

KIC 006349881

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})
006349881-01	OBS	4121.01	198.089152	319.730687	998.4	8.145	16.3	16.6	0.97	5275	3.37	1.64
006349881-02	OBS	No	407.547668	456.172353	1354.6	38.902	16.2	20.9	0.97	5275	3.59	0.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006349881-01	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
006349881-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

Ephemeris Match Information For 006349881-01

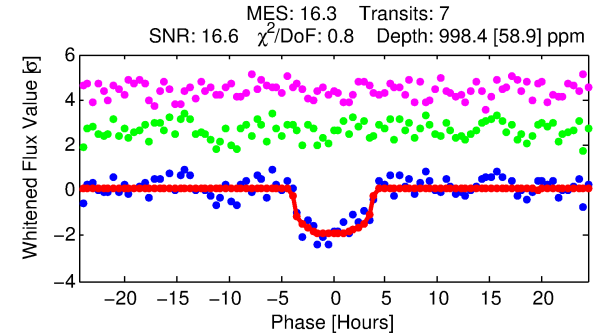
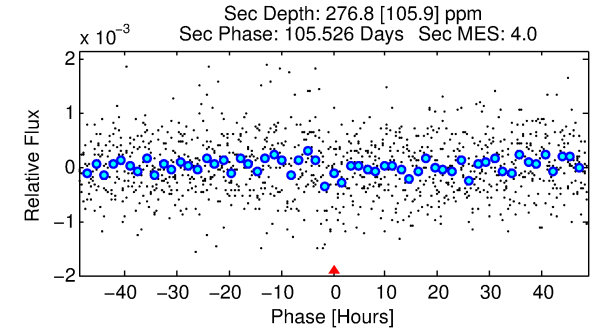
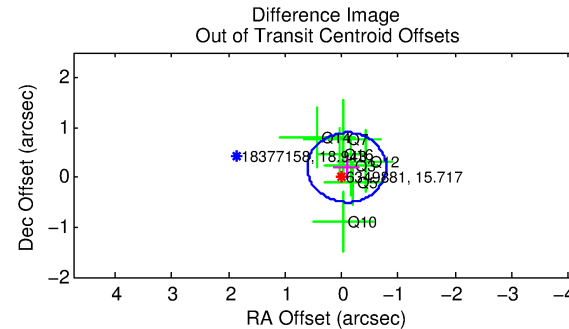
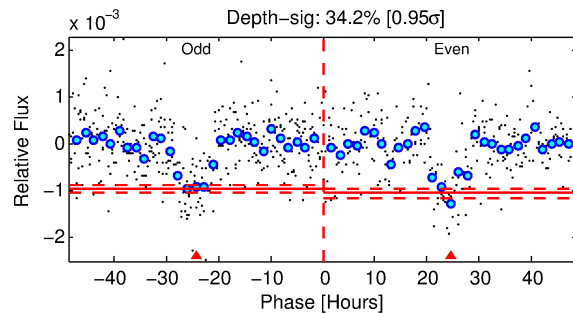
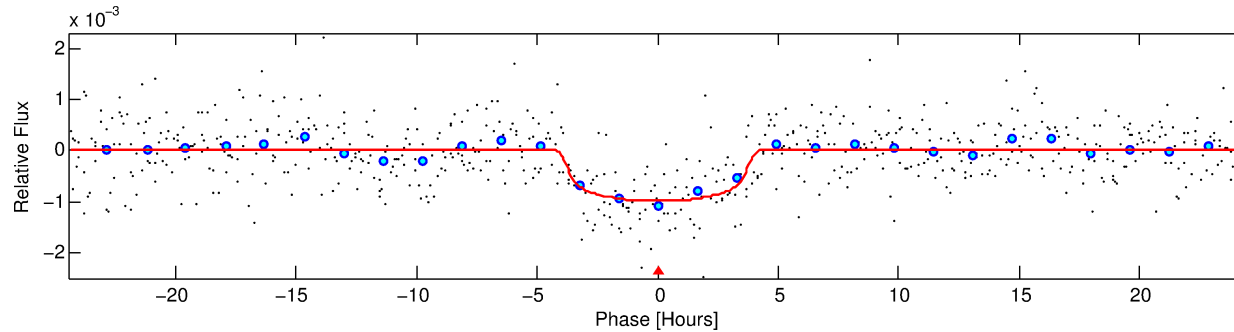
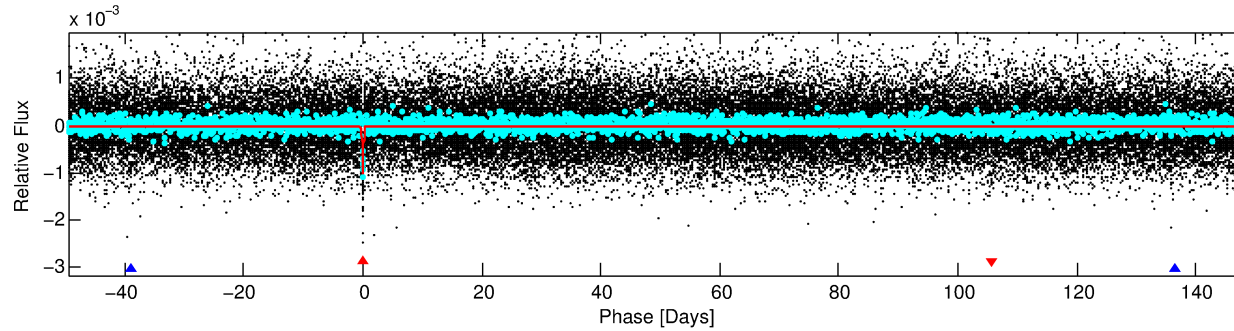
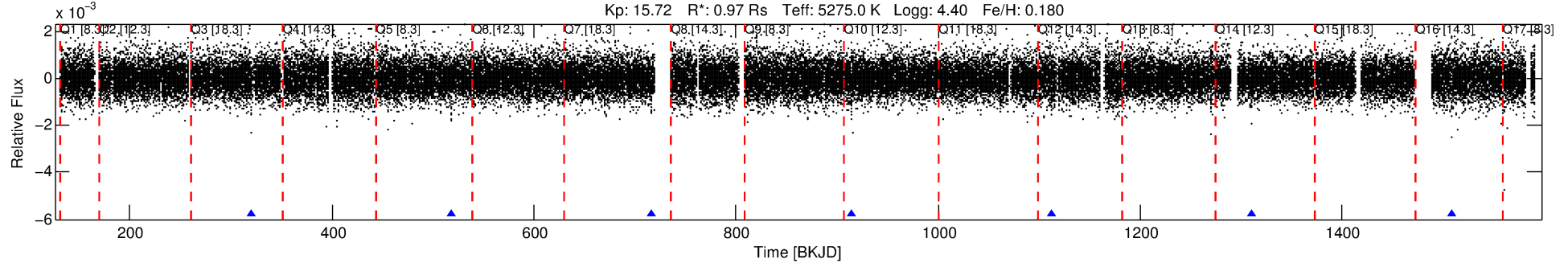
No Significant Match Found

DV One-Page Summary

KIC: 6349881 Candidate: 1 of 2 Period: 198.089 d

KOI: K04121.01 Corr: 0.995

Kp: 15.72 R*: 0.97 Rs Teff: 5275.0 K Logg: 4.40 Fe/H: 0.180



DV Fit Results:

Period = 198.08915 [0.00244] d
Epoch = 319.7307 [0.0086] BKJD
Rp/R* = 0.0319 [0.0070]
a/R* = 127.04 [103.27]
b = 0.77 [0.43]
Seff = 1.64 [0.34]
Teq = 288 [15] K
Rp = 3.37 [0.83] Re
a = 0.6312 [0.0761] AU
Ag = 5341.88 [3278.87] [1.63σ]
Teffp = 3811 [556] K [6.33σ]

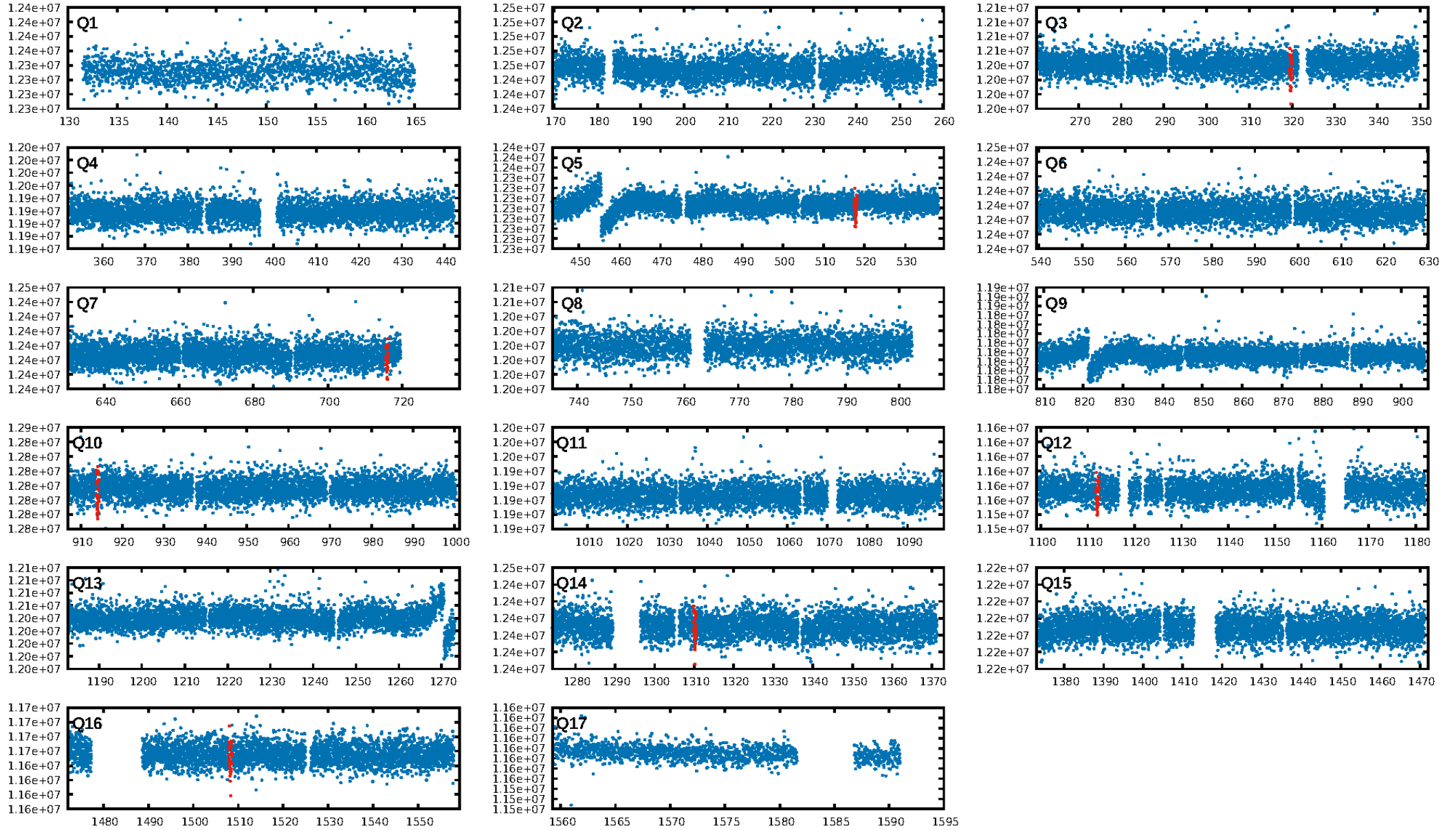
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [126.48σ]
ModelChiSquare2-sig: 41.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.94e-60
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 2.328
Centroid-sig: 45.4%
Centroid-so: 0.933 arcsec [0.98σ]
OotOffset-rm: 0.213 arcsec [0.92σ]
KicOffset-rm: 0.682 arcsec [2.97σ]
OotOffset-st: 2/2/2/1 [7]
KicOffset-st: 2/2/2/1 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [7/7]

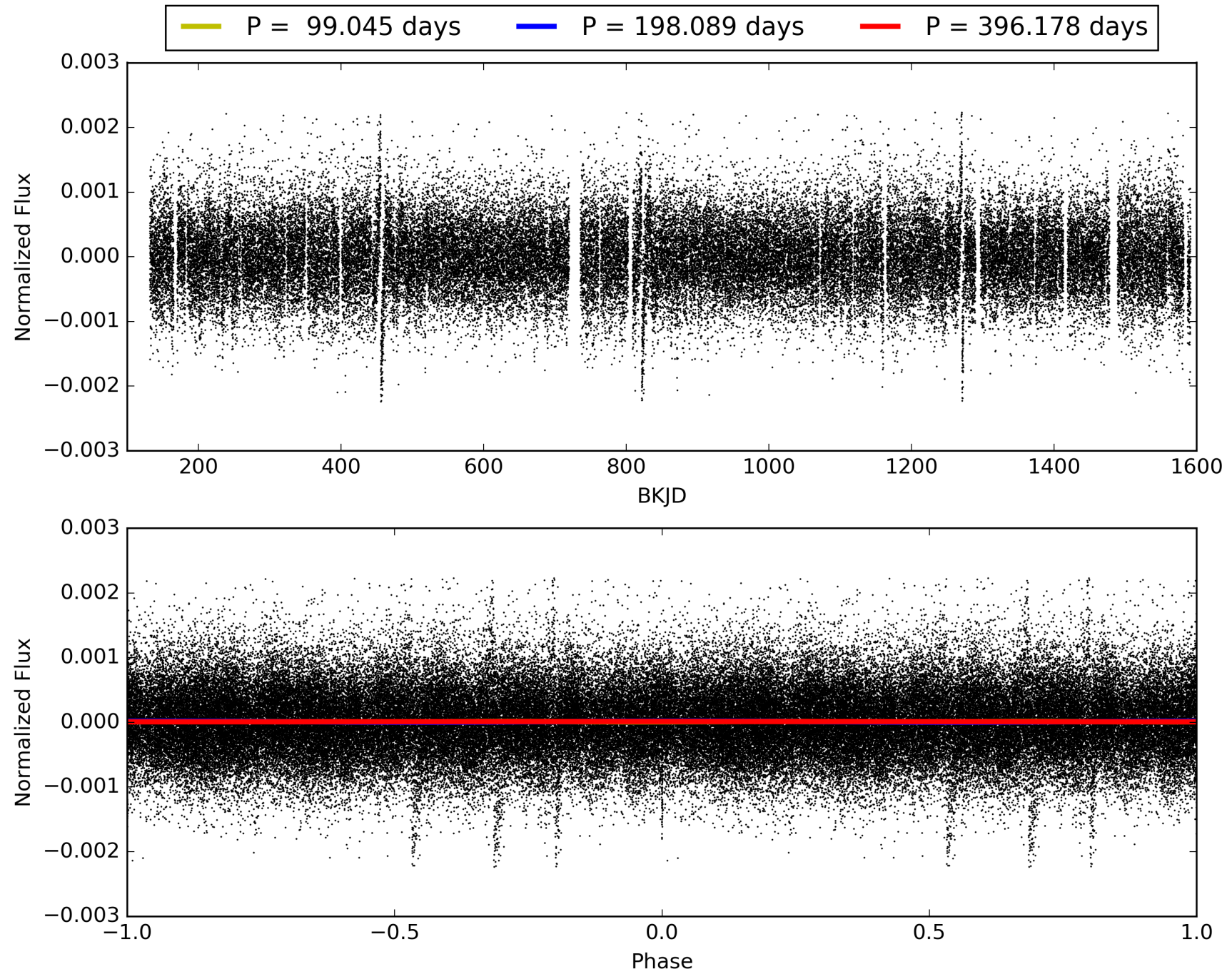
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:24:29 Z

