

KIC 009179906

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})
009179906-01	OBS	No	510.560526	543.540924	1795.6	5.845	14.4	5.4	0.29	3368	1.23	0.01
009179906-02	OBS	No	413.260849	365.733181	2470.6	5.838	12.2	8.5	0.29	3368	1.45	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009179906-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009179906-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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.

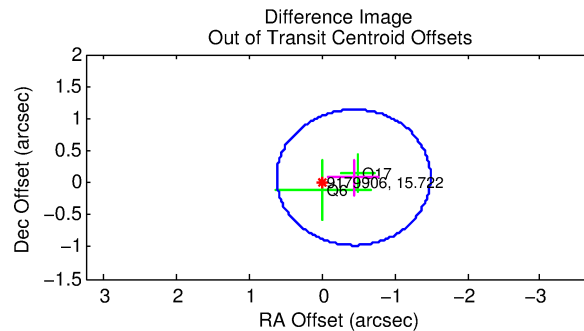
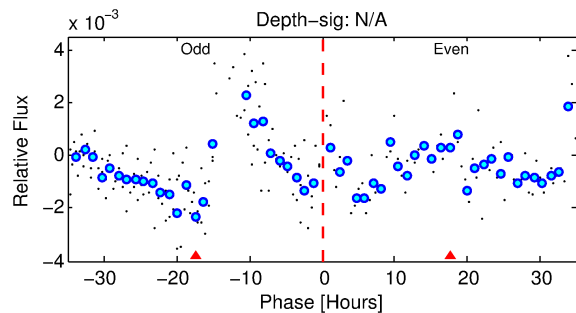
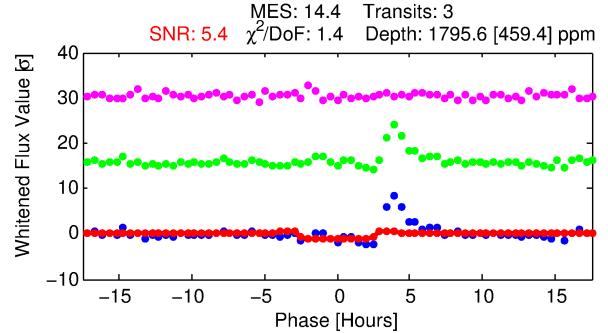
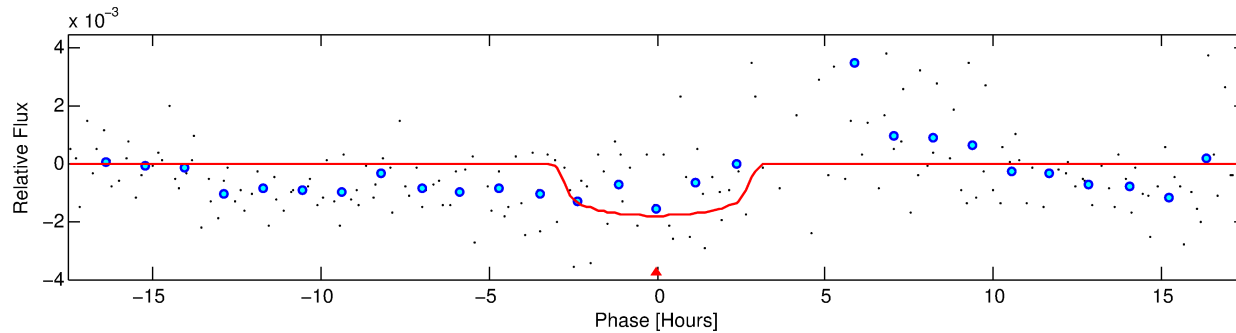
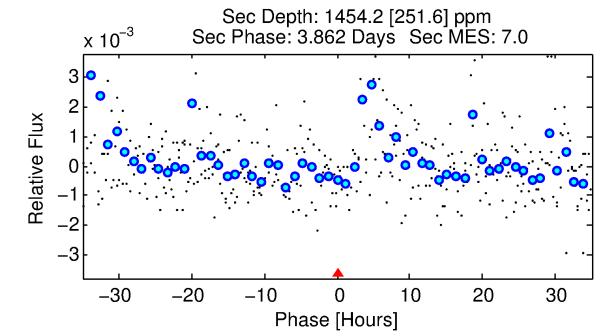
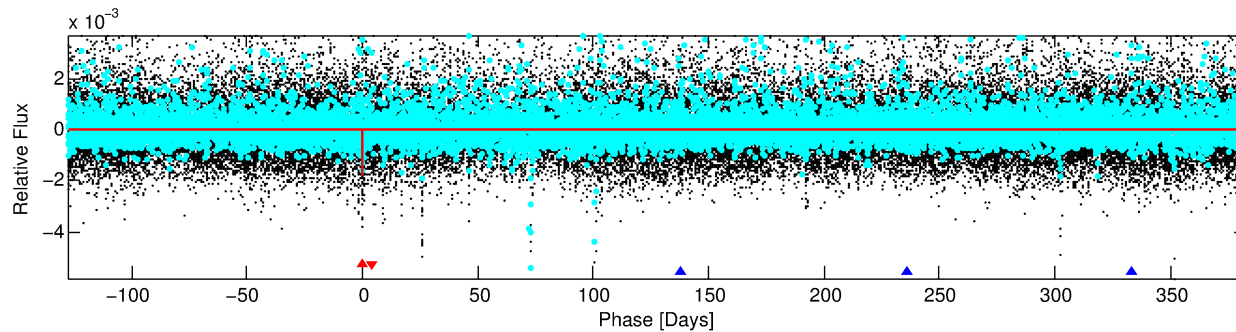
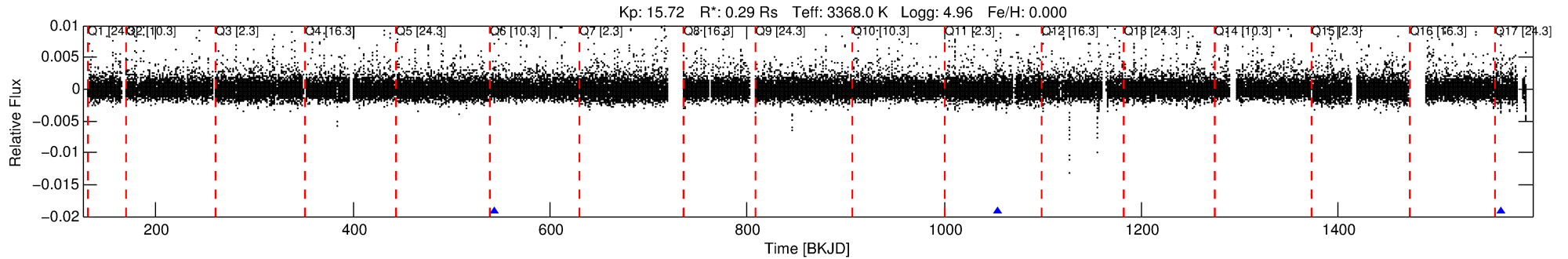
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009179906-01

No Significant Match Found

DV One-Page Summary

KIC: 9179906 Candidate: 1 of 2 Period: 510.561 d



DV Fit Results:

Period = 510.56053 [0.01088] d
Epoch = 543.5409 [0.0135] BKJD
Rp/R* = 0.0384 [0.0703]
a/R* = 681.81 [5331.73]
b = 0.19 [40.82]
Seff = 0.01 [0.00]
Teq = 89 [3] K
Rp = 1.23 [2.26] Re
a = 0.8203 [0.0921] AU
Ag = 356561.09 [1307378.83] [0.27σ]
Teff = 3355 [3074] K [1.06σ]

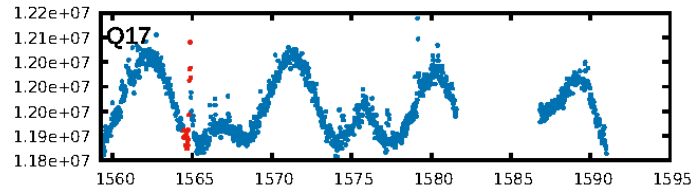
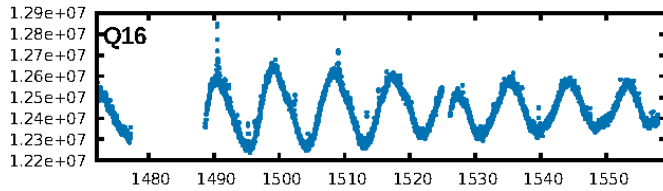
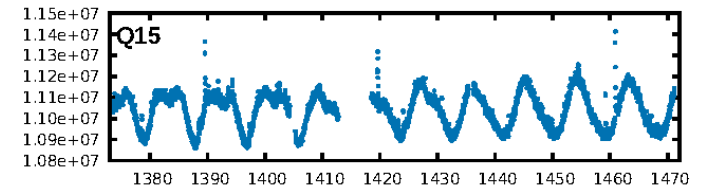
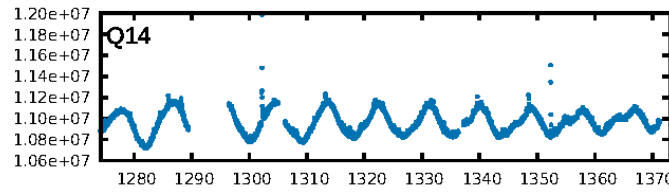
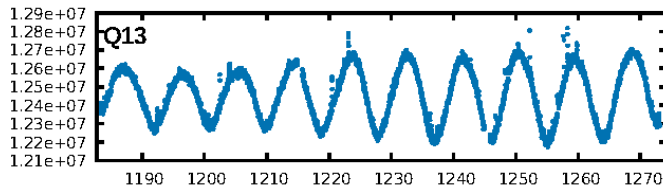
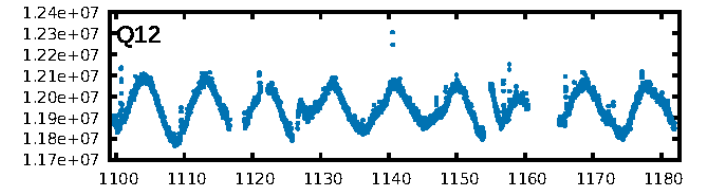
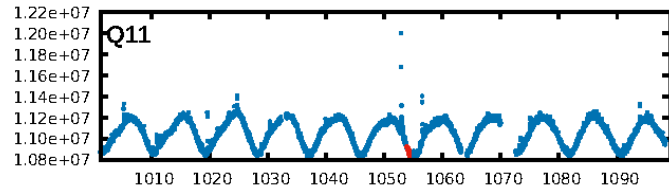
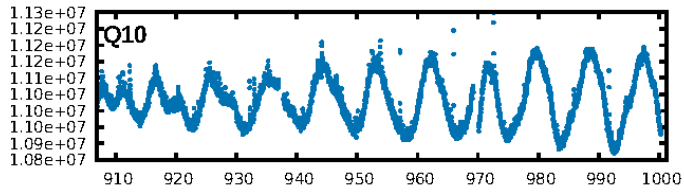
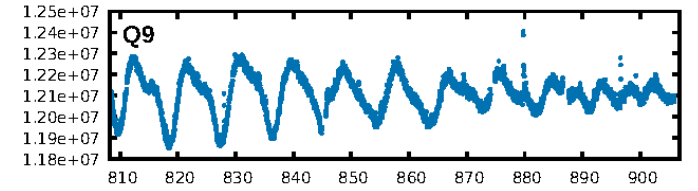
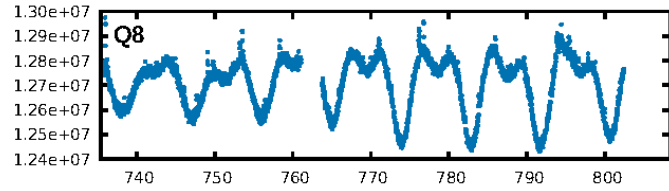
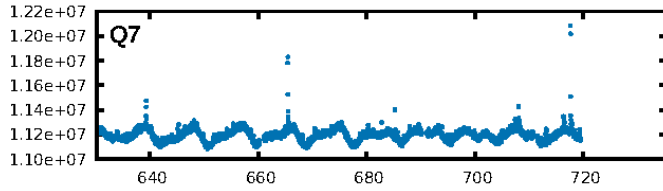
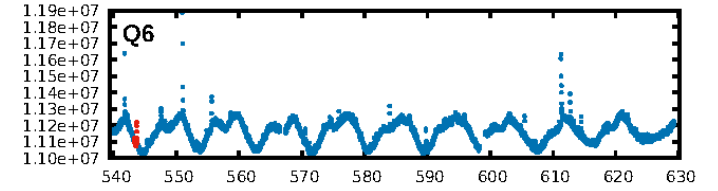
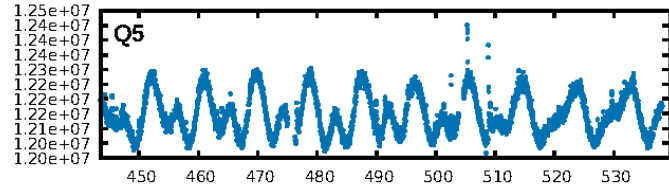
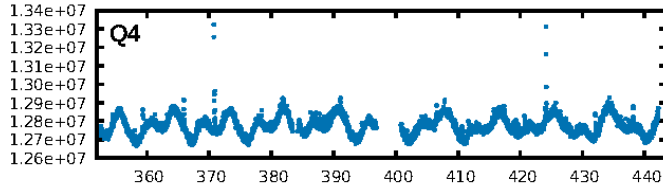
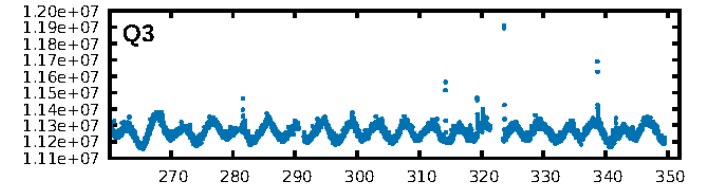
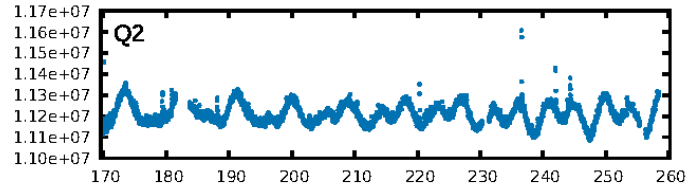
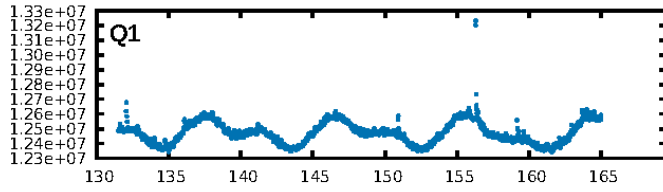
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [282.68σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 5.3%
Bootstrap-pfa: 2.19e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 1.616
Centroid-sig: 76.8%
Centroid-so: 0.287 arcsec [0.28σ]
OotOffset-rm: 0.442 arcsec [1.25σ]
KicOffset-rm: 0.188 arcsec [0.54σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

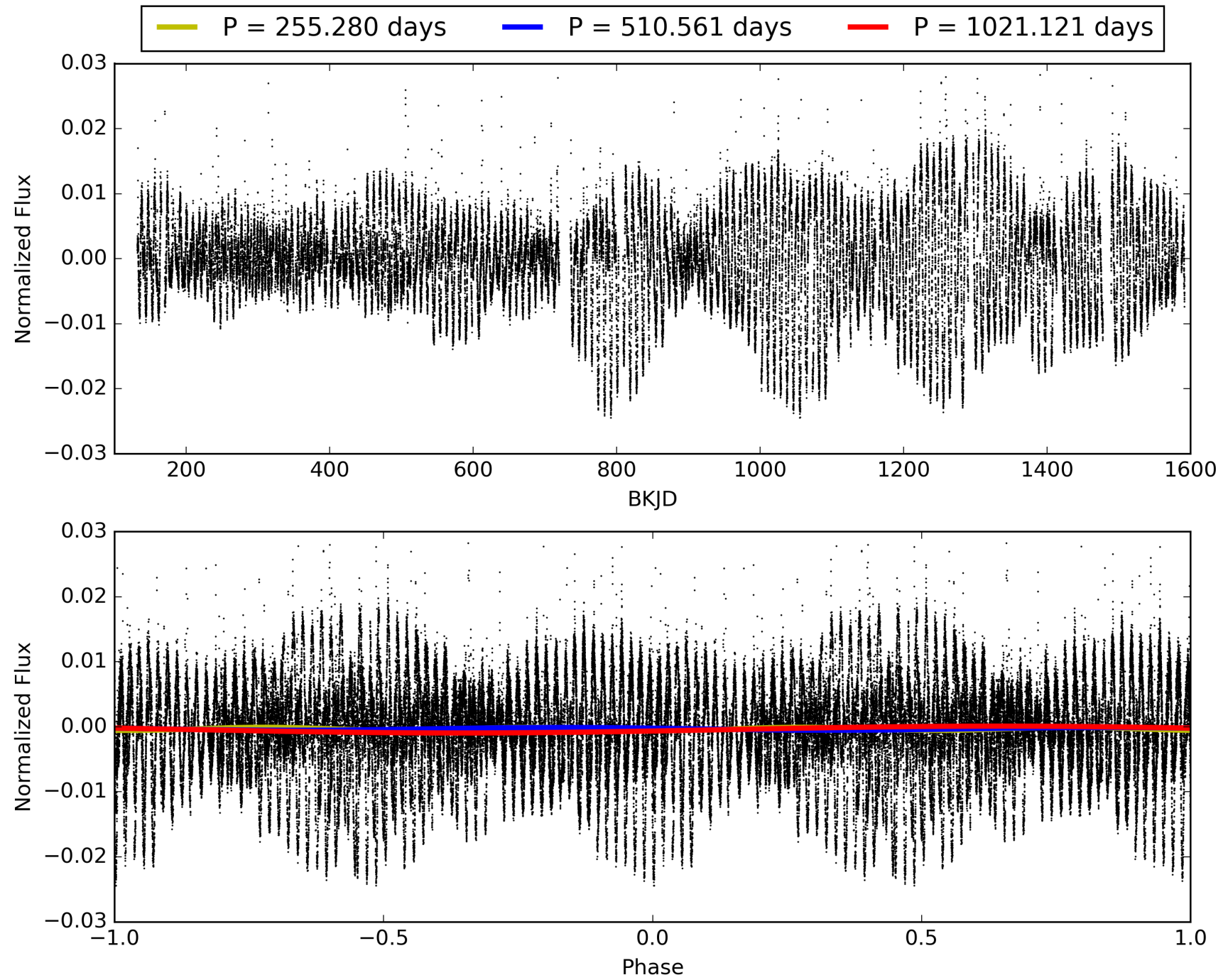
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:59:39 Z

