

KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

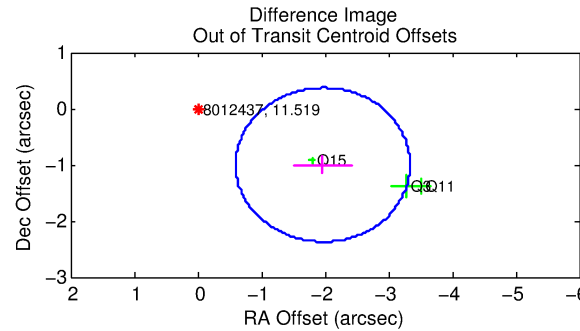
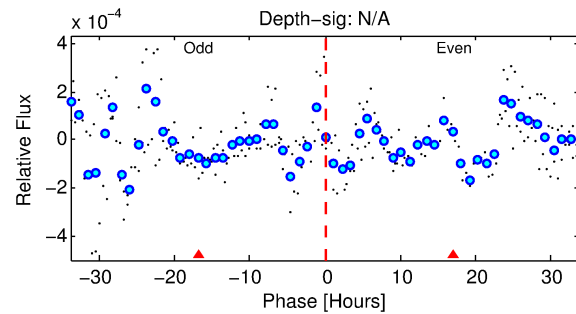
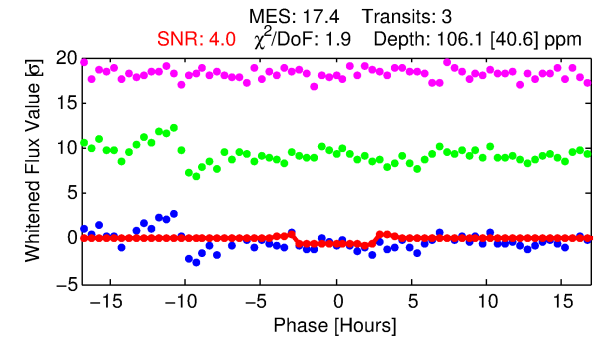
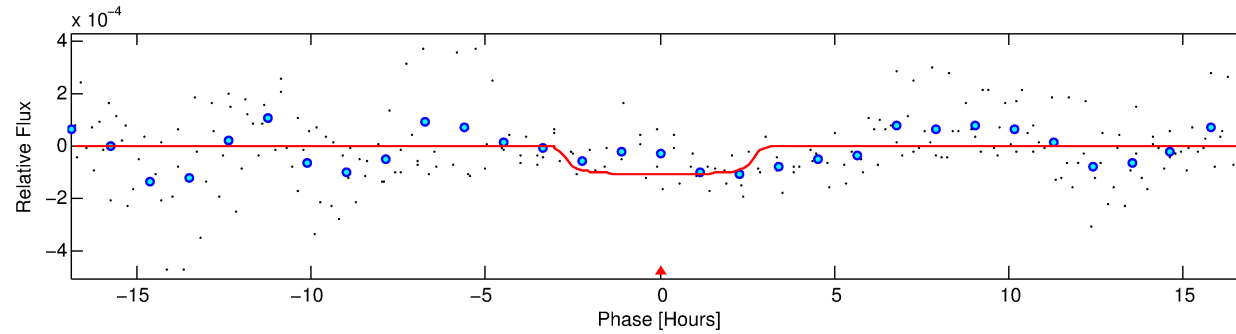
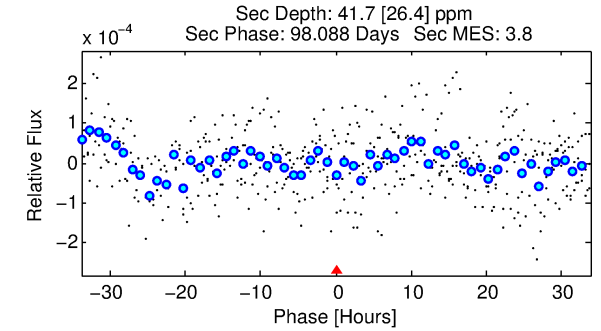
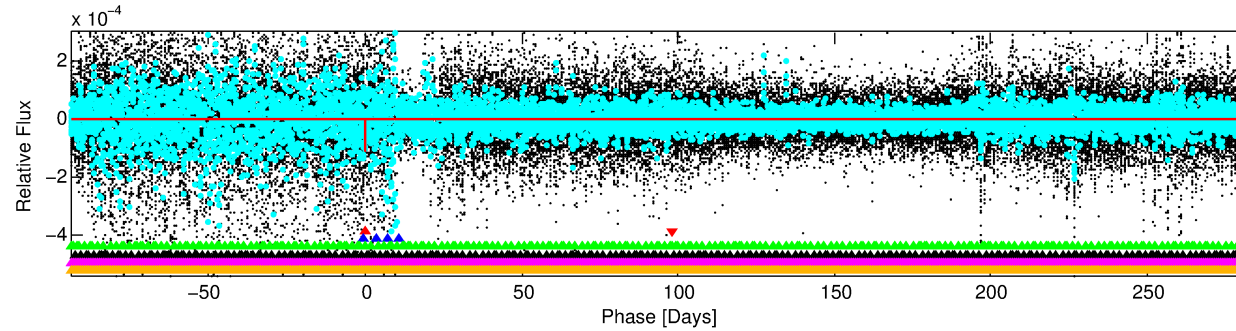
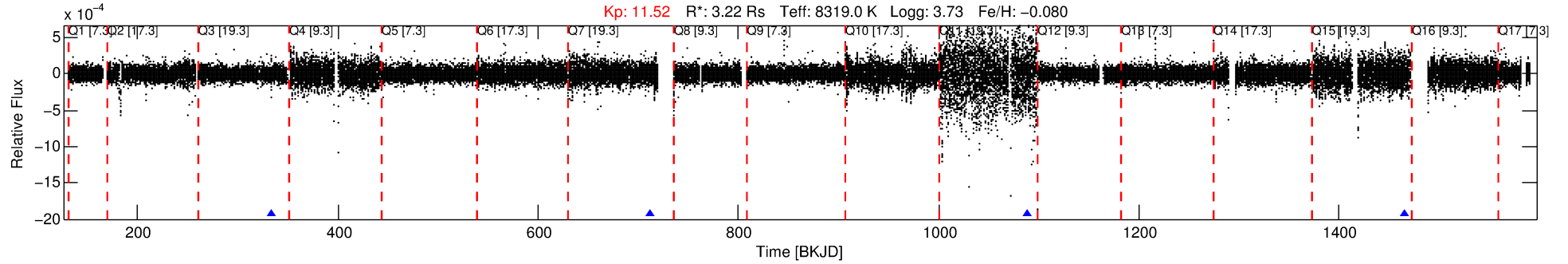
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-01

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 1 of 6 Period: 377.067 d



DV Fit Results:

Period = 377.06736 [0.00795] d
Epoch = 334.1135 [0.0141] BKJD
Rp/R* = 0.0106 [0.0108]
a/R* = 279.93 [1711.56]
b = 0.85 [2.02]
Seff = 26.37 [19.56]
Teq = 578 [107] K
Rp = 3.74 [4.14] Re
a = 1.2985 [0.5724] AU
Ag = 2768.81 [6216.39] [0.45σ]
Teffp = 6481 [3458] K [1.71σ]

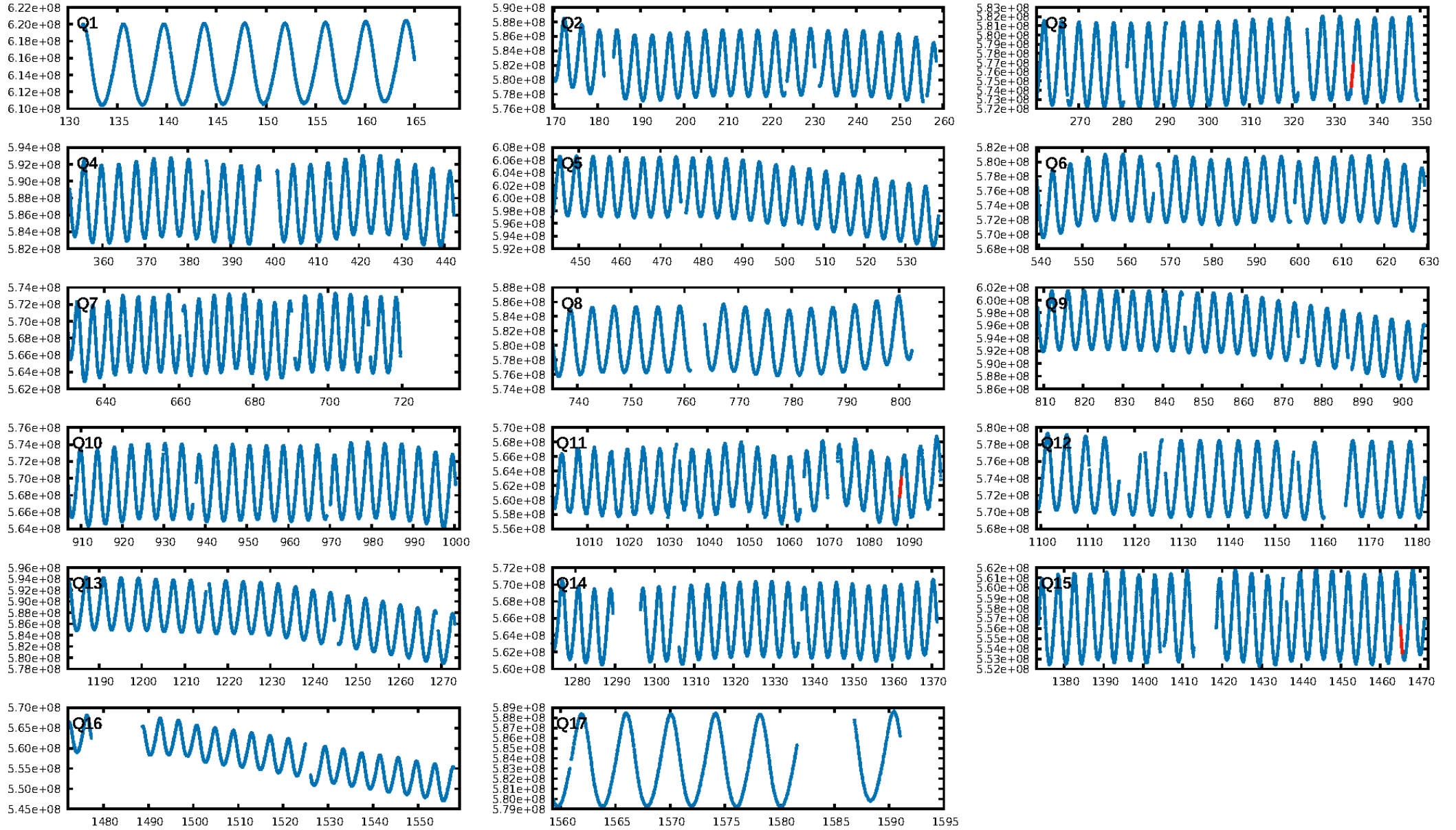
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1339.72σ]
LongPeriod-sig: 100.0% [13.31σ]
ModelChiSquare2-sig: 19.1%
ModelChiSquareGof-sig: 95.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9391
Centroid-sig: N/A
Centroid-so: 2.598 arcsec [0.76σ]
OotOffset-rm: 2.209 arcsec [4.83σ]
KicOffset-rm: 2.151 arcsec [4.19σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.00 [0/3]

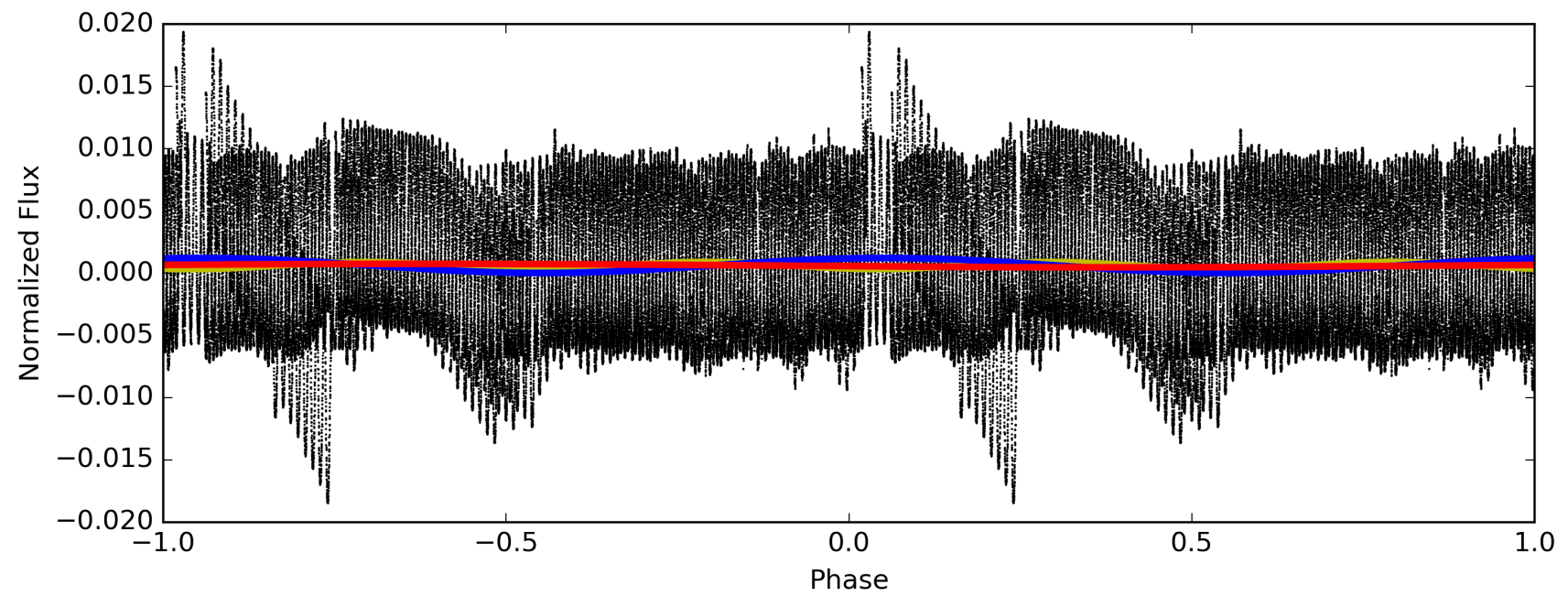
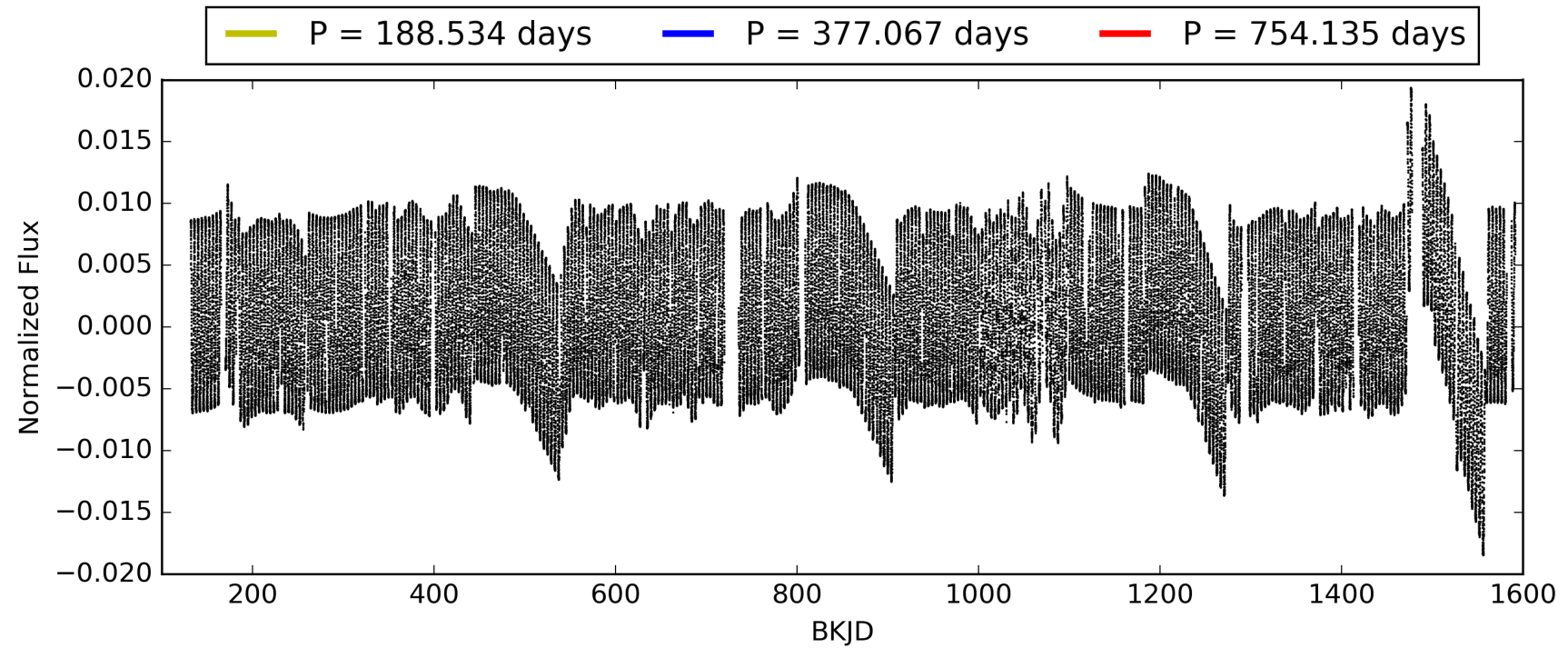
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:13:26 Z

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

TCE 008012437-01, PDC Light Curves

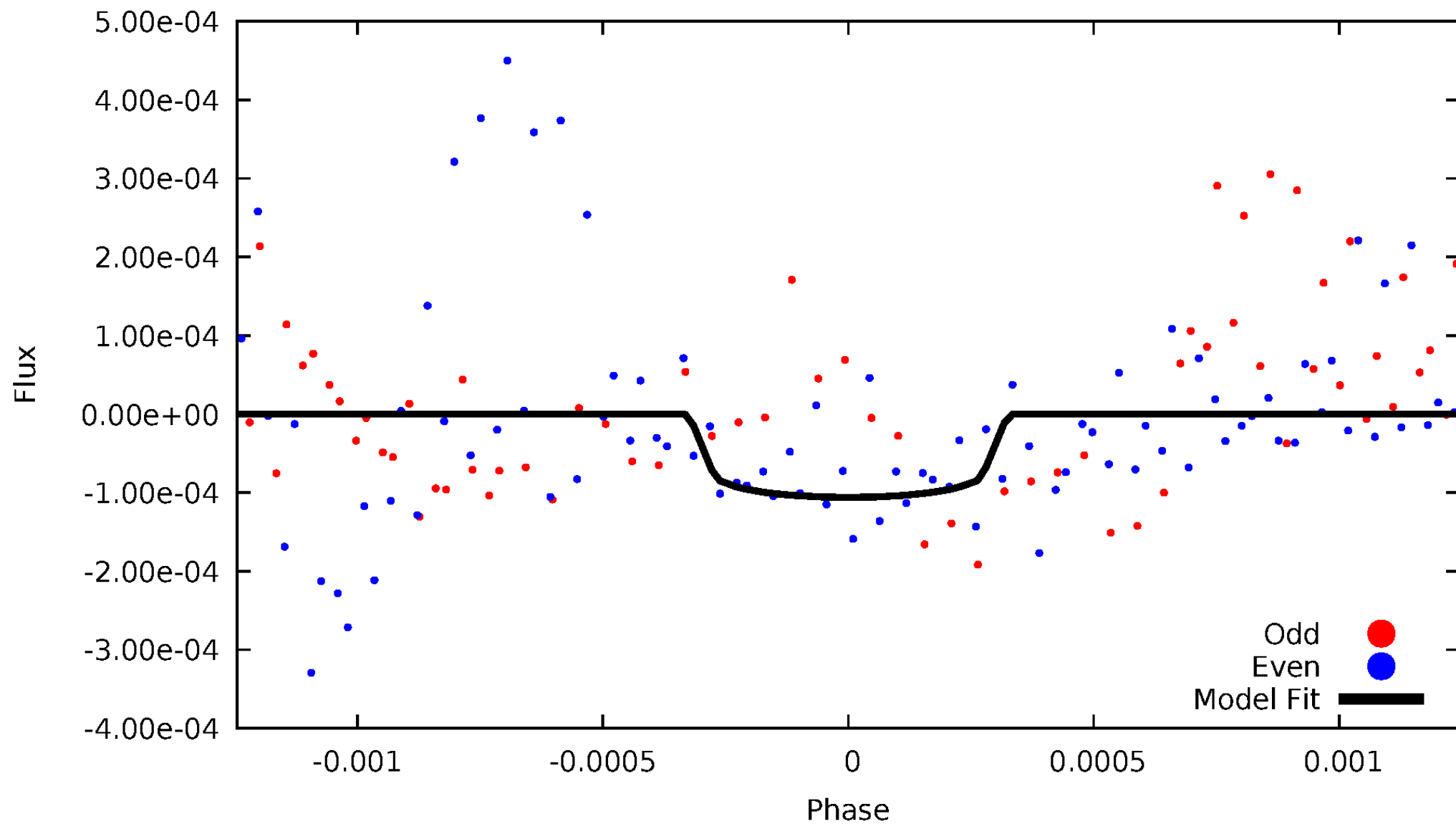


TCE 008012437-01



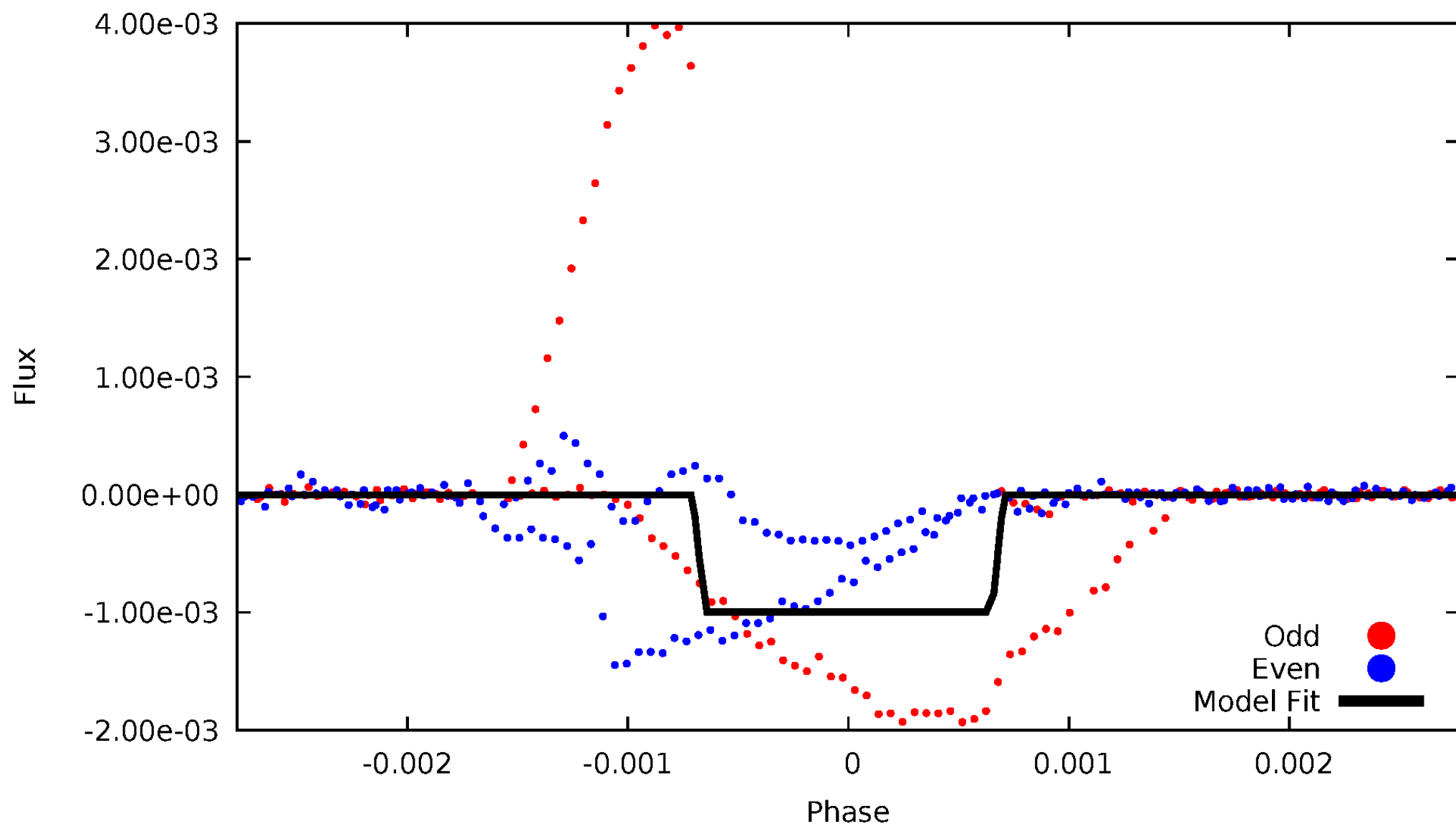
DV Odd/Even

TCE 008012437-01



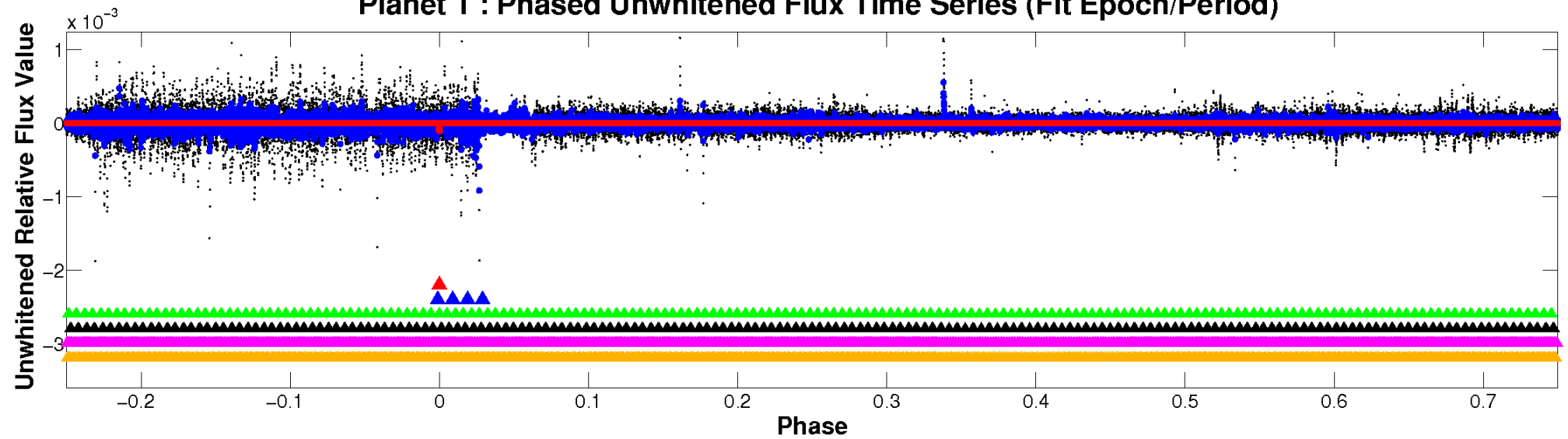
ALT Odd/Even

TCE 008012437-01

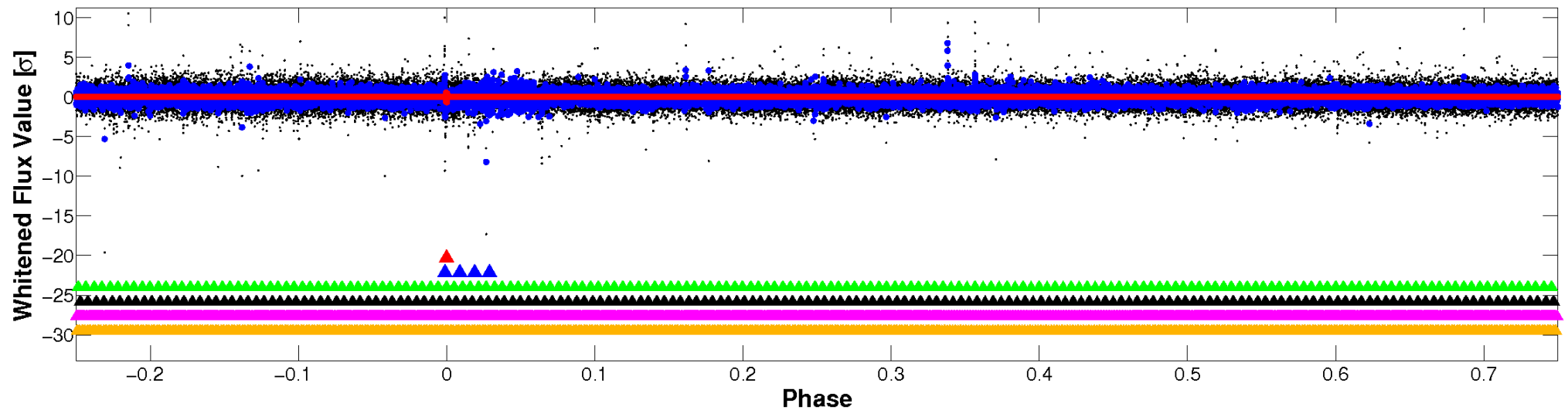


Non-Whitened Vs. Whitened Light Curve

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

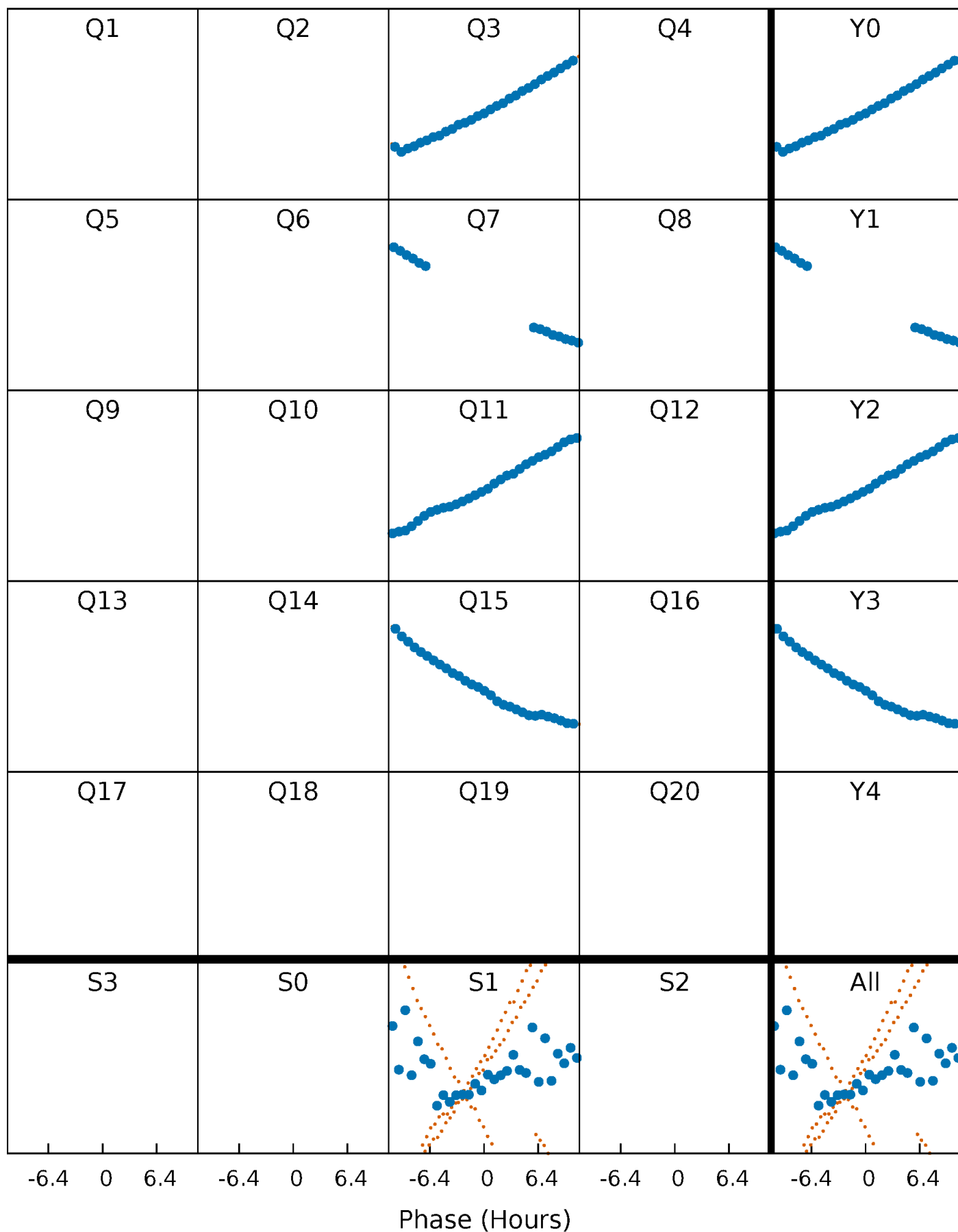


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



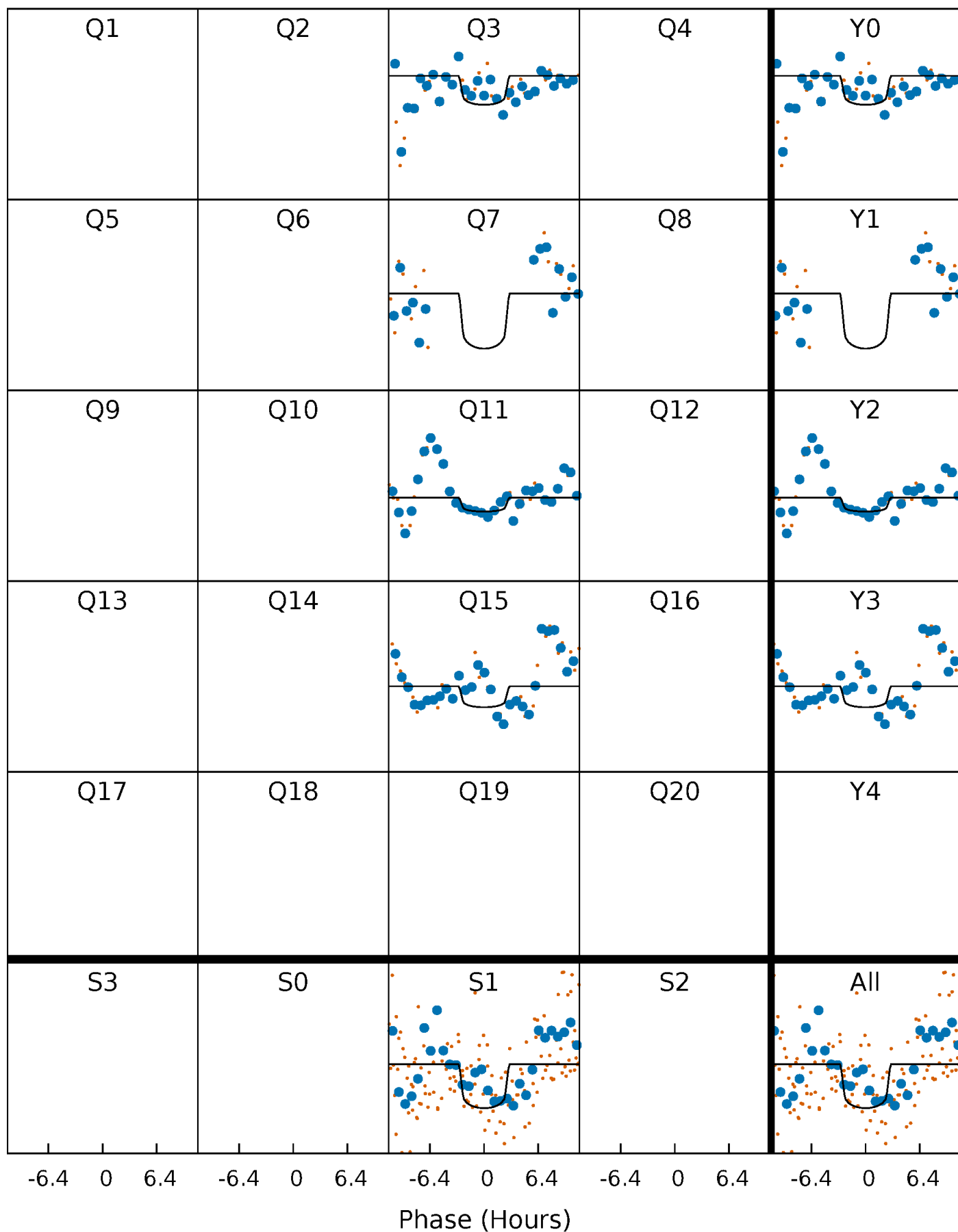
PDC Quarter-Phased Transit Curves

TCE 008012437-01 P=377.067361 Days $T_0=334.113531$ (BKJD)



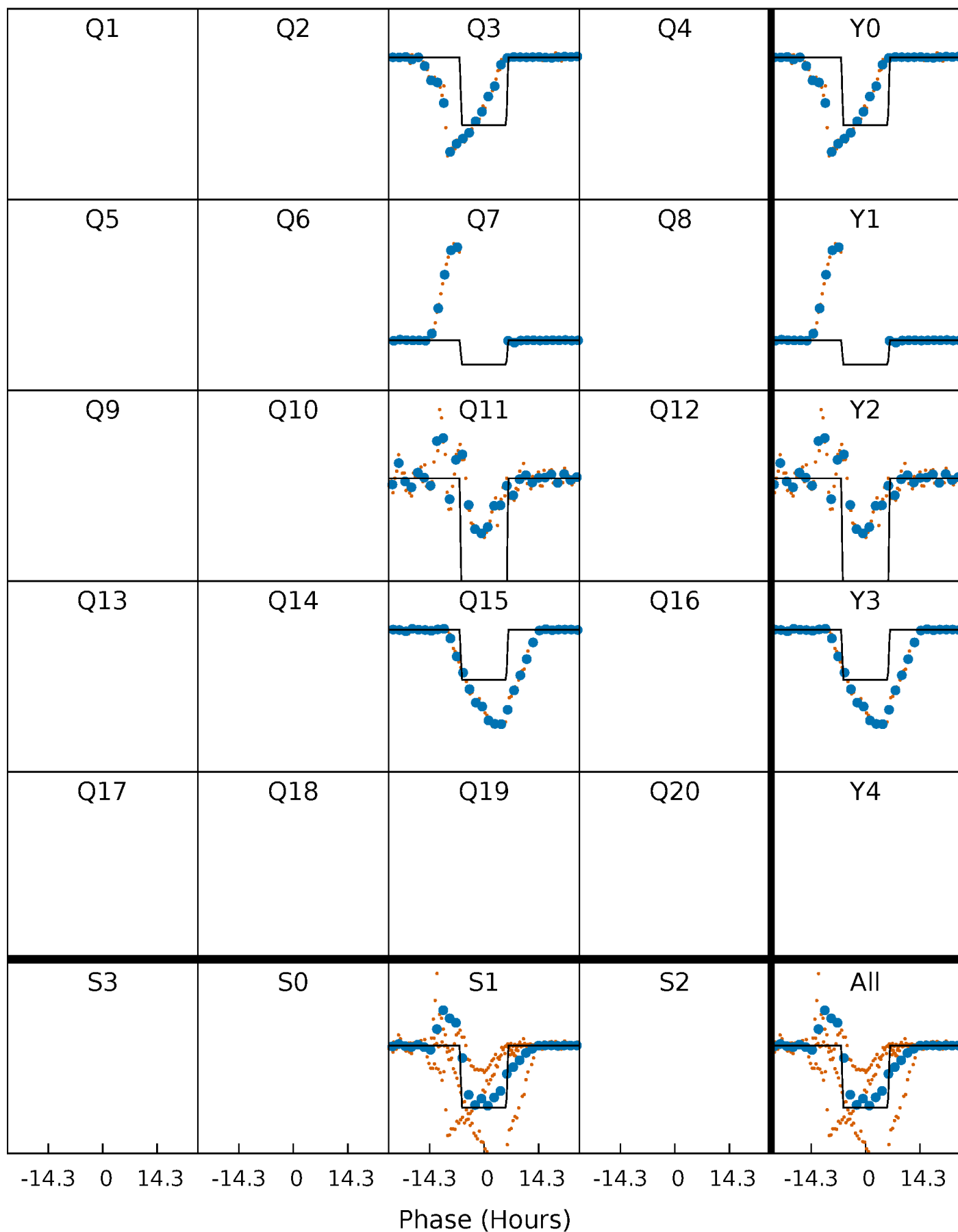
DV Quarter-Phased Transit Curves

TCE 008012437-01 P=377.067361 Days $T_0=334.113531$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

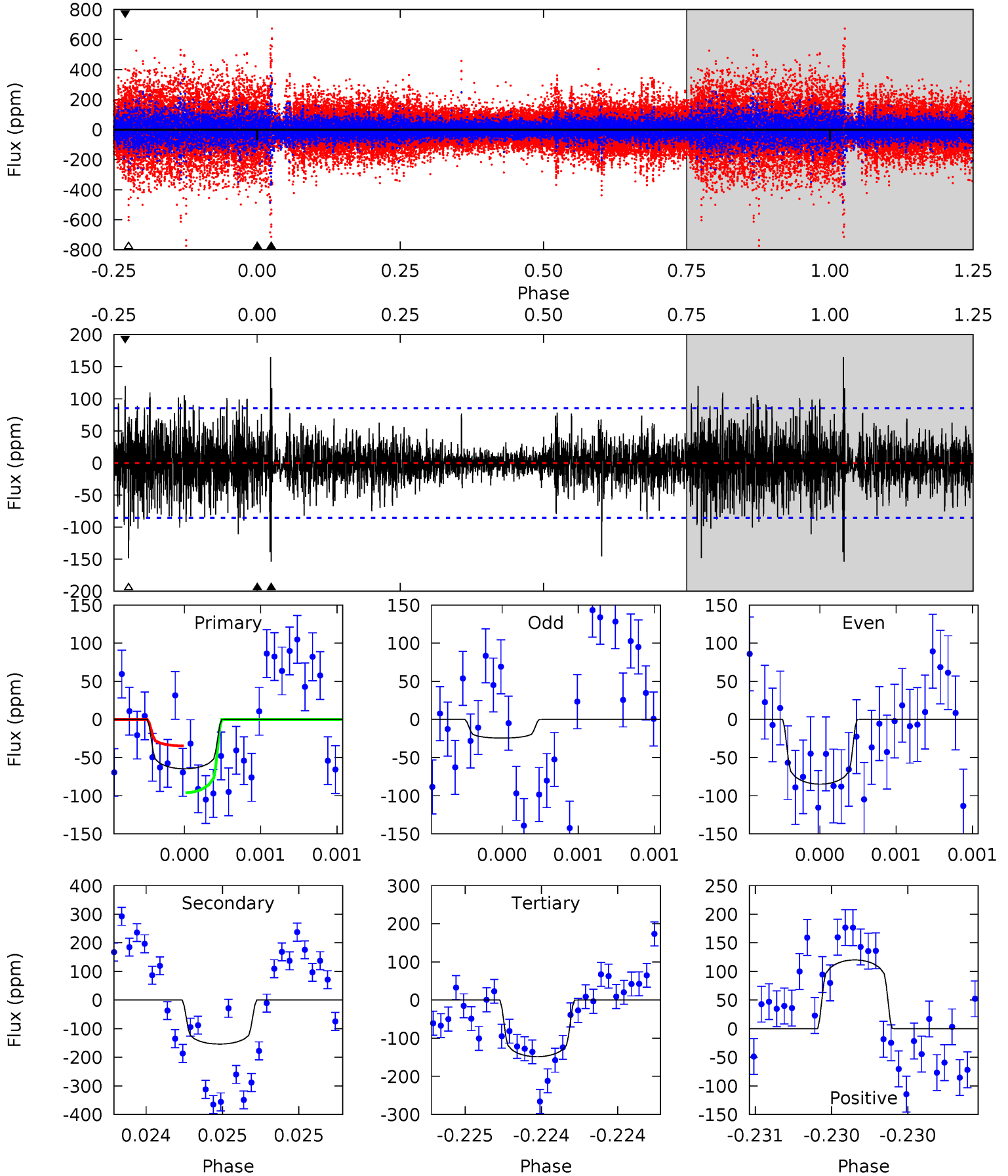
TCE 008012437-01 P=377.074105 Days $T_0=334.100144$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-01, P = 377.067361 Days, E = 334.113531 Days

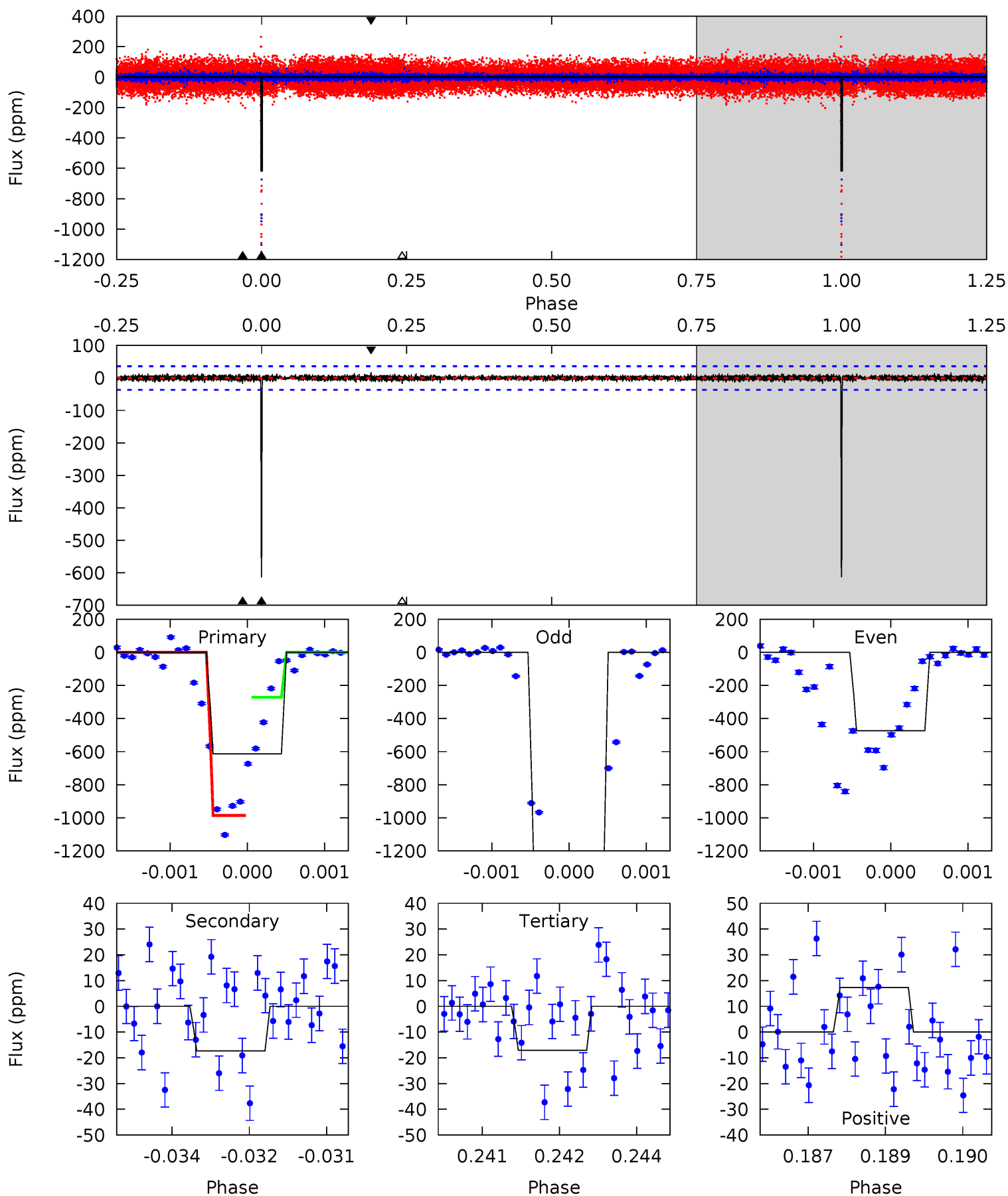
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.19	9.96	9.61	7.78	5.52	3.40	1.69	-5.43	-3.59	0.35	2.18	1.67	1.05	0.52	1.96



Alt Model-Shift Uniqueness Test

008012437-01, P = 377.074105 Days, E = 334.100144 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.9	2.57	2.54	2.56	5.39	3.19	0.52	88.3	88.3	0.03	0.00	111.1	1.21	0.03	0



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-154 ± 15	$4.07^{+3.21}_{-2.64}$	776^{+70}_{-90}	8041^{+11630}_{-2057}	8492^{+63039}_{-5817}
Alt.	-17 ± 7	$10.02^{+4.46}_{-3.91}$	788^{+68}_{-89}	3435^{+542}_{-391}	150^{+264}_{-85}

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

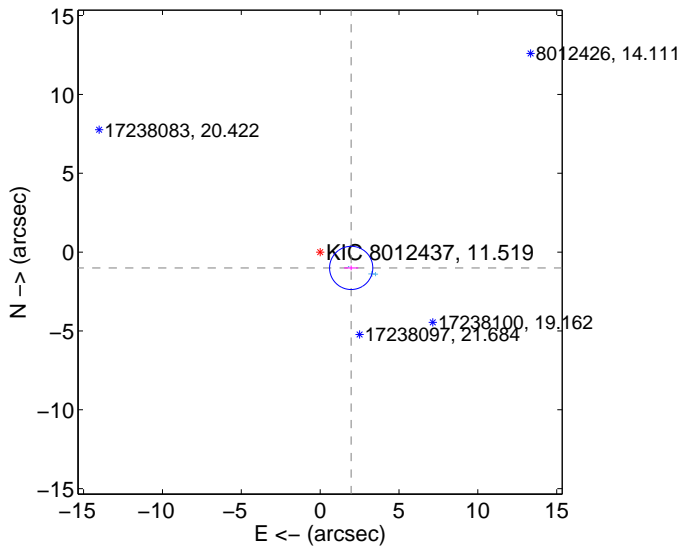
Supplemental centroid analysis for 008012437-01. **Kepler magnitude: 11.52.** Transit SNR 4.03

There are 3 quarters with good PRF difference image offsets

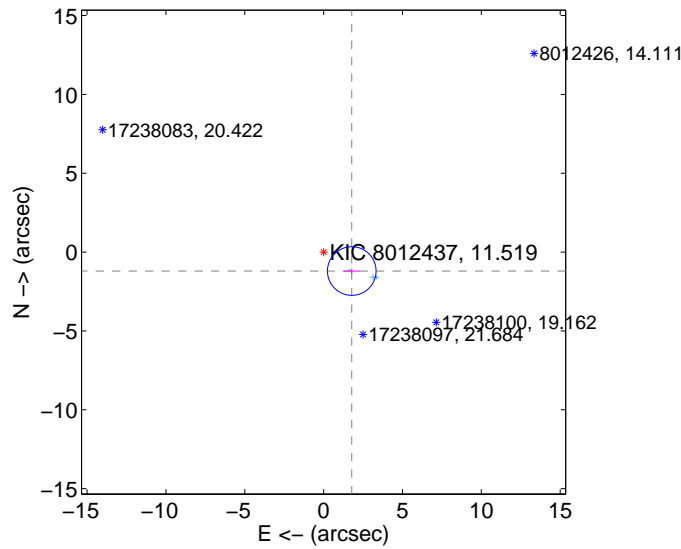
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.209 ± 0.457	4.83	-1.968 ± 0.445	-1.003 ± 0.149
PRF-fit source offset from KIC position	2.151 ± 0.514	4.19	-1.784 ± 0.516	-1.201 ± 0.167
photometric centroid source offset	2.60 ± 3.40	0.76	-0.13 ± 4.47	-2.59 ± 3.39

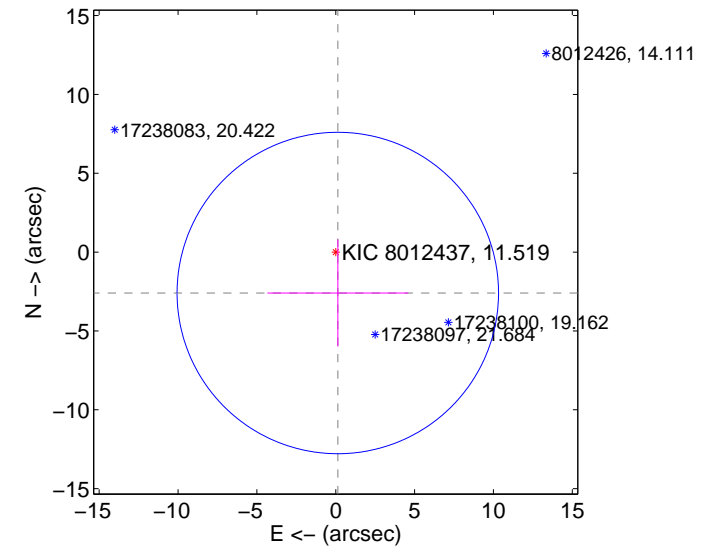
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

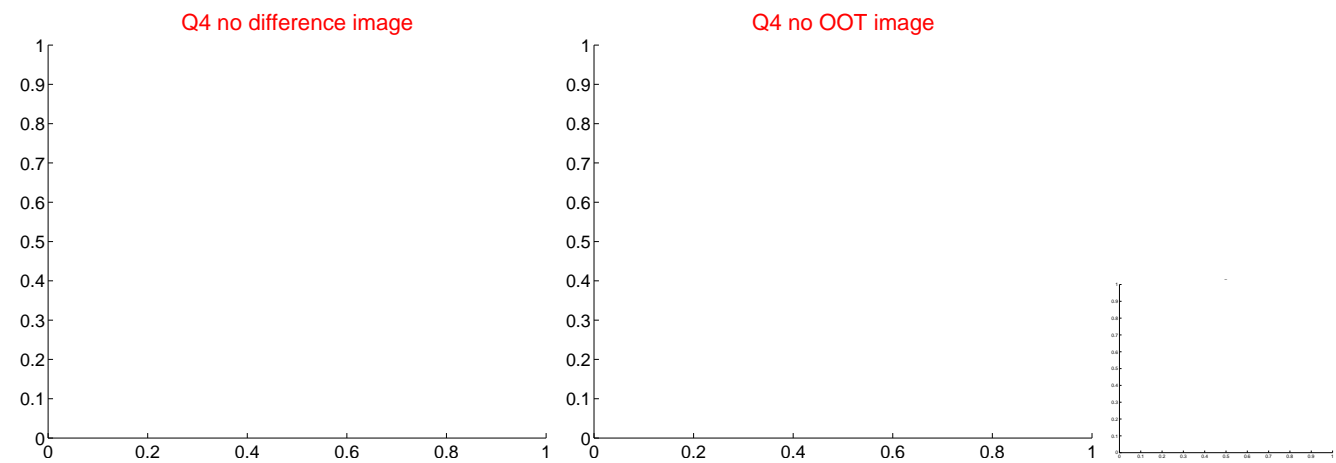
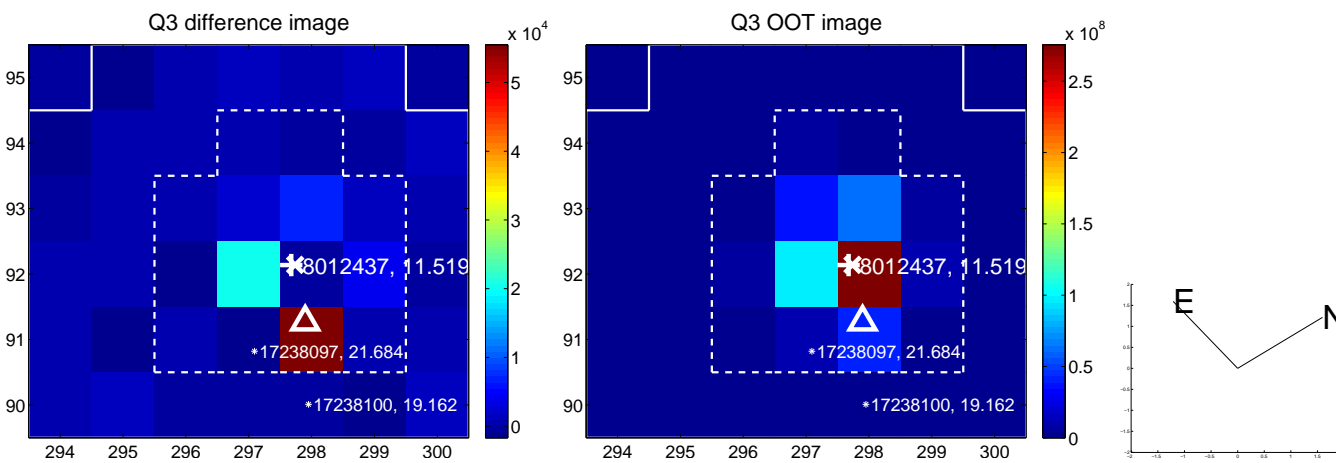
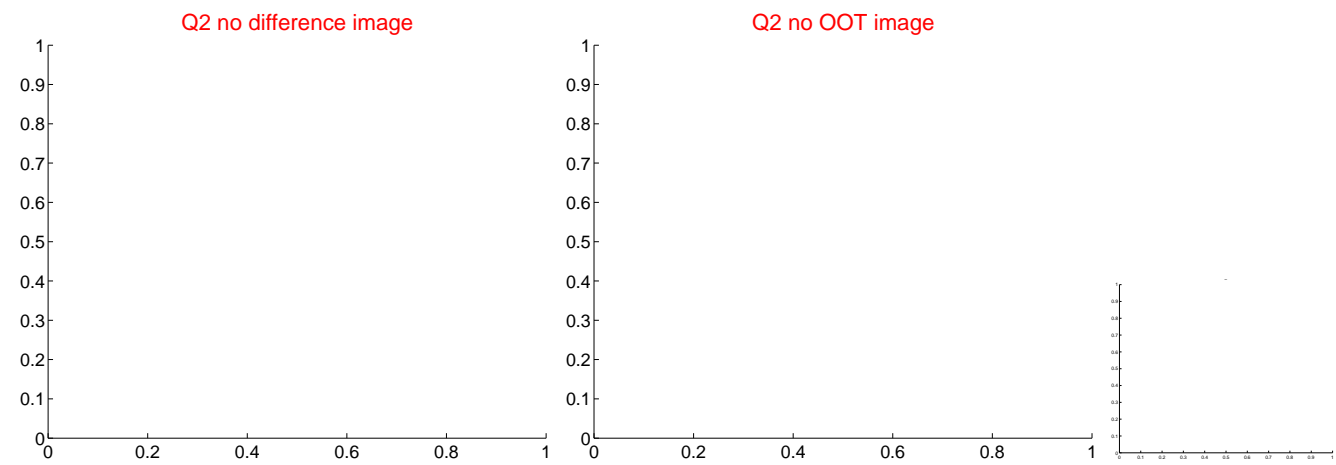
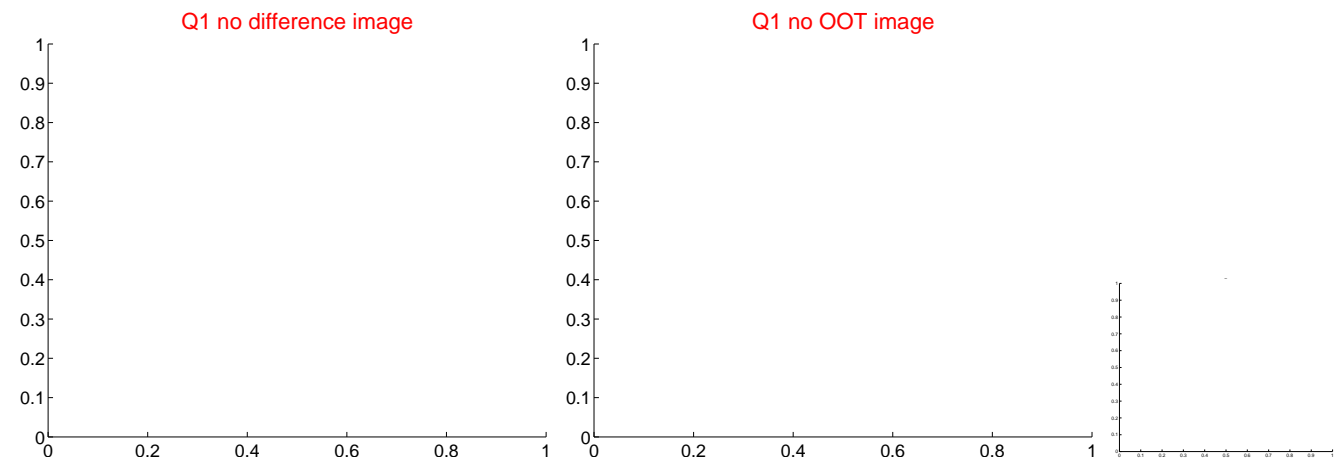


offset from photometric centroids



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.

