

KIC 008104065

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})
008104065-01	OBS	No	0.913996	132.378808	15.4	5.363	8.0	6.2	1.57	7296	0.71	14668.64
008104065-02	OBS	No	97.635417	171.883816	316.0	3.780	9.3	8.7	1.57	7296	3.32	28.94
008104065-03	OBS	No	68.989673	156.631091	335.7	1.925	8.3	8.7	1.57	7296	3.37	45.98
008104065-04	OBS	No	49.505080	140.104951	166.4	6.878	7.8	7.7	1.57	7296	2.21	71.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008104065-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008104065-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—EPHEM_MATCH
008104065-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008104065-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

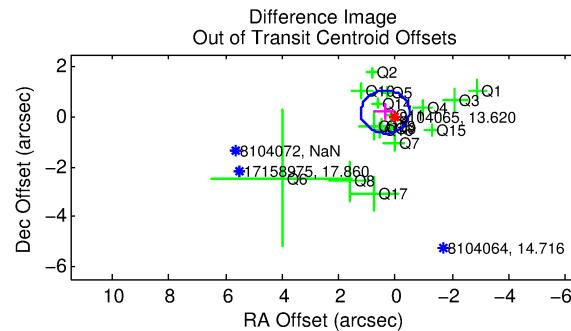
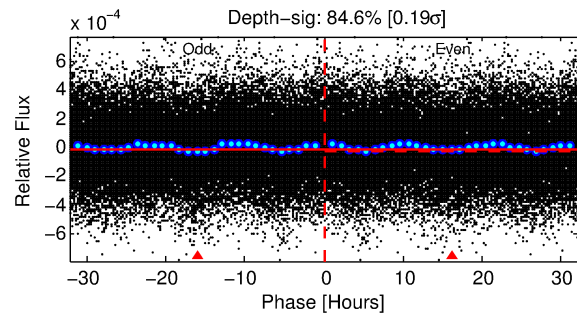
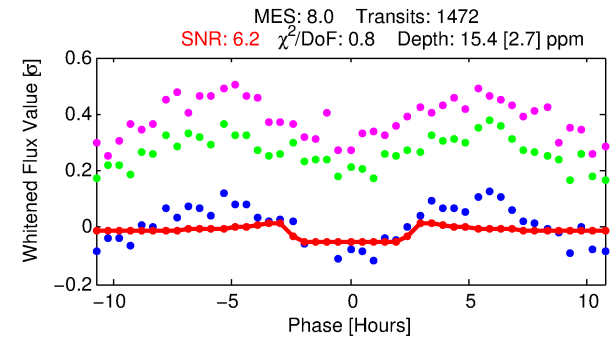
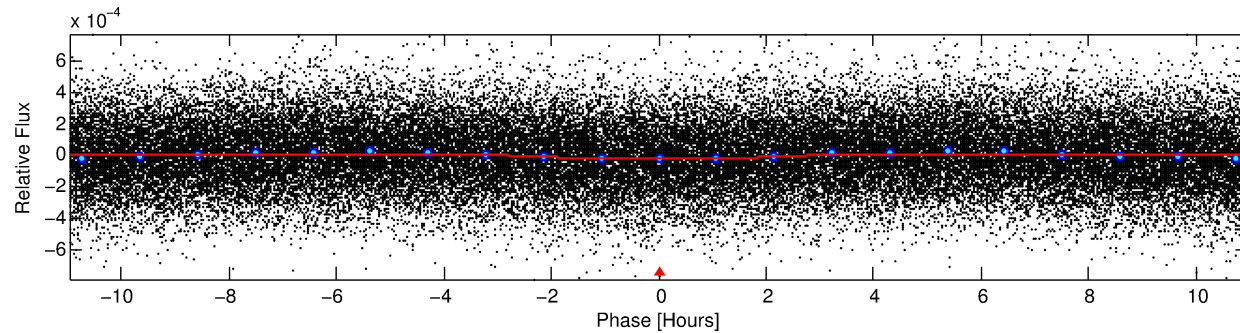
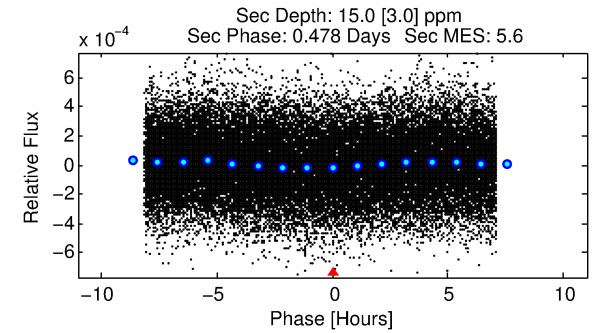
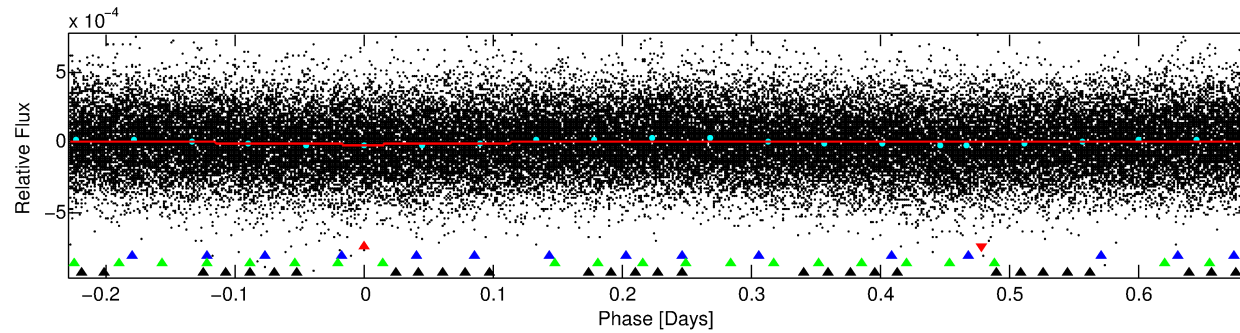
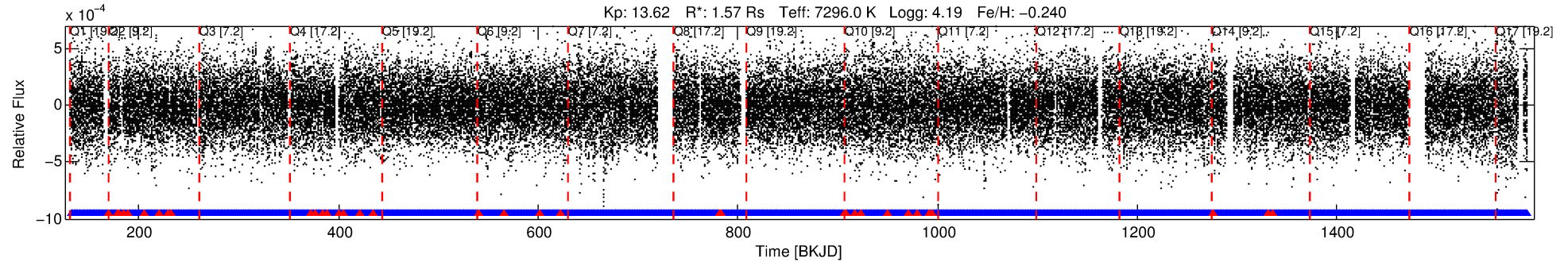
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008104065-01

No Significant Match Found

DV One-Page Summary

KIC: 8104065 Candidate: 1 of 4 Period: 0.914 d



DV Fit Results:

Period = 0.91400 [0.00002] d
Epoch = 132.3788 [0.0060] BKJD
Rp/R* = 0.0042 [0.0023]
a/R* = 1.10 [0.70]
b = 0.90 [0.75]
Seff = 14668.64 [5893.93]
Teq = 2806 [282] K
Rp = 0.71 [0.45] Re
a = 0.0206 [0.0052] AU
Ag = 6.91 [8.06] [0.73σ]
Teffp = 7034 [1984] K [2.11σ]

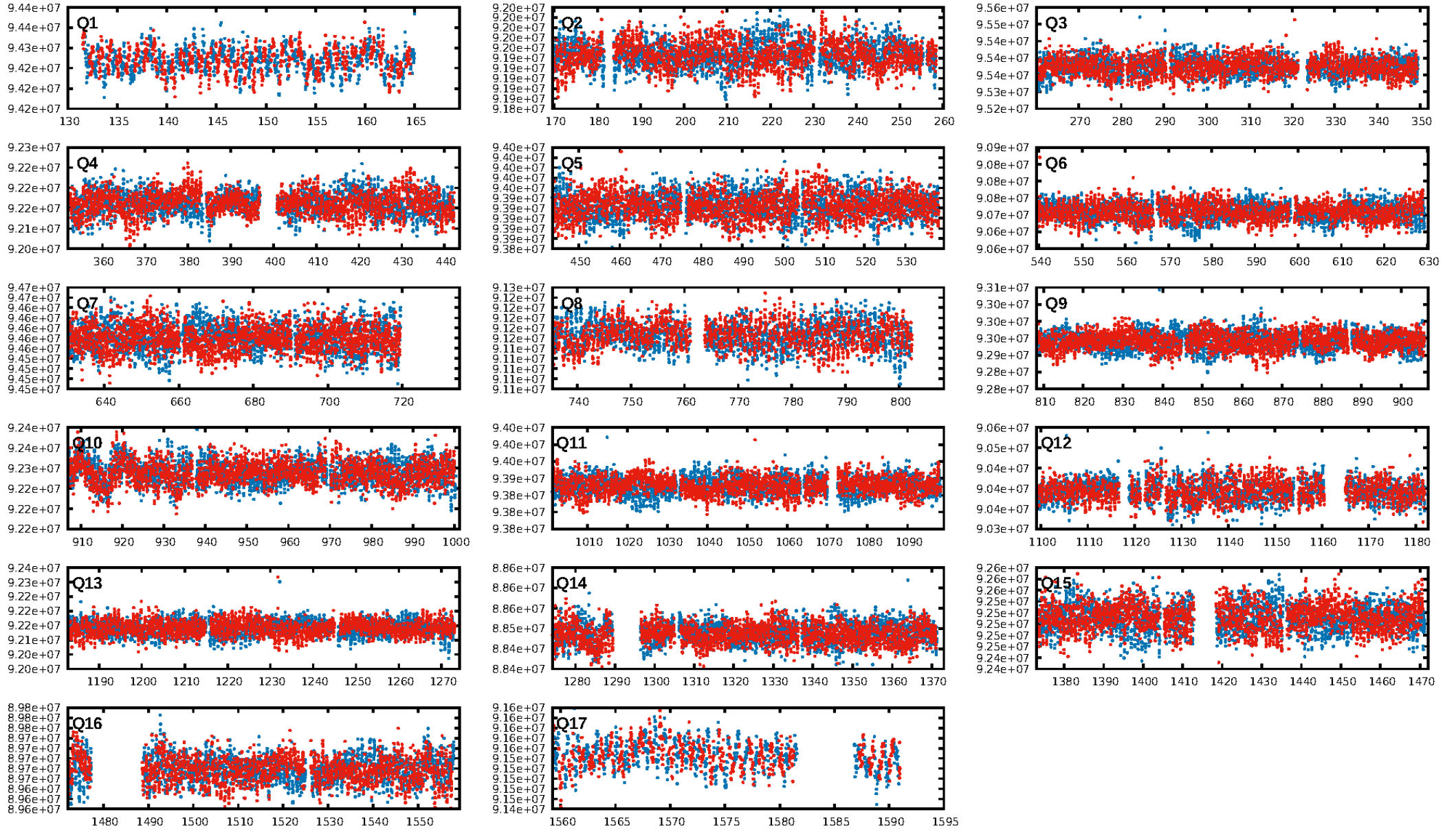
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [133.72σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.68e-08
RollingBand-fgt: 0.97 [1368/1405]
GhostDiagnostic-chr: 5.83
Centroid-sig: 3.1%
Centroid-so: 1.644 arcsec [1.33σ]
OotOffset-rm: 0.411 arcsec [1.44σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.473 arcsec [1.52σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 1.00 [17/17]

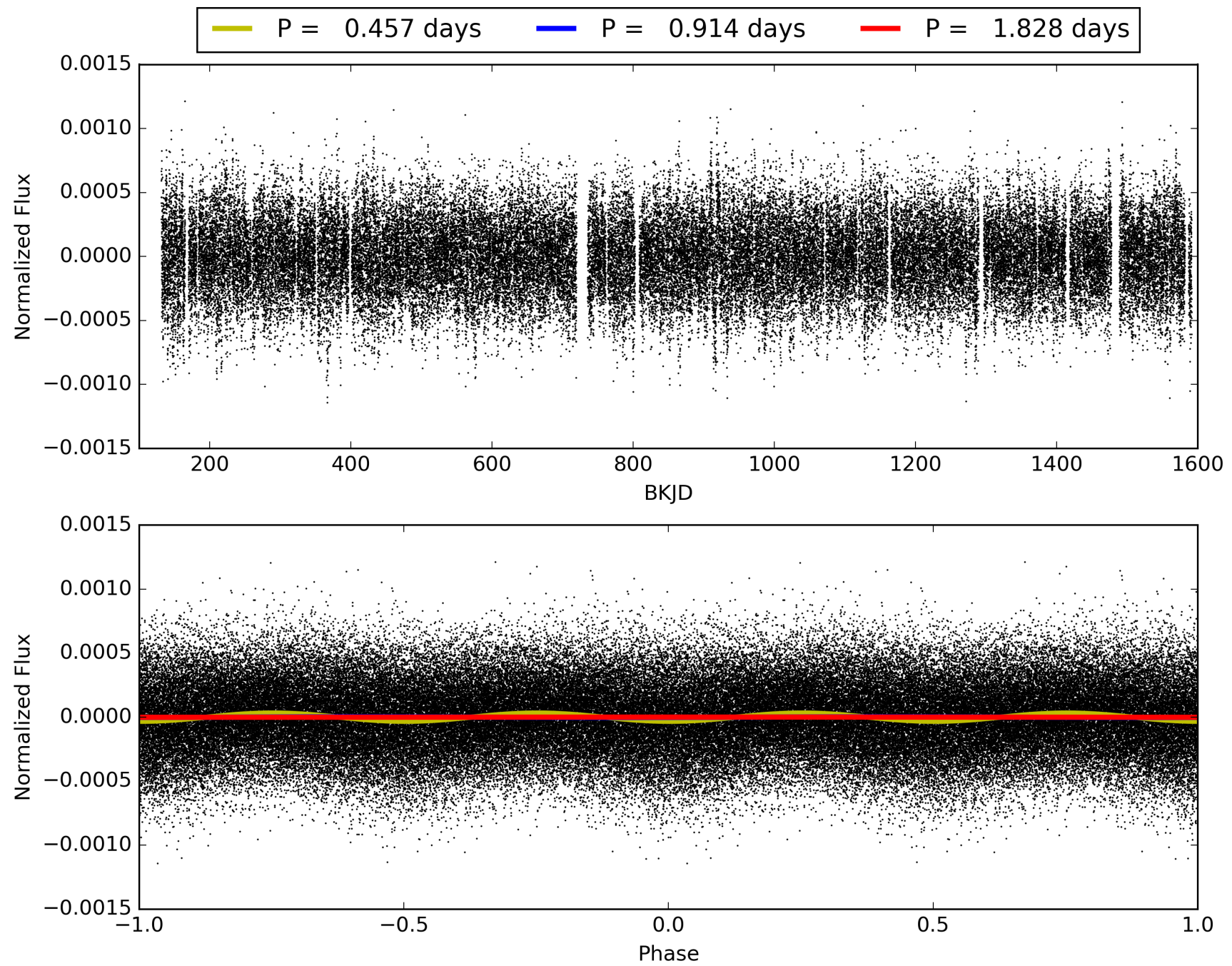
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:48:50 Z

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

TCE 008104065-01, PDC Light Curves

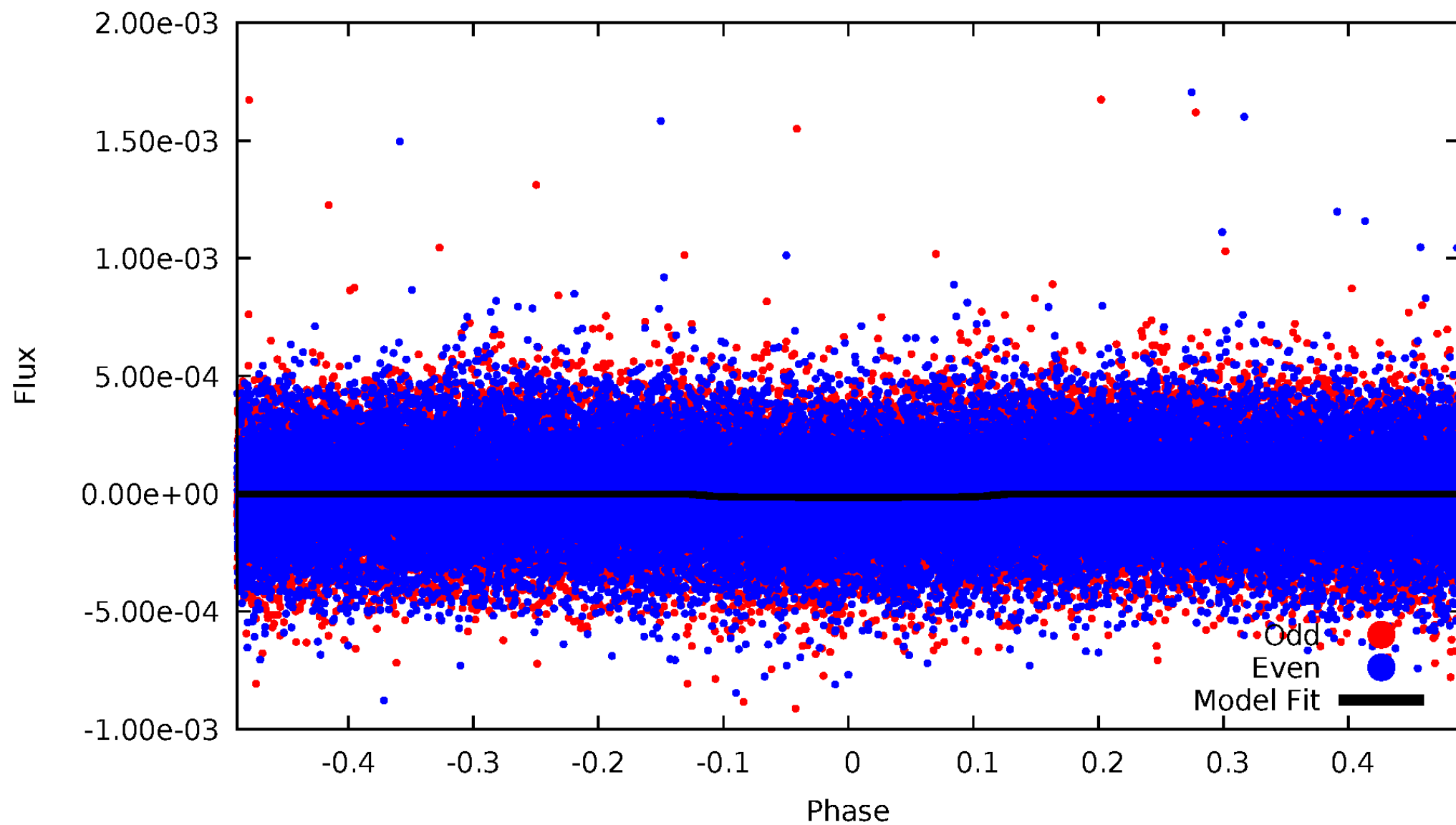


TCE 008104065-01



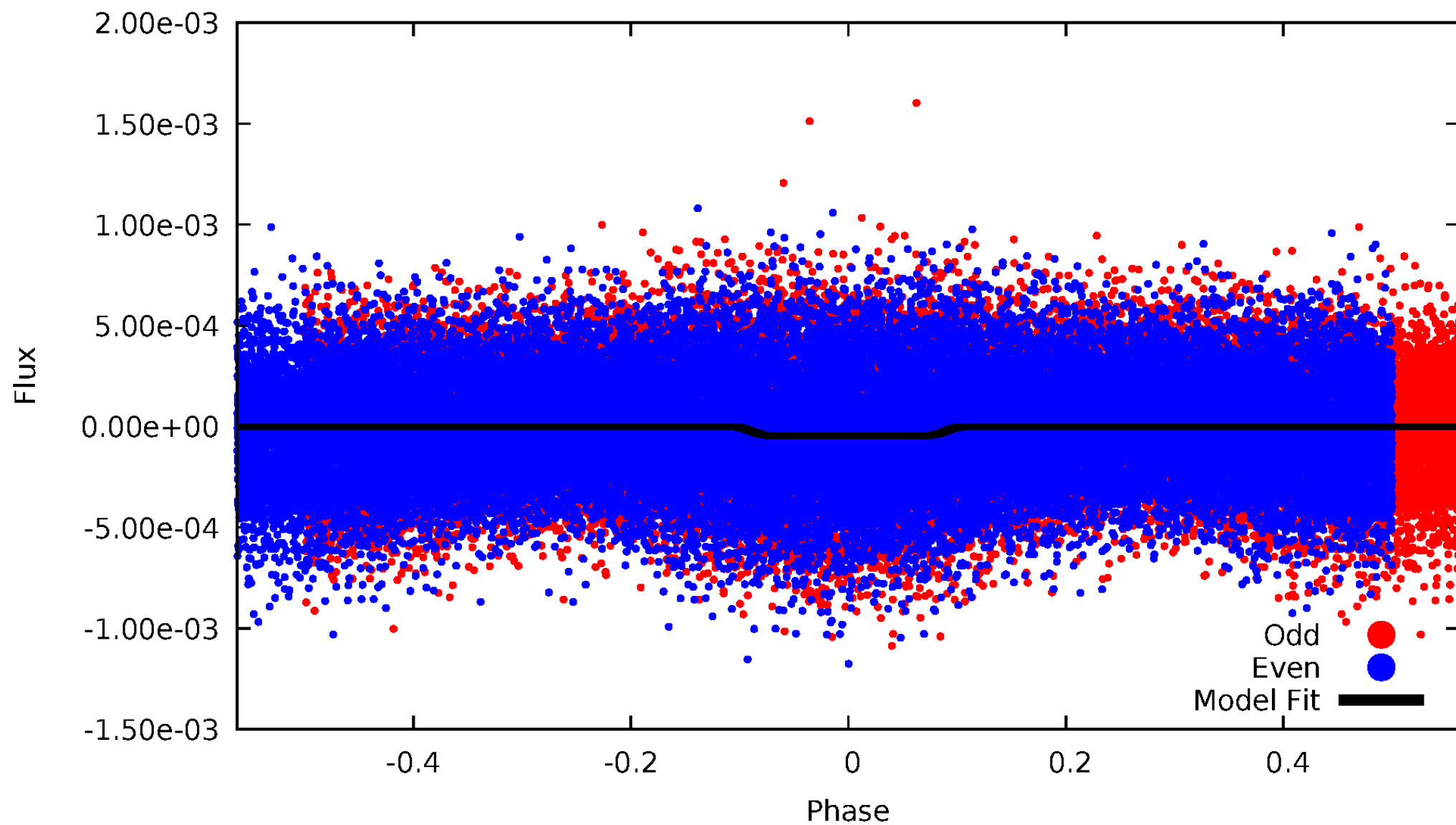
DV Odd/Even

TCE 008104065-01

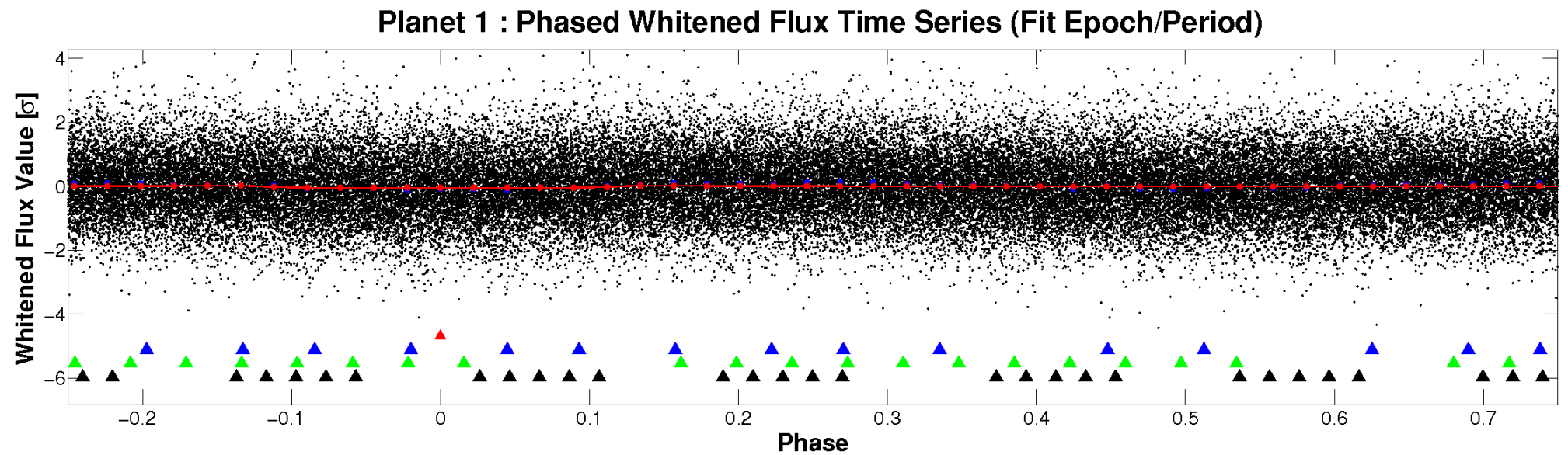
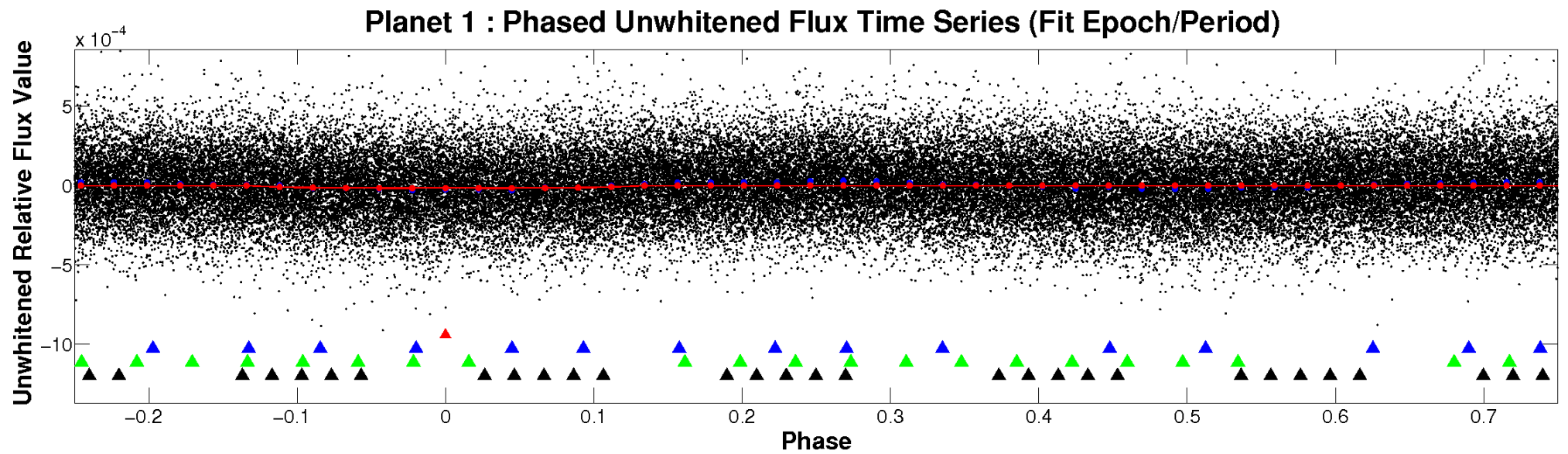


ALT Odd/Even

TCE 008104065-01

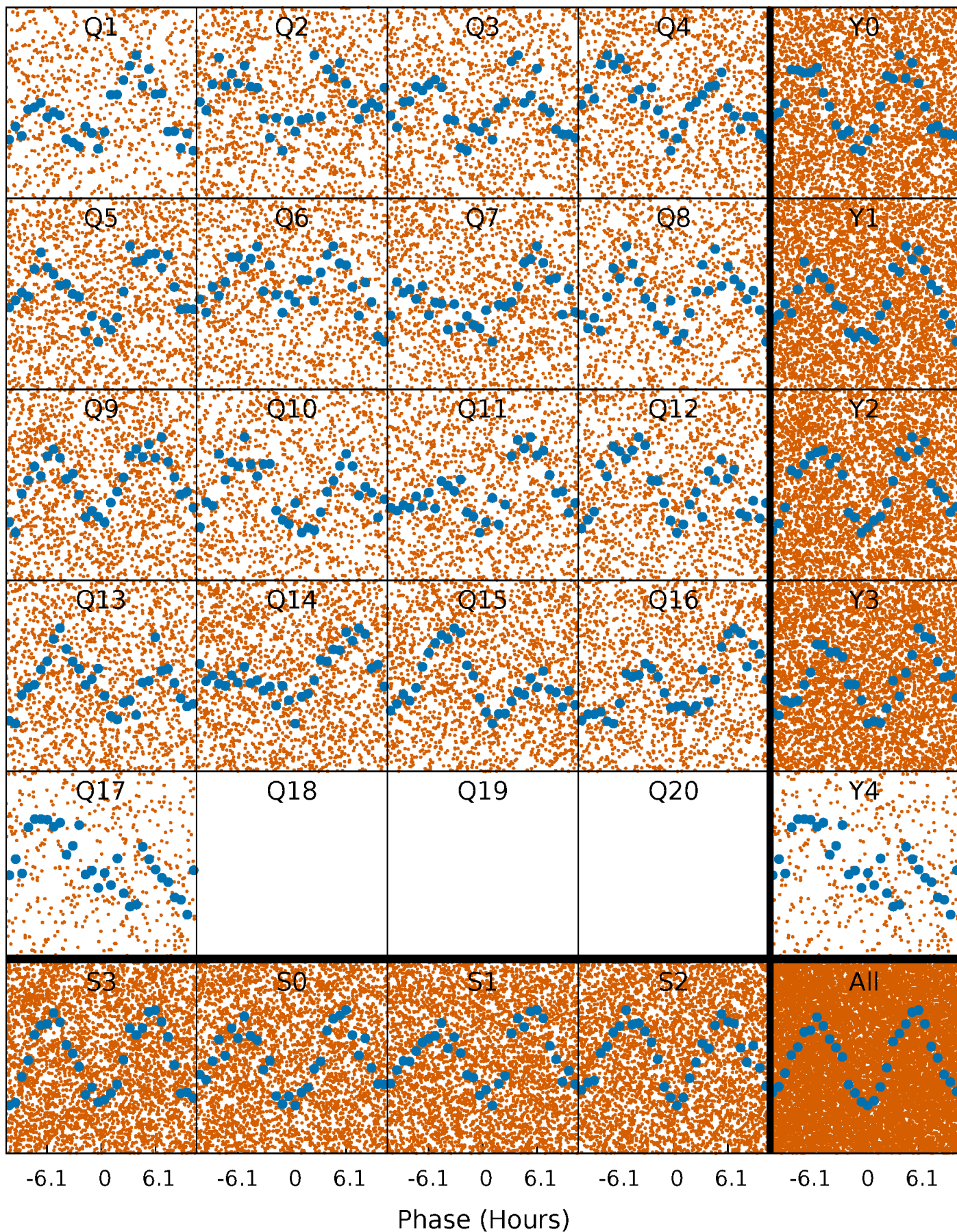


Non-Whitened Vs. Whitened Light Curve



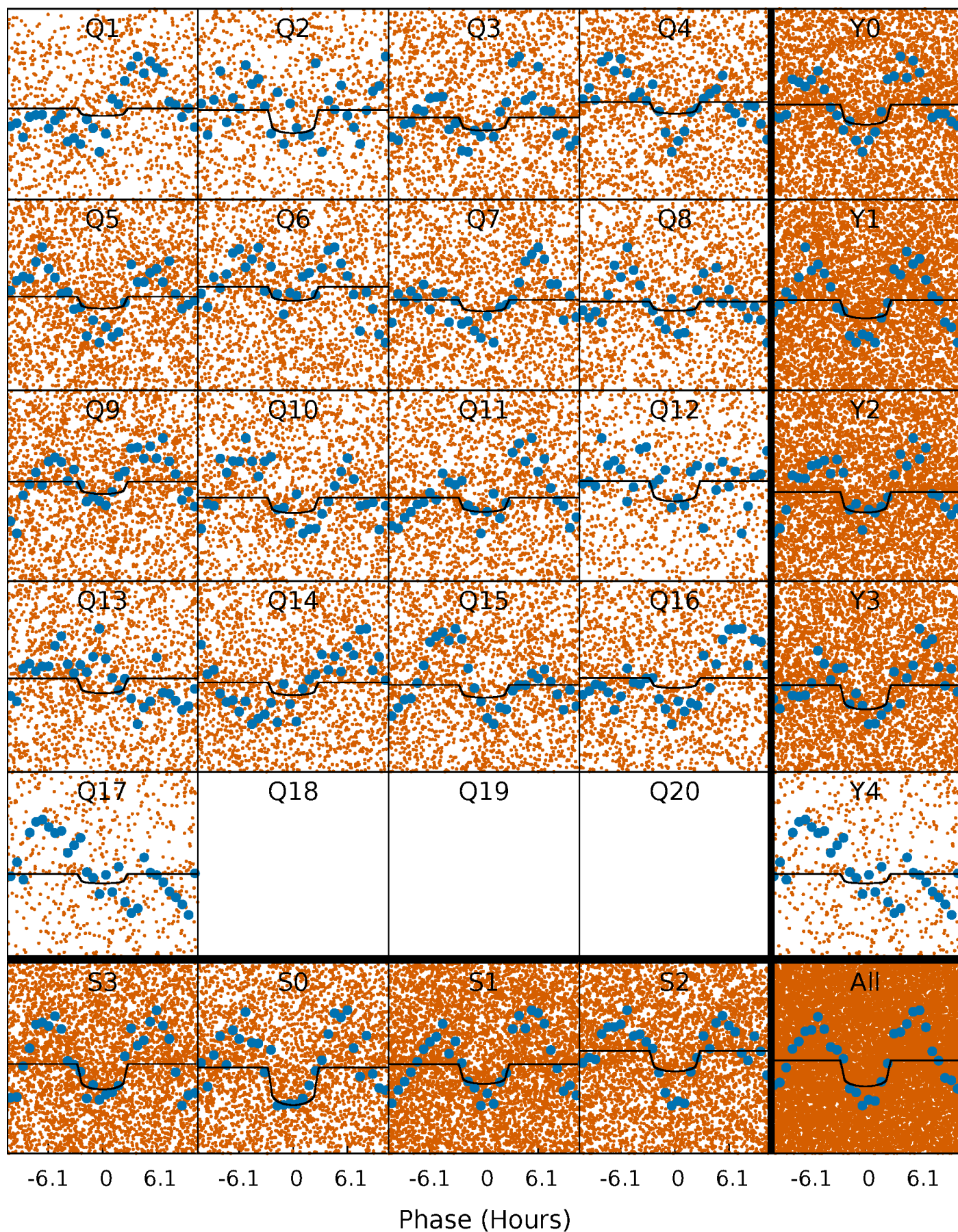
PDC Quarter-Phased Transit Curves

TCE 008104065-01 P= 0.913996 Days $T_0=132.378808$ (BKJD)



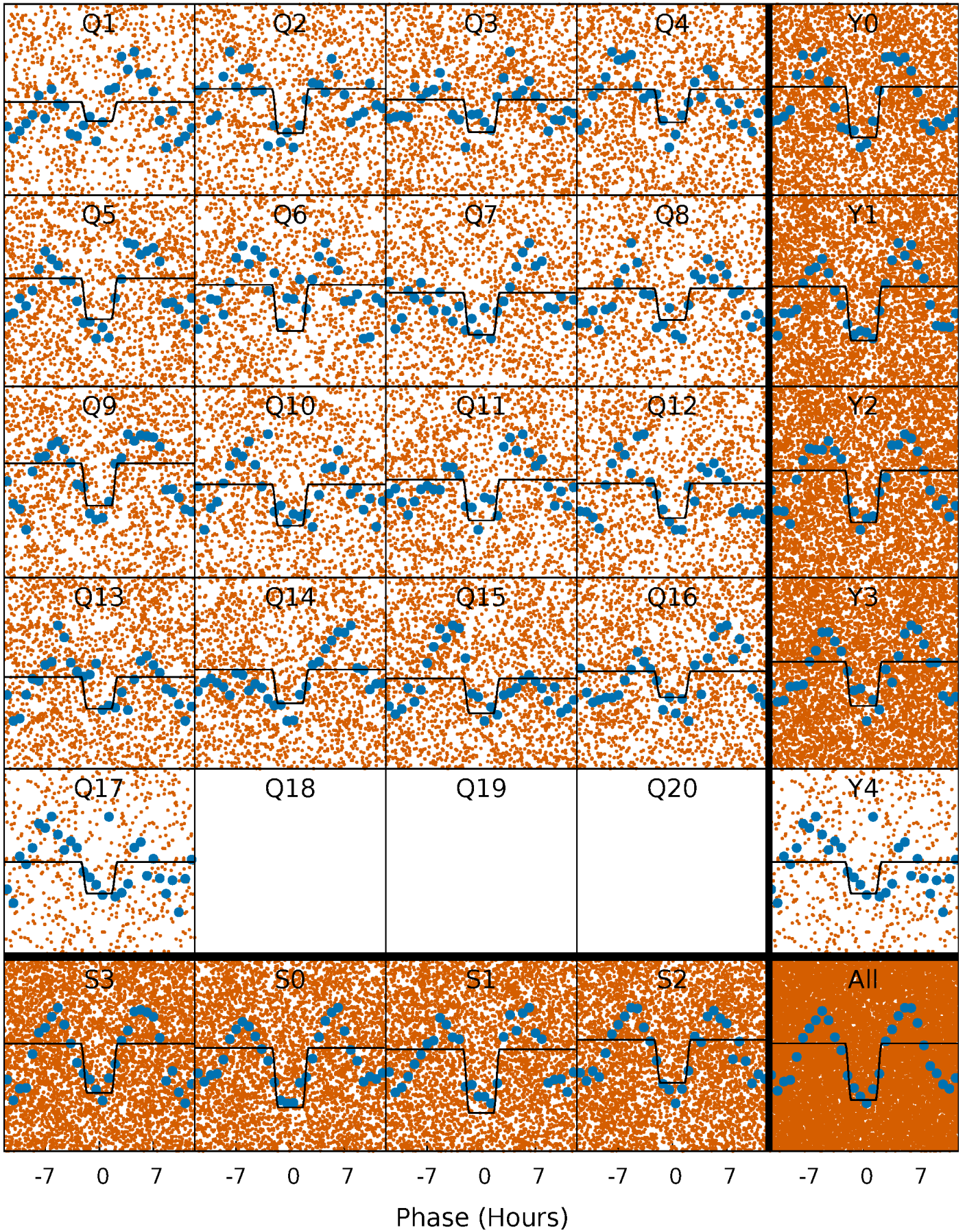
DV Quarter-Phased Transit Curves

TCE 008104065-01 P= 0.913996 Days $T_0=132.378808$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