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

TCE 009179906-01, PDC Light Curves

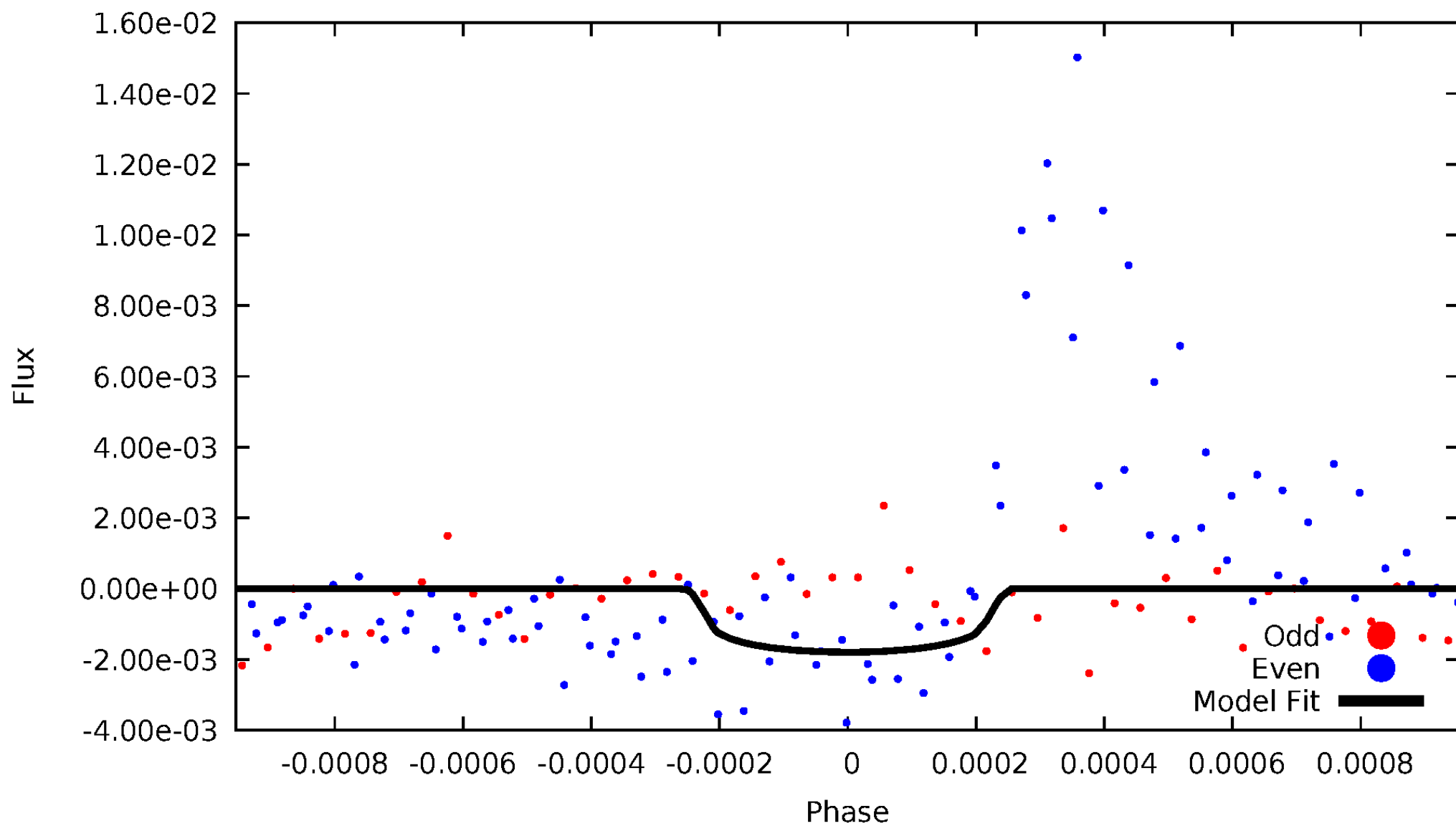


TCE 009179906-01



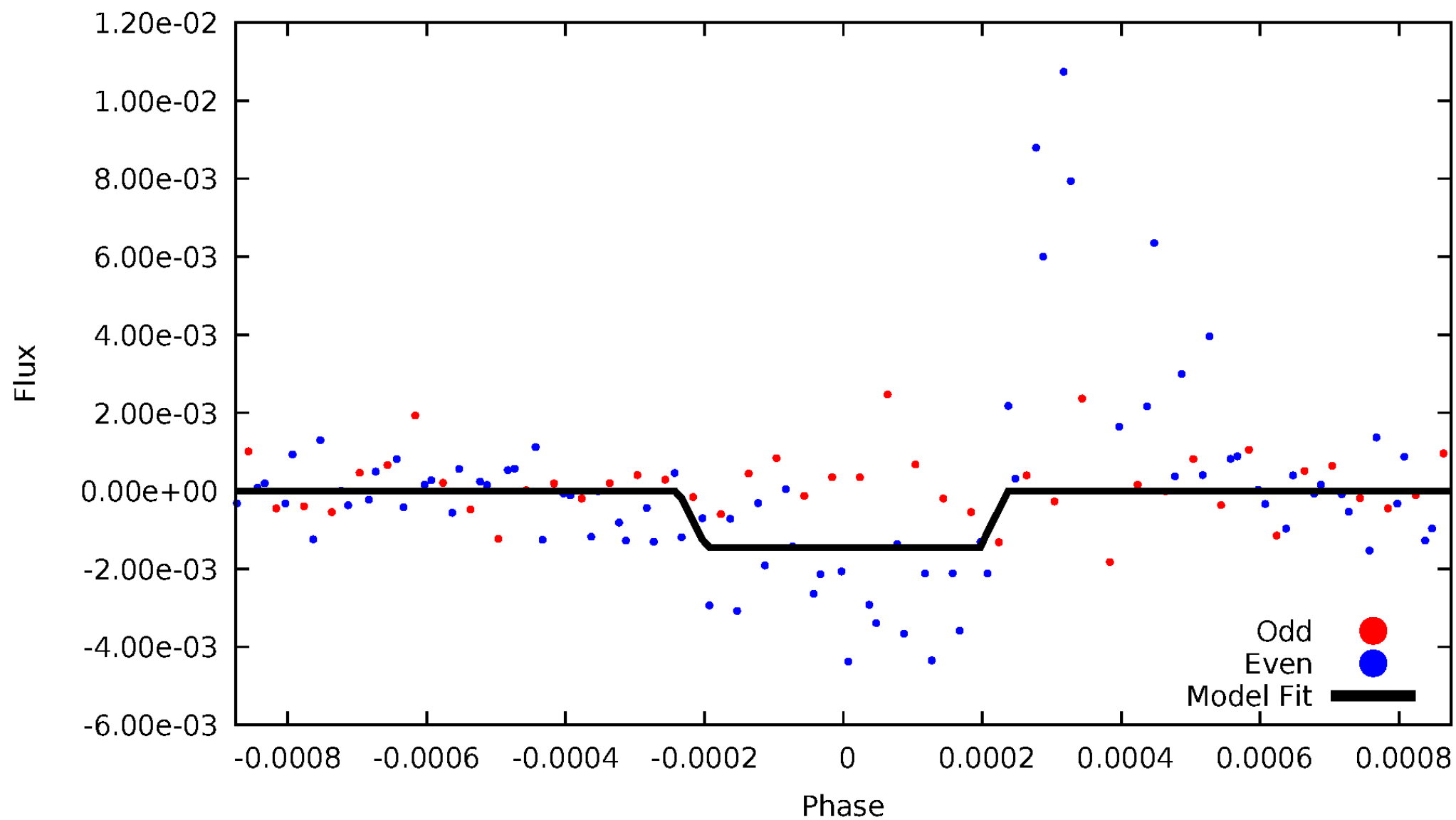
DV Odd/Even

TCE 009179906-01



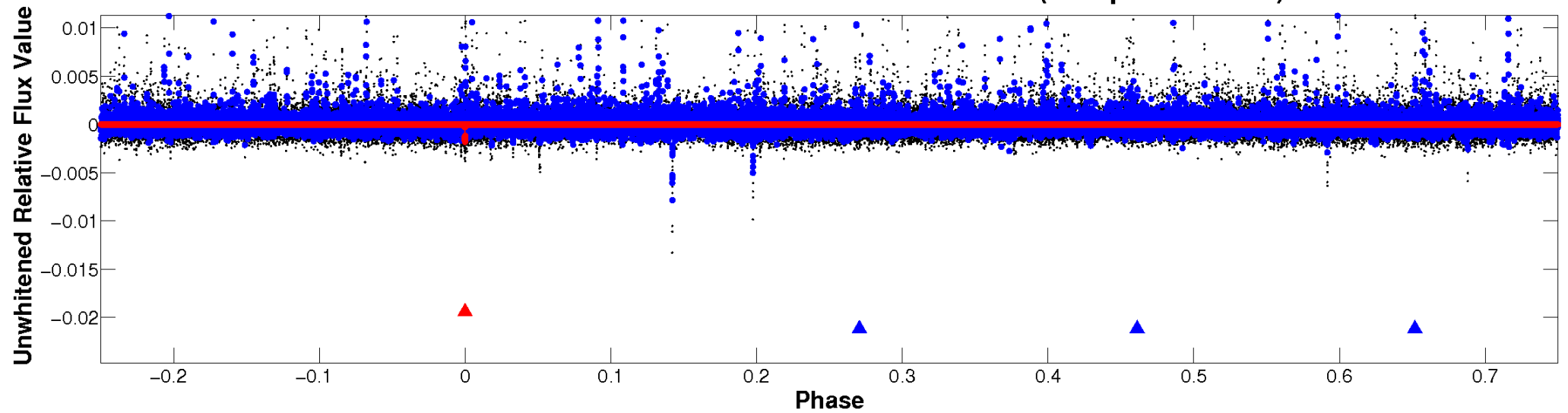
ALT Odd/Even

TCE 009179906-01

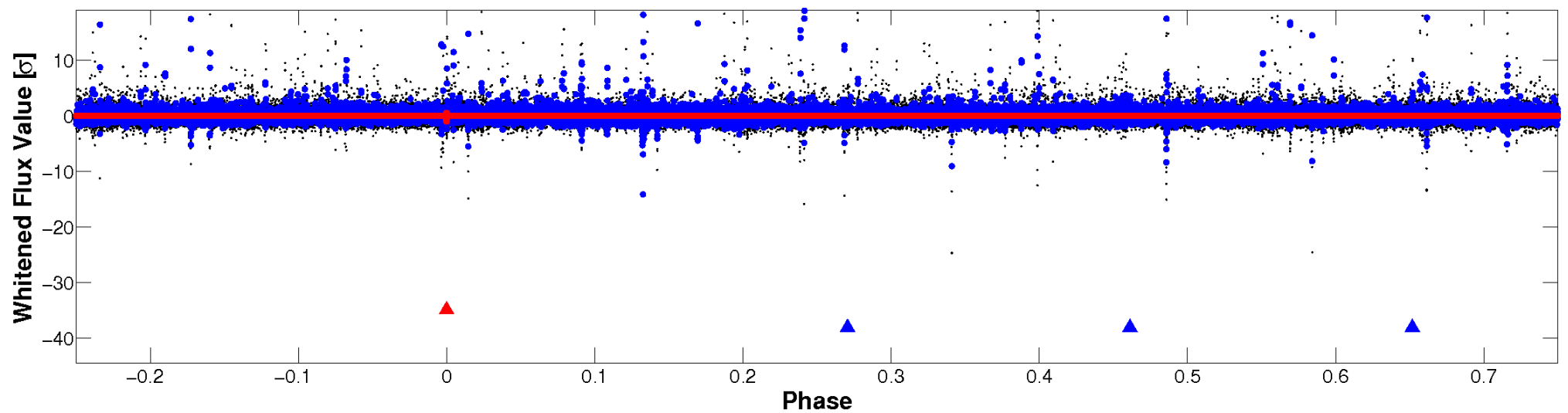


Non-Whitened Vs. Whitened Light Curve

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

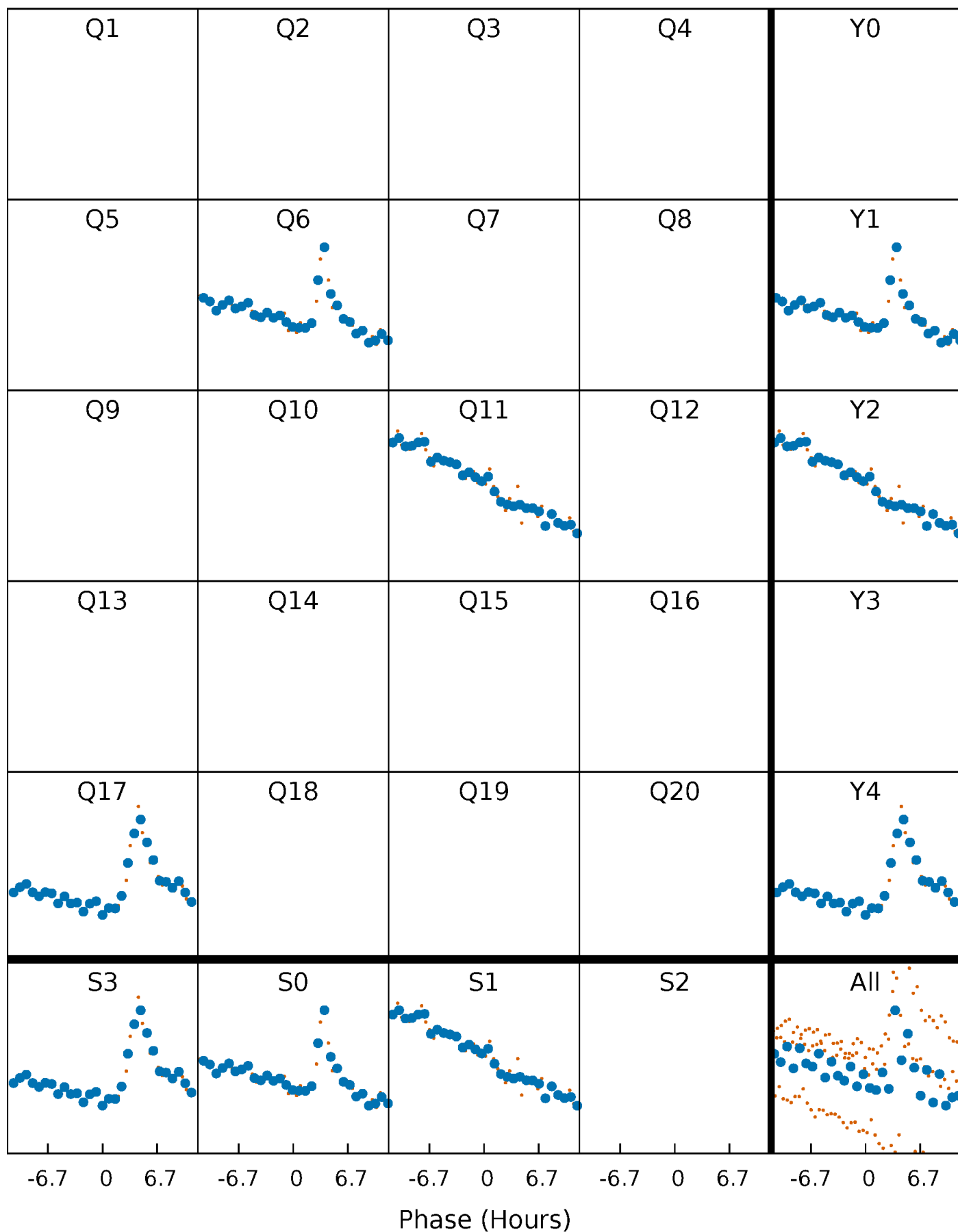


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



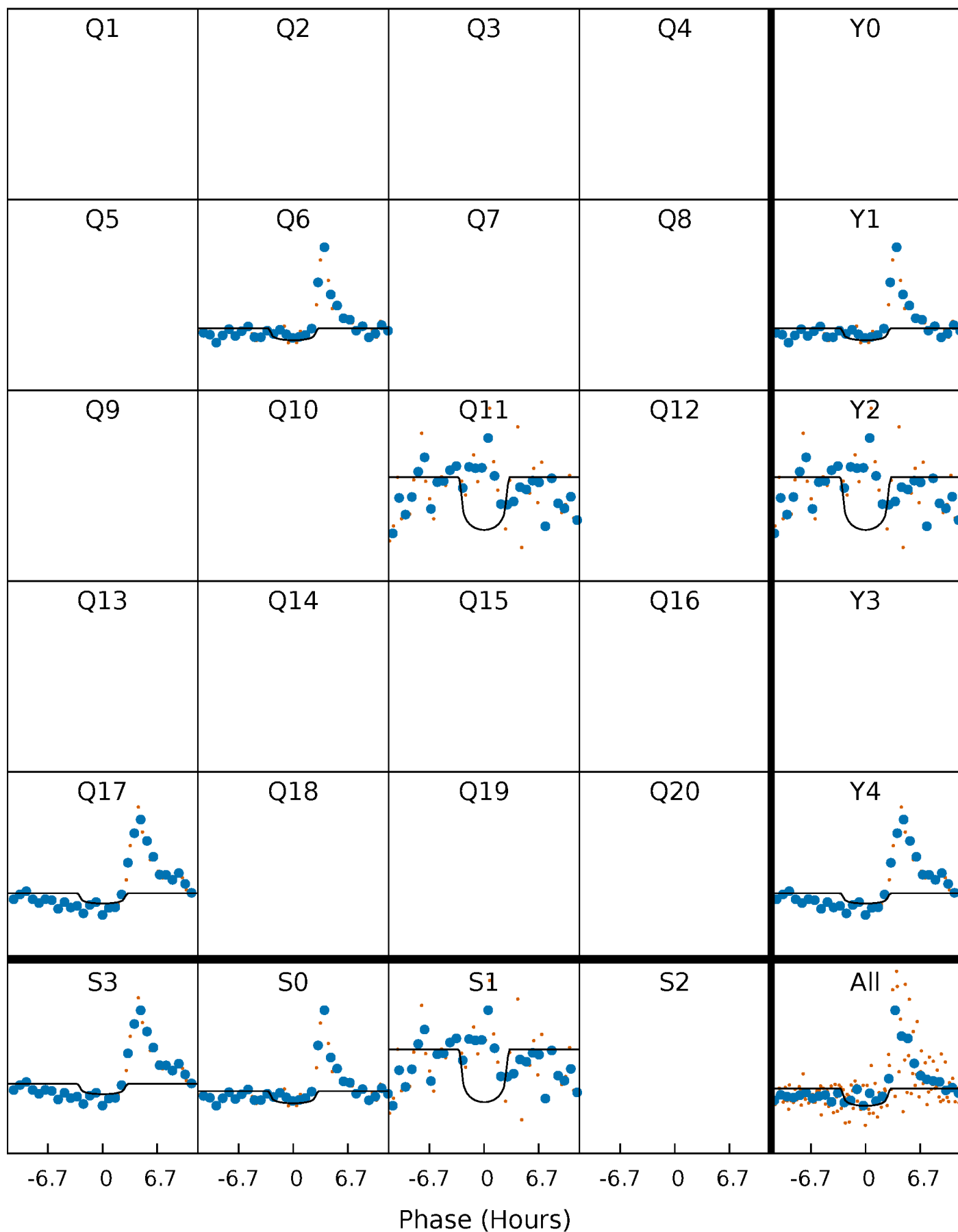
PDC Quarter-Phased Transit Curves

TCE 009179906-01 P=510.560526 Days $T_0=543.540924$ (BKJD)



