

KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

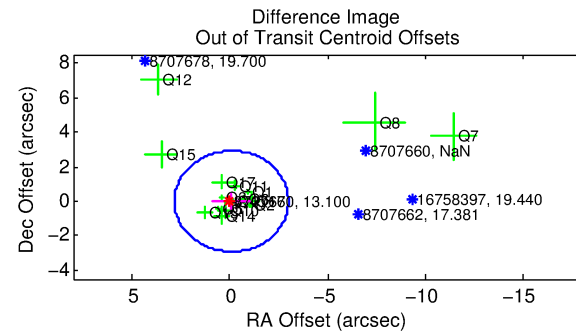
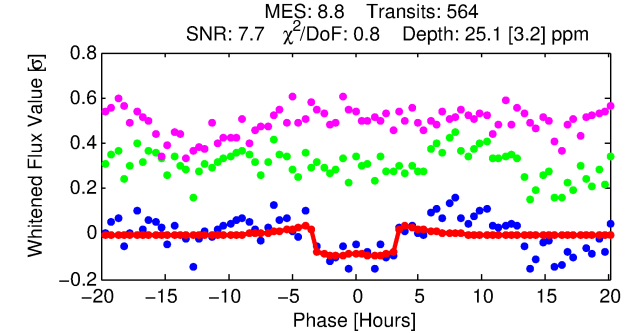
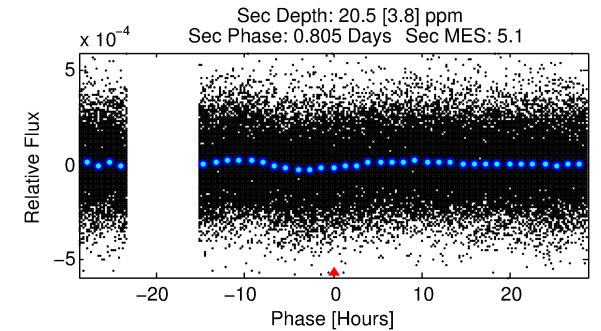
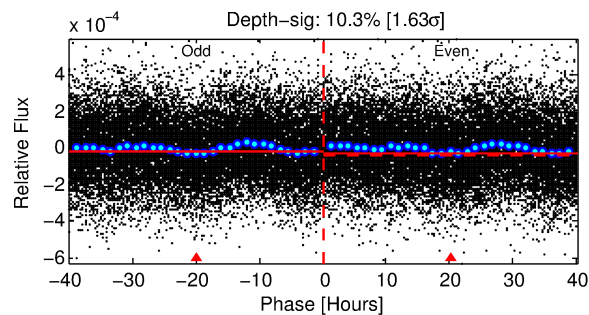
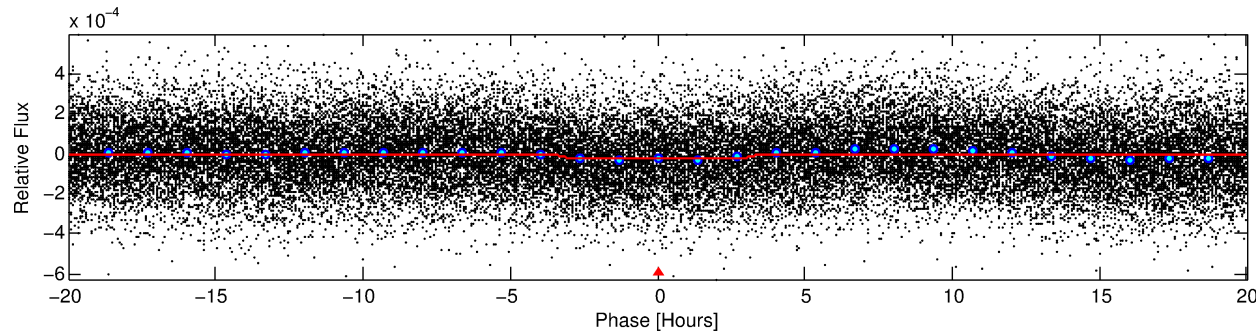
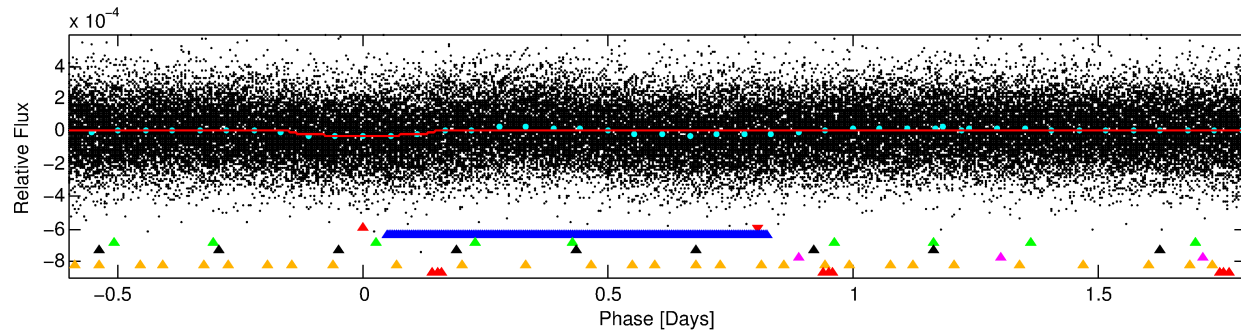
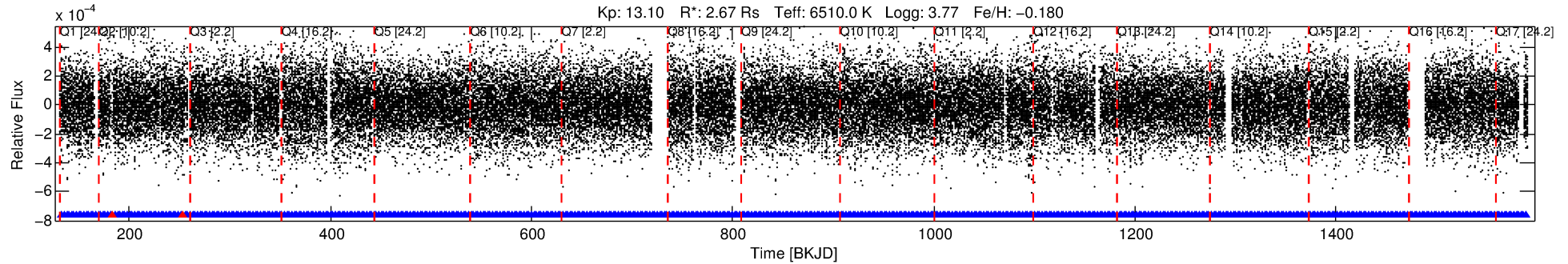
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-01

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 1 of 7 Period: 2.406 d



DV Fit Results:

Period = 2.40602 [0.00003] d
Epoch = 133.3047 [0.0058] BKJD
Rp/R* = 0.0049 [0.0015]
a/R* = 2.21 [2.92]
b = 0.67 [1.37]
Seff = 6970.81 [3670.21]
Teq = 2330 [307] K
Rp = 1.42 [0.66] Re
a = 0.0405 [0.0132] AU
Ag = 9.19 [7.52] [1.09σ]
Teffp = 6272 [1030] K [3.67σ]

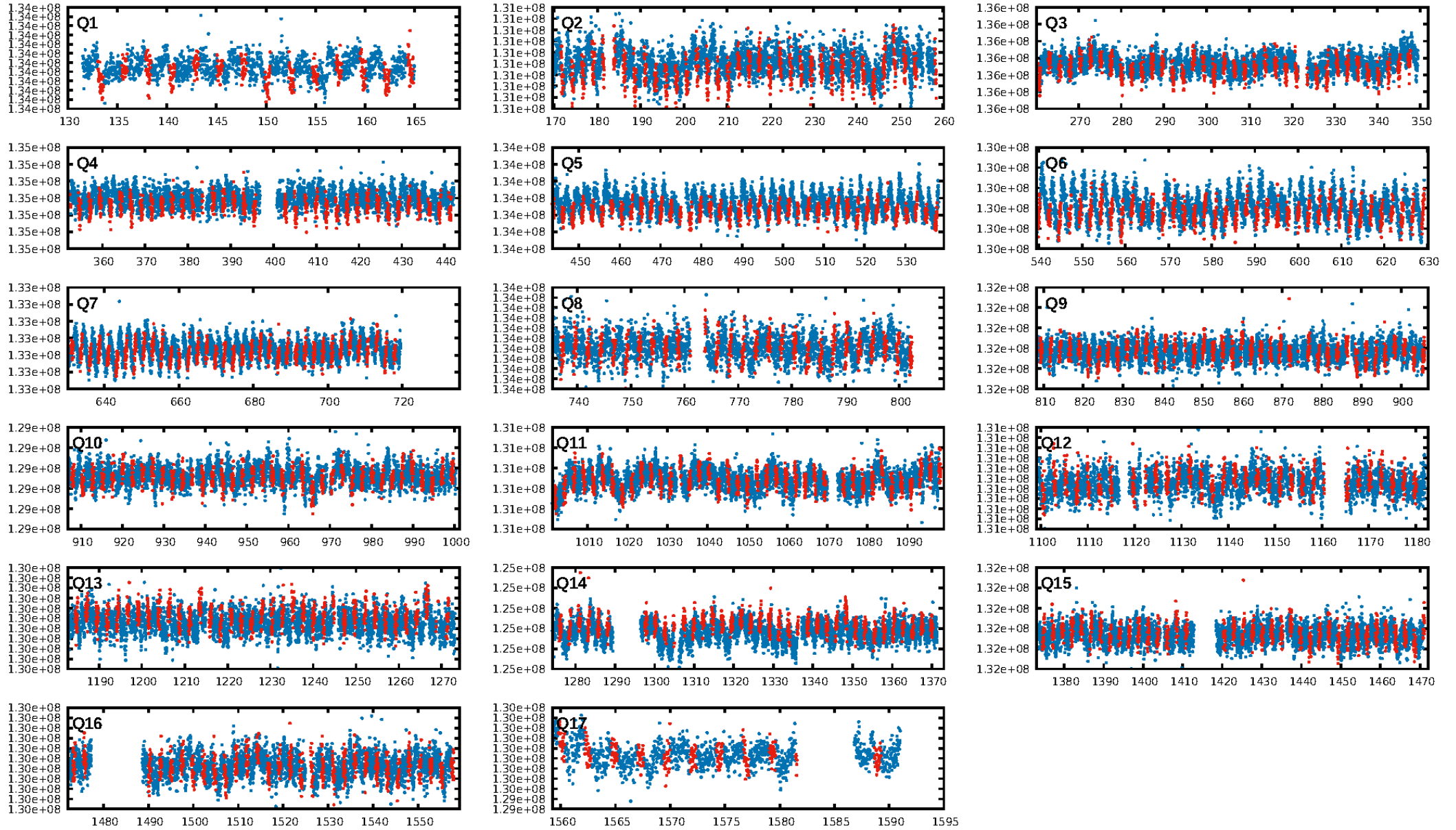
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.95e-10
RollingBand-fgt: 1.00 [538/540]
GhostDiagnostic-chr: 0.6649
Centroid-sig: 0.7%
Centroid-so: 1.803 arcsec [1.58σ]
OotOffset-rm: 0.088 arcsec [0.09σ]
KicOffset-rm: 0.242 arcsec [0.26σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 0.06 [1/17]

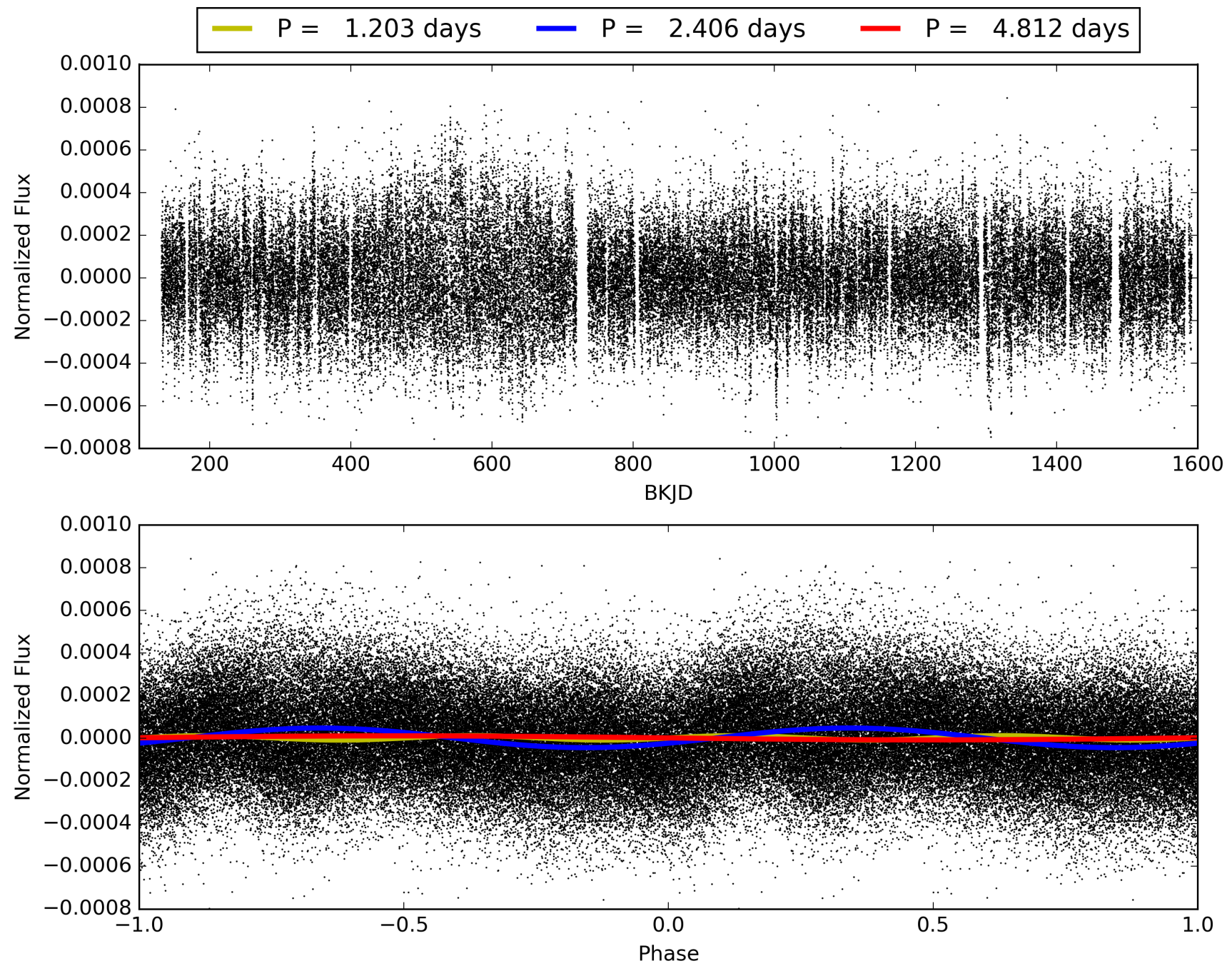
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:43 Z

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

TCE 008707670-01, PDC Light Curves

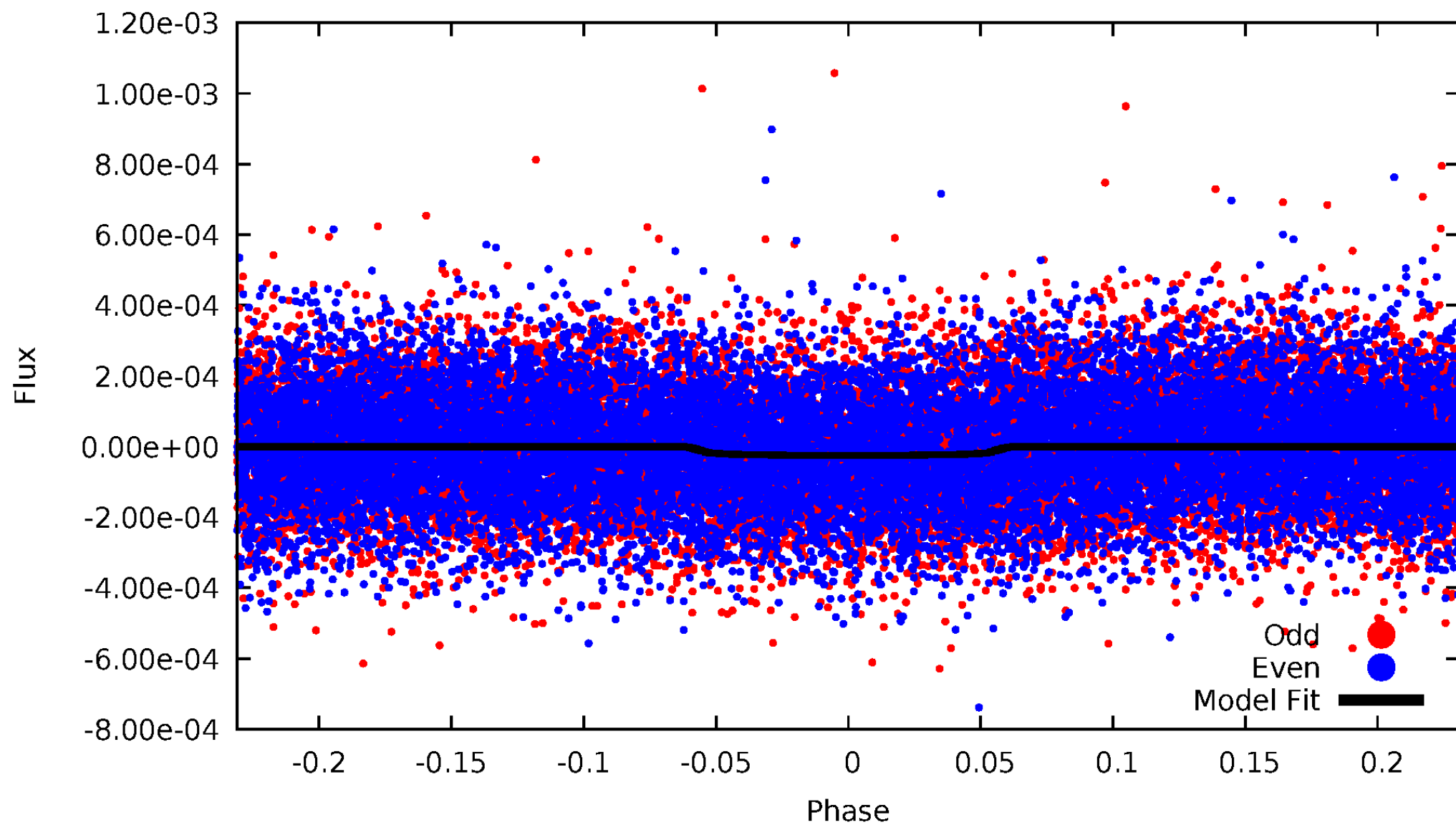


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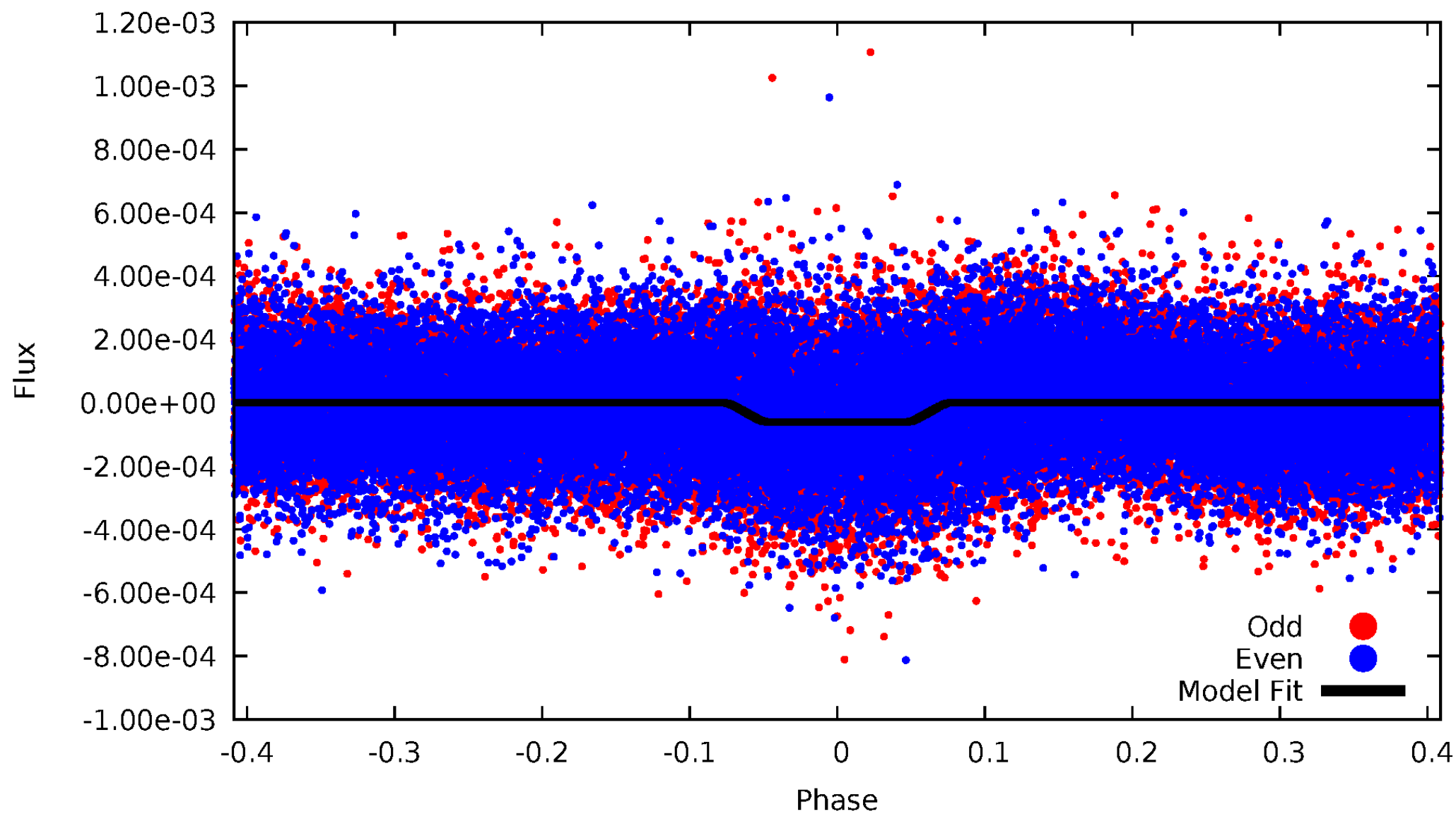
DV Odd/Even

TCE 008707670-01

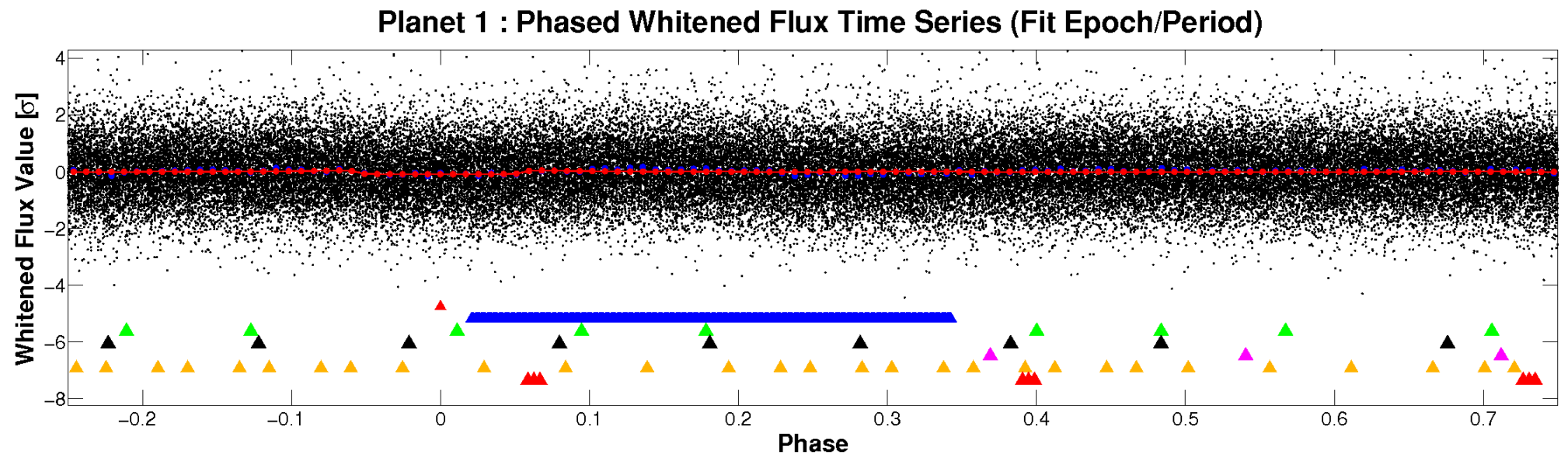
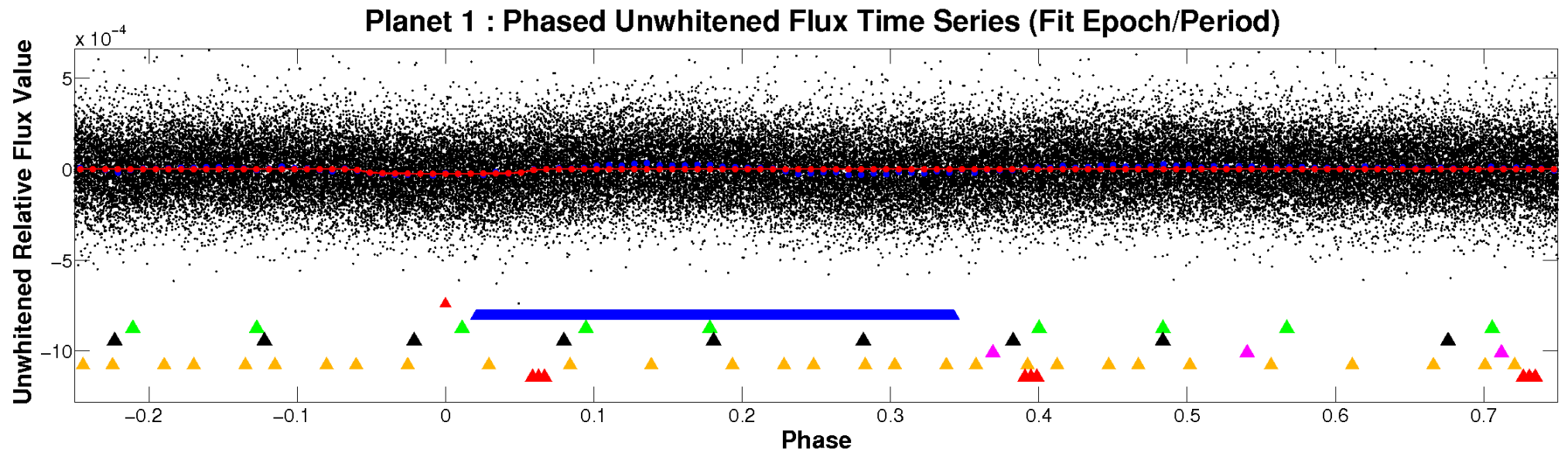


ALT Odd/Even

TCE 008707670-01

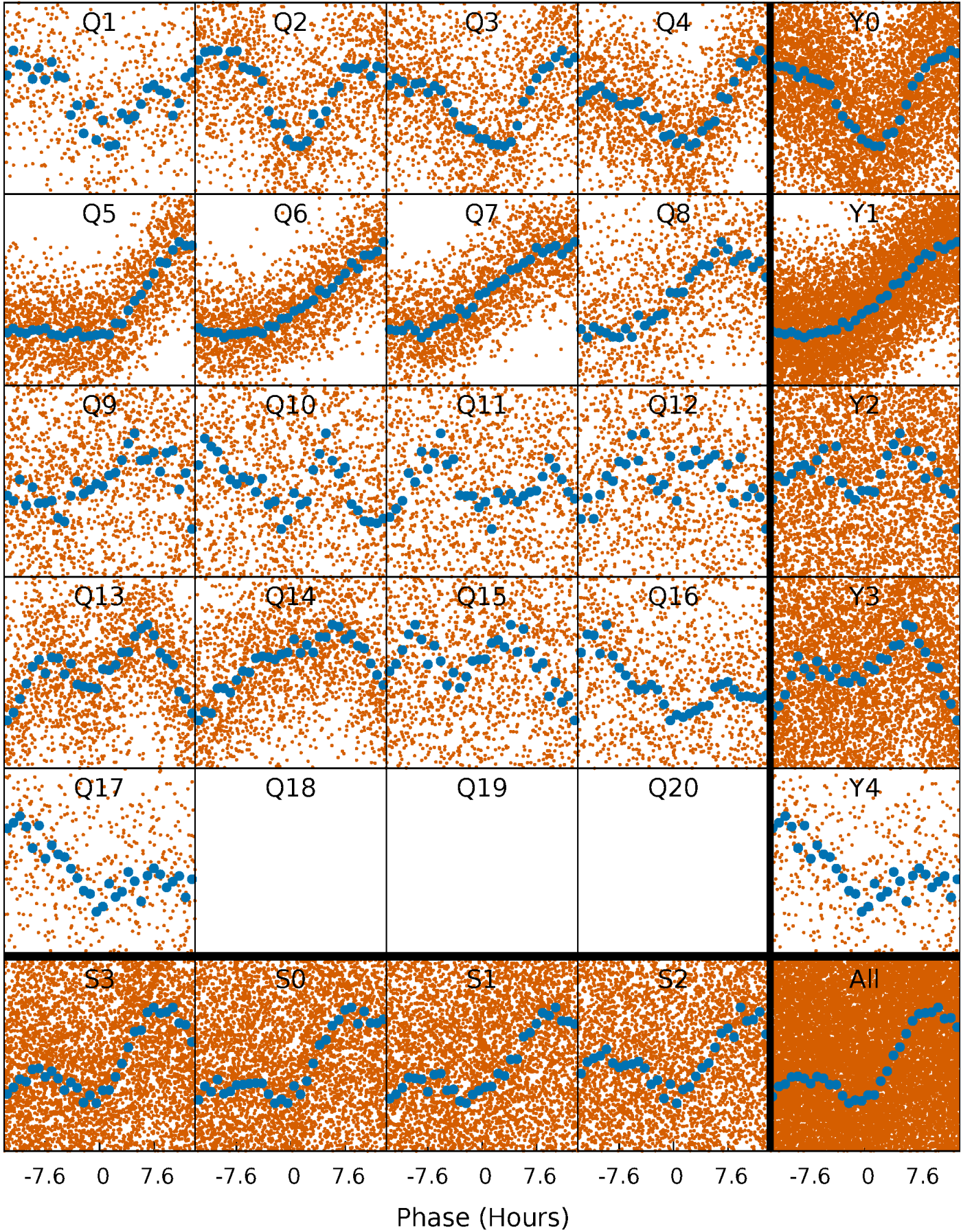


Non-Whitened Vs. Whitened Light Curve



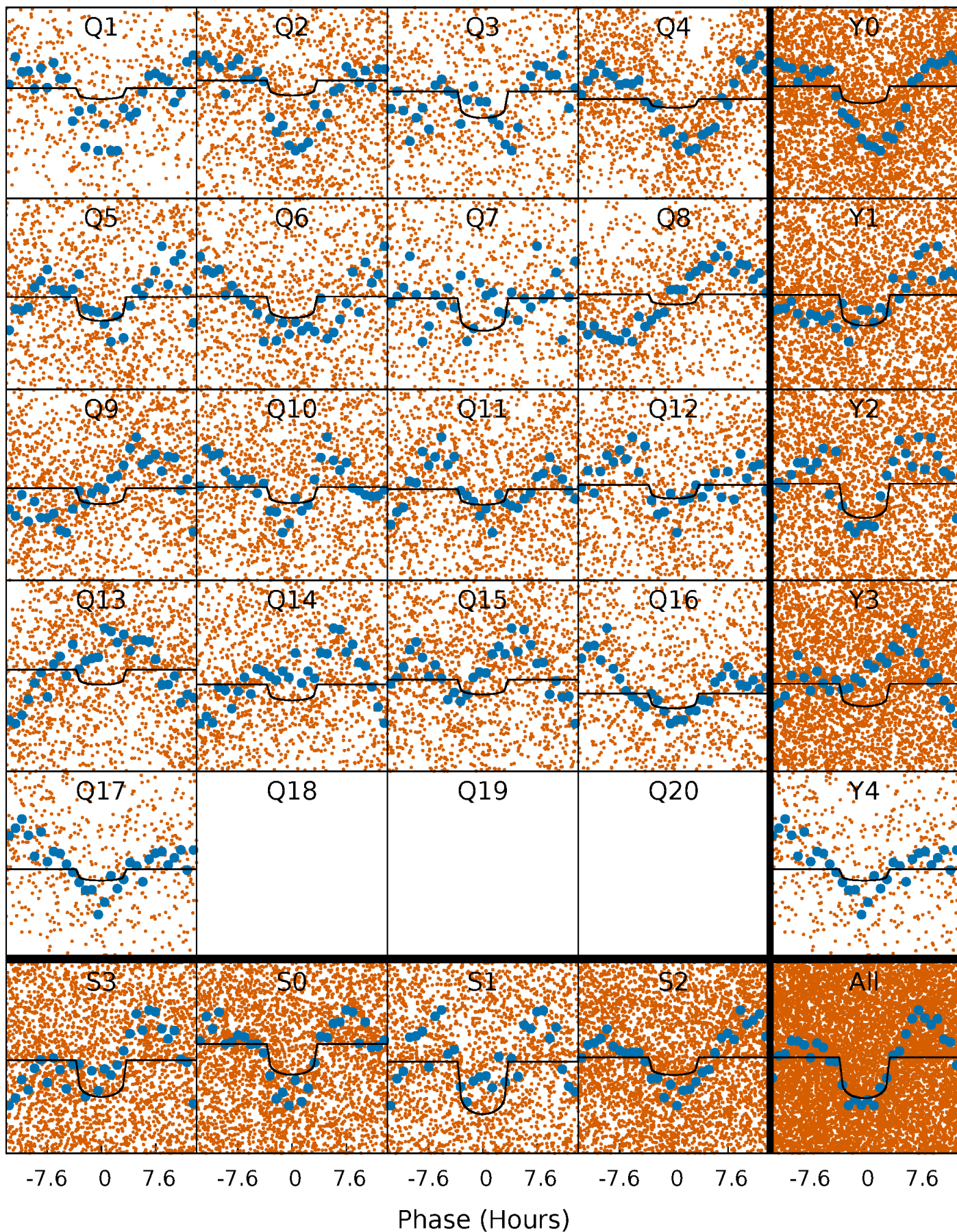
PDC Quarter-Phased Transit Curves

TCE 008707670-01 P= 2.406023 Days $T_0=133.304727$ (BKJD)



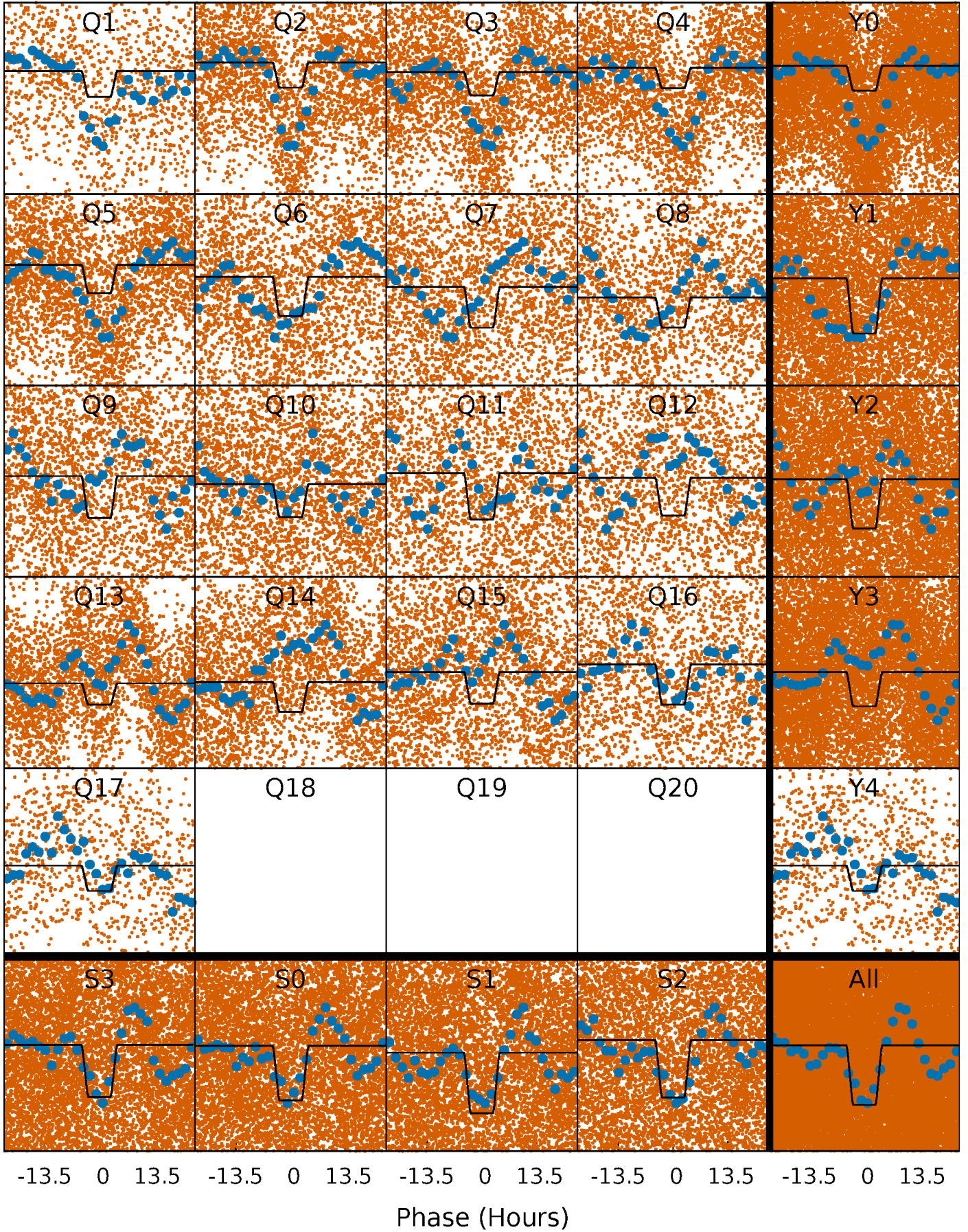
DV Quarter-Phased Transit Curves

TCE 008707670-01 P= 2.406023 Days $T_0=133.304727$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

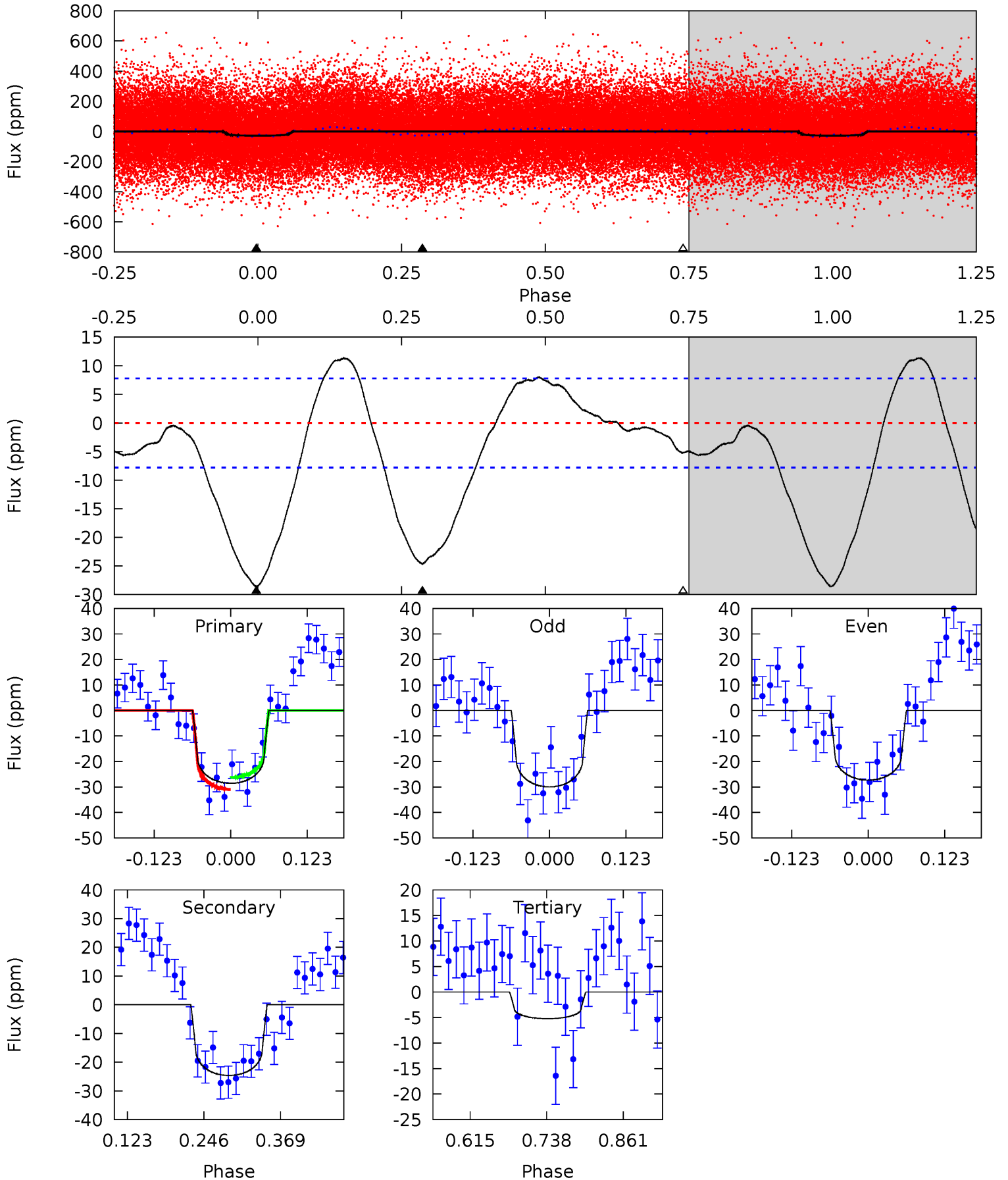
TCE 008707670-01 P= 2.405850 Days $T_0=133.331247$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-01, P = 2.406023 Days, E = 130.898704 Days

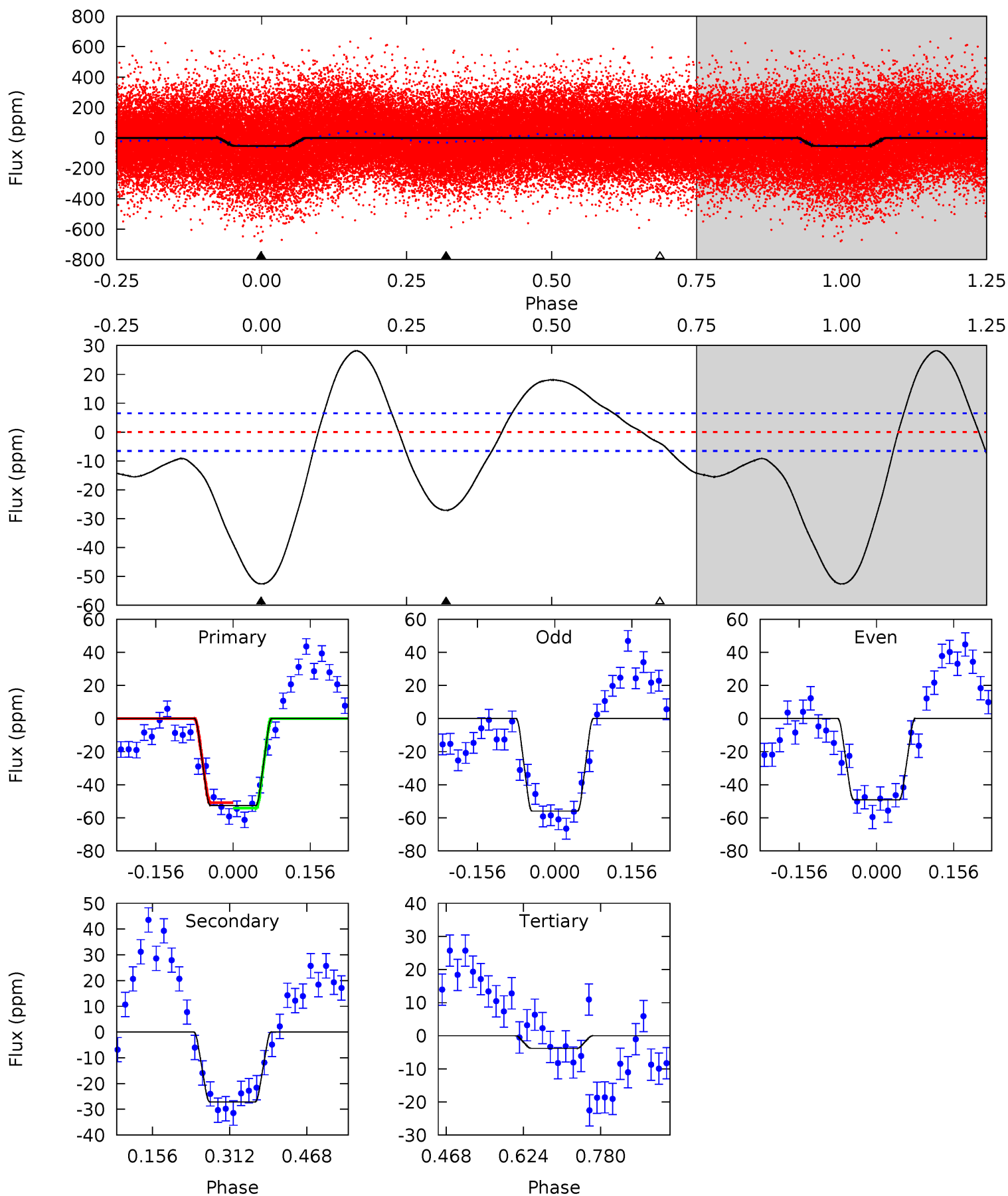
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.6	14.3	3.03	0	4.52	1.54	2.85	13.6	16.6	11.3	14.3	0.78	1.10	0.28	1.36



Alt Model-Shift Uniqueness Test

008707670-01, P = 2.405850 Days, E = 130.925397 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.1	18.6	2.62	0	4.47	1.42	8.59	33.4	36.1	16.0	18.6	2.33	1.08	0.35	1.11



Stellar Parameters For KIC 008707670

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 2	$1.31^{+0.48}_{-0.44}$	3173^{+219}_{-305}	6569^{+1542}_{-923}	13^{+16}_{-6}
Alt.	-27 ± 1	$2.14^{+0.53}_{-0.56}$	3177^{+209}_{-278}	5281^{+572}_{-469}	$5.379^{+3.790}_{-1.926}$

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

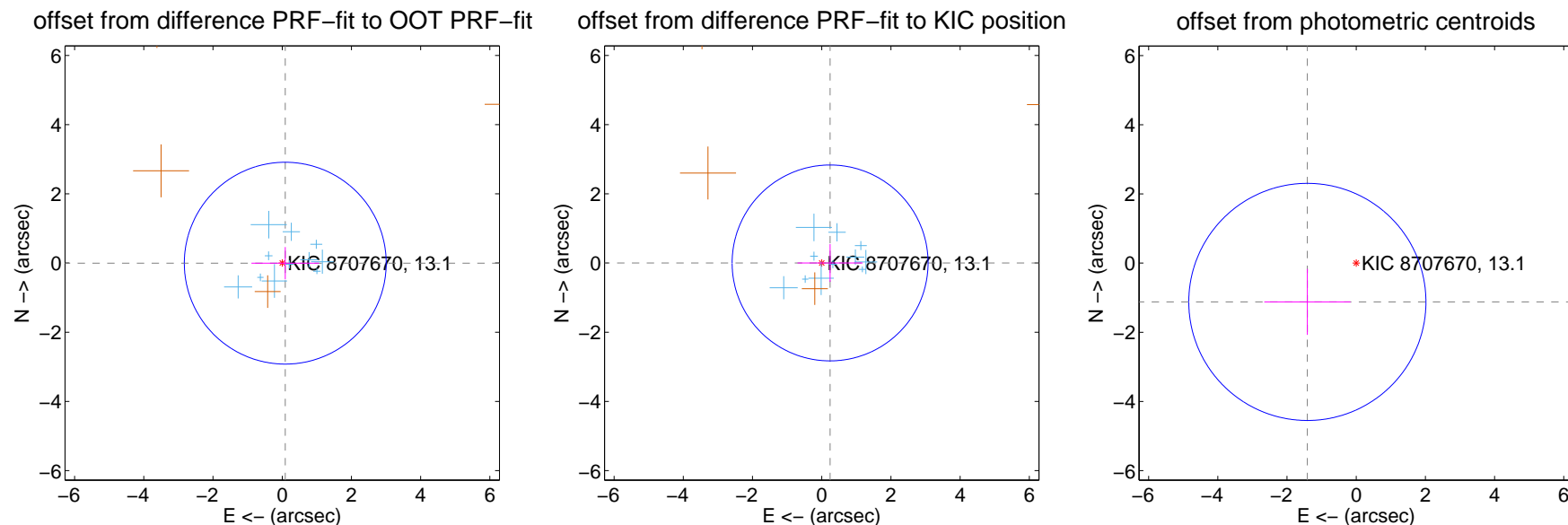
DV Centroid Data

Supplemental centroid analysis for 008707670-01. Kepler magnitude: 13.10. Transit SNR 7.74

There are 11 quarters with good PRF difference image offsets

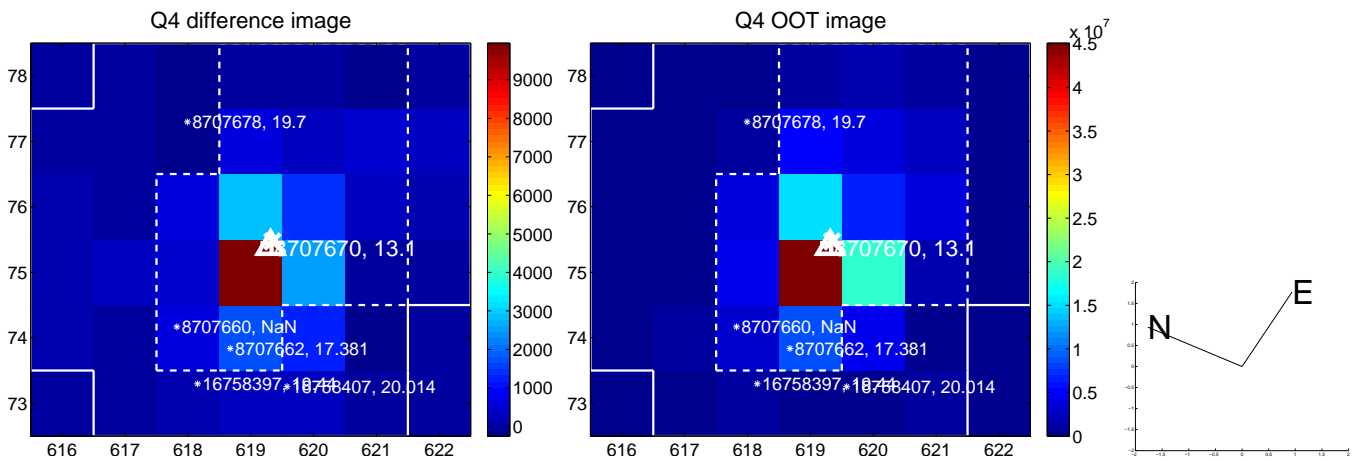
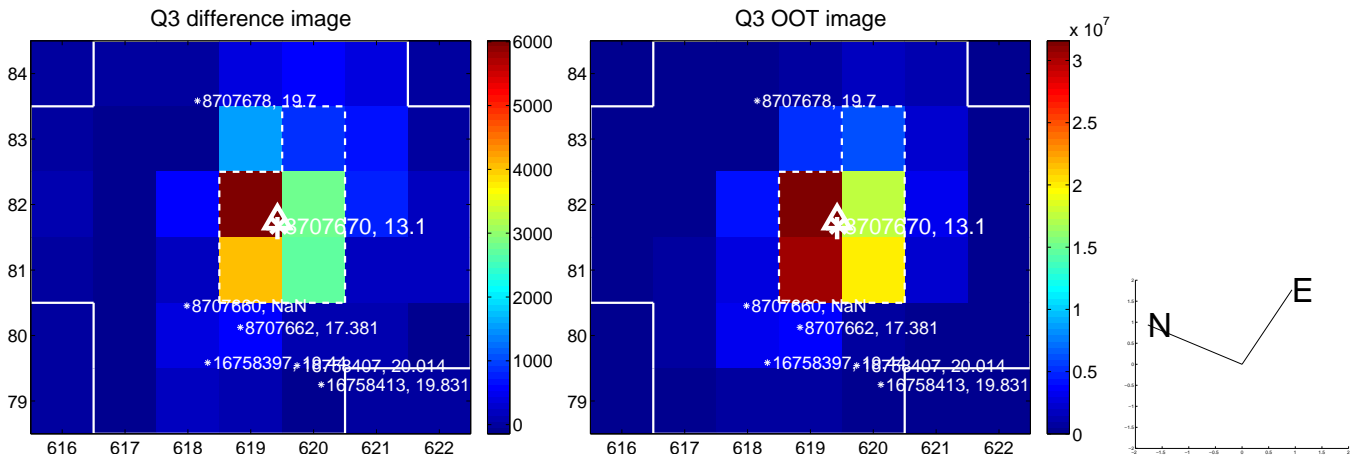
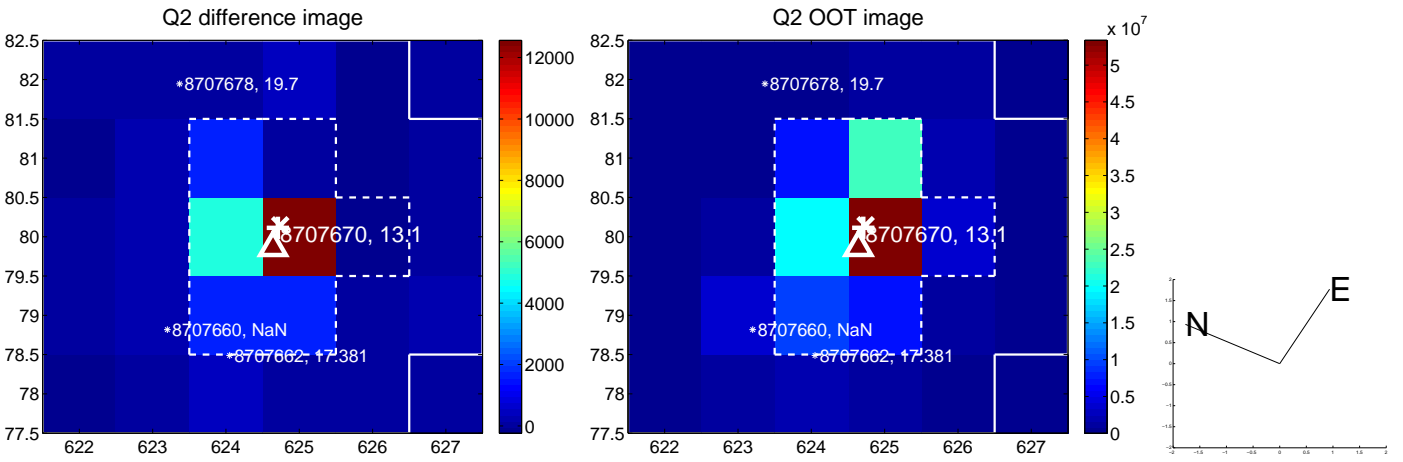
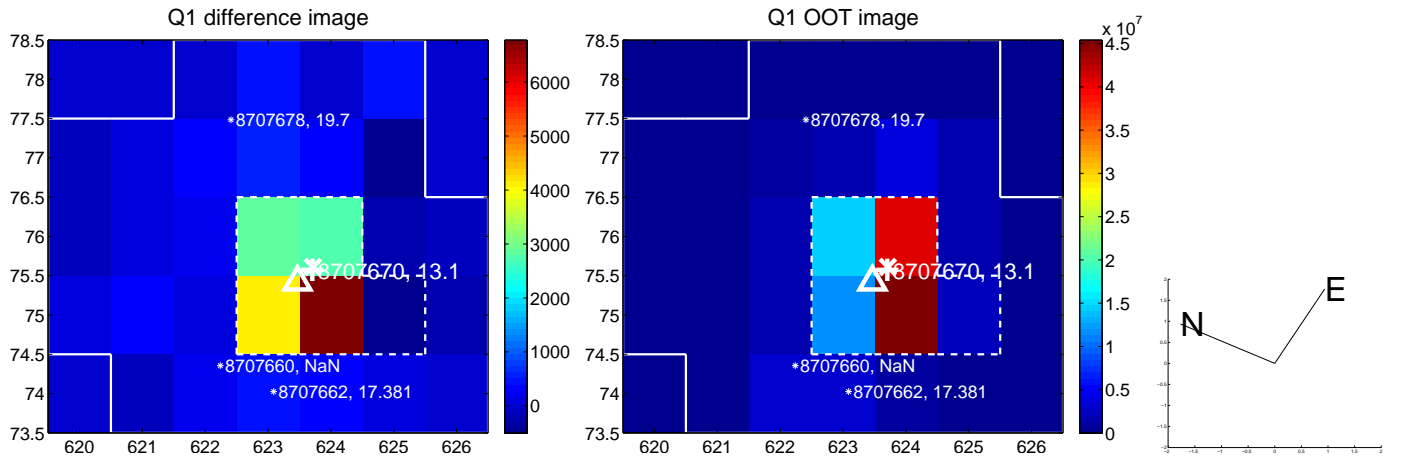
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.088 ± 0.972	0.09	-0.088 ± 0.979	-0.004 ± 0.466
PRF-fit source offset from KIC position	0.242 ± 0.944	0.26	-0.242 ± 0.942	0.003 ± 0.546
photometric centroid source offset	1.80 ± 1.14	1.58	1.41 ± 1.25	-1.12 ± 0.95

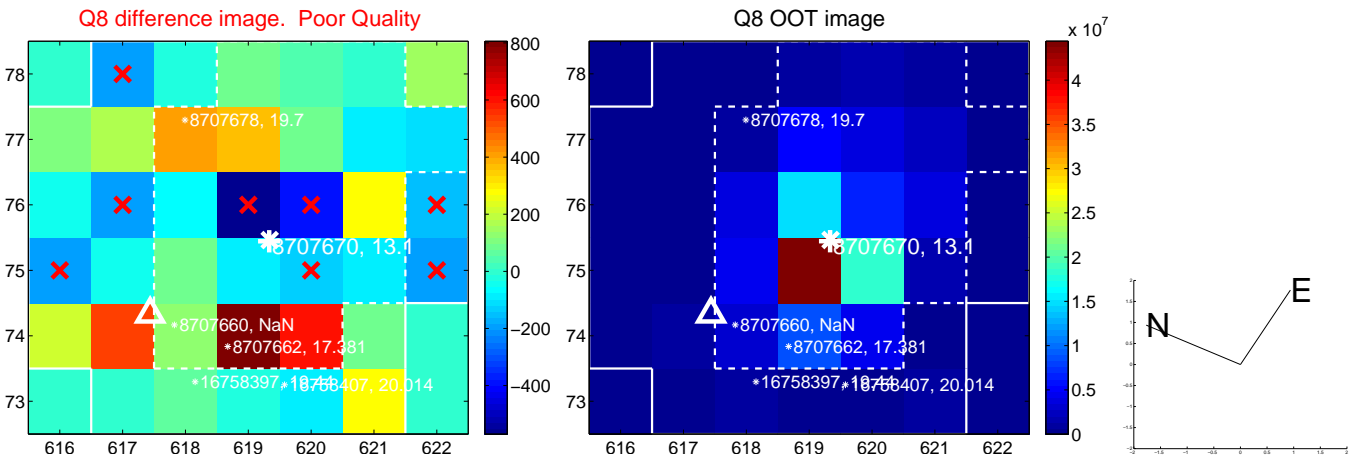
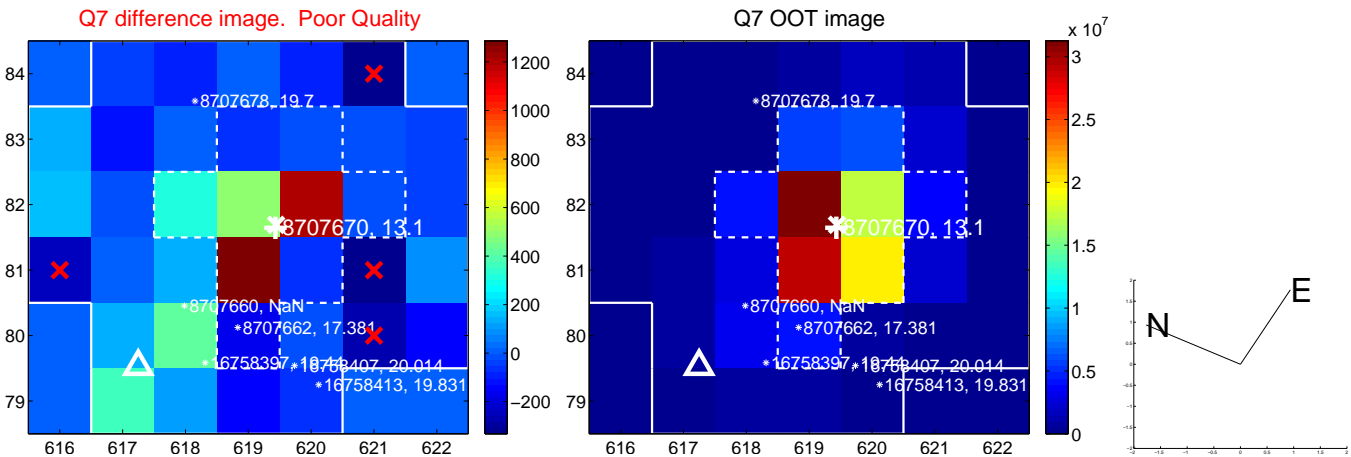
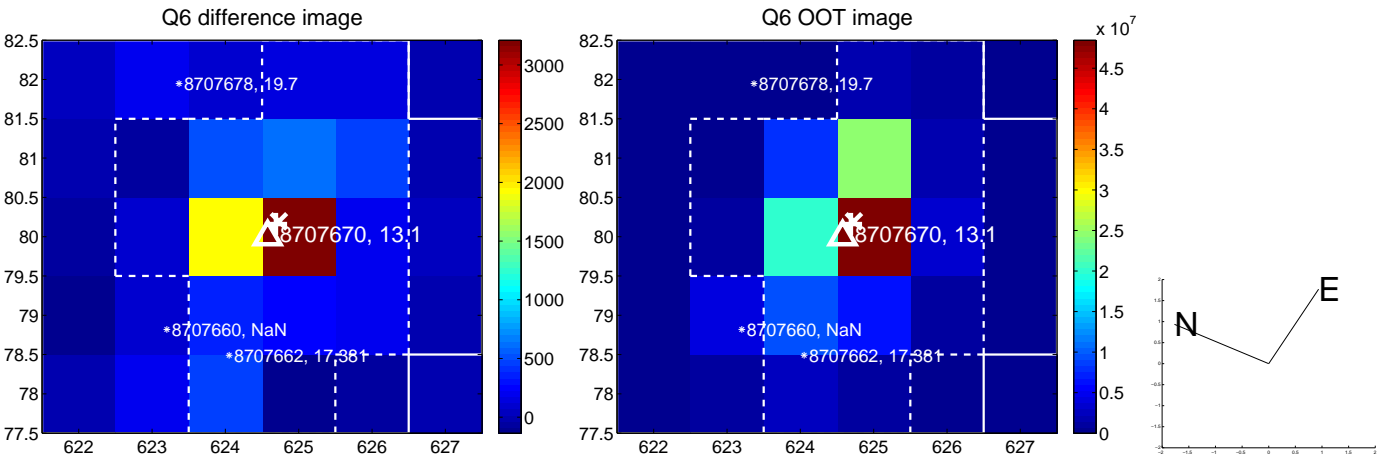
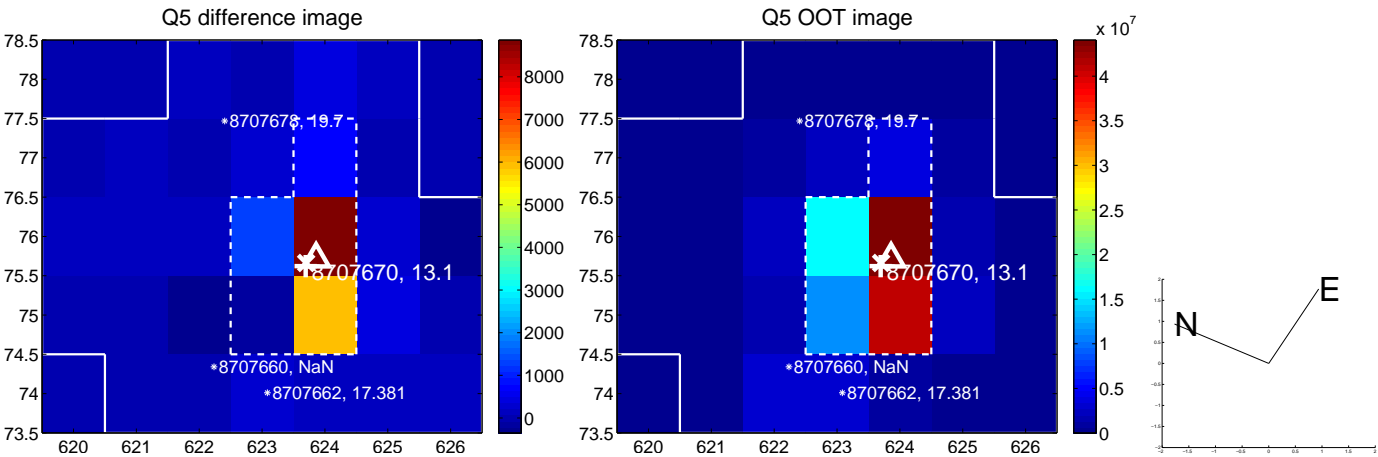


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

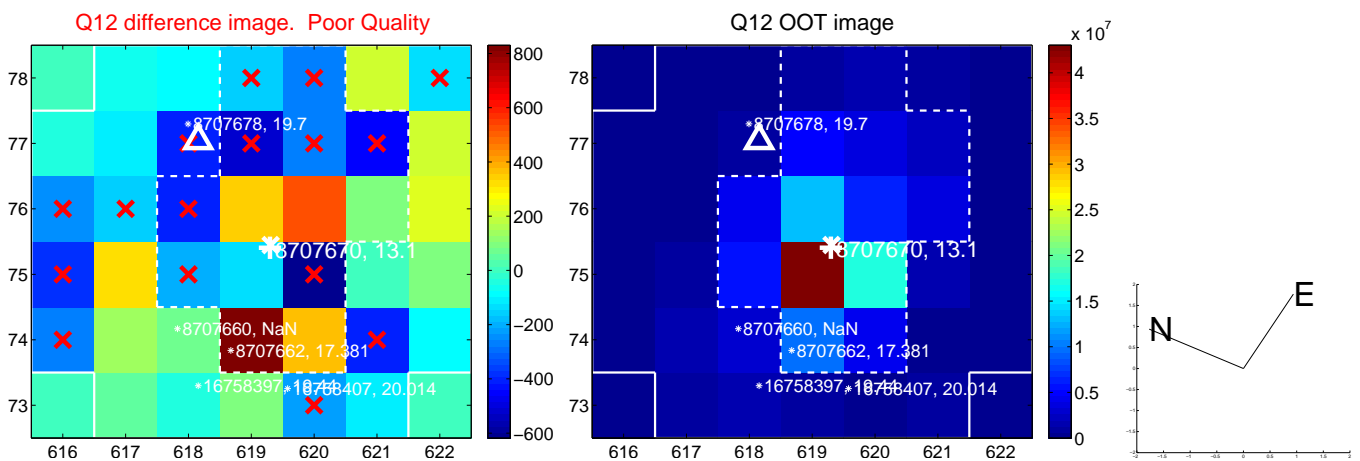
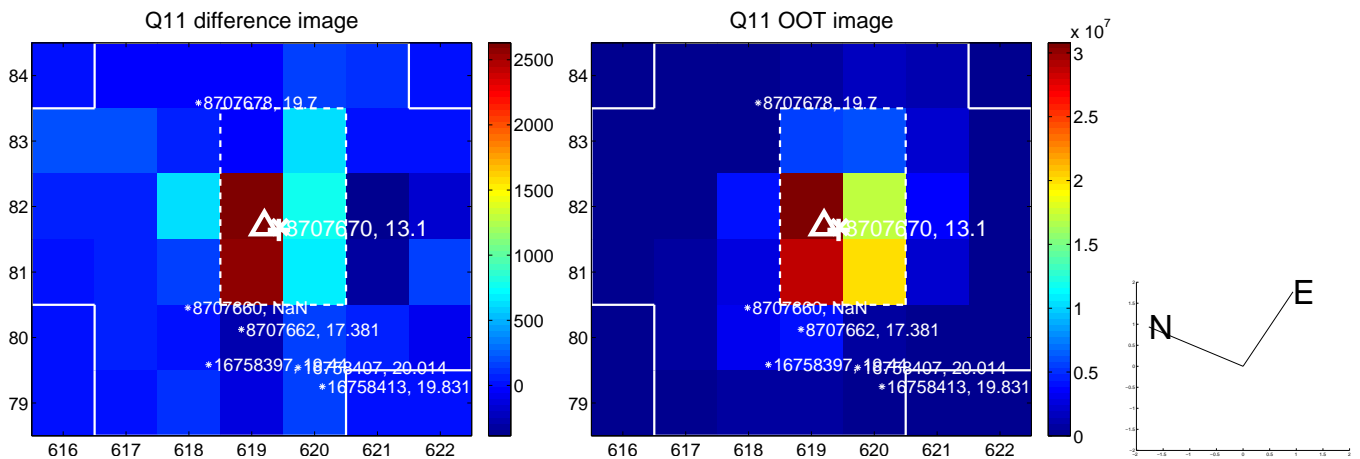
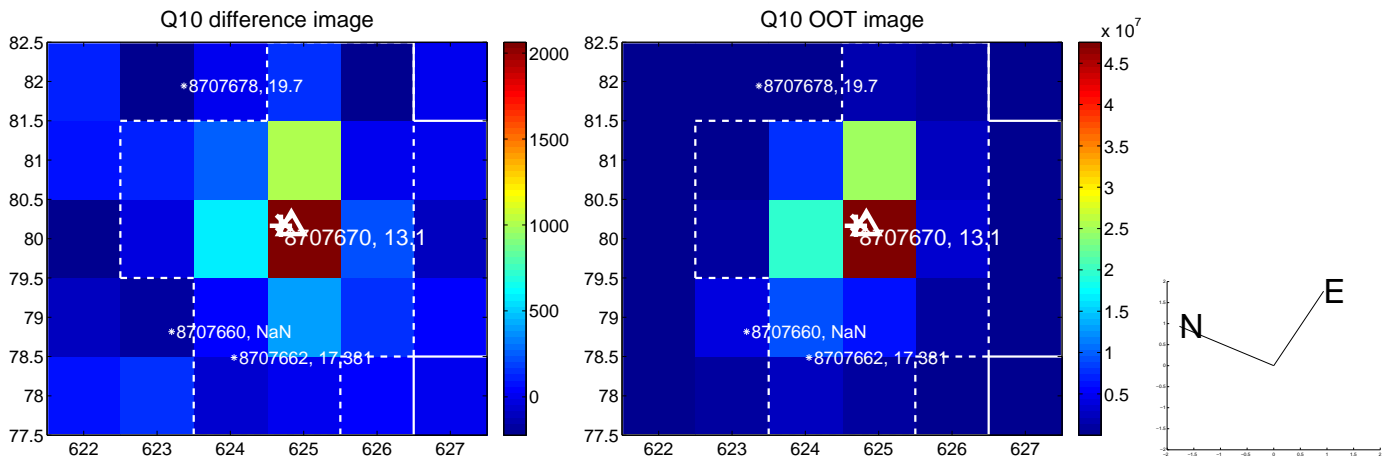
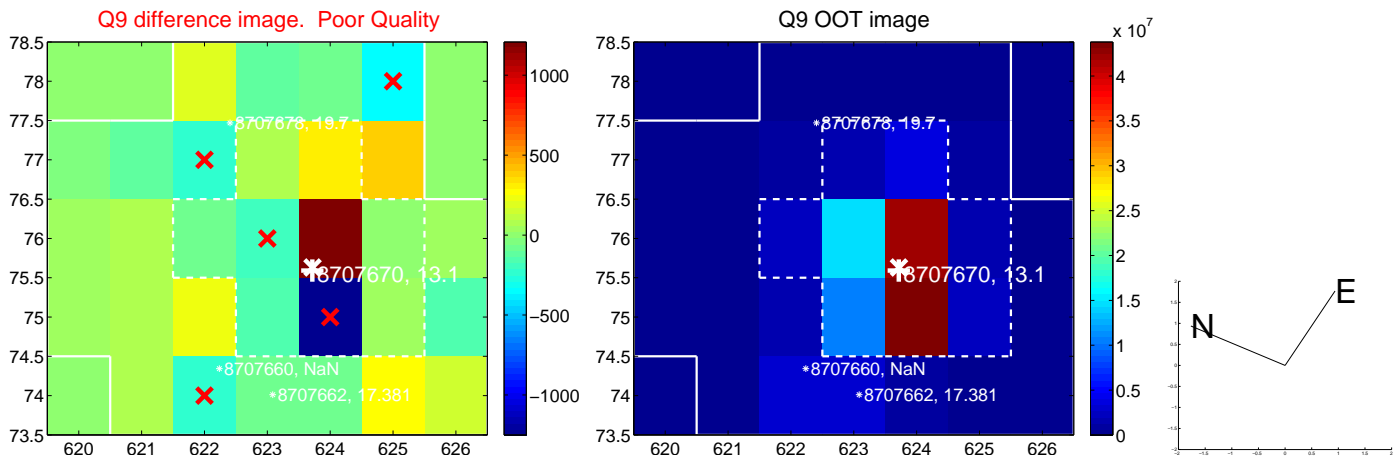
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



