

KIC 008098515

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})
008098515-01	OBS	6965.01	1.286606	132.107107	18.0	3.954	10.0	9.8	1.51	6846	0.76	6899.06
008098515-02	OBS	No	2.572469	131.740717	12.3	0.971	9.4	4.0	1.51	6846	0.57	2738.95
008098515-03	OBS	No	169.511126	239.698299	151.1	2.162	8.4	4.7	1.51	6846	2.01	10.29
008098515-04	OBS	No	2.572151	132.384712	51.8	3.621	8.4	9.0	1.51	6846	1.26	2739.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008098515-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—CENT_SATURATED
008098515-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008098515-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008098515-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

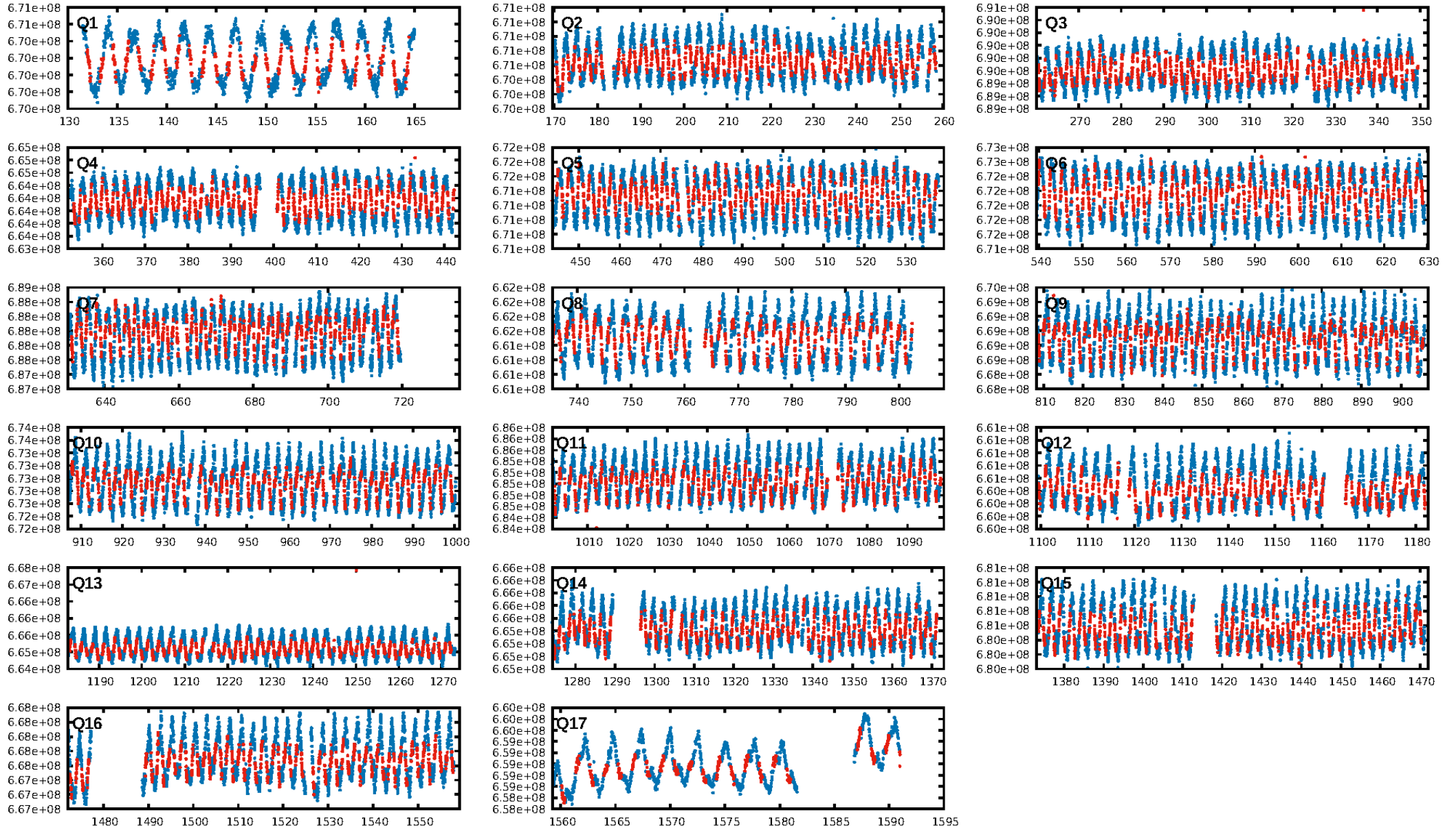
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008098515-01

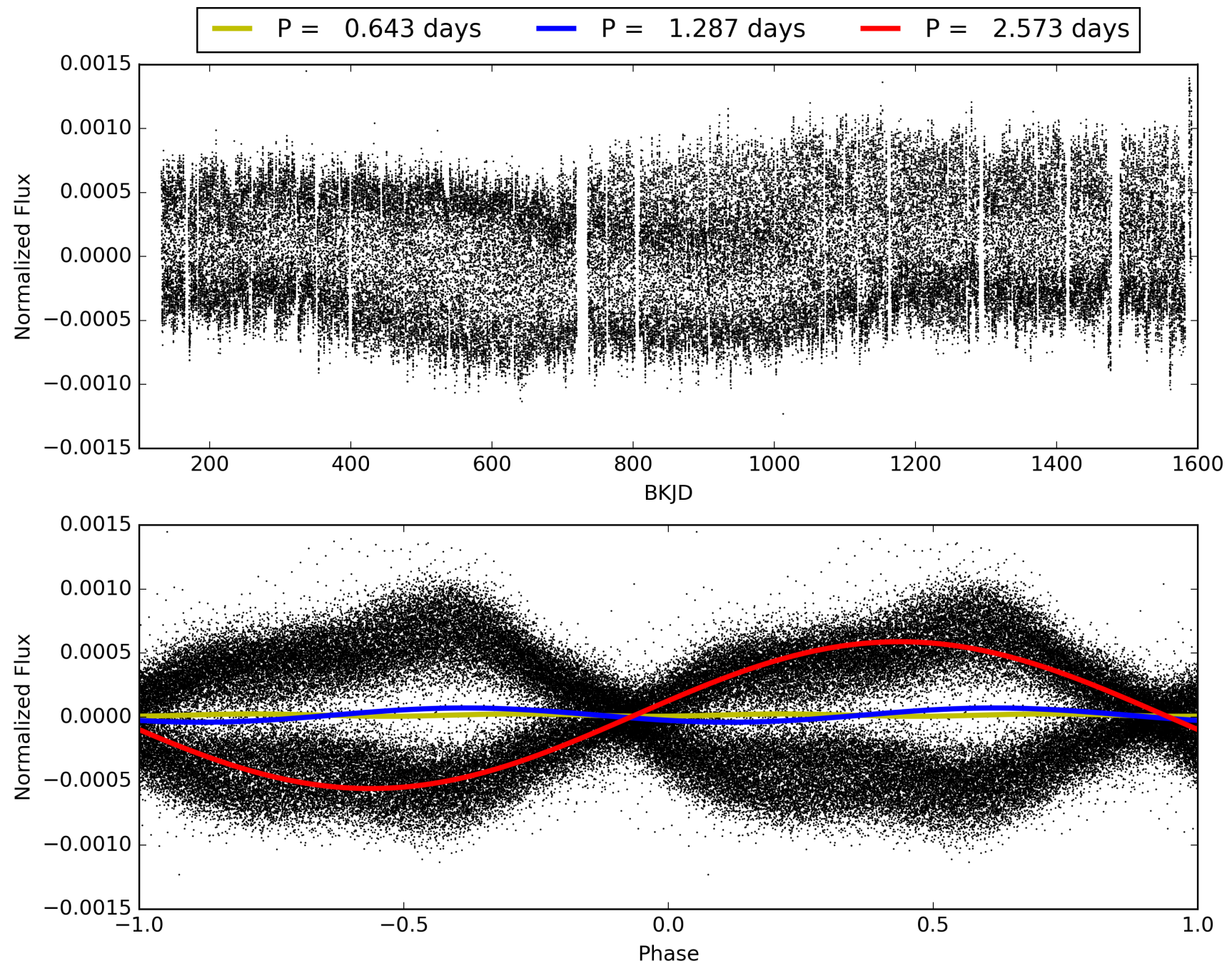
No Significant Match Found

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

TCE 008098515-01, PDC Light Curves

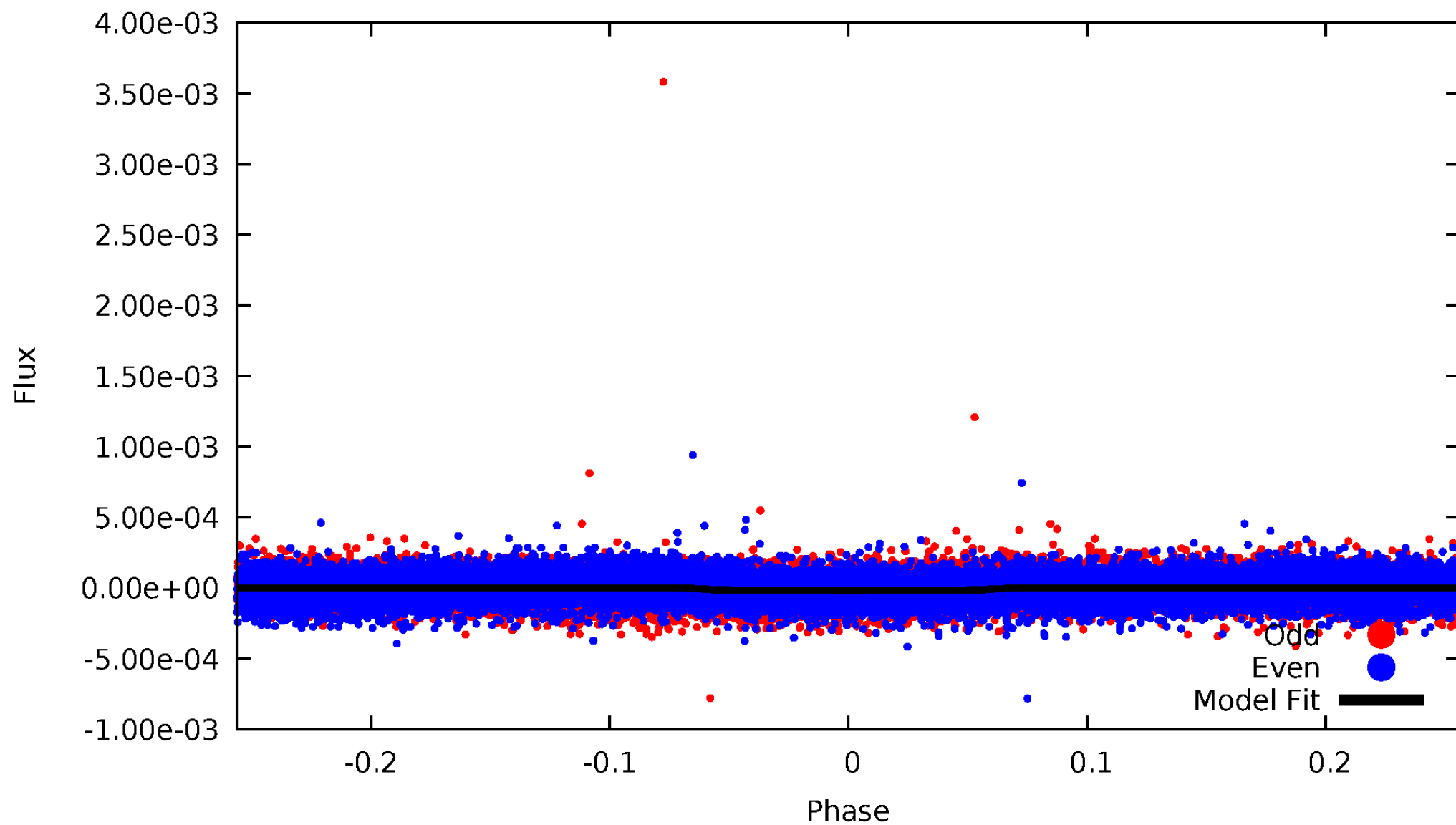


TCE 008098515-01



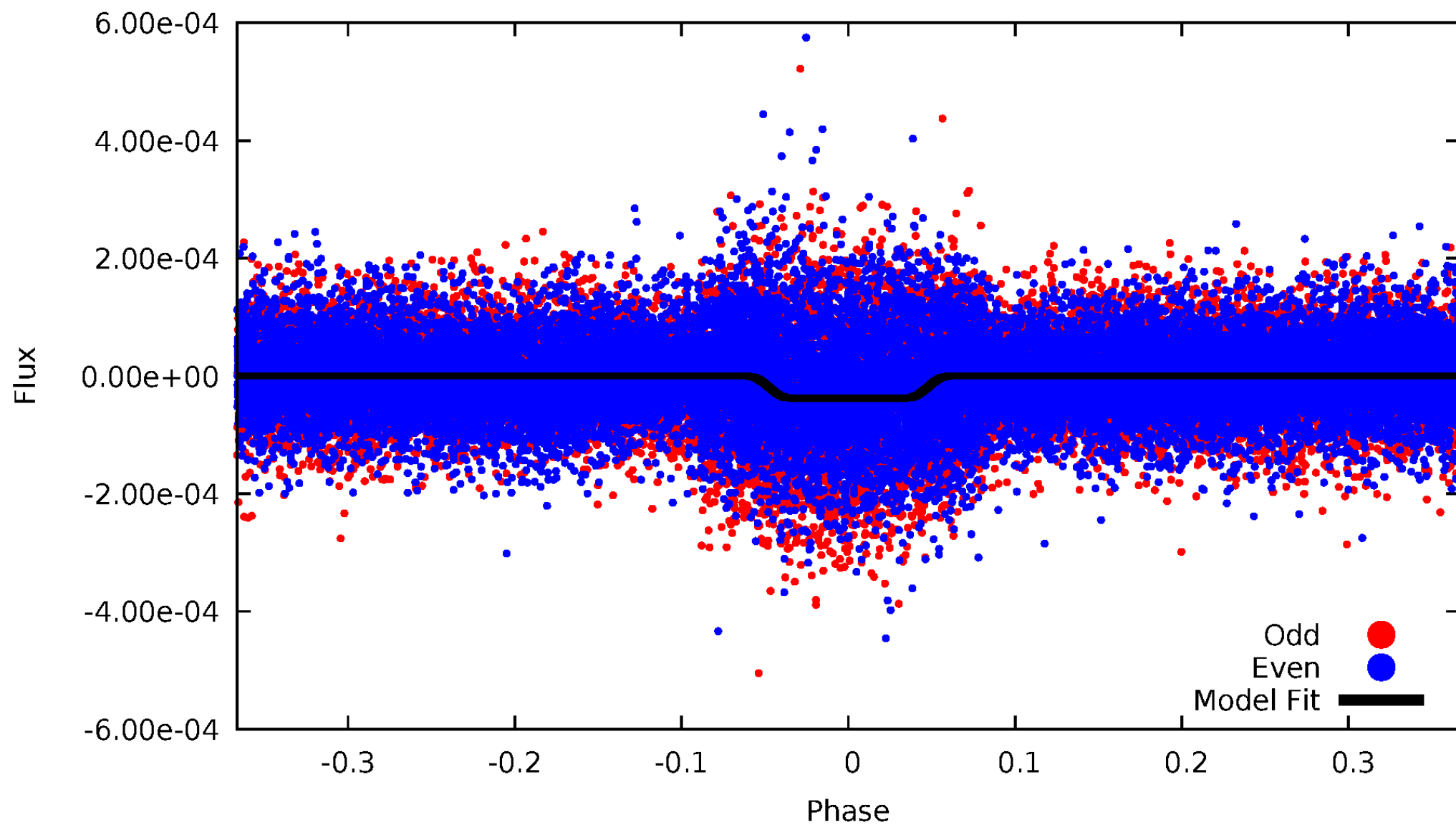
DV Odd/Even

TCE 008098515-01

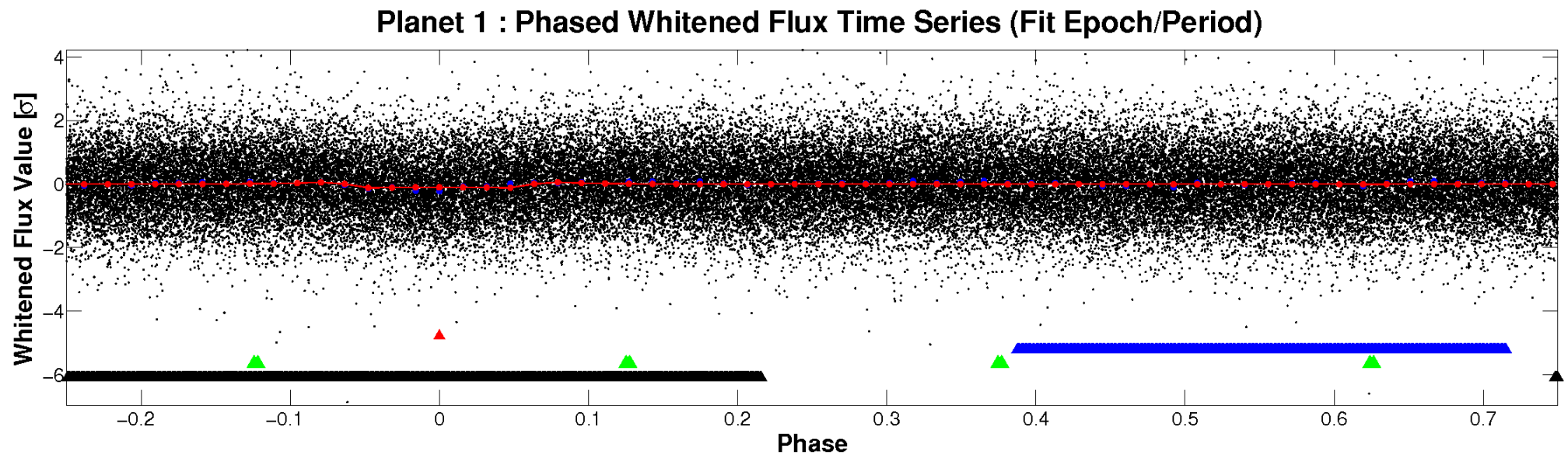
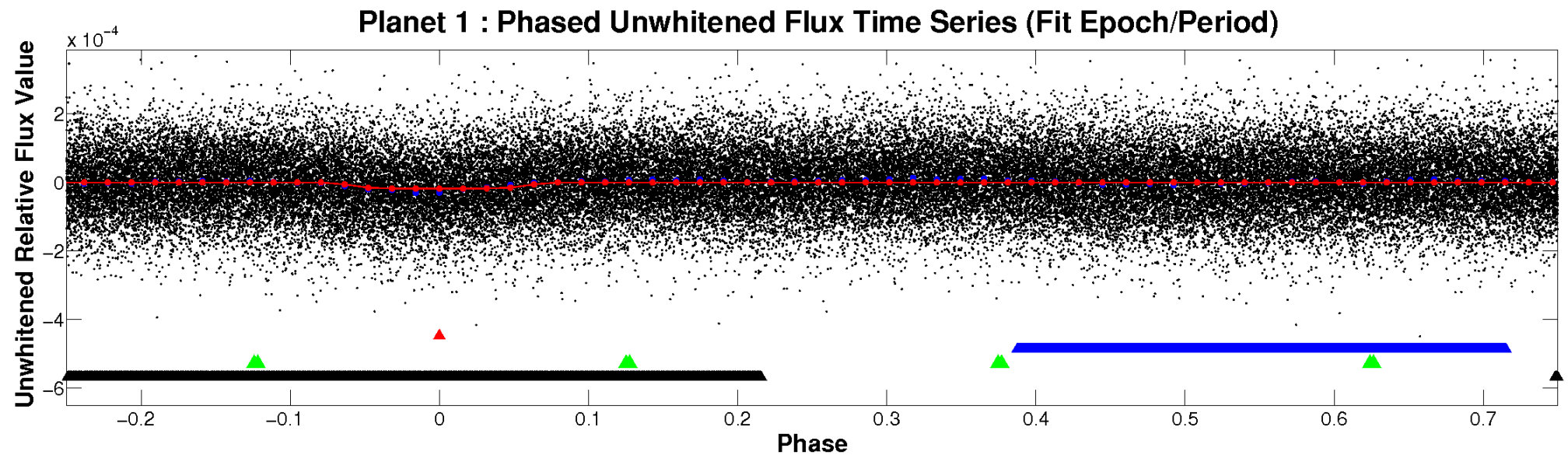


ALT Odd/Even

TCE 008098515-01

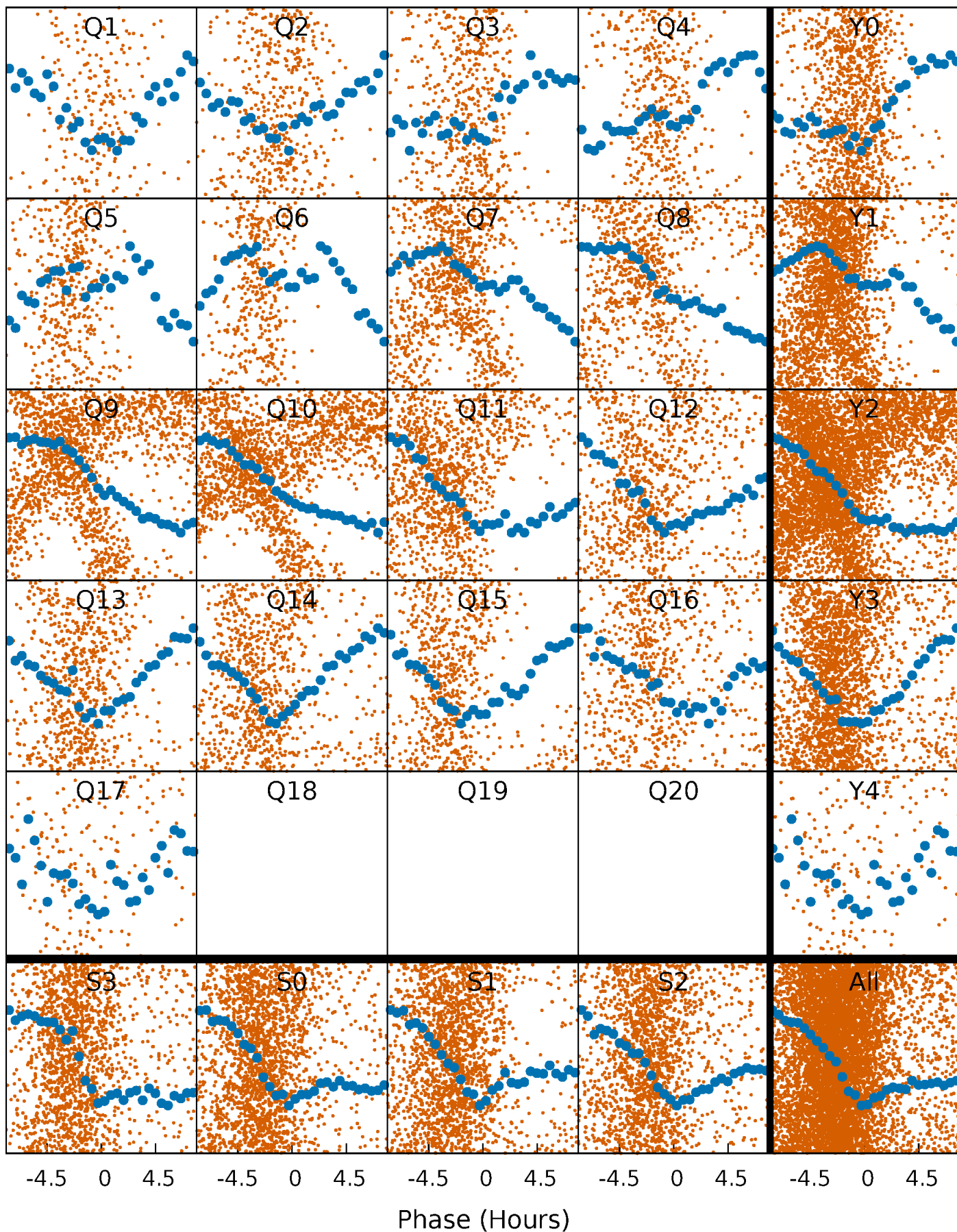


Non-Whitened Vs. Whitened Light Curve



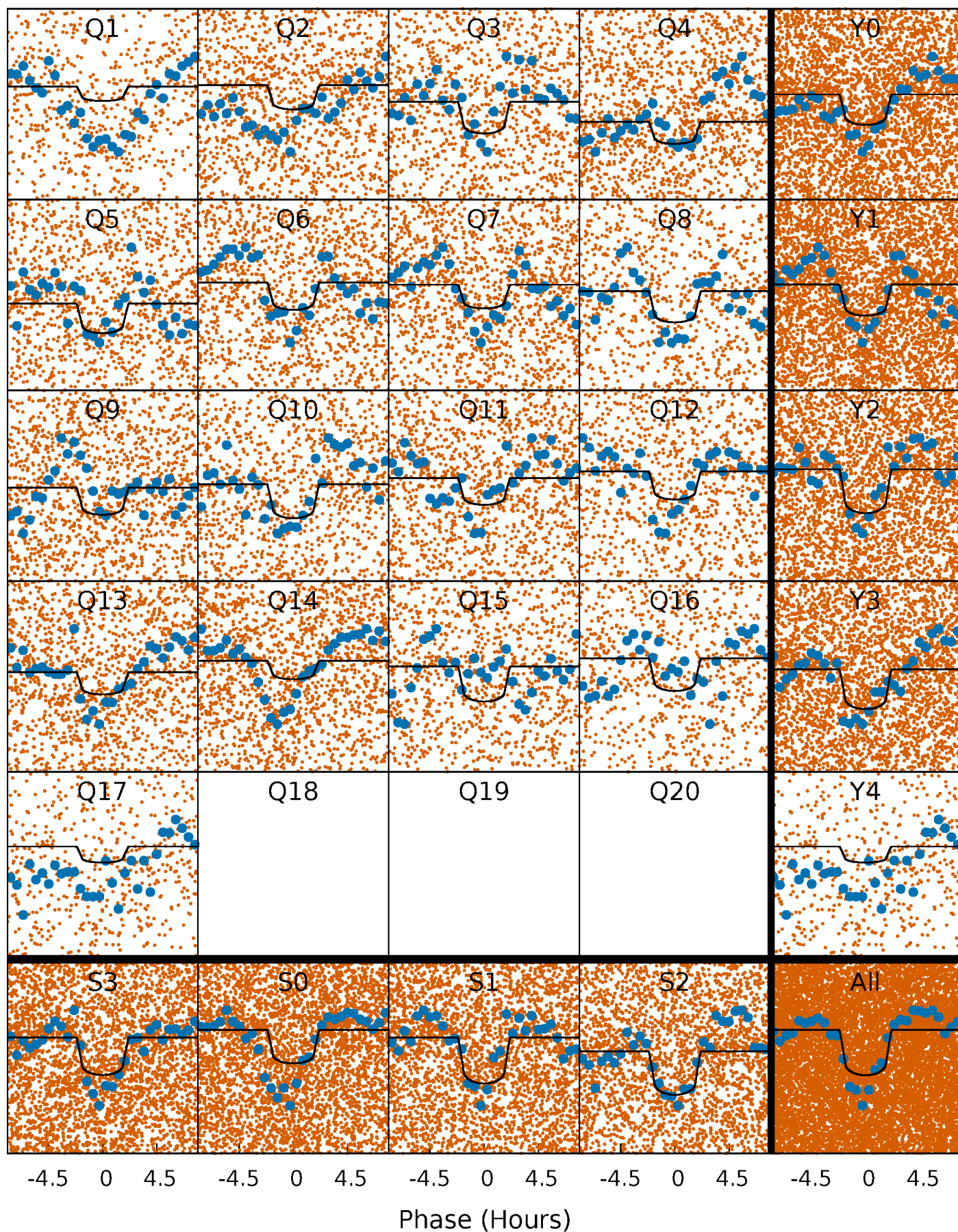
PDC Quarter-Phased Transit Curves

TCE 008098515-01 P= 1.286606 Days $T_0=132.107107$ (BKJD)



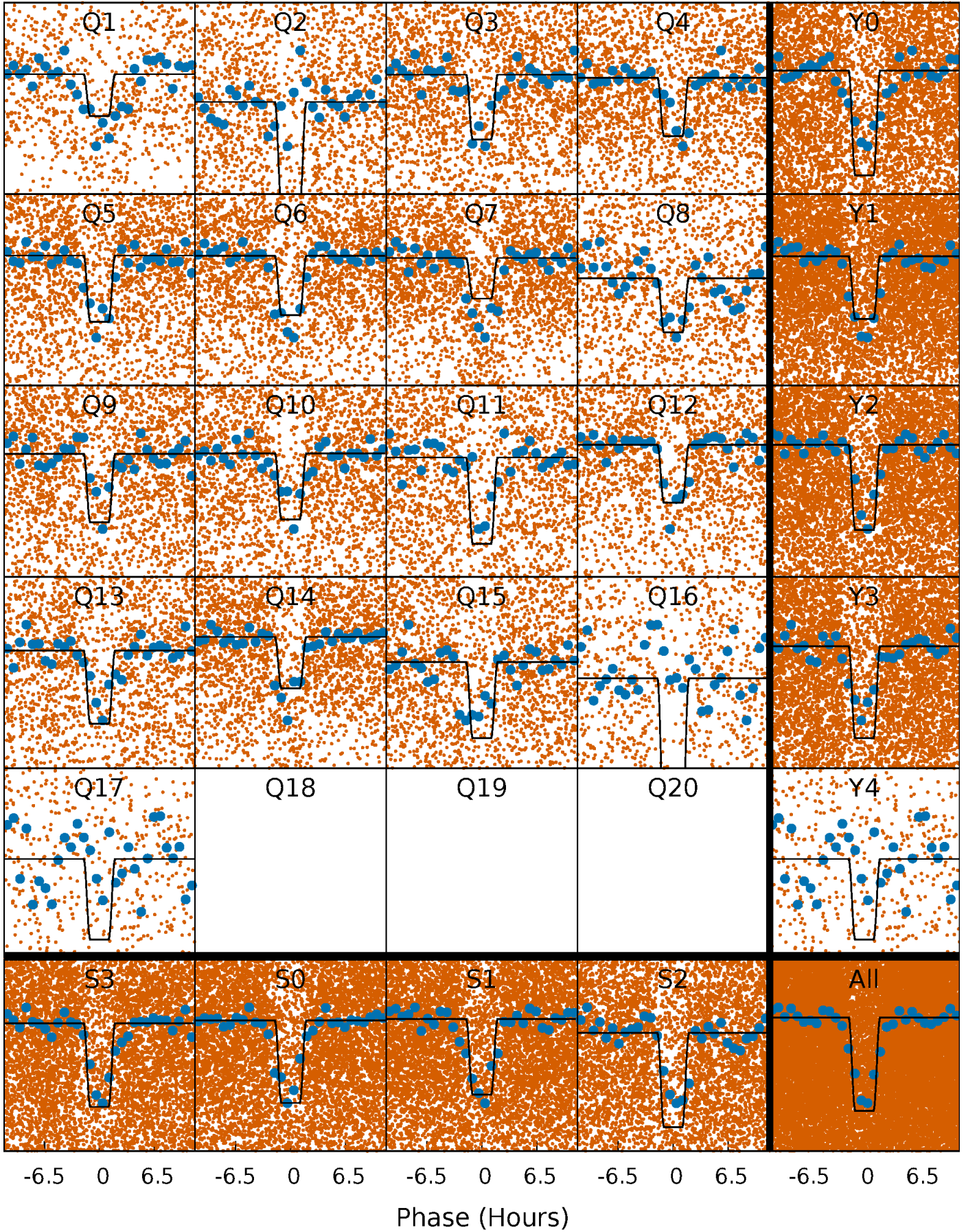
DV Quarter-Phased Transit Curves

TCE 008098515-01 P= 1.286606 Days $T_0=132.107107$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

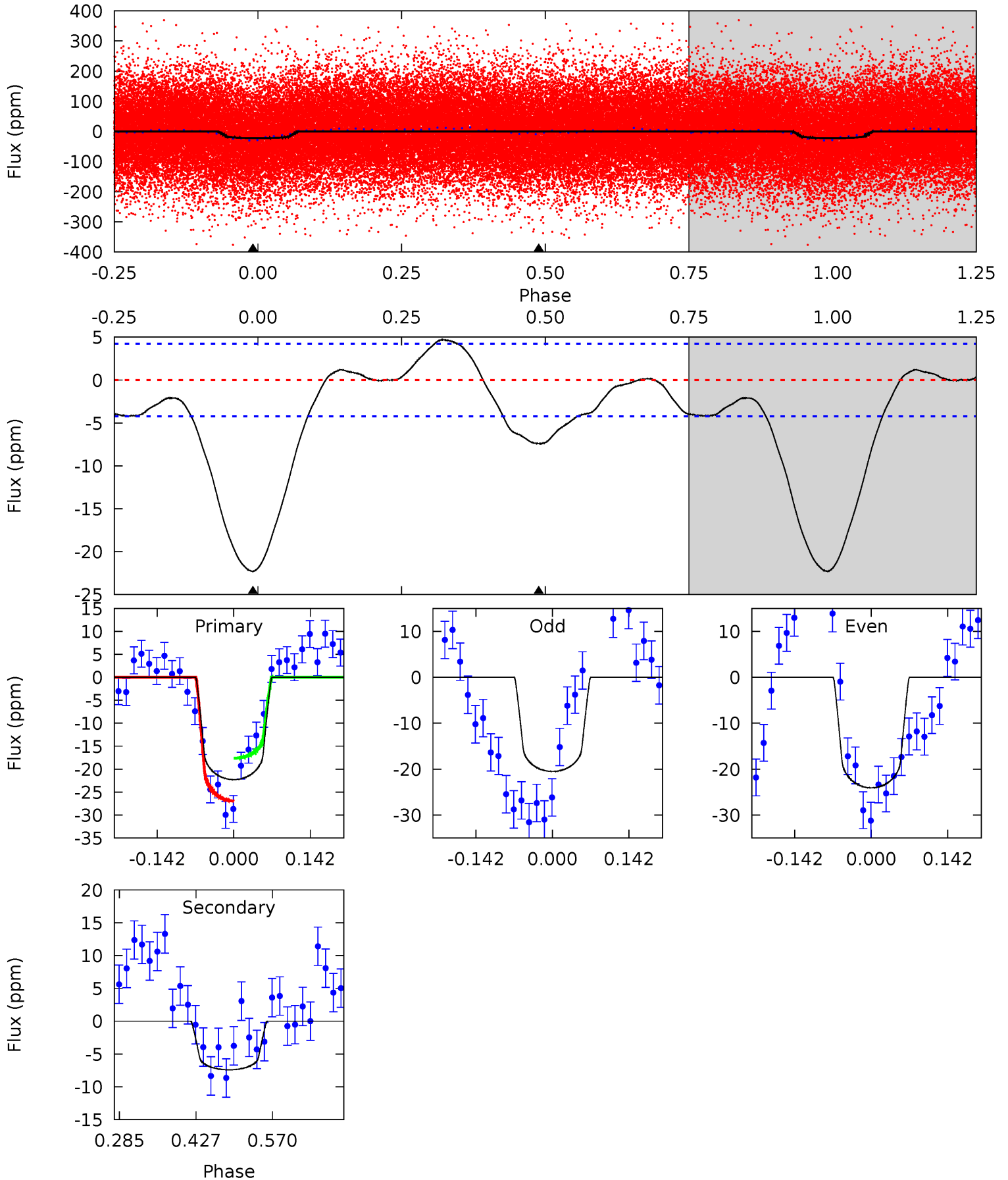
TCE 008098515-01 P= 1.286572 Days $T_0=132.109235$ (BKJD)



DV Model-Shift Uniqueness Test

008098515-01, P = 1.286606 Days, E = 130.820501 Days

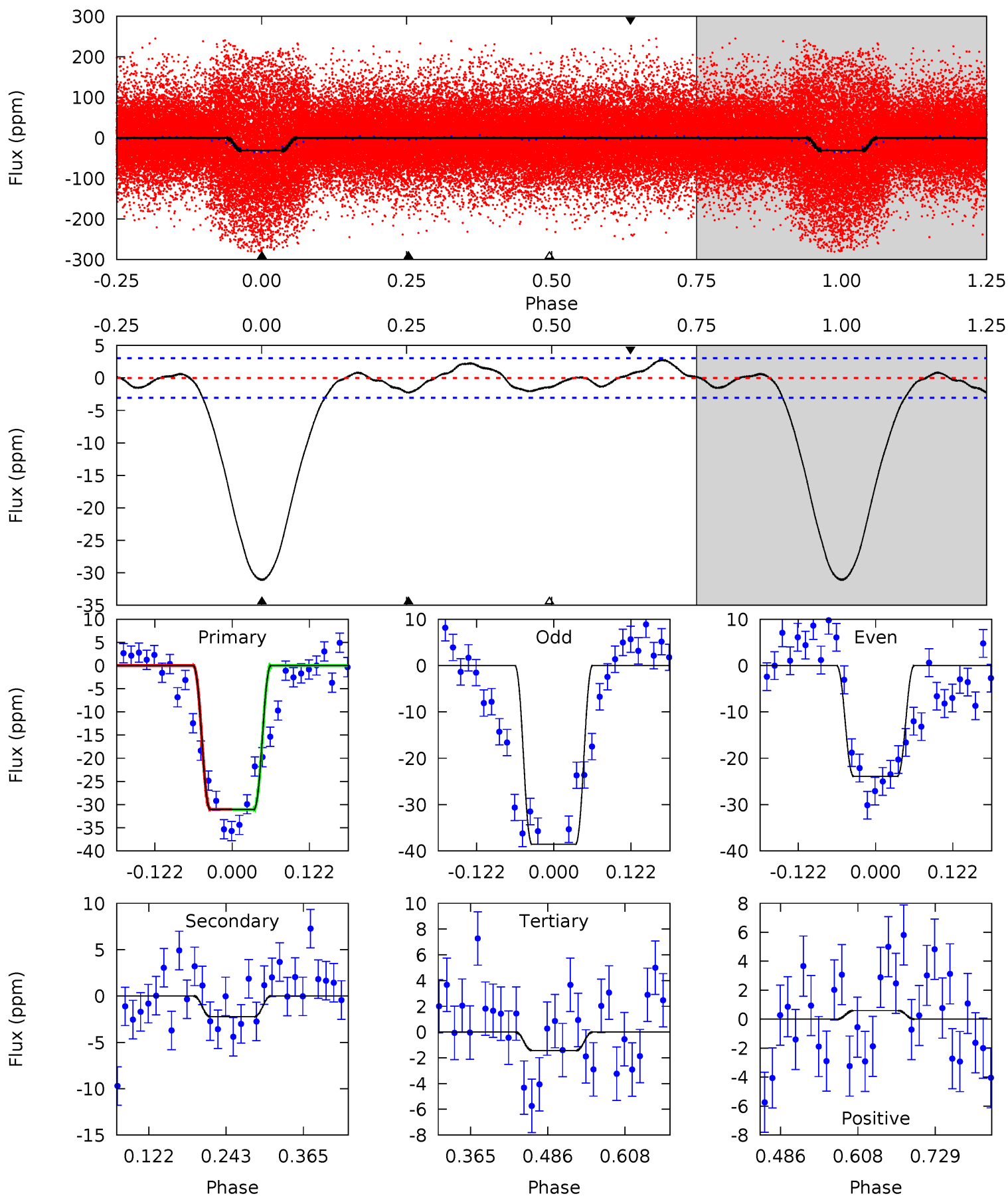
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	7.84	0	0	4.49	1.47	2.70	23.6	23.6	7.84	7.84	1.89	1.04	0.17	4.93



Alt Model-Shift Uniqueness Test

008098515-01, P = 1.286572 Days, E = 130.822663 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.0	3.32	2.13	0.89	4.52	1.55	1.78	43.9	45.2	1.19	2.43	11.0	1.02	0.08	0.05



Stellar Parameters For KIC 008098515

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6846^{+190}_{-286}	$4.205^{+0.128}_{-0.192}$	$-0.160^{+0.250}_{-0.350}$	$1.507^{+0.471}_{-0.314}$	$1.337^{+0.189}_{-0.231}$	$0.550^{+0.355}_{-0.273}$
	+3%/-4%	+3%/-5%	+156%/-219%	+31%/-21%	+14%/-17%	+65%/-50%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008098515-01 / KOI 6965.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7 ± 1	$0.77^{+0.19}_{-0.16}$	3271^{+249}_{-229}	5181^{+576}_{-432}	$4.393^{+2.575}_{-1.553}$
Alt.	-2 ± 1	$1.03^{+0.22}_{-0.18}$	3279^{+254}_{-224}	3424^{+384}_{-453}	$0.718^{+0.457}_{-0.277}$