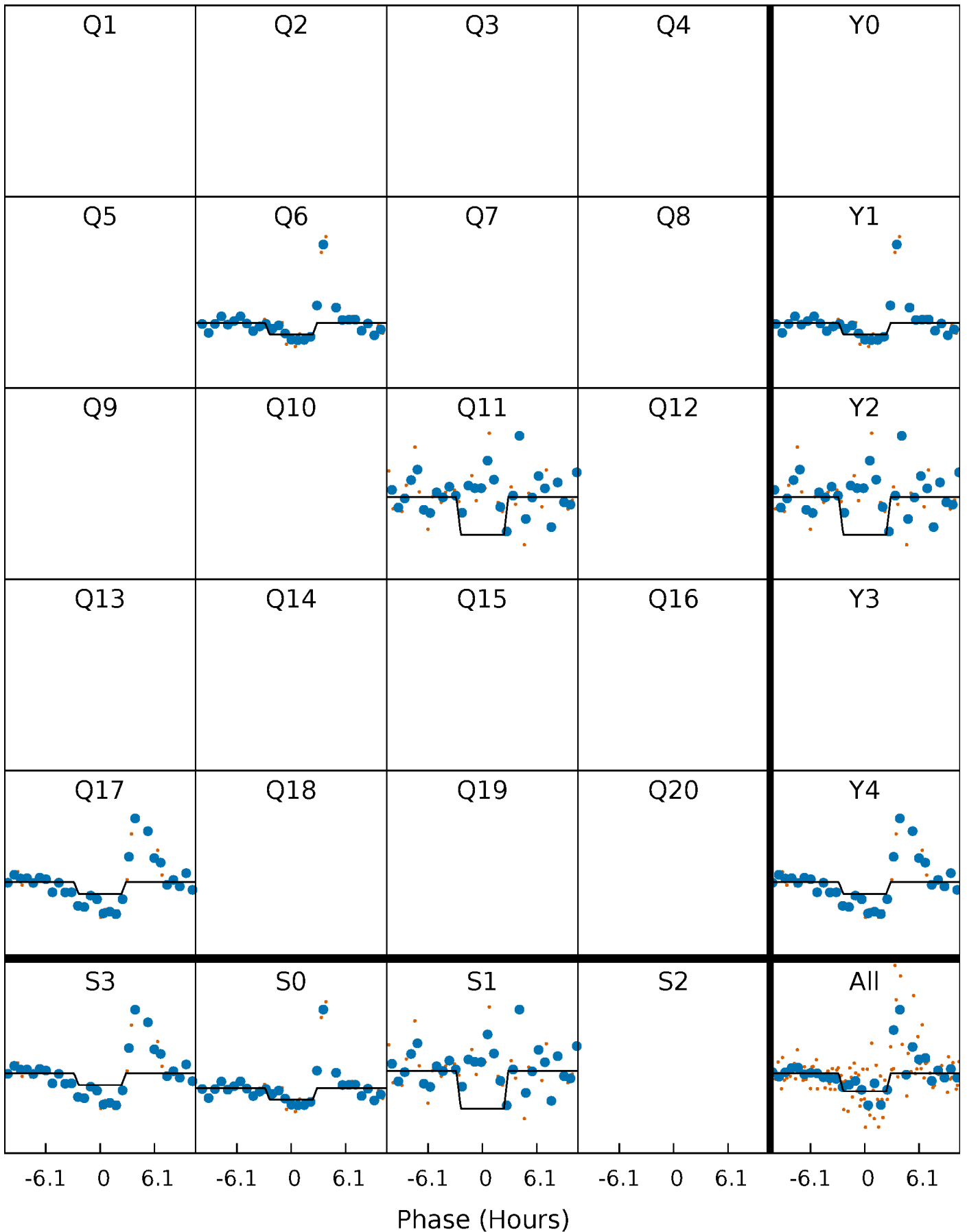
DV Quarter-Phased Transit Curves

TCE 009179906-01 P=510.560526 Days $T_0=543.540924$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

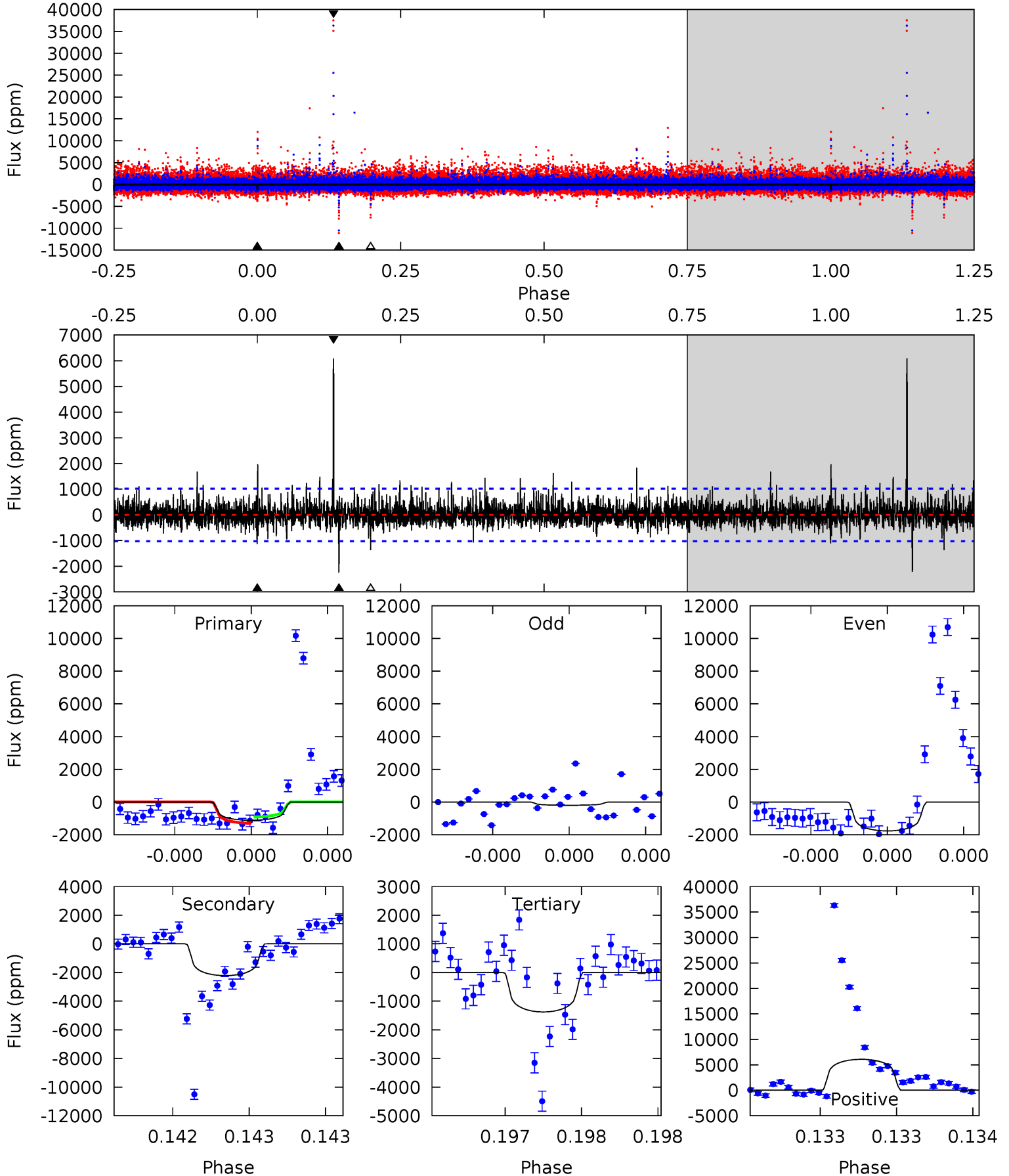
TCE 009179906-01 P=510.559741 Days $T_0=543.537812$ (BKJD)



DV Model-Shift Uniqueness Test

009179906-01, P = 510.560526 Days, E = 32.980398 Days

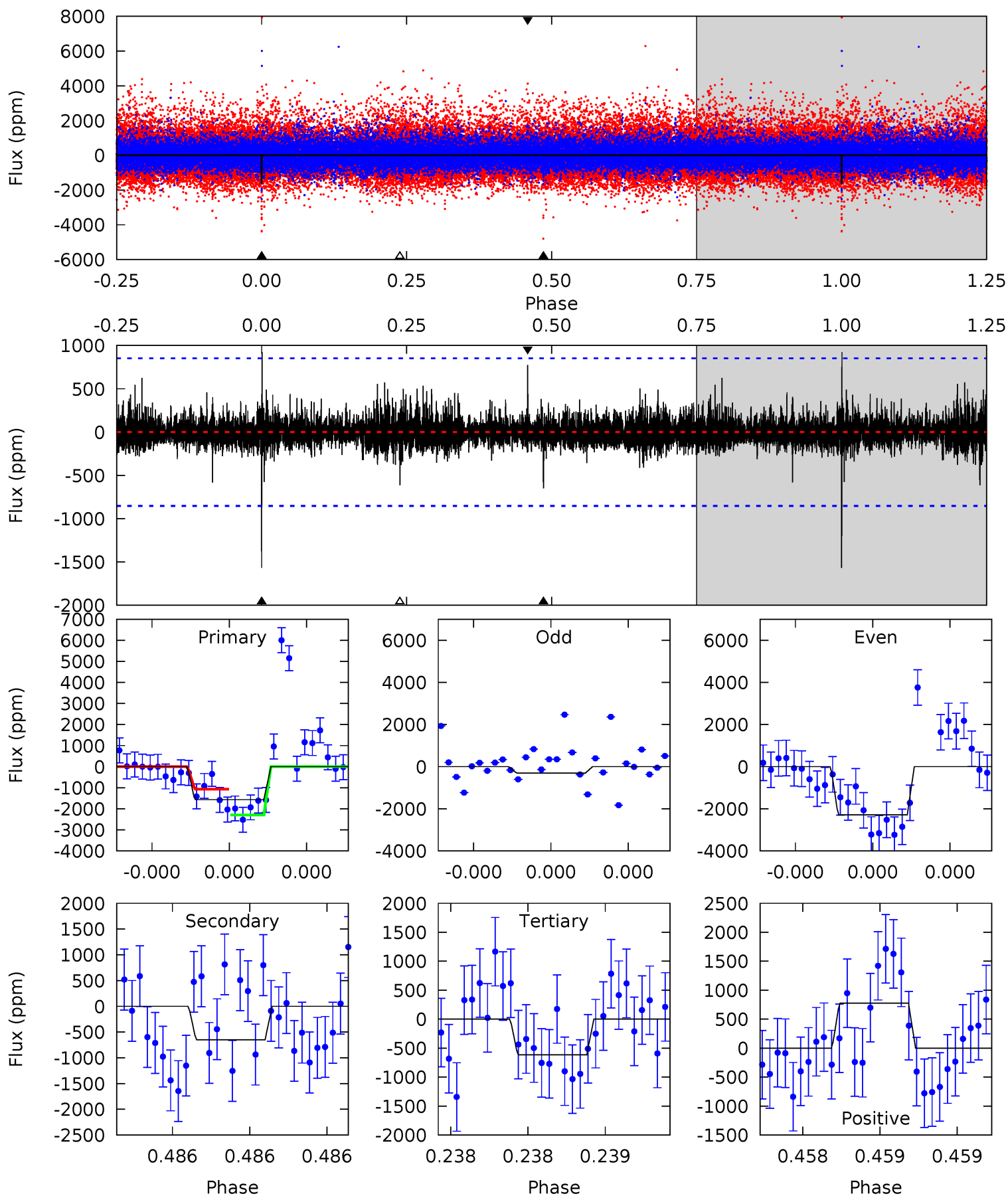
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.07	12.1	7.51	33.2	5.57	3.48	1.76	-1.44	-27.1	4.58	-21.1	3.26	1.20	0.73	1.04



Alt Model-Shift Uniqueness Test

009179906-01, $P = 510.559741$ Days, $E = 32.978071$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	4.26	4.03	5.09	5.60	3.51	0.73	6.26	5.20	0.23	-0.83	6.09	0.95	0.37	3.96



Stellar Parameters For KIC 009179906

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3368^{+54}_{-54}	$4.955^{+0.060}_{-0.044}$	$0.000^{+0.100}_{-0.100}$	$0.293^{+0.045}_{-0.045}$	$0.282^{+0.063}_{-0.051}$	$15.830^{+5.624}_{-3.486}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+15%/-15%	+22%/-18%	+36%/-22%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 009179906-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2215 ± 183	$2.08^{+1.98}_{-1.37}$	124^{+4}_{-4}	3077^{+1351}_{-528}	$194192^{+1590416}_{-144814}$
Alt.	-649 ± 152	$2.07^{+1.76}_{-1.40}$	124^{+4}_{-4}	2608^{+1018}_{-380}	$58840^{+469052}_{-43630}$

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

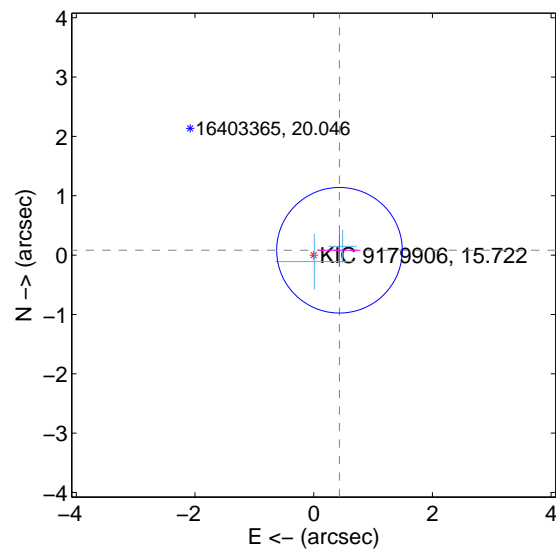
Supplemental centroid analysis for 009179906-01. Kepler magnitude: 15.72. Transit SNR 5.42

There are 2 quarters with good PRF difference image offsets

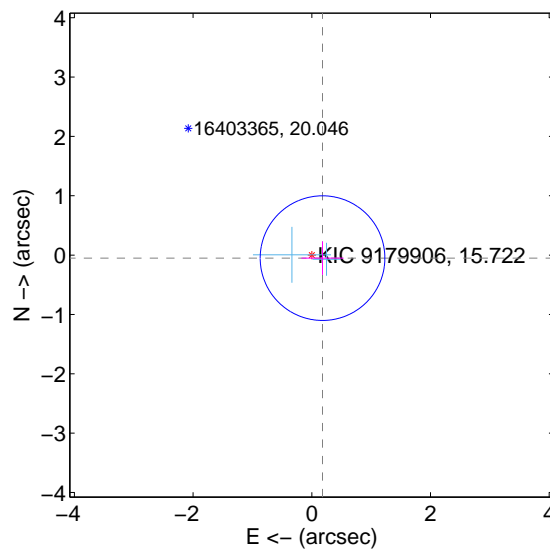
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.442 ± 0.353	1.25	-0.434 ± 0.355	0.082 ± 0.281
PRF-fit source offset from KIC position	0.188 ± 0.350	0.54	-0.181 ± 0.355	-0.051 ± 0.281
photometric centroid source offset	0.29 ± 1.04	0.28	0.28 ± 1.04	0.06 ± 1.00

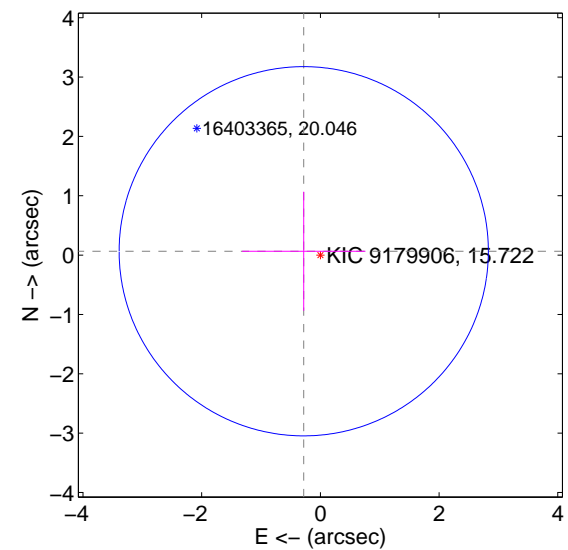
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

