

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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

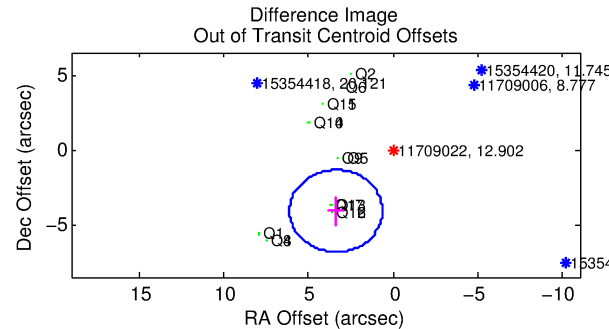
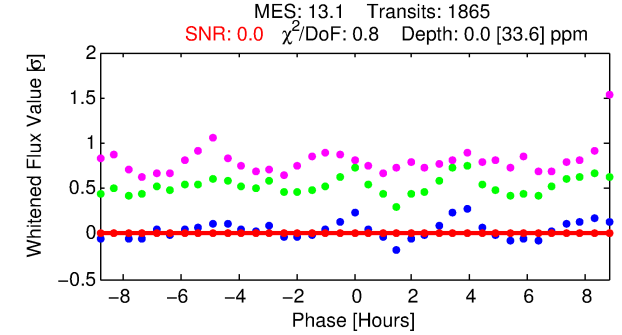
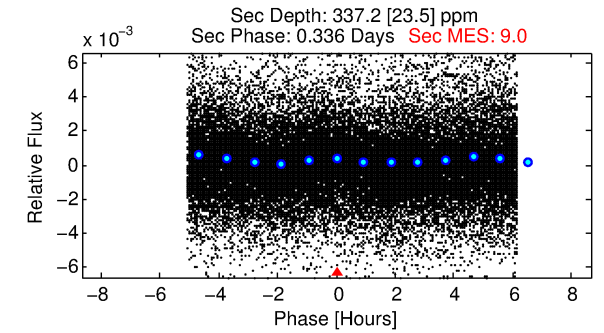
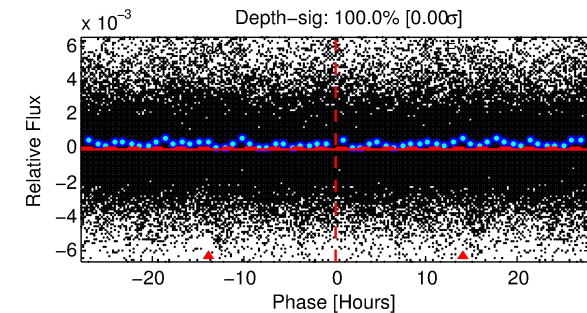
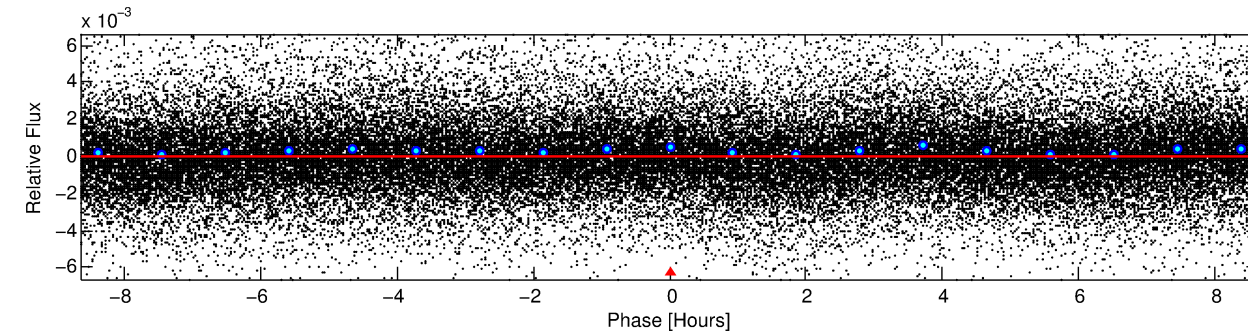
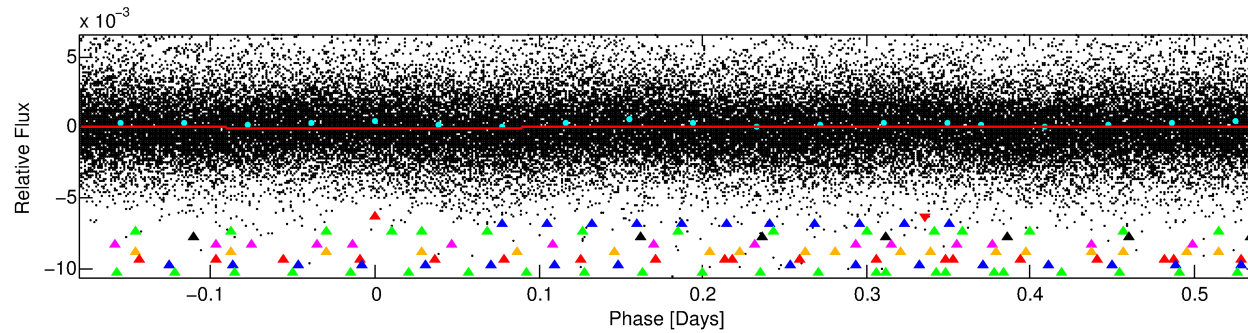
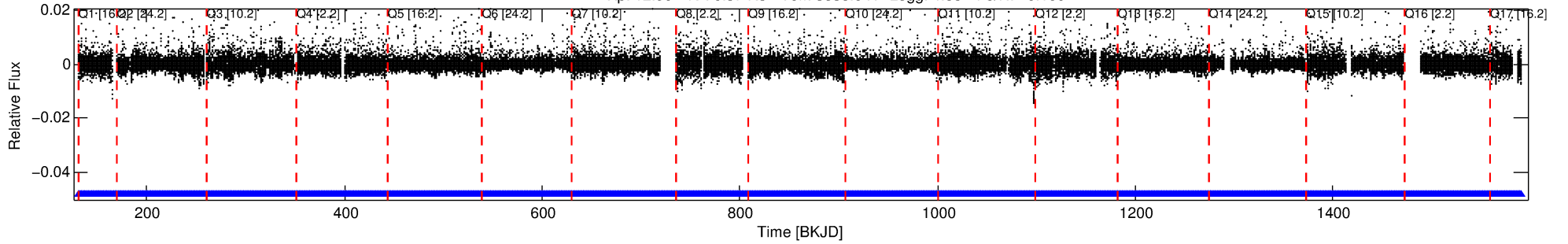
Ephemeris Match Information For 011709022-01

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 1 of 9 Period: 0.720 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 0.71970 [0.12934] d
Epoch = 131.8557 [26.5811] BKJD
Rp/R* = 0.0001 [0.1343]
a/R* = 1.33 [1651.68]
b = 0.02 [180134.67]
Seff = 147.06 [54.38]
Teq = 888 [82] K
Rp = 0.01 [5.39] Re
a = 0.0114 [0.0026] AU
Ag = 905653.32 [1901890210.46] [0.0001]
Teffp = 42352 [22236535] K [0.0001]

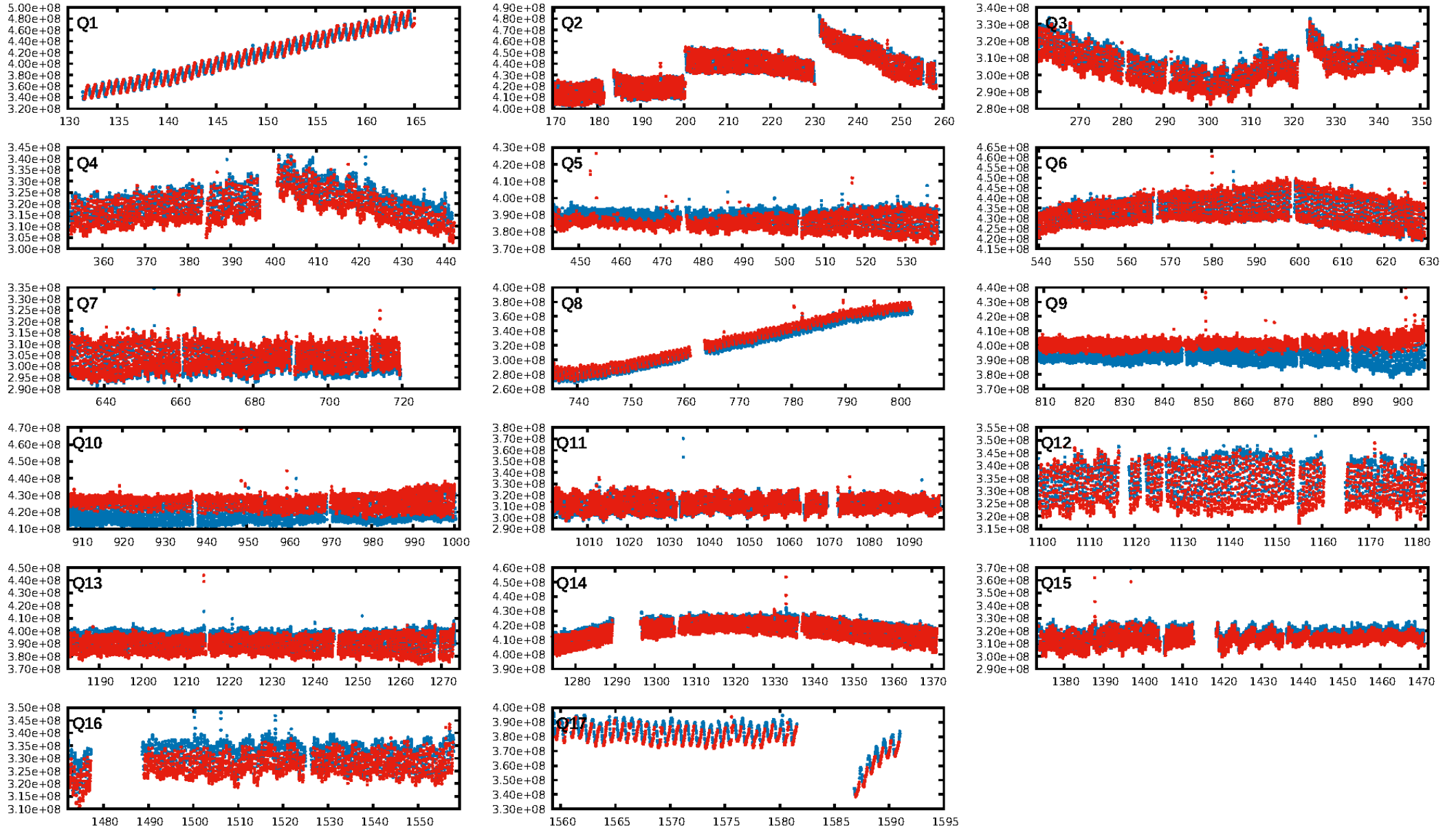
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [261.12σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1781/1781]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 5.319 arcsec [5.83σ]
KicOffset-rm: 5.333 arcsec [8.75σ]
OotOffset-st: 4/2/4/5 [15]
KicOffset-st: 4/2/4/5 [15]
DiffImageQuality-fgm: 0.33 [5/15]
DiffImageOverlap-fno: 1.00 [17/17]

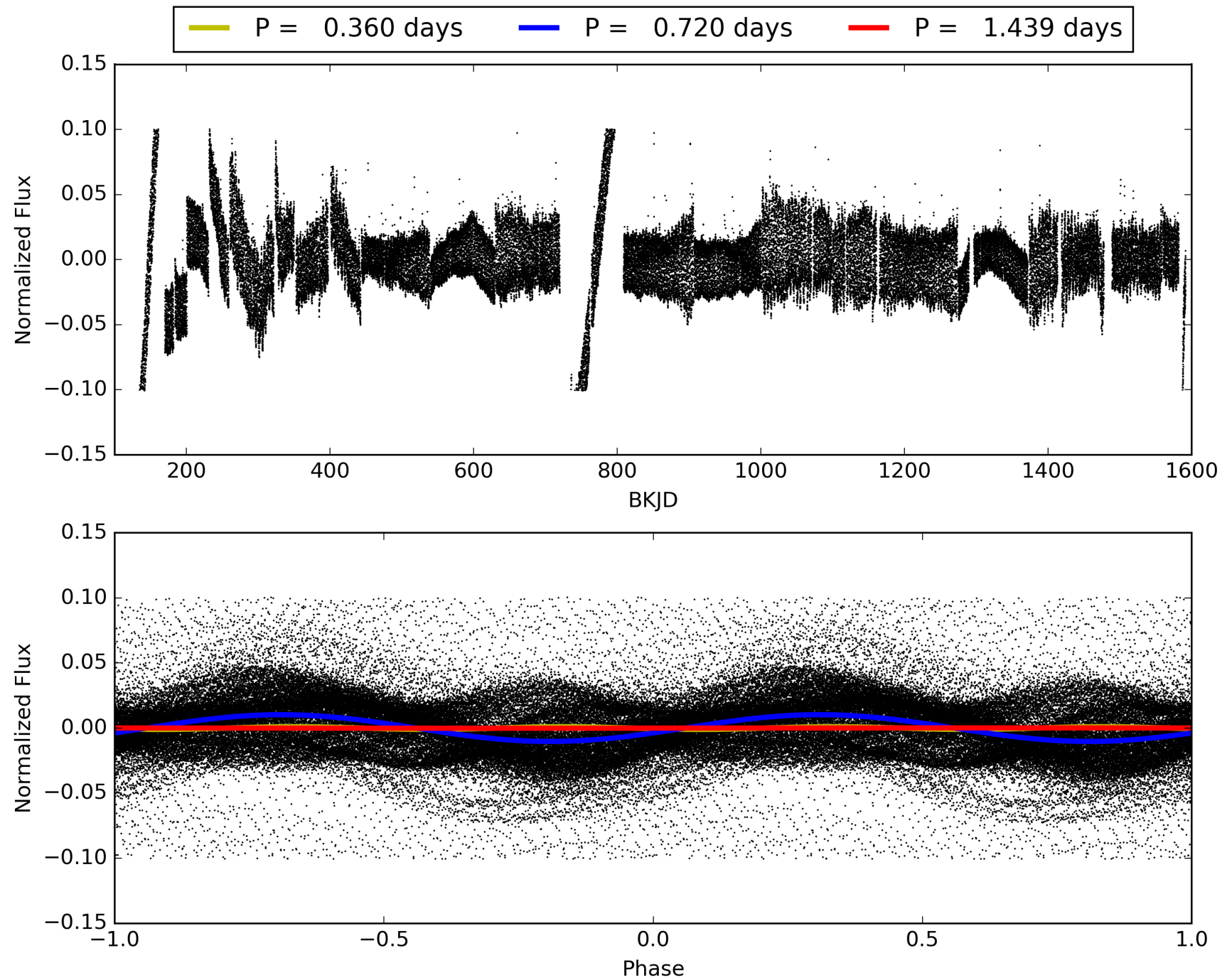
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:25 Z

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

TCE 011709022-01, PDC Light Curves

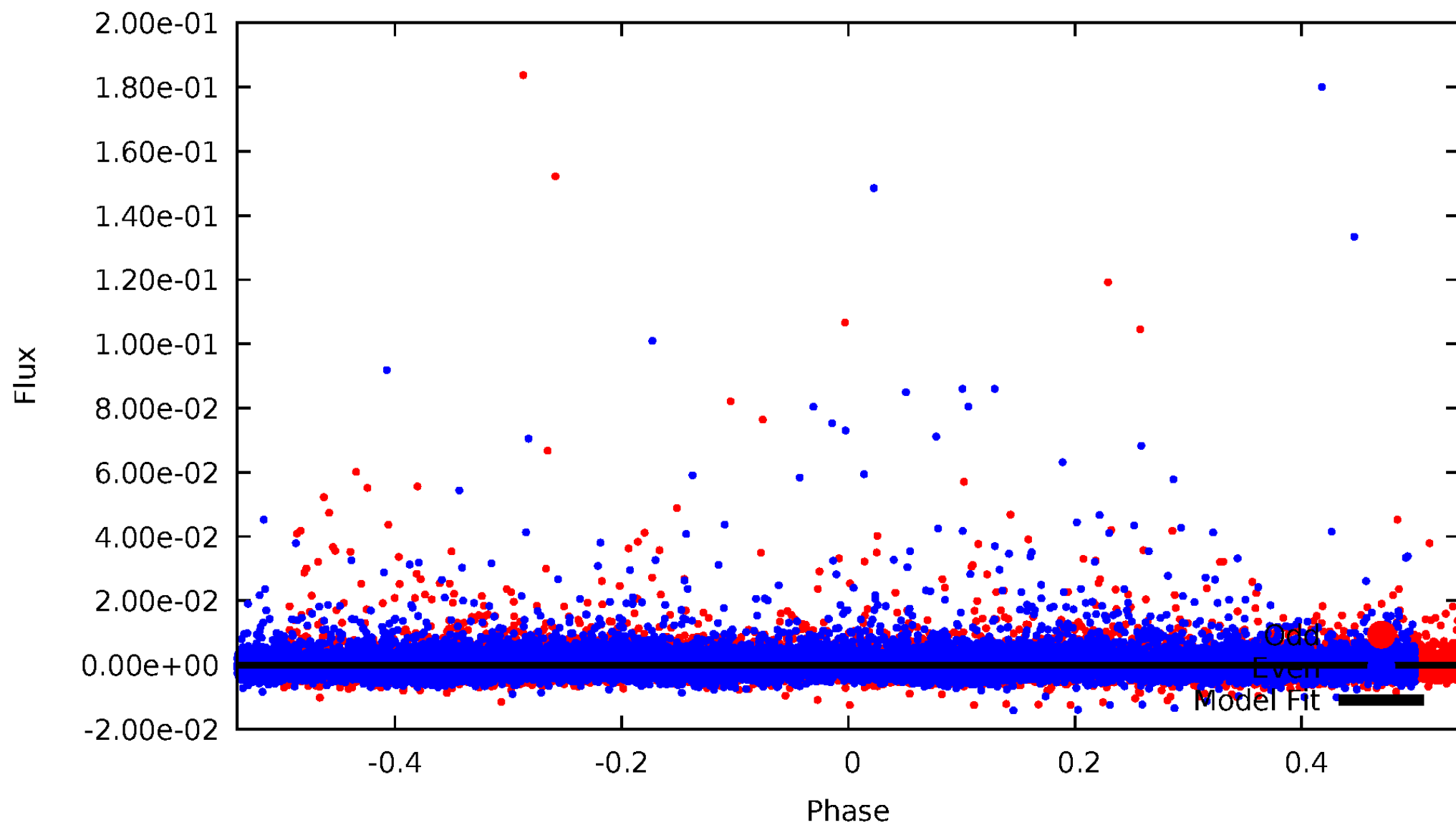


TCE 011709022-01



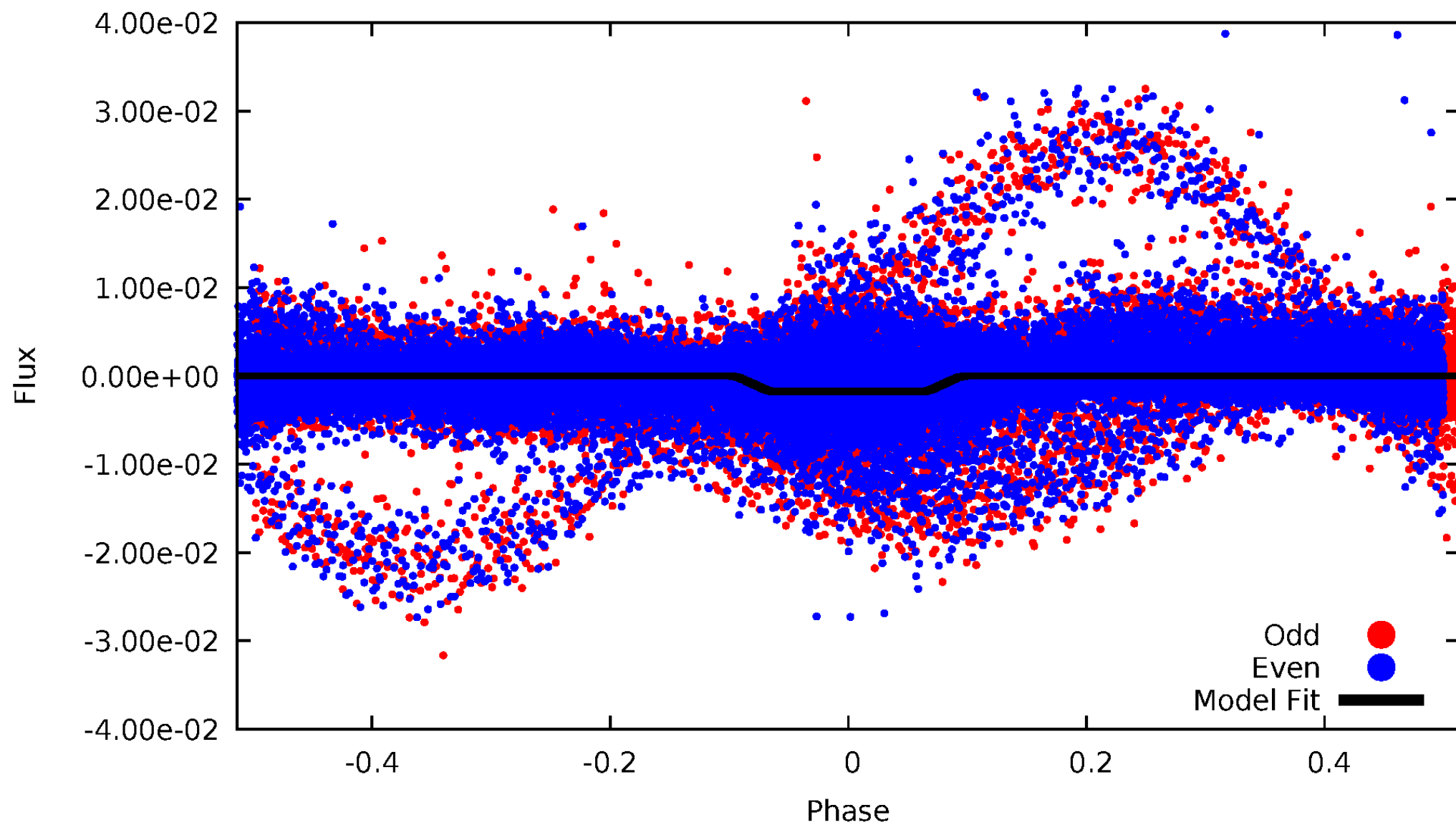
DV Odd/Even

TCE 011709022-01



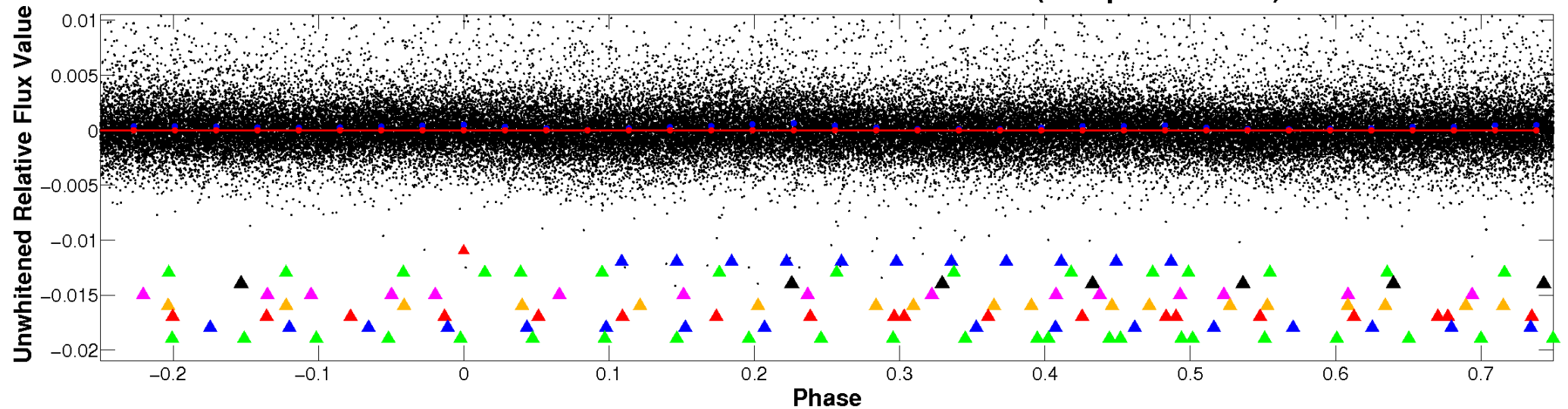
ALT Odd/Even

TCE 011709022-01

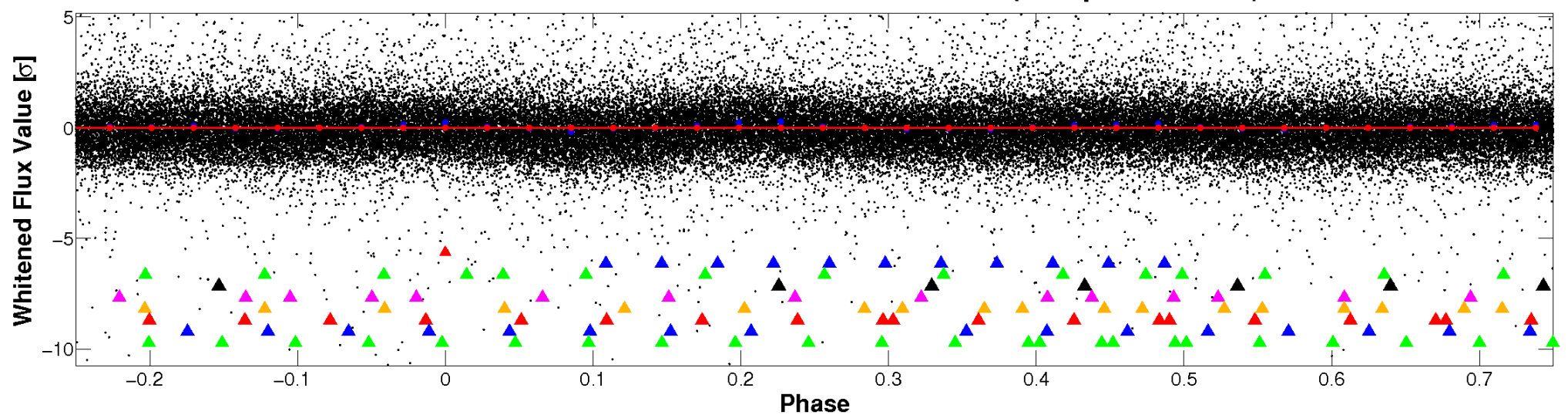


Non-Whitened Vs. Whitened Light Curve

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

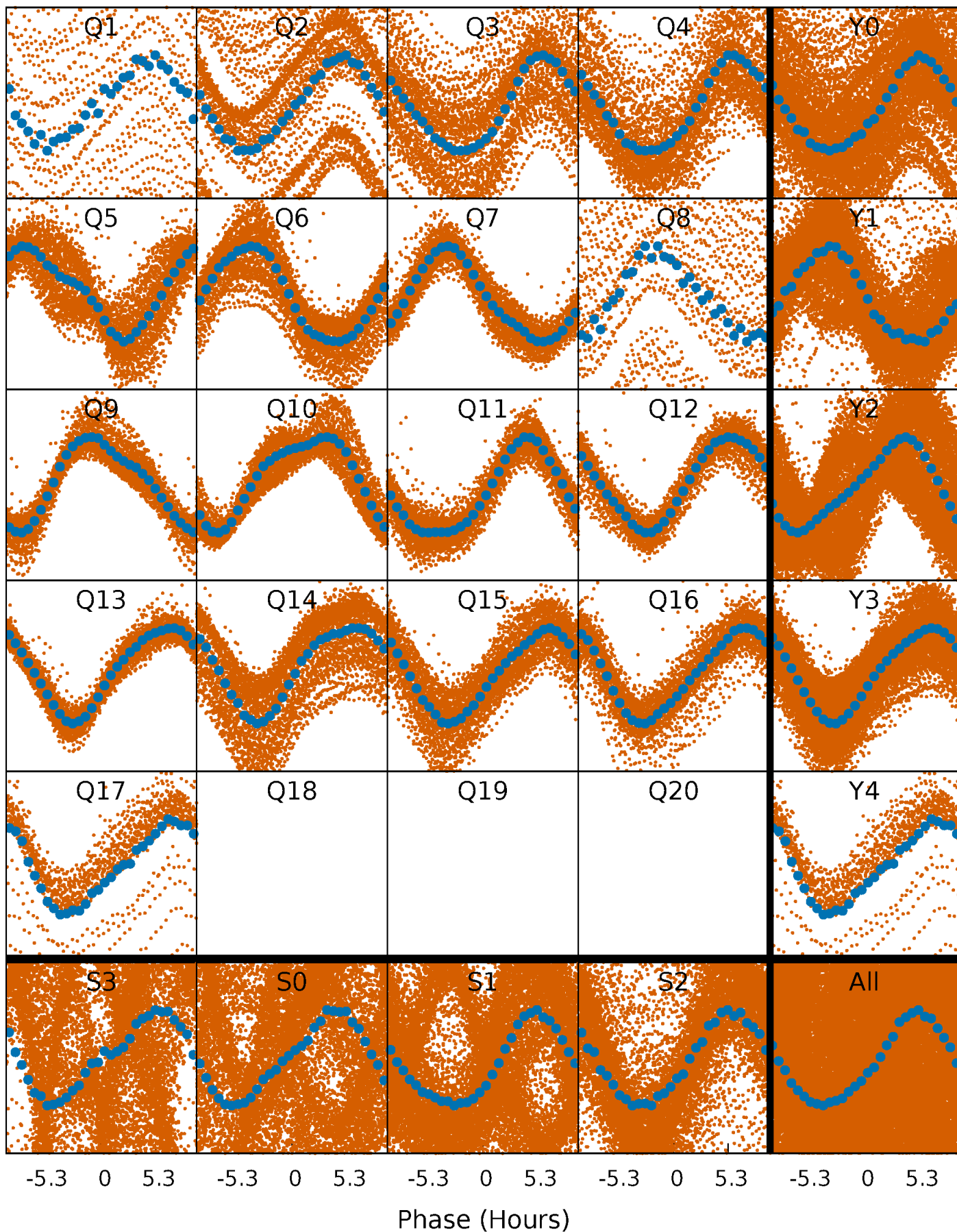


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



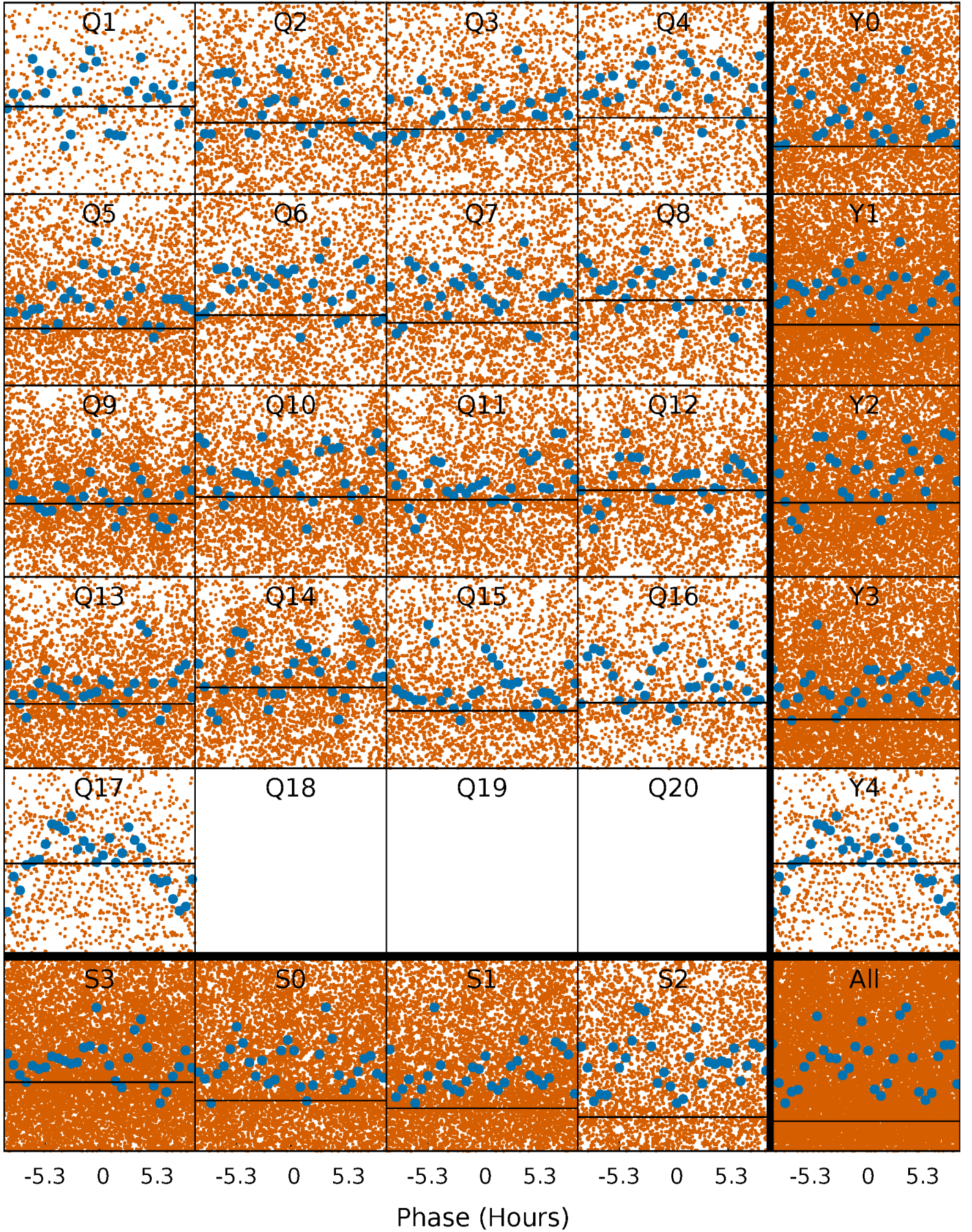
PDC Quarter-Phased Transit Curves

TCE 011709022-01 P= 0.719701 Days $T_0=131.855664$ (BKJD)



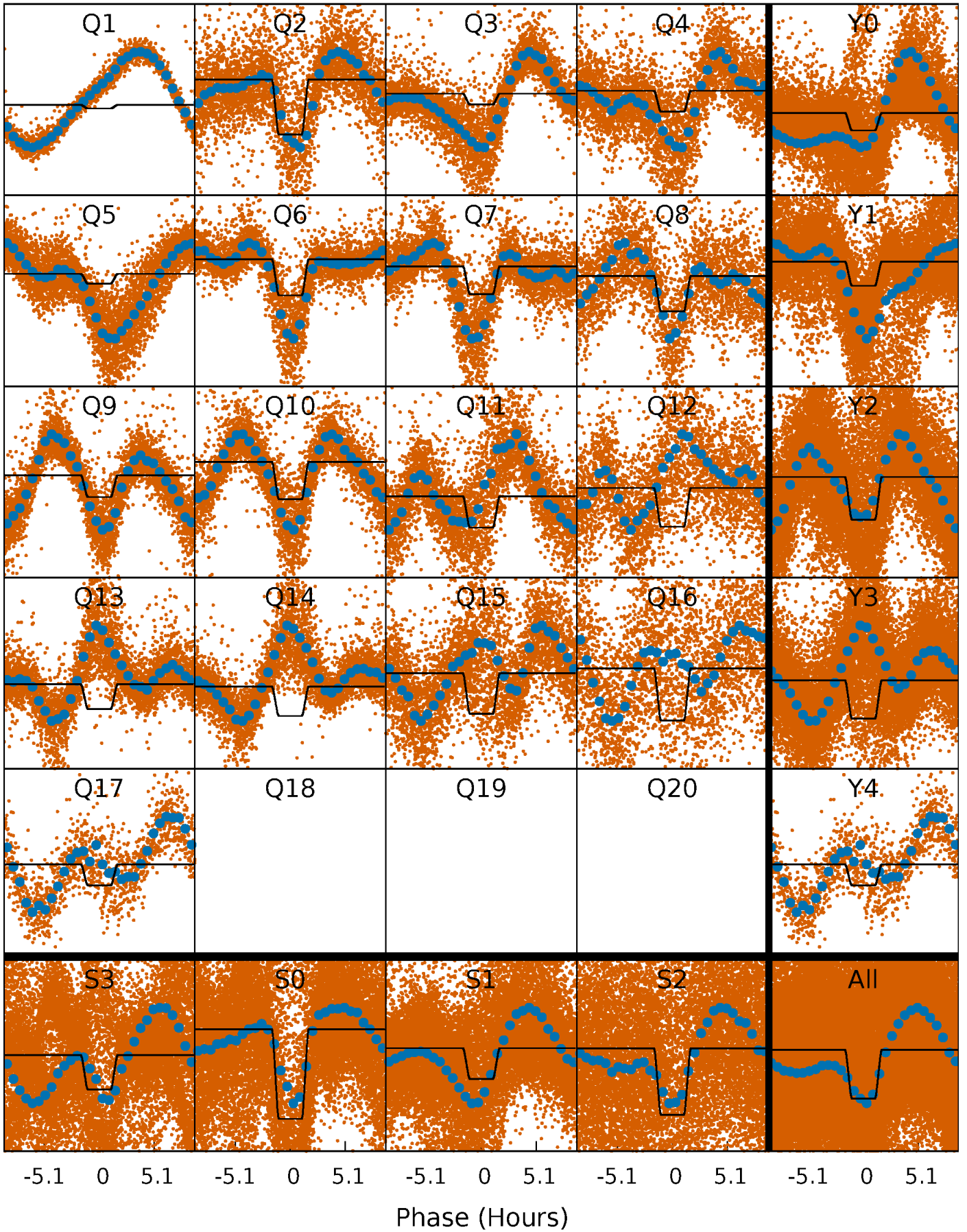
DV Quarter-Phased Transit Curves

TCE 011709022-01 P= 0.719701 Days $T_0=131.855664$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

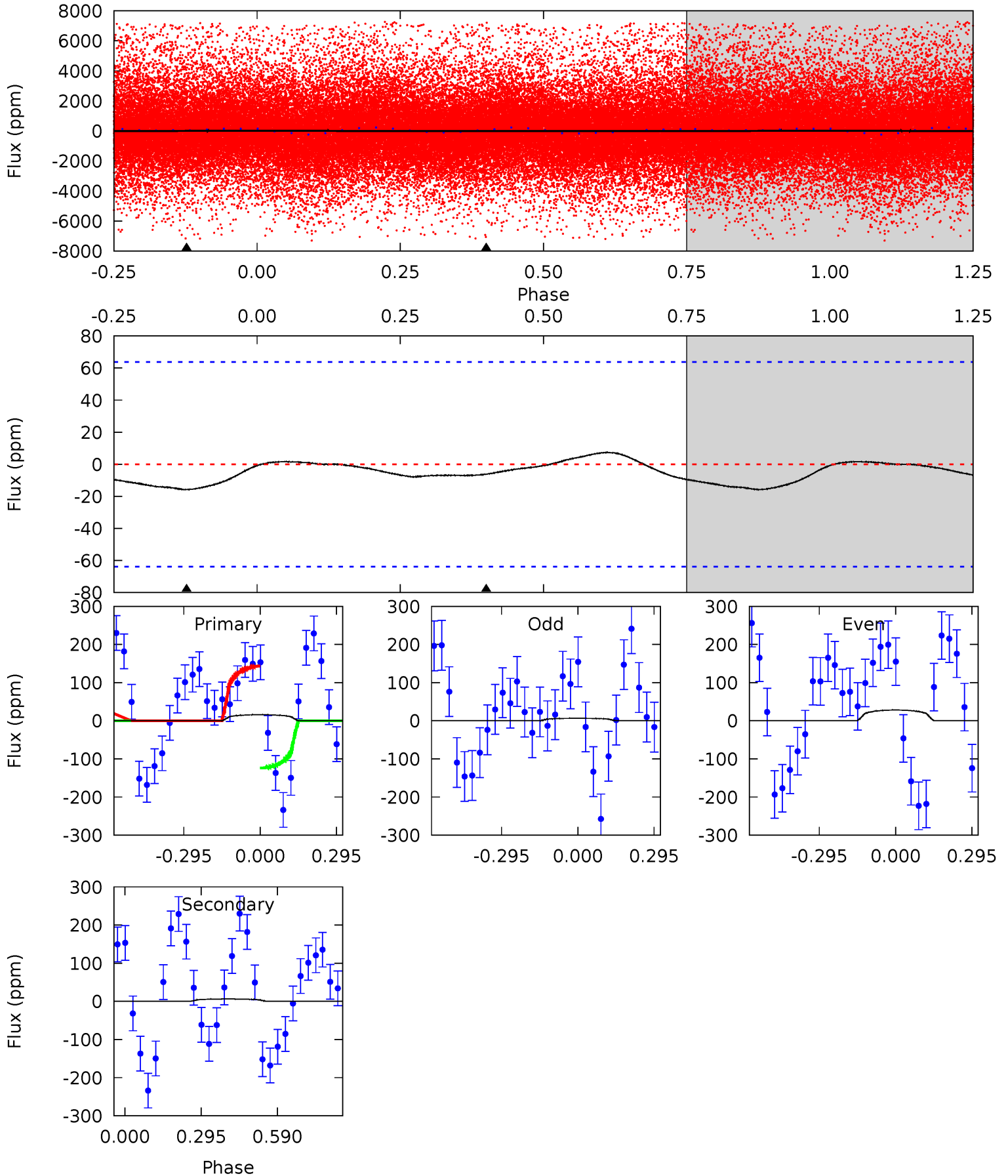
TCE 011709022-01 P= 0.719710 Days $T_0=131.895704$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-01, P = 0.719701 Days, E = 131.135963 Days

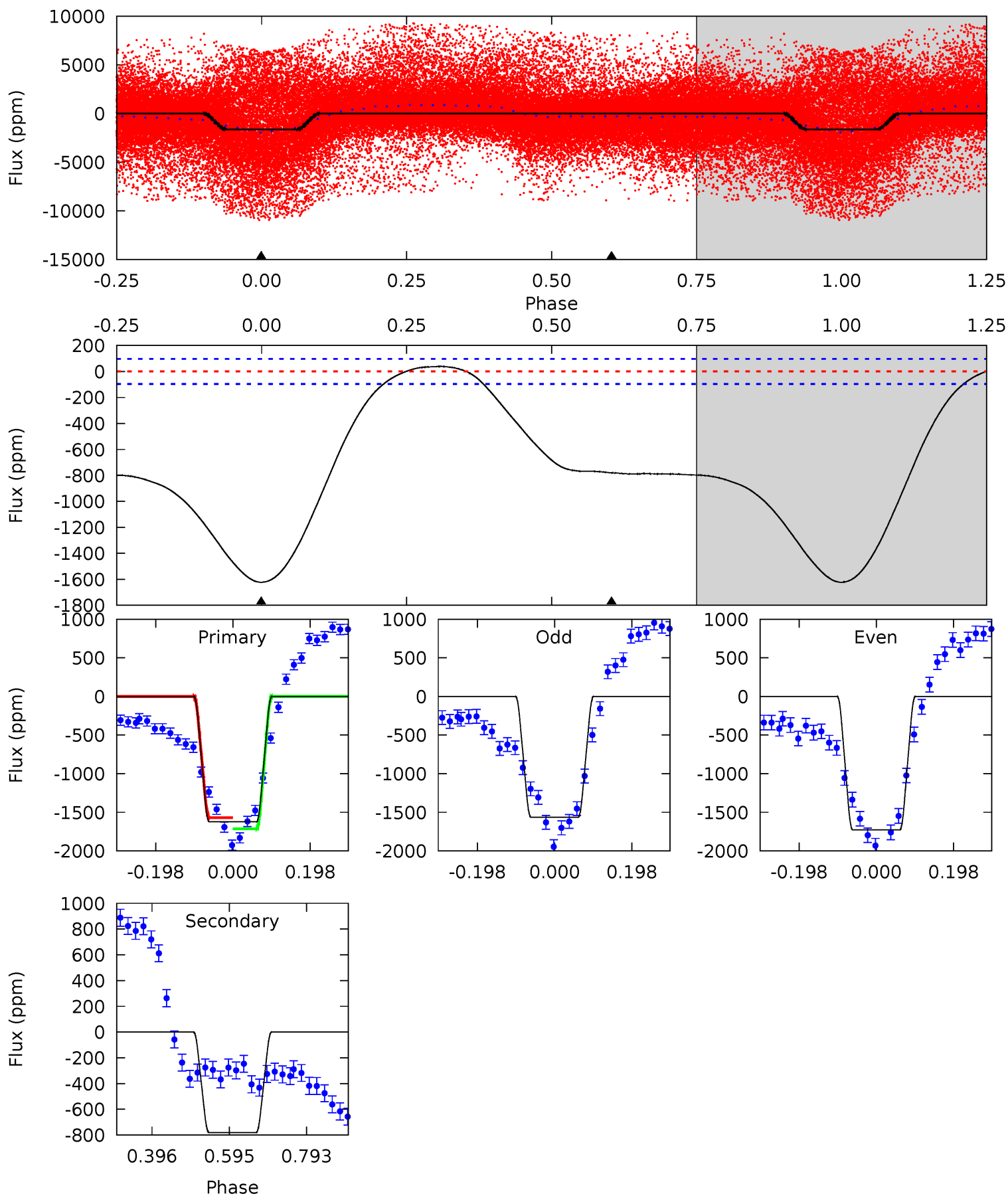
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.07	0.42	0	0	4.33	1.05	0.19	1.07	1.07	0.42	0.42	0.76	5.32	0.32	0.71



Alt Model-Shift Uniqueness Test

011709022-01, P = 0.719710 Days, E = 131.175994 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.1	35.6	0	0	4.42	1.29	2.98	74.1	74.1	35.6	35.6	3.77	0.85	0.02	3.15



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-01 / KOI 7474.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6 ± 15	$3.40^{+4.10}_{-2.51}$	1235^{+108}_{-96}	-1874^{+3478}_{-116}	$0.017^{+0.325}_{-0.061}$
Alt.	-780 ± 22	$4.29^{+4.42}_{-3.14}$	1239^{+104}_{-90}	2396^{+1078}_{-421}	$2.898^{+35.975}_{-2.179}$

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 $A_{obs} \gg 1.0$

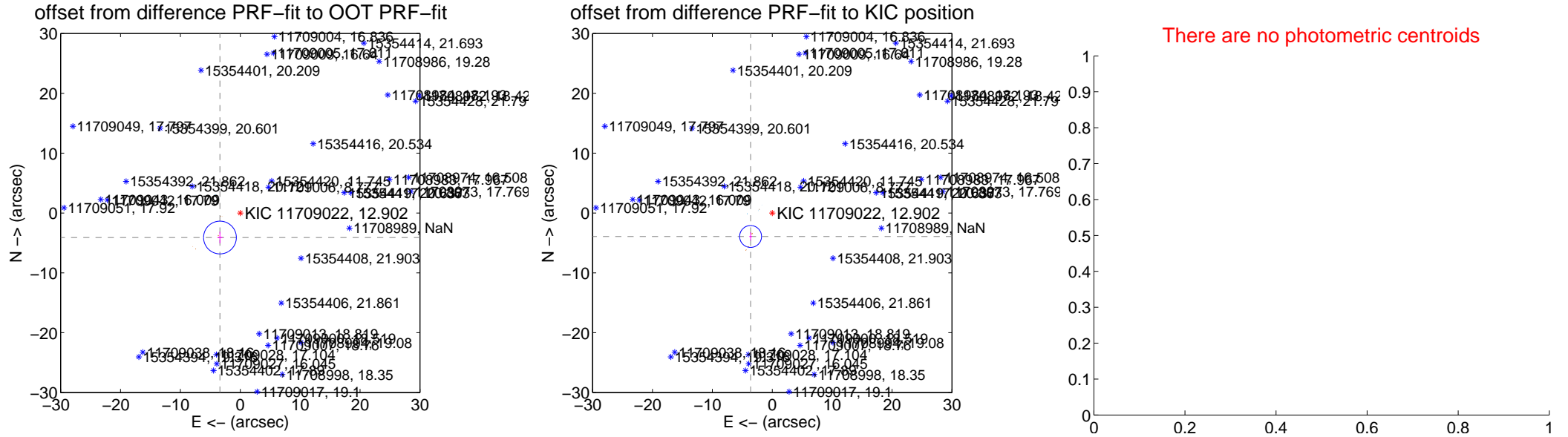
DV Centroid Data

Supplemental centroid analysis for 011709022-01. Kepler magnitude: 12.90. Transit SNR 0.00

There are 5 quarters with good PRF difference image offsets

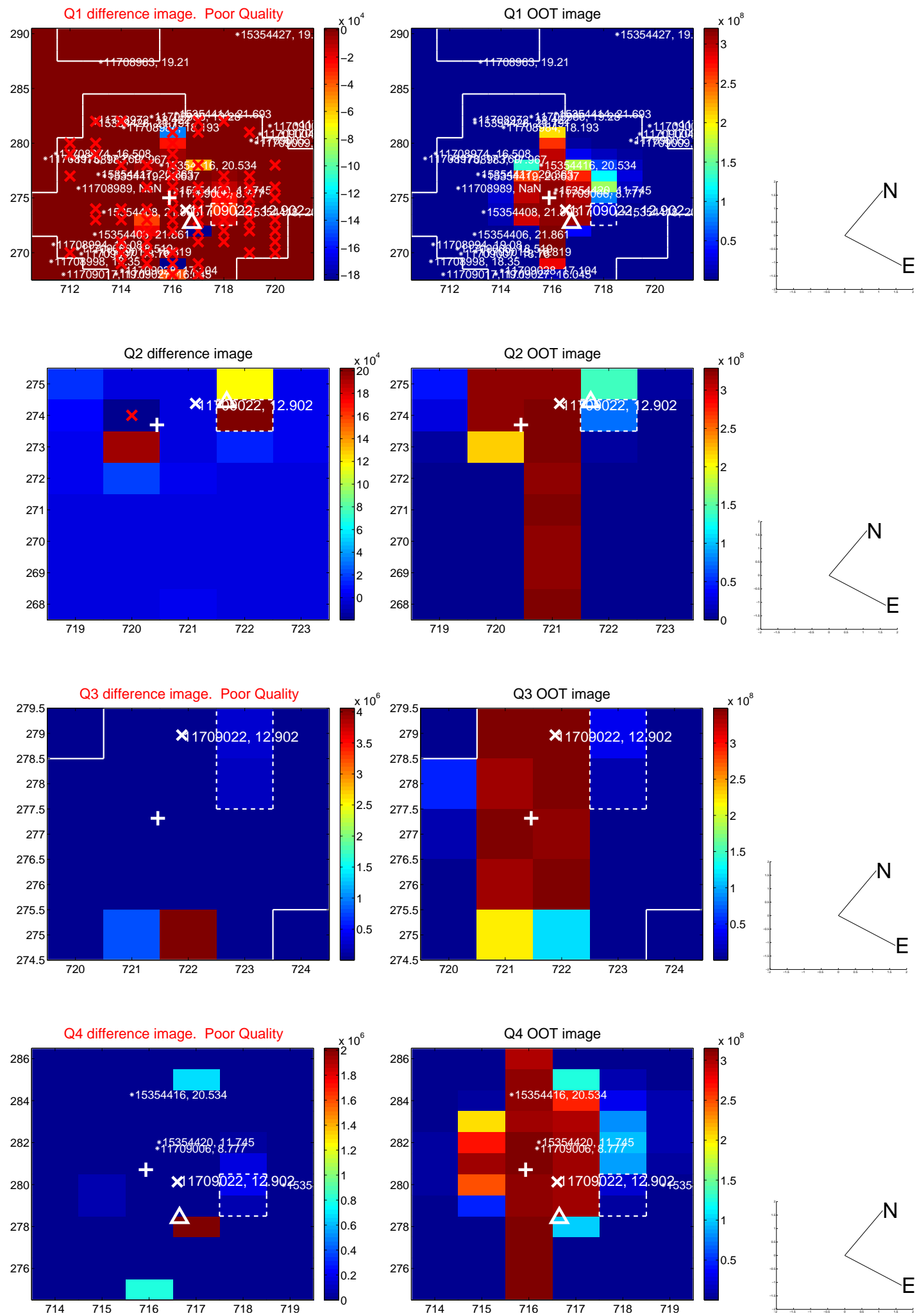
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.319 ± 0.912	5.83	3.394 ± 0.429	-4.096 ± 0.962
PRF-fit source offset from KIC position	5.333 ± 0.610	8.75	3.617 ± 0.227	-3.920 ± 0.678
photometric centroid source offset	—	—	—	—

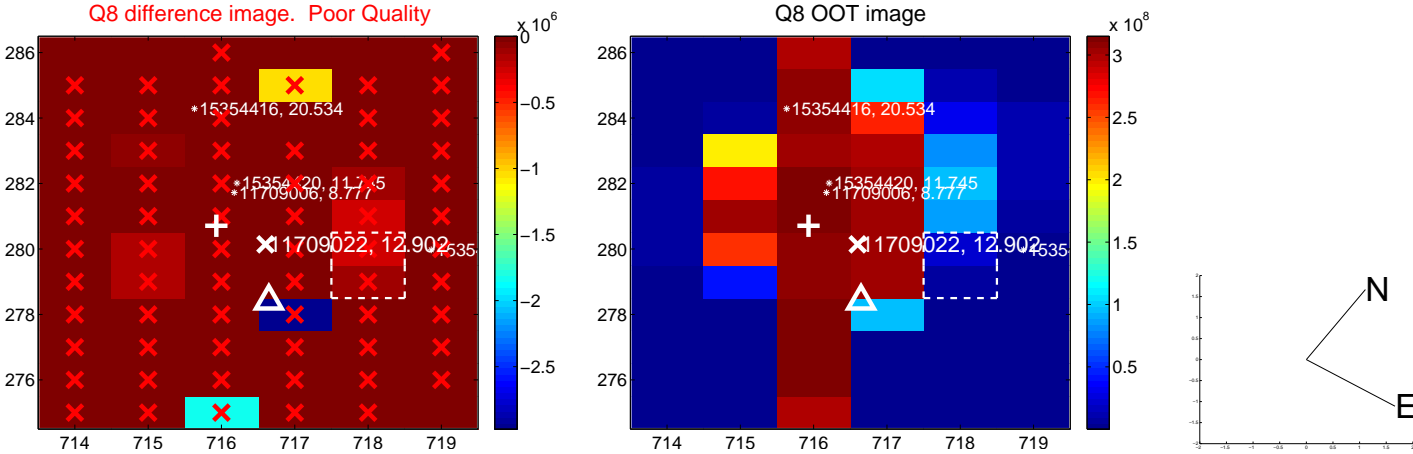
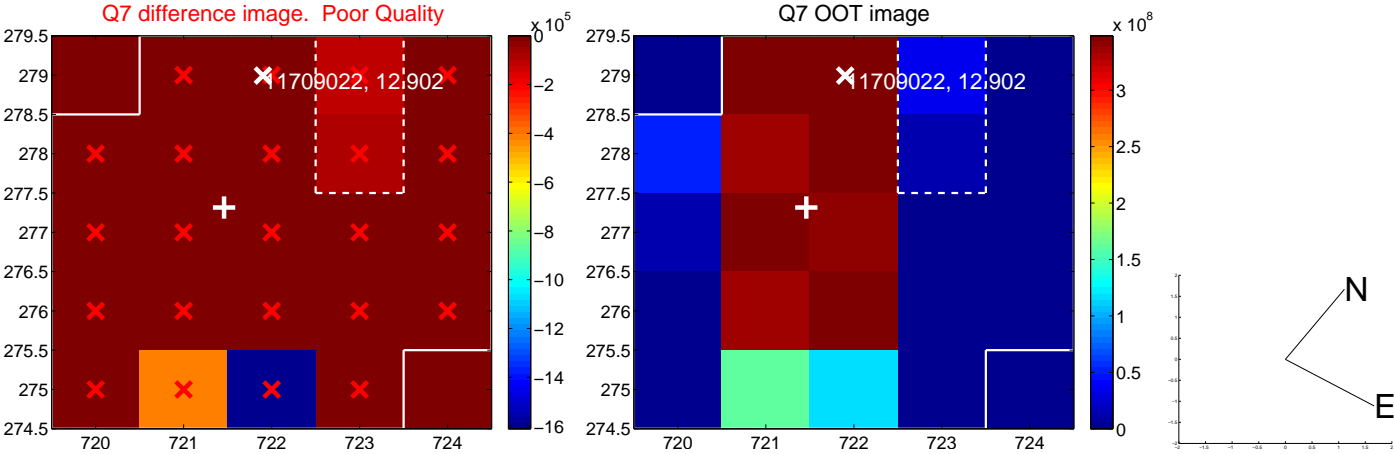
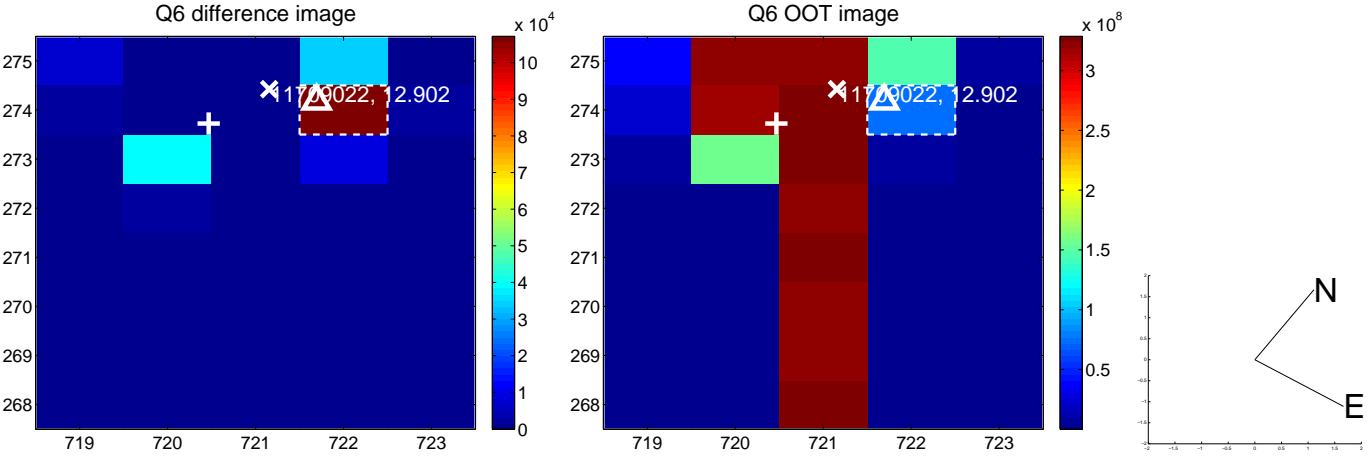
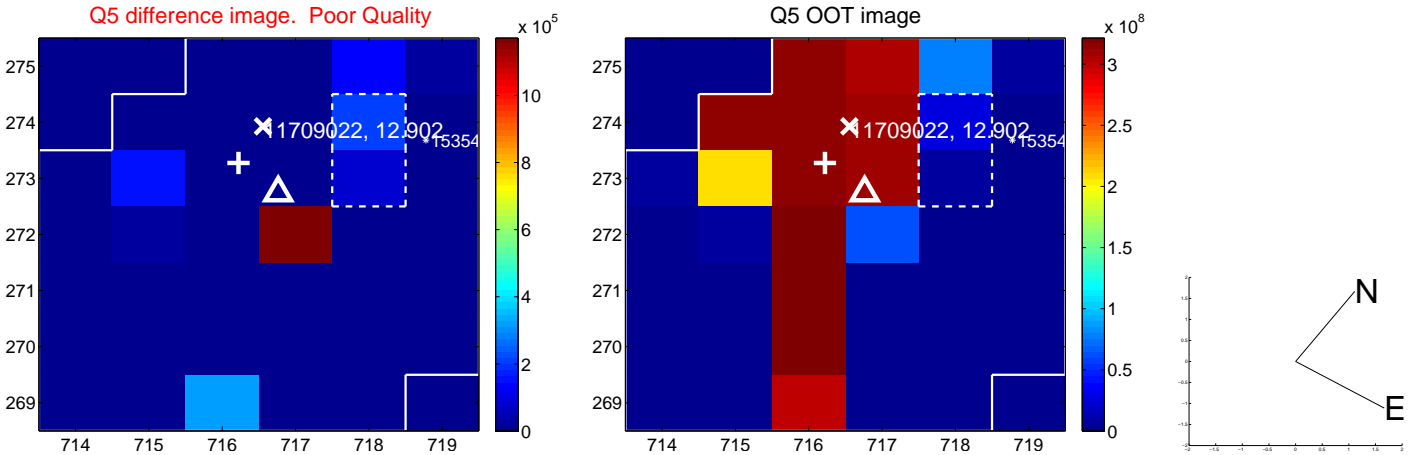


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

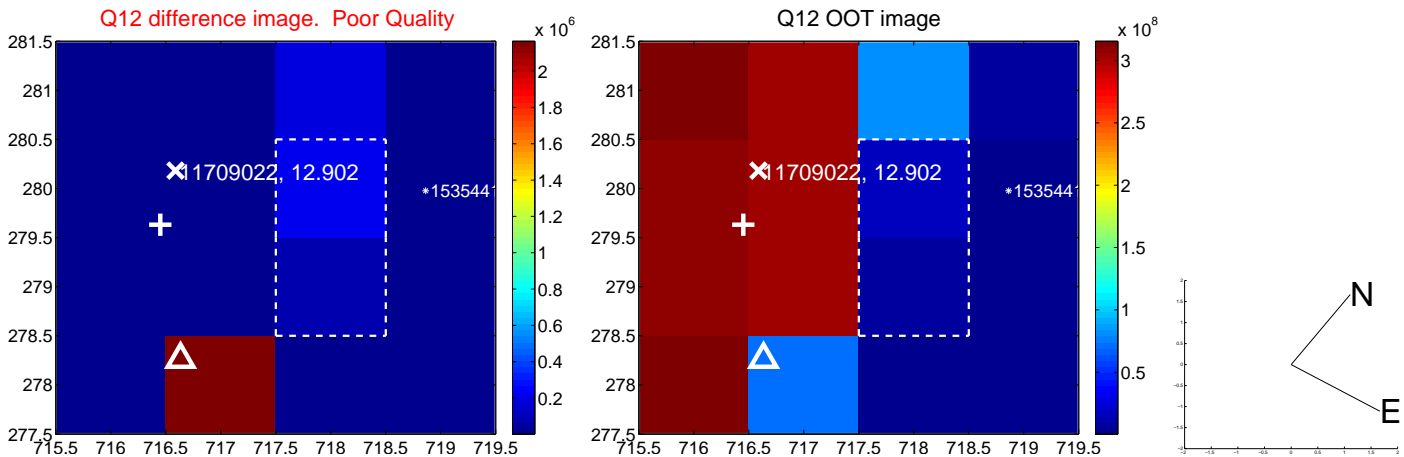
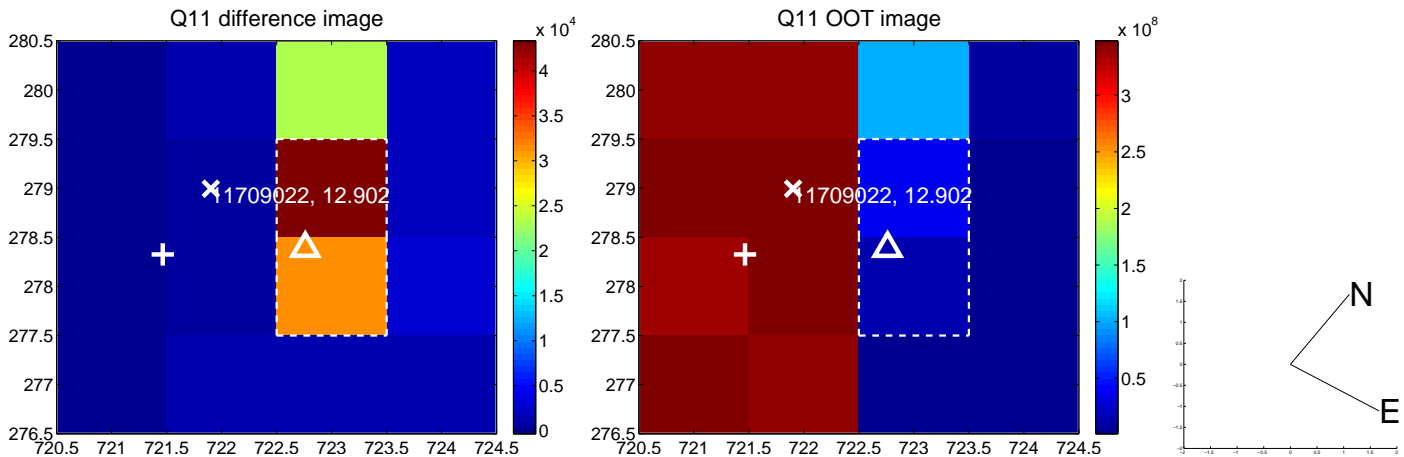
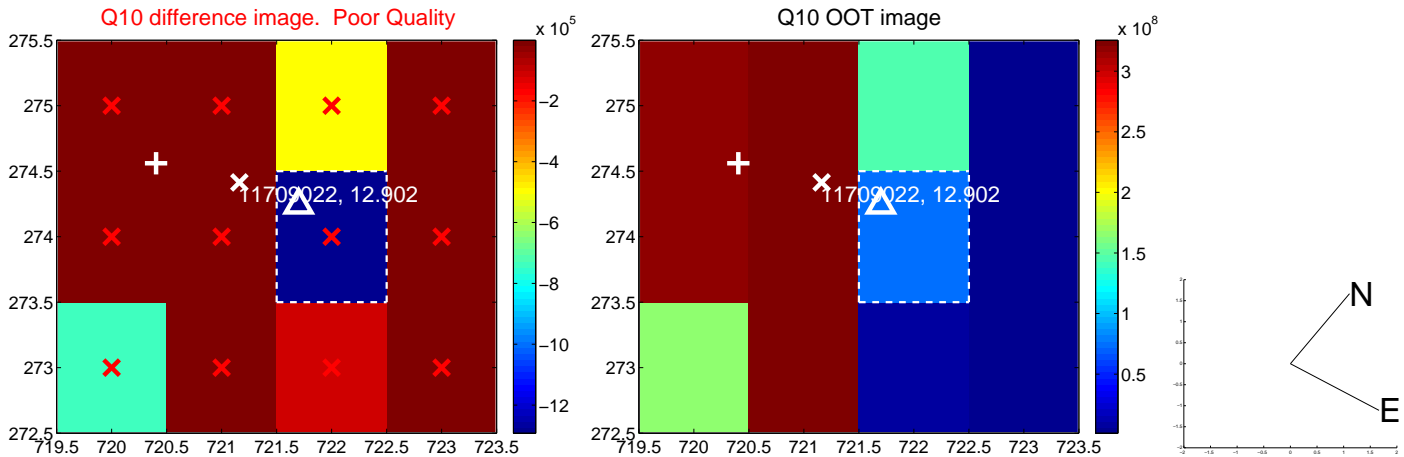
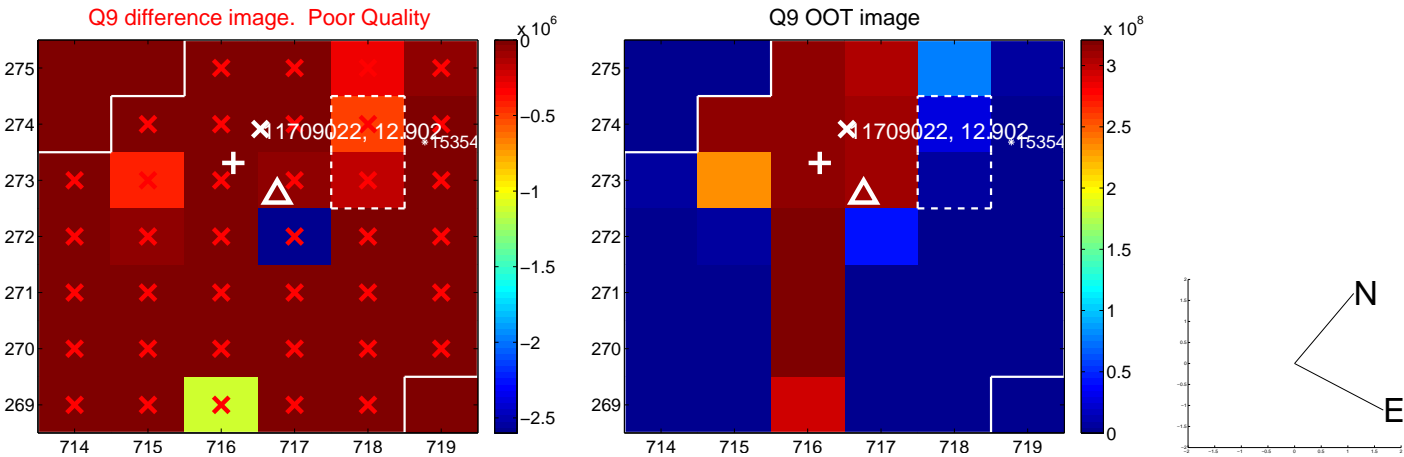
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



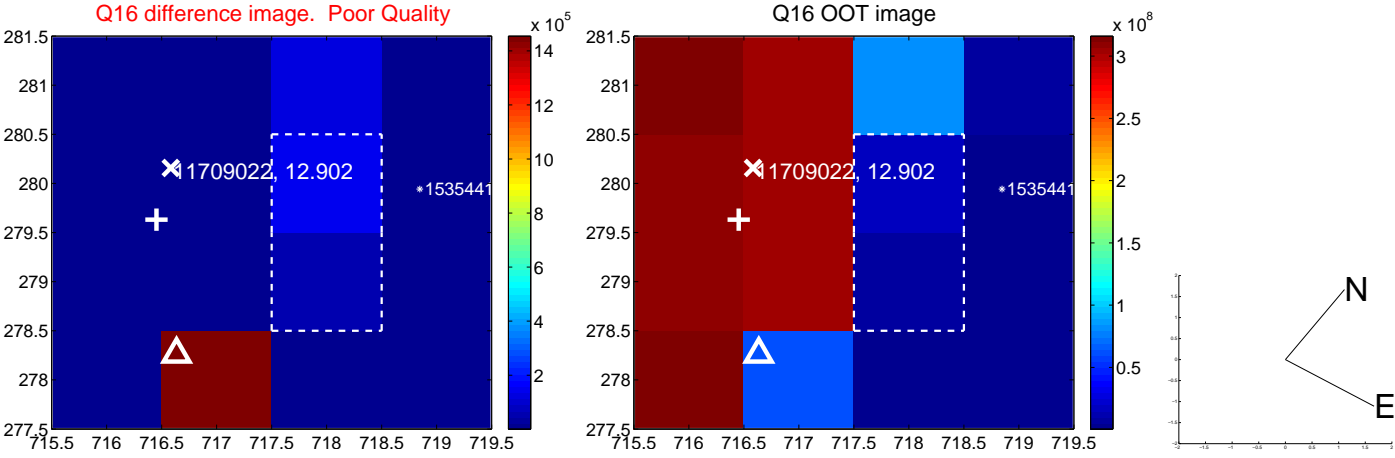
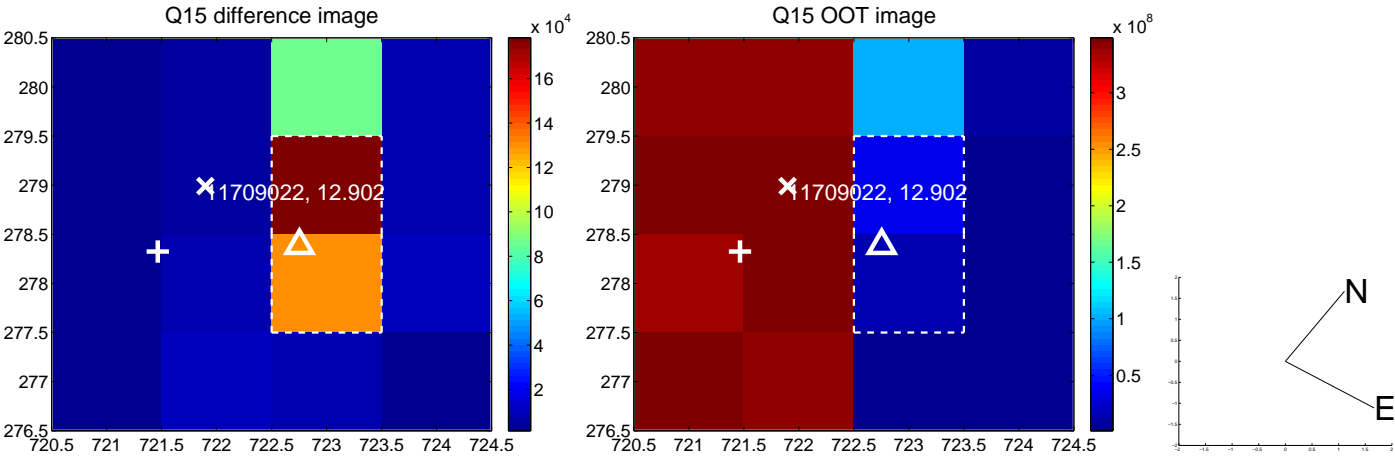
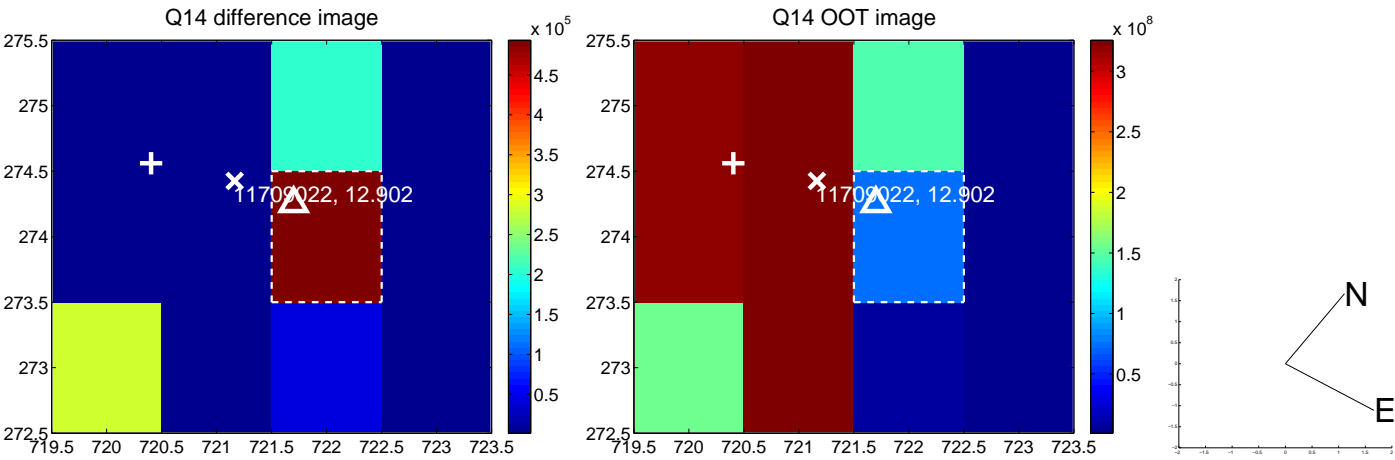
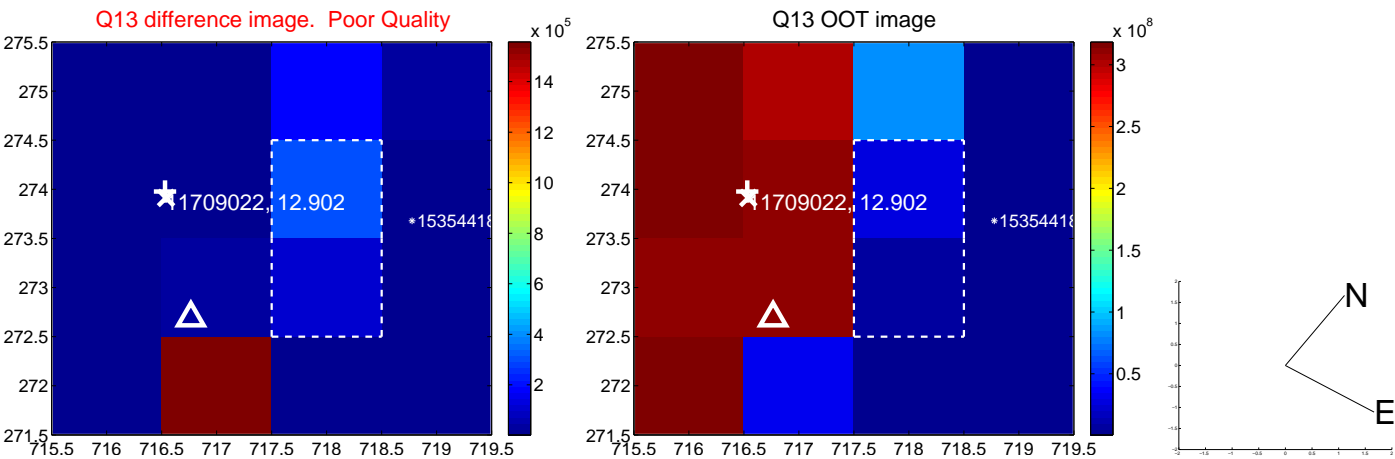
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



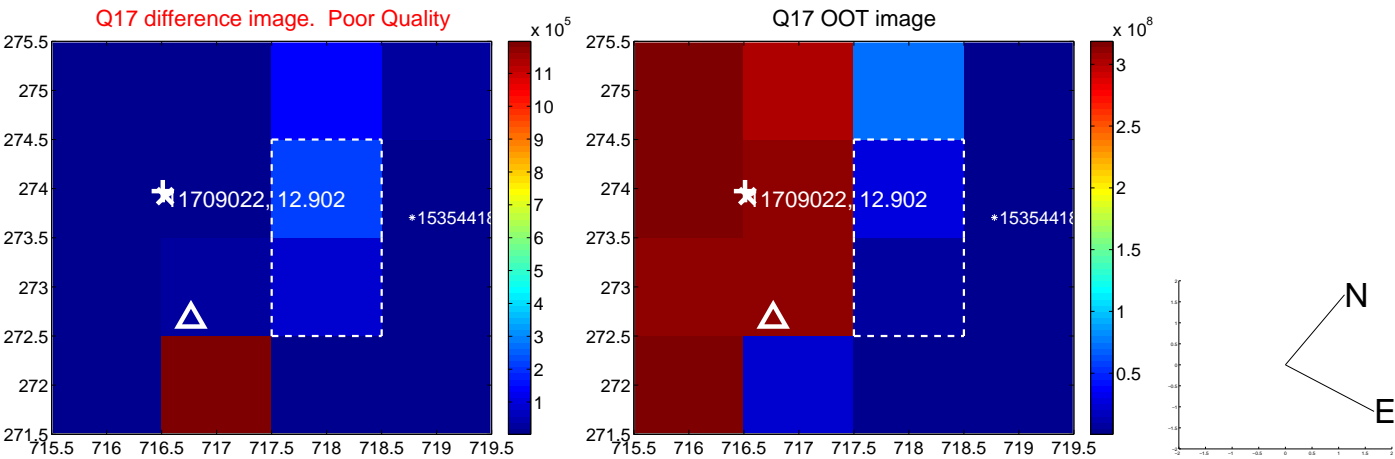
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

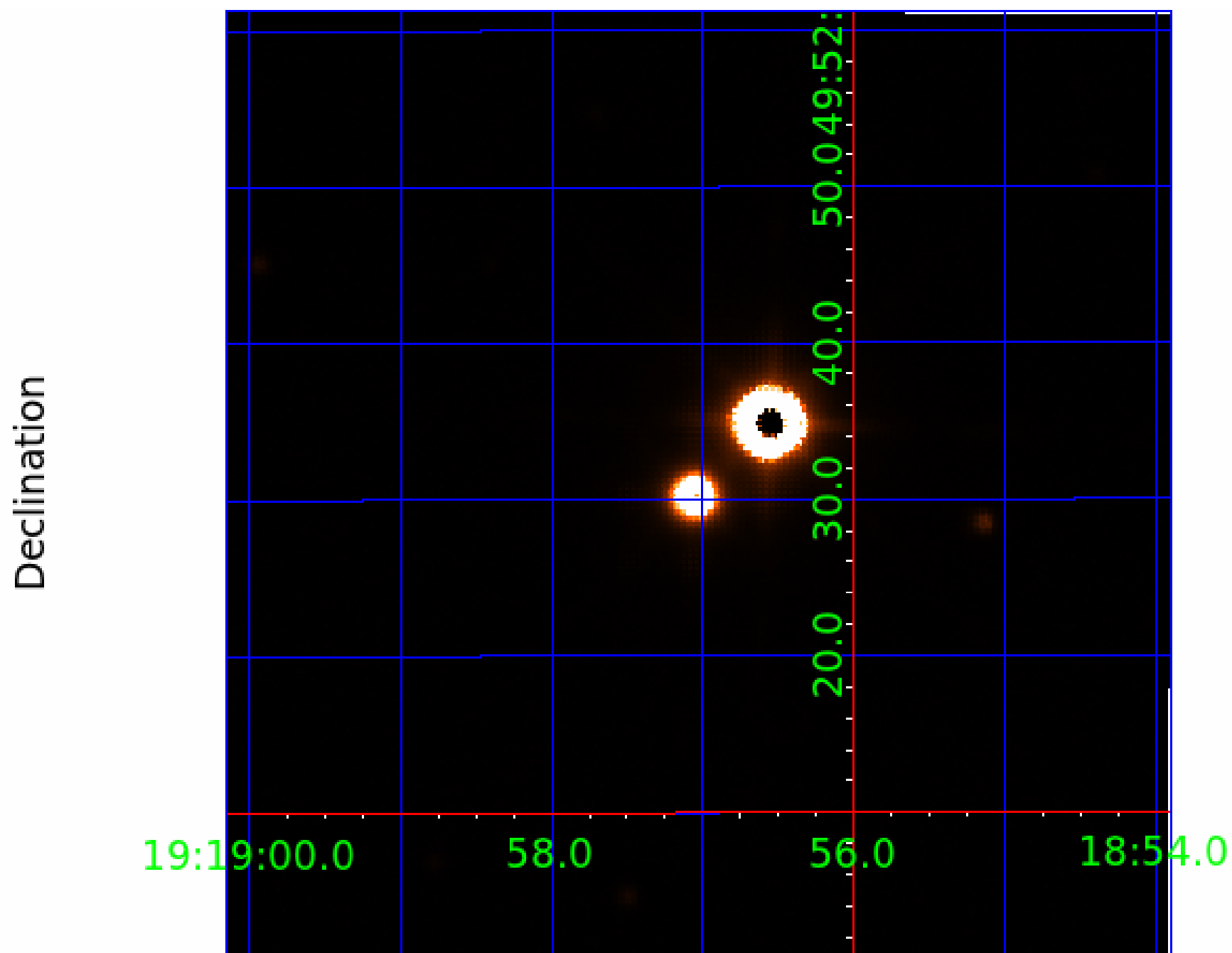


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



KIC 011709022

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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

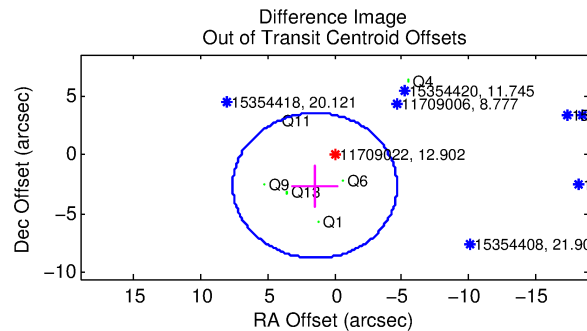
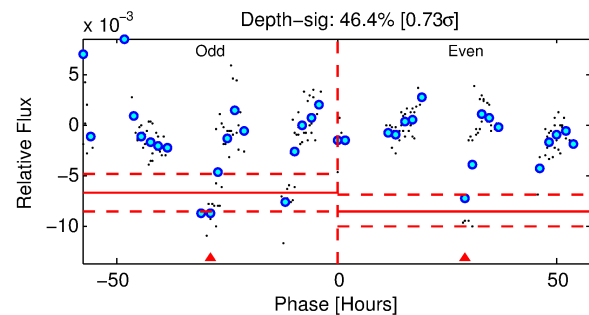
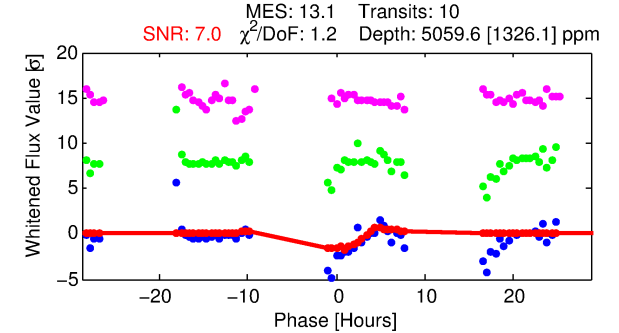
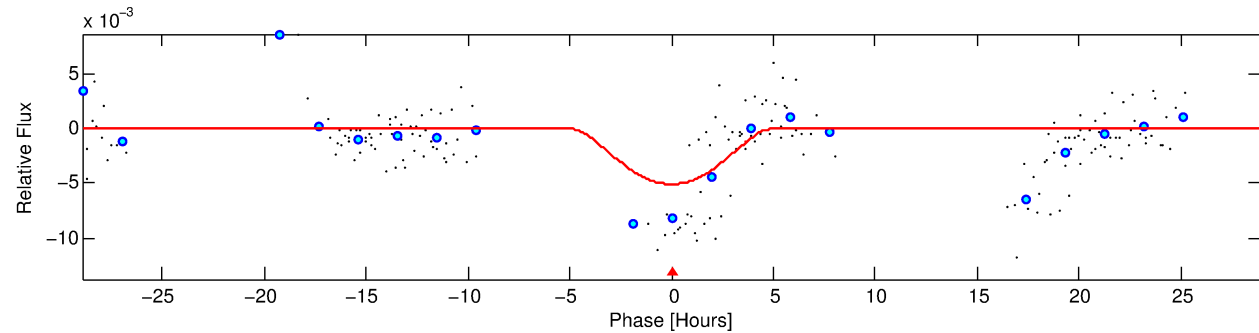
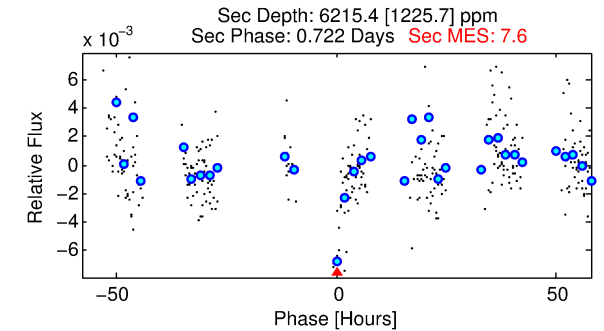
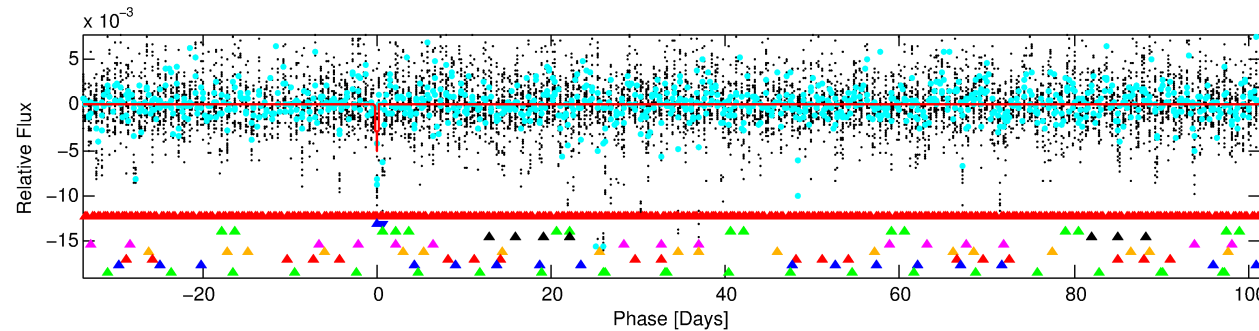
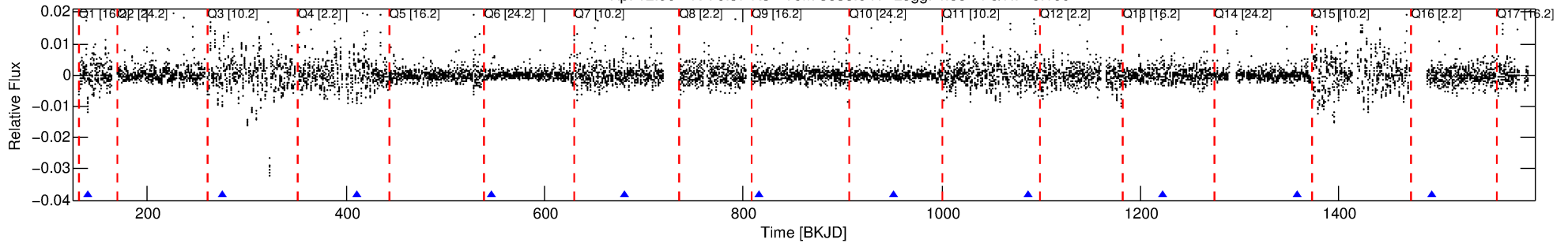
Ephemeris Match Information For 011709022-02

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 2 of 9 Period: 135.277 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 135.27659 [0.01074] d
Epoch = 140.1227 [0.0480] BKJD
Rp/R* = 0.1152 [0.4751]
a/R* = 54.83 [44.81]
b = 0.99 [0.70]
Seff = 0.14 [0.04]
Teq = 155 [11] K
Rp = 4.63 [19.12] Re
a = 0.3725 [0.0713] AU
Ag = 22172.30 [183048.86] [0.12σ]
Teffp = 2925 [6034] K [0.46σ]

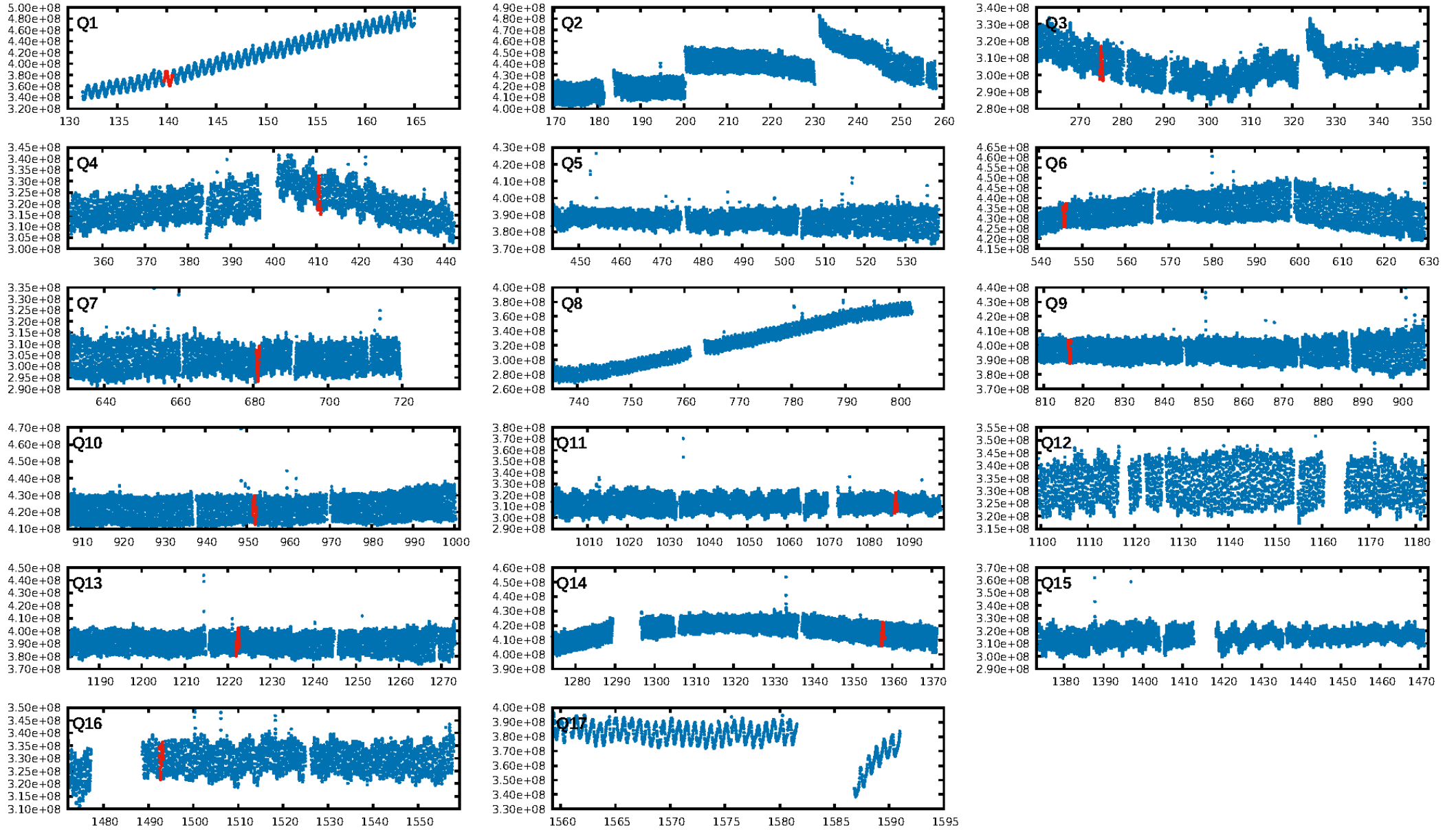
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.68σ]
LongPeriod-sig: 100.0% [105.02σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 0.7123
Centroid-sig: N/A
Centroid-so: 1.724 arcsec [43.26σ]
OotOffset-rm: 2.989 arcsec [1.46σ]
KicOffset-rm: 3.820 arcsec [3.12σ]
OotOffset-st: 1/1/1/3 [6]
KicOffset-st: 1/1/1/3 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/11]

