

KIC 008713594

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})
008713594-01	OBS	No	1.245742	131.811990	38.4	5.537	11.1	10.7	2.73	6549	1.80	18541.59
008713594-02	OBS	No	175.088571	143.984955	767.3	2.500	9.3	-1.0	2.73	6549	7.61	25.37
008713594-03	OBS	No	251.972855	133.891853	344.8	8.587	8.7	5.8	2.73	6549	5.31	15.62
008713594-04	OBS	No	101.647952	157.144895	337.4	6.000	7.9	-1.0	2.73	6549	5.04	52.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008713594-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008713594-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008713594-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008713594-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

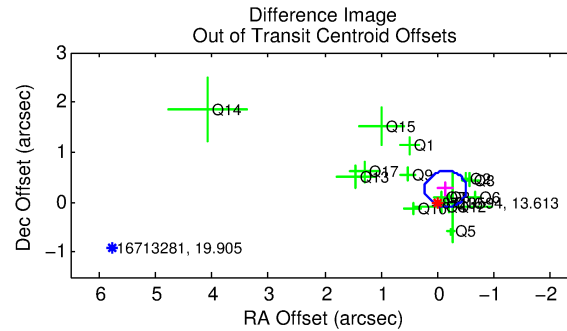
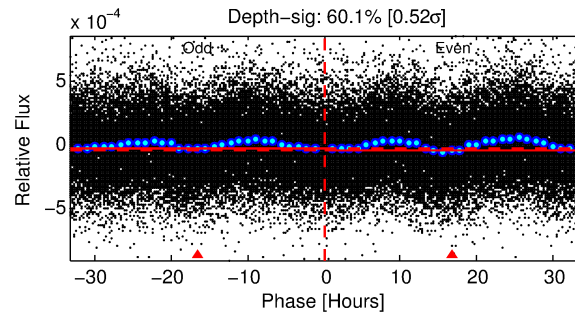
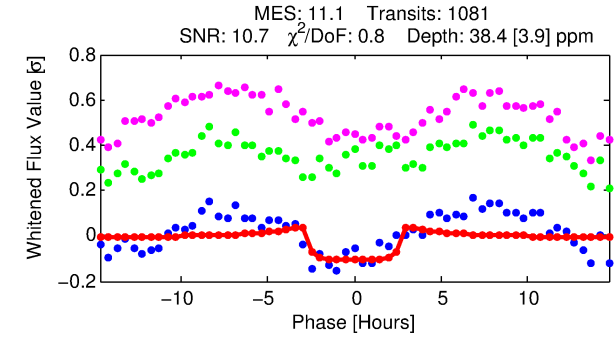
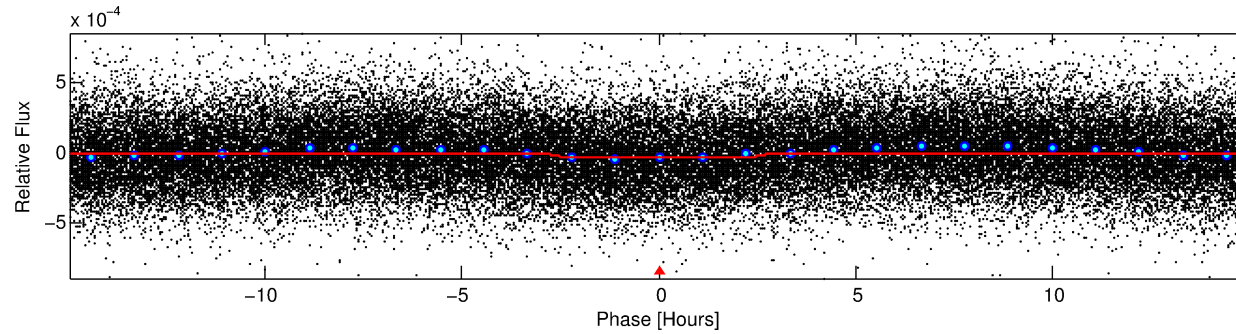
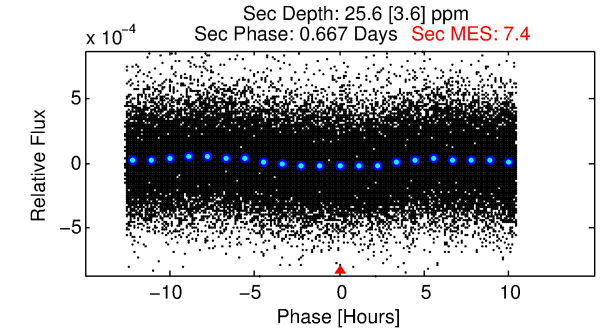
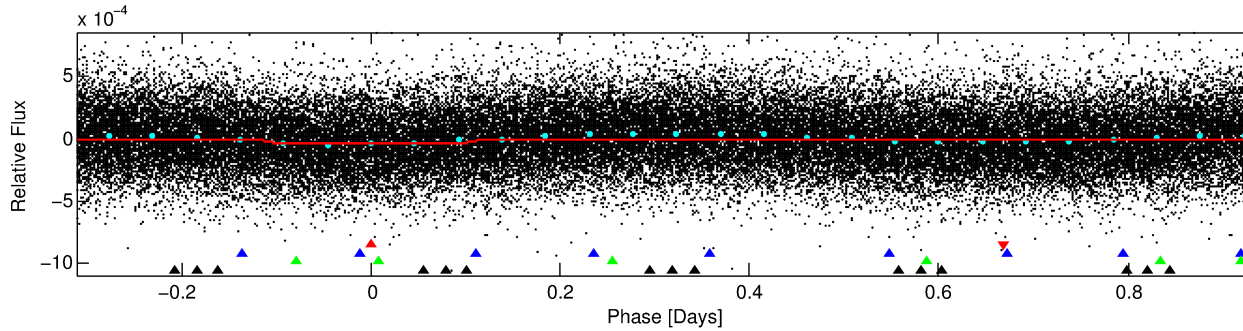
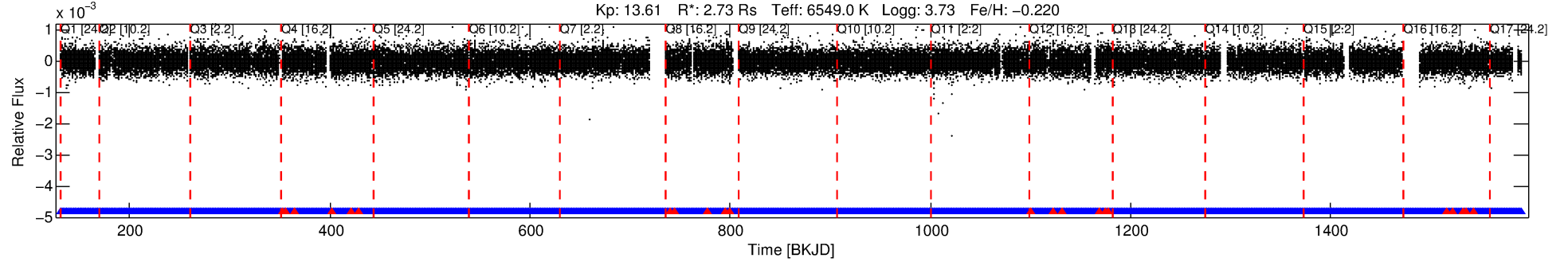
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008713594-01

No Significant Match Found

DV One-Page Summary

KIC: 8713594 Candidate: 1 of 4 Period: 1.246 d



DV Fit Results:

Period = 1.24574 [0.00001] d
Epoch = 131.8120 [0.0036] BKJD
Rp/R* = 0.0061 [0.0022]
a/R* = 1.51 [1.66]
b = 0.68 [1.56]
Seff = 18541.59 [16800.54]
Teq = 2976 [674] K
Rp = 1.80 [1.14] Re
a = 0.0257 [0.0139] AU
Ag = 2.87 [3.31] [0.57σ]
Teffp = 5990 [1110] K [2.32σ]