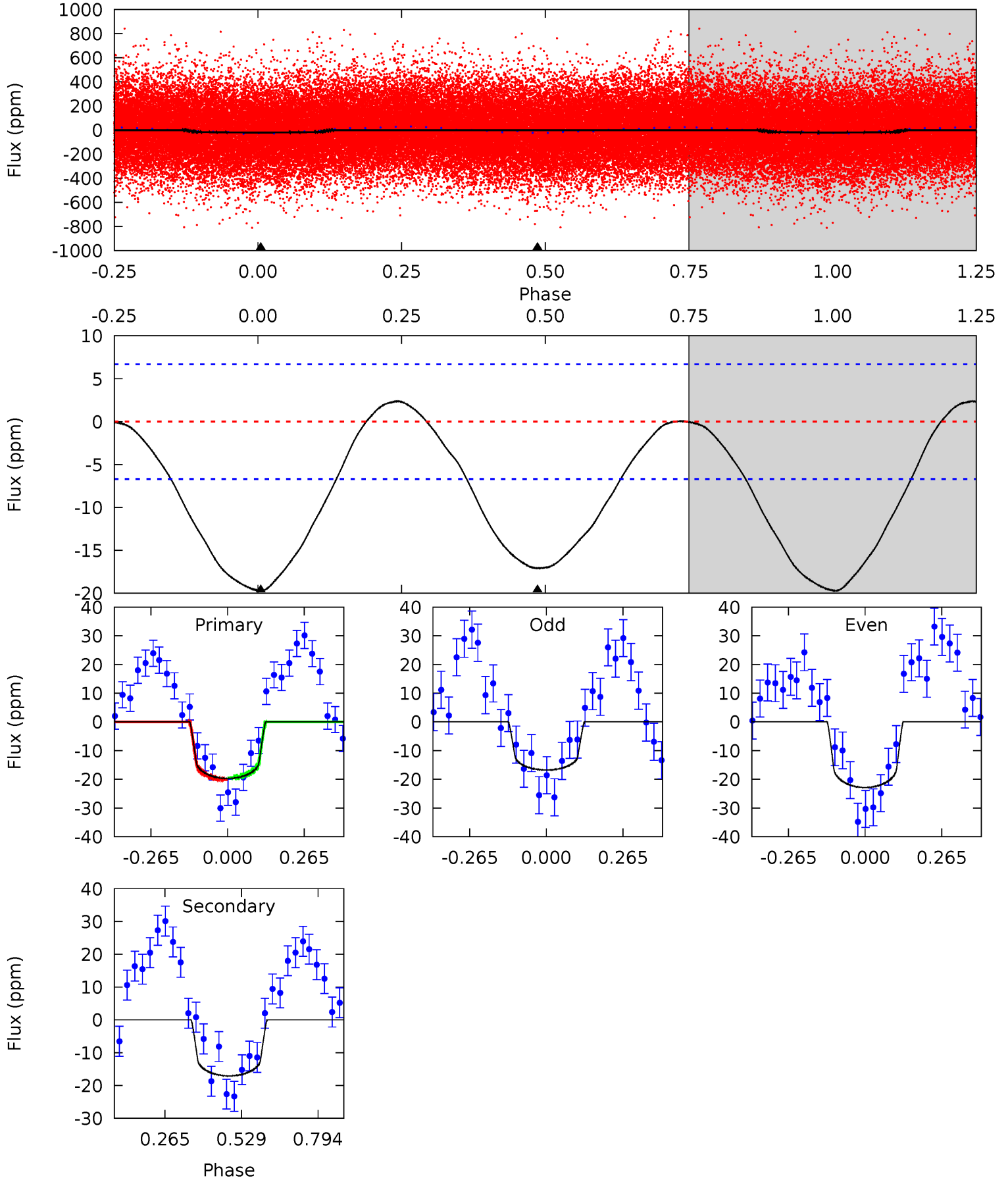
TCE 008104065-01 P= 0.914011 Days $T_0=132.370482$ (BKJD)



DV Model-Shift Uniqueness Test

008104065-01, P = 0.913996 Days, E = 131.464812 Days

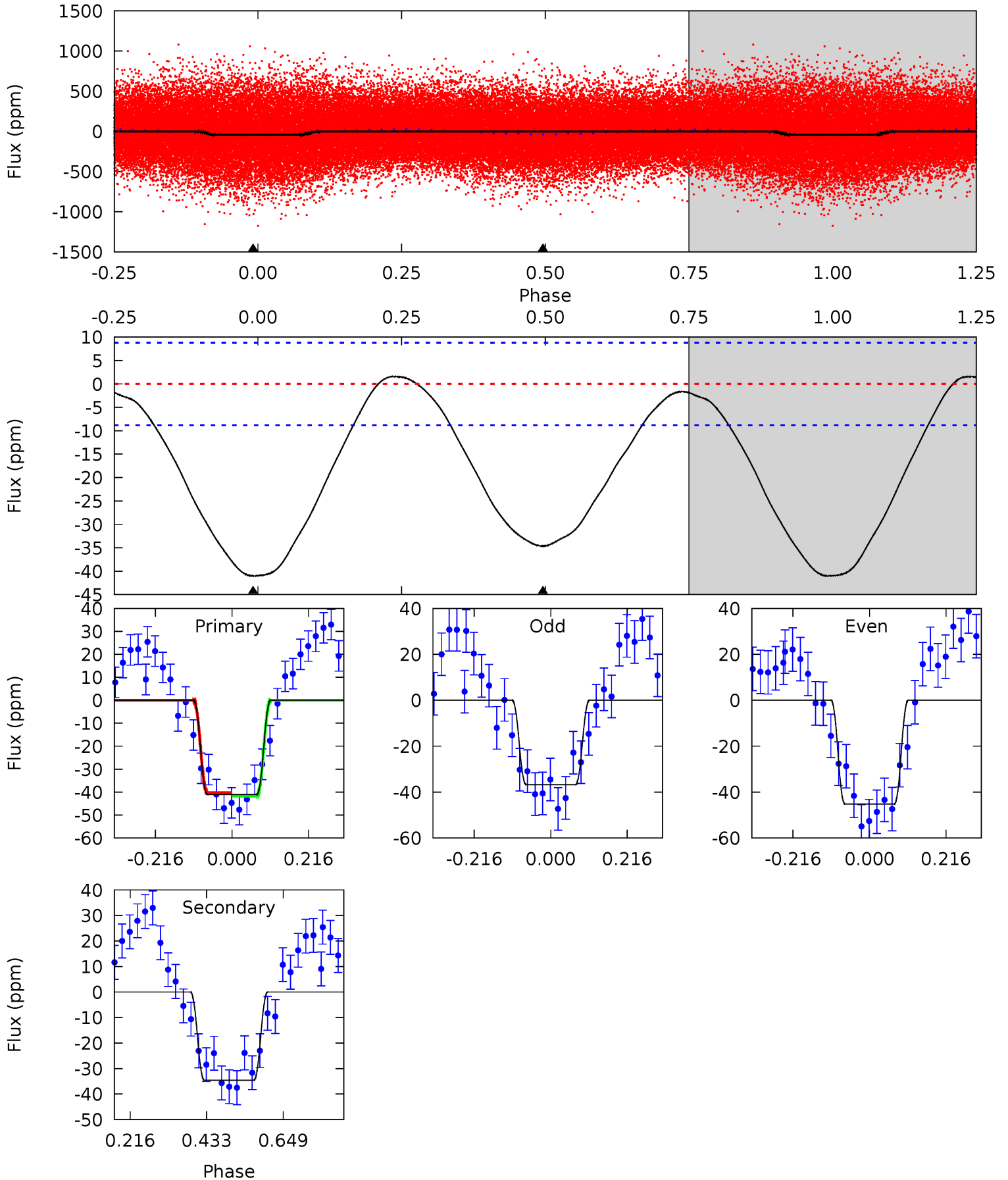
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	11.1	0	0	4.36	1.12	0.74	12.8	12.8	11.1	11.1	2.00	0.94	0.11	0.20



Alt Model-Shift Uniqueness Test

008104065-01, P = 0.914011 Days, E = 131.456471 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	17.3	0	0	4.40	1.24	0.83	20.5	20.5	17.3	17.3	2.10	1.00	0.04	0.36



Stellar Parameters For KIC 008104065

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7296^{+232}_{-348}	$4.194^{+0.124}_{-0.186}$	$-0.240^{+0.250}_{-0.350}$	$1.569^{+0.491}_{-0.327}$	$1.408^{+0.225}_{-0.225}$	$0.513^{+0.323}_{-0.267}$
	+3%/-5%	+3%/-4%	+104%/-146%	+31%/-21%	+16%/-16%	+63%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008104065-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-17 ± 2	$0.73^{+0.43}_{-0.37}$	3943^{+281}_{-274}	7069^{+4607}_{-1499}	$7.433^{+23.656}_{-4.461}$
Alt.	-35 ± 2	$1.17^{+0.45}_{-0.38}$	3943^{+319}_{-281}	6619^{+1628}_{-990}	$5.952^{+6.934}_{-2.877}$

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 $A_{obs} \gg 1.0$

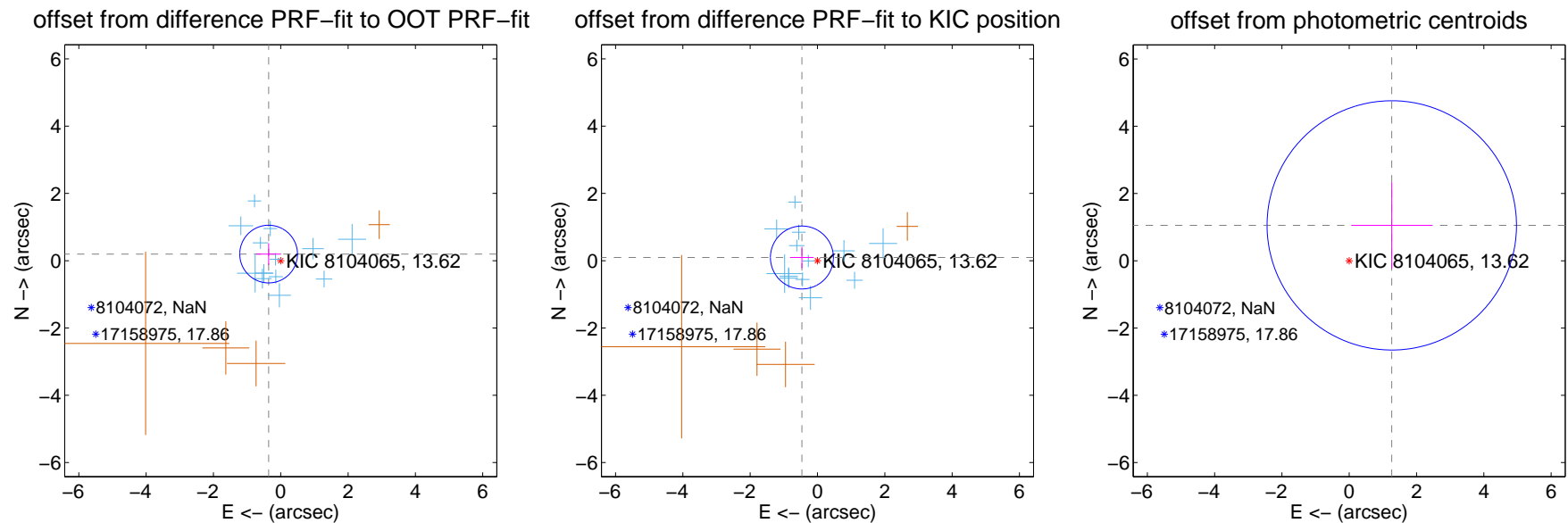
DV Centroid Data

Supplemental centroid analysis for 008104065-01. Kepler magnitude: 13.62. Transit SNR 6.19

There are 13 quarters with good PRF difference image offsets

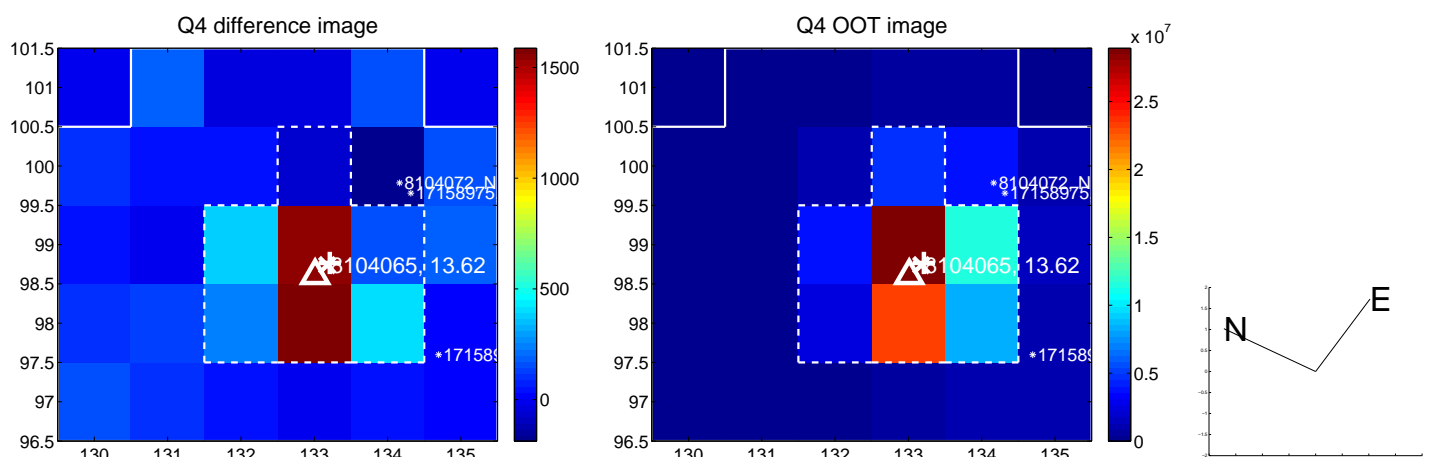
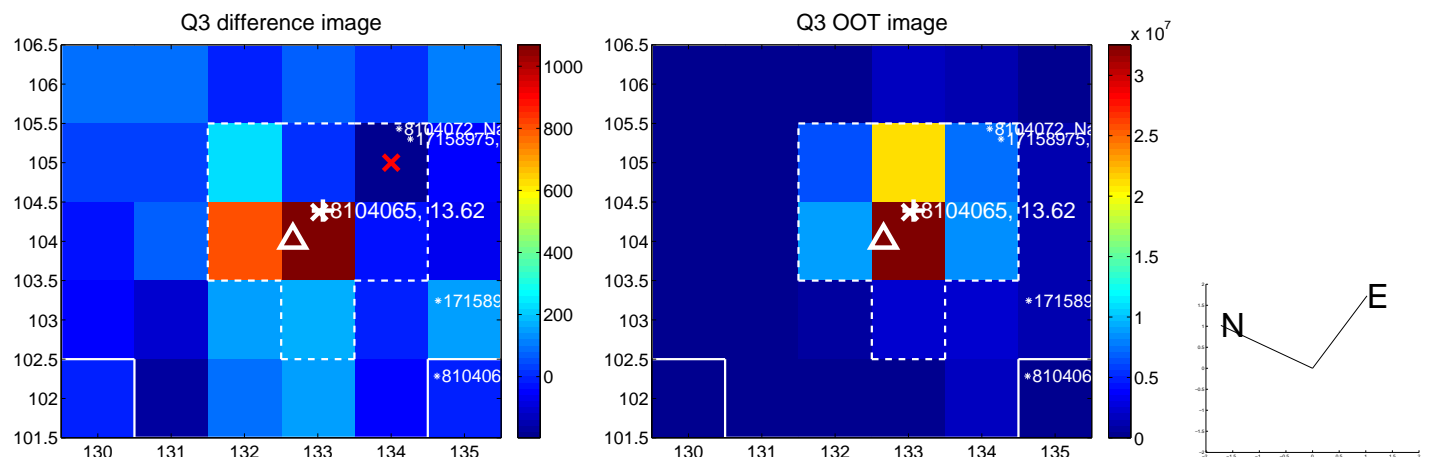
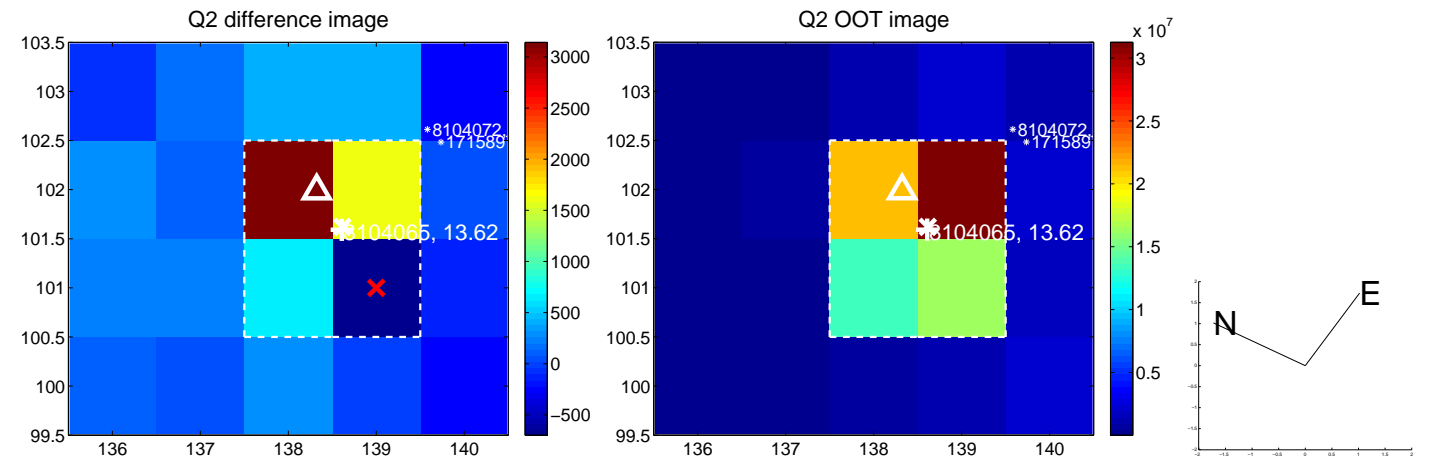
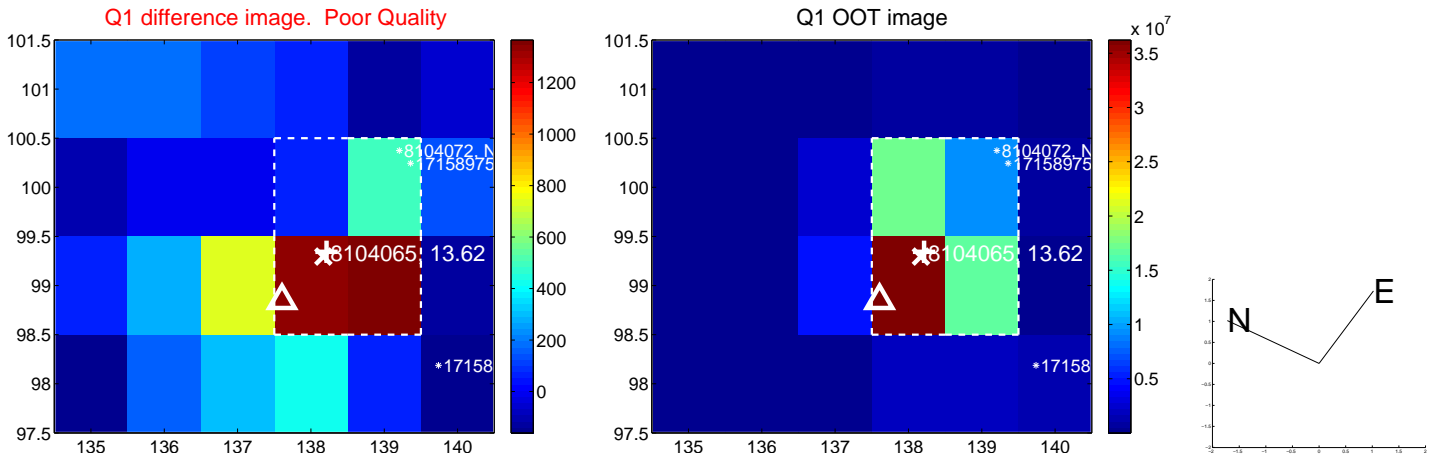
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.411 ± 0.286	1.44	0.361 ± 0.373	0.197 ± 0.322
PRF-fit source offset from KIC position	0.473 ± 0.312	1.52	0.463 ± 0.348	0.095 ± 0.317
photometric centroid source offset	1.64 ± 1.24	1.33	-1.26 ± 1.20	1.05 ± 1.28

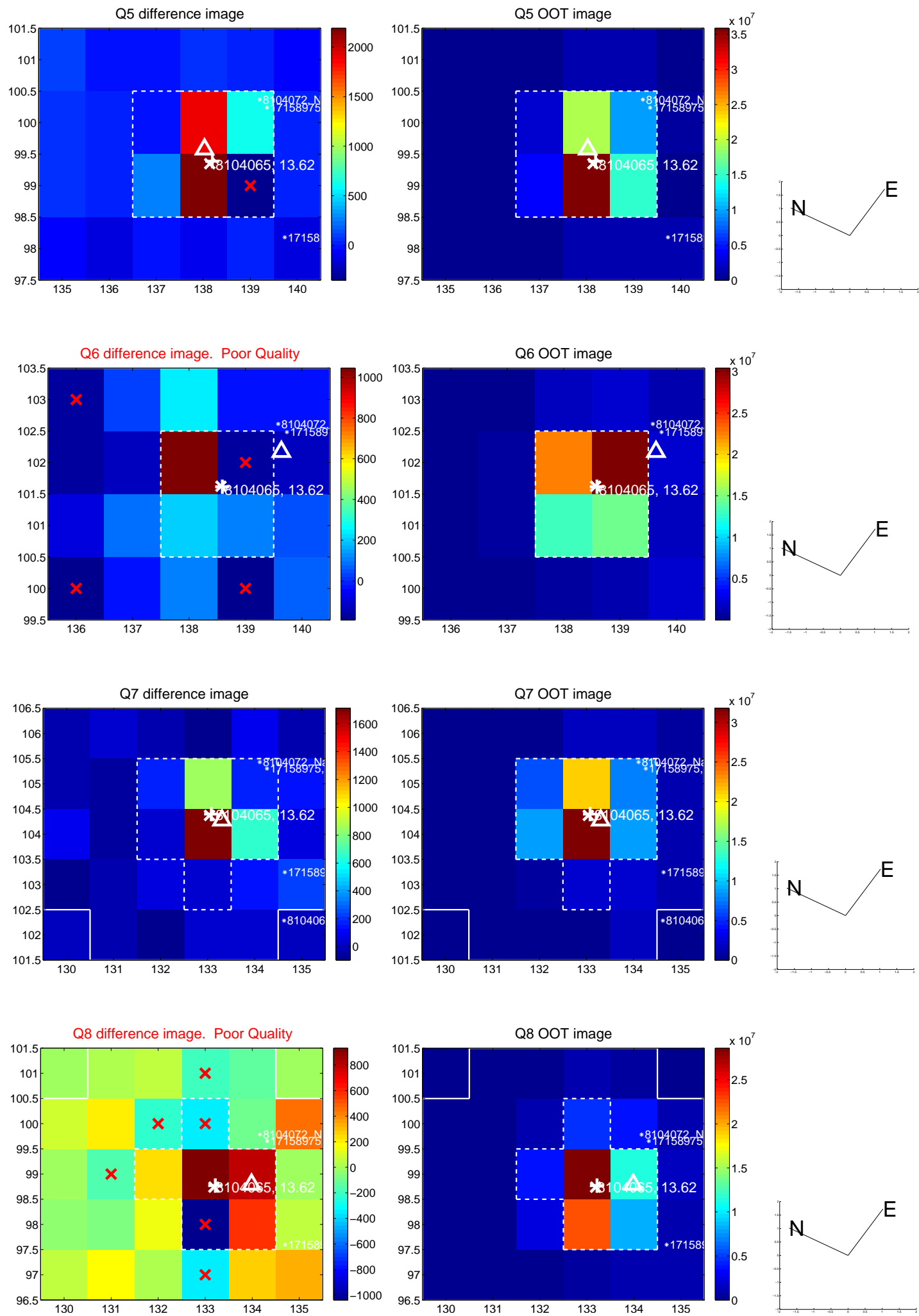


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

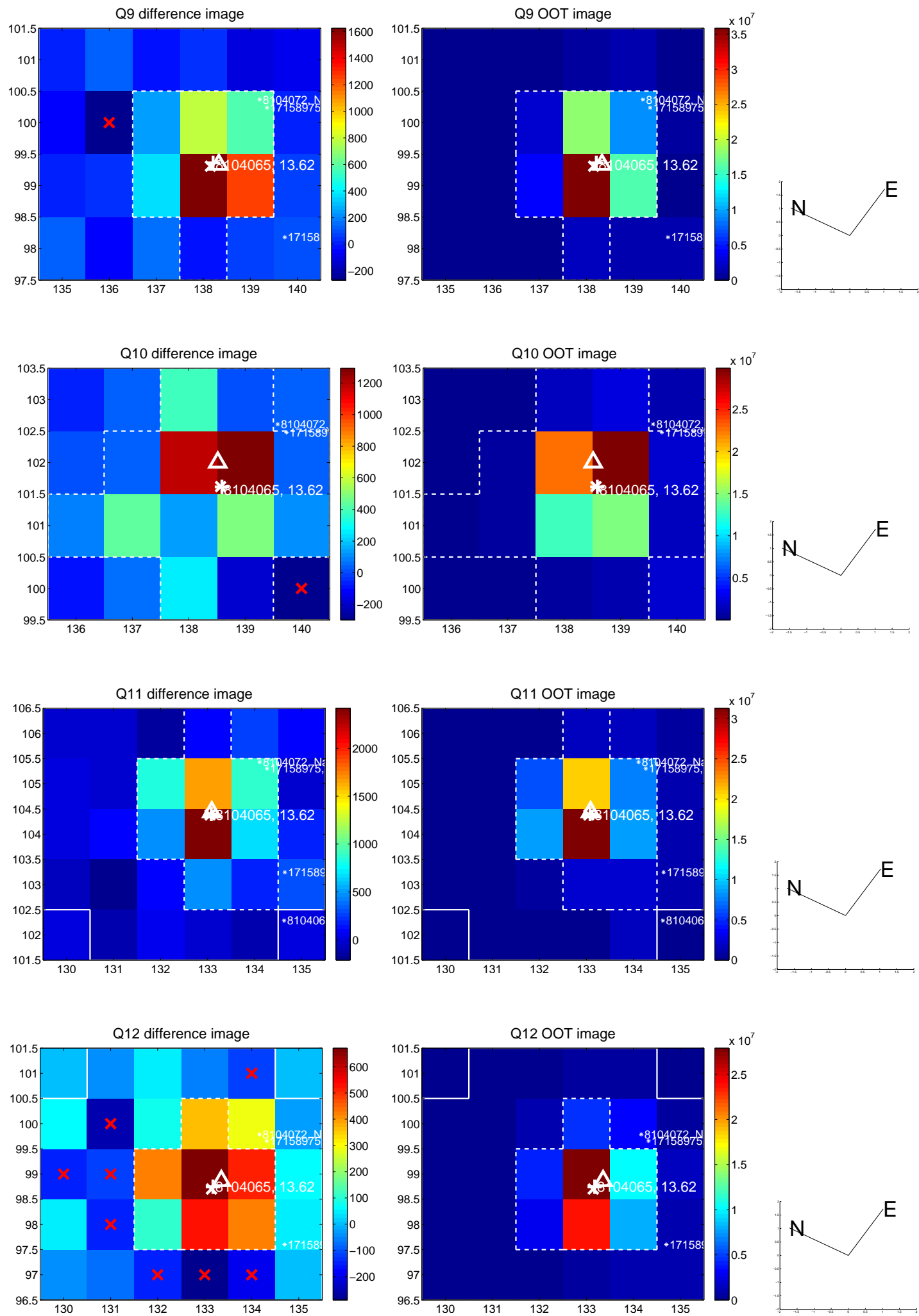
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



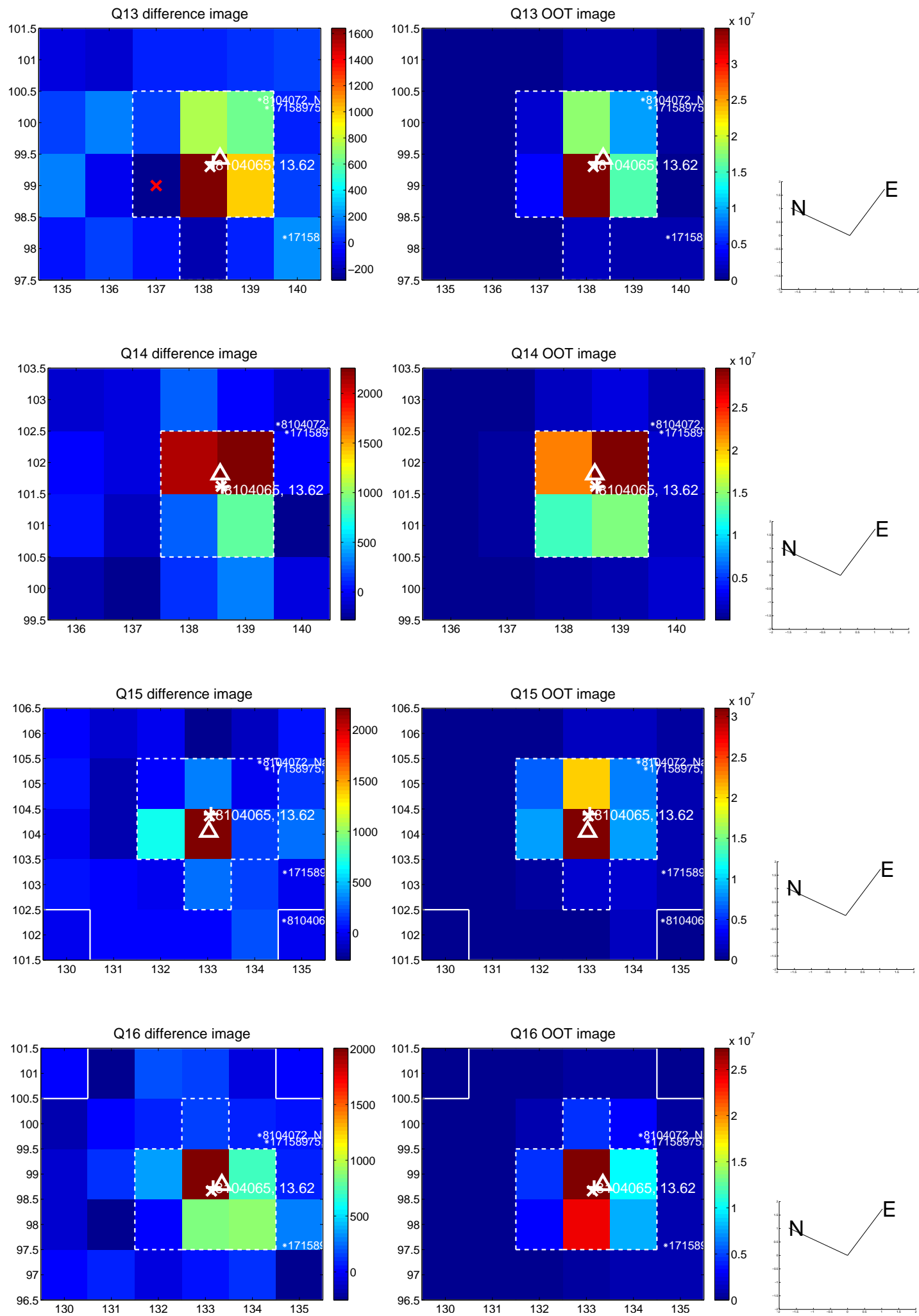
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



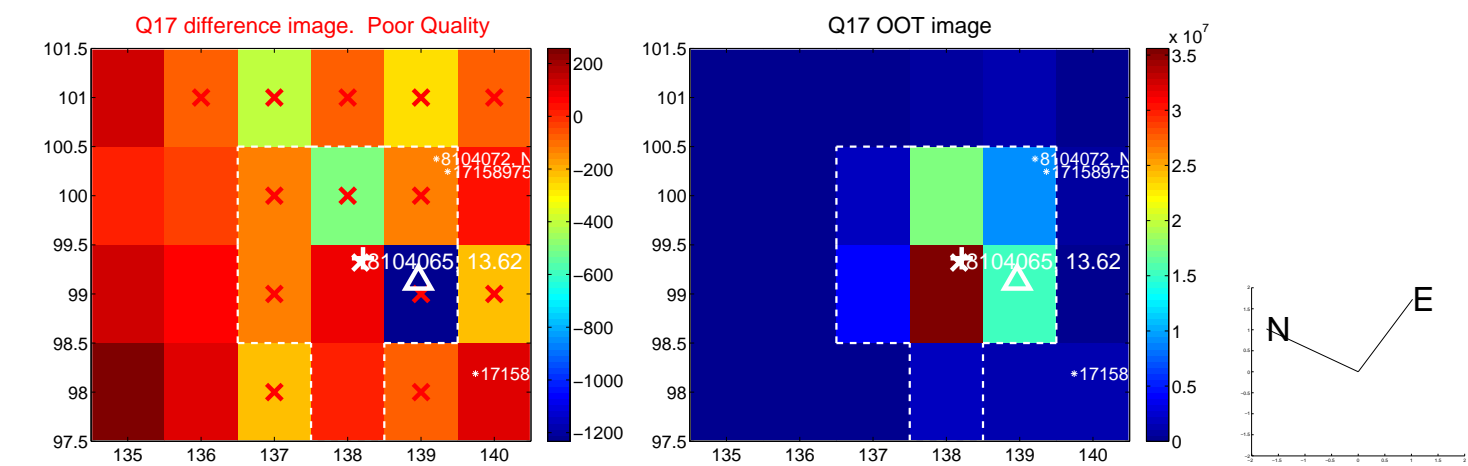
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



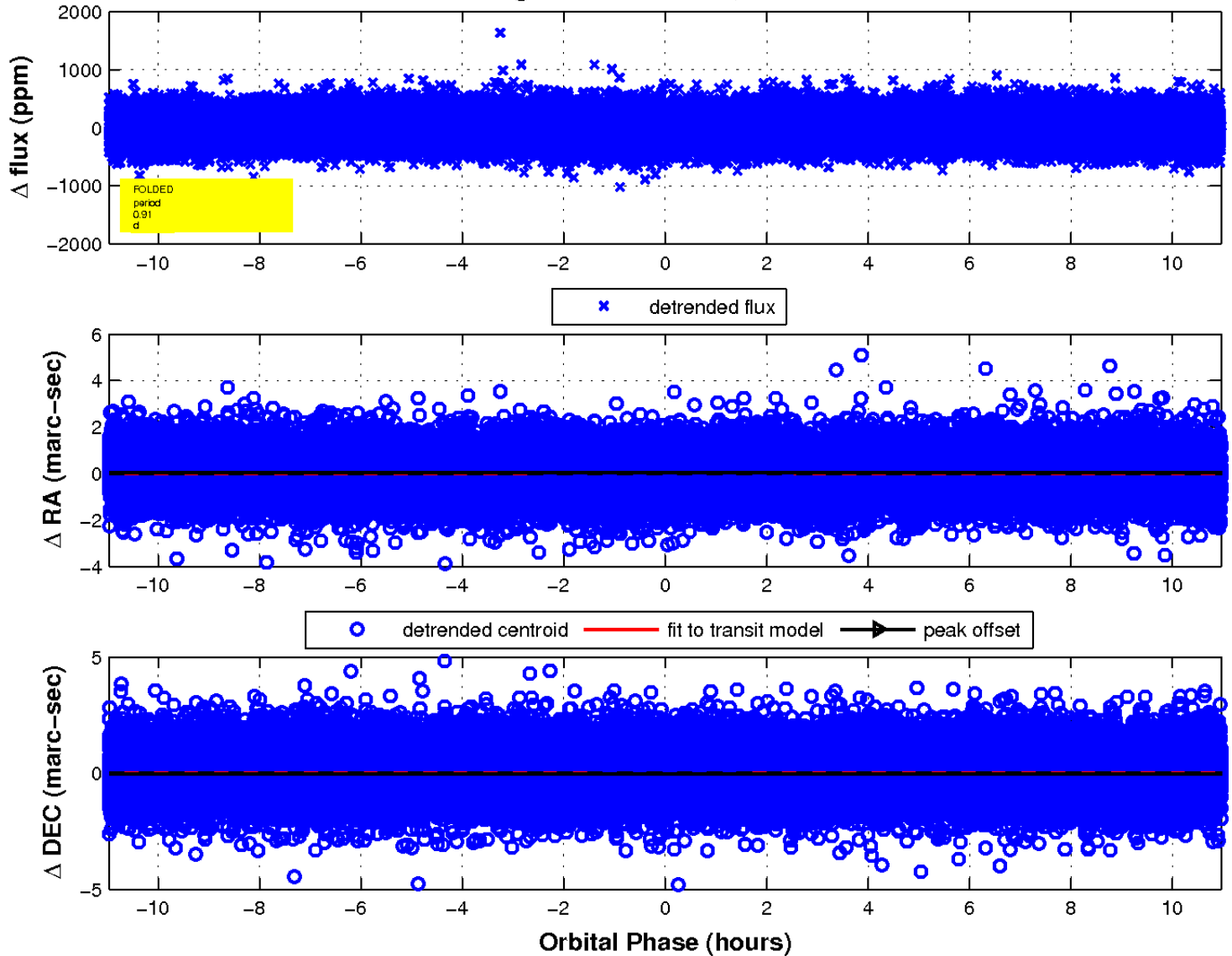
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

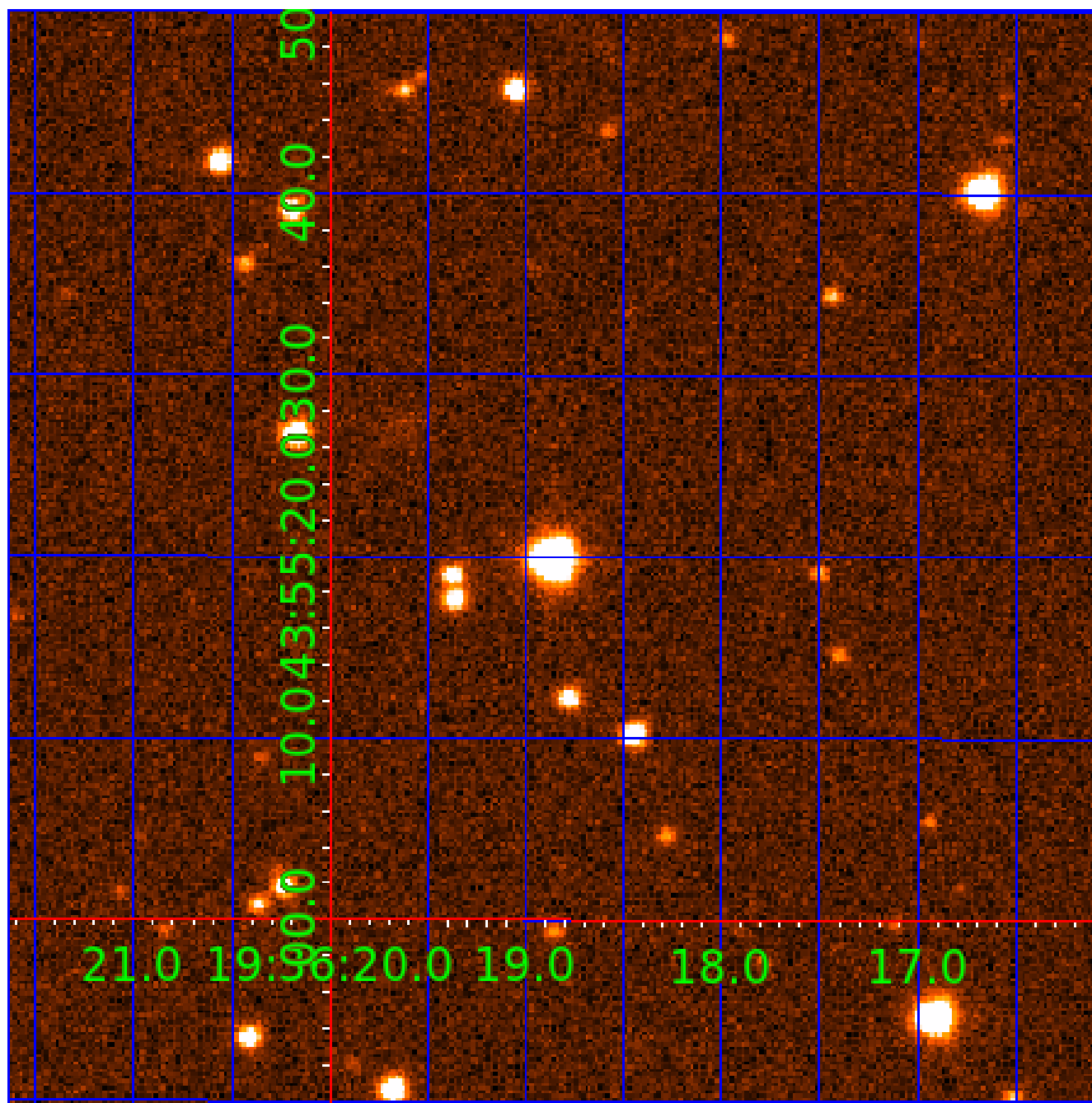


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 008104065

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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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008104065-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008104065-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—EPHEM_MATCH
008104065-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008104065-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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.