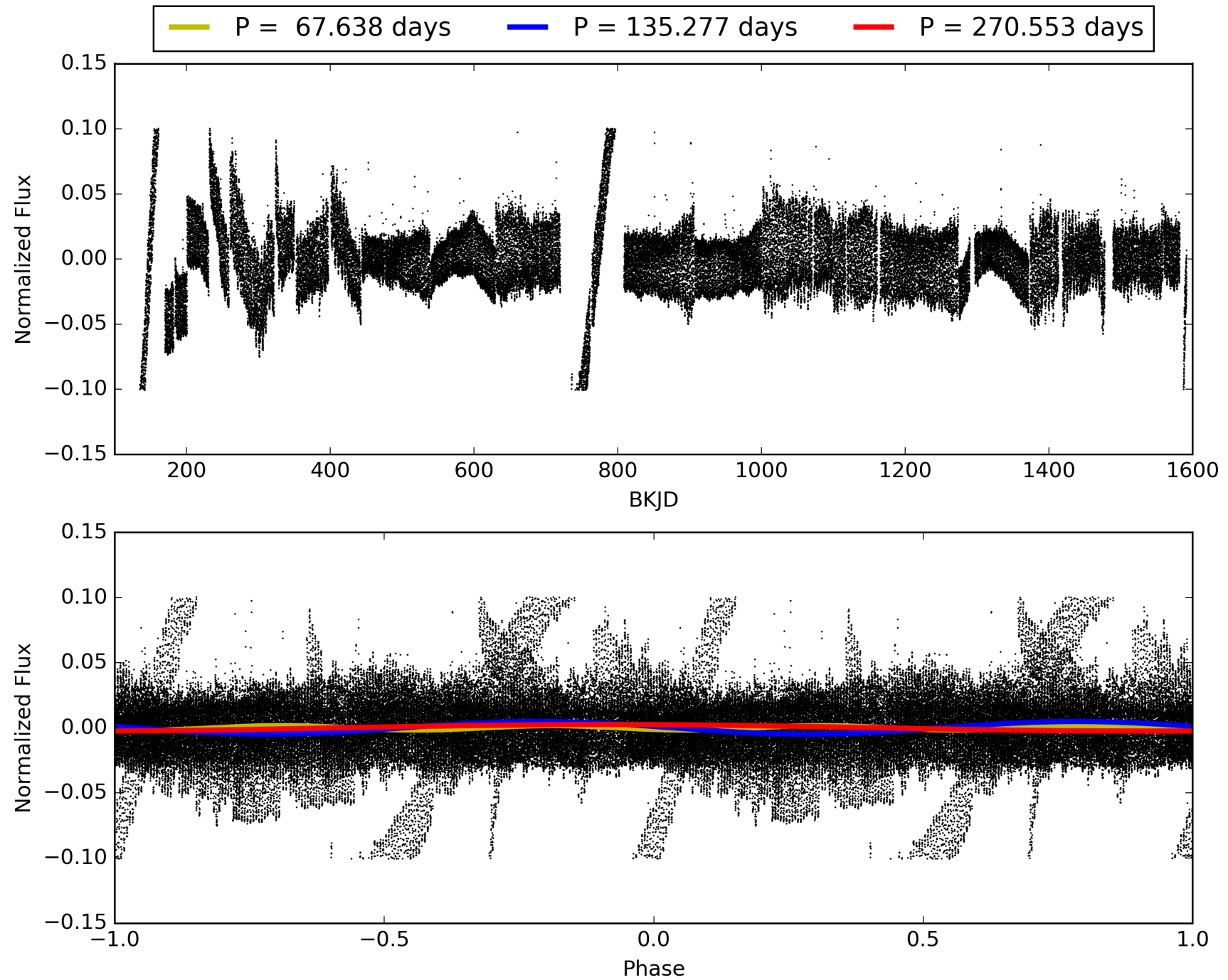
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:36 Z

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

TCE 011709022-02, PDC Light Curves

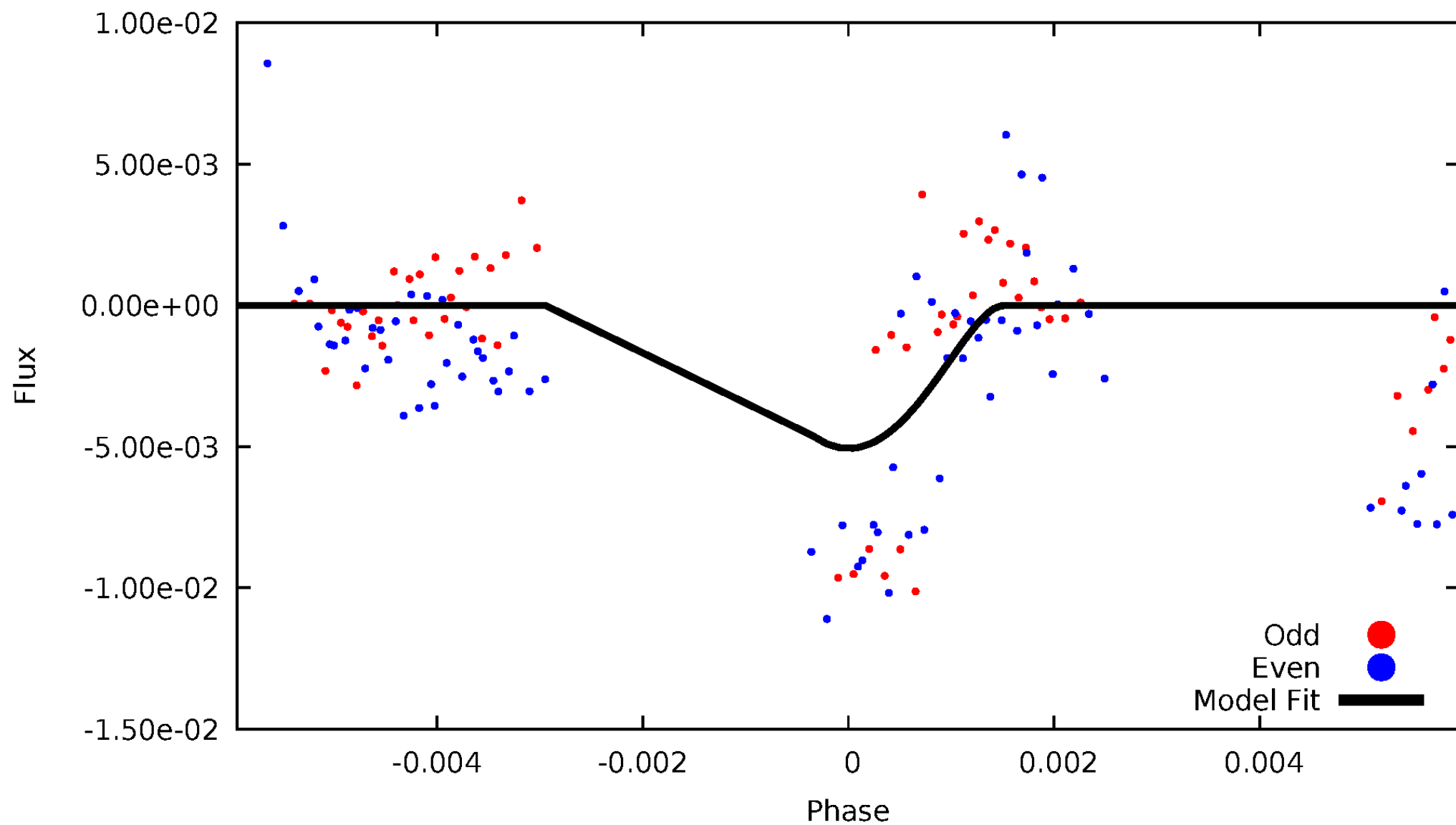


TCE 011709022-02



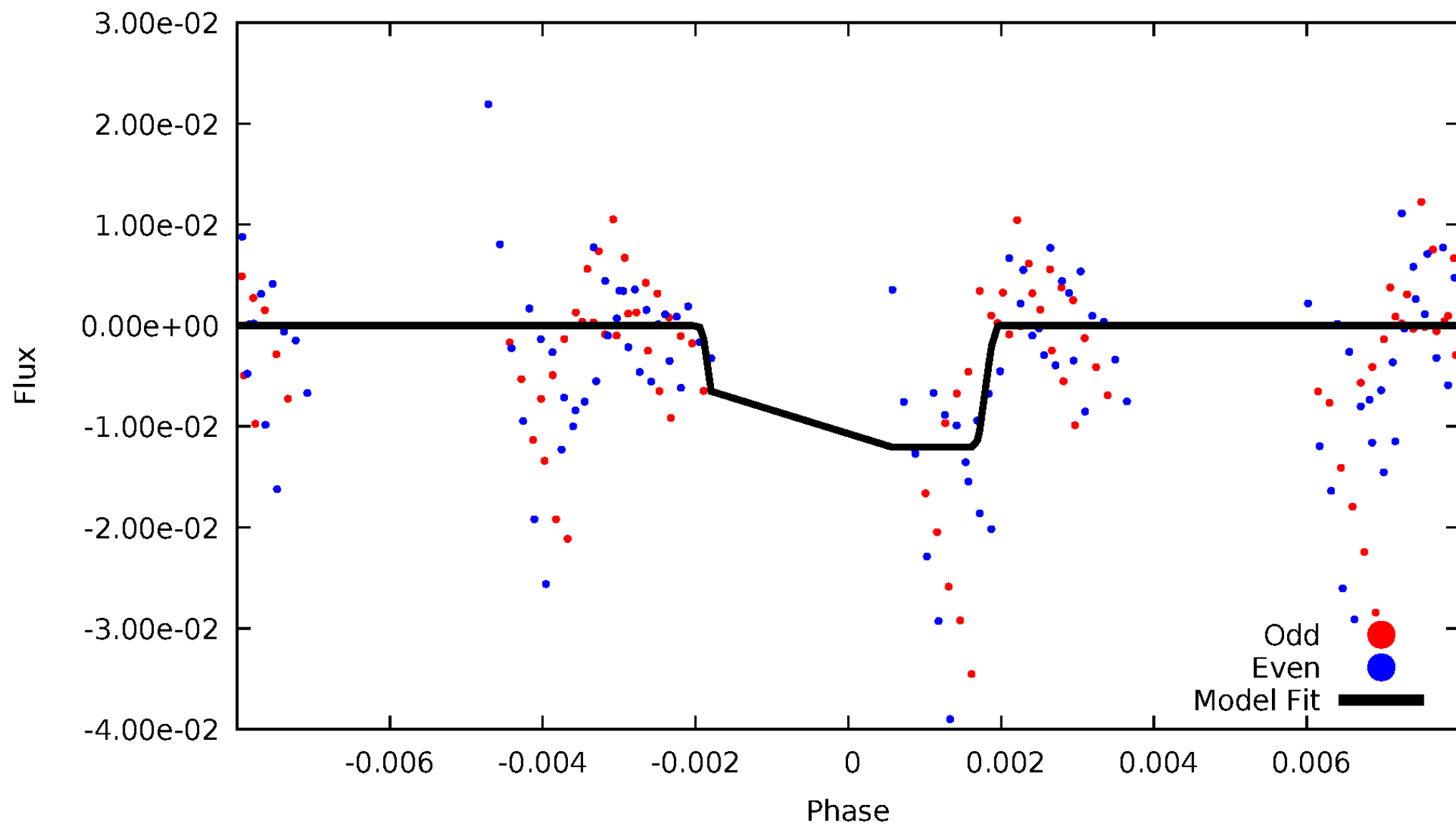
DV Odd/Even

TCE 011709022-02



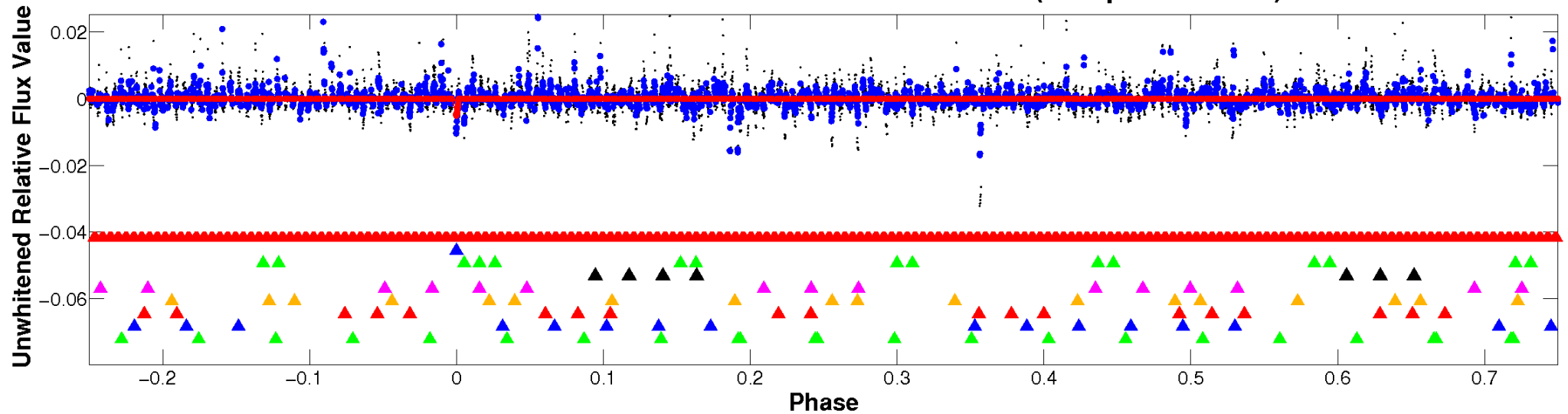
ALT Odd/Even

TCE 011709022-02

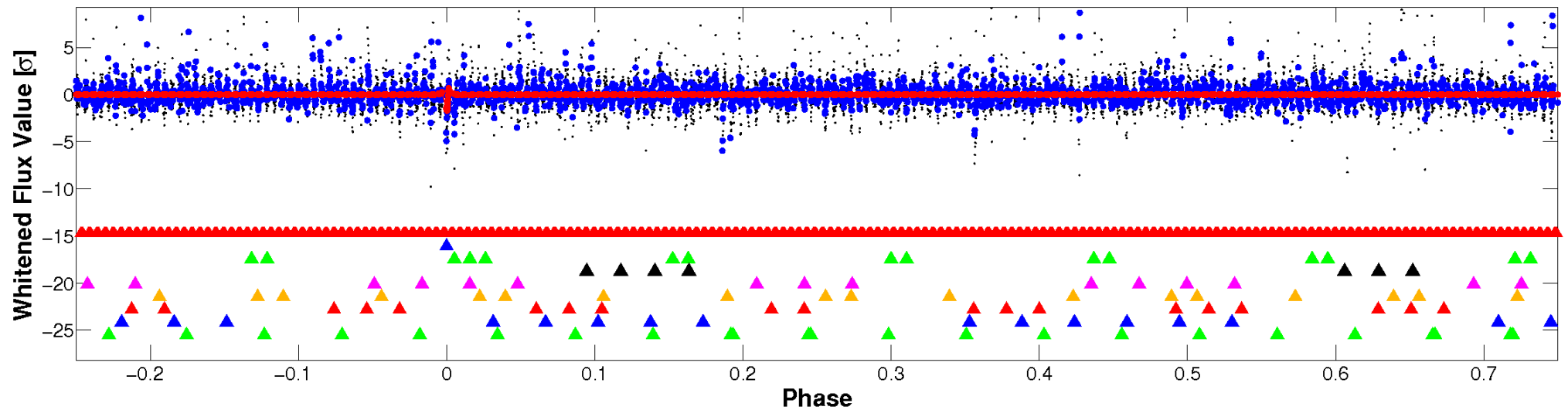


Non-Whitened Vs. Whitened Light Curve

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

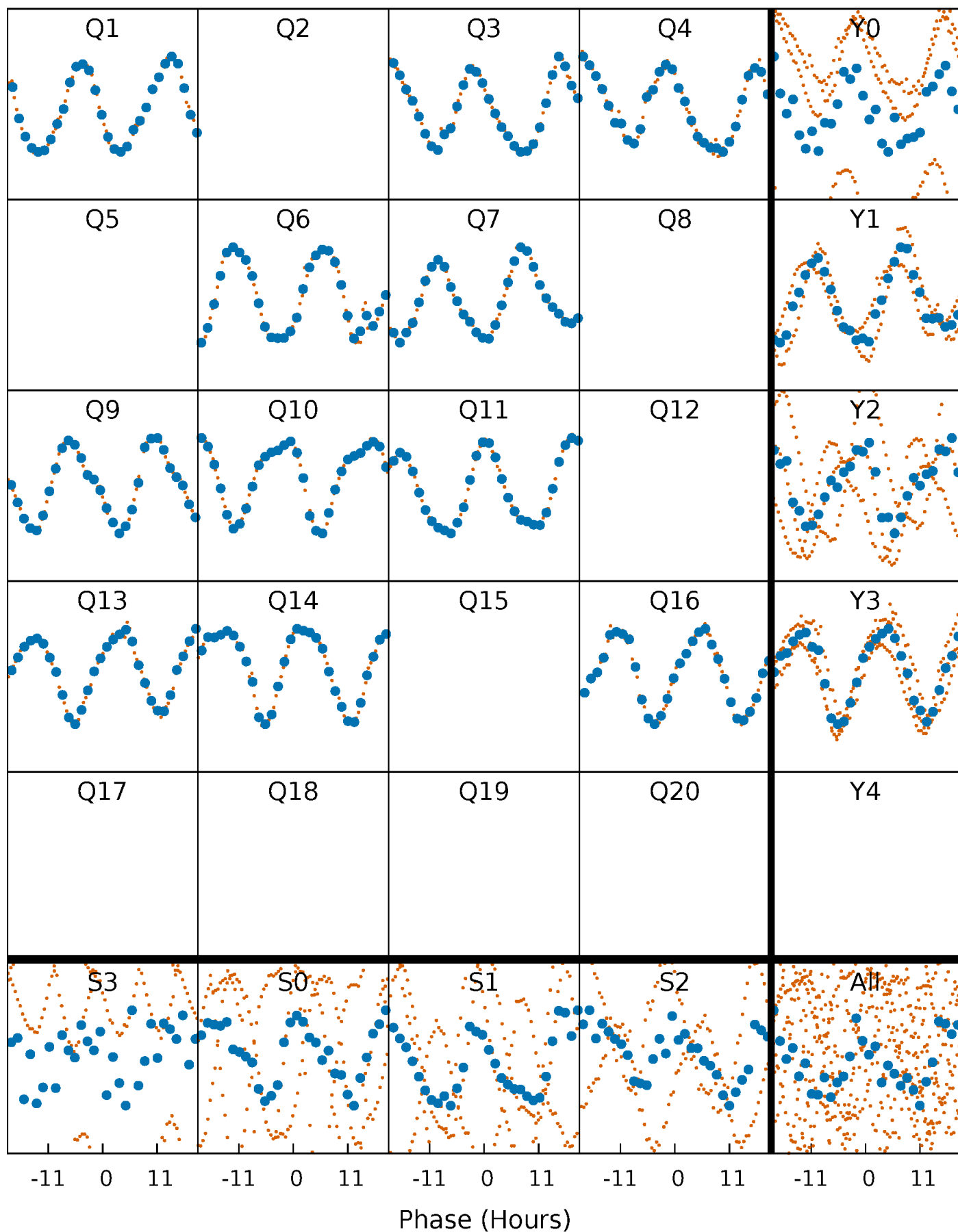


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



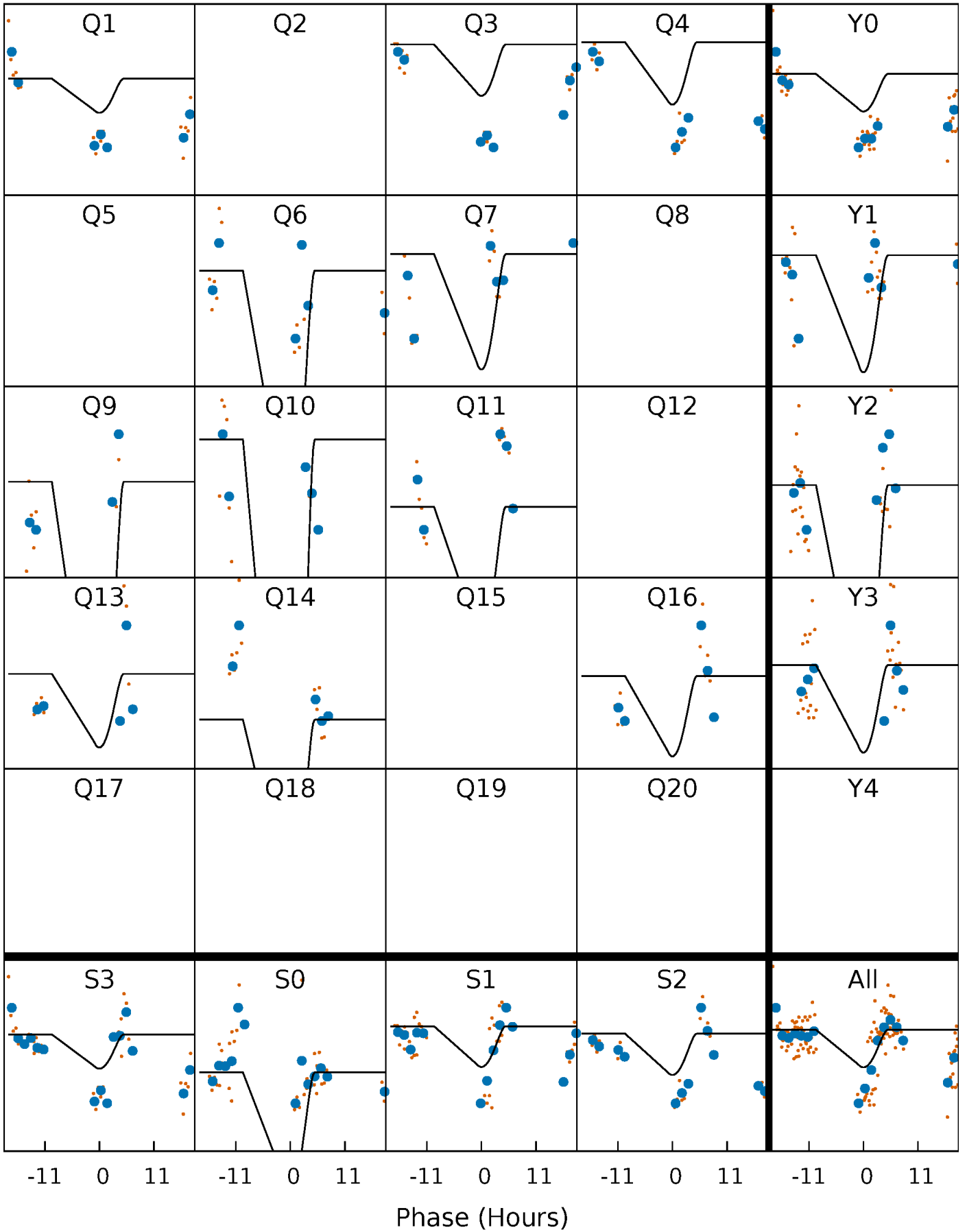
PDC Quarter-Phased Transit Curves

TCE 011709022-02 P=135.276590 Days $T_0=140.122742$ (BKJD)



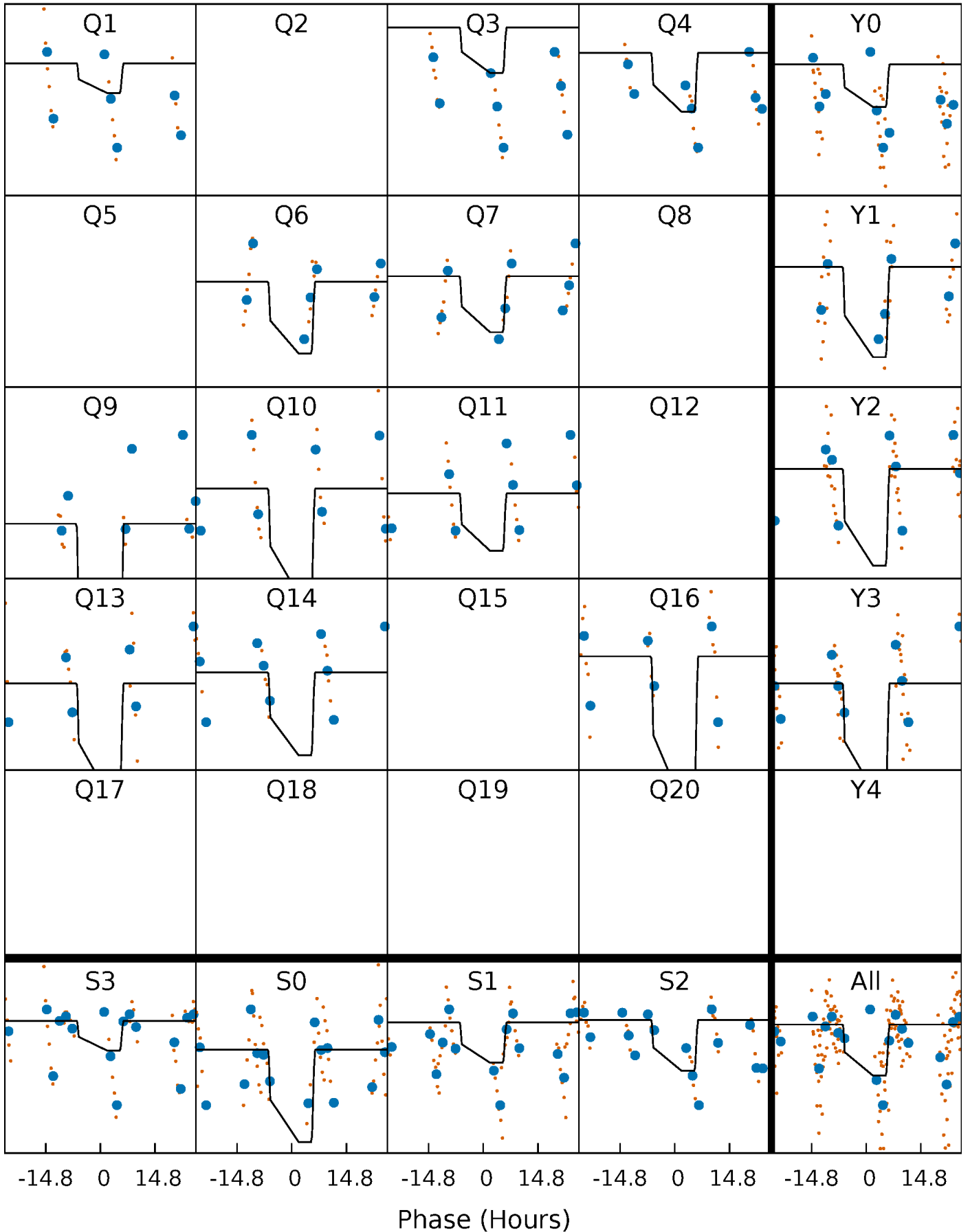
DV Quarter-Phased Transit Curves

TCE 011709022-02 P=135.276590 Days $T_0=140.122742$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

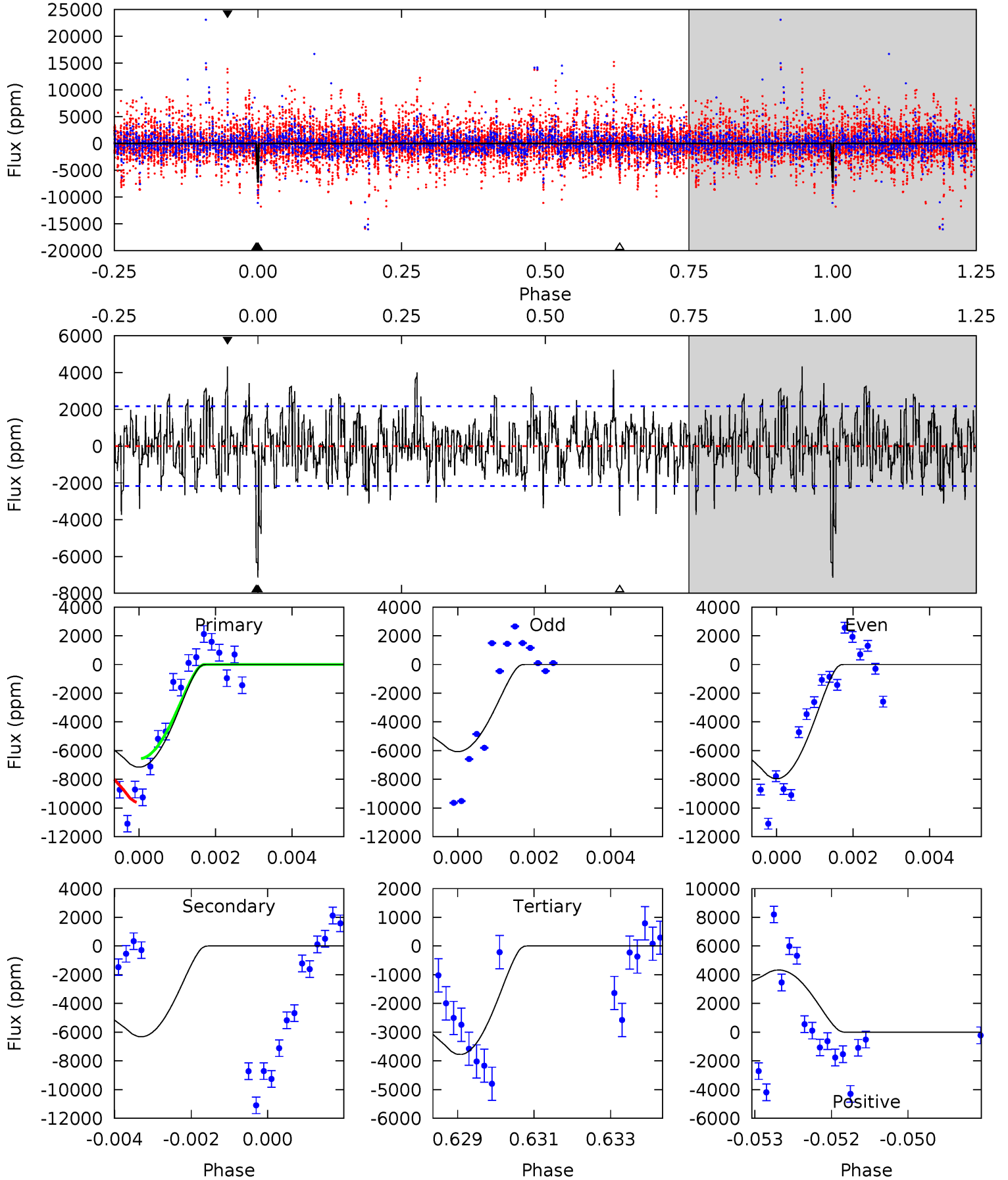
TCE 011709022-02 P=135.273626 Days $T_0=139.996085$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-02, P = 135.276590 Days, E = 4.846152 Days

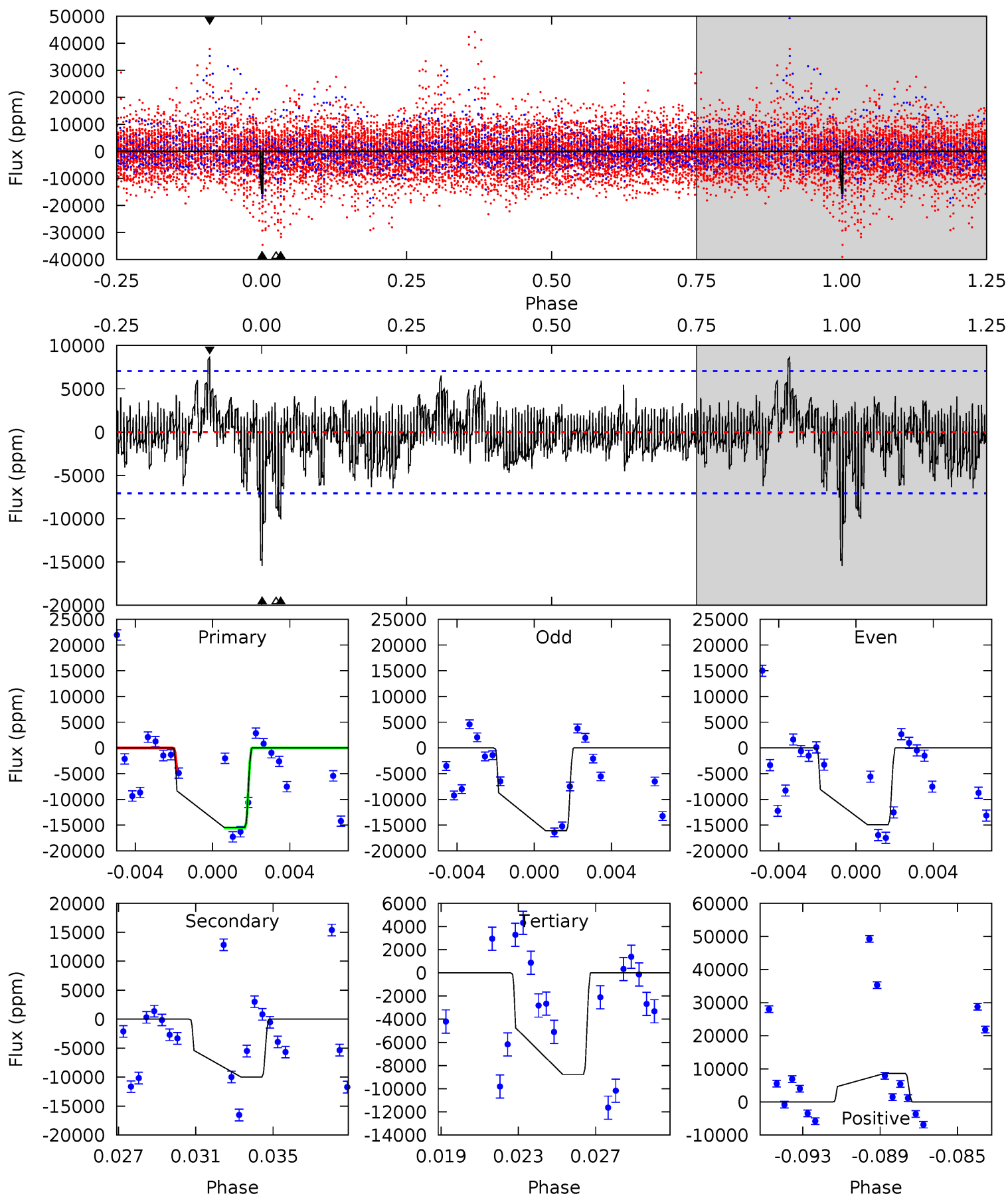
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	15.6	9.31	10.7	5.35	3.12	2.78	8.31	6.95	6.26	4.90	2.08	7.26	0.38	1.59



Alt Model-Shift Uniqueness Test

011709022-02, P = 135.273626 Days, E = 4.722459 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	7.36	6.47	6.36	5.20	2.89	1.50	4.90	5.01	0.90	1.00	0.42	1.03	0.36	1.61



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-6311 ± 405	$14.28^{+14.69}_{-10.09}$	215^{+11}_{-11}	2322^{+914}_{-328}	2377^{+26069}_{-1811}
Alt.	-9986 ± 1357	$15.64^{+16.01}_{-10.67}$	215^{+12}_{-11}	2421^{+864}_{-349}	3216^{+28430}_{-2448}

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 $A_{obs} \gg 1.0$

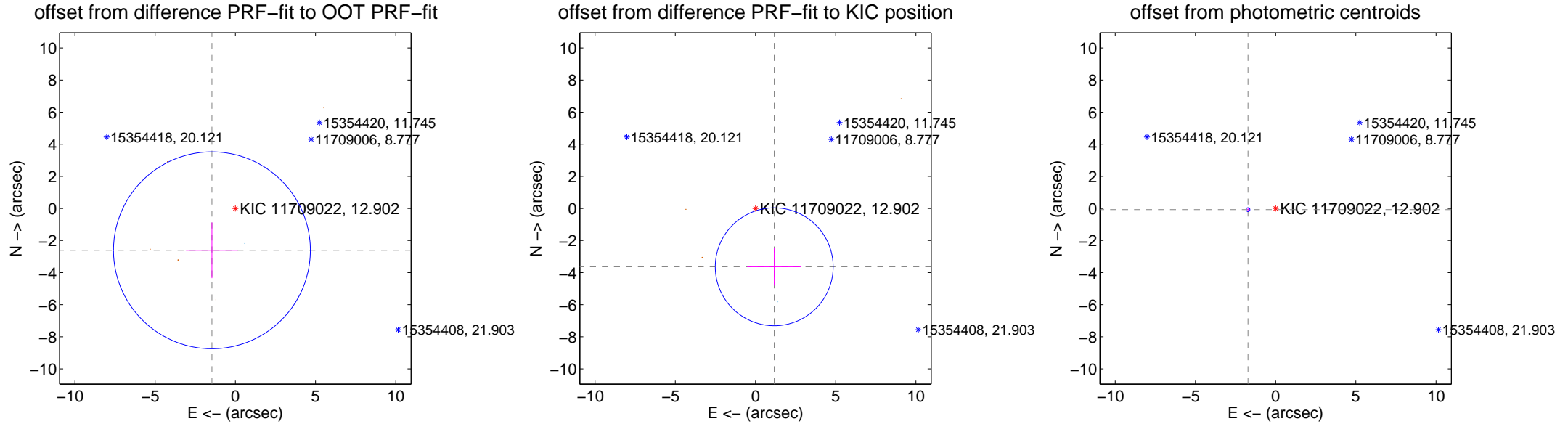
DV Centroid Data

Supplemental centroid analysis for 011709022-02. Kepler magnitude: 12.90. Transit SNR 7.01

There are 1 quarters with good PRF difference image offsets

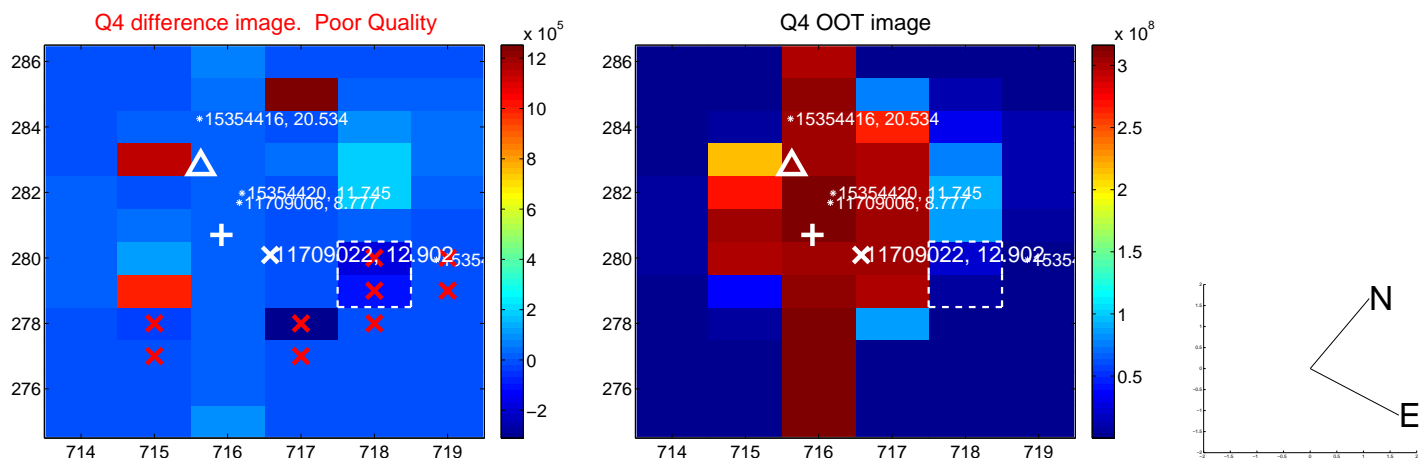
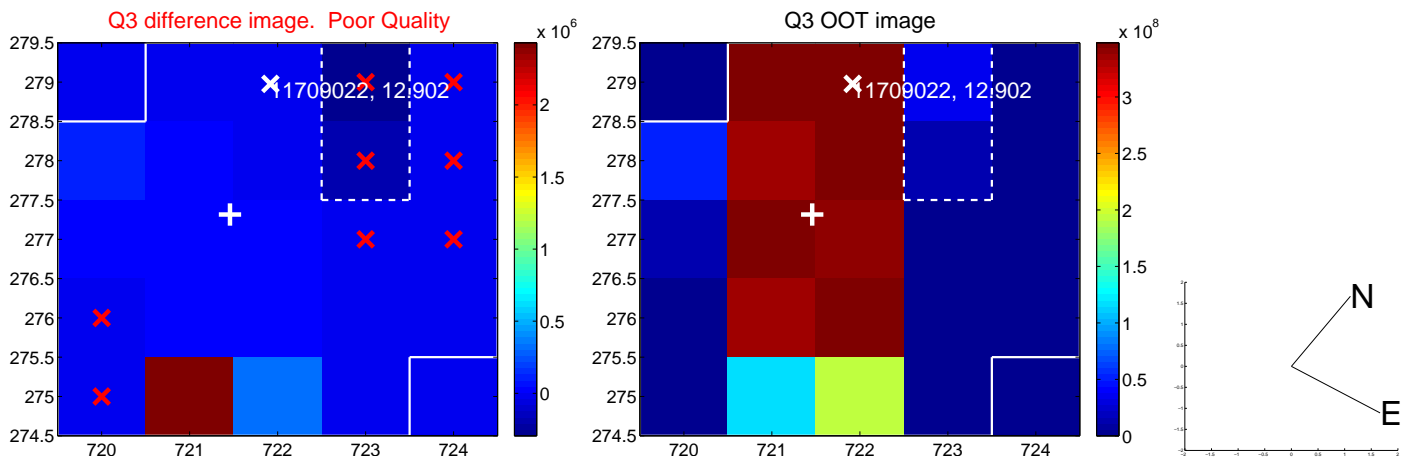
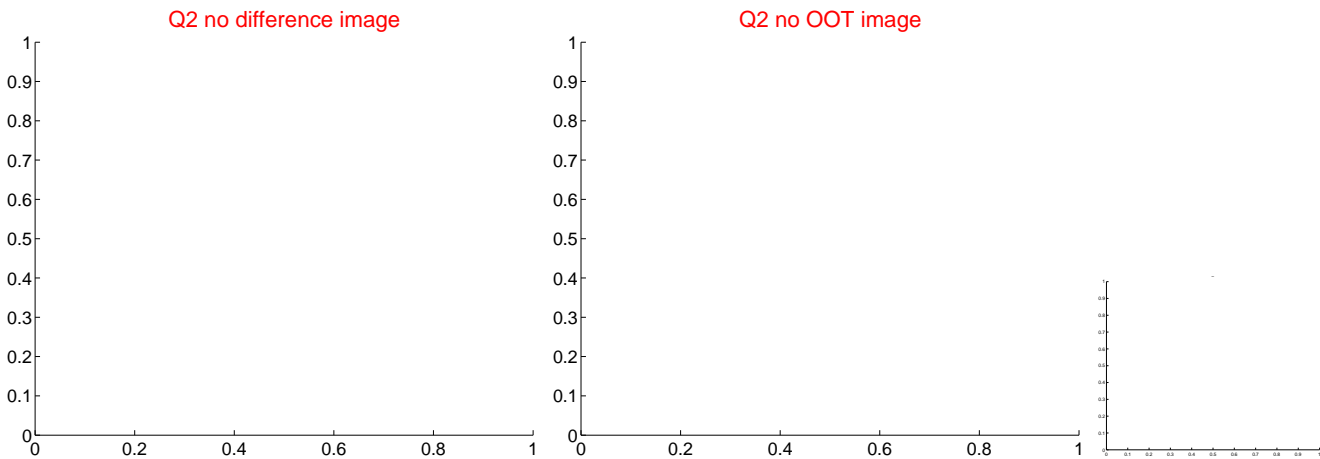
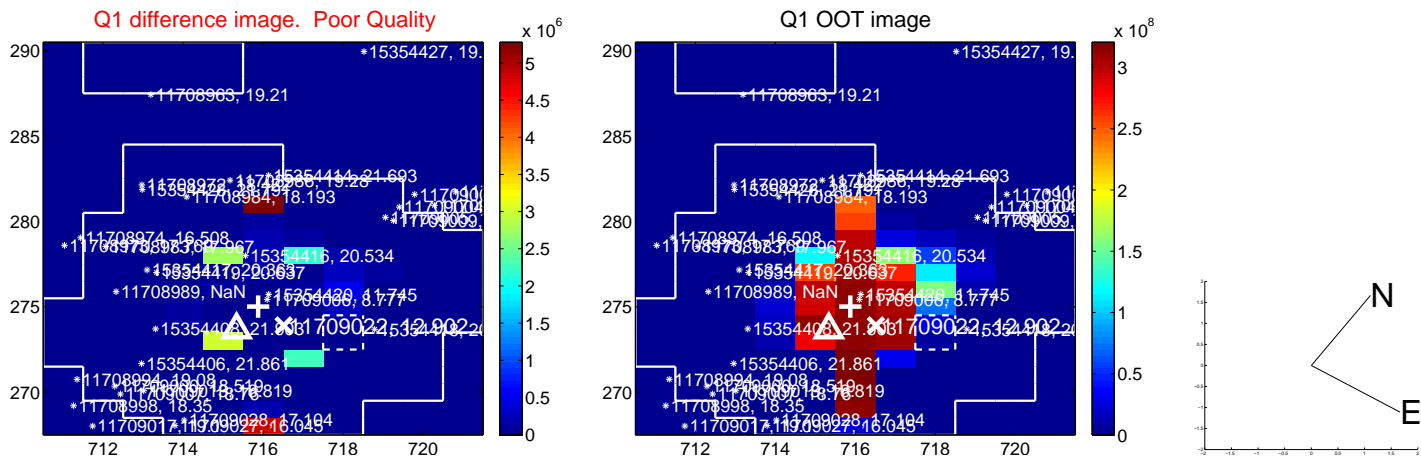
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.989 ± 2.045	1.46	1.460 ± 1.616	-2.609 ± 1.735
PRF-fit source offset from KIC position	3.820 ± 1.225	3.12	-1.167 ± 1.679	-3.637 ± 1.168
photometric centroid source offset	1.72 ± 0.04	43.26	1.72 ± 0.04	-0.07 ± 0.08



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.

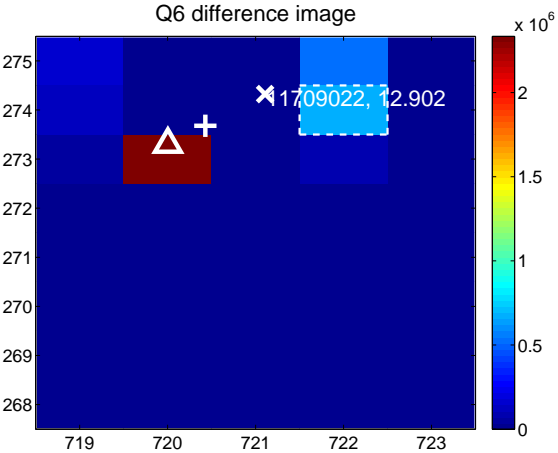
Q5 no difference image



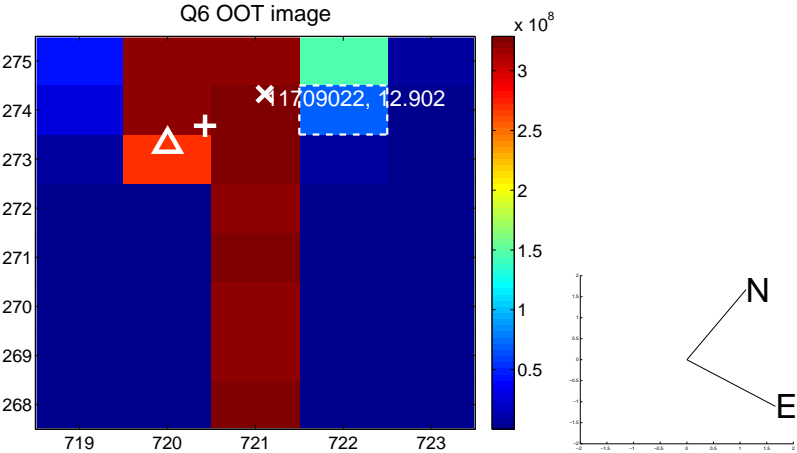
Q5 no OOT image



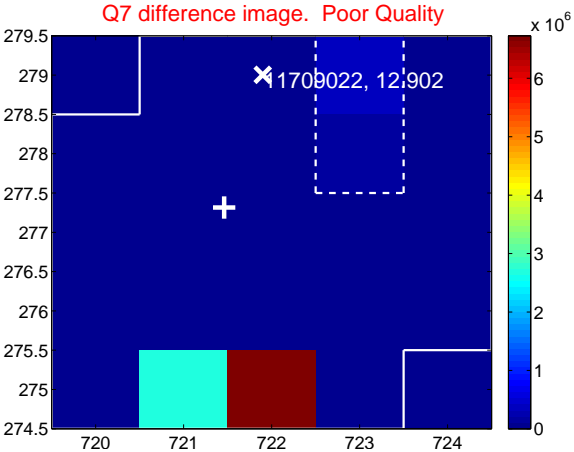
Q6 difference image



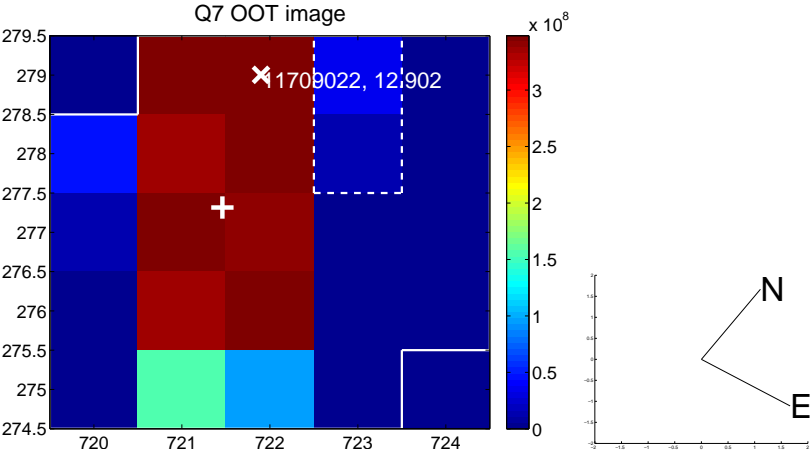
Q6 OOT image



Q7 difference image. Poor Quality



Q7 OOT image



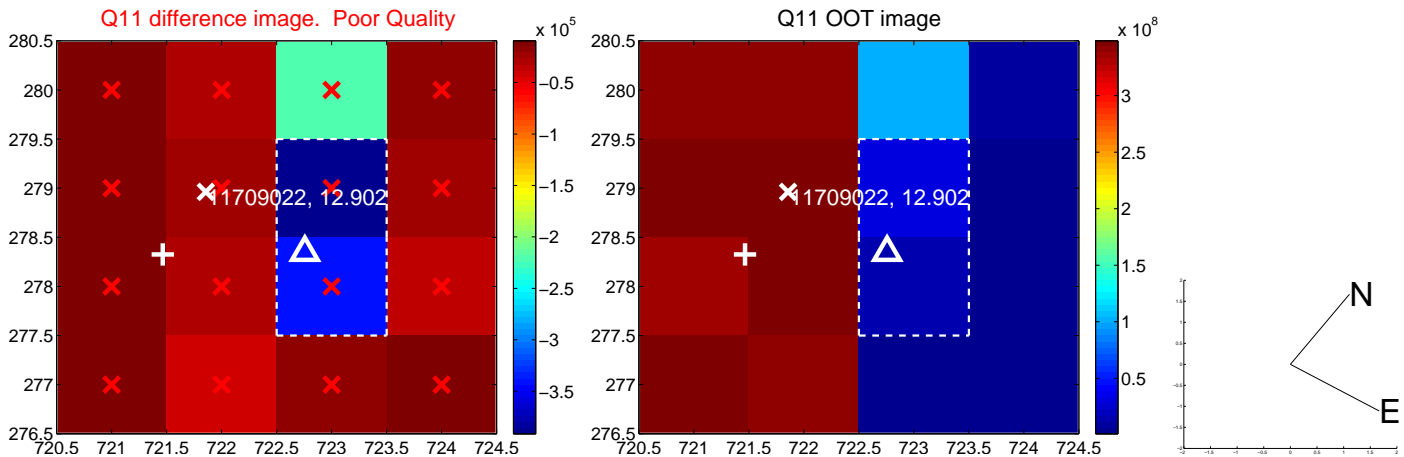
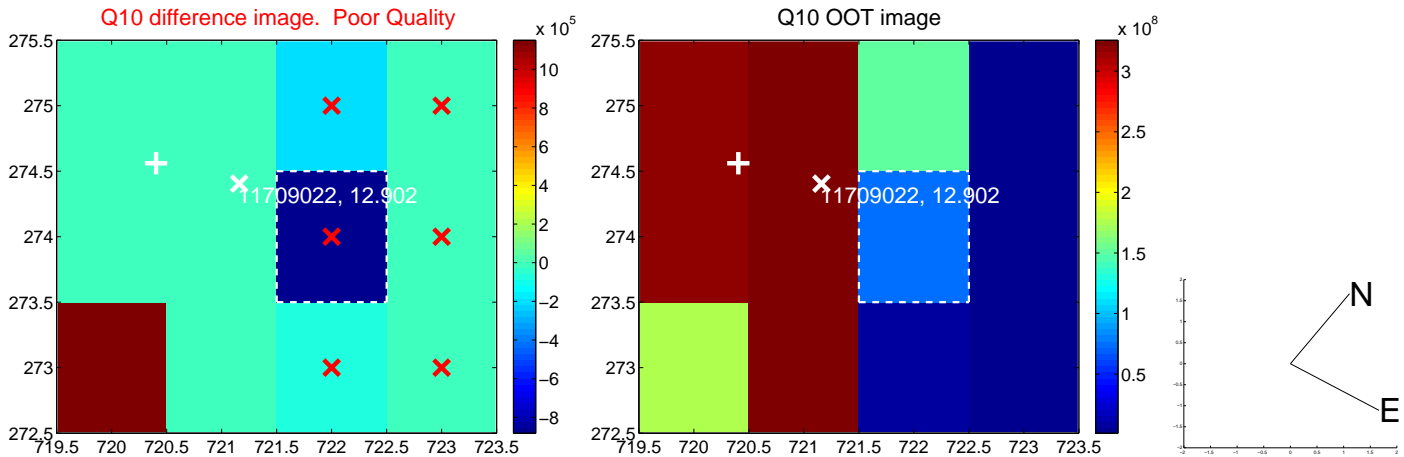
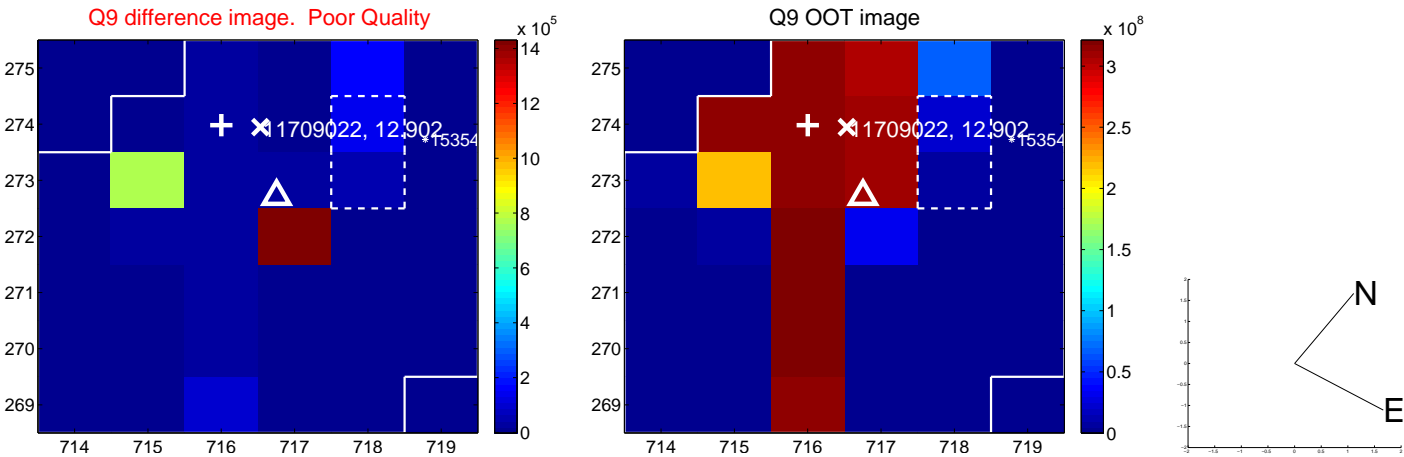
Q8 no difference image



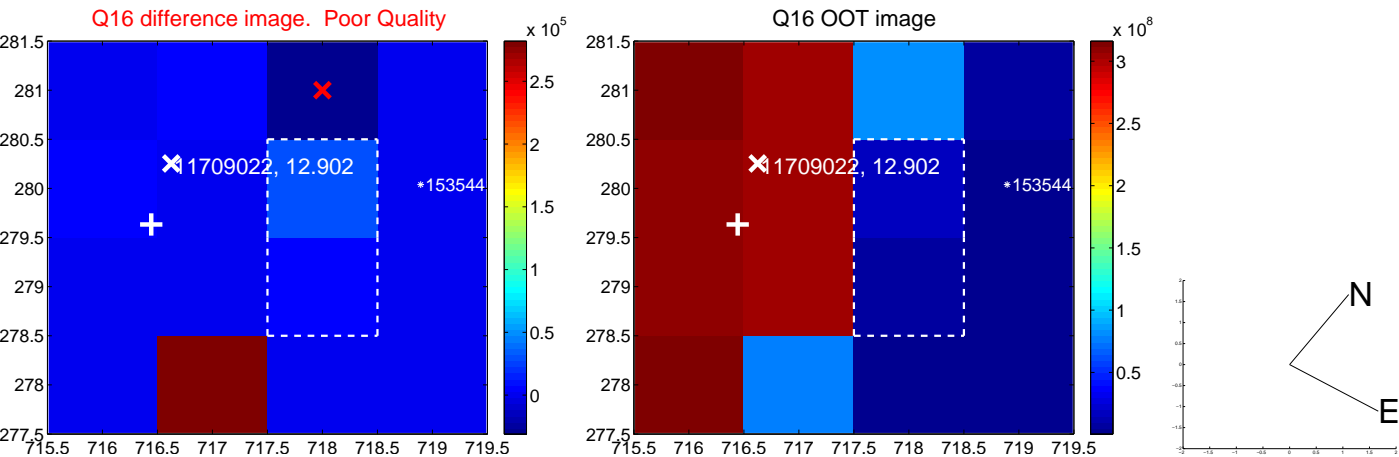
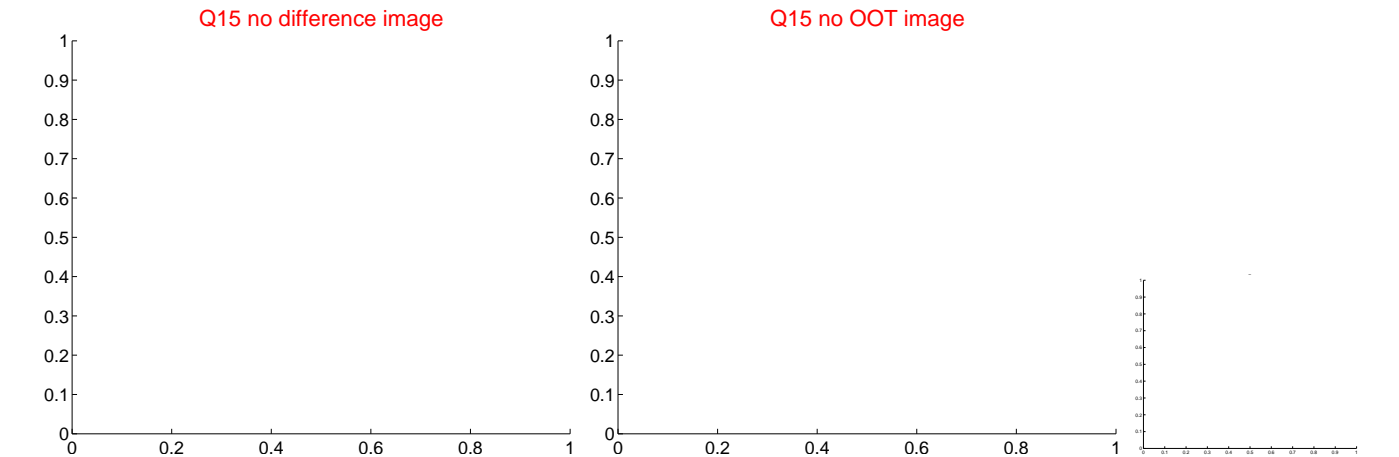
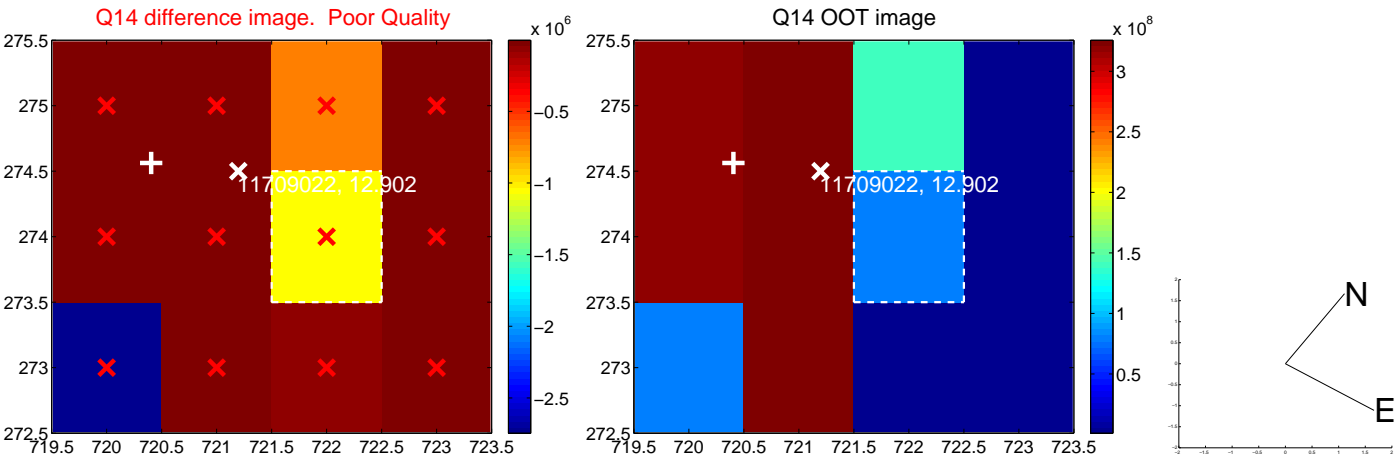
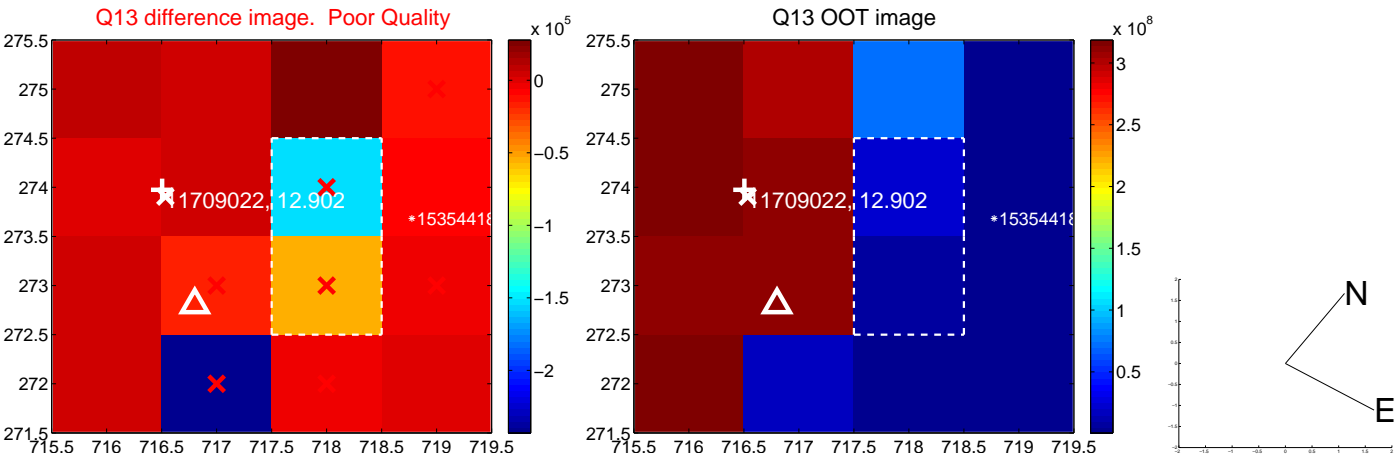
Q8 no OOT image



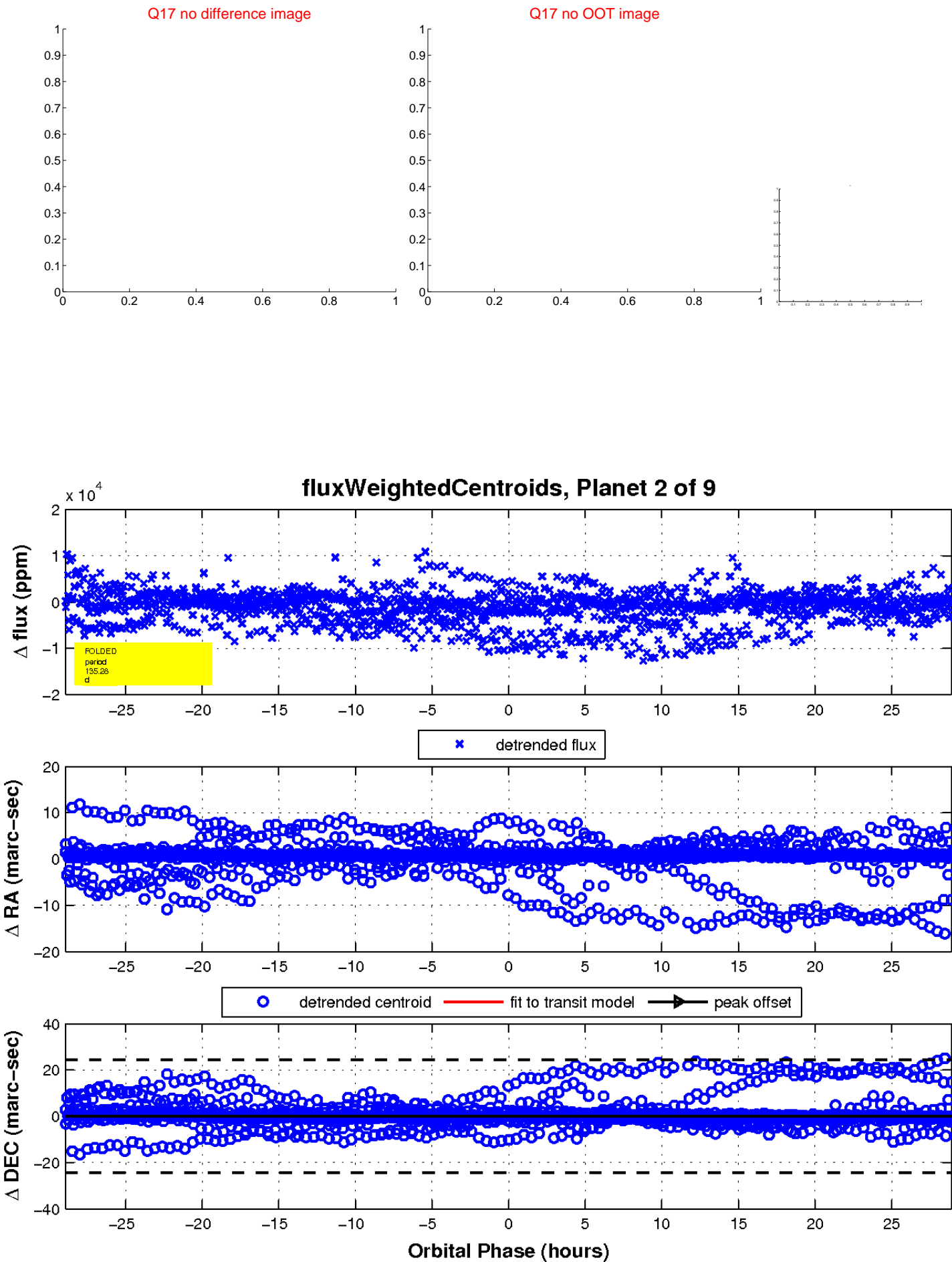
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



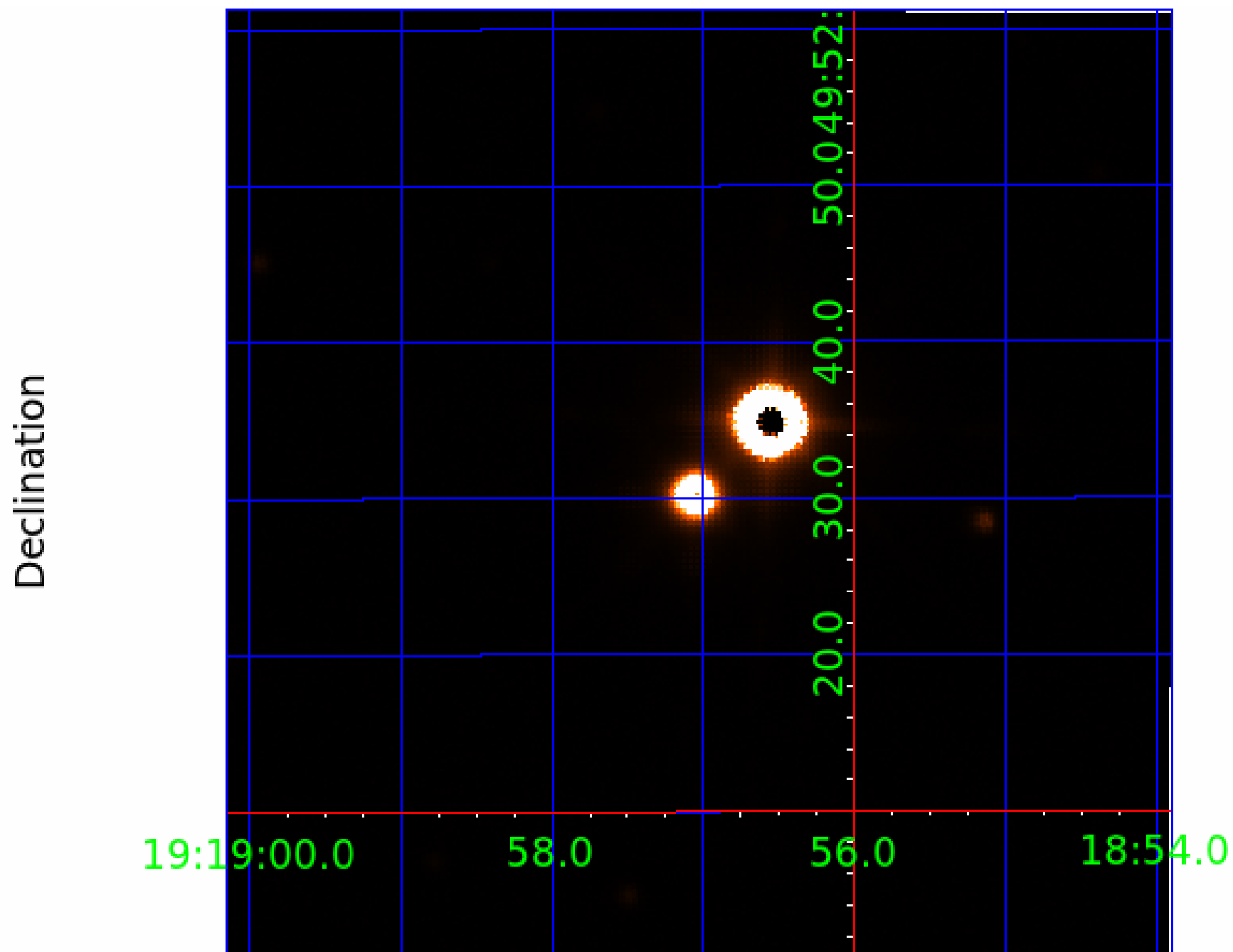
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

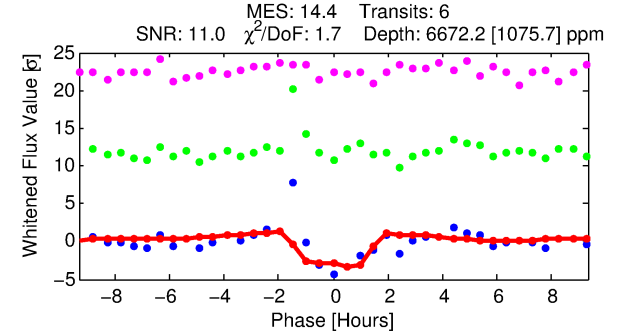
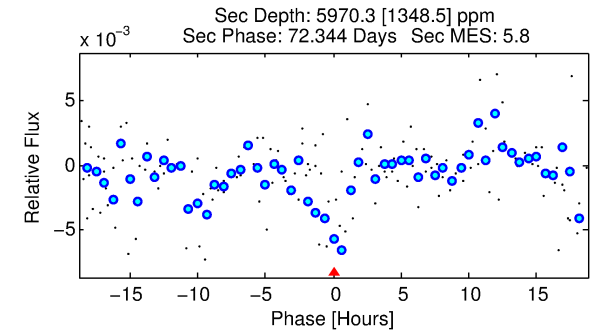
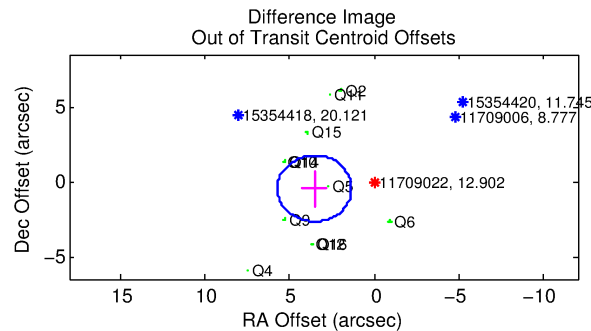
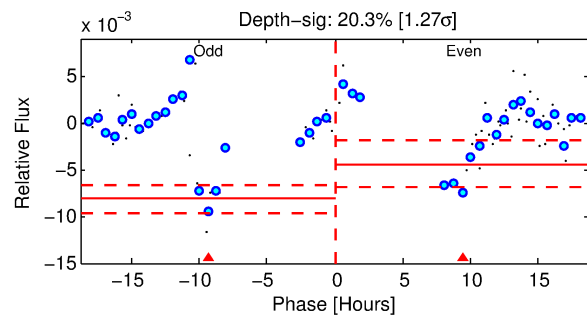
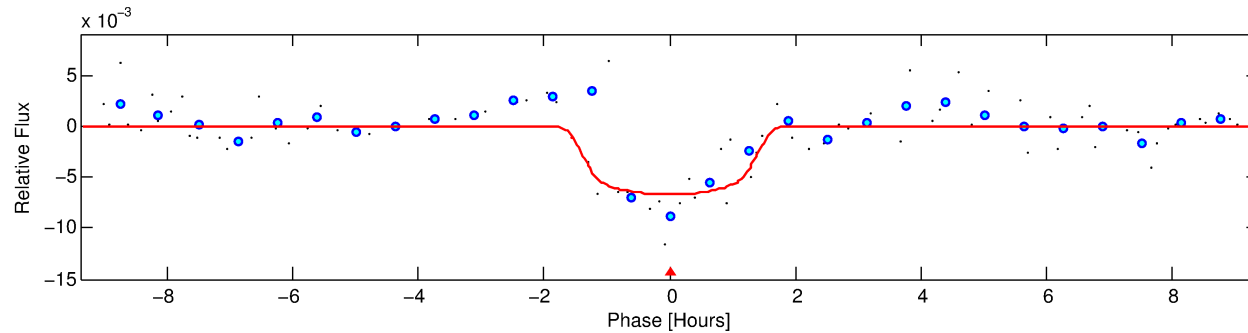
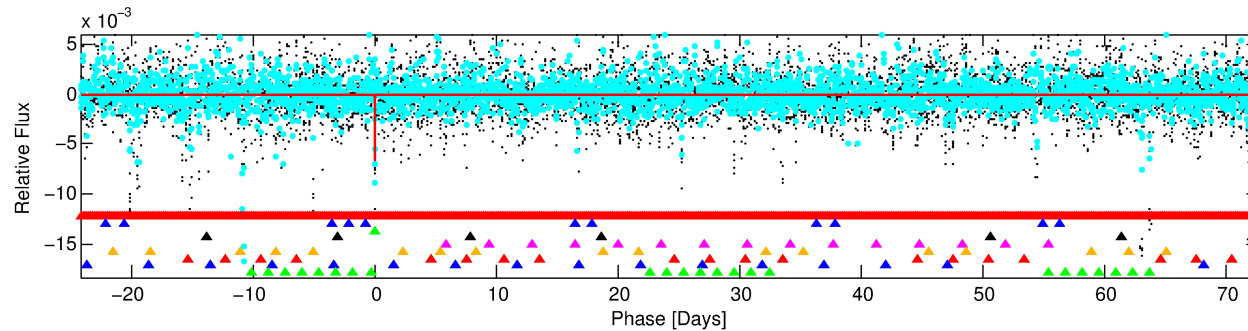
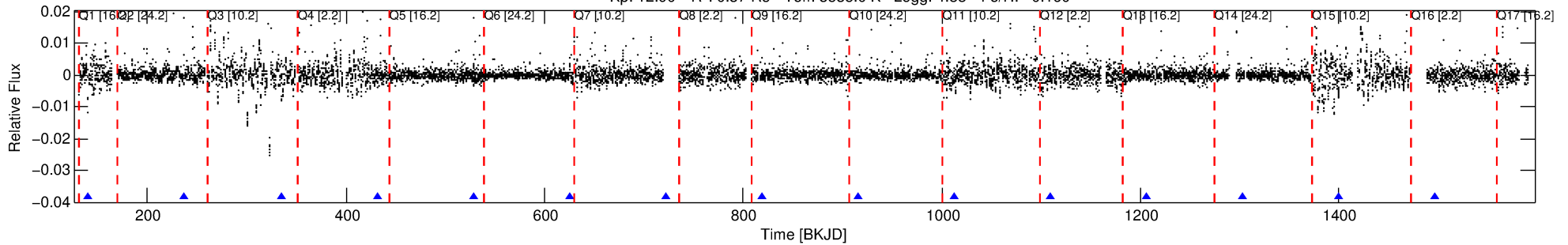
Ephemeris Match Information For 011709022-03

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 3 of 9 Period: 96.829 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 96.82884 [0.00092] d
Epoch = 140.8333 [0.0065] BKJD
Rp/R* = 0.0751 [0.0613]
a/R* = 241.76 [864.14]
b = 0.34 [9.48]
Seff = 0.21 [0.06]
Teff = 173 [12] K
Rp = 3.02 [2.58] Re
a = 0.2980 [0.0571] AU
Ag = 32066.36 [53396.89] [0.60σ]
Teffp = 3585 [1482] K [2.30σ]

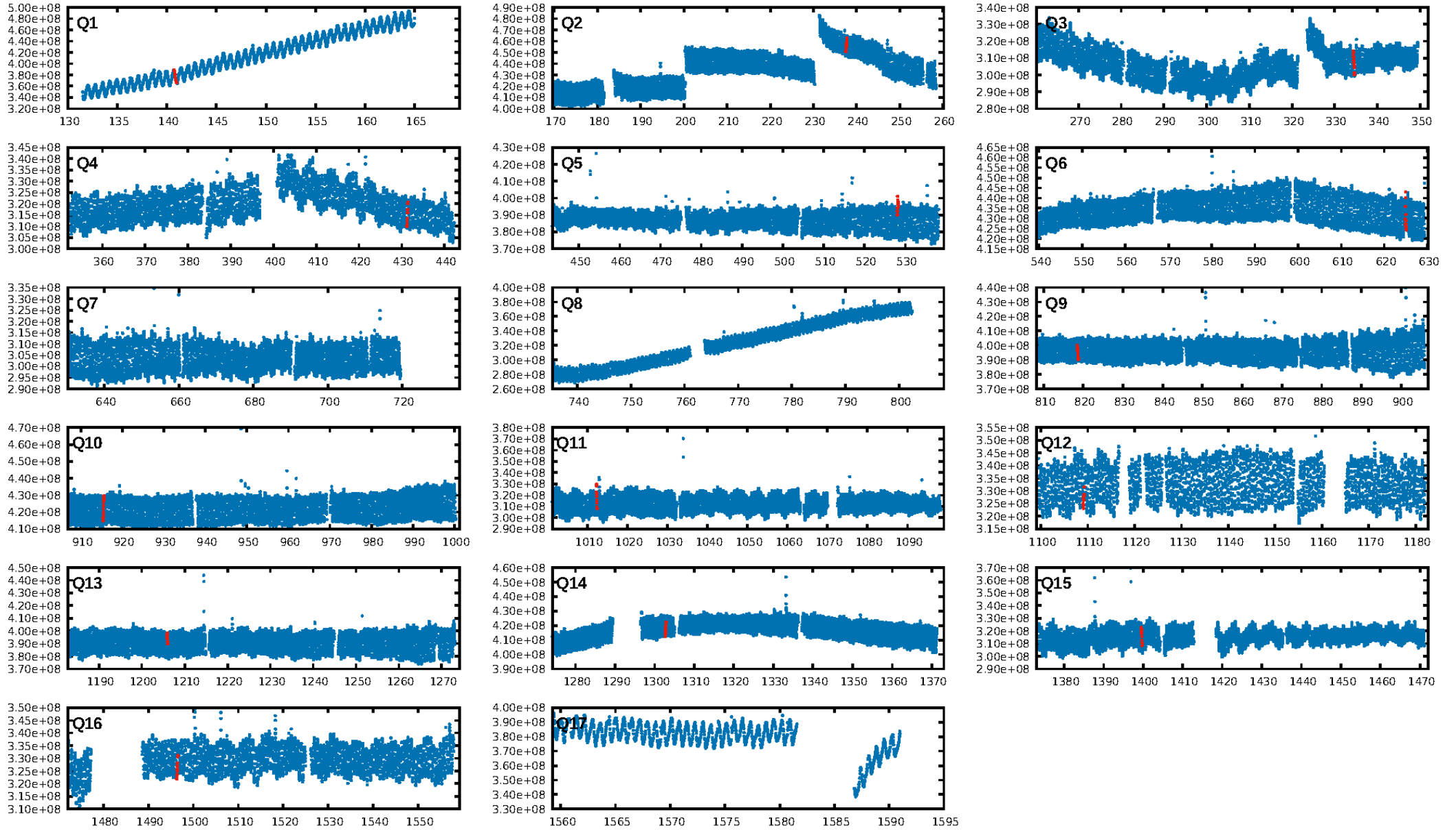
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.34σ]
LongPeriod-sig: 100.0% [15.47σ]
ModelChiSquare2-sig: 10.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.3367
Centroid-sig: N/A
Centroid-so: 1.720 arcsec [77.12σ]
OotOffset-rm: 3.575 arcsec [4.88σ]
KicOffset-rm: 4.463 arcsec [5.62σ]
OotOffset-st: 4/2/3/2 [11]
KicOffset-st: 4/2/3/2 [11]
DiffImageQuality-fgm: 0.18 [2/11]
DiffImageOverlap-fno: 0.00 [0/13]

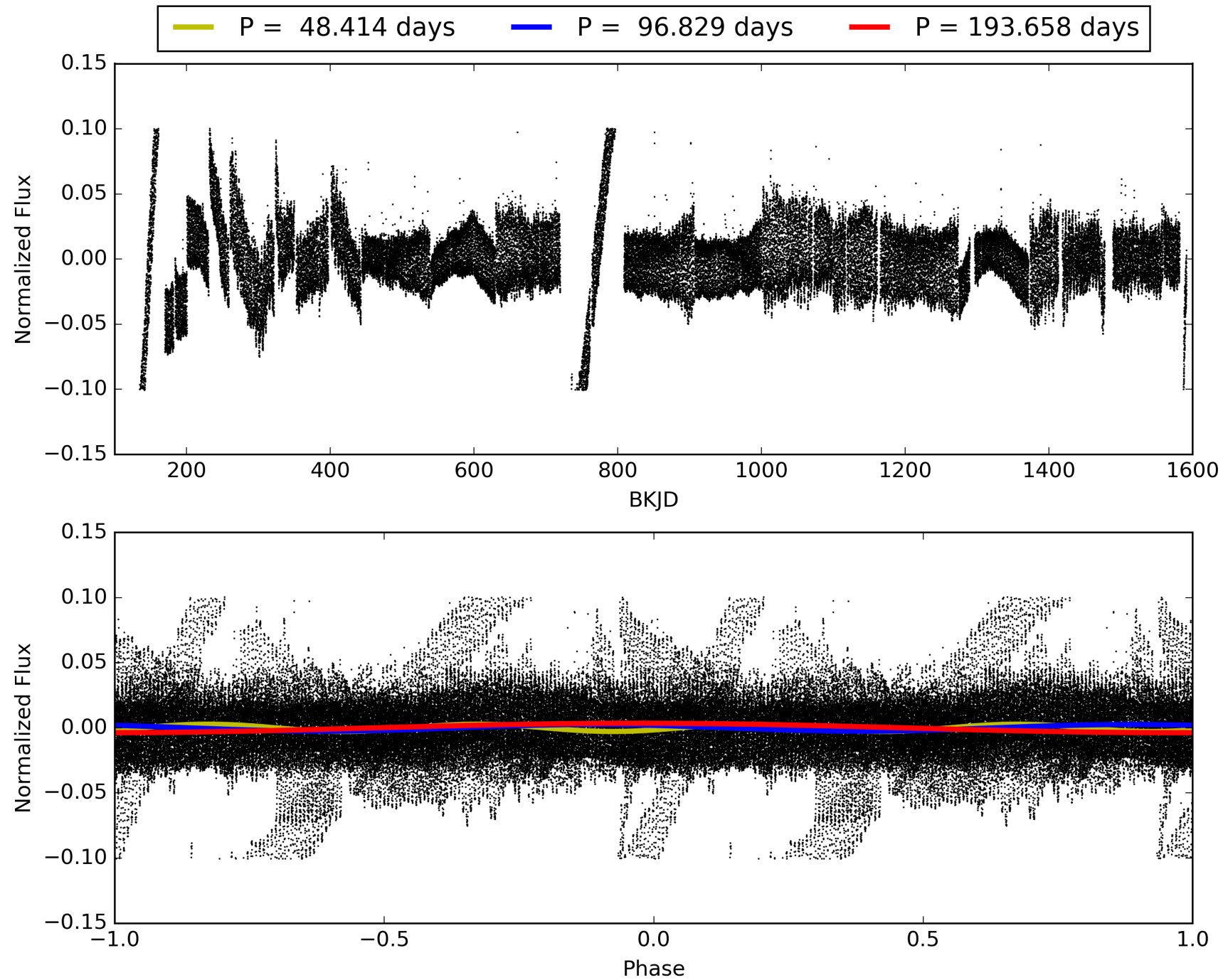
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:40 Z

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

TCE 011709022-03, PDC Light Curves

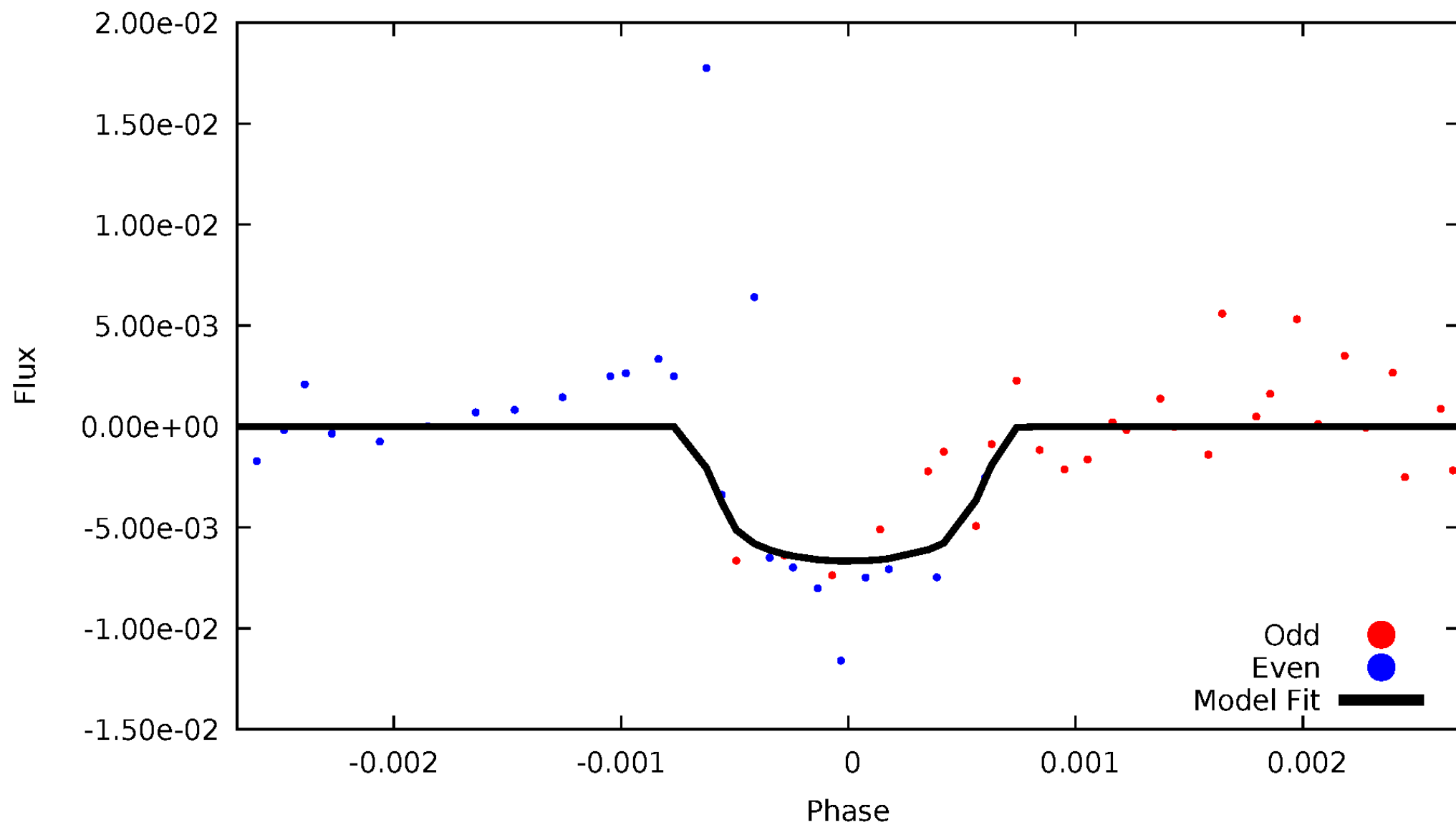


TCE 011709022-03



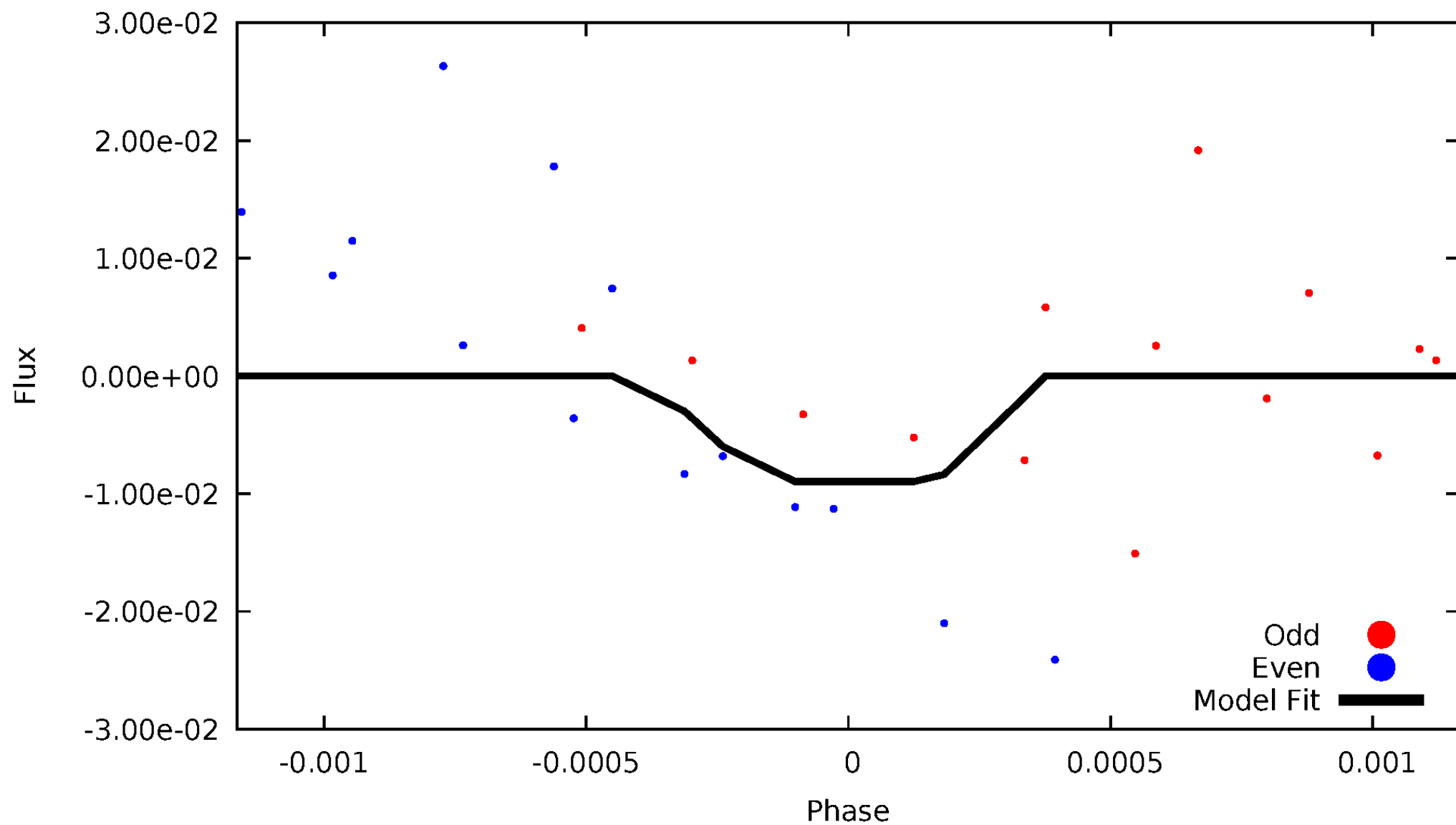
DV Odd/Even

TCE 011709022-03



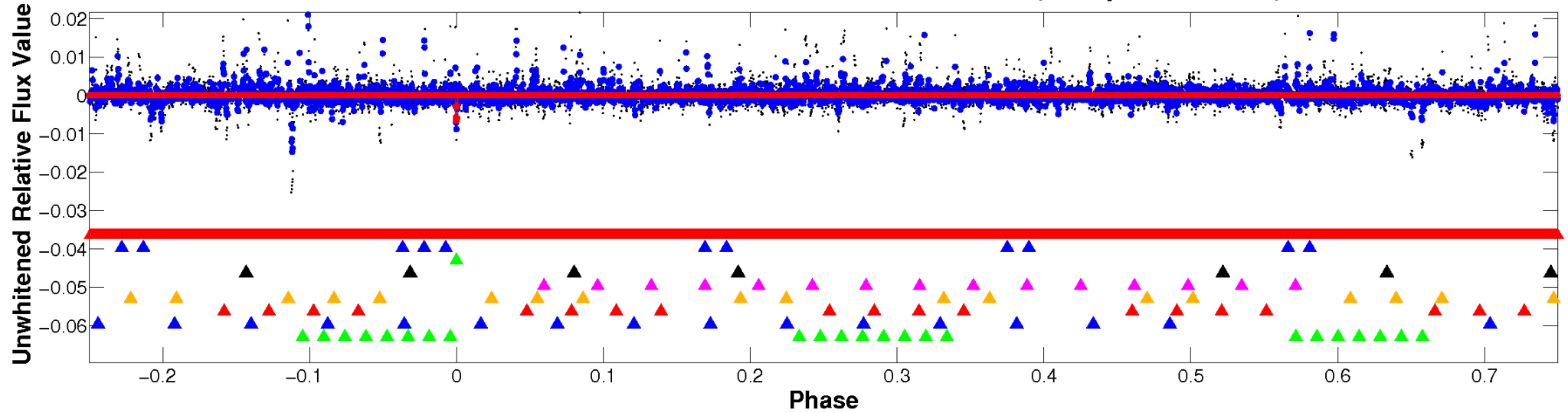
ALT Odd/Even

TCE 011709022-03

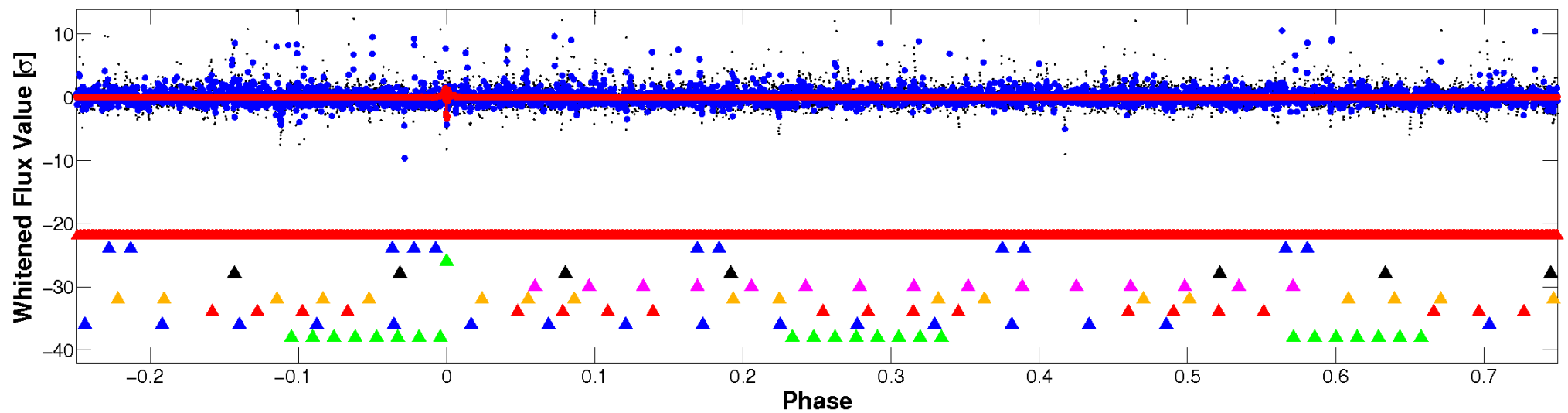


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

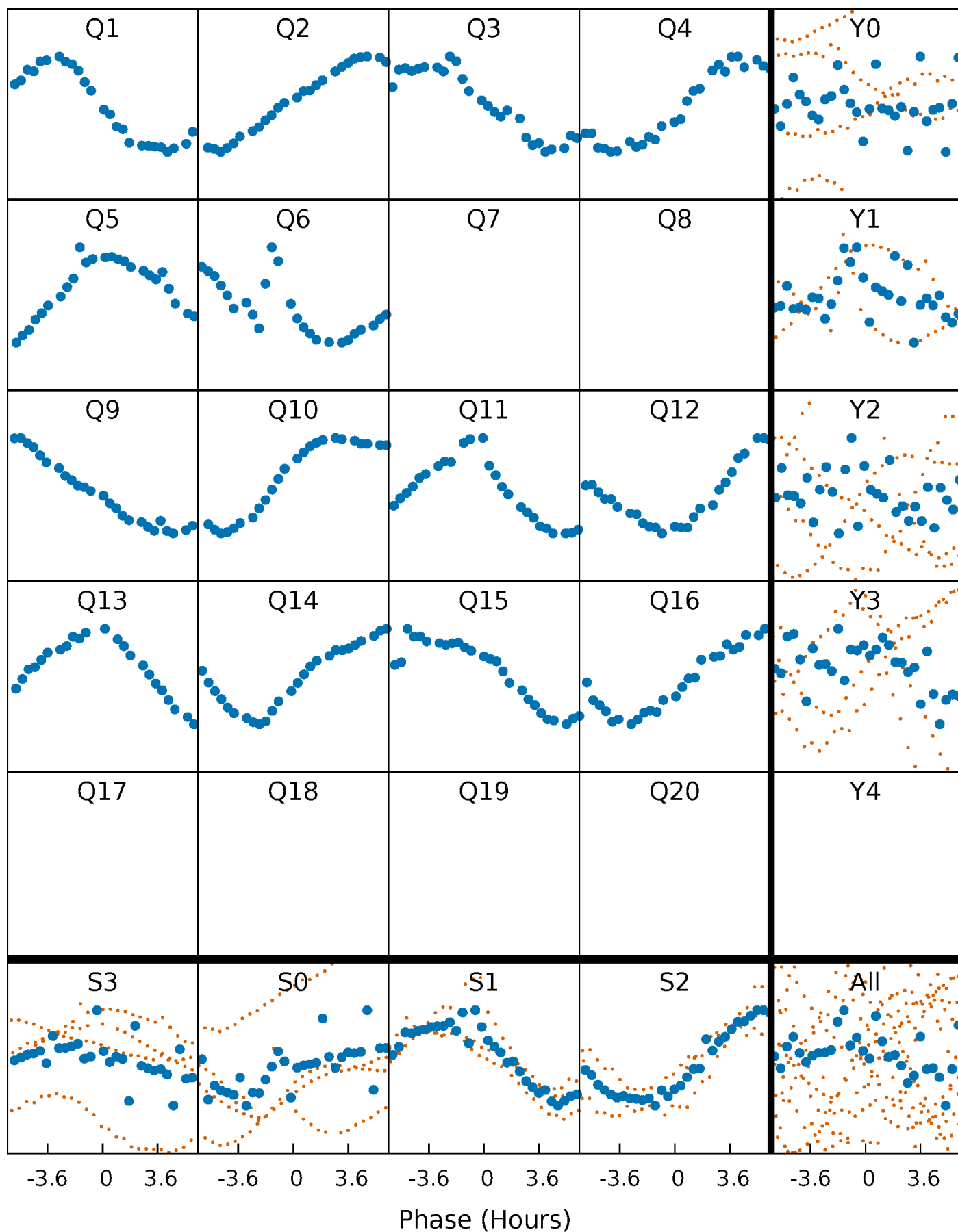


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



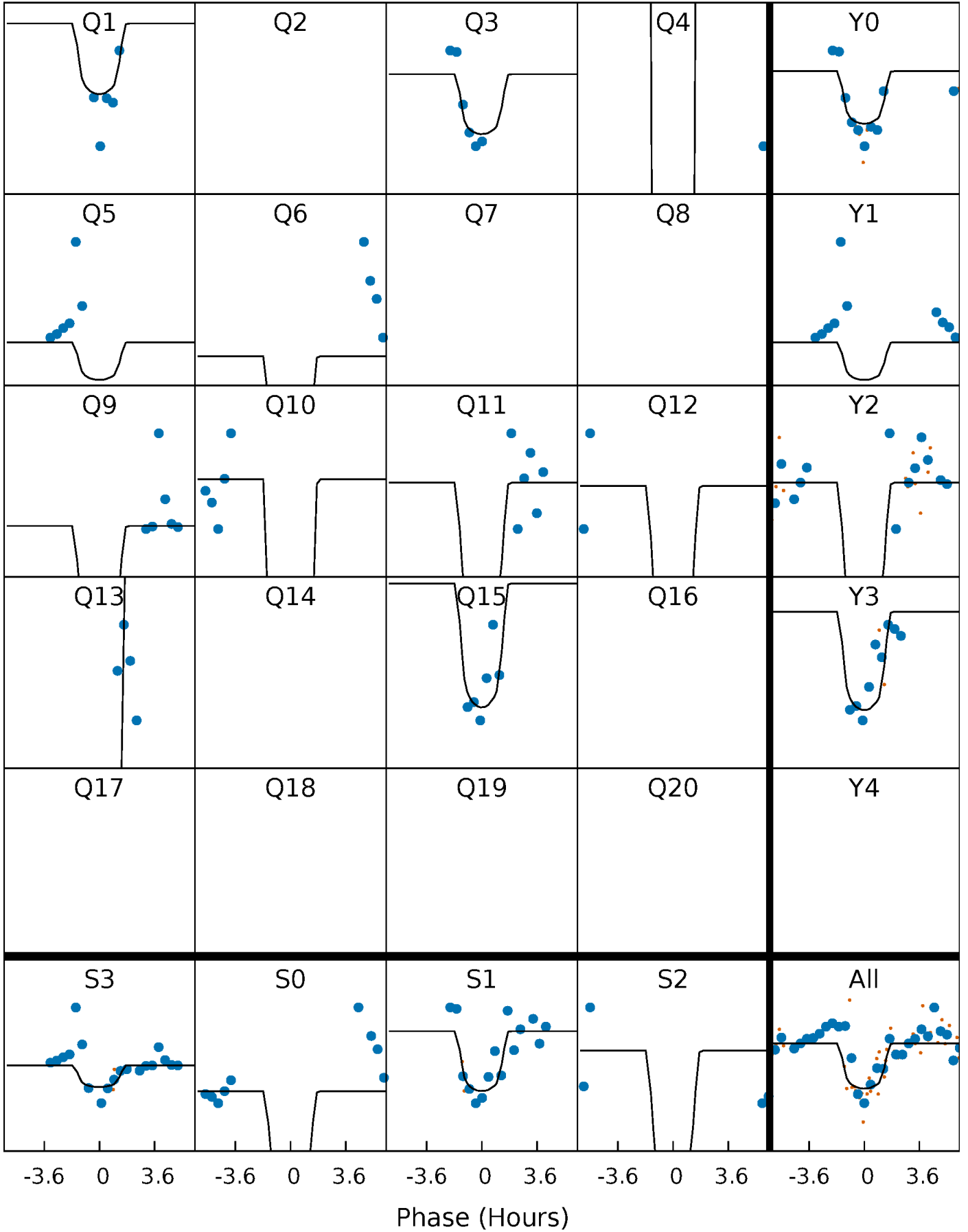
PDC Quarter-Phased Transit Curves

TCE 011709022-03 P= 96.828839 Days $T_0=140.833301$ (BKJD)