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 $A_{obs} \gg 1.0$

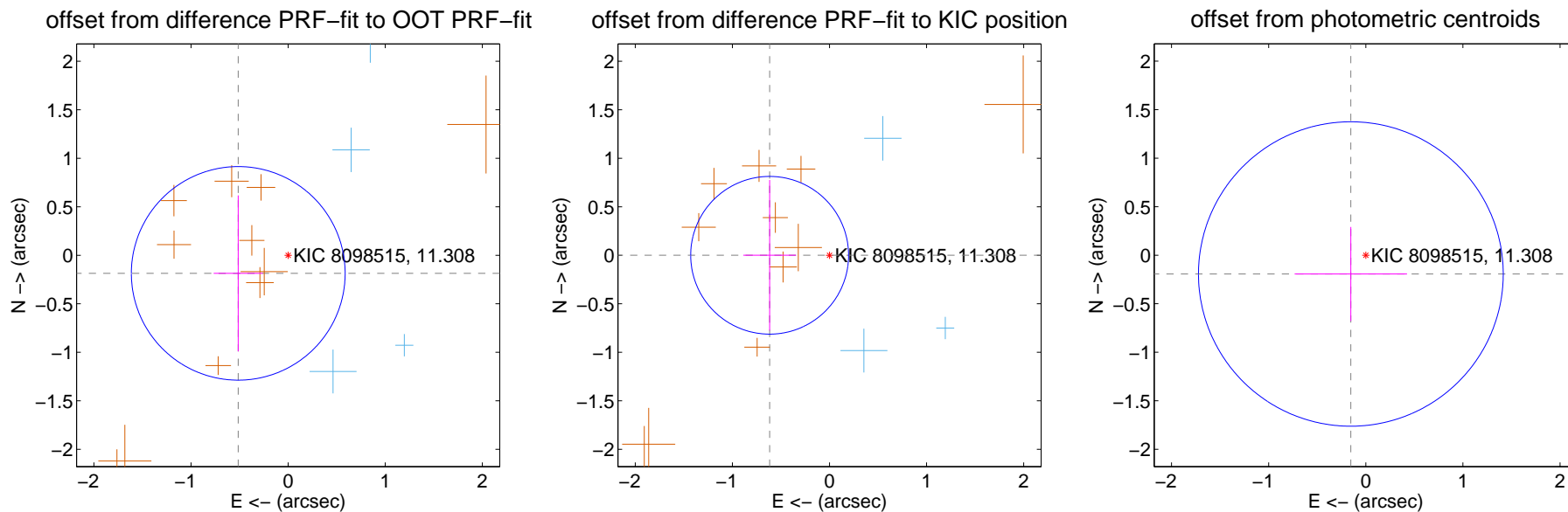
DV Centroid Data

Supplemental centroid analysis for 008098515-01. **Kepler magnitude: 11.31.** Transit SNR 9.76

There are 4 quarters with good PRF difference image offsets

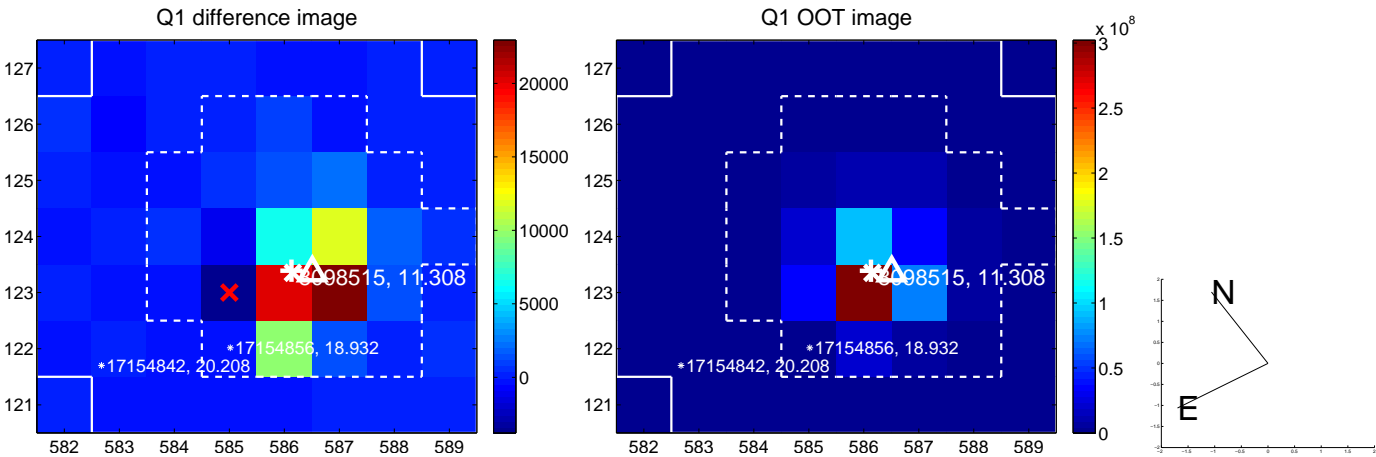
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.546 ± 0.367	1.49	0.514 ± 0.253	-0.186 ± 0.804
PRF-fit source offset from KIC position	0.616 ± 0.271	2.27	0.616 ± 0.271	0.000 ± 0.776
photometric centroid source offset	0.25 ± 0.52	0.47	0.15 ± 0.58	-0.19 ± 0.48

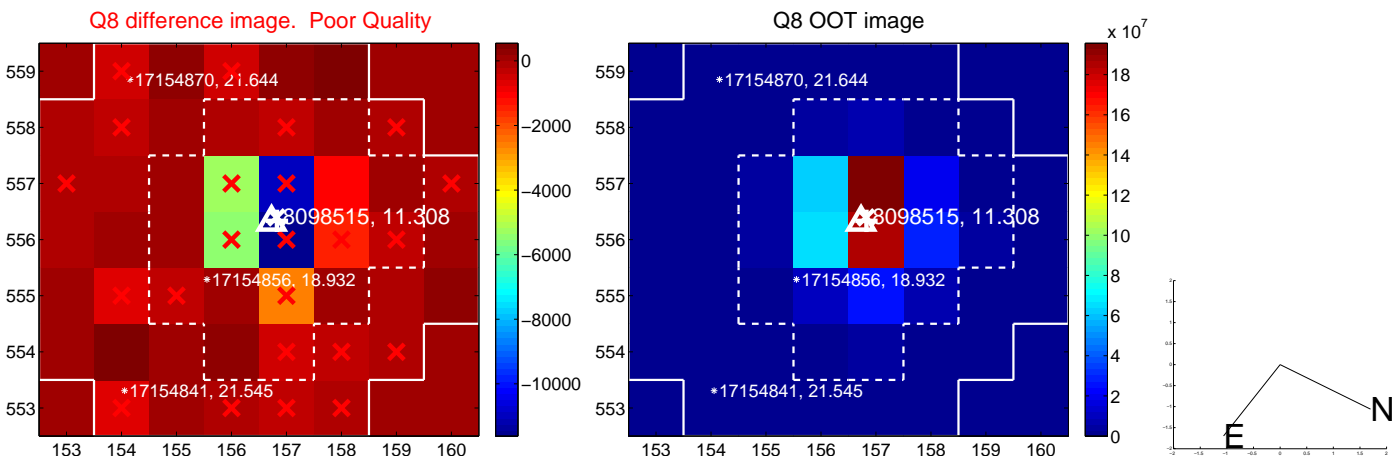
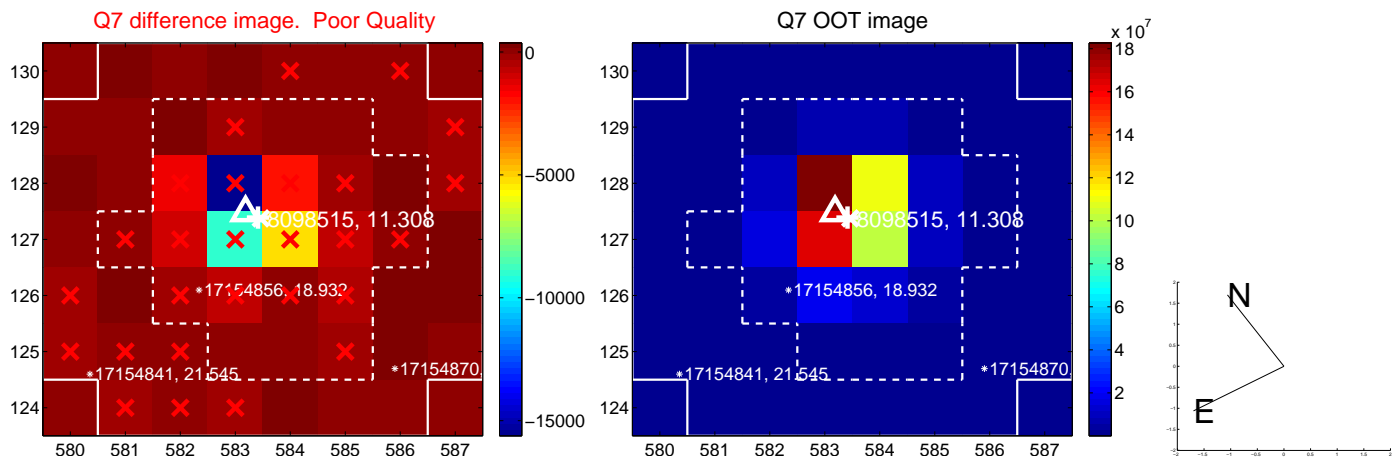
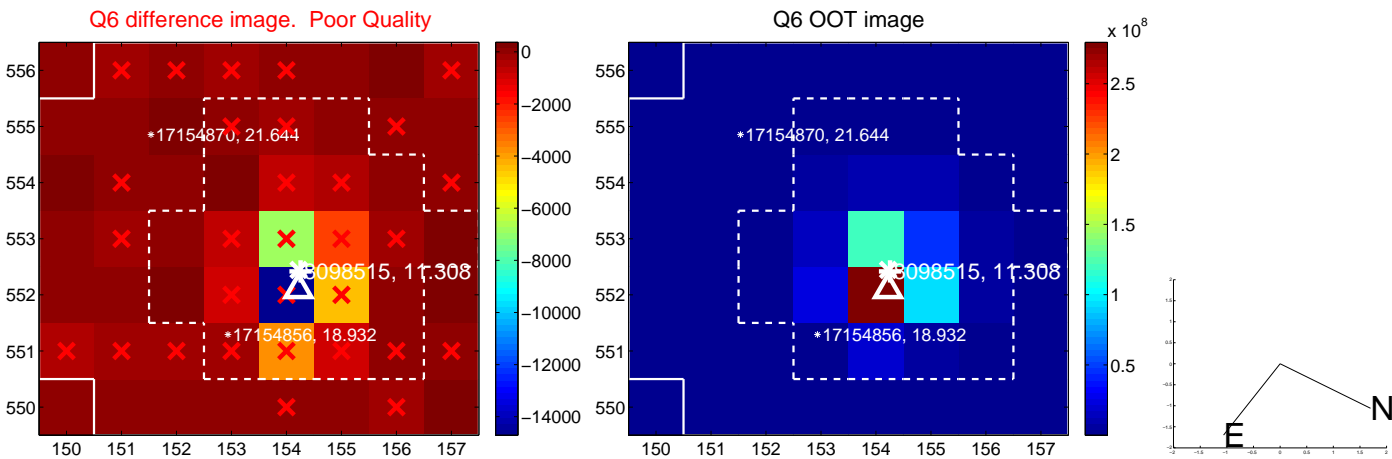
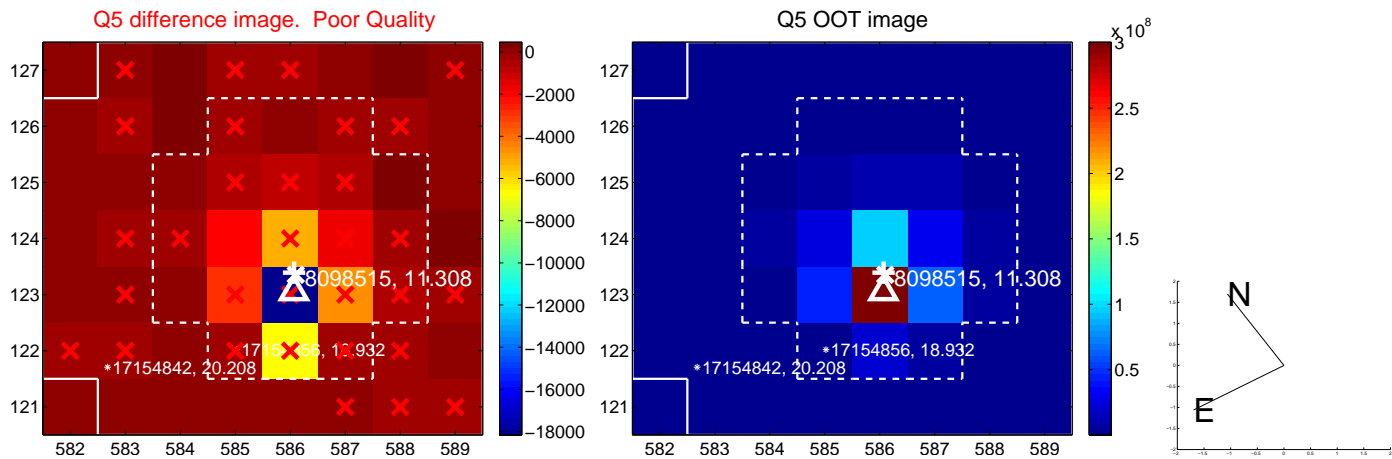


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

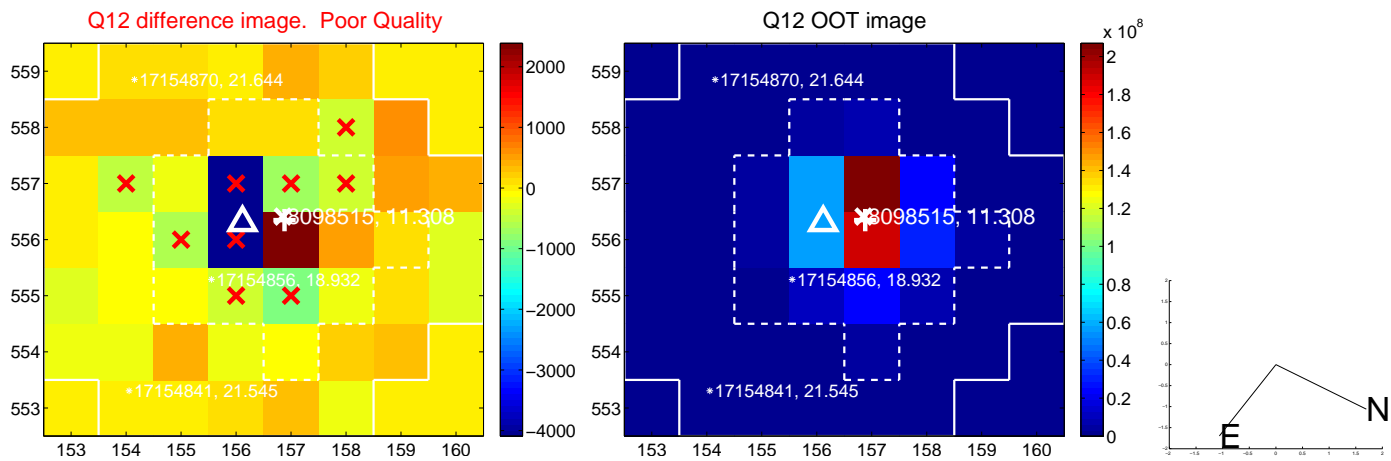
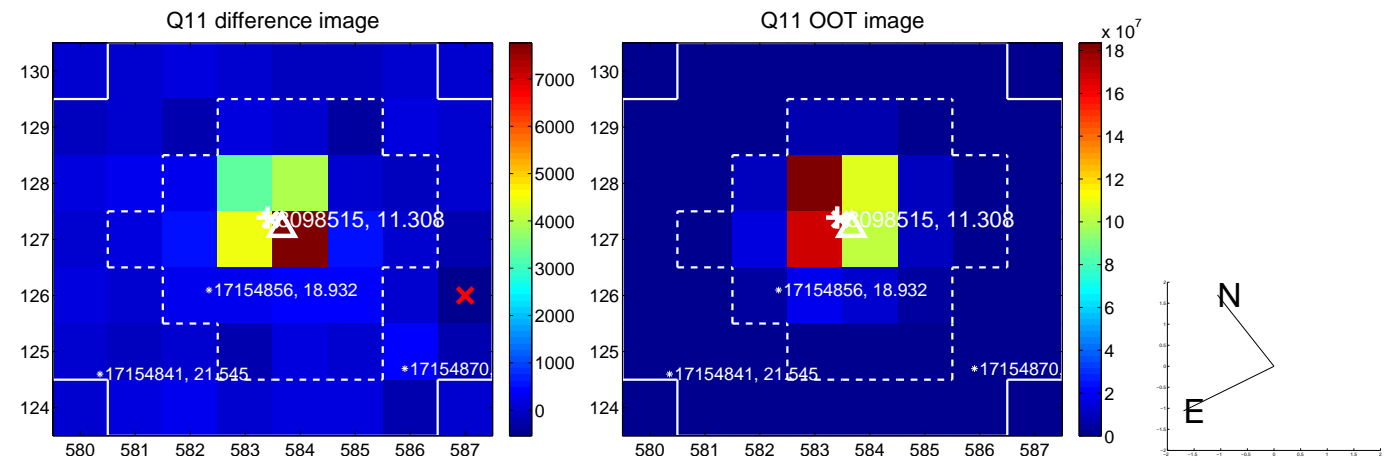
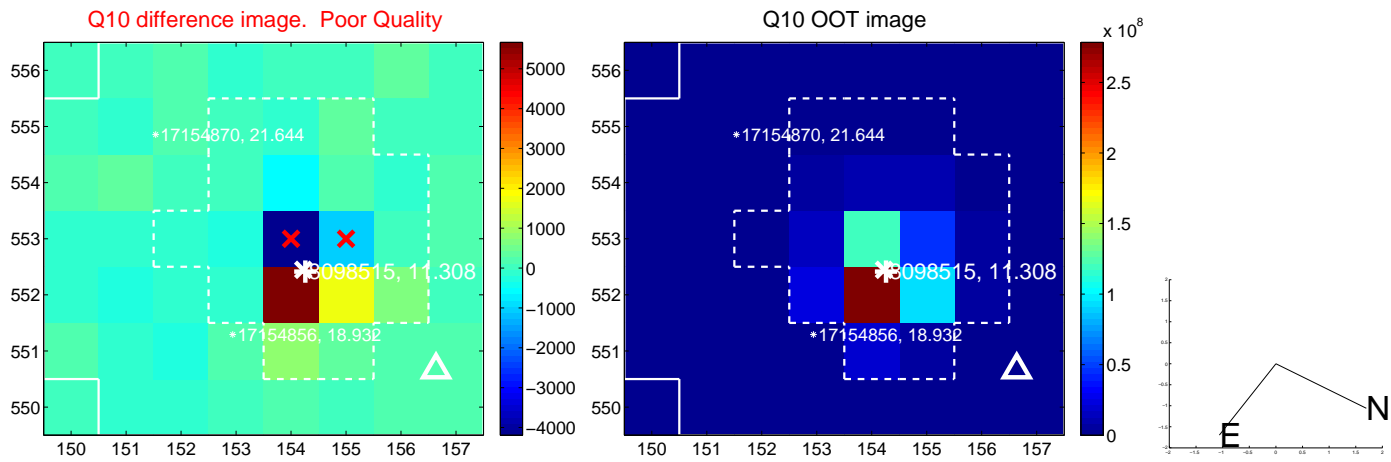
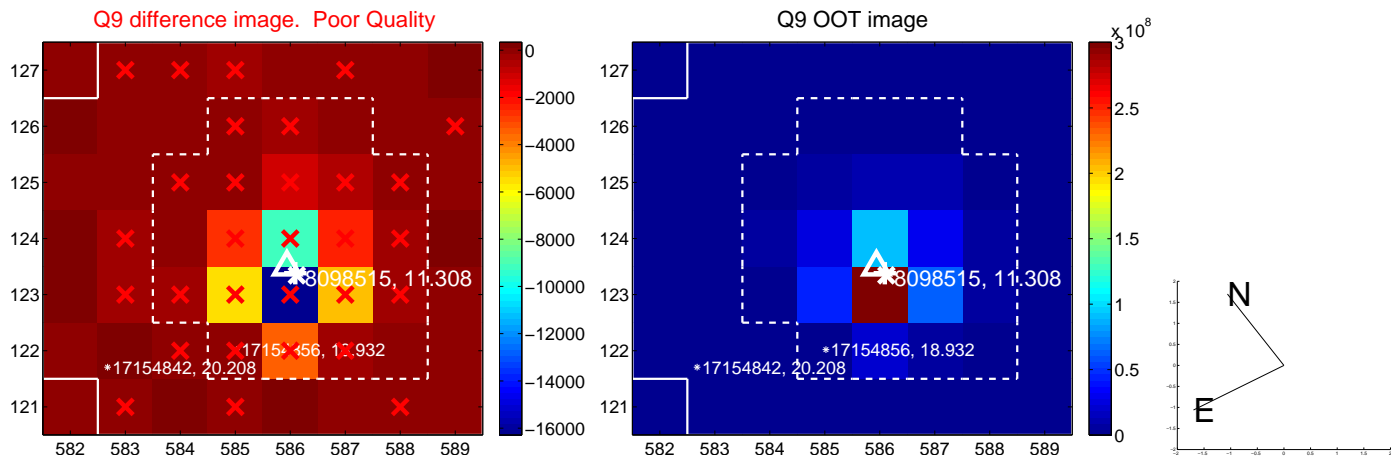
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



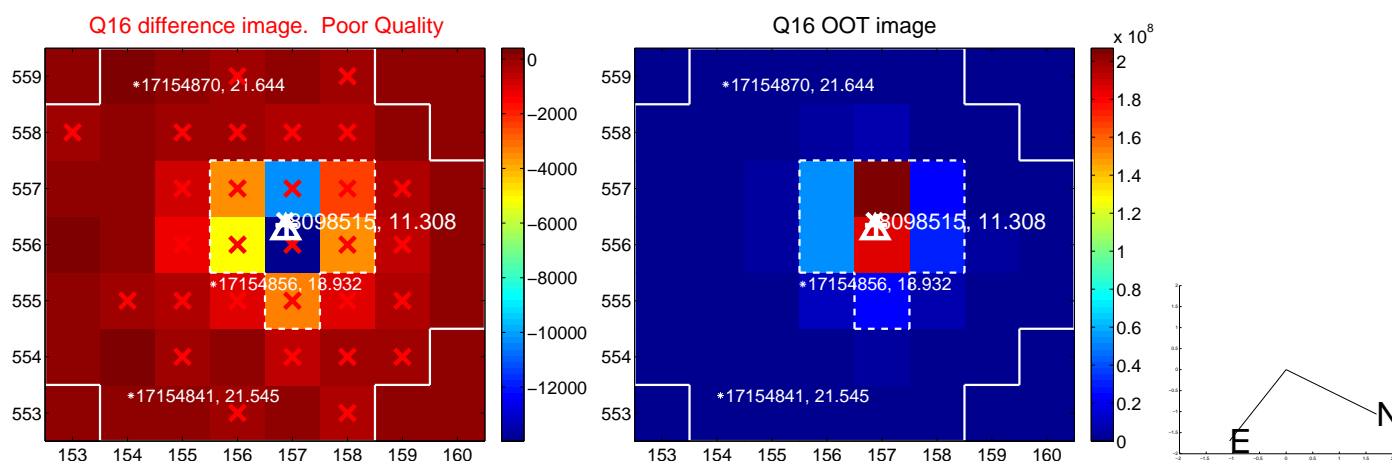
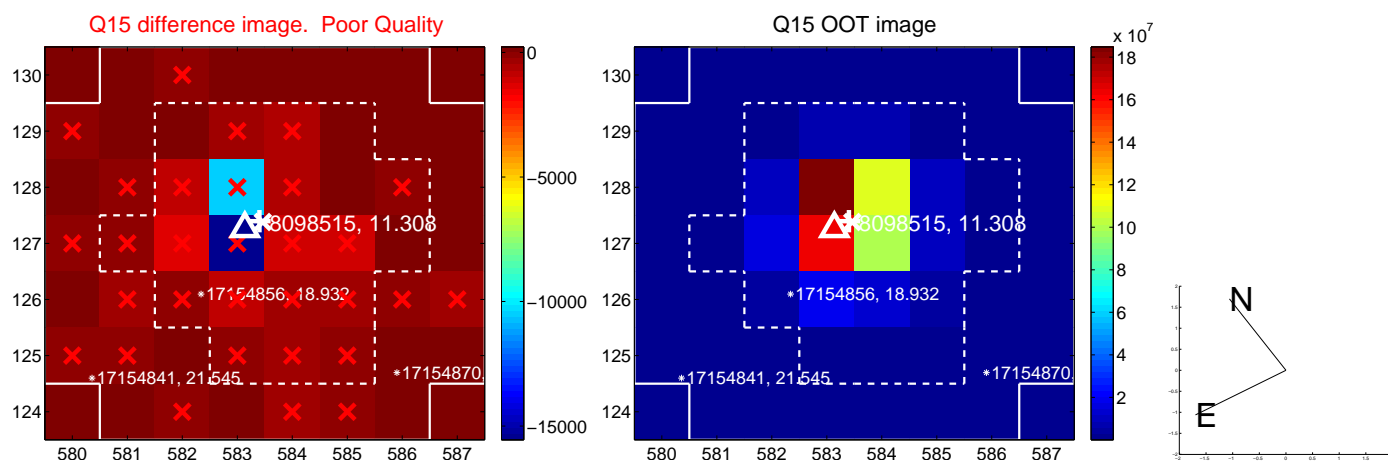
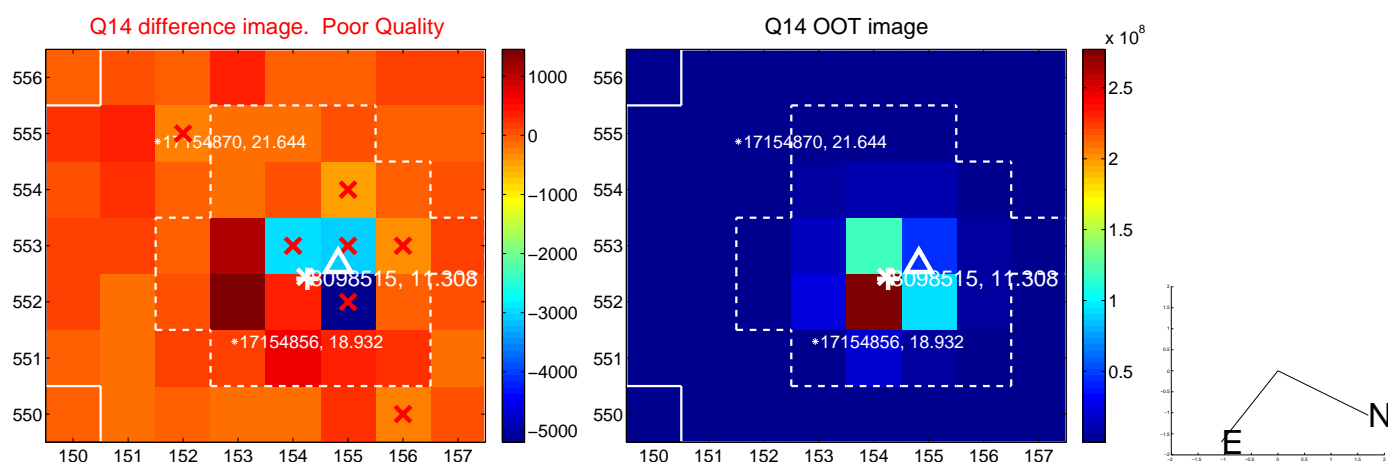
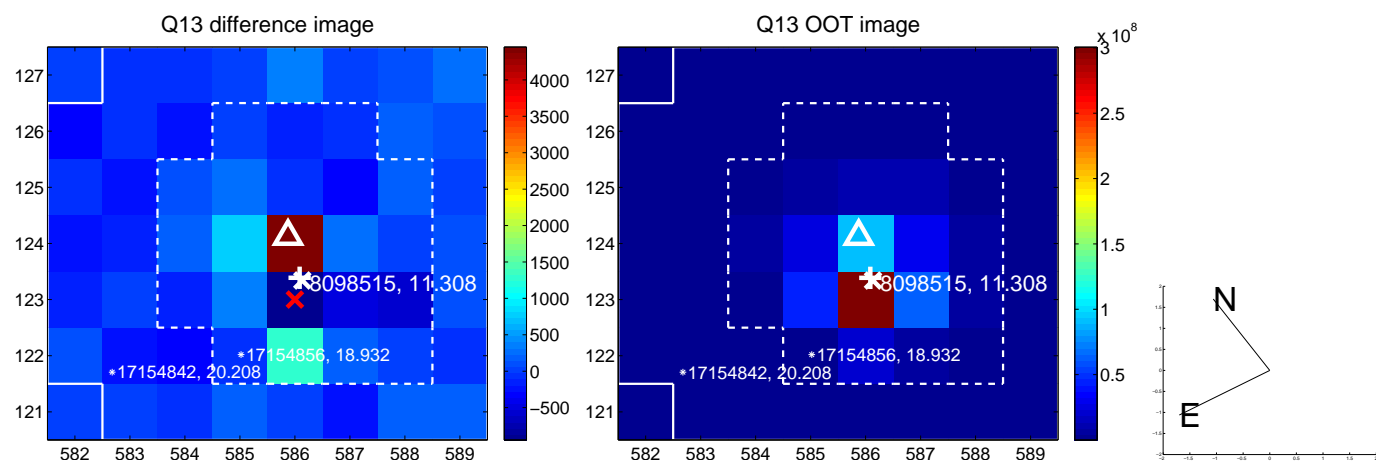
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



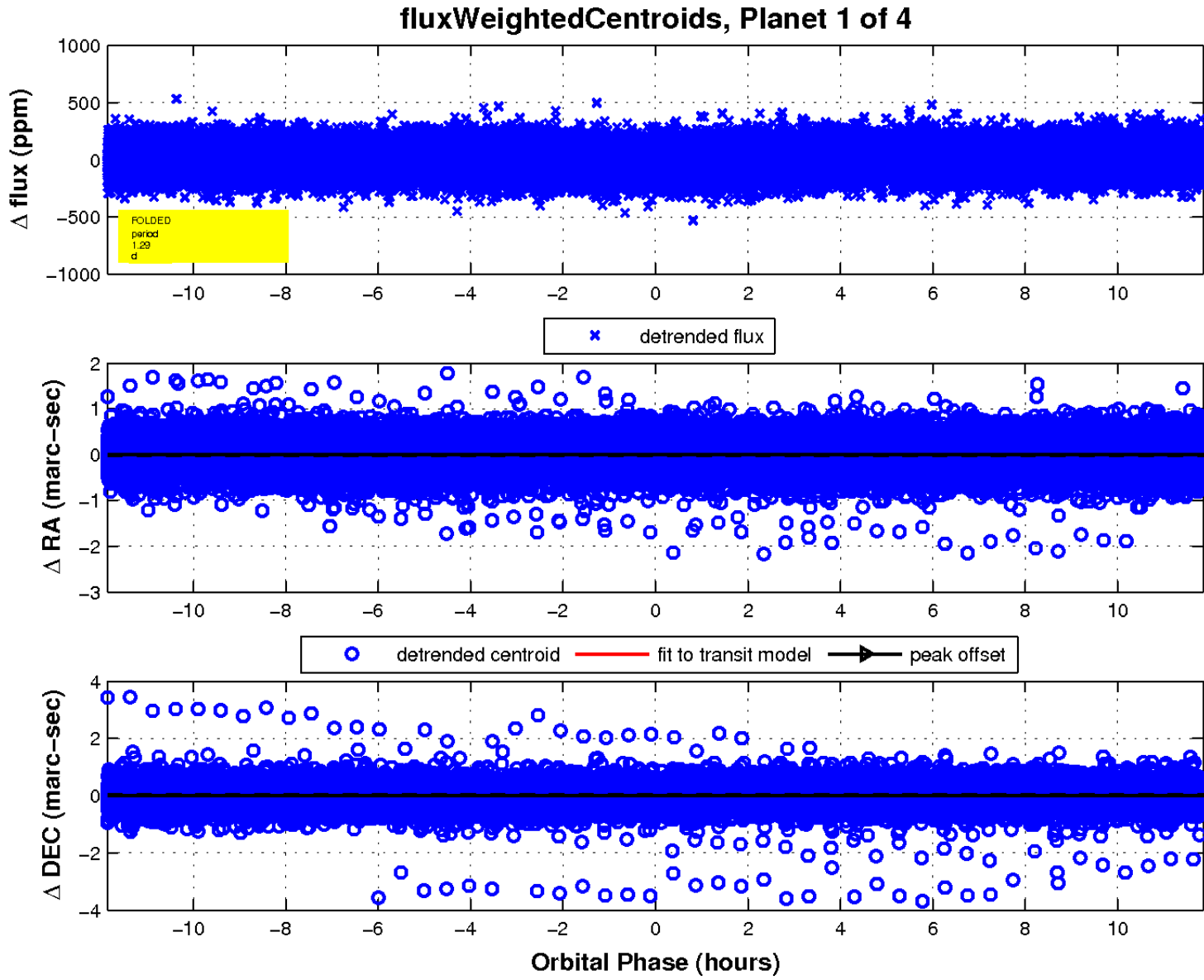
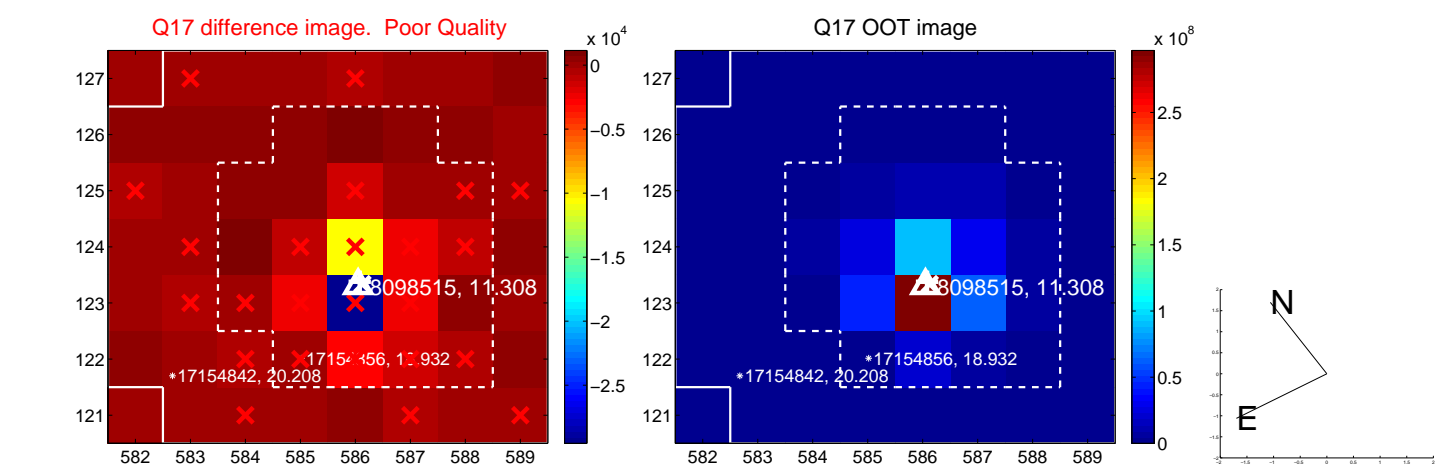
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

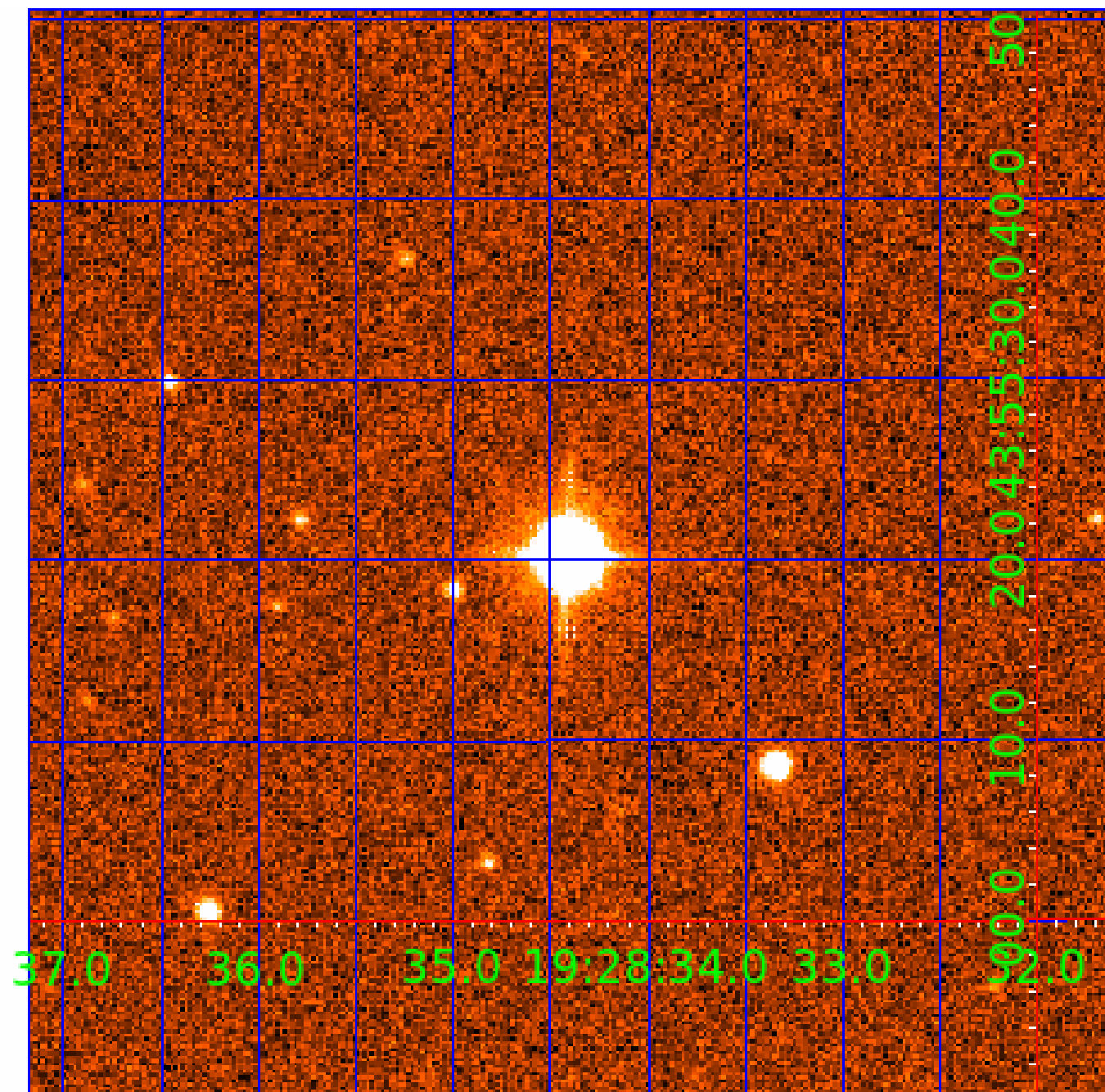


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008098515

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})
008098515-01	OBS	6965.01	1.286606	132.107107	18.0	3.954	10.0	9.8	1.51	6846	0.76	6899.06
008098515-02	OBS	No	2.572469	131.740717	12.3	0.971	9.4	4.0	1.51	6846	0.57	2738.95
008098515-03	OBS	No	169.511126	239.698299	151.1	2.162	8.4	4.7	1.51	6846	2.01	10.29
008098515-04	OBS	No	2.572151	132.384712	51.8	3.621	8.4	9.0	1.51	6846	1.26	2739.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008098515-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—CENT_SATURATED
008098515-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008098515-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008098515-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