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

TCE 006349881-01, PDC Light Curves

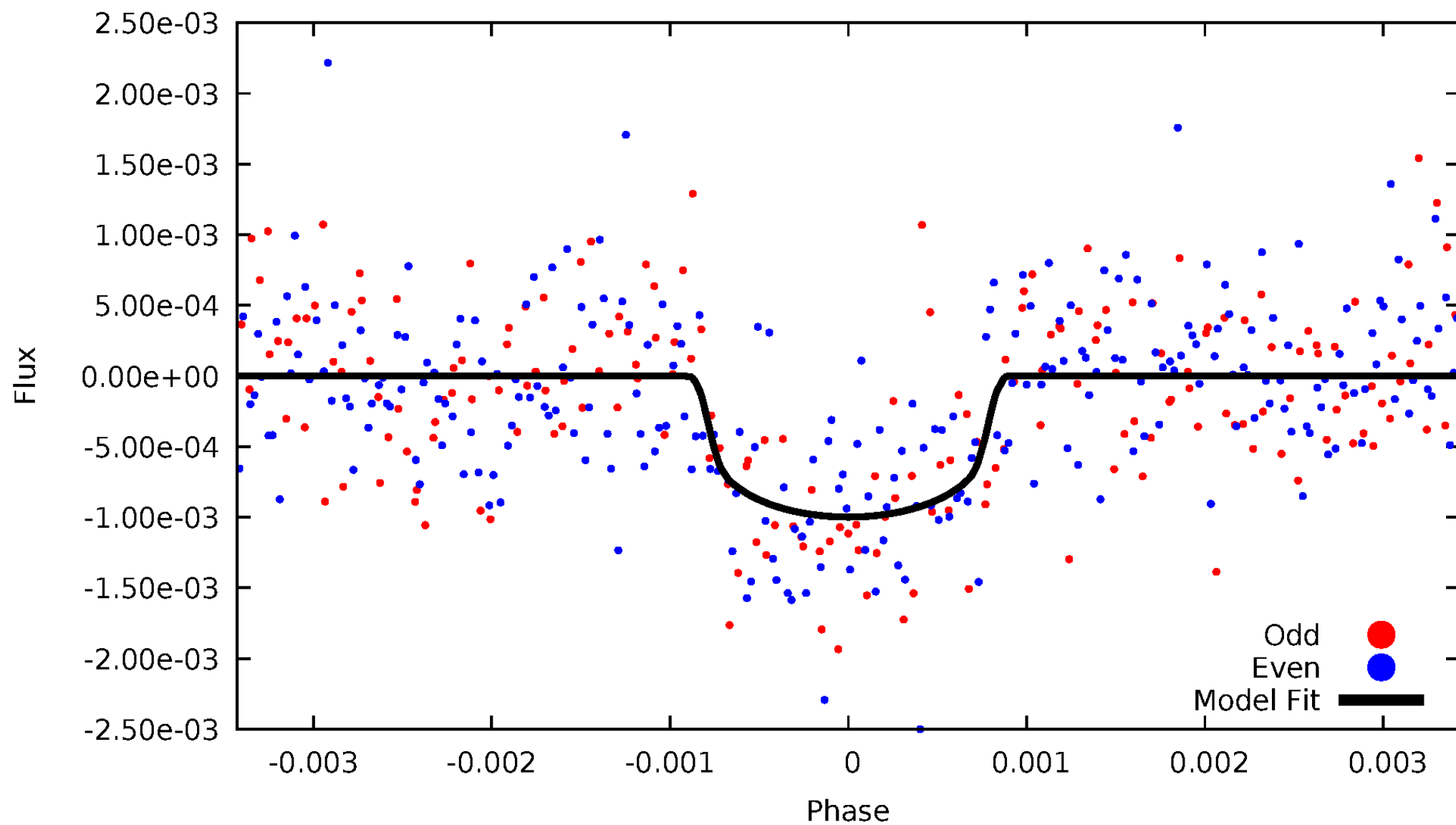


TCE 006349881-01



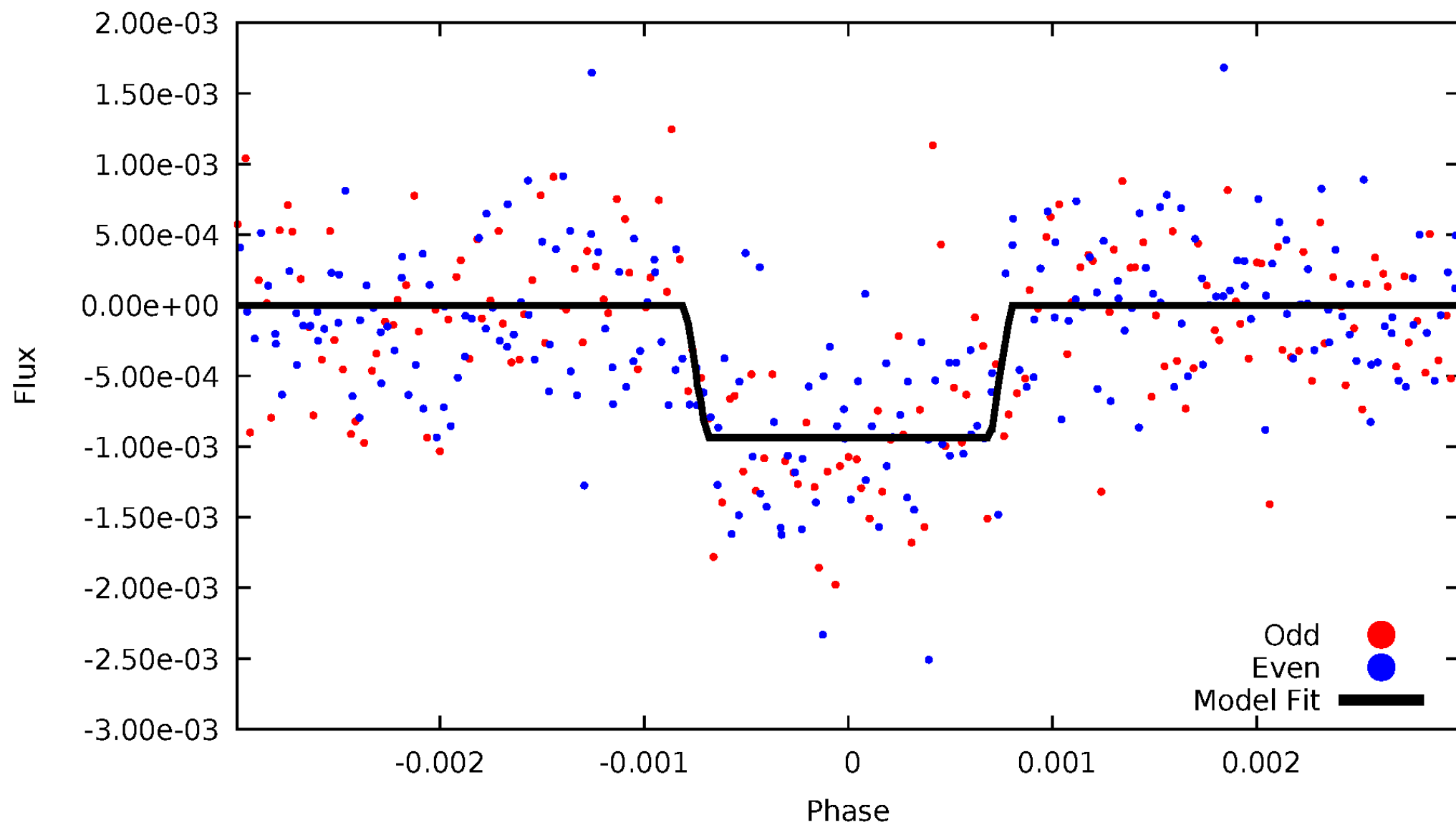
DV Odd/Even

TCE 006349881-01



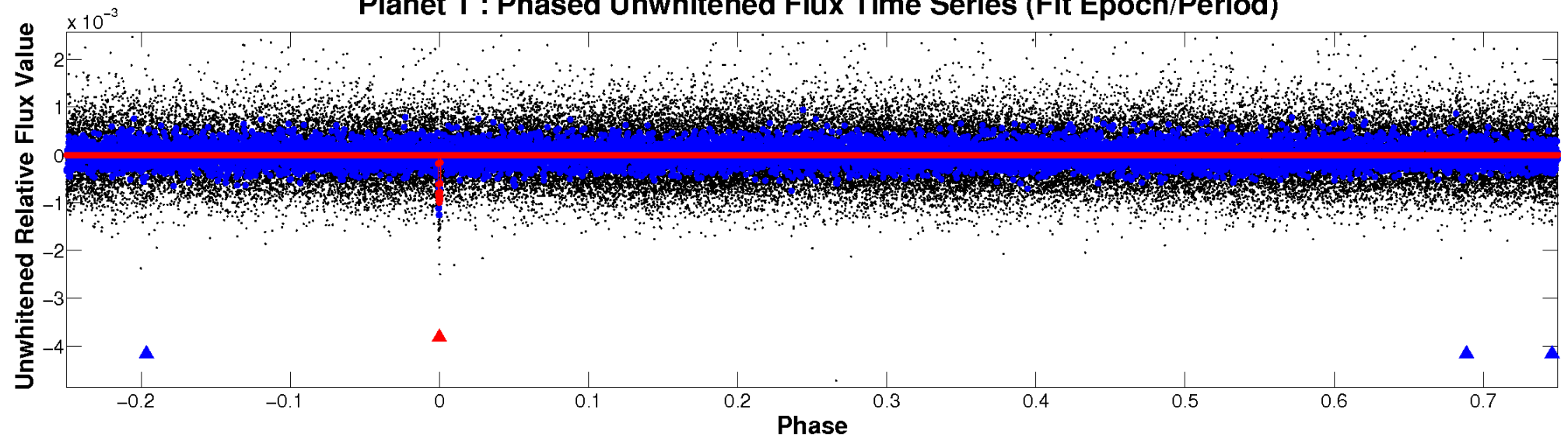
ALT Odd/Even

TCE 006349881-01

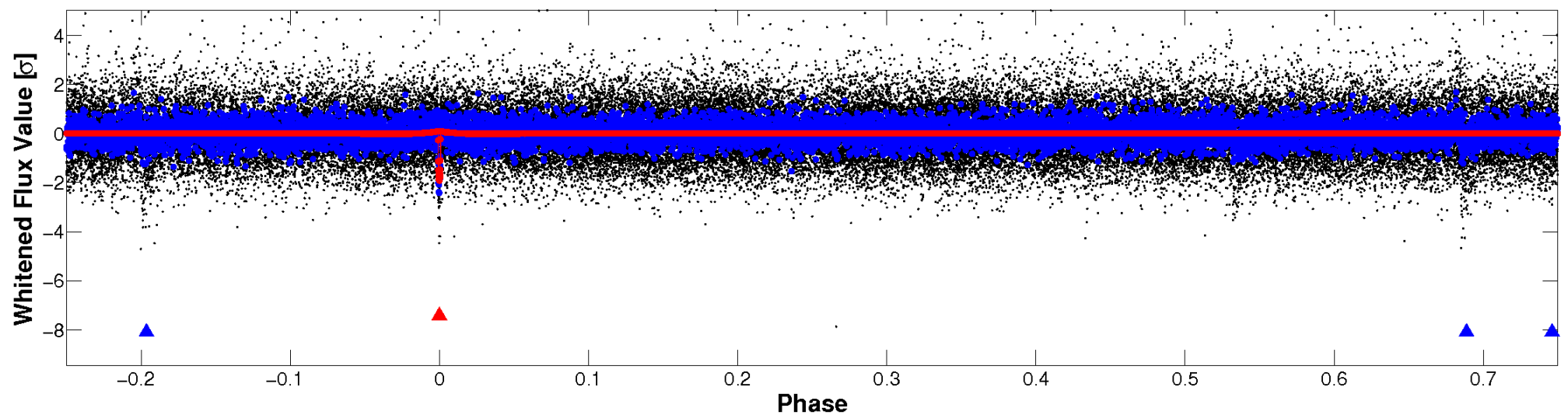


Non-Whitened Vs. Whitened Light Curve

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

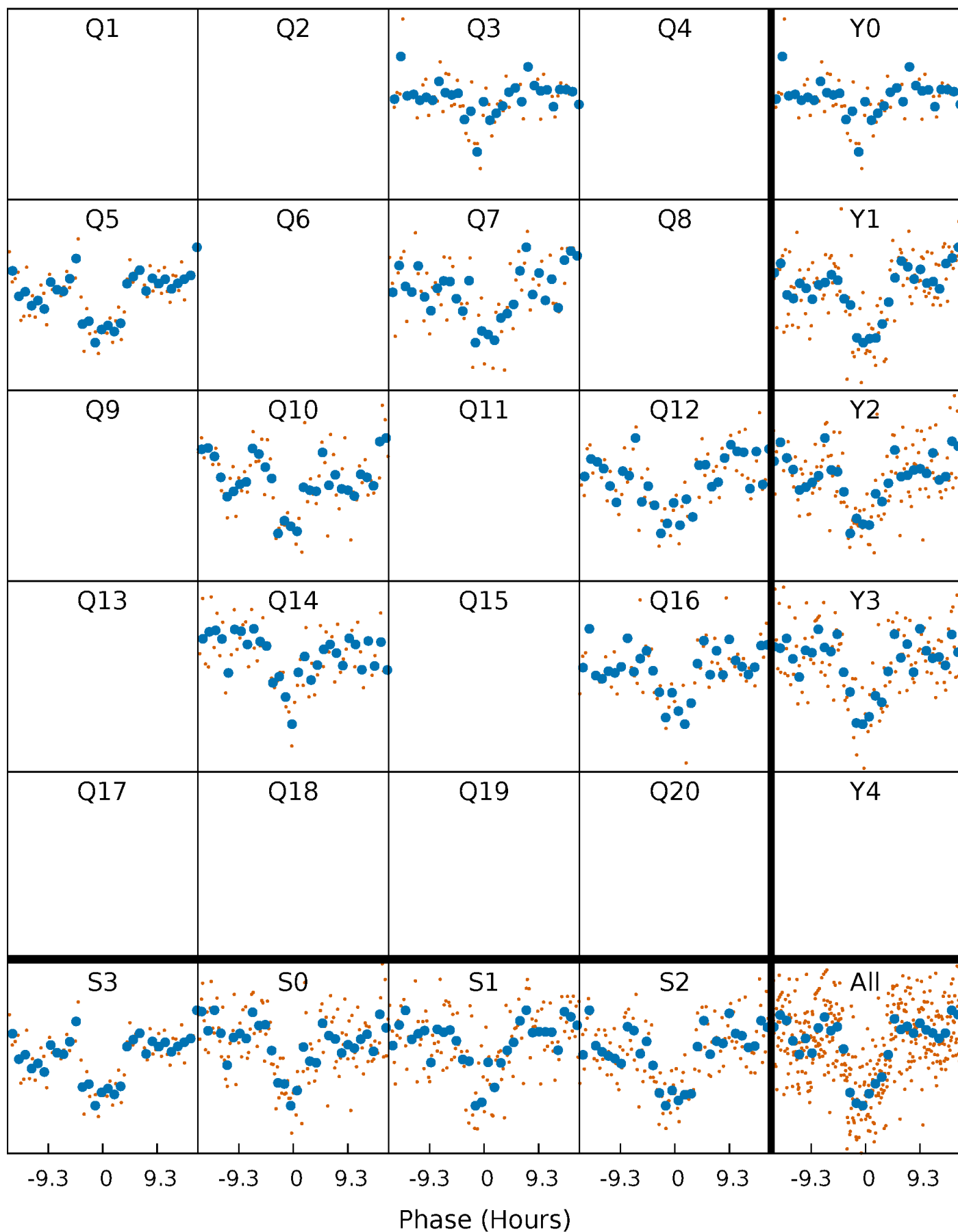


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



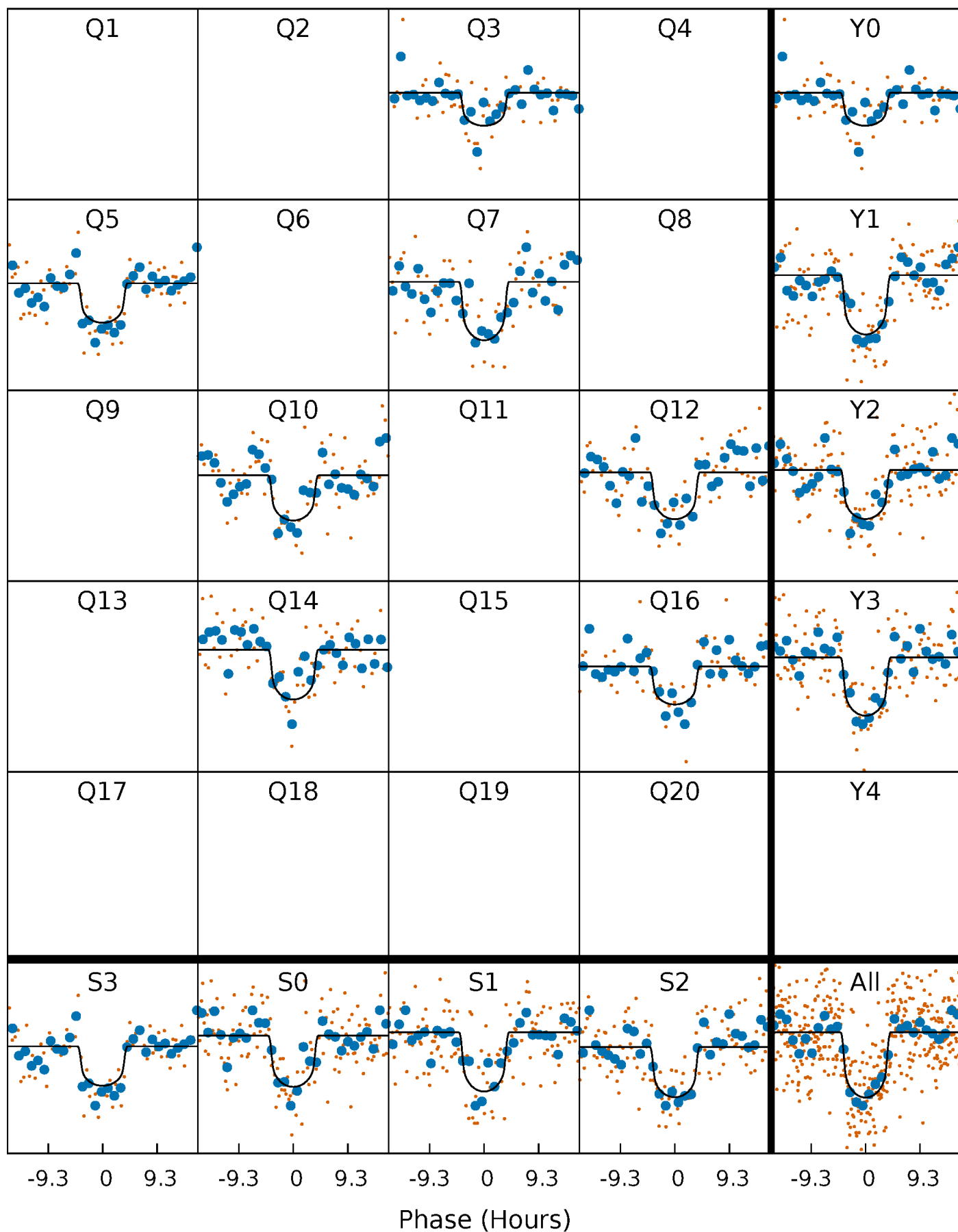
PDC Quarter-Phased Transit Curves

TCE 006349881-01 P=198.089152 Days $T_0=319.730687$ (BKJD)



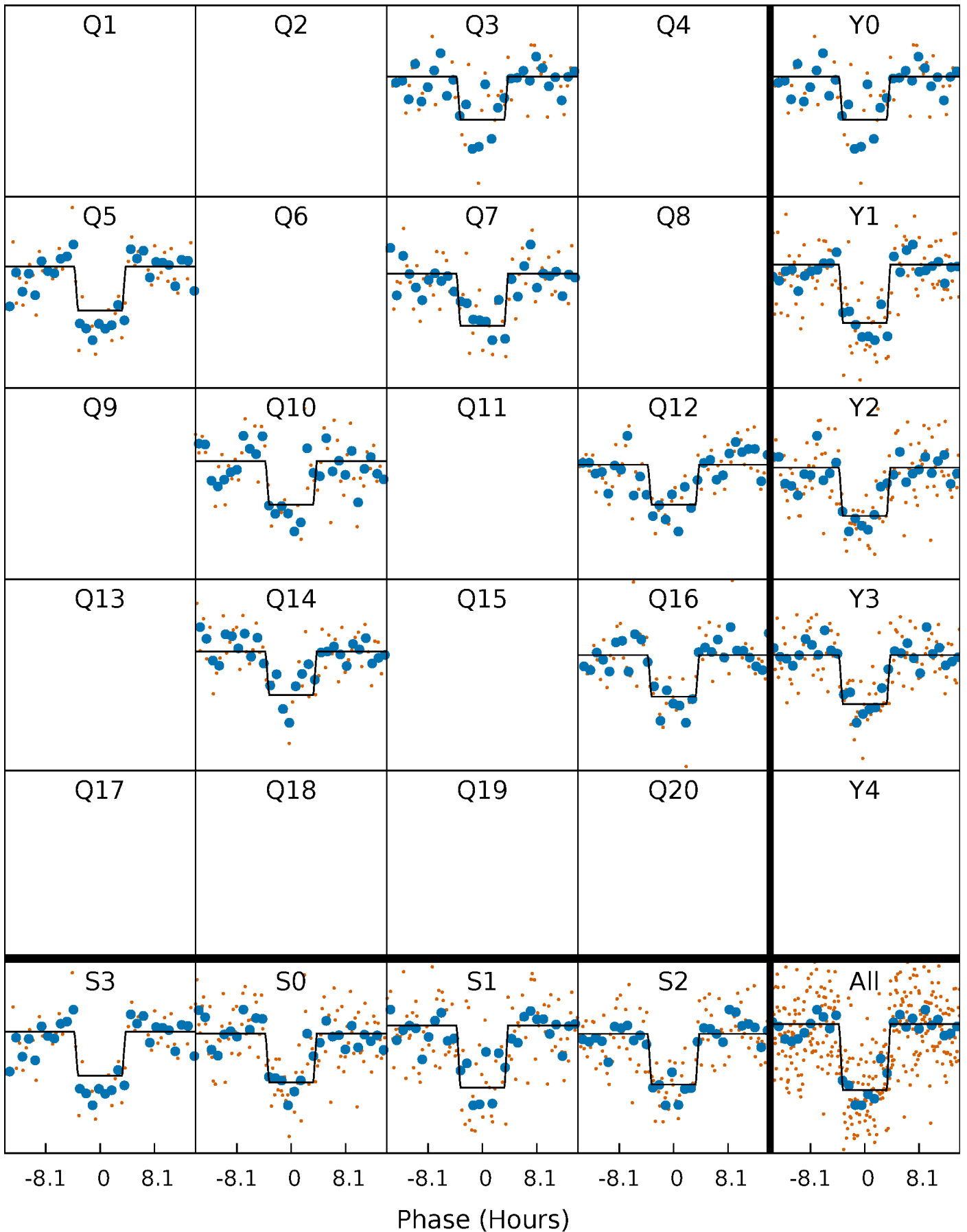
DV Quarter-Phased Transit Curves

TCE 006349881-01 P=198.089152 Days $T_0=319.730687$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