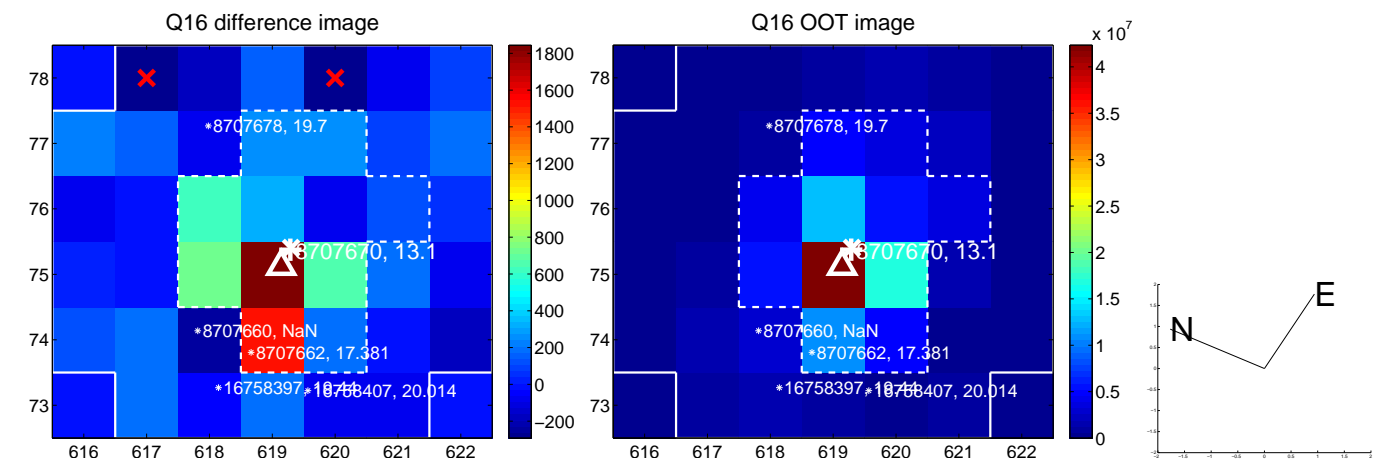
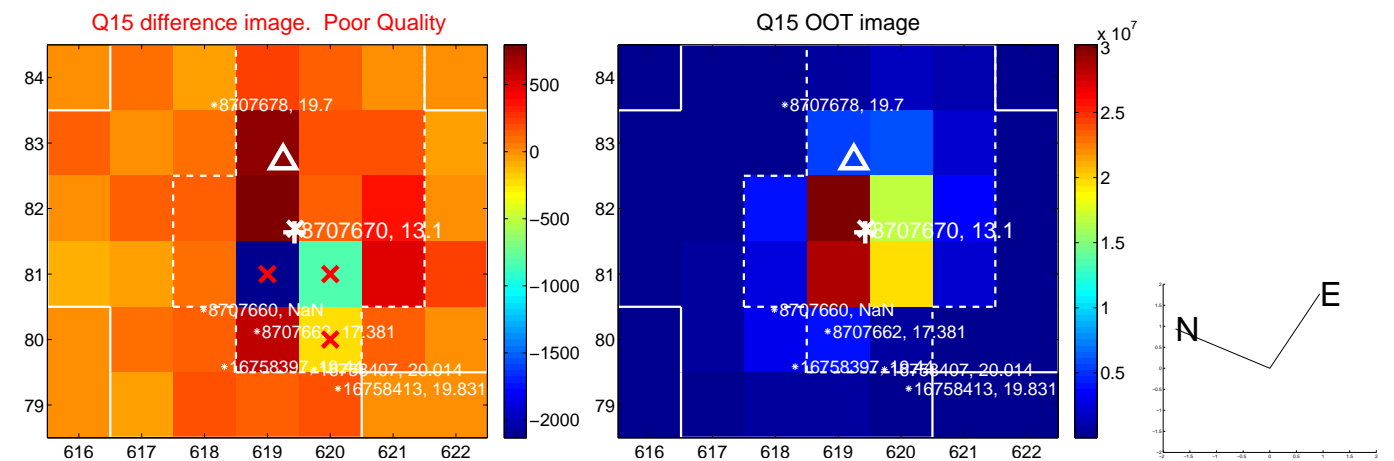
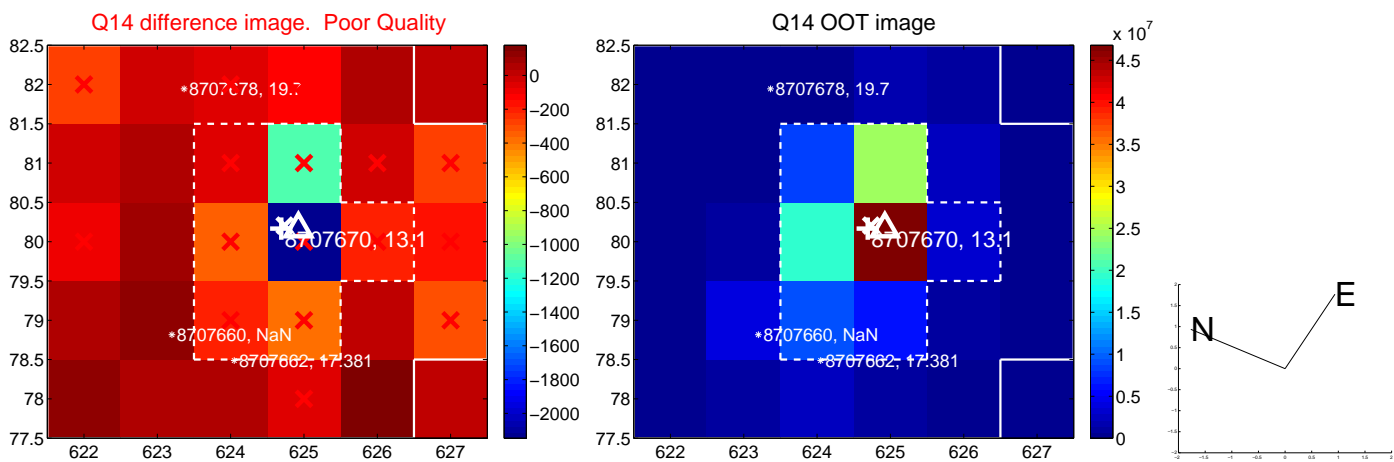
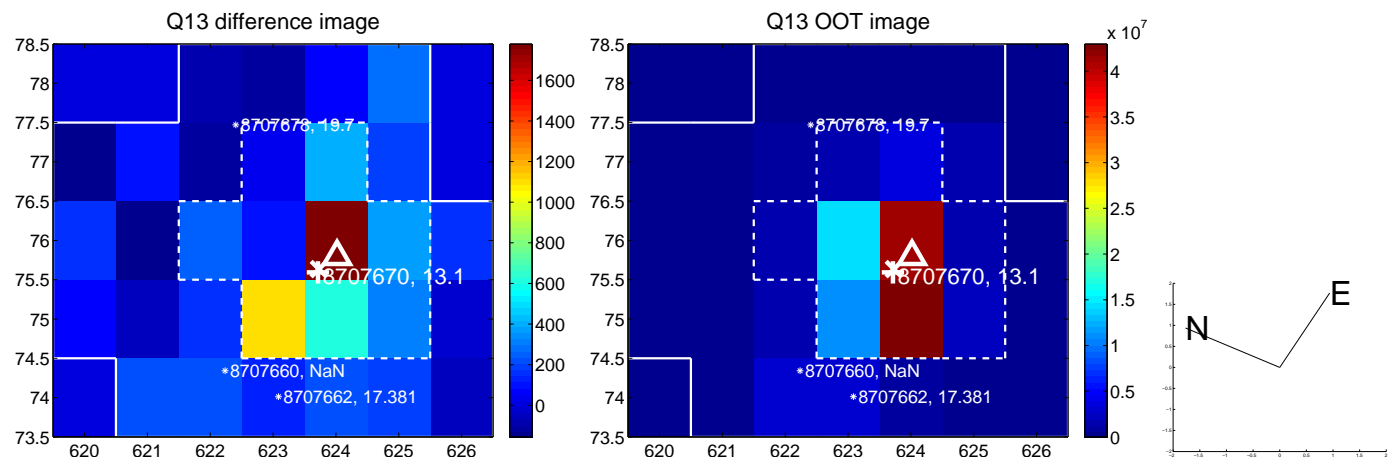
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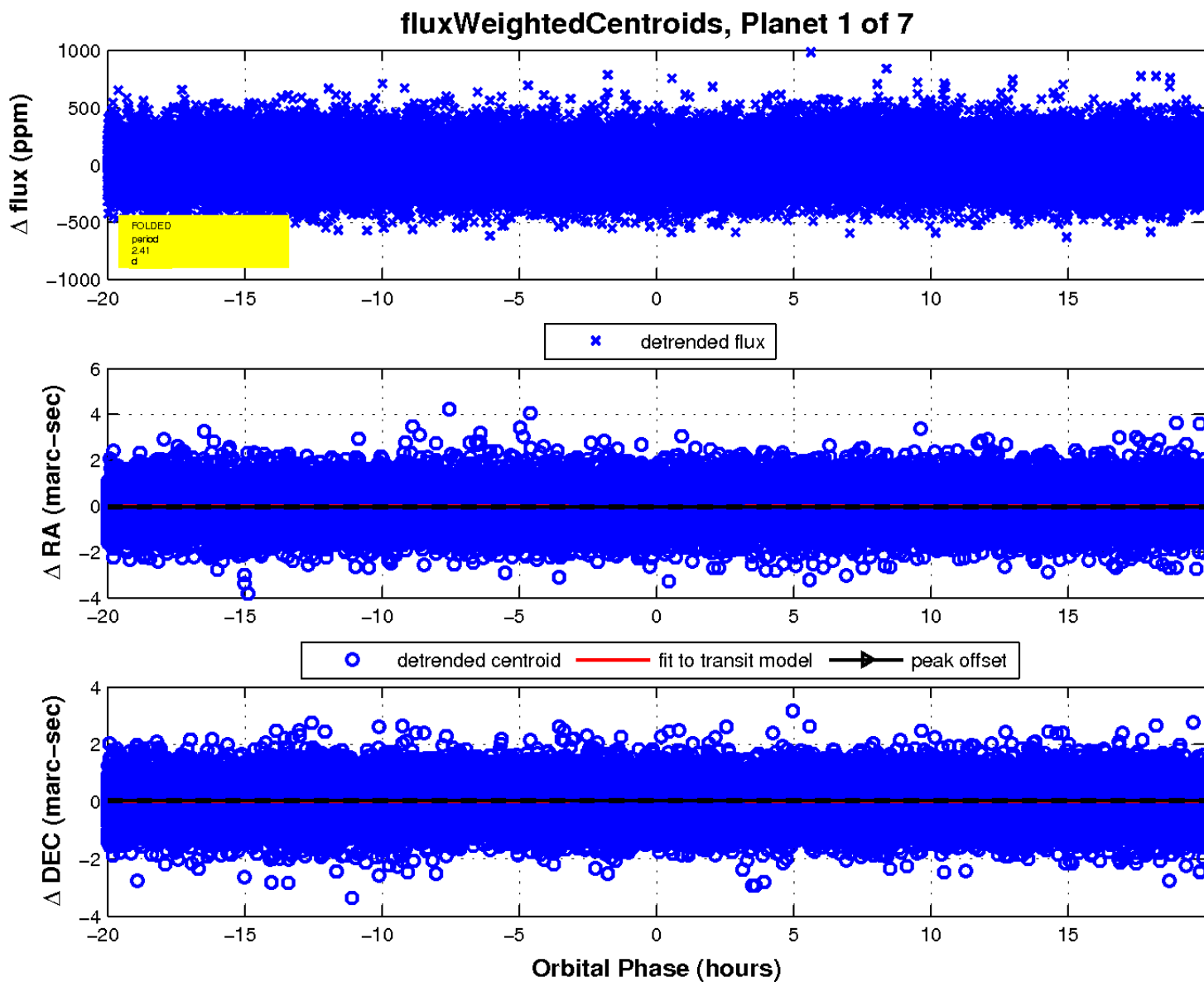
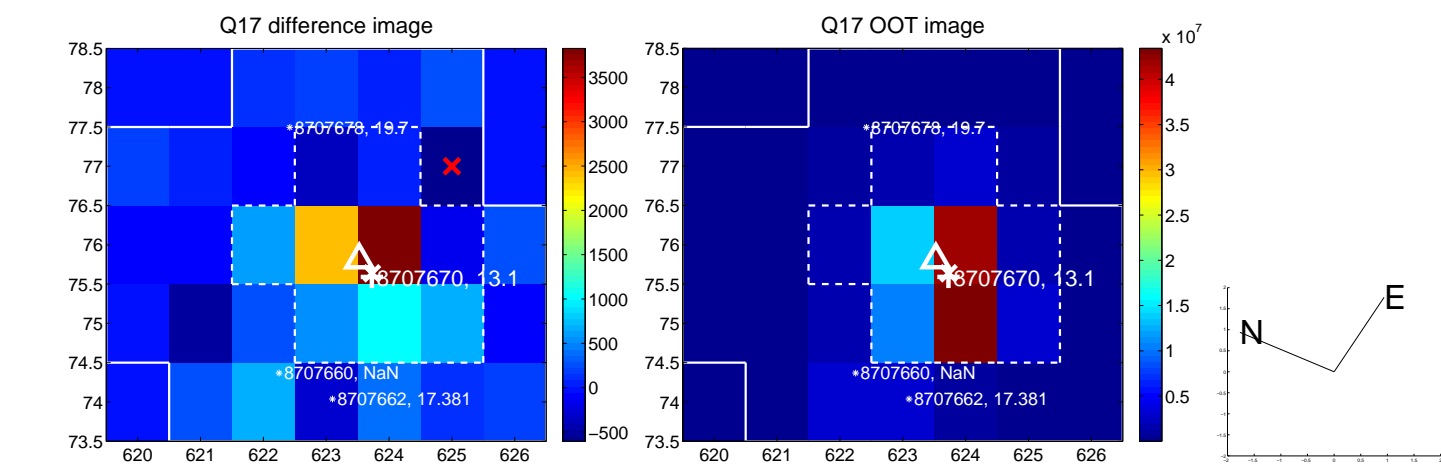
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



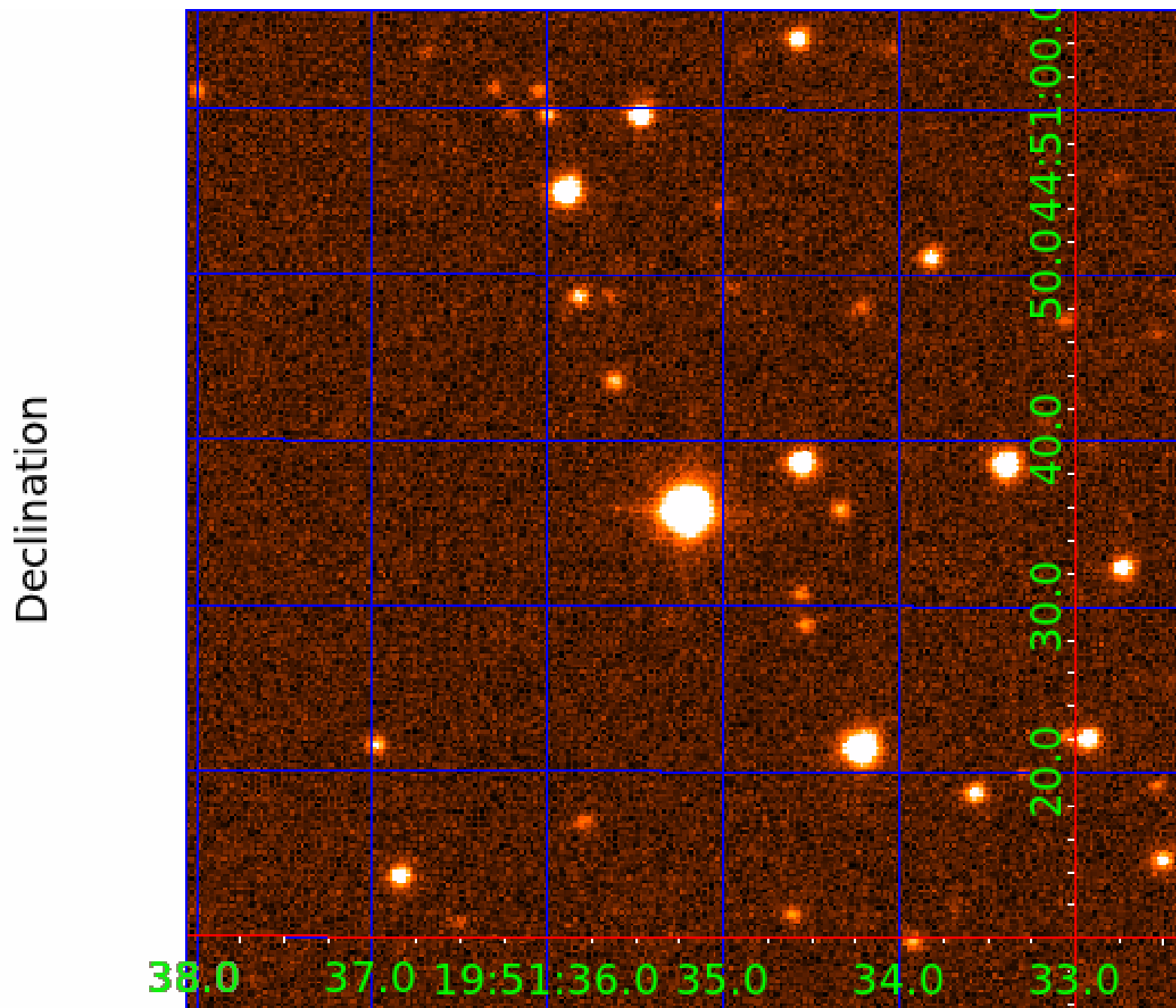
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008707670

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})
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008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

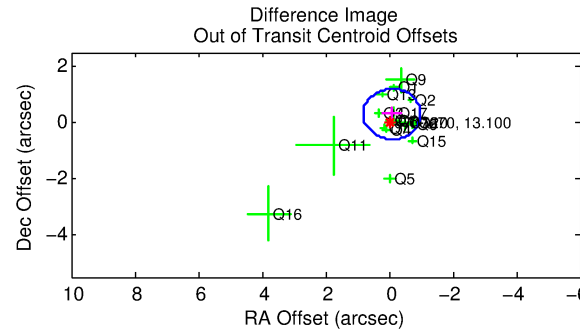
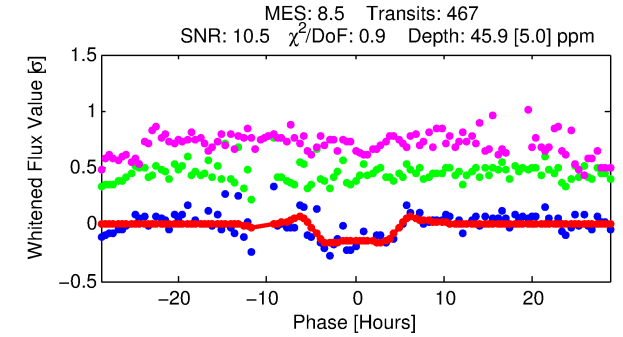
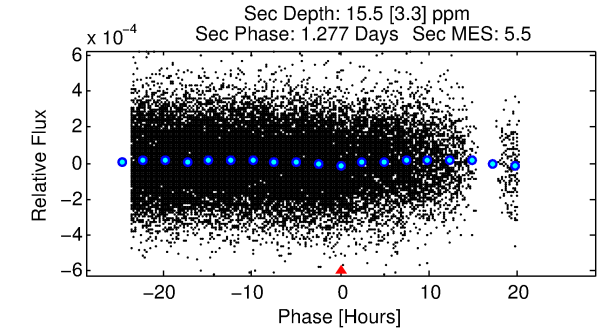
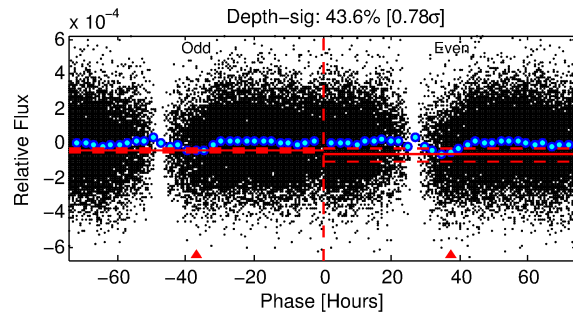
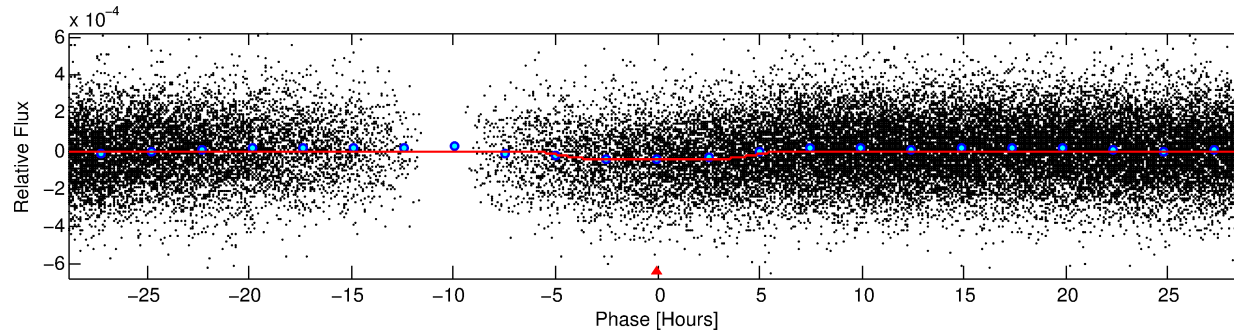
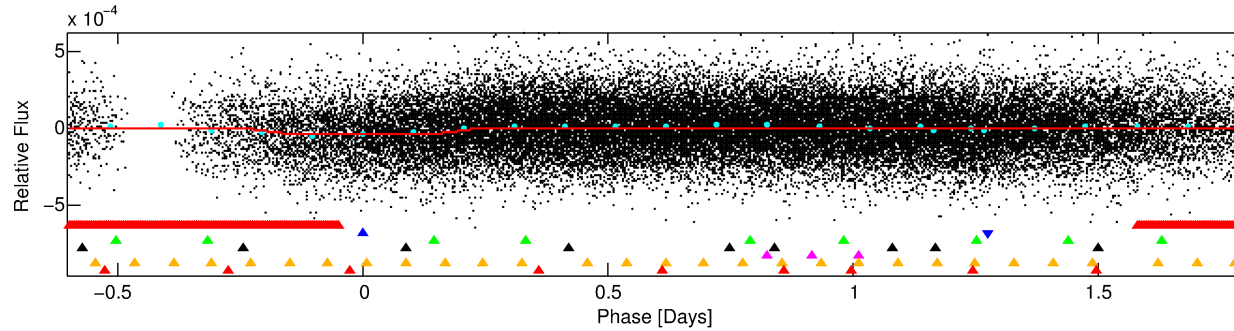
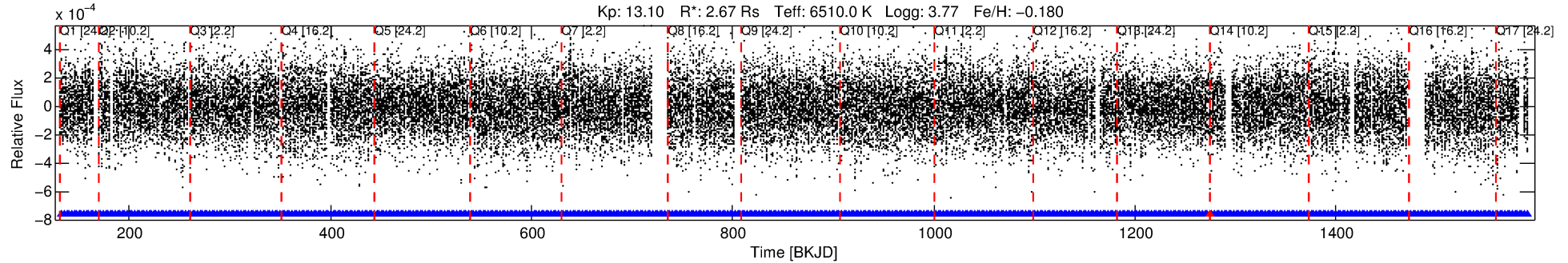
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-02

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 2 of 7 Period: 2.407 d



DV Fit Results:

Period = 2.40730 [0.00005] d
Epoch = 133.3546 [0.0218] BKJD
Rp/R* = 0.0084 [0.0005]
a/R* = 1.04 [0.01]
b = 0.98 [0.01]
Seff = 6965.87 [3667.61]
Teq = 2330 [307] K
Rp = 2.43 [0.87] Re
a = 0.0405 [0.0132] AU
Ag = 2.36 [1.33] [1.02 σ]
Teffp = 4464 [319] K [4.82 σ]

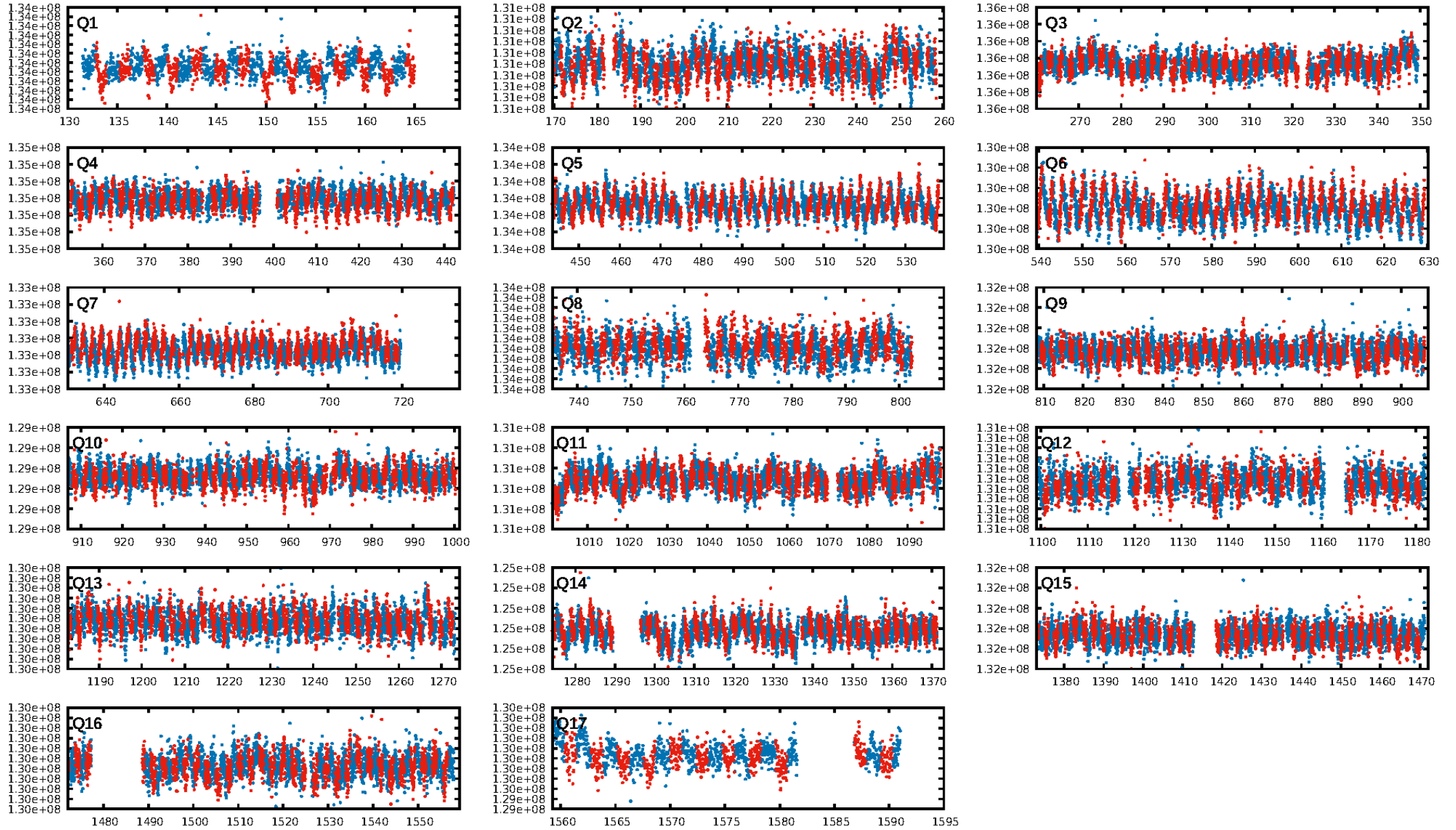
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00 σ]
LongPeriod-sig: 100.0% [84.75 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.68e-09
RollingBand-fgt: 1.00 [455/456]
GhostDiagnostic-chr: 3.864
Centroid-sig: 12.3%
Centroid-so: 0.680 arcsec [1.31 σ]
OotOffset-rm: 0.315 arcsec [1.05 σ]
KicOffset-rm: 0.462 arcsec [1.36 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]

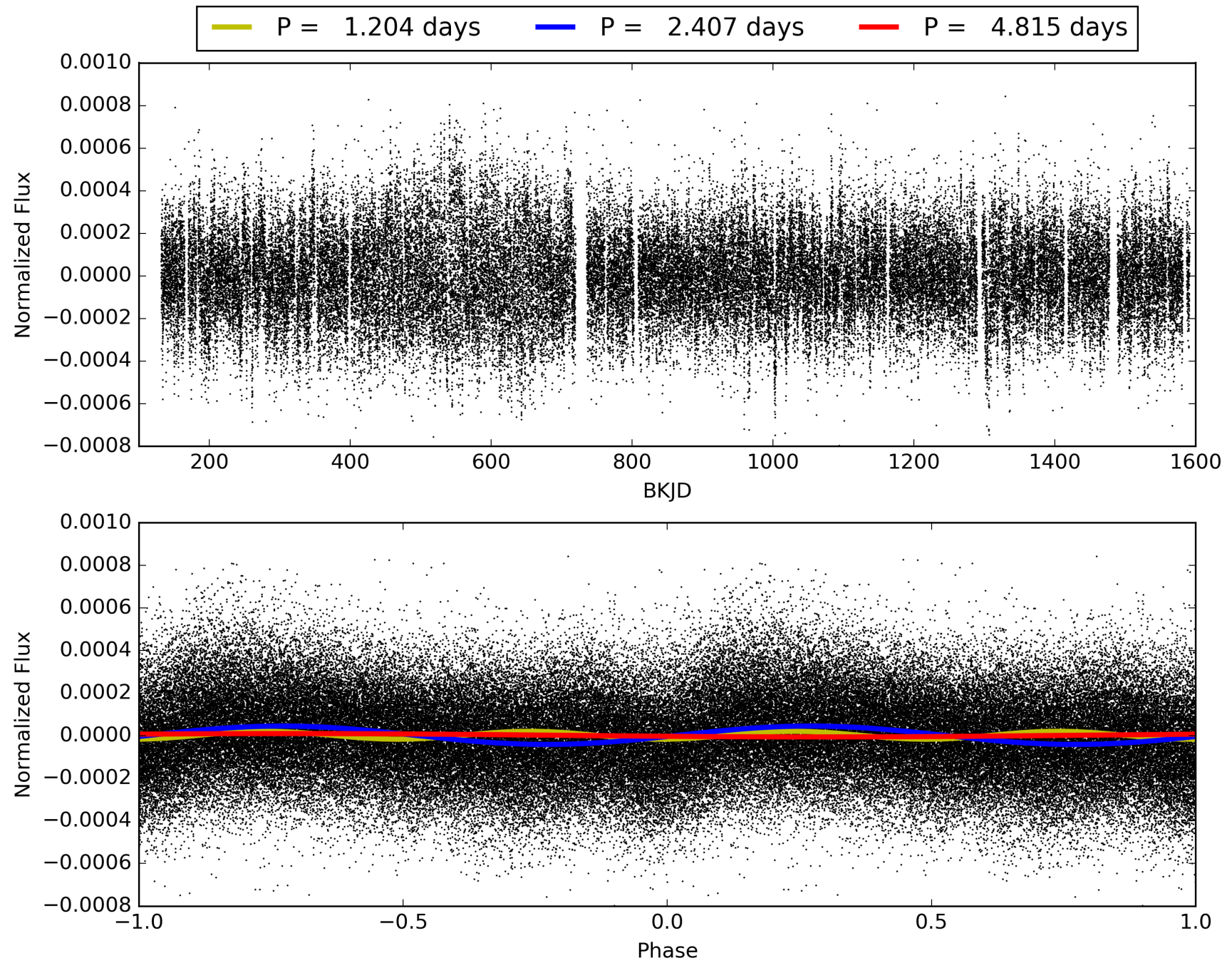
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:56 Z

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

TCE 008707670-02, PDC Light Curves

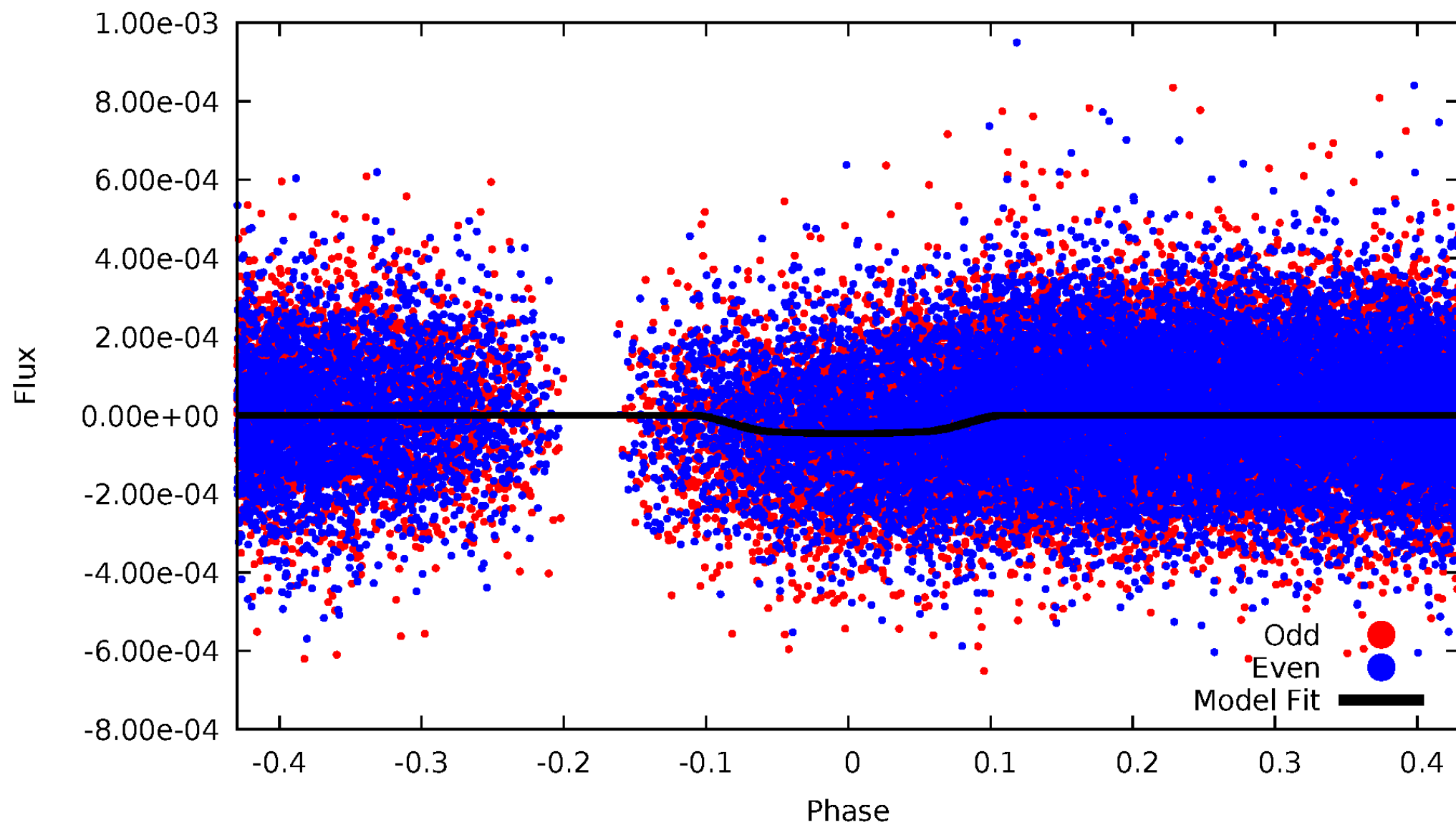


TCE 008707670-02



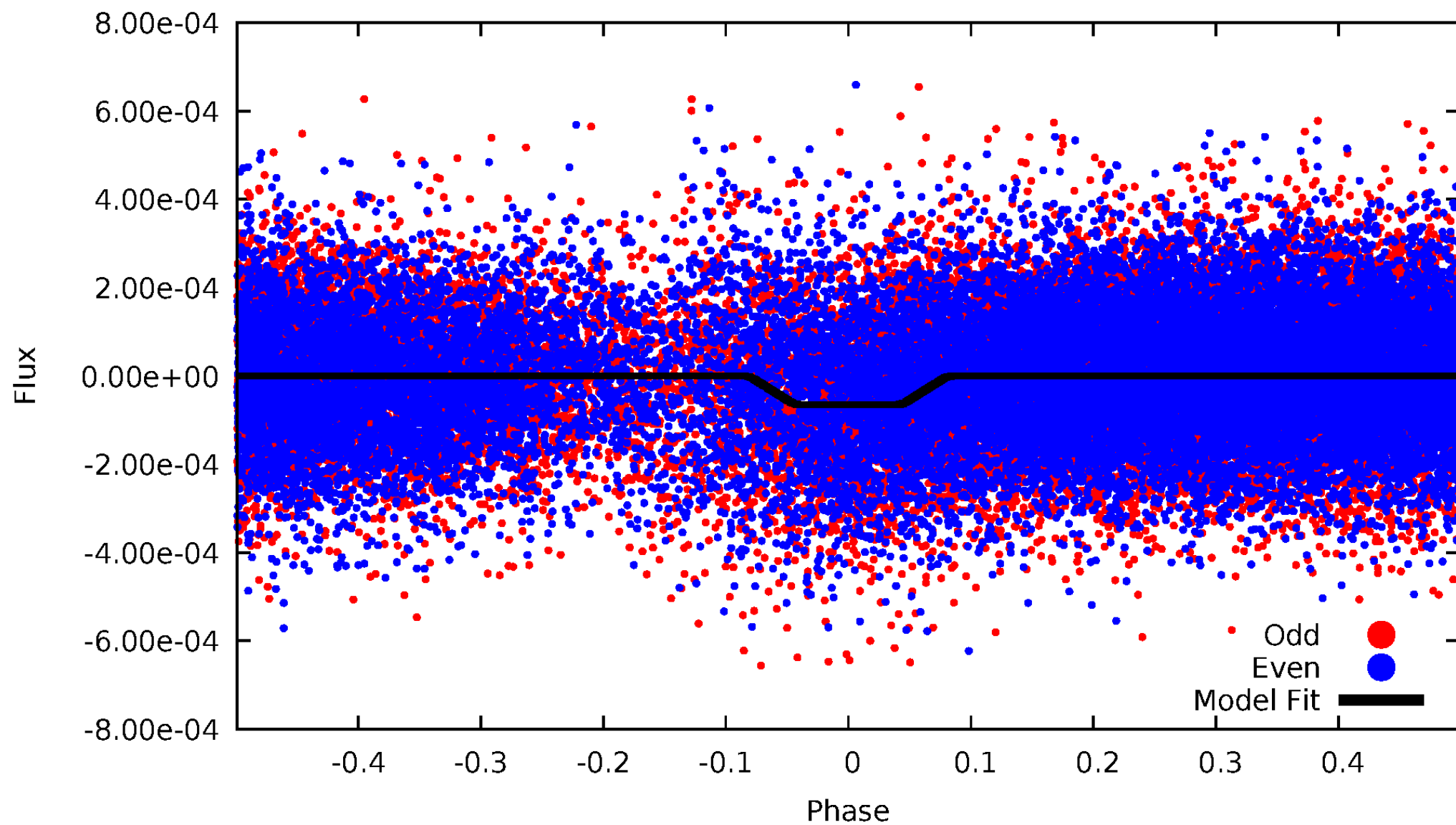
DV Odd/Even

TCE 008707670-02



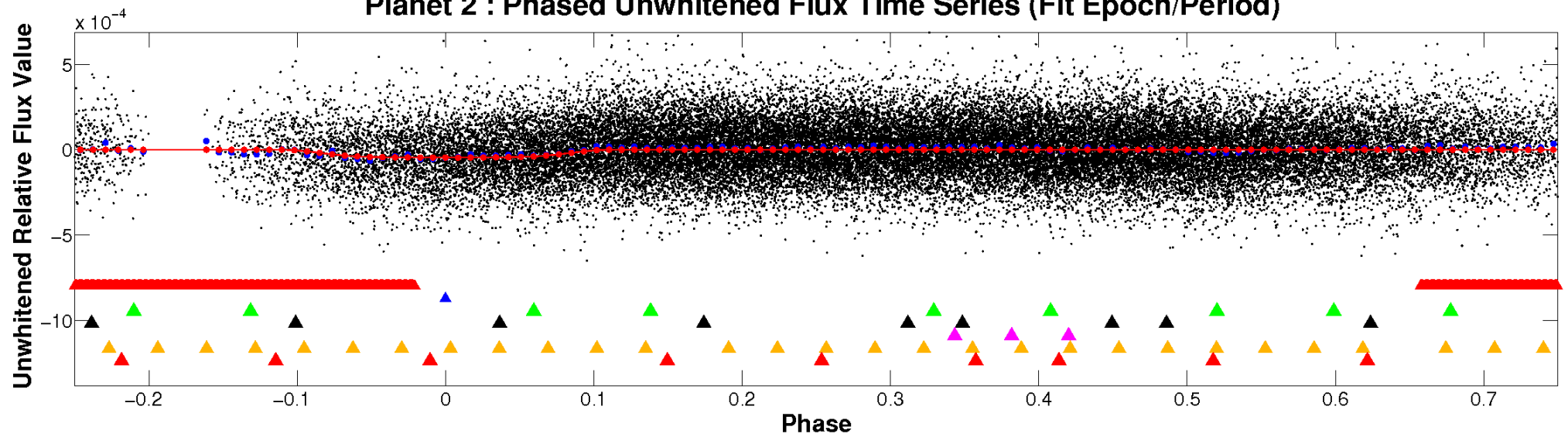
ALT Odd/Even

TCE 008707670-02

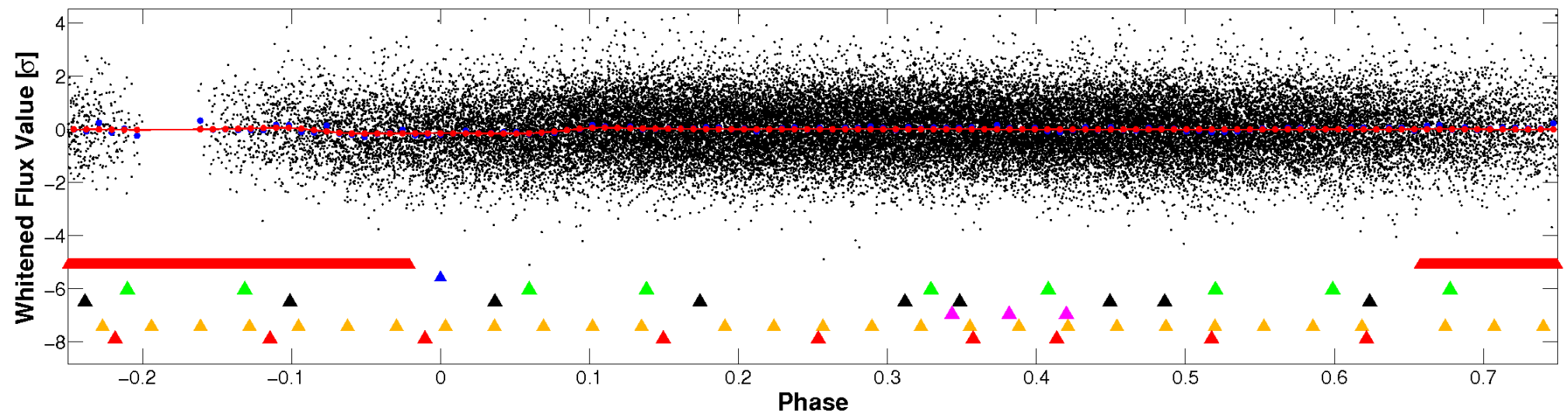


Non-Whitened Vs. Whitened Light Curve

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

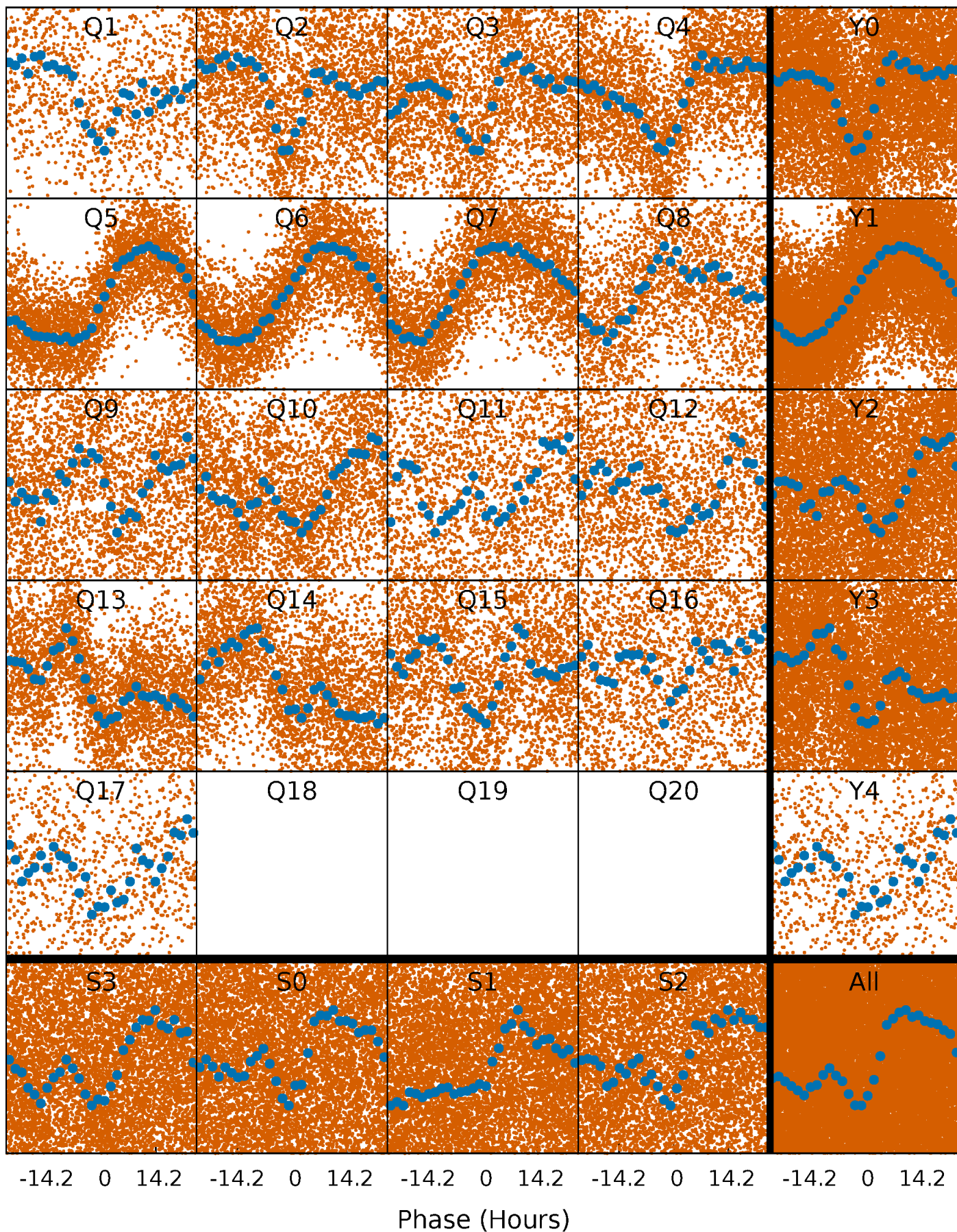


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



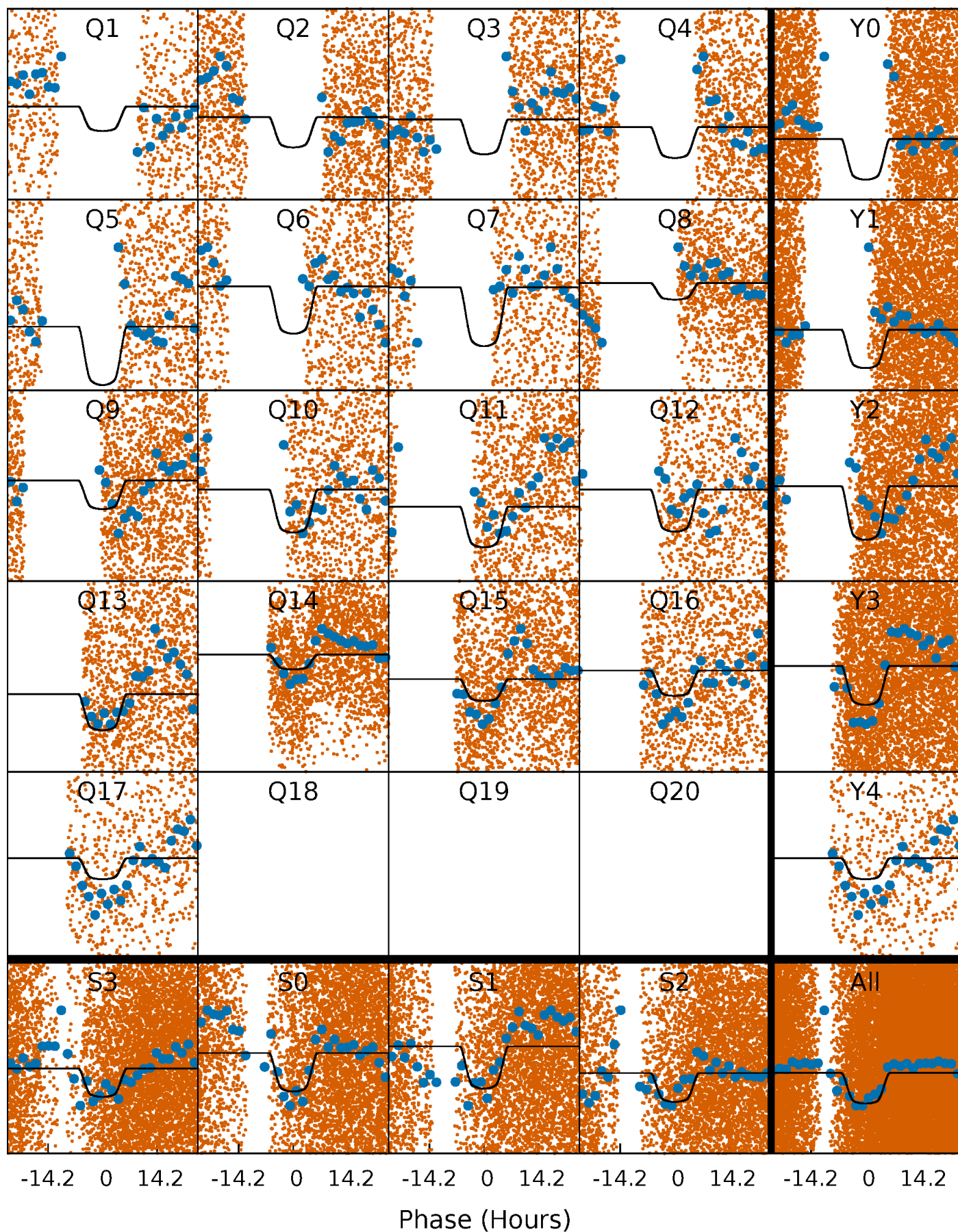
PDC Quarter-Phased Transit Curves

TCE 008707670-02 P= 2.407304 Days $T_0=133.354605$ (BKJD)



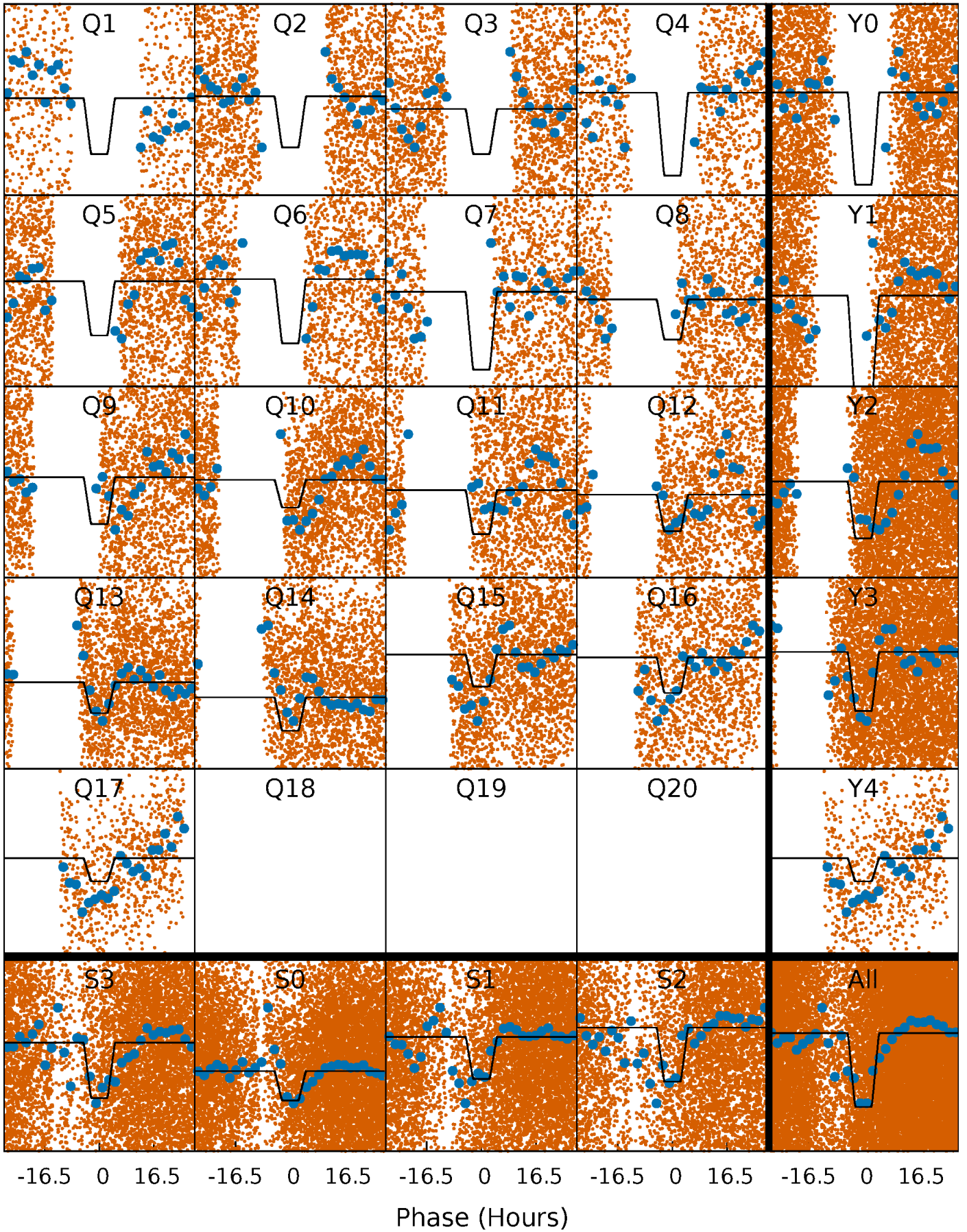
DV Quarter-Phased Transit Curves

TCE 008707670-02 P= 2.407304 Days $T_0=133.354605$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

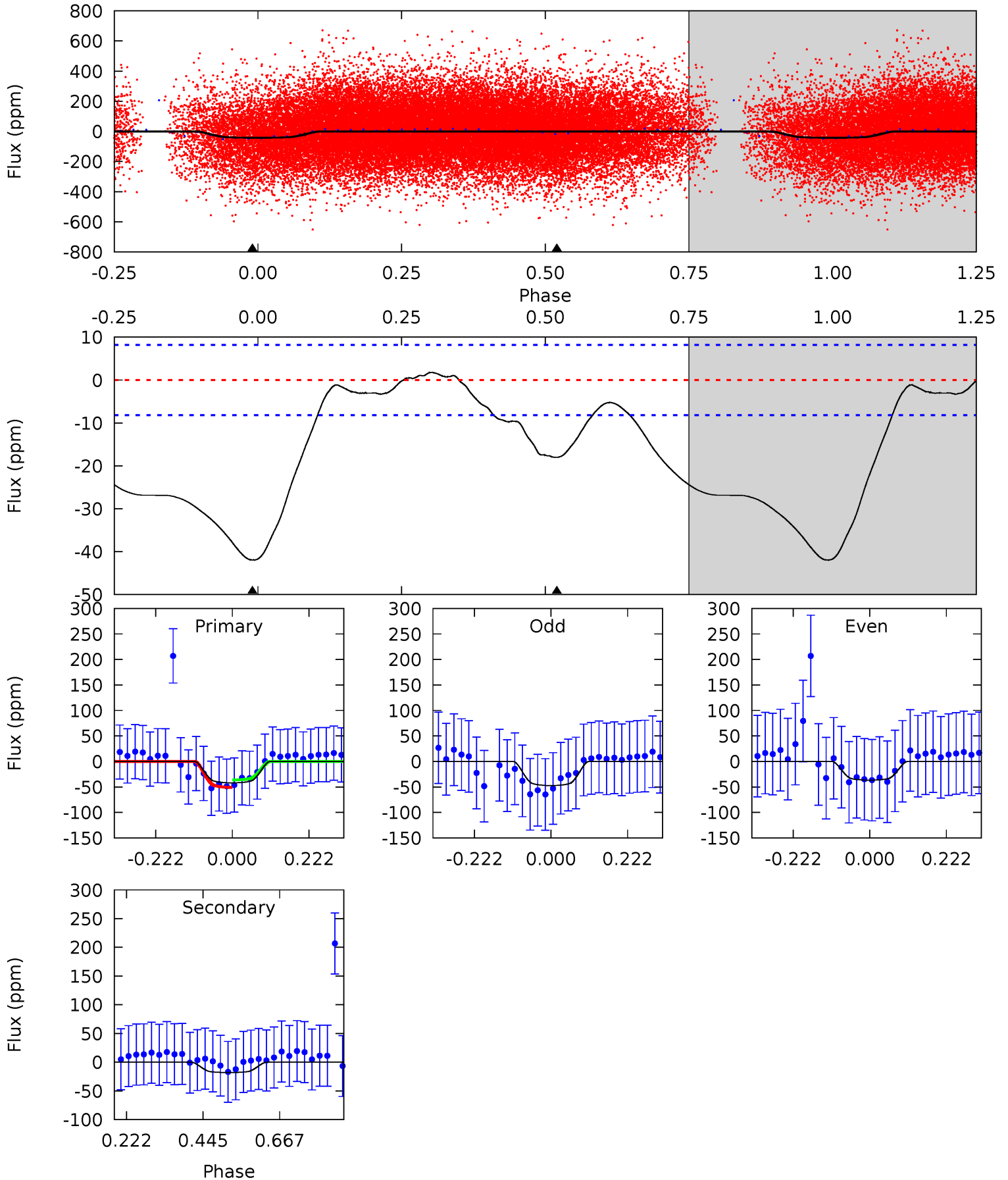
TCE 008707670-02 P= 2.407703 Days $T_0=133.216273$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-02, P = 2.407304 Days, E = 130.947301 Days

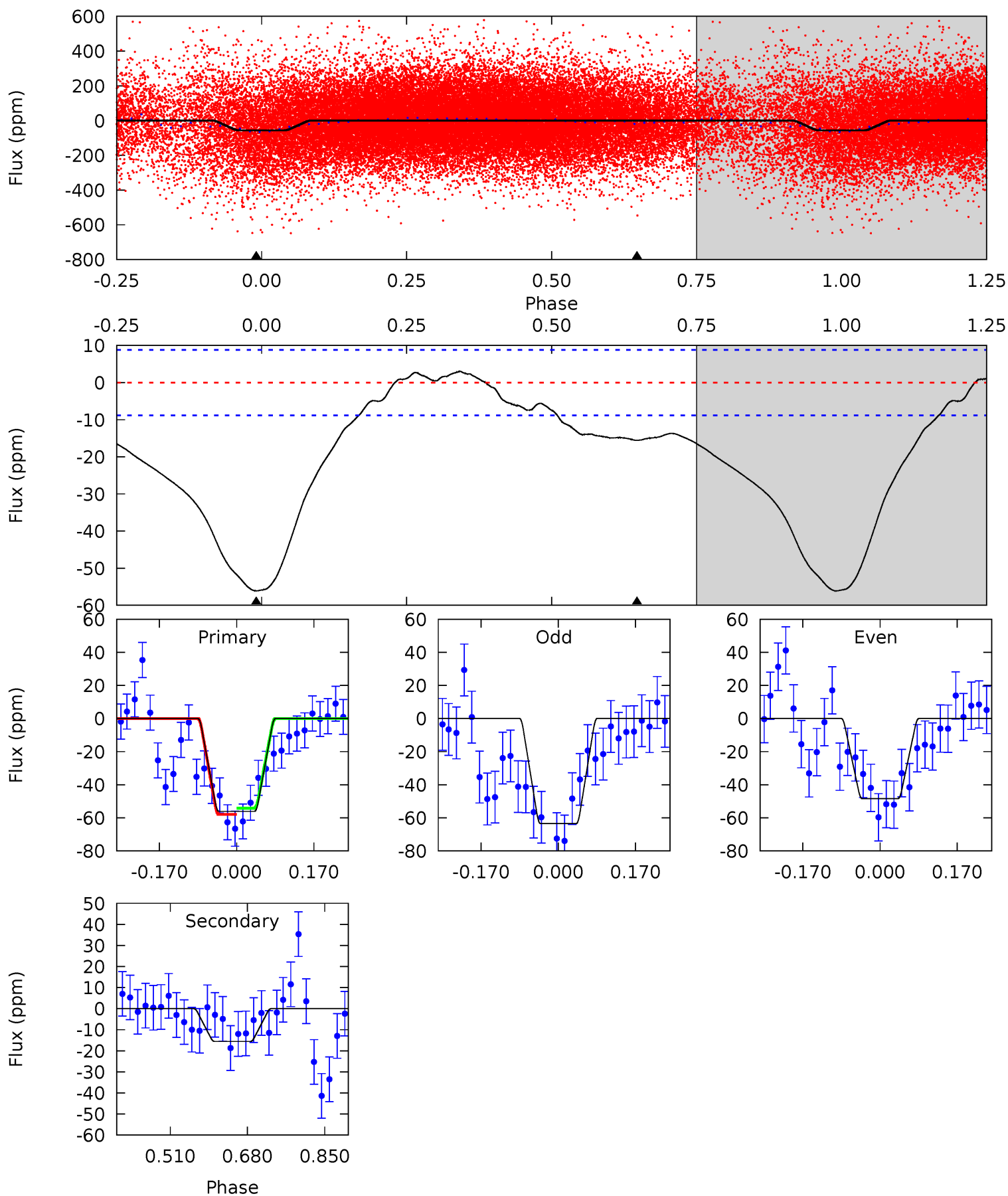
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	9.71	0	0	4.39	1.22	2.79	22.6	22.6	9.71	9.71	2.86	-1.81	0.04	3.69



Alt Model-Shift Uniqueness Test

008707670-02, P = 2.407703 Days, E = 130.808570 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	7.86	0	0	4.45	1.37	1.93	28.3	28.3	7.86	7.86	3.80	1.22	0.05	0.93



Stellar Parameters For KIC 008707670

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-18 ± 2	$2.37^{+0.33}_{-0.44}$	3184^{+203}_{-255}	4652^{+192}_{-205}	$2.952^{+1.274}_{-0.674}$
Alt.	-16 ± 2	$2.26^{+0.34}_{-0.38}$	3194^{+202}_{-261}	4581^{+207}_{-224}	$2.763^{+1.194}_{-0.682}$

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

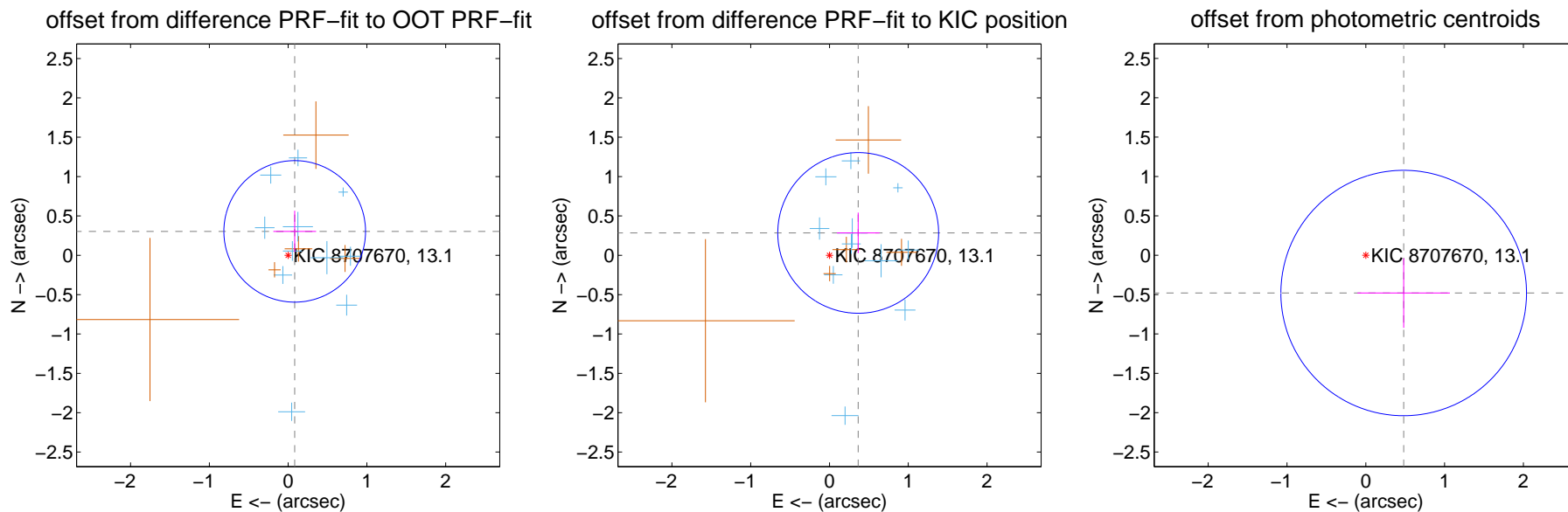
DV Centroid Data

Supplemental centroid analysis for 008707670-02. Kepler magnitude: 13.10. Transit SNR 10.46

There are 11 quarters with good PRF difference image offsets

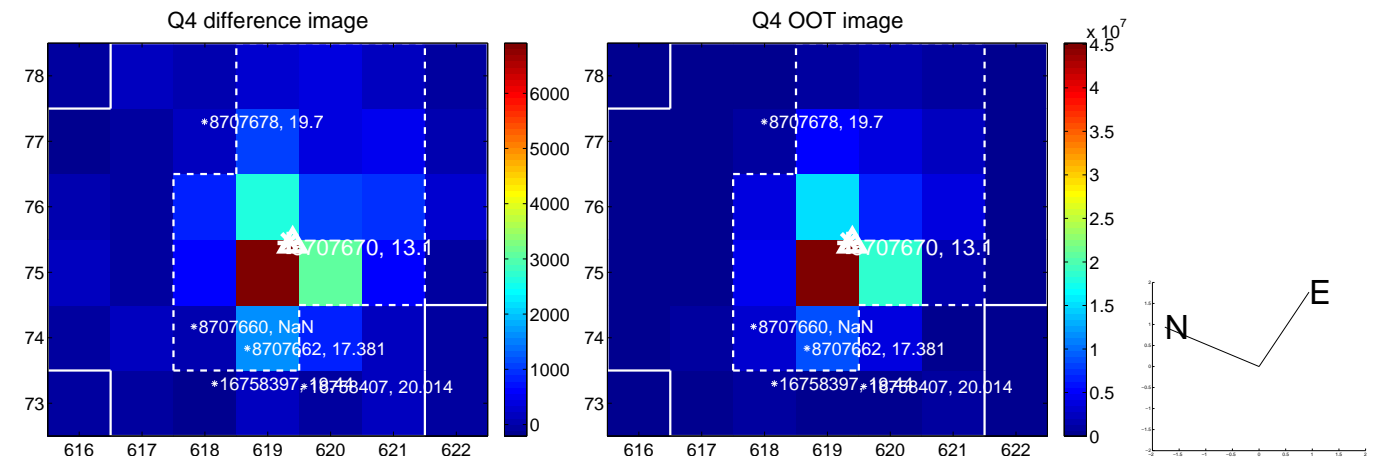
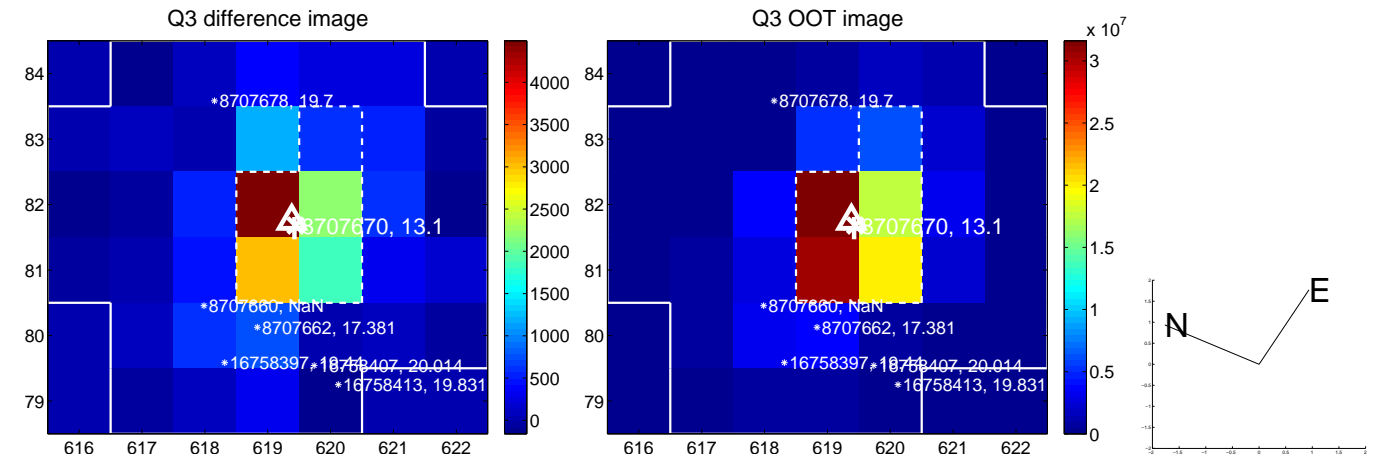
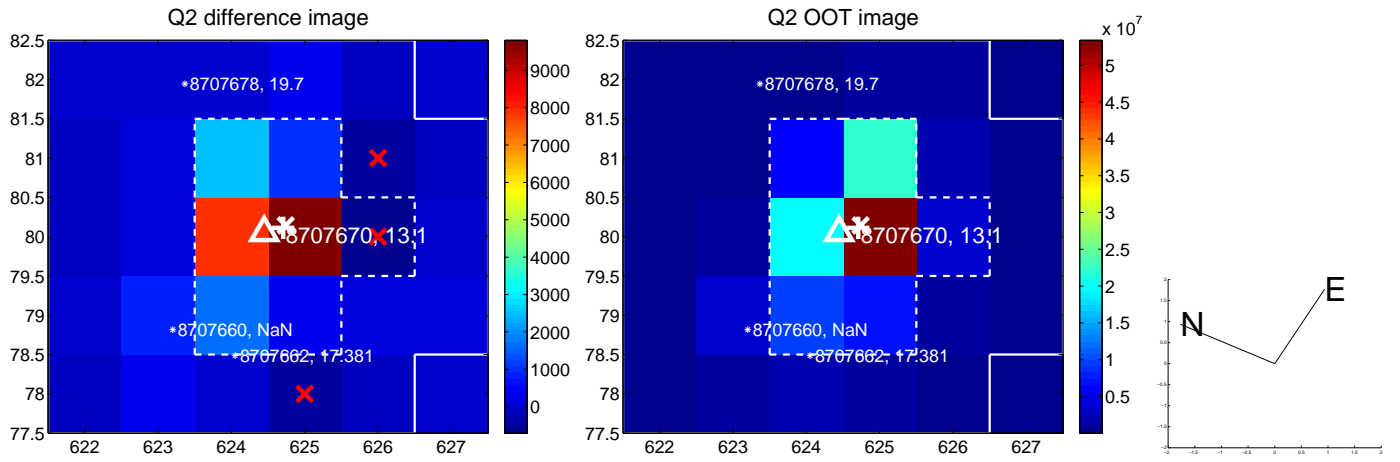
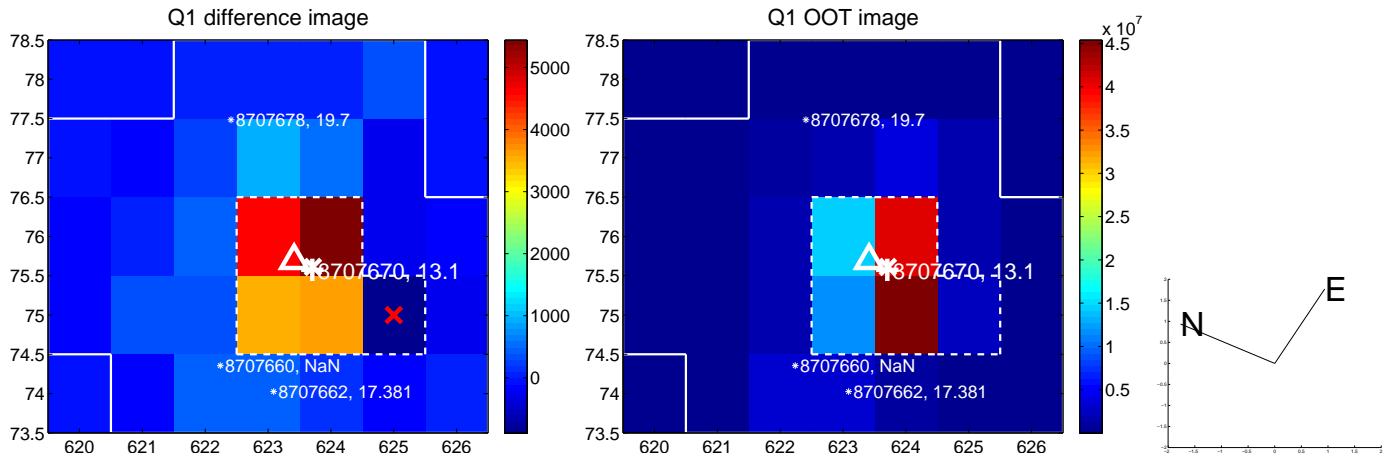
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.315 ± 0.300	1.05	-0.084 ± 0.272	0.304 ± 0.262
PRF-fit source offset from KIC position	0.462 ± 0.340	1.36	-0.364 ± 0.270	0.284 ± 0.258
photometric centroid source offset	0.68 ± 0.52	1.31	-0.48 ± 0.59	-0.48 ± 0.44