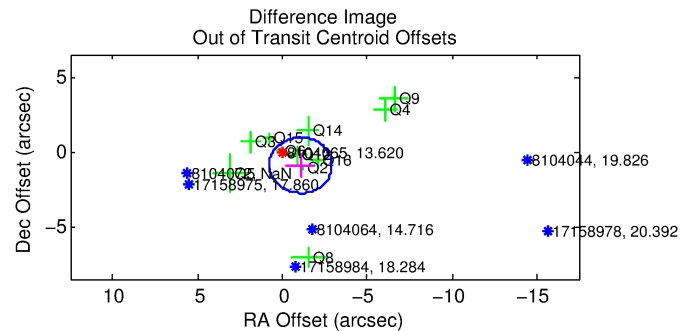
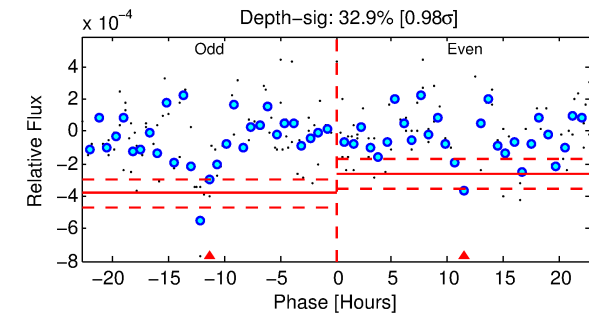
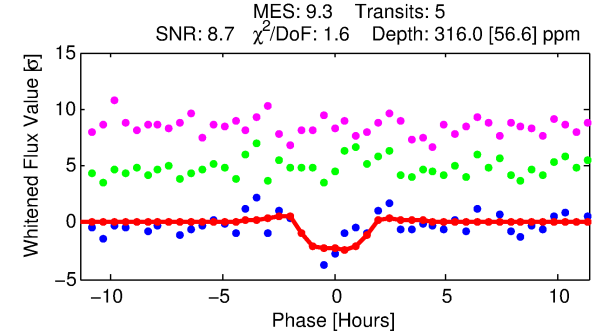
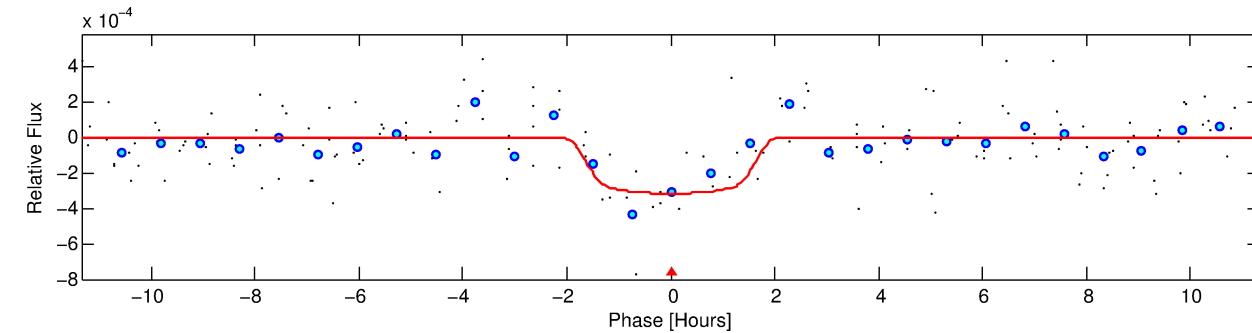
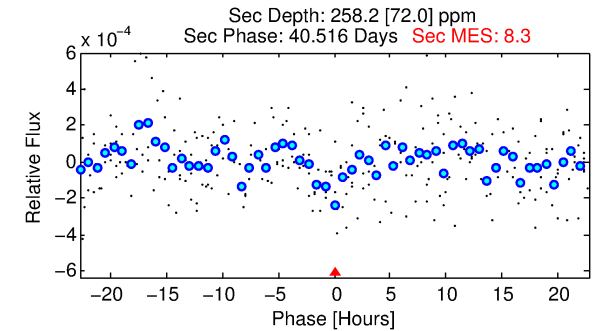
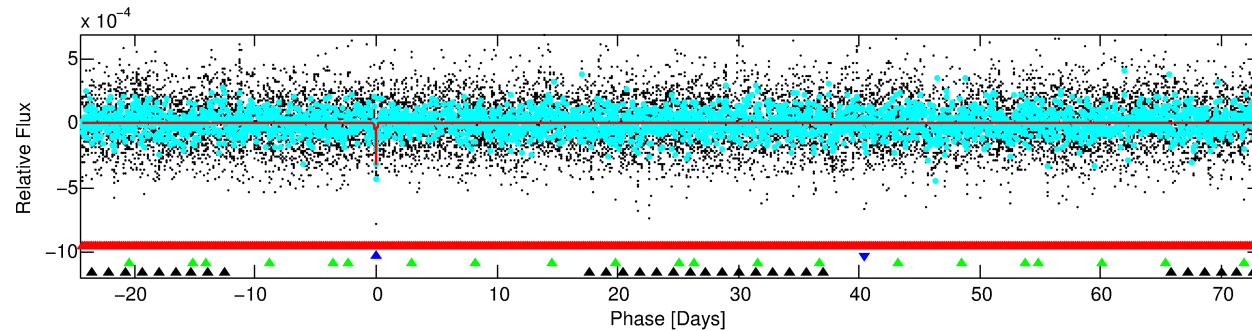
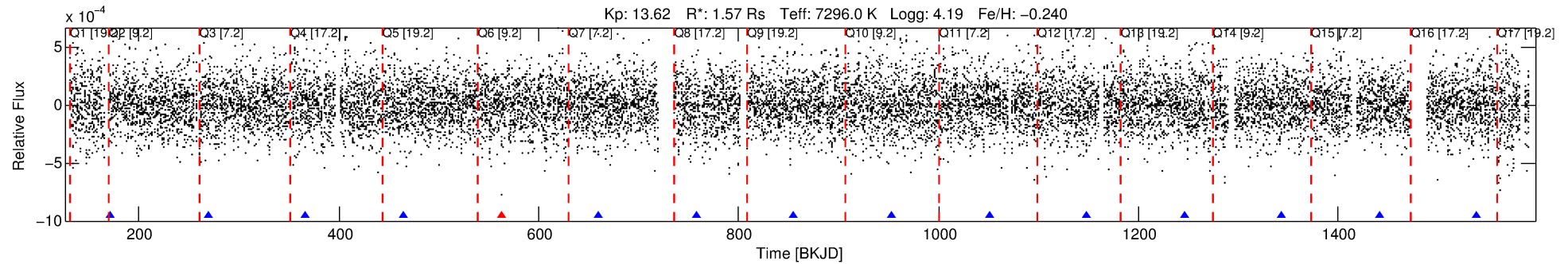
Ephemeris Match Information For 008104065-02

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
008104065-02	8104065	912.01	8505670	9:1	4475.2	-833	1	15.06	13.62	5.52	Col-Anomaly	1	2.12	2.40

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8104065 Candidate: 2 of 4 Period: 97.635 d



DV Fit Results:

Period = 97.63542 [0.00198] d
Epoch = 171.8838 [0.0131] BKJD
Rp/R* = 0.0194 [0.0082]
a/R* = 82.32 [207.63]
b = 0.93 [0.37]
Seff = 28.94 [11.63]
Teq = 591 [59] K
Rp = 3.32 [1.75] Re
a = 0.4647 [0.1175] AU
Ag = 2785.66 [2669.27] [1.04σ]
Teffp = 6643 [1513] K [4.00σ]

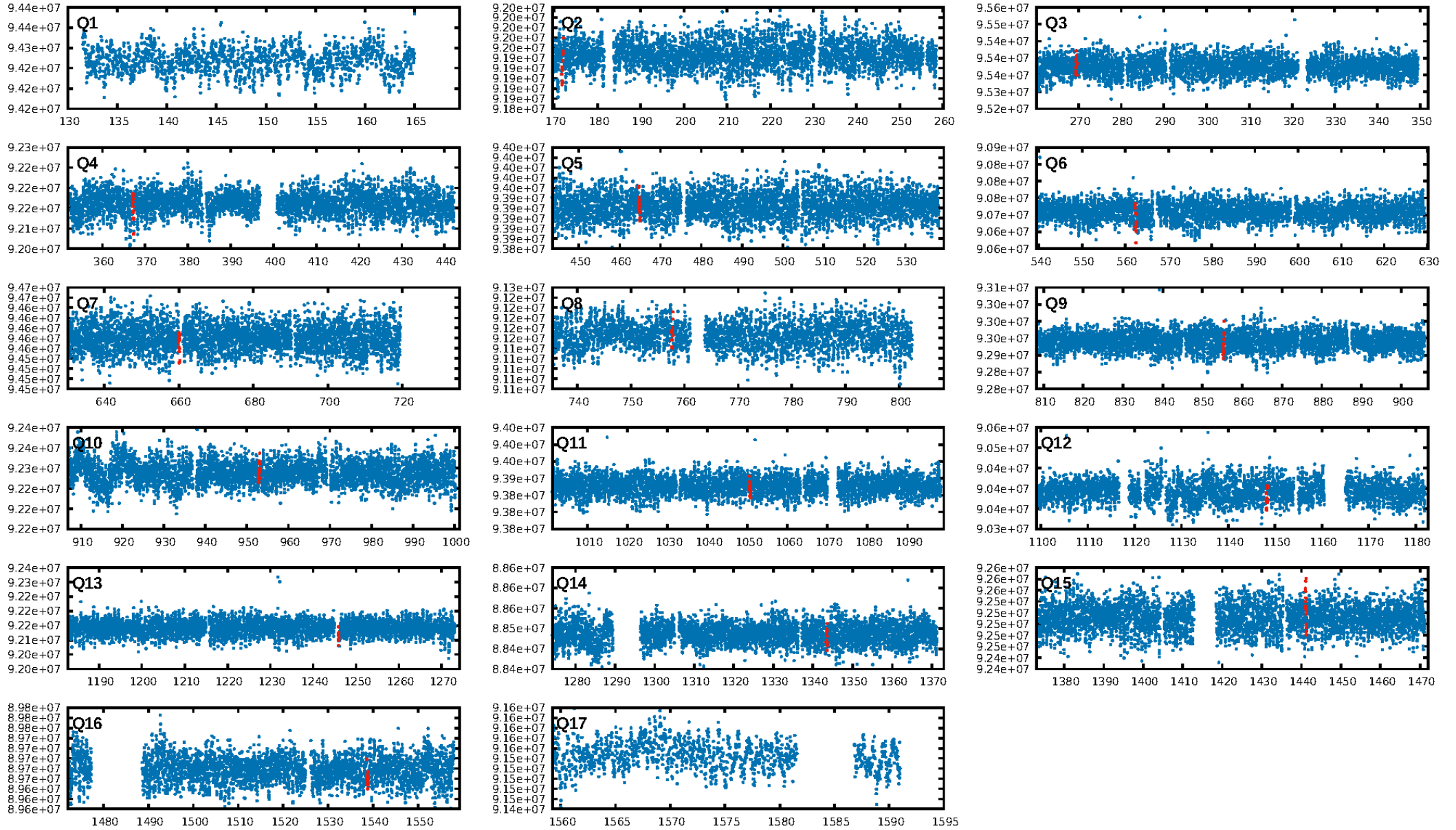
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [162.09σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 51.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.46e-10
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: -1.509
Centroid-sig: 80.7%
Centroid-so: 0.311 arcsec [0.38σ]
OotOffset-rm: 1.407 arcsec [2.28σ]
KicOffset-rm: 1.414 arcsec [2.31σ]
OotOffset-st: 3/2/4/2 [11]
KicOffset-st: 3/2/4/2 [11]
DiffImageQuality-fgm: 0.27 [3/11]
DiffImageOverlap-fno: 0.00 [0/13]

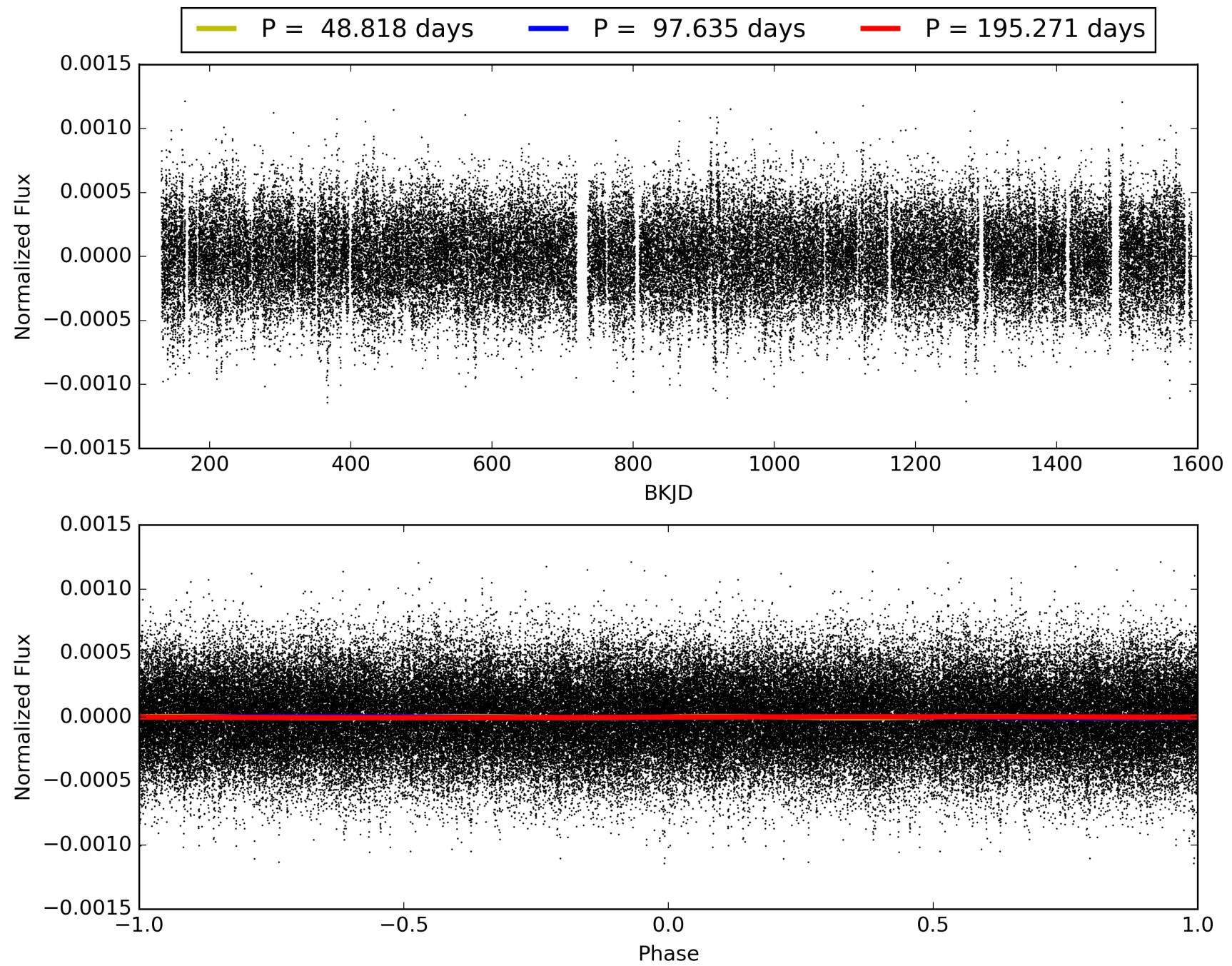
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:49:01 Z

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

TCE 008104065-02, PDC Light Curves

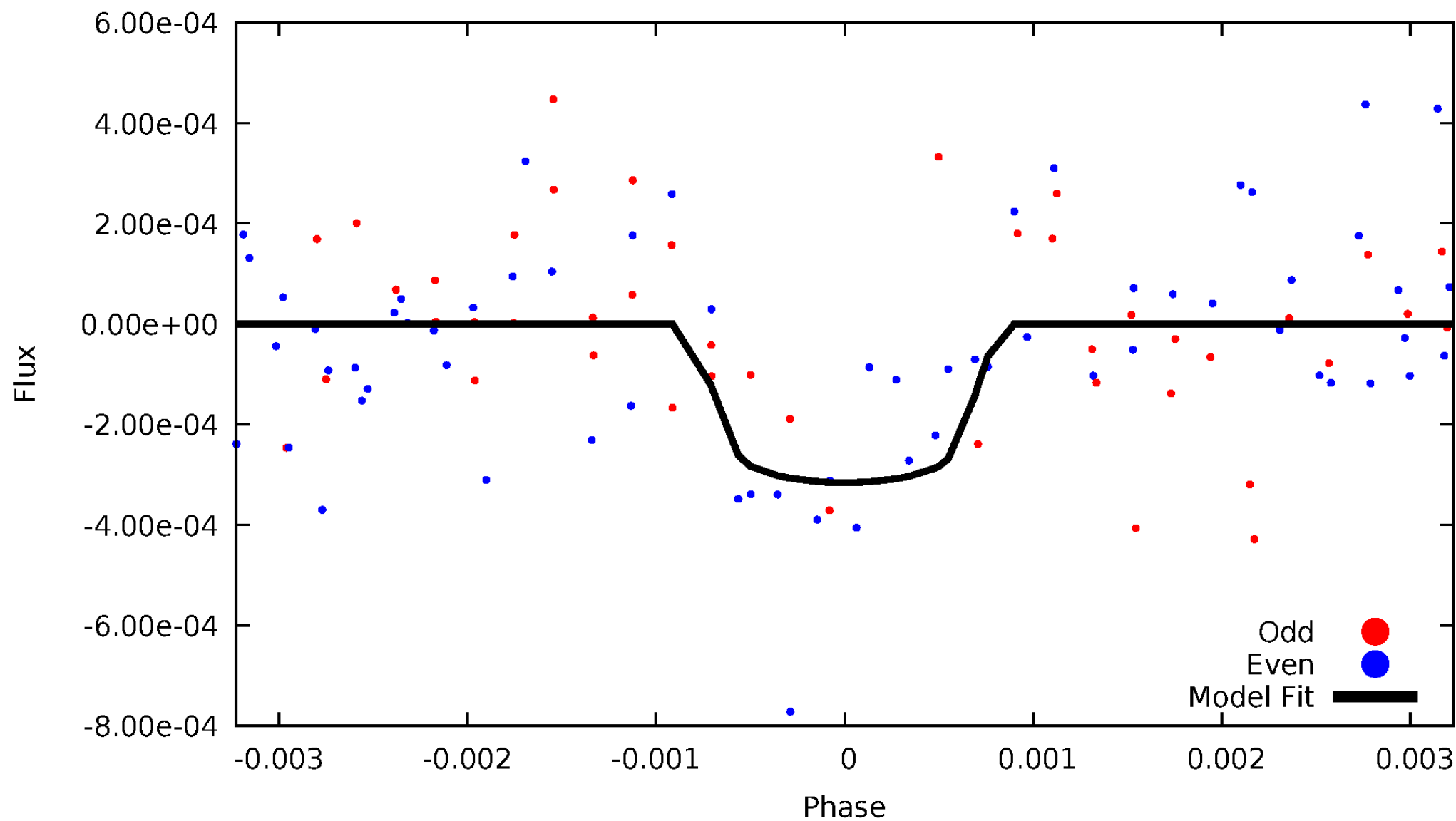


TCE 008104065-02



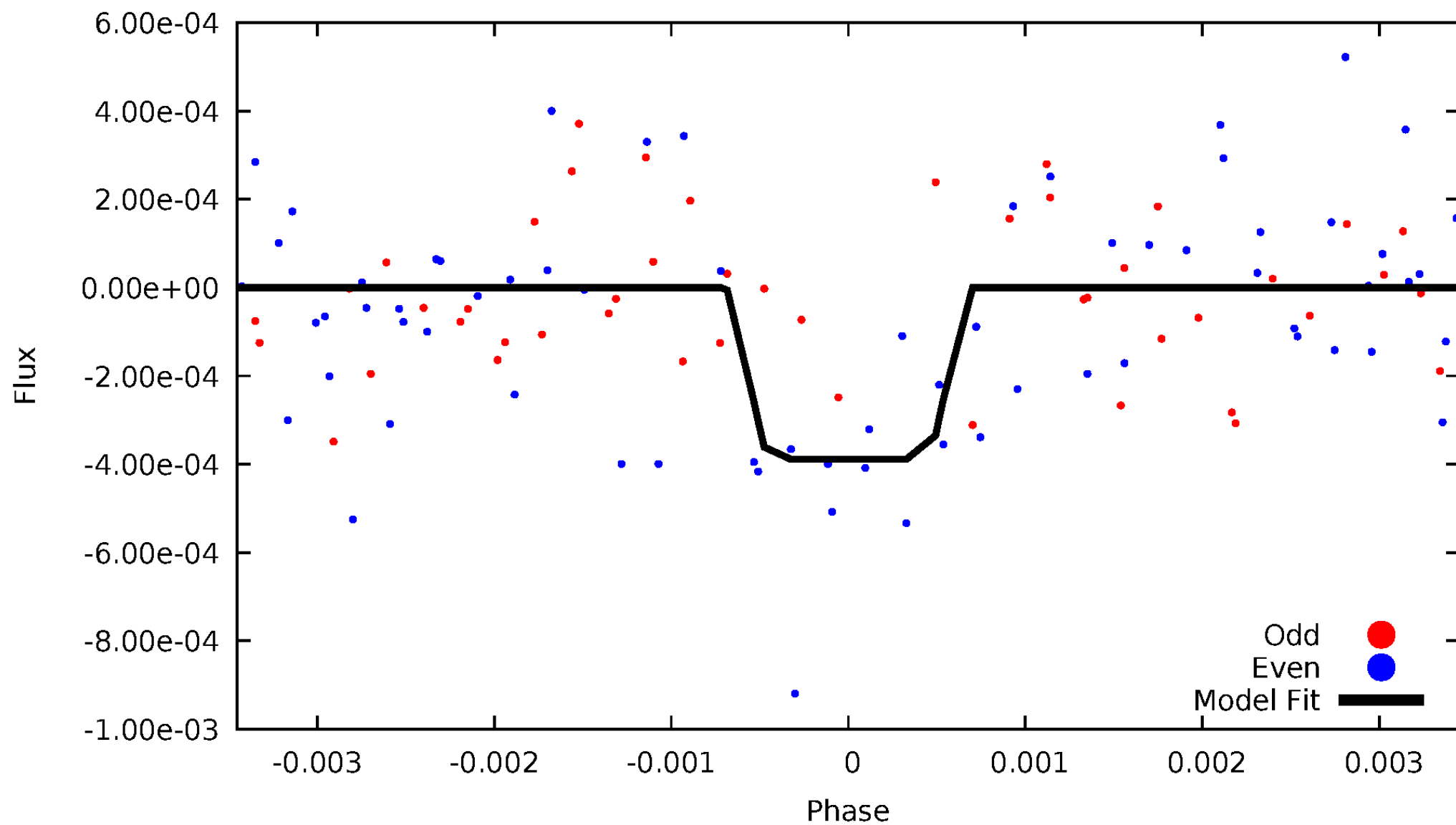
DV Odd/Even

TCE 008104065-02



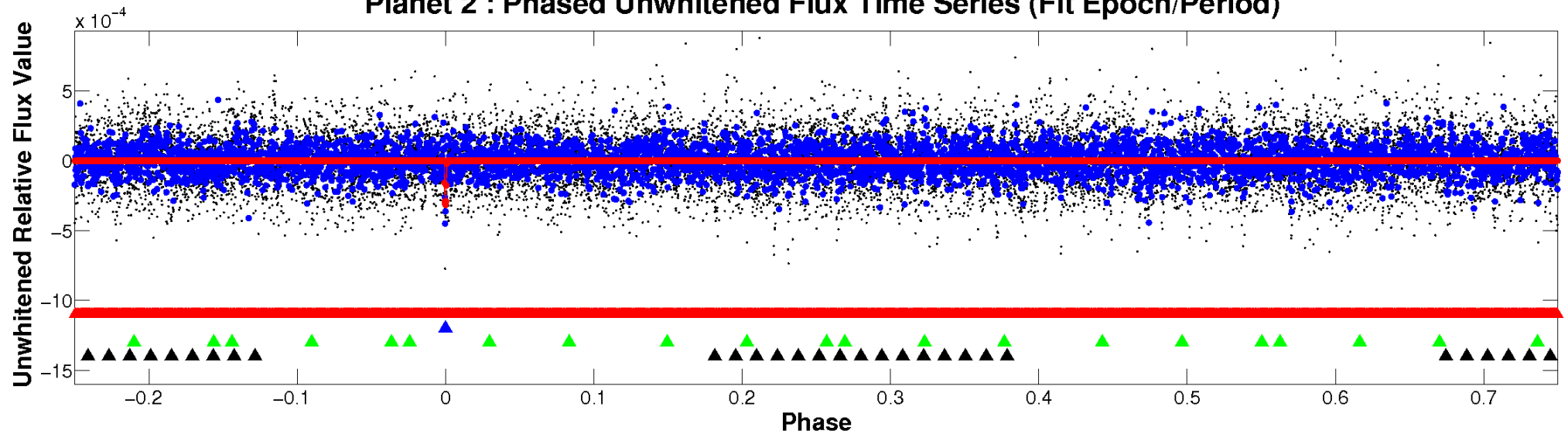
ALT Odd/Even

TCE 008104065-02

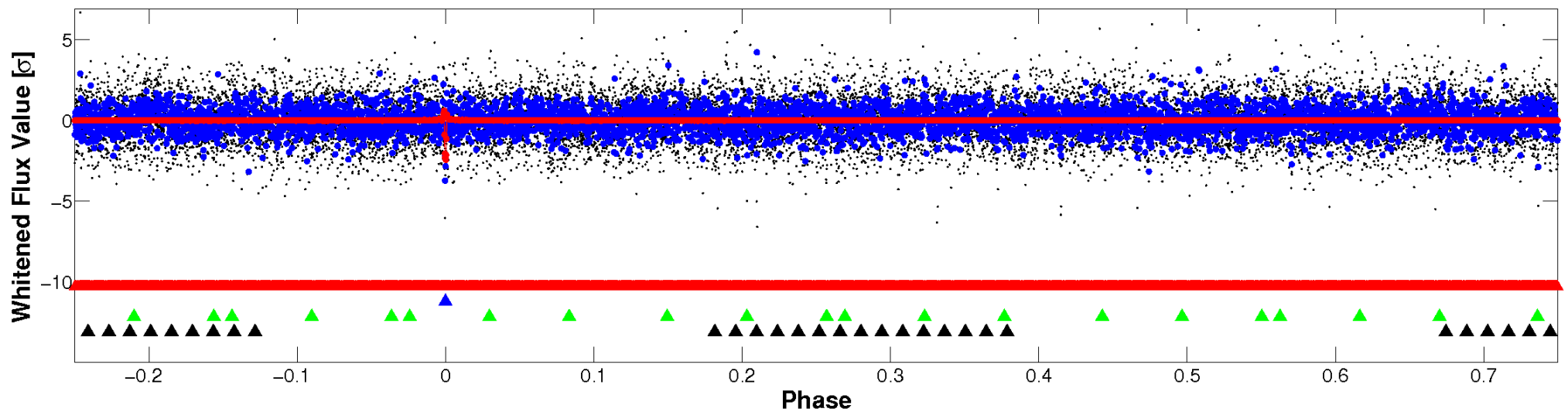


Non-Whitened Vs. Whitened Light Curve

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

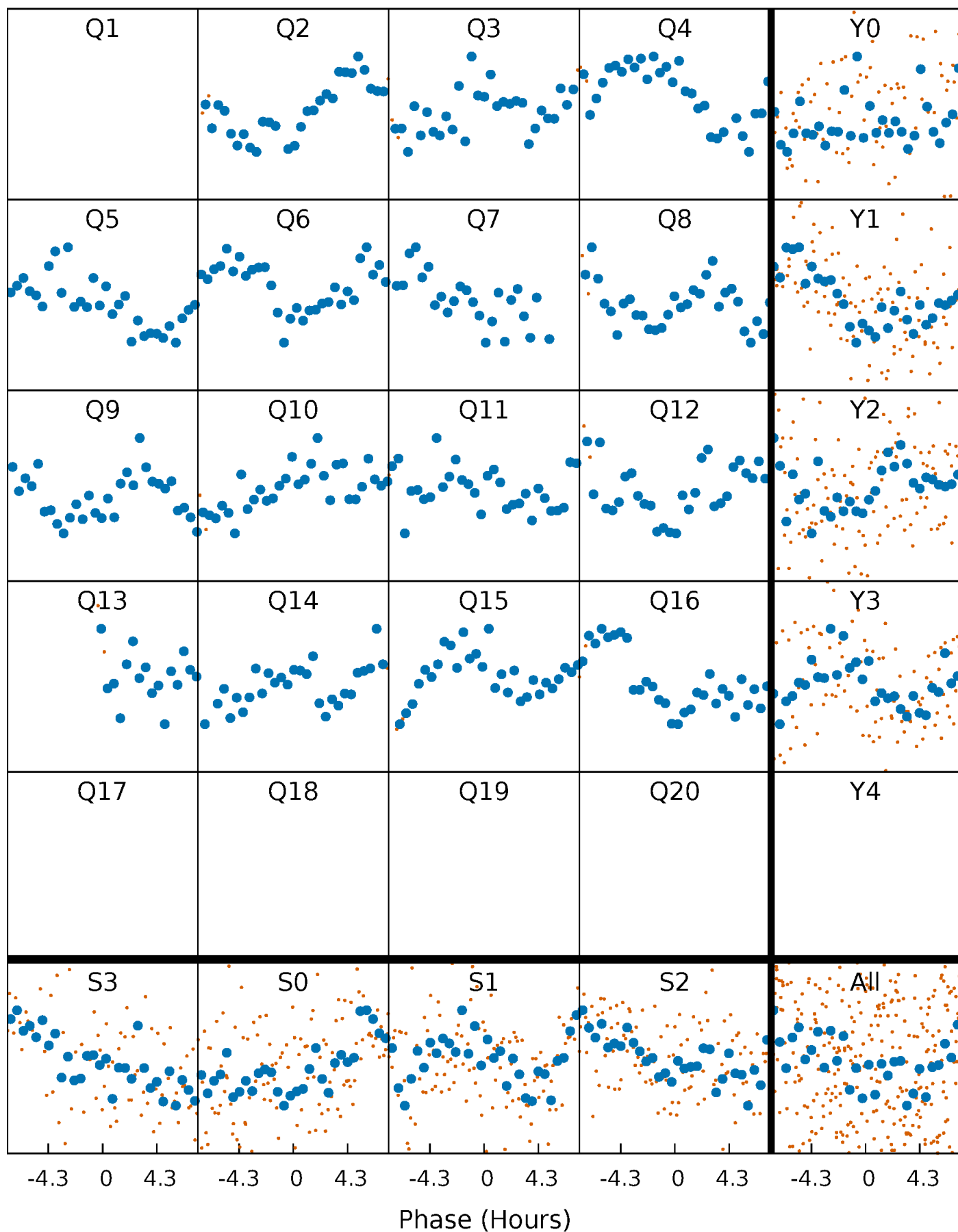


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



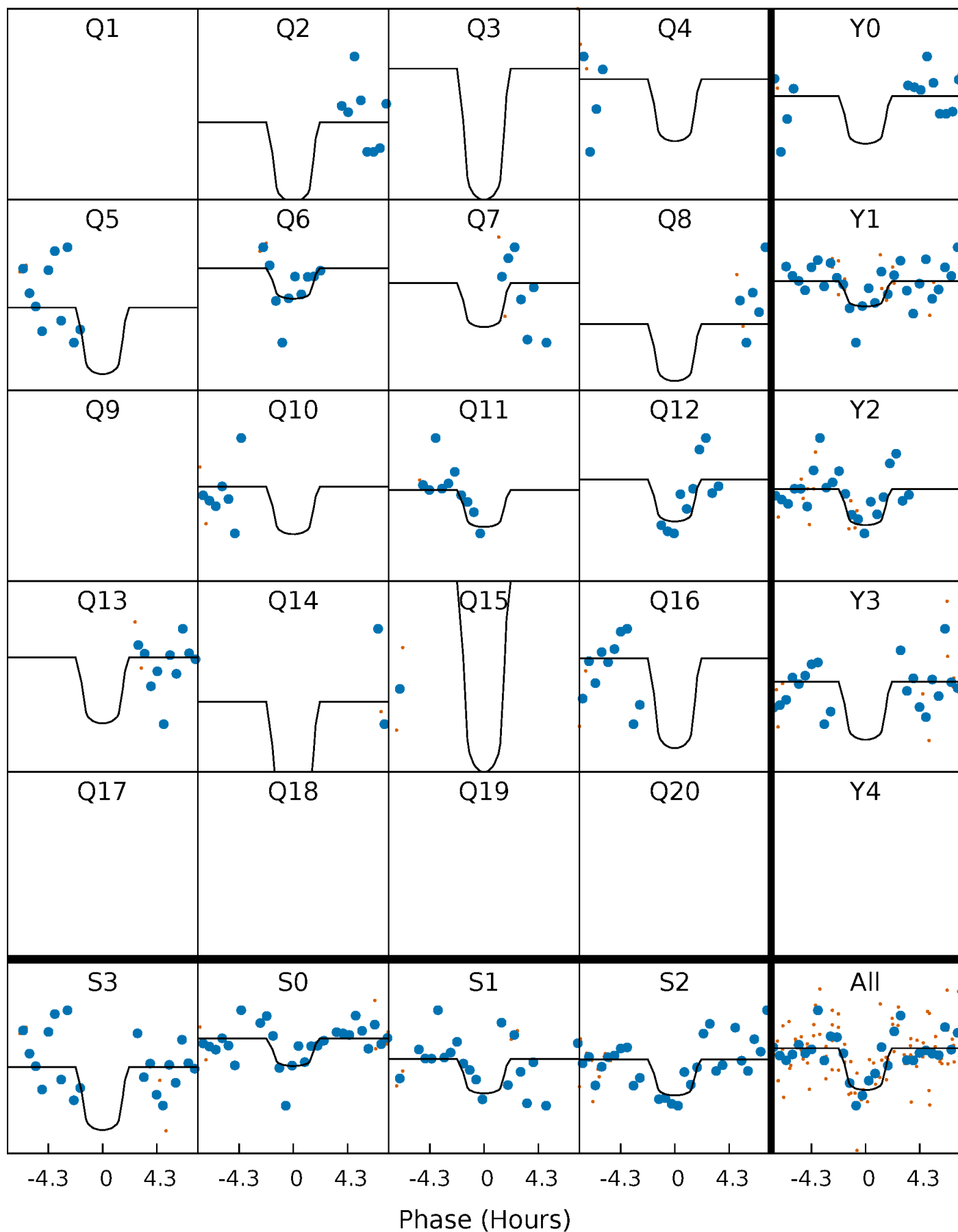
PDC Quarter-Phased Transit Curves

TCE 008104065-02 P= 97.635417 Days $T_0=171.883816$ (BKJD)



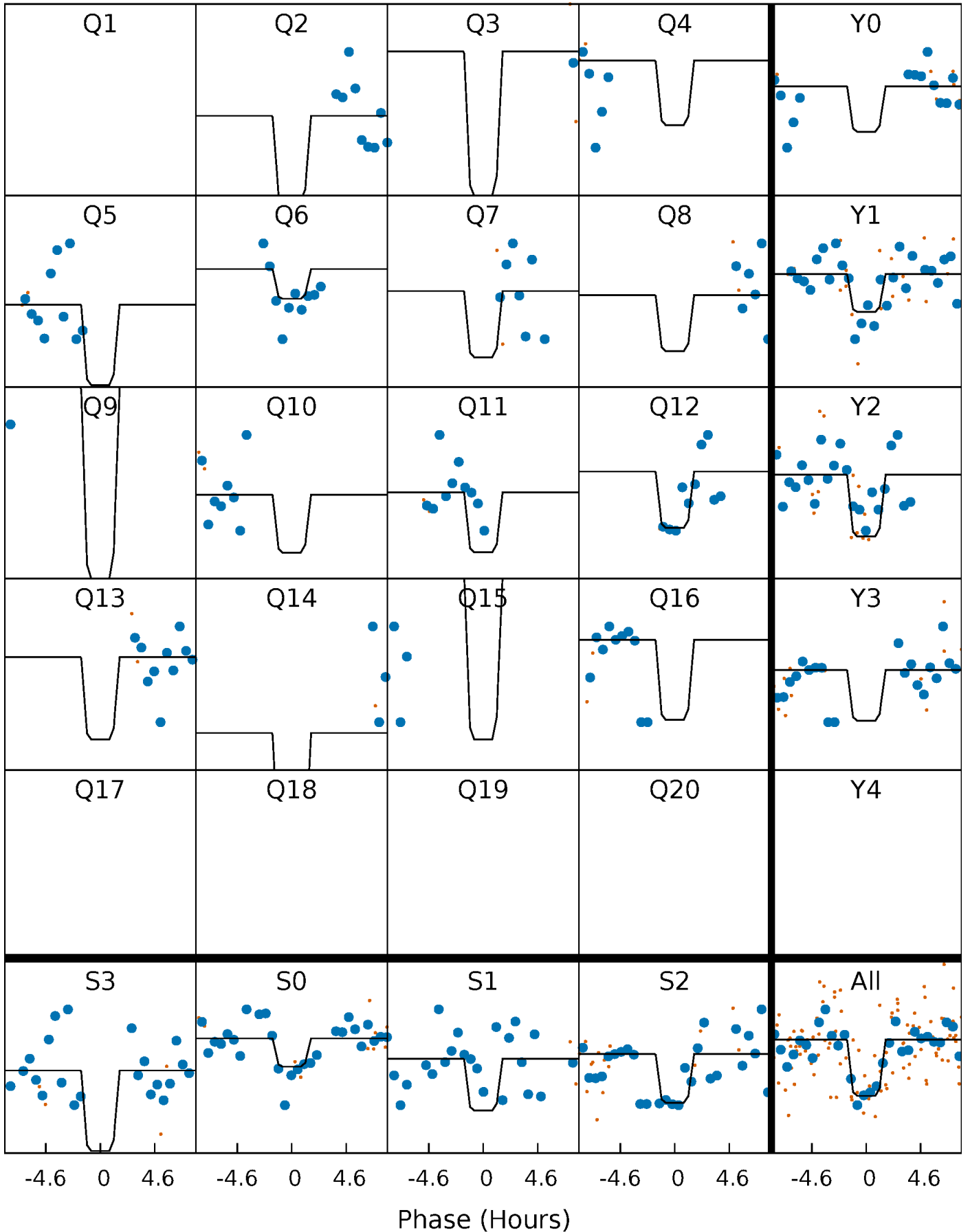
DV Quarter-Phased Transit Curves

TCE 008104065-02 P= 97.635417 Days $T_0=171.883816$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