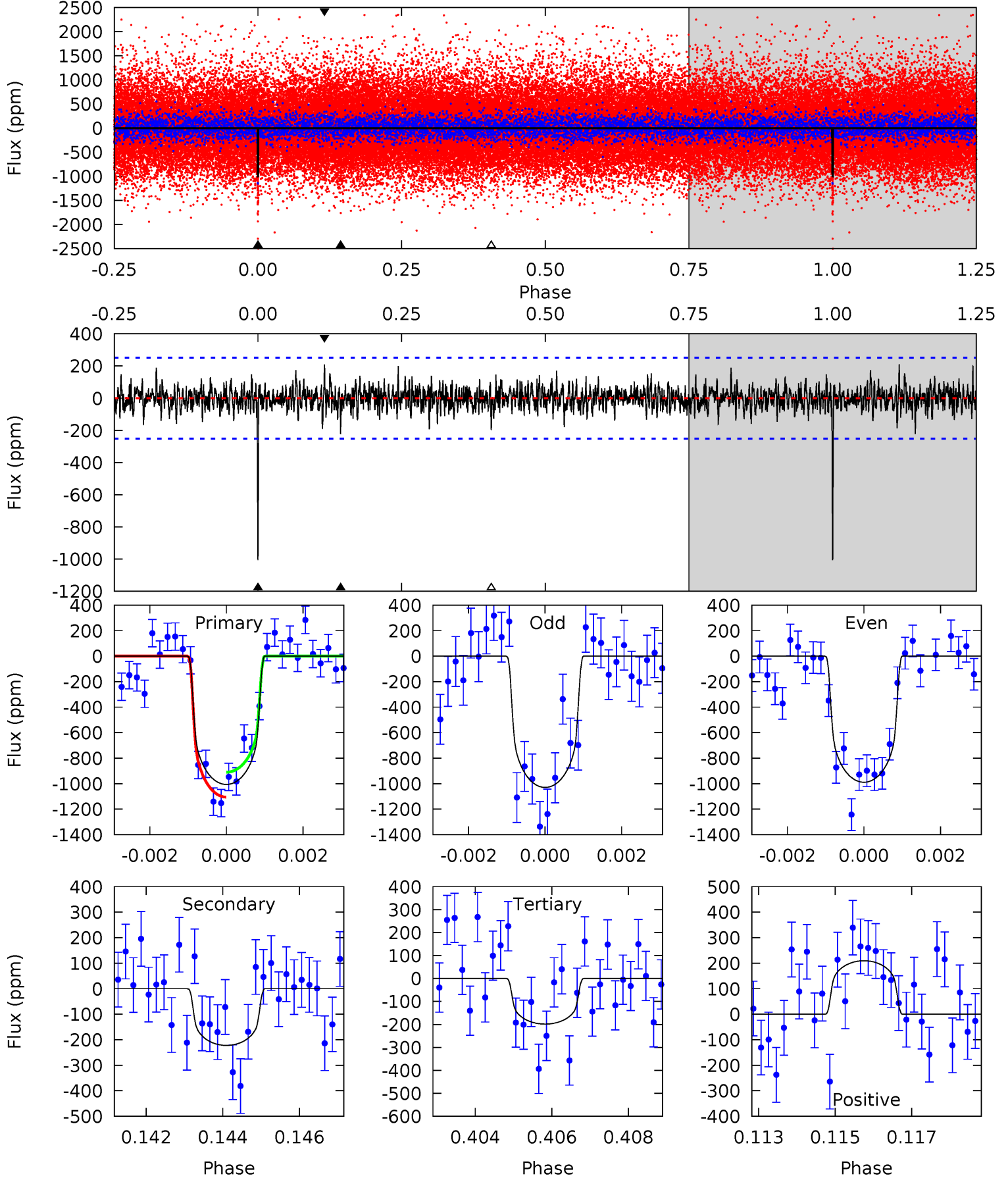
TCE 006349881-01 P=198.089742 Days $T_0=319.728875$ (BKJD)



DV Model-Shift Uniqueness Test

006349881-01, P = 198.089152 Days, E = 121.641535 Days

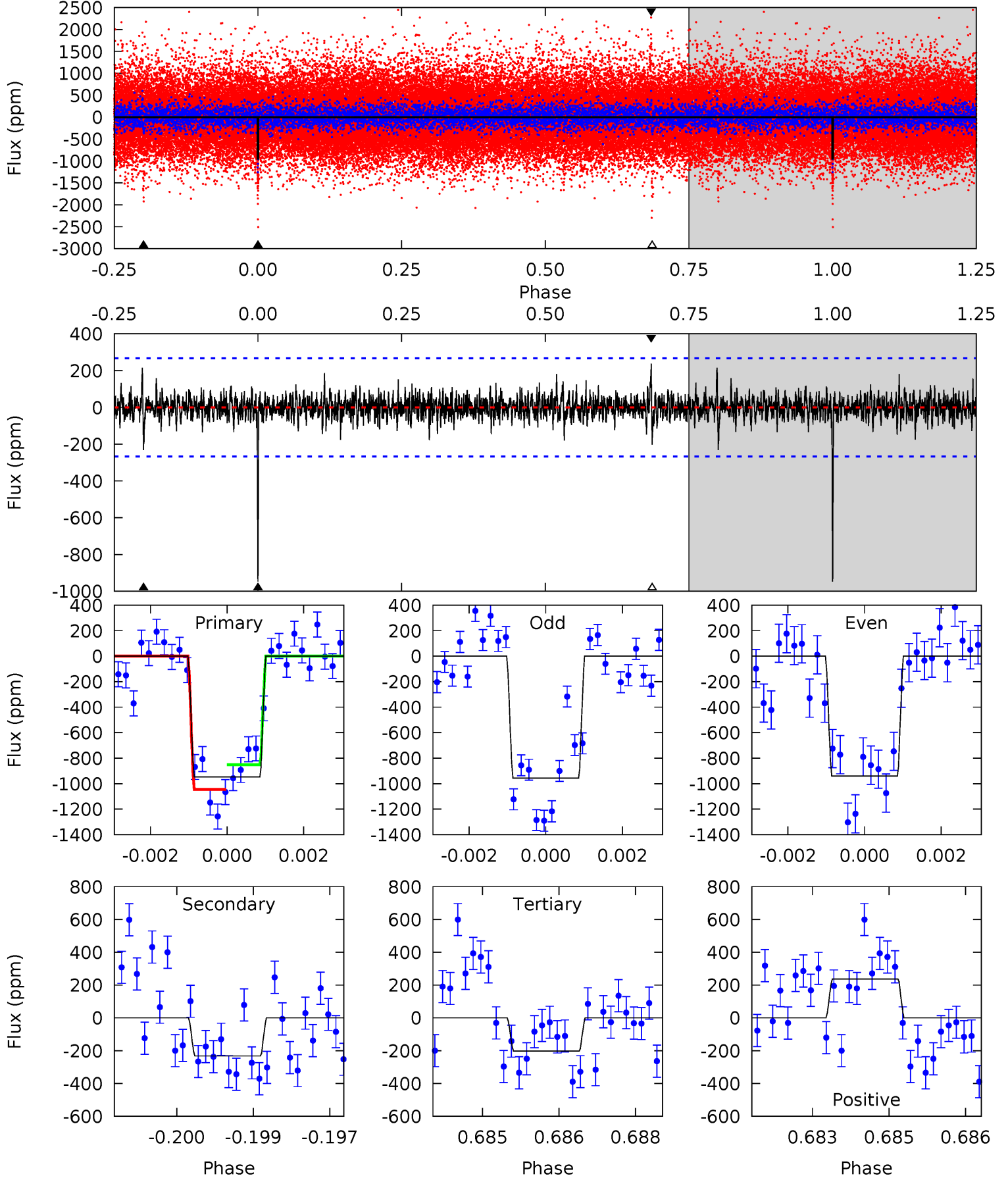
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	4.72	4.22	4.45	5.35	3.12	1.13	17.2	16.9	0.50	0.27	0.43	1.04	0.17	2.08



Alt Model-Shift Uniqueness Test

006349881-01, P = 198.089742 Days, E = 121.639133 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	4.66	4.07	4.76	5.37	3.16	0.93	15.0	14.3	0.59	-0.09	0.17	1.04	0.20	1.94



Stellar Parameters For KIC 006349881

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5275^{+86}_{-79}	$4.397^{+0.120}_{-0.080}$	$0.180^{+0.150}_{-0.150}$	$0.969^{+0.102}_{-0.113}$	$0.855^{+0.061}_{-0.030}$	$1.323^{+0.652}_{-0.344}$
	+2%/-1%	+3%/-2%	+83%/-83%	+11%/-12%	+7%/-4%	+49%/-26%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006349881-01 / KOI 4121.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-222 ± 47	$3.35^{+0.75}_{-0.75}$	402^{+13}_{-15}	3917^{+392}_{-274}	4321^{+2981}_{-1555}
Alt.	-232 ± 50	$3.23^{+0.81}_{-0.81}$	401^{+14}_{-16}	3980^{+447}_{-319}	4962^{+3798}_{-2159}

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

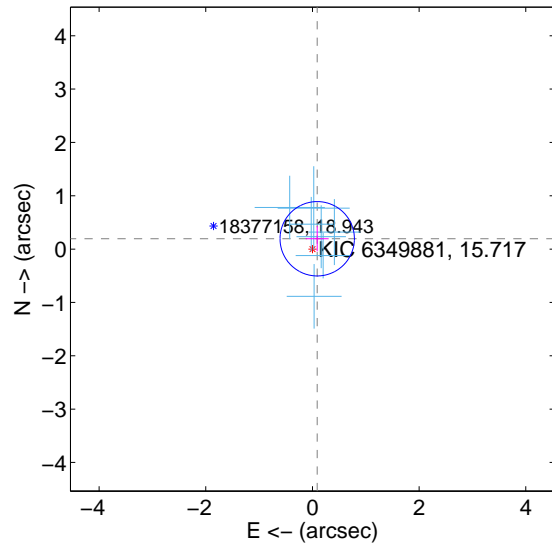
Supplemental centroid analysis for 006349881-01. Kepler magnitude: 15.72. Transit SNR 16.62

There are 7 quarters with good PRF difference image offsets

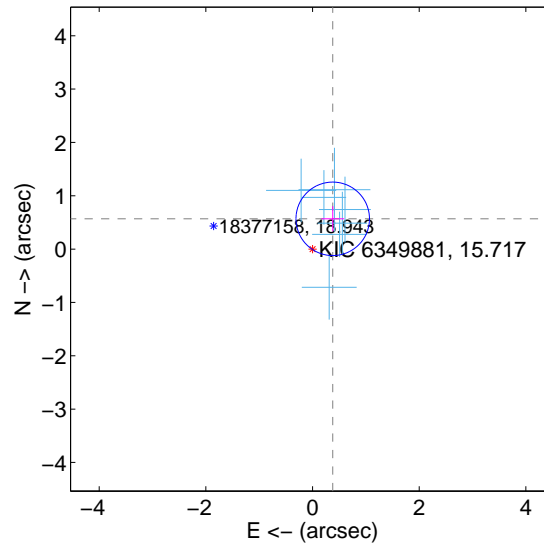
The direct PRF centroid is offset from the target star catalog position by about 0.56 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.213 ± 0.232	0.92	-0.089 ± 0.215	0.194 ± 0.236
PRF-fit source offset from KIC position	0.682 ± 0.230	2.97	-0.379 ± 0.215	0.567 ± 0.236
photometric centroid source offset	0.93 ± 0.95	0.98	-0.91 ± 0.94	0.21 ± 1.03

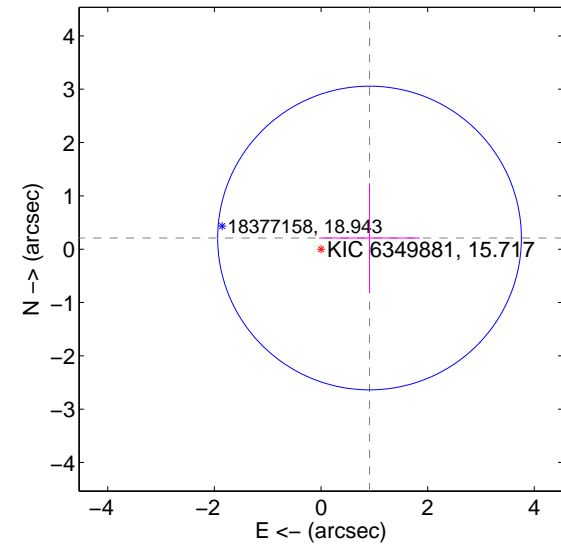
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