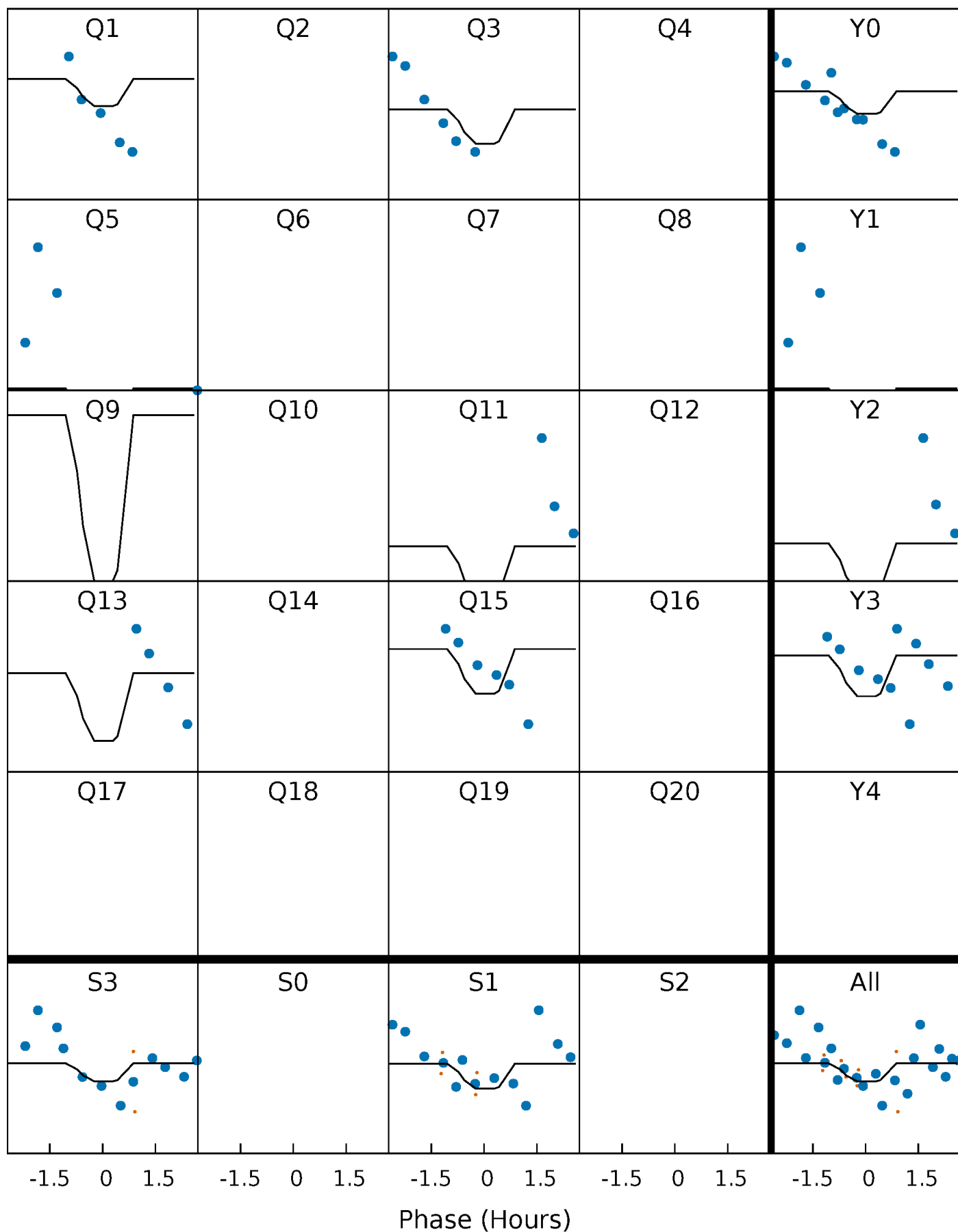
DV Quarter-Phased Transit Curves

TCE 011709022-03 P= 96.828839 Days $T_0=140.833301$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

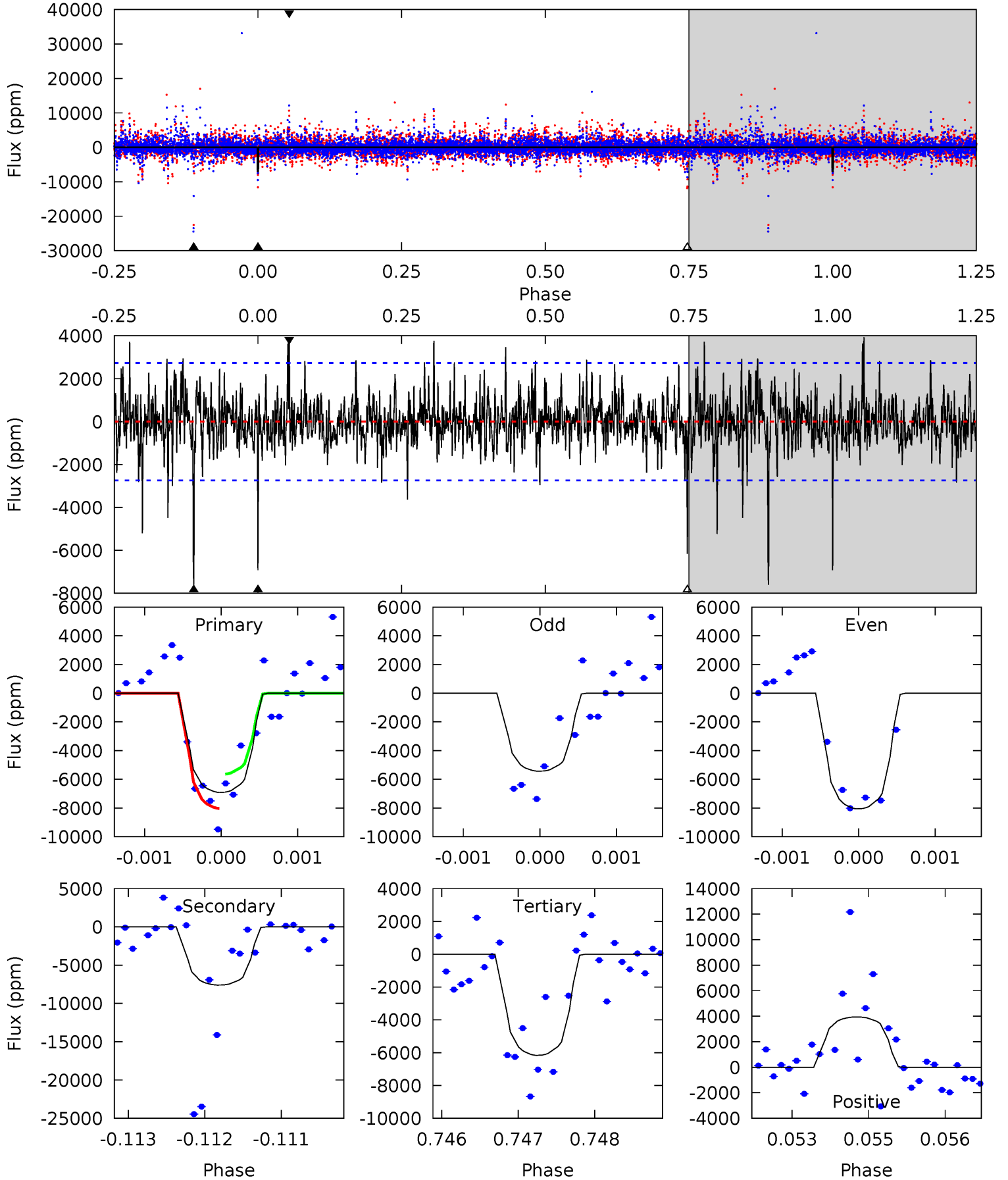
TCE 011709022-03 P= 96.827411 Days $T_0=140.853293$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-03, P = 96.828839 Days, E = 44.004462 Days

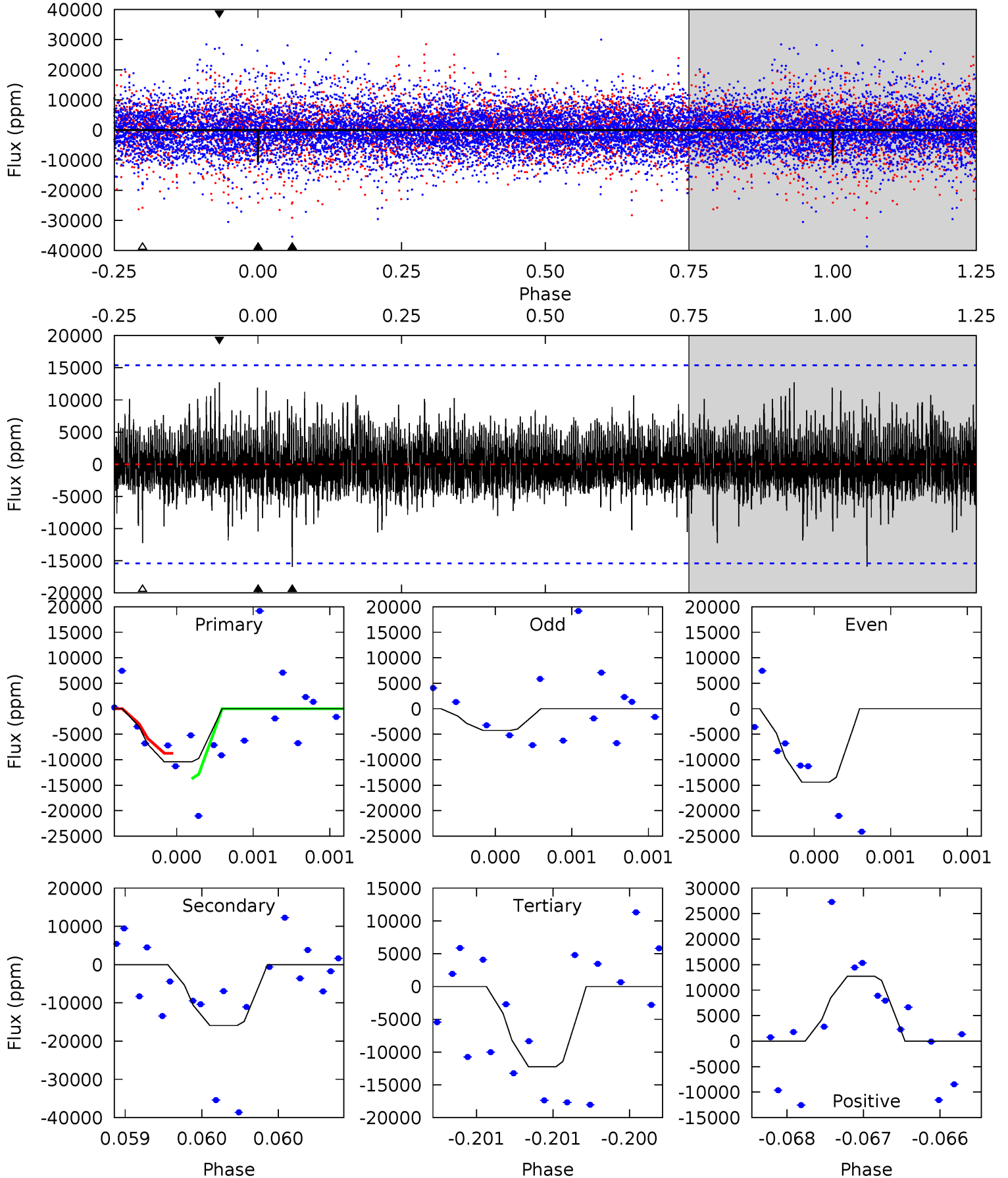
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	15.0	12.2	7.78	5.40	3.20	1.90	1.49	5.86	2.84	7.21	2.22	0.35	0.34	2.38



Alt Model-Shift Uniqueness Test

011709022-03, P = 96.827411 Days, E = 44.025882 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.75	5.72	4.40	4.57	5.53	3.42	1.19	-0.65	-0.82	1.32	1.15	1.69	0.85	0.44	0.84



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7601 ± 507	$3.15^{+2.41}_{-1.95}$	241^{+13}_{-14}	3625^{+1674}_{-578}	$38339^{+229673}_{-26251}$
Alt.	-15919 ± 2784	$3.88^{+2.43}_{-2.09}$	239^{+12}_{-13}	3812^{+1296}_{-523}	$53556^{+180576}_{-34074}$

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

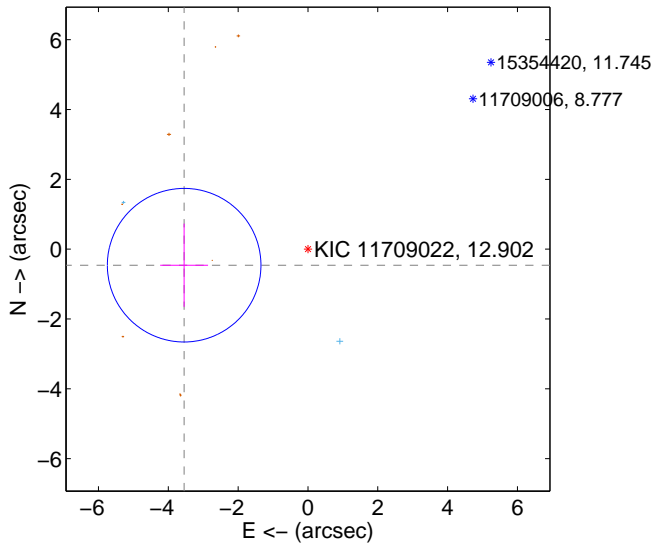
Supplemental centroid analysis for 011709022-03. Kepler magnitude: 12.90. Transit SNR 11.01

There are 2 quarters with good PRF difference image offsets

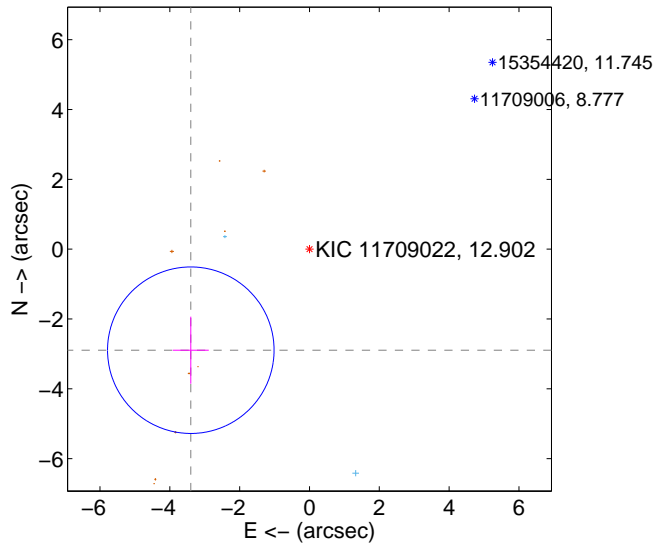
The OOT PRF centroid is offset from the target star catalog position by about 2.53 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.575 ± 0.733	4.88	3.545 ± 0.685	-0.459 ± 1.194
PRF-fit source offset from KIC position	4.463 ± 0.795	5.62	3.398 ± 0.515	-2.893 ± 0.962
photometric centroid source offset	1.72 ± 0.02	77.12	1.72 ± 0.02	-0.04 ± 0.04

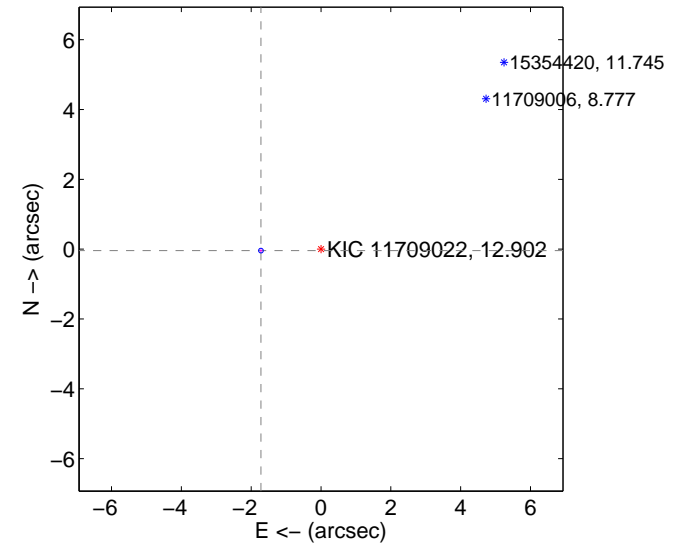
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

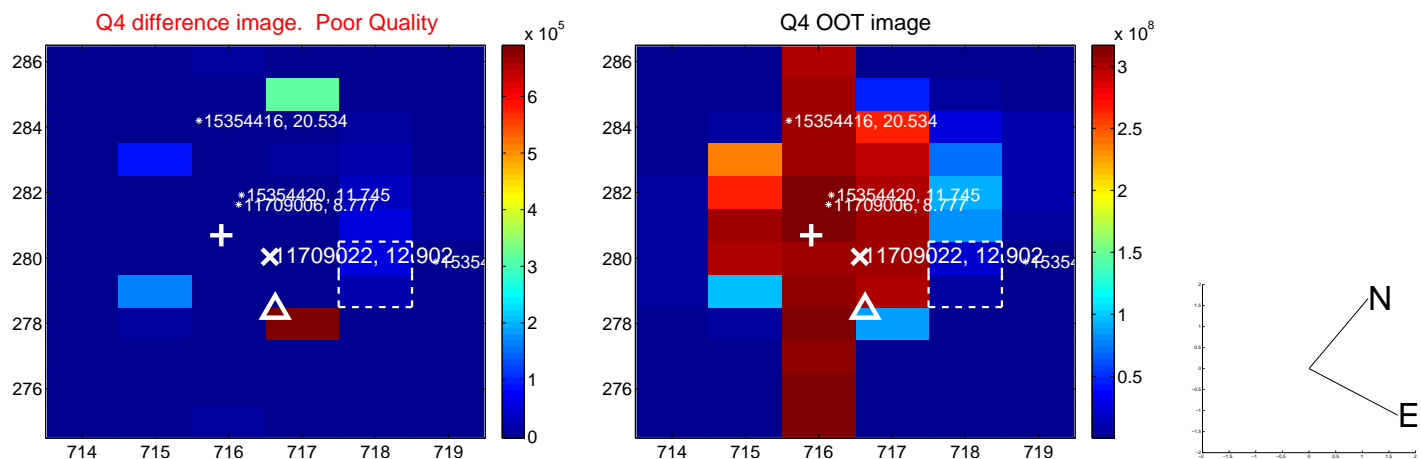
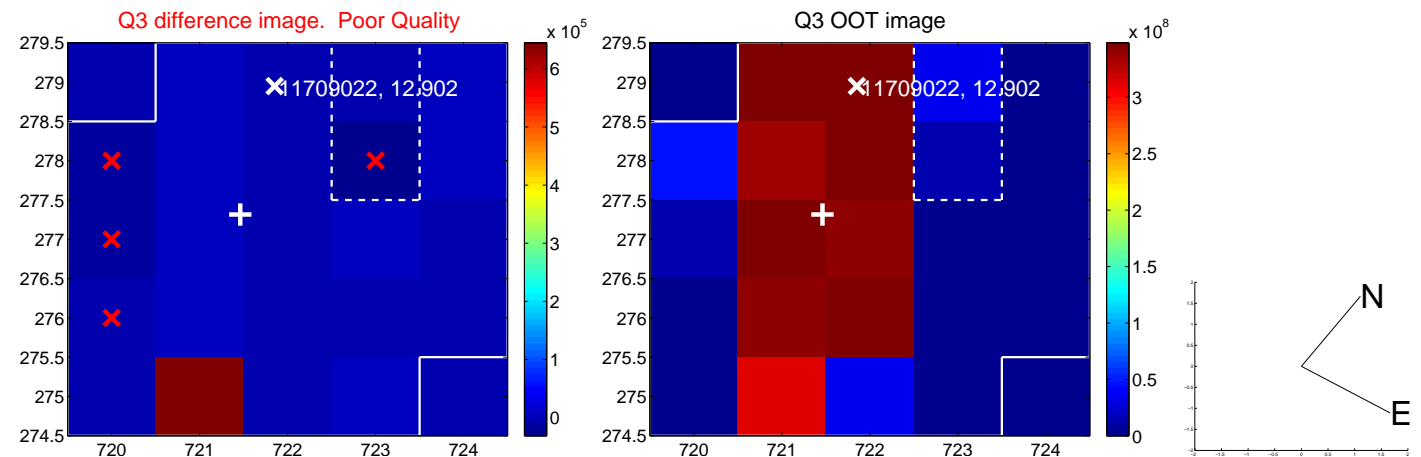
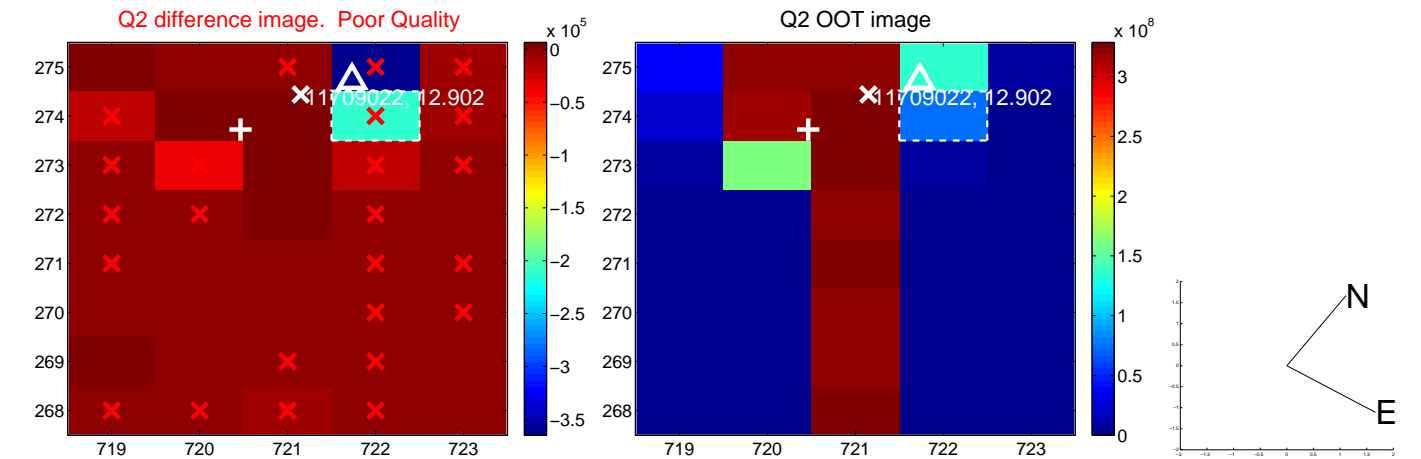
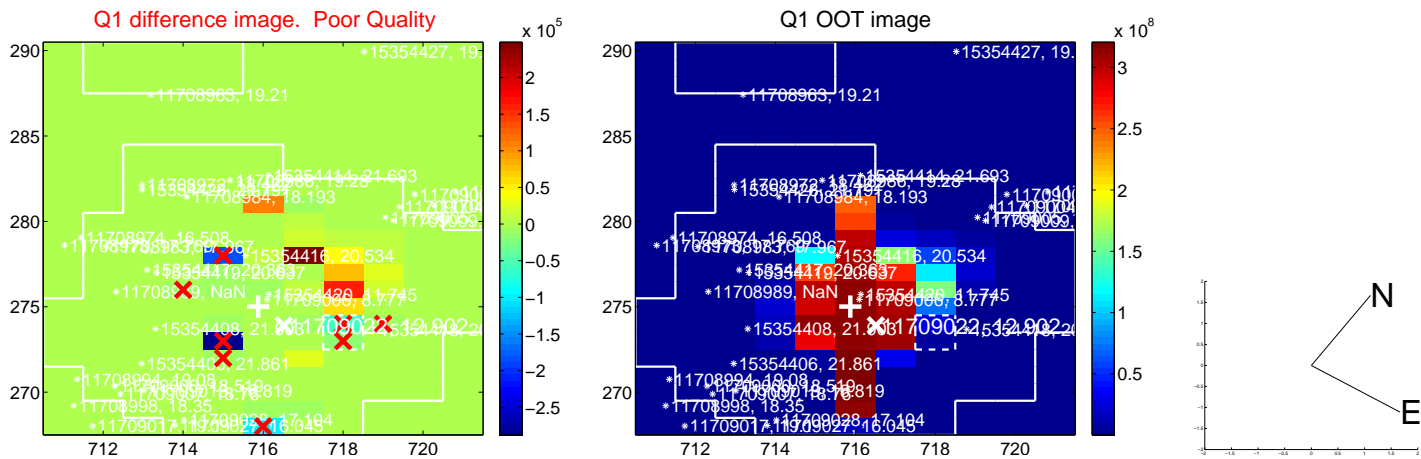


offset from photometric centroids

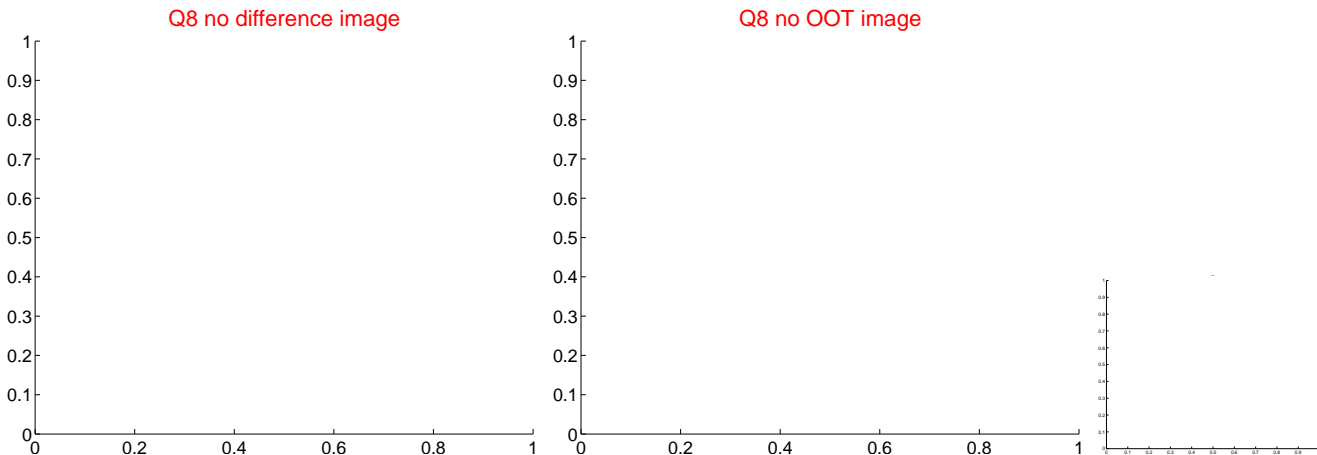
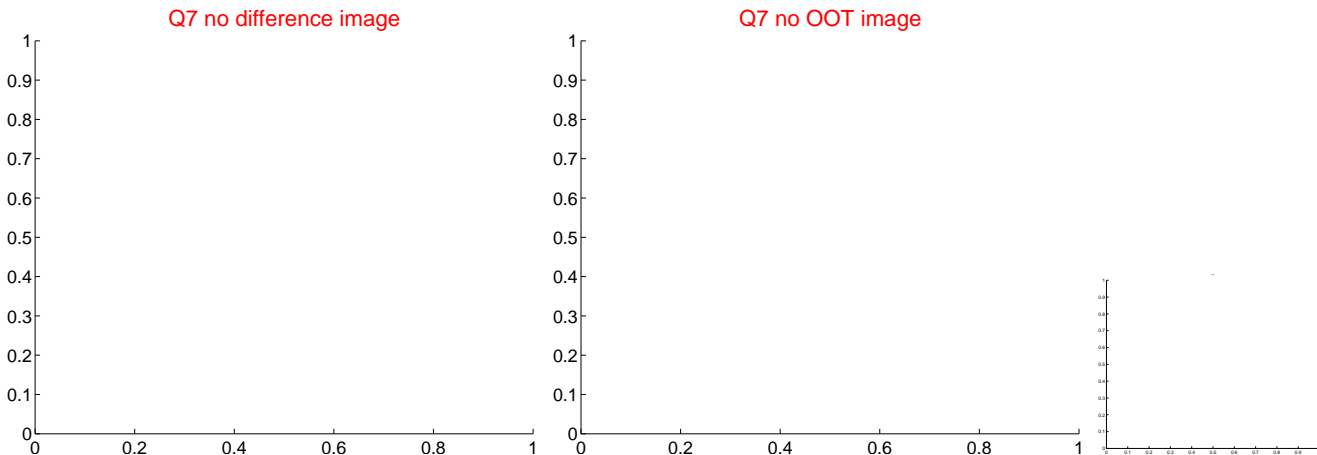
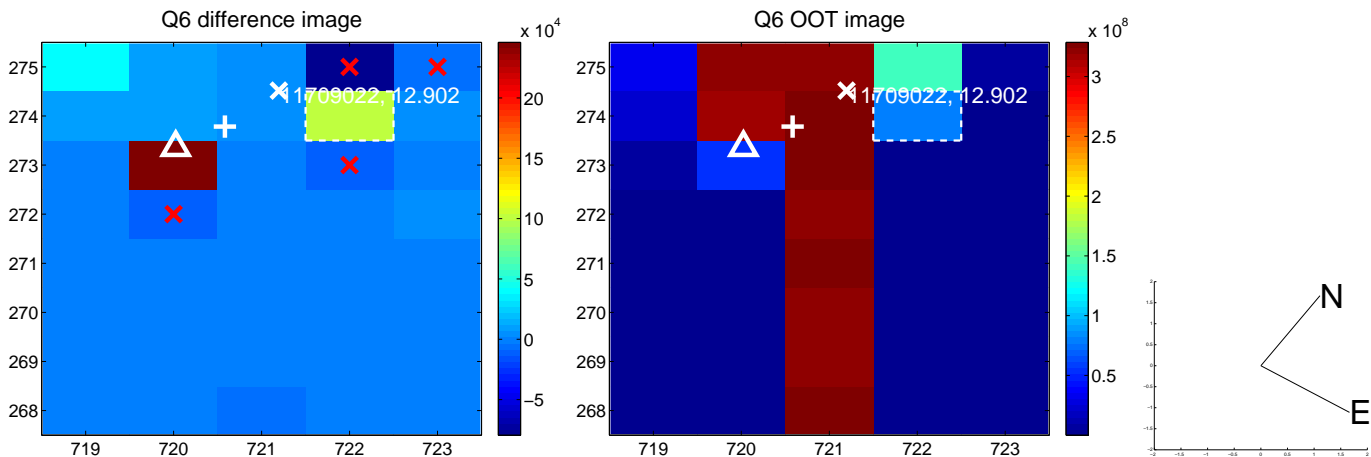
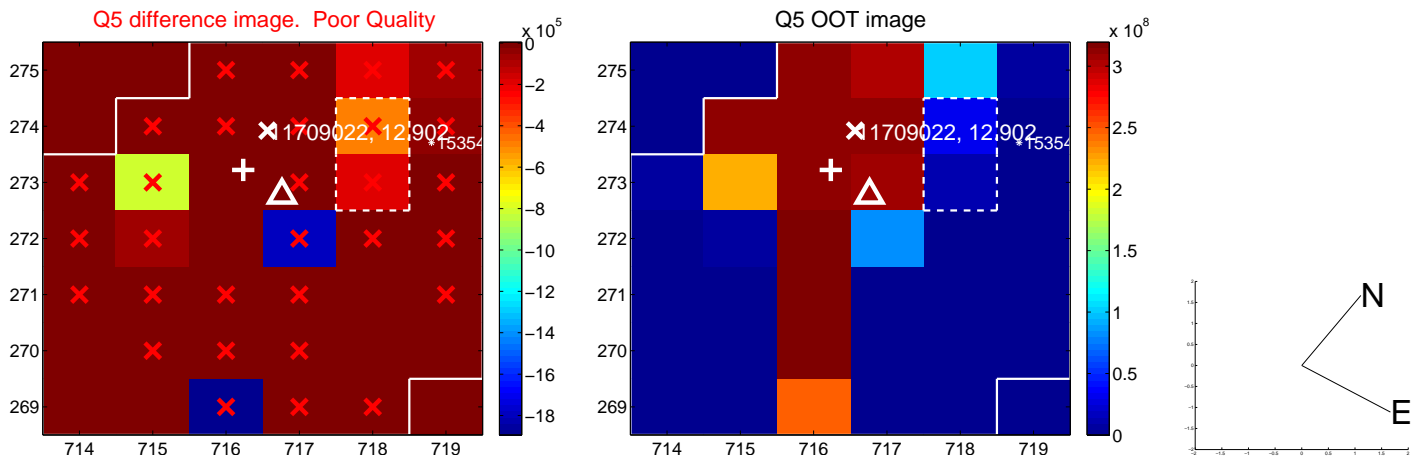


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

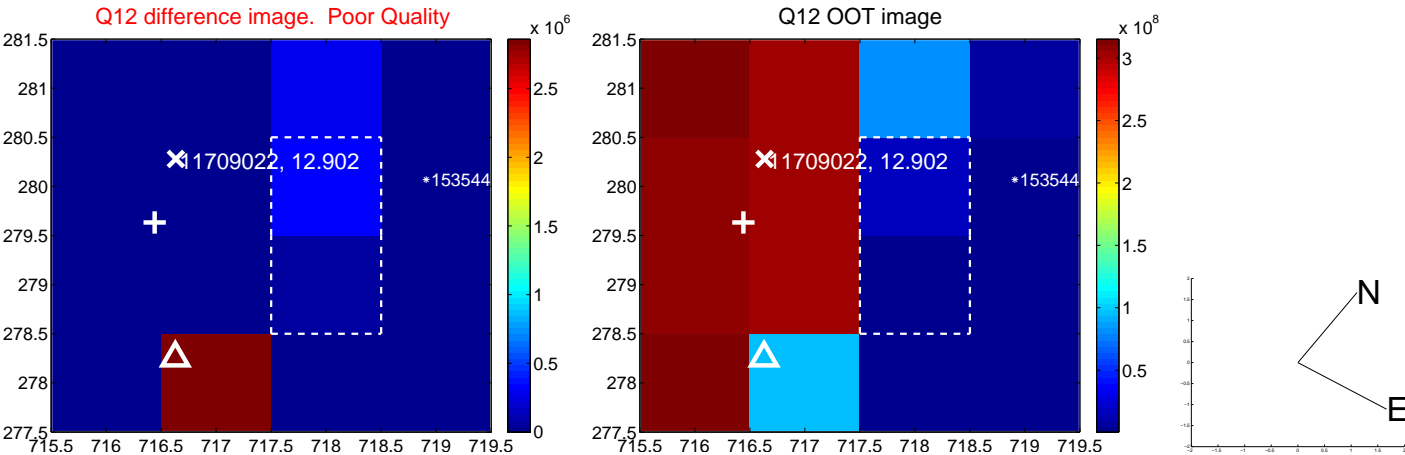
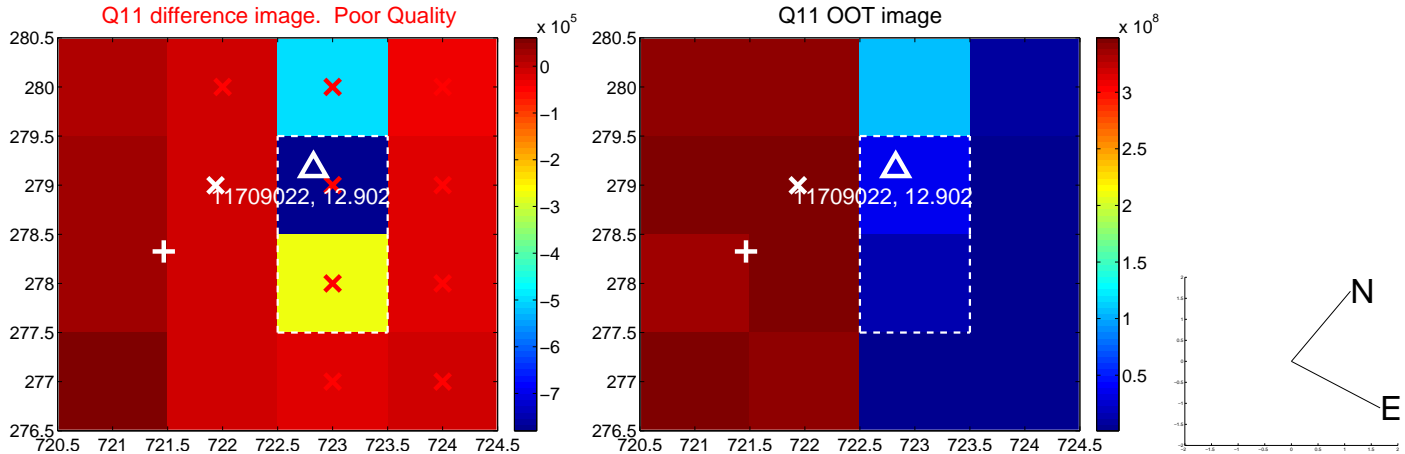
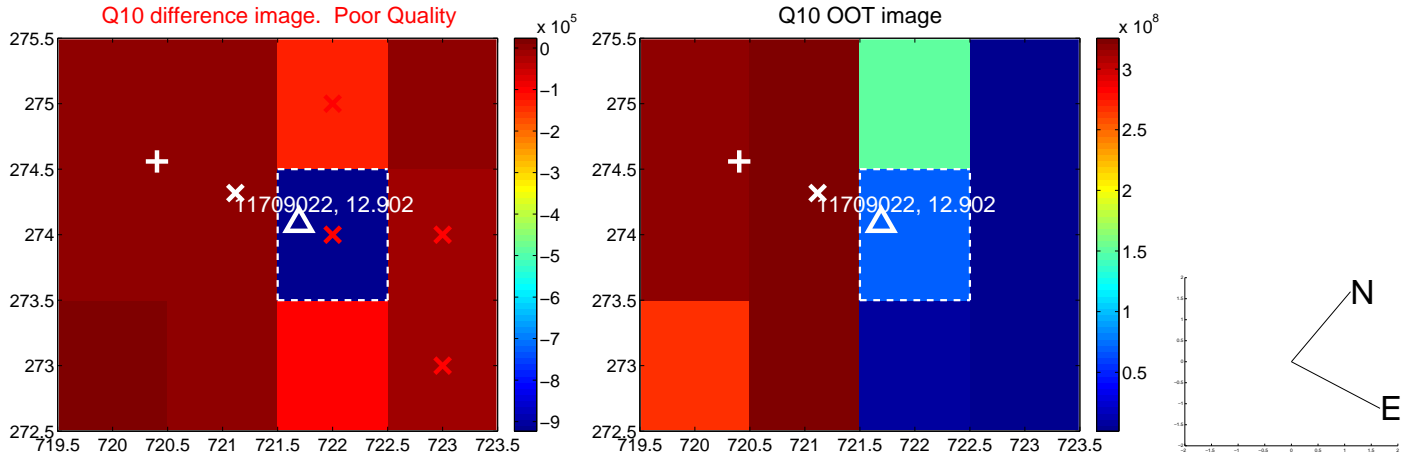
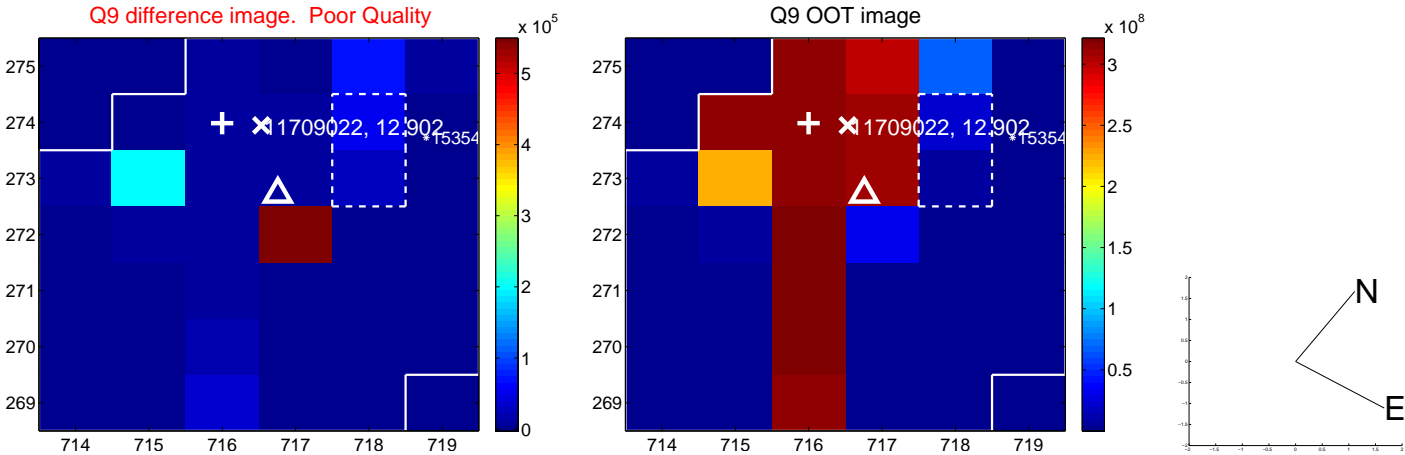
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



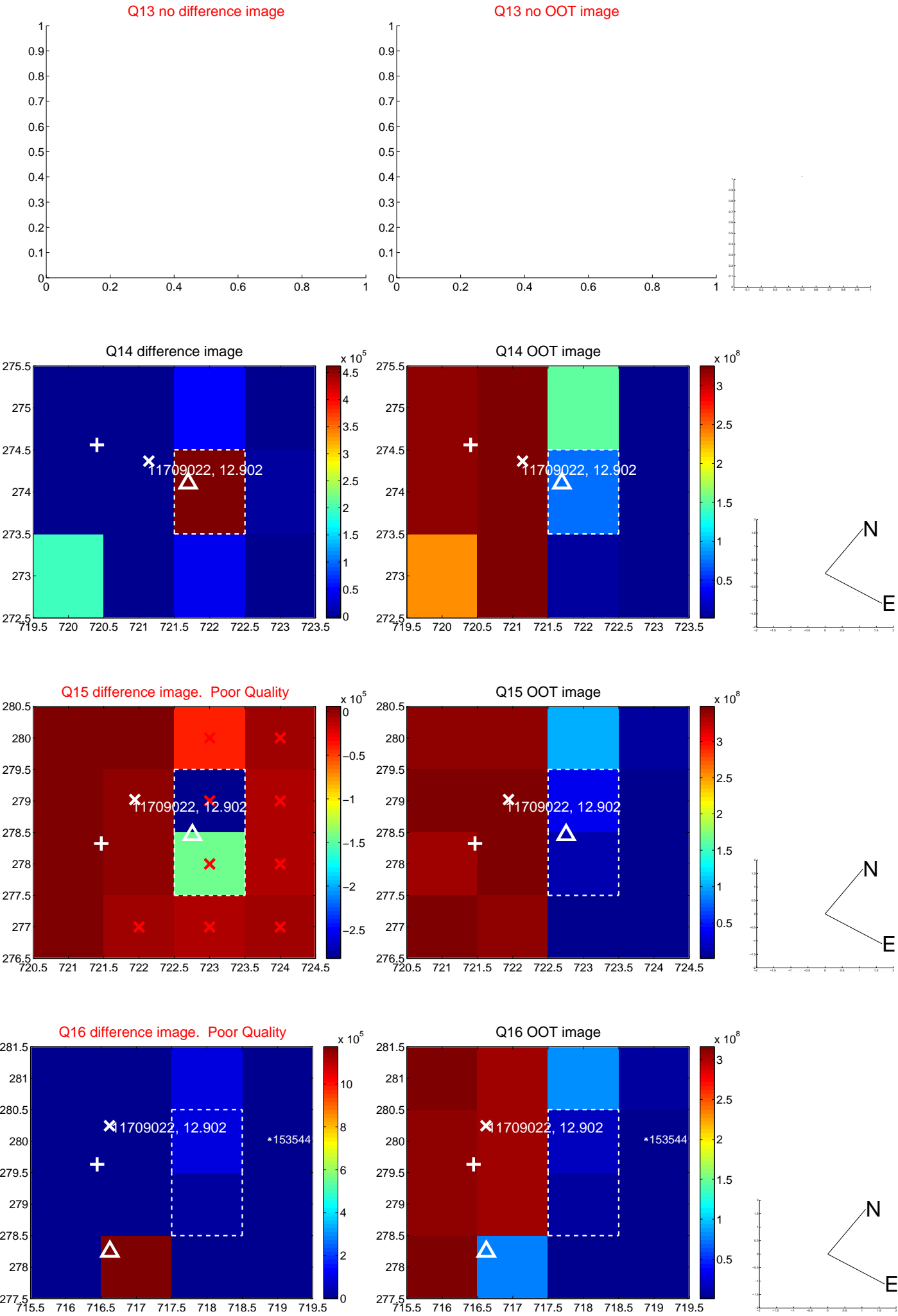
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



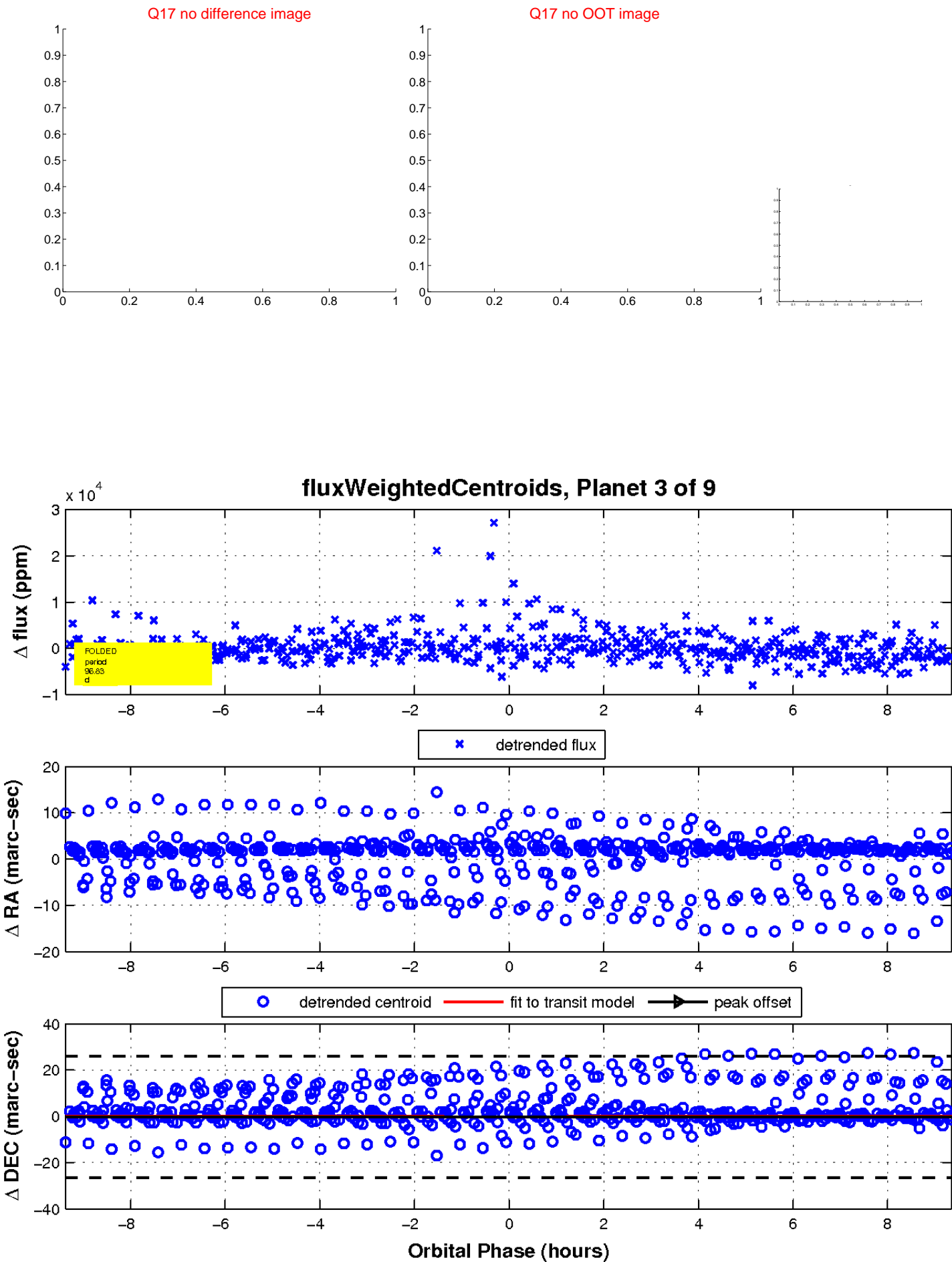
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



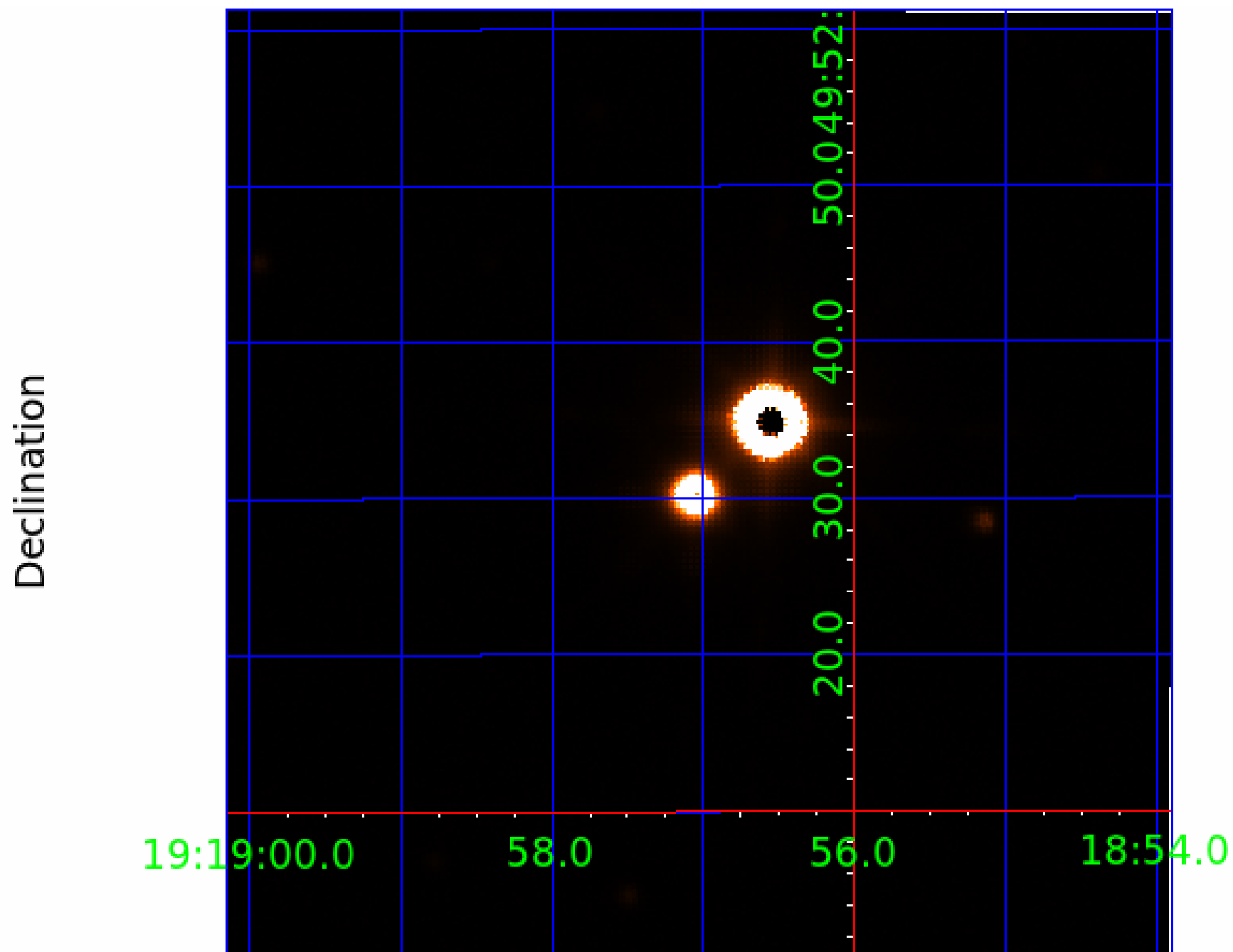
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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 011709022-04

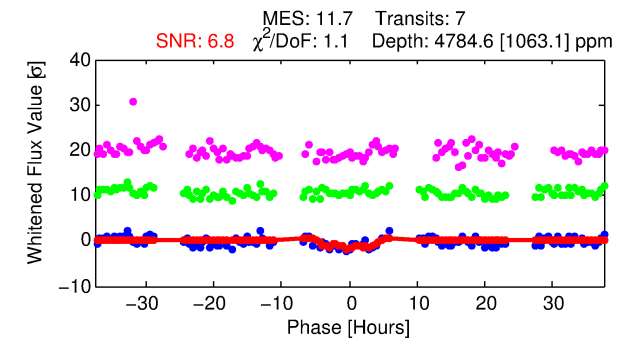
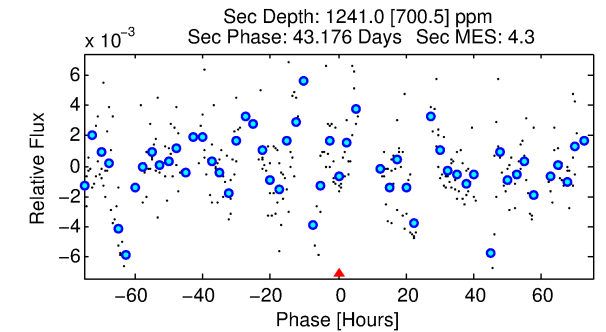
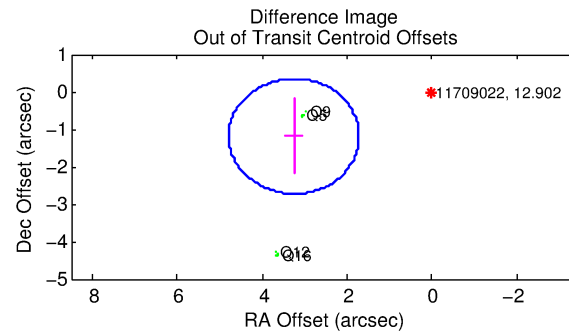
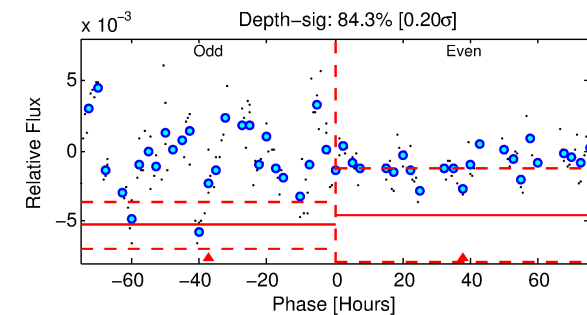
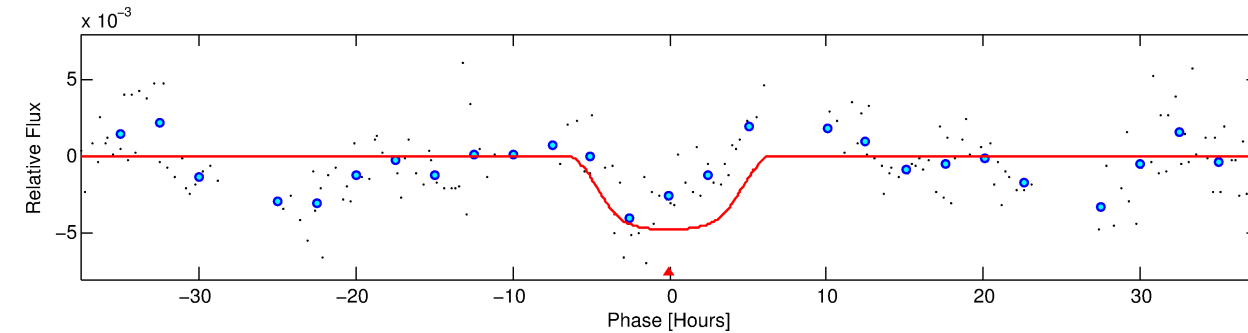
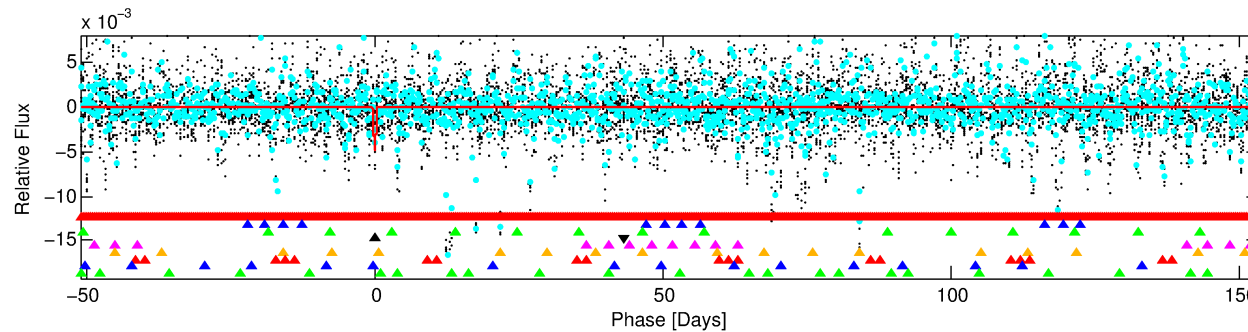
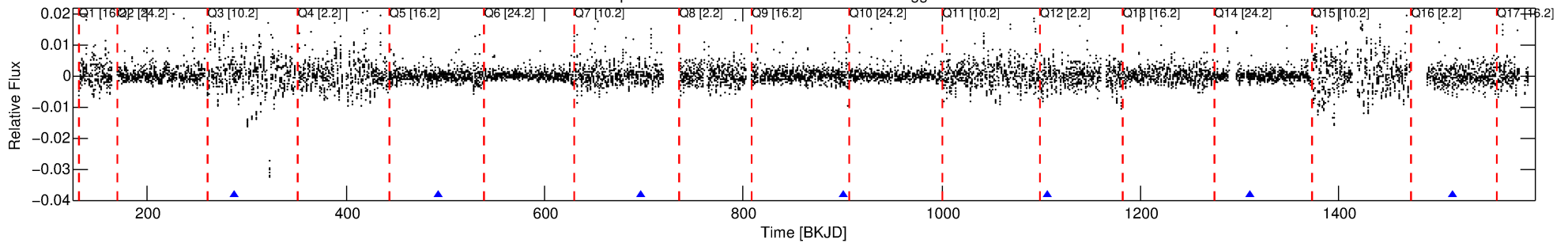
No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 4 of 9 Period: 204.470 d

KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 204.46960 [0.02095] d
Epoch = 288.1933 [0.0613] BKJD
Rp/R* = 0.0743 [0.0097]
a/R* = 76.61 [24.37]
b = 0.88 [0.06]
Seff = 0.08 [0.02]
Teff = 135 [10] K
Rp = 2.98 [0.86] Re
a = 0.4905 [0.0939] AU
Ag = 18460.13 [12341.43] [1.50σ]
Teffp = 2434 [388] K [5.92σ]

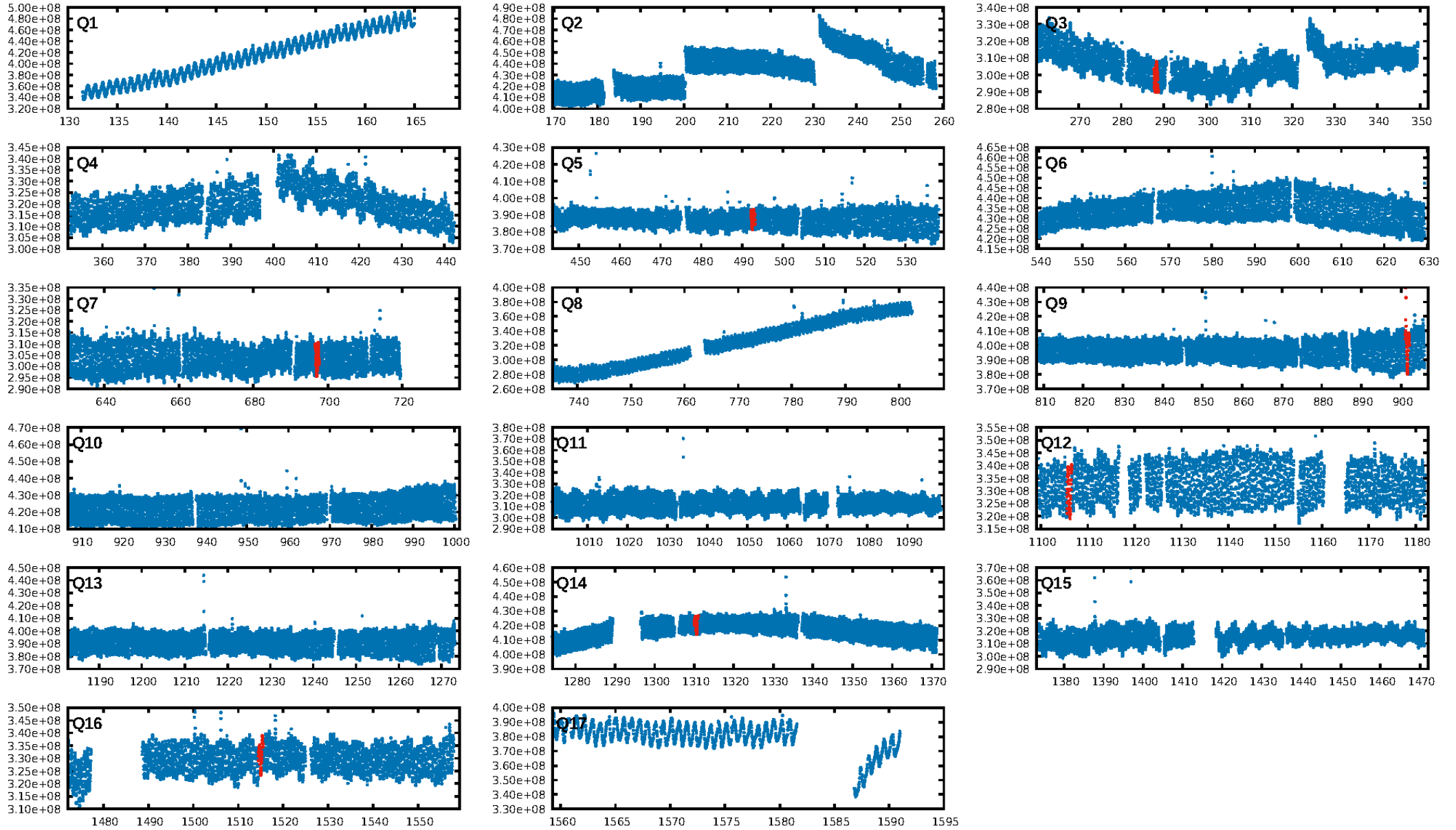
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [105.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 42.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -2.881
Centroid-sig: N/A
Centroid-so: 1.774 arcsec [40.03σ]
OotOffset-rm: 3.458 arcsec [6.74σ]
KicOffset-rm: 5.545 arcsec [7.11σ]
OotOffset-st: 0/0/2/2 [4]
KicOffset-st: 0/0/2/2 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.00 [0/7]

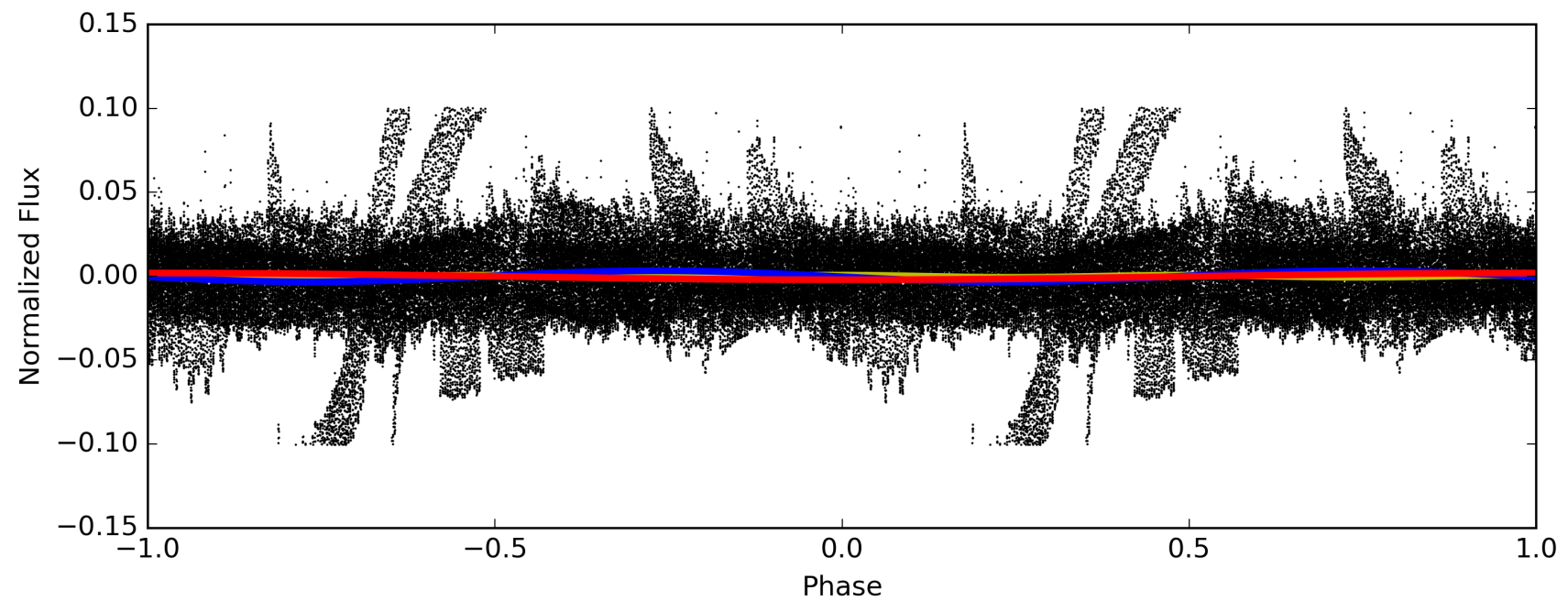
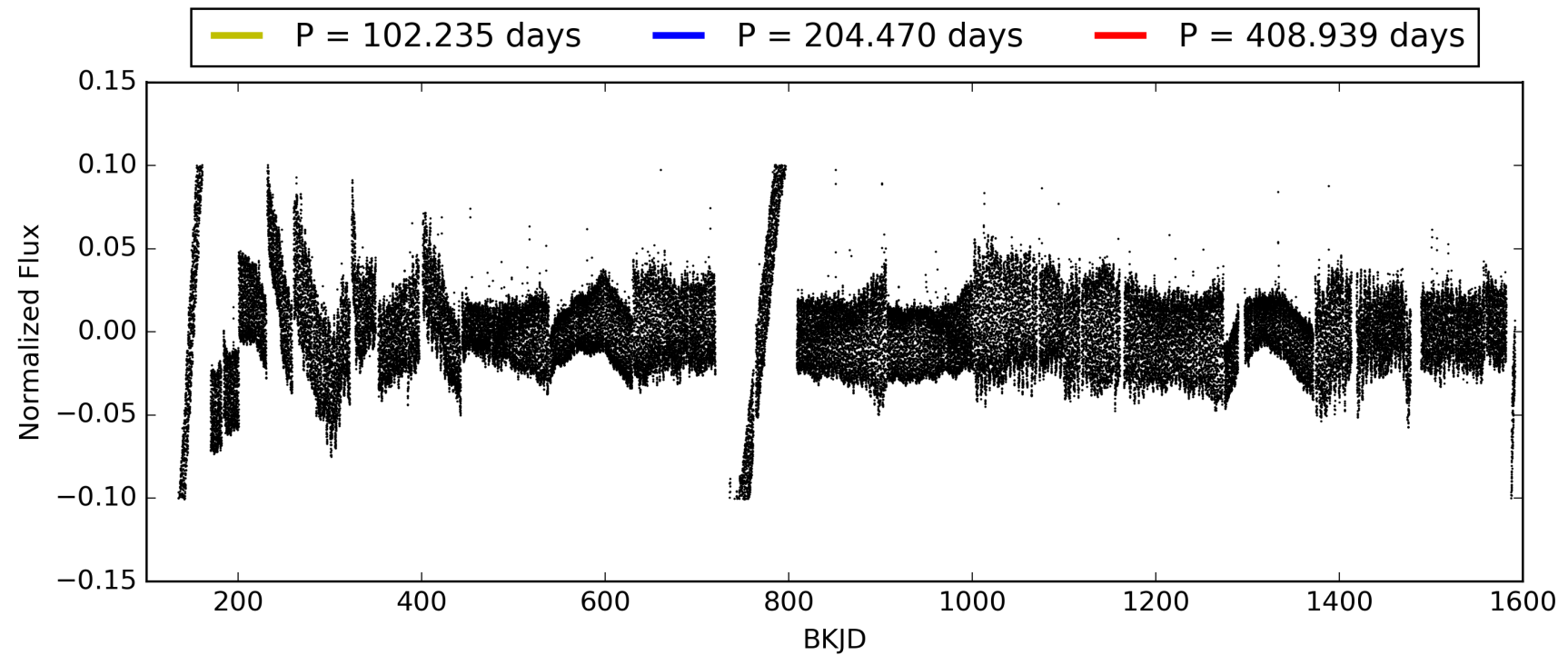
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:44 Z

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

TCE 011709022-04, PDC Light Curves

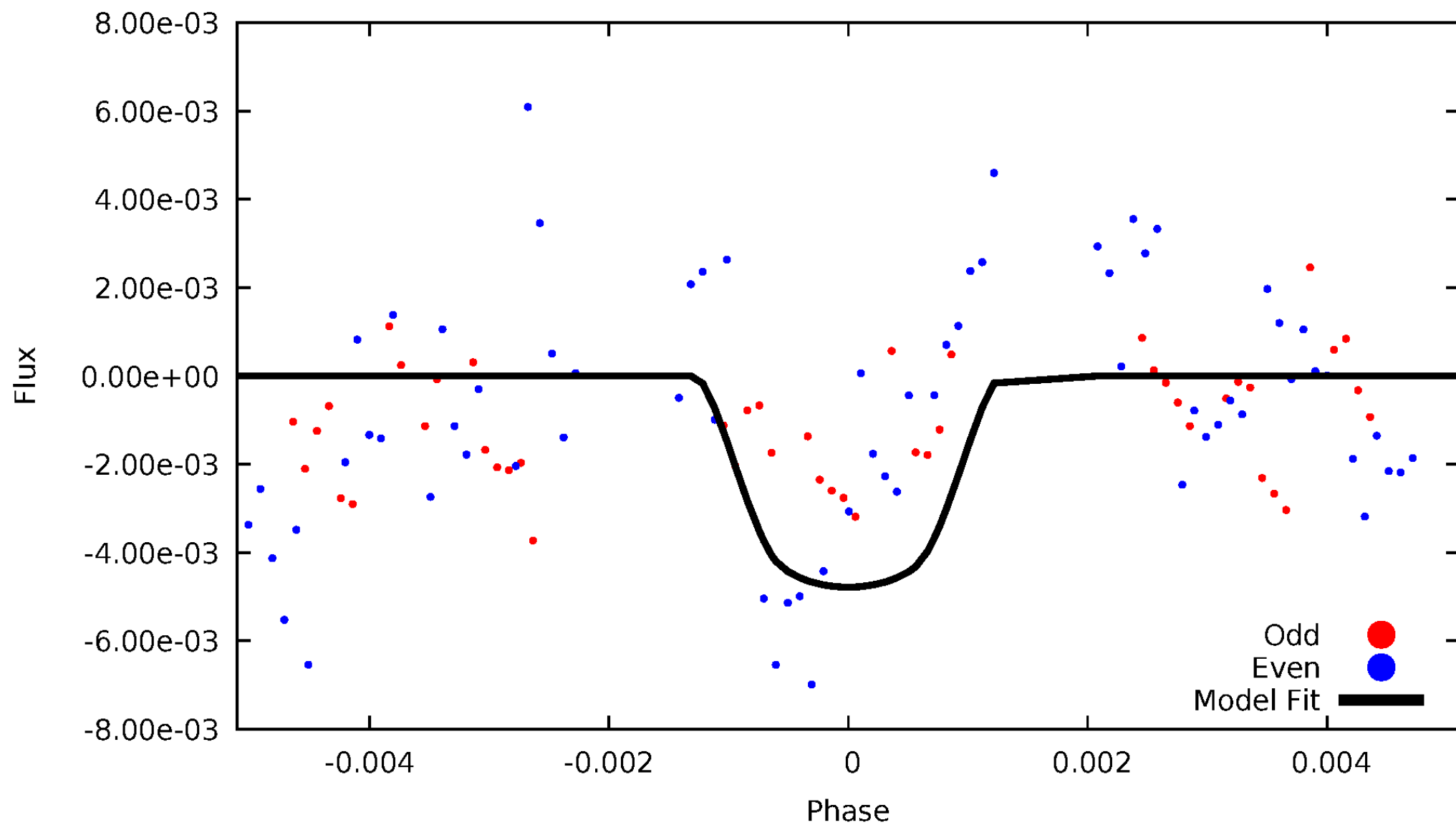


TCE 011709022-04



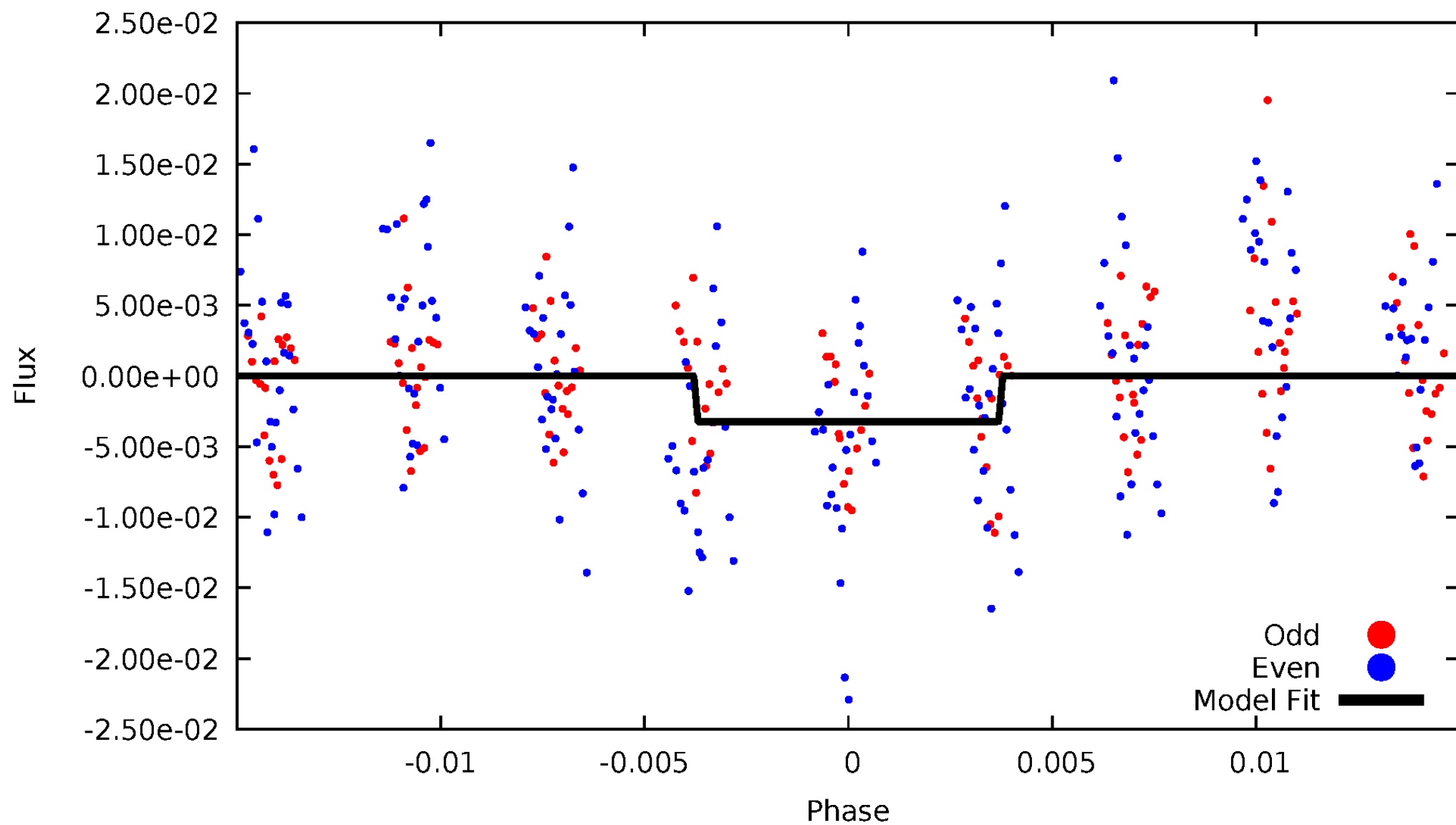
DV Odd/Even

TCE 011709022-04



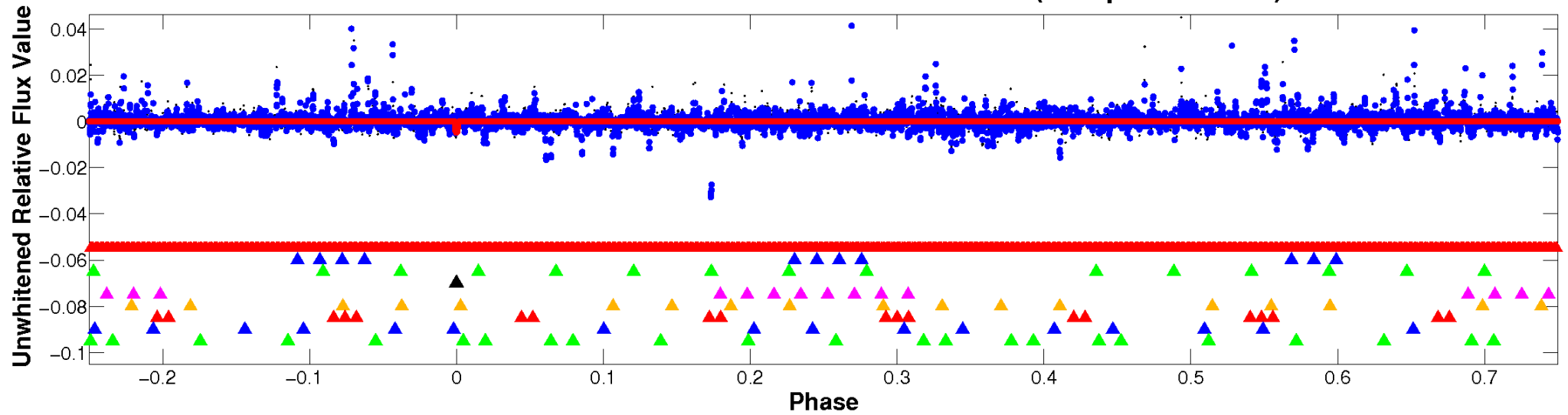
ALT Odd/Even

TCE 011709022-04

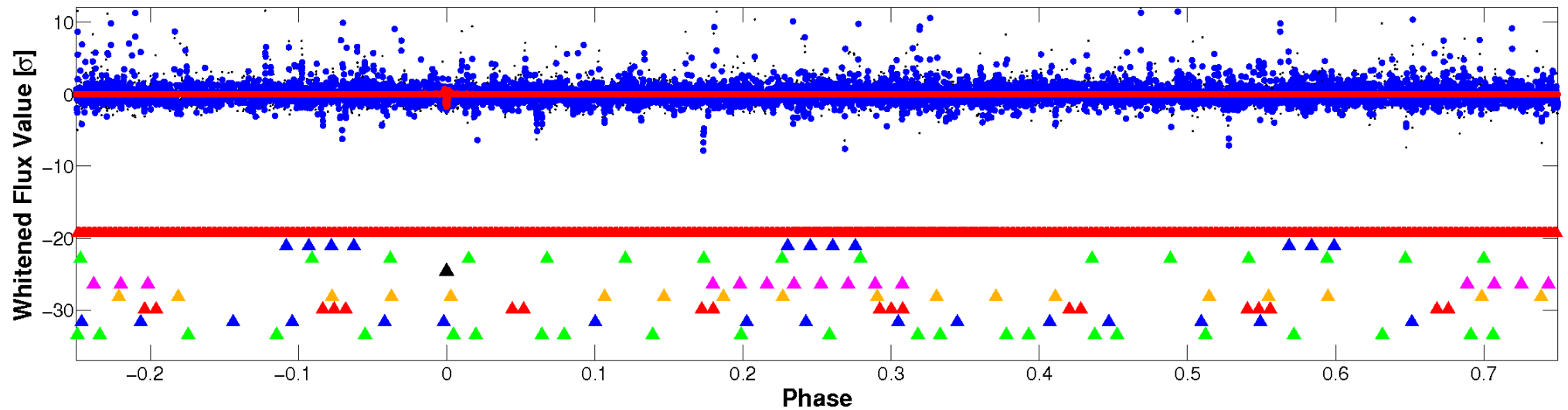


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

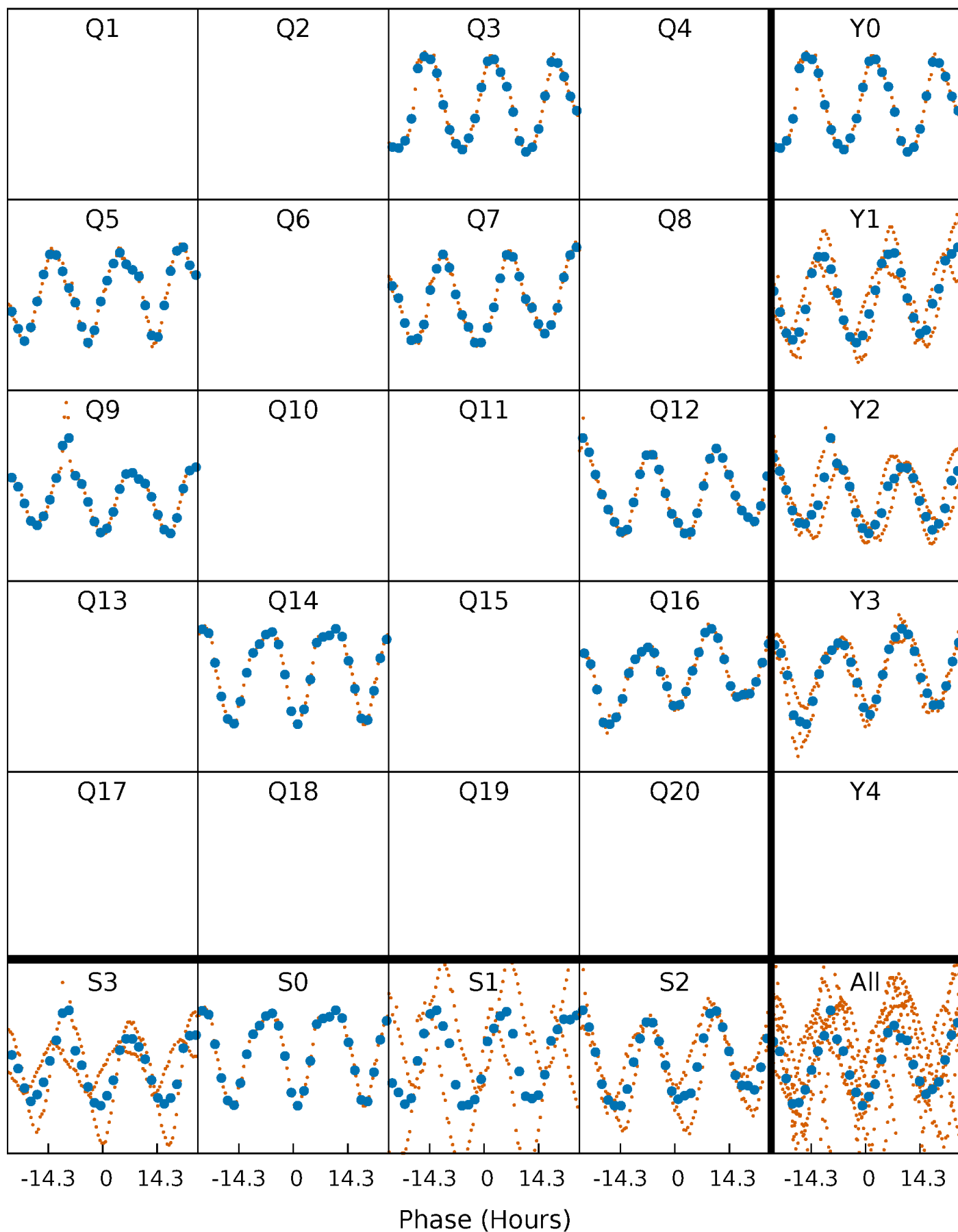


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



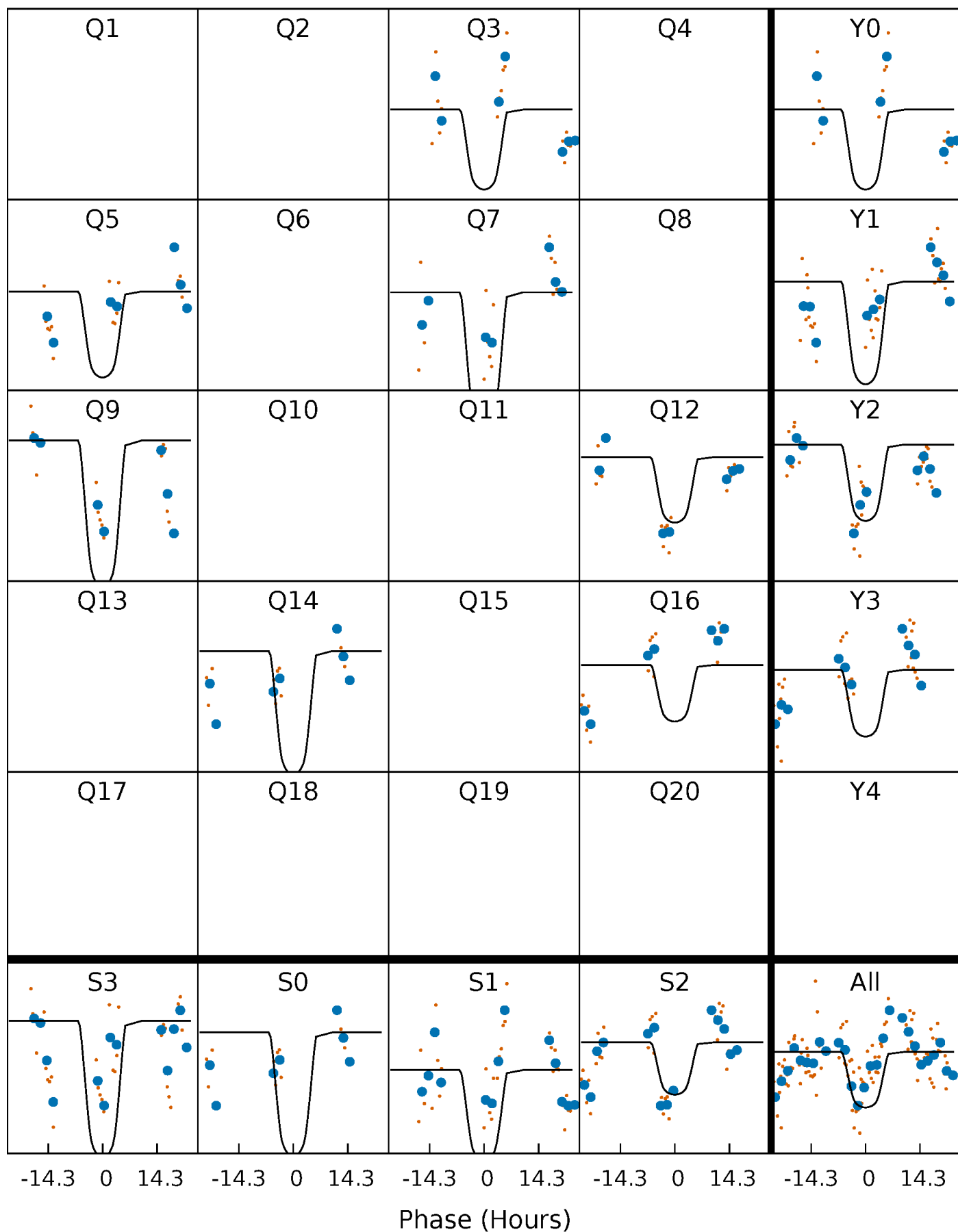
PDC Quarter-Phased Transit Curves

TCE 011709022-04 $P=204.469597$ Days $T_0=288.193286$ (BKJD)