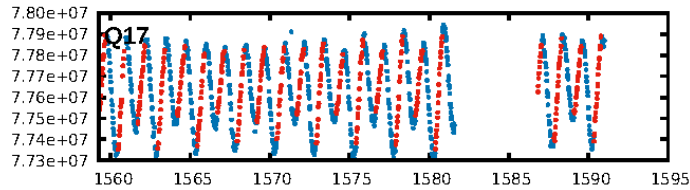
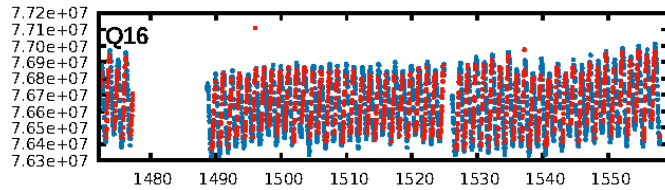
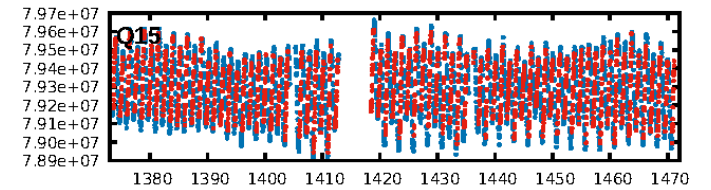
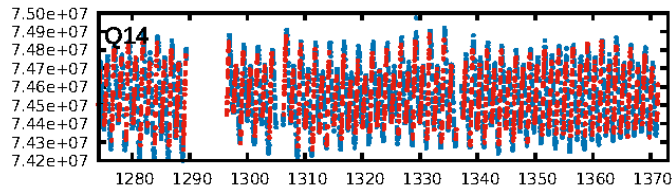
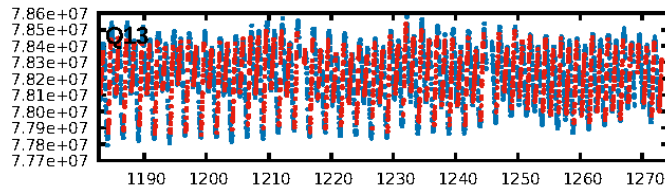
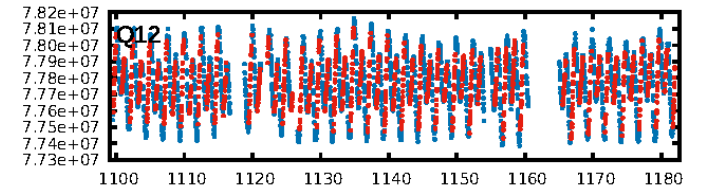
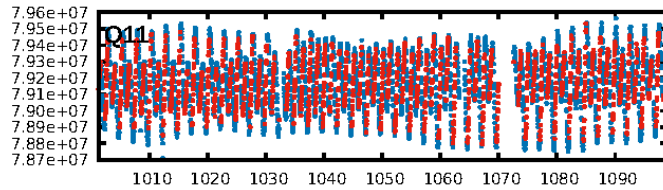
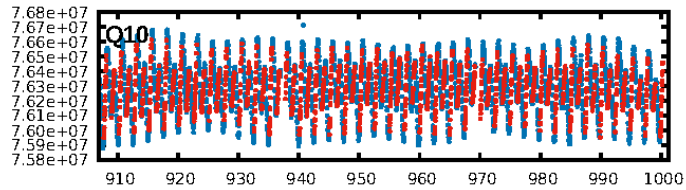
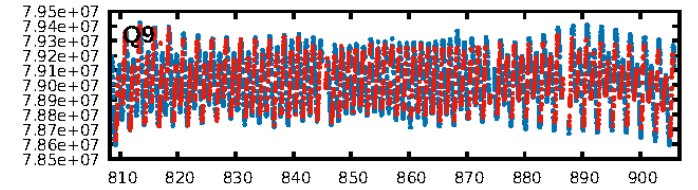
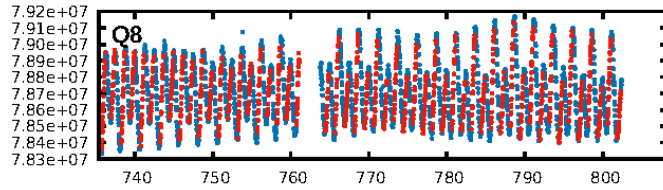
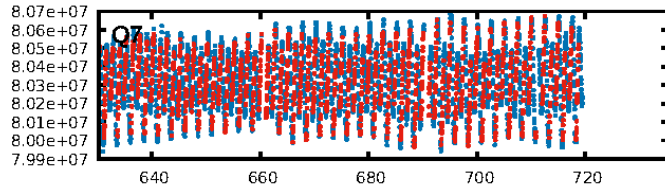
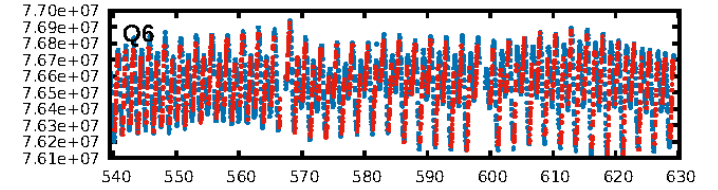
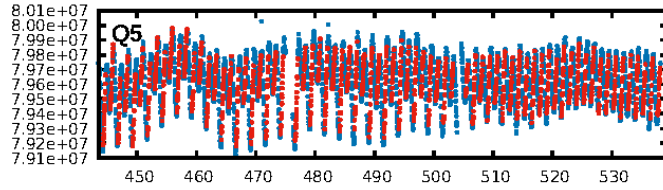
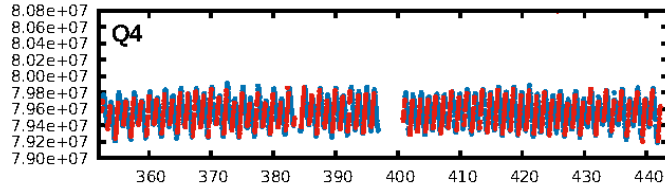
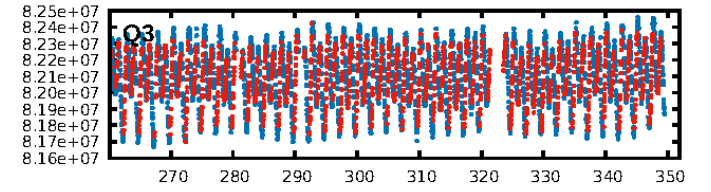
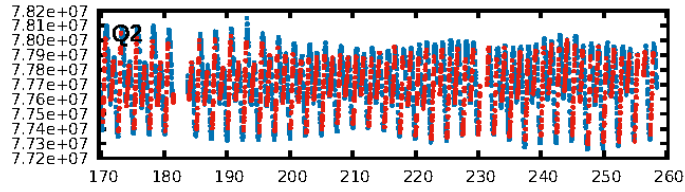
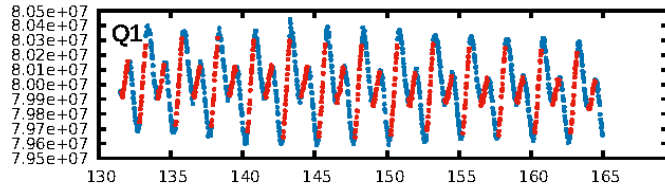
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [295.15σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.43e-19
RollingBand-fgt: 0.98 [1010/1032]
GhostDiagnostic-chr: 2.58
Centroid-sig: 34.9%
Centroid-so: 0.394 arcsec [0.51σ]
OotOffset-rm: 0.299 arcsec [2.47σ]
KicOffset-rm: 0.164 arcsec [0.66σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 0.75 [12/16]
DiffImageOverlap-fno: 1.00 [17/17]

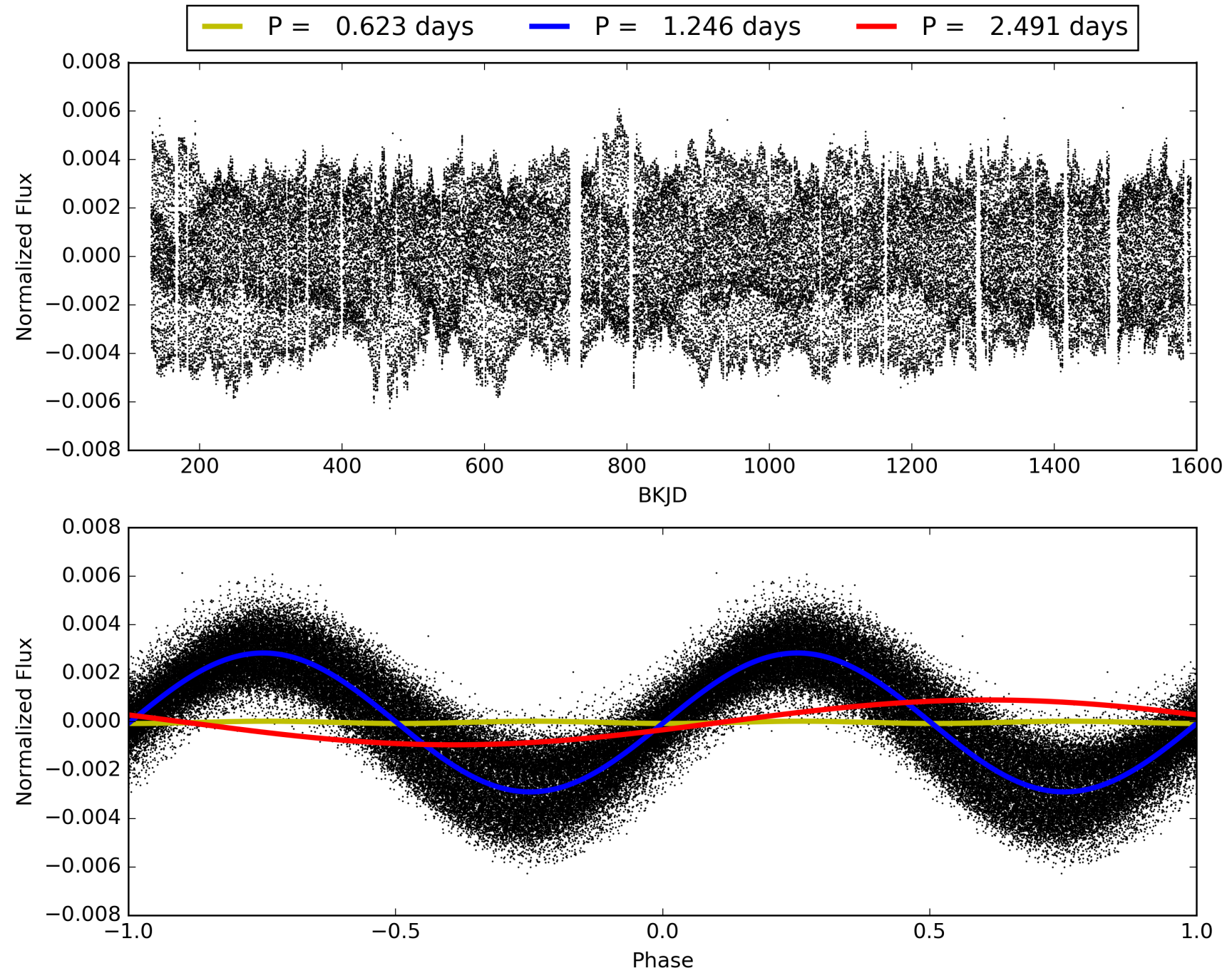
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008713594-01, PDC Light Curves