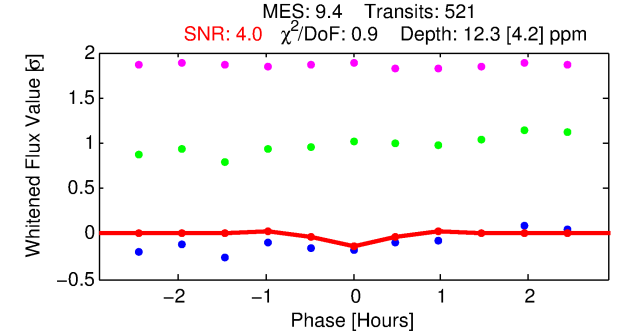
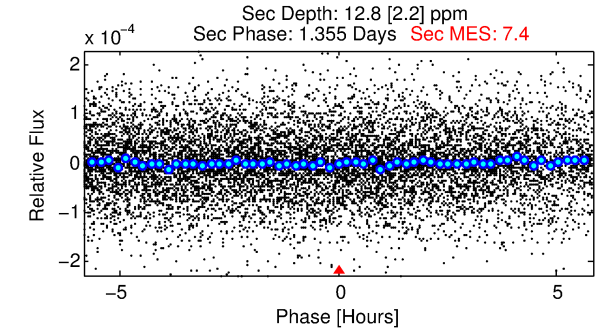
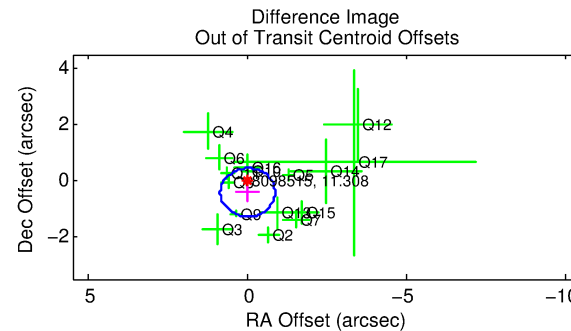
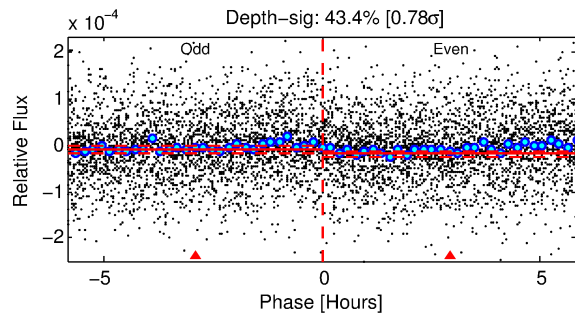
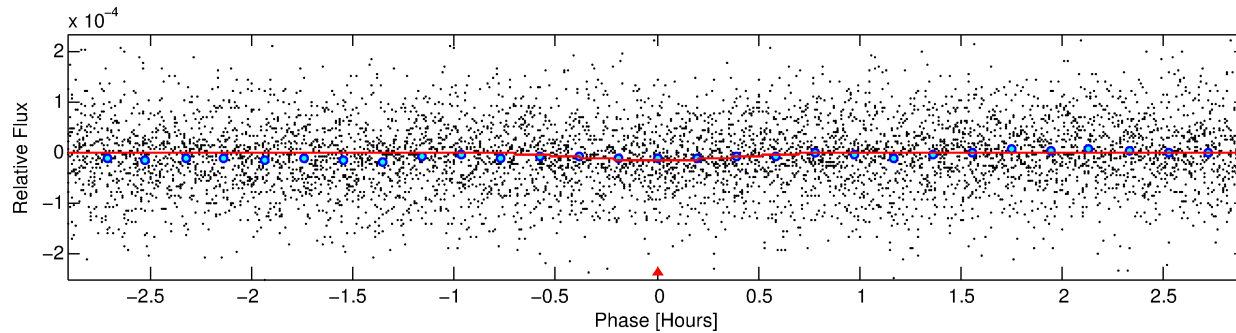
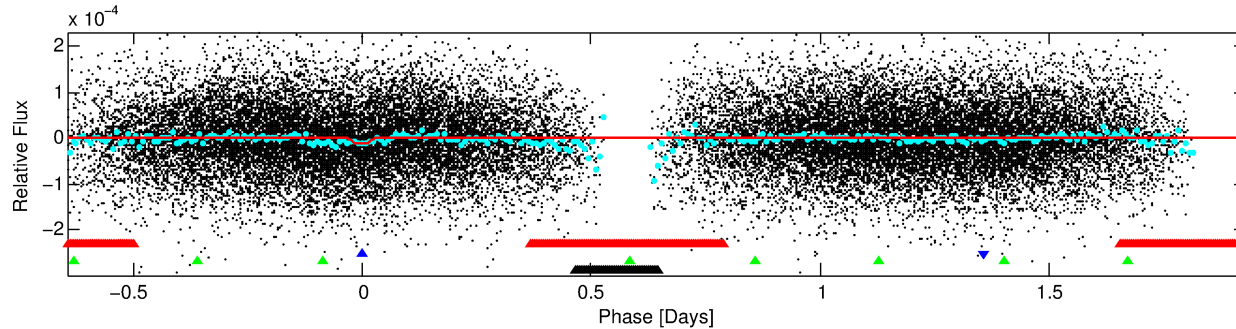
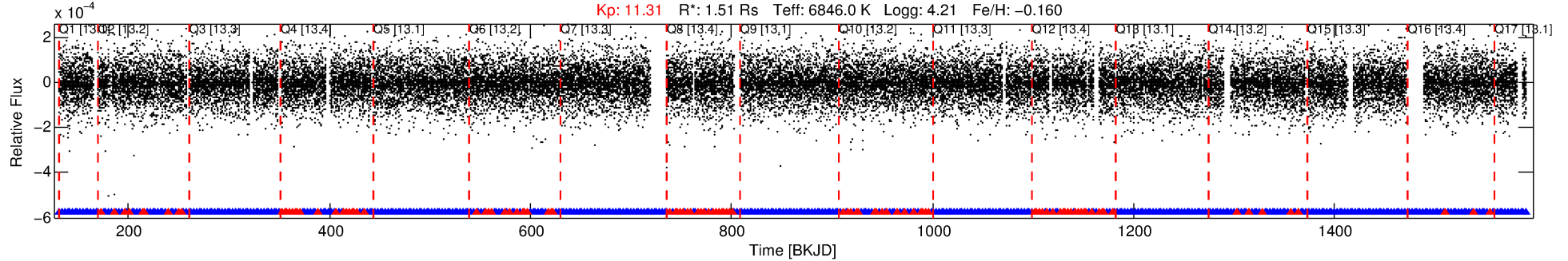
Ephemeris Match Information For 008098515-02

No Significant Match Found

DV One-Page Summary

KIC: 8098515 Candidate: 2 of 4 Period: 2.572 d
KOI: K06965 Corr: No Ephemeris Match

Kp: 11.31 R*: 1.51 Rs Teff: 6846.0 K Logg: 4.21 Fe/H: -0.160



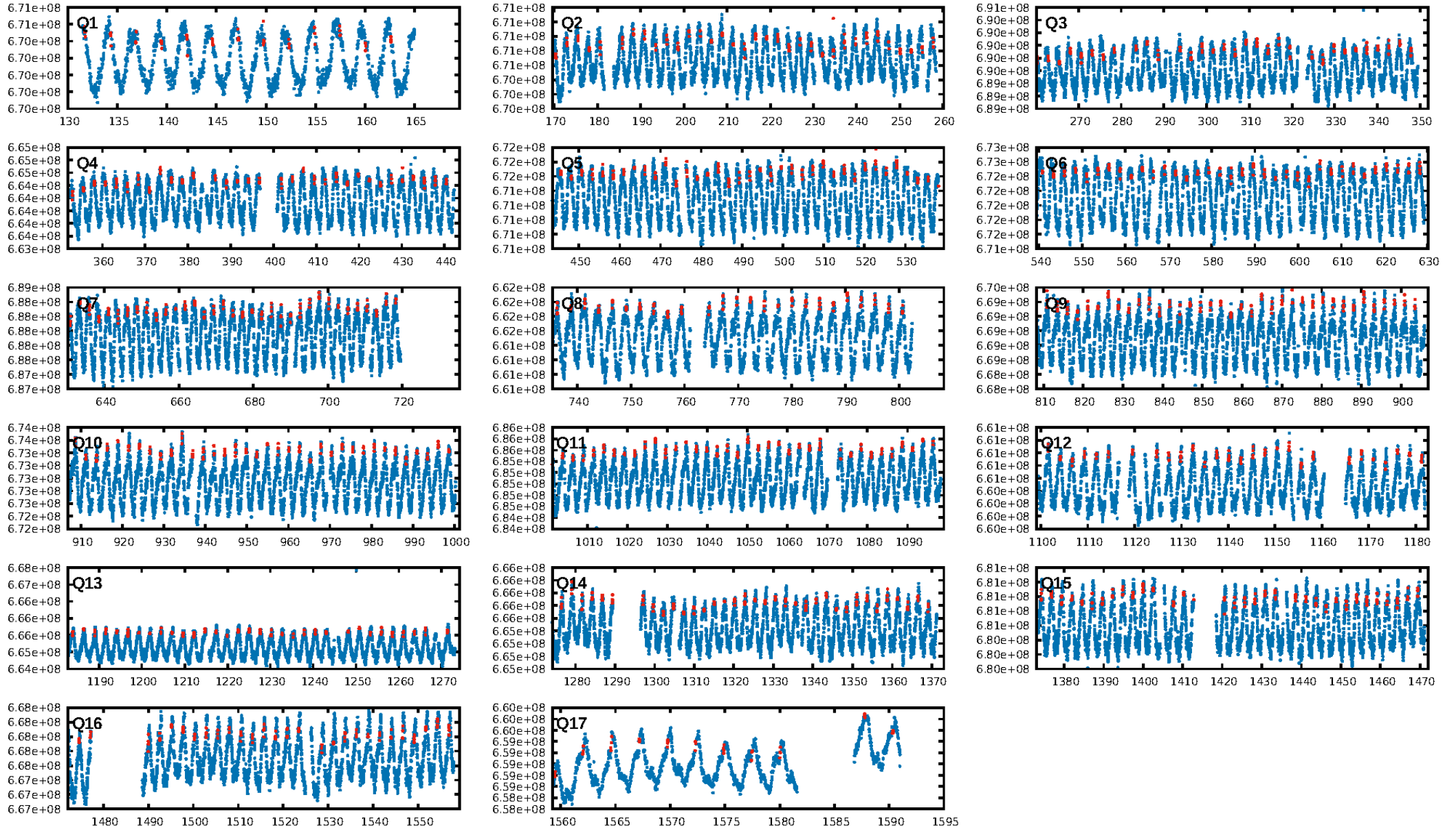
DV Fit Results:

Period = 2.57247 [0.00003] d
Epoch = 131.7407 [0.0043] BKJD
Rp/R* = 0.0035 [0.0011]
a/R* = 14.52 [22.15]
b = 0.70 [1.10]
Seff = 2738.95 [1089.42]
Teq = 1845 [183] K
Rp = 0.57 [0.25] Re
a = 0.0404 [0.0103] AU
Ag = 35.18 [26.40] [1.29σ]
Teff = 6946 [1179] K [4.28σ]

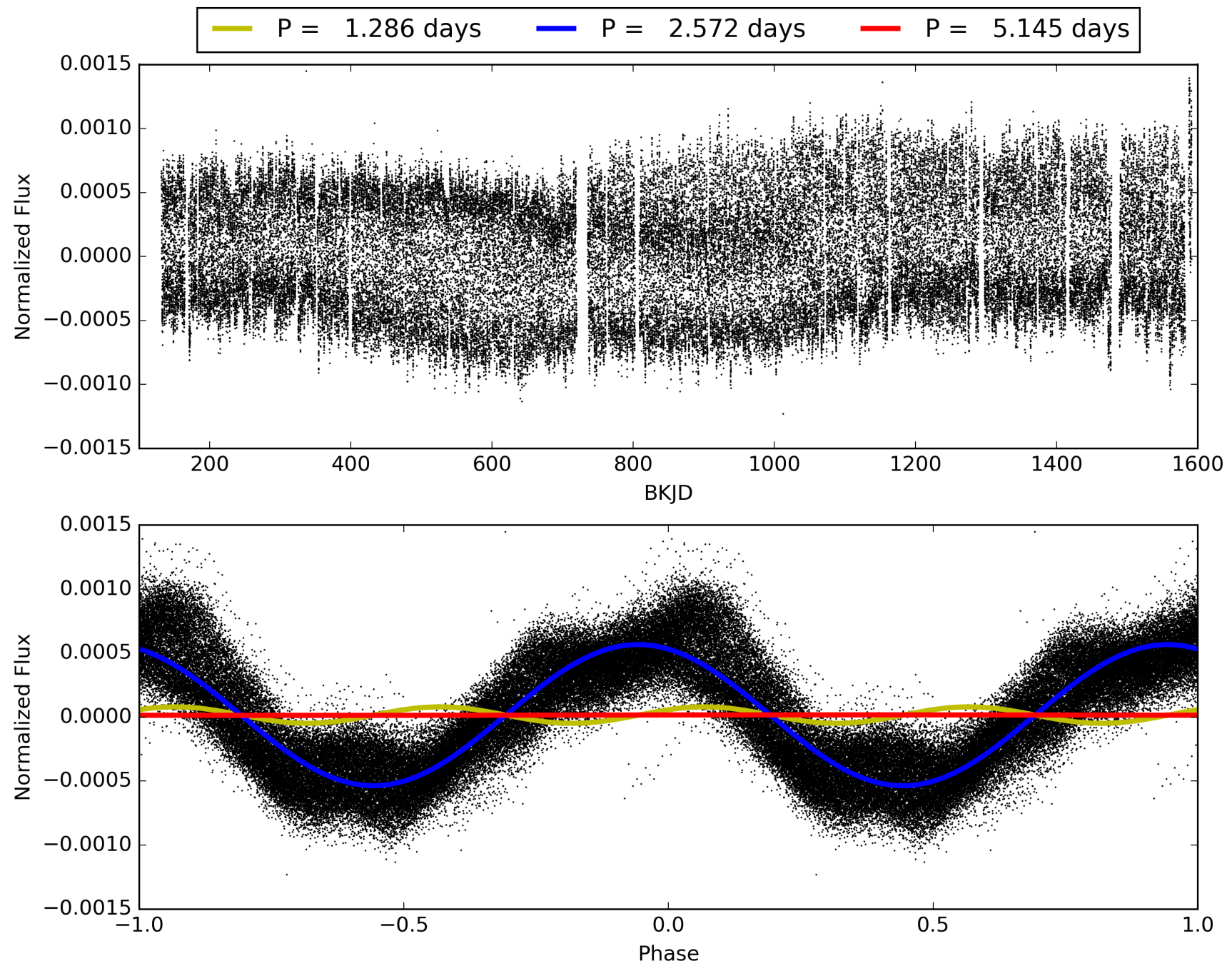
DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00σ]
LongPeriod-sig: 100.0% [1690.67σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.89e-15
RollingBand-fgt: 0.79 [394/497]
GhostDiagnostic-chr: 9.791
Centroid-sig: 2.0%
Centroid-so: 4.237 arcsec [1.87σ]
OotOffset-rm: 0.417 arcsec [1.46σ]
KicOffset-rm: 0.248 arcsec [0.79σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.25 [4/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008098515-02, PDC Light Curves

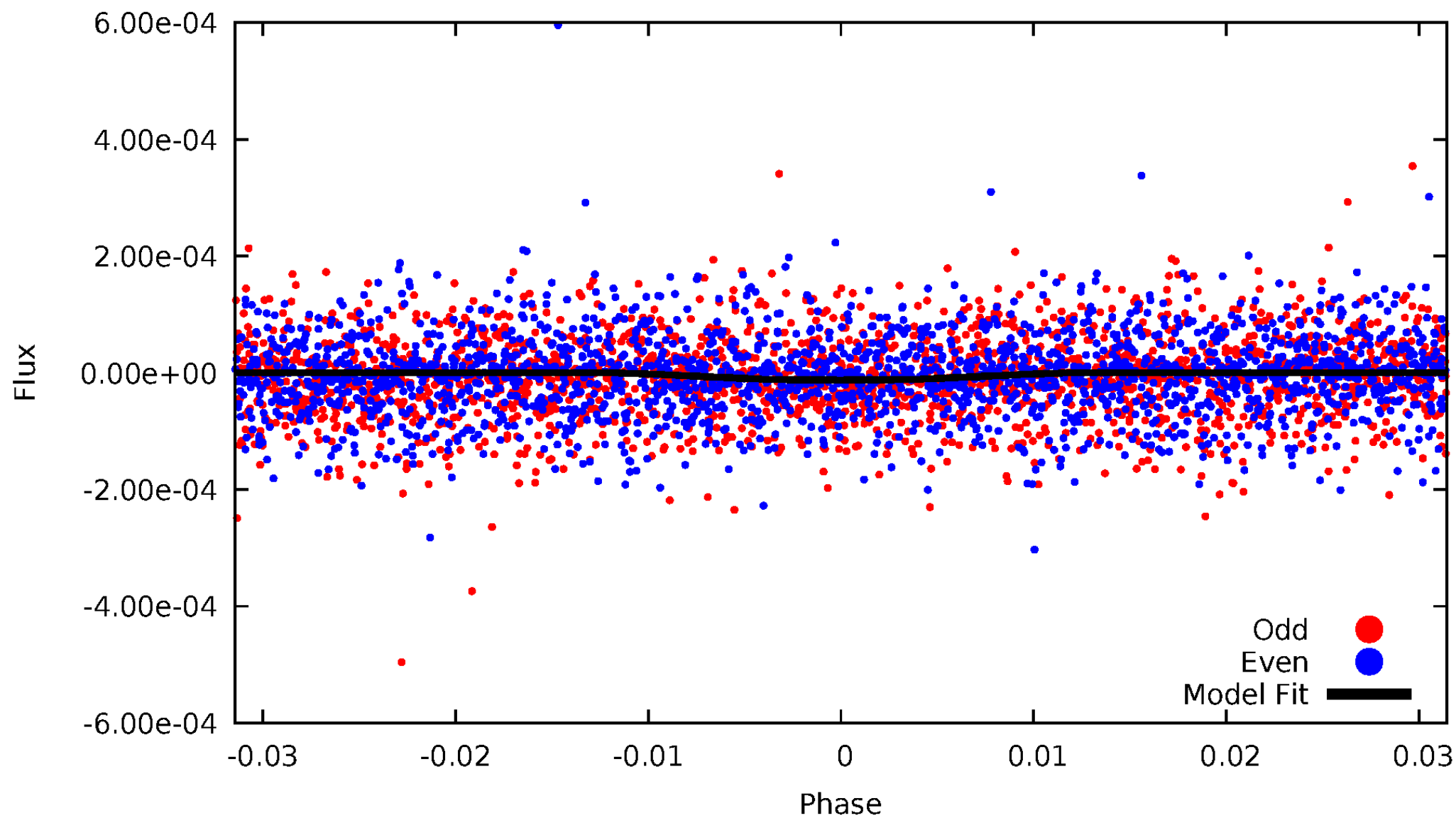


TCE 008098515-02



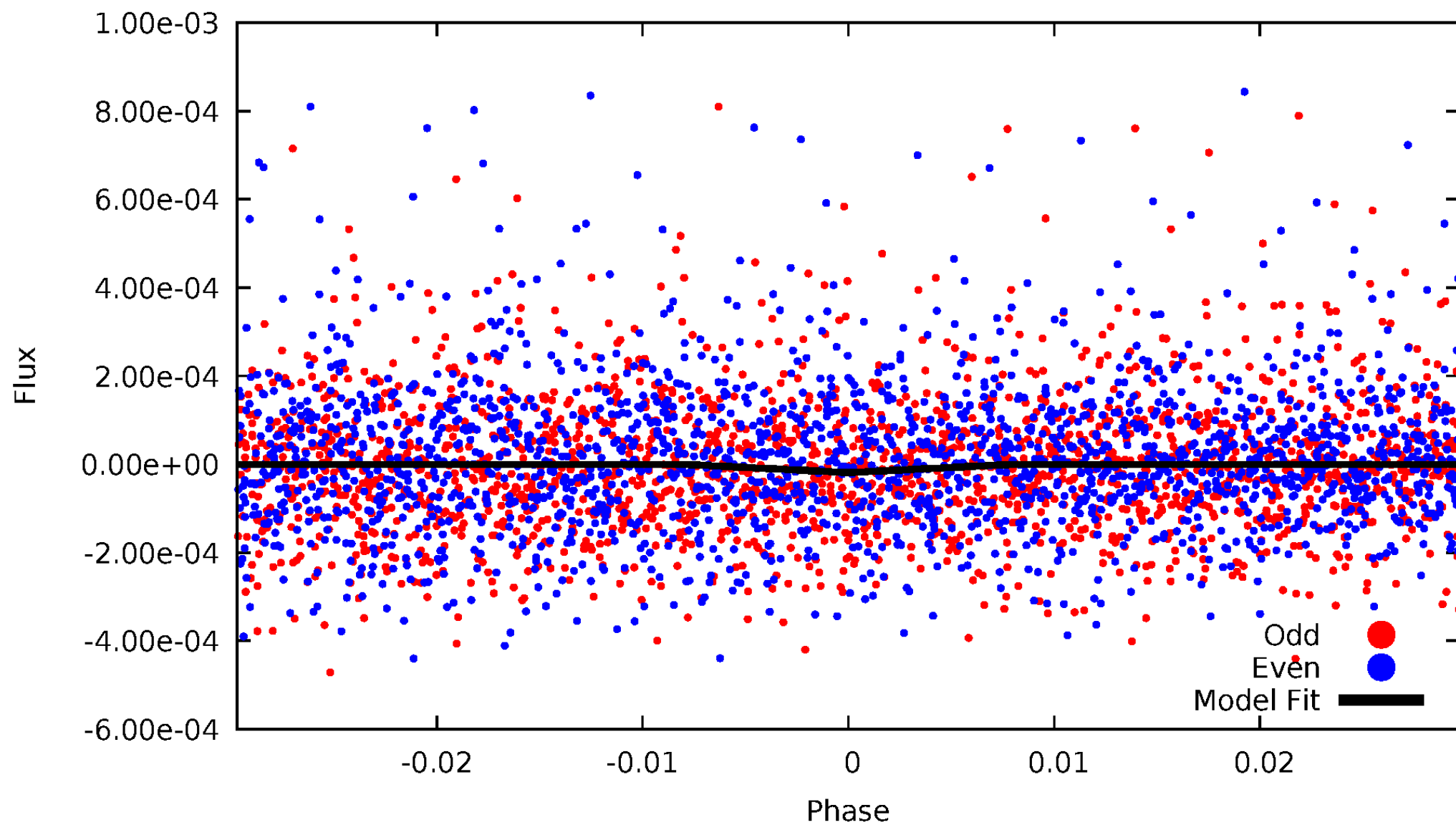
DV Odd/Even

TCE 008098515-02



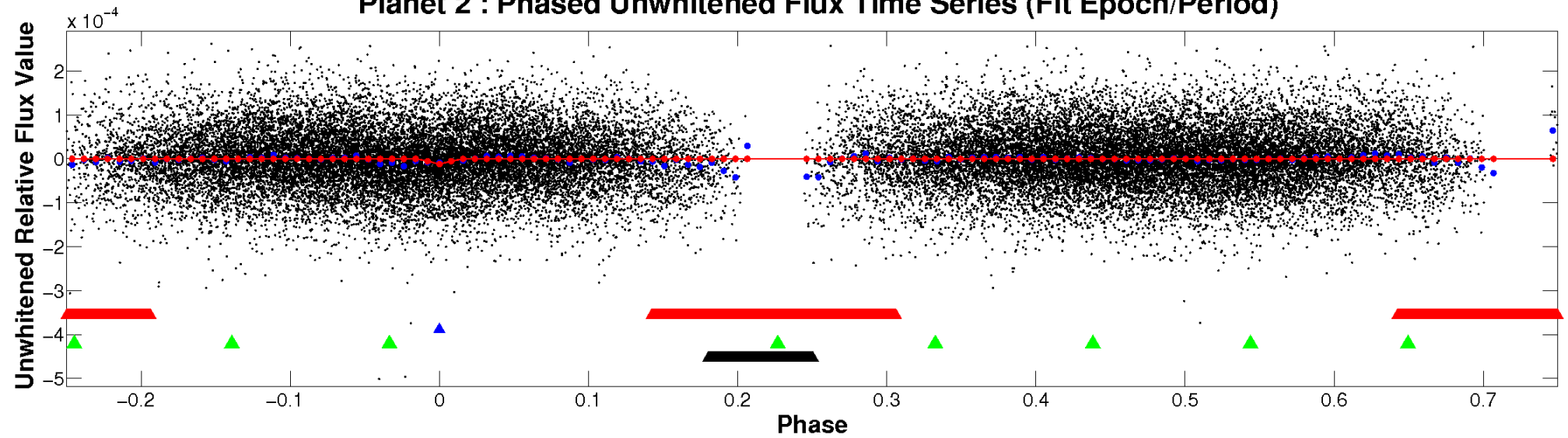
ALT Odd/Even

TCE 008098515-02

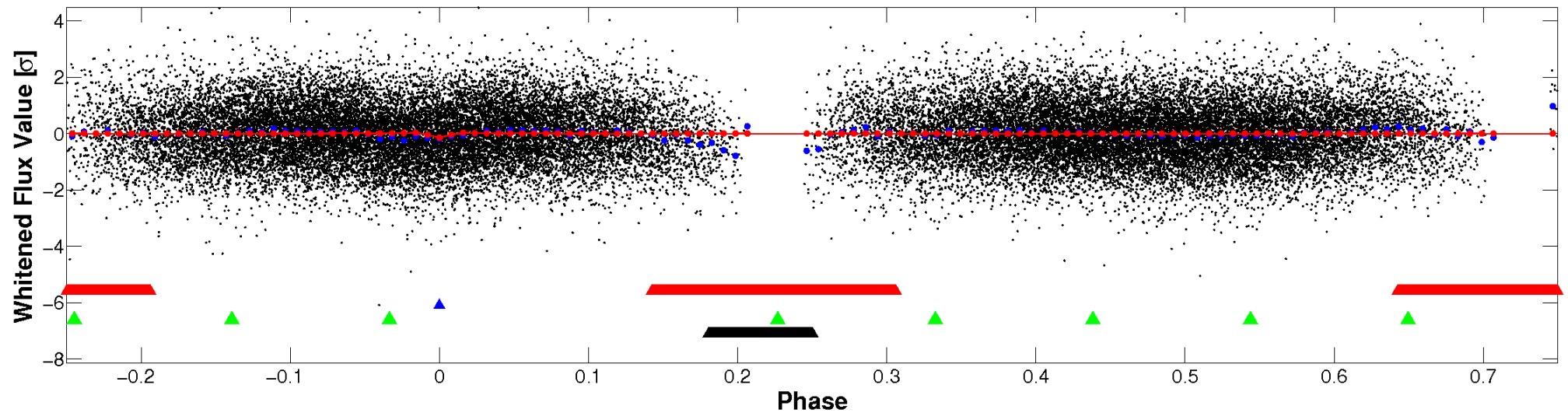


Non-Whitened Vs. Whitened Light Curve

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

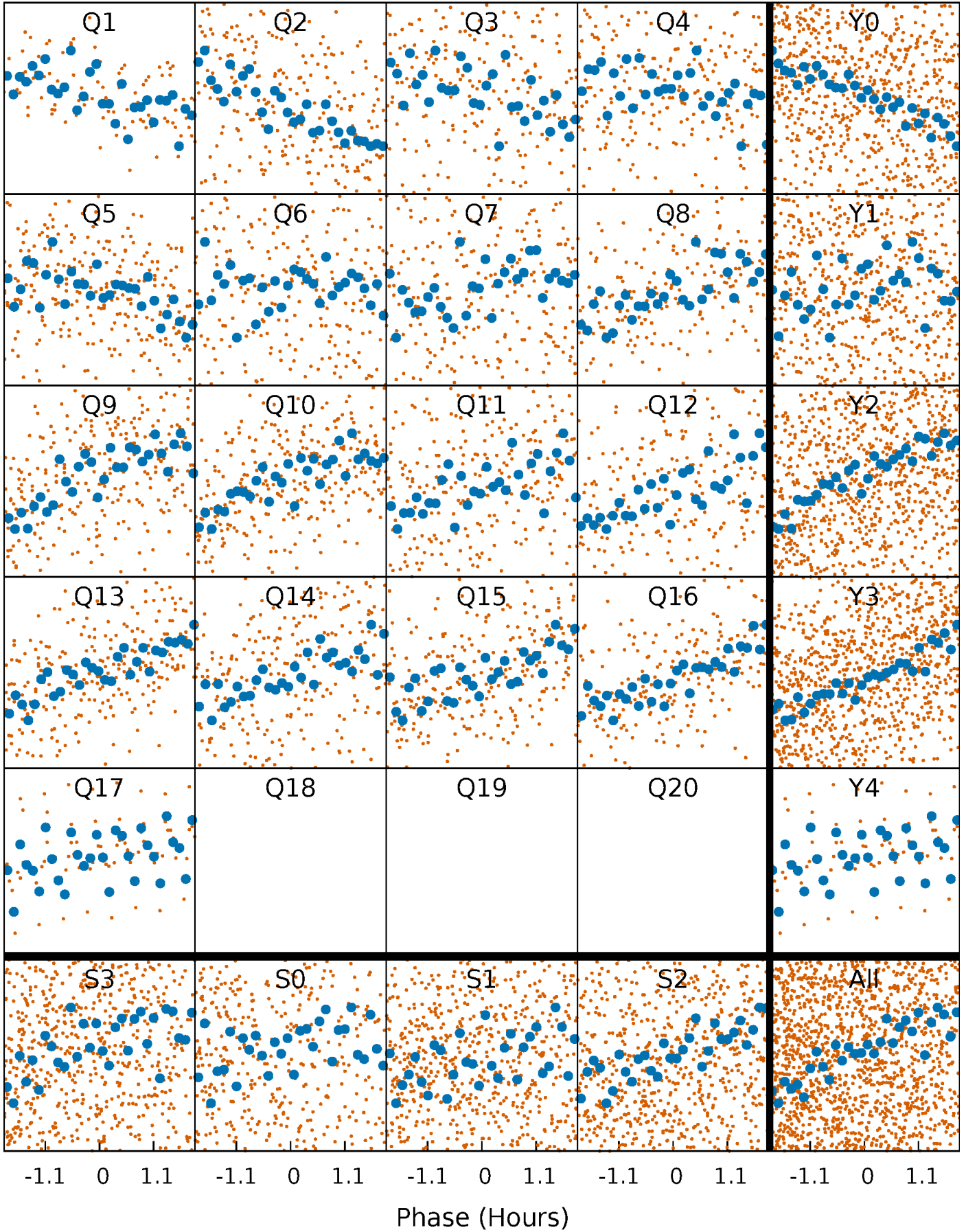


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



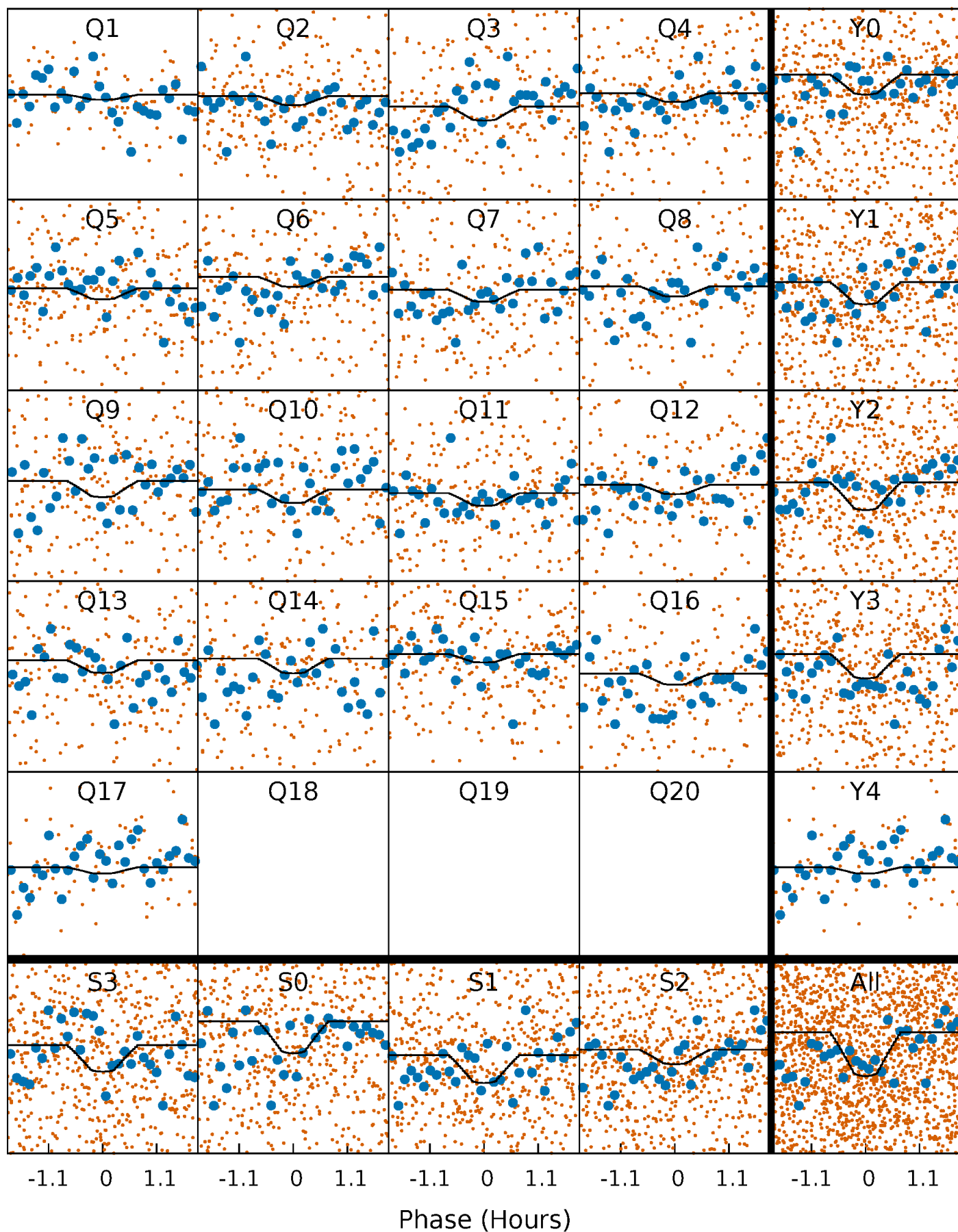
PDC Quarter-Phased Transit Curves

TCE 008098515-02 P= 2.572469 Days $T_0=131.740717$ (BKJD)



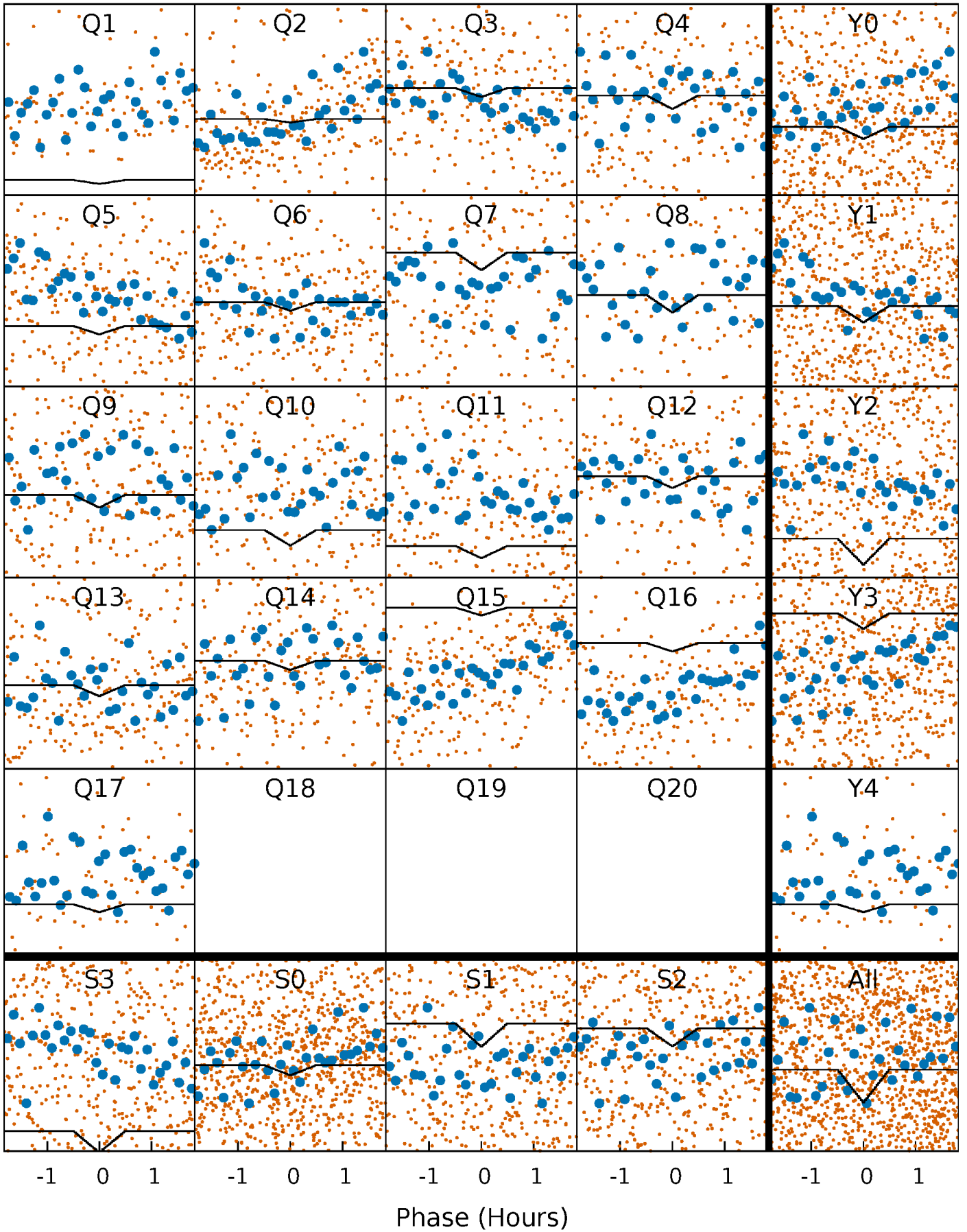
DV Quarter-Phased Transit Curves

TCE 008098515-02 P= 2.572469 Days $T_0=131.740717$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