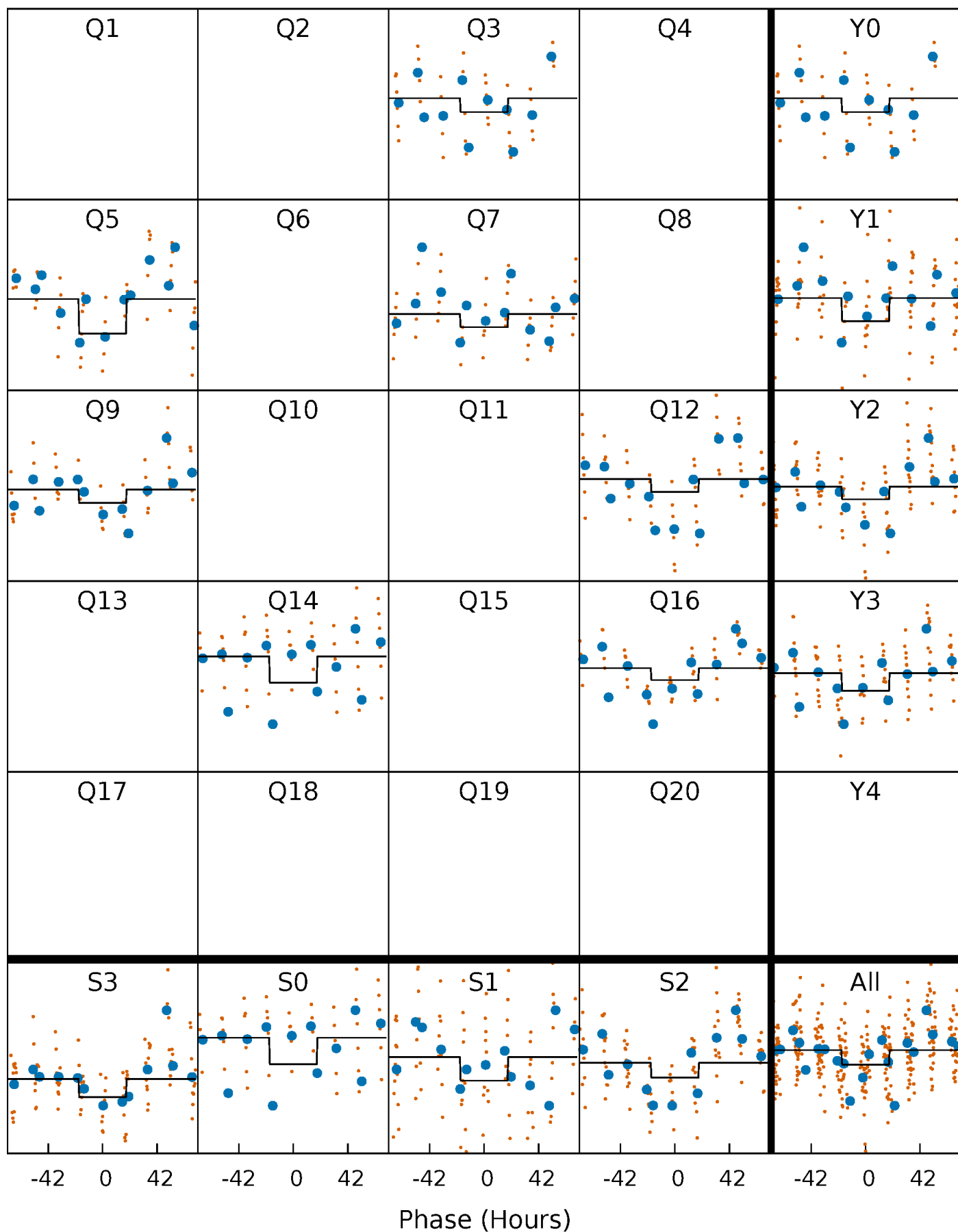
DV Quarter-Phased Transit Curves

TCE 011709022-04 $P=204.469597$ Days $T_0=288.193286$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

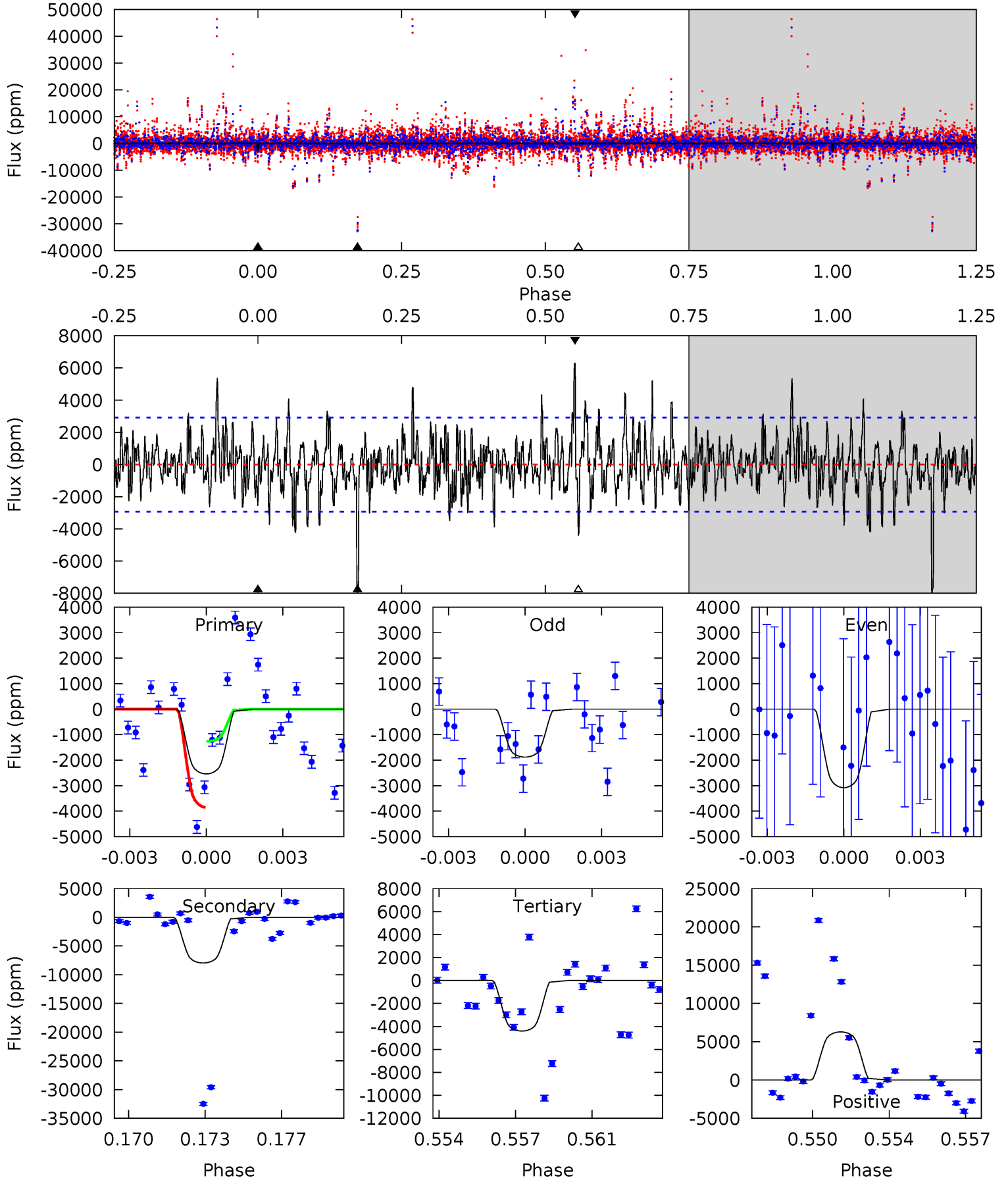
TCE 011709022-04 $P=204.430957$ Days $T_0=288.303217$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-04, P = 204.469597 Days, E = 83.723689 Days

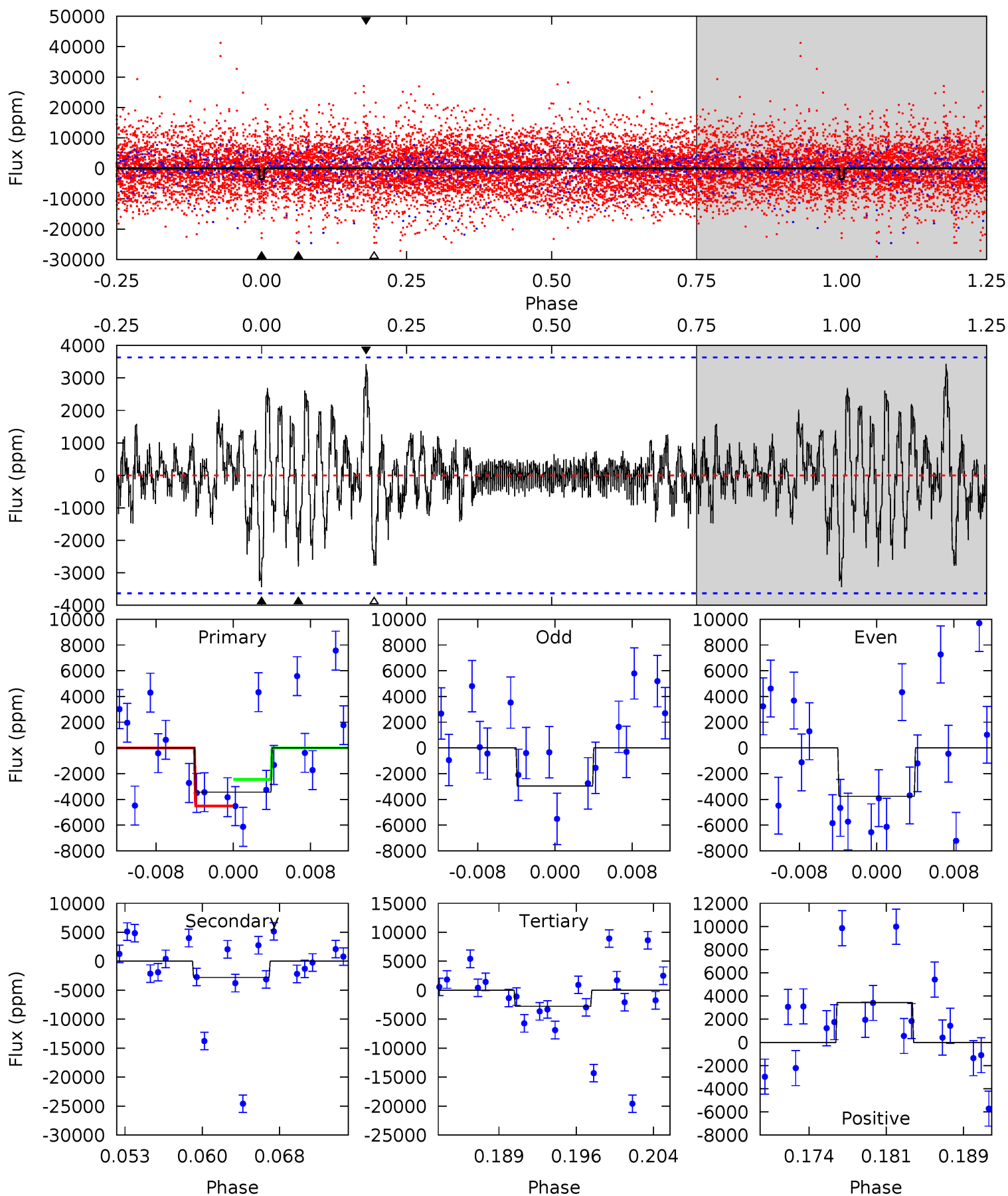
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.54	14.2	7.88	11.2	5.23	2.93	2.45	-3.34	-6.70	6.34	2.98	1.03	0.44	0.44	2.32



Alt Model-Shift Uniqueness Test

011709022-04, P = 204.430957 Days, E = 83.872260 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.80	3.92	3.89	4.80	5.08	2.67	1.10	0.92	0.01	0.04	-0.87	0.56	1.17	0.50	1.45



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7953 ± 559	$2.92^{+0.58}_{-0.52}$	187^{+9}_{-11}	3748^{+220}_{-214}	122718^{+49196}_{-31953}
Alt.	-2807 ± 715	$2.29^{+0.51}_{-0.50}$	187^{+10}_{-11}	3430^{+298}_{-233}	71432^{+43457}_{-25200}

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

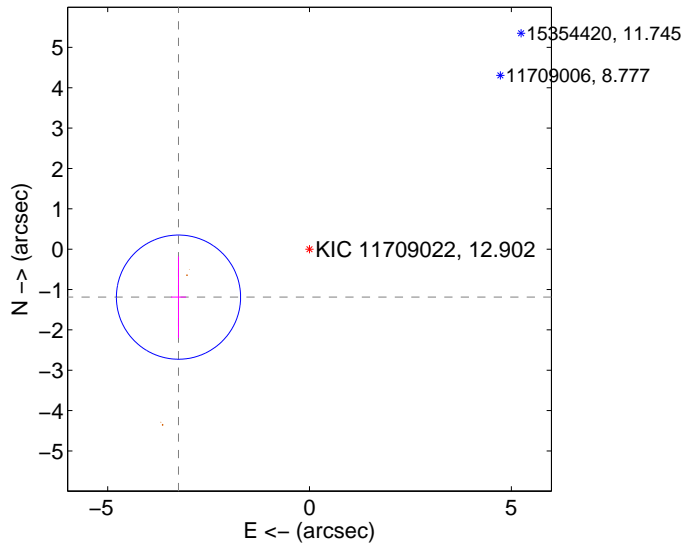
Supplemental centroid analysis for 011709022-04. Kepler magnitude: 12.90. Transit SNR 6.77

There are 0 quarters with good PRF difference image offsets

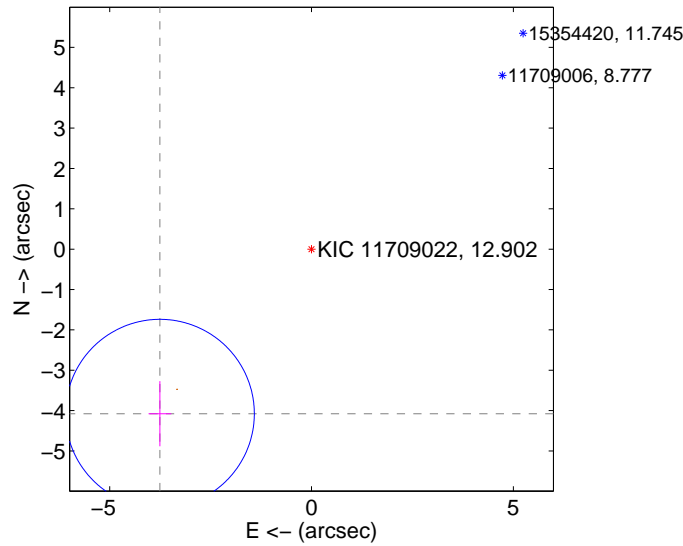
The OOT PRF centroid is offset from the target star catalog position by about 2.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.458 ± 0.513	6.74	3.247 ± 0.186	-1.189 ± 1.008
PRF-fit source offset from KIC position	5.545 ± 0.780	7.11	3.757 ± 0.282	-4.078 ± 0.807
photometric centroid source offset	1.77 ± 0.04	40.03	1.77 ± 0.04	-0.04 ± 0.09

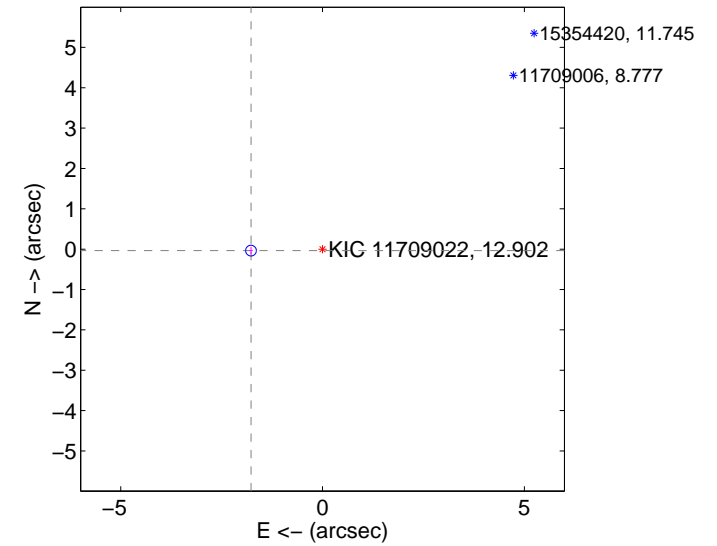
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



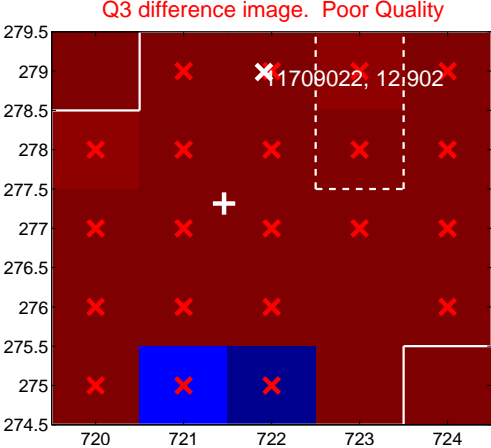
Q2 no difference image



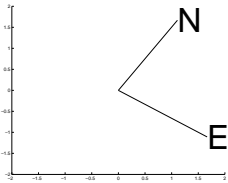
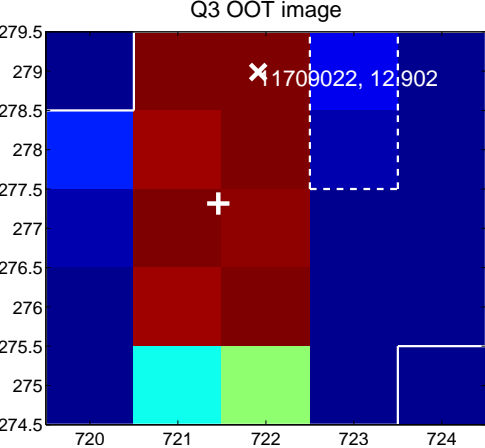
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



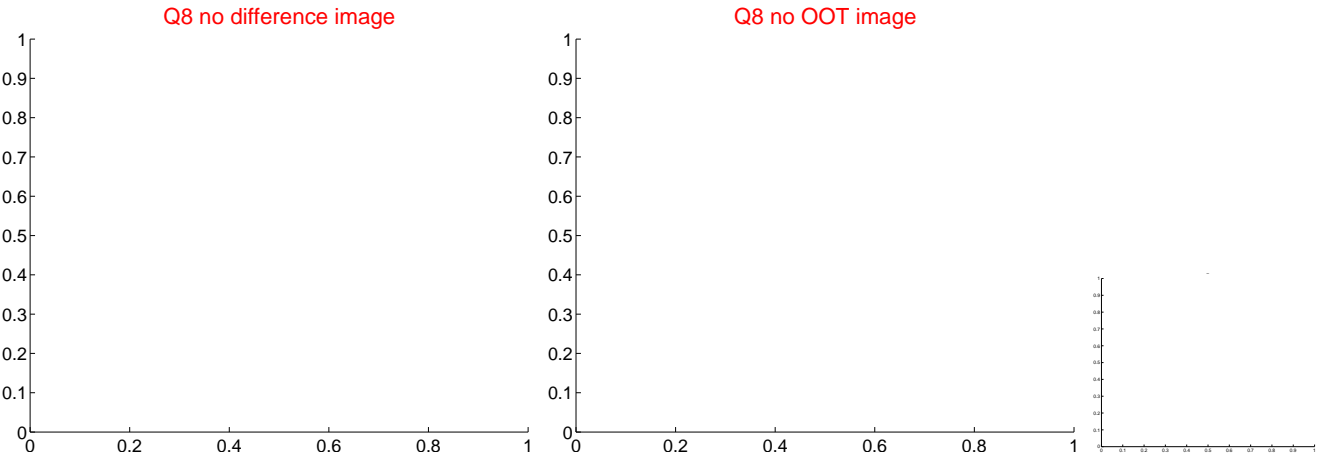
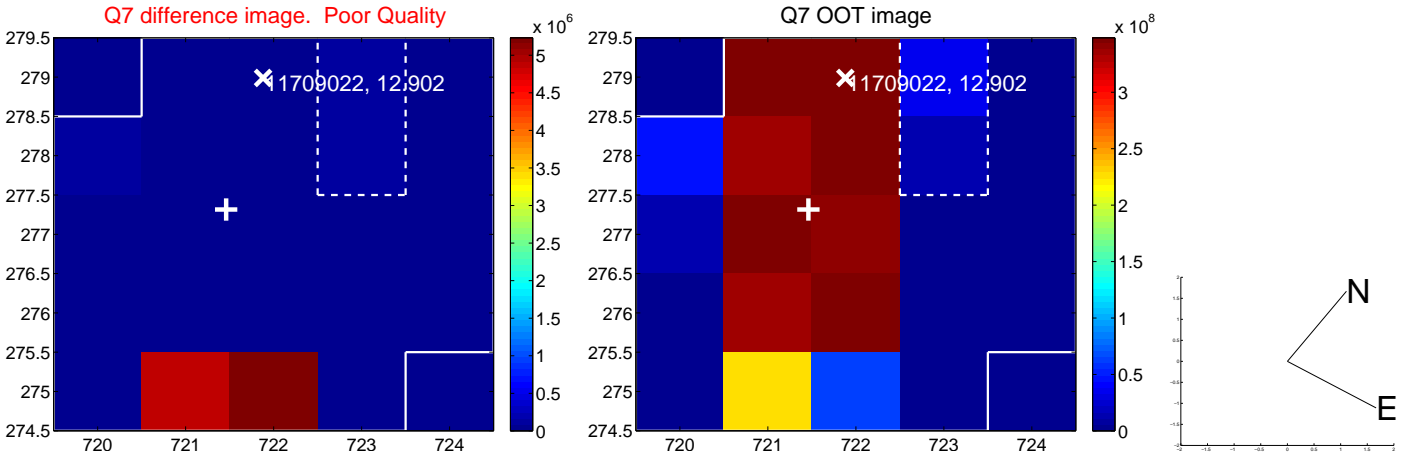
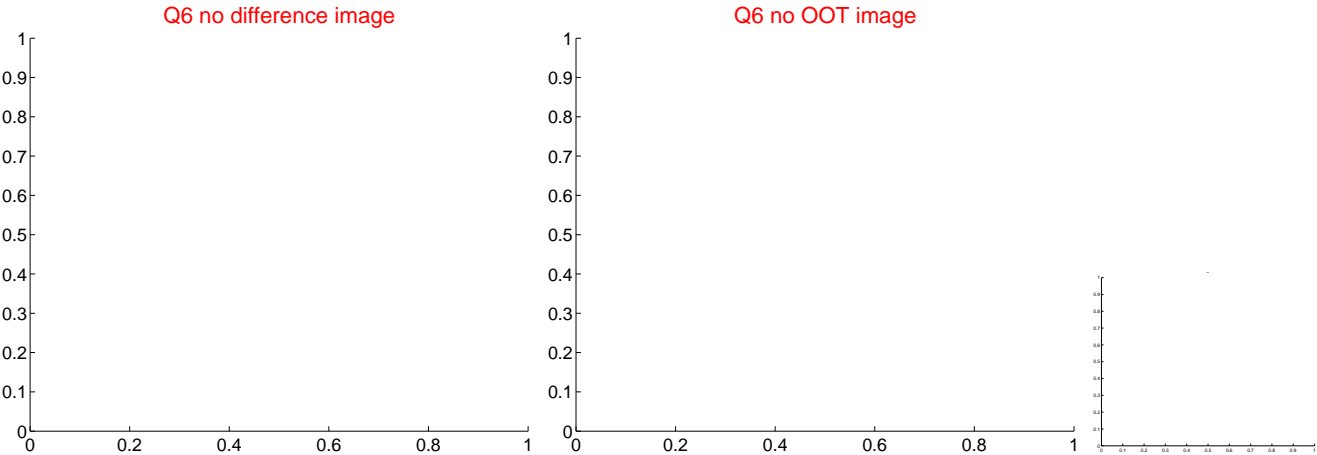
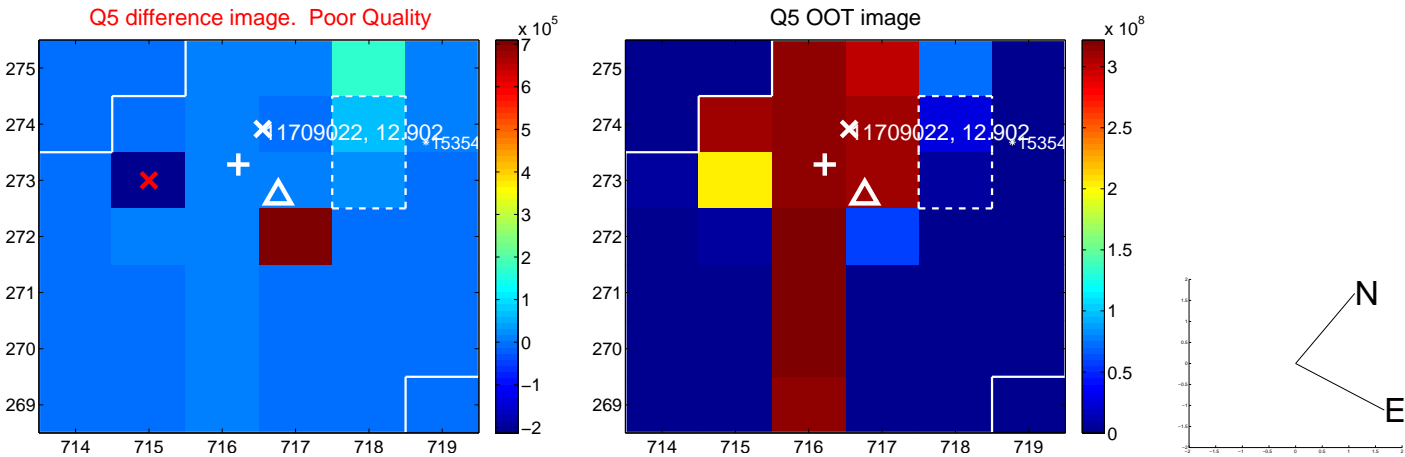
Q4 no difference image



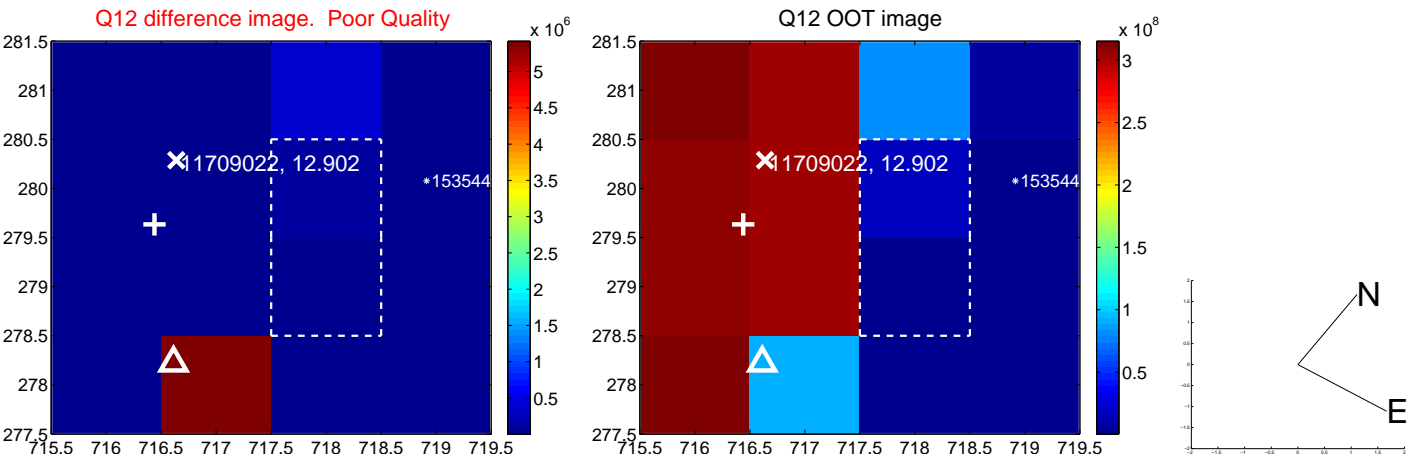
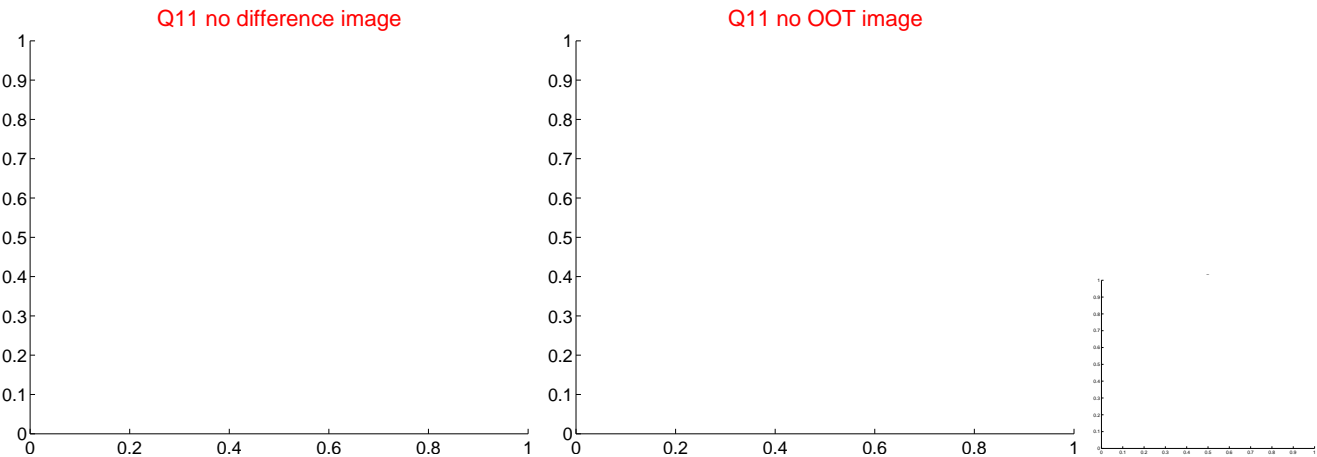
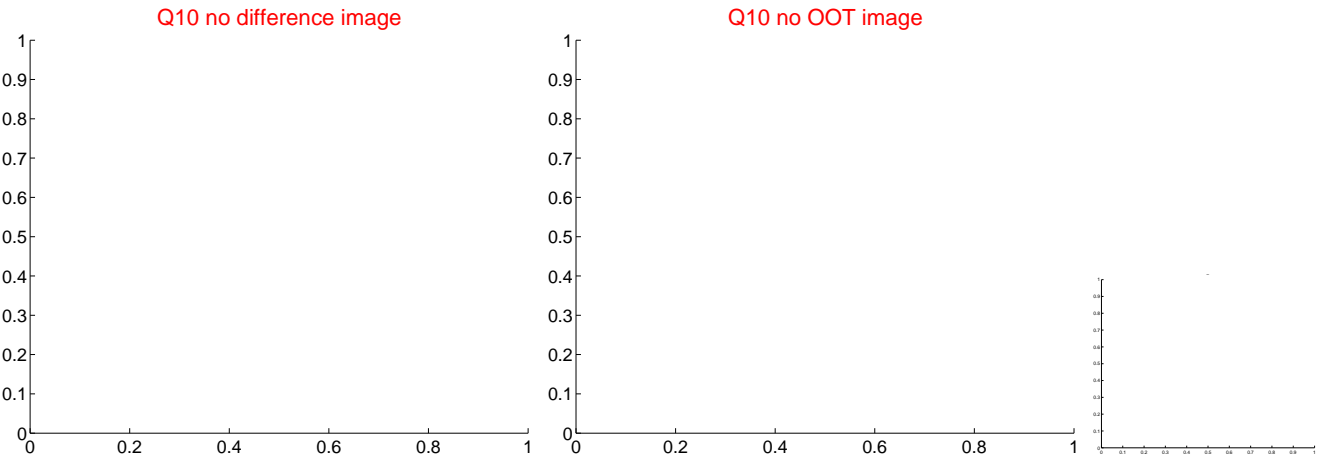
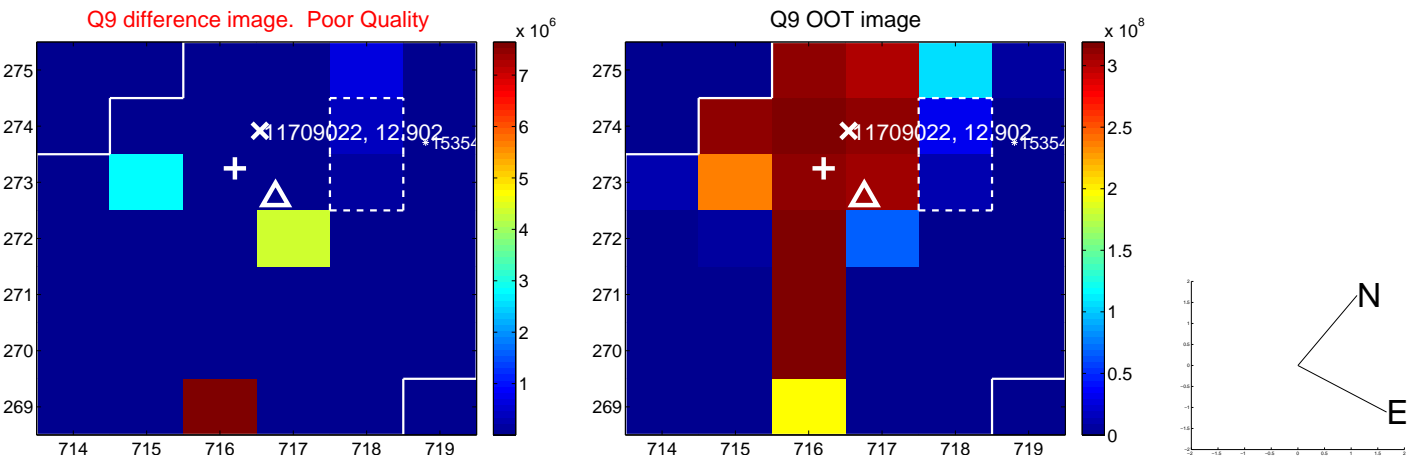
Q4 no OOT image



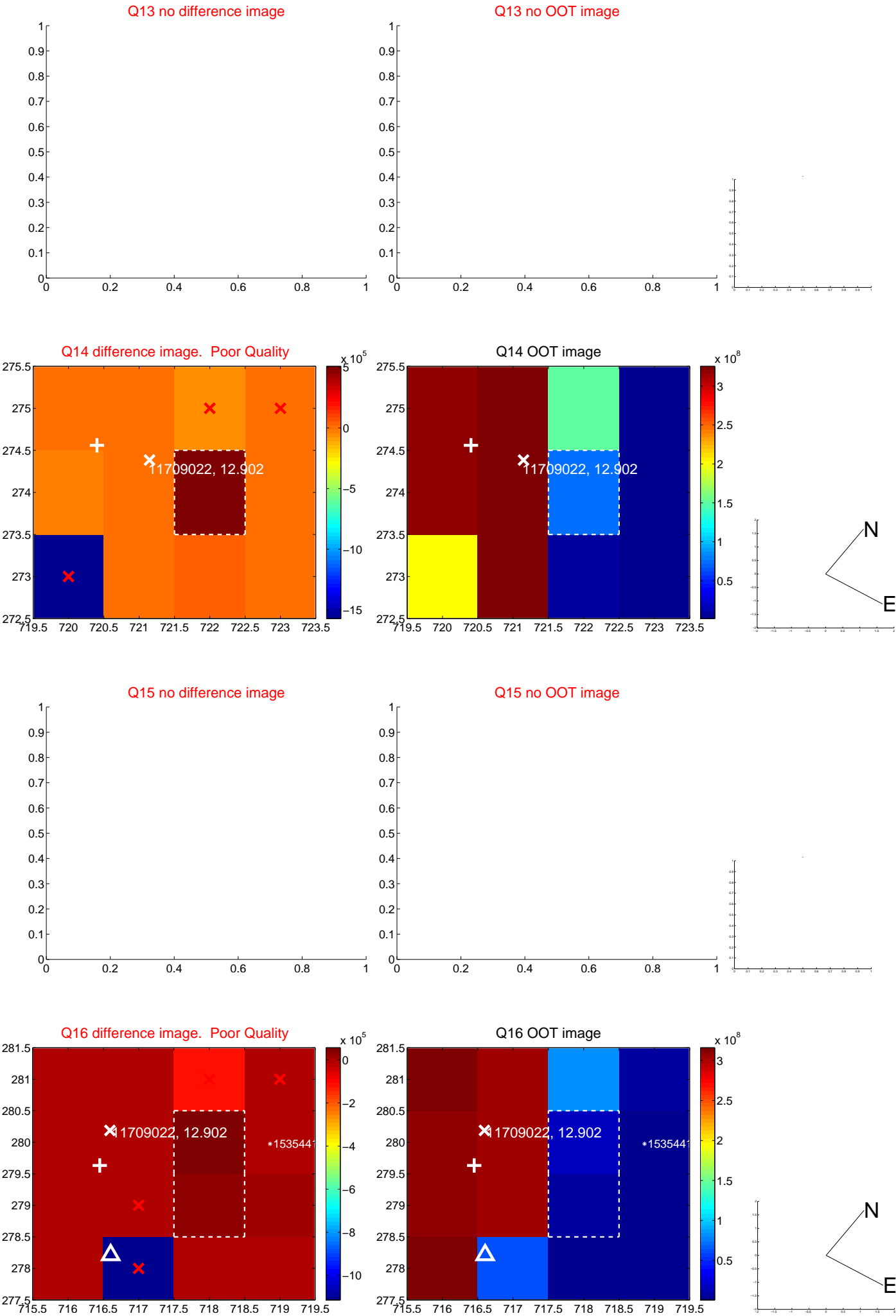
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



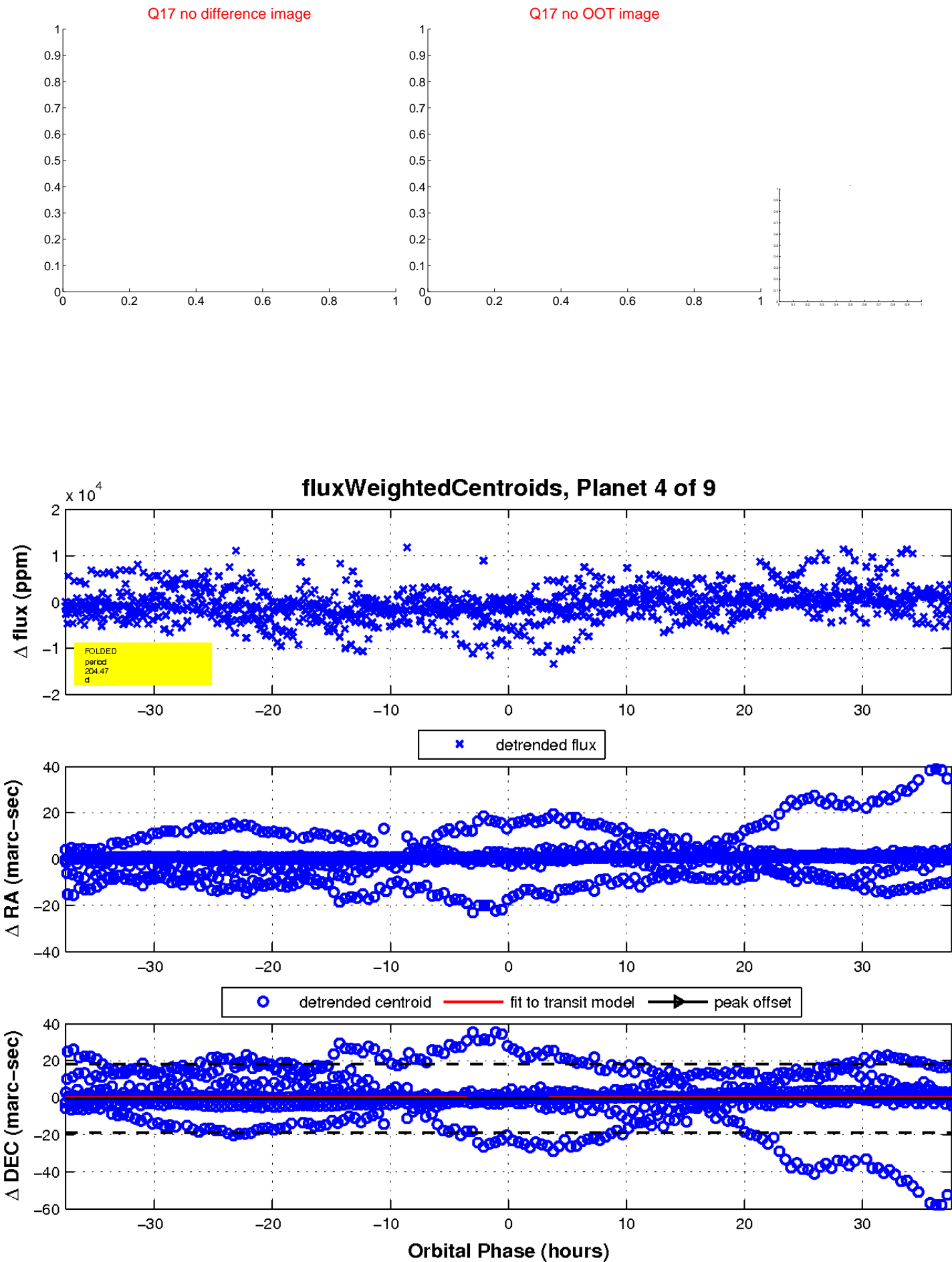
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



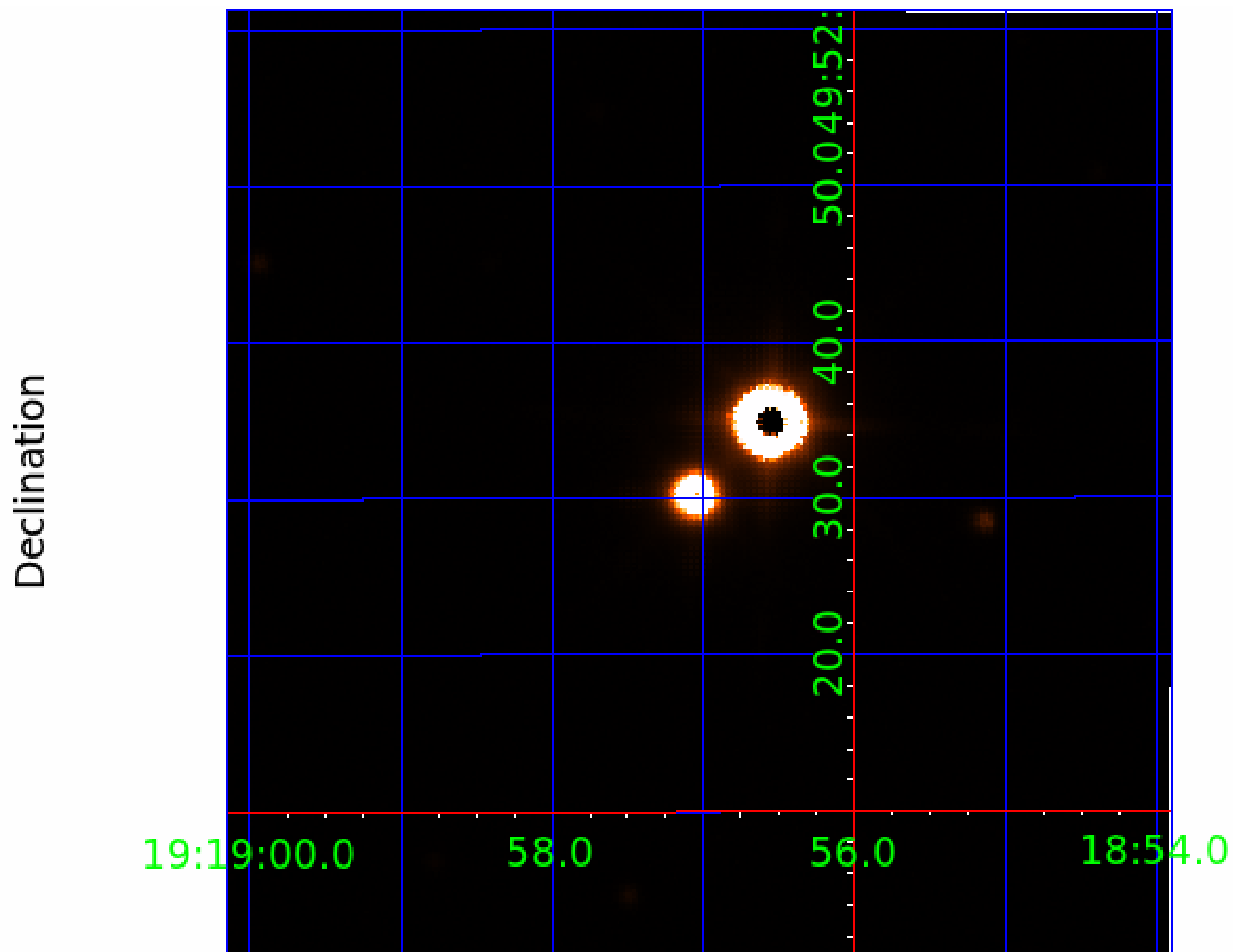
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

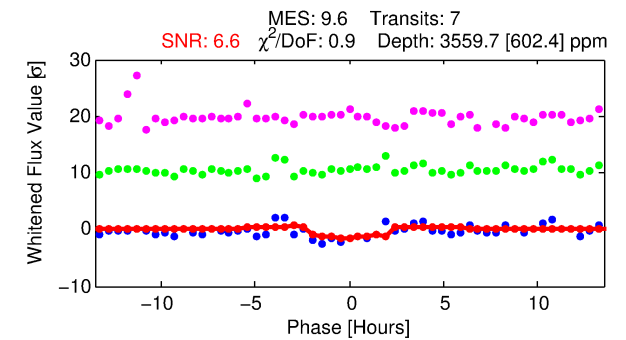
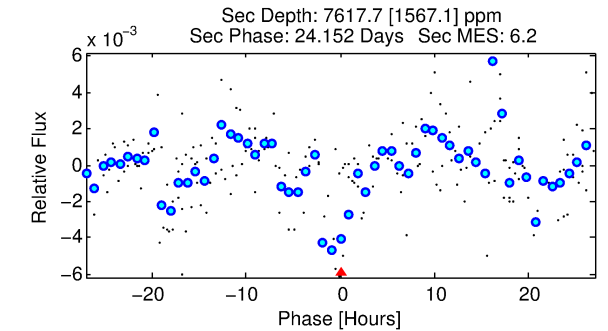
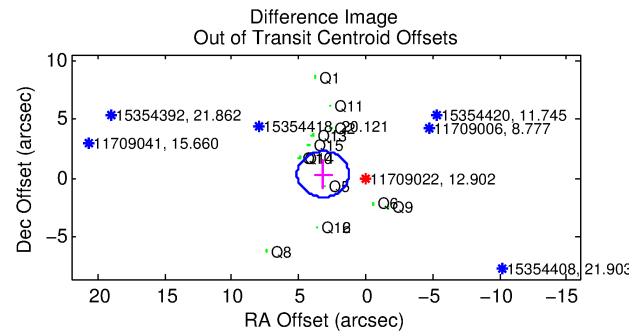
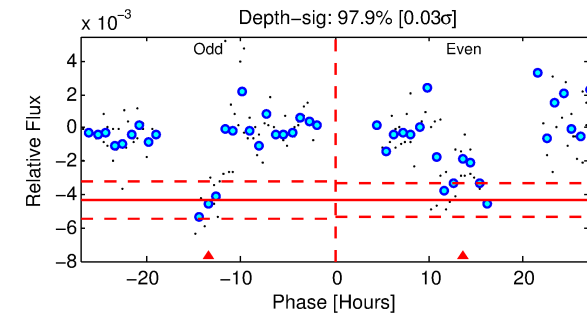
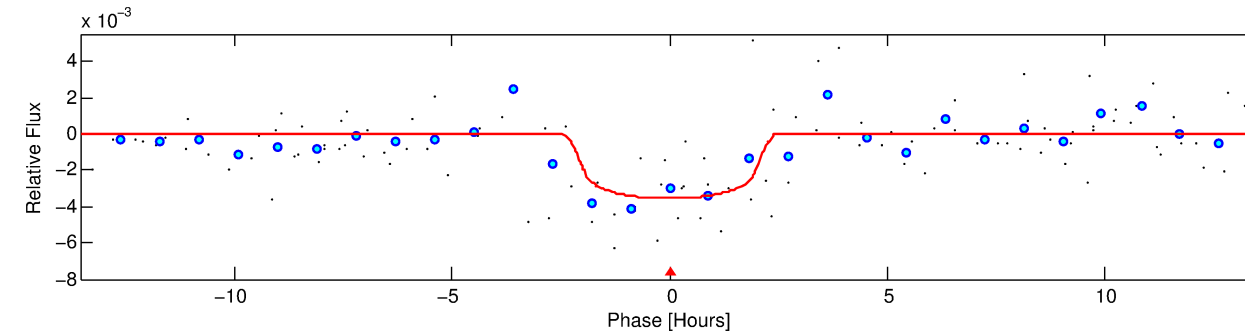
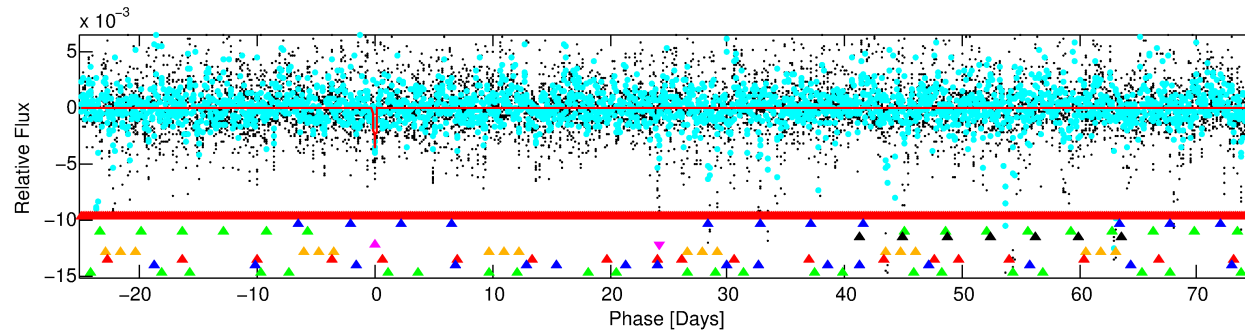
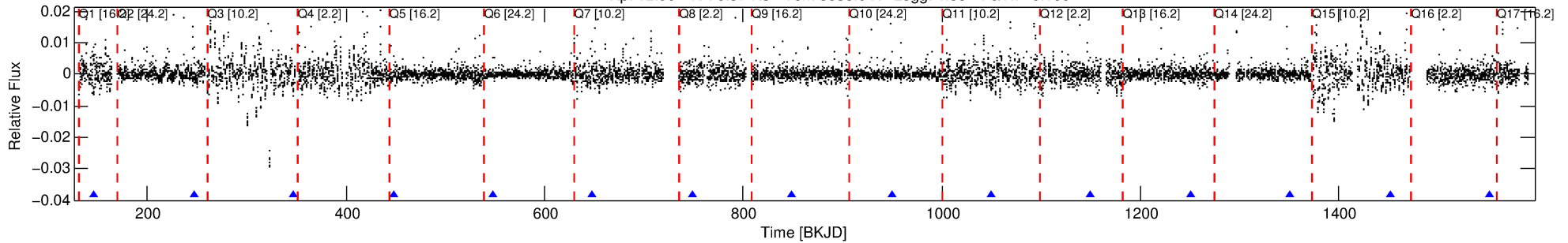
Ephemeris Match Information For 011709022-05

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 5 of 9 Period: 100.368 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



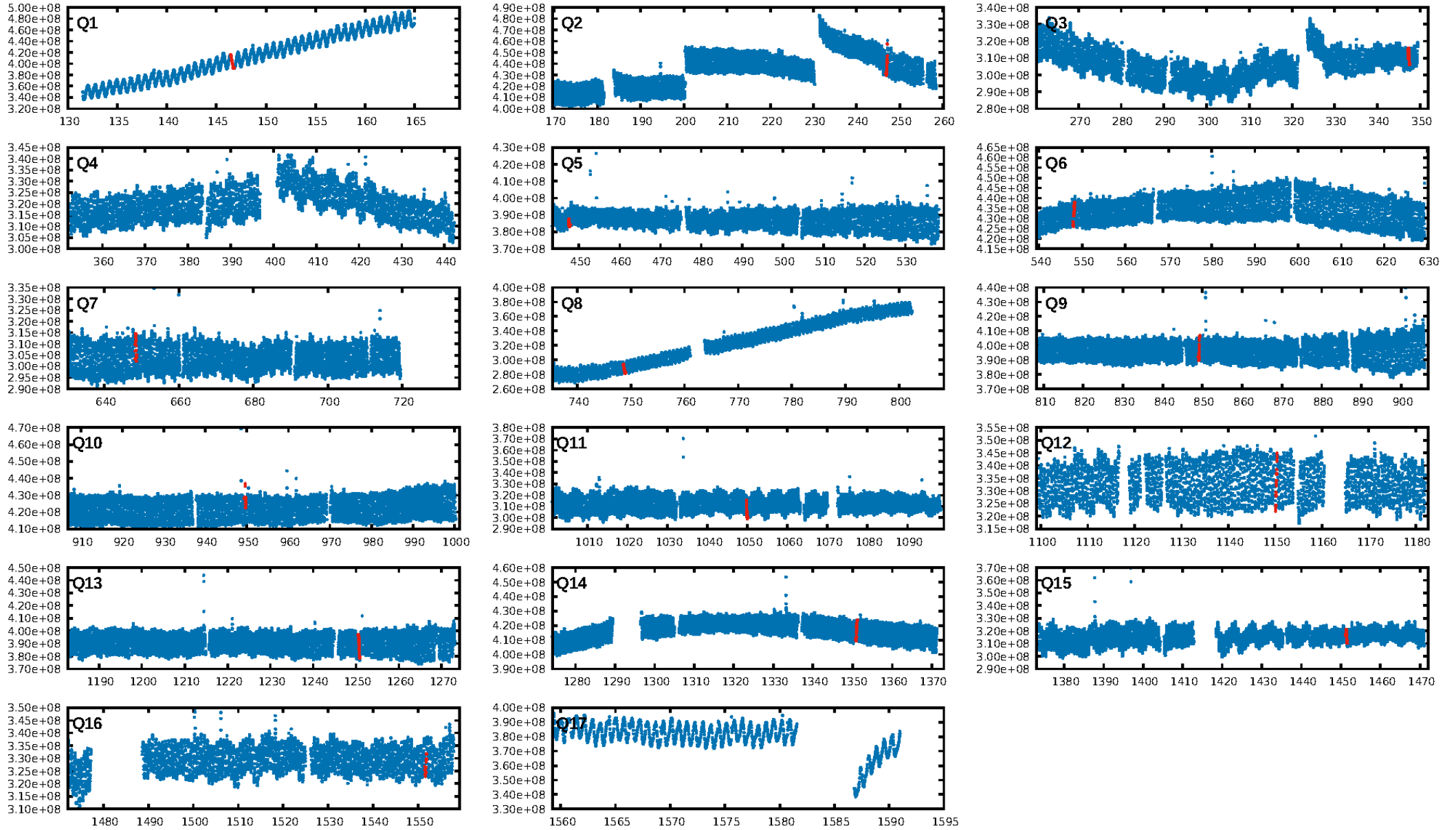
DV Fit Results:

Period = 100.36755 [0.00246] d
Epoch = 146.6045 [0.0187] BKJD
Rp/R* = 0.0541 [0.0461]
a/R* = 179.10 [679.40]
b = 0.02 [181.63]
Seff = 0.20 [0.06]
Teq = 171 [12] K
Rp = 2.17 [1.93] Re
a = 0.3053 [0.0584] AU
Ag = 82697.38 [143217.85] [0.58σ]
Teffp = 4489 [1931] K [2.24σ]

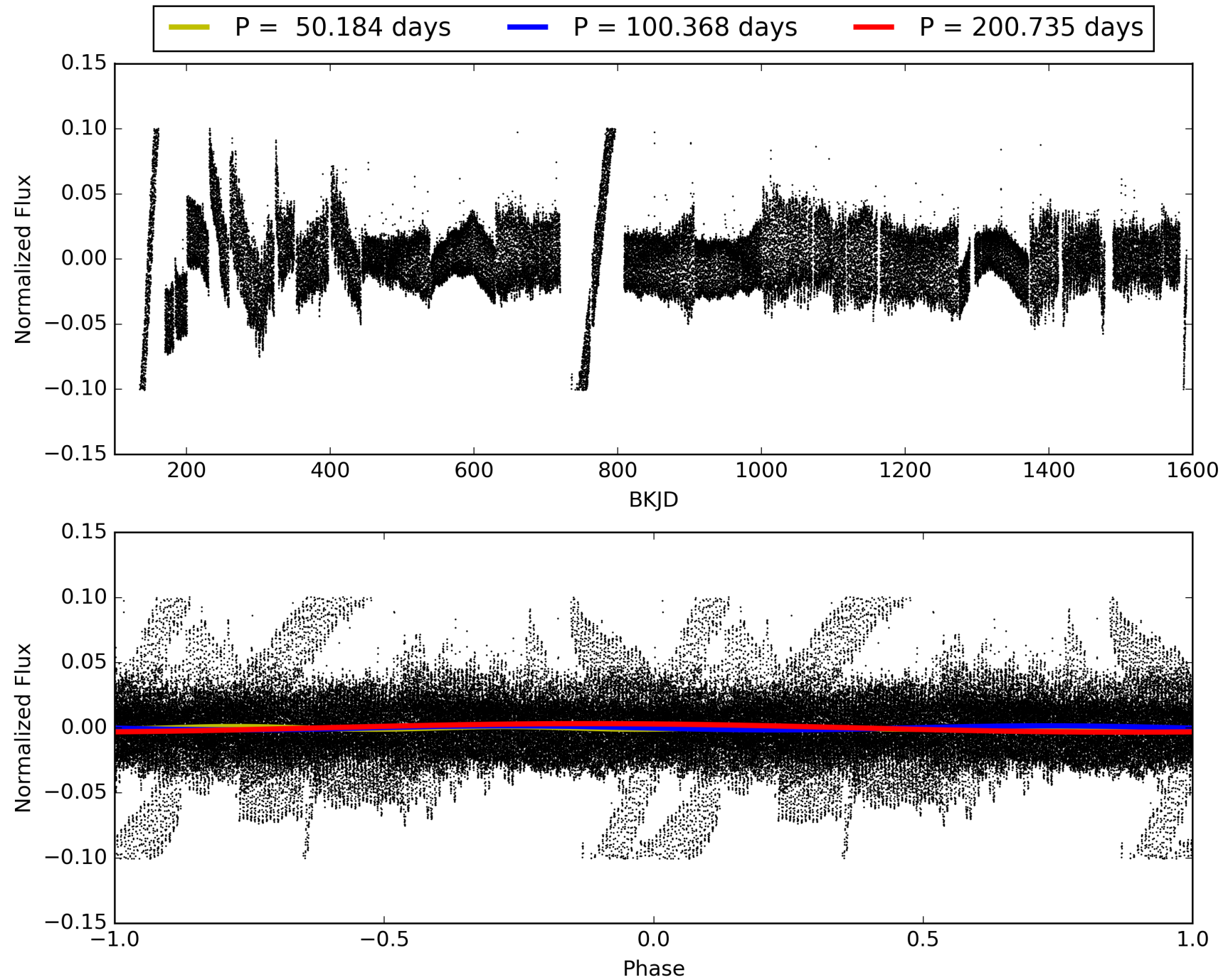
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.47σ]
LongPeriod-sig: 100.0% [78.68σ]
ModelChiSquare2-sig: 40.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.754
Centroid-sig: N/A
Centroid-so: 1.738 arcsec [47.73σ]
OotOffset-rm: 3.220 arcsec [5.02σ]
KicOffset-rm: 3.504 arcsec [3.38σ]
OotOffset-st: 4/2/3/4 [13]
KicOffset-st: 4/2/3/4 [13]
DiffImageQuality-fgm: 0.31 [4/13]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 011709022-05, PDC Light Curves

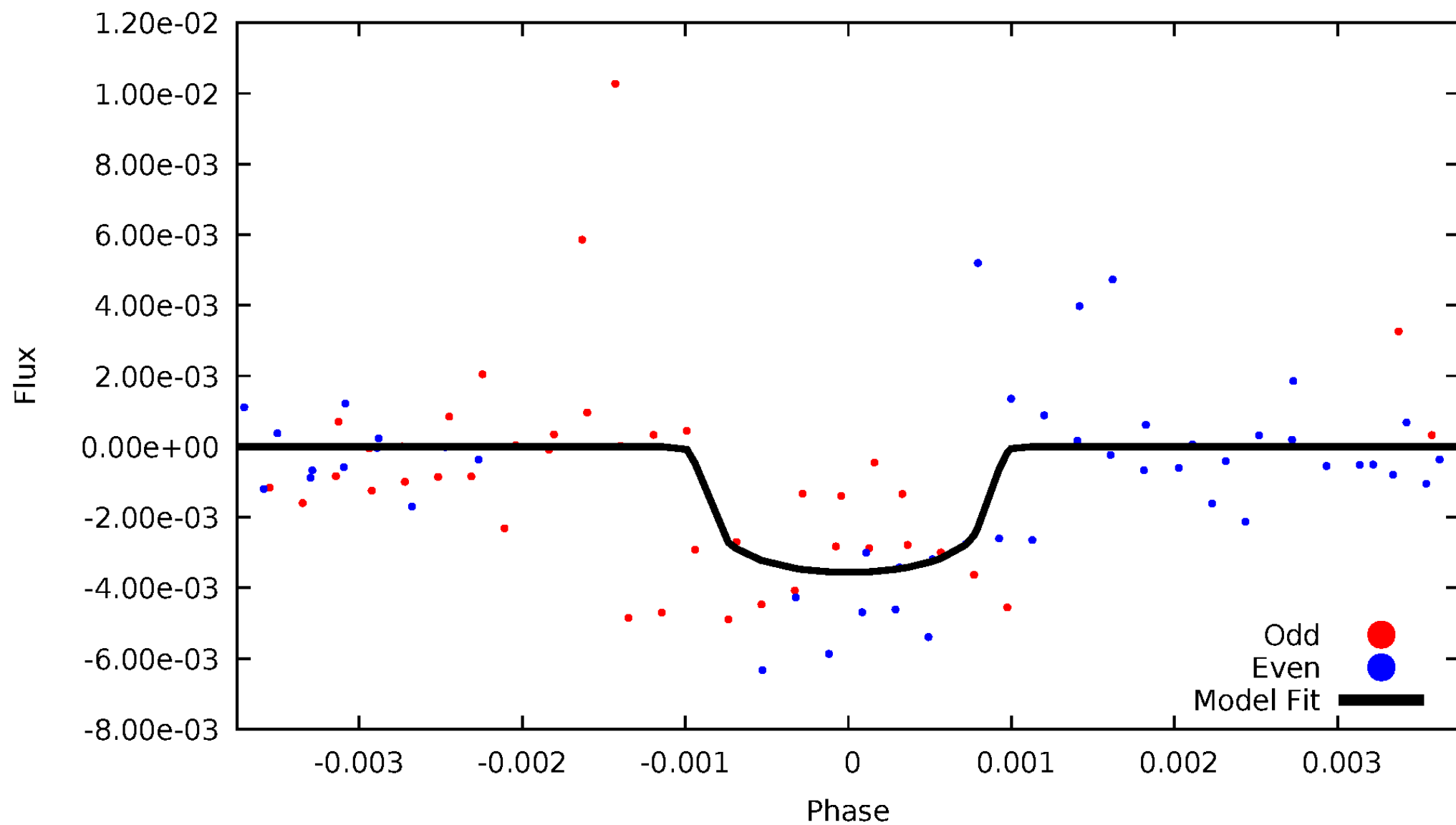


TCE 011709022-05



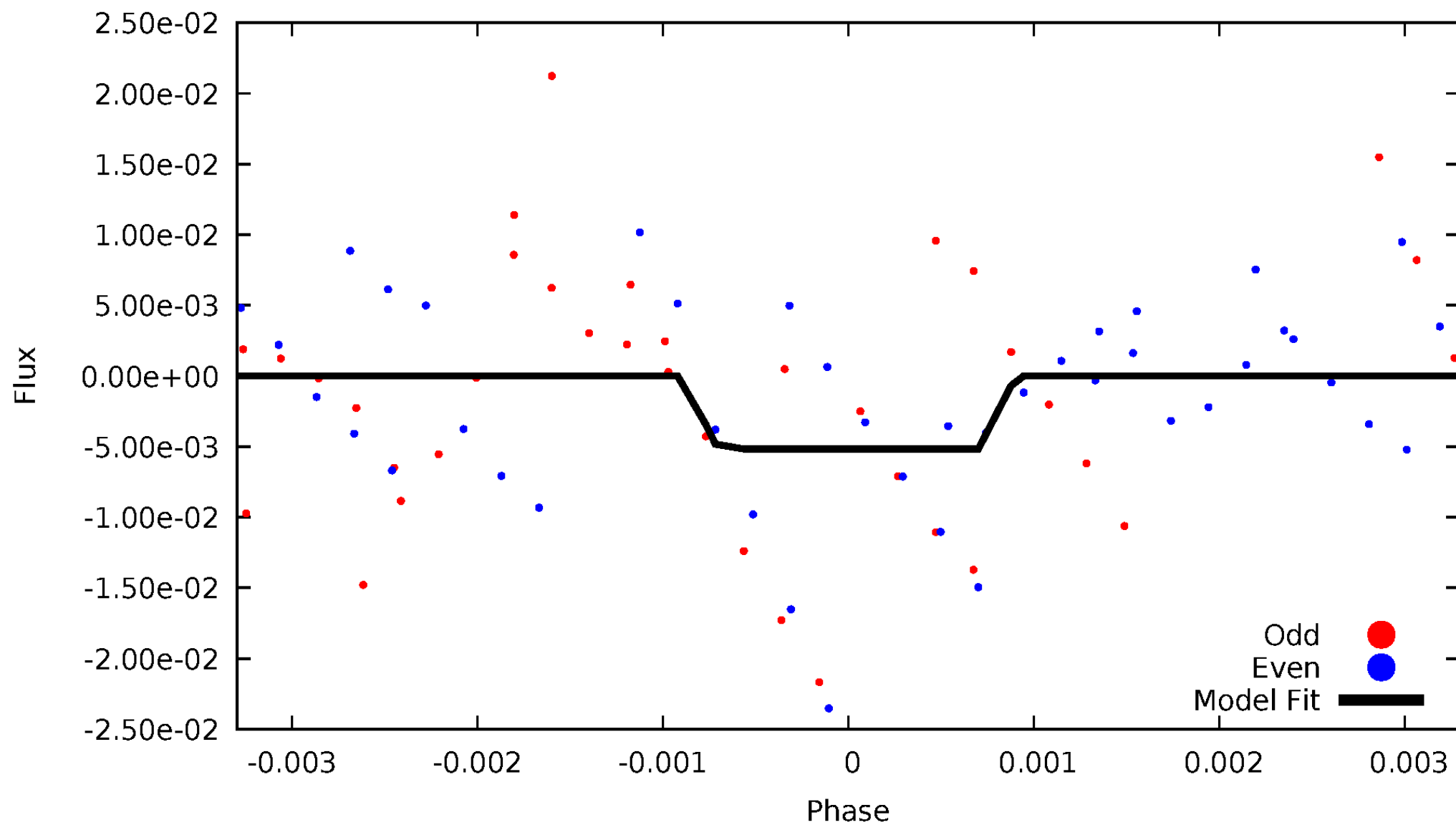
DV Odd/Even

TCE 011709022-05



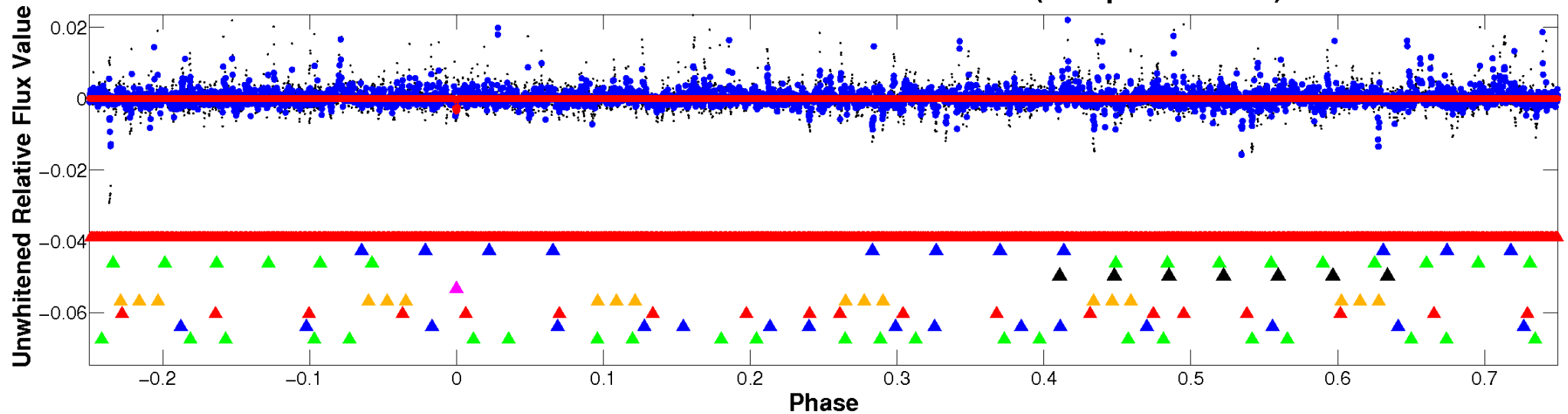
ALT Odd/Even

TCE 011709022-05

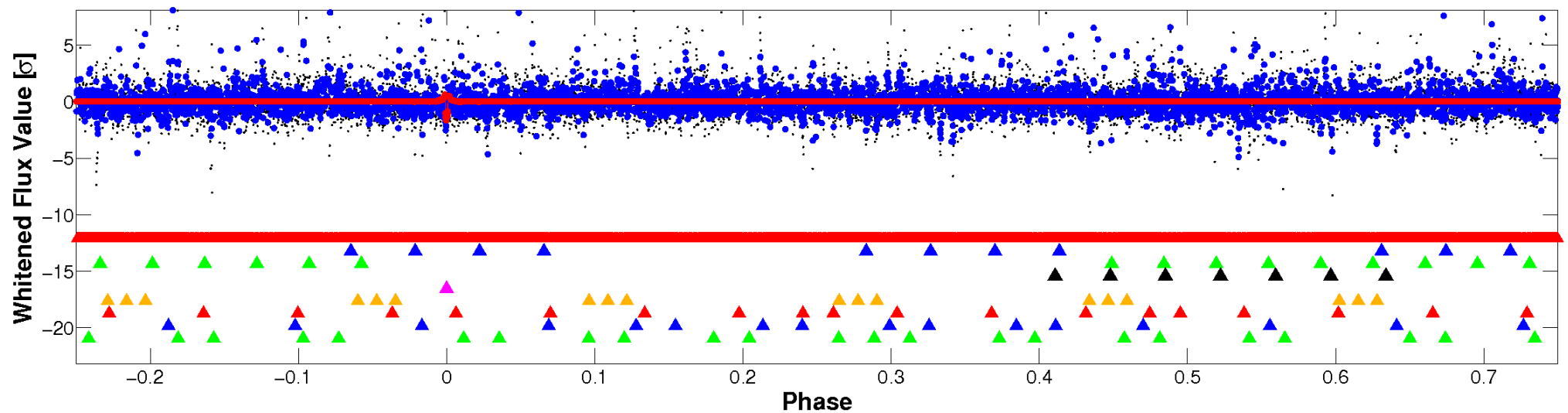


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

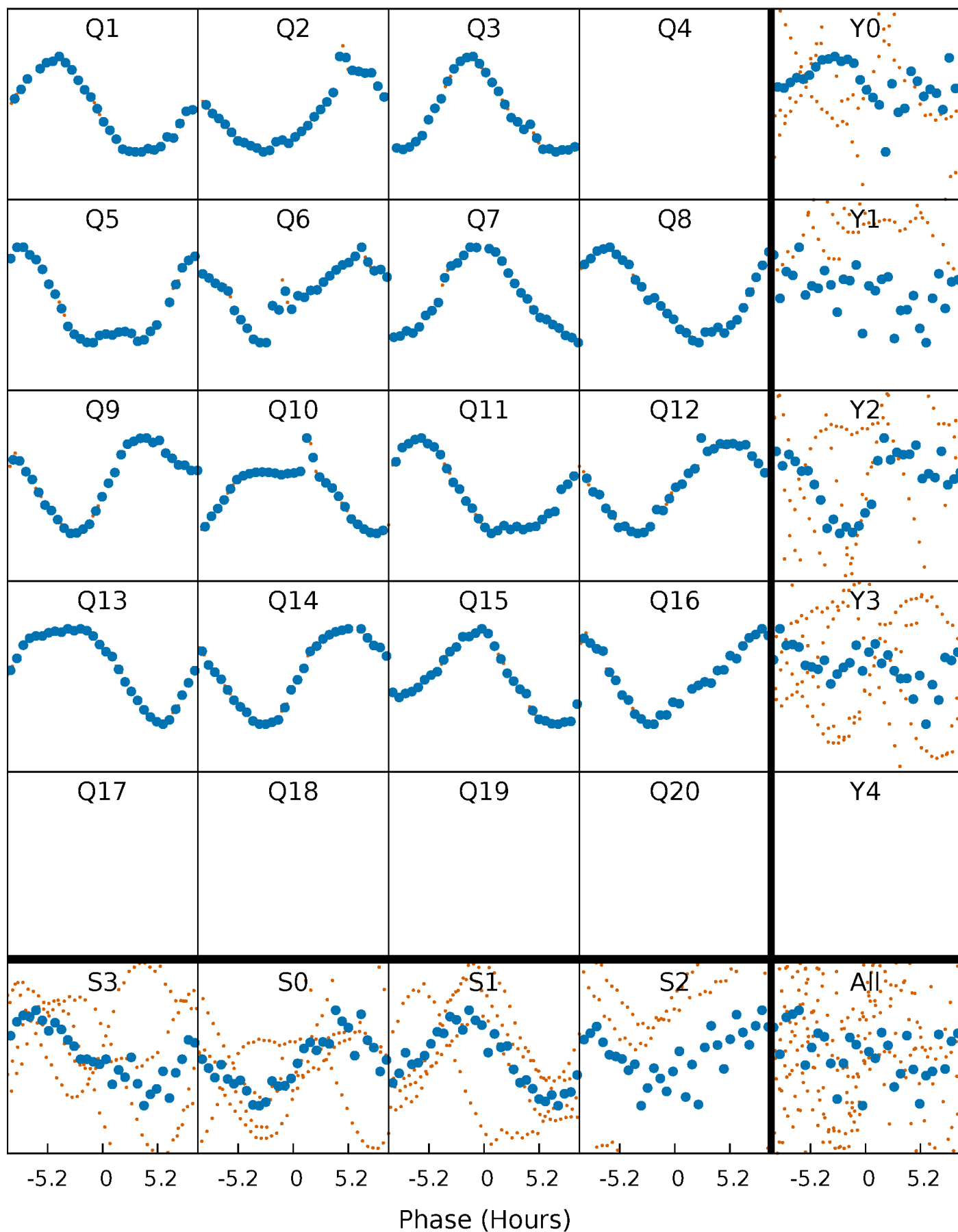


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



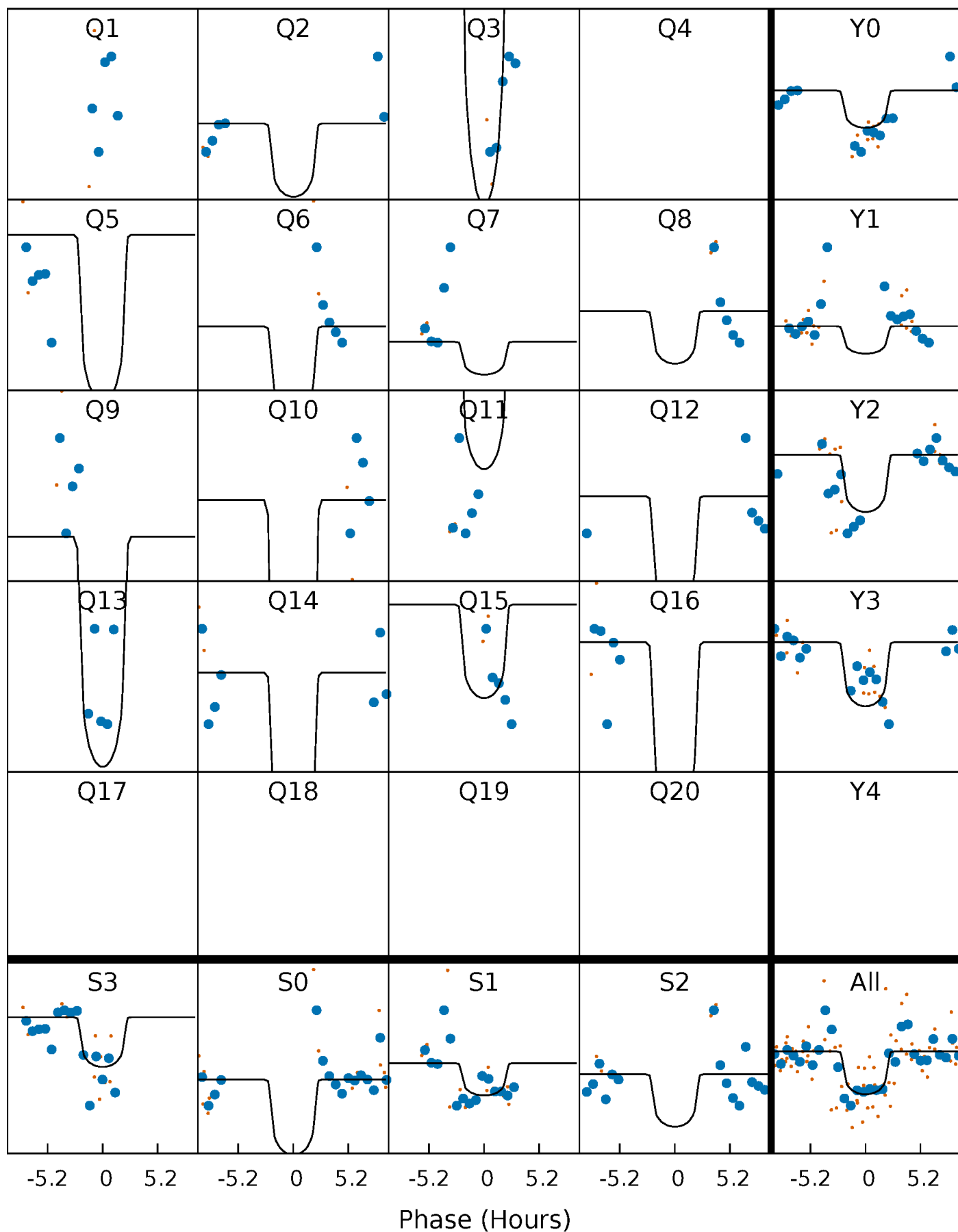
PDC Quarter-Phased Transit Curves

TCE 011709022-05 P=100.367554 Days $T_0=146.604526$ (BKJD)



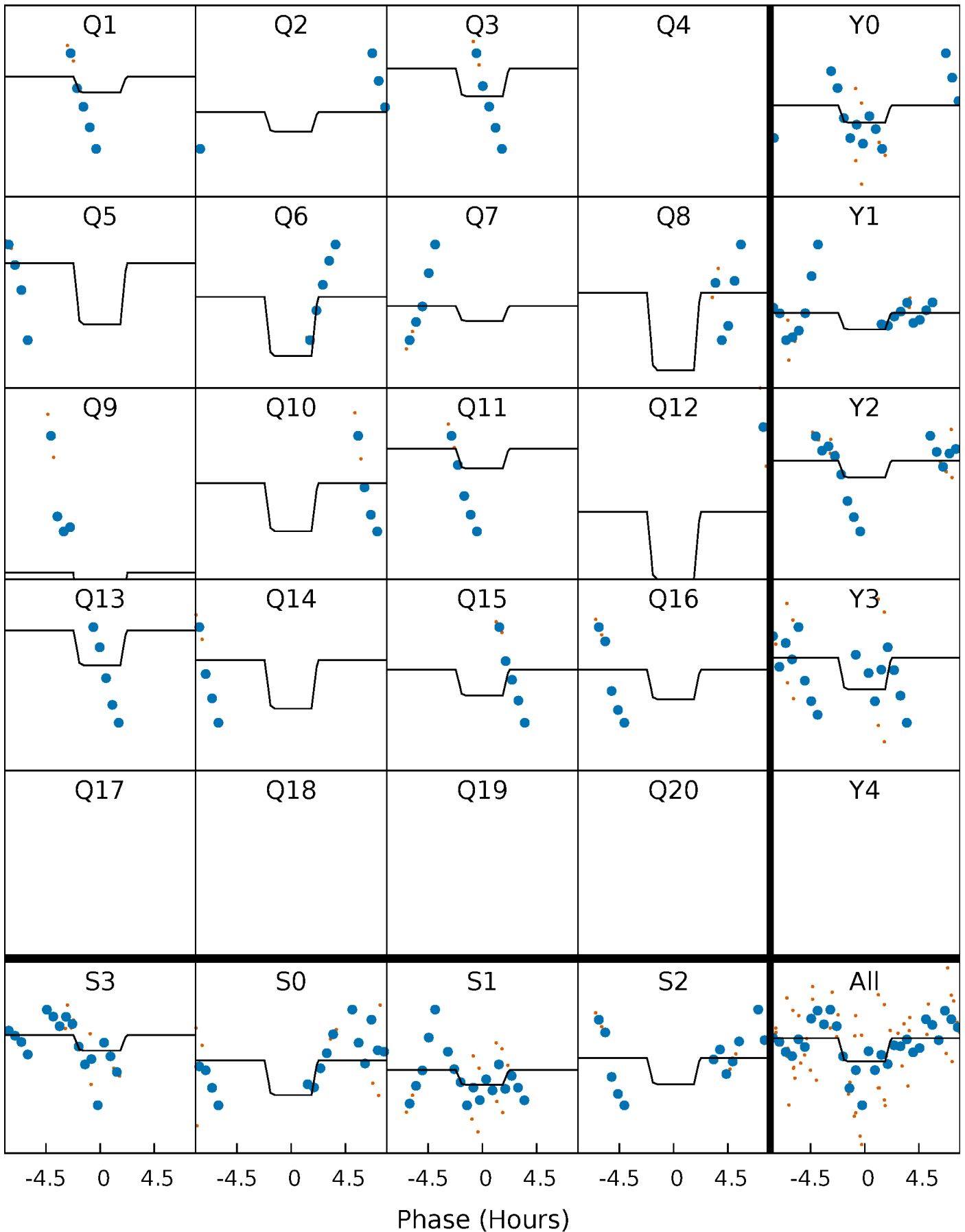
DV Quarter-Phased Transit Curves

TCE 011709022-05 $P=100.367554$ Days $T_0=146.604526$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

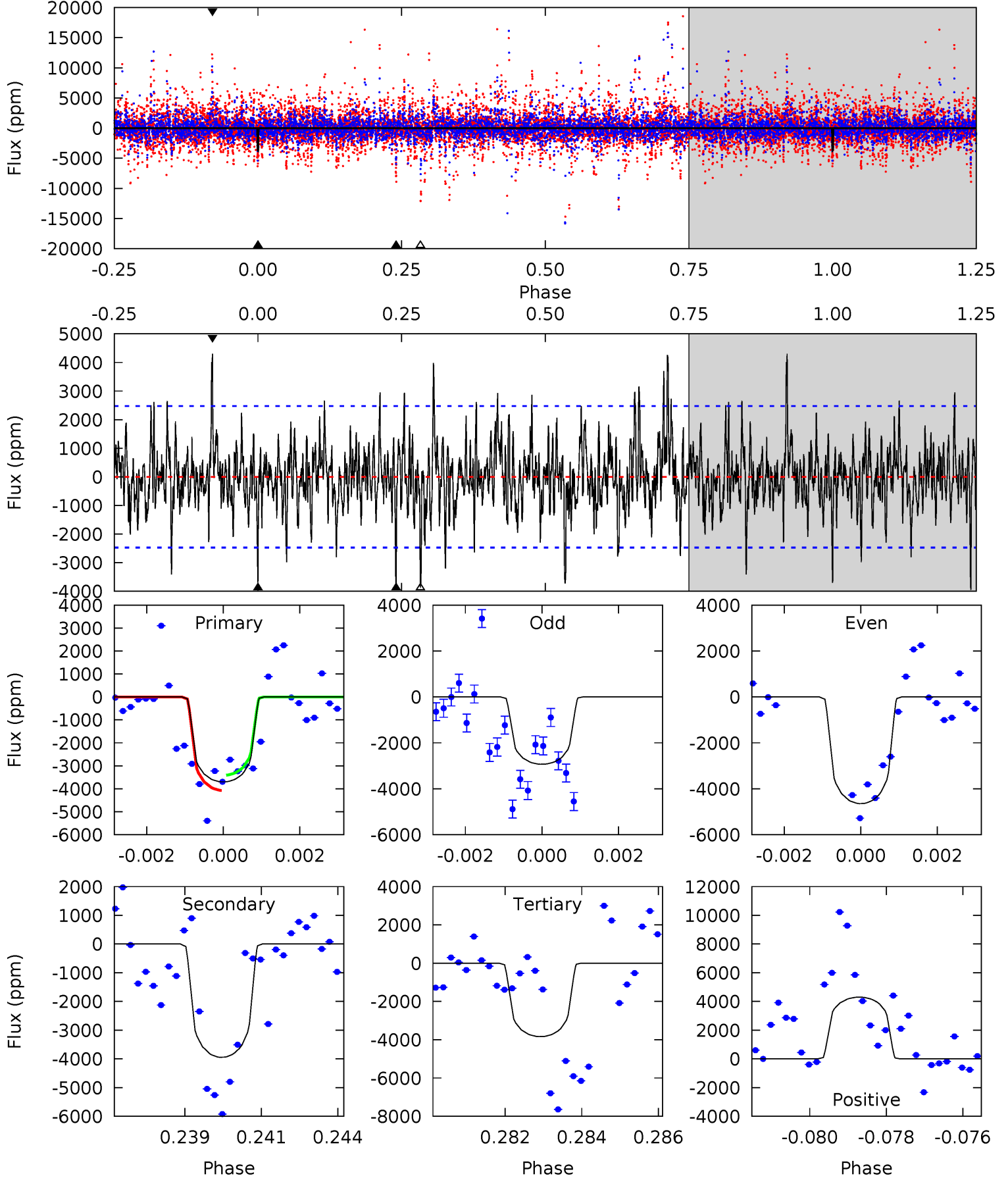
TCE 011709022-05 $P=100.358967$ Days $T_0=146.664520$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-05, P = 100.367554 Days, E = 46.236972 Days

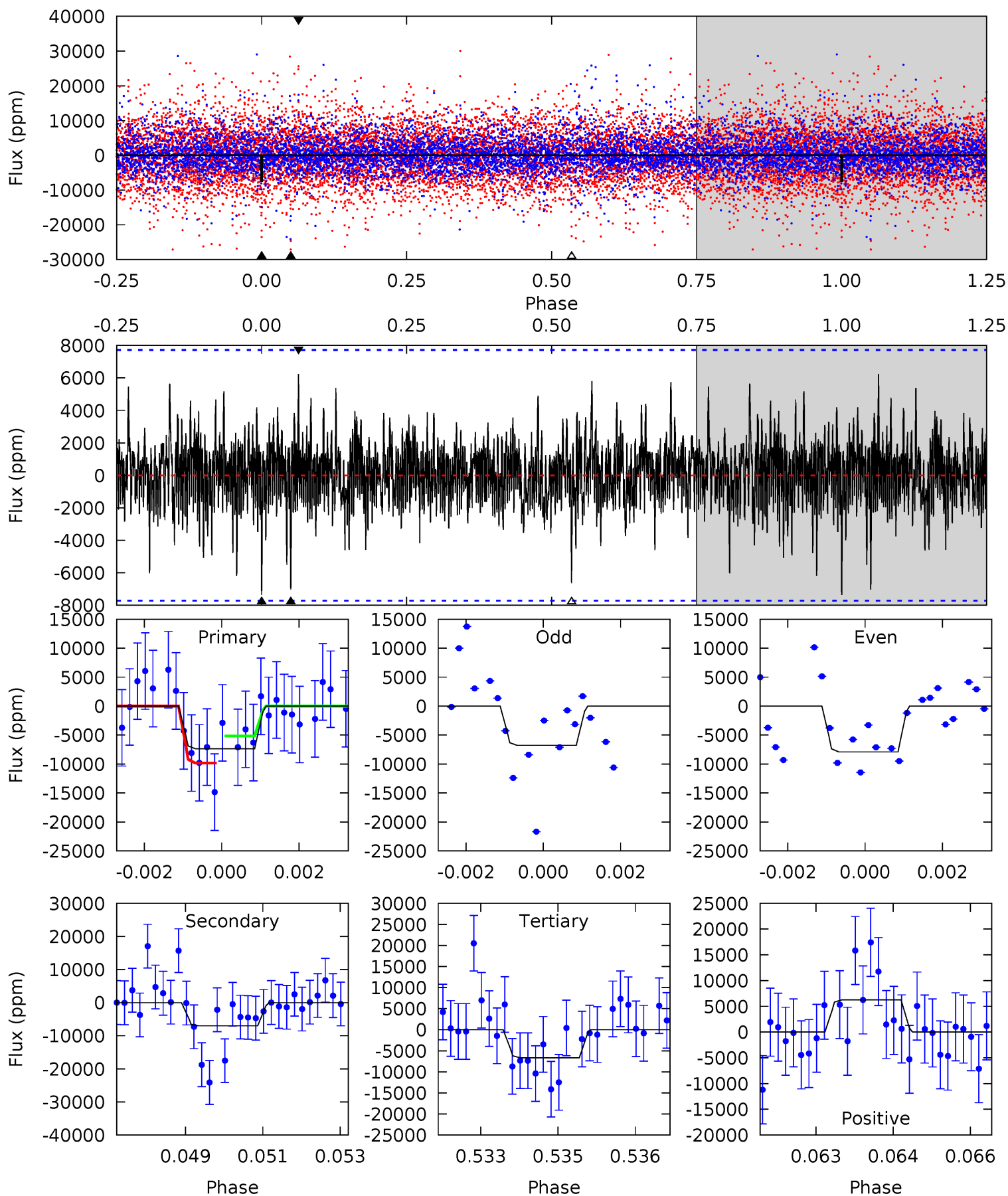
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.95	8.47	8.24	9.24	5.32	3.07	2.17	-0.29	-1.29	0.23	-0.76	1.64	0.60	0.52	0.71



Alt Model-Shift Uniqueness Test

011709022-05, P = 100.358967 Days, E = 46.305553 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.11	4.87	4.61	4.33	5.36	3.15	1.19	0.50	0.78	0.26	0.54	0.38	1.04	0.46	1.62



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3945 ± 466	$2.37^{+1.82}_{-1.35}$	238^{+12}_{-13}	3569^{+1232}_{-558}	$35974^{+152544}_{-24387}$
Alt.	-7012 ± 1439	$2.97^{+1.84}_{-1.68}$	238^{+12}_{-13}	3656^{+1277}_{-515}	$39240^{+183423}_{-23802}$

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 $A_{obs} \gg 1.0$

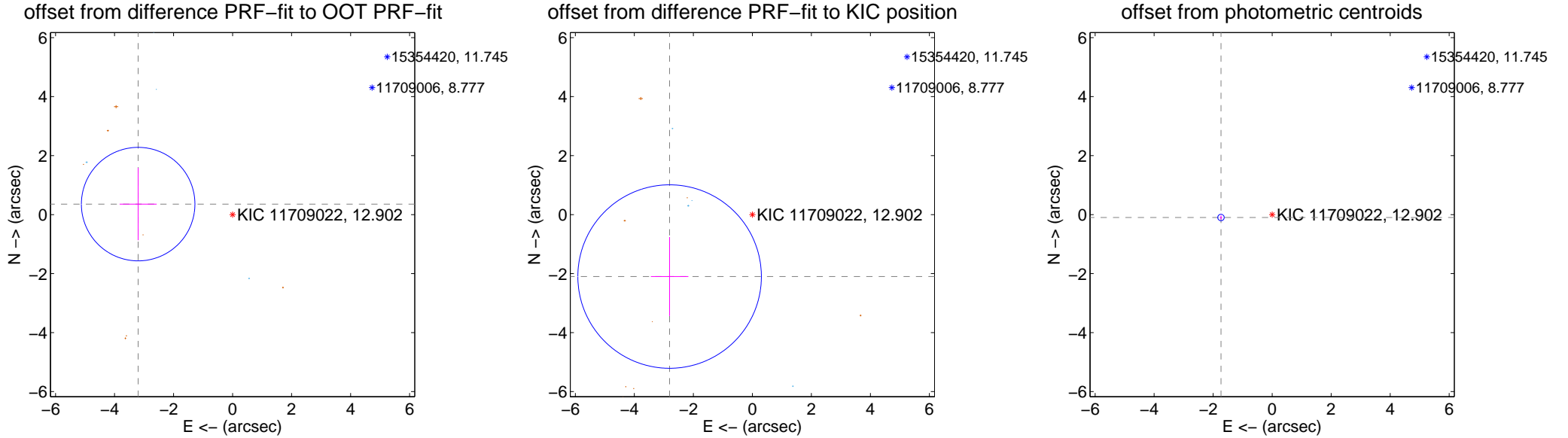
DV Centroid Data

Supplemental centroid analysis for 011709022-05. Kepler magnitude: 12.90. Transit SNR 6.58