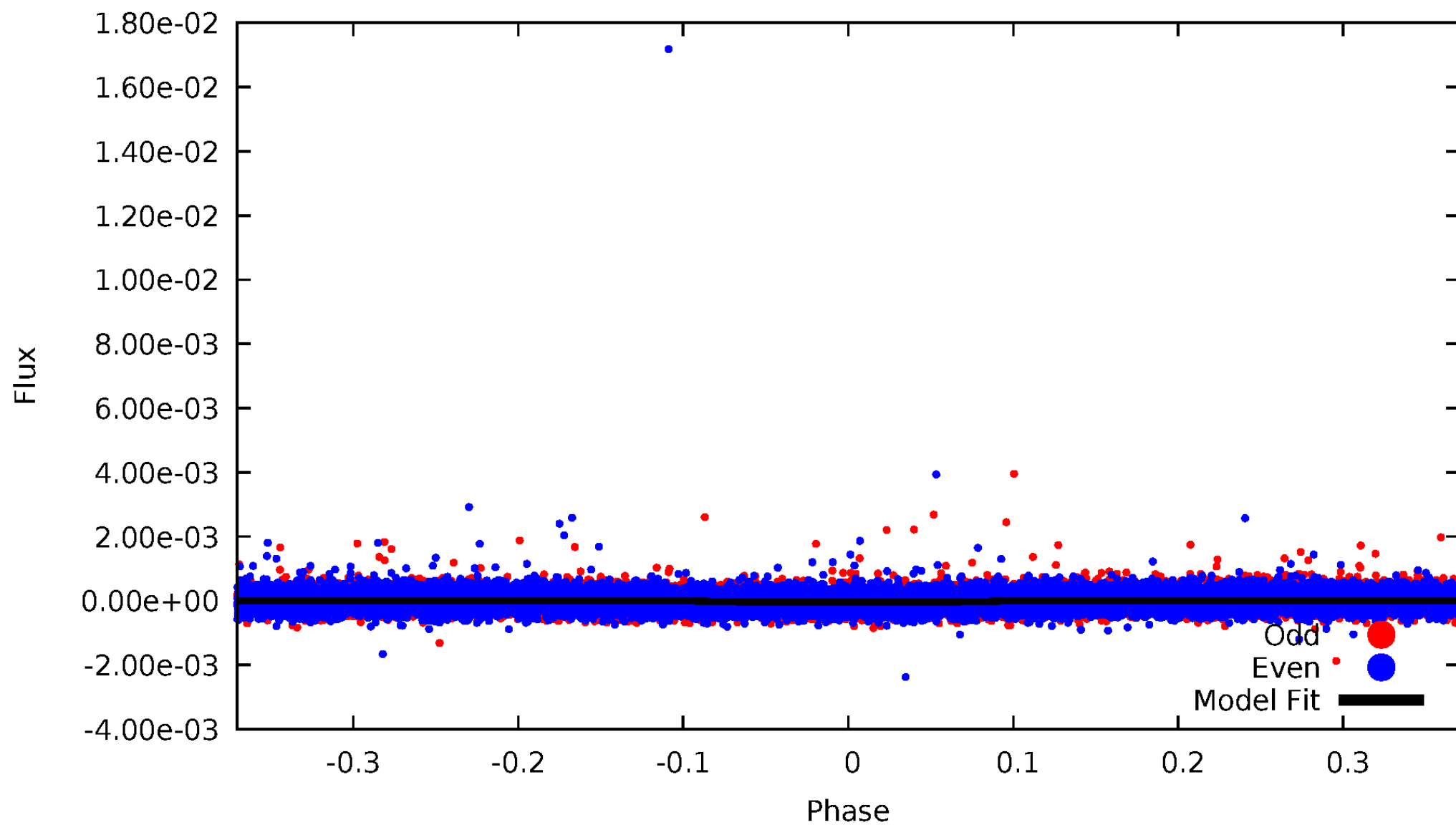


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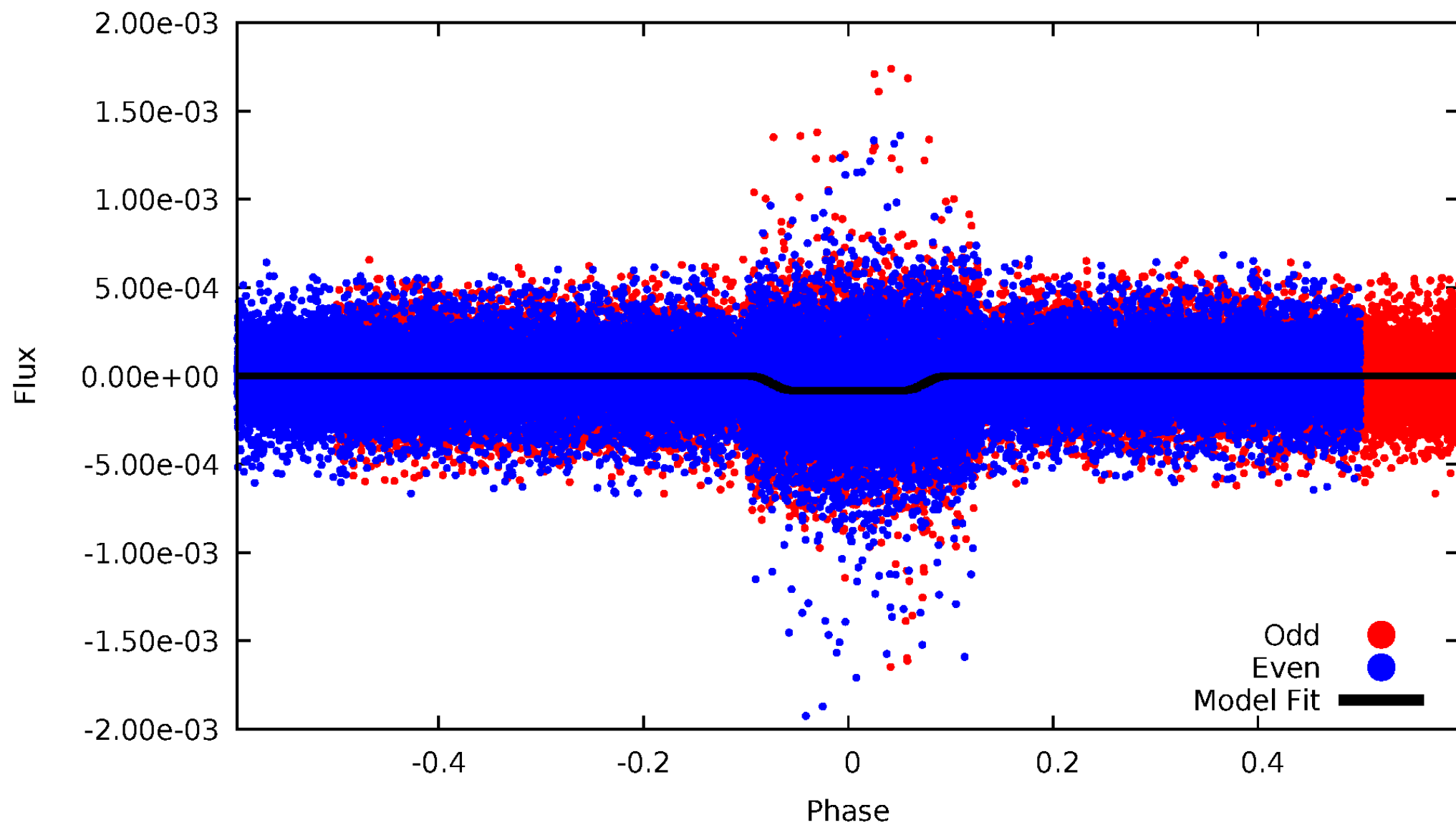
DV Odd/Even