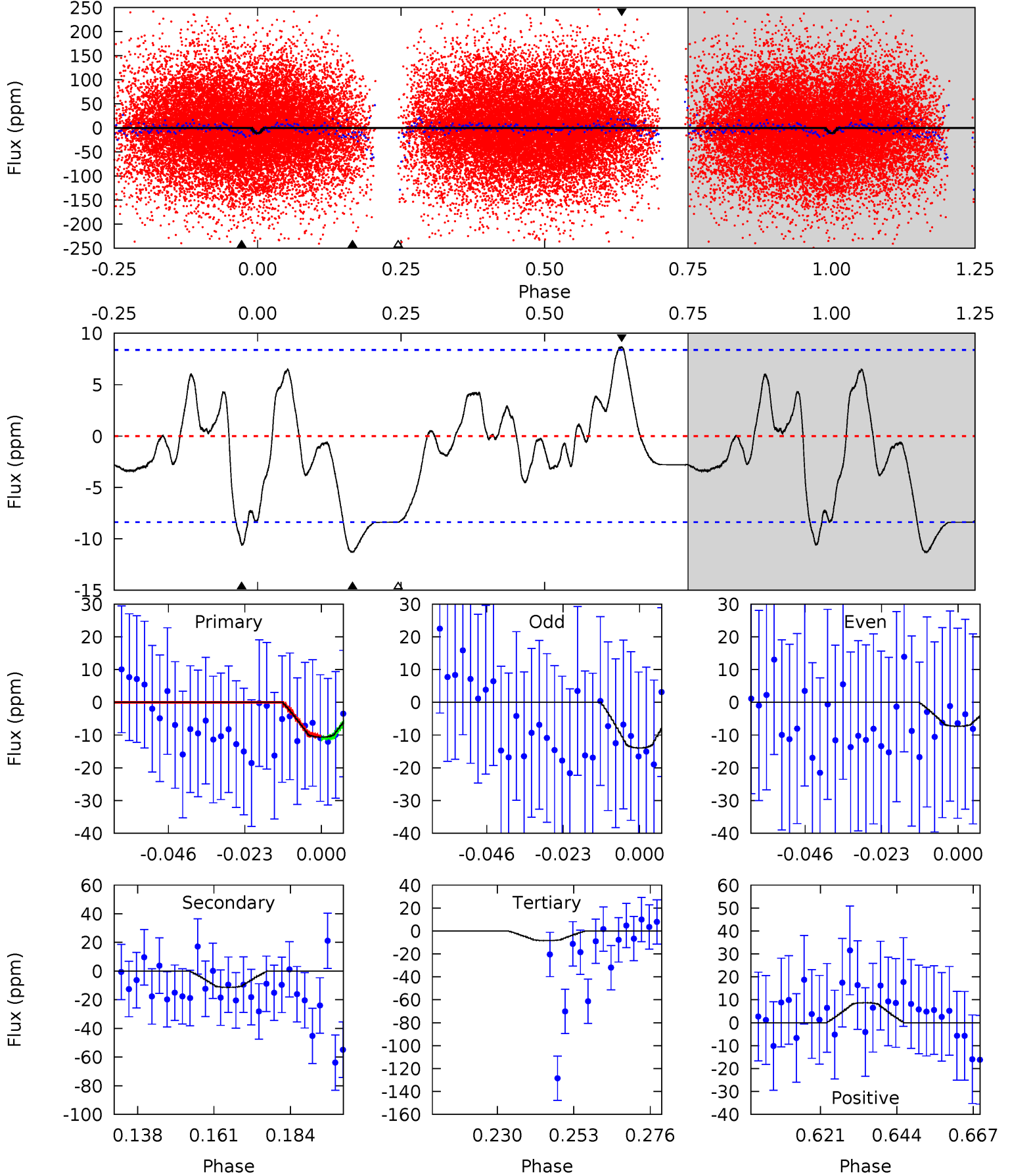
TCE 008098515-02 P= 2.572447 Days $T_0=131.748846$ (BKJD)



DV Model-Shift Uniqueness Test

008098515-02, P = 2.572469 Days, E = 129.168248 Days

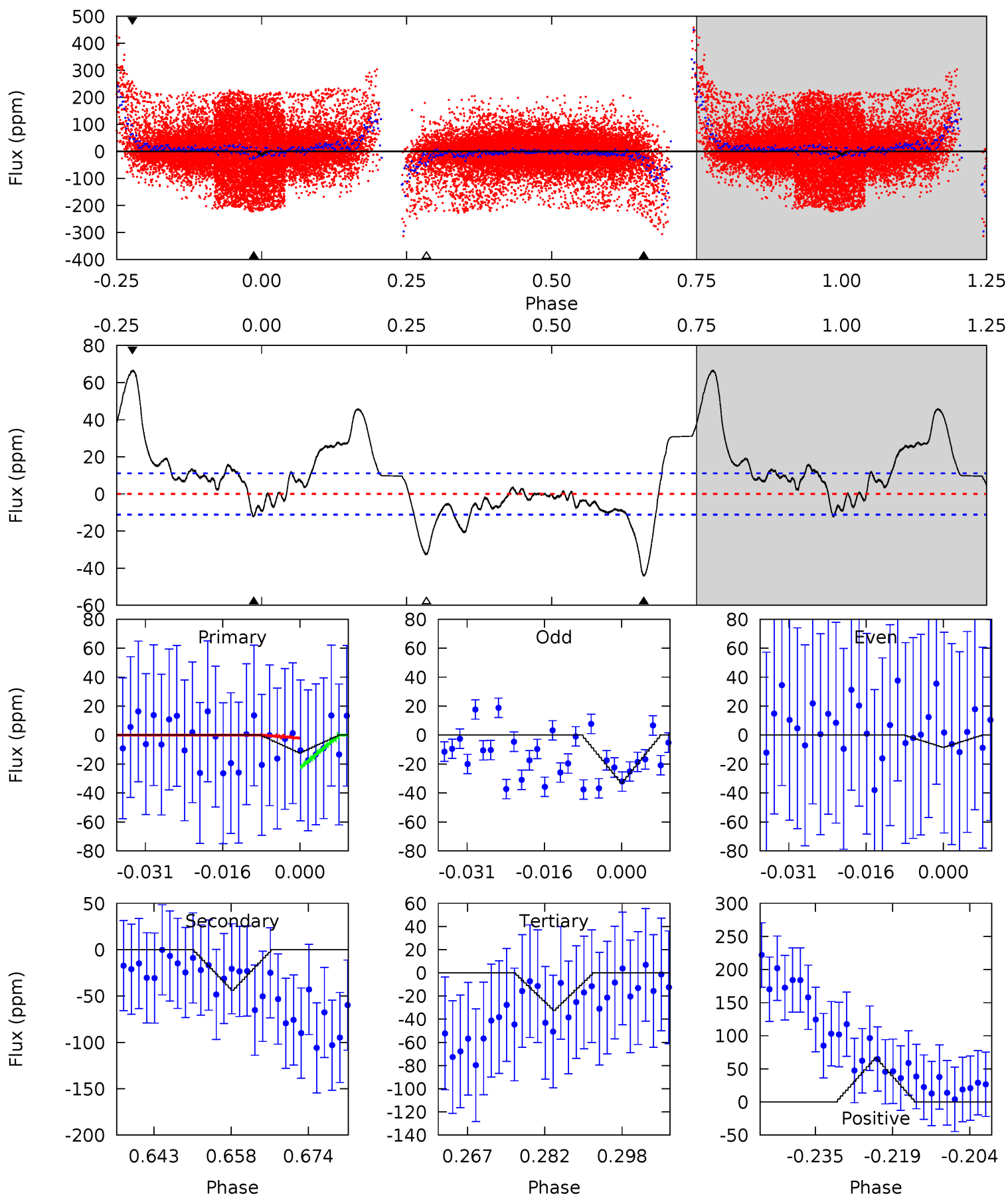
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.18	6.59	4.86	5.05	4.86	2.27	1.88	1.32	1.13	1.72	1.53	1.93	0.72	0.43	0.21



Alt Model-Shift Uniqueness Test

008098515-02, P = 2.572447 Days, E = 129.176399 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.47	19.5	14.4	29.5	4.94	2.42	5.79	-8.92	-24.1	5.11	-10.0	5.52	-0.45	0.60	4.60



Stellar Parameters For KIC 008098515

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6846^{+190}_{-286}	$4.205^{+0.128}_{-0.192}$	$-0.160^{+0.250}_{-0.350}$	$1.507^{+0.471}_{-0.314}$	$1.337^{+0.189}_{-0.231}$	$0.550^{+0.355}_{-0.273}$
	+3%/-4%	+3%/-5%	+156%/-219%	+31%/-21%	+14%/-17%	+65%/-50%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008098515-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11 ± 2	$0.58^{+0.22}_{-0.20}$	2602^{+182}_{-167}	6709^{+1744}_{-960}	30^{+37}_{-14}
Alt.	-44 ± 2	$0.71^{+0.25}_{-0.21}$	2589^{+224}_{-173}	8854^{+2356}_{-1261}	77^{+74}_{-33}

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

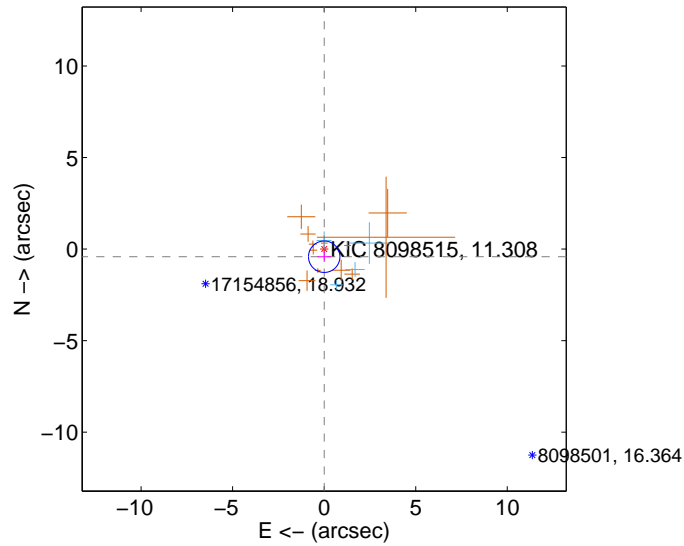
Supplemental centroid analysis for 008098515-02. **Kepler magnitude: 11.31.** Transit SNR 3.95

There are 4 quarters with good PRF difference image offsets

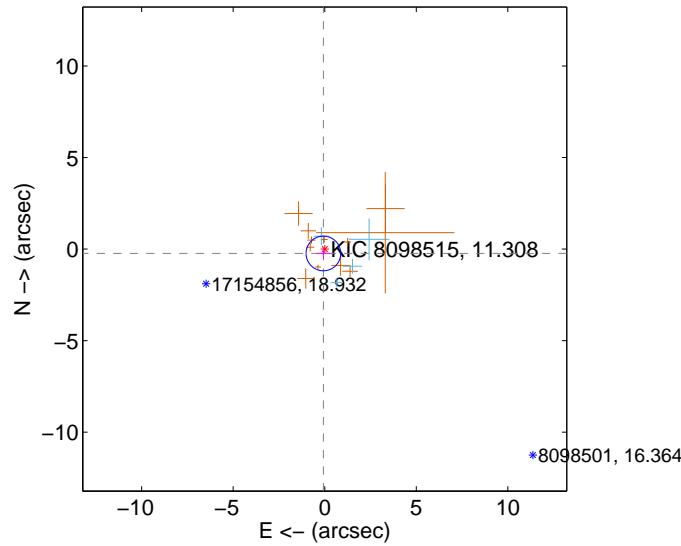
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.417 ± 0.286	1.46	-0.002 ± 0.375	-0.417 ± 0.286
PRF-fit source offset from KIC position	0.248 ± 0.316	0.79	0.073 ± 0.368	-0.237 ± 0.297
photometric centroid source offset	4.24 ± 2.26	1.87	-4.17 ± 2.27	0.73 ± 1.92

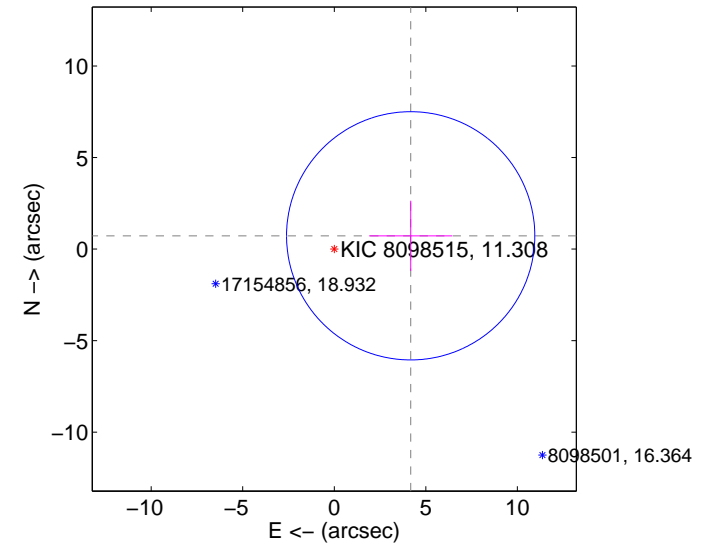
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

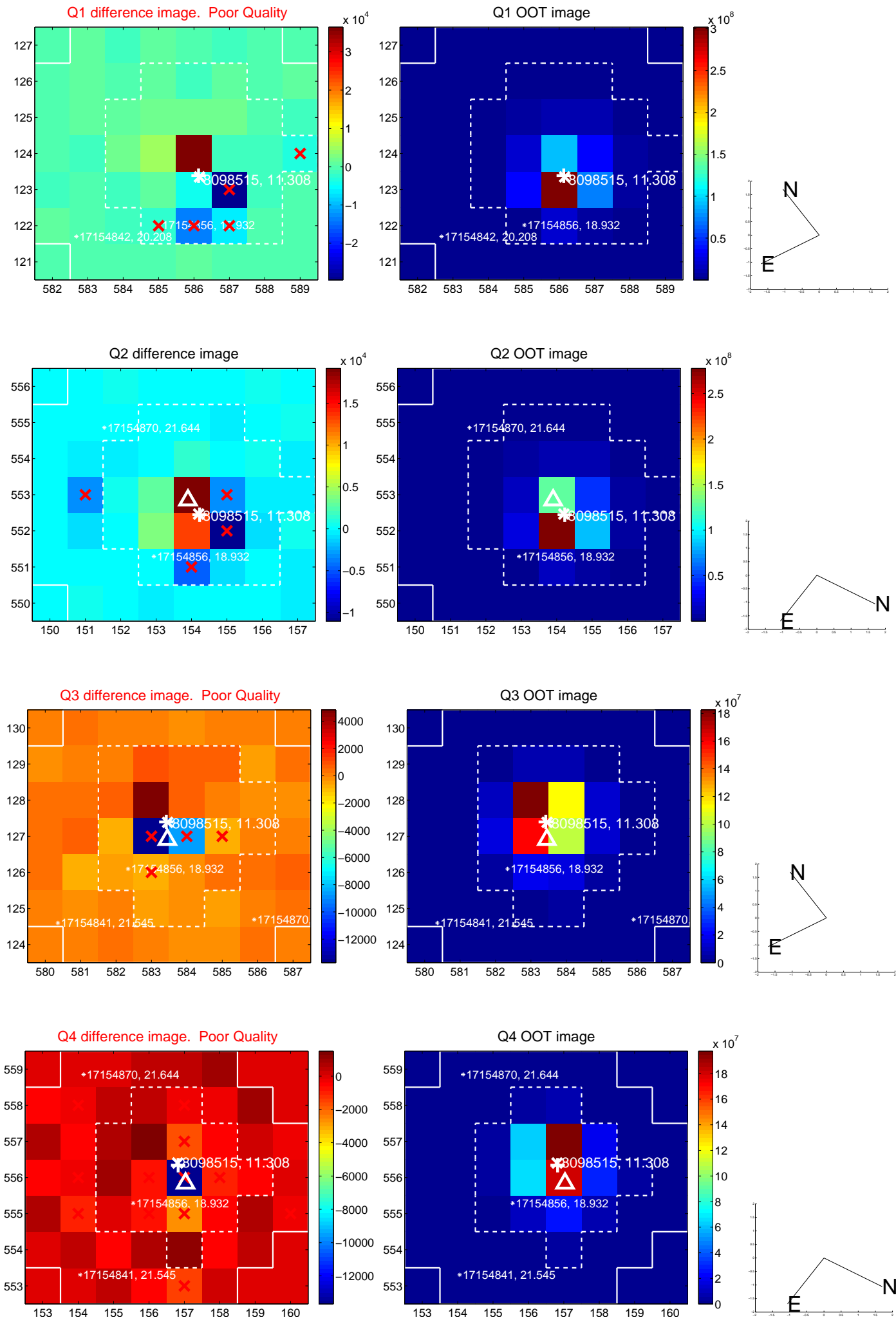


offset from photometric centroids

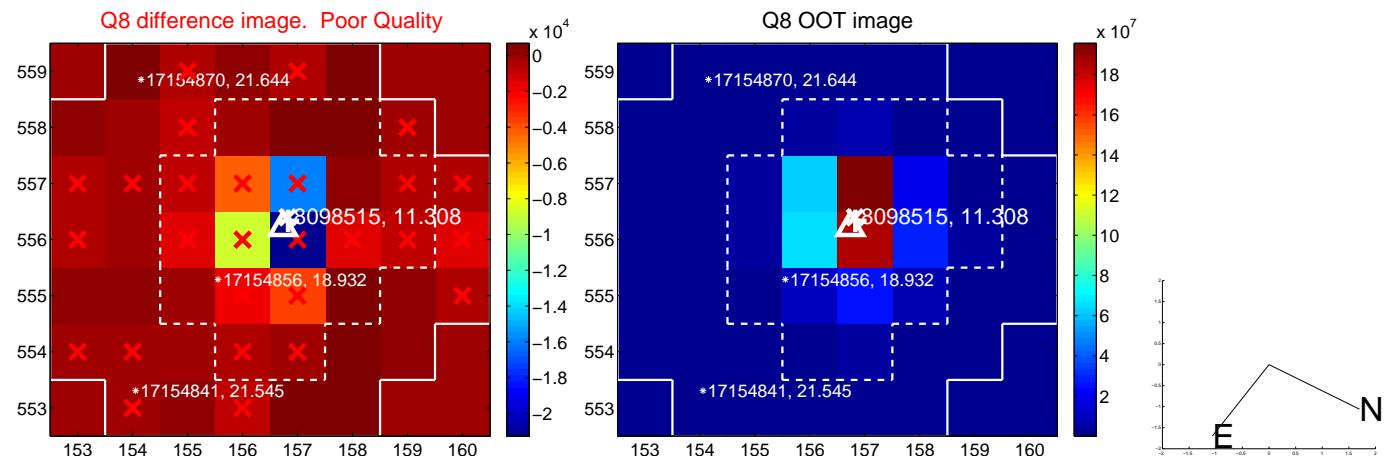
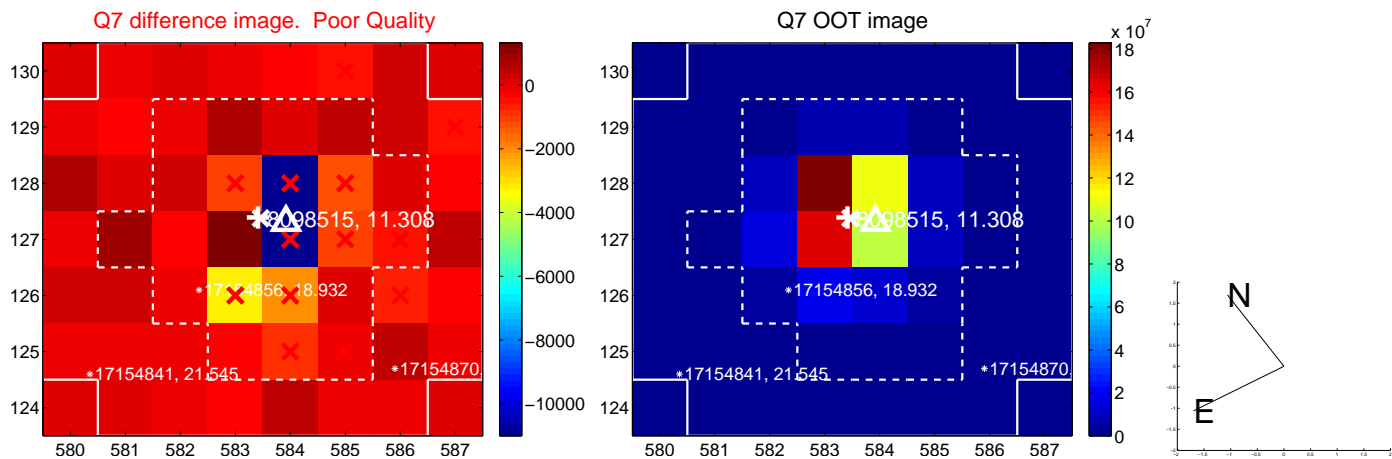
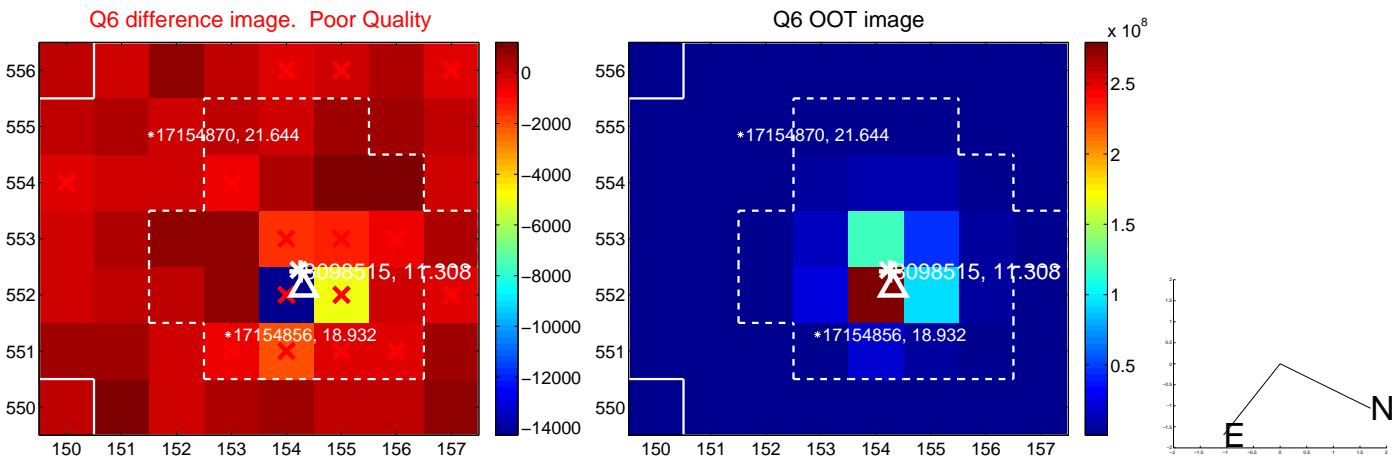
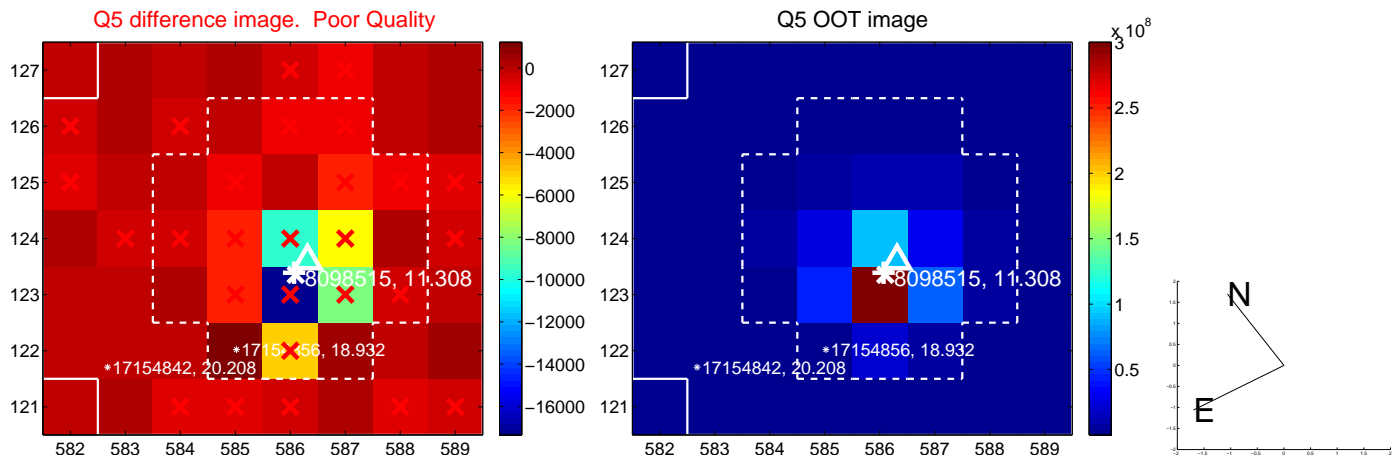


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

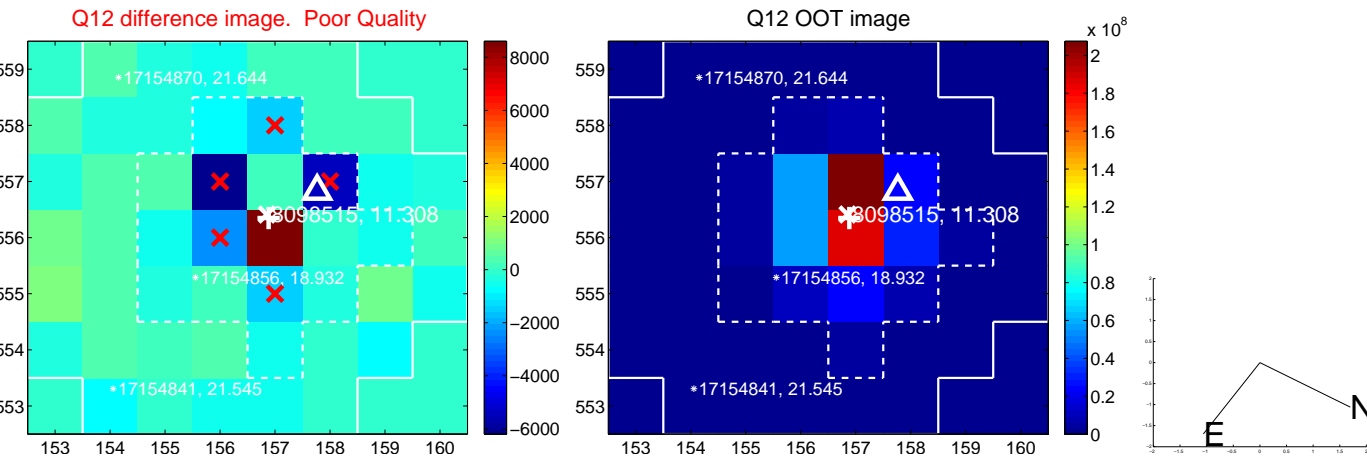
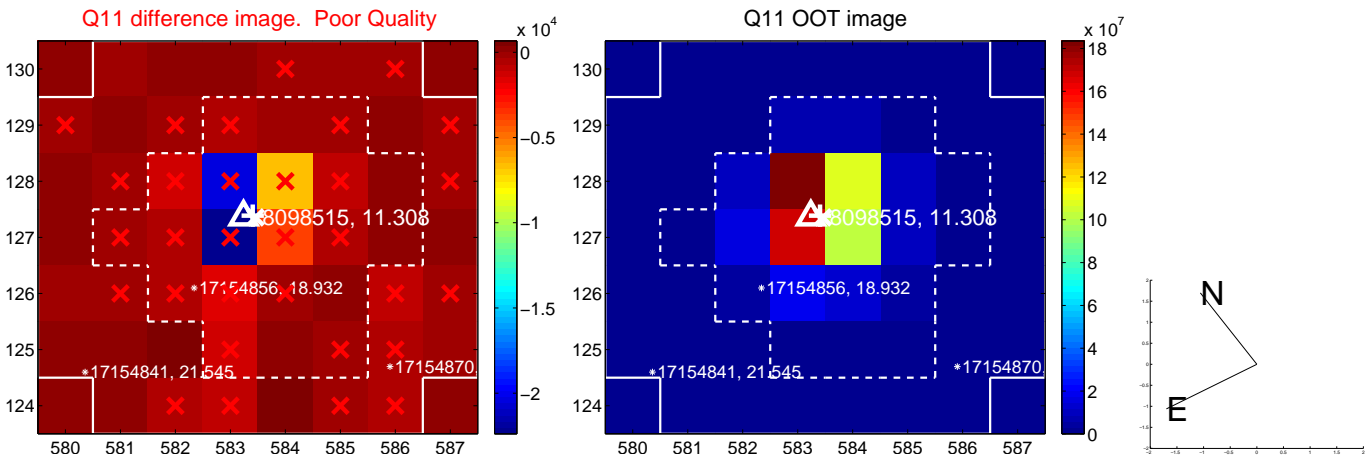
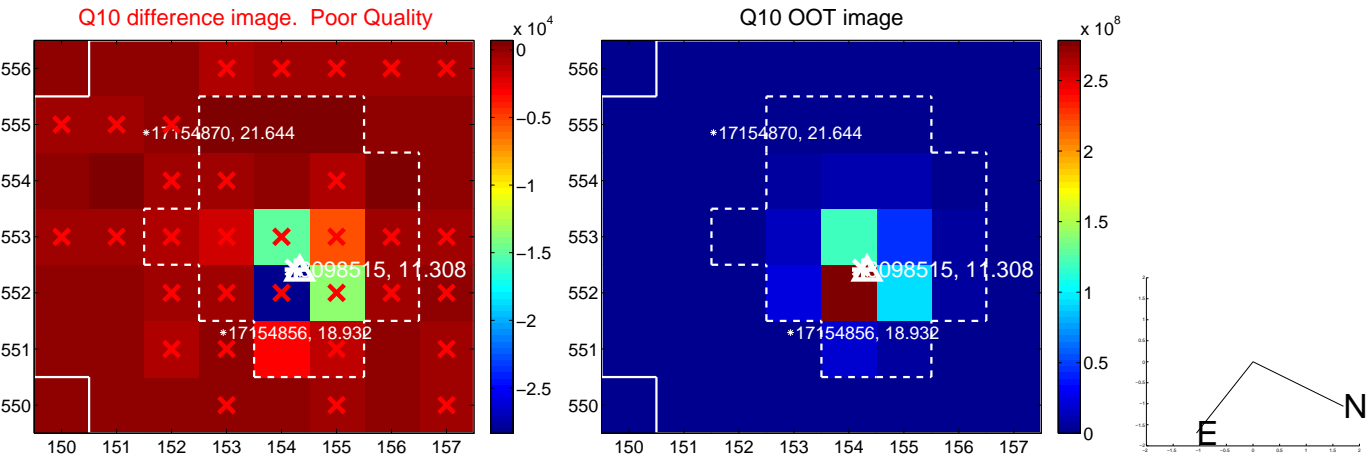
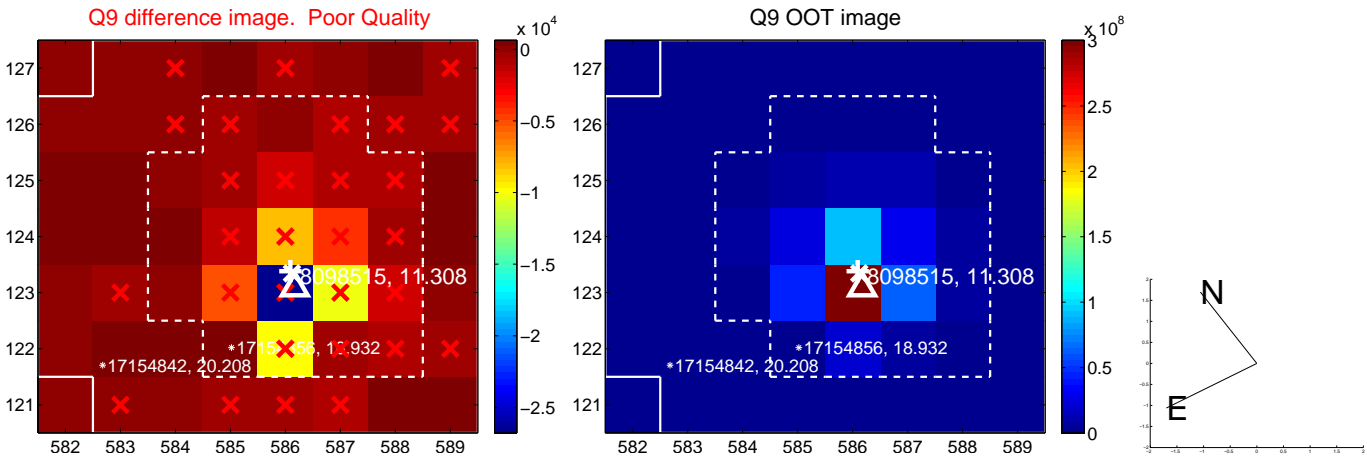
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



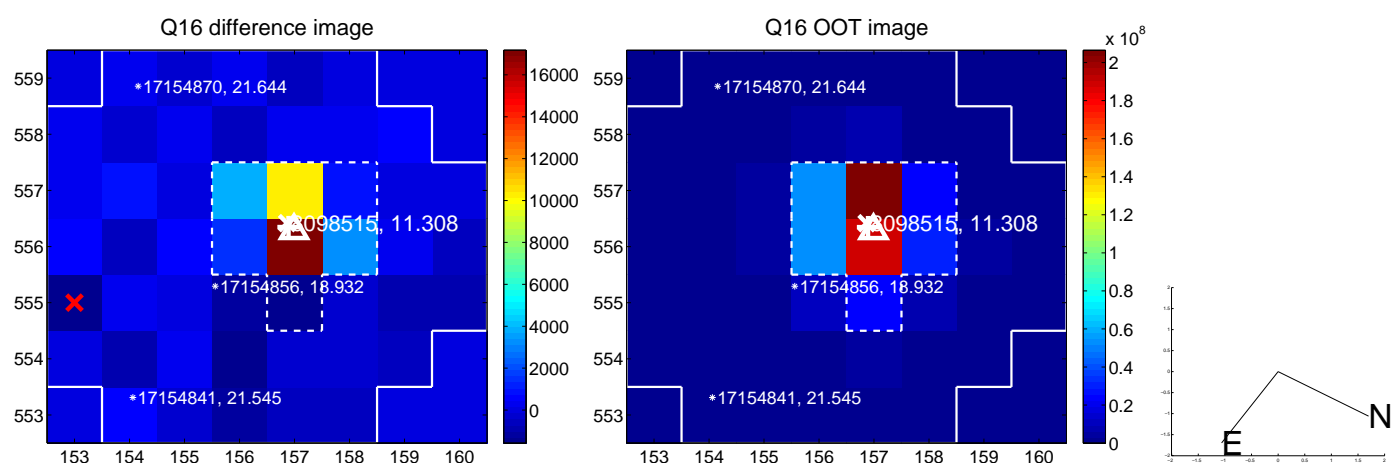
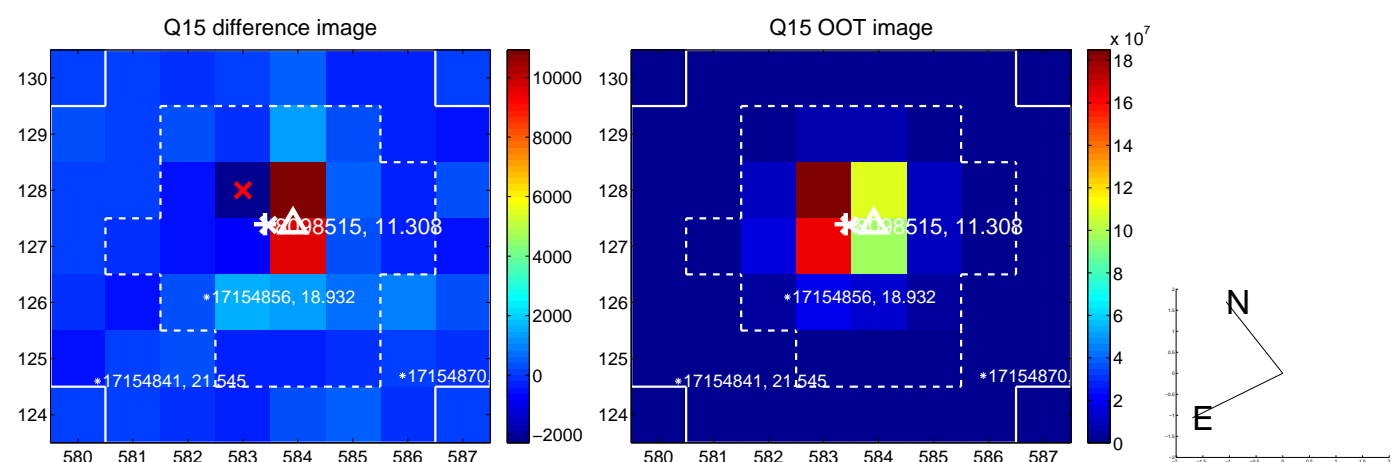
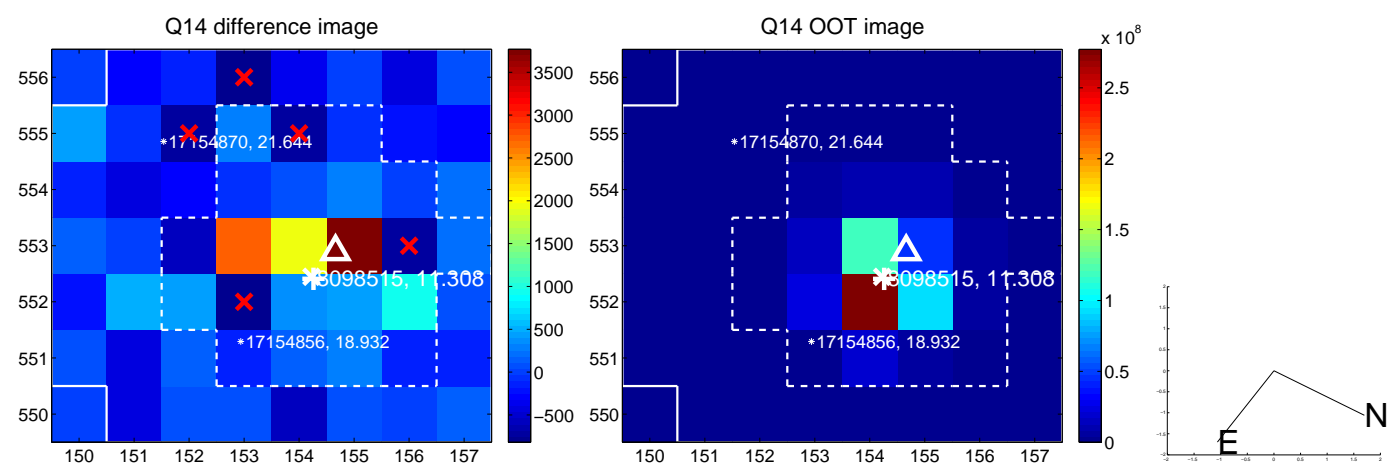
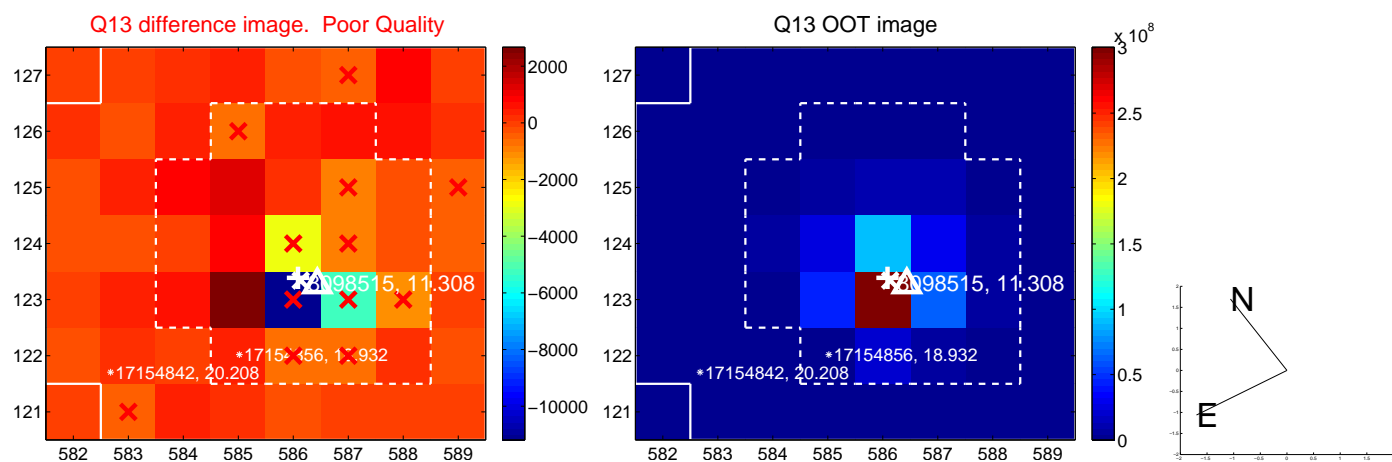
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