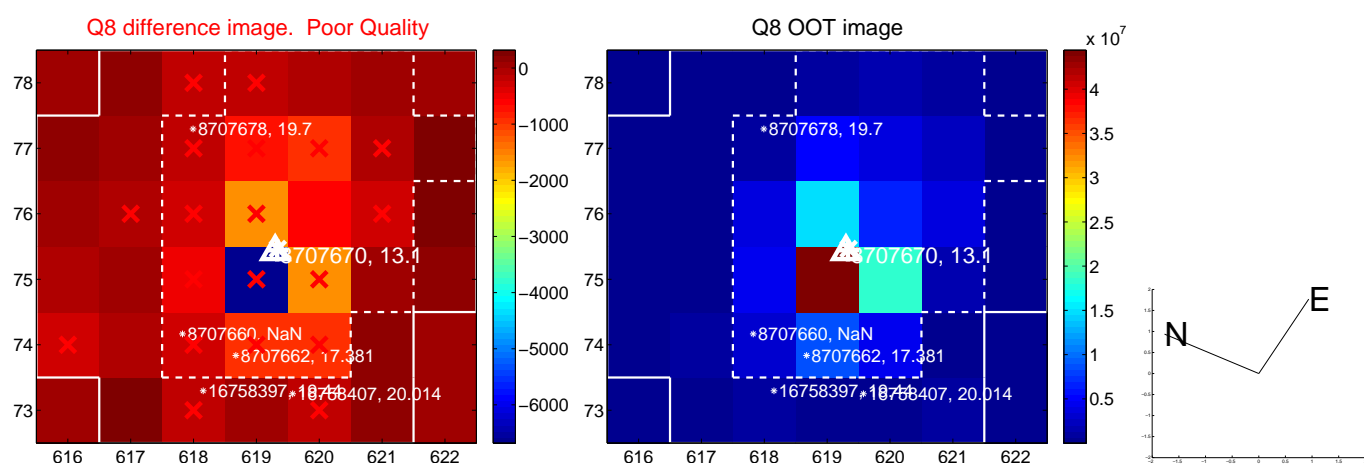
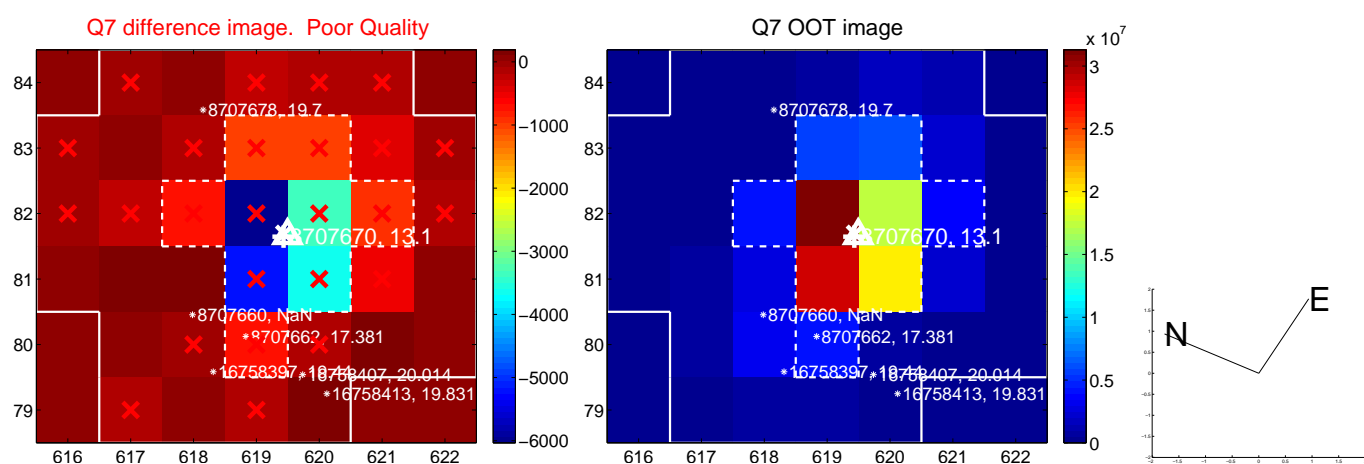
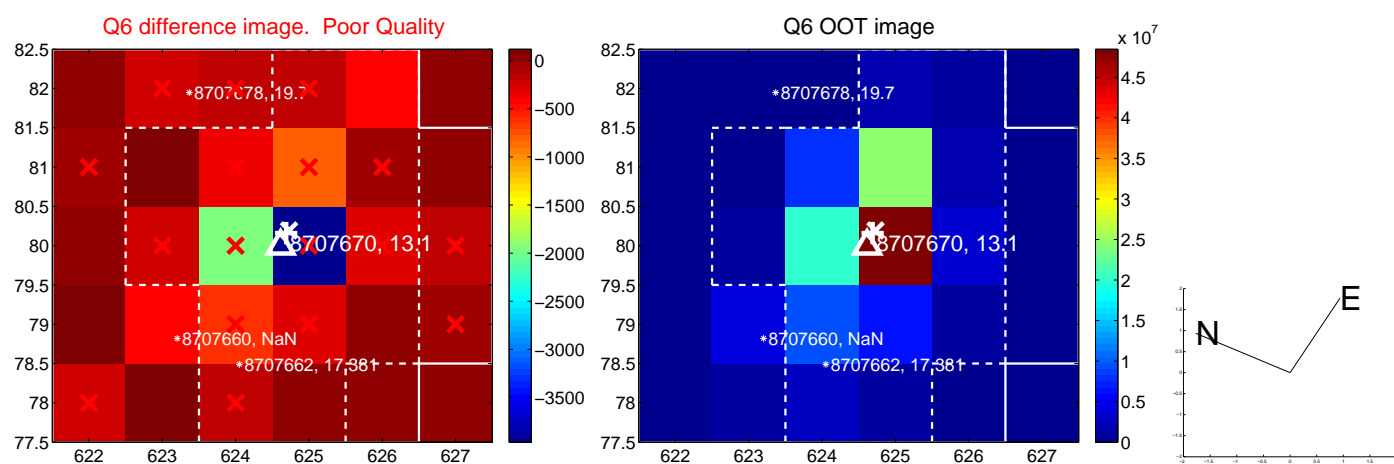
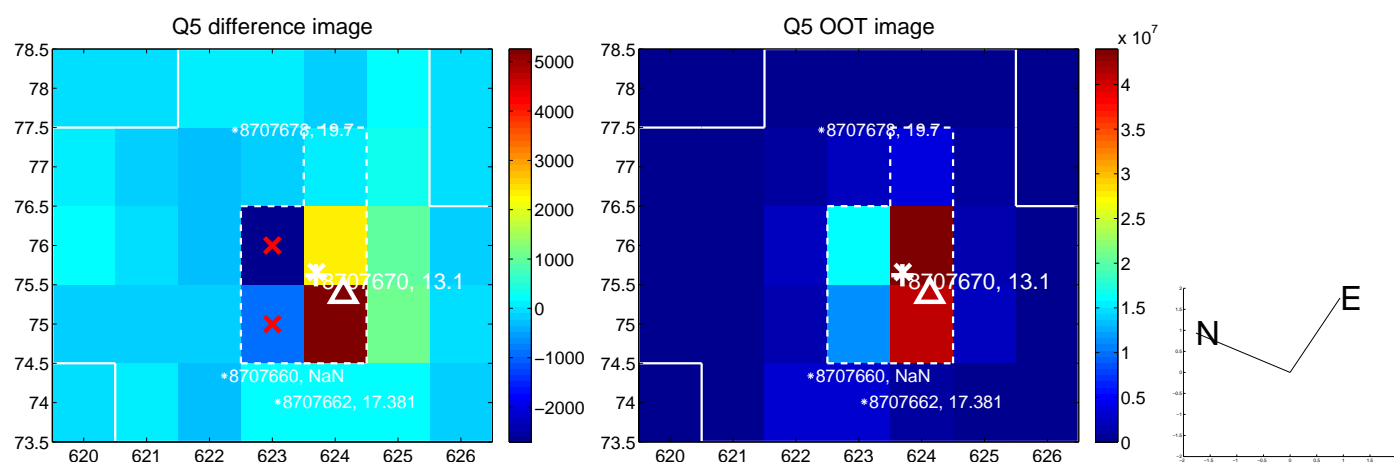


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

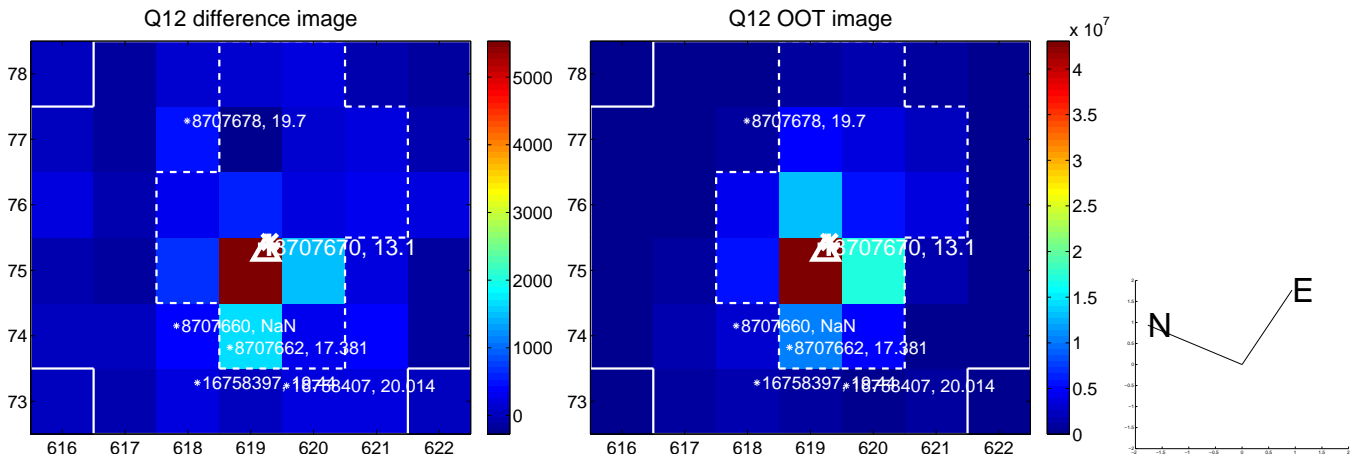
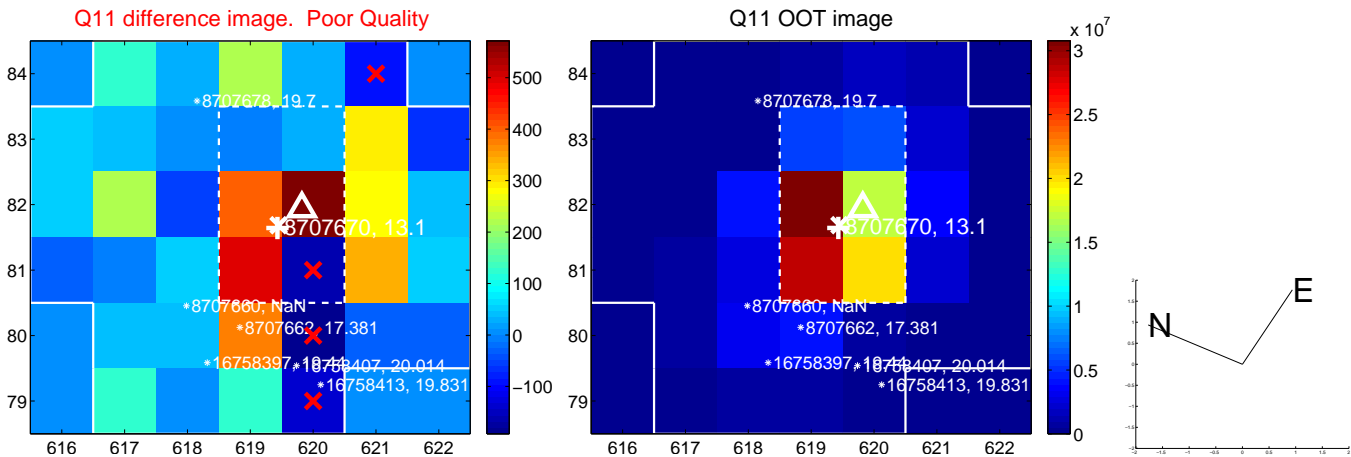
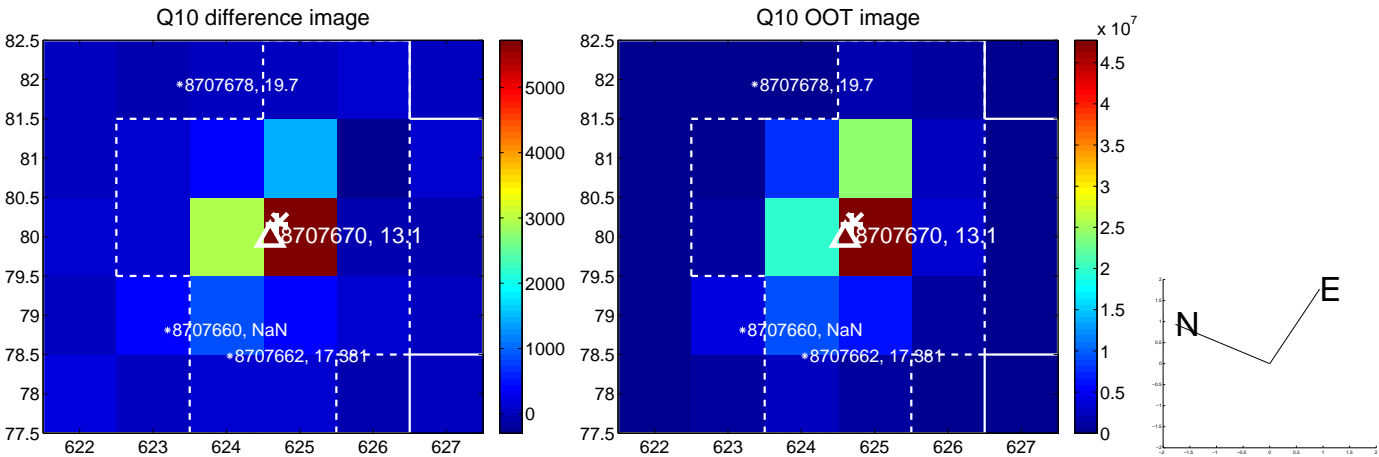
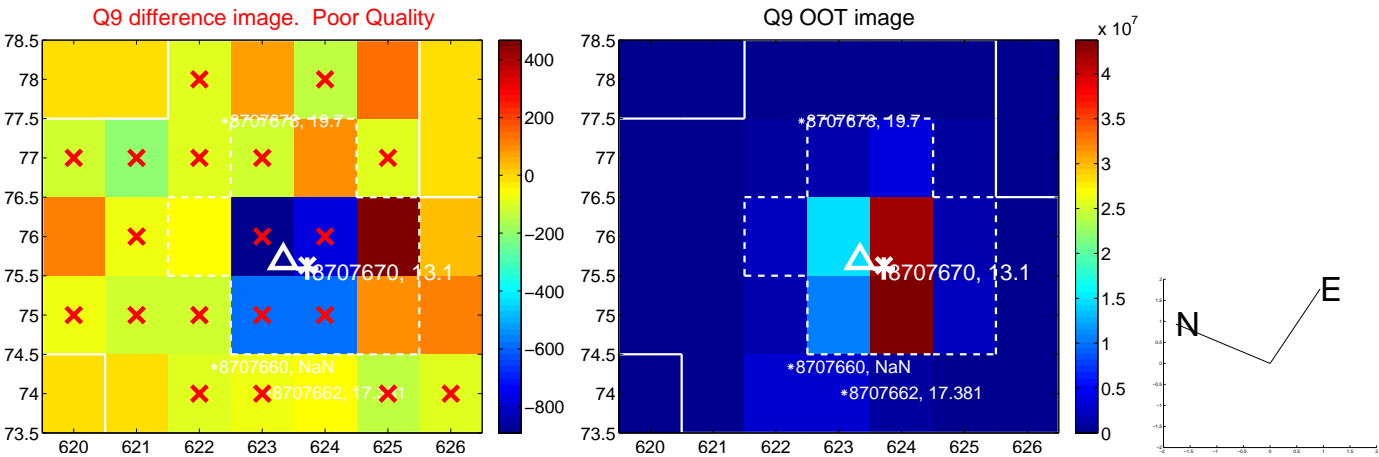
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



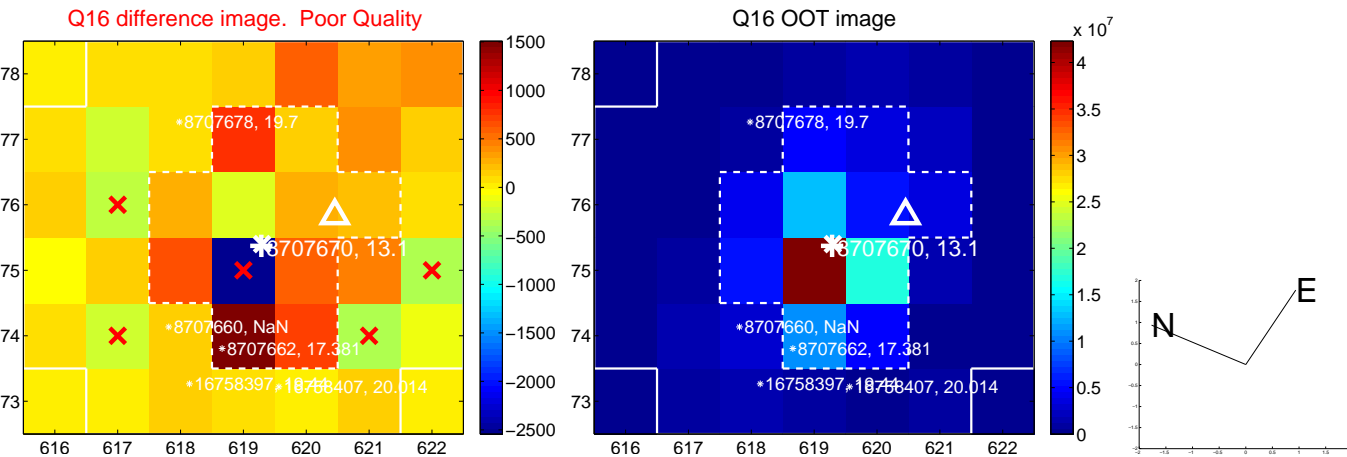
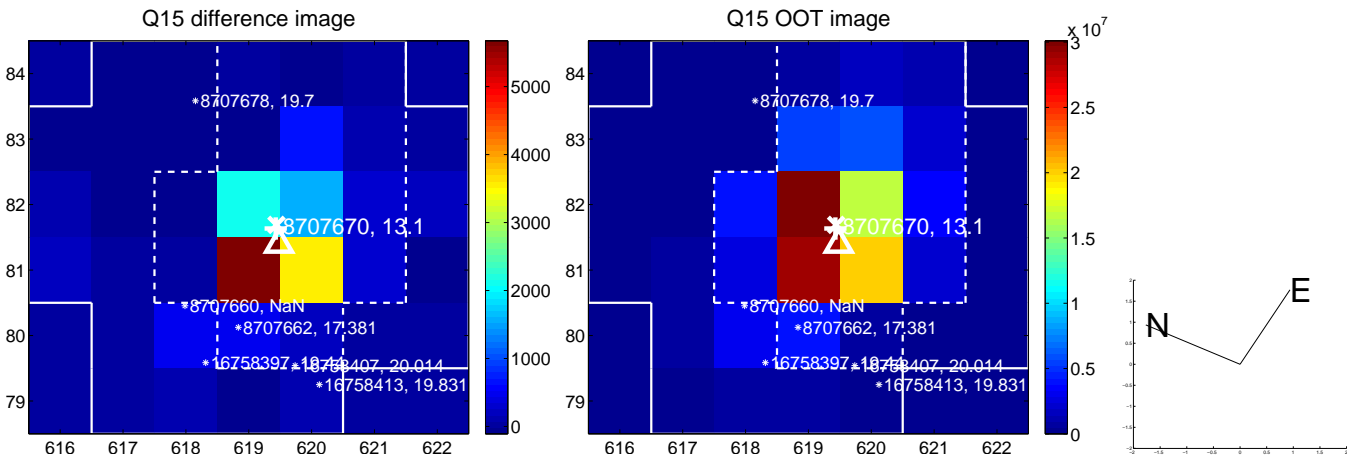
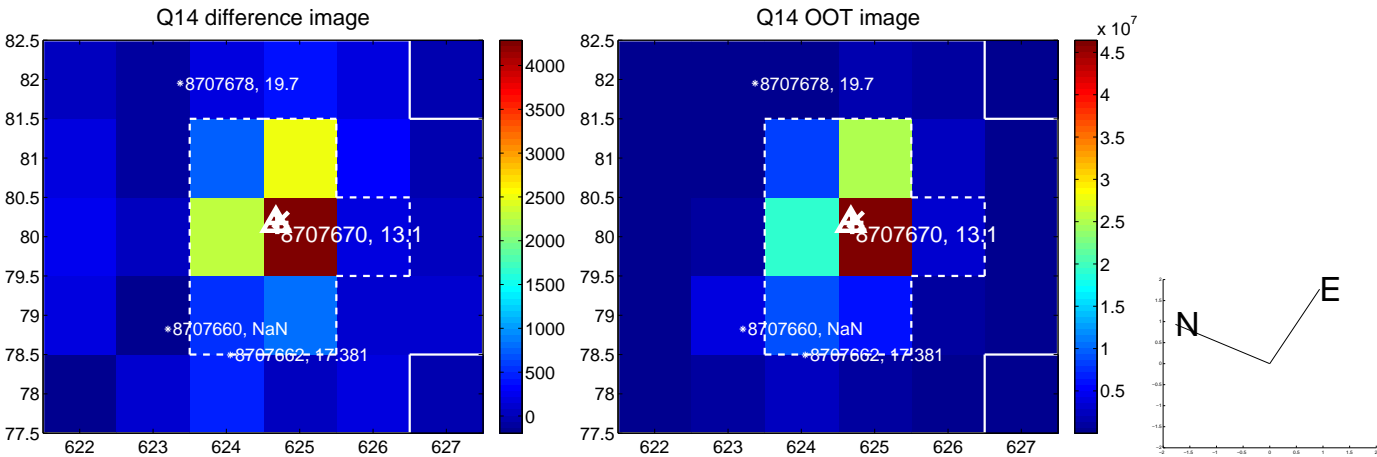
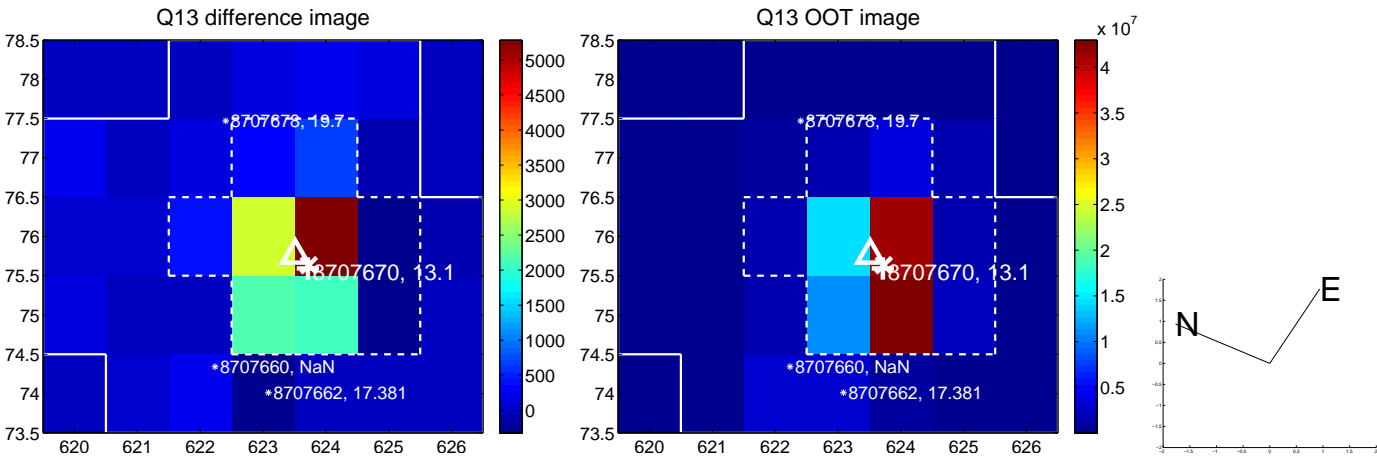
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



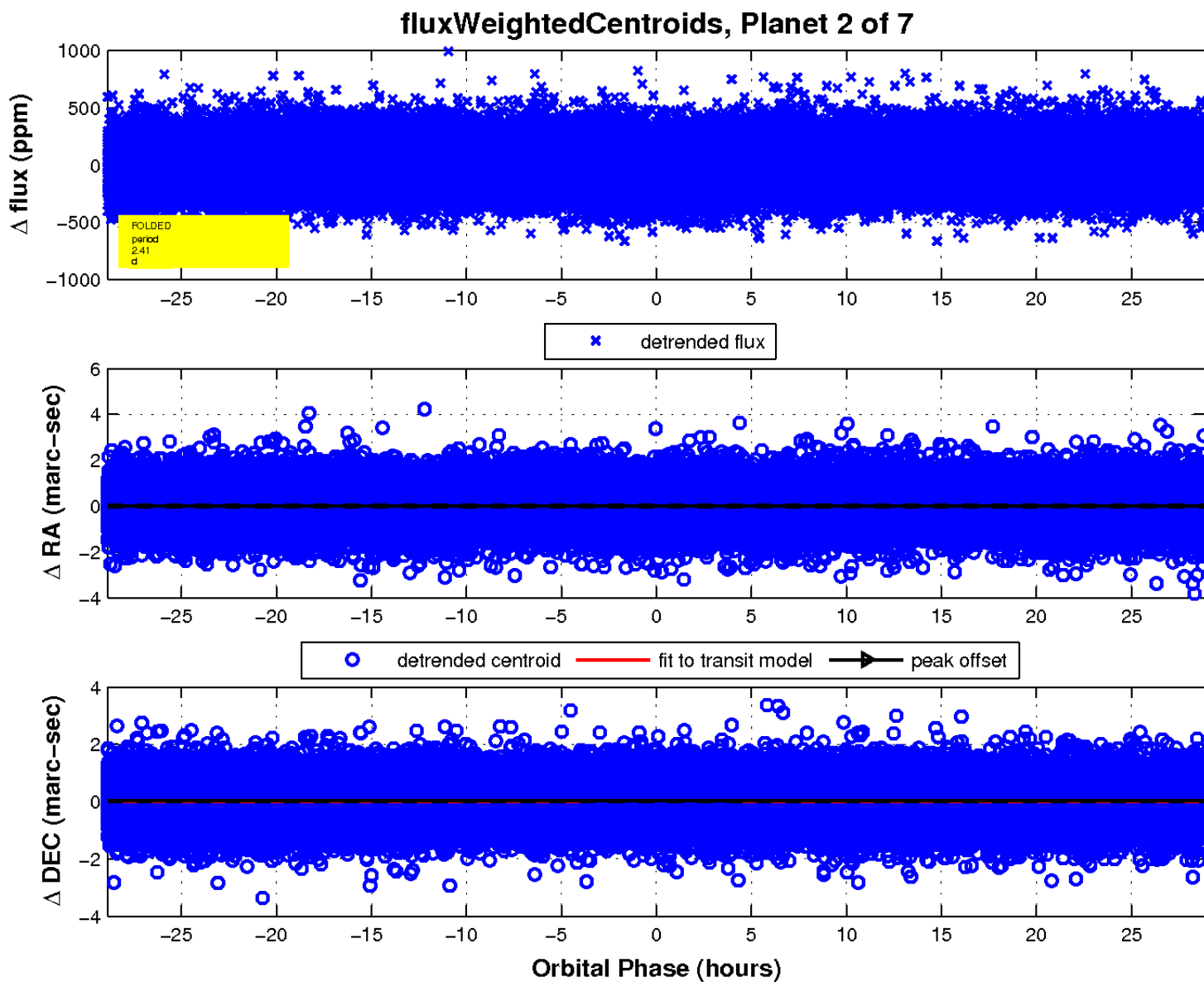
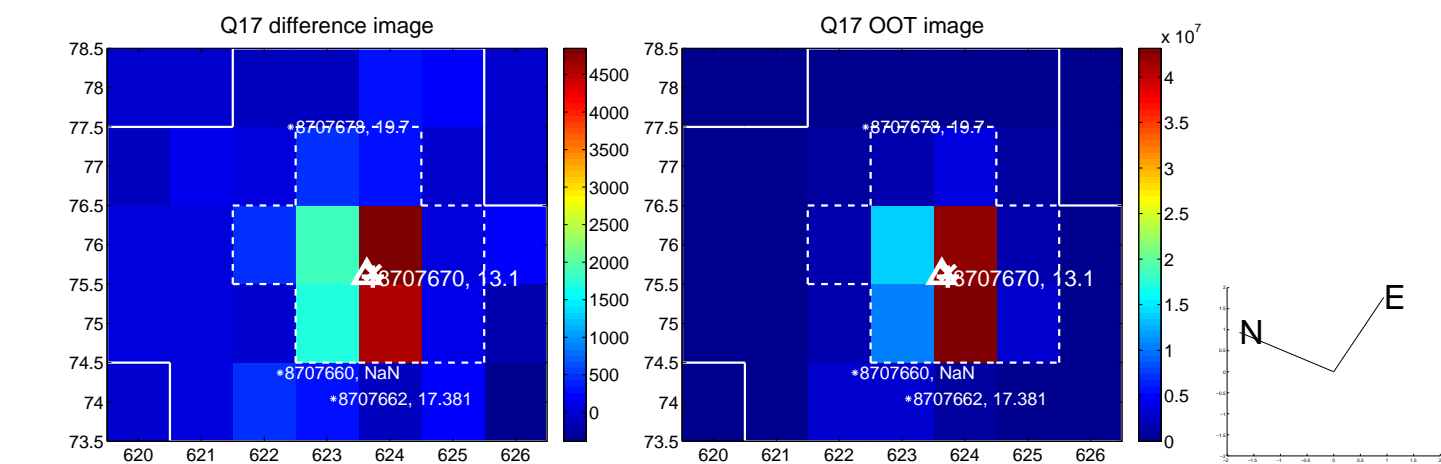
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



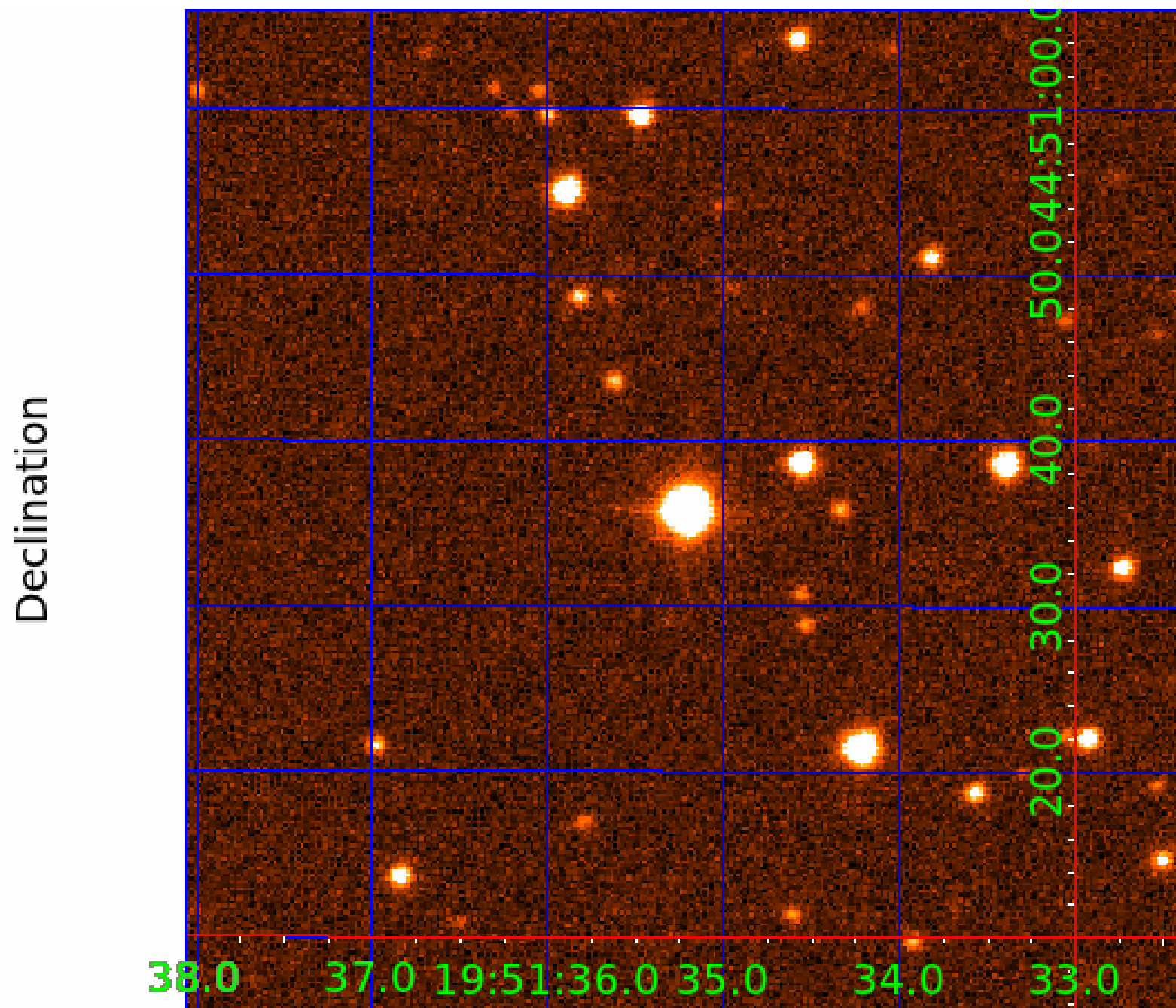
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

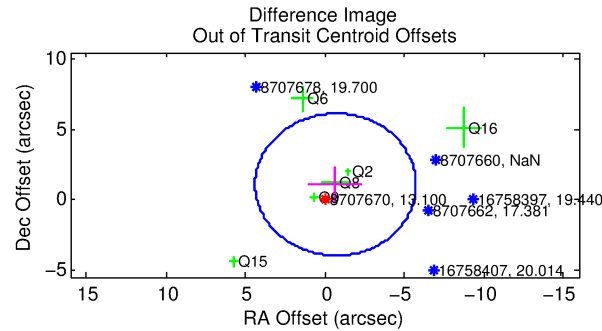
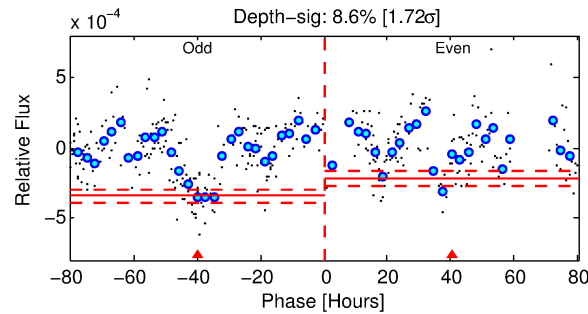
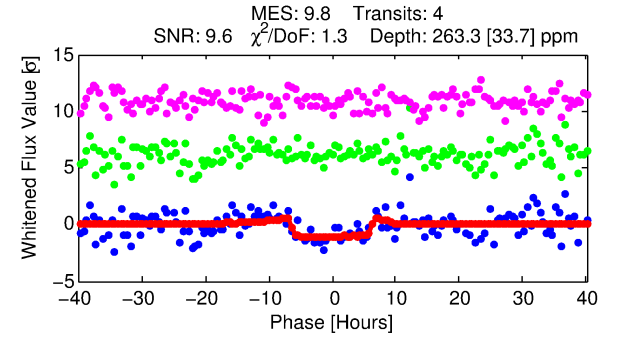
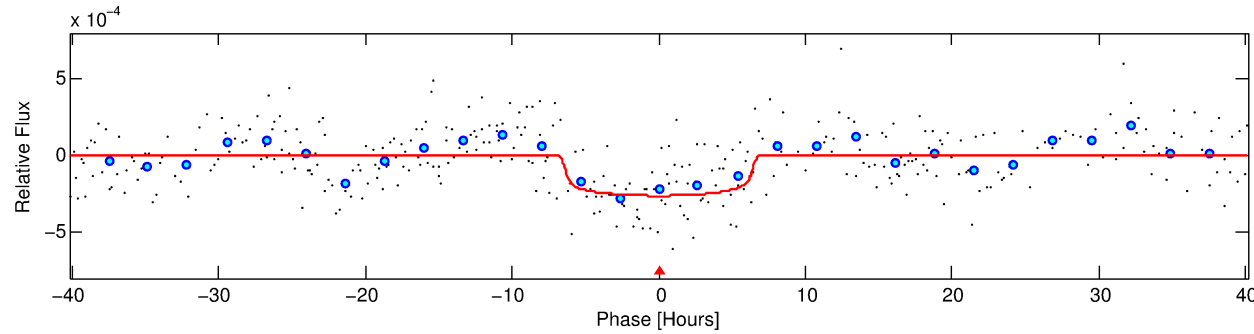
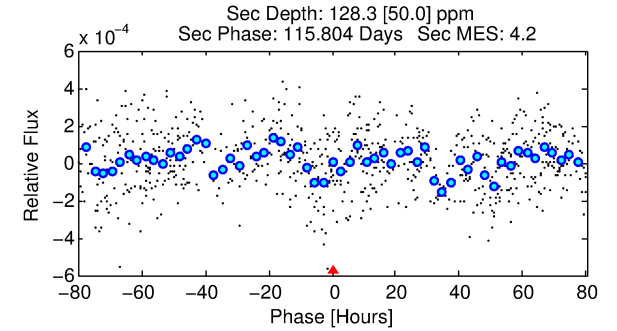
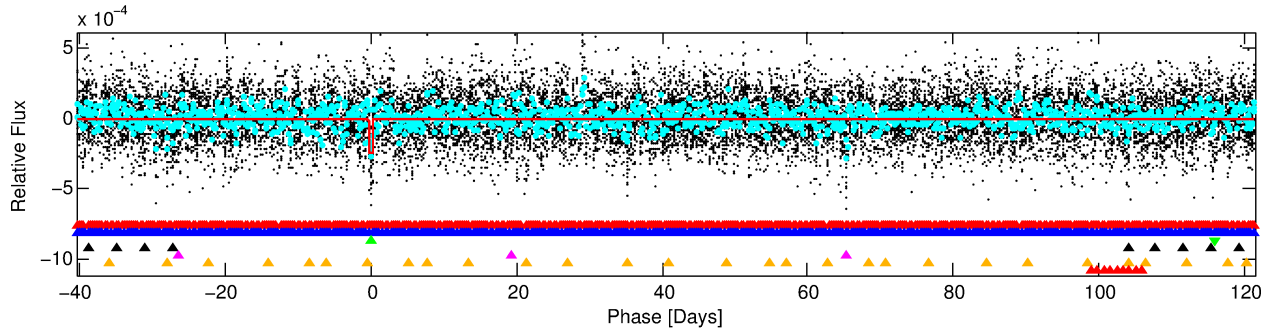
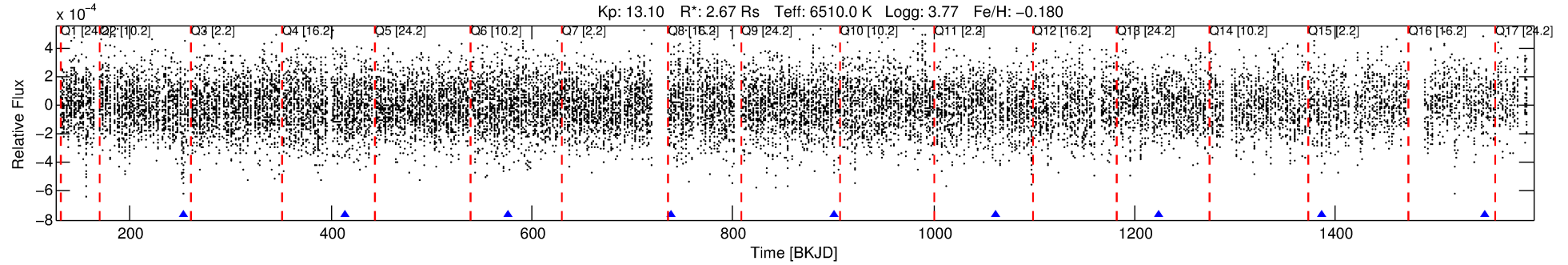
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-03

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 3 of 7 Period: 161.939 d



DV Fit Results:

Period = 161.93860 [0.00349] d
Epoch = 252.5647 [0.0134] BKJD
Rp/R* = 0.0164 [0.0035]
a/R* = 58.38 [65.62]
b = 0.80 [0.52]
Seff = 25.46 [13.41]
Teq = 573 [75] K
Rp = 4.77 [1.97] Re
a = 0.6700 [0.2180] AU
Ag = 1393.40 [1076.53] [1.29σ]
Teffp = 5411 [810] K [5.94σ]

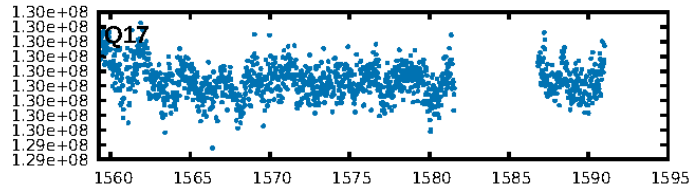
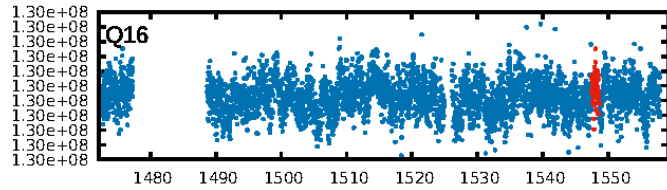
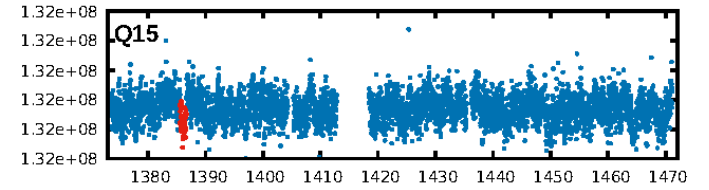
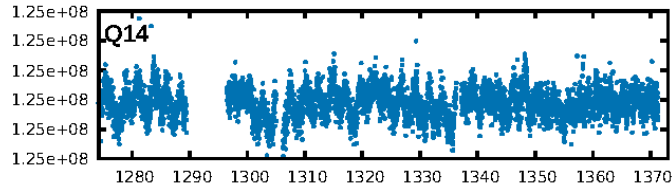
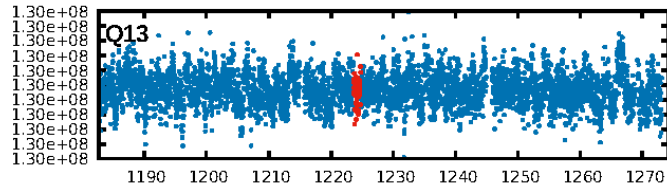
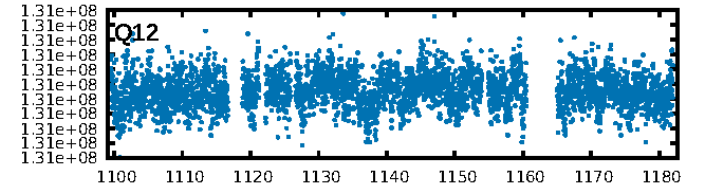
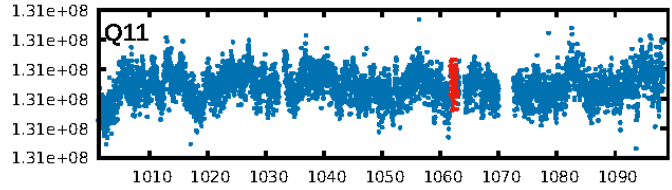
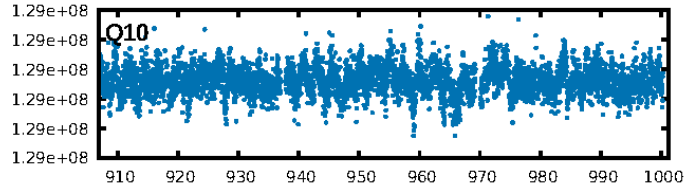
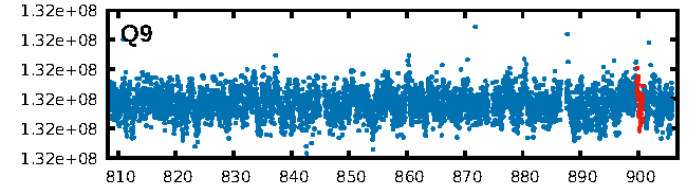
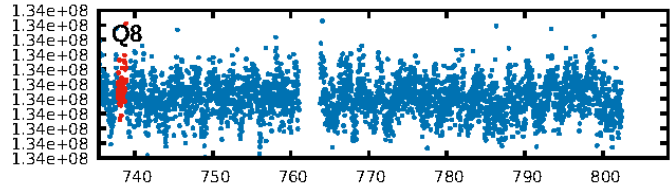
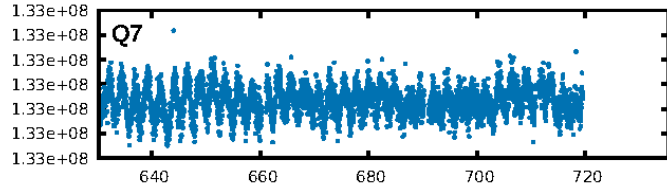
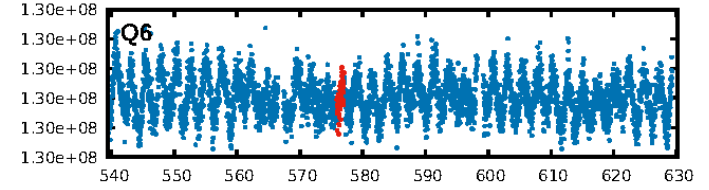
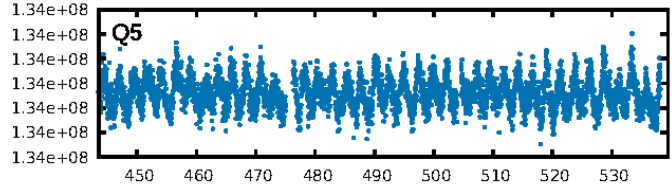
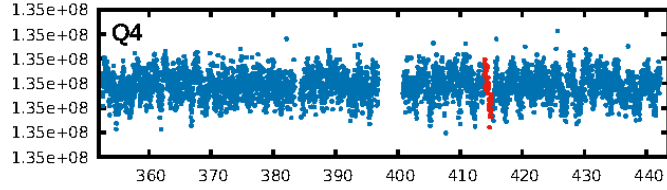
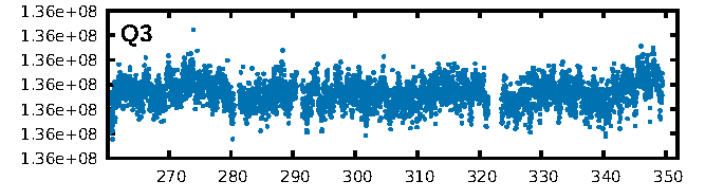
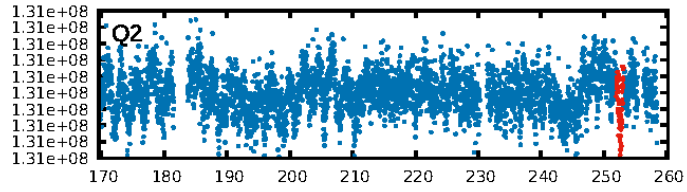
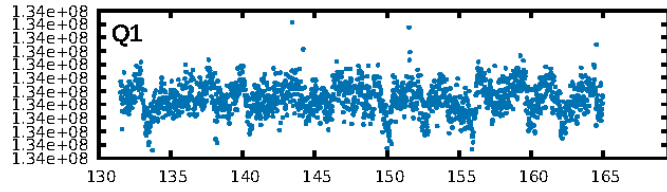
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [189.93σ]
LongPeriod-sig: 58.4% [0.81σ]
ModelChiSquare2-sig: 1.7%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 2.45e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.4926
Centroid-sig: 5.6%
Centroid-so: 0.818 arcsec [1.07σ]
OotOffset-rm: 1.281 arcsec [0.76σ]
KicOffset-rm: 1.412 arcsec [0.59σ]
OotOffset-st: 2/1/2/1 [6]
KicOffset-st: 2/1/2/1 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.00 [0/9]

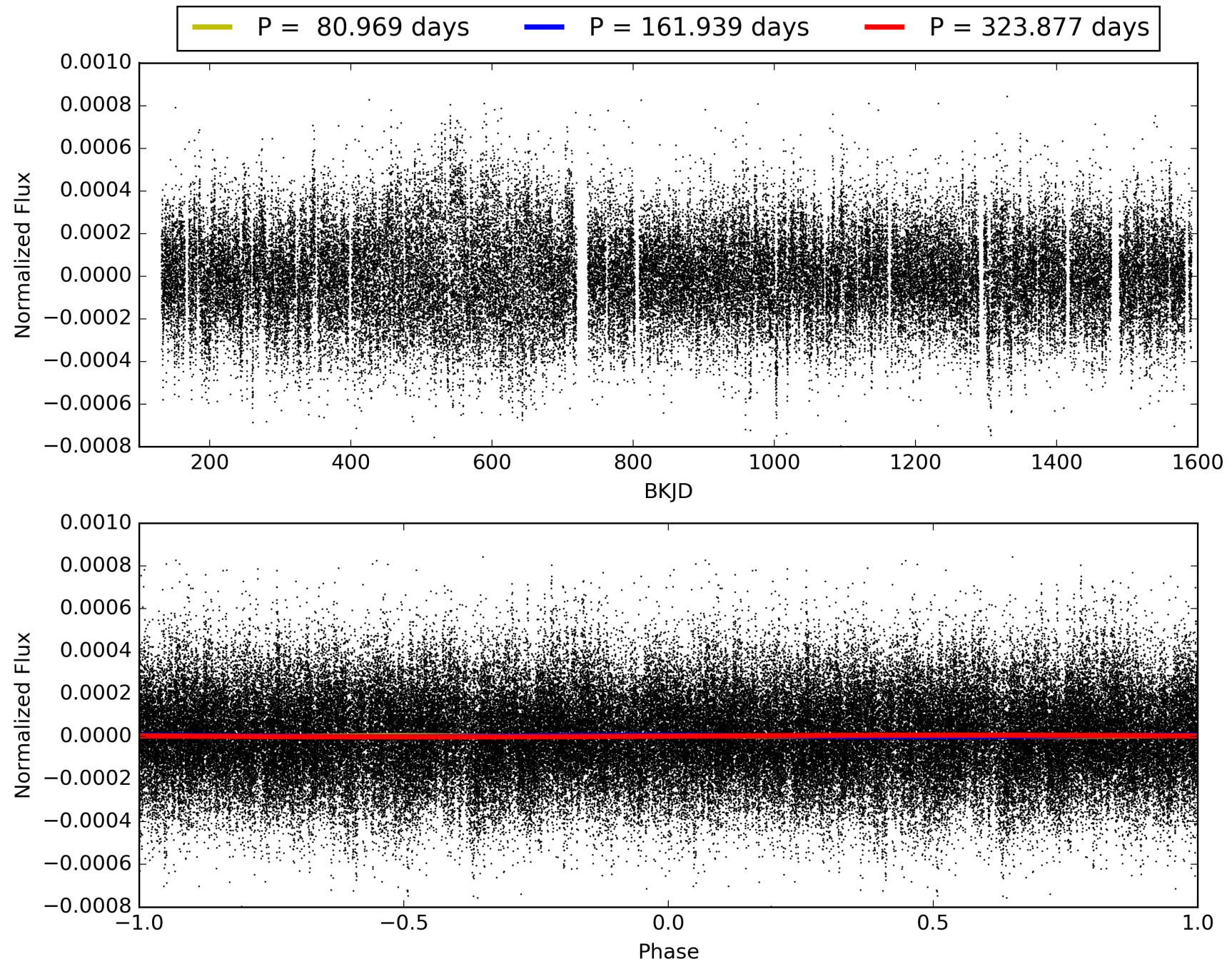
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:00:05 Z

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

TCE 008707670-03, PDC Light Curves

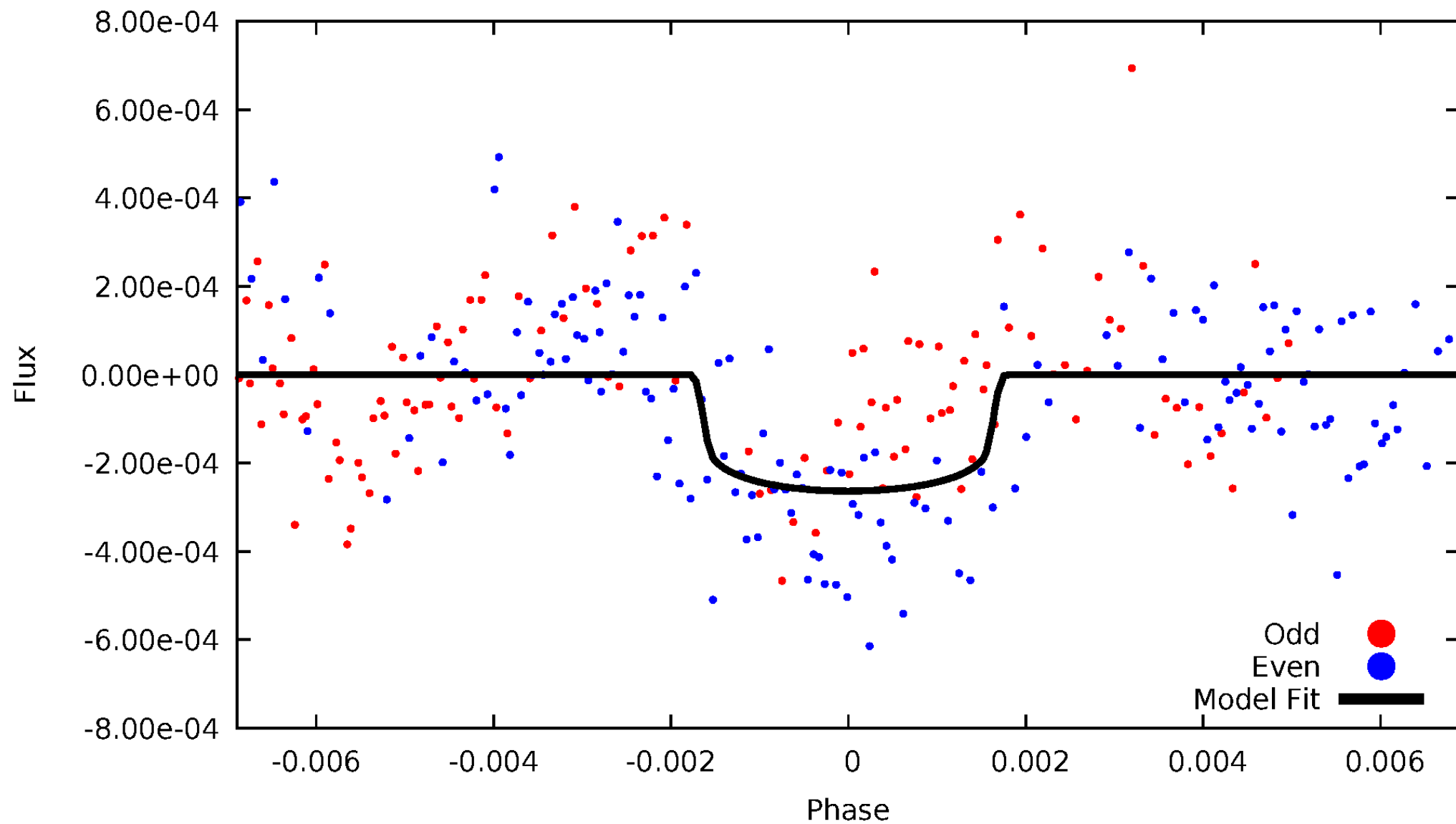


TCE 008707670-03



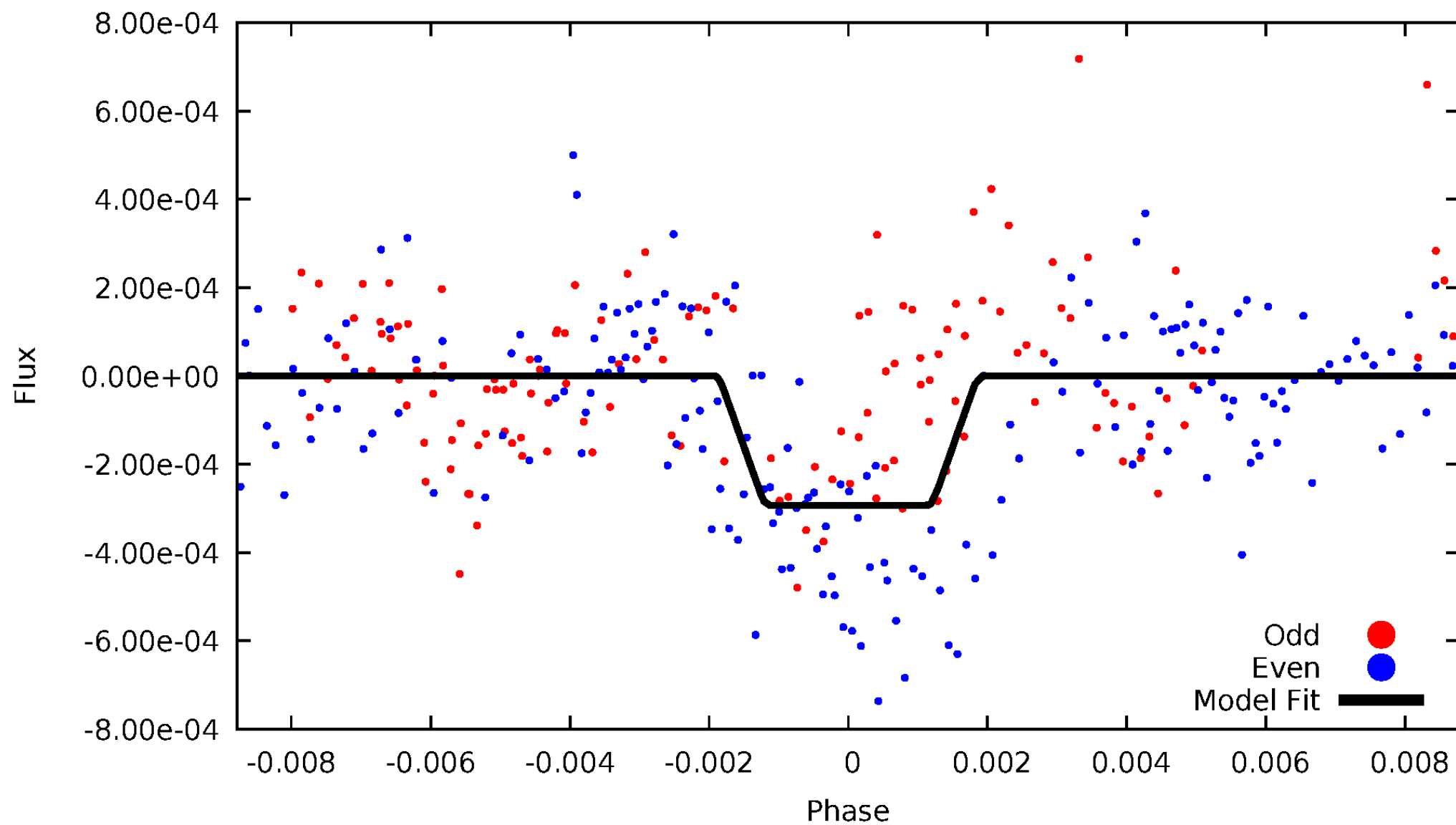
DV Odd/Even

TCE 008707670-03



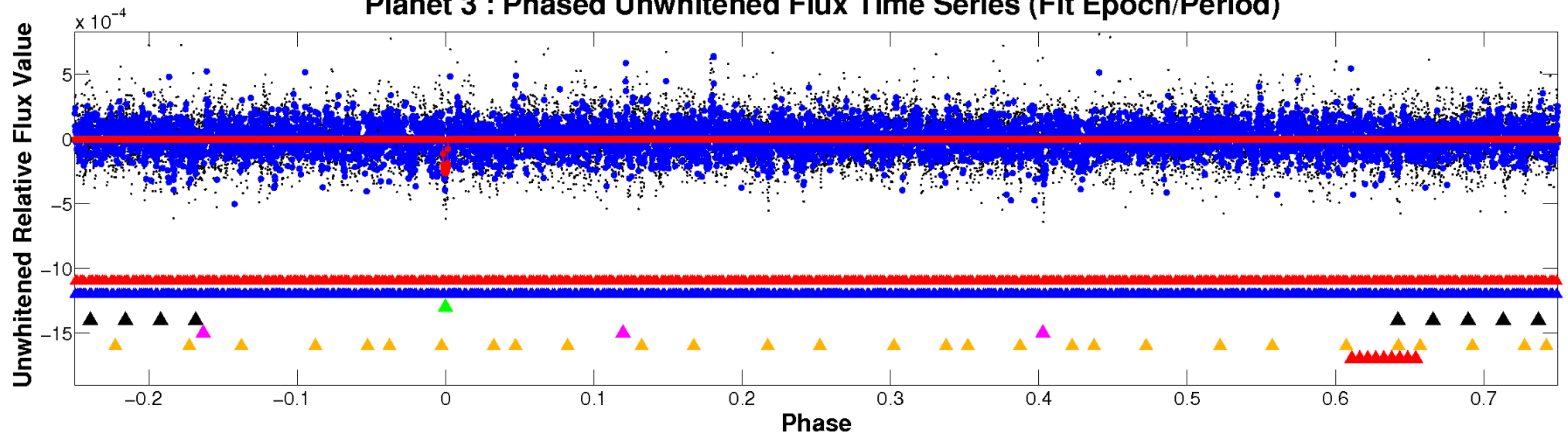
ALT Odd/Even

TCE 008707670-03

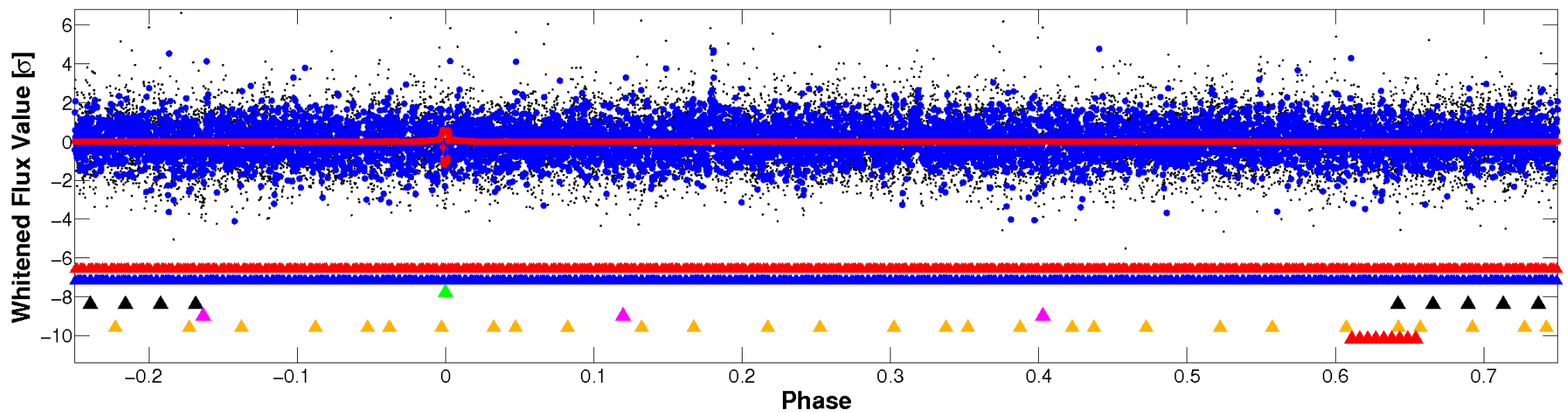


Non-Whitened Vs. Whitened Light Curve

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

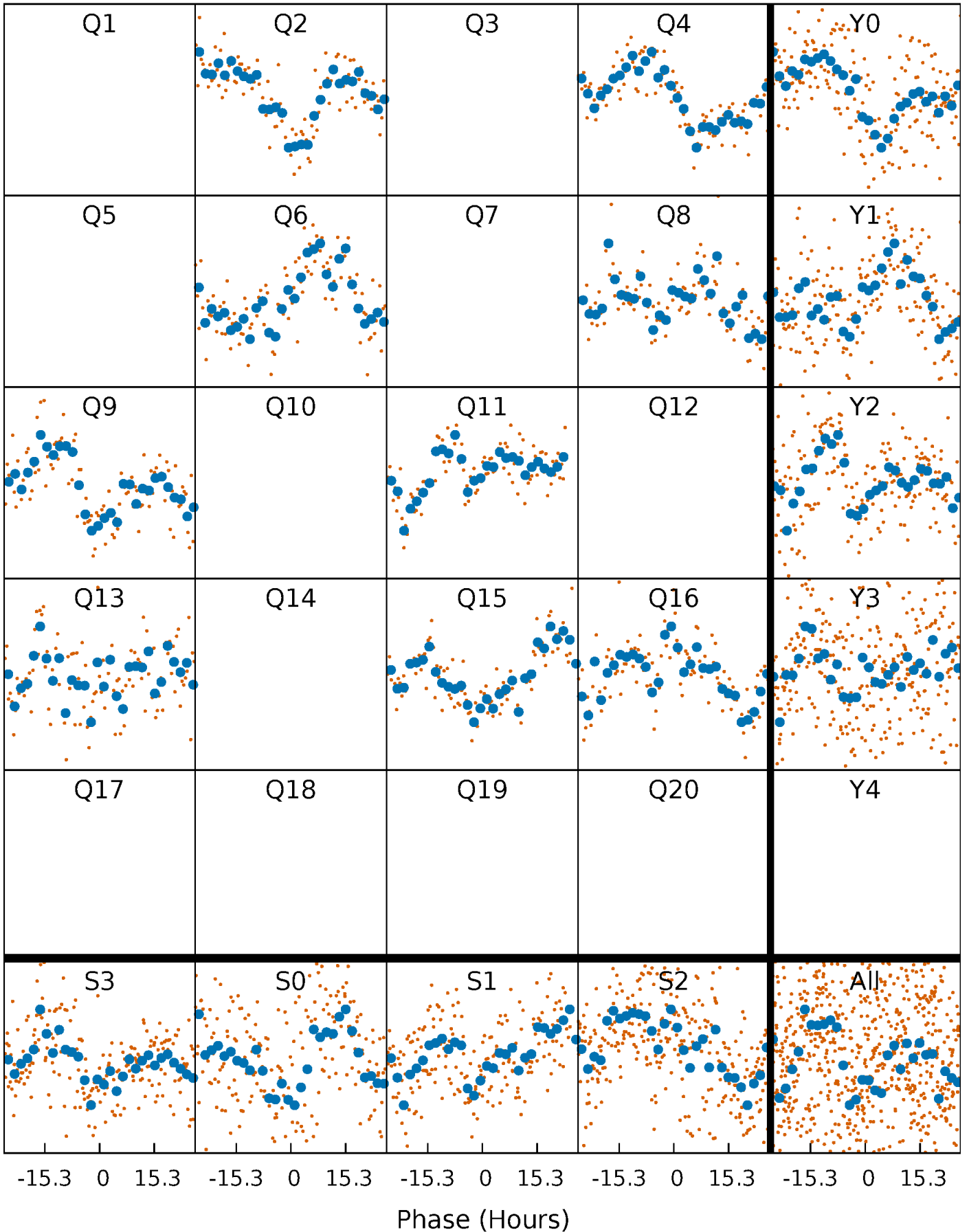


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



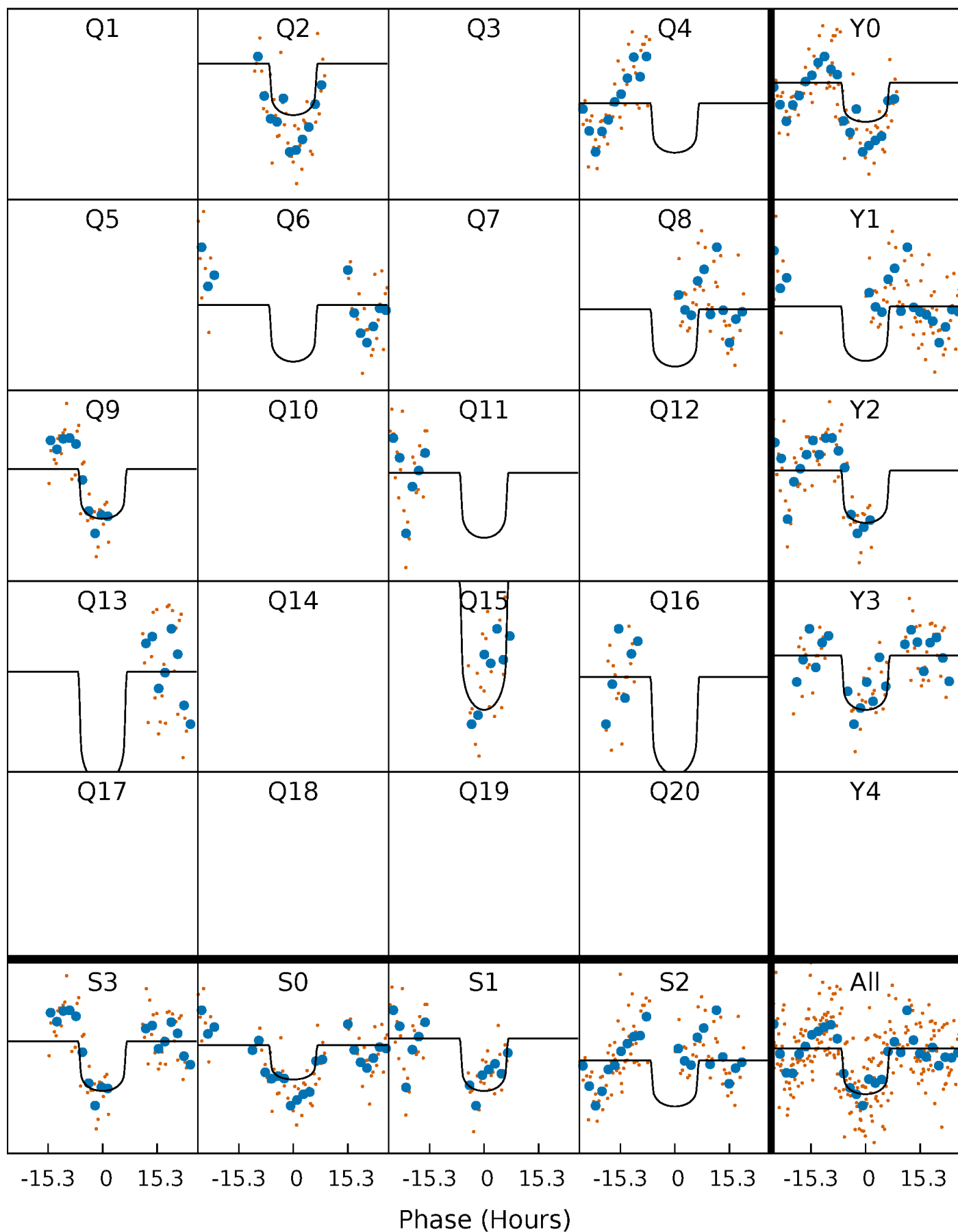
PDC Quarter-Phased Transit Curves

TCE 008707670-03 P=161.938595 Days $T_0=252.564716$ (BKJD)