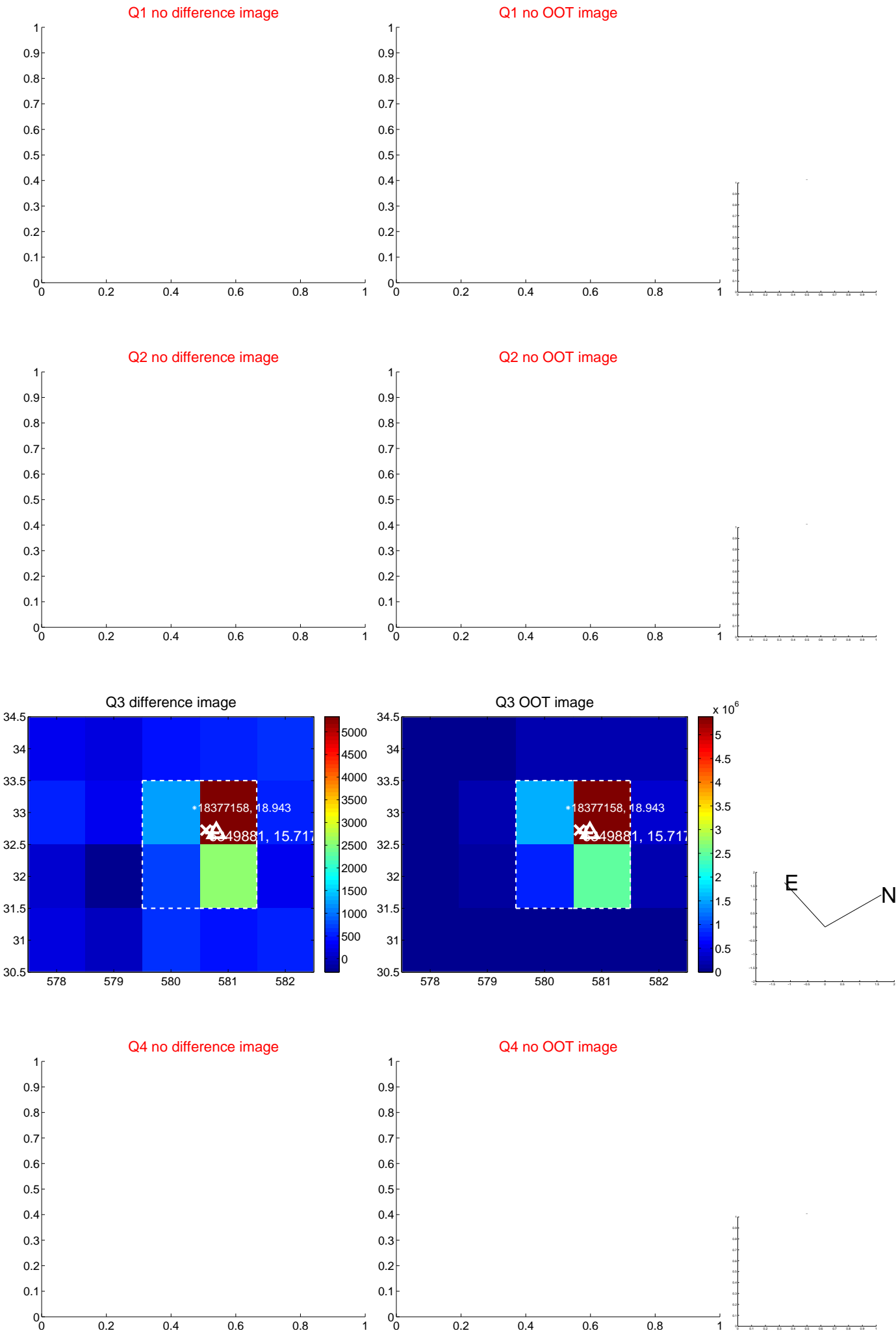


offset from photometric centroids

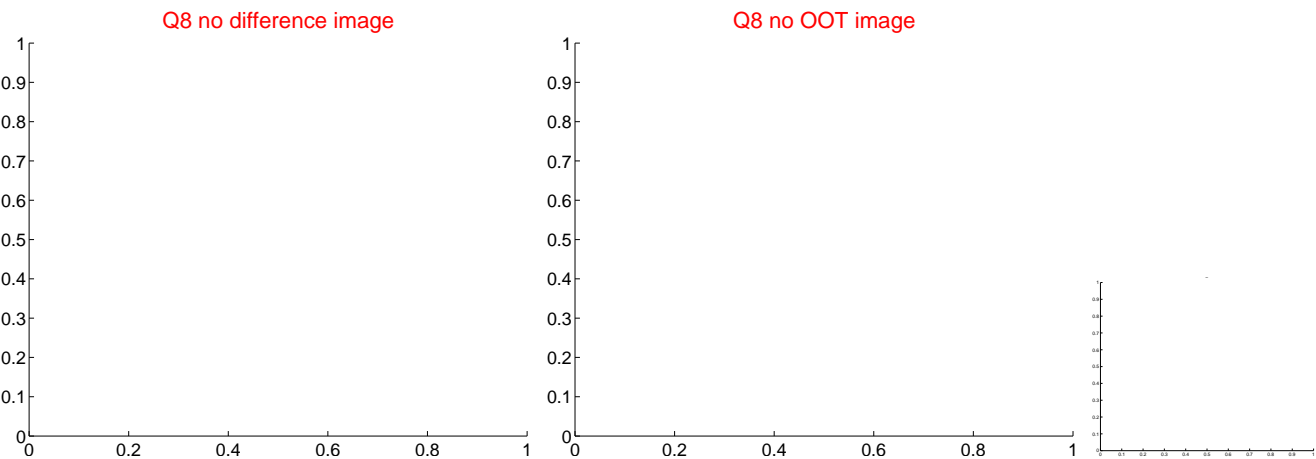
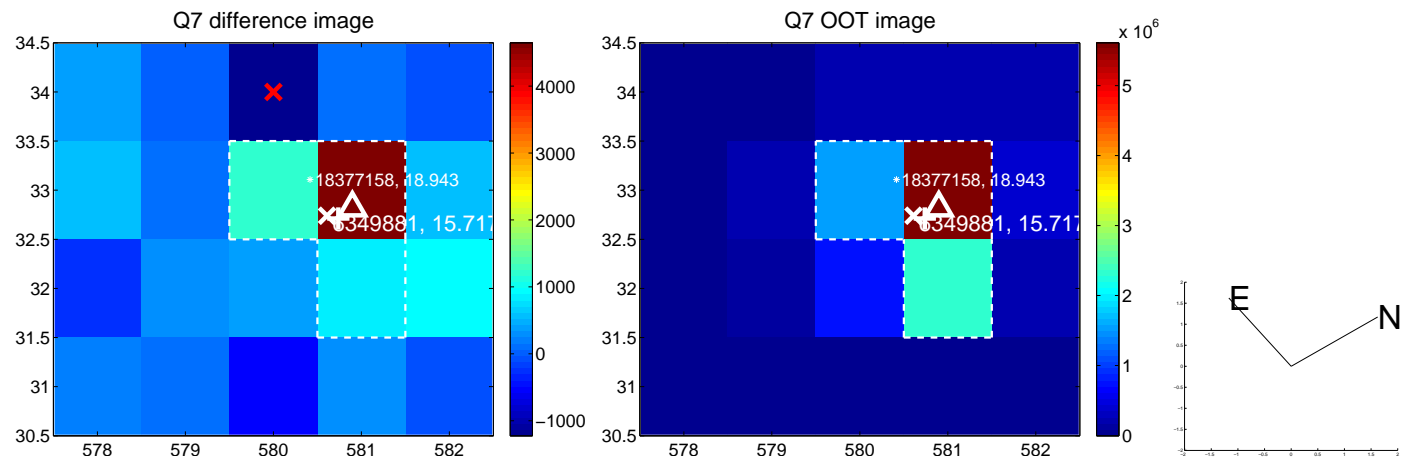
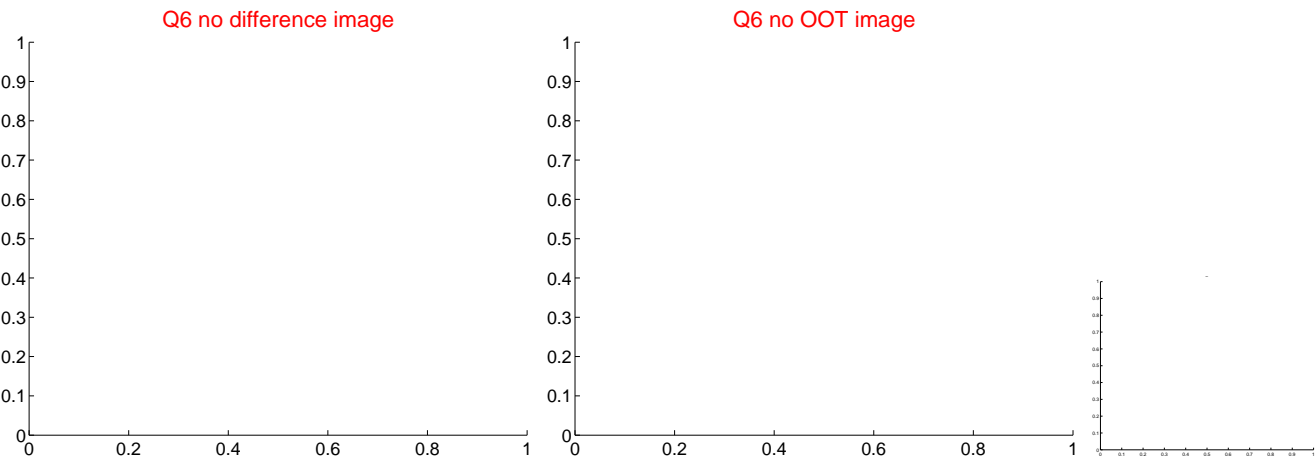
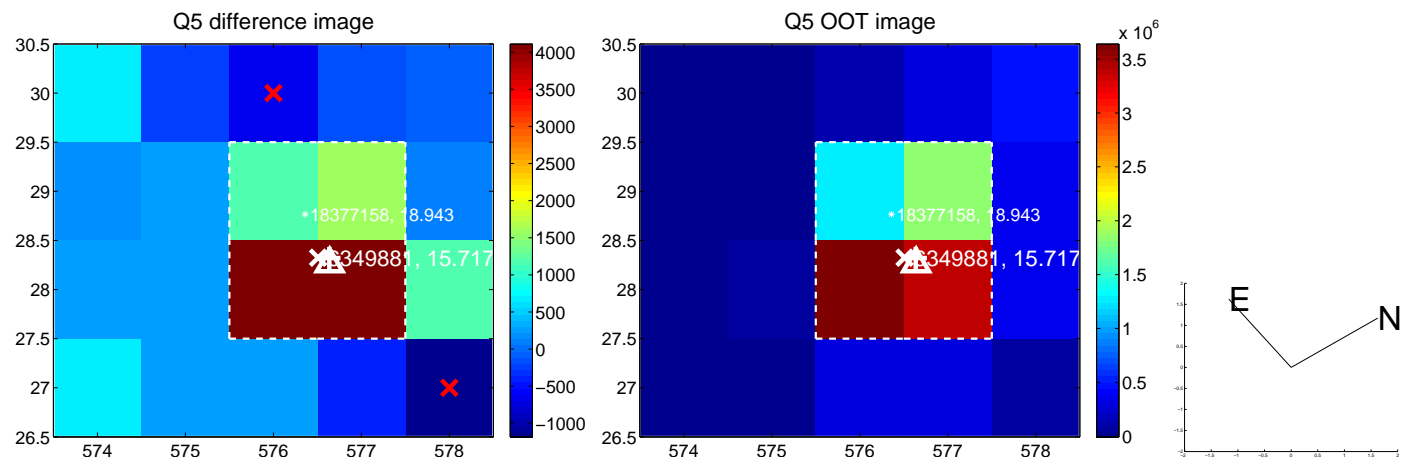


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

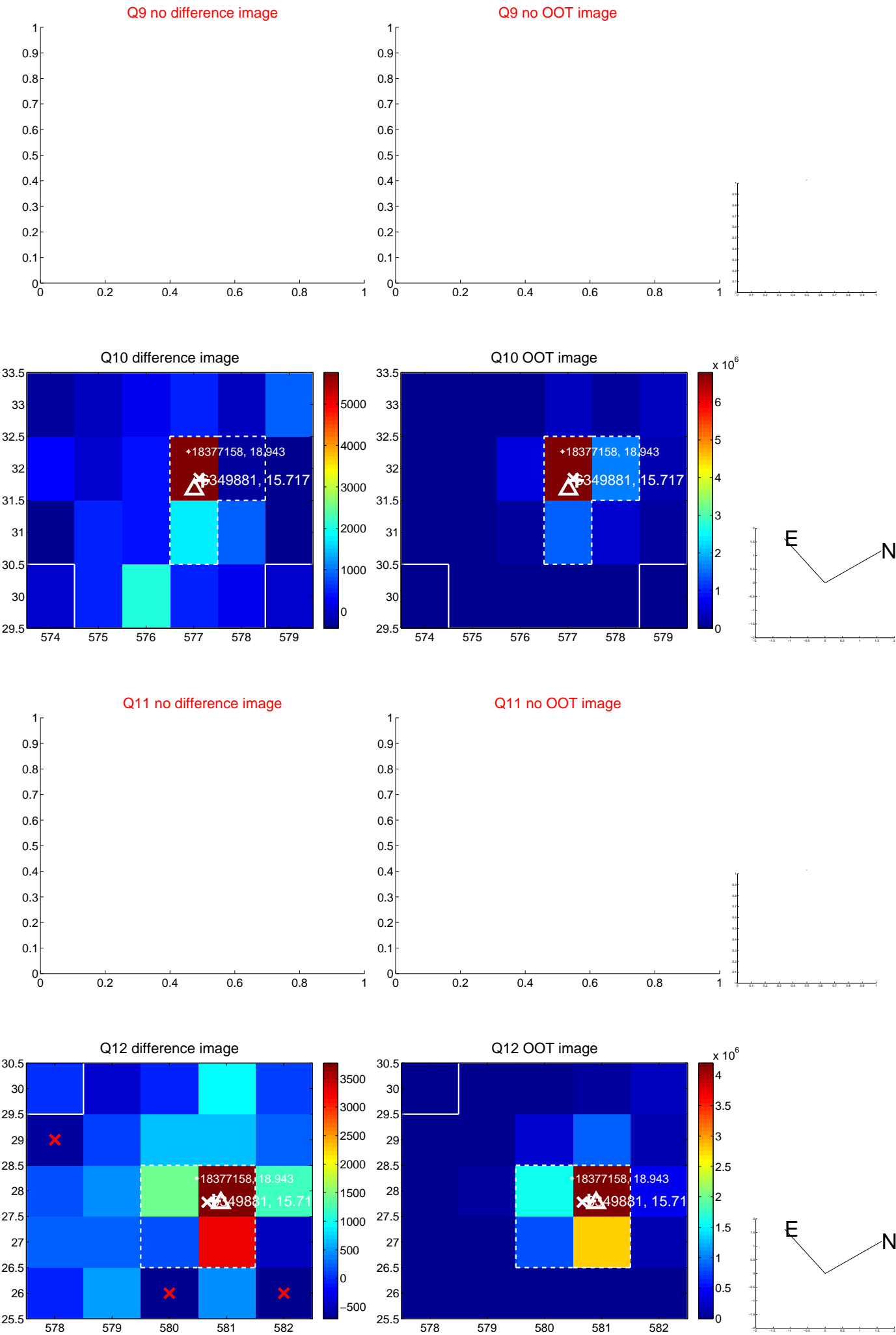
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

