

KIC 004995948

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})
004995948-01	OBS	No	1.522091	132.397542	17.8	4.868	8.4	8.5	1.52	6165	0.80	4379.84
004995948-02	OBS	No	1.014726	131.892606	19.3	3.556	8.5	9.1	1.52	6165	0.68	7520.52
004995948-03	OBS	No	47.745381	167.880419	117.8	5.694	7.3	7.4	1.52	6165	1.85	44.27
004995948-04	OBS	No	135.840999	243.869492	254.8	1.862	7.8	6.8	1.52	6165	2.45	10.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004995948-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
004995948-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
004995948-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
004995948-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

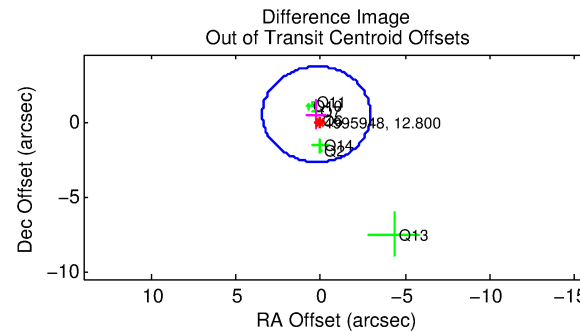
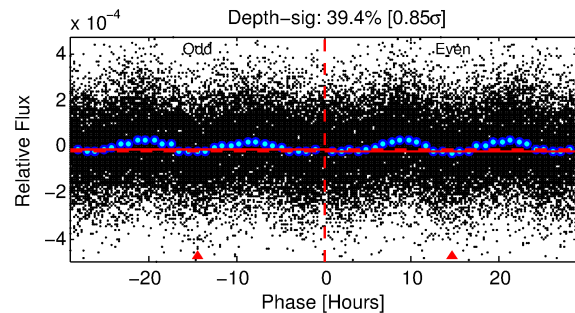
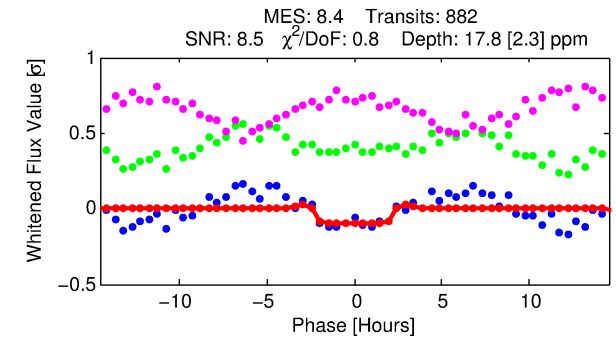
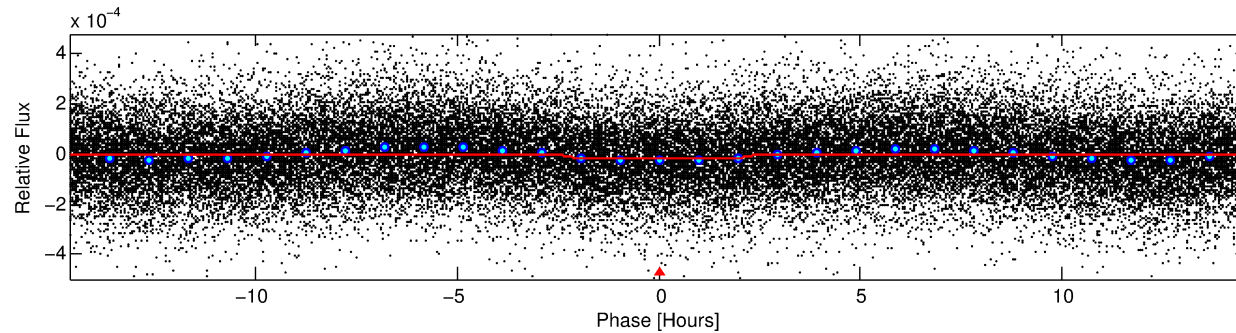
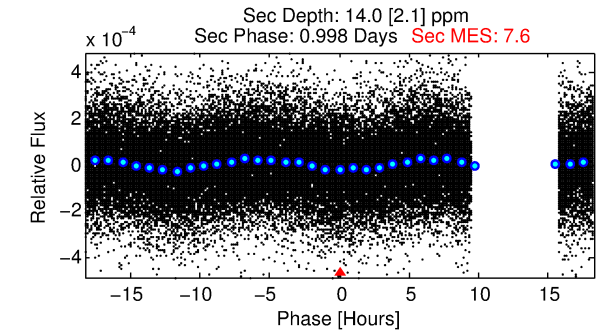
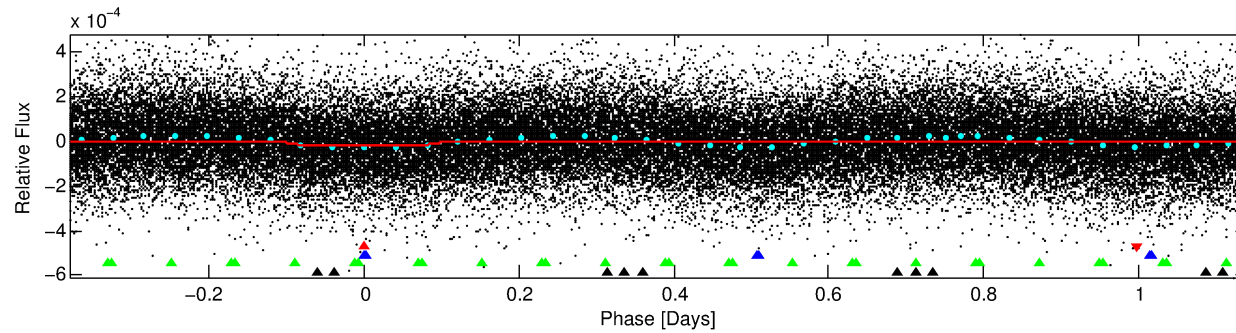
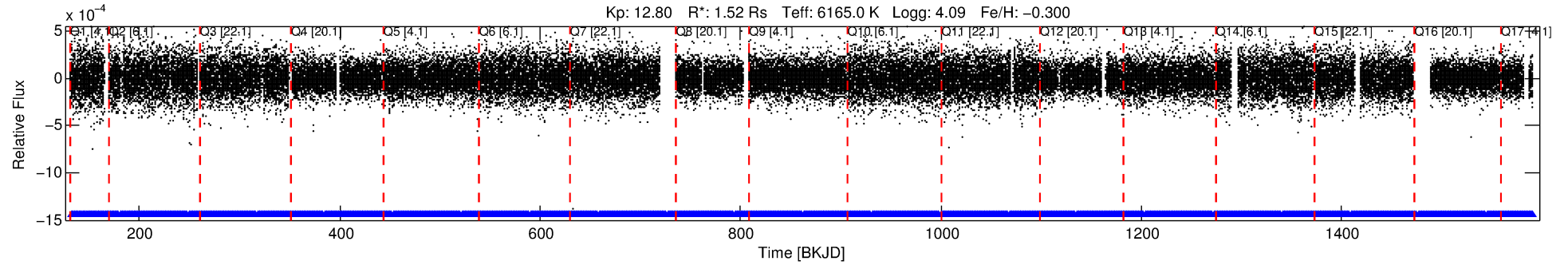
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004995948-01

No Significant Match Found

DV One-Page Summary

KIC: 4995948 Candidate: 1 of 4 Period: 1.522 d



DV Fit Results:

Period = 1.52209 [0.00002] d
Epoch = 132.3975 [0.0049] BKJD
Rp/R* = 0.0048 [0.0014]
a/R* = 1.25 [0.75]
b = 0.95 [0.18]
Seff = 4379.84 [1983.48]
Teq = 2074 [235] K
Rp = 0.80 [0.31] Re
a = 0.0261 [0.0070] AU
Ag = 8.31 [6.16] [1.19σ]
Teffp = 5445 [834] K [3.89σ]

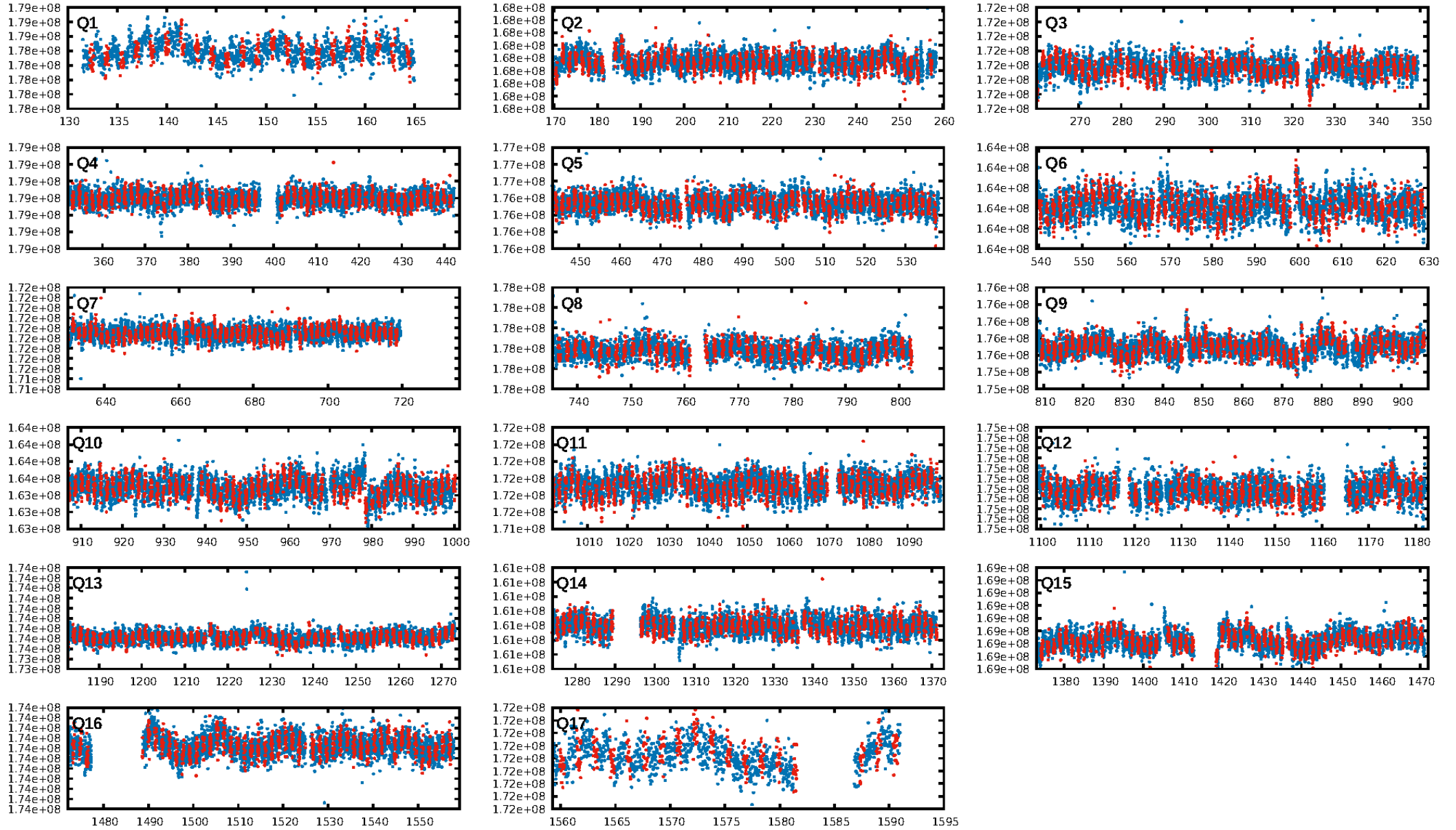
DV Diagnostic Results:

ShortPeriod-sig: 95.7% [2.02σ]
LongPeriod-sig: 100.0% [148.10σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.16e-09
RollingBand-fgt: 1.00 [842/842]
GhostDiagnostic-chr: -0.835
Centroid-sig: 0.0%
Centroid-so: 6.872 arcsec [3.74σ]
OotOffset-rm: 0.556 arcsec [0.52σ]
OotOffset-st: 4/2/0/1 [7]
KicOffset-rm: 8.395 arcsec [6.30σ]
KicOffset-st: 4/2/1/1 [8]
DiffImageQuality-fgm: 0.75 [6/8]
DiffImageOverlap-fno: 0.71 [12/17]

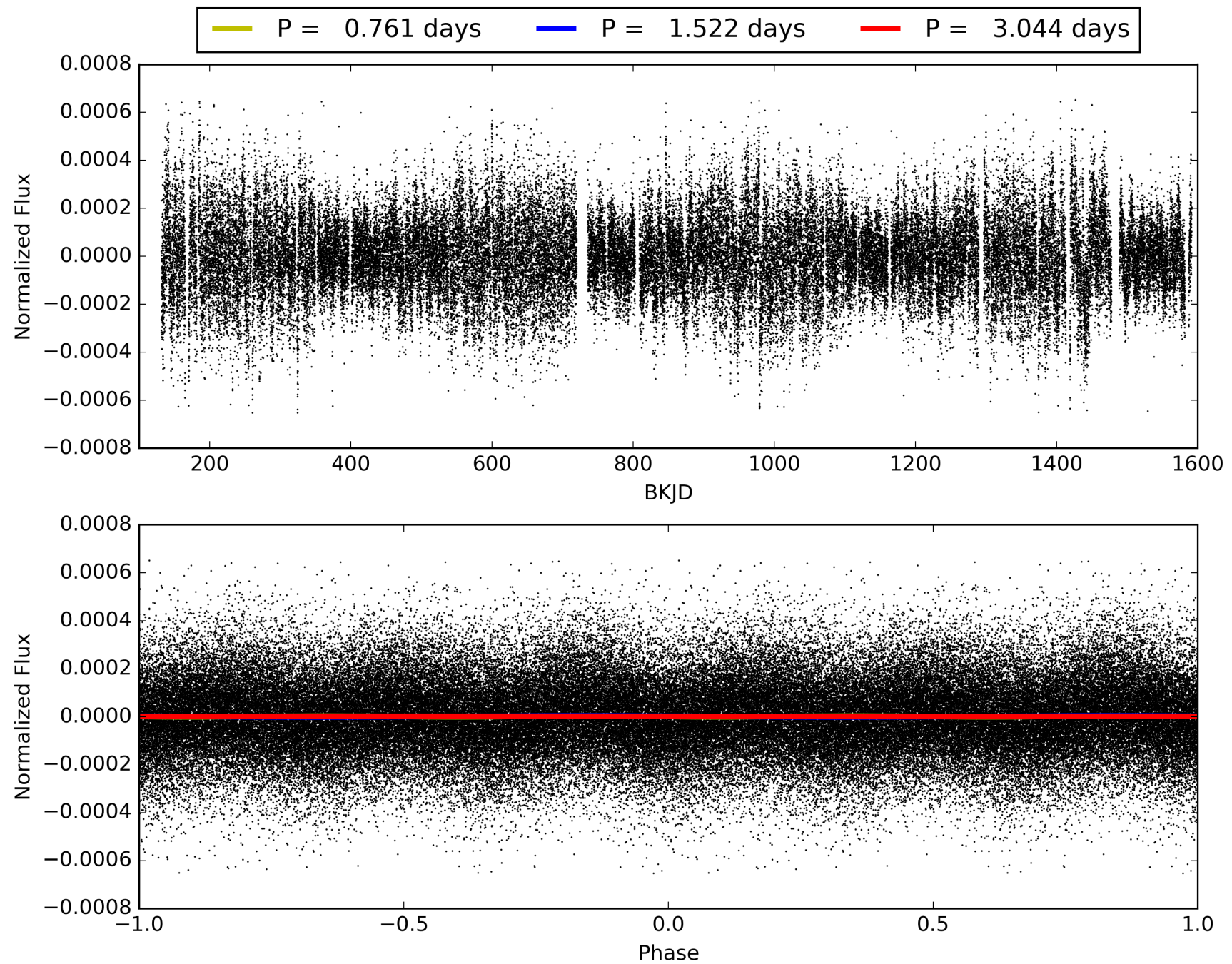
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004995948-01, PDC Light Curves

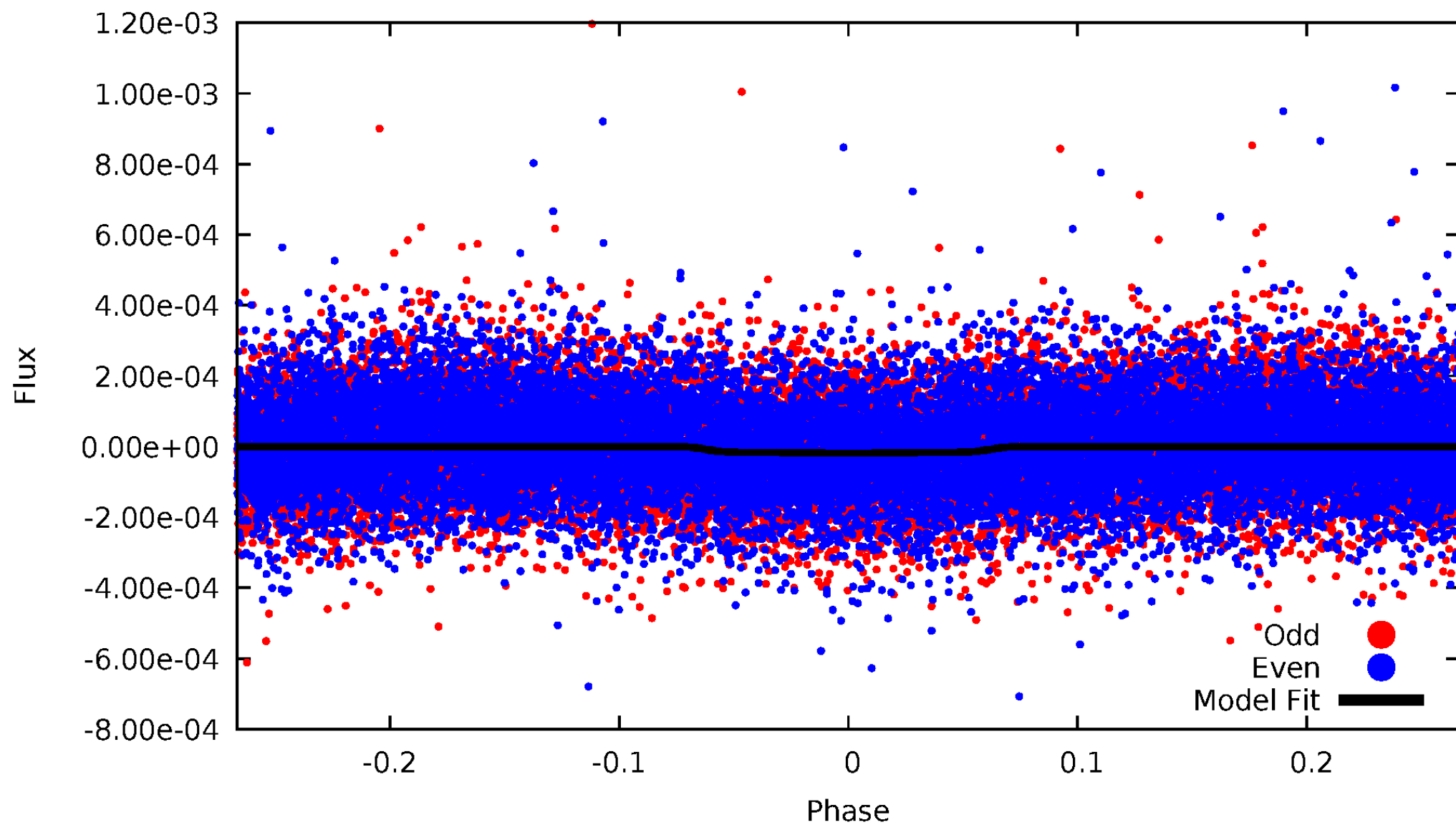


TCE 004995948-01



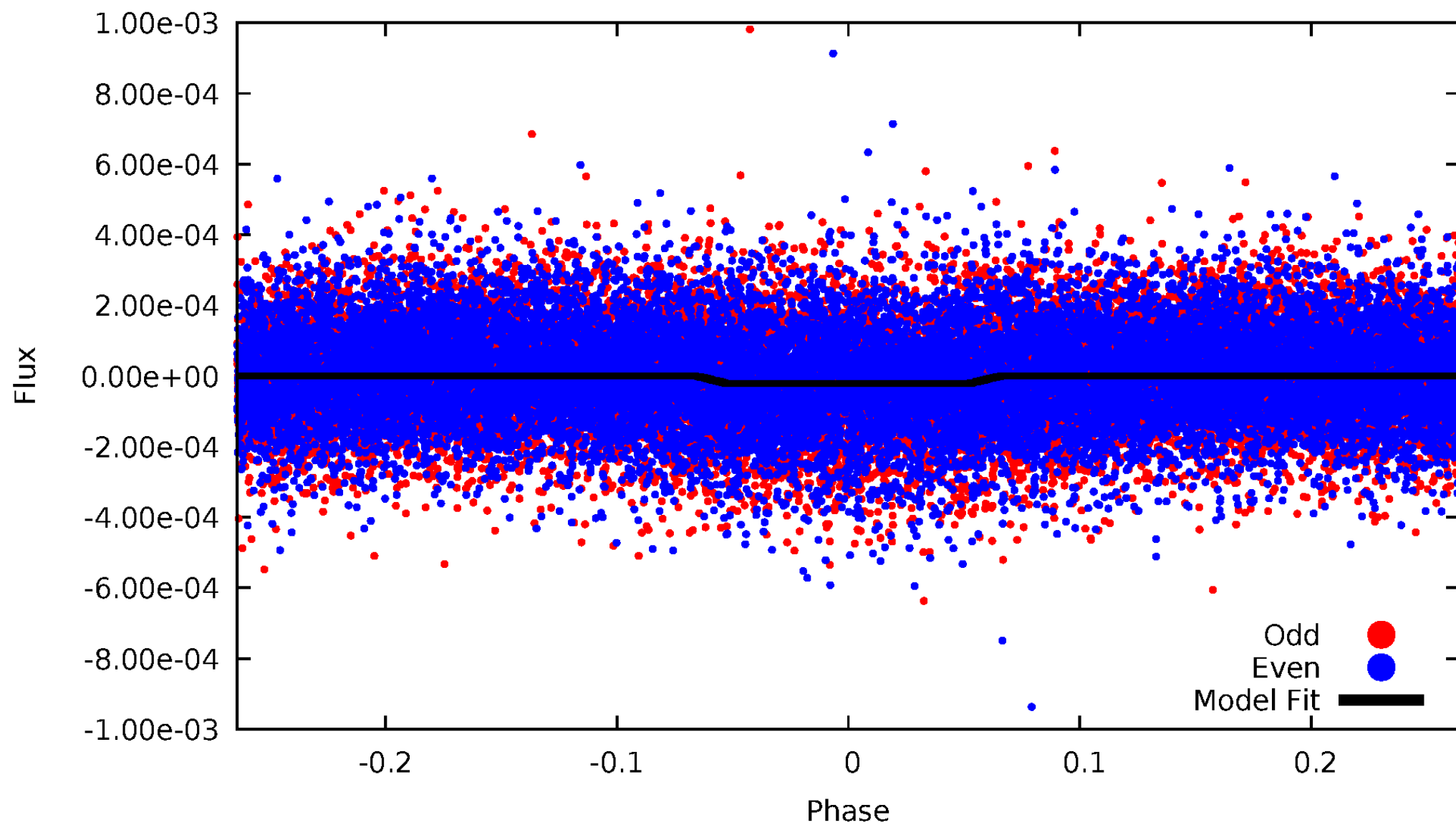
DV Odd/Even

TCE 004995948-01

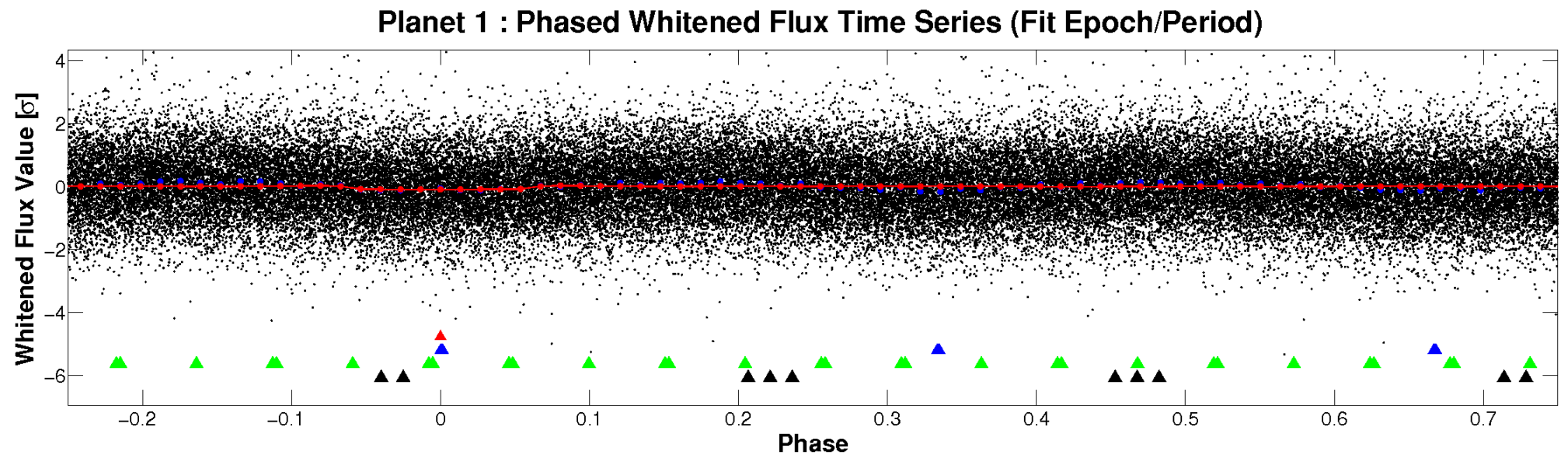
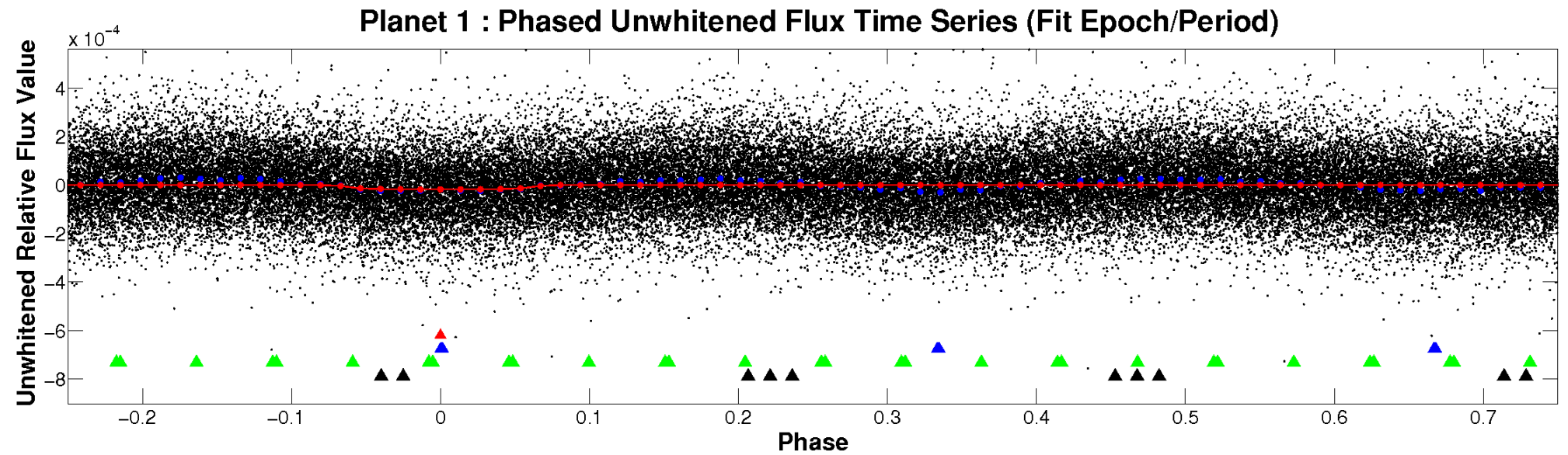


ALT Odd/Even

TCE 004995948-01

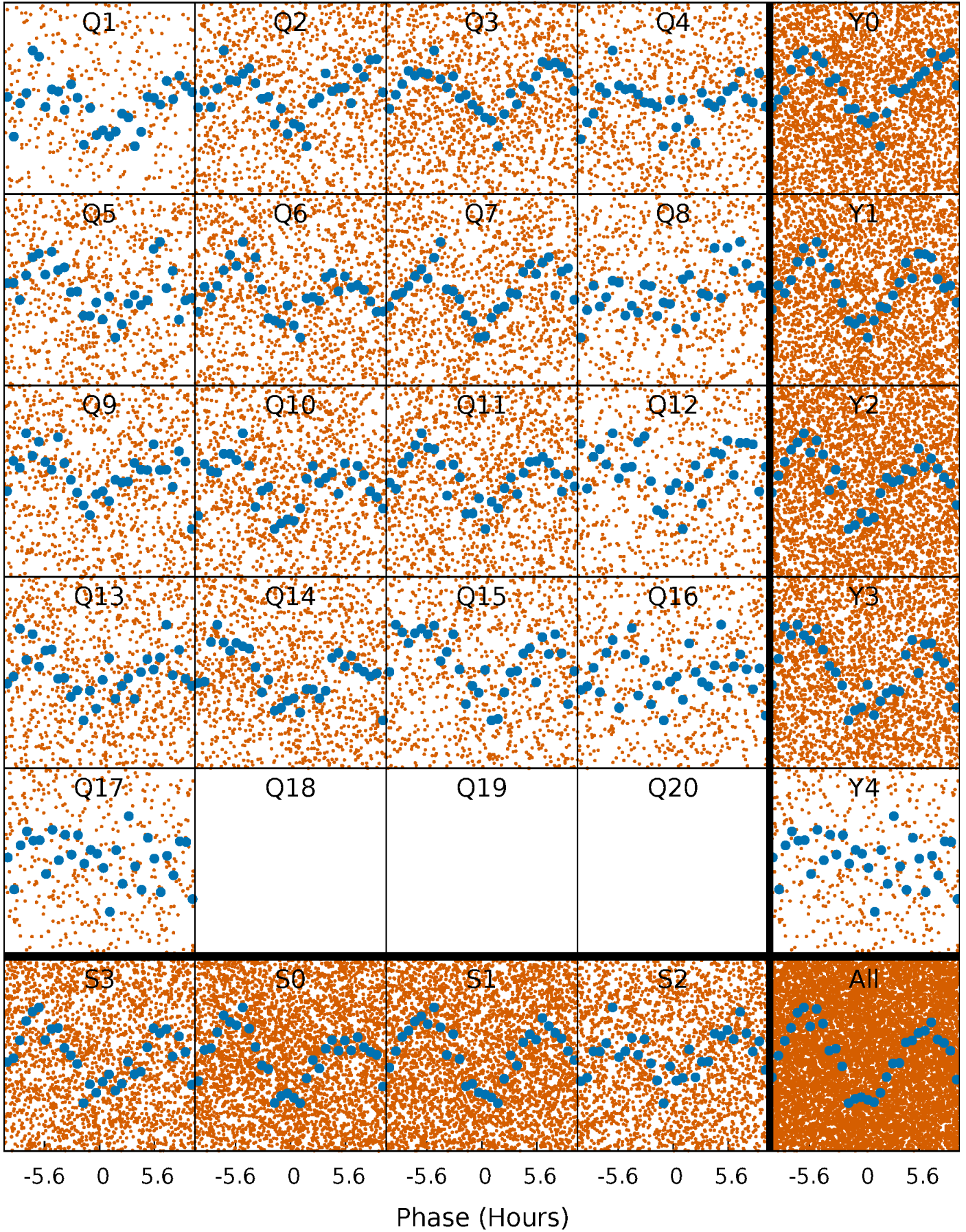


Non-Whitened Vs. Whitened Light Curve



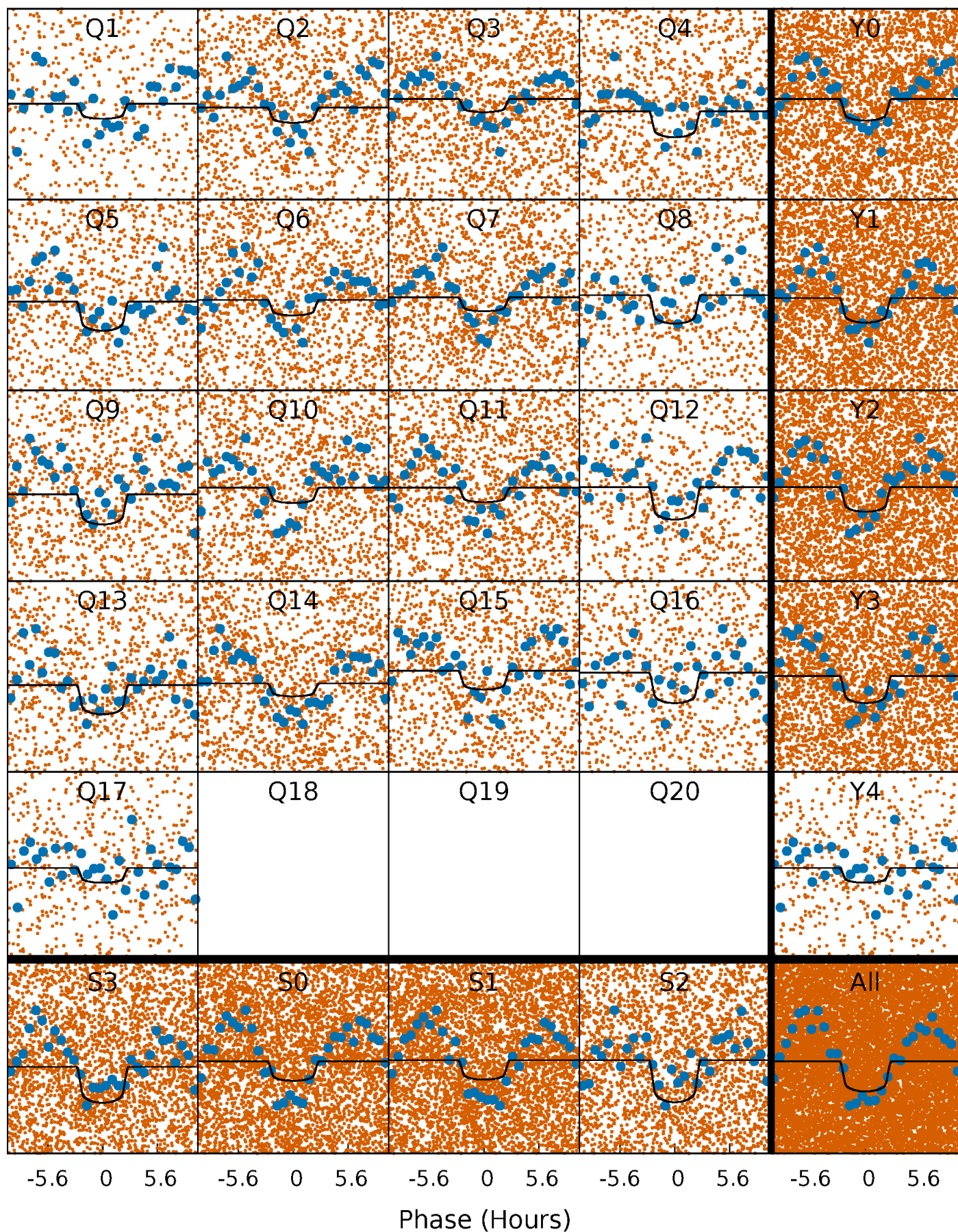
PDC Quarter-Phased Transit Curves

TCE 004995948-01 P= 1.522091 Days $T_0=132.397542$ (BKJD)



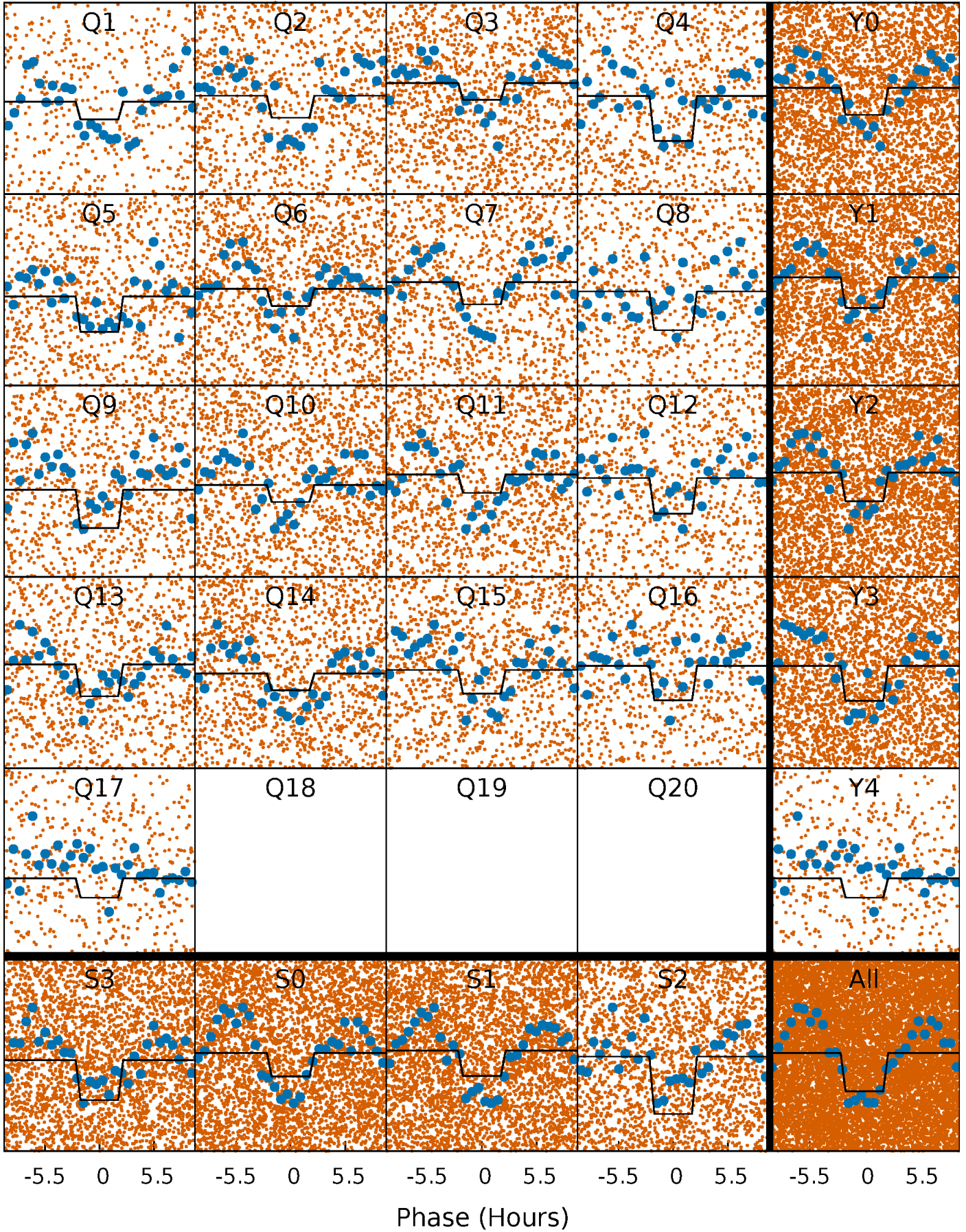
DV Quarter-Phased Transit Curves

TCE 004995948-01 P= 1.522091 Days $T_0=132.397542$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

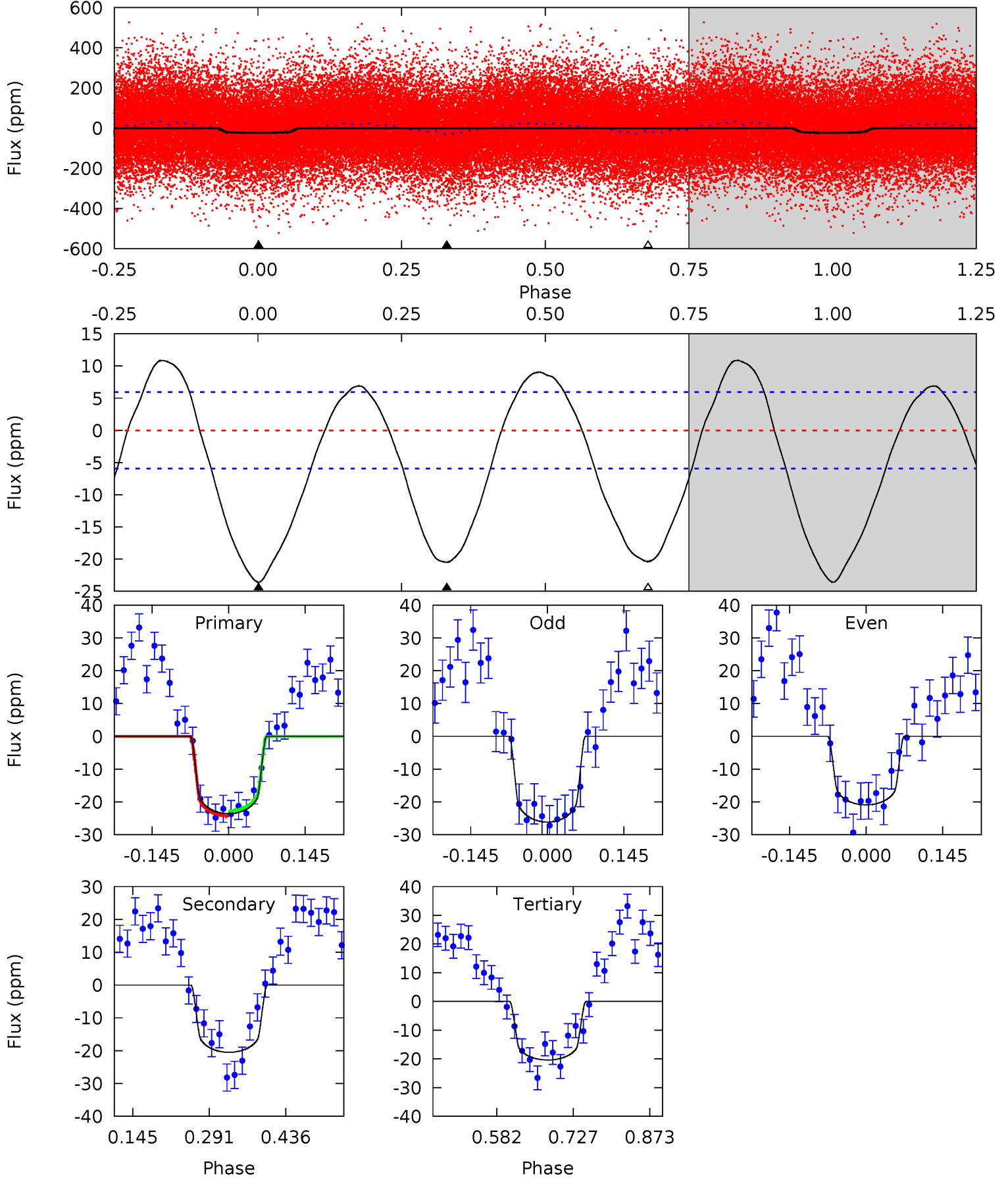
TCE 004995948-01 P= 1.522066 Days $T_0=132.411665$ (BKJD)