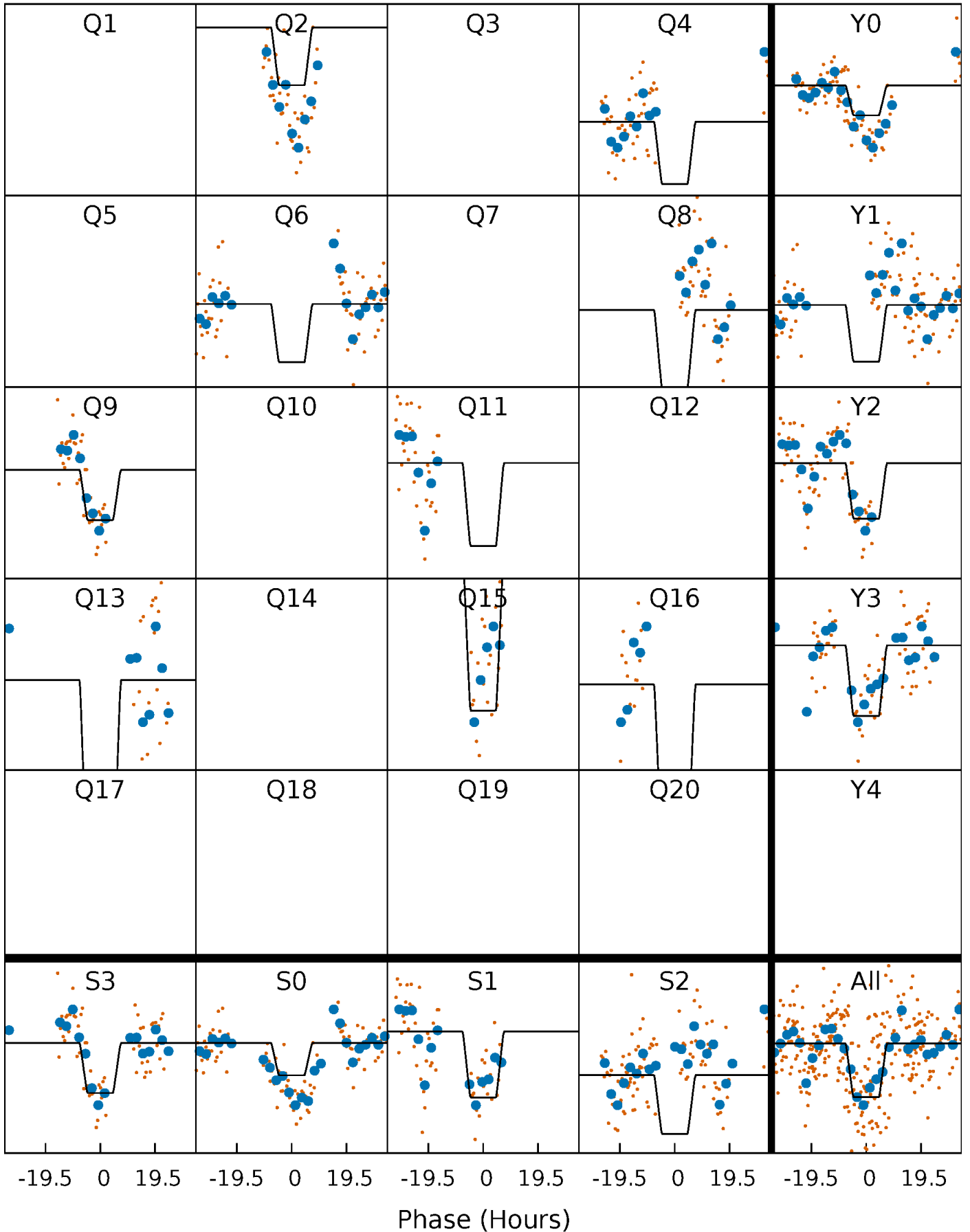
DV Quarter-Phased Transit Curves

TCE 008707670-03 $P=161.938595$ Days $T_0=252.564716$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

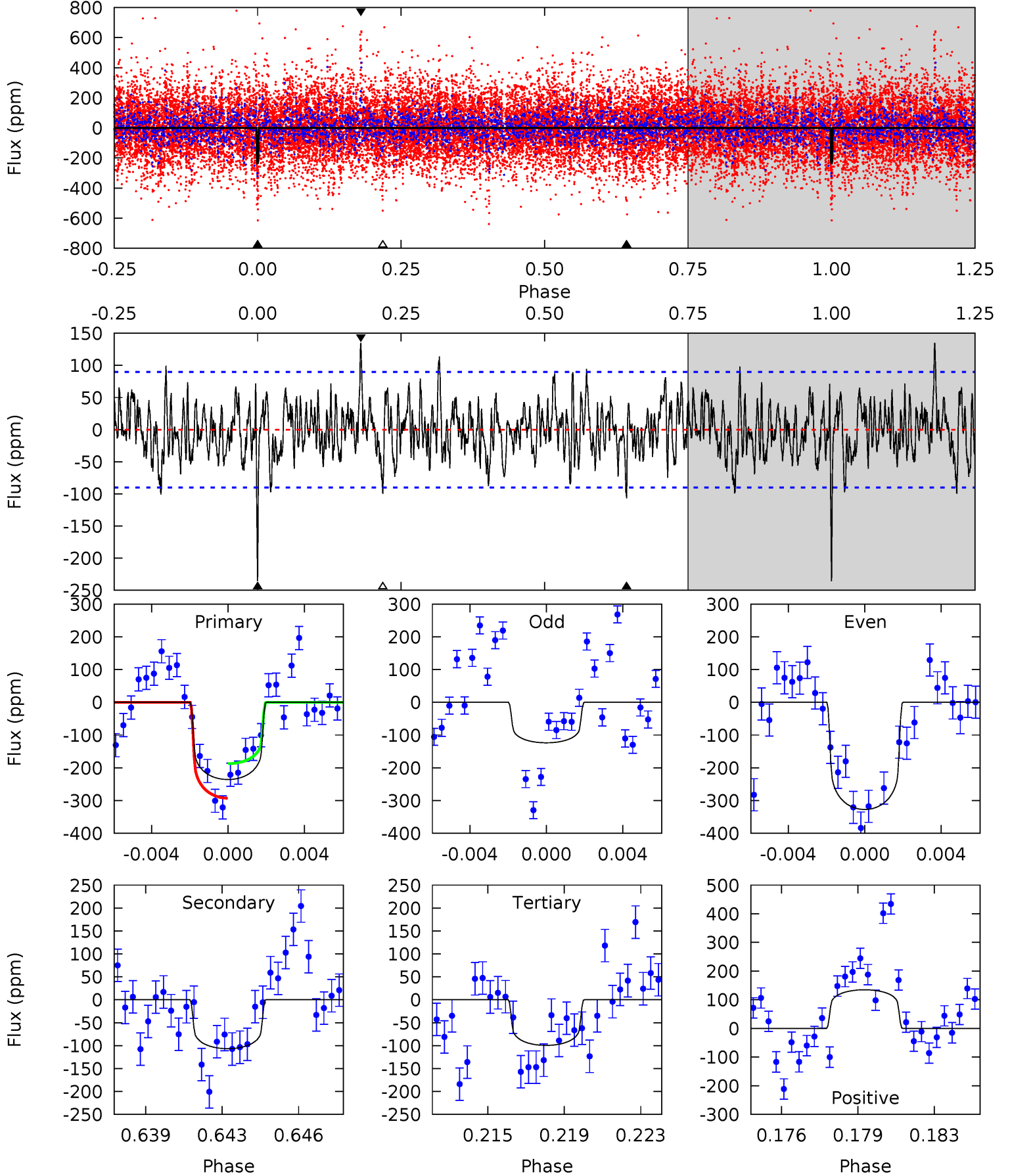
TCE 008707670-03 P=161.942774 Days $T_0=252.533444$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-03, $P = 161.938595$ Days, $E = 90.626121$ Days

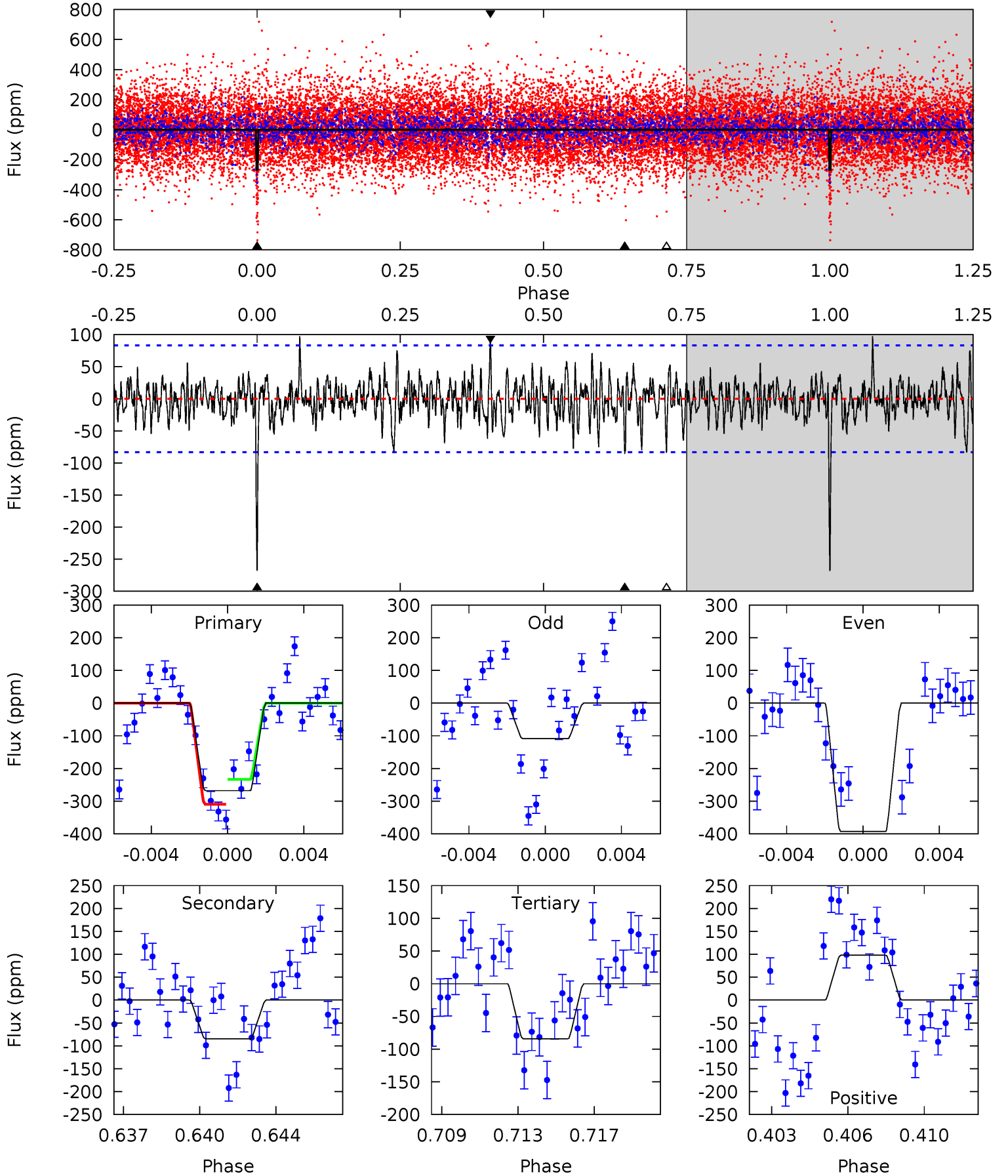
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	6.19	5.77	7.83	5.22	2.91	1.98	7.91	5.86	0.42	-1.63	5.87	0.88	0.36	3.05



Alt Model-Shift Uniqueness Test

008707670-03, P = 161.942774 Days, E = 90.590670 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	5.28	5.26	6.12	5.21	2.89	1.55	11.5	10.6	0.02	-0.84	8.80	0.56	0.27	2.38



Stellar Parameters For KIC 008707670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-107 ± 17	$4.42^{+1.30}_{-1.23}$	783^{+52}_{-72}	5217^{+729}_{-473}	1333^{+1176}_{-540}
Alt.	-85 ± 16	$4.72^{+1.41}_{-1.19}$	786^{+50}_{-64}	4832^{+590}_{-397}	919^{+739}_{-368}

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 $A_{obs} \gg 1.0$

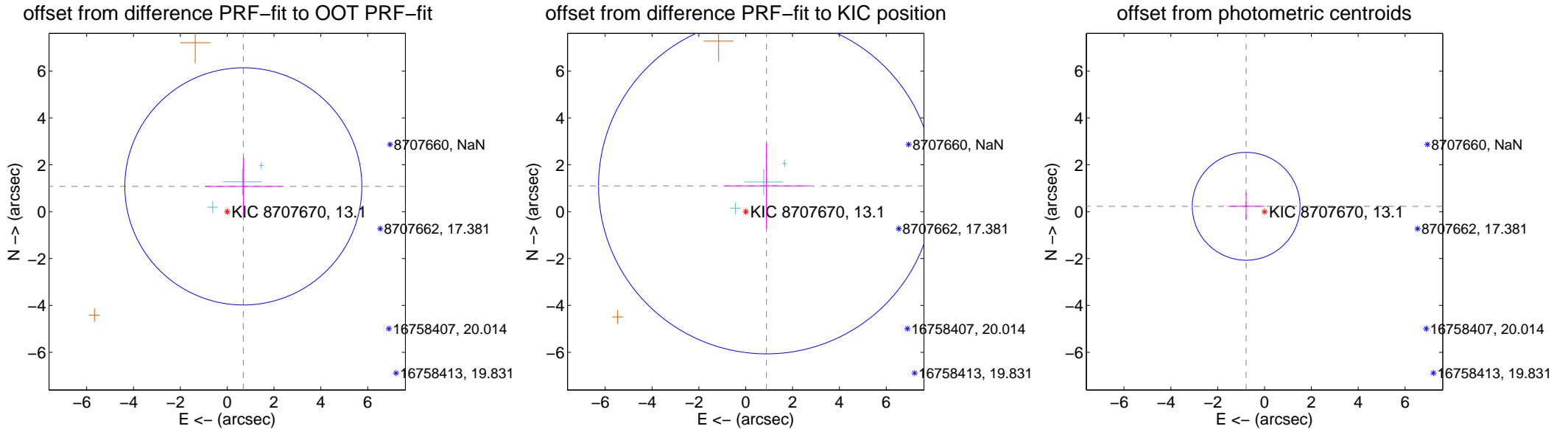
DV Centroid Data

Supplemental centroid analysis for 008707670-03. Kepler magnitude: 13.10. Transit SNR 9.64

There are 3 quarters with good PRF difference image offsets

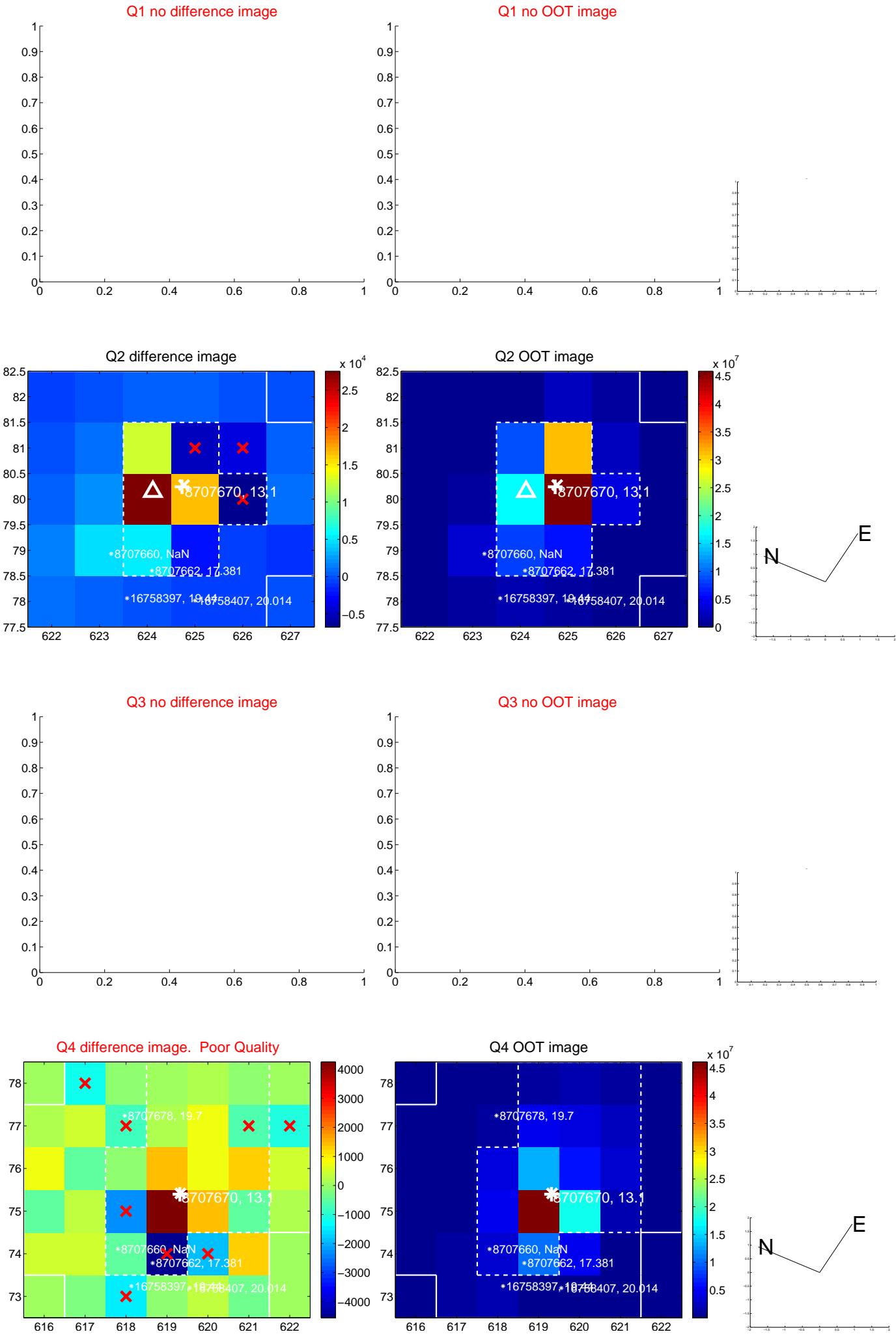
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.281 ± 1.686	0.76	-0.690 ± 1.638	1.079 ± 1.211
PRF-fit source offset from KIC position	1.412 ± 2.389	0.59	-0.884 ± 1.807	1.102 ± 1.826
photometric centroid source offset	0.82 ± 0.77	1.07	0.79 ± 0.78	0.23 ± 0.58



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.

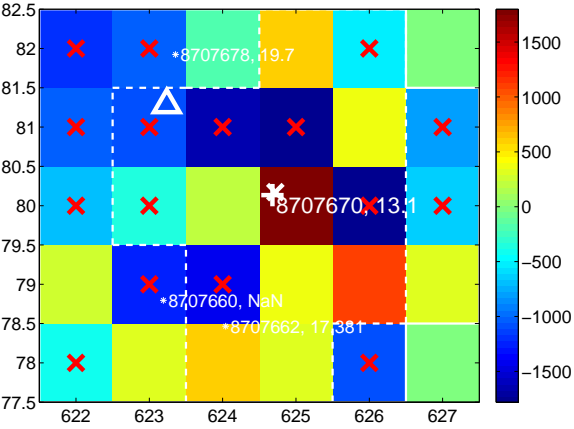
Q5 no difference image



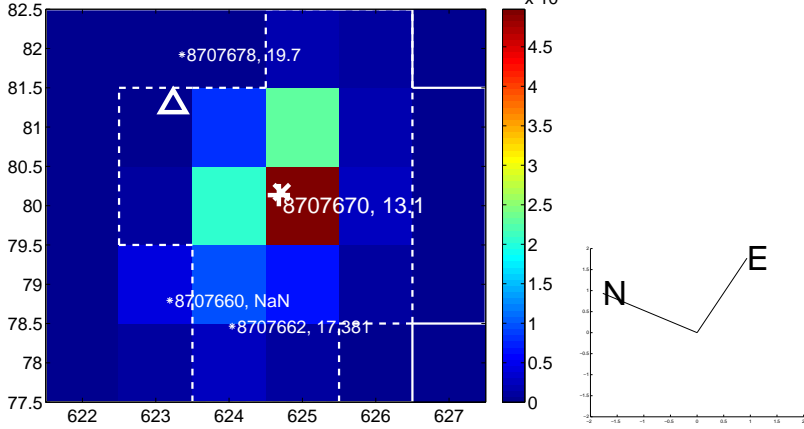
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



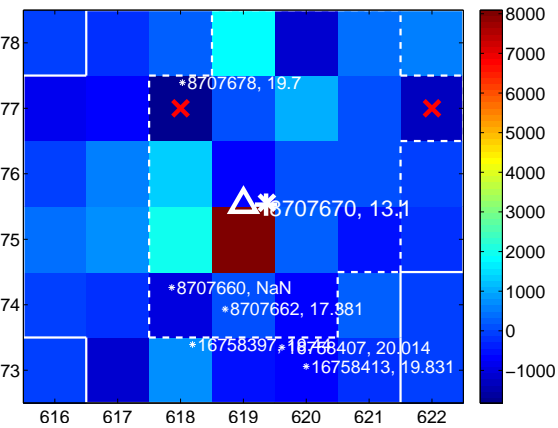
Q7 no difference image



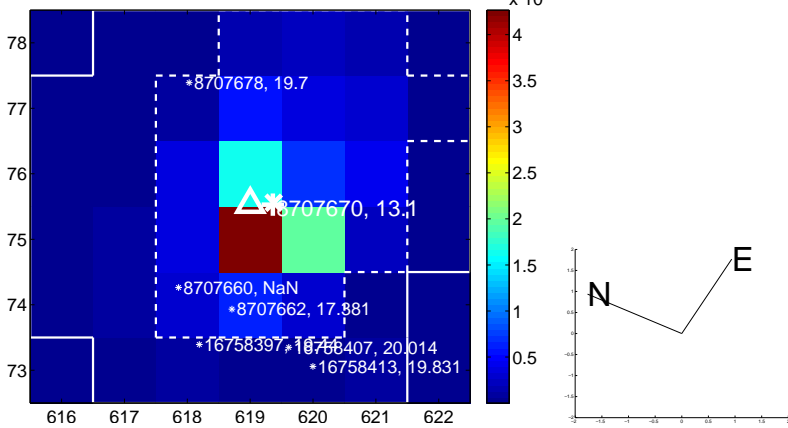
Q7 no OOT image



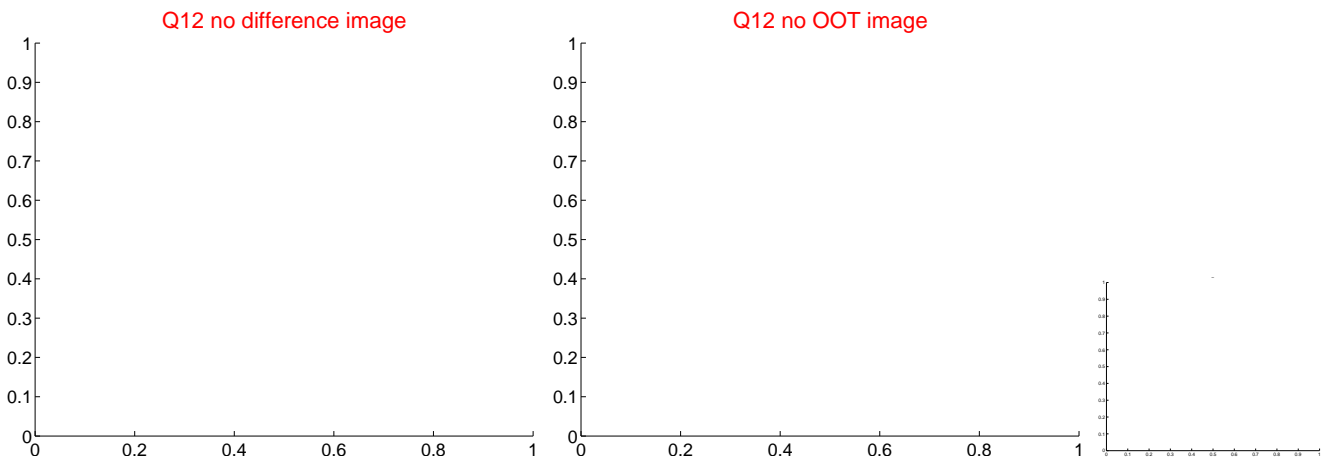
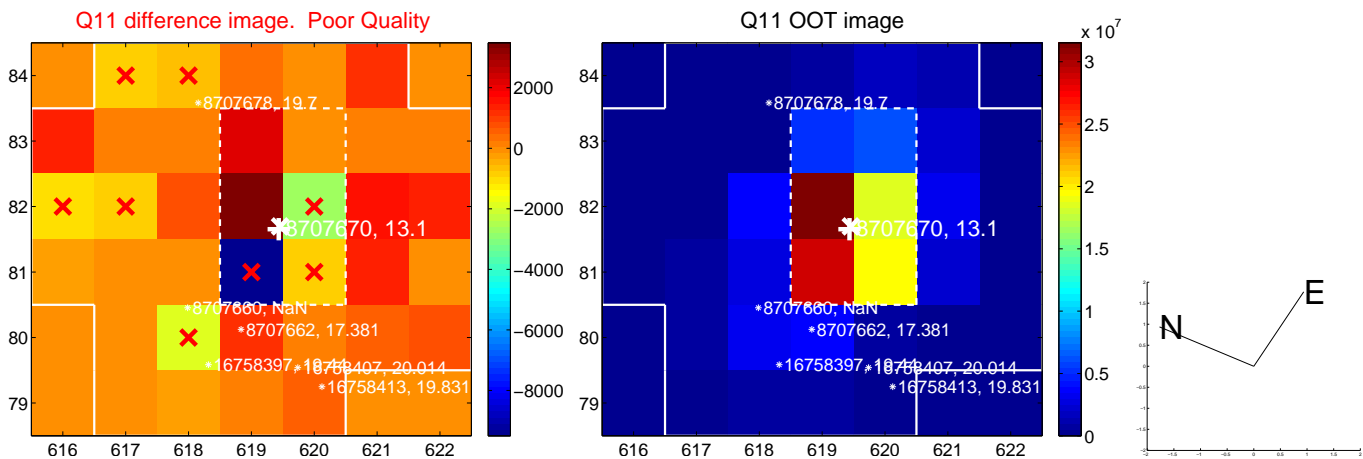
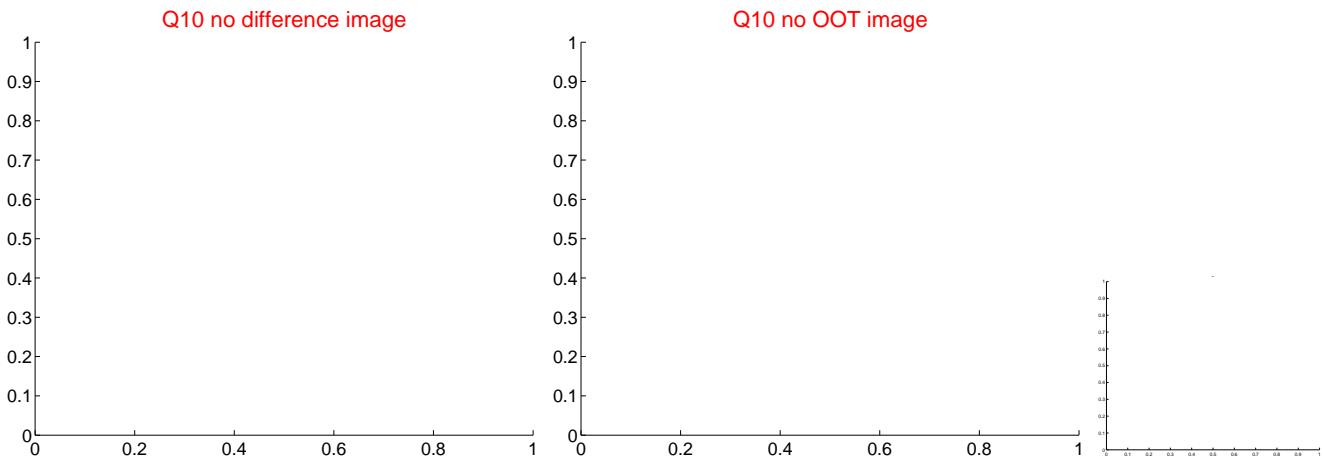
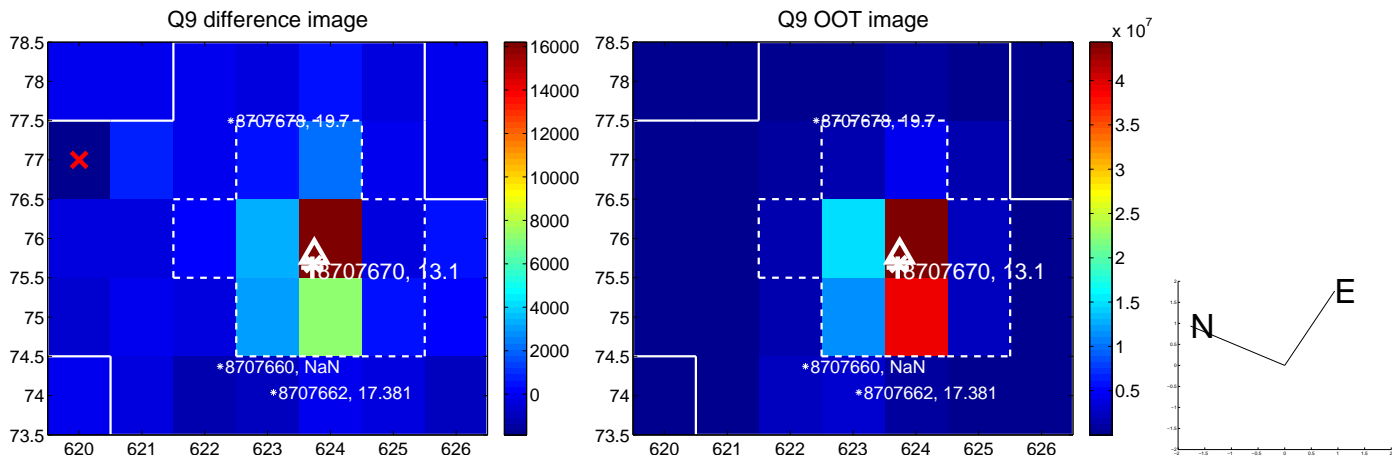
Q8 difference image



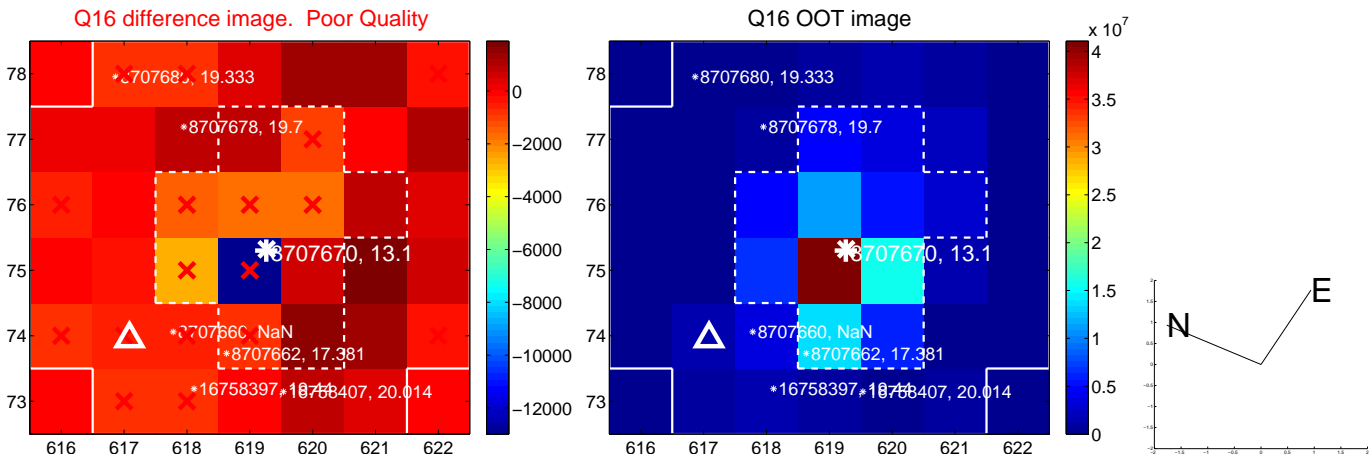
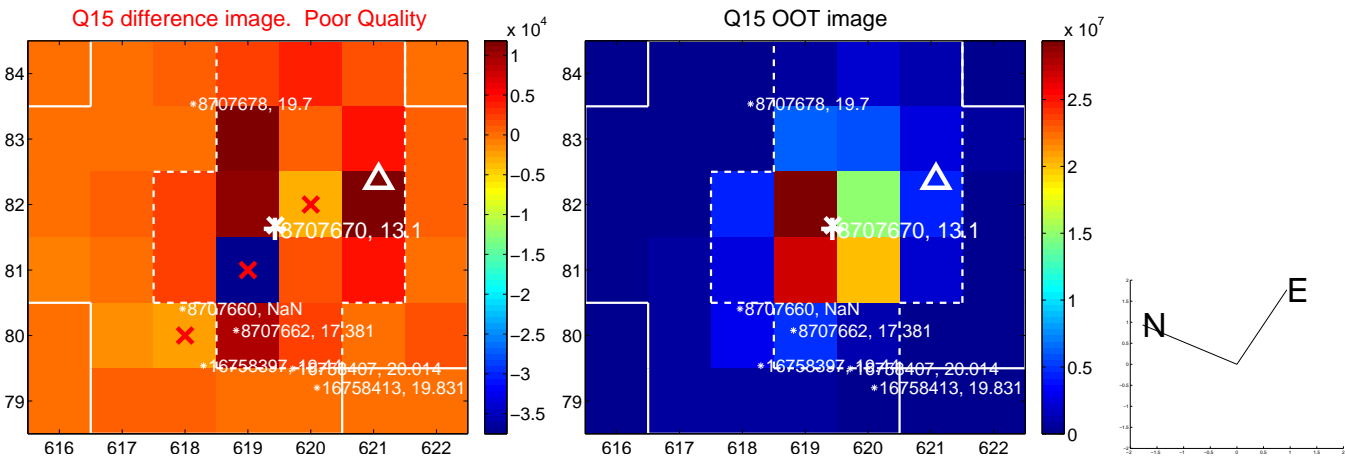
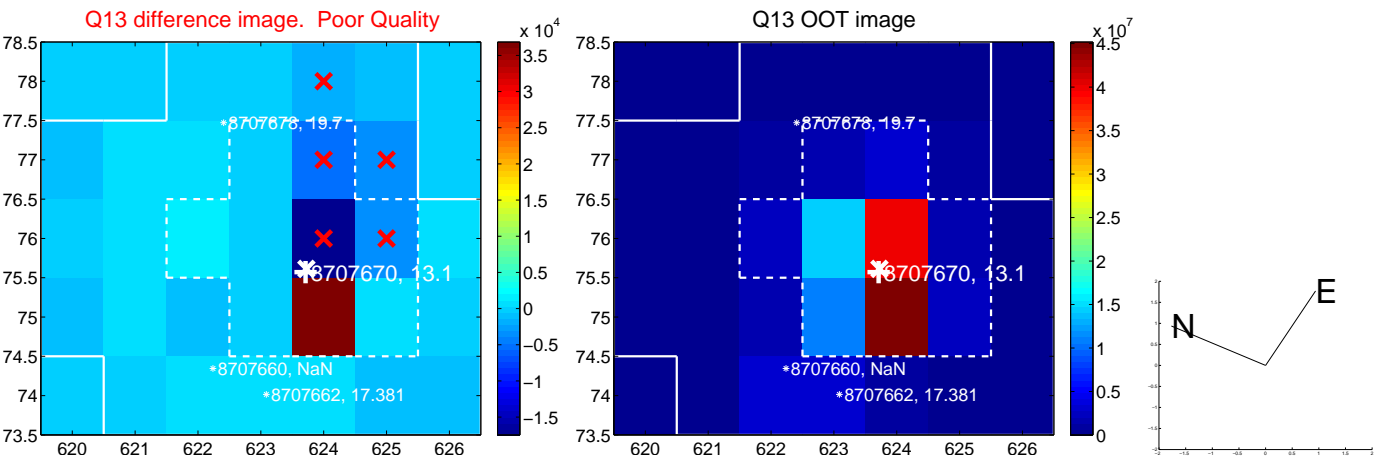
Q8 OOT image



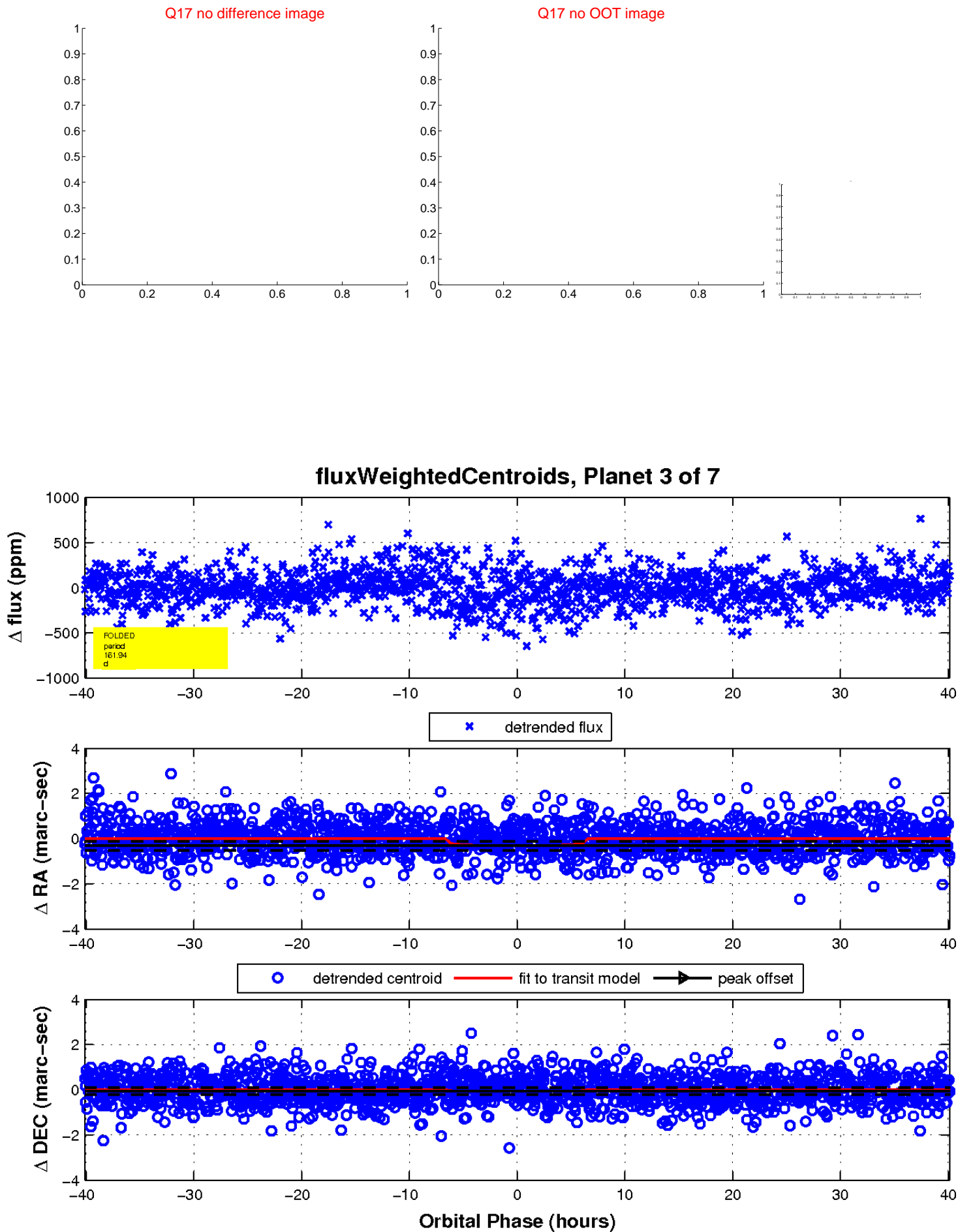
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



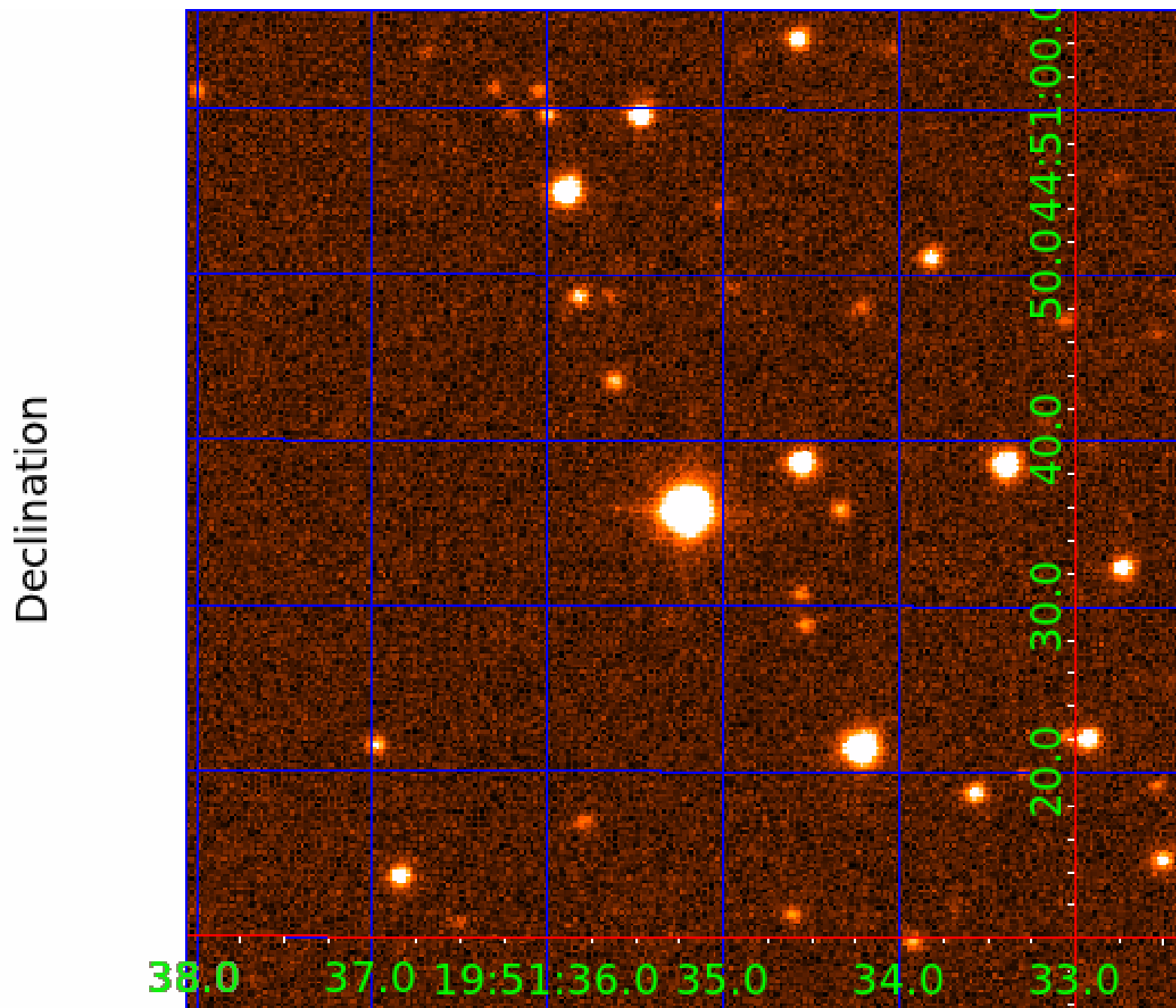
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

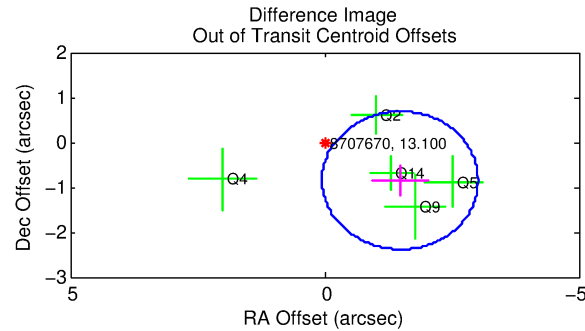
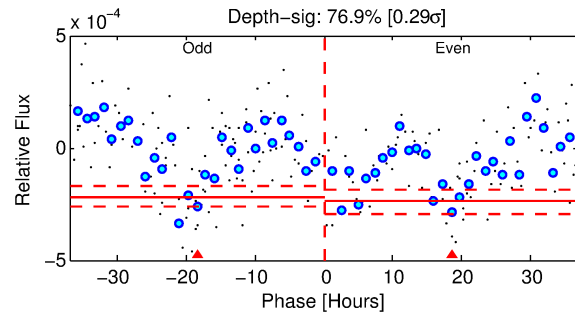
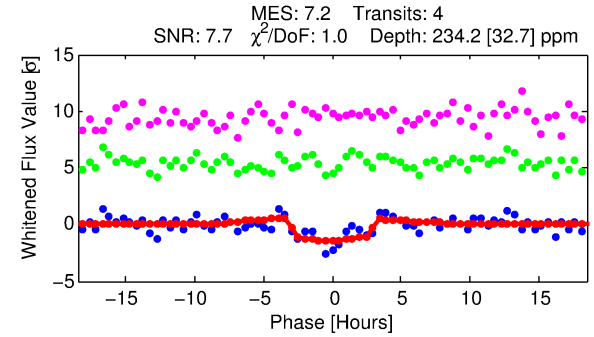
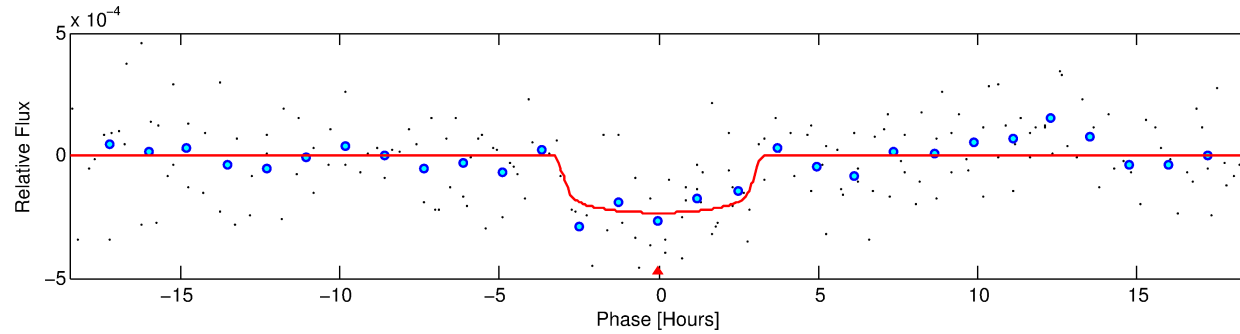
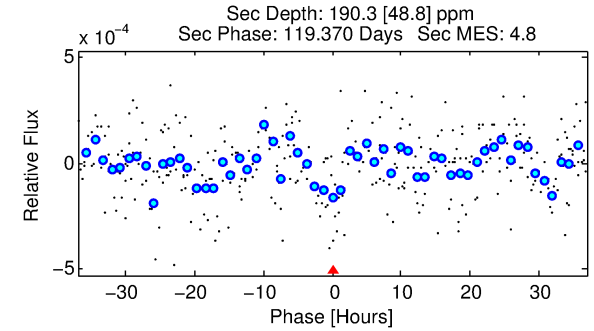
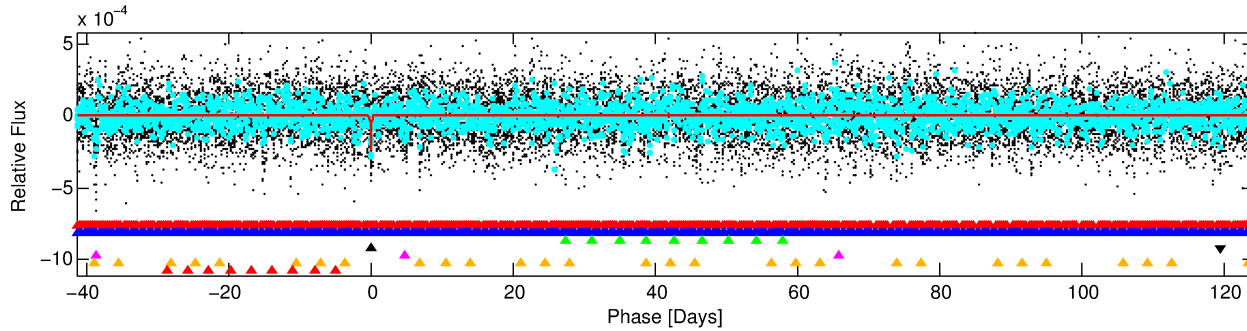
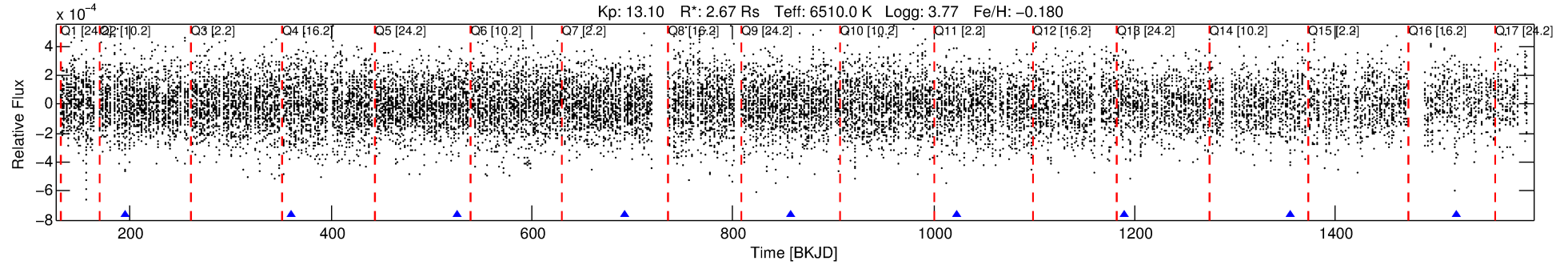
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-04

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 4 of 7 Period: 165.773 d



DV Fit Results:

Period = 165.77272 [0.00217] d
Epoch = 194.6190 [0.0120] BKJD
Rp/R* = 0.0146 [0.0135]
a/R* = 175.77 [869.11]
b = 0.55 [6.37]
Seff = 24.68 [12.99]
Teff = 568 [75] K
Rp = 4.24 [4.19] Re
a = 0.6805 [0.2214] AU
Ag = 2698.43 [5214.19] [0.52σ]
Teffp = 6333 [2960] K [1.95σ]

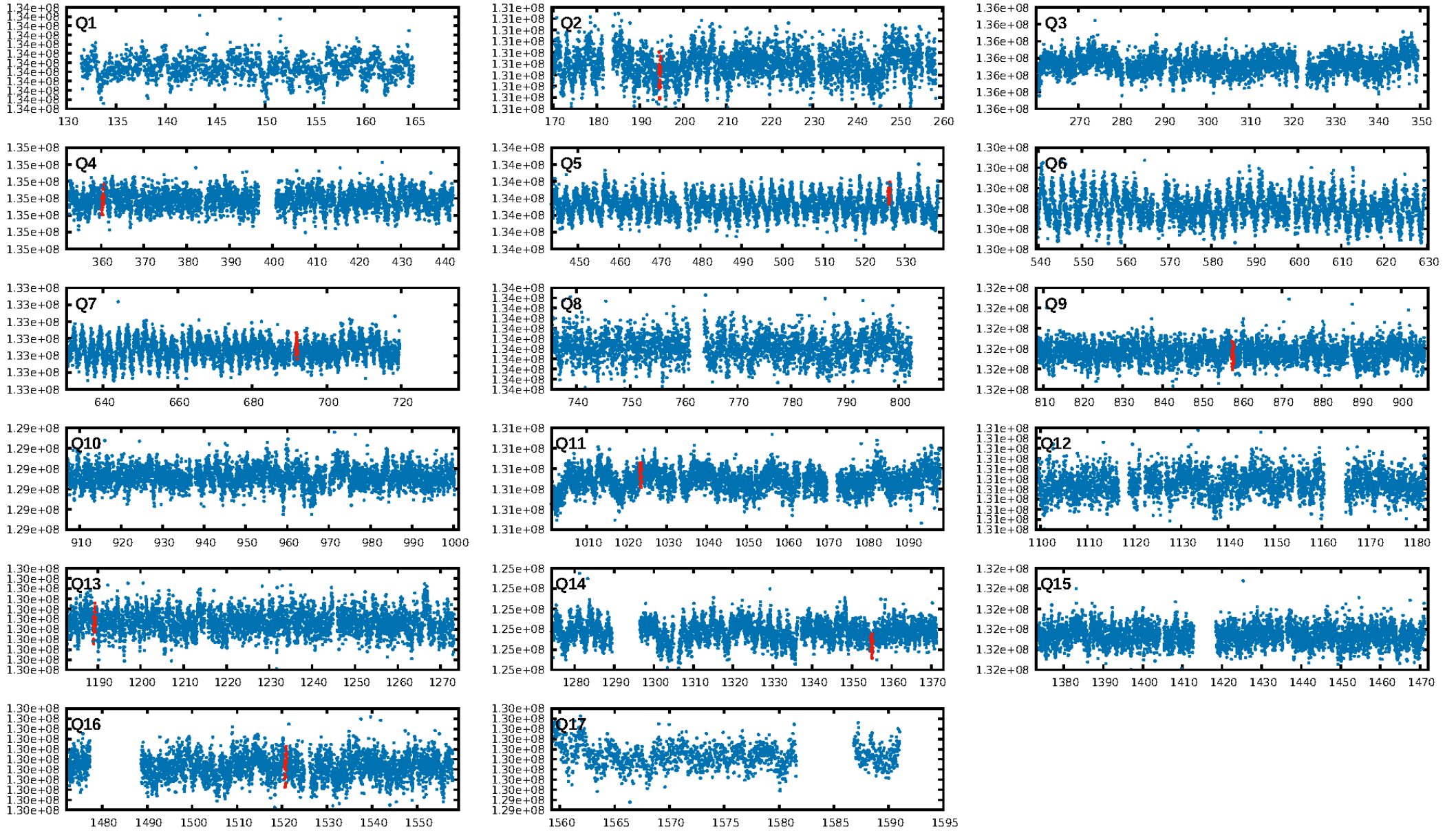
DV Diagnostic Results:

ShortPeriod-sig: 99.8% [3.11σ]
LongPeriod-sig: 100.0% [665.68σ]
ModelChiSquare2-sig: 84.3%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 1.82e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6031
Centroid-sig: 80.3%
Centroid-so: 0.937 arcsec [0.87σ]
OotOffset-rm: 1.710 arcsec [3.34σ]
OotOffset-st: 2/0/1/2 [5]
KicOffset-rm: 1.858 arcsec [2.41σ]
KicOffset-st: 2/0/1/2 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.25 [2/8]

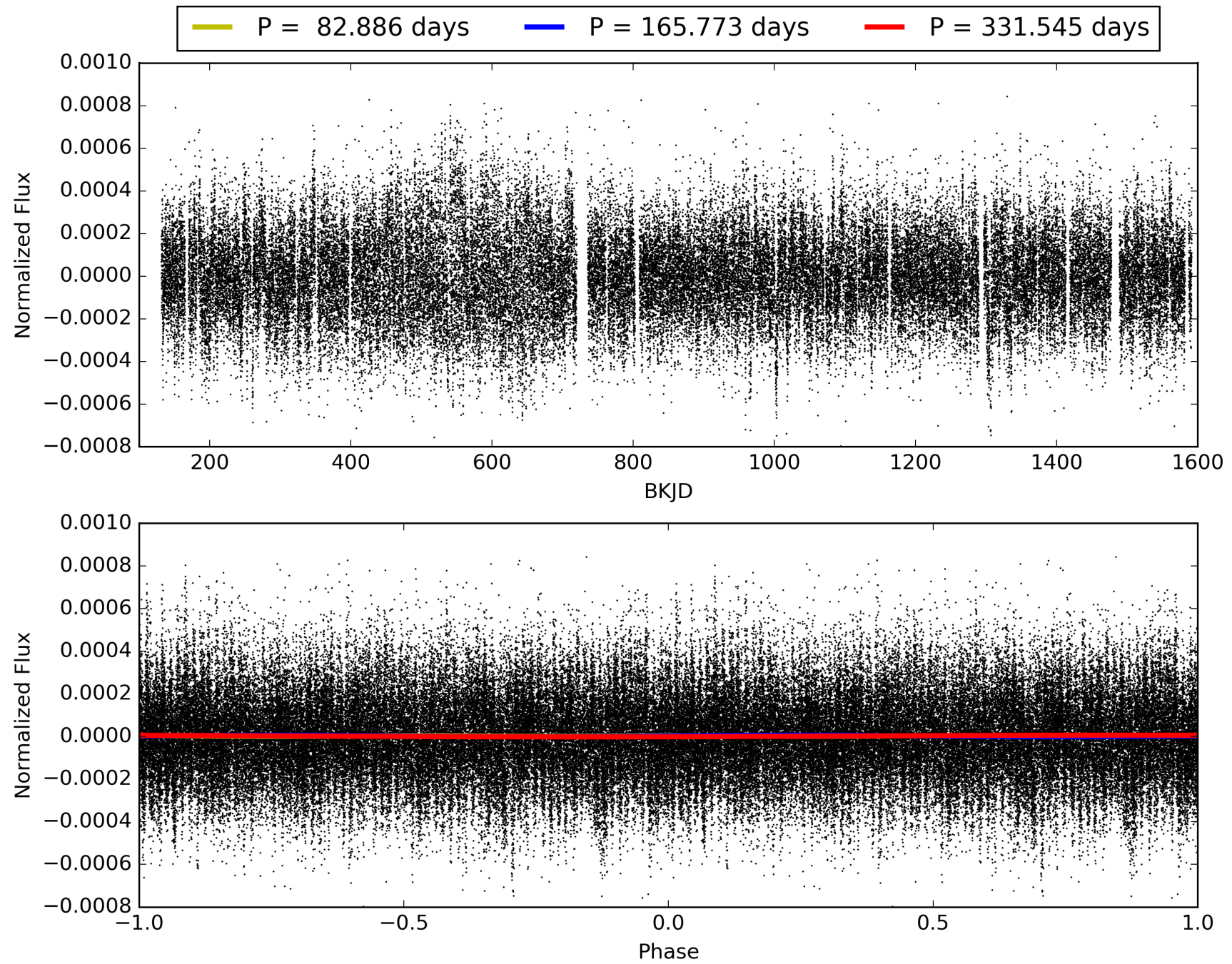
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:00:09 Z

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

TCE 008707670-04, PDC Light Curves

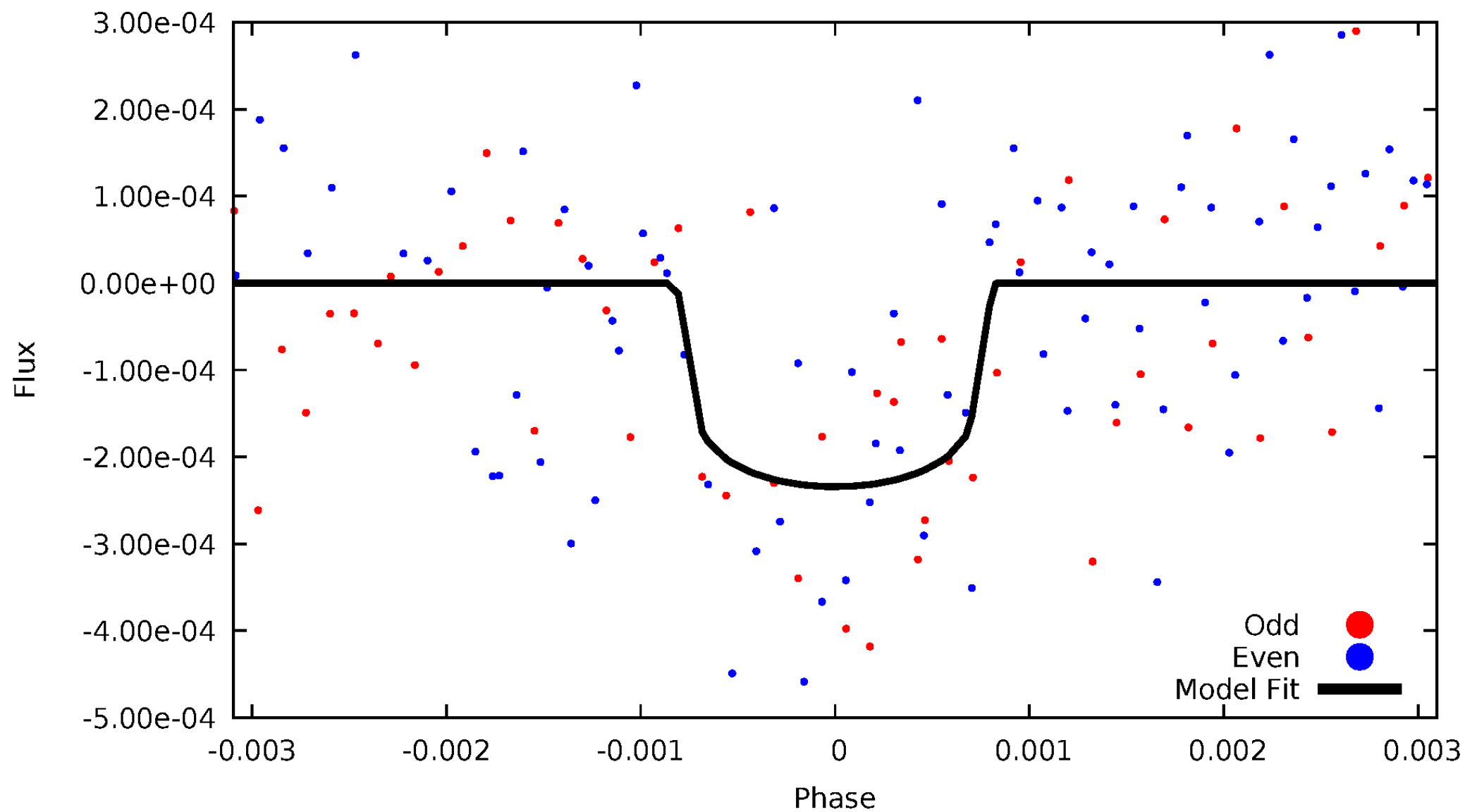


TCE 008707670-04



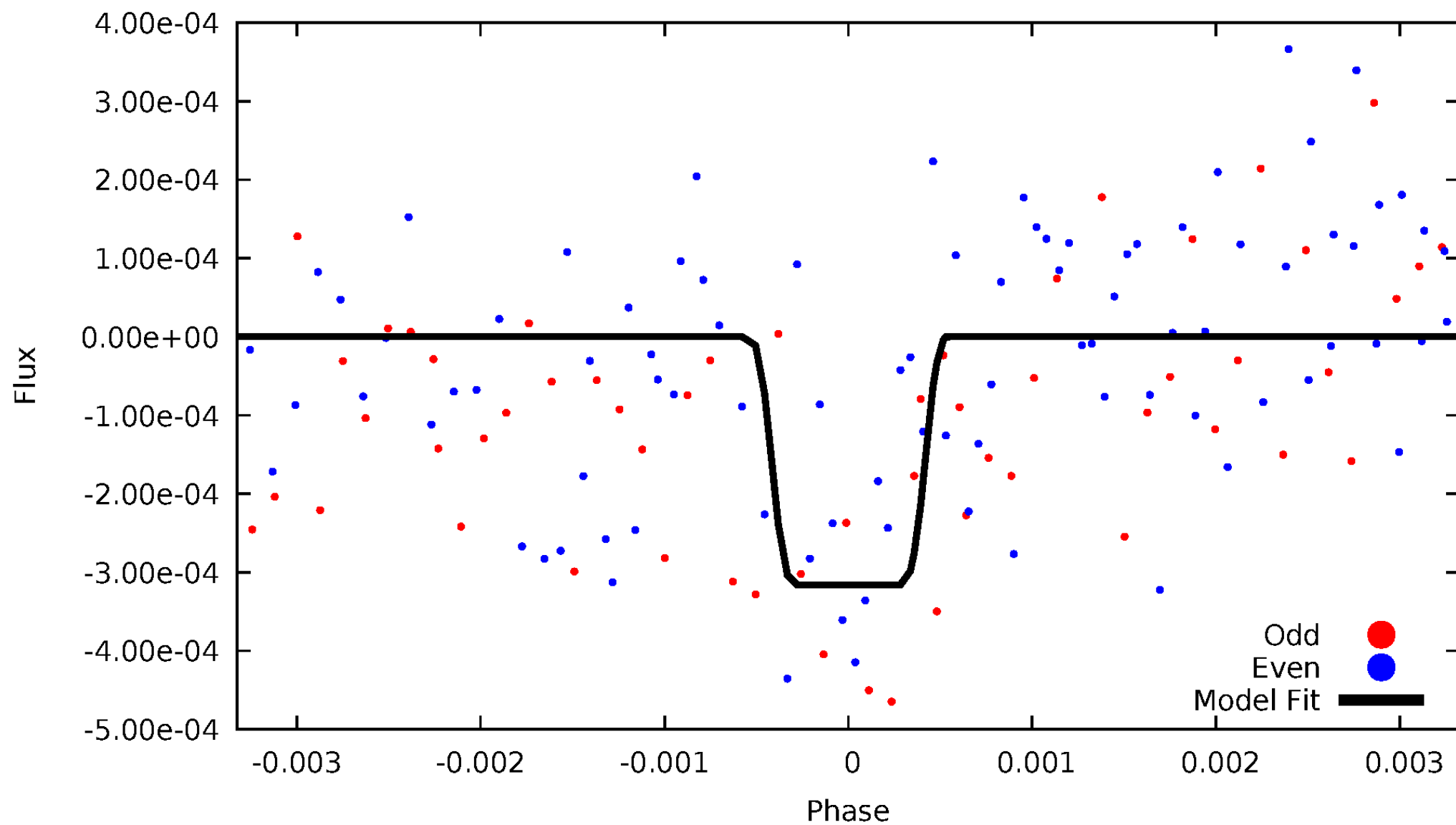
DV Odd/Even

TCE 008707670-04



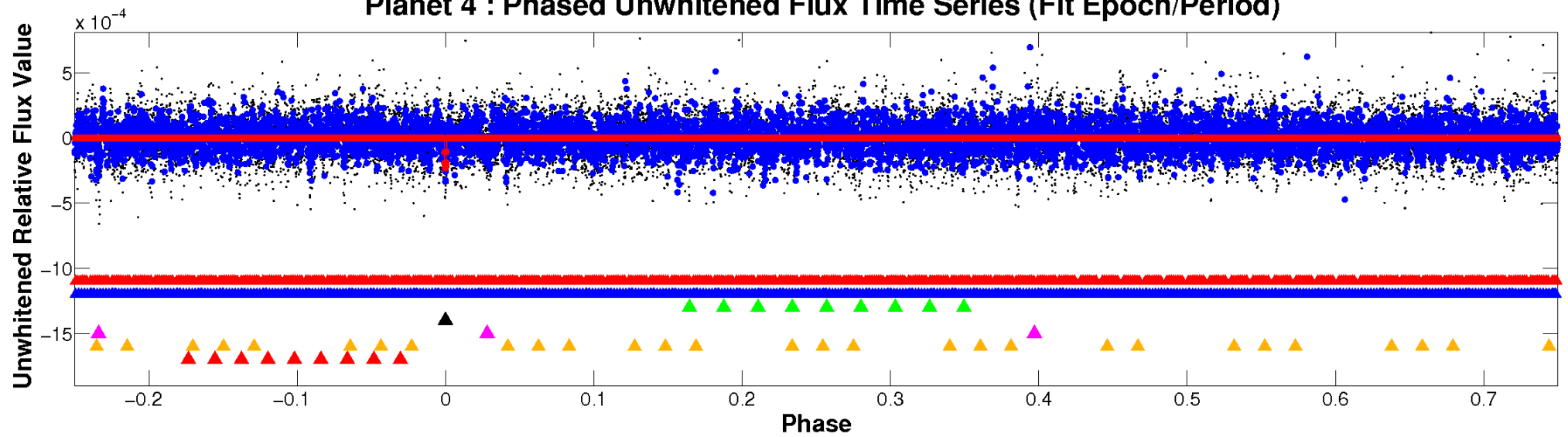
ALT Odd/Even

TCE 008707670-04

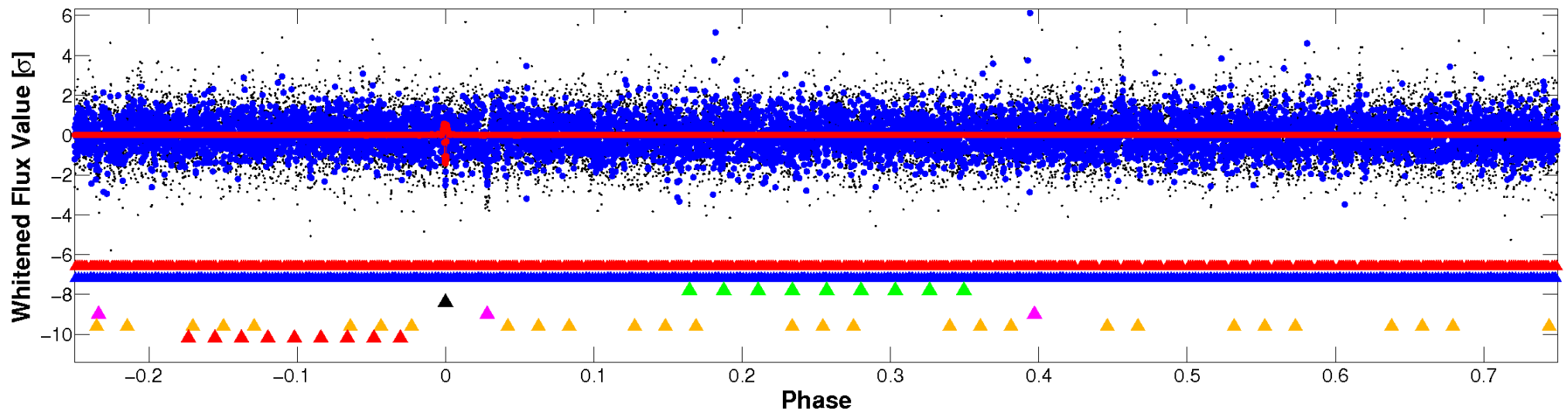


Non-Whitened Vs. Whitened Light Curve

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

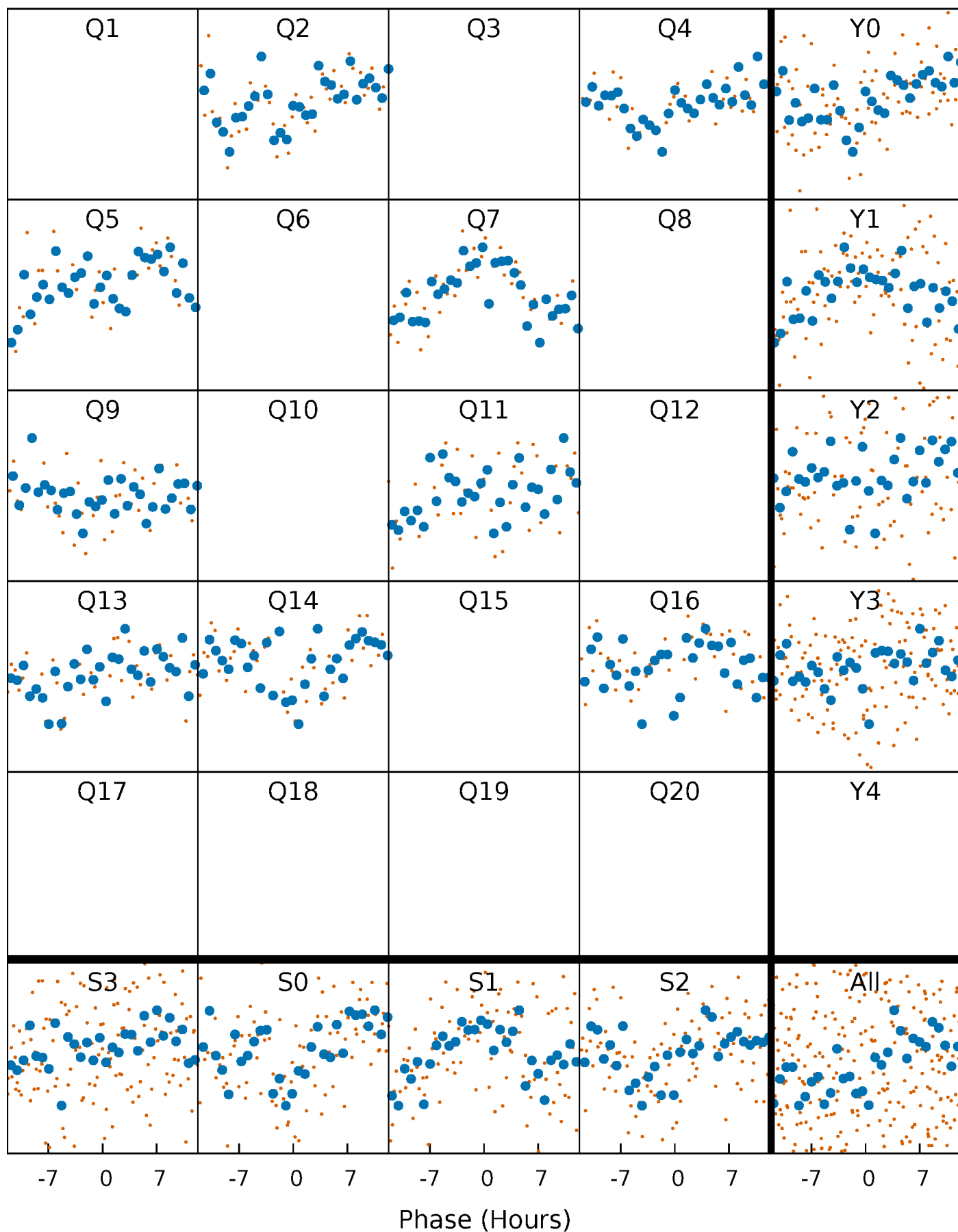


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



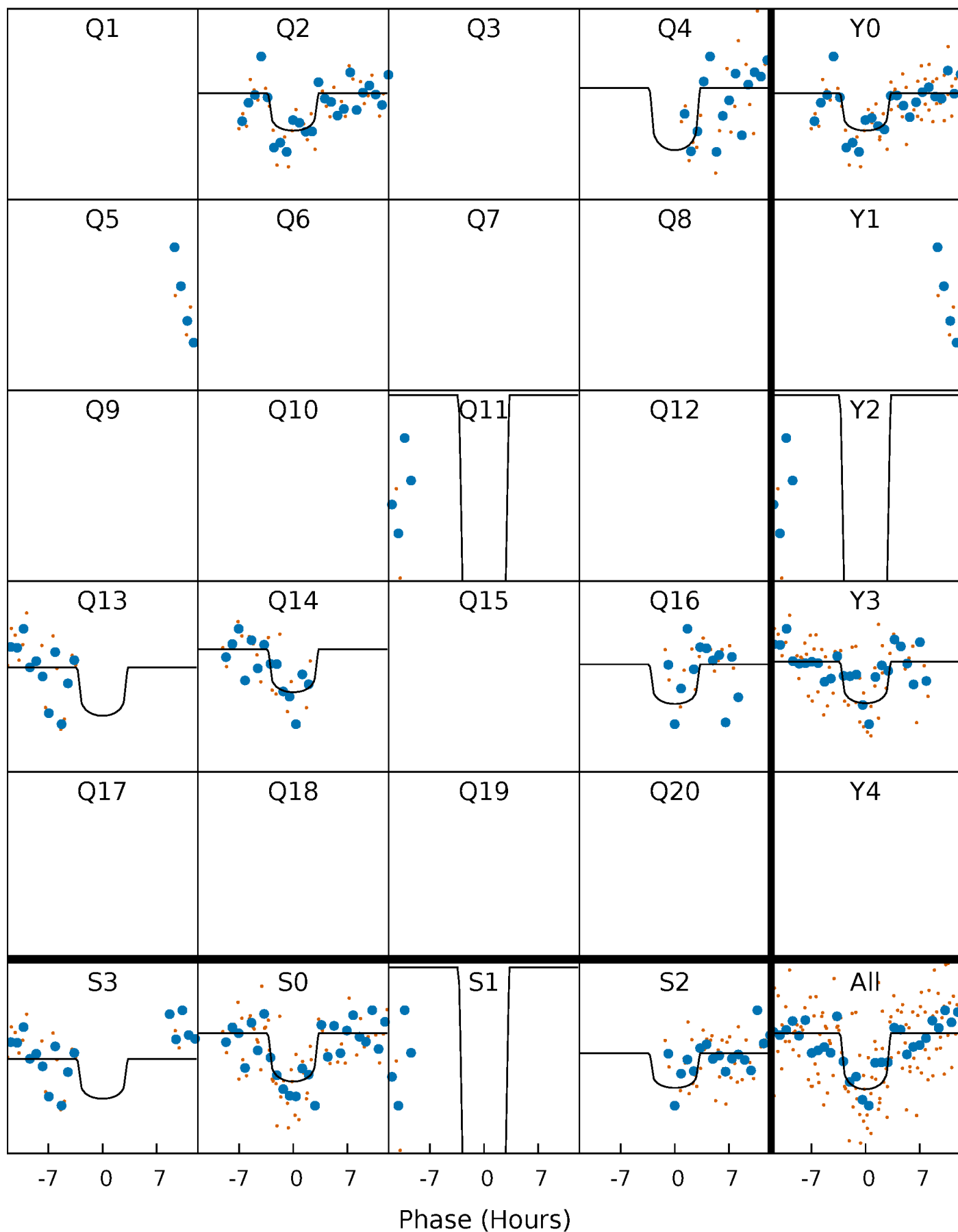
PDC Quarter-Phased Transit Curves

TCE 008707670-04 P=165.772717 Days $T_0=194.619026$ (BKJD)



