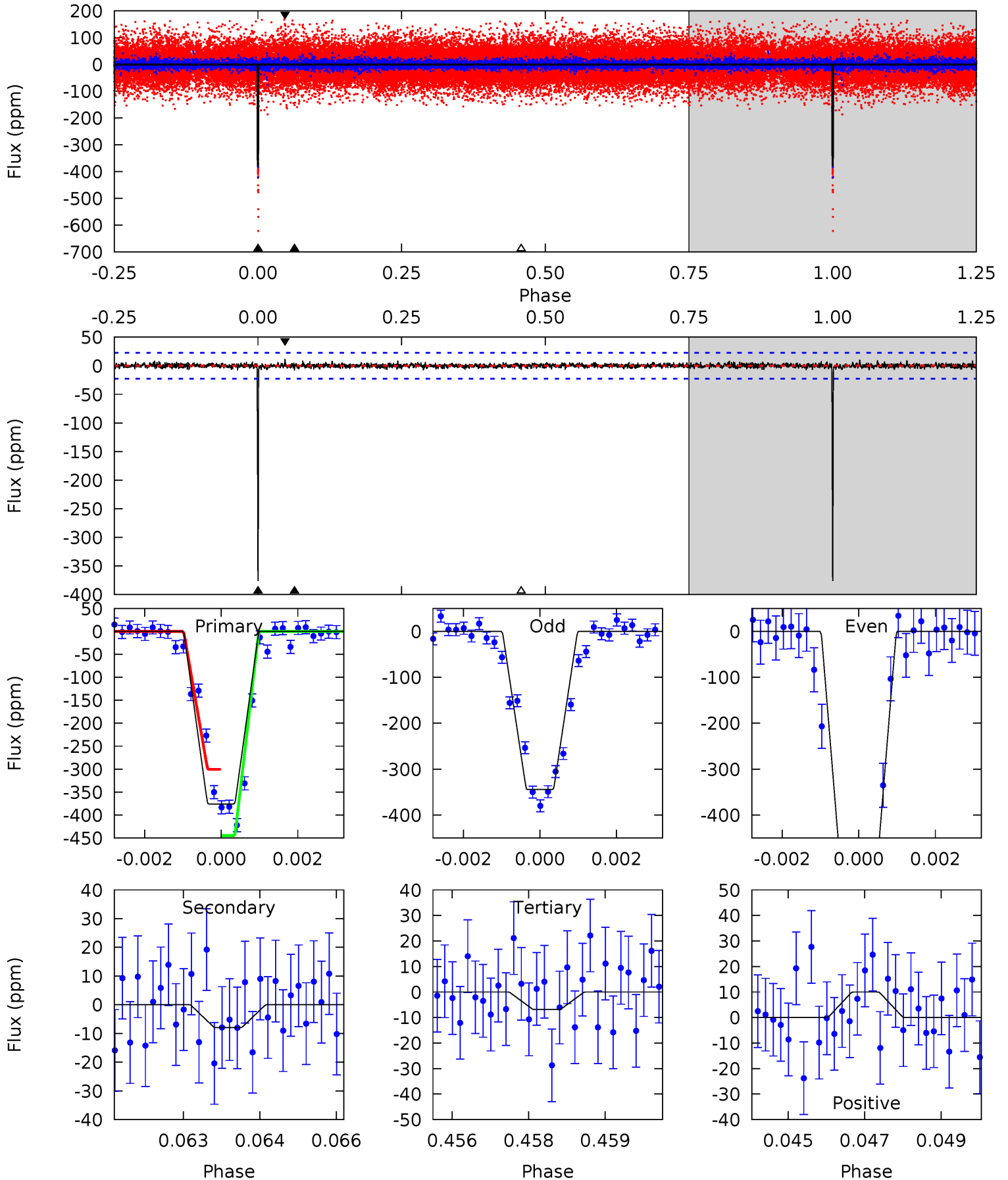
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.87	29.7	23.3	18.1	5.28	3.01	5.43	-18.4	-13.2	6.43	11.6	1.91	0.64	0.38	3.87



Alt Model-Shift Uniqueness Test

009347707-02, P = 493.129915 Days, E = 222.991521 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
89.1	1.88	1.62	2.36	5.35	3.13	0.49	87.4	86.7	0.26	-0.48	38.6	1.52	0.03	17.0



Stellar Parameters For KIC 009347707

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6243^{+197}_{-219}	$3.615^{+0.578}_{-0.102}$	$0.140^{+0.200}_{-0.300}$	$3.341^{+0.469}_{-1.875}$	$1.678^{+0.173}_{-0.519}$	$0.063^{+0.554}_{-0.014}$
	+3%/-4%	+16%/-3%	+143%/-214%	+14%/-56%	+10%/-31%	+874%/-22%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009347707-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1478 ± 50	$12.61^{+9.98}_{-7.43}$	567^{+42}_{-81}	6108^{+3777}_{-1184}	10338^{+50335}_{-7001}
Alt.	-8 ± 4	$8.80^{+7.96}_{-5.92}$	564^{+44}_{-79}	2711^{+1093}_{-418}	103^{+948}_{-80}