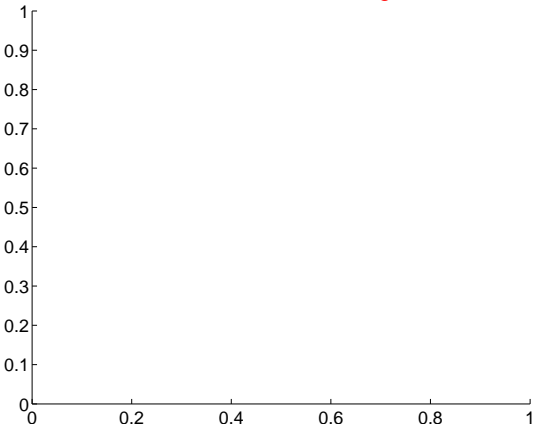


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

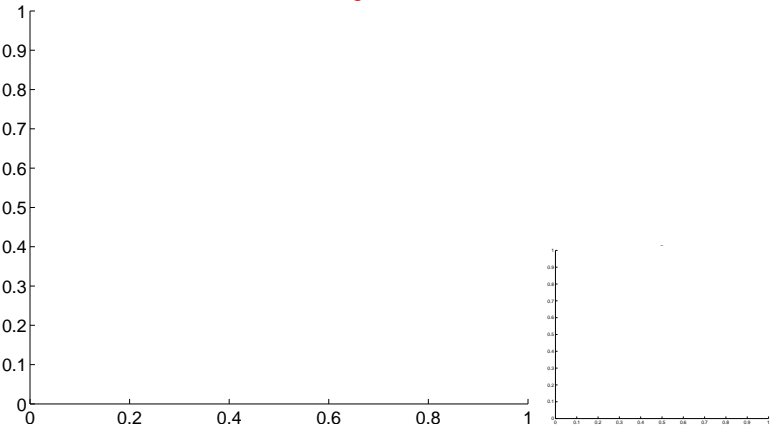


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

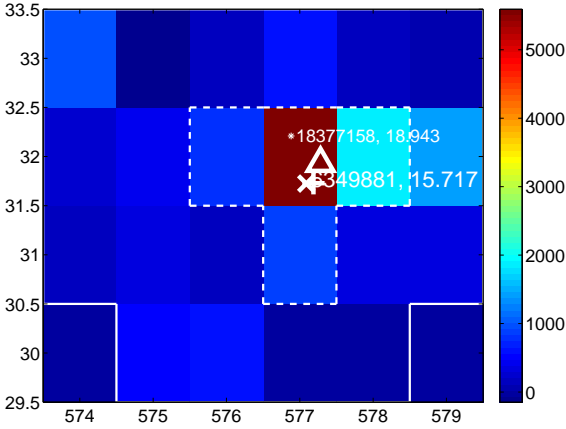
Q13 no difference image



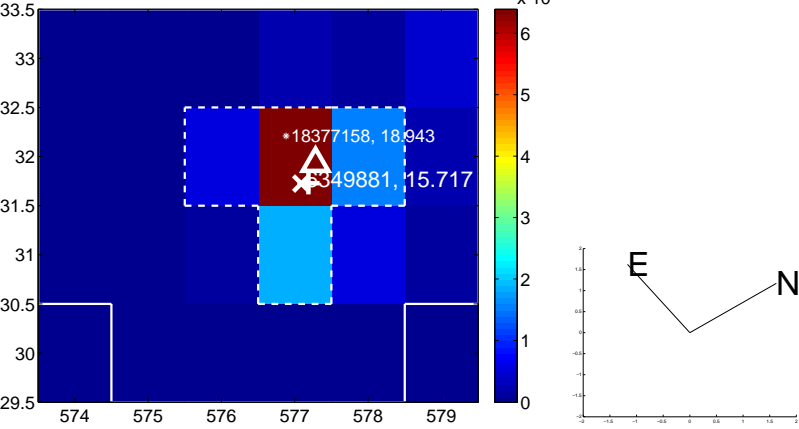
Q13 no OOT image



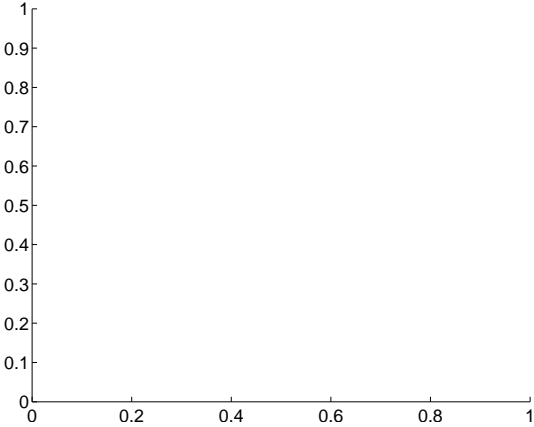
Q14 difference image



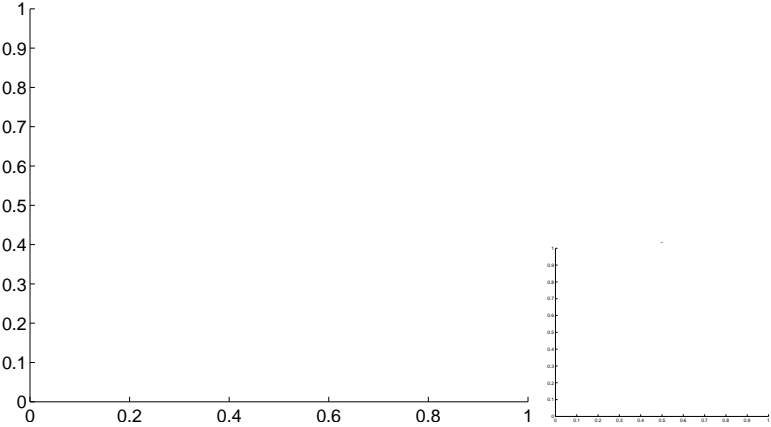
Q14 OOT image



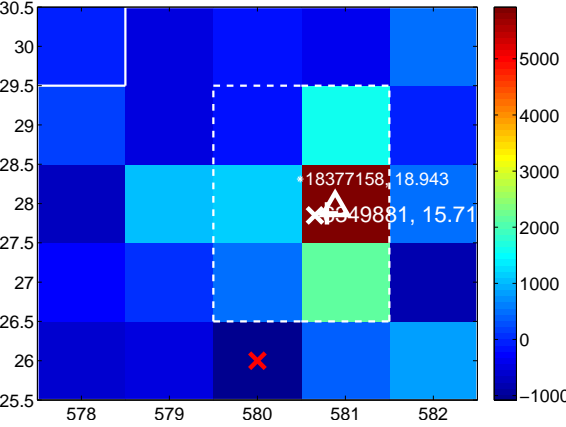
Q15 no difference image



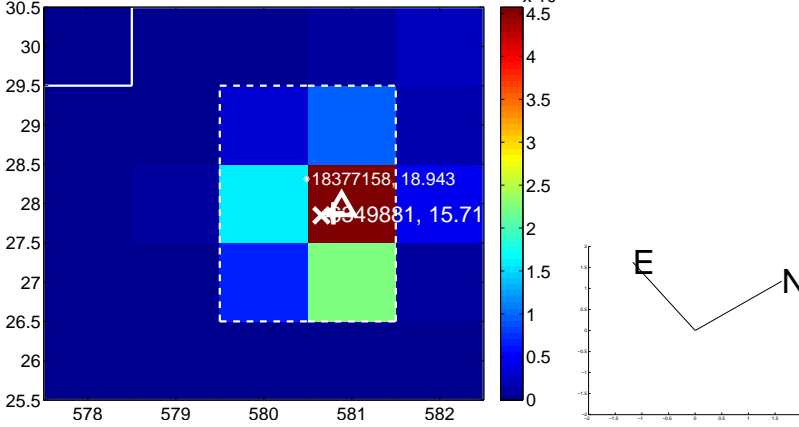
Q15 no OOT image



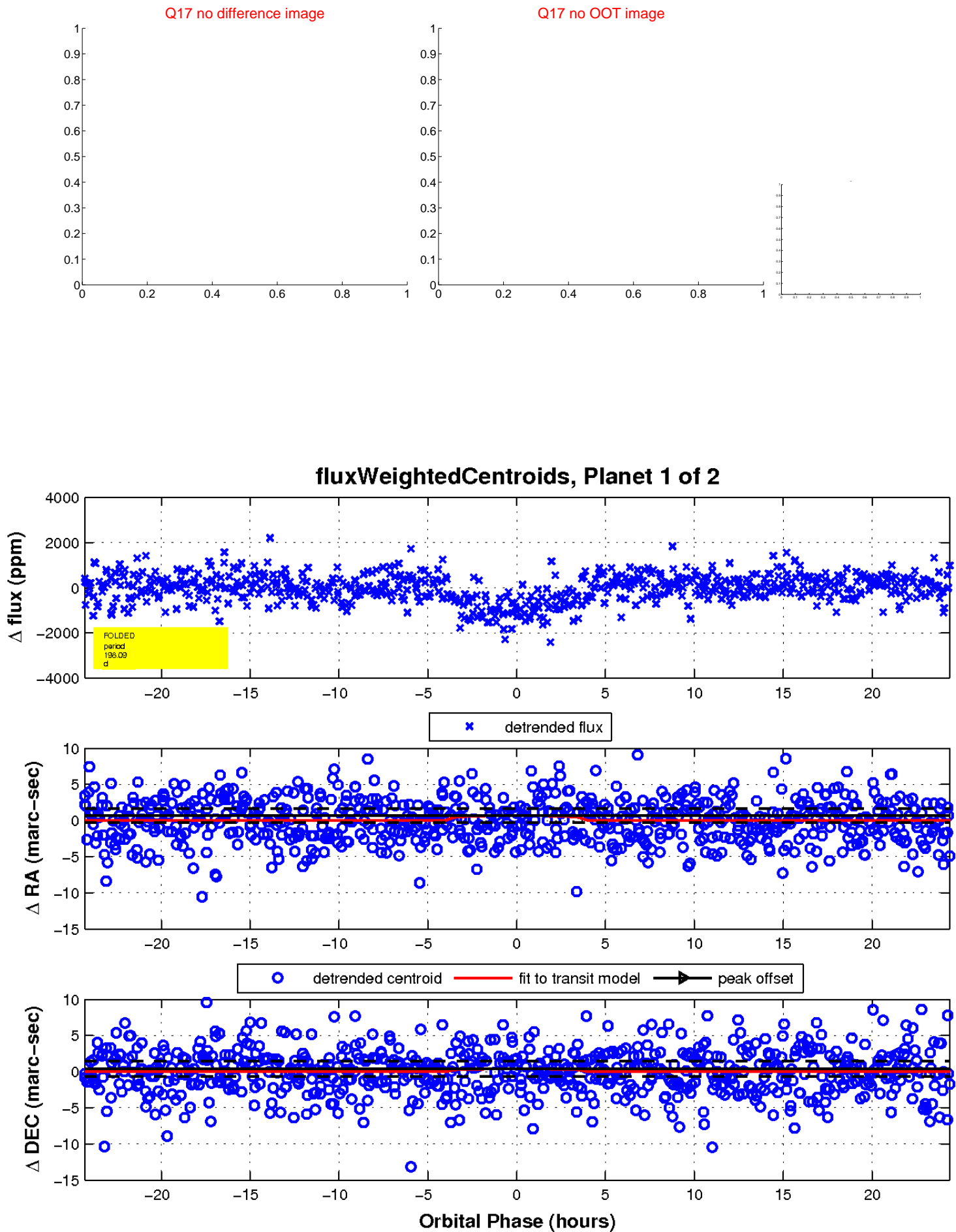
Q16 difference image



Q16 OOT image

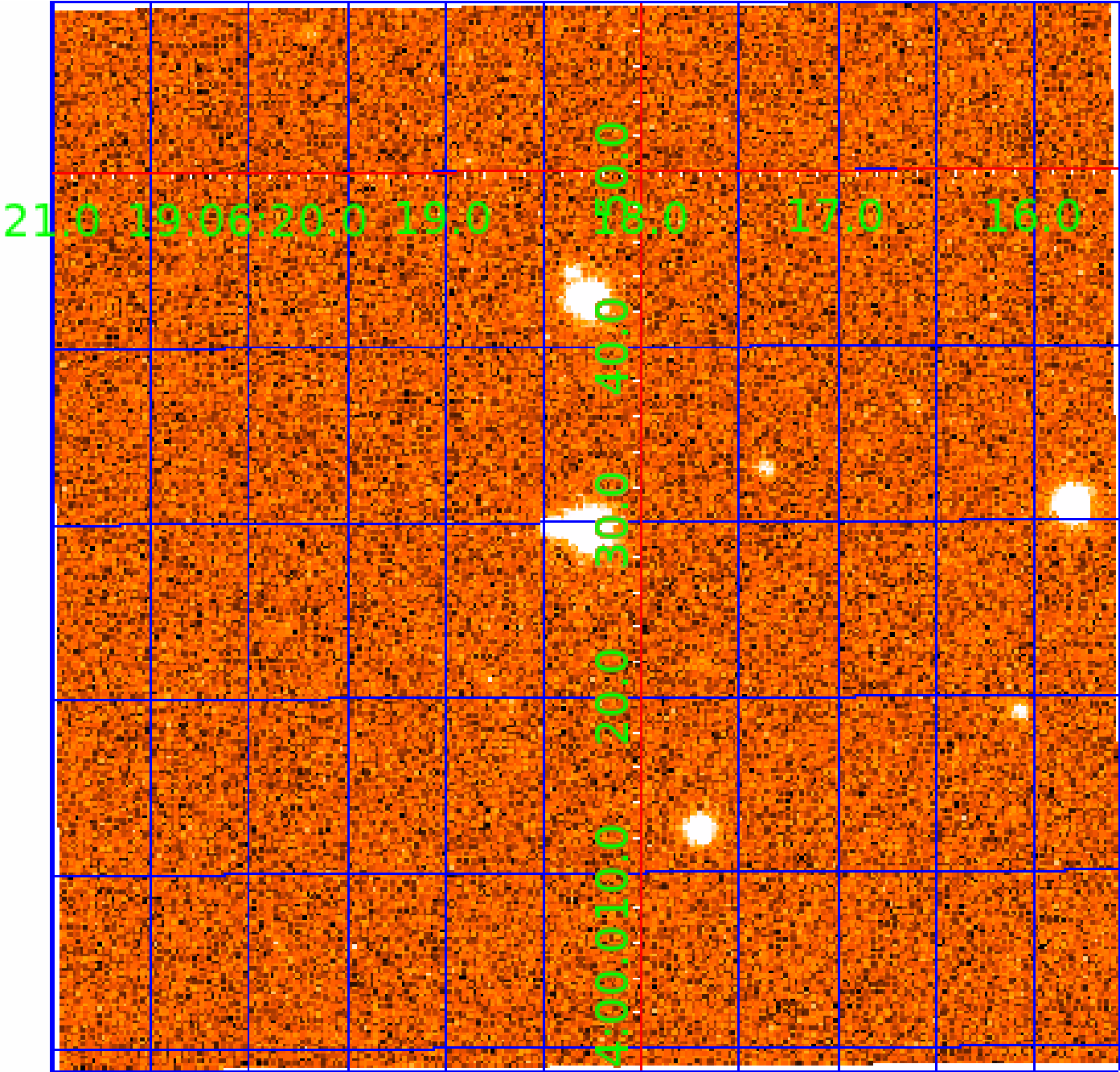


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006349881

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})
006349881-01	OBS	4121.01	198.089152	319.730687	998.4	8.145	16.3	16.6	0.97	5275	3.37	1.64
006349881-02	OBS	No	407.547668	456.172353	1354.6	38.902	16.2	20.9	0.97	5275	3.59	0.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006349881-01	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
006349881-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

Ephemeris Match Information For 006349881-02

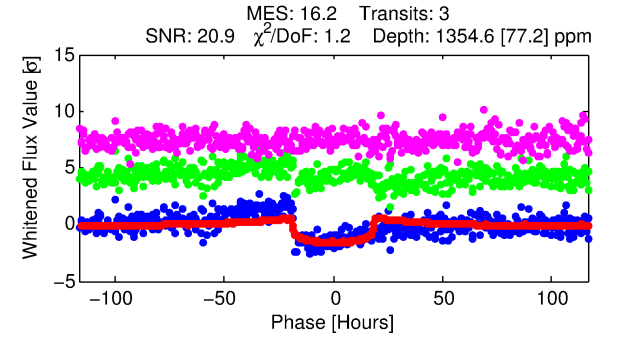
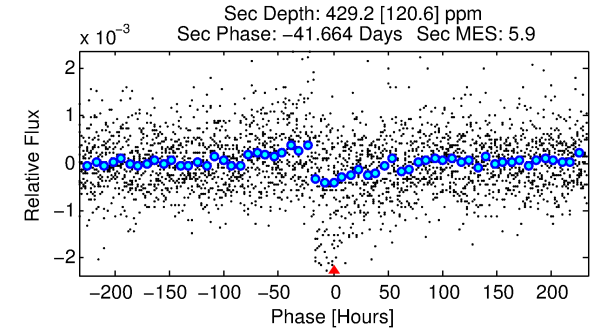
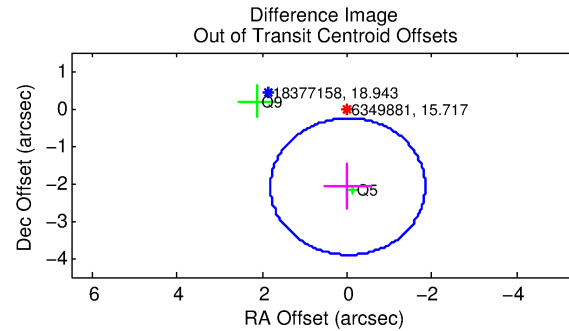
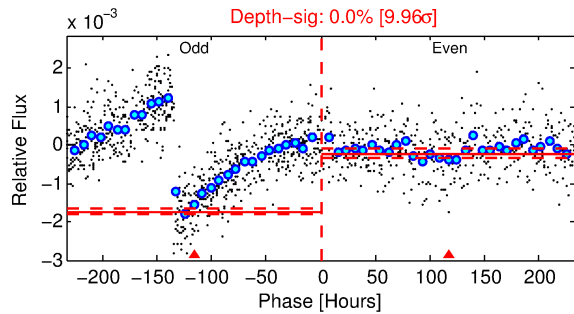
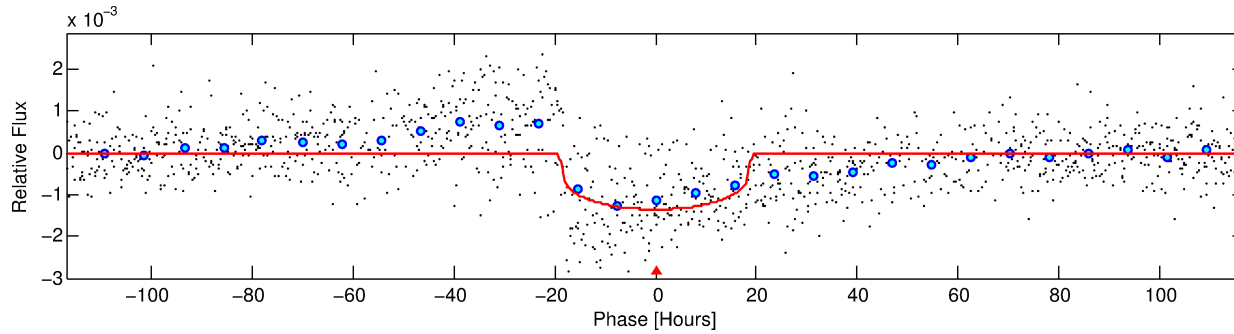
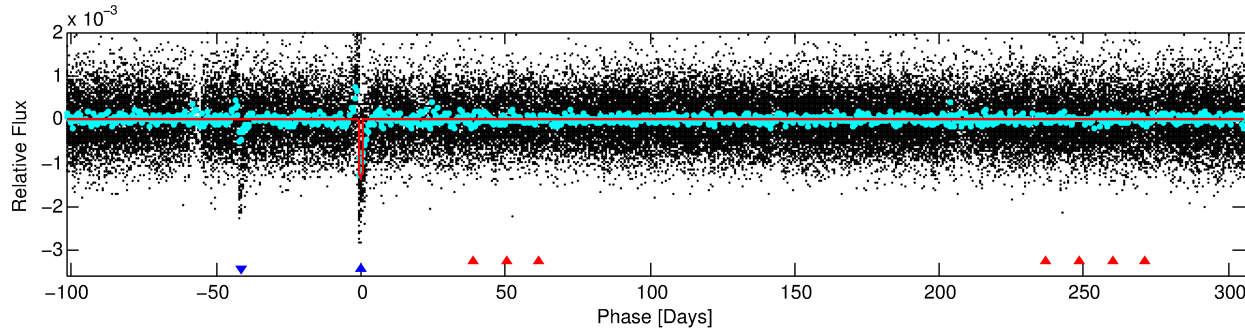
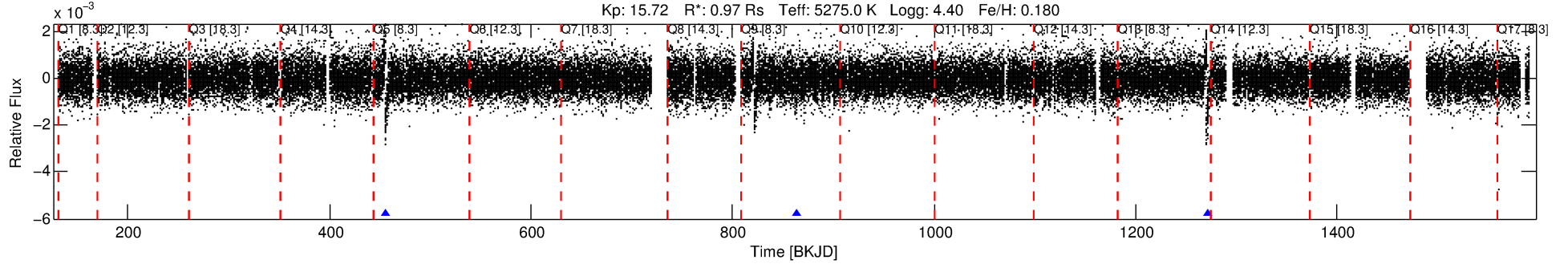
No Significant Match Found

DV One-Page Summary

KIC: 6349881 Candidate: 2 of 2 Period: 407.548 d

KOI: K04121 Corr: No Ephemeris Match

Kp: 15.72 R*: 0.97 Rs Teff: 5275.0 K Logg: 4.40 Fe/H: 0.180



DV Fit Results:

Period = 407.54767 [0.01705] d
Epoch = 456.1724 [0.0222] BKJD
Rp/R* = 0.0339 [0.0057]
a/R* = 73.77 [44.01]
b = 0.47 [1.01]
Seff = 0.62 [0.13]
Teq = 227 [12] K
Rp = 3.59 [0.73] Re
a = 1.0210 [0.1231] AU
Ag = 19116.25 [9209.68] [2.08σ]
Teff = 4122 [457] K [8.53σ]

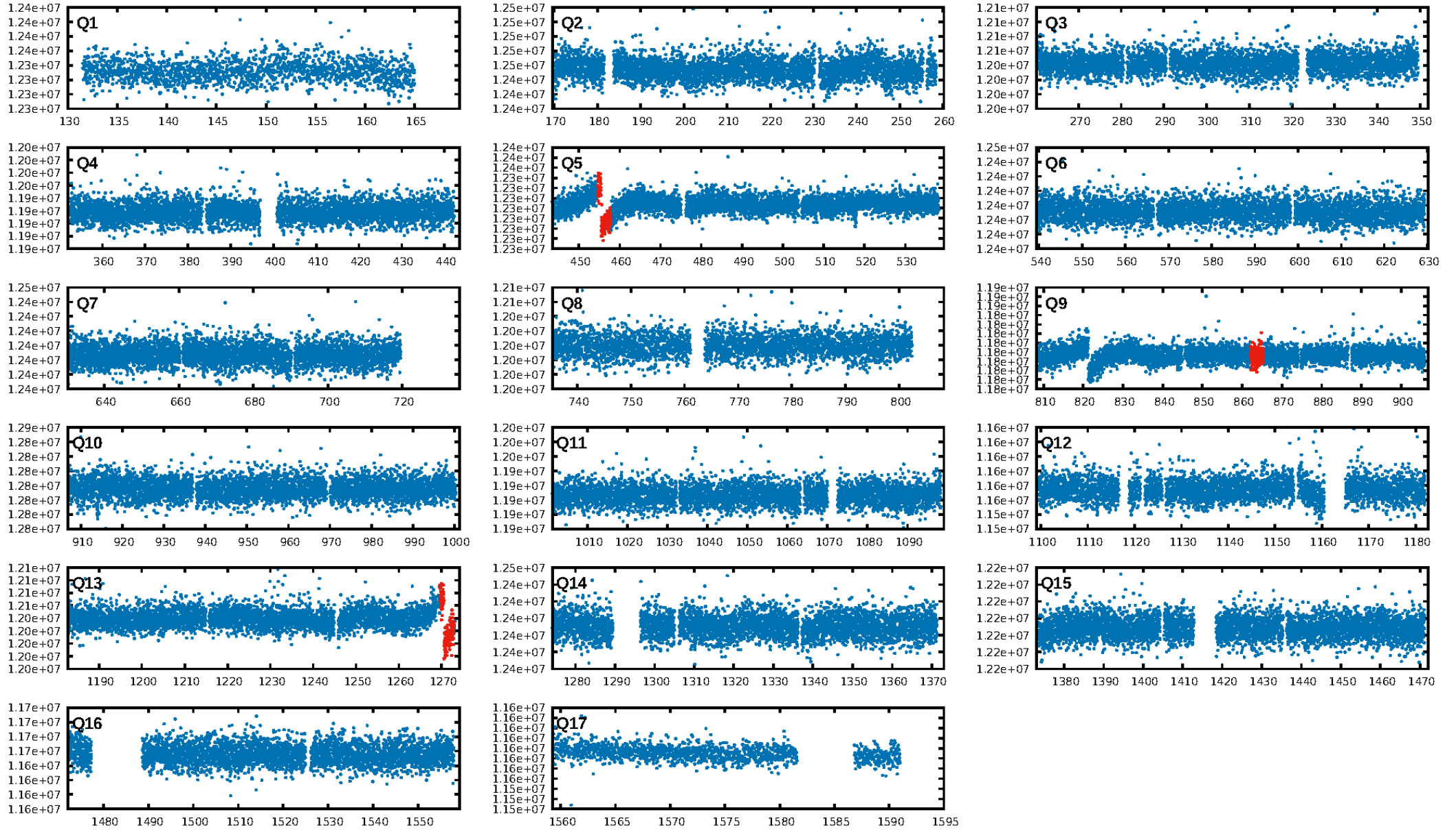
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [126.48σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 82.4%
Bootstrap-pfa: 6.16e-67
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 5.923
Centroid-sig: 0.3%
Centroid-so: 0.450 arcsec [0.83σ]
OotOffset-rm: 2.085 arcsec [3.43σ]
KicOffset-rm: 1.799 arcsec [2.89σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

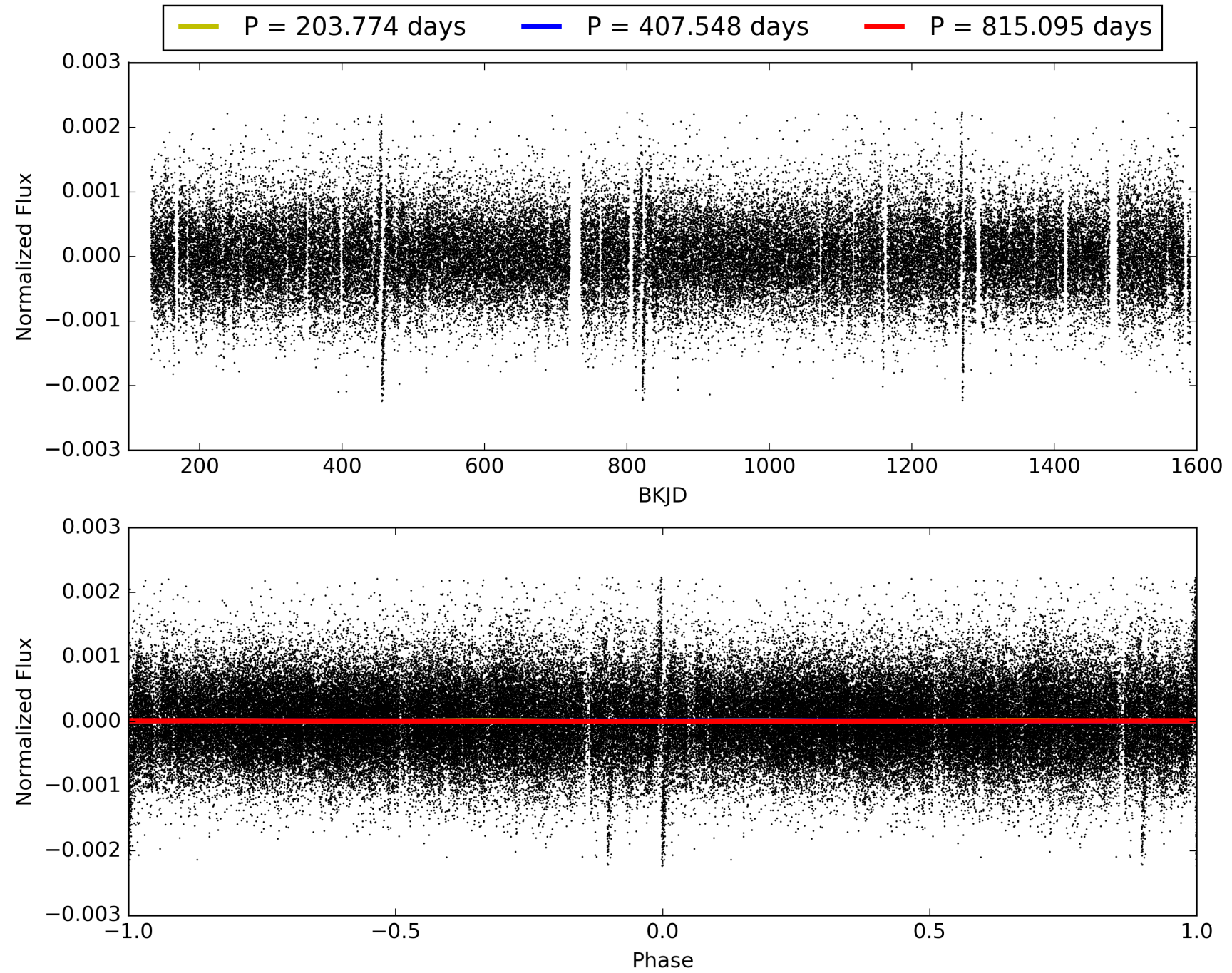
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:24:37 Z

