

KIC 009594022

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})
009594022-01	OBS	No	6.977107	132.084708	53.1	18.255	11.8	11.3	3.41	8169	2.69	5917.88
009594022-02	OBS	No	6.977148	136.224877	43.0	19.983	9.0	9.7	3.41	8169	2.45	5917.83
009594022-03	OBS	No	1.743998	131.669691	59.4	12.191	7.2	9.9	3.41	8169	2.97	37584.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009594022-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009594022-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009594022-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV

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

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

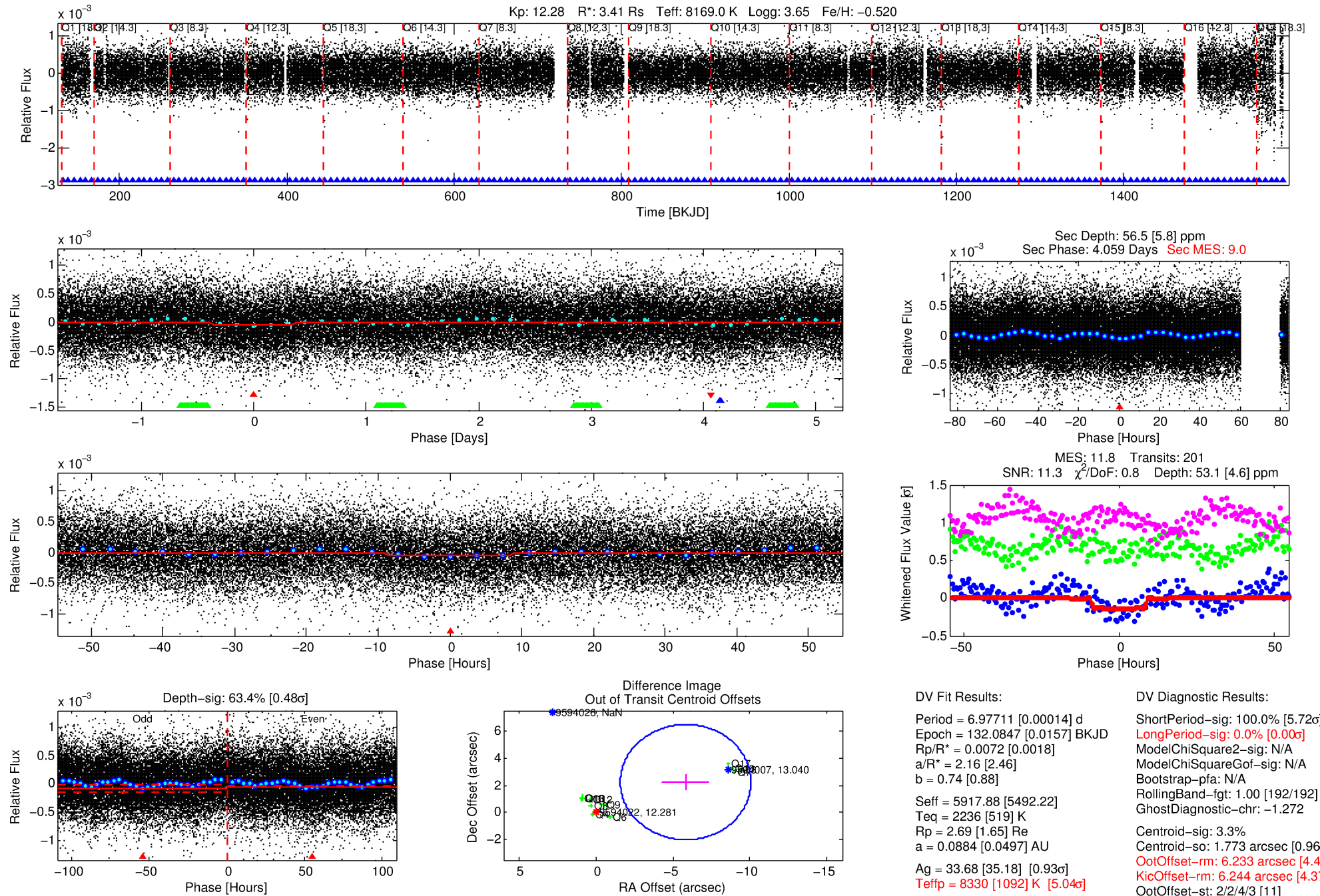
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009594022-01

No Significant Match Found

DV One-Page Summary

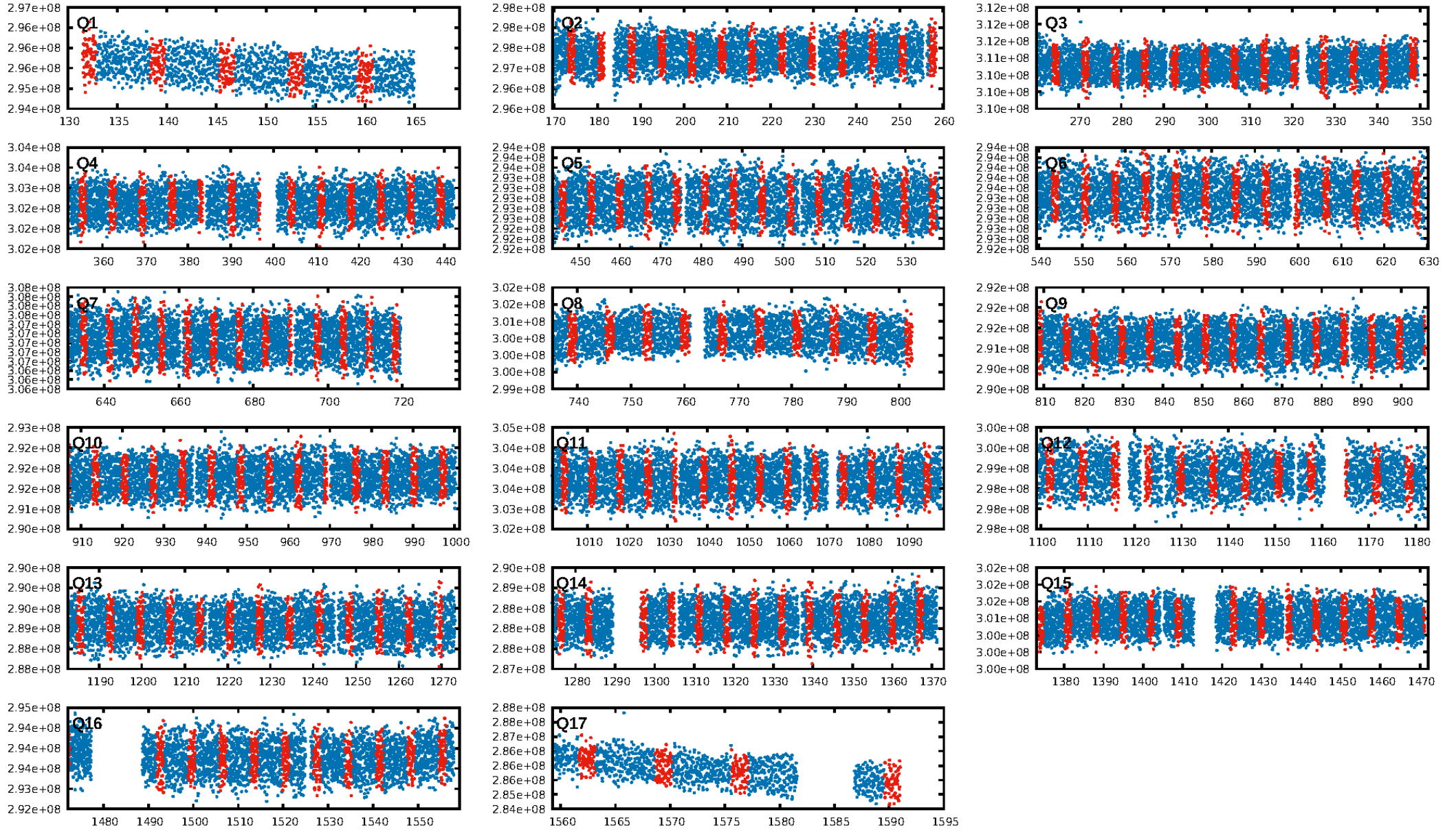
KIC: 9594022 Candidate: 1 of 3 Period: 6.977 d



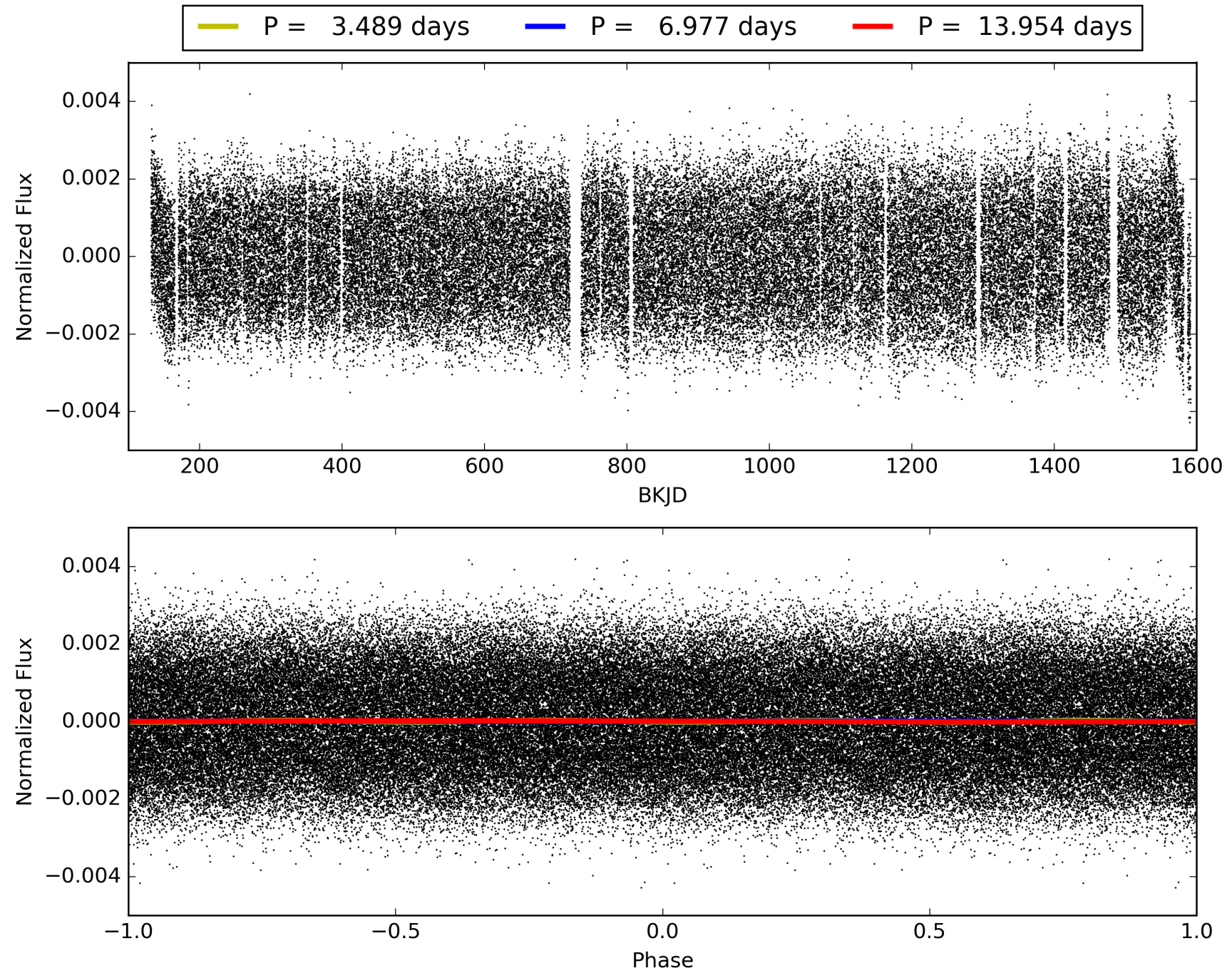
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:18:10 Z

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

TCE 009594022-01, PDC Light Curves

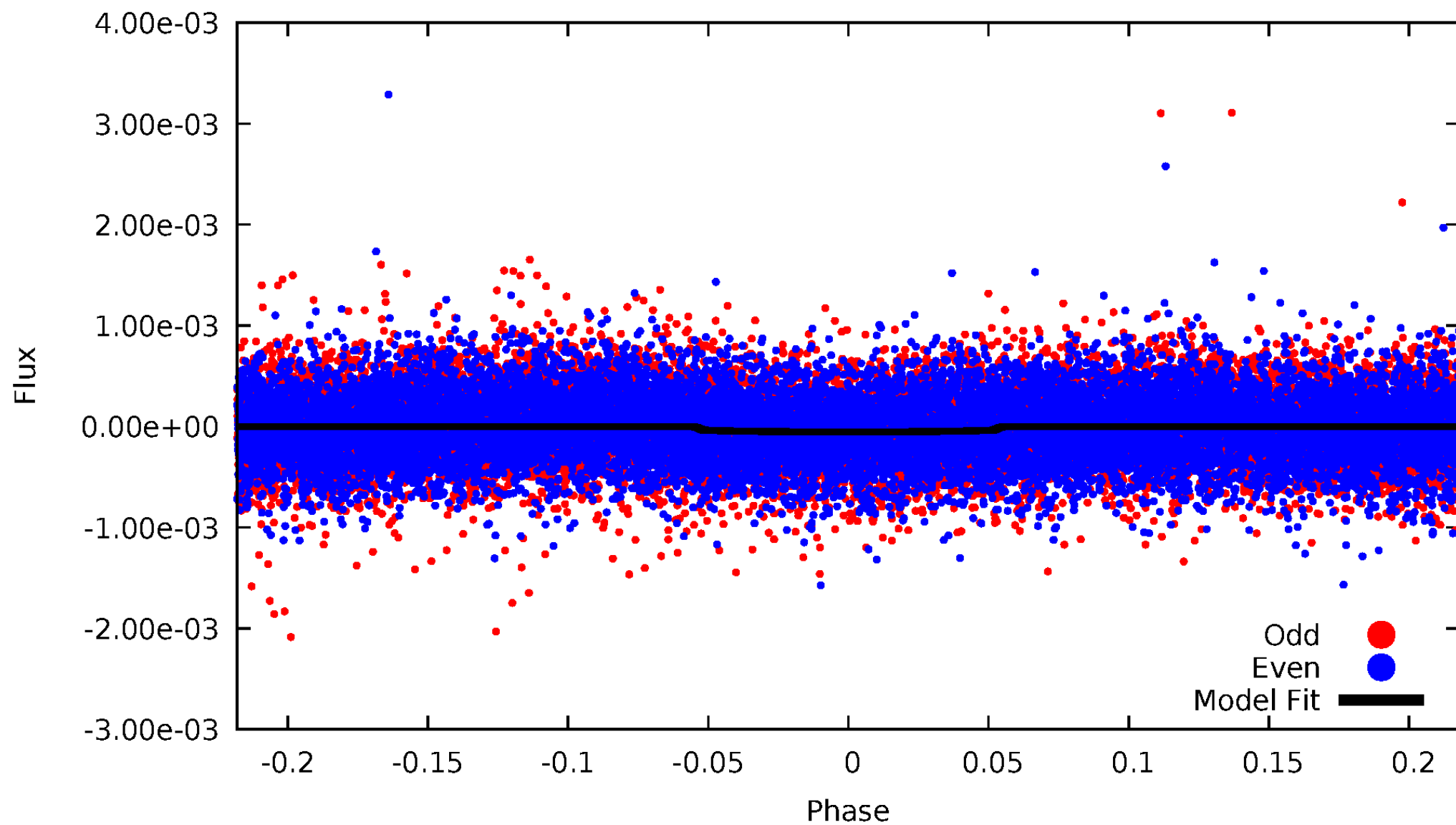


TCE 009594022-01



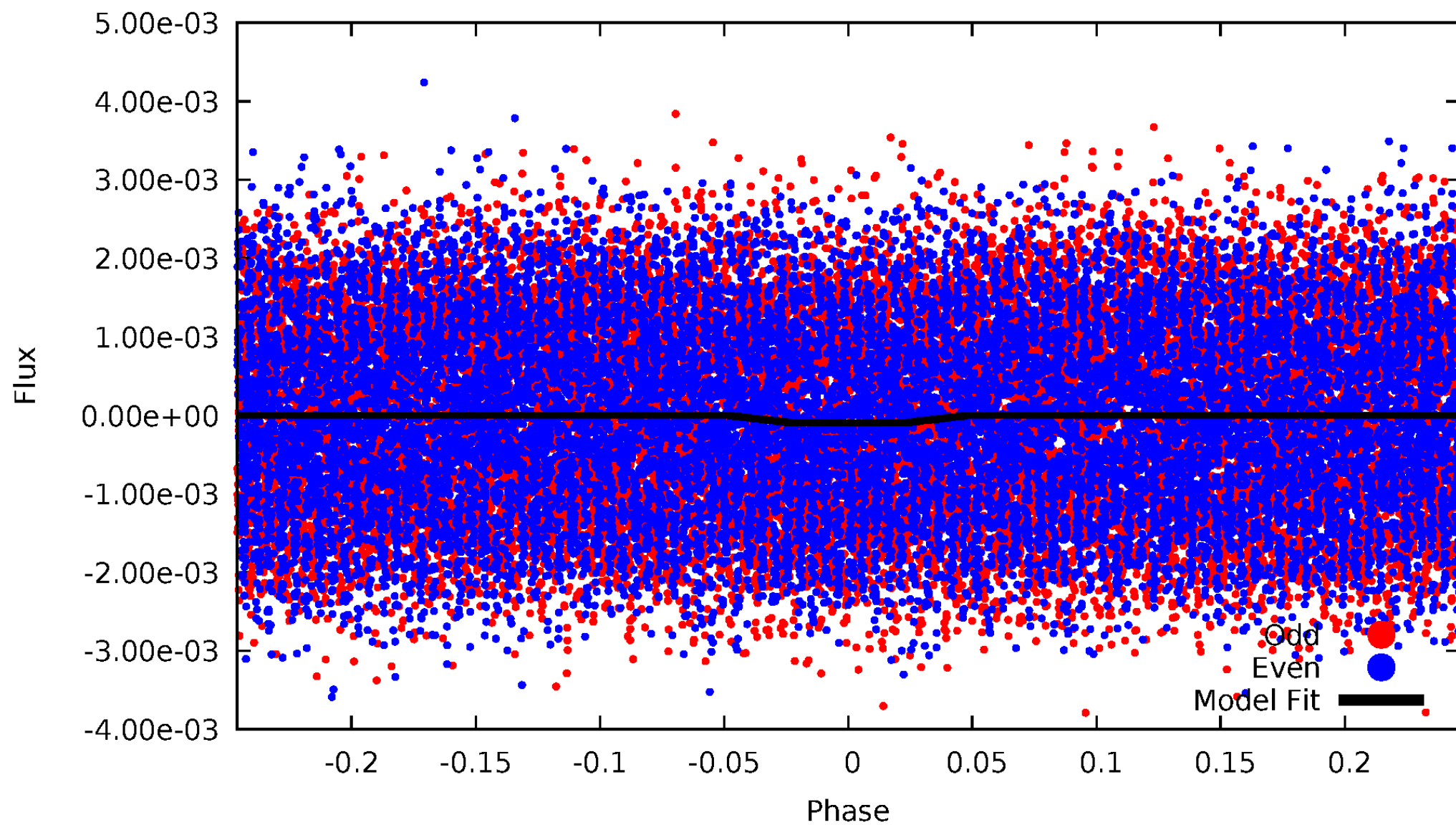
DV Odd/Even

TCE 009594022-01

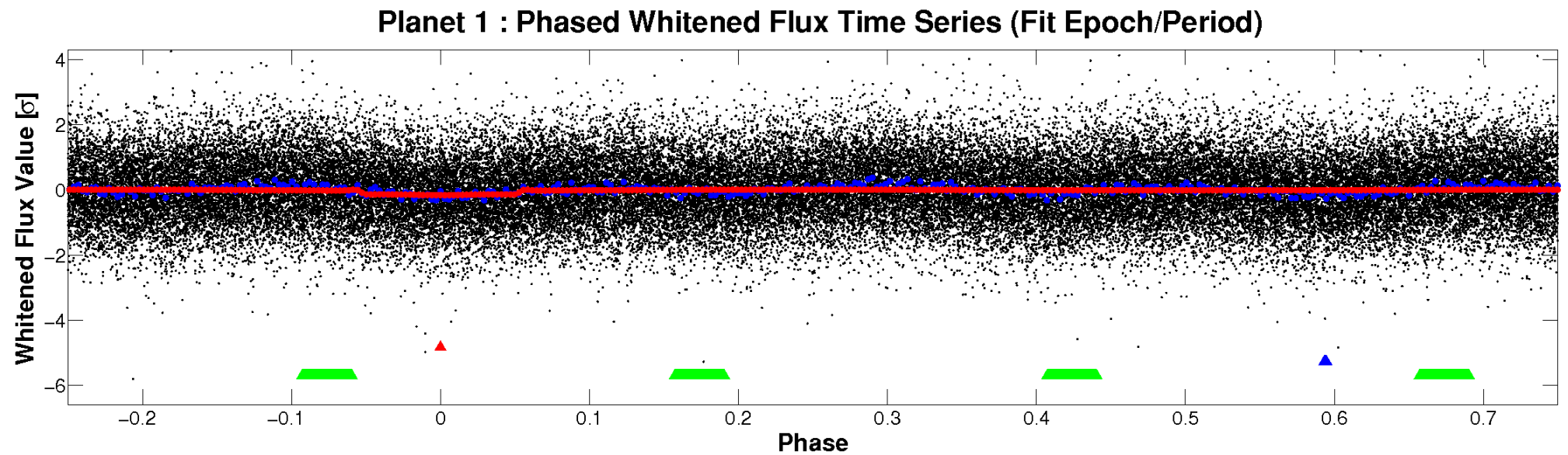
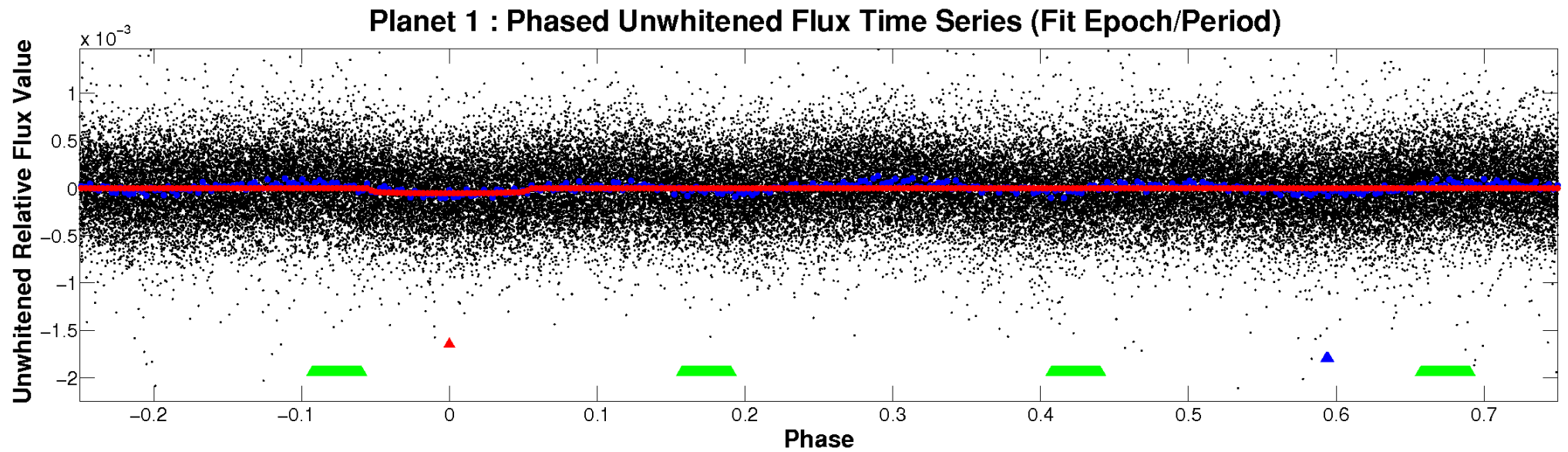


ALT Odd/Even

TCE 009594022-01

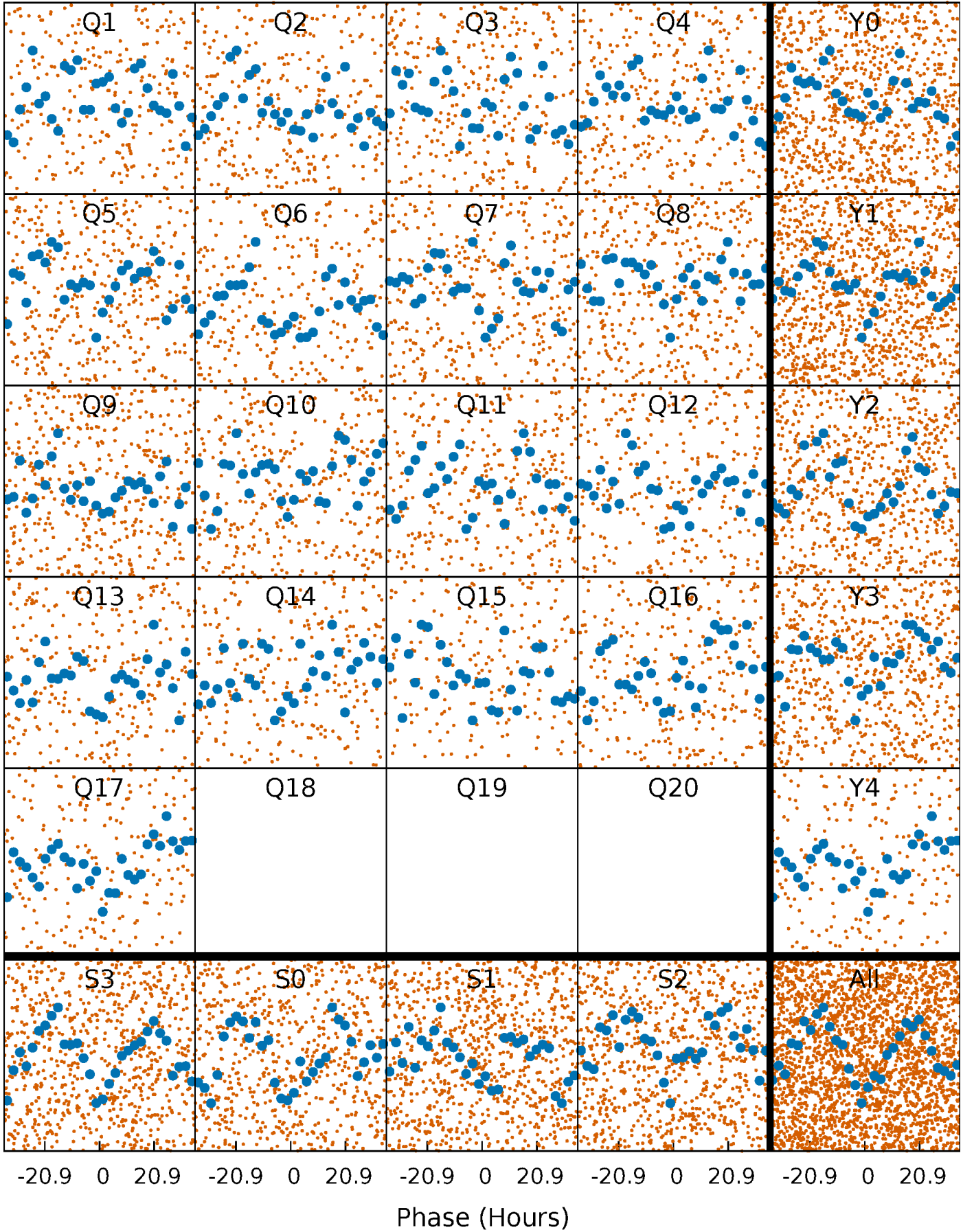


Non-Whitened Vs. Whitened Light Curve



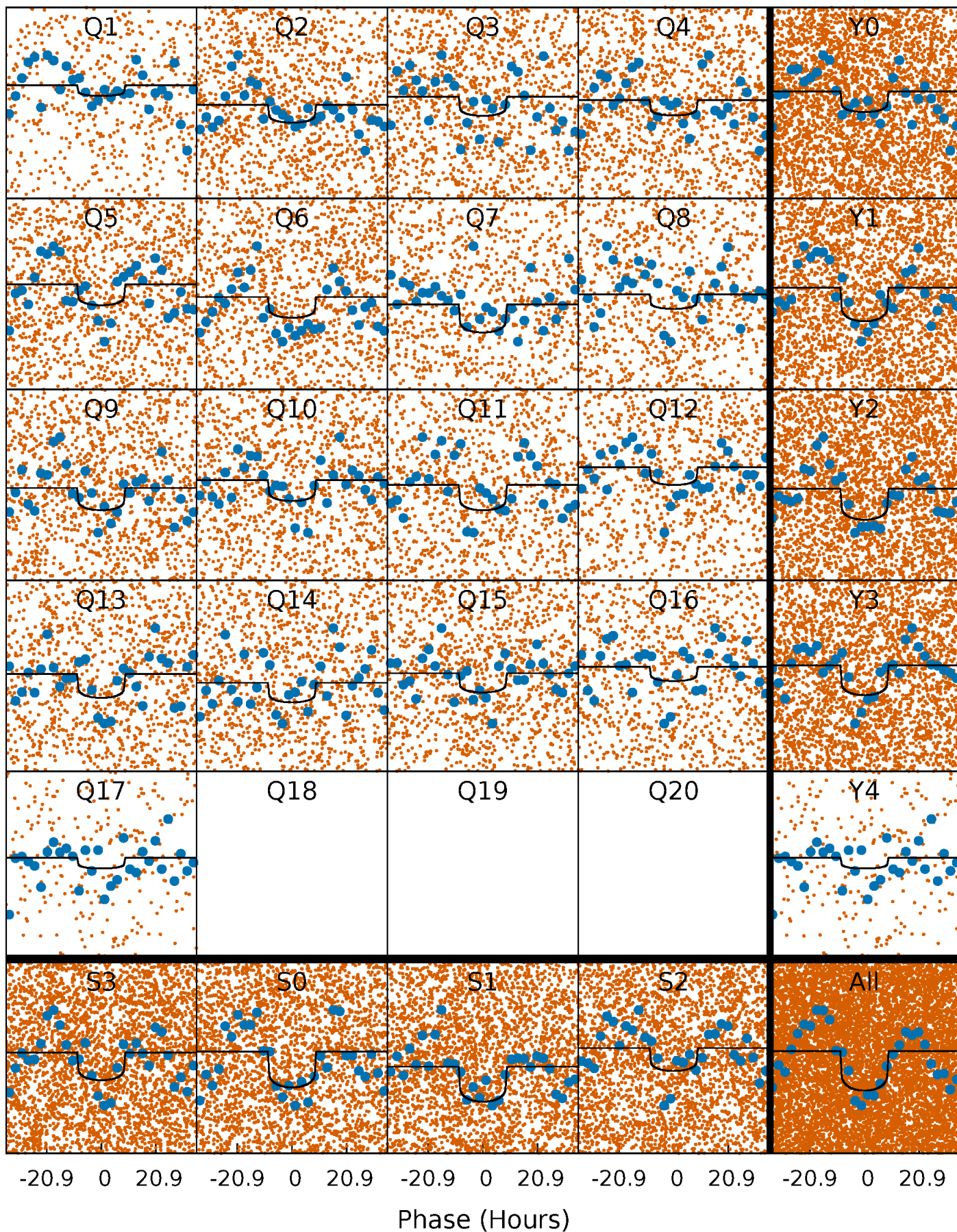
PDC Quarter-Phased Transit Curves

TCE 009594022-01 P= 6.977107 Days $T_0=132.084708$ (BKJD)



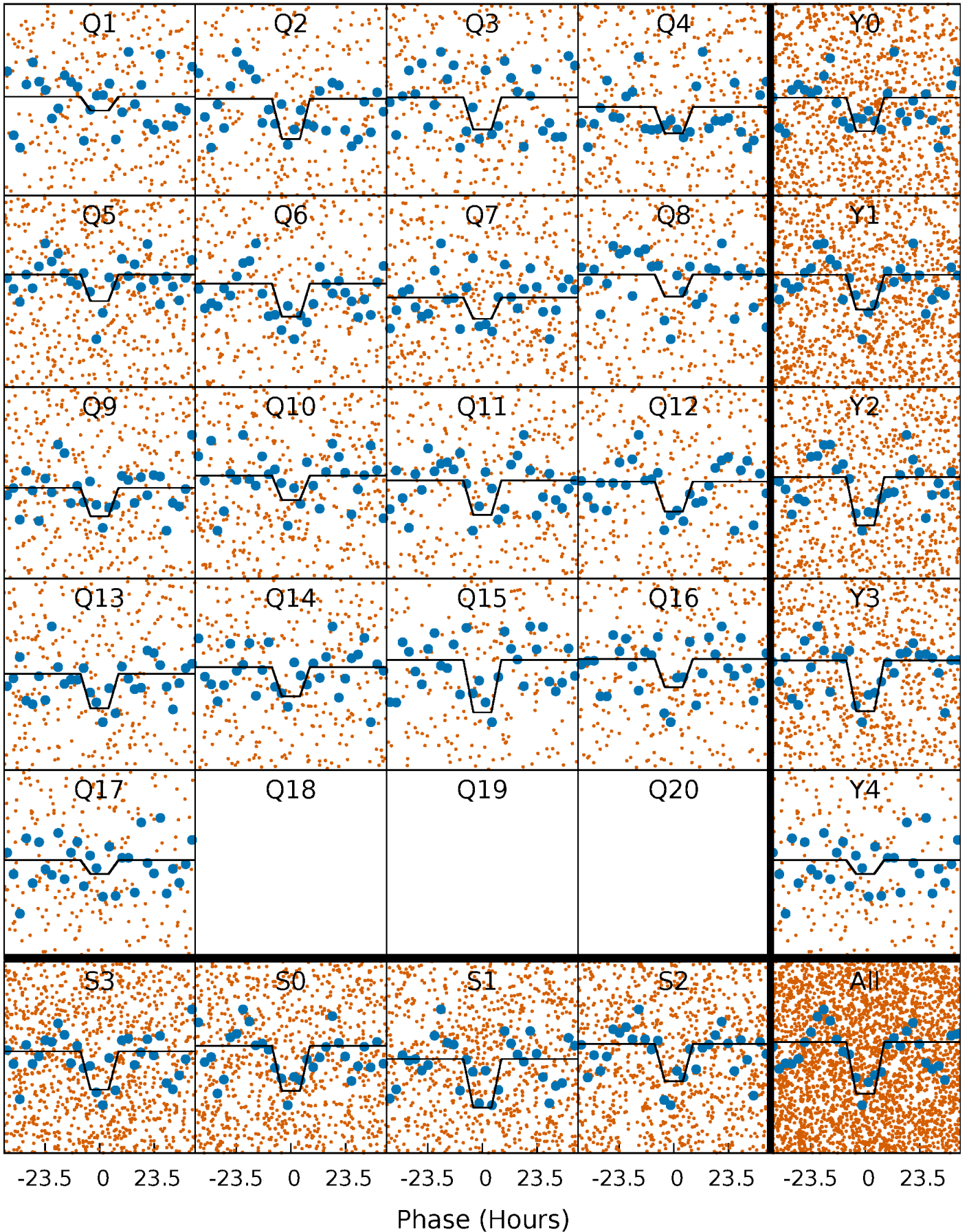
DV Quarter-Phased Transit Curves

TCE 009594022-01 P= 6.977107 Days $T_0=132.084708$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