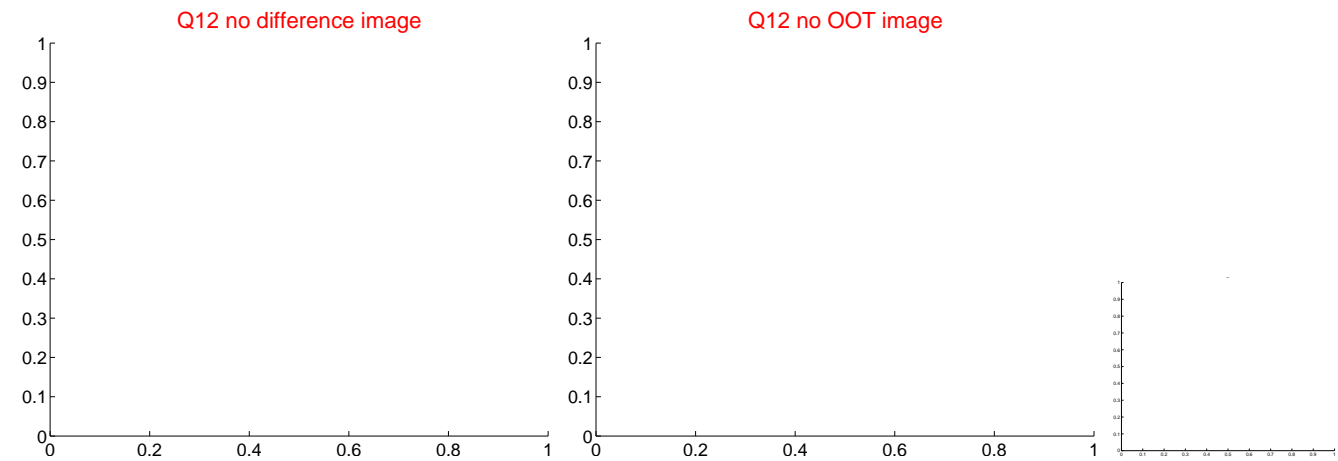
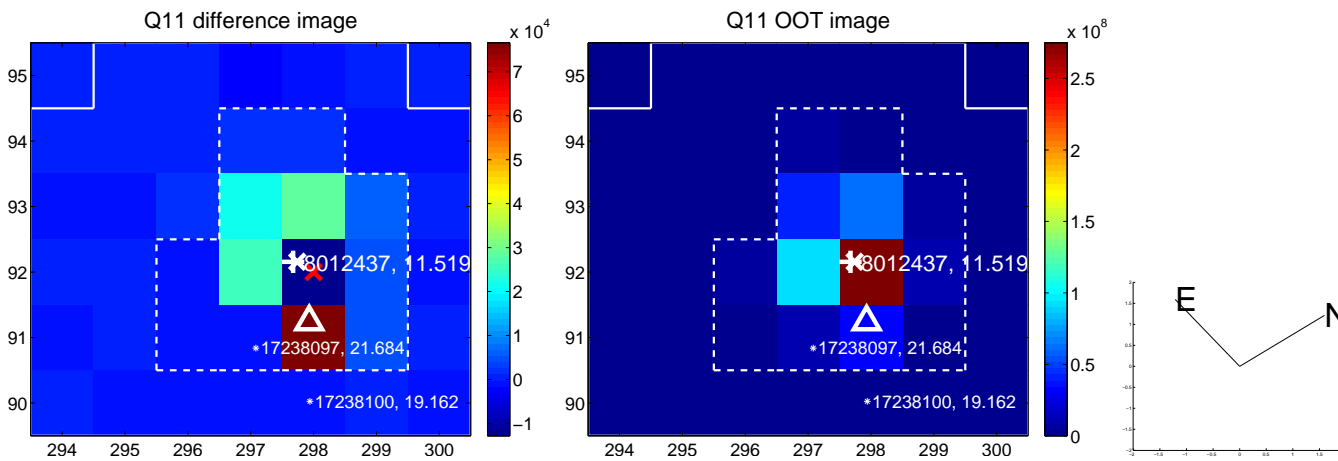
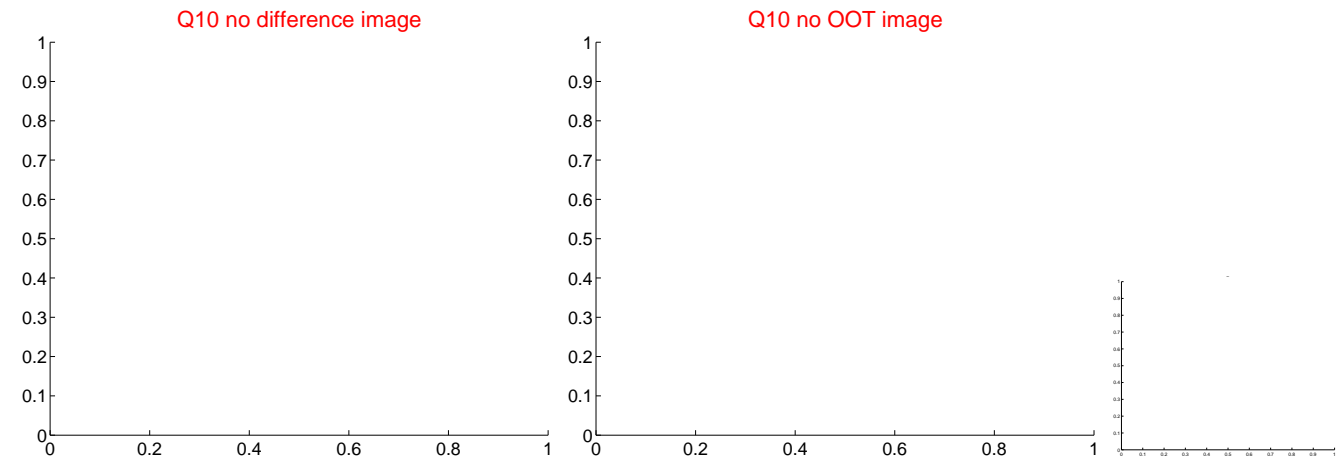
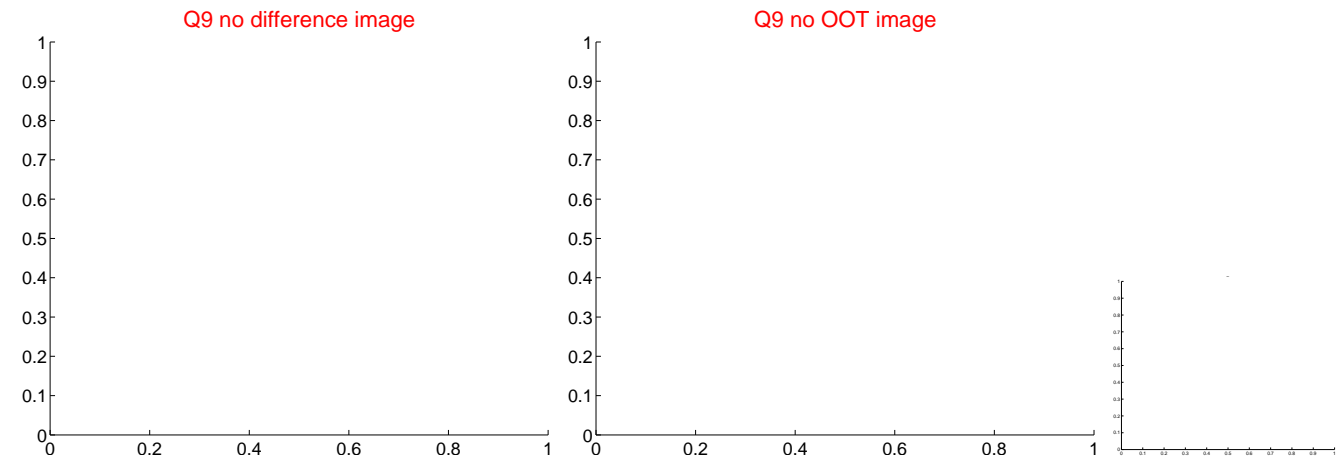
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



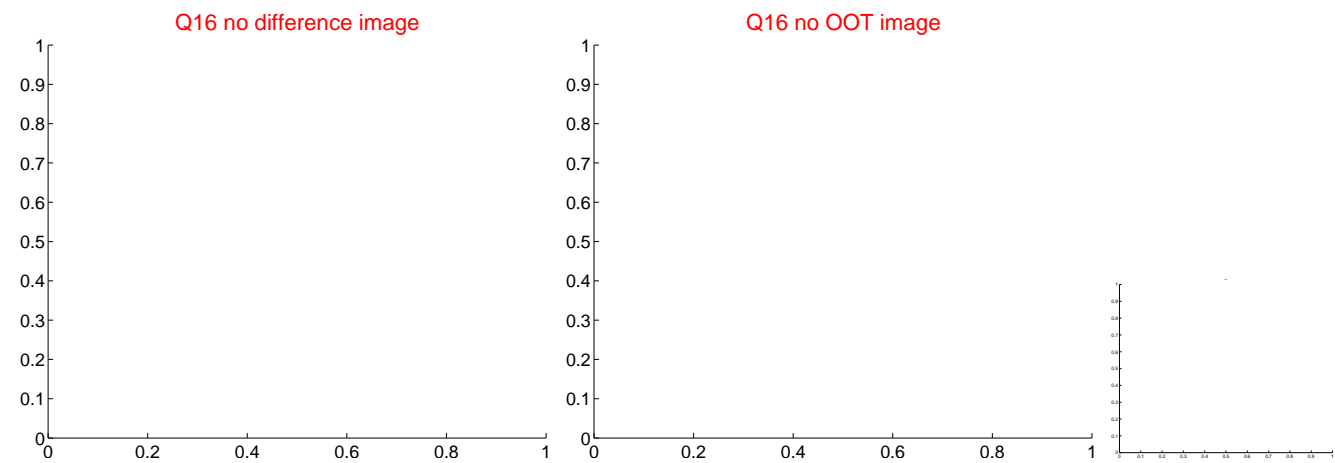
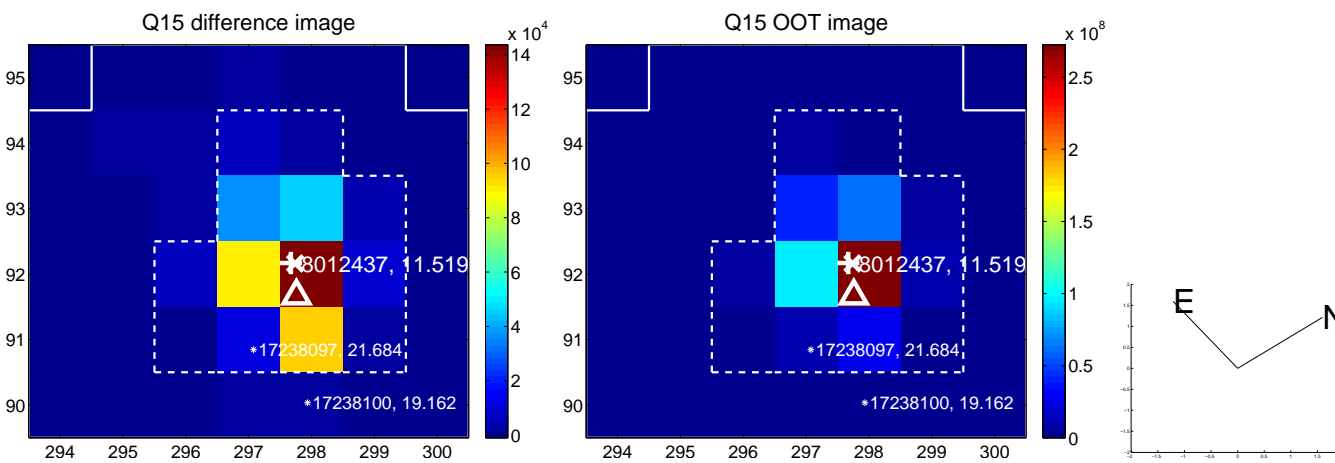
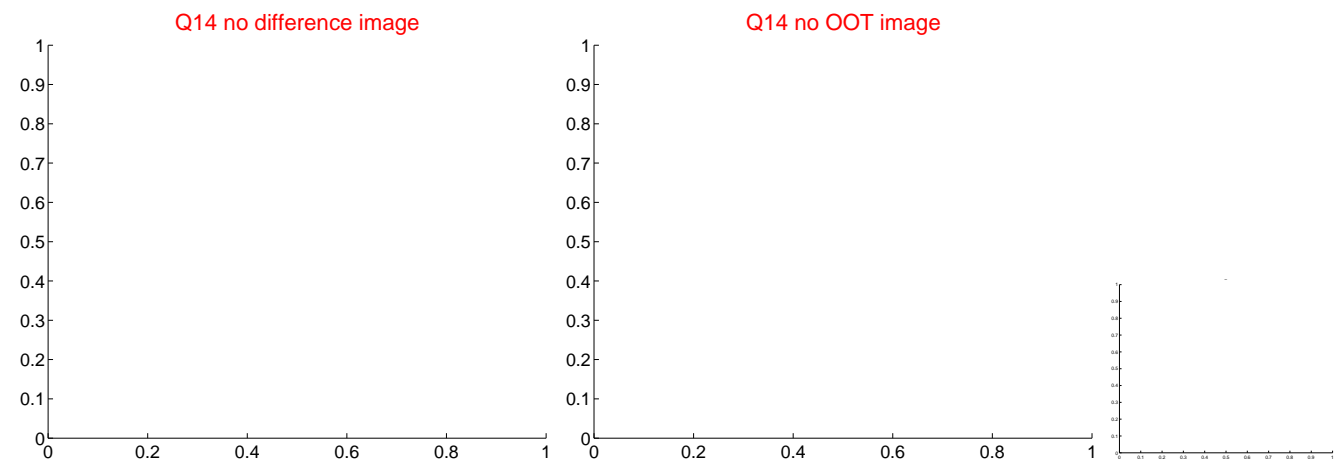
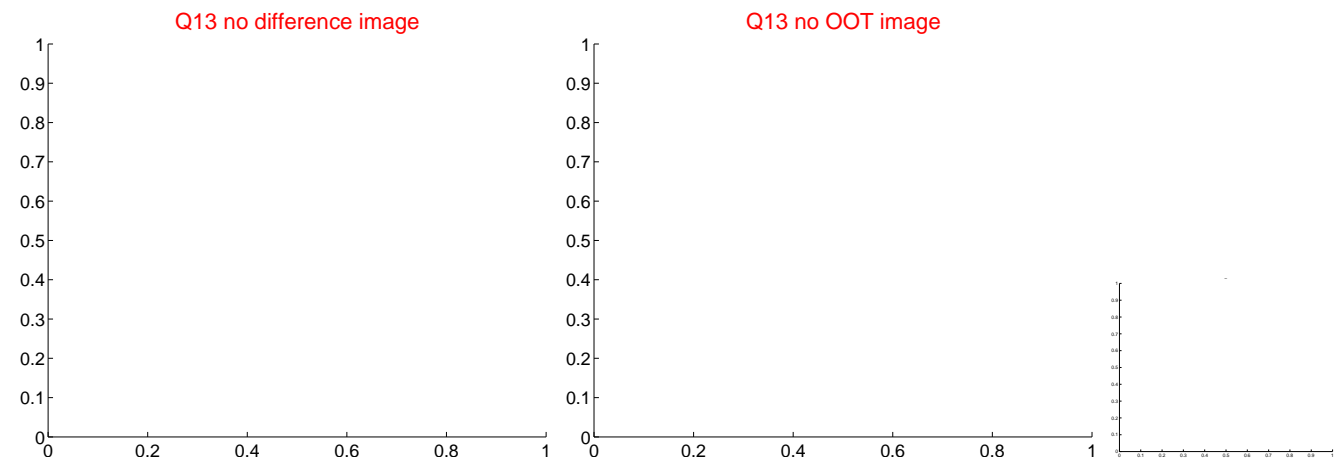
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



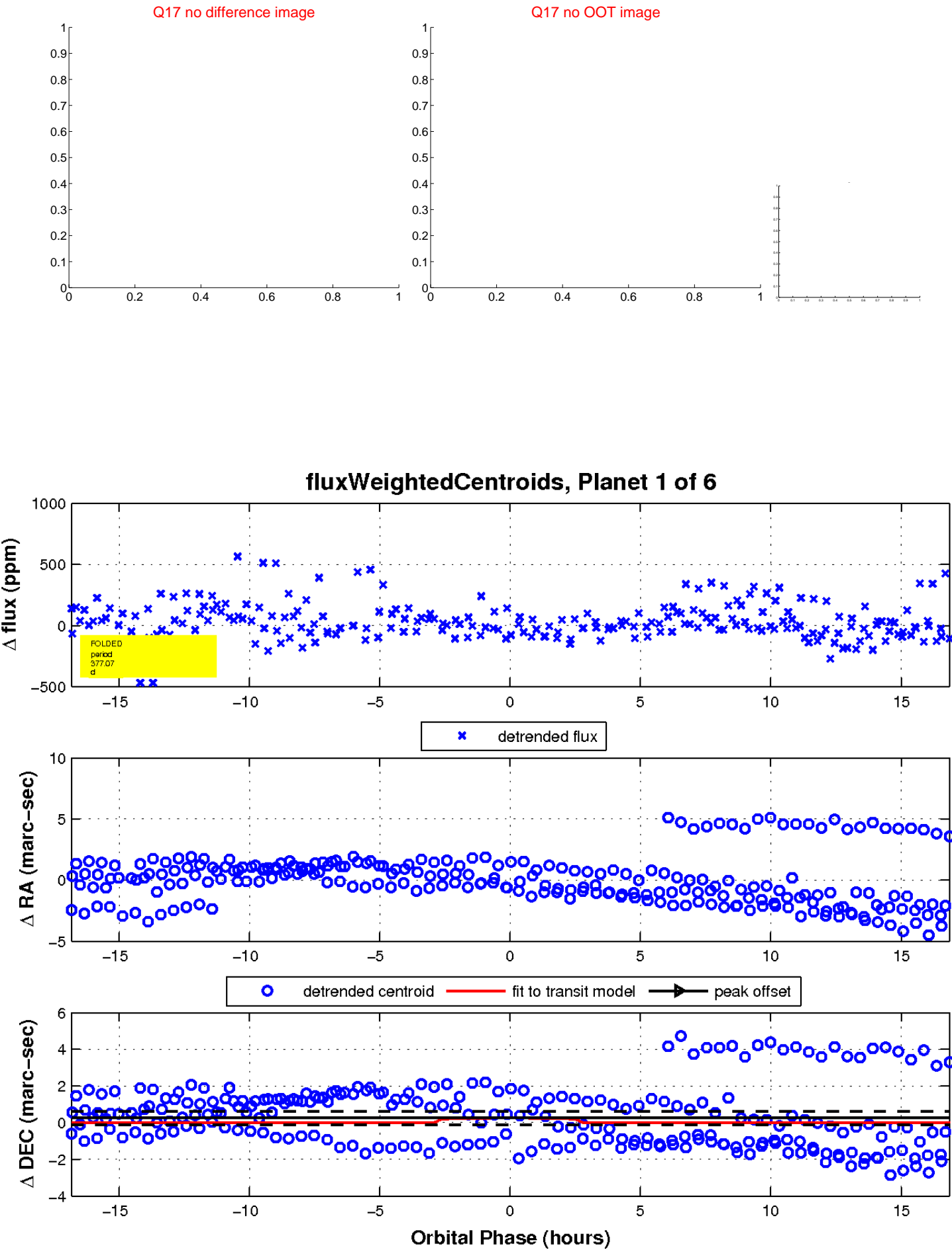
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



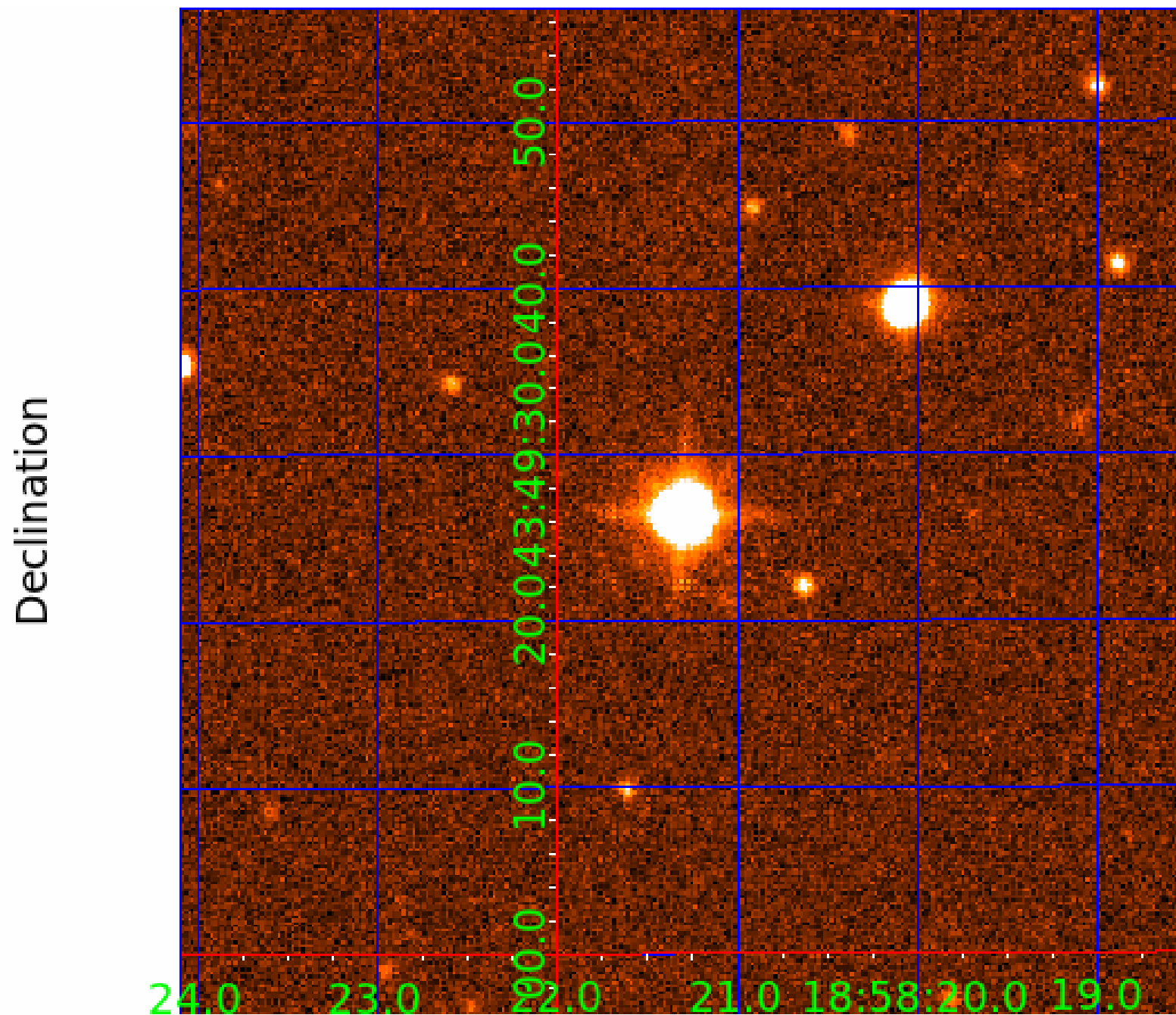
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

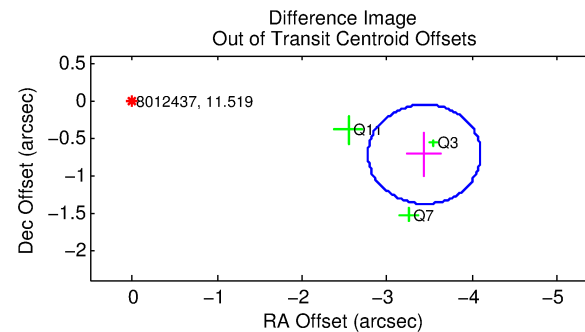
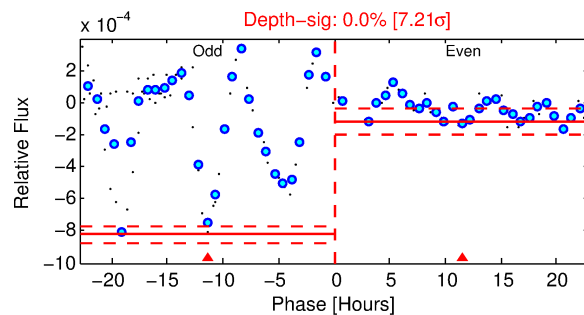
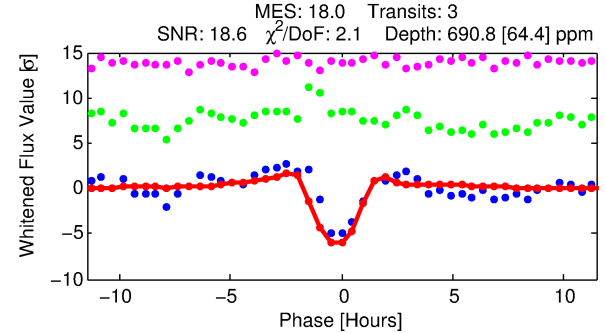
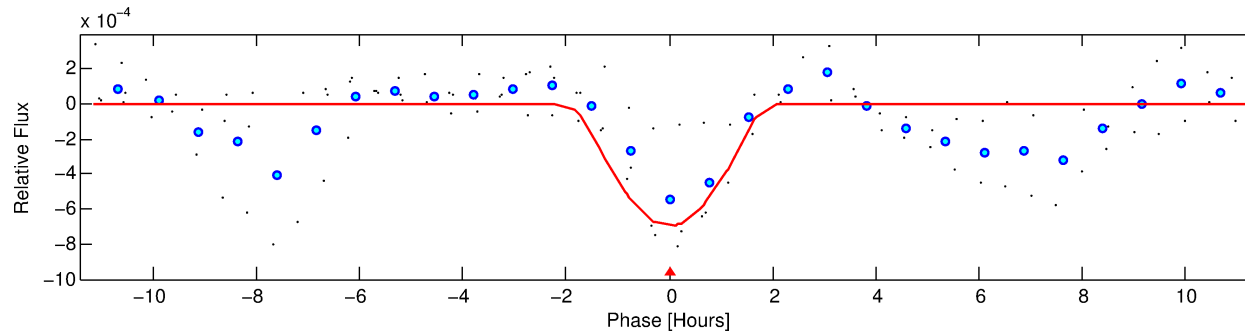
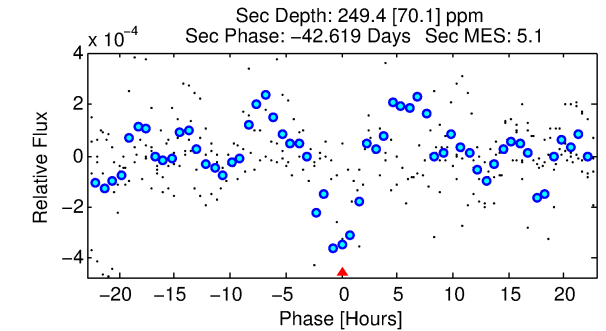
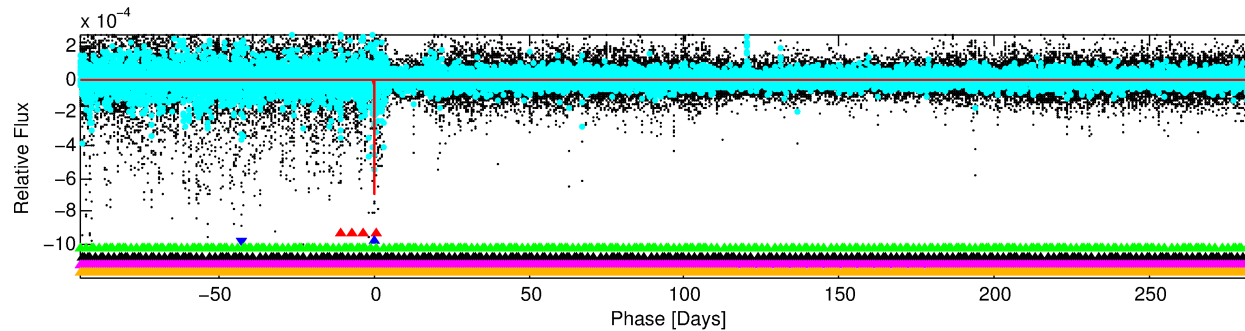
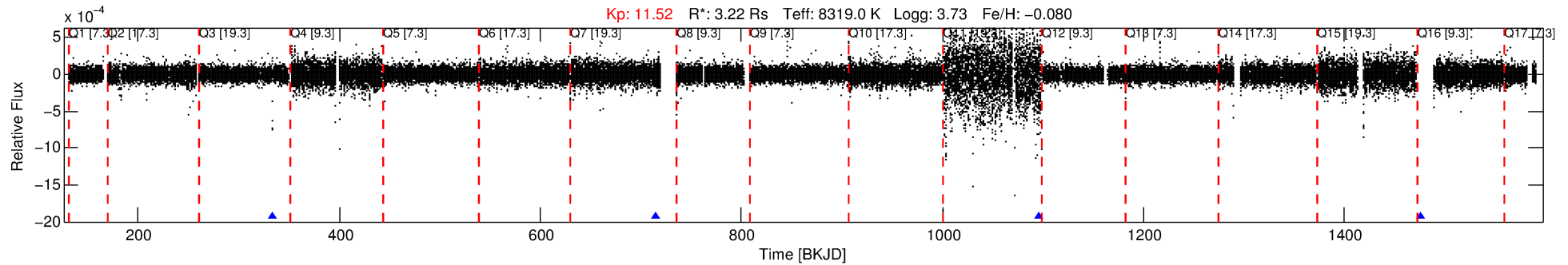
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-02

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 2 of 6 Period: 380.843 d



DV Fit Results:

Period = 380.84278 [0.00513] d
Epoch = 333.7116 [0.0048] BKJD
Rp/R* = 0.0401 [0.0585]
a/R* = 238.57 [109.81]
b = 0.99 [0.10]
Seff = 26.02 [19.30]
Teq = 576 [107] K
Rp = 14.10 [21.48] Re
a = 1.3072 [0.5762] AU
Ag = 1179.80 [3560.04] [0.33σ]
Teffp = 5219 [3830] K [1.21σ]

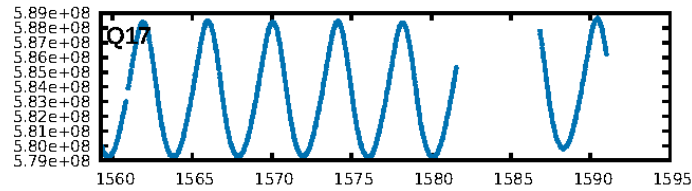
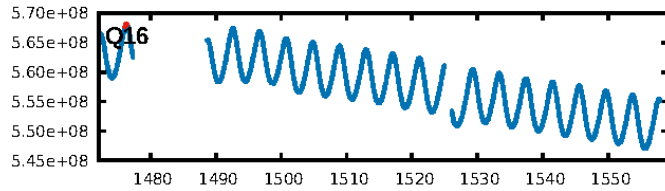
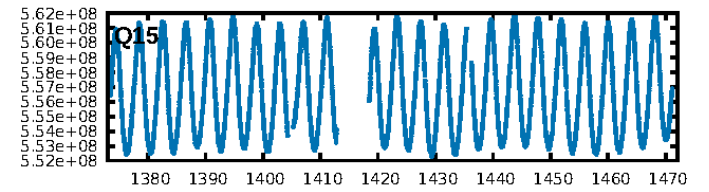
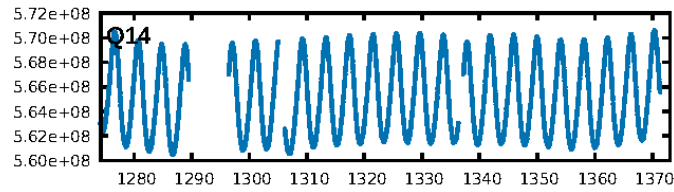
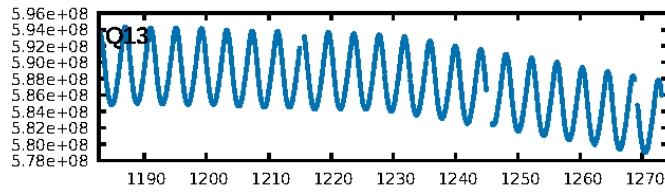
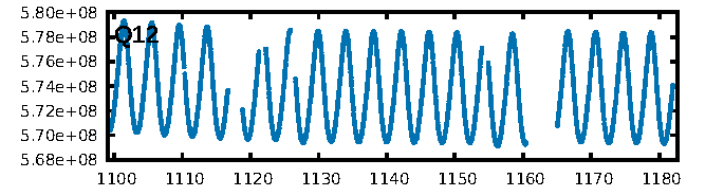
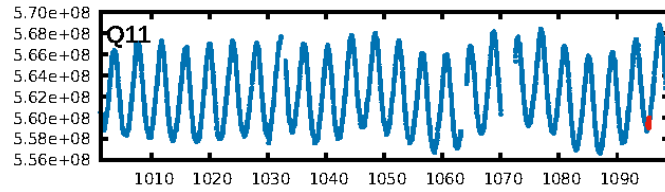
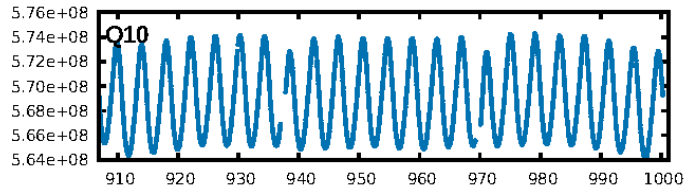
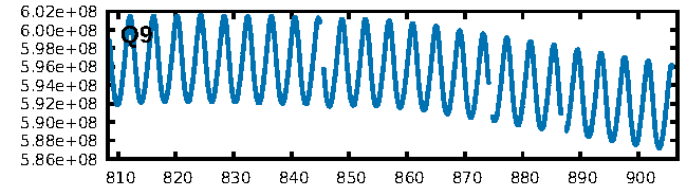
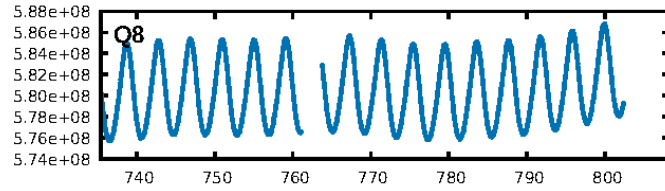
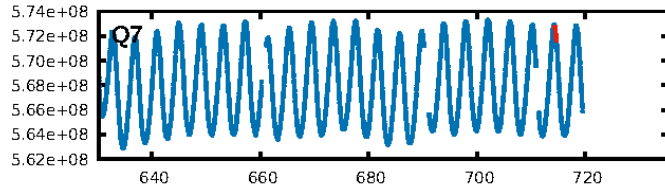
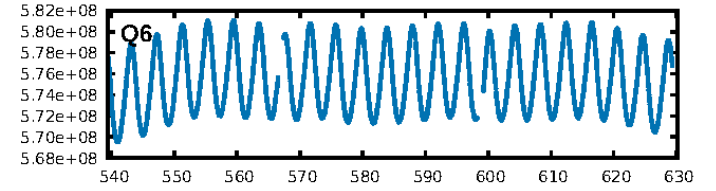
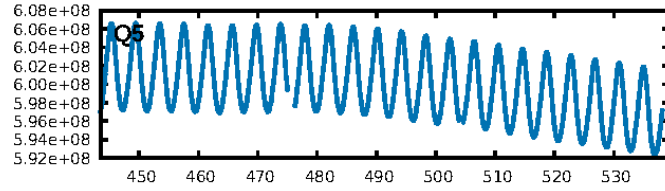
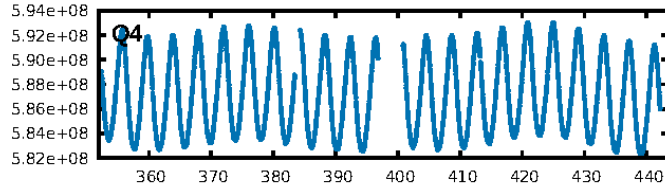
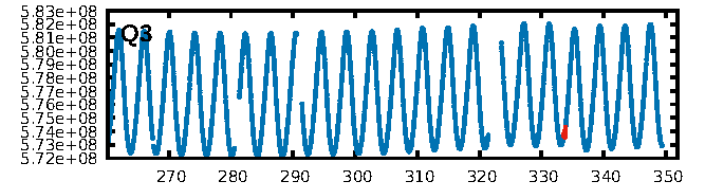
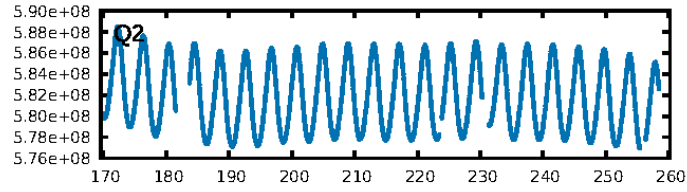
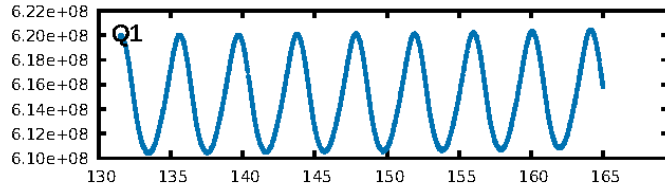
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.31σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 83.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.905
Centroid-sig: N/A
Centroid-so: 0.508 arcsec [0.76σ]
OotOffset-rm: 3.516 arcsec [15.90σ]
KicOffset-rm: 3.431 arcsec [14.58σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

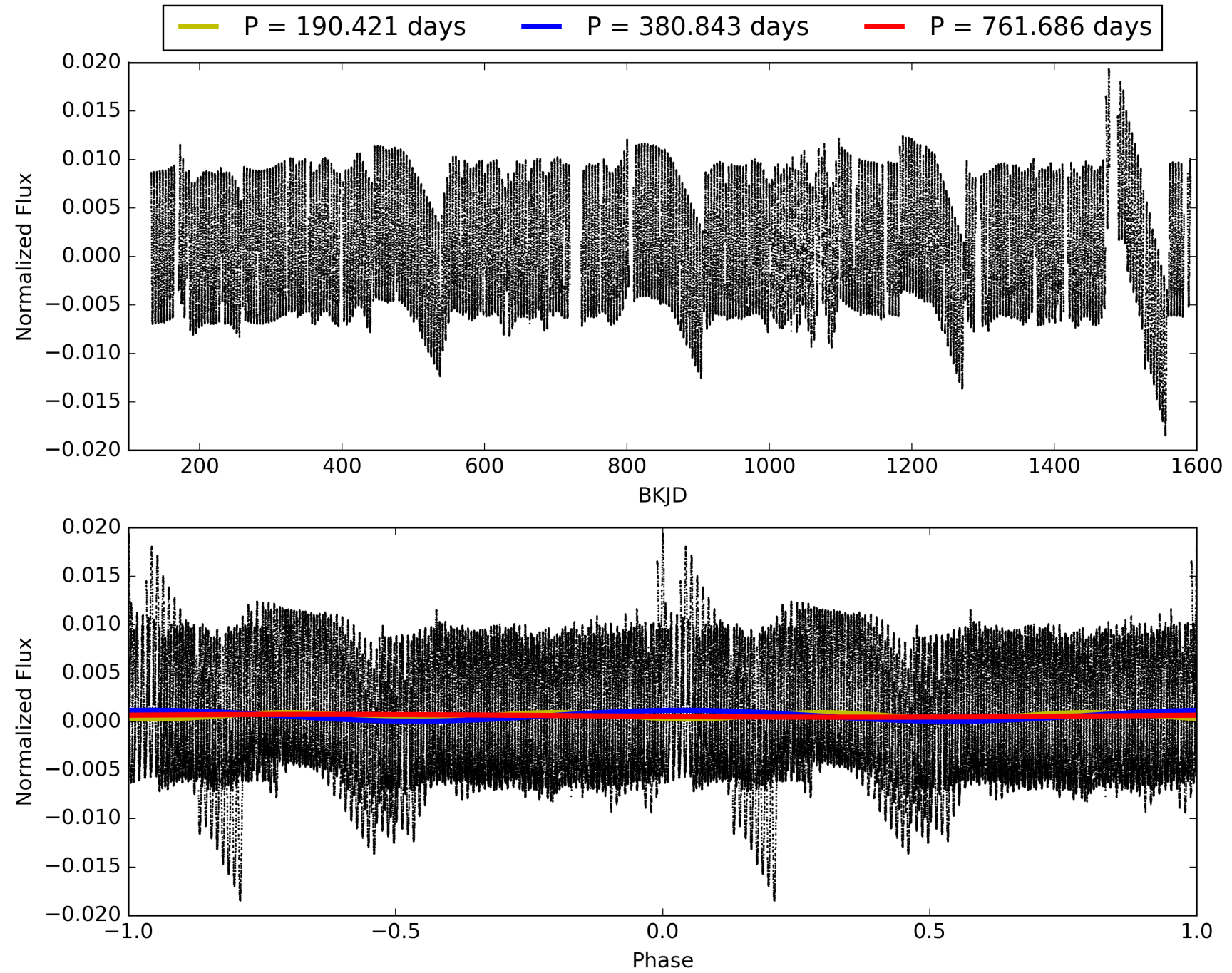
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:13:41 Z

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

TCE 008012437-02, PDC Light Curves

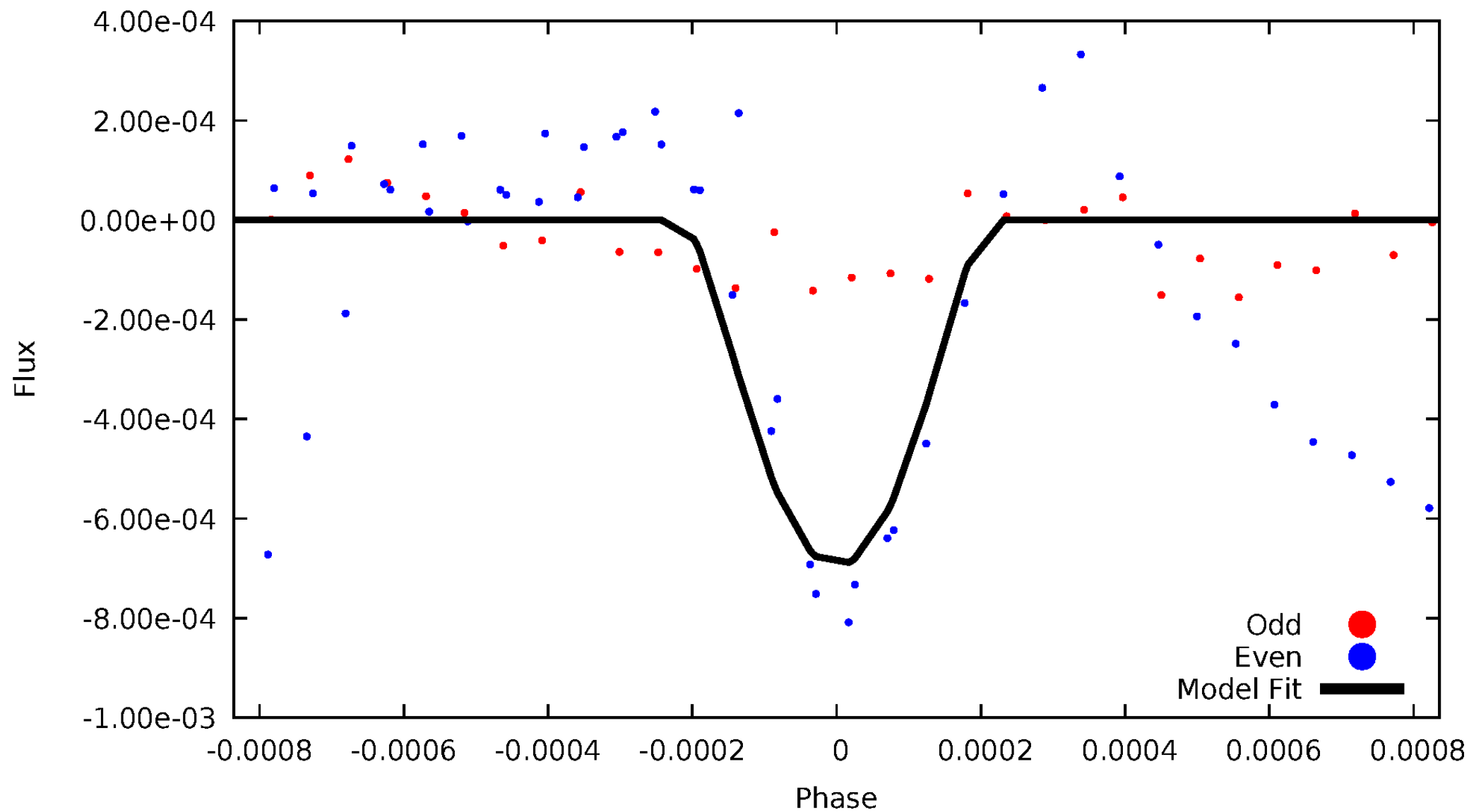


TCE 008012437-02



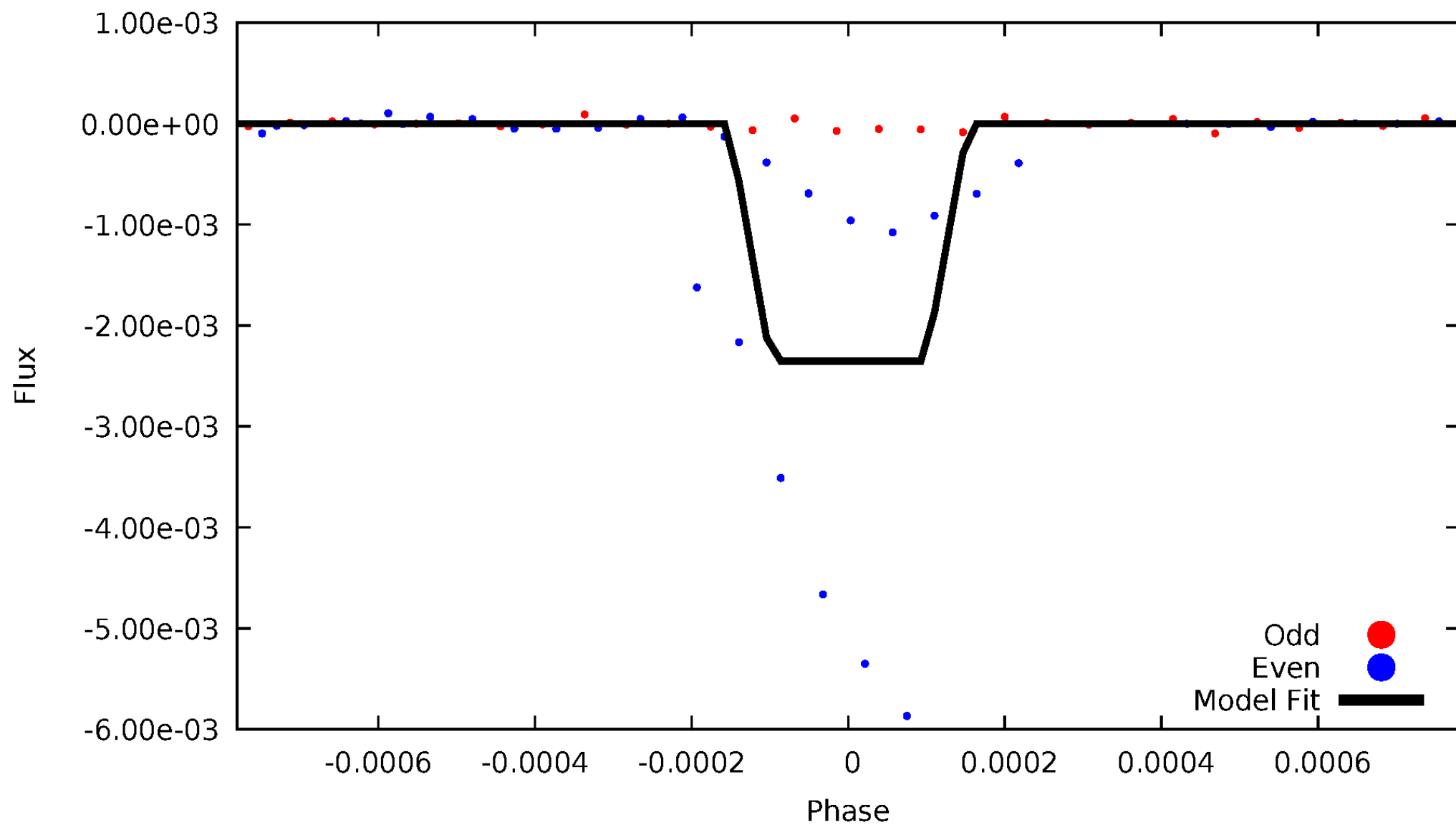
DV Odd/Even

TCE 008012437-02



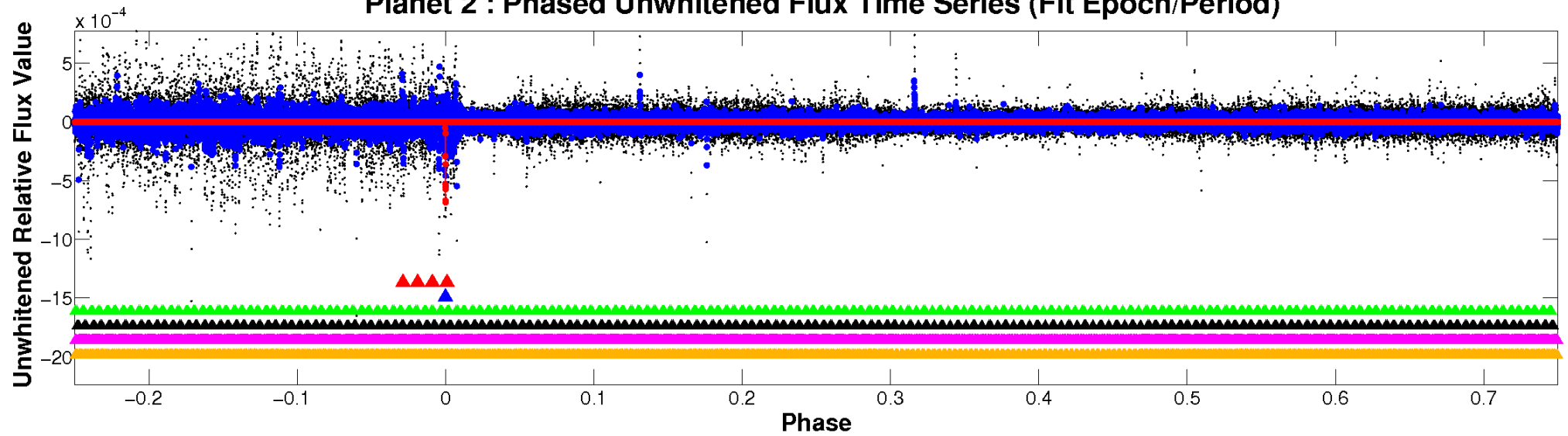
ALT Odd/Even

TCE 008012437-02

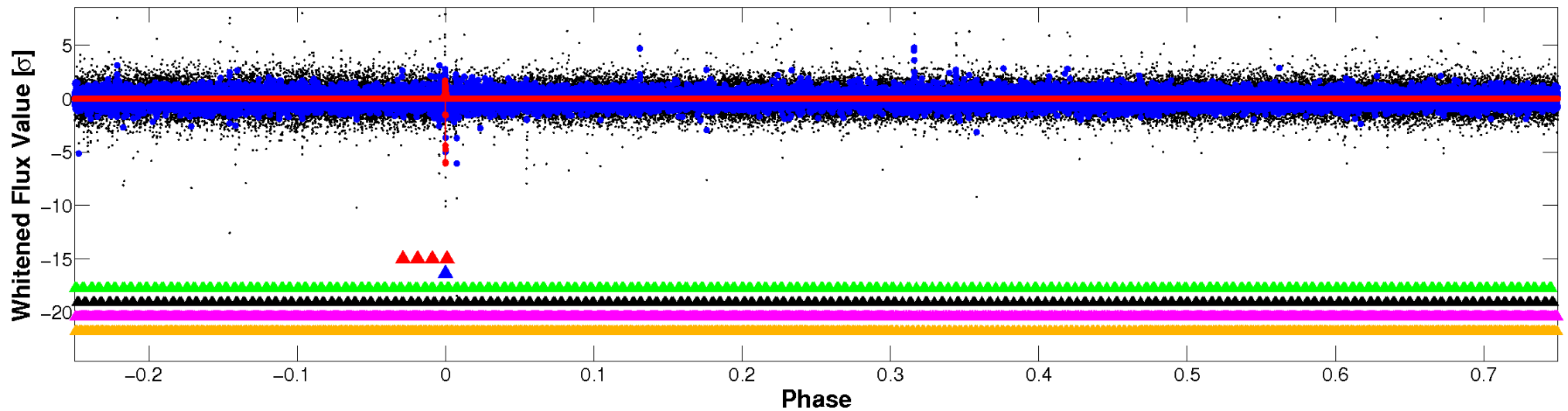


Non-Whitened Vs. Whitened Light Curve

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

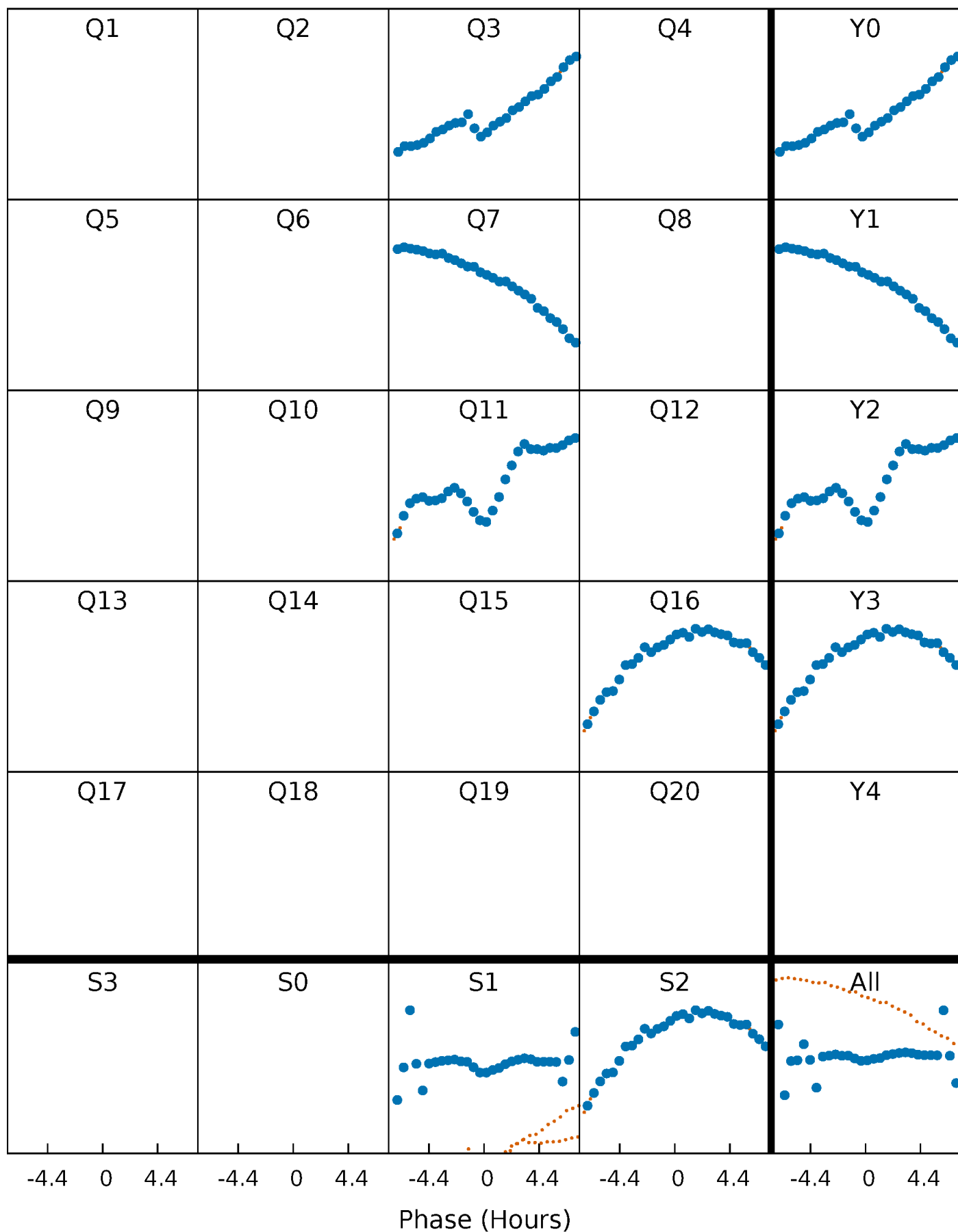


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



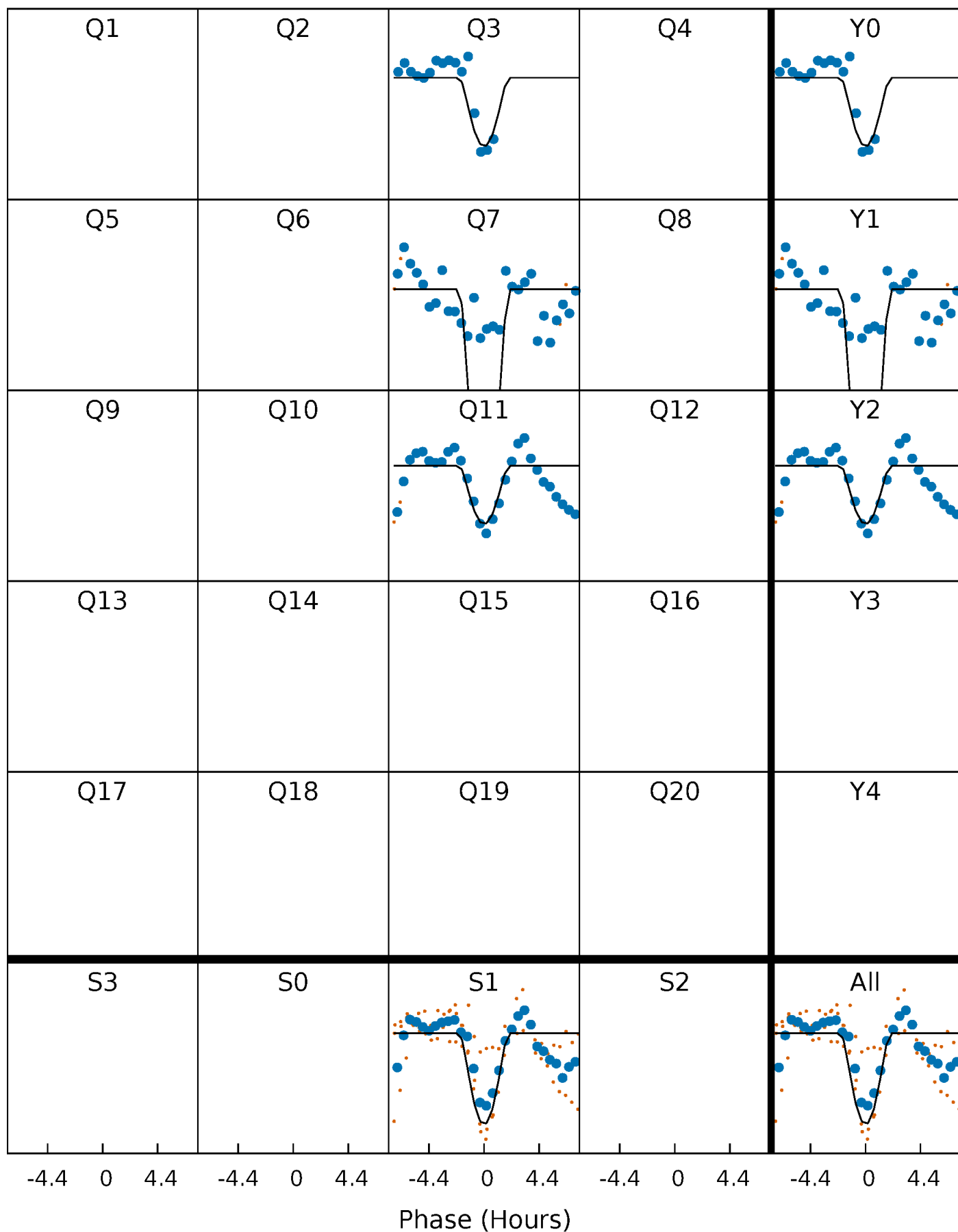
PDC Quarter-Phased Transit Curves

TCE 008012437-02 P=380.842776 Days $T_0=333.711560$ (BKJD)



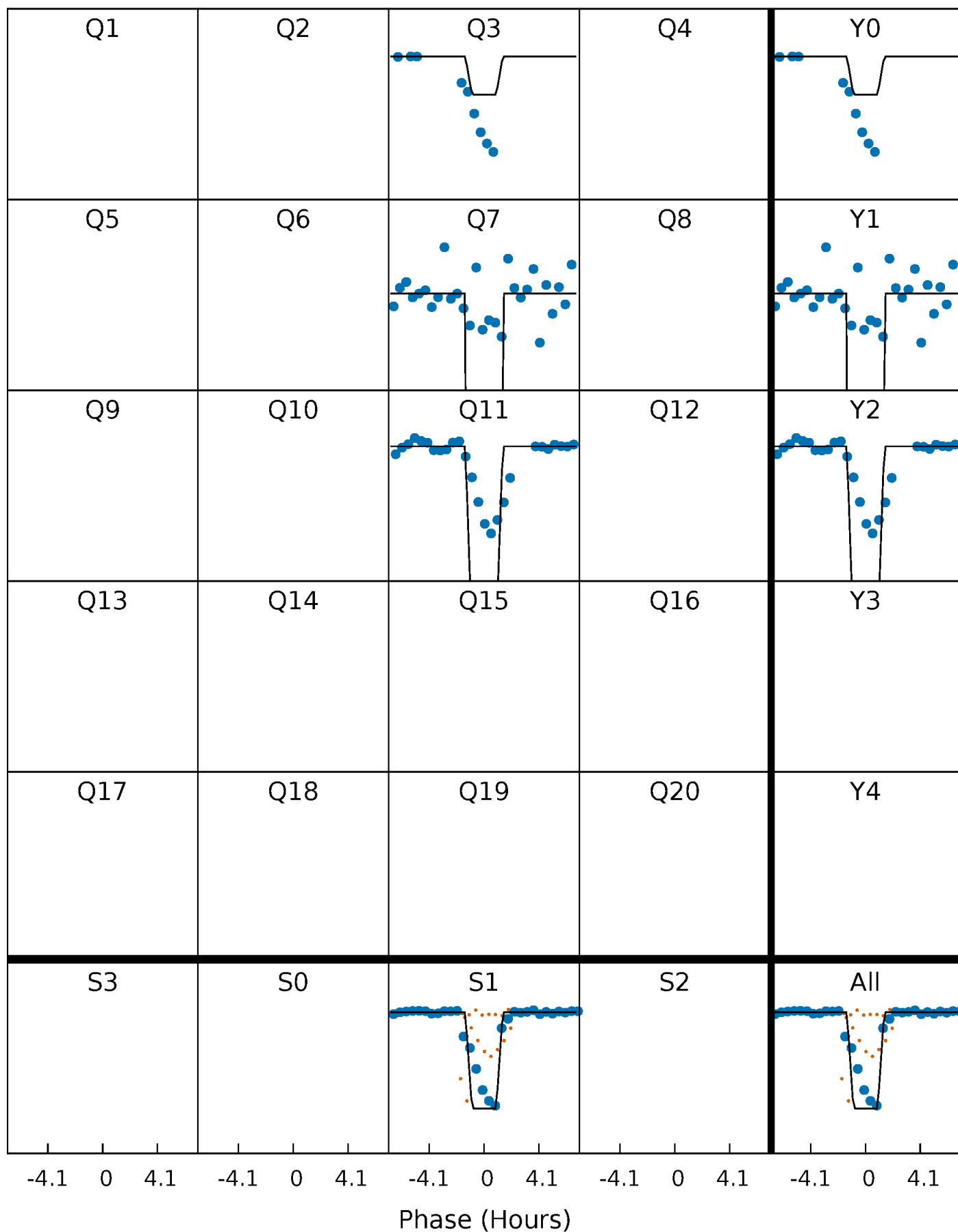
DV Quarter-Phased Transit Curves

TCE 008012437-02 $P=380.842776$ Days $T_0=333.711560$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