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

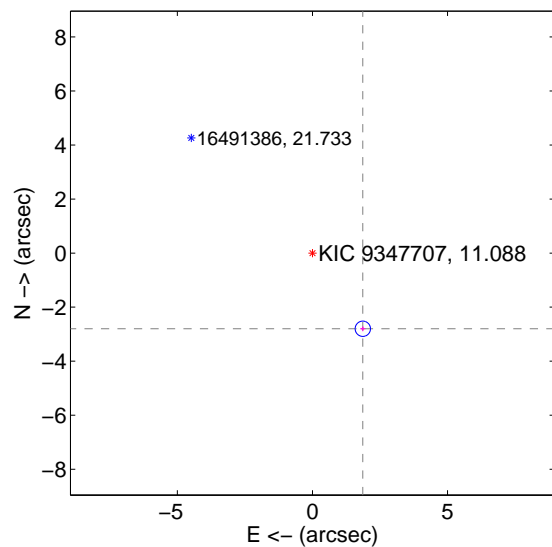
Supplemental centroid analysis for 009347707-02. **Kepler magnitude: 11.09.** Transit SNR 13.10

There are 0 quarters with good PRF difference image offsets

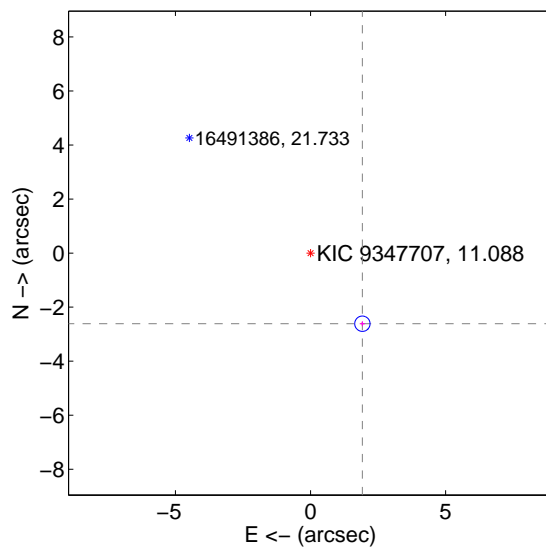
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.364 ± 0.094	35.61	-1.864 ± 0.097	-2.800 ± 0.093
PRF-fit source offset from KIC position	3.243 ± 0.095	34.27	-1.919 ± 0.097	-2.614 ± 0.093
photometric centroid source offset	2.23 ± 1.75	1.28	-2.10 ± 1.81	-0.75 ± 1.12

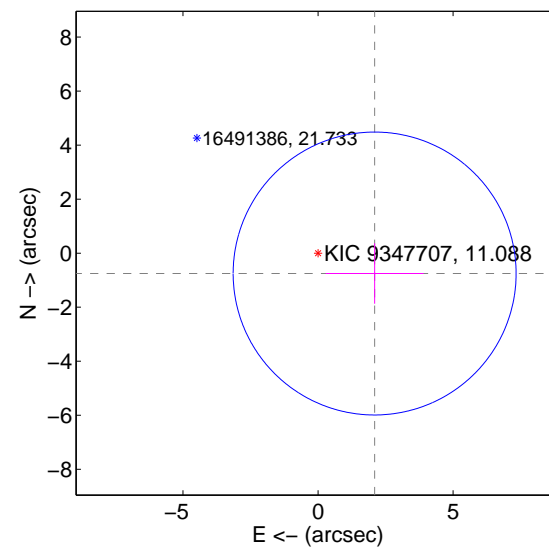
offset from difference PRF-fit to OOT PRF-fit



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.



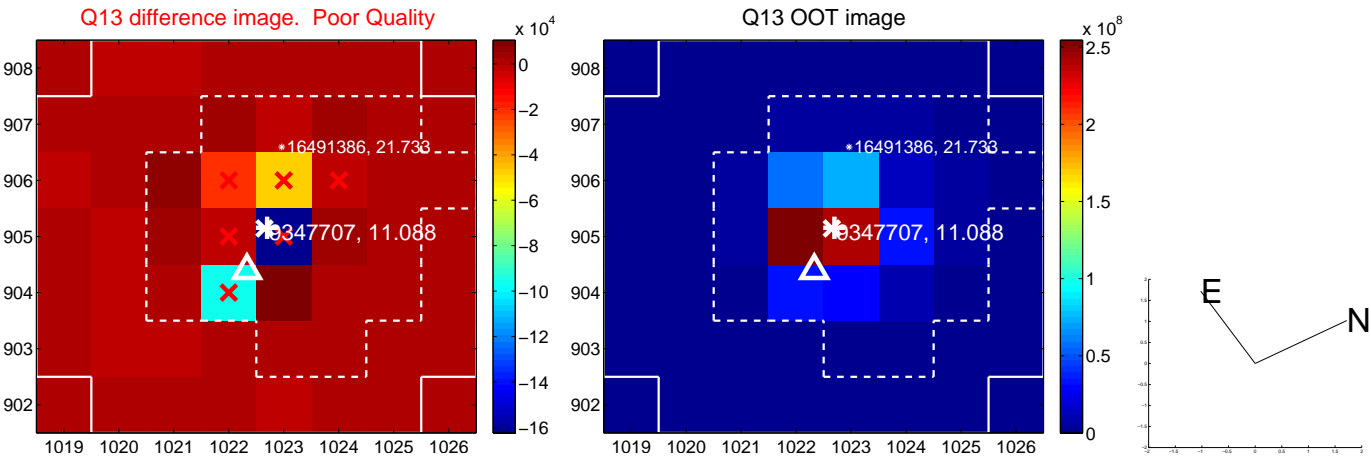
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