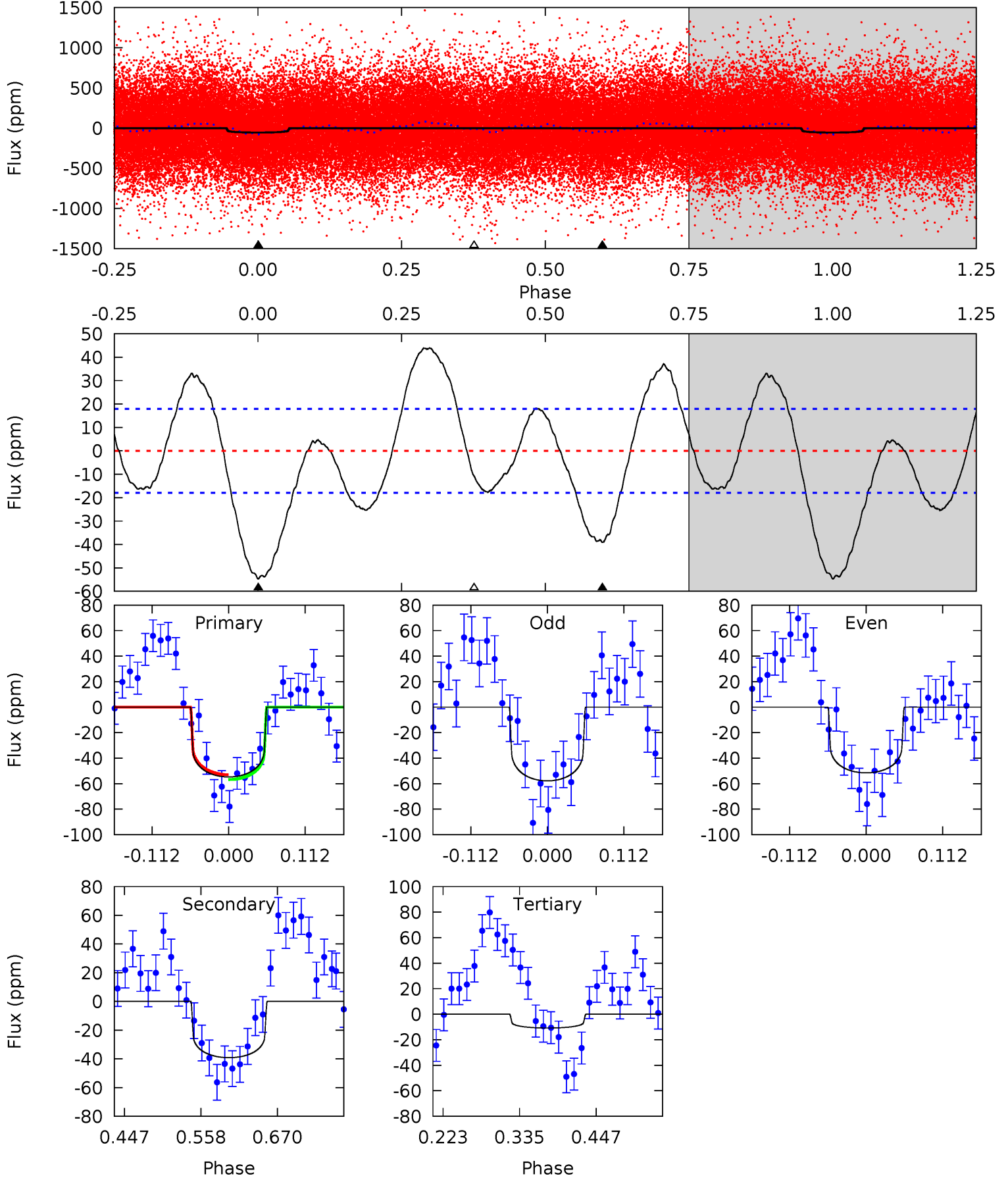
TCE 009594022-01 P= 6.976547 Days $T_0=132.143724$ (BKJD)



DV Model-Shift Uniqueness Test

009594022-01, P = 6.977107 Days, E = 125.107601 Days

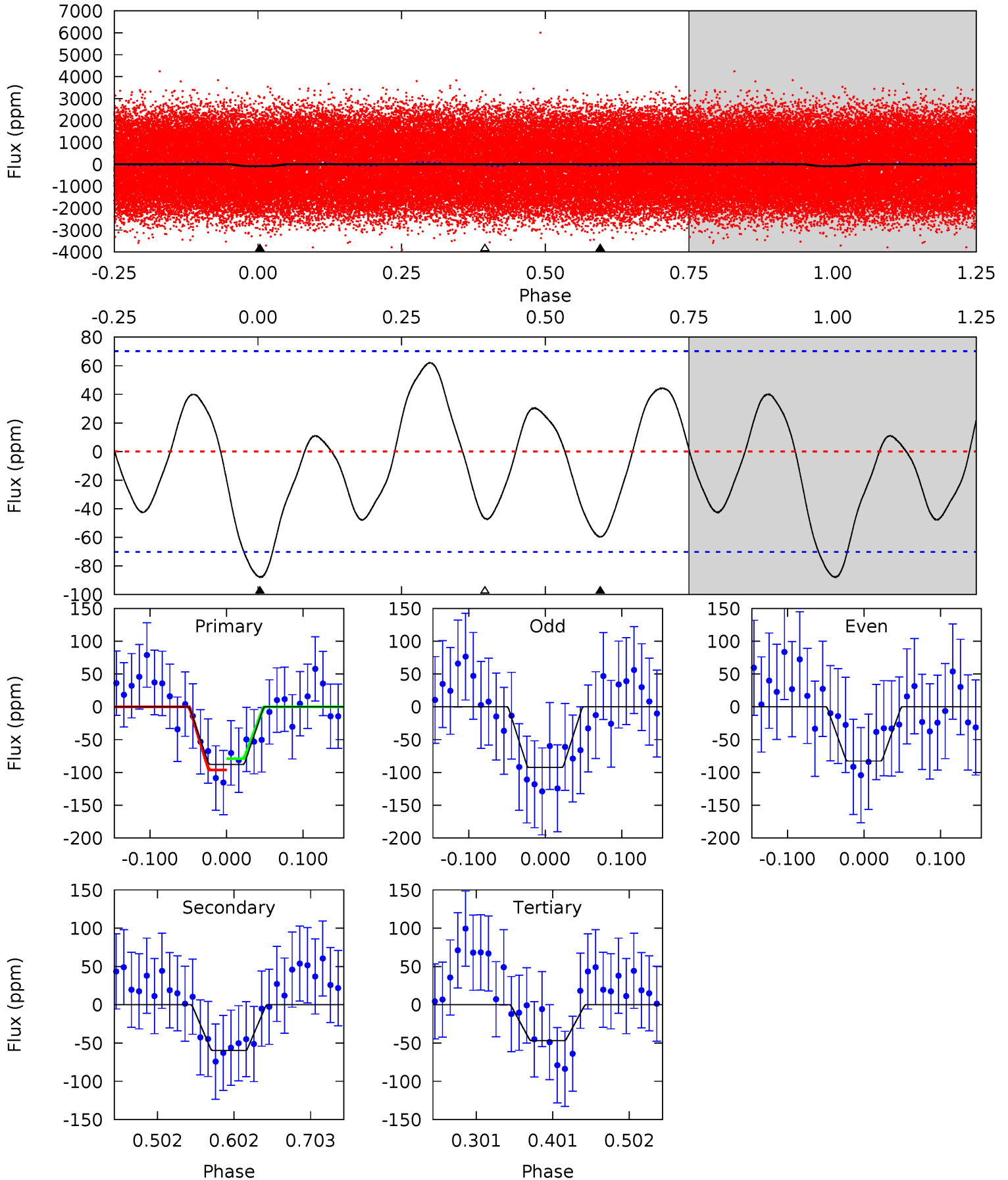
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	9.92	2.74	0	4.54	1.59	5.19	11.1	13.9	7.19	9.92	0.80	0.99	0.45	0.48



Alt Model-Shift Uniqueness Test

009594022-01, P = 6.976547 Days, E = 125.167177 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.70	3.88	3.05	0	4.56	1.64	2.13	2.66	5.70	0.83	3.88	0.32	0.34	0.41	0.57



Stellar Parameters For KIC 009594022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8169^{+251}_{-306}	$3.651^{+0.544}_{-0.096}$	$-0.520^{+0.200}_{-0.300}$	$3.406^{+0.452}_{-1.922}$	$1.894^{+0.056}_{-0.501}$	$0.068^{+0.489}_{-0.020}$
	+3%/-4%	+15%/-3%	+38%/-58%	+13%/-56%	+3%/-26%	+725%/-29%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009594022-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-39 ± 4	$2.30^{+0.91}_{-0.74}$	3020^{+232}_{-441}	7472^{+1569}_{-974}	30^{+38}_{-14}
Alt.	-60 ± 15	$3.27^{+0.96}_{-1.05}$	3039^{+200}_{-418}	6979^{+1115}_{-722}	23^{+25}_{-10}

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 $A_{obs} \gg 1.0$

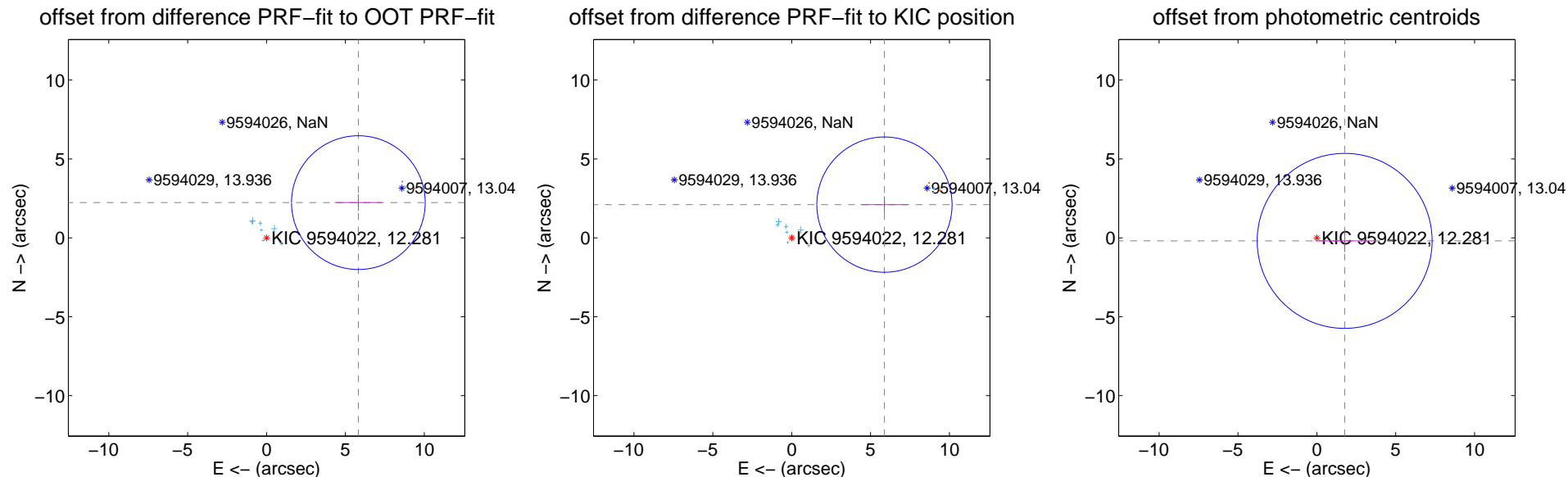
DV Centroid Data

Supplemental centroid analysis for 009594022-01. Kepler magnitude: 12.28. Transit SNR 11.35

There are 9 quarters with good PRF difference image offsets

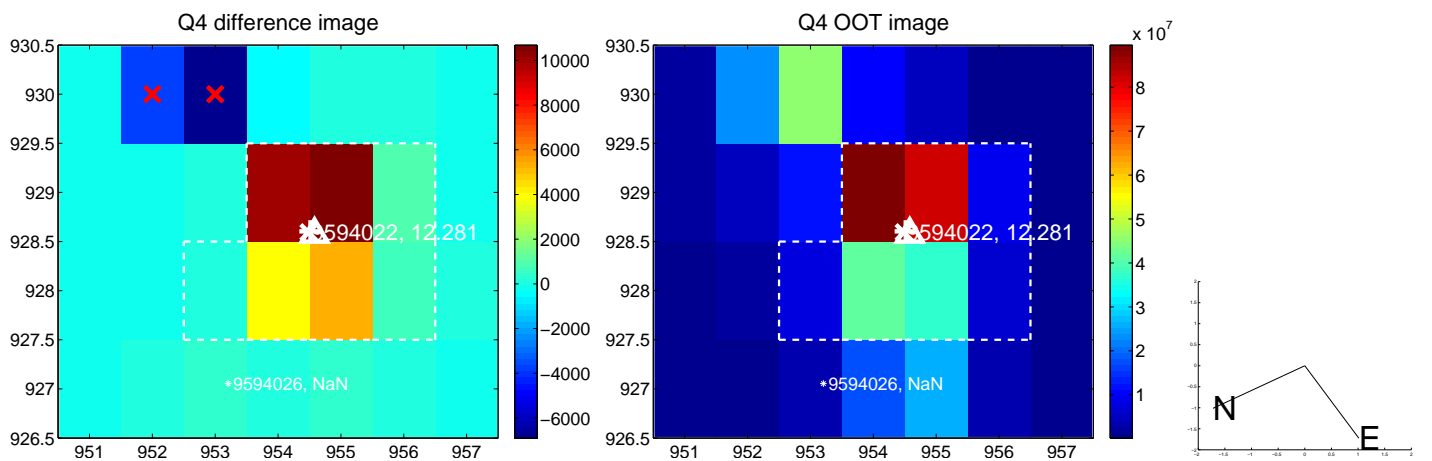
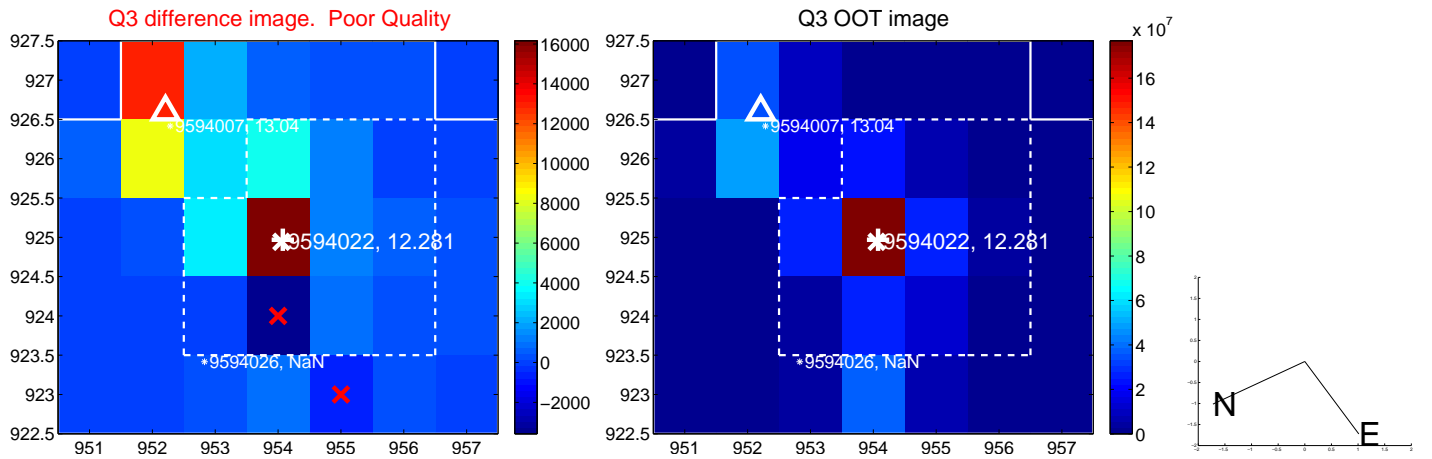
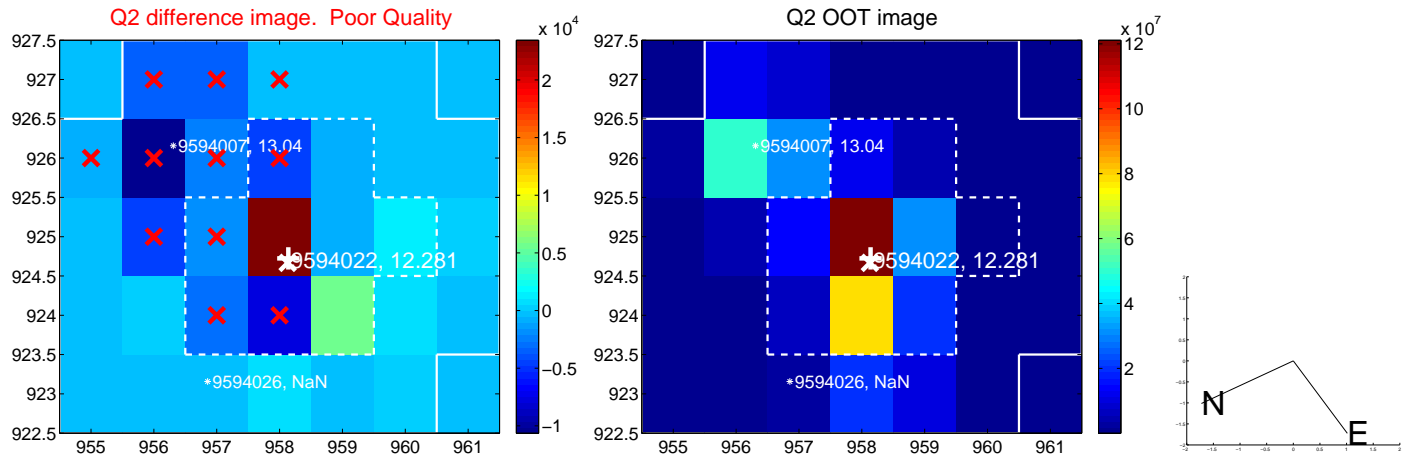
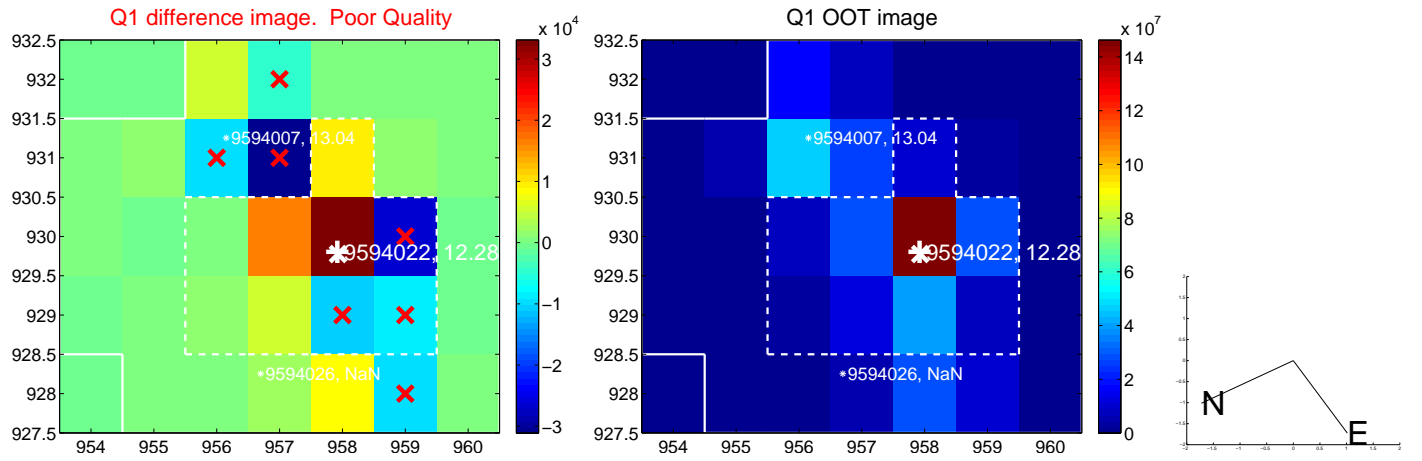
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.233 ± 1.413	4.41	-5.820 ± 1.499	2.231 ± 0.528
PRF-fit source offset from KIC position	6.244 ± 1.429	4.37	-5.879 ± 1.505	2.103 ± 0.530
photometric centroid source offset	1.77 ± 1.85	0.96	-1.76 ± 1.86	-0.19 ± 0.71

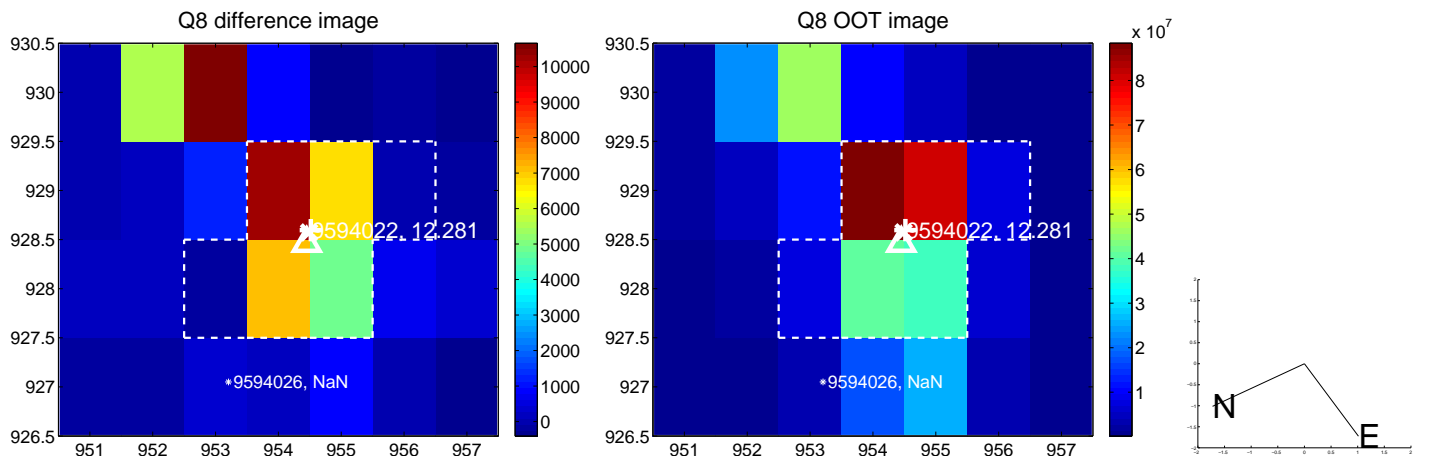
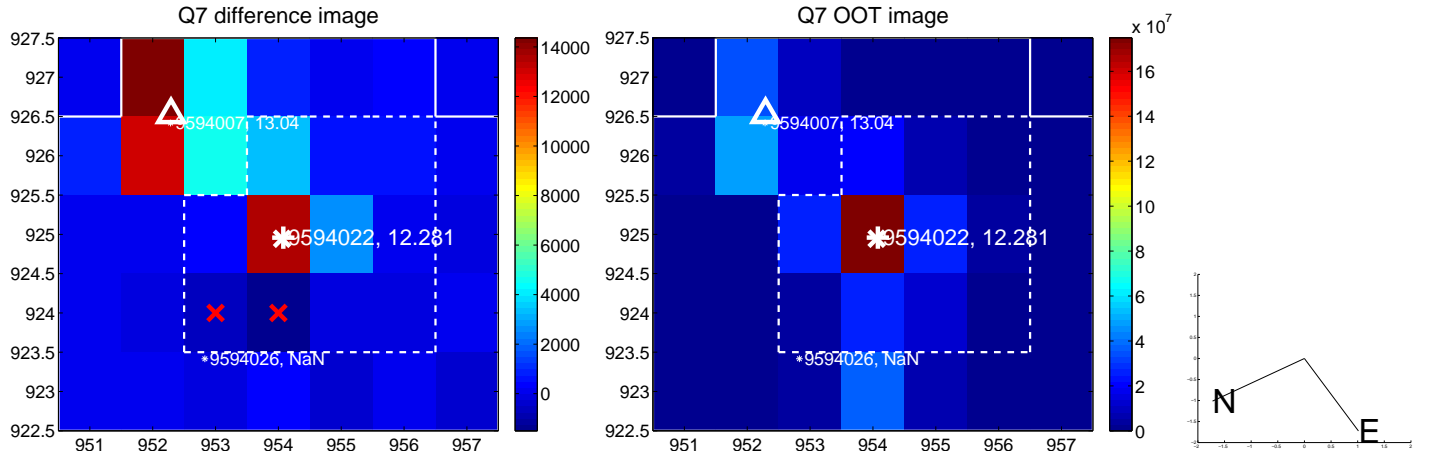
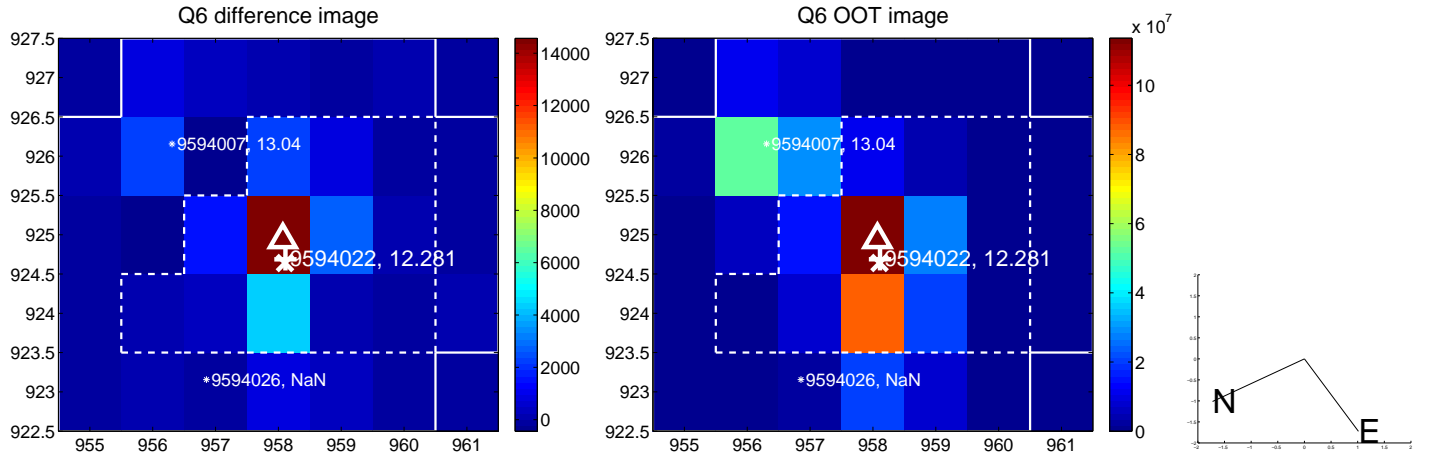
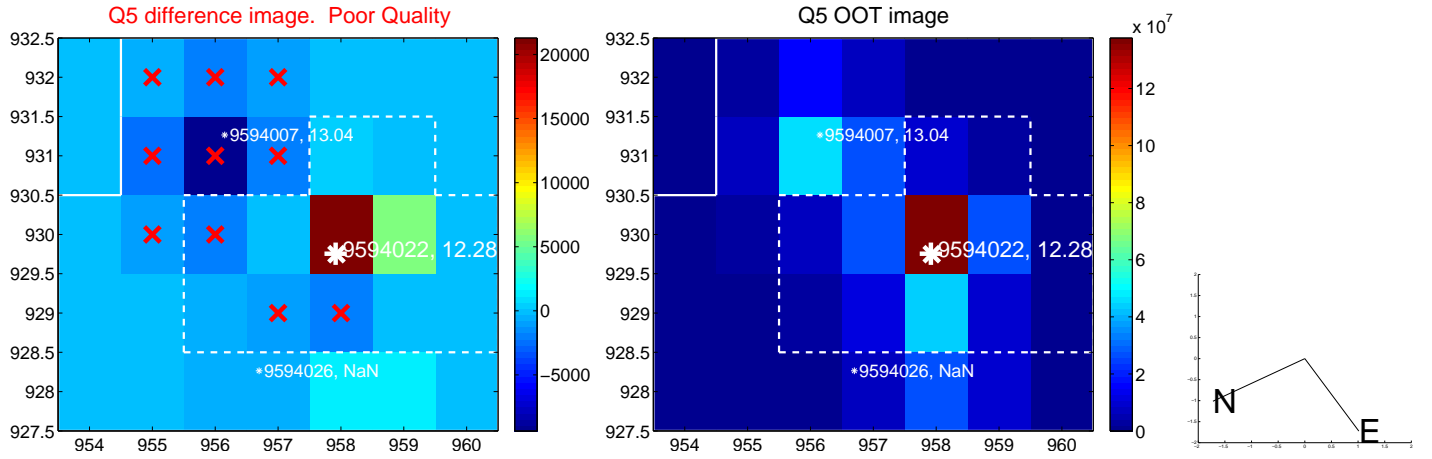