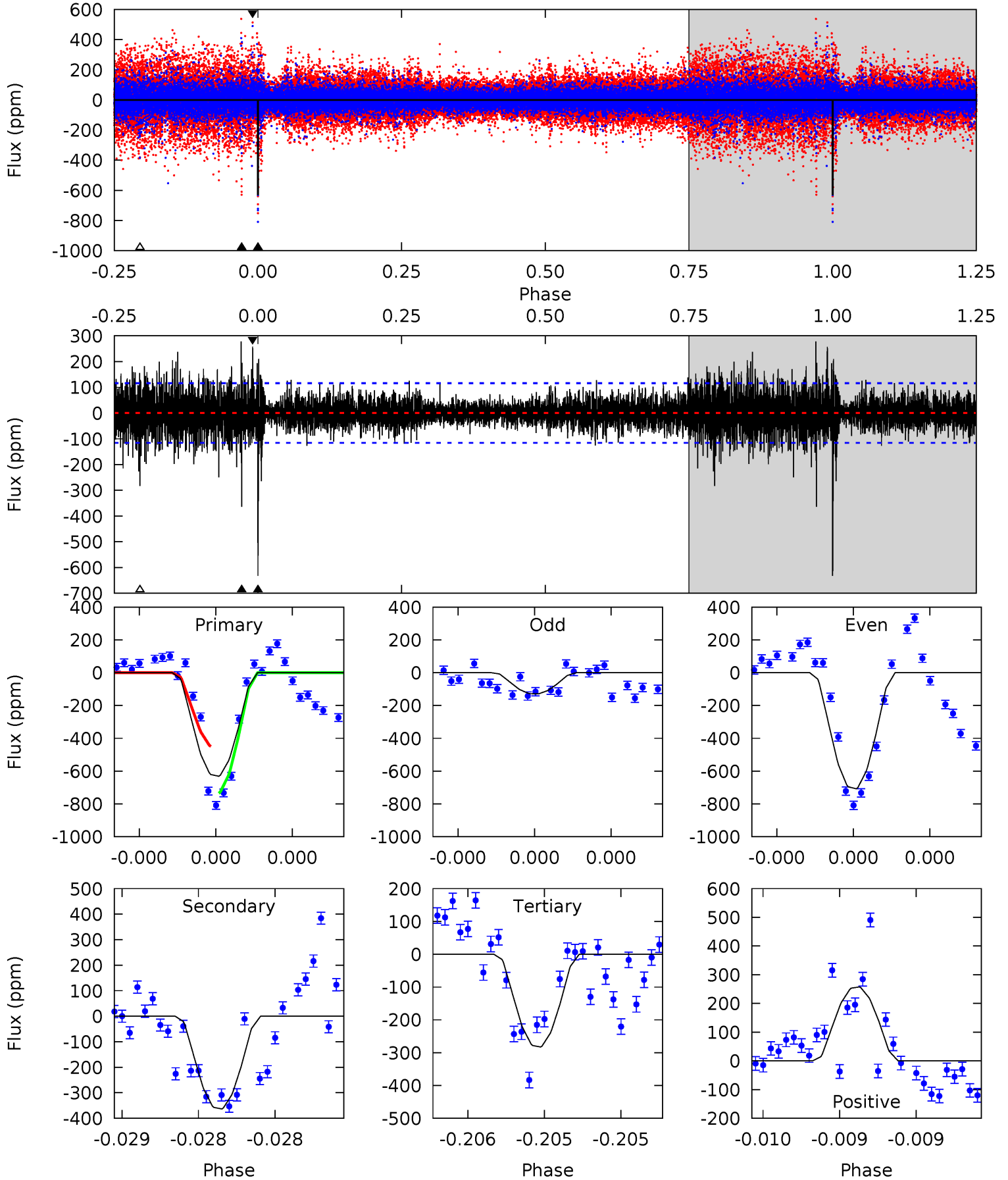
TCE 008012437-02 P=380.834441 Days $T_0=333.713081$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-02, P = 380.842776 Days, E = 333.711560 Days

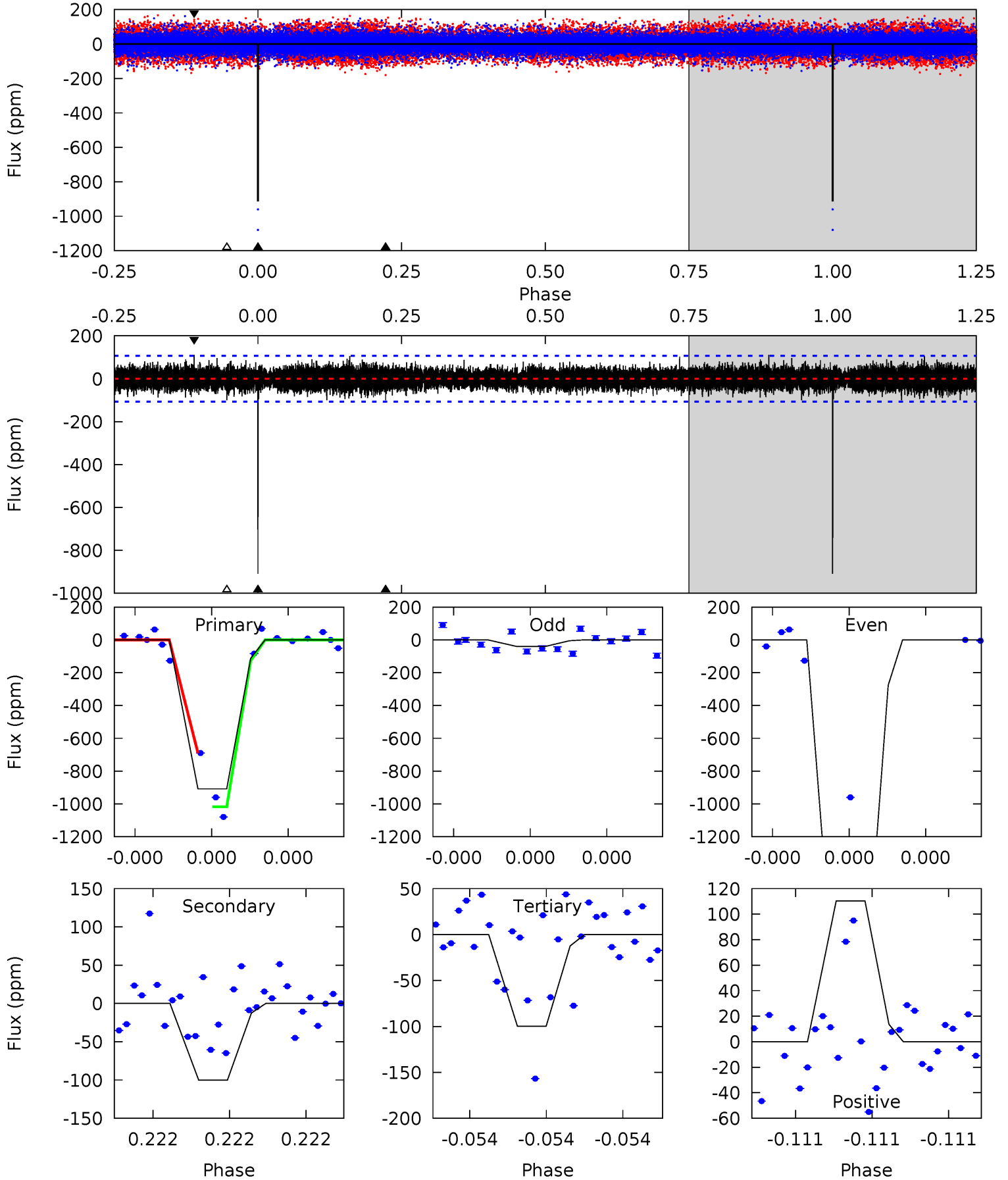
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.5	17.6	13.7	12.5	5.60	3.52	2.10	16.9	18.1	3.90	5.11	12.9	0.79	0.31	7.13



Alt Model-Shift Uniqueness Test

008012437-02, P = 380.834441 Days, E = 333.713081 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.2	5.31	5.29	5.86	5.67	3.63	1.16	42.9	42.3	0.02	-0.55	70.4	2.26	0.11	0



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-363 ± 21	$18.58^{+19.06}_{-12.68}$	781^{+68}_{-99}	4704^{+3301}_{-940}	955^{+8567}_{-712}
Alt.	-100 ± 19	$20.72^{+18.51}_{-13.26}$	784^{+65}_{-85}	3620^{+1657}_{-612}	217^{+1367}_{-155}

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 $A_{obs} \gg 1.0$

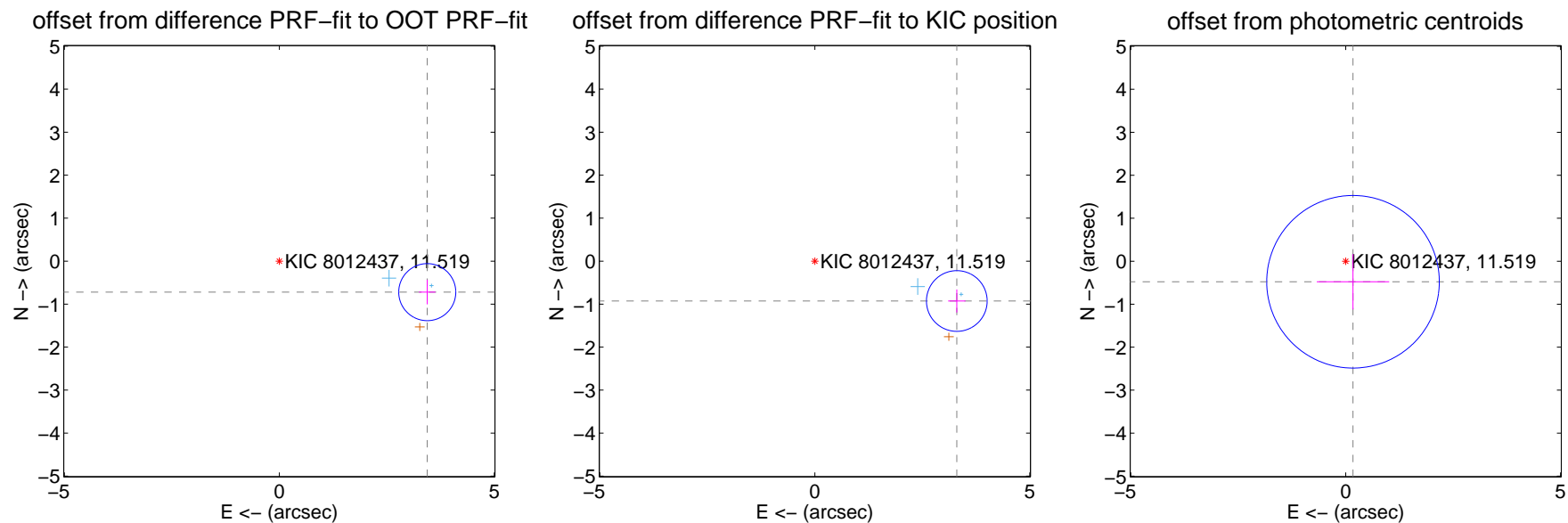
DV Centroid Data

Supplemental centroid analysis for 008012437-02. **Kepler magnitude: 11.52.** Transit SNR 18.63

There are 2 quarters with good PRF difference image offsets

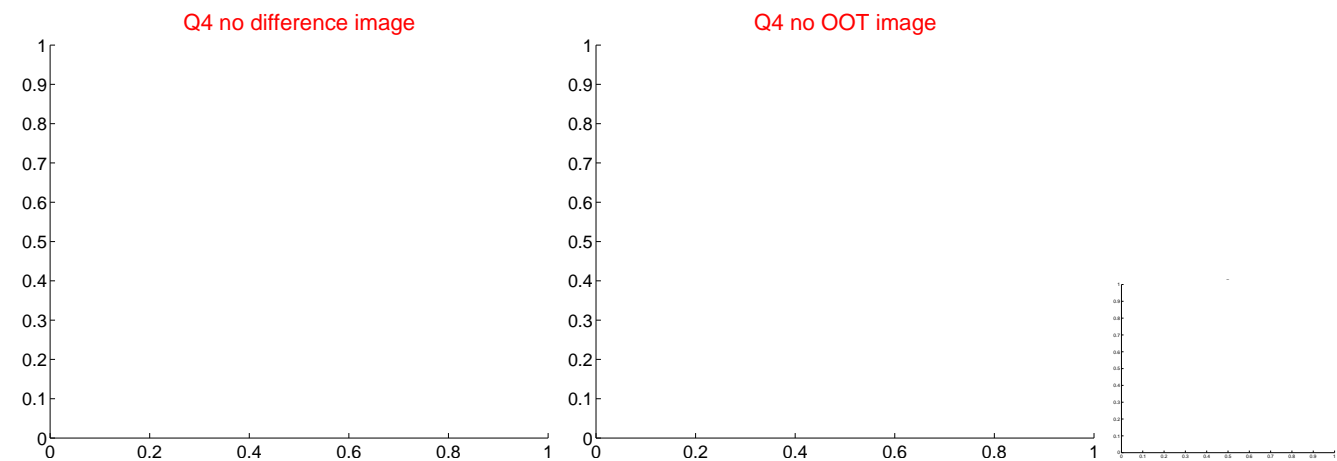
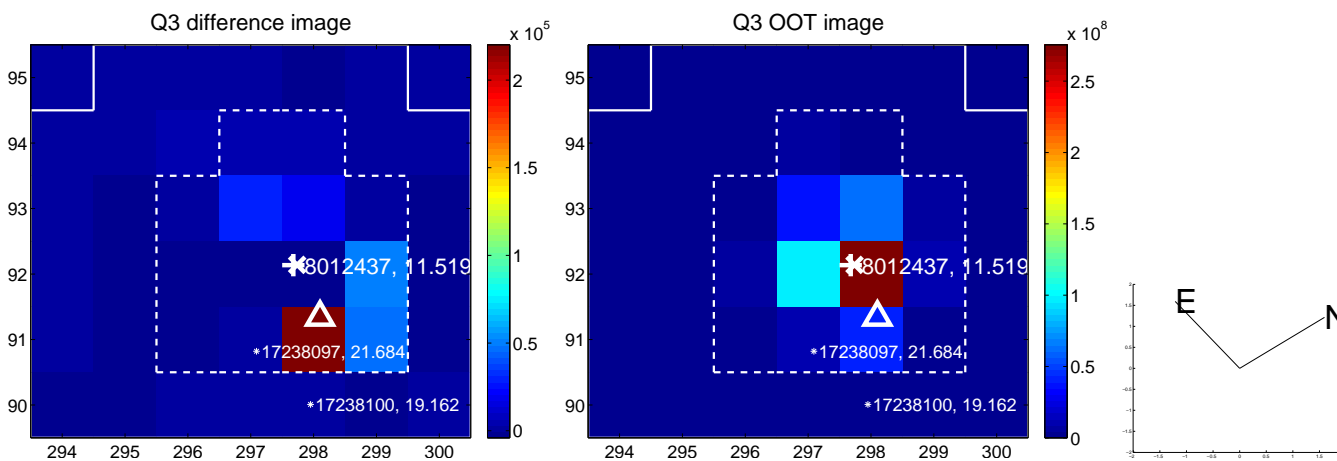
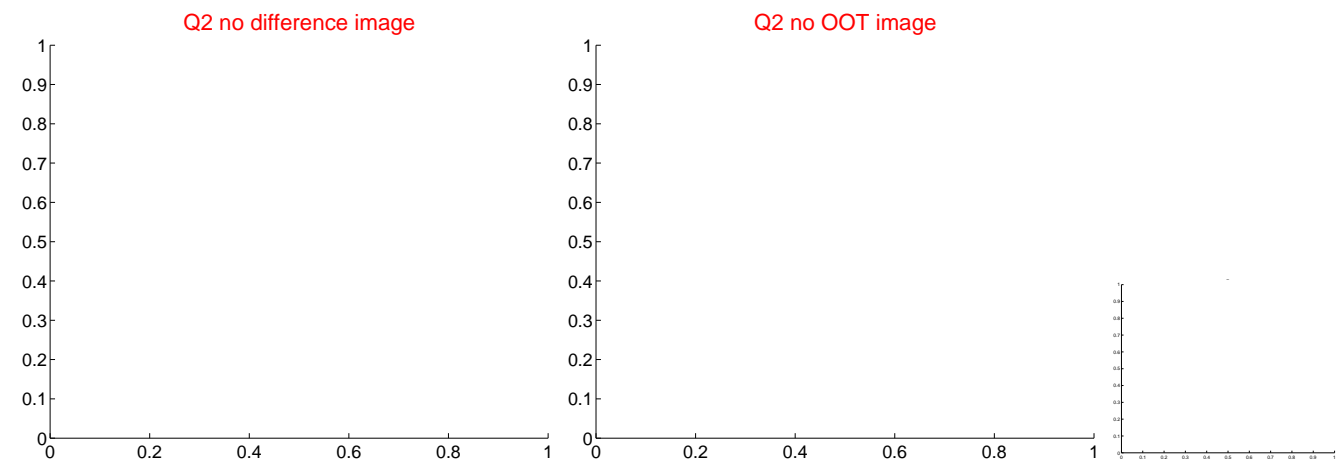
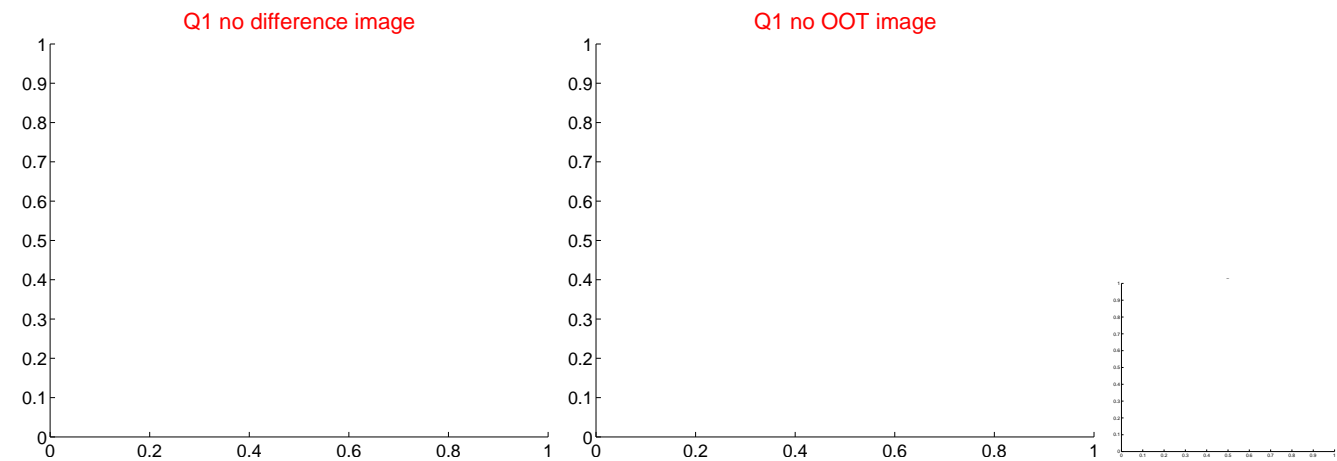
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.516 ± 0.221	15.90	-3.442 ± 0.192	-0.721 ± 0.285
PRF-fit source offset from KIC position	3.431 ± 0.235	14.58	-3.303 ± 0.202	-0.927 ± 0.267
photometric centroid source offset	0.51 ± 0.67	0.76	-0.17 ± 0.84	-0.48 ± 0.64

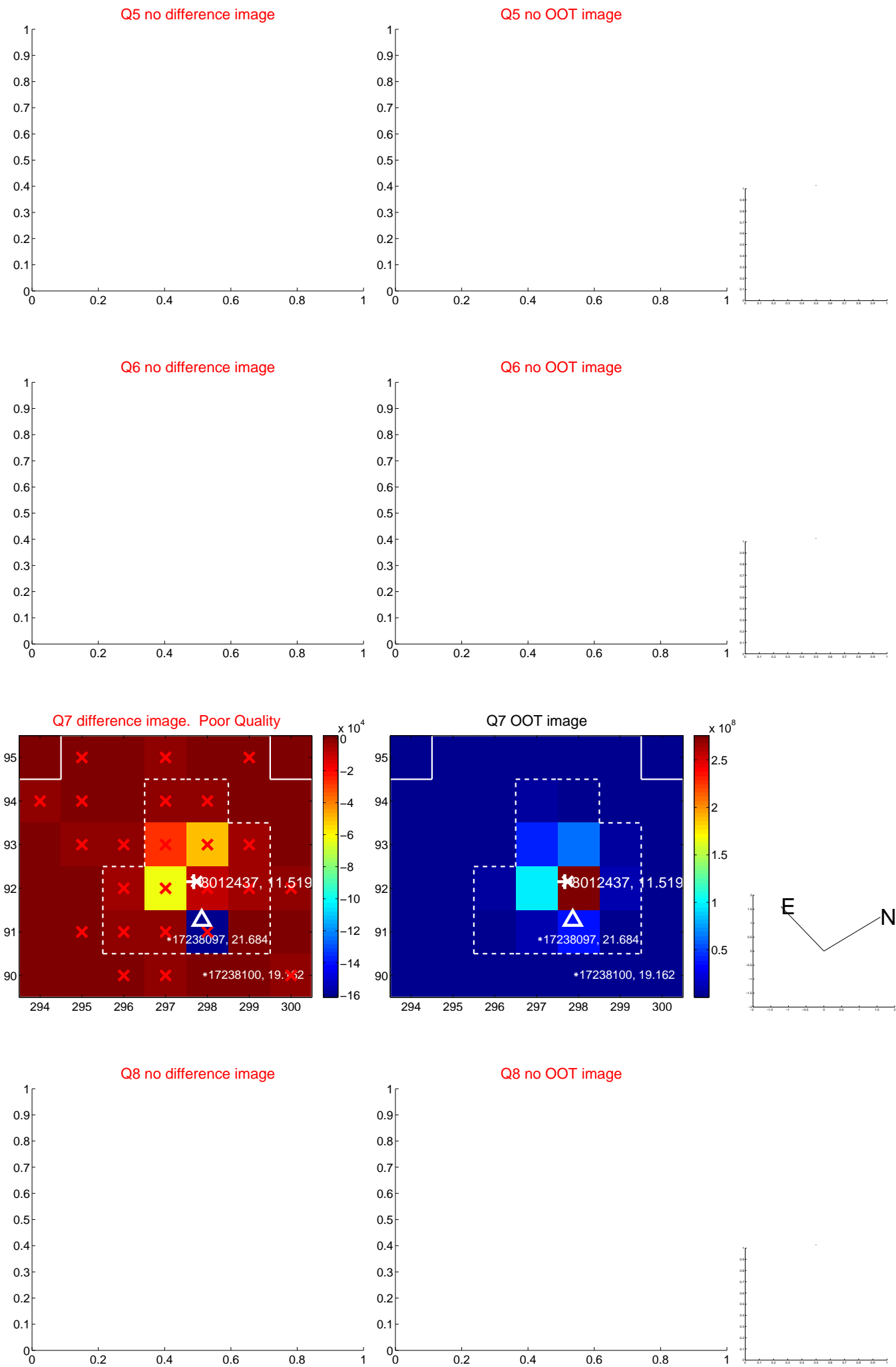


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

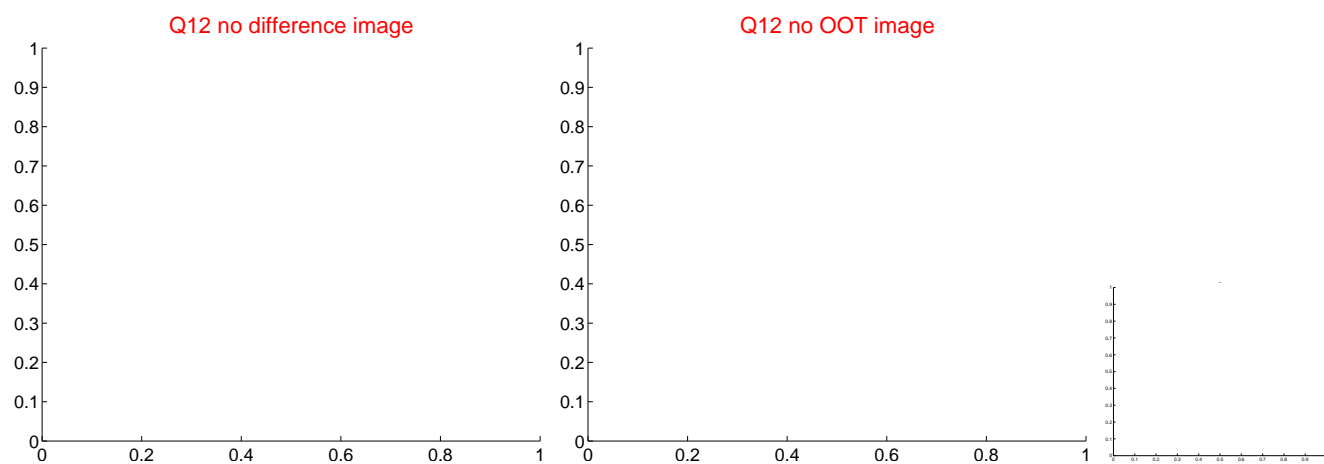
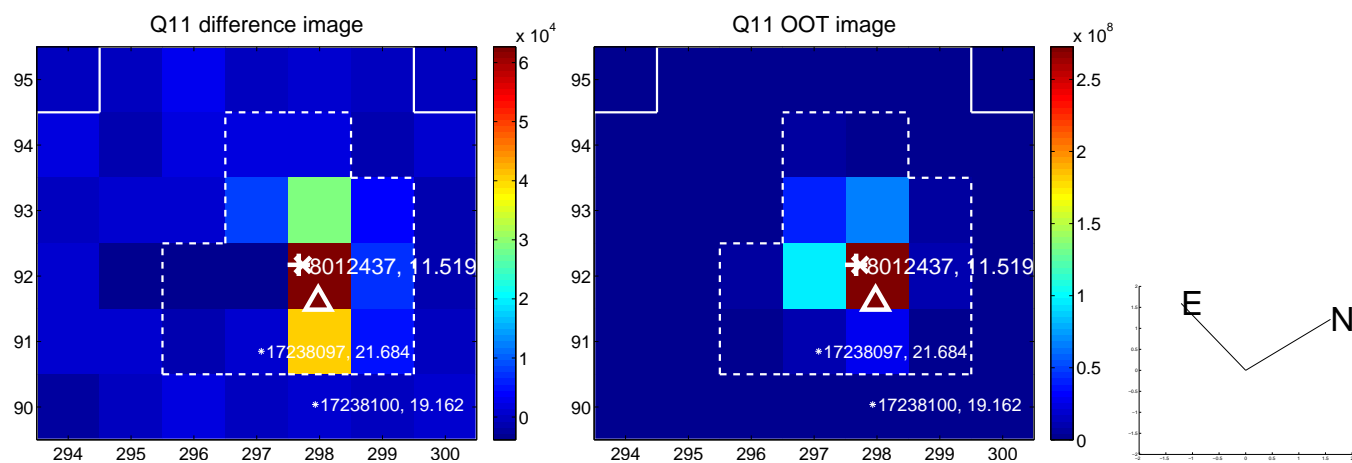
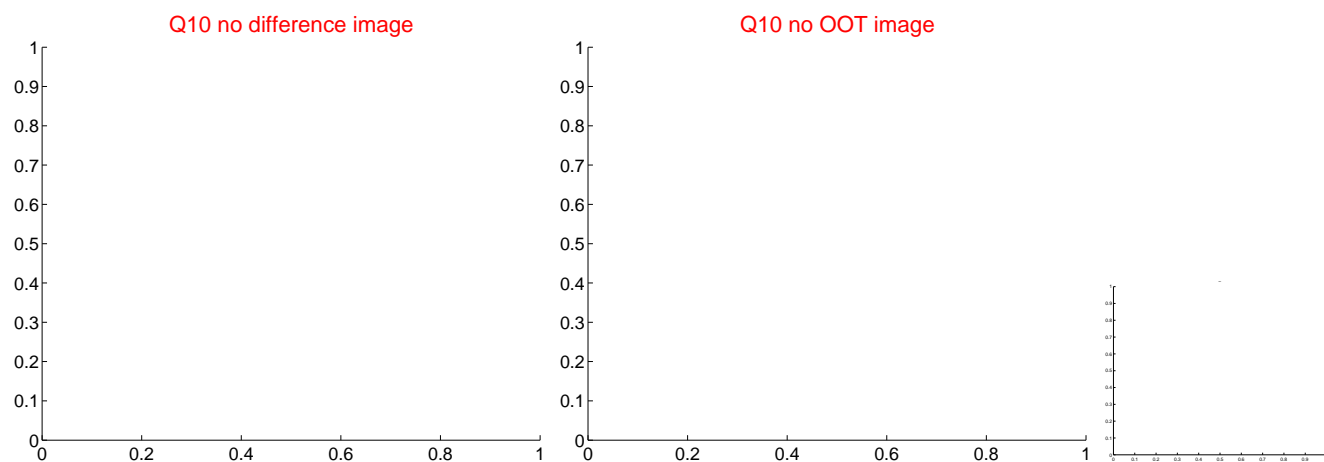
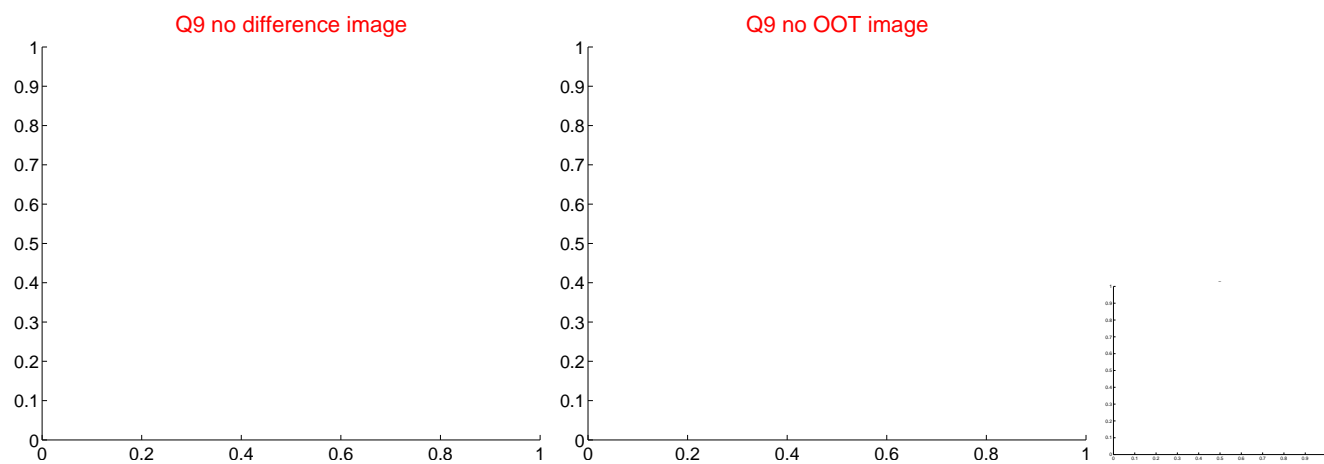
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



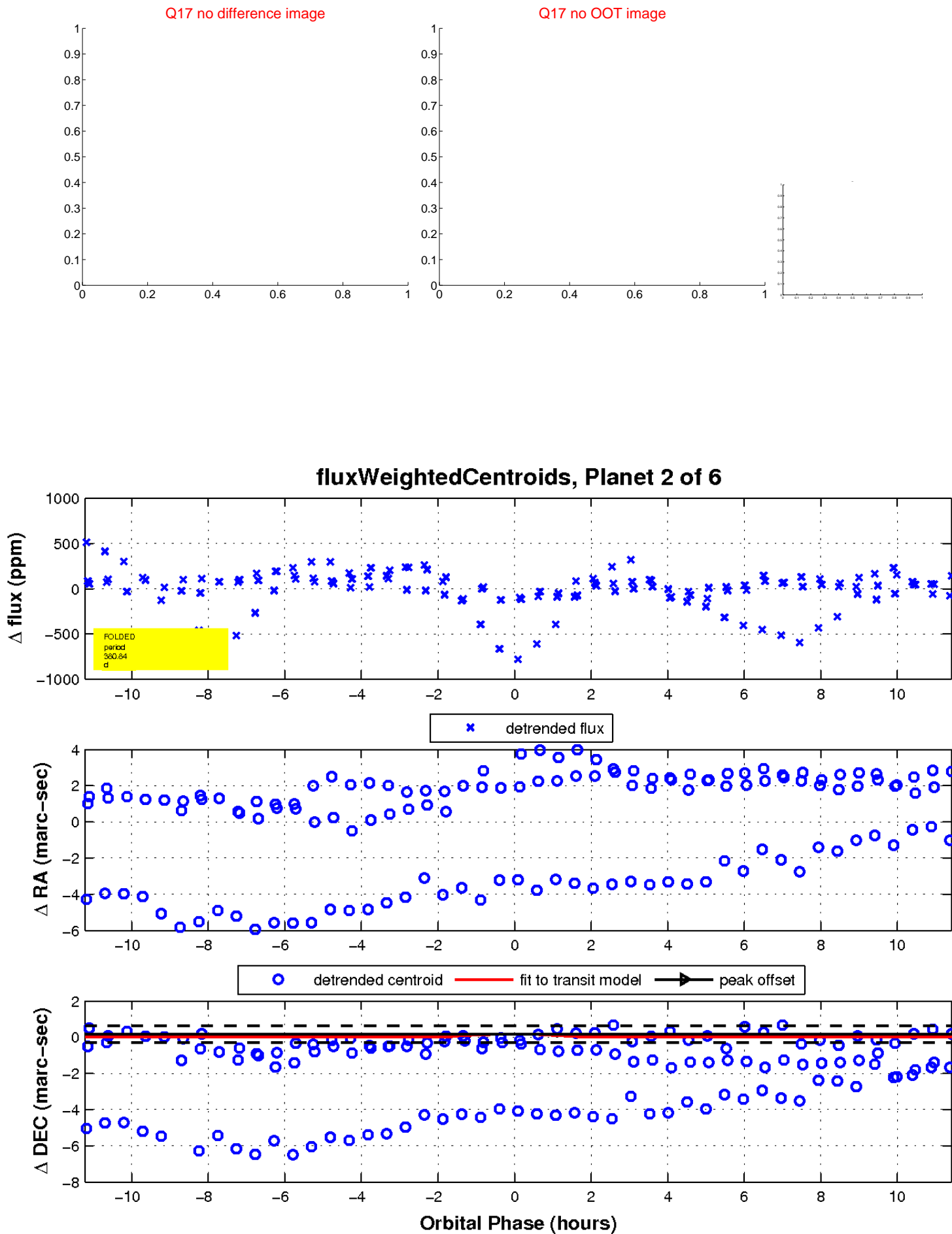
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



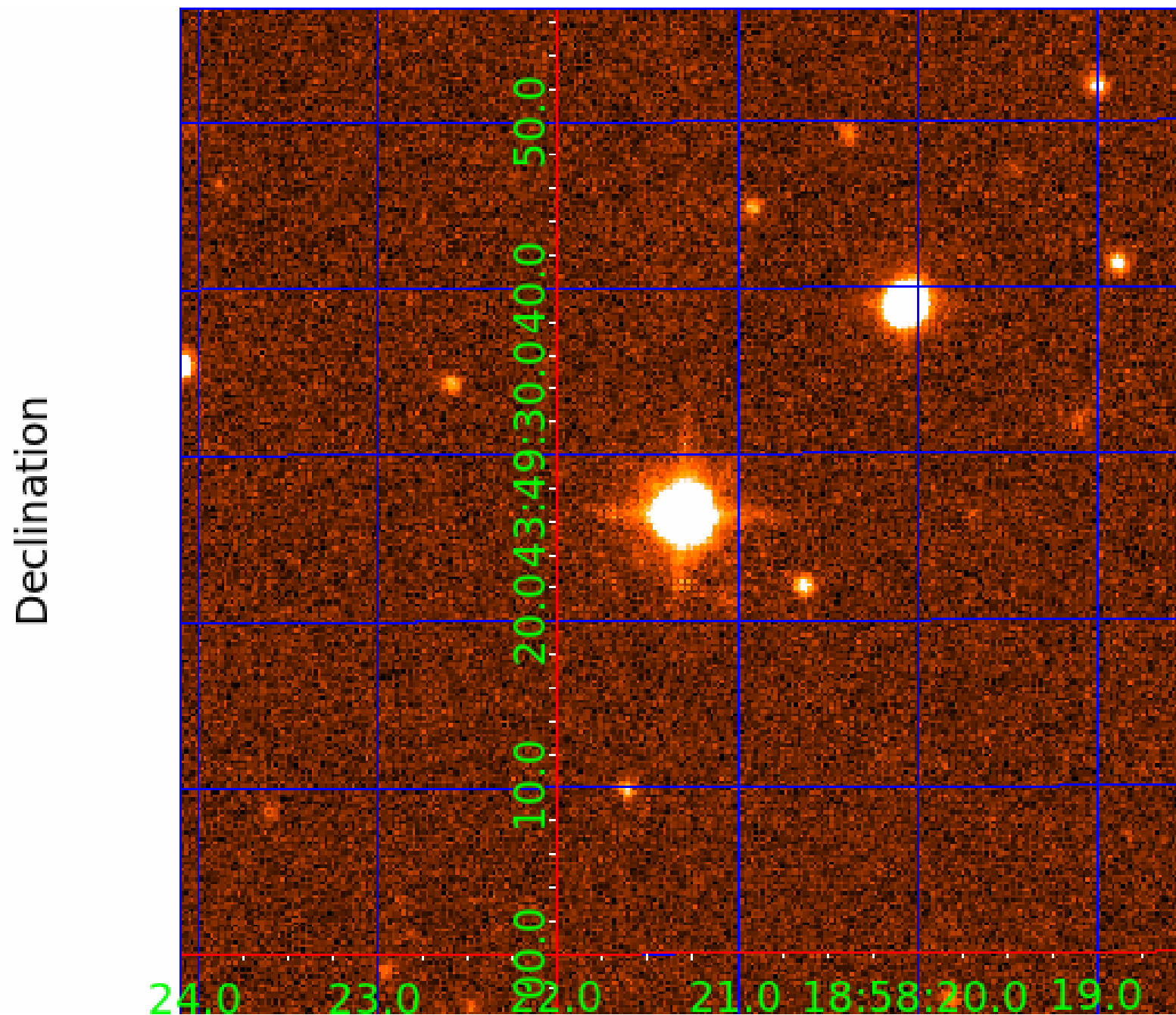
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

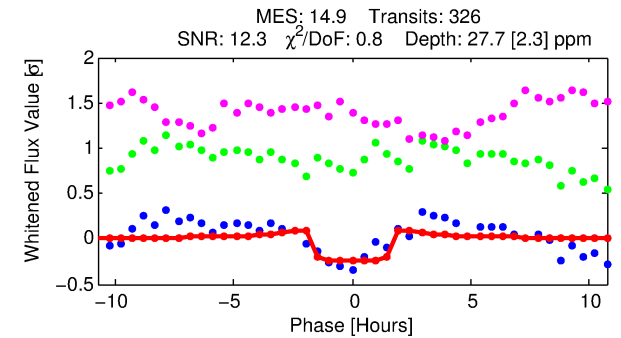
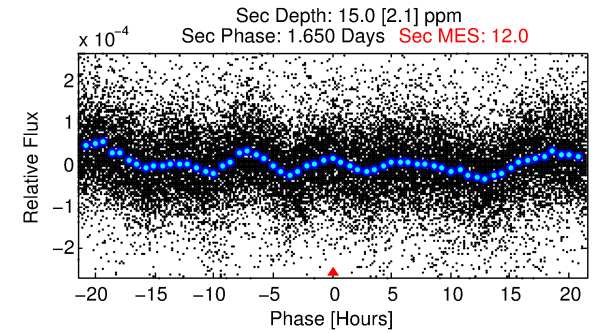
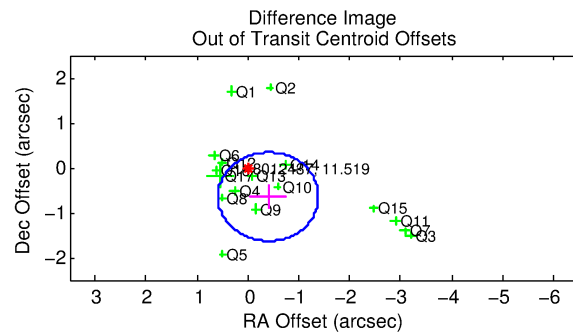
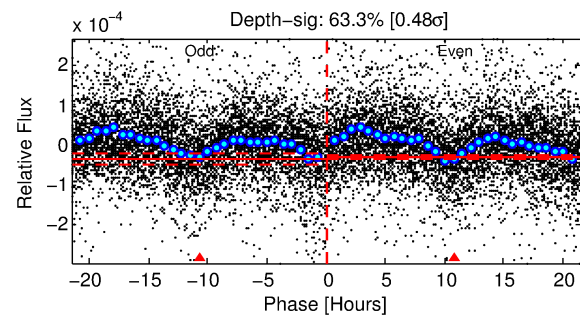
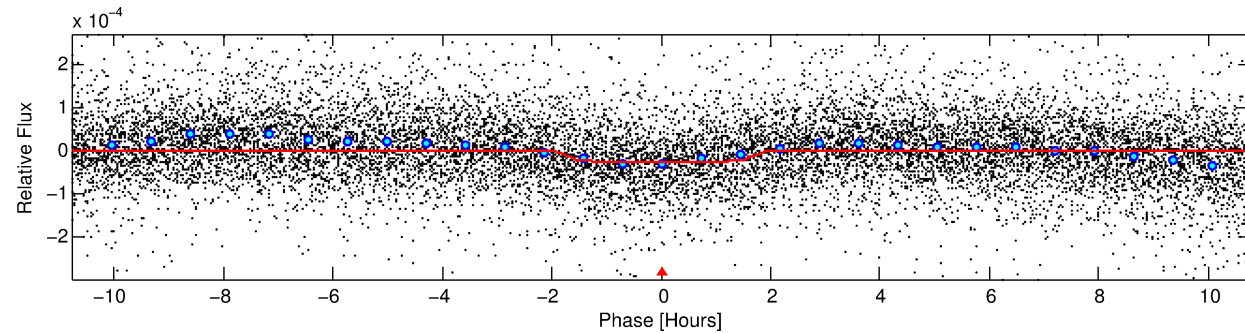
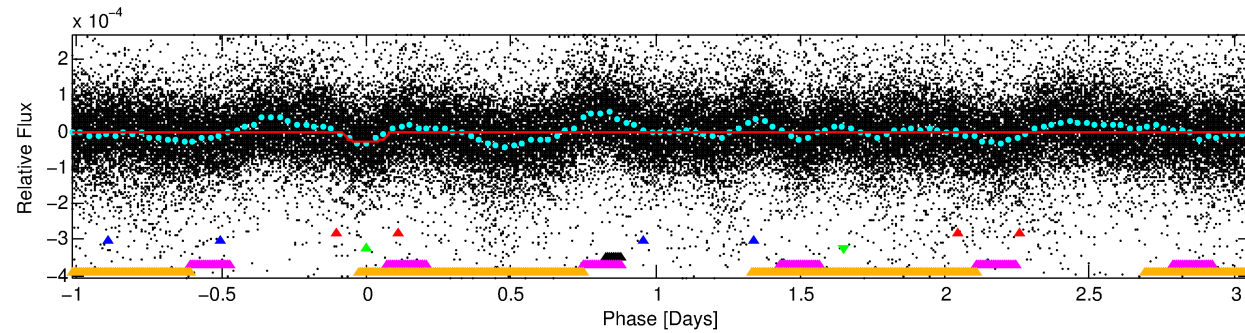
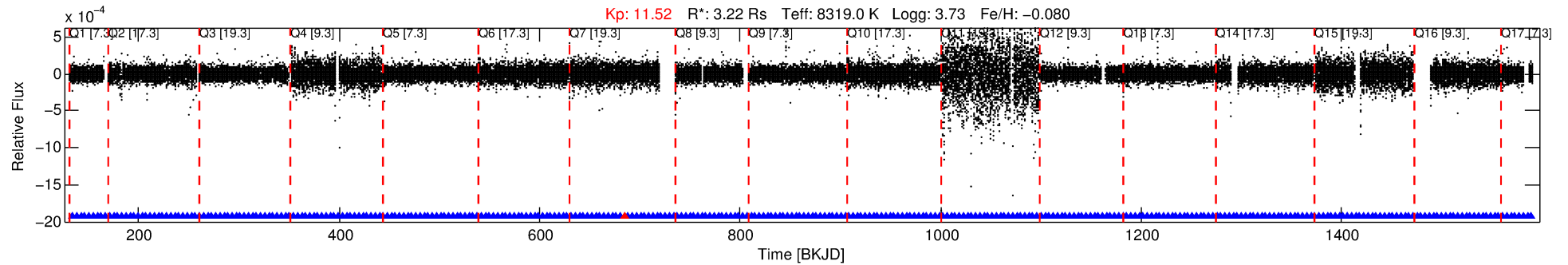
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-03

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 3 of 6 Period: 4.075 d



DV Fit Results:

Period = 4.07524 [0.00002] d
Epoch = 134.5312 [0.0028] BKJD
Rp/R* = 0.0056 [0.0010]
a/R* = 4.13 [4.47]
b = 0.89 [0.27]
Seff = 11035.42 [8186.75]
Teq = 2614 [485] K
Rp = 1.96 [0.93] Re
a = 0.0635 [0.0280] AU
Ag = 8.65 [7.09] [1.08 σ]
Teffp = 6931 [748] K [4.84 σ]

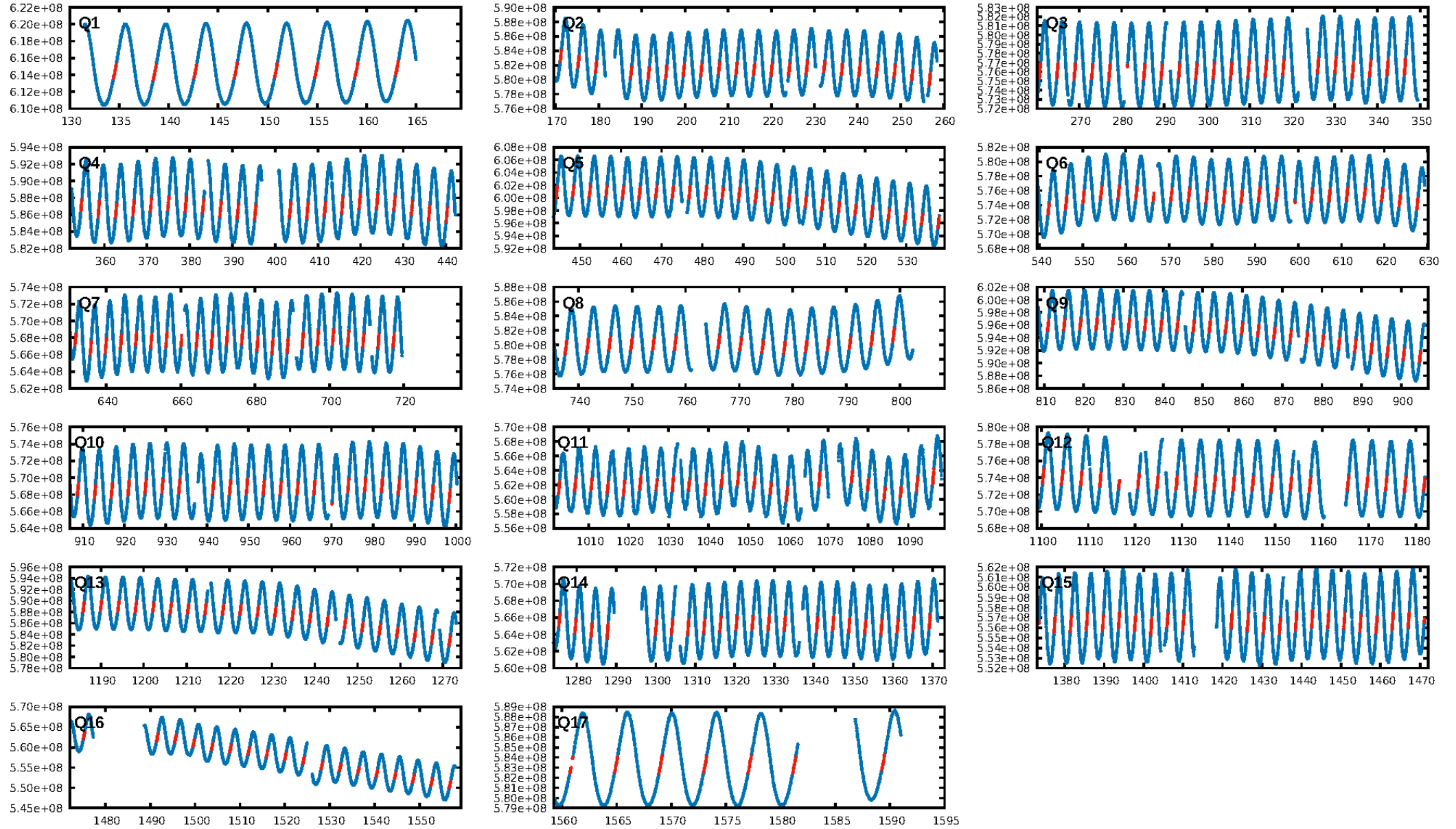
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [1339.72 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [310/311]
GhostDiagnostic-chr: 5.992
Centroid-sig: N/A
Centroid-so: 0.913 arcsec [1.28 σ]
OotOffset-rm: 0.759 arcsec [2.31 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.918 arcsec [3.14 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

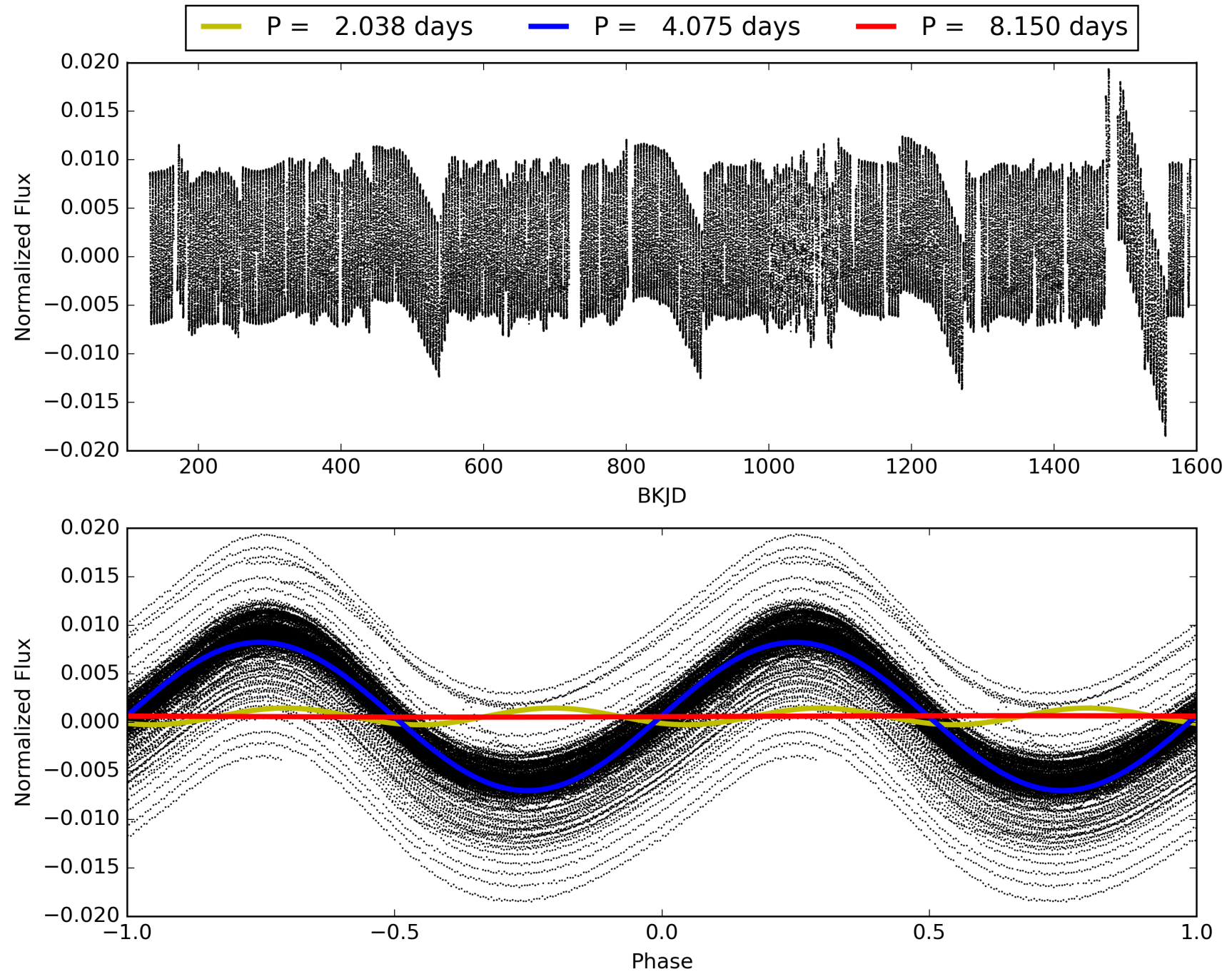
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:13:48 Z