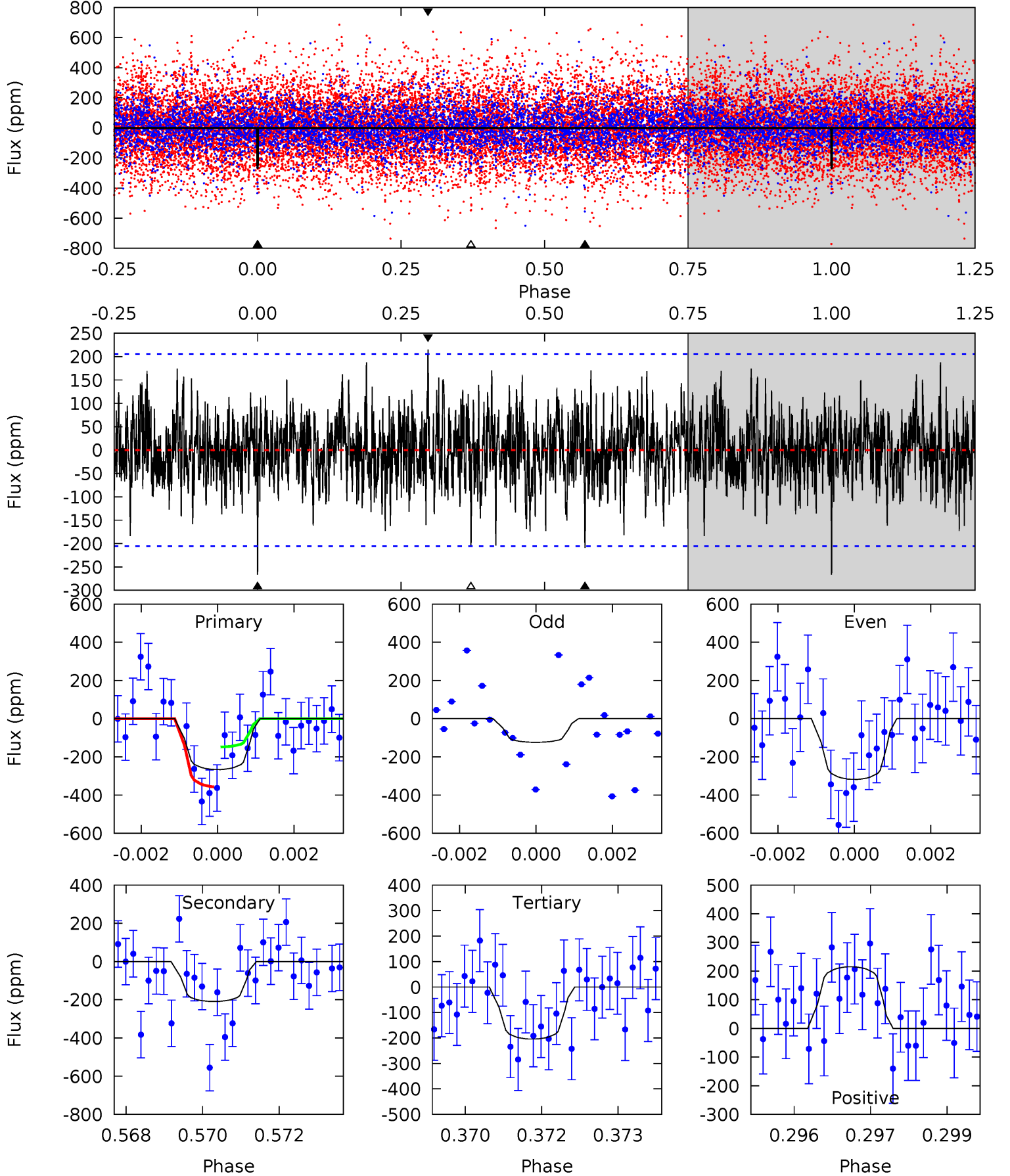
TCE 008104065-02 P= 97.634703 Days $T_0=171.887948$ (BKJD)



DV Model-Shift Uniqueness Test

008104065-02, P = 97.635417 Days, E = 74.248399 Days

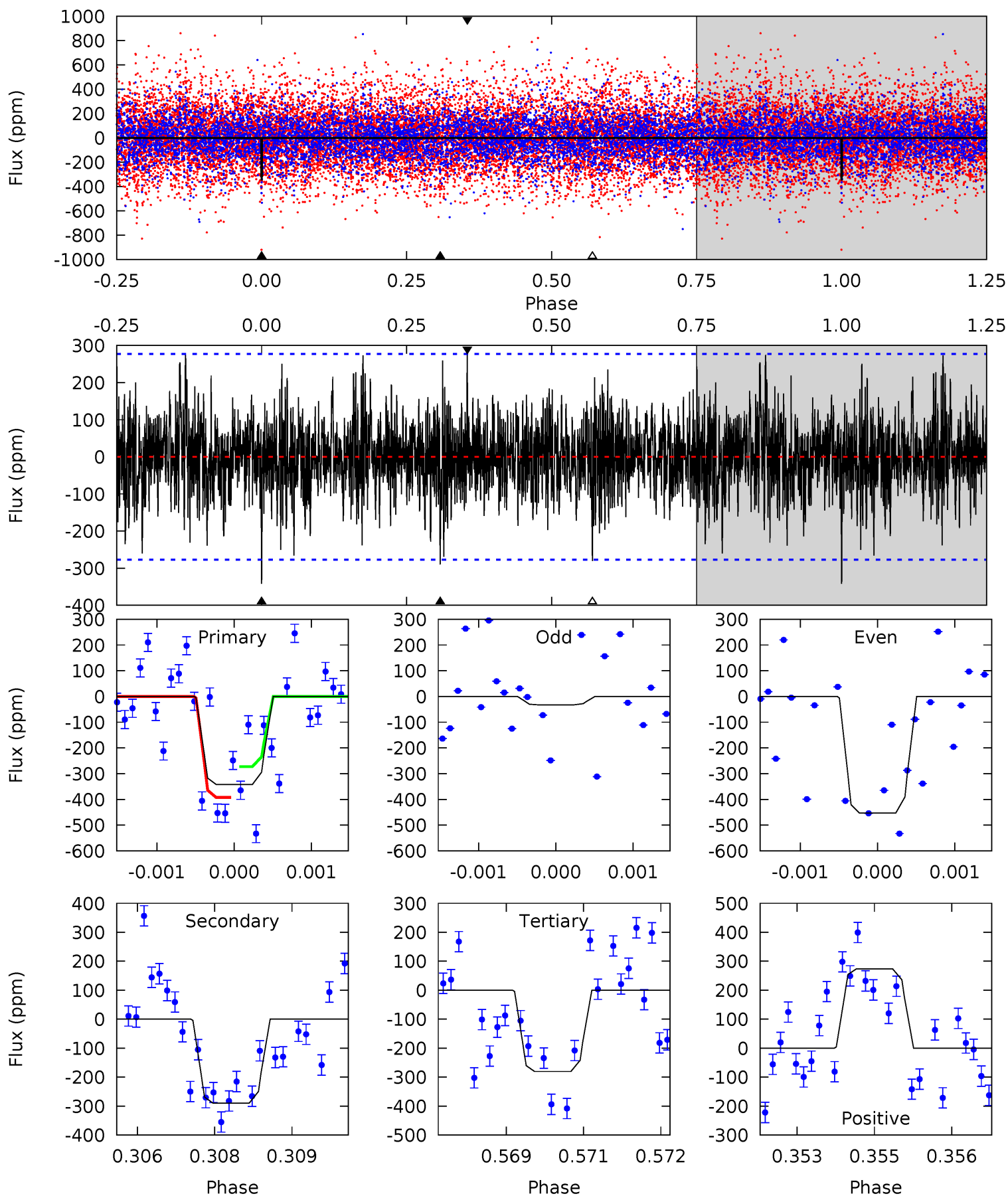
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.94	5.45	5.33	5.60	5.36	3.15	1.54	1.62	1.34	0.12	-0.16	2.29	0.60	0.45	2.73



Alt Model-Shift Uniqueness Test

008104065-02, P = 97.634703 Days, E = 74.253245 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.65	5.64	5.46	5.33	5.39	3.20	1.54	1.19	1.32	0.18	0.31	3.58	0.99	0.44	1.16



Stellar Parameters For KIC 008104065

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7296^{+232}_{-348}	$4.194^{+0.124}_{-0.186}$	$-0.240^{+0.250}_{-0.350}$	$1.569^{+0.491}_{-0.327}$	$1.408^{+0.225}_{-0.225}$	$0.513^{+0.323}_{-0.267}$
	+3%/-5%	+3%/-4%	+104%/-146%	+31%/-21%	+16%/-16%	+63%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008104065-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-209 ± 38	$3.40^{+1.58}_{-1.43}$	831^{+67}_{-55}	6239^{+1997}_{-1037}	2123^{+4072}_{-1154}
Alt.	-290 ± 51	$3.44^{+1.57}_{-1.44}$	835^{+64}_{-59}	6717^{+2419}_{-1166}	2920^{+5022}_{-1622}

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

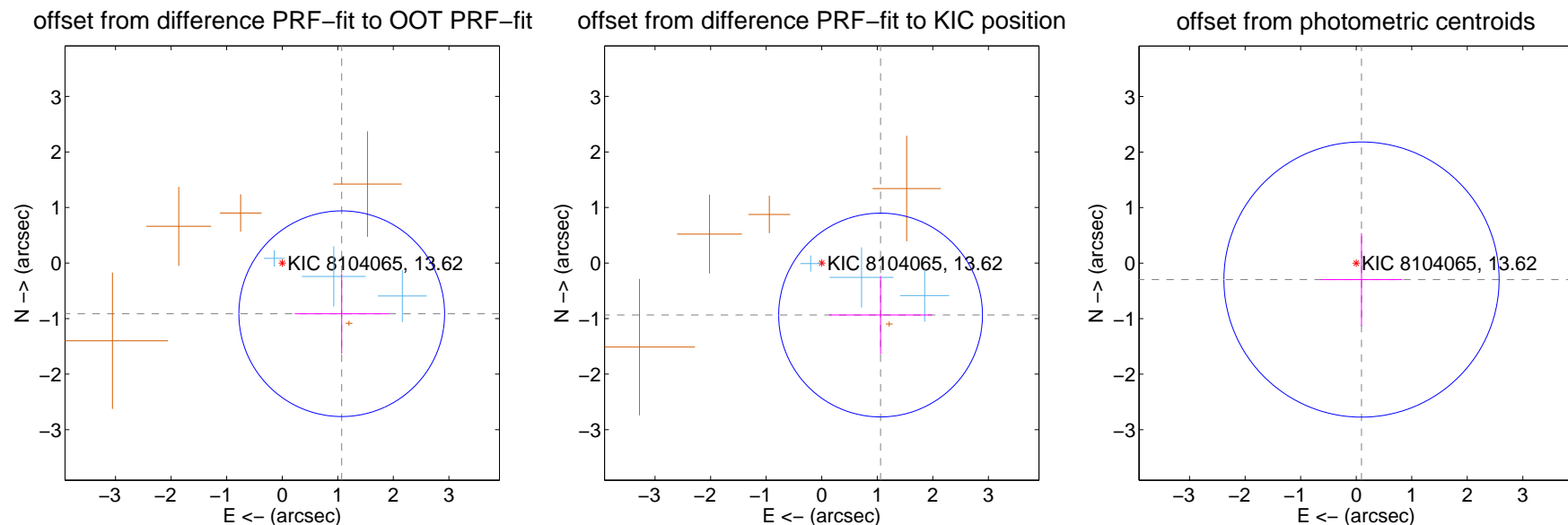
DV Centroid Data

Supplemental centroid analysis for 008104065-02. Kepler magnitude: 13.62. Transit SNR 8.69

There are 3 quarters with good PRF difference image offsets

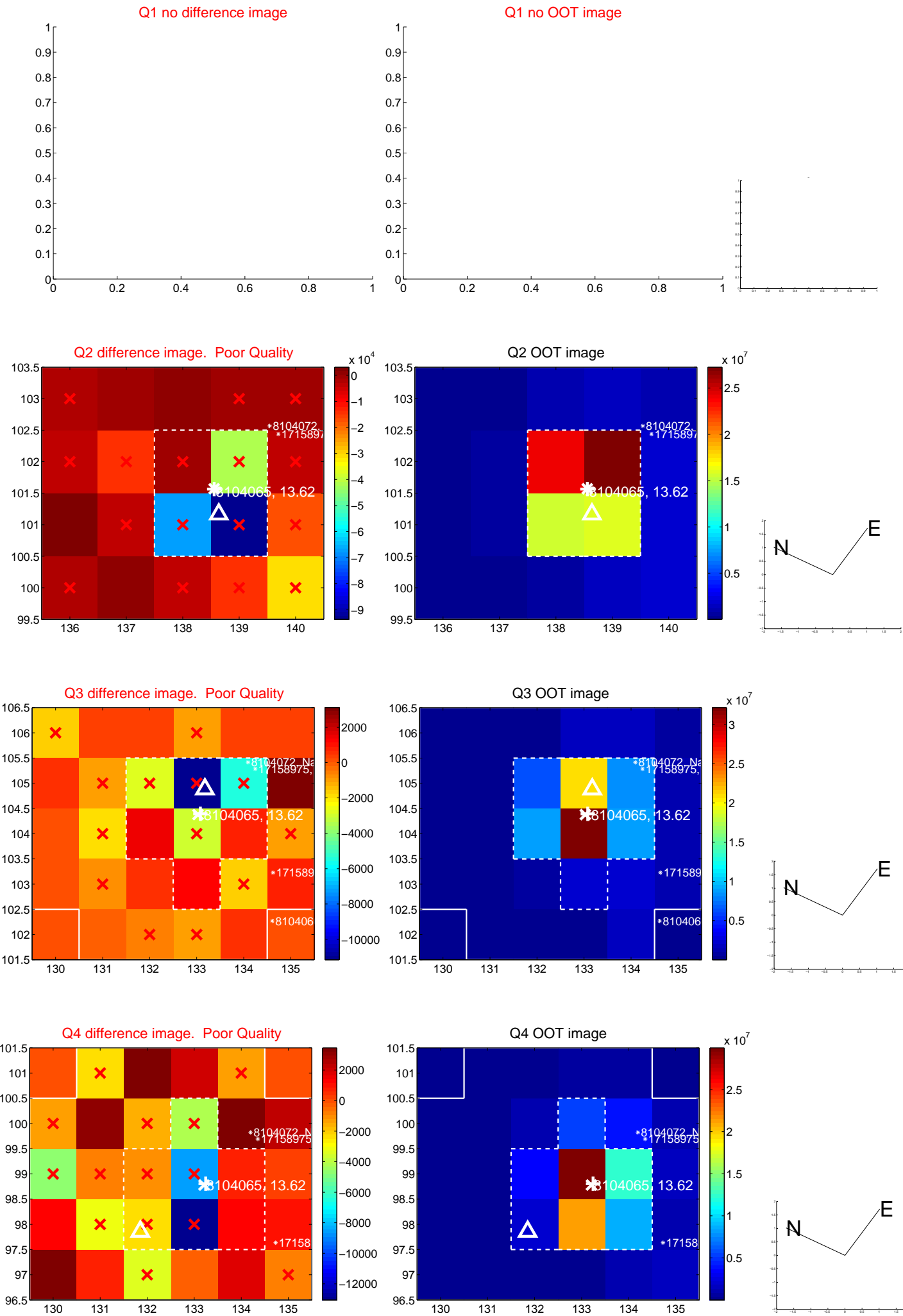
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.407 ± 0.617	2.28	-1.071 ± 0.847	-0.912 ± 0.720
PRF-fit source offset from KIC position	1.414 ± 0.611	2.31	-1.059 ± 0.928	-0.936 ± 0.704
photometric centroid source offset	0.31 ± 0.83	0.38	-0.10 ± 0.73	-0.30 ± 0.83

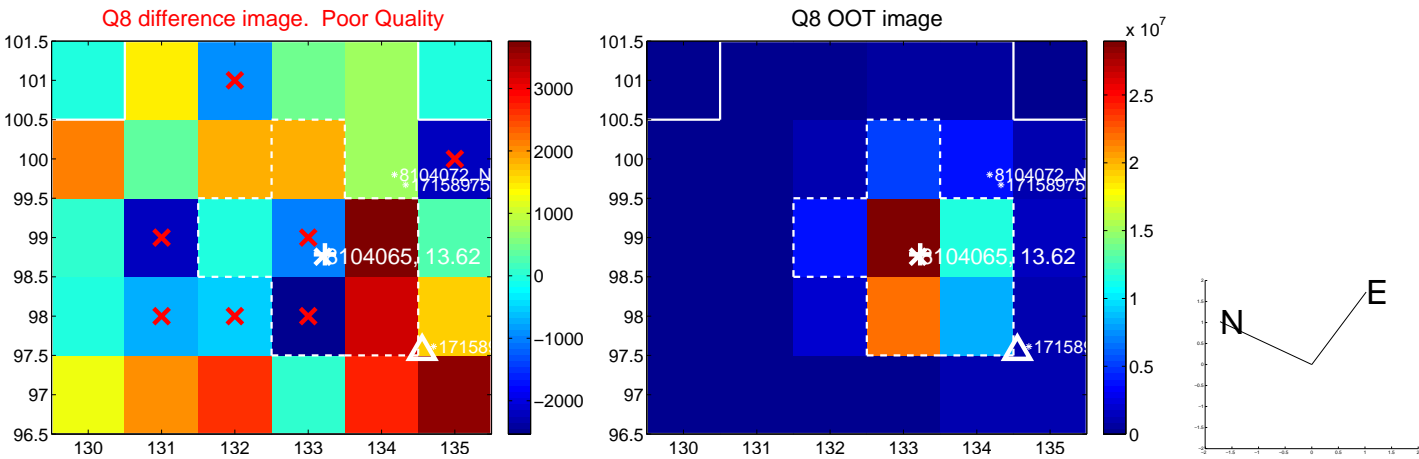
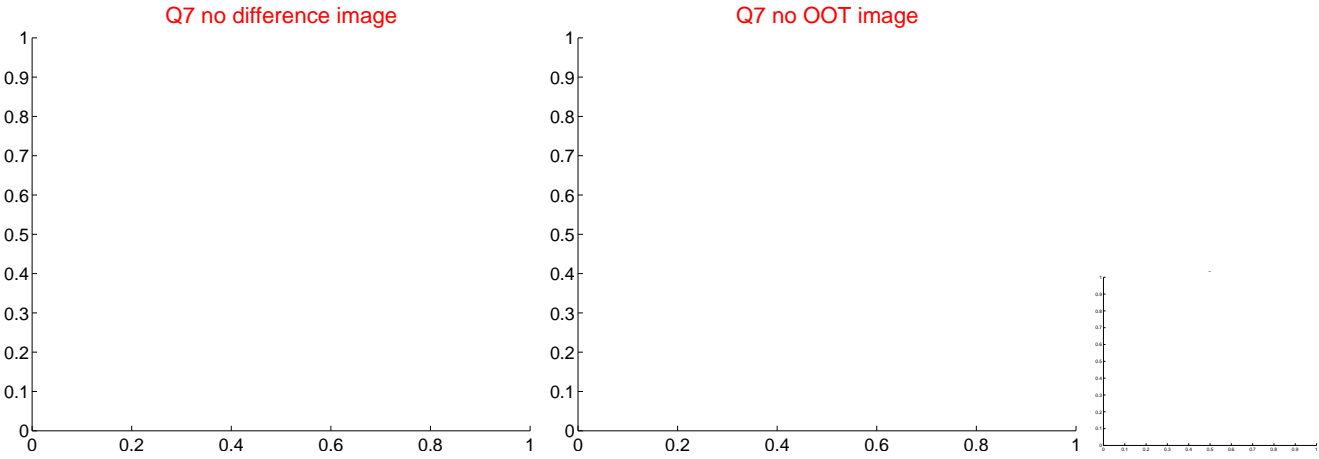
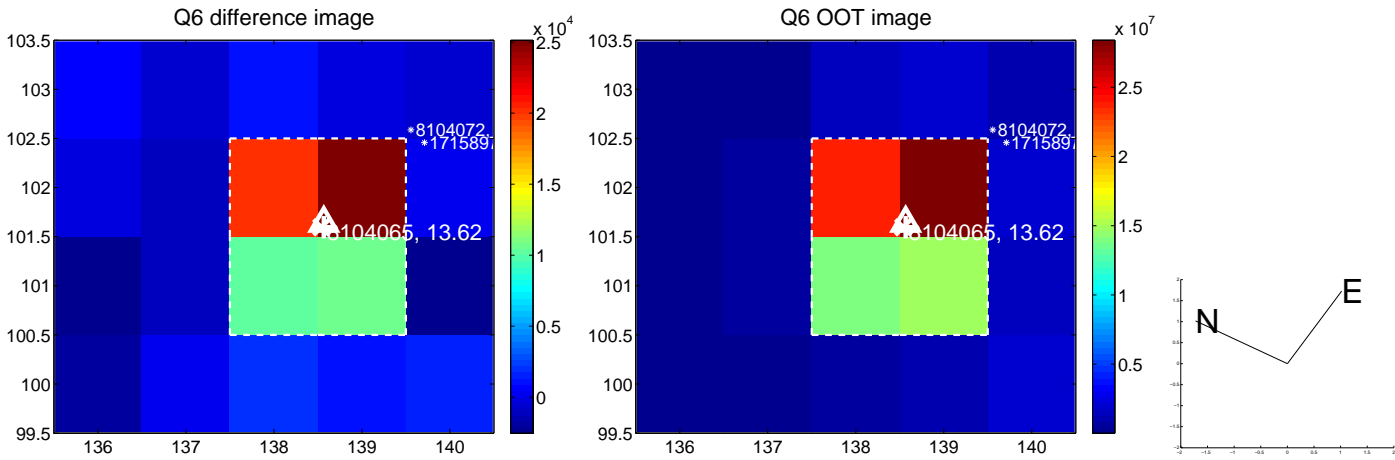
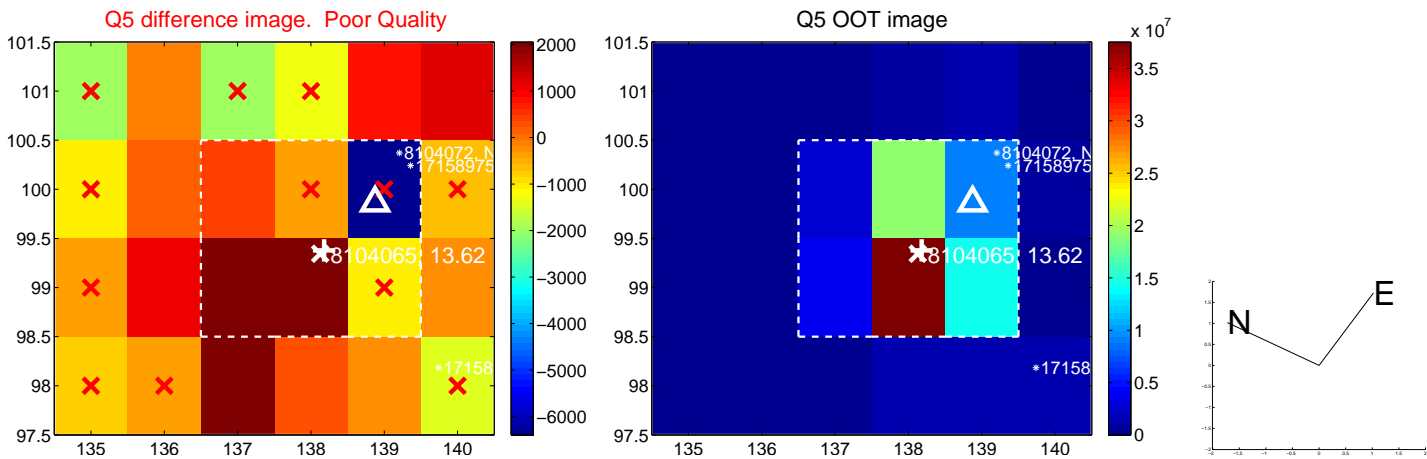


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

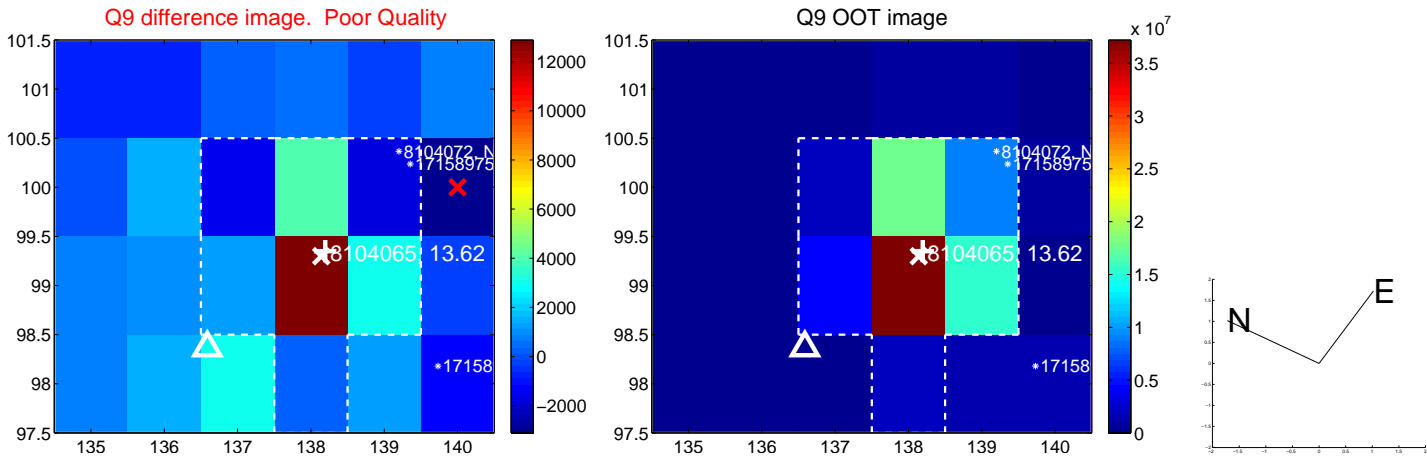
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



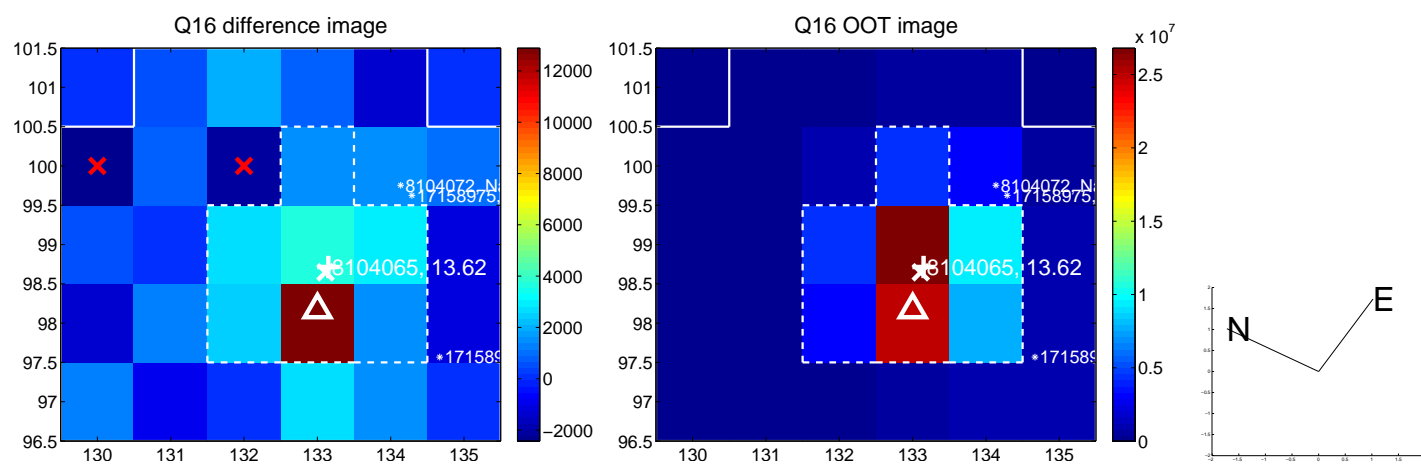
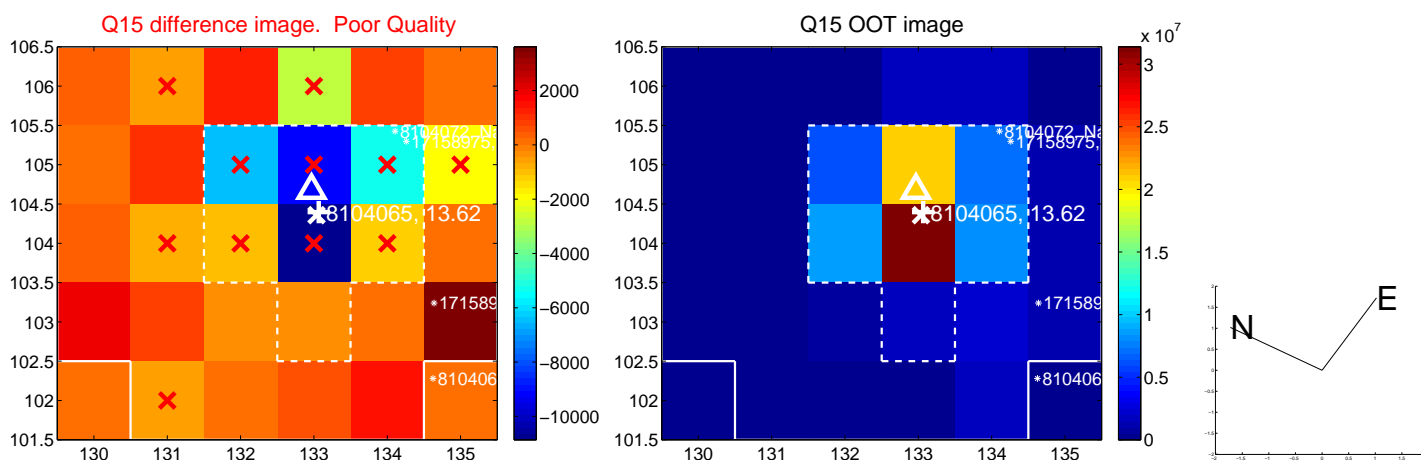
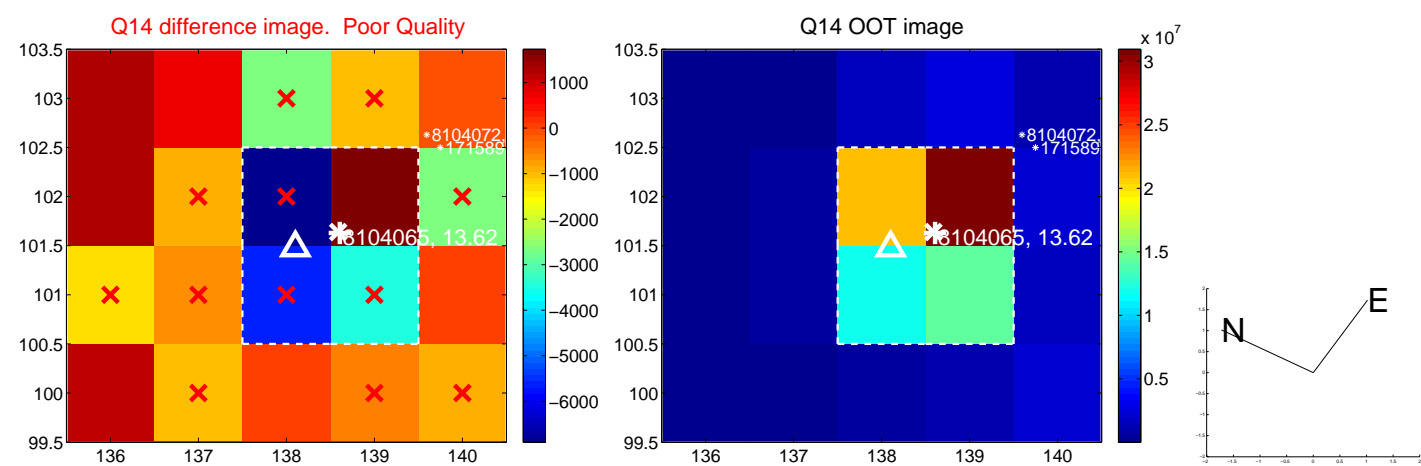
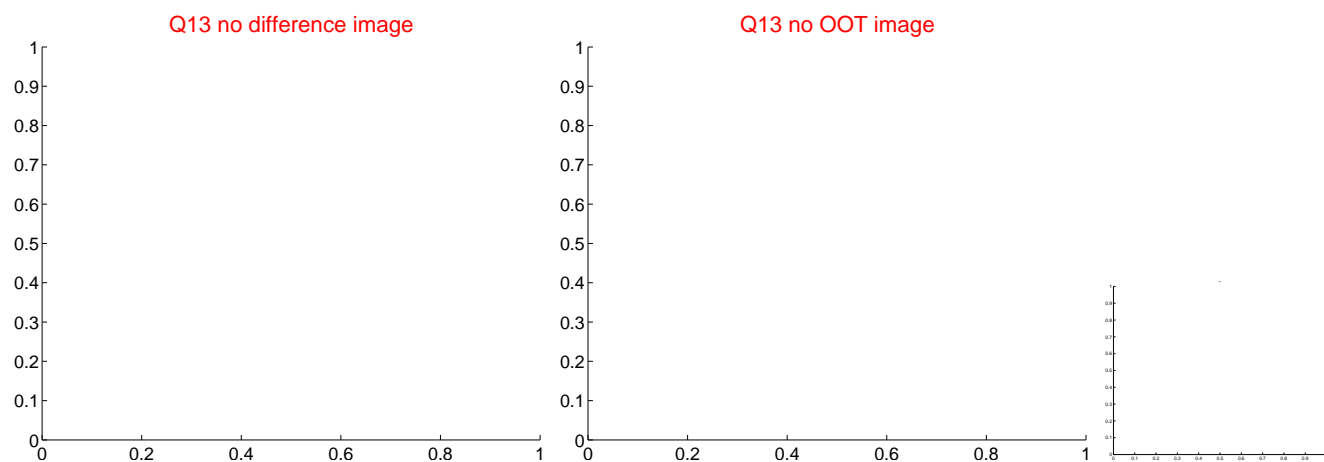
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



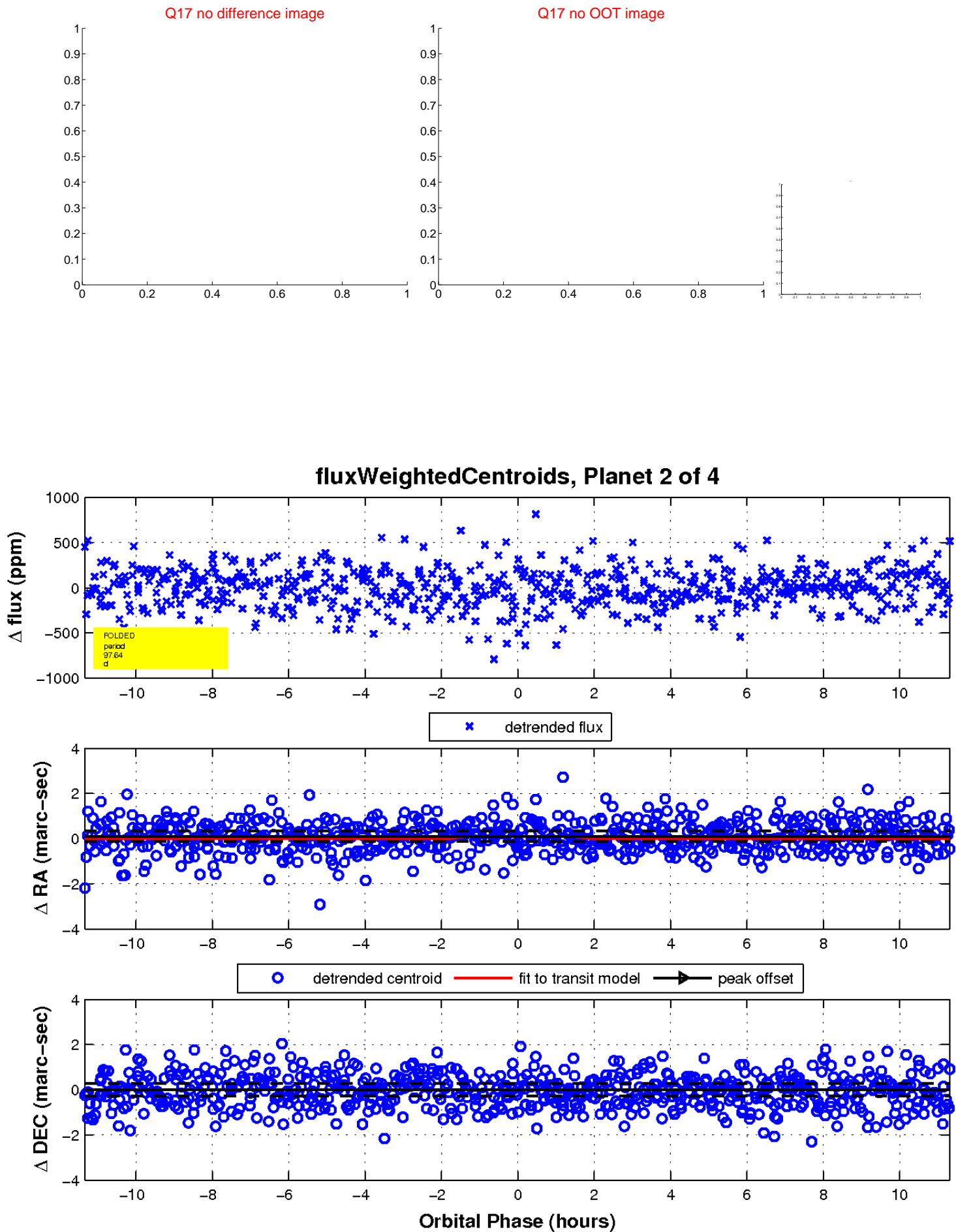
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

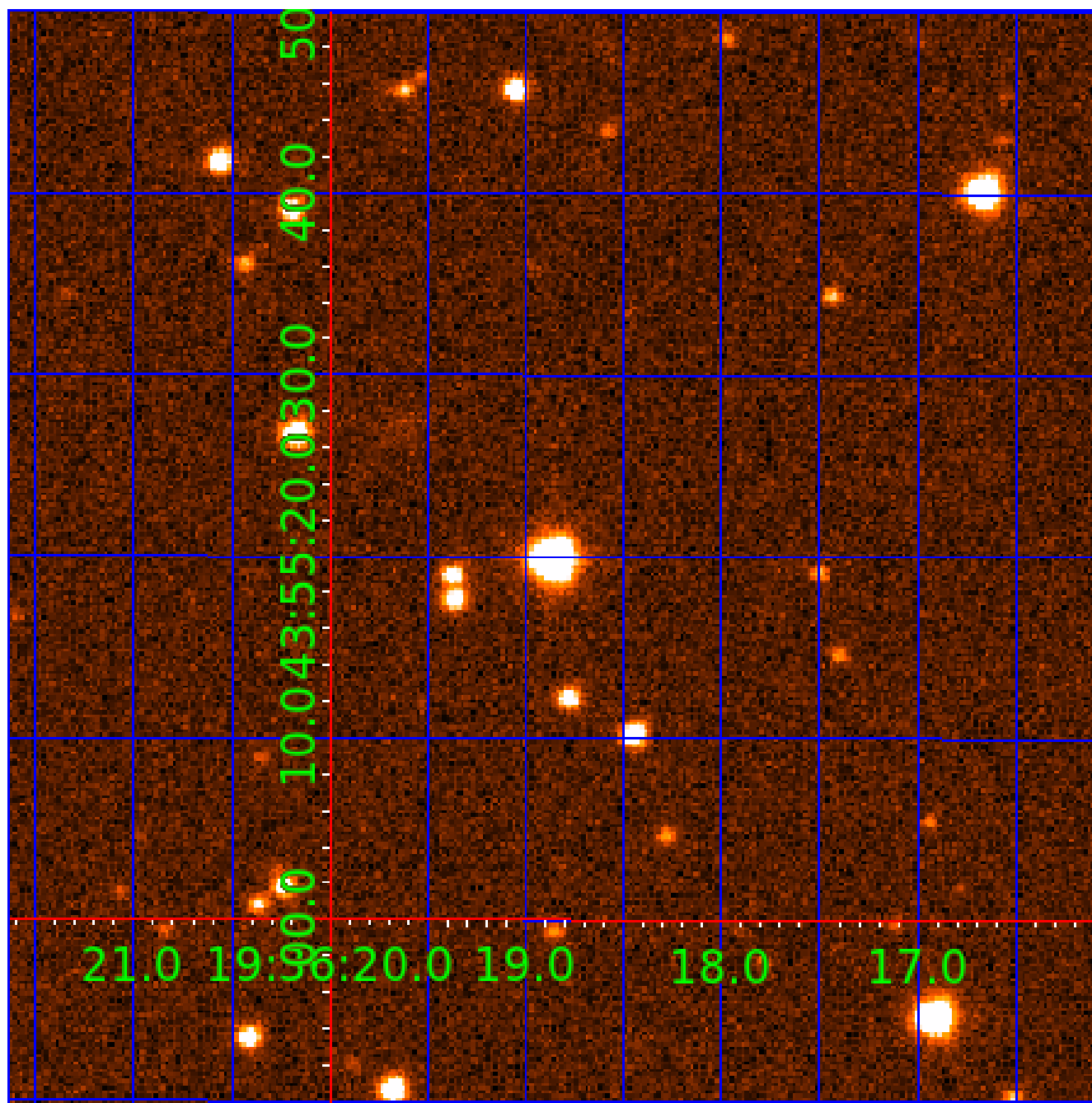


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008104065

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})
008104065-01	OBS	No	0.913996	132.378808	15.4	5.363	8.0	6.2	1.57	7296	0.71	14668.64
008104065-02	OBS	No	97.635417	171.883816	316.0	3.780	9.3	8.7	1.57	7296	3.32	28.94
008104065-03	OBS	No	68.989673	156.631091	335.7	1.925	8.3	8.7	1.57	7296	3.37	45.98
008104065-04	OBS	No	49.505080	140.104951	166.4	6.878	7.8	7.7	1.57	7296	2.21	71.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008104065-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008104065-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—EPHEM_MATCH
008104065-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008104065-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