TCE 008713594-01

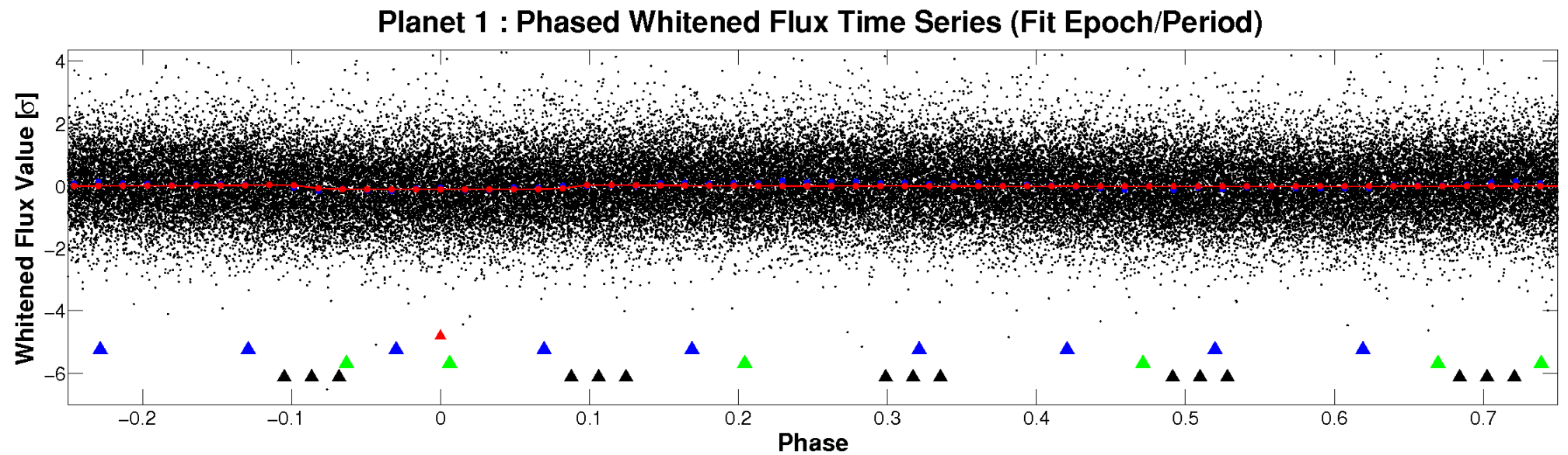
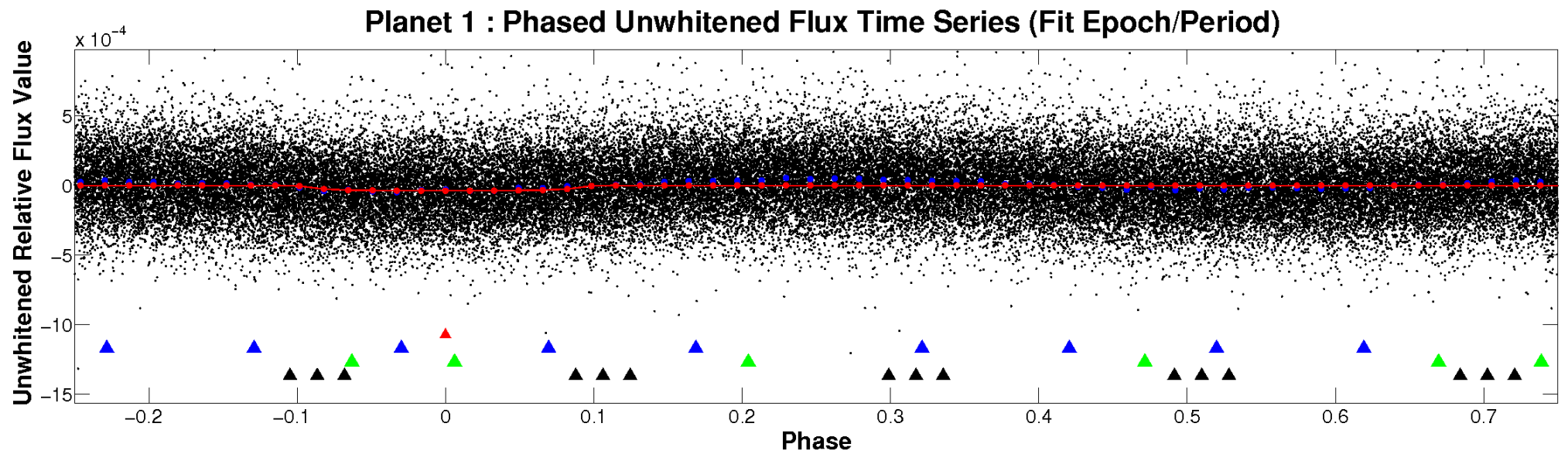