DV Model-Shift Uniqueness Test

004995948-01, P = 1.522091 Days, E = 130.875451 Days

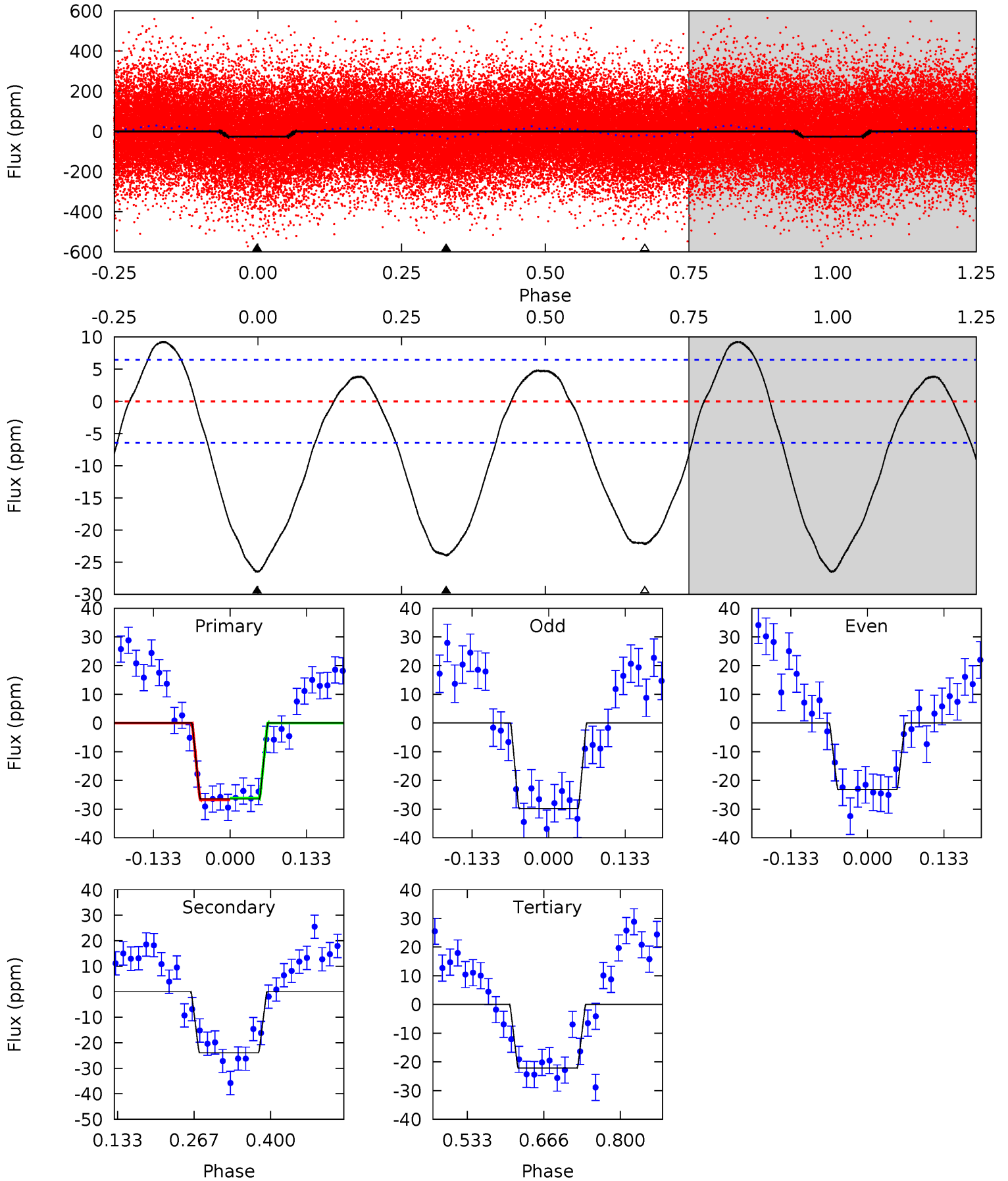
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	15.5	15.4	0	4.49	1.46	8.25	2.42	17.8	0.08	15.5	1.99	1.26	0.32	0.57



Alt Model-Shift Uniqueness Test

004995948-01, P = 1.522066 Days, E = 130.889599 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.5	16.7	15.4	0	4.50	1.50	7.29	3.03	18.5	1.24	16.7	2.33	1.39	0.26	0.18



Stellar Parameters For KIC 004995948

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6165^{+170}_{-189}	$4.086^{+0.259}_{-0.111}$	$-0.300^{+0.300}_{-0.300}$	$1.521^{+0.334}_{-0.408}$	$1.029^{+0.180}_{-0.135}$	$0.412^{+0.600}_{-0.160}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-27%	+17%/-13%	+146%/-39%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004995948-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-20 ± 1	$0.77^{+0.25}_{-0.24}$	2854^{+171}_{-196}	5939^{+1207}_{-690}	13^{+14}_{-5}
Alt.	-24 ± 1	$0.73^{+0.27}_{-0.25}$	2859^{+177}_{-227}	6369^{+1615}_{-832}	18^{+24}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

DV Centroid Data

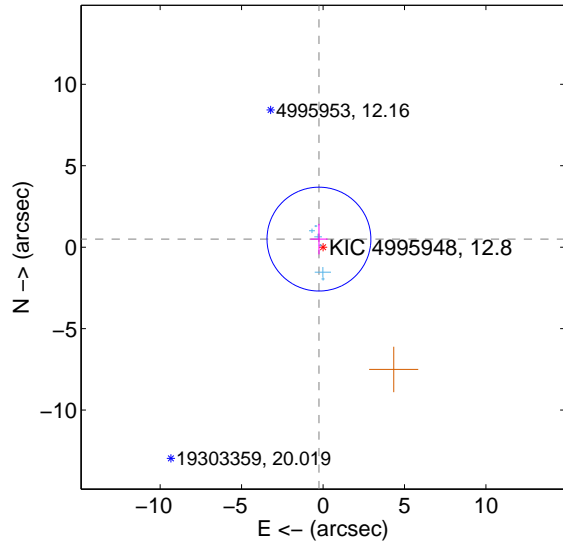
Supplemental centroid analysis for 004995948-01. Kepler magnitude: 12.80. Transit SNR 8.55

There are 6 quarters with good PRF difference image offsets

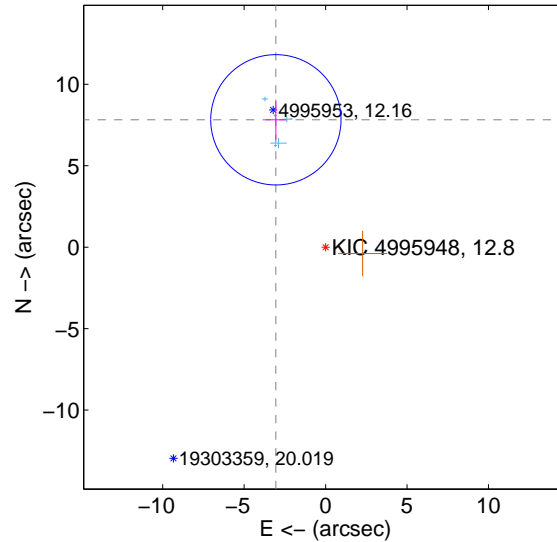
The OOT PRF centroid is offset from the target star catalog position by about 8.43 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.556 ± 1.063	0.52	0.251 ± 0.528	0.496 ± 0.937
PRF-fit source offset from KIC position	8.395 ± 1.333	6.30	3.051 ± 0.638	7.821 ± 1.230
photometric centroid source offset	6.87 ± 1.84	3.74	2.28 ± 0.87	6.48 ± 1.92

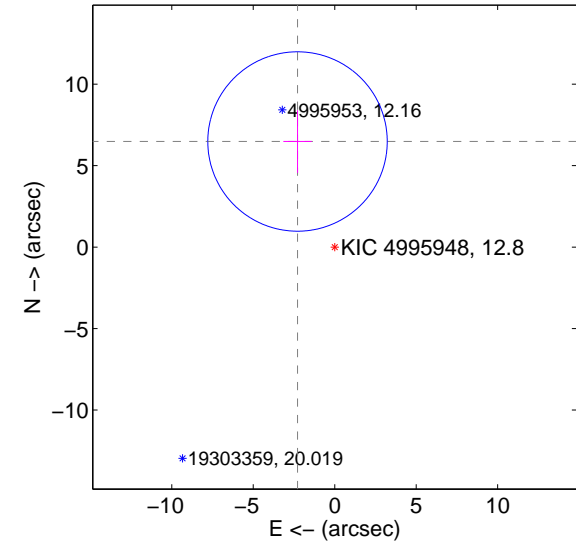
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

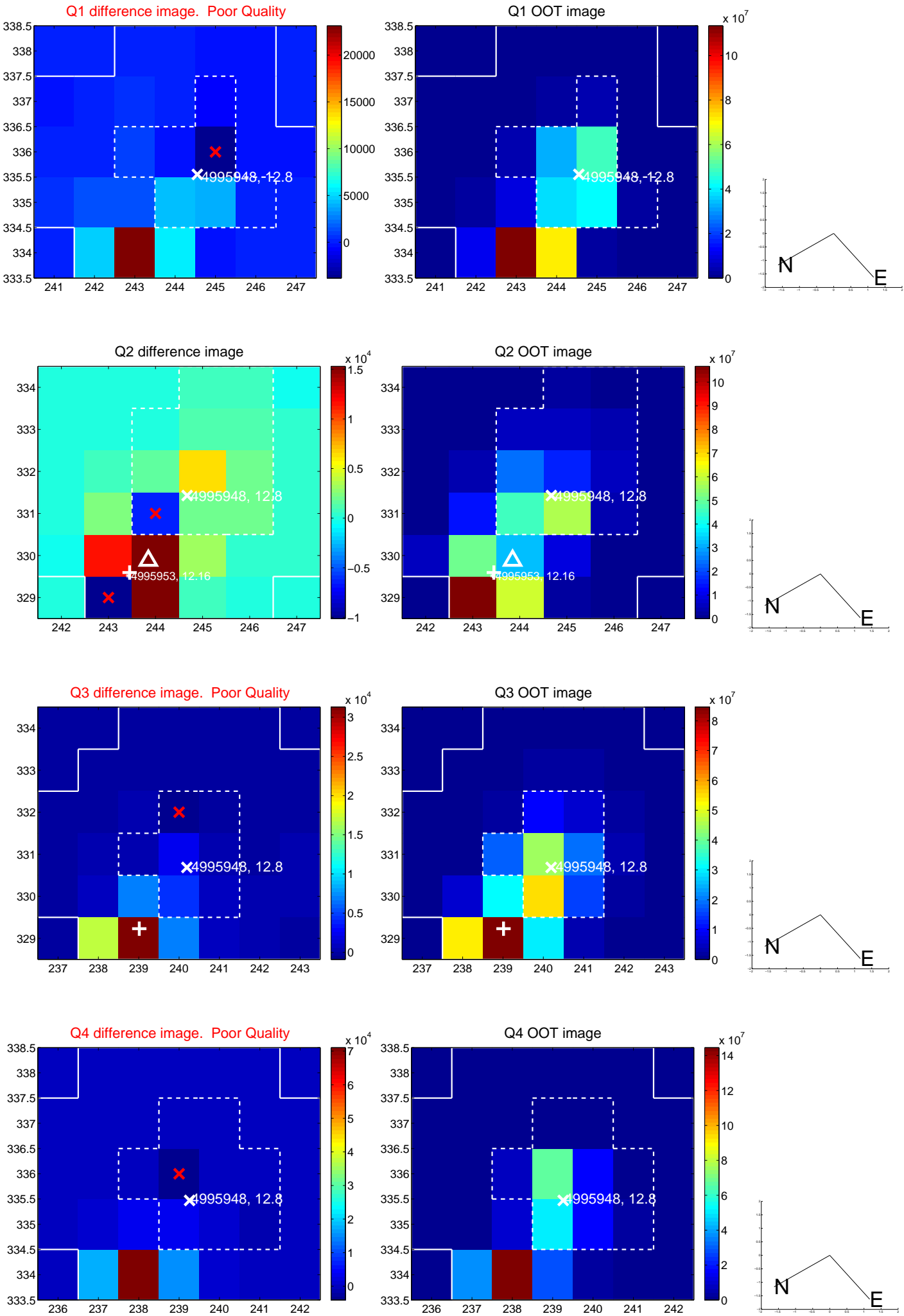


offset from photometric centroids

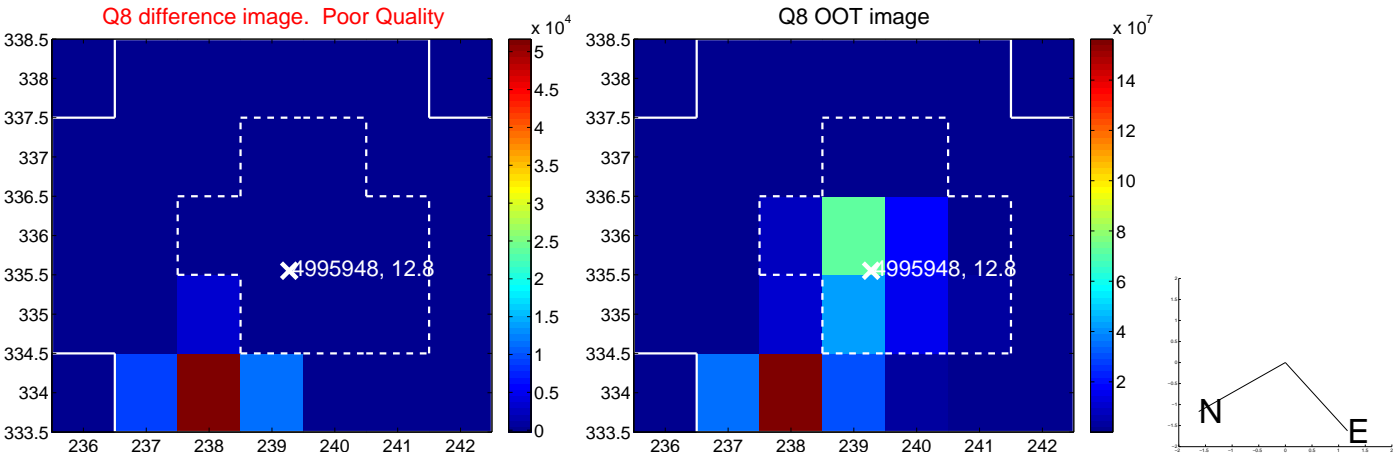
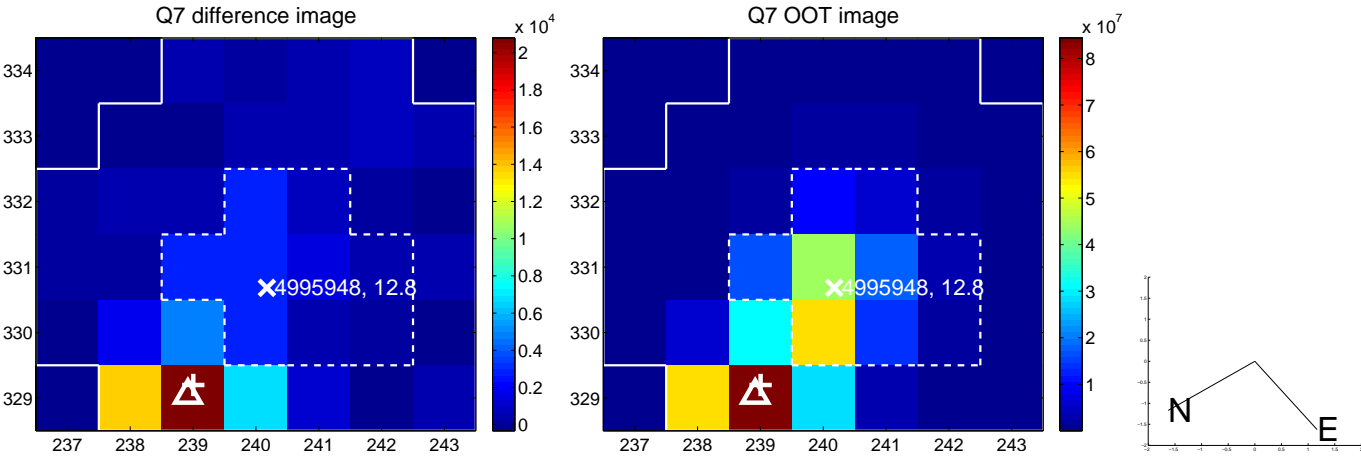
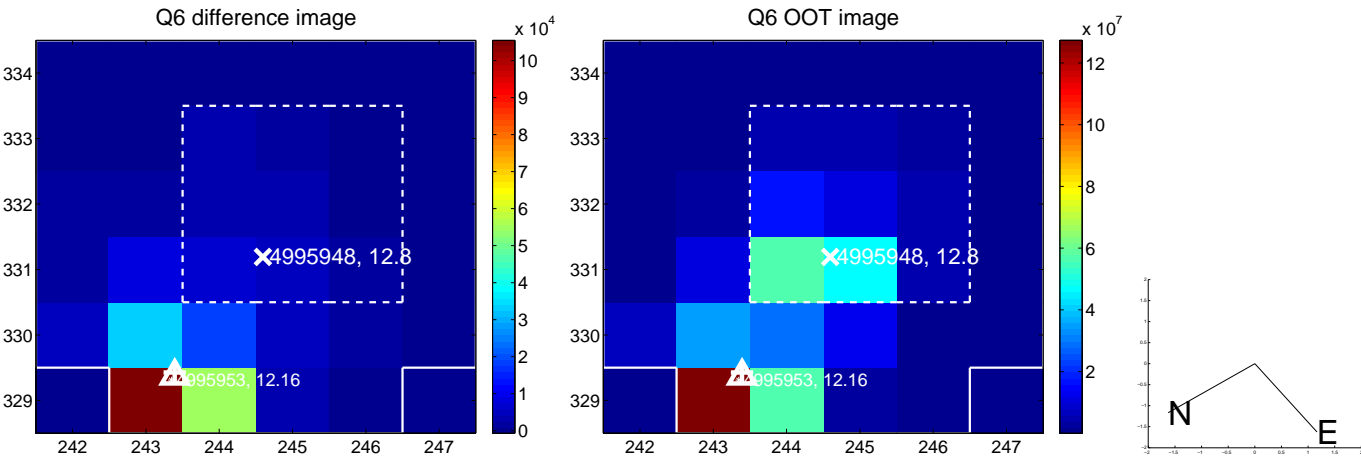
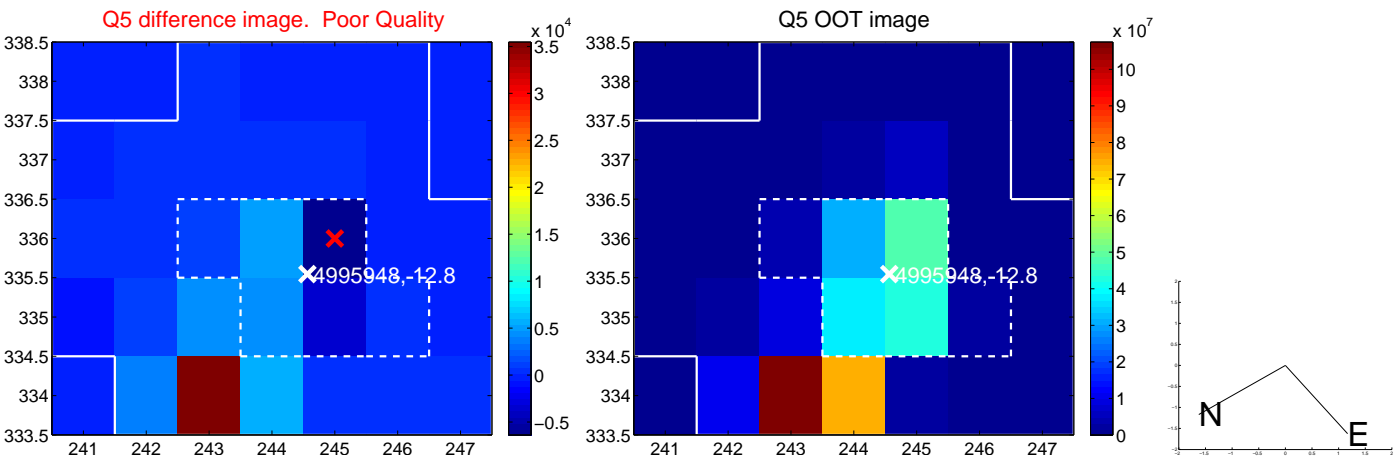


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

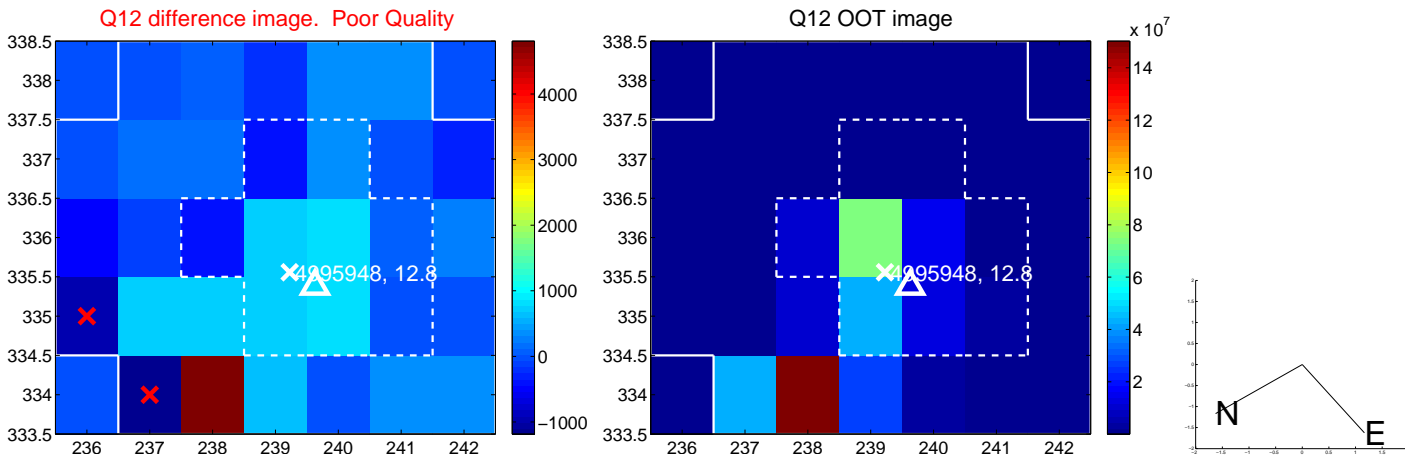
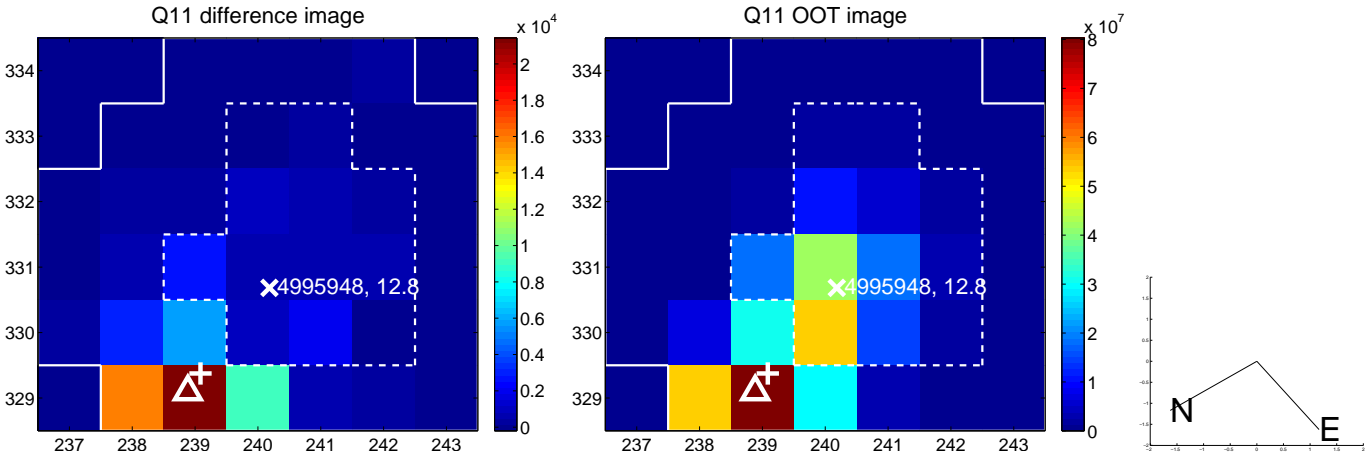
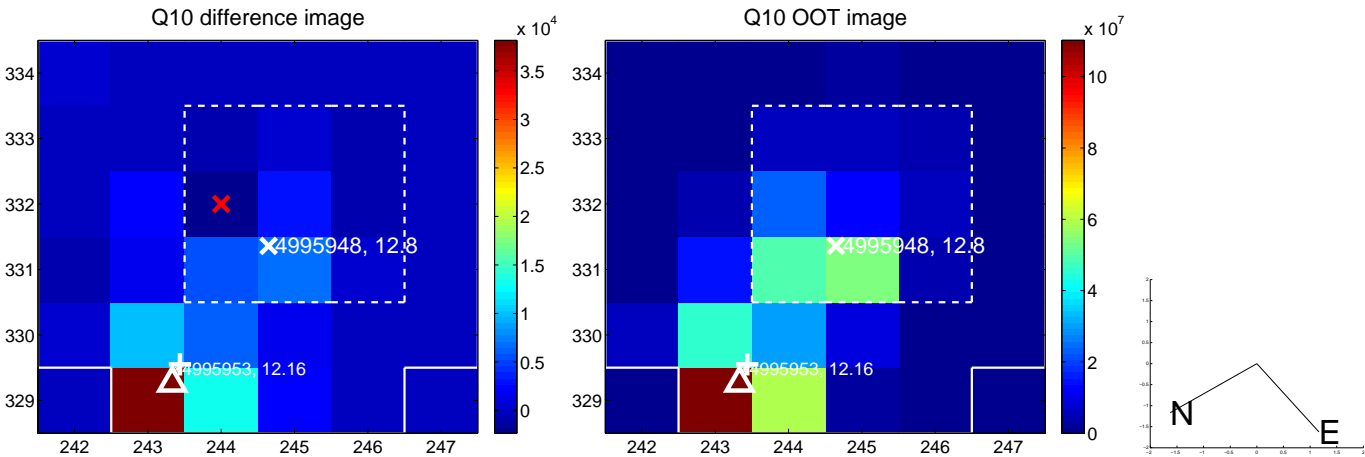
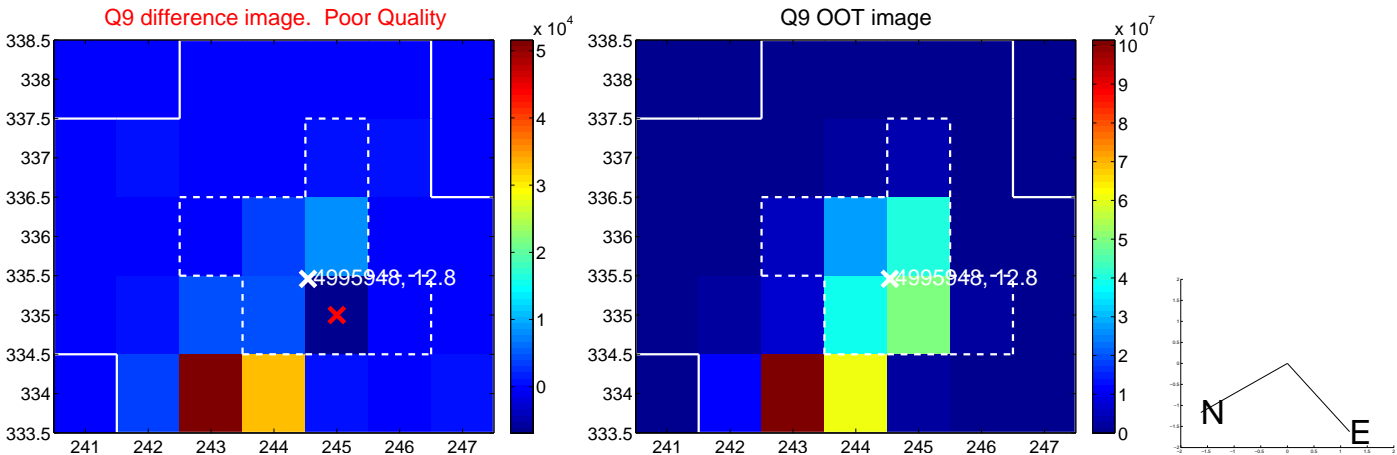
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



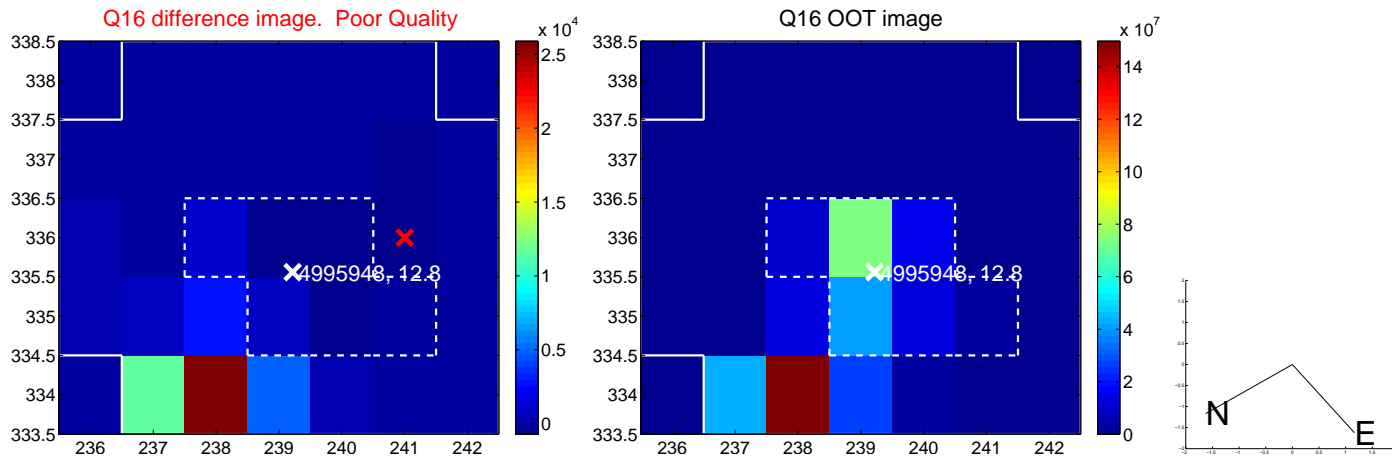
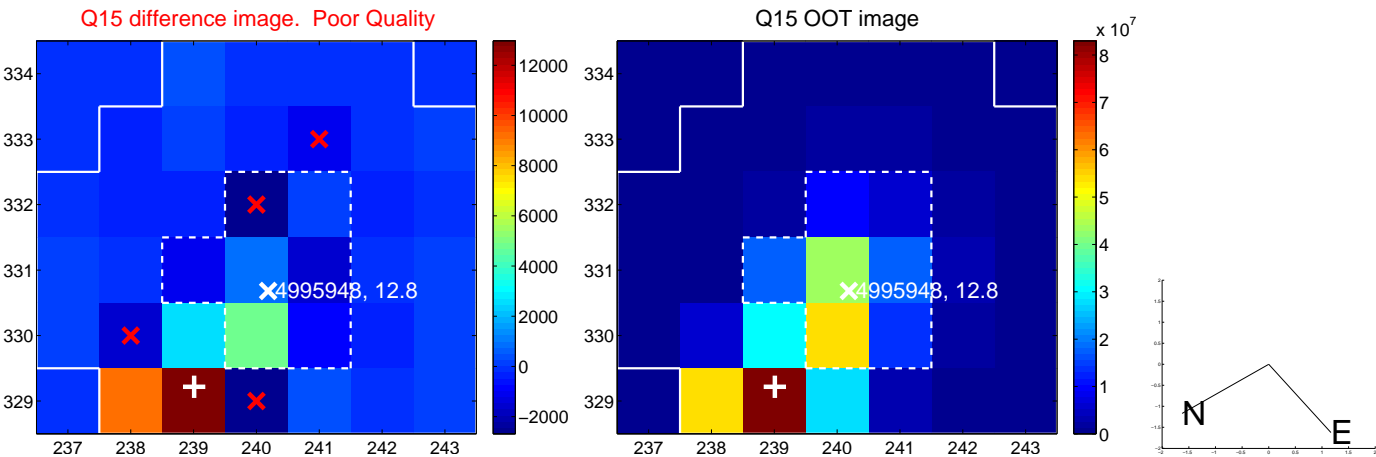
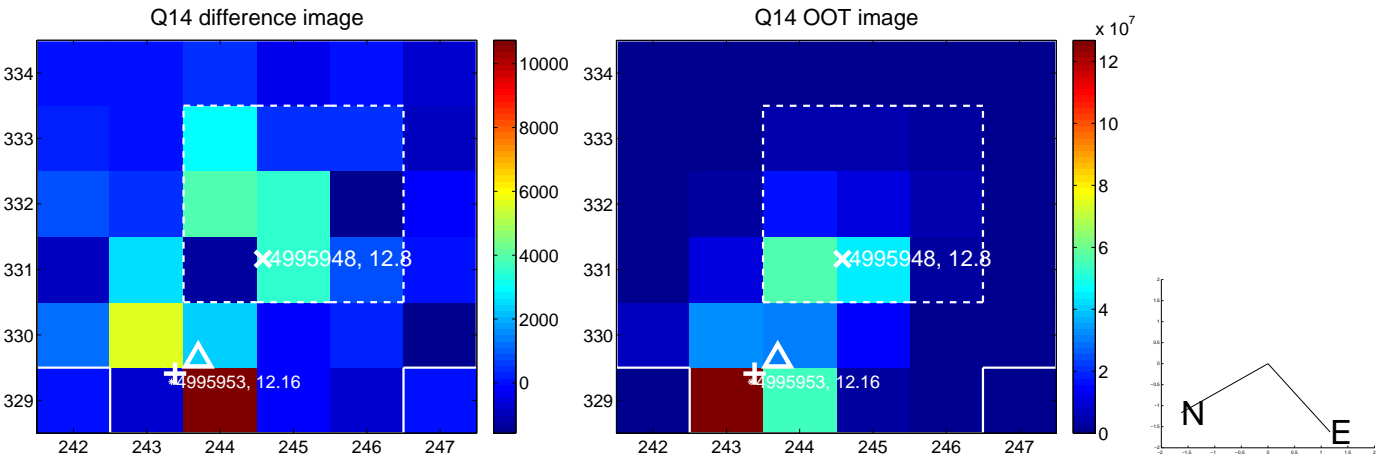
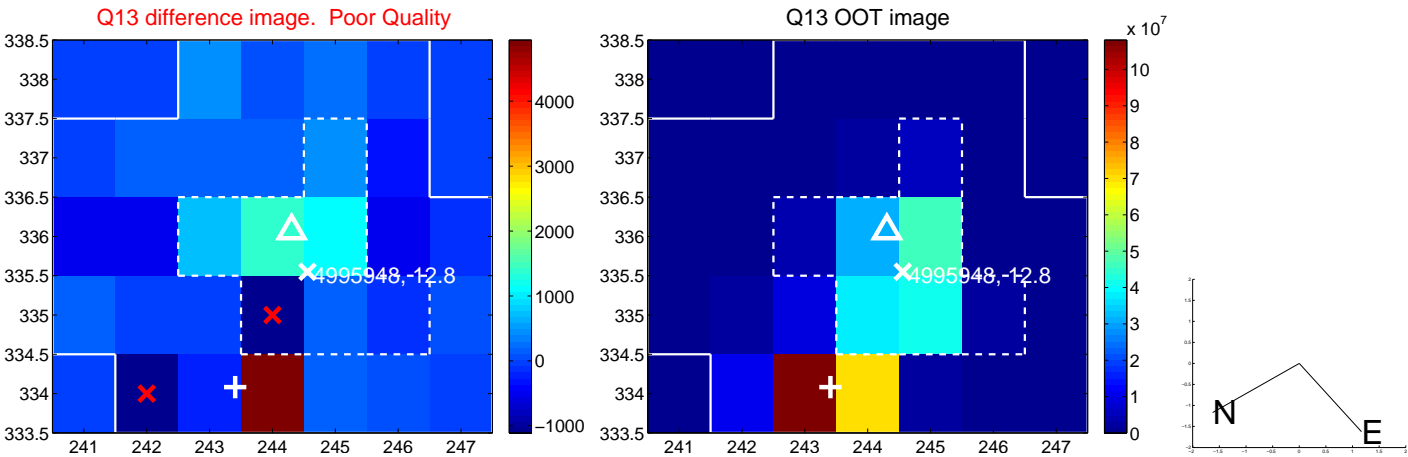
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



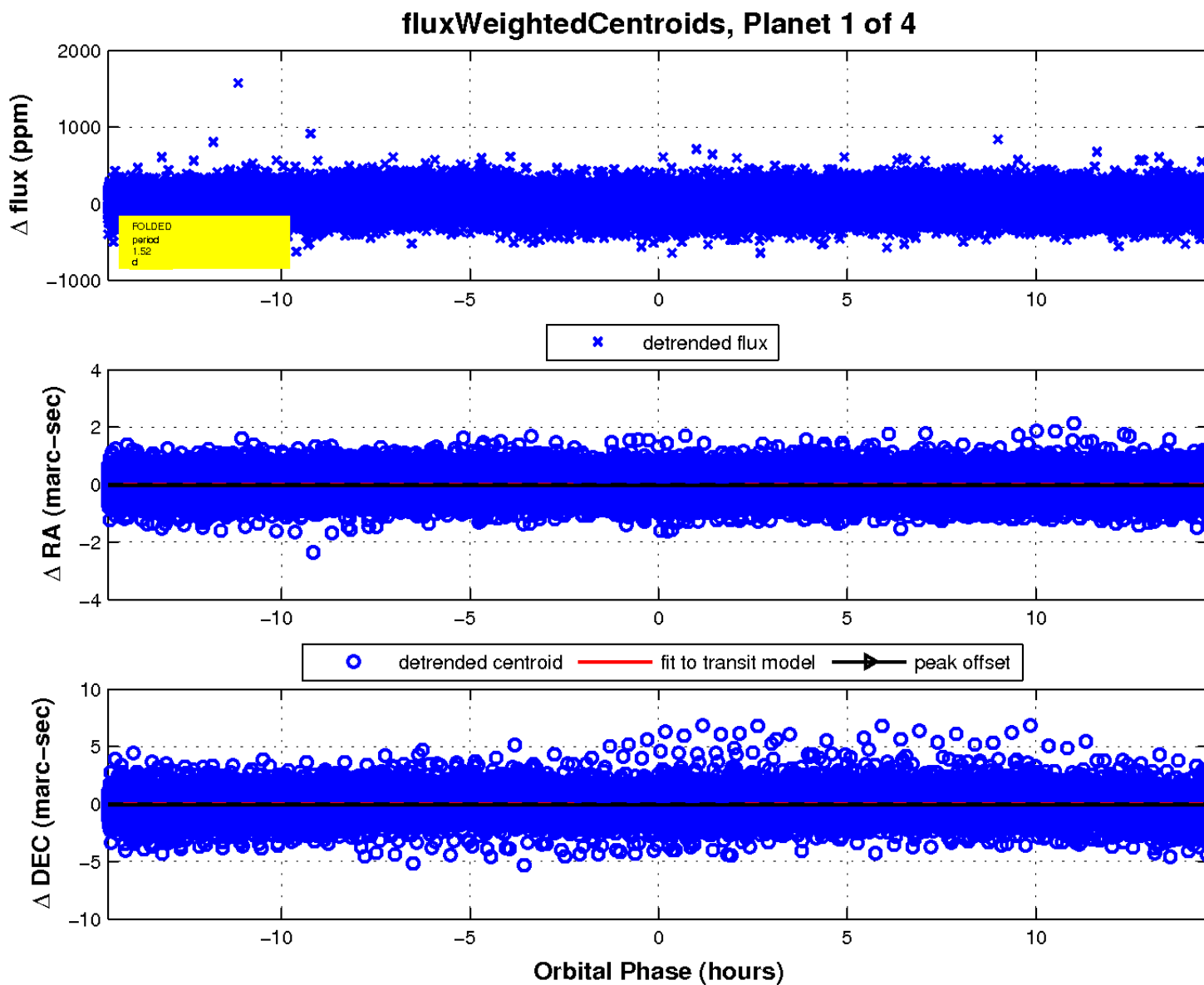
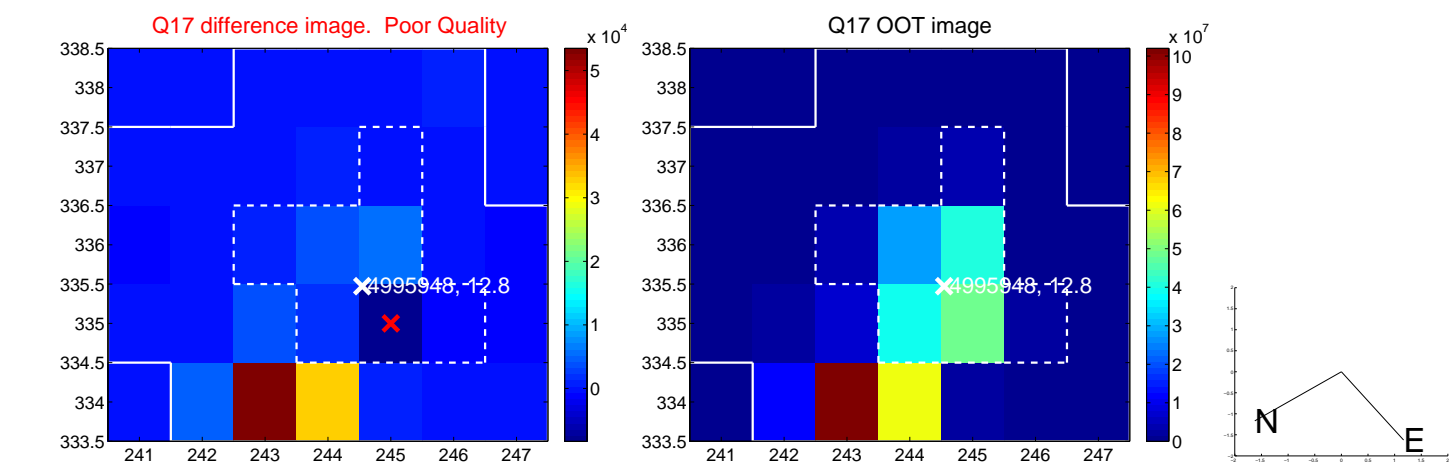
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