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

TCE 008012437-03, PDC Light Curves

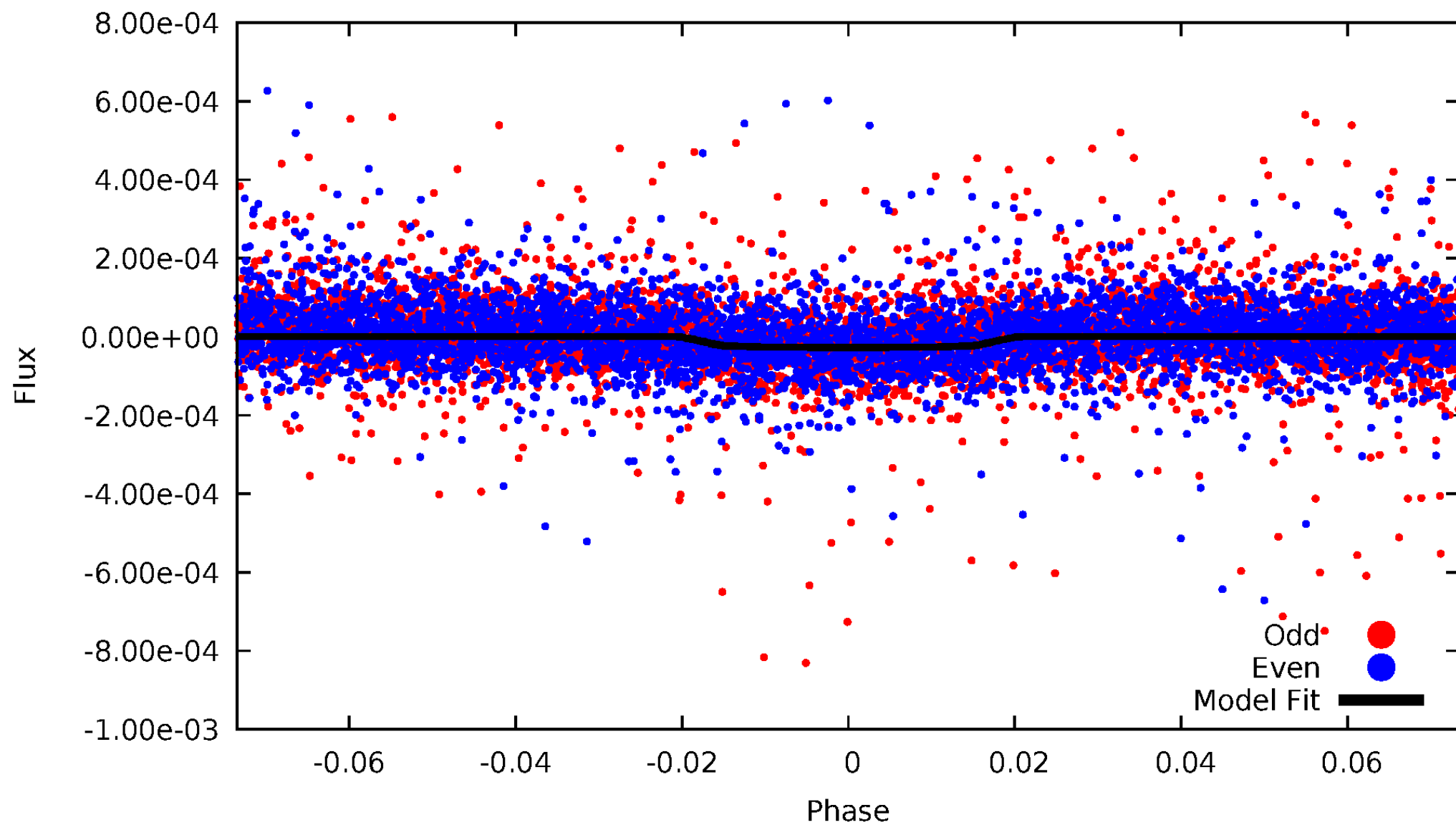


TCE 008012437-03



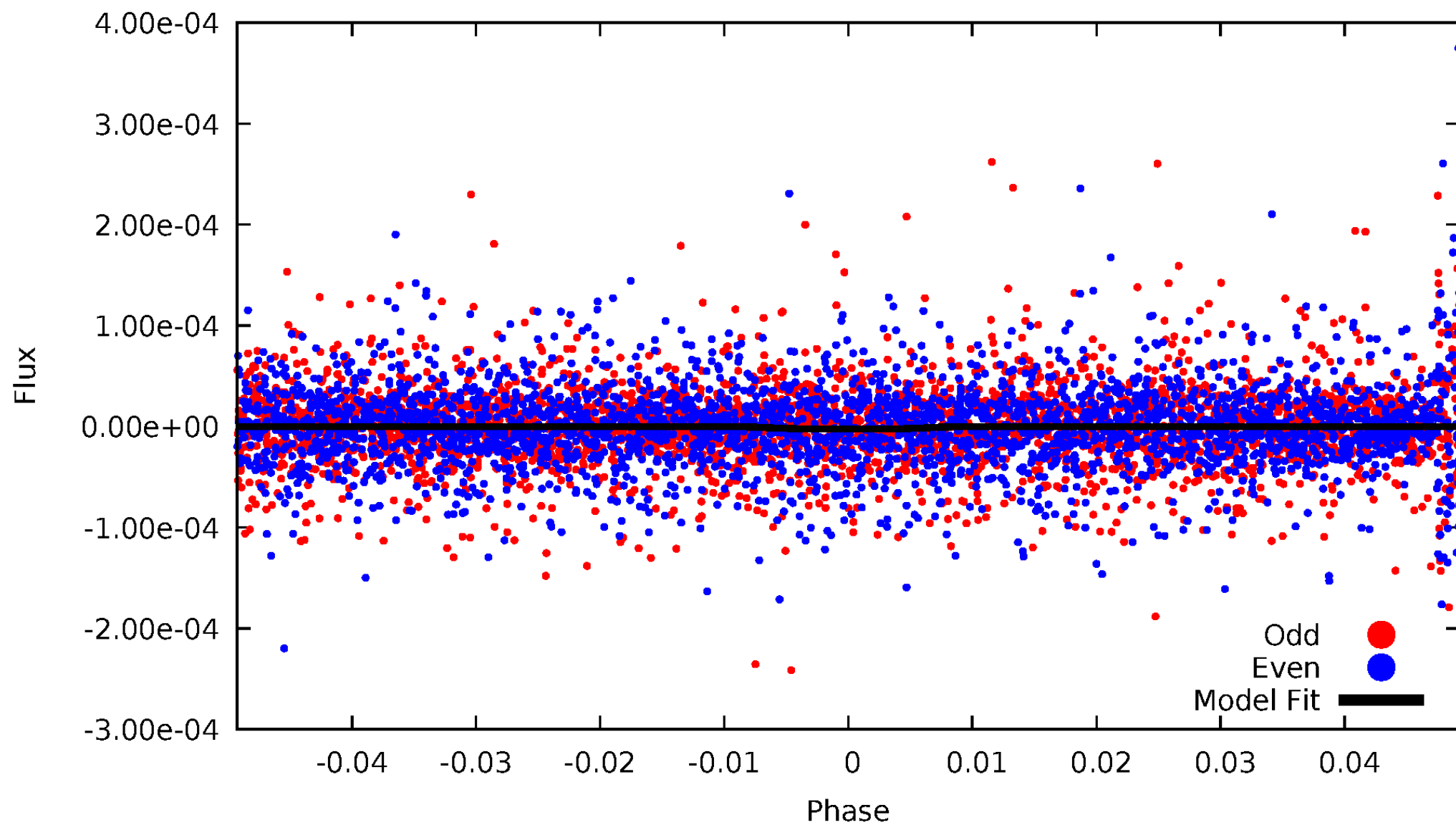
DV Odd/Even

TCE 008012437-03



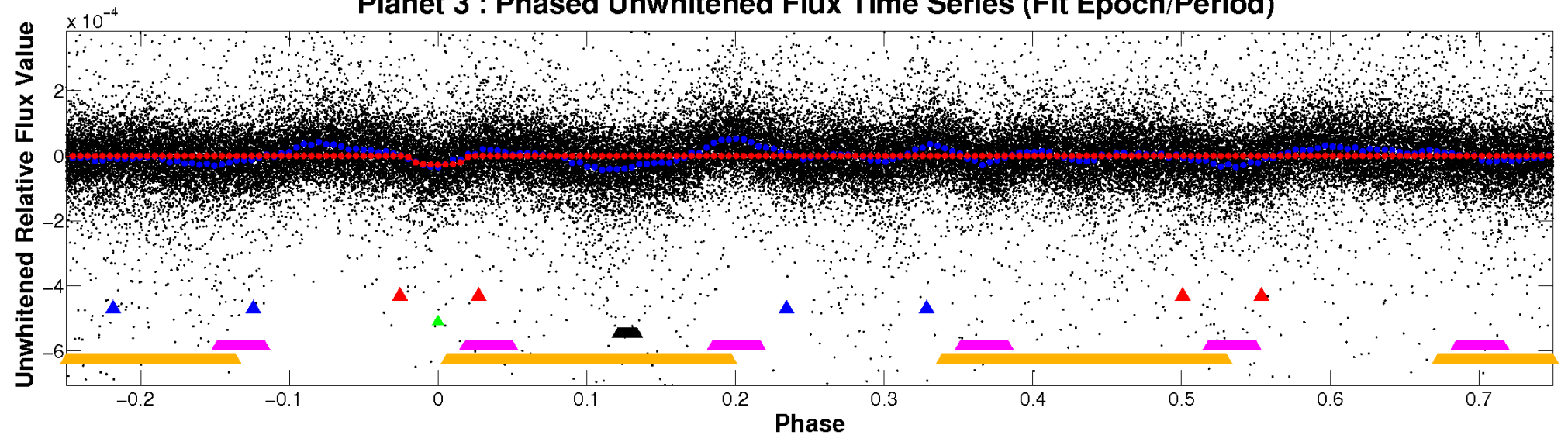
ALT Odd/Even

TCE 008012437-03

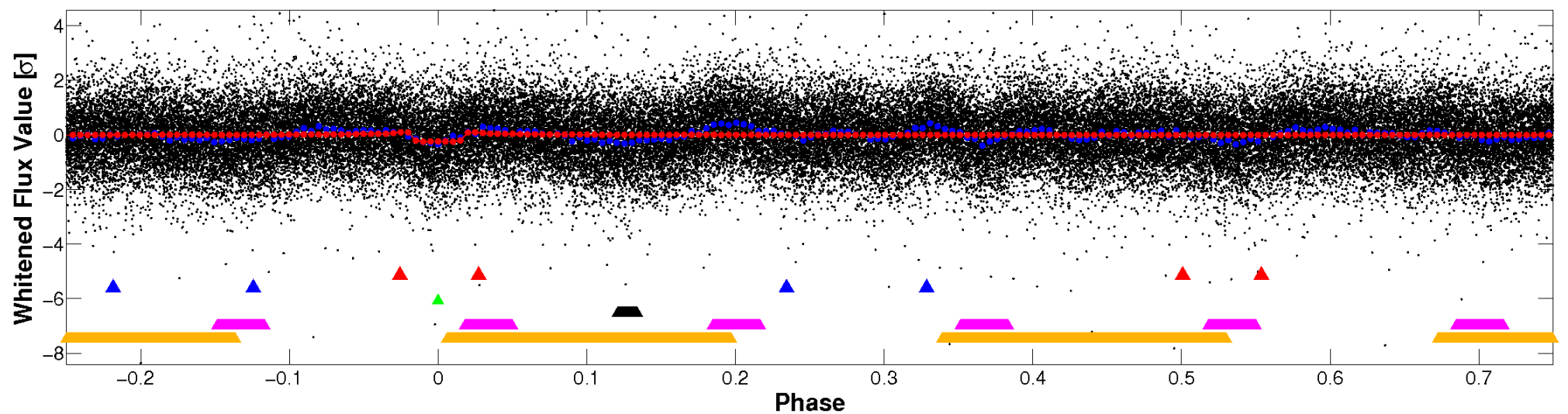


Non-Whitened Vs. Whitened Light Curve

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

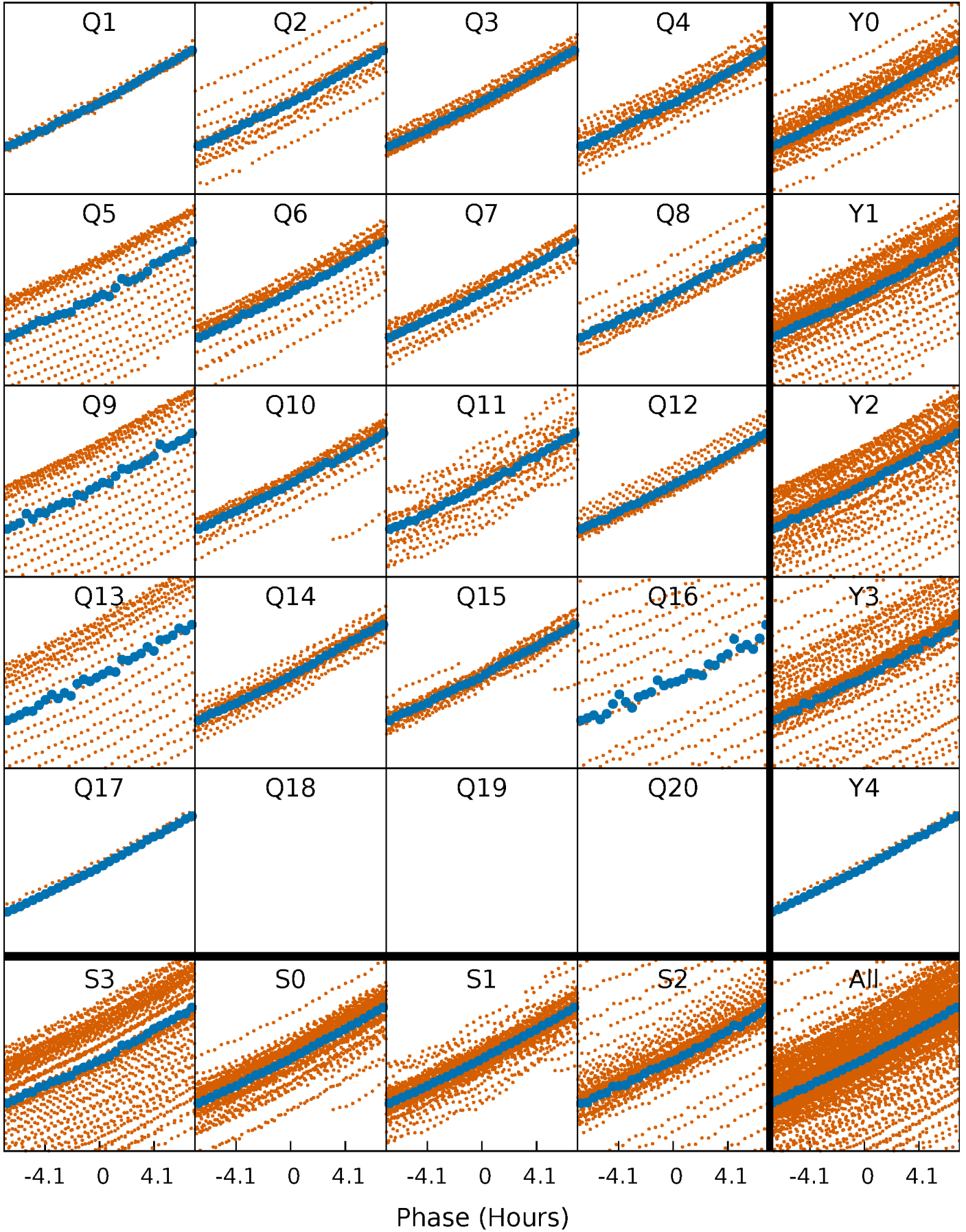


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



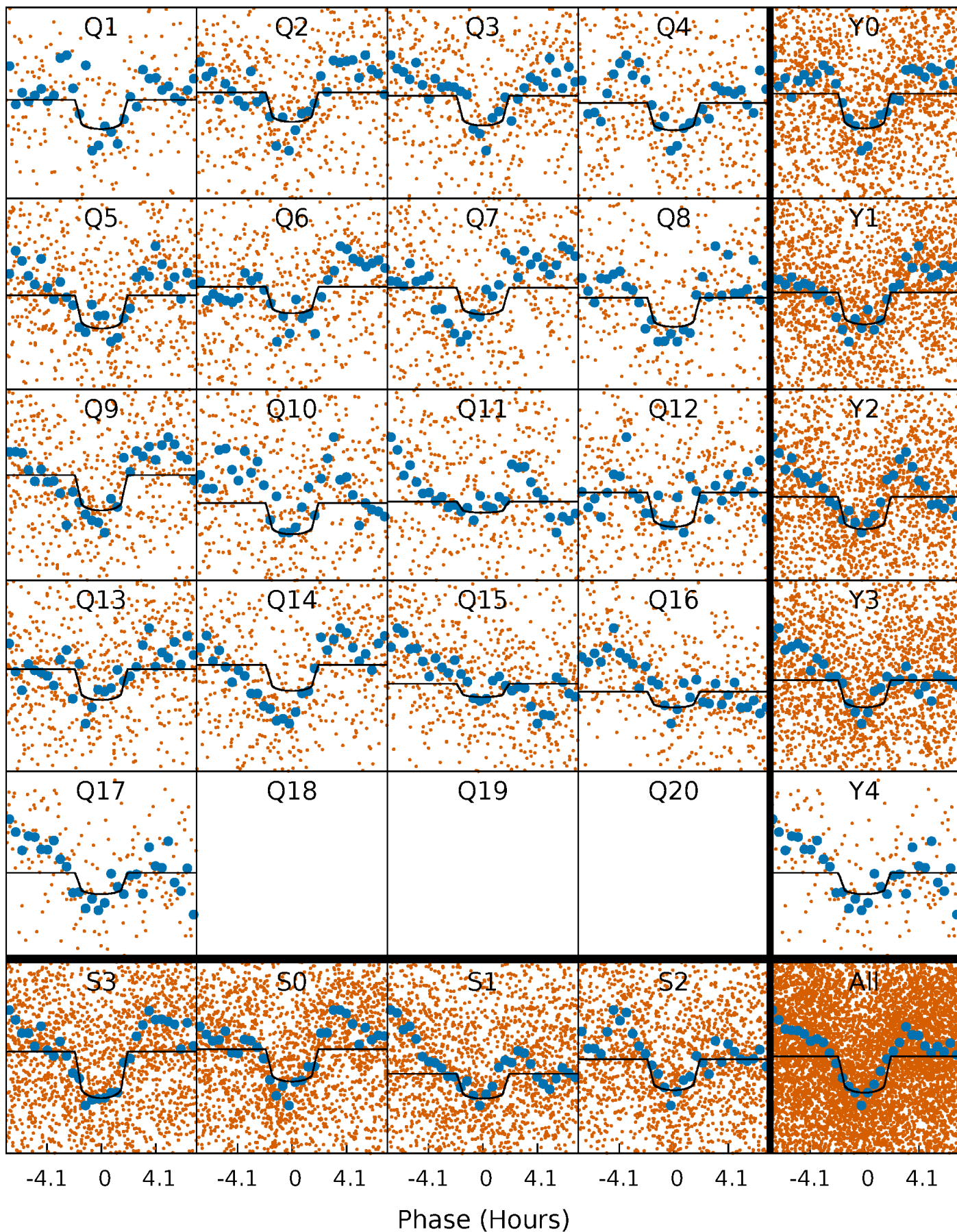
PDC Quarter-Phased Transit Curves

TCE 008012437-03 P= 4.075239 Days $T_0=134.531207$ (BKJD)



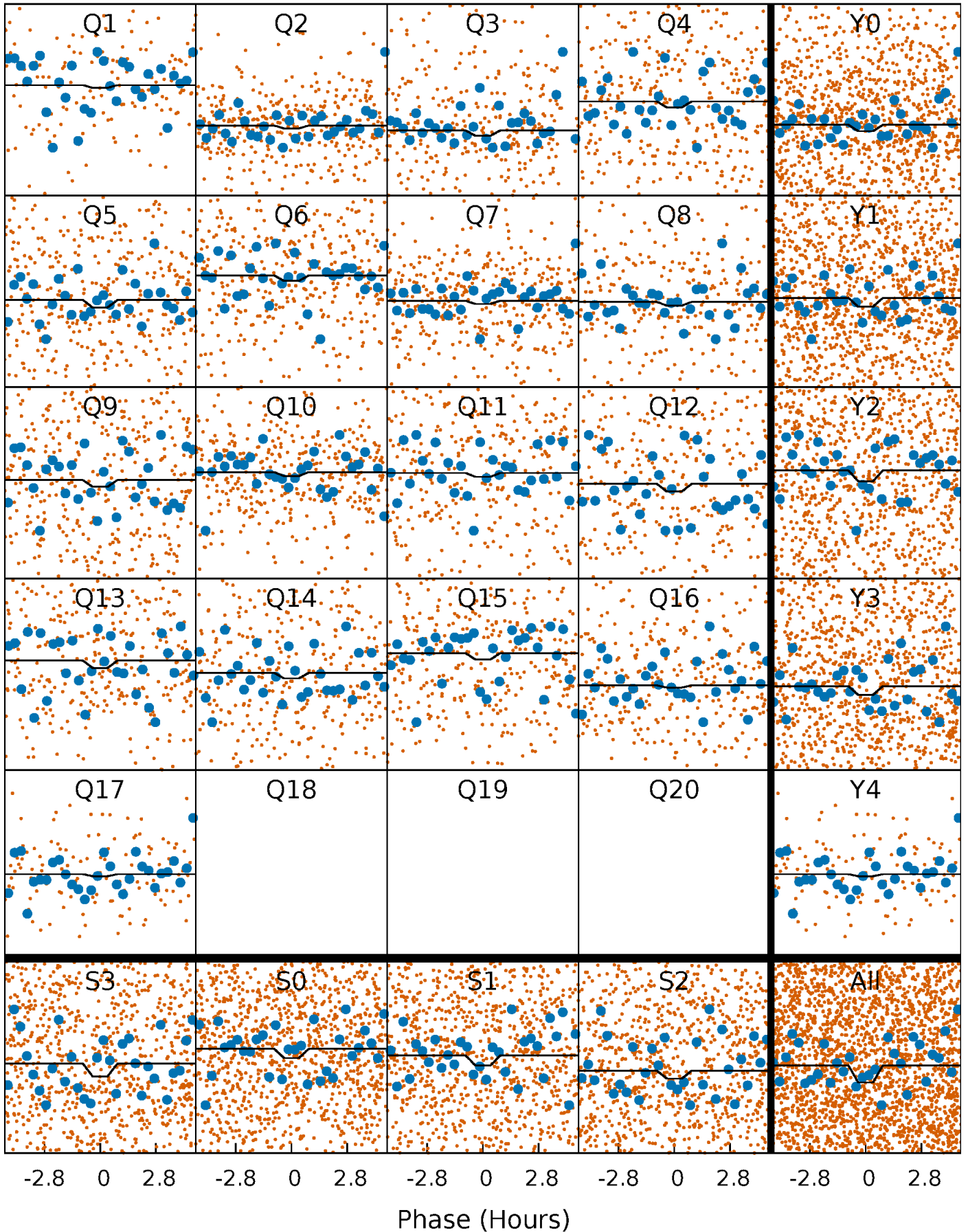
DV Quarter-Phased Transit Curves

TCE 008012437-03 P= 4.075239 Days $T_0=134.531207$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

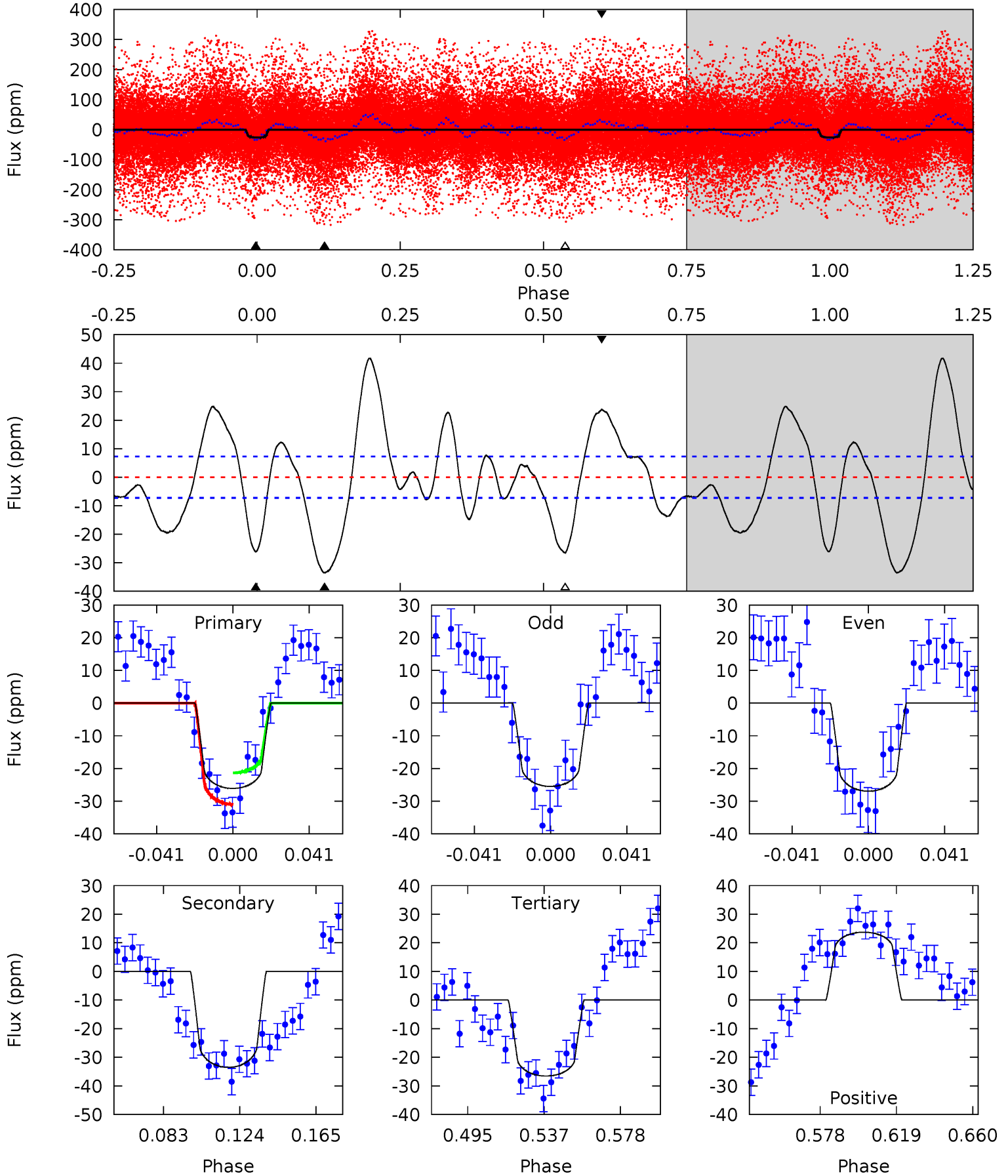
TCE 008012437-03 P= 4.074881 Days $T_0=134.614277$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-03, P = 4.075239 Days, E = 130.455968 Days

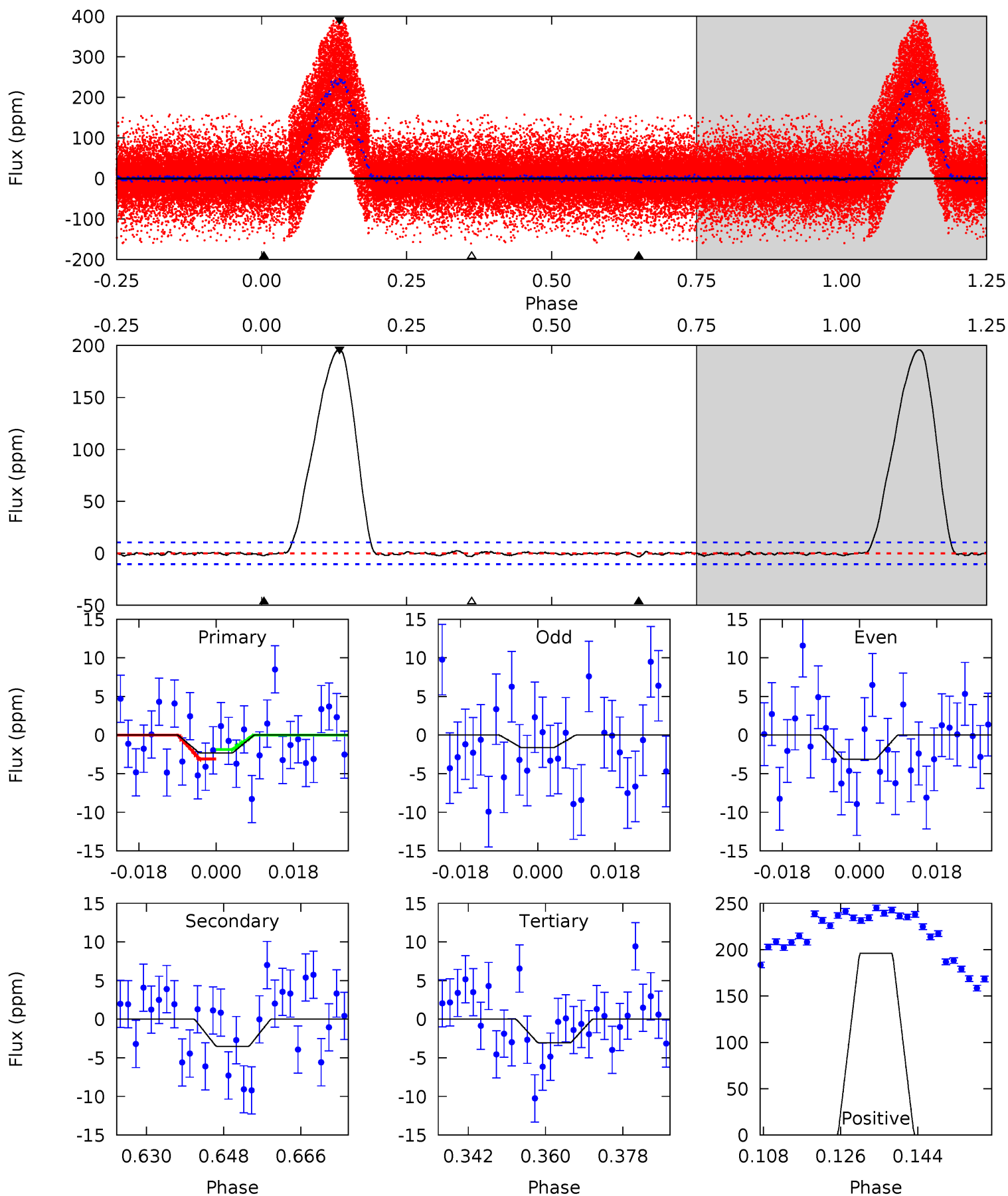
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.1	21.9	17.4	15.5	4.75	2.04	9.40	-0.29	1.56	4.56	6.42	0.48	1.07	0.55	3.20



Alt Model-Shift Uniqueness Test

008012437-03, P = 4.074881 Days, E = 130.539396 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.10	1.66	1.44	92.4	4.91	2.37	20.1	-0.34	-91.3	0.22	-90.7	0.35	2.17	0.98	0.27



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-34 ± 2	$1.82^{+0.52}_{-0.52}$	3541^{+295}_{-415}	8434^{+1429}_{-932}	22^{+21}_{-8}
Alt.	-4 ± 2	$0.53^{+0.34}_{-0.29}$	3512^{+306}_{-388}	8590^{+7116}_{-2659}	25^{+96}_{-19}

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

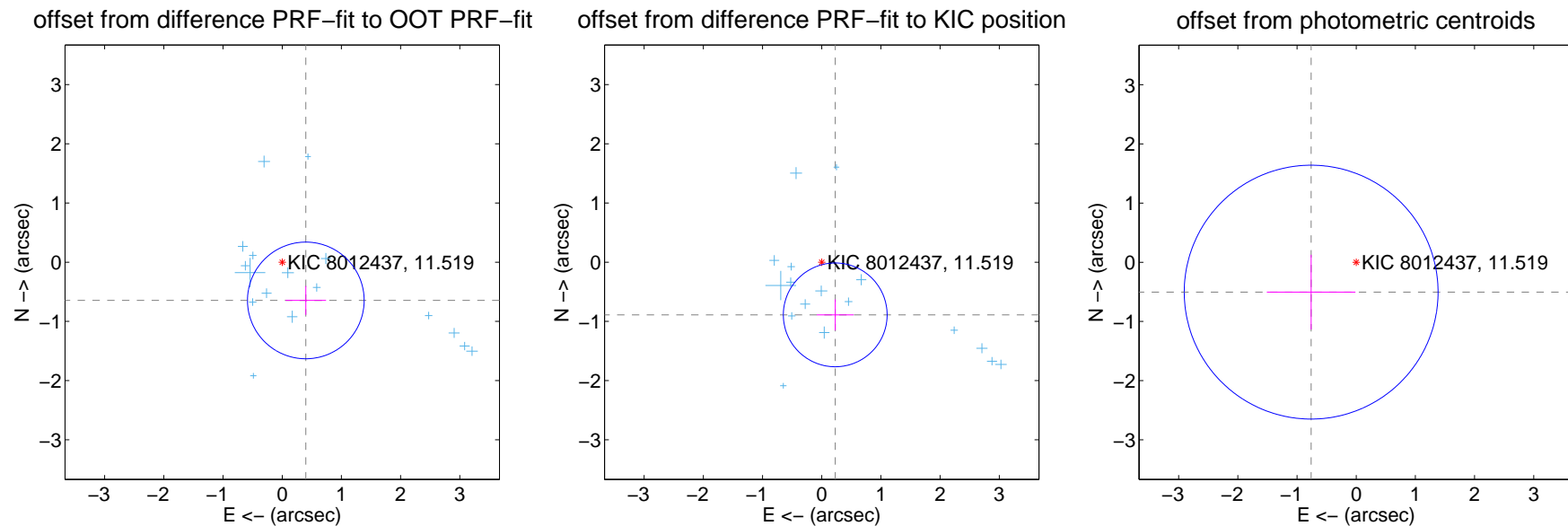
DV Centroid Data

Supplemental centroid analysis for 008012437-03. **Kepler magnitude: 11.52.** Transit SNR 12.28

There are 17 quarters with good PRF difference image offsets

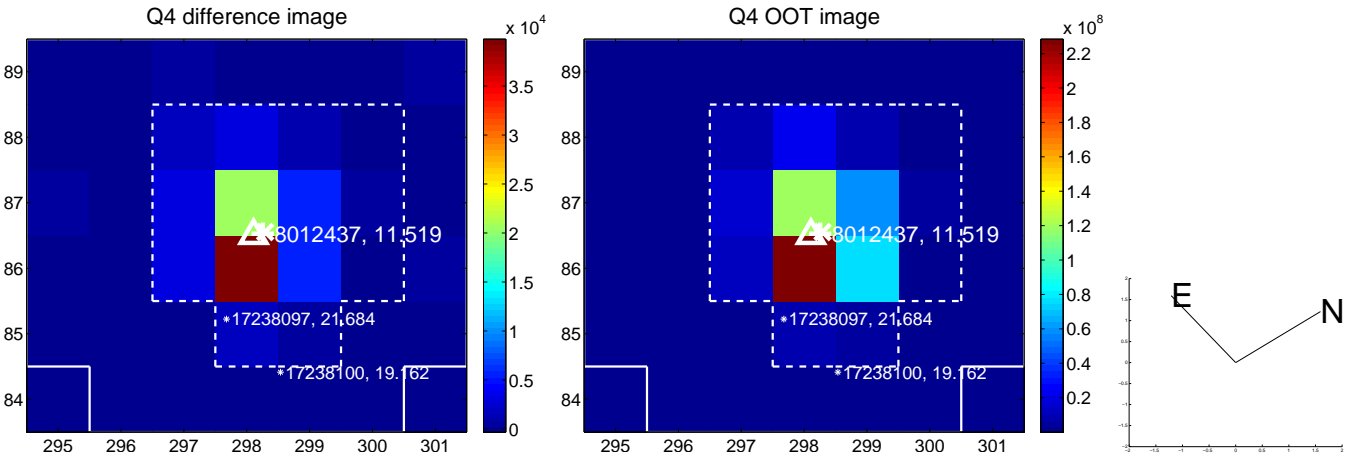
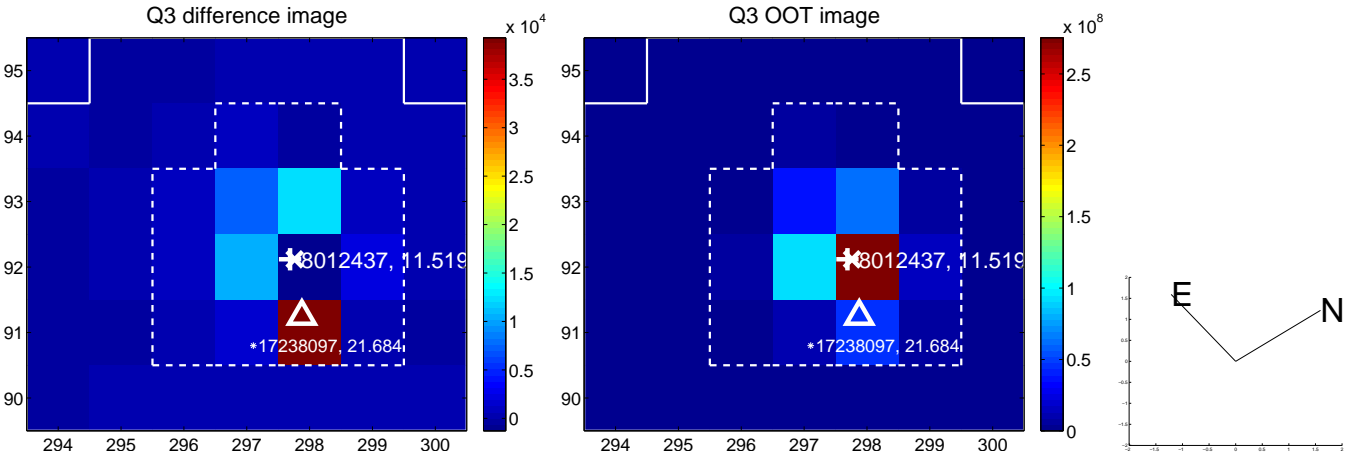
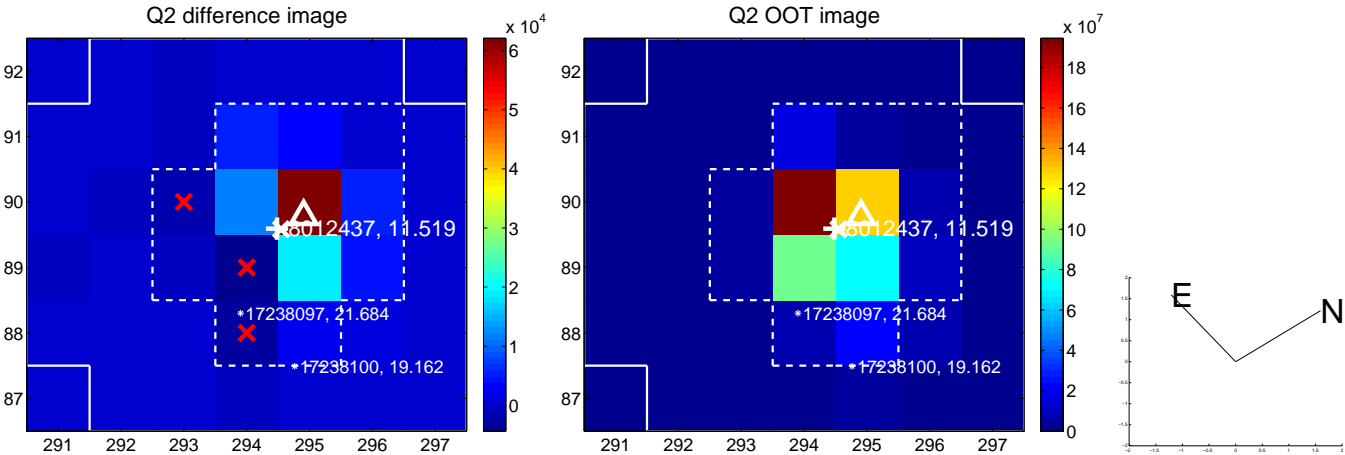
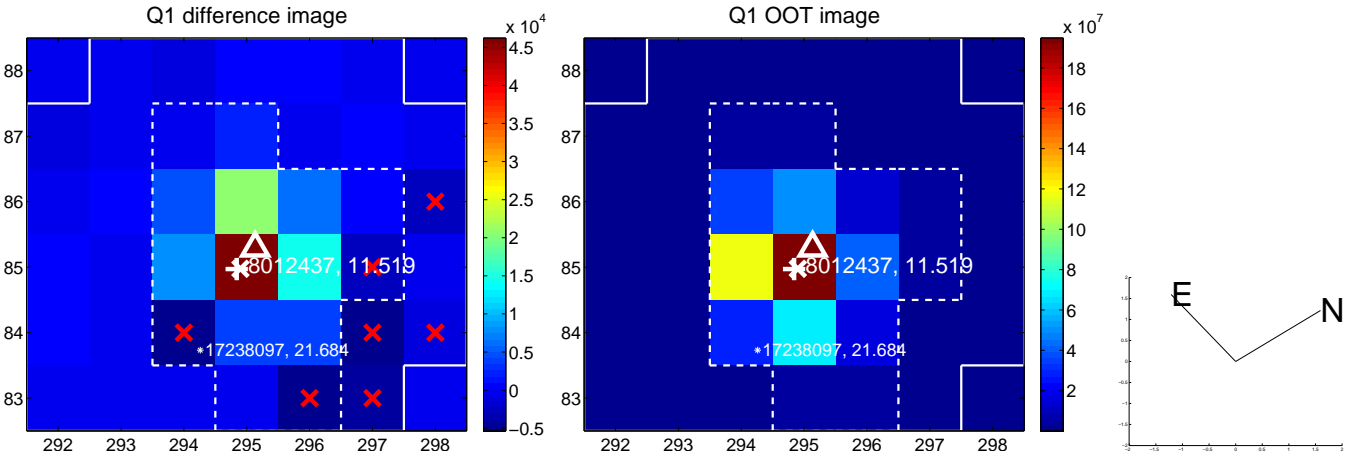
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.759 ± 0.328	2.31	-0.399 ± 0.342	-0.646 ± 0.244
PRF-fit source offset from KIC position	0.918 ± 0.292	3.14	-0.228 ± 0.311	-0.890 ± 0.262
photometric centroid source offset	0.91 ± 0.71	1.28	0.76 ± 0.75	-0.50 ± 0.63

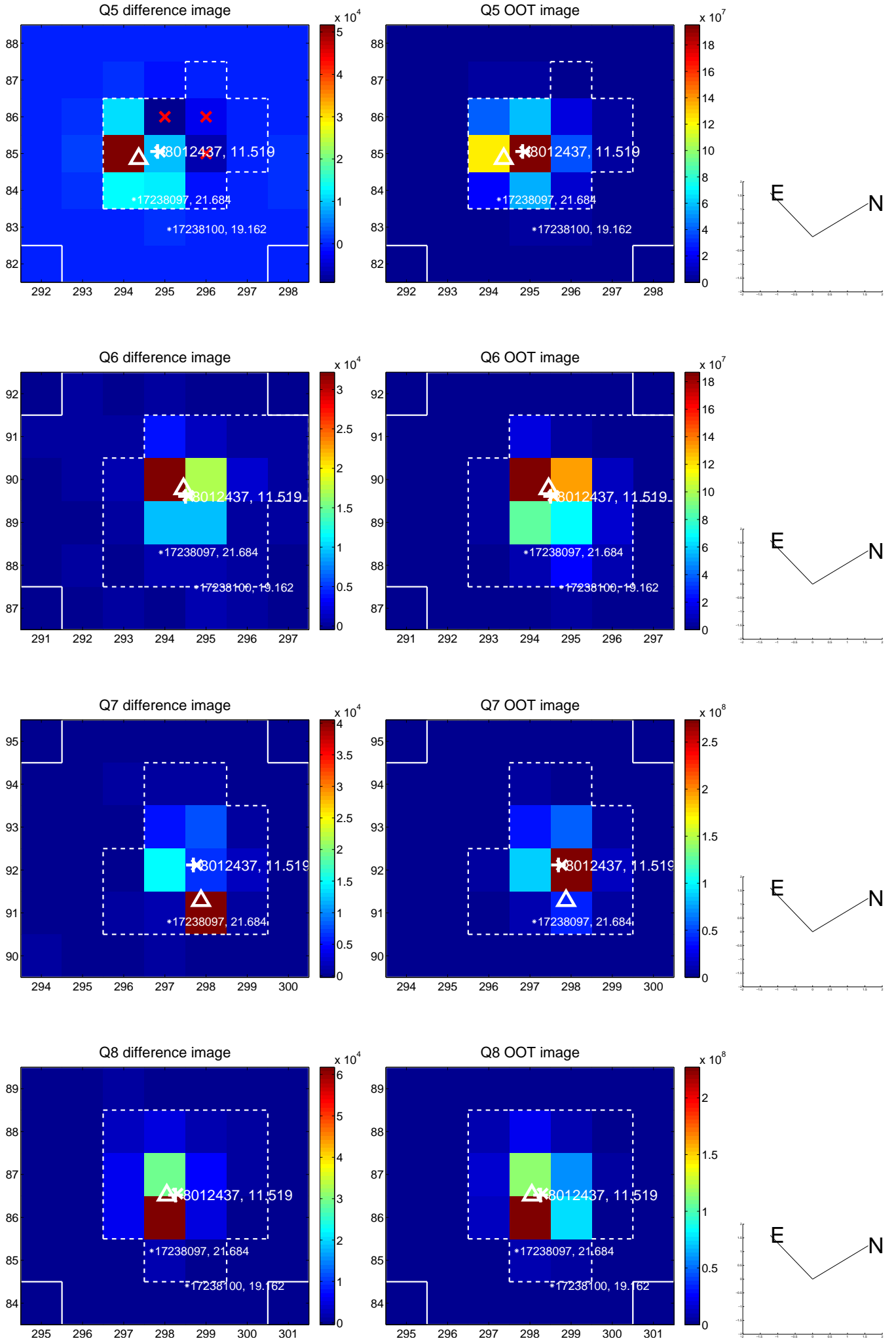


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

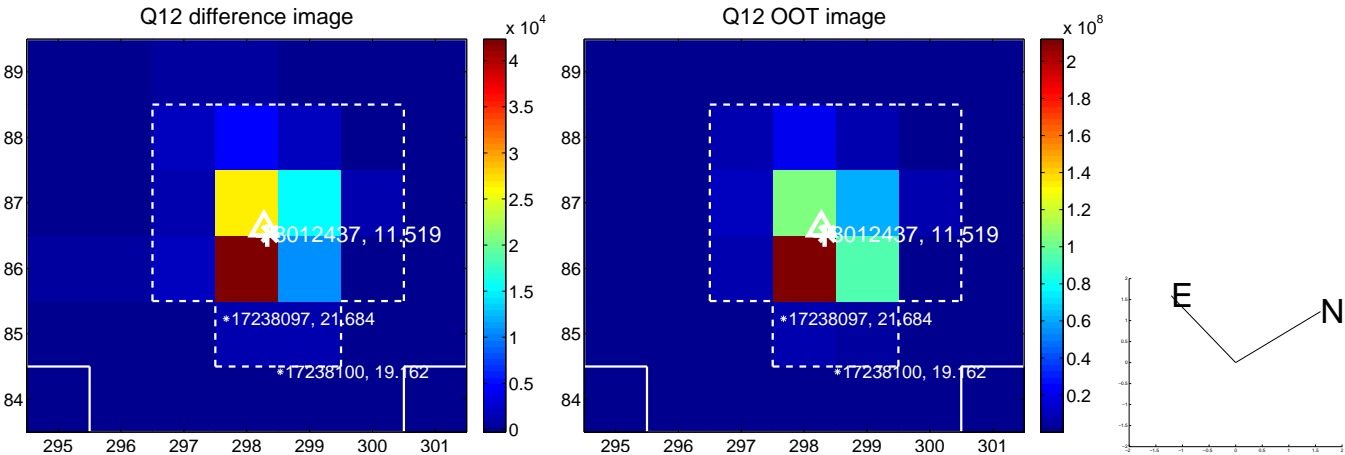
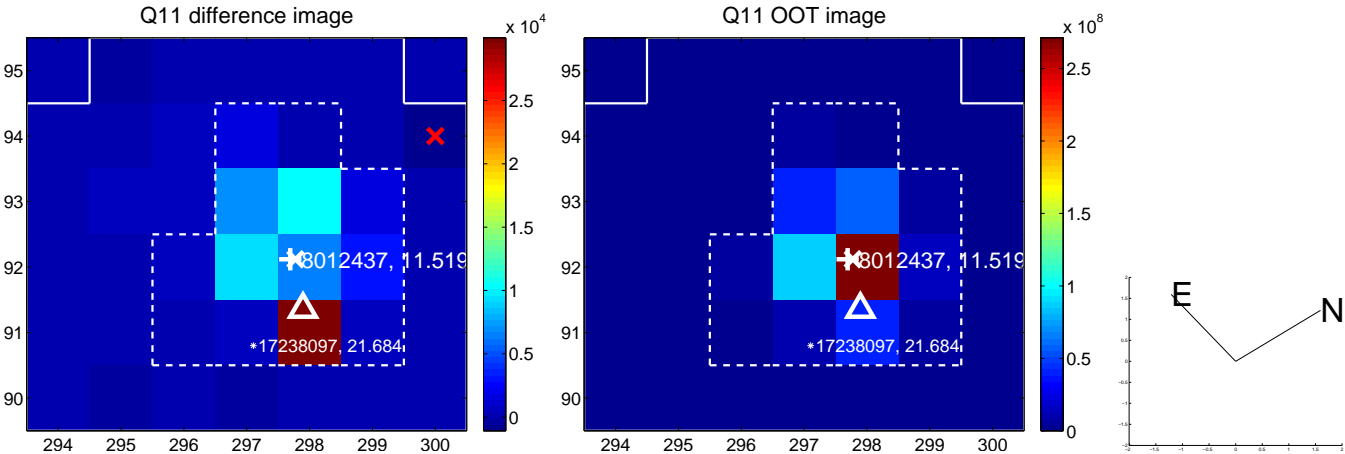
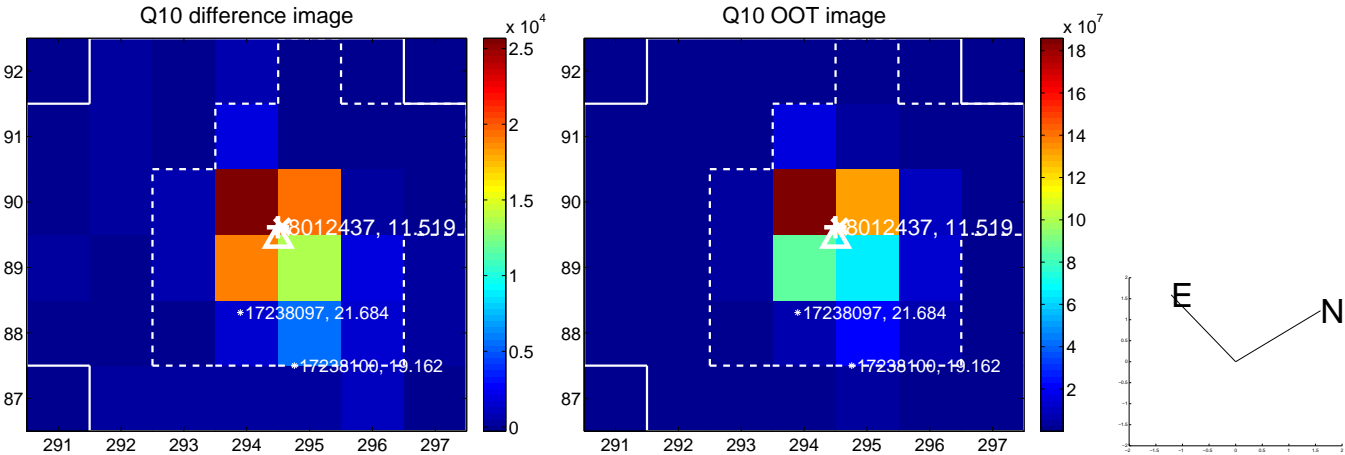
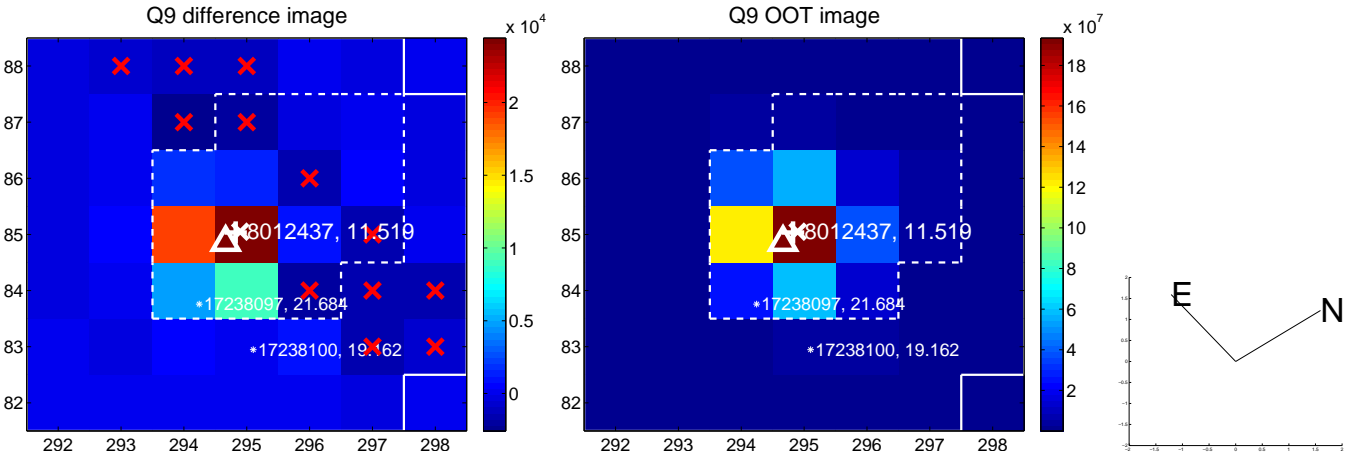
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



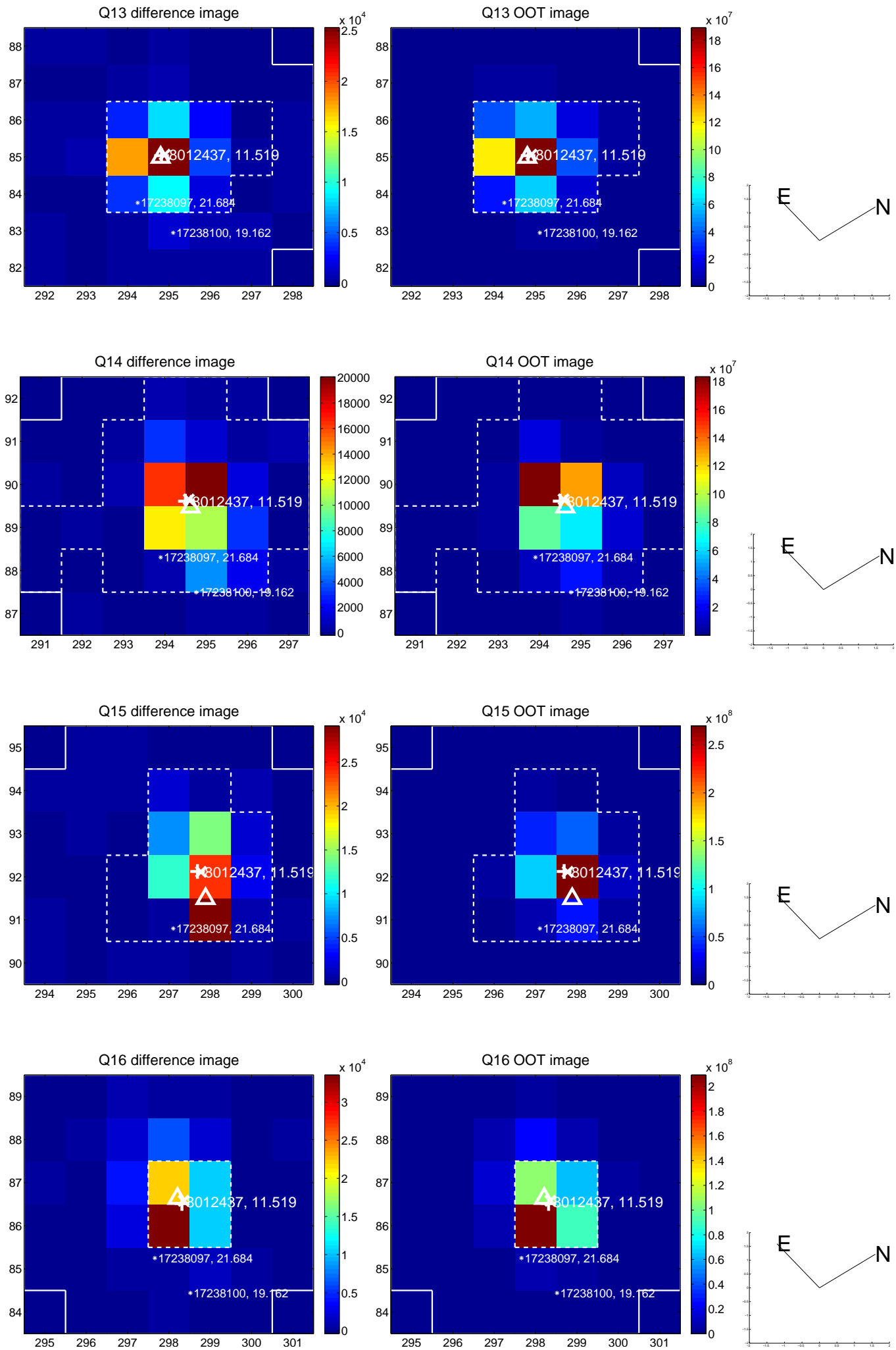
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



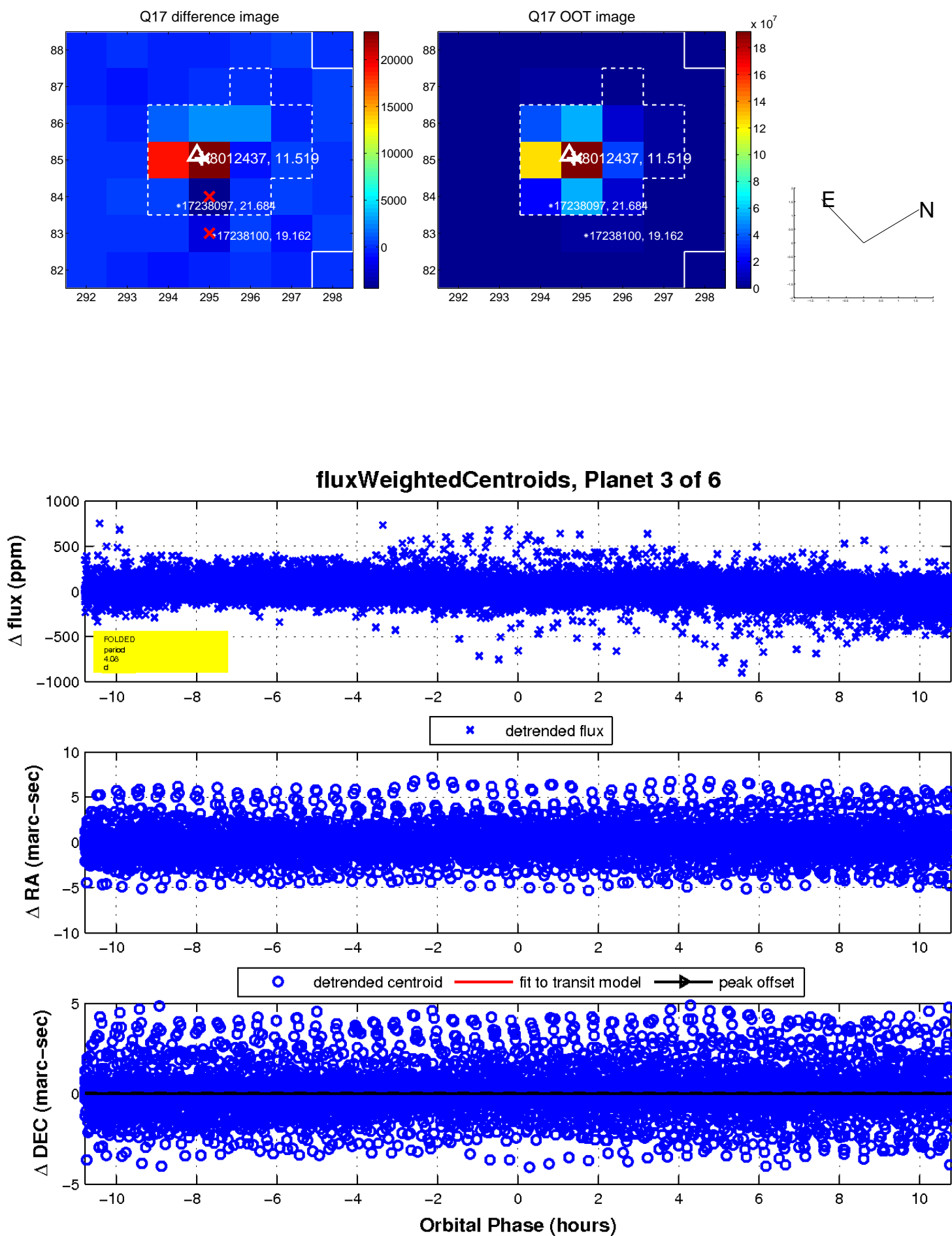
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



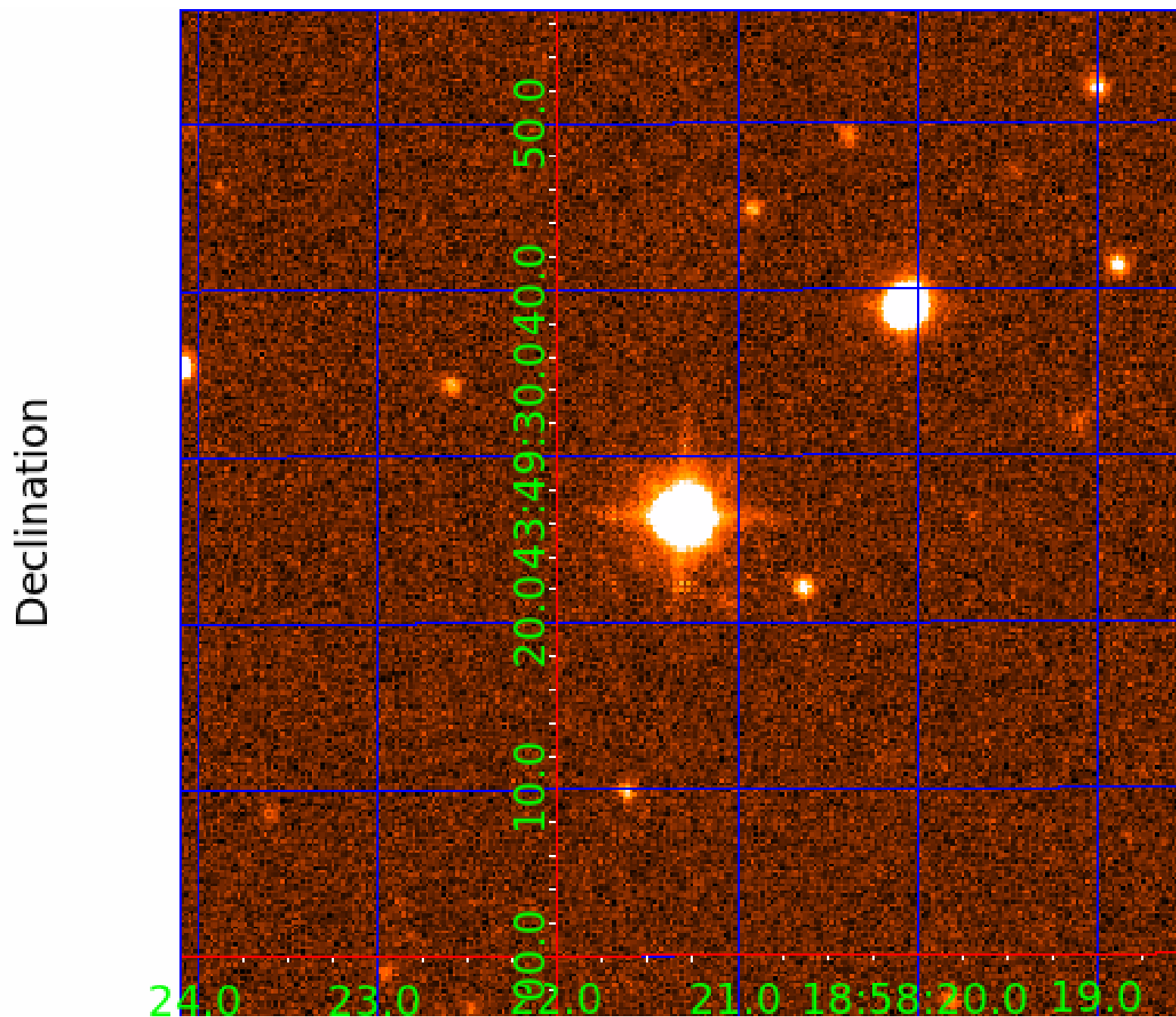
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

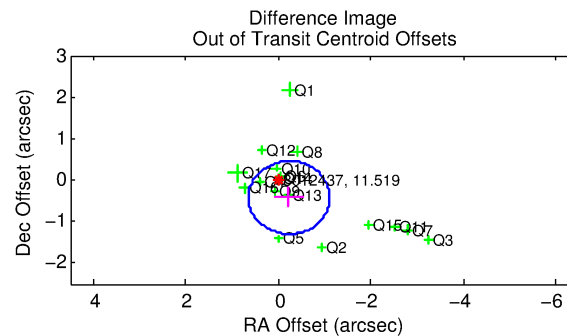
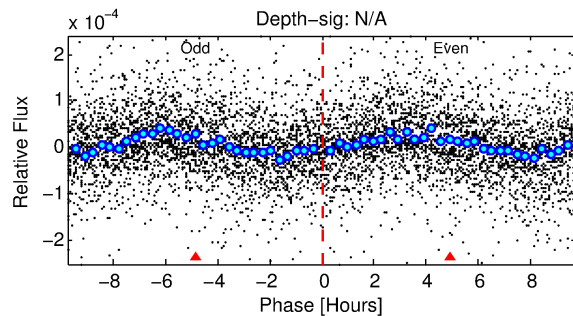
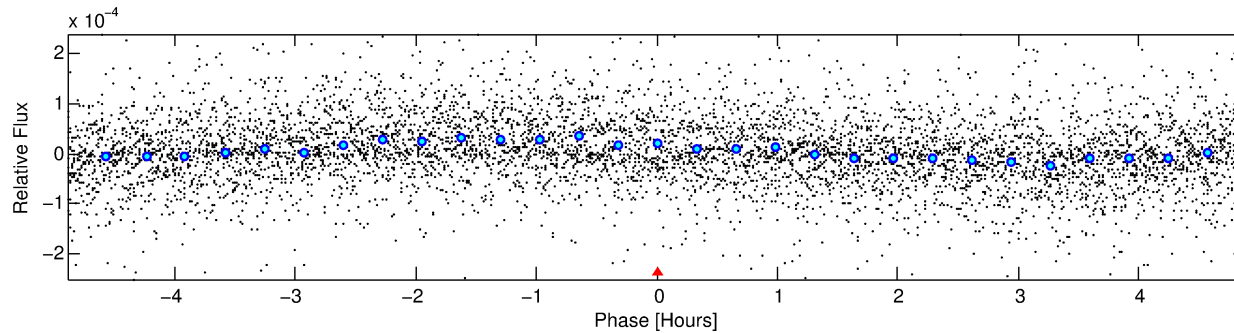
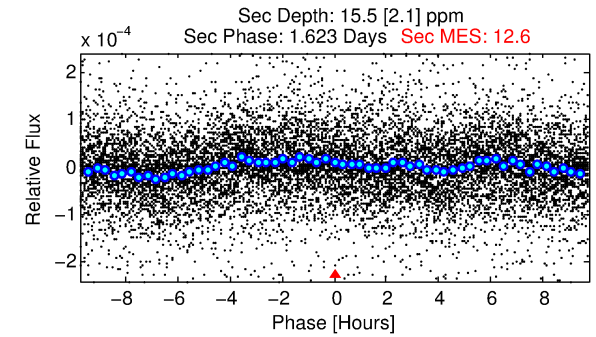
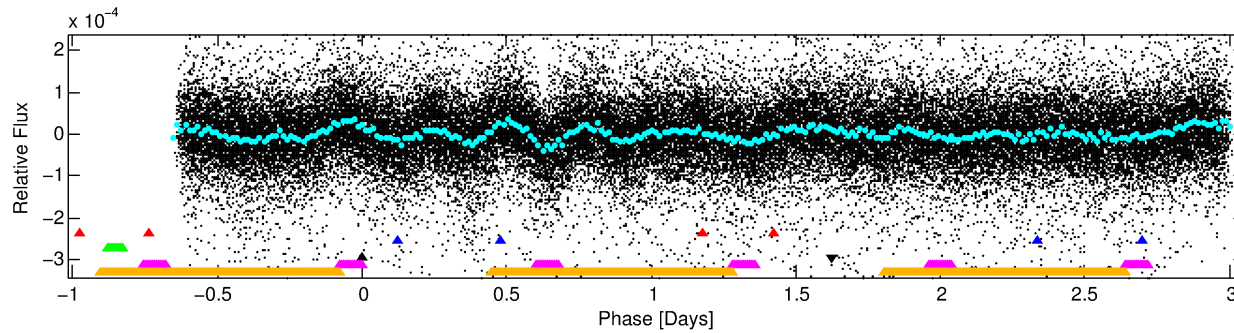
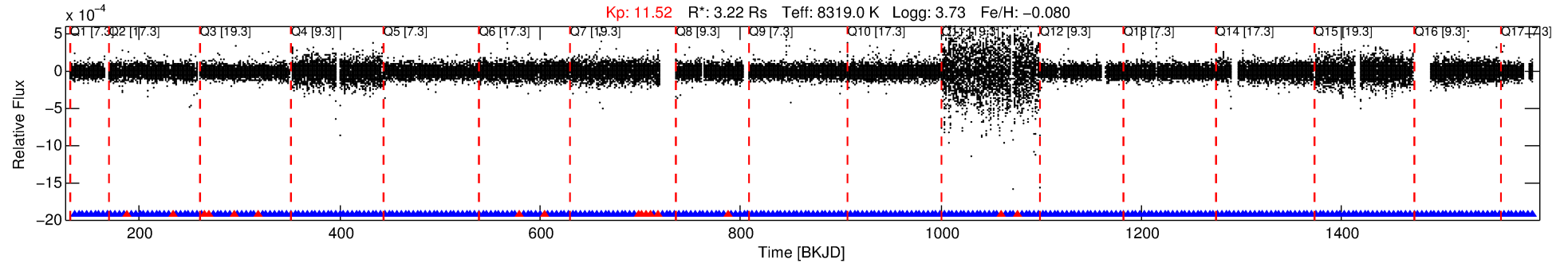
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-04

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 4 of 6 Period: 4.075 d



TPS TCE Results:

Period = 4.07509 d
Epoch = 135.0767 BKJD

DV fit results are unavailable

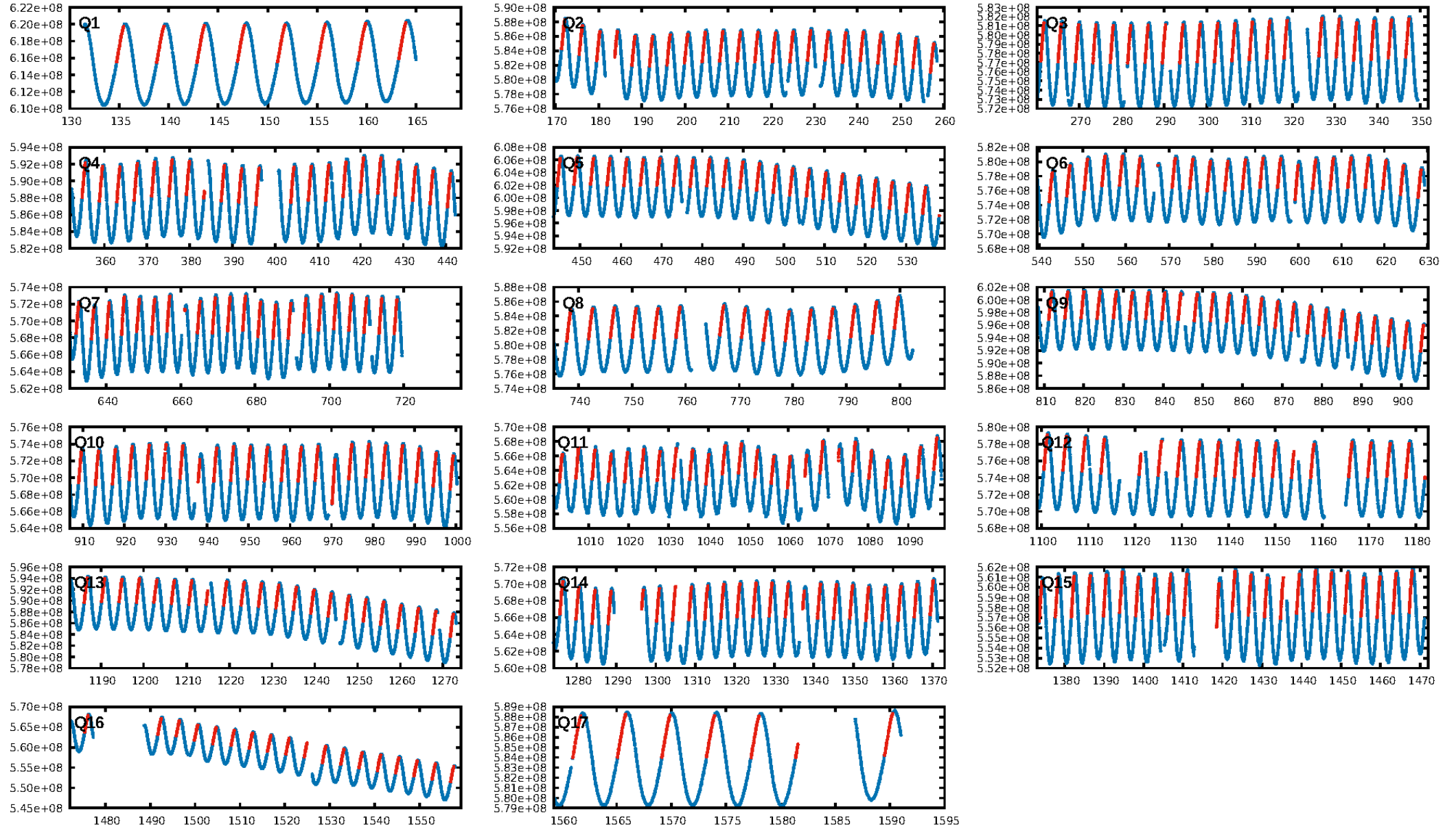
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.75 σ]
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [299/315]
GhostDiagnostic-chr: 0.7786
Centroid-sig: N/A
Centroid-so: 5.551 arcsec [1.77 σ]
OotOffset-rm: 0.479 arcsec [1.64 σ]
KicOffset-rm: 0.720 arcsec [2.39 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

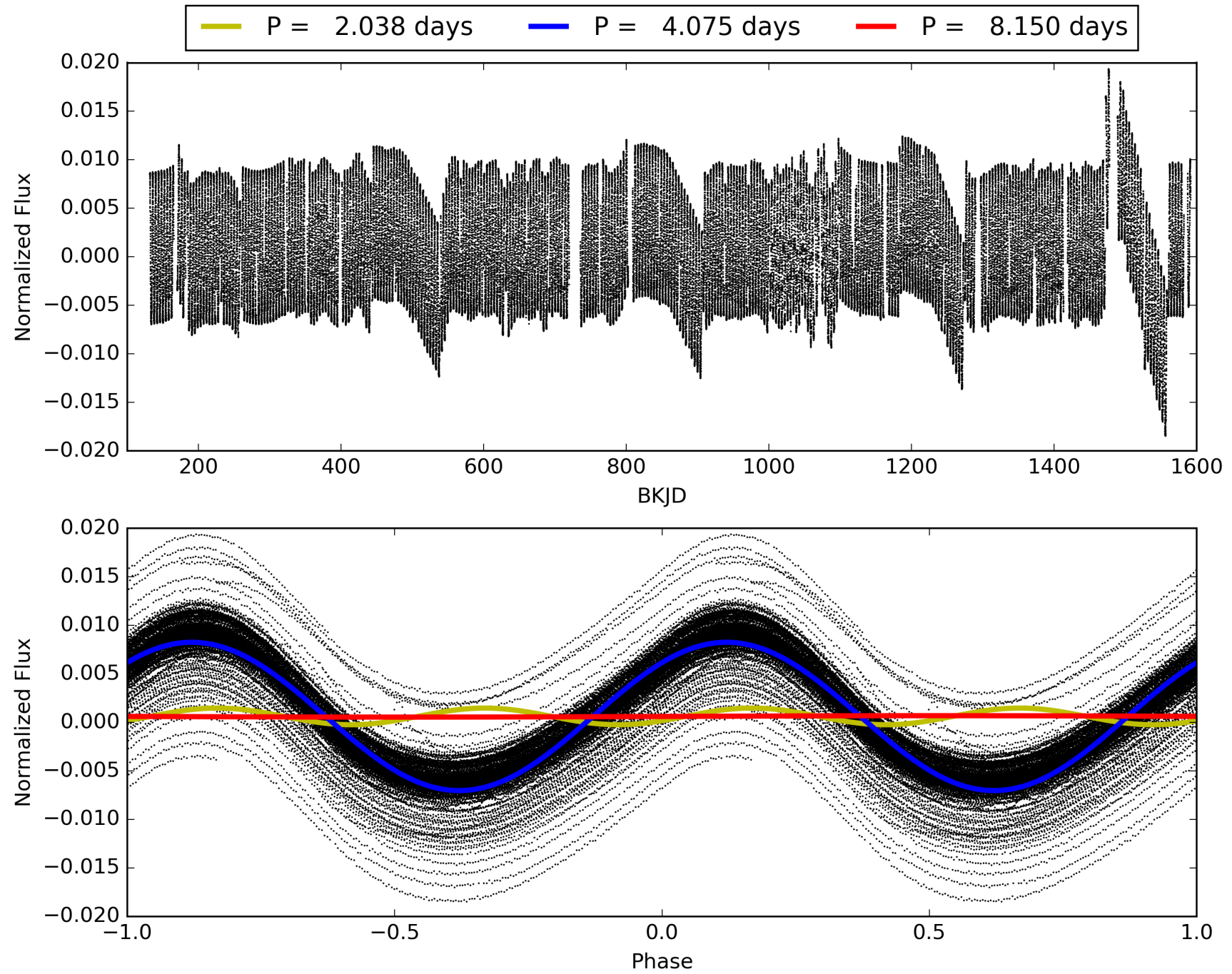
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:13:55 Z

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

TCE 008012437-04, PDC Light Curves

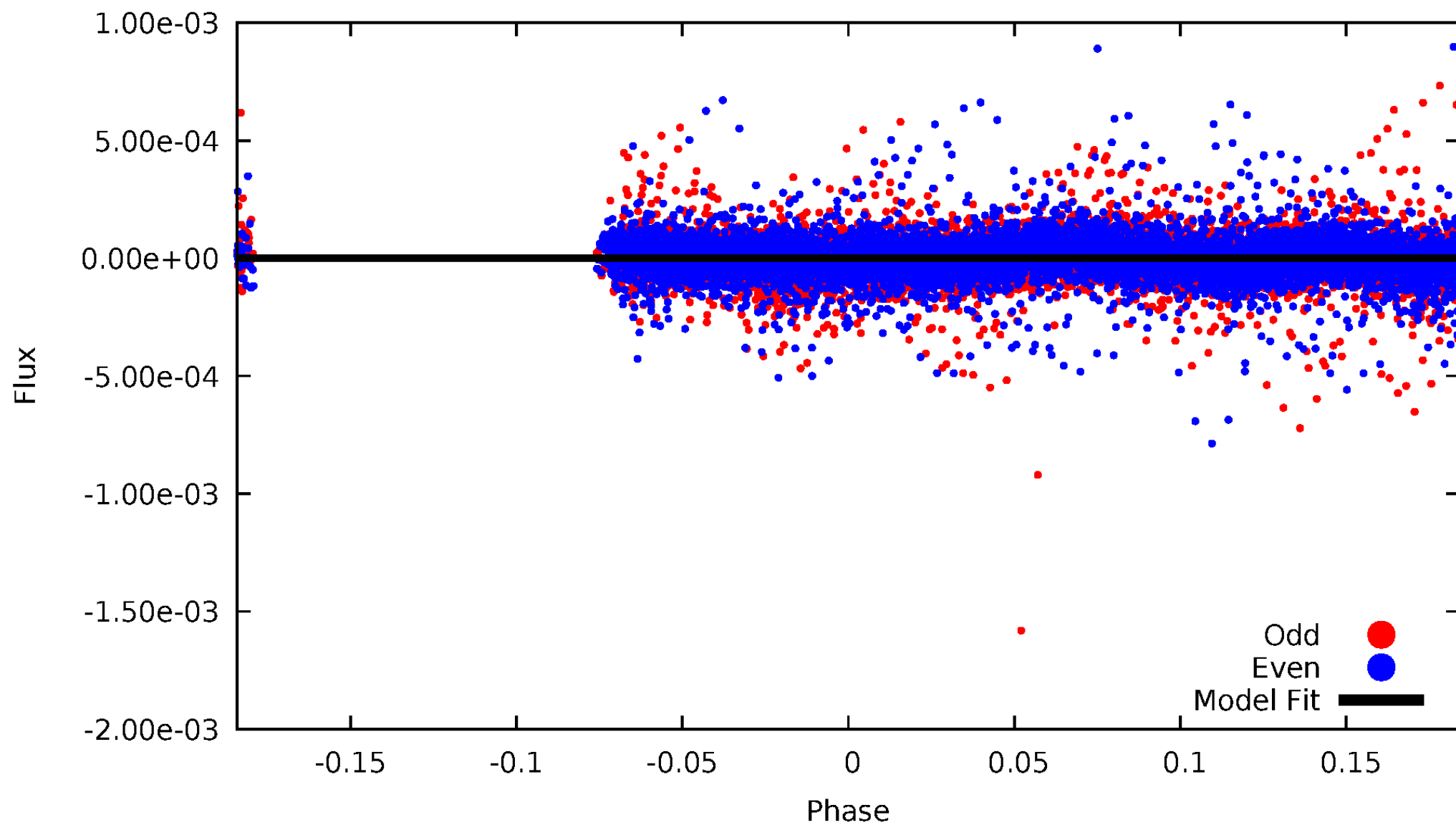


TCE 008012437-04



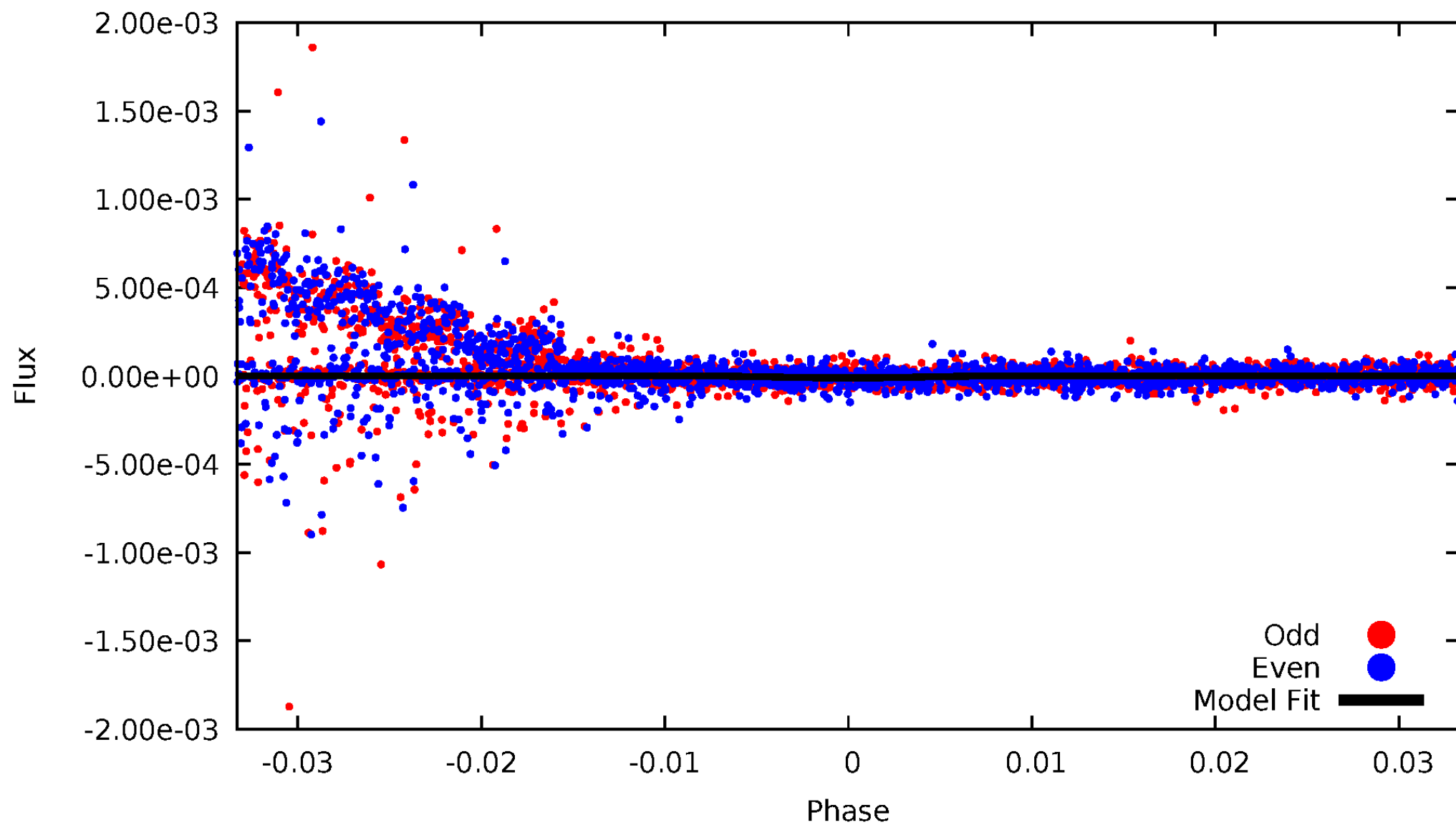
DV Odd/Even

TCE 008012437-04



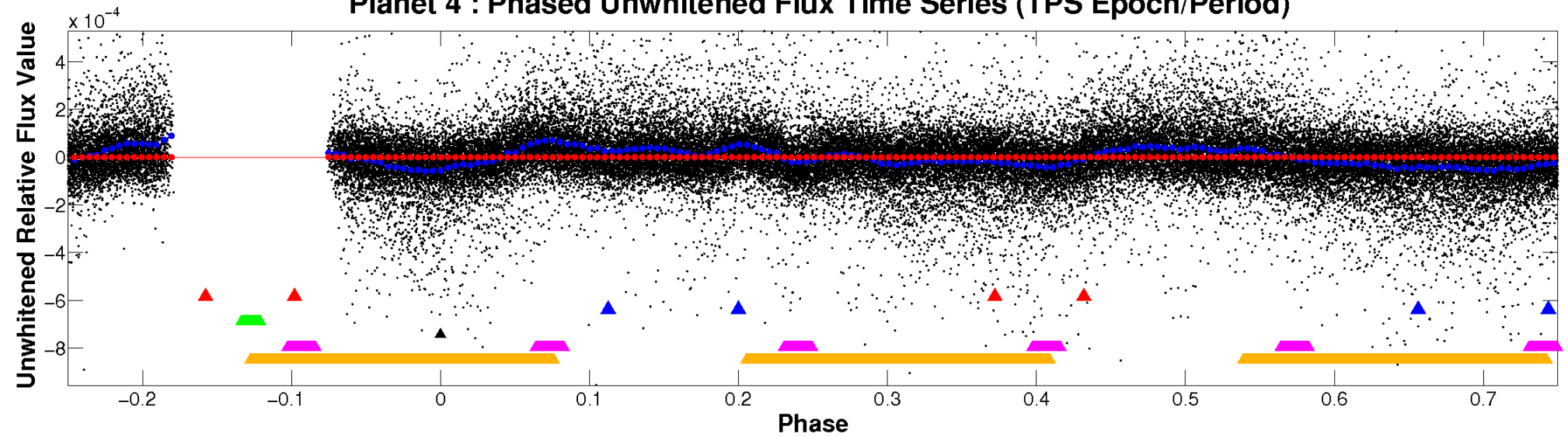
ALT Odd/Even

TCE 008012437-04

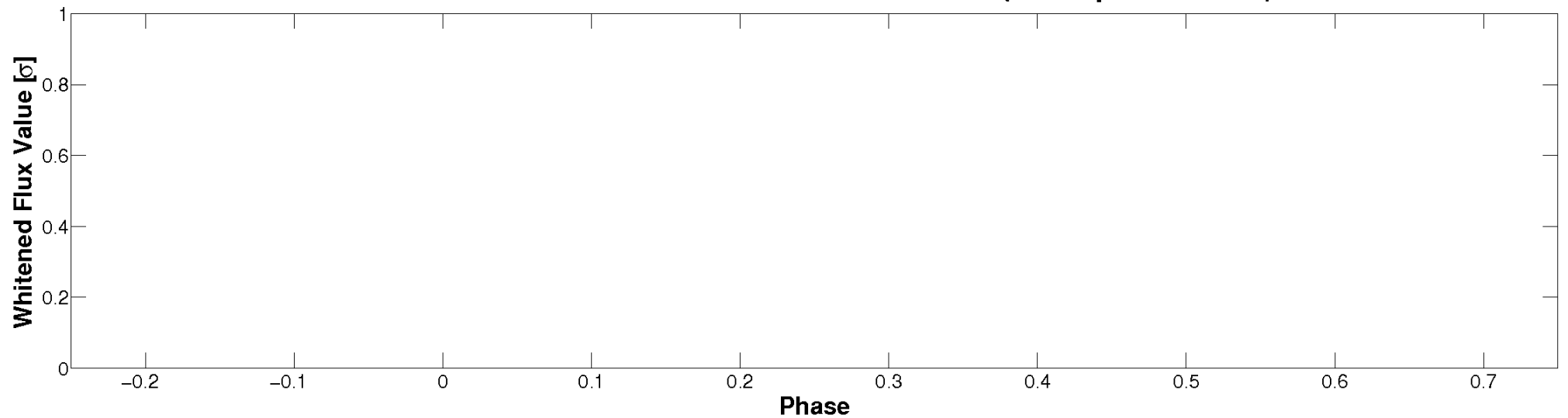


Non-Whitened Vs. Whitened Light Curve

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

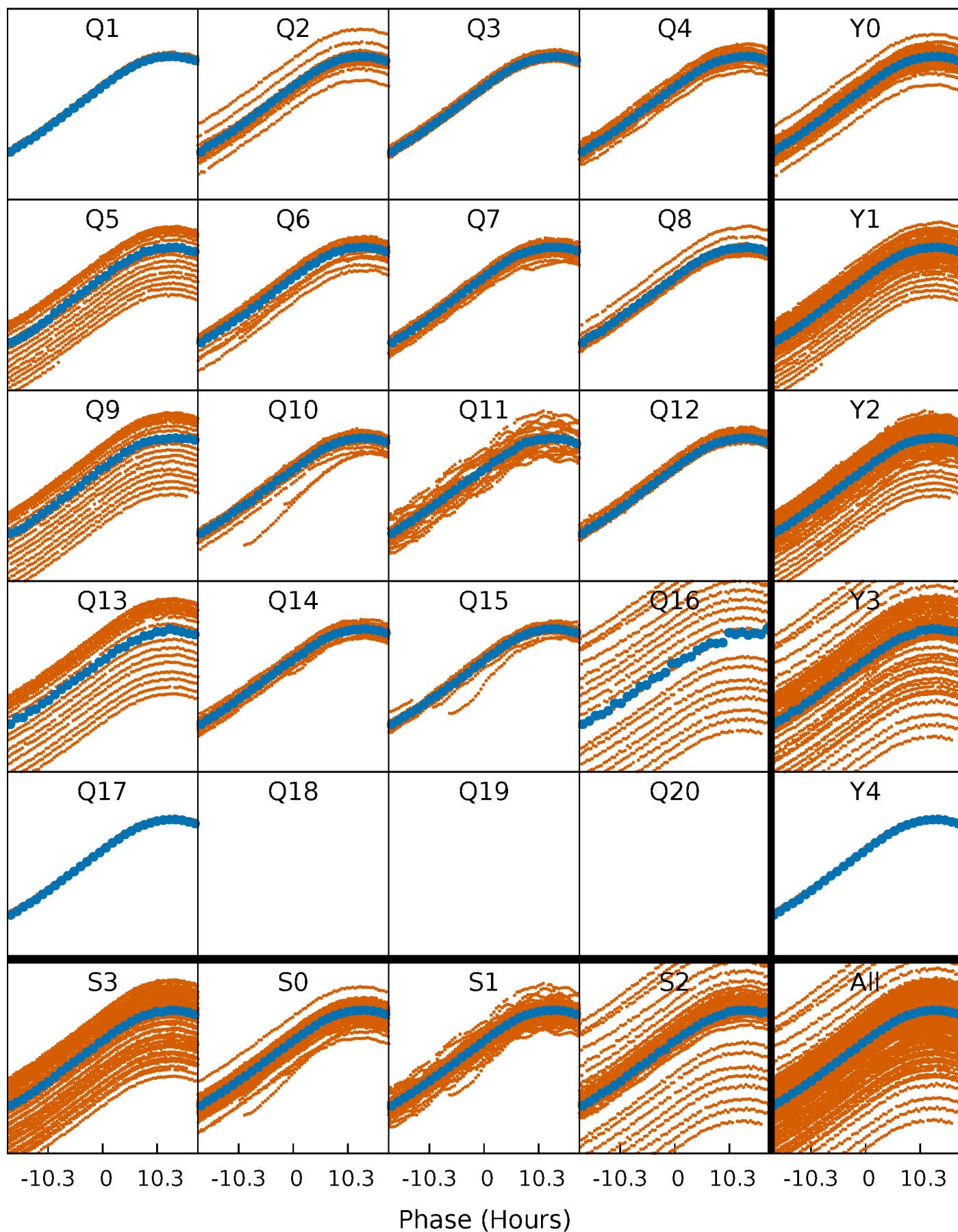


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



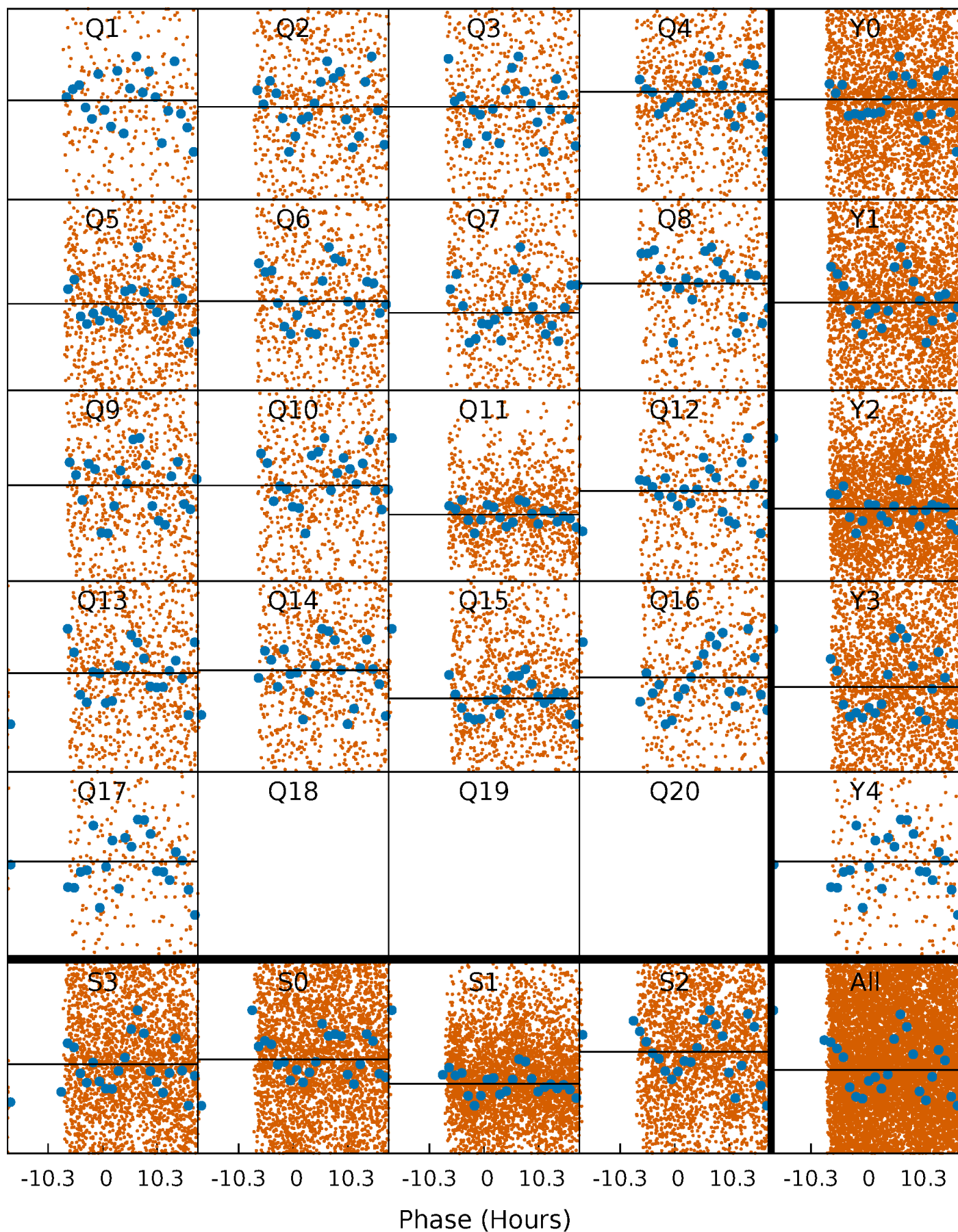
PDC Quarter-Phased Transit Curves

TCE 008012437-04 P= 4.075089 Days $T_0=135.076650$ (BKJD)



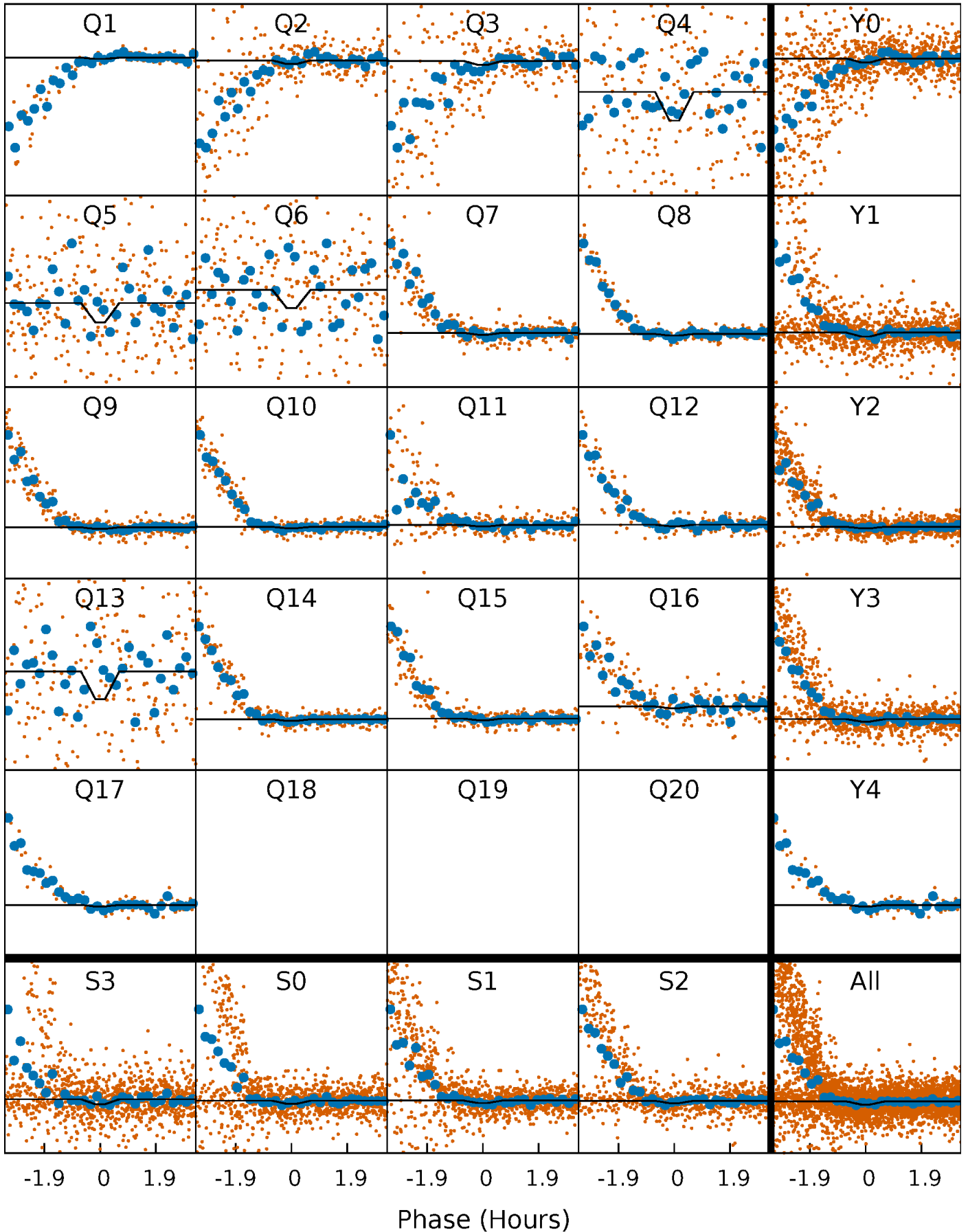
DV Quarter-Phased Transit Curves

TCE 008012437-04 P= 4.075089 Days $T_0=135.076650$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

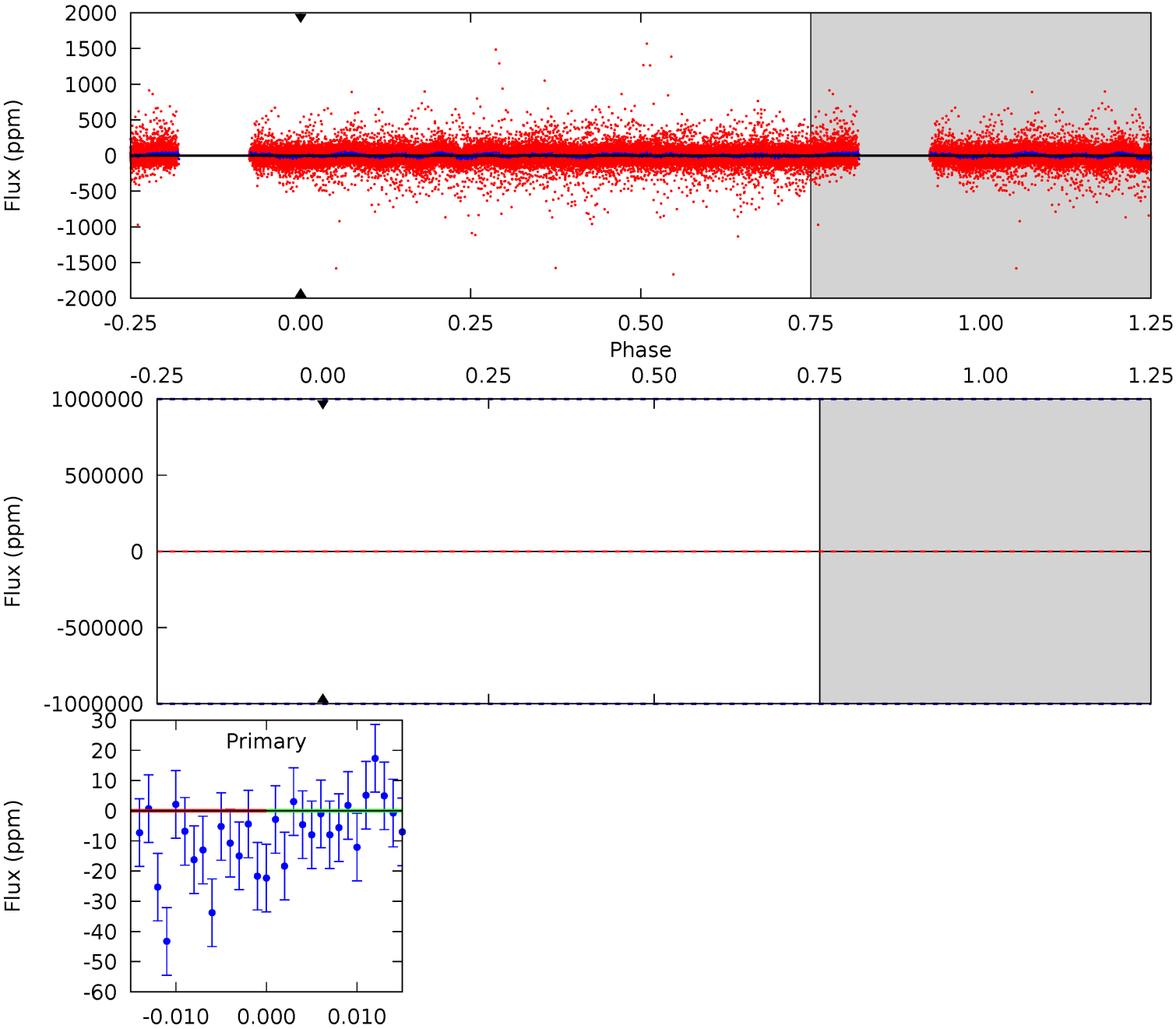
TCE 008012437-04 $P = 4.075089$ Days $T_0 = 135.412983$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-04, P = 4.075089 Days, E = 131.001561 Days

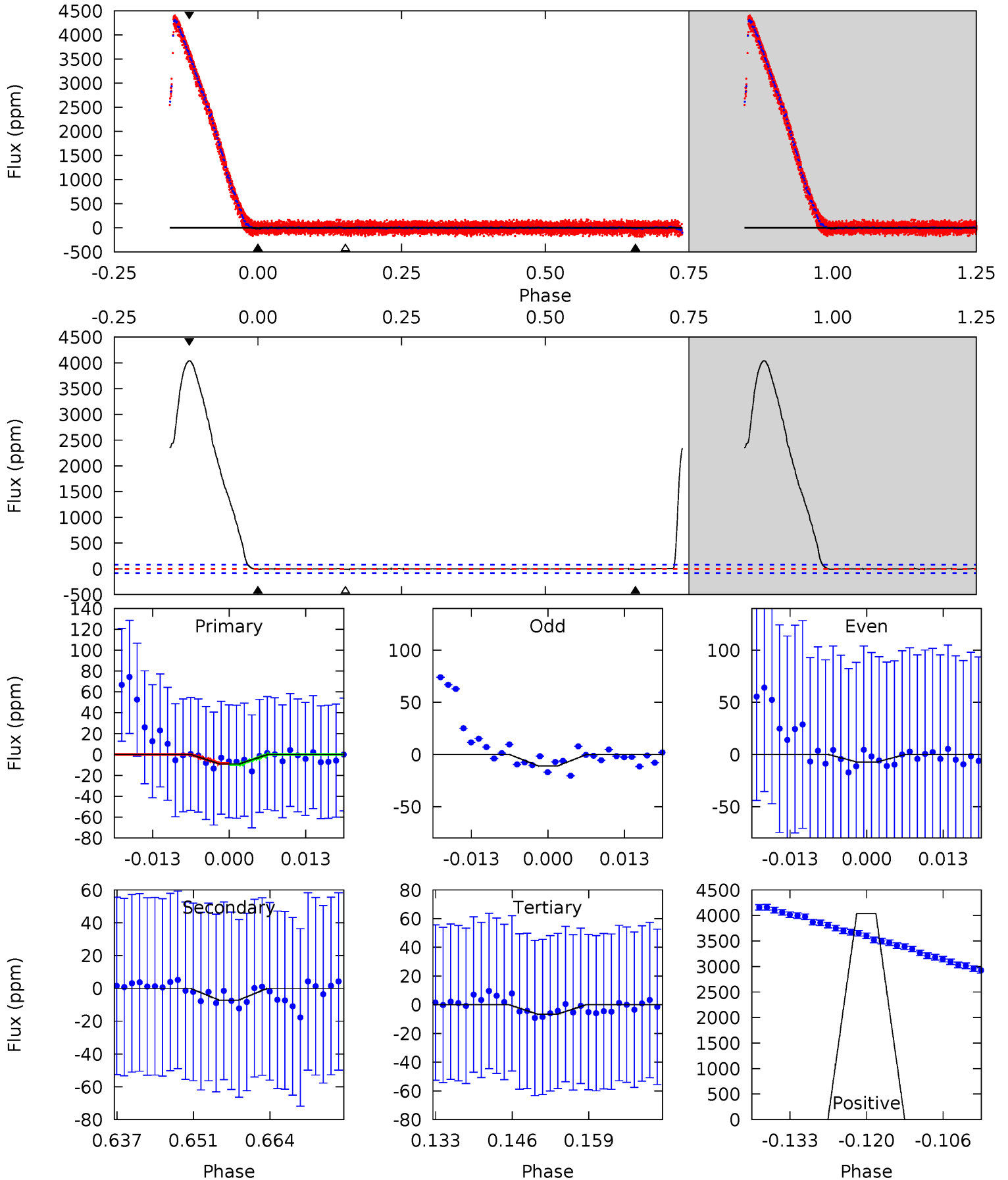
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008012437-04, P = 4.075089 Days, E = 131.337894 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.56	0.45	0.41	249.3	4.97	2.48	30.1	0.15	-248.7	0.04	-248.9	0.11	1.09	1.00	0.02



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$22.10^{+24.39}_{-15.81}$	3532^{+308}_{-402}	3726^{+66397}_{-52746}	$0.904^{+1078.938}_{-686.332}$
Alt.	-7 ± 16	$22.33^{+25.88}_{-15.65}$	3551^{+297}_{-431}	-3265^{+1136}_{-271}	$0.017^{+0.270}_{-0.059}$

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 $A_{obs} \gg 1.0$

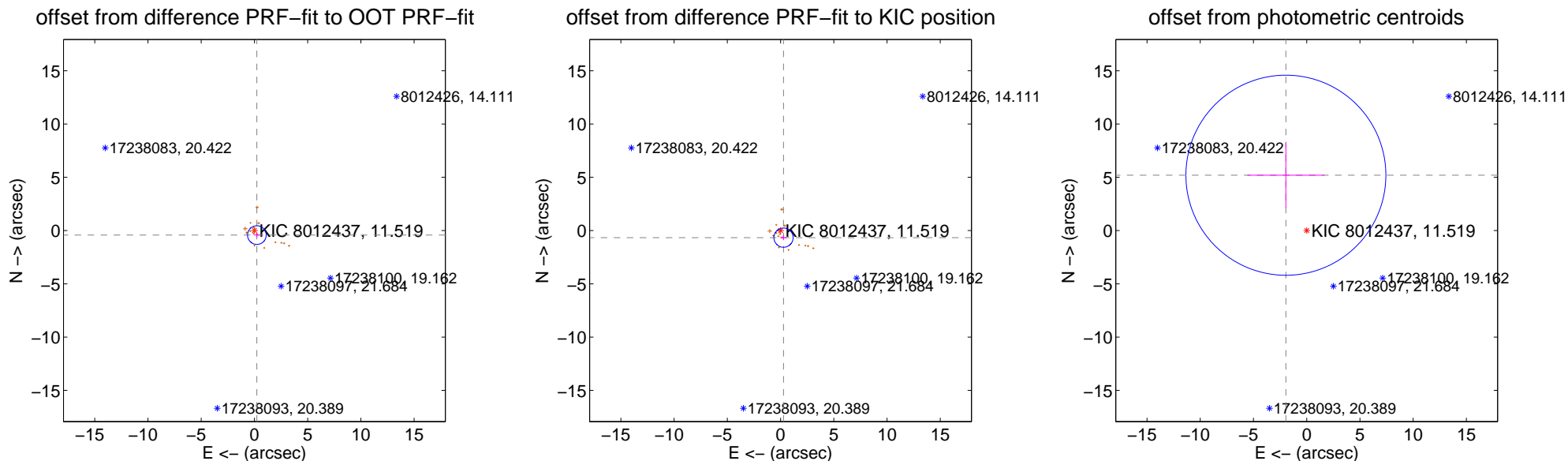
DV Centroid Data

Supplemental centroid analysis for 008012437-04. **Kepler magnitude: 11.52.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

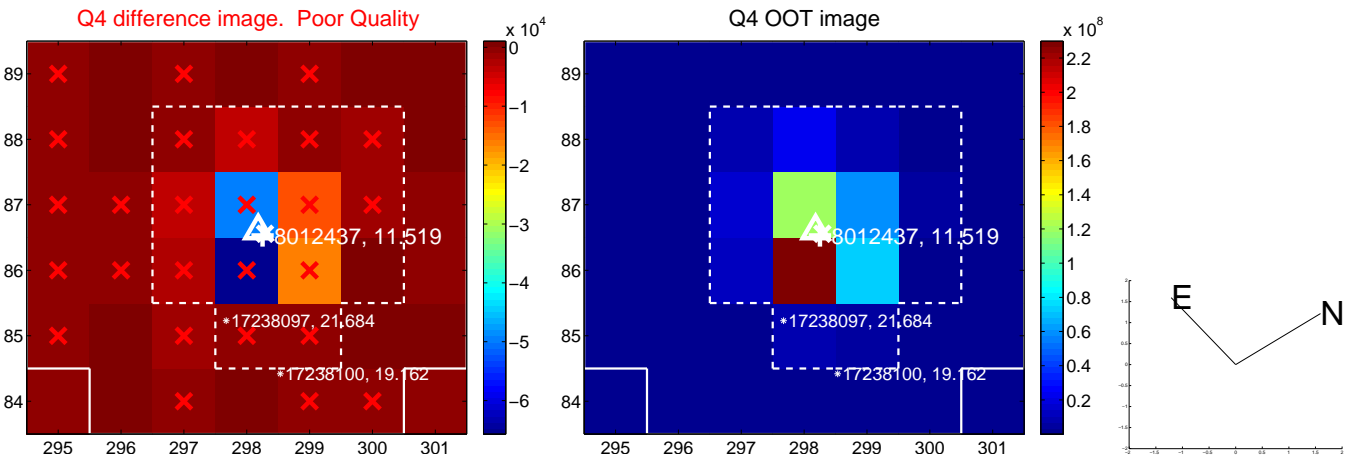
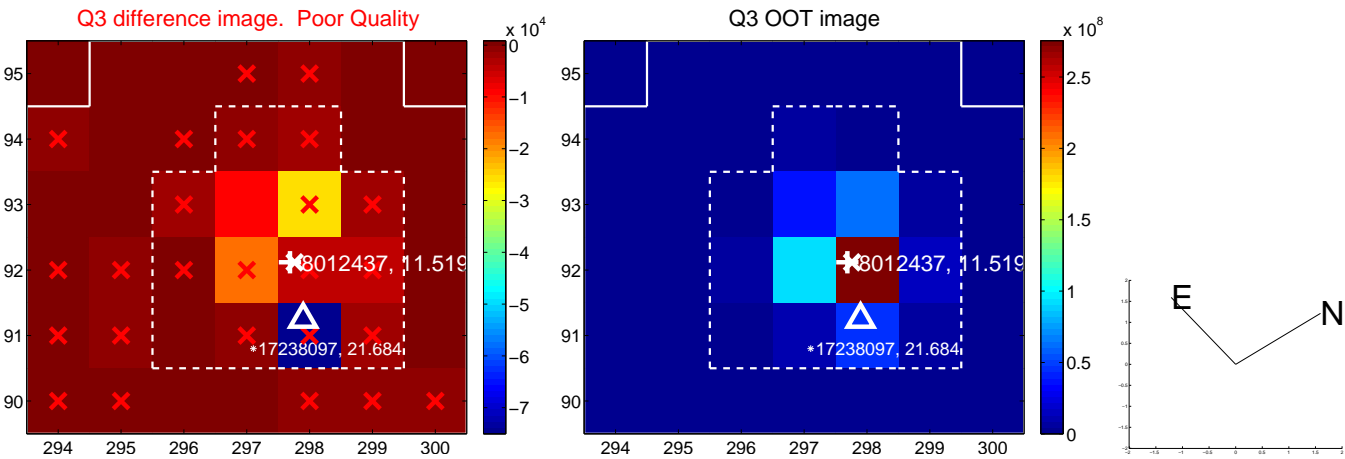
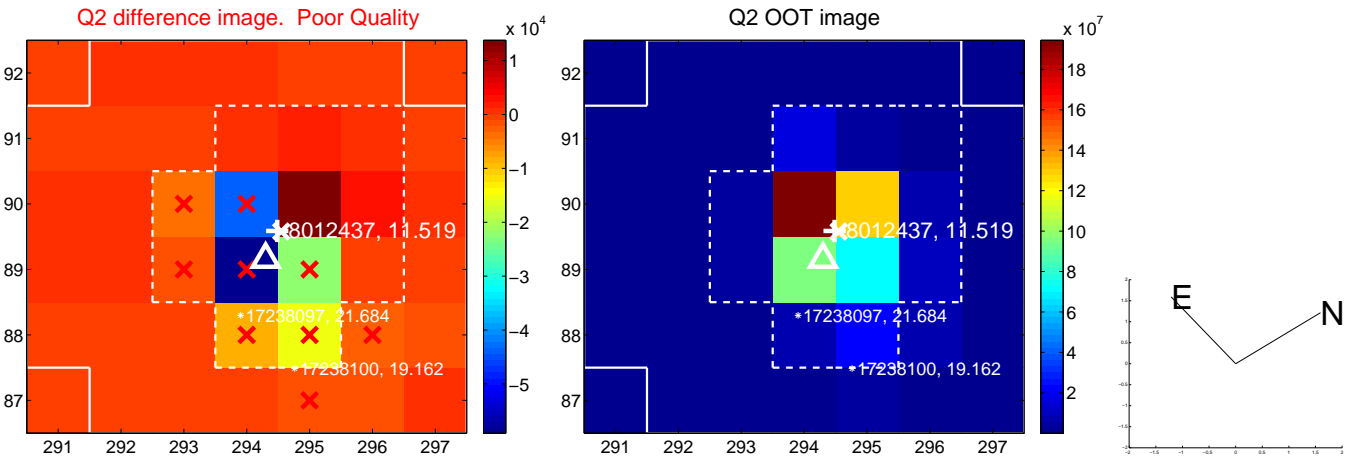
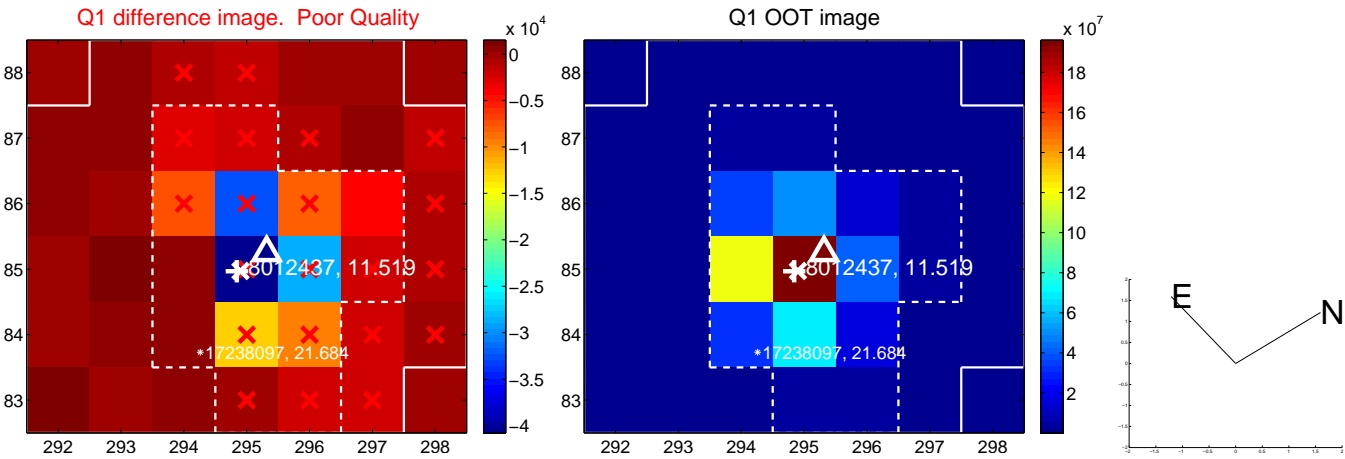
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.479 ± 0.292	1.64	-0.228 ± 0.294	-0.421 ± 0.224
PRF-fit source offset from KIC position	0.720 ± 0.301	2.39	-0.278 ± 0.308	-0.664 ± 0.235
photometric centroid source offset	5.55 ± 3.13	1.77	1.95 ± 3.62	5.20 ± 3.05

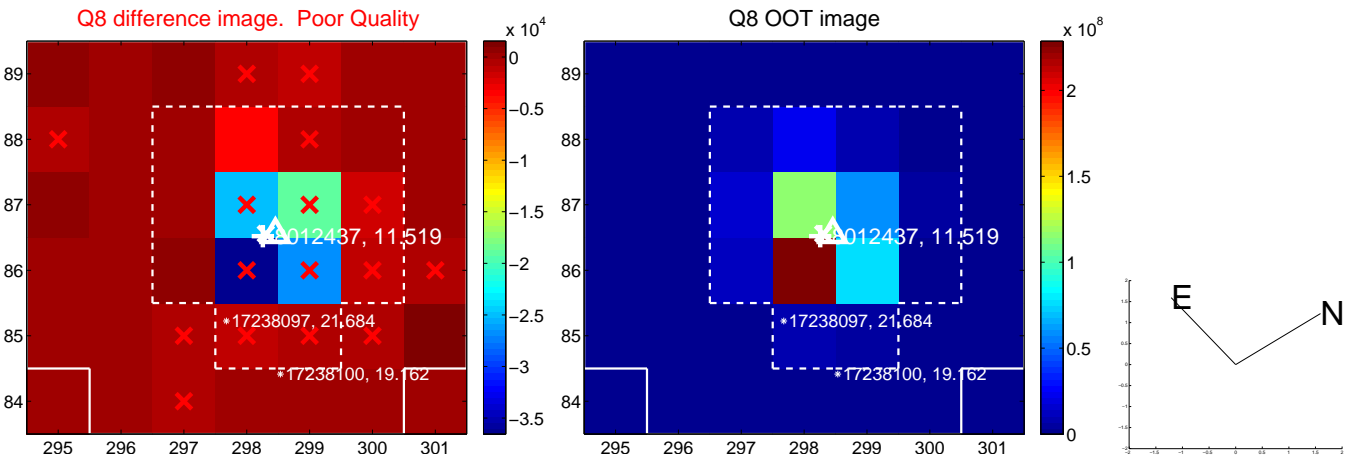
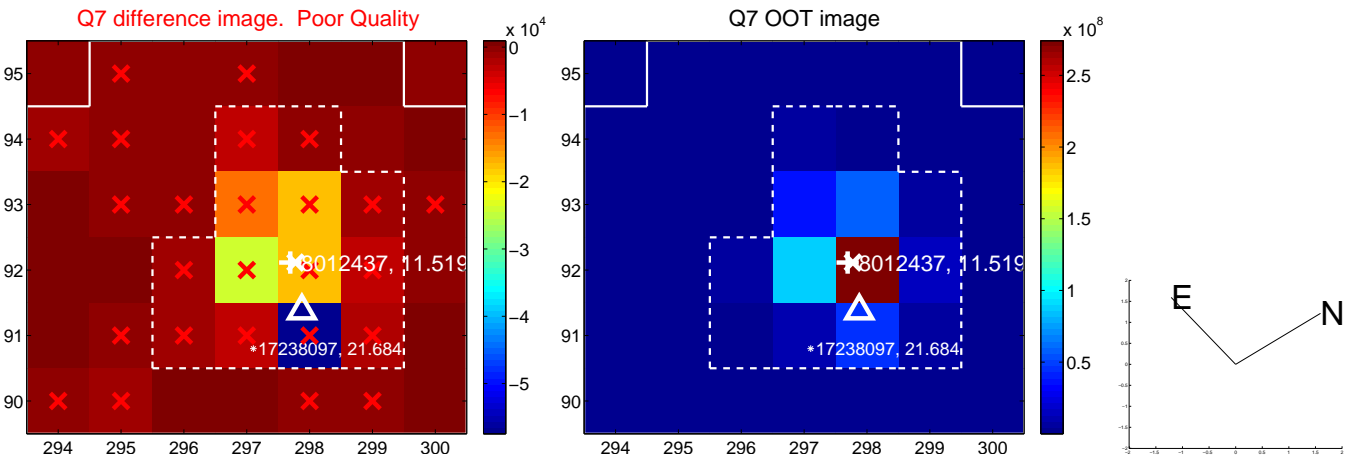
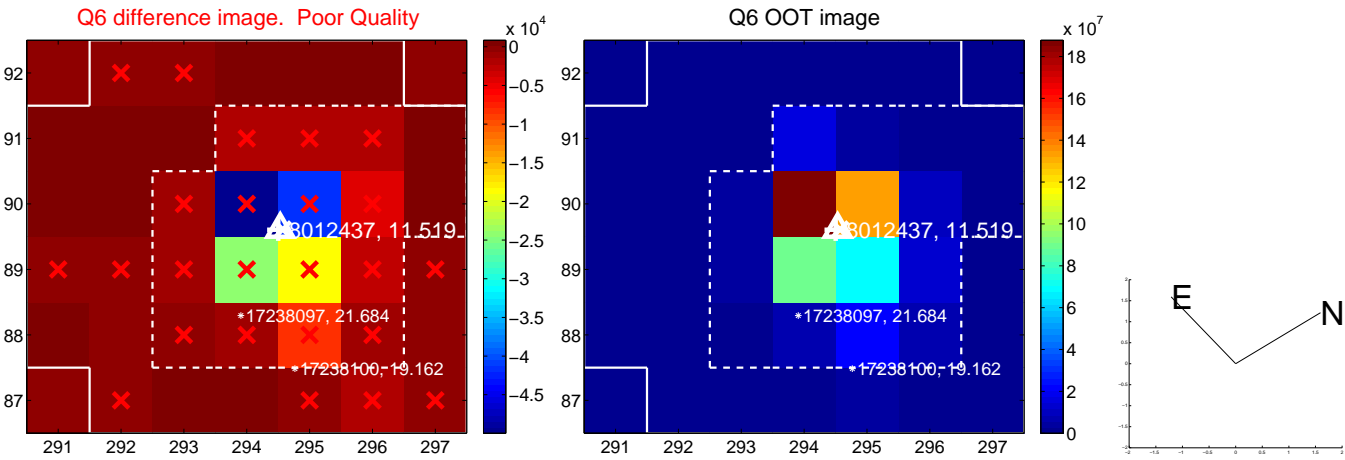
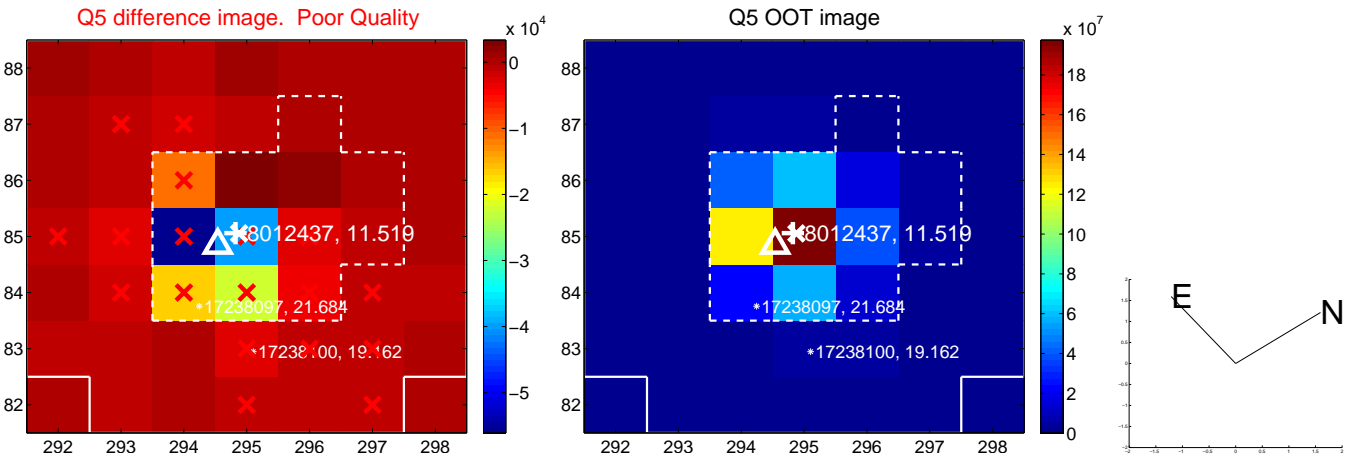


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

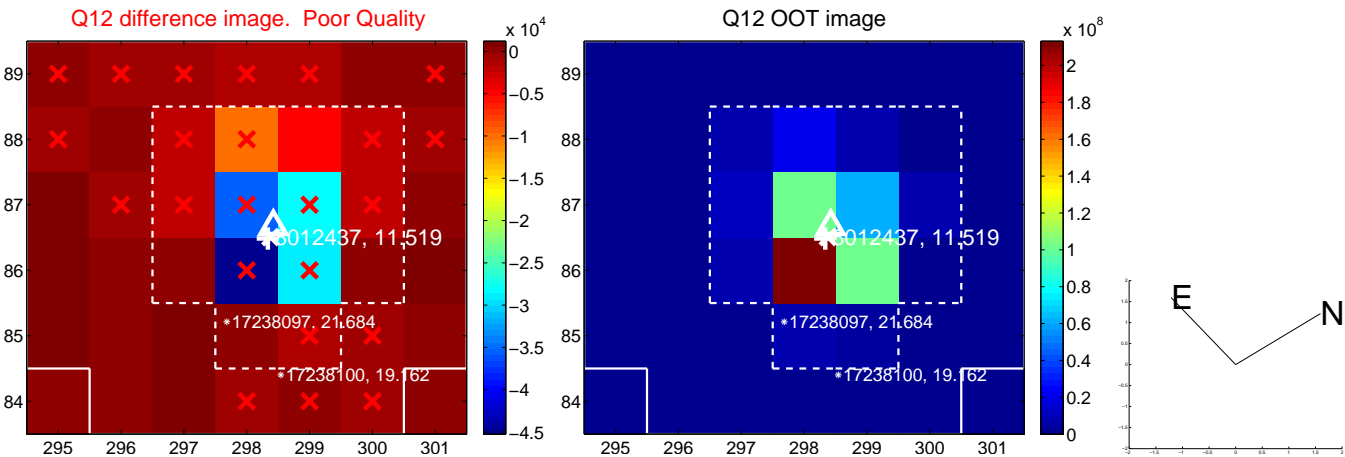
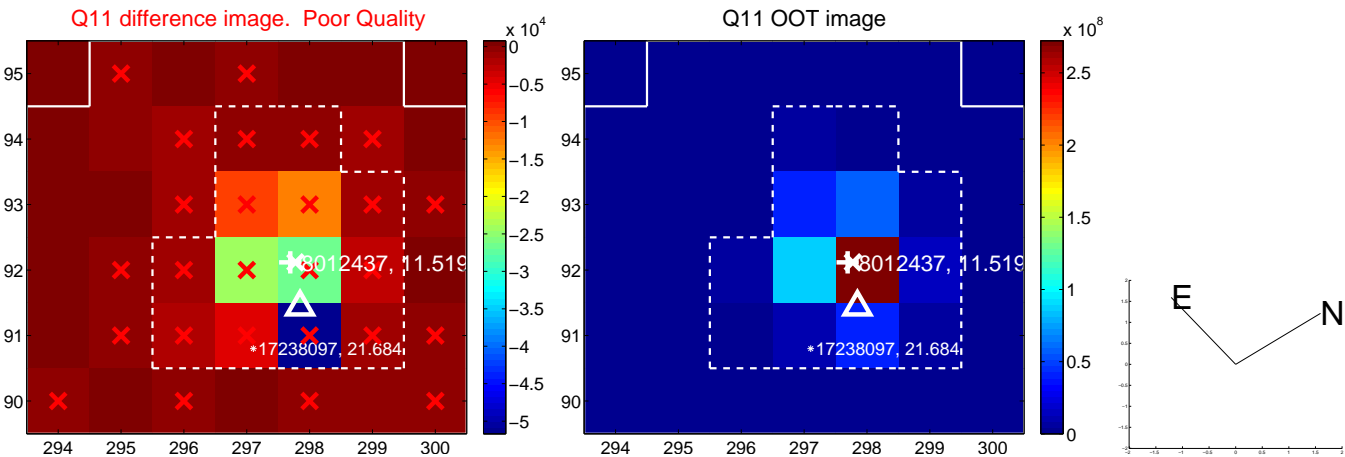
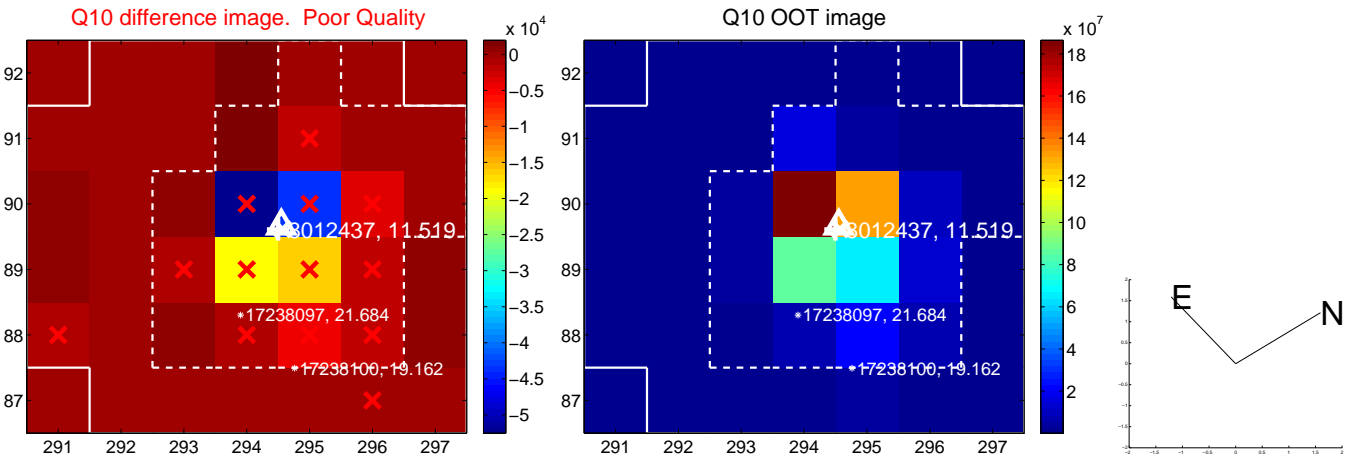
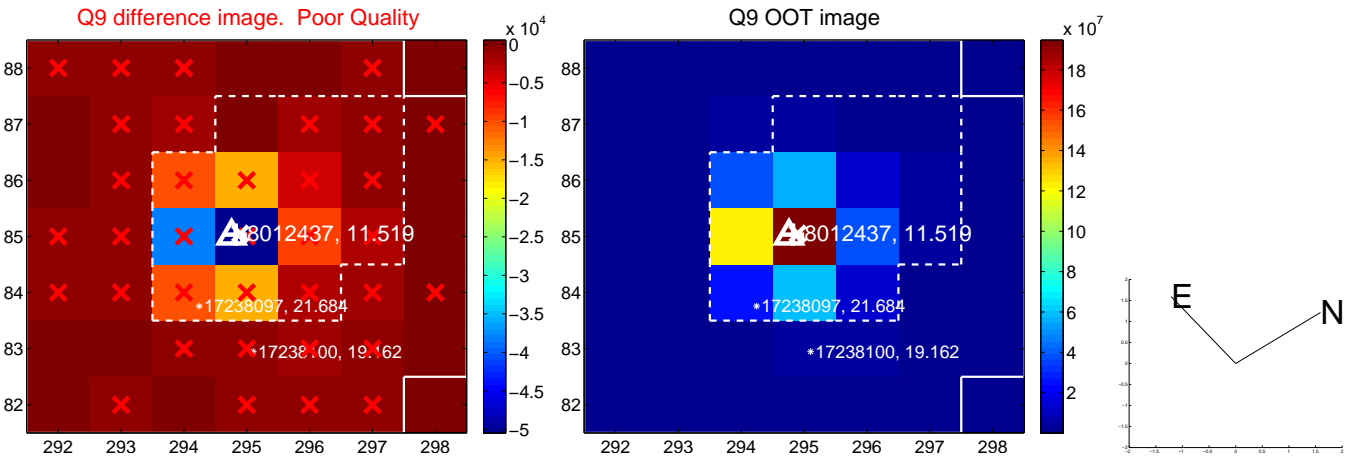
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