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

TCE 006349881-02, PDC Light Curves

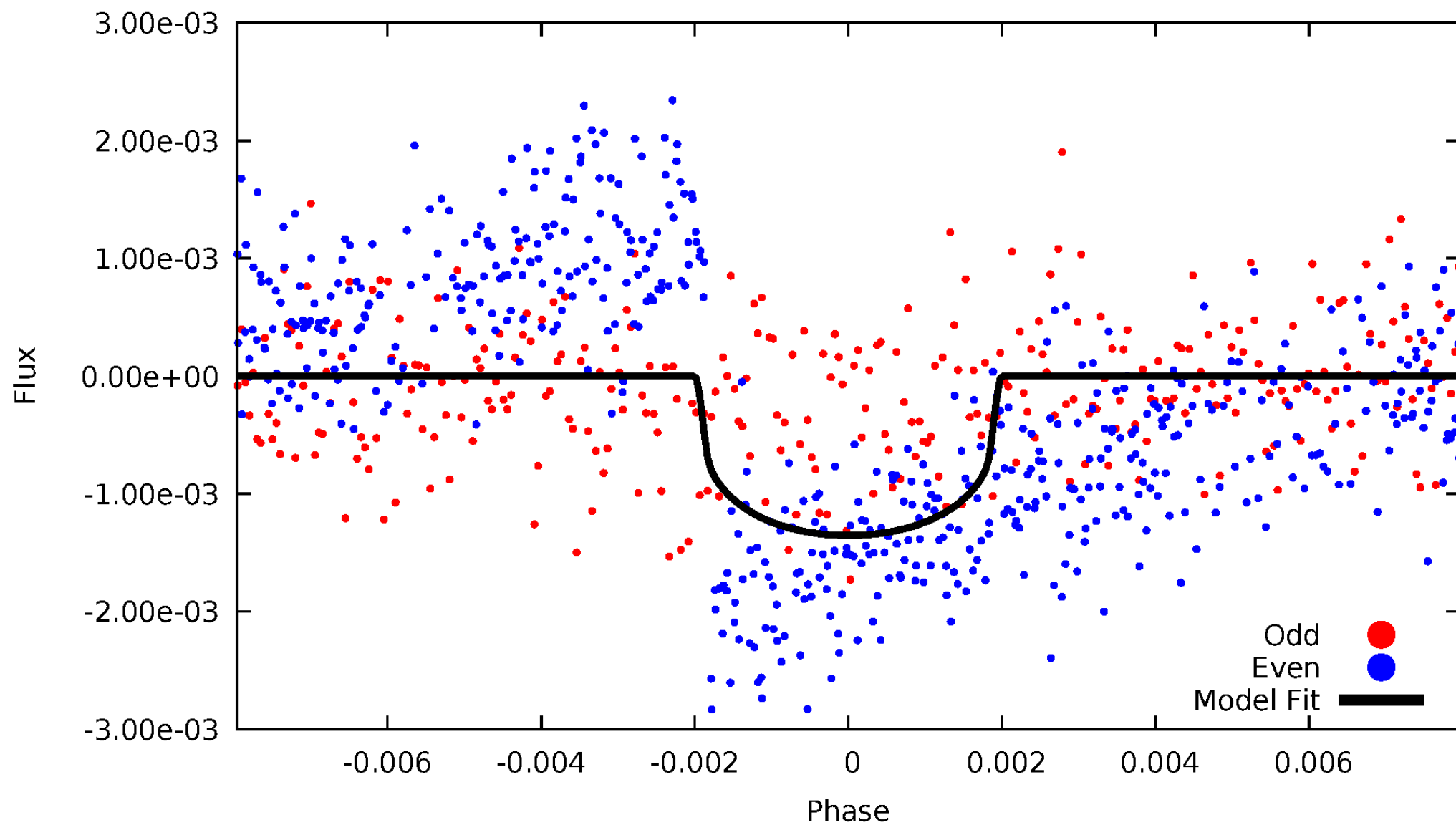


TCE 006349881-02



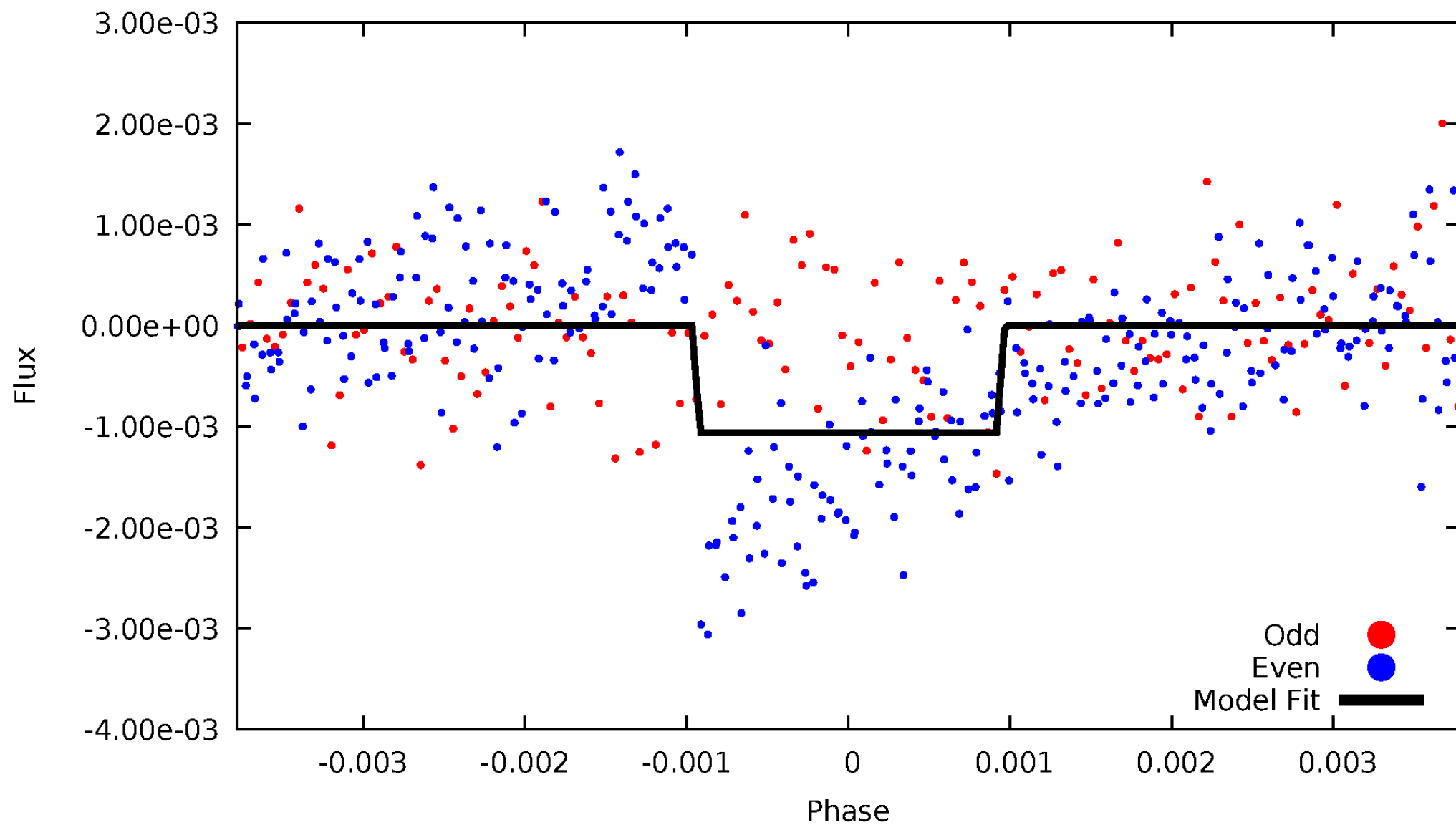
DV Odd/Even

TCE 006349881-02



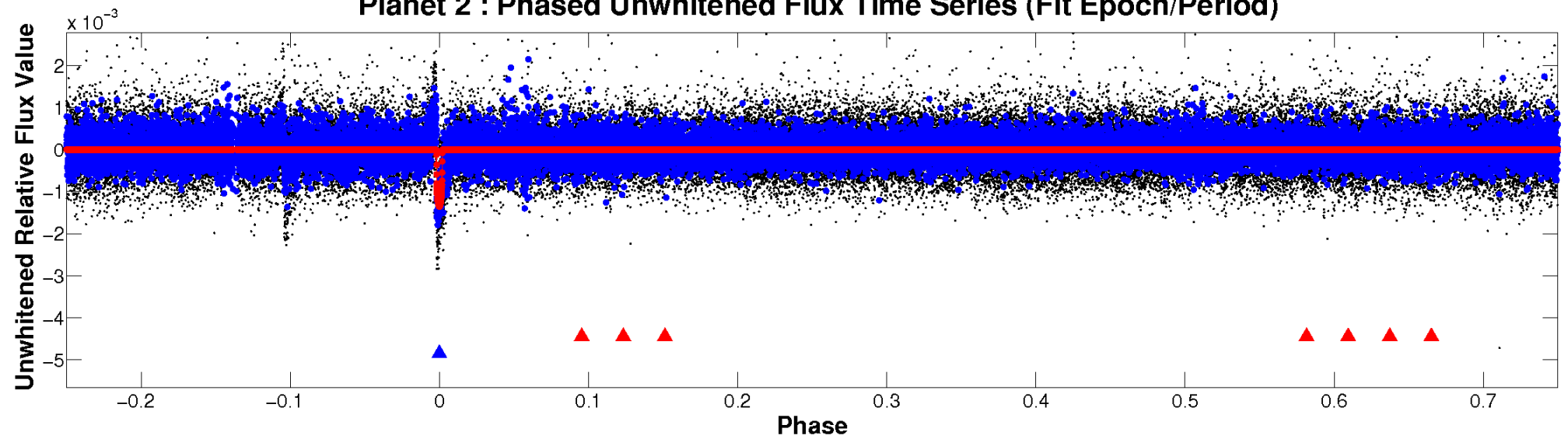
ALT Odd/Even

TCE 006349881-02

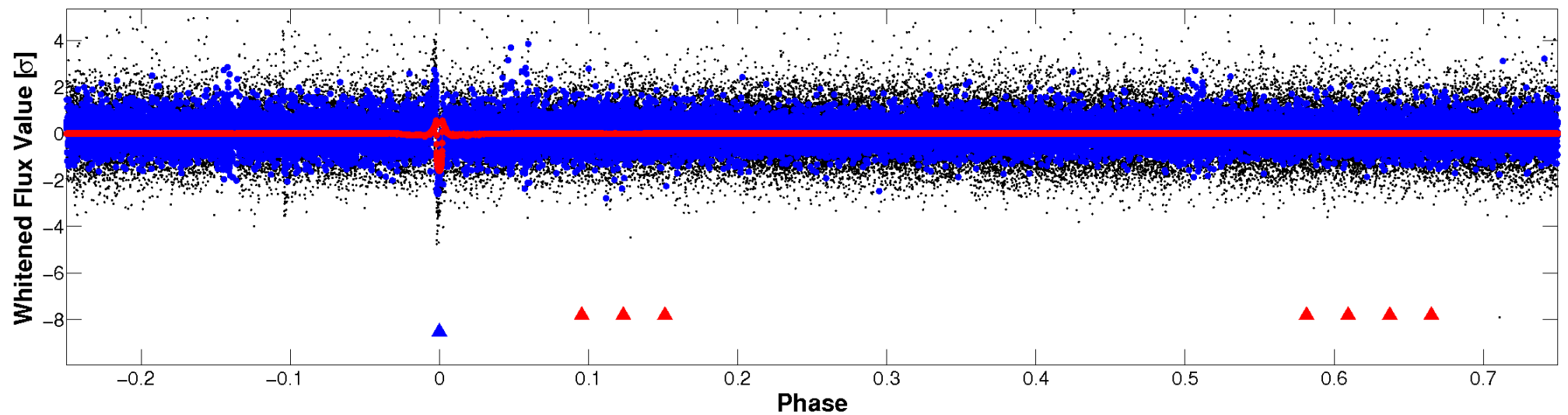


Non-Whitened Vs. Whitened Light Curve

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

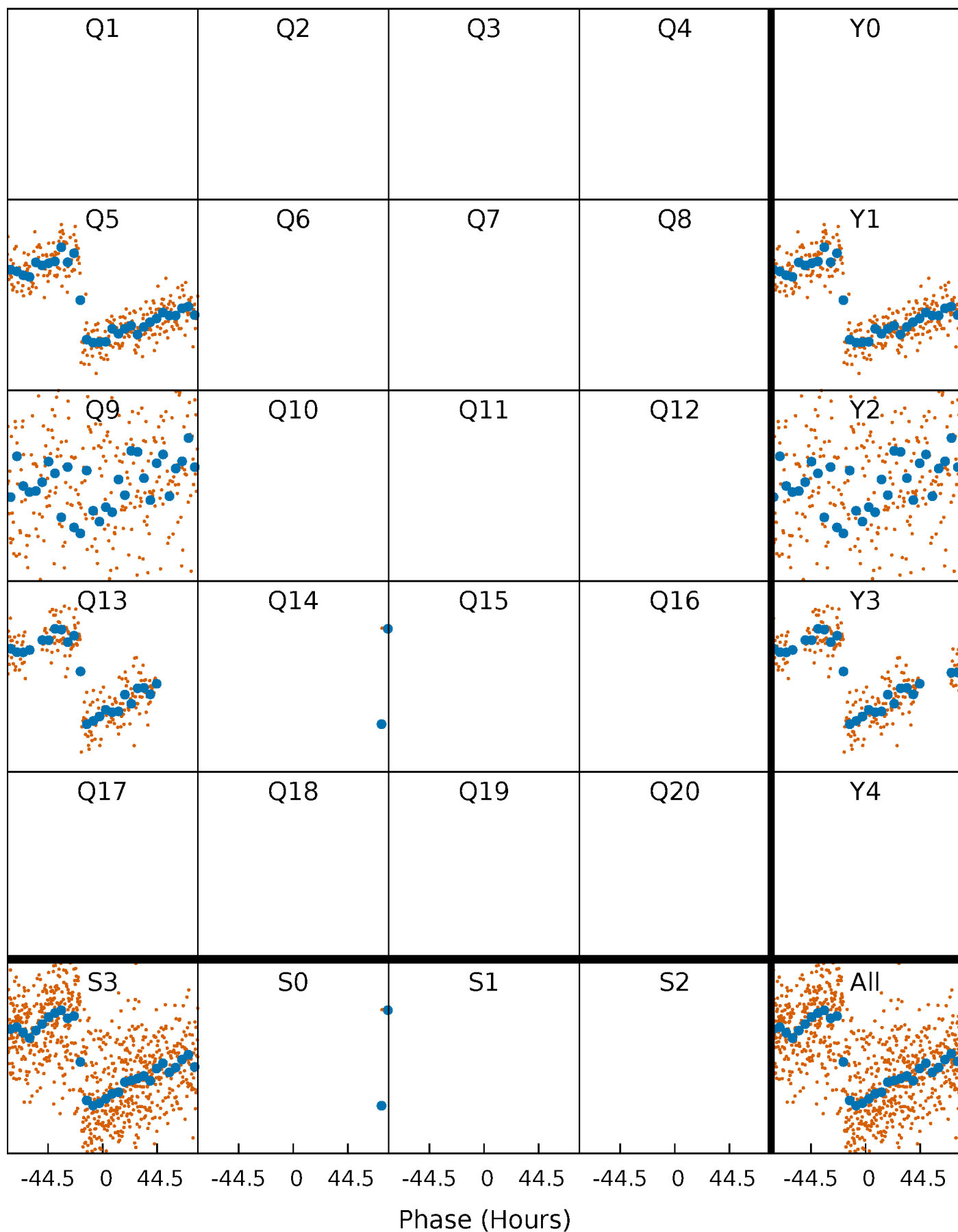


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 006349881-02 $P=407.547668$ Days $T_0=456.172353$ (BKJD)



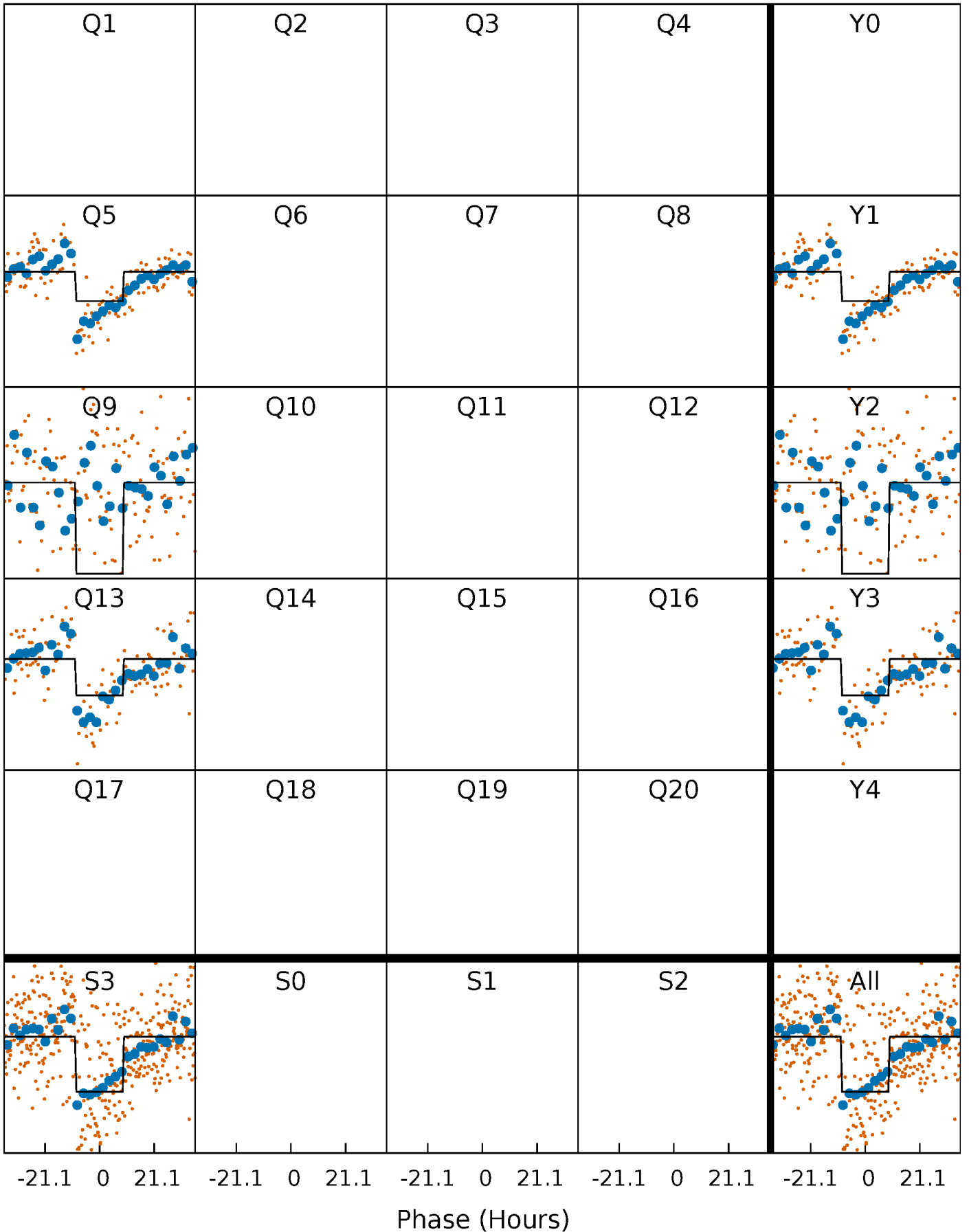
DV Quarter-Phased Transit Curves

TCE 006349881-02 $P=407.547668$ Days $T_0=456.172353$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