There are 4 quarters with good PRF difference image offsets

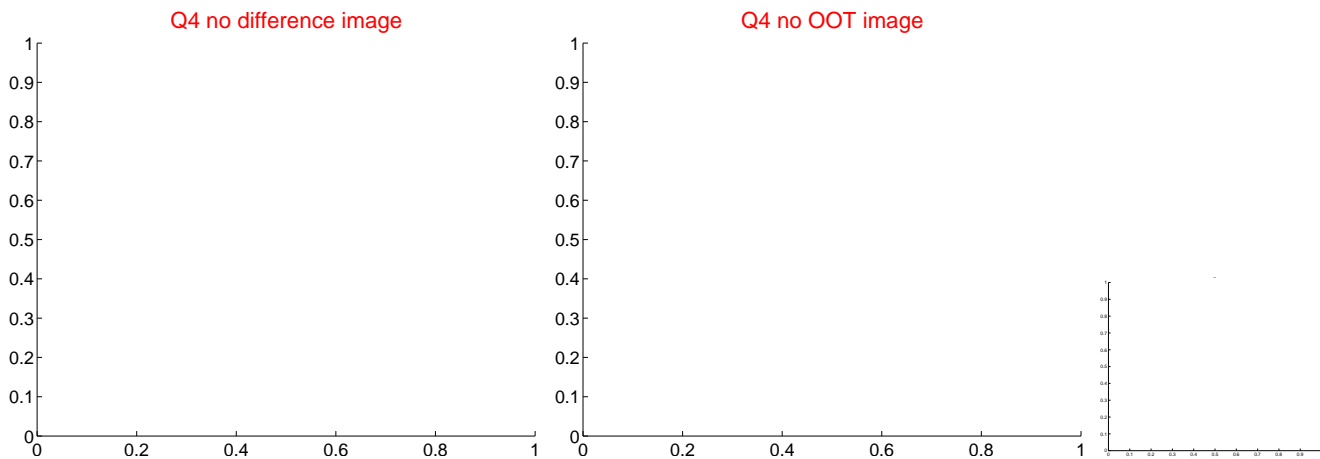
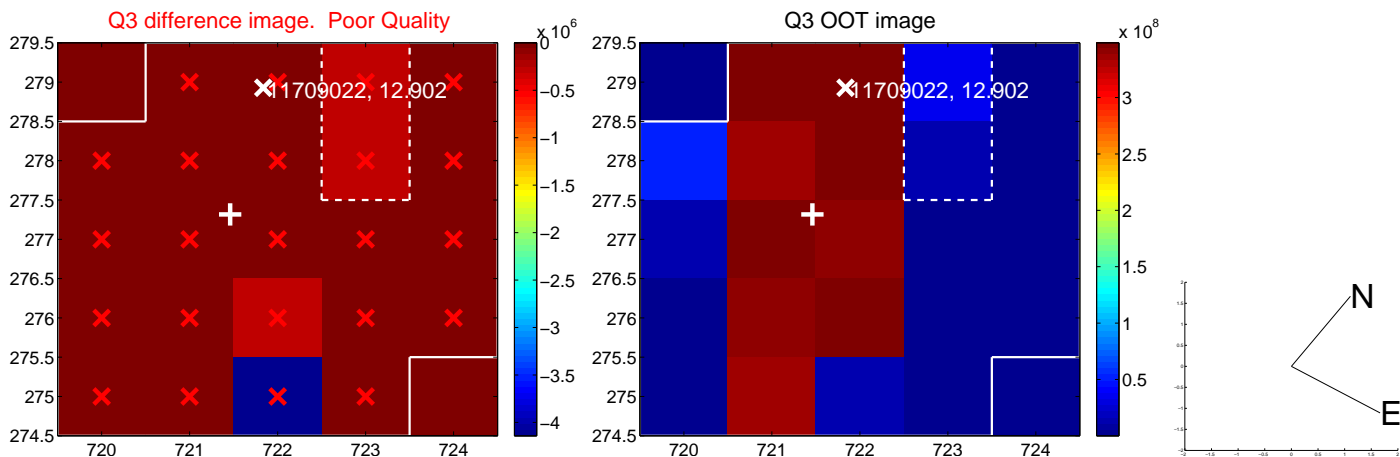
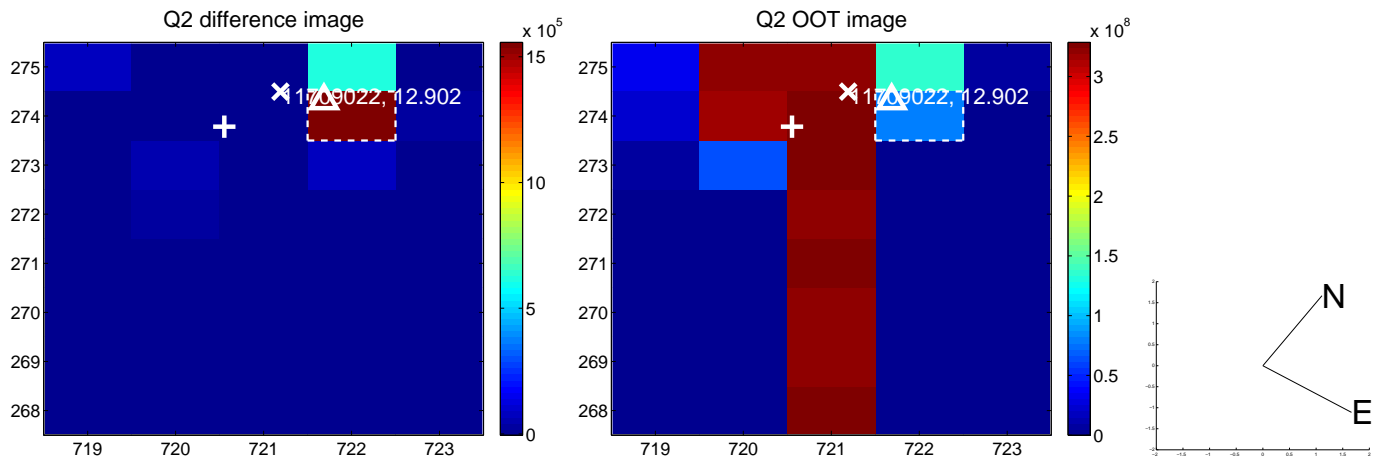
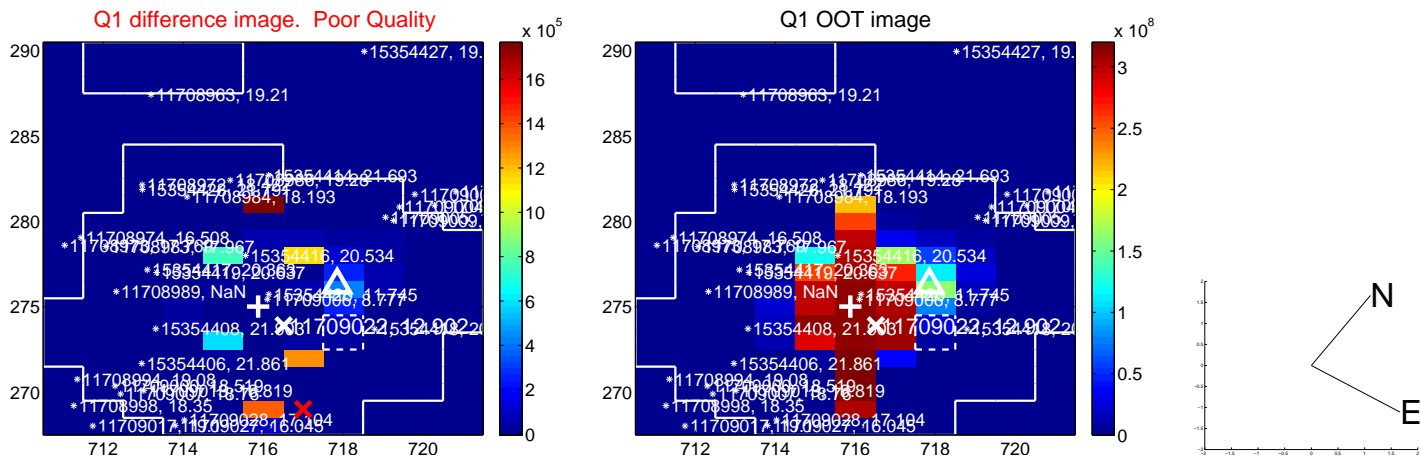
The direct PRF centroid is offset from the target star catalog position by about 1.86 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.220 ± 0.641	5.02	3.201 ± 0.627	0.356 ± 1.226
PRF-fit source offset from KIC position	3.504 ± 1.037	3.38	2.805 ± 0.636	-2.100 ± 1.339
photometric centroid source offset	1.74 ± 0.04	47.73	1.73 ± 0.04	-0.10 ± 0.07

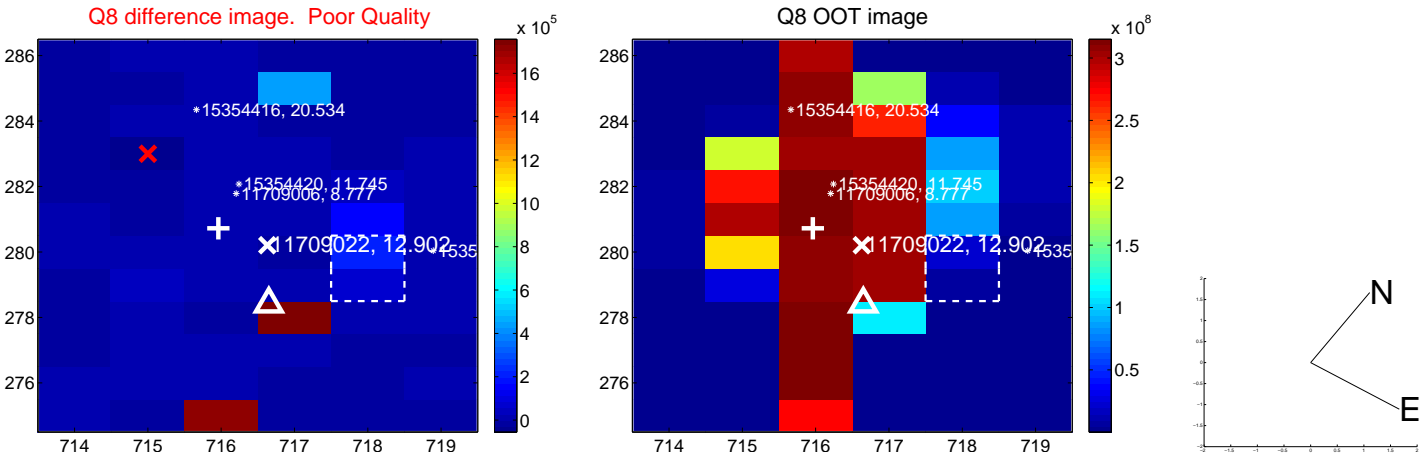
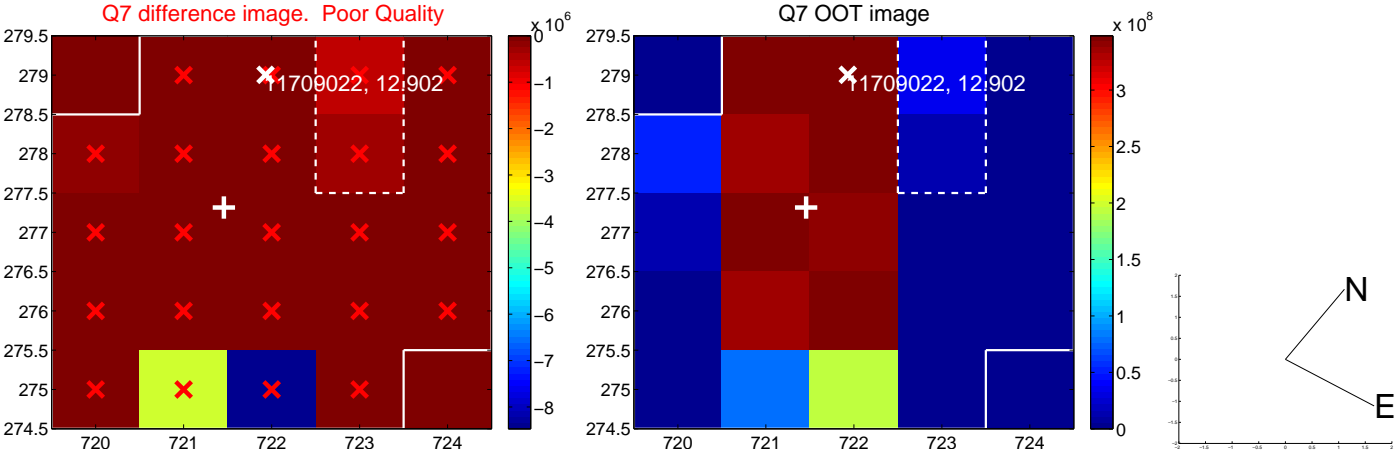
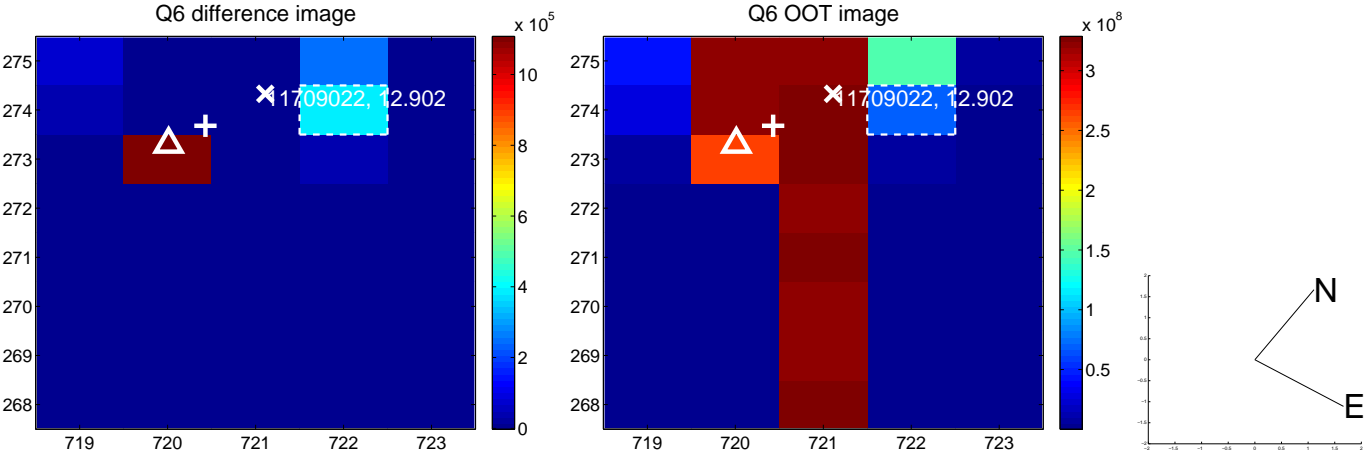
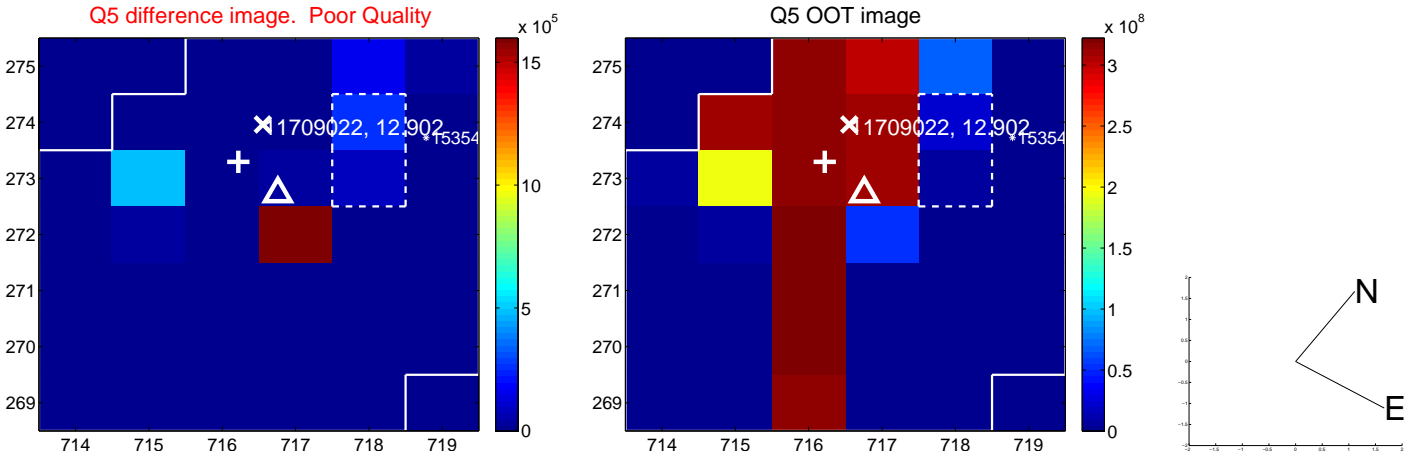


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

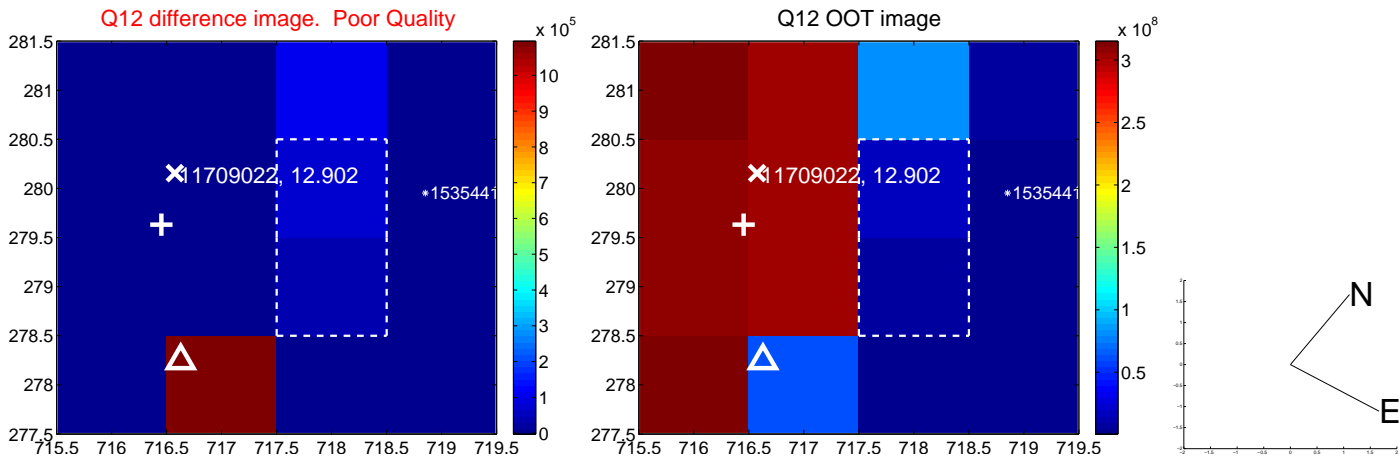
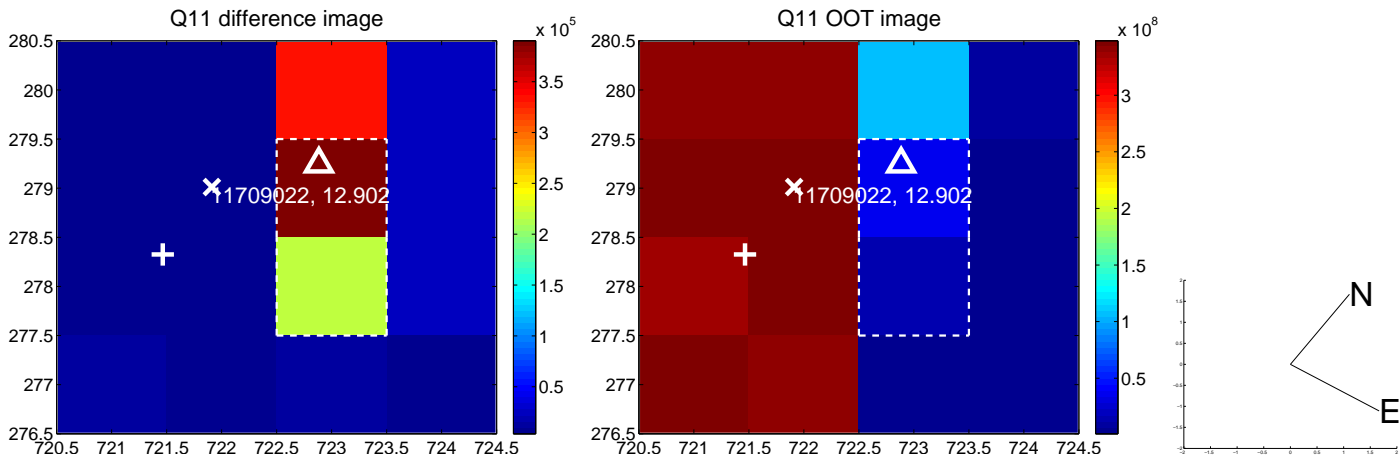
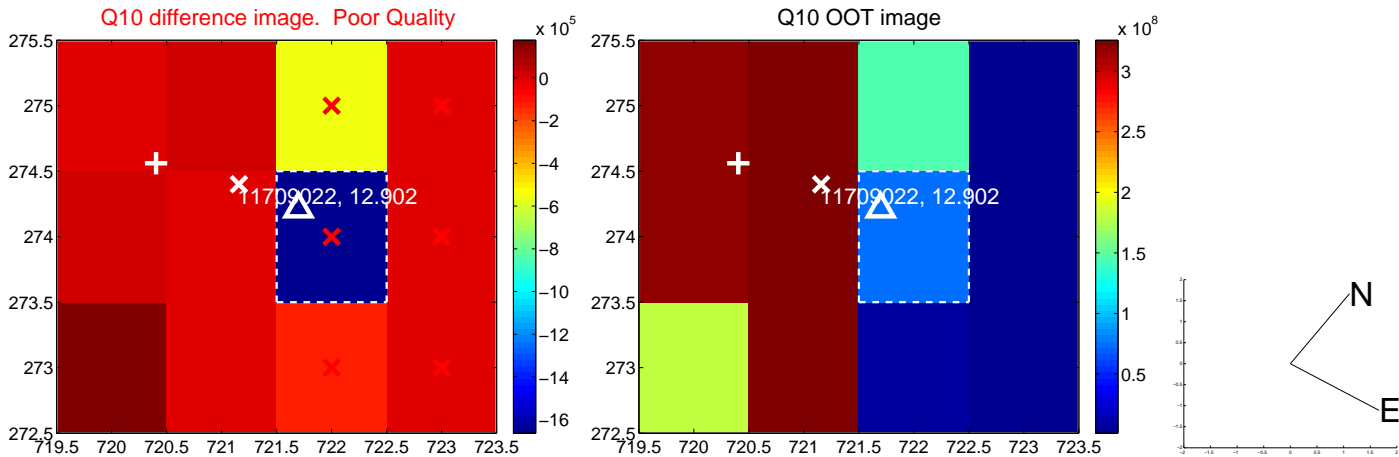
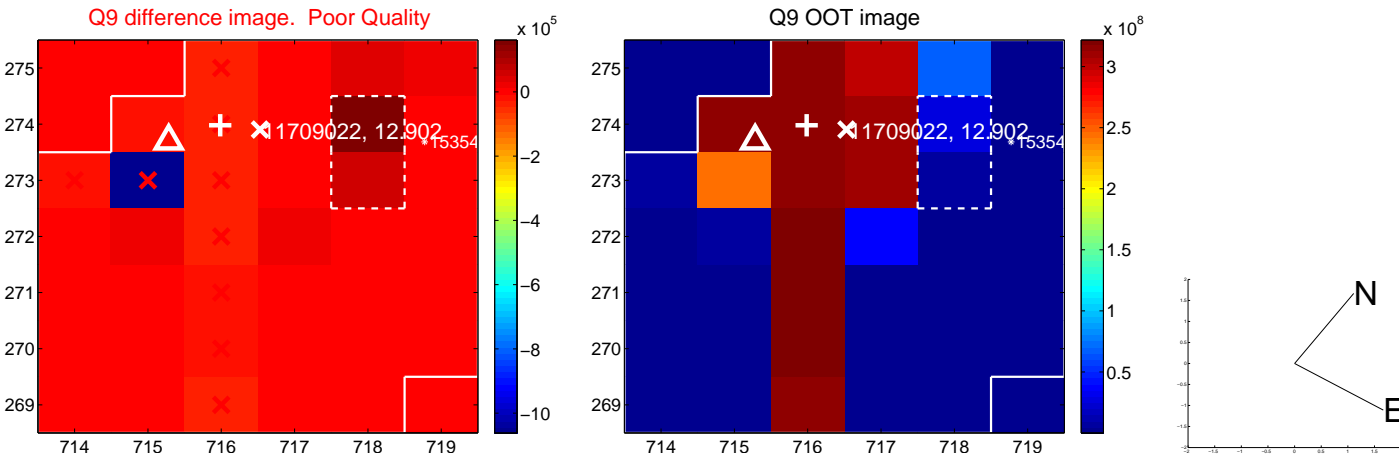
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



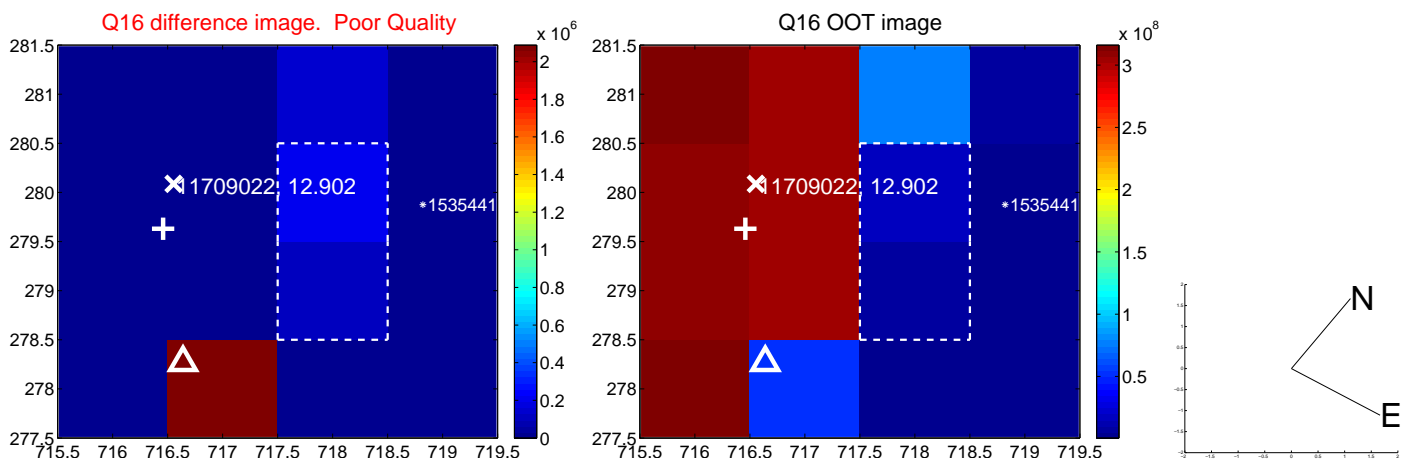
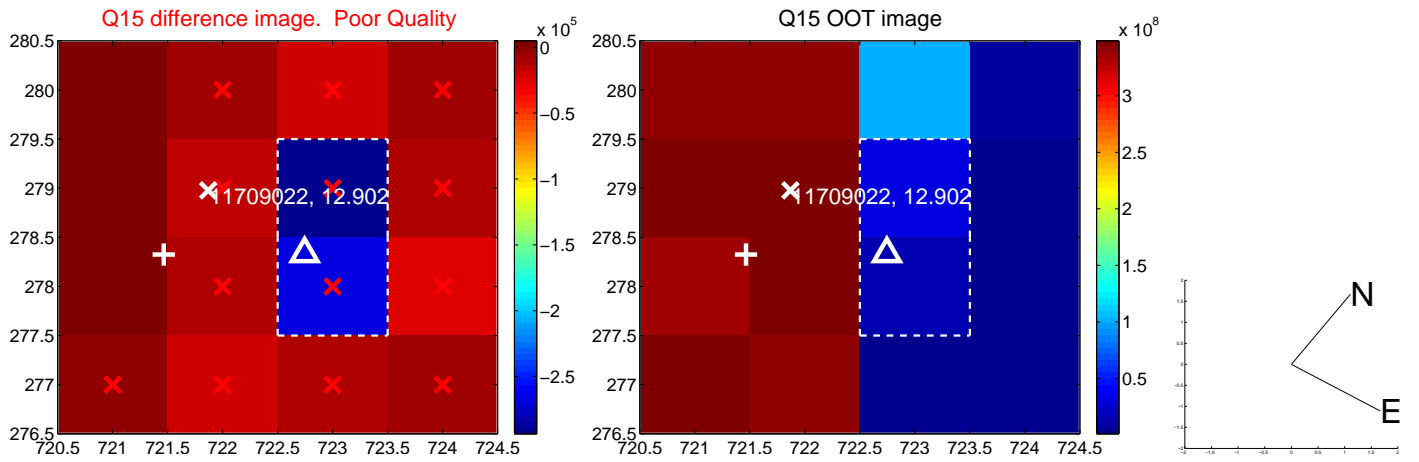
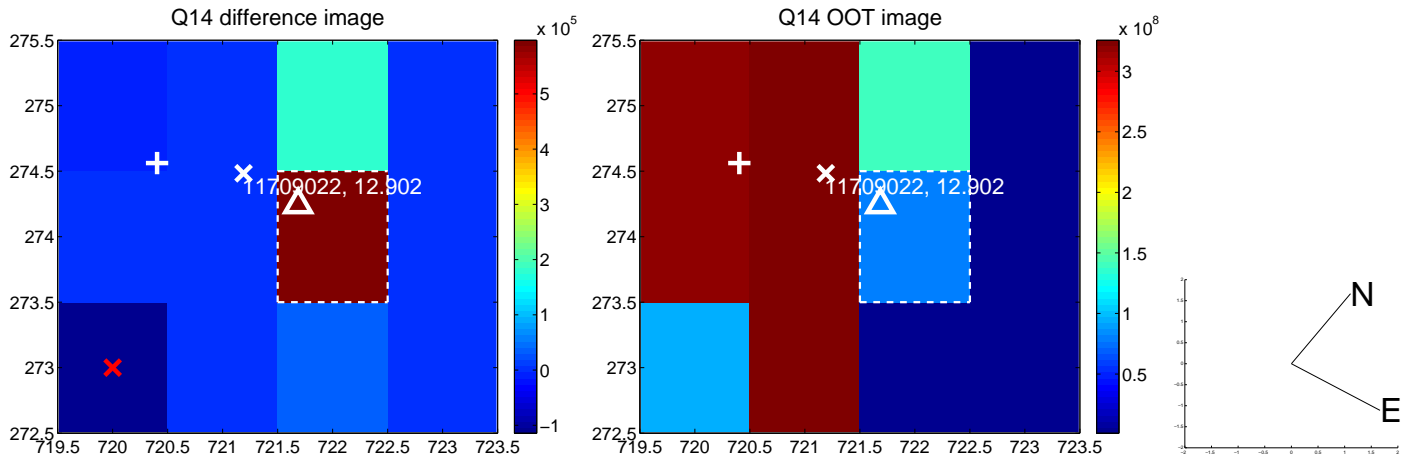
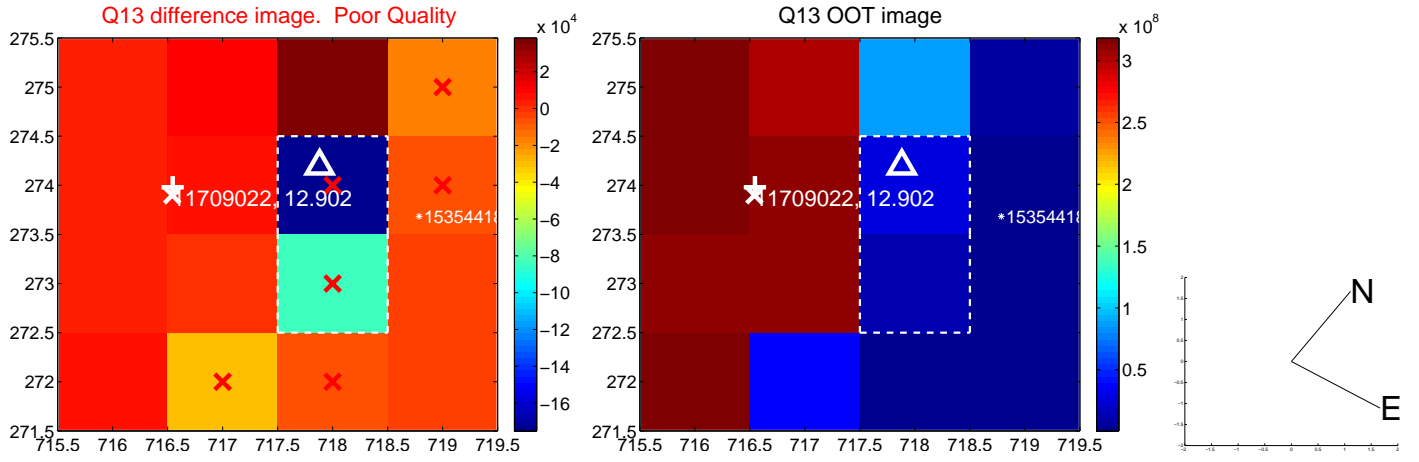
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



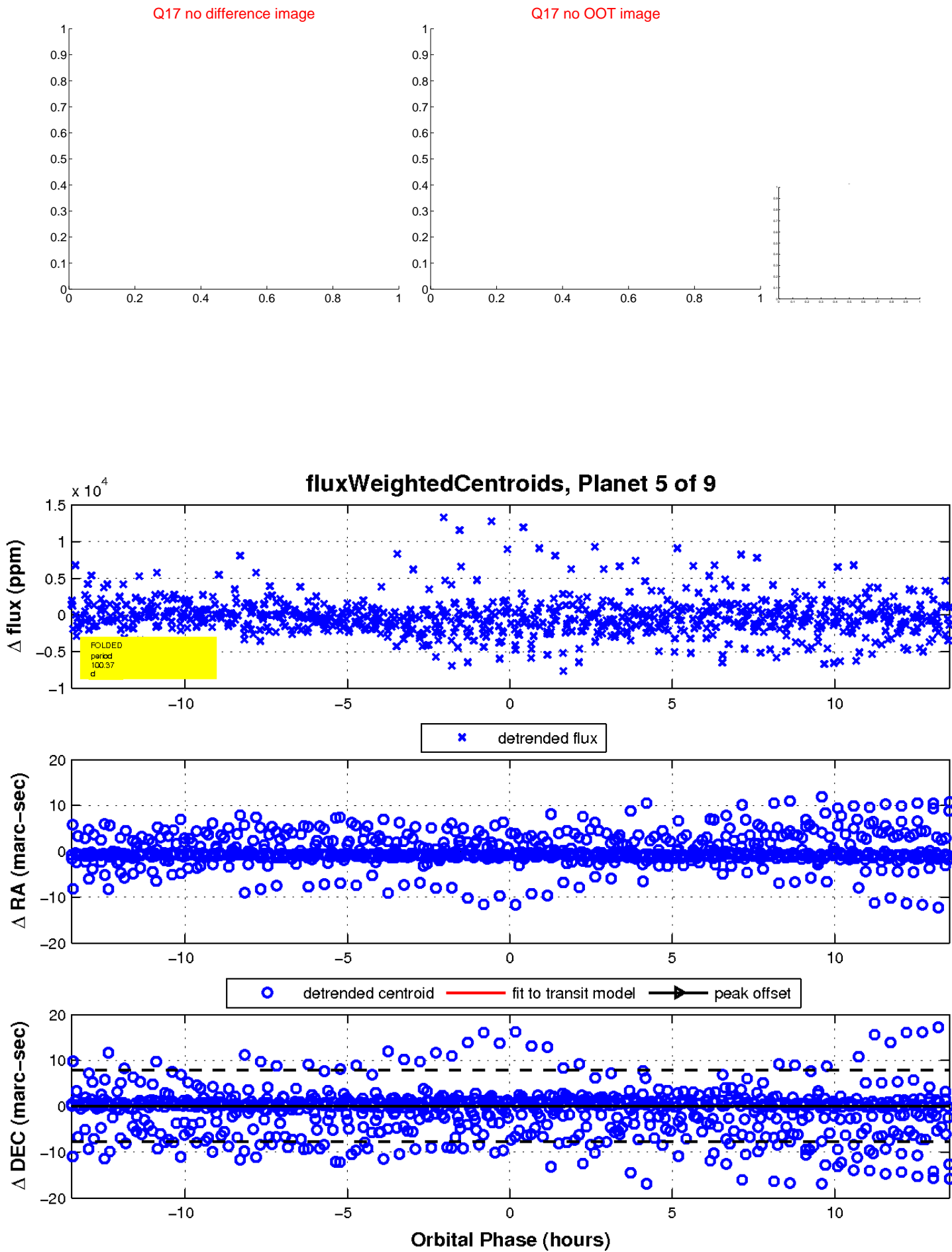
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



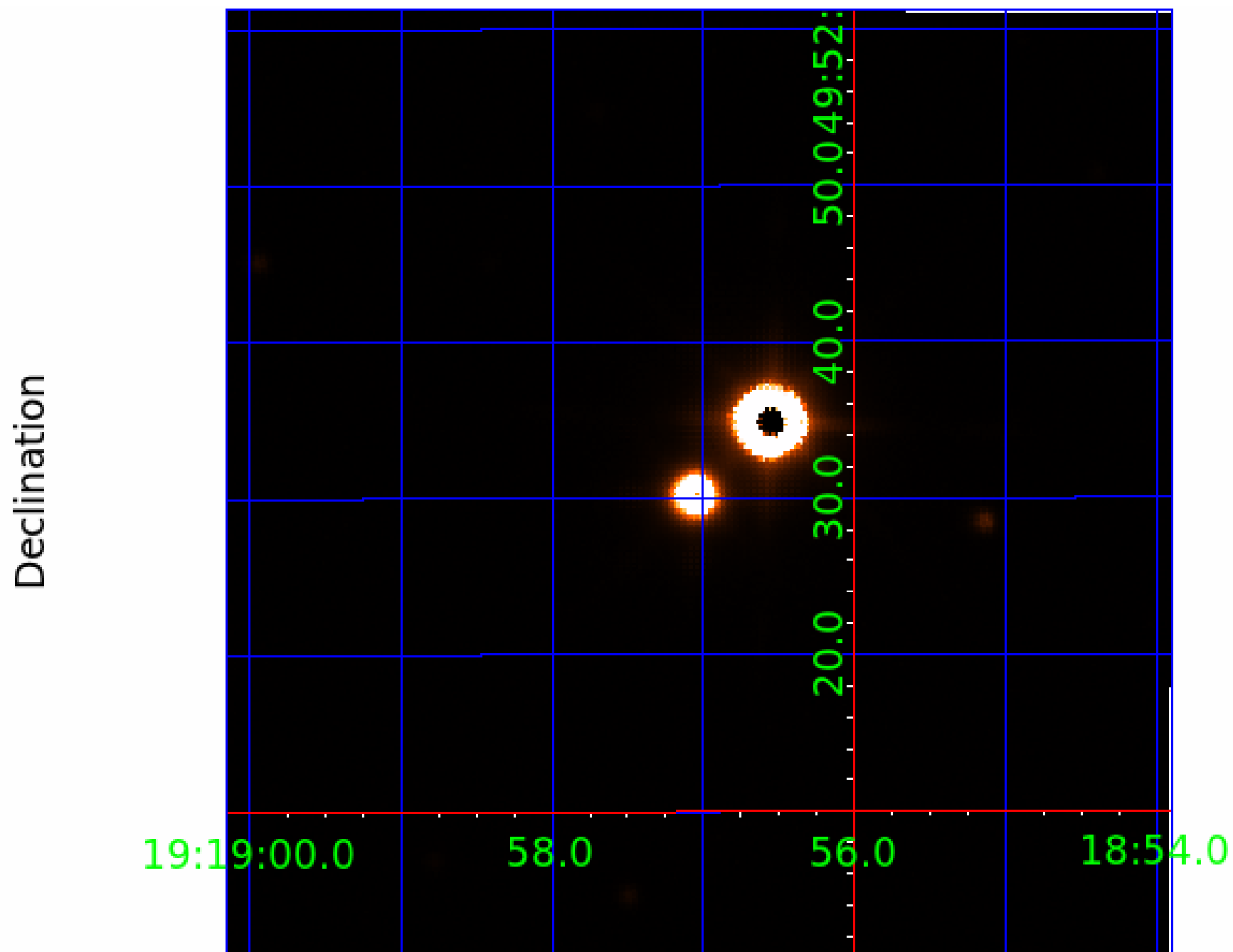
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

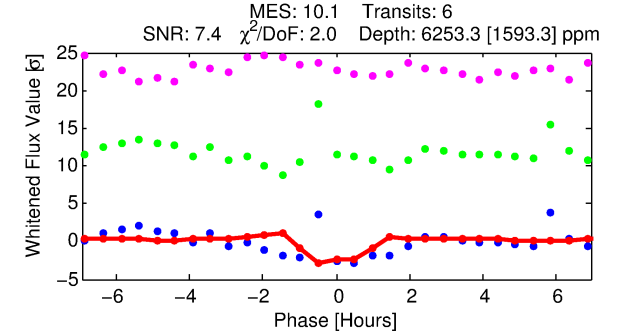
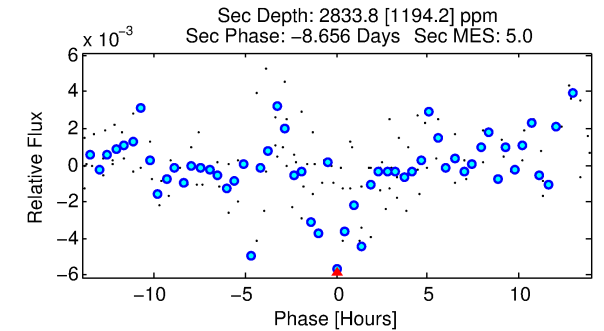
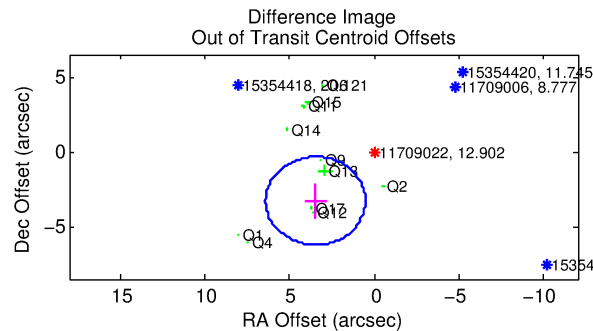
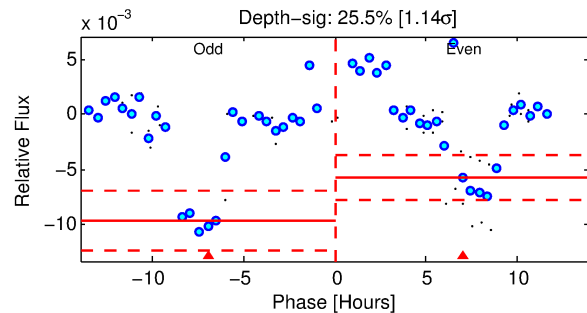
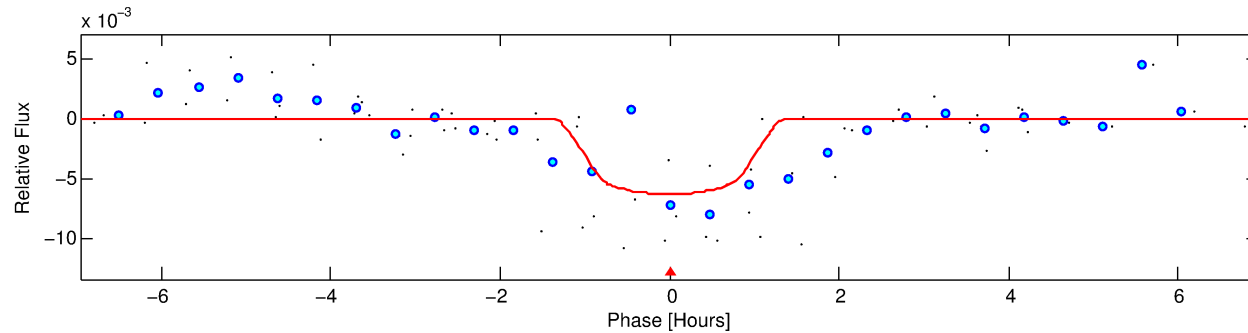
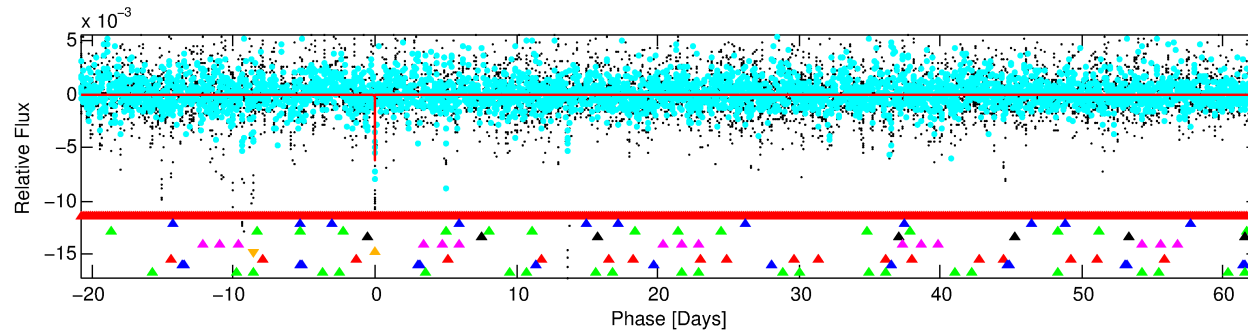
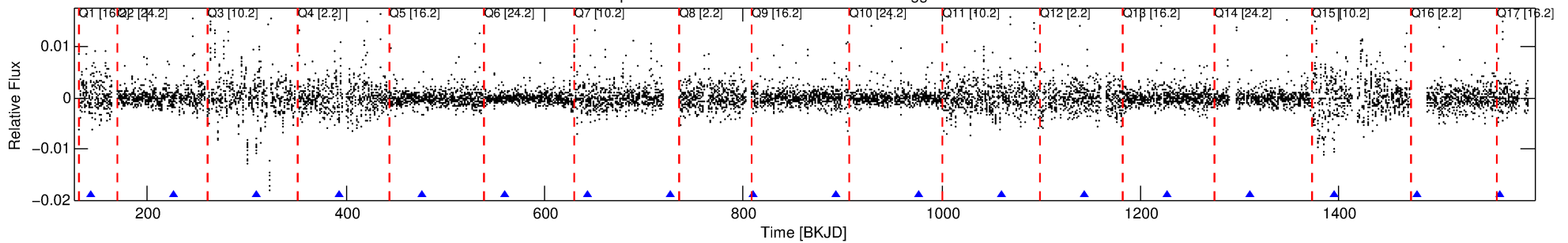
Ephemeris Match Information For 011709022-06

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 6 of 9 Period: 83.427 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 83.42689 [0.00076] d
Epoch = 143.1475 [0.0068] BKJD
Rp/R* = 0.0718 [0.5919]
a/R* = 294.43 [10966.67]
b = 0.00 [42862.28]
Seff = 0.26 [0.07]
Teq = 182 [13] K
Rp = 2.88 [23.78] Re
a = 0.2699 [0.0517] AU
Ag = 13645.48 [224977.94] [0.06σ]
Teffp = 3043 [12543] K [0.23σ]

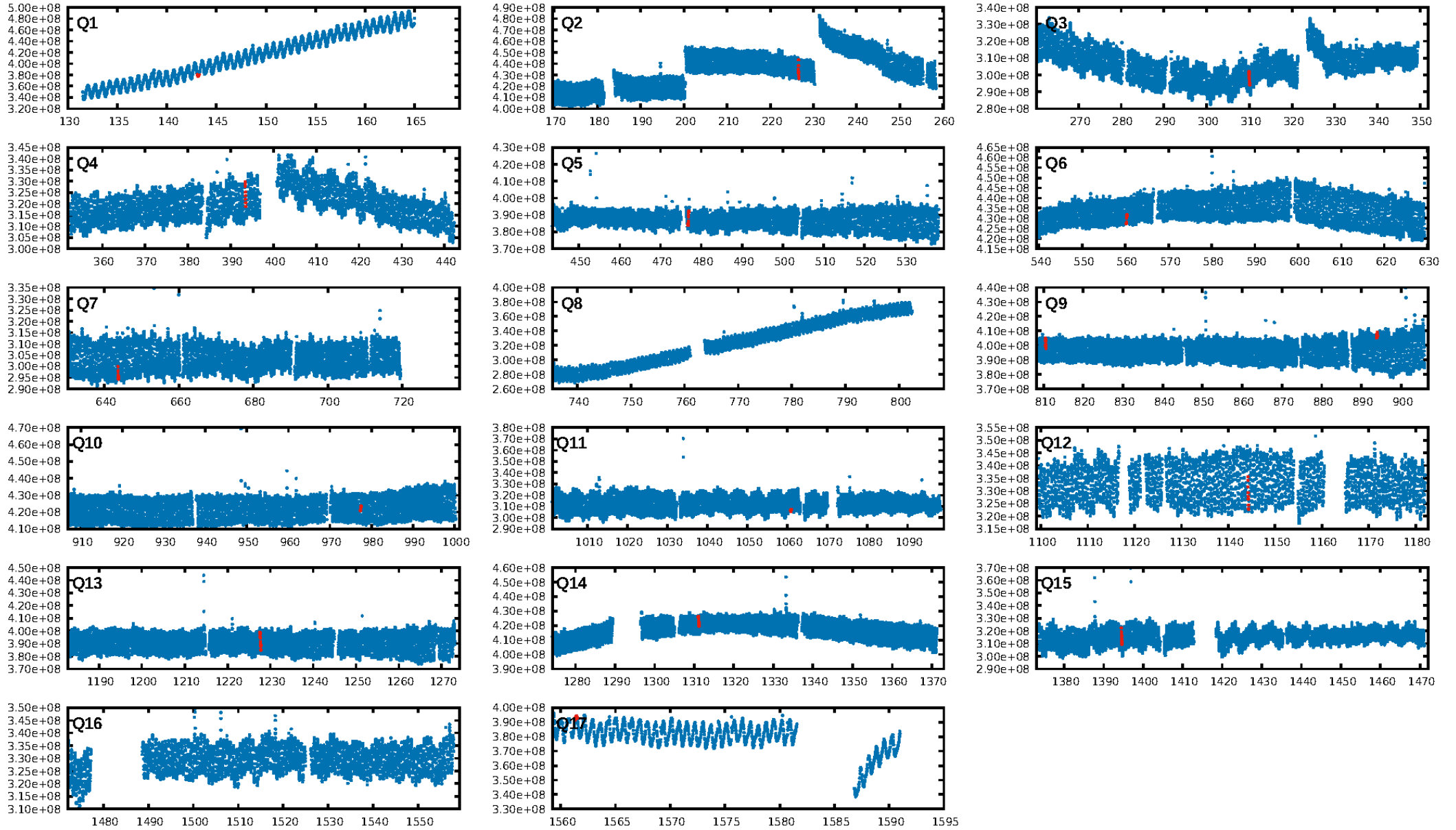
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [48.32σ]
LongPeriod-sig: 100.0% [51.36σ]
ModelChiSquare2-sig: 8.2%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -0.7594
Centroid-sig: N/A
Centroid-so: 1.730 arcsec [82.16σ]
OotOffset-rm: 4.787 arcsec [4.88σ]
KicOffset-rm: 5.056 arcsec [8.24σ]
OotOffset-st: 3/2/2/4 [11]
KicOffset-st: 3/2/2/4 [11]
DiffImageQuality-fgm: 0.09 [1/11]
DiffImageOverlap-fno: 0.00 [0/14]

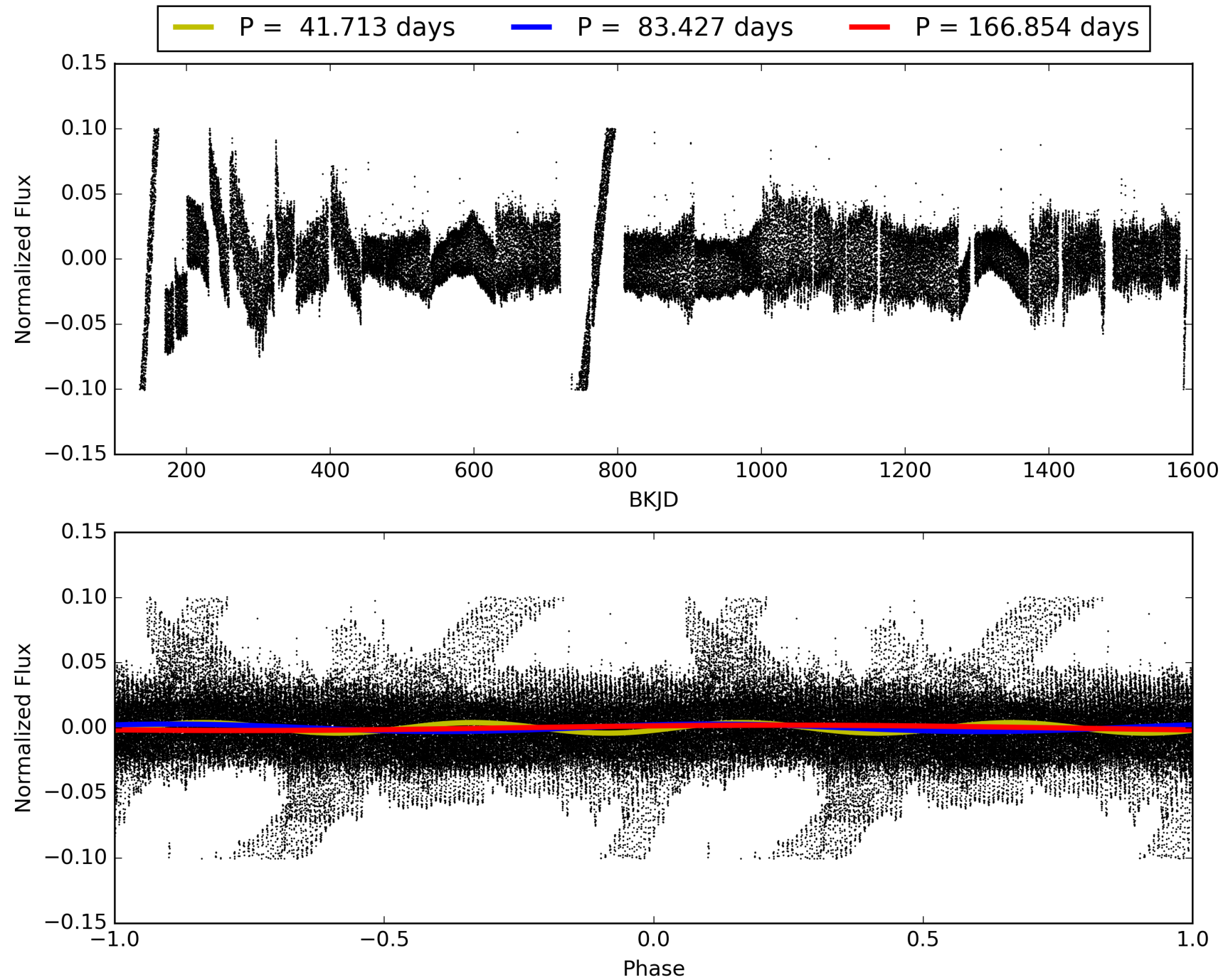
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:51:51 Z

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

TCE 011709022-06, PDC Light Curves

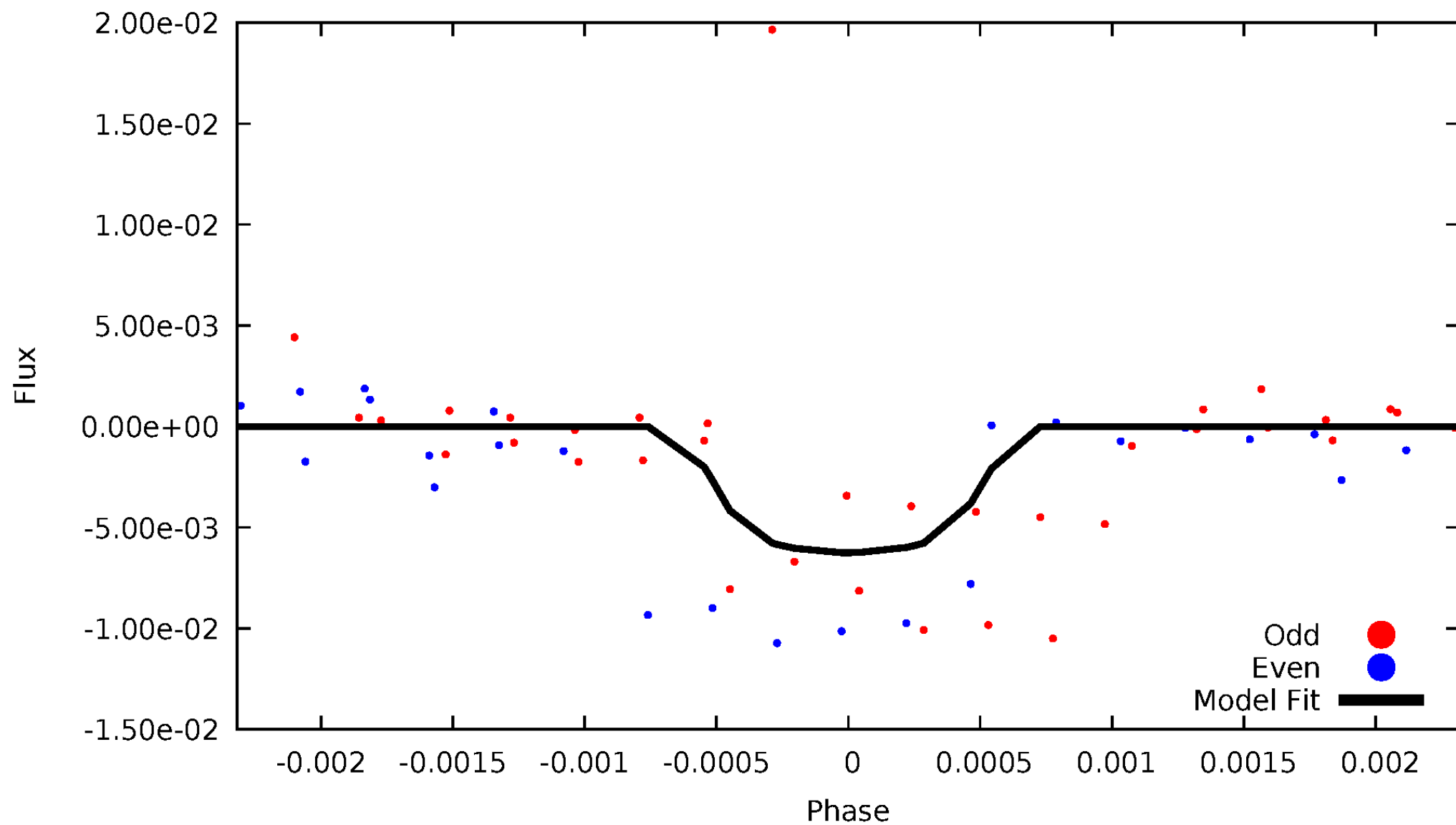


TCE 011709022-06



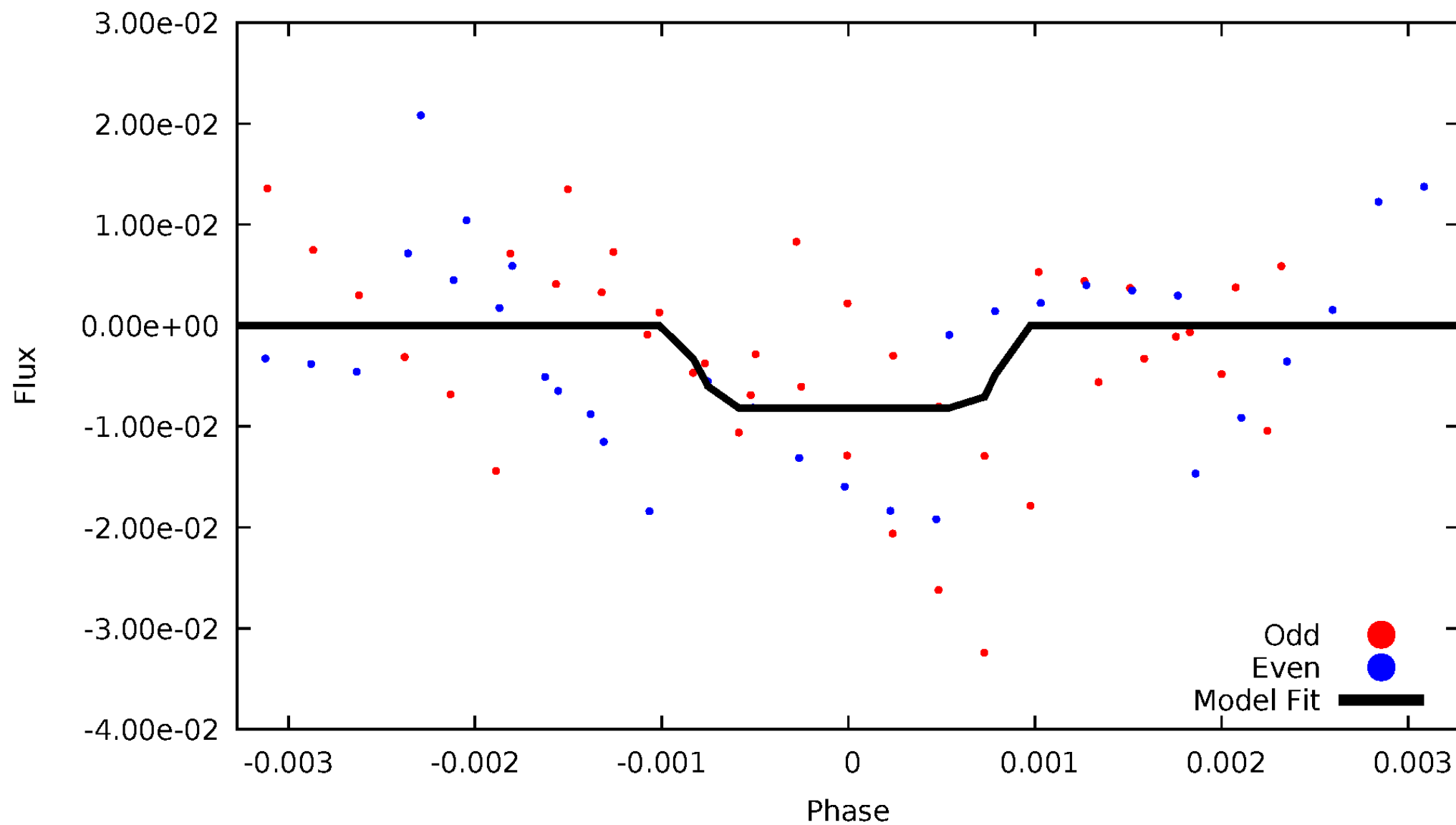
DV Odd/Even

TCE 011709022-06



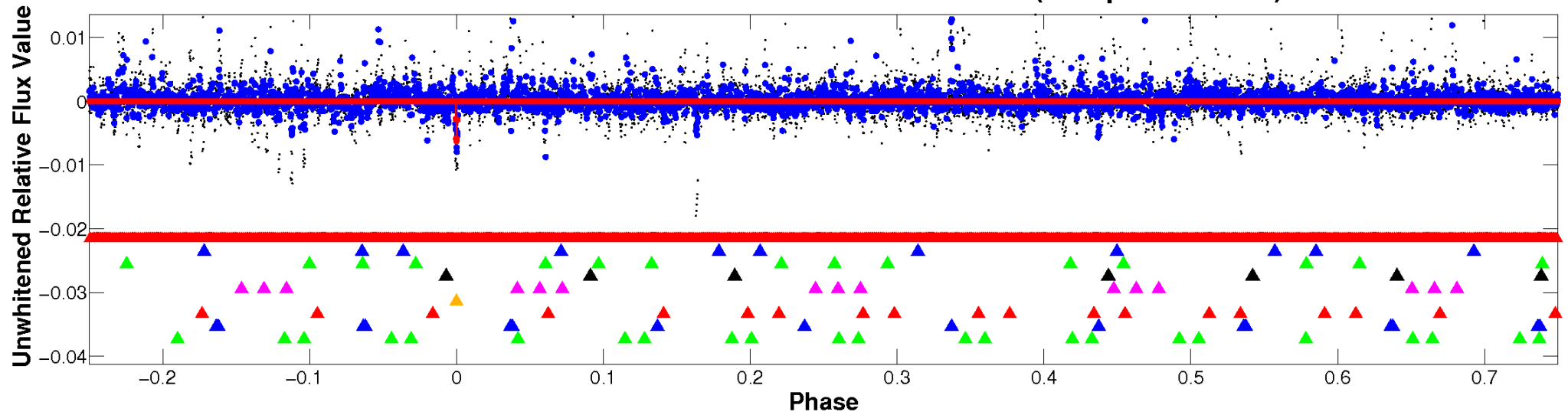
ALT Odd/Even

TCE 011709022-06

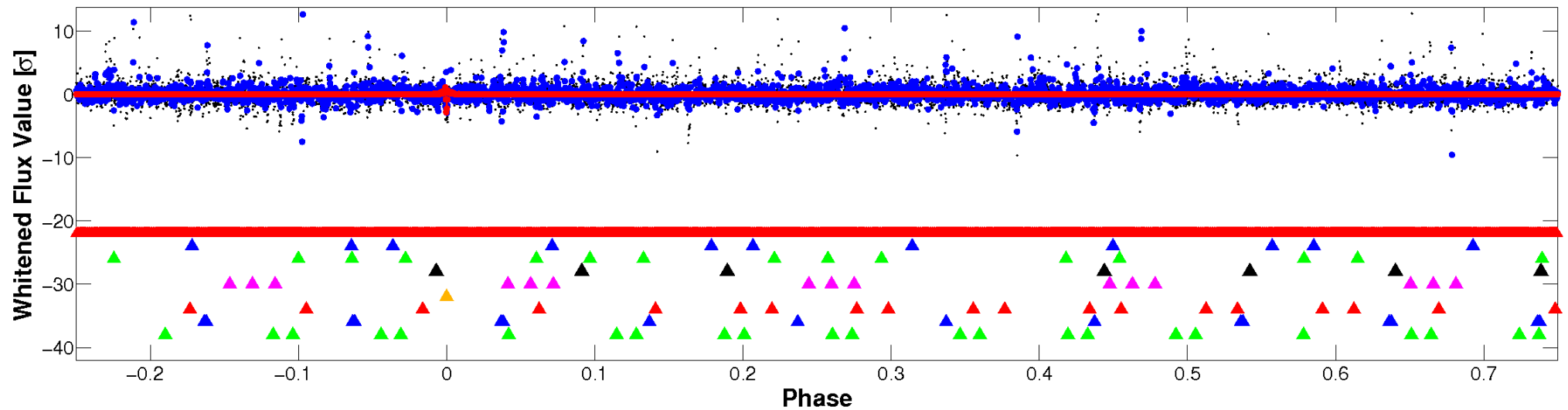


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

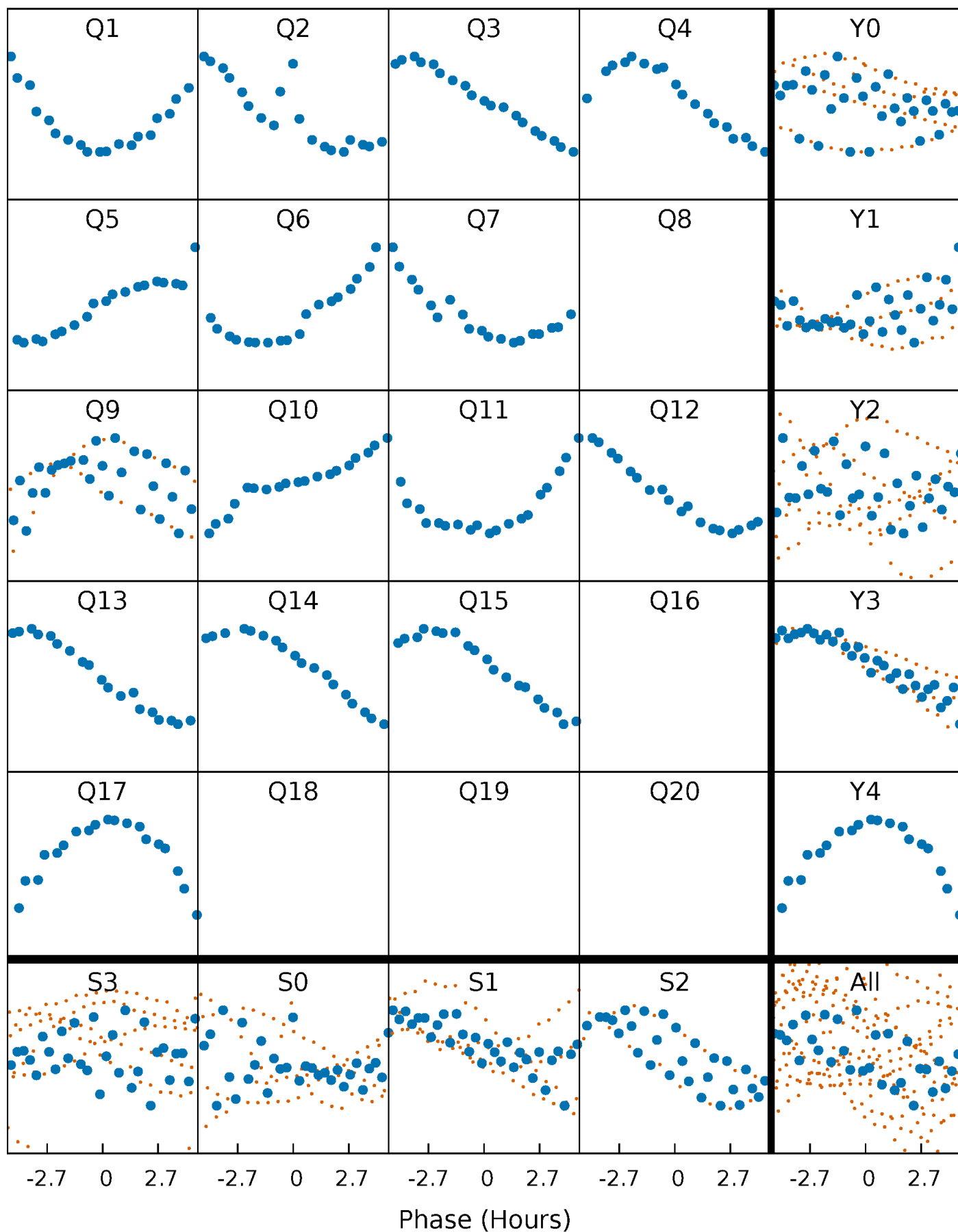


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



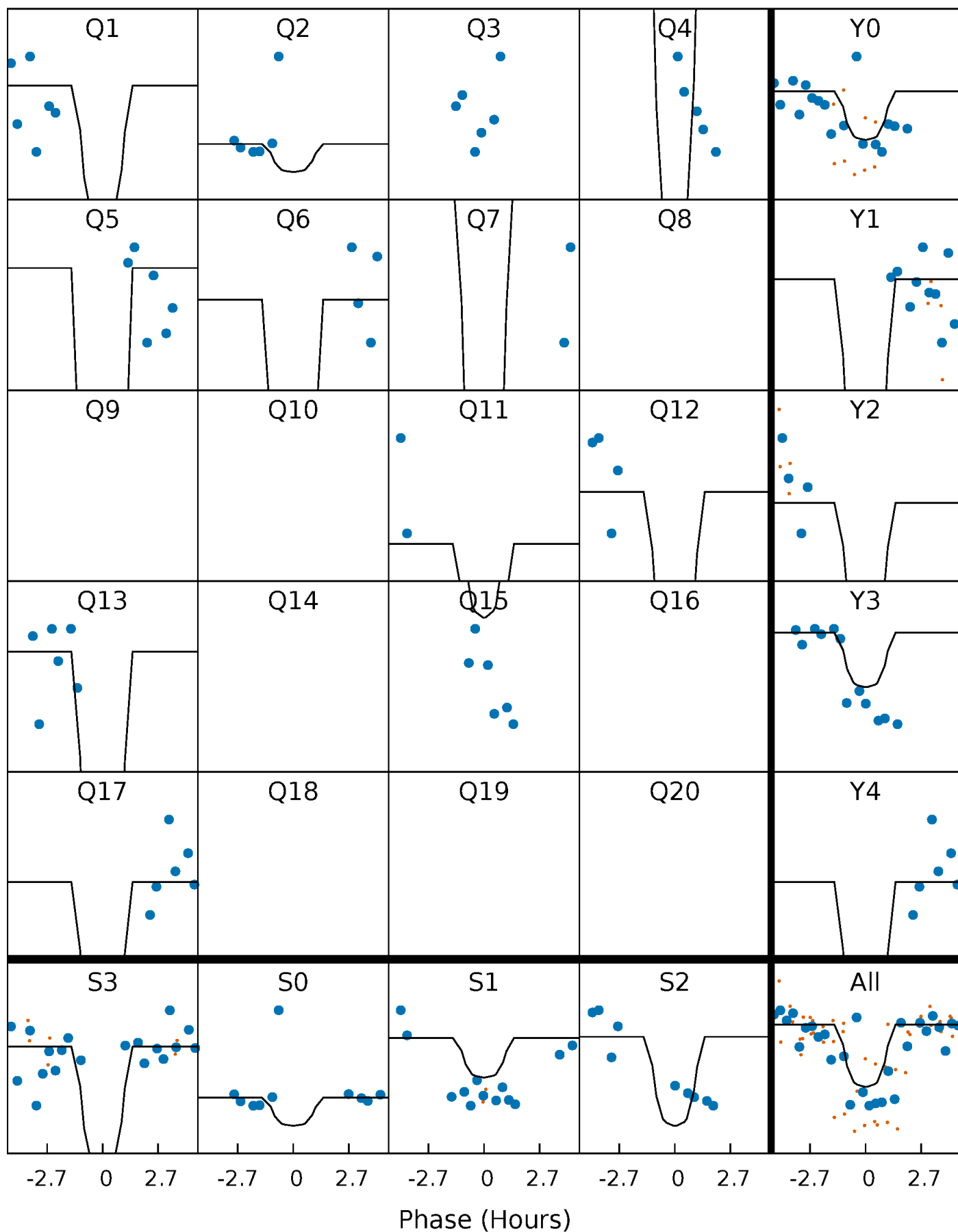
PDC Quarter-Phased Transit Curves

TCE 011709022-06 P= 83.426892 Days $T_0=143.147542$ (BKJD)



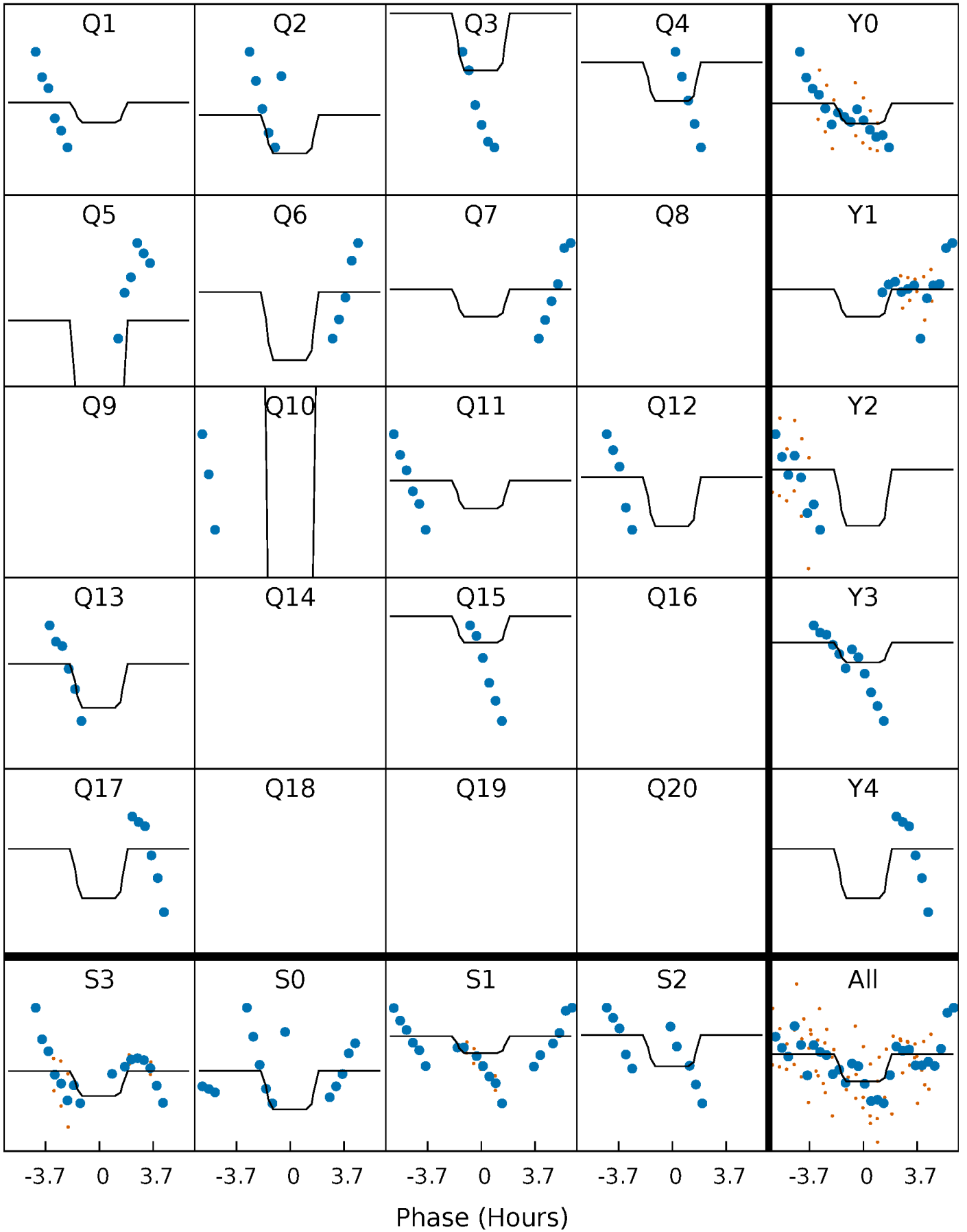
DV Quarter-Phased Transit Curves

TCE 011709022-06 P= 83.426892 Days $T_0=143.147542$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

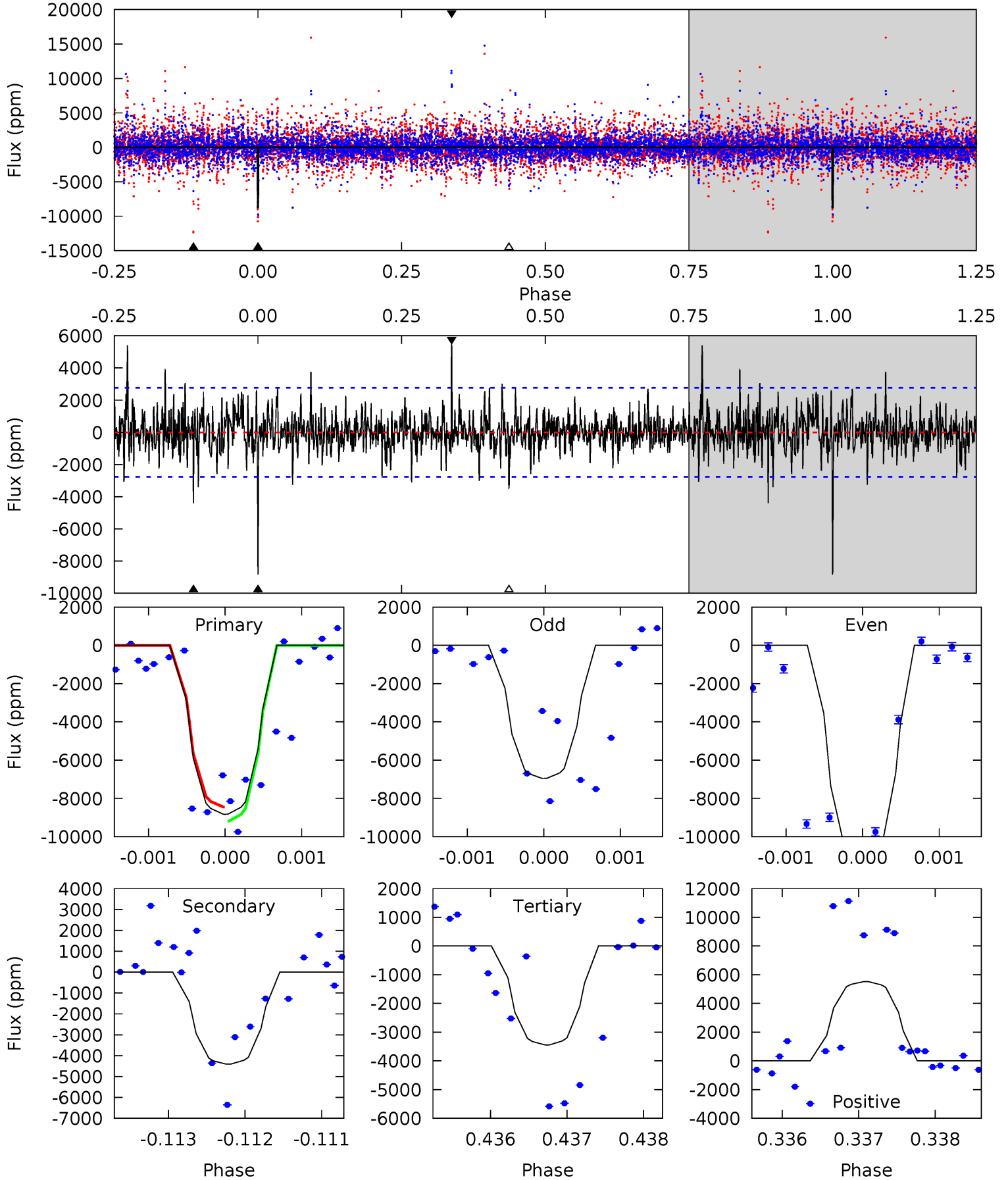
TCE 011709022-06 P= 83.427238 Days $T_0=143.146337$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-06, P = 83.426892 Days, E = 59.720650 Days

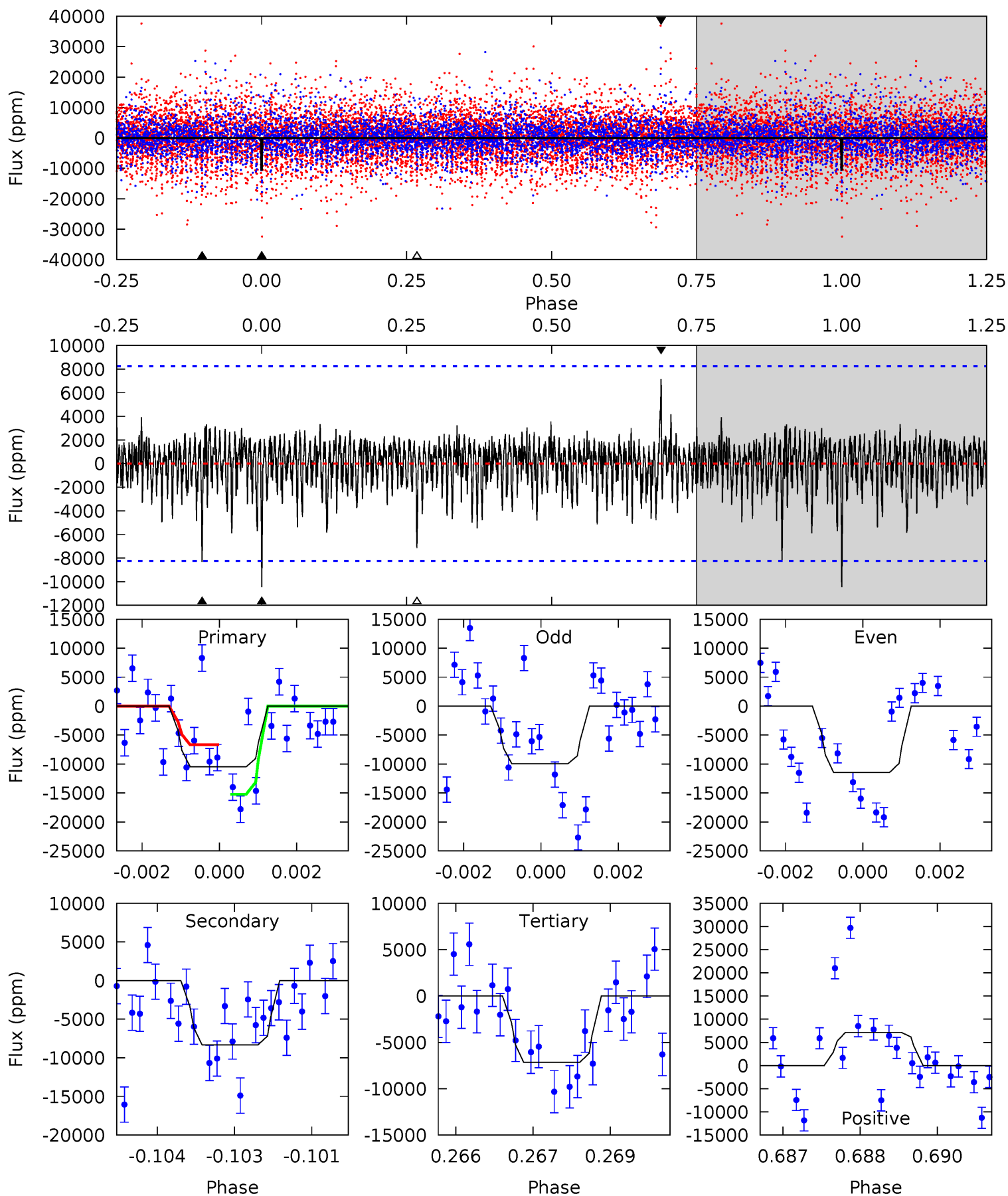
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	8.66	6.77	10.9	5.44	3.27	1.75	10.6	6.49	1.89	-2.20	3.16	0.25	0.38	0.74



Alt Model-Shift Uniqueness Test

011709022-06, P = 83.427238 Days, E = 59.719099 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.82	5.42	4.66	4.66	5.37	3.16	1.09	2.16	2.16	0.75	0.76	0.47	0.99	0.41	2.78



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4407 ± 509	$16.53^{+18.71}_{-12.20}$	253^{+13}_{-14}	2177^{+848}_{-321}	668^{+8891}_{-521}
Alt.	-8310 ± 1534	$16.52^{+20.69}_{-11.08}$	254^{+12}_{-13}	2329^{+804}_{-365}	1182^{+10100}_{-935}

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 $A_{obs} \gg 1.0$

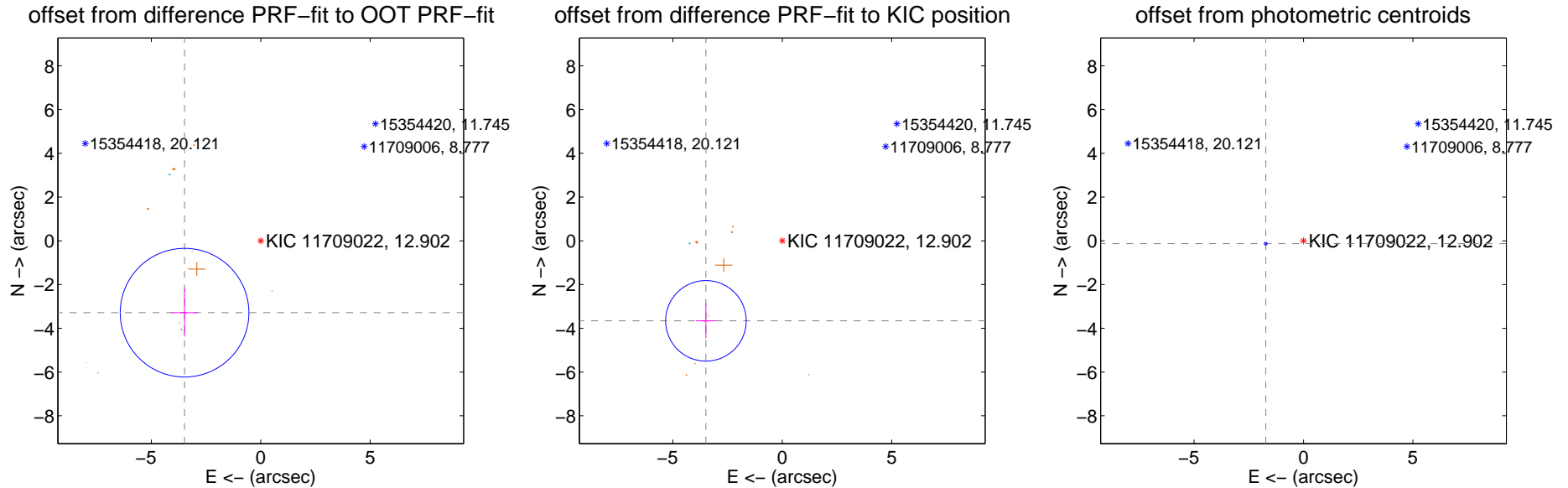
DV Centroid Data

Supplemental centroid analysis for 011709022-06. Kepler magnitude: 12.90. Transit SNR 7.44

There are 1 quarters with good PRF difference image offsets

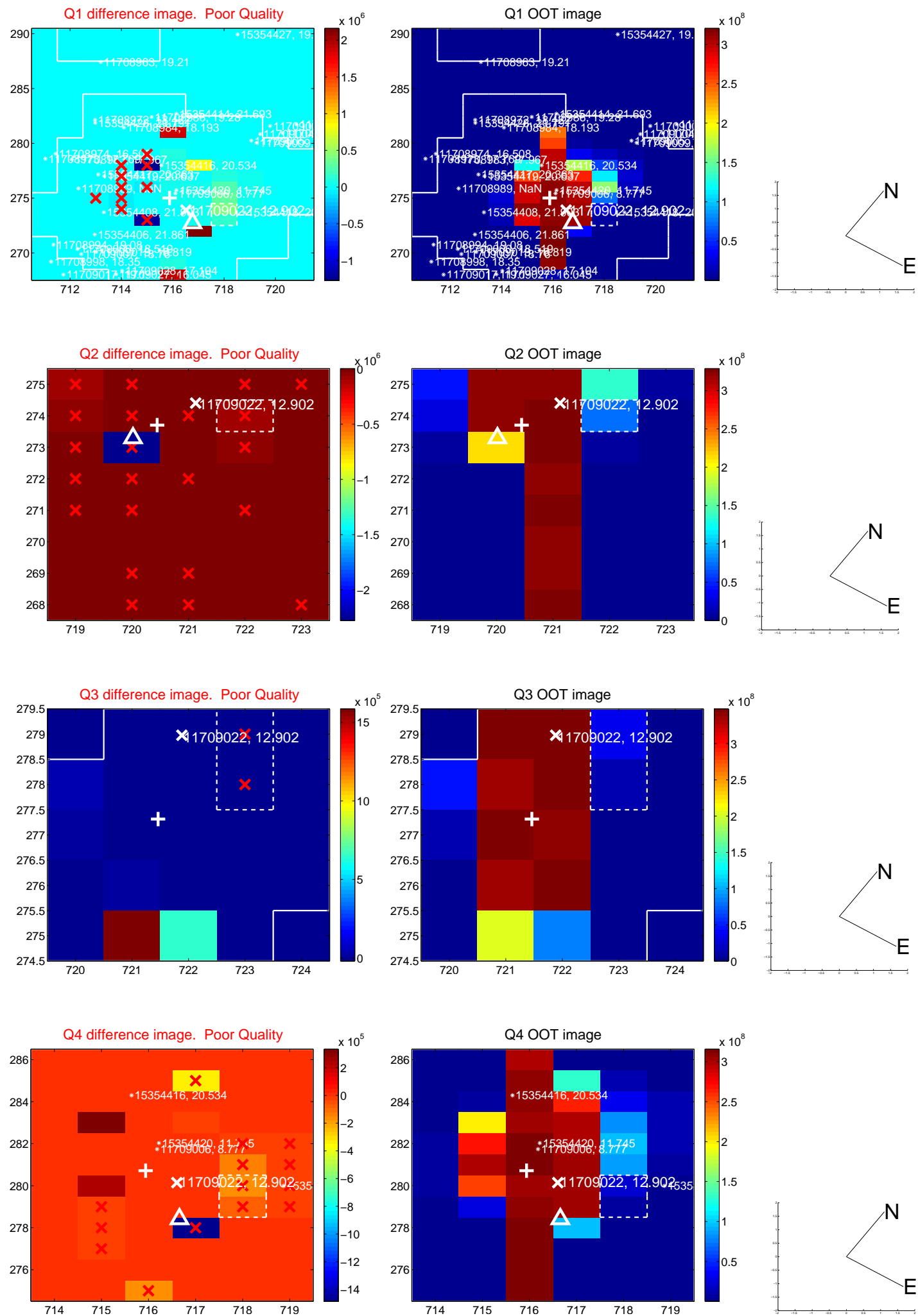
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.787 ± 0.980	4.88	3.481 ± 0.605	-3.286 ± 1.090
PRF-fit source offset from KIC position	5.056 ± 0.614	8.24	3.490 ± 0.457	-3.659 ± 0.791
photometric centroid source offset	1.73 ± 0.02	82.16	1.72 ± 0.02	-0.13 ± 0.04



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.