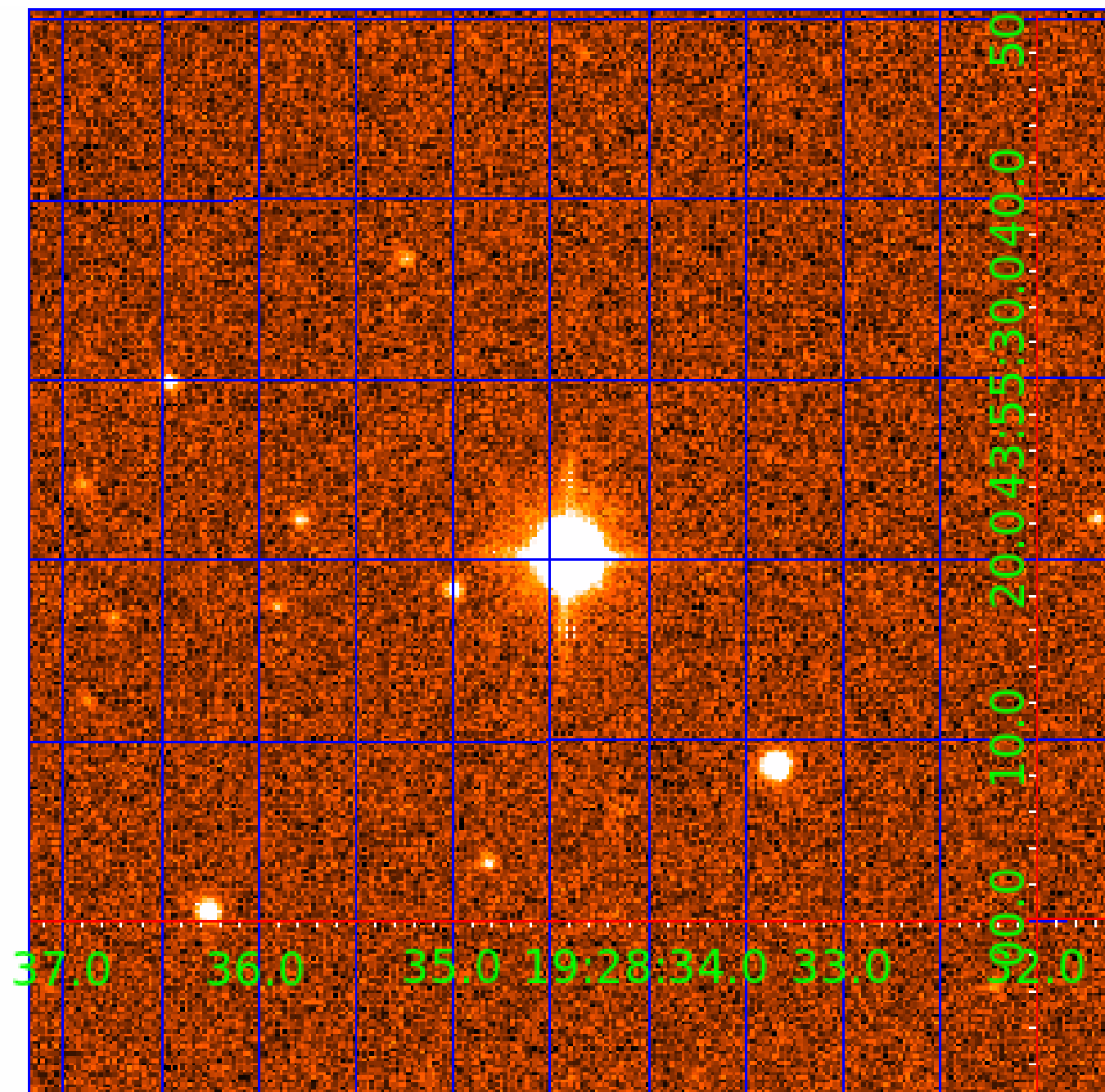


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008098515

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})
008098515-01	OBS	6965.01	1.286606	132.107107	18.0	3.954	10.0	9.8	1.51	6846	0.76	6899.06
008098515-02	OBS	No	2.572469	131.740717	12.3	0.971	9.4	4.0	1.51	6846	0.57	2738.95
008098515-03	OBS	No	169.511126	239.698299	151.1	2.162	8.4	4.7	1.51	6846	2.01	10.29
008098515-04	OBS	No	2.572151	132.384712	51.8	3.621	8.4	9.0	1.51	6846	1.26	2739.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008098515-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—CENT_SATURATED
008098515-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008098515-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008098515-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

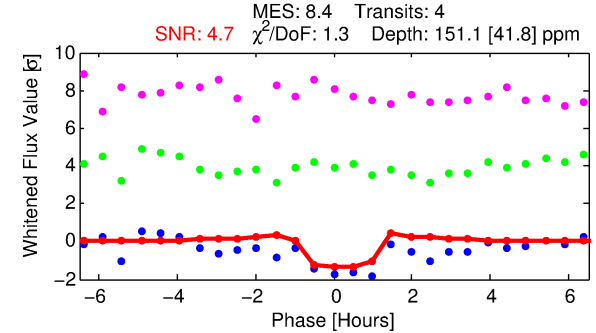
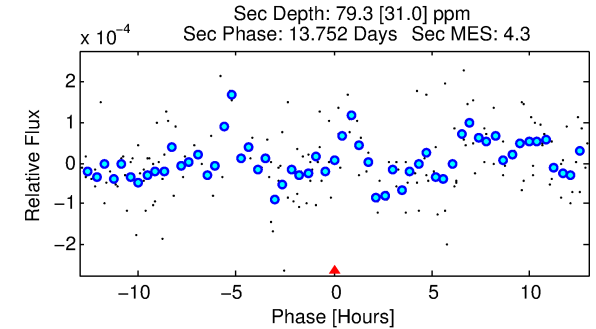
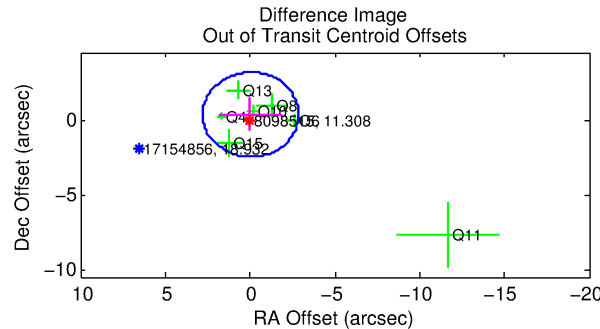
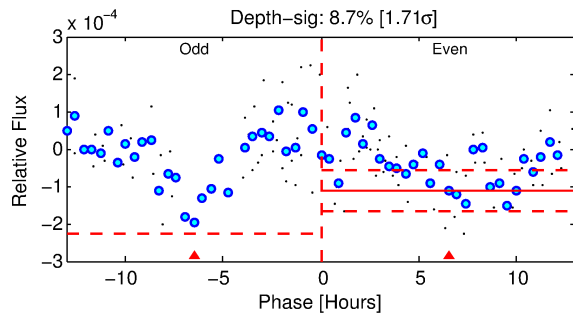
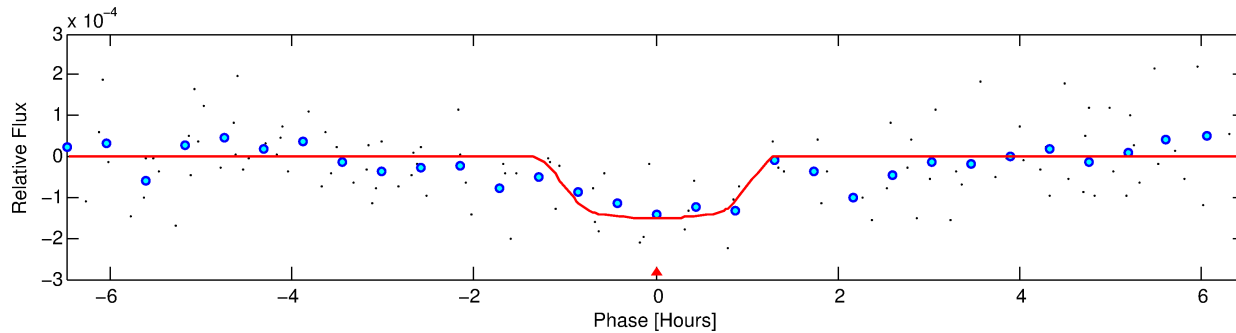
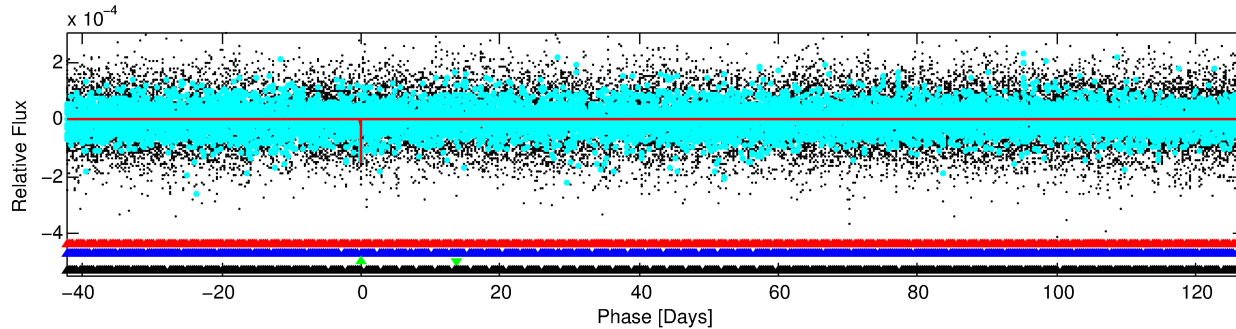
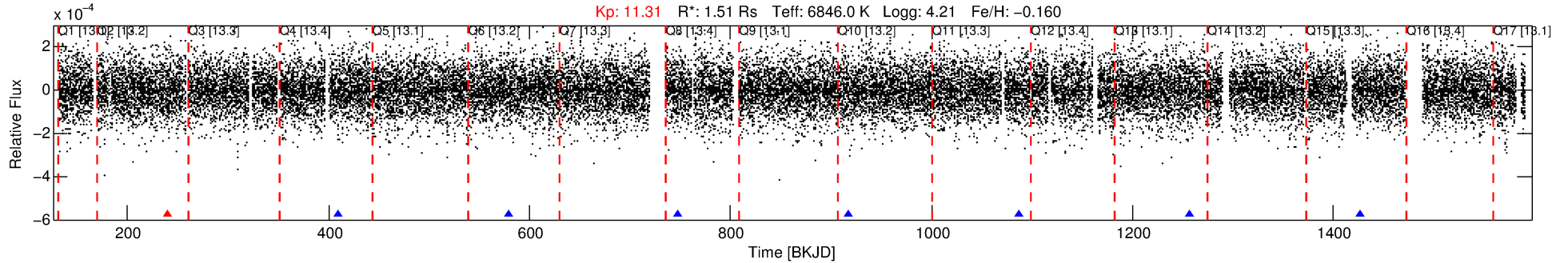
Ephemeris Match Information For 008098515-03

No Significant Match Found

DV One-Page Summary

KIC: 8098515 Candidate: 3 of 4 Period: 169.511 d
KOI: K06965 Corr: No Ephemeris Match

Kp: 11.31 R*: 1.51 Rs Teff: 6846.0 K Logg: 4.21 Fe/H: -0.160



DV Fit Results:

Period = 169.51113 [0.00294] d
Epoch = 239.6983 [0.0118] BKJD
Rp/R* = 0.0122 [0.0100]
a/R* = 410.87 [1858.51]
b = 0.74 [2.73]
Seff = 10.29 [4.09]
Teq = 457 [45] K
Rp = 2.01 [1.76] Re
a = 0.6590 [0.1682] AU
Ag = 4689.81 [8043.52] [0.58σ]
Teff = 5843 [2462] K [2.19σ]

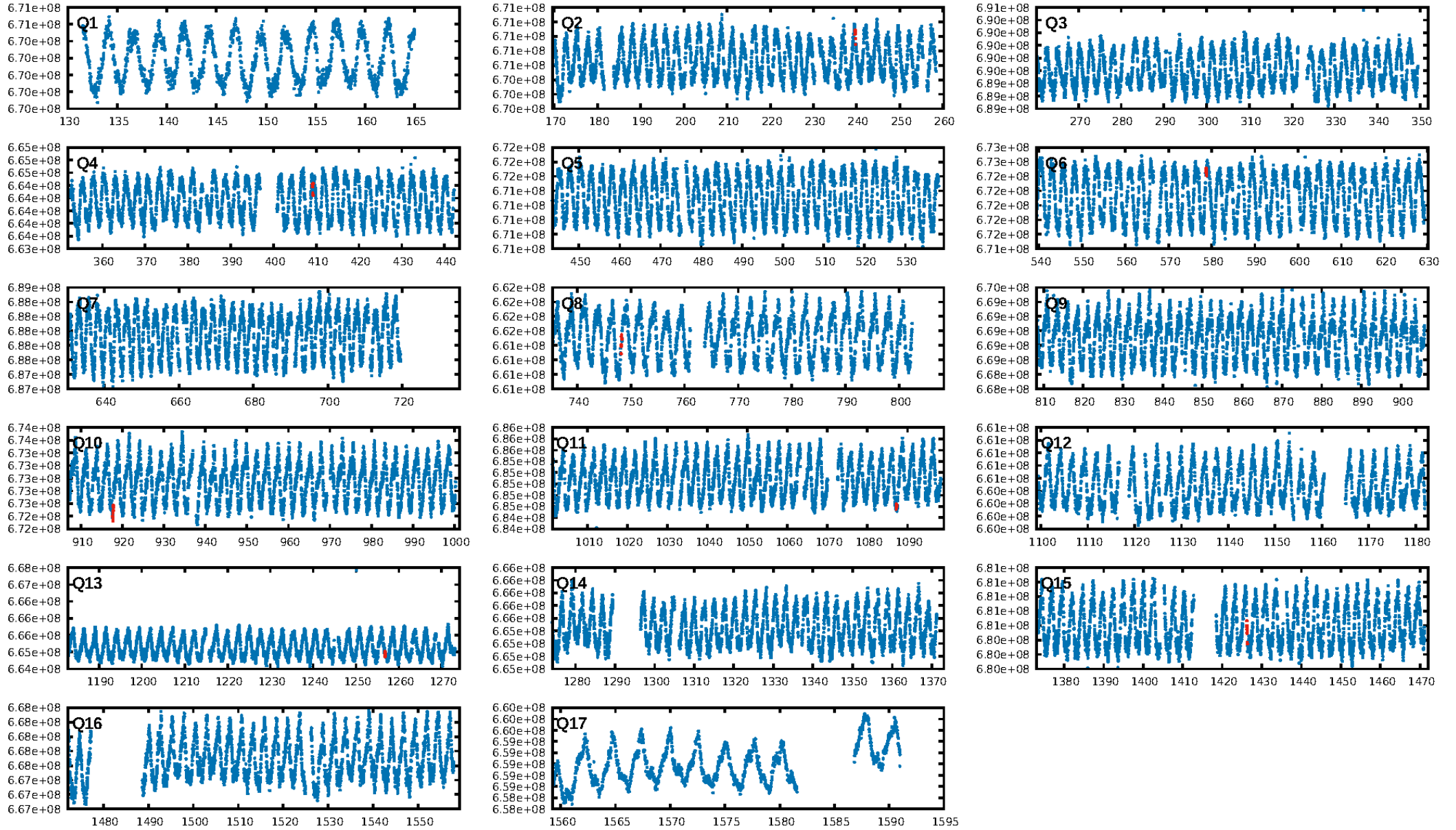
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1690.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 10.0%
ModelChiSquareGof-sig: 98.5%
Bootstrap-pfa: 3.94e-11
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: 0.3321
Centroid-sig: 2.4%
Centroid-so: 1.630 arcsec [1.75σ]
OotOffset-rm: 0.348 arcsec [0.37σ]
KicOffset-rm: 0.528 arcsec [0.41σ]
OotOffset-st: 2/2/2/1 [7]
KicOffset-st: 2/2/2/1 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 0.38 [3/8]

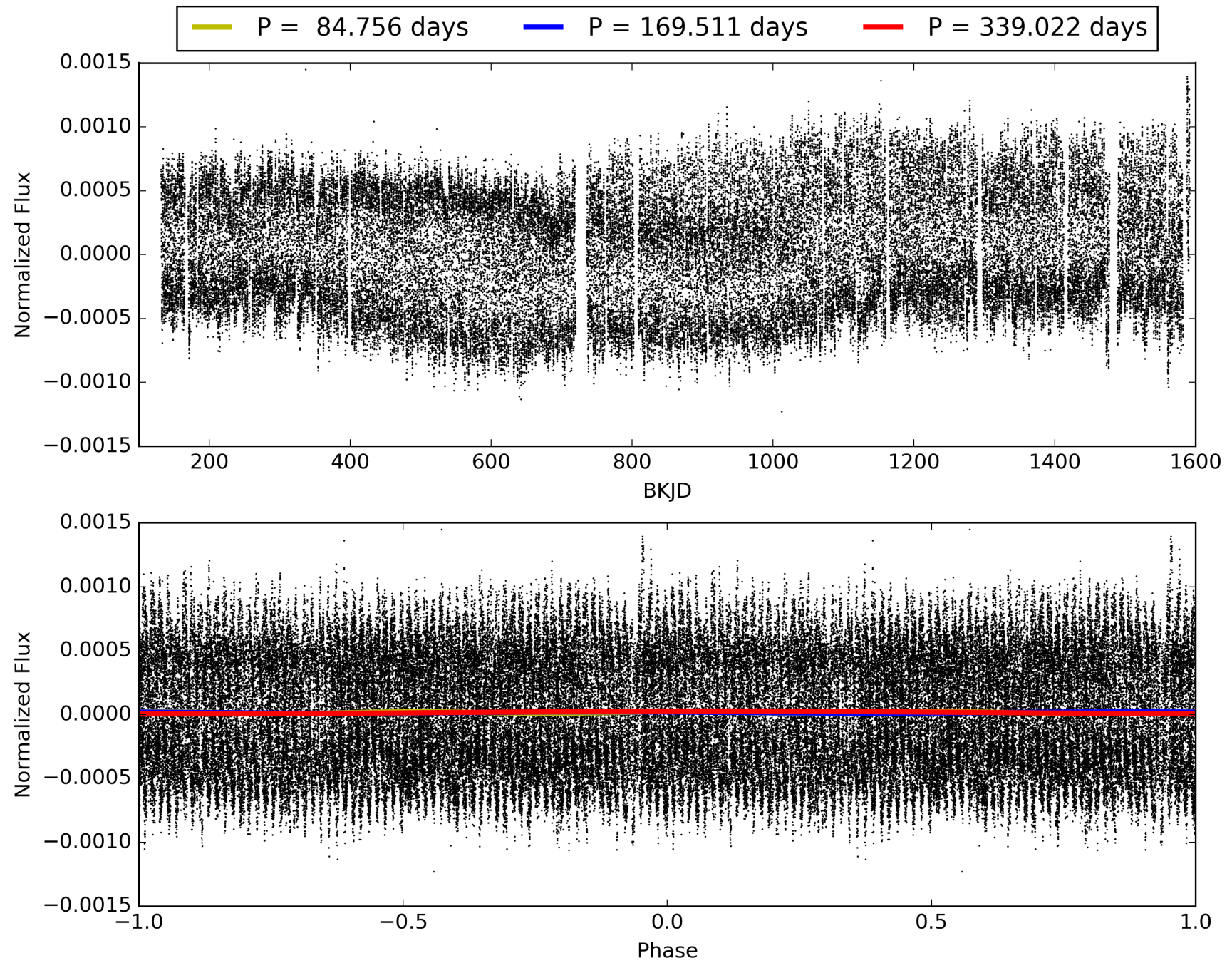
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:39:30 Z

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

TCE 008098515-03, PDC Light Curves

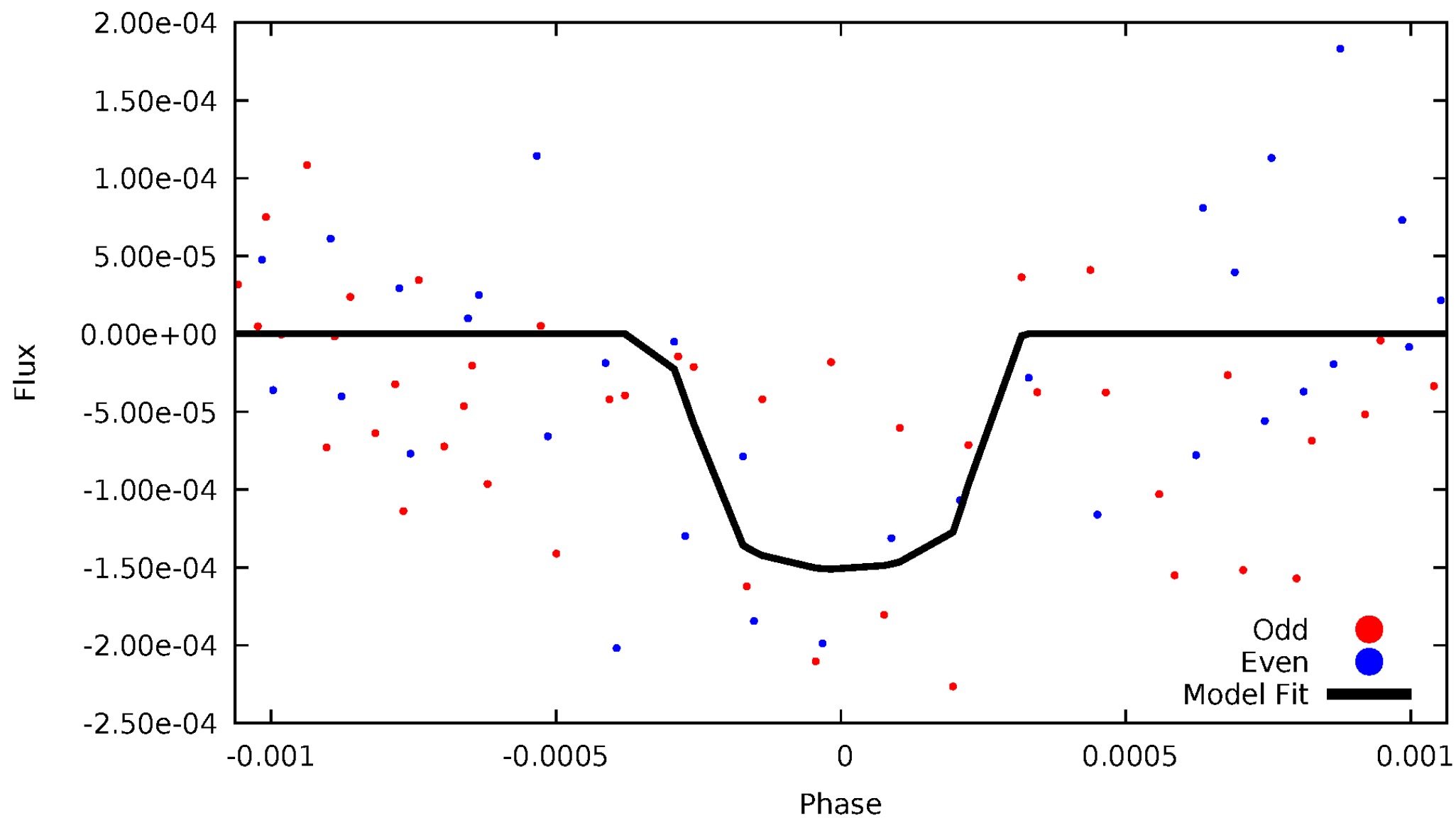


TCE 008098515-03



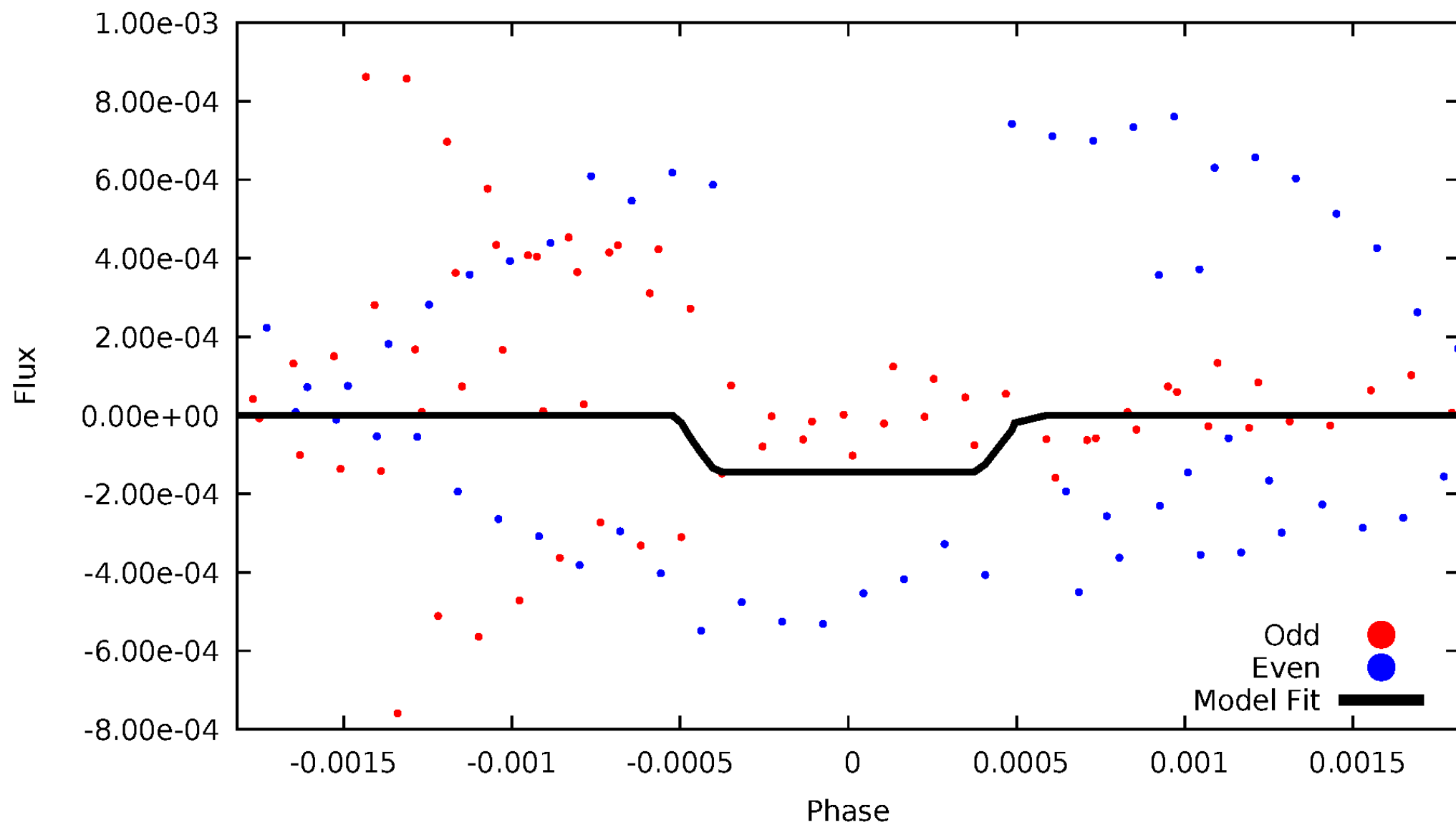
DV Odd/Even

TCE 008098515-03



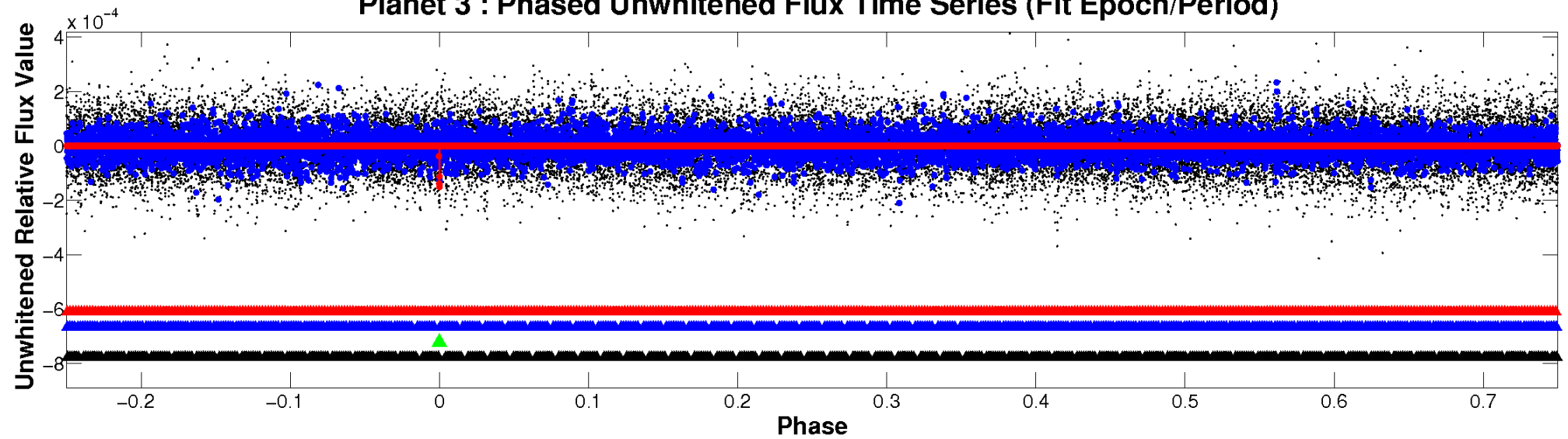
ALT Odd/Even

TCE 008098515-03

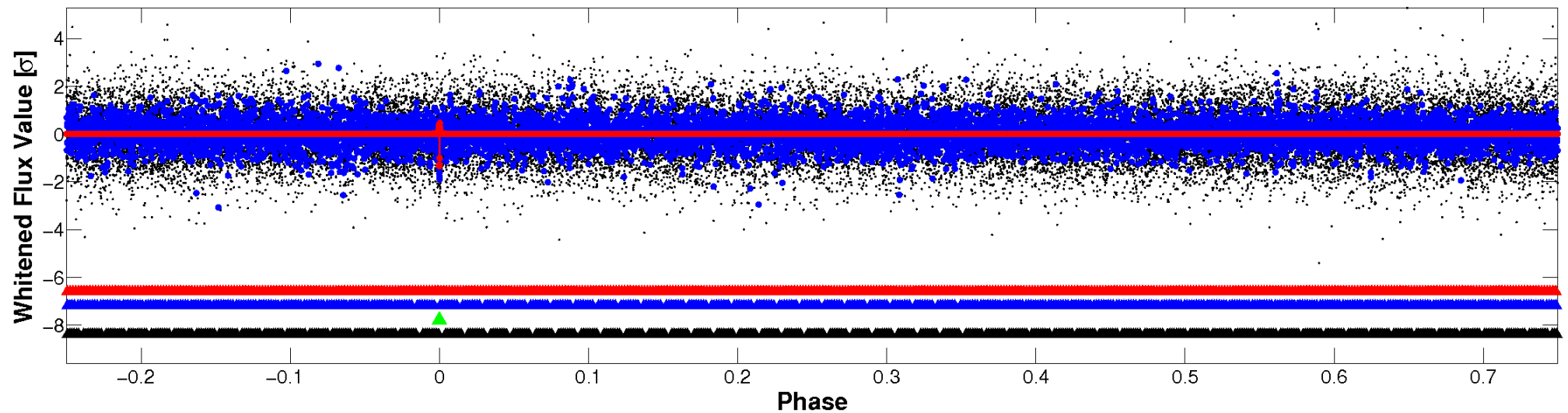


Non-Whitened Vs. Whitened Light Curve

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

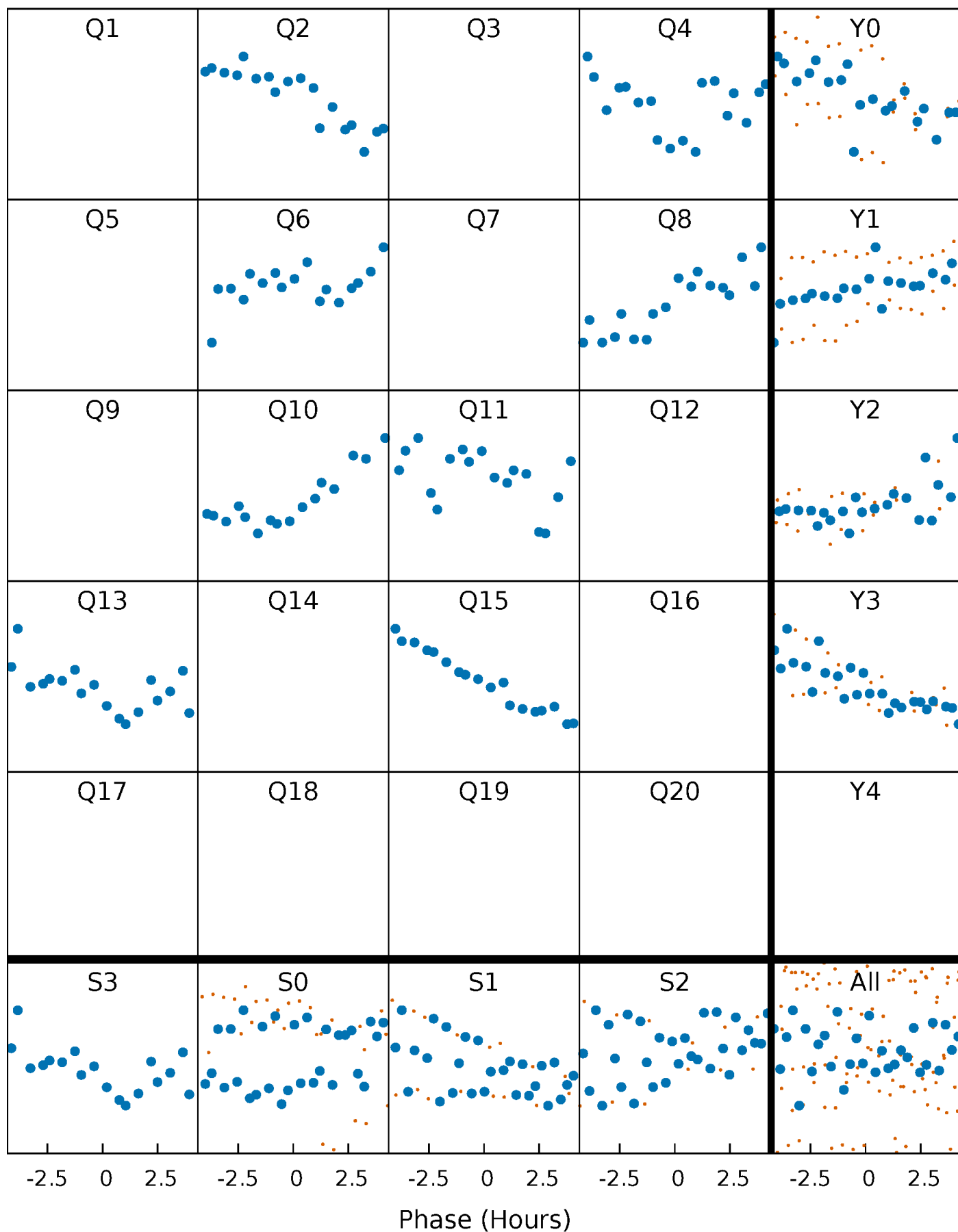


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



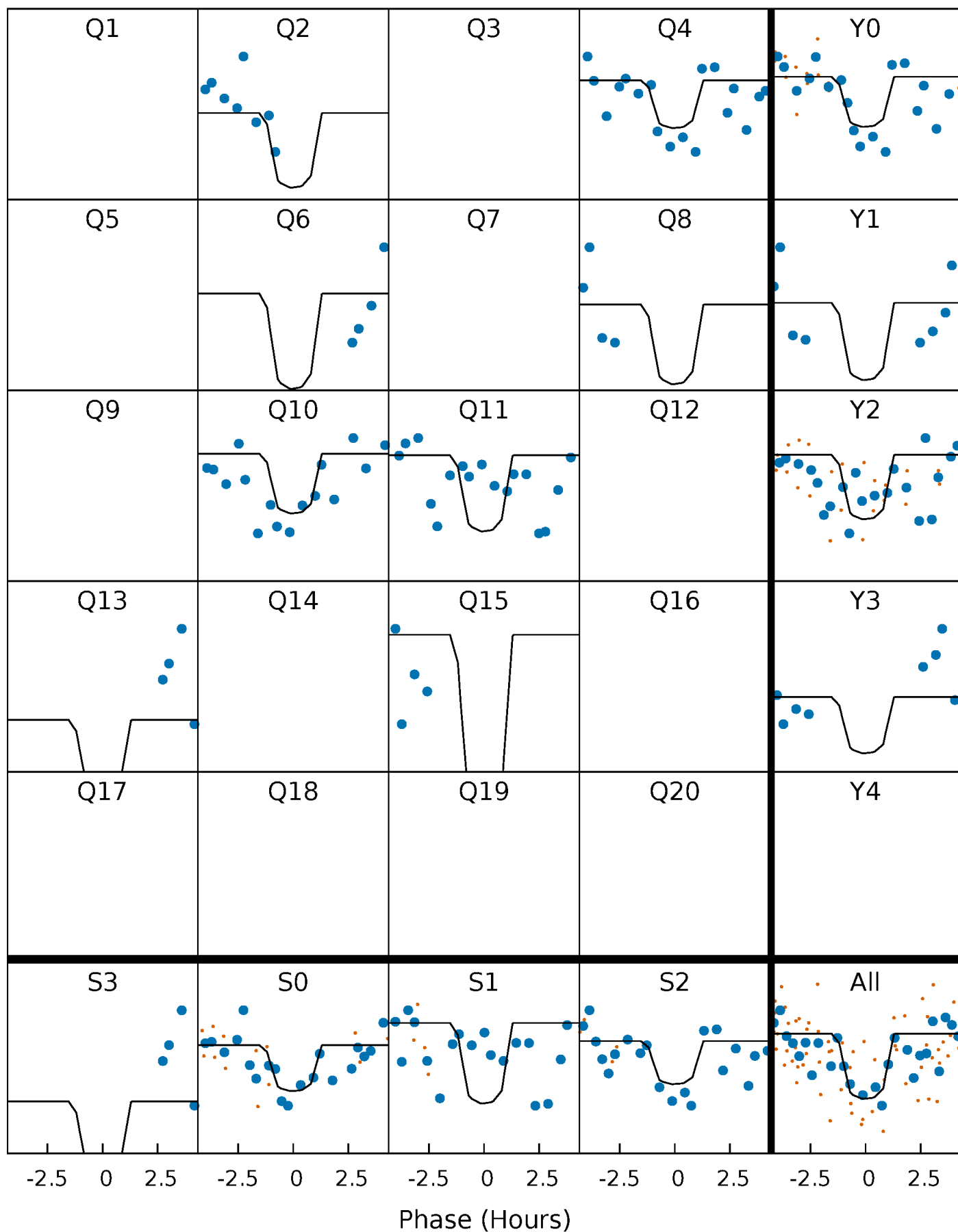
PDC Quarter-Phased Transit Curves

TCE 008098515-03 P=169.511126 Days $T_0=239.698299$ (BKJD)



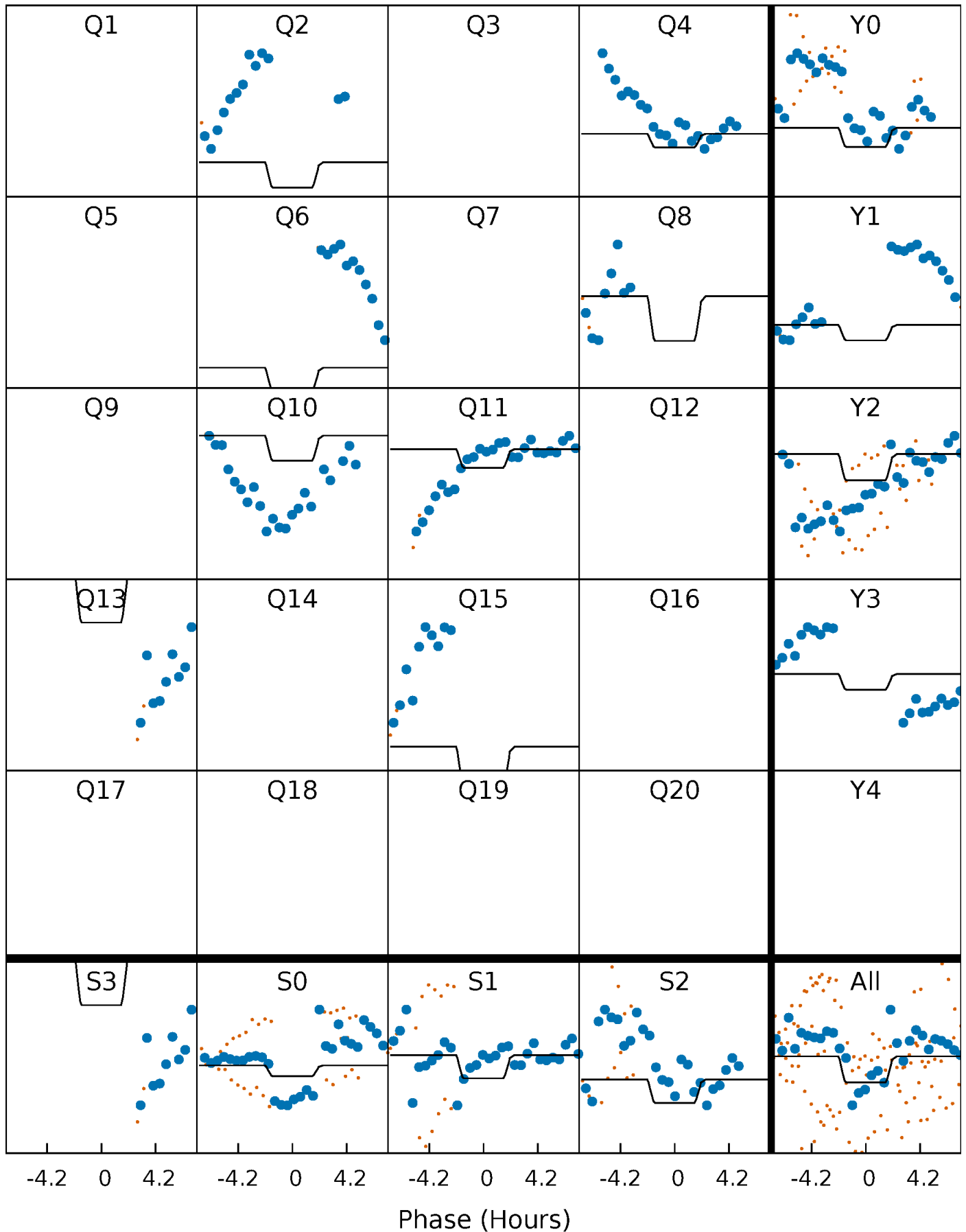
DV Quarter-Phased Transit Curves

TCE 008098515-03 P=169.511126 Days $T_0=239.698299$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