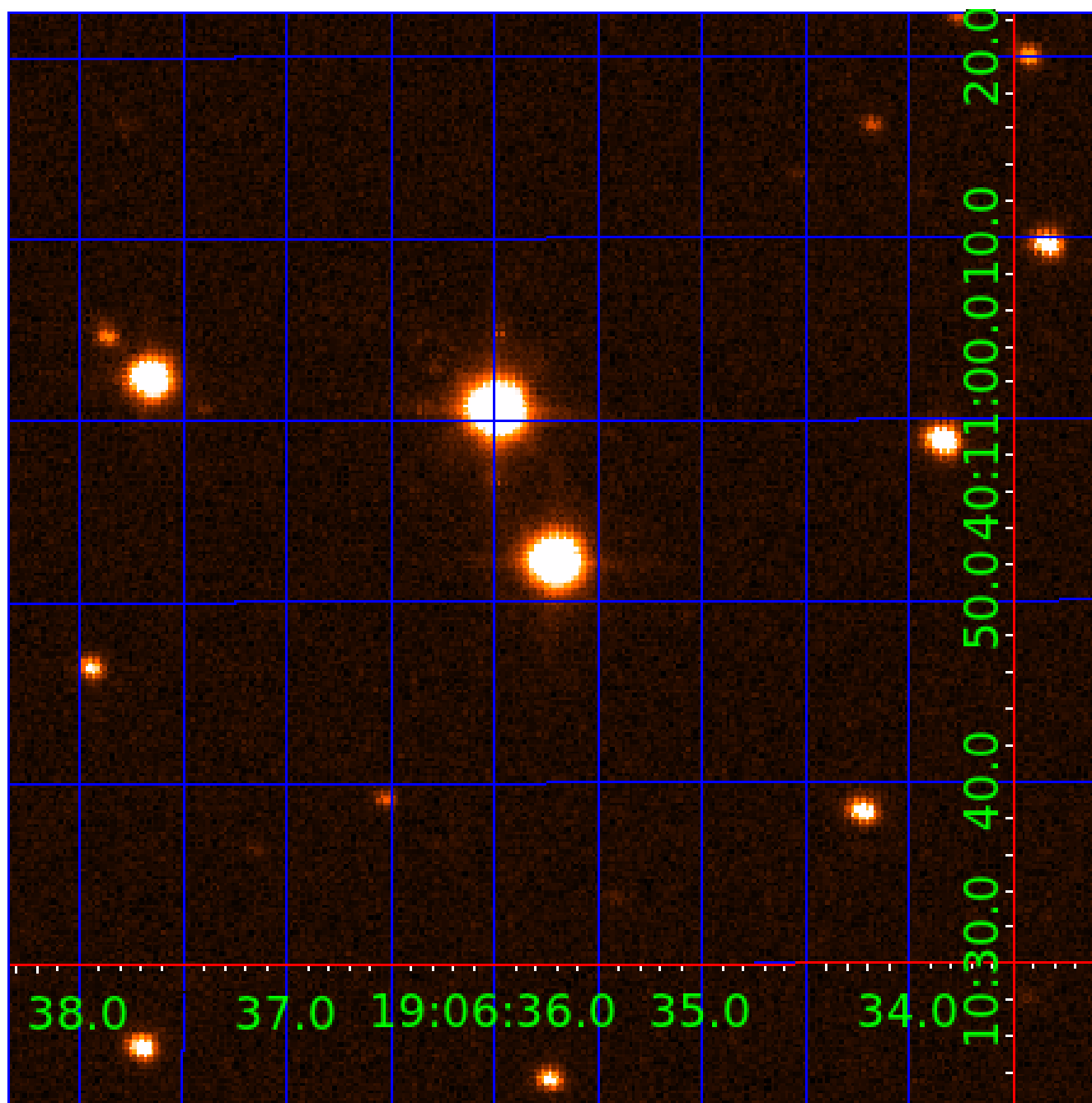


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004995948

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})
004995948-01	OBS	No	1.522091	132.397542	17.8	4.868	8.4	8.5	1.52	6165	0.80	4379.84
004995948-02	OBS	No	1.014726	131.892606	19.3	3.556	8.5	9.1	1.52	6165	0.68	7520.52
004995948-03	OBS	No	47.745381	167.880419	117.8	5.694	7.3	7.4	1.52	6165	1.85	44.27
004995948-04	OBS	No	135.840999	243.869492	254.8	1.862	7.8	6.8	1.52	6165	2.45	10.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004995948-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
004995948-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
004995948-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
004995948-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

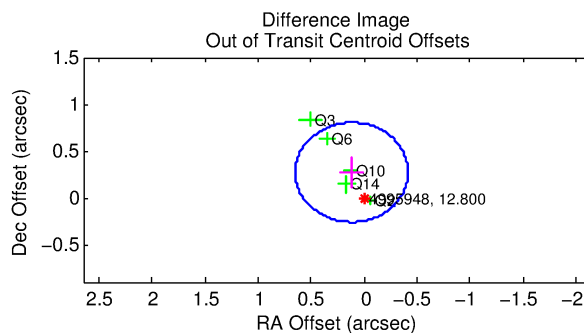
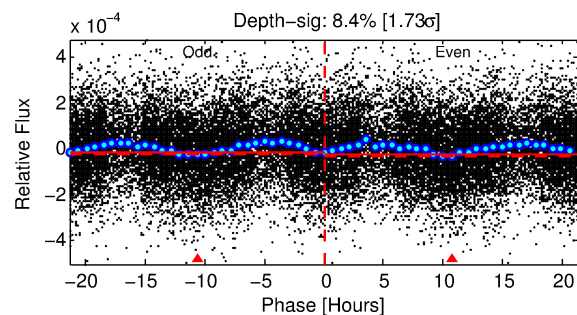
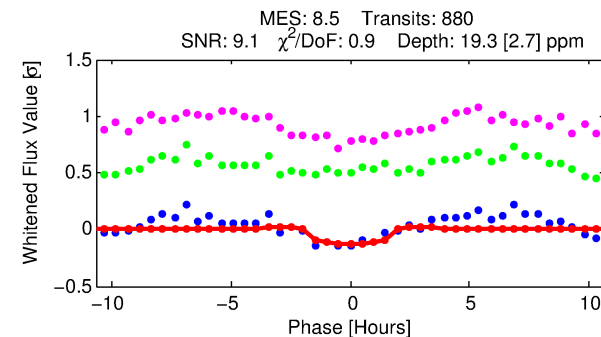
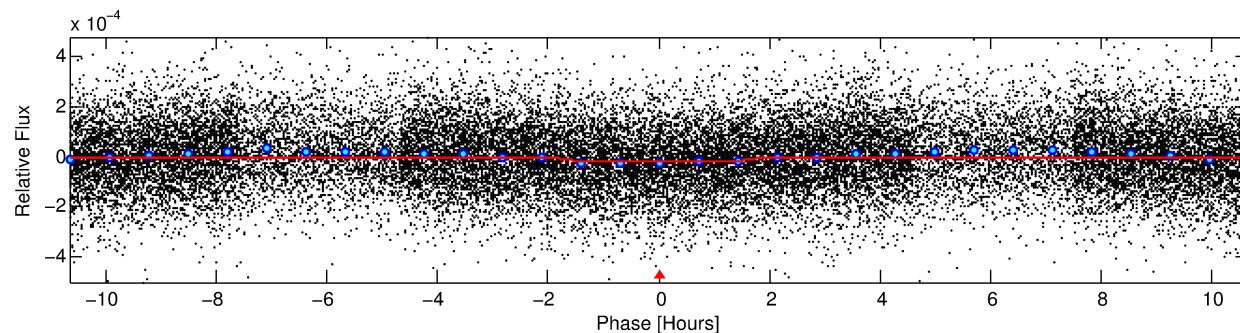
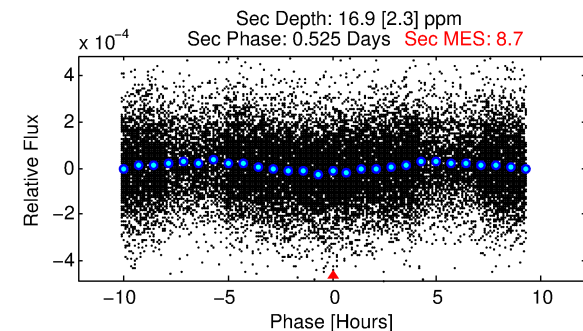
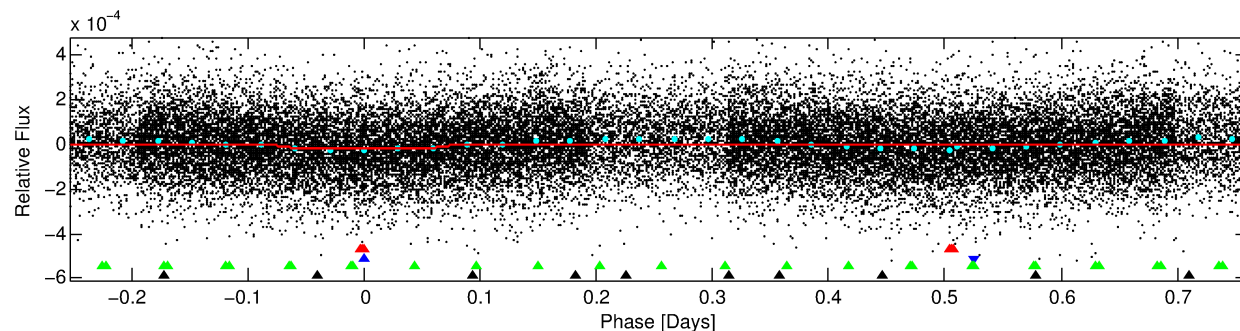
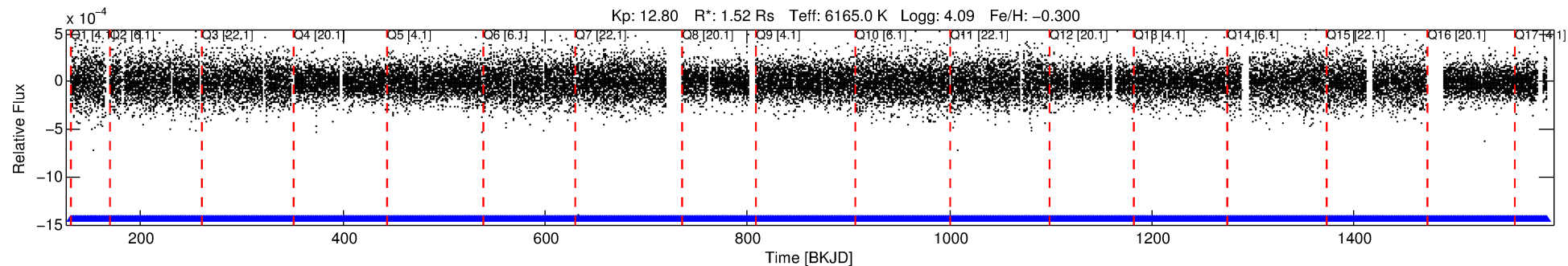
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004995948-02

No Significant Match Found

DV One-Page Summary

KIC: 4995948 Candidate: 2 of 4 Period: 1.015 d



DV Fit Results:

Period = 1.01473 [0.00001] d
Epoch = 131.8926 [0.0042] BKJD
Rp/R* = 0.0041 [0.0021]
a/R* = 2.15 [4.40]
b = 0.36 [6.32]
Seff = 7520.52 [3405.79]
Teq = 2375 [269] K
Rp = 0.68 [0.40] Re
a = 0.0200 [0.0053] AU
Ag = 8.05 [9.14] [0.77σ]
Teffp = 6184 [1631] K [2.31σ]

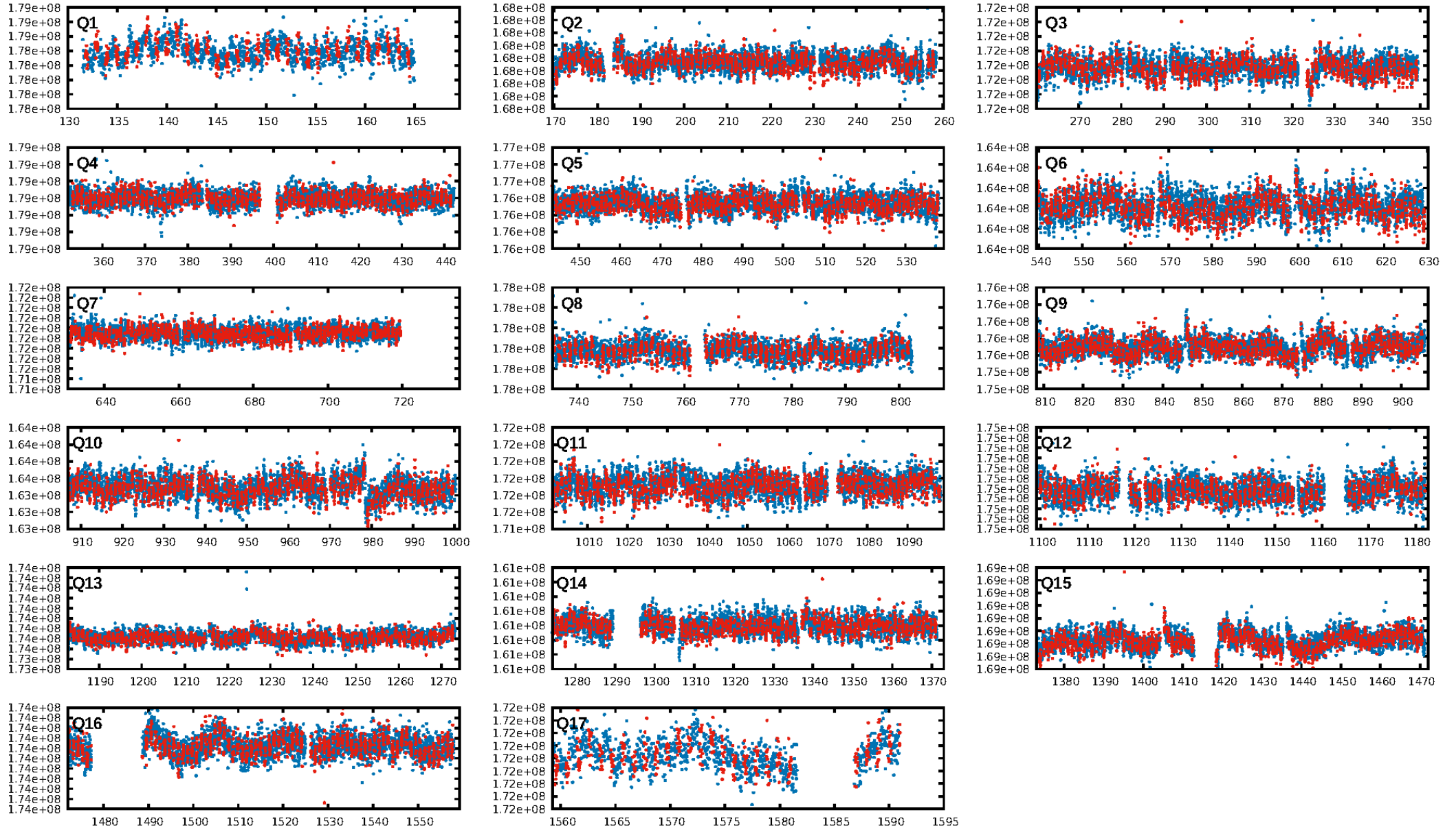
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 95.7% [2.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.12e-10
RollingBand-fgt: 1.00 [839/839]
GhostDiagnostic-chr: -1.568
Centroid-sig: 62.5%
Centroid-so: 3.052 arcsec [2.22σ]
OotOffset-rm: 0.296 arcsec [1.67σ]
OotOffset-st: 4/1/0/0 [5]
KicOffset-rm: 8.761 arcsec [9.94σ]
KicOffset-st: 4/1/0/2 [7]
DiffImageQuality-fgm: 0.71 [5/7]
DiffImageOverlap-fno: 1.00 [17/17]

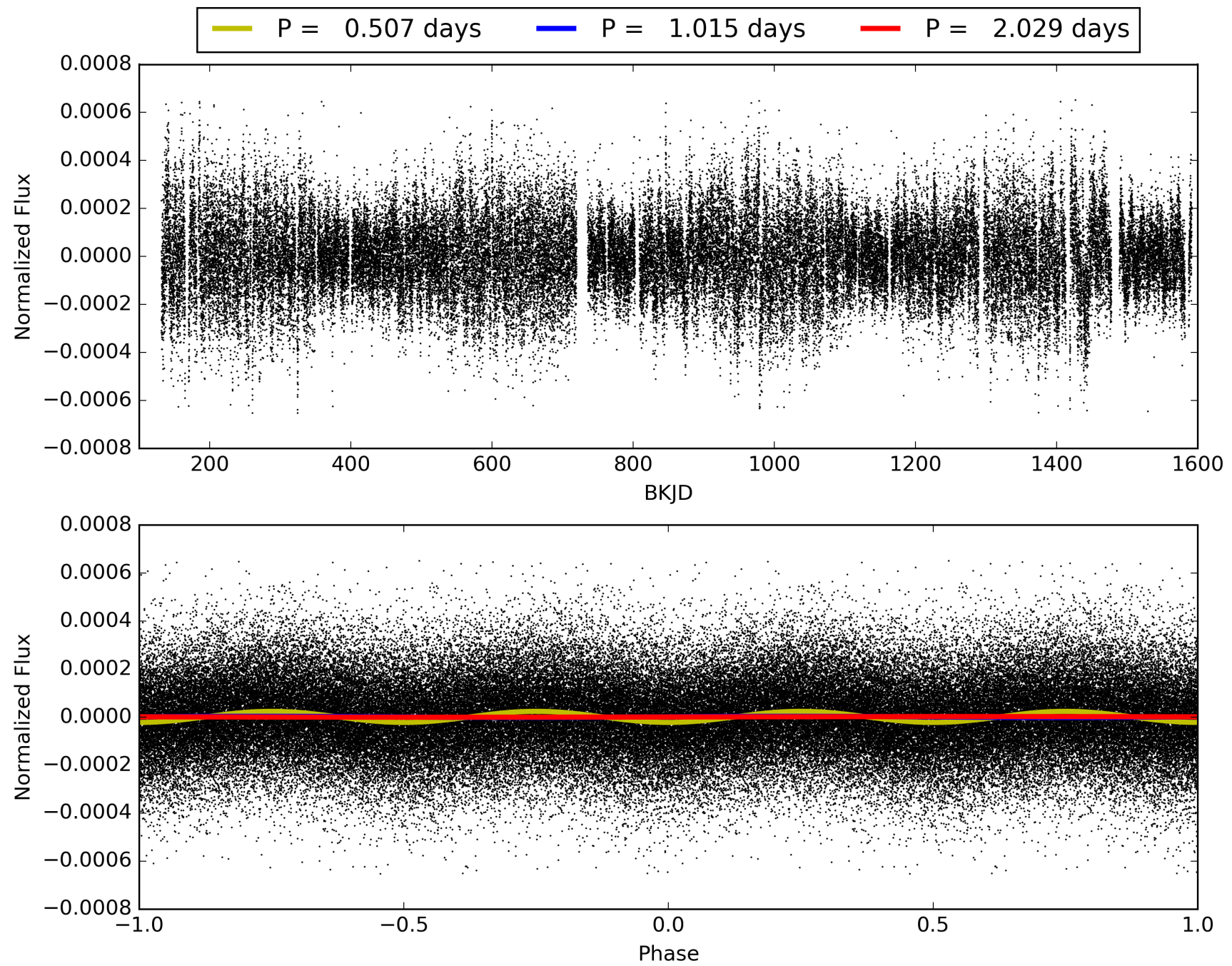
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:23:08 Z

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

TCE 004995948-02, PDC Light Curves

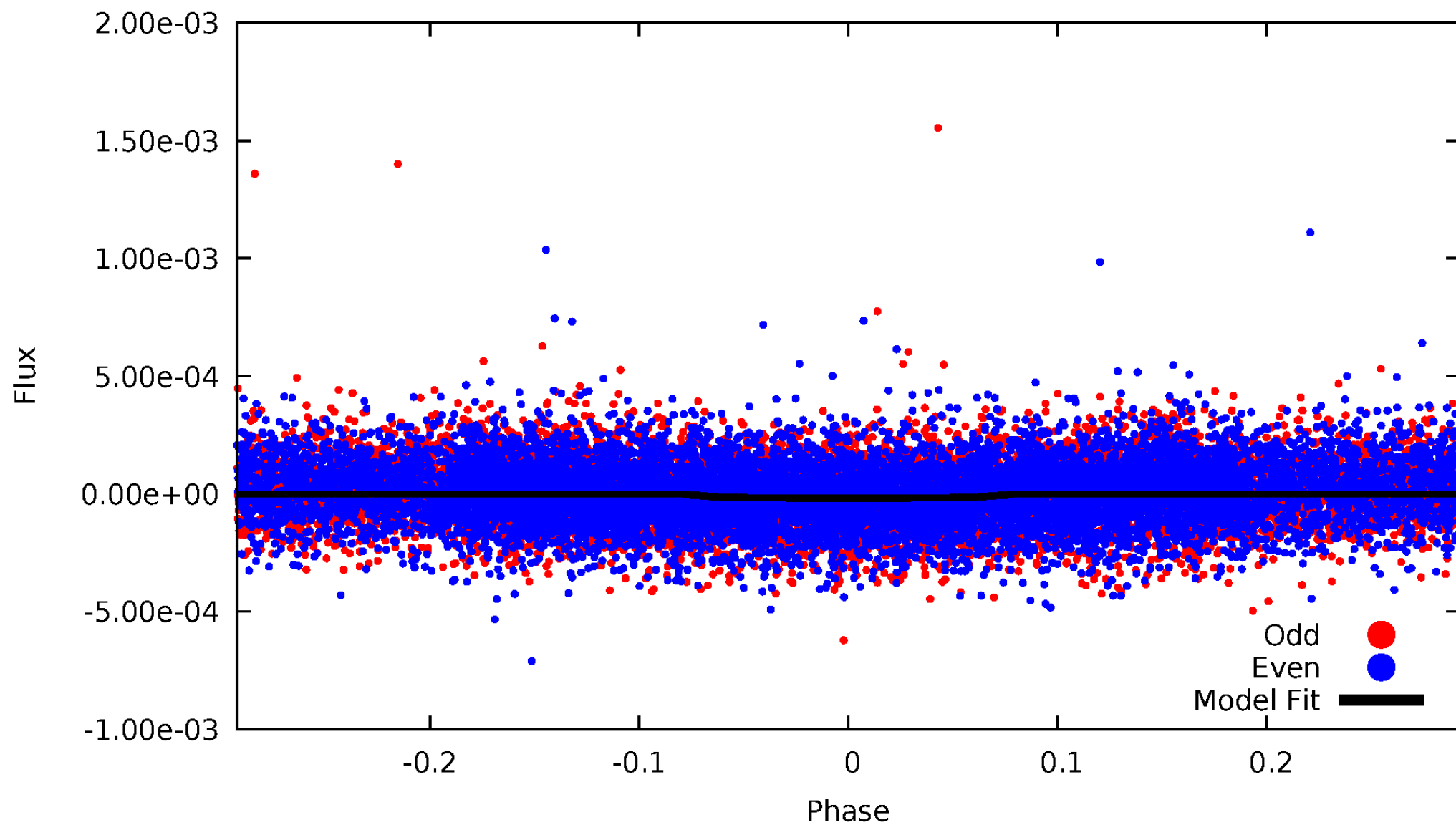


TCE 004995948-02



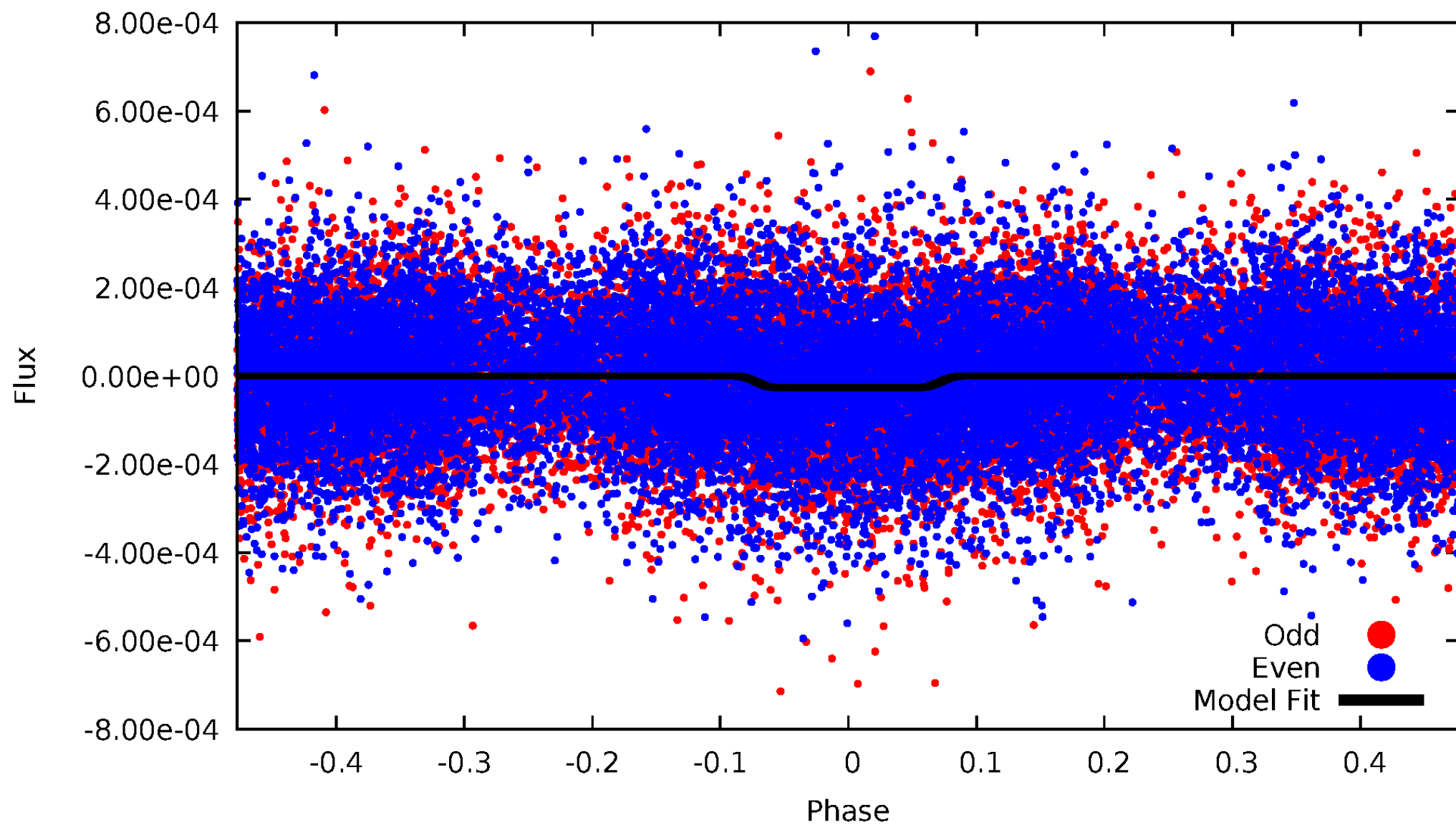
DV Odd/Even

TCE 004995948-02



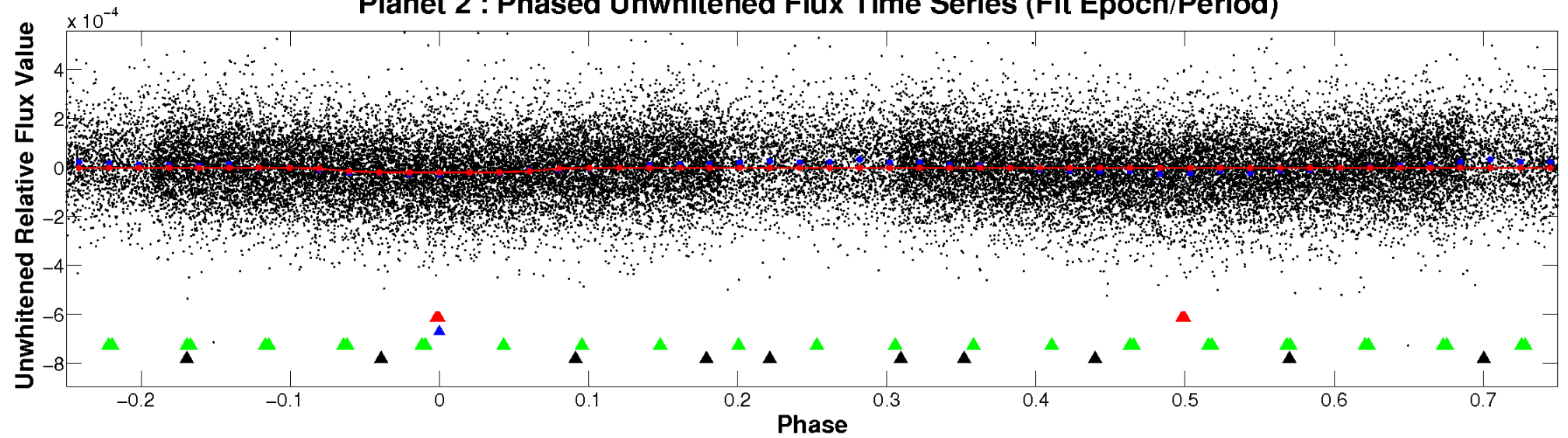
ALT Odd/Even

TCE 004995948-02

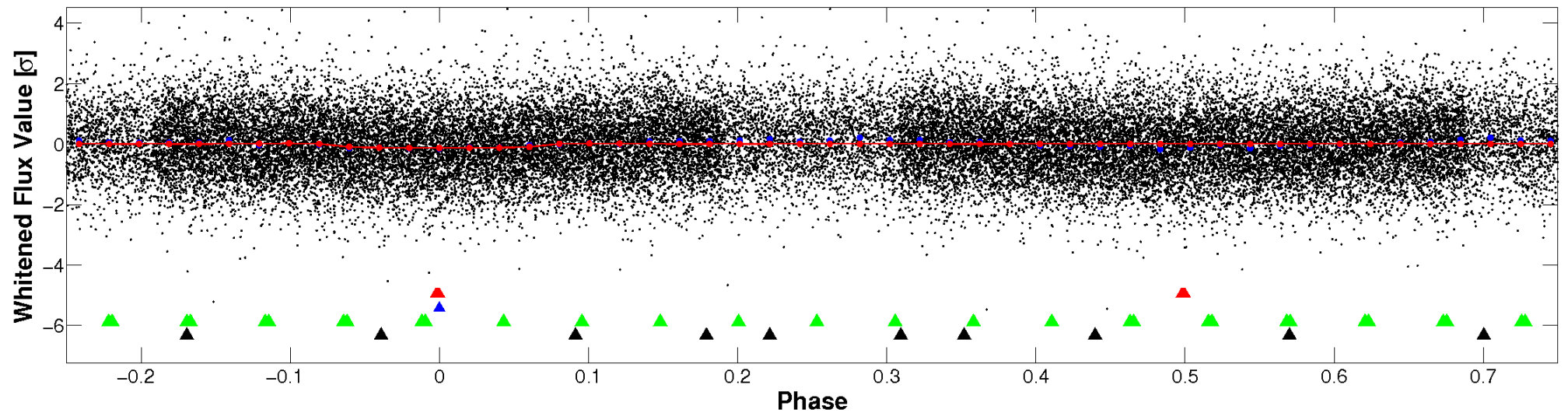


Non-Whitened Vs. Whitened Light Curve

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

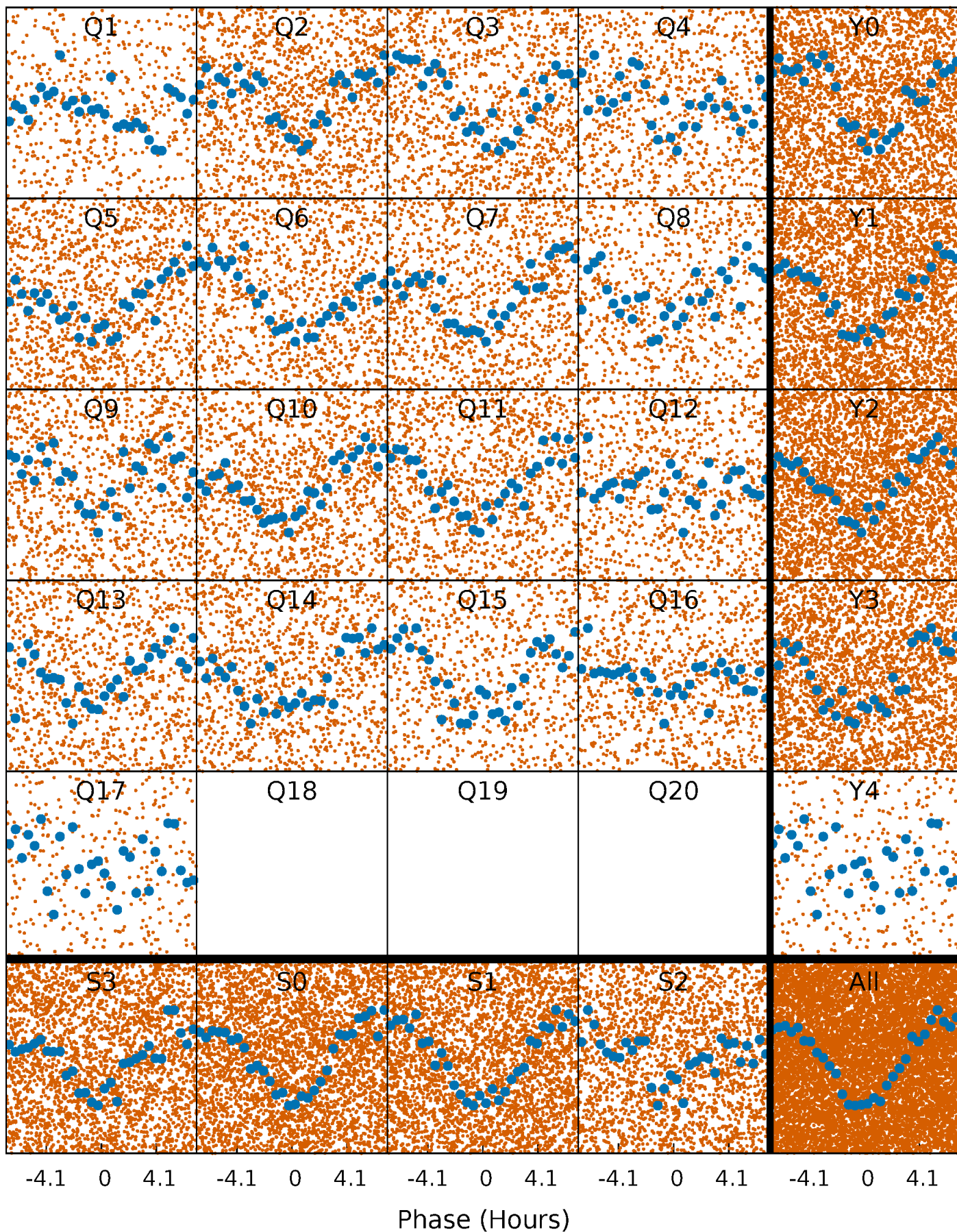


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



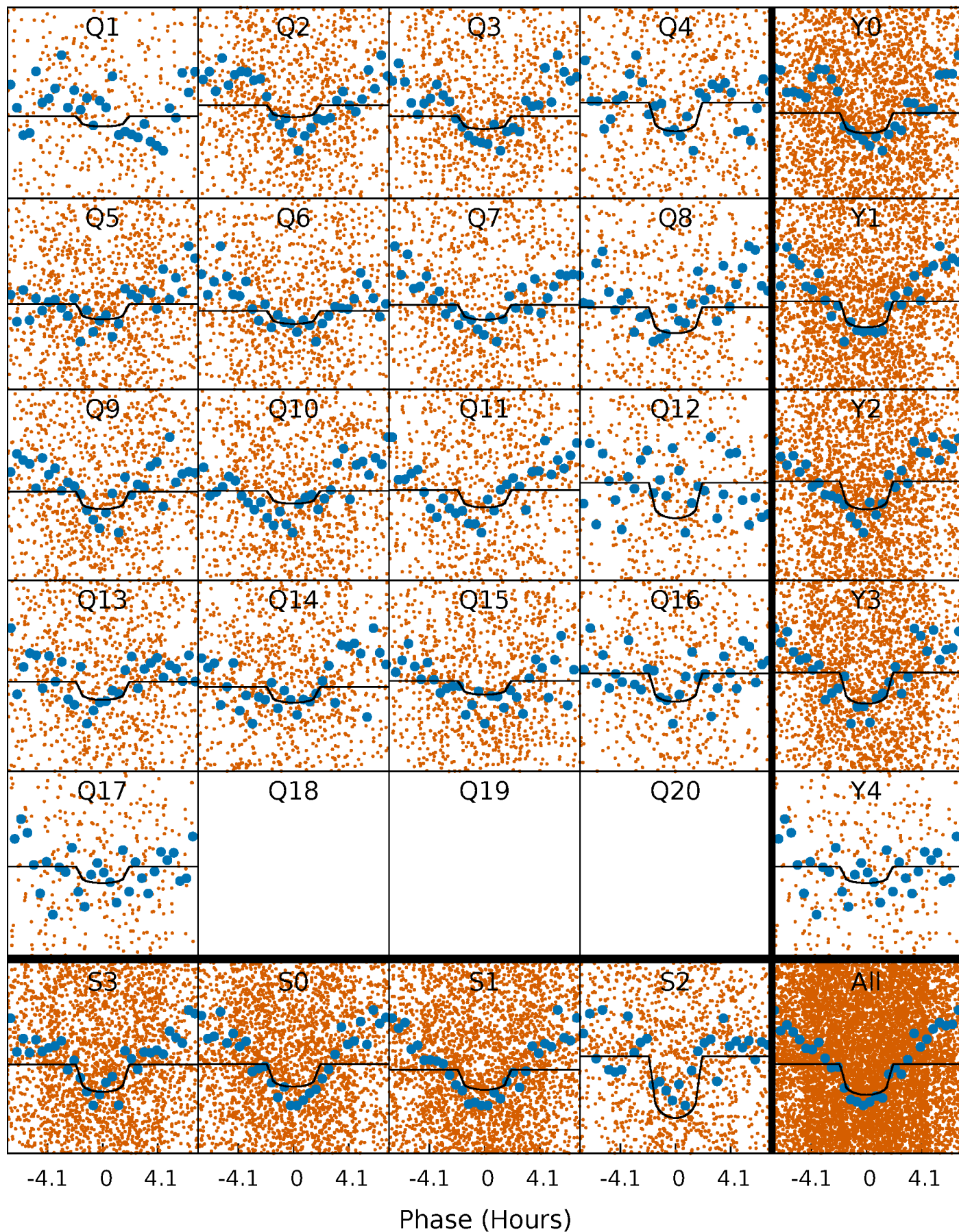
PDC Quarter-Phased Transit Curves

TCE 004995948-02 P= 1.014726 Days $T_0=131.892606$ (BKJD)



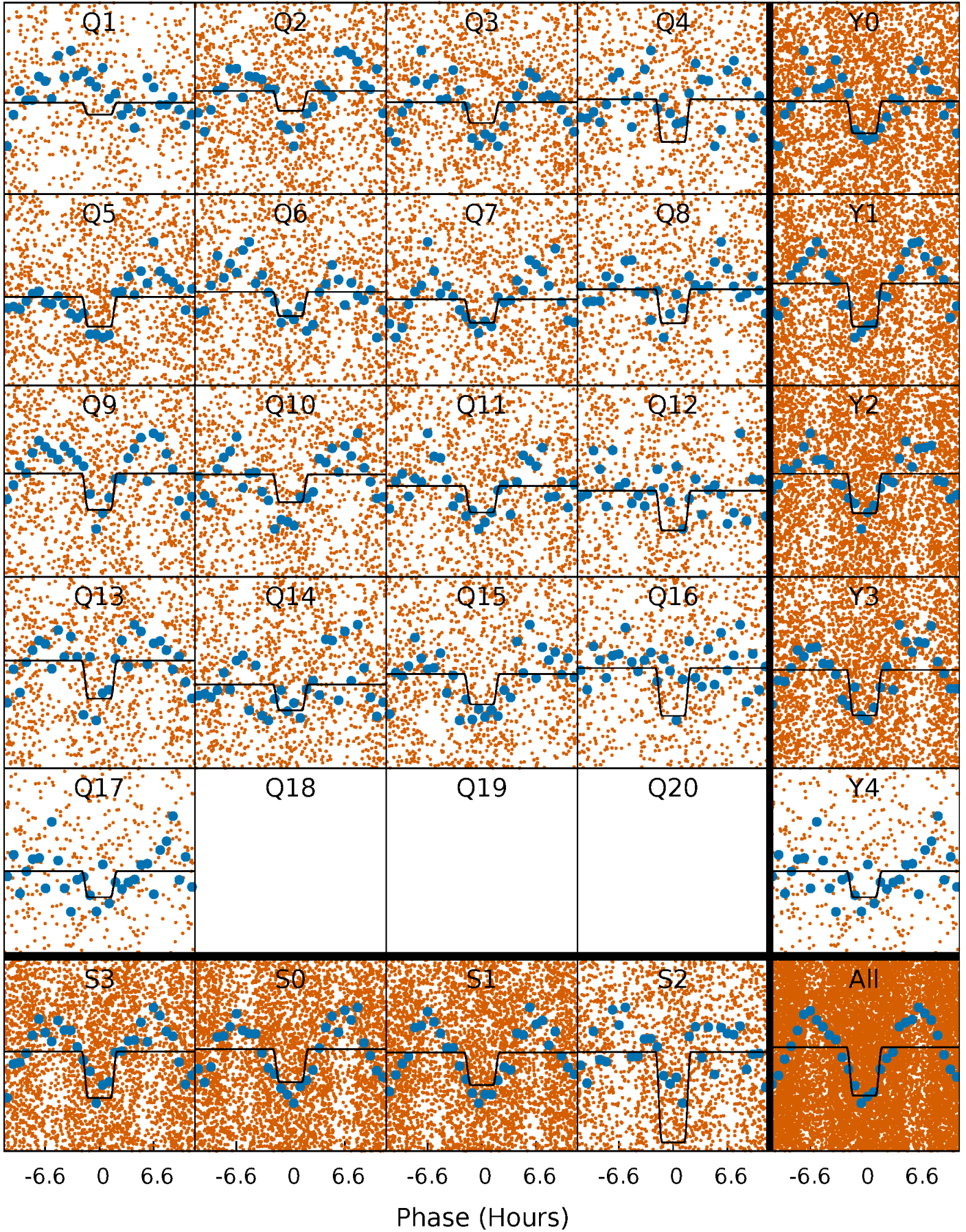
DV Quarter-Phased Transit Curves

TCE 004995948-02 P= 1.014726 Days $T_0=131.892606$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