ALT Odd/Even

TCE 008713594-01

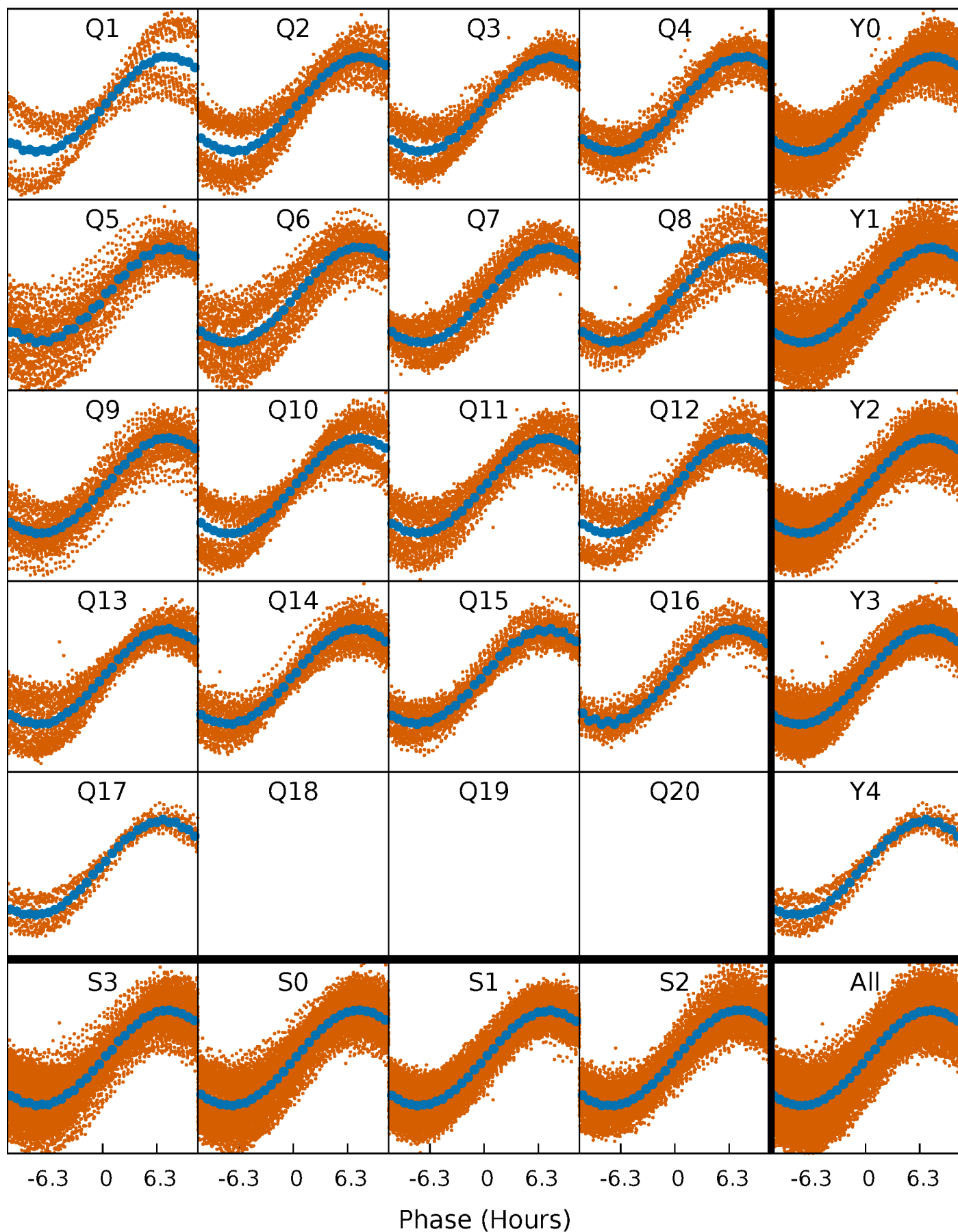


Non-Whitened Vs. Whitened Light Curve



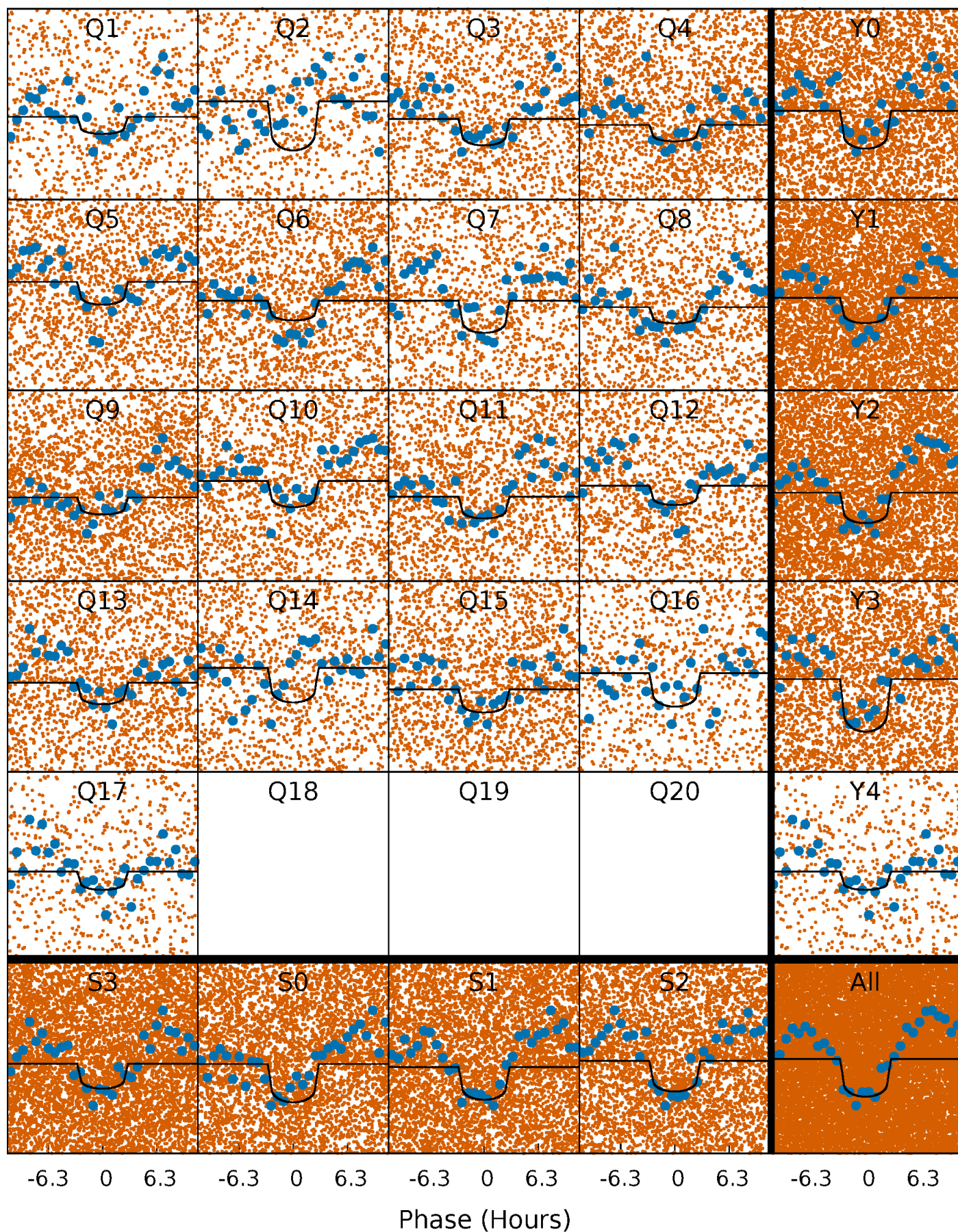
PDC Quarter-Phased Transit Curves

TCE 008713594-01 P= 1.245742 Days $T_0=131.811990$ (BKJD)



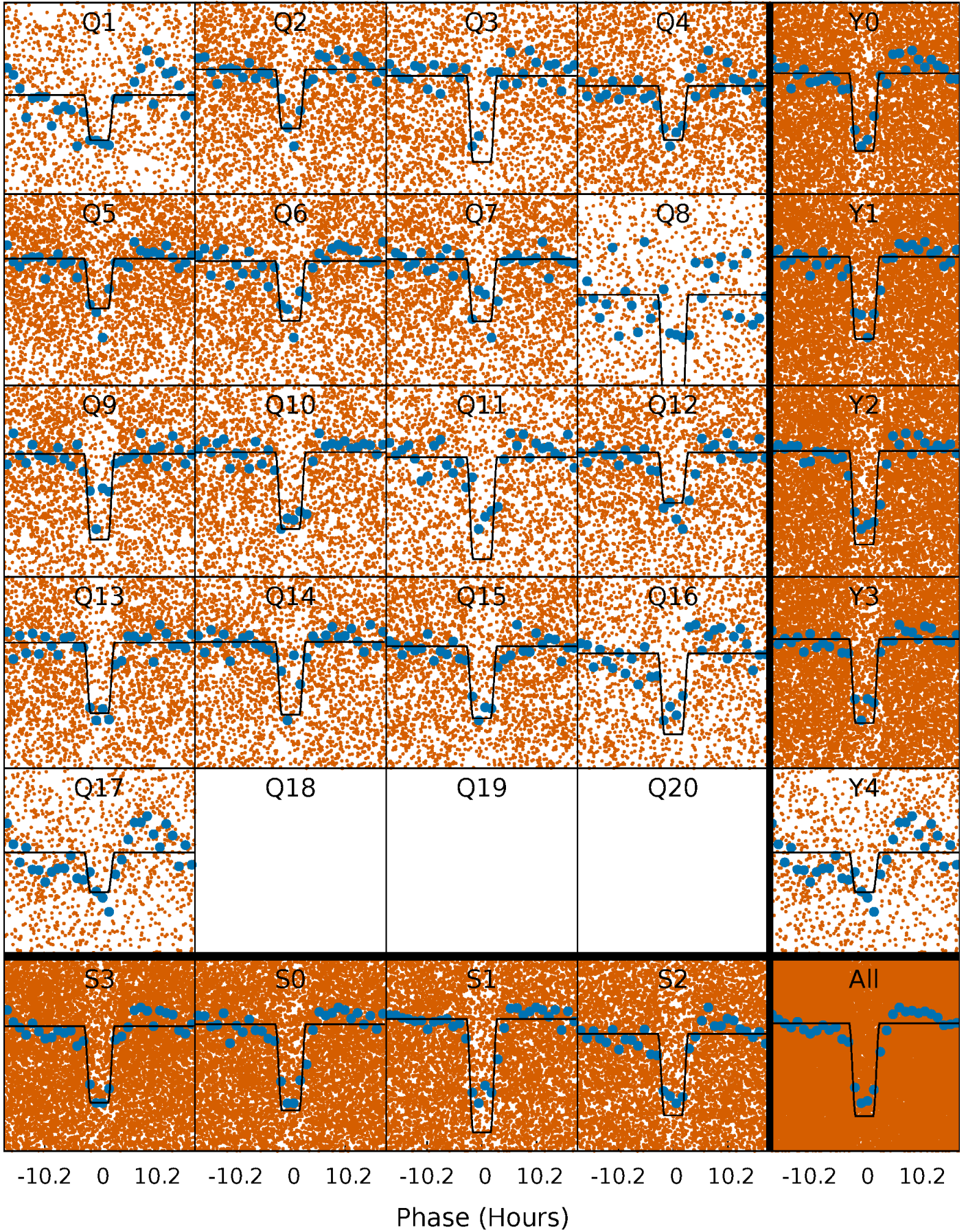
DV Quarter-Phased Transit Curves

TCE 008713594-01 P= 1.245742 Days $T_0=131.811990$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

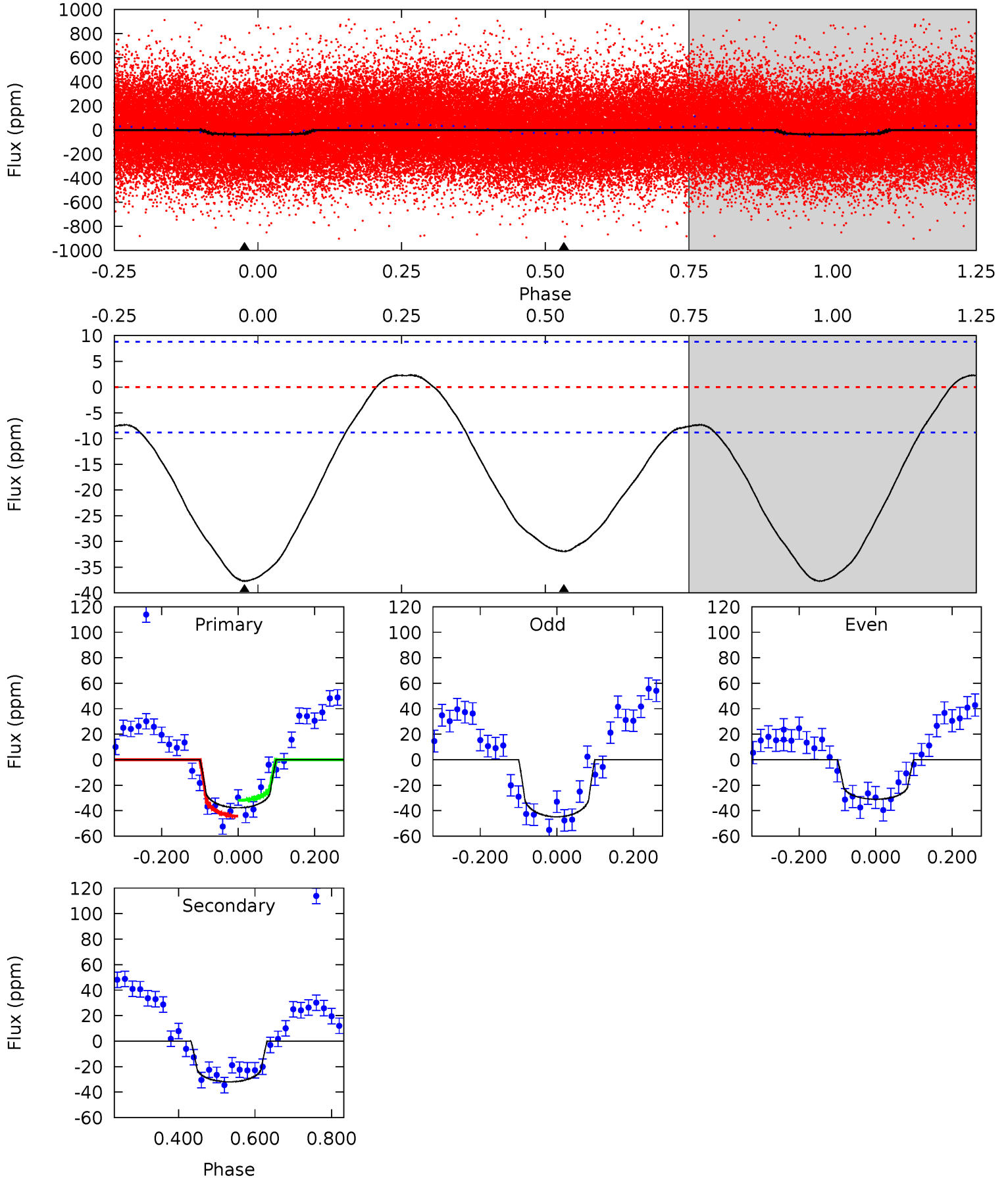
TCE 008713594-01 P= 1.245740 Days $T_0=131.758557$ (BKJD)