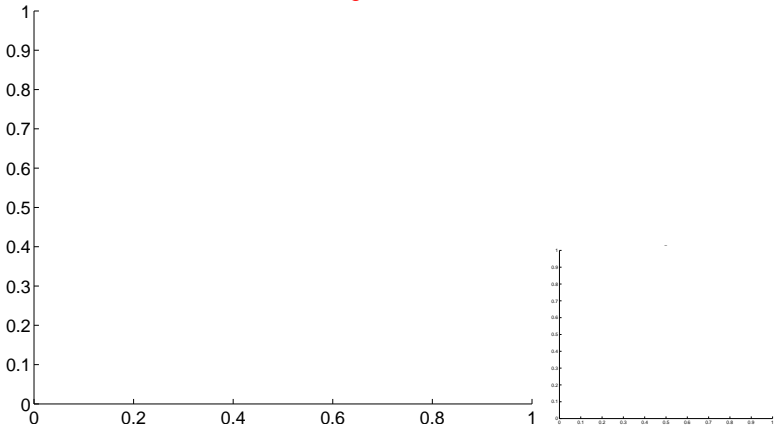


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

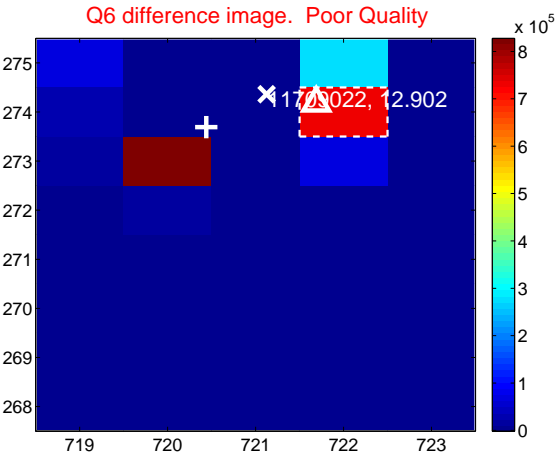
Q5 no difference image



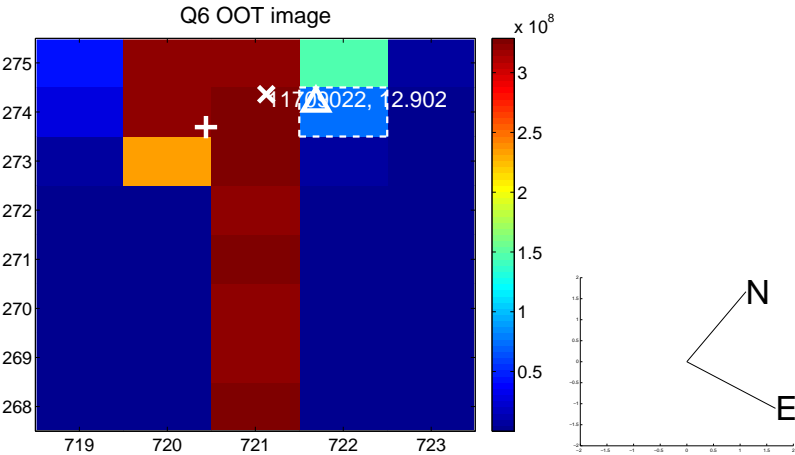
Q5 no OOT image



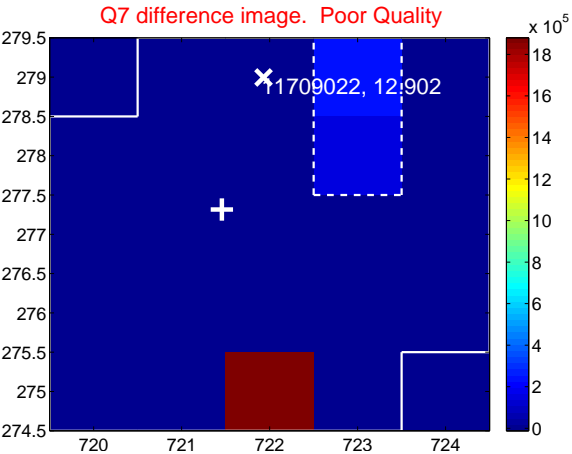
Q6 difference image. Poor Quality



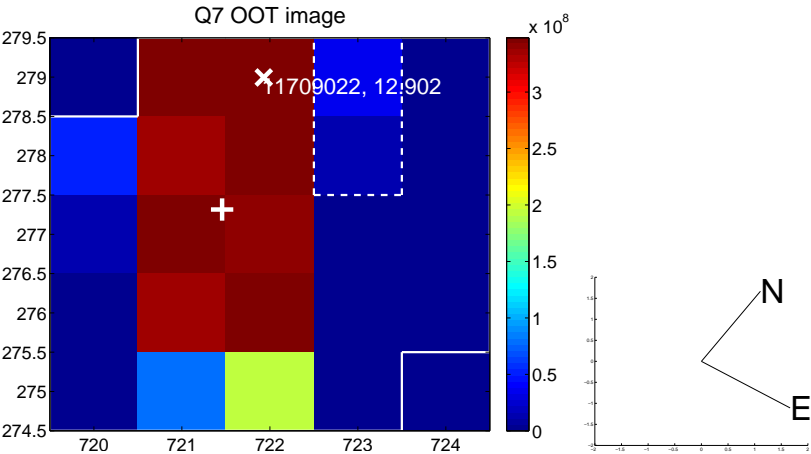
Q6 OOT image



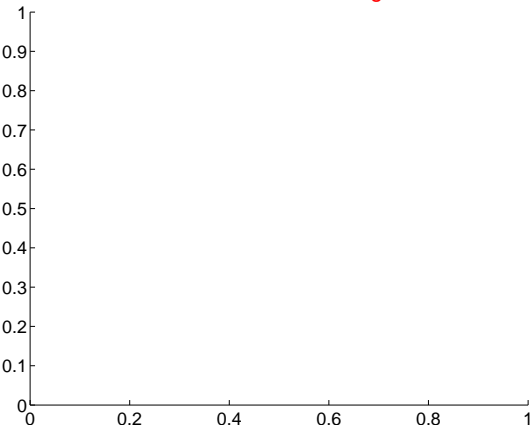
Q7 difference image. Poor Quality



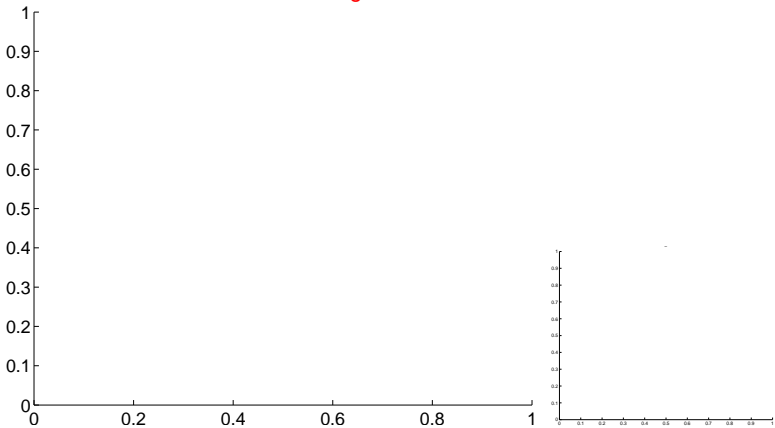
Q7 OOT image



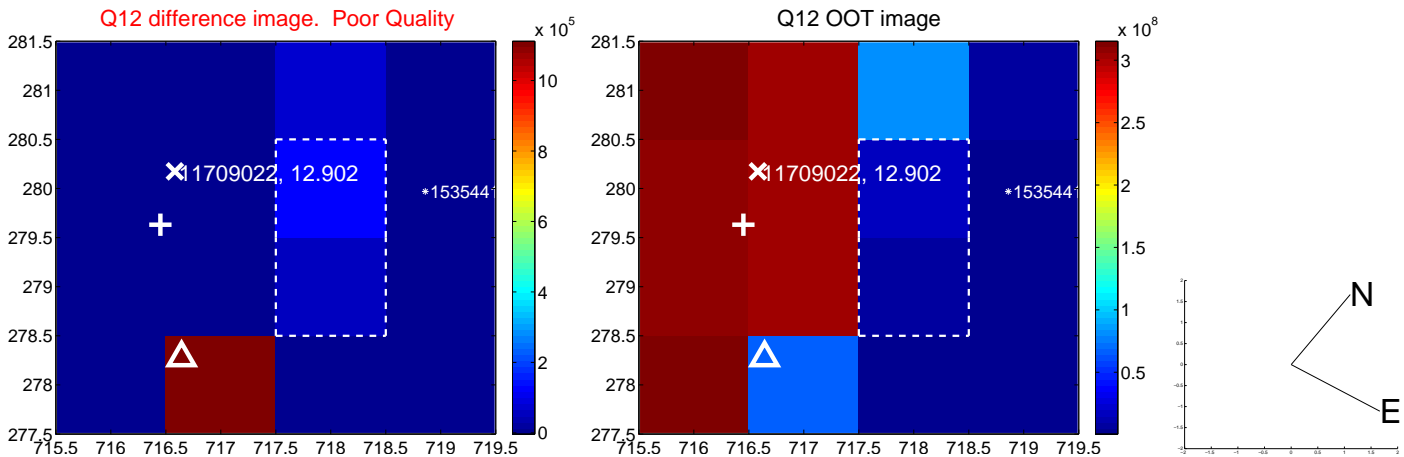
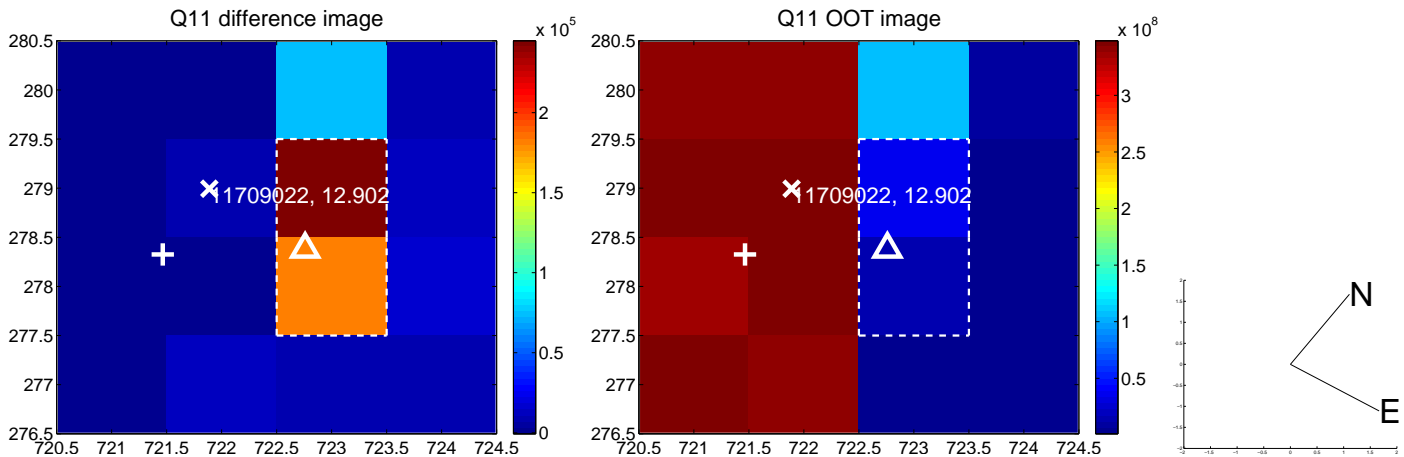
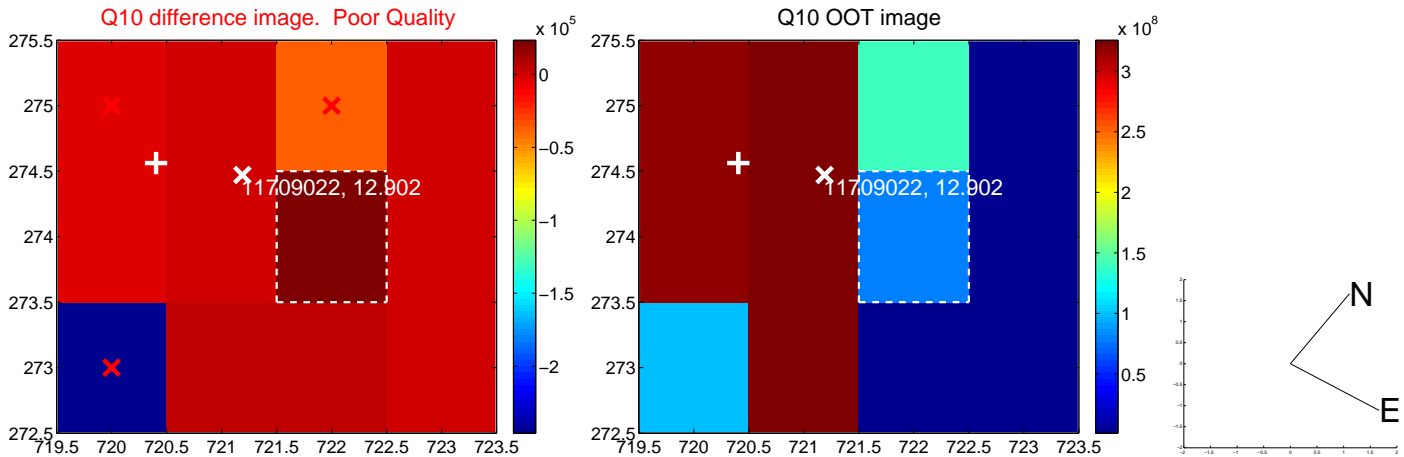
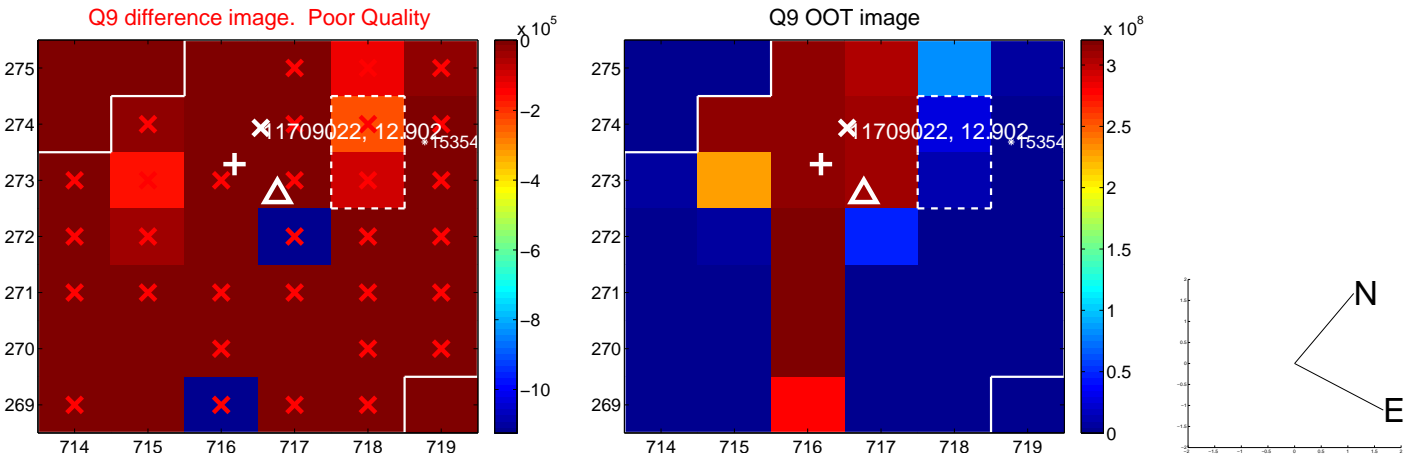
Q8 no difference image



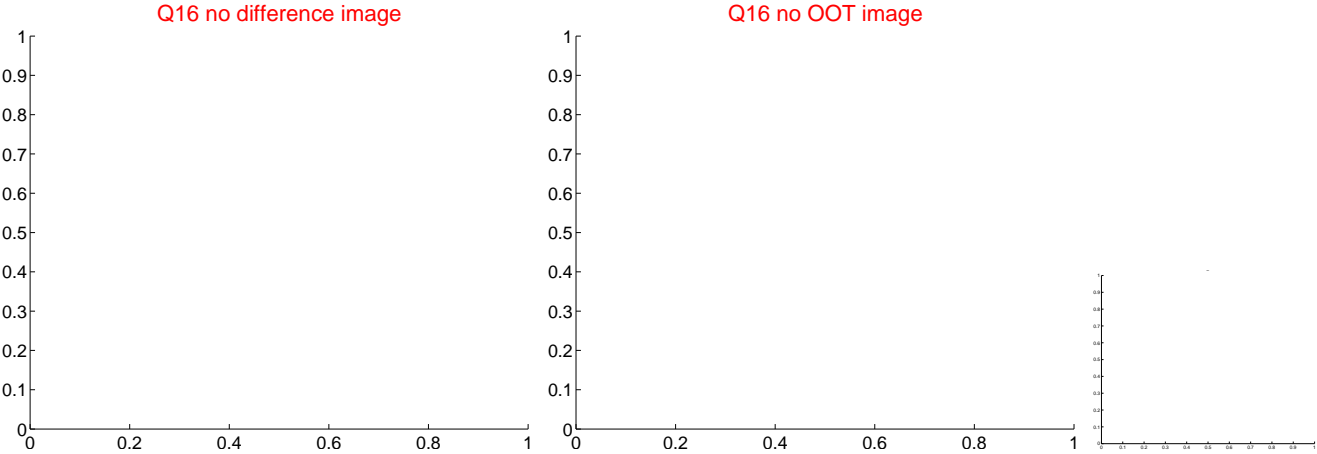
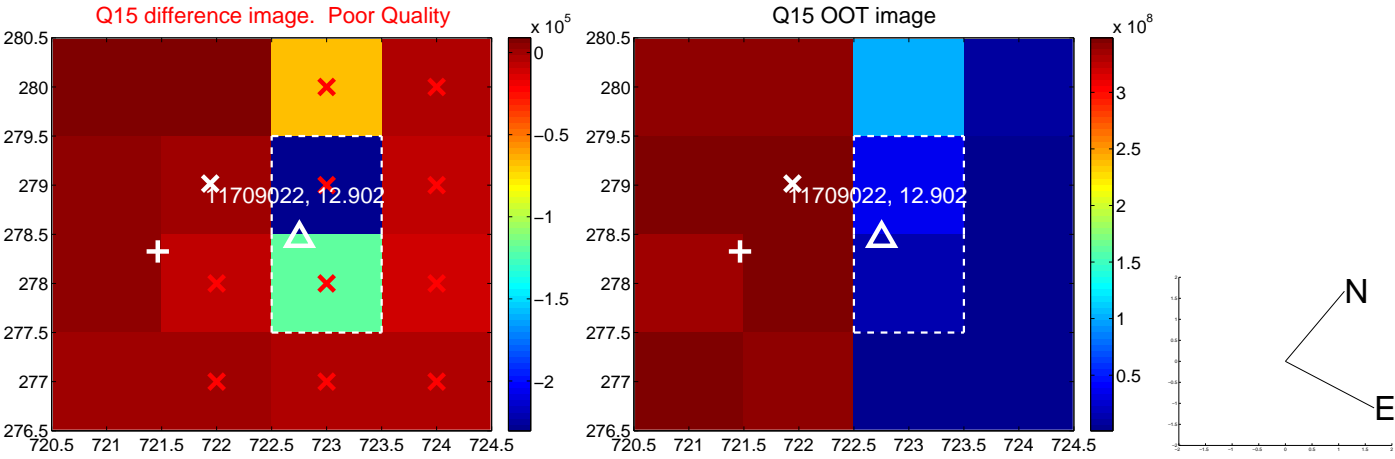
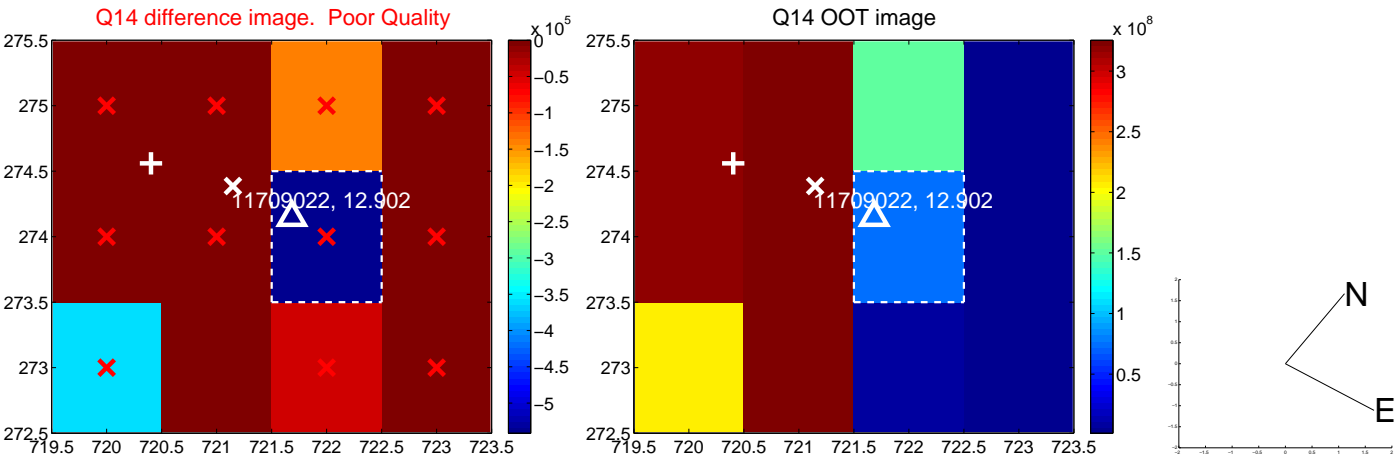
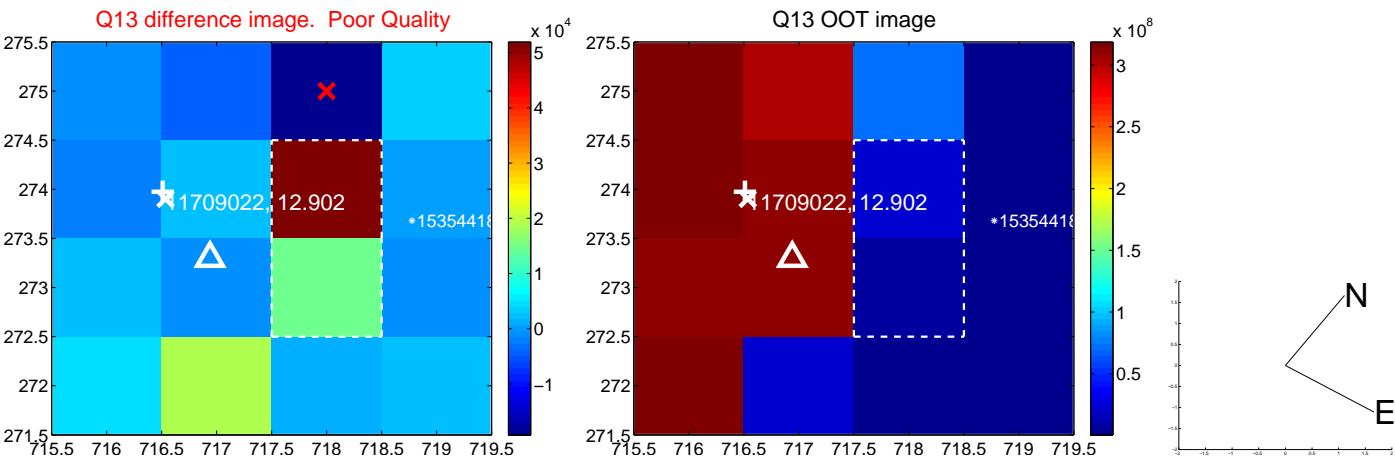
Q8 no OOT image



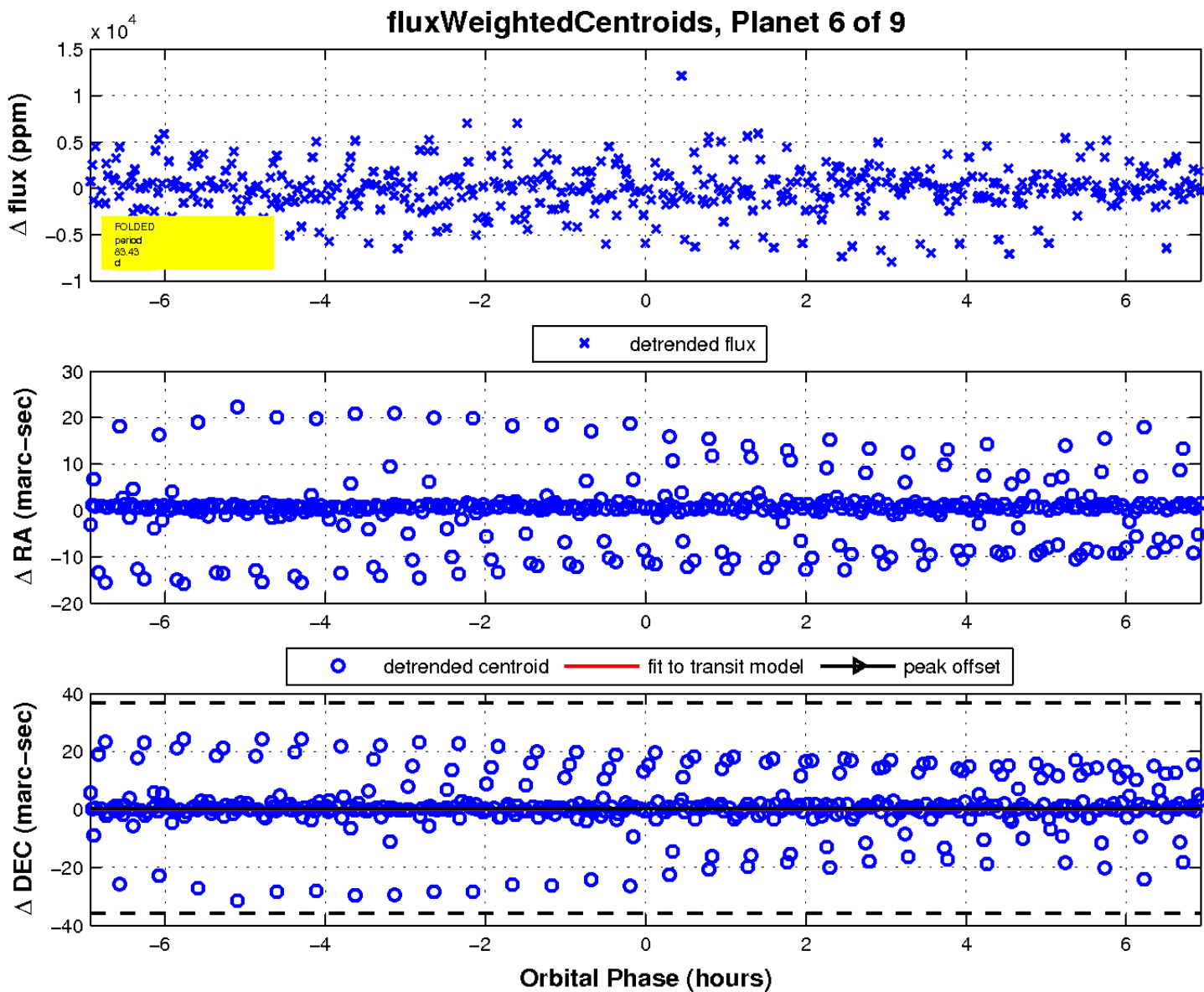
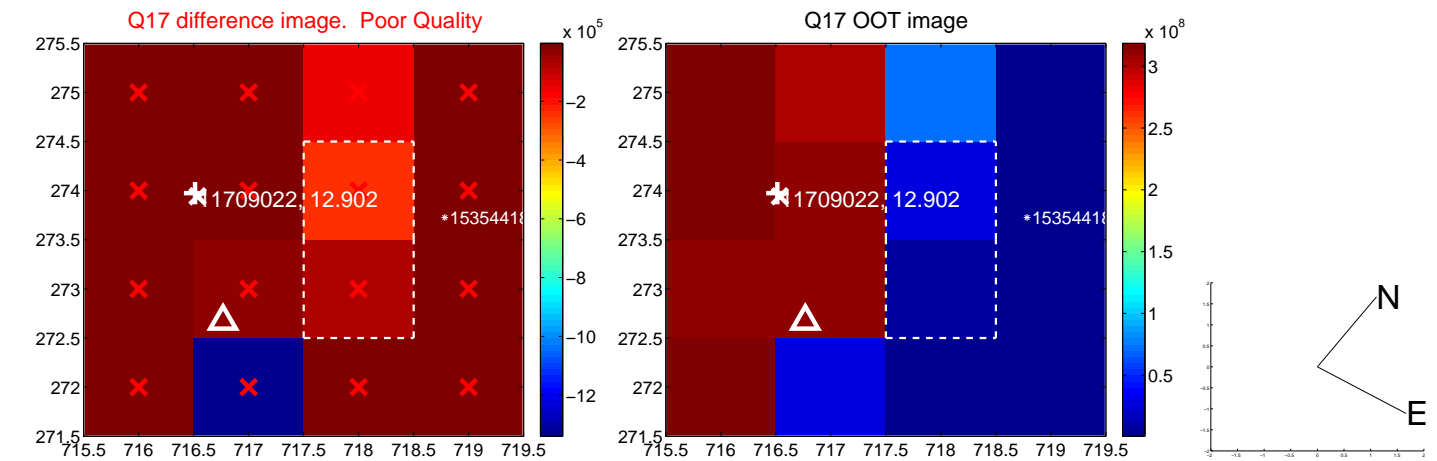
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



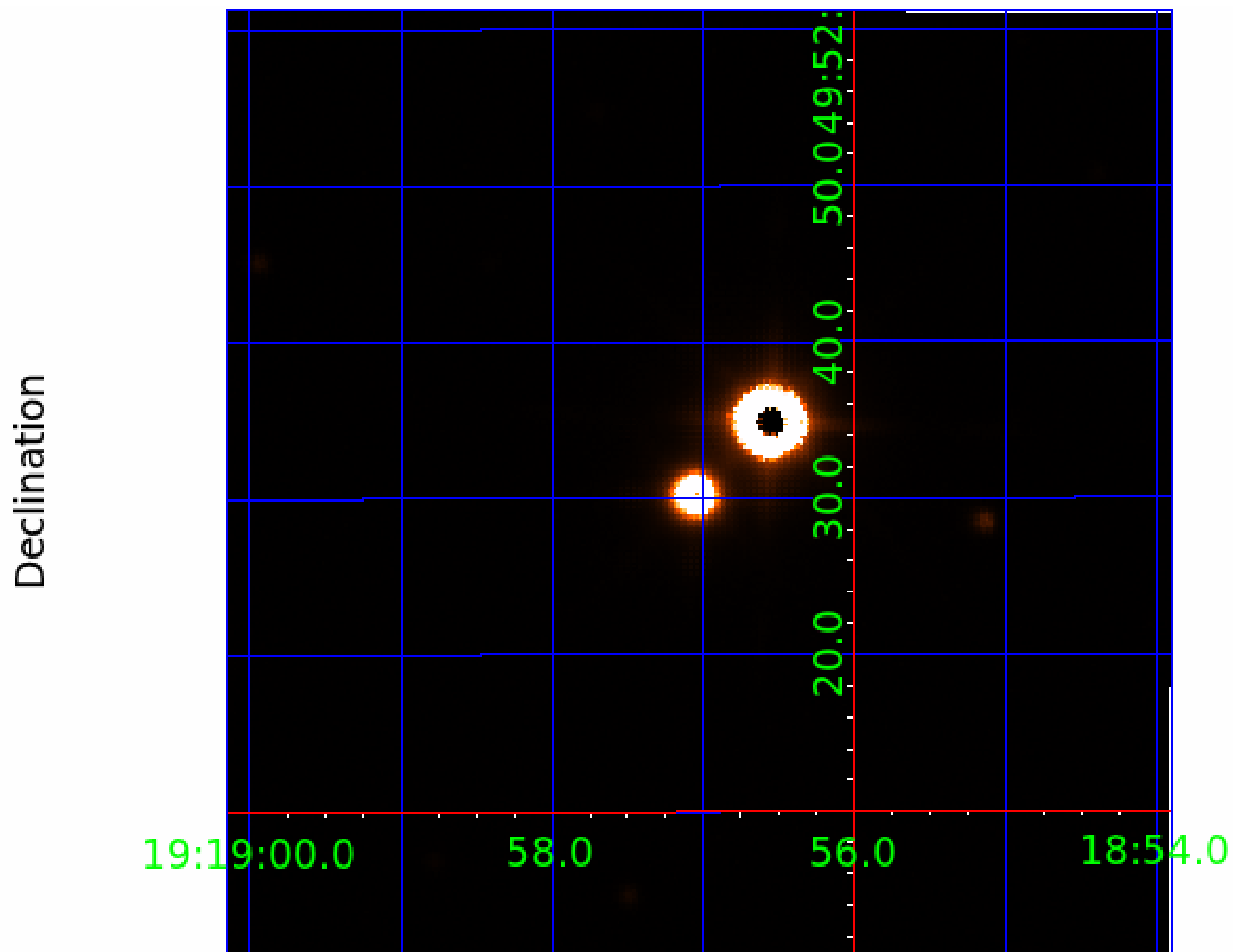
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

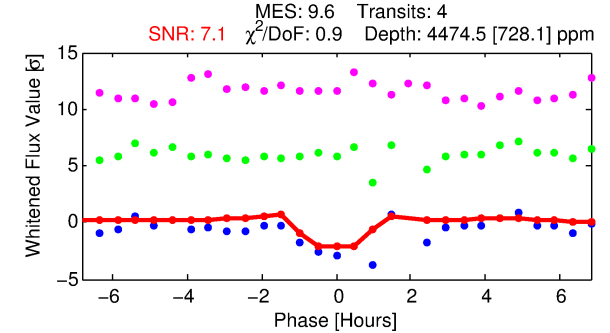
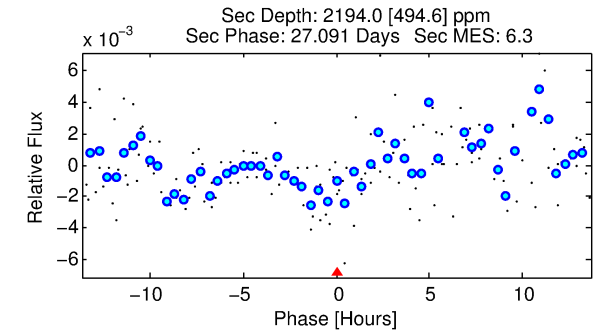
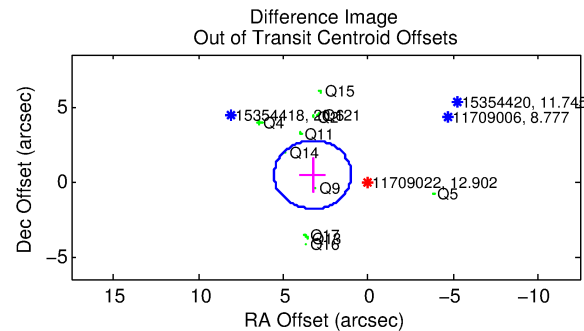
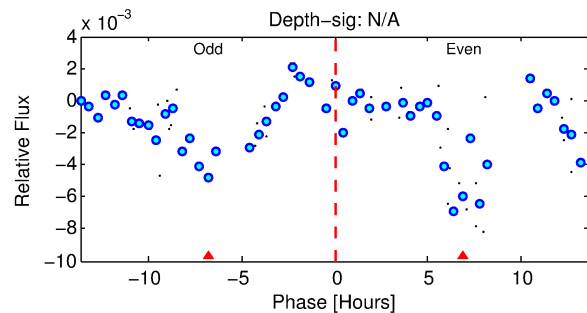
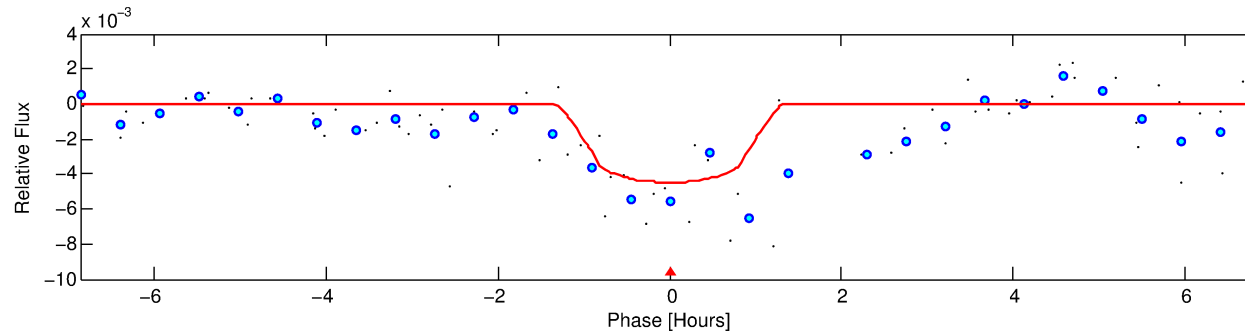
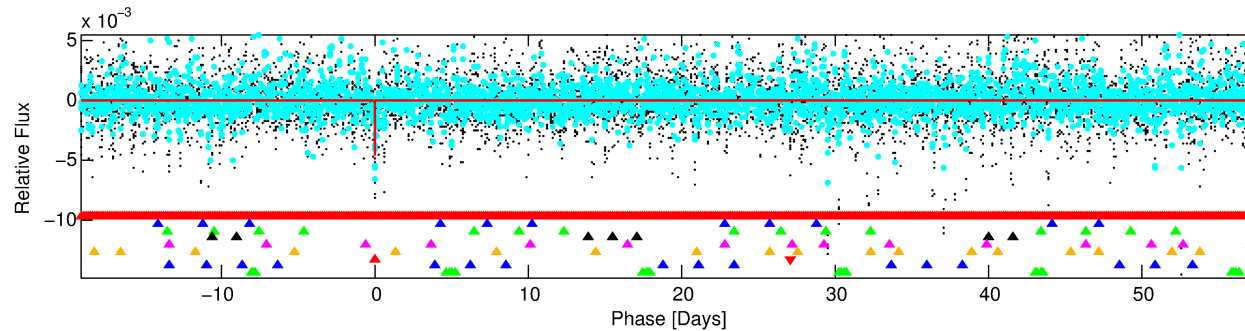
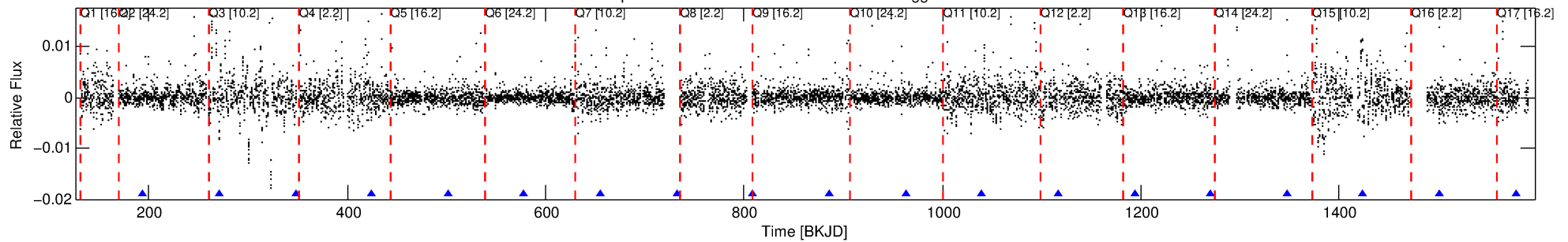
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 011709022-07

No Significant Match Found

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



DV Fit Results:

Period = 76.87338 [0.00071] d
Epoch = 194.2325 [0.0073] BKJD
Rp/R* = 0.0623 [0.0505]
a/R* = 246.92 [872.88]
b = 0.46 [6.17]

Seff = 0.29 [0.08]
Teq = 187 [13] K
Rp = 2.50 [2.13] Re
a = 0.2555 [0.0489] AU

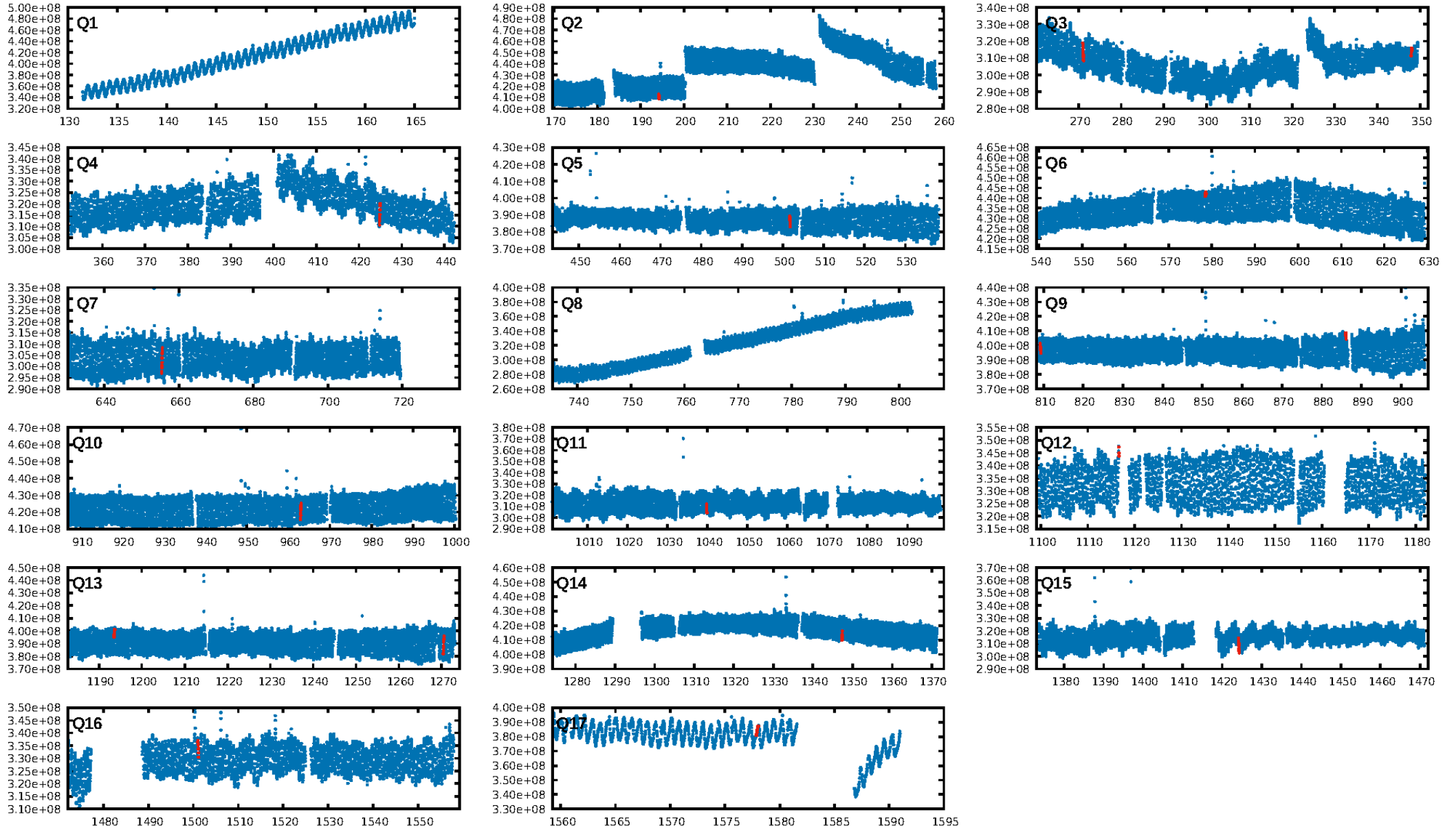
Ag = 12579.77 [20806.52] [0.60σ]
Teff = 3064 [1258] K [2.29σ]

DV Diagnostic Results:

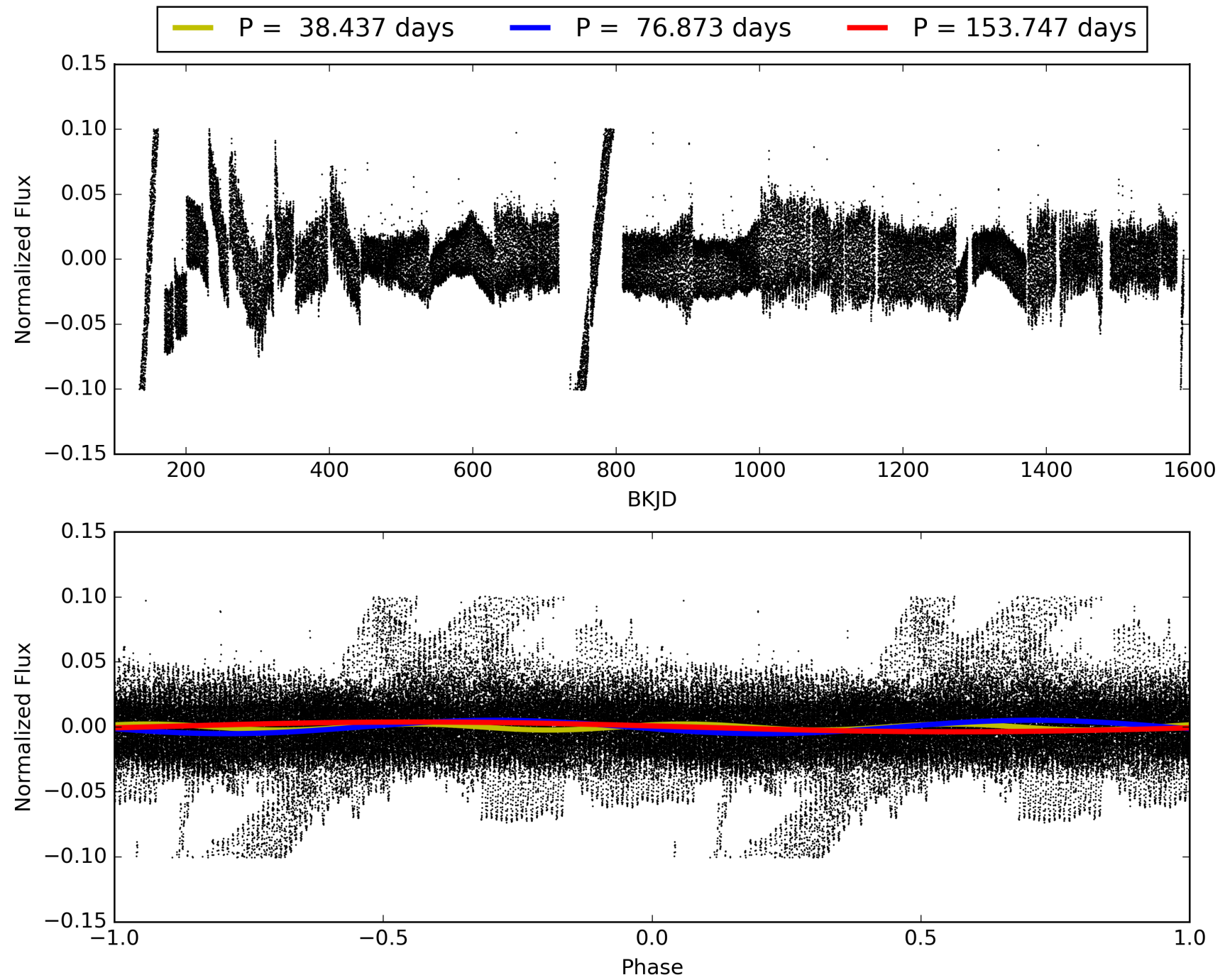
ShortPeriod-sig: 100.0% [73.42σ]
LongPeriod-sig: 100.0% [48.32σ]
ModelChiSquare2-sig: 54.1%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.6795

Centroid-sig: N/A
Centroid-so: 1.752 arcsec [64.92σ]
OotOffset-rm: 3.294 arcsec [4.34σ]
KicOffset-rm: 3.547 arcsec [5.06σ]
OotOffset-st: 3/2/2/4 [11]
KicOffset-st: 3/2/2/4 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 011709022-07, PDC Light Curves

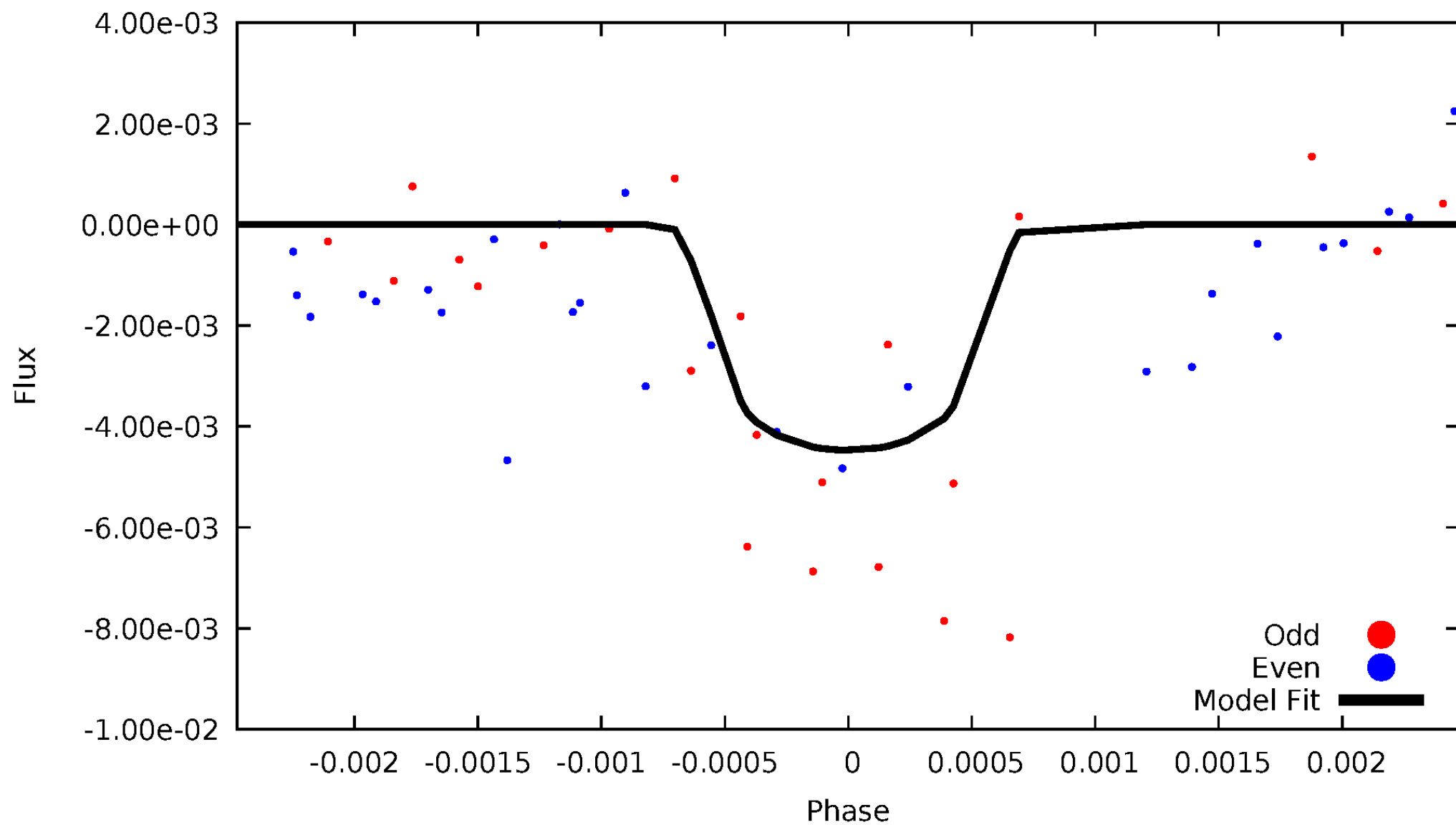


TCE 011709022-07



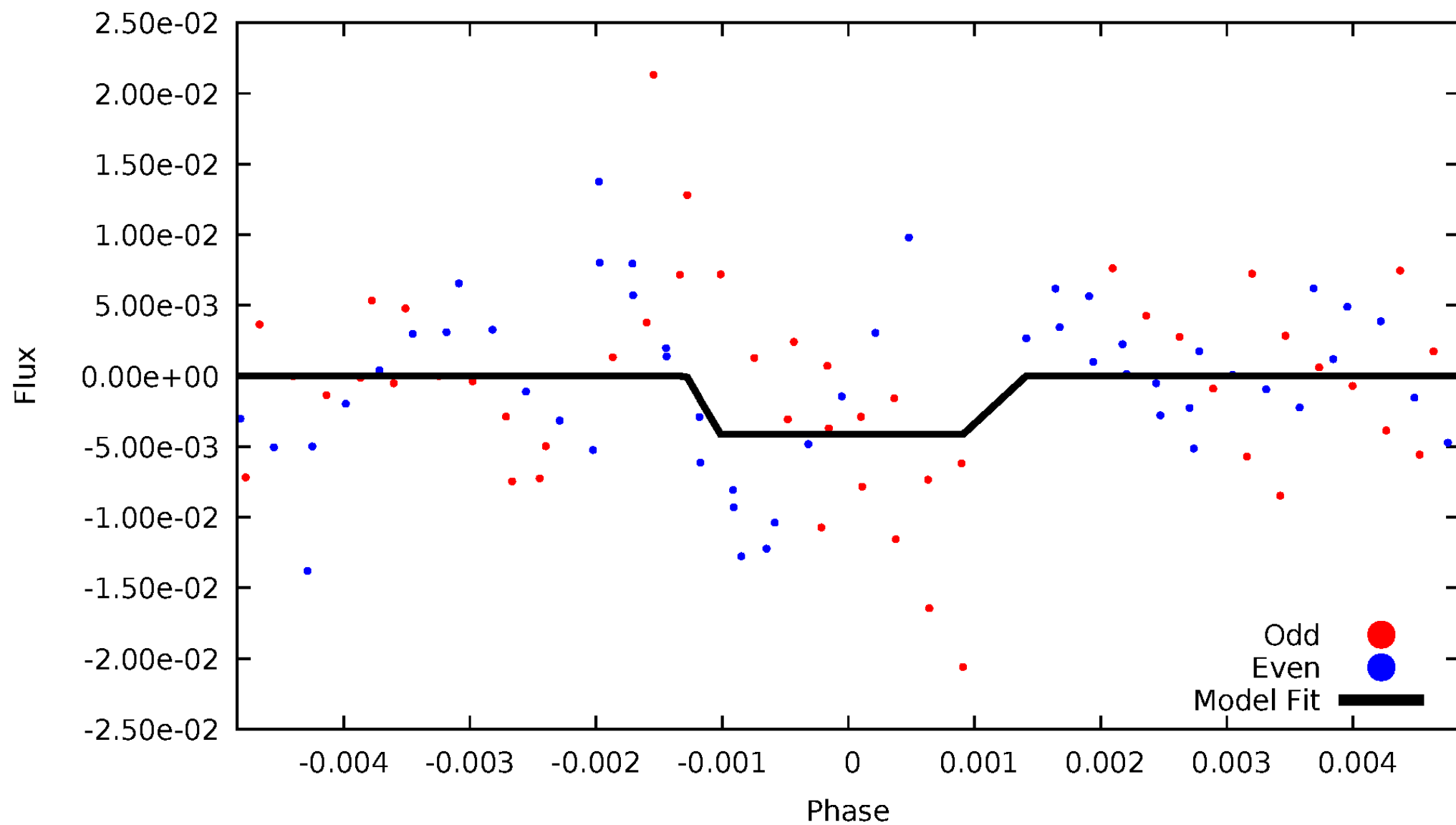
DV Odd/Even

TCE 011709022-07



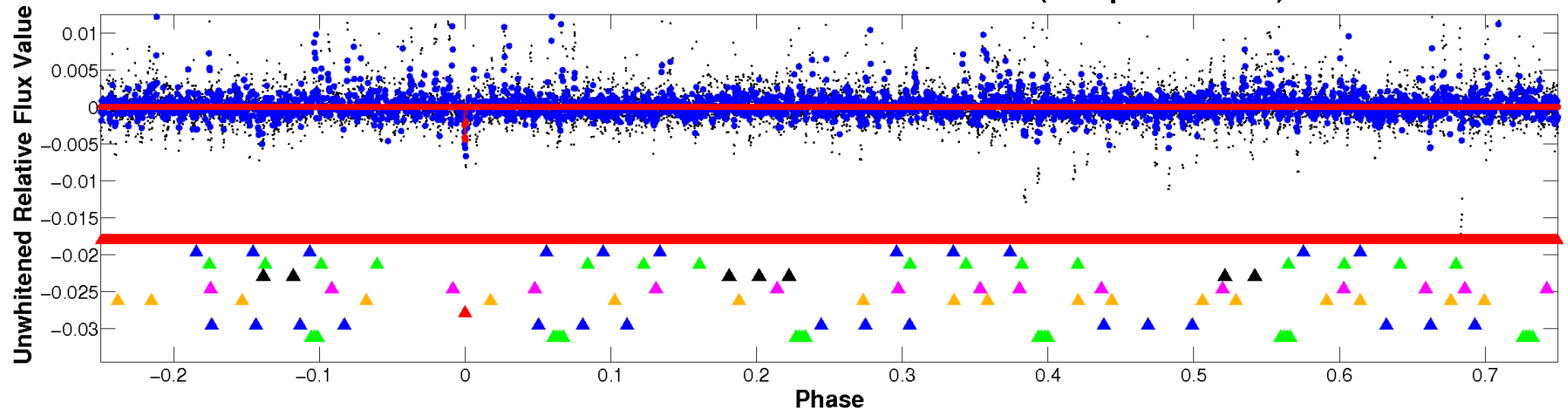
ALT Odd/Even

TCE 011709022-07

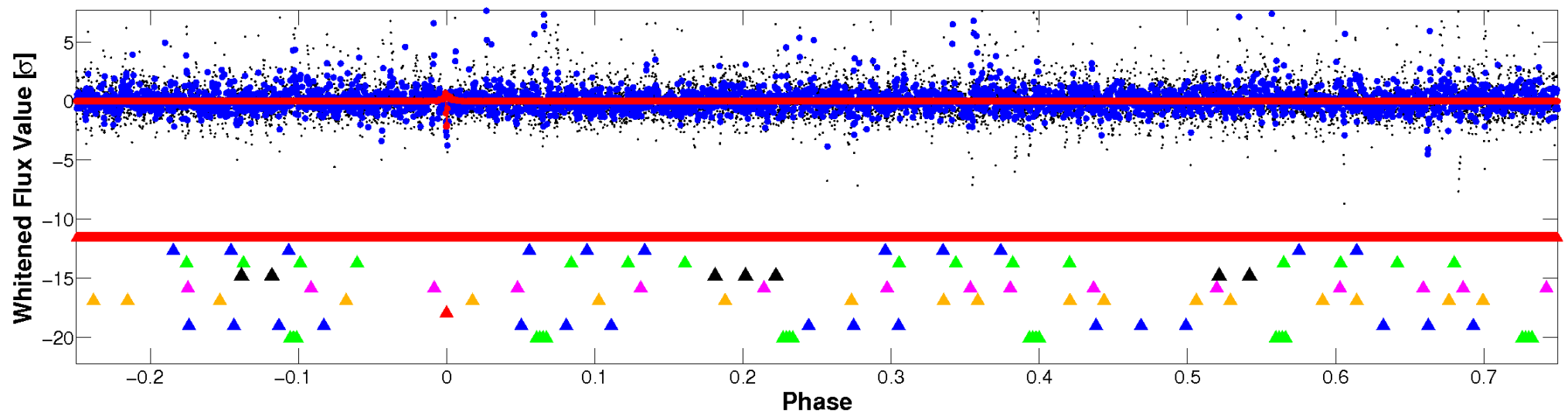


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

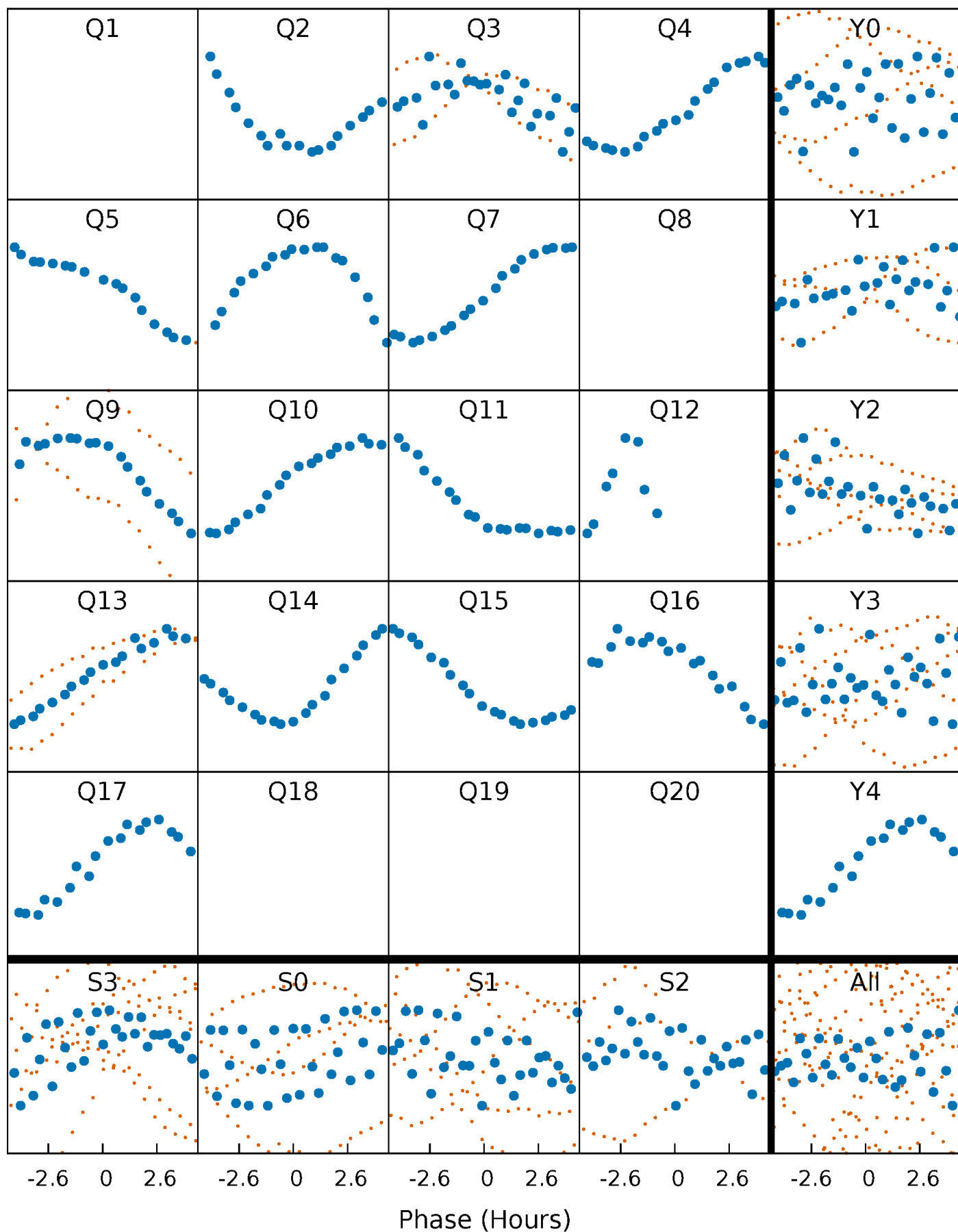


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



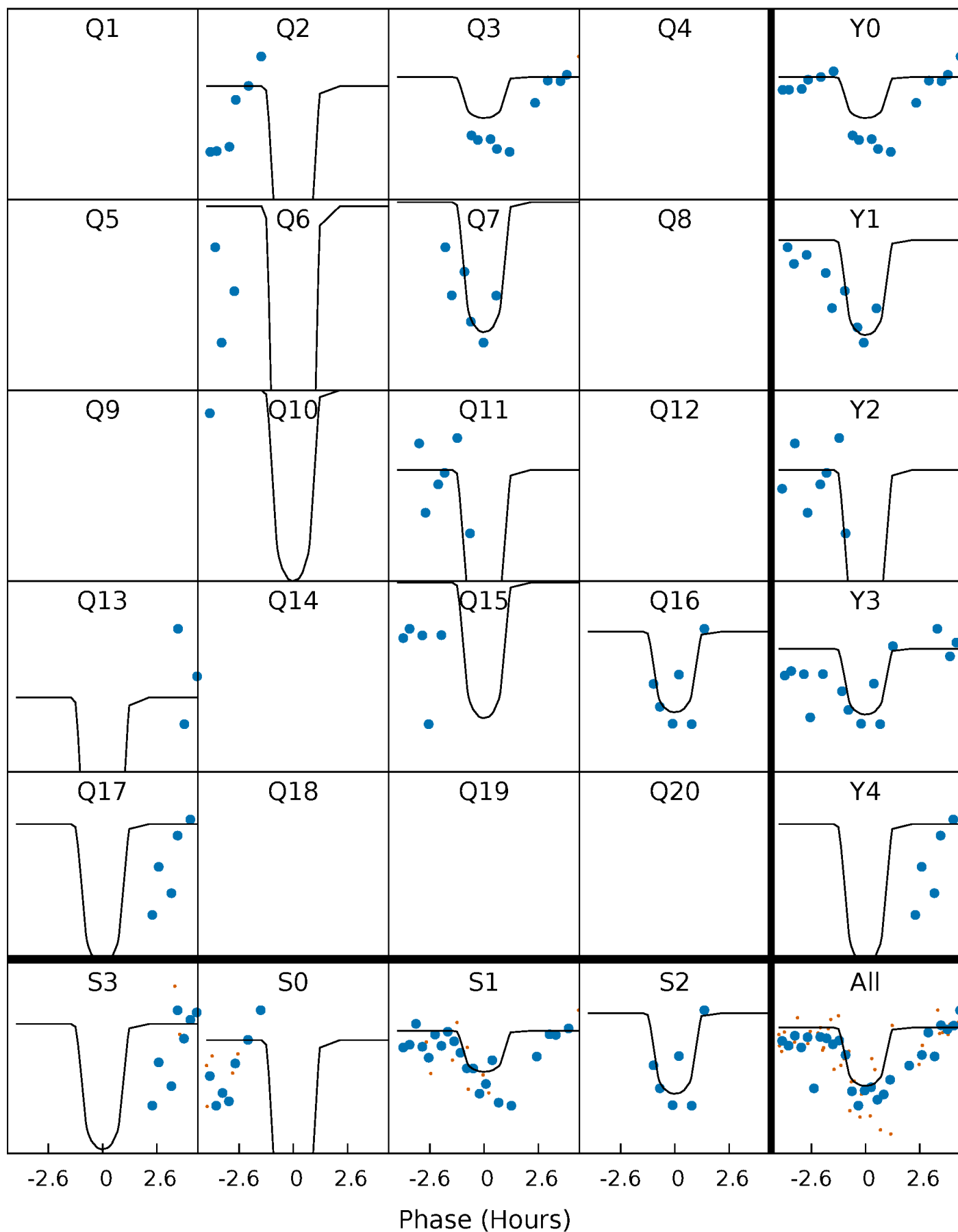
PDC Quarter-Phased Transit Curves

TCE 011709022-07 P= 76.873379 Days $T_0=194.232476$ (BKJD)



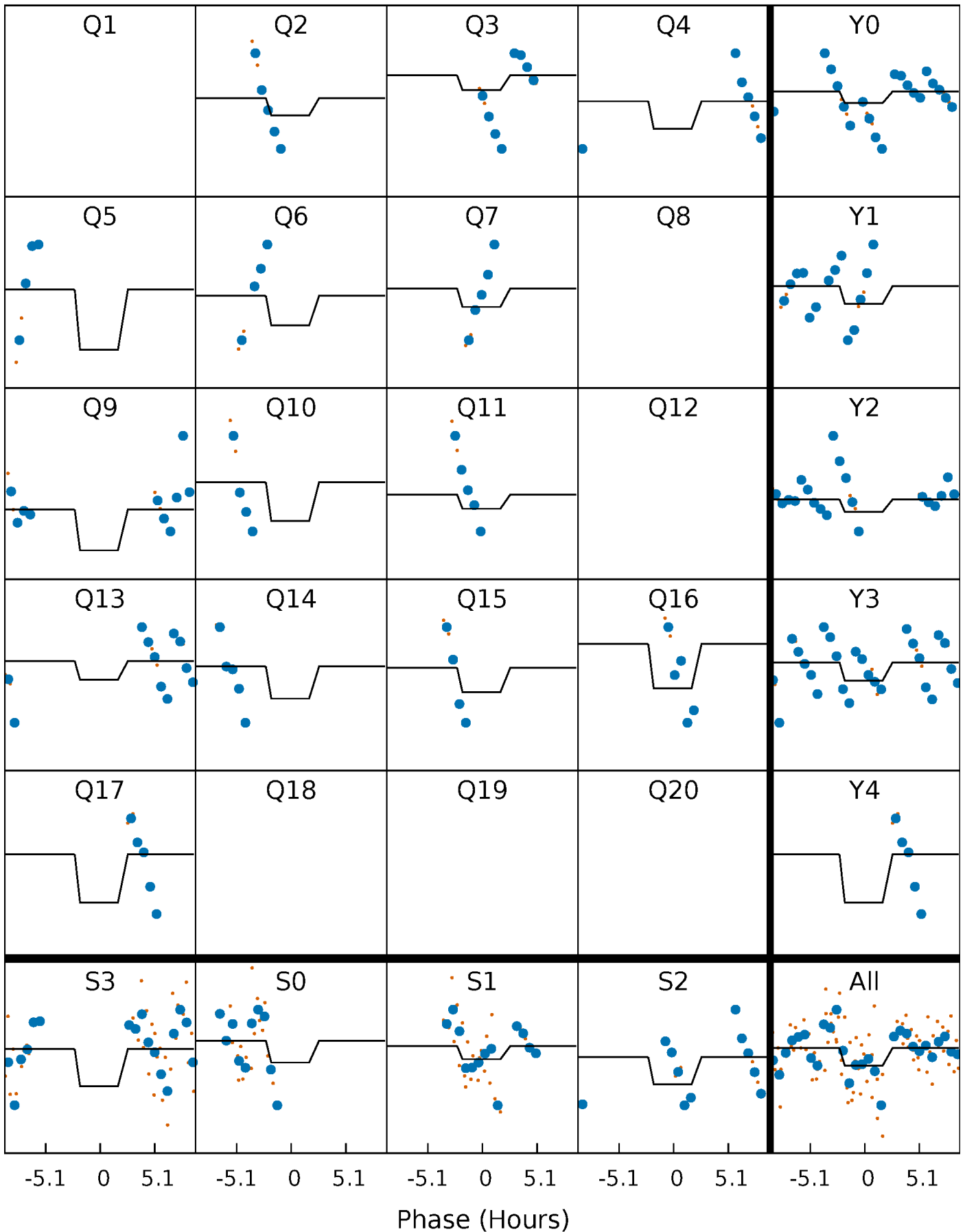
DV Quarter-Phased Transit Curves

TCE 011709022-07 $P = 76.873379$ Days $T_0 = 194.232476$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

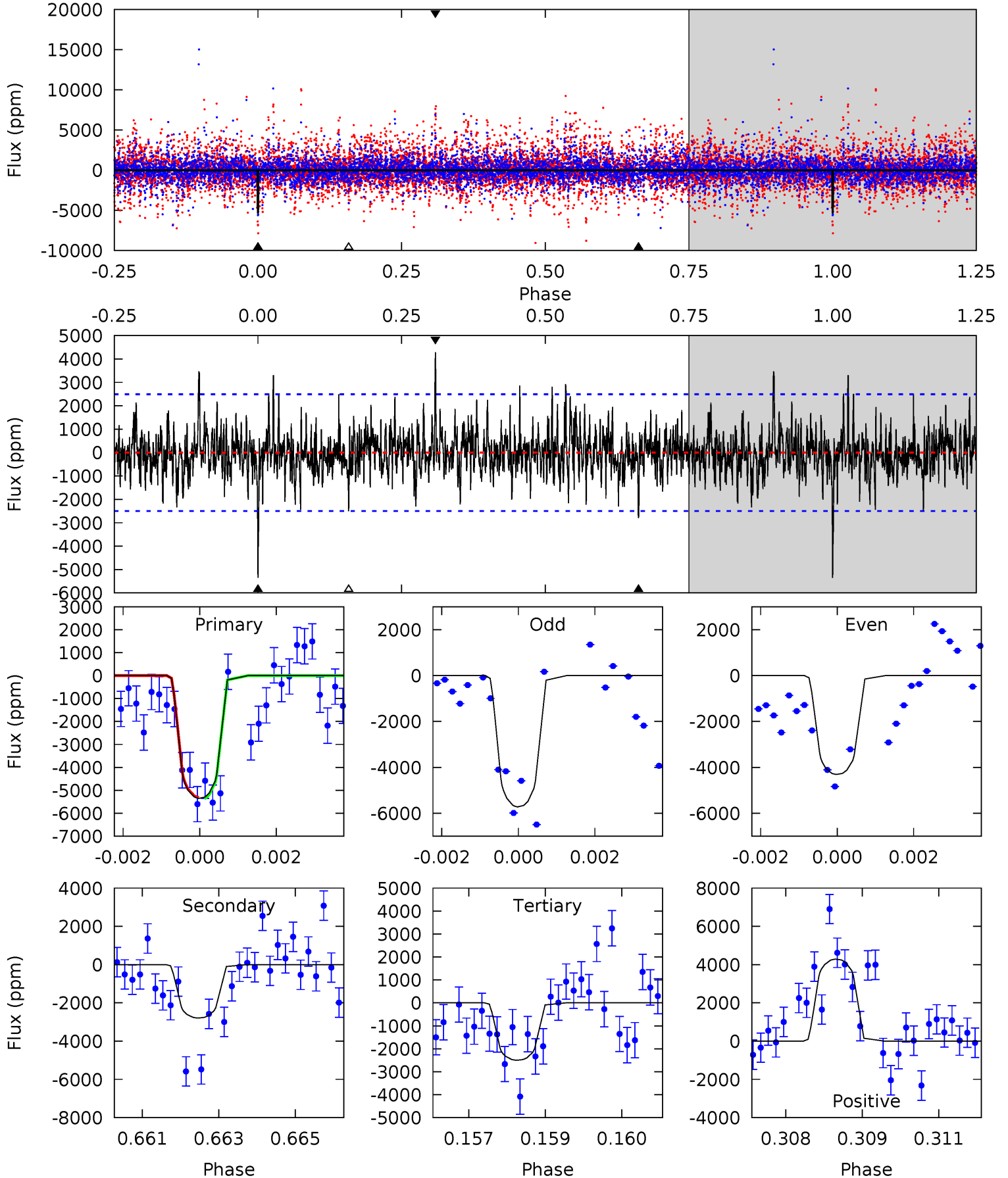
TCE 011709022-07 P= 76.873612 Days $T_0=194.212783$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-07, $P = 76.873379$ Days, $E = 117.359097$ Days

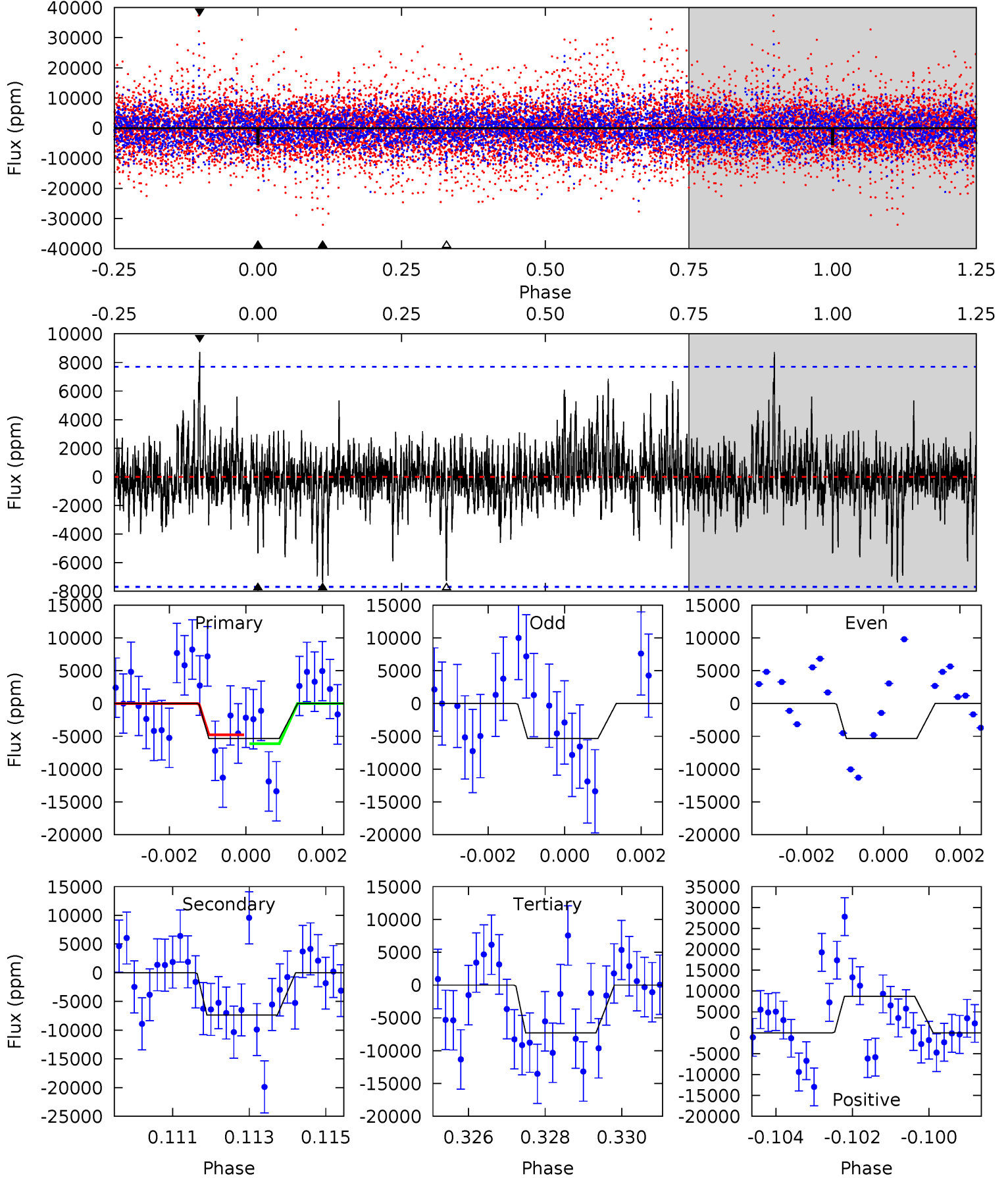
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	5.97	5.34	9.16	5.34	3.10	1.69	6.09	2.27	0.63	-3.19	1.12	1.07	0.44	0.06



Alt Model-Shift Uniqueness Test

011709022-07, P = 76.873612 Days, E = 117.339171 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.69	5.10	5.03	6.03	5.32	3.08	1.15	-1.34	-2.34	0.07	-0.93	0.00	1.01	0.54	0.47



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2795 ± 468	$2.70^{+1.83}_{-1.53}$	258^{+14}_{-13}	3266^{+1035}_{-468}	13647^{+60746}_{-8772}
Alt.	-7381 ± 1447	$2.88^{+1.86}_{-1.70}$	260^{+14}_{-14}	3731^{+1531}_{-574}	$32085^{+160351}_{-20508}$

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 $A_{obs} \gg 1.0$

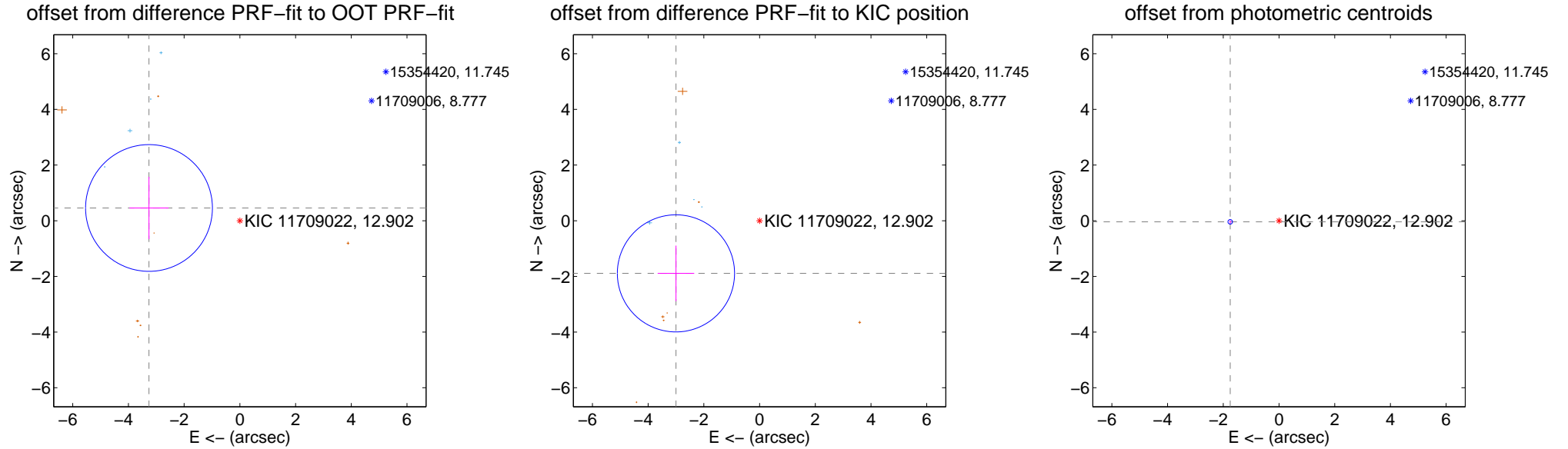
DV Centroid Data

Supplemental centroid analysis for 011709022-07. Kepler magnitude: 12.90. Transit SNR 7.07

There are 4 quarters with good PRF difference image offsets

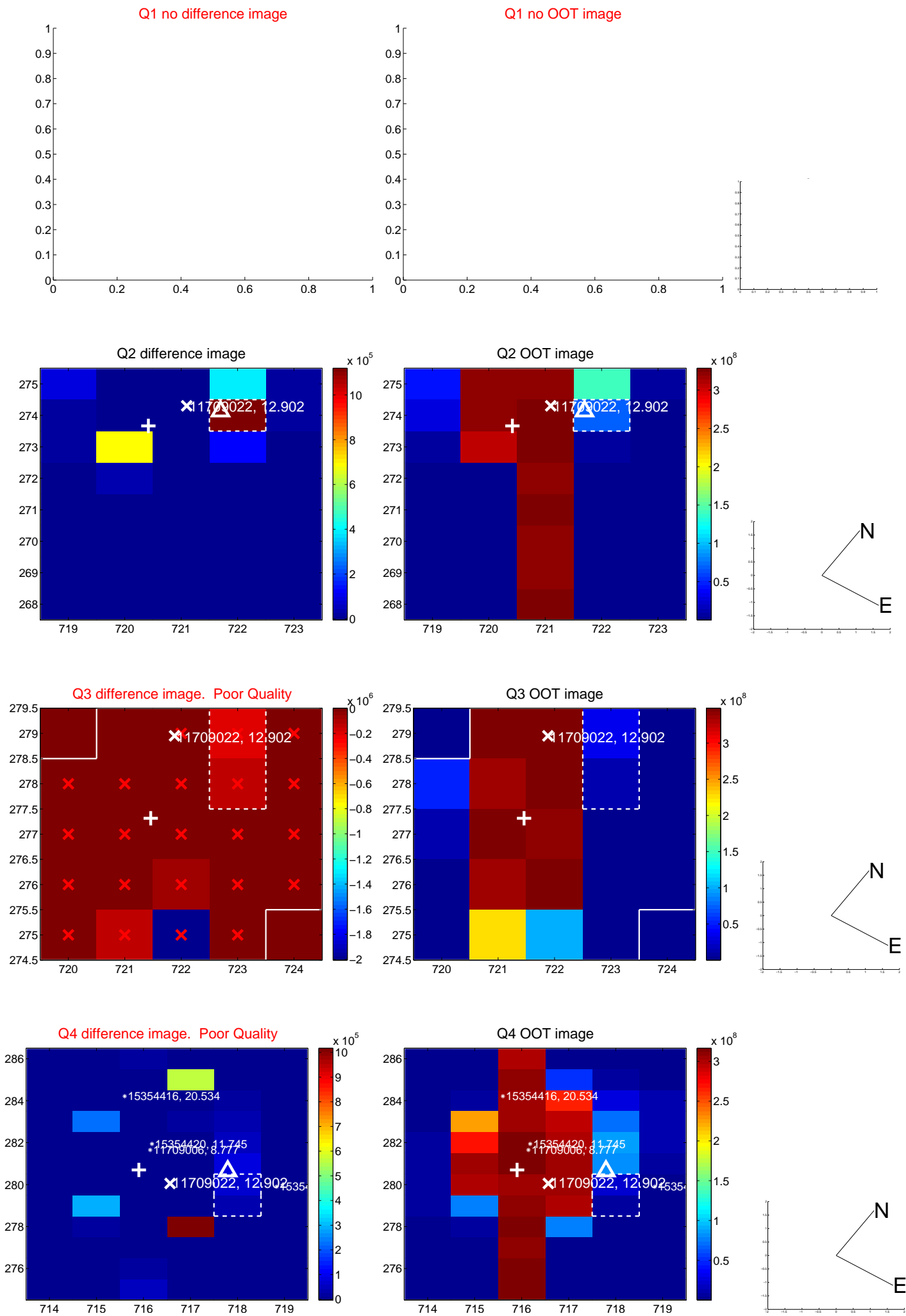
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.294 ± 0.759	4.34	3.262 ± 0.702	0.458 ± 1.119
PRF-fit source offset from KIC position	3.547 ± 0.701	5.06	3.001 ± 0.656	-1.891 ± 0.998
photometric centroid source offset	1.75 ± 0.03	64.92	1.75 ± 0.03	-0.04 ± 0.05

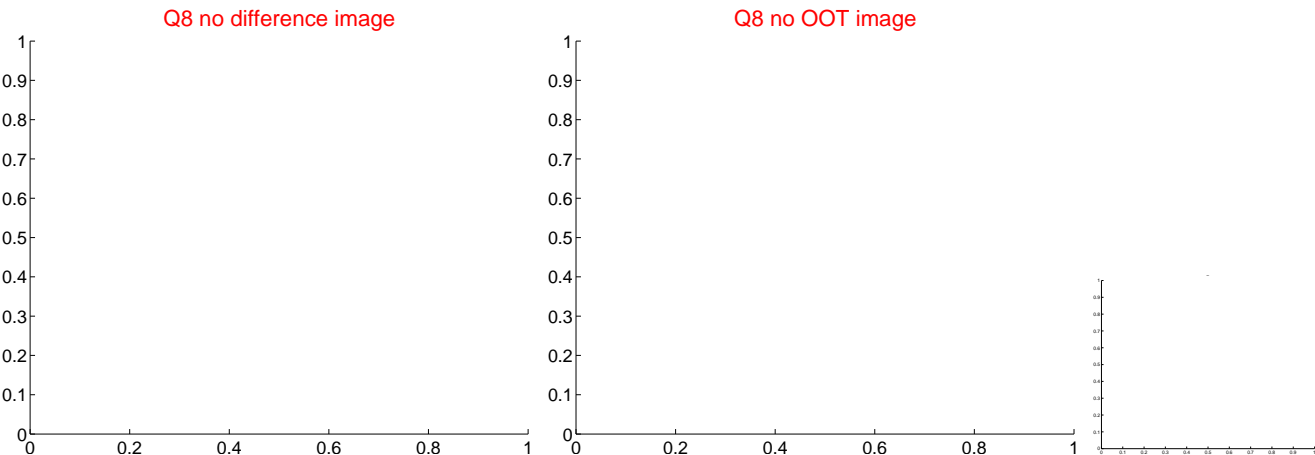
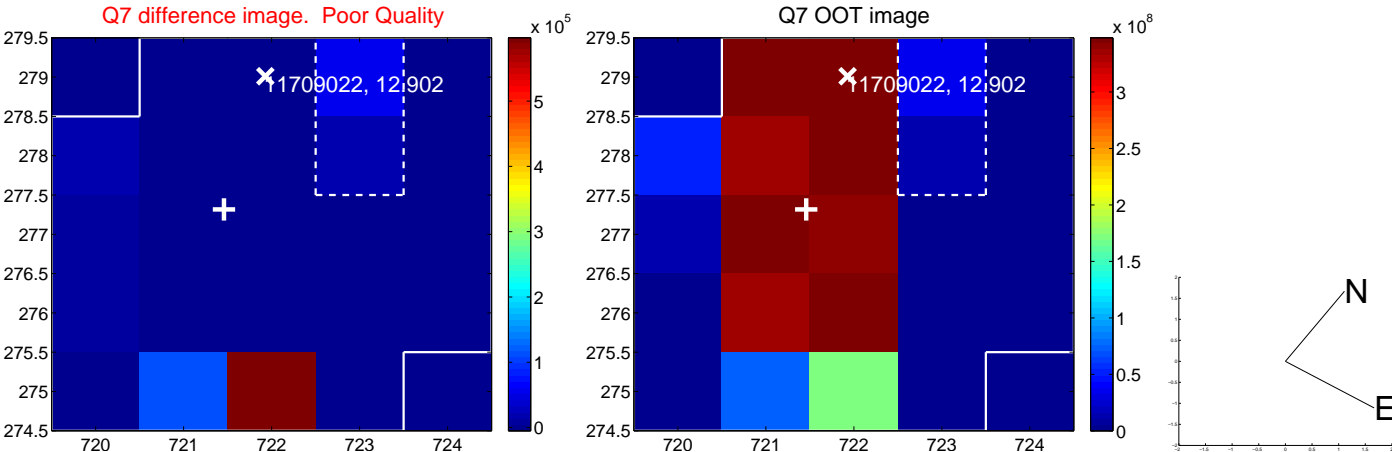
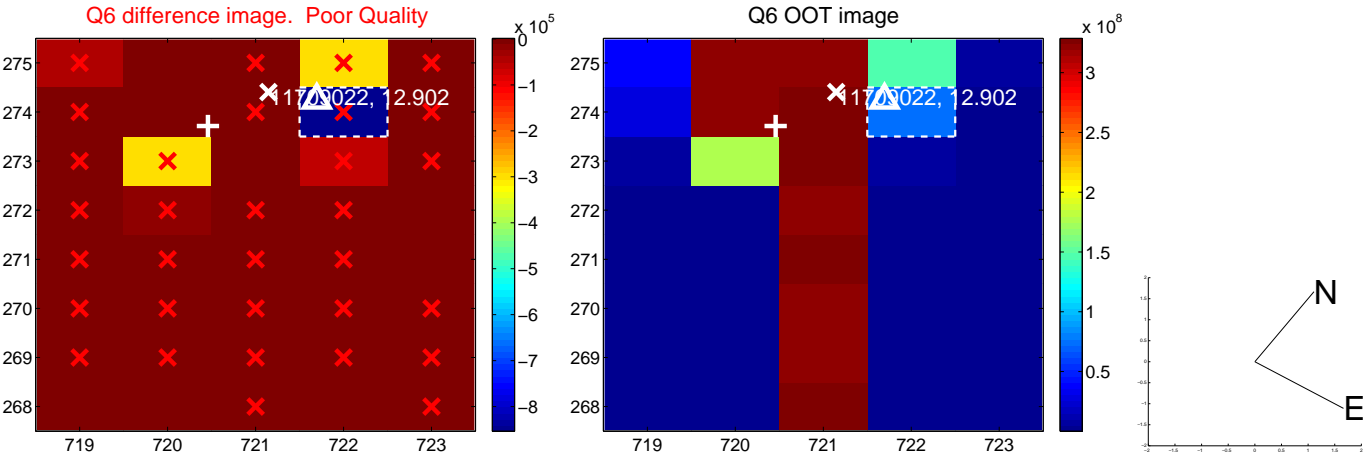
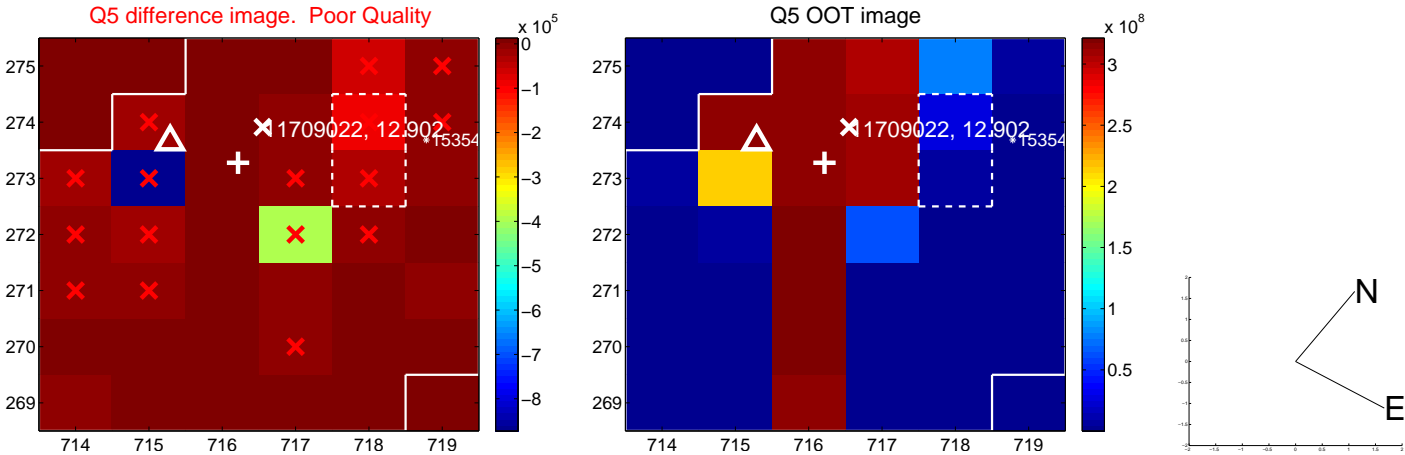