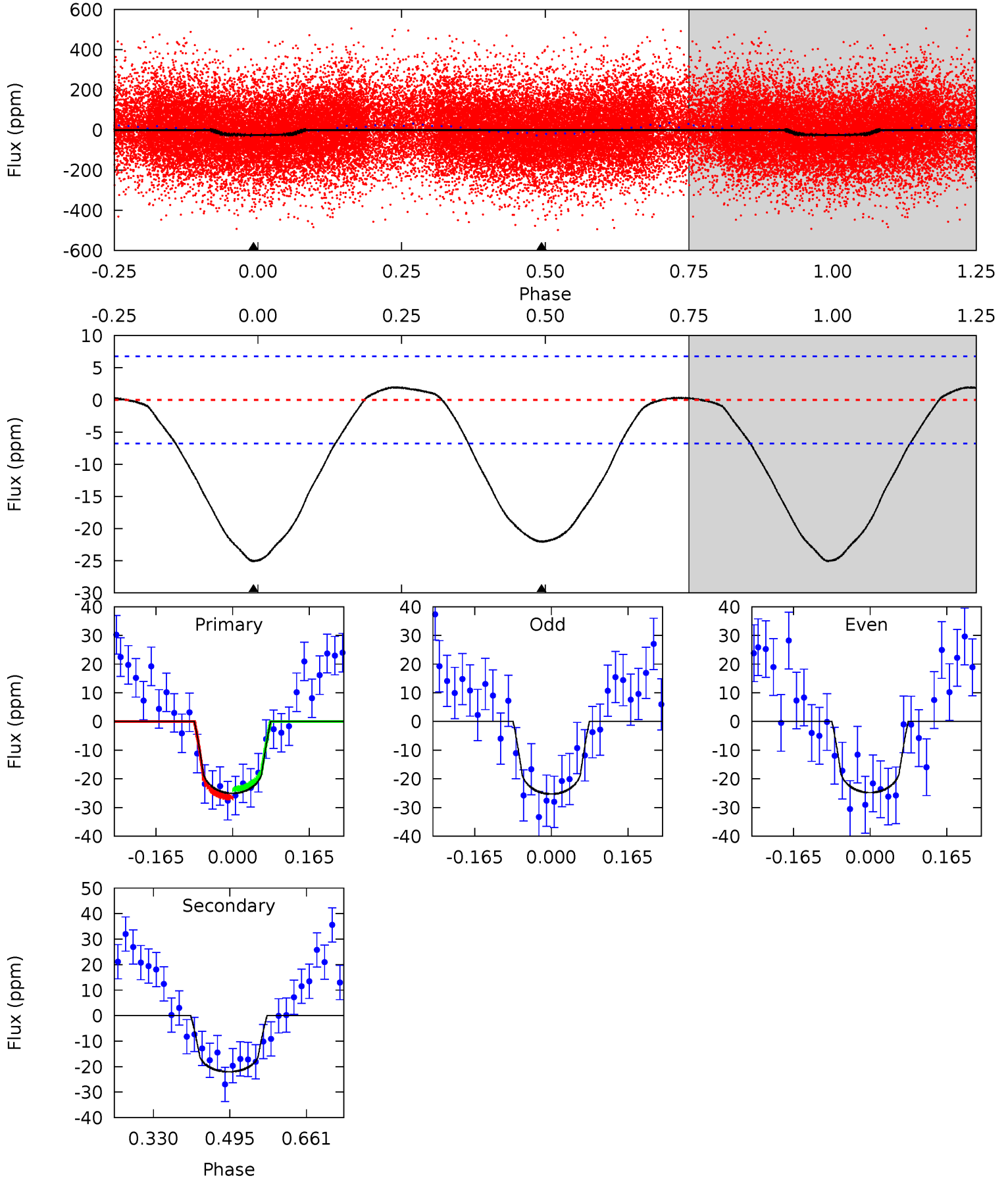
TCE 004995948-02 P= 1.014709 Days $T_0=131.892541$ (BKJD)



DV Model-Shift Uniqueness Test

004995948-02, P = 1.014726 Days, E = 130.877880 Days

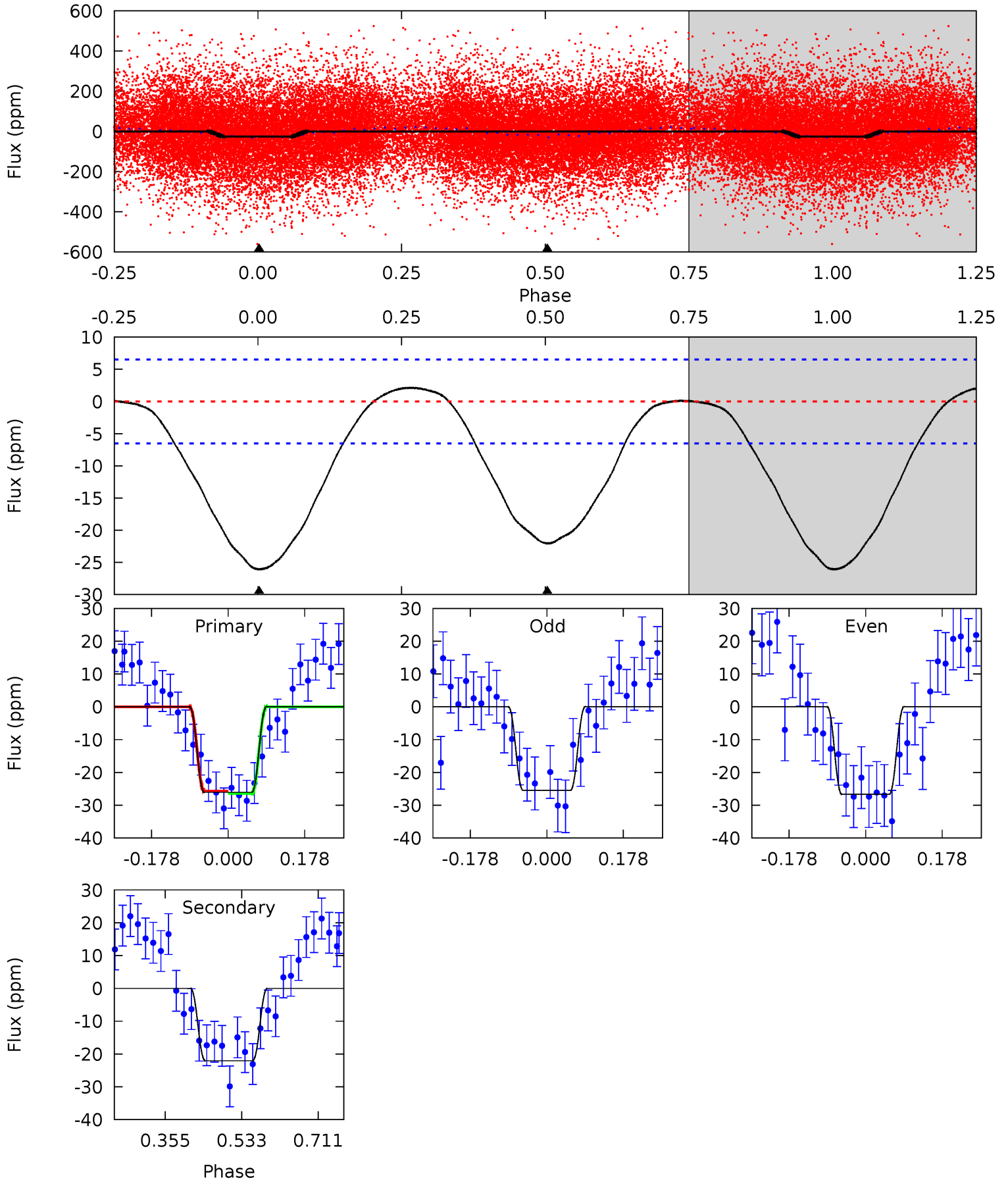
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	14.5	0	0	4.46	1.39	0.90	16.5	16.5	14.5	14.5	0.17	1.09	0.07	0.97



Alt Model-Shift Uniqueness Test

004995948-02, P = 1.014709 Days, E = 130.877832 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	15.0	0	0	4.44	1.35	0.80	17.8	17.8	15.0	15.0	0.41	1.13	0.08	0.24



Stellar Parameters For KIC 004995948

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6165^{+170}_{-189}	$4.086^{+0.259}_{-0.111}$	$-0.300^{+0.300}_{-0.300}$	$1.521^{+0.334}_{-0.408}$	$1.029^{+0.180}_{-0.135}$	$0.412^{+0.600}_{-0.160}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-27%	+17%/-13%	+146%/-39%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004995948-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-22 ± 2	$0.65^{+0.38}_{-0.31}$	3271^{+191}_{-259}	6555^{+3157}_{-1239}	12^{+32}_{-7}
Alt.	-22 ± 1	$0.82^{+0.37}_{-0.34}$	3266^{+198}_{-267}	5845^{+1738}_{-943}	$7.346^{+13.180}_{-3.916}$

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

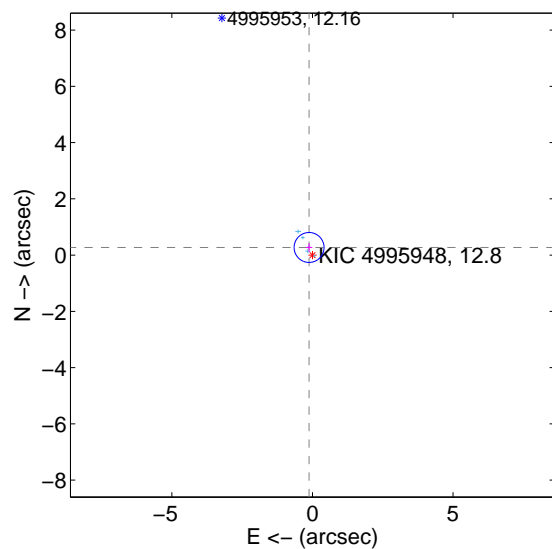
Supplemental centroid analysis for 004995948-02. Kepler magnitude: 12.80. Transit SNR 9.08

There are 5 quarters with good PRF difference image offsets

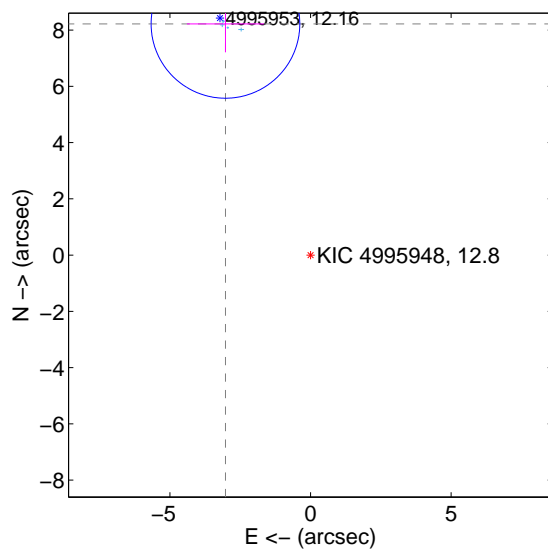
The OOT PRF centroid is offset from the target star catalog position by about 8.58 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.296 ± 0.177	1.67	0.120 ± 0.112	0.271 ± 0.156
PRF-fit source offset from KIC position	8.761 ± 0.881	9.94	3.025 ± 1.370	8.222 ± 1.011
photometric centroid source offset	3.05 ± 1.37	2.22	1.11 ± 0.69	2.84 ± 1.45

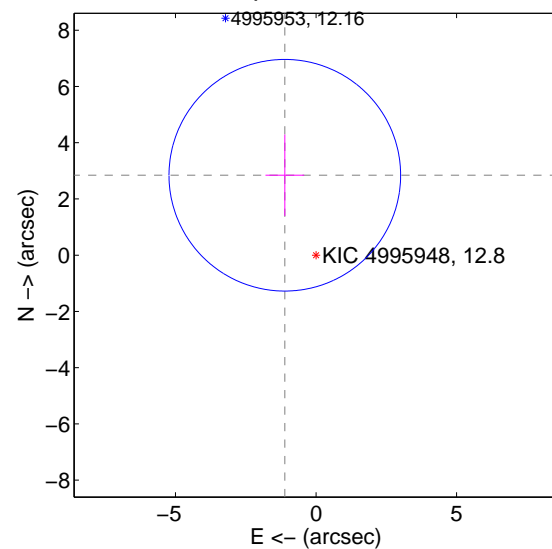
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

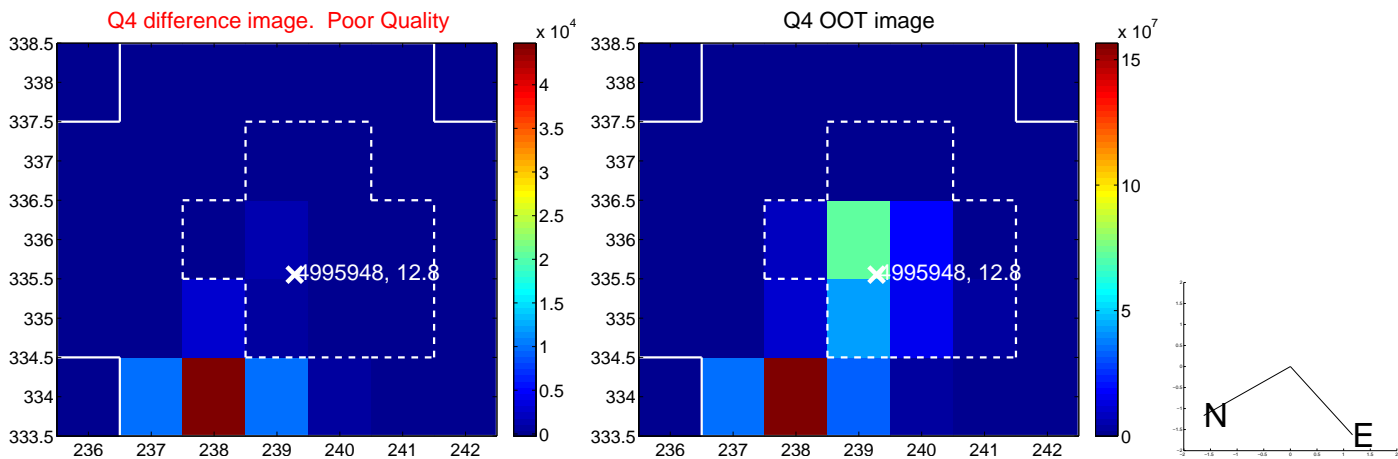
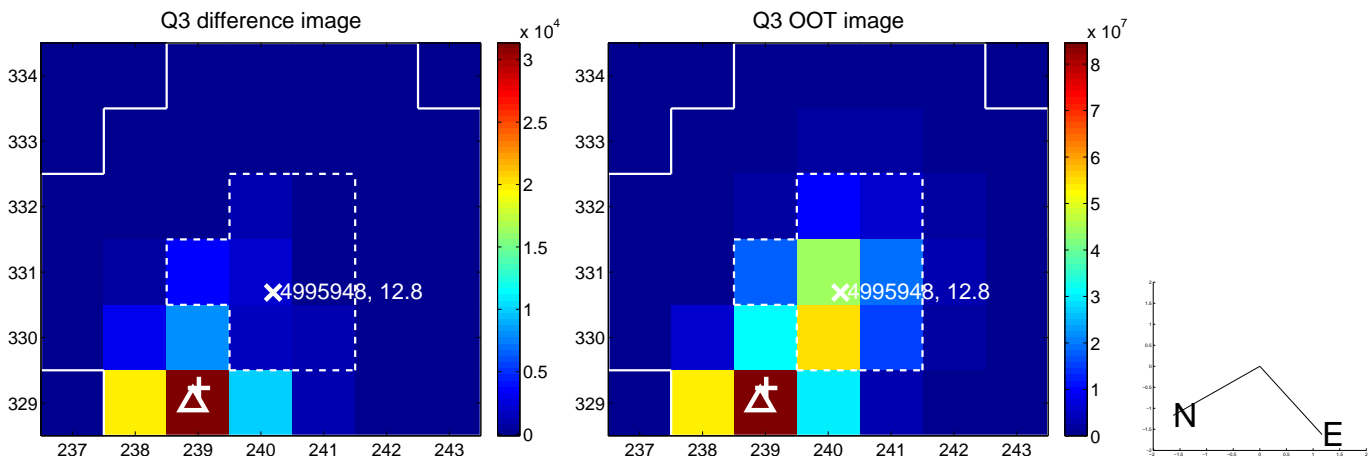
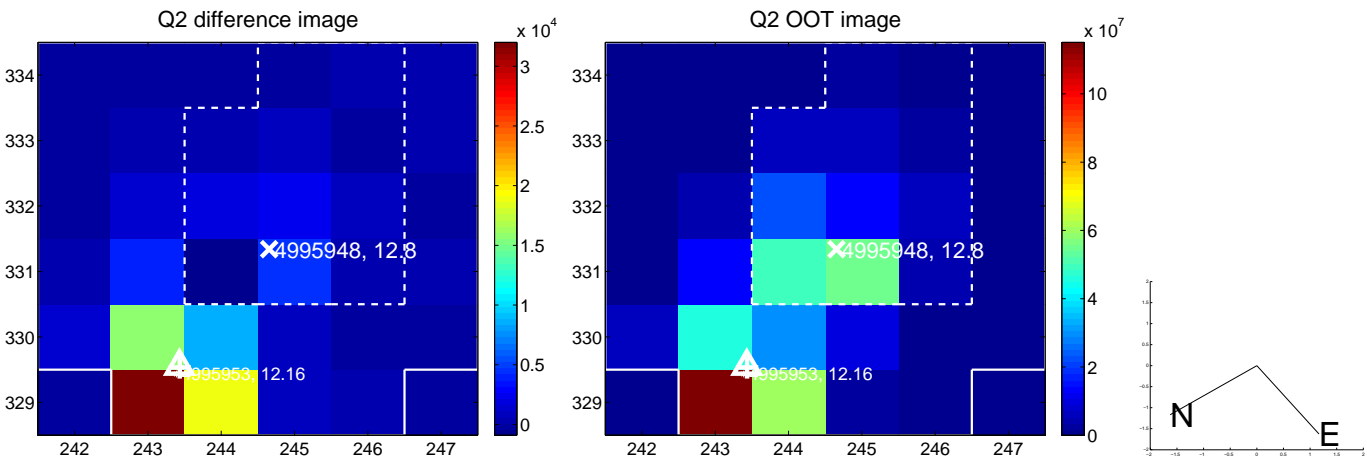
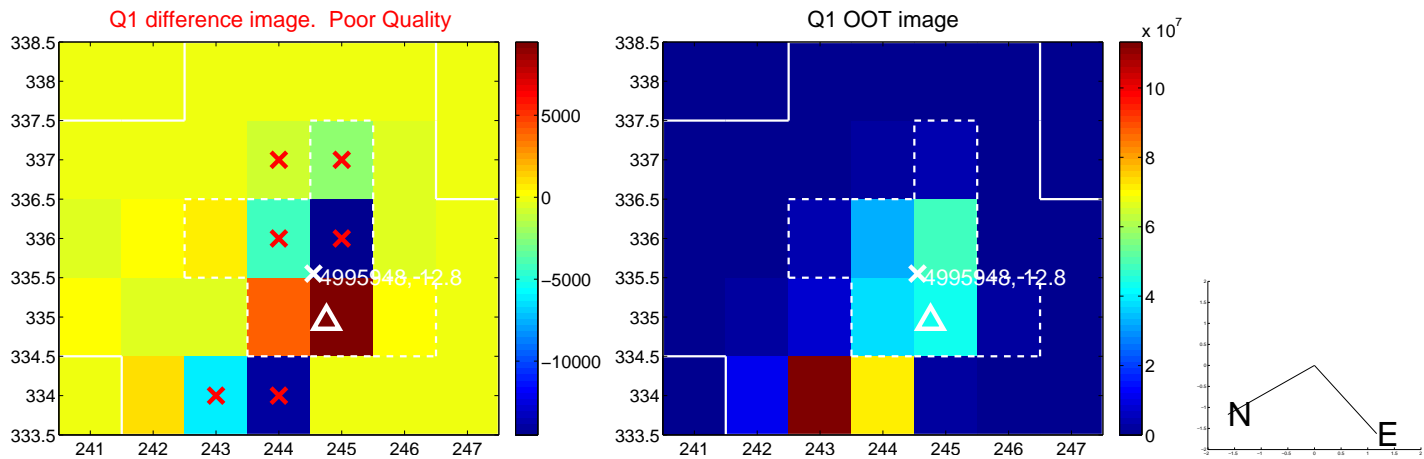


offset from photometric centroids

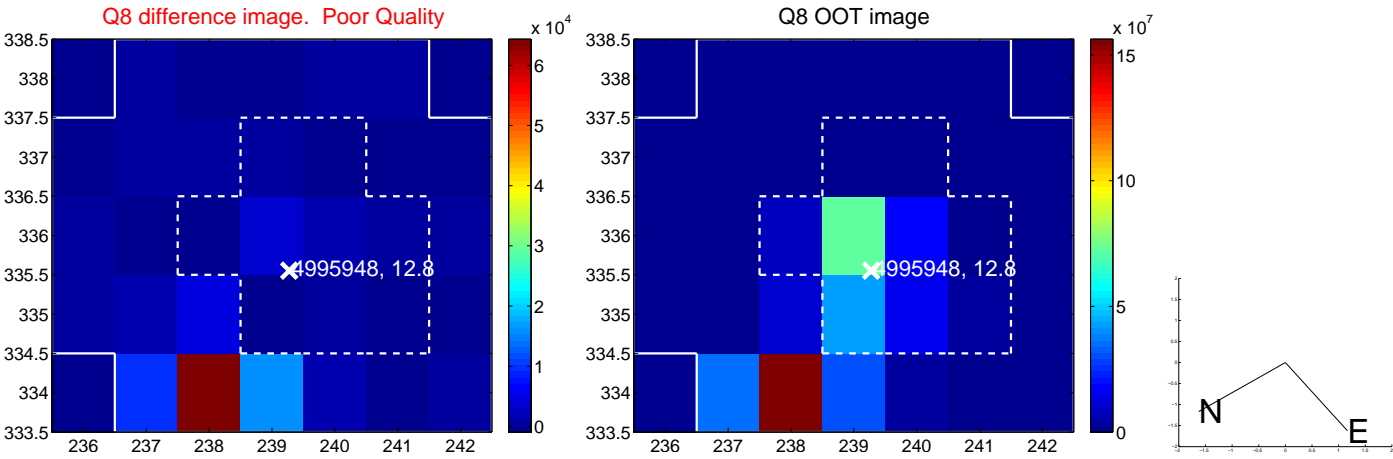
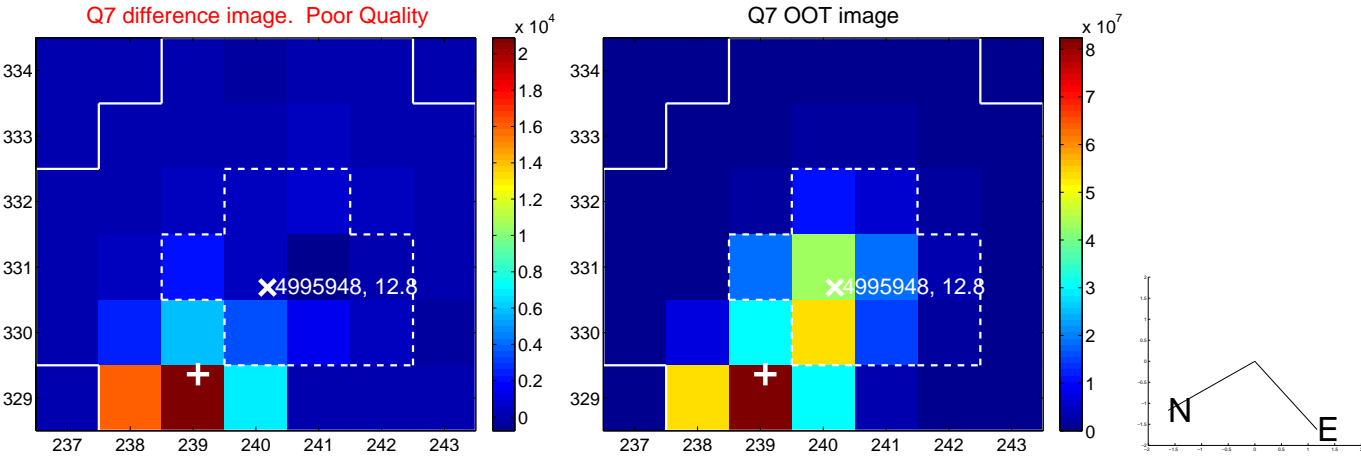
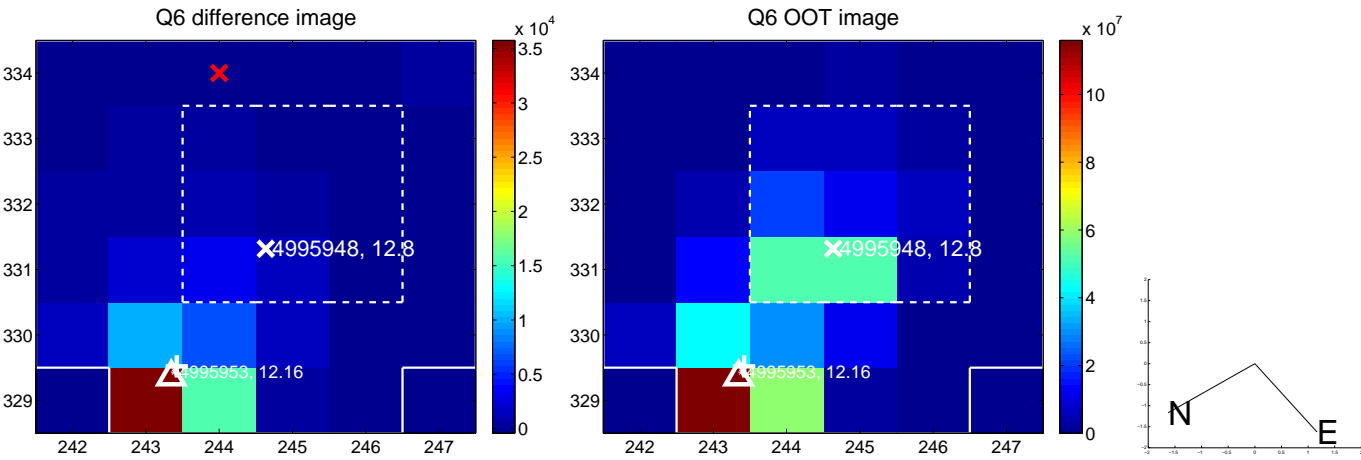
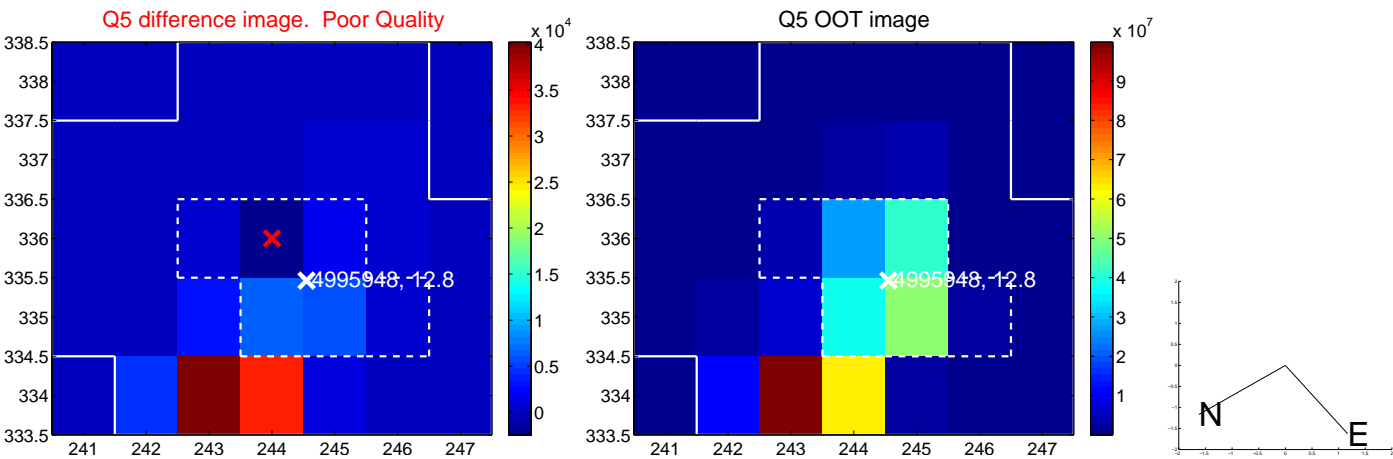


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

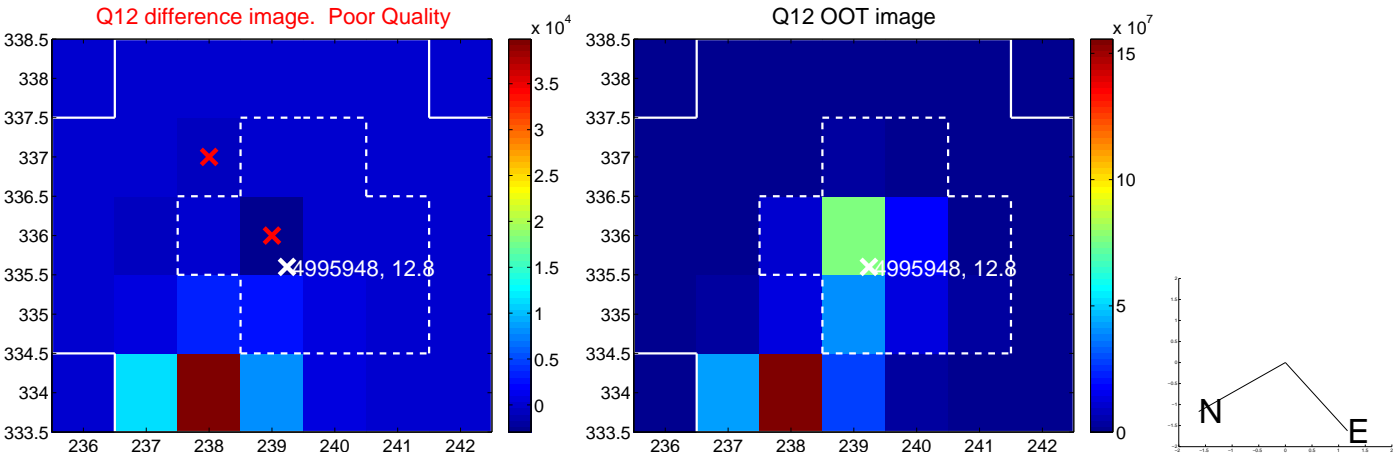
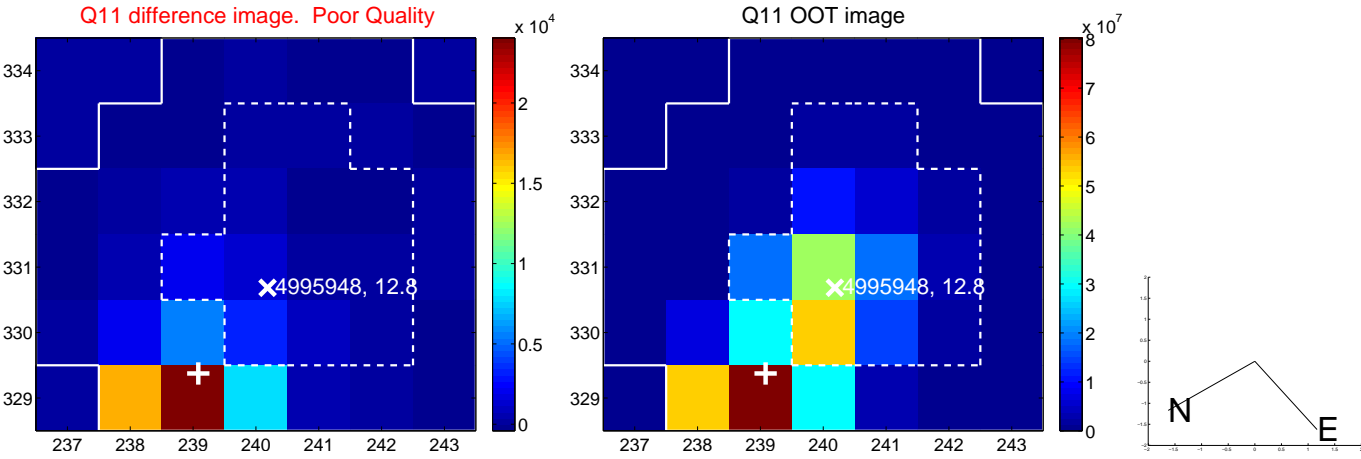
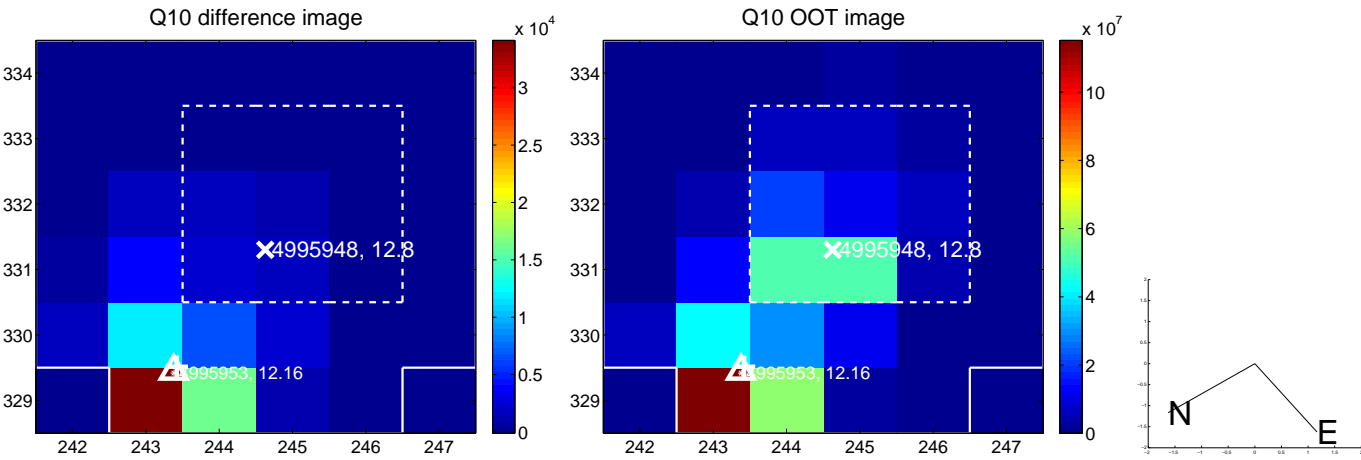
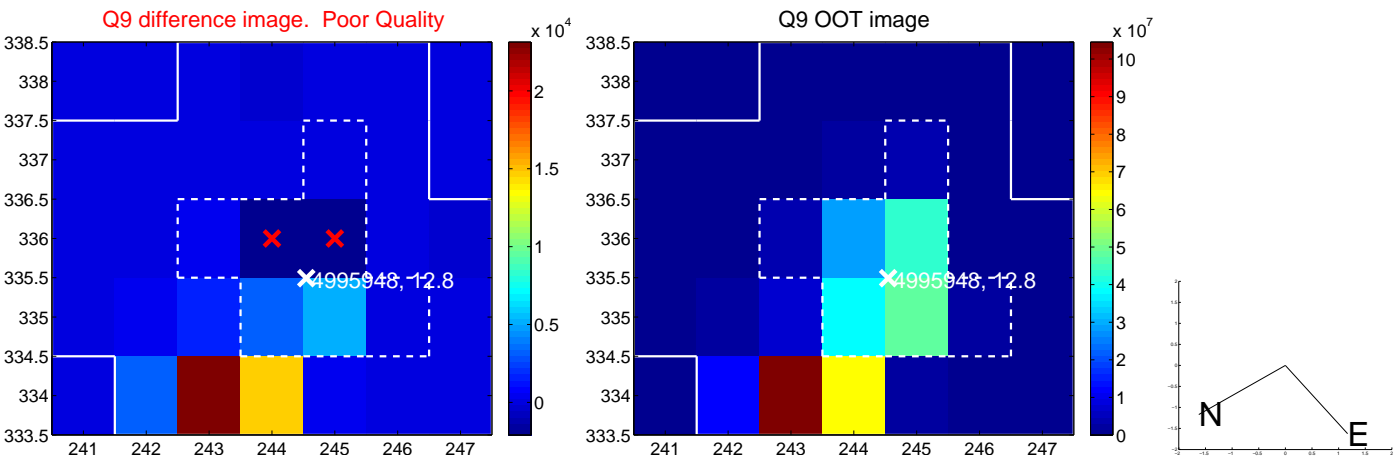
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



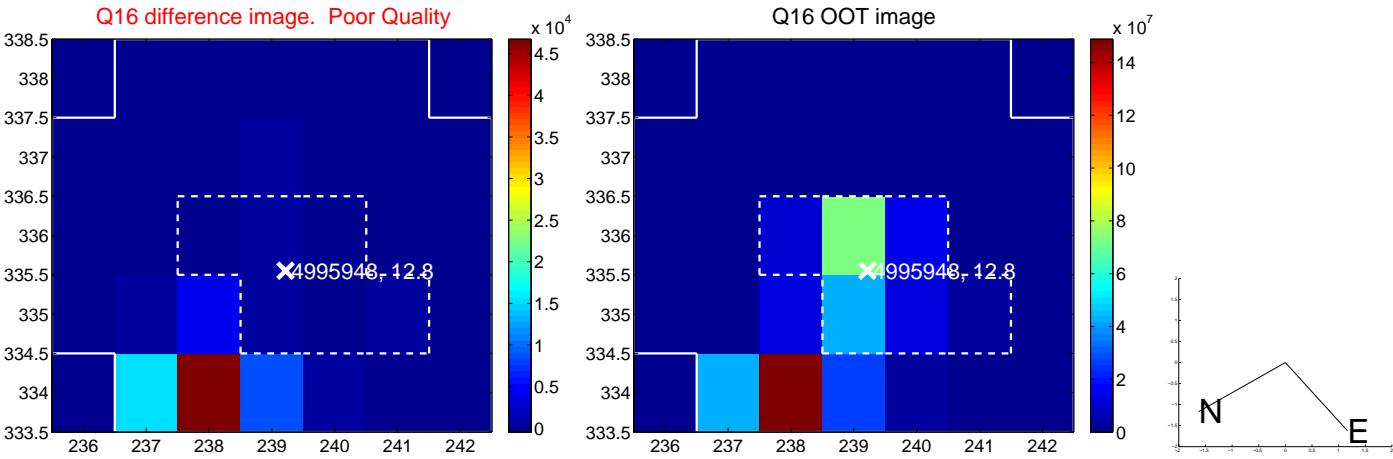
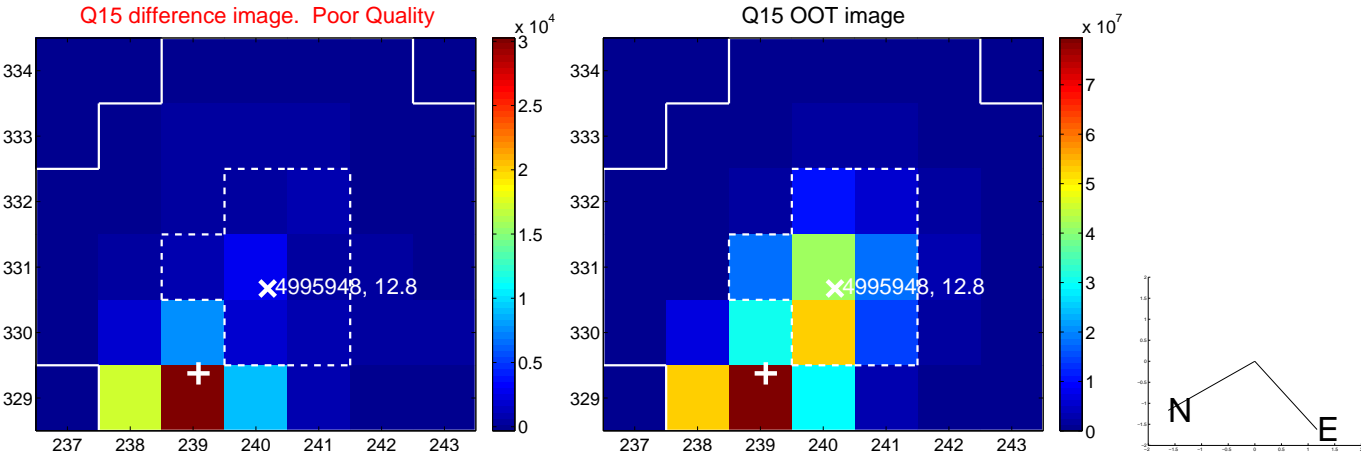
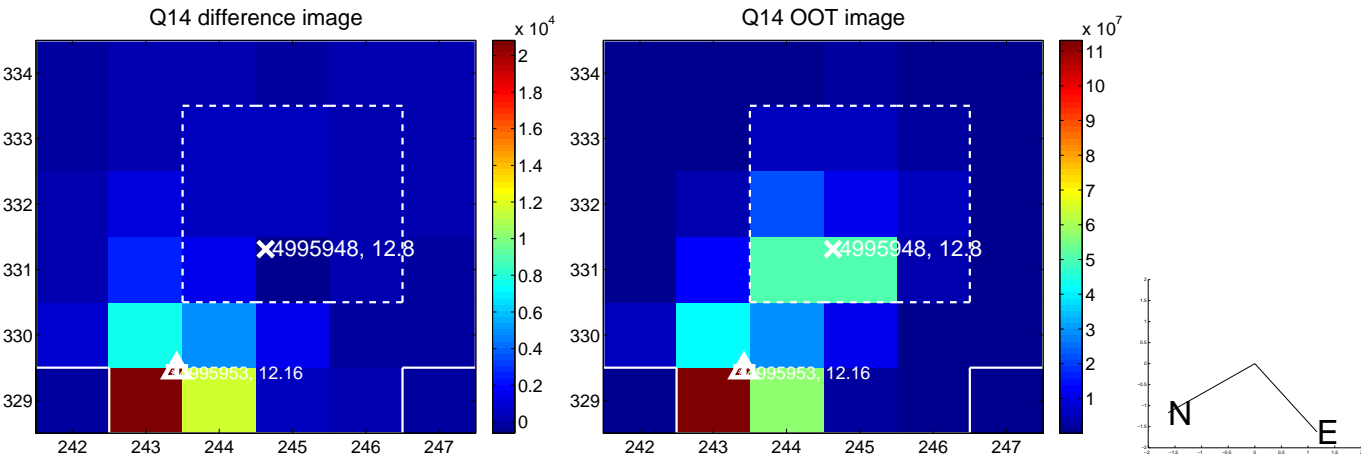
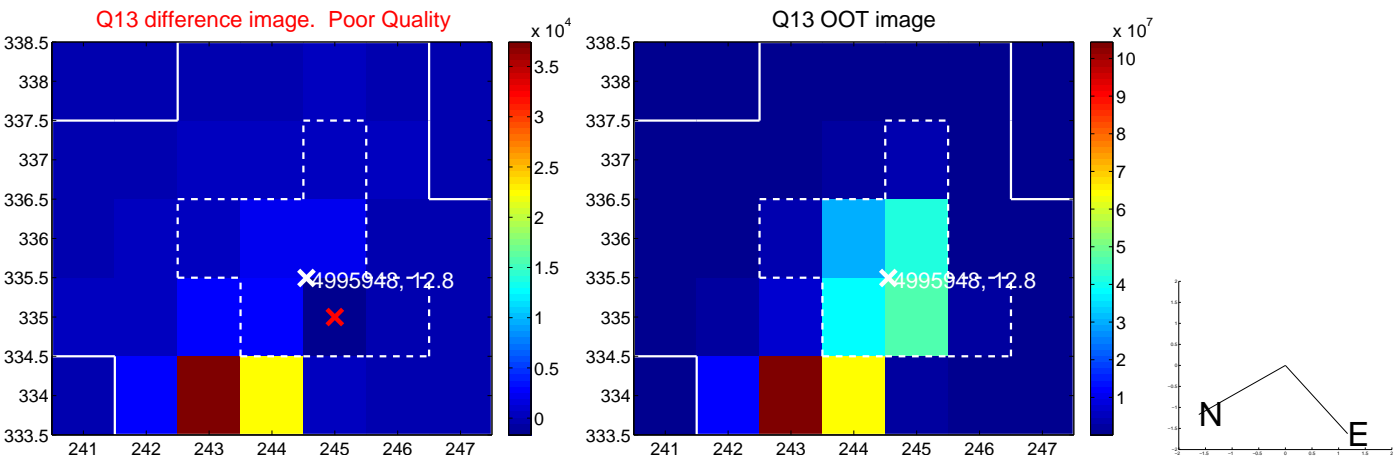
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