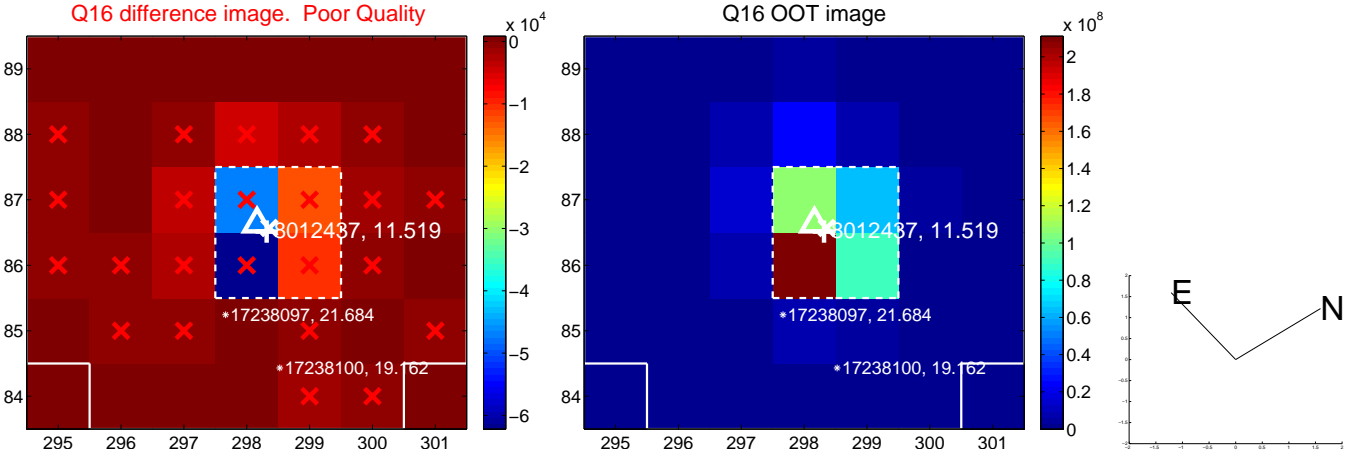
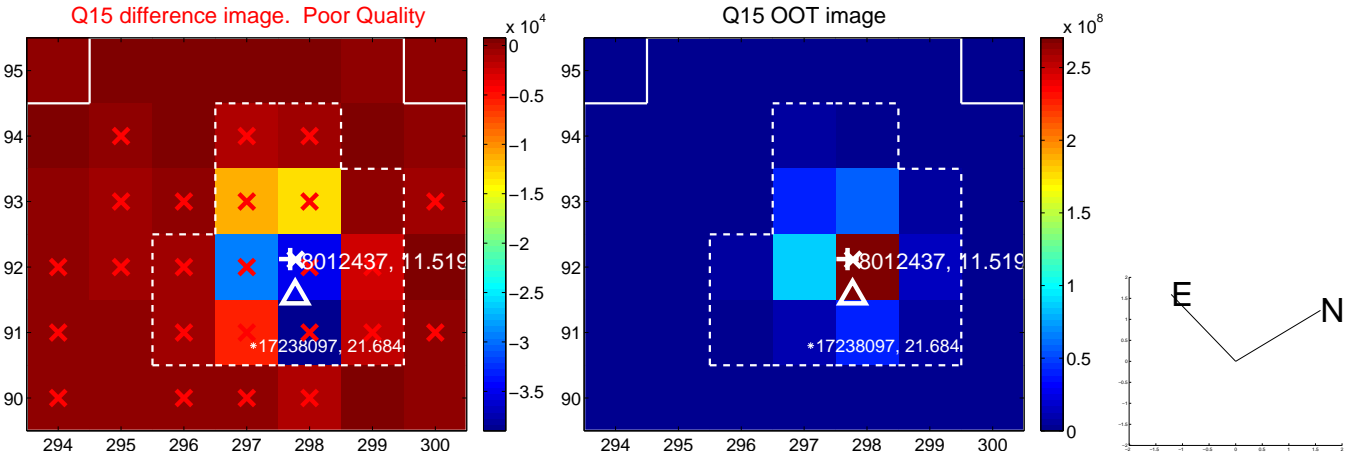
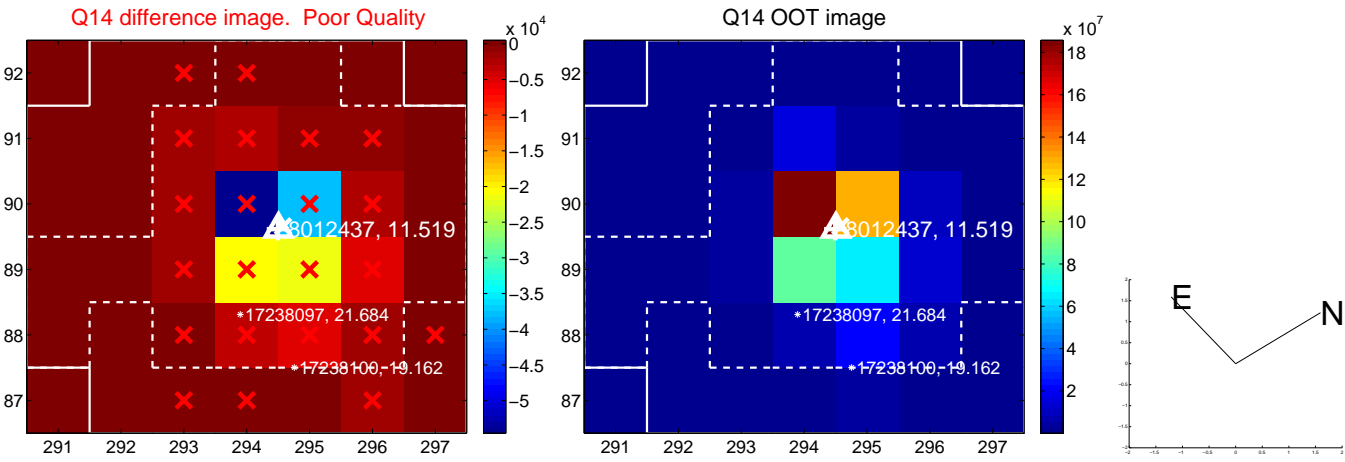
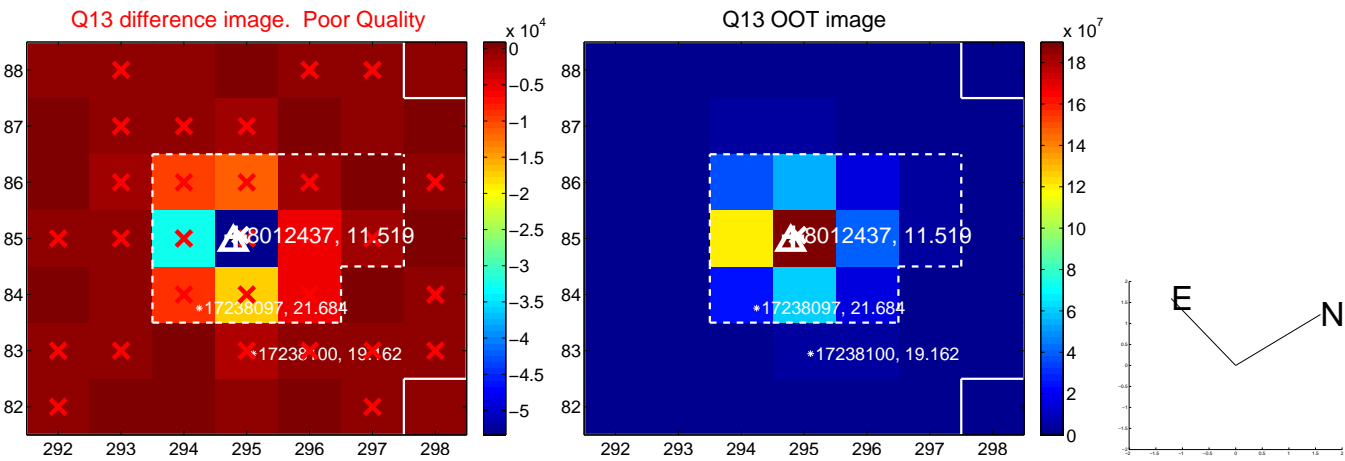
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



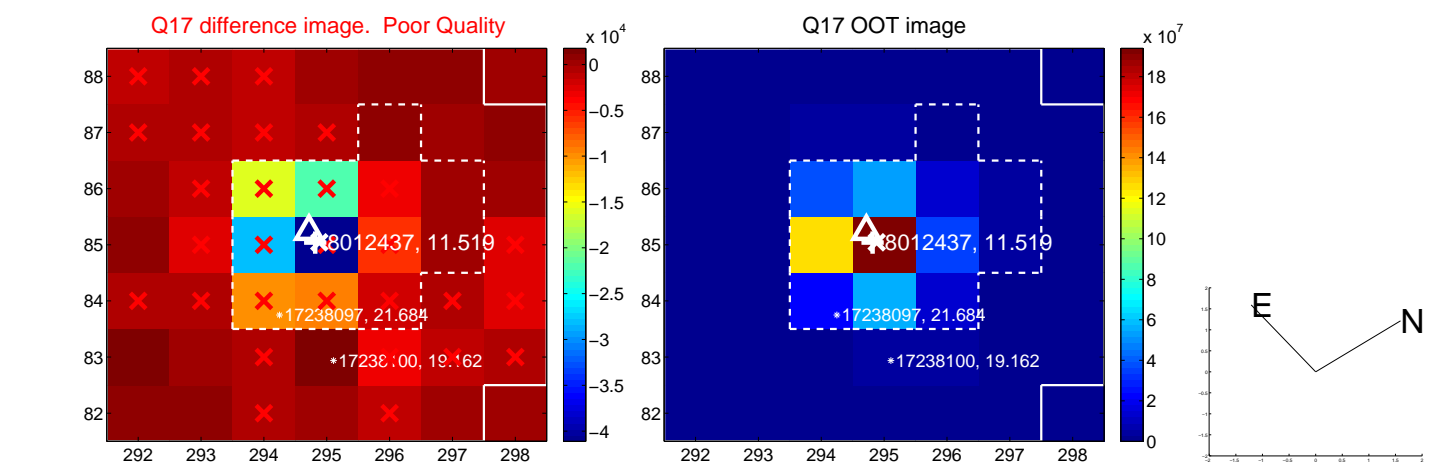
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



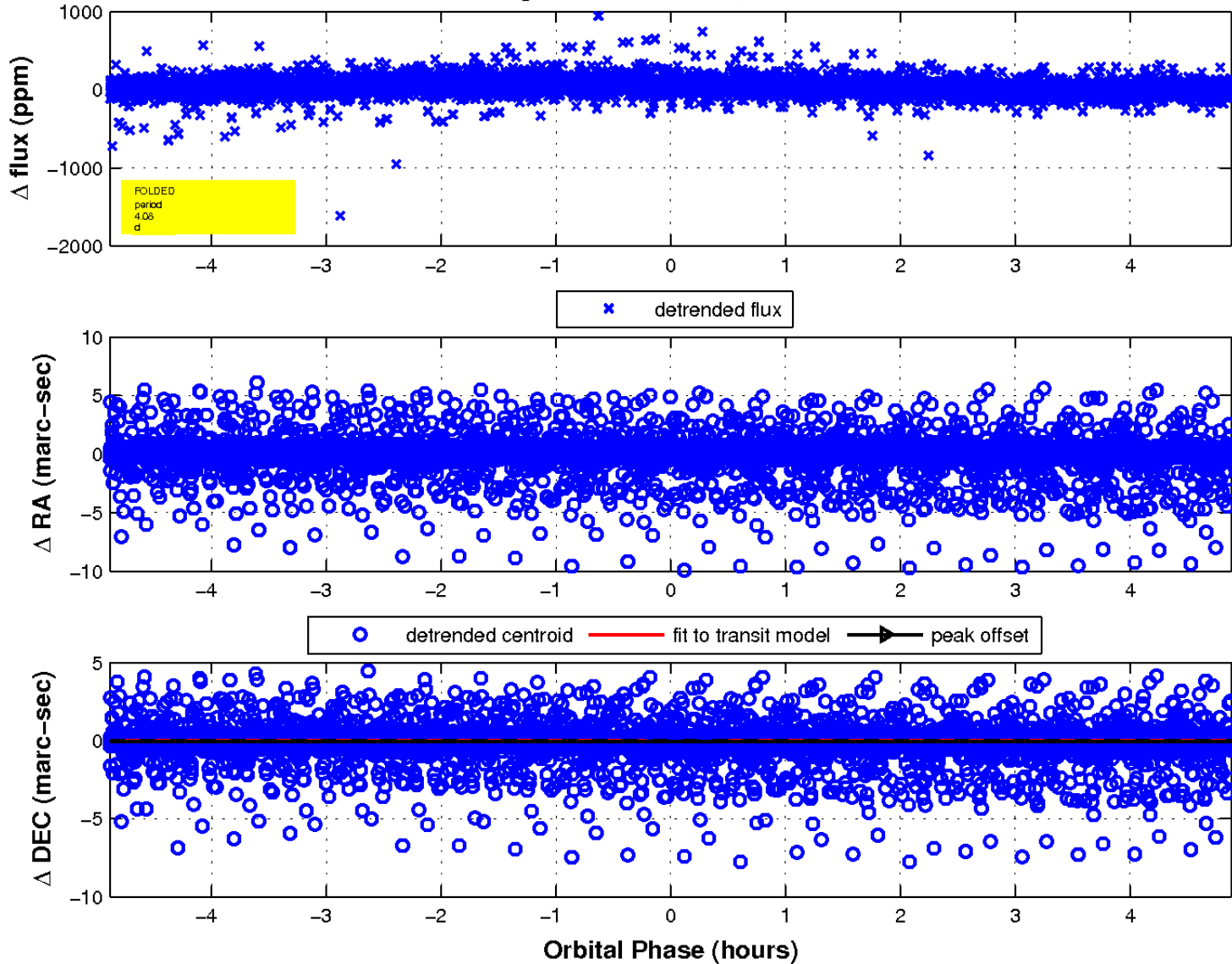
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



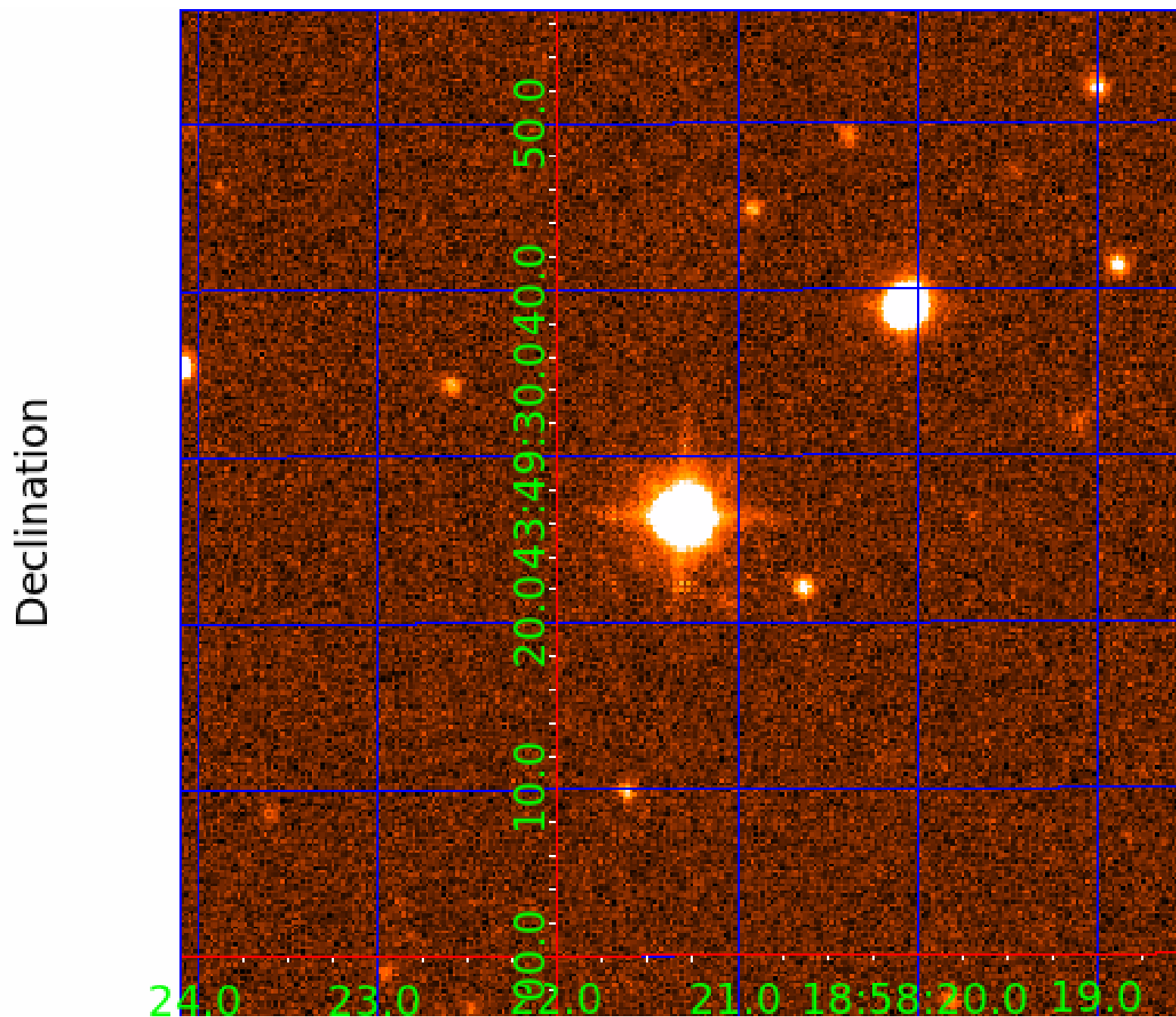
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 4 of 6



UKIRT Image



KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

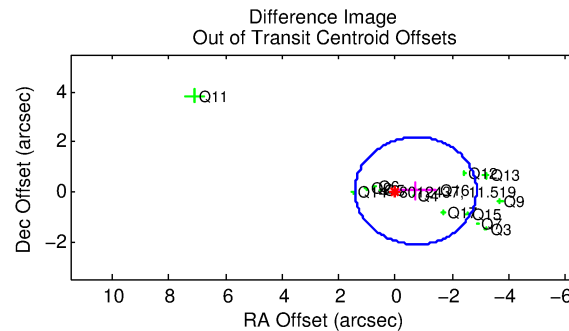
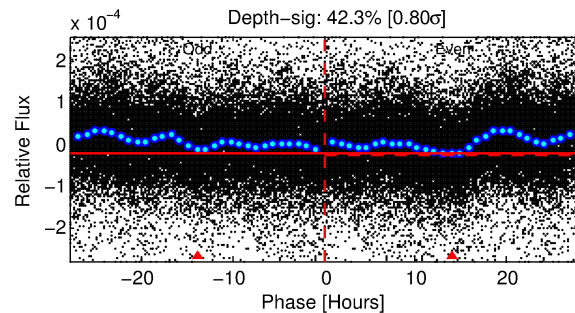
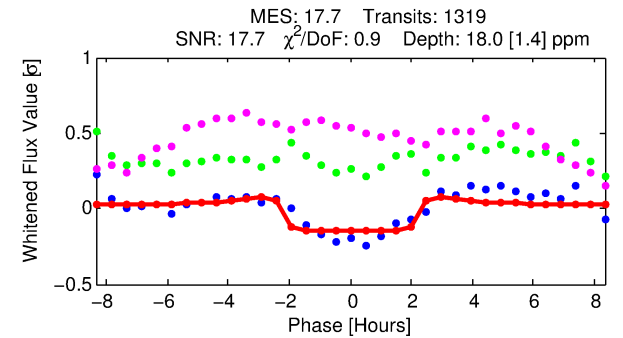
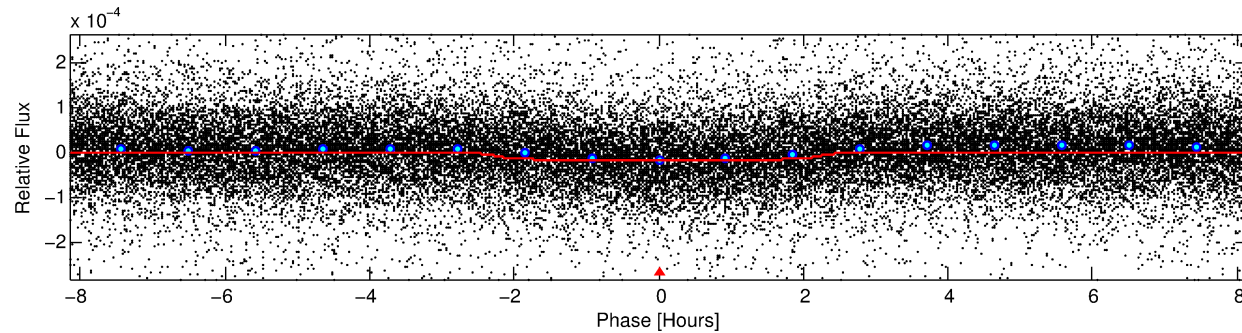
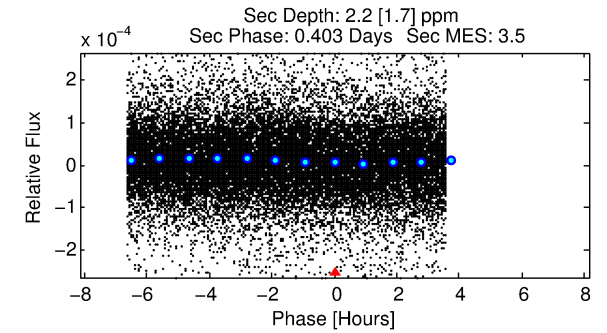
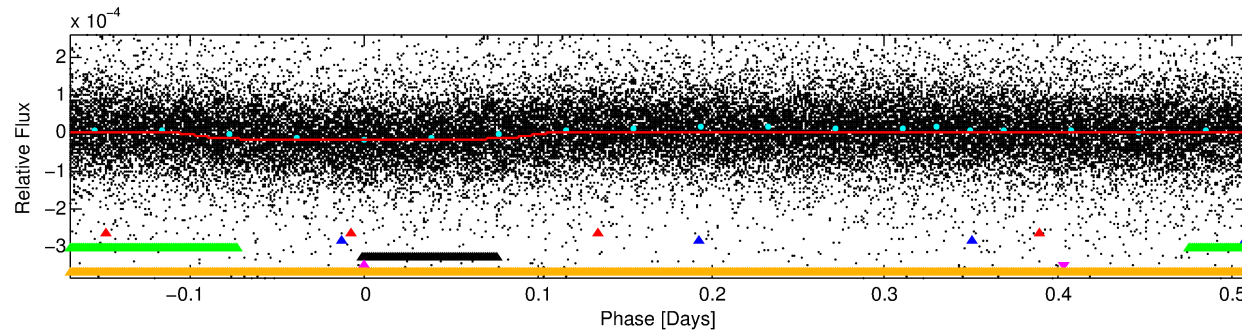
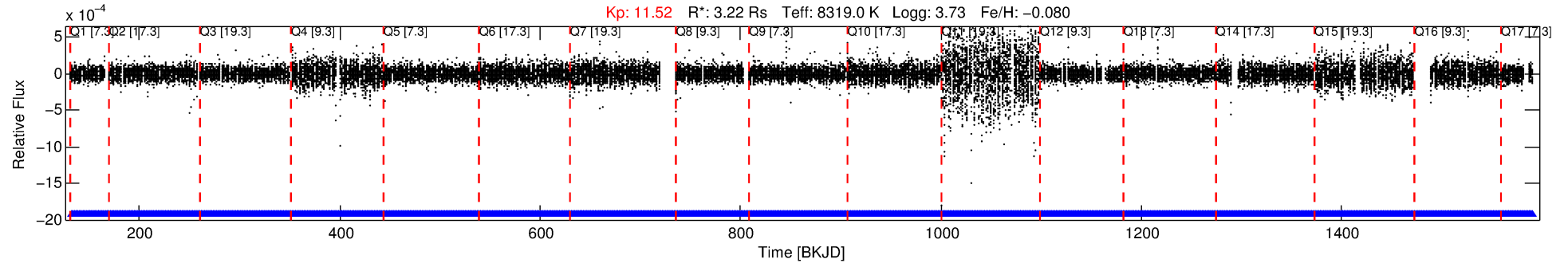
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-05

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 5 of 6 Period: 0.679 d



DV Fit Results:

Period = 0.67915 [0.00001] d
Epoch = 132.0184 [0.0019] BKJD
Rp/R* = 0.0040 [0.0013]
a/R* = 1.26 [0.86]
b = 0.33 [5.14]
Seff = 120330.49 [89268.58]
Teq = 4749 [881] K
Rp = 1.40 [0.76] Re
a = 0.0192 [0.0085] AU
Ag = 0.23 [0.28] [-2.77σ]
Teffp = 5067 [1289] K [0.20σ]

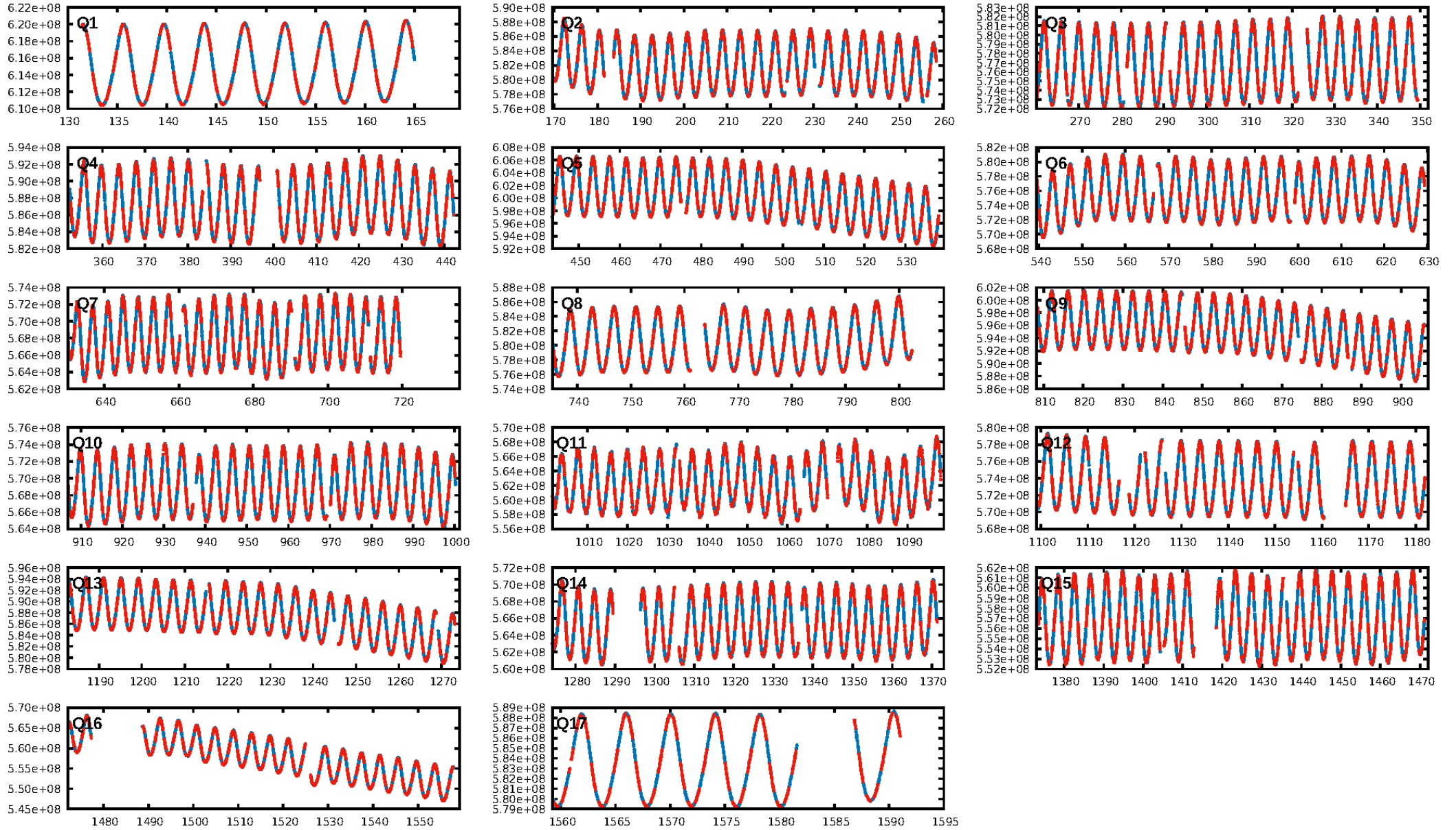
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.5% [2.80σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1259/1259]
GhostDiagnostic-chr: 0.1811
Centroid-sig: N/A
Centroid-so: 0.539 arcsec [1.51σ]
OotOffset-rm: 0.726 arcsec [1.01σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-rm: 0.632 arcsec [0.79σ]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 0.79 [11/14]
DiffImageOverlap-fno: 0.59 [10/17]

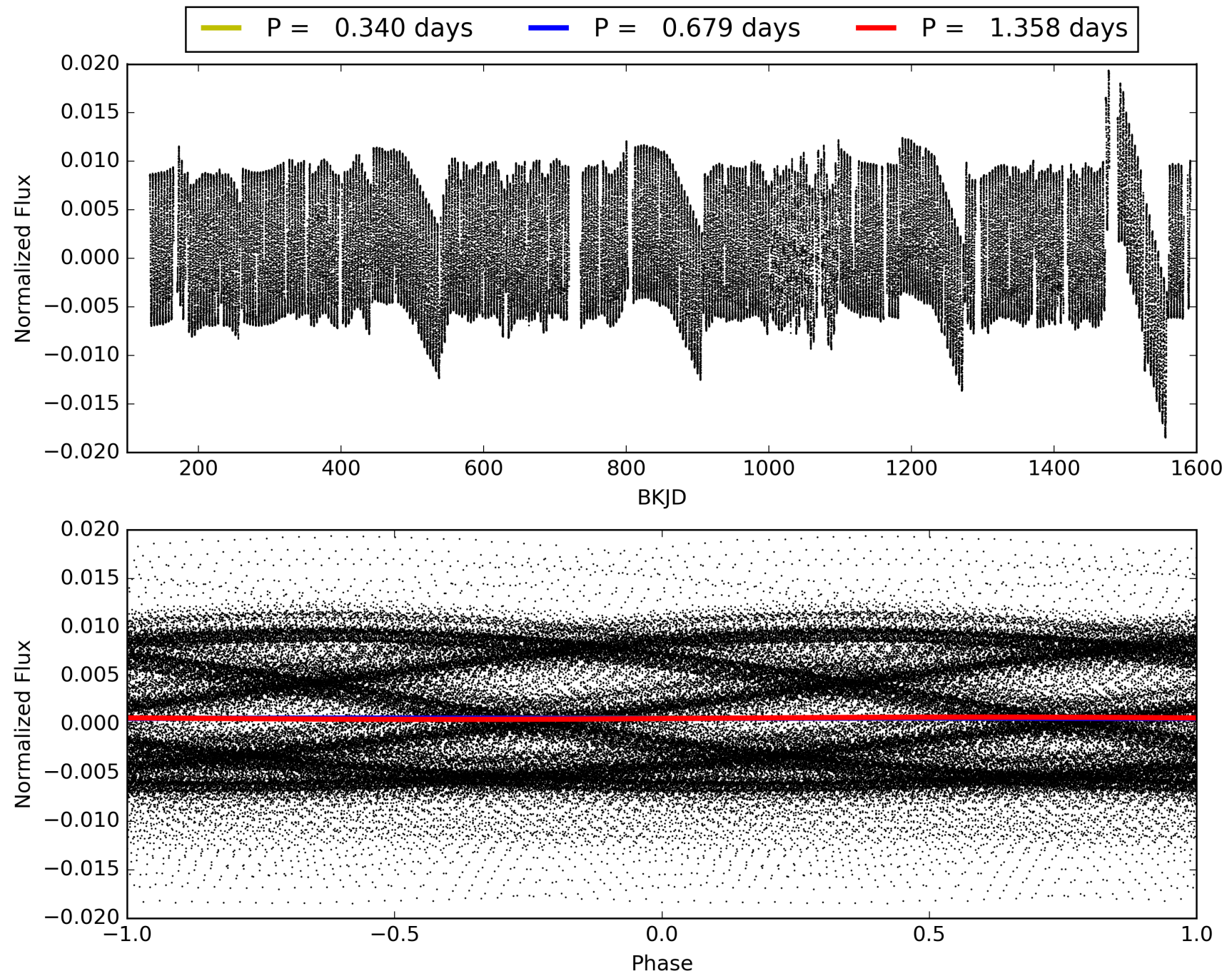
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:14:05 Z

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

TCE 008012437-05, PDC Light Curves

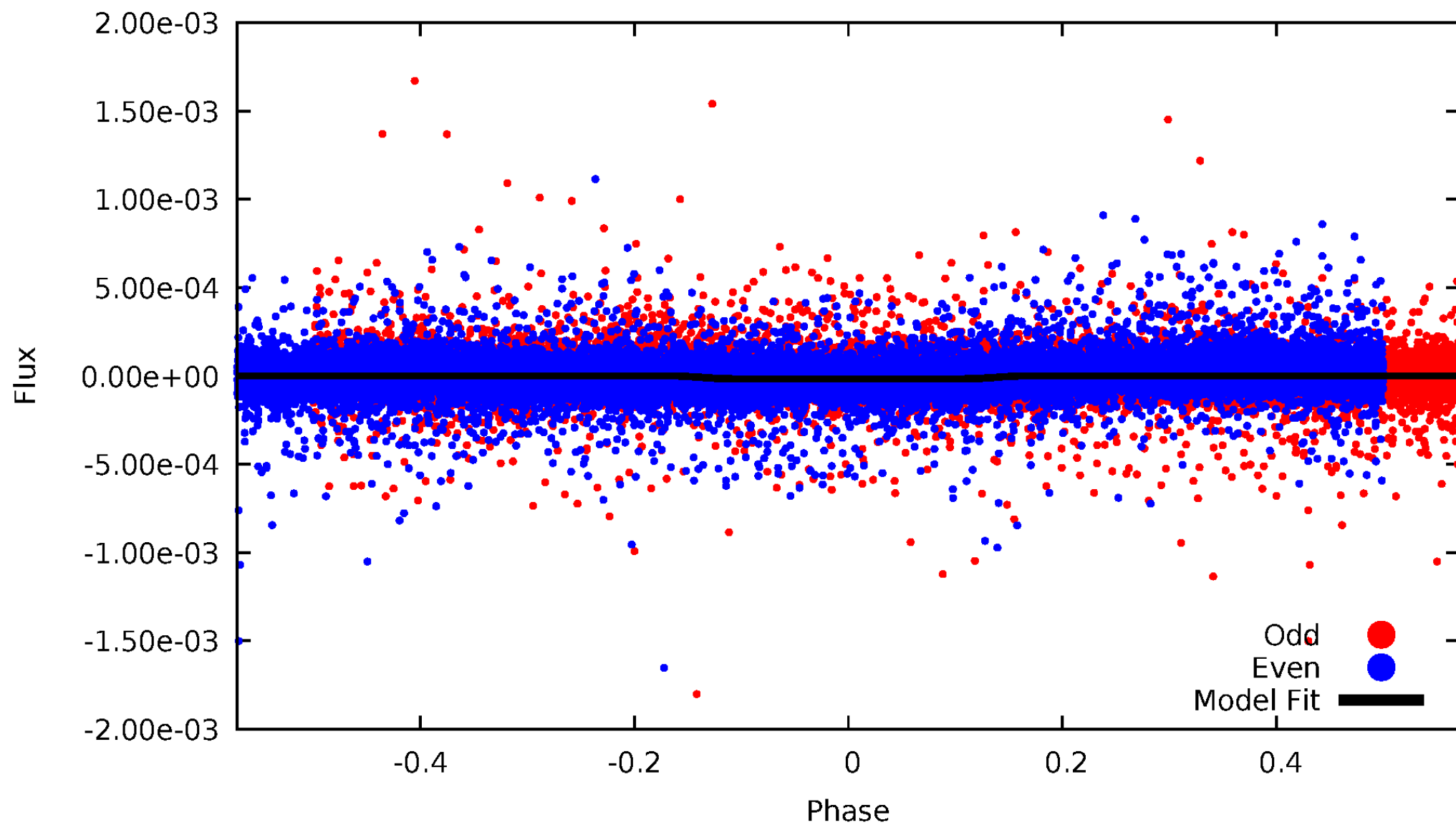


TCE 008012437-05



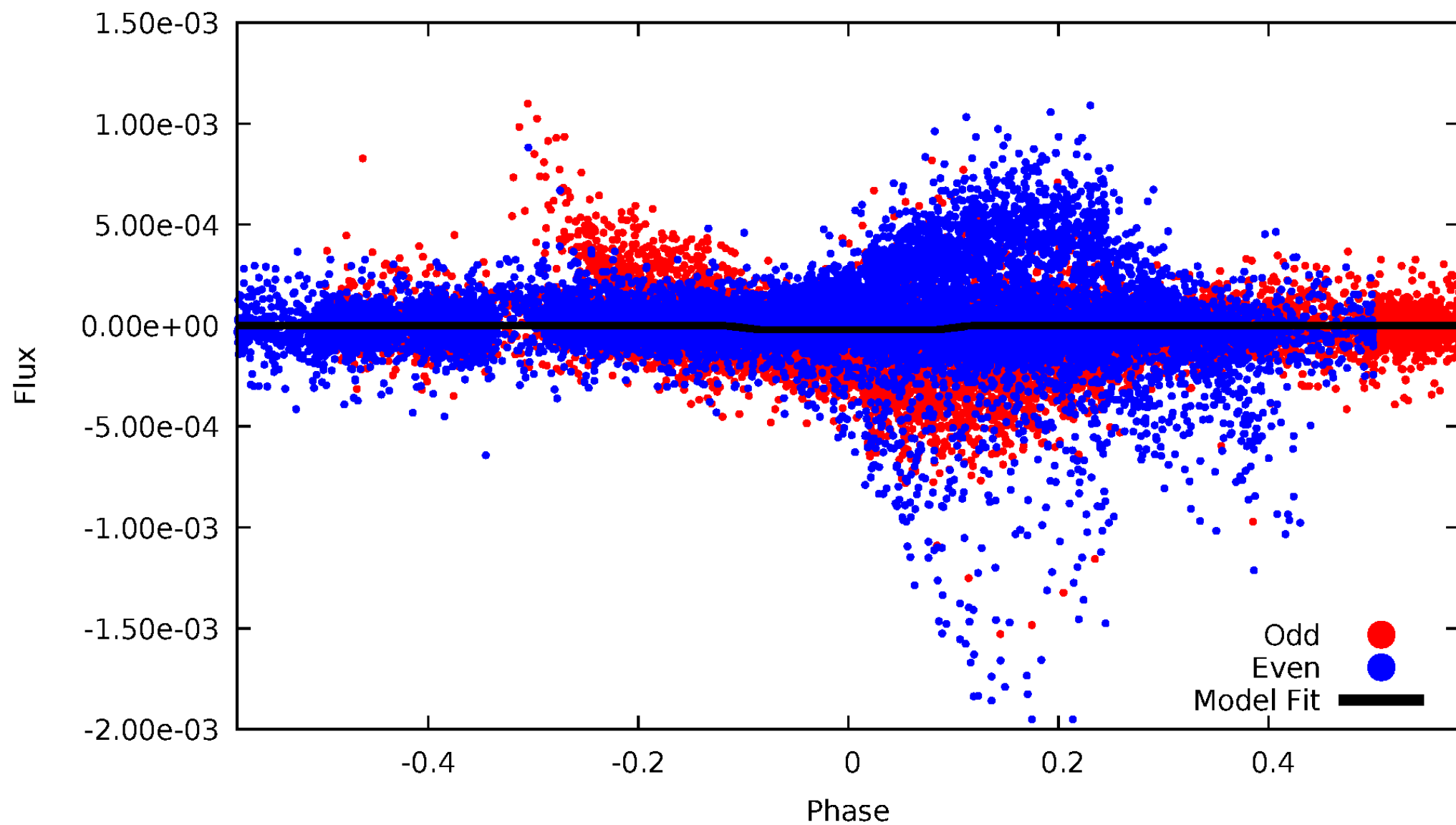
DV Odd/Even

TCE 008012437-05



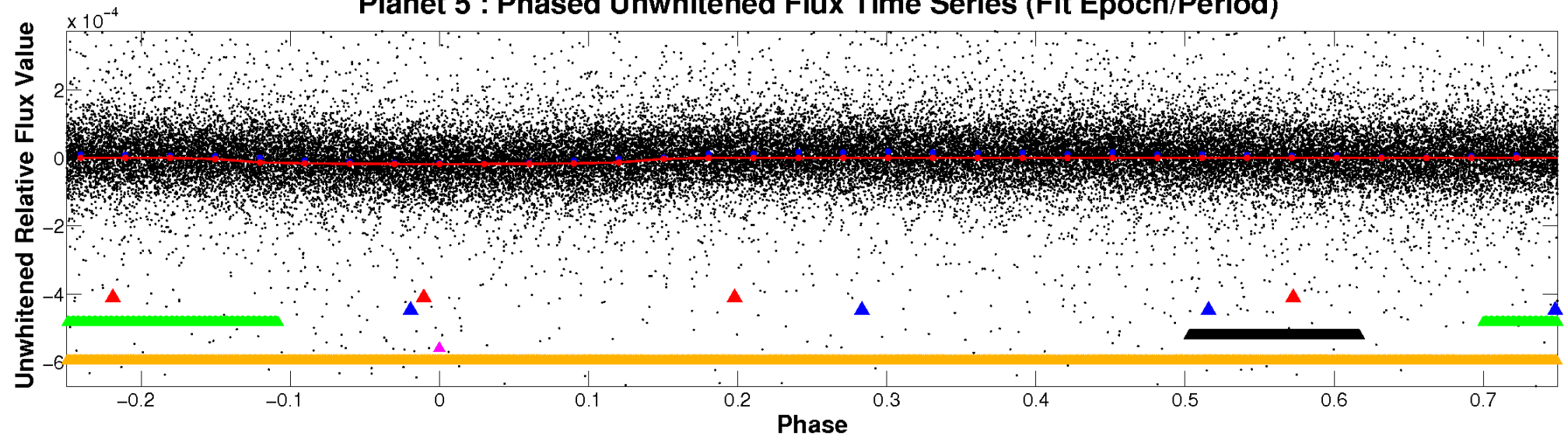
ALT Odd/Even

TCE 008012437-05

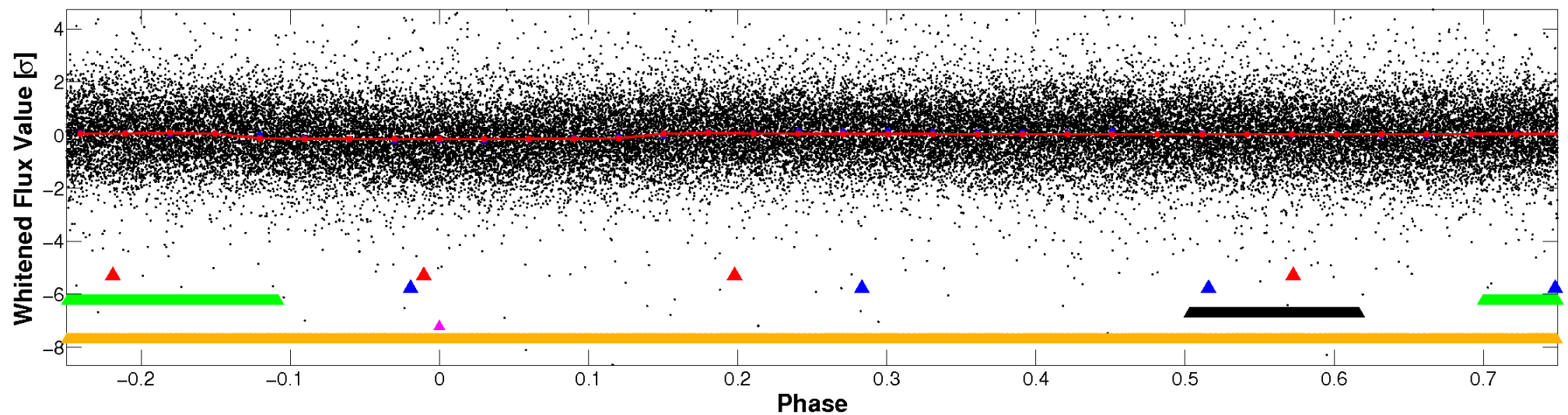


Non-Whitened Vs. Whitened Light Curve

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

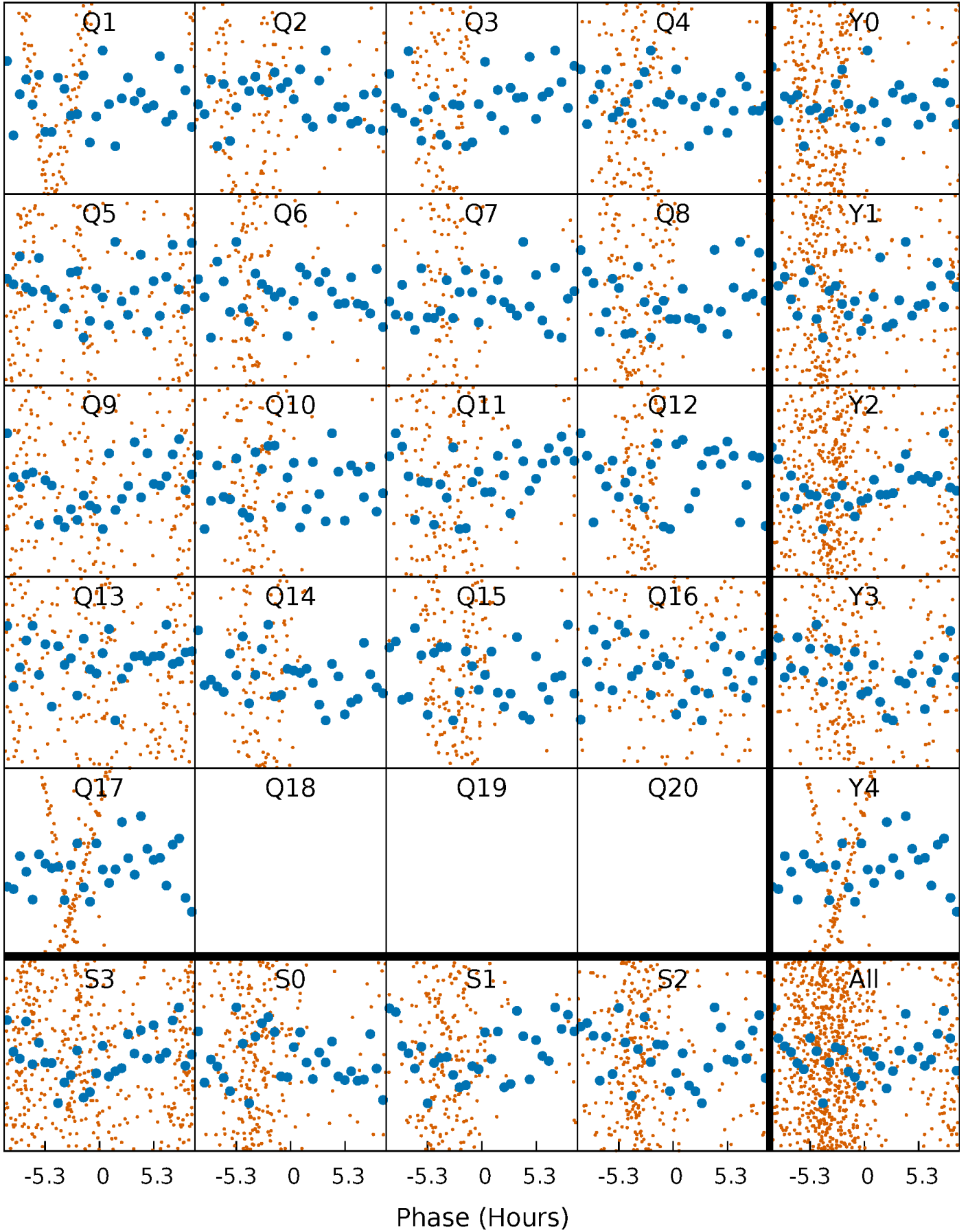


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



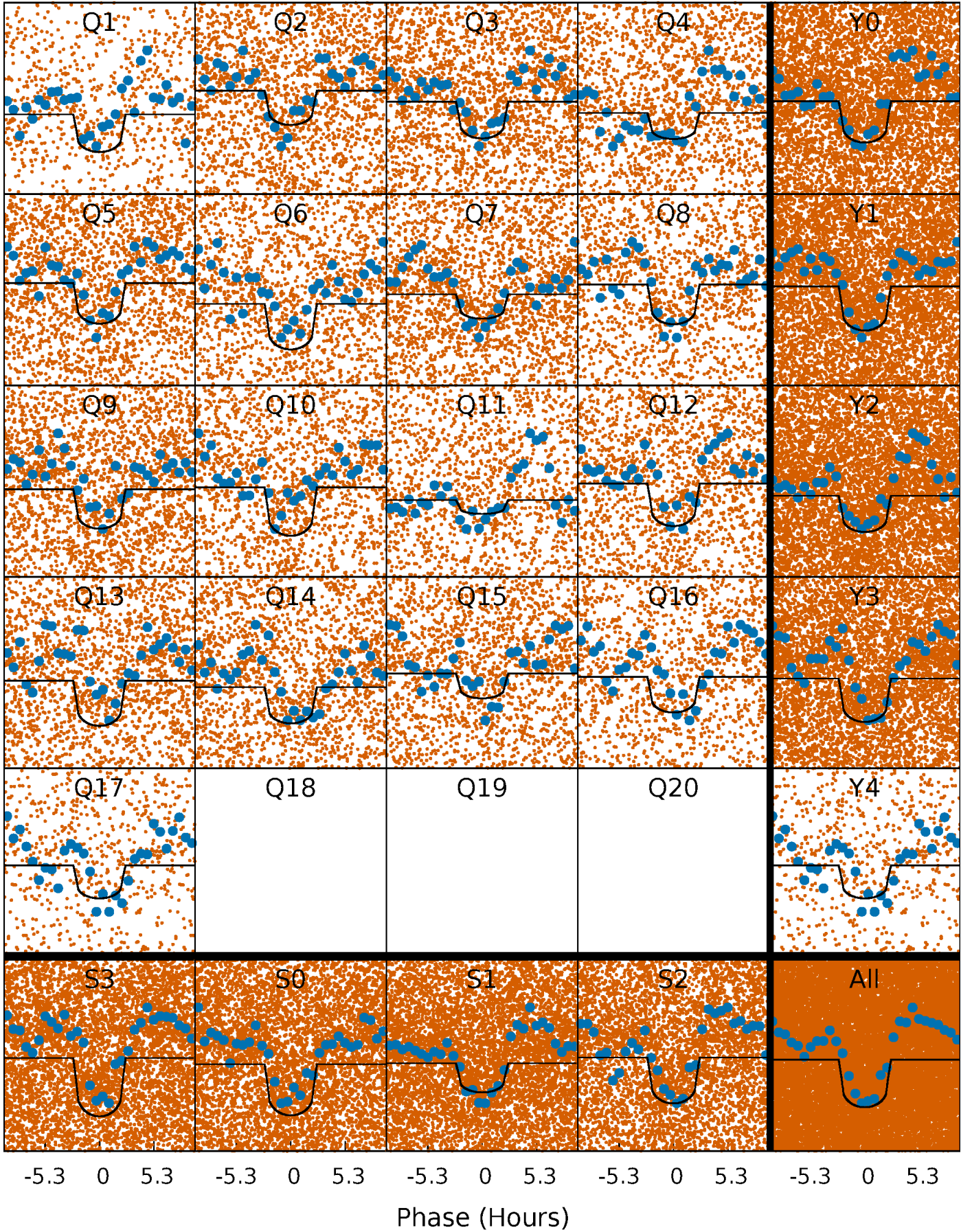
PDC Quarter-Phased Transit Curves

TCE 008012437-05 $P = 0.679146$ Days $T_0 = 132.018429$ (BKJD)



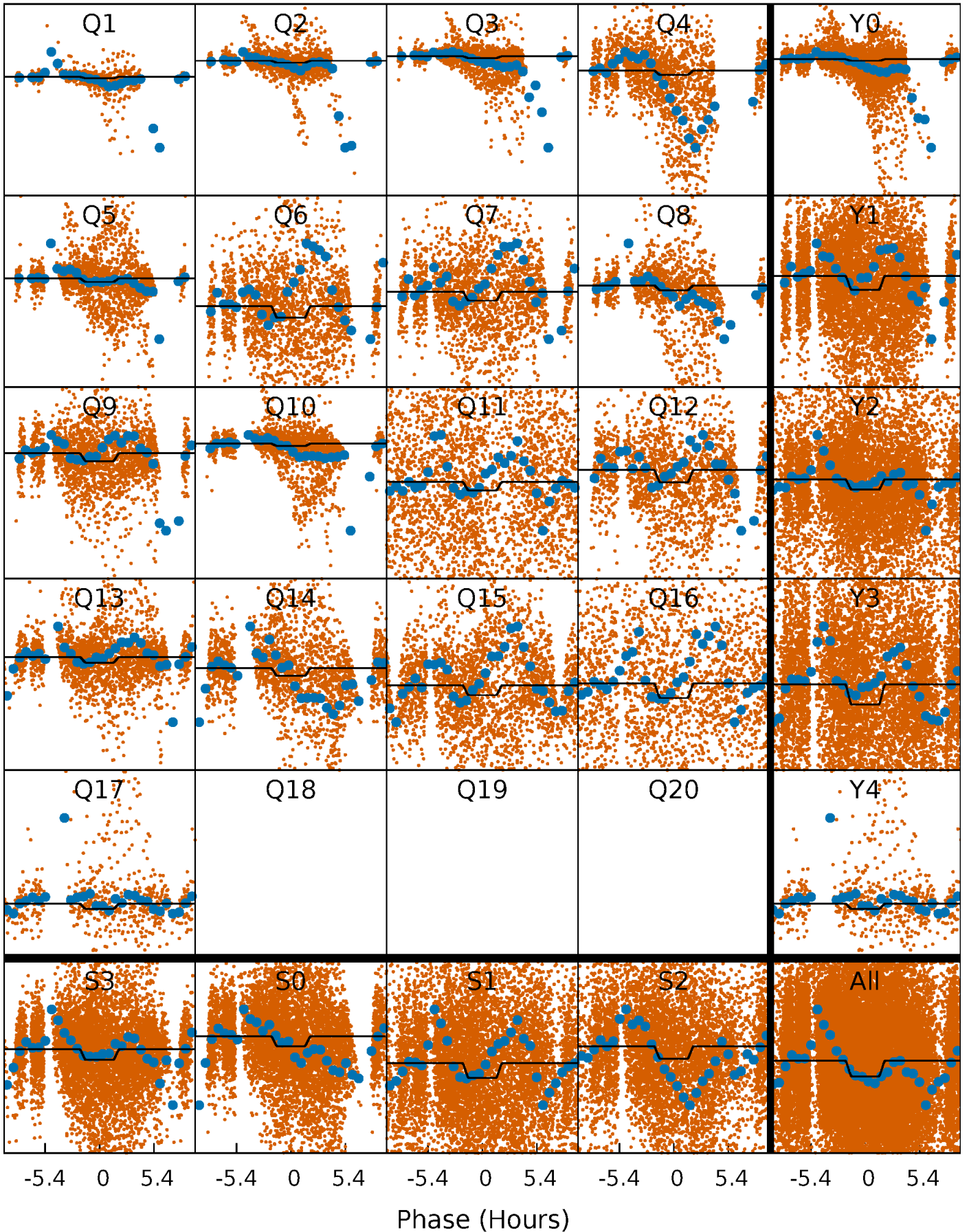
DV Quarter-Phased Transit Curves

TCE 008012437-05 $P = 0.679146$ Days $T_0 = 132.018429$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

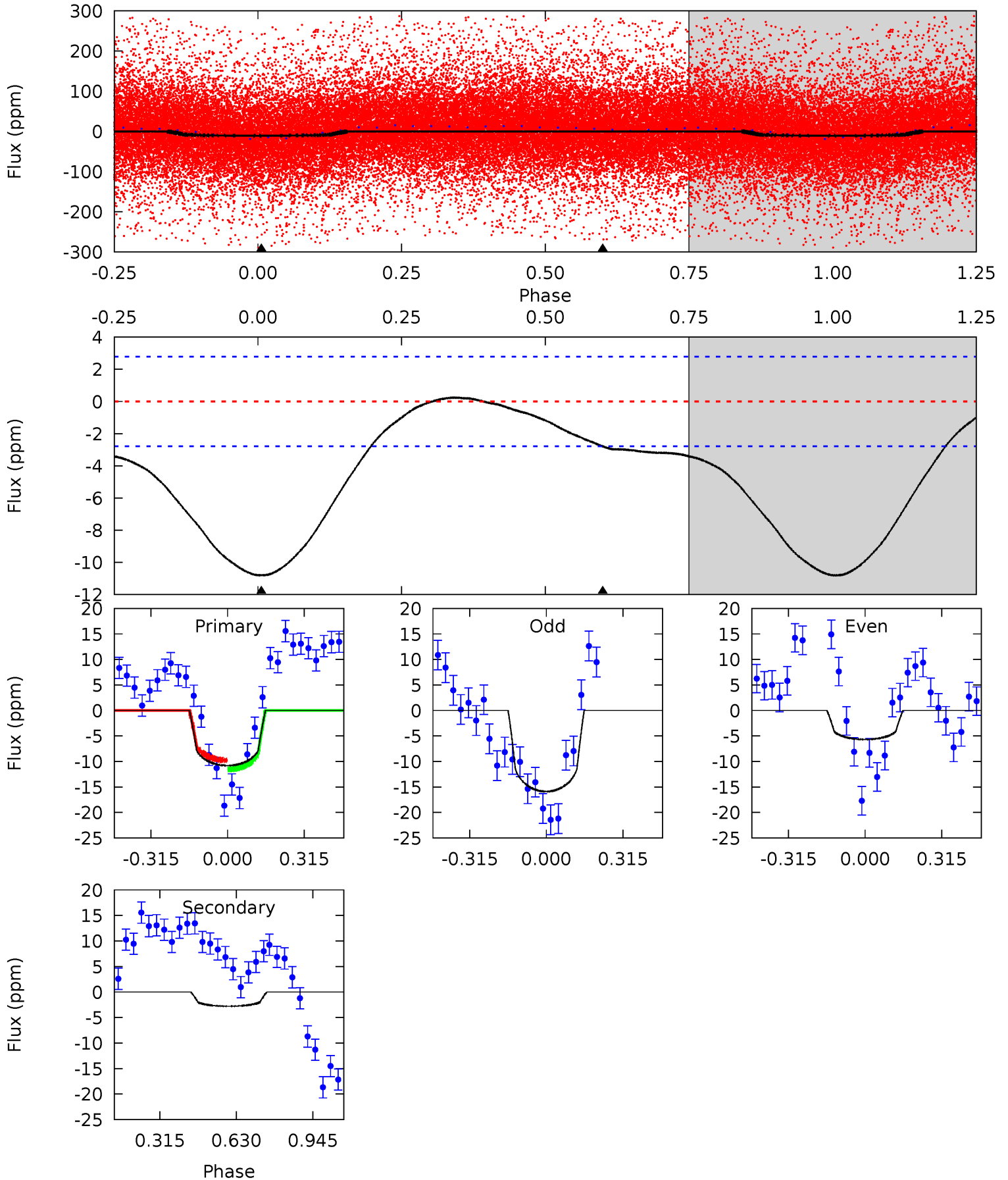
TCE 008012437-05 $P = 0.679171$ Days $T_0 = 131.914258$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-05, P = 0.679146 Days, E = 131.339283 Days