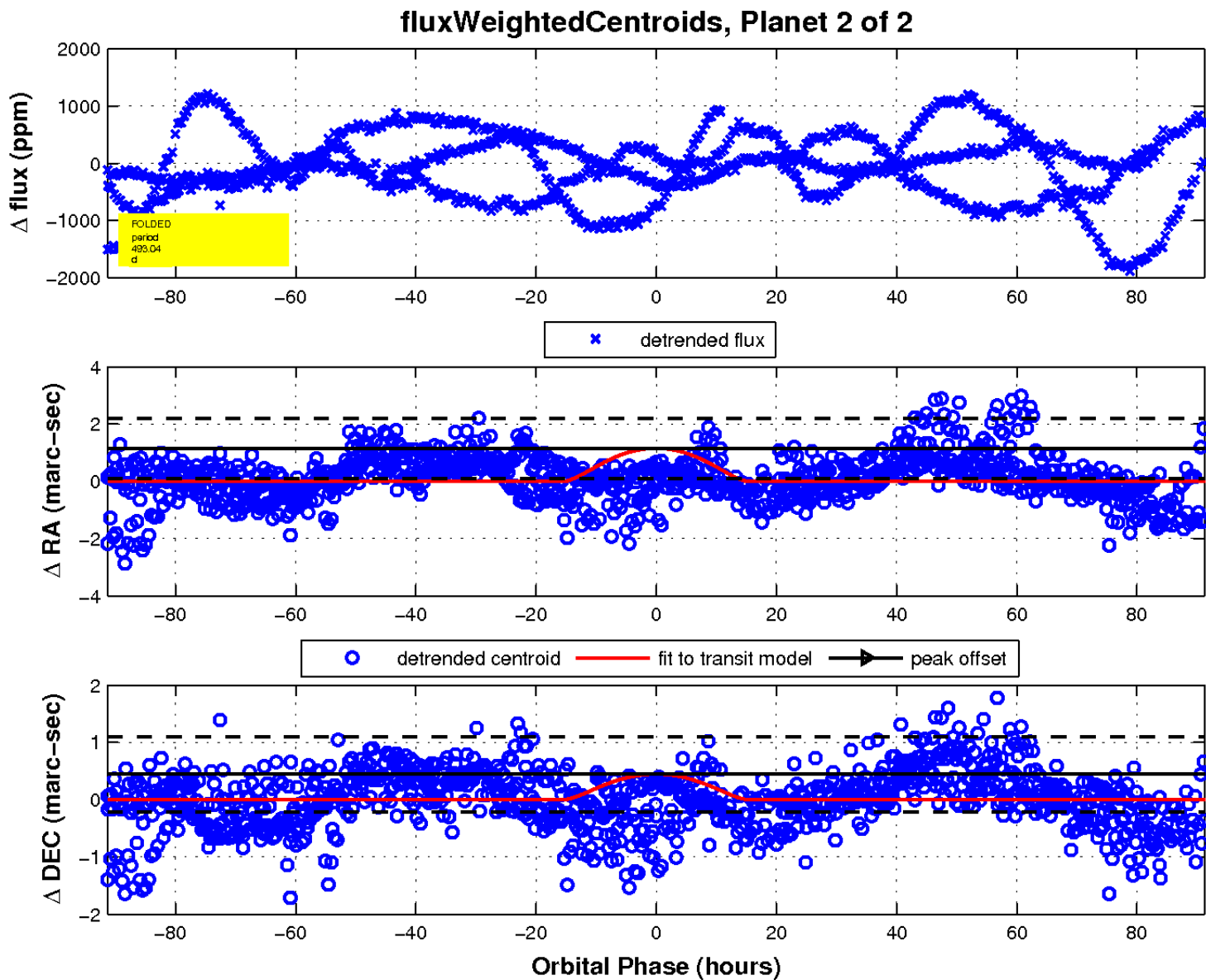
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