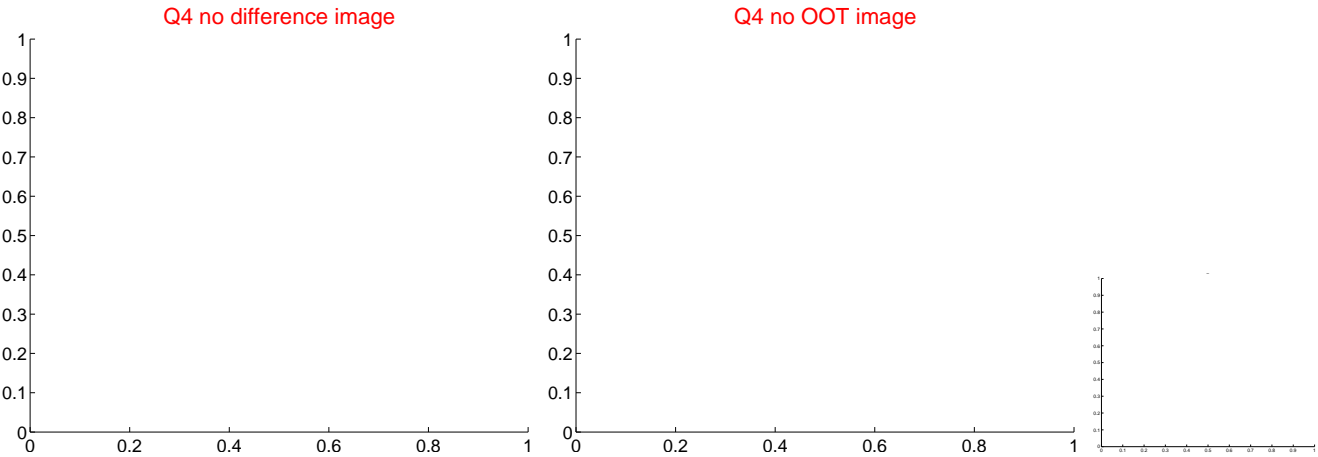
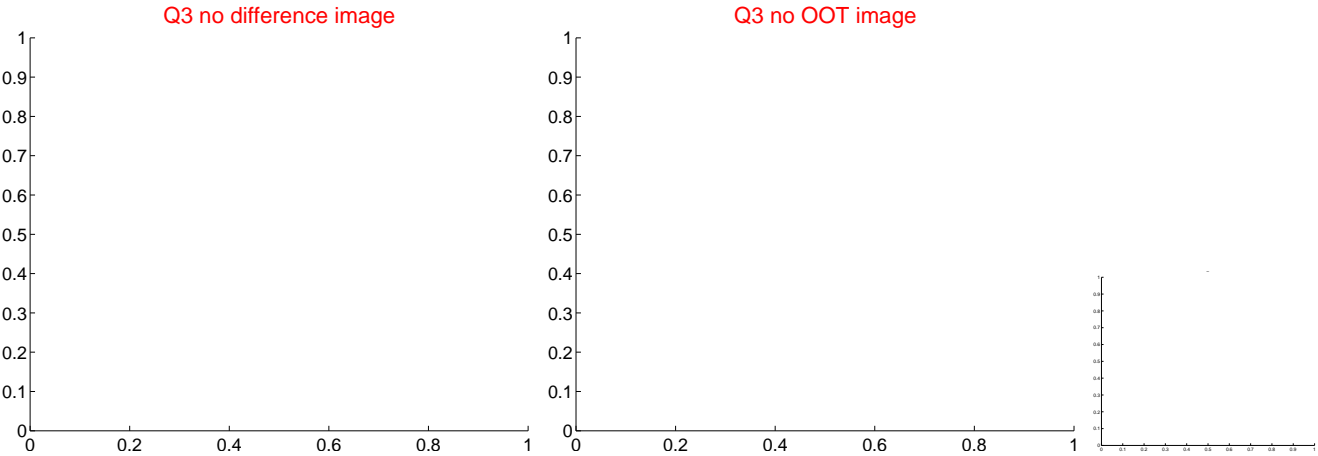
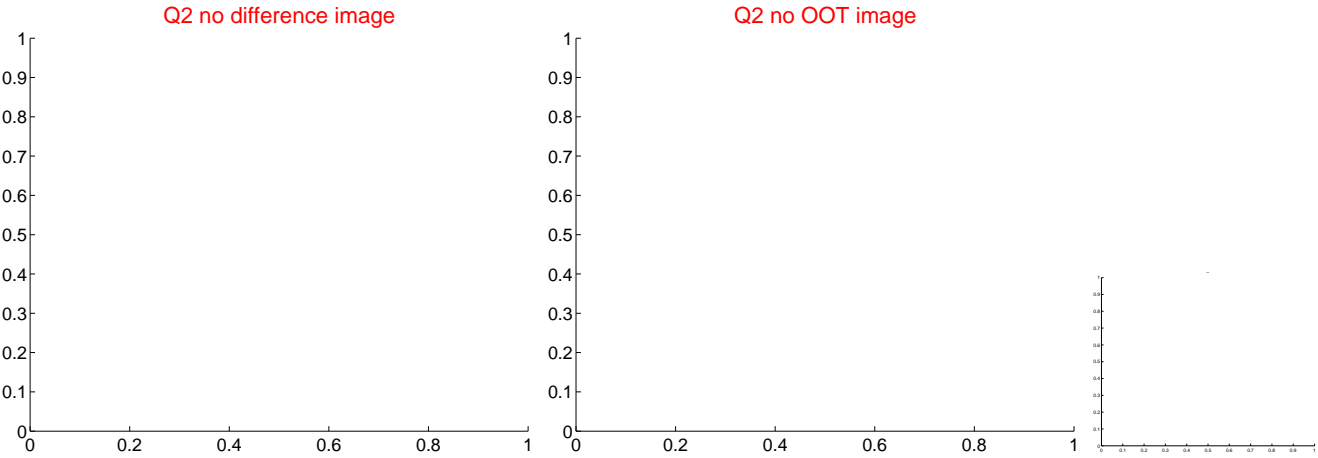
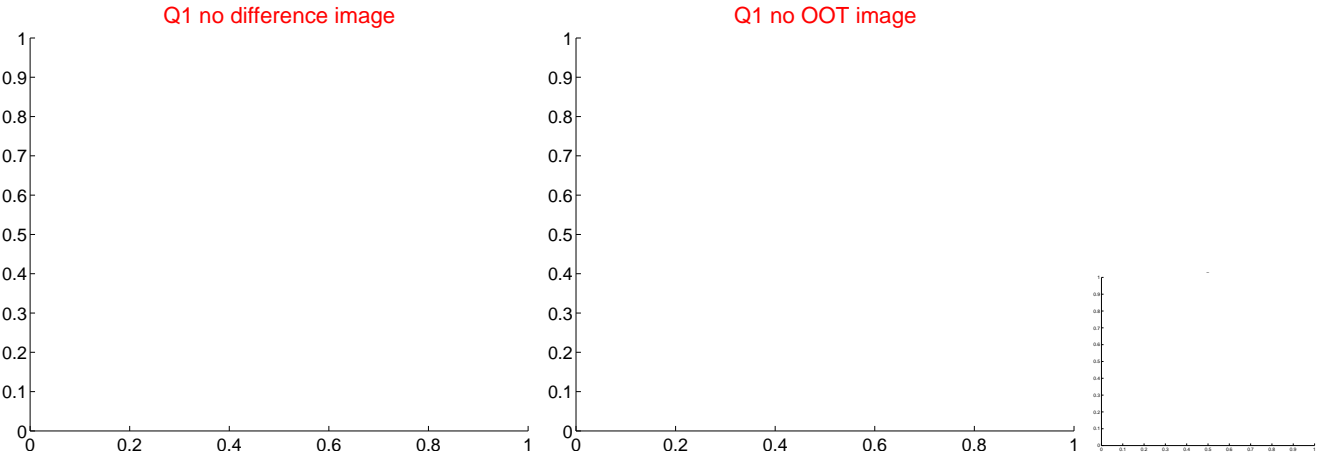


offset from photometric centroids

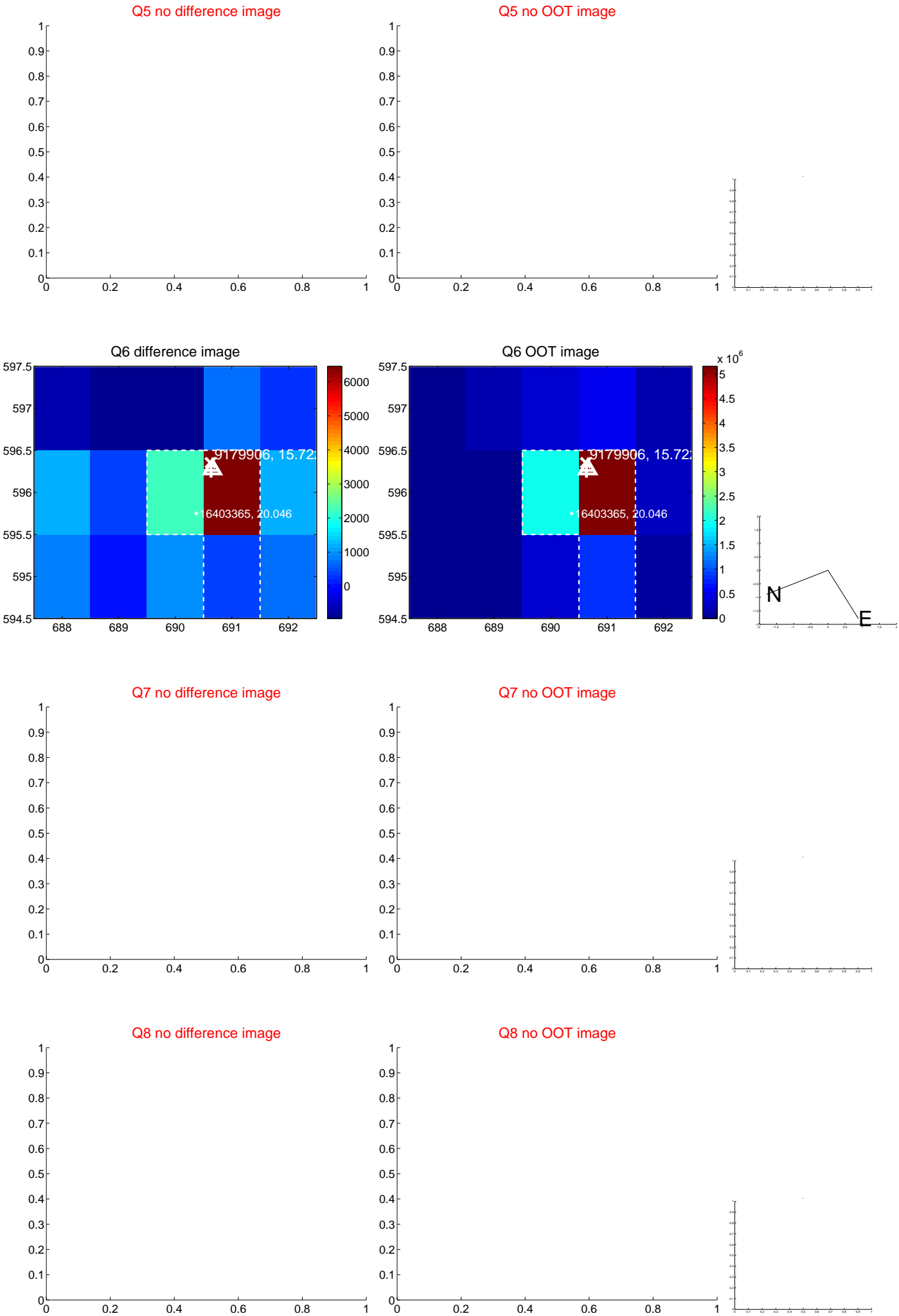


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

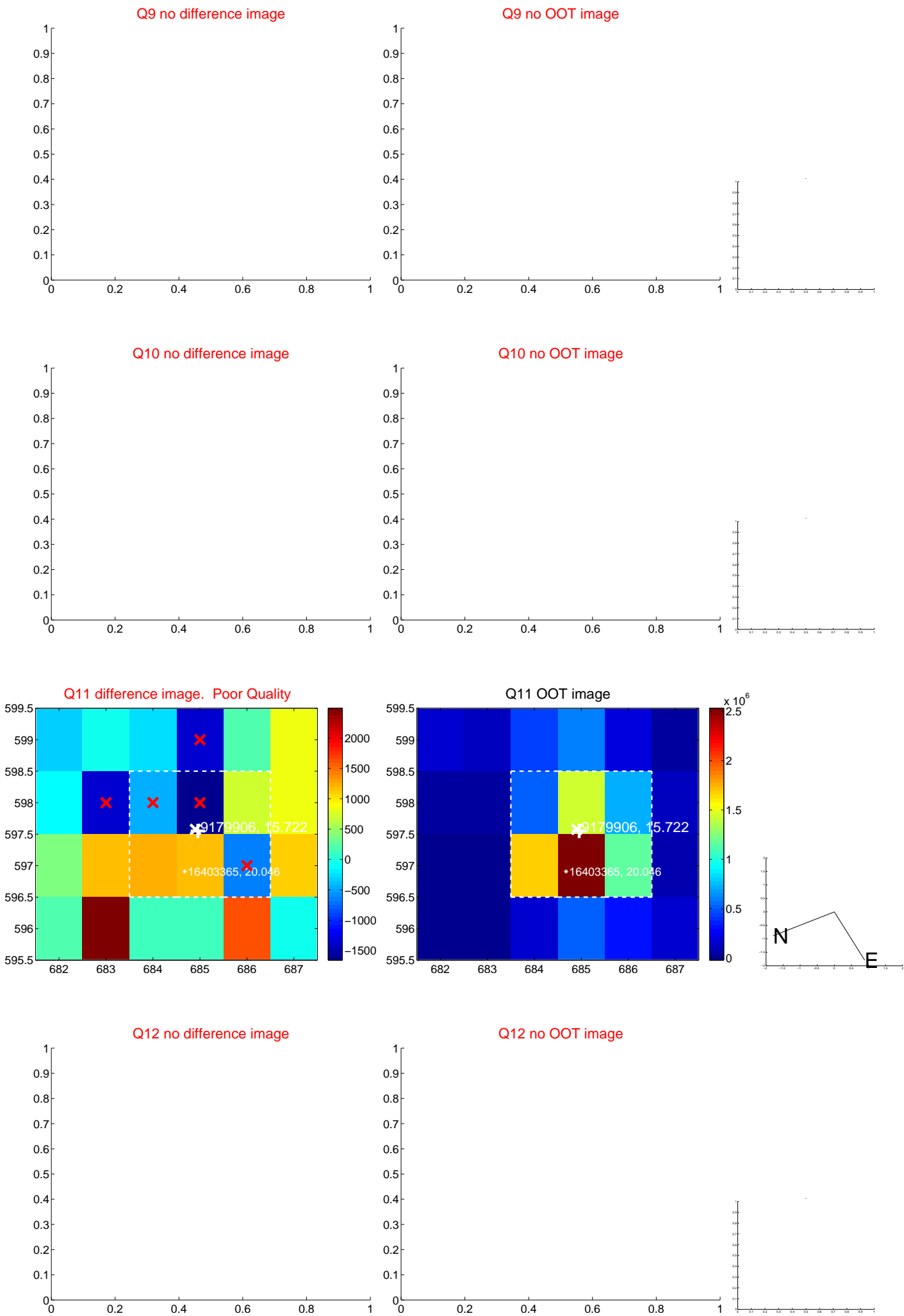
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



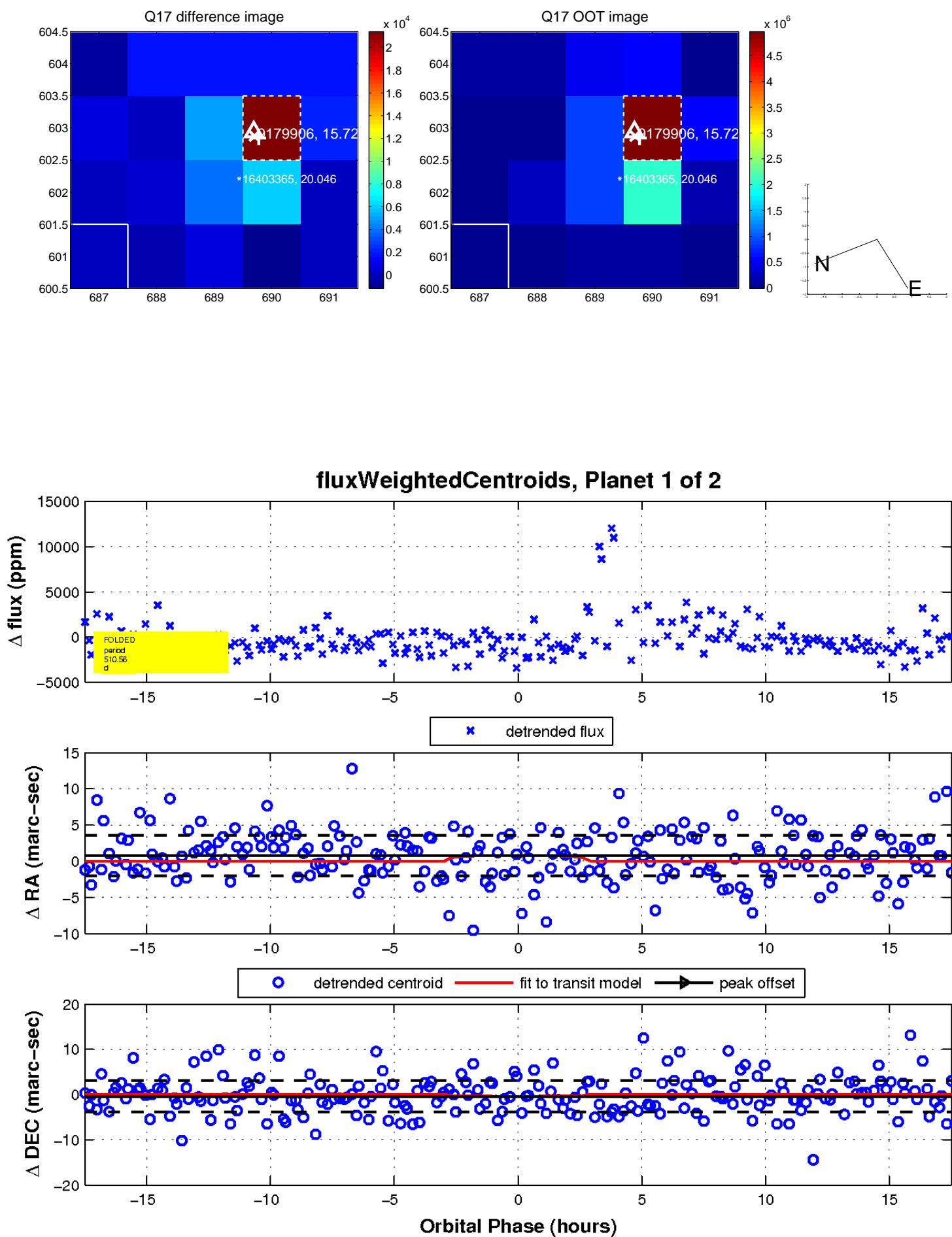
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

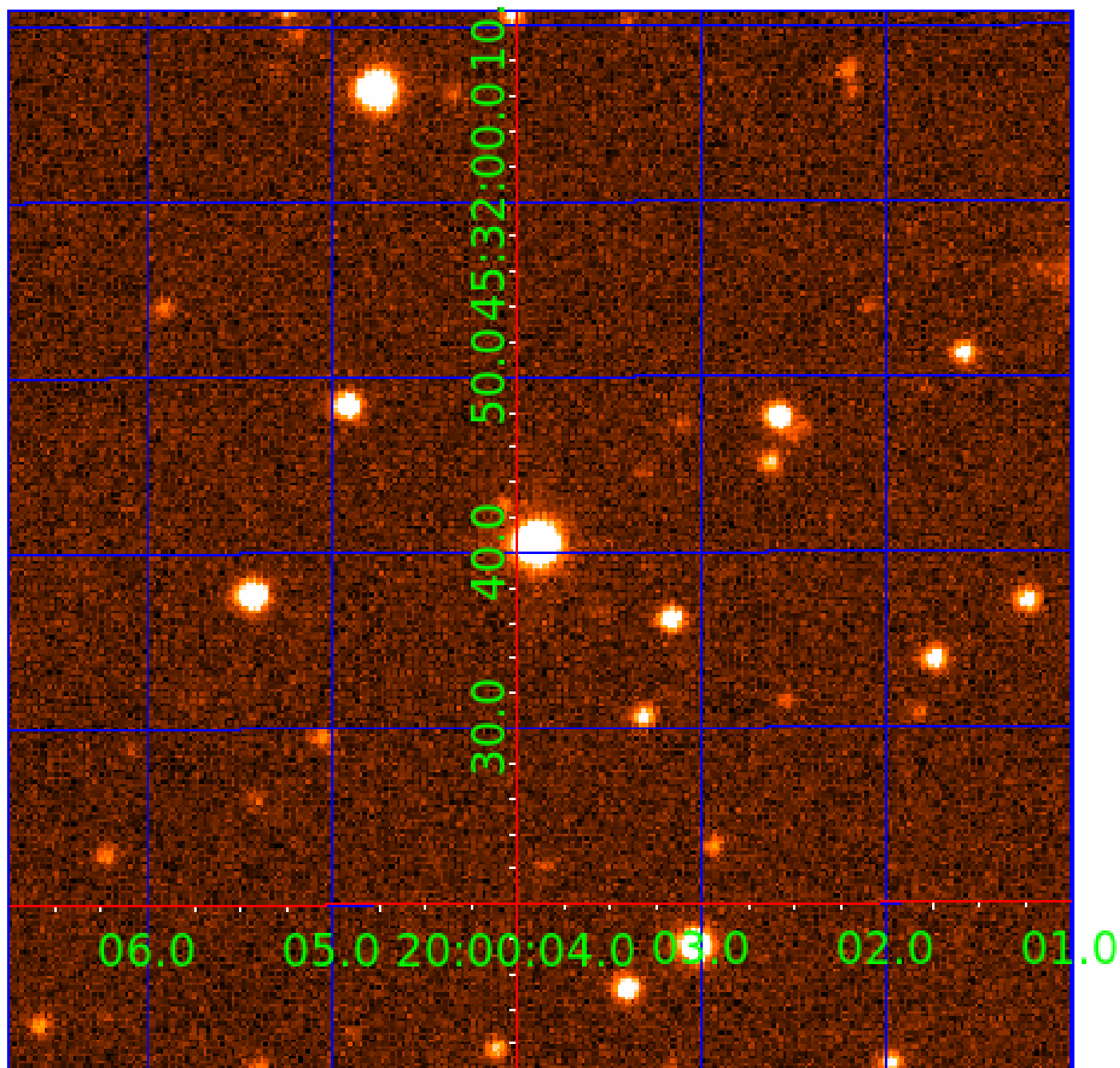


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009179906

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})
009179906-01	OBS	No	510.560526	543.540924	1795.6	5.845	14.4	5.4	0.29	3368	1.23	0.01
009179906-02	OBS	No	413.260849	365.733181	2470.6	5.838	12.2	8.5	0.29	3368	1.45	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009179906-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009179906-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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.