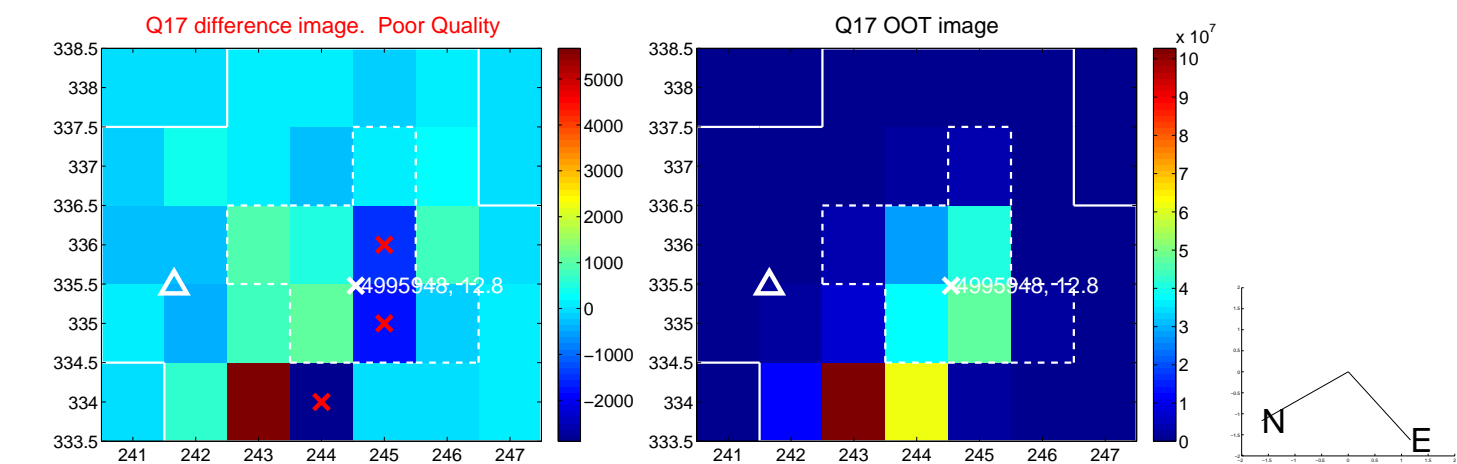
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



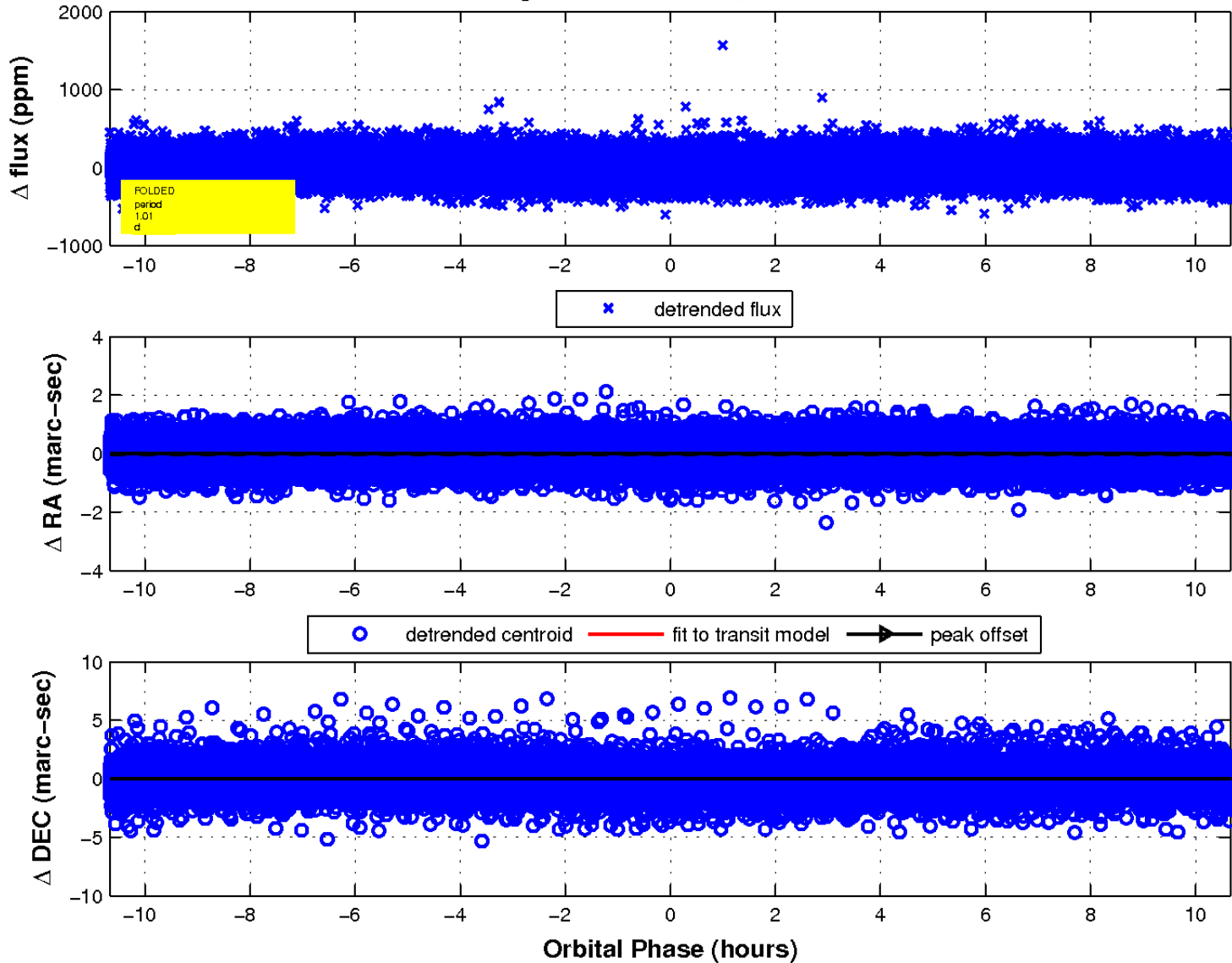
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

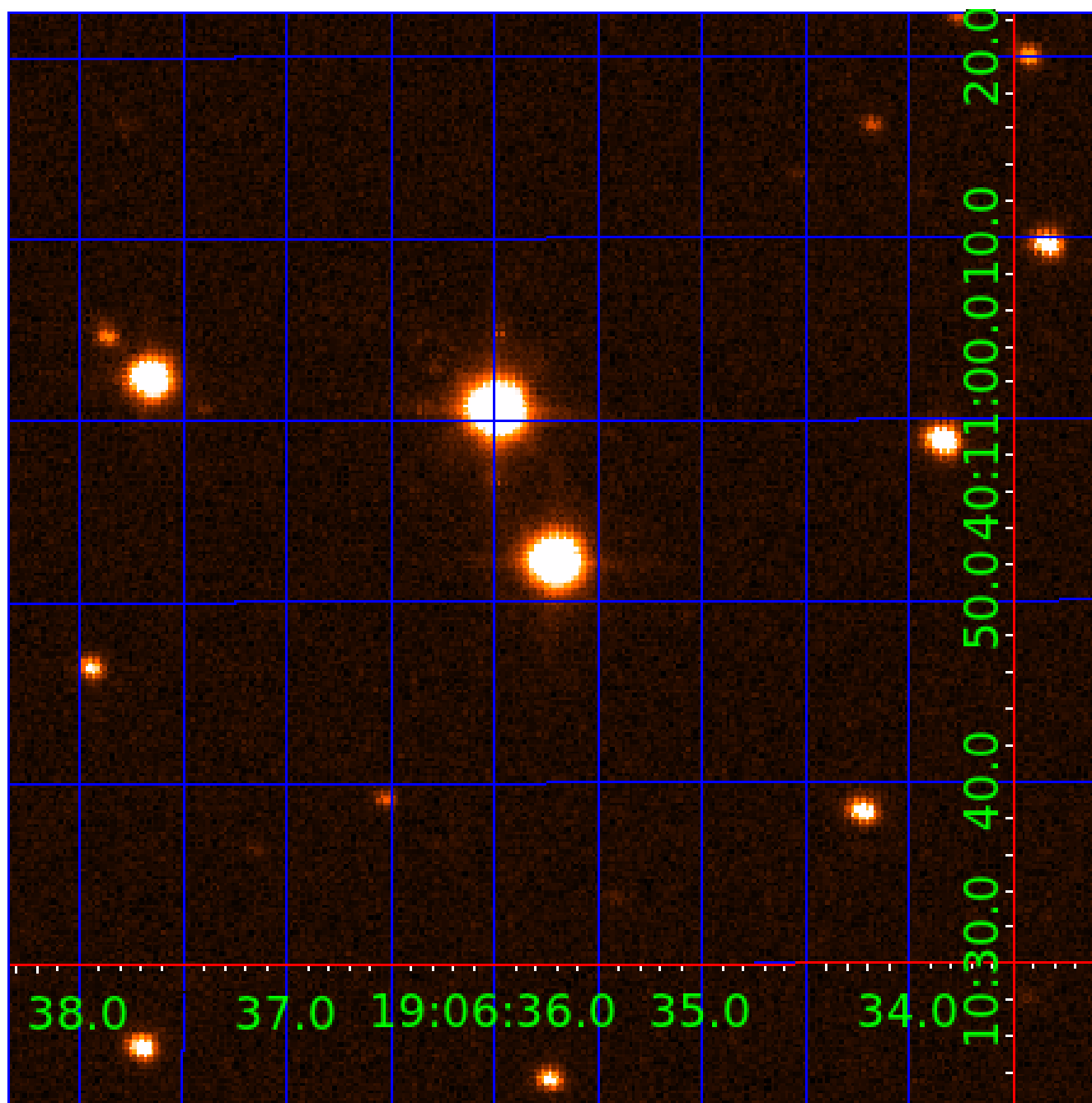


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 004995948

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})
004995948-01	OBS	No	1.522091	132.397542	17.8	4.868	8.4	8.5	1.52	6165	0.80	4379.84
004995948-02	OBS	No	1.014726	131.892606	19.3	3.556	8.5	9.1	1.52	6165	0.68	7520.52
004995948-03	OBS	No	47.745381	167.880419	117.8	5.694	7.3	7.4	1.52	6165	1.85	44.27
004995948-04	OBS	No	135.840999	243.869492	254.8	1.862	7.8	6.8	1.52	6165	2.45	10.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004995948-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
004995948-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
004995948-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
004995948-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

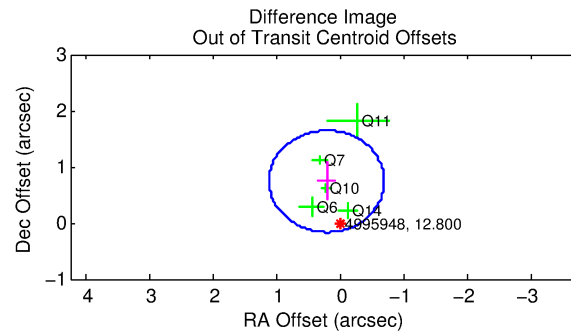
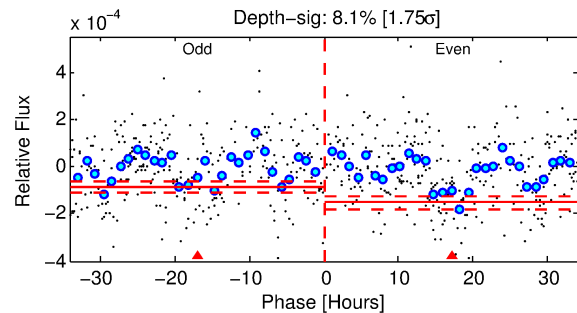
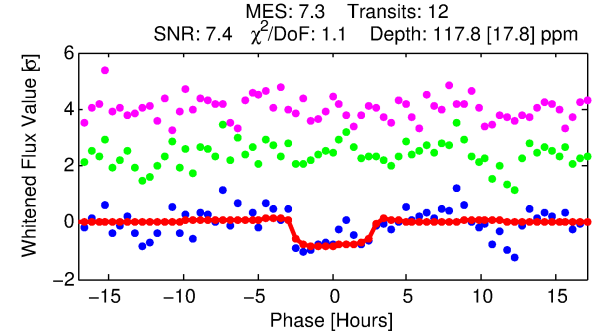
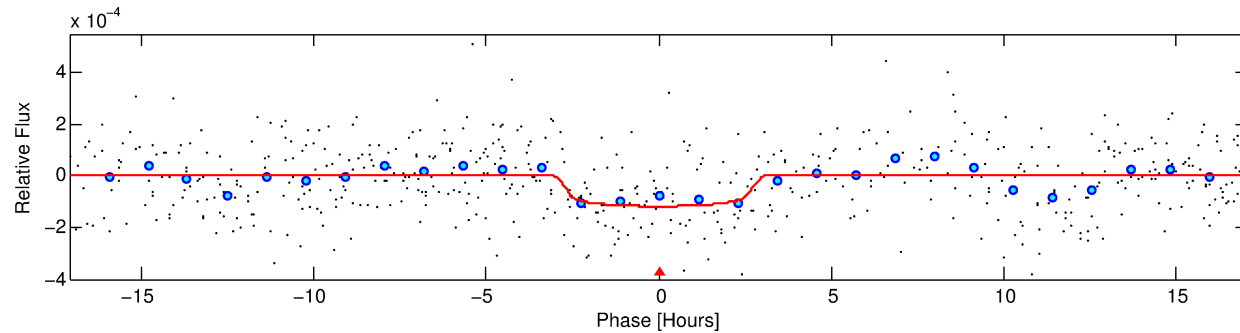
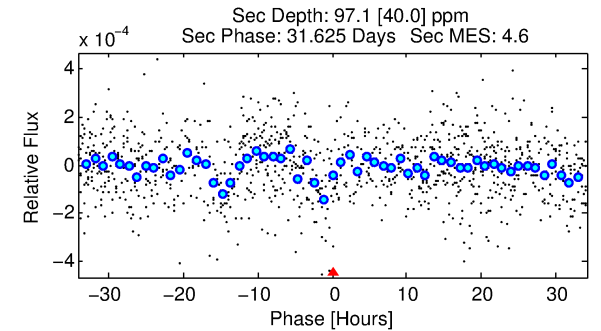
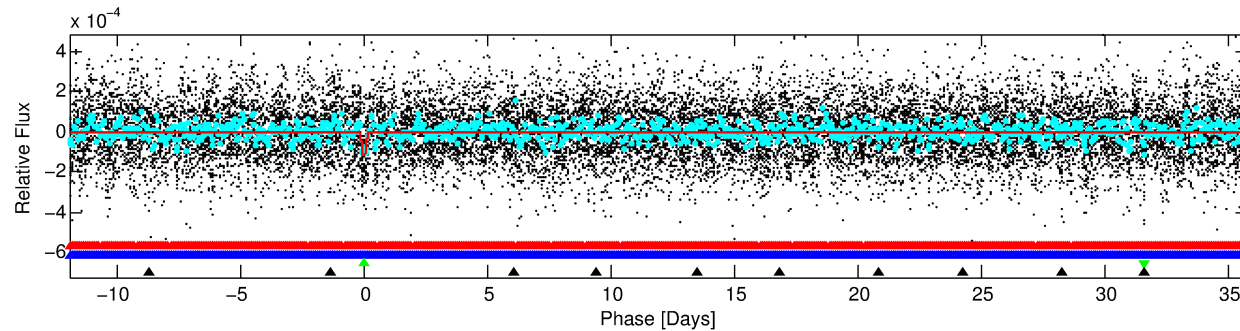
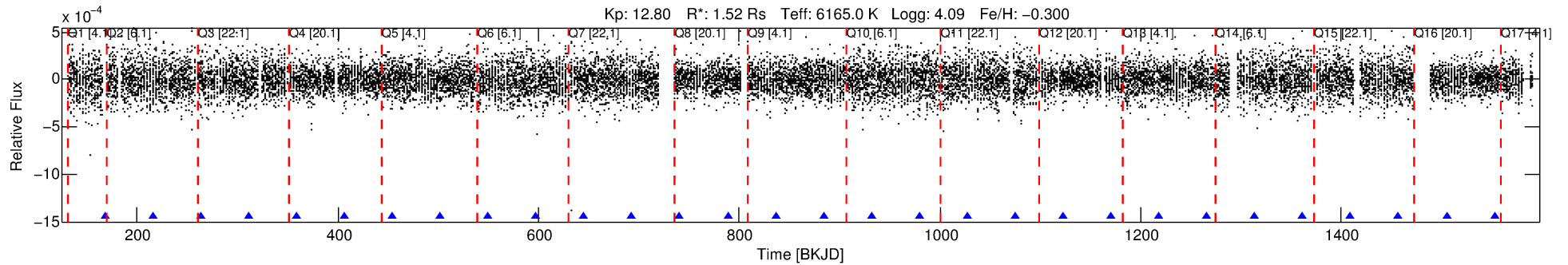
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004995948-03

No Significant Match Found

DV One-Page Summary

KIC: 4995948 Candidate: 3 of 4 Period: 47.745 d



DV Fit Results:

Period = 47.74538 [0.00090] d
Epoch = 167.8804 [0.0137] BKJD
Rp/R* = 0.0112 [0.0066]
a/R* = 36.54 [114.53]
b = 0.84 [1.15]
Seff = 44.27 [20.05]
Teq = 658 [74] K
Rp = 1.86 [1.21] Re
a = 0.2601 [0.0695] AU
Ag = 1050.14 [1393.09] [0.75σ]
Teffp = 5789 [1822] K [2.81σ]

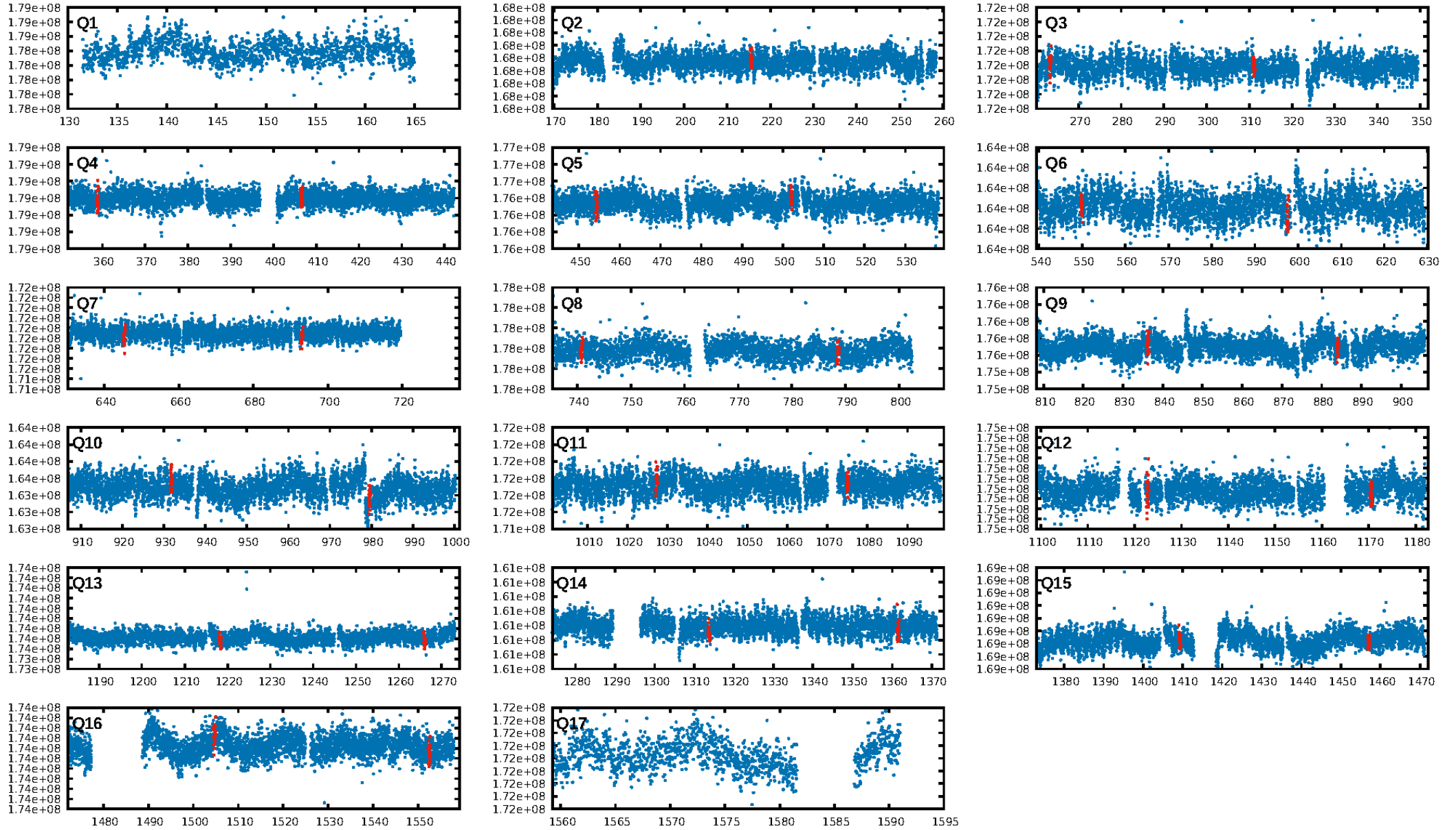
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [148.10σ]
LongPeriod-sig: 100.0% [352.95σ]
ModelChiSquare2-sig: 29.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.59e-09
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: -0.5387
Centroid-sig: 4.2%
Centroid-so: 5.188 arcsec [3.34σ]
OotOffset-rm: 0.770 arcsec [2.55σ]
KicOffset-rm: 8.750 arcsec [4.21σ]
OotOffset-st: 3/2/0/0 [5]
KicOffset-st: 3/2/0/1 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 0.00 [0/15]

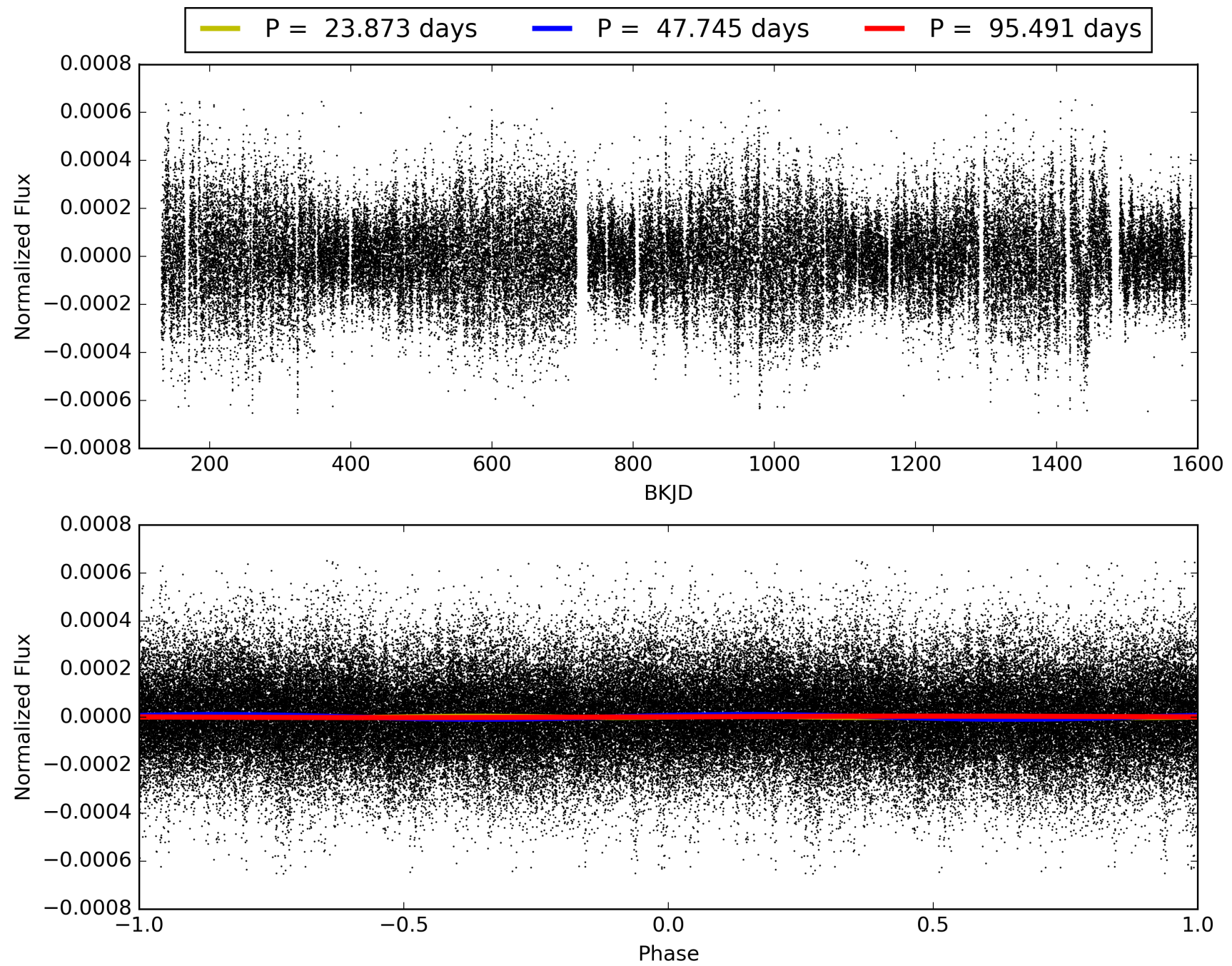
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:23:16 Z

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

TCE 004995948-03, PDC Light Curves

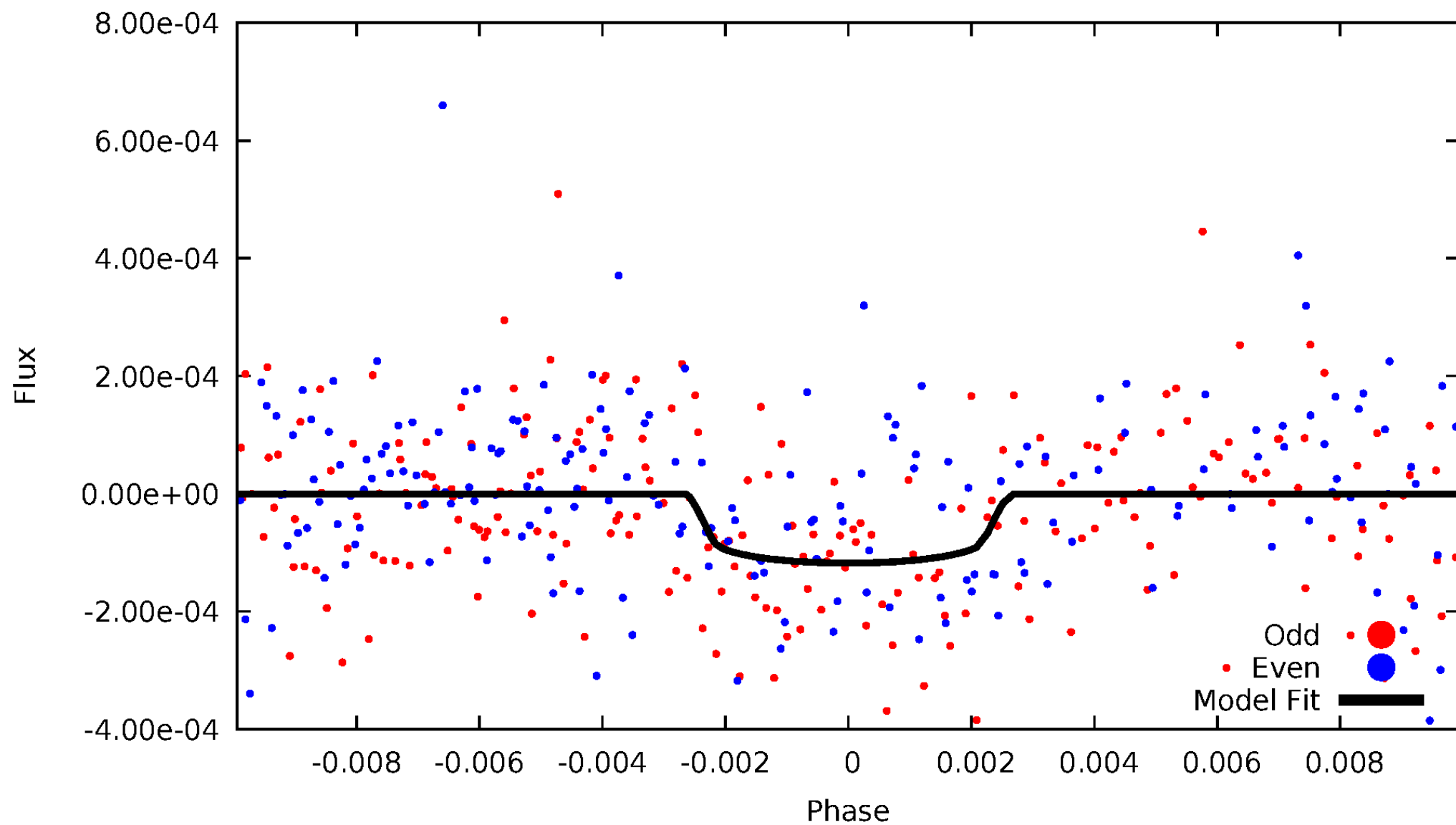


TCE 004995948-03



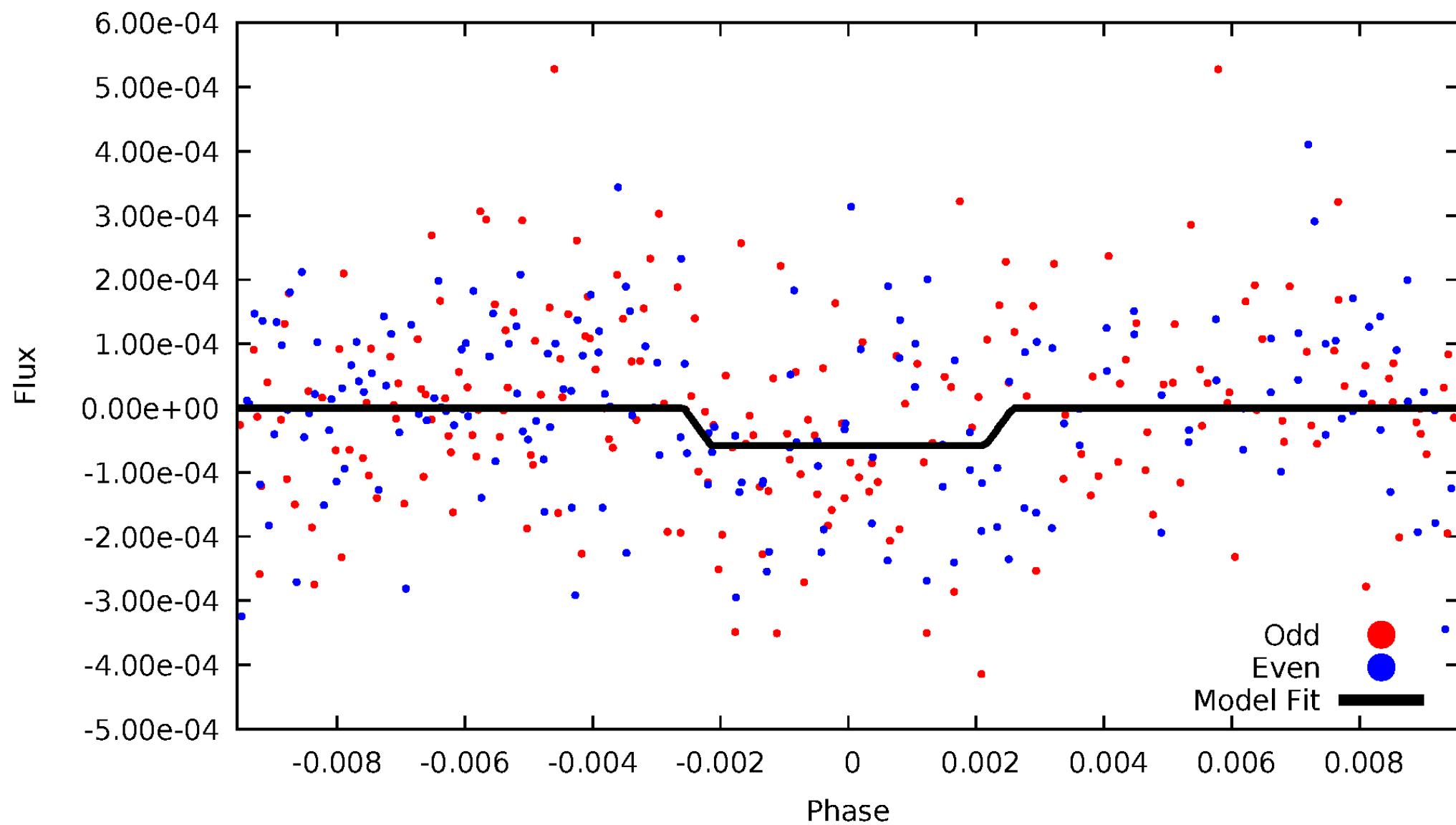
DV Odd/Even

TCE 004995948-03



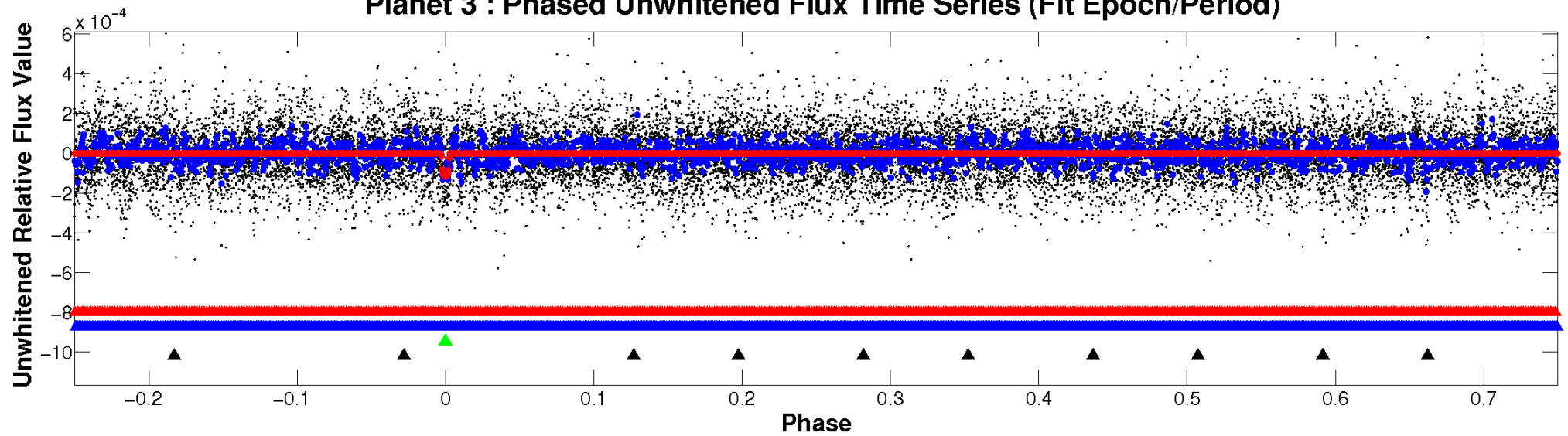
ALT Odd/Even

TCE 004995948-03

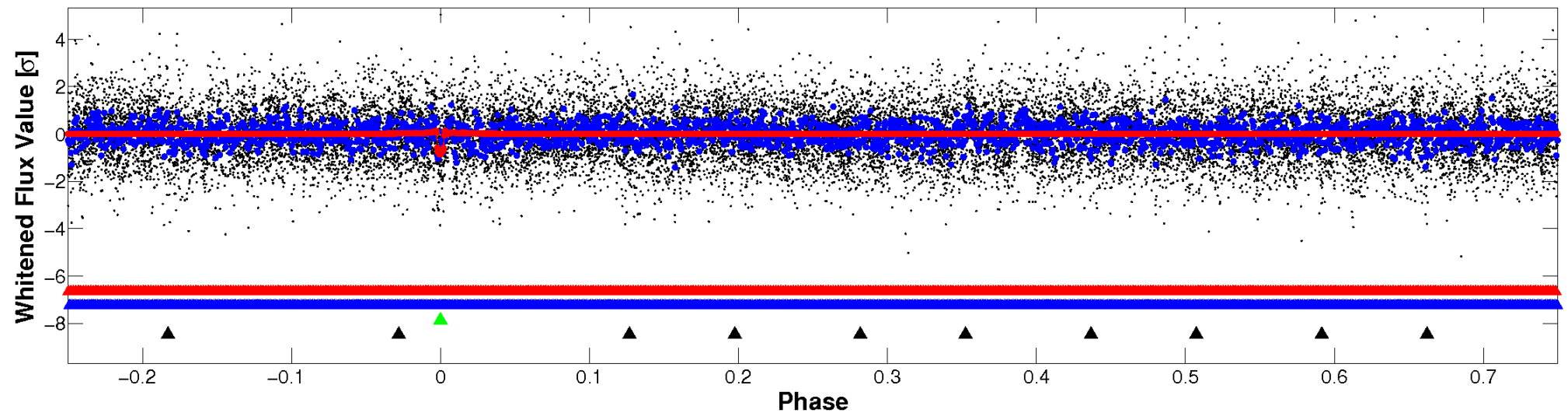


Non-Whitened Vs. Whitened Light Curve

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

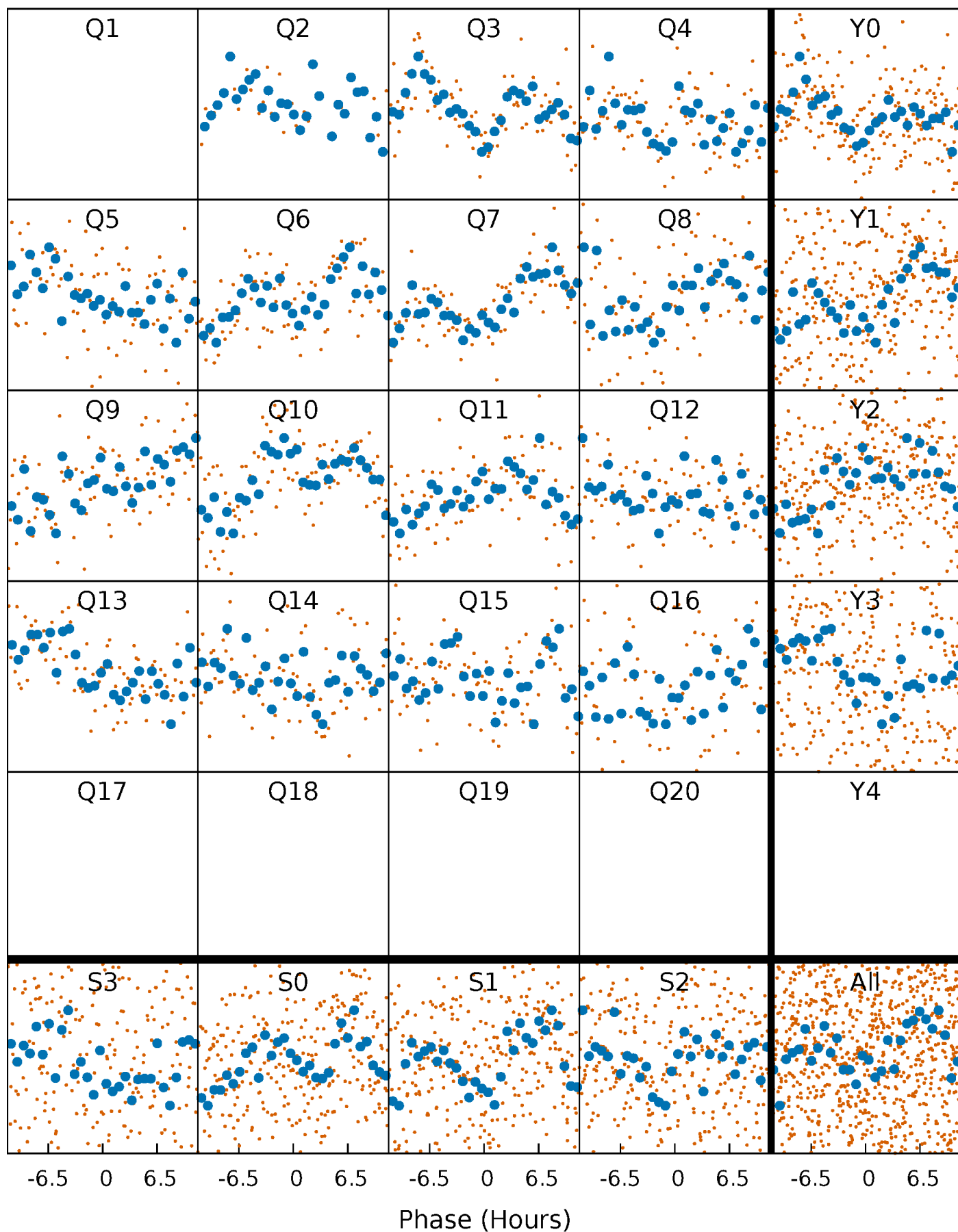


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



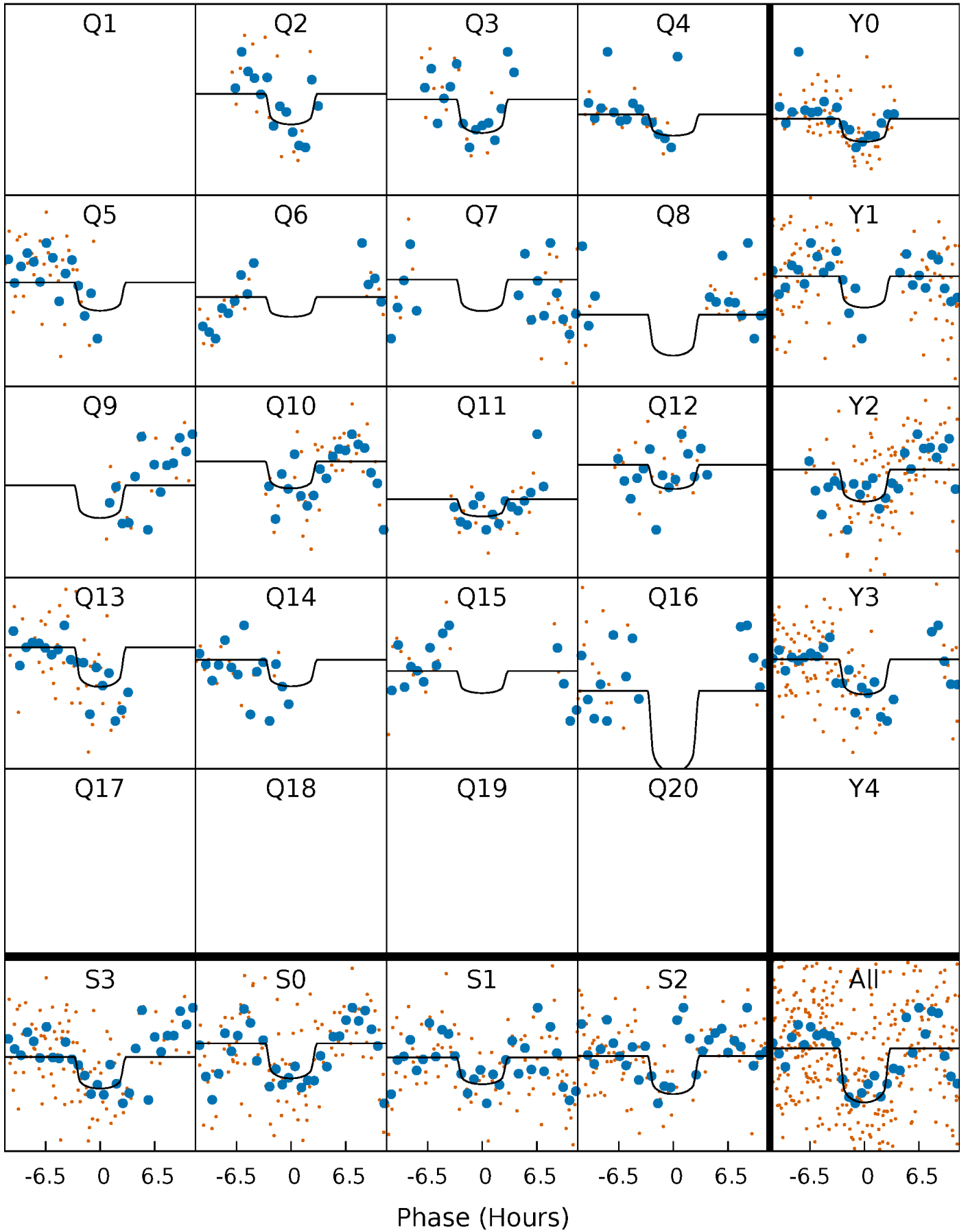
PDC Quarter-Phased Transit Curves

TCE 004995948-03 P= 47.745381 Days $T_0=167.880419$ (BKJD)