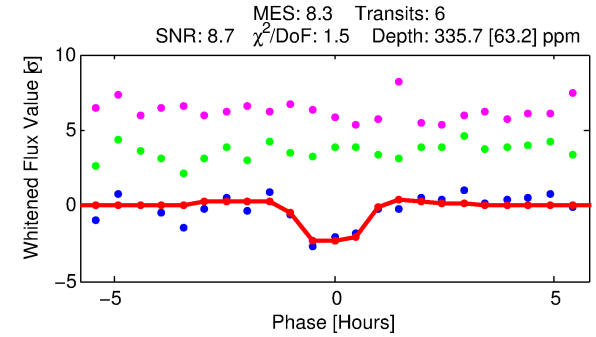
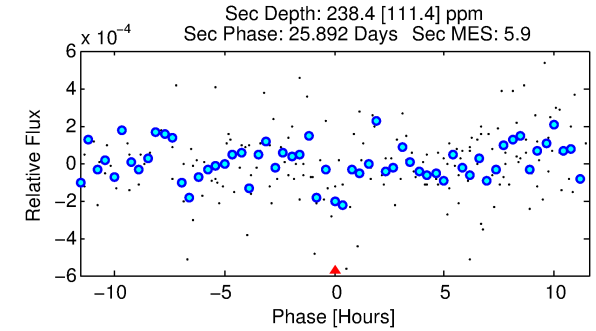
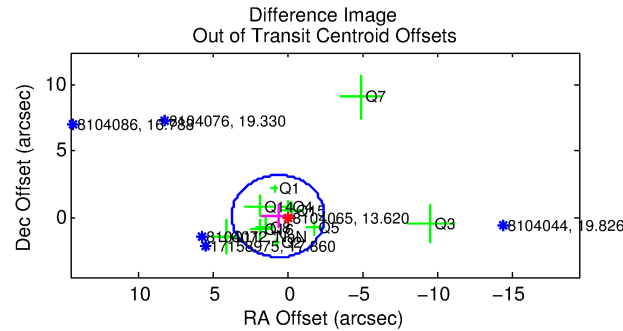
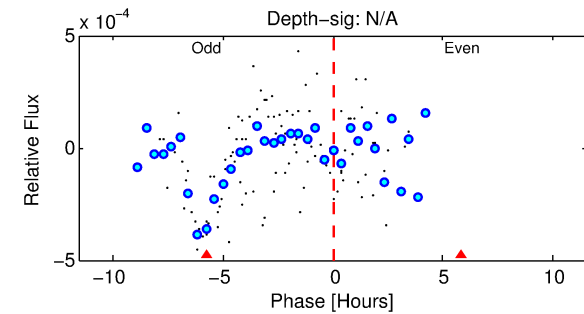
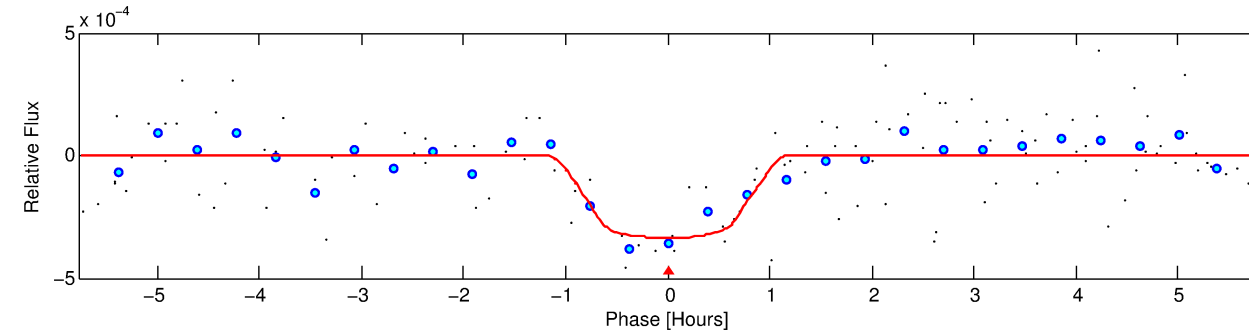
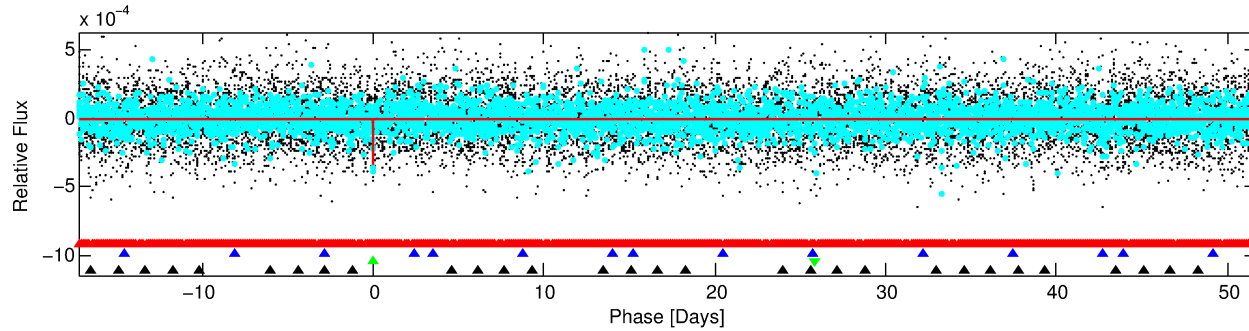
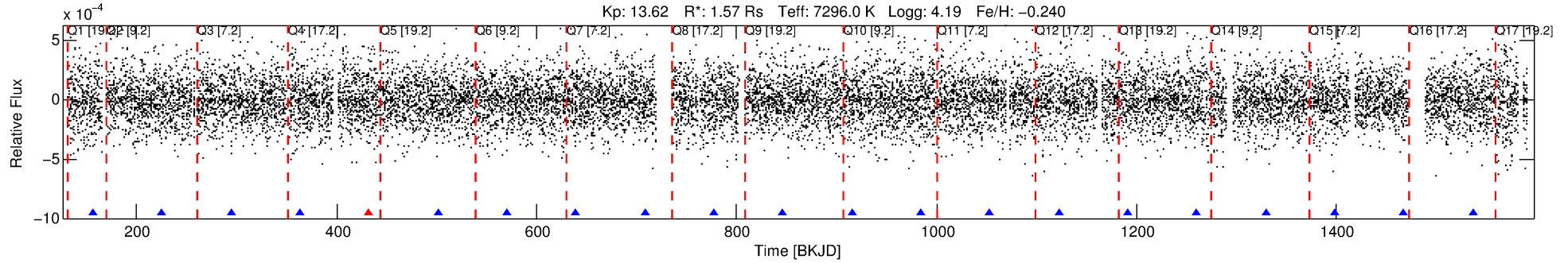
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008104065-03

No Significant Match Found

DV One-Page Summary

KIC: 8104065 Candidate: 3 of 4 Period: 68.990 d



DV Fit Results:

Period = 68.98967 [0.00116] d
Epoch = 156.6311 [0.0062] BKJD
Rp/R* = 0.0197 [0.0109]
a/R* = 124.72 [416.61]
b = 0.91 [0.62]
Seff = 45.98 [18.48]
Teq = 664 [67] K
Rp = 3.37 [2.14] Re
a = 0.3687 [0.0932] AU
Ag = 1570.63 [1963.04] [0.80] σ
Teffp = 6463 [1961] K [2.95] σ

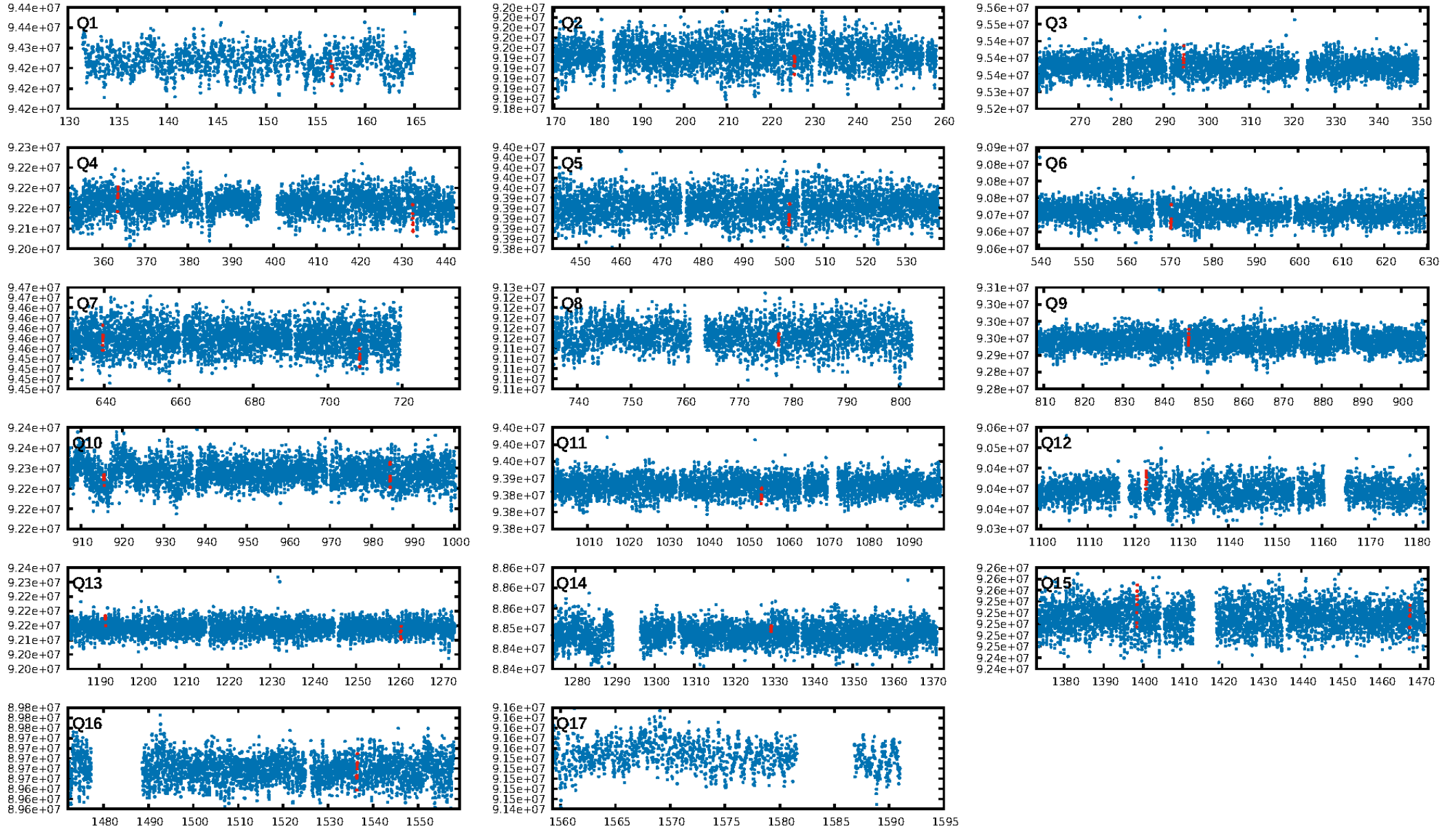
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.48] σ
LongPeriod-sig: 100.0% [162.09] σ
ModelChiSquare2-sig: 88.6%
ModelChiSquareGof-sig: 99.2%
Bootstrap-pfa: 2.89e-09
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: -1.155
Centroid-sig: 28.4%
Centroid-so: 1.047 arcsec [1.34] σ
OotOffset-rm: 0.612 arcsec [0.59] σ
KicOffset-rm: 0.676 arcsec [0.66] σ
OotOffset-st: 2/4/3/2 [11]
KicOffset-st: 2/4/3/2 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 0.27 [4/15]

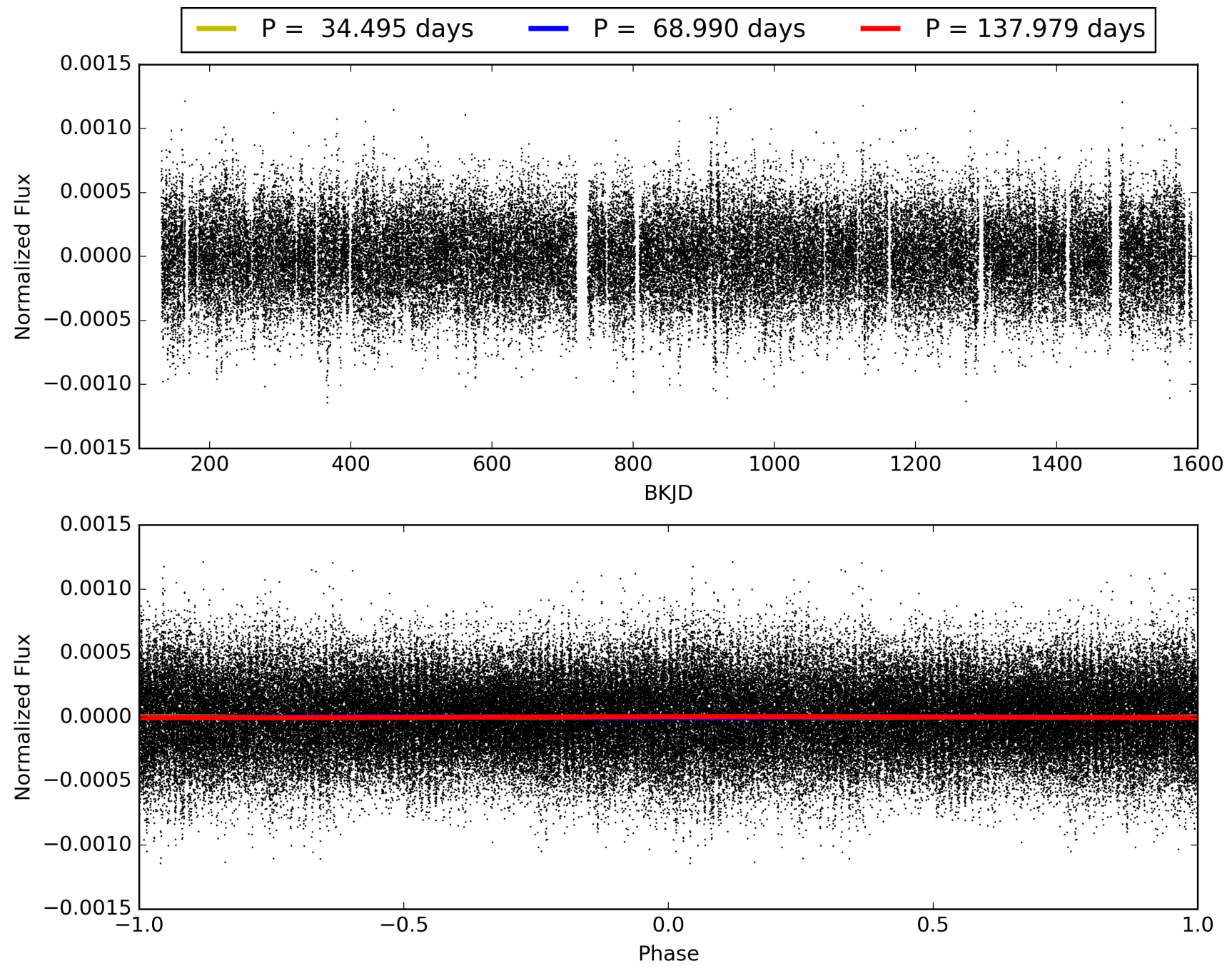
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:49:05 Z

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

TCE 008104065-03, PDC Light Curves

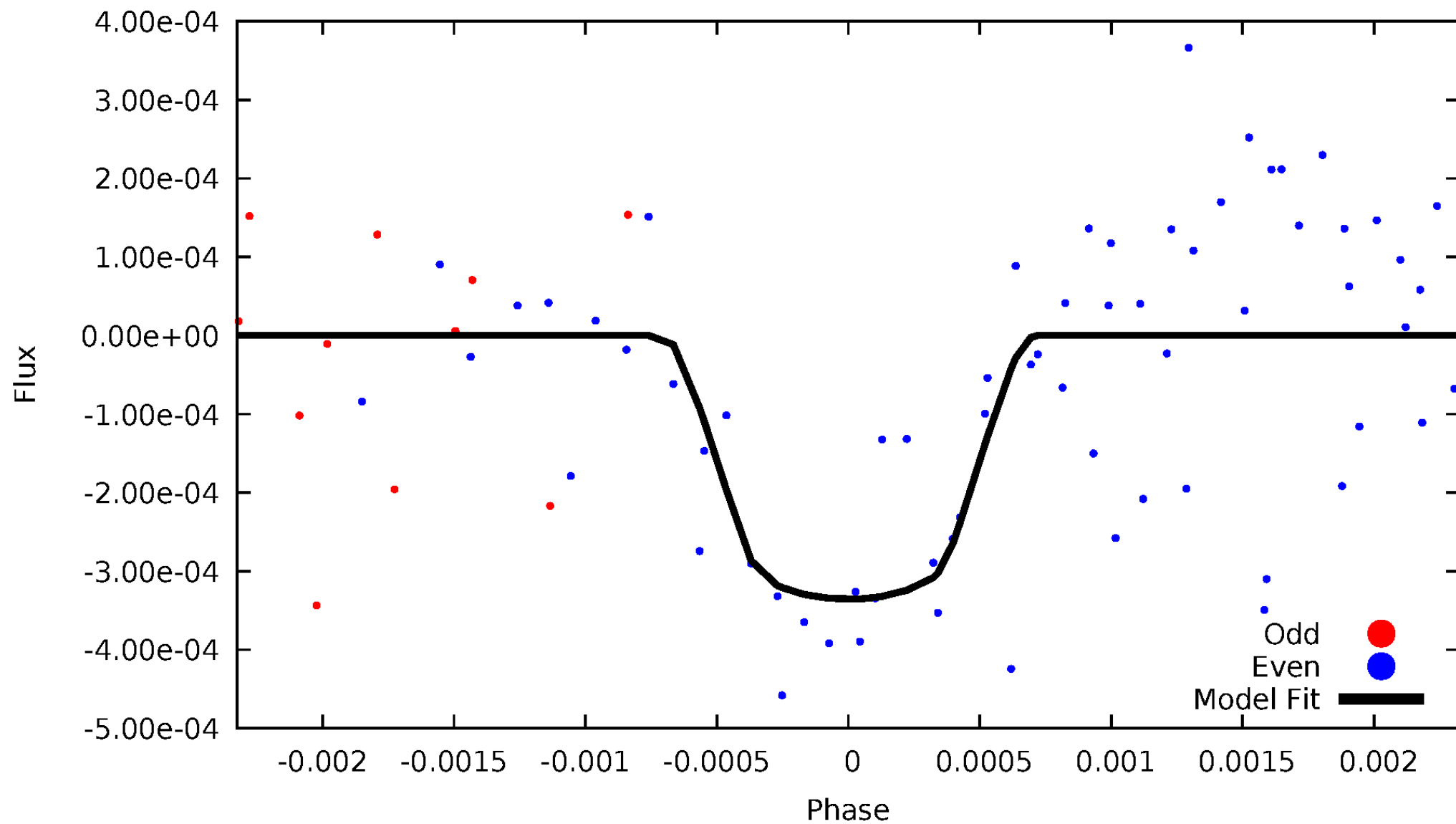


TCE 008104065-03



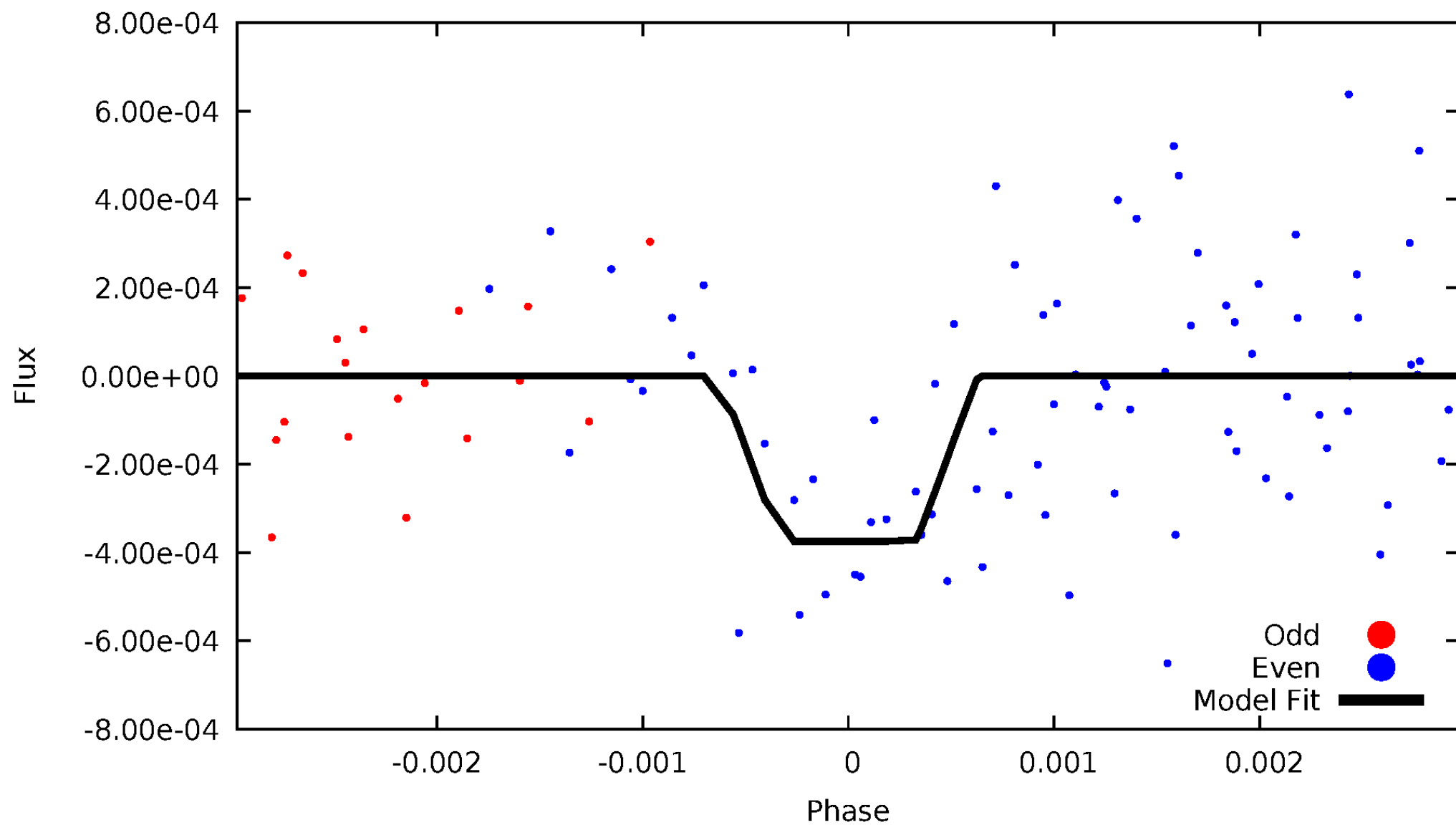
DV Odd/Even

TCE 008104065-03



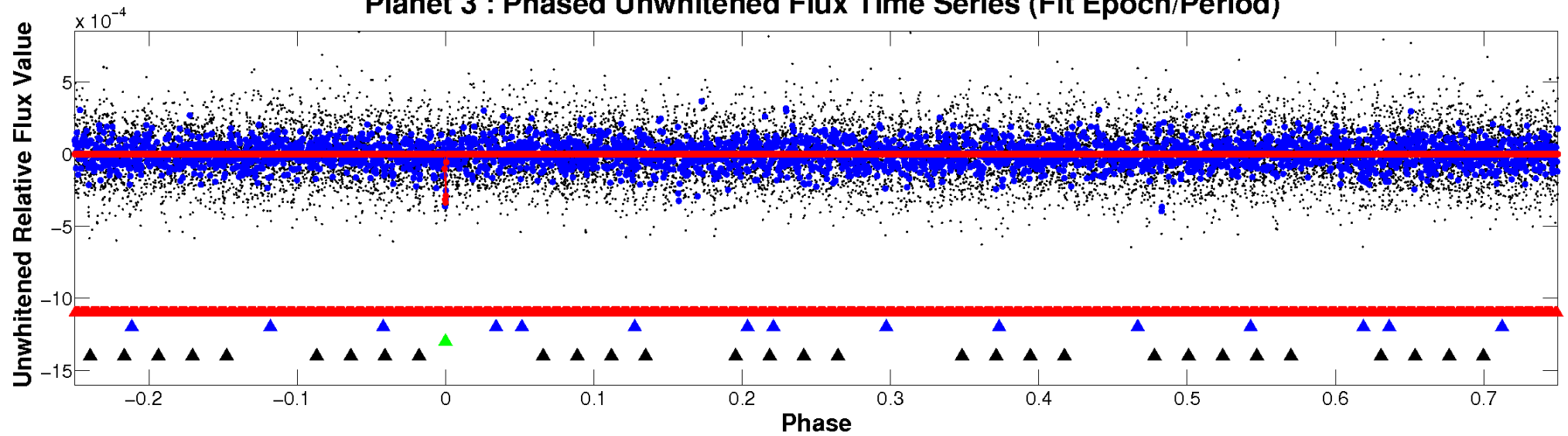
ALT Odd/Even

TCE 008104065-03

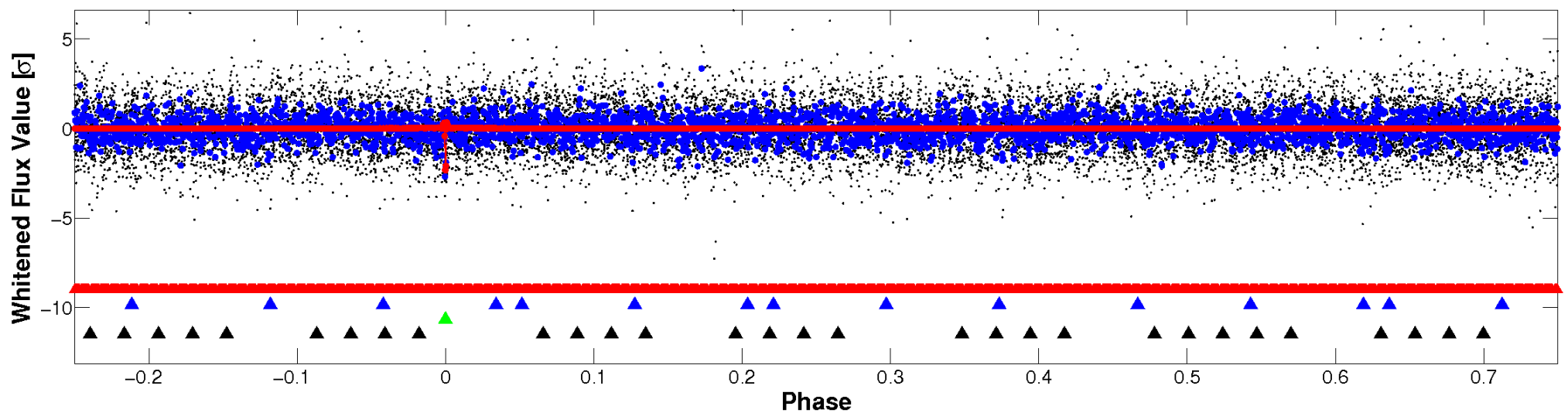


Non-Whitened Vs. Whitened Light Curve

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

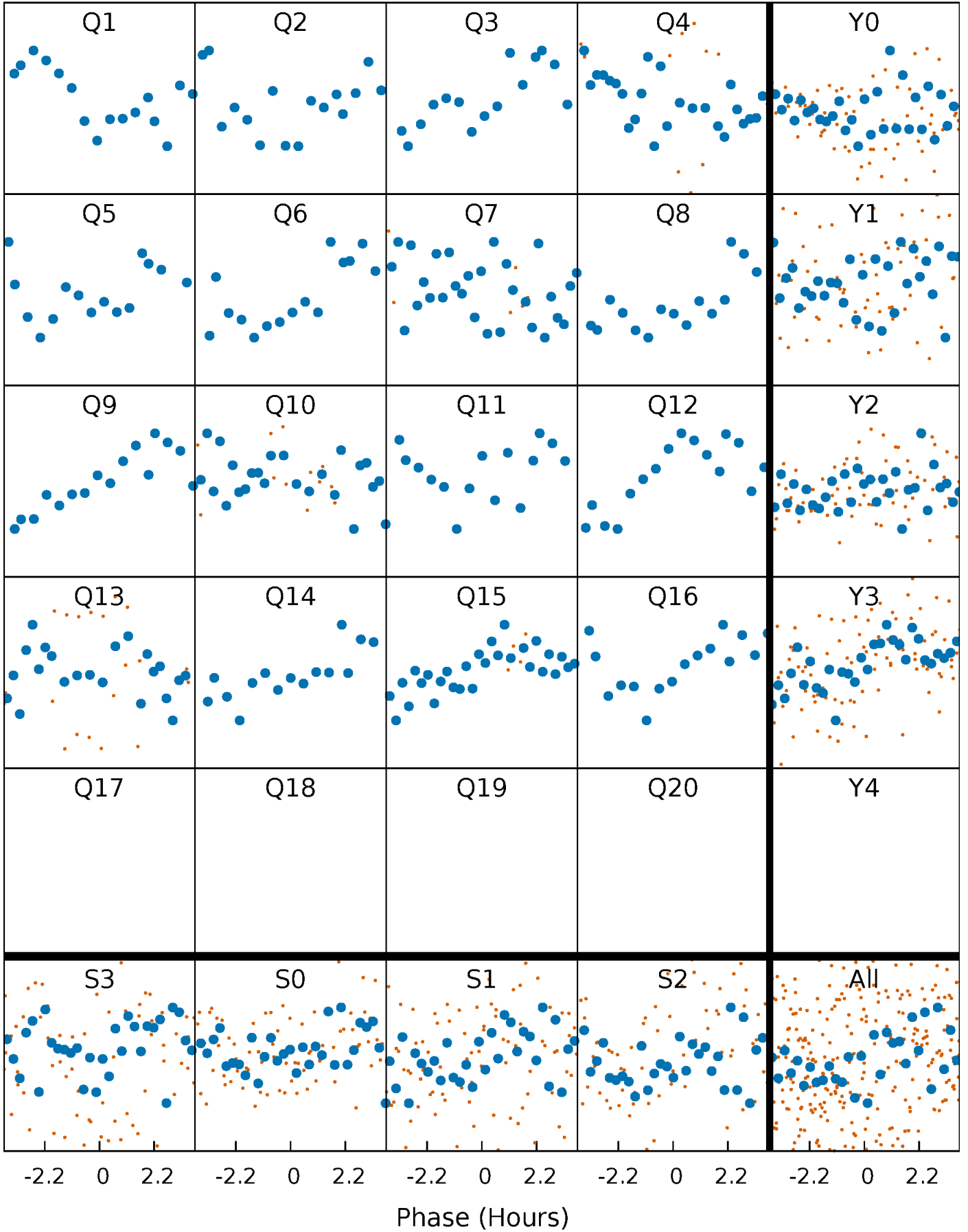


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



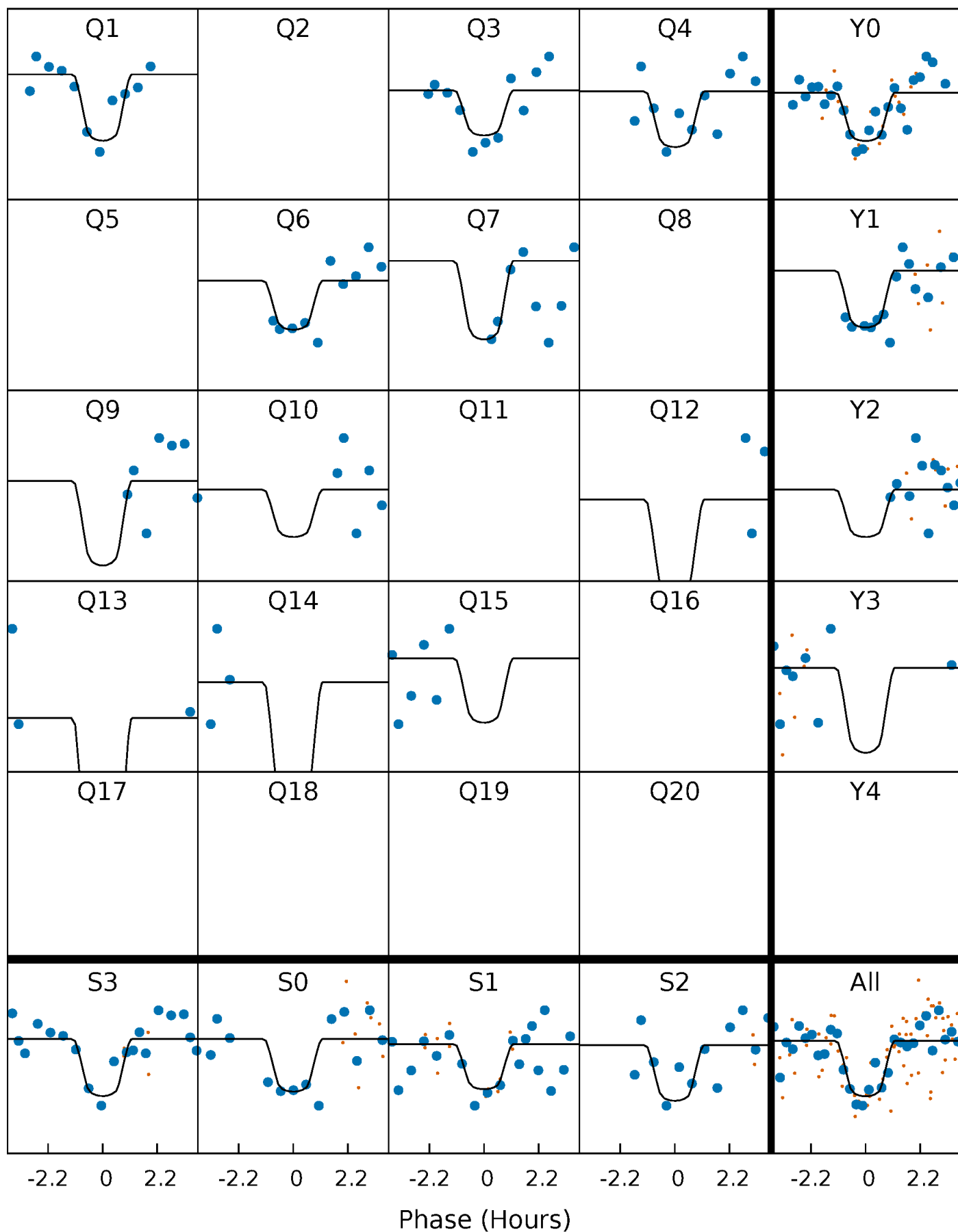
PDC Quarter-Phased Transit Curves

TCE 008104065-03 P= 68.989673 Days $T_0=156.631091$ (BKJD)



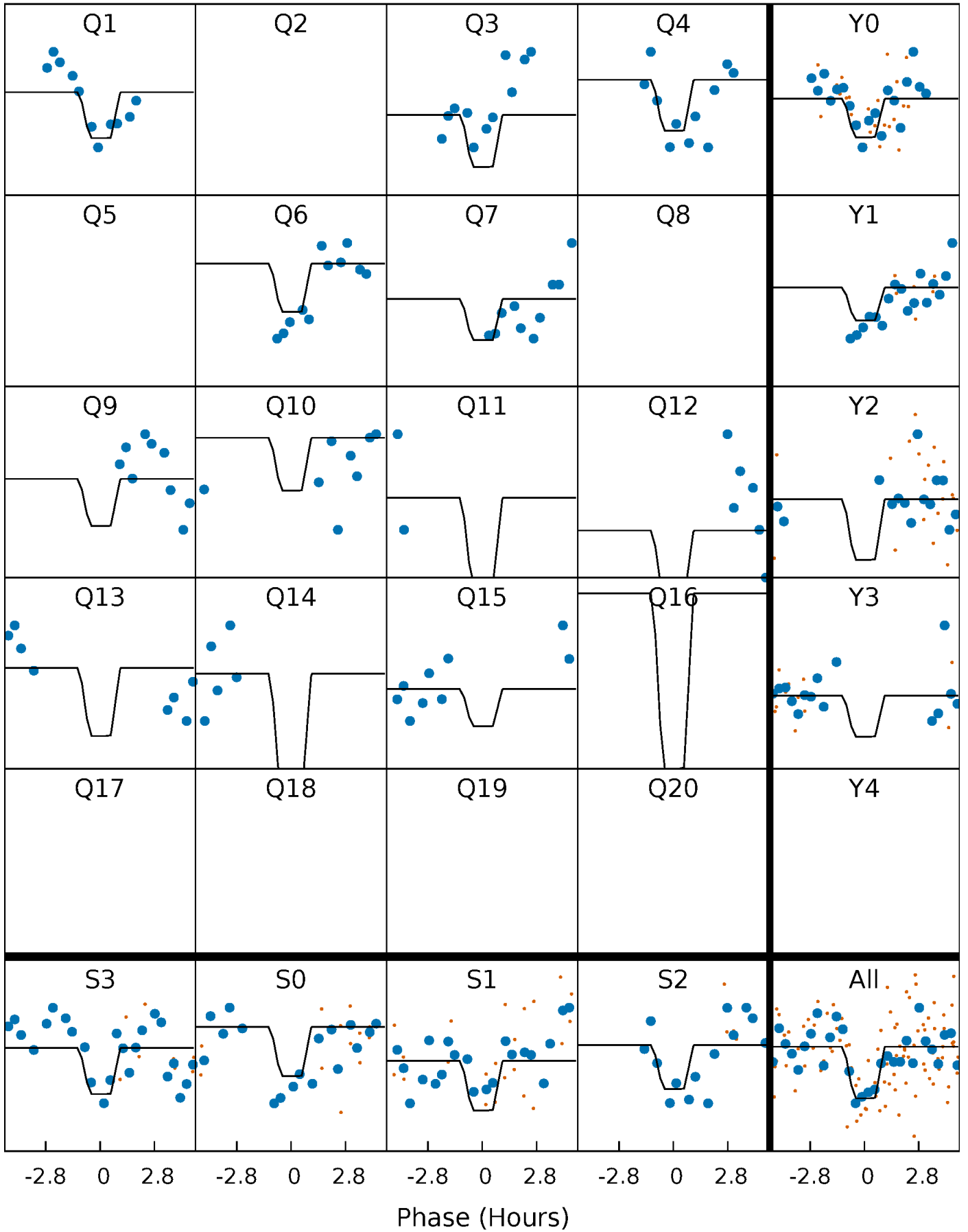
DV Quarter-Phased Transit Curves

TCE 008104065-03 P= 68.989673 Days $T_0=156.631091$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