DV Model-Shift Uniqueness Test

008713594-01, P = 1.245742 Days, E = 130.566248 Days

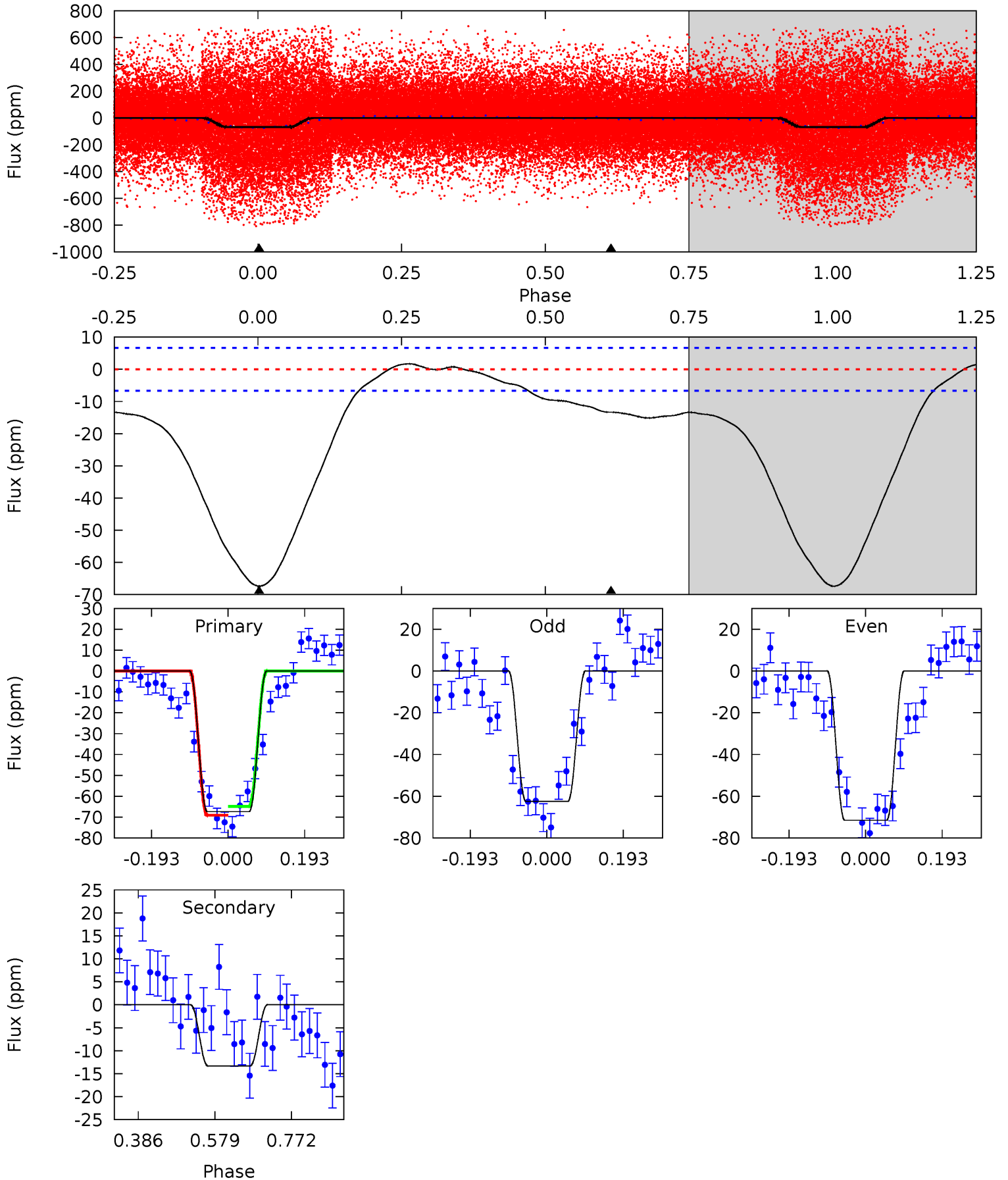
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	16.0	0	0	4.42	1.28	1.88	18.9	18.9	16.0	16.0	3.47	0.93	0.06	3.13



Alt Model-Shift Uniqueness Test

008713594-01, P = 1.245740 Days, E = 130.512817 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.8	8.87	0	0	4.42	1.30	1.33	44.8	44.8	8.87	8.87	2.99	1.16	0.03	1.40



Stellar Parameters For KIC 008713594

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6549^{+182}_{-250}	$3.731^{+0.535}_{-0.094}$	$-0.220^{+0.250}_{-0.300}$	$2.727^{+0.479}_{-1.436}$	$1.461^{+0.211}_{-0.362}$	$0.101^{+0.636}_{-0.030}$
	+3%/-4%	+14%/-3%	+114%/-136%	+18%/-53%	+14%/-25%	+627%/-30%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008713594-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-32 ± 2	$1.57^{+0.72}_{-0.64}$	4025^{+291}_{-579}	6235^{+1746}_{-937}	$4.739^{+8.286}_{-2.481}$
Alt.	-13 ± 2	$2.39^{+0.89}_{-0.78}$	3989^{+317}_{-510}	4000^{+663}_{-582}	$0.839^{+1.007}_{-0.379}$

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

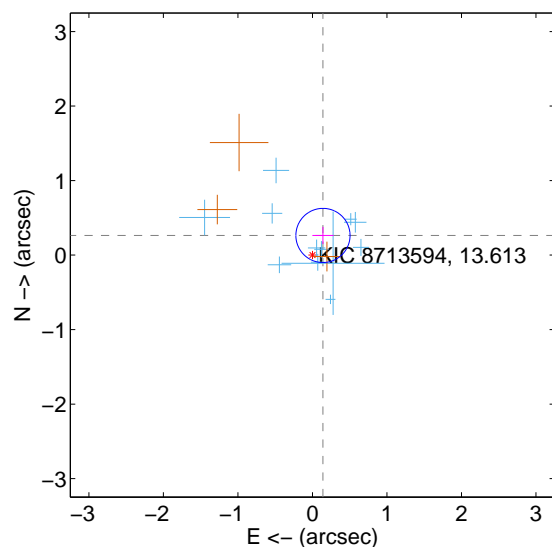
Supplemental centroid analysis for 008713594-01. Kepler magnitude: 13.61. Transit SNR 10.70

There are 12 quarters with good PRF difference image offsets

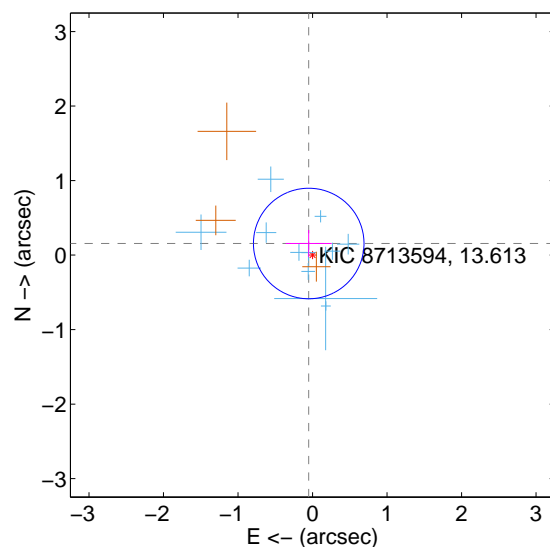
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.299 ± 0.121	2.47	-0.141 ± 0.142	0.264 ± 0.115
PRF-fit source offset from KIC position	0.164 ± 0.247	0.66	0.051 ± 0.308	0.156 ± 0.181
photometric centroid source offset	0.39 ± 0.77	0.51	0.25 ± 0.76	0.31 ± 0.78