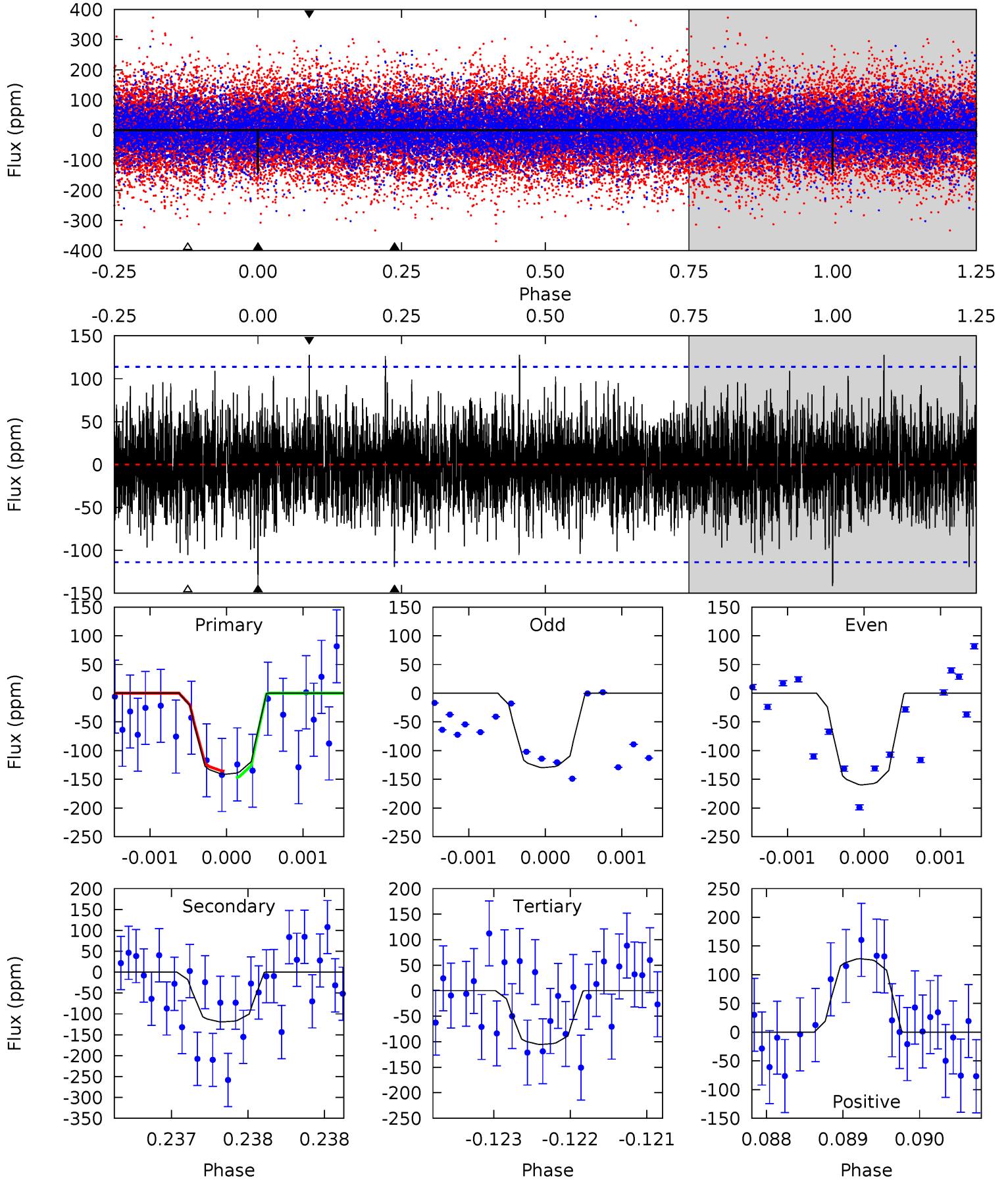
TCE 008098515-03 P=169.503191 Days $T_0=239.737416$ (BKJD)



DV Model-Shift Uniqueness Test

008098515-03, P = 169.511126 Days, E = 70.187173 Days

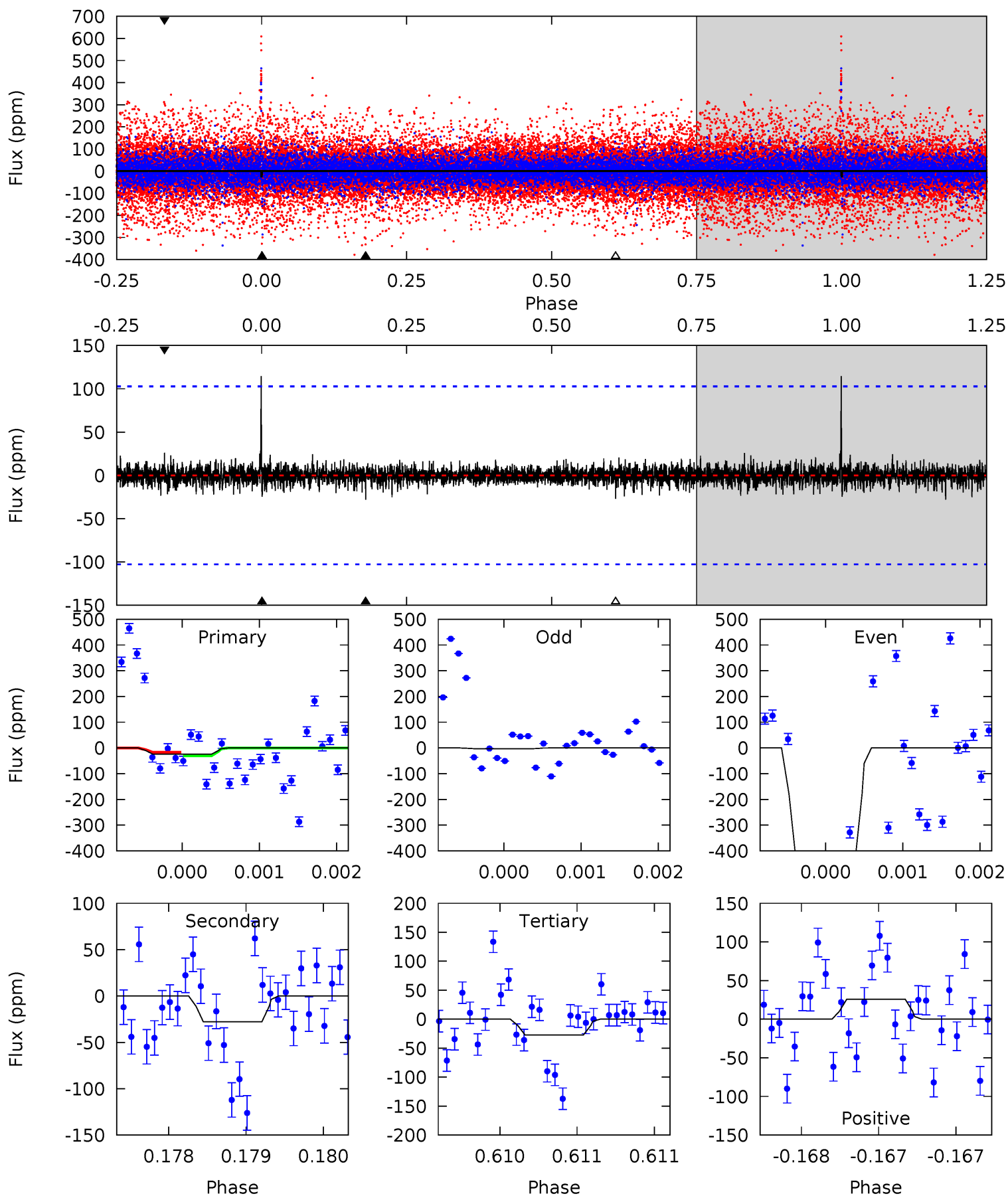
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.88	5.80	5.12	6.22	5.54	3.43	1.55	1.75	0.66	0.68	-0.42	0.71	0.99	0.47	0.27



Alt Model-Shift Uniqueness Test

008098515-03, P = 169.503191 Days, E = 70.234225 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.29	1.48	1.43	1.37	5.45	3.29	0.35	-0.14	-0.08	0.04	0.11	13.5	4.10	0.80	0.36



Stellar Parameters For KIC 008098515

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6846^{+190}_{-286}	$4.205^{+0.128}_{-0.192}$	$-0.160^{+0.250}_{-0.350}$	$1.507^{+0.471}_{-0.314}$	$1.337^{+0.189}_{-0.231}$	$0.550^{+0.355}_{-0.273}$
	+3%/-4%	+3%/-5%	+156%/-219%	+31%/-21%	+14%/-17%	+65%/-50%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008098515-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-119±21	$2.32^{+1.70}_{-1.42}$	642^{+48}_{-43}	6030^{+4717}_{-1317}	5102^{+31546}_{-3419}
Alt.	-28±19	$2.21^{+1.73}_{-1.35}$	642^{+46}_{-43}	4407^{+2351}_{-1080}	1223^{+6790}_{-989}

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 $A_{obs} \gg 1.0$

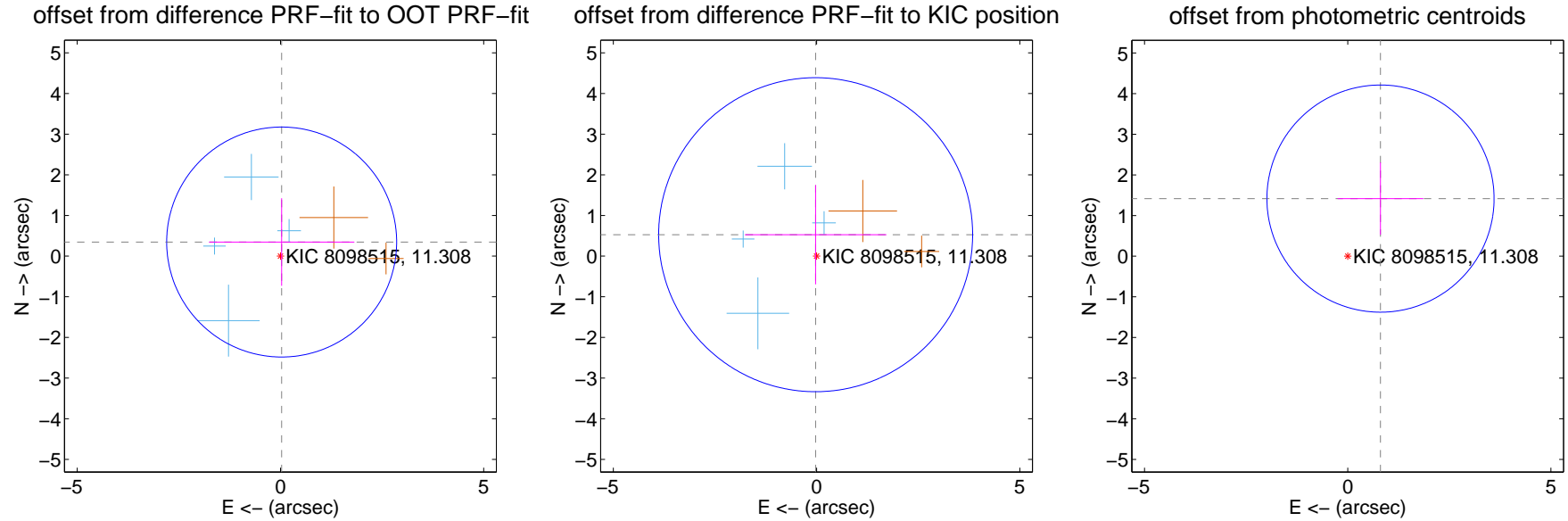
DV Centroid Data

Supplemental centroid analysis for 008098515-03. **Kepler magnitude: 11.31.** Transit SNR 4.68

There are 4 quarters with good PRF difference image offsets

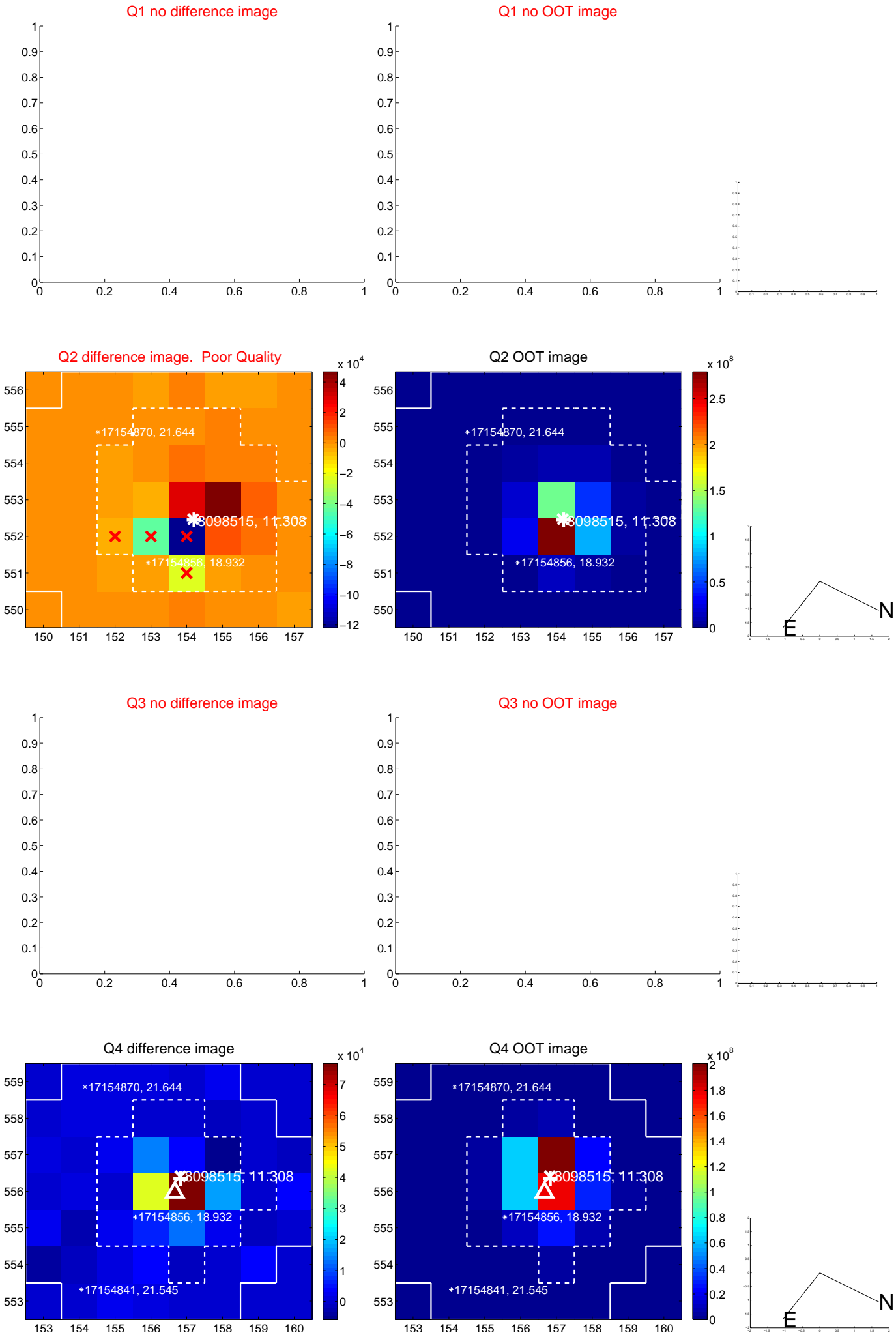
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.348 ± 0.943	0.37	-0.030 ± 1.787	0.347 ± 1.076
PRF-fit source offset from KIC position	0.528 ± 1.287	0.41	0.023 ± 1.740	0.527 ± 1.221
photometric centroid source offset	1.63 ± 0.93	1.75	-0.81 ± 1.05	1.42 ± 0.89

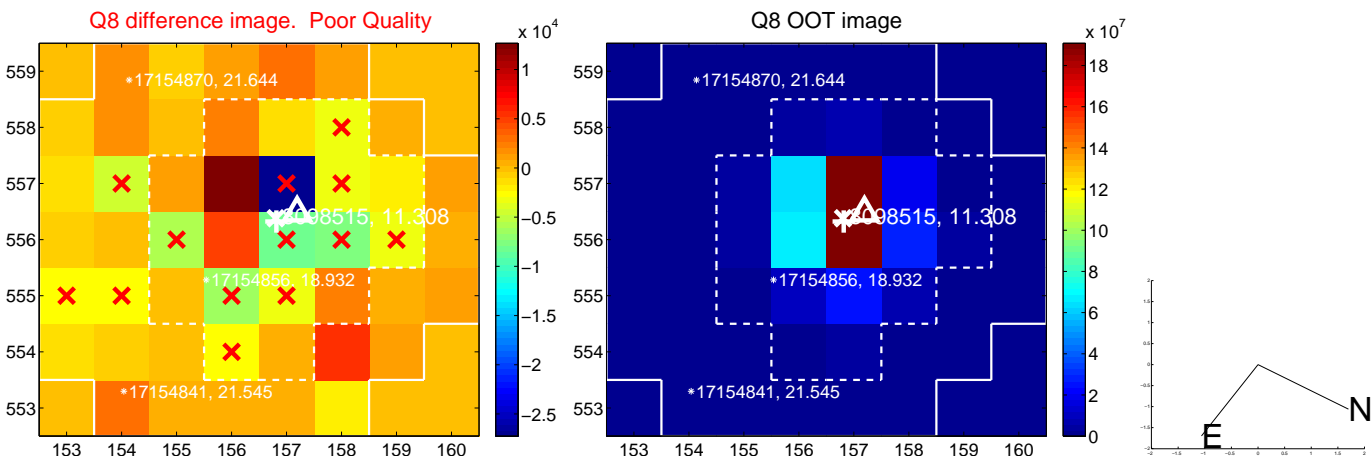
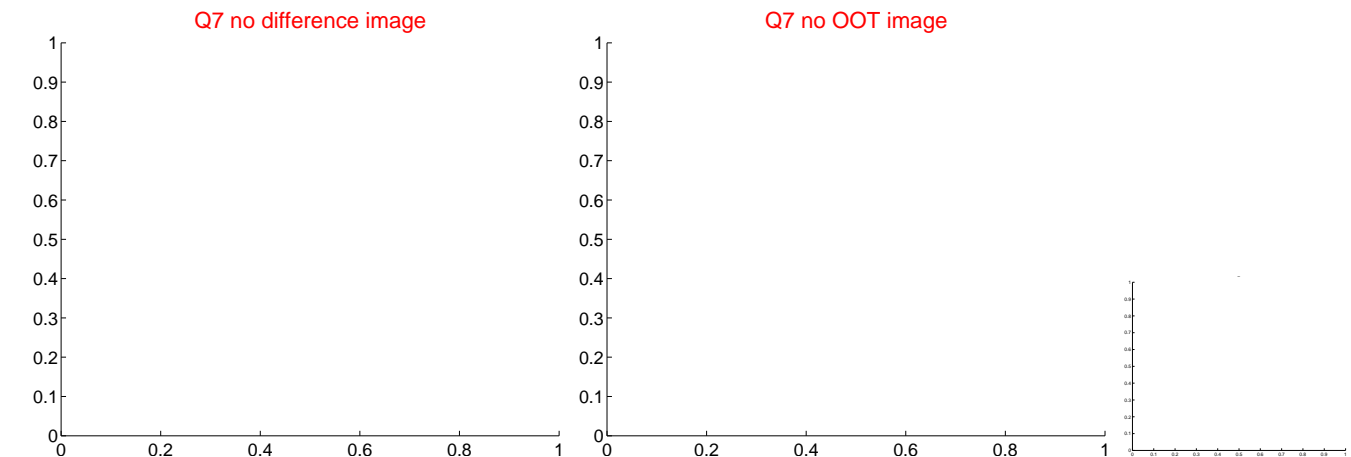
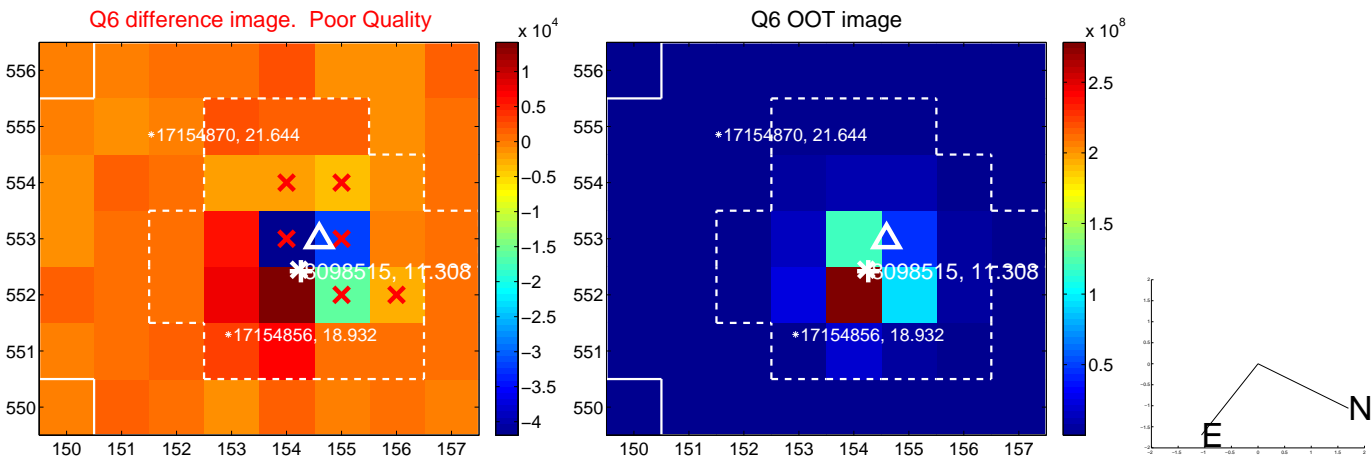
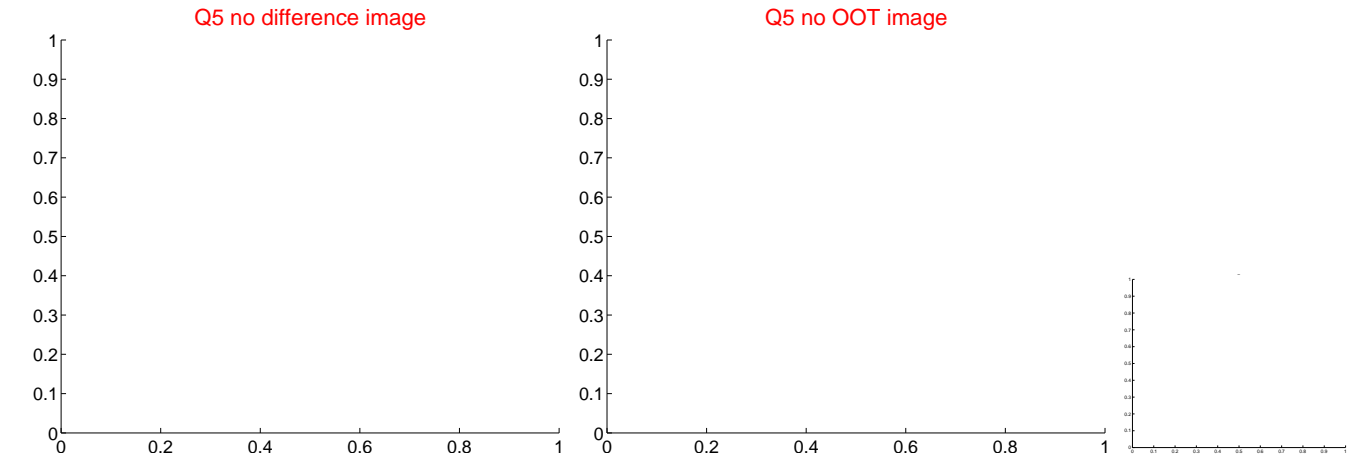


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

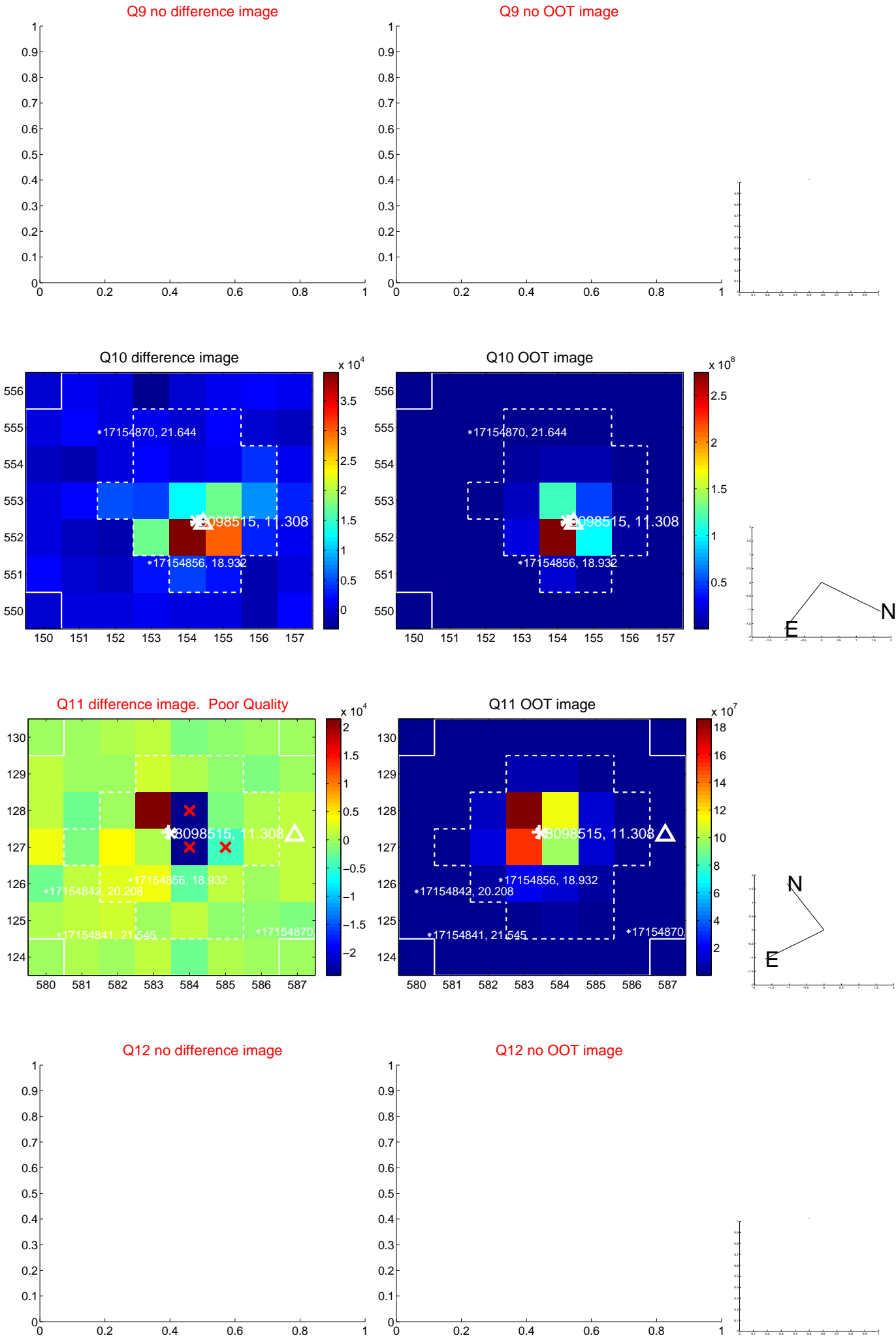
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



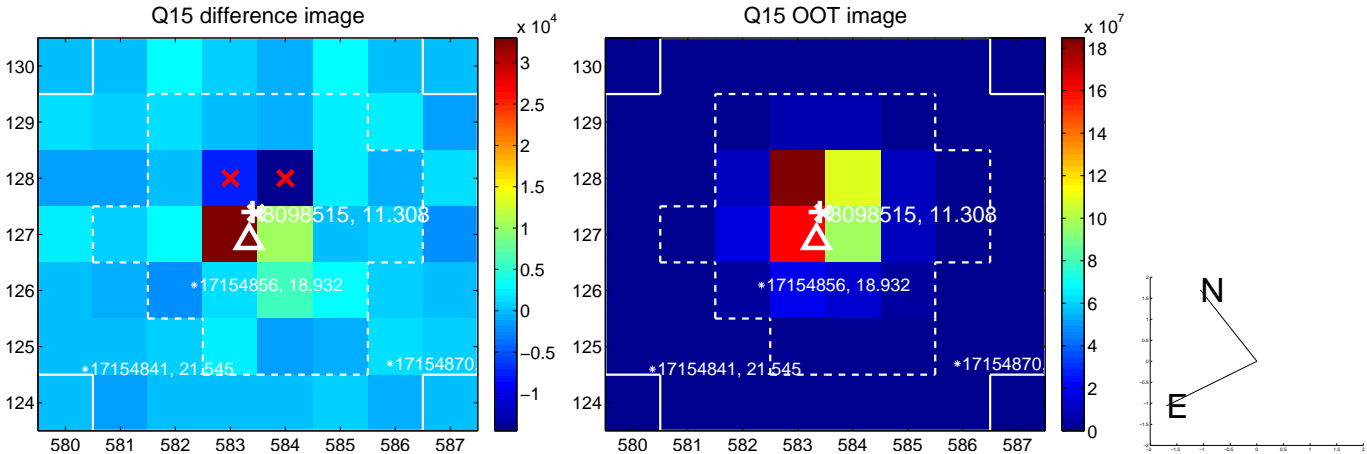
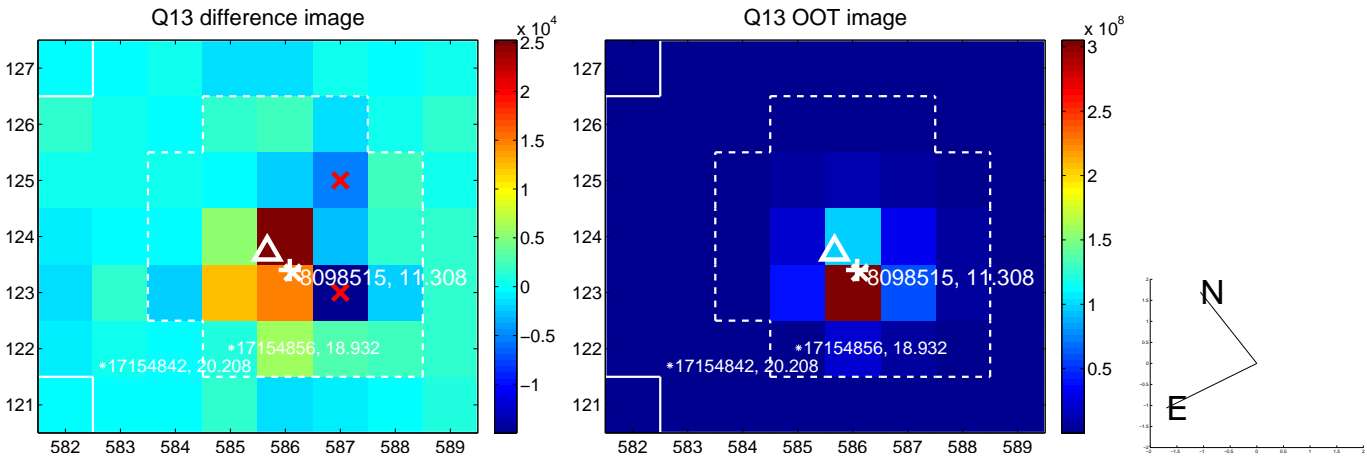
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



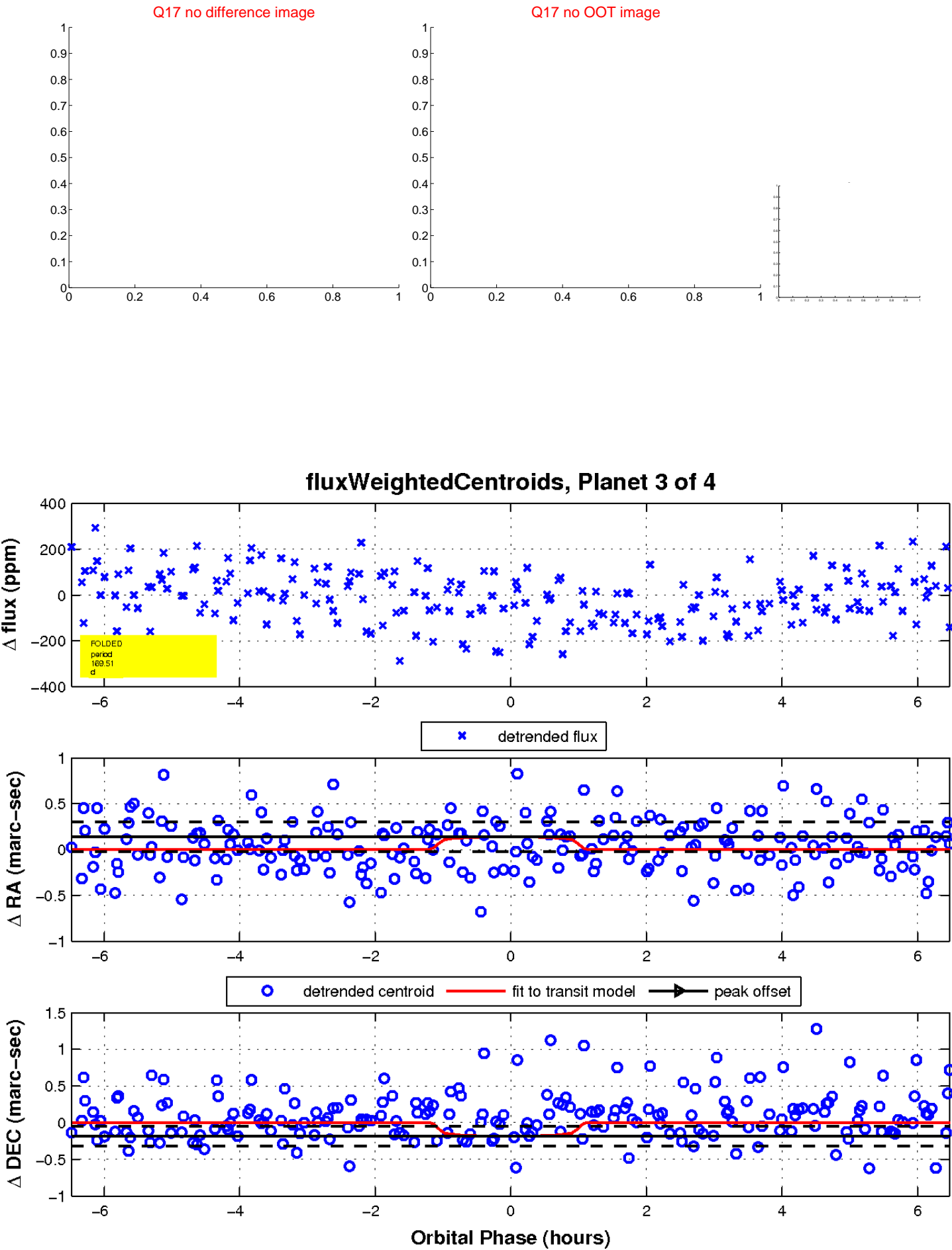
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

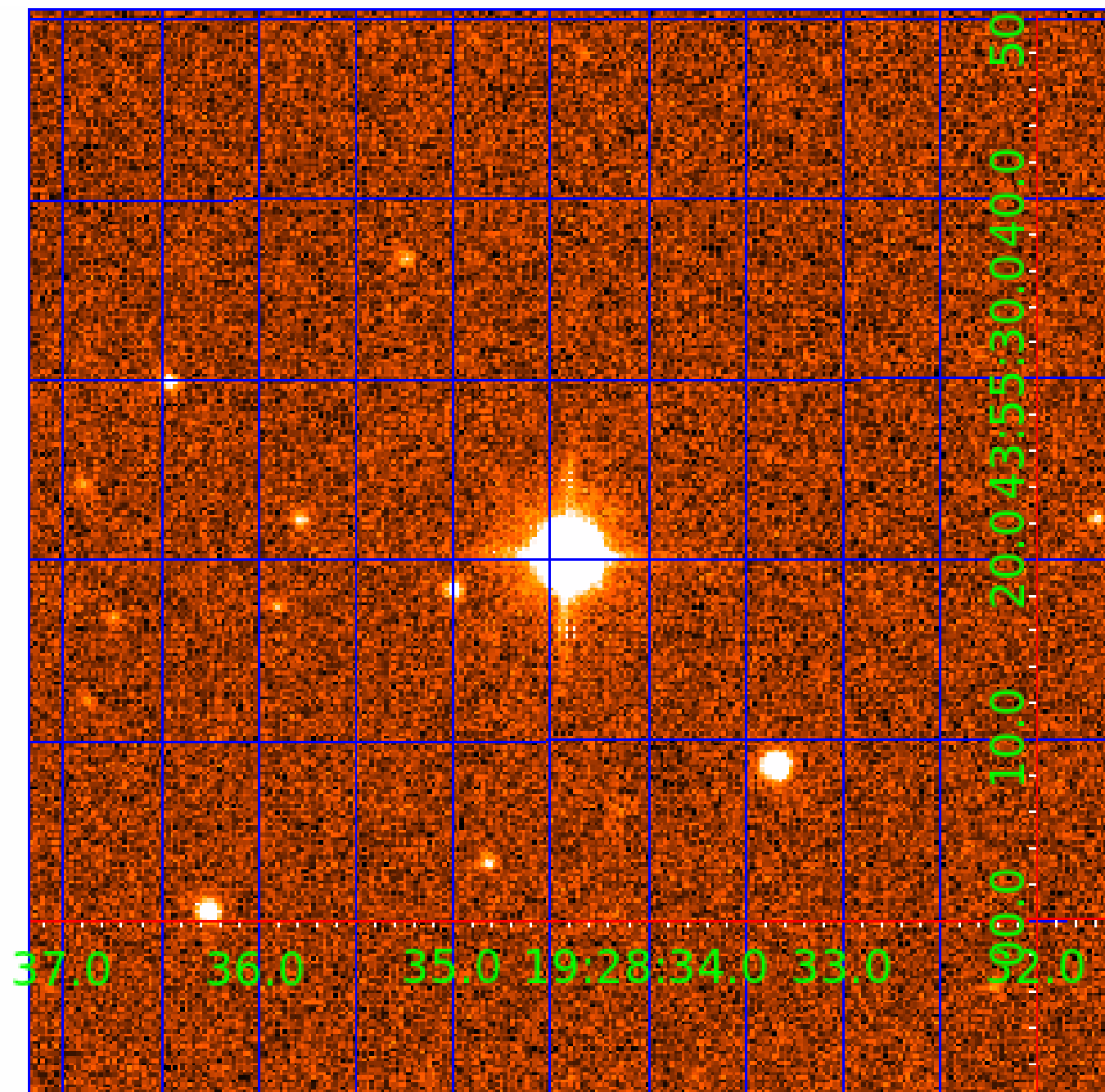


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008098515

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})
008098515-01	OBS	6965.01	1.286606	132.107107	18.0	3.954	10.0	9.8	1.51	6846	0.76	6899.06
008098515-02	OBS	No	2.572469	131.740717	12.3	0.971	9.4	4.0	1.51	6846	0.57	2738.95
008098515-03	OBS	No	169.511126	239.698299	151.1	2.162	8.4	4.7	1.51	6846	2.01	10.29
008098515-04	OBS	No	2.572151	132.384712	51.8	3.621	8.4	9.0	1.51	6846	1.26	2739.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008098515-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—CENT_SATURATED
008098515-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008098515-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008098515-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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.