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

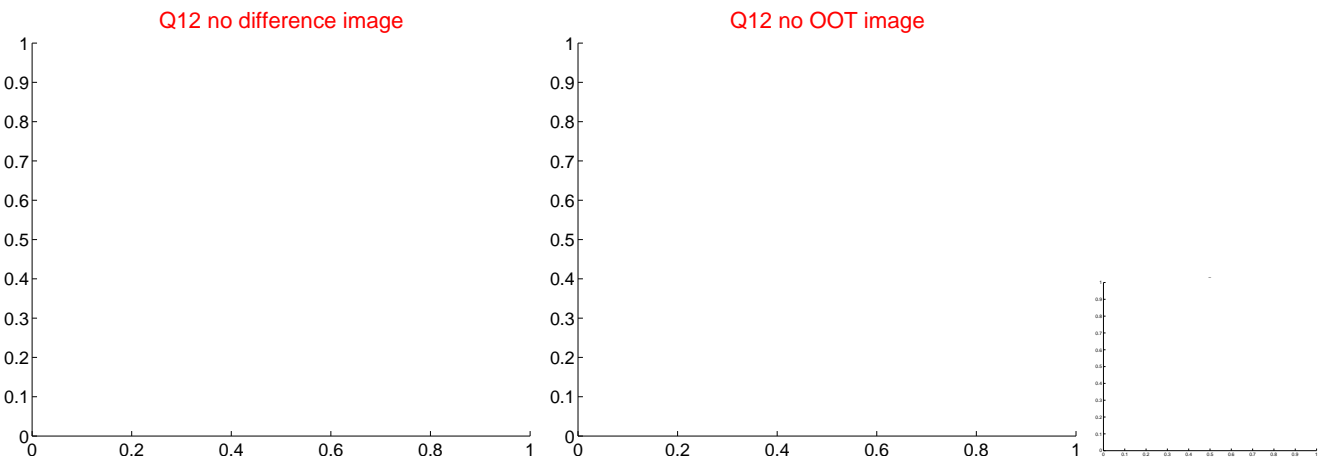
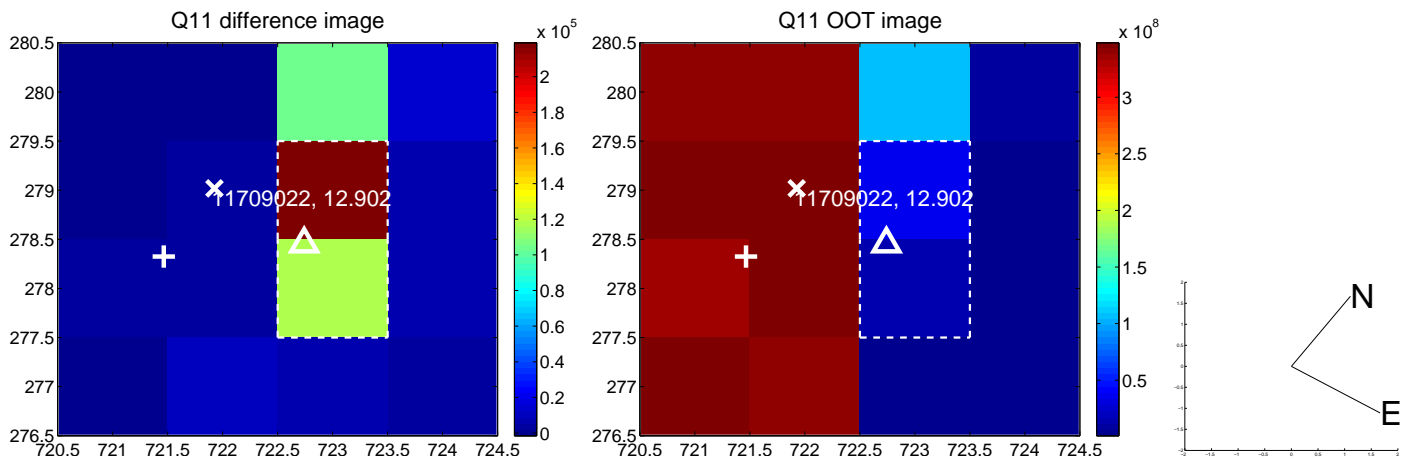
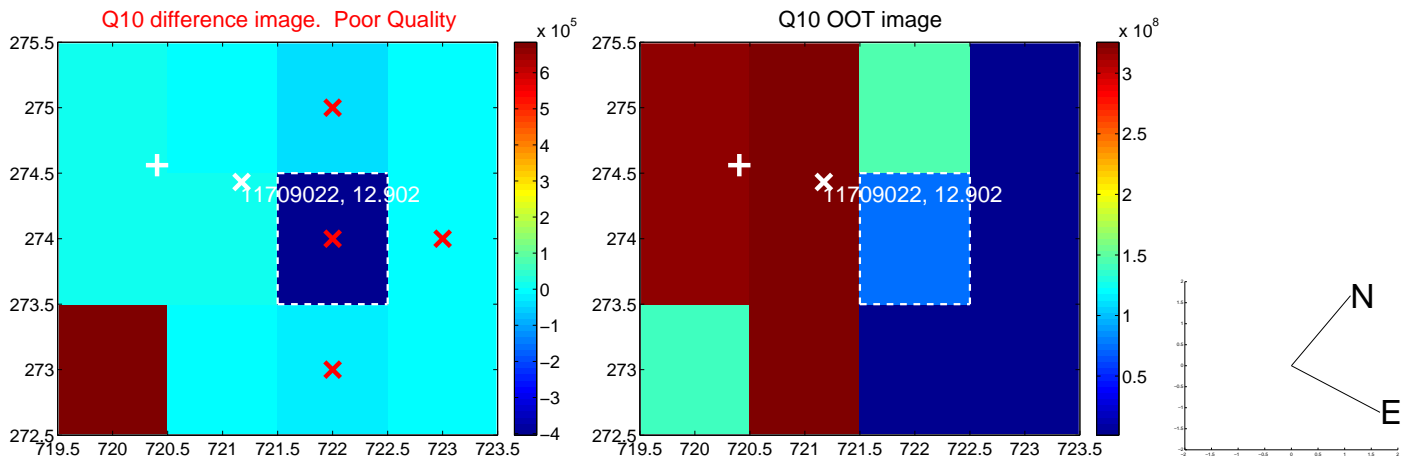
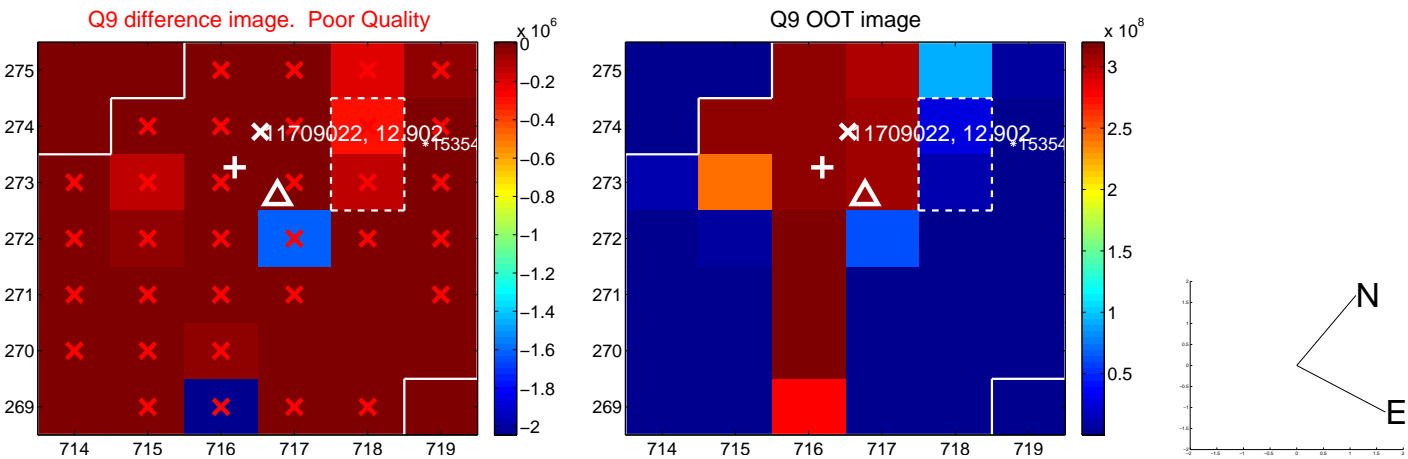
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



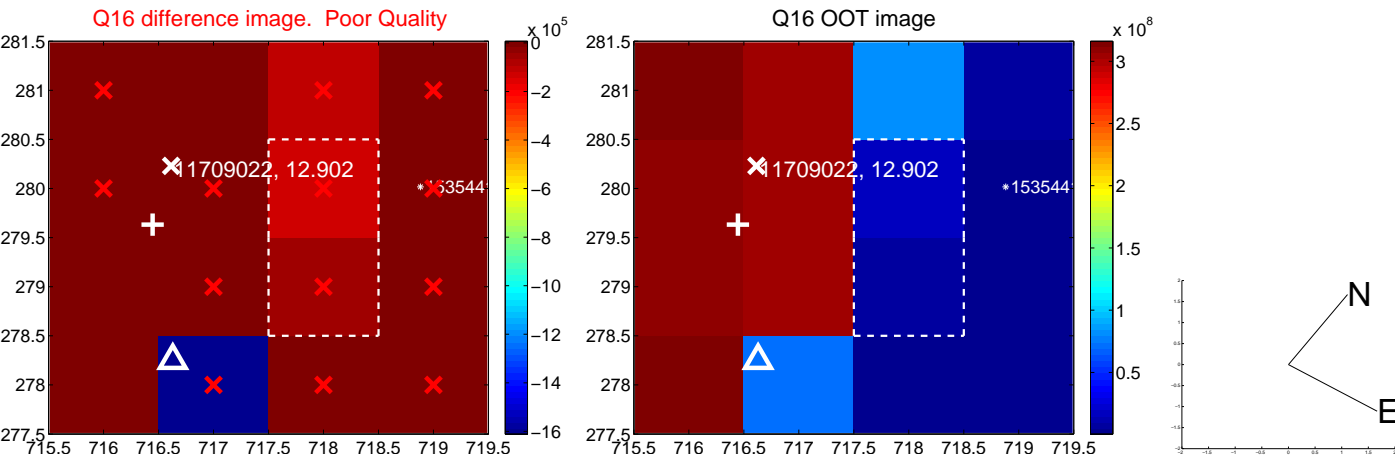
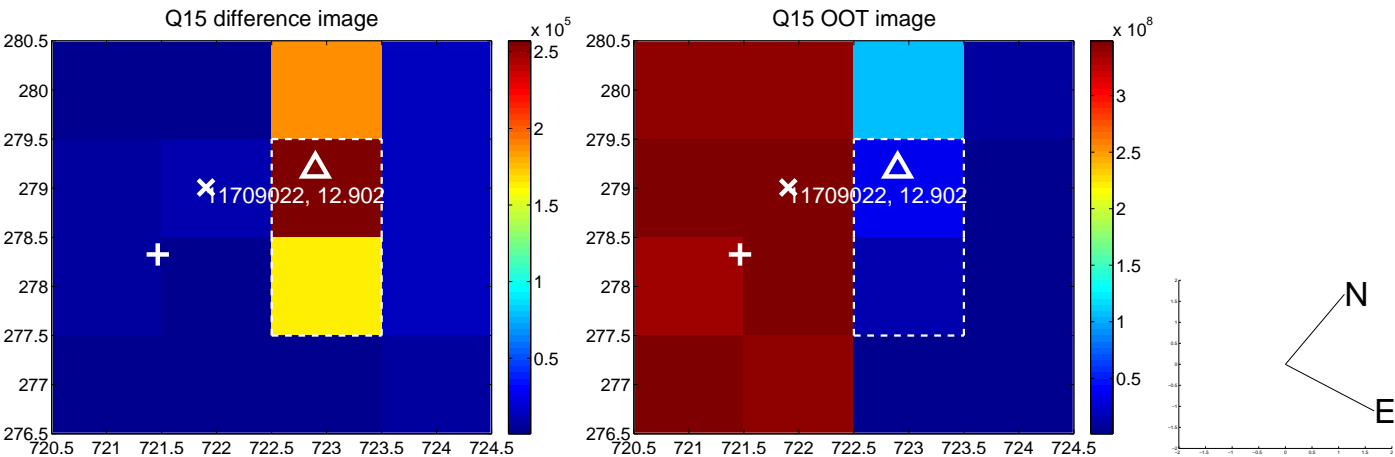
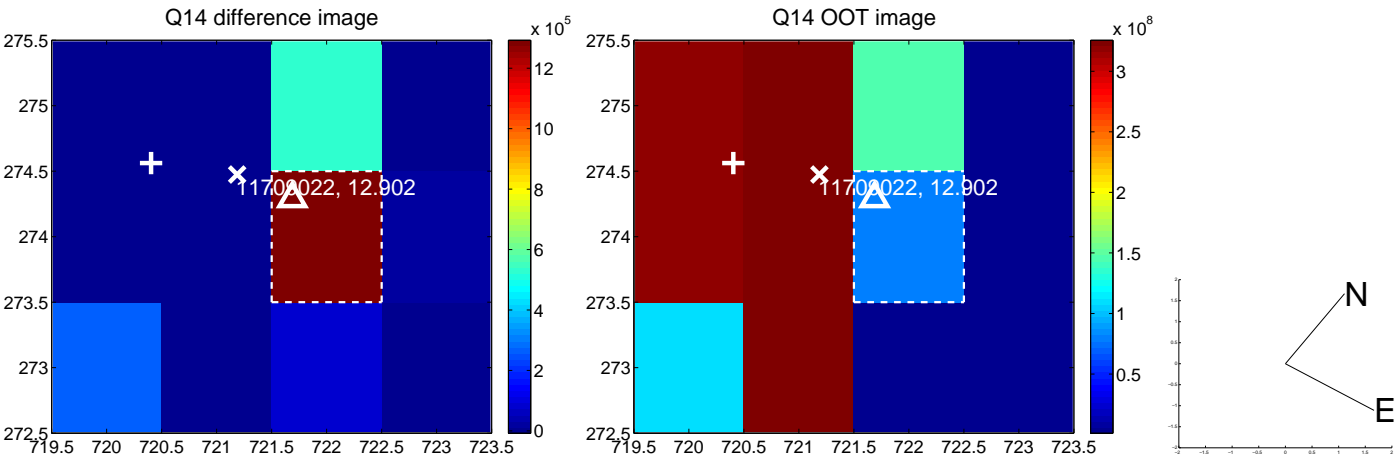
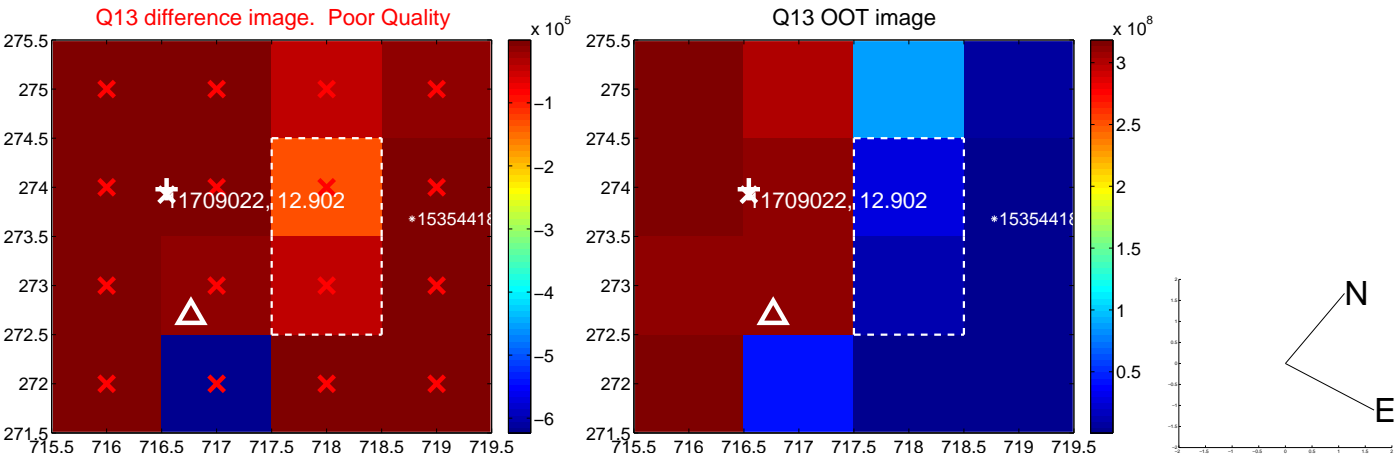
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



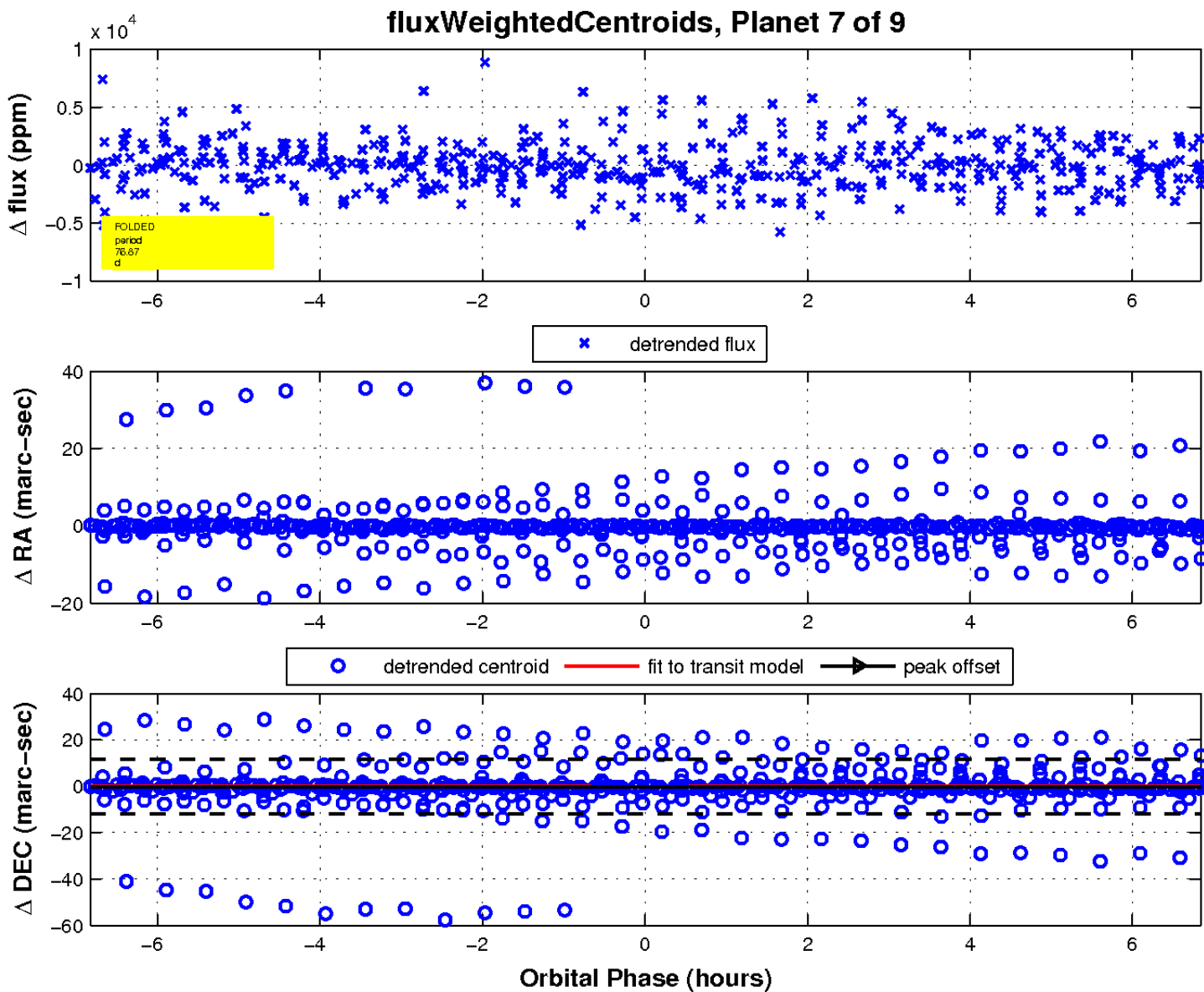
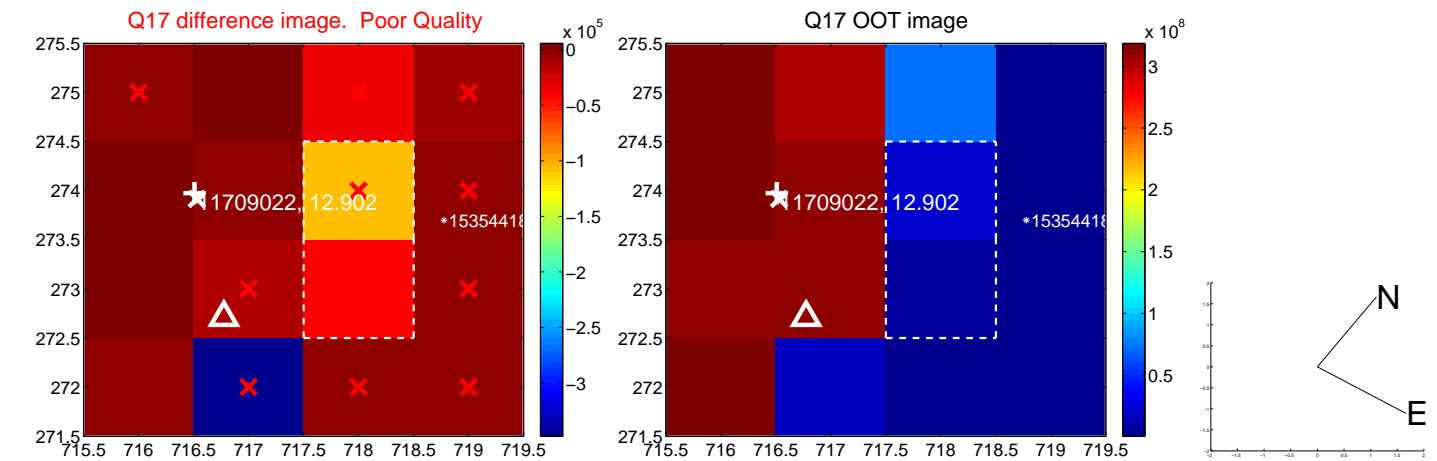
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



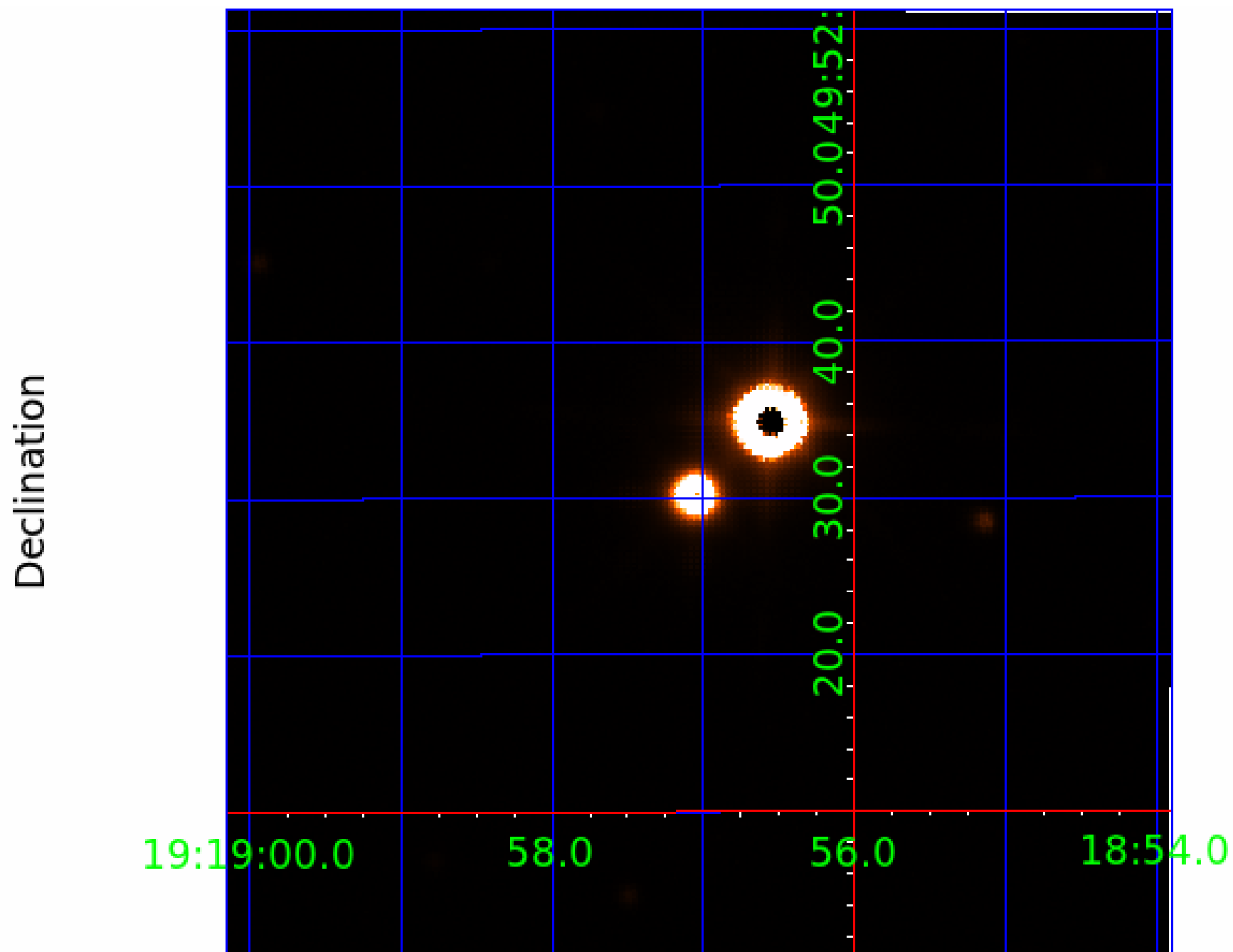
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

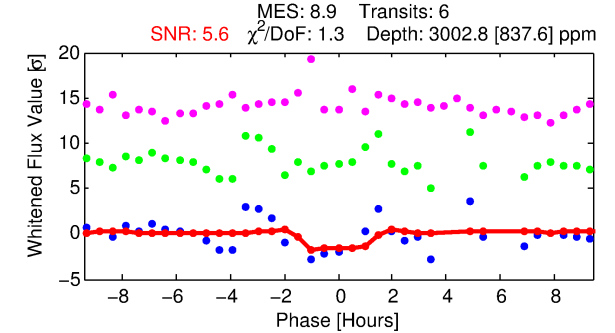
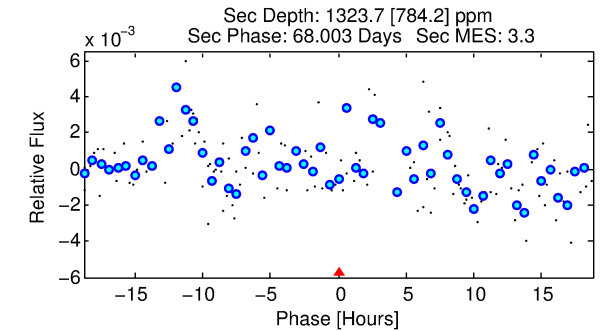
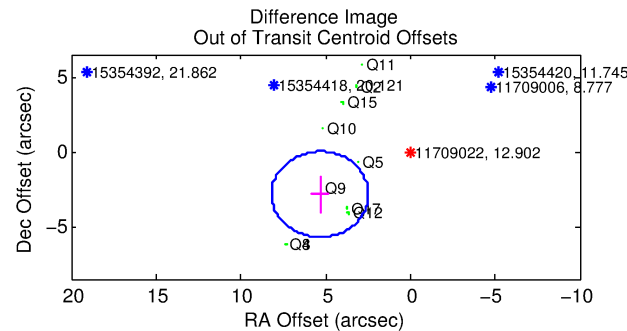
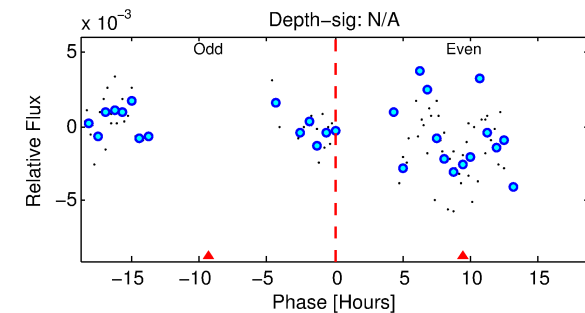
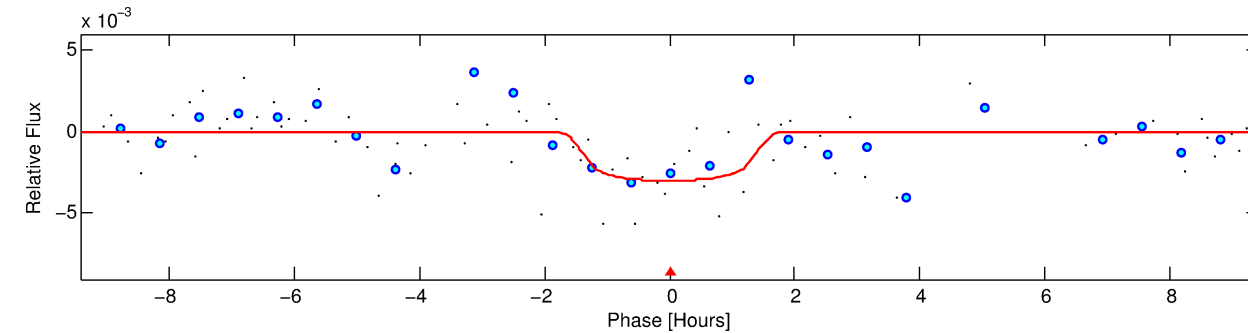
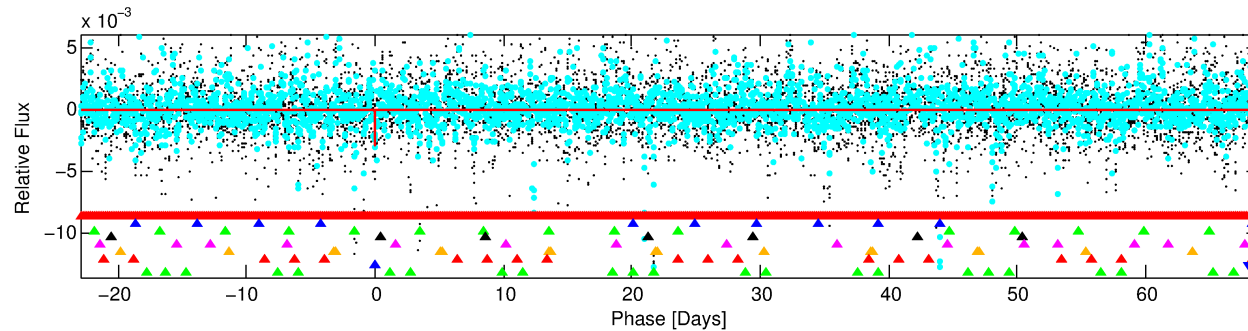
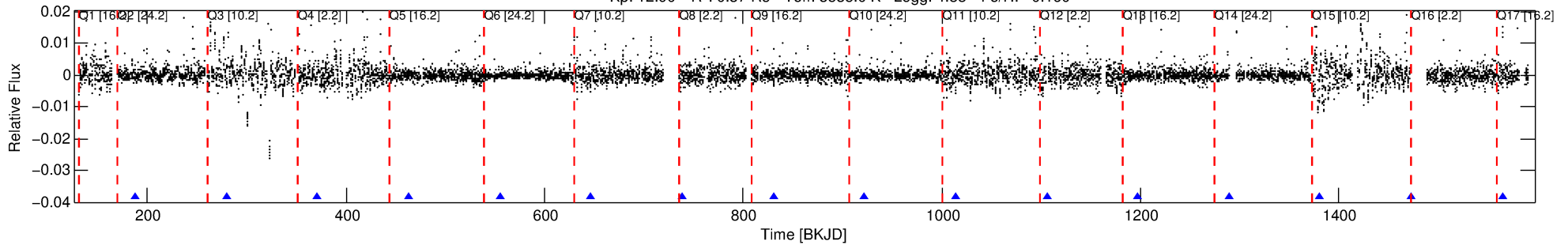
Ephemeris Match Information For 011709022-08

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 8 of 9 Period: 91.781 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



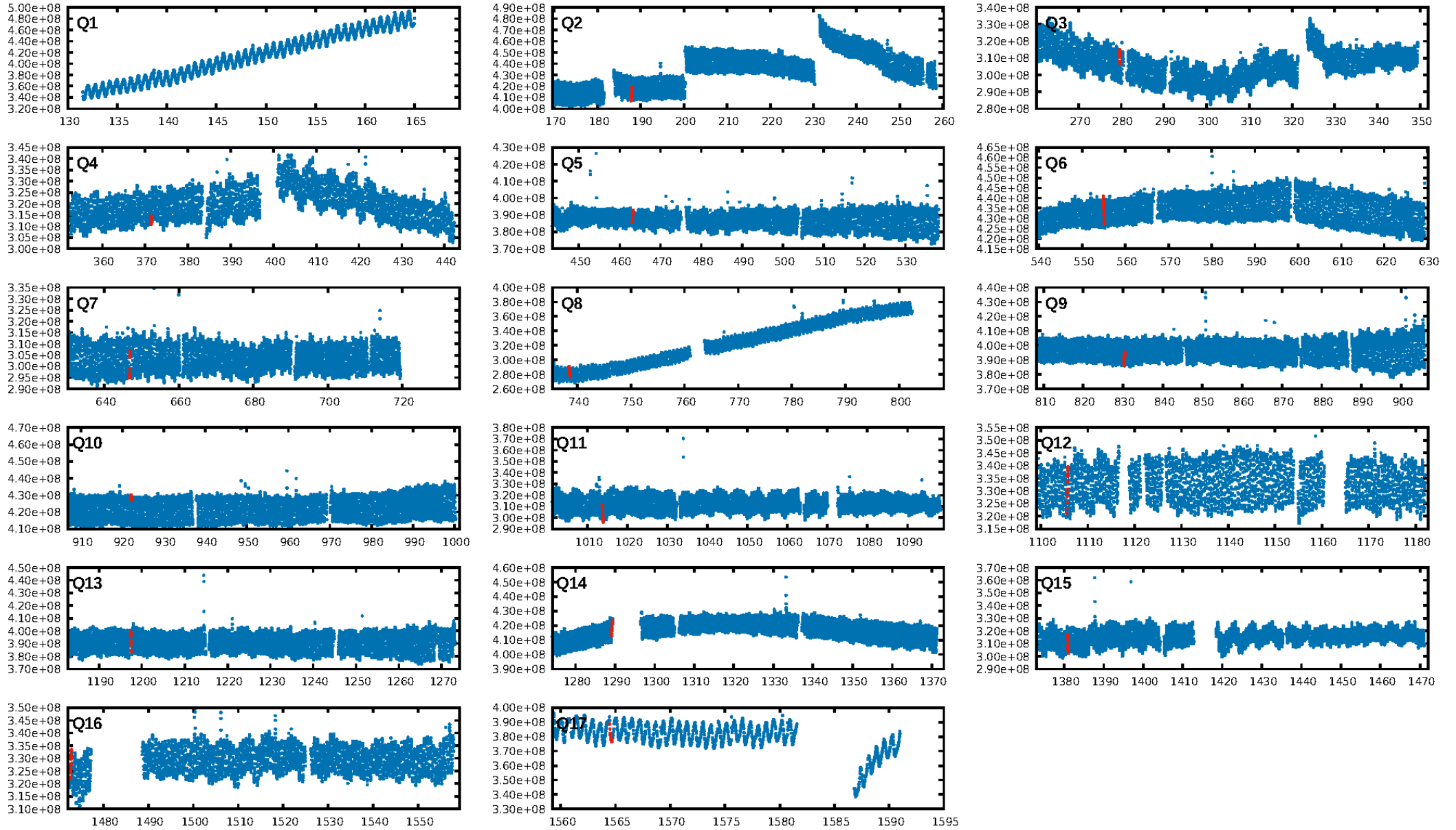
DV Fit Results:

Period = 91.78150 [0.00392] d
Epoch = 187.8668 [0.0255] BKJD
Rp/R* = 0.0525 [0.0741]
a/R* = 189.92 [1175.96]
b = 0.62 [6.10]
Seff = 0.23 [0.06]
Teq = 176 [12] K
Rp = 2.11 [3.02] Re
a = 0.2876 [0.0551] AU
Ag = 13574.18 [39300.18] [0.35σ]
Teffp = 2944 [2126] K [1.30σ]

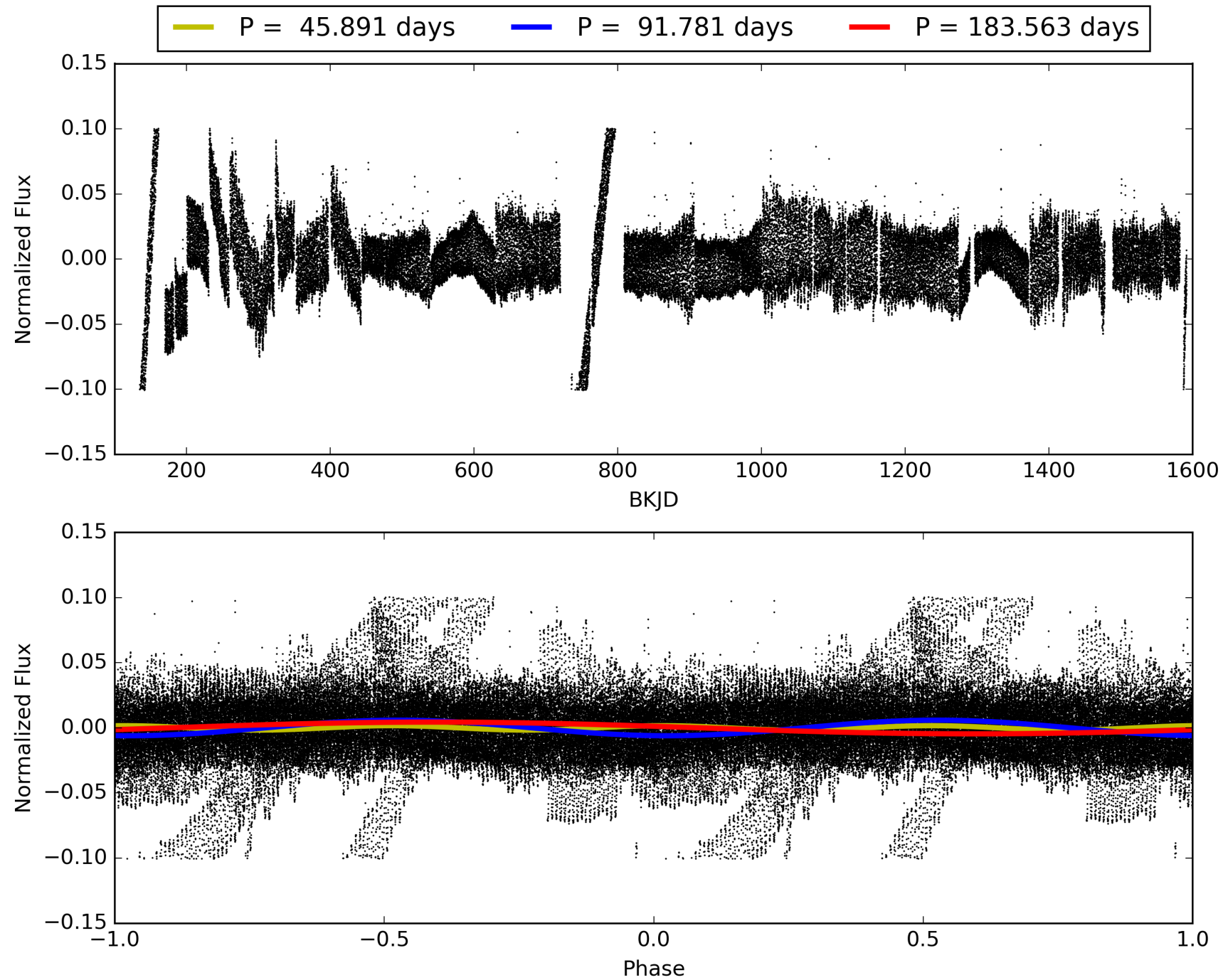
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.36σ]
LongPeriod-sig: 100.0% [27.34σ]
ModelChiSquare2-sig: 6.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 3.236
Centroid-sig: N/A
Centroid-so: 1.767 arcsec [37.43σ]
OotOffset-rm: 6.042 arcsec [6.34σ]
KicOffset-rm: 5.078 arcsec [6.48σ]
OotOffset-st: 2/2/3/3 [10]
KicOffset-st: 2/2/3/3 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/13]

TCE 011709022-08, PDC Light Curves

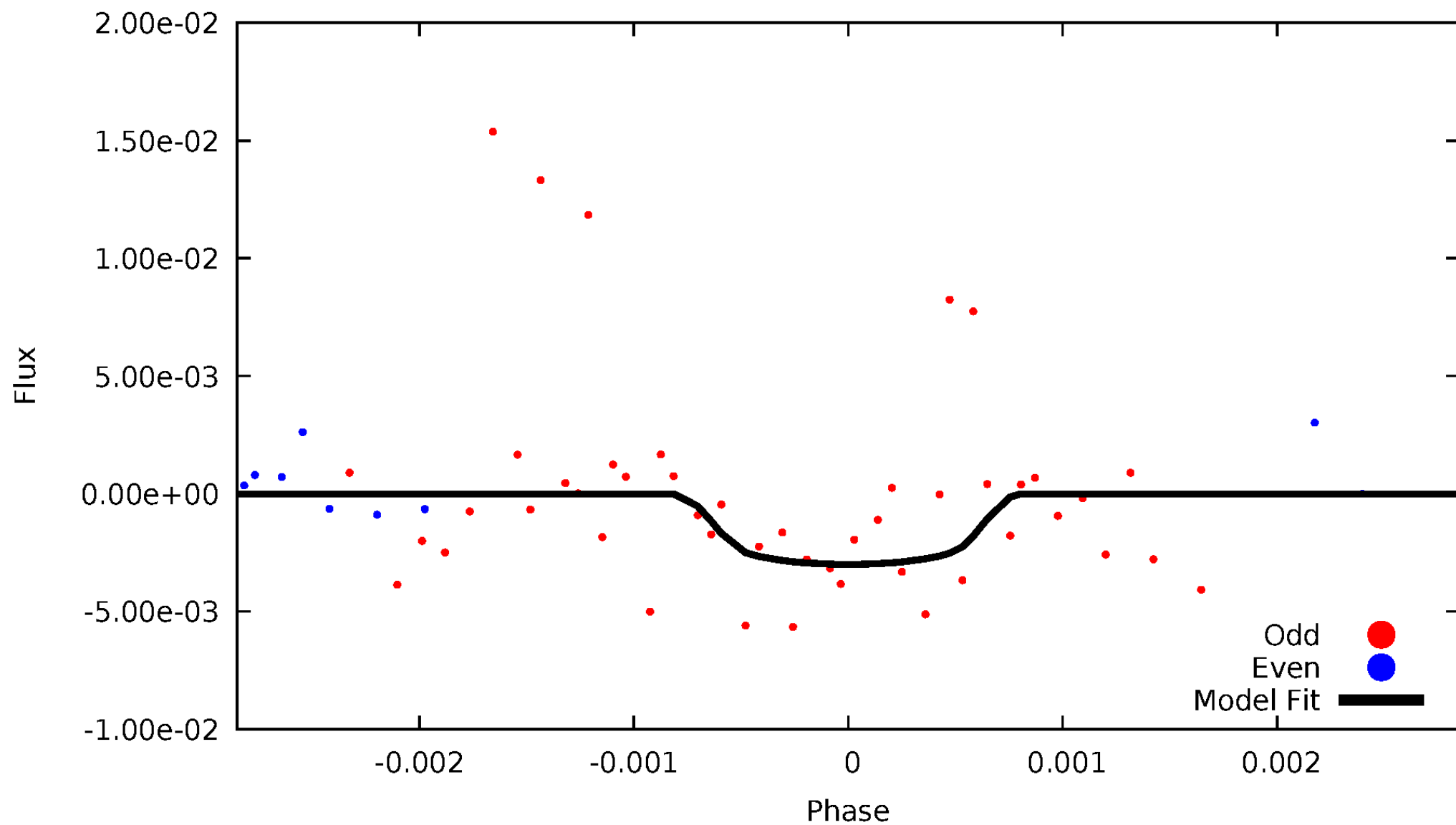


TCE 011709022-08



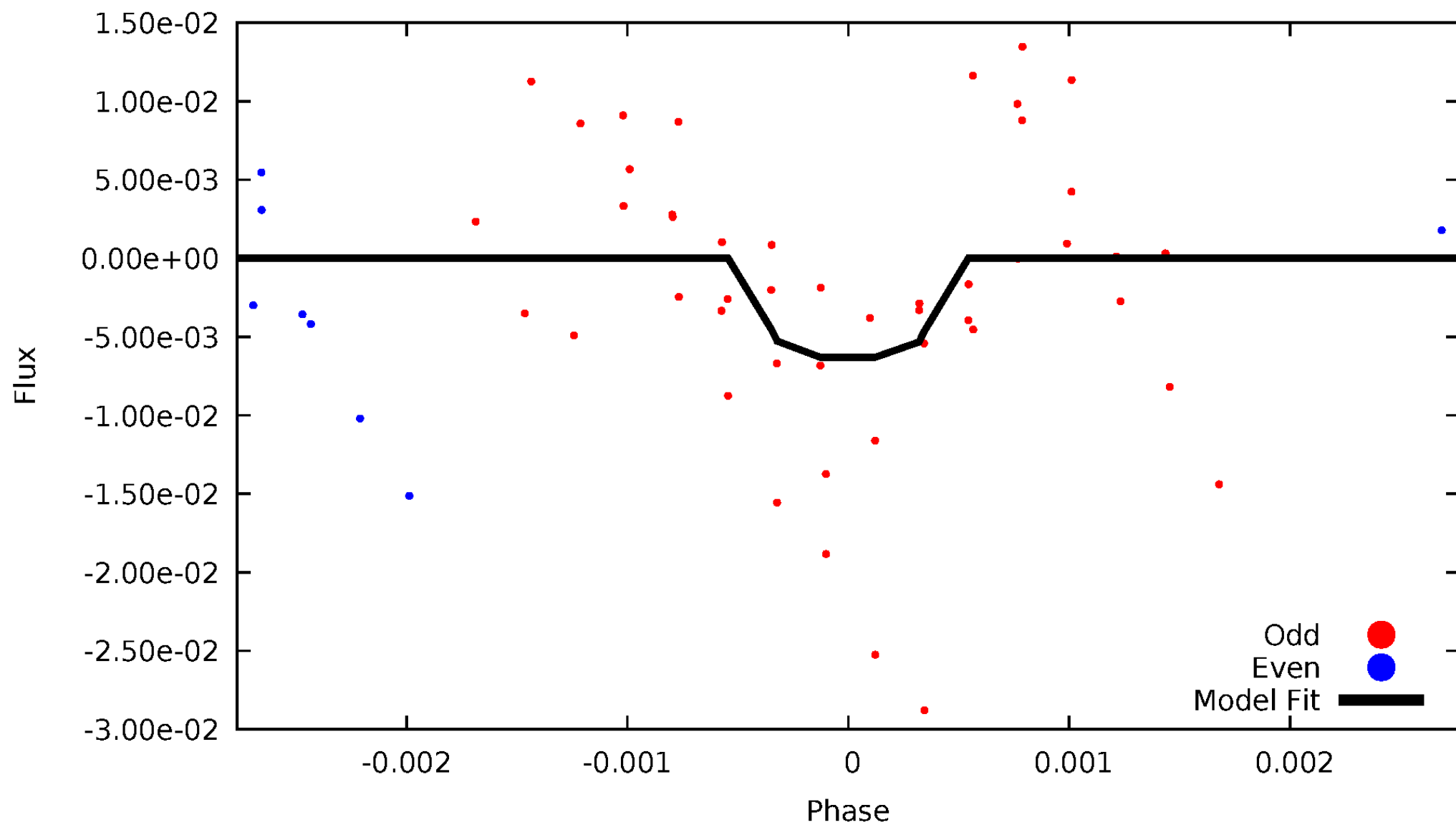
DV Odd/Even

TCE 011709022-08



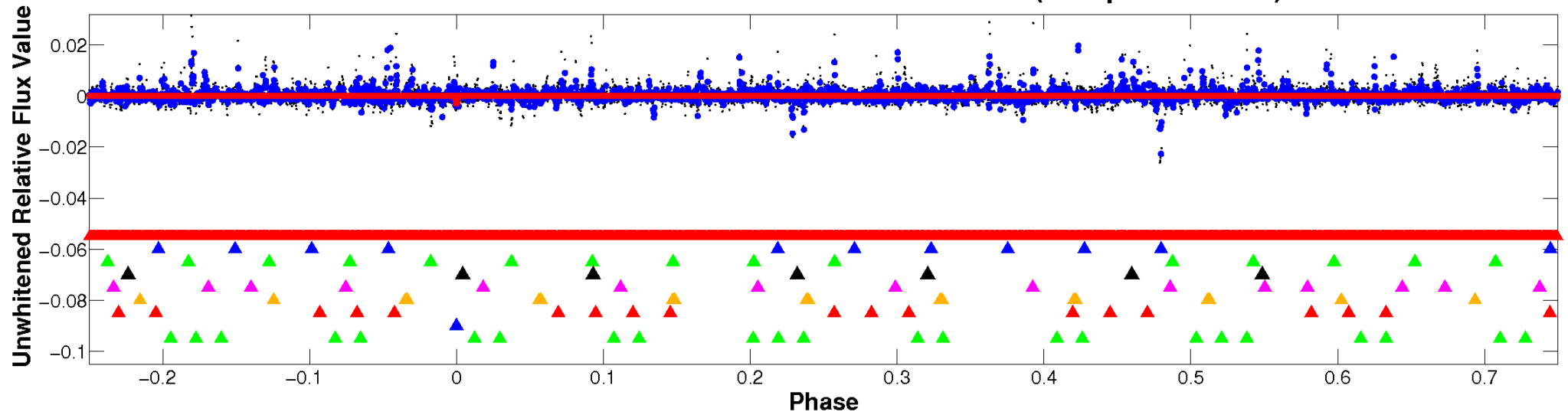
ALT Odd/Even

TCE 011709022-08

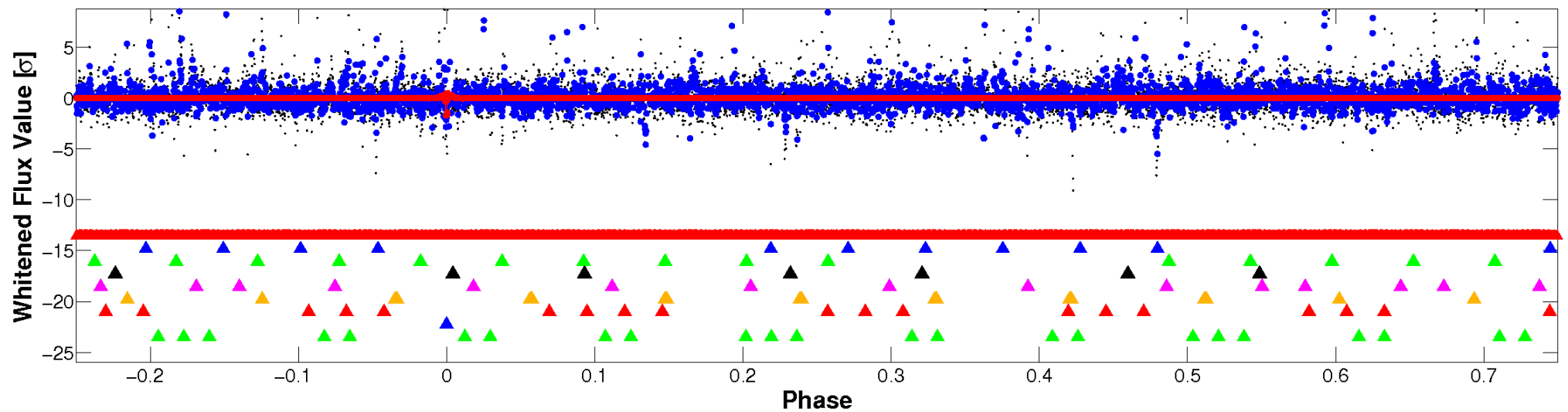


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

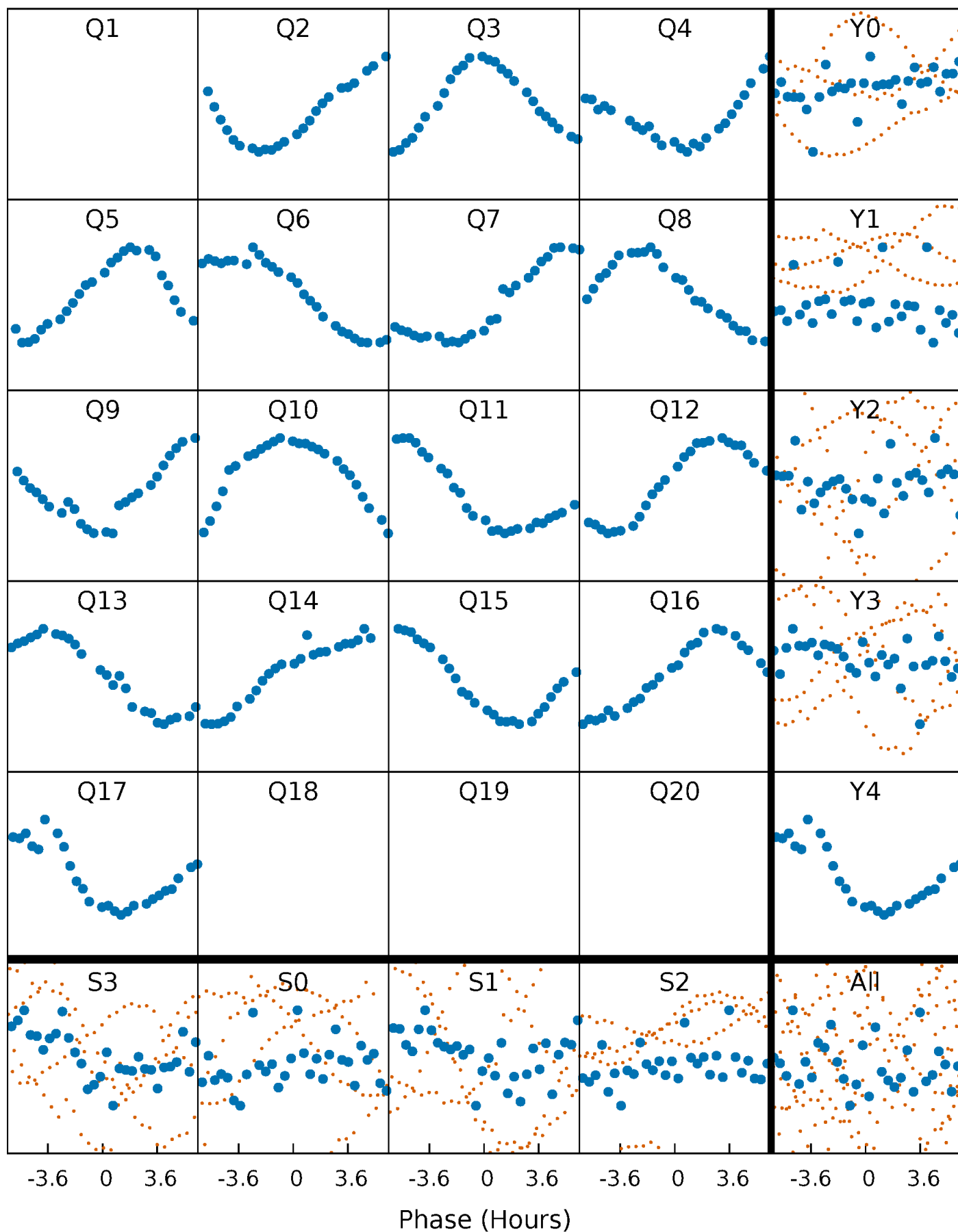


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



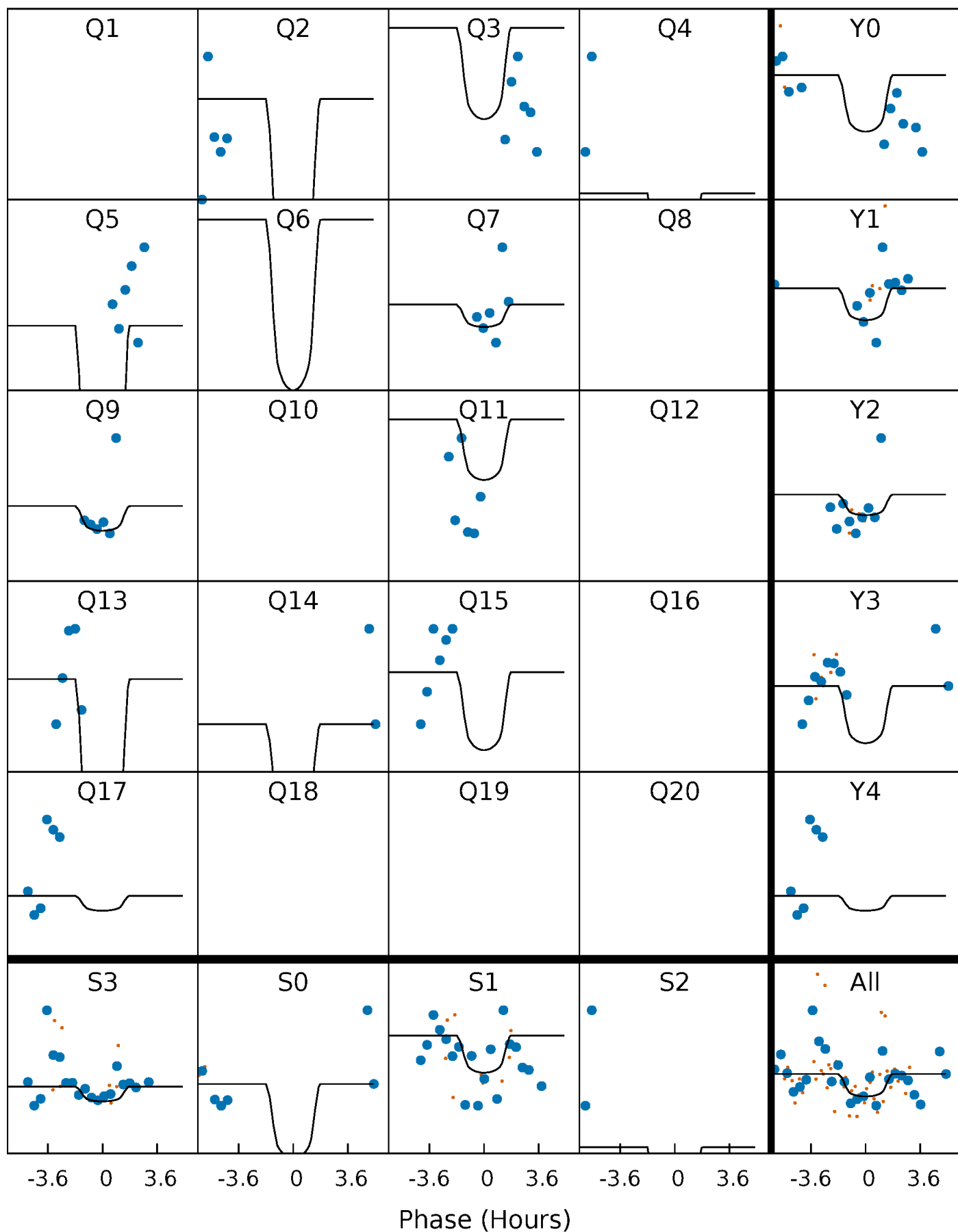
PDC Quarter-Phased Transit Curves

TCE 011709022-08 P= 91.781499 Days $T_0=187.866769$ (BKJD)



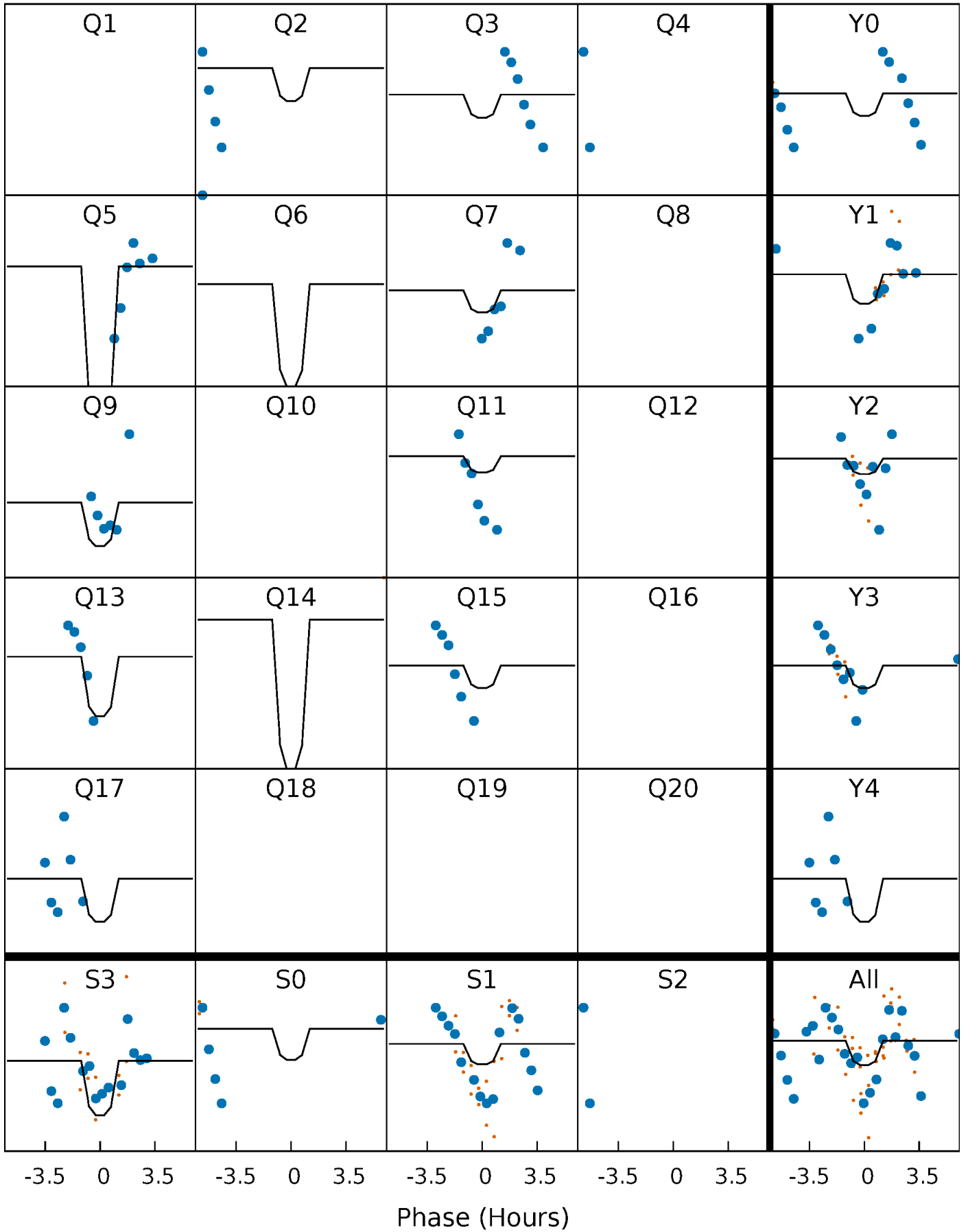
DV Quarter-Phased Transit Curves

TCE 011709022-08 P= 91.781499 Days $T_0=187.866769$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

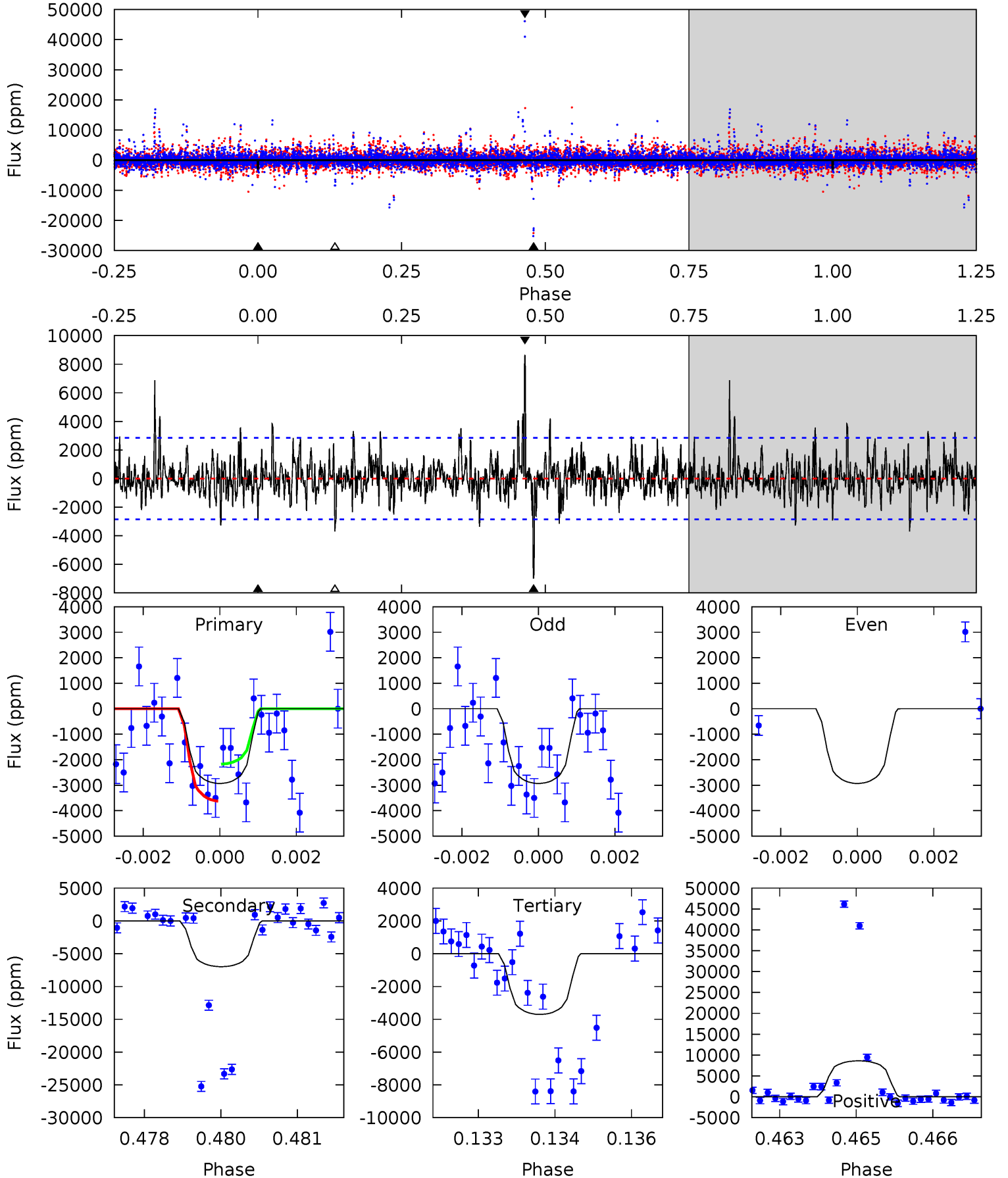
TCE 011709022-08 P= 91.777510 Days $T_0=187.867851$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-08, P = 91.781499 Days, E = 96.085270 Days

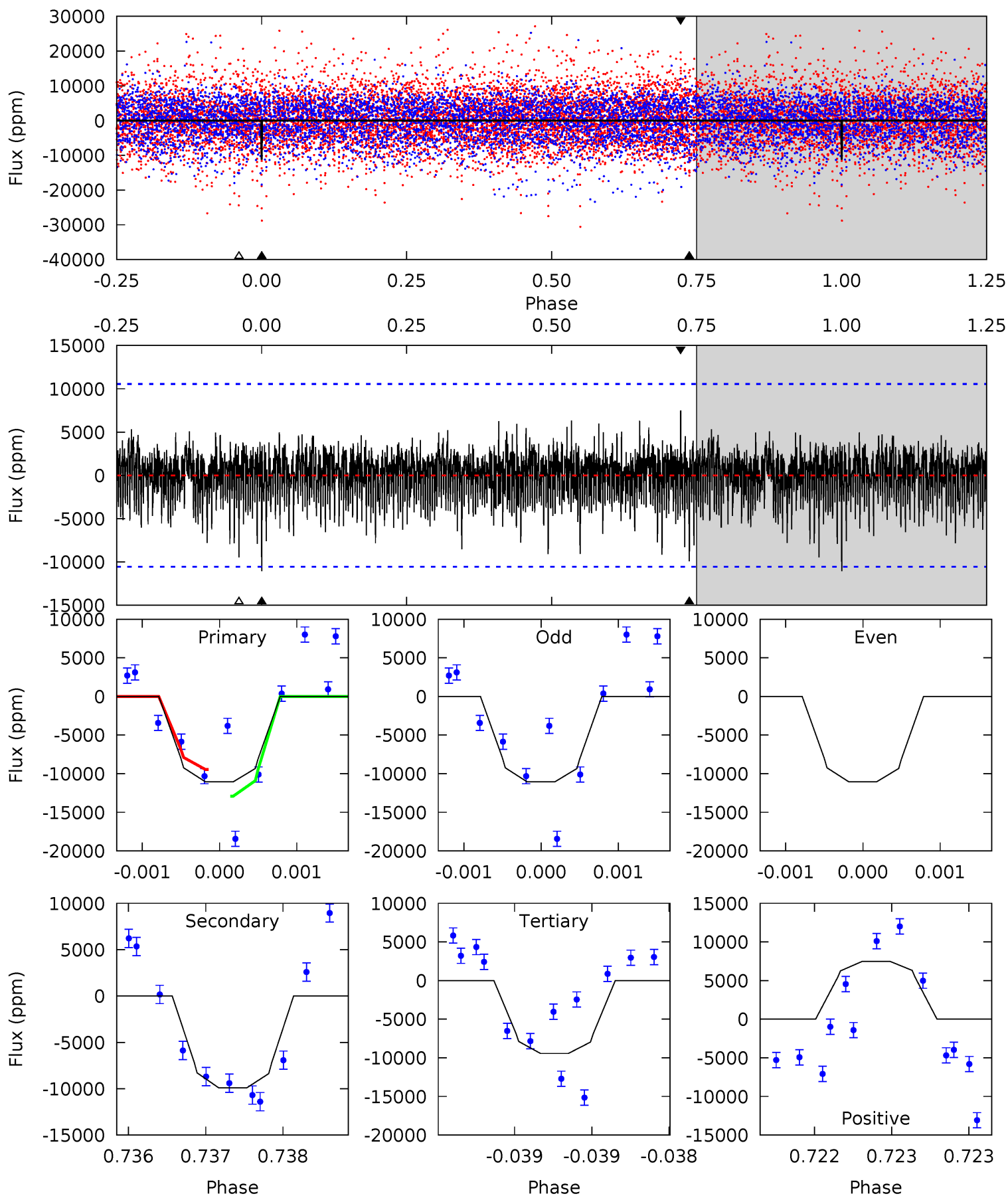
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.53	13.2	6.99	16.2	5.38	3.17	1.92	-1.46	-10.7	6.18	-3.07	0	1.71	0.55	1.39



Alt Model-Shift Uniqueness Test

011709022-08, P = 91.777510 Days, E = 96.090341 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.78	5.18	4.94	3.91	5.52	3.39	1.23	0.84	1.87	0.25	1.27	0	1.22	0.40	0.91



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-6985 ± 530	$3.00^{+2.56}_{-2.03}$	245^{+12}_{-14}	3667^{+1874}_{-647}	$37324^{+282303}_{-26897}$
Alt.	-9913 ± 1912	$3.65^{+2.91}_{-2.28}$	244^{+14}_{-13}	3629^{+1547}_{-599}	$34151^{+201989}_{-23625}$

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 $A_{obs} \gg 1.0$

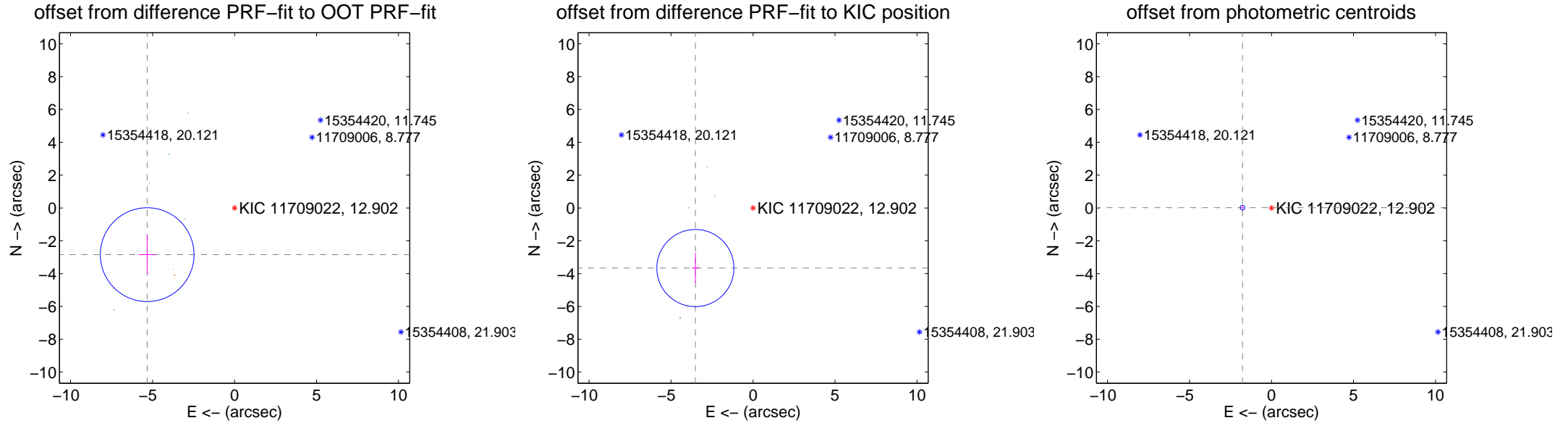
DV Centroid Data

Supplemental centroid analysis for 011709022-08. Kepler magnitude: 12.90. Transit SNR 5.60

There are 3 quarters with good PRF difference image offsets

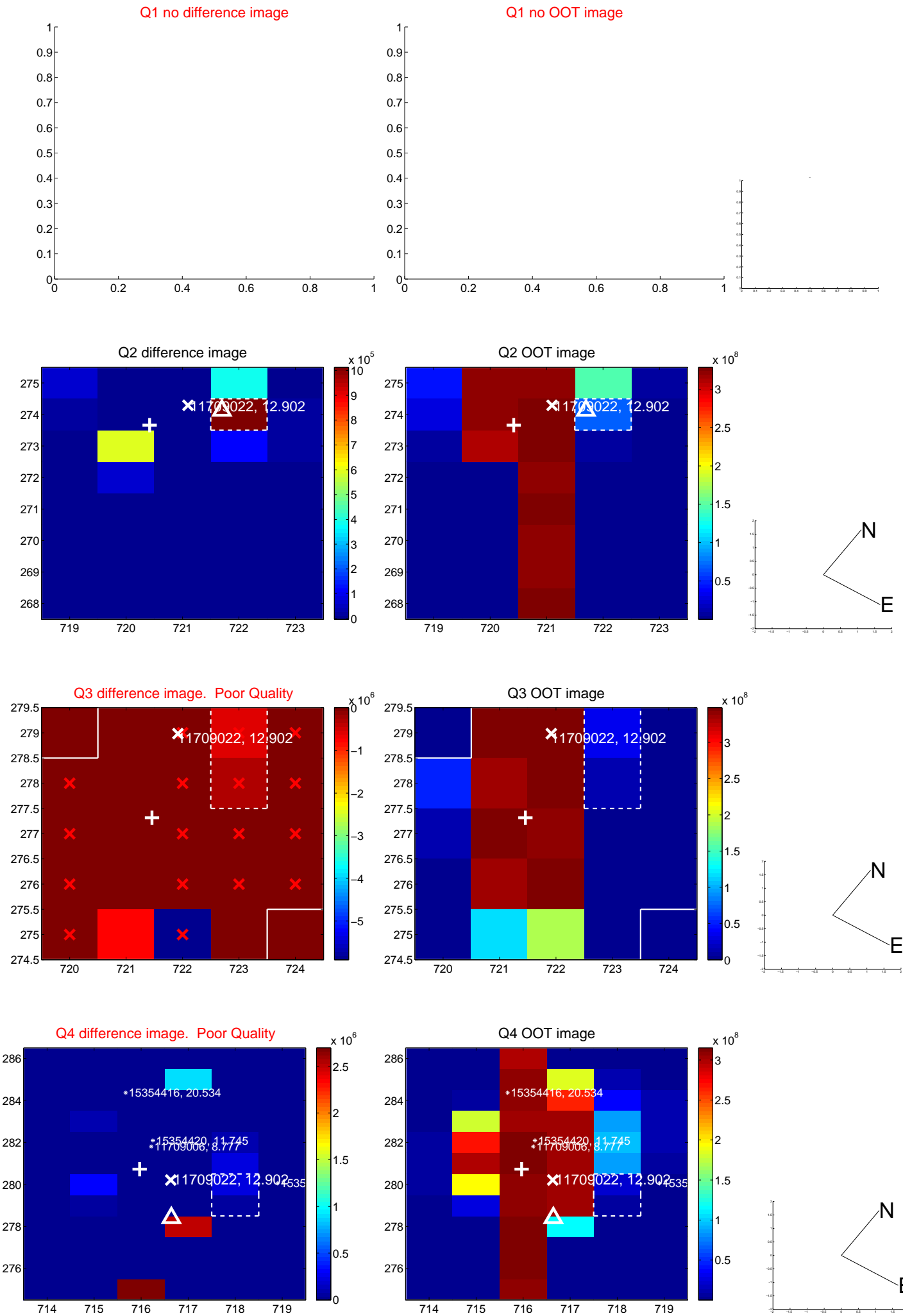
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.042 ± 0.953	6.34	5.330 ± 0.525	-2.845 ± 1.202
PRF-fit source offset from KIC position	5.078 ± 0.783	6.48	3.518 ± 0.225	-3.662 ± 0.913
photometric centroid source offset	1.77 ± 0.05	37.43	1.77 ± 0.05	0.02 ± 0.08

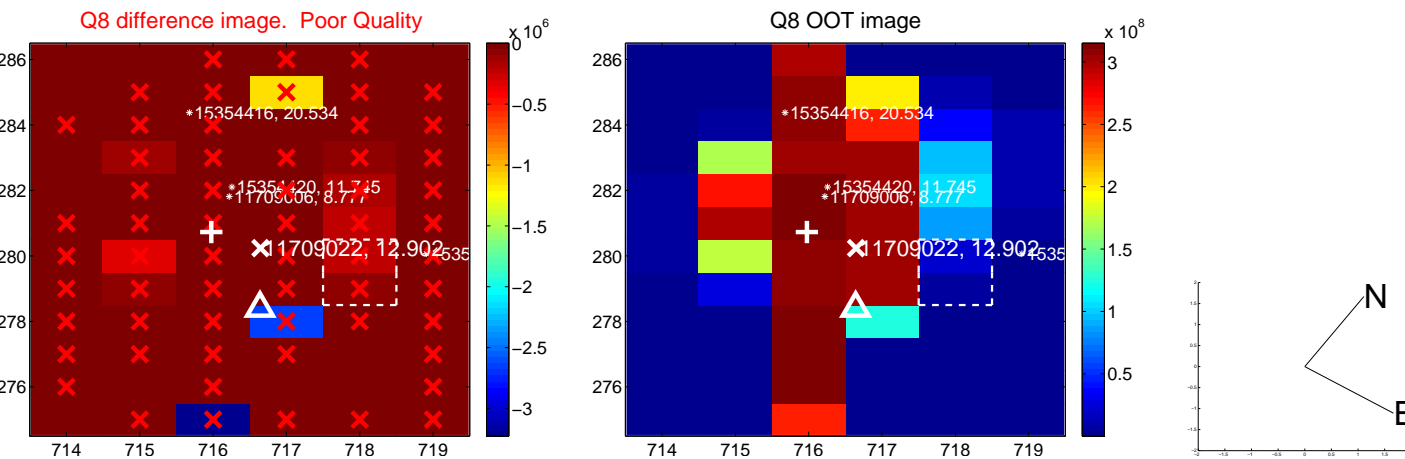
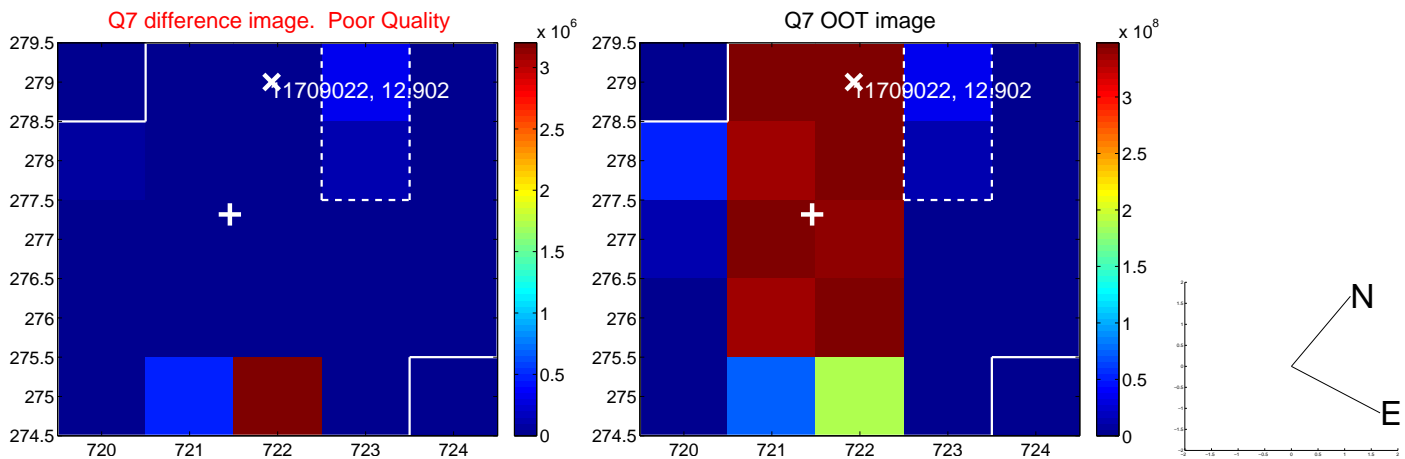
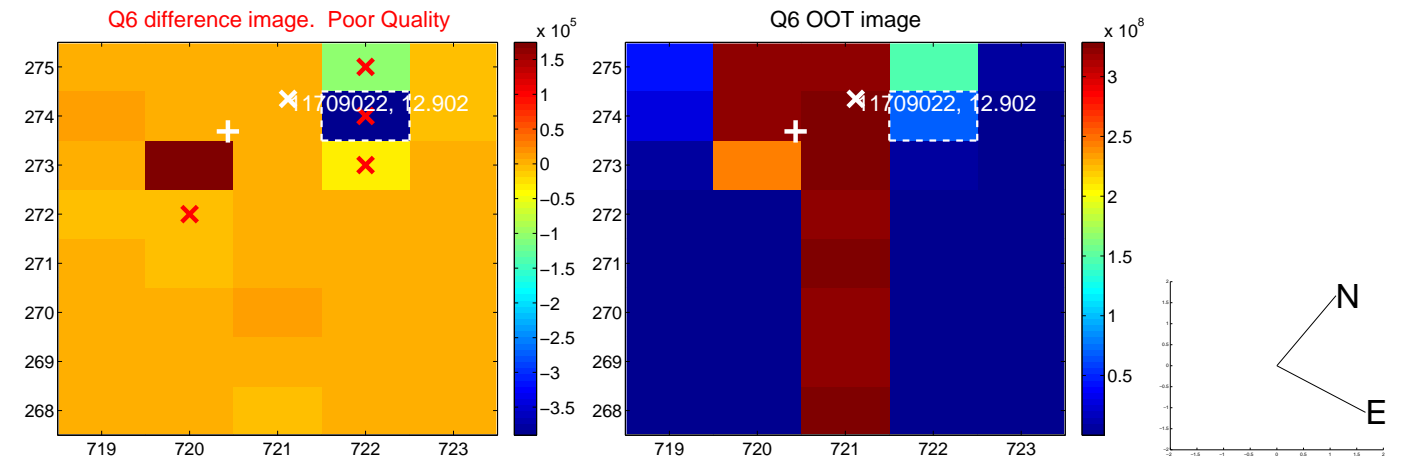
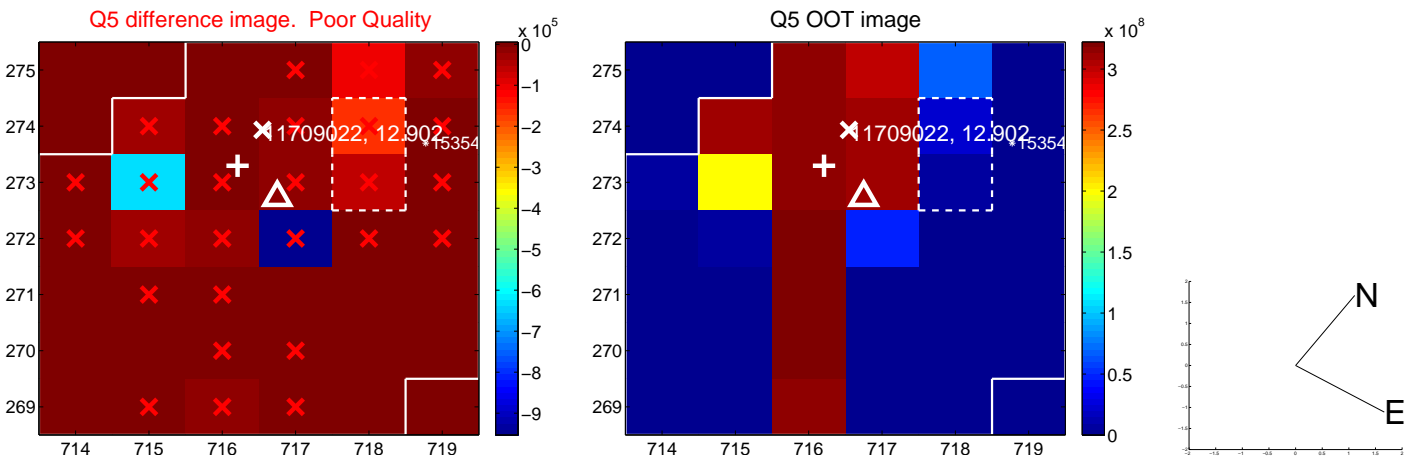


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

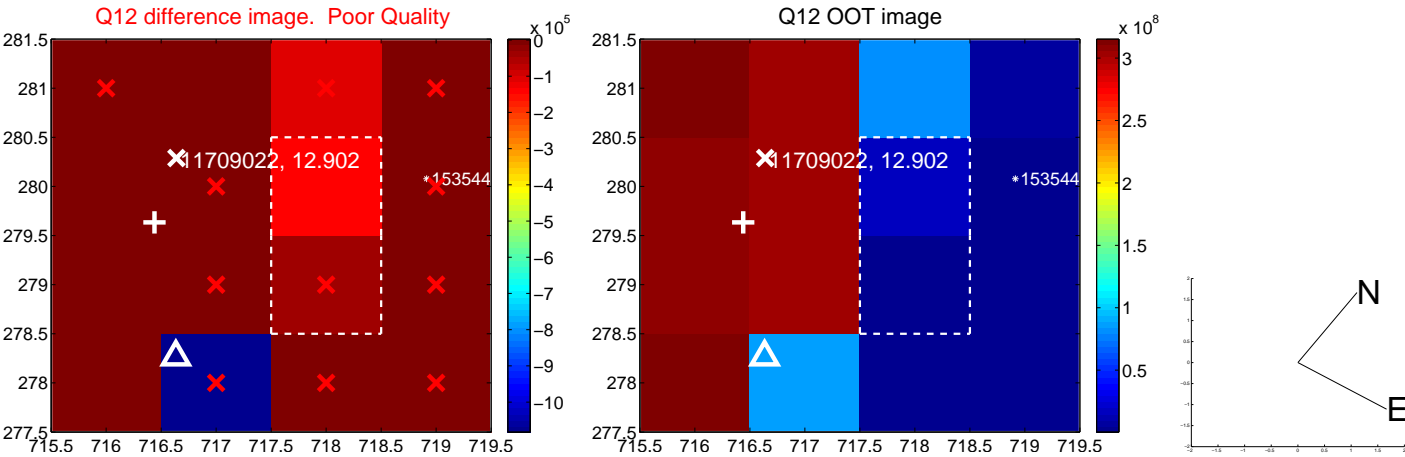
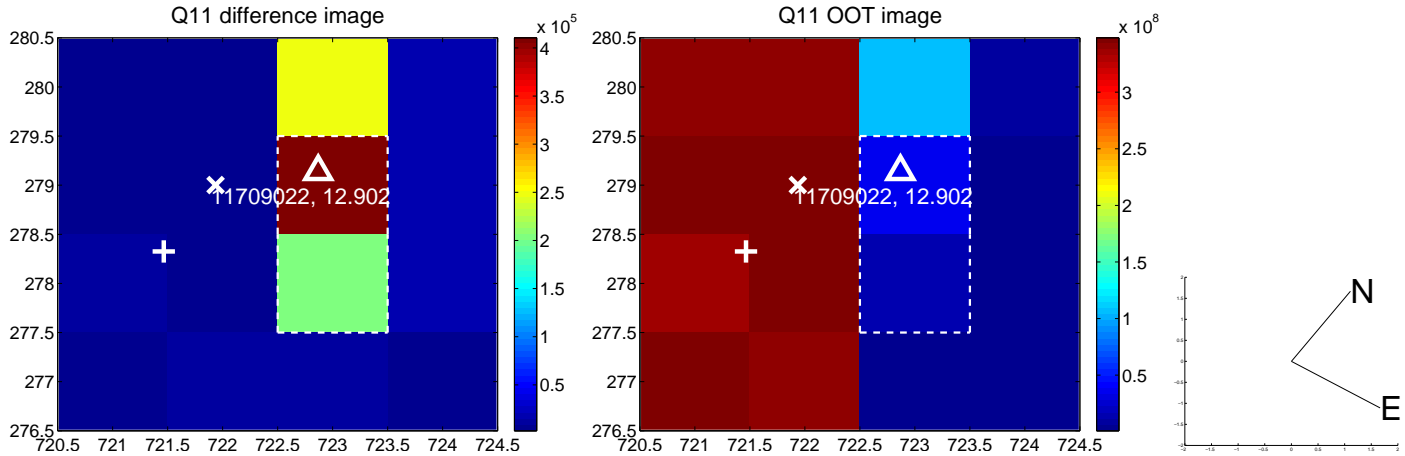
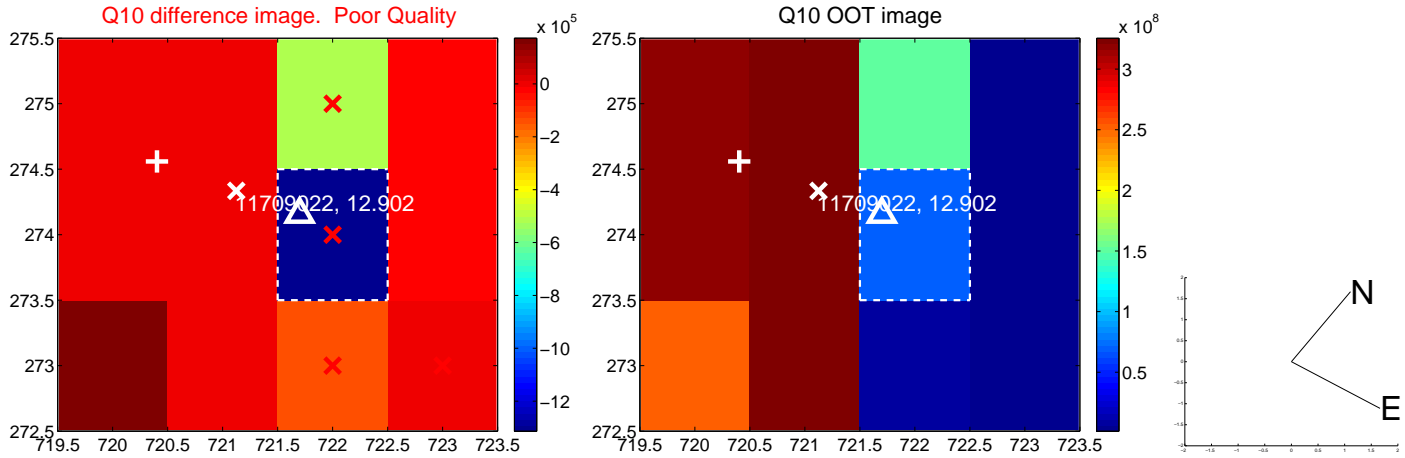
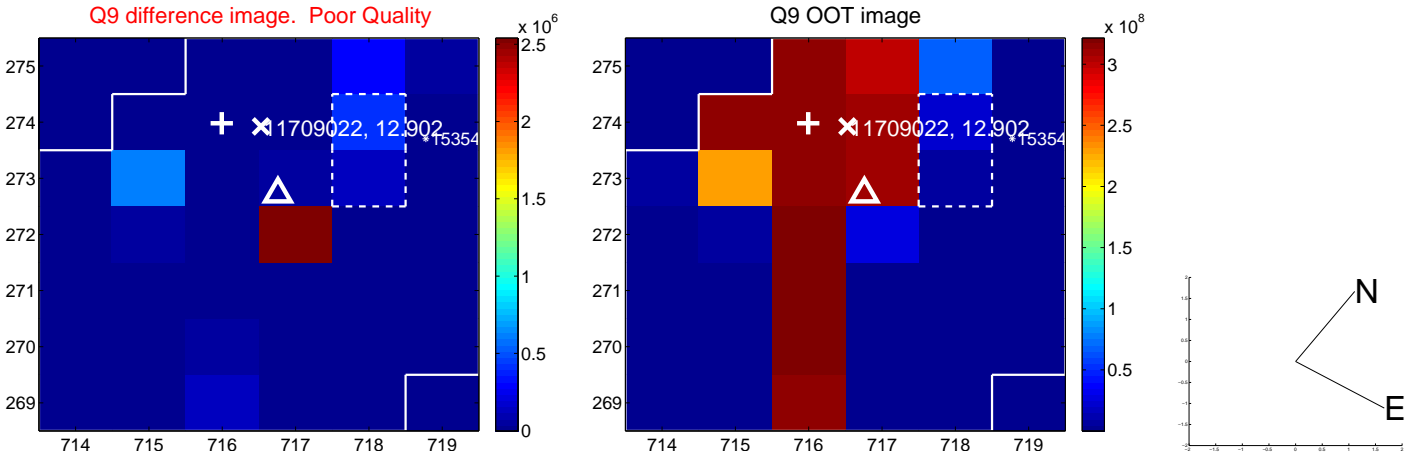
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



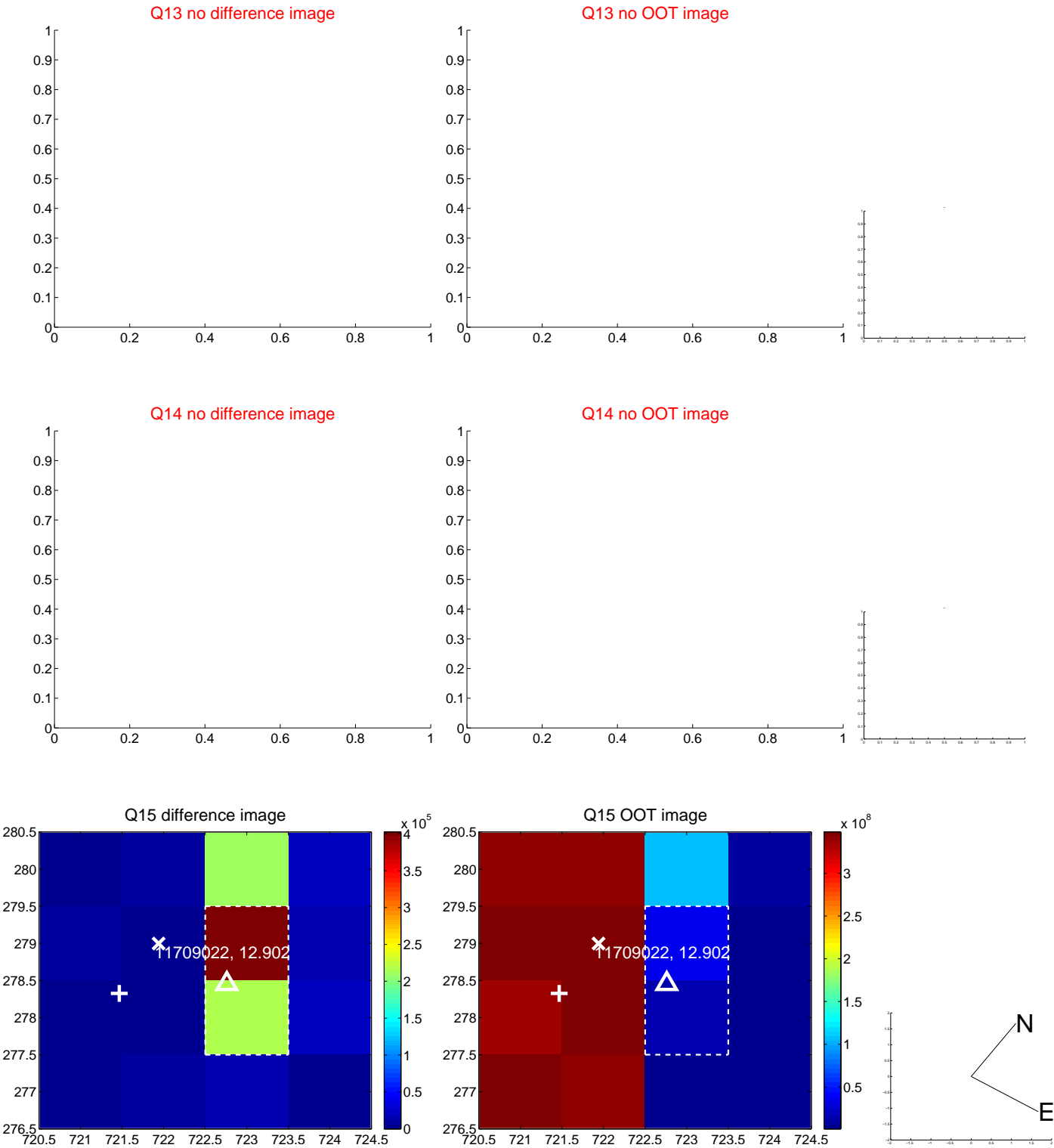
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



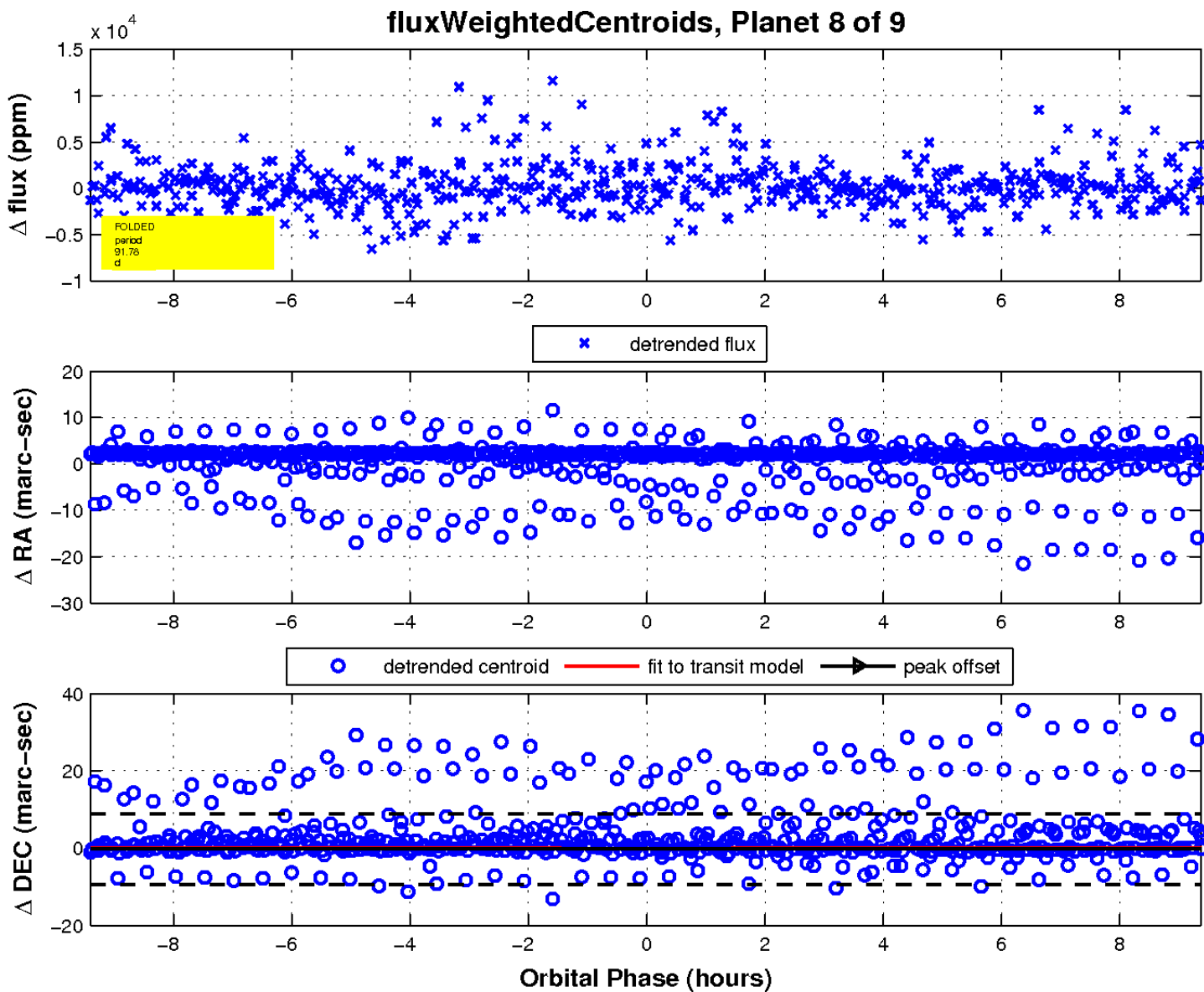
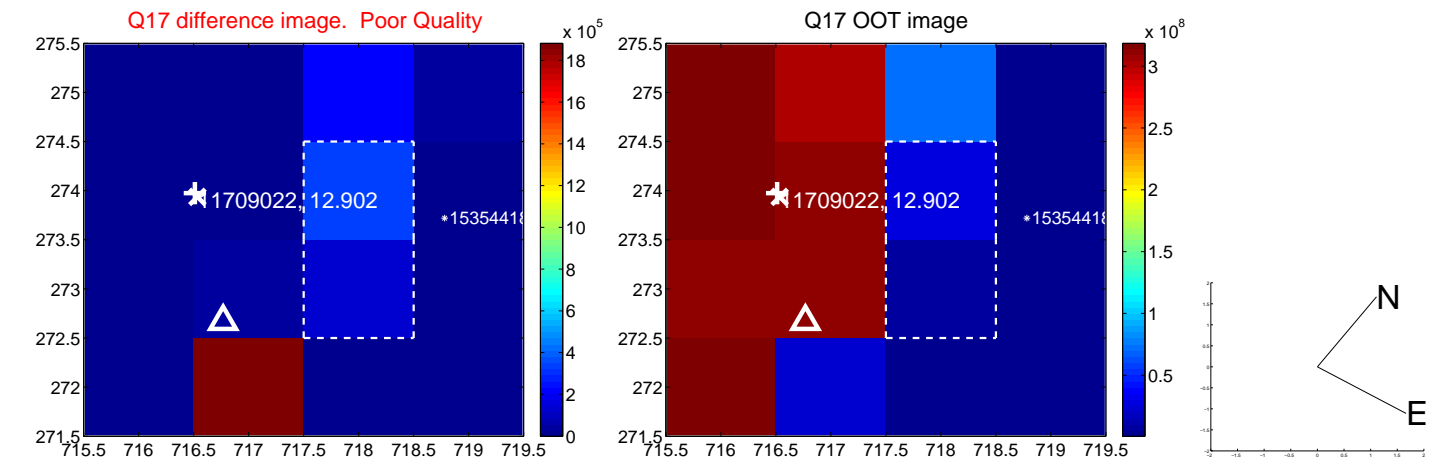
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



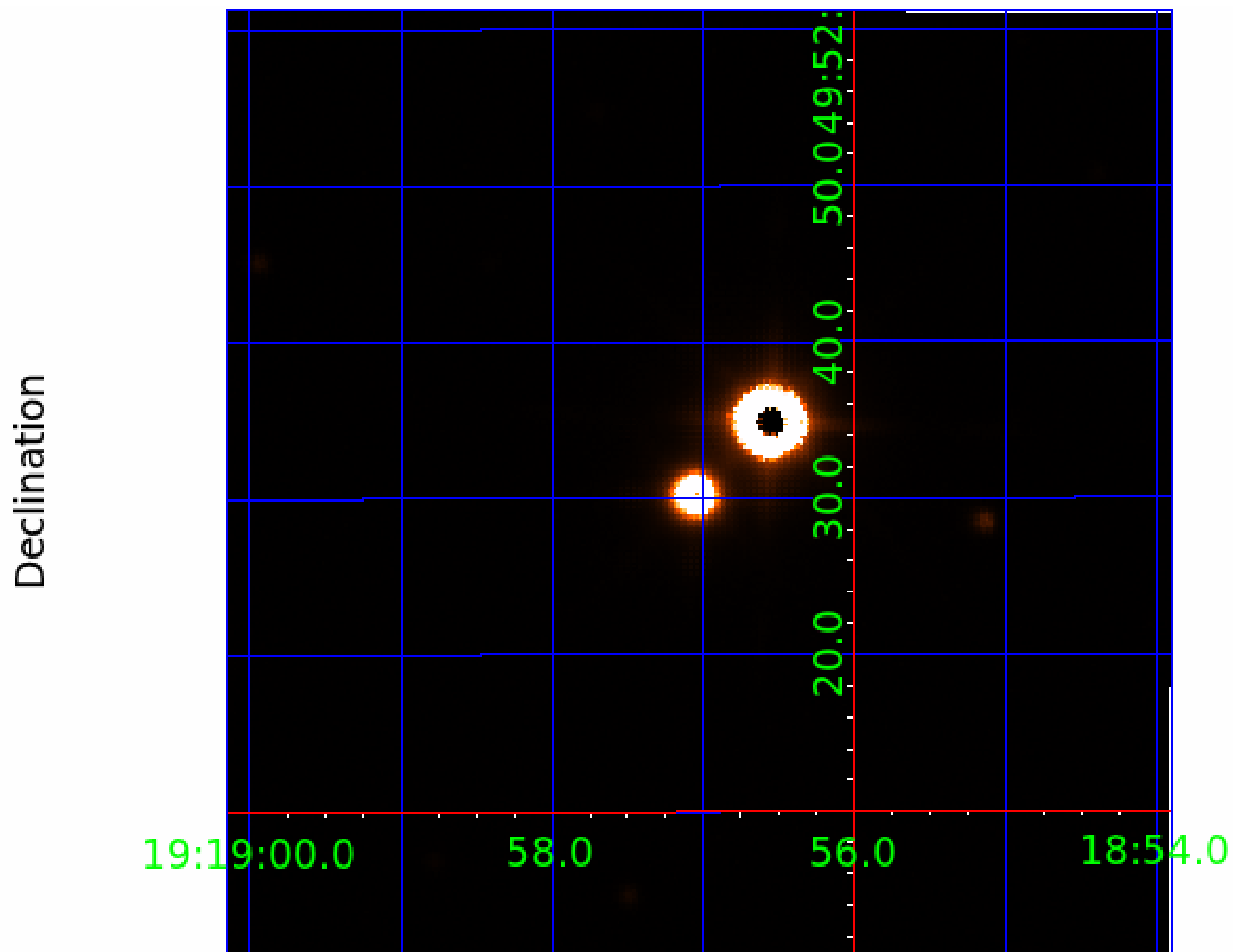
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



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})
011709022-01	OBS	7474.01	0.719701	131.855664	0.0	4.655	13.1	0.0	0.37	3535	0.01	147.06
011709022-02	OBS	No	135.276590	140.122742	5059.6	9.645	13.1	7.0	0.37	3535	4.62	0.14
011709022-03	OBS	No	96.828839	140.833301	6672.2	3.126	14.4	11.0	0.37	3535	3.02	0.21
011709022-04	OBS	No	204.469597	288.193286	4784.6	12.531	11.7	6.8	0.37	3535	2.98	0.08
011709022-05	OBS	No	100.367554	146.604526	3559.7	4.512	9.6	6.6	0.37	3535	2.17	0.20
011709022-06	OBS	No	83.426892	143.147542	6253.3	2.320	10.1	7.4	0.37	3535	2.88	0.26
011709022-07	OBS	No	76.873379	194.232476	4474.5	2.283	9.6	7.1	0.37	3535	2.50	0.29
011709022-08	OBS	No	91.781499	187.866769	3002.8	3.140	8.9	5.6	0.37	3535	2.11	0.23
011709022-09	OBS	No	64.089106	173.168211	1304.5	3.500	10.0	-1.0	0.37	3535	1.32	0.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709022-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_KIC_POS
011709022-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
011709022-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011709022-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_RESOLVED_OFFSET
011709022-06	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
011709022-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
011709022-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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.