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

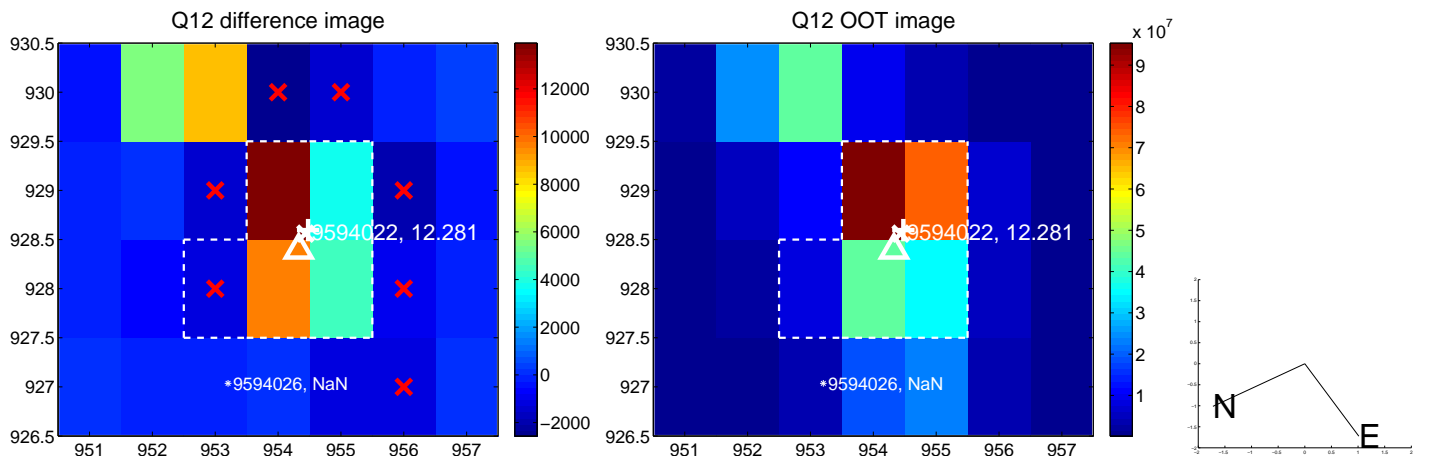
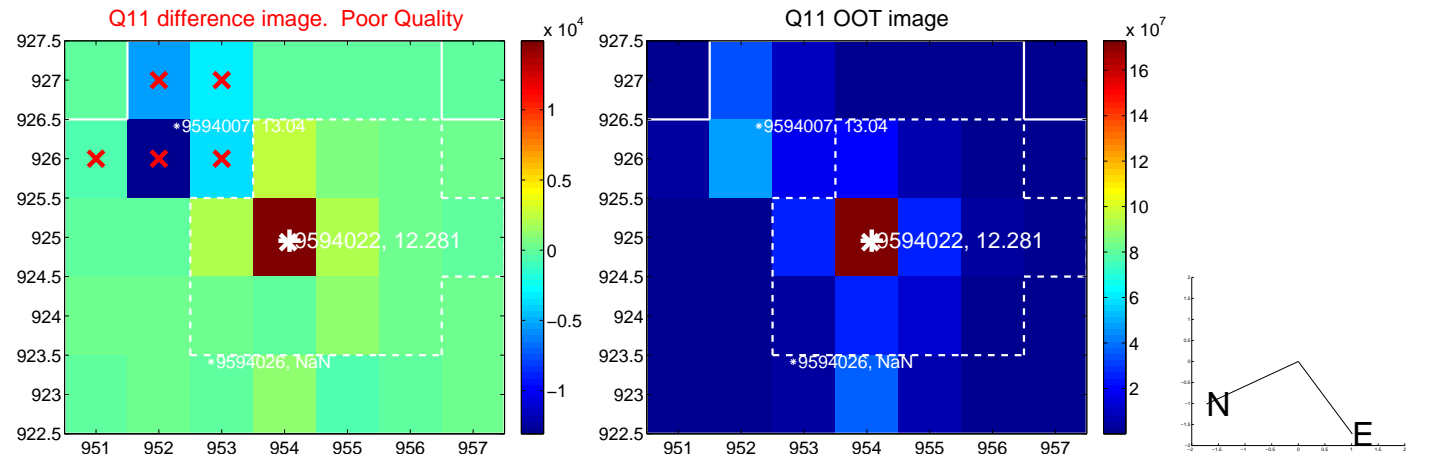
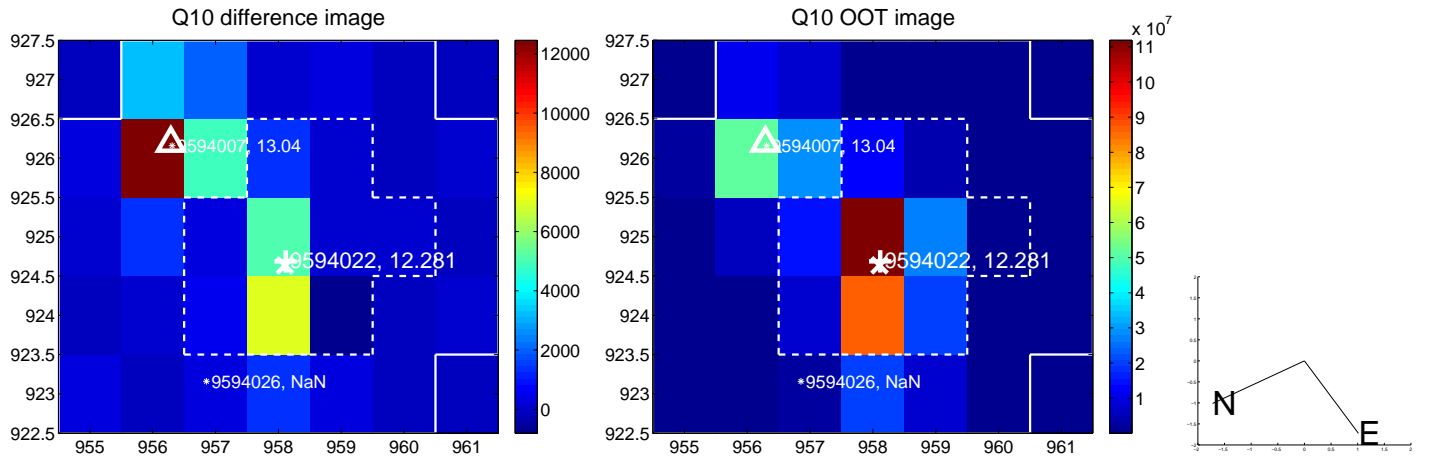
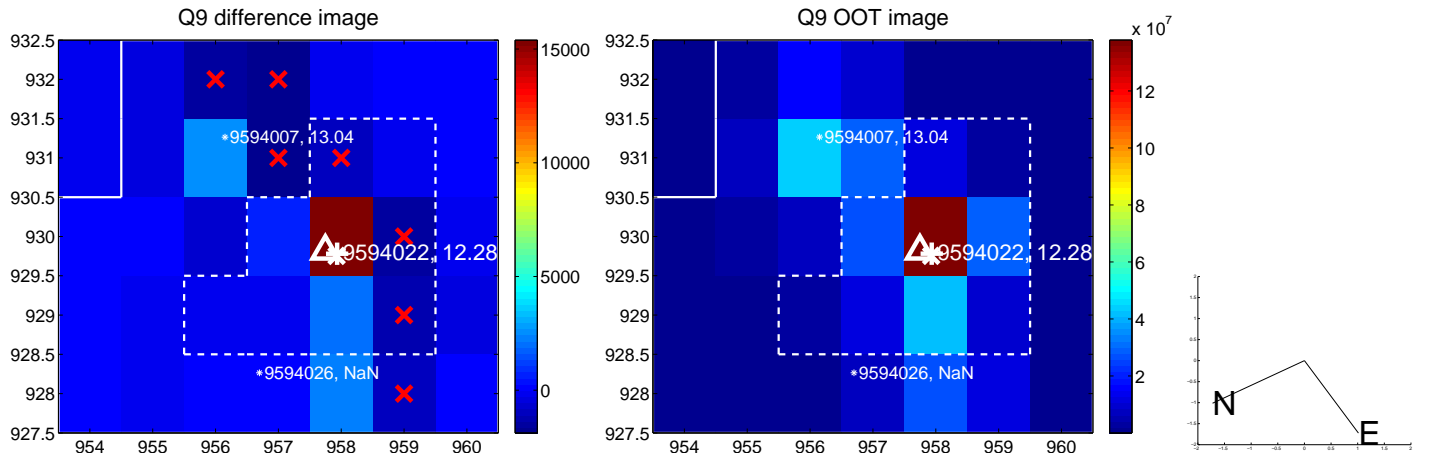
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



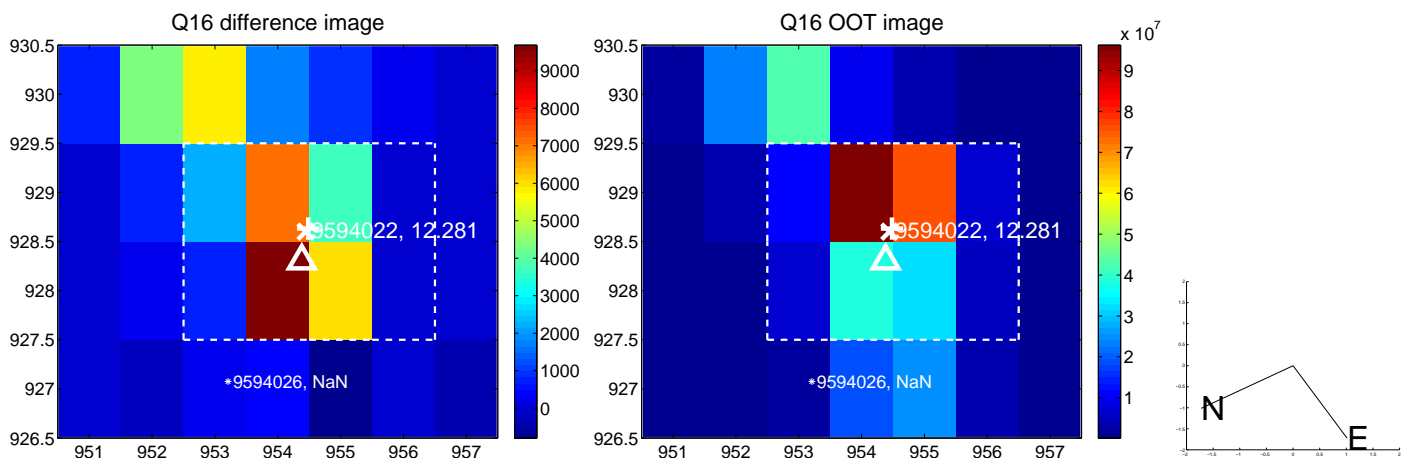
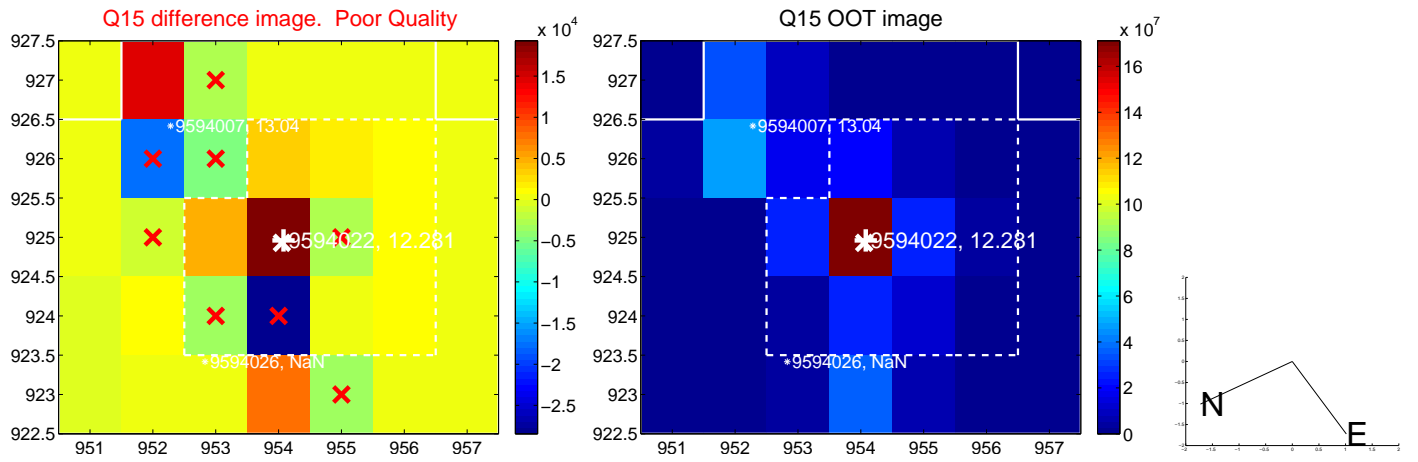
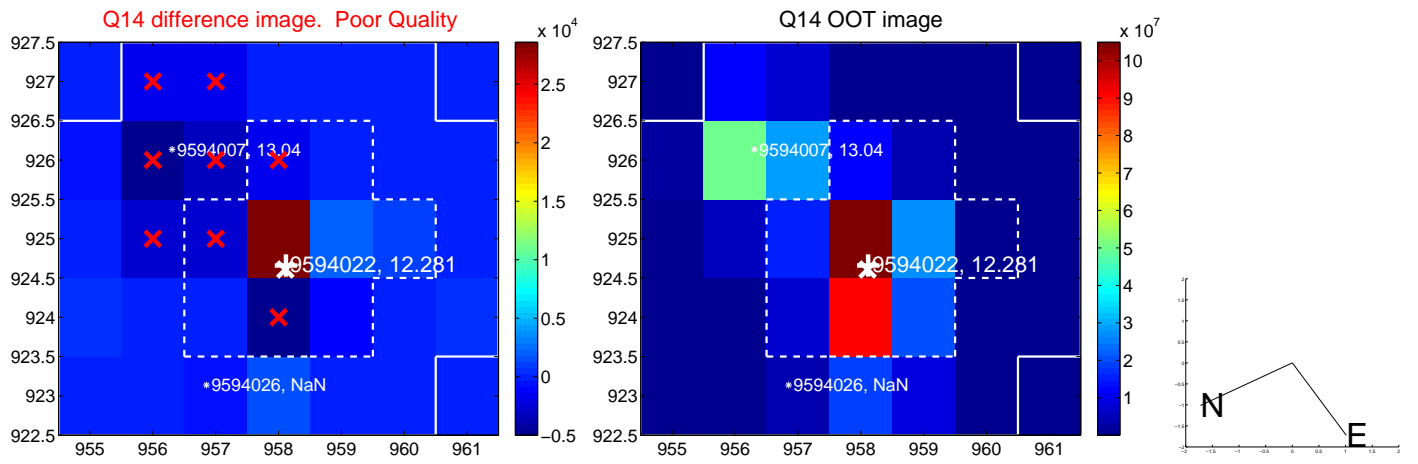
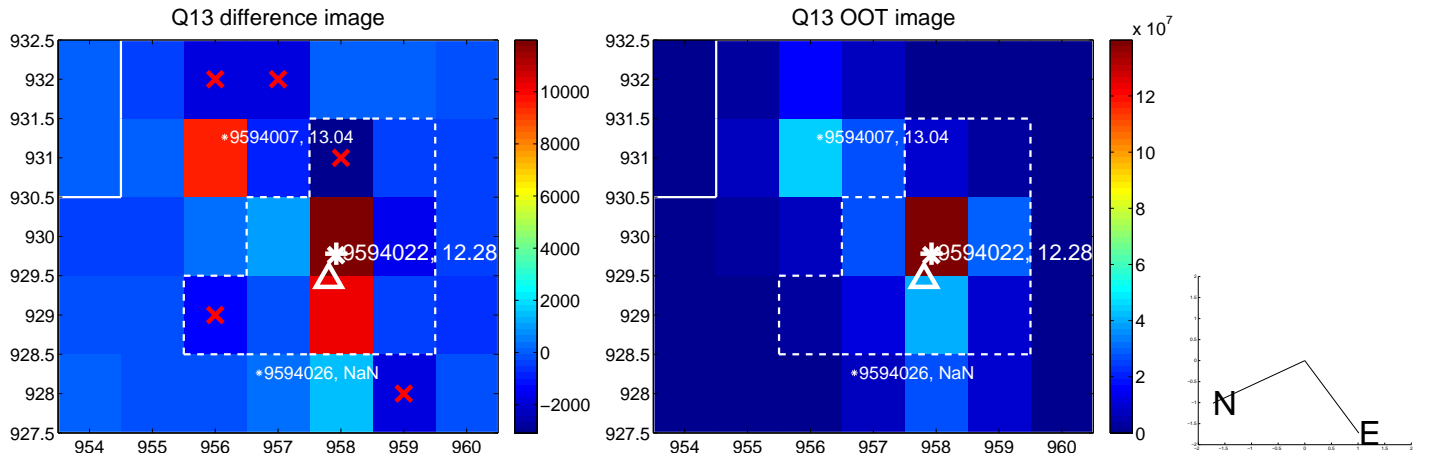
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



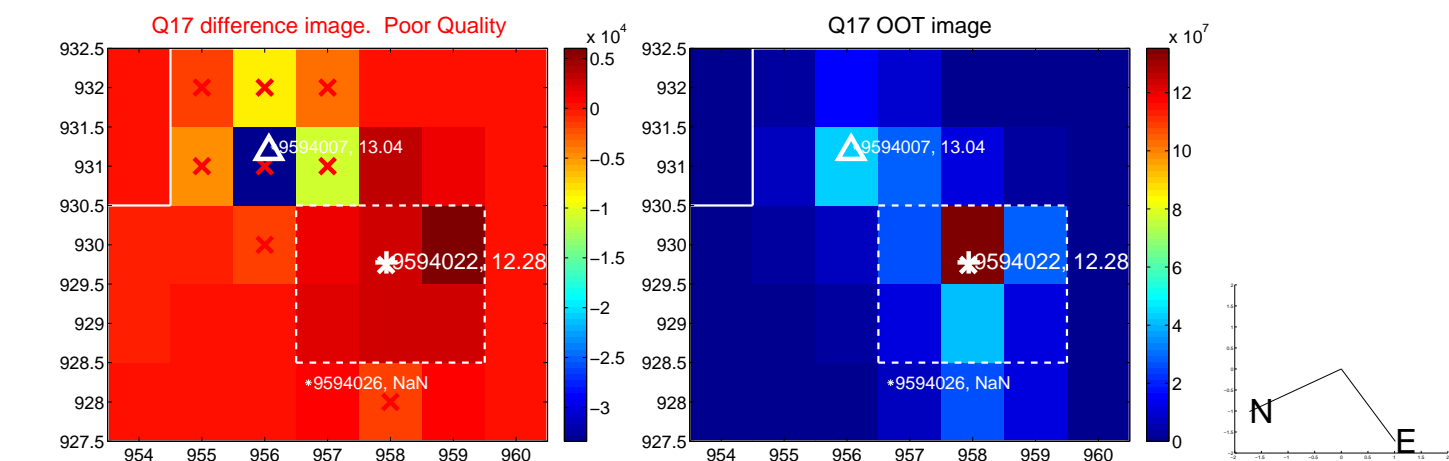
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



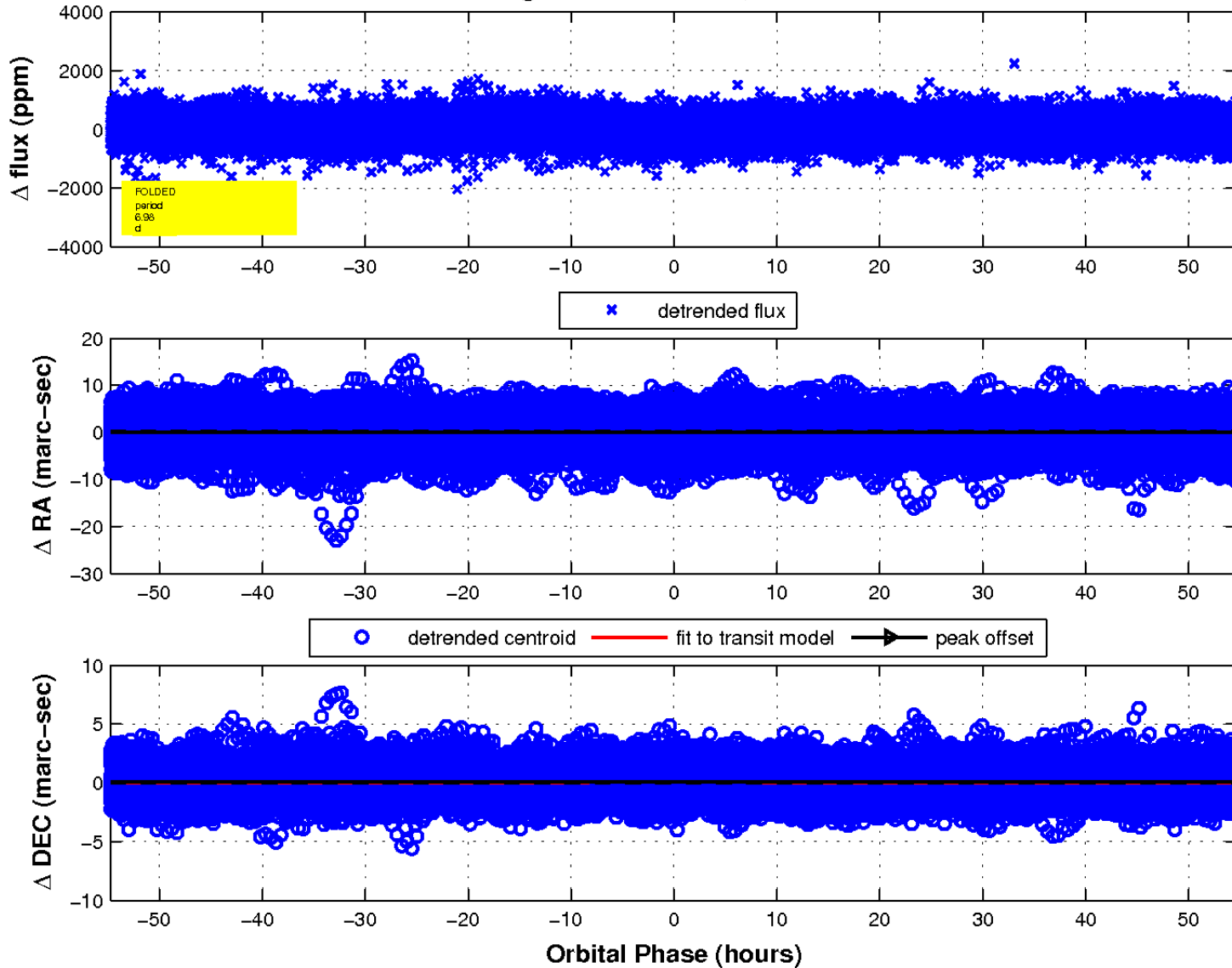
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

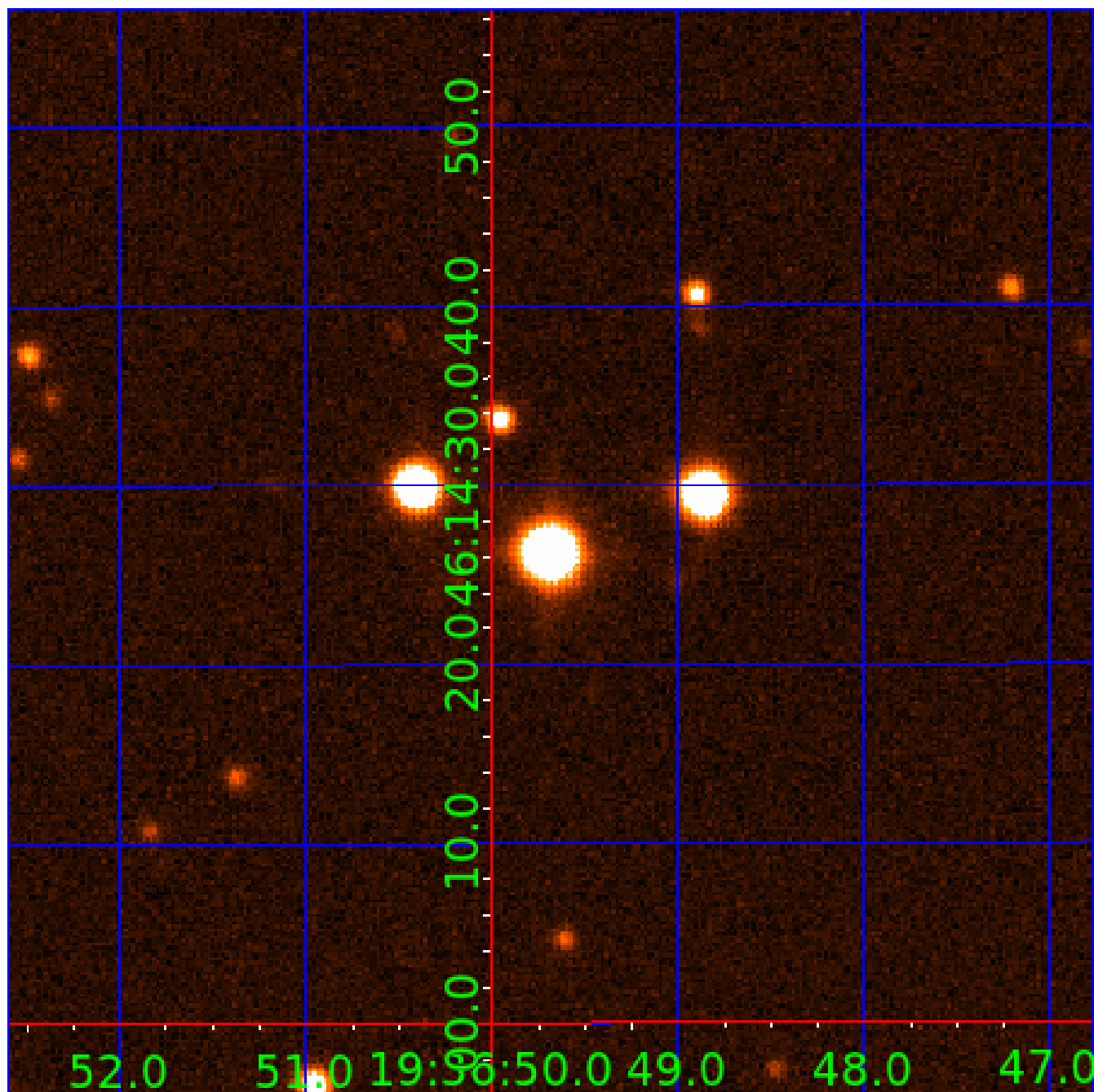


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 009594022

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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009594022-02	OBS	No	6.977148	136.224877	43.0	19.983	9.0	9.7	3.41	8169	2.45	5917.83
009594022-03	OBS	No	1.743998	131.669691	59.4	12.191	7.2	9.9	3.41	8169	2.97	37584.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009594022-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009594022-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009594022-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV

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

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

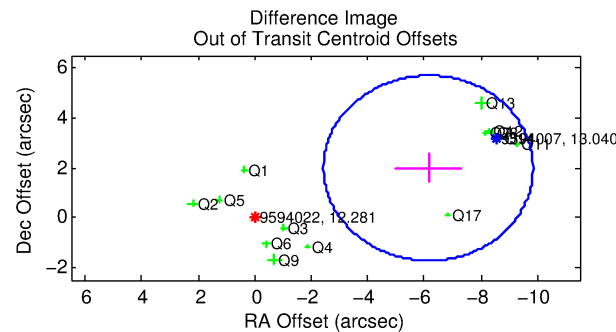
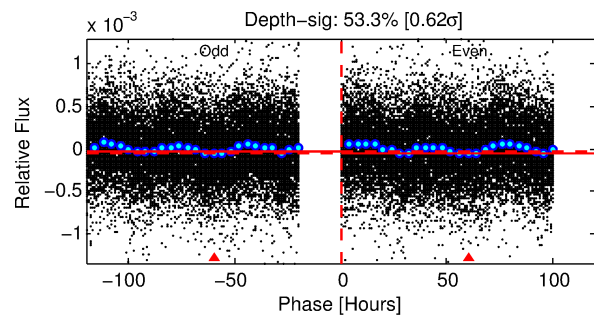
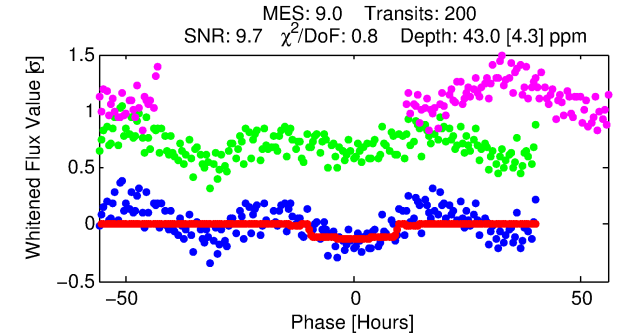
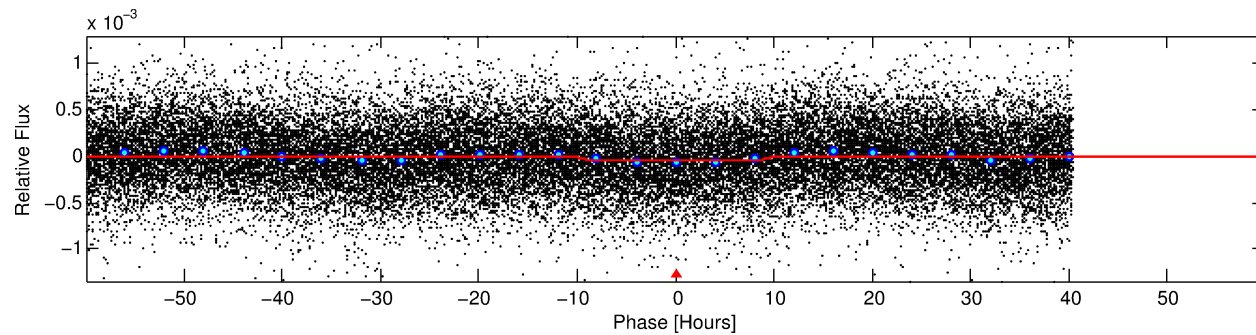
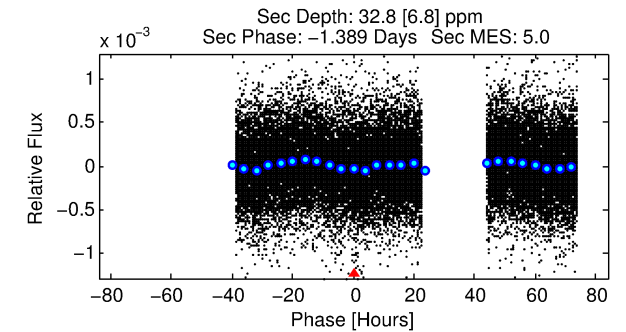
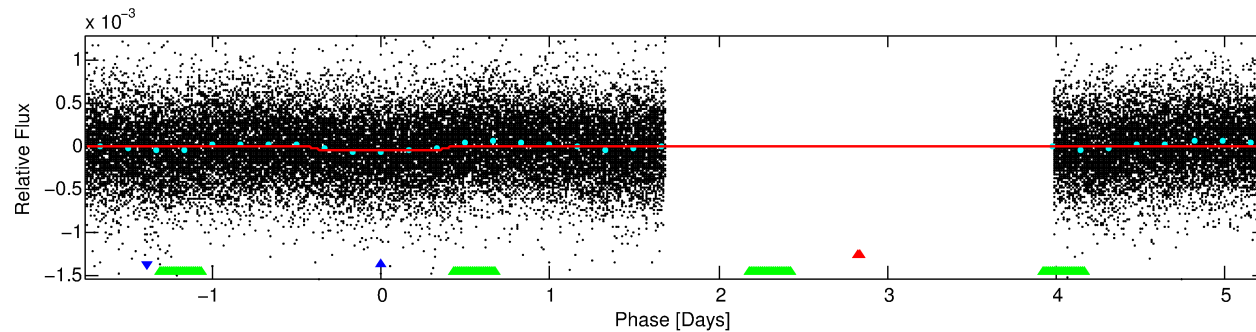
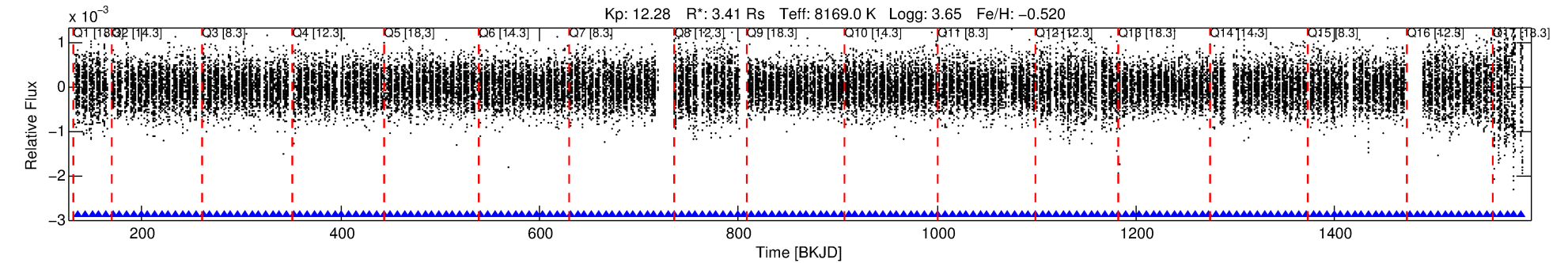
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009594022-02

No Significant Match Found

DV One-Page Summary

KIC: 9594022 Candidate: 2 of 3 Period: 6.977 d



DV Fit Results:

Period = 6.97715 [0.00019] d
Epoch = 136.2249 [0.0206] BKJD
Rp/R* = 0.0066 [0.0016]
a/R* = 1.91 [1.99]
b = 0.78 [0.73]
Seff = 5917.83 [5492.18]
Teff = 2236 [519] K
Rp = 2.45 [1.50] Re
a = 0.0884 [0.0497] AU
Ag = 23.59 [24.96] [0.90σ]
Teffp = 7621 [1049] K [4.60σ]

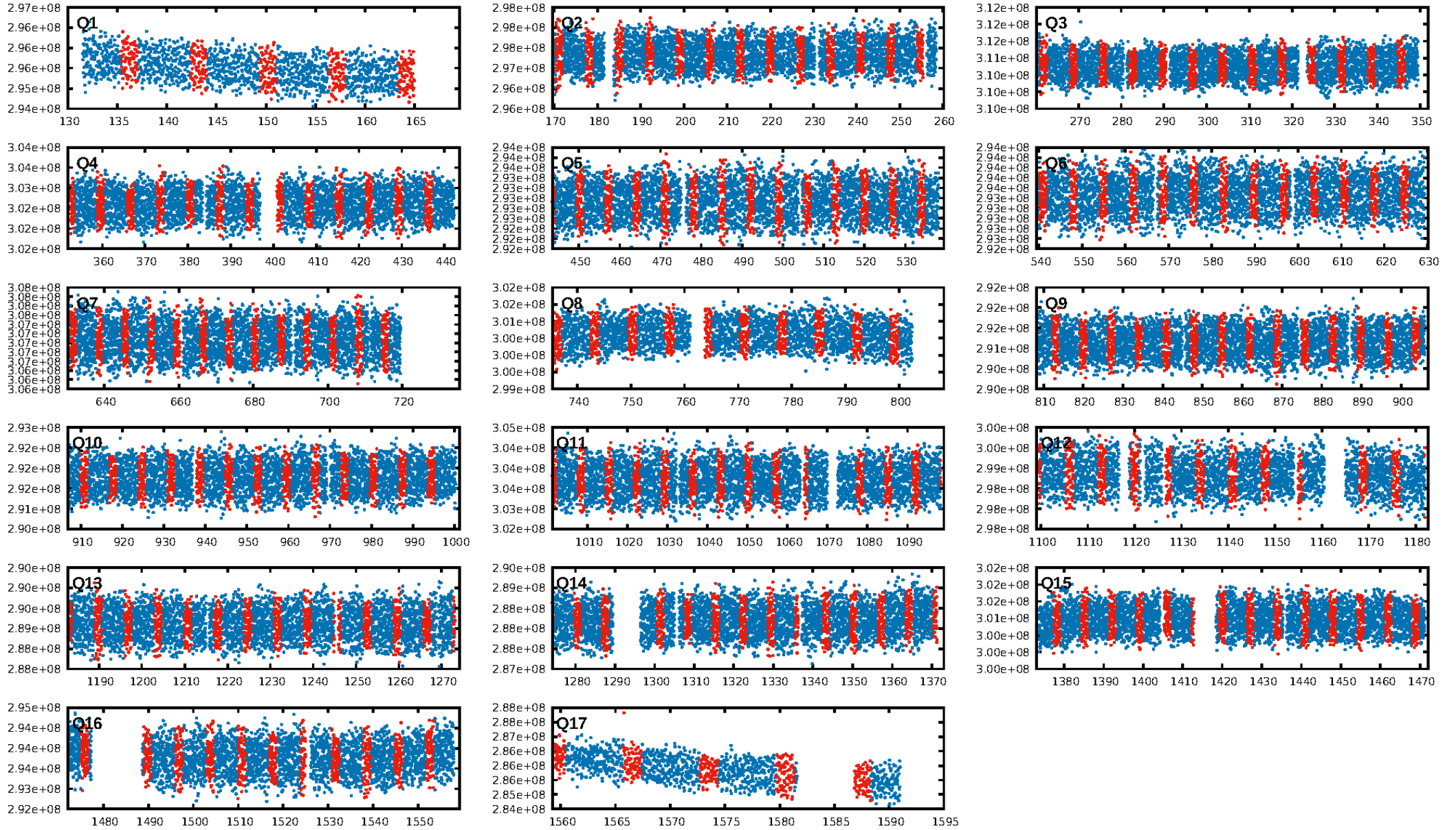
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [190/190]
GhostDiagnostic-chr: -1.917
Centroid-sig: 0.0%
Centroid-so: 6.528 arcsec [2.99σ]
OotOffset-rm: 6.452 arcsec [5.22σ]
KicOffset-rm: 6.487 arcsec [5.31σ]
OotOffset-st: 3/3/3/5 [14]
KicOffset-st: 3/3/3/5 [14]
DiffImageQuality-fgm: 0.71 [10/14]
DiffImageOverlap-fno: 0.00 [0/17]