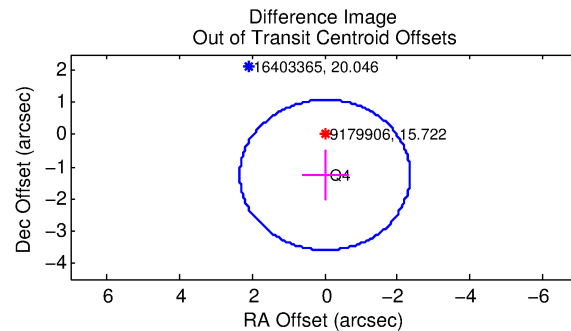
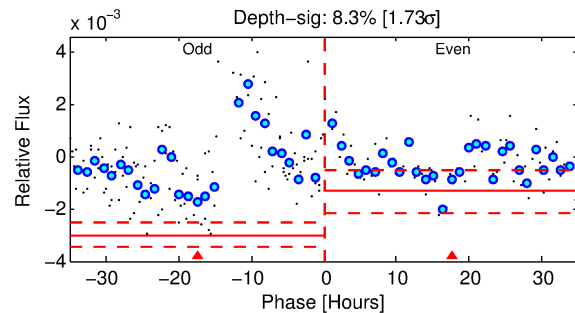
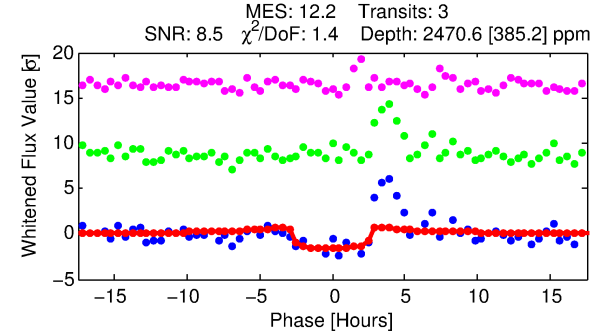
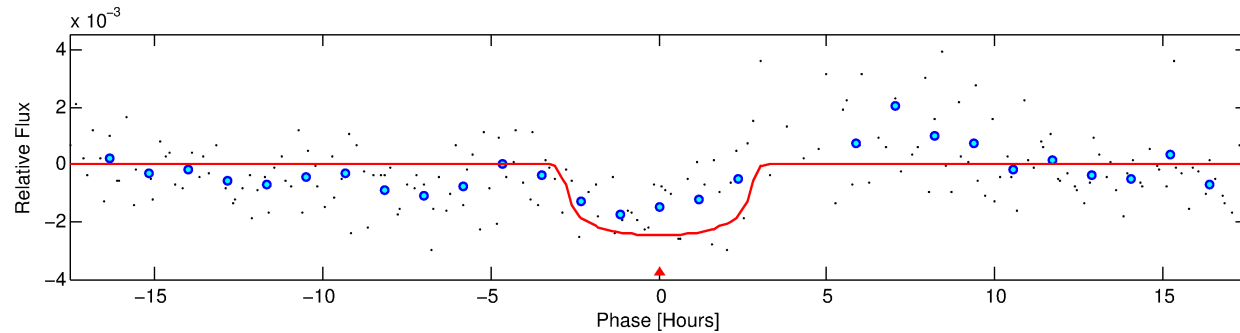
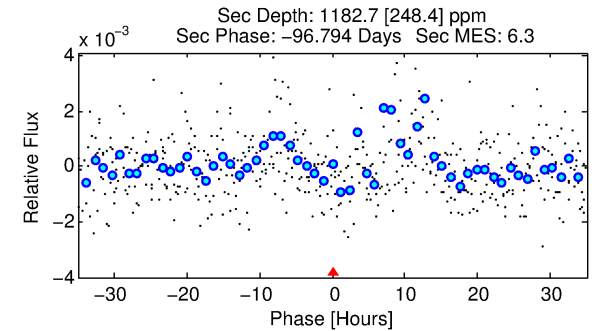
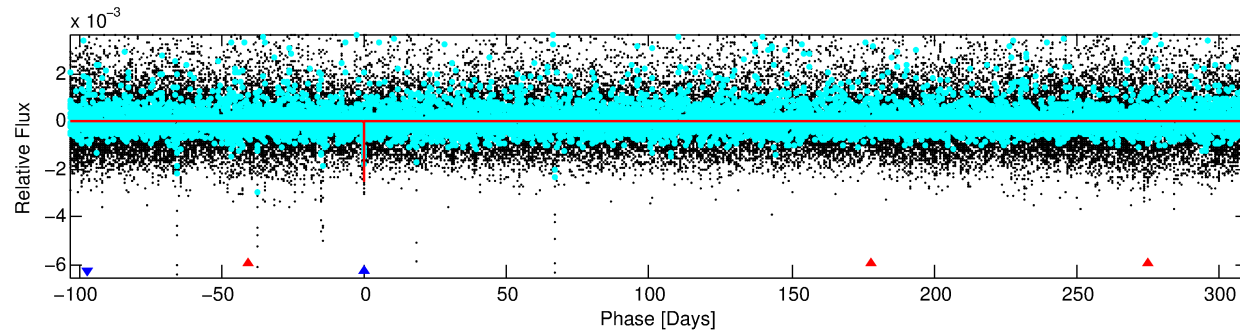
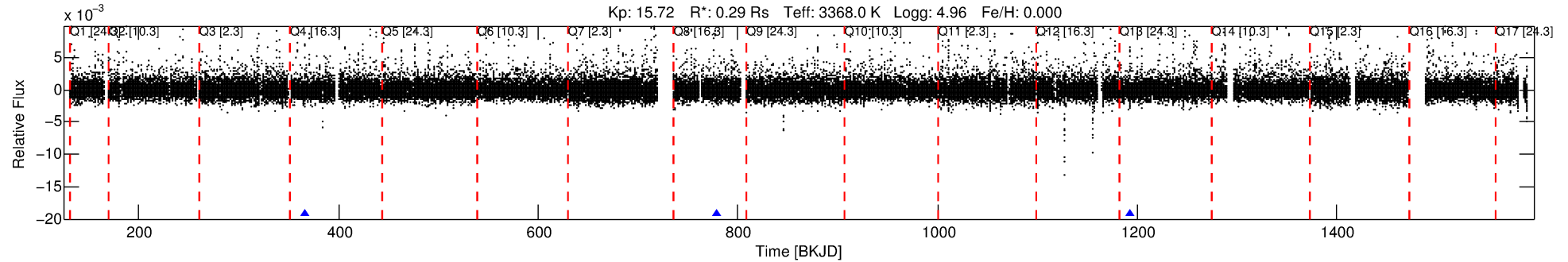
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009179906-02

No Significant Match Found

DV One-Page Summary

KIC: 9179906 Candidate: 2 of 2 Period: 413.261 d



DV Fit Results:

Period = 413.26085 [0.00758] d
Epoch = 365.7332 [0.0089] BKJD
Rp/R* = 0.0453 [0.0409]
a/R* = 543.88 [2085.63]
b = 0.29 [12.35]
Seff = 0.02 [0.00]
Teq = 95 [4] K
Rp = 1.45 [1.33] Re
a = 0.7125 [0.0800] AU
Ag = 157138.44 [286342.44] [0.55σ]
Teffp = 2933 [1333] K [2.13σ]

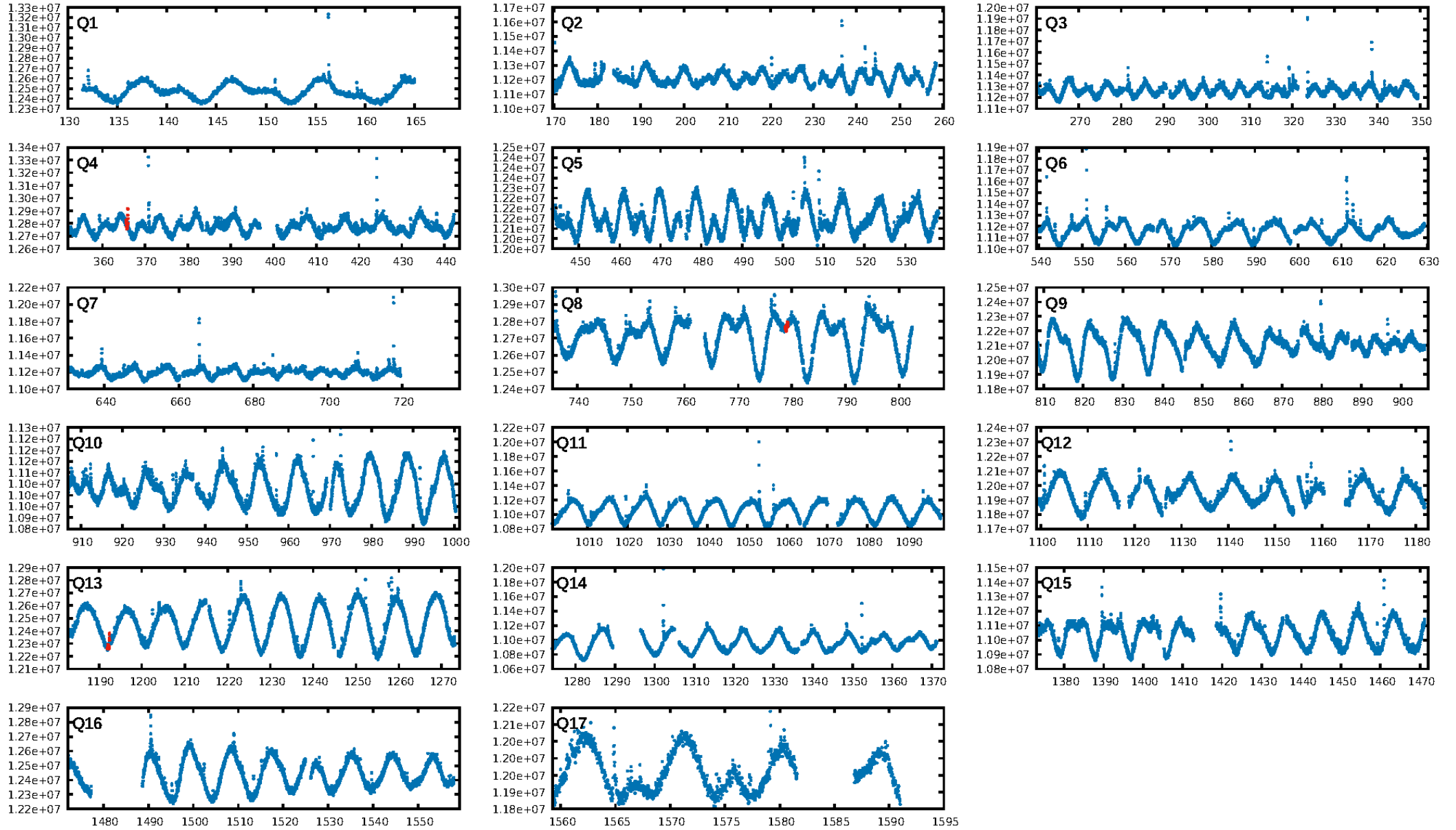
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [282.68σ]
ModelChiSquare2-sig: 1.1%
ModelChiSquareGoF-sig: 36.7%
Bootstrap-pfa: 1.36e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.153
Centroid-sig: 34.5%
Centroid-so: 1.389 arcsec [1.56σ]
OotOffset-rm: 1.259 arcsec [1.61σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-rm: 1.364 arcsec [1.76σ]
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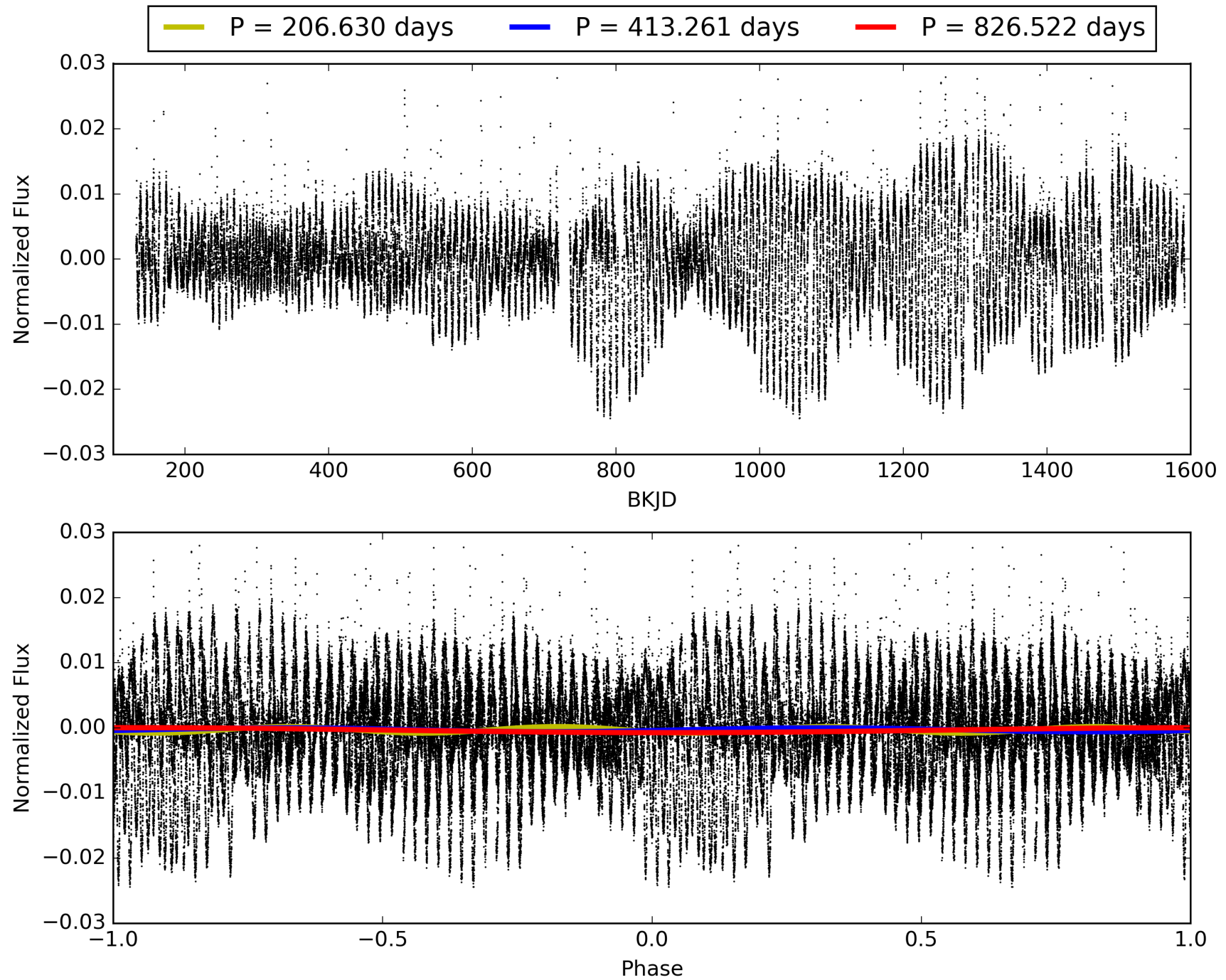
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:59:53 Z