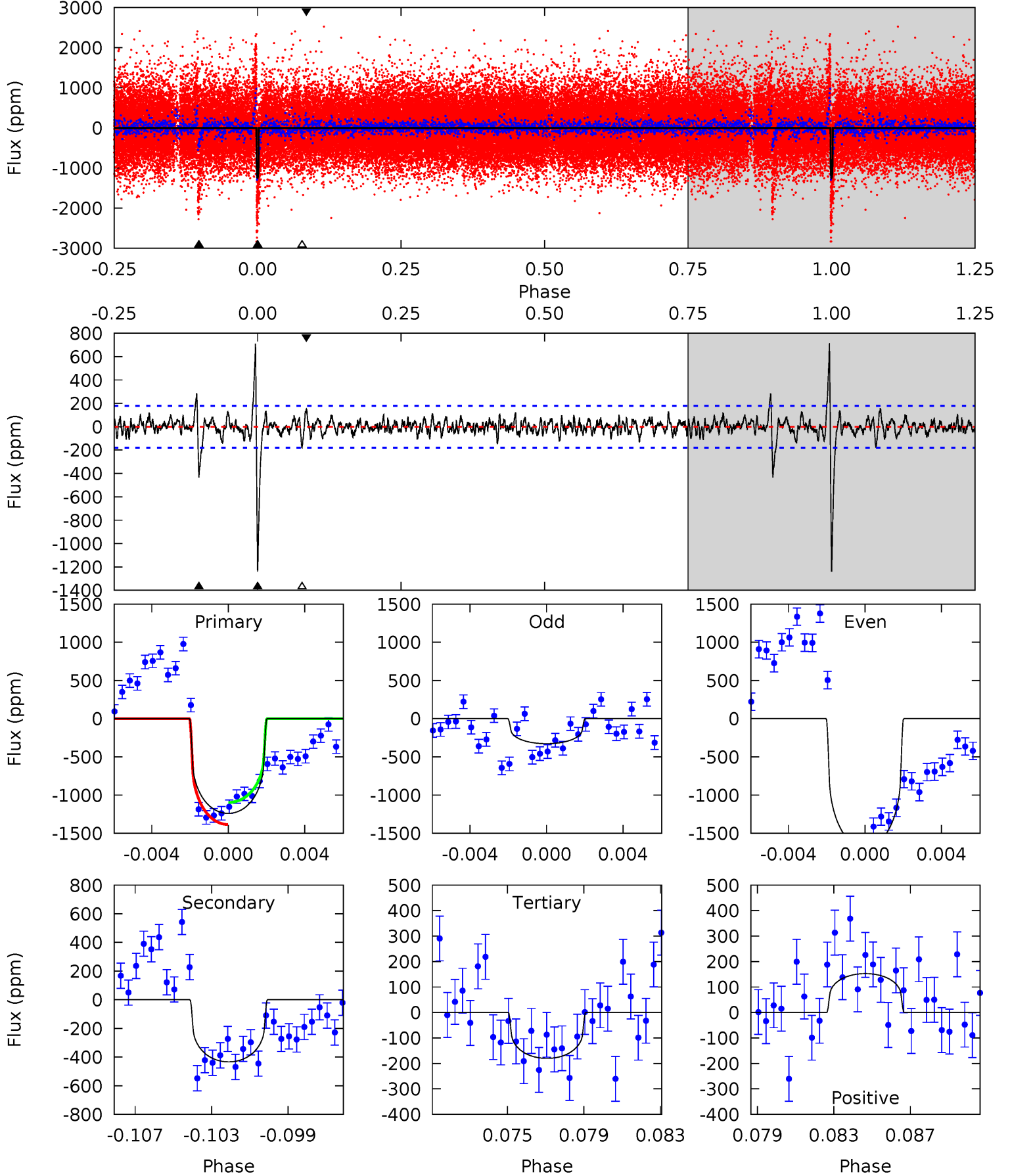
TCE 006349881-02 $P=407.540543$ Days $T_0=455.816399$ (BKJD)



DV Model-Shift Uniqueness Test

006349881-02, $P = 407.547668$ Days, $E = 48.624685$ Days

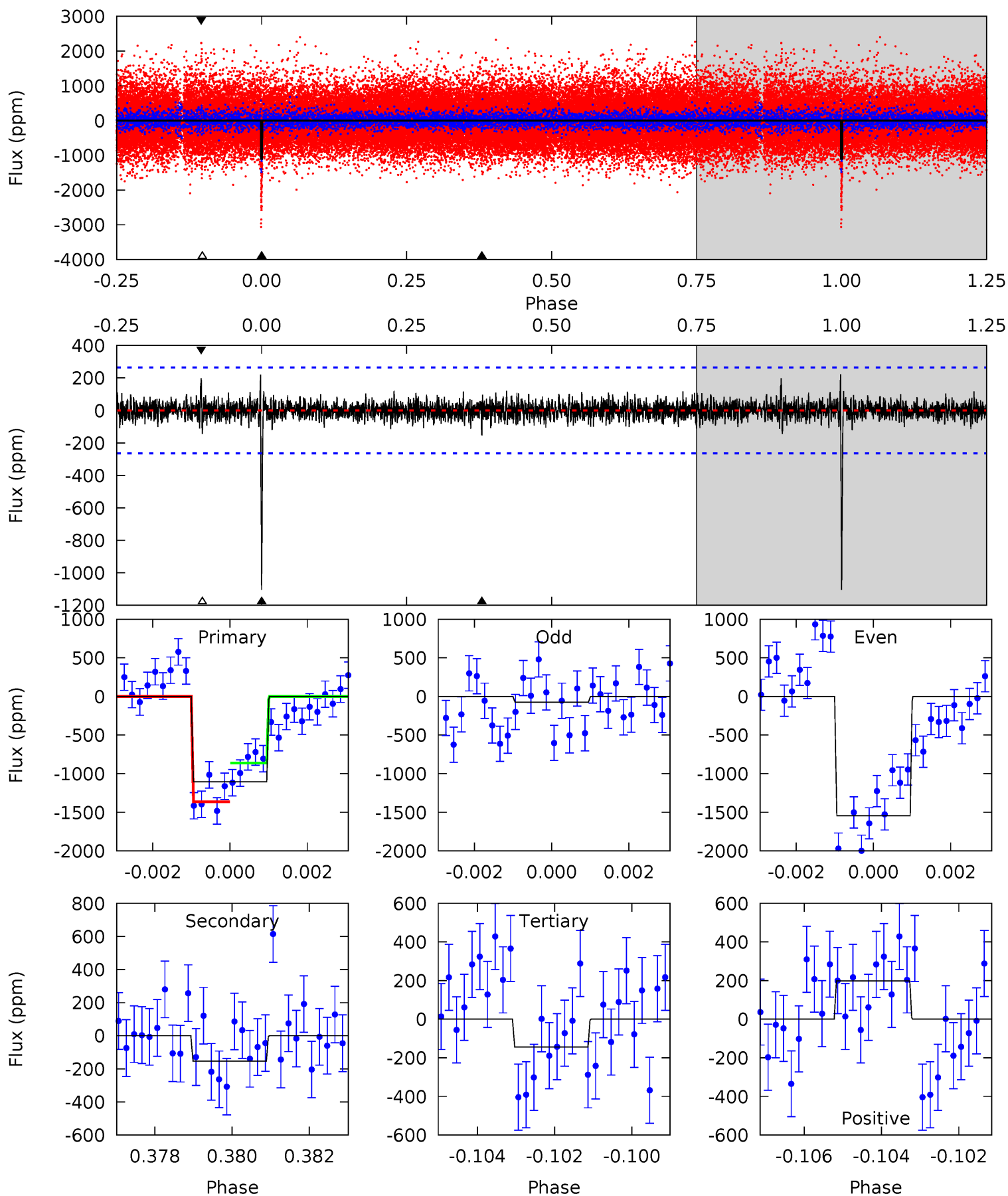
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.0	12.6	5.23	4.43	5.20	2.88	1.61	30.8	31.6	7.36	8.16	18.7	0.74	0.36	4.17



Alt Model-Shift Uniqueness Test

006349881-02, $P = 407.540543$ Days, $E = 48.275856$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	3.08	2.89	3.99	5.33	3.10	0.73	19.4	18.3	0.19	-0.90	14.3	0.71	0.17	5.06



Stellar Parameters For KIC 006349881

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5275^{+86}_{-79}	$4.397^{+0.120}_{-0.080}$	$0.180^{+0.150}_{-0.150}$	$0.969^{+0.102}_{-0.113}$	$0.855^{+0.061}_{-0.030}$	$1.323^{+0.652}_{-0.344}$
	+2%/-1%	+3%/-2%	+83%/-83%	+11%/-12%	+7%/-4%	+49%/-26%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 006349881-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-434 ± 34	$3.58^{+0.69}_{-0.64}$	316^{+11}_{-12}	4321^{+343}_{-249}	19700^{+9356}_{-5605}
Alt.	-153 ± 50	$3.40^{+0.66}_{-0.59}$	316^{+12}_{-12}	3664^{+312}_{-304}	7616^{+4714}_{-3280}

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

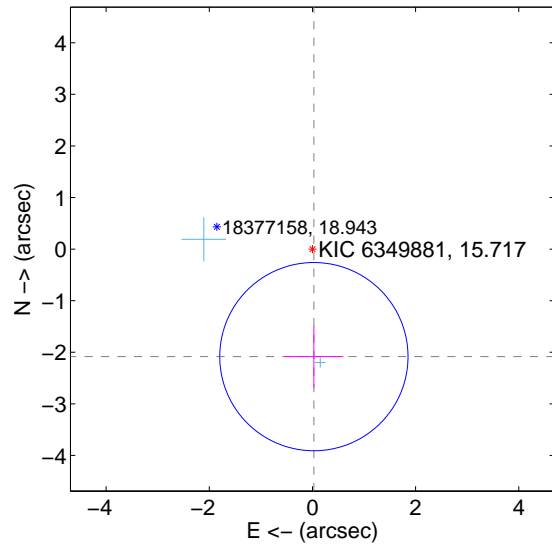
Supplemental centroid analysis for 006349881-02. Kepler magnitude: 15.72. Transit SNR 20.90

There are 2 quarters with good PRF difference image offsets

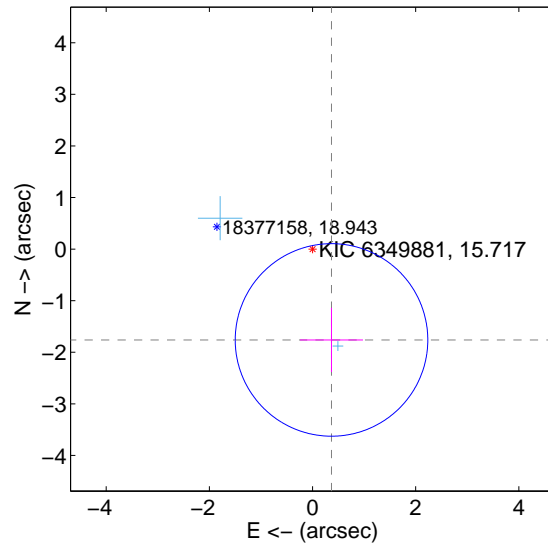
The direct PRF centroid is offset from the target star catalog position by about 0.52 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.085 ± 0.608	3.43	-0.028 ± 0.568	-2.085 ± 0.601
PRF-fit source offset from KIC position	1.799 ± 0.622	2.89	-0.368 ± 0.610	-1.761 ± 0.623
photometric centroid source offset	0.45 ± 0.54	0.83	-0.26 ± 0.56	-0.37 ± 0.54

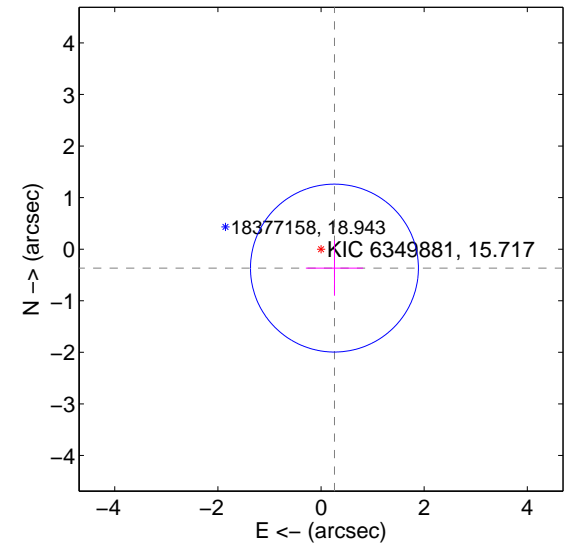
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

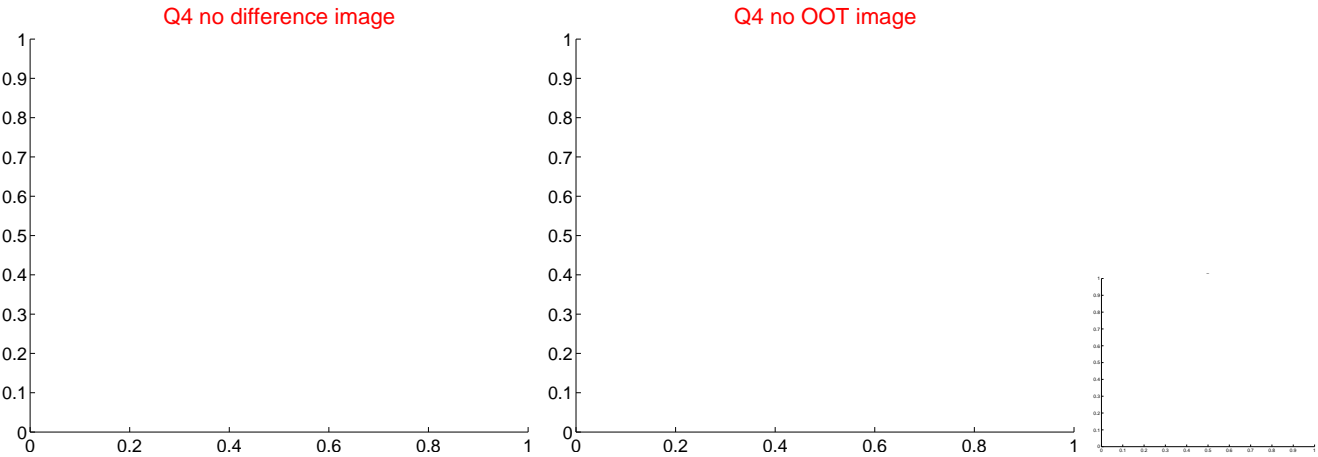
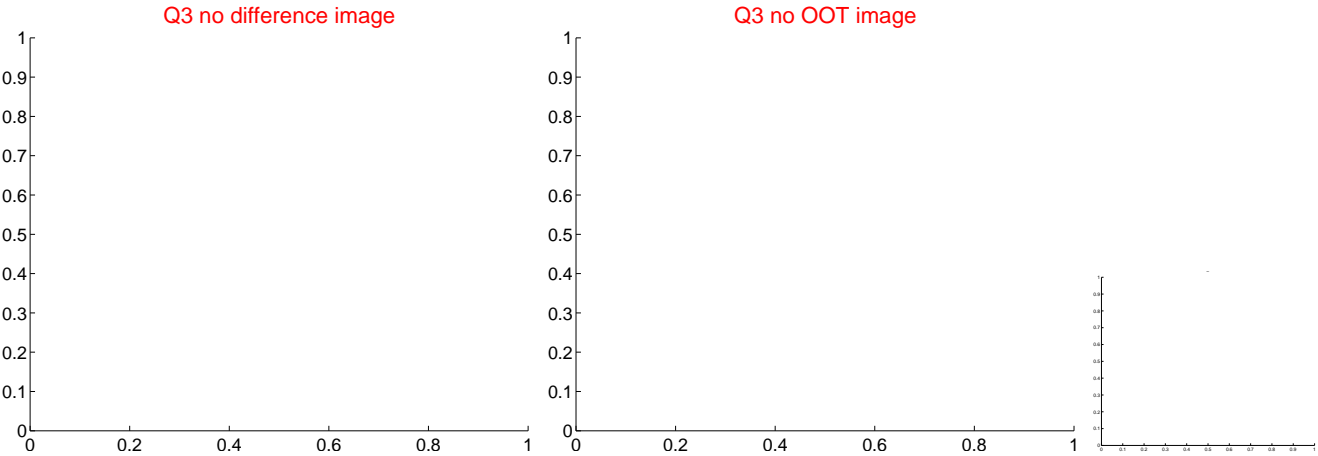
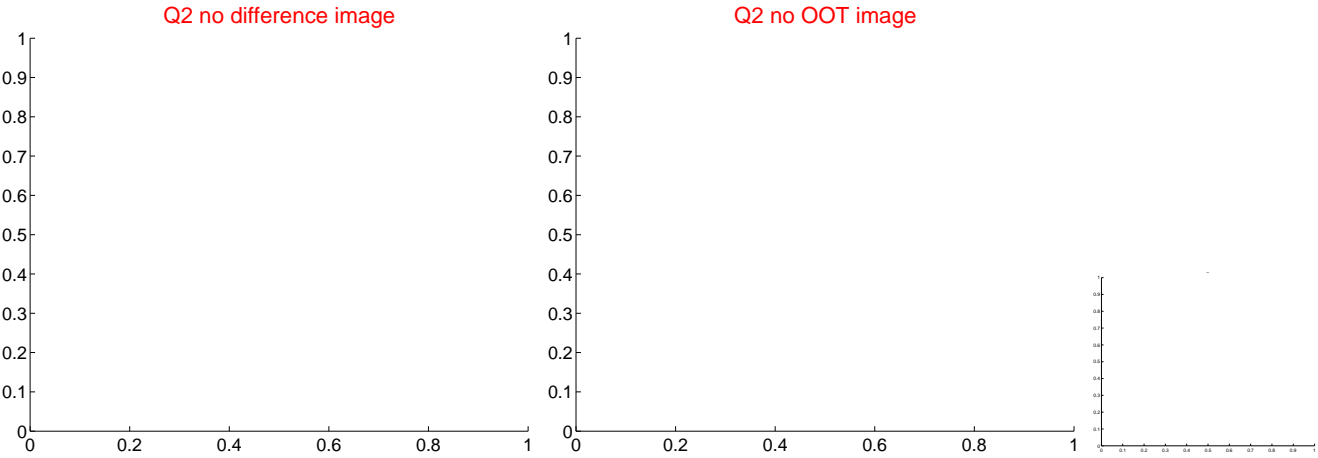
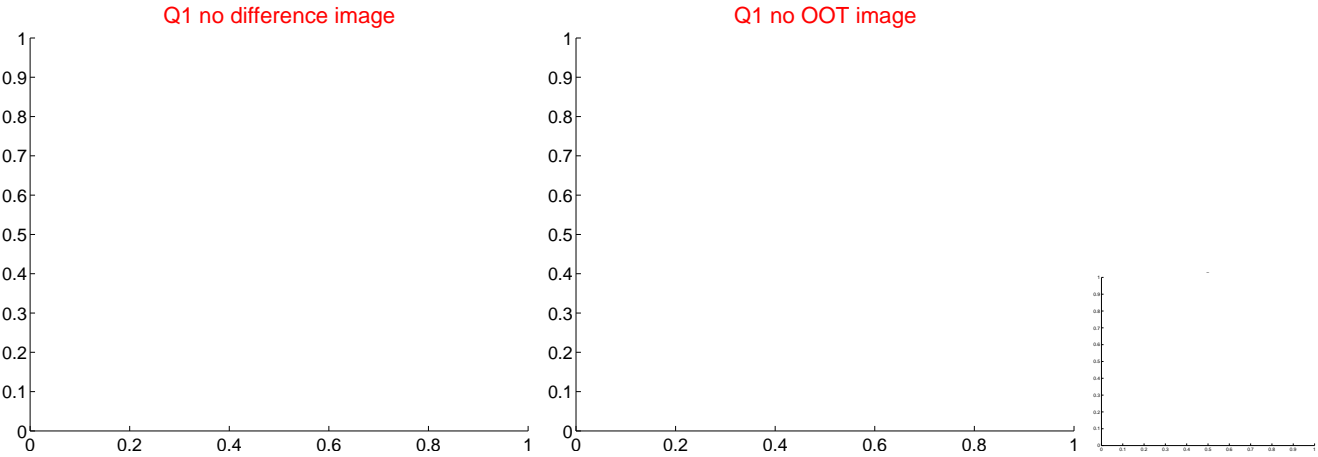