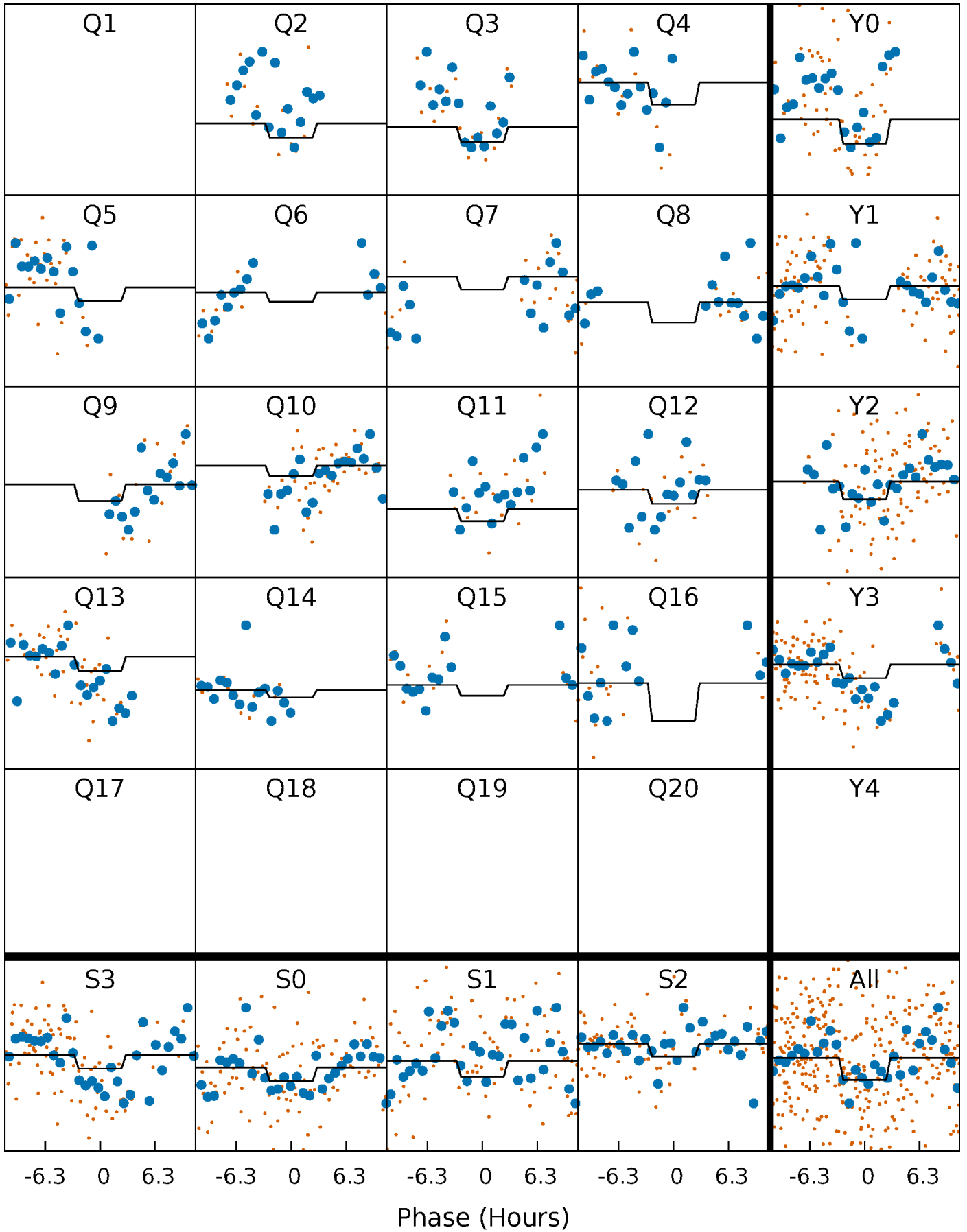
DV Quarter-Phased Transit Curves

TCE 004995948-03 P= 47.745381 Days $T_0=167.880419$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

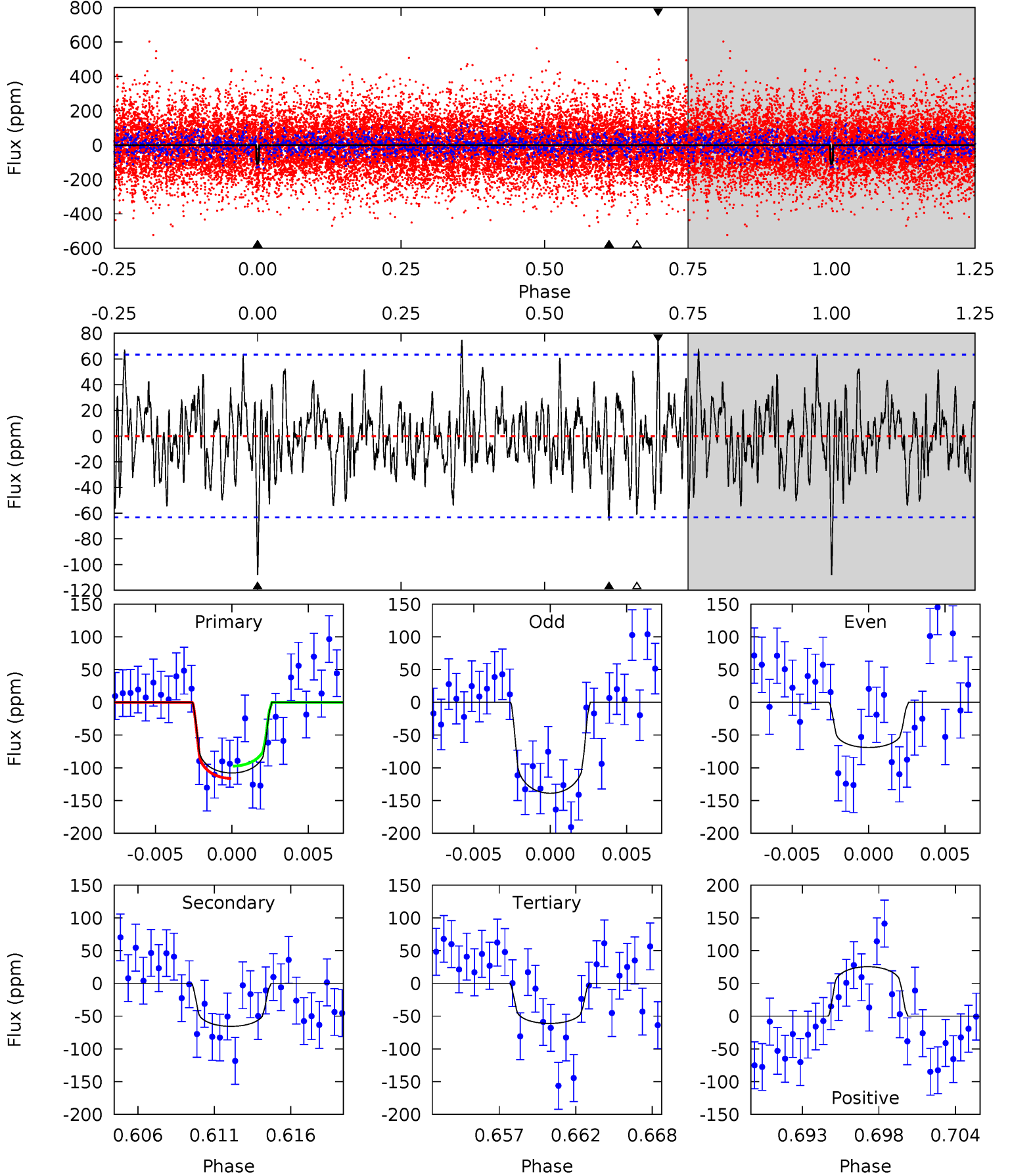
TCE 004995948-03 P= 47.744630 Days $T_0=167.893449$ (BKJD)



DV Model-Shift Uniqueness Test

004995948-03, P = 47.745381 Days, E = 120.135038 Days

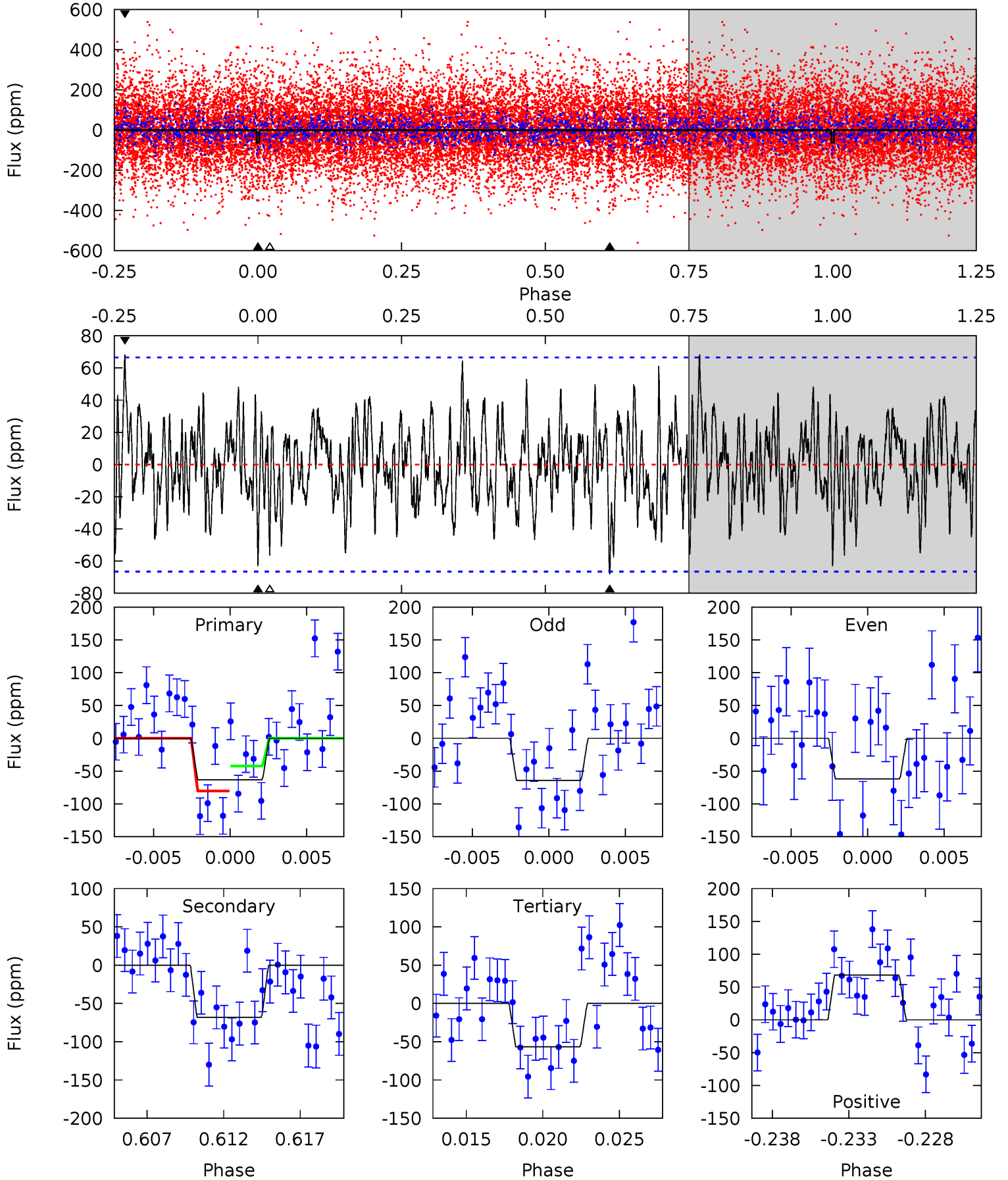
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.78	5.34	4.98	6.14	5.15	2.80	1.80	3.81	2.64	0.36	-0.80	2.83	0.93	0.41	0.77



Alt Model-Shift Uniqueness Test

004995948-03, $P = 47.744630$ Days, $E = 120.148819$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.90	5.28	4.38	5.29	5.16	2.80	1.62	0.52	-0.39	0.90	-0.00	0.09	0.94	0.50	1.47



Stellar Parameters For KIC 004995948

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6165^{+170}_{-189}	$4.086^{+0.259}_{-0.111}$	$-0.300^{+0.300}_{-0.300}$	$1.521^{+0.334}_{-0.408}$	$1.029^{+0.180}_{-0.135}$	$0.412^{+0.600}_{-0.160}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-27%	+17%/-13%	+146%/-39%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004995948-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-66 ± 12	$1.88^{+1.08}_{-0.96}$	902^{+60}_{-67}	5179^{+2078}_{-877}	698^{+2180}_{-418}
Alt.	-68 ± 13	$1.35^{+0.99}_{-0.83}$	903^{+57}_{-68}	6055^{+4626}_{-1367}	1435^{+7588}_{-985}

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

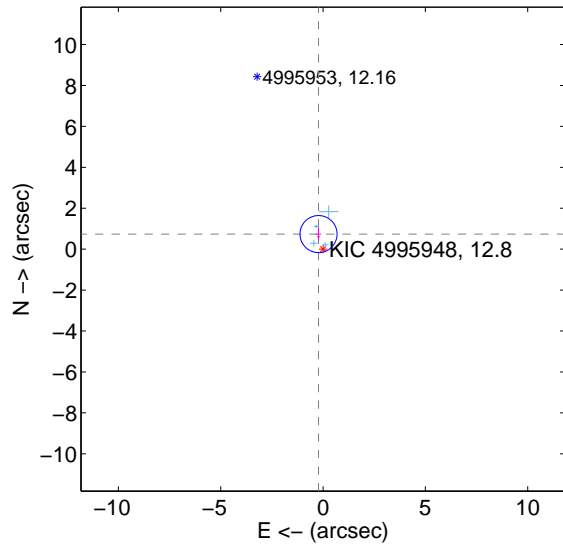
Supplemental centroid analysis for 004995948-03. Kepler magnitude: 12.80. Transit SNR 7.38

There are 4 quarters with good PRF difference image offsets

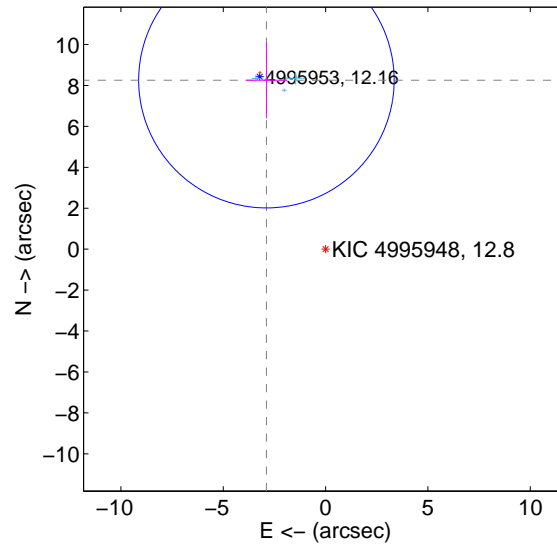
The OOT PRF centroid is offset from the target star catalog position by about 8.58 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.770 ± 0.302	2.55	0.220 ± 0.134	0.738 ± 0.331
PRF-fit source offset from KIC position	8.750 ± 2.081	4.21	2.892 ± 1.012	8.258 ± 1.860
photometric centroid source offset	5.19 ± 1.55	3.34	0.81 ± 0.69	5.12 ± 1.57

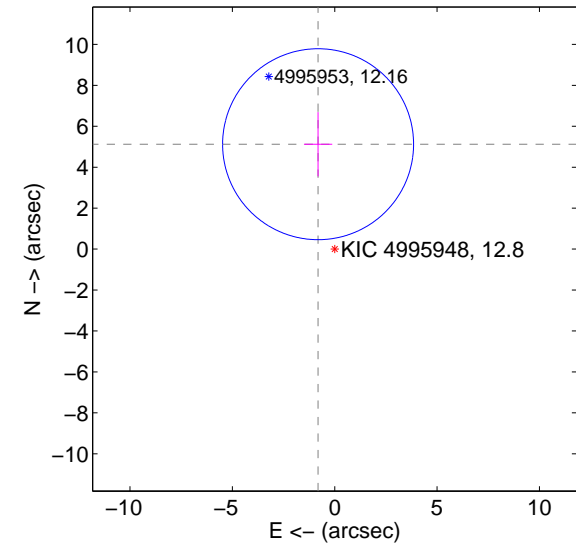
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

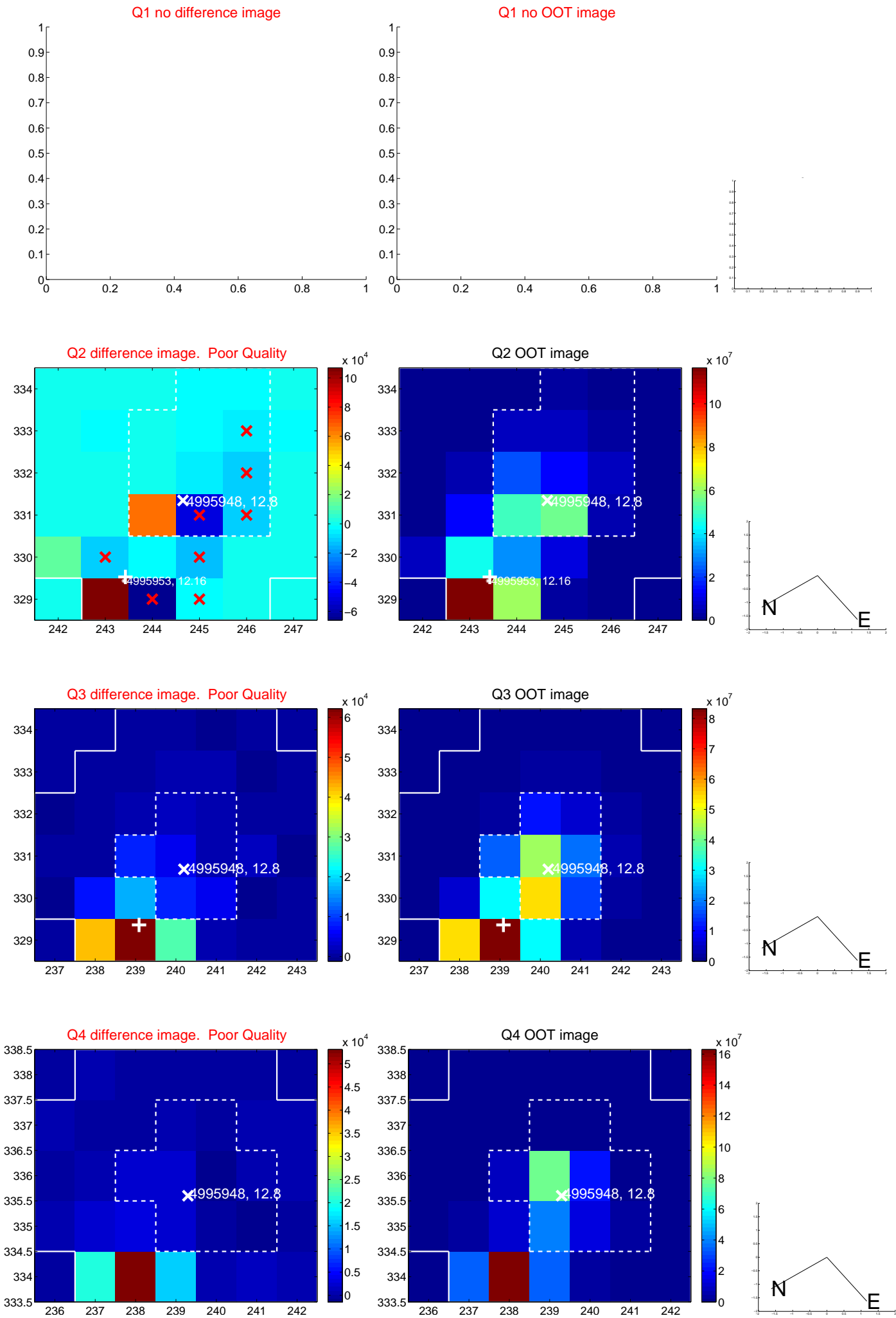


offset from photometric centroids

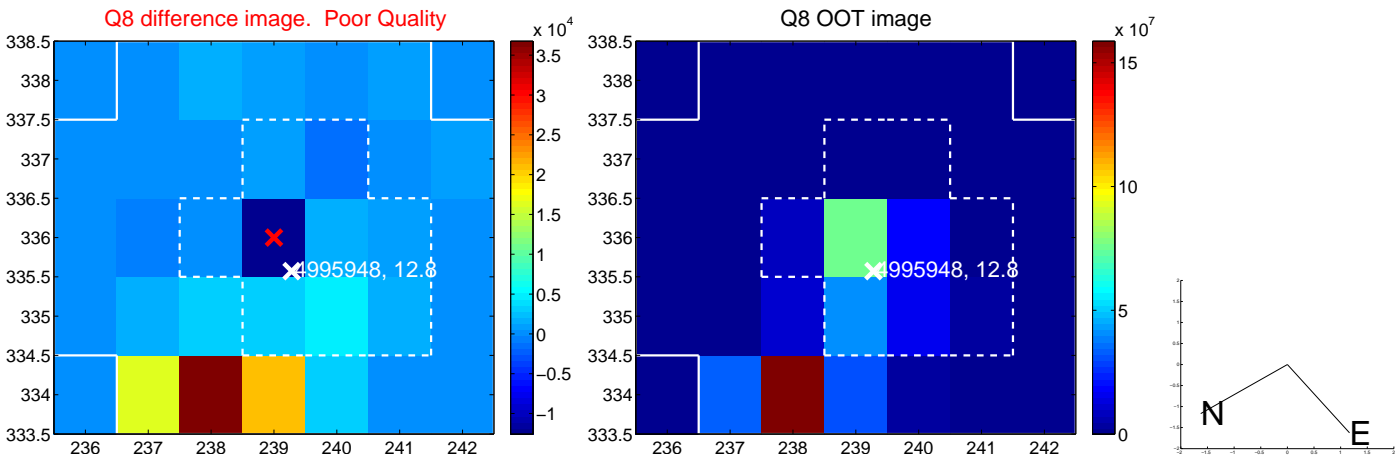
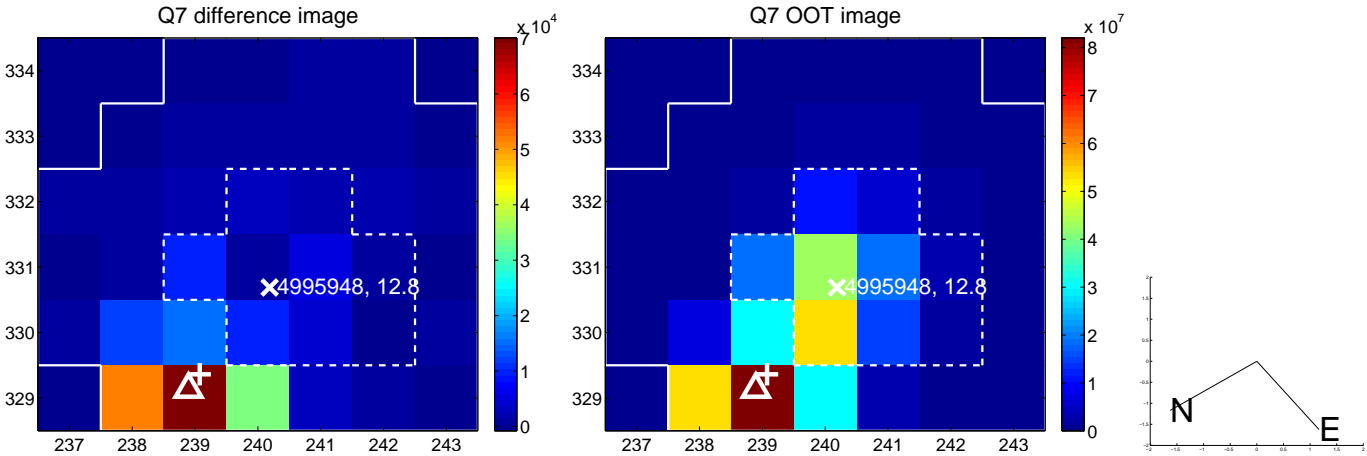
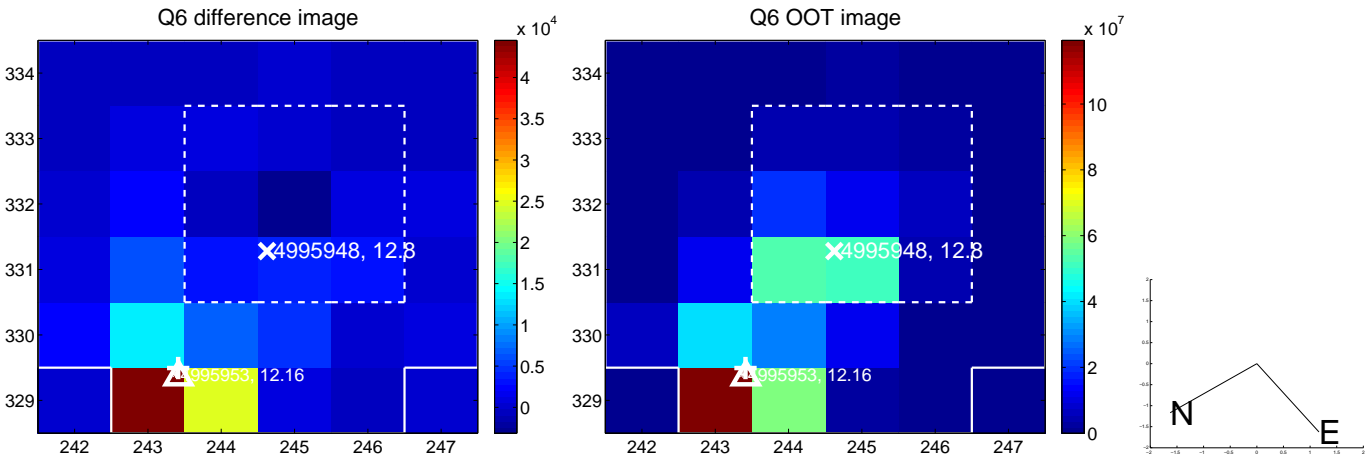
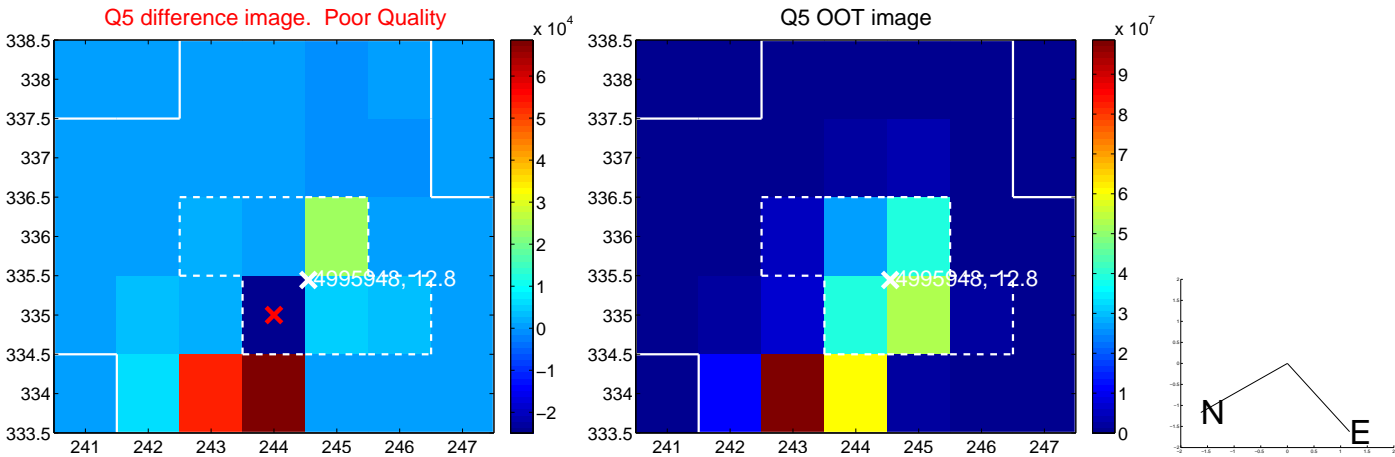


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

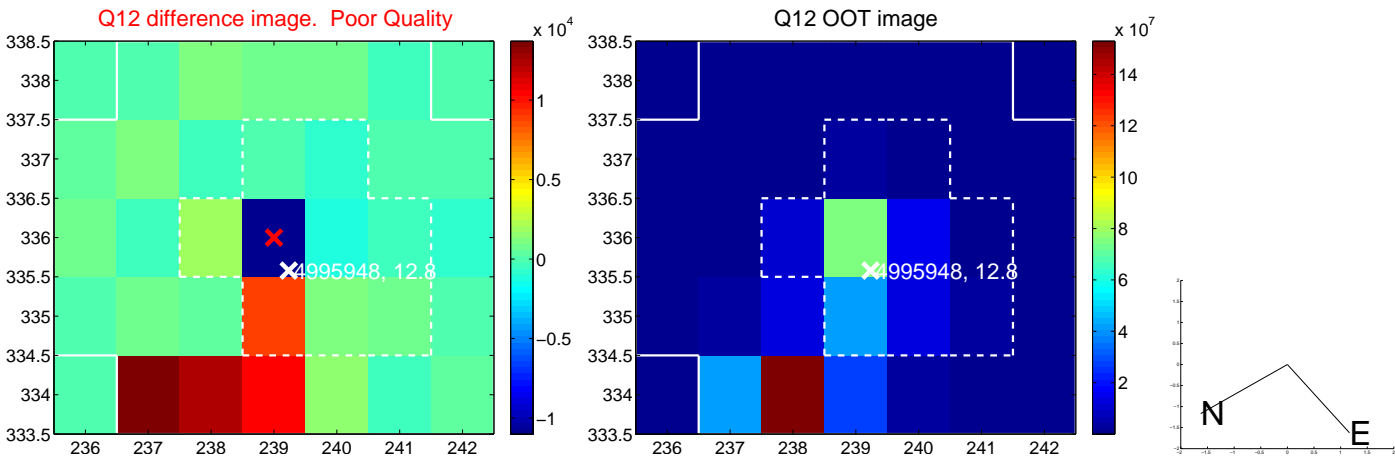
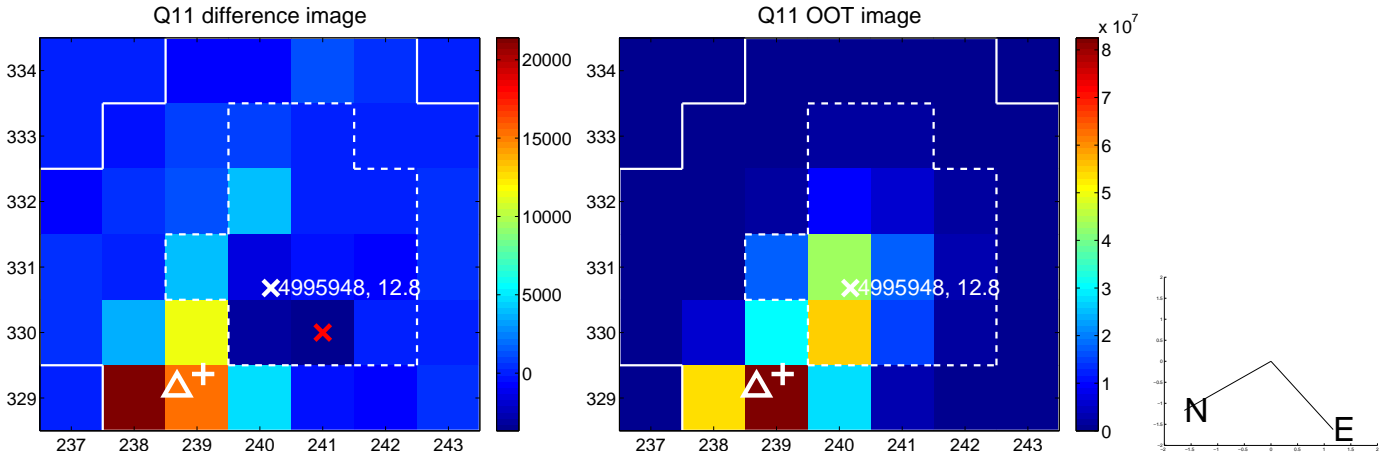
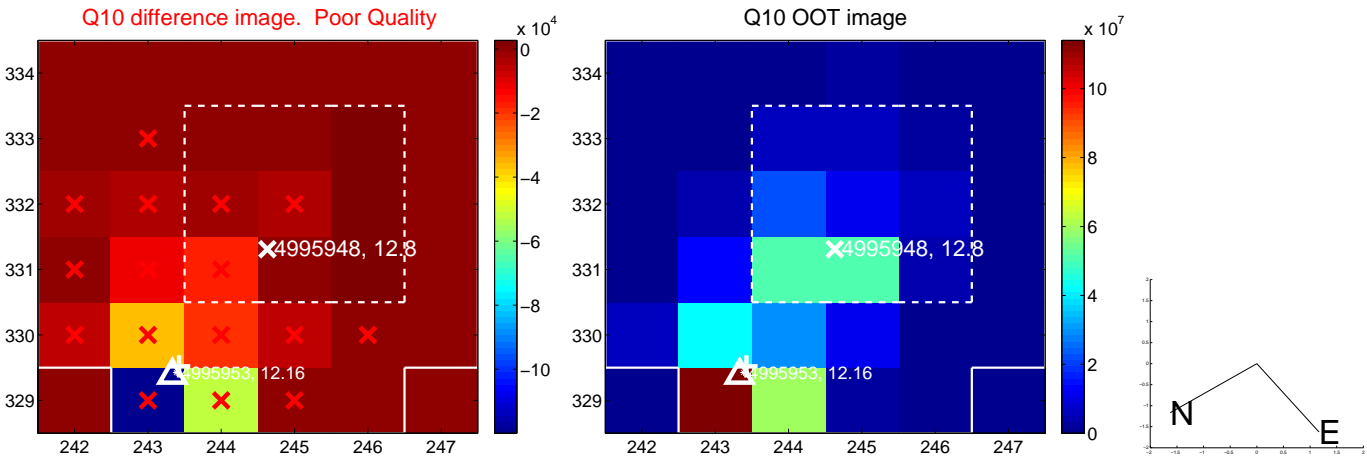
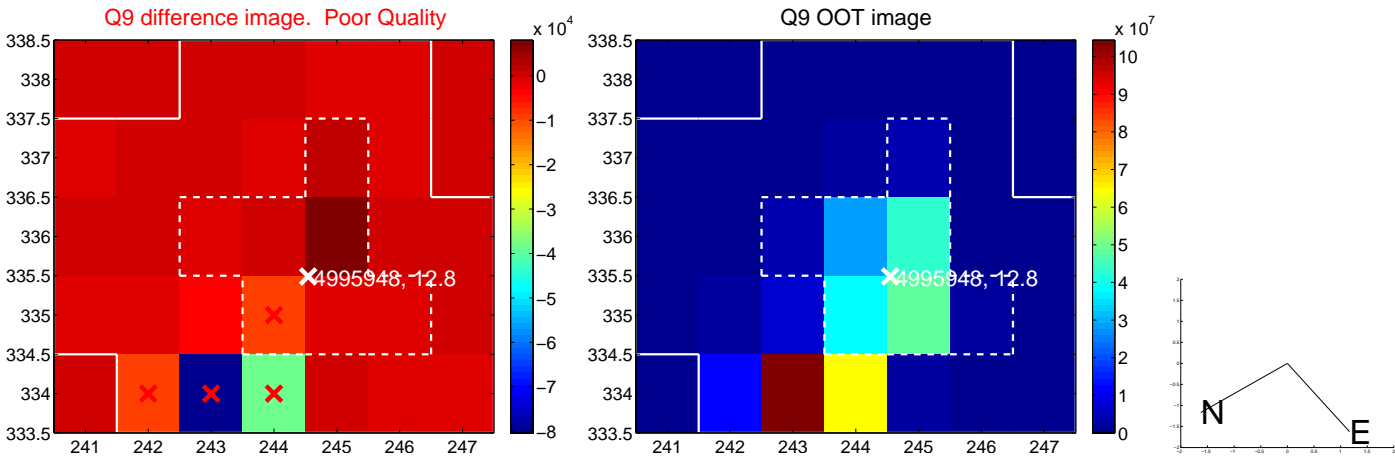
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



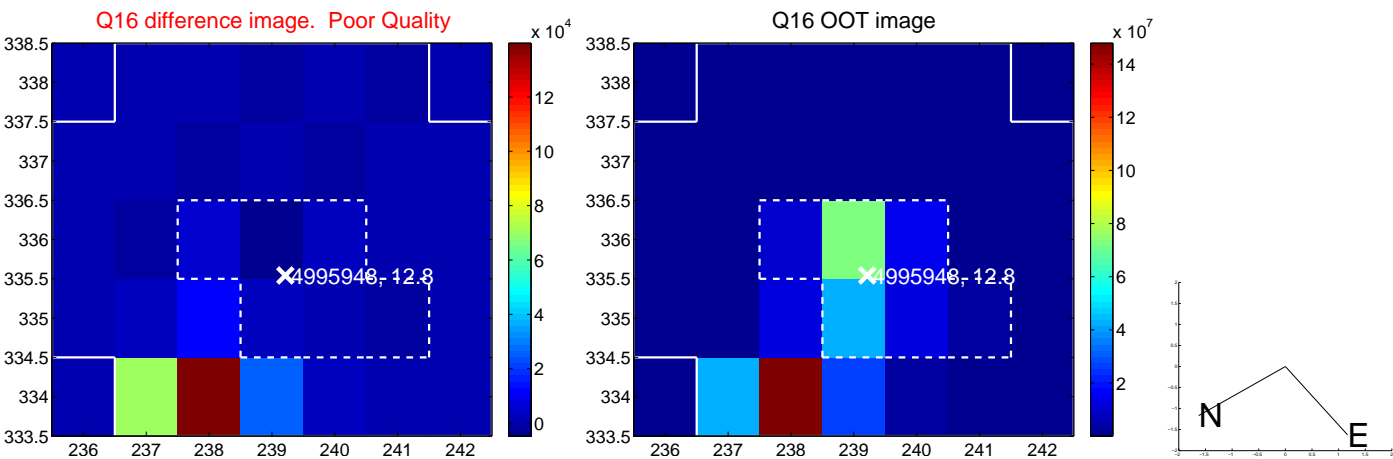
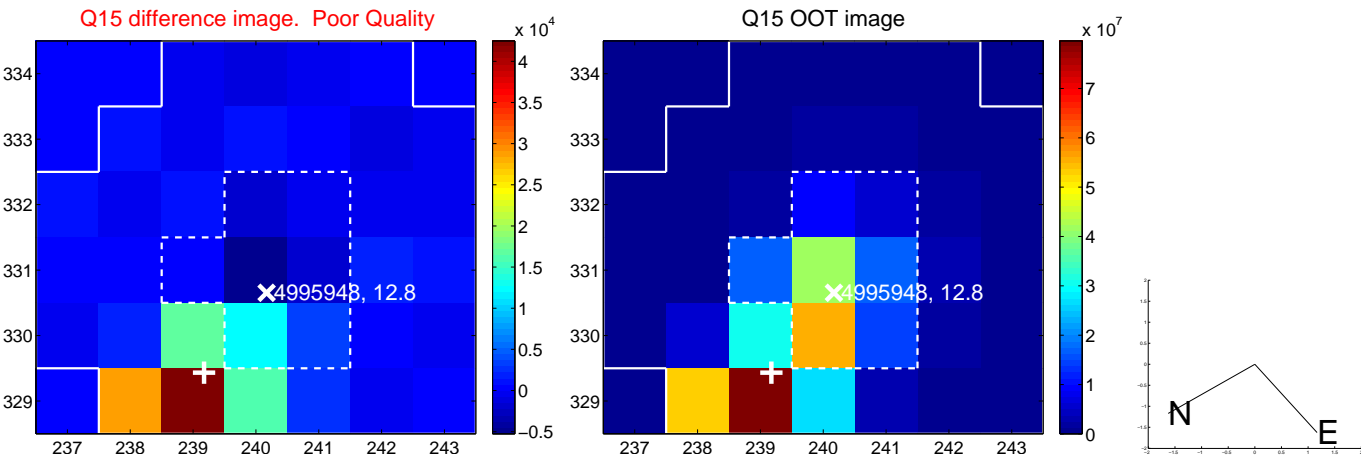
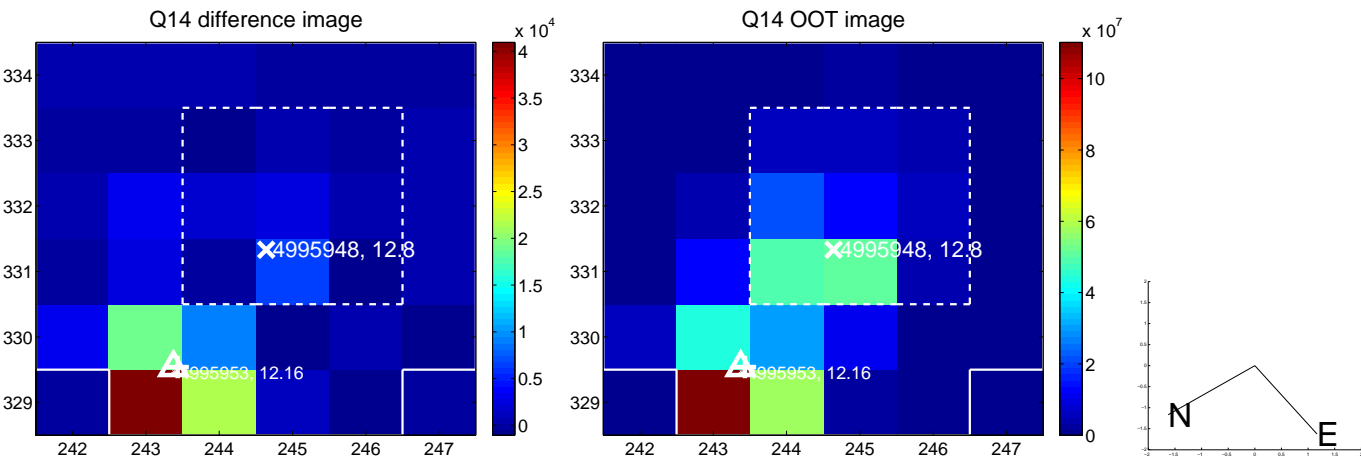
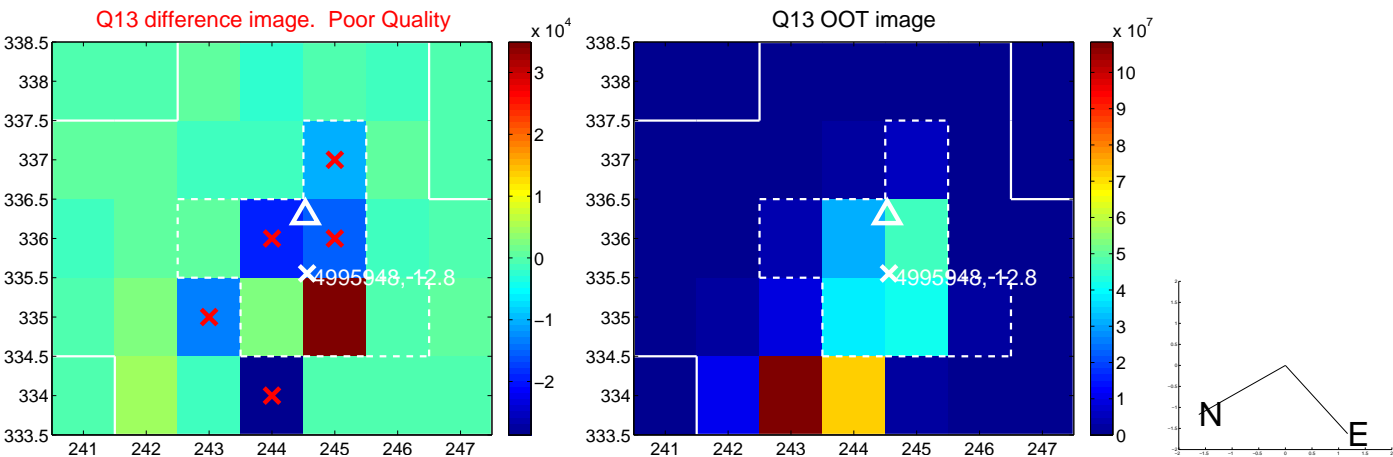
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