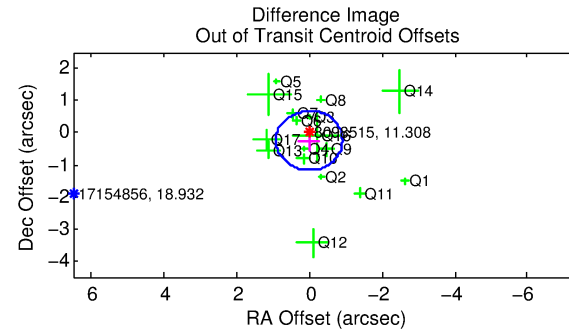
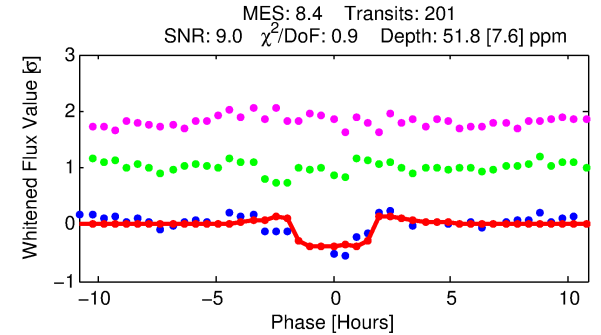
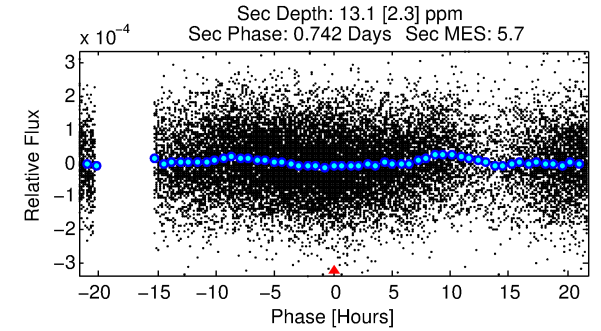
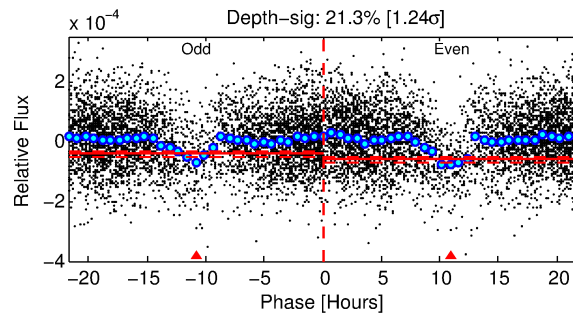
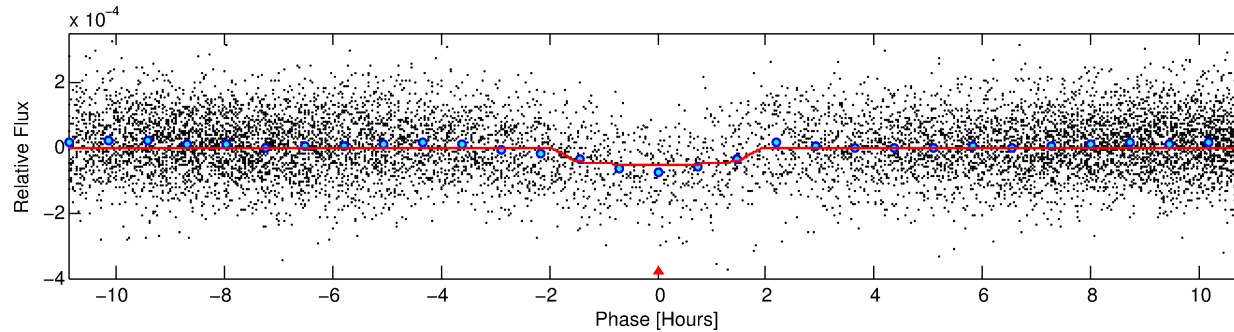
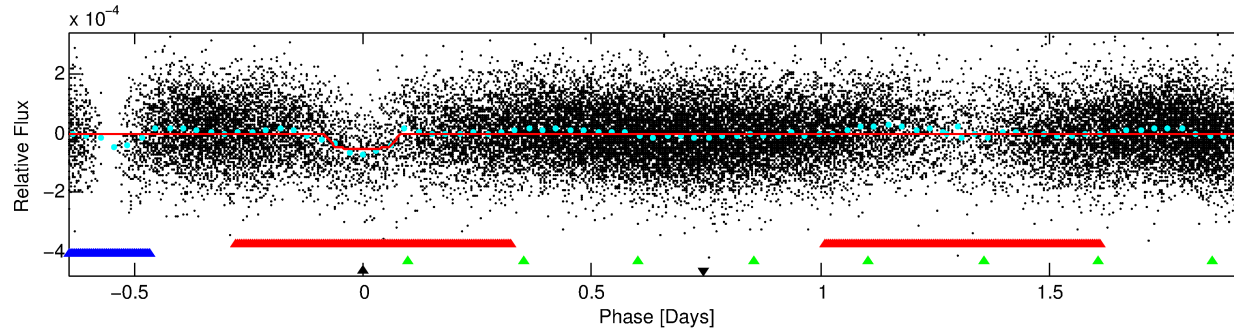
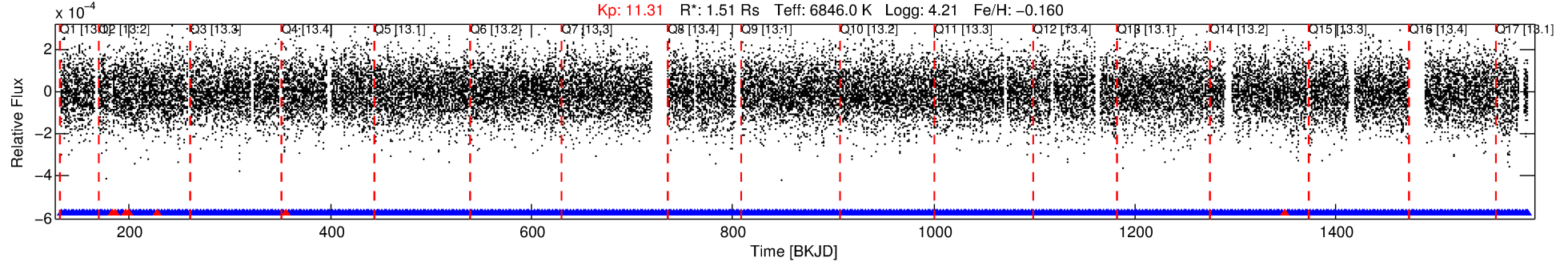
Ephemeris Match Information For 008098515-04

No Significant Match Found

DV One-Page Summary

KIC: 8098515 Candidate: 4 of 4 Period: 2.572 d
KOI: K06965 Corr: No Ephemeris Match

Kp: 11.31 R*: 1.51 Rs Teff: 6846.0 K Logg: 4.21 Fe/H: -0.160



DV Fit Results:

Period = 2.57215 [0.00002] d
Epoch = 132.3847 [0.0030] BKJD
Rp/R* = 0.0077 [0.0023]
a/R* = 2.64 [3.90]
b = 0.90 [0.37]
Seff = 2739.40 [1089.59]
Teq = 1845 [183] K
Rp = 1.26 [0.54] Re
a = 0.0404 [0.0103] AU
Ag = 7.41 [5.31] [1.21σ]
Teff = 4706 [755] K [3.68σ]

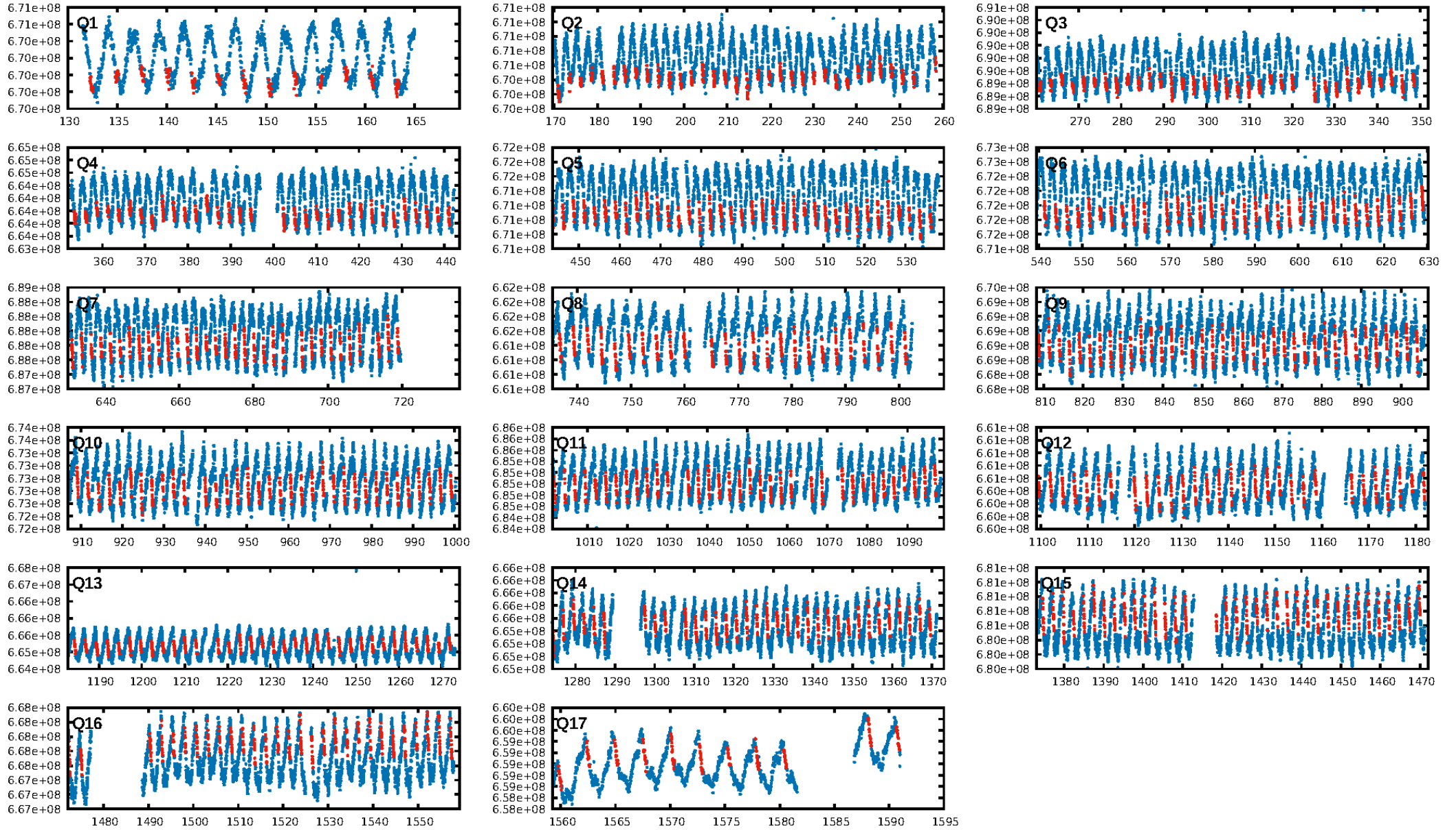
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.75σ]
LongPeriod-sig: 0.2% [0.00σ]
ModelChiSquare2-sig: 83.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.28e-12
RollingBand-fgt: 0.96 [170/177]
GhostDiagnostic-chr: -54.44
Centroid-sig: 13.4%
Centroid-so: 0.487 arcsec [1.89σ]
OotOffset-rm: 0.251 arcsec [0.82σ]
KicOffset-rm: 0.142 arcsec [0.54σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.00 [0/17]

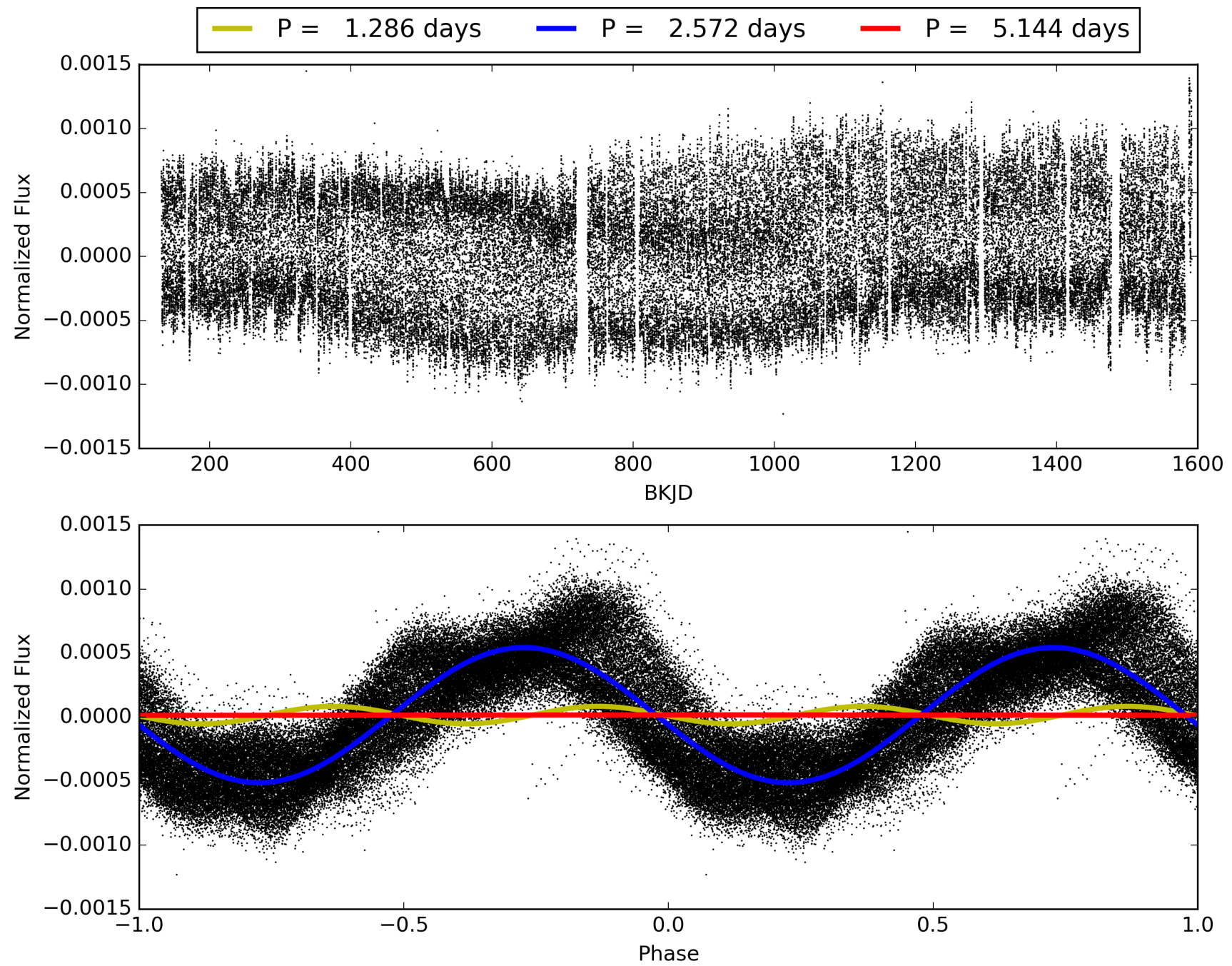
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:39:36 Z

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

TCE 008098515-04, PDC Light Curves

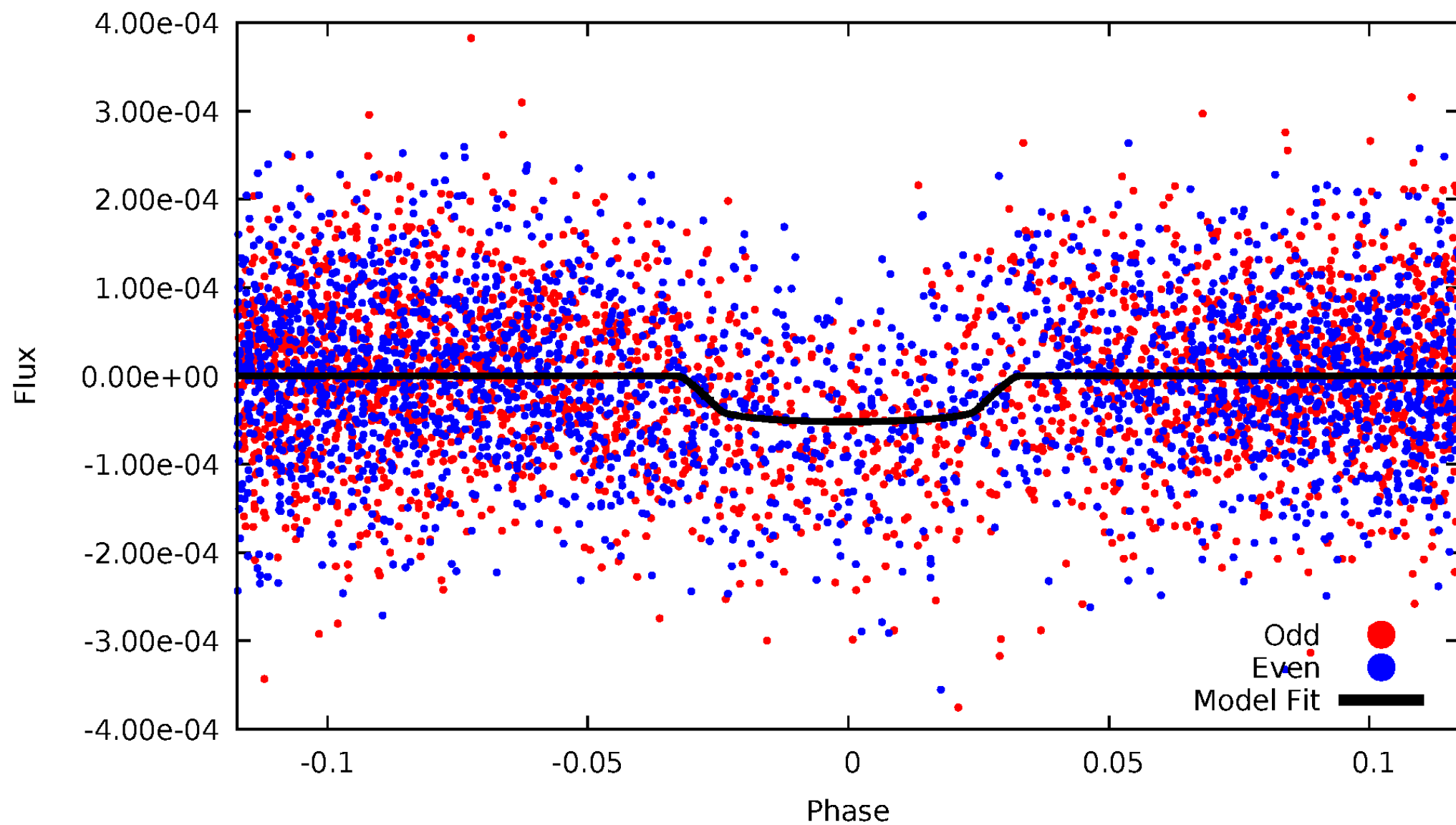


TCE 008098515-04



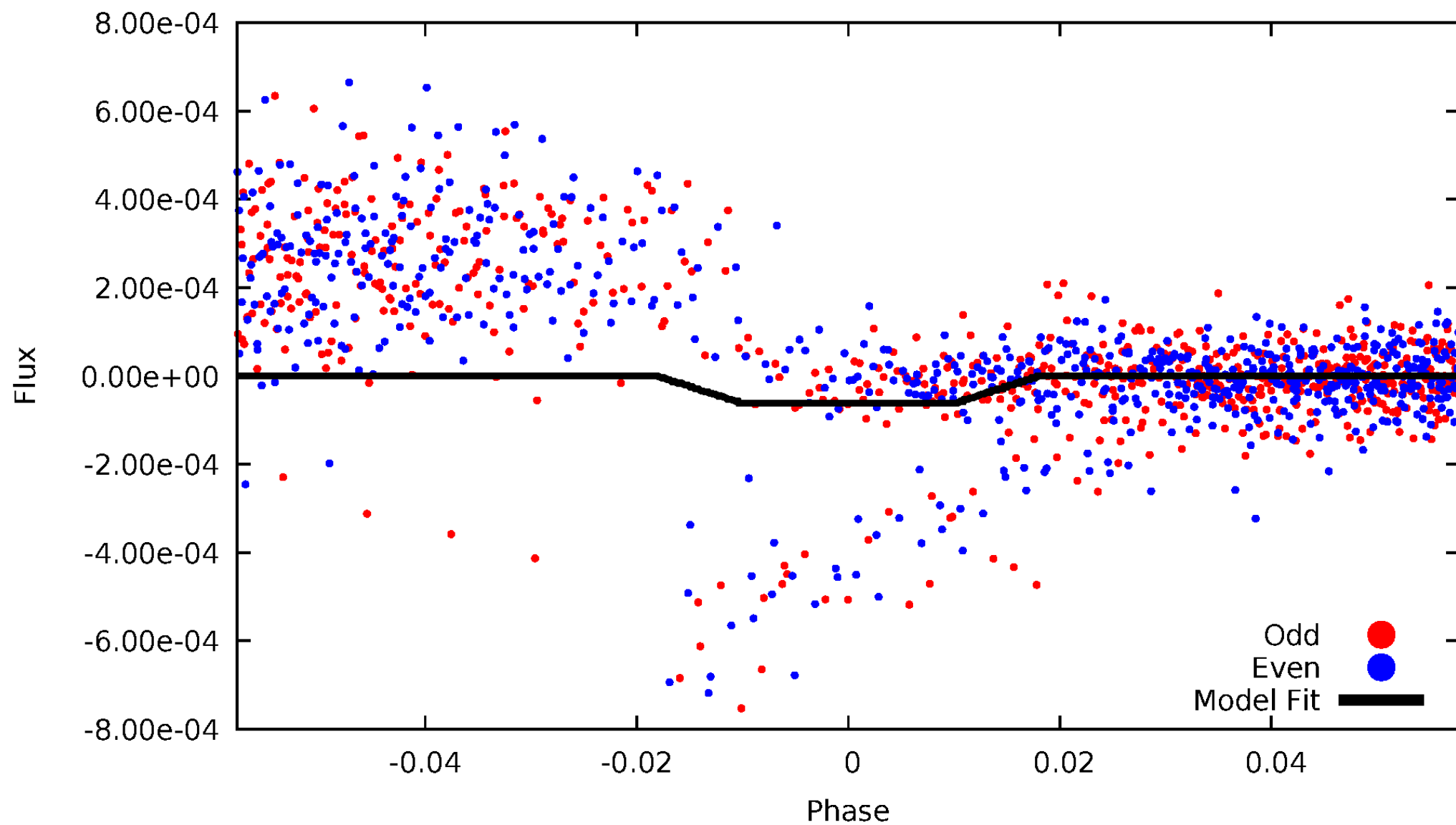
DV Odd/Even

TCE 008098515-04



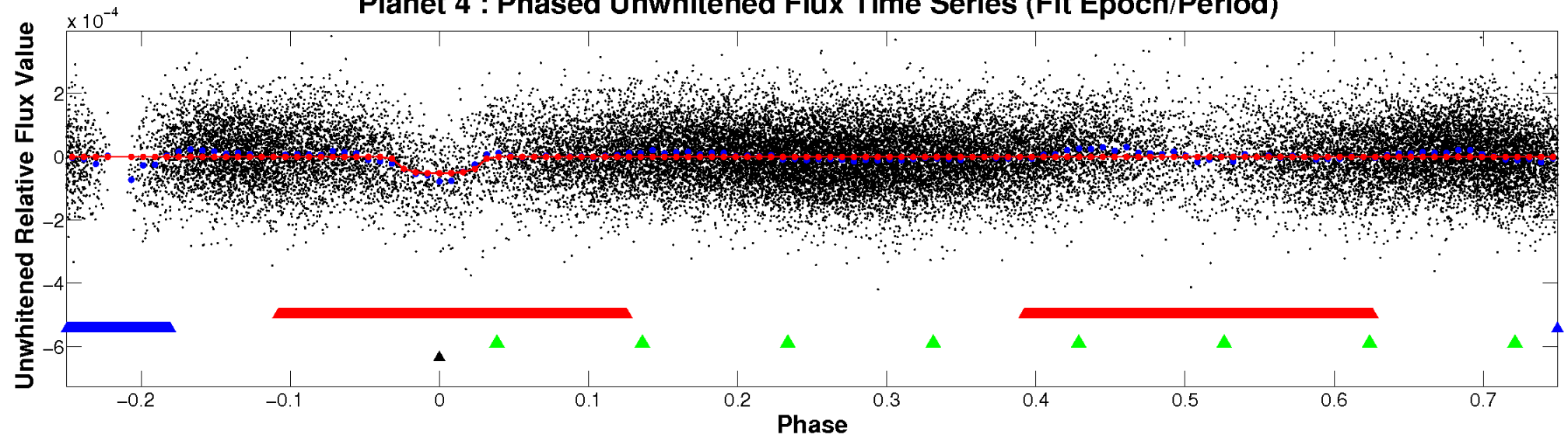
ALT Odd/Even

TCE 008098515-04

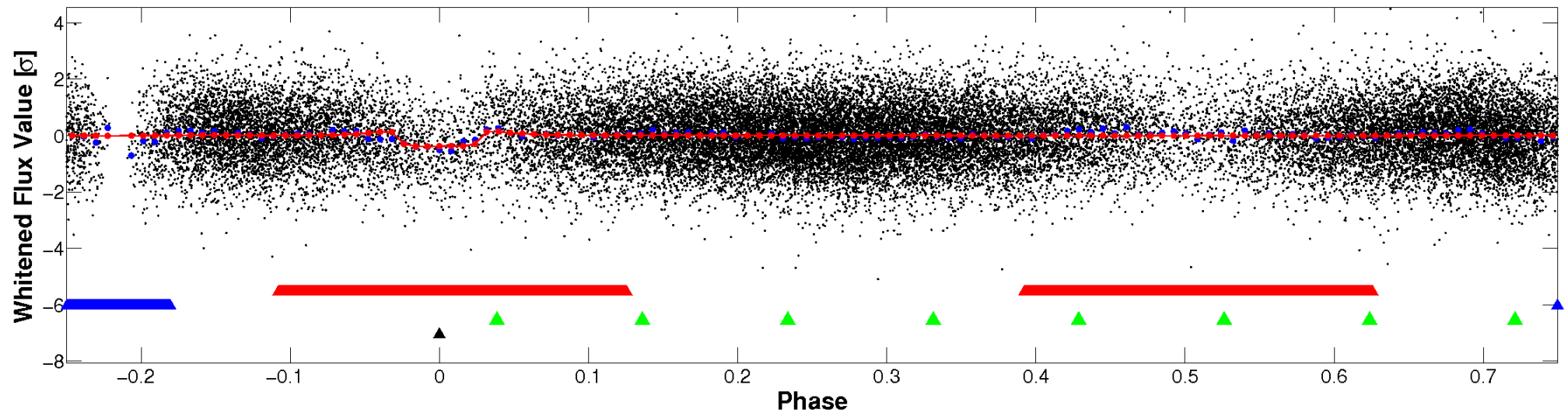


Non-Whitened Vs. Whitened Light Curve

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

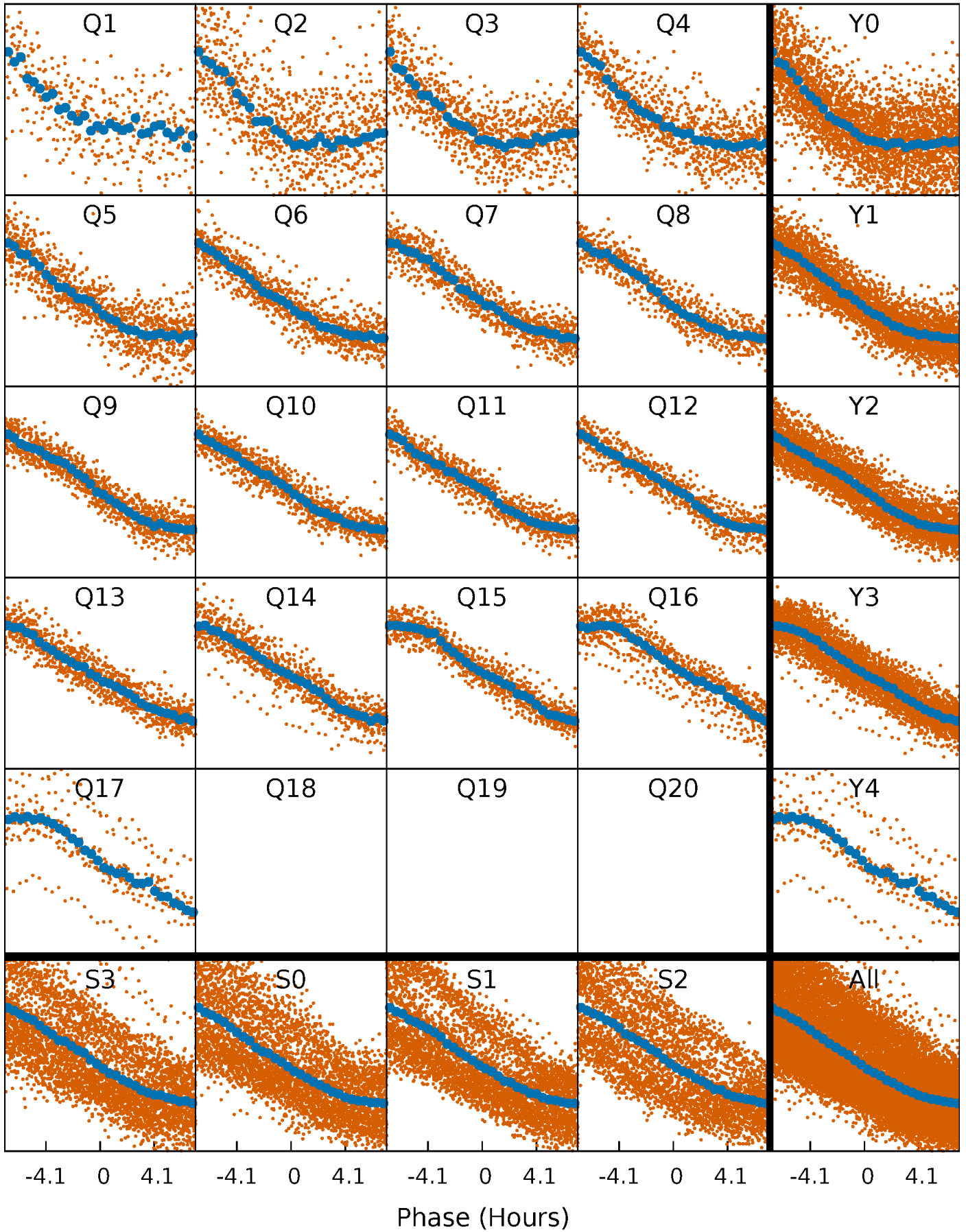


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



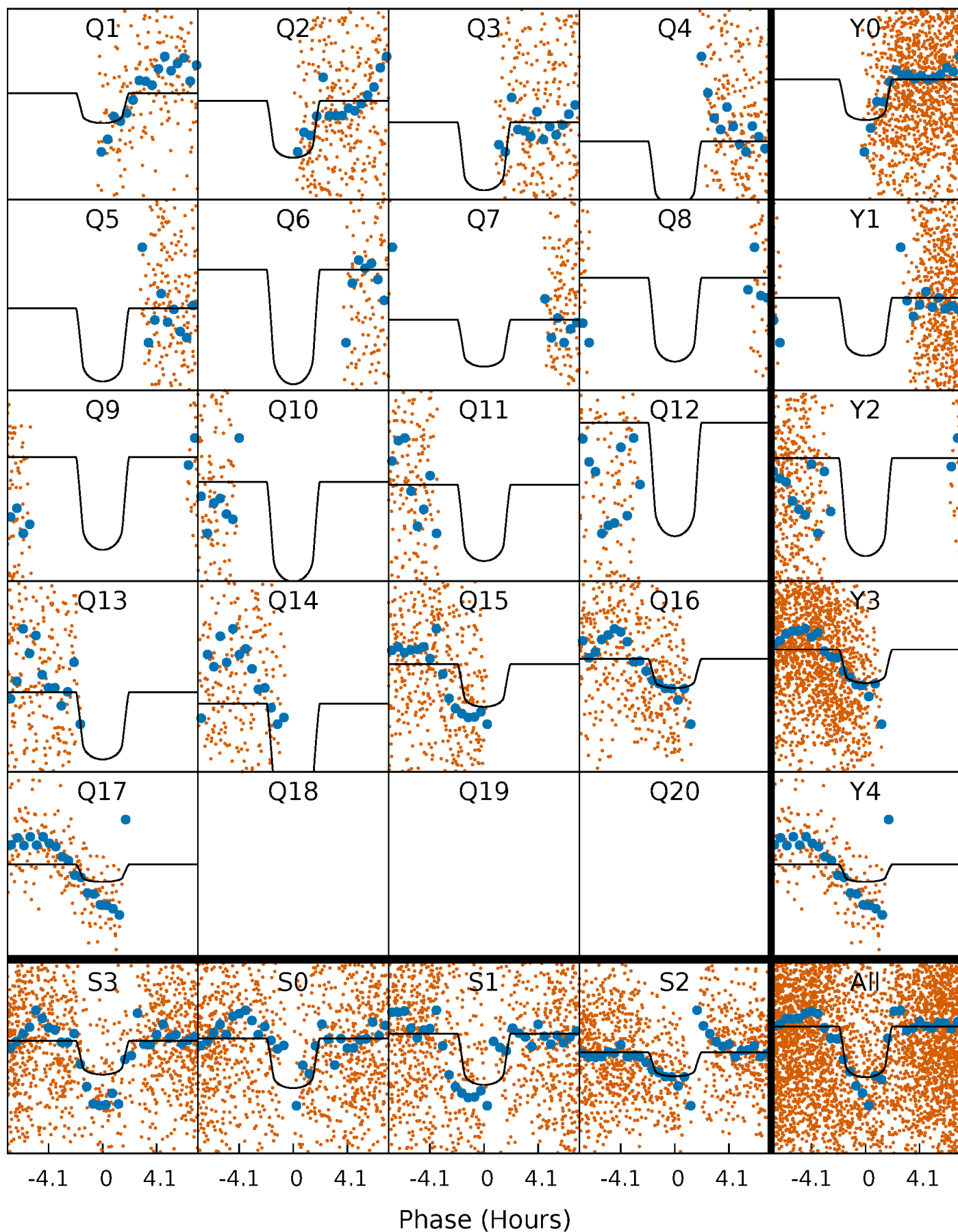
PDC Quarter-Phased Transit Curves

TCE 008098515-04 P= 2.572151 Days $T_0=132.384712$ (BKJD)



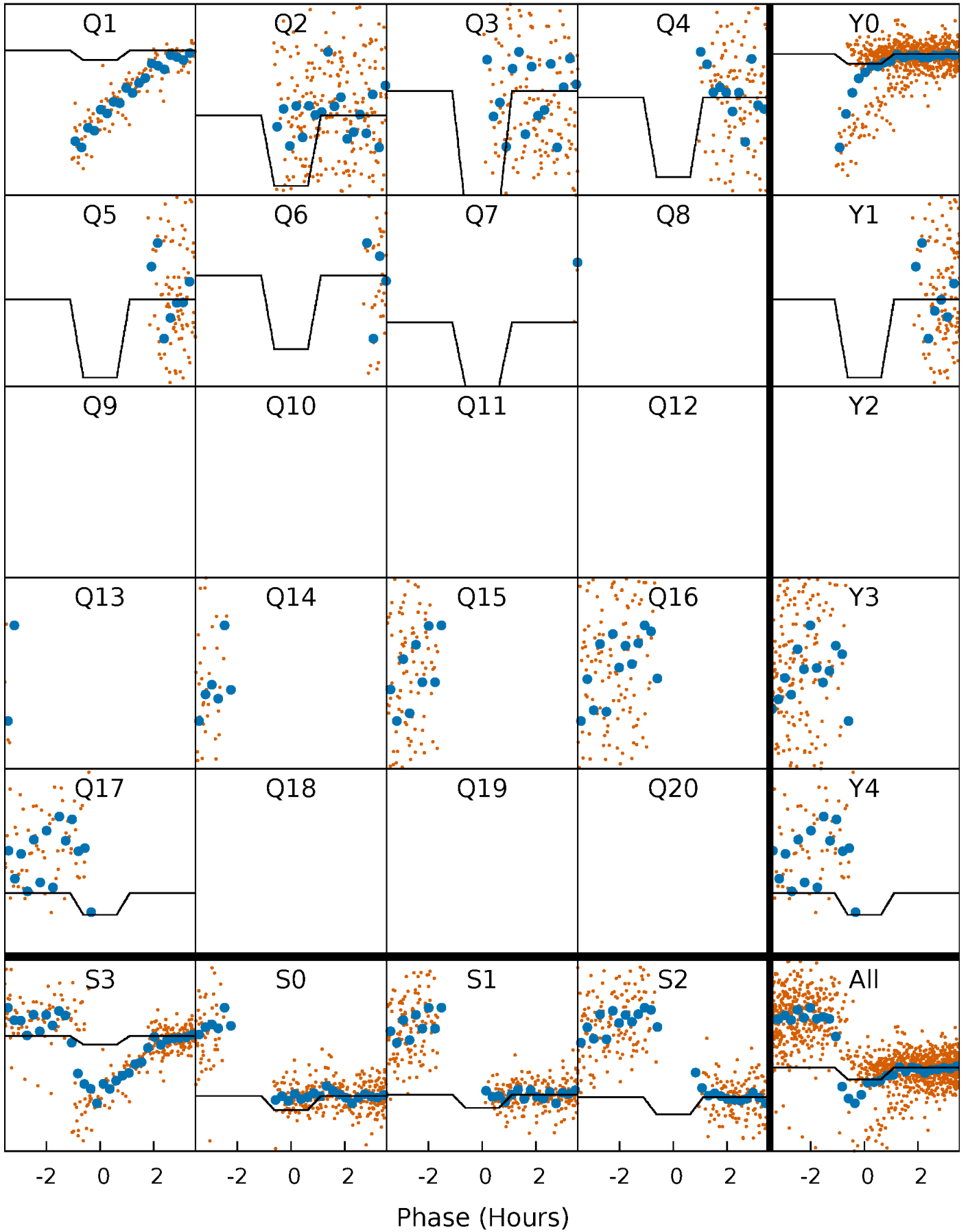
DV Quarter-Phased Transit Curves

TCE 008098515-04 P= 2.572151 Days $T_0=132.384712$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