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

TCE 009179906-02, PDC Light Curves

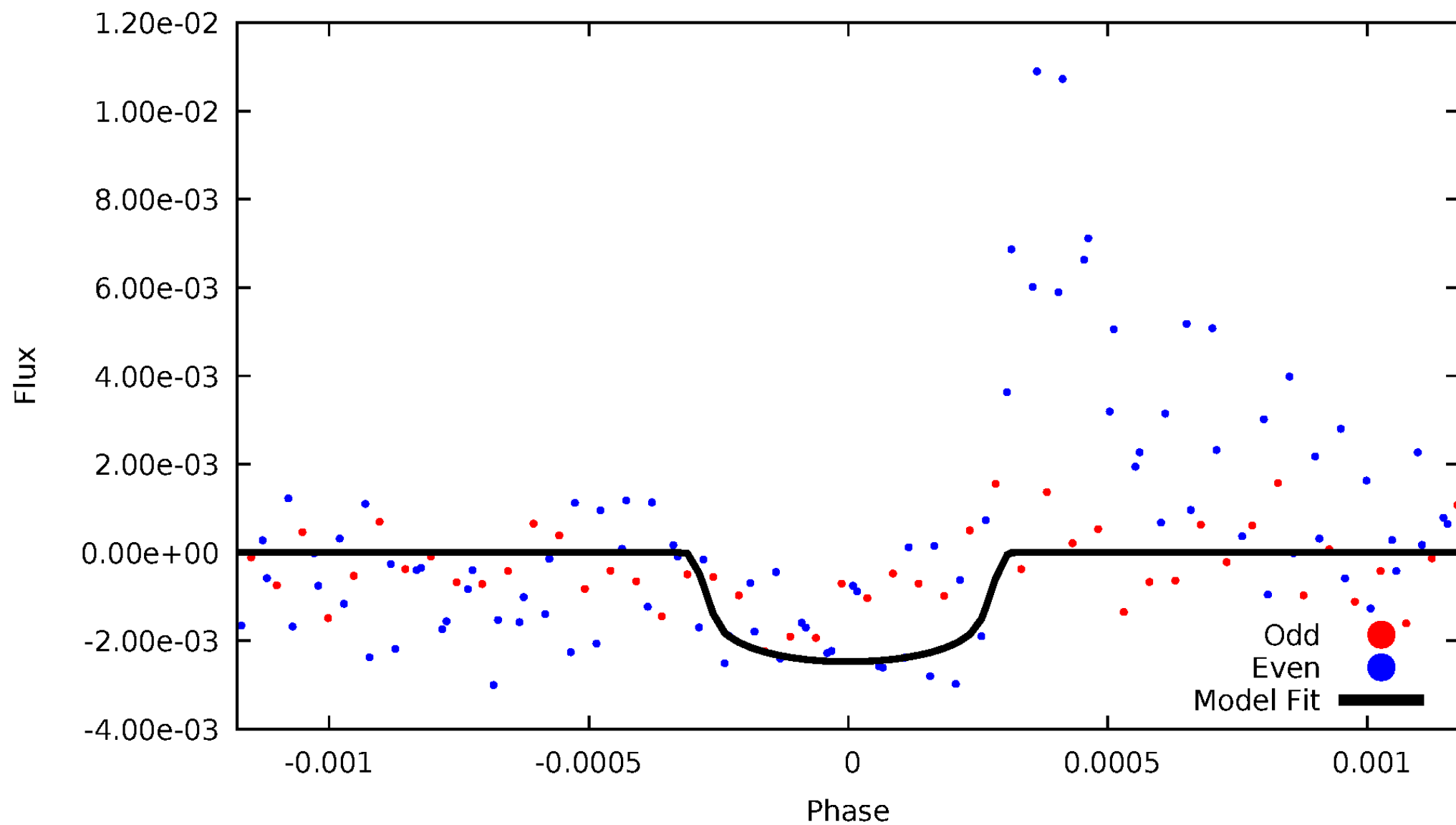


TCE 009179906-02



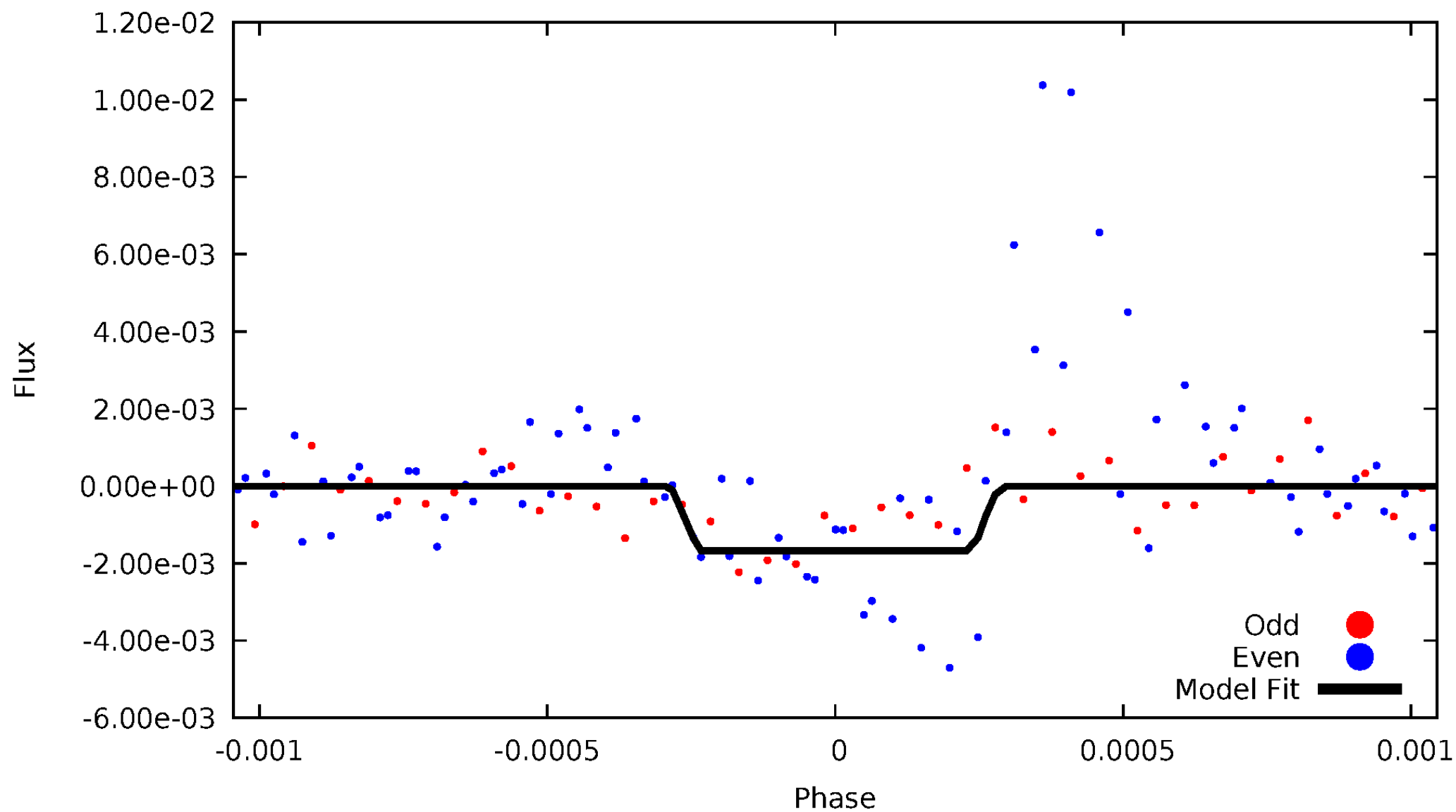
DV Odd/Even

TCE 009179906-02



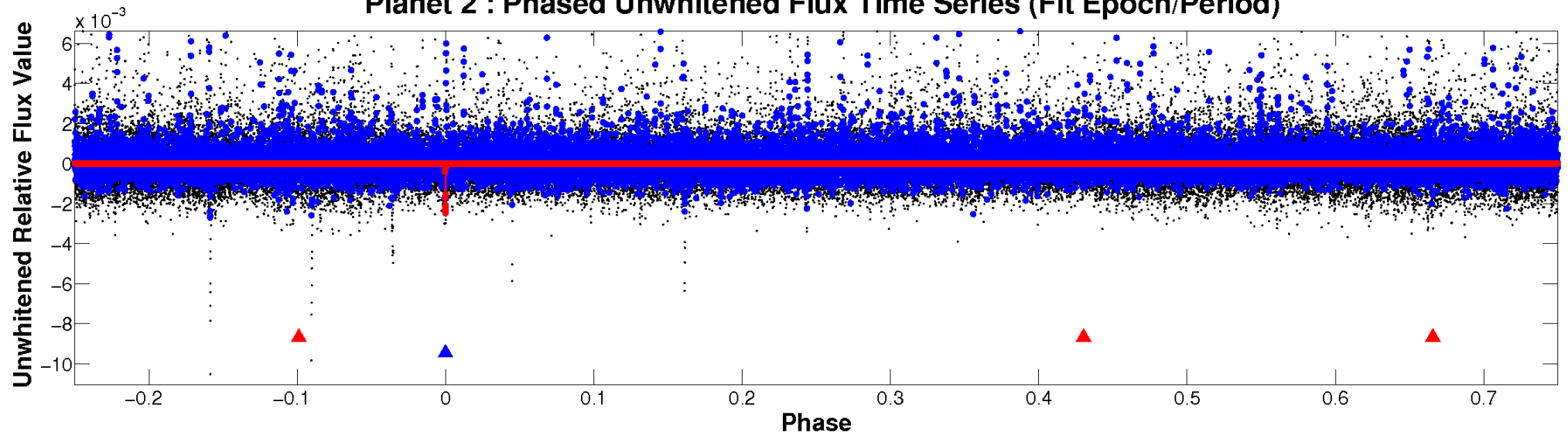
ALT Odd/Even

TCE 009179906-02

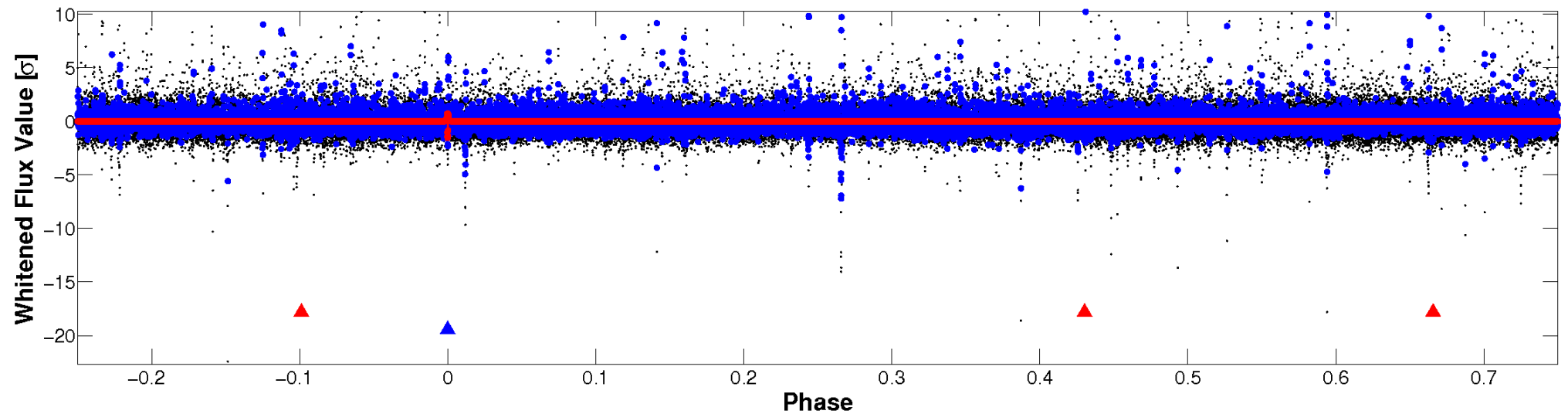


Non-Whitened Vs. Whitened Light Curve

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

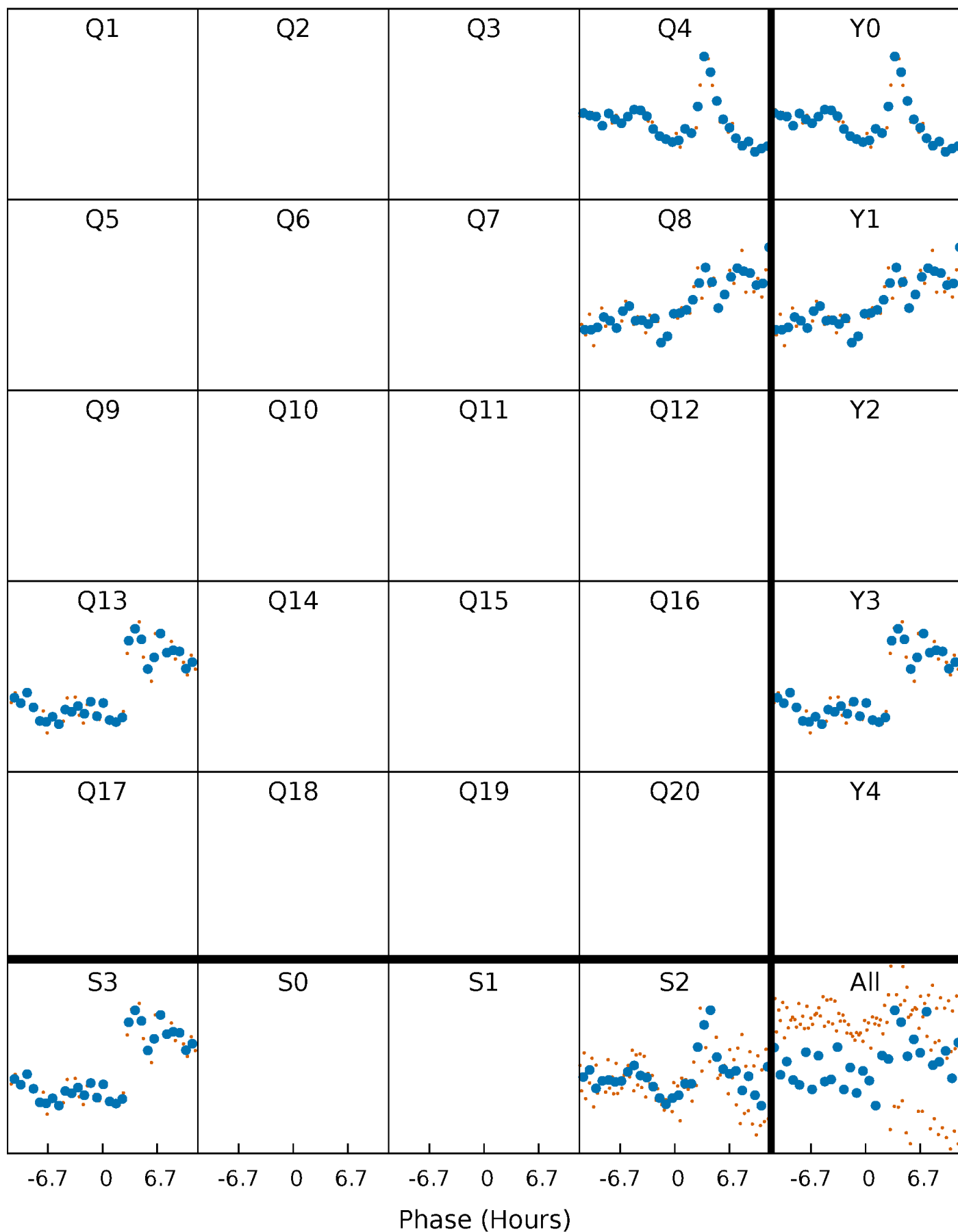


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



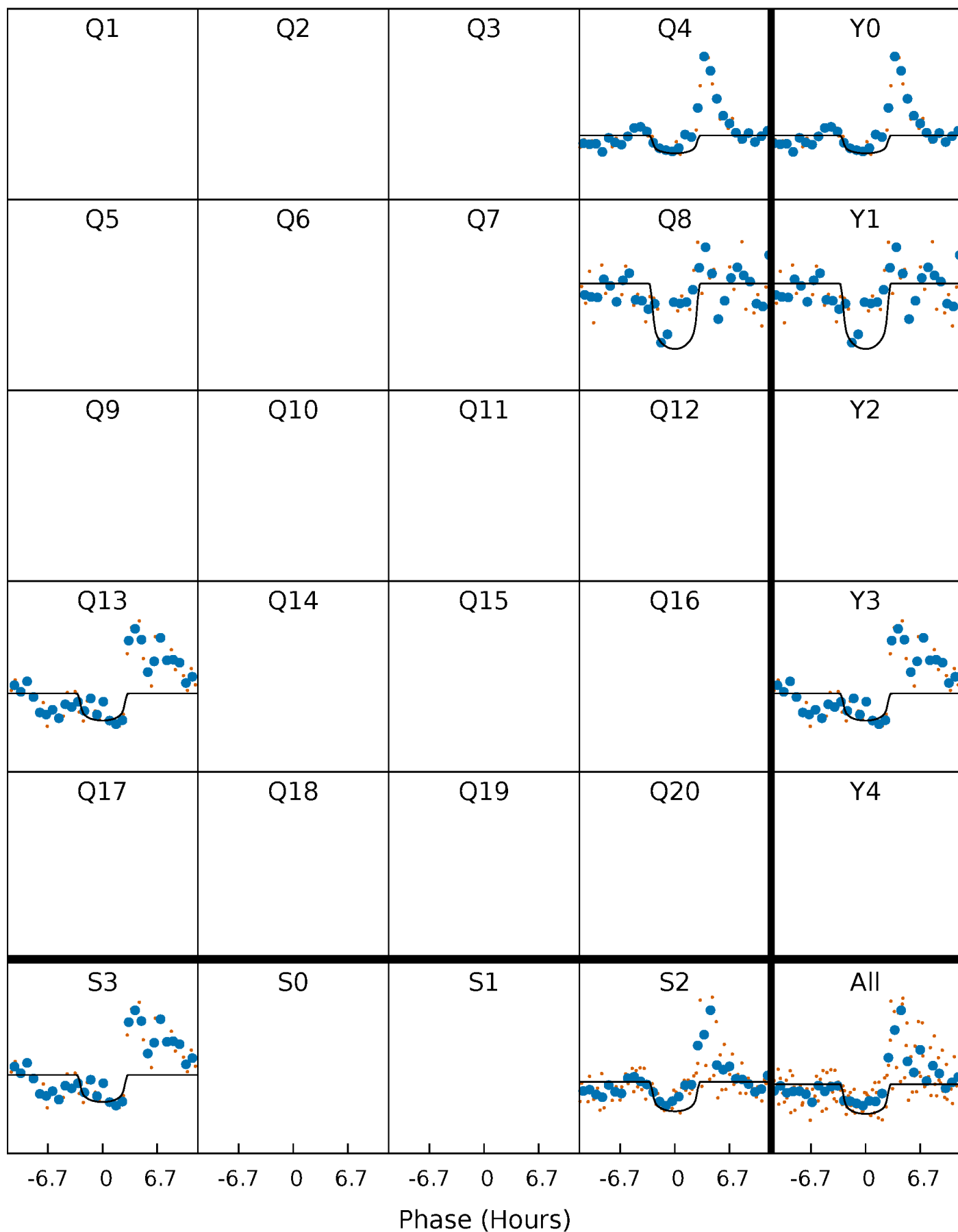
PDC Quarter-Phased Transit Curves

TCE 009179906-02 $P=413.260849$ Days $T_0=365.733181$ (BKJD)



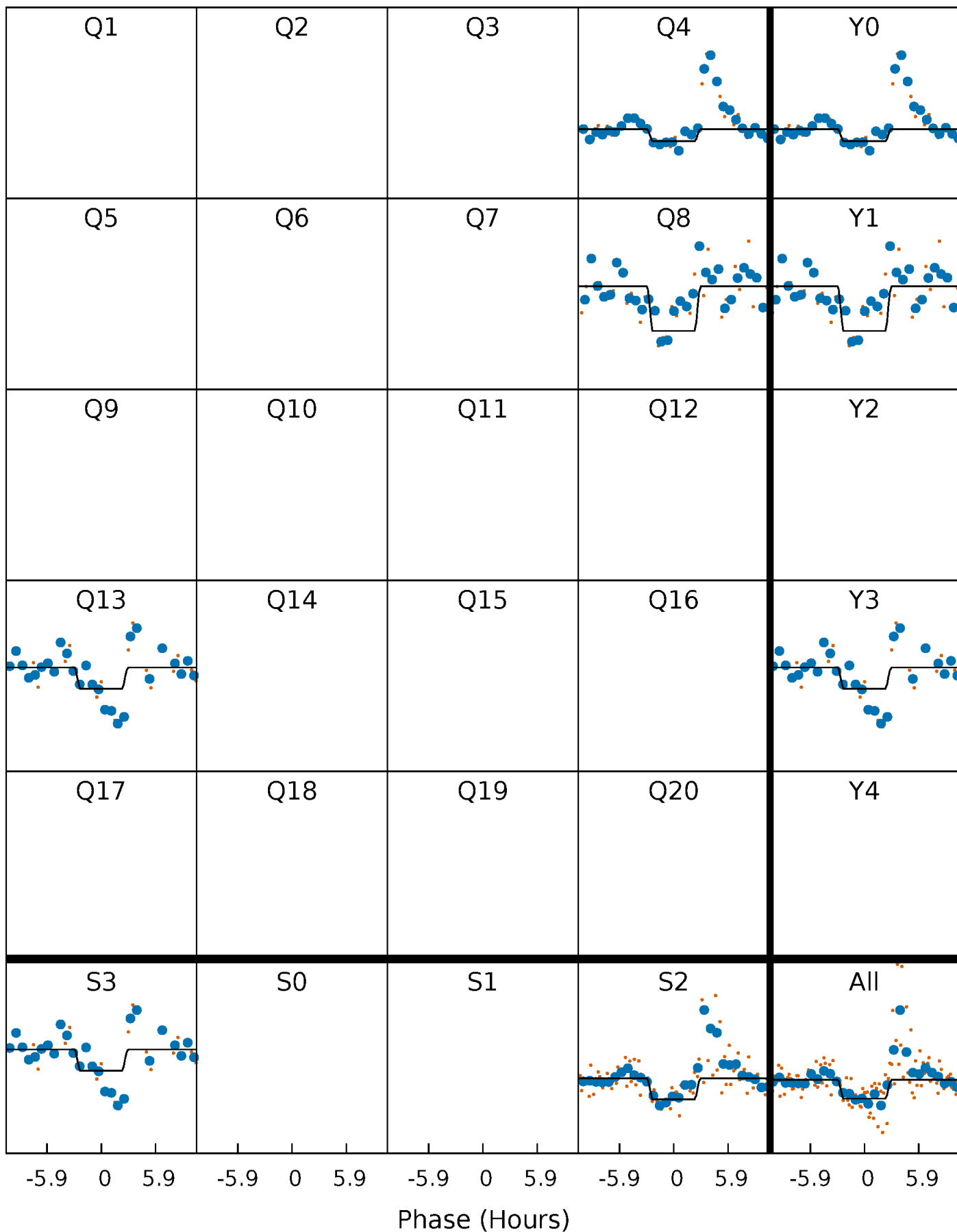
DV Quarter-Phased Transit Curves

TCE 009179906-02 $P=413.260849$ Days $T_0=365.733181$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