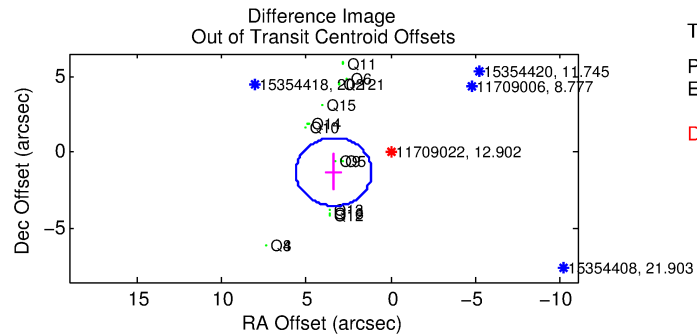
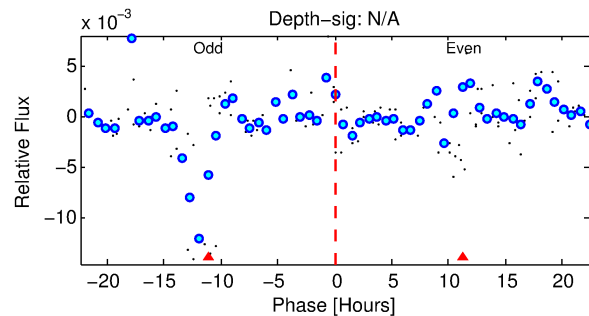
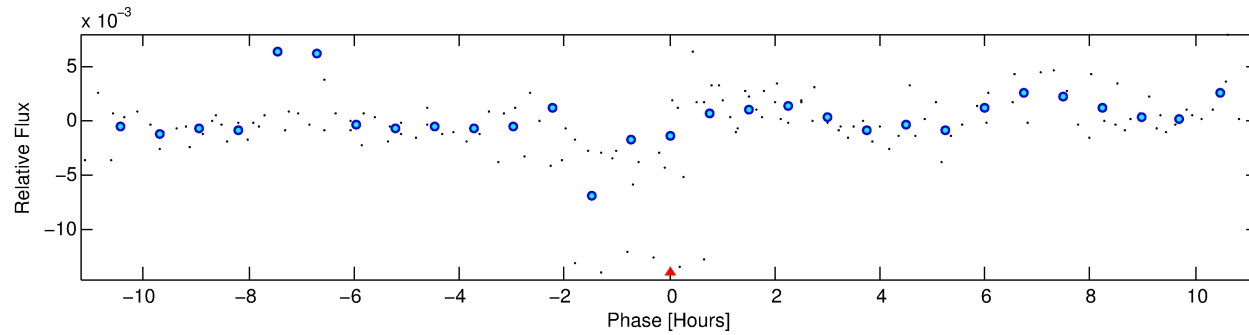
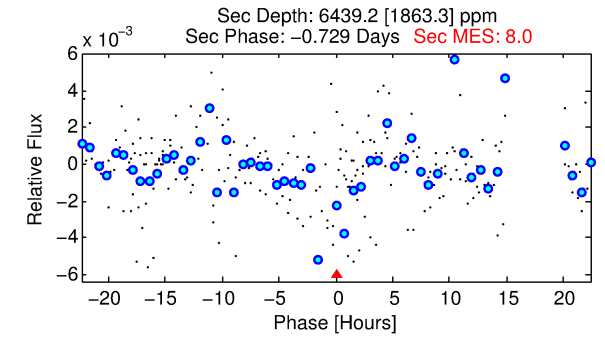
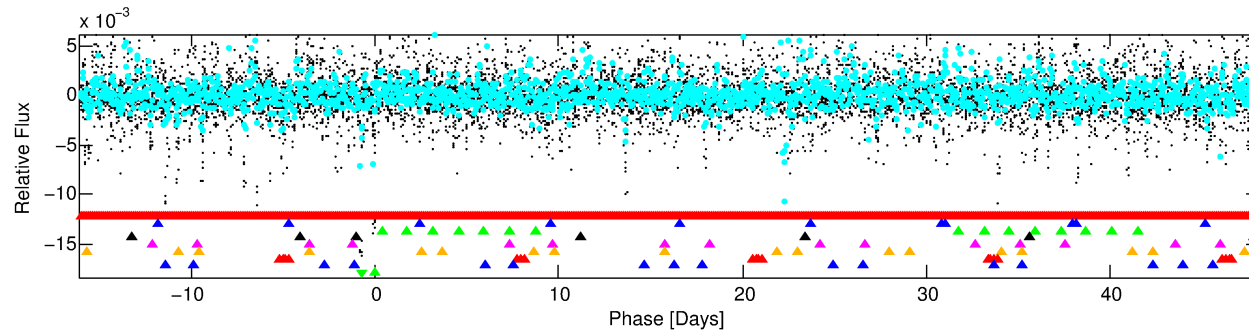
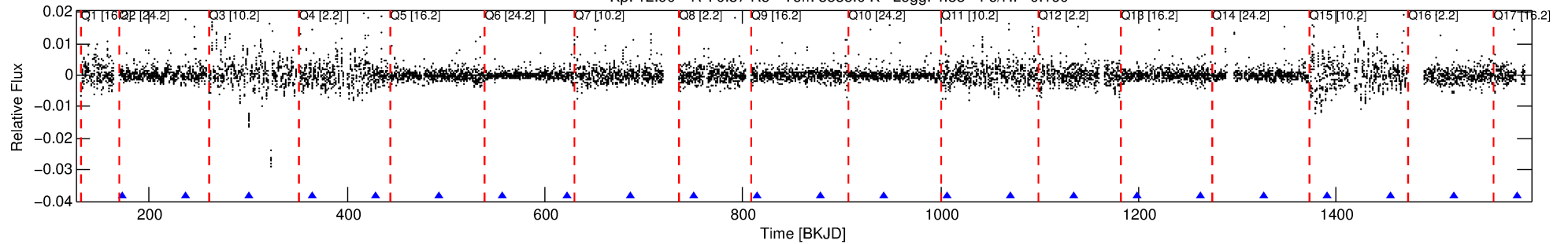
Ephemeris Match Information For 011709022-09

No Significant Match Found

DV One-Page Summary

KIC: 11709022 Candidate: 9 of 9 Period: 64.089 d
KOI: K07474 Corr: No Ephemeris Match

Kp: 12.90 R*: 0.37 Rs Teff: 3535.0 K Logg: 4.88 Fe/H: -0.160



TPS TCE Results:

Period = 64.08911 d
Epoch = 173.1682 BKJD

DV fit results are unavailable

DV Diagnostic Results:

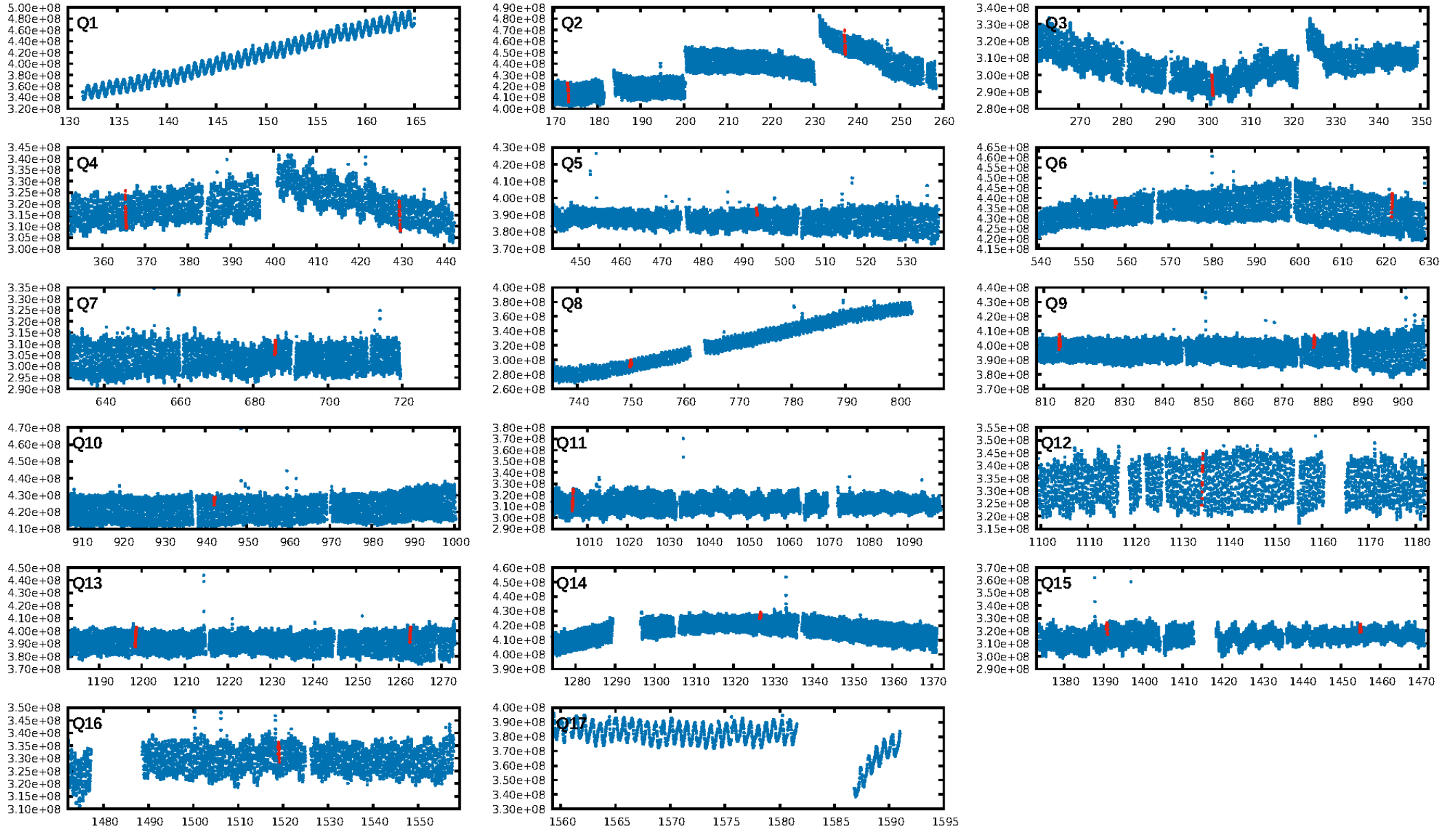
ShortPeriod-sig: 100.0% [261.12σ]
LongPeriod-sig: 100.0% [73.42σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.729

Centroid-sig: N/A
Centroid-so: 1.743 arcsec [111.29σ]
OotOffset-rm: 3.618 arcsec [4.86σ]
KicOffset-rm: 4.572 arcsec [6.31σ]
OotOffset-st: 4/2/4/3 [13]
KicOffset-st: 4/2/4/3 [13]
DiffImageQuality-fgm: 0.00 [0/13]
DiffImageOverlap-fno: 0.00 [0/15]

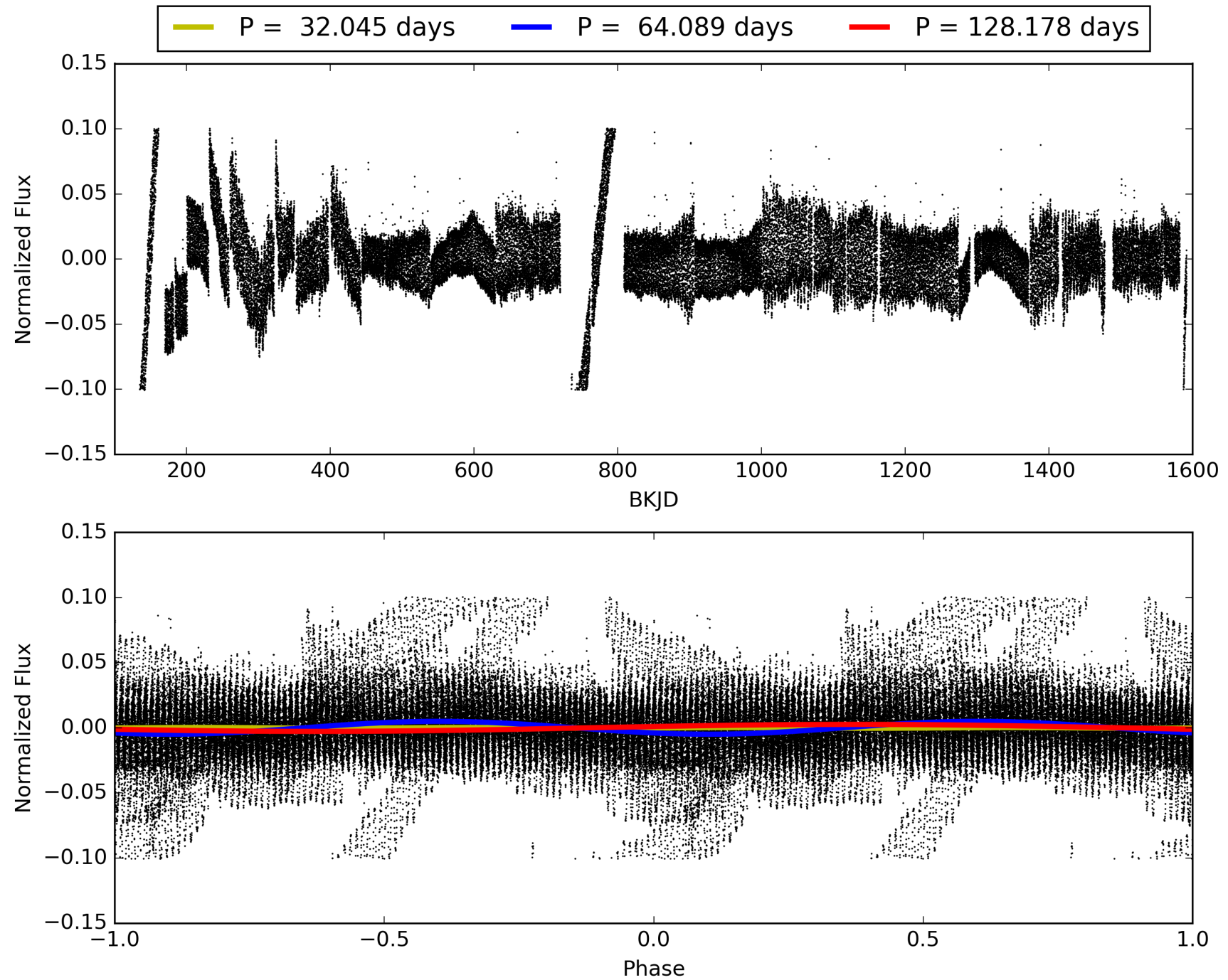
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:52:02 Z

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

TCE 011709022-09, PDC Light Curves

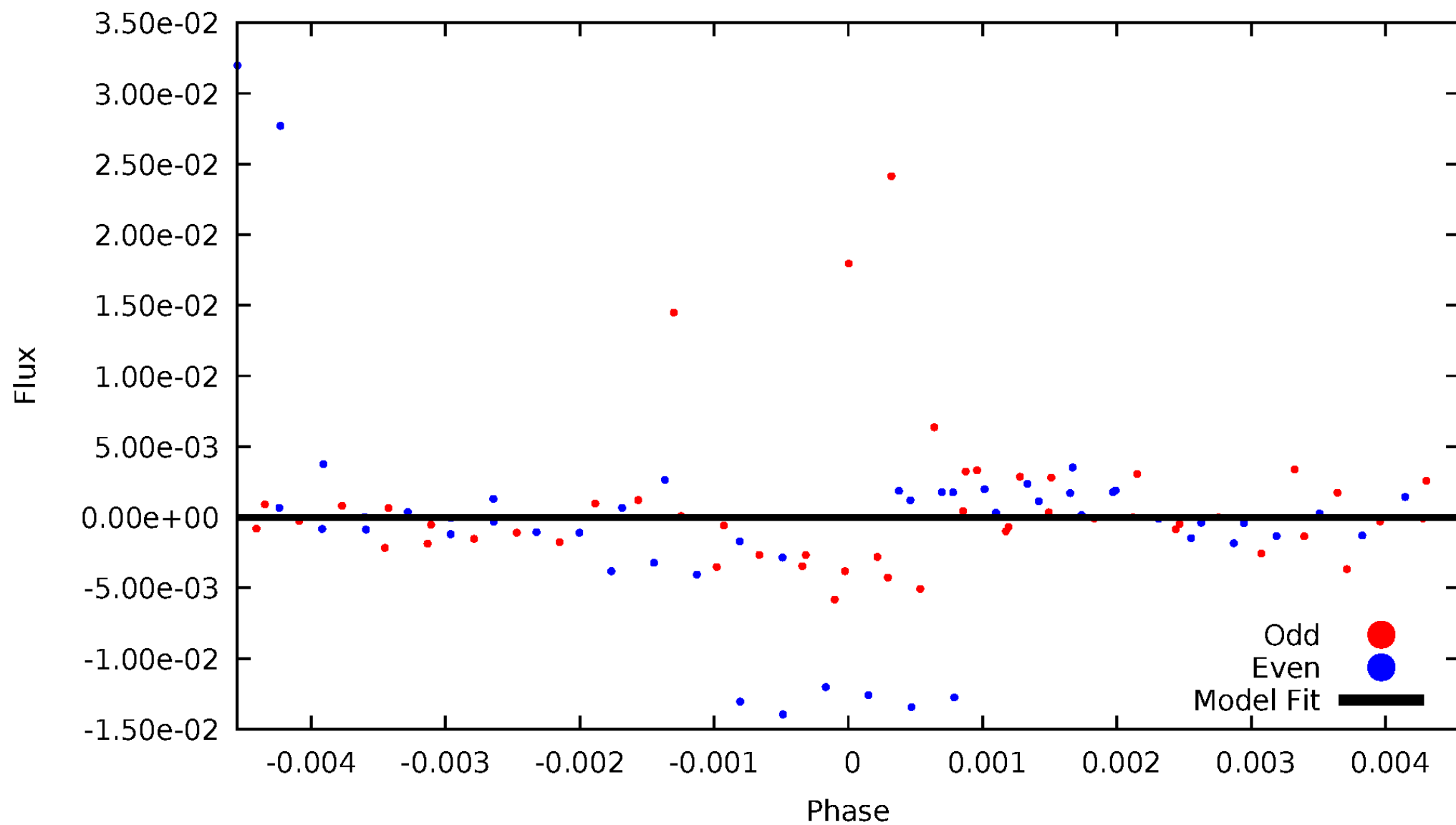


TCE 011709022-09



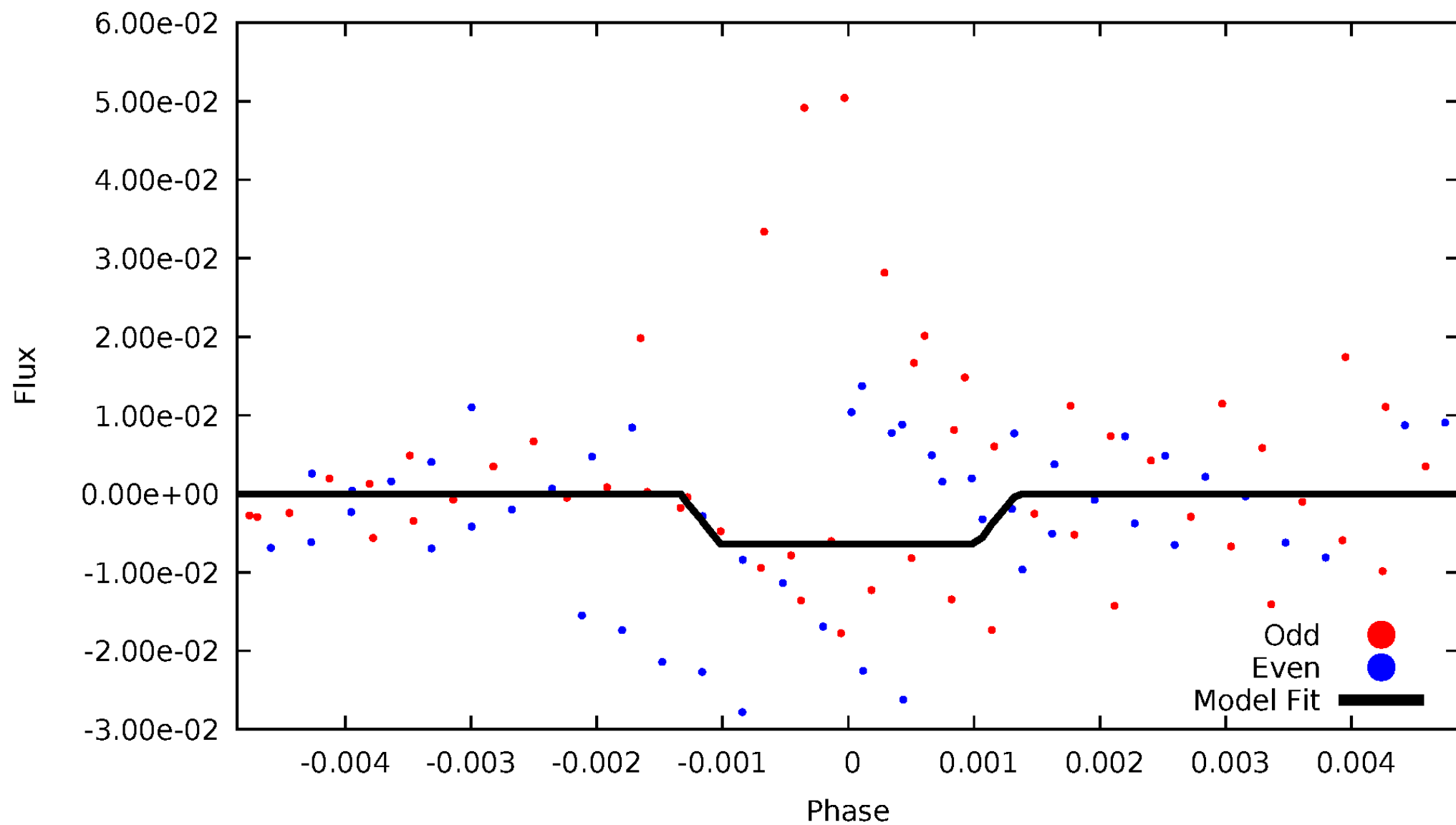
DV Odd/Even

TCE 011709022-09



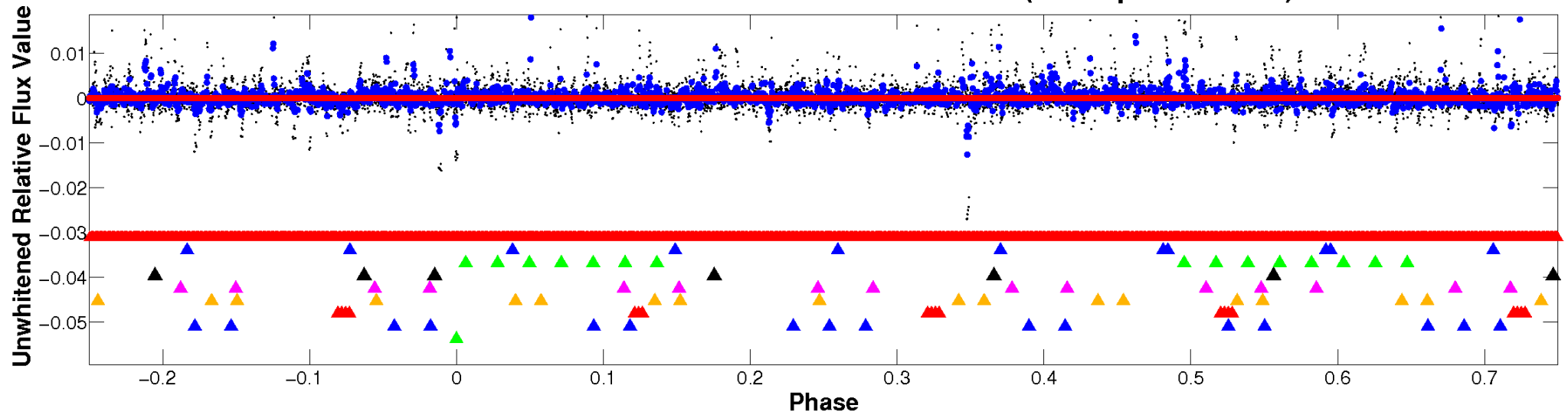
ALT Odd/Even

TCE 011709022-09

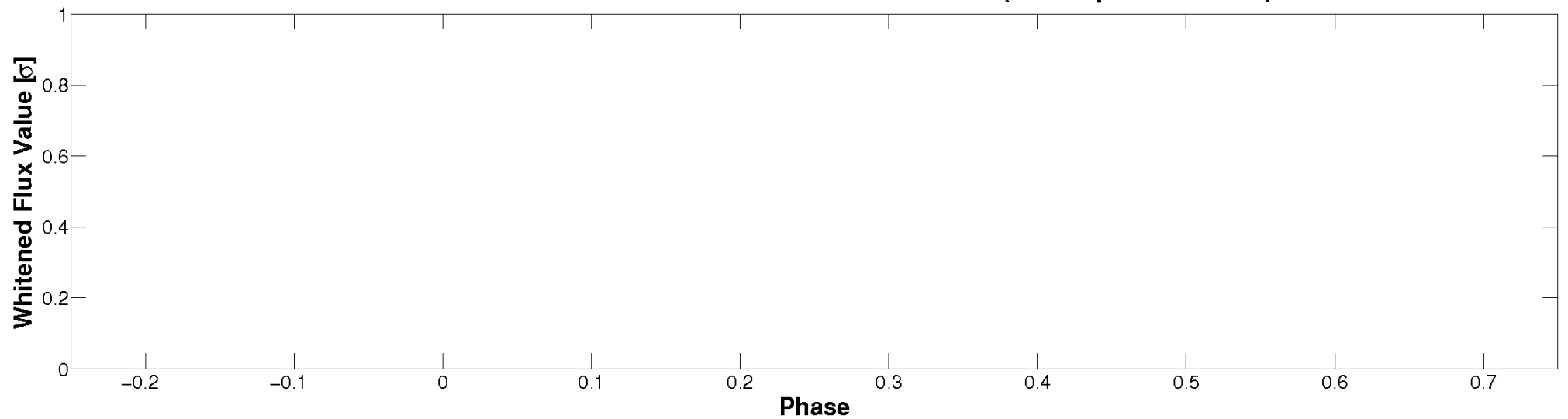


Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

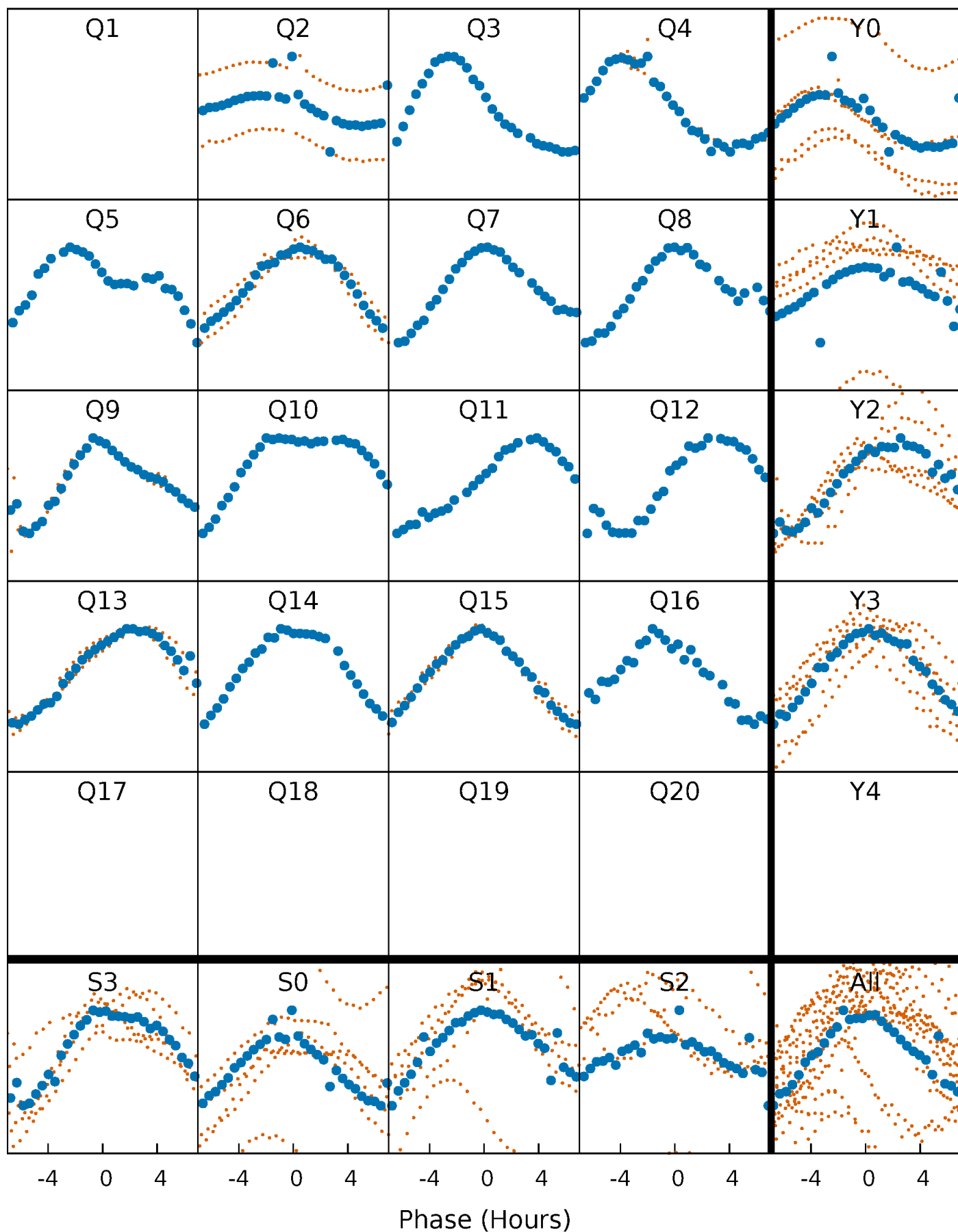


Planet 9 : Phased Whitened Flux Time Series (TPS Epoch/Period)



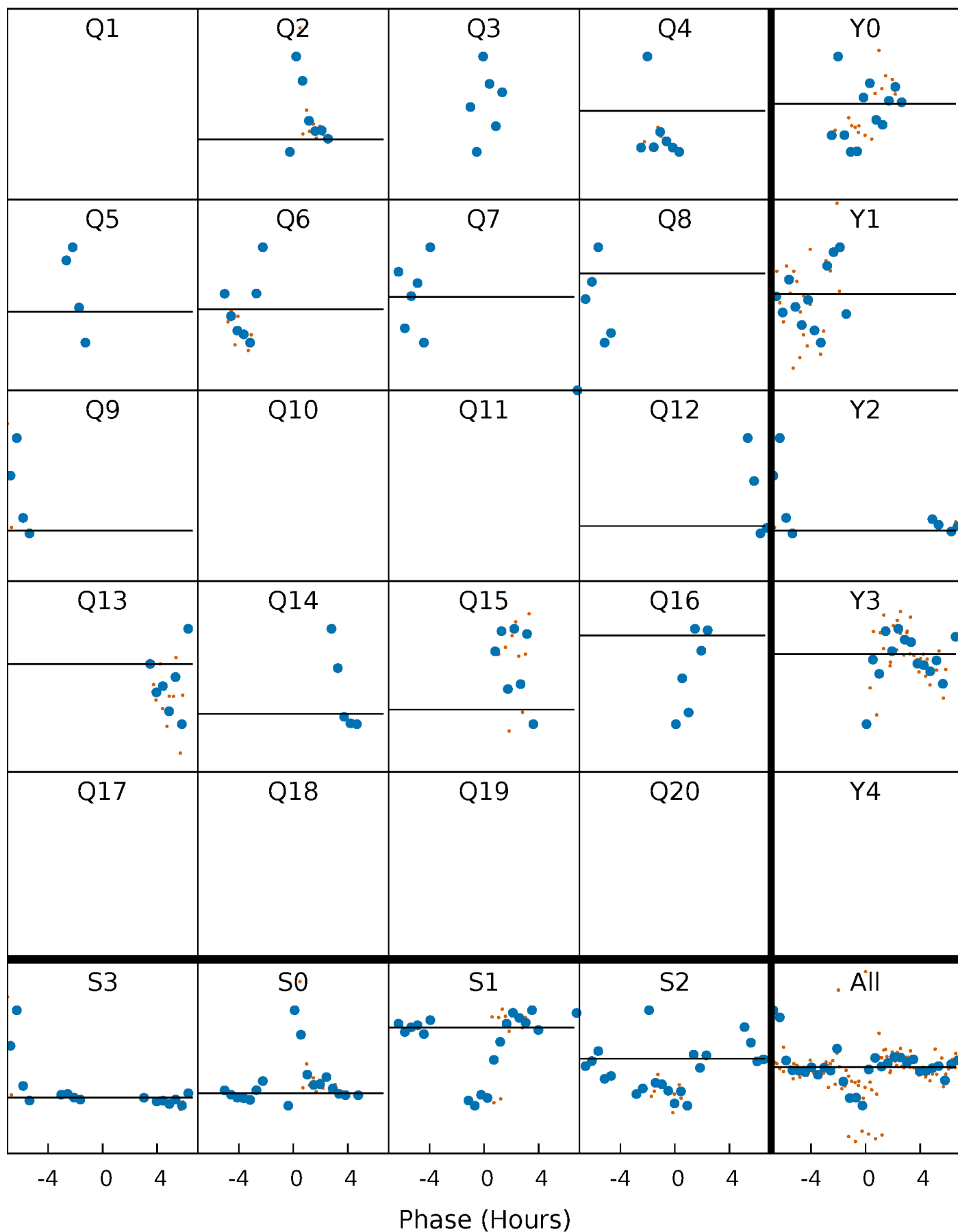
PDC Quarter-Phased Transit Curves

TCE 011709022-09 P= 64.089106 Days $T_0=173.168212$ (BKJD)



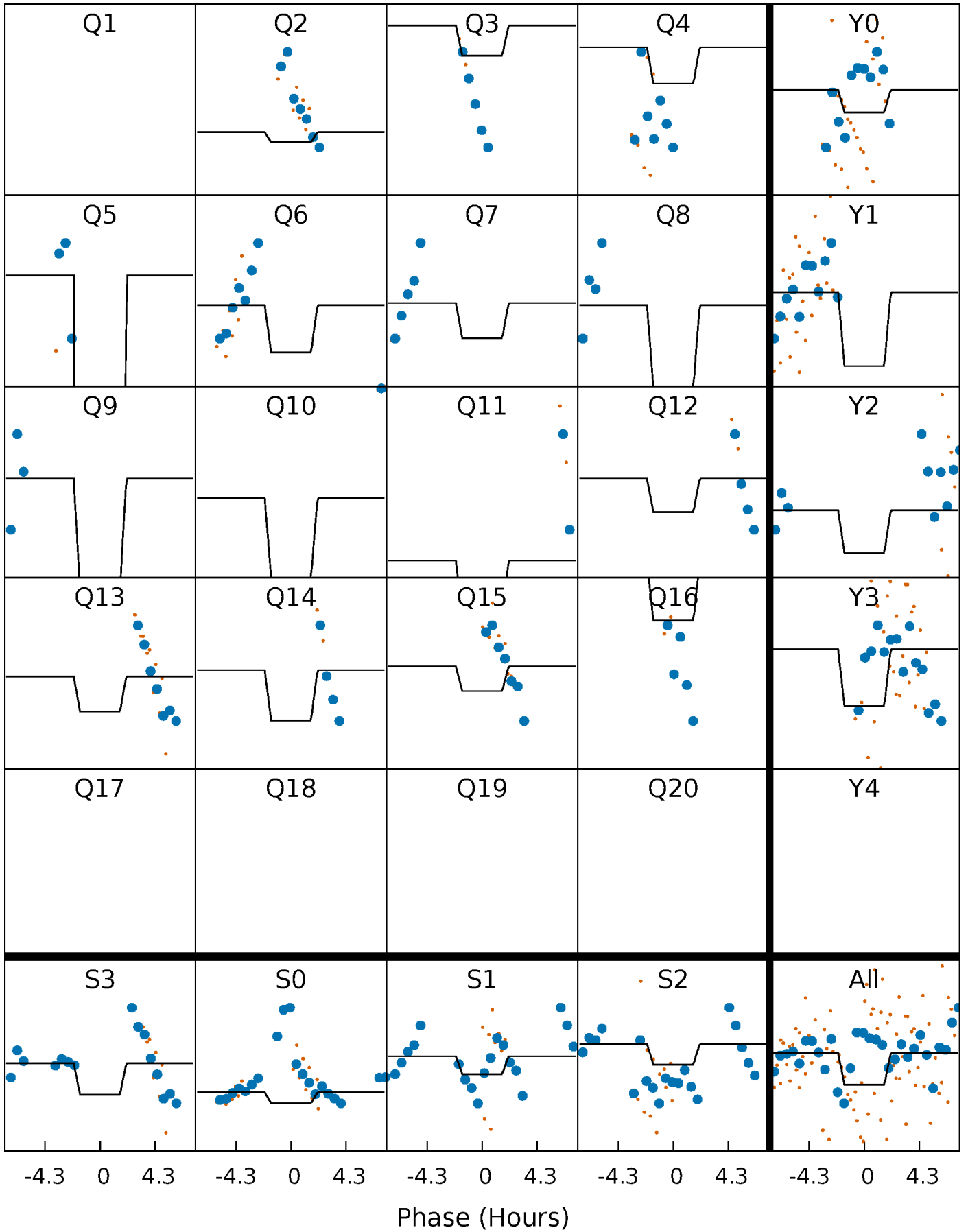
DV Quarter-Phased Transit Curves

TCE 011709022-09 P= 64.089106 Days $T_0=173.168212$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

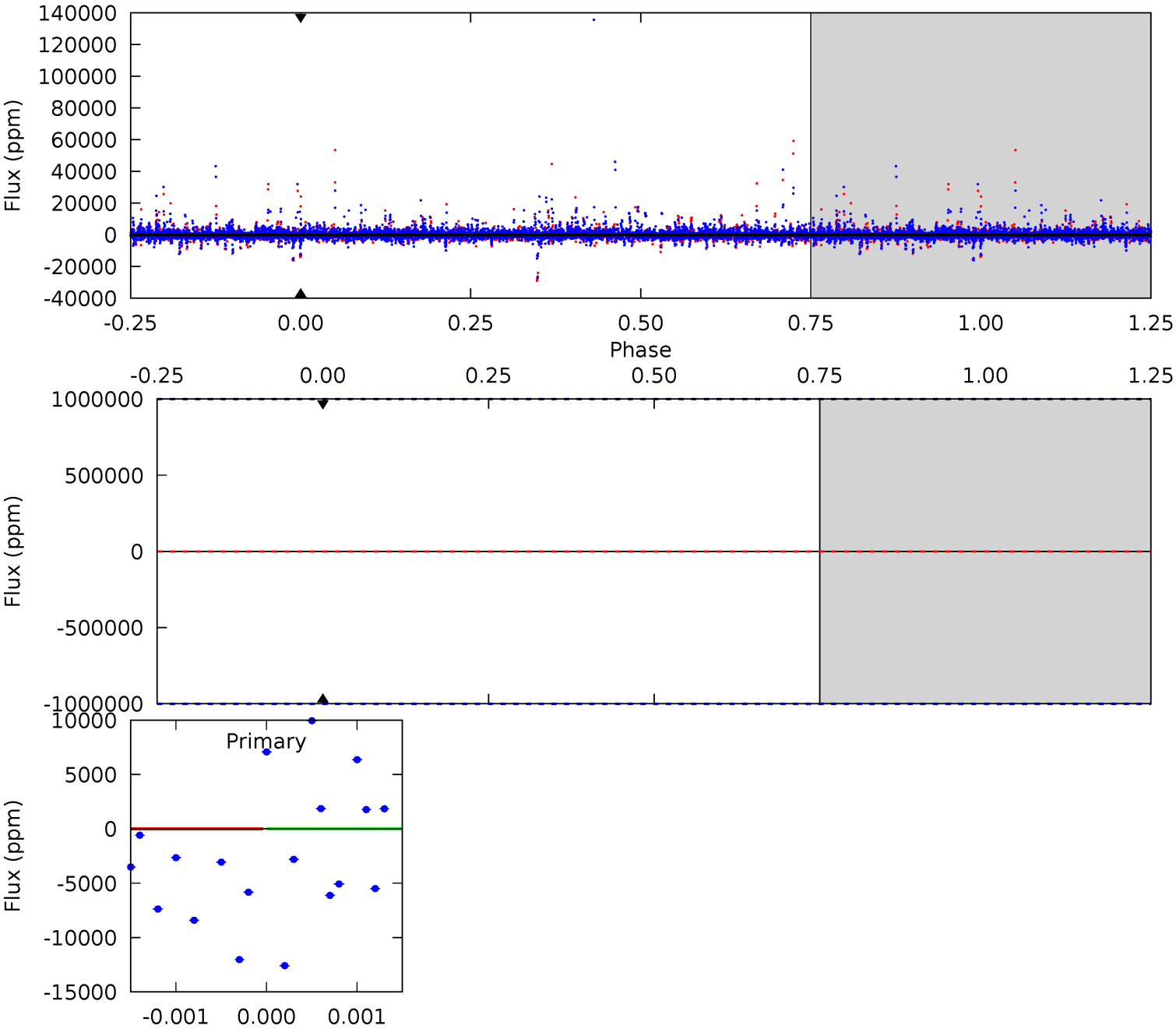
TCE 011709022-09 P= 64.089106 Days $T_0=173.190786$ (BKJD)



DV Model-Shift Uniqueness Test

011709022-09, P = 64.089106 Days, E = 109.079106 Days

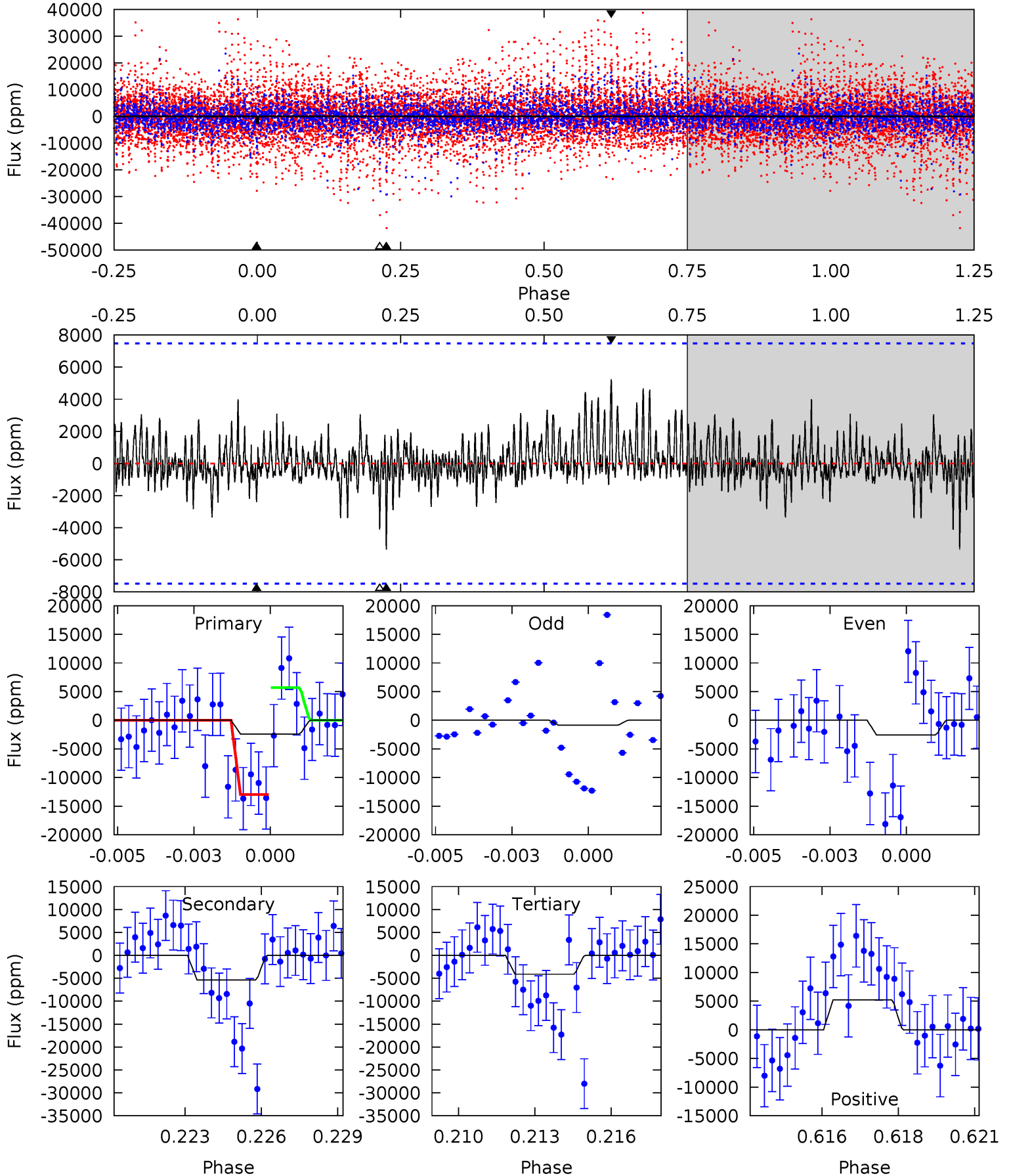
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

011709022-09, P = 64.089106 Days, E = 109.101680 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	3.78	2.90	3.69	5.28	3.01	0.83	-1.21	-2.00	0.87	0.08	0.54	0.63	0.49	0



Stellar Parameters For KIC 011709022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3535^{+111}_{-124}	$4.882^{+0.114}_{-0.076}$	$-0.160^{+0.250}_{-0.300}$	$0.368^{+0.077}_{-0.094}$	$0.378^{+0.080}_{-0.110}$	$10.680^{+7.997}_{-3.301}$
	+3%/-4%	+2%/-2%	+156%/-188%	+21%/-26%	+21%/-29%	+75%/-31%
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 011709022-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$3.15^{+3.38}_{-2.15}$	275^{+14}_{-15}	-2991^{+9941}_{-3940}	$-6136.054^{+475885.528}_{-453133.056}$
Alt.	-5353 ± 1418	$4.43^{+3.76}_{-2.96}$	276^{+13}_{-16}	3097^{+1271}_{-465}	7611^{+53437}_{-5416}

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

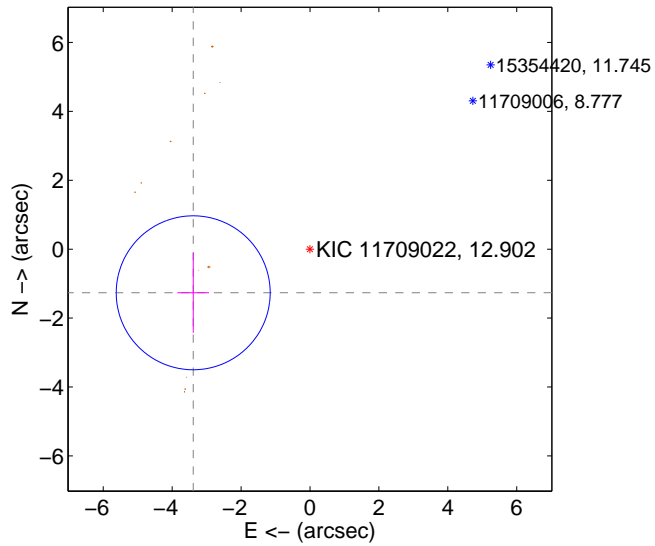
Supplemental centroid analysis for 011709022-09. Kepler magnitude: 12.90. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

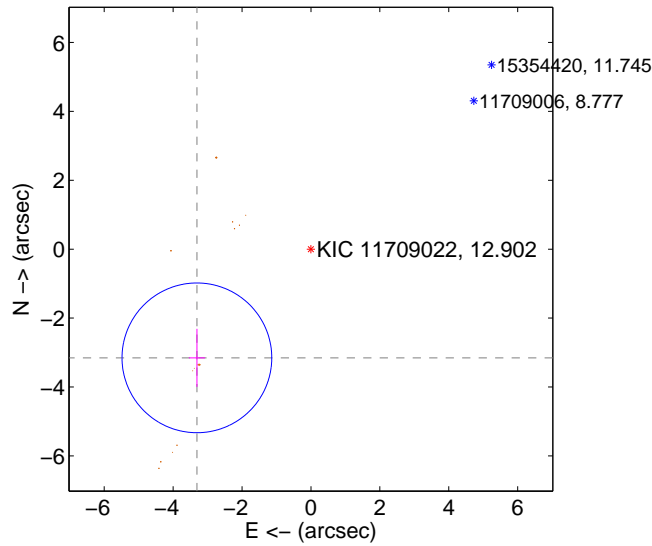
The OOT PRF centroid is offset from the target star catalog position by about 2.23 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.618 ± 0.745	4.86	3.389 ± 0.460	-1.266 ± 1.160
PRF-fit source offset from KIC position	4.572 ± 0.724	6.31	3.310 ± 0.234	-3.154 ± 0.843
photometric centroid source offset	1.74 ± 0.02	111.29	1.74 ± 0.02	-0.12 ± 0.03

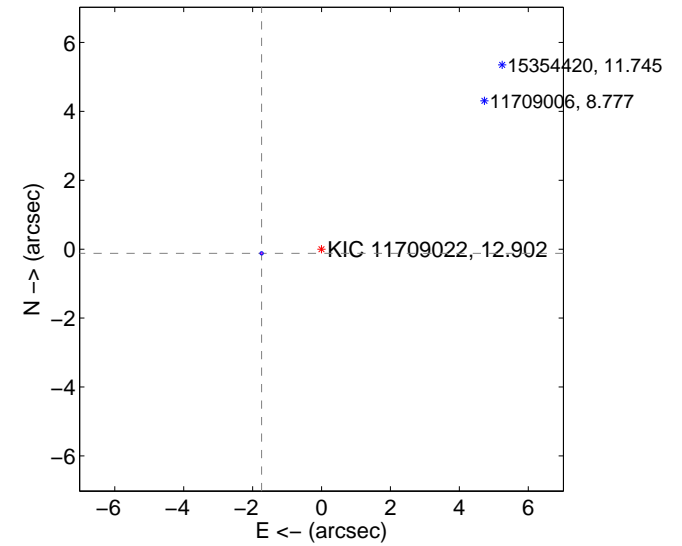
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

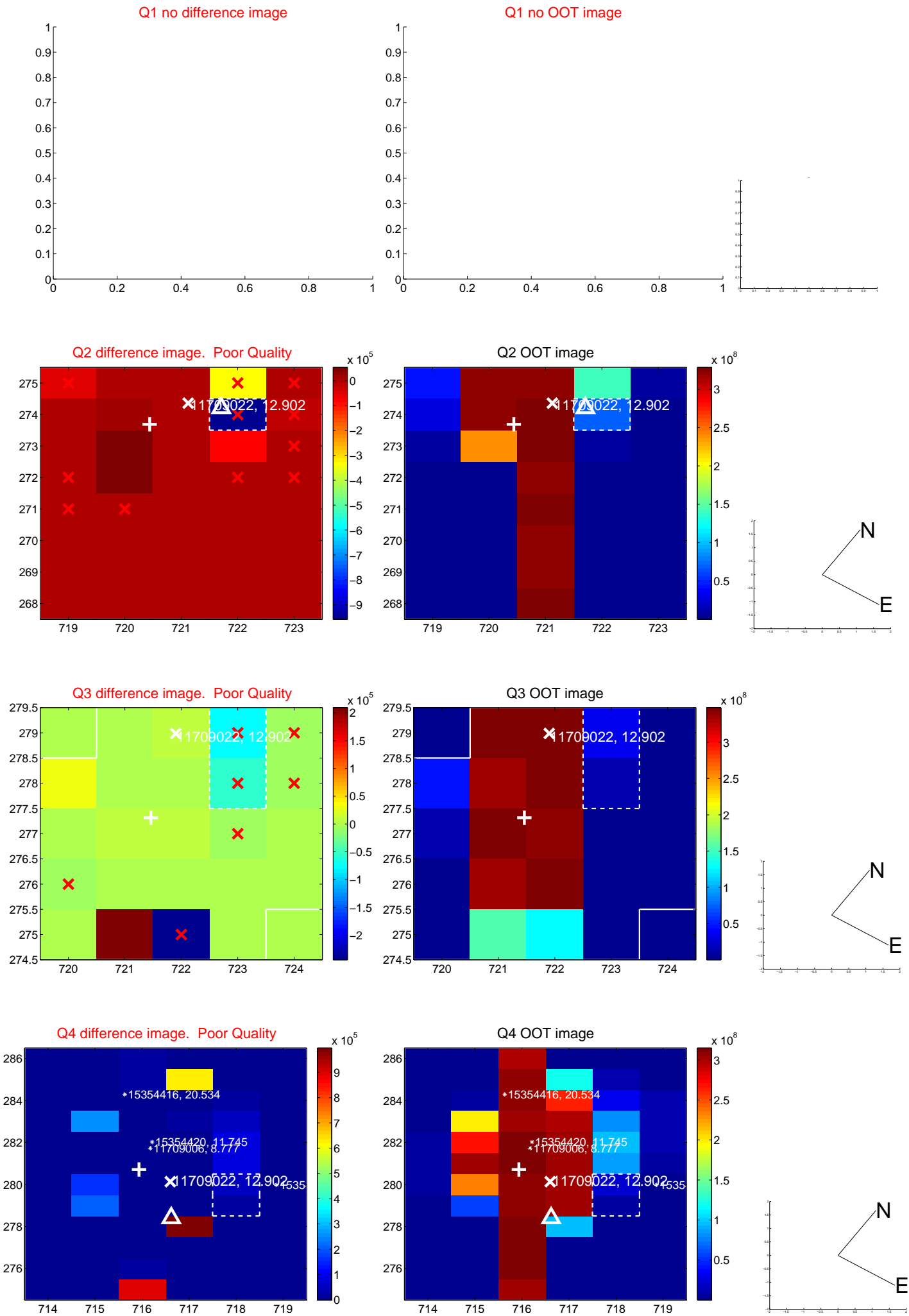


offset from photometric centroids

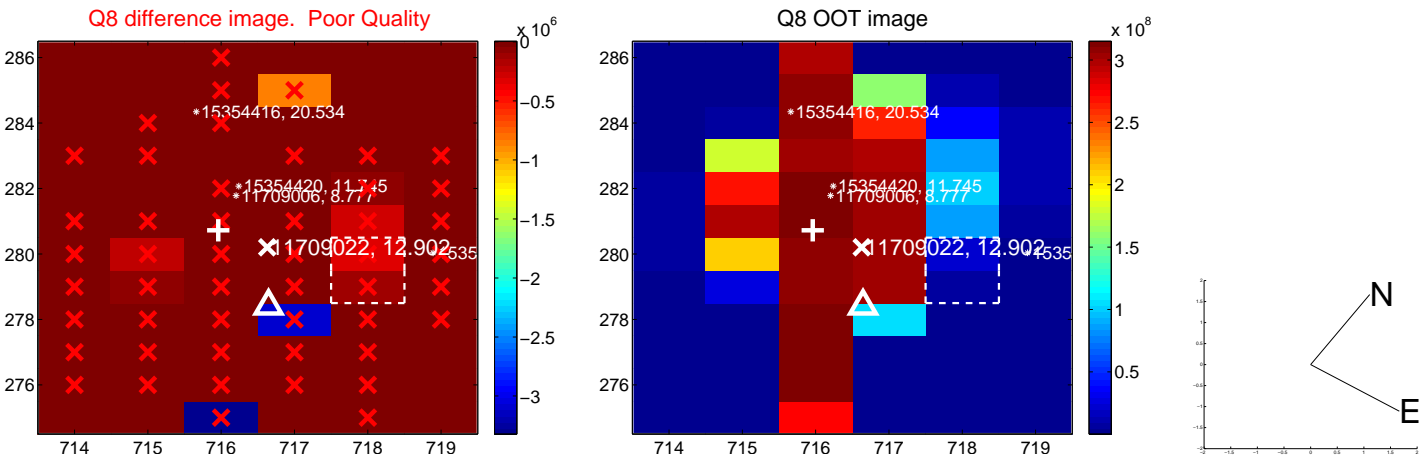
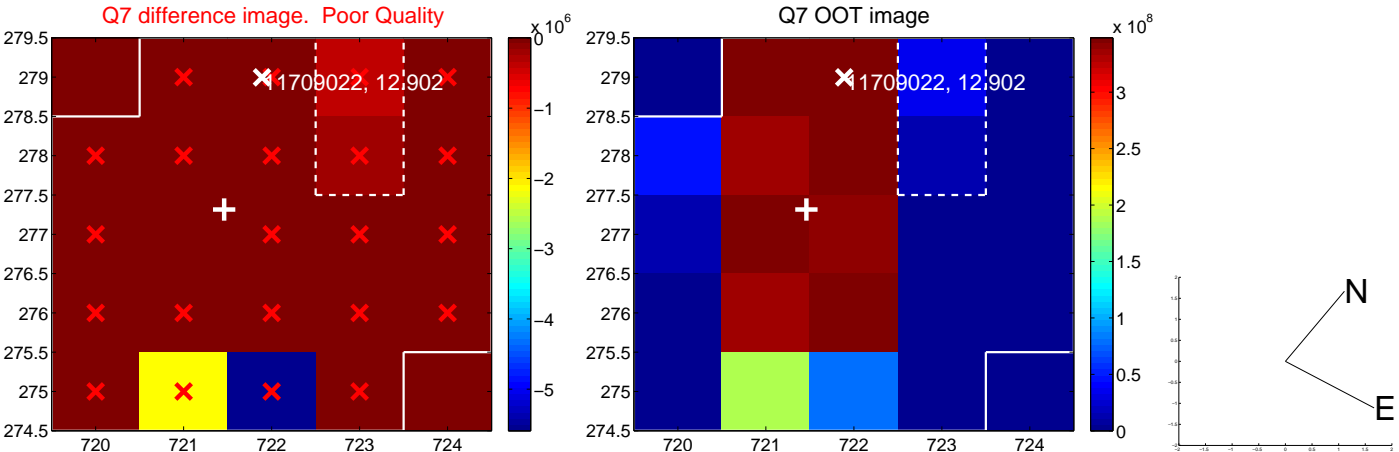
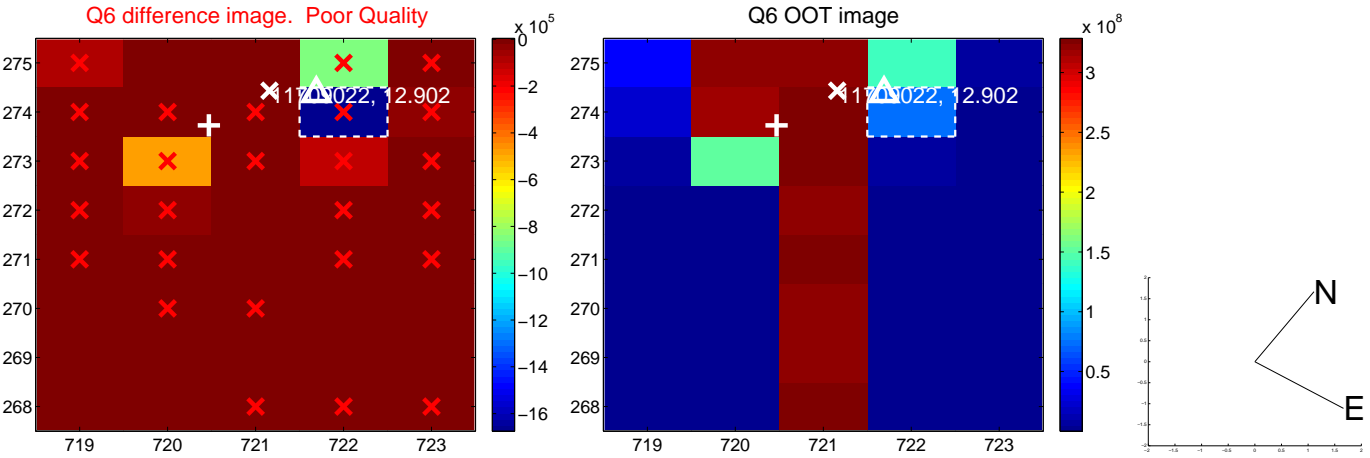
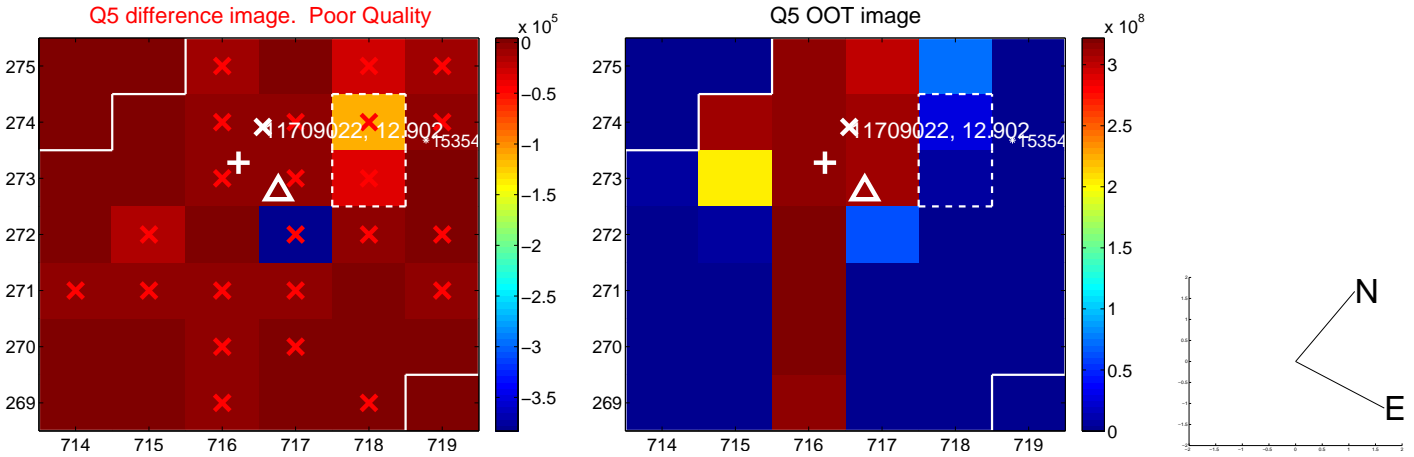


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

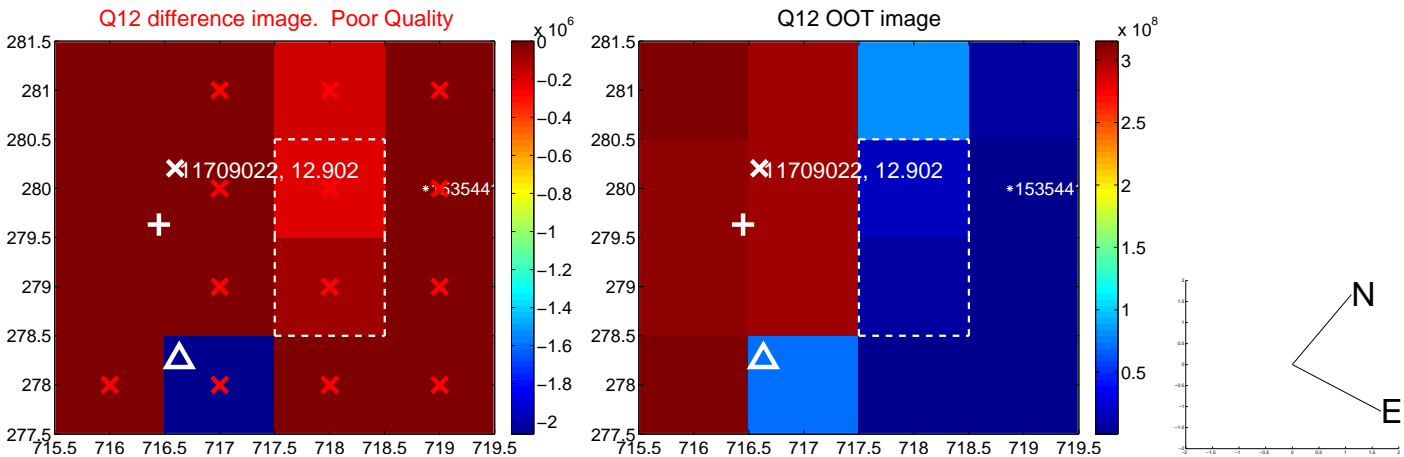
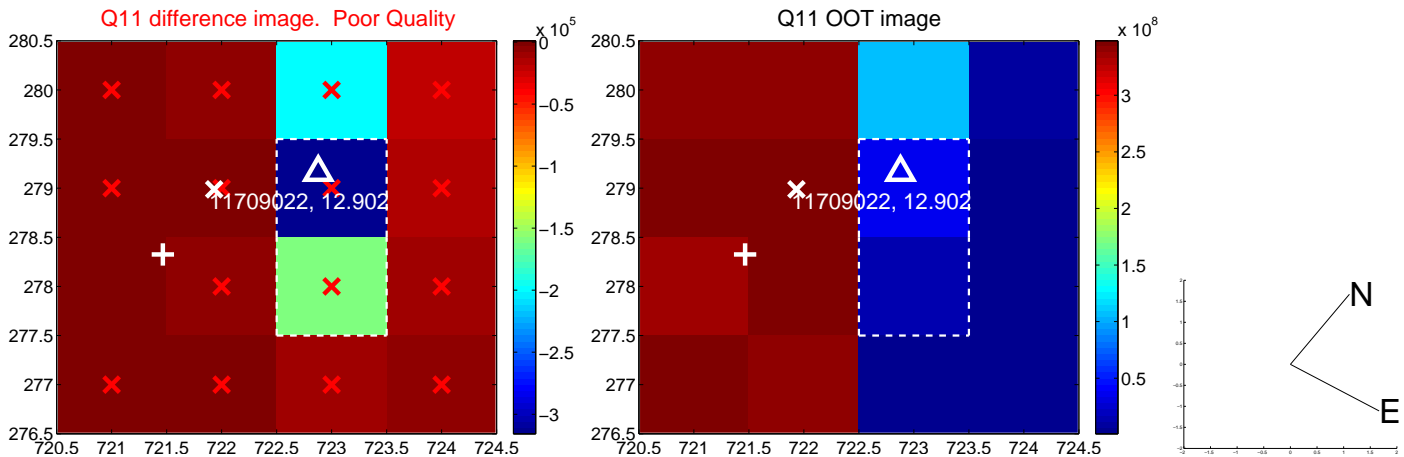
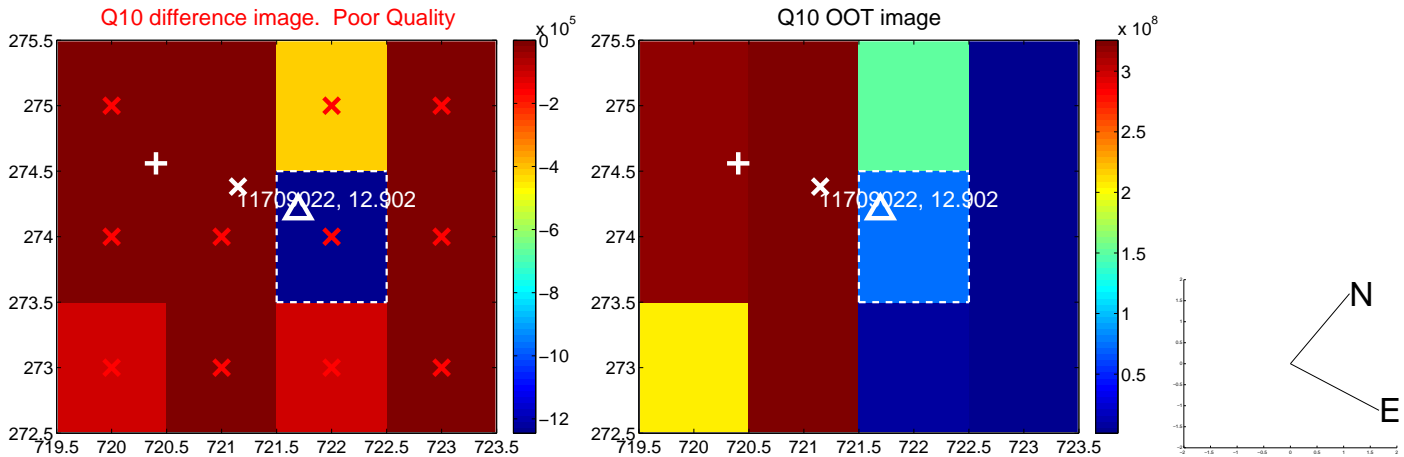
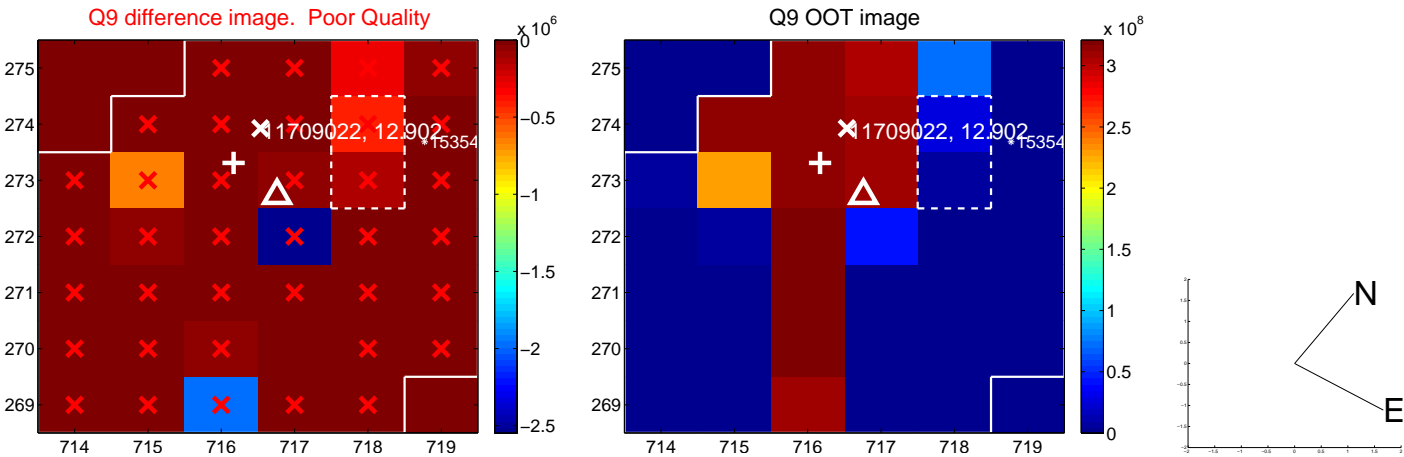
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



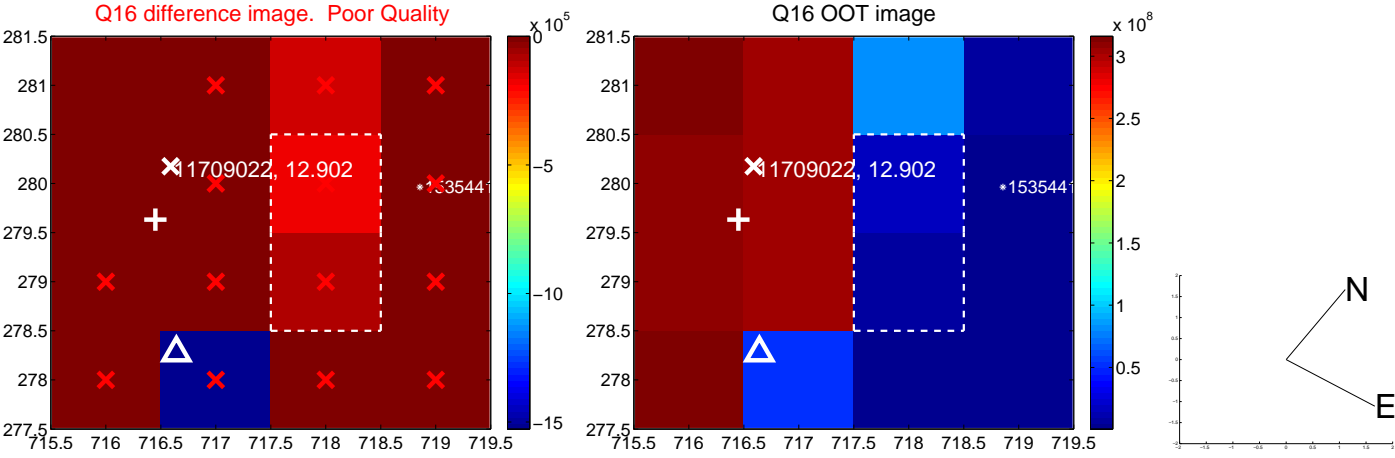
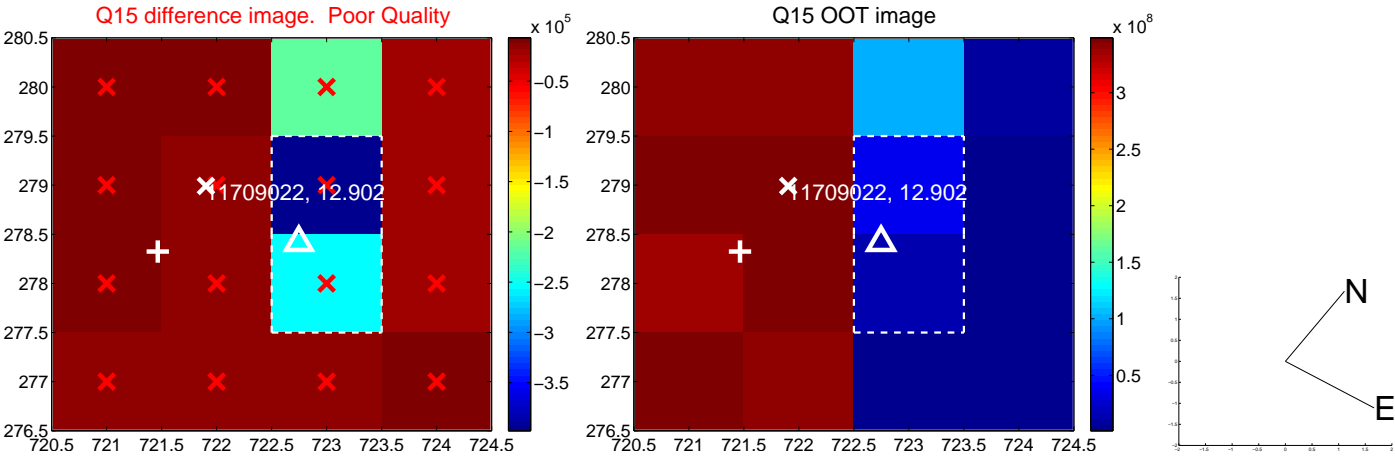
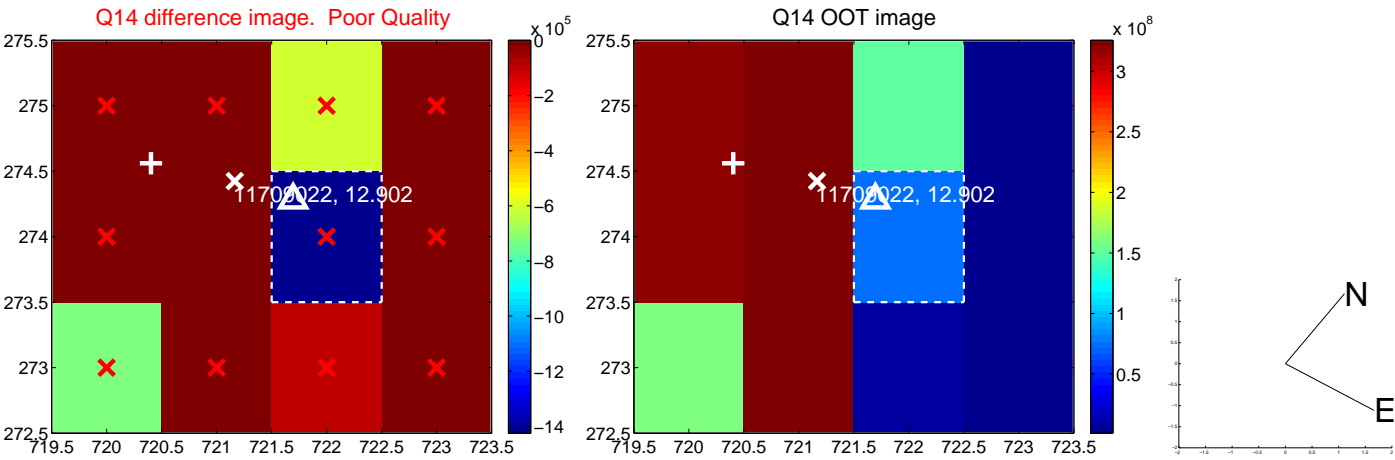
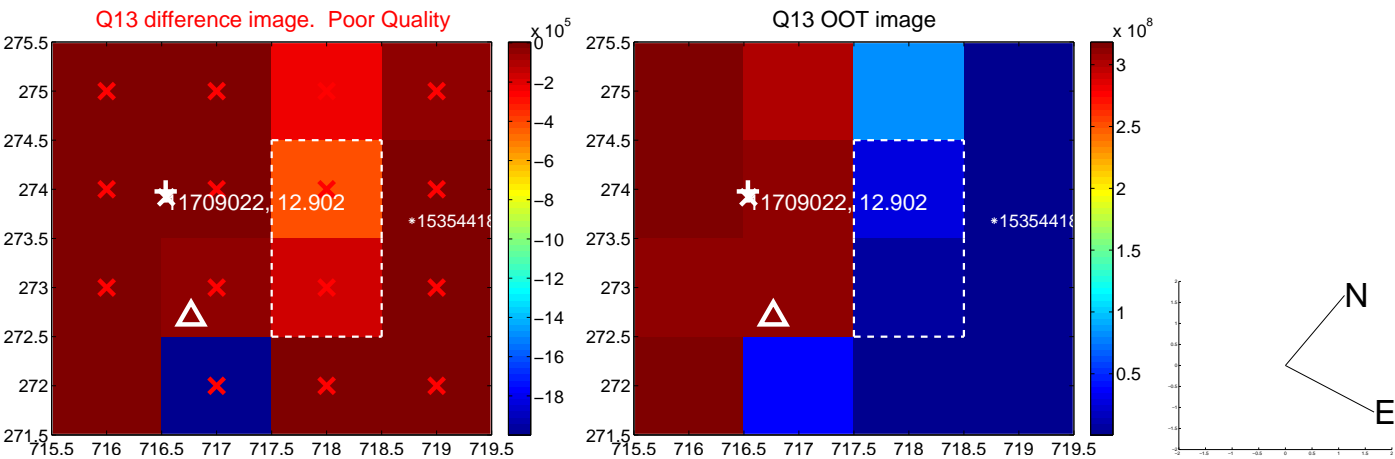
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



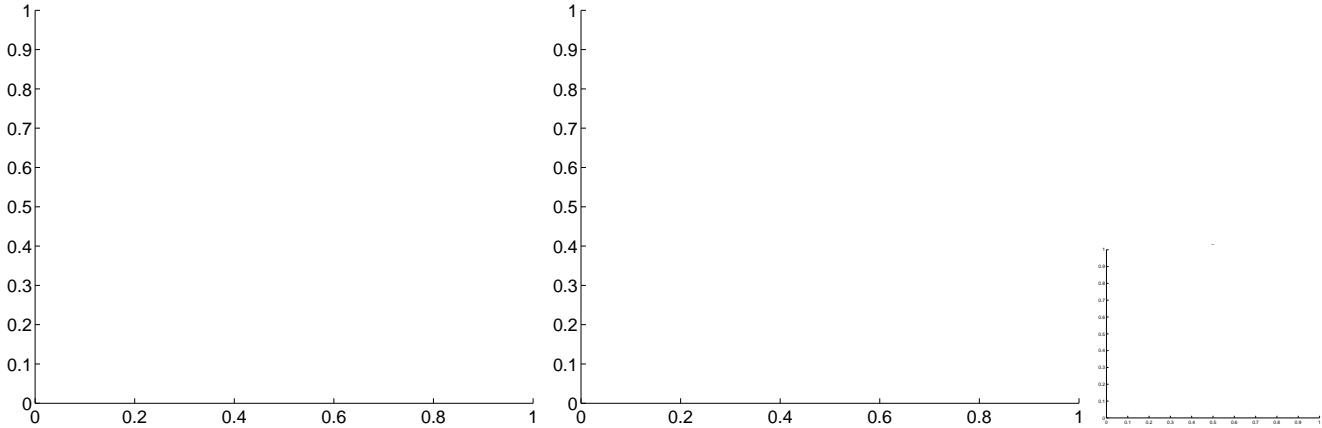
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



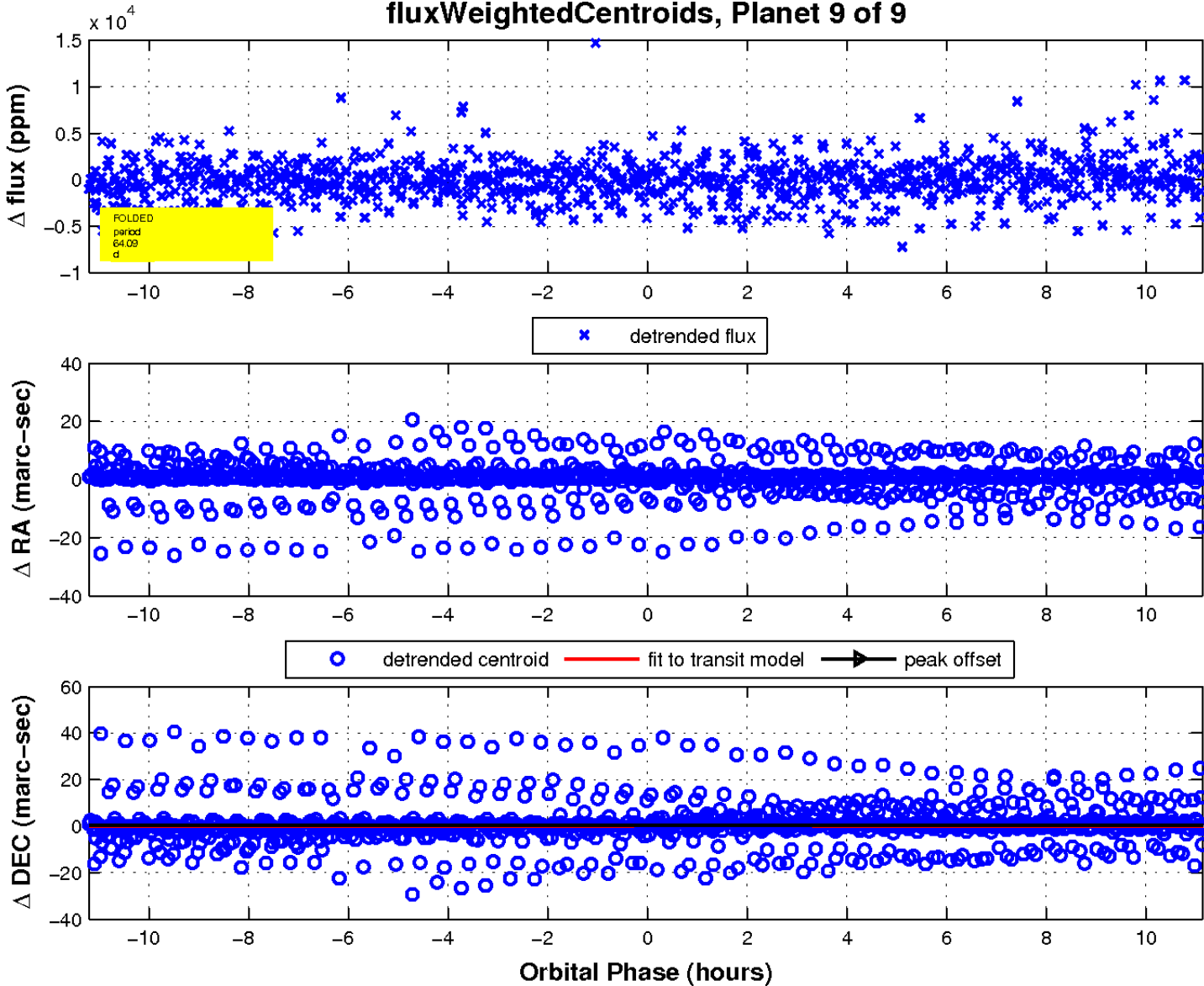
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 9 of 9



UKIRT Image