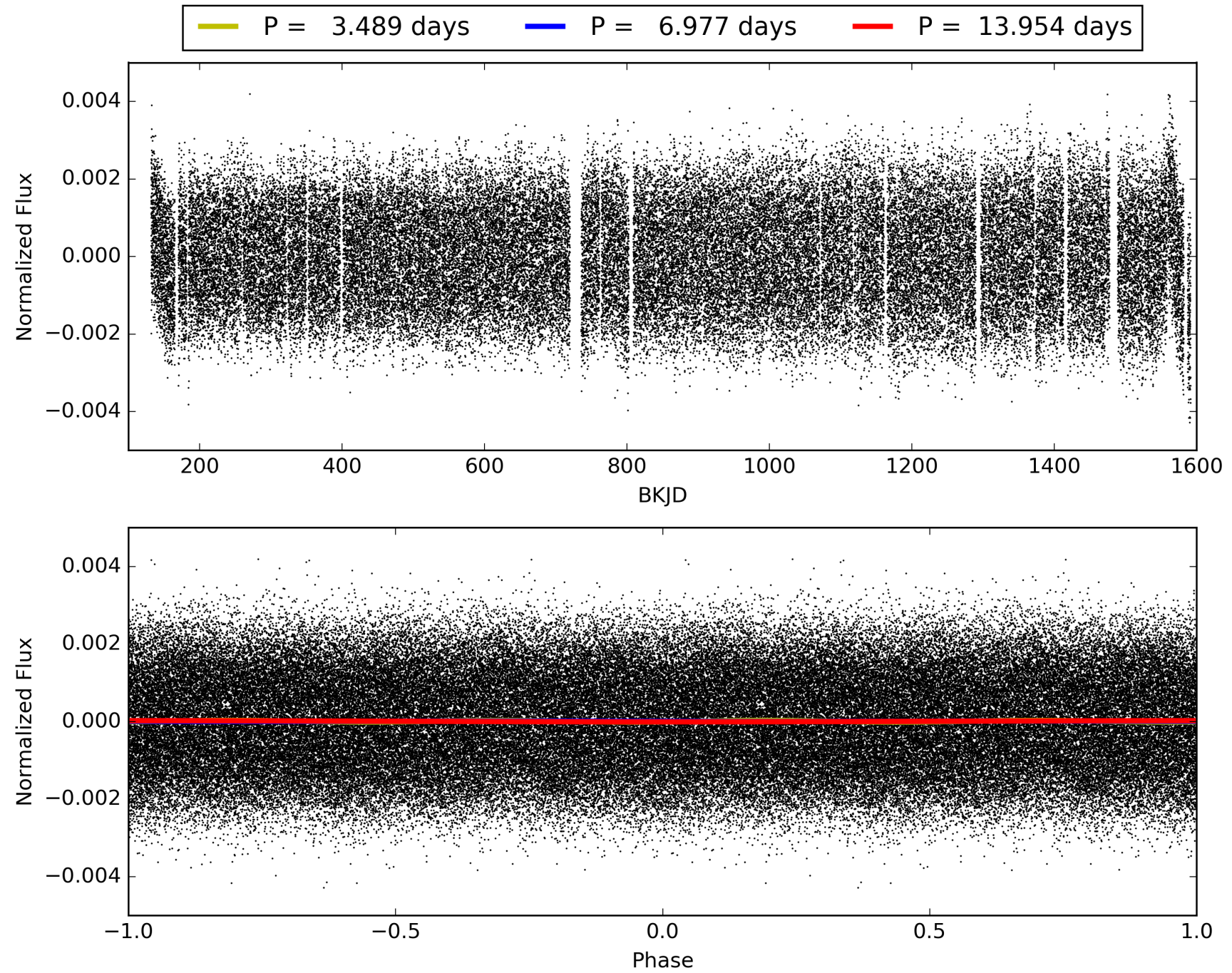
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:18:21 Z

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

TCE 009594022-02, PDC Light Curves

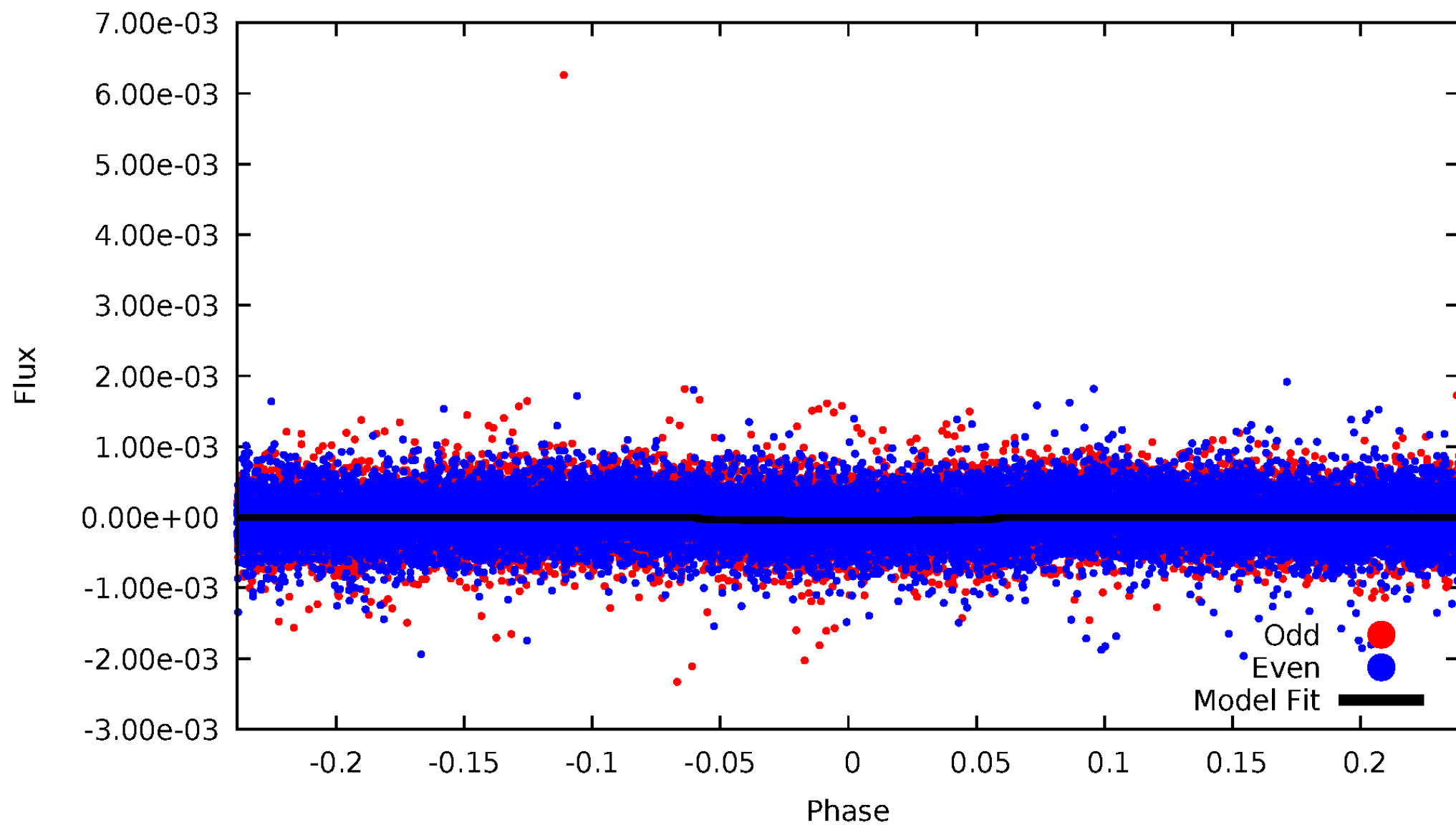


TCE 009594022-02



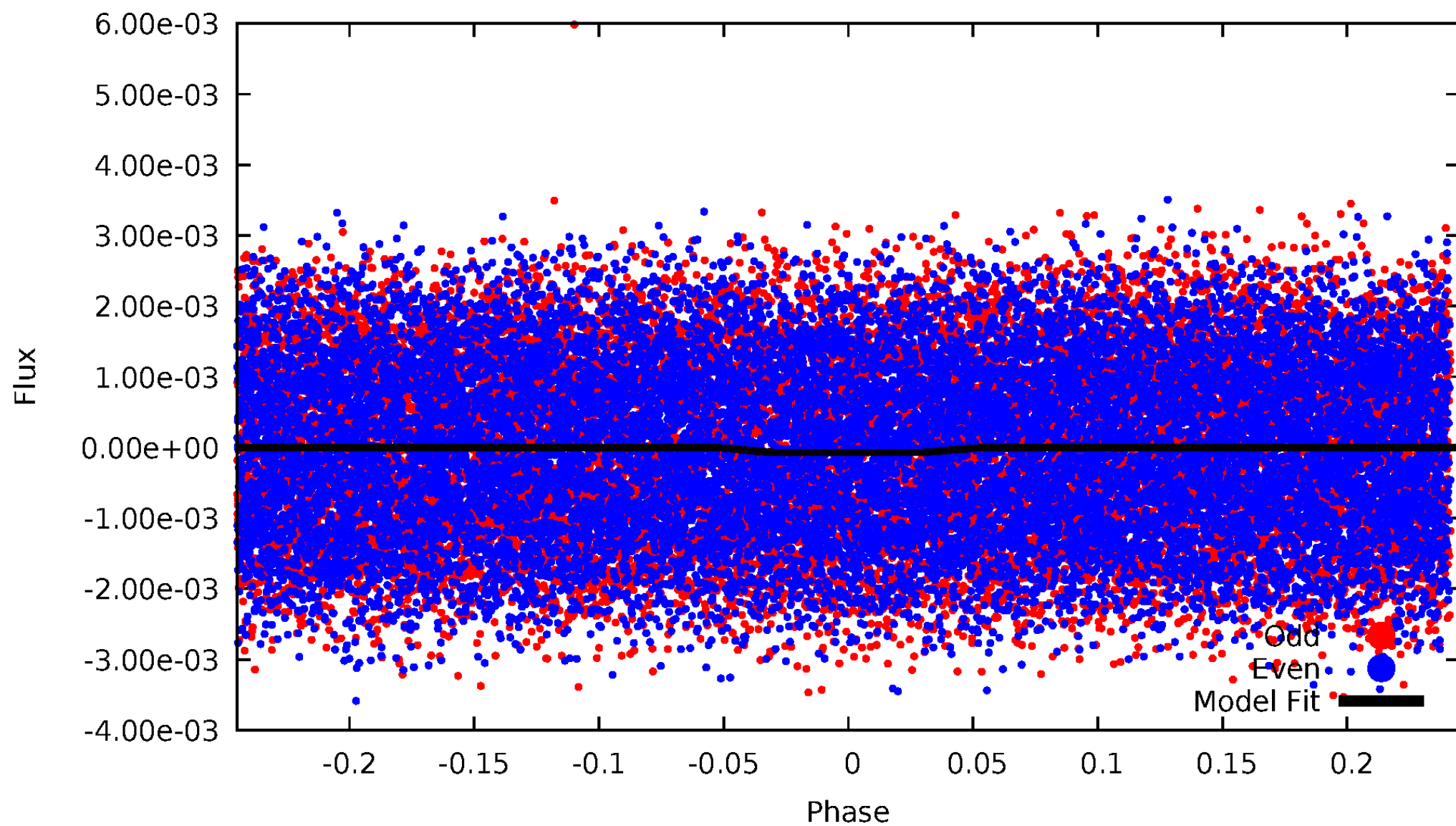
DV Odd/Even

TCE 009594022-02



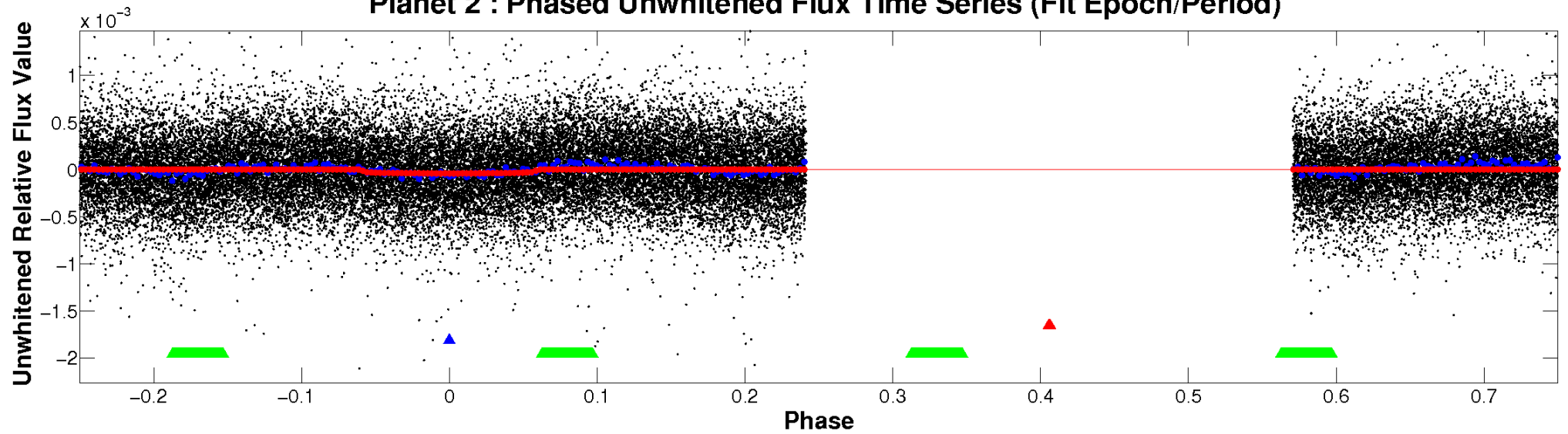
ALT Odd/Even

TCE 009594022-02

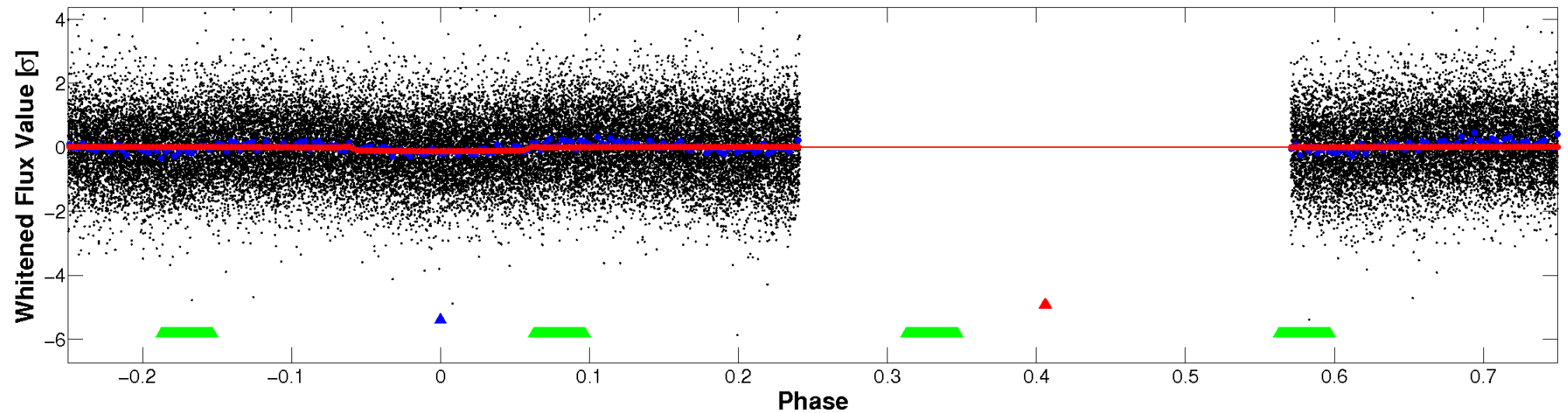


Non-Whitened Vs. Whitened Light Curve

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

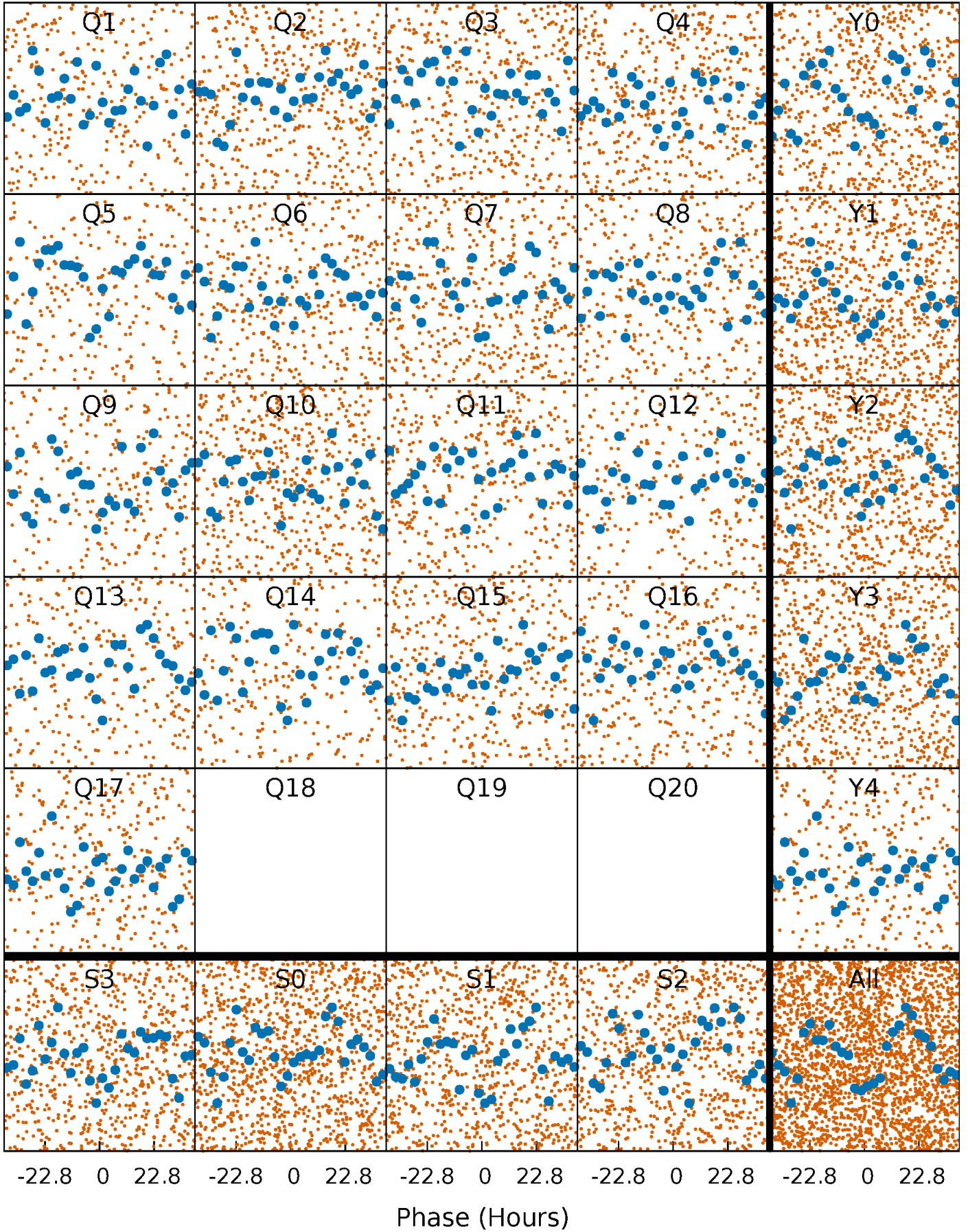


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



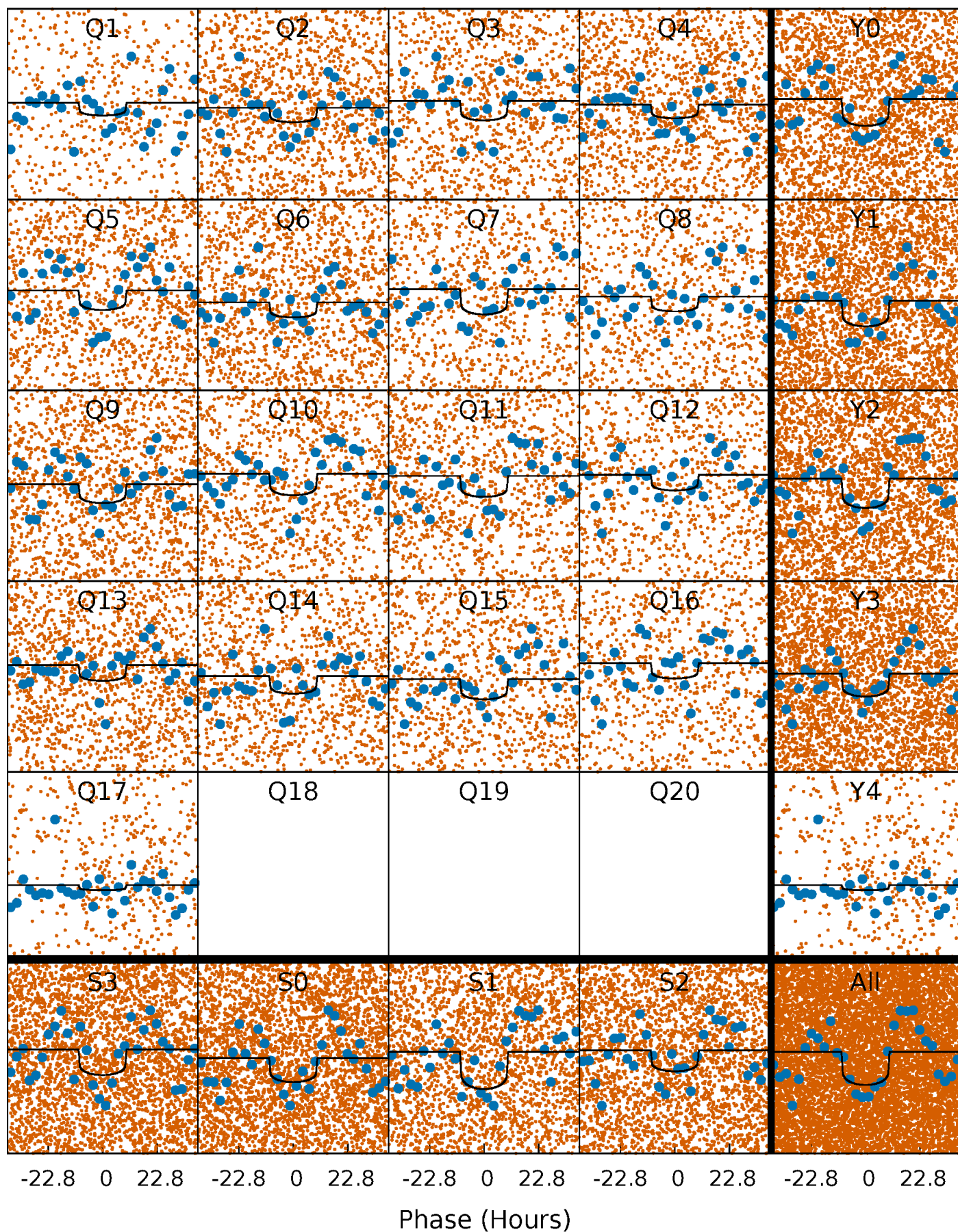
PDC Quarter-Phased Transit Curves

TCE 009594022-02 P= 6.977148 Days $T_0=136.224877$ (BKJD)



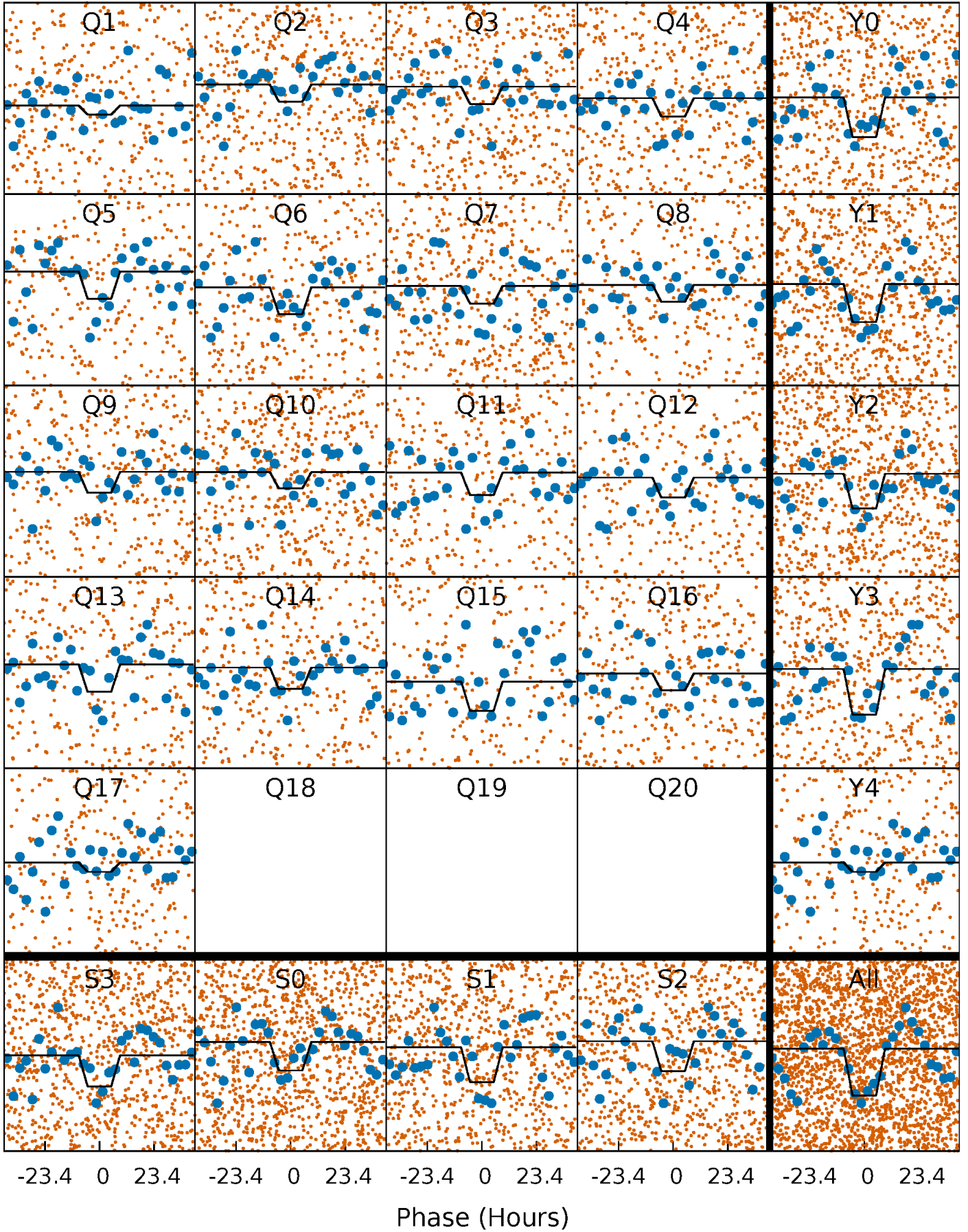
DV Quarter-Phased Transit Curves

TCE 009594022-02 P= 6.977148 Days $T_0=136.224877$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

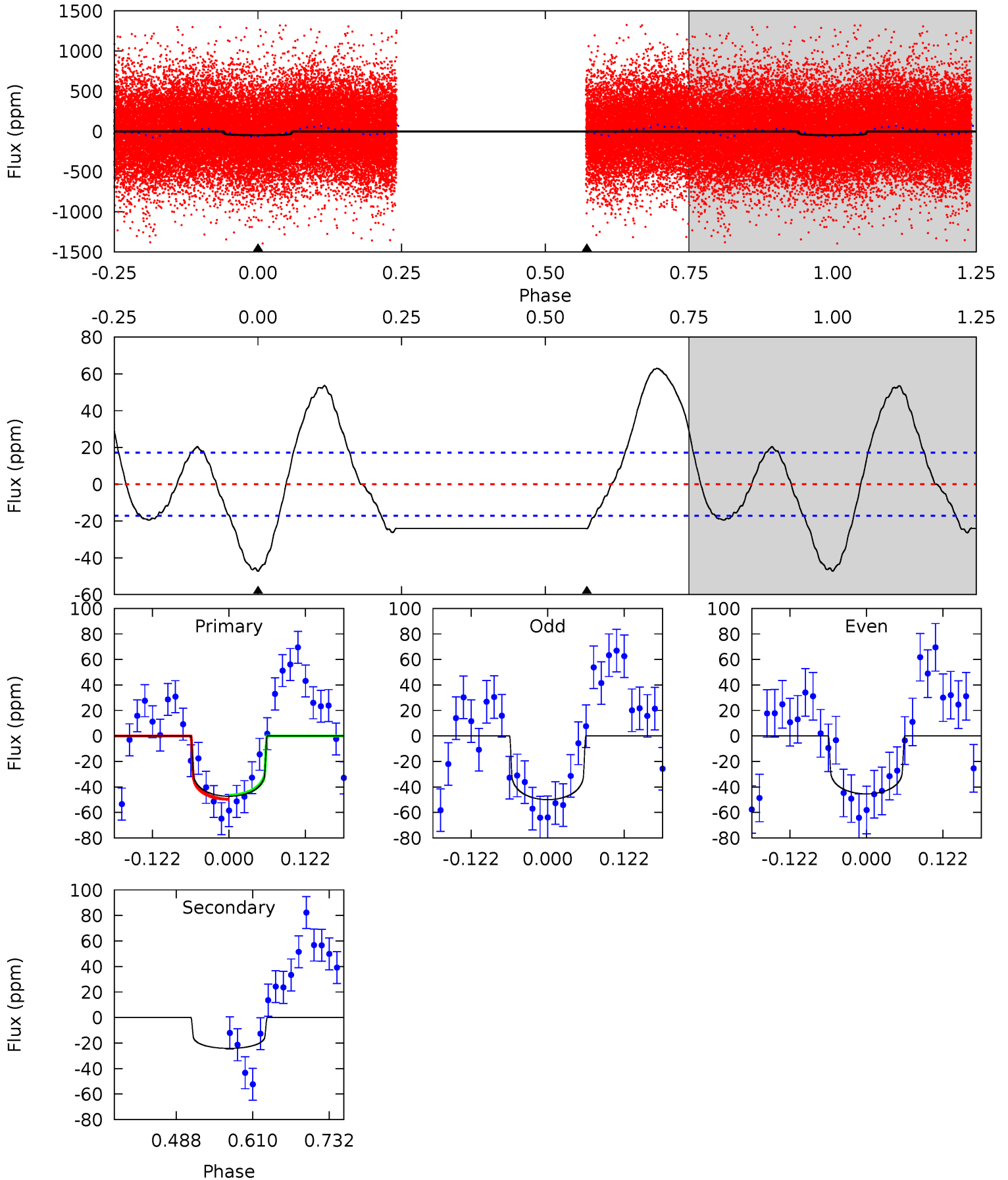
TCE 009594022-02 P= 6.977043 Days $T_0=136.237345$ (BKJD)



DV Model-Shift Uniqueness Test

009594022-02, P = 6.977148 Days, E = 129.247729 Days

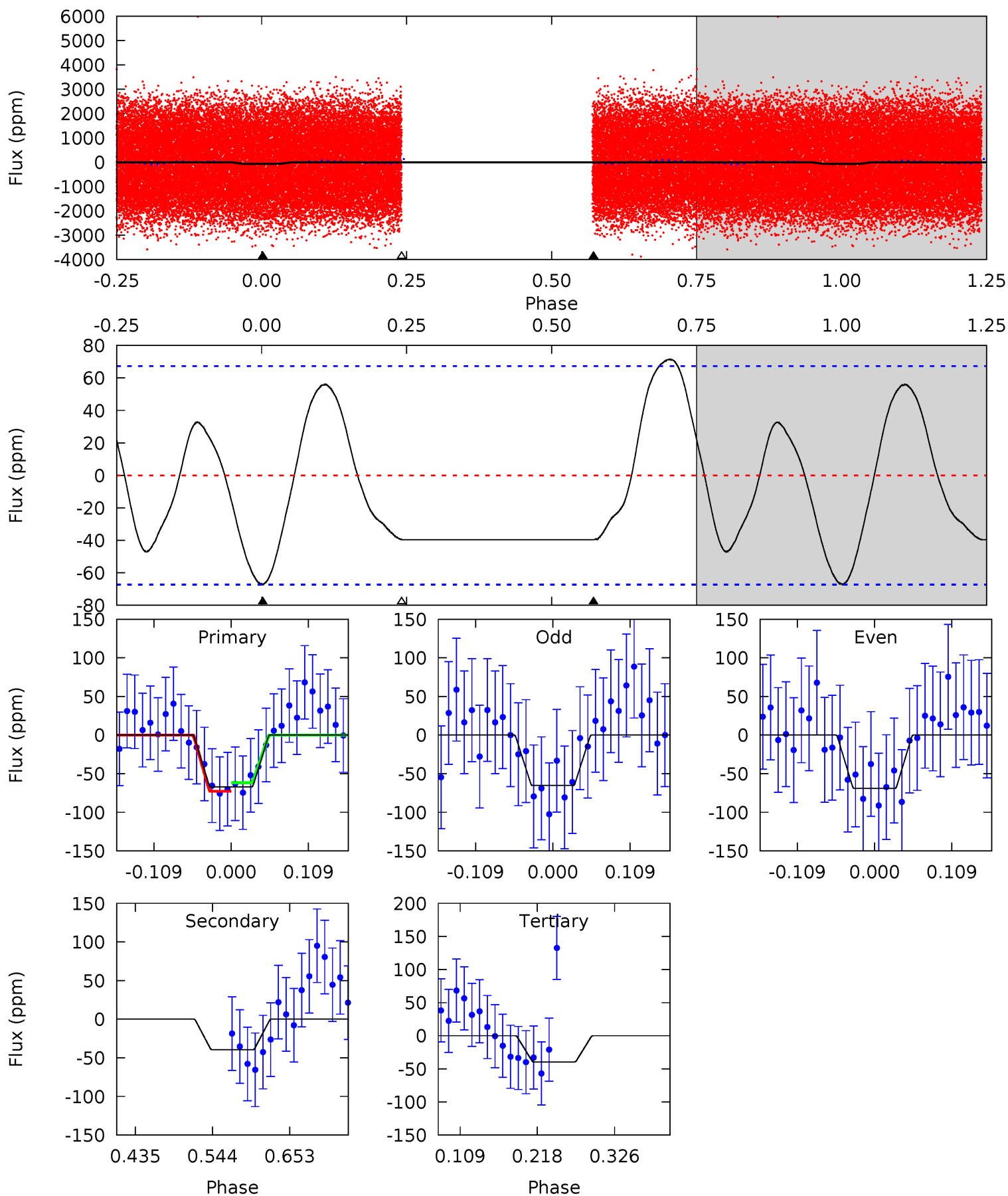
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	6.37	0	0	4.52	1.55	7.07	12.5	12.5	6.37	6.37	0.60	0.93	0.57	0.42