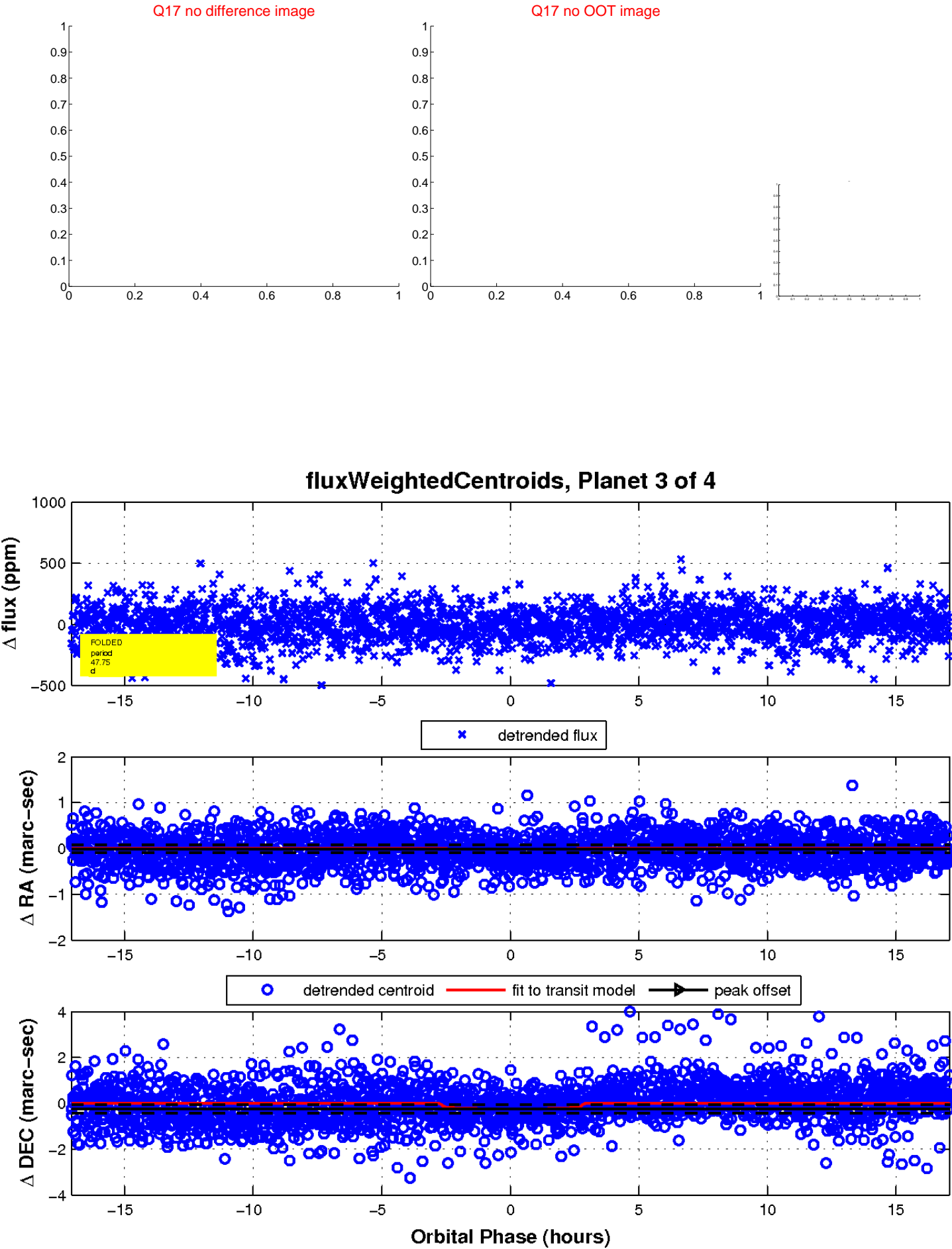
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

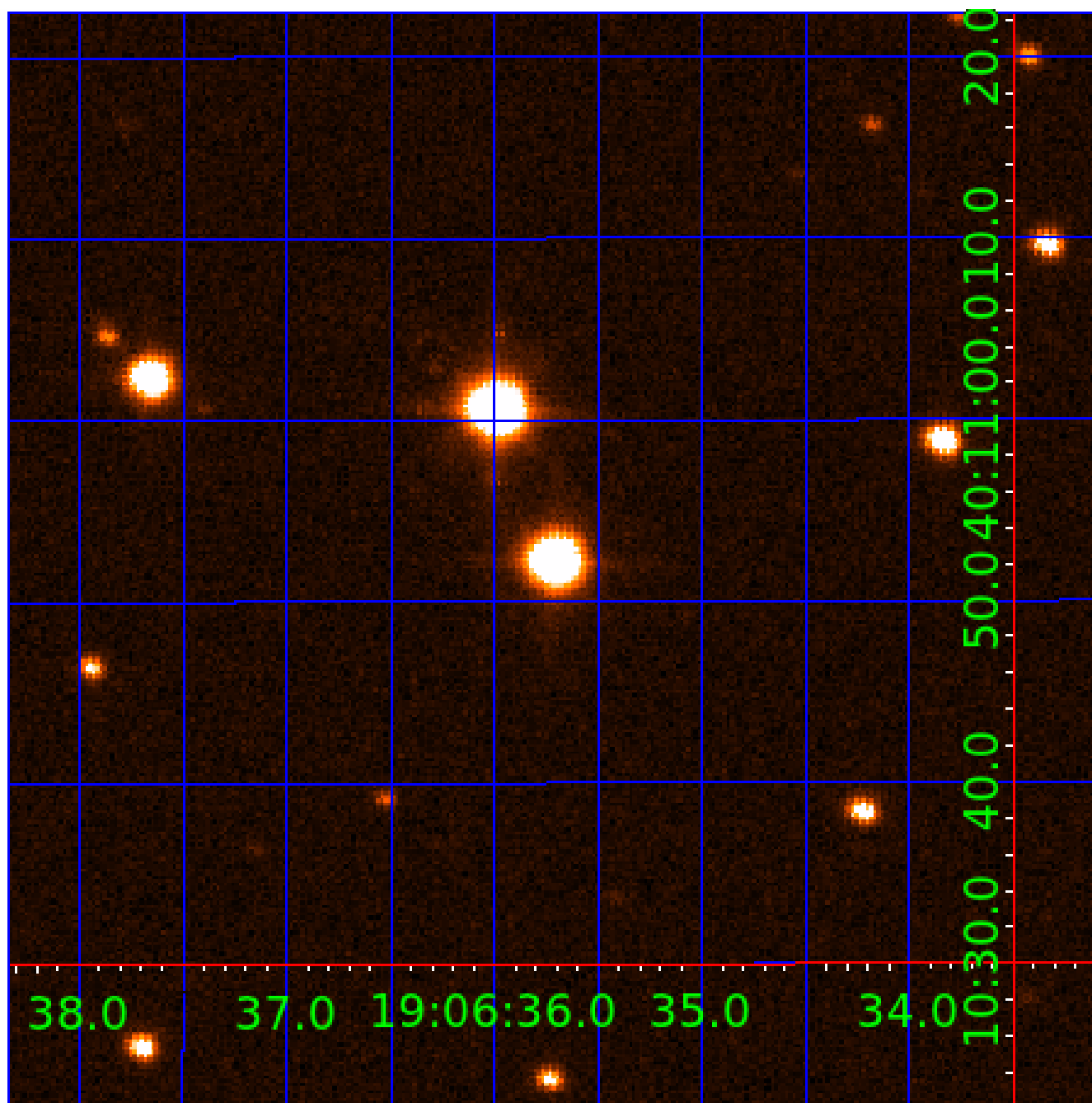


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004995948

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})
004995948-01	OBS	No	1.522091	132.397542	17.8	4.868	8.4	8.5	1.52	6165	0.80	4379.84
004995948-02	OBS	No	1.014726	131.892606	19.3	3.556	8.5	9.1	1.52	6165	0.68	7520.52
004995948-03	OBS	No	47.745381	167.880419	117.8	5.694	7.3	7.4	1.52	6165	1.85	44.27
004995948-04	OBS	No	135.840999	243.869492	254.8	1.862	7.8	6.8	1.52	6165	2.45	10.98

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004995948-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
004995948-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET
004995948-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET
004995948-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEWS_DIFFS

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

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

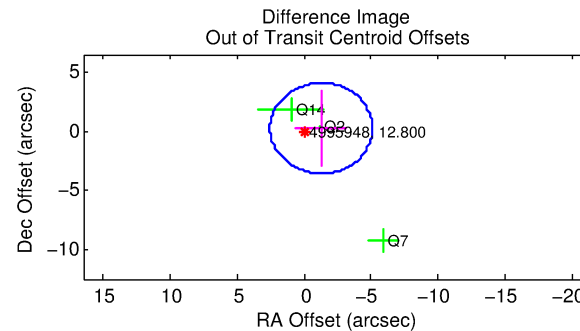
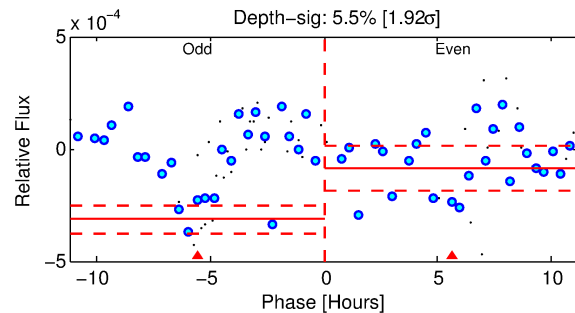
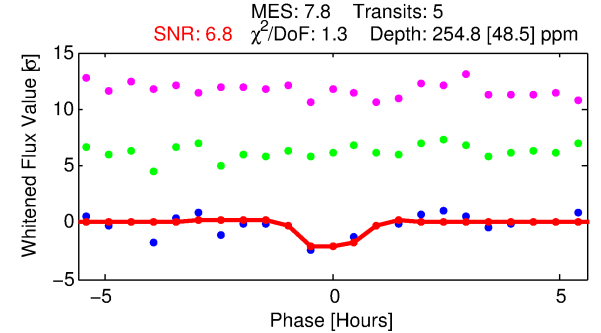
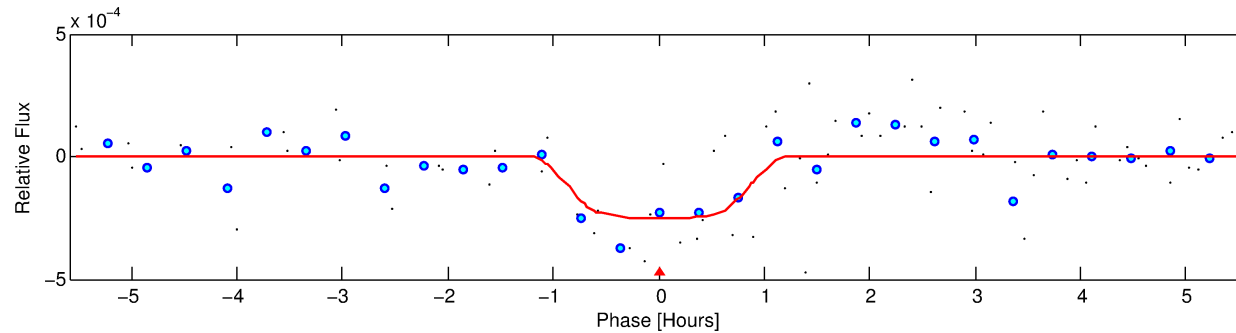
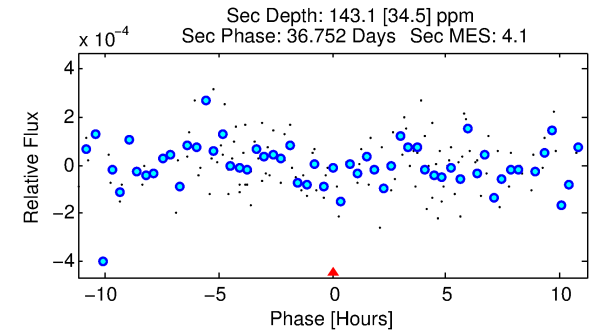
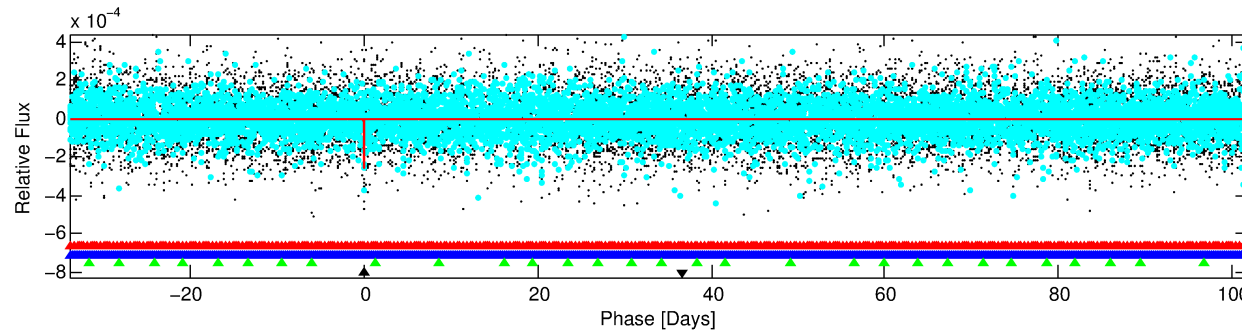
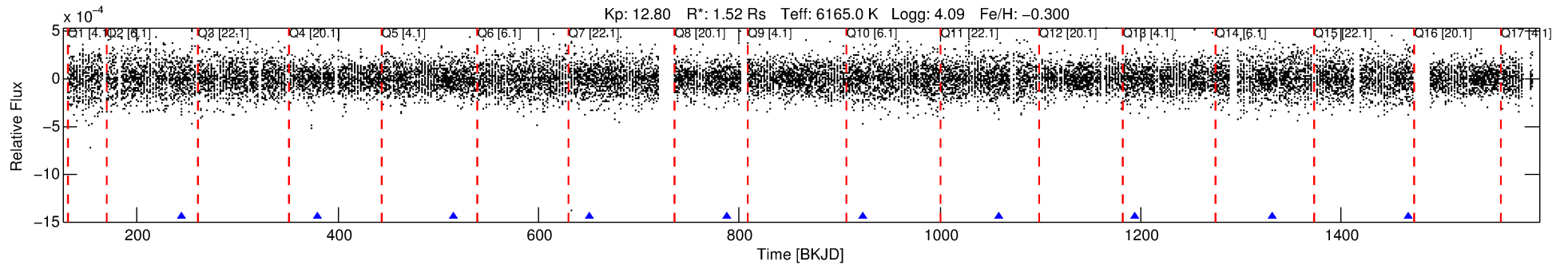
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004995948-04

No Significant Match Found

DV One-Page Summary

KIC: 4995948 Candidate: 4 of 4 Period: 135.841 d



DV Fit Results:

Period = 135.84100 [0.00175] d
Epoch = 243.8695 [0.0067] BKJD
Rp/R* = 0.0148 [0.0333]
a/R* = 545.16 [6045.82]
b = 0.27 [38.95]
Seff = 10.98 [4.97]
Teq = 464 [53] K
Rp = 2.45 [5.57] Re
a = 0.5222 [0.1396] AU
Ag = 3564.21 [16152.66] [0.22 σ]
Teffp = 5545 [6256] K [0.81 σ]

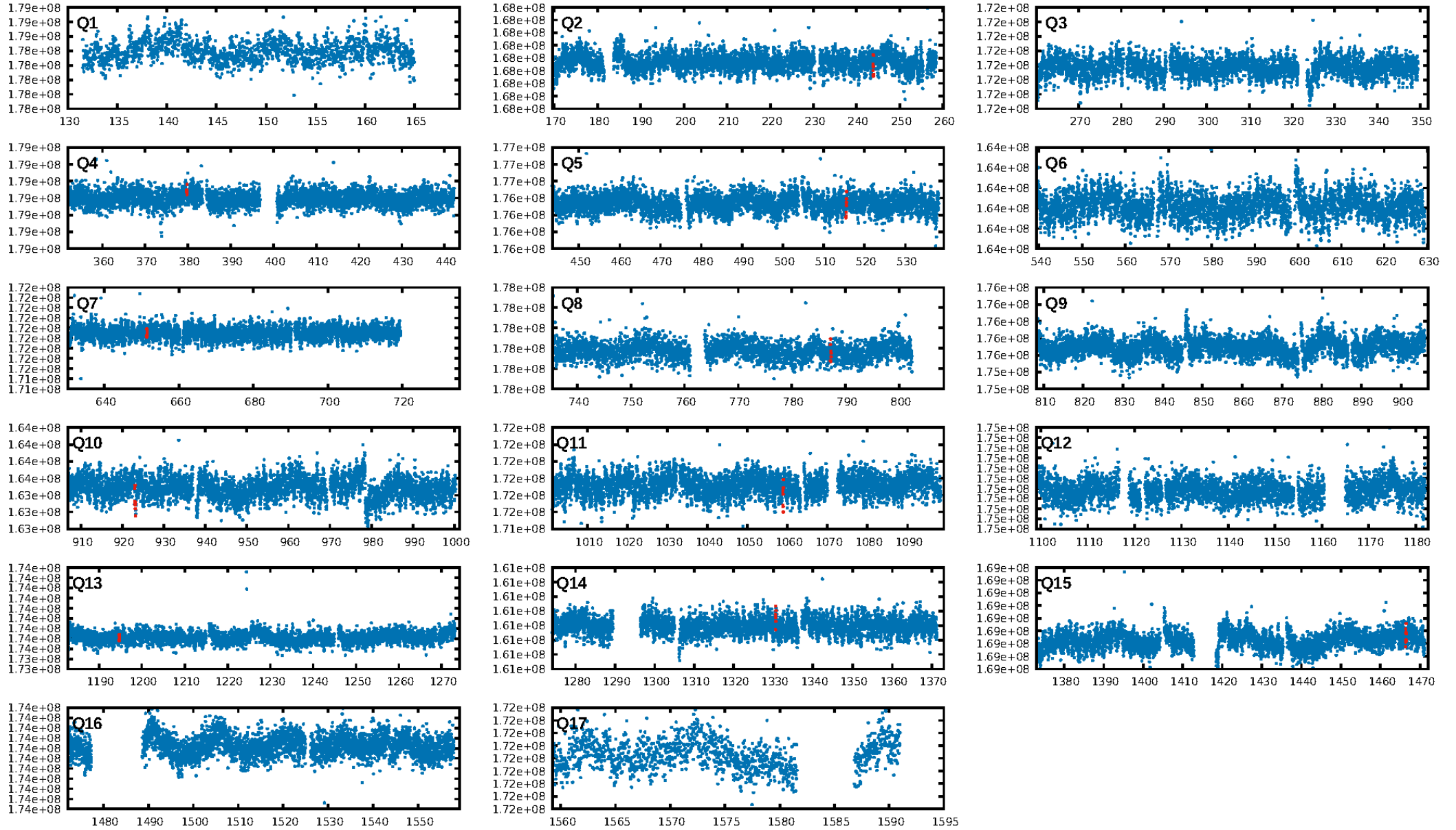
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [352.95 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 70.6%
Bootstrap-pfa: 2.15e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -8.155
Centroid-sig: 47.4%
Centroid-so: 3.734 arcsec [3.05 σ]
OotOffset-rm: 1.293 arcsec [1.01 σ]
KicOffset-rm: 8.628 arcsec [2.74 σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.20 [2/10]

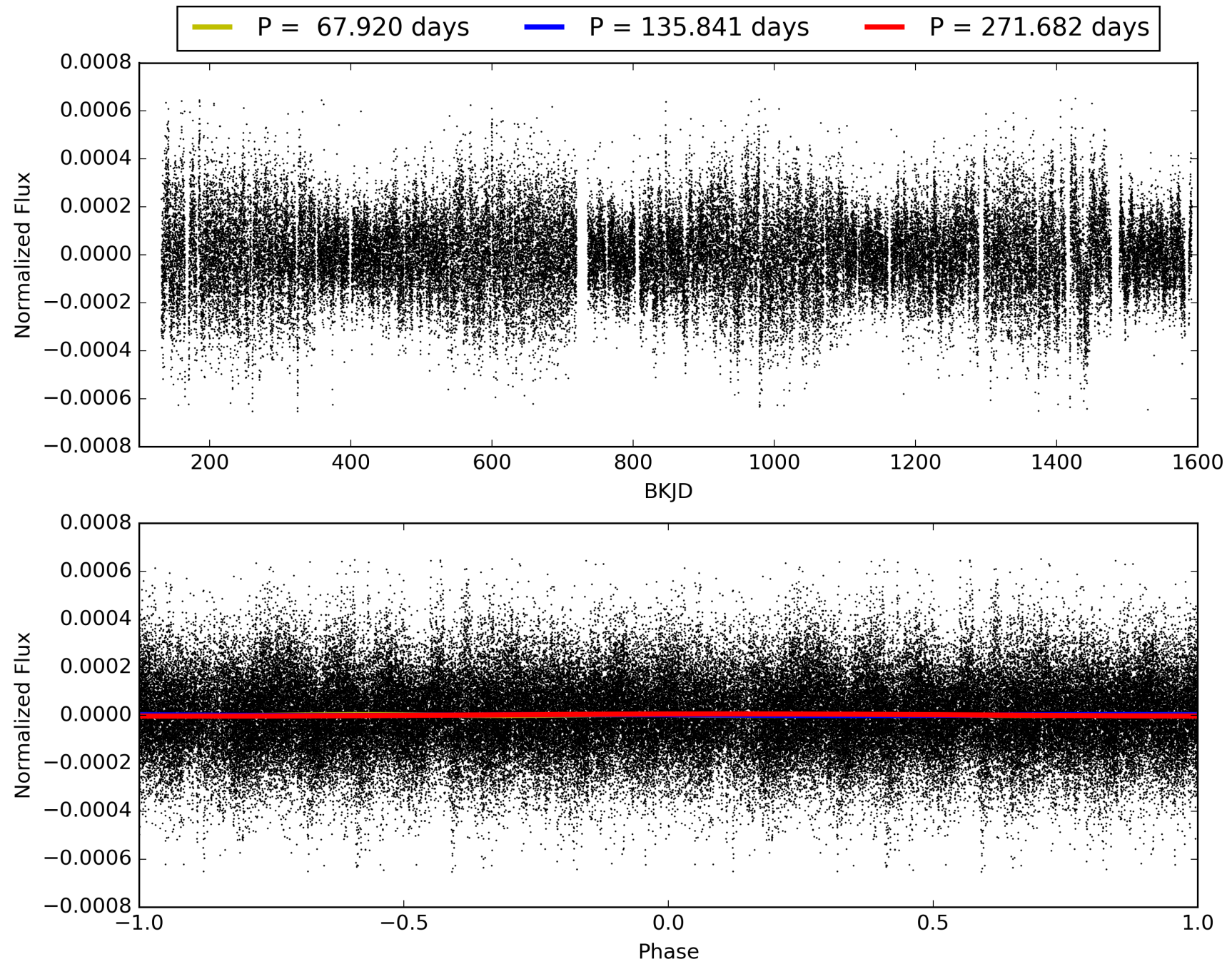
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:23:22 Z

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

TCE 004995948-04, PDC Light Curves

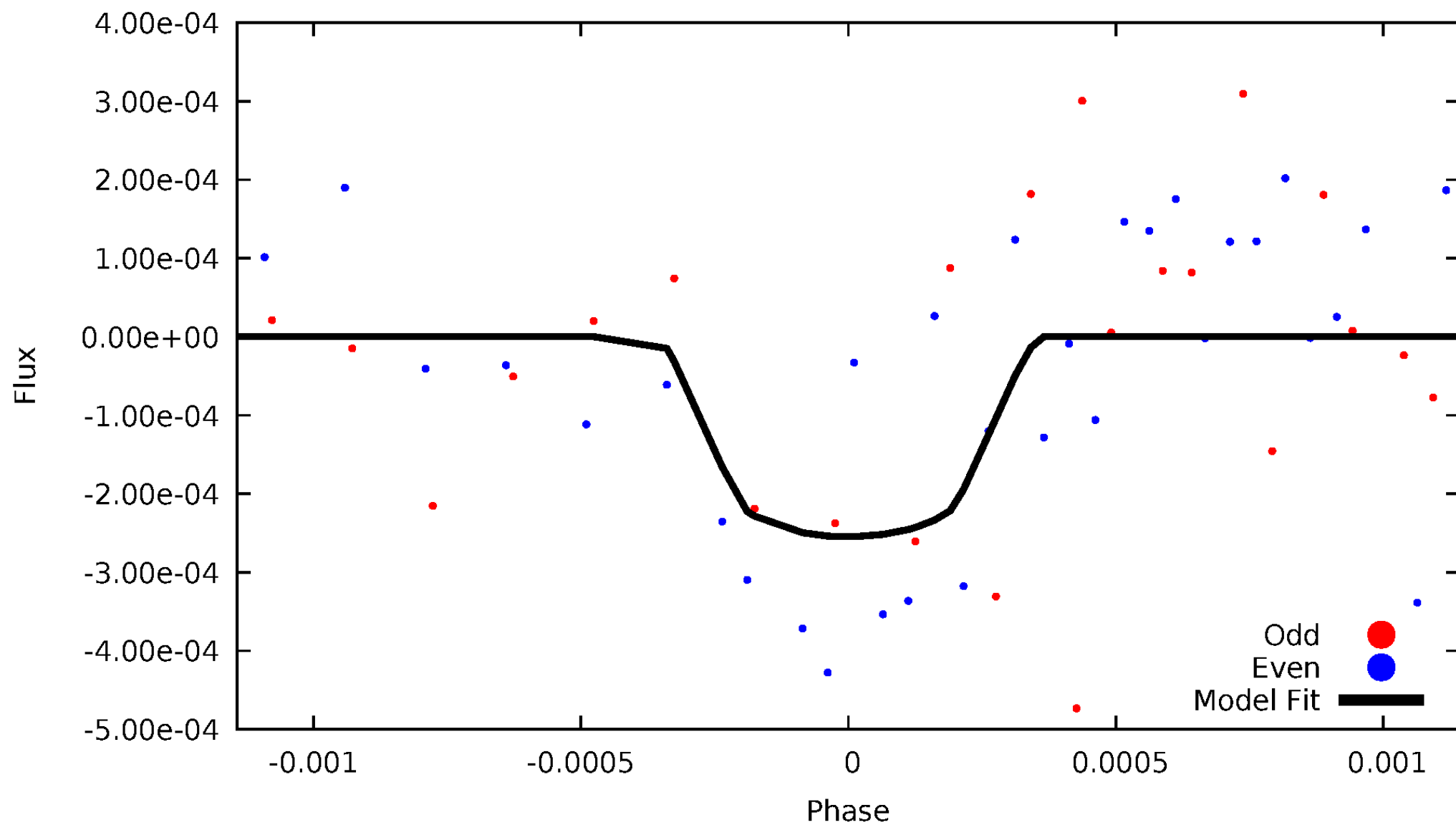


TCE 004995948-04



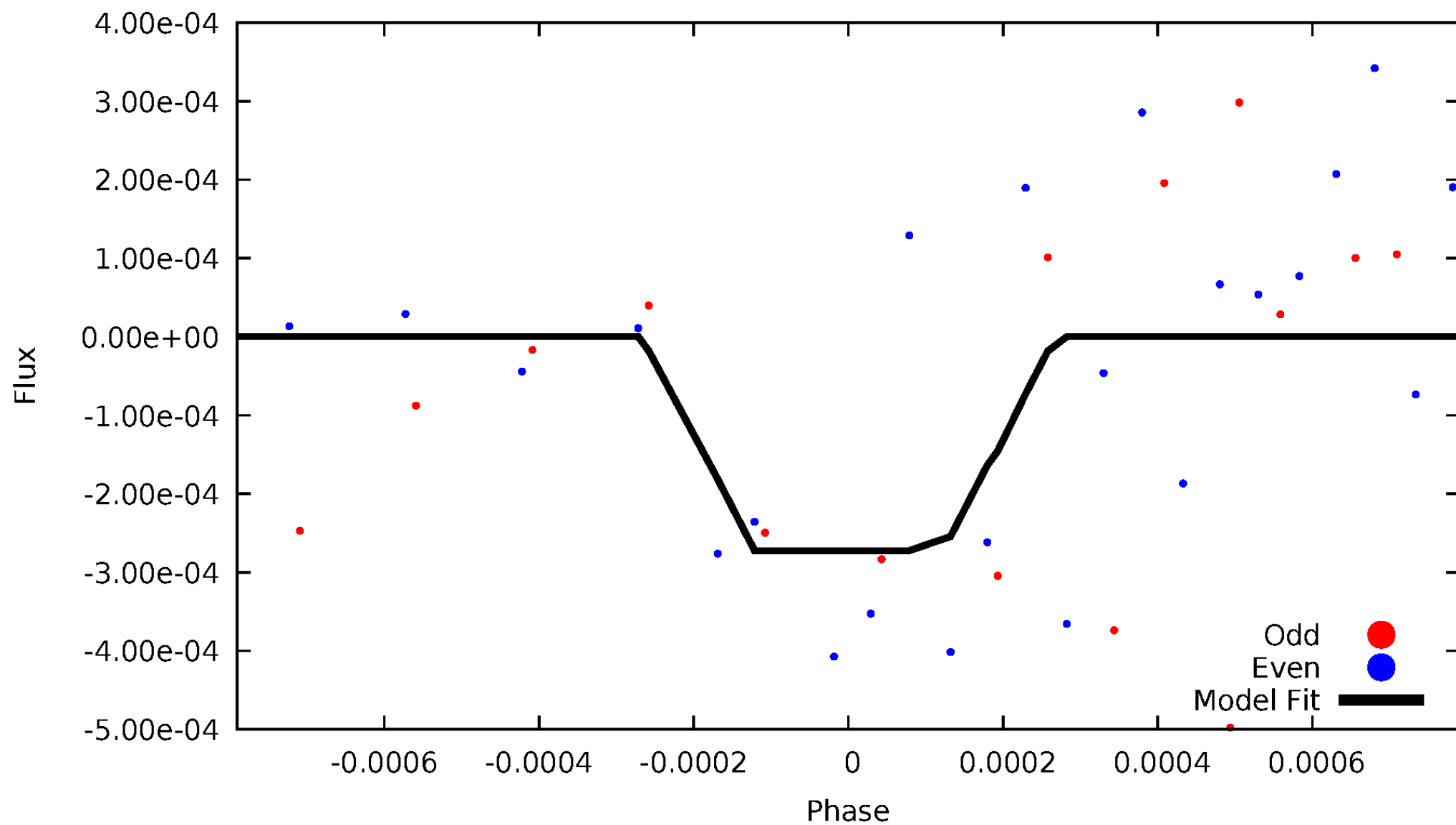
DV Odd/Even

TCE 004995948-04



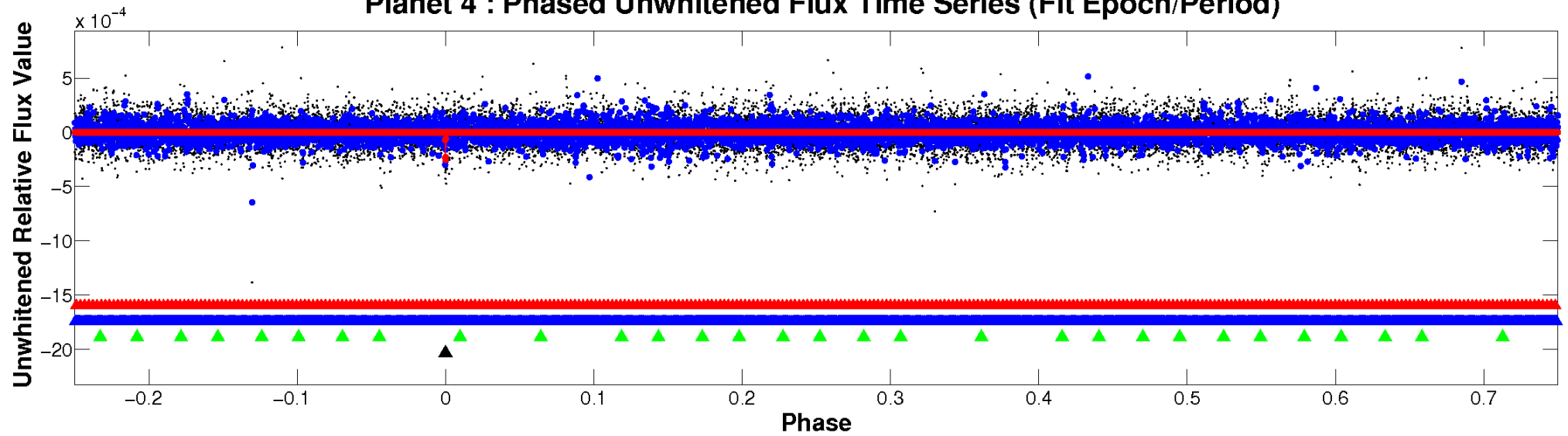
ALT Odd/Even

TCE 004995948-04

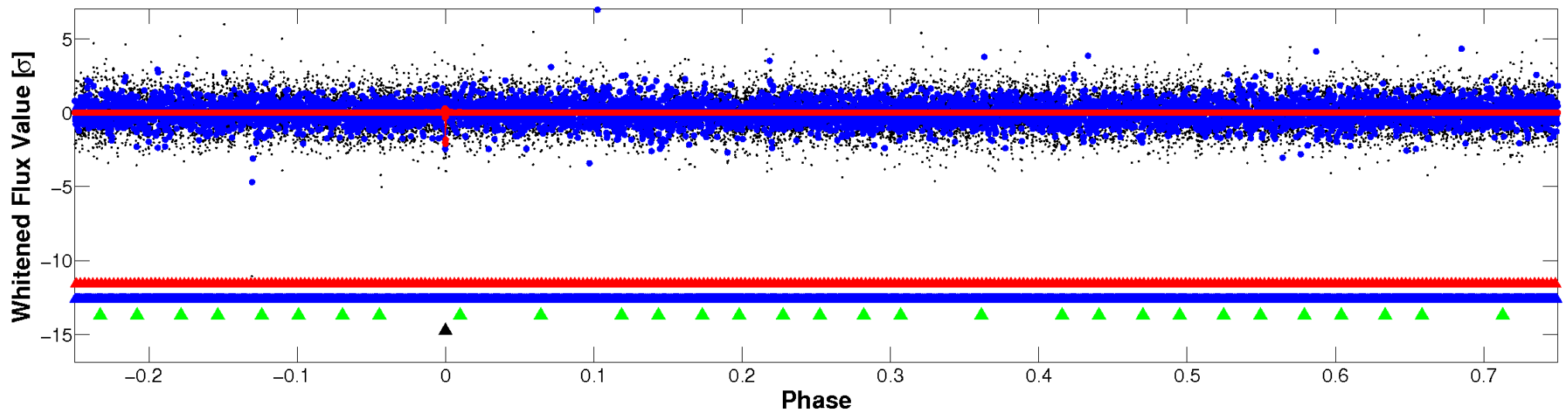


Non-Whitened Vs. Whitened Light Curve

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

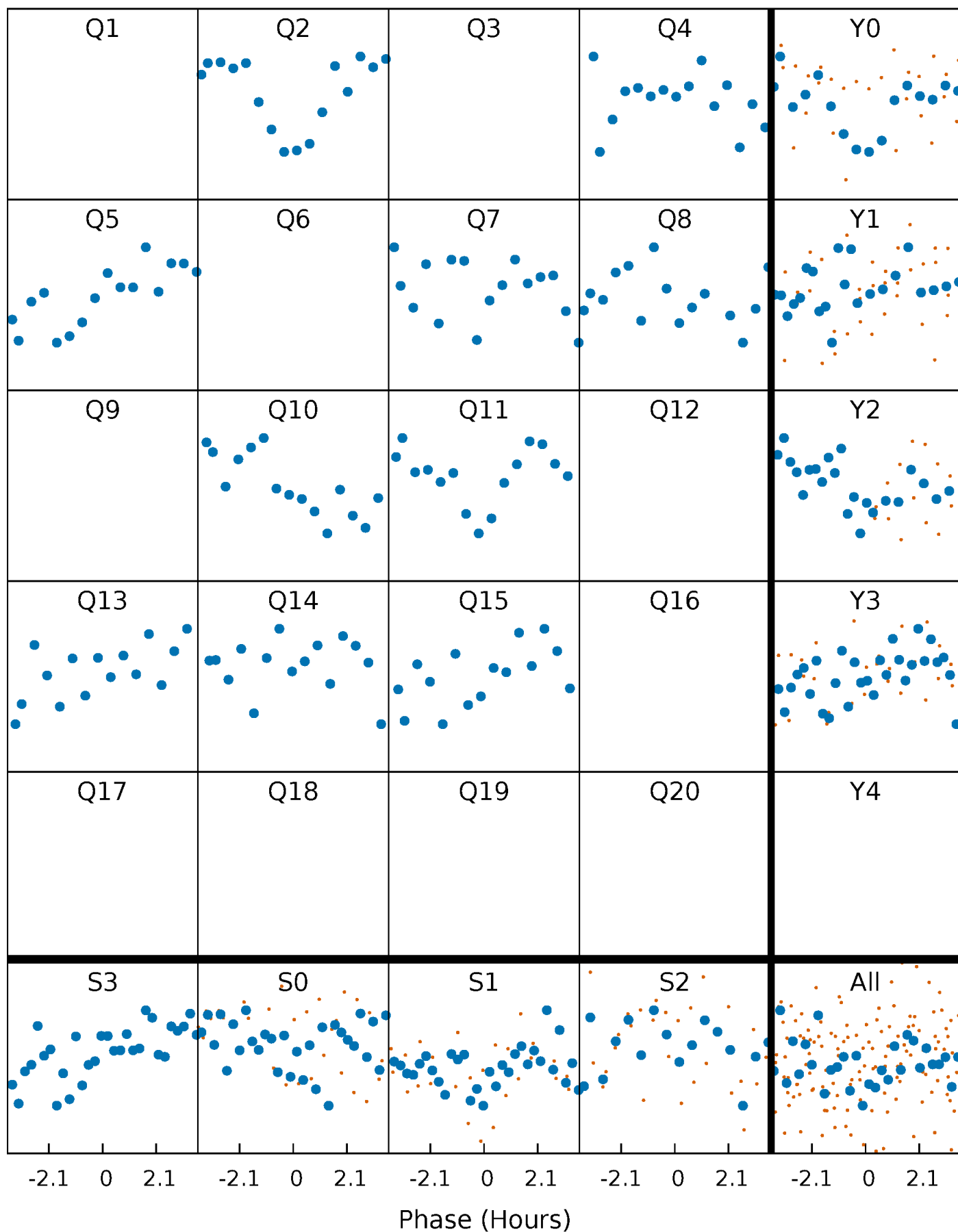


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



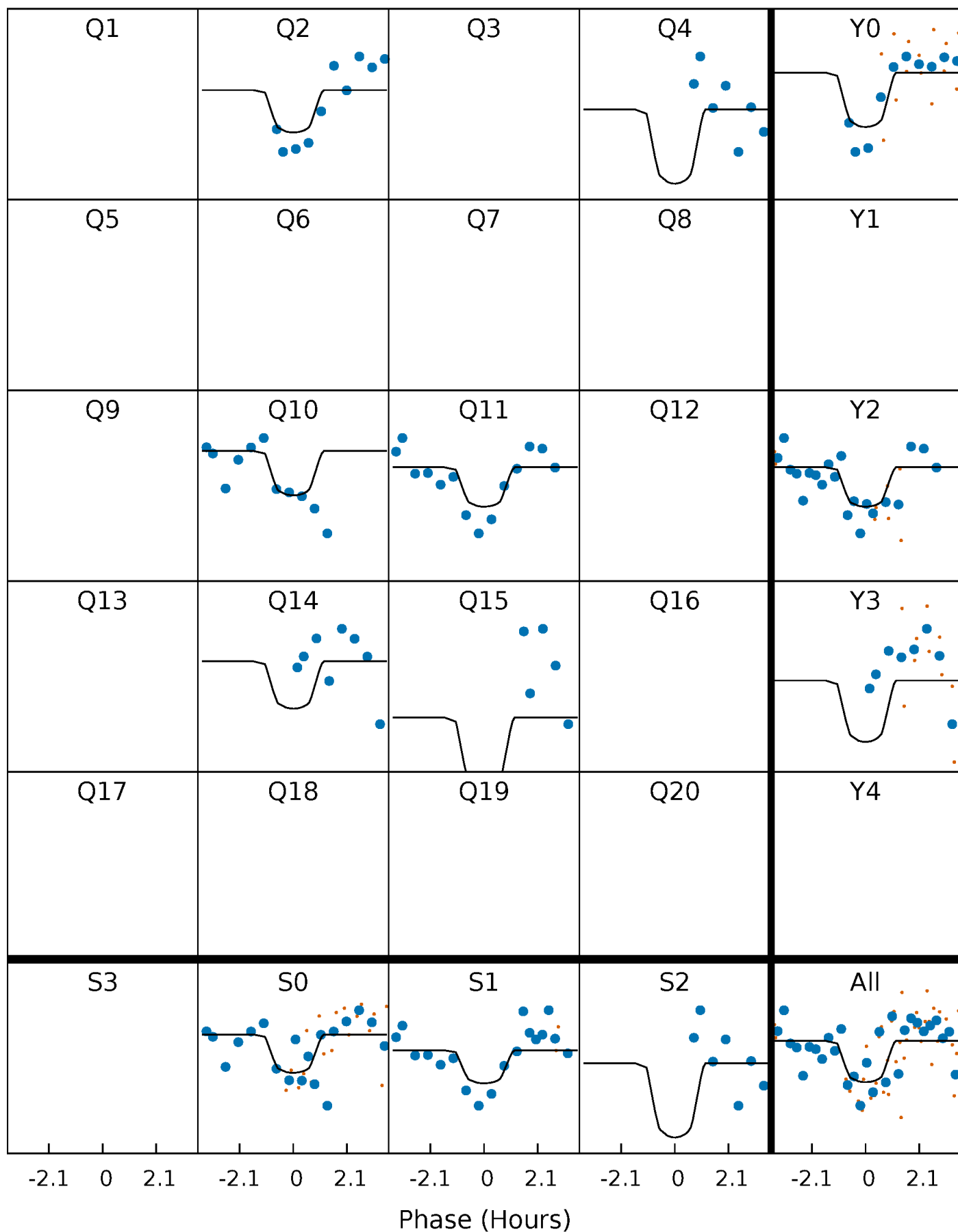
PDC Quarter-Phased Transit Curves

TCE 004995948-04 P=135.840999 Days $T_0=243.869492$ (BKJD)