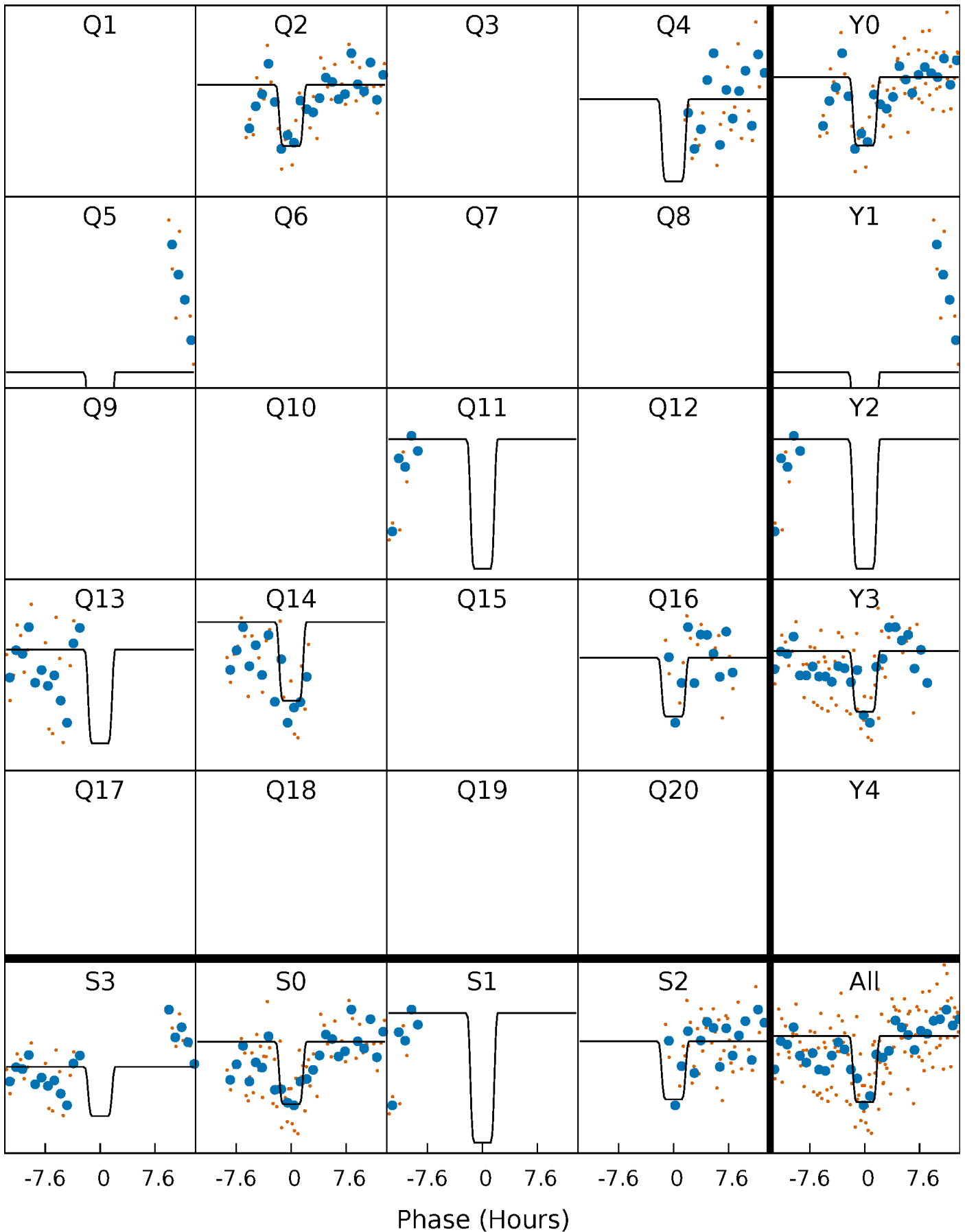
DV Quarter-Phased Transit Curves

TCE 008707670-04 P=165.772717 Days $T_0=194.619026$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

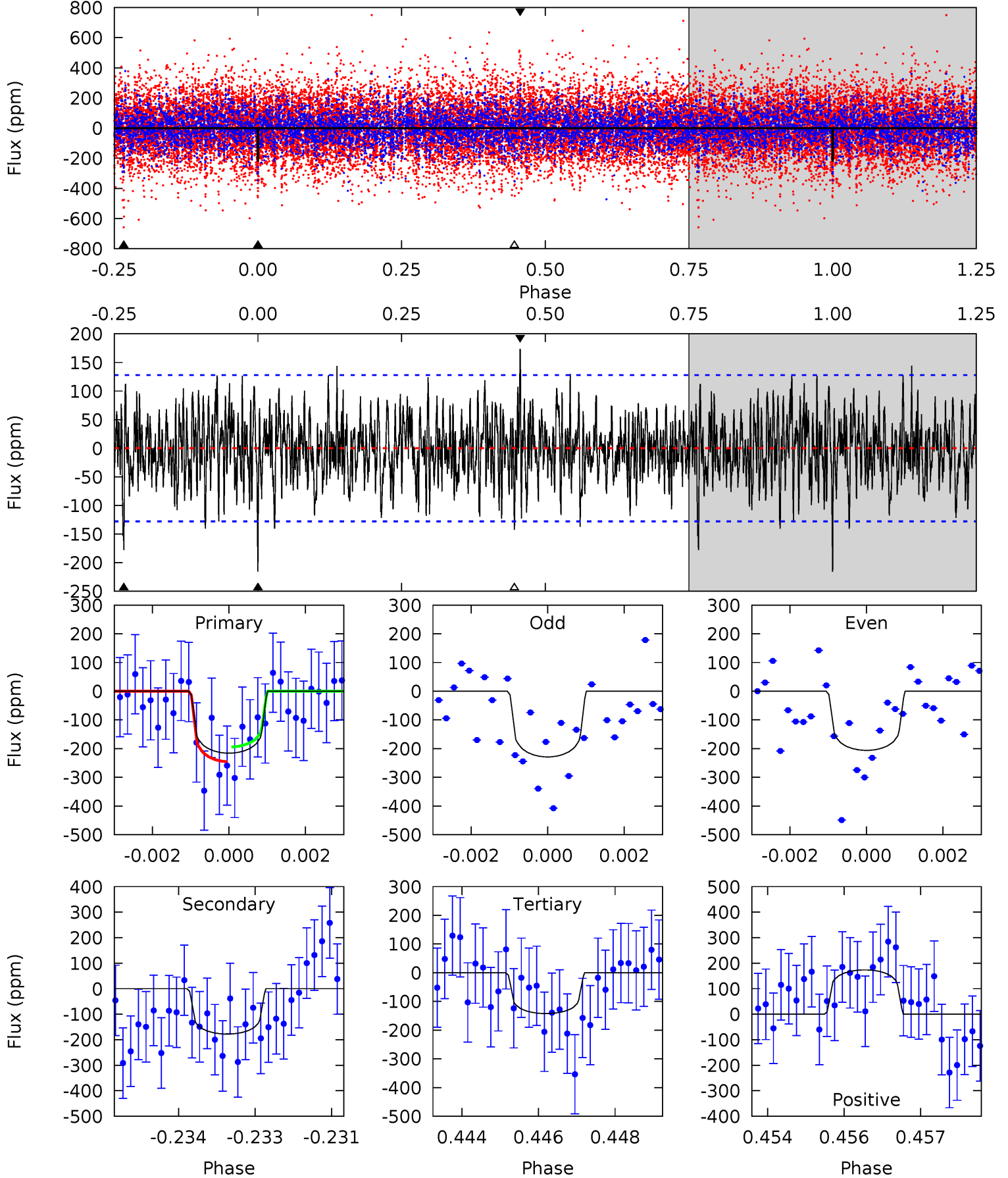
TCE 008707670-04 P=165.776069 Days $T_0=194.586301$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-04, $P = 165.772717$ Days, $E = 28.846309$ Days

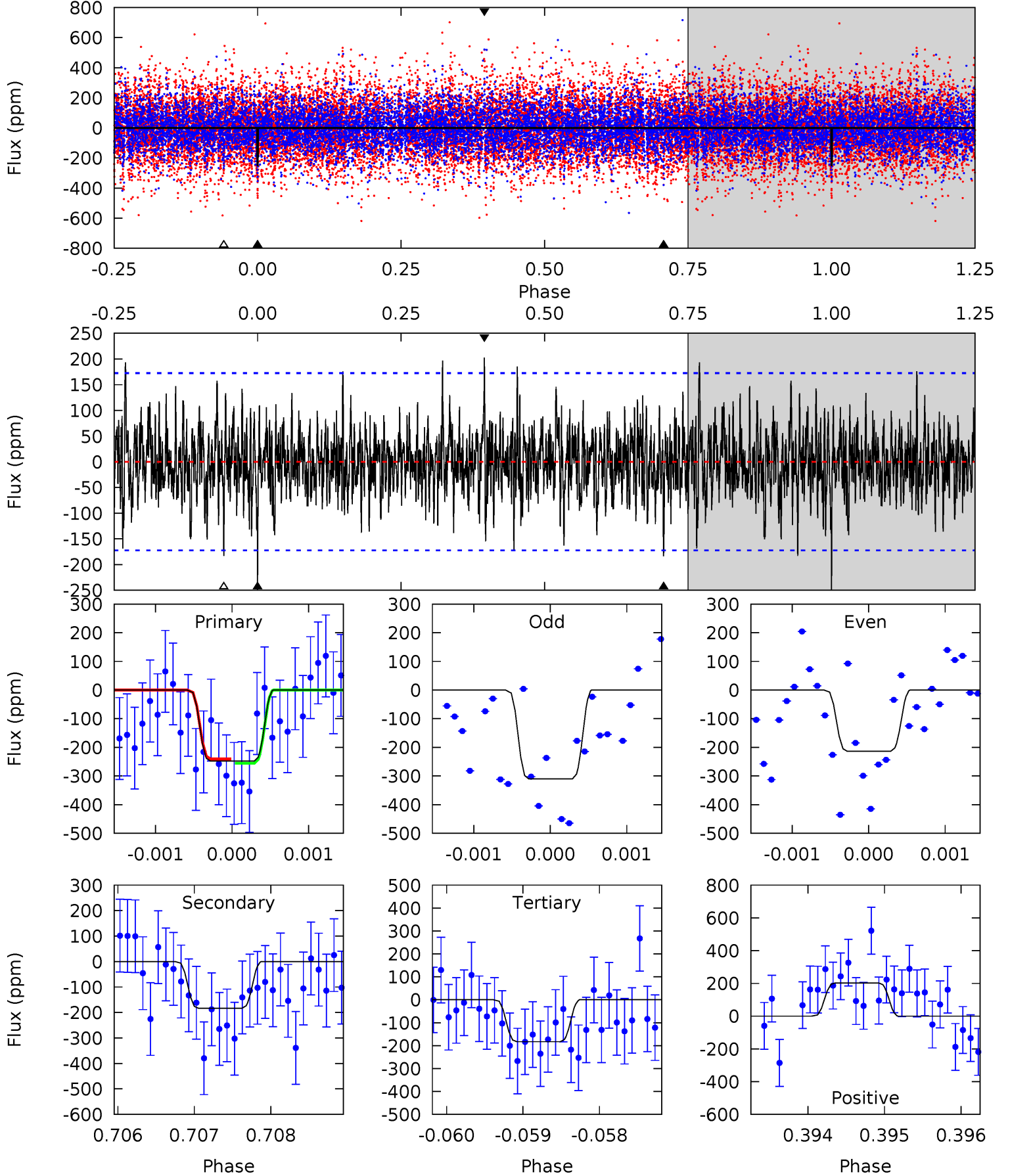
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.07	7.46	5.97	7.29	5.36	3.15	1.96	3.09	1.78	1.49	0.17	0.47	0.95	0.45	1.05



Alt Model-Shift Uniqueness Test

008707670-04, $P = 165.776069$ Days, $E = 28.810232$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.86	5.80	5.79	6.41	5.45	3.29	1.65	2.07	1.44	0.02	-0.61	1.50	1.02	0.45	0.24



Stellar Parameters For KIC 008707670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-178 ± 24	$4.44^{+3.91}_{-2.66}$	776^{+54}_{-70}	5831^{+4010}_{-1357}	2188^{+12552}_{-1539}
Alt.	-183 ± 32	$5.20^{+3.70}_{-2.97}$	782^{+44}_{-67}	5527^{+2914}_{-1120}	1792^{+7348}_{-1210}

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 $A_{obs} \gg 1.0$

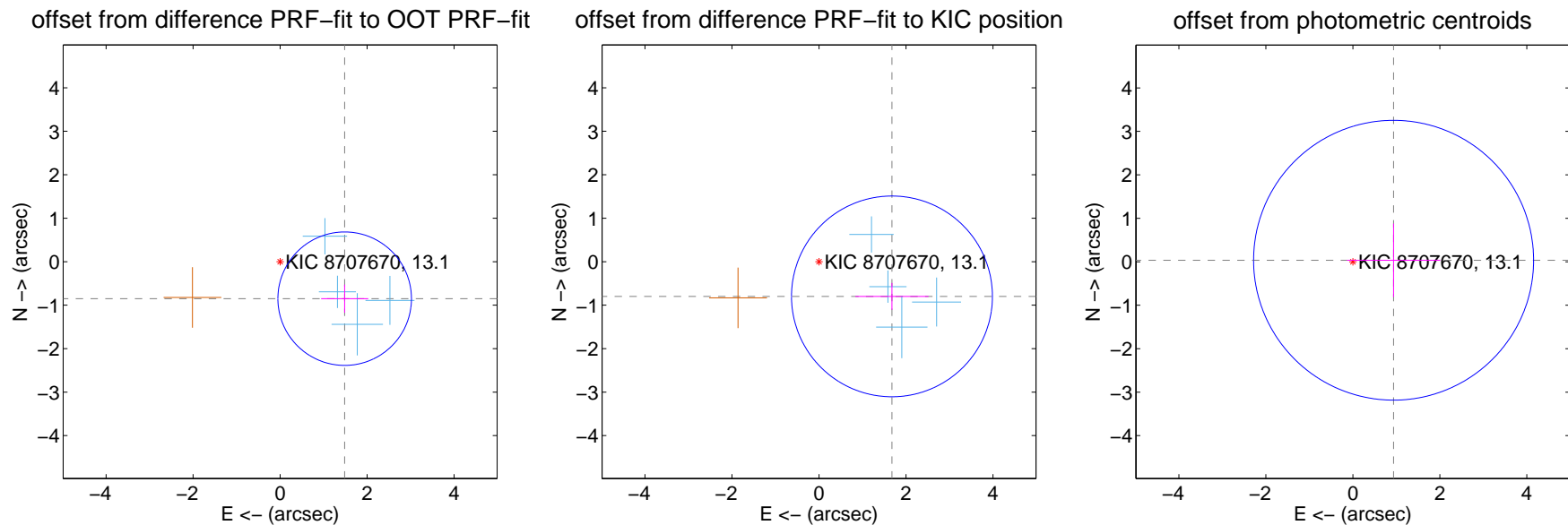
DV Centroid Data

Supplemental centroid analysis for 008707670-04. Kepler magnitude: 13.10. Transit SNR 7.75

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.710 ± 0.512	3.34	-1.484 ± 0.542	-0.851 ± 0.323
PRF-fit source offset from KIC position	1.858 ± 0.770	2.41	-1.677 ± 0.840	-0.798 ± 0.308
photometric centroid source offset	0.94 ± 1.07	0.87	-0.94 ± 1.07	0.04 ± 0.84



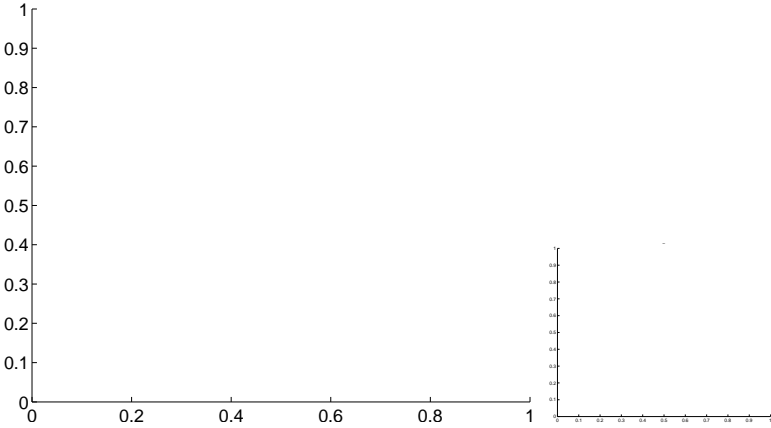
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

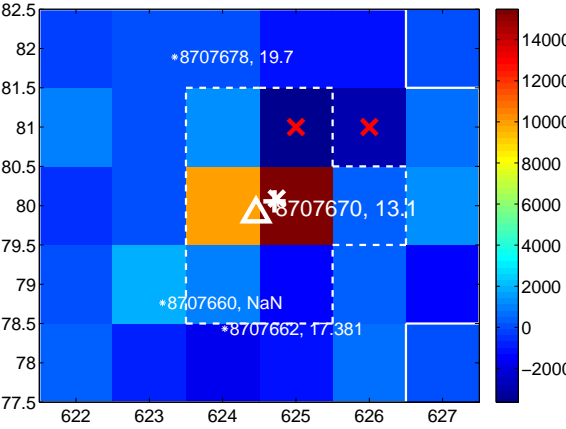
Q1 no difference image



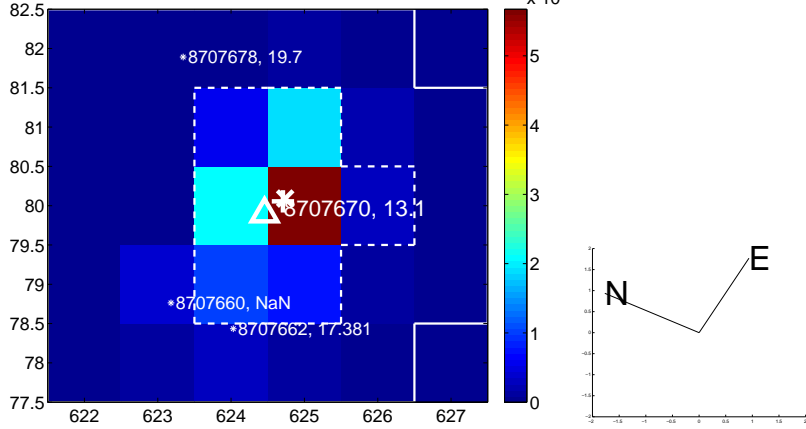
Q1 no OOT image



Q2 difference image



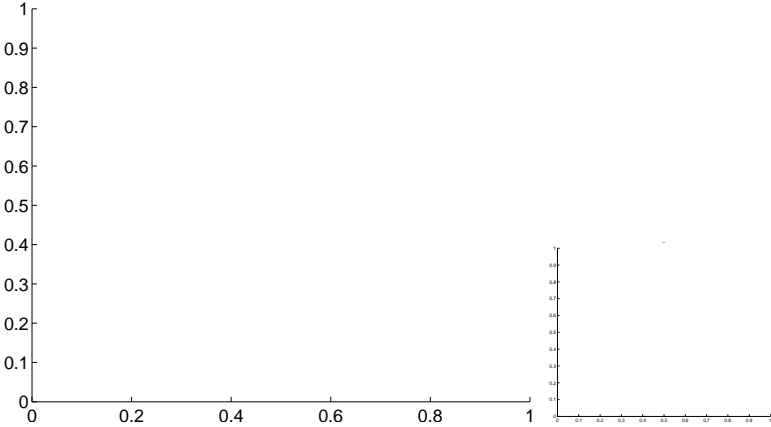
Q2 OOT image



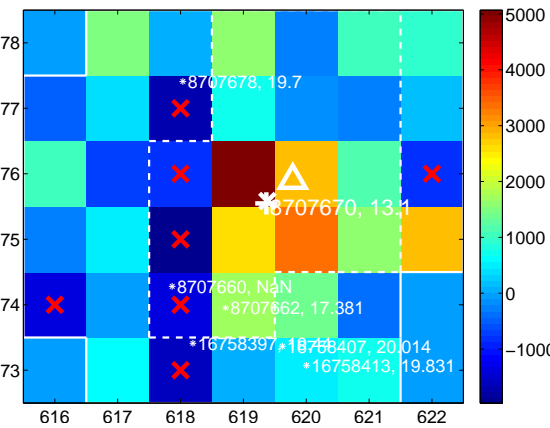
Q3 no difference image



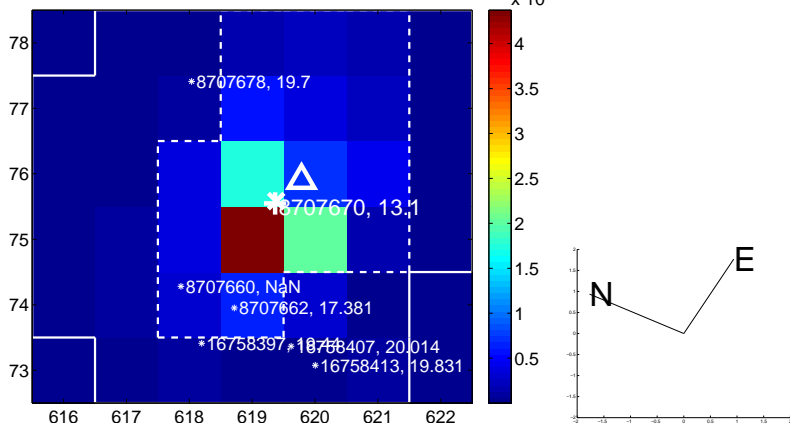
Q3 no OOT image



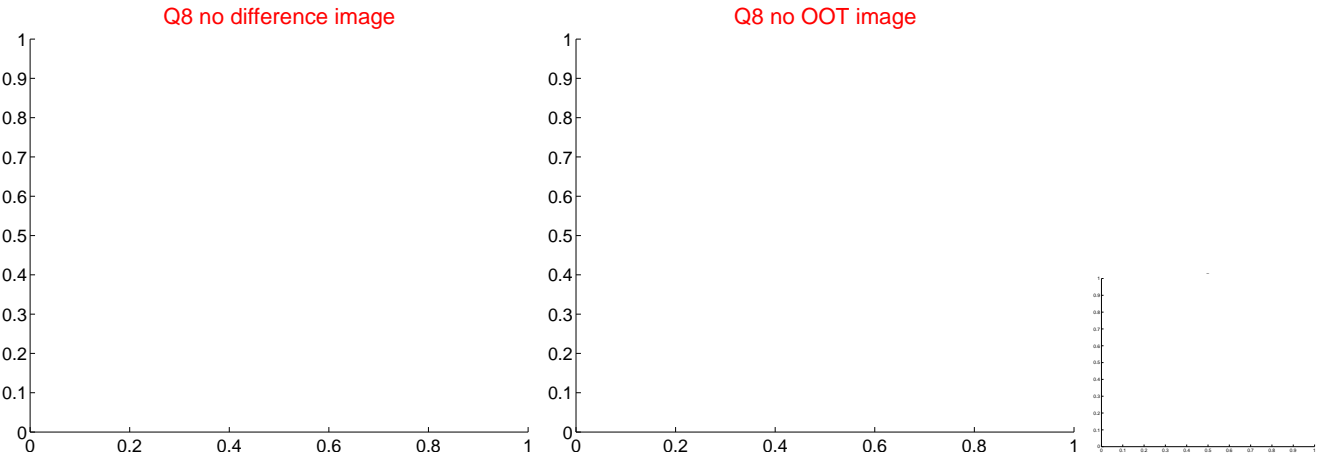
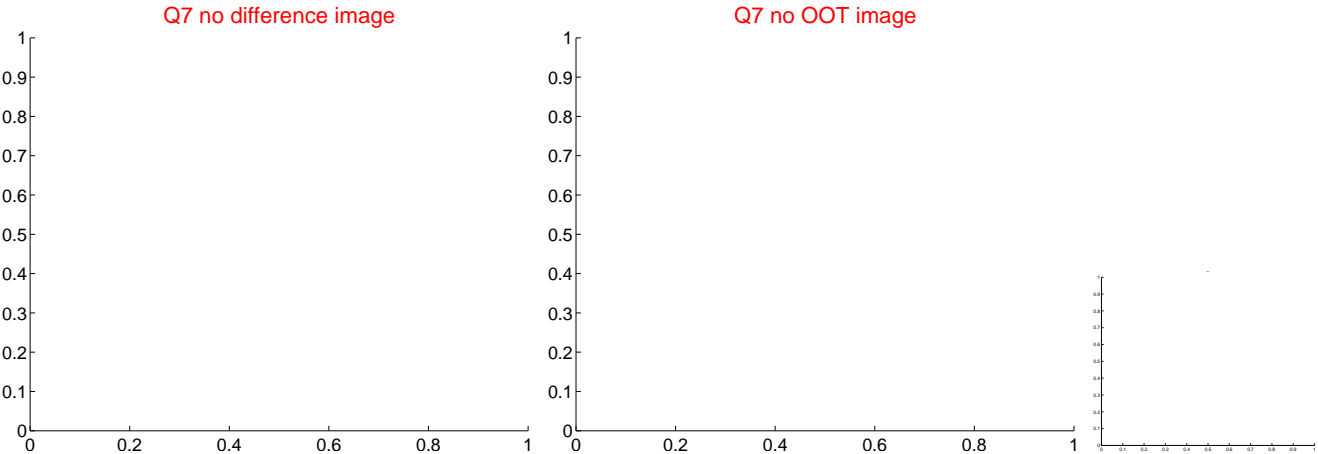
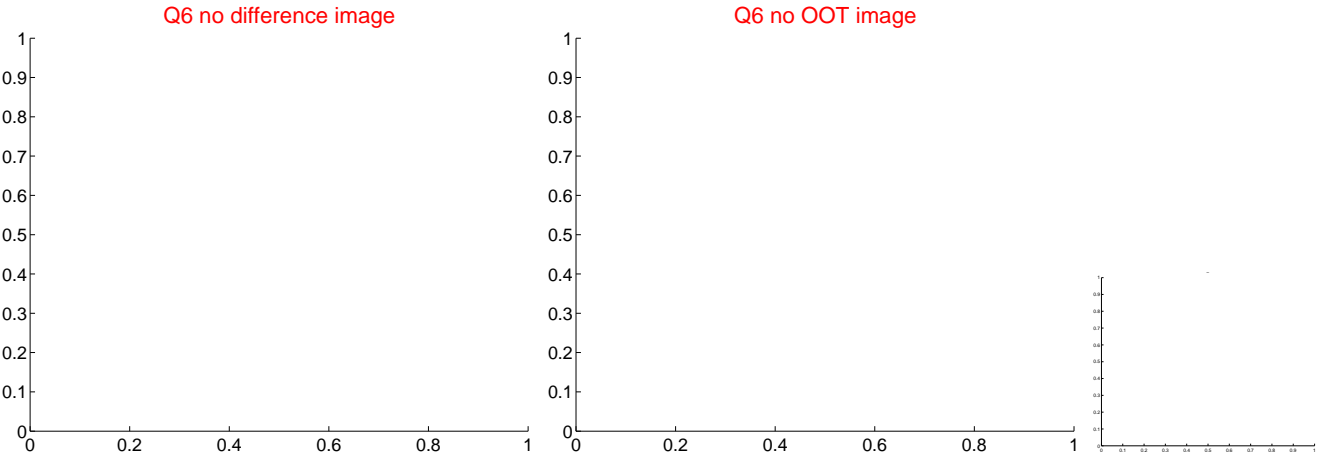
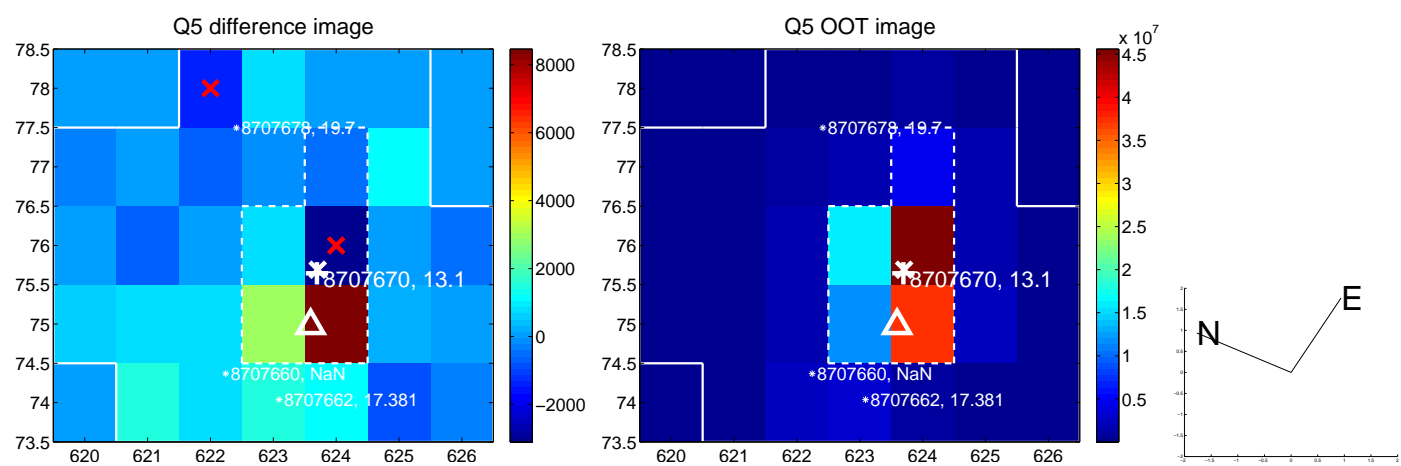
Q4 difference image. Poor Quality



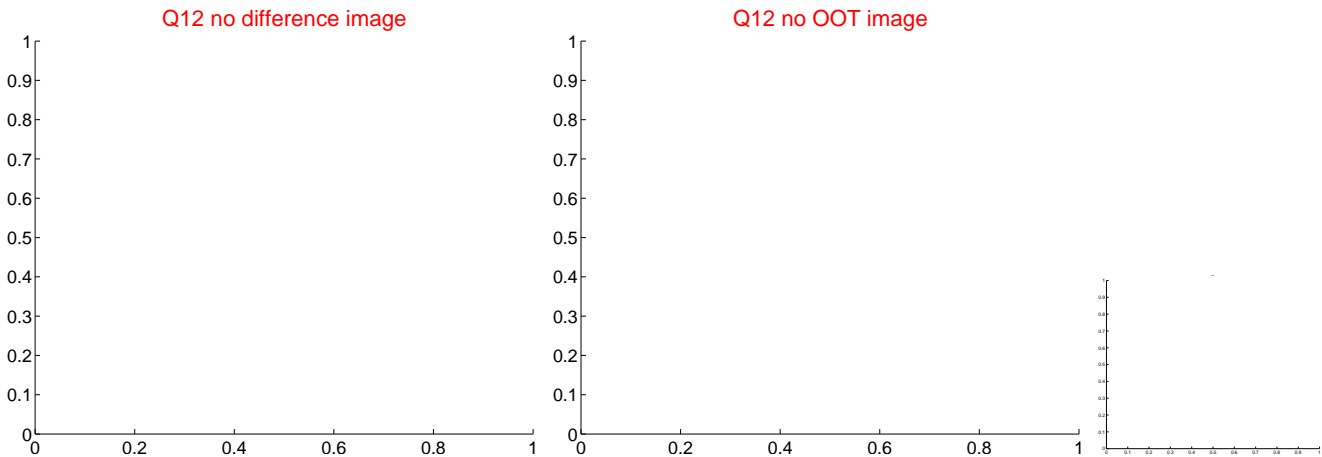
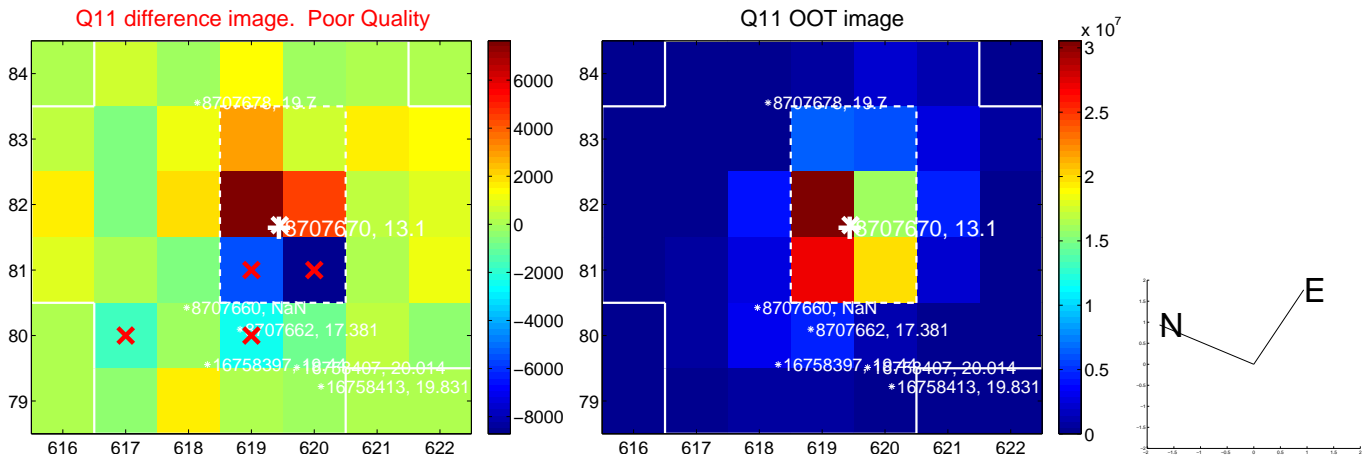
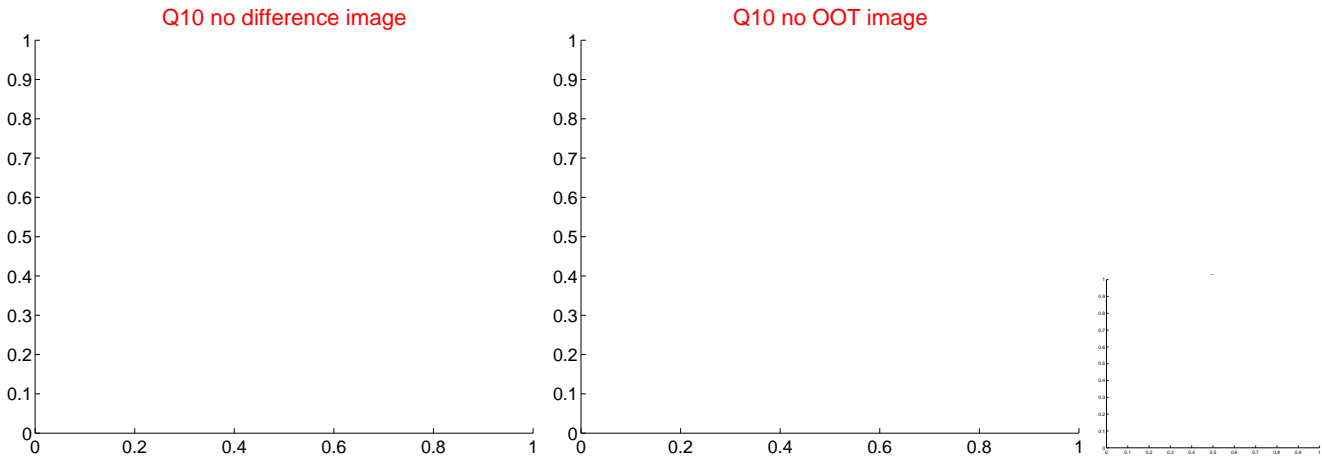
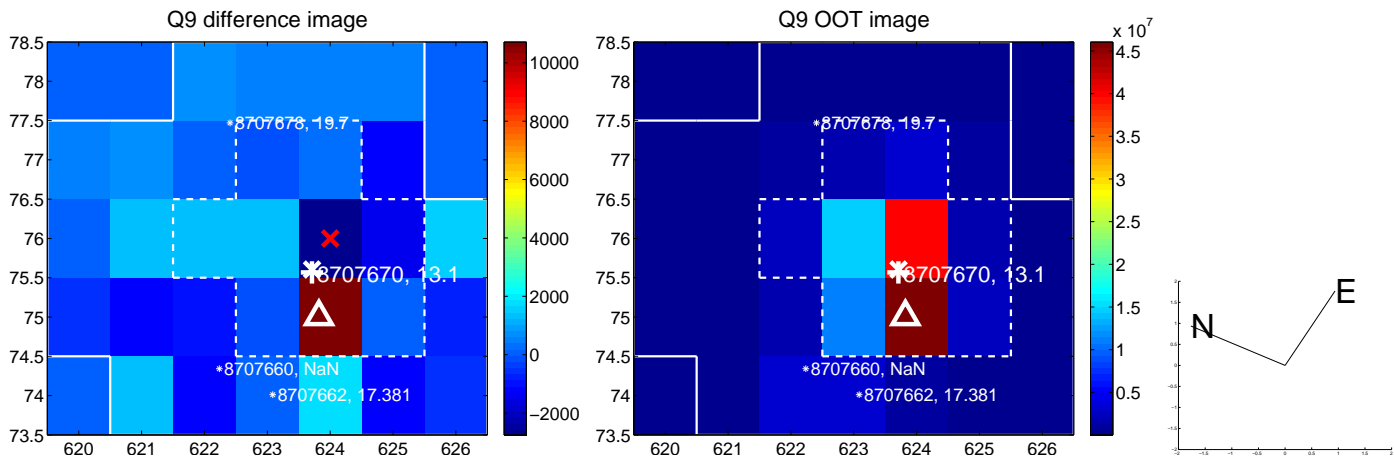
Q4 OOT image



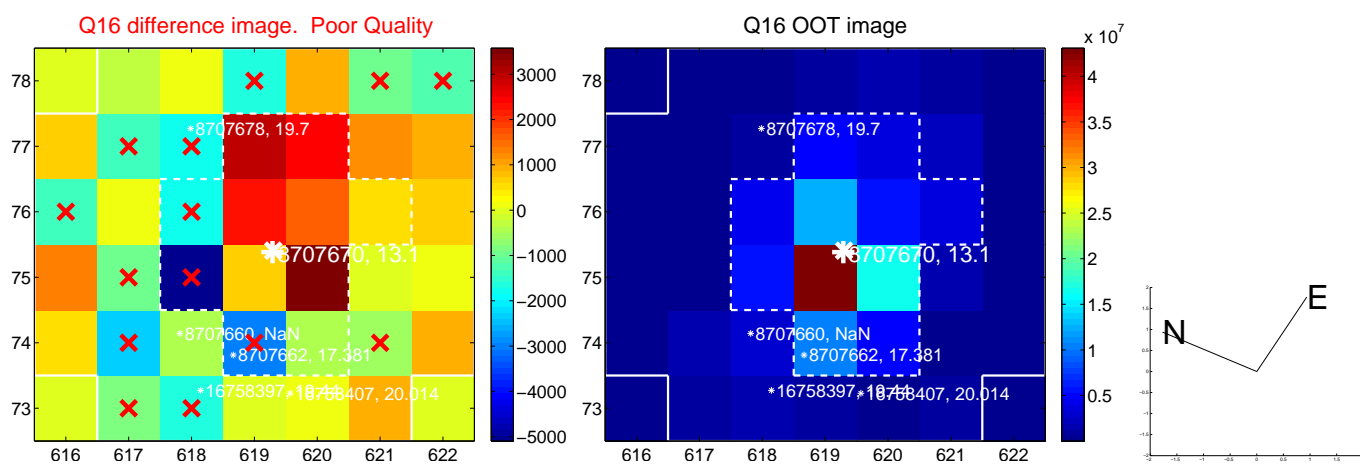
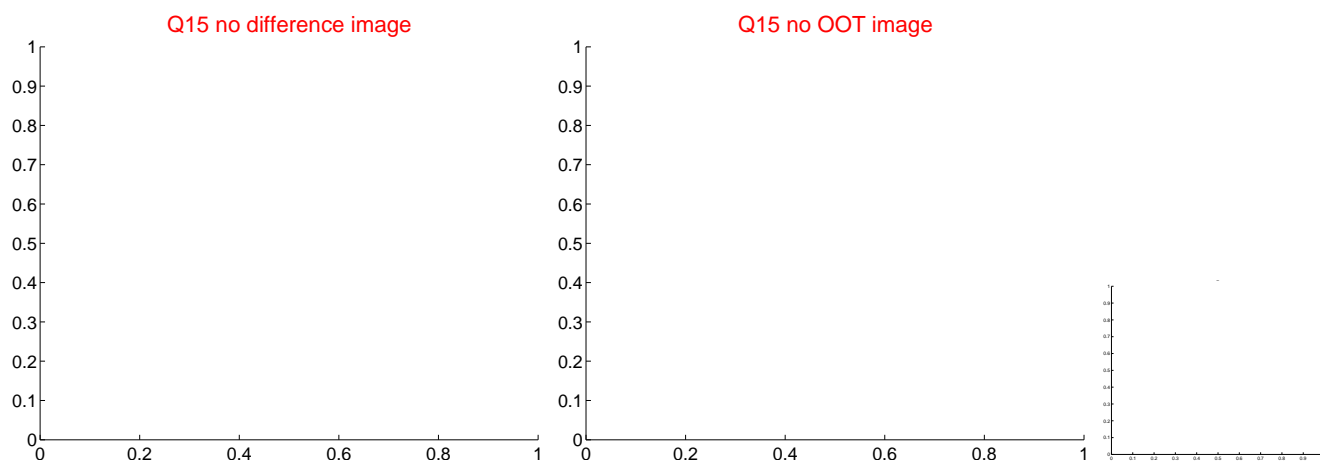
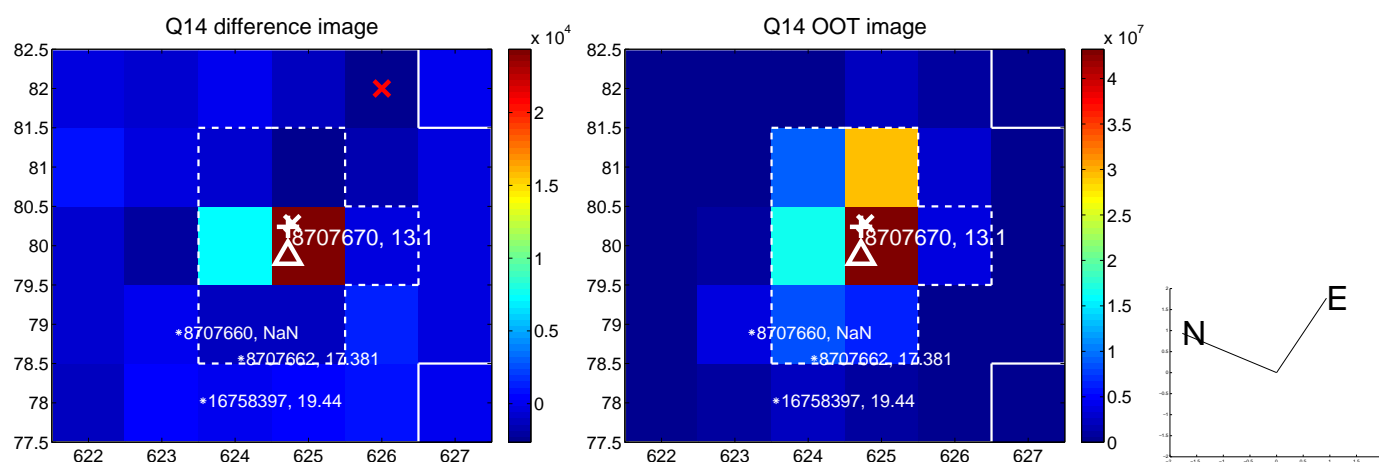
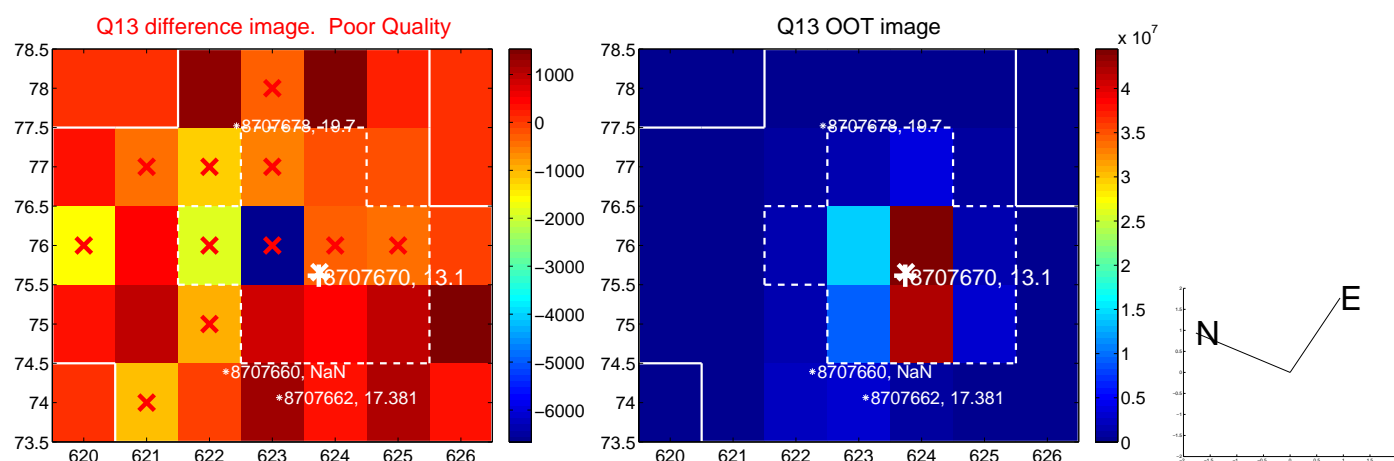
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



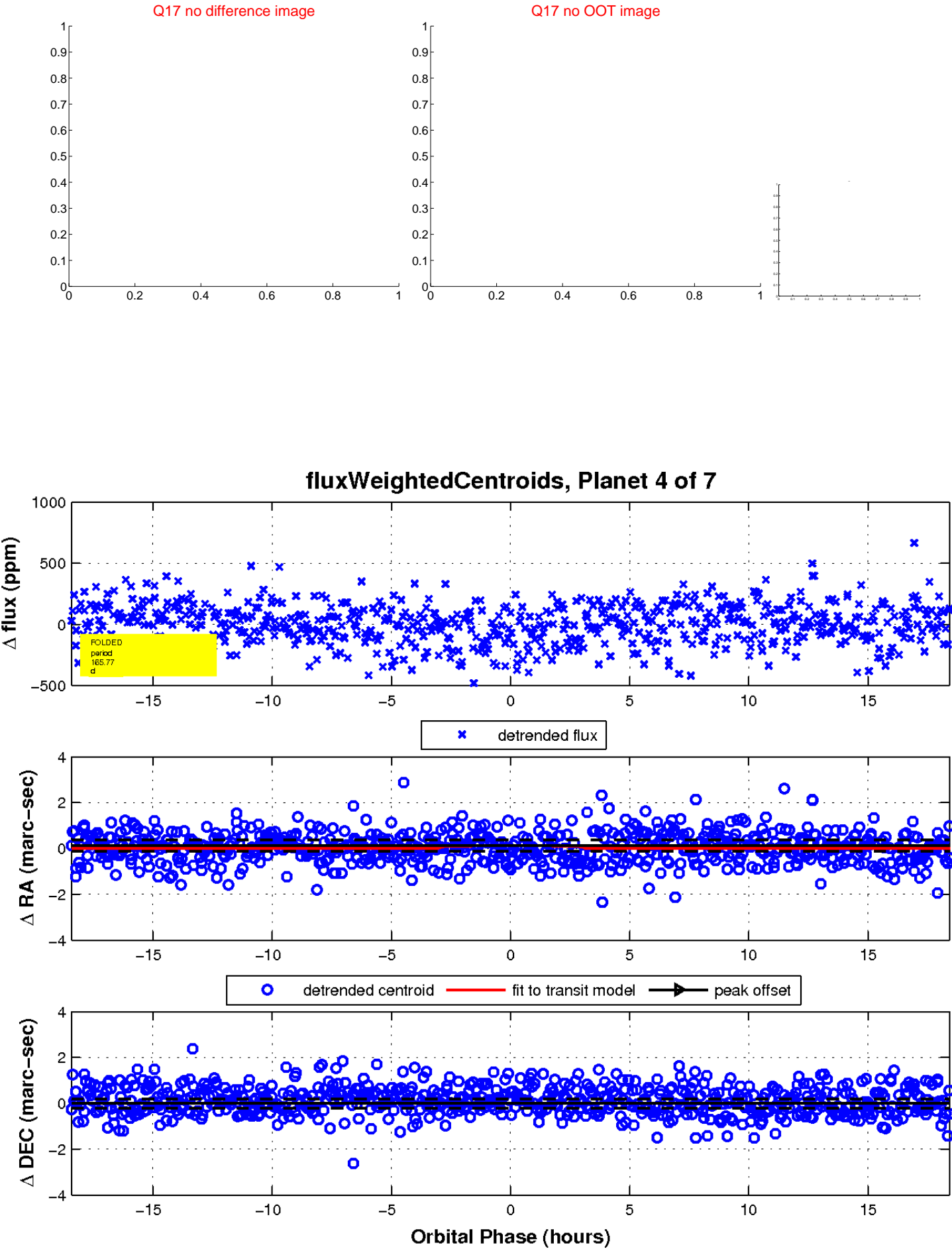
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



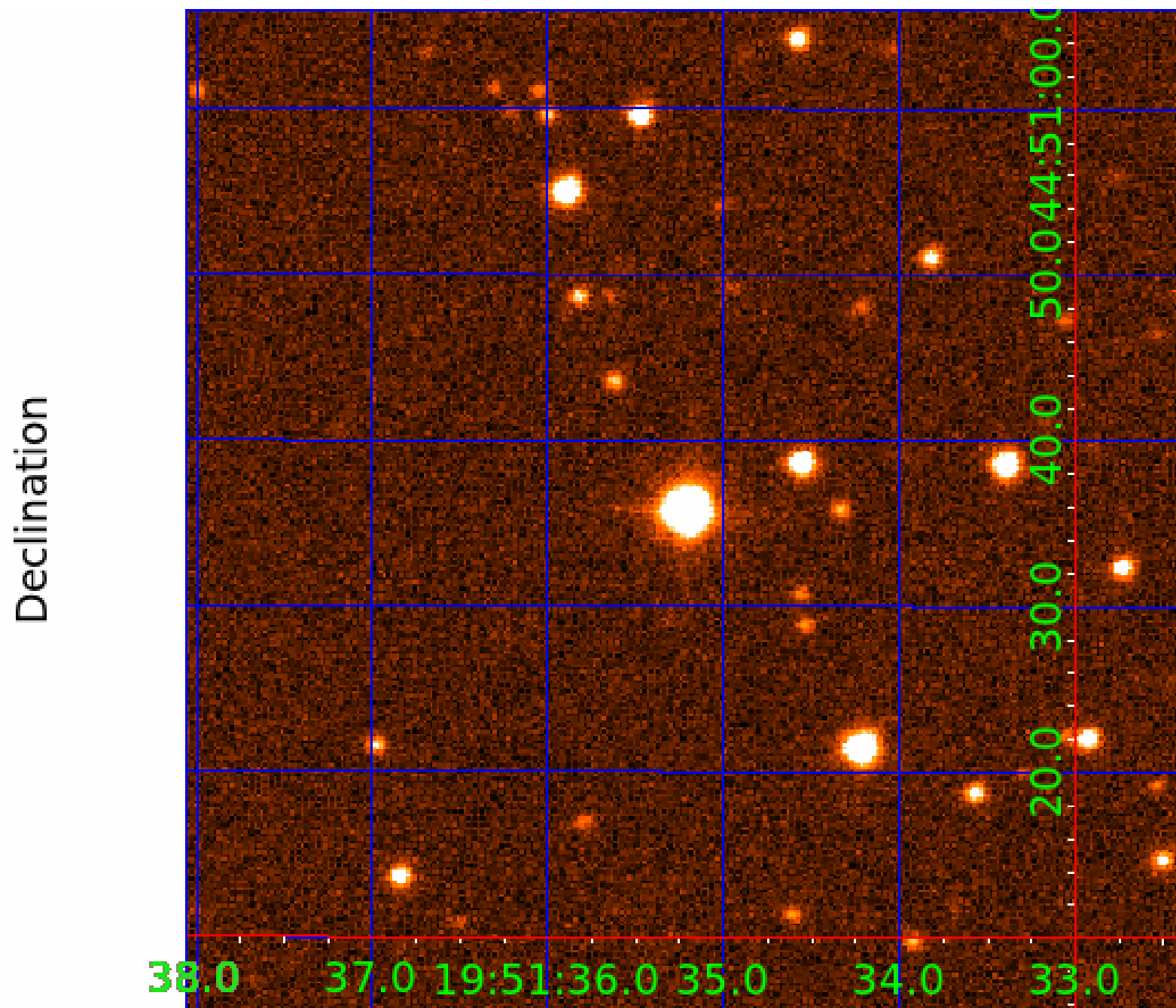
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

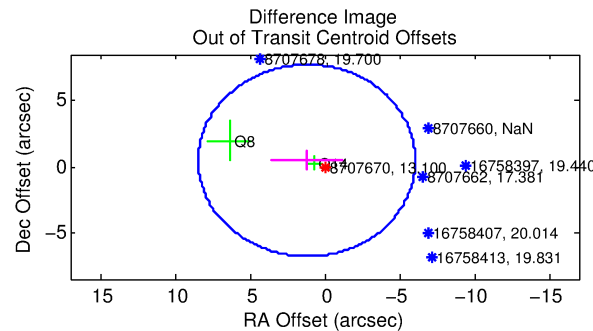
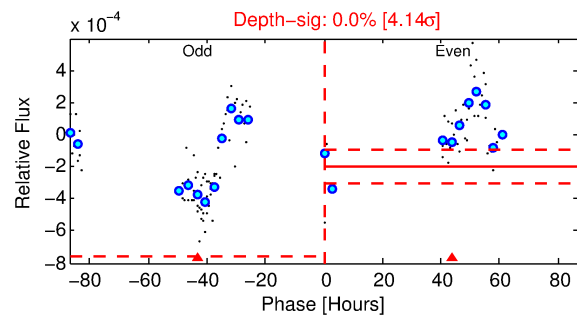
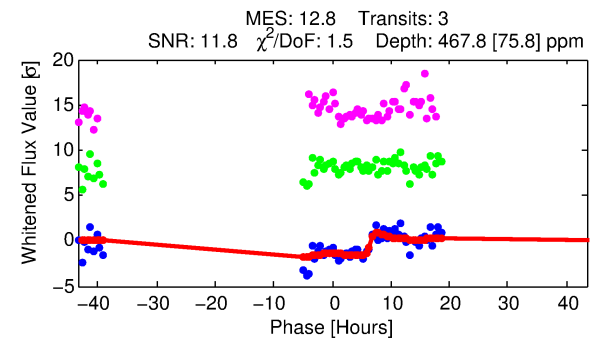
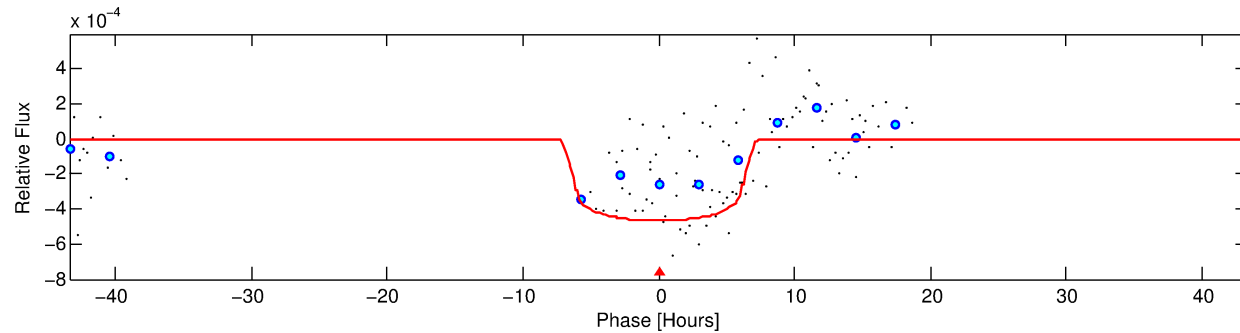
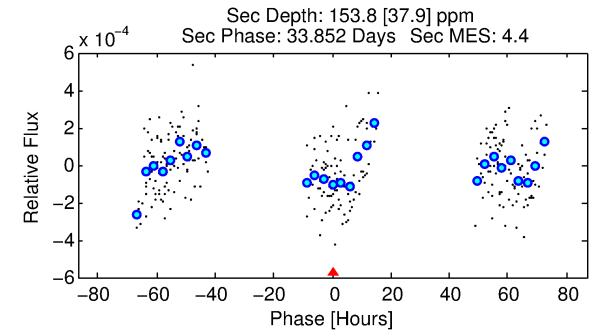
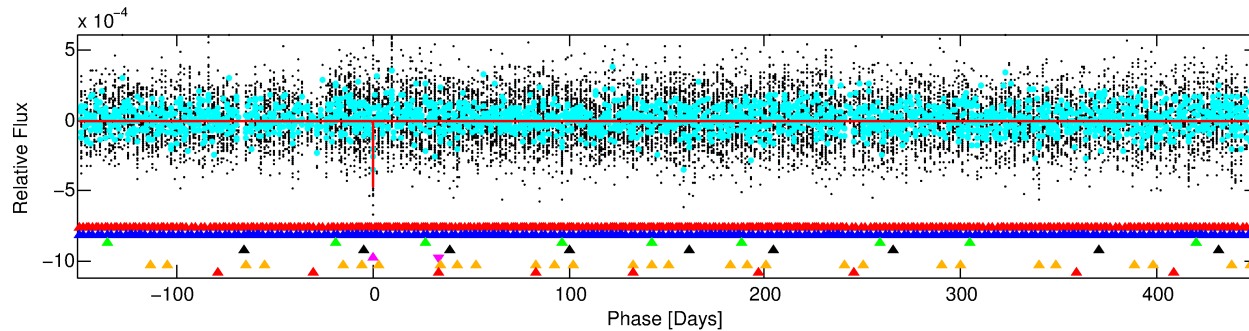
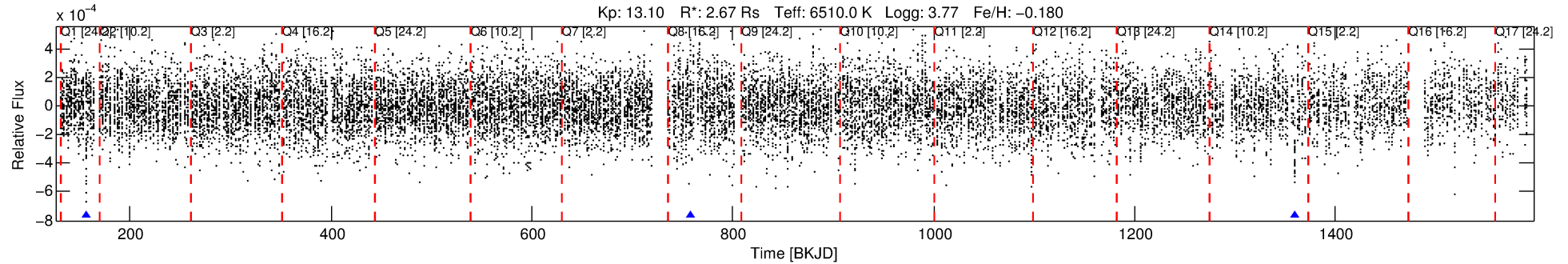
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-05

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 5 of 7 Period: 601.918 d



DV Fit Results:

Period = 601.91841 [0.01574] d
Epoch = 155.8469 [0.0847] BKJD
Rp/R* = 0.0230 [0.0030]
a/R* = 158.85 [98.90]
b = 0.89 [0.11]
Seff = 4.42 [2.33]
Teq = 370 [49] K
Rp = 6.69 [2.51] Re
a = 1.6076 [0.5231] AU
Ag = 4881.63 [3030.42] [1.61σ]
Teffp = 4779 [459] K [9.56σ]

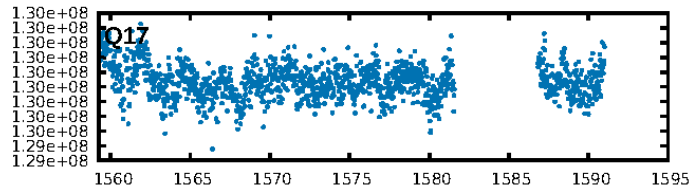
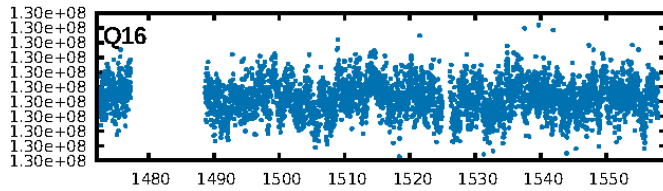
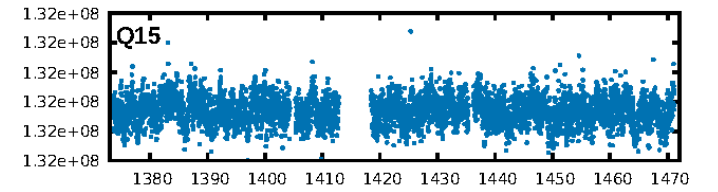
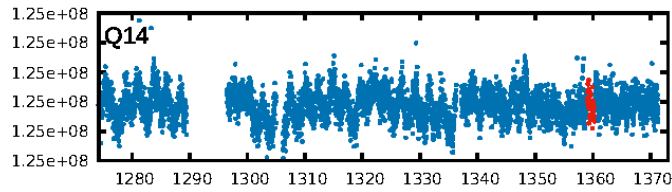
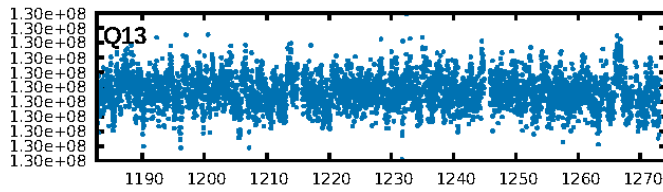
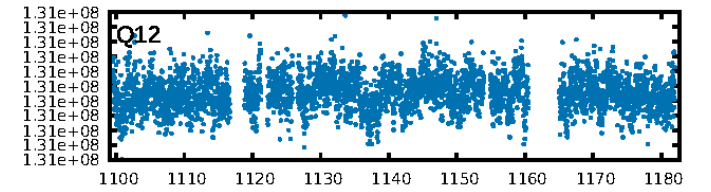
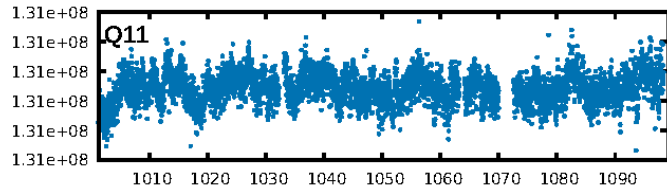
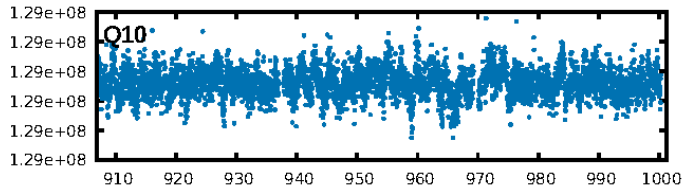
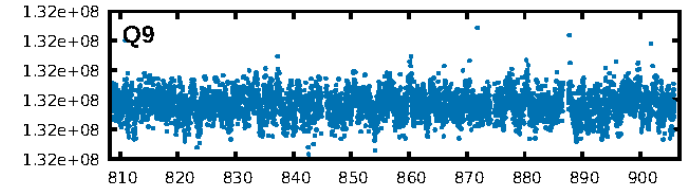
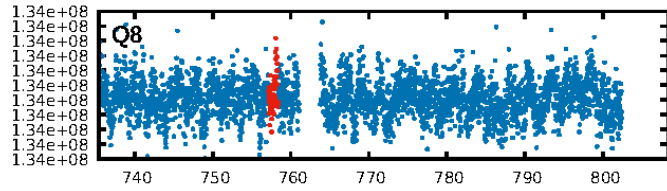
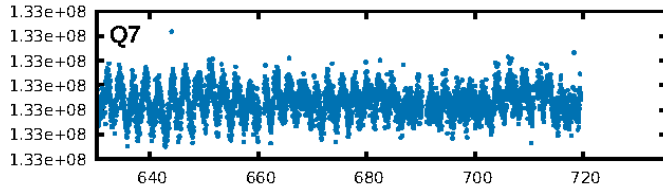
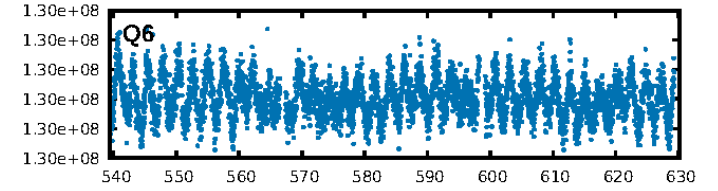
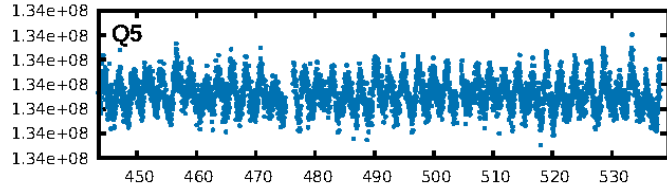
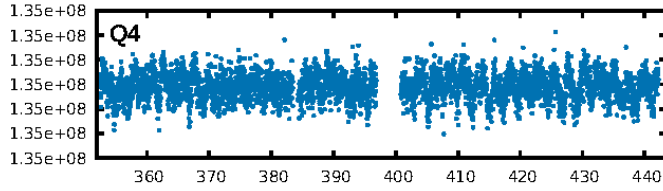
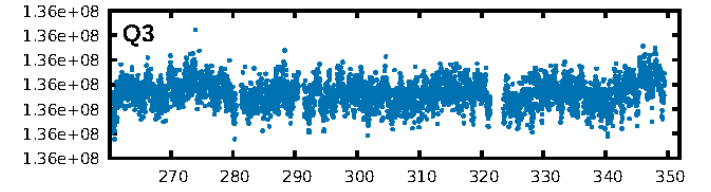
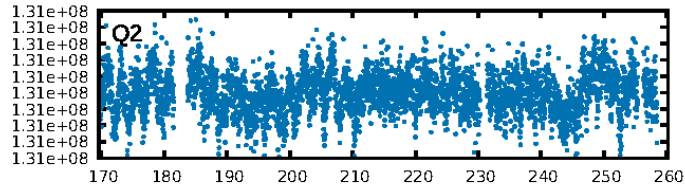
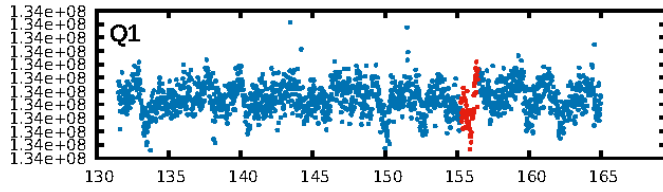
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [665.68σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 77.4%
Bootstrap-pfa: 2.97e-18
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -1.844
Centroid-sig: 22.0%
Centroid-so: 0.502 arcsec [0.93σ]
OotOffset-rm: 1.276 arcsec [0.53σ]
KicOffset-rm: 1.096 arcsec [0.46σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/3]

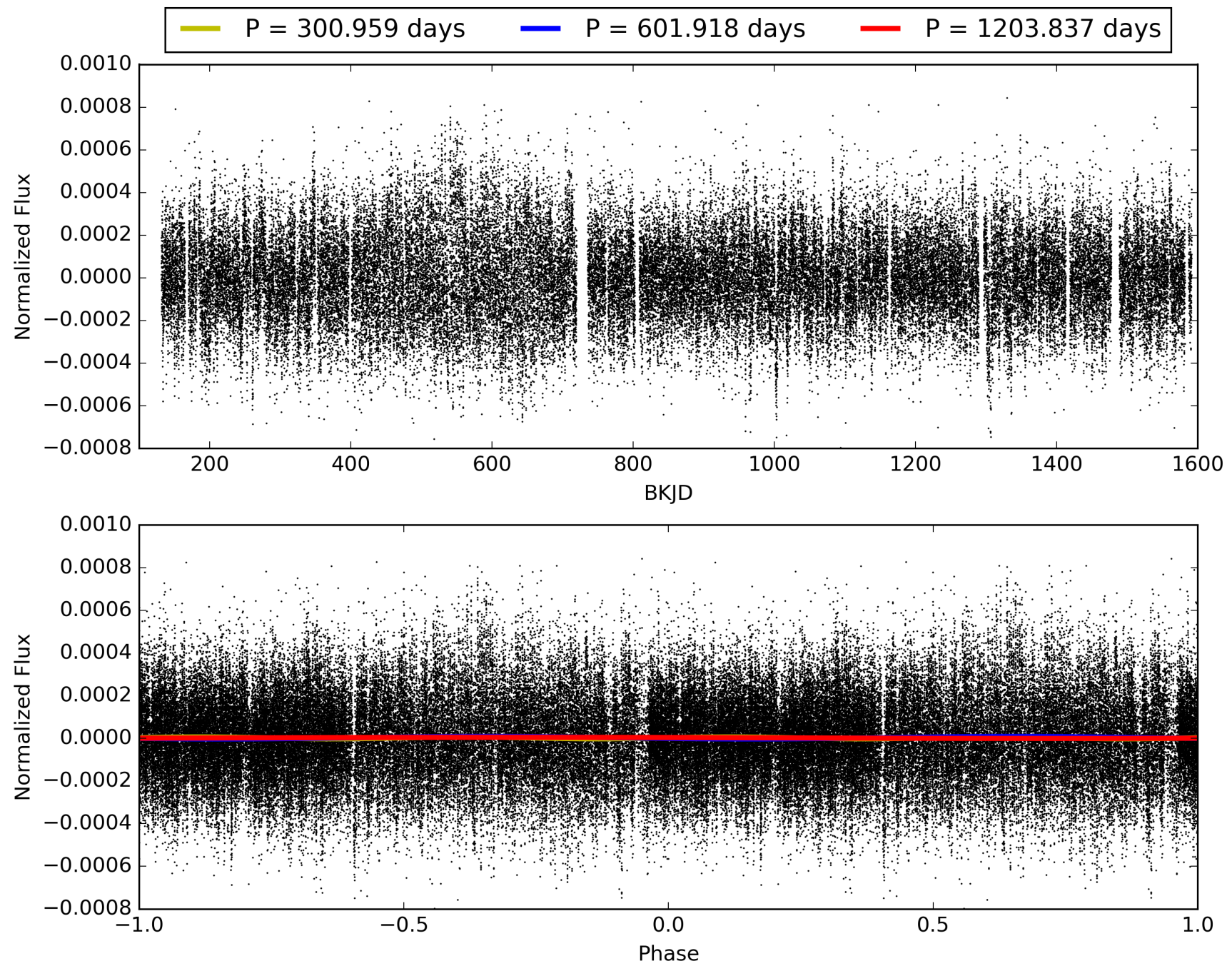
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:00:15 Z