Alt Model-Shift Uniqueness Test

009594022-02, P = 6.977043 Days, E = 129.260302 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.54	2.68	2.67	0	4.55	1.60	2.57	1.86	4.54	0.00	2.68	0.13	1.02	0.52	0.37



Stellar Parameters For KIC 009594022

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8169^{+251}_{-306}	$3.651^{+0.544}_{-0.096}$	$-0.520^{+0.200}_{-0.300}$	$3.406^{+0.452}_{-1.922}$	$1.894^{+0.056}_{-0.501}$	$0.068^{+0.489}_{-0.020}$
	+3%/-4%	+15%/-3%	+38%/-58%	+13%/-56%	+3%/-26%	+725%/-29%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009594022-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24 ± 4	$2.14^{+0.76}_{-0.72}$	3027^{+231}_{-406}	6805^{+1450}_{-807}	22^{+24}_{-10}
Alt.	-40 ± 15	$2.82^{+0.83}_{-0.89}$	3033^{+231}_{-424}	6841^{+1109}_{-1020}	20^{+24}_{-10}

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

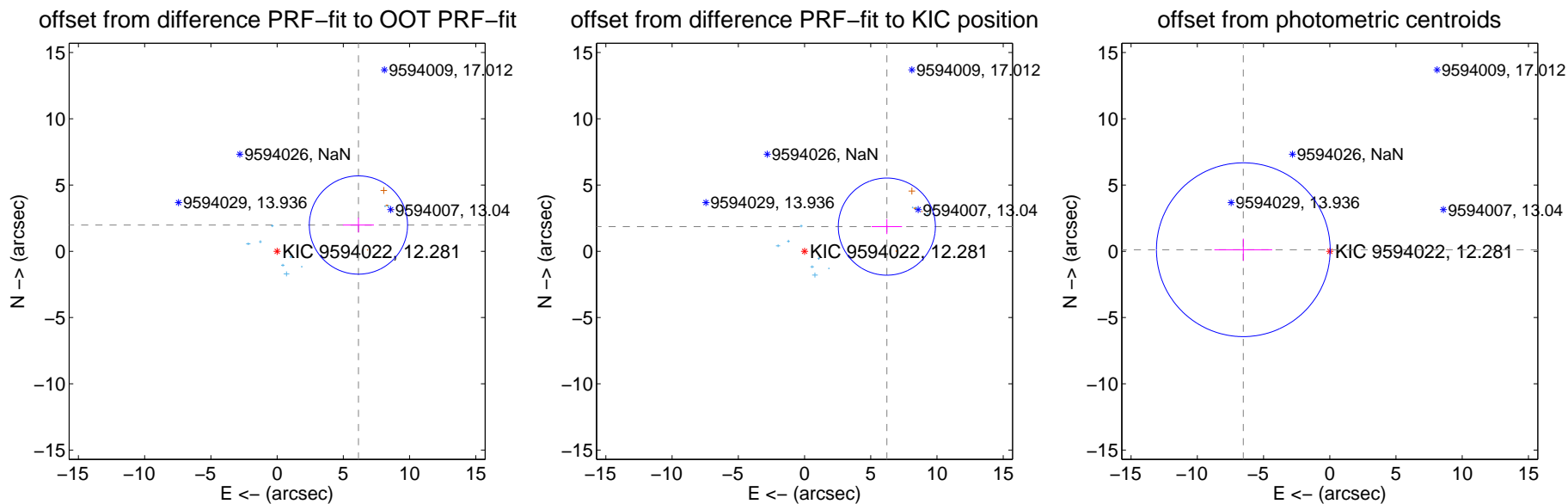
DV Centroid Data

Supplemental centroid analysis for 009594022-02. Kepler magnitude: 12.28. Transit SNR 9.73

There are 10 quarters with good PRF difference image offsets

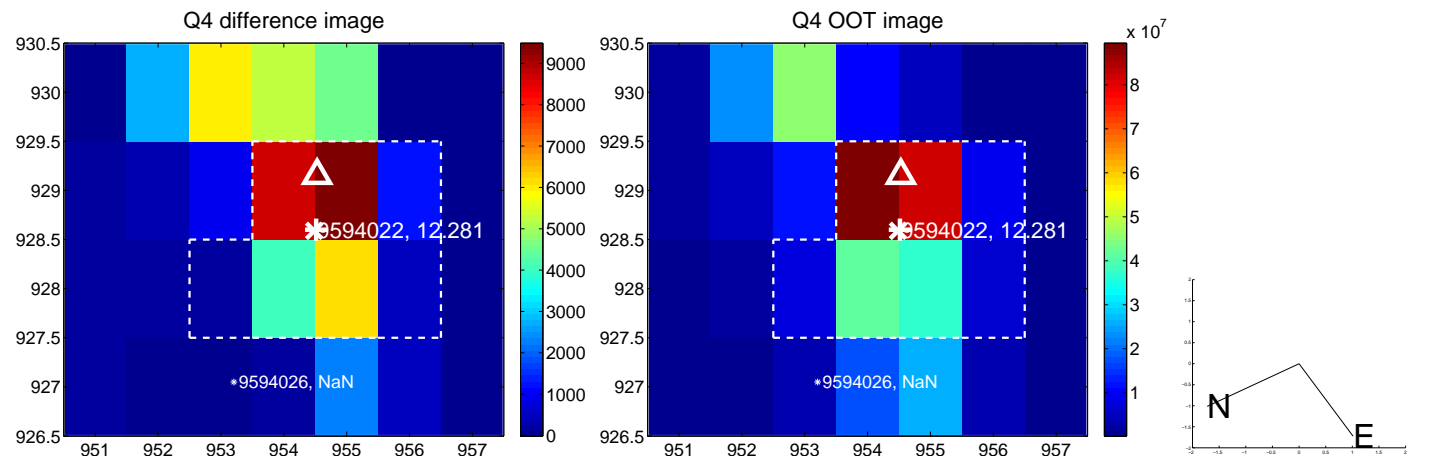
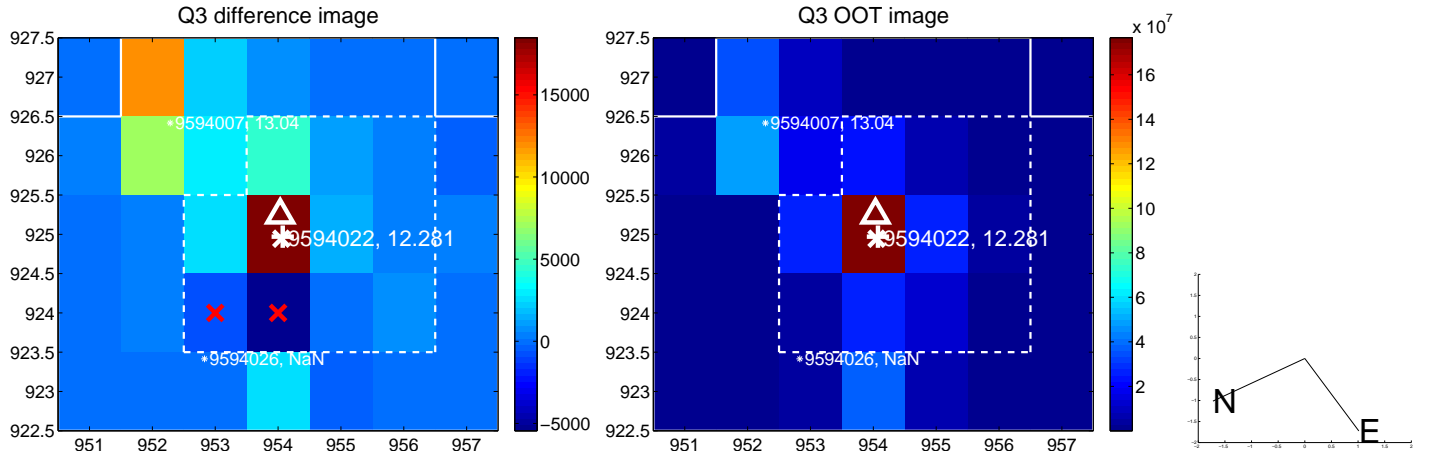
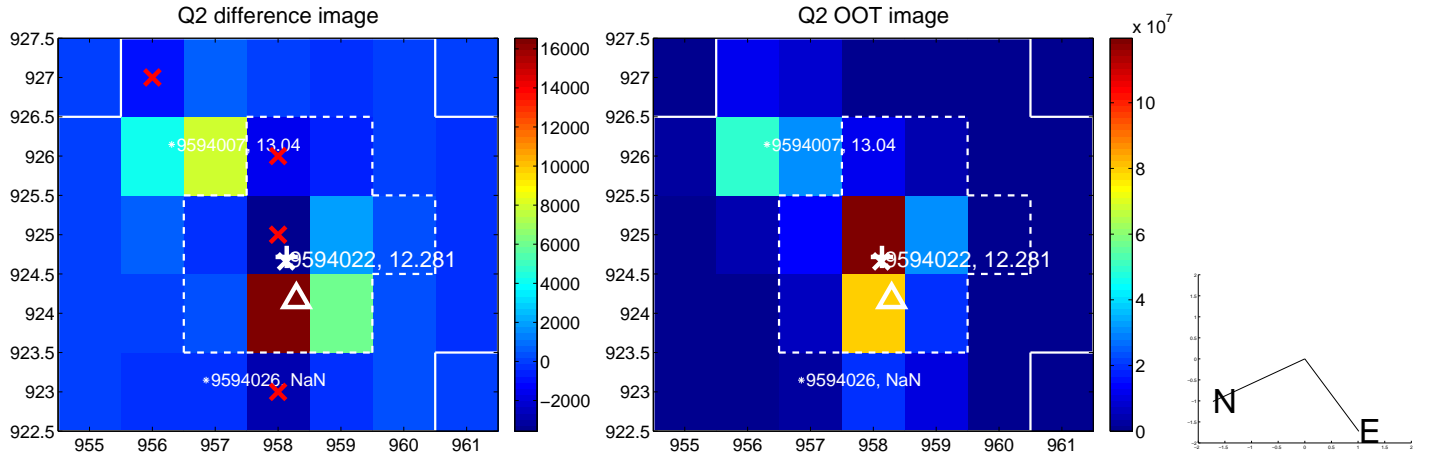
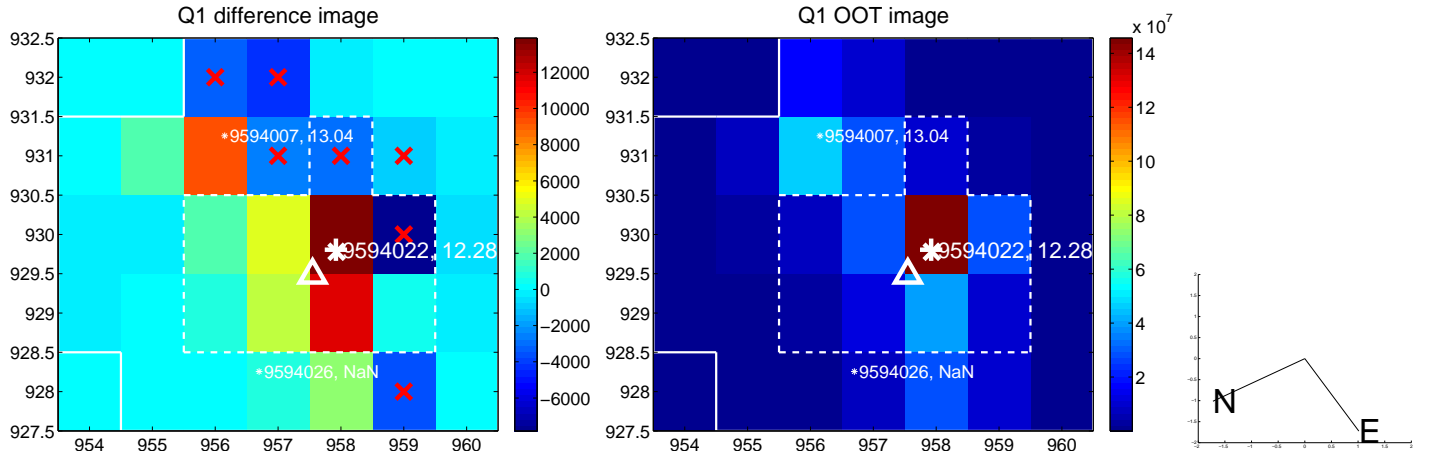
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.452 ± 1.236	5.22	-6.140 ± 1.170	1.982 ± 0.552
PRF-fit source offset from KIC position	6.487 ± 1.222	5.31	-6.214 ± 1.147	1.862 ± 0.562
photometric centroid source offset	6.53 ± 2.19	2.99	6.53 ± 2.19	0.12 ± 0.83

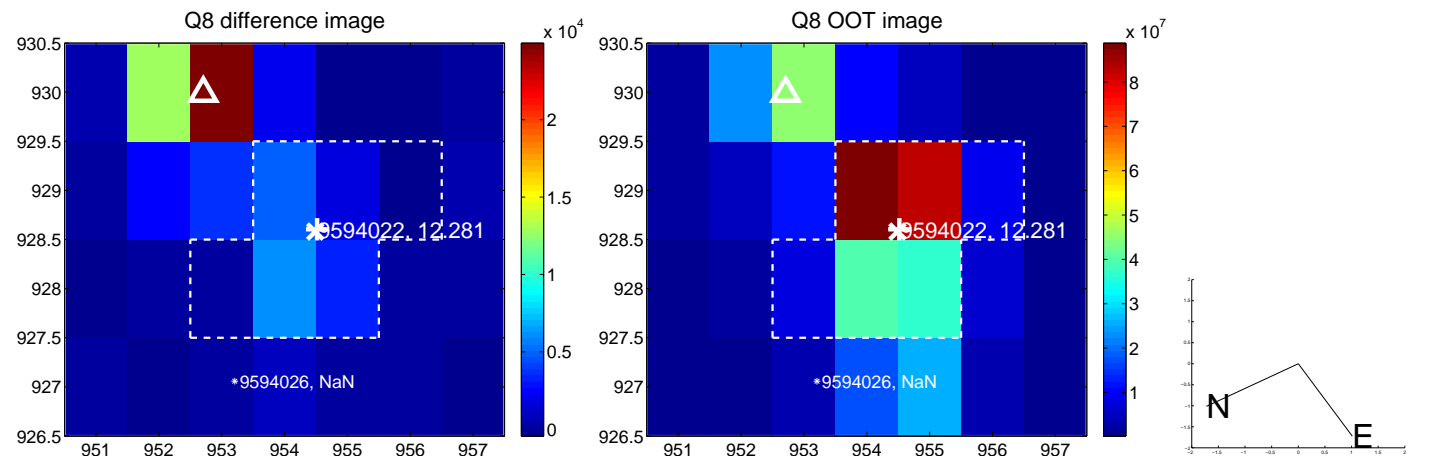
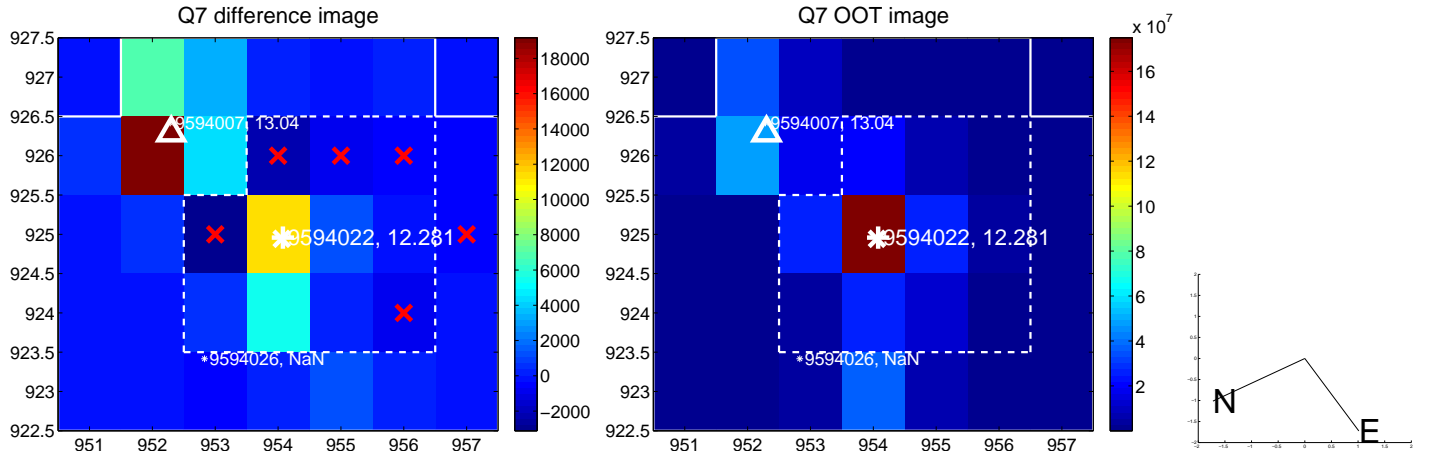
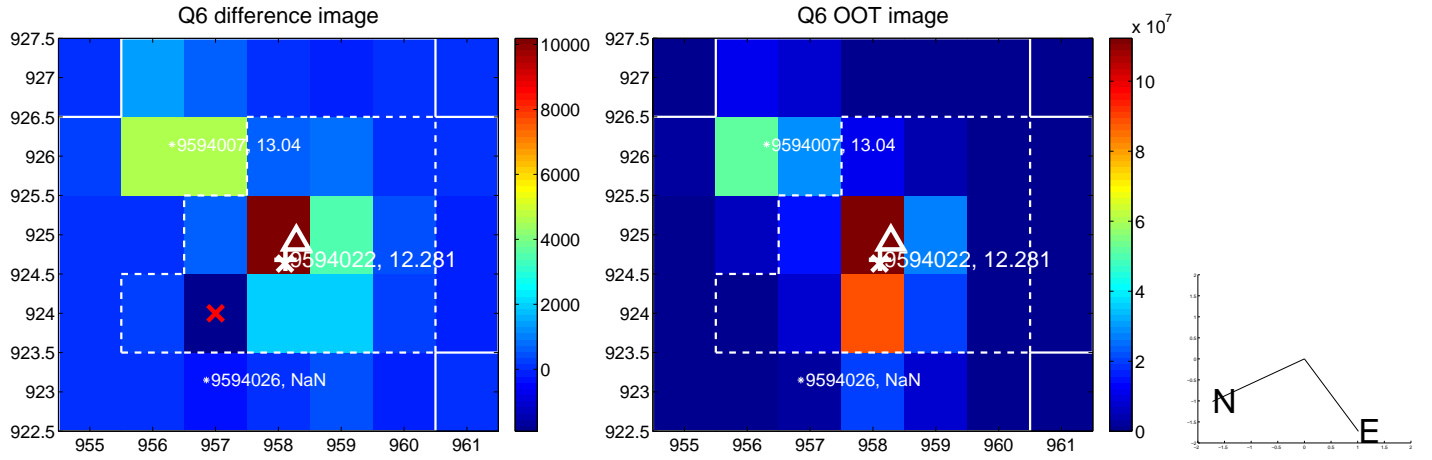
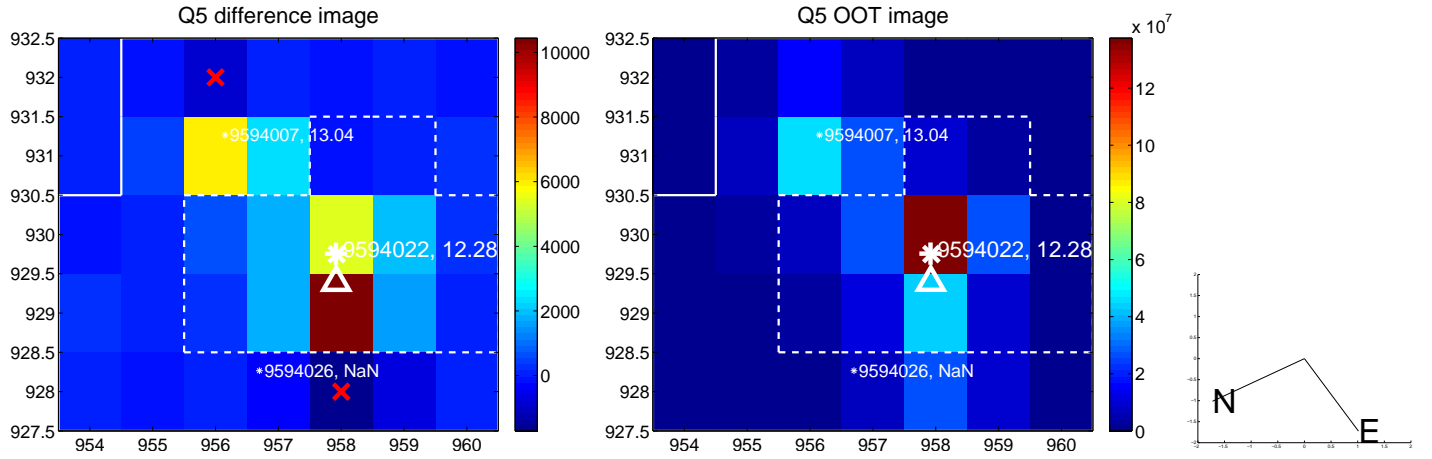


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

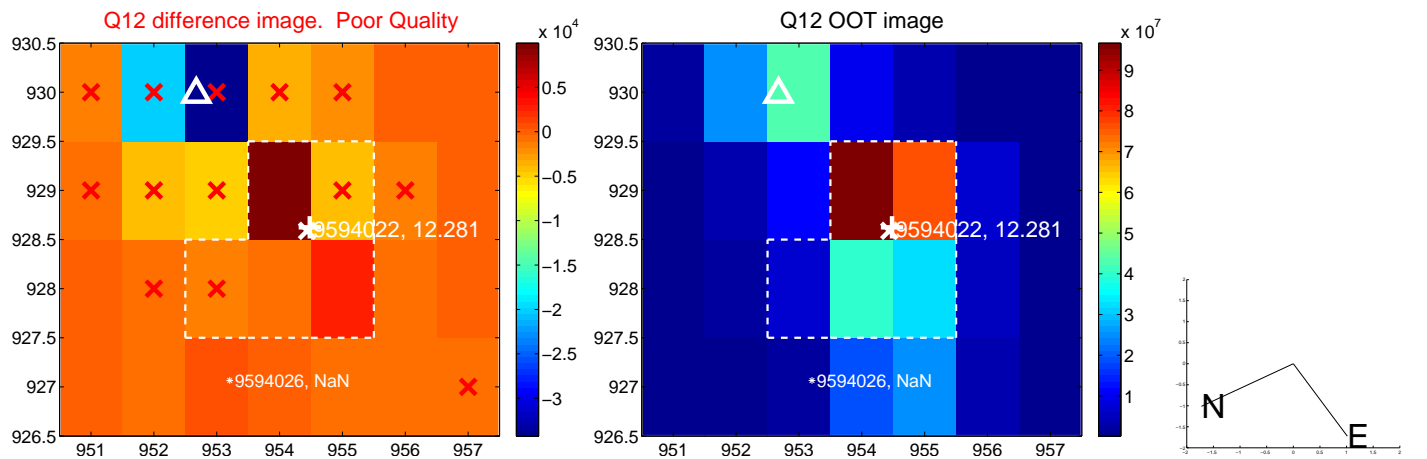
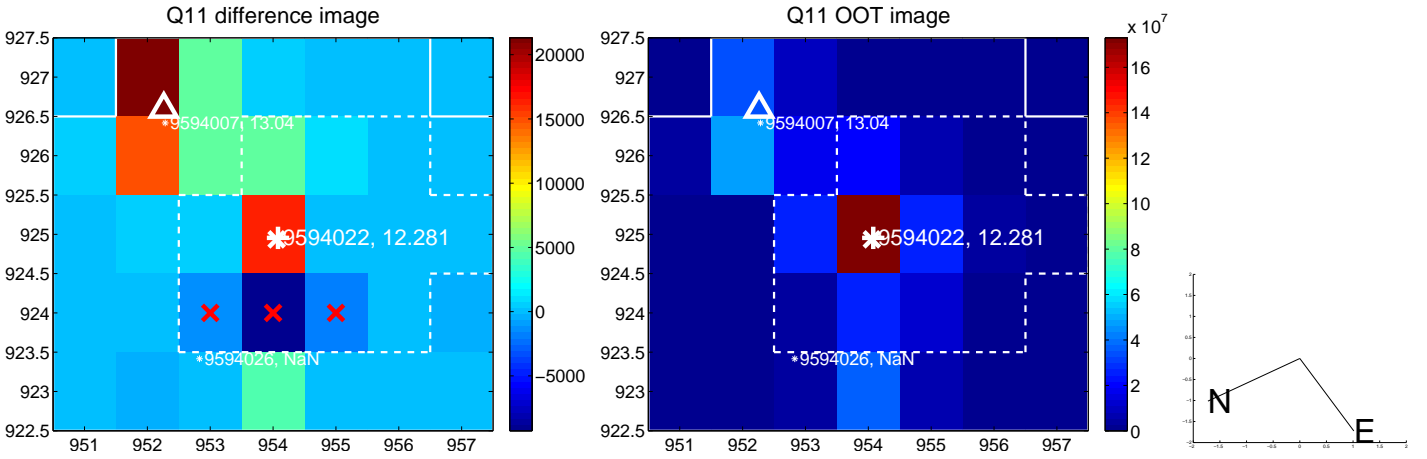
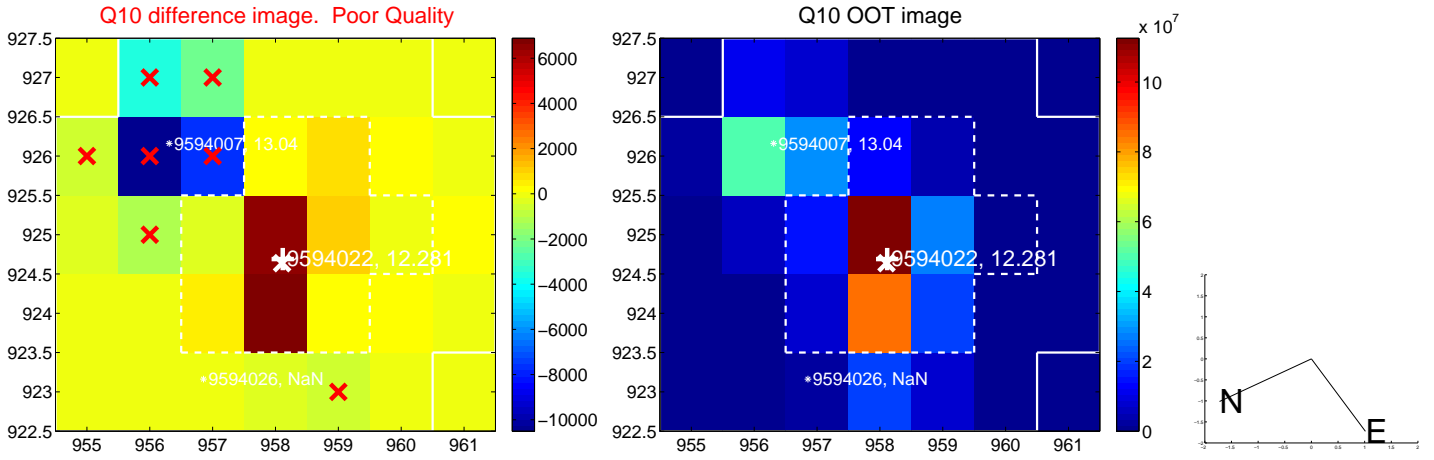
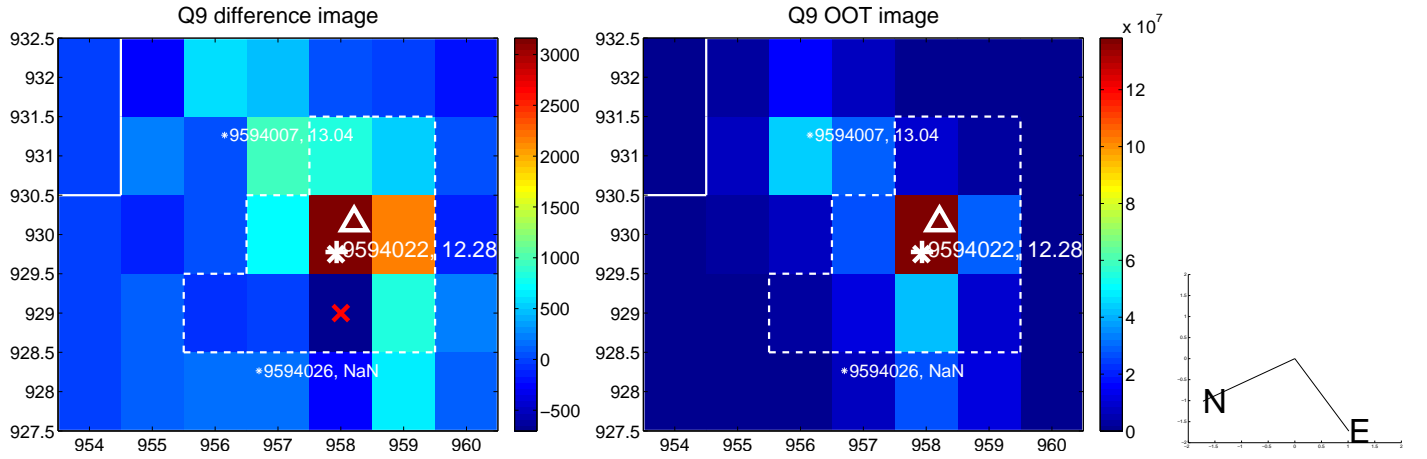
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