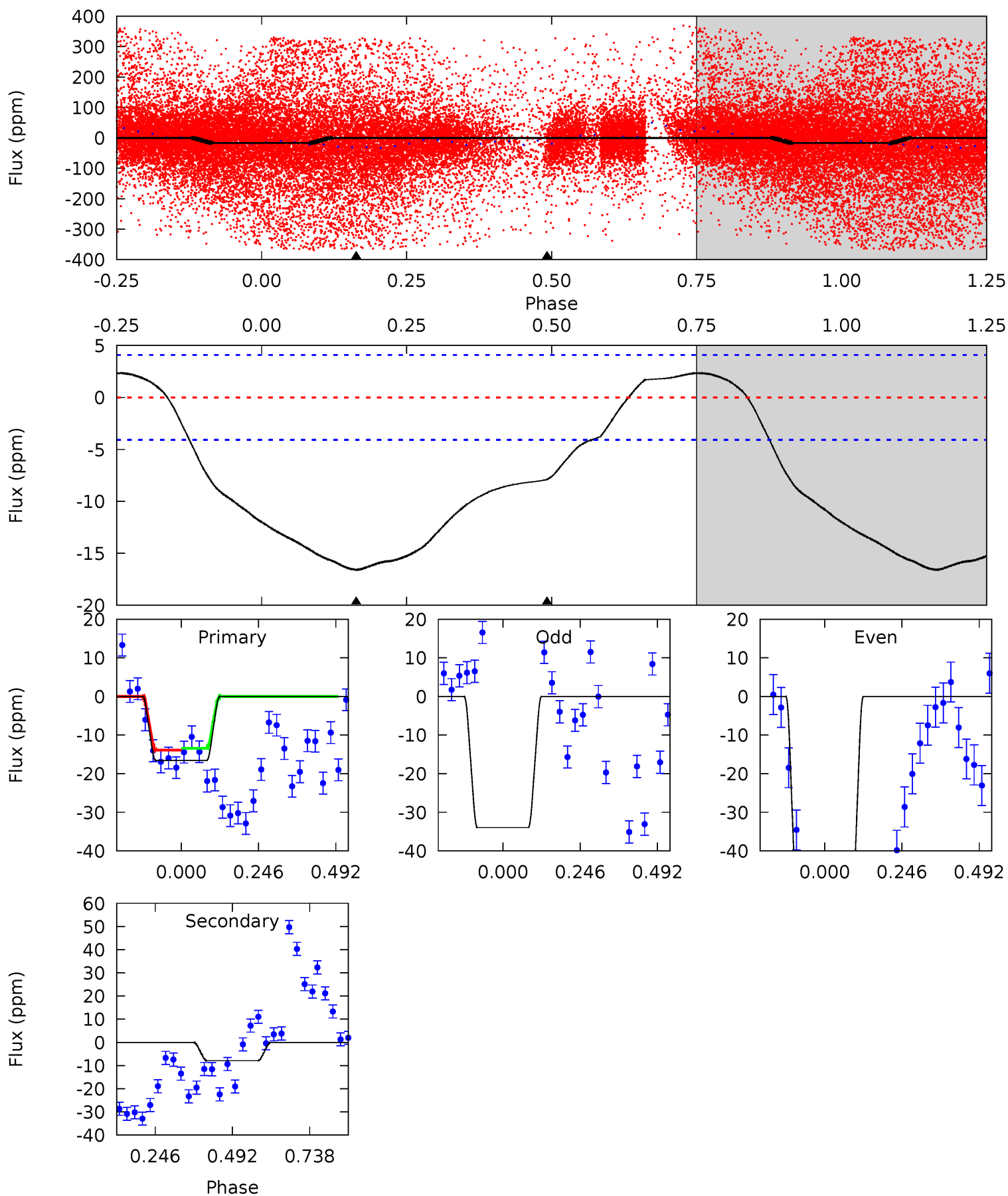
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	4.32	0	0	4.32	1.00	0.54	16.8	16.8	4.32	4.32	7.60	1.16	0.02	1.38



Alt Model-Shift Uniqueness Test

008012437-05, $P = 0.679171$ Days, $E = 131.235087$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	8.44	0	0	4.37	1.16	3.76	17.8	17.8	8.44	8.44	14.1	2.09	0.12	0.26



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 1	$1.28^{+0.51}_{-0.47}$	6434^{+584}_{-772}	3524^{+2072}_{-8057}	$0.343^{+0.511}_{-0.180}$
Alt.	-8 ± 1	$1.42^{+0.60}_{-0.49}$	6439^{+553}_{-735}	5653^{+1546}_{-1500}	$0.784^{+0.990}_{-0.398}$

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

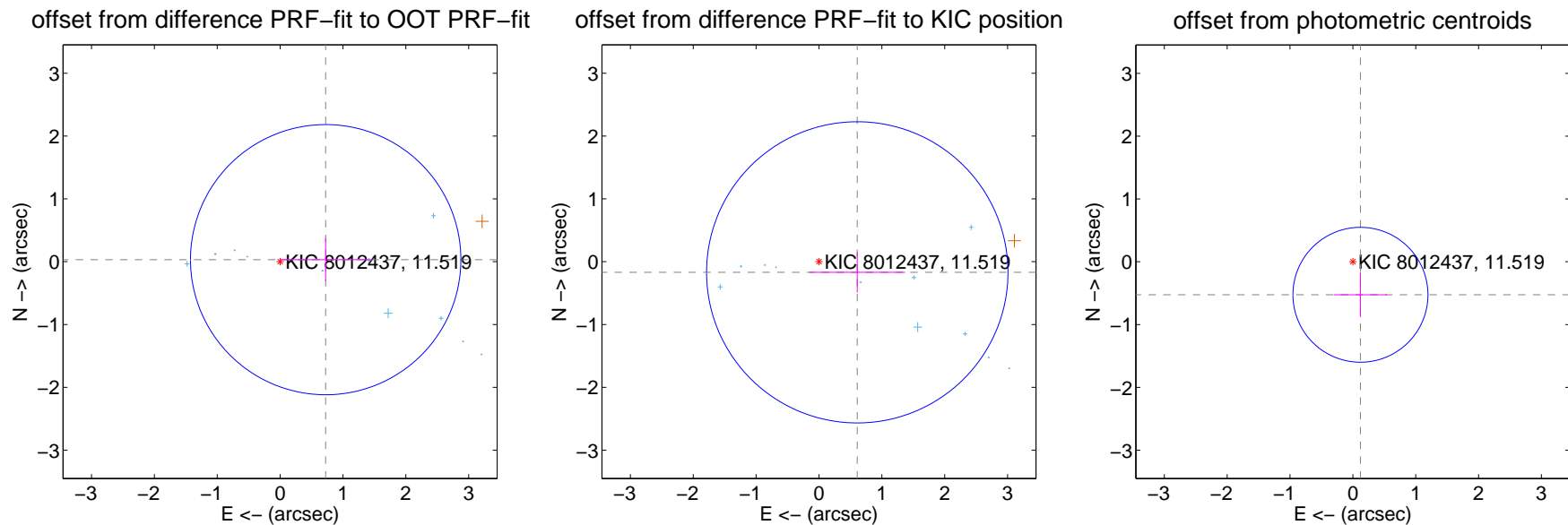
DV Centroid Data

Supplemental centroid analysis for 008012437-05. **Kepler magnitude: 11.52.** Transit SNR 17.74

There are 11 quarters with good PRF difference image offsets

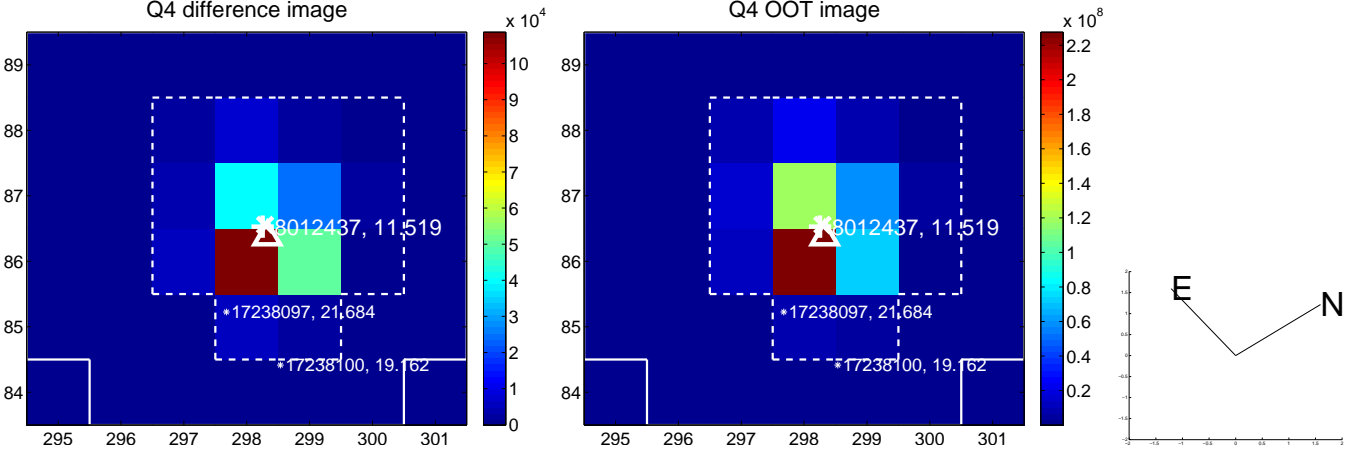
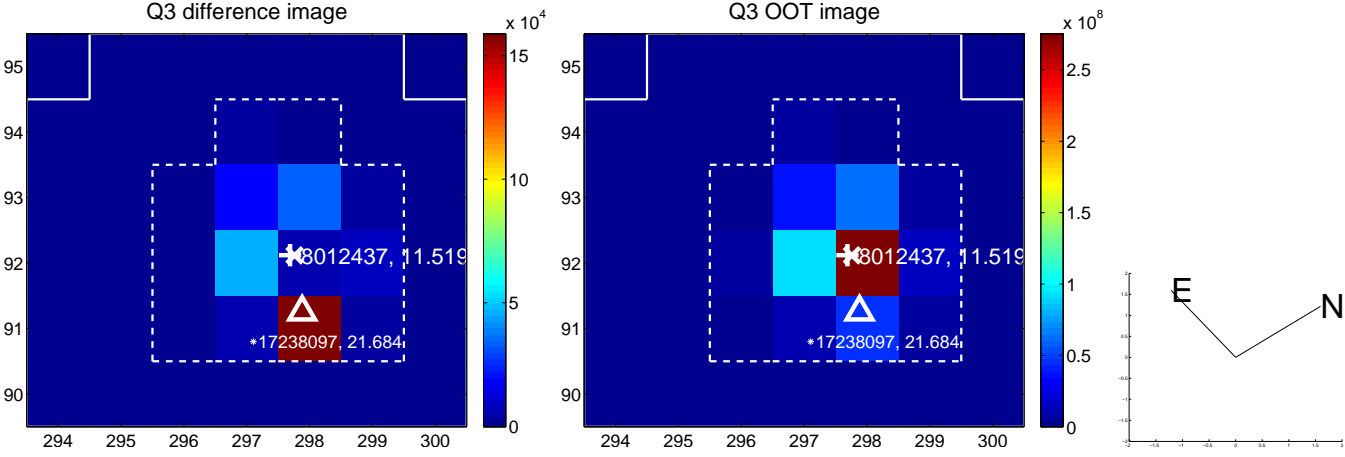
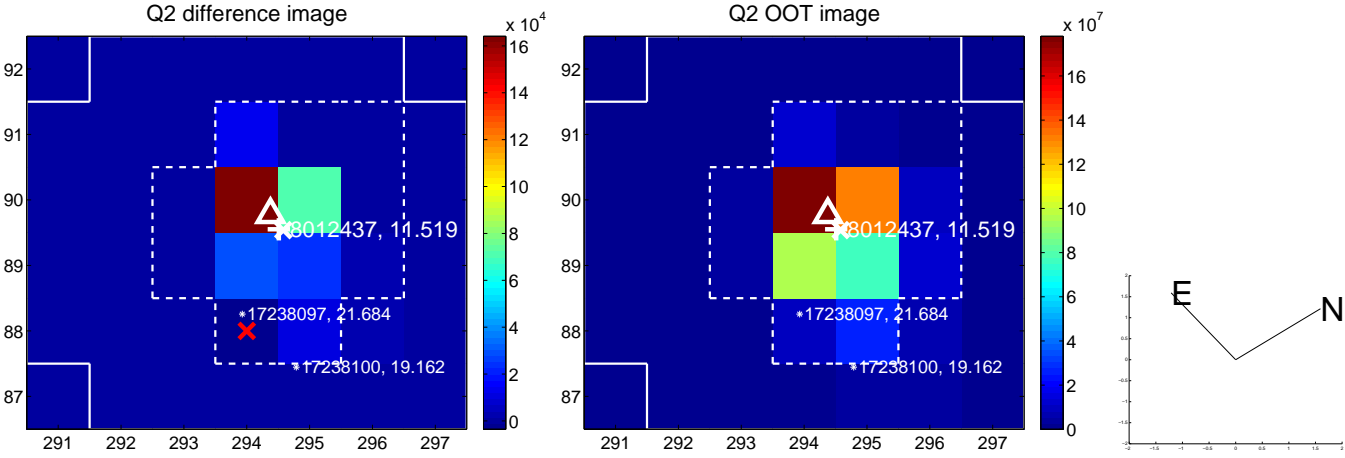
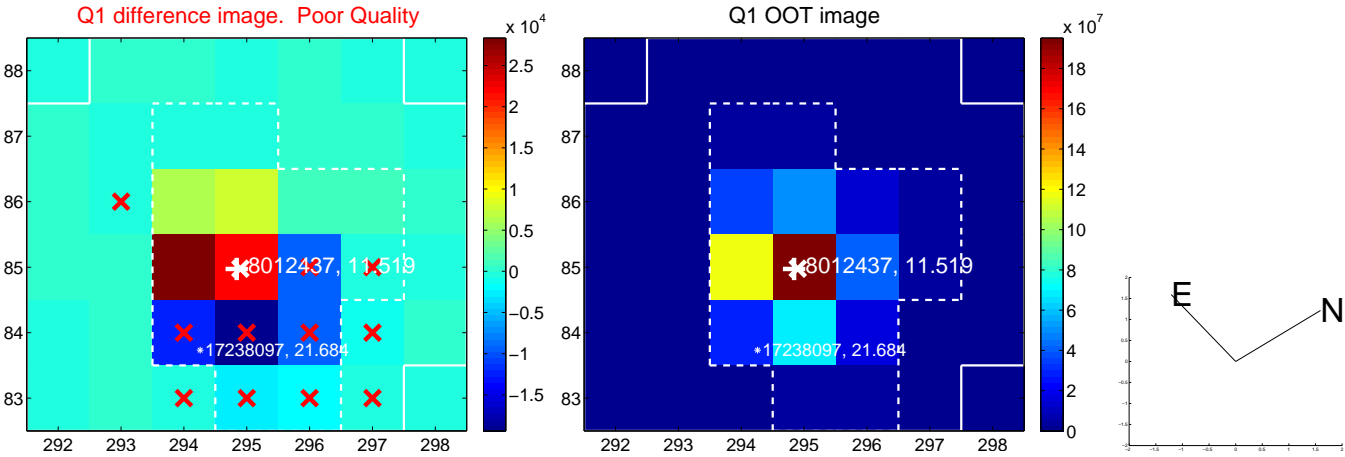
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.726 ± 0.717	1.01	-0.725 ± 0.729	0.032 ± 0.344
PRF-fit source offset from KIC position	0.632 ± 0.799	0.79	-0.609 ± 0.760	-0.170 ± 0.320
photometric centroid source offset	0.54 ± 0.36	1.51	-0.12 ± 0.42	-0.53 ± 0.35

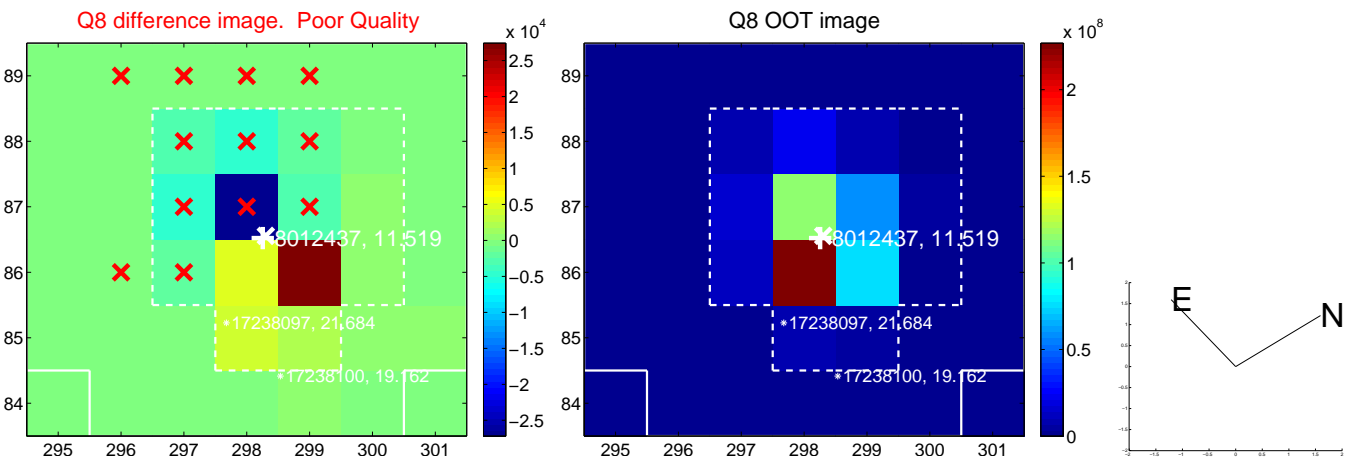
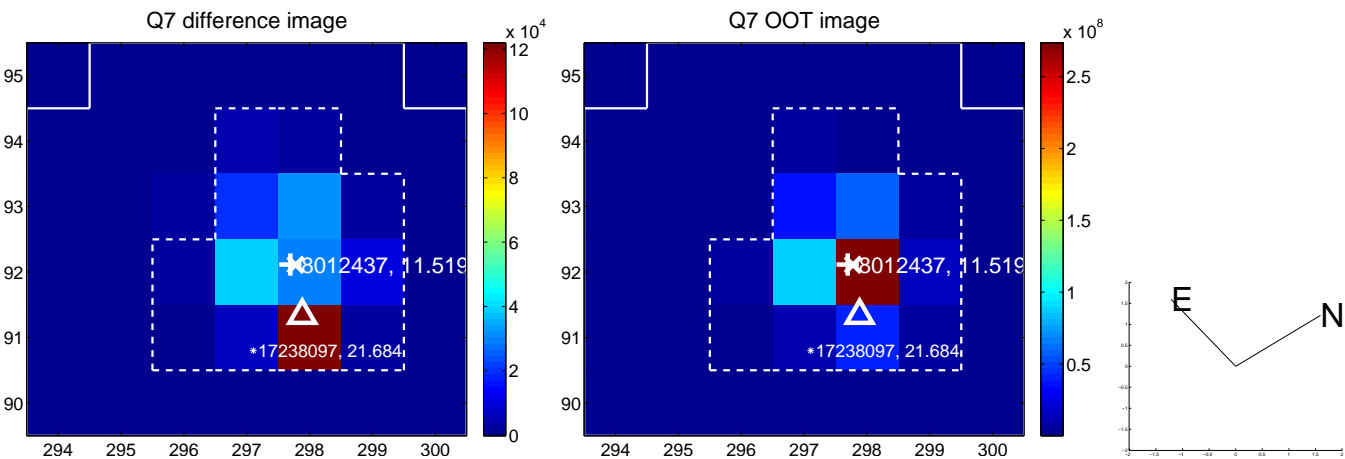
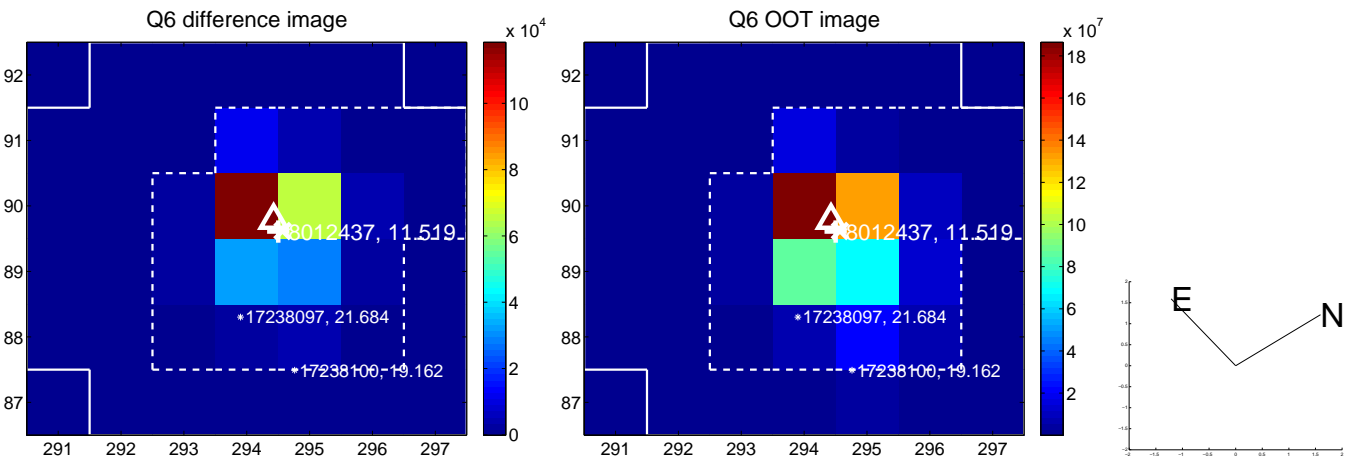
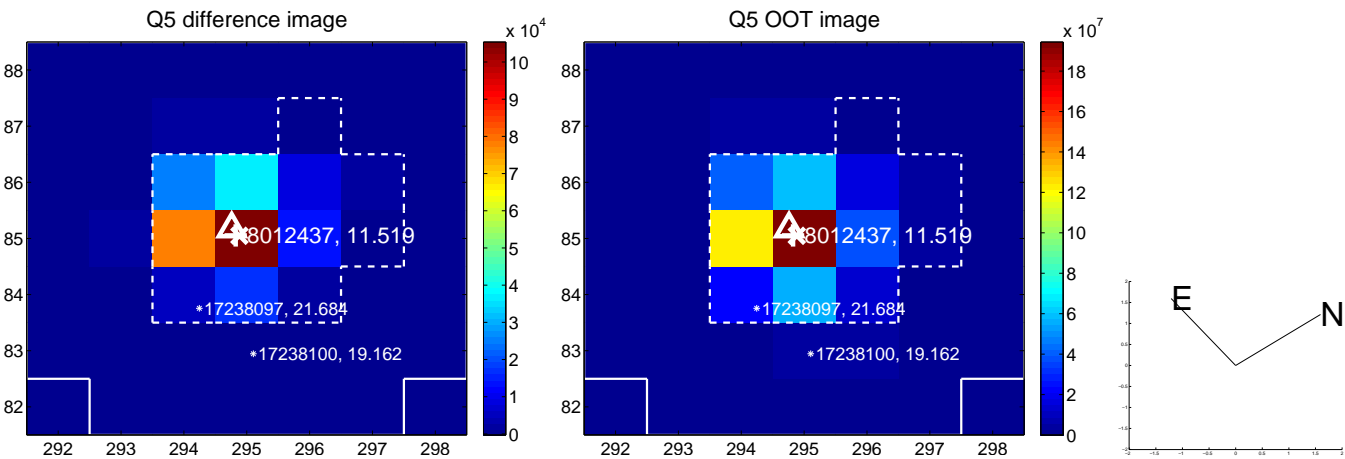


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

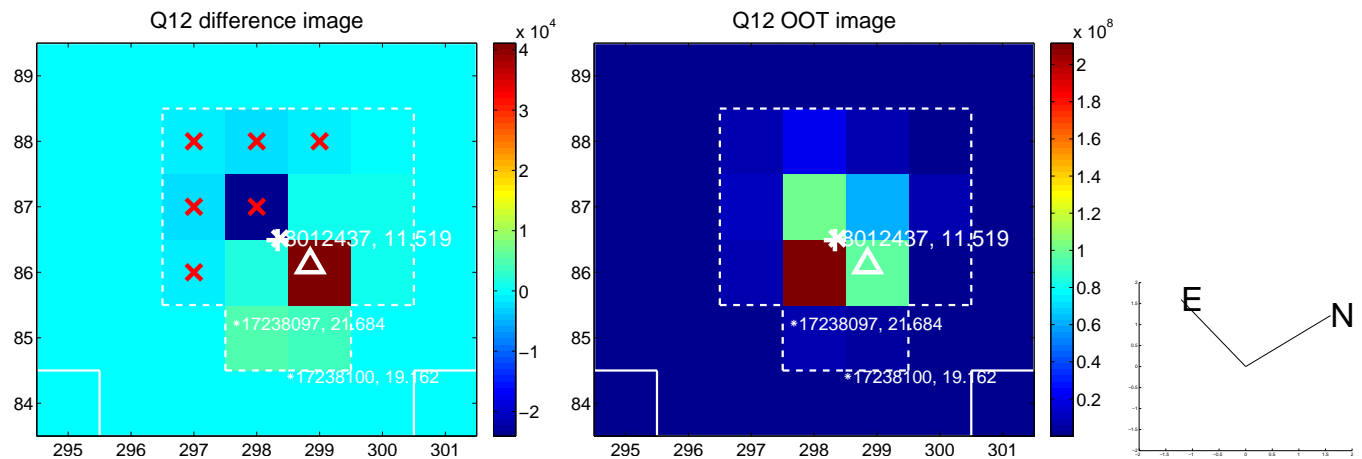
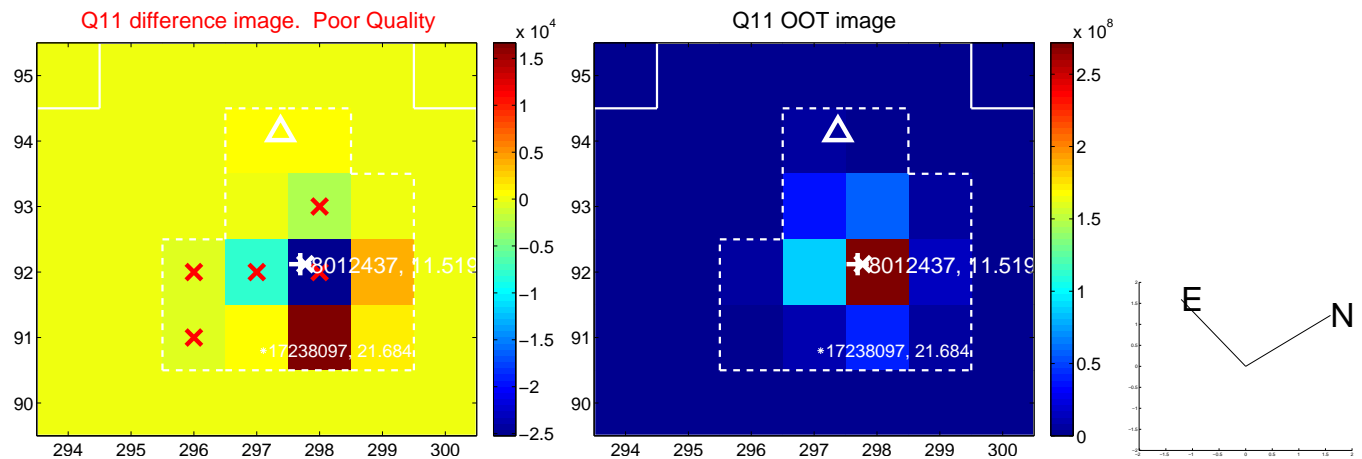
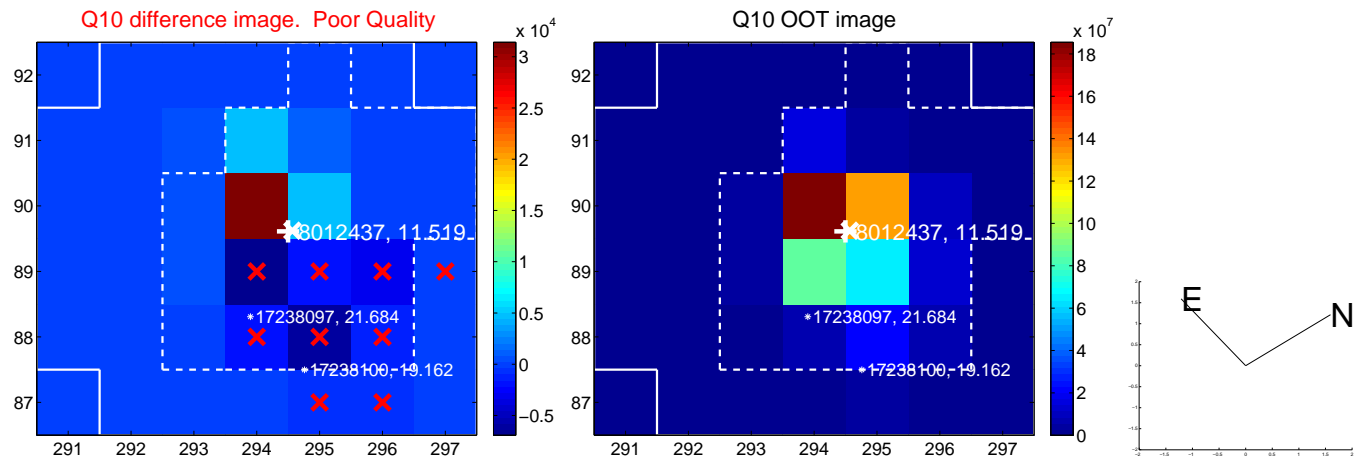
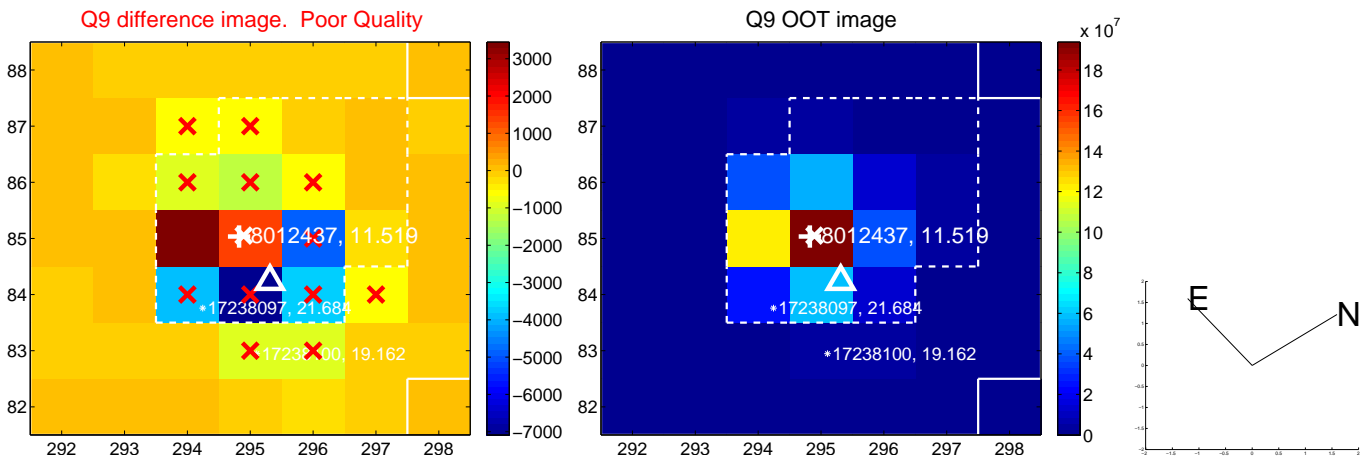
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



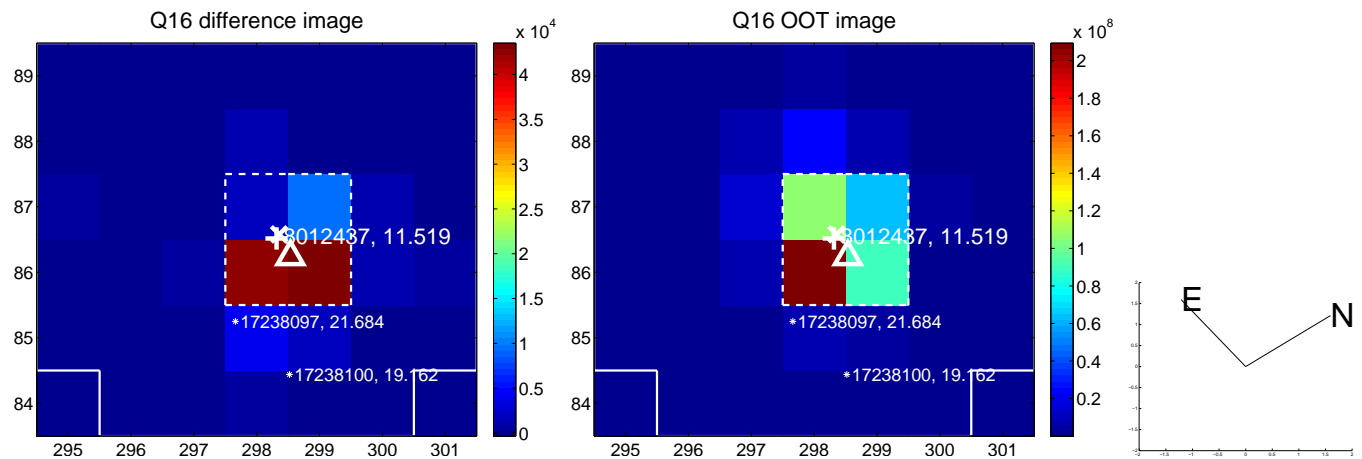
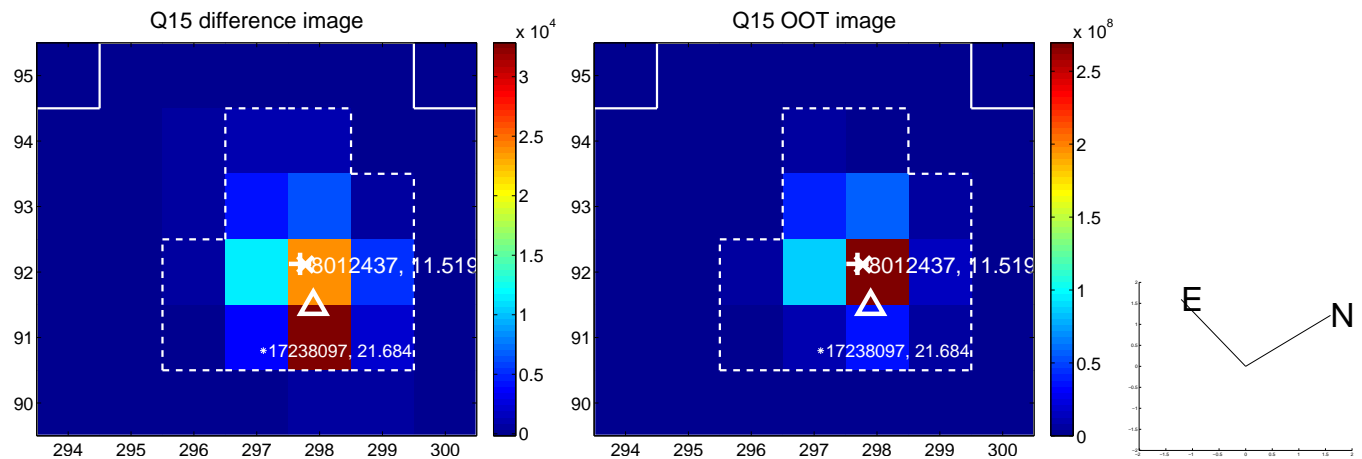
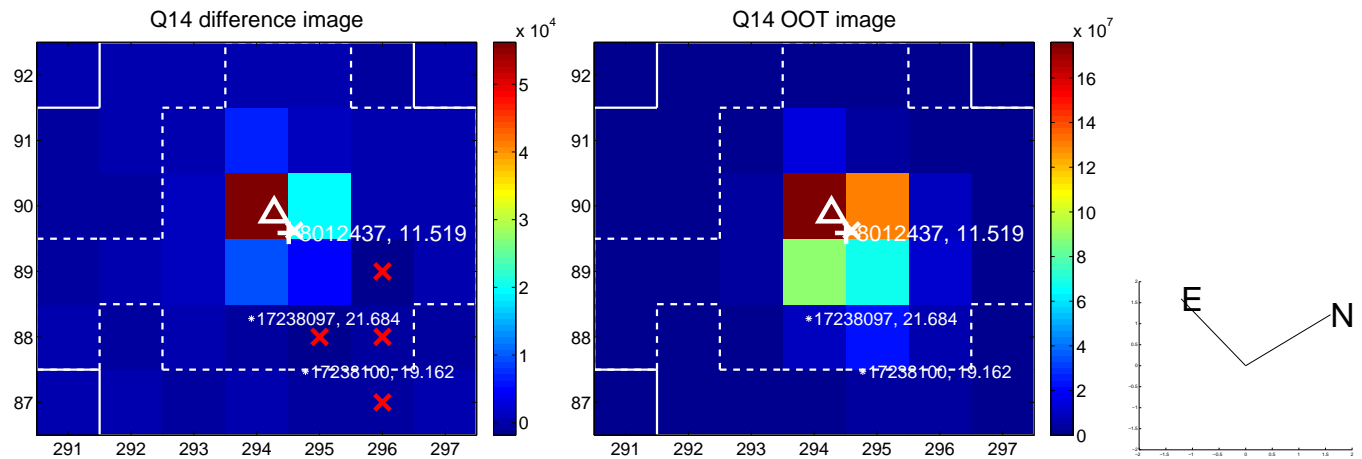
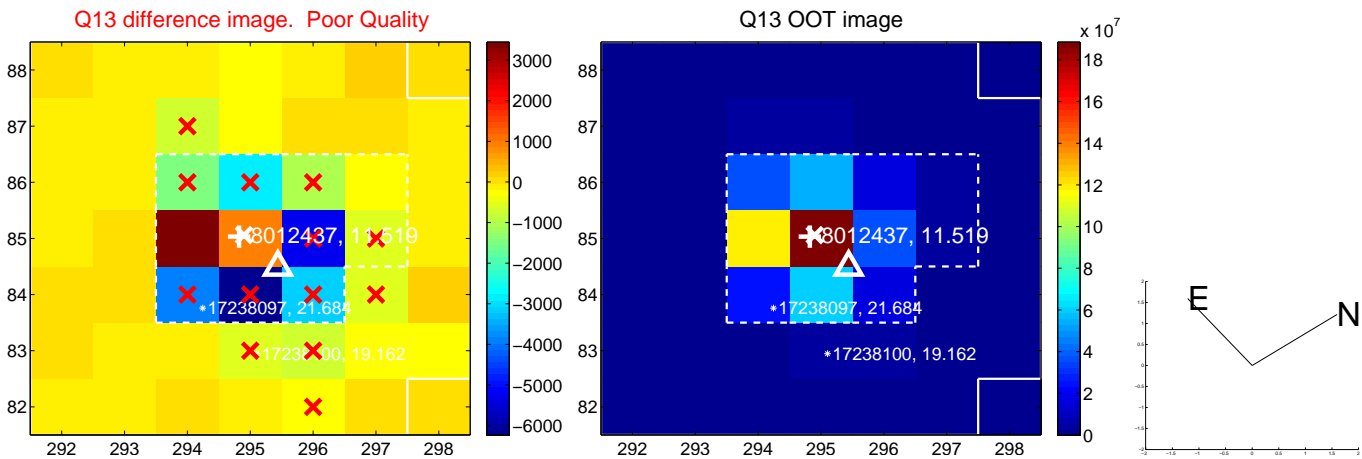
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



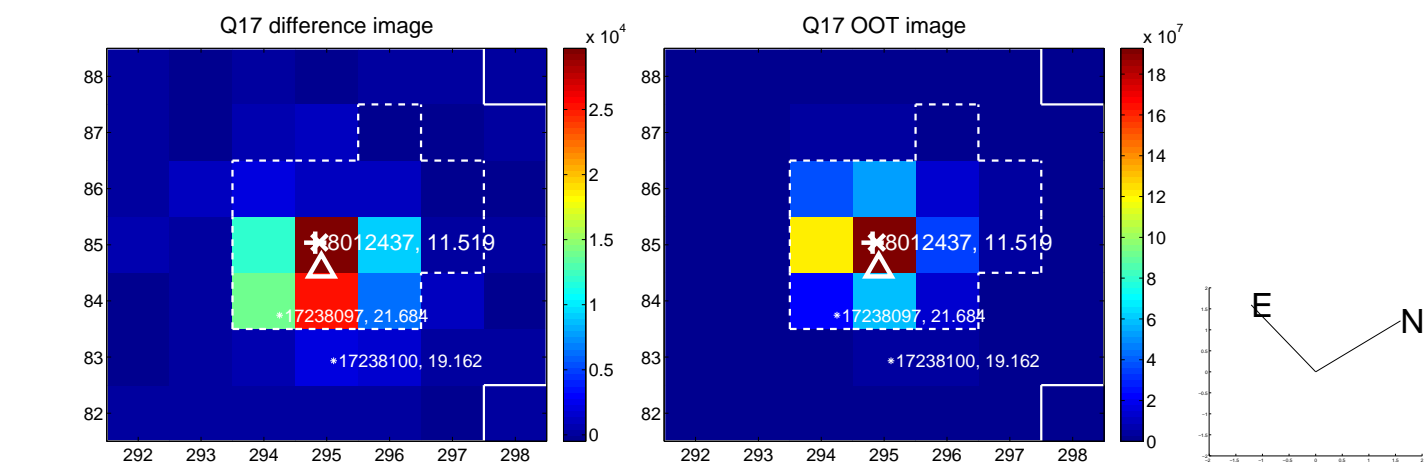
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



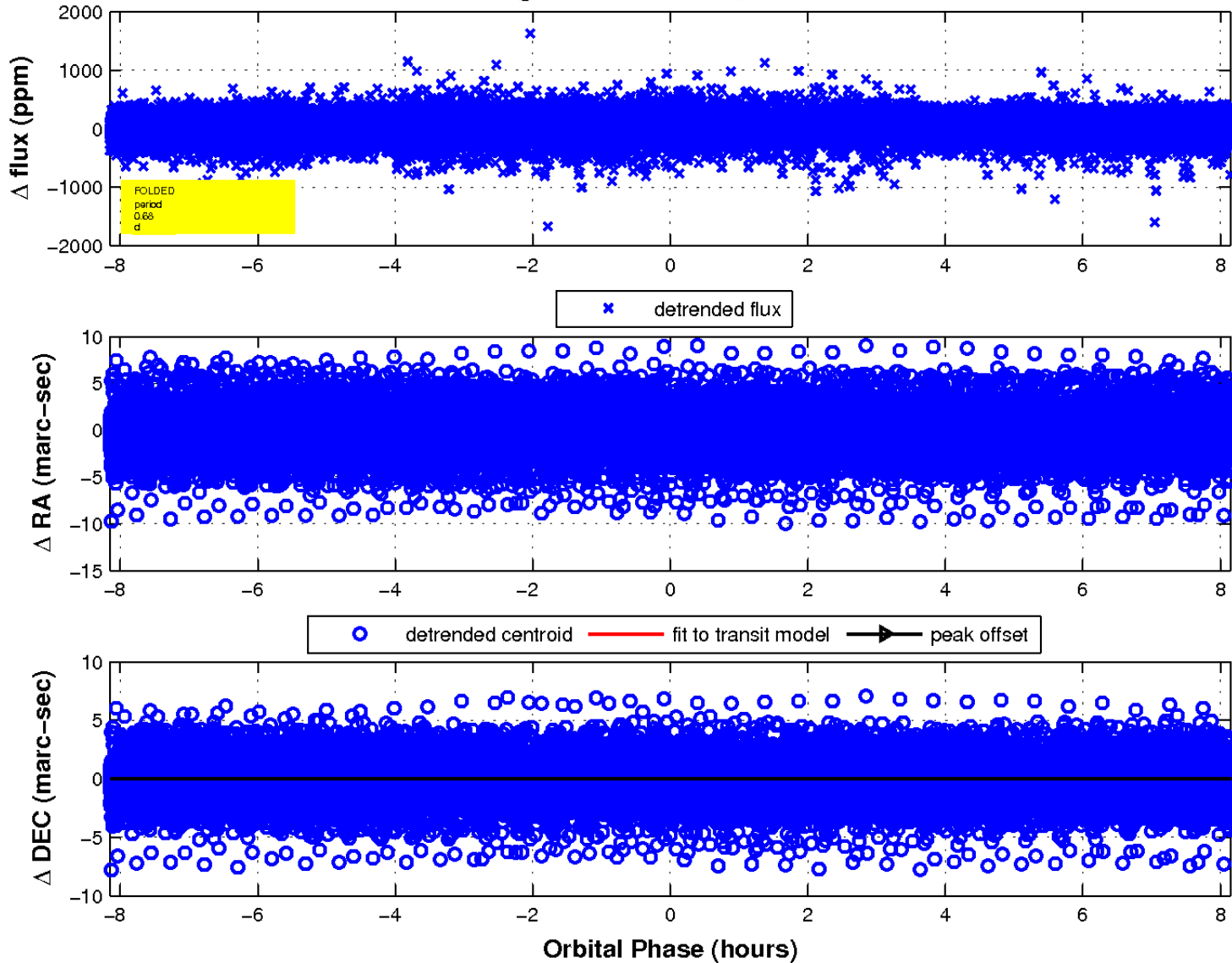
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



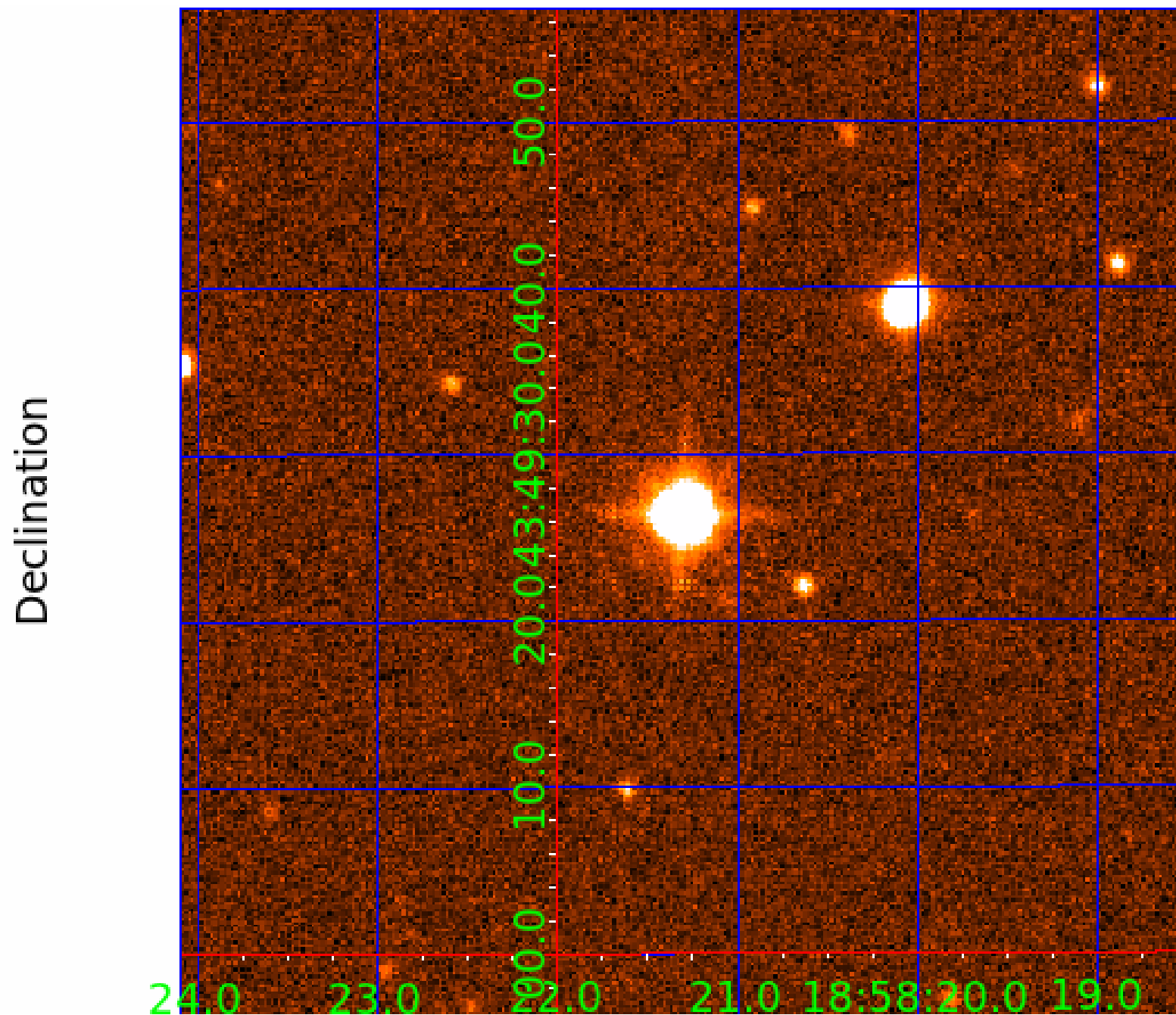
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 5 of 6



UKIRT Image



KIC 008012437

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})
008012437-01	OBS	No	377.067361	334.113531	106.1	5.635	17.4	4.0	3.22	8319	3.74	26.37
008012437-02	OBS	No	380.842776	333.711560	690.8	3.817	18.0	18.6	3.22	8319	14.10	26.02
008012437-03	OBS	No	4.075239	134.531207	27.7	3.591	14.9	12.3	3.22	8319	1.96	11035.42
008012437-04	OBS	No	4.075089	135.076650	84.5	9.000	14.8	-1.0	3.22	8319	3.00	11035.96
008012437-05	OBS	No	0.679146	132.018429	18.0	4.655	17.7	17.7	3.22	8319	1.40	120330.49
008012437-06	OBS	No	1.359139	131.837931	316.8	3.500	19.3	-1.0	3.22	8319	5.80	47713.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008012437-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_UNRESOLVED_OFFSET
008012437-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008012437-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008012437-04	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
008012437-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
008012437-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_NOFITS

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

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

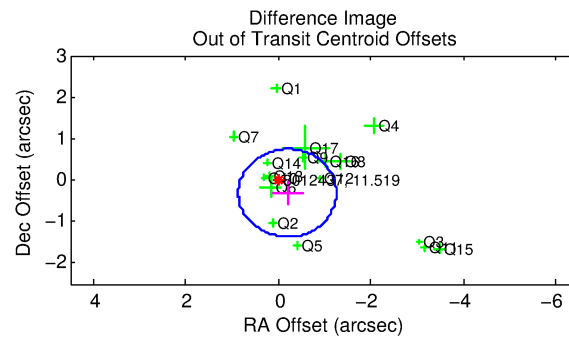
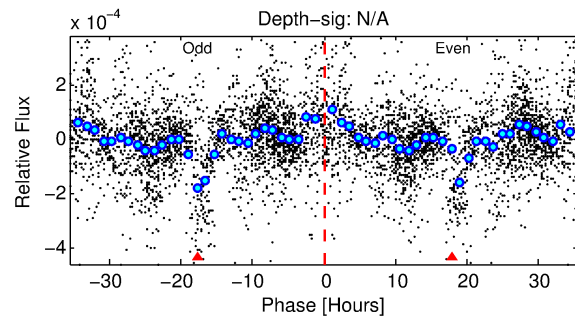
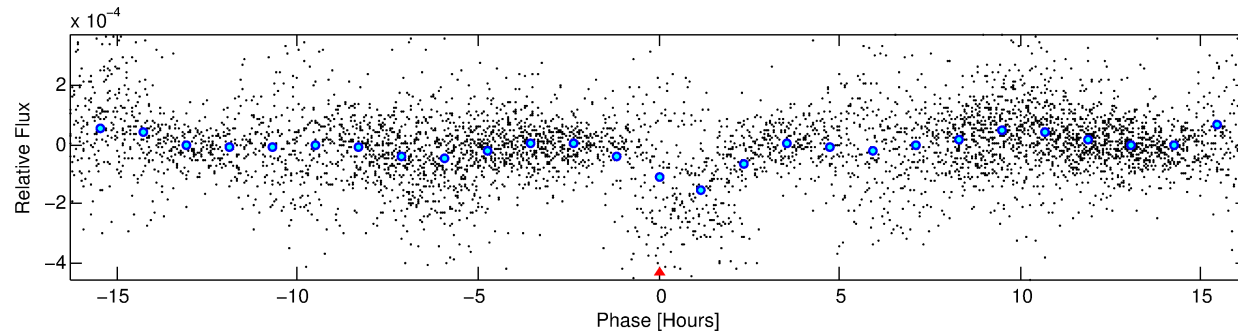
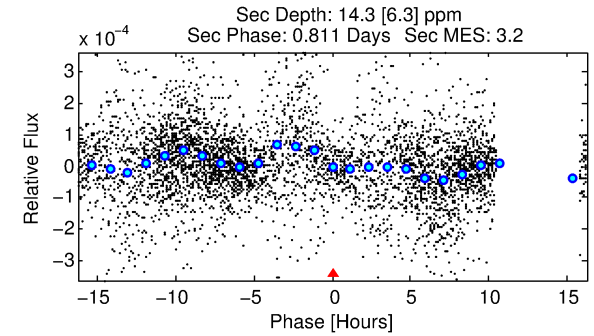
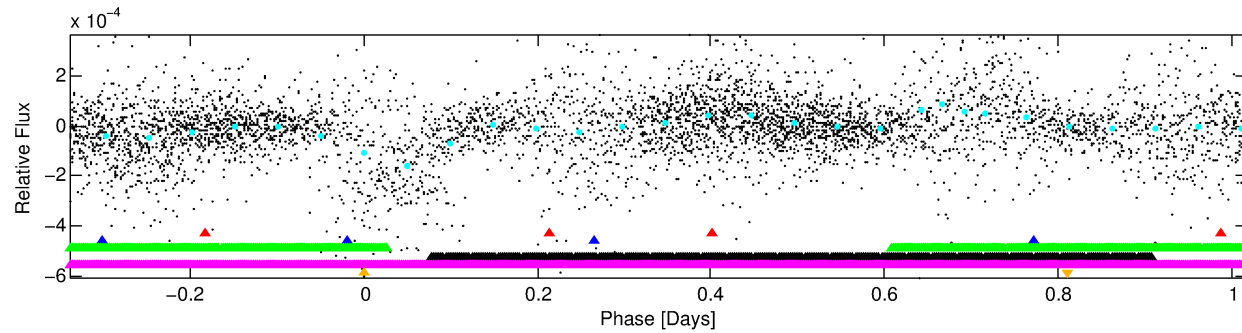
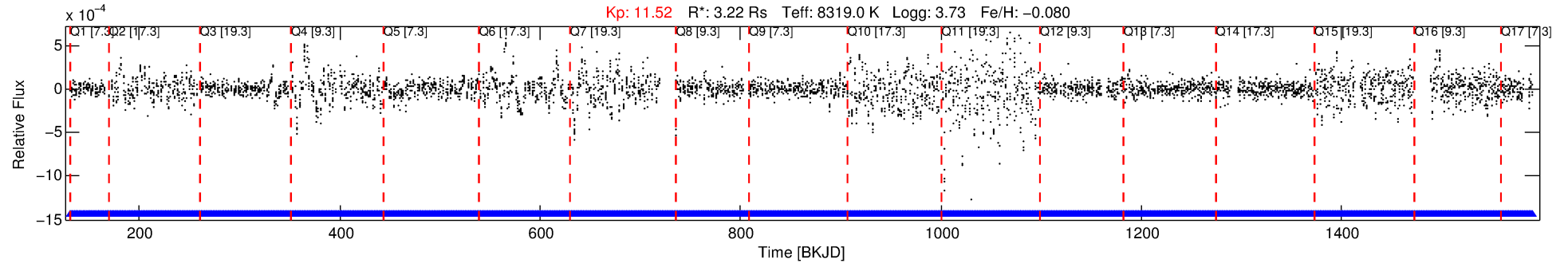
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008012437-06

No Significant Match Found

DV One-Page Summary

KIC: 8012437 Candidate: 6 of 6 Period: 1.359 d



TPS TCE Results:

Period = 1.35914 d
Epoch = 131.8379 BKJD

DV fit results are unavailable

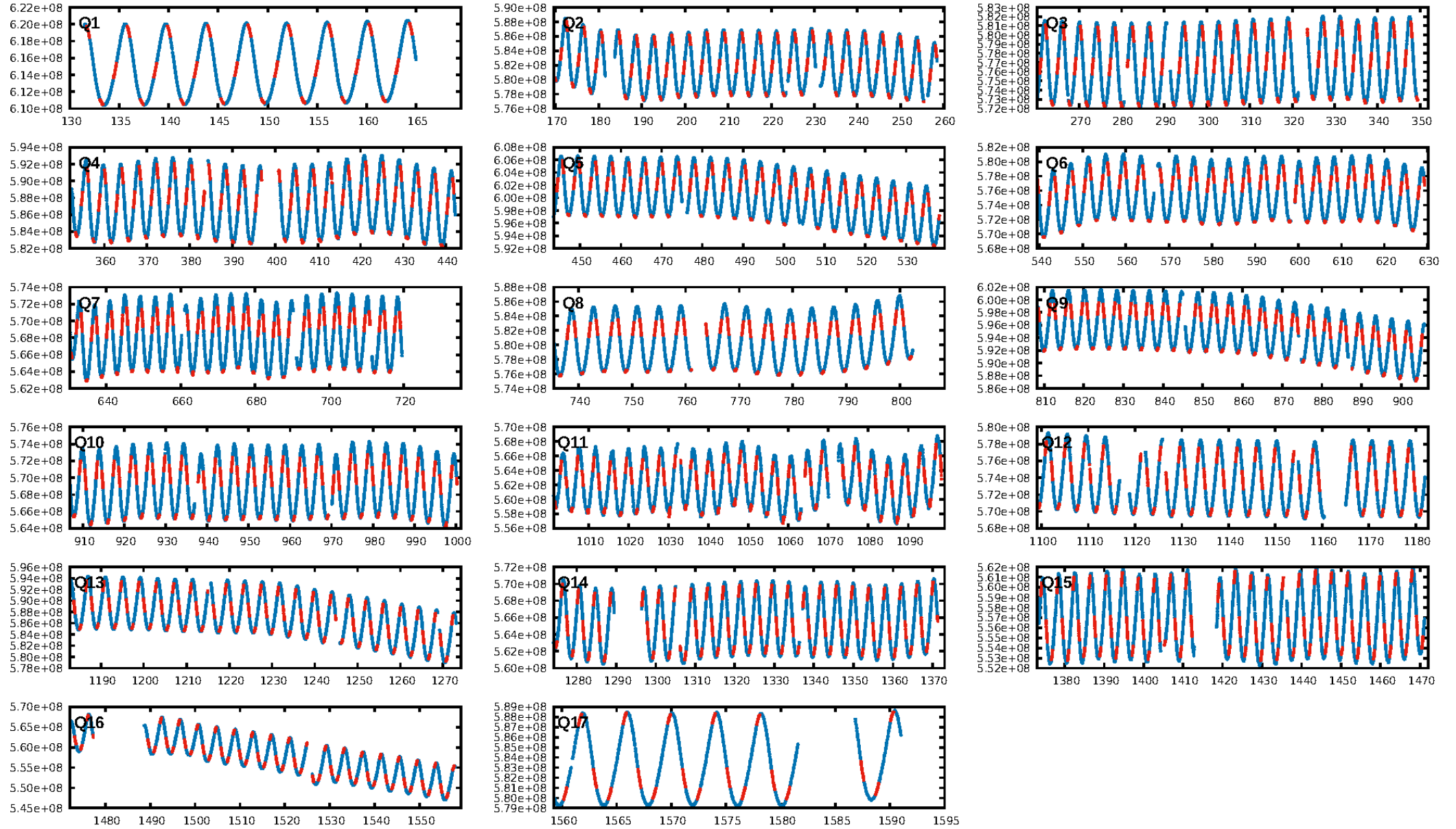
DV Diagnostic Results:

ShortPeriod-sig: 99.5% [2.80 σ]
LongPeriod-sig: 100.0% [6.75 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [257/257]
GhostDiagnostic-chr: 1.704
Centroid-sig: N/A
Centroid-so: 0.302 arcsec [2.45 σ]
OotOffset-rm: 0.364 arcsec [1.03 σ]
KicOffset-rm: 0.552 arcsec [1.91 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 0.00 [0/17]

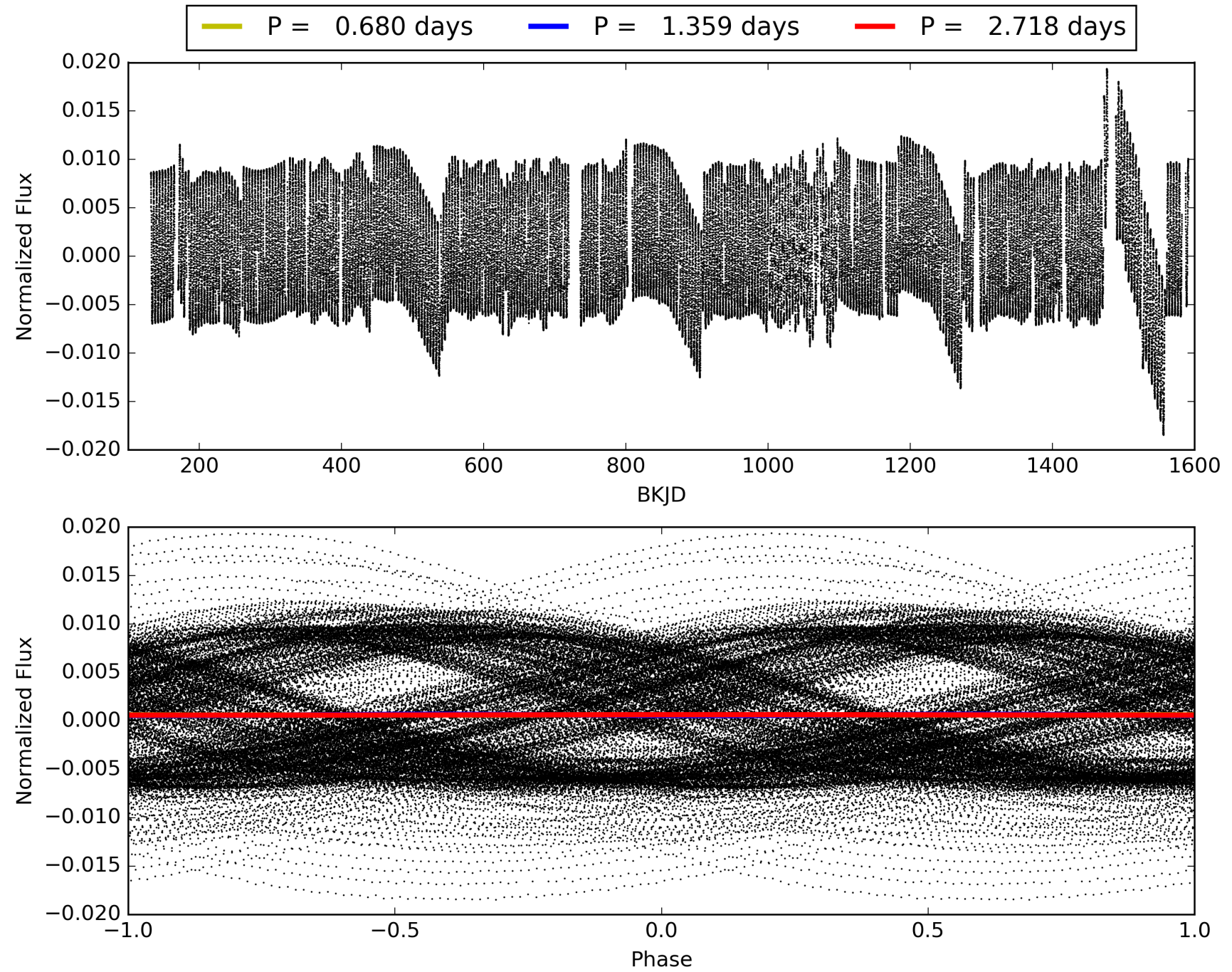
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:14:16 Z