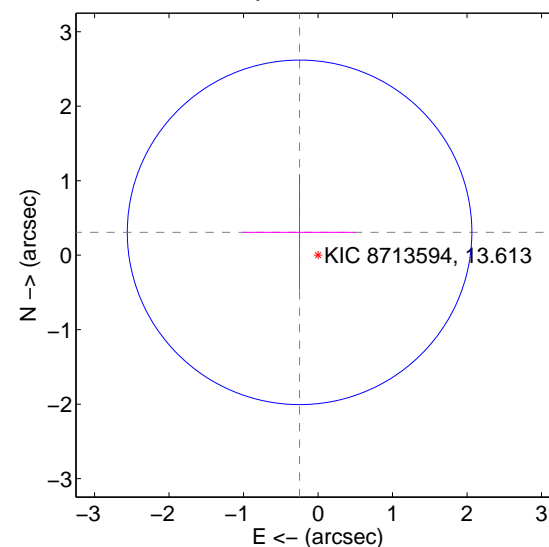
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

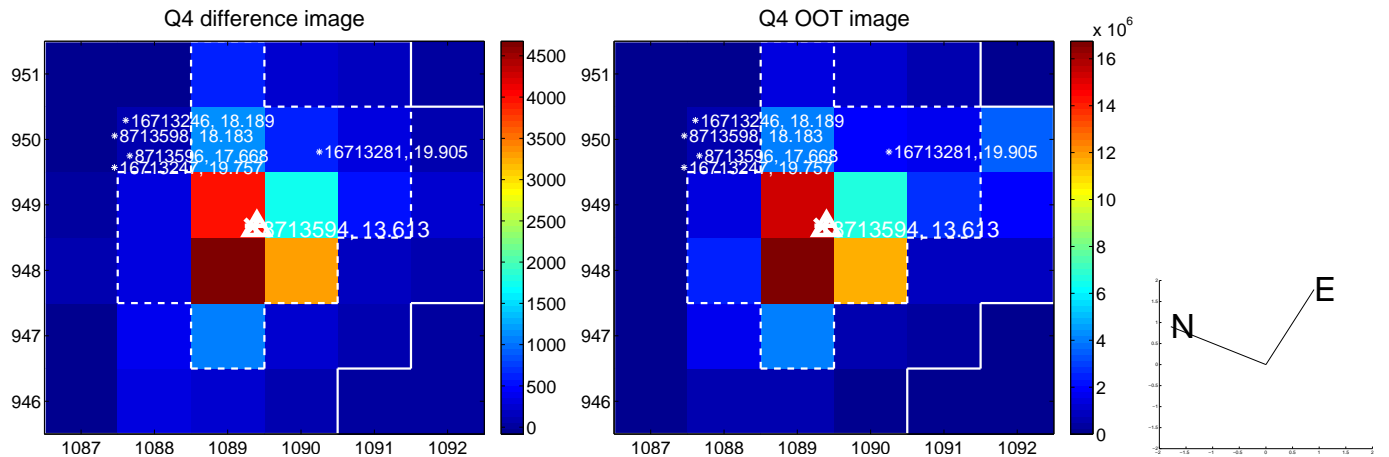
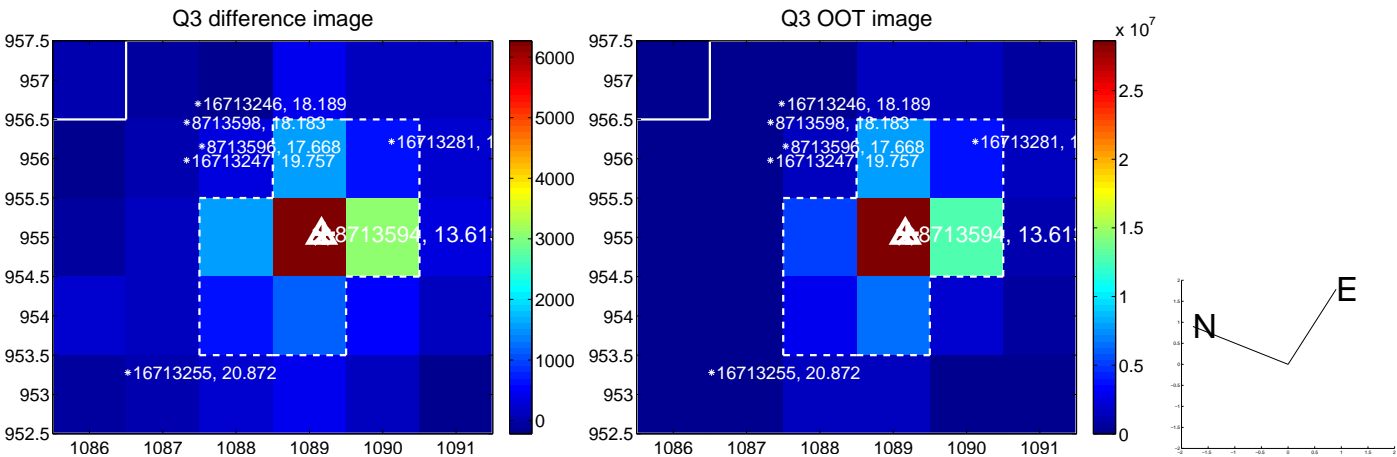
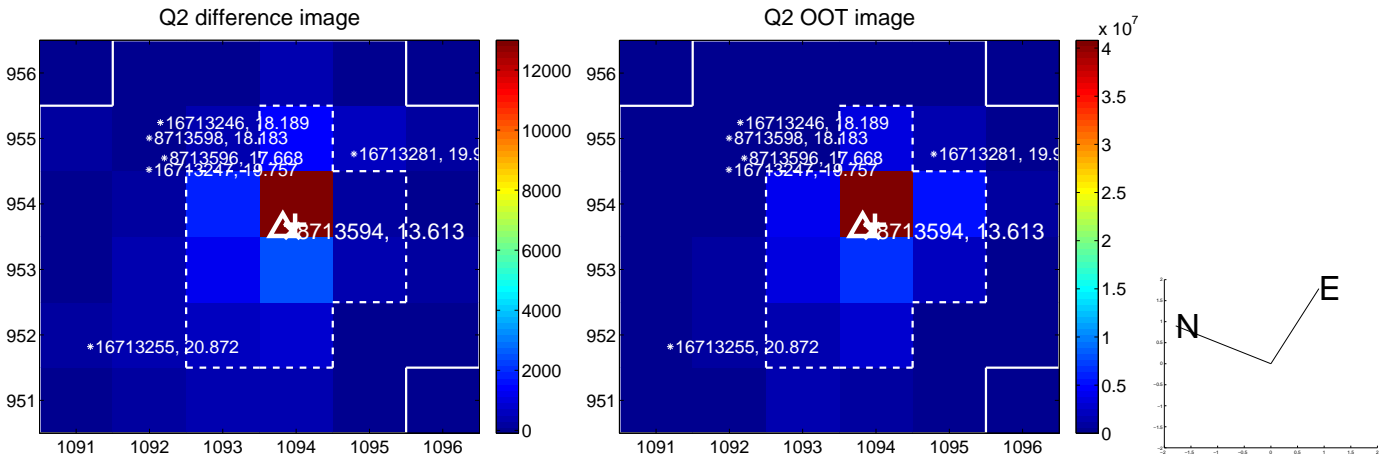
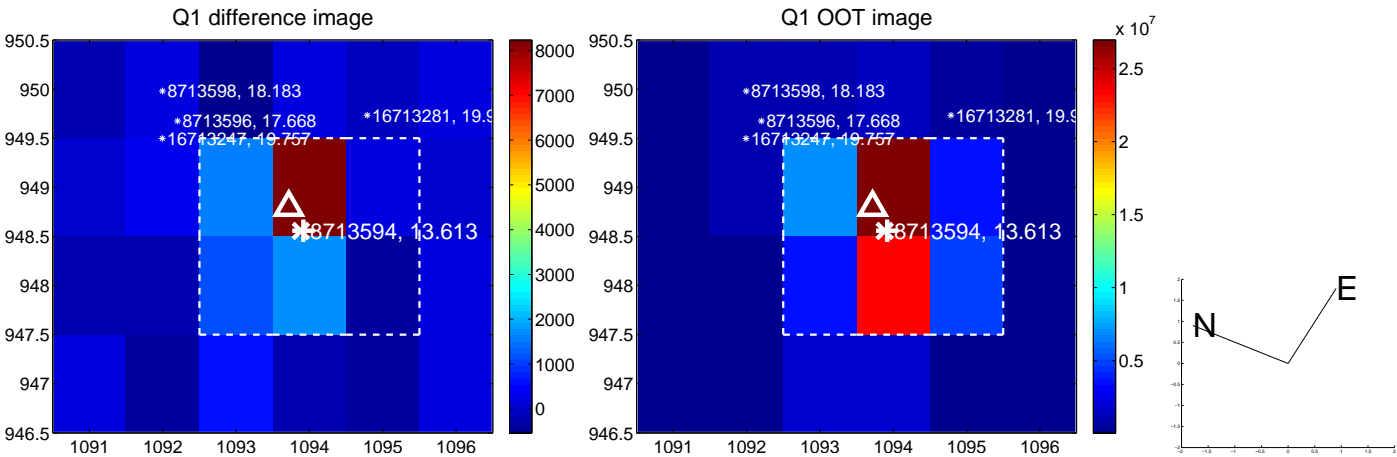