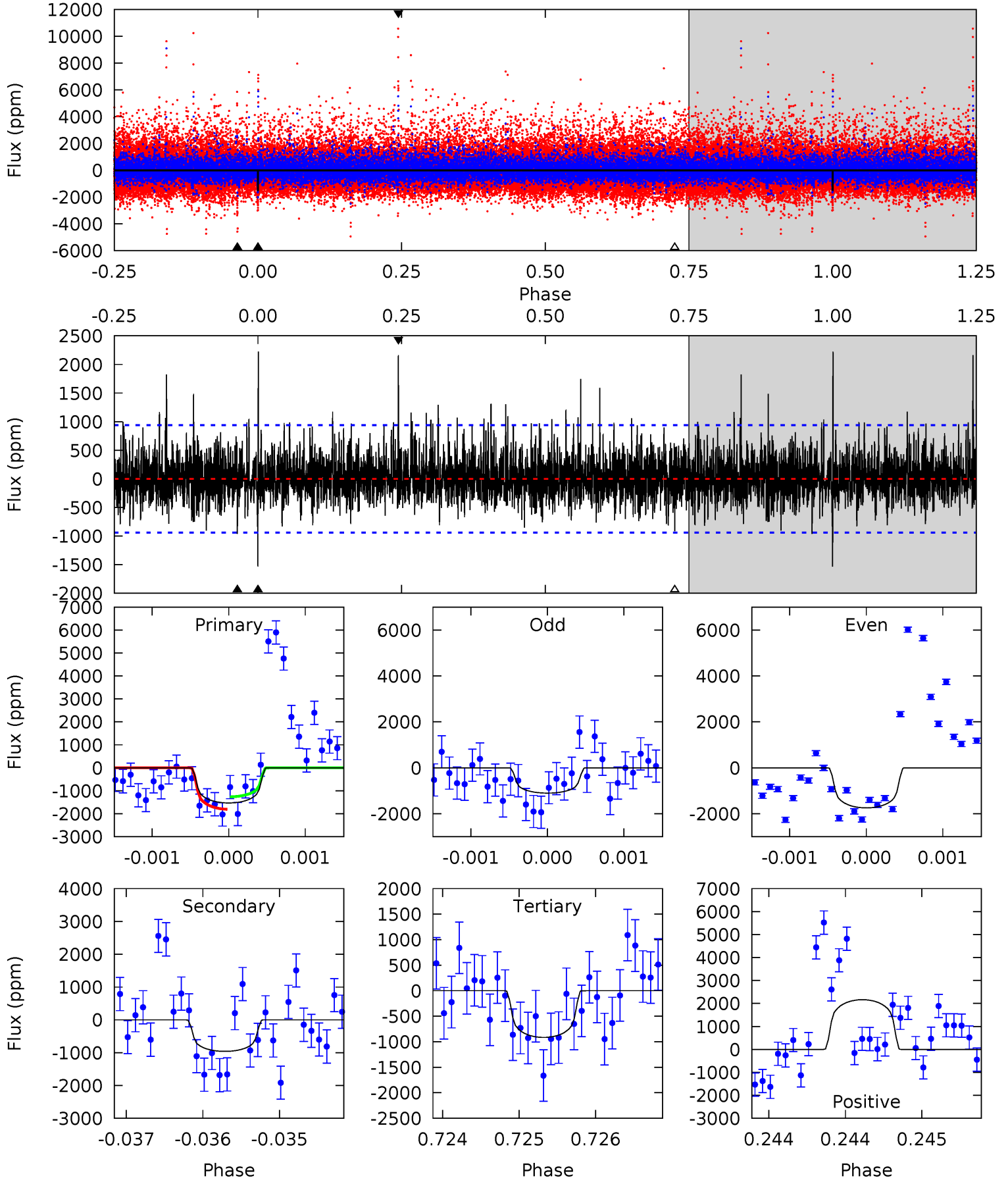
TCE 009179906-02 $P=413.261940$ Days $T_0=365.734464$ (BKJD)



DV Model-Shift Uniqueness Test

009179906-02, P = 413.260849 Days, E = 365.733181 Days

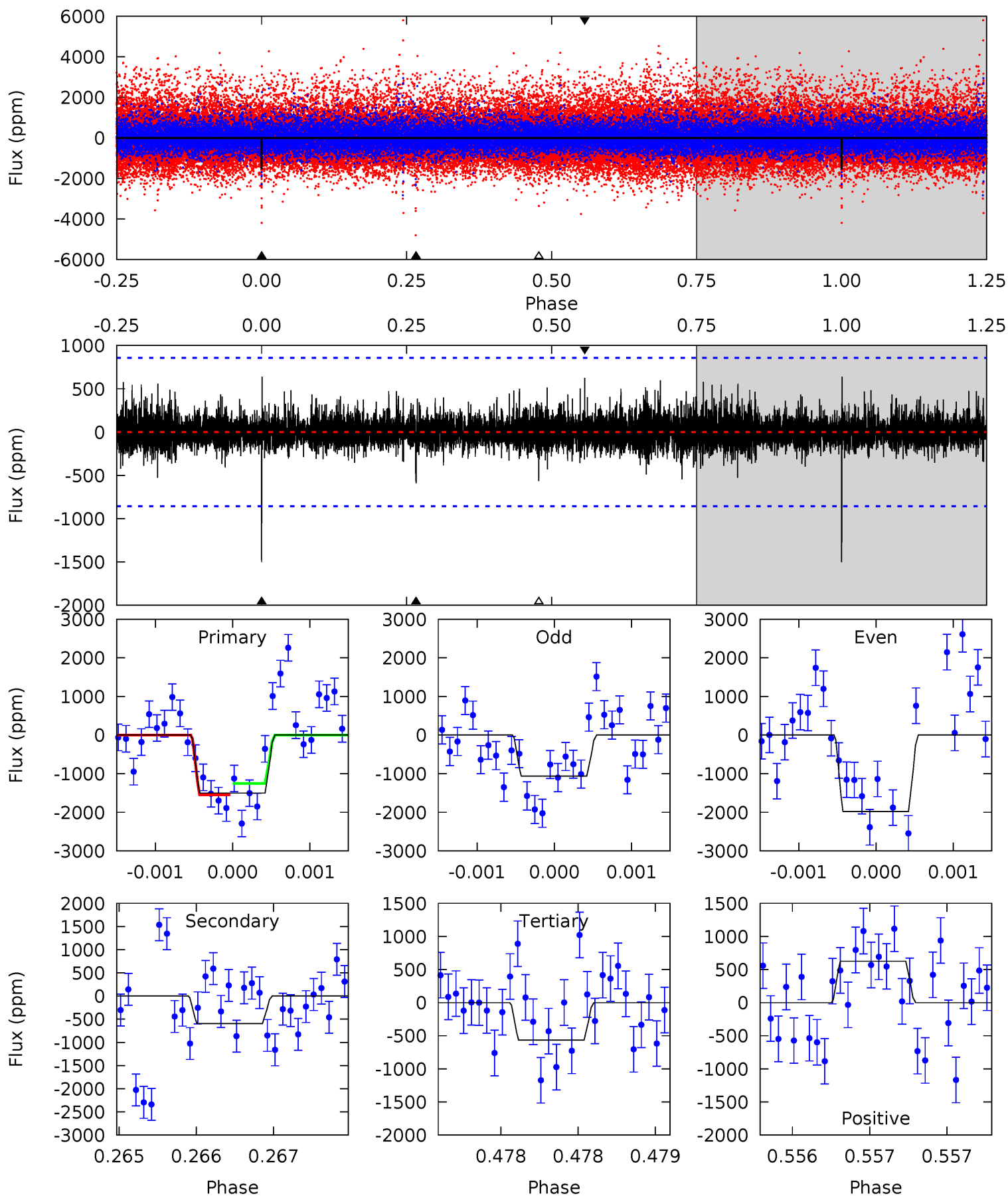
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.01	5.65	5.39	12.7	5.53	3.41	1.83	3.62	-3.72	0.26	-7.08	1.53	1.09	0.59	1.61



Alt Model-Shift Uniqueness Test

009179906-02, P = 413.261940 Days, E = 365.734464 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.75	3.85	3.67	4.05	5.56	3.46	0.80	6.08	5.70	0.18	-0.20	2.80	1.05	0.30	0.93



Stellar Parameters For KIC 009179906

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3368^{+54}_{-54}	$4.955^{+0.060}_{-0.044}$	$0.000^{+0.100}_{-0.100}$	$0.293^{+0.045}_{-0.045}$	$0.282^{+0.063}_{-0.051}$	$15.830^{+5.624}_{-3.486}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+15%/-15%	+22%/-18%	+36%/-22%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 009179906-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-960 ± 170	$1.71^{+1.21}_{-1.07}$	133^{+4}_{-4}	2887^{+1012}_{-388}	$92263^{+613783}_{-60316}$
Alt.	-593 ± 154	$1.55^{+1.21}_{-1.00}$	133^{+4}_{-4}	2756^{+1023}_{-381}	$66602^{+492051}_{-46740}$

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 $A_{obs} \gg 1.0$

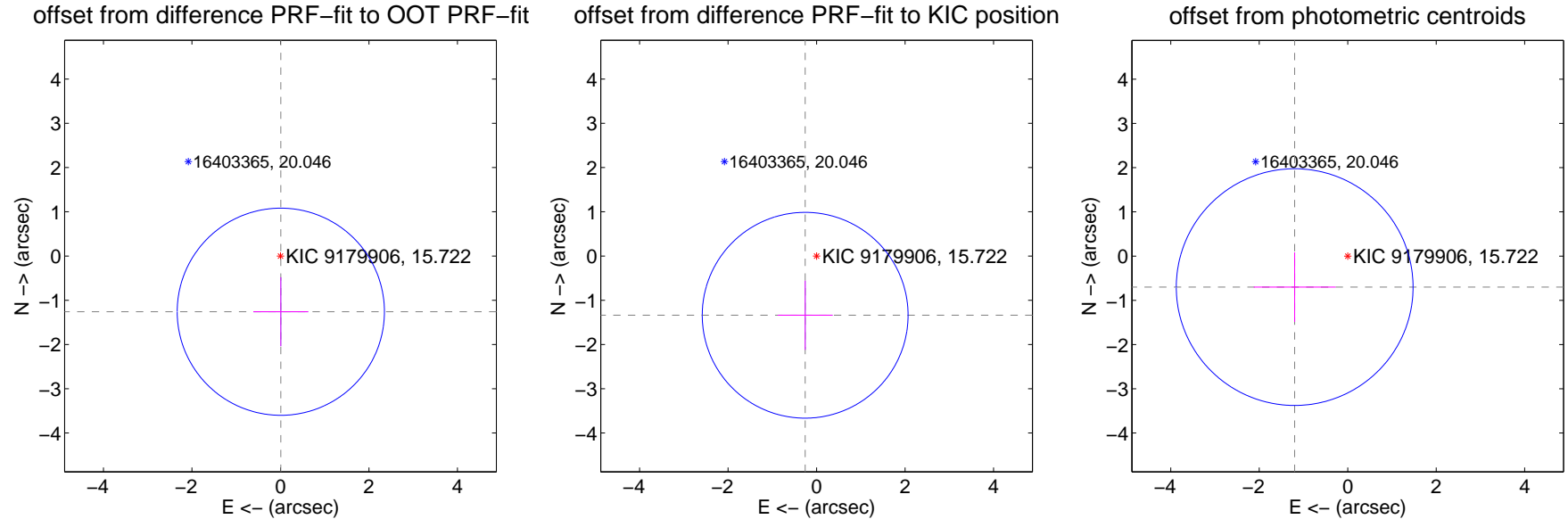
DV Centroid Data

Supplemental centroid analysis for 009179906-02. Kepler magnitude: 15.72. Transit SNR 8.53

There are 1 quarters with good PRF difference image offsets

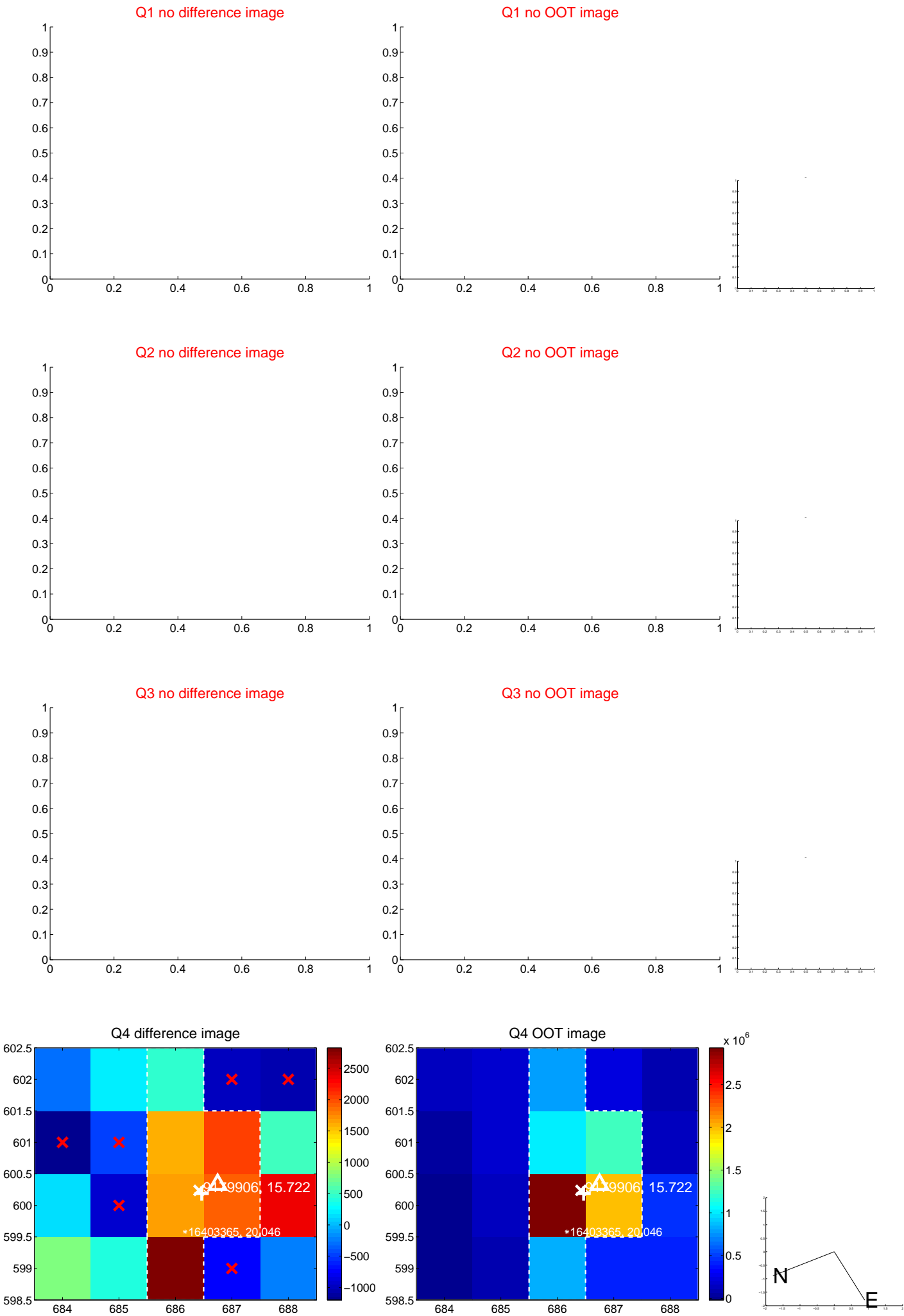
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.259 ± 0.781	1.61	-0.008 ± 0.621	-1.259 ± 0.781
PRF-fit source offset from KIC position	1.364 ± 0.775	1.76	0.258 ± 0.621	-1.339 ± 0.781
photometric centroid source offset	1.39 ± 0.89	1.56	1.20 ± 0.93	-0.70 ± 0.79