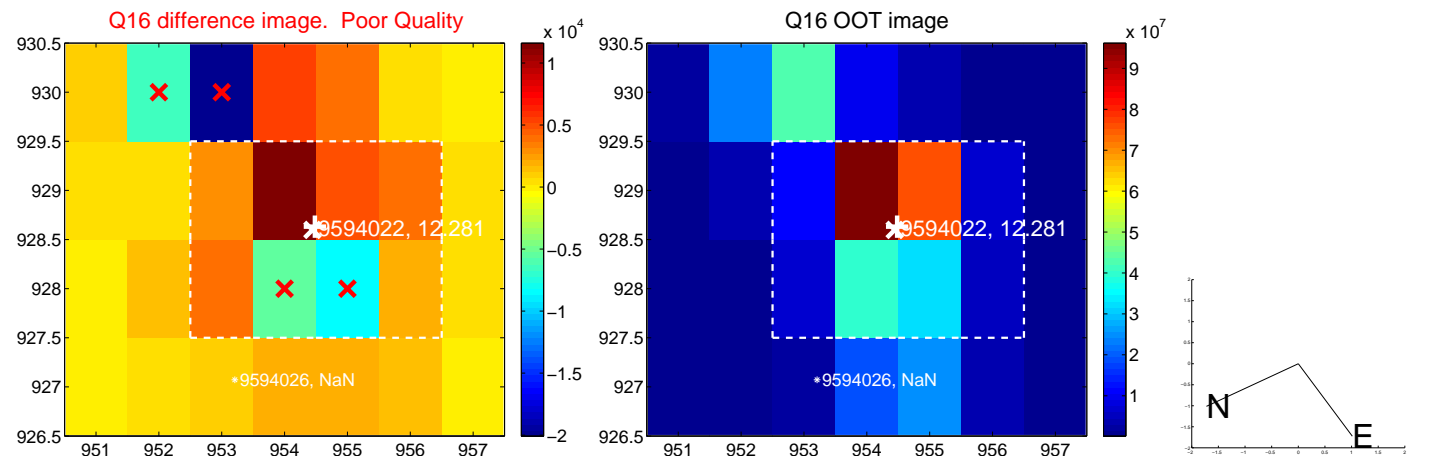
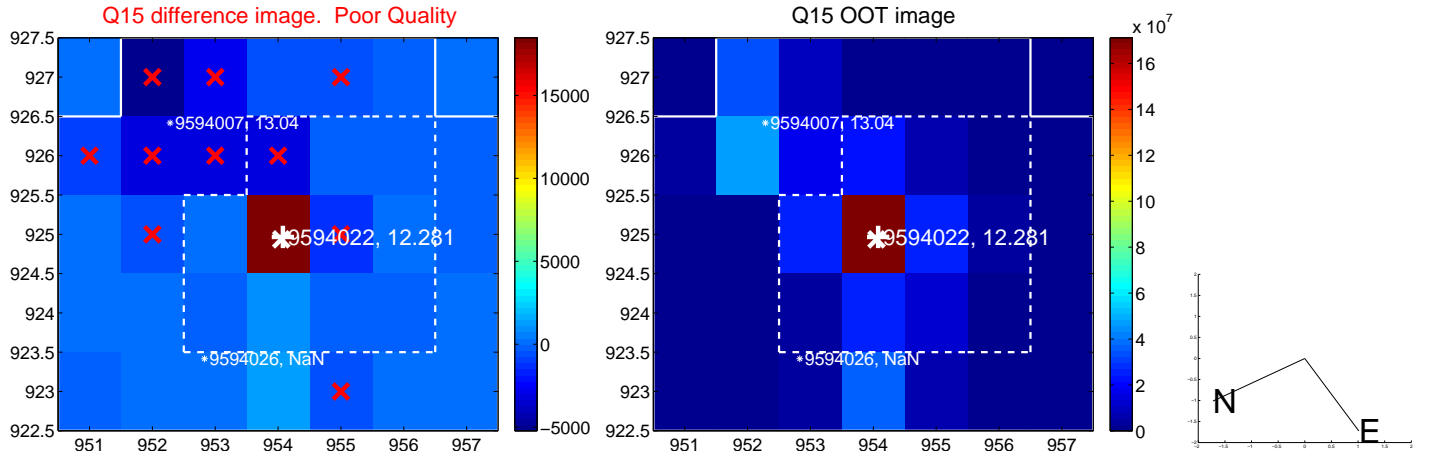
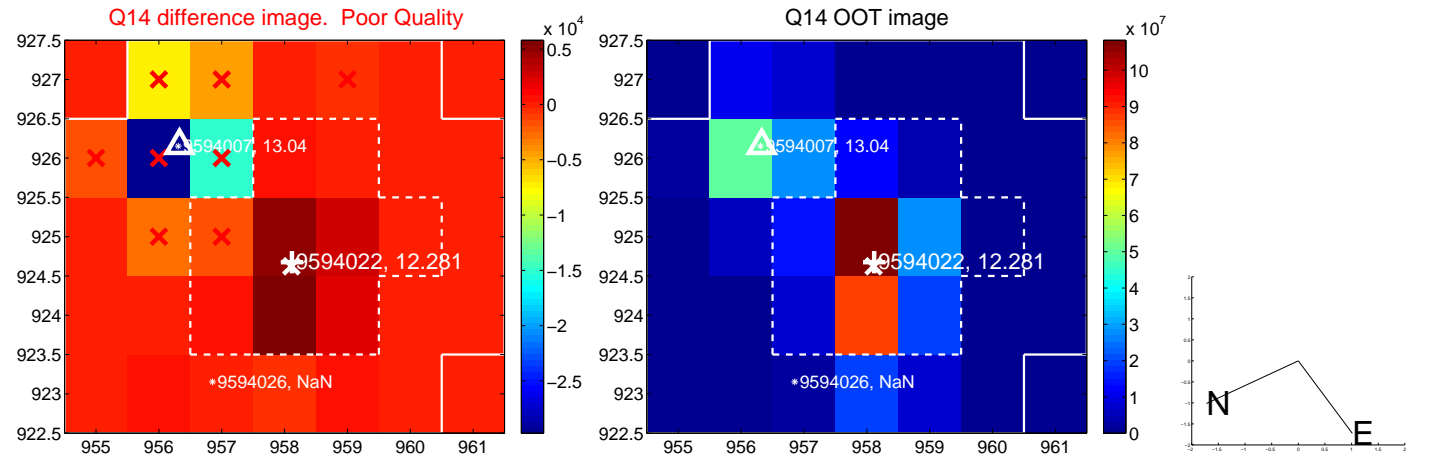
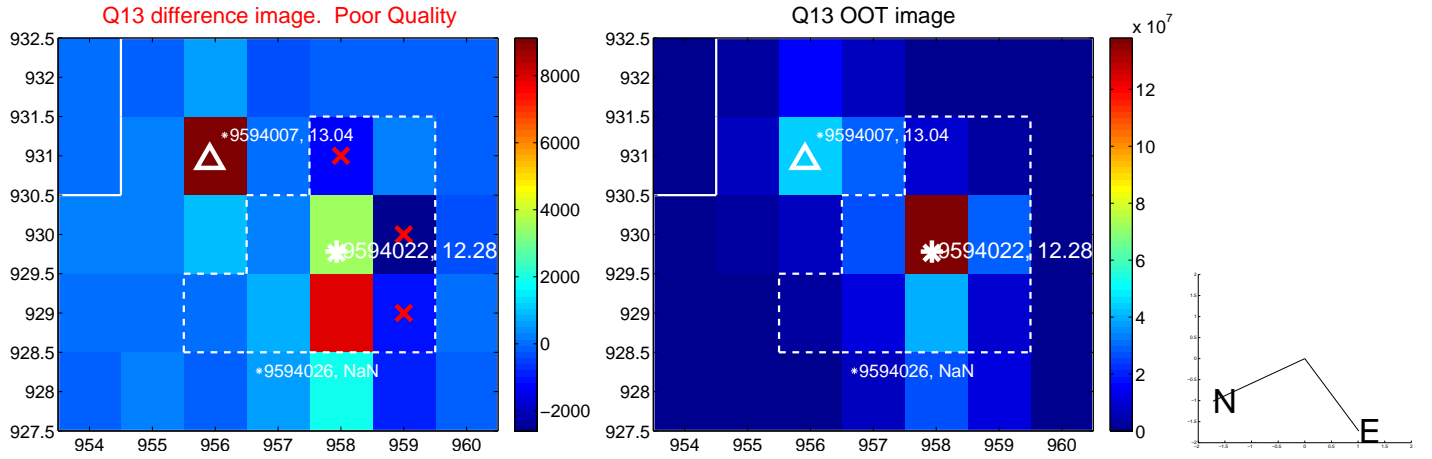
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



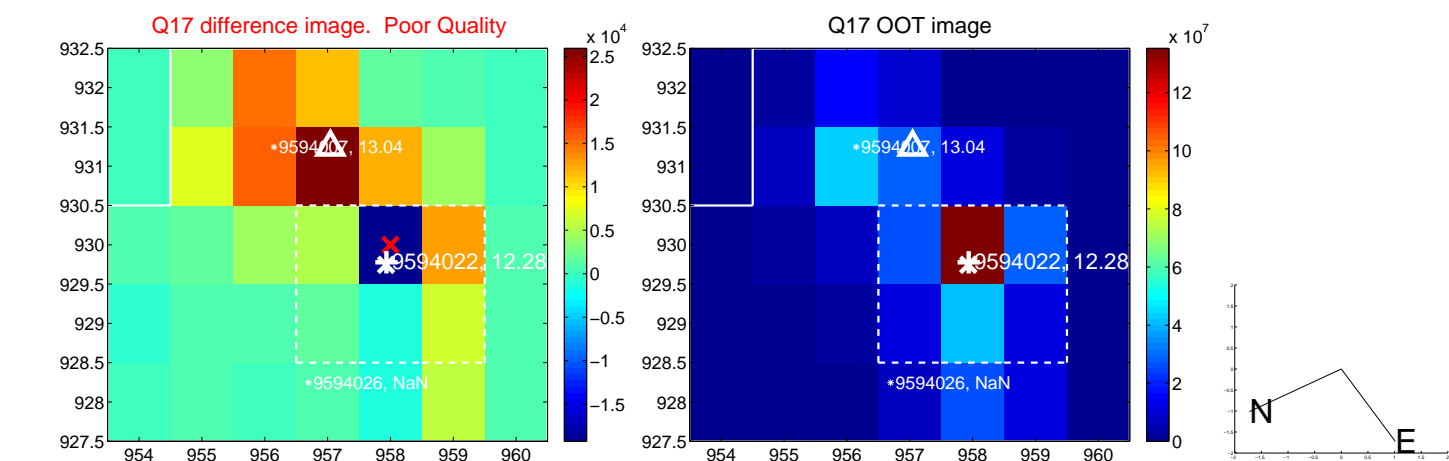
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



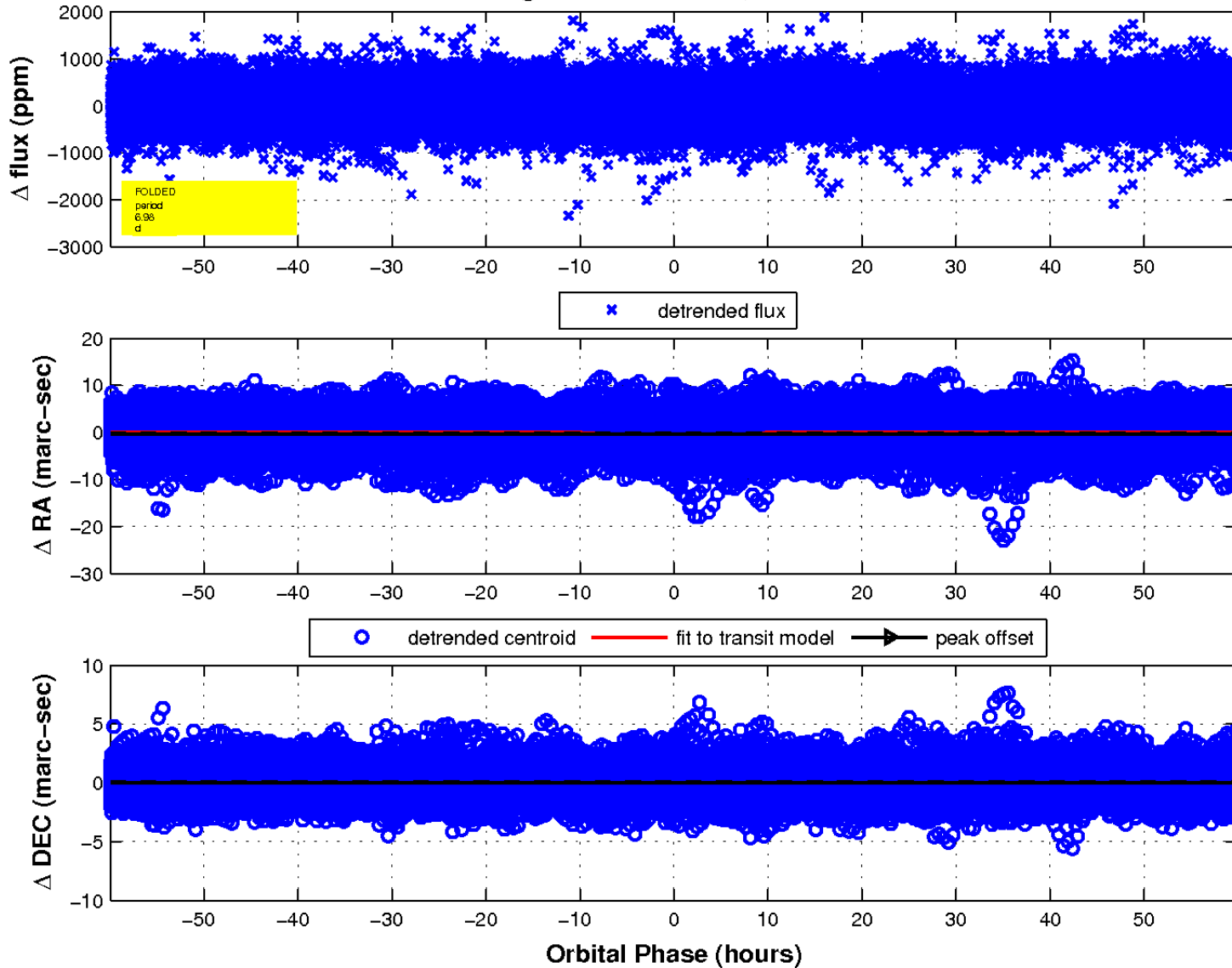
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

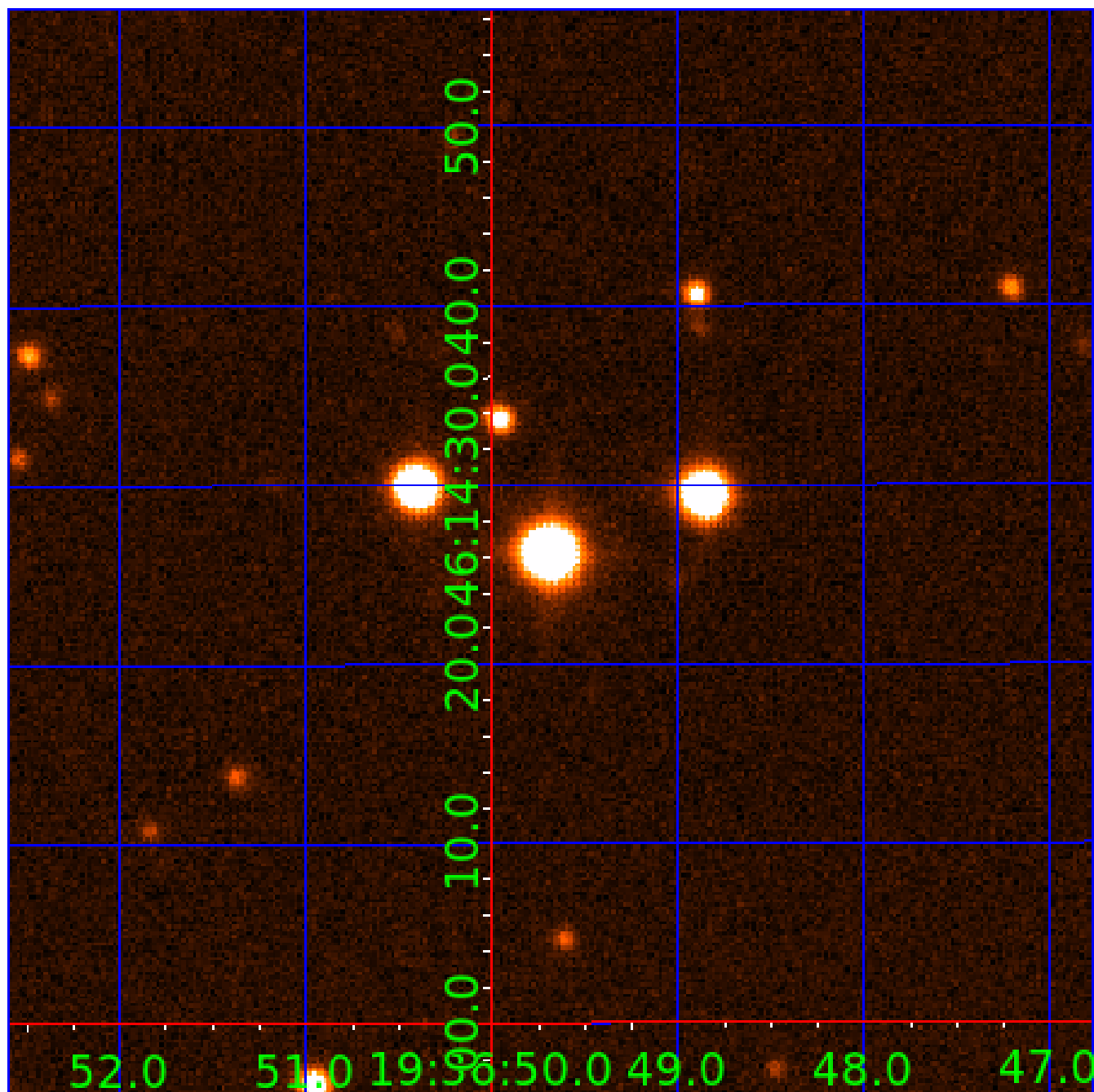


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 009594022

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})
009594022-01	OBS	No	6.977107	132.084708	53.1	18.255	11.8	11.3	3.41	8169	2.69	5917.88
009594022-02	OBS	No	6.977148	136.224877	43.0	19.983	9.0	9.7	3.41	8169	2.45	5917.83
009594022-03	OBS	No	1.743998	131.669691	59.4	12.191	7.2	9.9	3.41	8169	2.97	37584.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009594022-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009594022-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009594022-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV

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

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

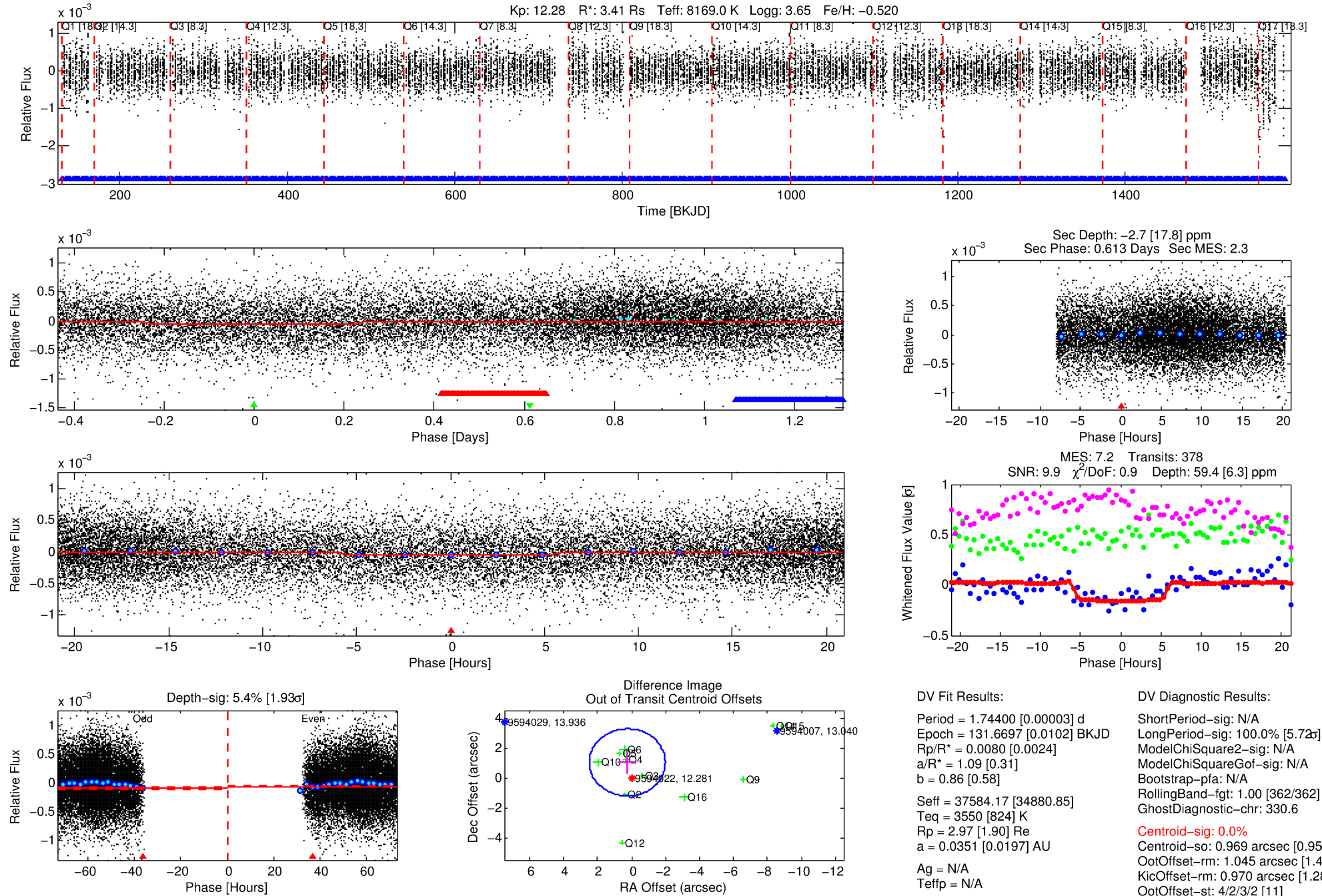
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009594022-03

No Significant Match Found

DV One-Page Summary

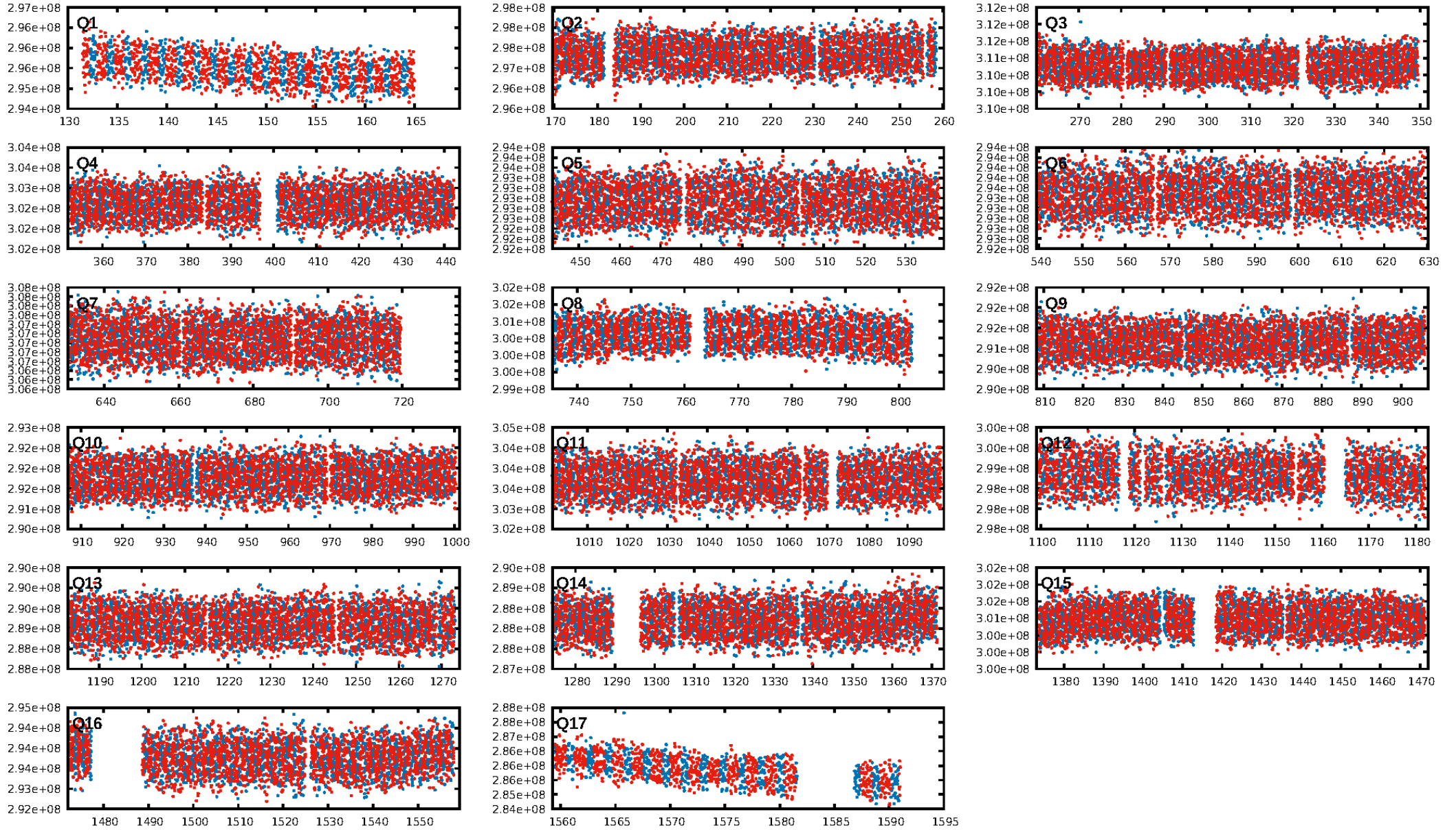
KIC: 9594022 Candidate: 3 of 3 Period: 1.744 d






Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:18:32 Z

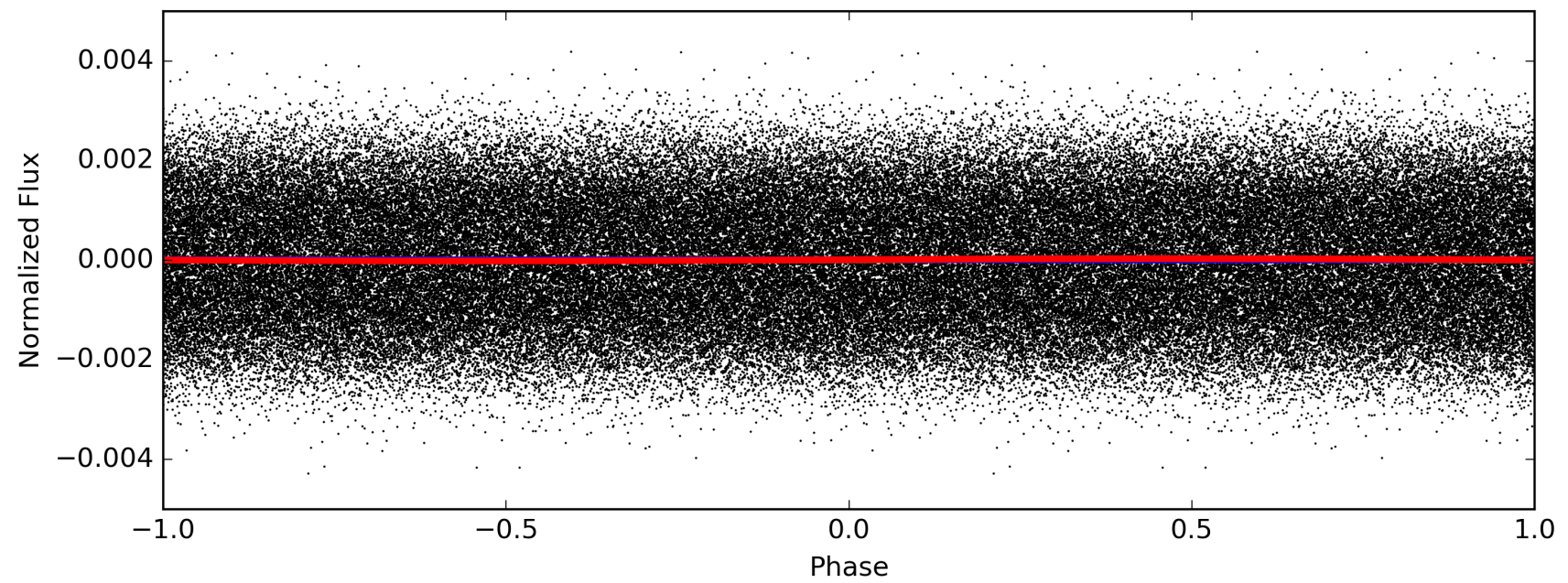
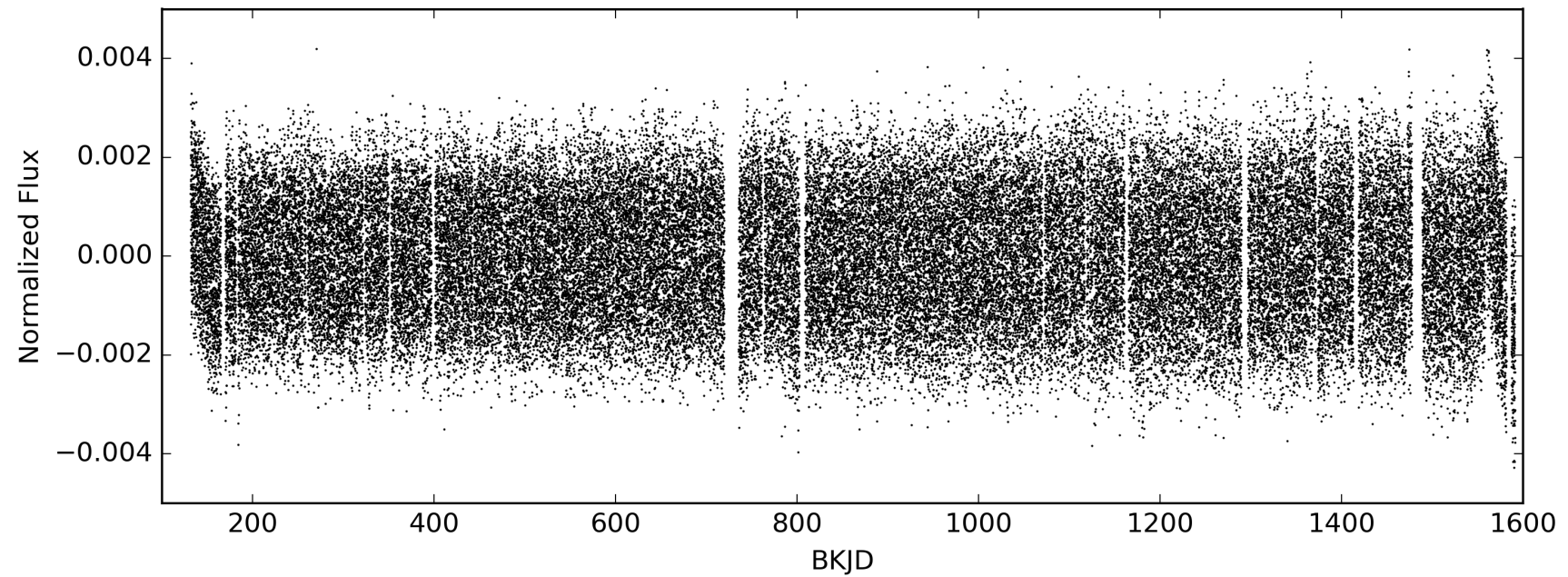
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009594022-03, PDC Light Curves