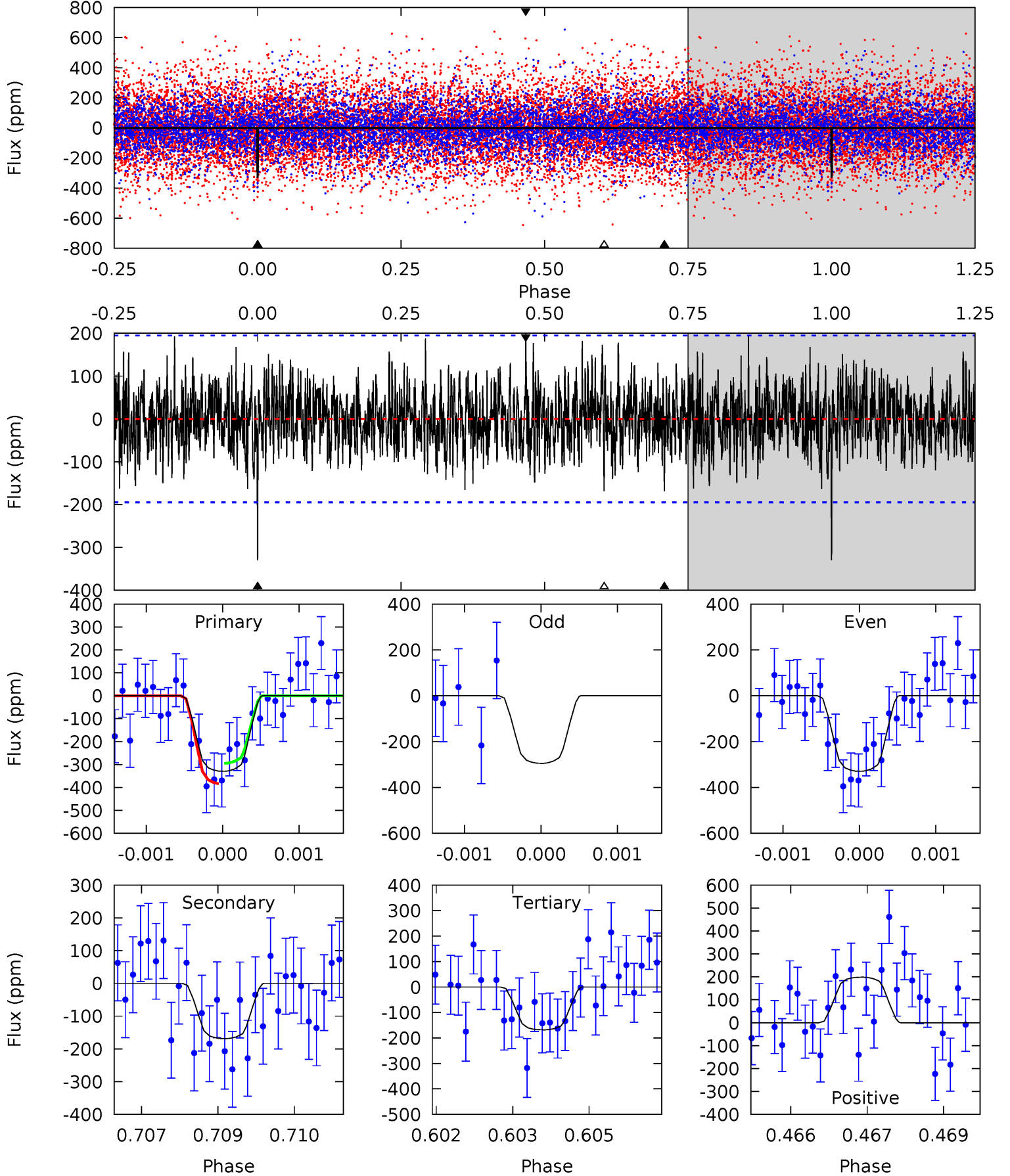
TCE 008104065-03 P= 68.990516 Days $T_0=156.623787$ (BKJD)



DV Model-Shift Uniqueness Test

008104065-03, P = 68.989673 Days, E = 87.641418 Days

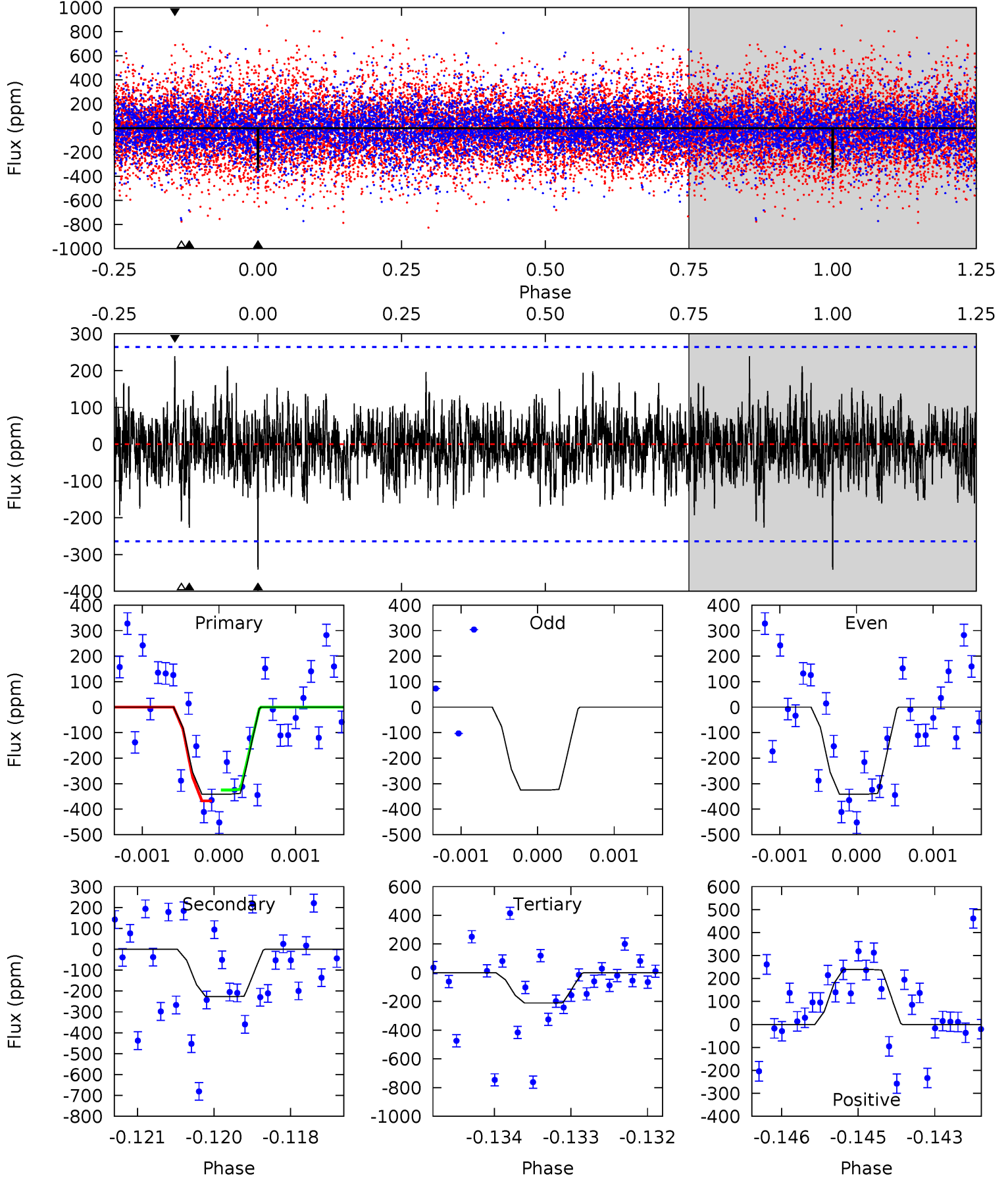
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.14	4.67	4.66	5.51	5.39	3.20	1.58	4.47	3.63	0.01	-0.83	0.59	0.99	0.38	1.19



Alt Model-Shift Uniqueness Test

008104065-03, P = 68.990516 Days, E = 87.633271 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.00	4.66	4.32	4.90	5.42	3.24	1.21	2.68	2.10	0.34	-0.25	0.20	0.96	0.41	0.43



Stellar Parameters For KIC 008104065

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7296^{+232}_{-348}	$4.194^{+0.124}_{-0.186}$	$-0.240^{+0.250}_{-0.350}$	$1.569^{+0.491}_{-0.327}$	$1.408^{+0.225}_{-0.225}$	$0.513^{+0.323}_{-0.267}$
	+3%/-5%	+3%/-4%	+104%/-146%	+31%/-21%	+16%/-16%	+63%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008104065-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-169 ± 36	$3.47^{+2.13}_{-1.75}$	936^{+69}_{-62}	5784^{+2989}_{-1032}	1036^{+3327}_{-639}
Alt.	-227 ± 49	$3.48^{+1.76}_{-1.71}$	935^{+68}_{-66}	6247^{+3212}_{-1167}	1365^{+4344}_{-792}

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

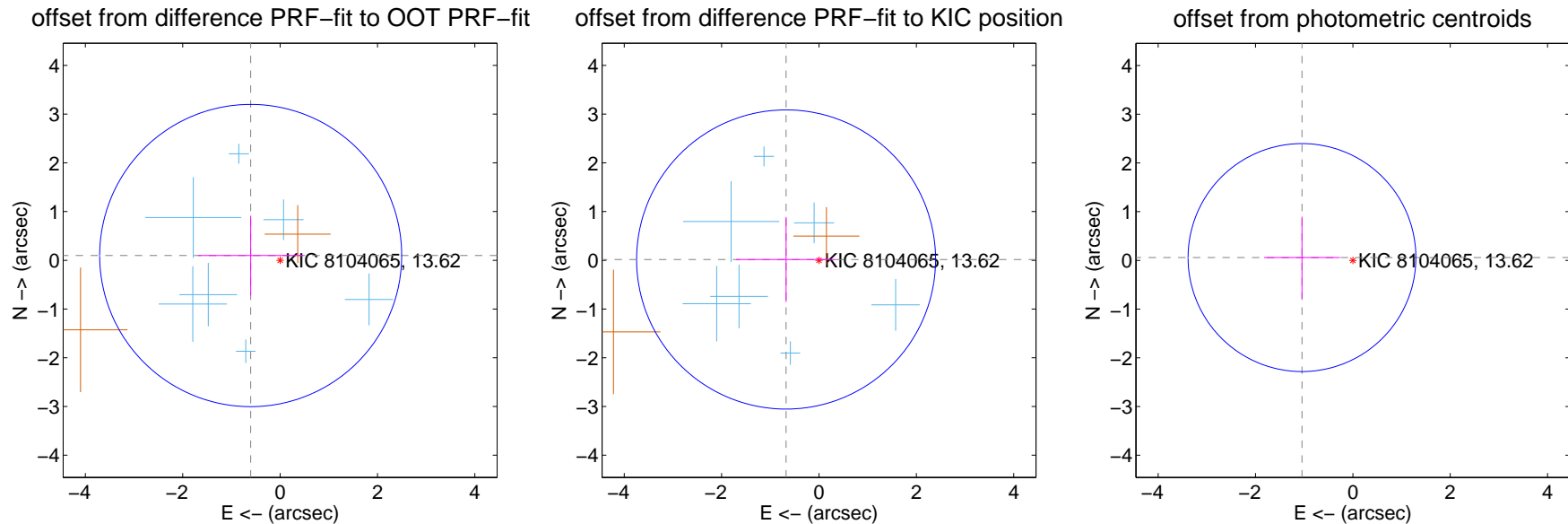
DV Centroid Data

Supplemental centroid analysis for 008104065-03. Kepler magnitude: 13.62. Transit SNR 8.73

There are 7 quarters with good PRF difference image offsets

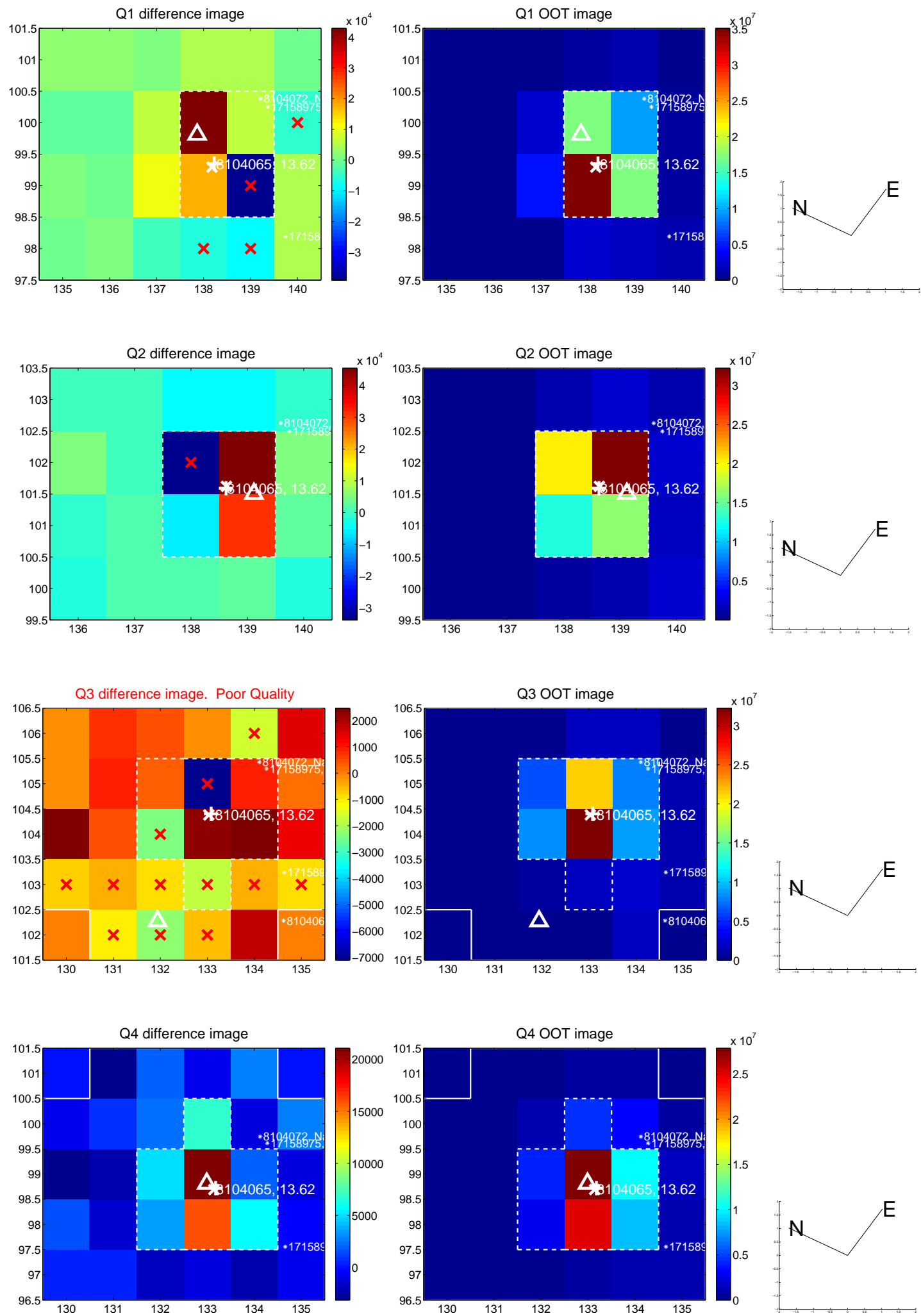
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.612 ± 1.034	0.59	0.604 ± 1.079	0.098 ± 0.816
PRF-fit source offset from KIC position	0.676 ± 1.023	0.66	0.676 ± 1.028	0.017 ± 0.873
photometric centroid source offset	1.05 ± 0.78	1.34	1.05 ± 0.78	0.06 ± 0.84

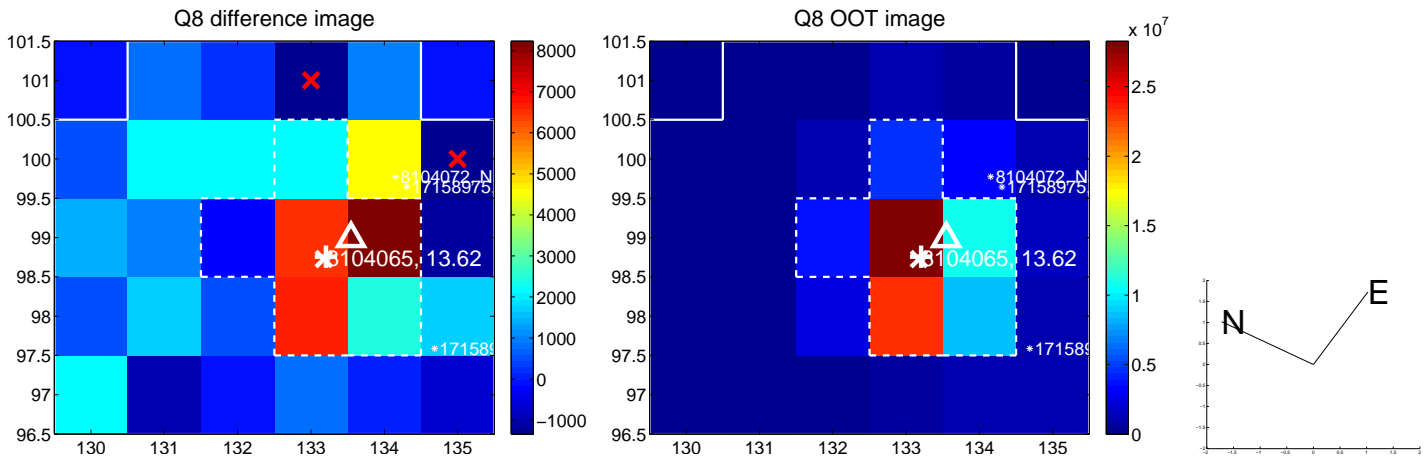
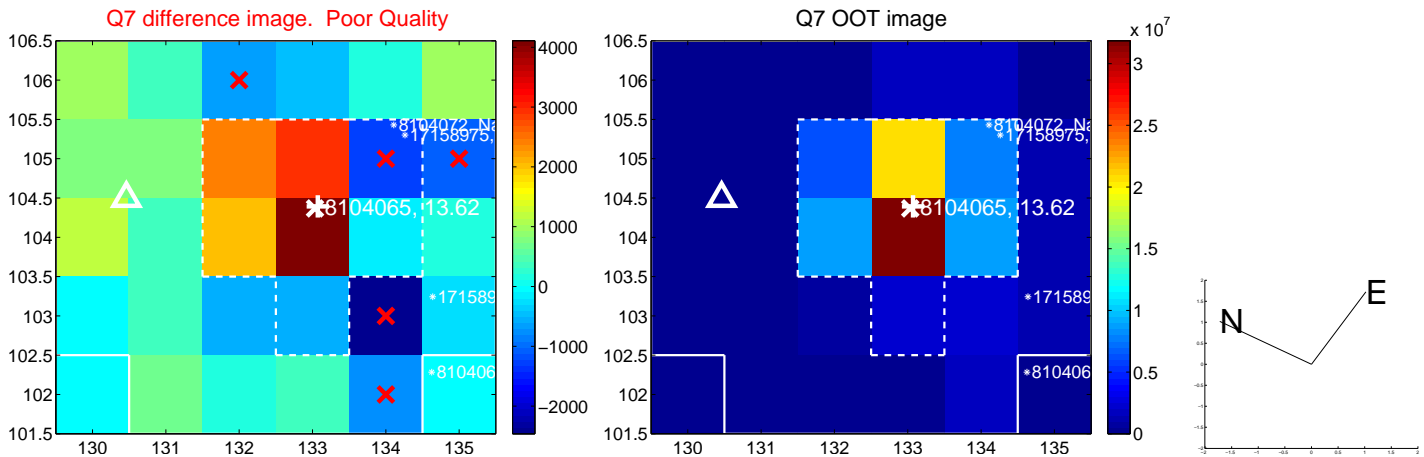
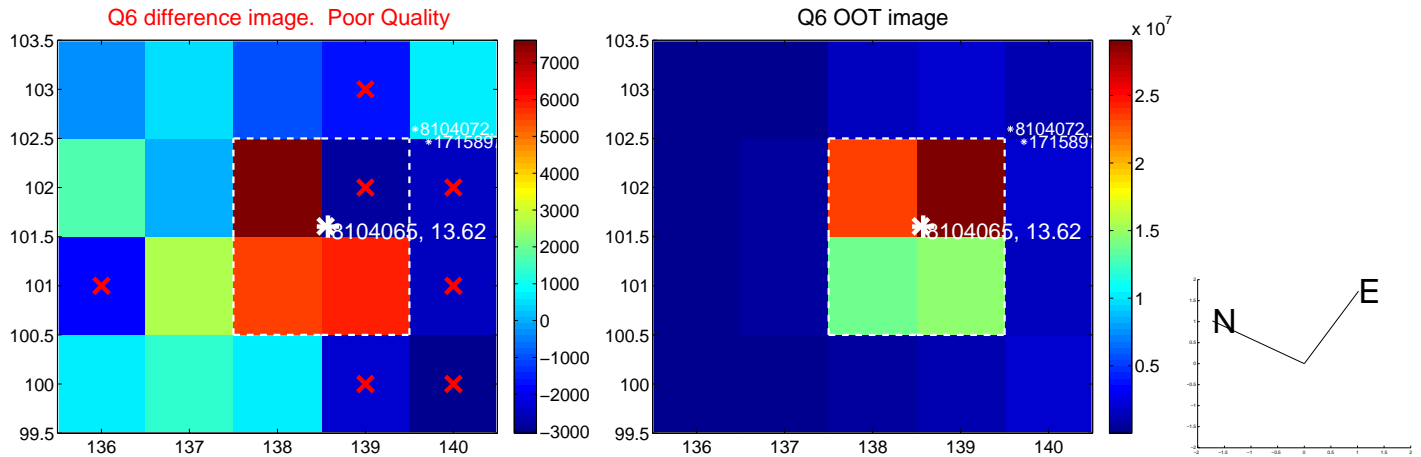
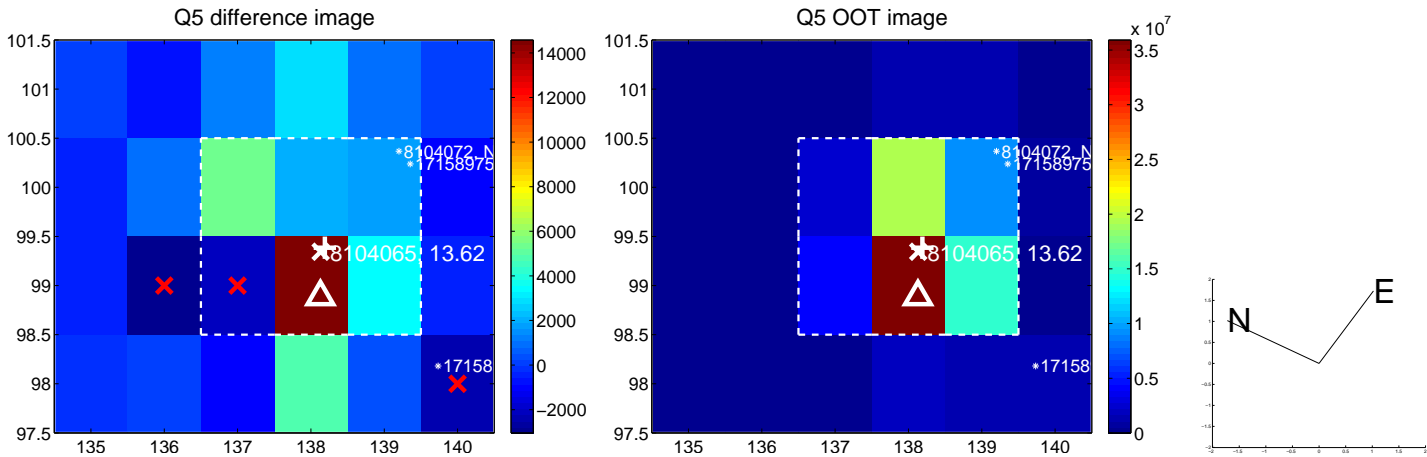


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

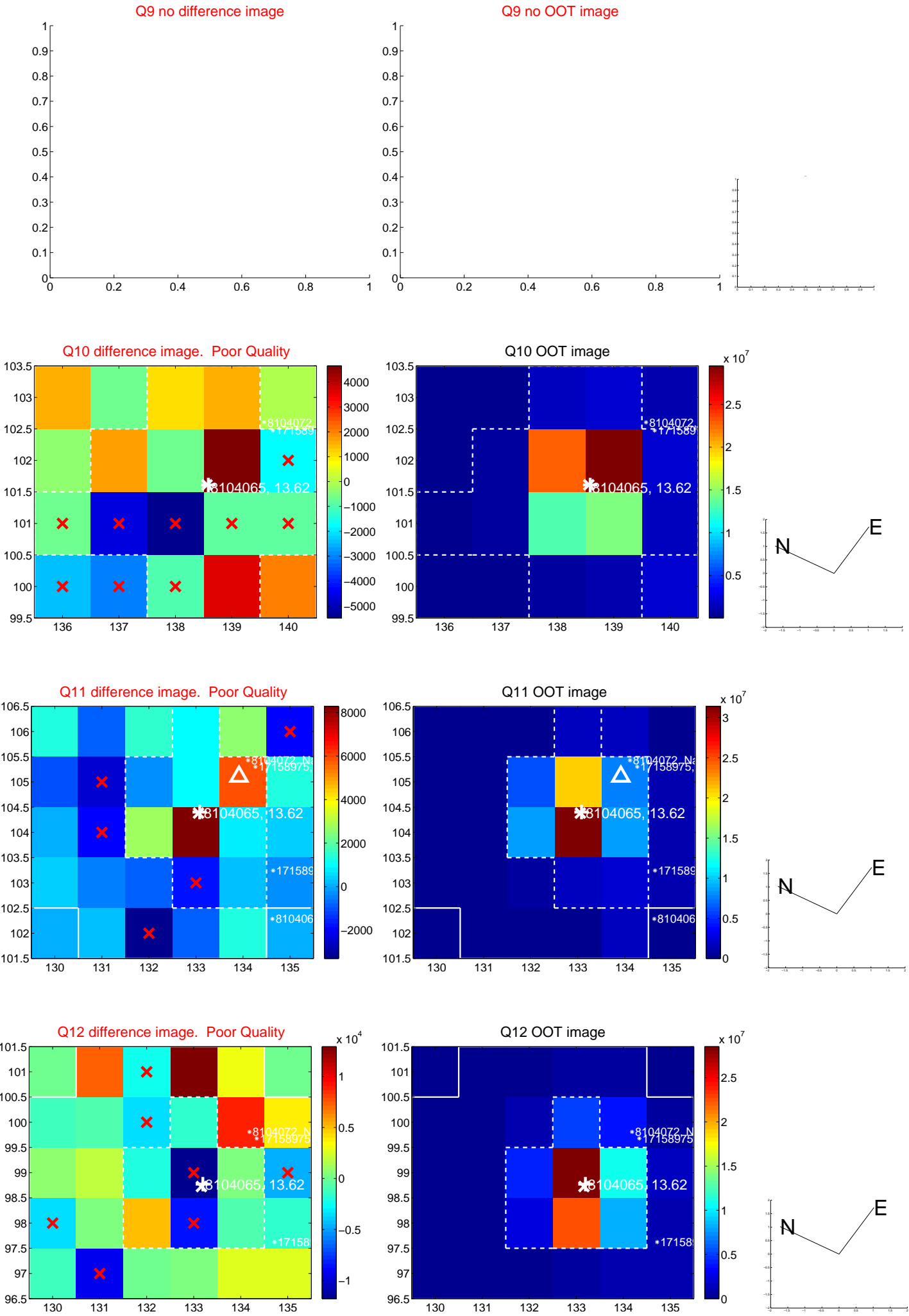
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



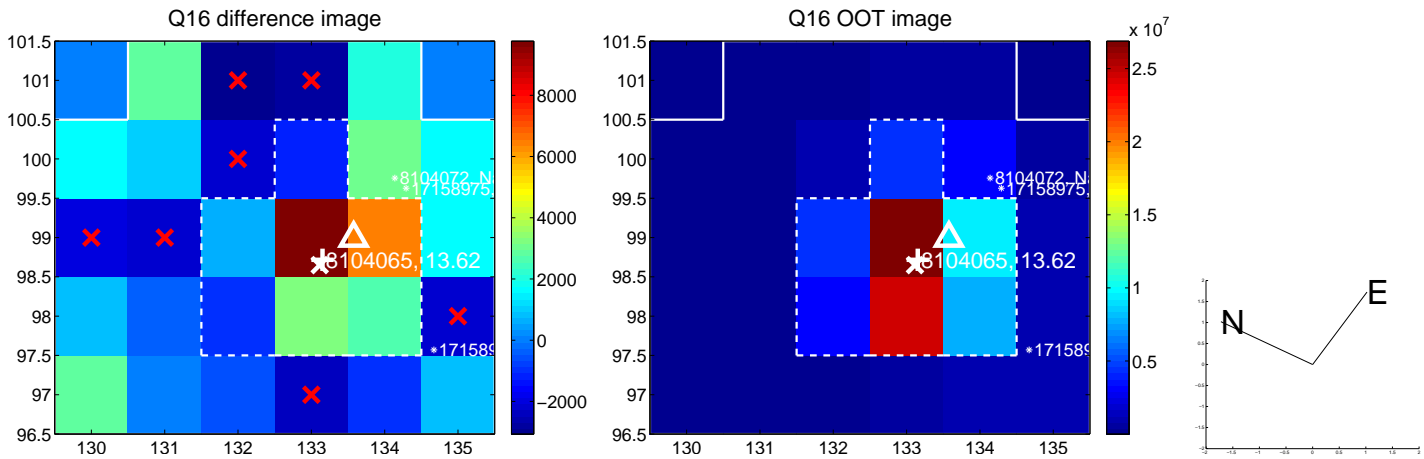
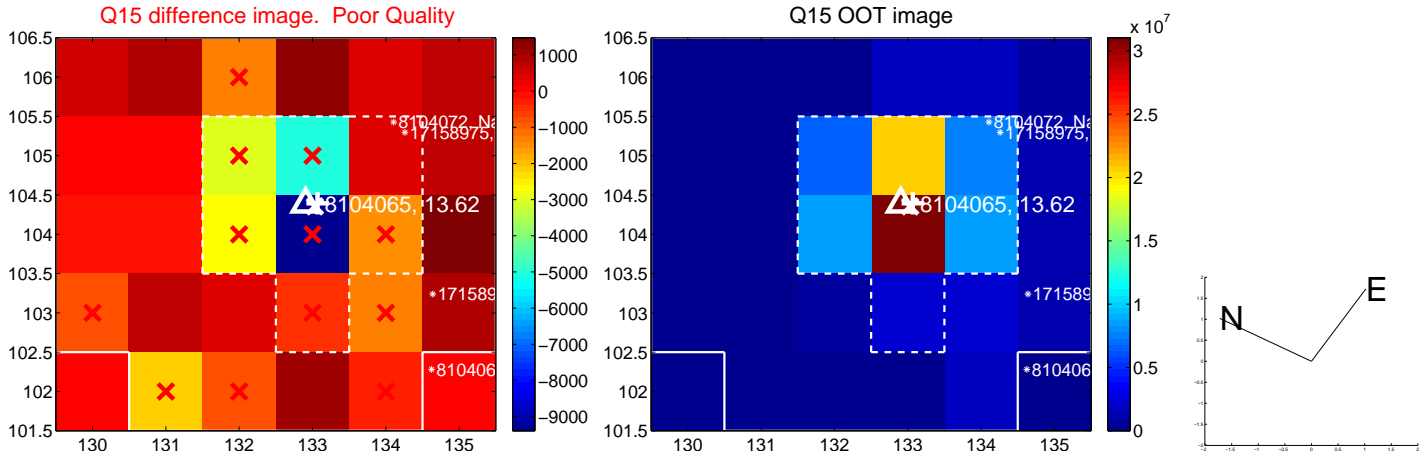
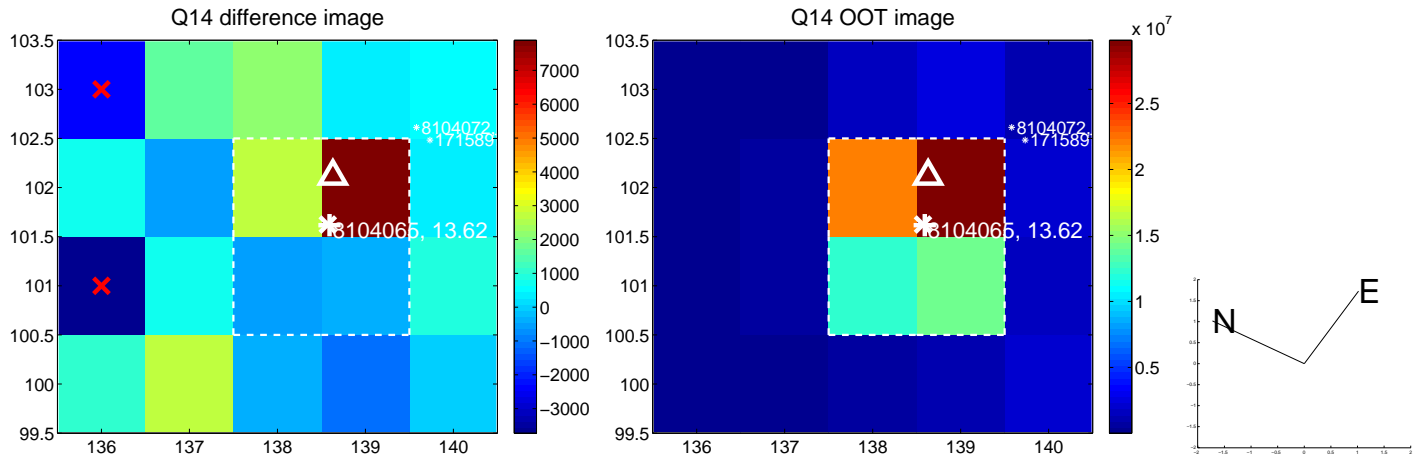
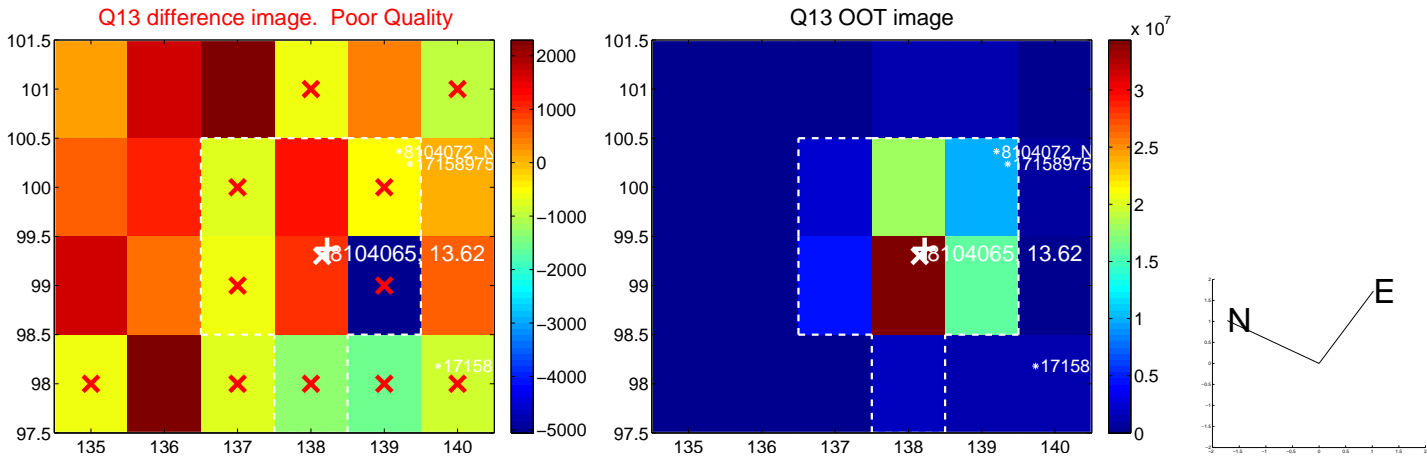
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



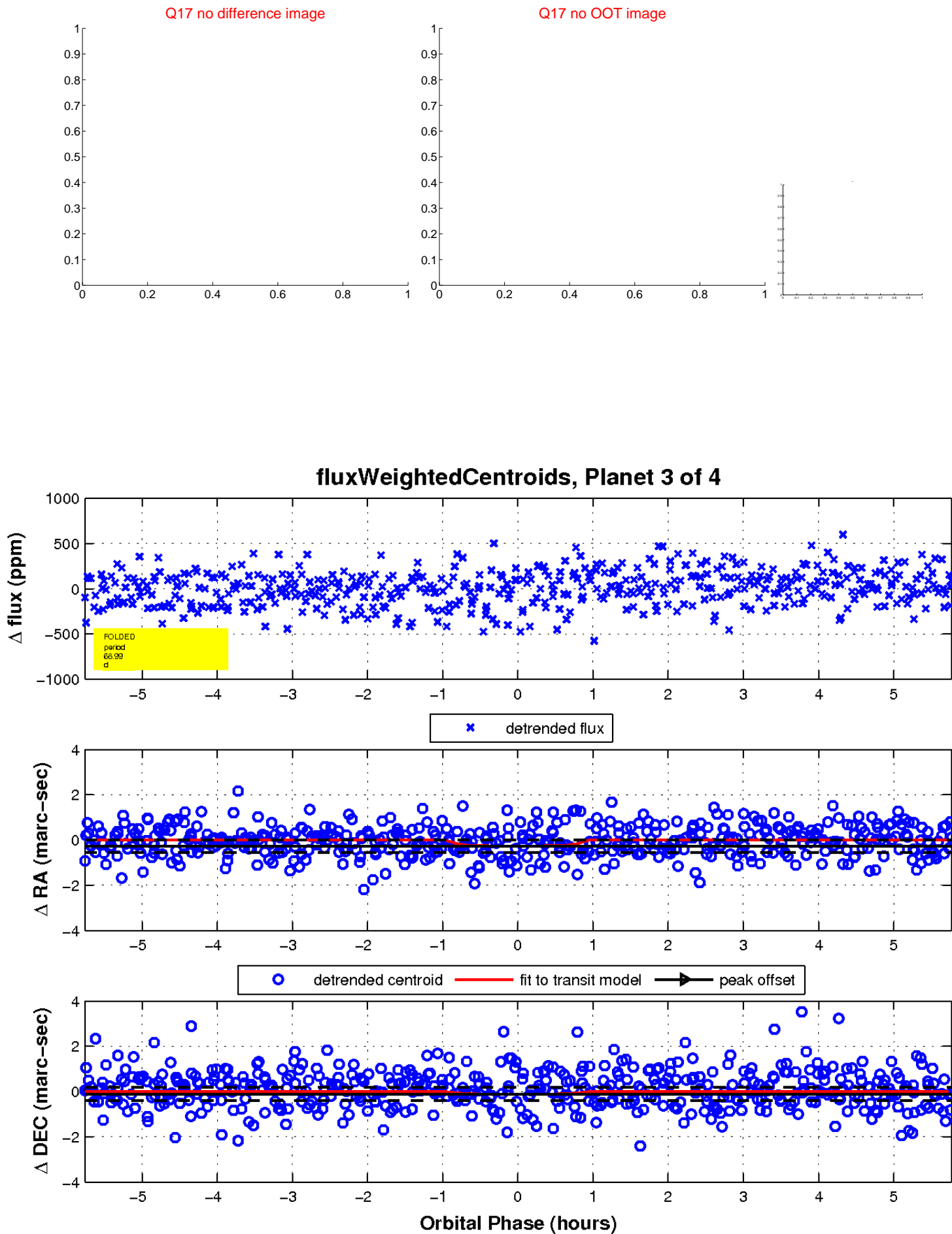
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