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

TCE 008707670-05, PDC Light Curves

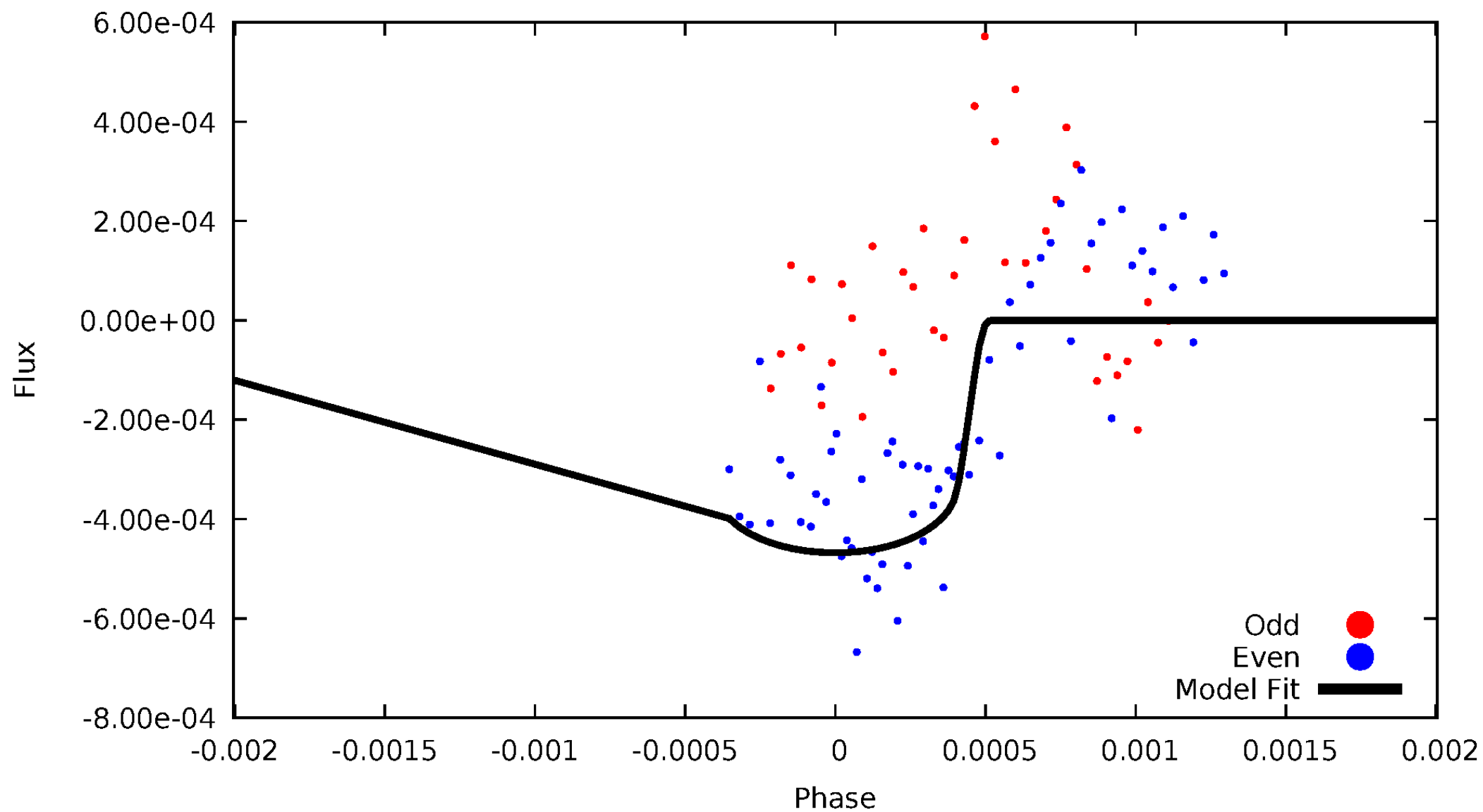


TCE 008707670-05



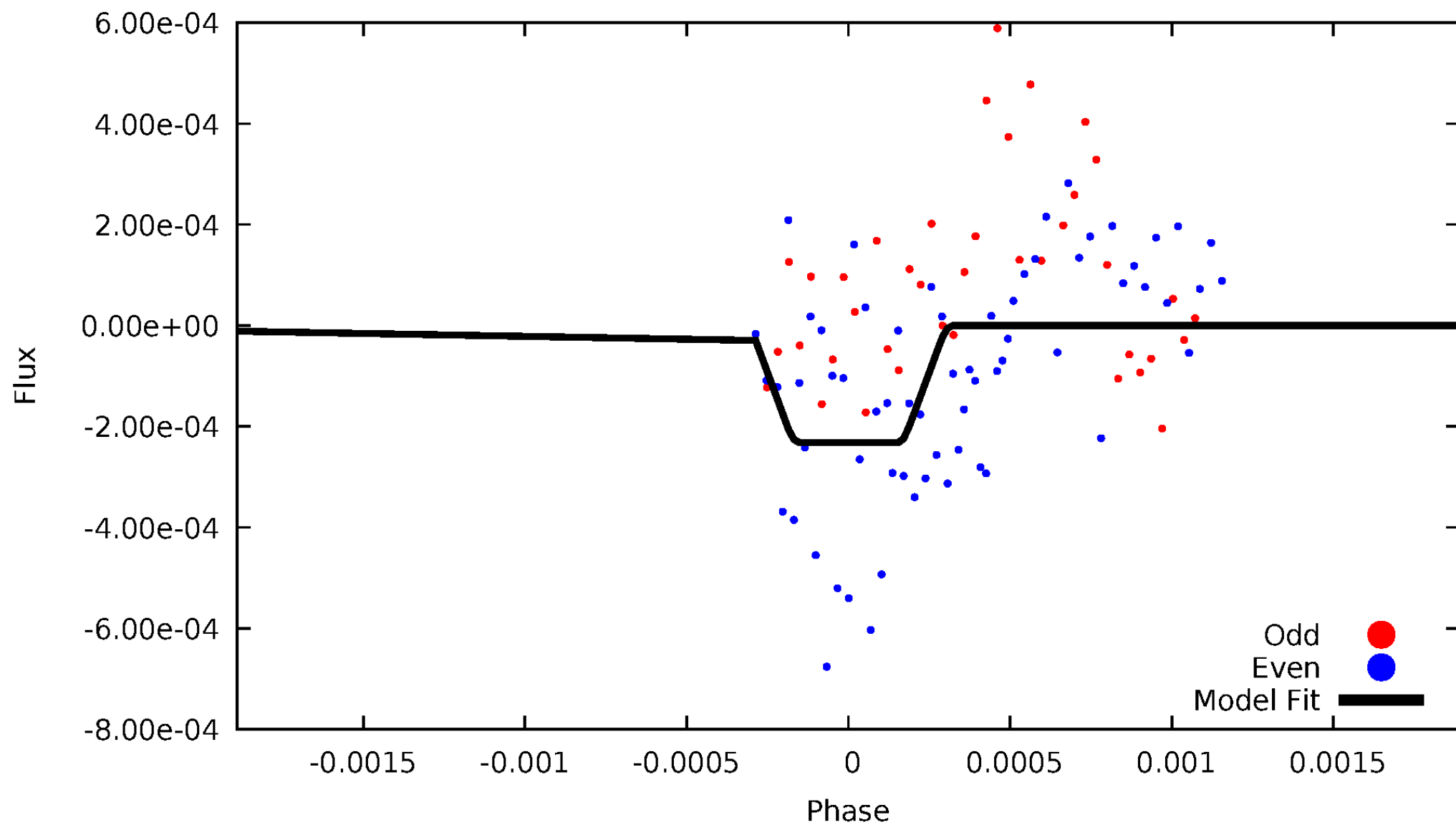
DV Odd/Even

TCE 008707670-05



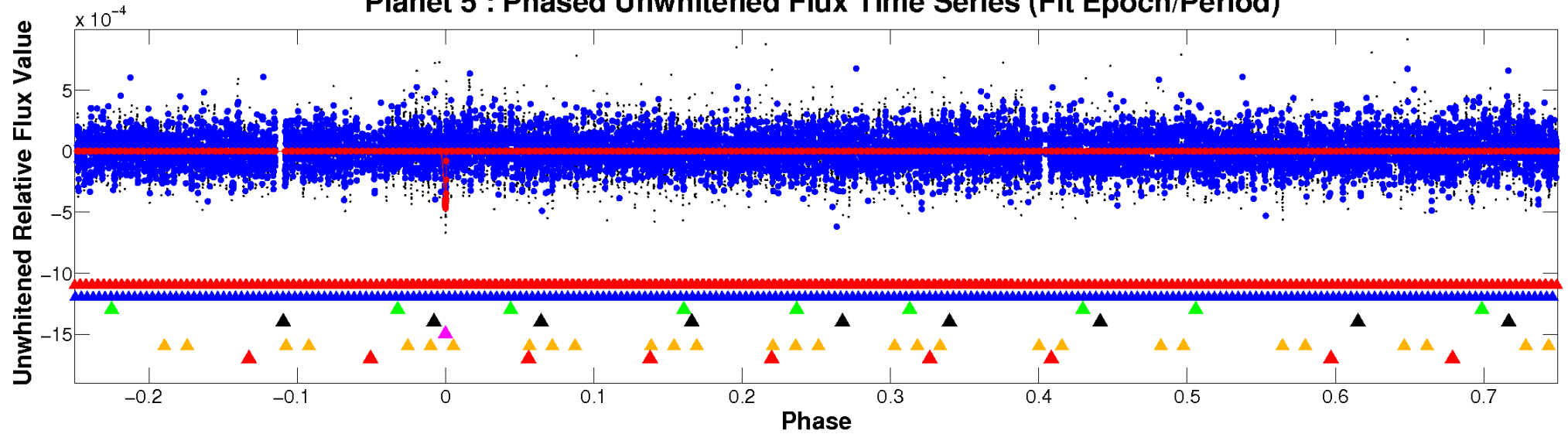
ALT Odd/Even

TCE 008707670-05

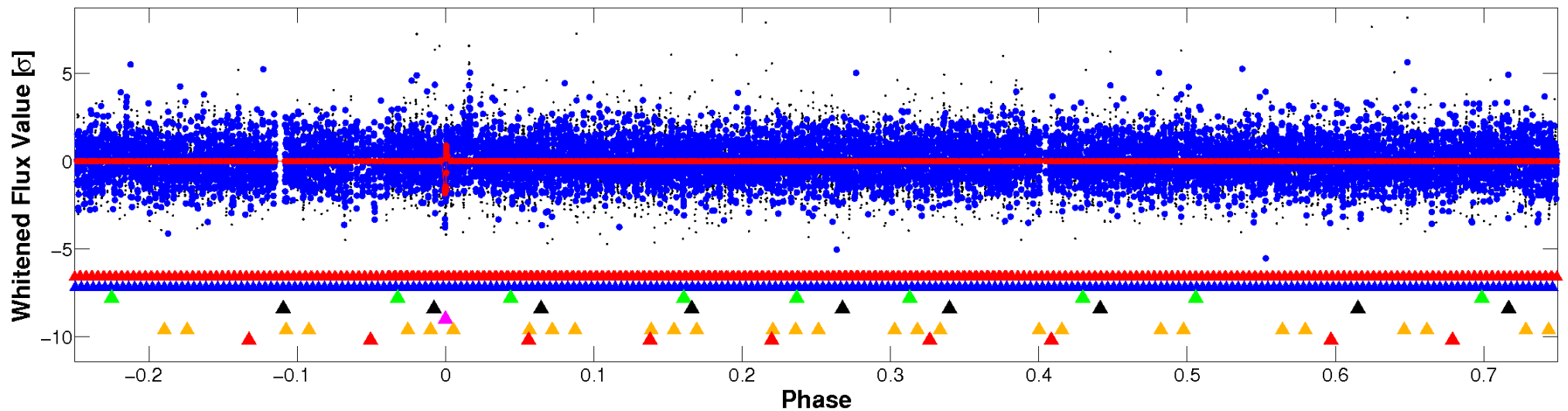


Non-Whitened Vs. Whitened Light Curve

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

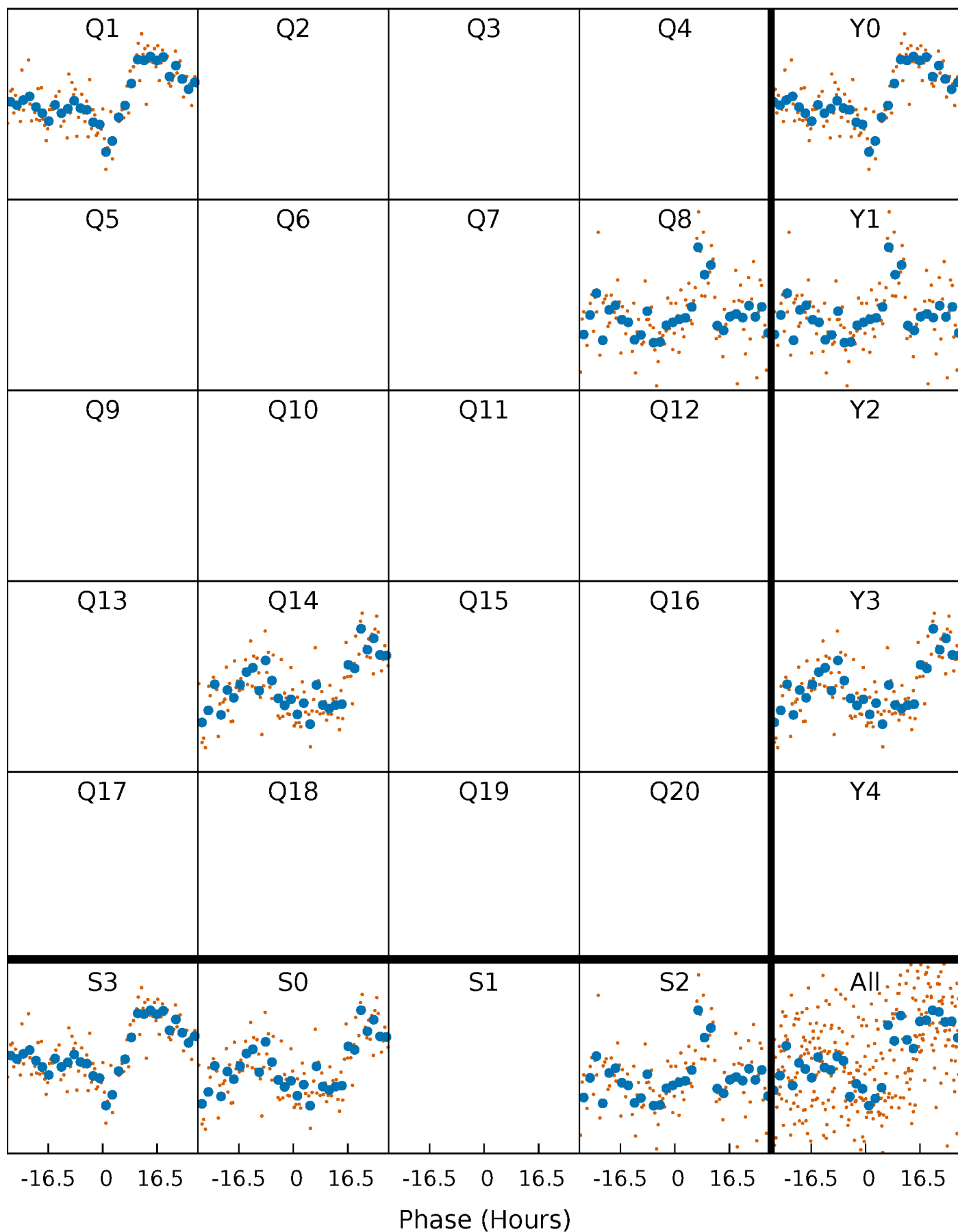


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



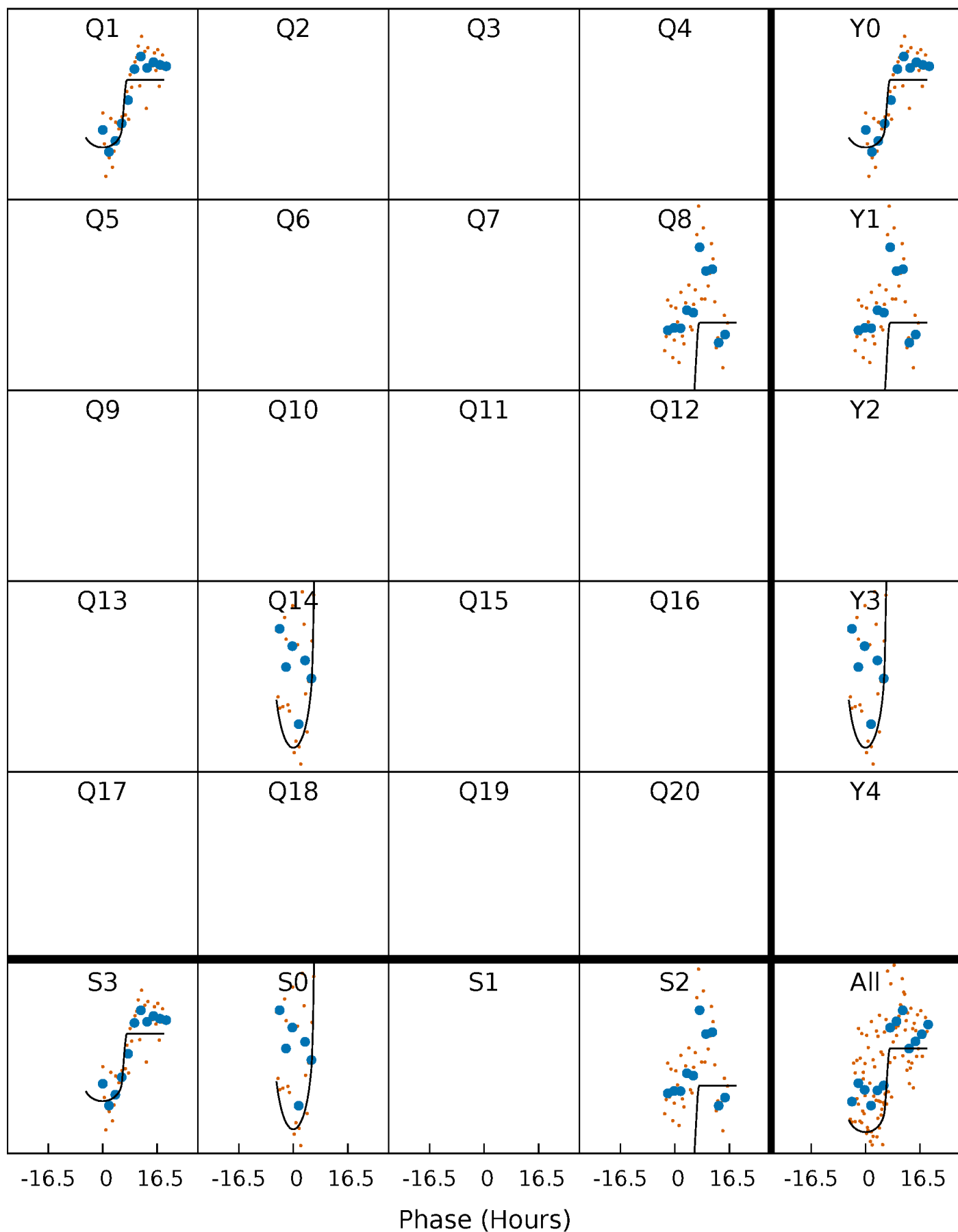
PDC Quarter-Phased Transit Curves

TCE 008707670-05 $P=601.918407$ Days $T_0=155.846910$ (BKJD)



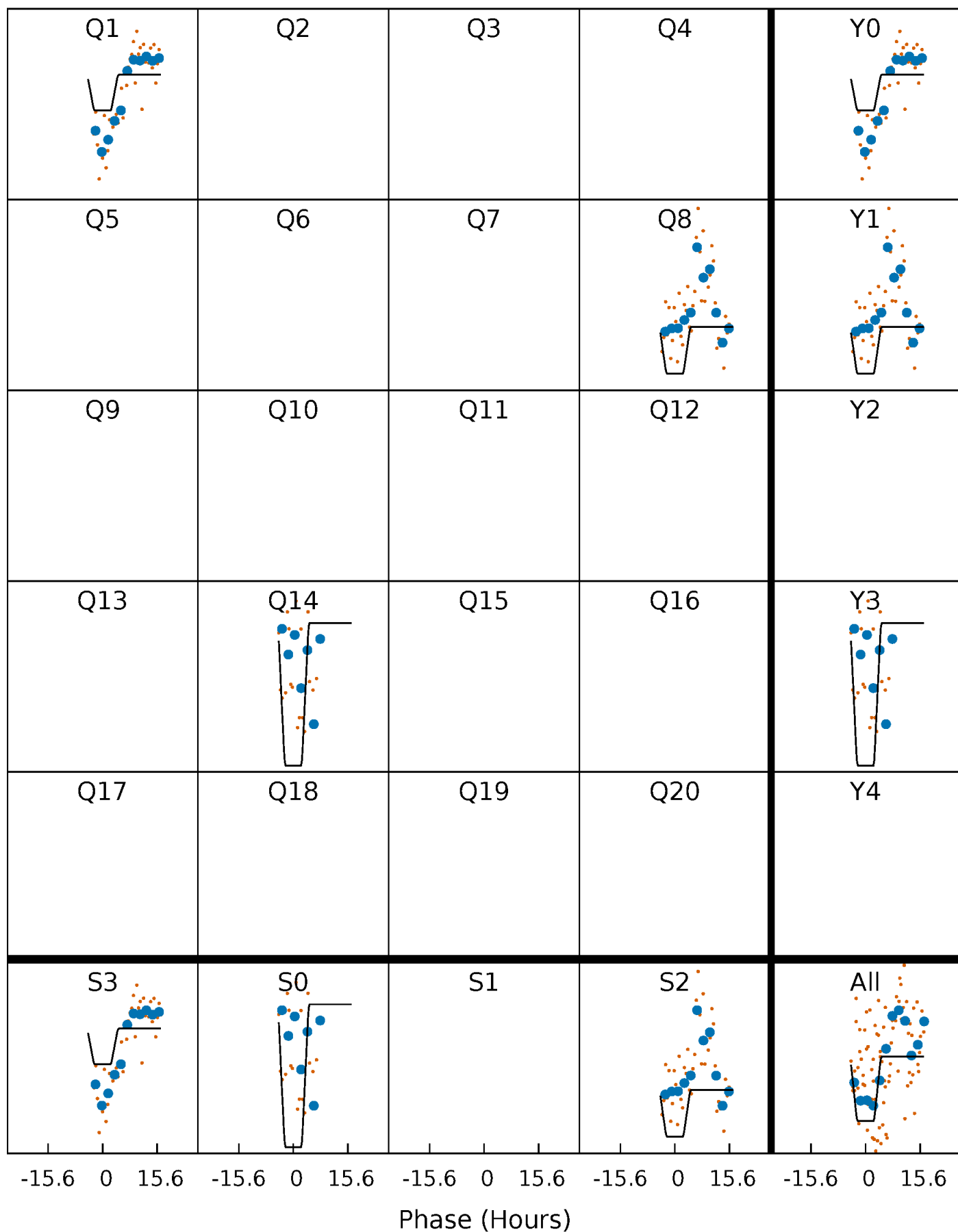
DV Quarter-Phased Transit Curves

TCE 008707670-05 P=601.918407 Days $T_0=155.846910$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

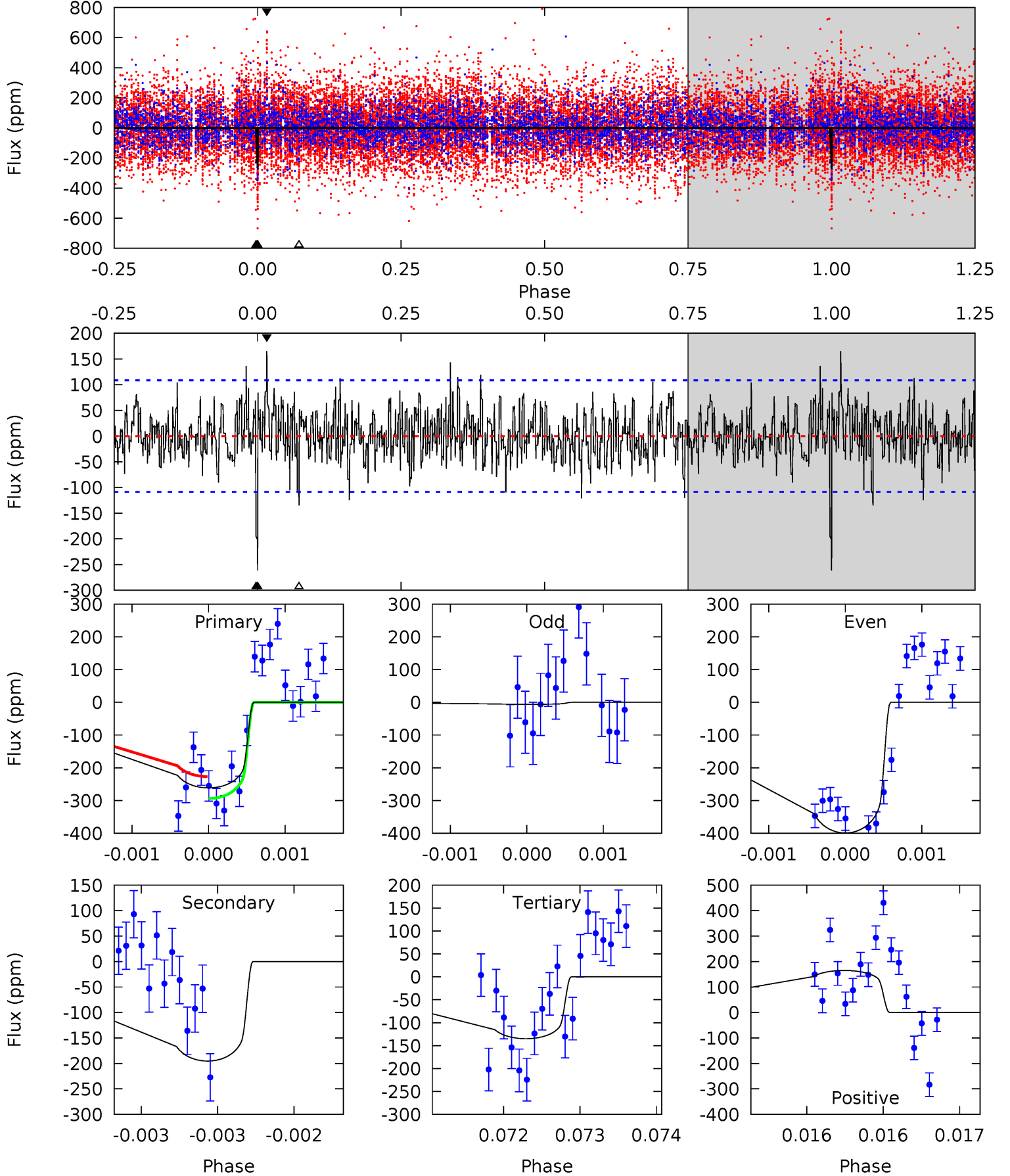
TCE 008707670-05 P=601.856887 Days $T_0=155.930367$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-05, $P = 601.918407$ Days, $E = 155.846910$ Days

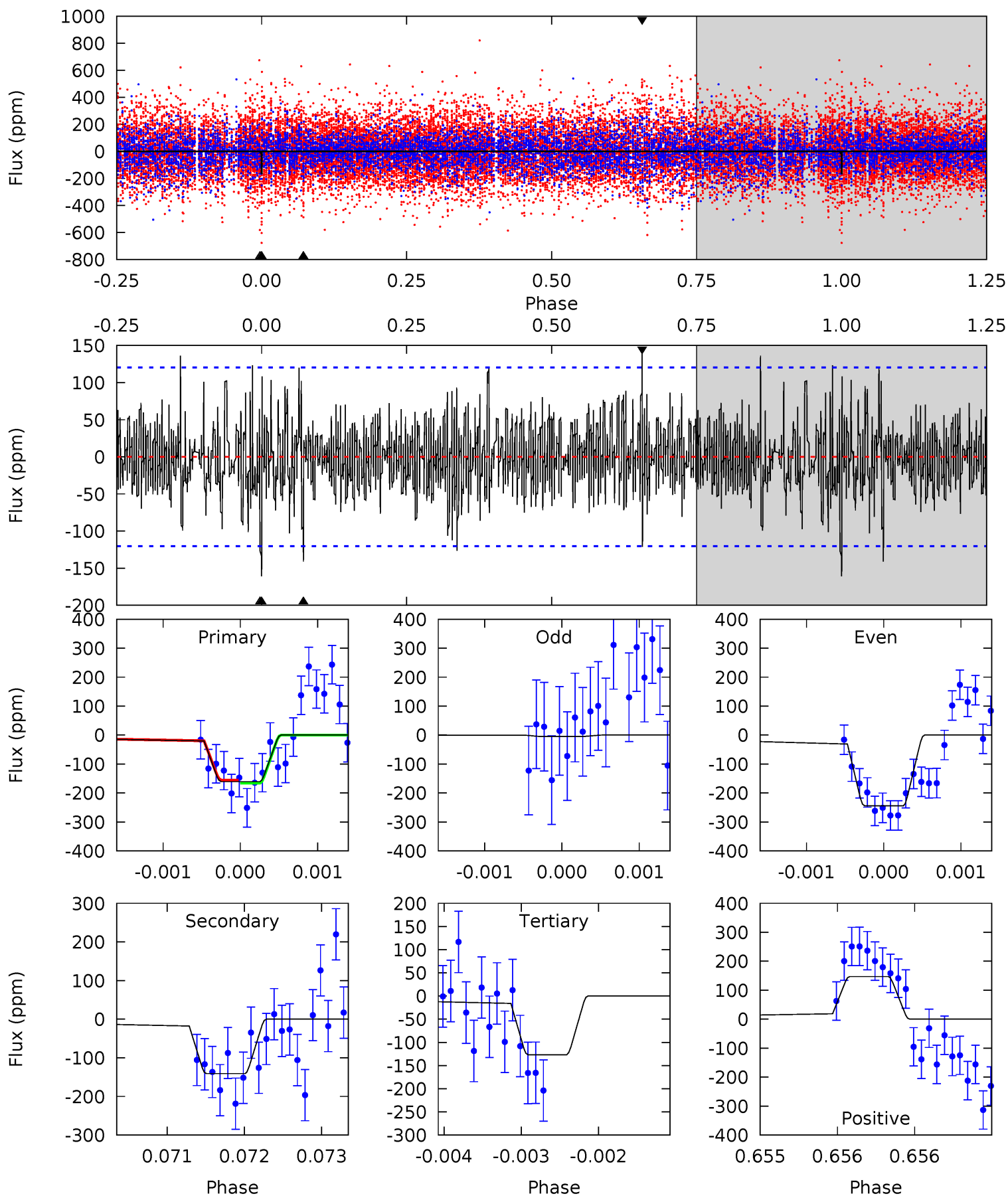
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	9.87	6.82	8.33	5.48	3.33	1.96	6.39	4.87	3.05	1.53	9.53	0.71	0.39	1.56



Alt Model-Shift Uniqueness Test

008707670-05, P = 601.856887 Days, E = 155.930367 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	6.48	5.83	6.77	5.54	3.43	1.70	1.57	0.63	0.65	-0.29	5.19	3.46	0.48	0.24



Stellar Parameters For KIC 008707670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-195 ± 20	$6.41^{+1.20}_{-1.32}$	508^{+29}_{-46}	5118^{+364}_{-289}	6966^{+3286}_{-2128}
Alt.	-141 ± 22	$4.18^{+1.08}_{-1.05}$	506^{+31}_{-43}	5748^{+742}_{-506}	11533^{+8815}_{-4268}

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 $A_{obs} \gg 1.0$

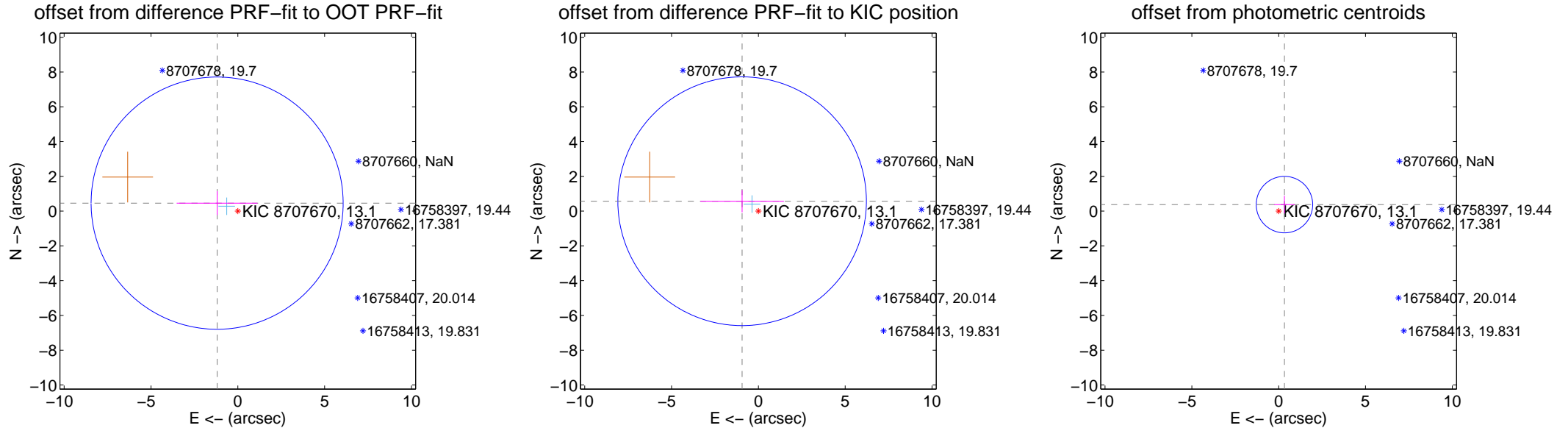
DV Centroid Data

Supplemental centroid analysis for 008707670-05. Kepler magnitude: 13.10. Transit SNR 11.78

There are 1 quarters with good PRF difference image offsets

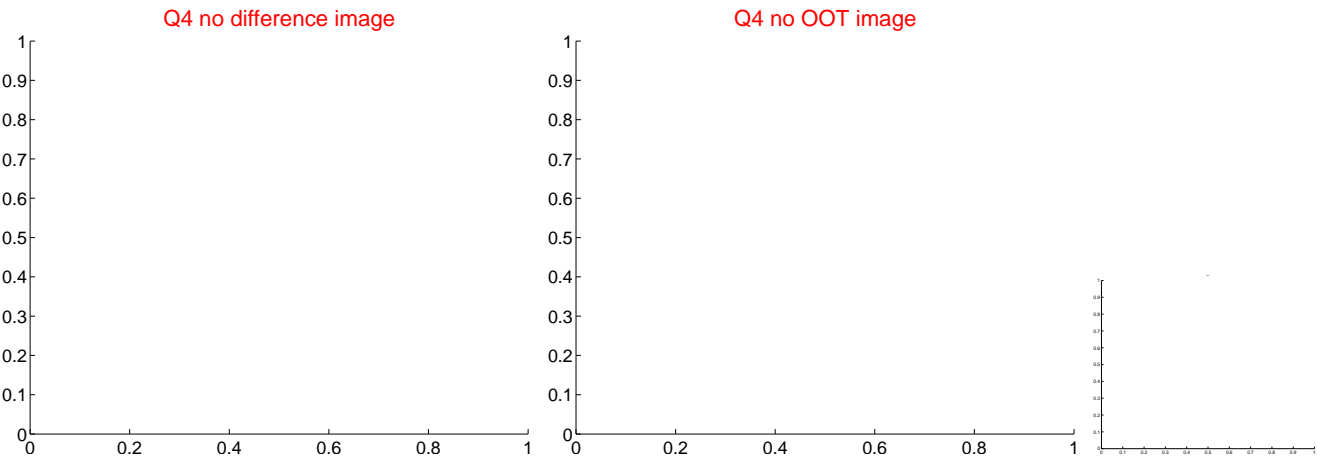
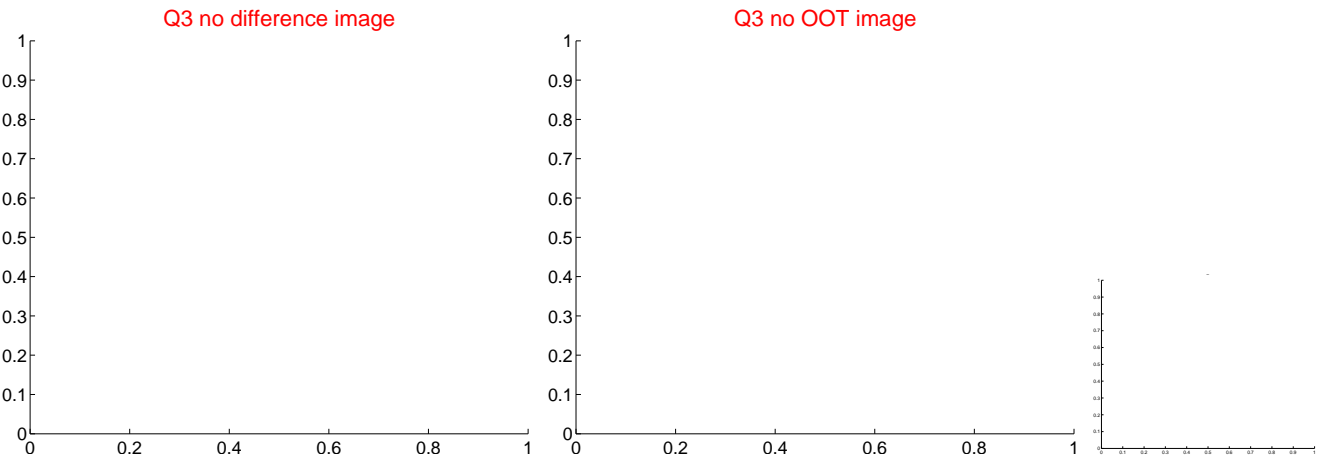
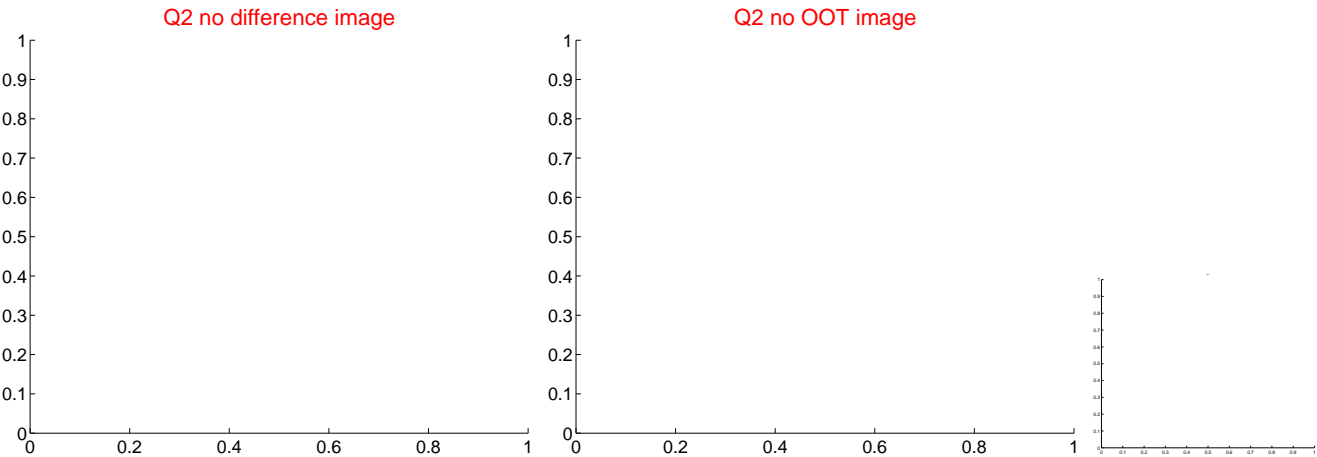
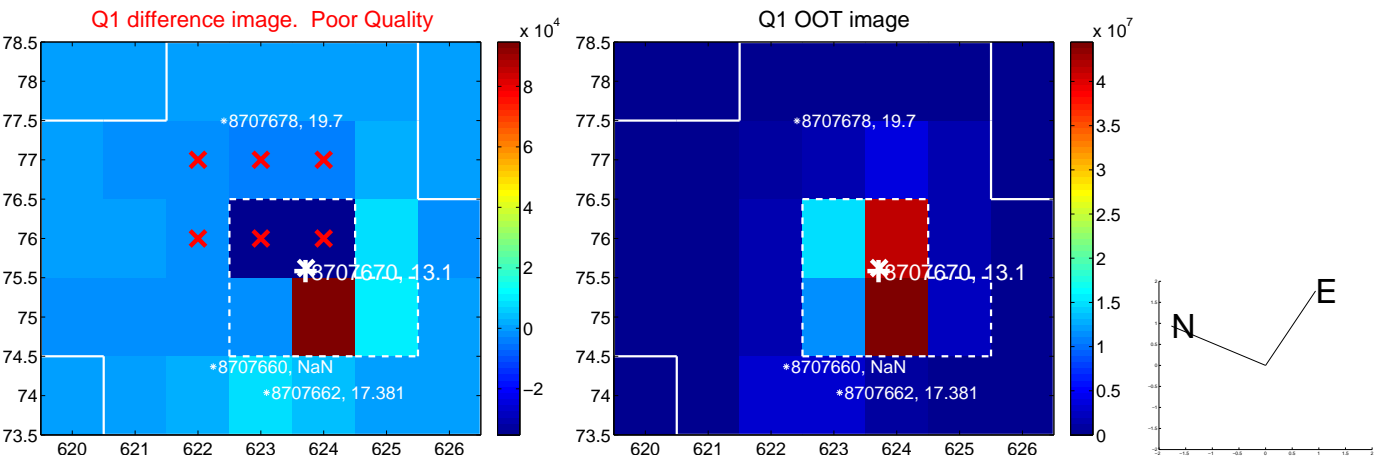
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.276 ± 2.419	0.53	1.191 ± 2.328	0.460 ± 0.687
PRF-fit source offset from KIC position	1.096 ± 2.385	0.46	0.936 ± 2.405	0.569 ± 0.638
photometric centroid source offset	0.50 ± 0.54	0.93	-0.33 ± 0.59	0.38 ± 0.50

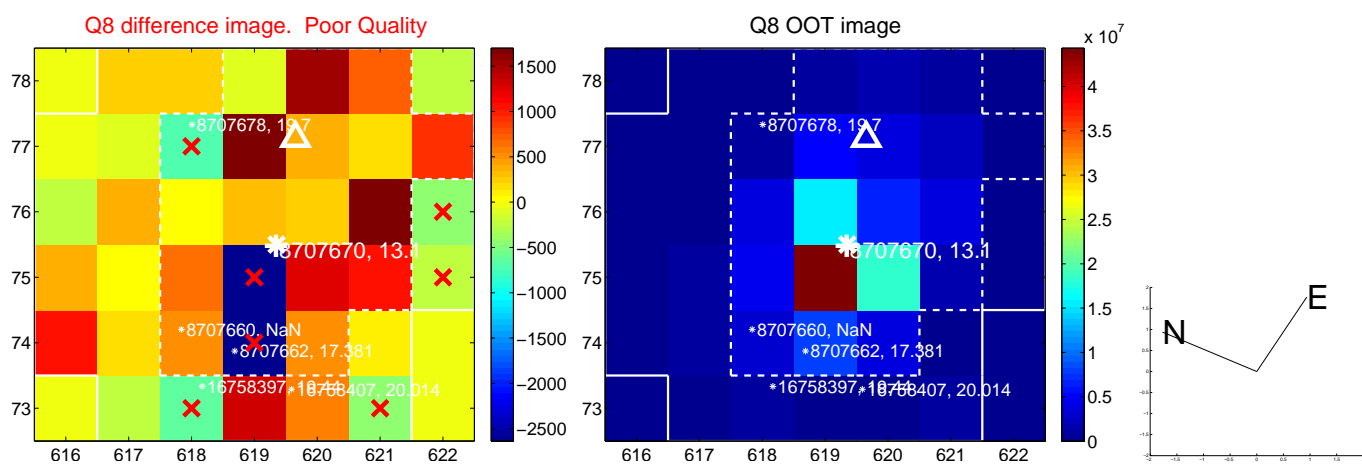
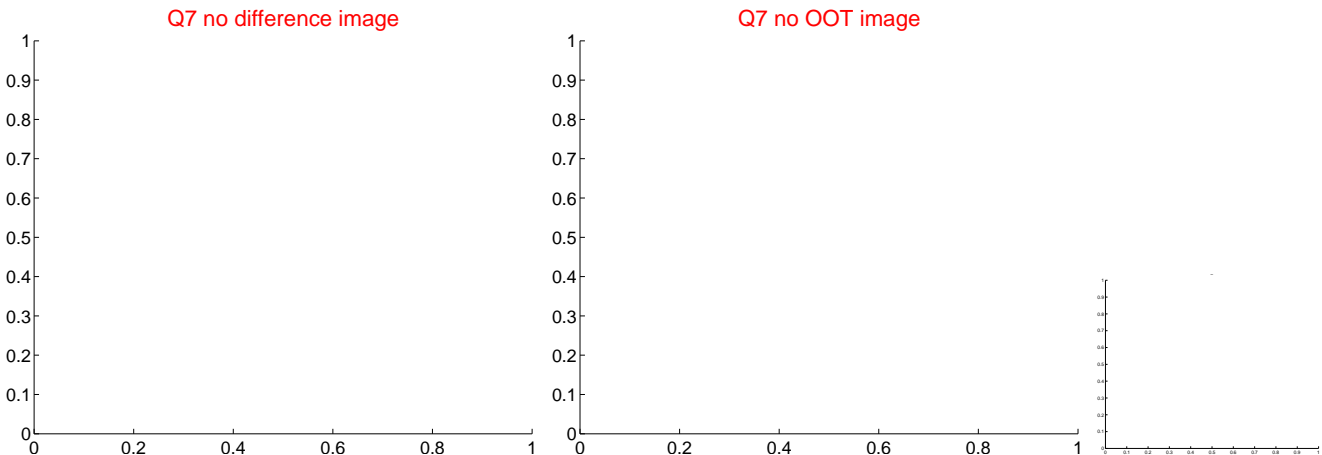
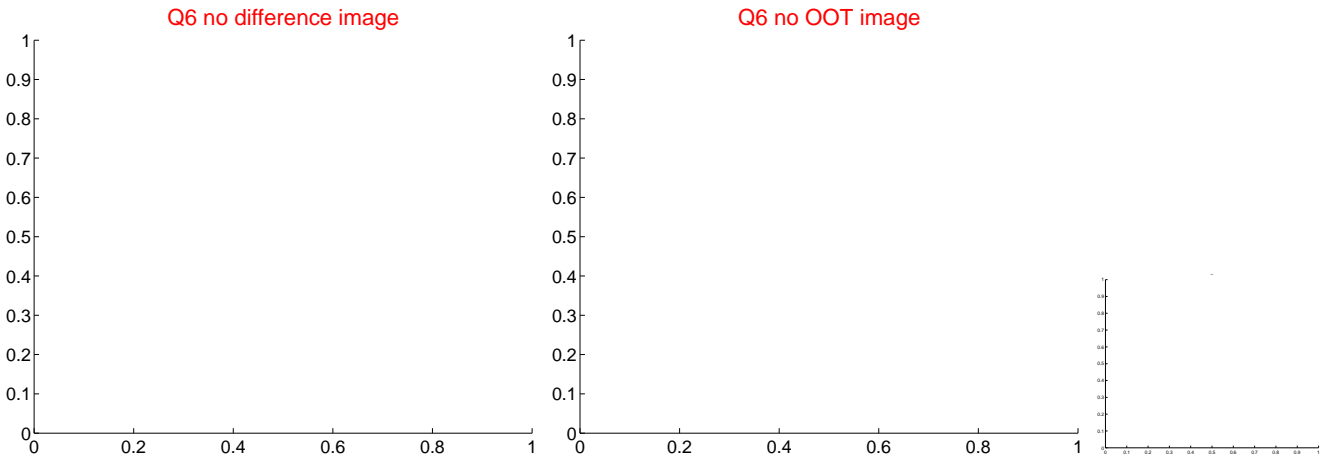
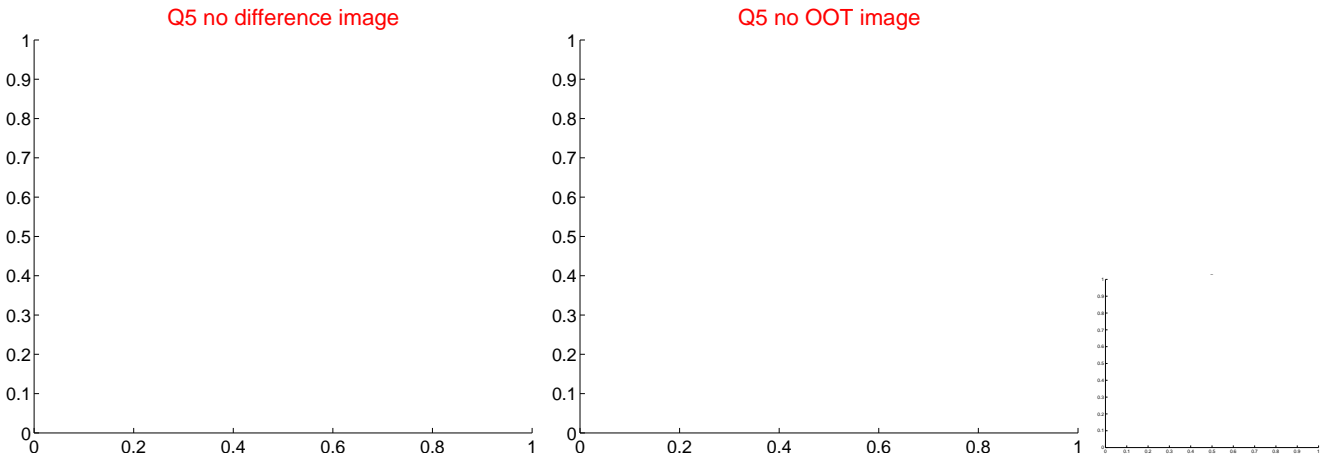


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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



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



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

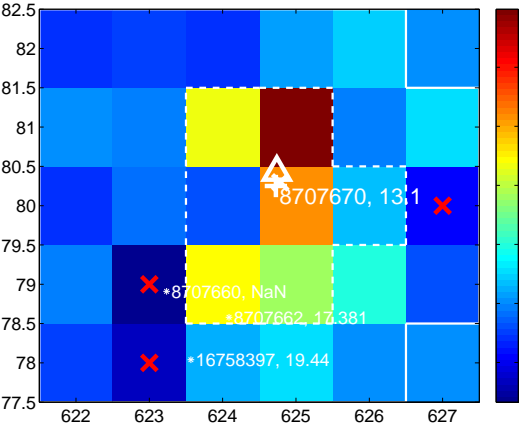
Q13 no difference image



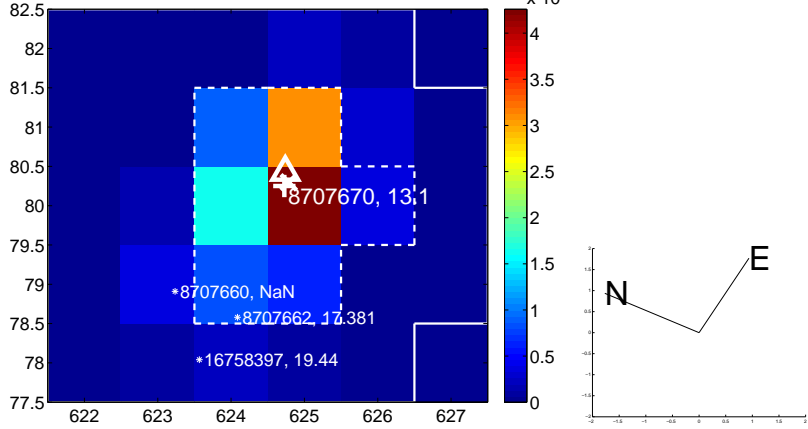
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



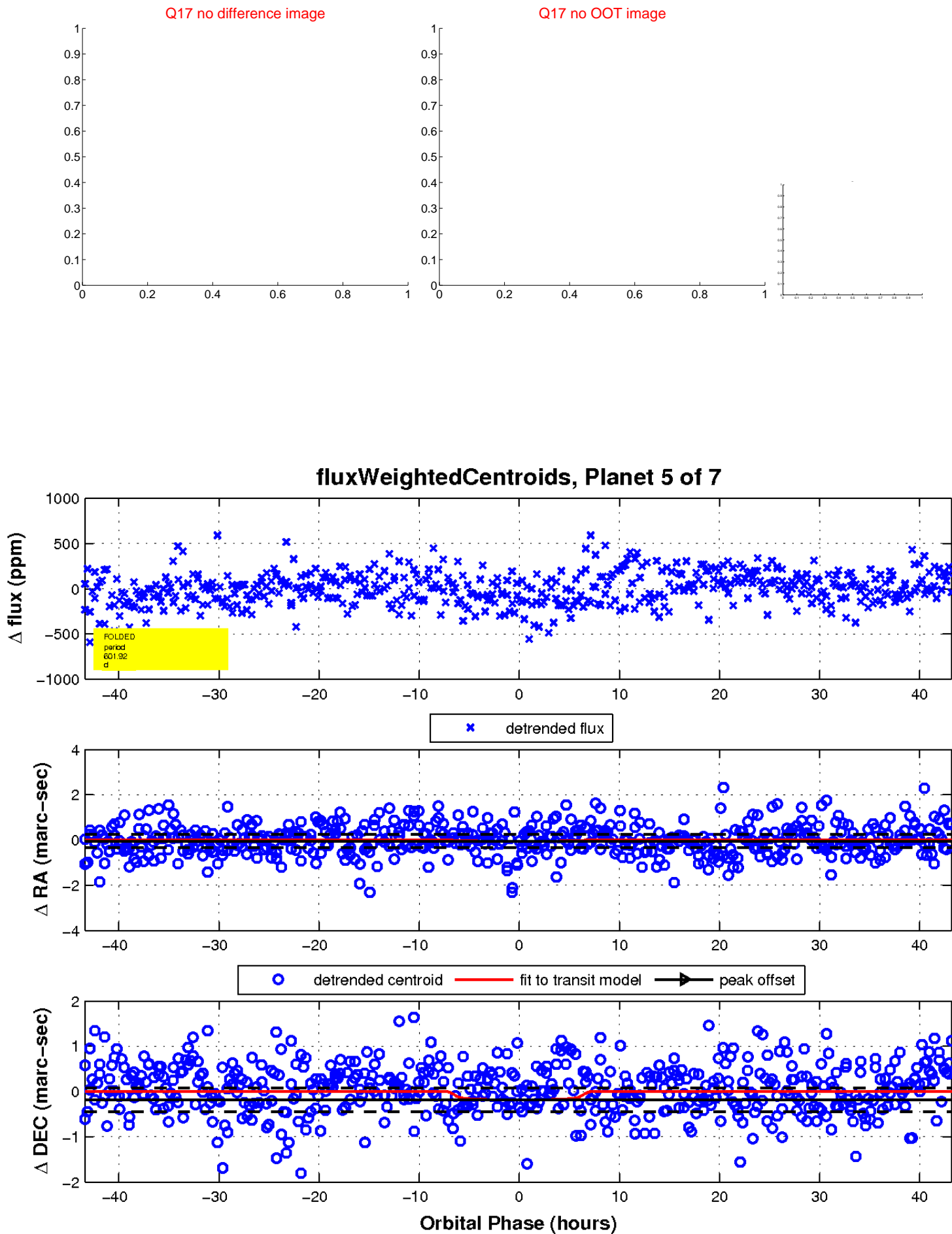
Q16 no difference image



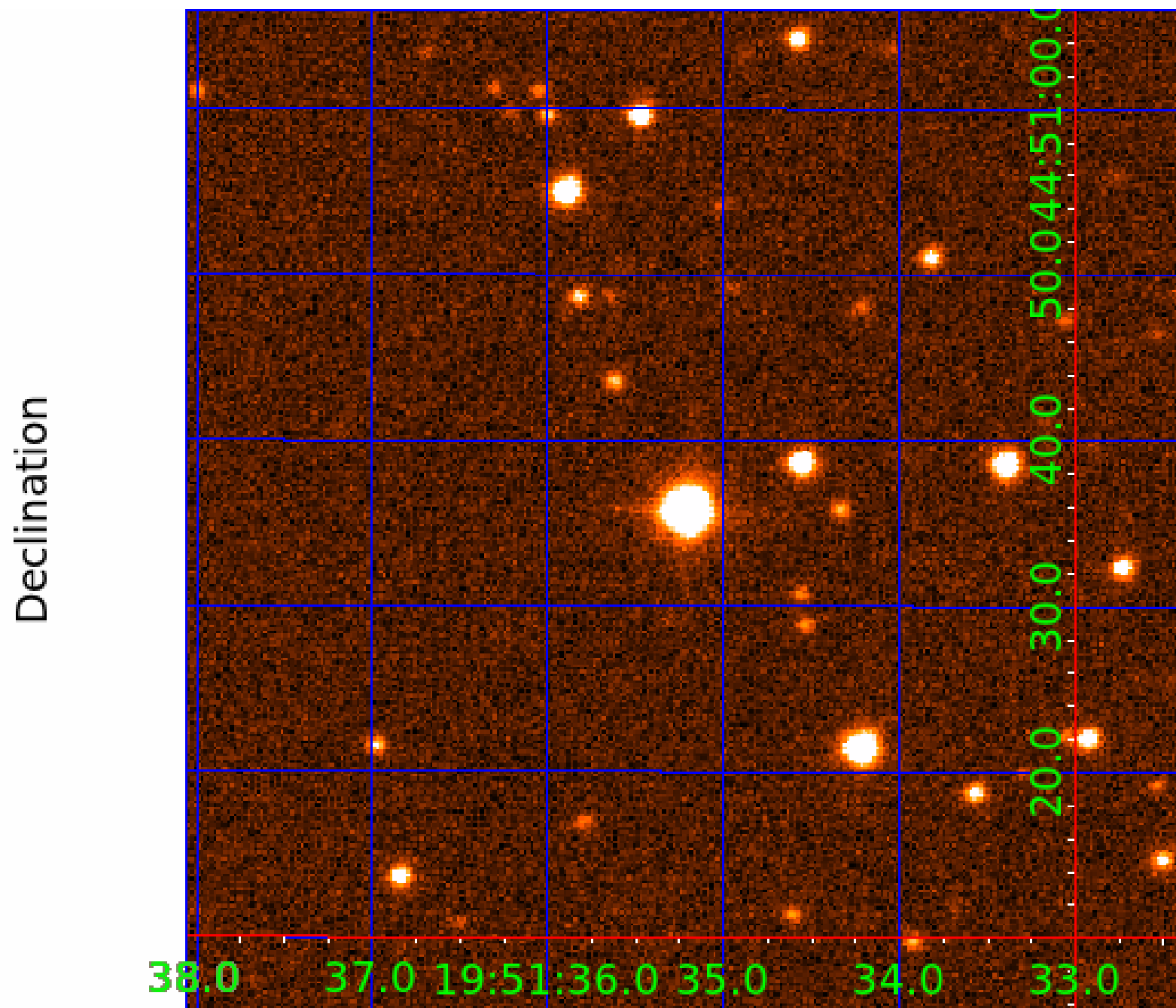
Q16 no OOT image



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



UKIRT Image



KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

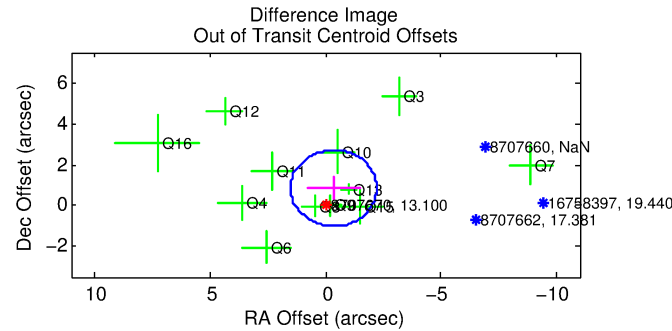
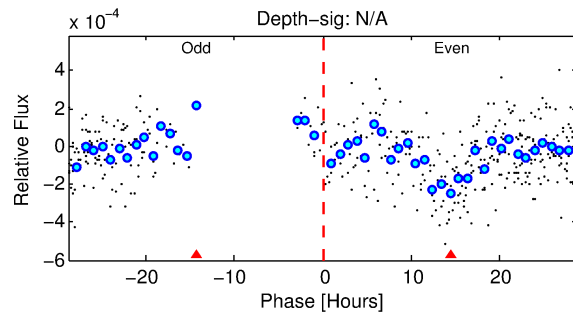
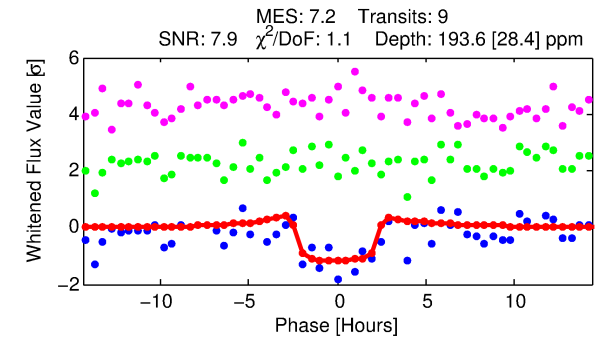
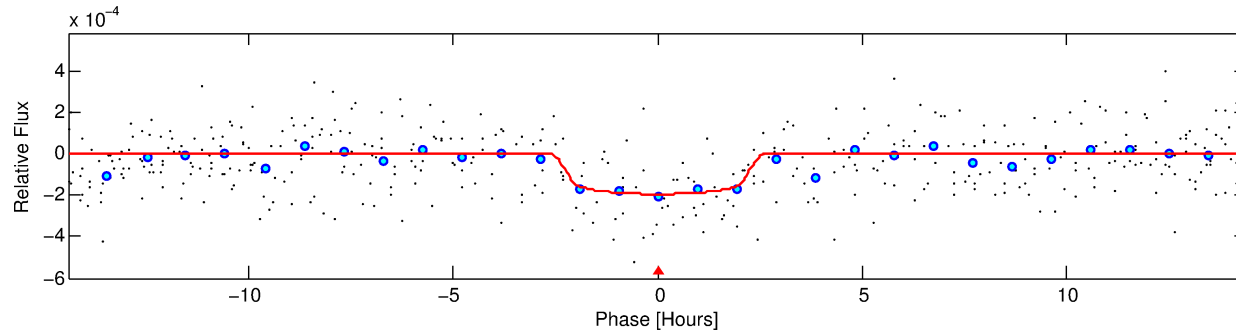
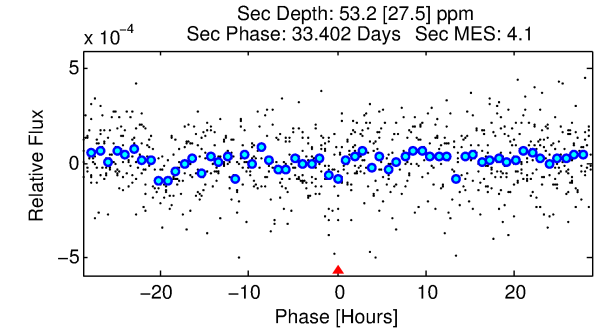
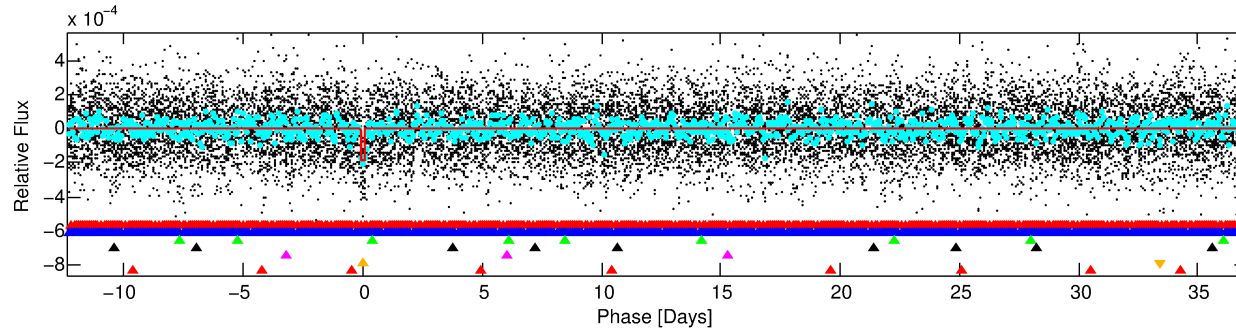
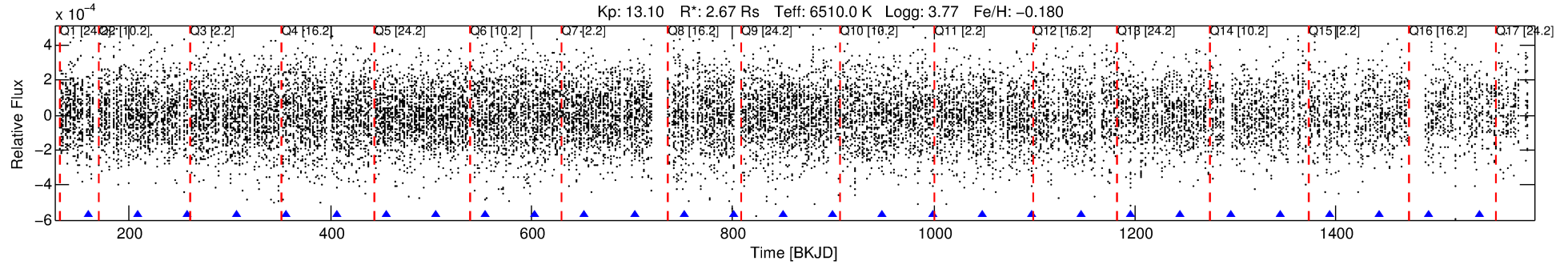
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-06

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 6 of 7 Period: 49.389 d



DV Fit Results:

Period = 49.38932 [0.00082] d
Epoch = 159.0513 [0.0118] BKJD
Rp/R* = 0.0144 [0.0090]
a/R* = 43.64 [152.70]
b = 0.85 [1.16]
Seff = 124.02 [65.30]
Teq = 851 [112] K
Rp = 4.19 [3.00] Re
a = 0.3036 [0.0988] AU
Ag = 153.73 [221.79] [0.69σ]
Teff = 4633 [1573] K [2.40σ]

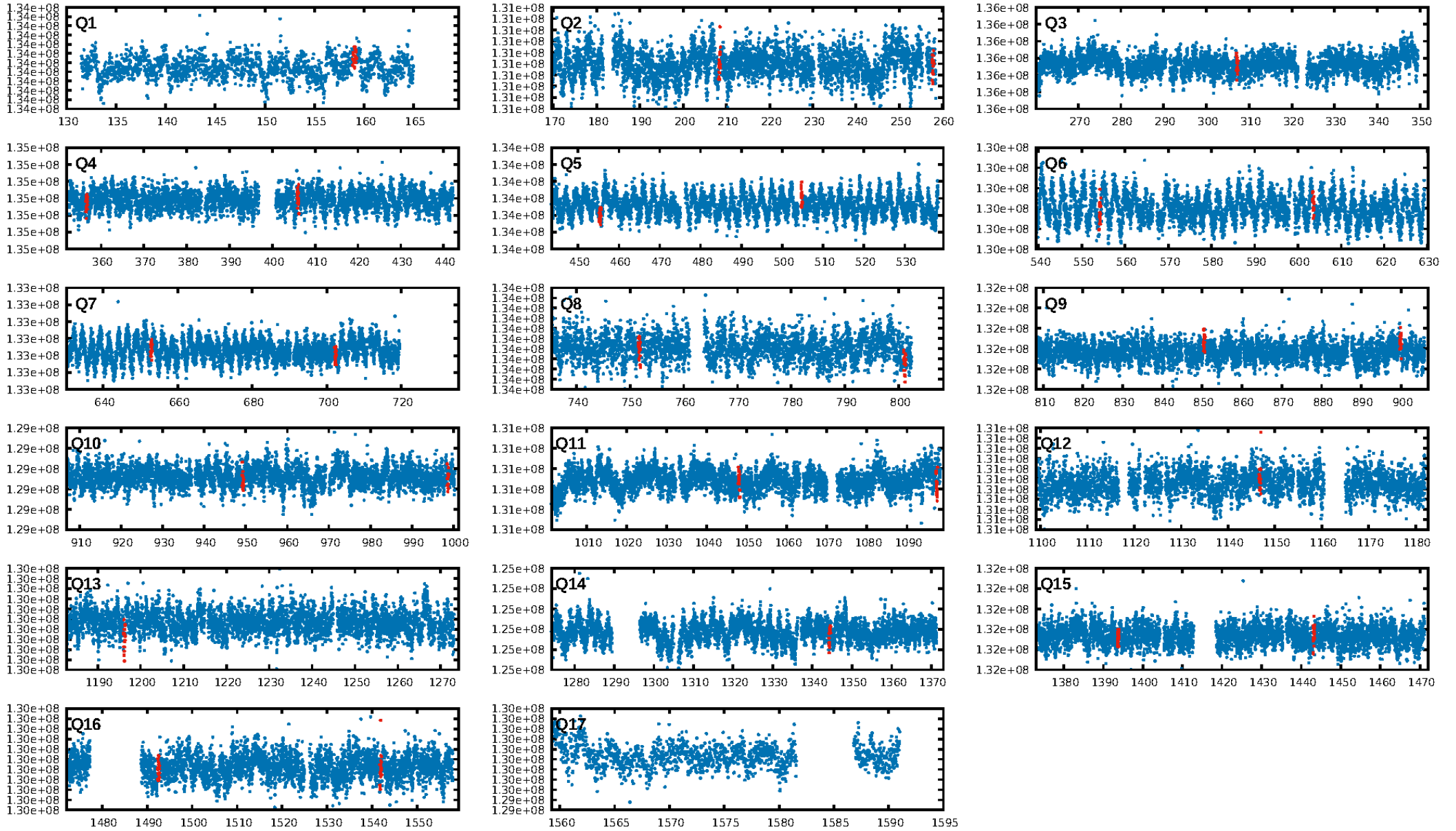
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [84.75σ]
LongPeriod-sig: 100.0% [189.93σ]
ModelChiSquare2-sig: 11.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.59e-07
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -0.6362
Centroid-sig: 80.3%
Centroid-so: 0.711 arcsec [0.84σ]
OotOffset-rm: 0.916 arcsec [1.48σ]
OotOffset-st: 2/4/4/2 [12]
KicOffset-rm: 0.961 arcsec [1.19σ]
KicOffset-st: 2/4/4/2 [12]
DiffImageQuality-fgm: 0.25 [3/12]
DiffImageOverlap-fno: 0.38 [6/16]

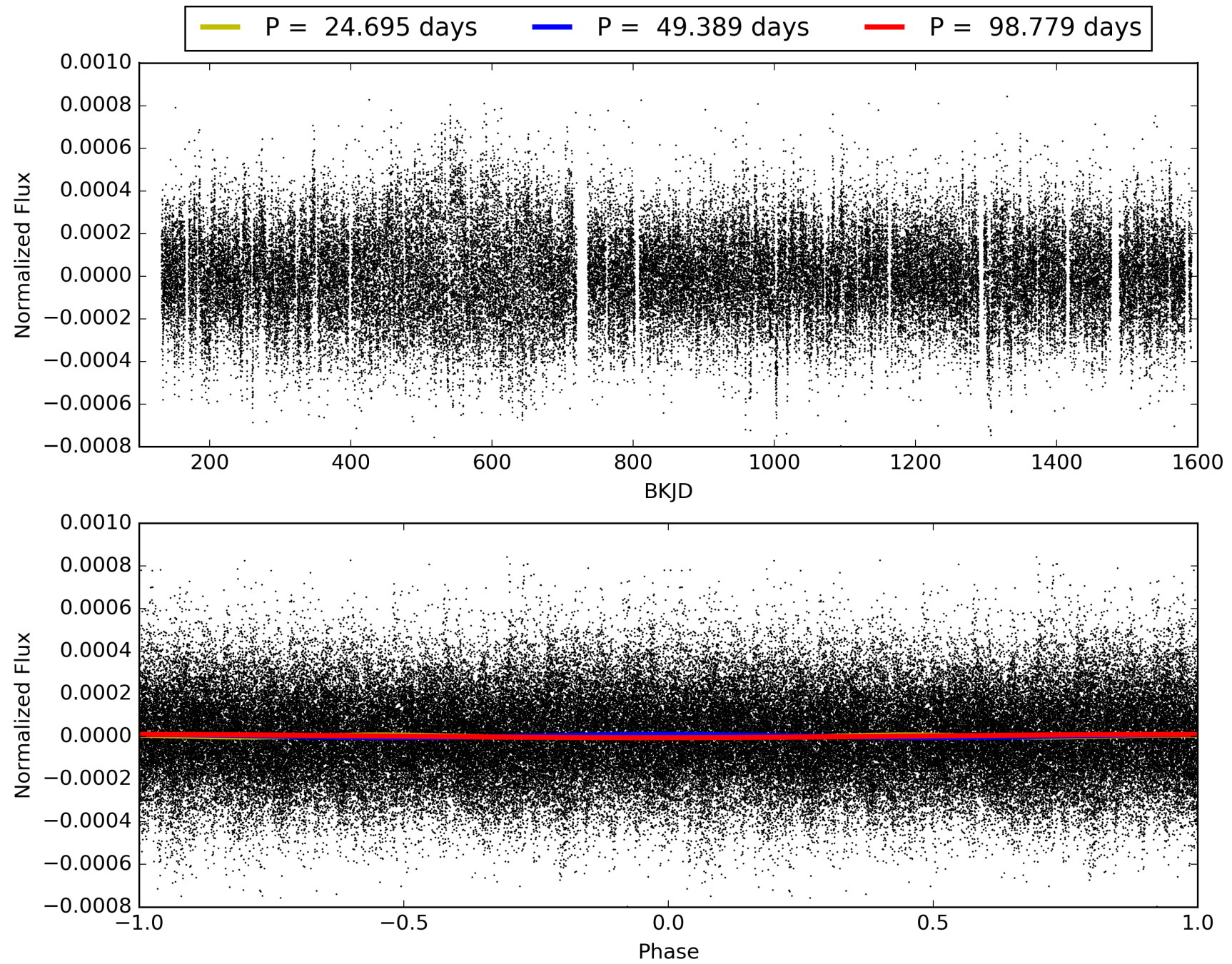
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:00:19 Z