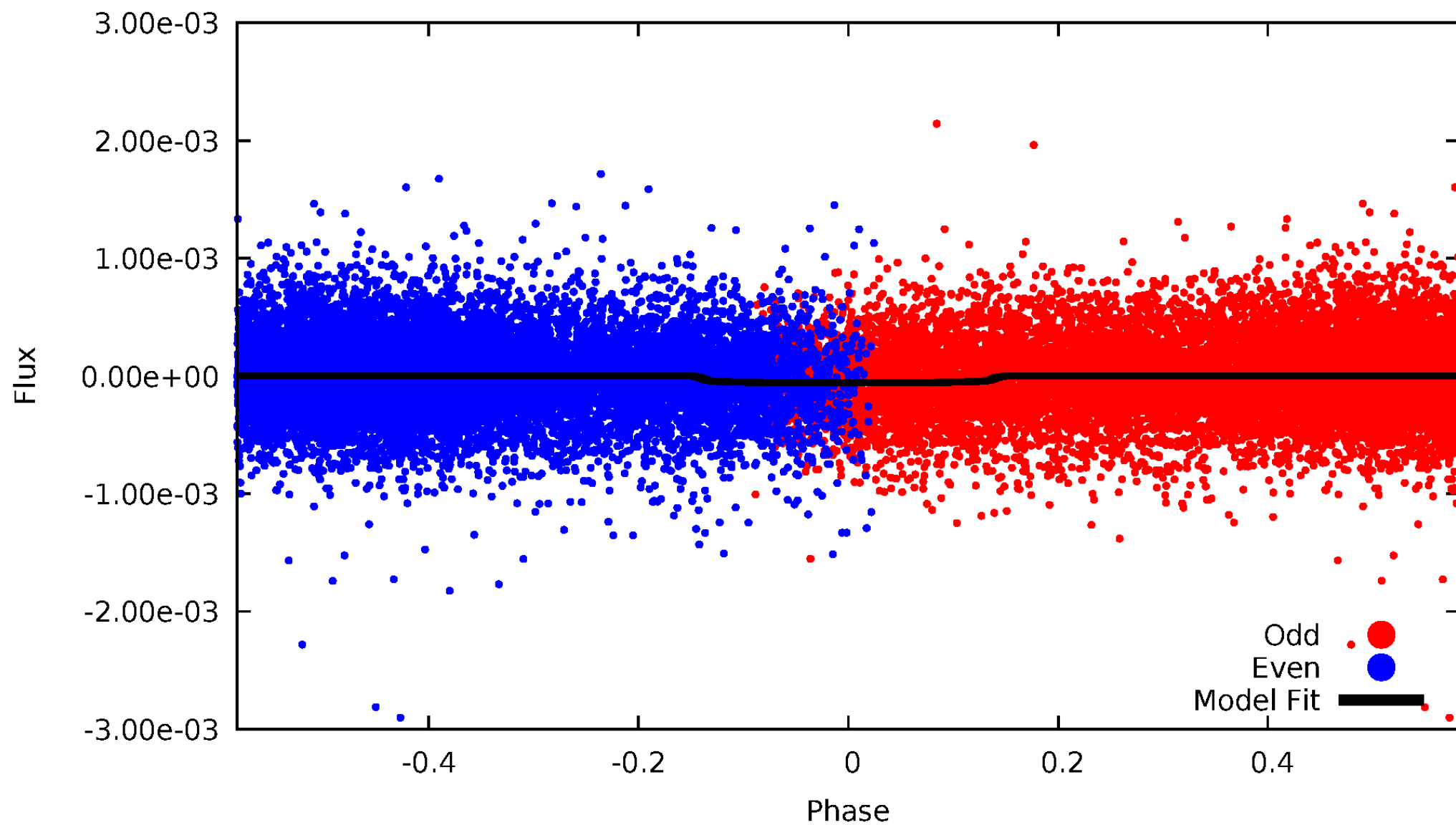
TCE 009594022-03

 P = 0.872 days  P = 1.744 days  P = 3.488 days



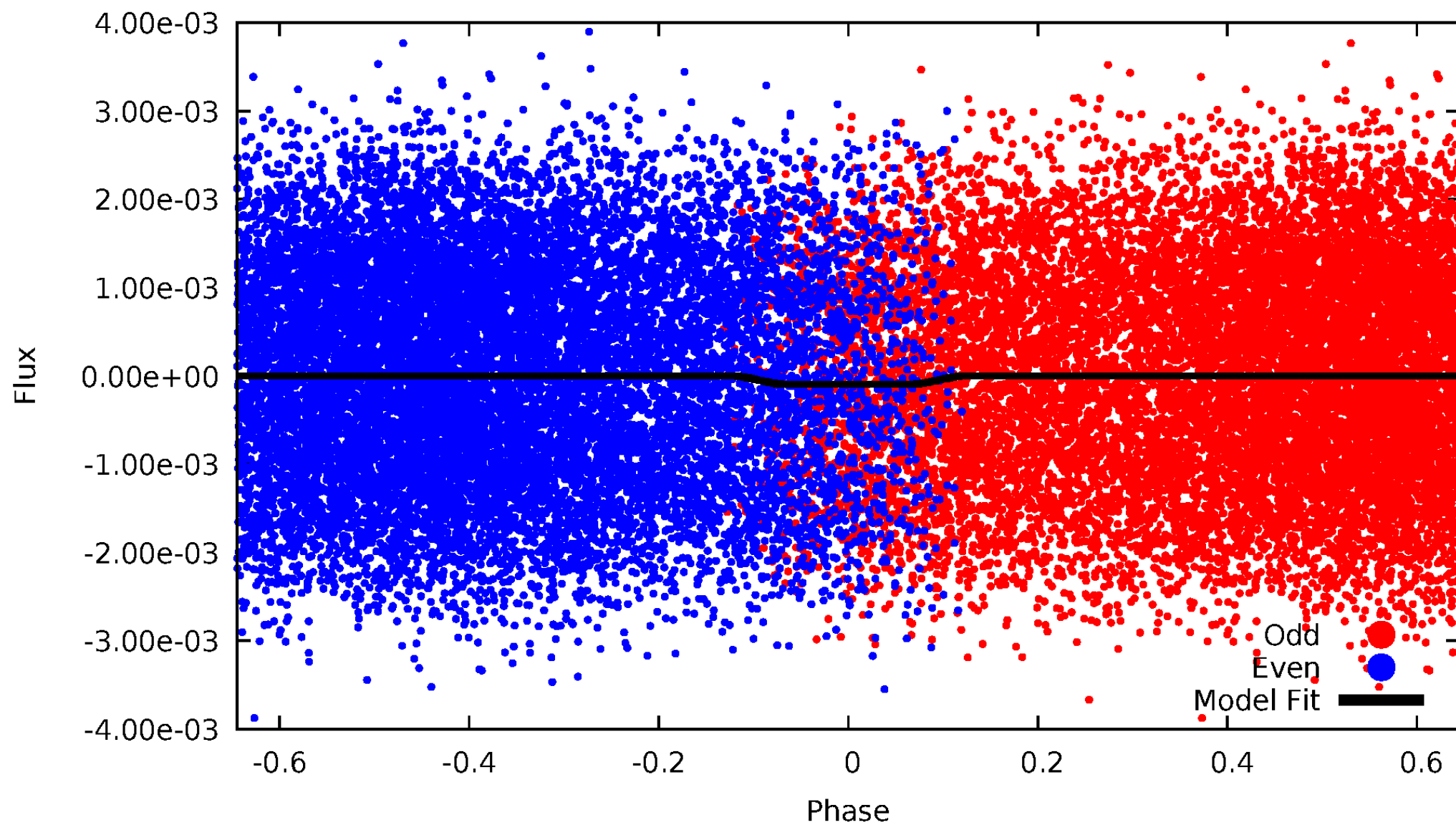
DV Odd/Even

TCE 009594022-03



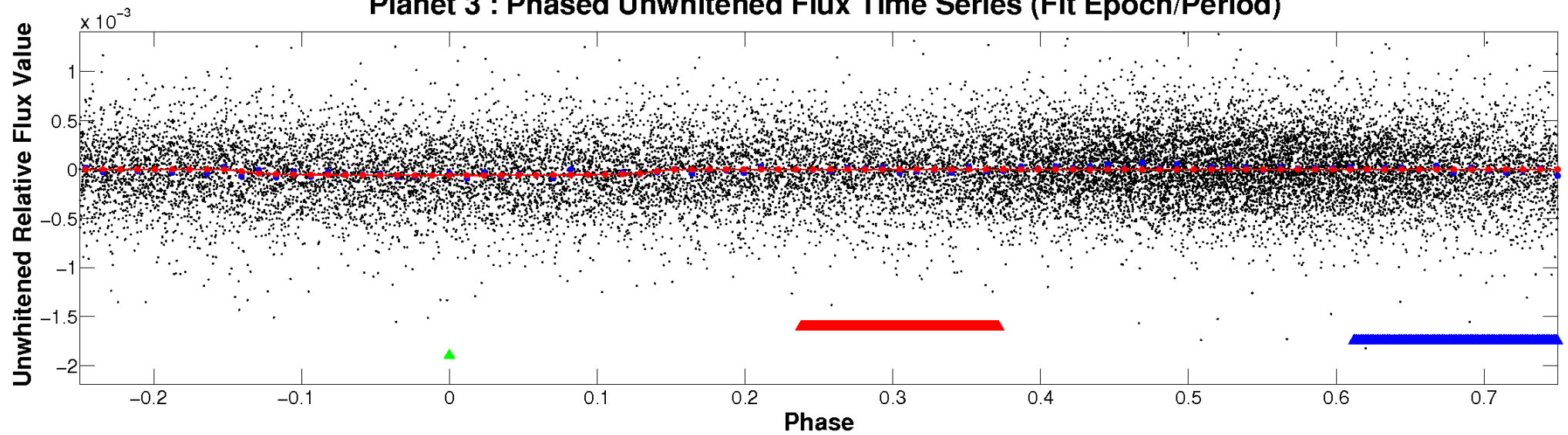
ALT Odd/Even

TCE 009594022-03

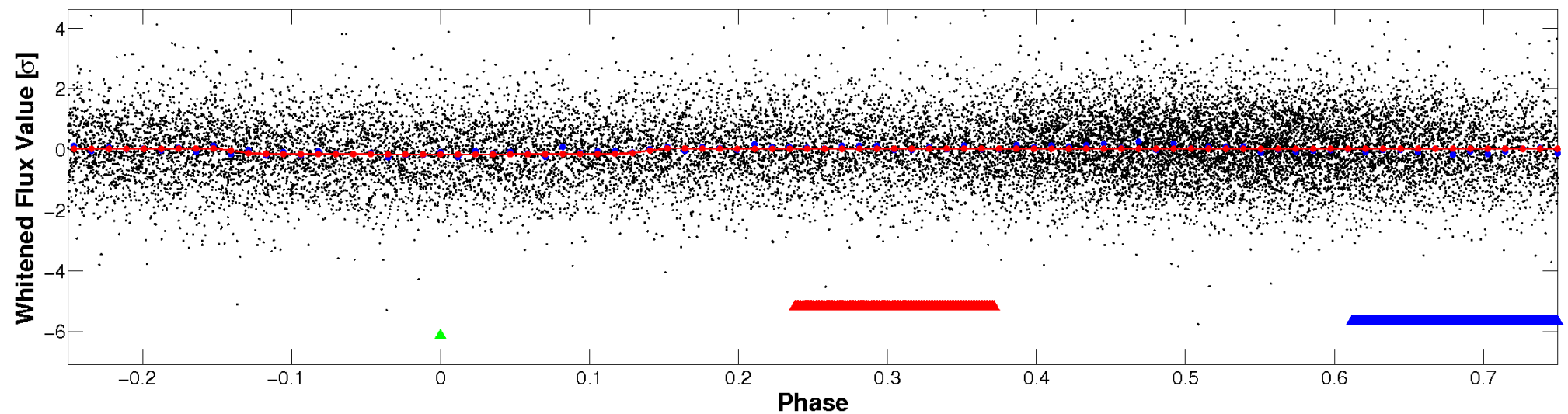


Non-Whitened Vs. Whitened Light Curve

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

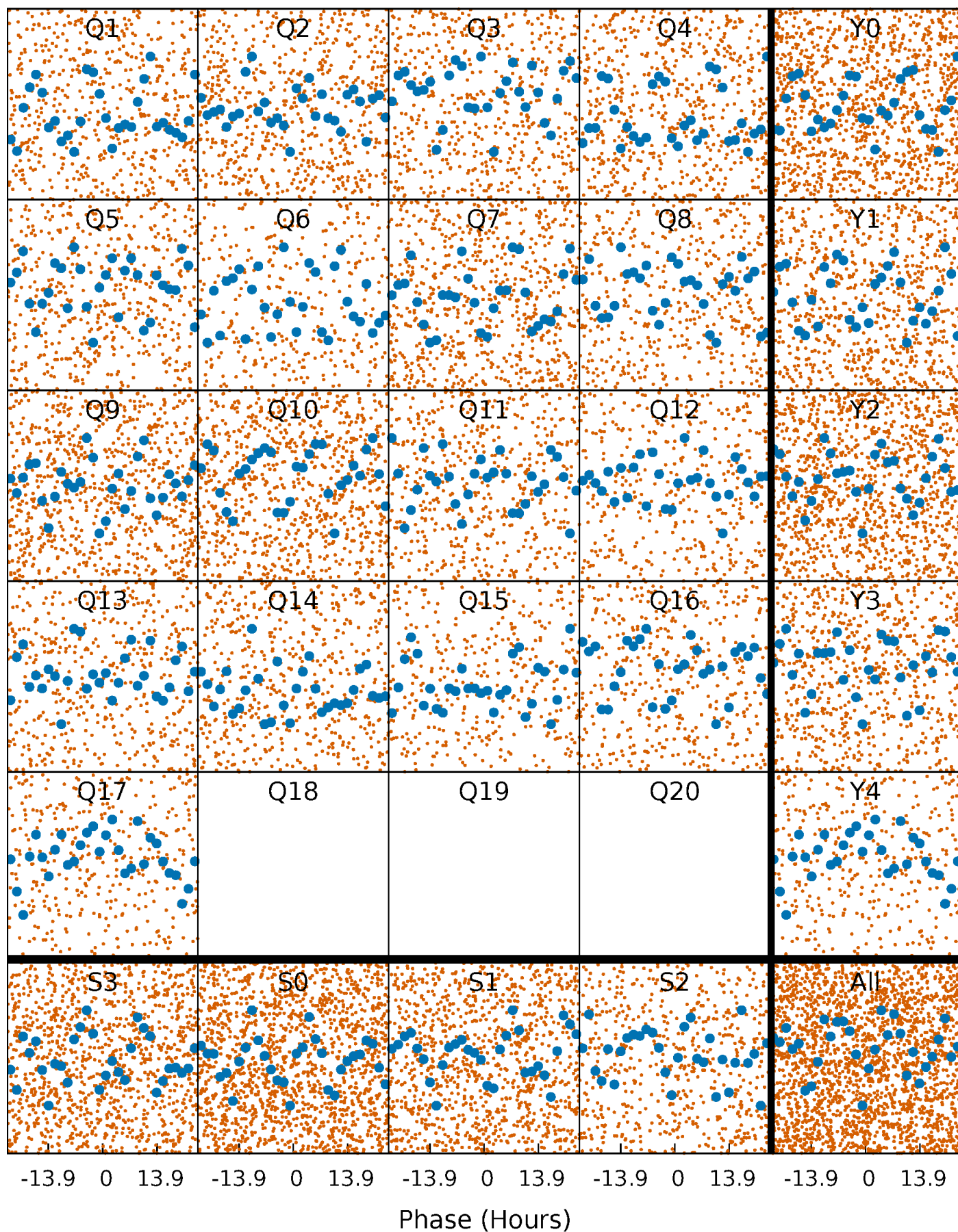


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



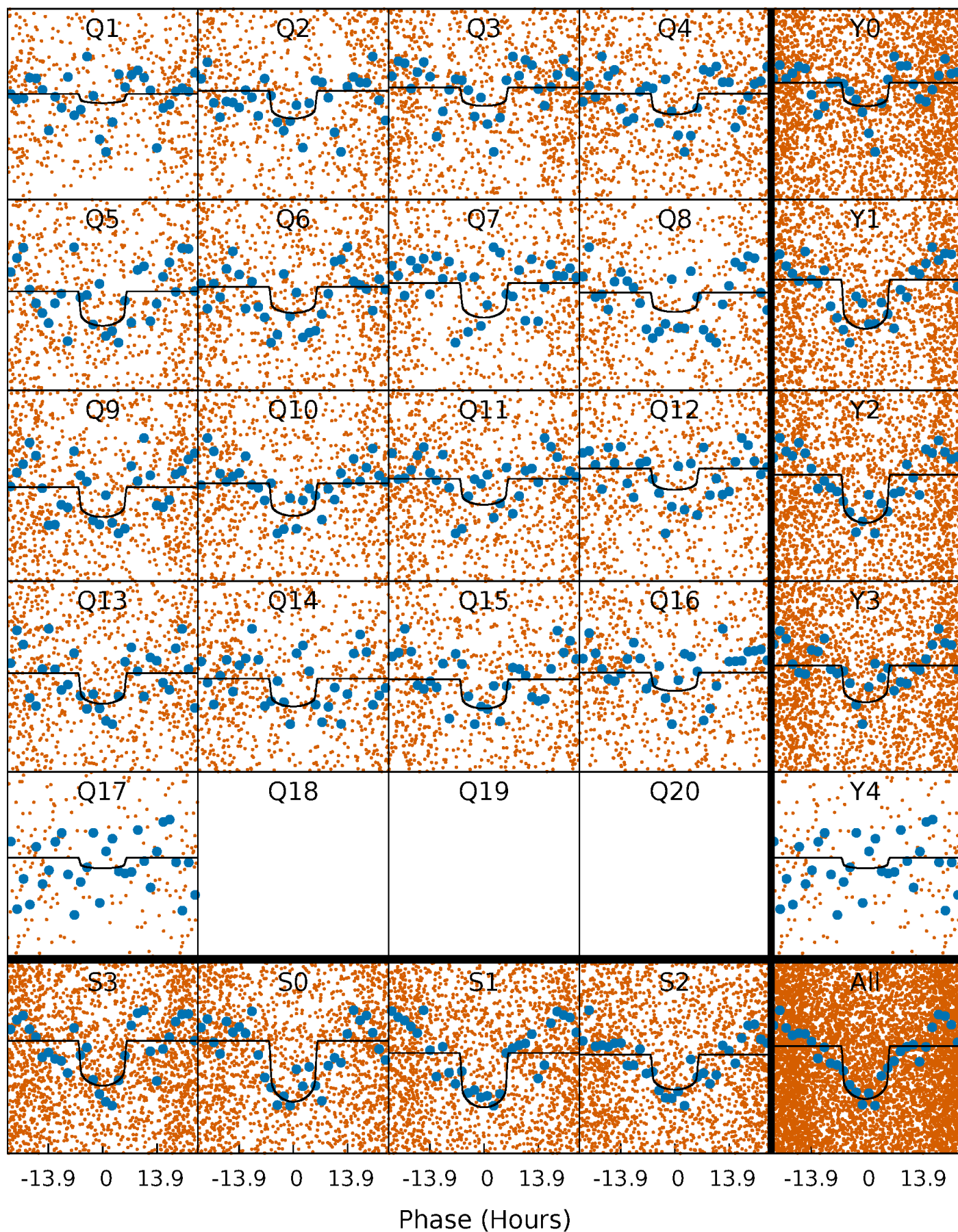
PDC Quarter-Phased Transit Curves

TCE 009594022-03 P= 1.743998 Days $T_0=131.669691$ (BKJD)



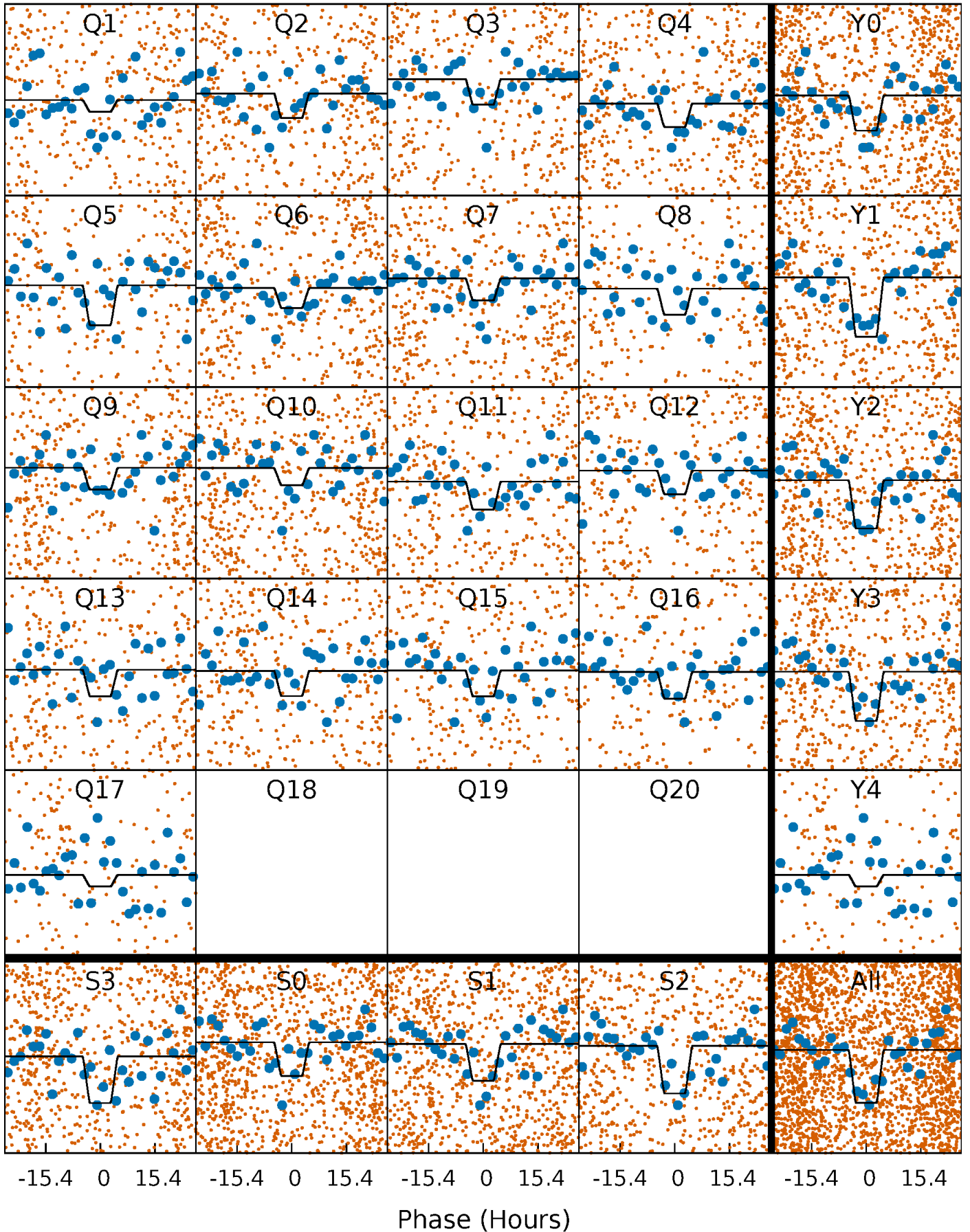
DV Quarter-Phased Transit Curves

TCE 009594022-03 P= 1.743998 Days $T_0=131.669691$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

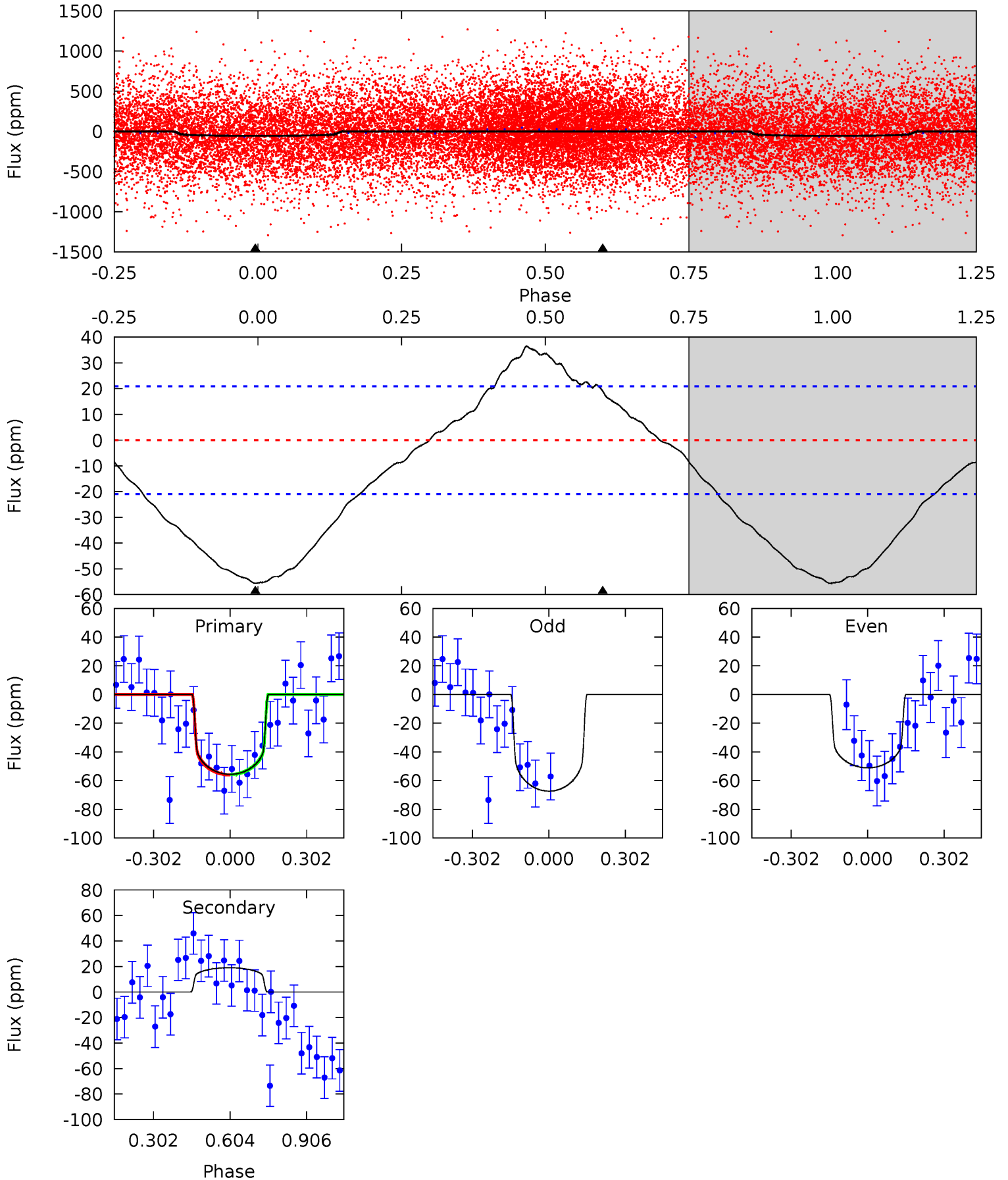
TCE 009594022-03 P= 1.743719 Days $T_0=131.734991$ (BKJD)



DV Model-Shift Uniqueness Test

009594022-03, P = 1.743998 Days, E = 131.669691 Days

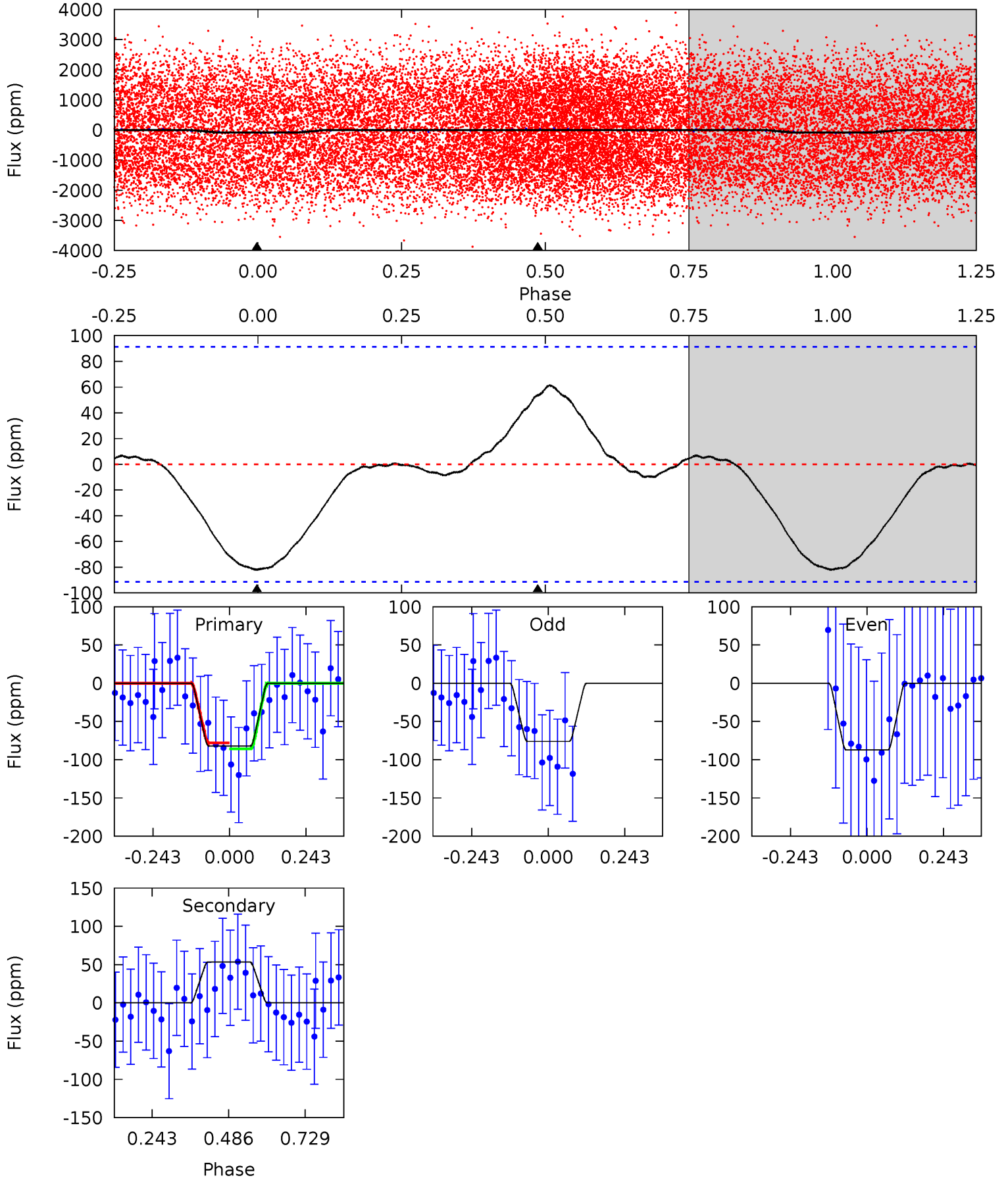
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	-3.93	0	0	4.33	1.03	1.22	11.5	11.5	-3.93	-3.93	1.61	0.96	0.40	0.04



Alt Model-Shift Uniqueness Test

009594022-03, P = 1.743719 Days, E = 131.734991 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.93	-2.56	0	0	4.37	1.17	0.16	3.93	3.93	-2.56	-2.56	0.27	1.02	0.43	0.19



Stellar Parameters For KIC 009594022

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	8169^{+251}_{-306}	$3.651^{+0.544}_{-0.096}$	$-0.520^{+0.200}_{-0.300}$	$3.406^{+0.452}_{-1.922}$	$1.894^{+0.056}_{-0.501}$	$0.068^{+0.489}_{-0.020}$
	+3%/-4%	+15%/-3%	+38%/-58%	+13%/-56%	+3%/-26%	+725%/-29%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009594022-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	19 ± 5	$2.59^{+1.06}_{-1.00}$	4829^{+361}_{-689}	-6073^{+694}_{-1240}	$-1.814^{+0.917}_{-2.834}$
Alt.	53 ± 21	$3.19^{+1.10}_{-1.08}$	4786^{+370}_{-698}	-7038^{+1071}_{-1428}	$-3.499^{+1.988}_{-4.460}$

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

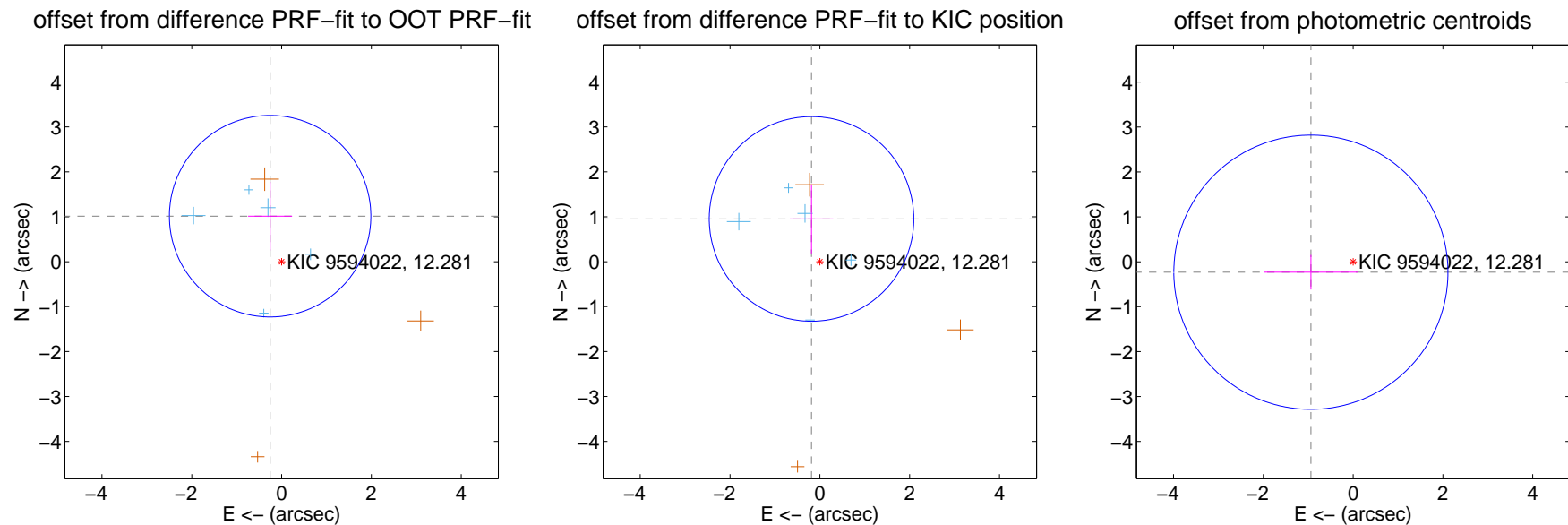
DV Centroid Data

Supplemental centroid analysis for 009594022-03. Kepler magnitude: 12.28. Transit SNR 9.93

There are 6 quarters with good PRF difference image offsets

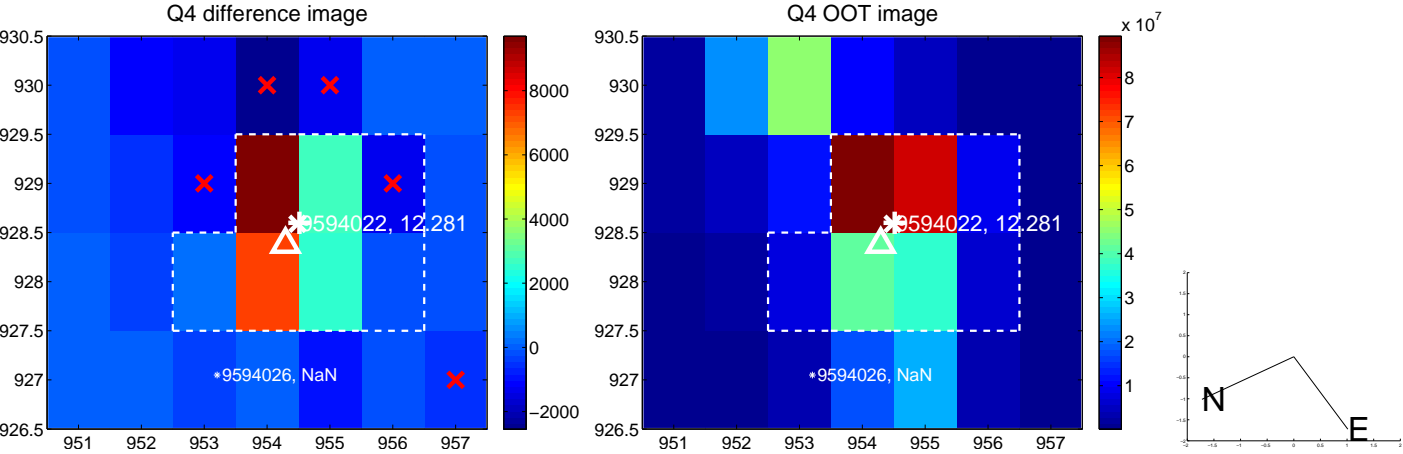
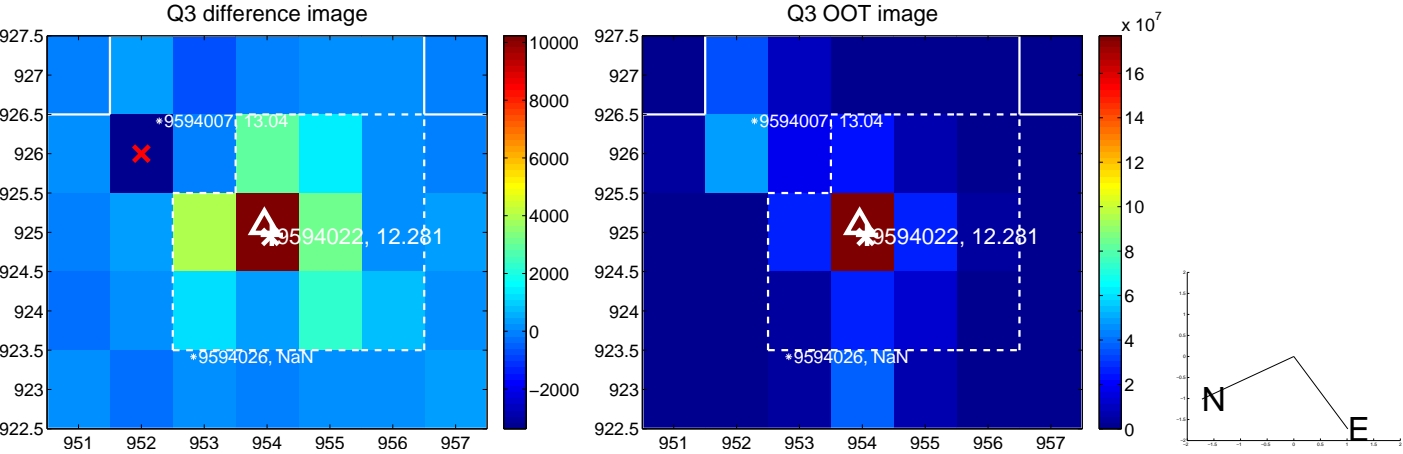
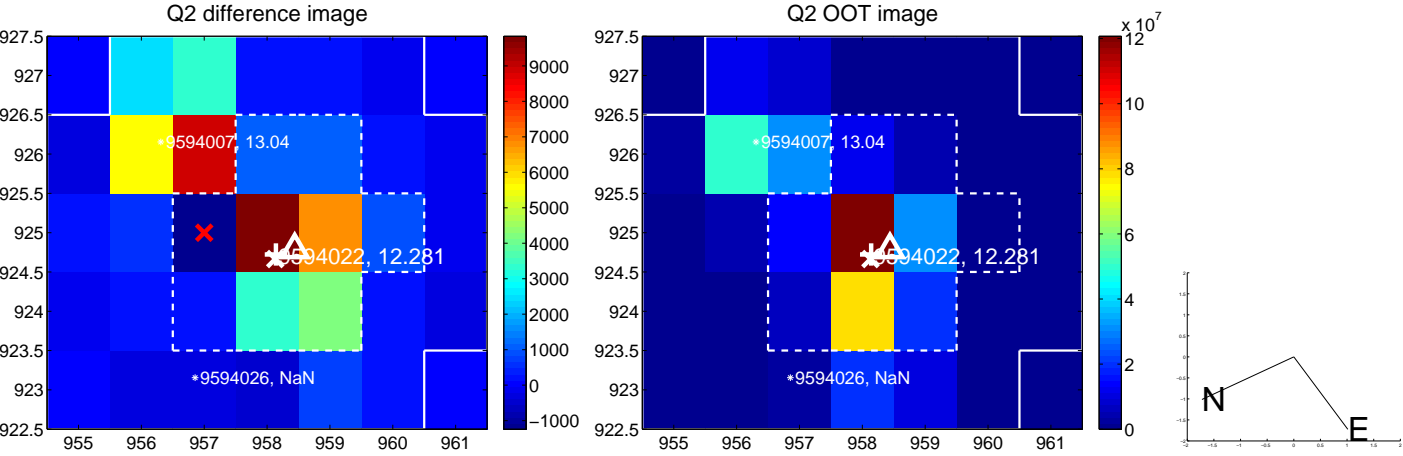
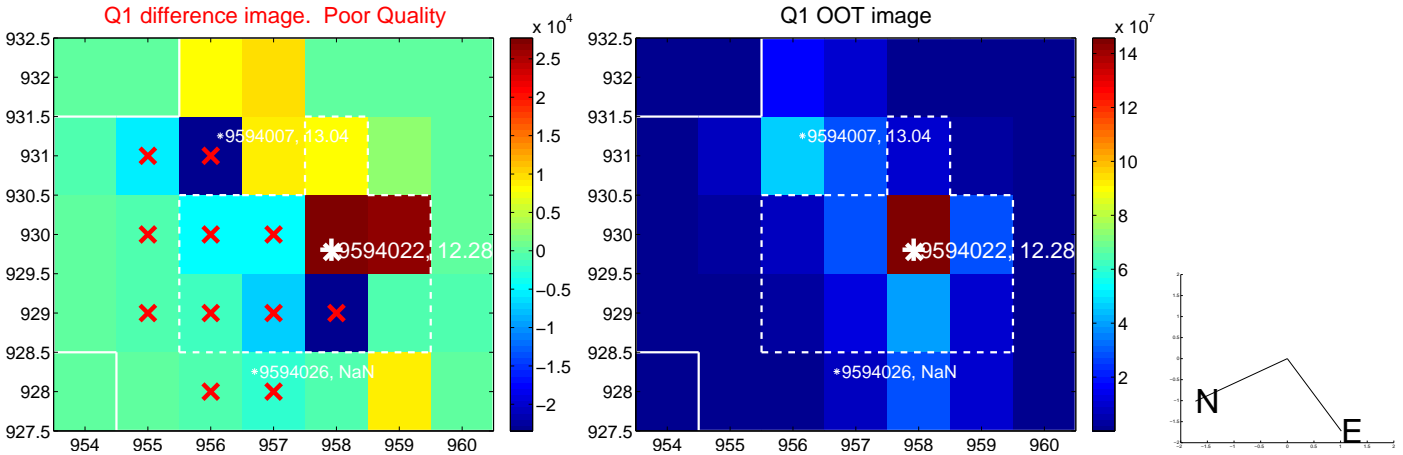
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.045 ± 0.748	1.40	0.255 ± 0.490	1.013 ± 0.761
PRF-fit source offset from KIC position	0.970 ± 0.759	1.28	0.186 ± 0.483	0.953 ± 0.768
photometric centroid source offset	0.97 ± 1.02	0.95	0.94 ± 1.04	-0.23 ± 0.38