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

TCE 008012437-06, PDC Light Curves

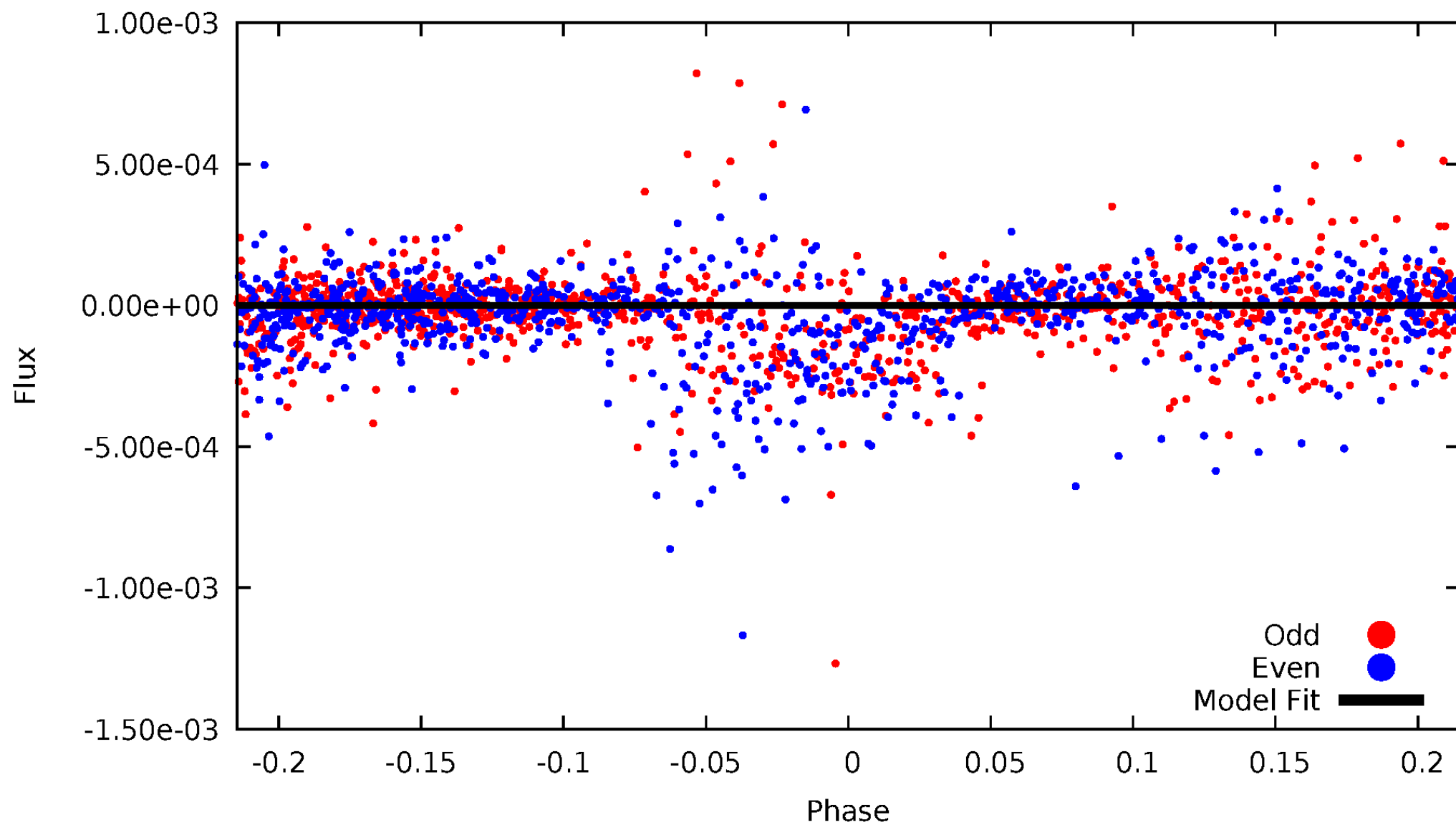


TCE 008012437-06



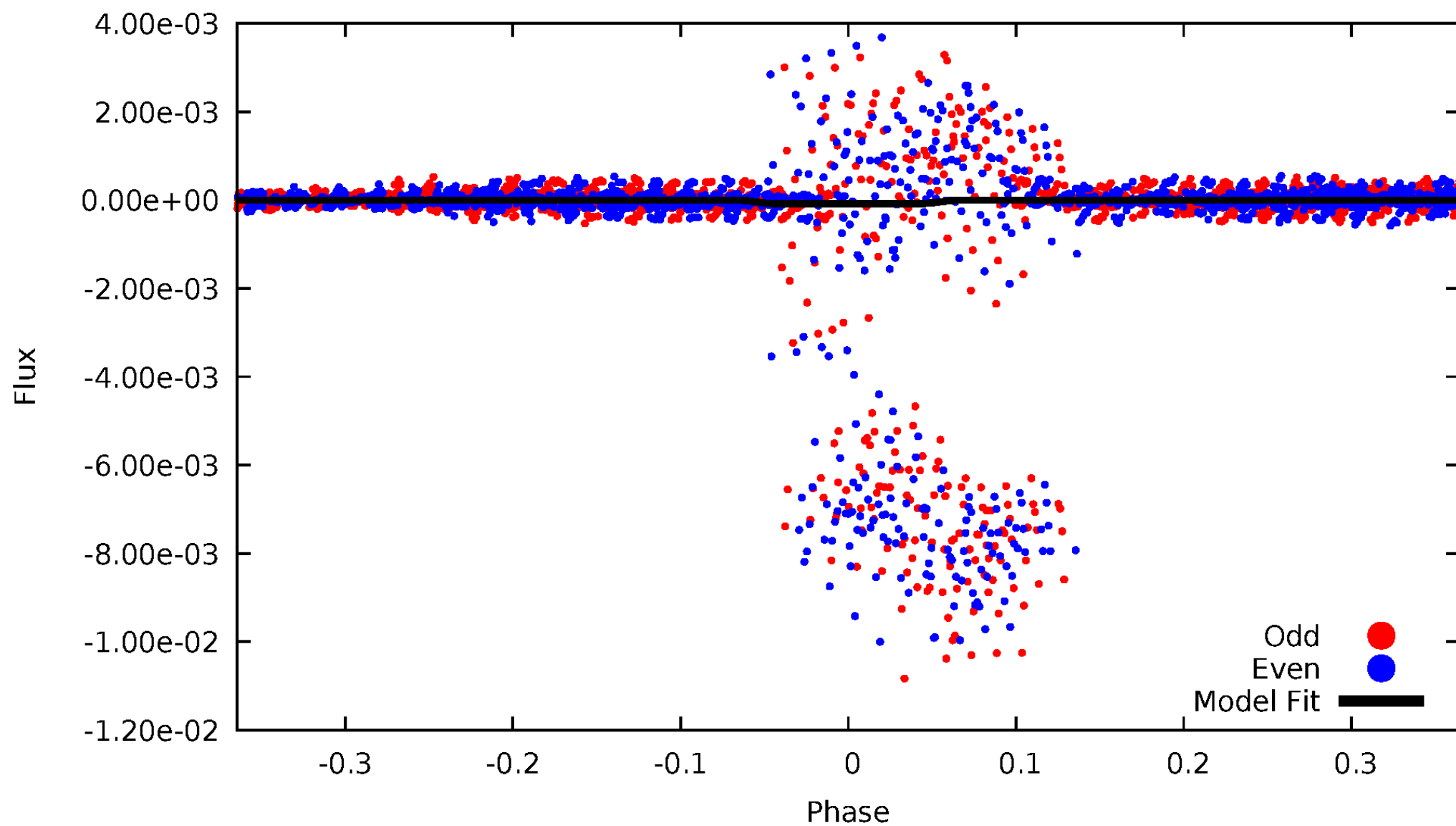
DV Odd/Even

TCE 008012437-06



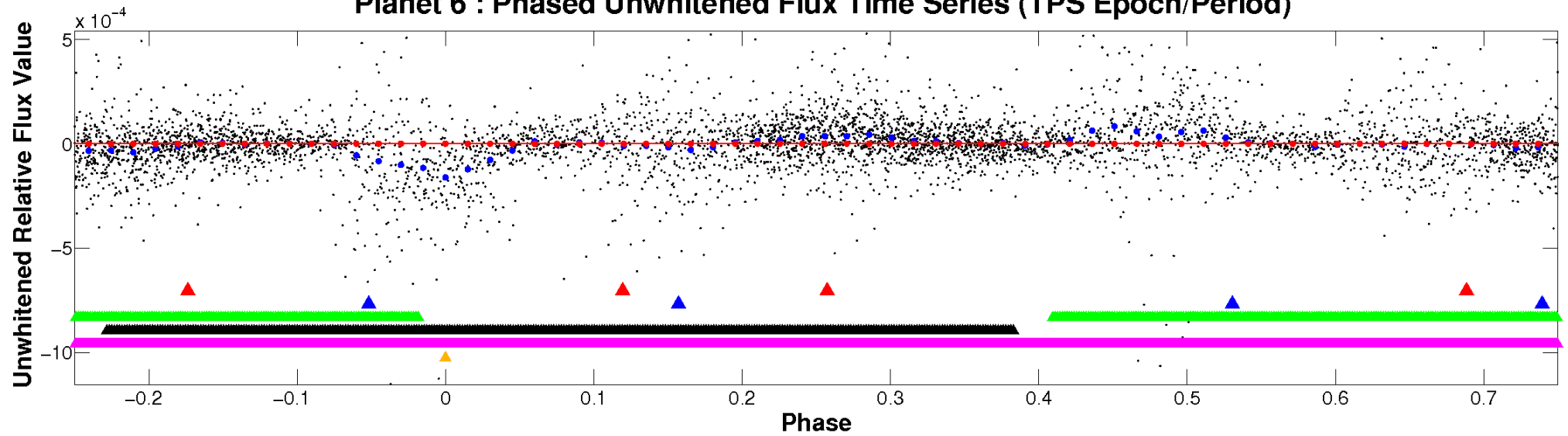
ALT Odd/Even

TCE 008012437-06



Non-Whitened Vs. Whitened Light Curve

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

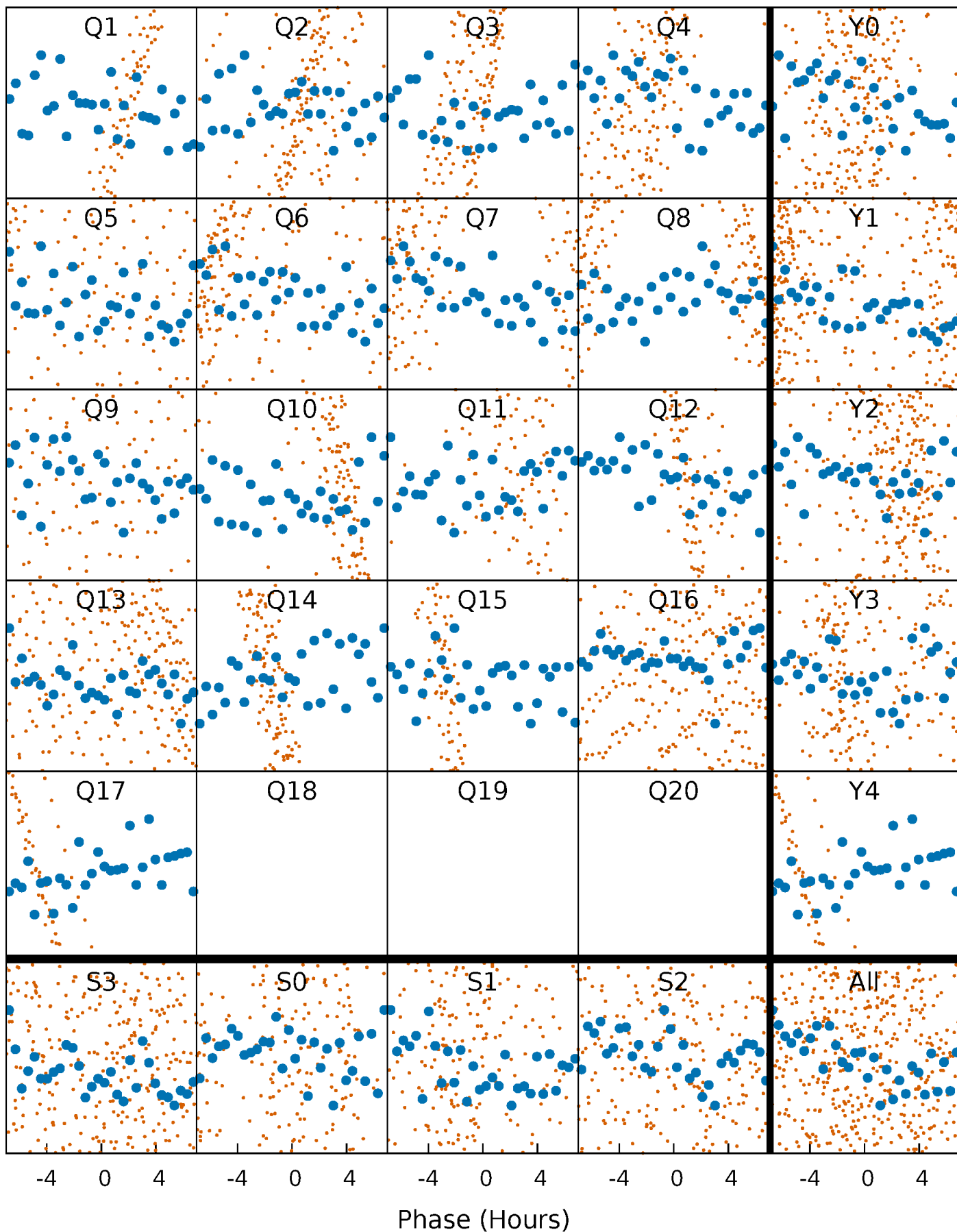


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



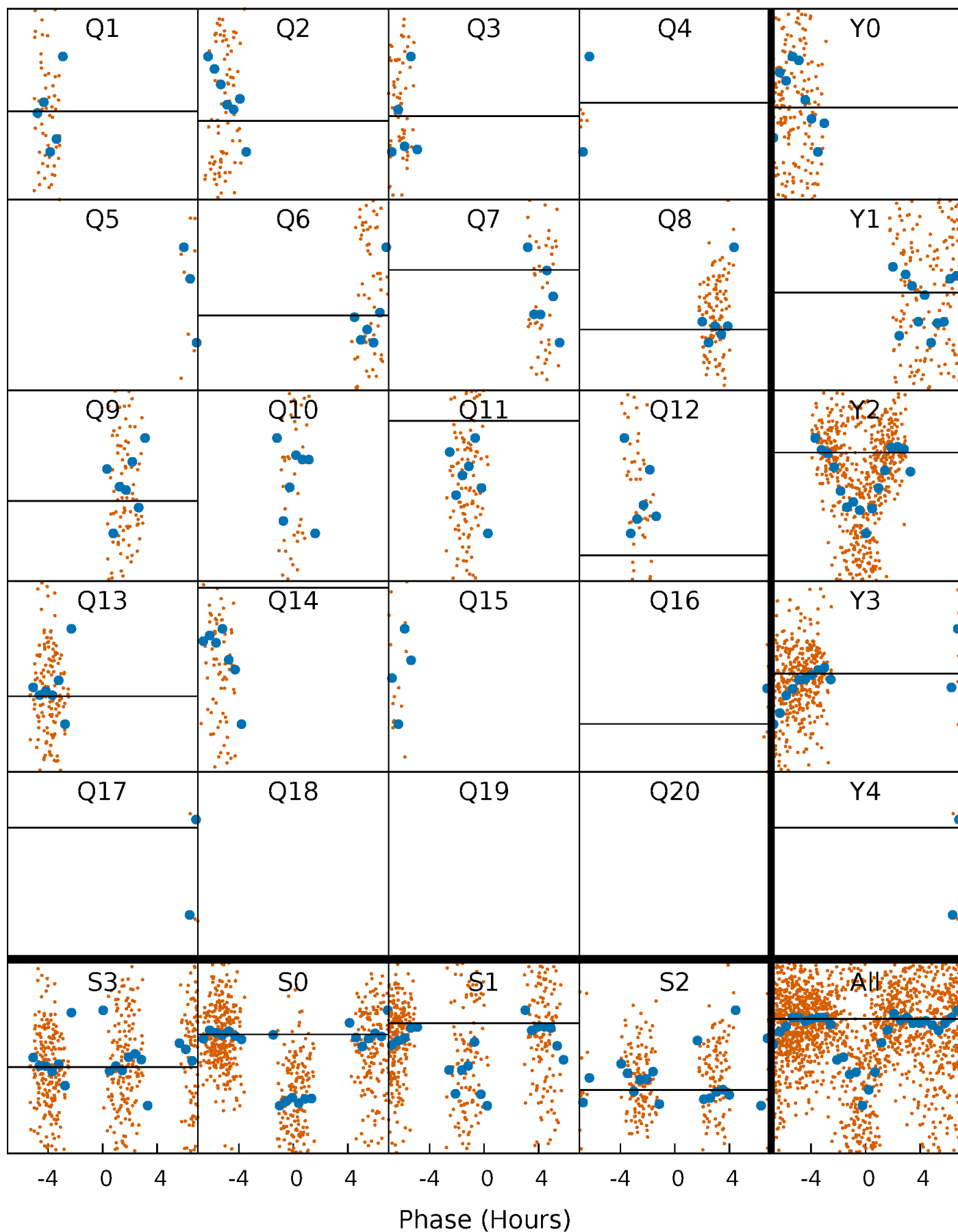
PDC Quarter-Phased Transit Curves

TCE 008012437-06 P= 1.359139 Days $T_0=131.837931$ (BKJD)



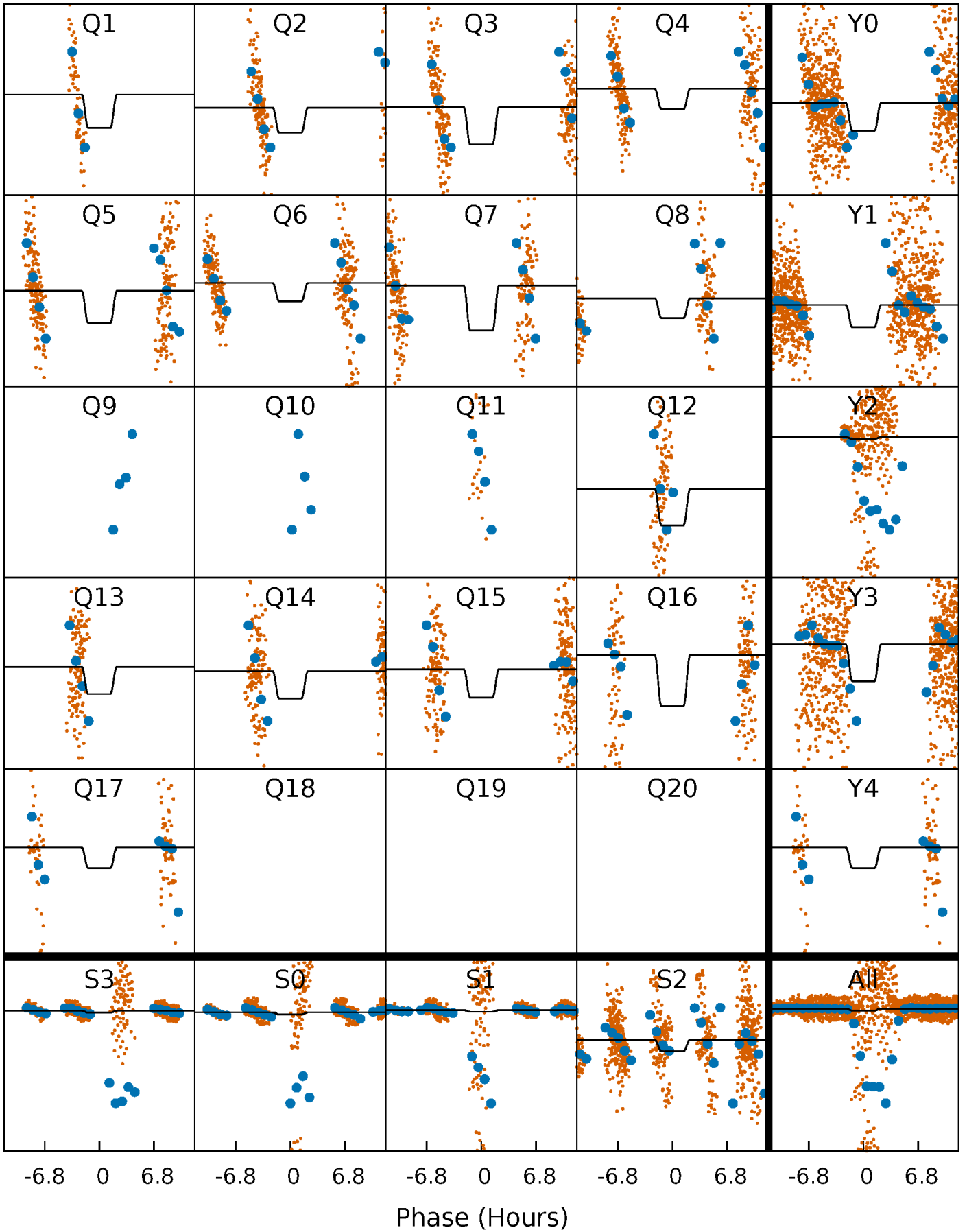
DV Quarter-Phased Transit Curves

TCE 008012437-06 P= 1.359139 Days $T_0=131.837931$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

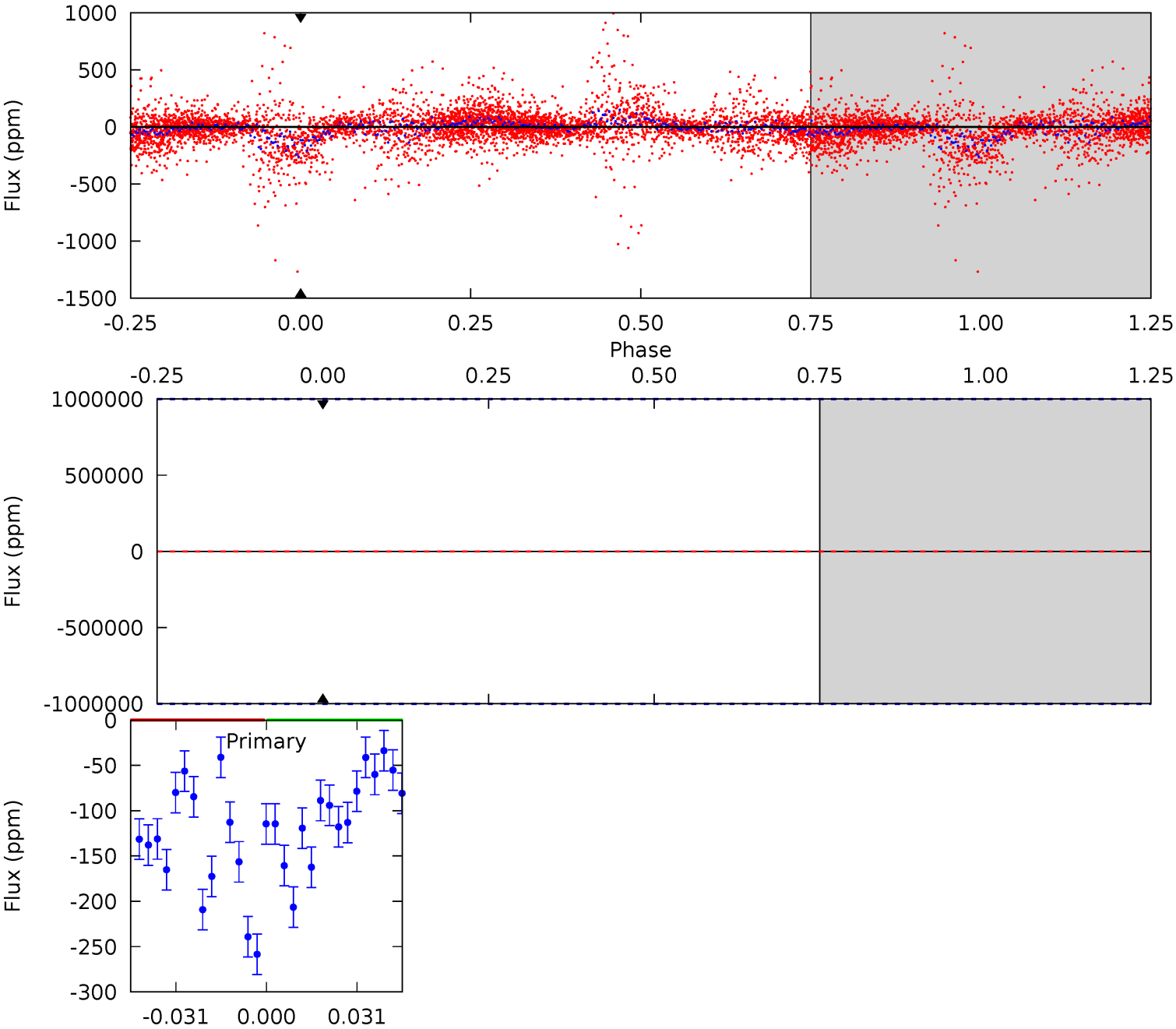
TCE 008012437-06 P= 1.359139 Days $T_0=131.786279$ (BKJD)



DV Model-Shift Uniqueness Test

008012437-06, P = 1.359139 Days, E = 130.478792 Days

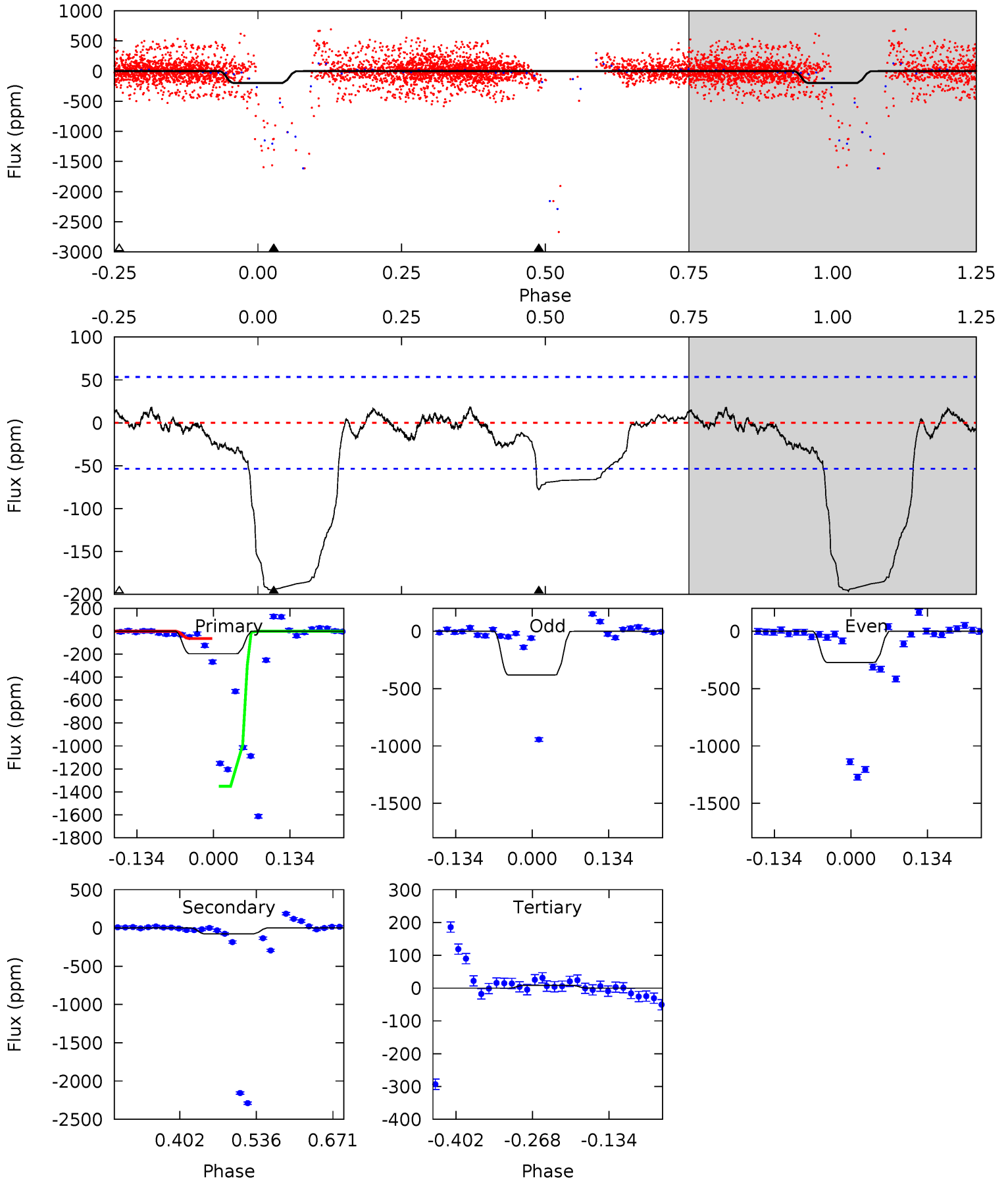
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008012437-06, P = 1.359139 Days, E = 130.427140 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	6.57	-0.70	0	4.50	1.50	0.80	17.2	16.5	7.27	6.57	4.53	13.5	0.09	0



Stellar Parameters For KIC 008012437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8319^{+230}_{-374}	$3.735^{+0.428}_{-0.143}$	$-0.080^{+0.300}_{-0.400}$	$3.219^{+0.946}_{-1.419}$	$2.053^{+0.369}_{-0.491}$	$0.087^{+0.322}_{-0.037}$
	+3%/-4%	+11%/-4%	+375%/-500%	+29%/-44%	+18%/-24%	+372%/-43%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008012437-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$25.40^{+25.94}_{-17.24}$	5099^{+456}_{-648}	4380^{+43557}_{-43497}	$0.734^{+173.269}_{-117.448}$
Alt.	-78 ± 12	$22.06^{+26.21}_{-15.69}$	5100^{+430}_{-604}	-3914^{+8820}_{-455}	$0.082^{+0.888}_{-0.065}$

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

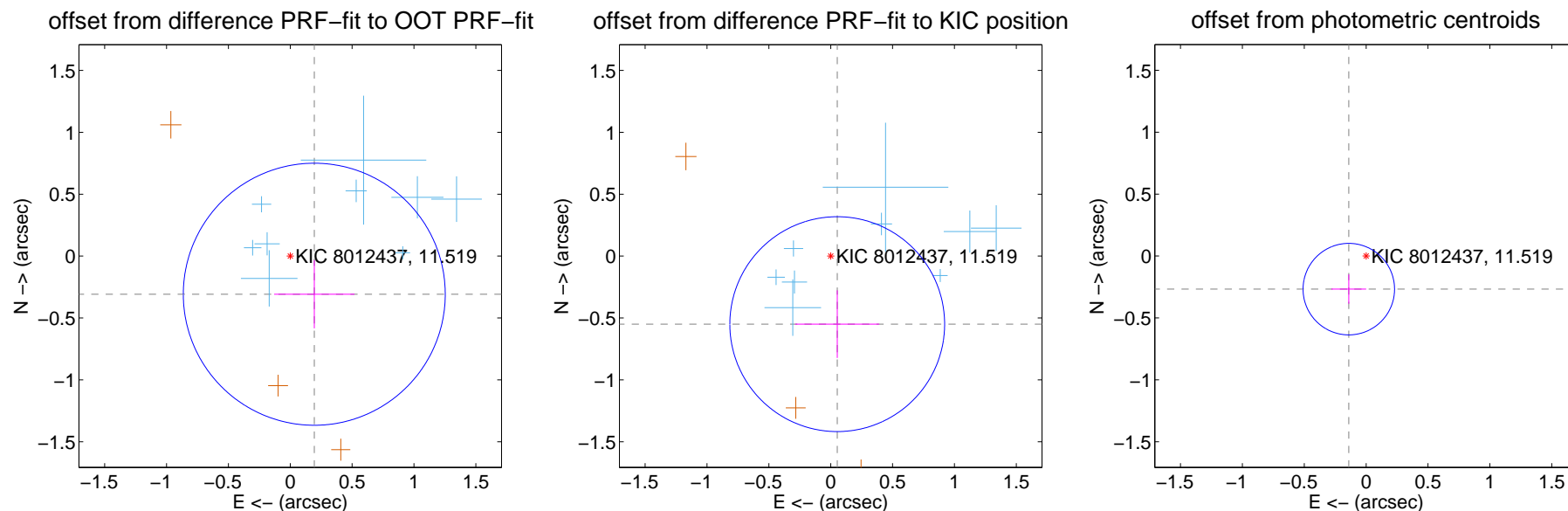
DV Centroid Data

Supplemental centroid analysis for 008012437-06. **Kepler magnitude: 11.52.** Transit SNR -1.00

There are 11 quarters with good PRF difference image offsets

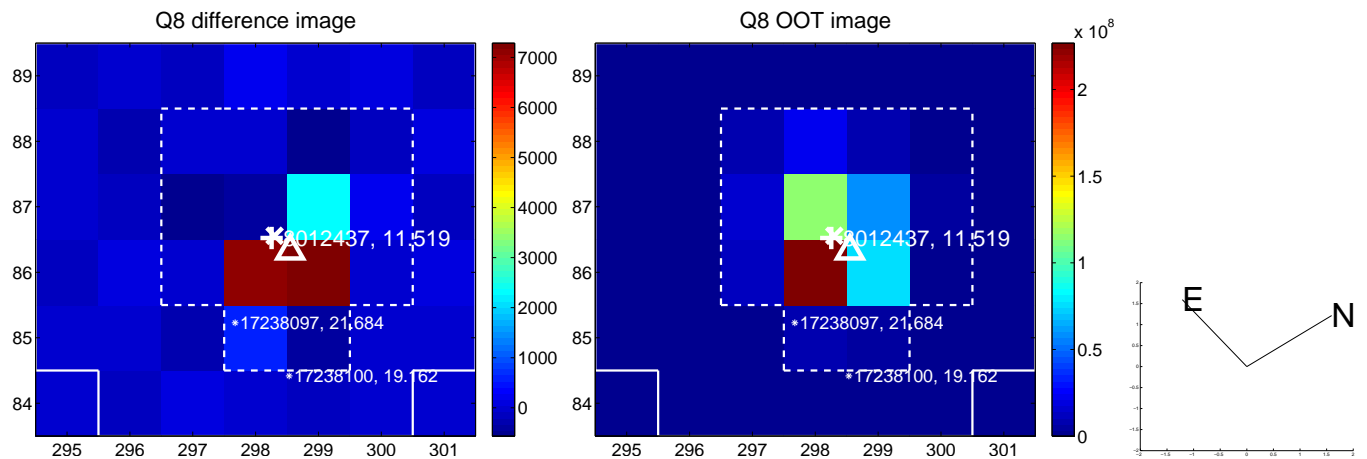
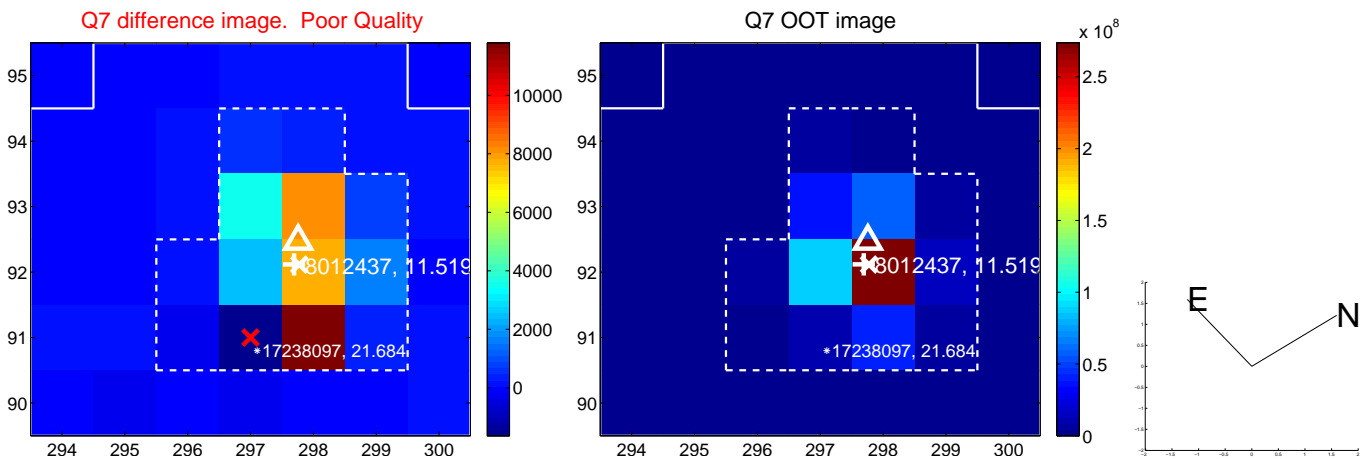
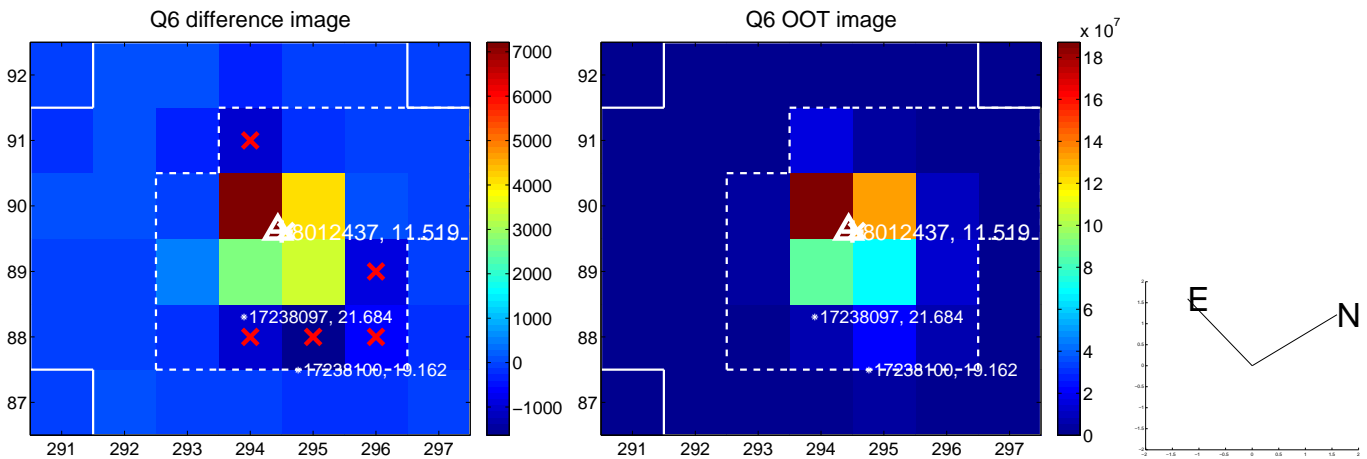
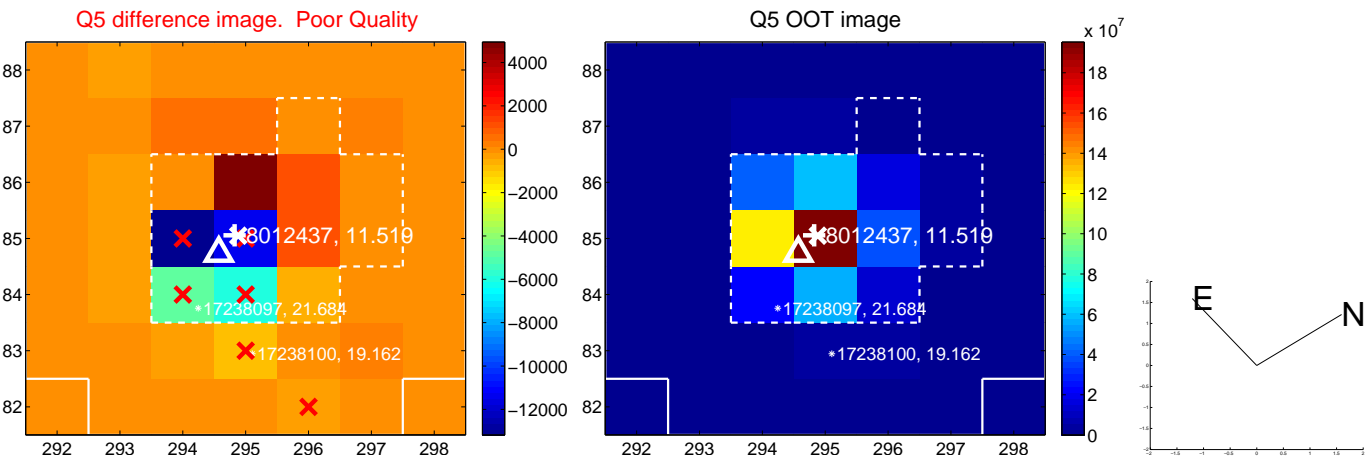
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.364 ± 0.353	1.03	-0.194 ± 0.325	-0.308 ± 0.275
PRF-fit source offset from KIC position	0.552 ± 0.289	1.91	-0.053 ± 0.340	-0.550 ± 0.273
photometric centroid source offset	0.30 ± 0.12	2.45	0.14 ± 0.14	-0.27 ± 0.12

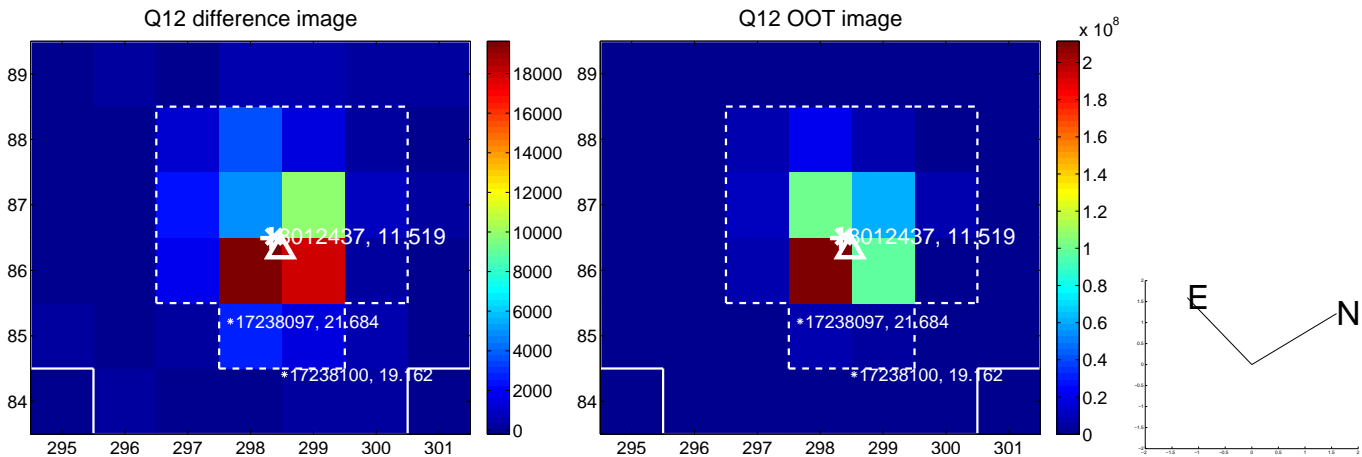
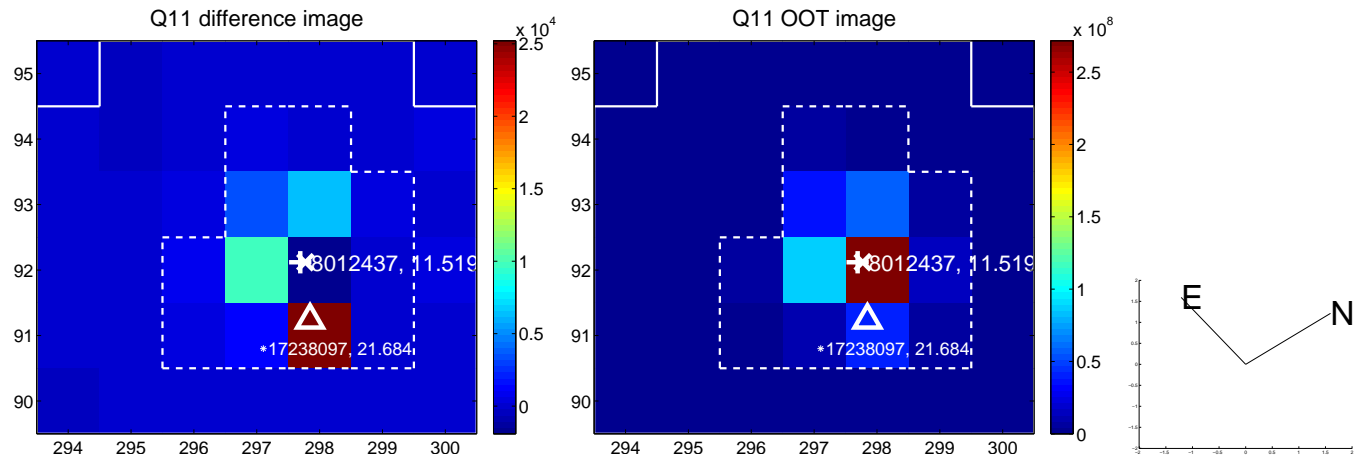
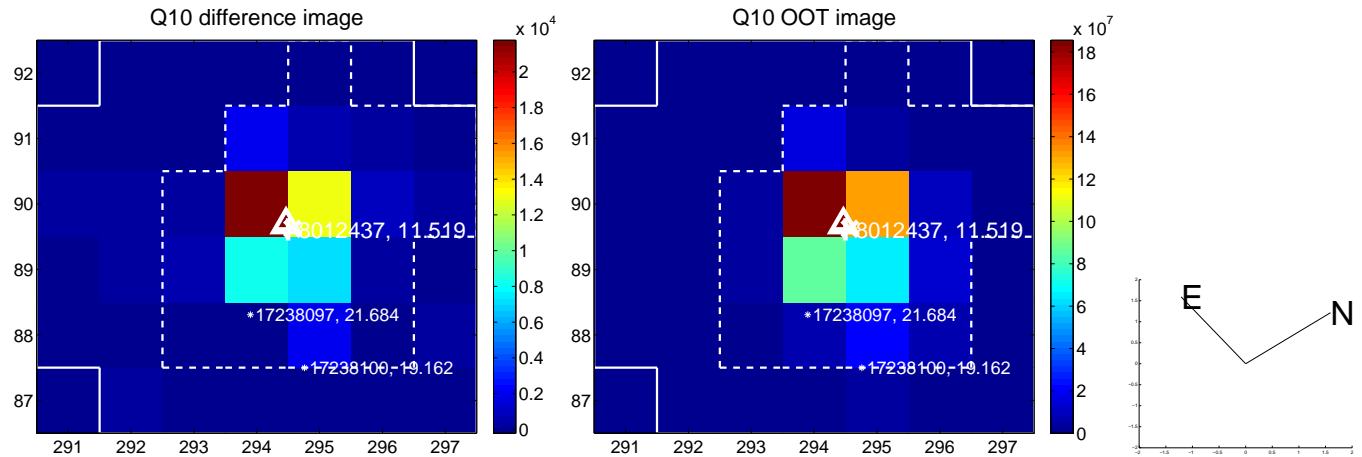
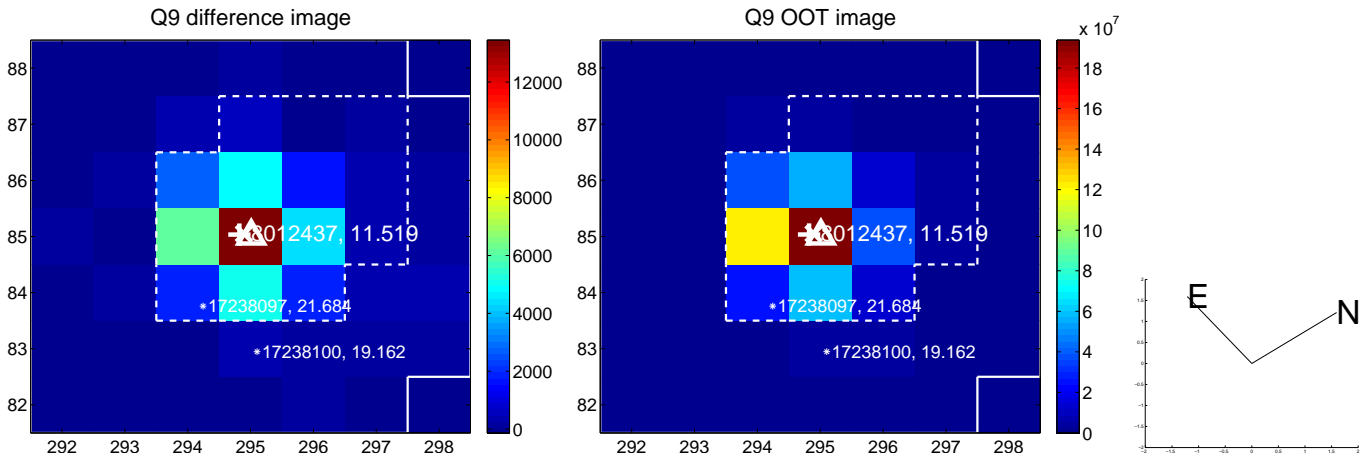


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

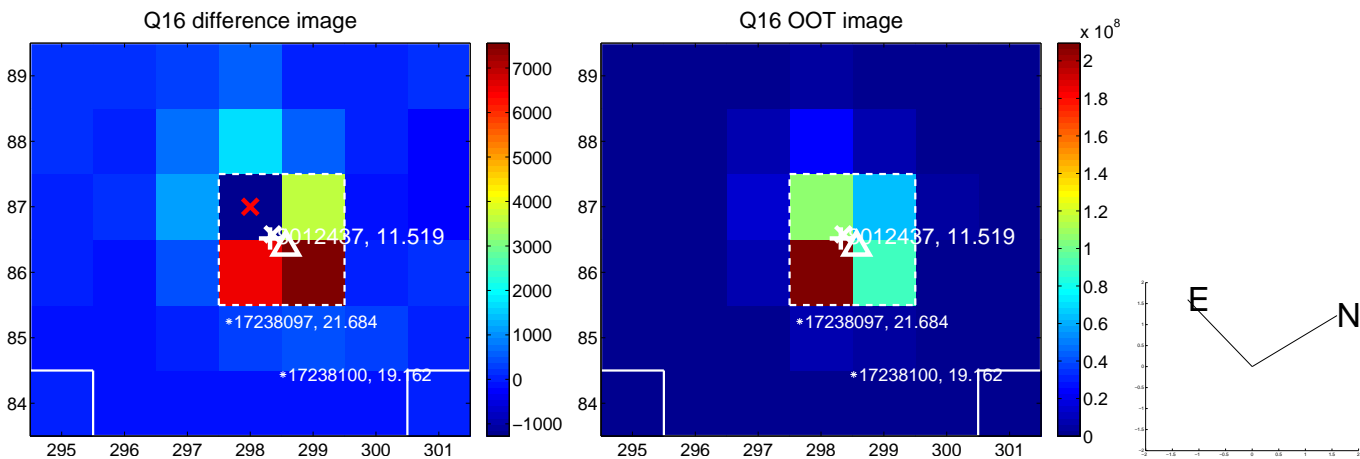
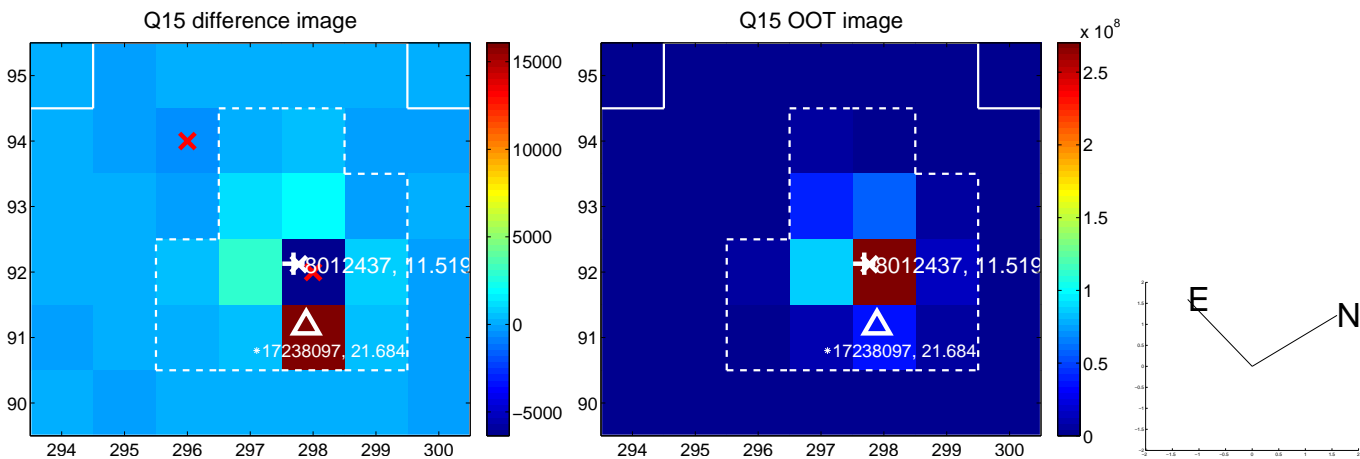
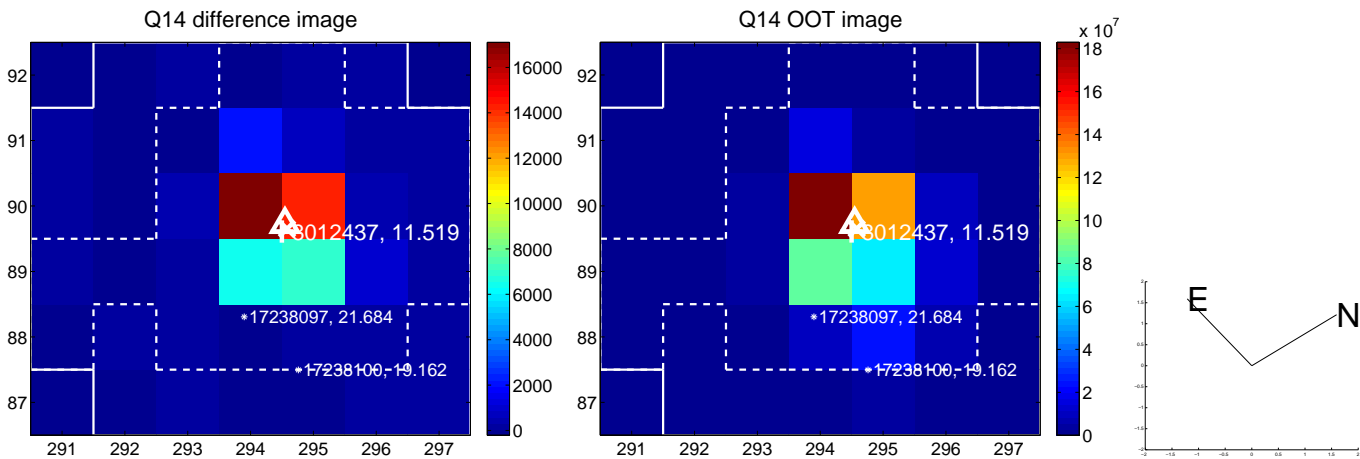
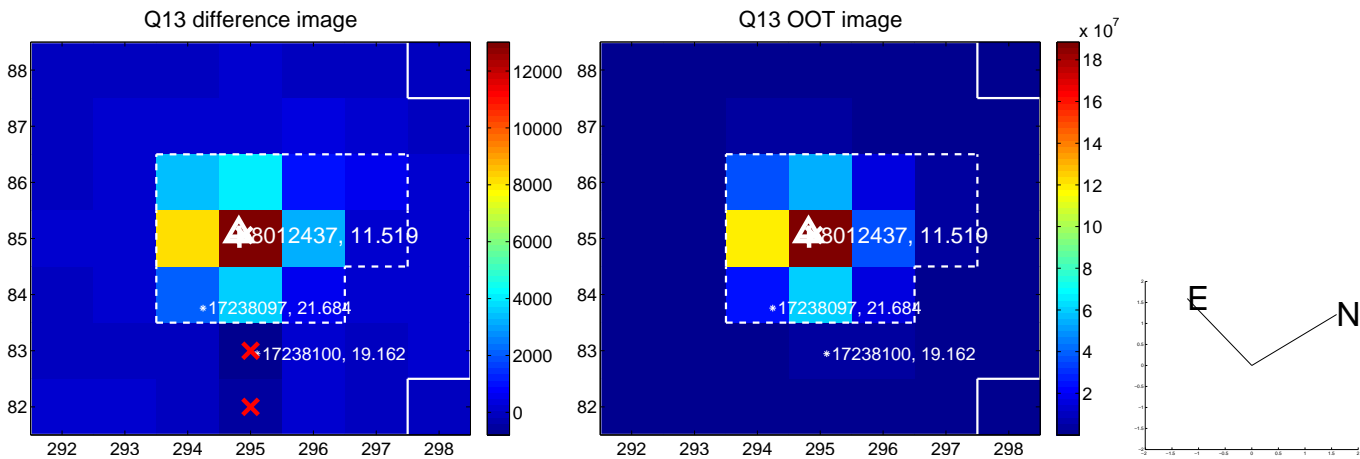
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



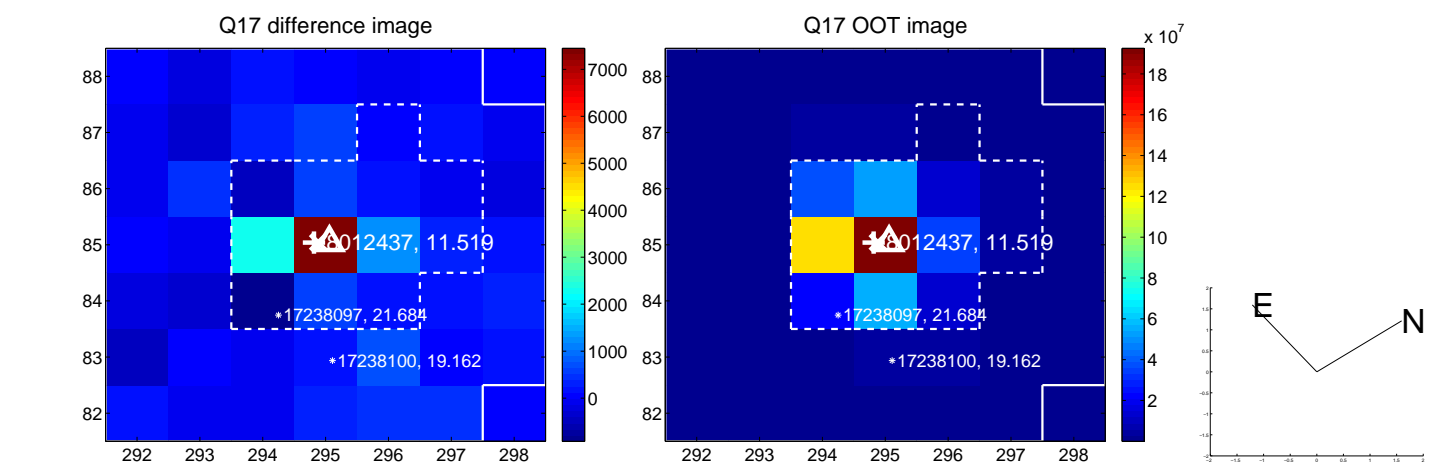
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



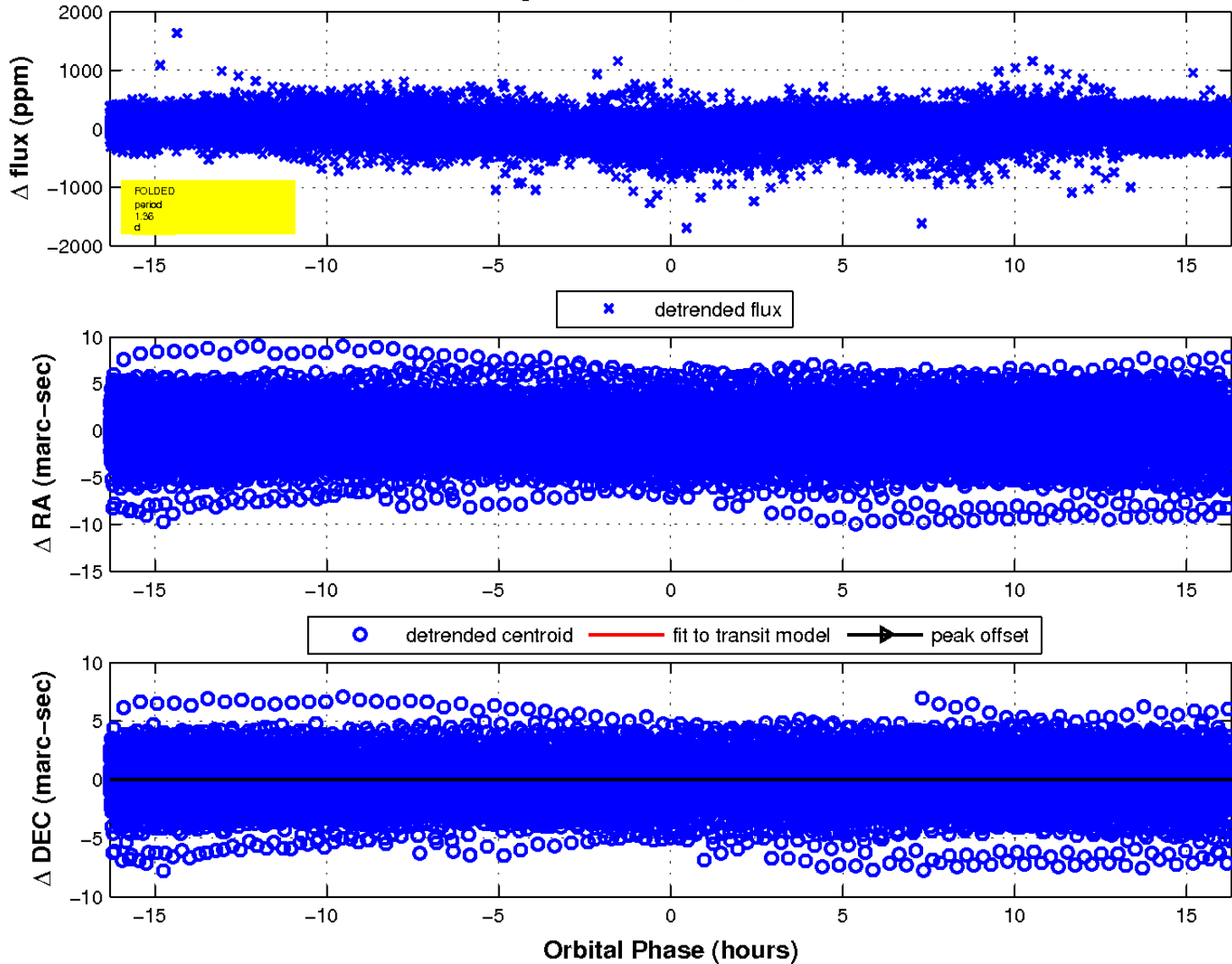
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