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

TCE 008707670-06, PDC Light Curves

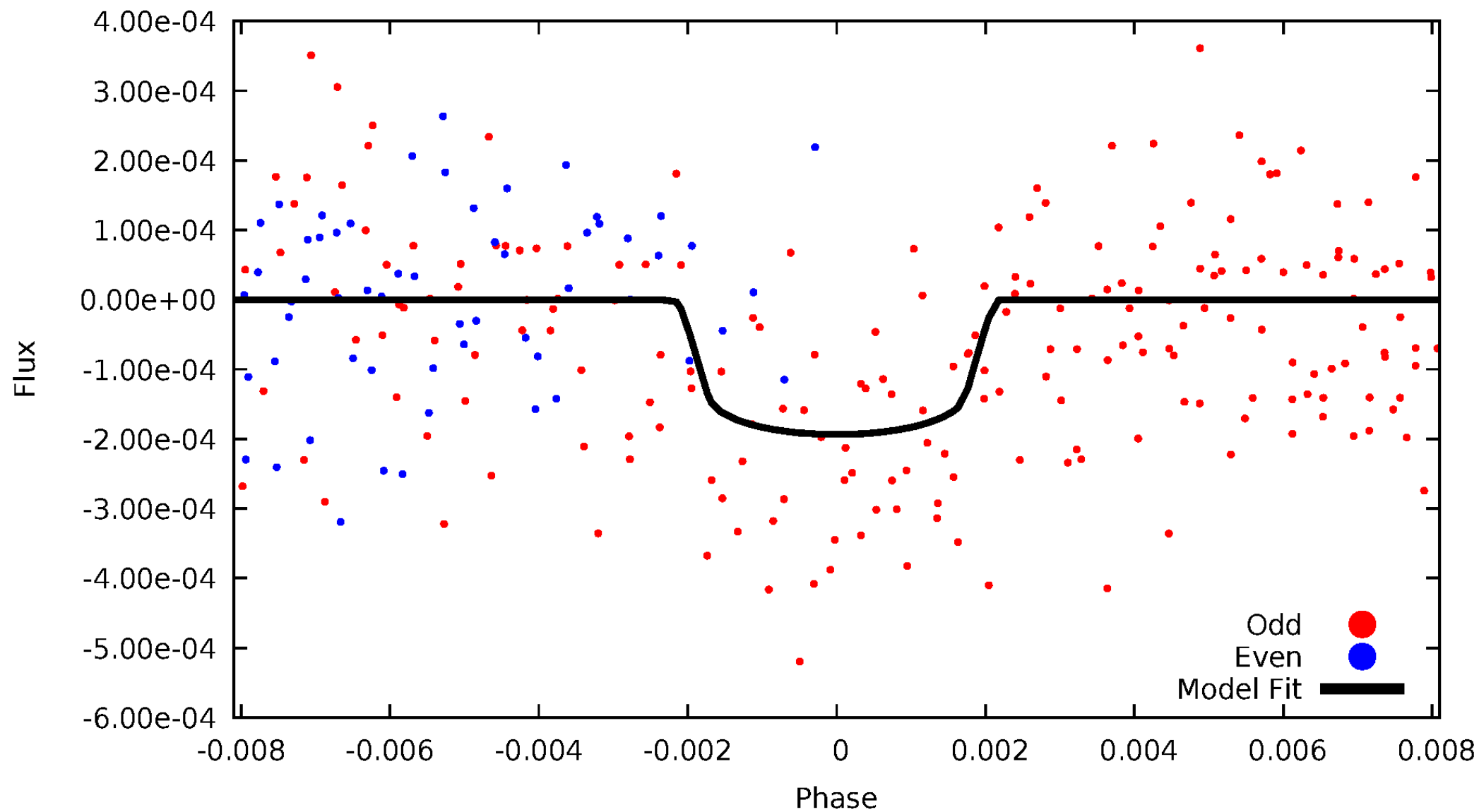


TCE 008707670-06



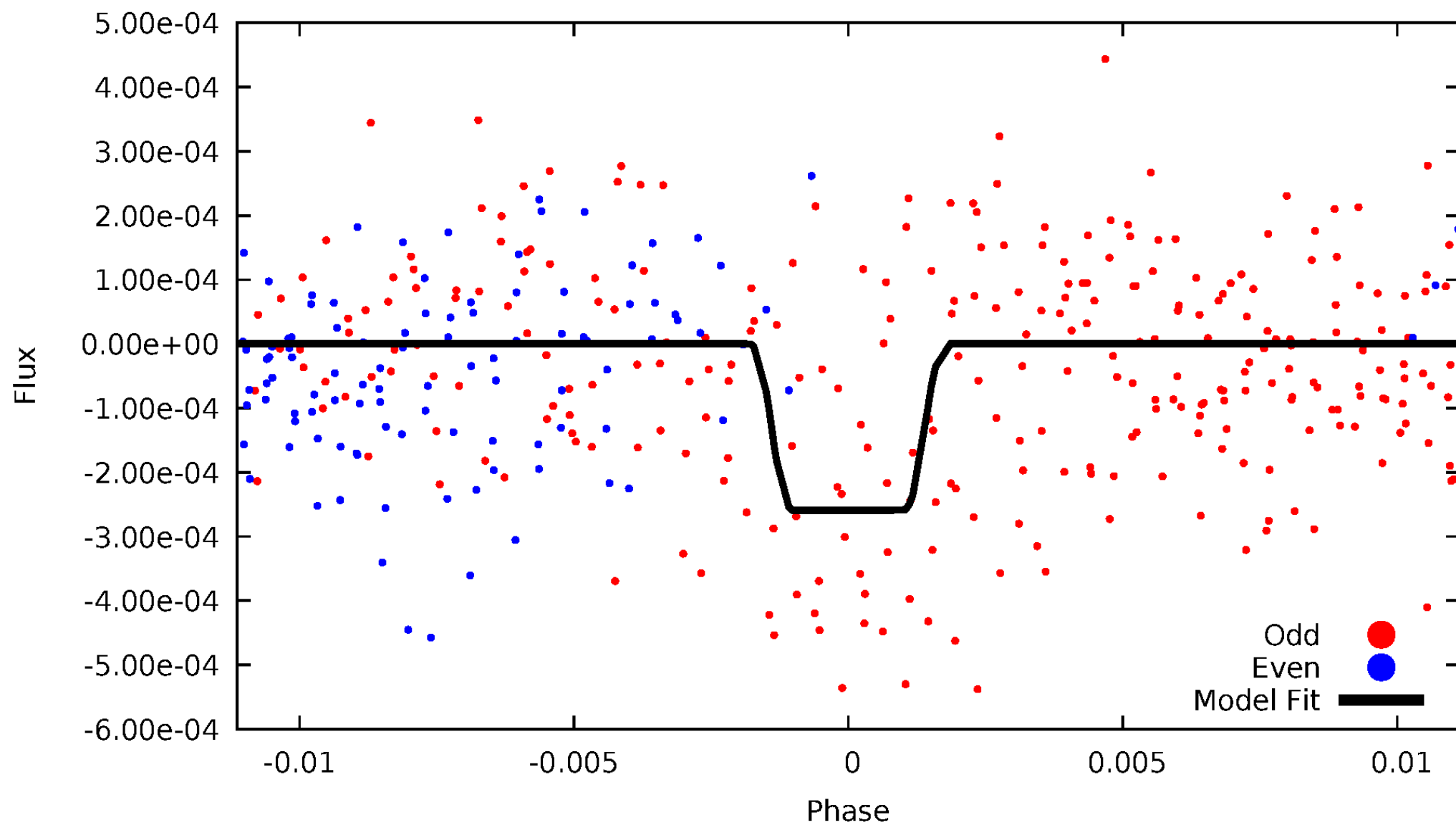
DV Odd/Even

TCE 008707670-06



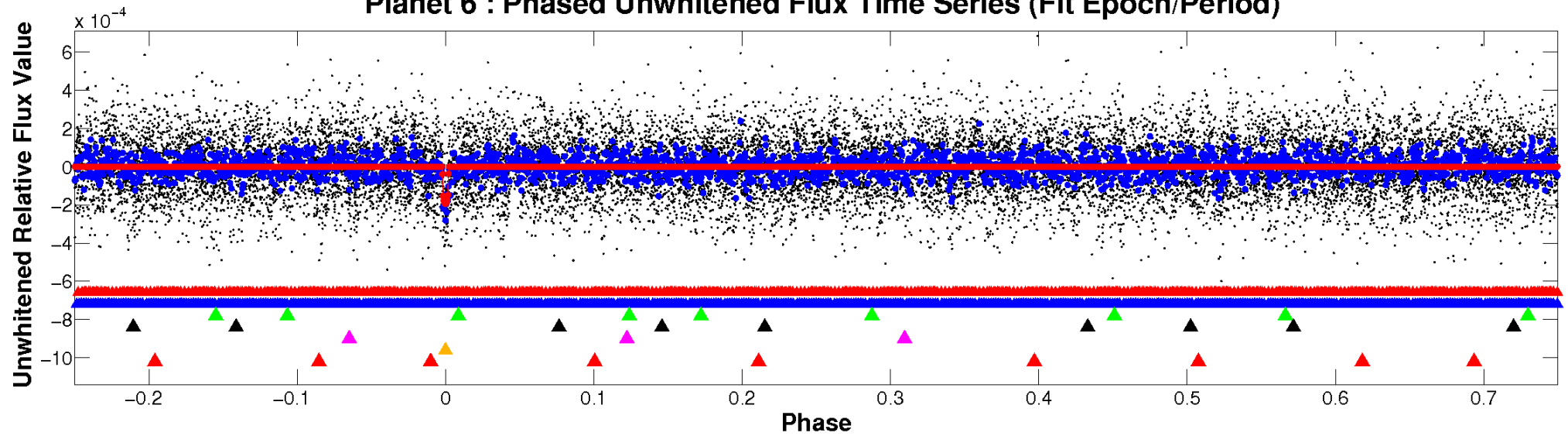
ALT Odd/Even

TCE 008707670-06

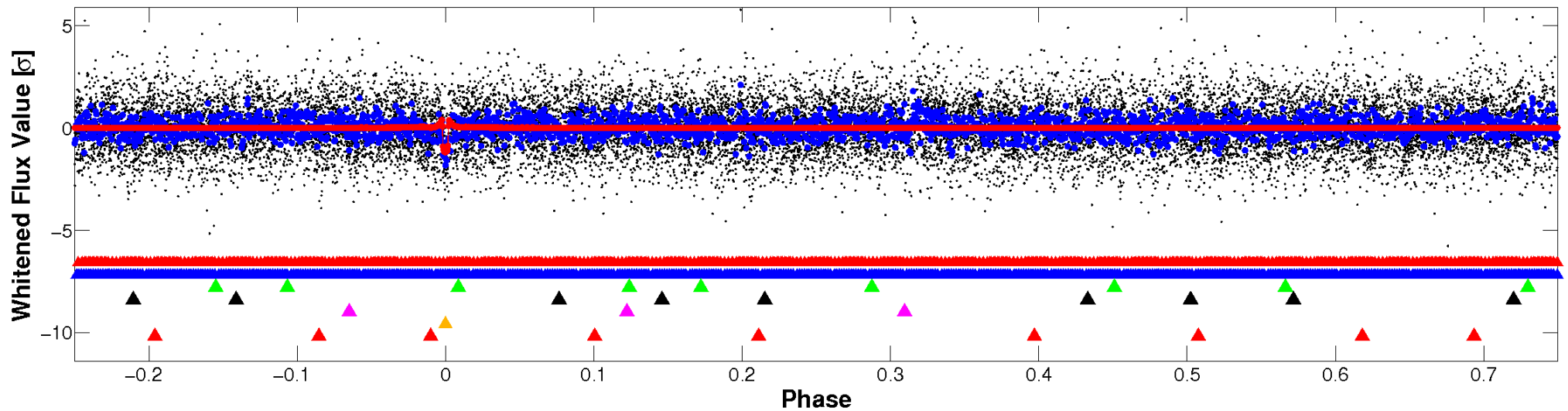


Non-Whitened Vs. Whitened Light Curve

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

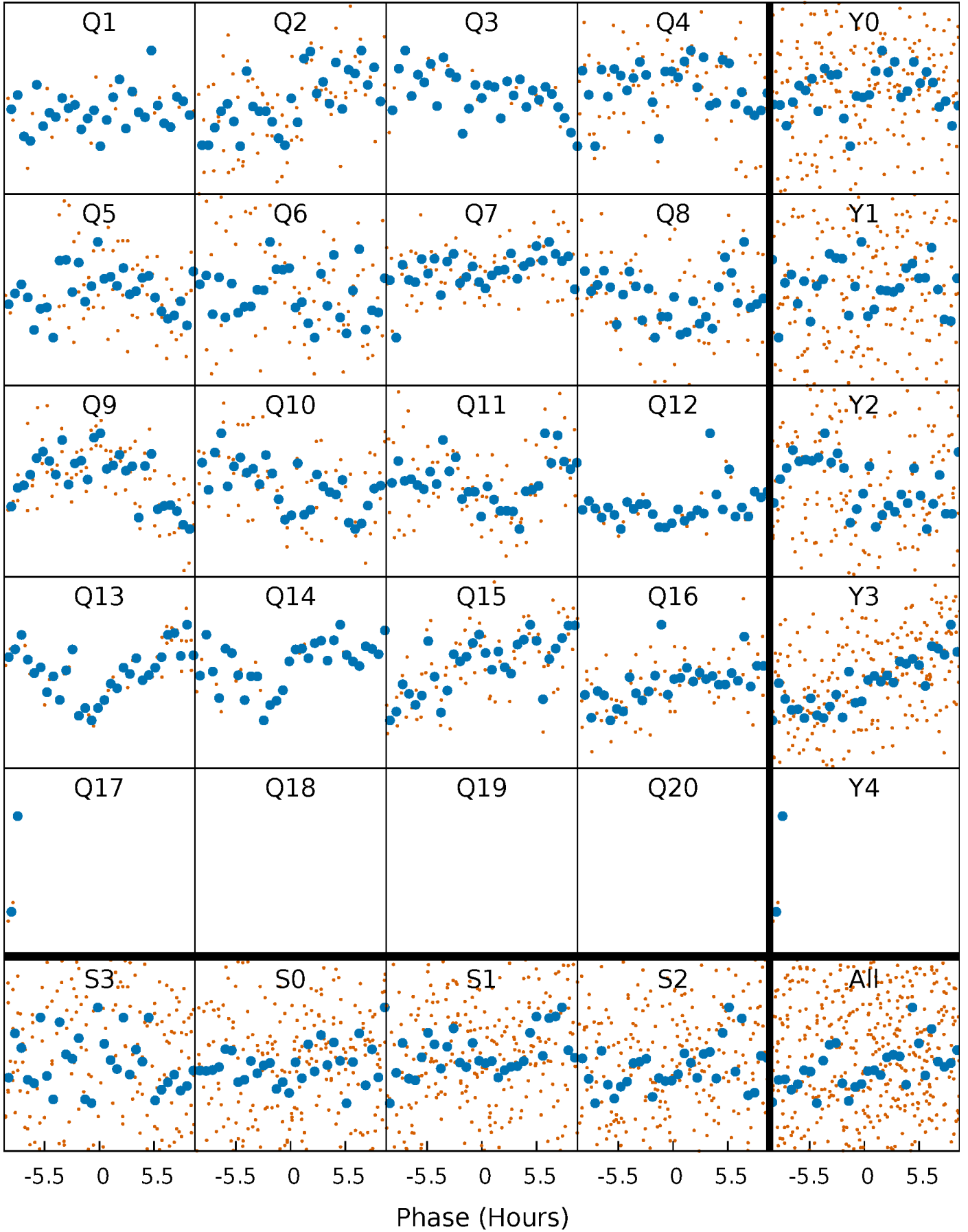


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



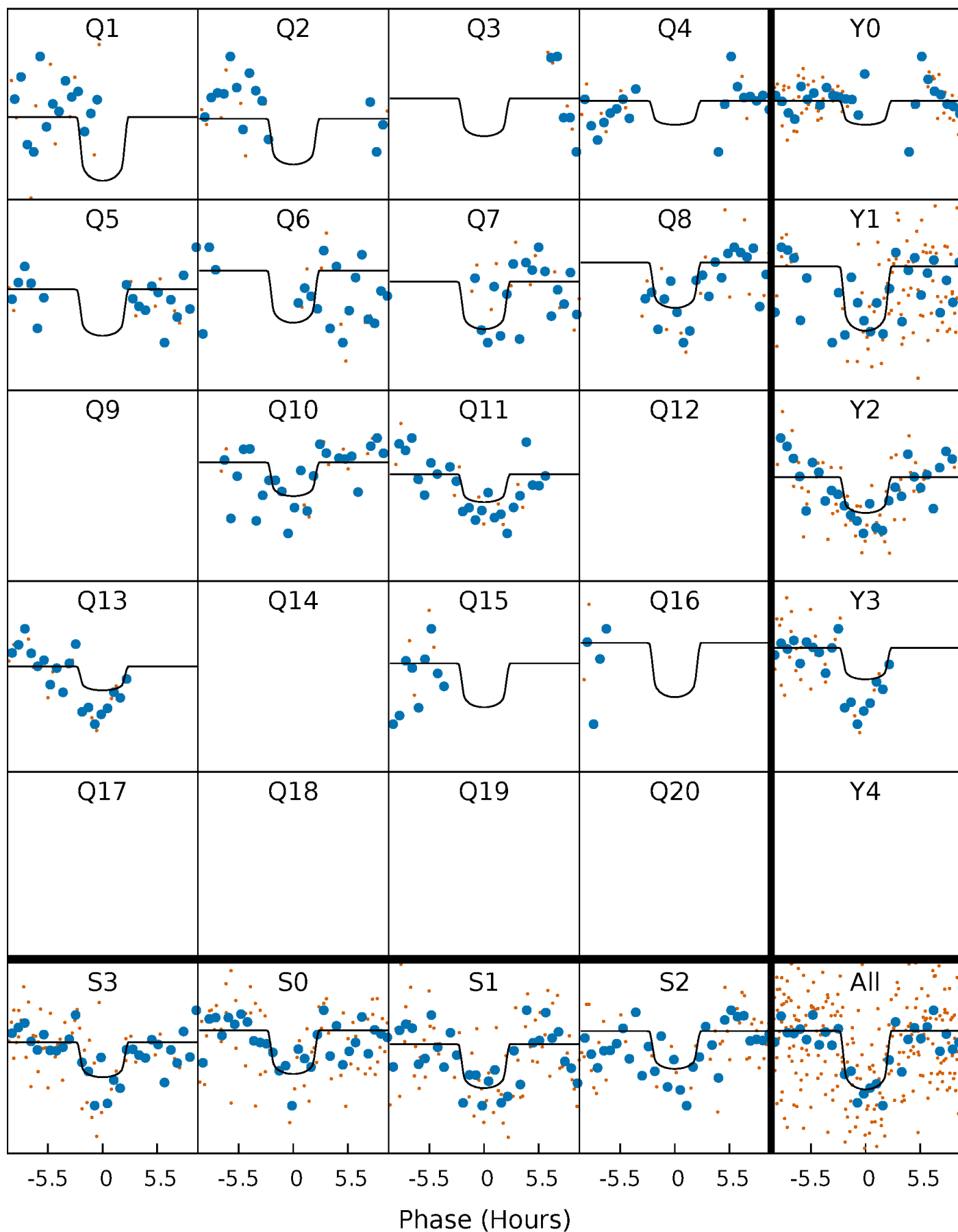
PDC Quarter-Phased Transit Curves

TCE 008707670-06 P= 49.389323 Days $T_0=159.051327$ (BKJD)



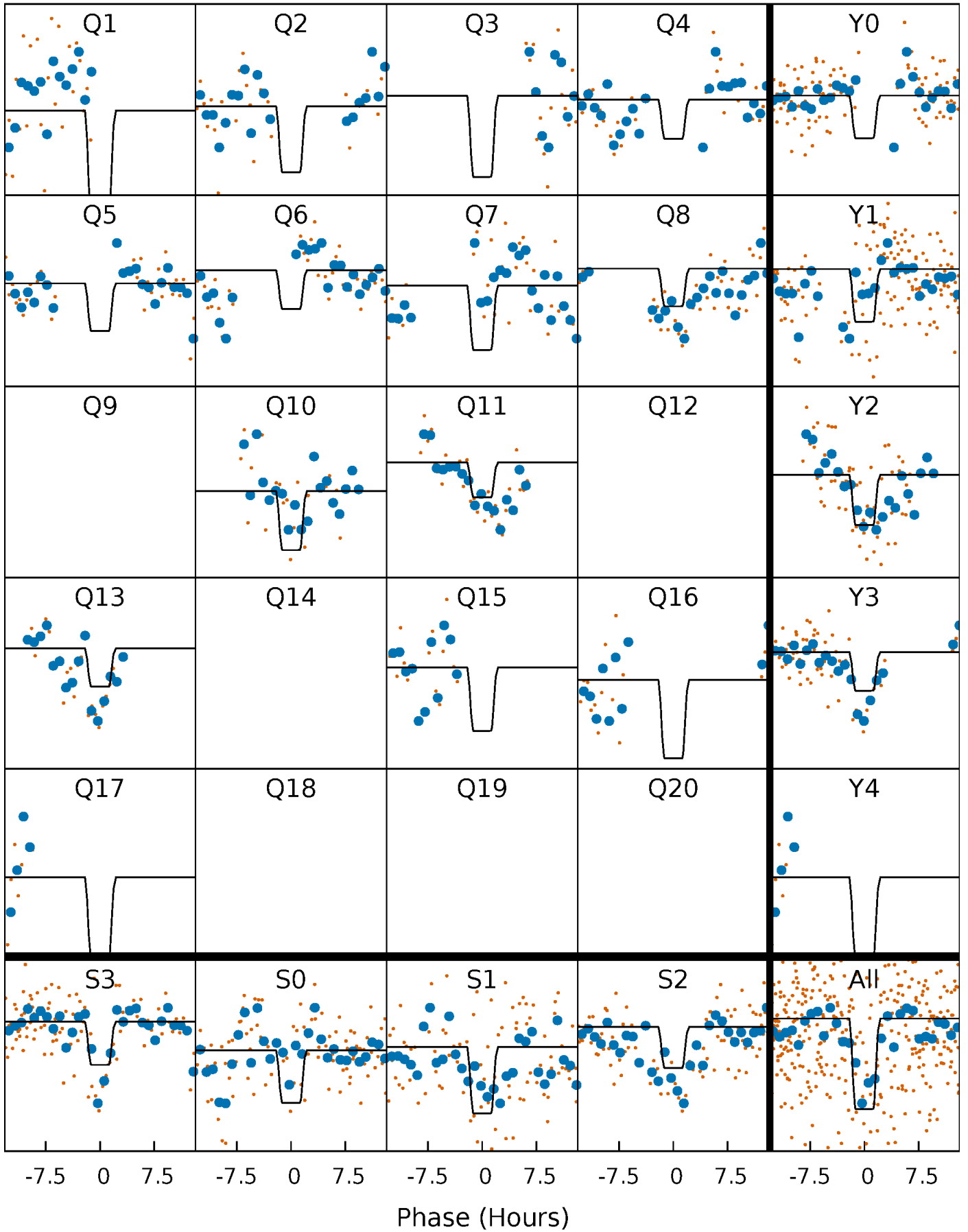
DV Quarter-Phased Transit Curves

TCE 008707670-06 P= 49.389323 Days $T_0=159.051327$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

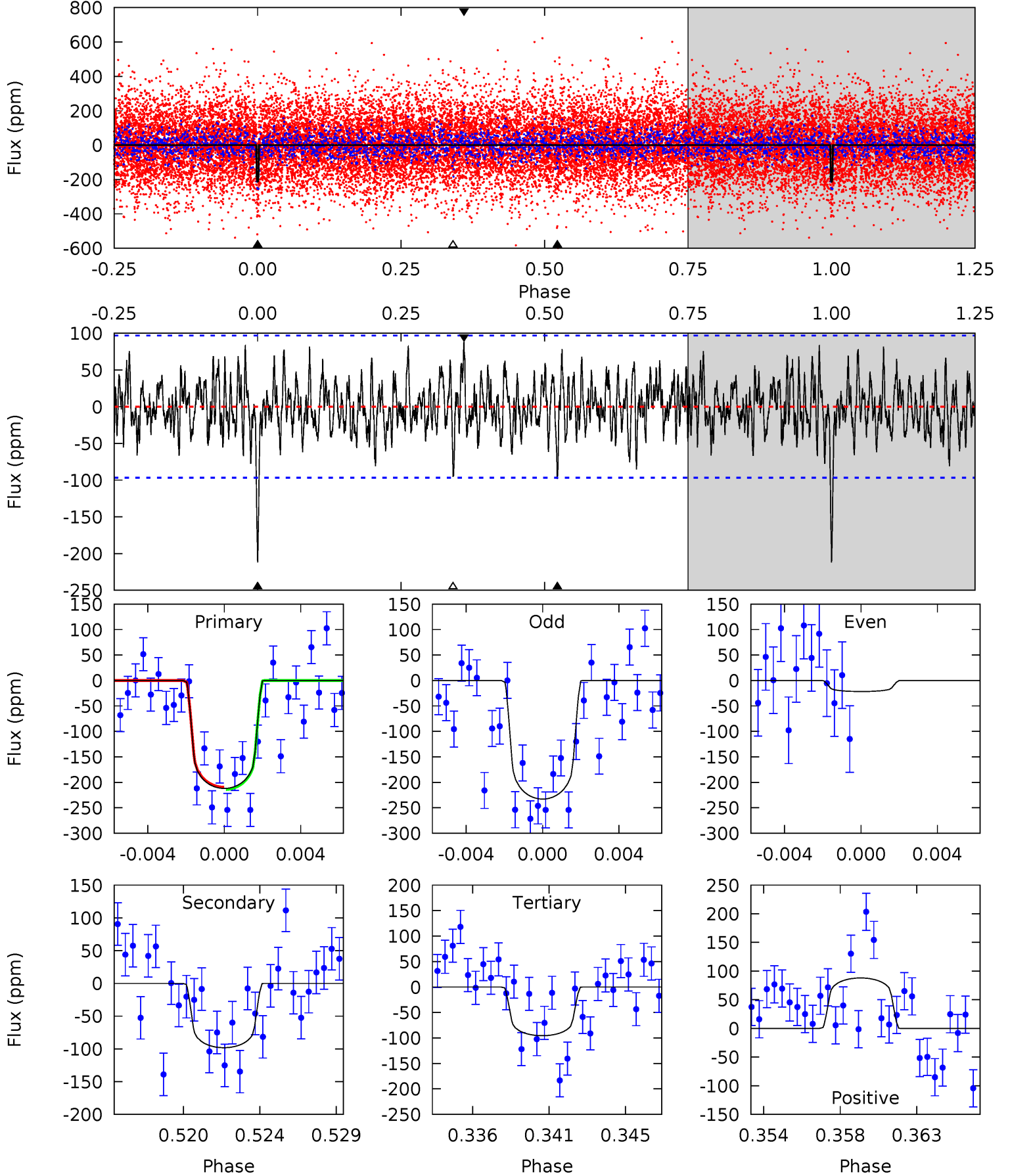
TCE 008707670-06 P= 49.387519 Days $T_0=159.070117$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-06, P = 49.389323 Days, E = 109.662004 Days

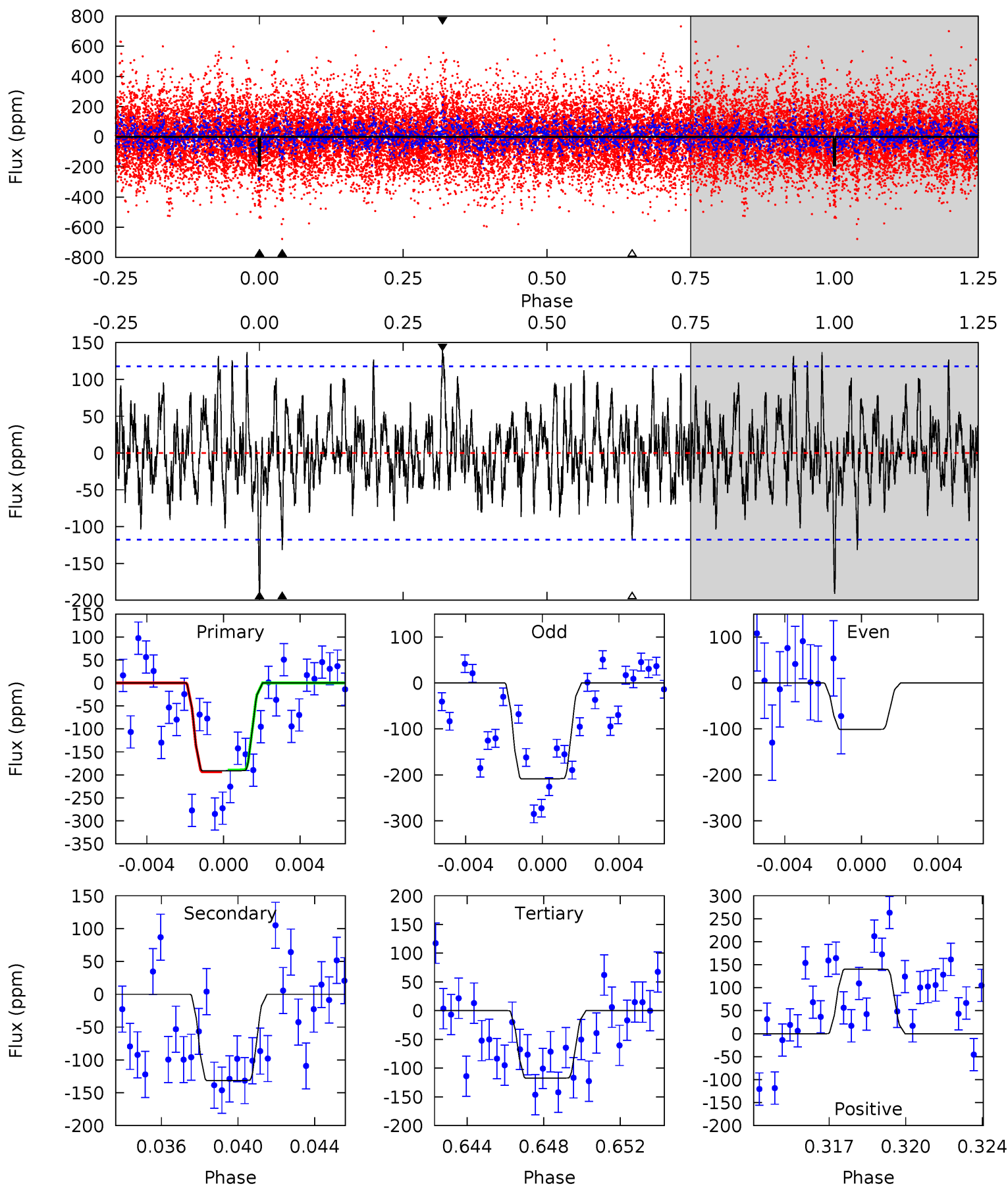
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	5.26	5.12	4.71	5.18	2.85	1.57	6.23	6.63	0.14	0.54	3.33	0.82	0.29	0.12



Alt Model-Shift Uniqueness Test

008707670-06, P = 49.387519 Days, E = 109.682598 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.48	5.83	5.21	6.22	5.22	2.91	1.80	3.27	2.26	0.62	-0.39	1.14	1.27	0.42	0.08



Stellar Parameters For KIC 008707670

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-98 ± 19	$4.14^{+2.69}_{-2.31}$	1165^{+75}_{-105}	5289^{+2638}_{-982}	280^{+1154}_{-174}
Alt.	-132 ± 23	$4.55^{+2.61}_{-2.20}$	1167^{+80}_{-99}	5477^{+2302}_{-1034}	326^{+953}_{-203}

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 $A_{obs} \gg 1.0$

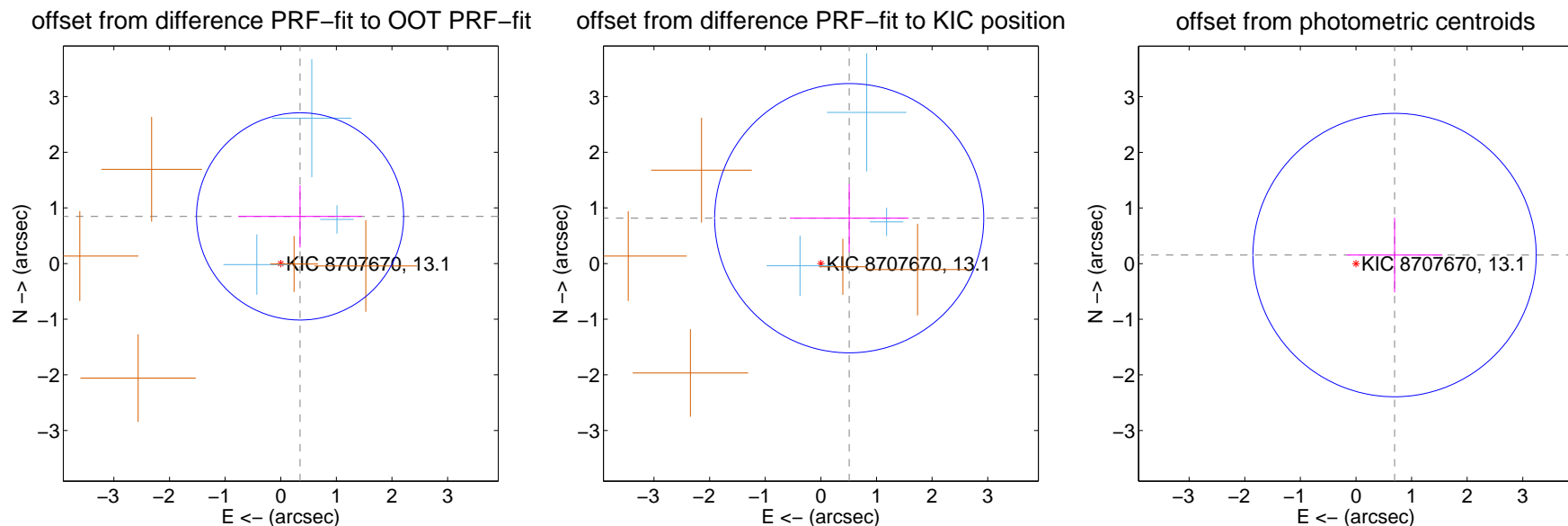
DV Centroid Data

Supplemental centroid analysis for 008707670-06. Kepler magnitude: 13.10. Transit SNR 7.93

There are 3 quarters with good PRF difference image offsets

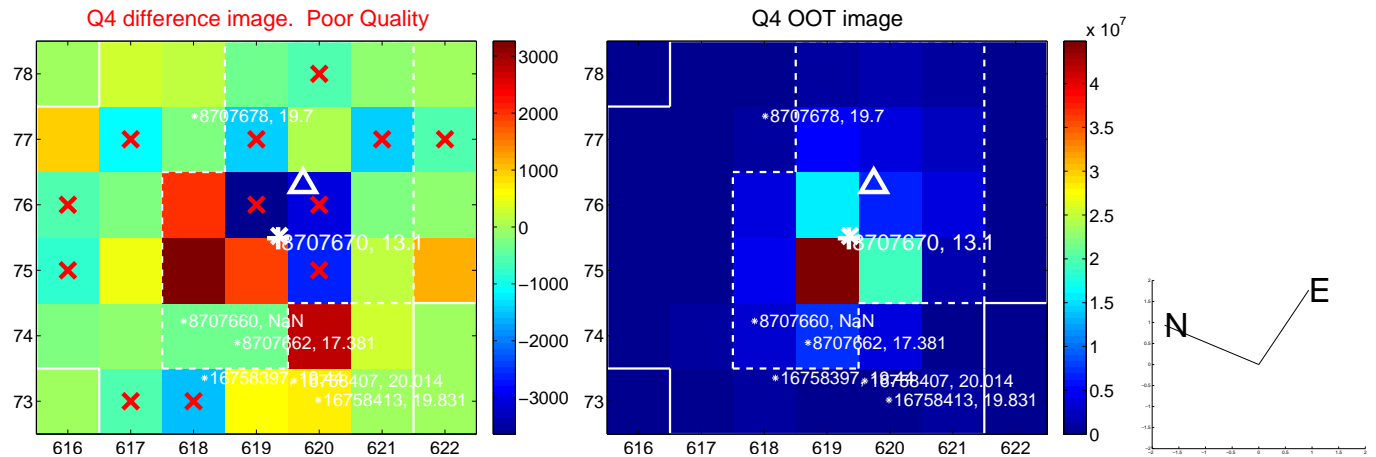
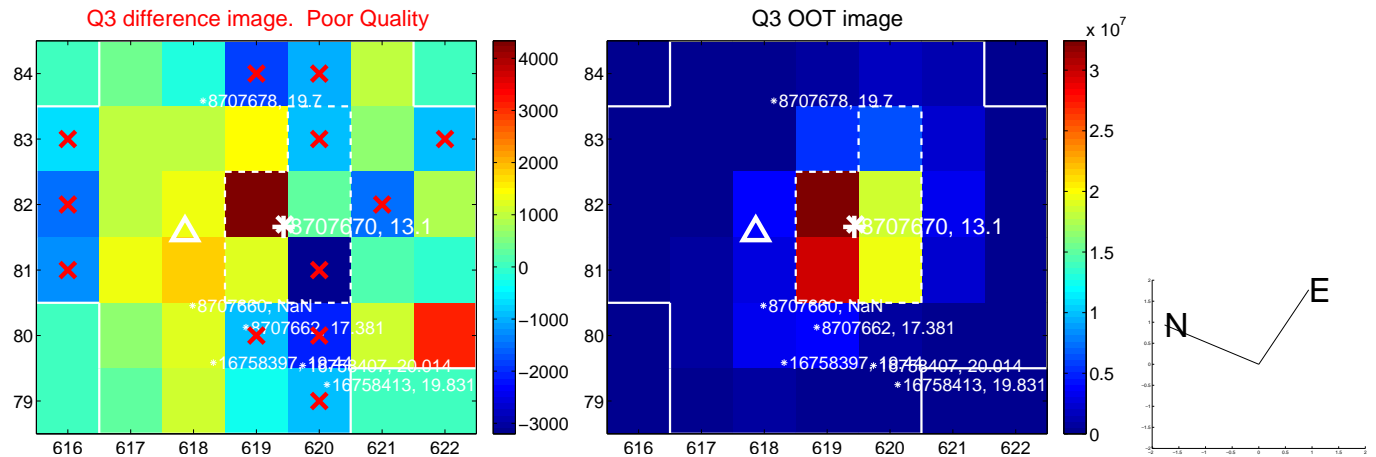
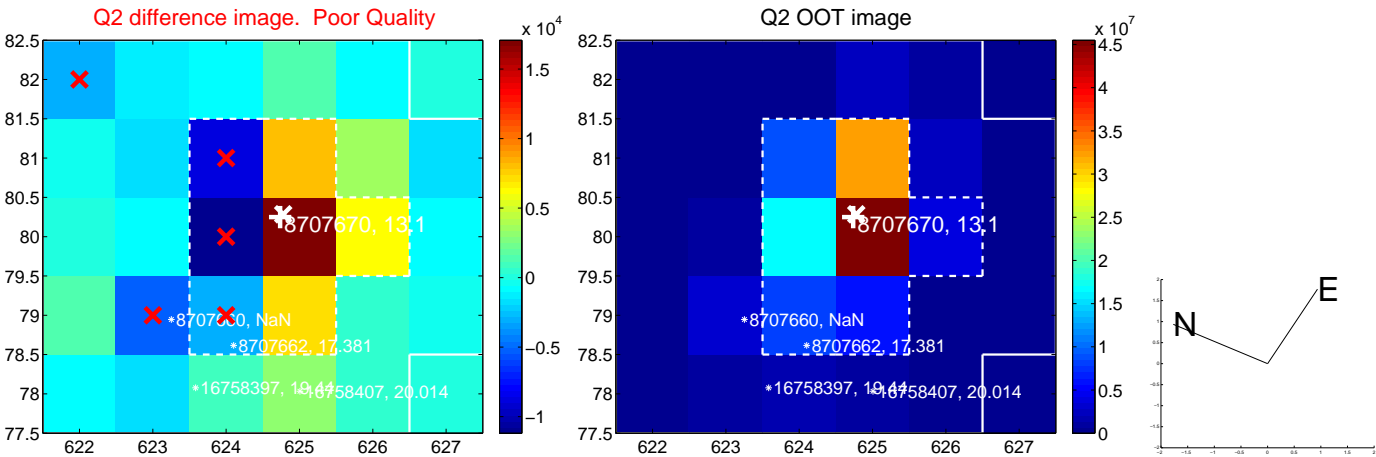
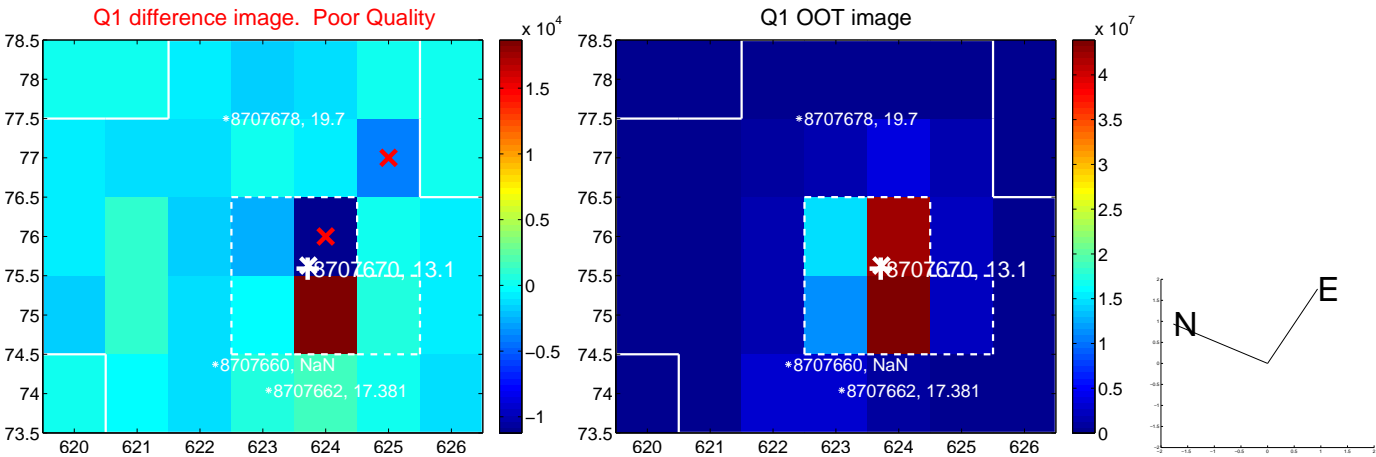
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.916 ± 0.621	1.48	-0.348 ± 1.112	0.847 ± 0.558
PRF-fit source offset from KIC position	0.961 ± 0.807	1.19	-0.510 ± 1.068	0.815 ± 0.611
photometric centroid source offset	0.71 ± 0.85	0.84	-0.69 ± 0.86	0.15 ± 0.67

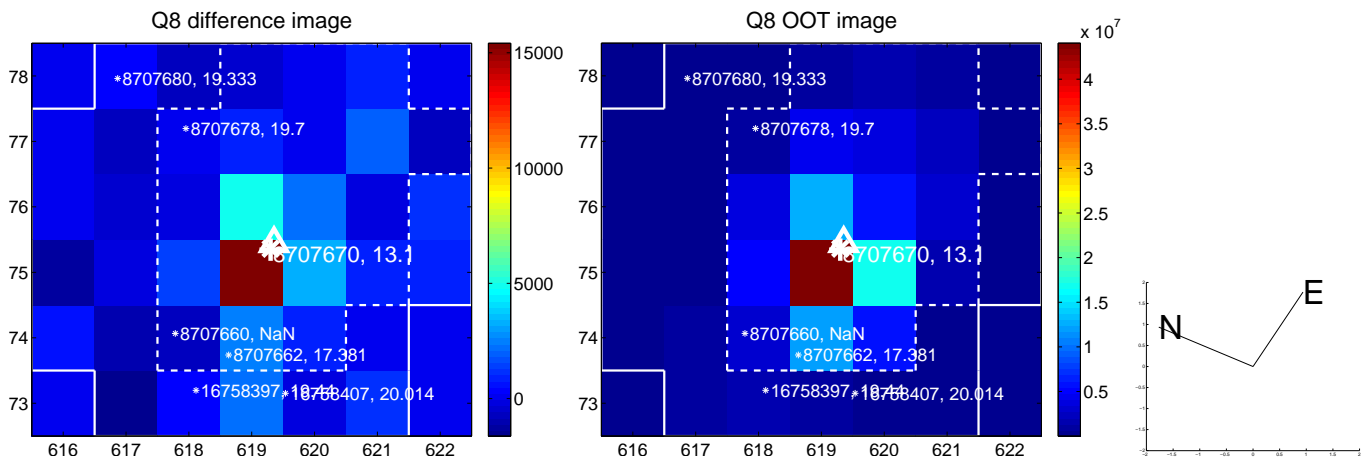
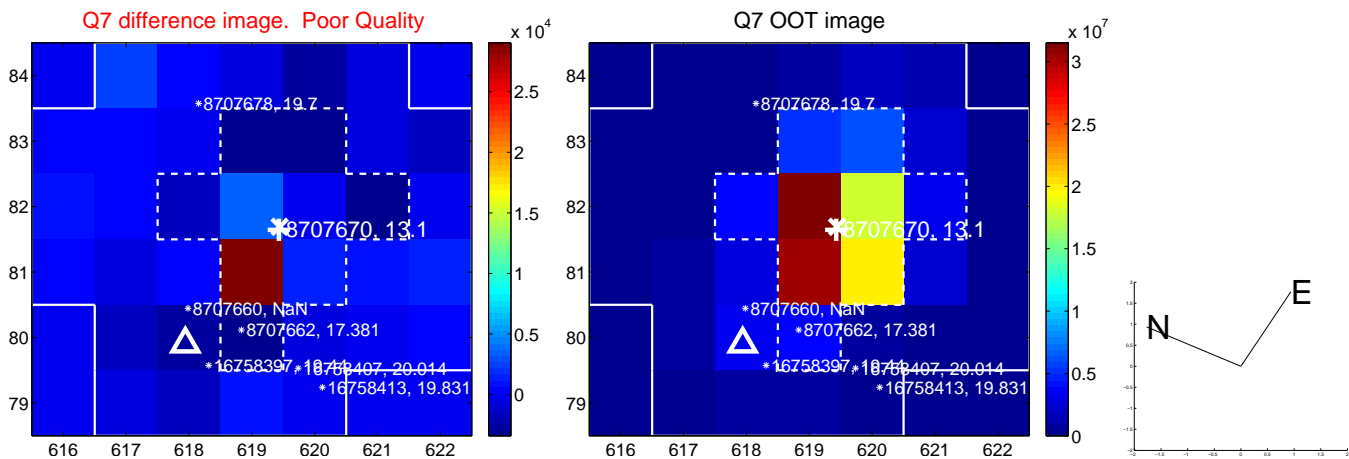
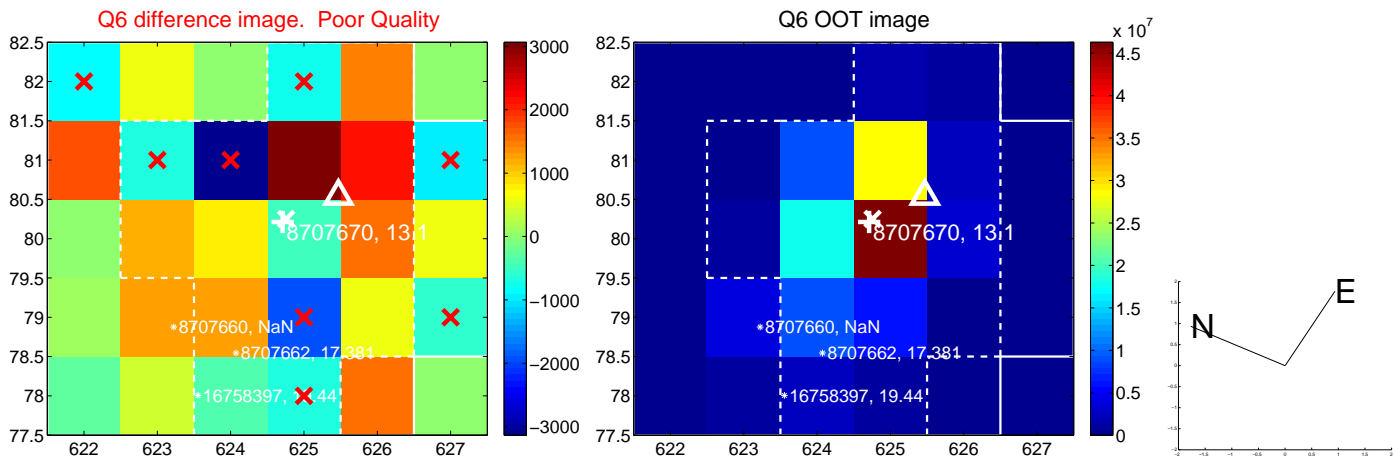
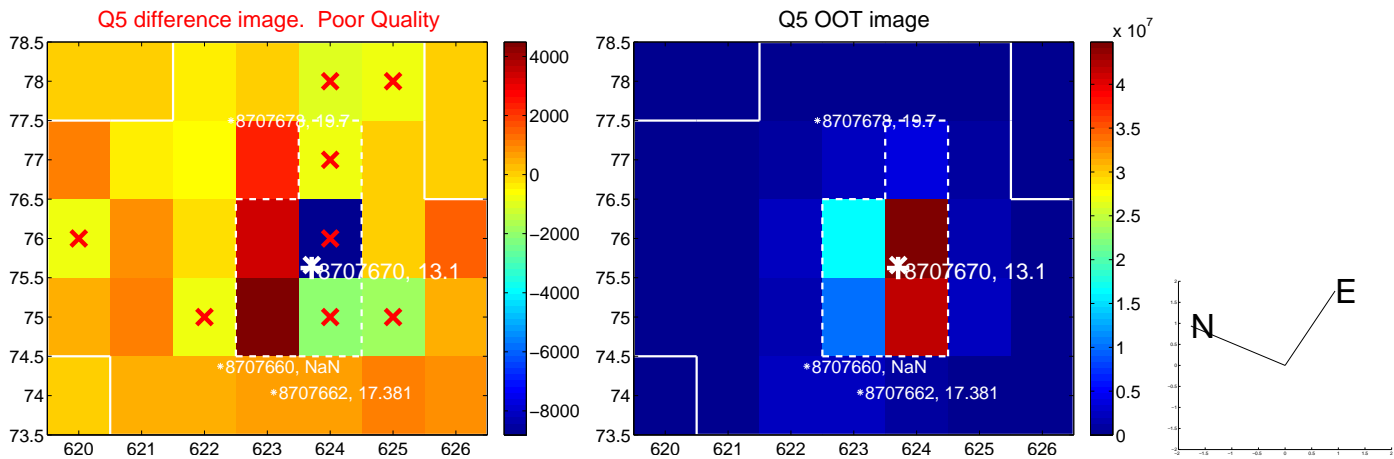


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

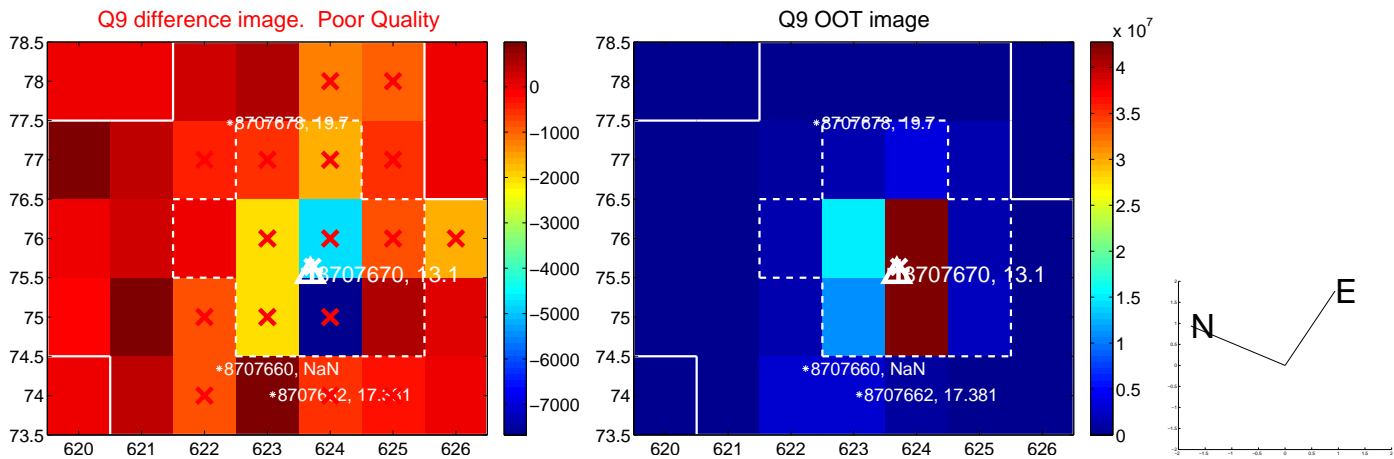
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



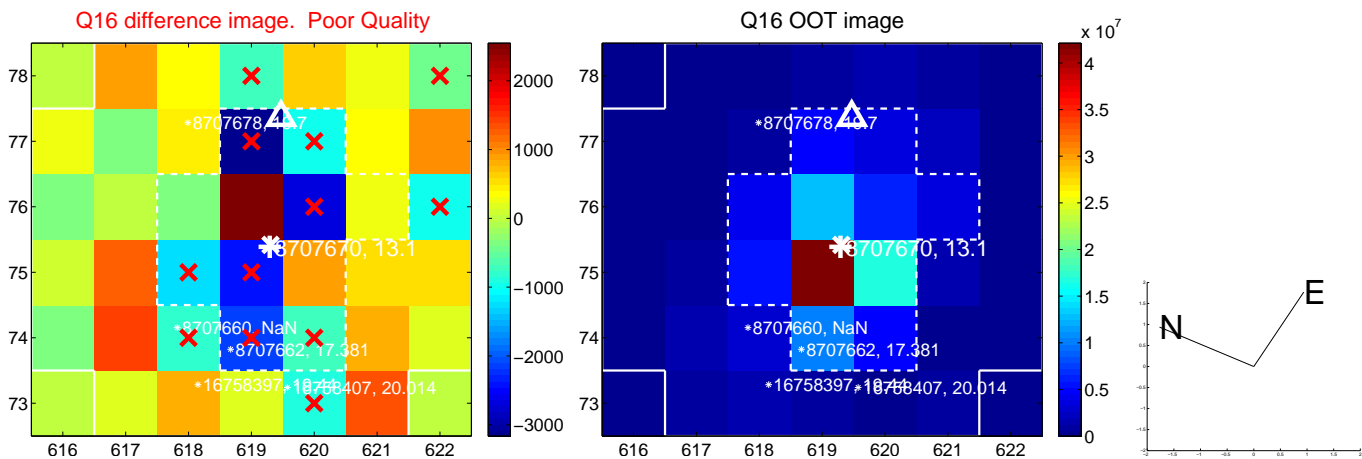
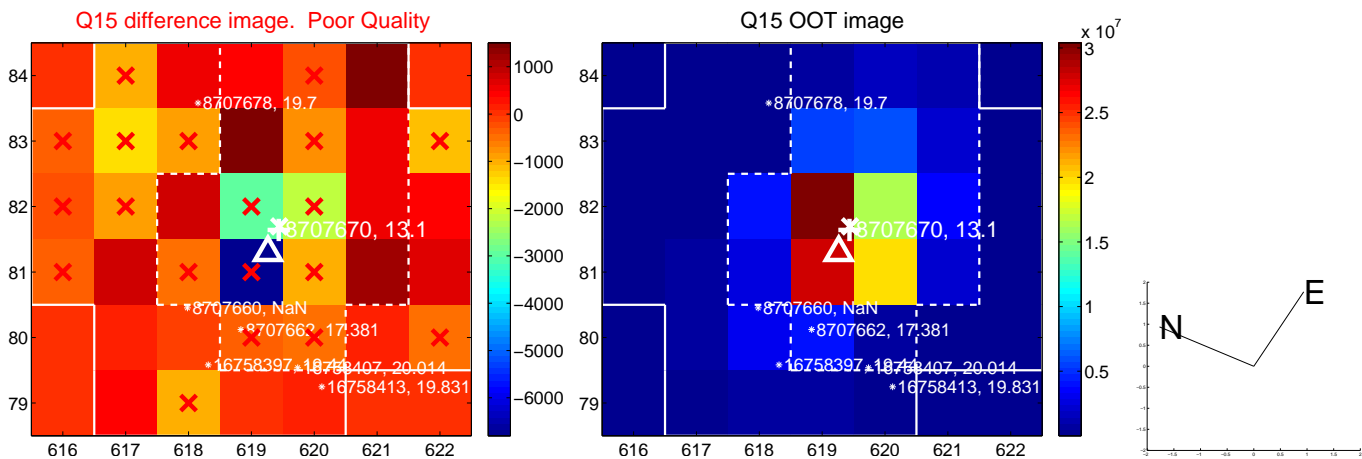
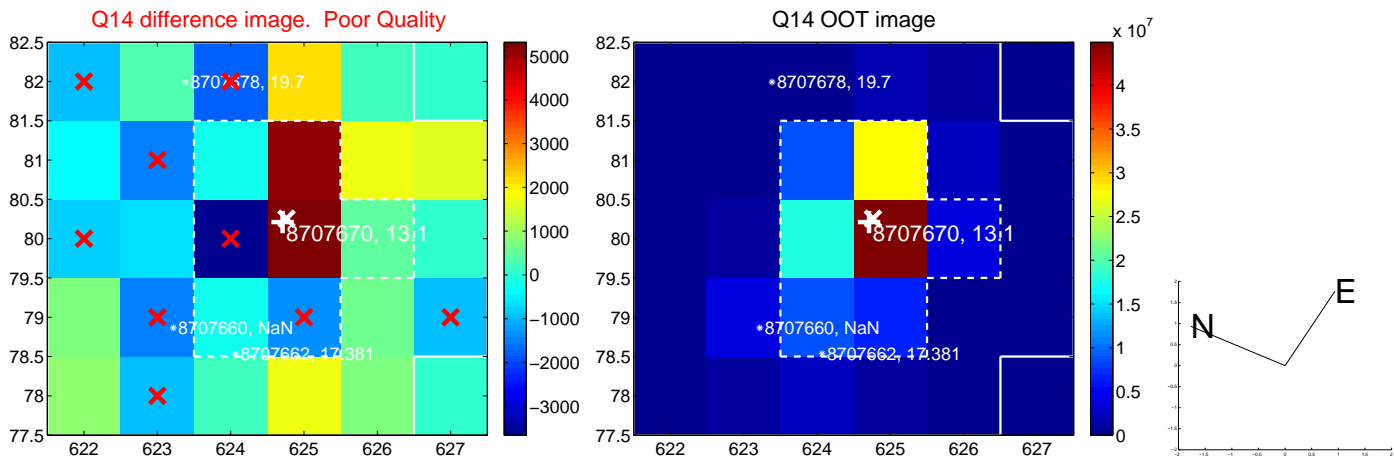
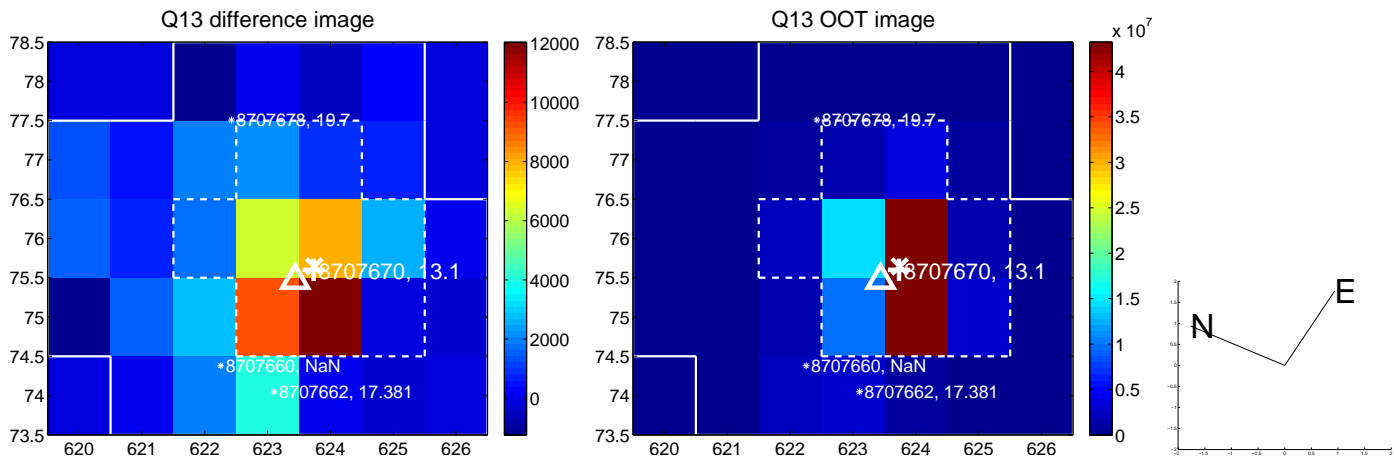
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



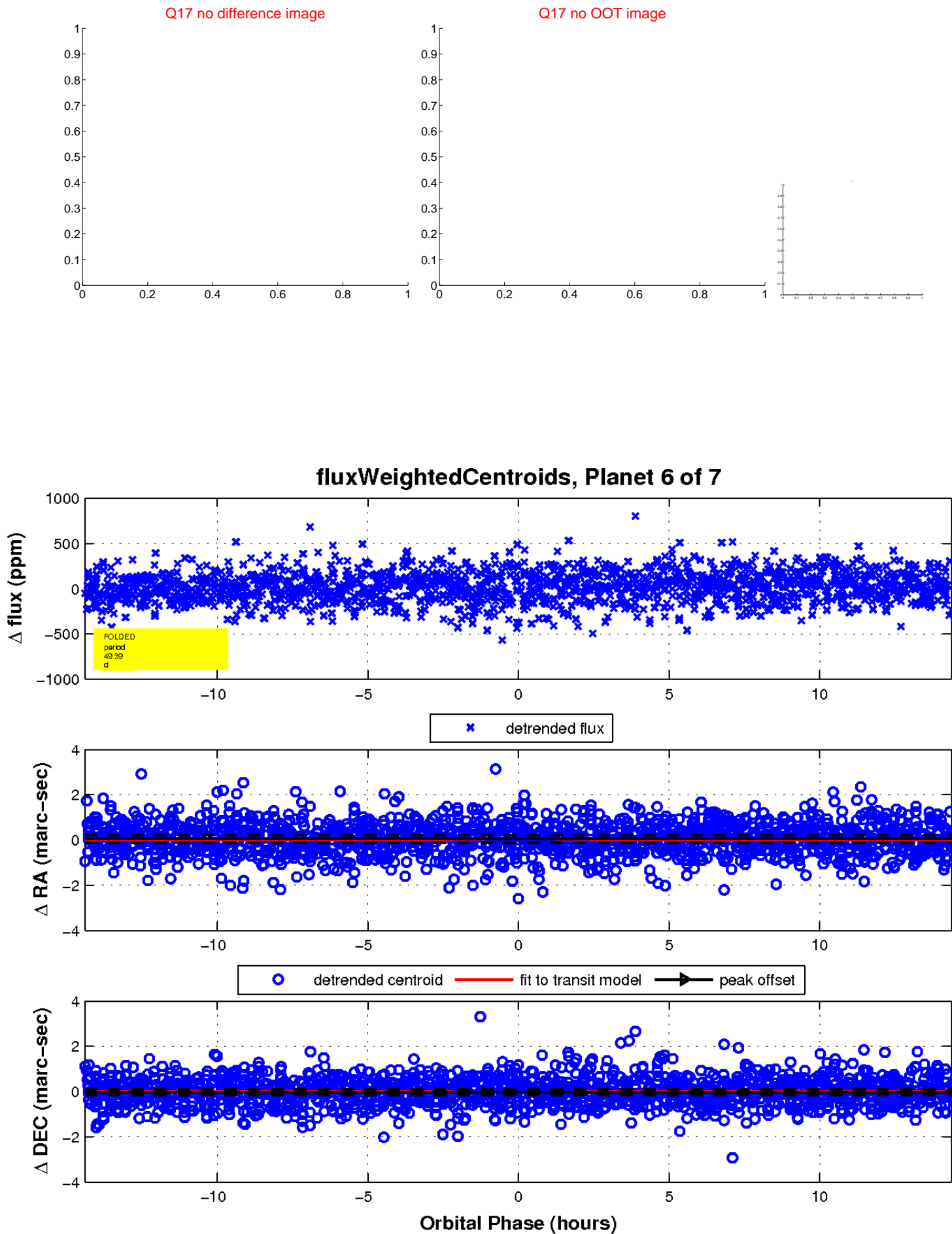
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



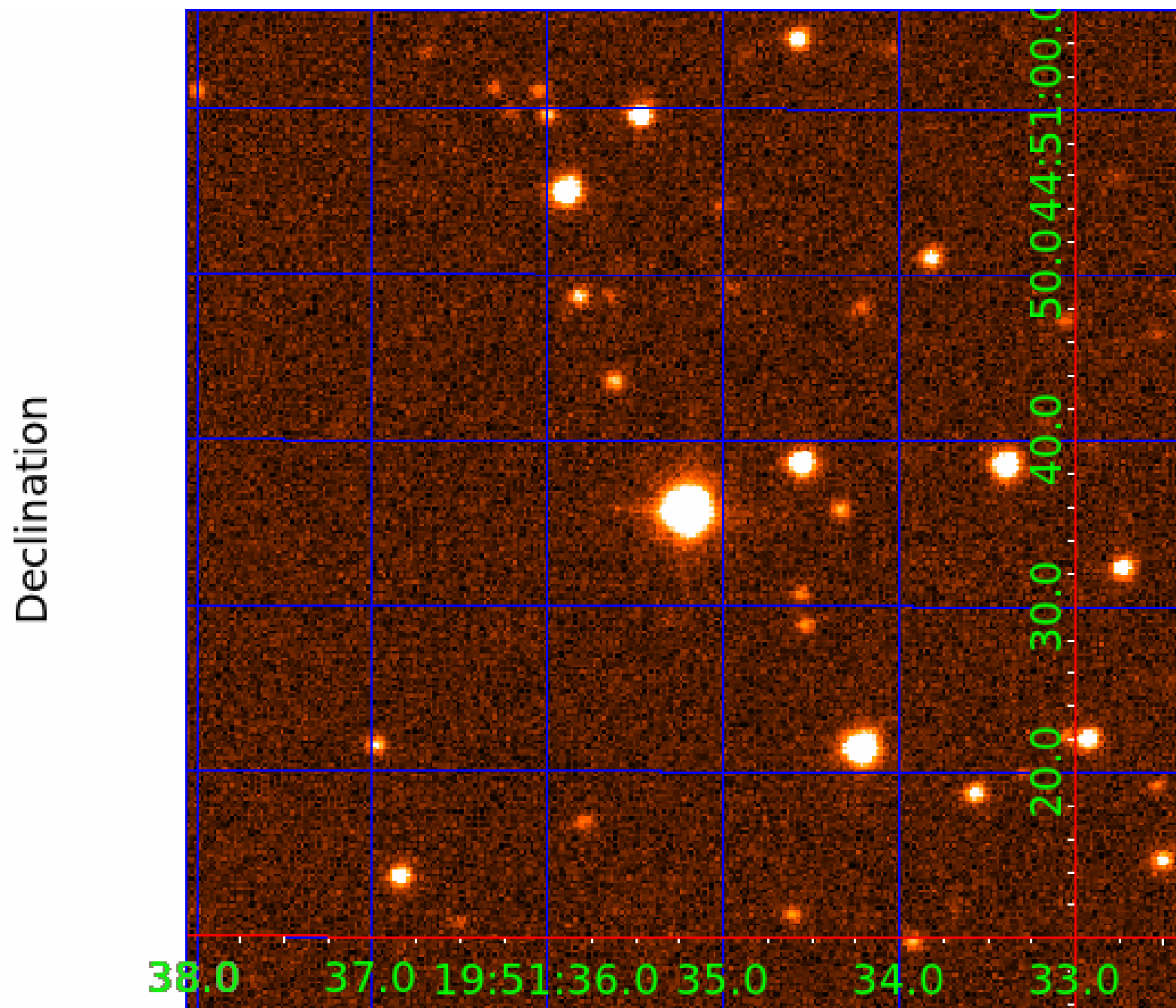
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008707670

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})
008707670-01	OBS	No	2.406023	133.304727	25.1	6.667	8.8	7.7	2.67	6510	1.42	6970.81
008707670-02	OBS	No	2.407304	133.354605	45.9	12.409	8.5	10.5	2.67	6510	2.43	6965.87
008707670-03	OBS	No	161.938595	252.564716	263.3	13.389	9.8	9.6	2.67	6510	4.77	25.46
008707670-04	OBS	No	165.772718	194.619026	234.2	6.158	7.2	7.7	2.67	6510	4.24	24.68
008707670-05	OBS	No	601.918407	155.846910	467.8	14.469	12.8	11.8	2.67	6510	6.69	4.42
008707670-06	OBS	No	49.389323	159.051327	193.6	4.797	7.2	7.9	2.67	6510	4.19	124.02
008707670-07	OBS	No	162.810806	189.583373	223.7	21.978	11.4	7.6	2.67	6510	4.40	25.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008707670-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008707670-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV
008707670-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008707670-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008707670-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008707670-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT
008707670-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

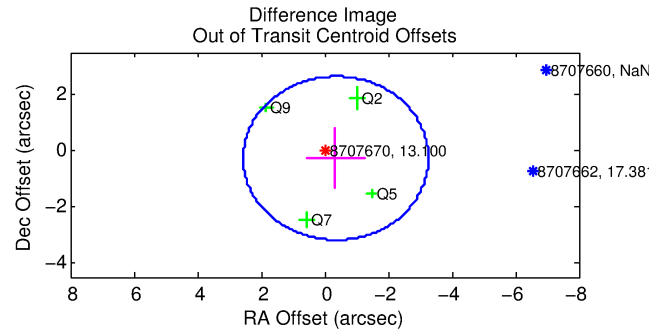
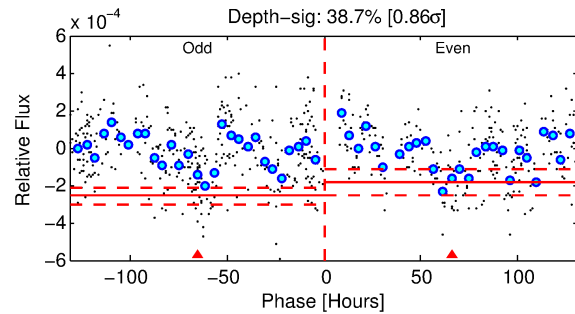
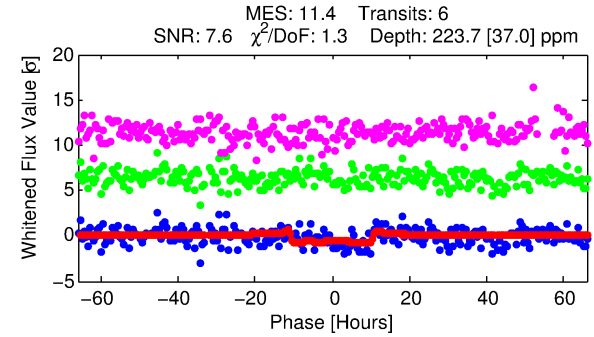
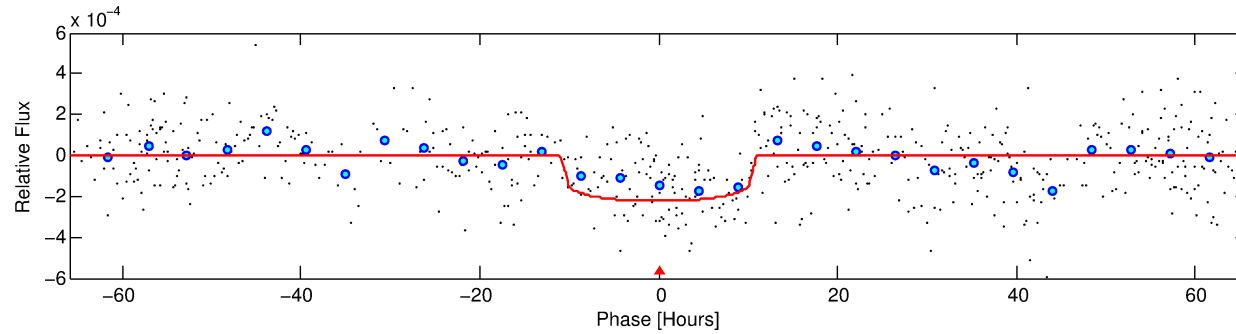
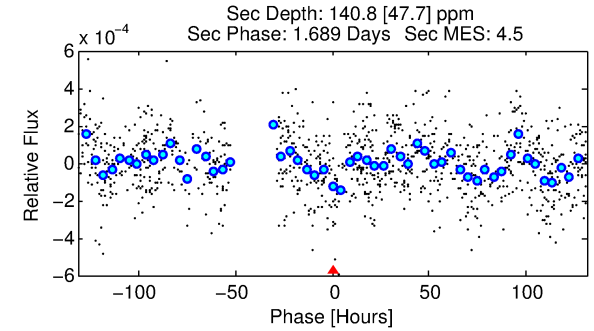
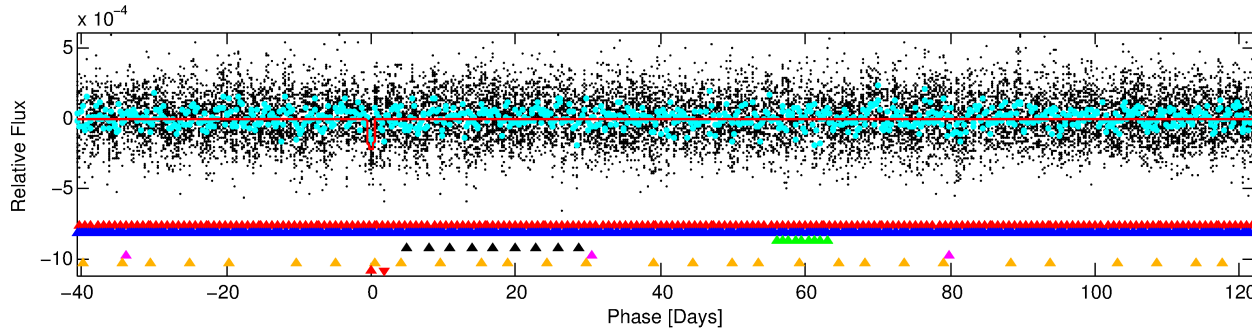
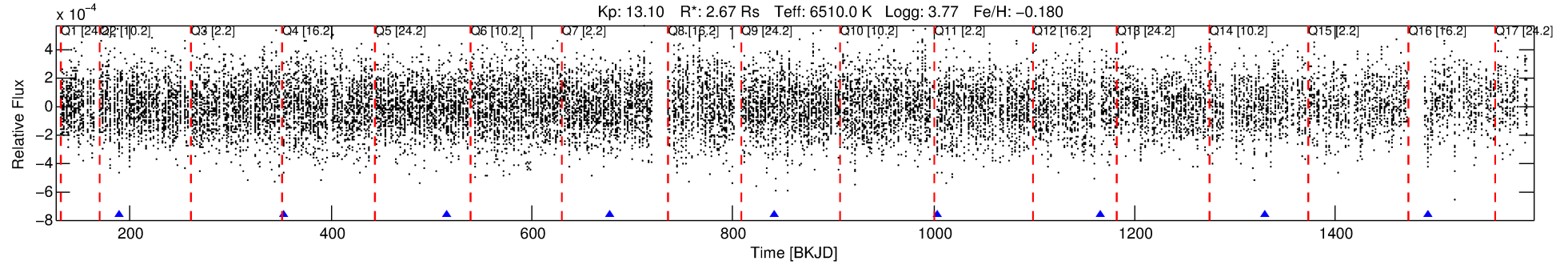
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008707670-07