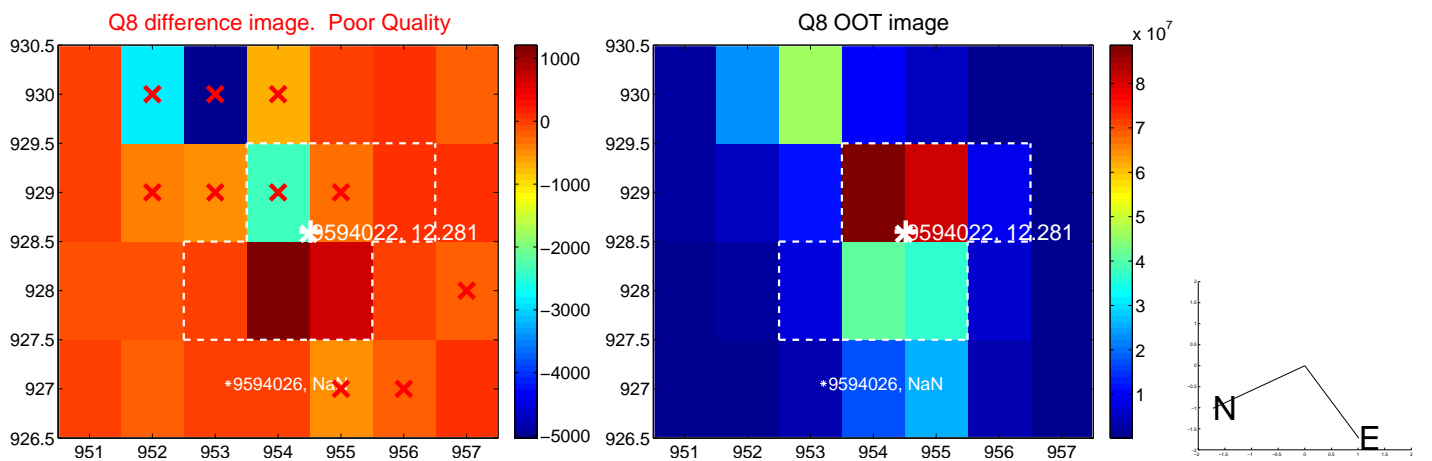
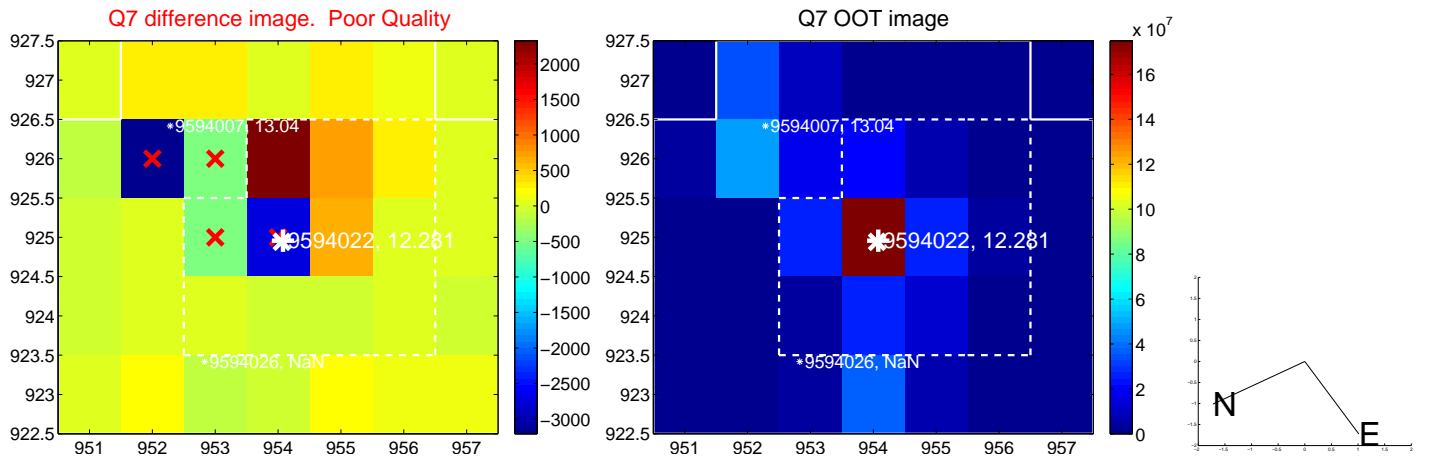
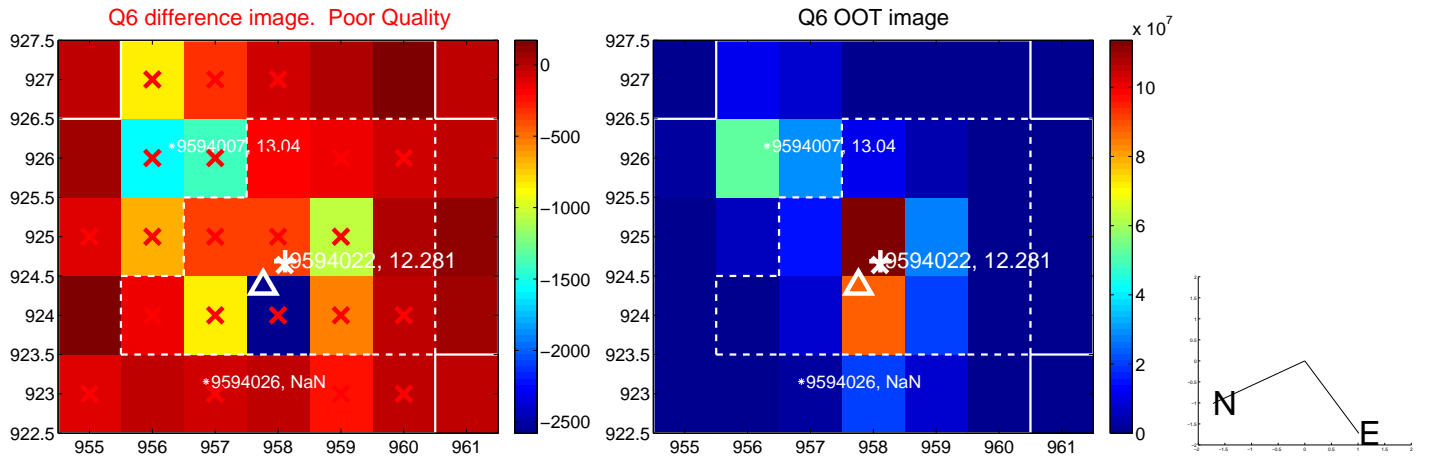
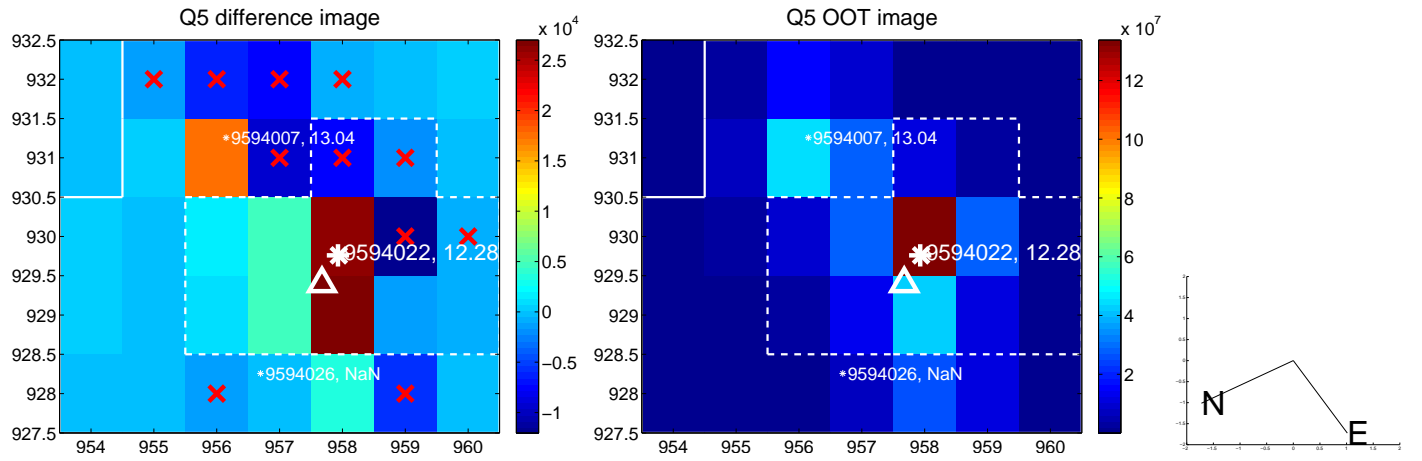


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

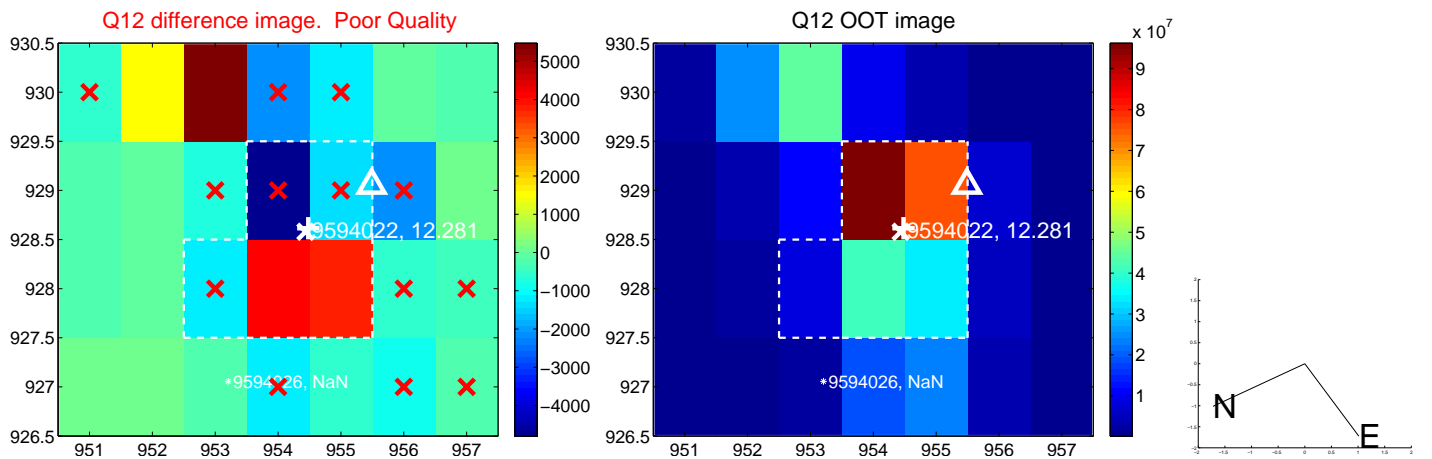
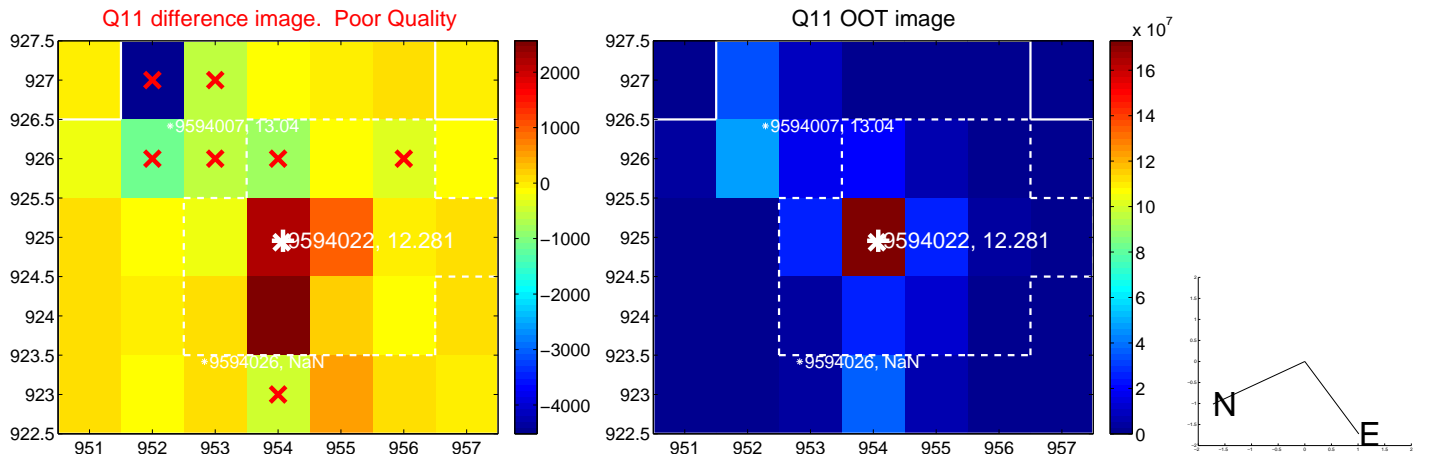
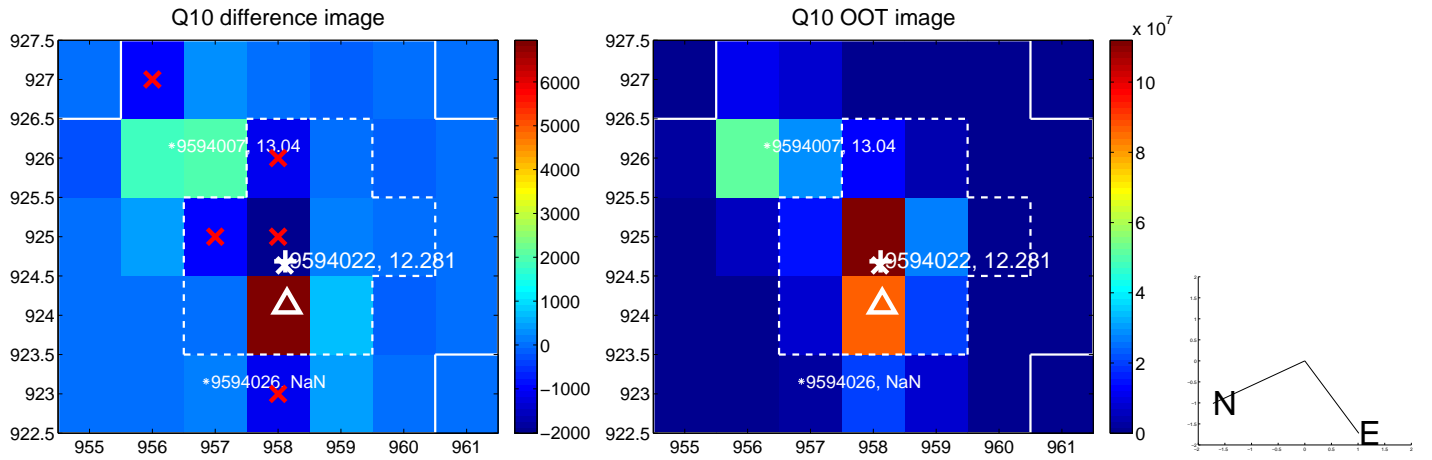
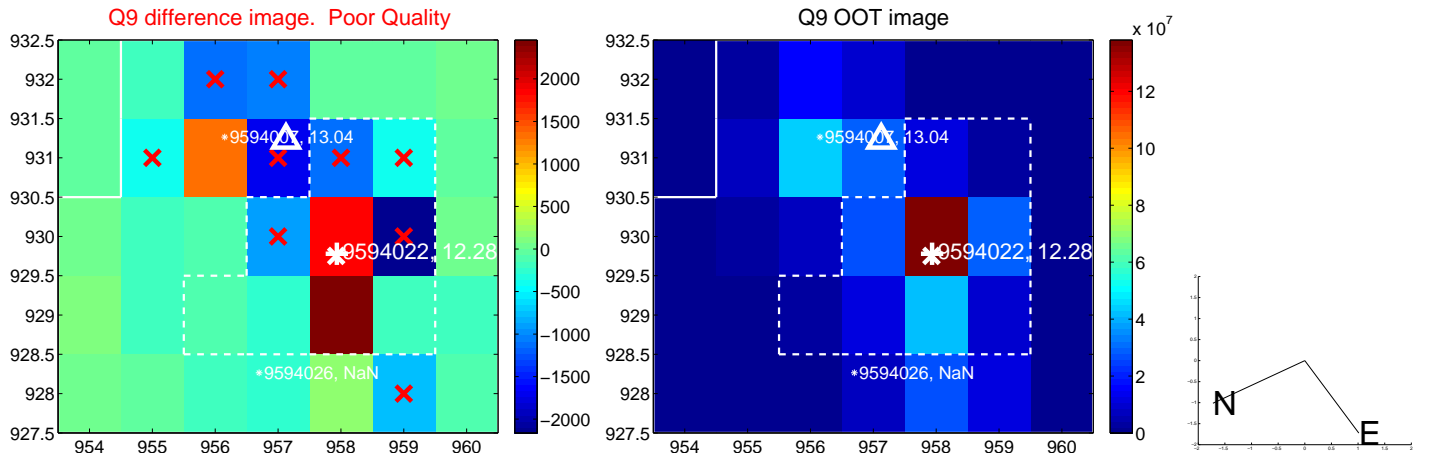
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



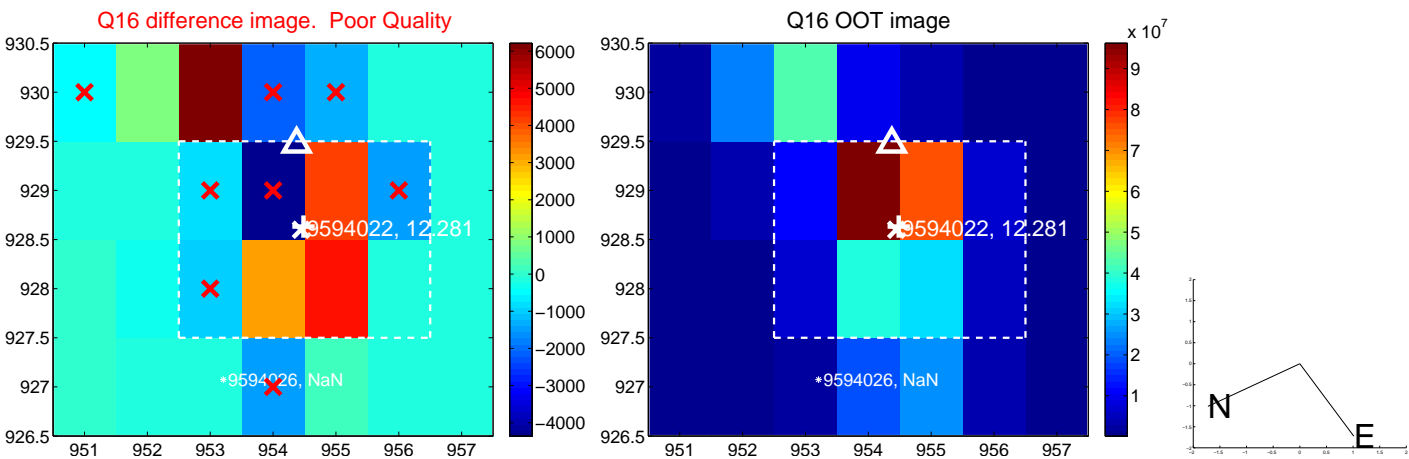
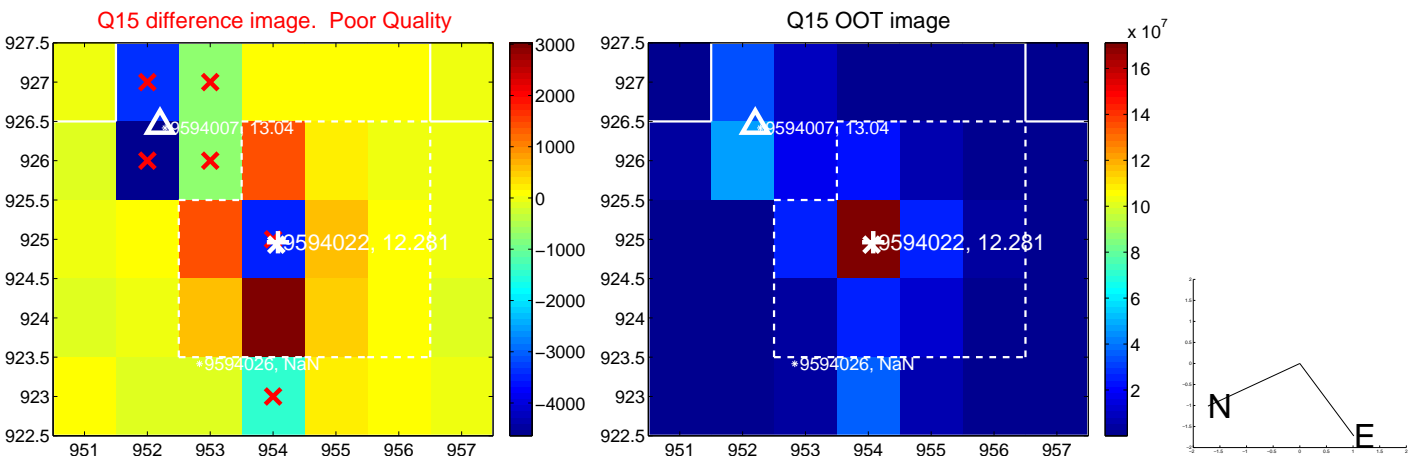
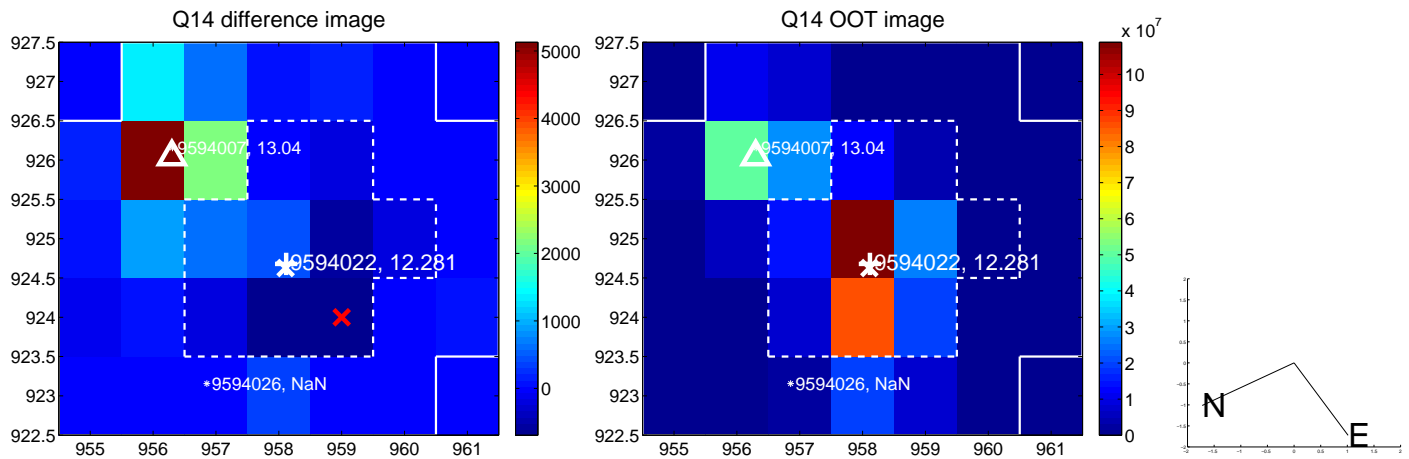
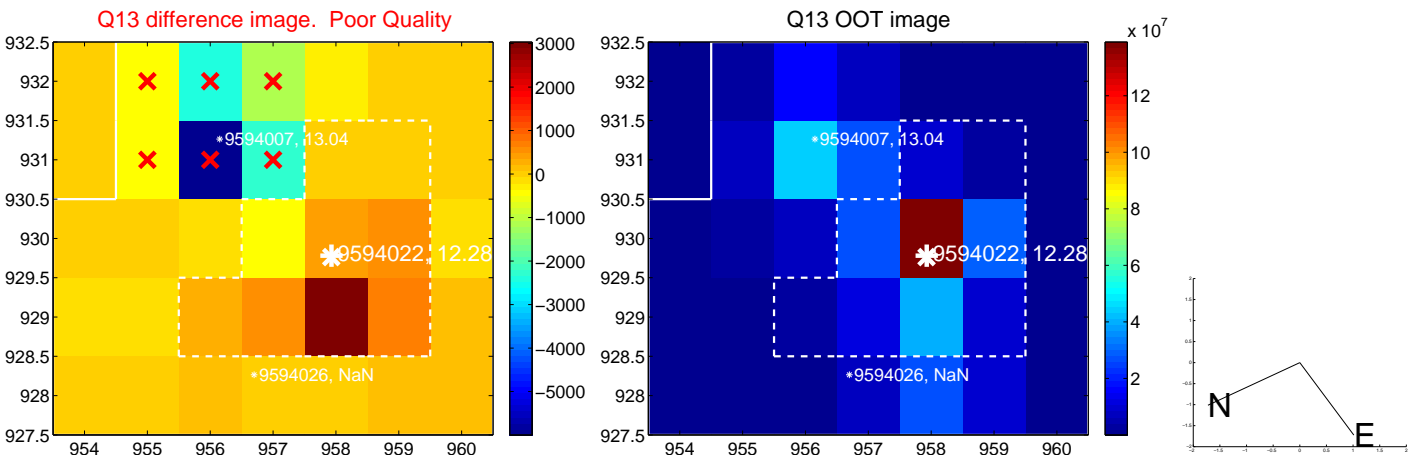
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



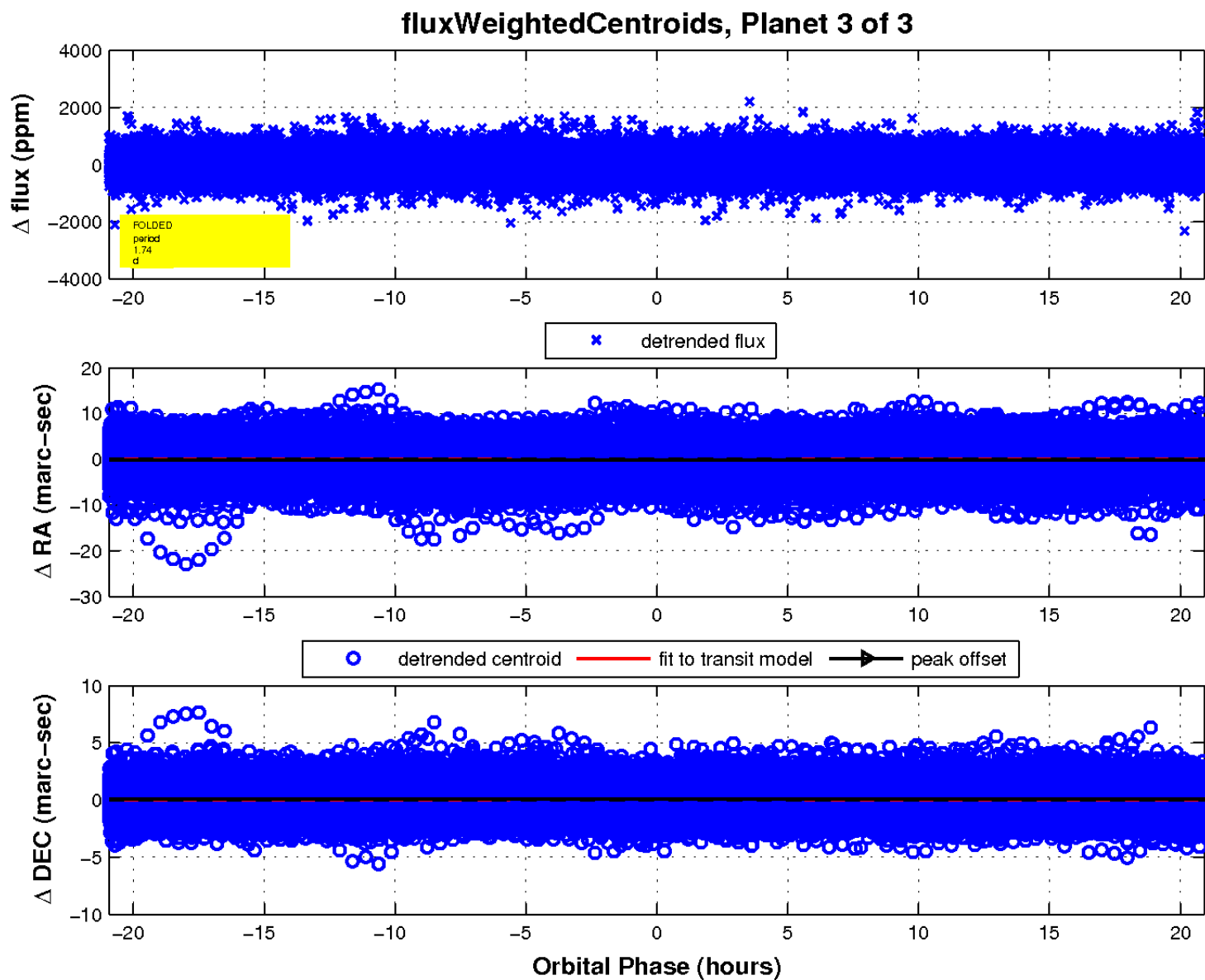
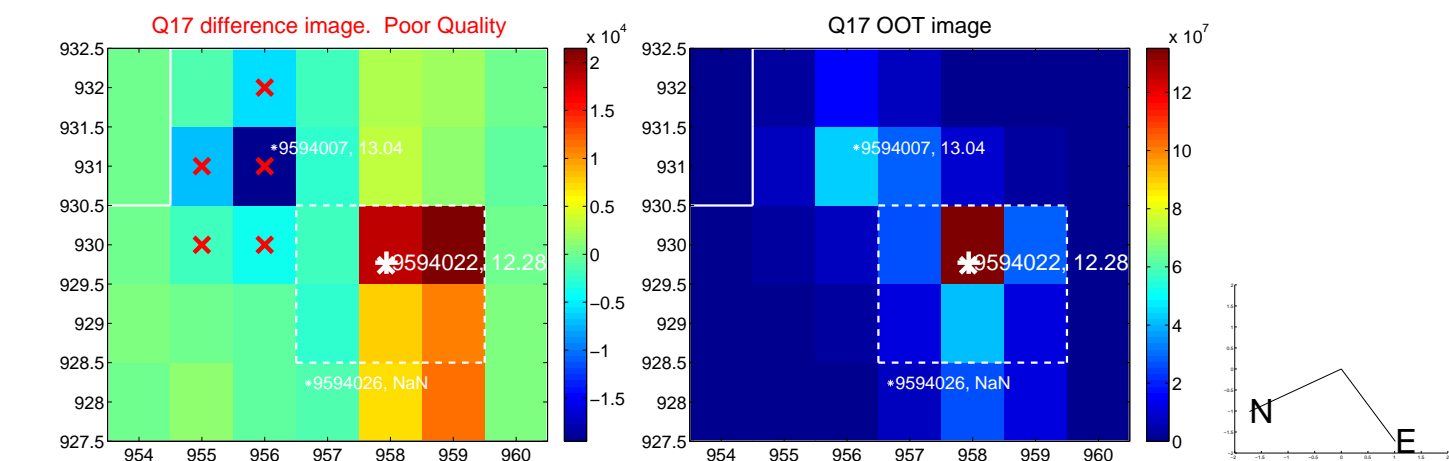
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