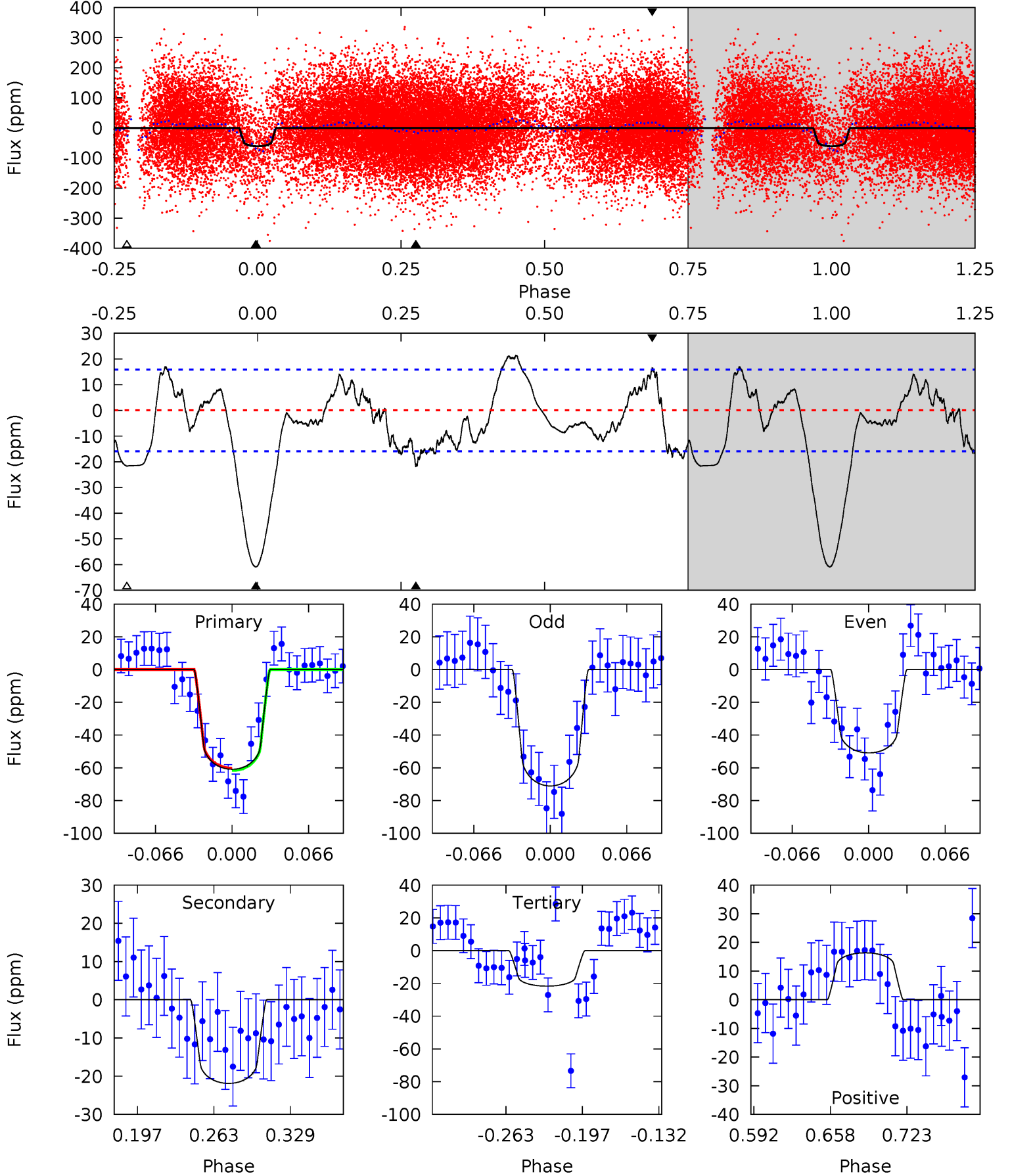
TCE 008098515-04 P= 2.572238 Days $T_0=132.414008$ (BKJD)



DV Model-Shift Uniqueness Test

008098515-04, P = 2.572151 Days, E = 129.812561 Days

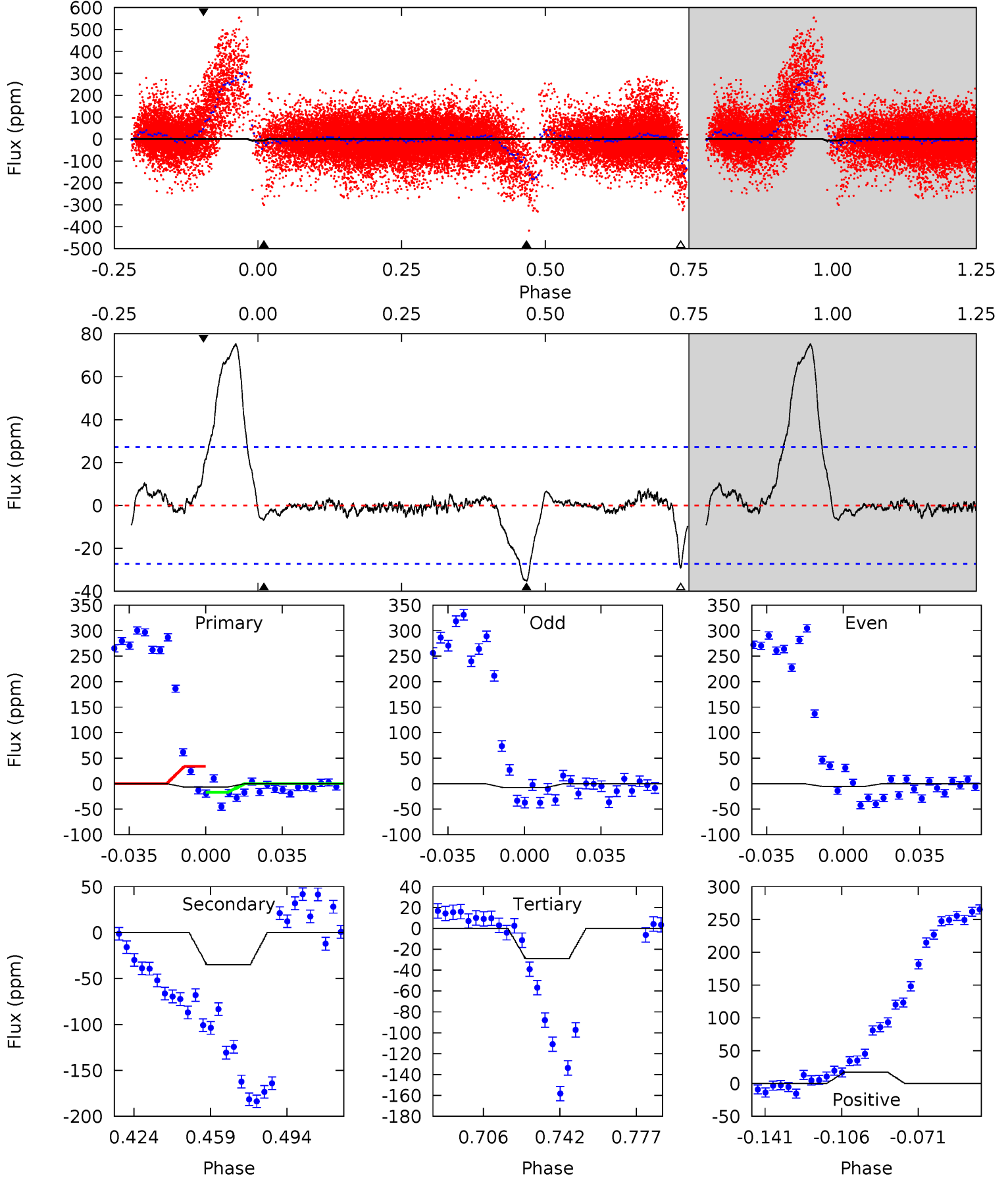
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	6.40	6.34	4.79	4.65	1.84	2.87	11.5	13.0	0.06	1.61	2.97	0.86	0.26	0.20



Alt Model-Shift Uniqueness Test

008098515-04, P = 2.572238 Days, E = 129.841770 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.17	6.17	5.09	3.02	4.78	2.10	1.75	-3.92	-1.85	1.08	3.15	0.20	4.78	0.68	1.47



Stellar Parameters For KIC 008098515

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6846^{+190}_{-286}	$4.205^{+0.128}_{-0.192}$	$-0.160^{+0.250}_{-0.350}$	$1.507^{+0.471}_{-0.314}$	$1.337^{+0.189}_{-0.231}$	$0.550^{+0.355}_{-0.273}$
	+3%/-4%	+3%/-5%	+156%/-219%	+31%/-21%	+14%/-17%	+65%/-50%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008098515-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-22 ± 3	$1.29^{+0.45}_{-0.38}$	2594^{+200}_{-170}	5322^{+895}_{-647}	12^{+12}_{-5}
Alt.	-35 ± 6	$1.32^{+0.43}_{-0.40}$	2589^{+200}_{-169}	5836^{+1175}_{-697}	18^{+20}_{-8}

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

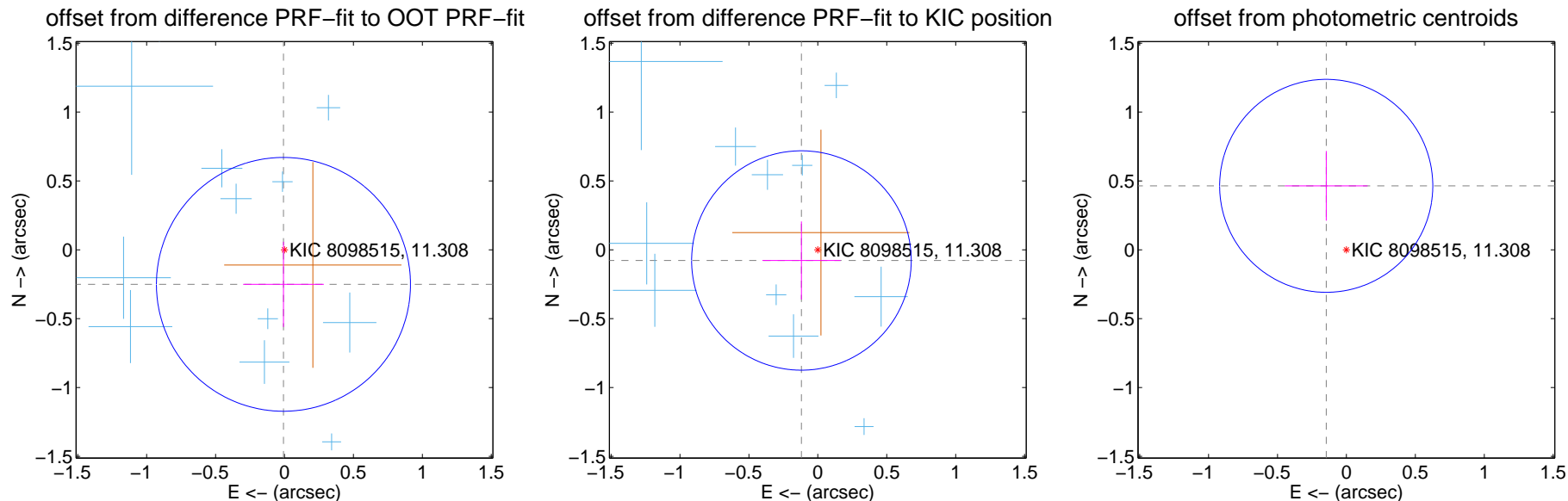
DV Centroid Data

Supplemental centroid analysis for 008098515-04. **Kepler magnitude: 11.31.** Transit SNR 8.99

There are 16 quarters with good PRF difference image offsets

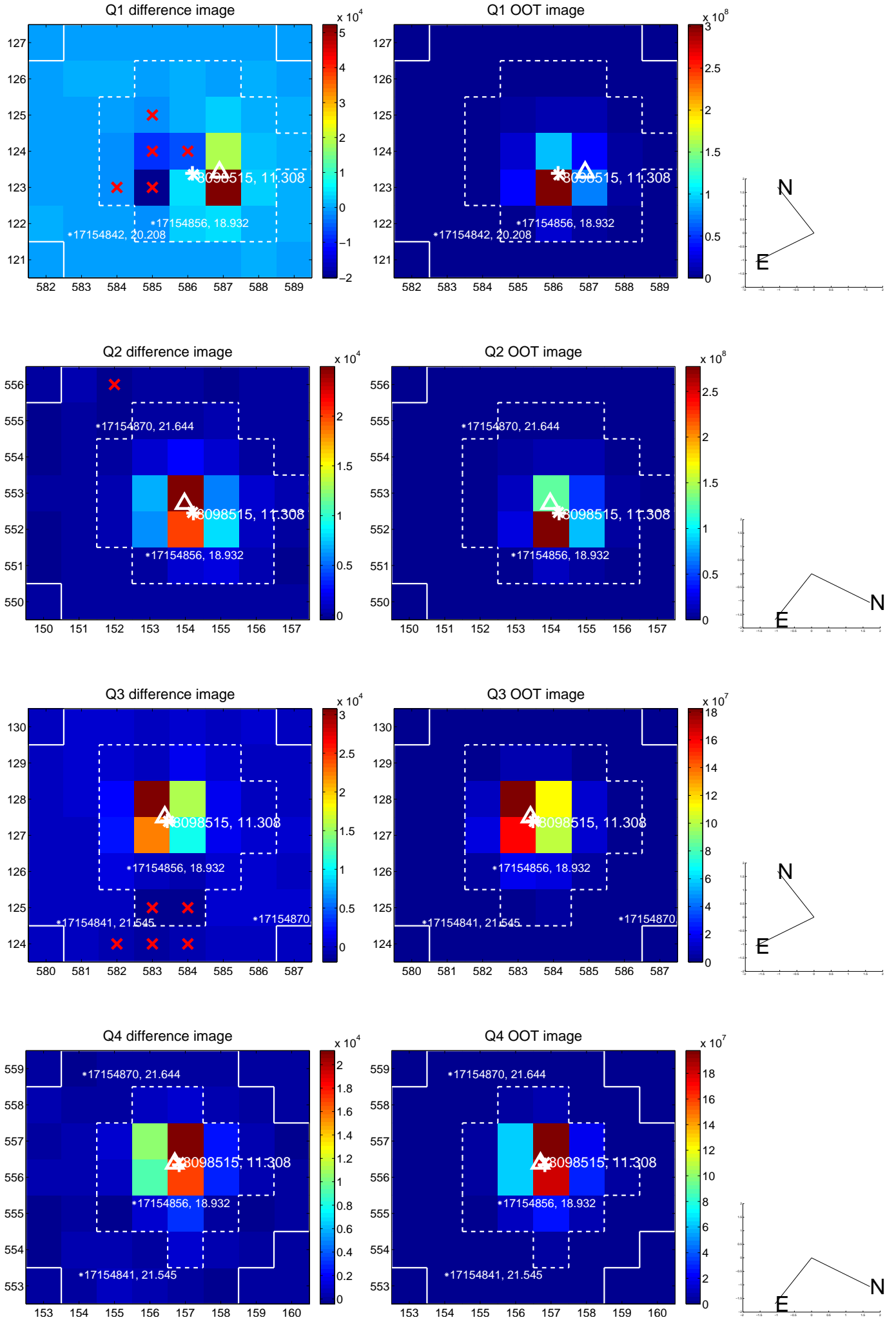
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.251 ± 0.307	0.82	0.008 ± 0.293	-0.251 ± 0.309
PRF-fit source offset from KIC position	0.142 ± 0.266	0.54	0.119 ± 0.283	-0.078 ± 0.283
photometric centroid source offset	0.49 ± 0.26	1.89	0.15 ± 0.30	0.46 ± 0.25

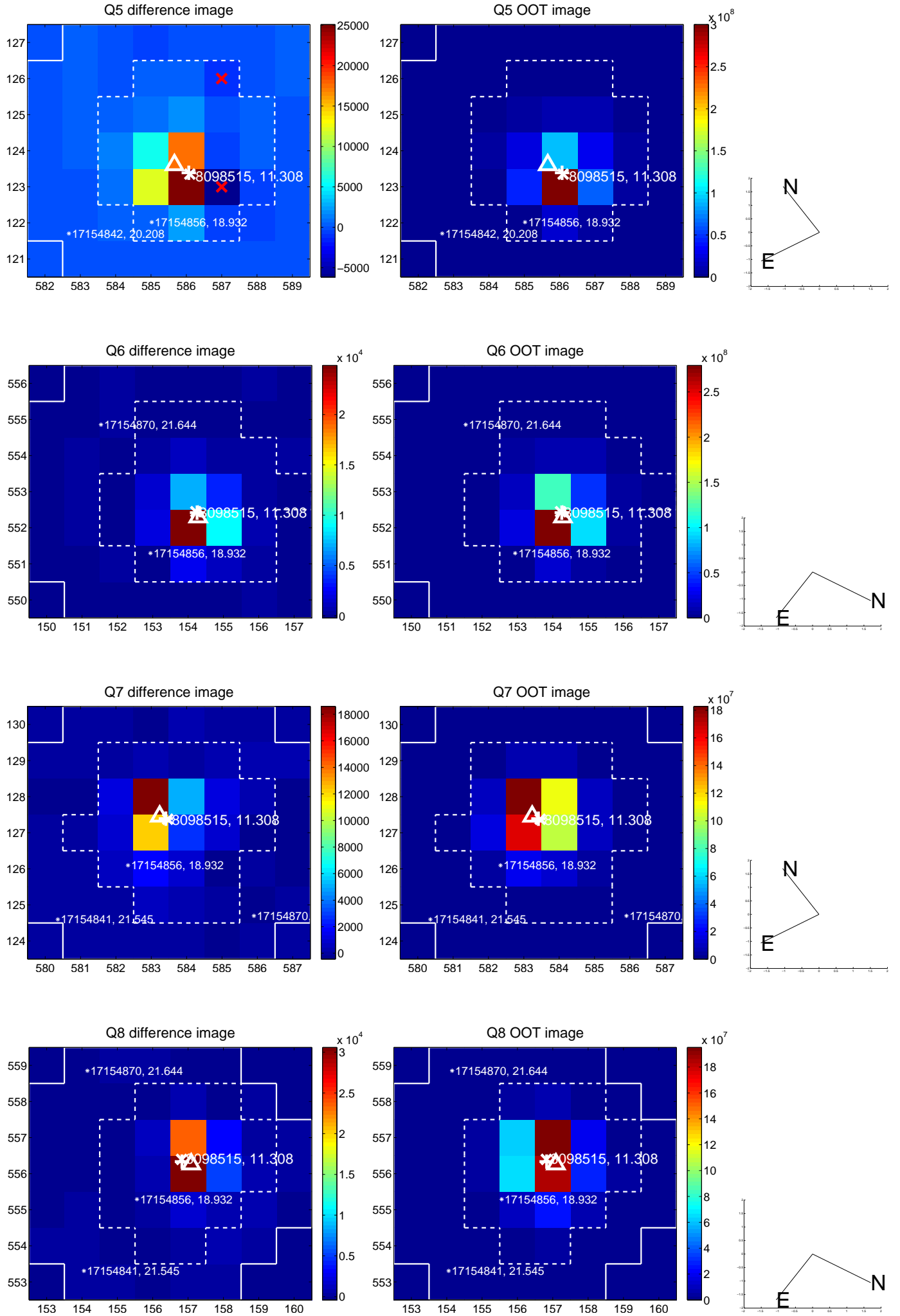


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

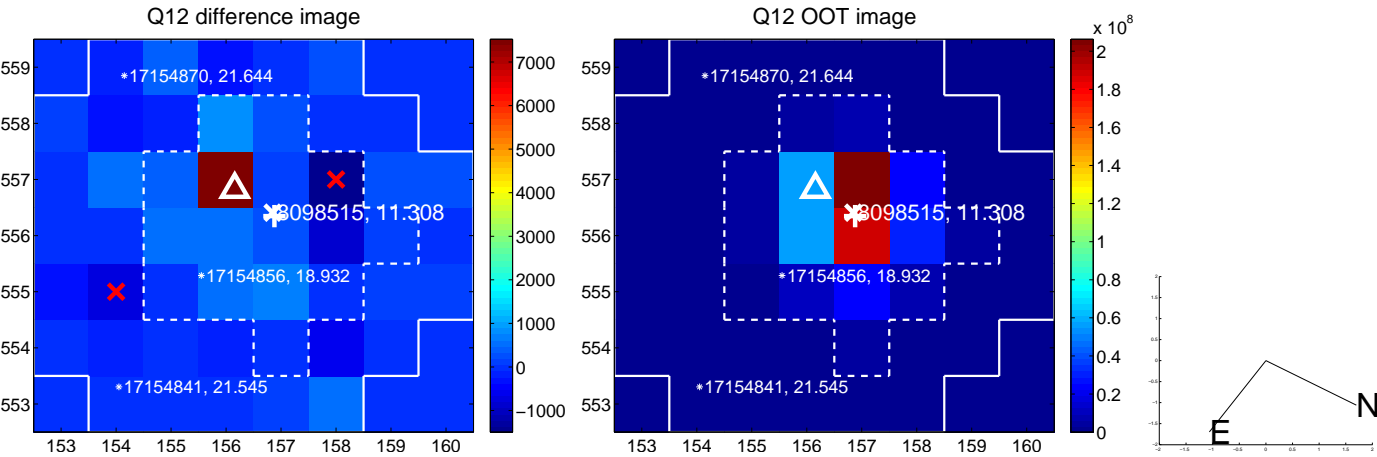
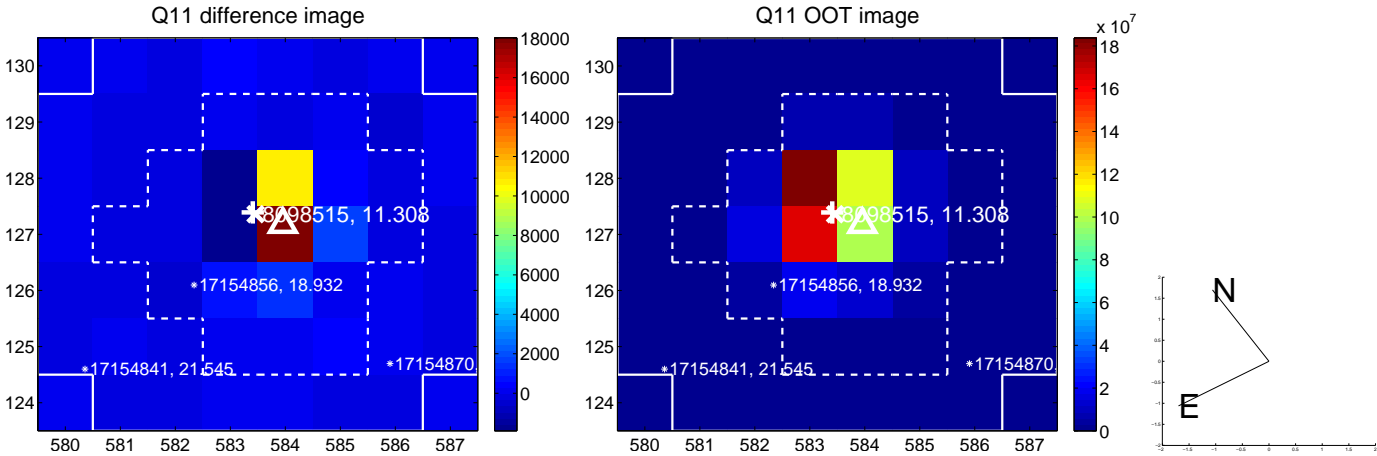
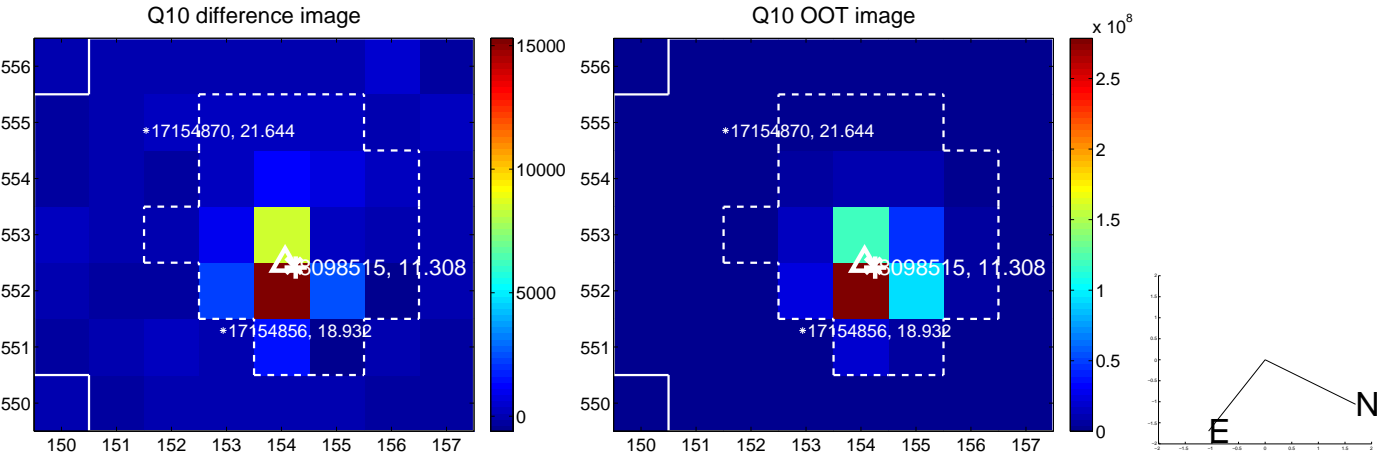
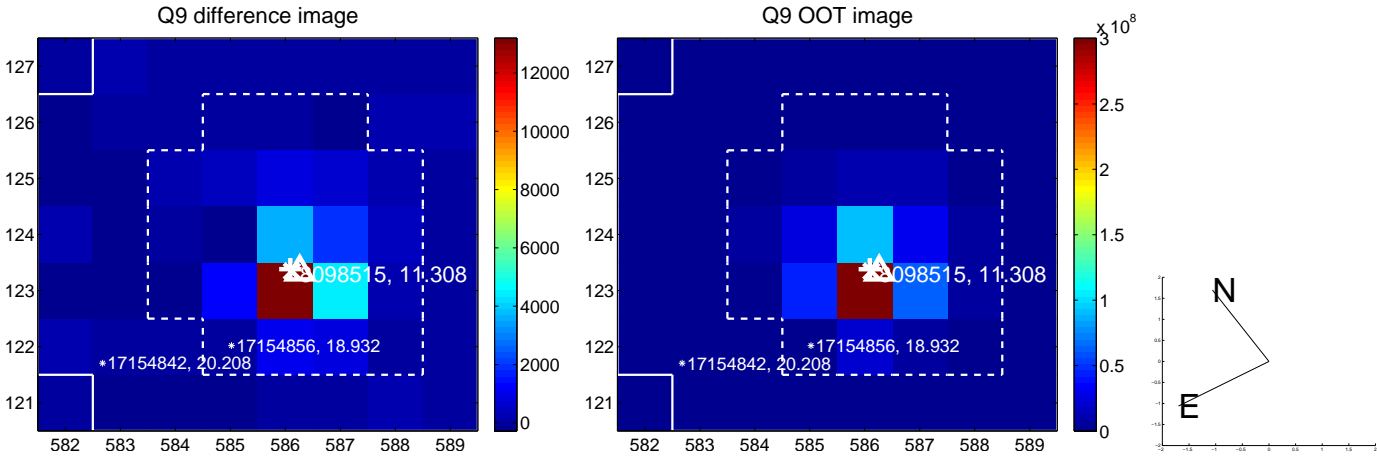
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



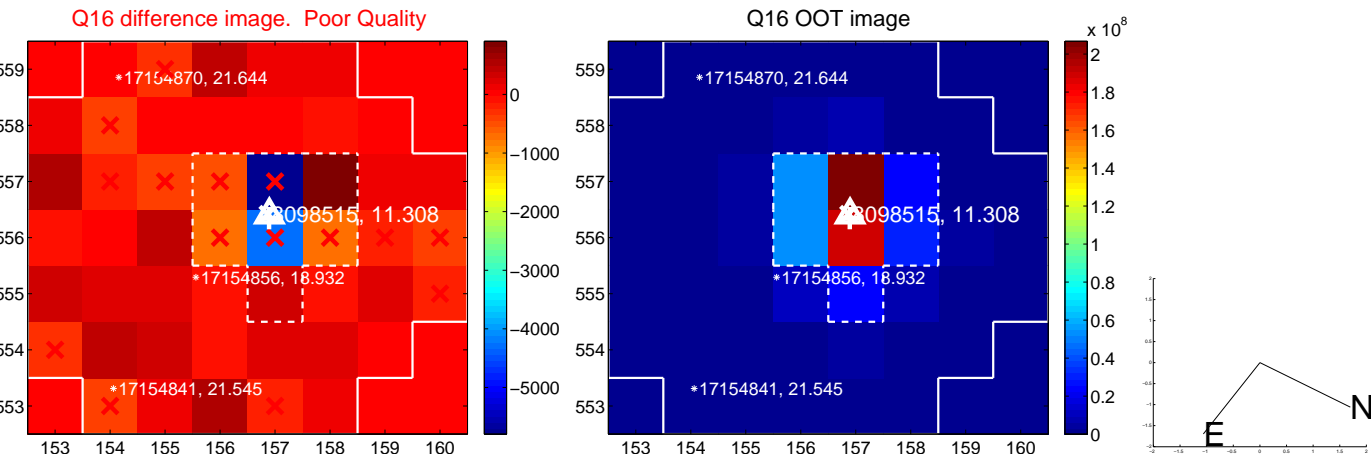
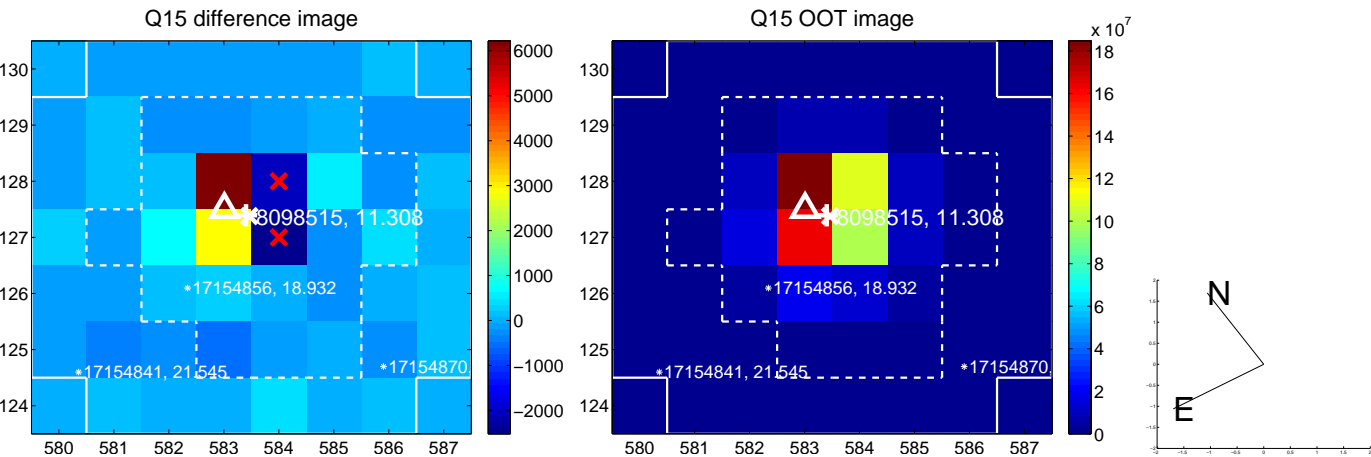
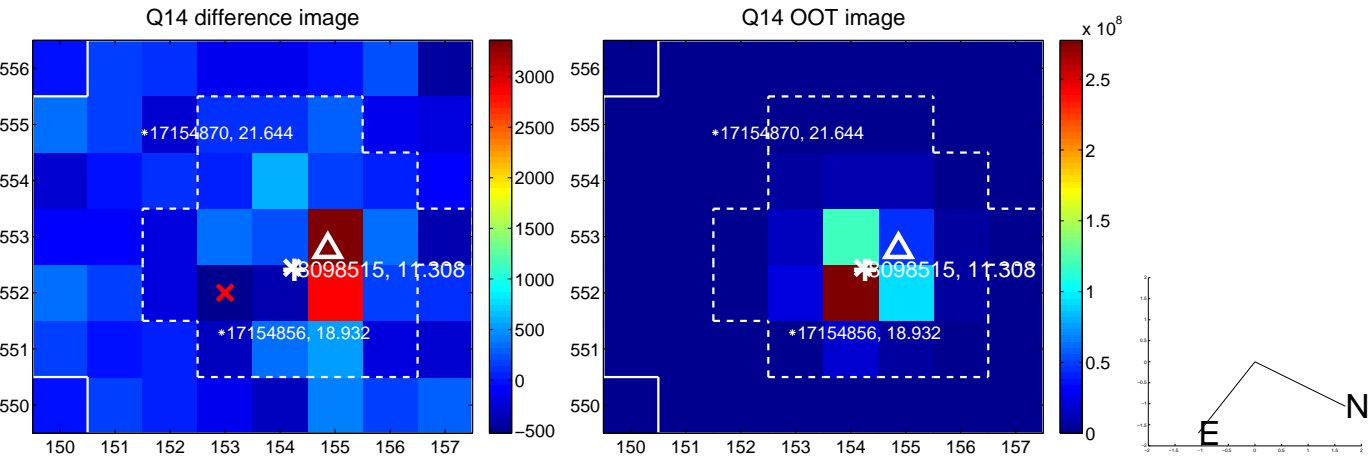
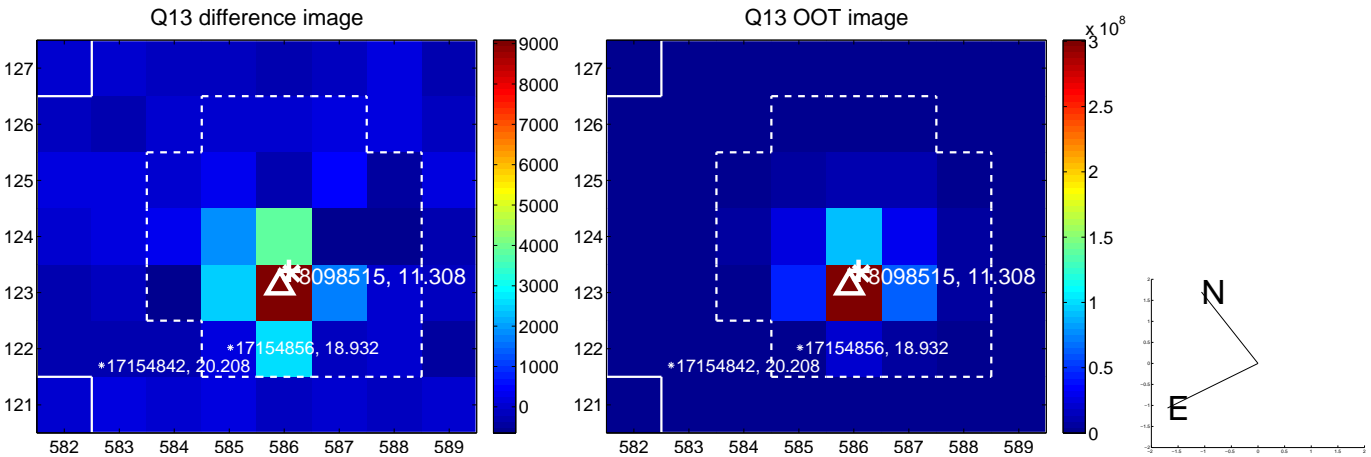
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



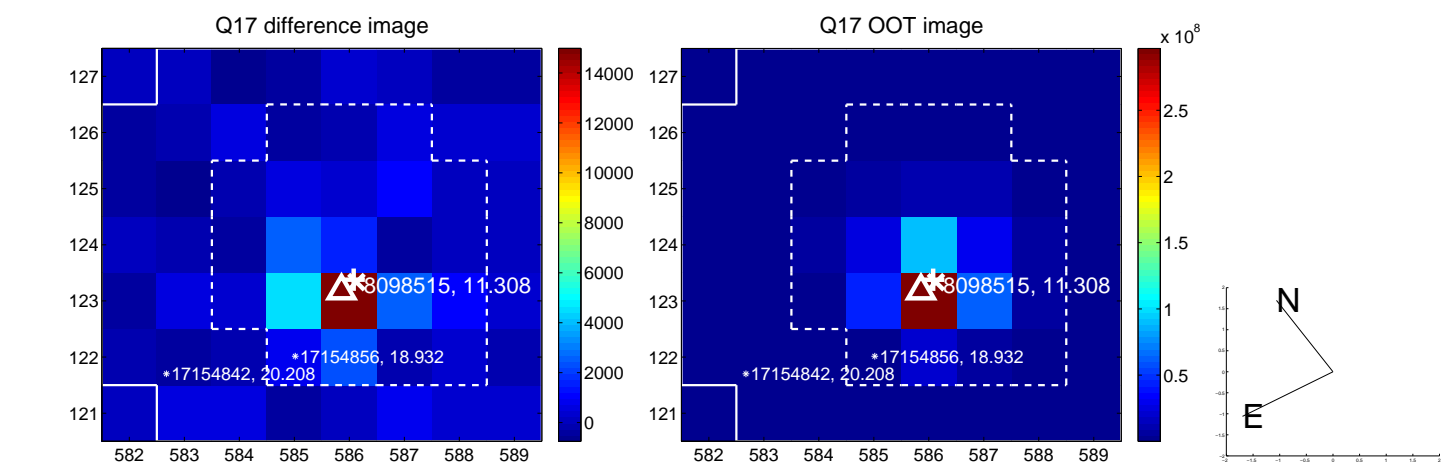
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



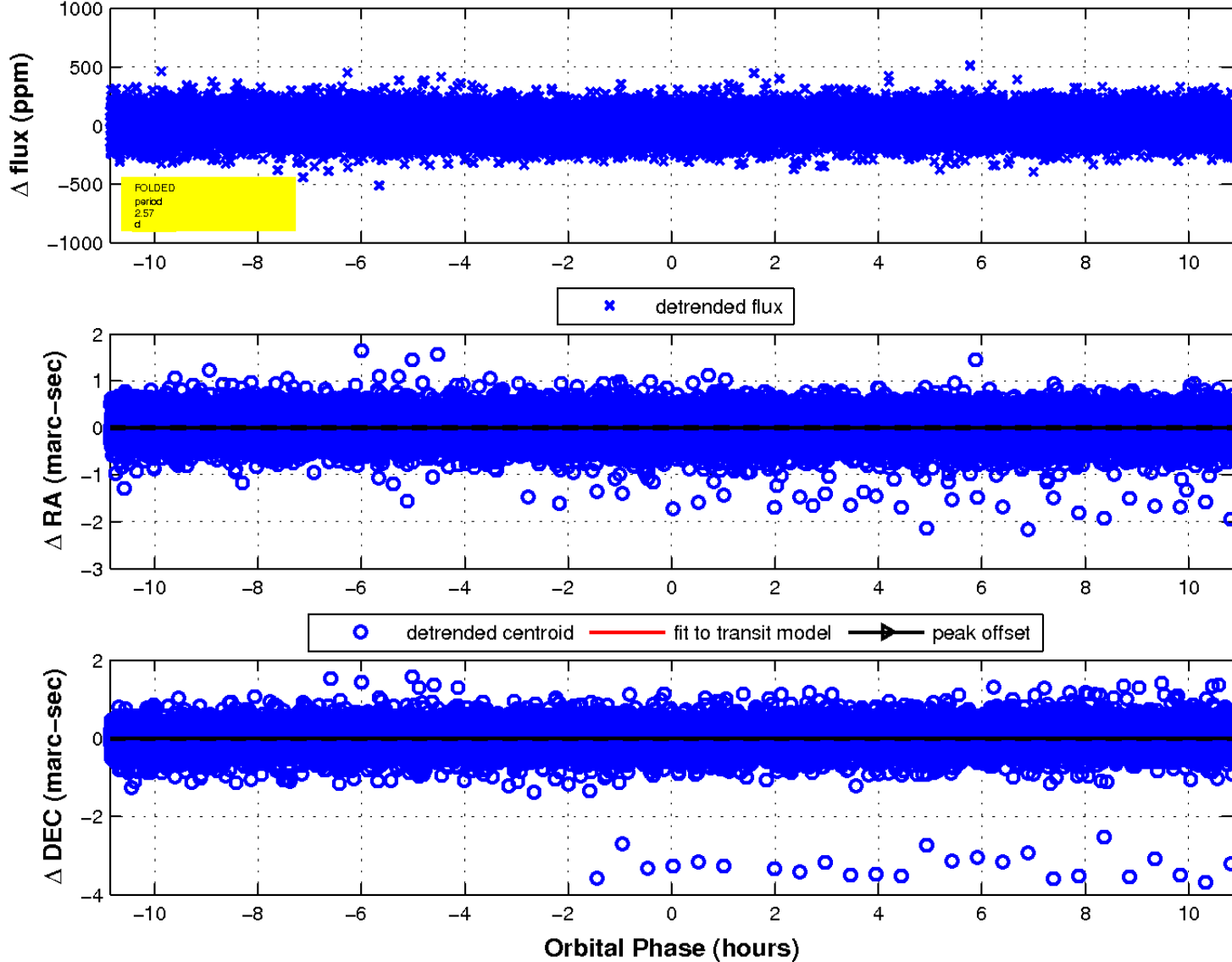
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