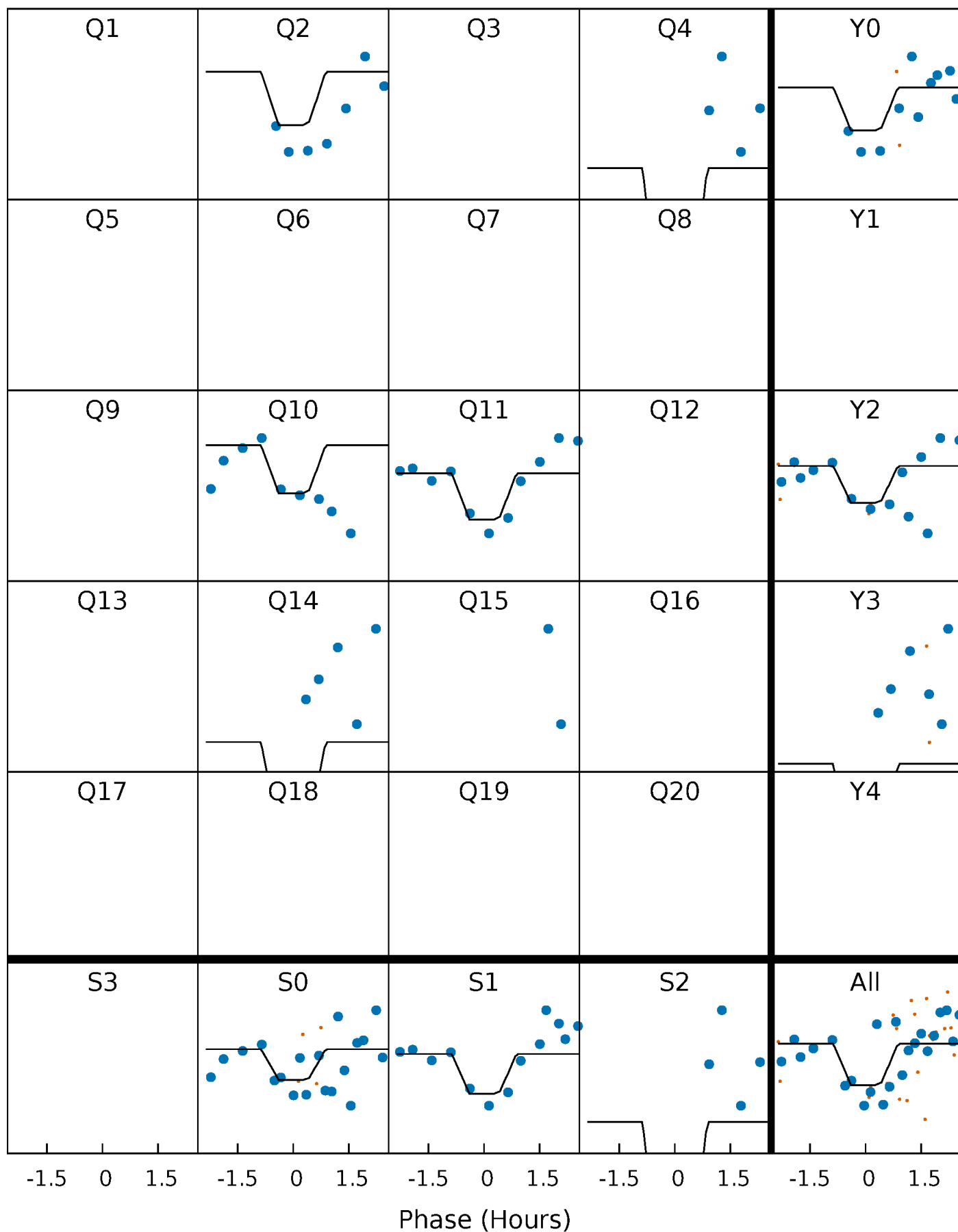
DV Quarter-Phased Transit Curves

TCE 004995948-04 $P=135.840999$ Days $T_0=243.869492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

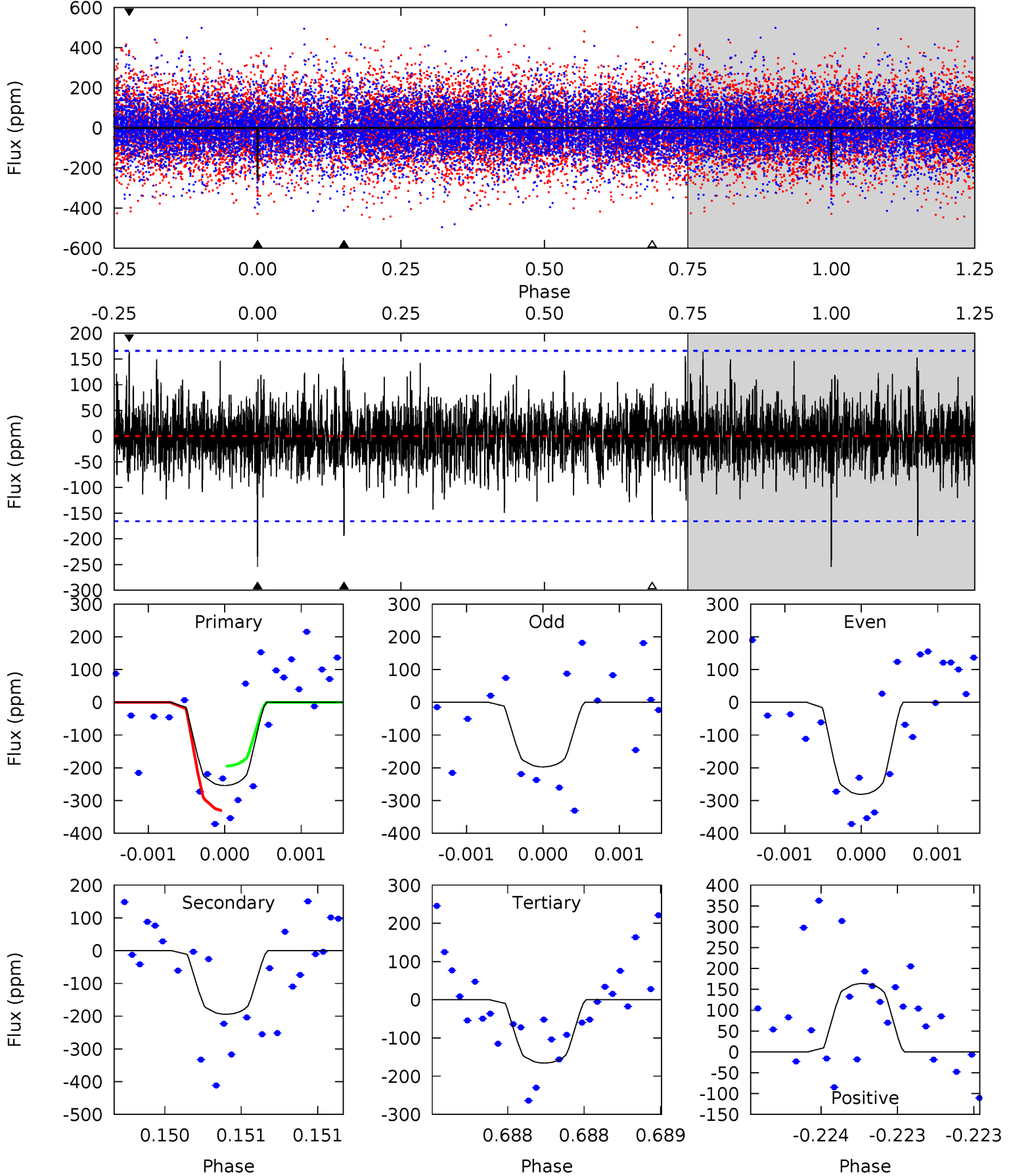
TCE 004995948-04 P=135.840982 Days $T_0=243.860389$ (BKJD)



DV Model-Shift Uniqueness Test

004995948-04, P = 135.840999 Days, E = 108.028493 Days

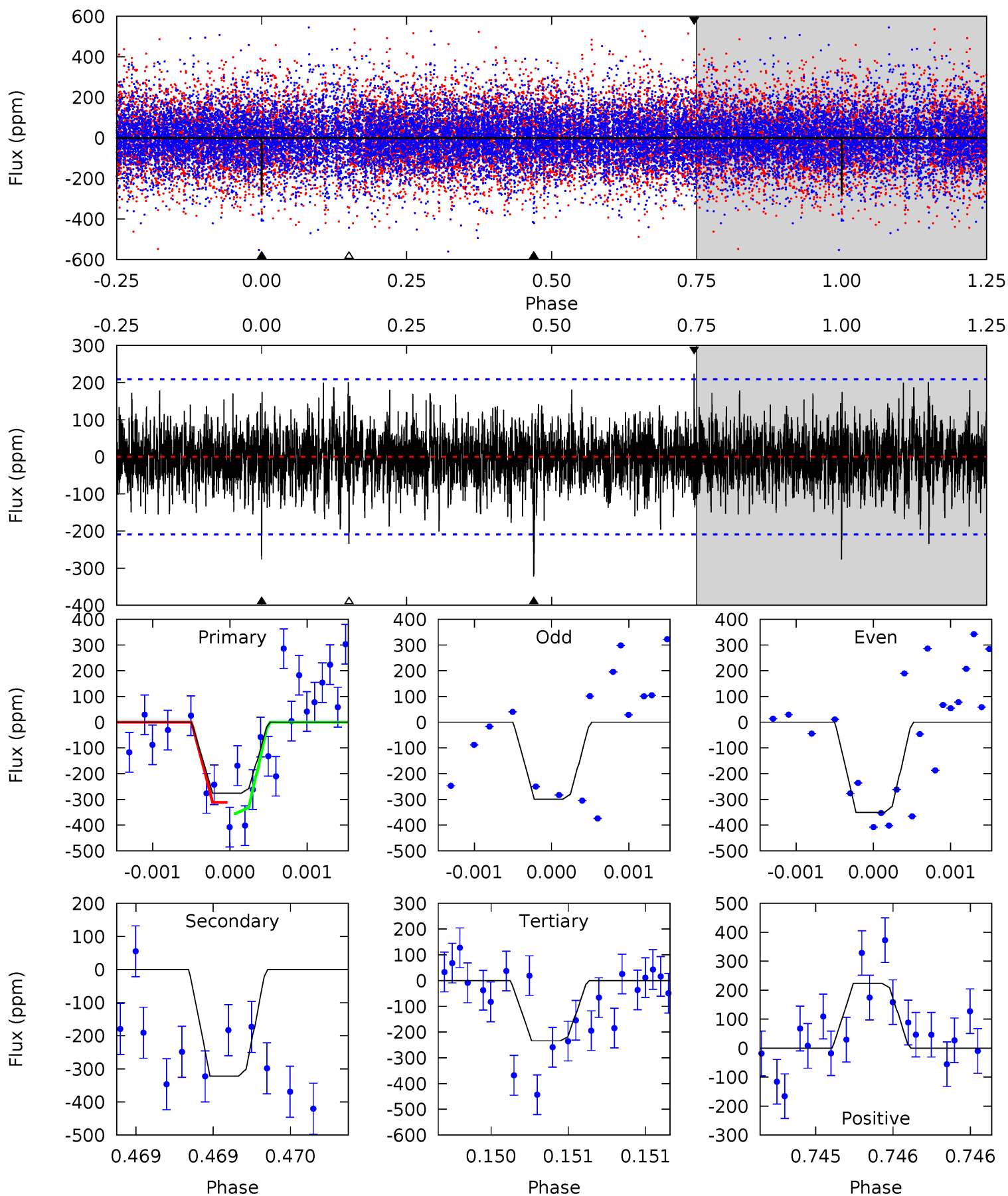
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.47	6.48	5.52	5.46	5.52	3.40	1.32	2.95	3.01	0.96	1.02	1.30	0.65	0.39	2.20



Alt Model-Shift Uniqueness Test

004995948-04, P = 135.840982 Days, E = 108.019407 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.34	8.57	6.23	5.95	5.56	3.46	1.44	1.11	1.39	2.34	2.61	0.63	0.70	0.41	0.53



Stellar Parameters For KIC 004995948

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6165^{+170}_{-189}	$4.086^{+0.259}_{-0.111}$	$-0.300^{+0.300}_{-0.300}$	$1.521^{+0.334}_{-0.408}$	$1.029^{+0.180}_{-0.135}$	$0.412^{+0.600}_{-0.160}$
	+3%/-3%	+6%/-3%	+100%/-100%	+22%/-27%	+17%/-13%	+146%/-39%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004995948-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-194 ± 30	$4.55^{+4.23}_{-2.92}$	636^{+43}_{-43}	4502^{+2882}_{-937}	1419^{+9940}_{-1053}
Alt.	-322 ± 38	$4.97^{+4.14}_{-3.37}$	637^{+41}_{-49}	4800^{+3617}_{-1013}	2124^{+16669}_{-1548}

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

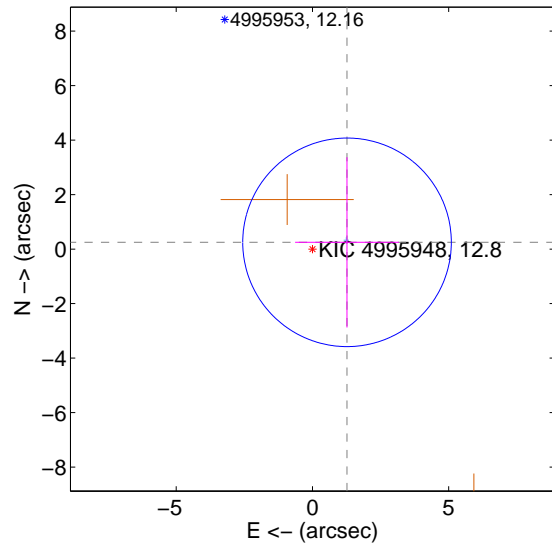
Supplemental centroid analysis for 004995948-04. Kepler magnitude: 12.80. Transit SNR 6.82

There are 1 quarters with good PRF difference image offsets

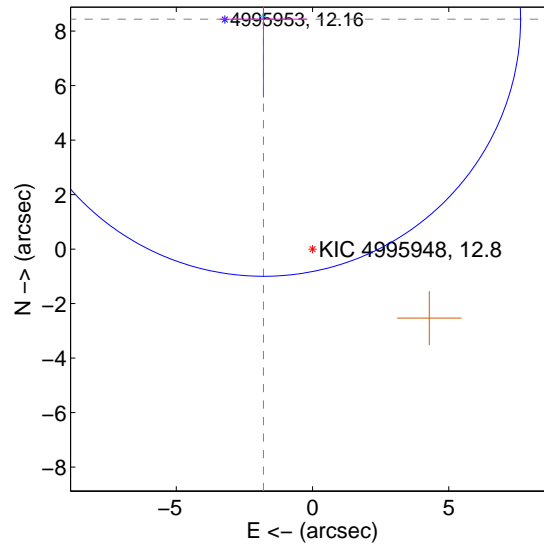
The OOT PRF centroid is offset from the target star catalog position by about 8.62 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.293 ± 1.276	1.01	-1.269 ± 1.906	0.248 ± 3.127
PRF-fit source offset from KIC position	8.628 ± 3.145	2.74	1.800 ± 1.602	8.439 ± 2.877
photometric centroid source offset	3.73 ± 1.22	3.05	0.41 ± 0.72	3.71 ± 1.23

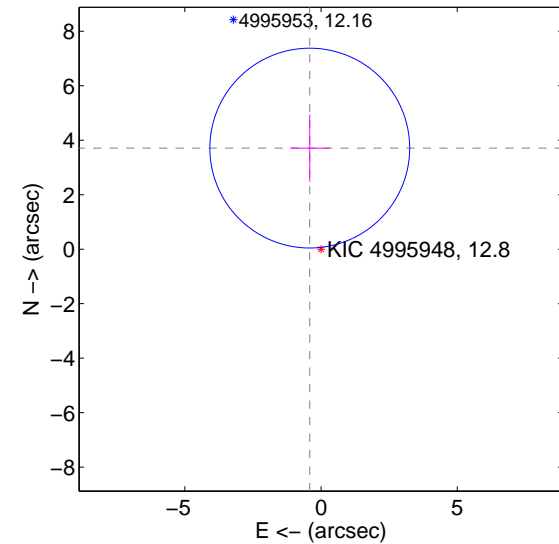
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

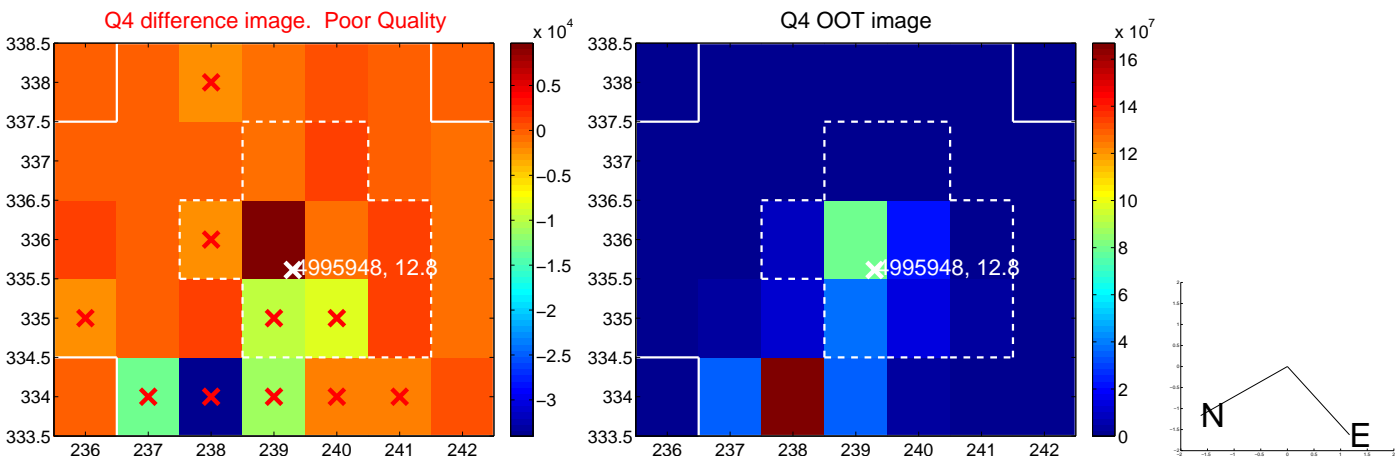
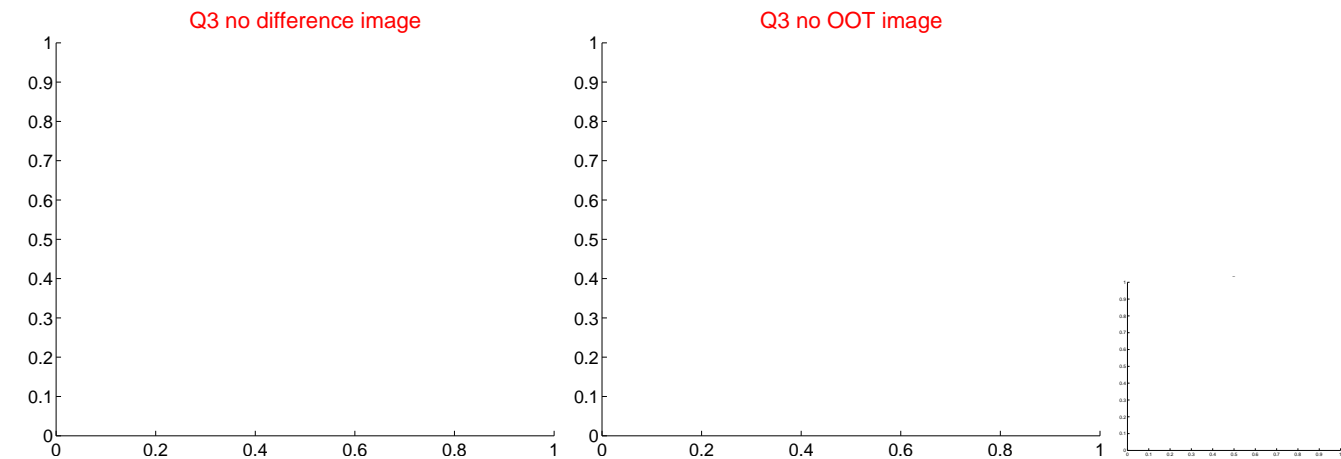
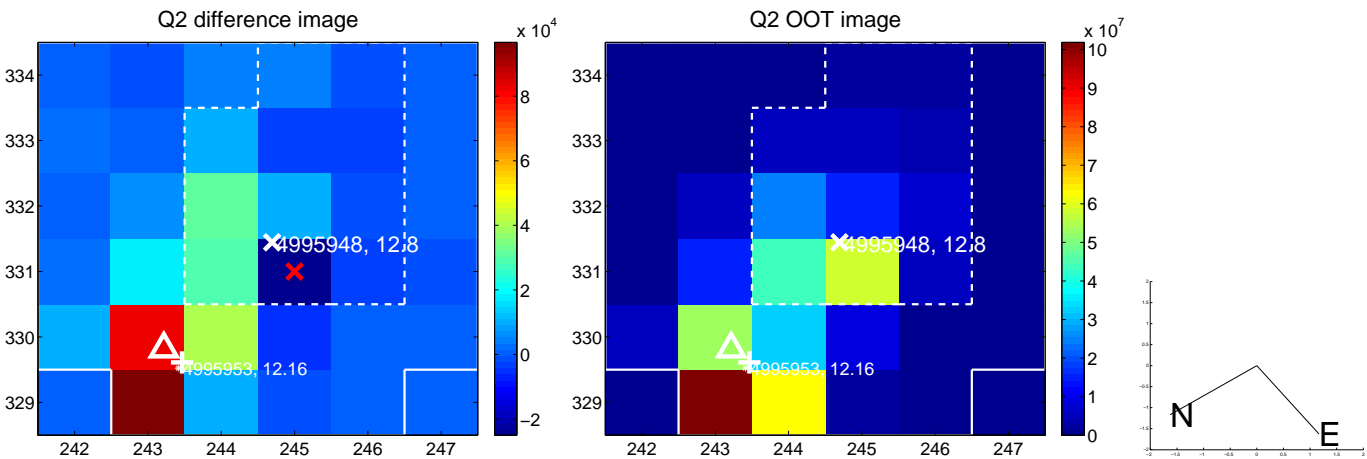
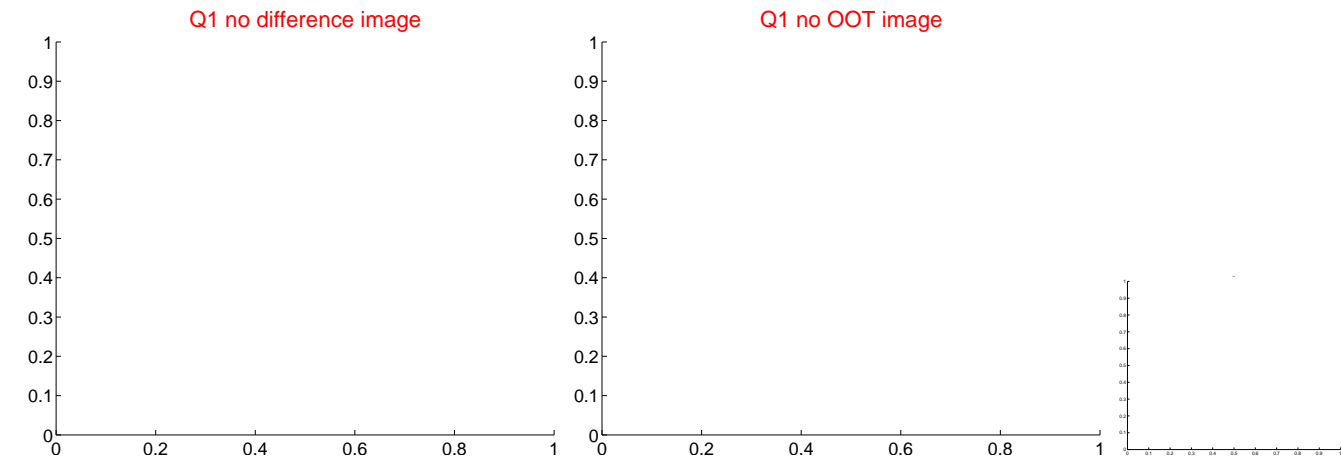


offset from photometric centroids

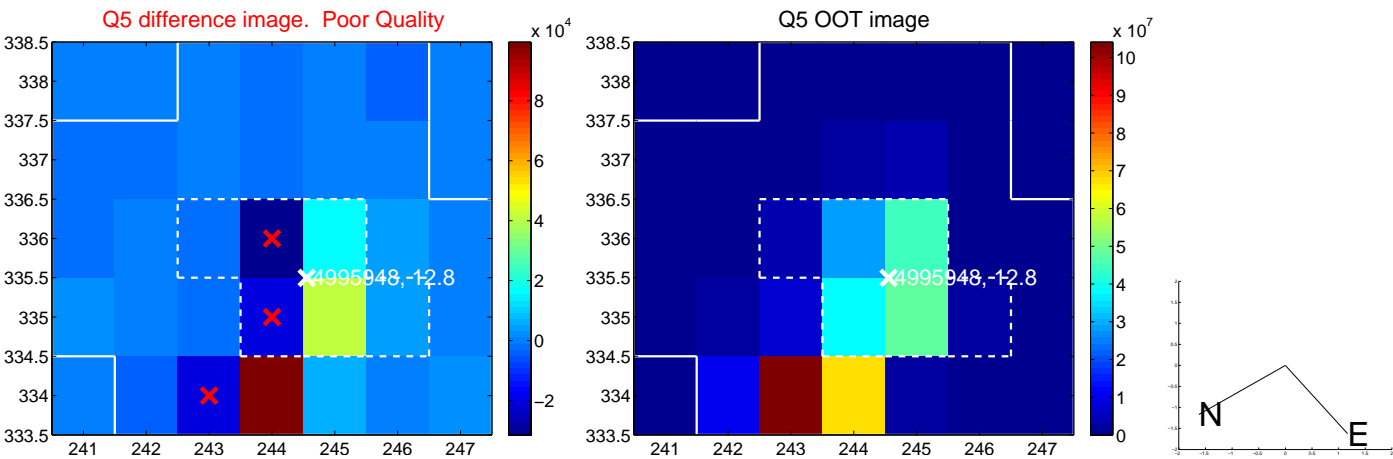


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

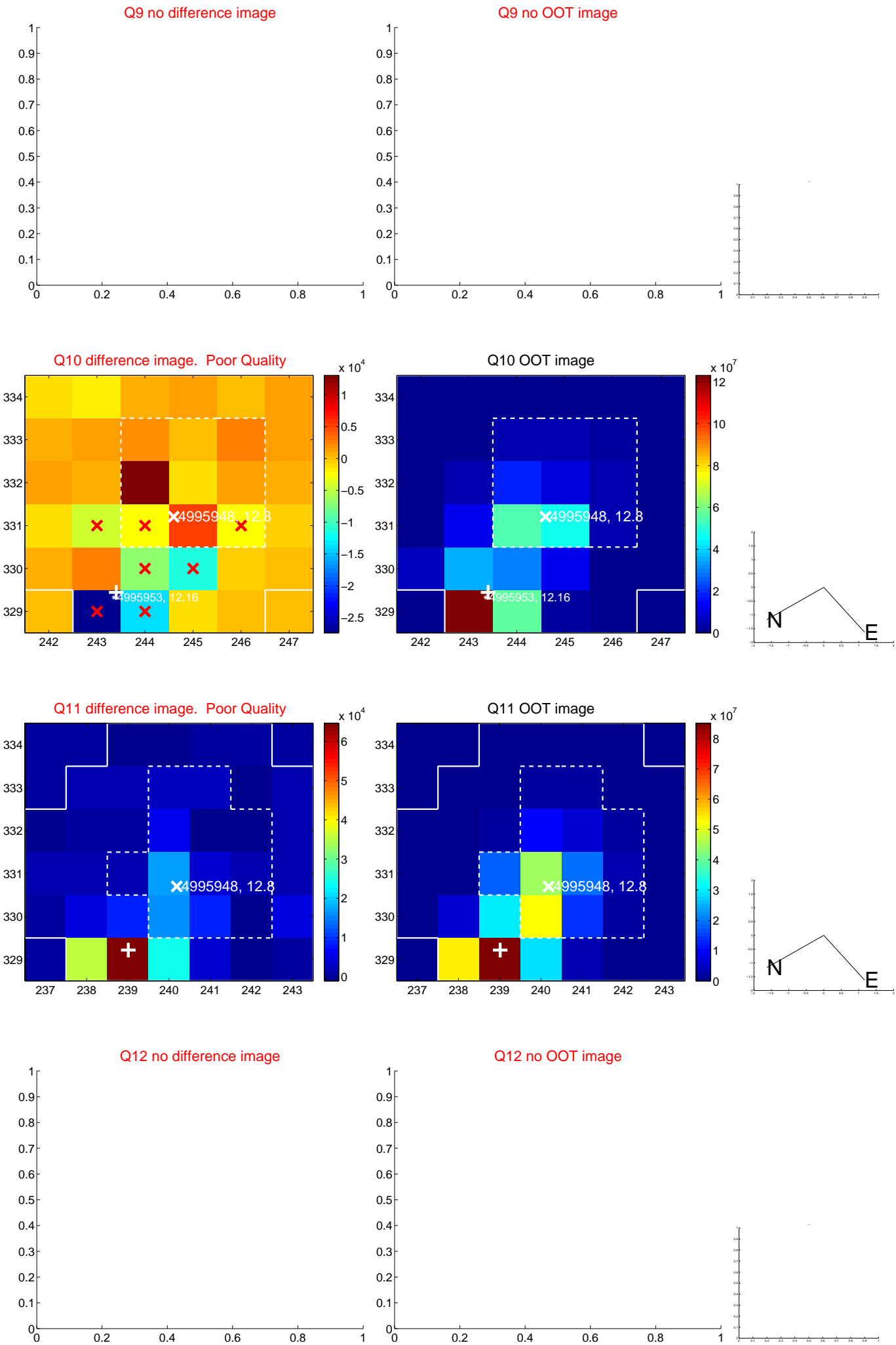
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



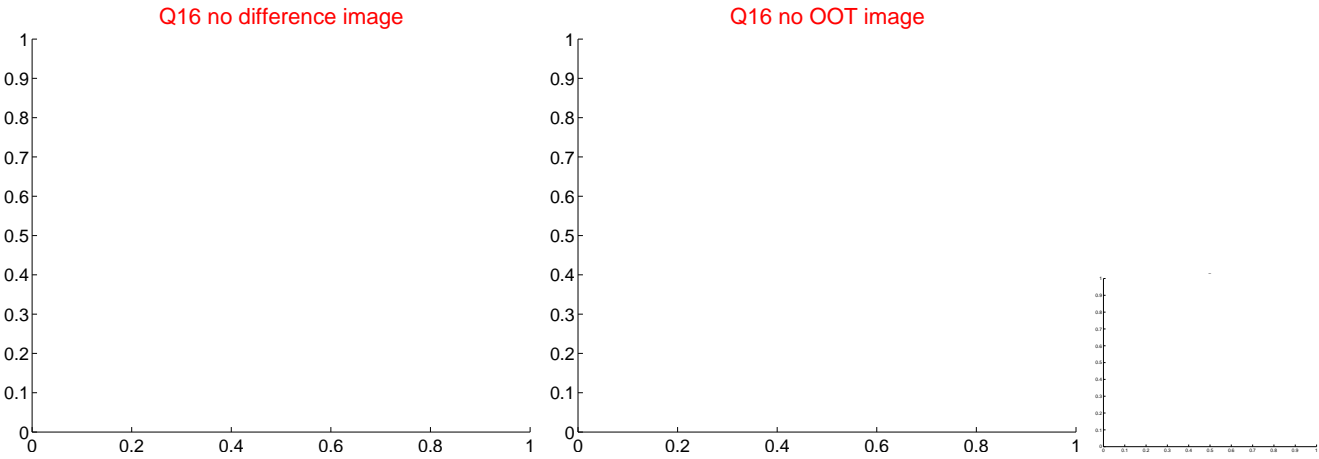
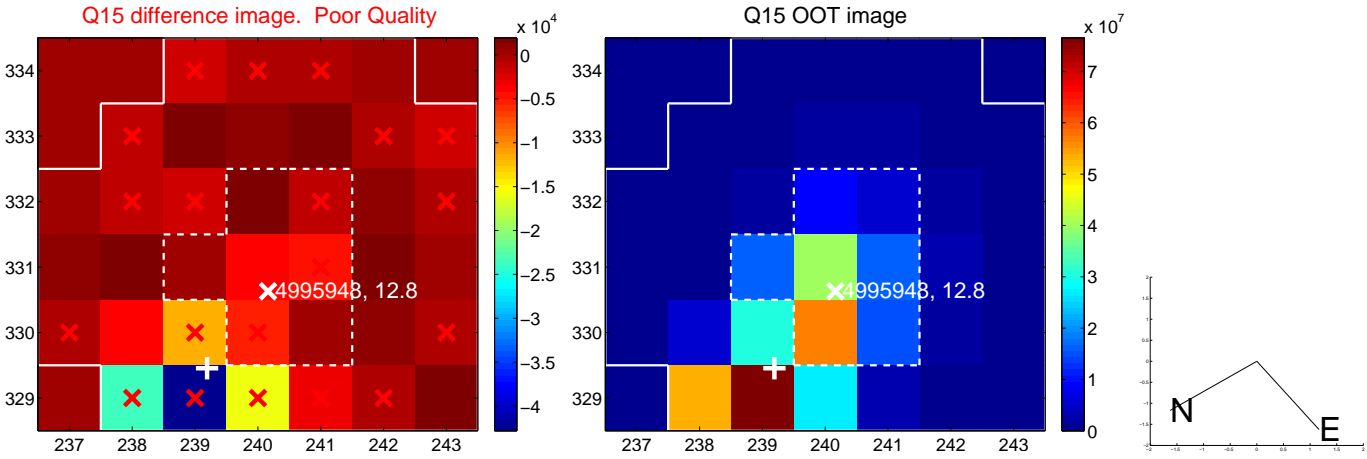
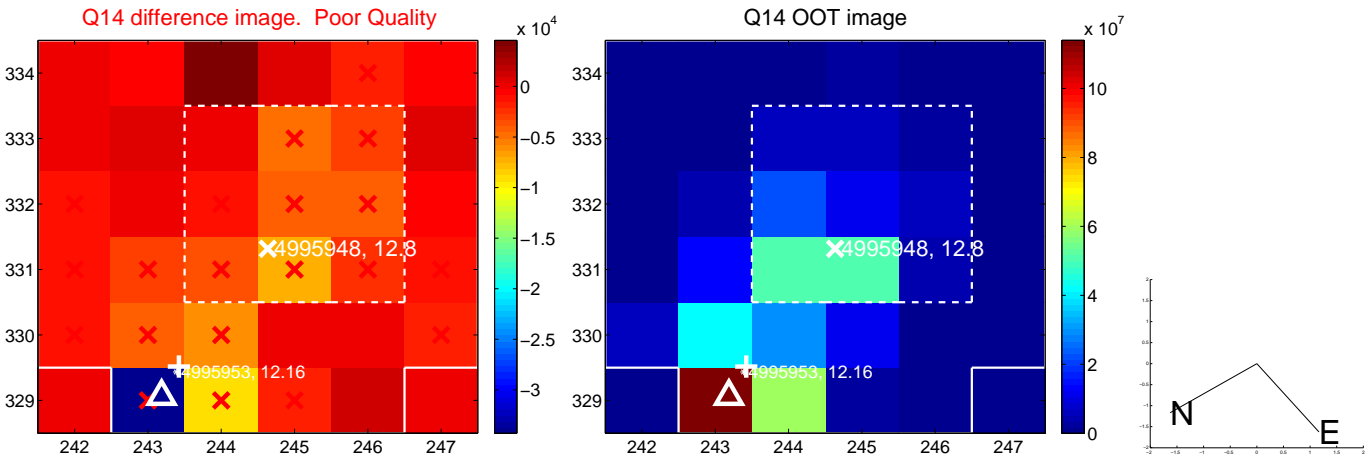
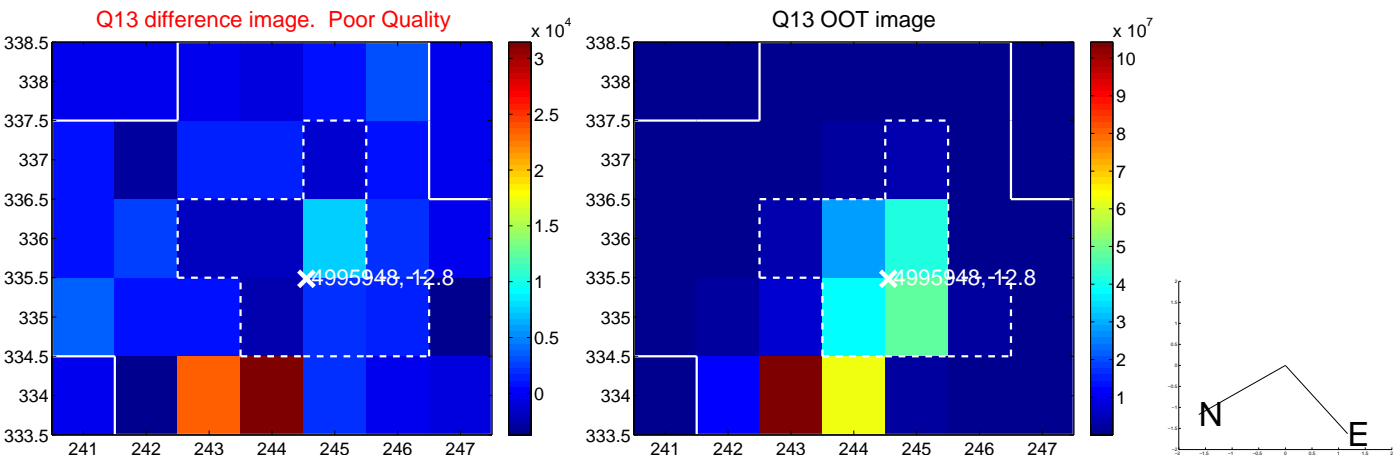
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



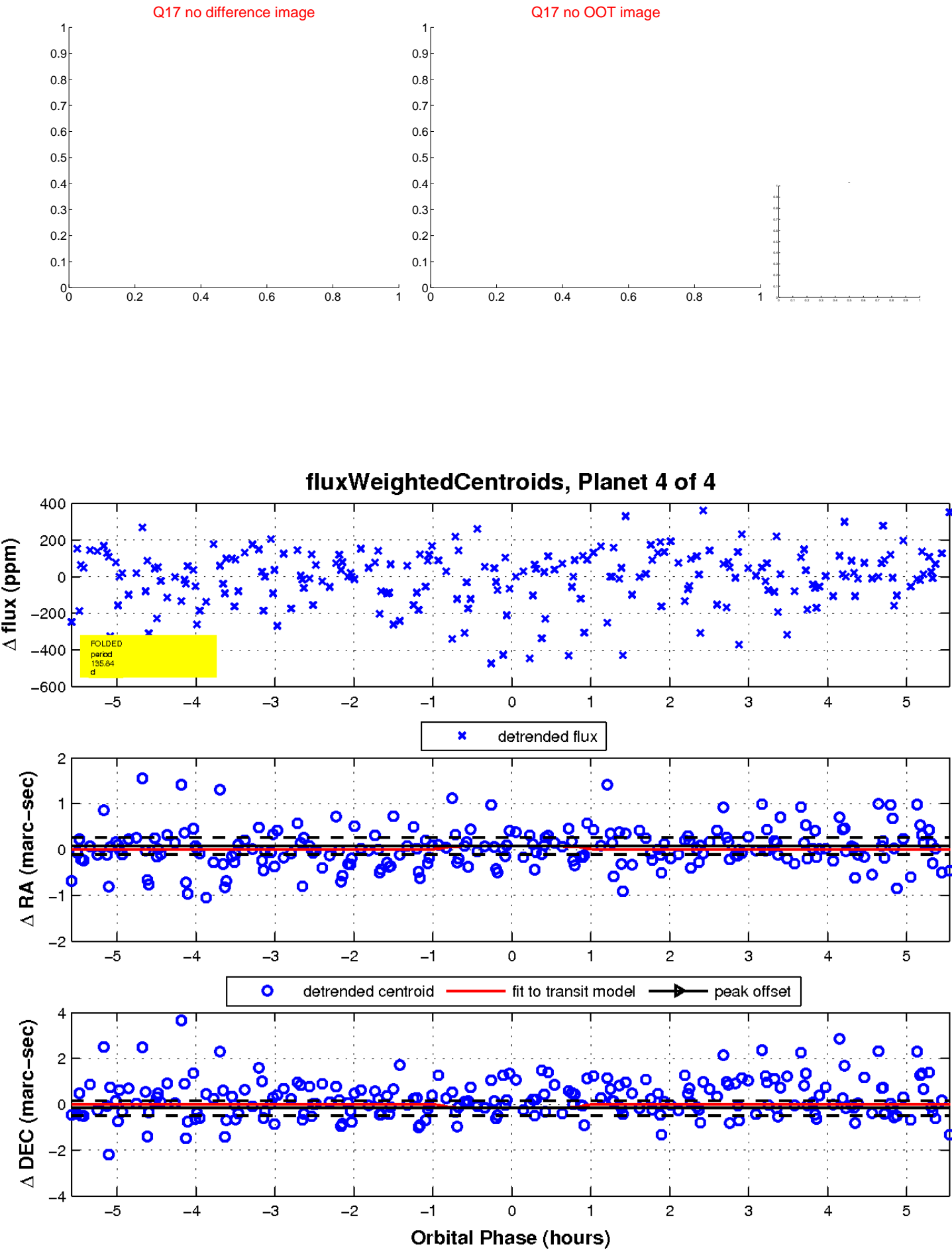
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