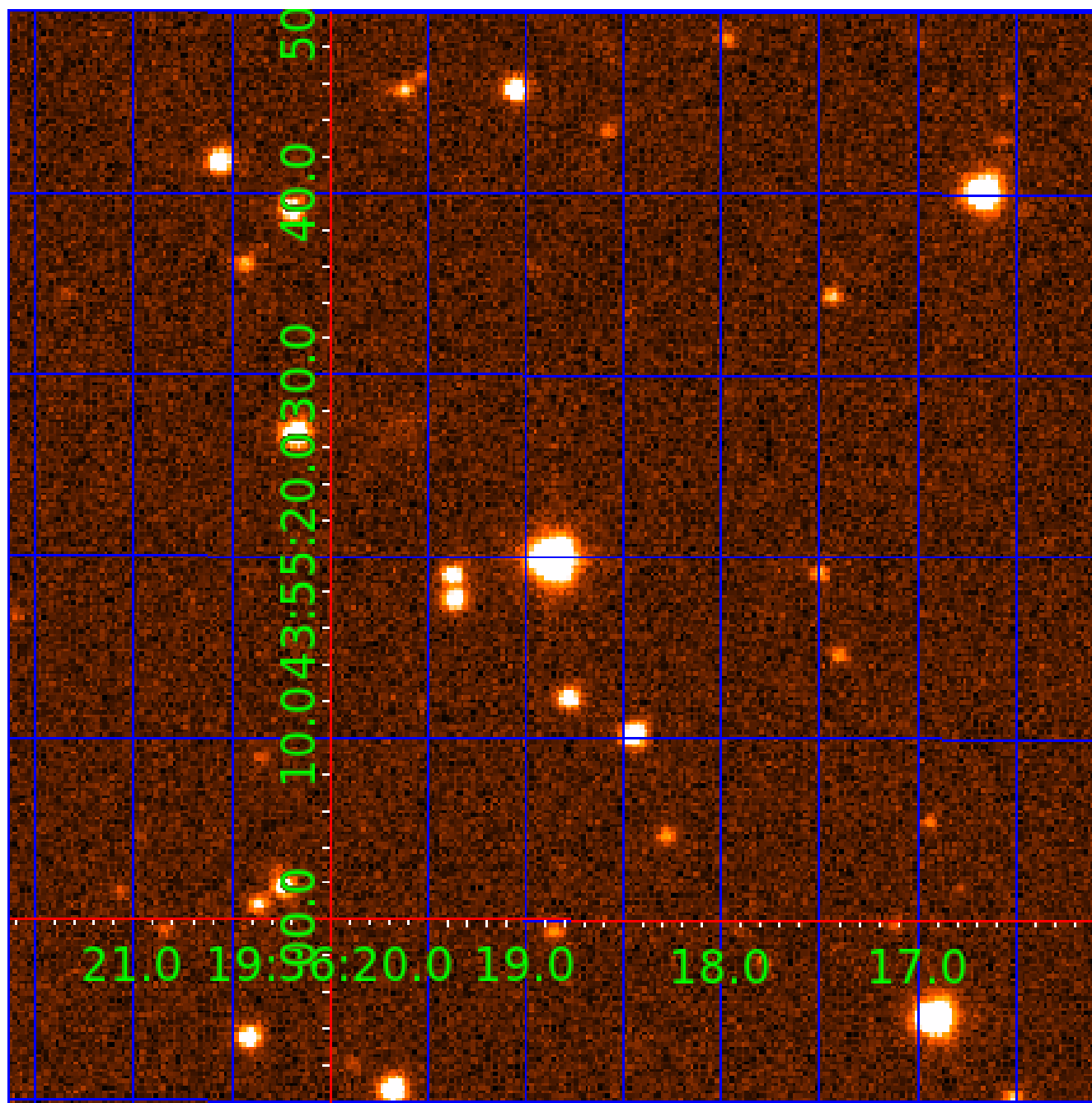


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008104065

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})
008104065-01	OBS	No	0.913996	132.378808	15.4	5.363	8.0	6.2	1.57	7296	0.71	14668.64
008104065-02	OBS	No	97.635417	171.883816	316.0	3.780	9.3	8.7	1.57	7296	3.32	28.94
008104065-03	OBS	No	68.989673	156.631091	335.7	1.925	8.3	8.7	1.57	7296	3.37	45.98
008104065-04	OBS	No	49.505080	140.104951	166.4	6.878	7.8	7.7	1.57	7296	2.21	71.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008104065-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008104065-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—EPHEM_MATCH
008104065-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
008104065-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

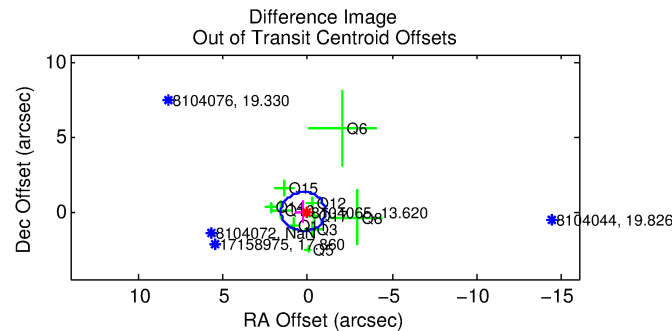
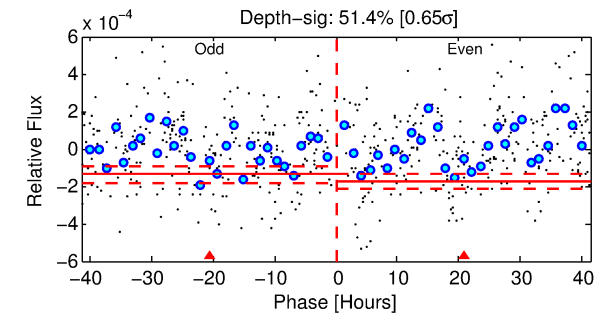
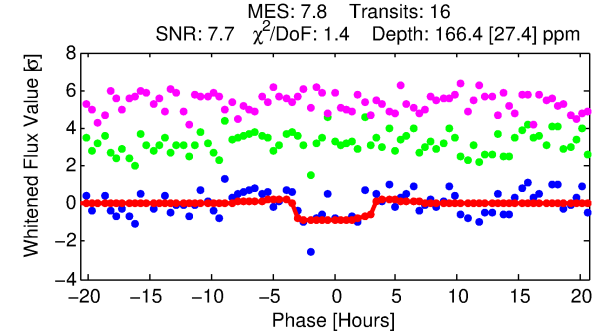
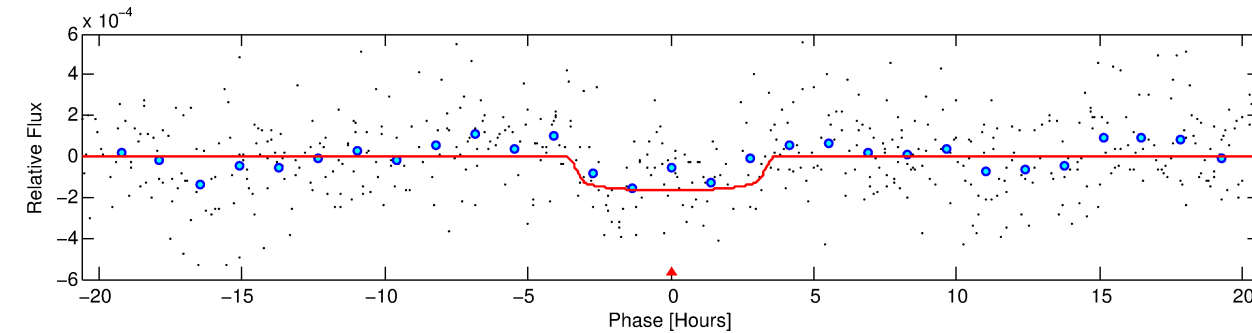
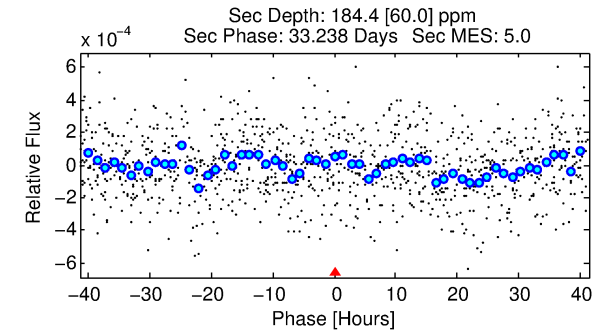
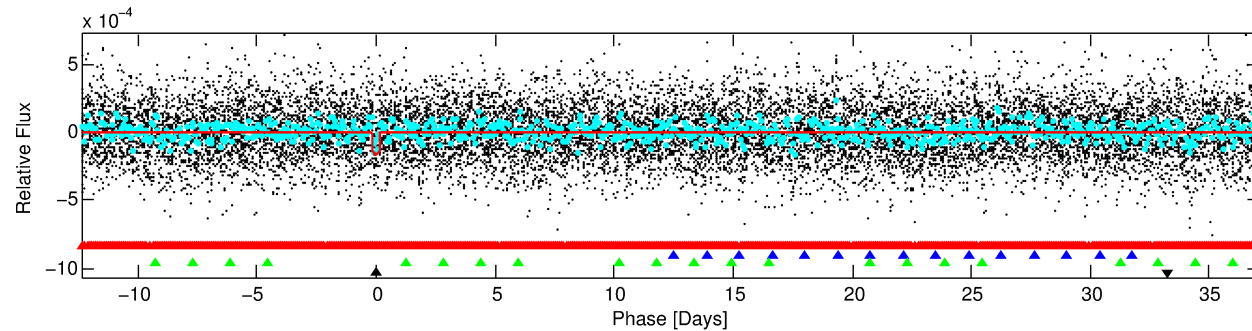
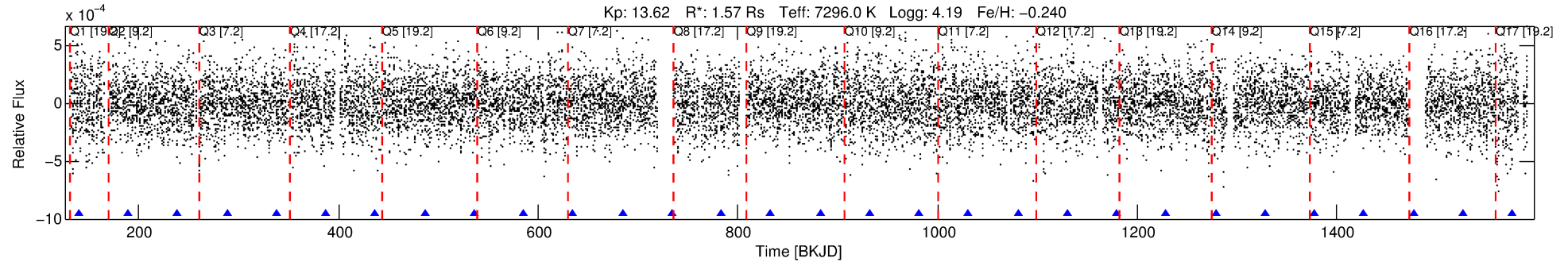
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008104065-04

No Significant Match Found

DV One-Page Summary

KIC: 8104065 Candidate: 4 of 4 Period: 49.505 d



DV Fit Results:

Period = 49.50508 [0.00090] d
Epoch = 140.1050 [0.0152] BKJD
Rp/R* = 0.0129 [0.0071]
a/R* = 35.87 [119.82]
b = 0.78 [1.73]
Seff = 71.58 [28.76]
Teq = 742 [75] K
Rp = 2.21 [1.40] Re
a = 0.2955 [0.0747] AU
Ag = 1810.42 [2166.99] [0.83σ]
Teffp = 7480 [2168] K [3.11σ]

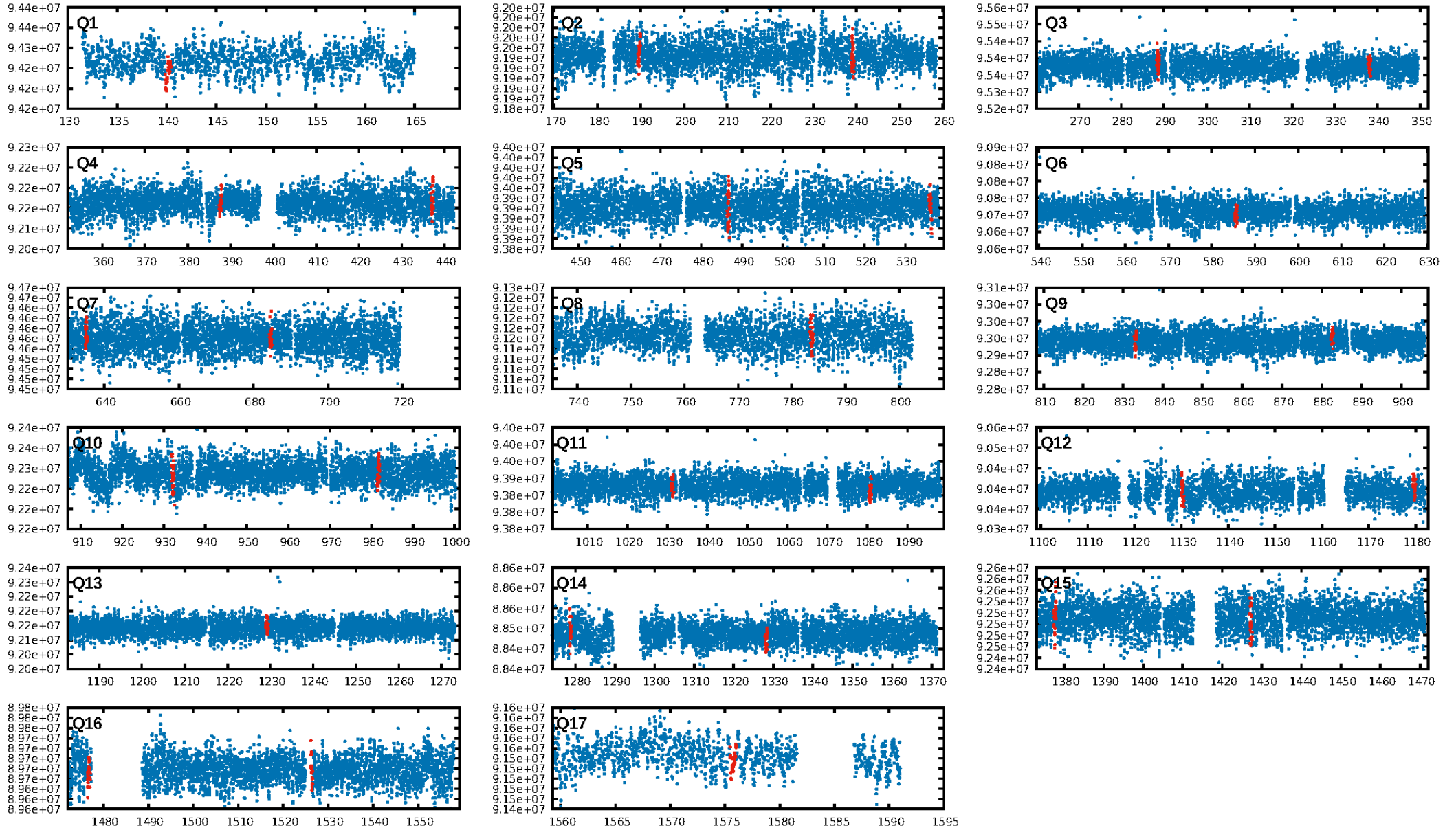
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [133.72σ]
LongPeriod-sig: 100.0% [65.48σ]
ModelChiSquare2-sig: 14.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.36e-08
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -1.581
Centroid-sig: 17.1%
Centroid-so: 1.269 arcsec [1.58σ]
OotOffset-rm: 0.268 arcsec [0.62σ]
OotOffset-st: 3/3/2/2 [10]
KicOffset-rm: 0.470 arcsec [0.90σ]
KicOffset-st: 3/3/2/2 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 0.00 [0/15]

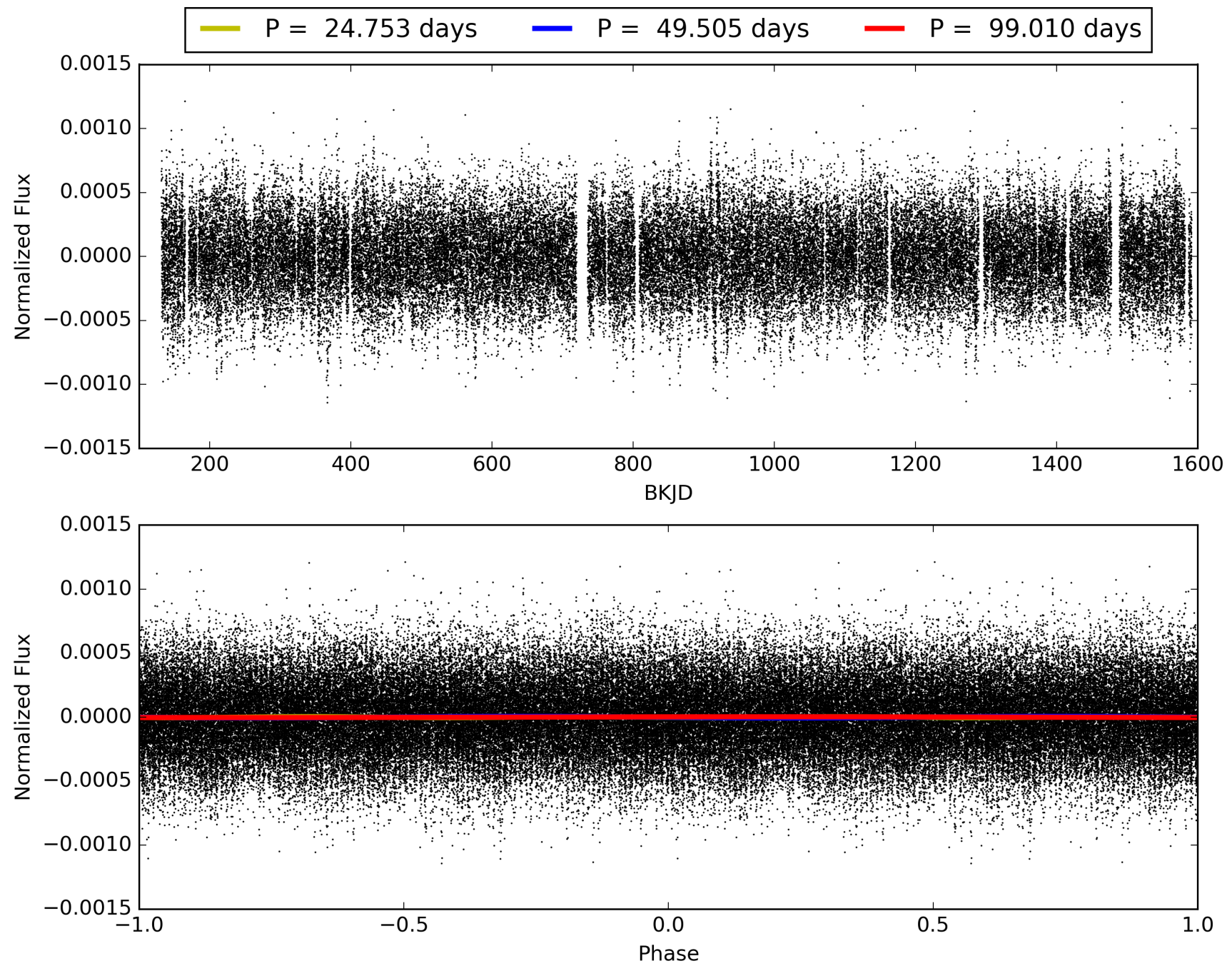
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:49:09 Z

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

TCE 008104065-04, PDC Light Curves

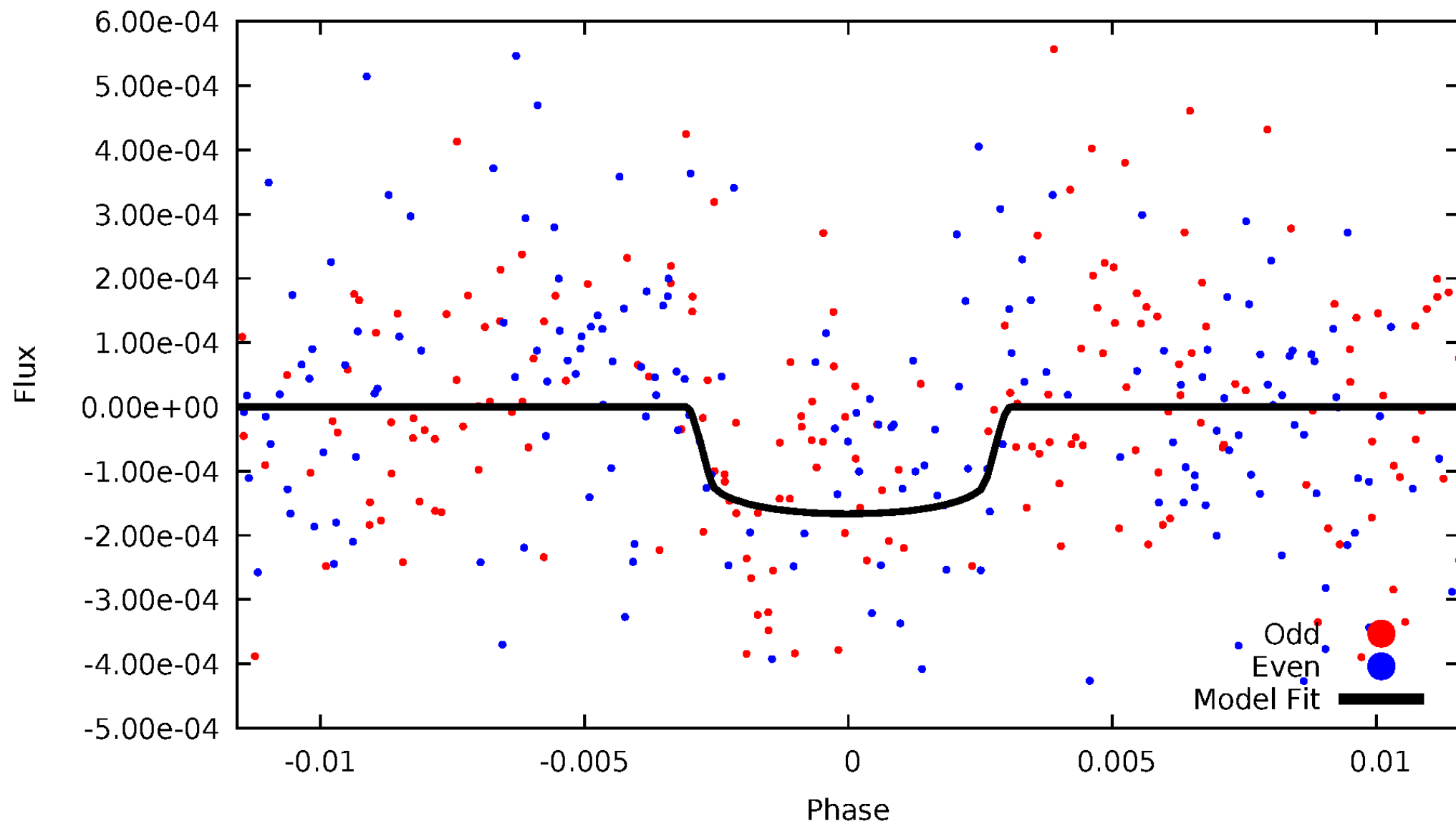


TCE 008104065-04



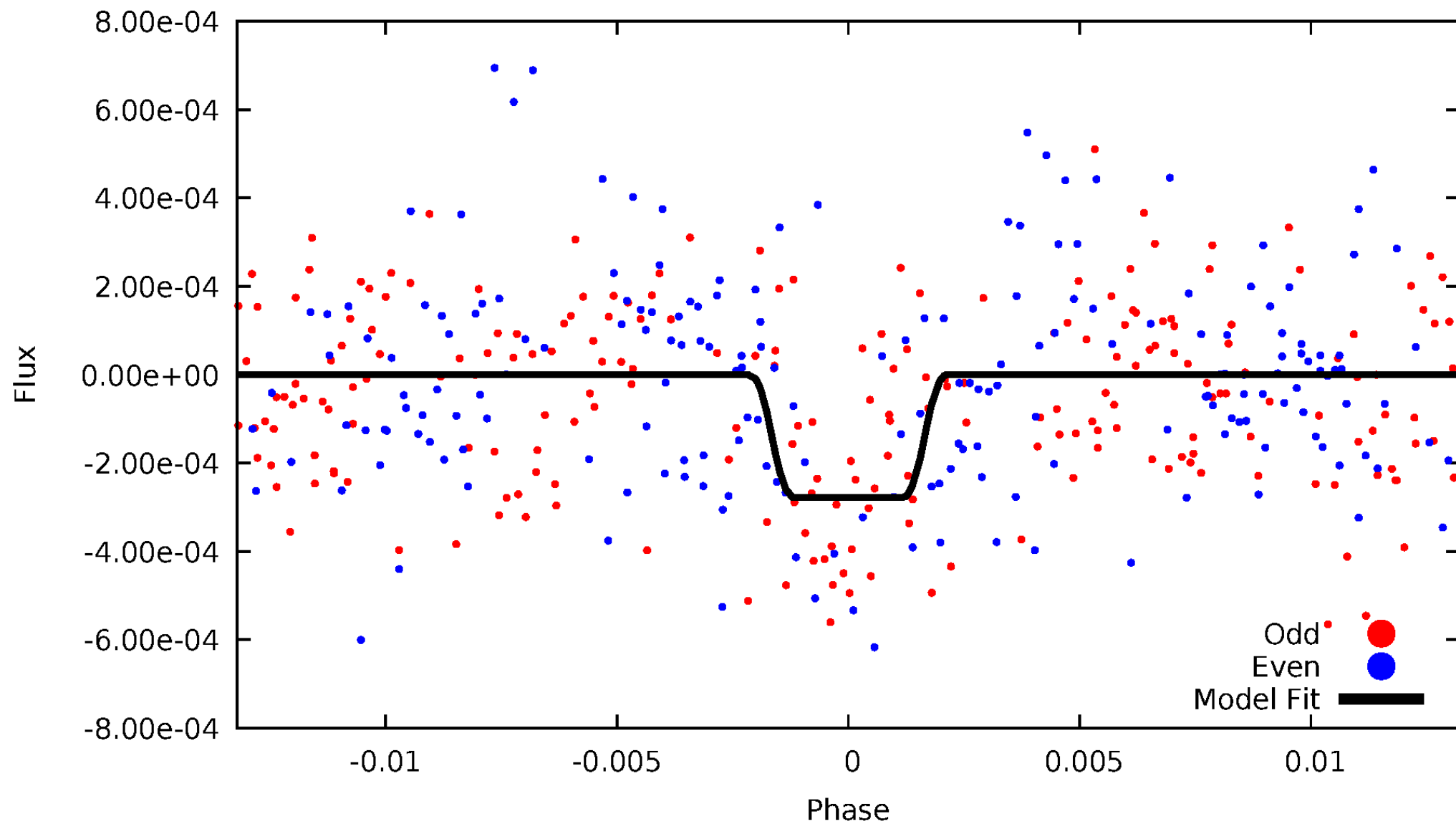
DV Odd/Even

TCE 008104065-04



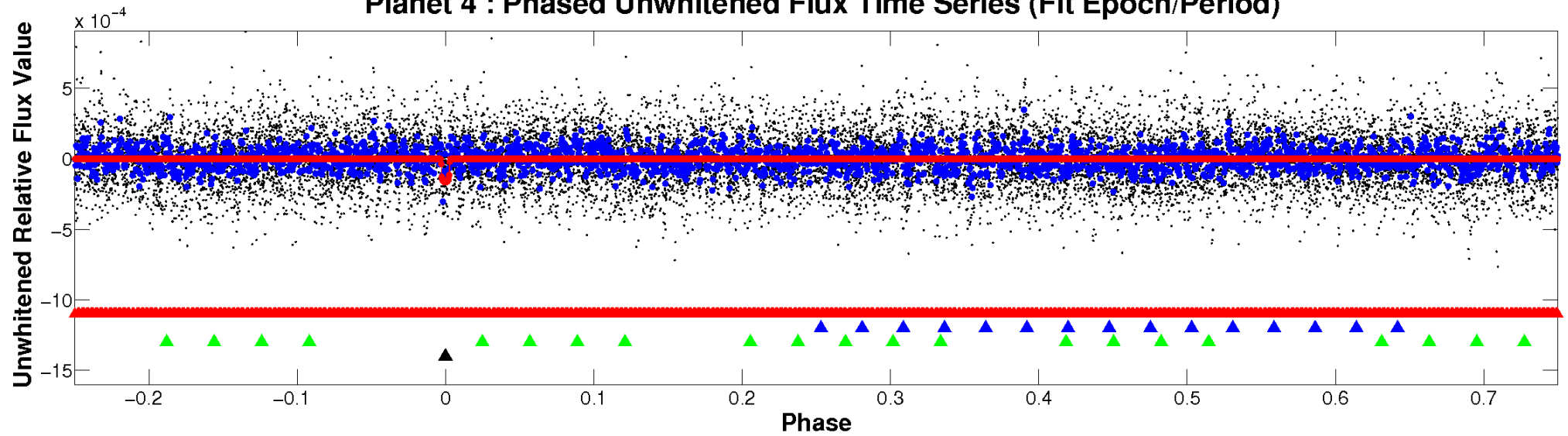
ALT Odd/Even

TCE 008104065-04

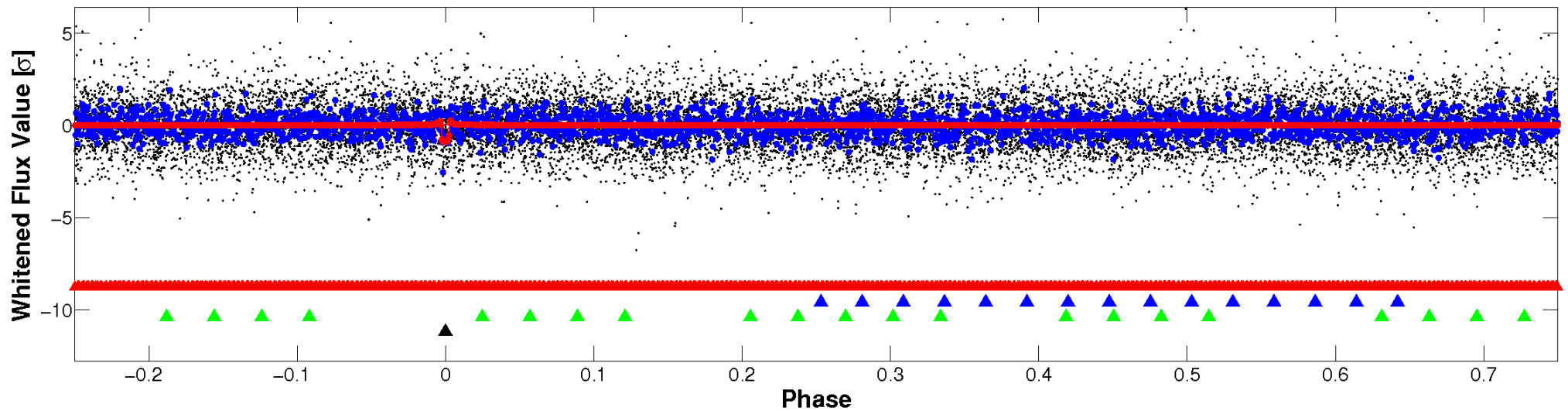


Non-Whitened Vs. Whitened Light Curve

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

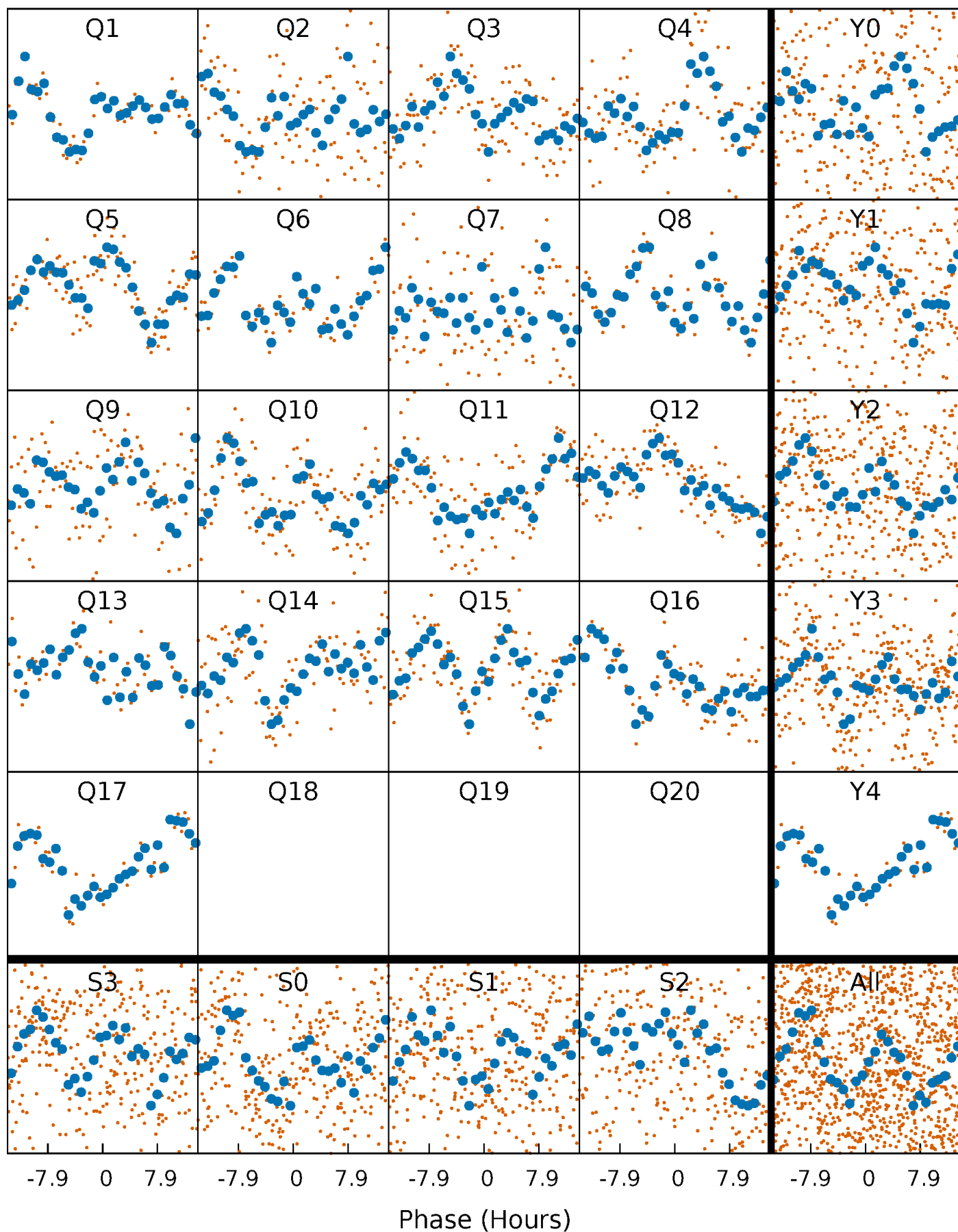


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



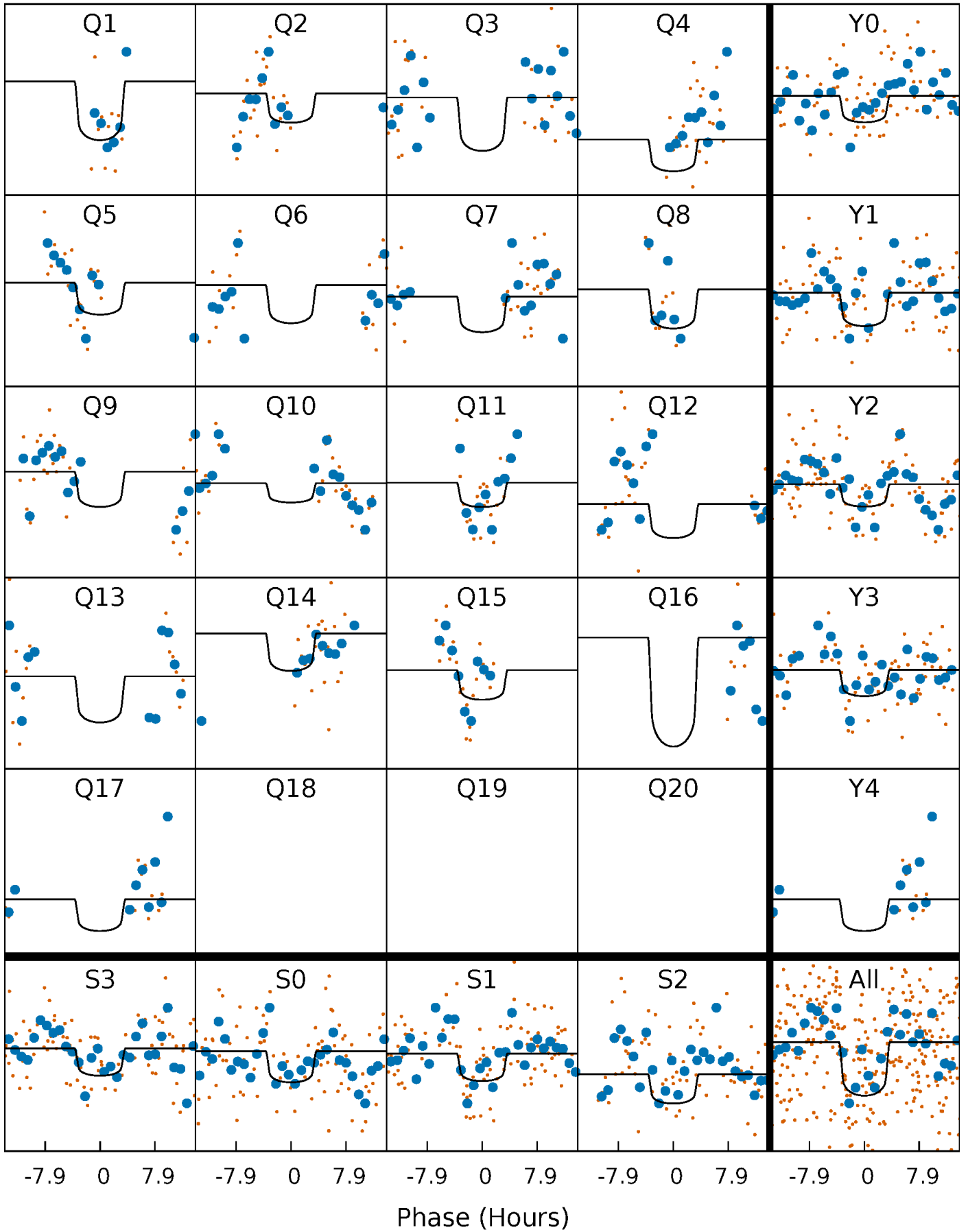
PDC Quarter-Phased Transit Curves

TCE 008104065-04 P= 49.505080 Days $T_0=140.104951$ (BKJD)