No Significant Match Found

DV One-Page Summary

KIC: 8707670 Candidate: 7 of 7 Period: 162.811 d



DV Fit Results:

Period = 162.81081 [0.00642] d
Epoch = 189.5834 [0.0236] BKJD
Rp/R* = 0.0151 [0.0023]
a/R* = 35.32 [23.77]
b = 0.80 [0.30]
Seff = 25.28 [13.31]
Teq = 572 [75] K
Rp = 4.40 [1.69] Re
a = 0.6724 [0.2188] AU
Ag = 1806.98 [1233.20] [1.46σ]
Teffp = 5764 [688] K [7.50σ]

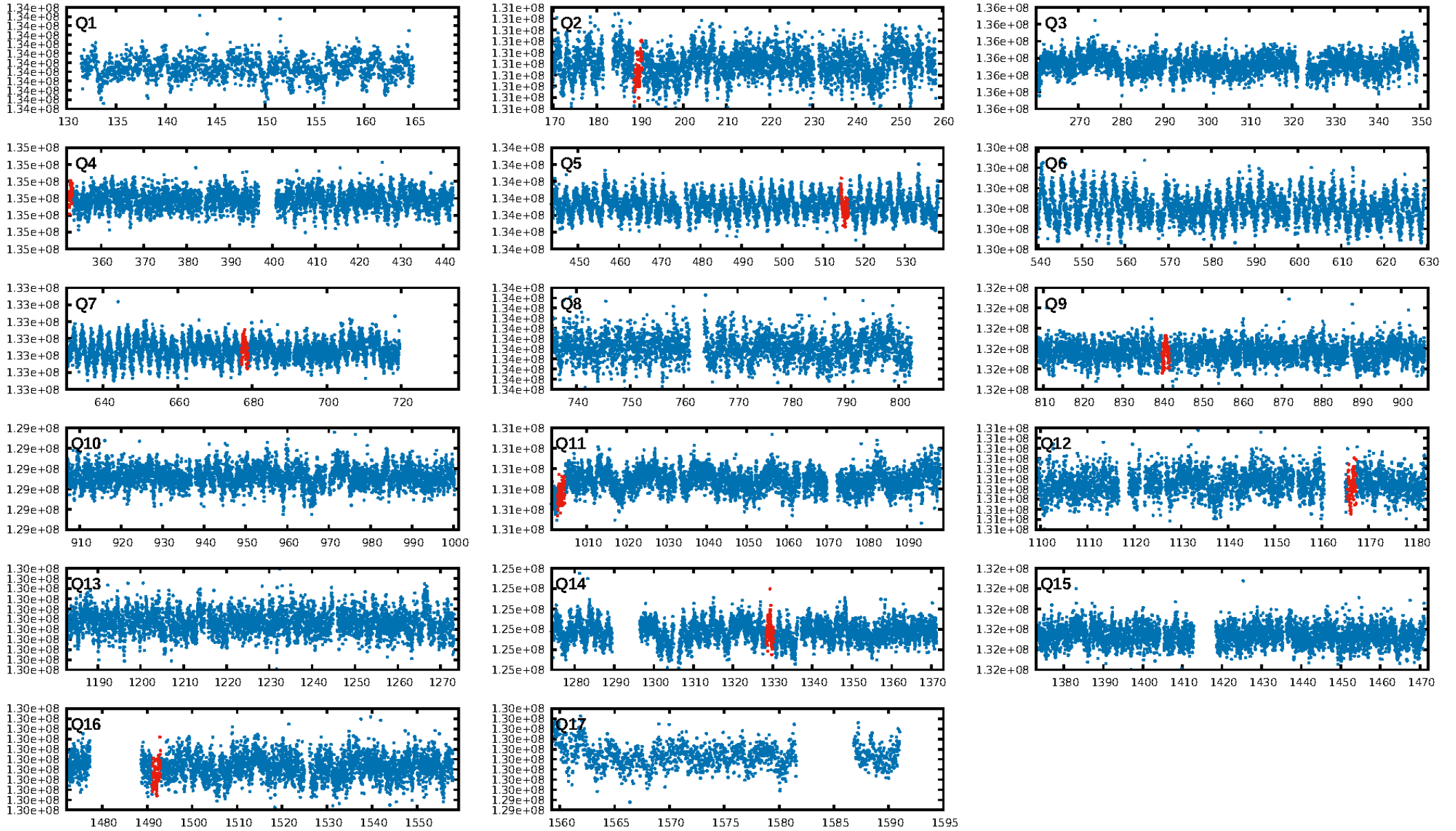
DV Diagnostic Results:

ShortPeriod-sig: 58.4% [0.81σ]
LongPeriod-sig: 99.8% [3.11σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.16e-14
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -95.64
Centroid-sig: 32.5%
Centroid-so: 0.784 arcsec [1.13σ]
OotOffset-rm: 0.445 arcsec [0.46σ]
KicOffset-rm: 0.606 arcsec [0.63σ]
OotOffset-st: 1/1/0/2 [4]
KicOffset-st: 1/1/0/2 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/6]

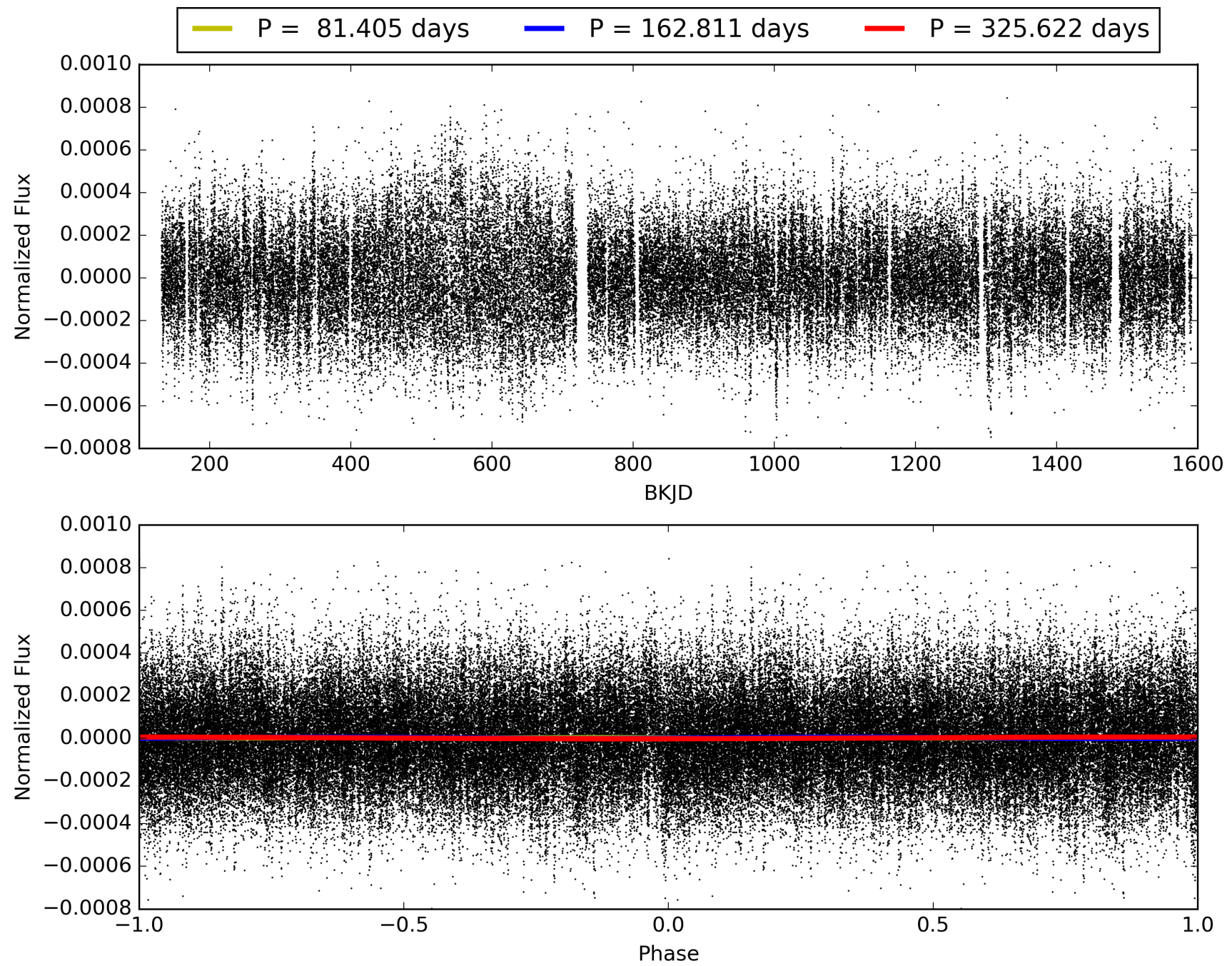
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:00:23 Z

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

TCE 008707670-07, PDC Light Curves

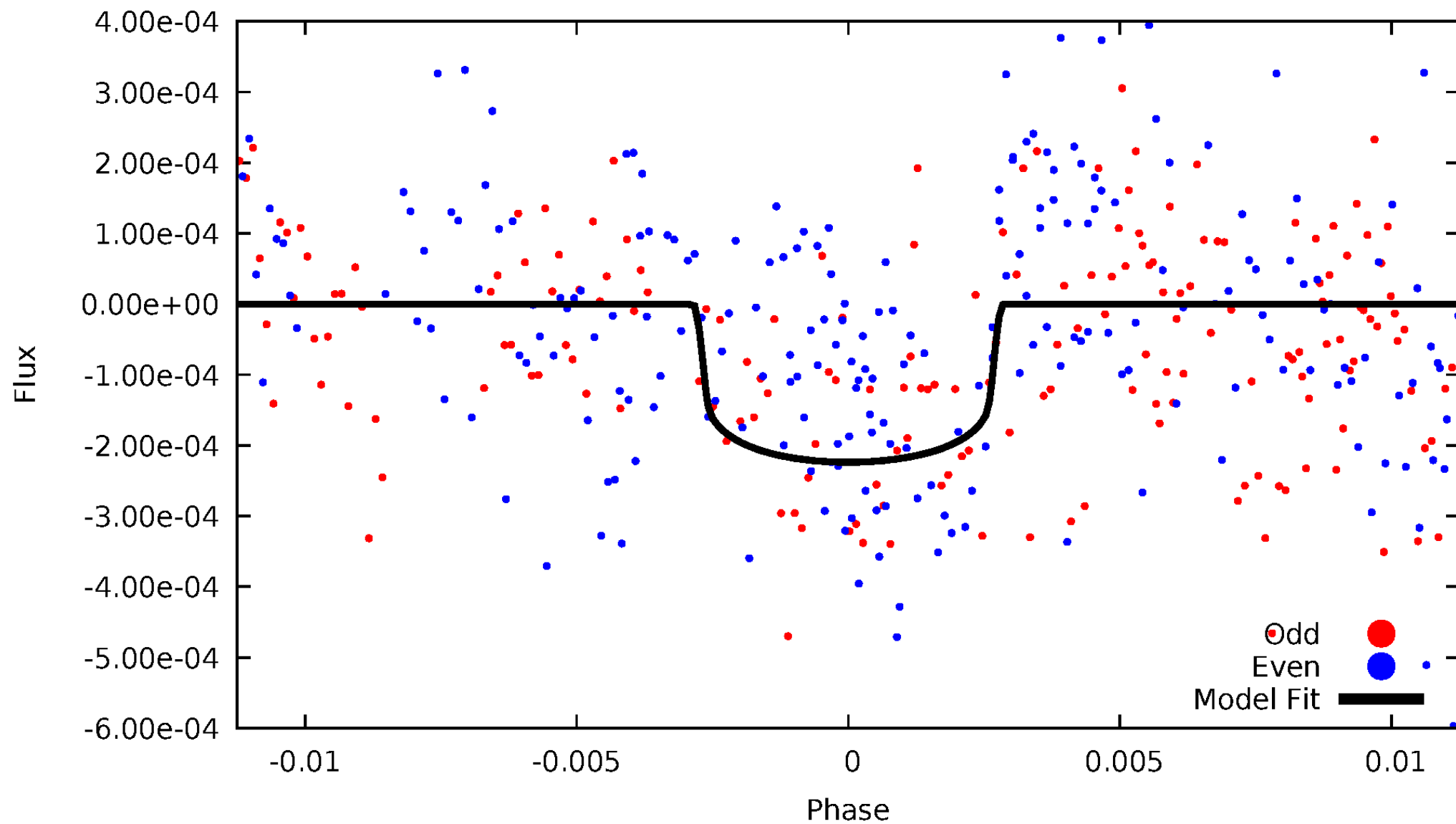


TCE 008707670-07



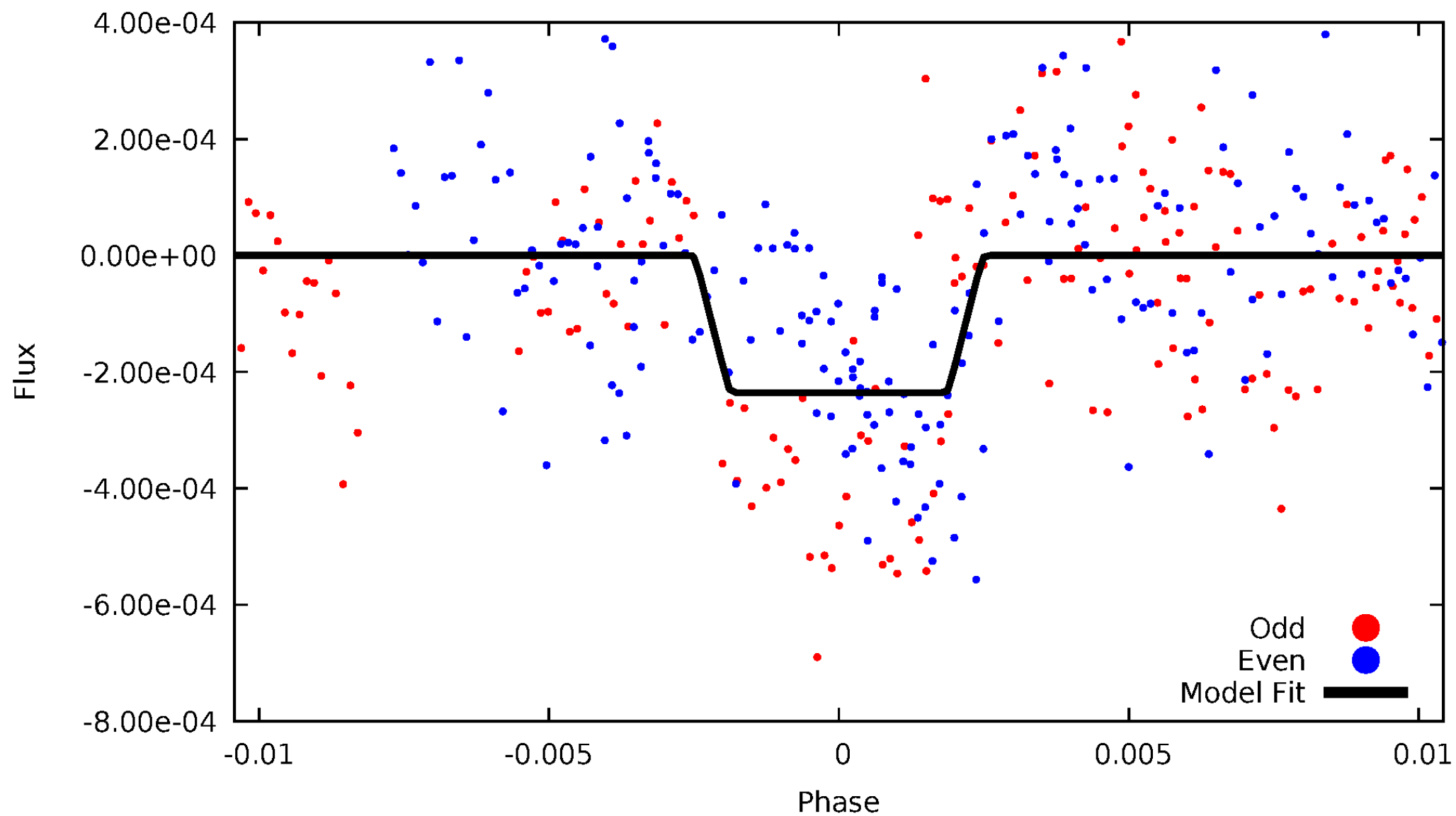
DV Odd/Even

TCE 008707670-07



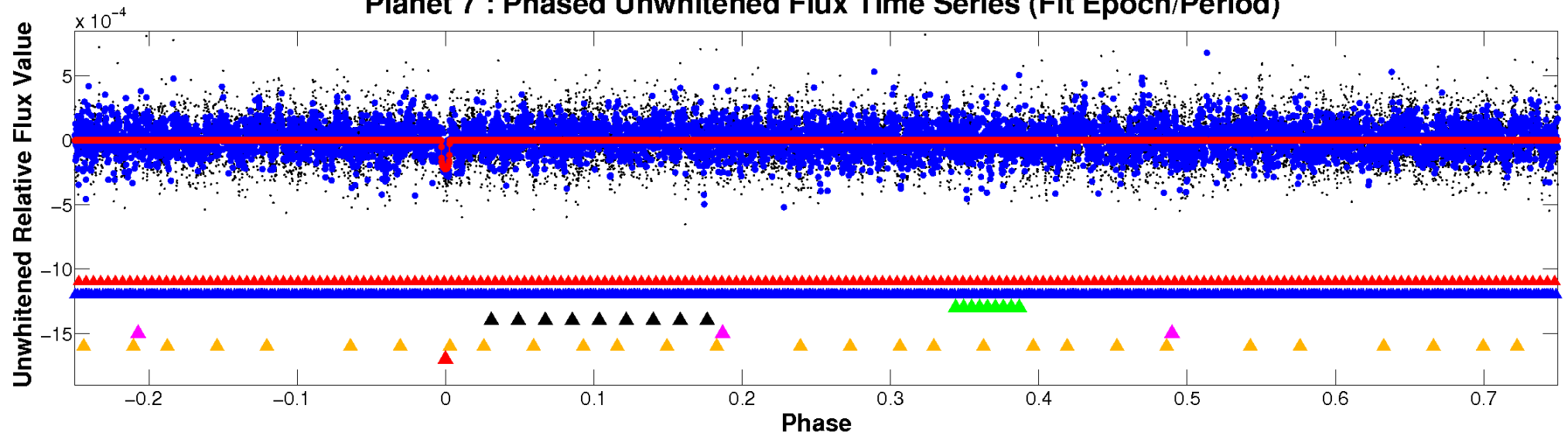
ALT Odd/Even

TCE 008707670-07

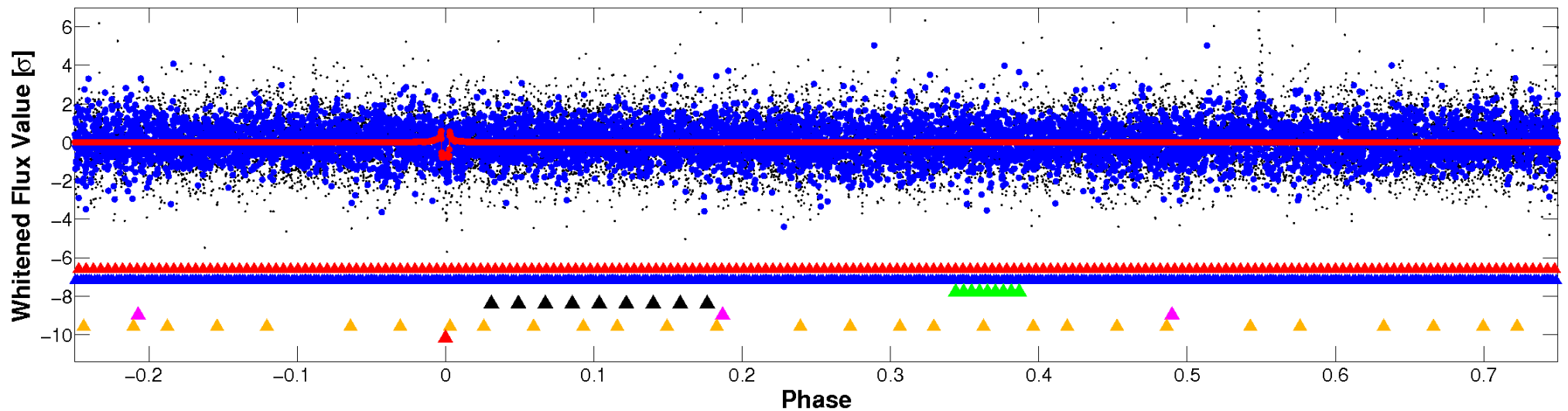


Non-Whitened Vs. Whitened Light Curve

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

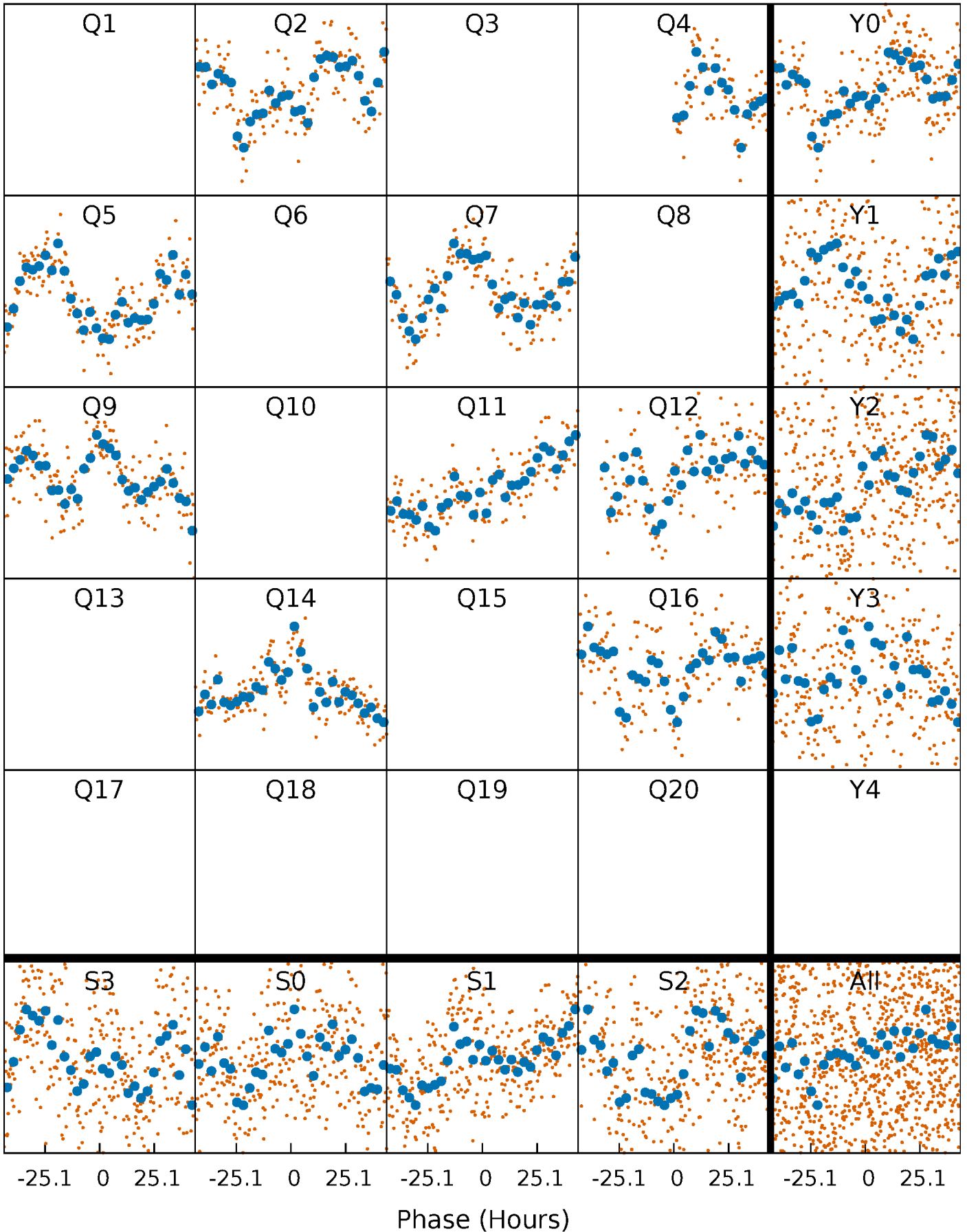


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



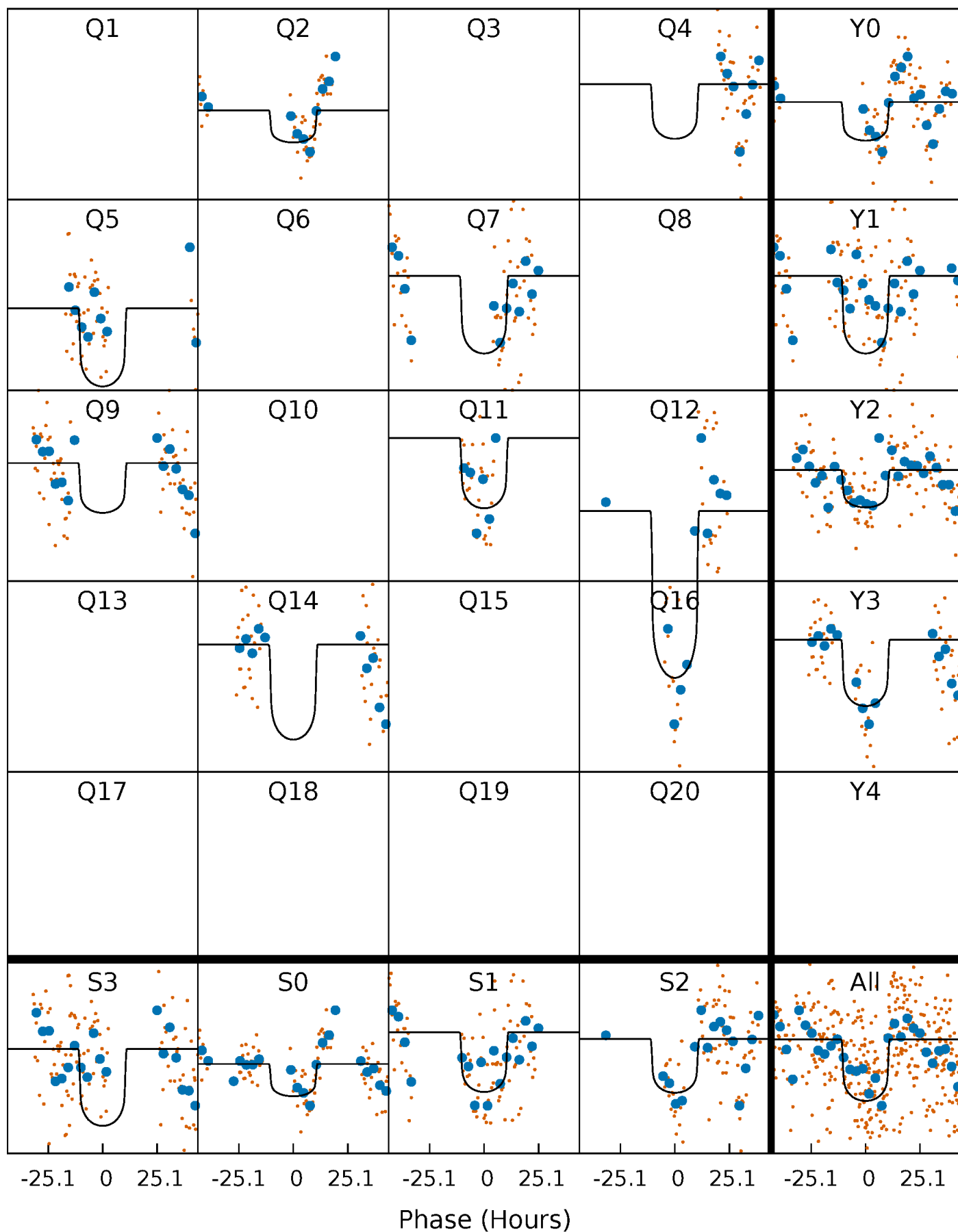
PDC Quarter-Phased Transit Curves

TCE 008707670-07 $P=162.810806$ Days $T_0=189.583373$ (BKJD)



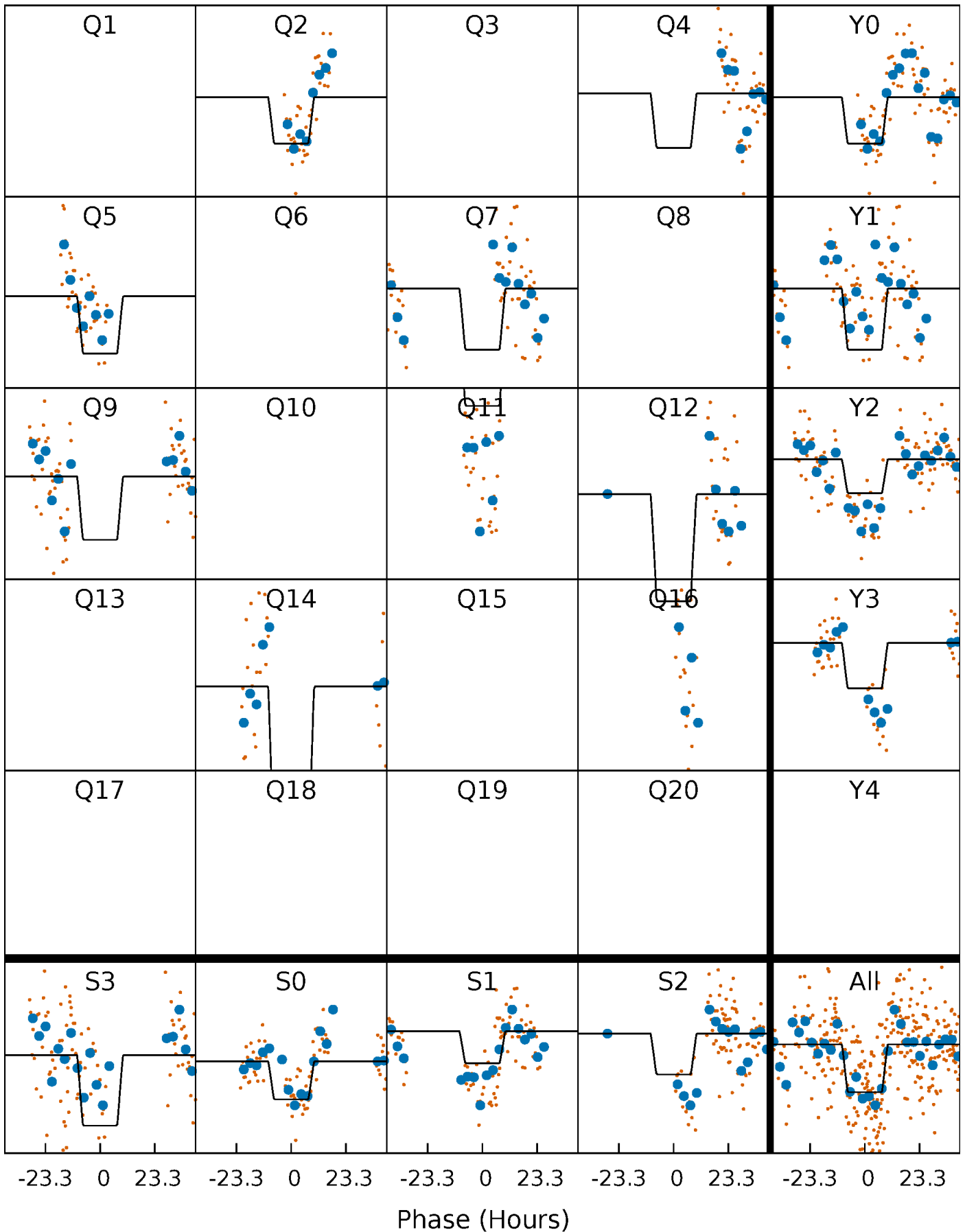
DV Quarter-Phased Transit Curves

TCE 008707670-07 P=162.810806 Days $T_0=189.583373$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

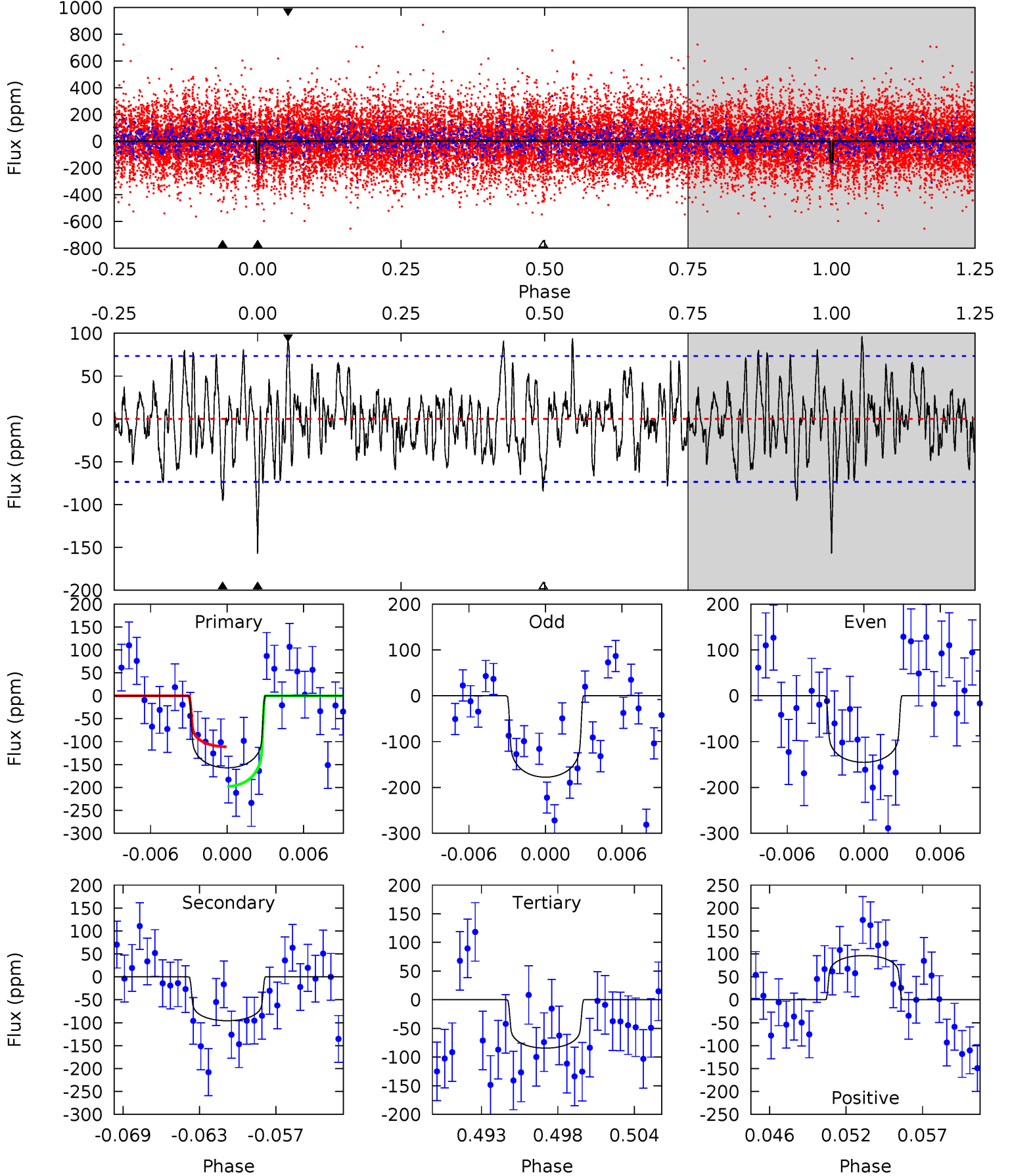
TCE 008707670-07 P=162.773739 Days $T_0=189.648552$ (BKJD)



DV Model-Shift Uniqueness Test

008707670-07, $P = 162.810806$ Days, $E = 26.772567$ Days

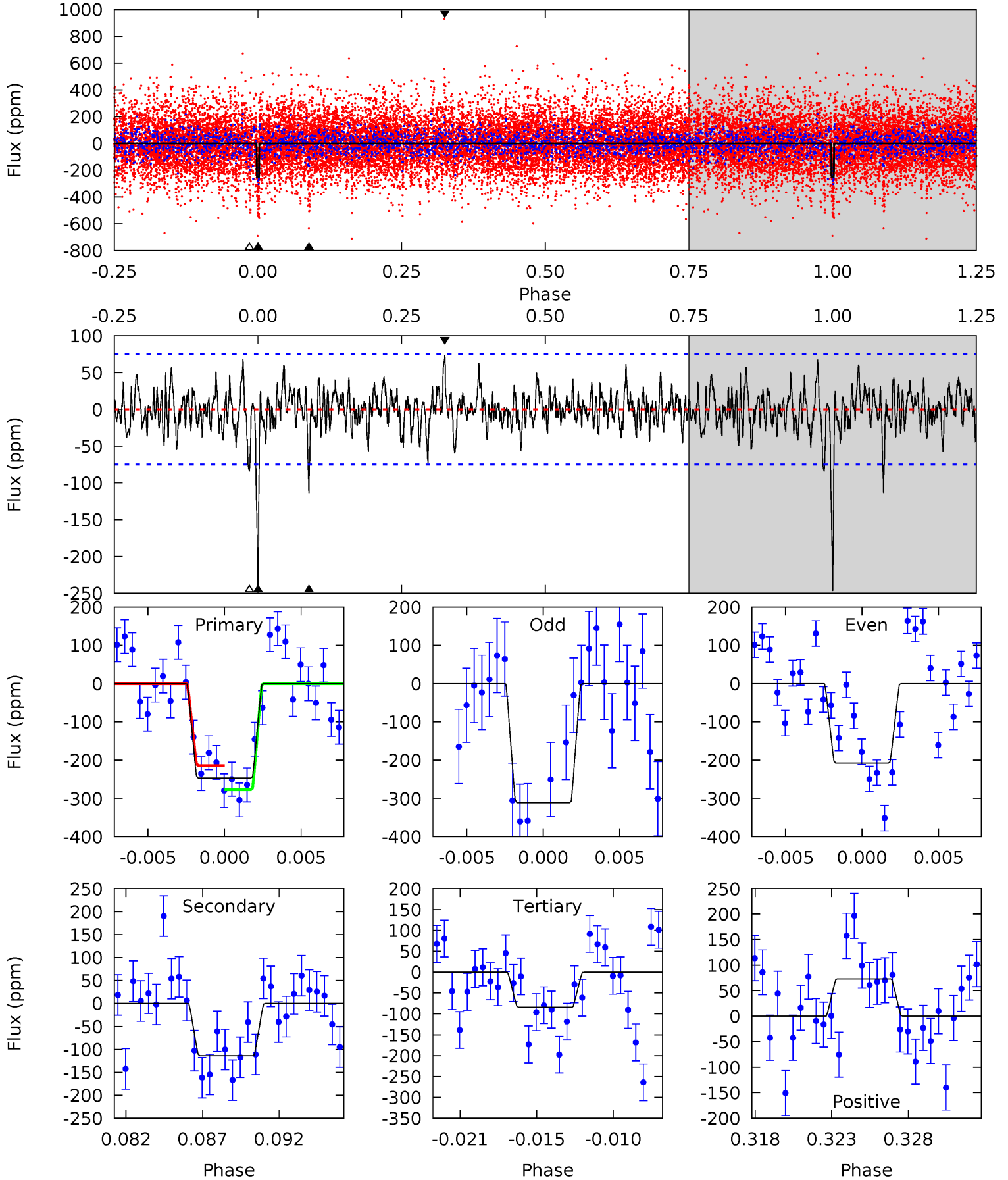
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	6.69	5.90	6.73	5.13	2.76	2.19	5.09	4.25	0.79	-0.05	1.10	0.78	0.38	3.02



Alt Model-Shift Uniqueness Test

008707670-07, $P = 162.773739$ Days, $E = 26.874813$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	7.83	5.78	5.04	5.15	2.80	1.48	11.2	11.9	2.05	2.78	3.41	0.94	0.23	2.07



Stellar Parameters For KIC 008707670

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6510^{+182}_{-228}	$3.771^{+0.293}_{-0.098}$	$-0.180^{+0.300}_{-0.250}$	$2.665^{+0.434}_{-0.940}$	$1.530^{+0.192}_{-0.357}$	$0.114^{+0.240}_{-0.036}$
	+3%/-4%	+8%/-3%	+167%/-139%	+16%/-35%	+13%/-23%	+211%/-32%
Source	PHO1	FLK73	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 008707670-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-96 ± 14	$4.16^{+0.97}_{-0.91}$	785^{+46}_{-65}	5268^{+478}_{-381}	1361^{+858}_{-461}
Alt.	-114 ± 15	$4.34^{+0.86}_{-1.04}$	787^{+47}_{-71}	5430^{+456}_{-383}	1510^{+1018}_{-452}

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

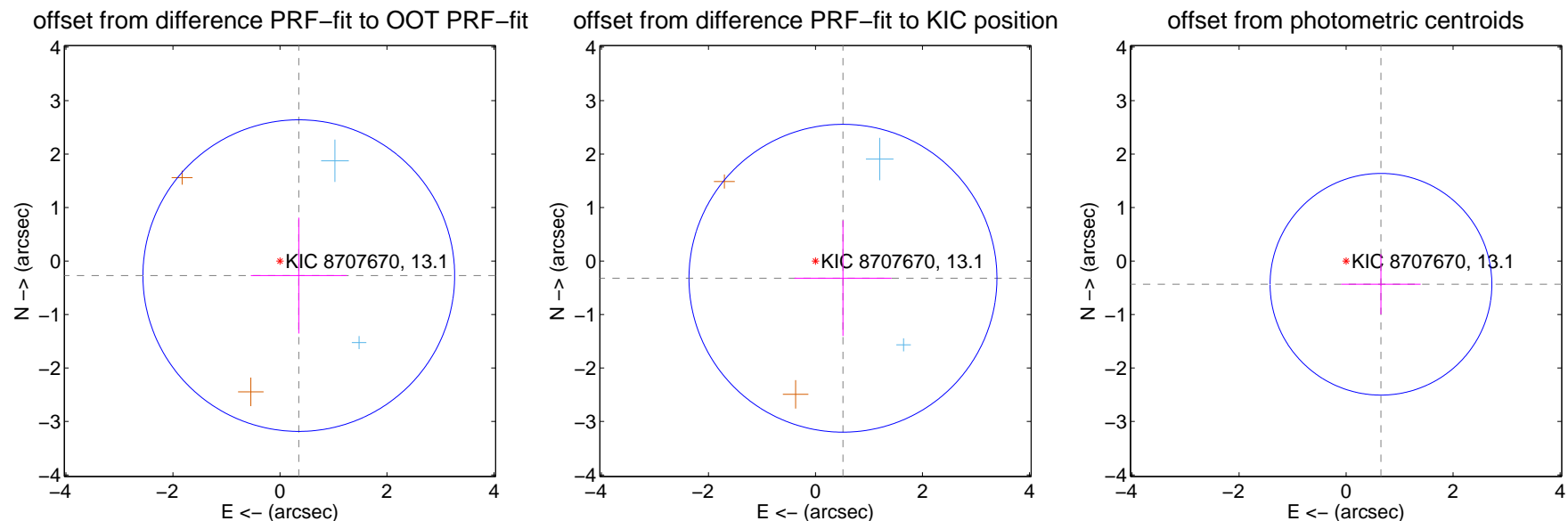
DV Centroid Data

Supplemental centroid analysis for 008707670-07. Kepler magnitude: 13.10. Transit SNR 7.56

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.445 ± 0.971	0.46	-0.352 ± 0.897	-0.273 ± 1.083
PRF-fit source offset from KIC position	0.606 ± 0.959	0.63	-0.514 ± 0.908	-0.322 ± 1.078
photometric centroid source offset	0.78 ± 0.69	1.13	-0.65 ± 0.74	-0.43 ± 0.56



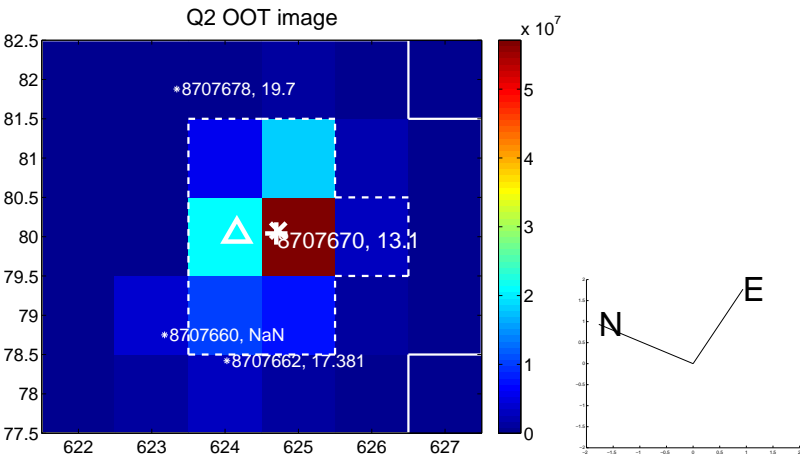
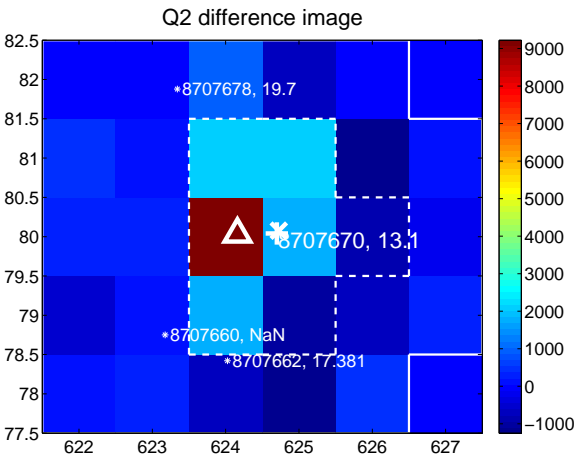
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

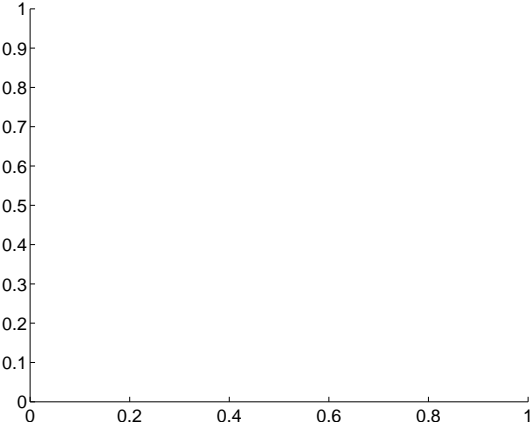
Q1 no difference image



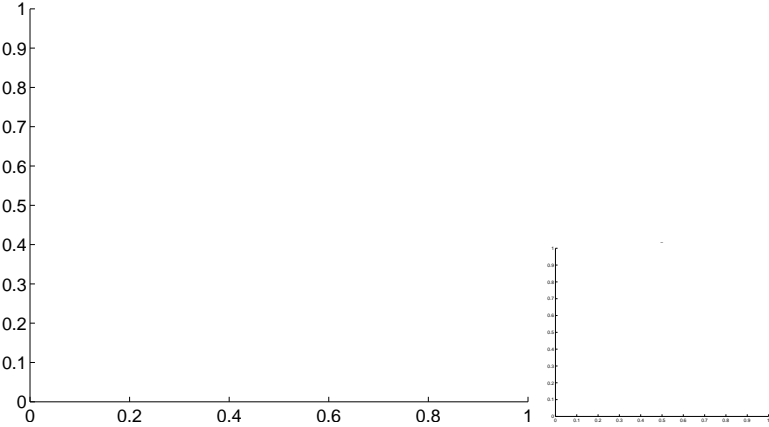
Q1 no OOT image



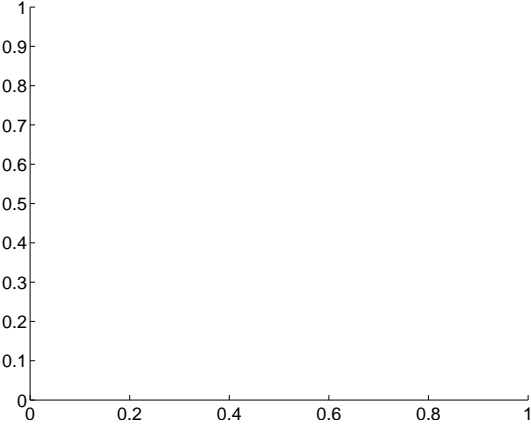
Q3 no difference image



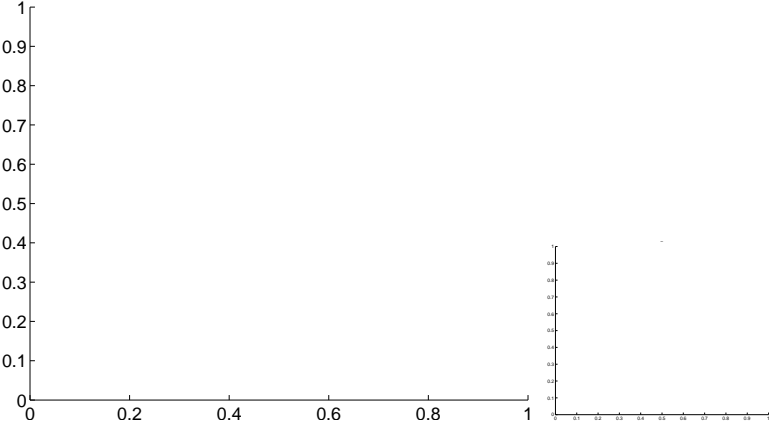
Q3 no OOT image



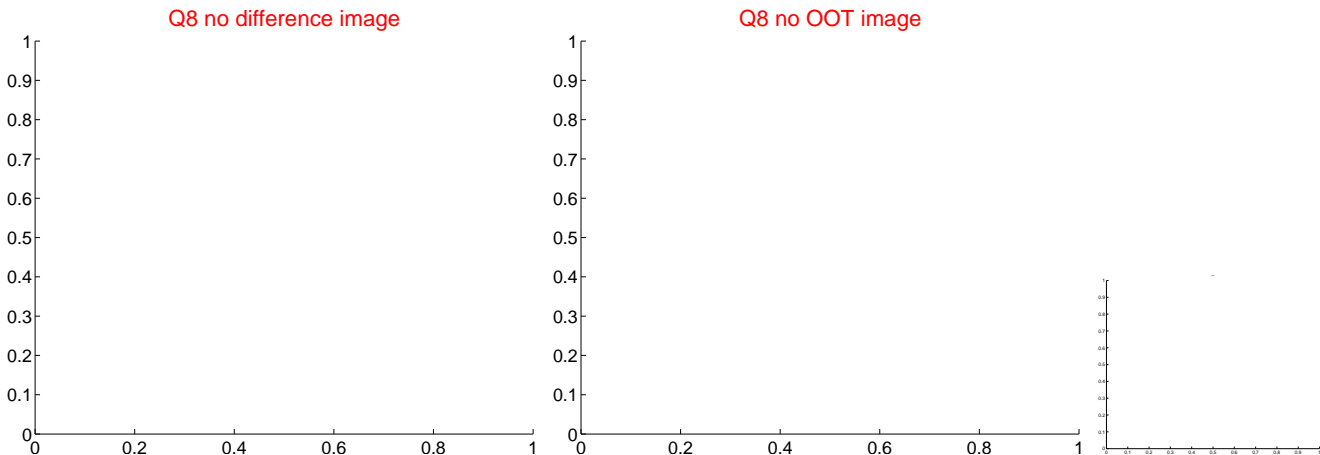
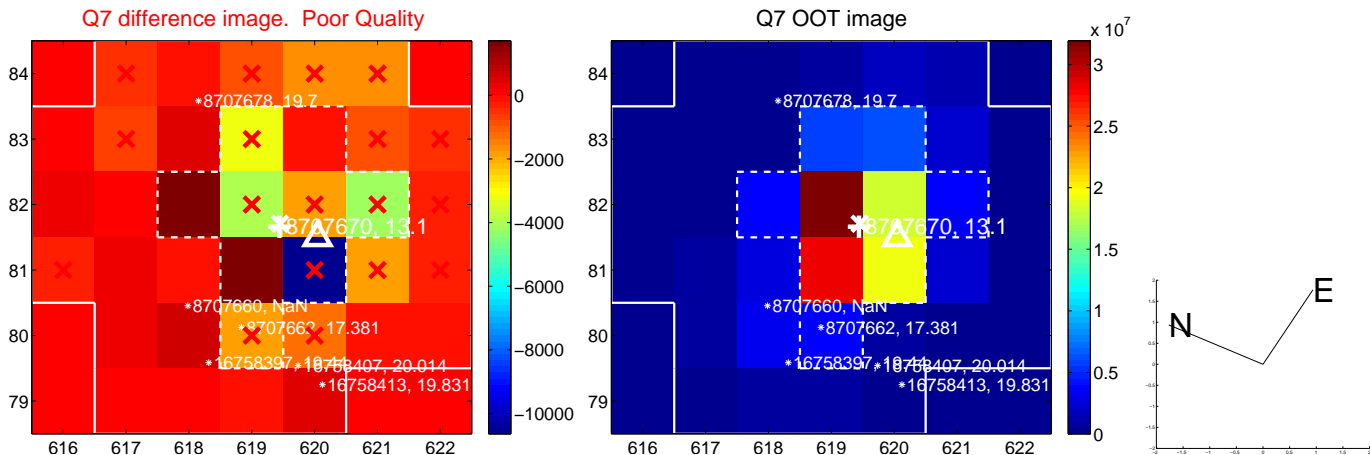
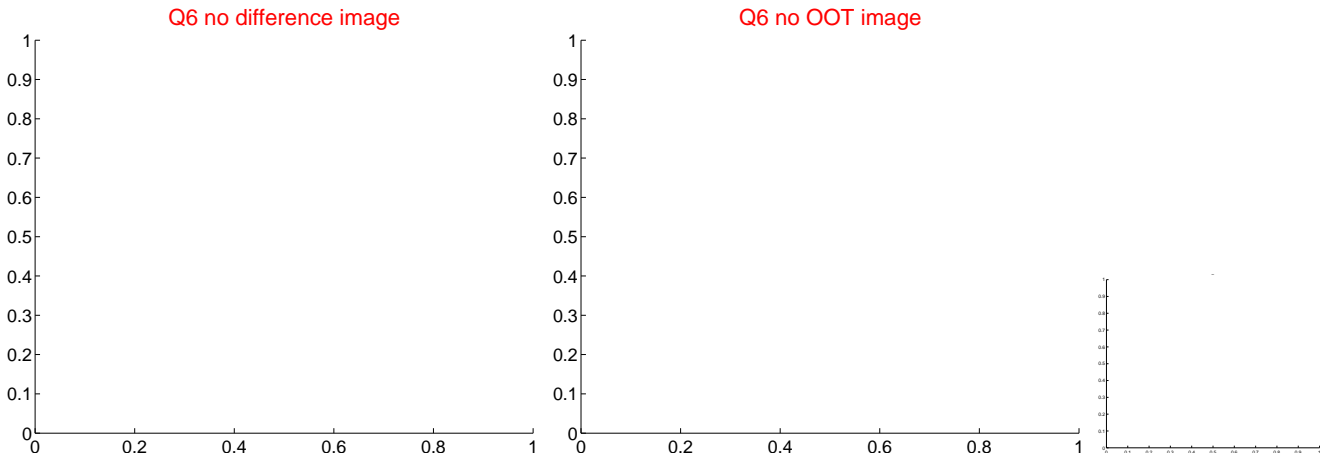
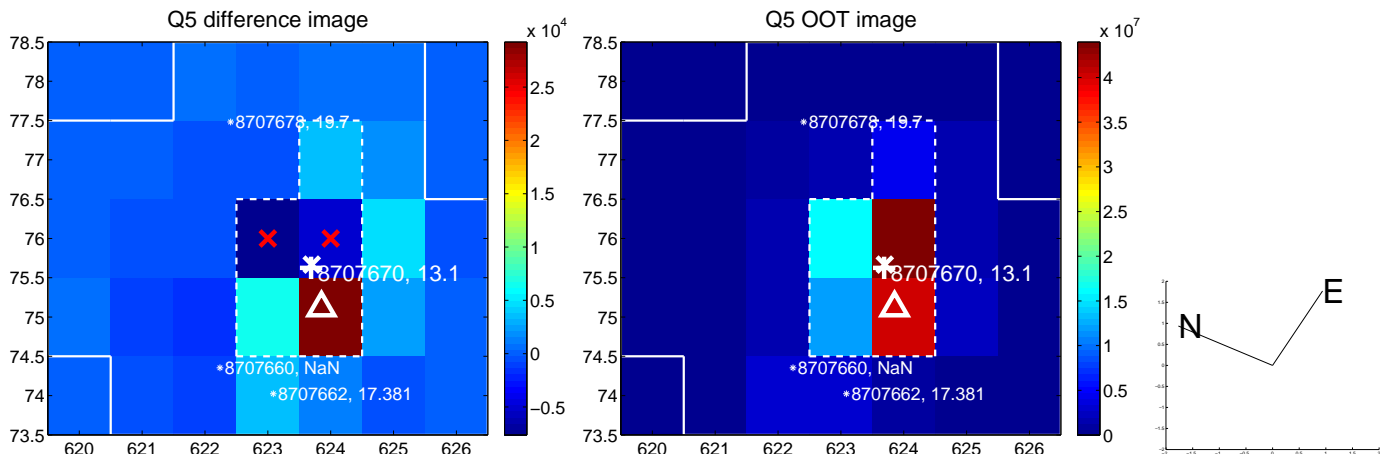
Q4 no difference image



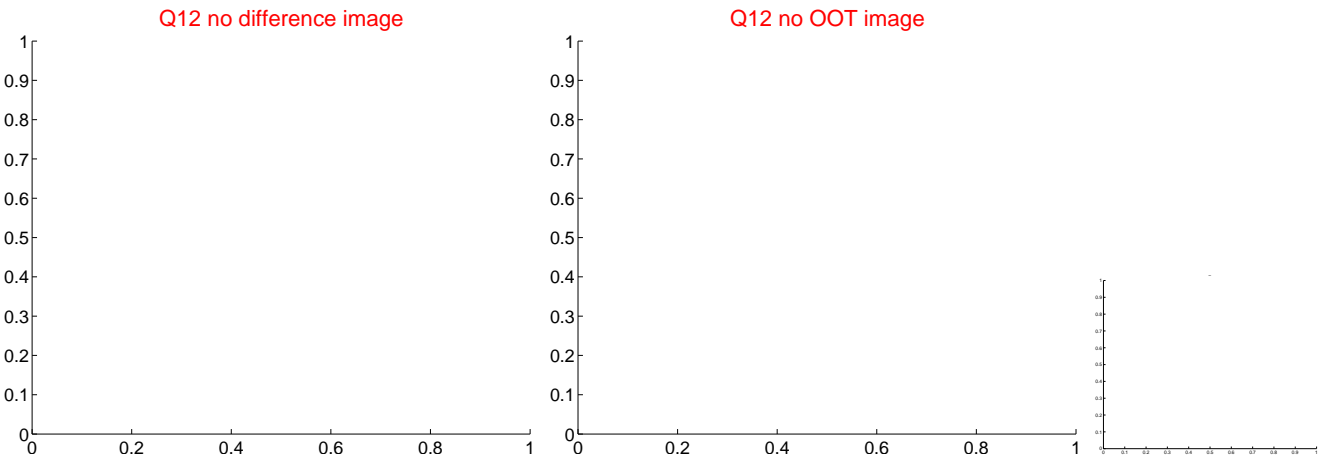
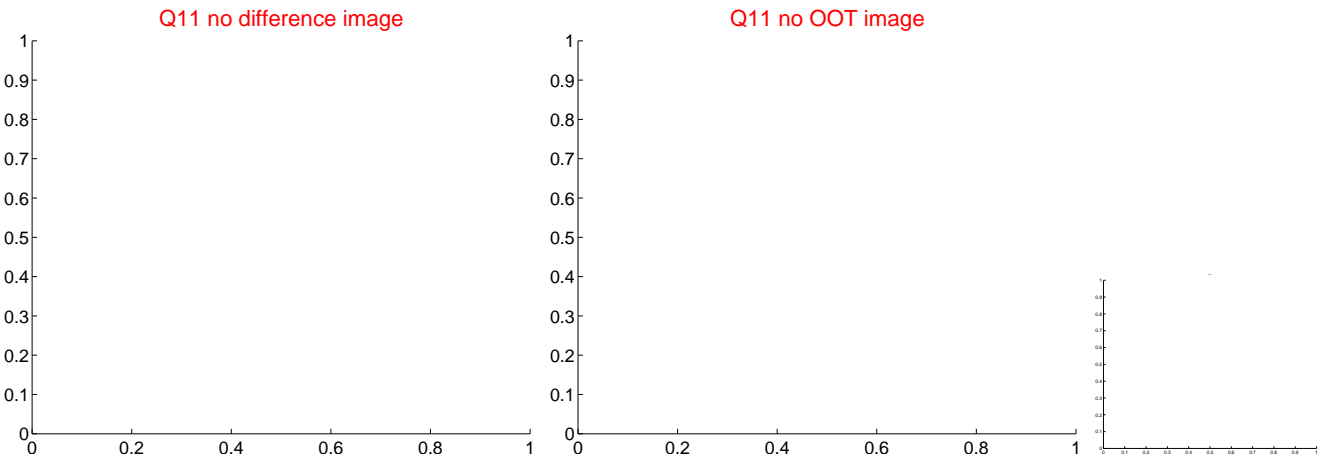
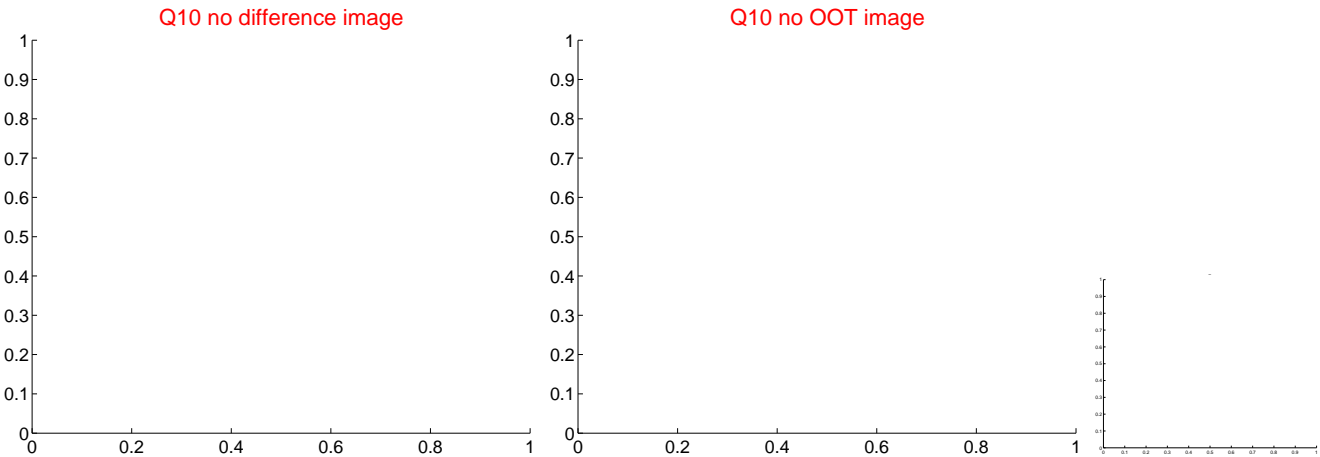
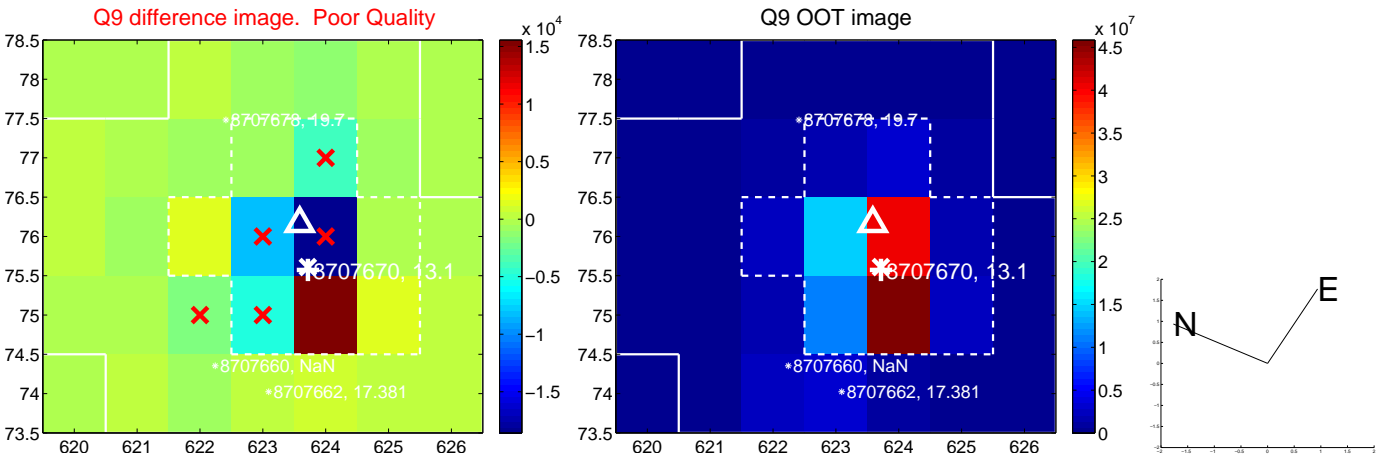
Q4 no OOT image



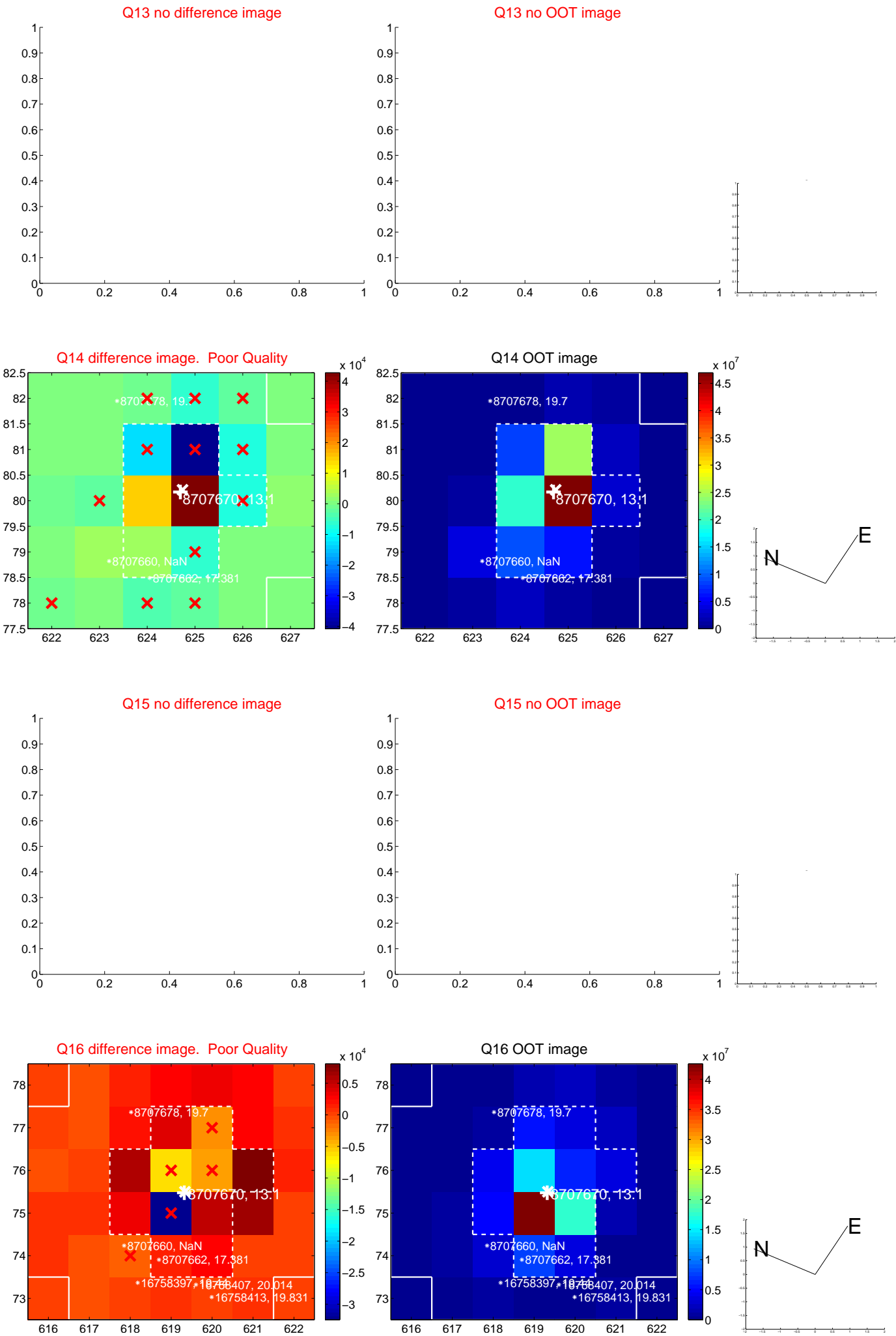
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



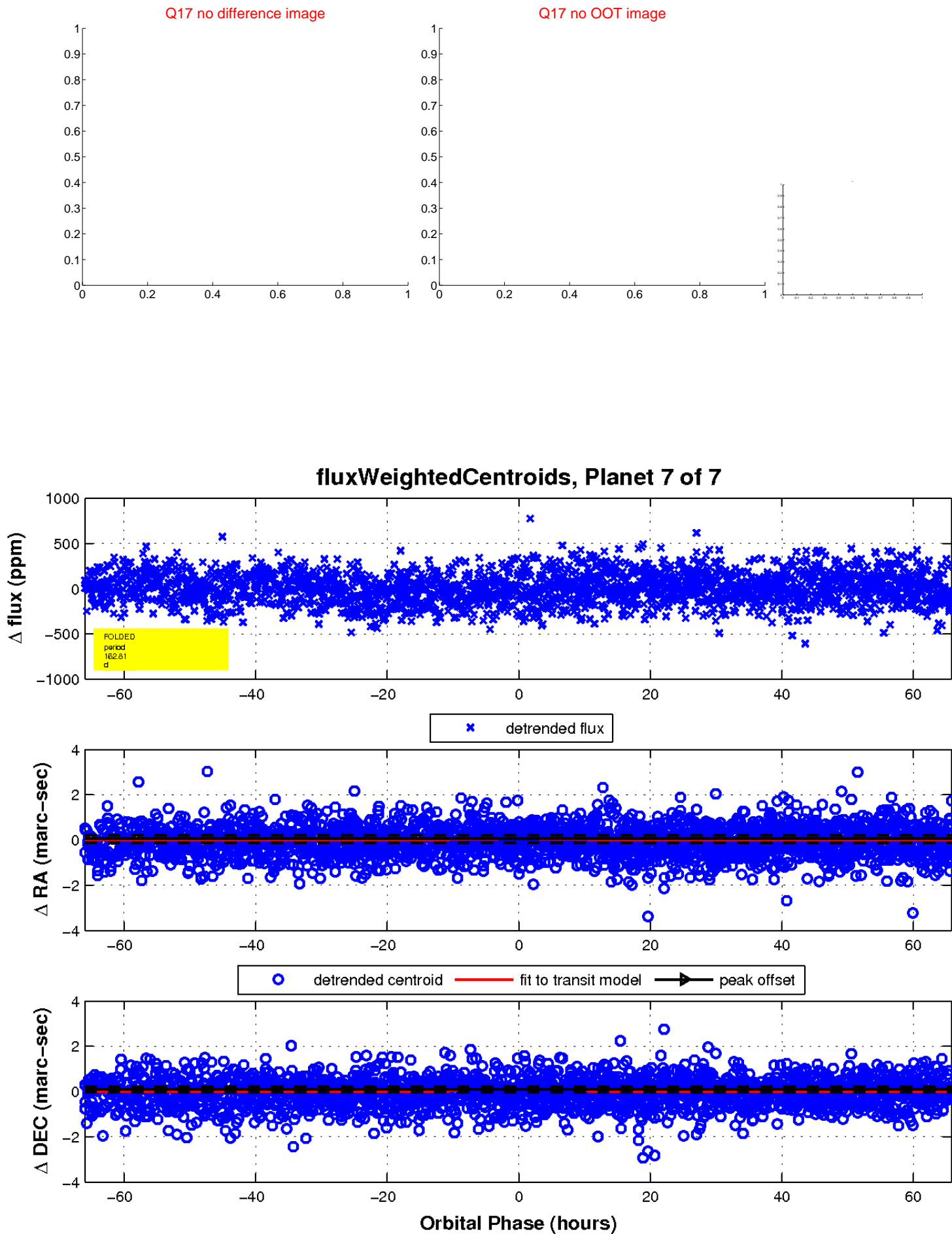
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