offset from photometric centroids

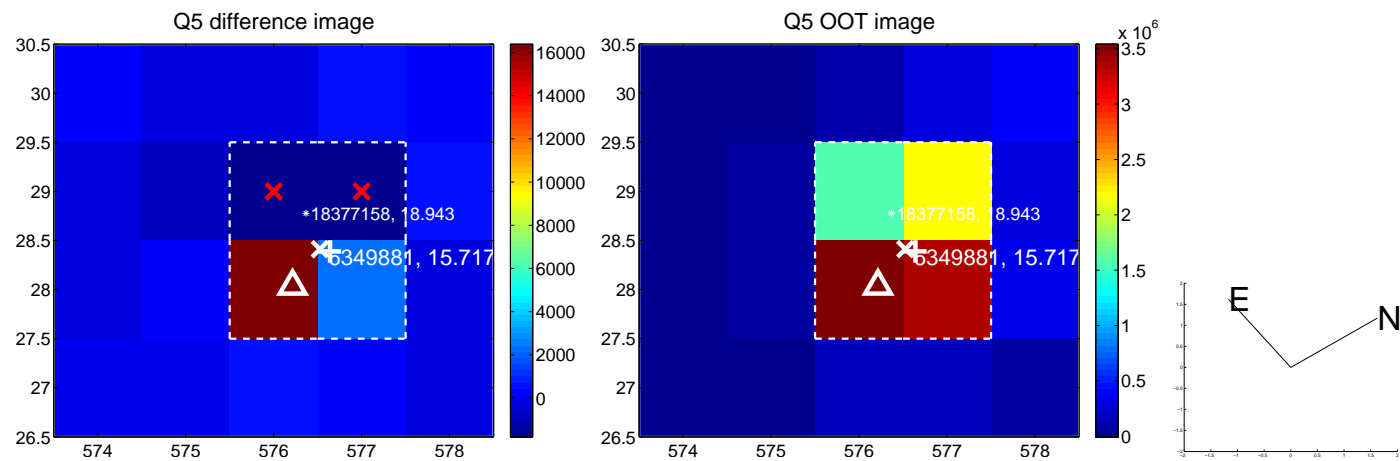


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

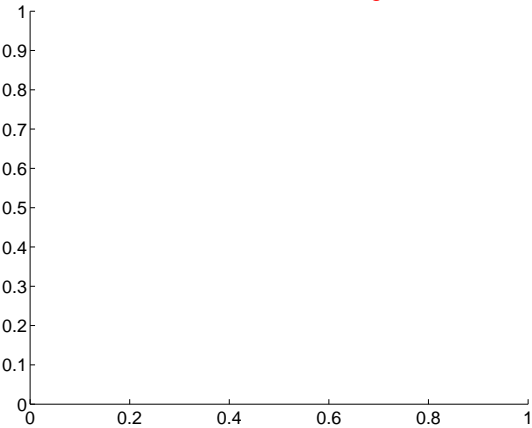
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



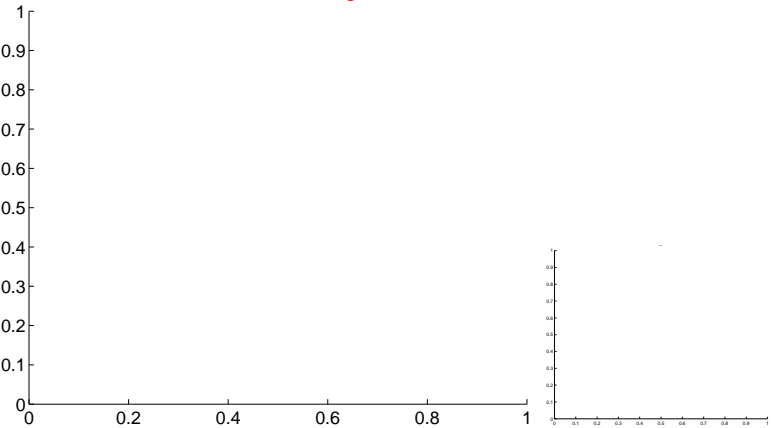
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



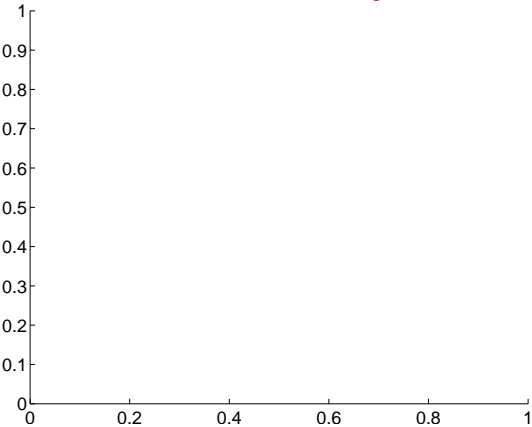
Q6 no difference image



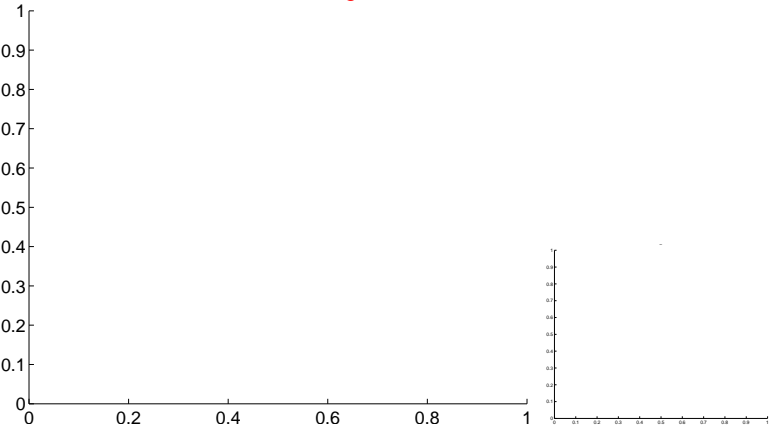
Q6 no OOT image



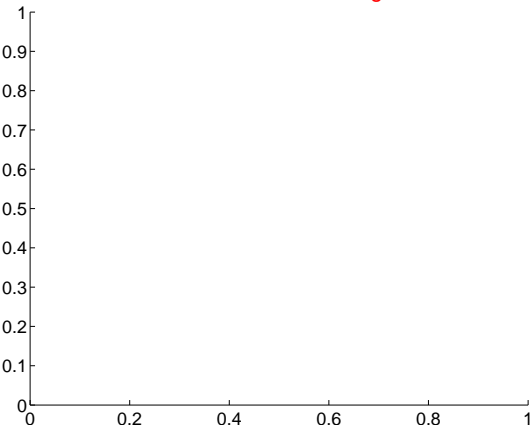
Q7 no difference image



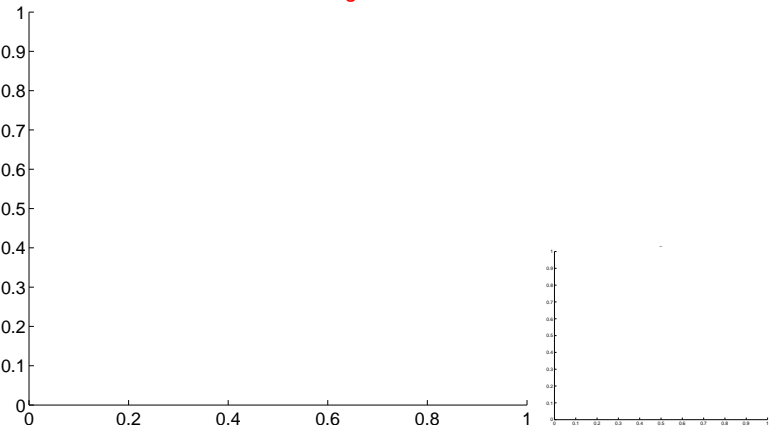
Q7 no OOT image



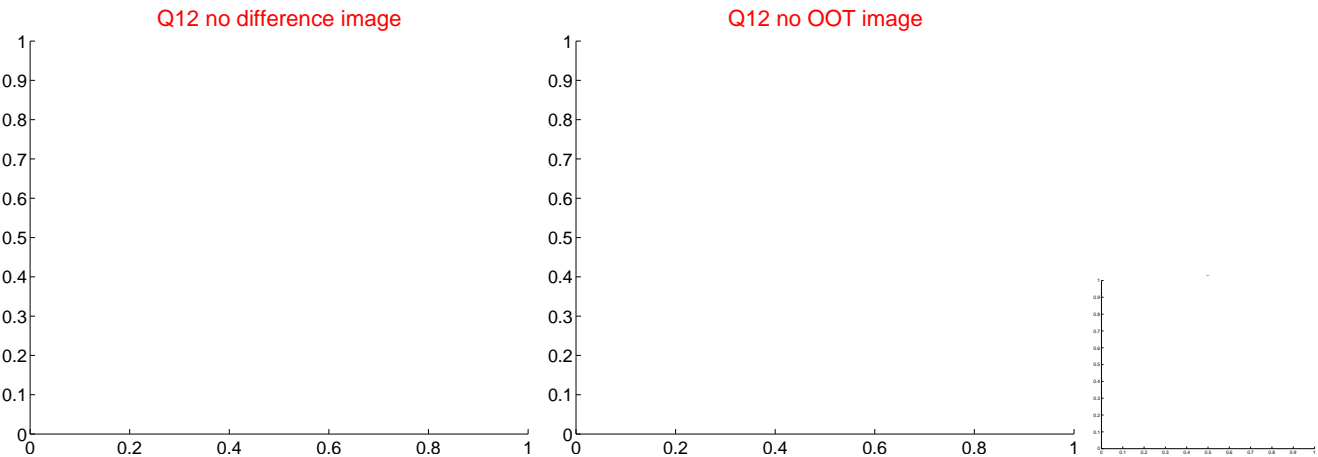
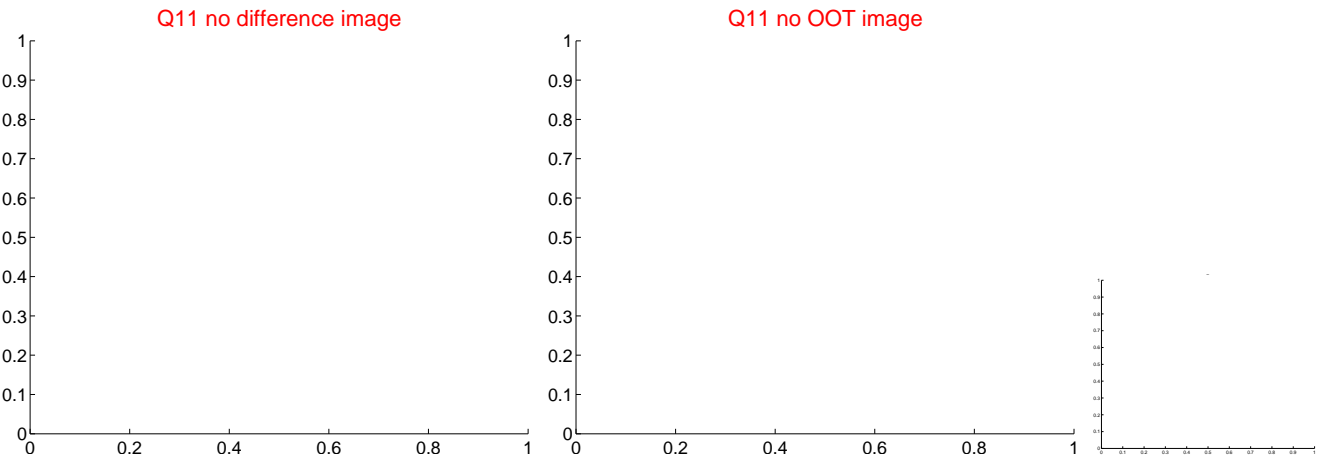
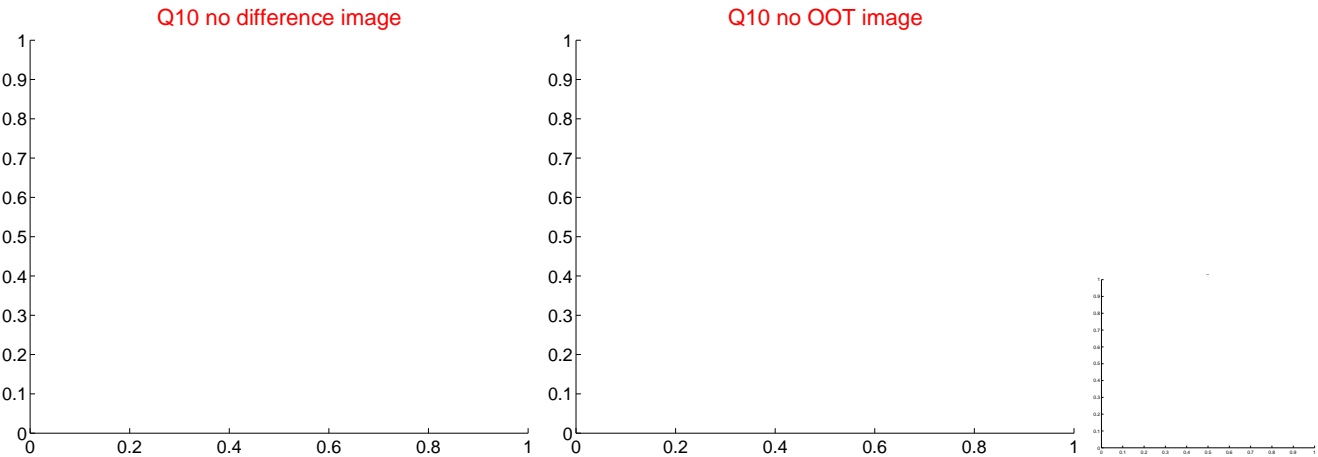
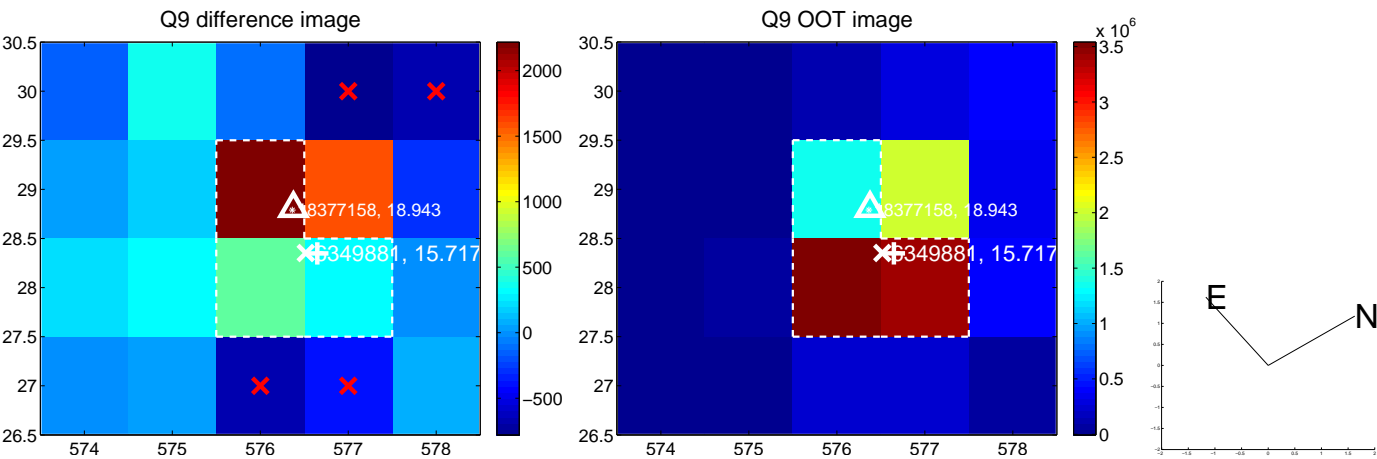
Q8 no difference image



Q8 no OOT image



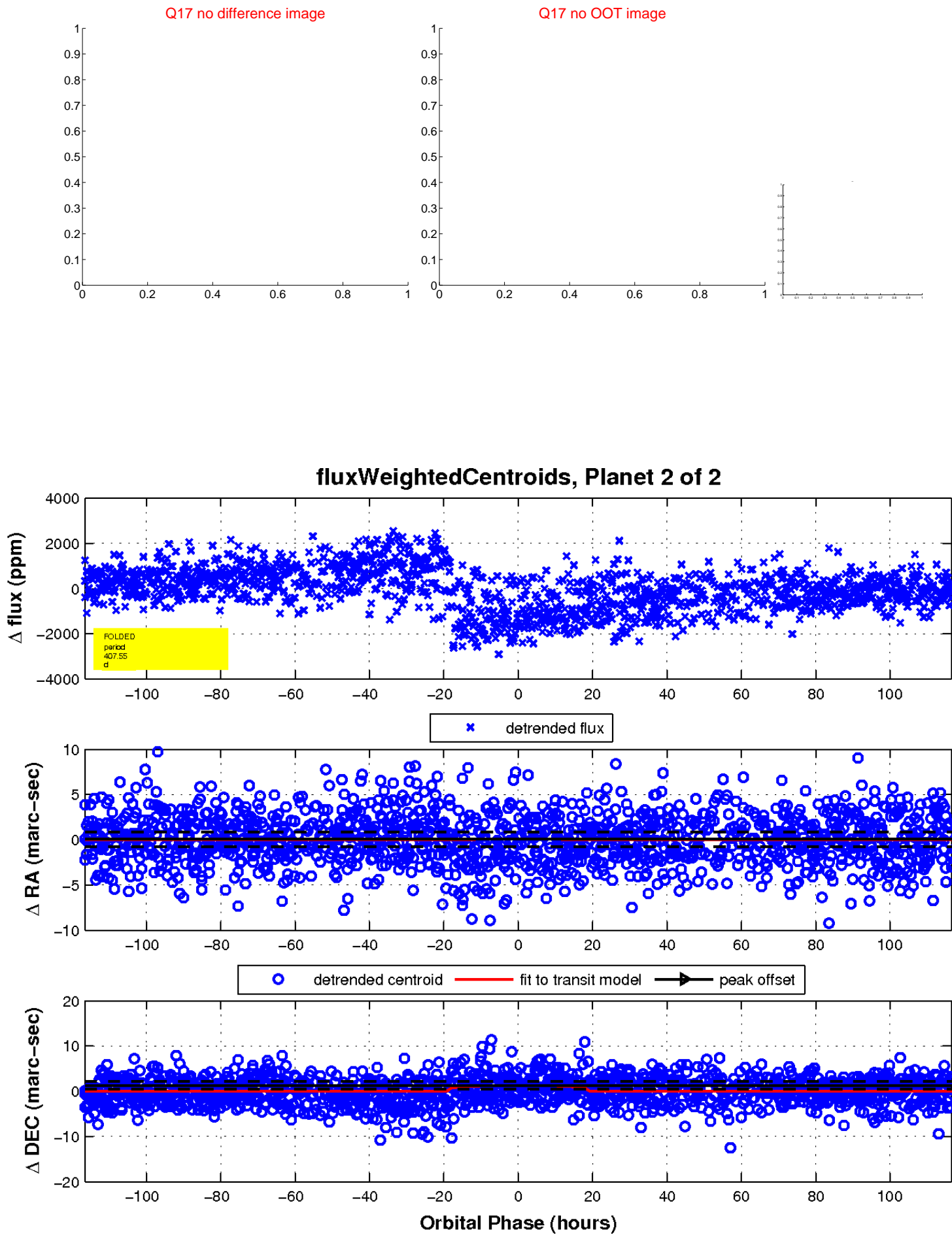
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