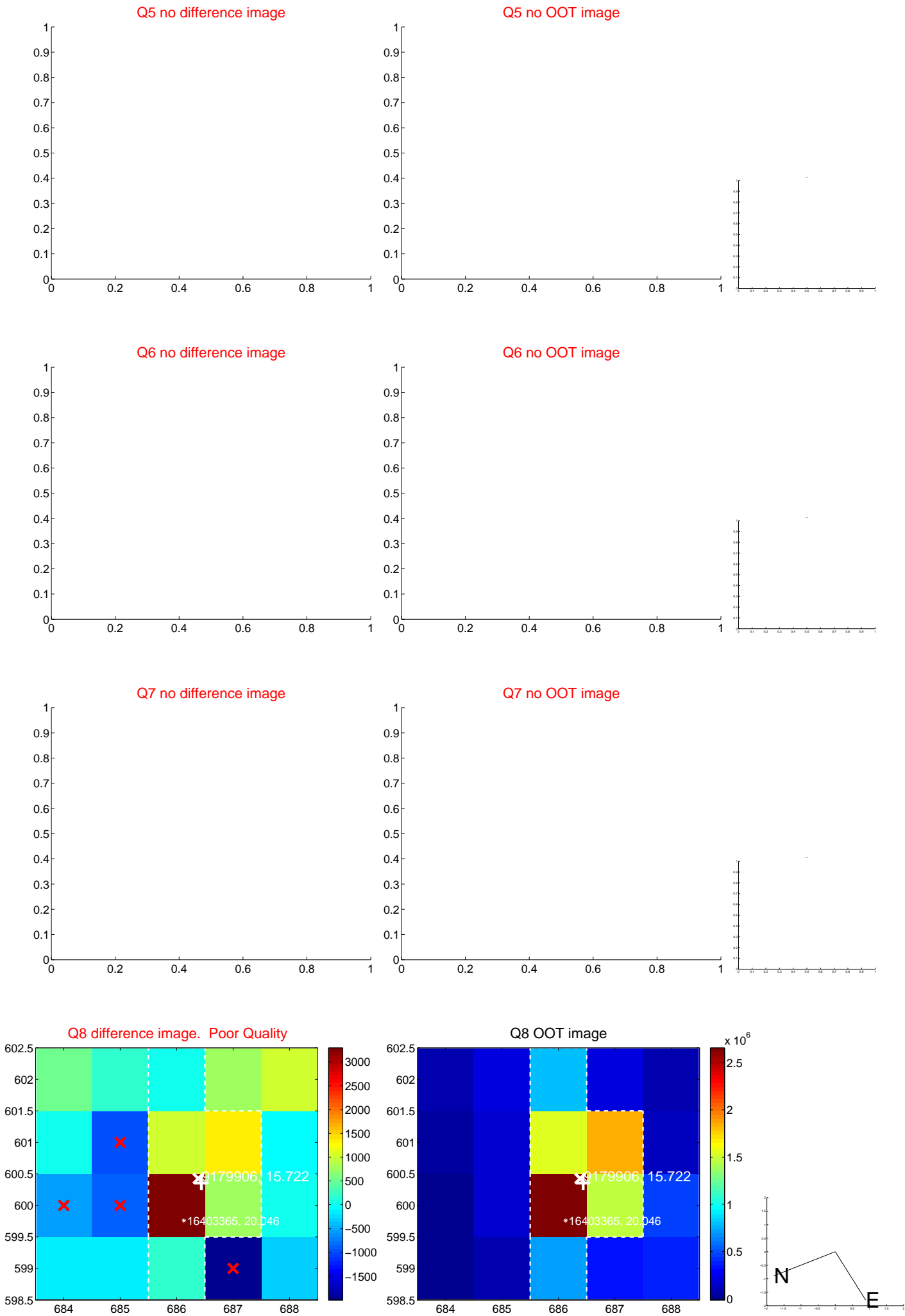


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

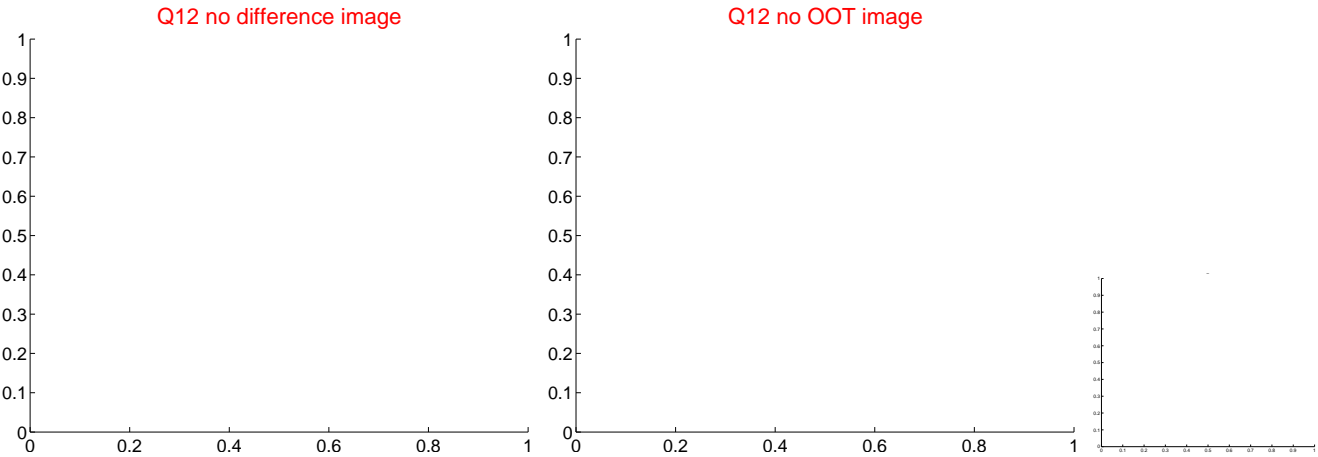
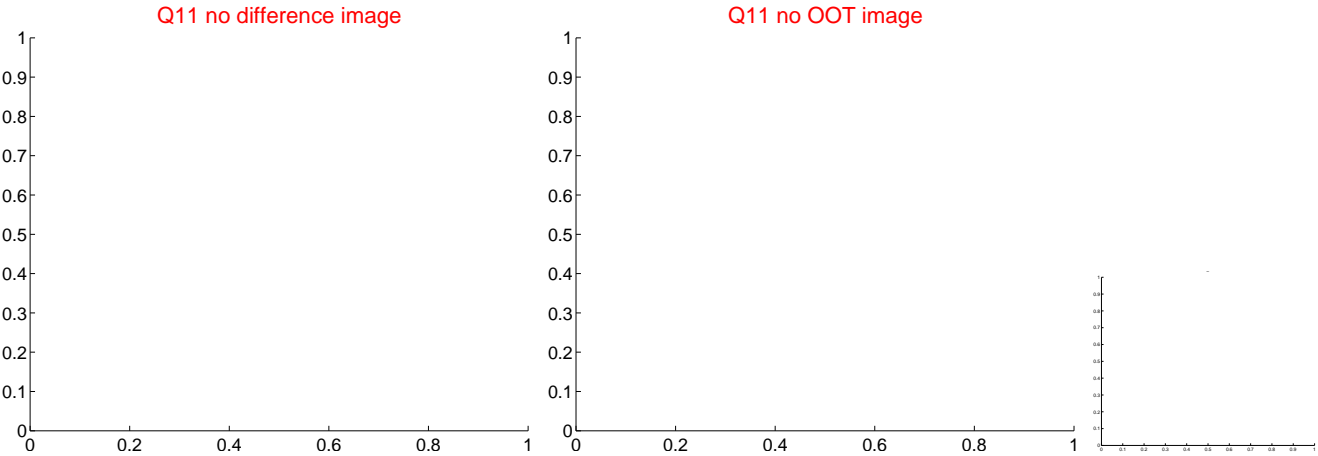
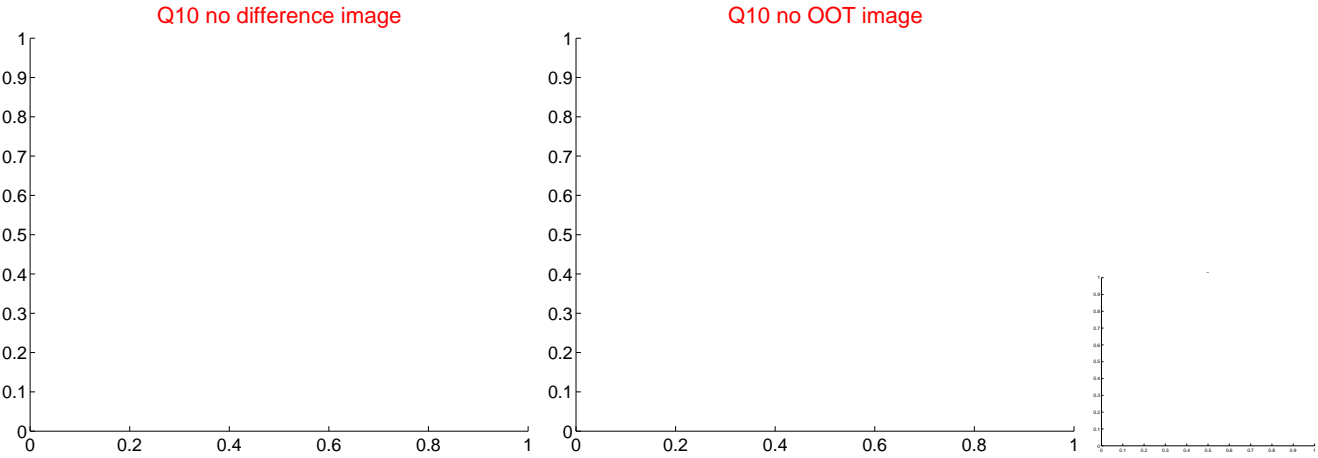
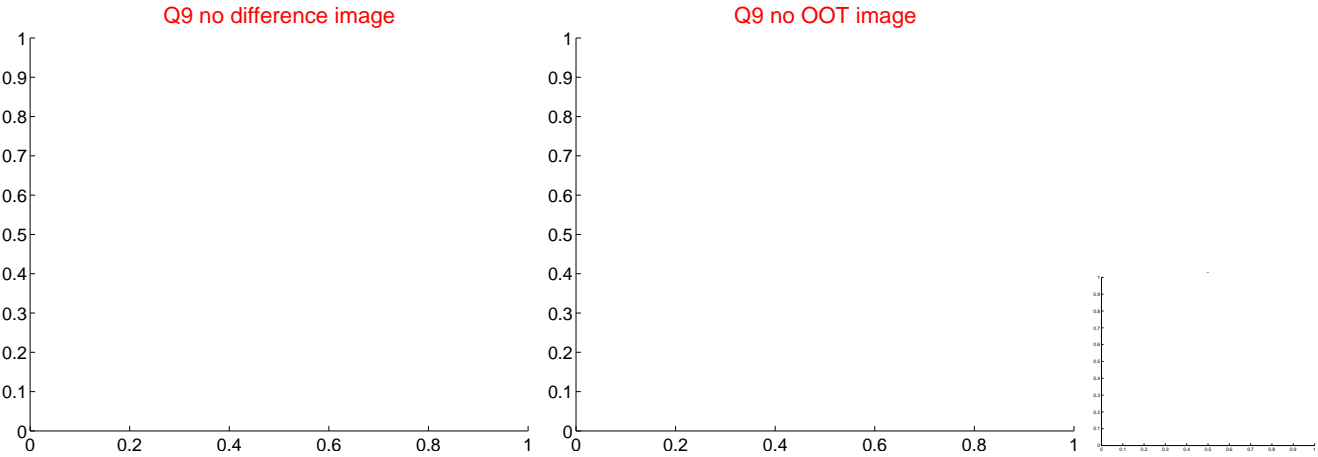
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



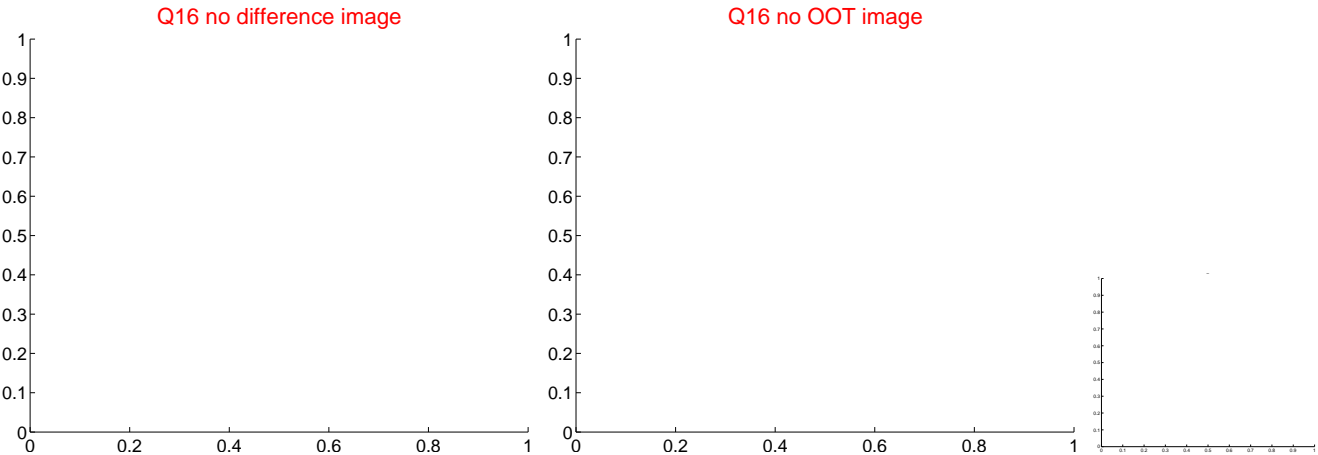
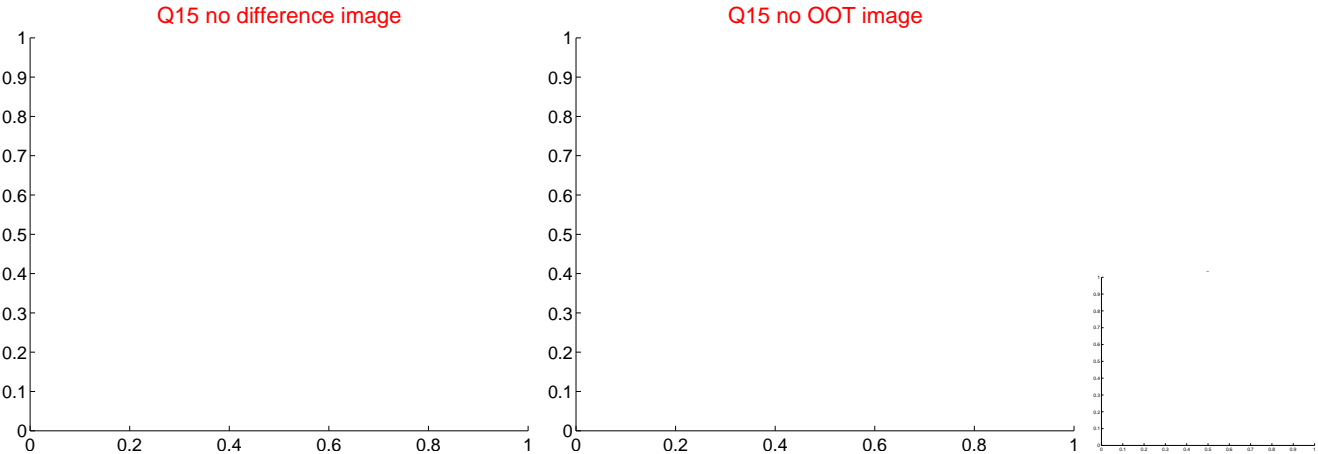
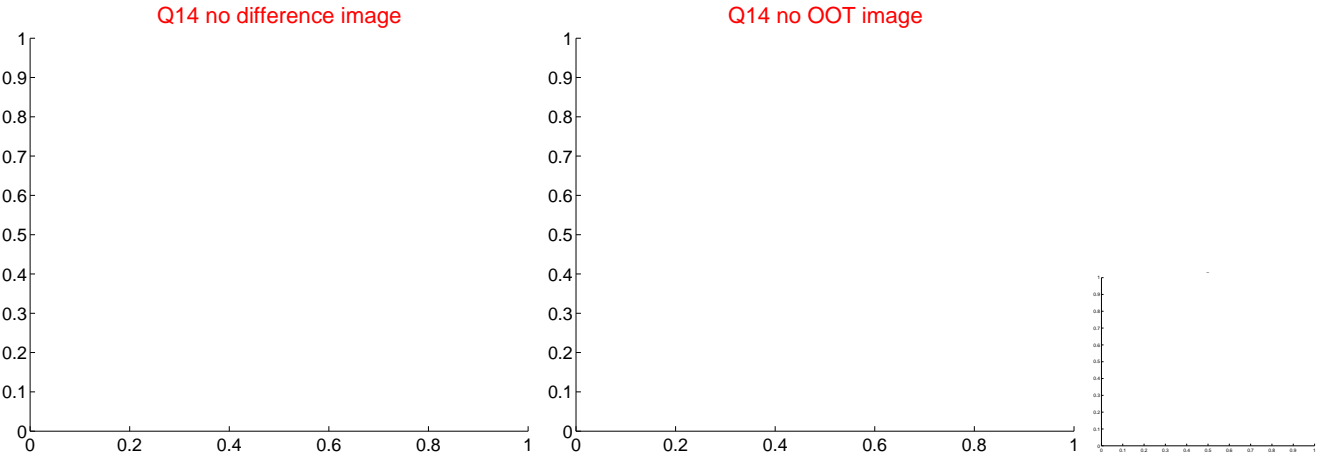
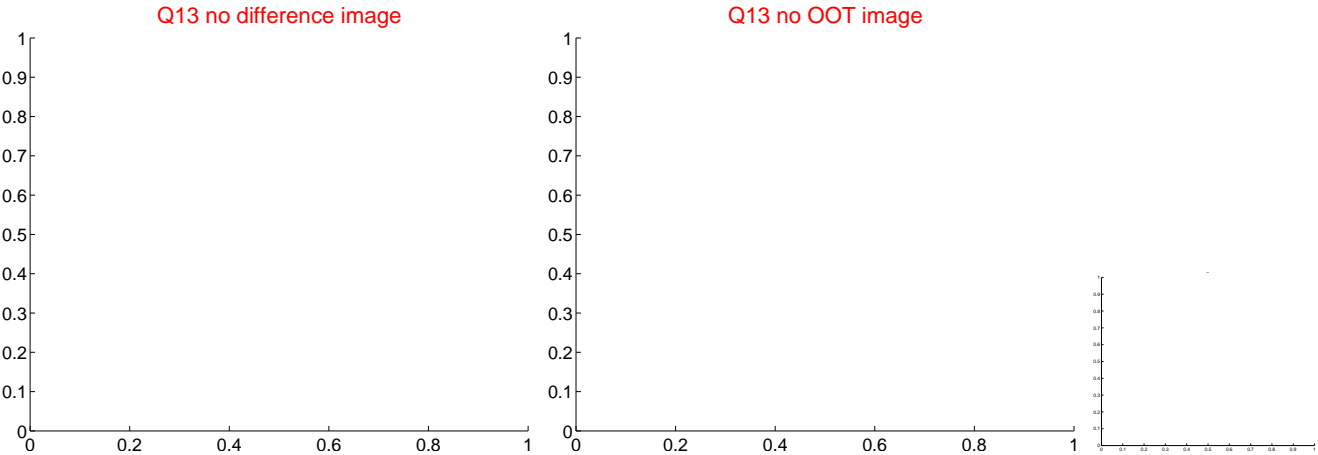
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



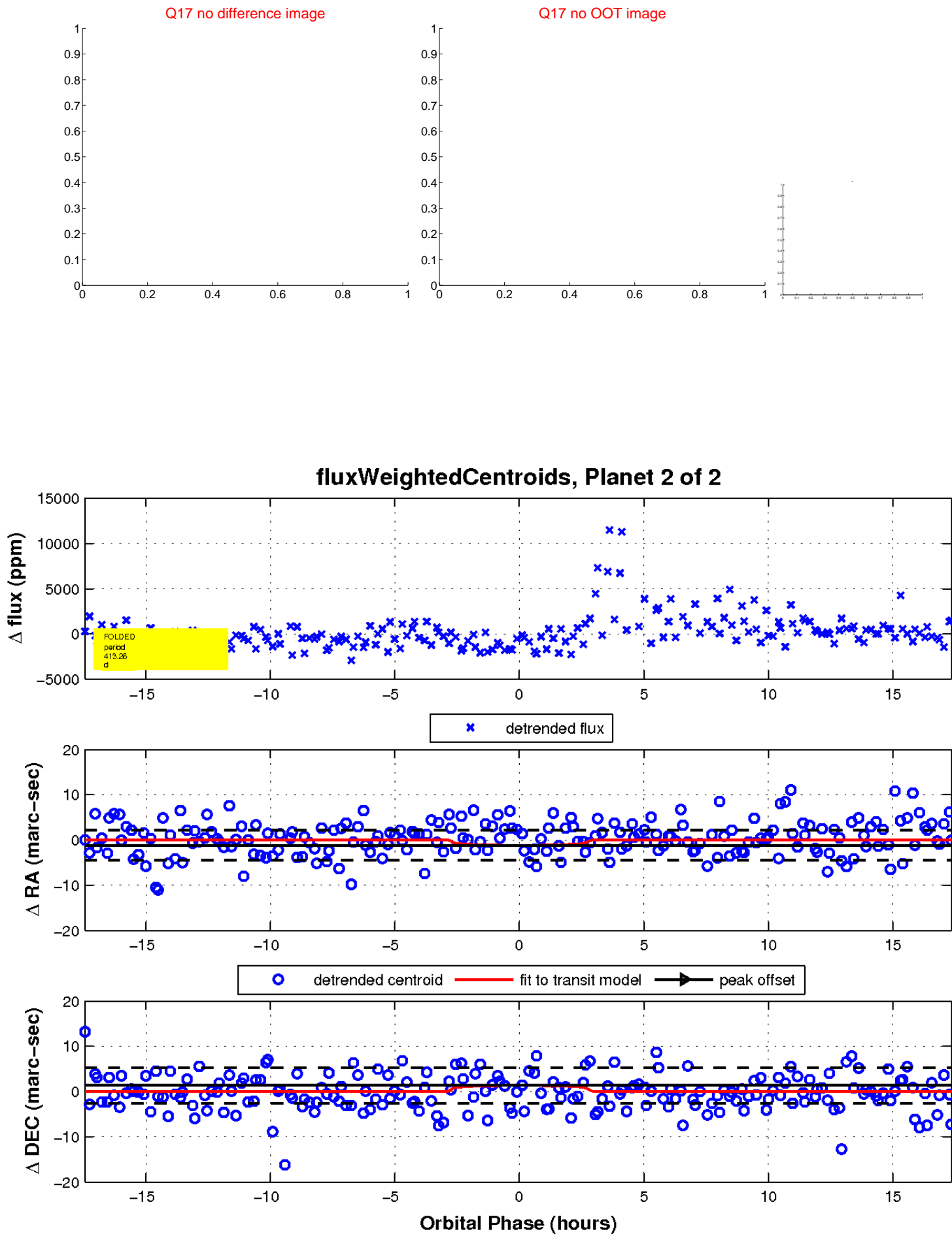
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