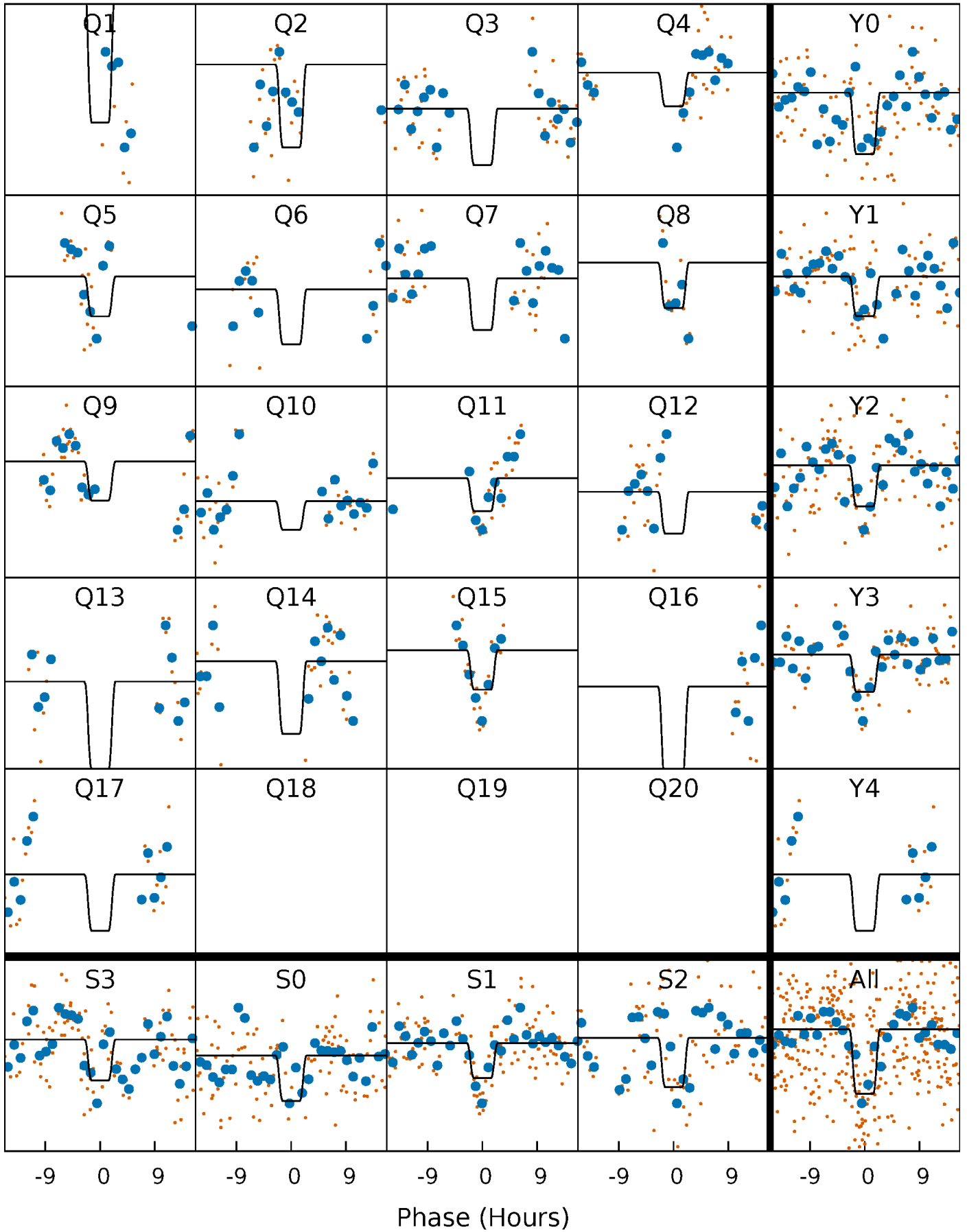
DV Quarter-Phased Transit Curves

TCE 008104065-04 P= 49.505080 Days $T_0=140.104951$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

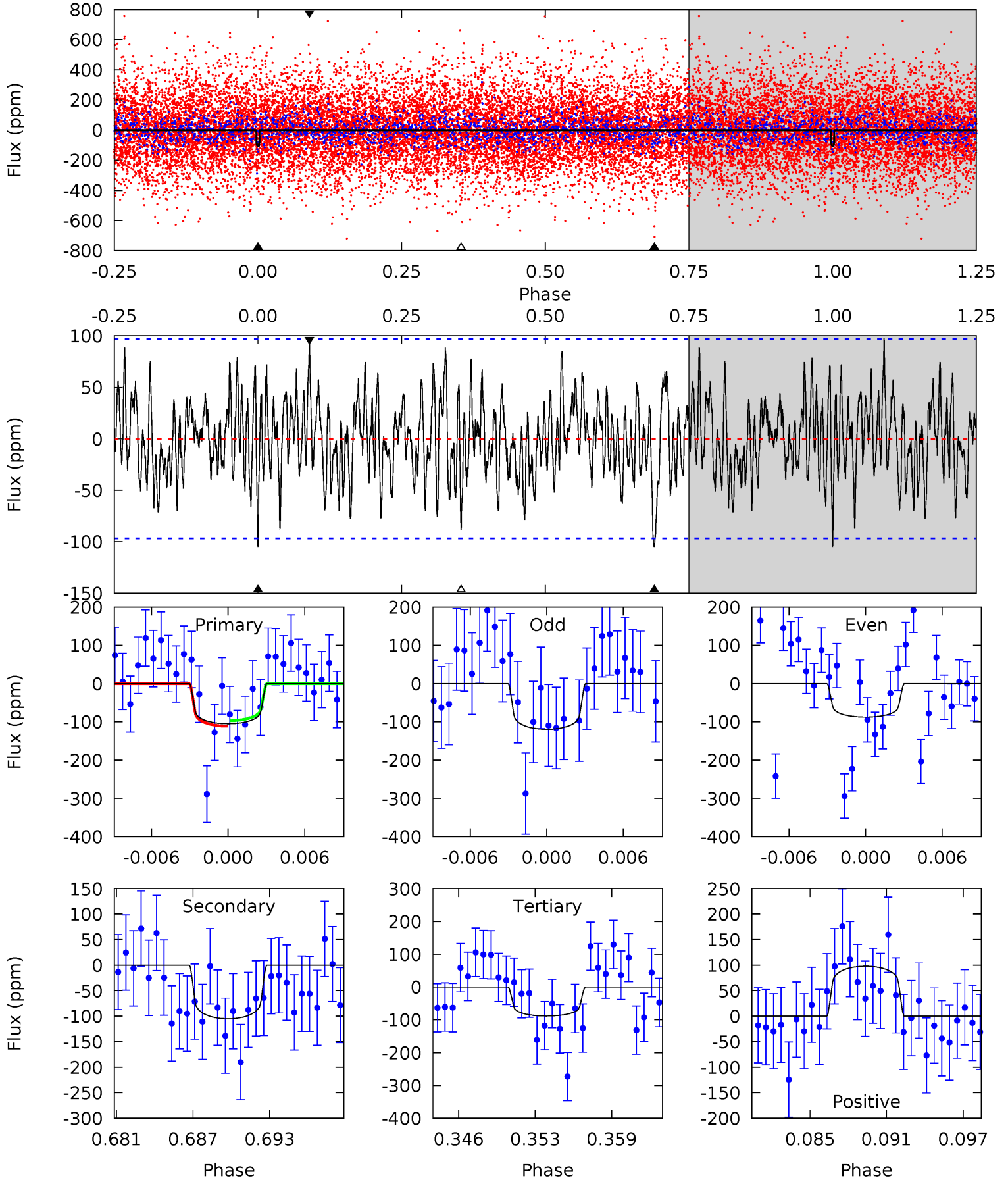
TCE 008104065-04 $P = 49.504689$ Days $T_0 = 140.038114$ (BKJD)



DV Model-Shift Uniqueness Test

008104065-04, P = 49.505080 Days, E = 90.599871 Days

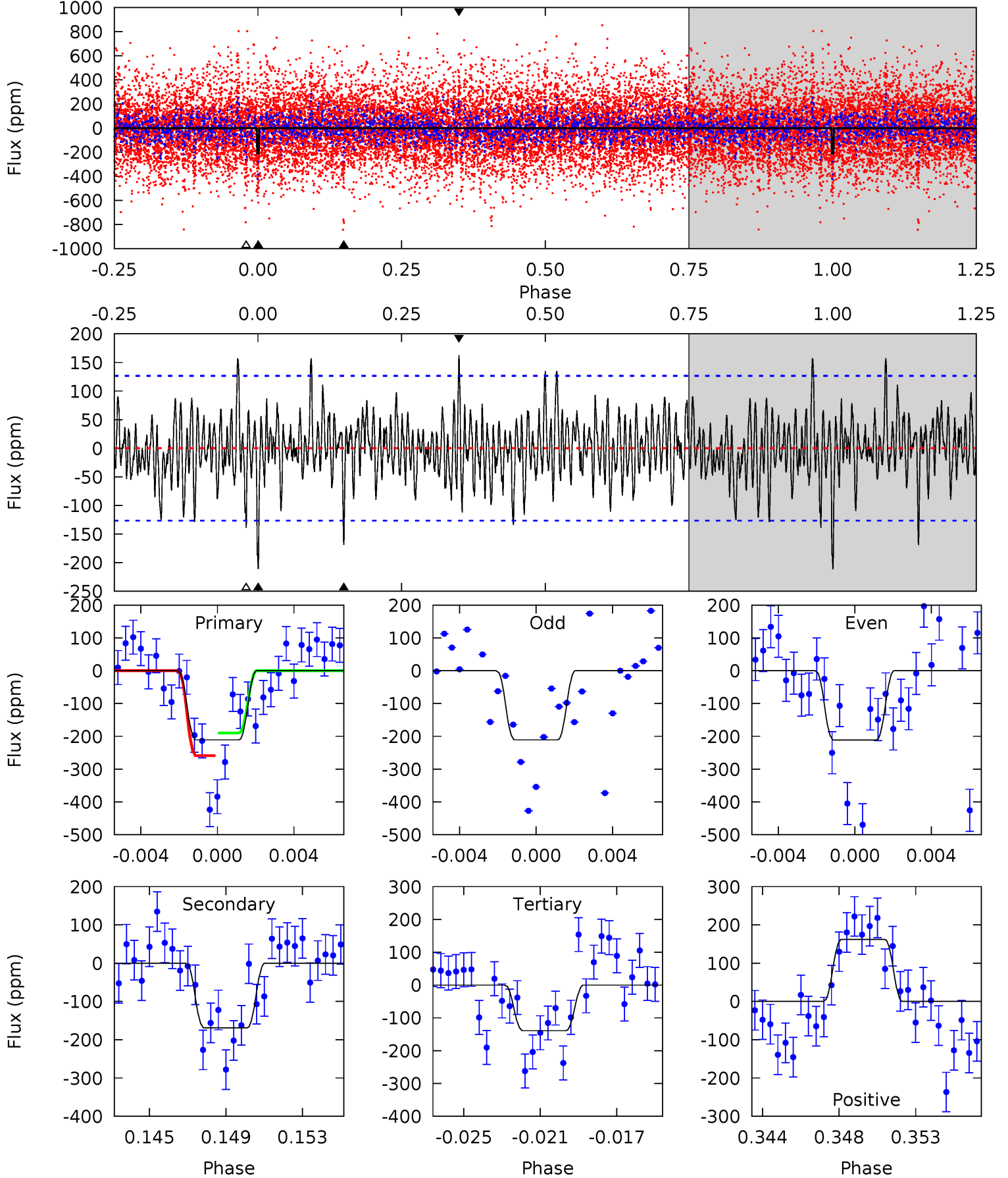
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.55	5.56	4.67	5.18	5.12	2.74	1.74	0.88	0.36	0.89	0.38	0.84	0.81	0.48	0.38



Alt Model-Shift Uniqueness Test

008104065-04, P = 49.504689 Days, E = 90.533425 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.67	6.94	5.71	6.67	5.19	2.87	1.87	2.96	2.00	1.24	0.28	0.01	0.91	0.43	1.42



Stellar Parameters For KIC 008104065

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7296^{+232}_{-348}	$4.194^{+0.124}_{-0.186}$	$-0.240^{+0.250}_{-0.350}$	$1.569^{+0.491}_{-0.327}$	$1.408^{+0.225}_{-0.225}$	$0.513^{+0.323}_{-0.267}$
	+3%/-5%	+3%/-4%	+104%/-146%	+31%/-21%	+16%/-16%	+63%/-52%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008104065-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-105 ± 19	$2.43^{+1.24}_{-1.17}$	1043^{+84}_{-75}	6192^{+2988}_{-1113}	865^{+2270}_{-504}
Alt.	-169 ± 24	$2.99^{+1.33}_{-1.29}$	1045^{+78}_{-78}	6229^{+2344}_{-947}	909^{+1729}_{-470}

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 $A_{obs} \gg 1.0$

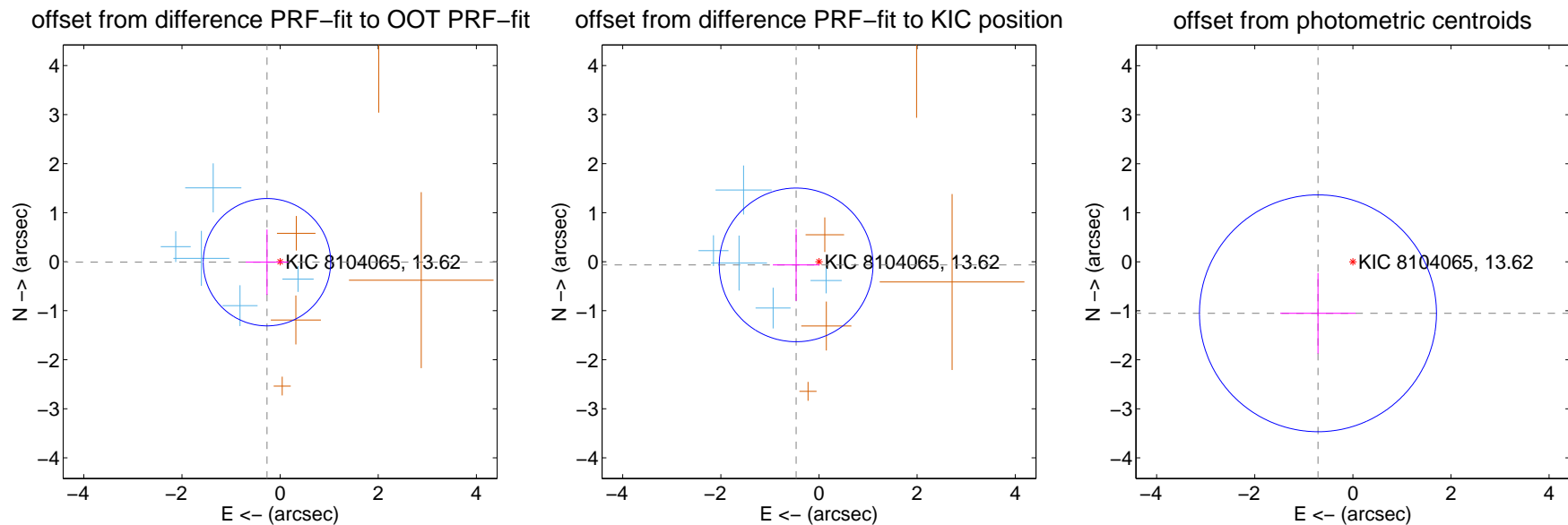
DV Centroid Data

Supplemental centroid analysis for 008104065-04. Kepler magnitude: 13.62. Transit SNR 7.72

There are 5 quarters with good PRF difference image offsets

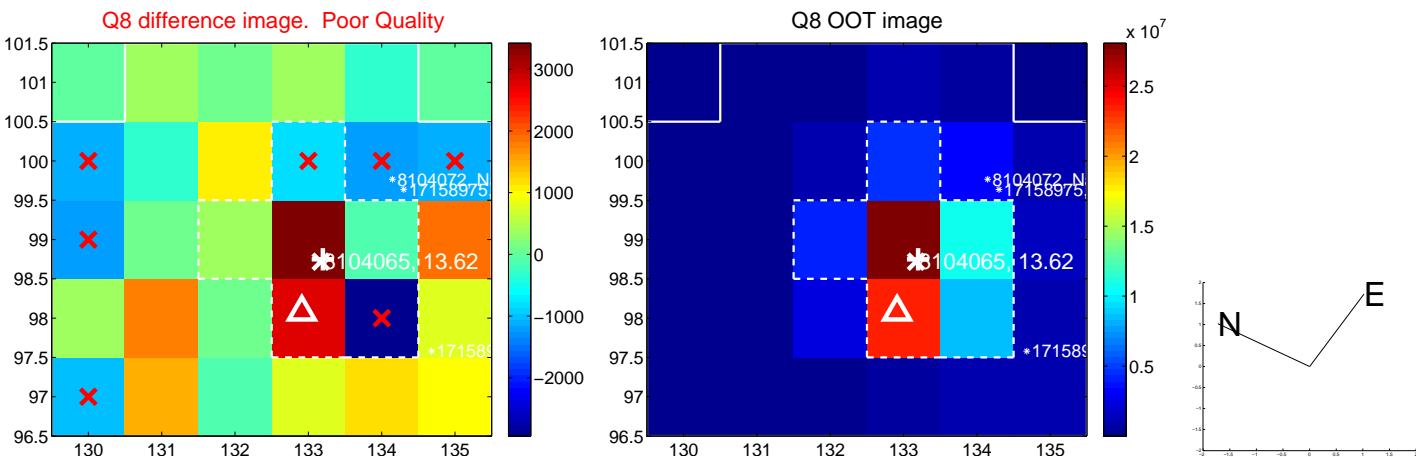
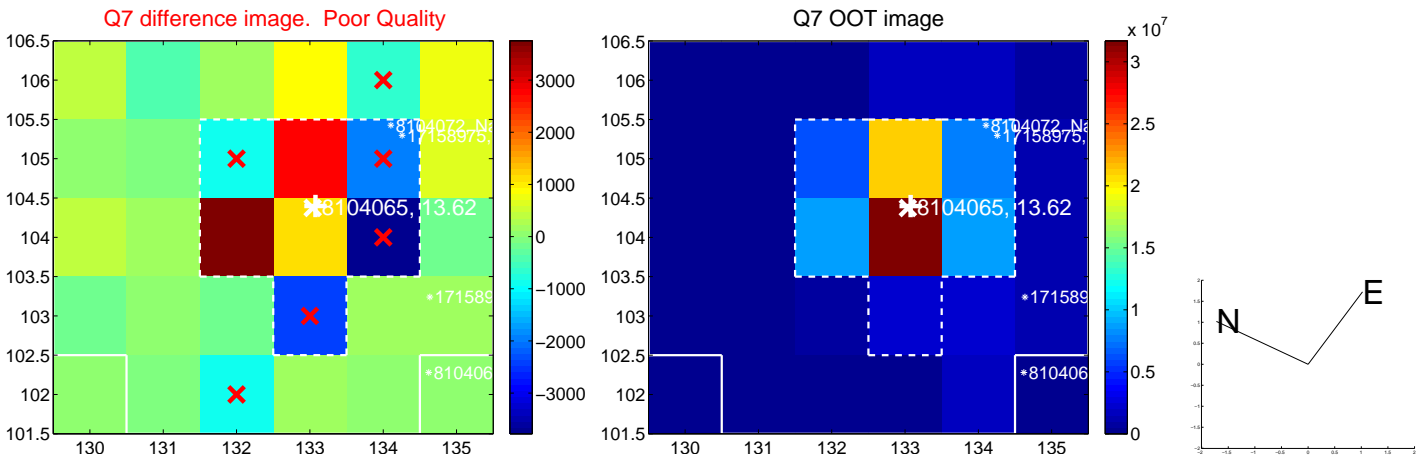
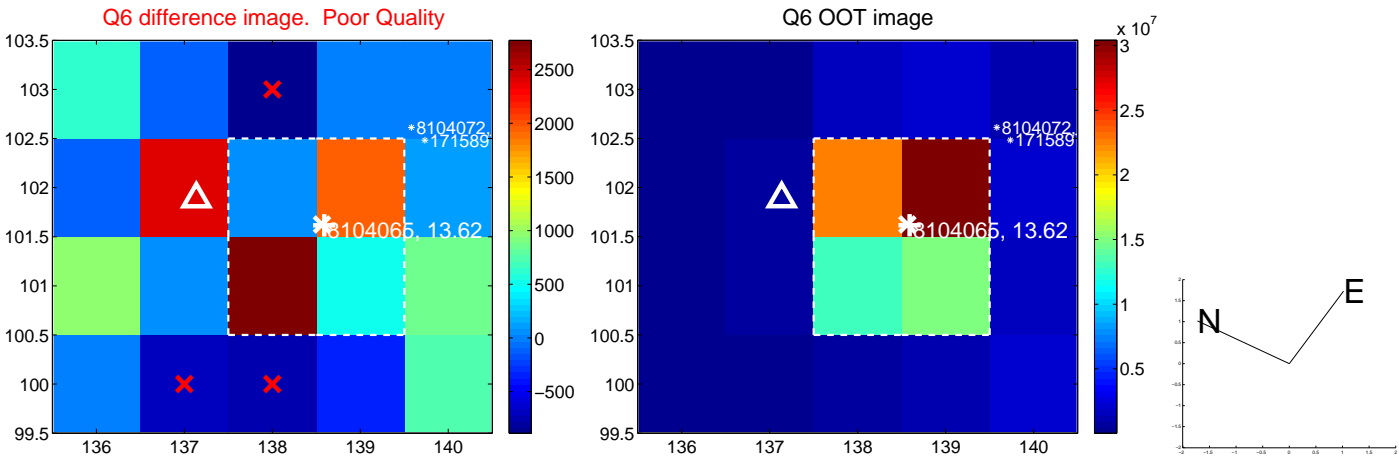
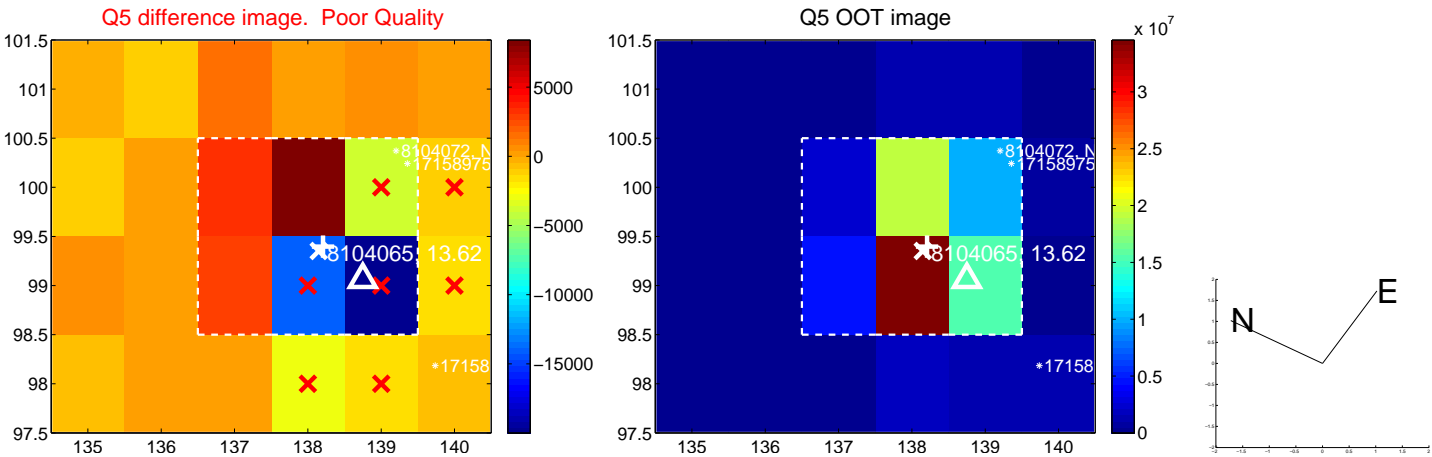
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.268 ± 0.433	0.62	0.268 ± 0.434	-0.010 ± 0.667
PRF-fit source offset from KIC position	0.470 ± 0.522	0.90	0.466 ± 0.475	-0.065 ± 0.734
photometric centroid source offset	1.27 ± 0.81	1.58	0.71 ± 0.77	-1.05 ± 0.82

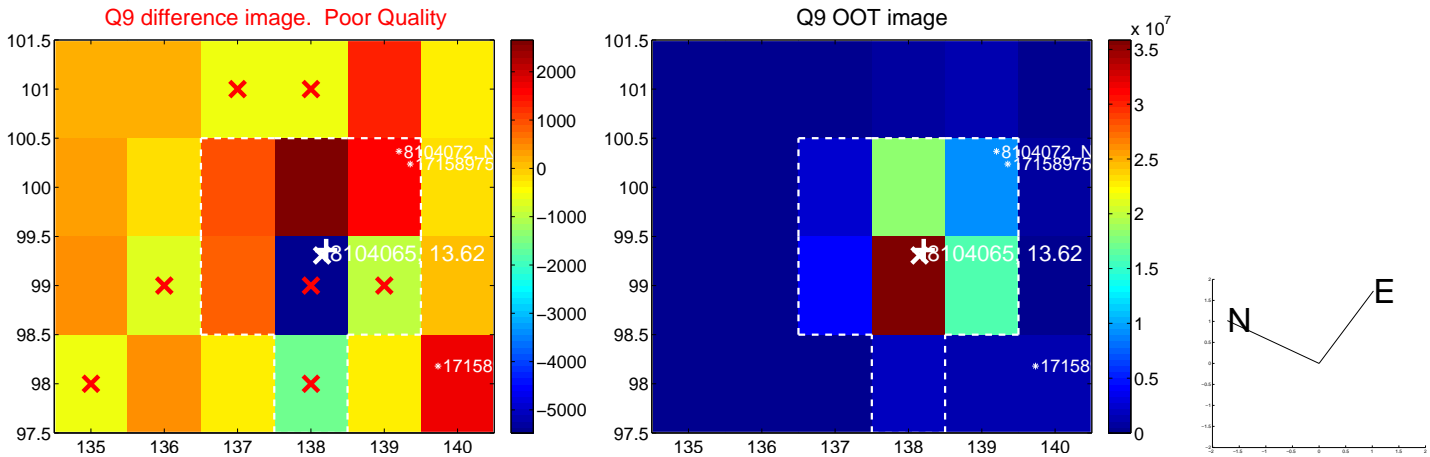


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

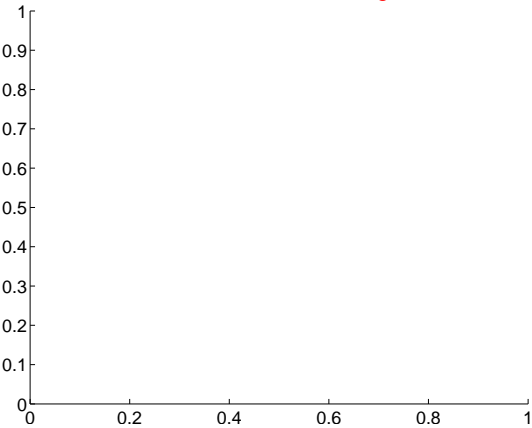


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

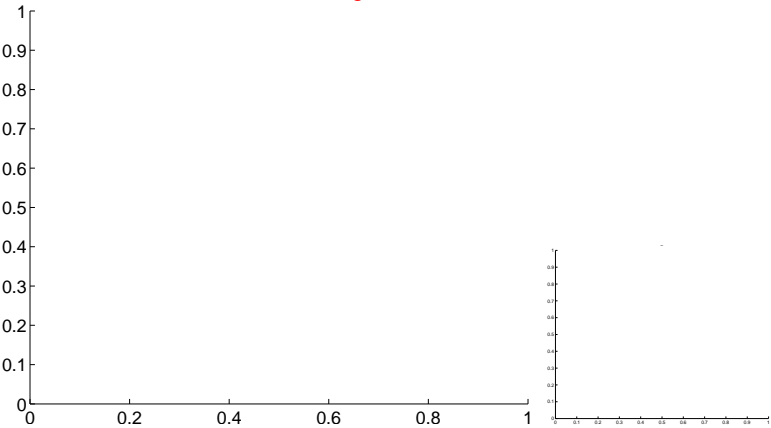


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

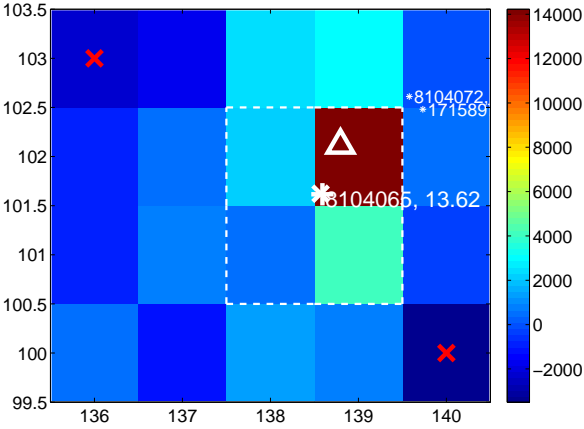
Q13 no difference image



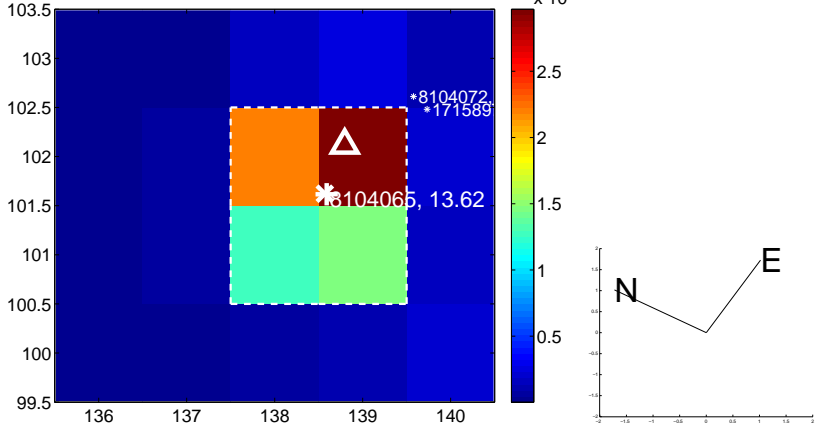
Q13 no OOT image



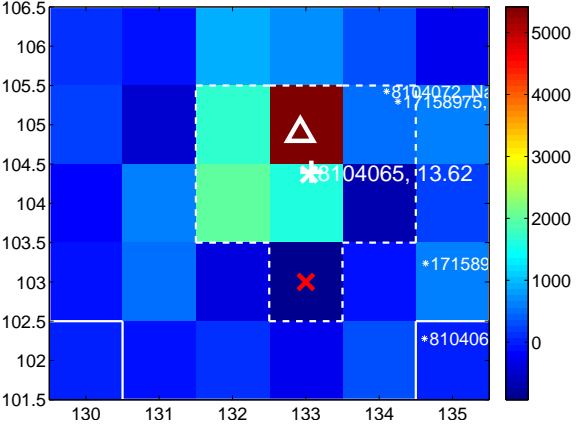
Q14 difference image



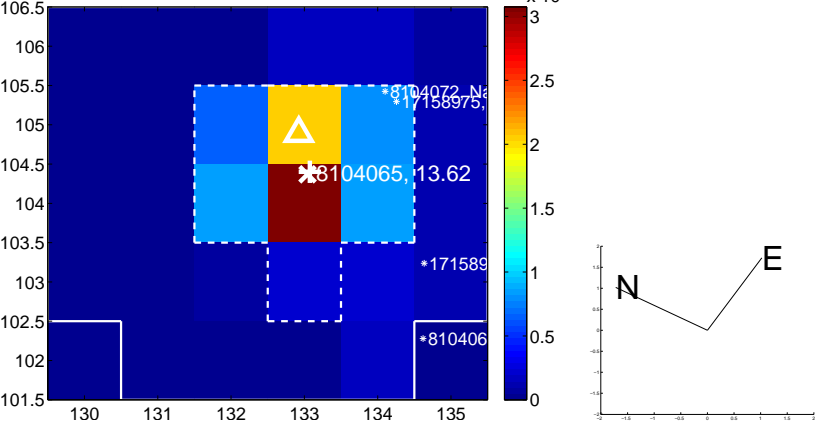
Q14 OOT image



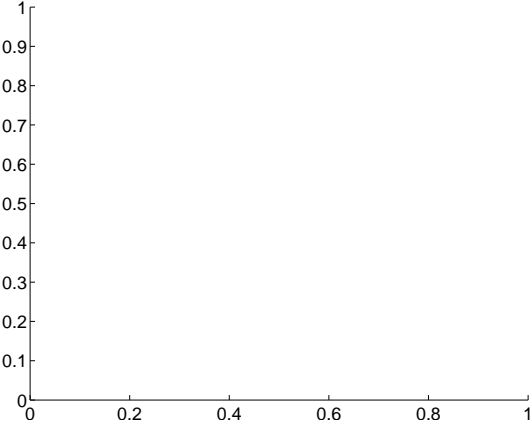
Q15 difference image



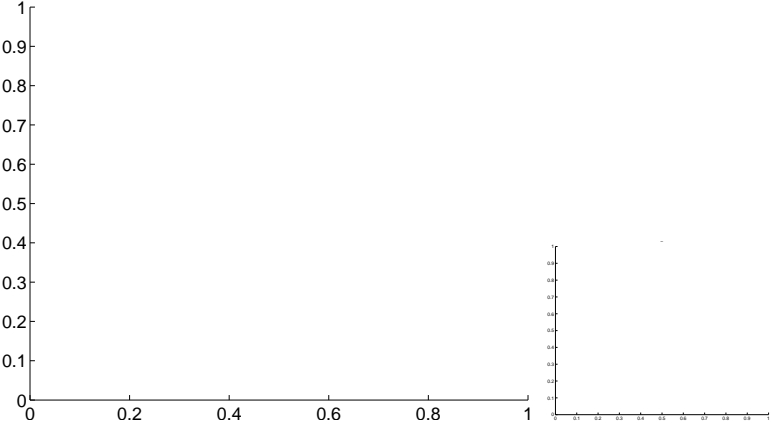
Q15 OOT image



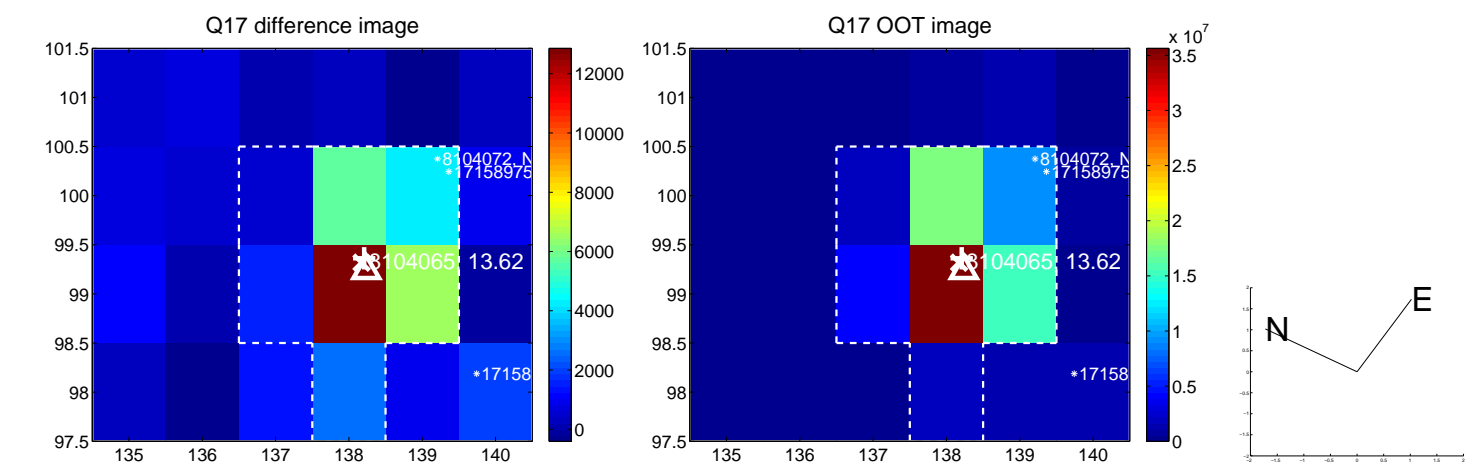
Q16 no difference image



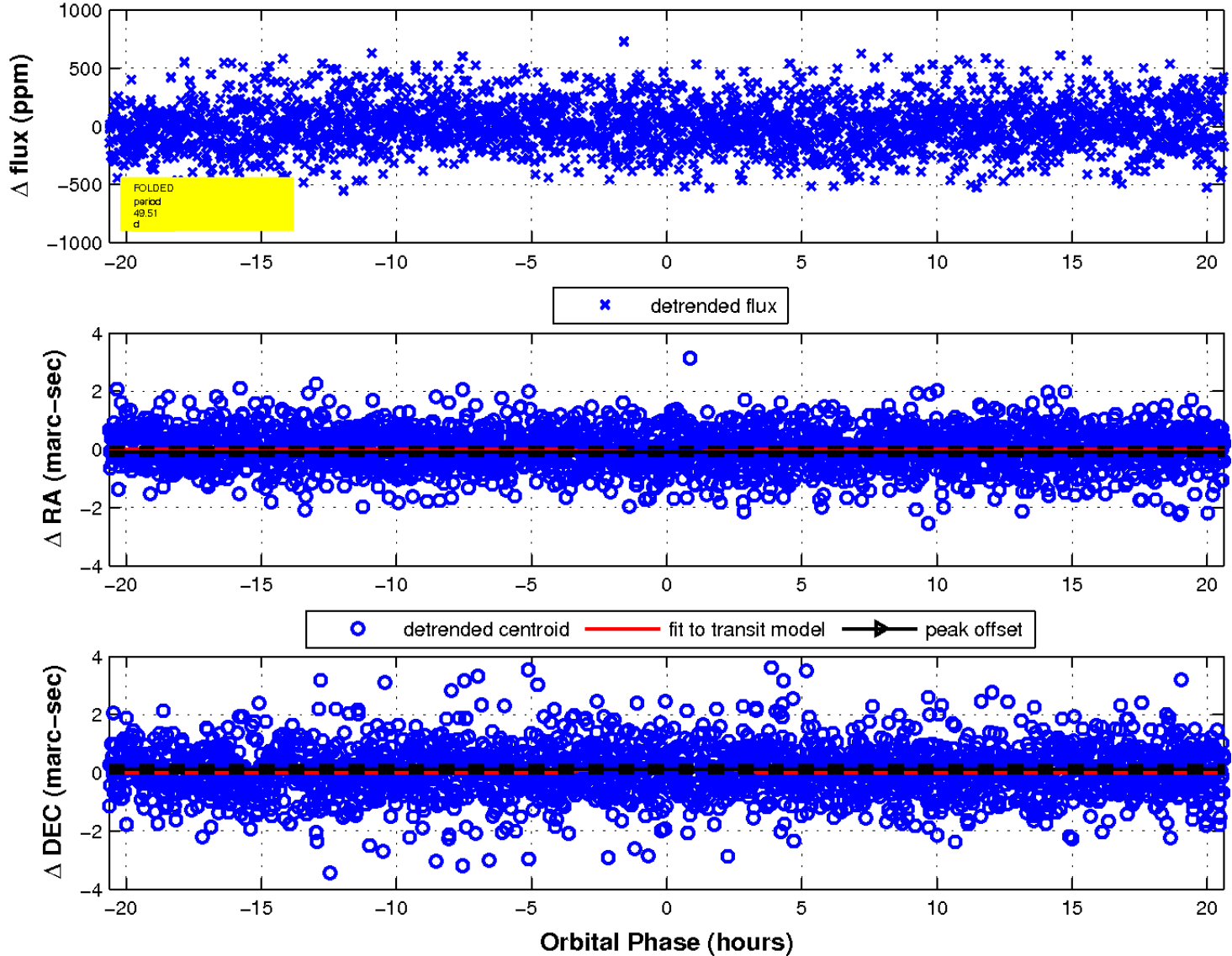
Q16 no OOT image



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