offset from photometric centroids

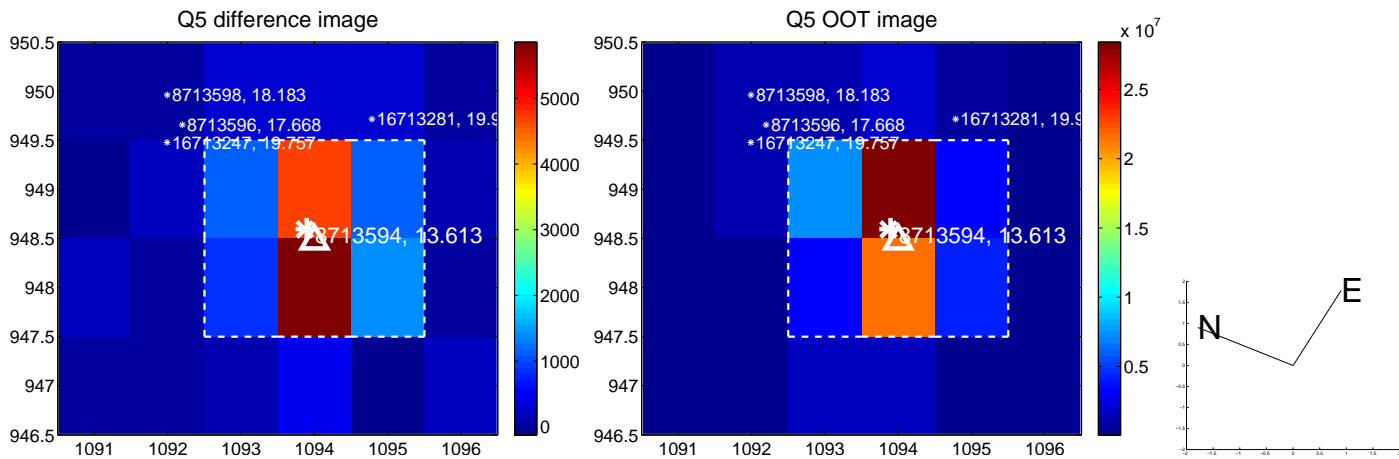


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

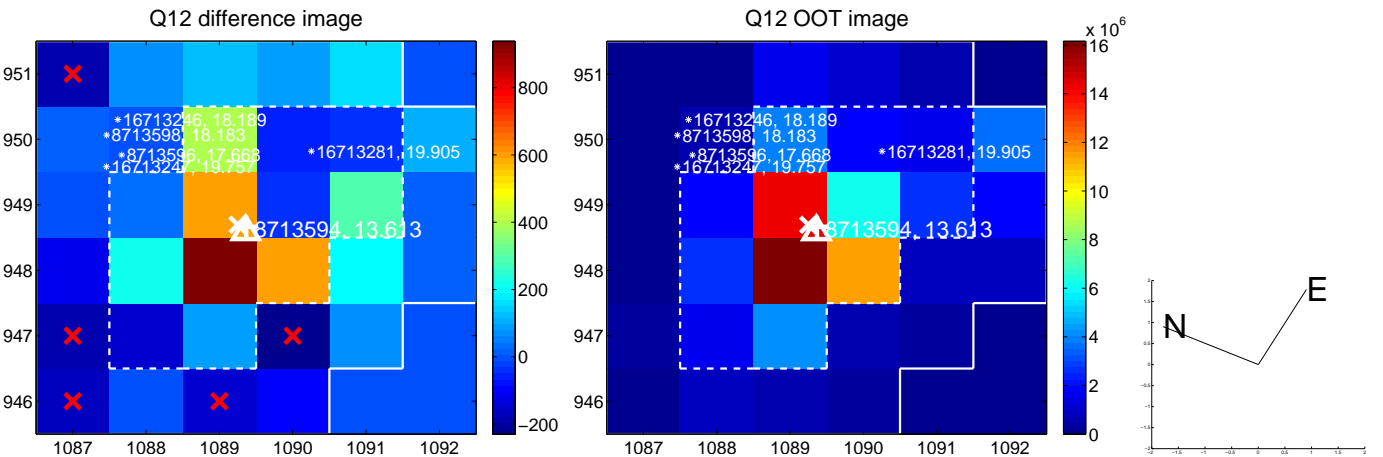
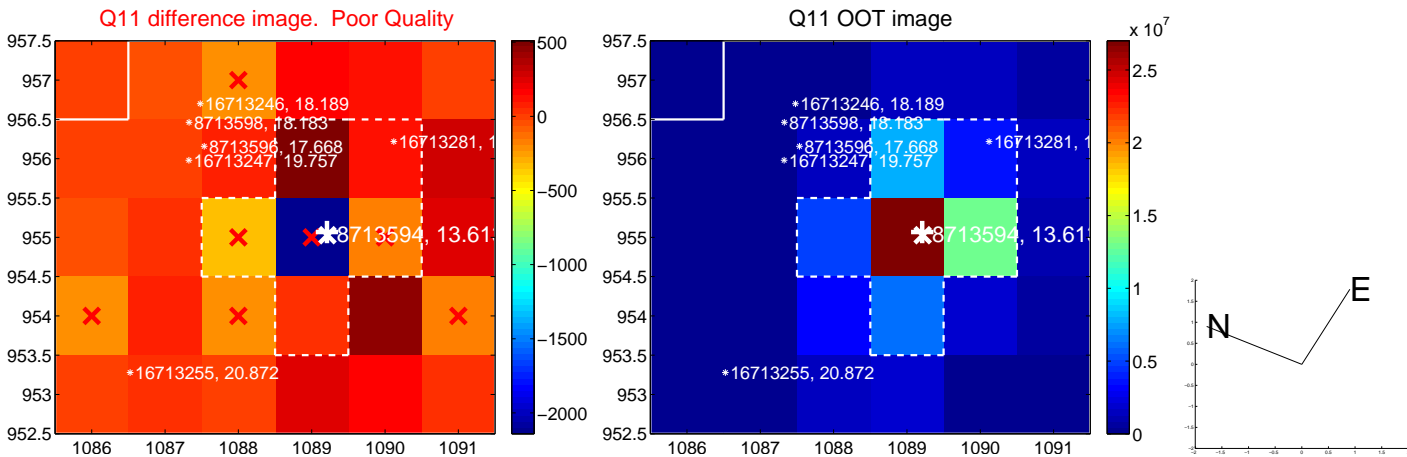
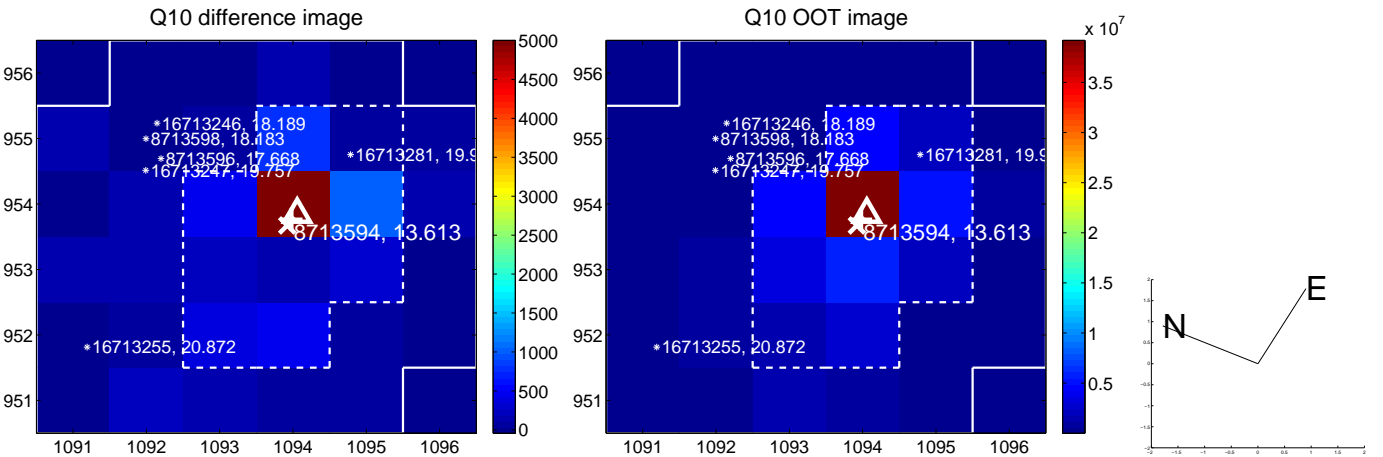
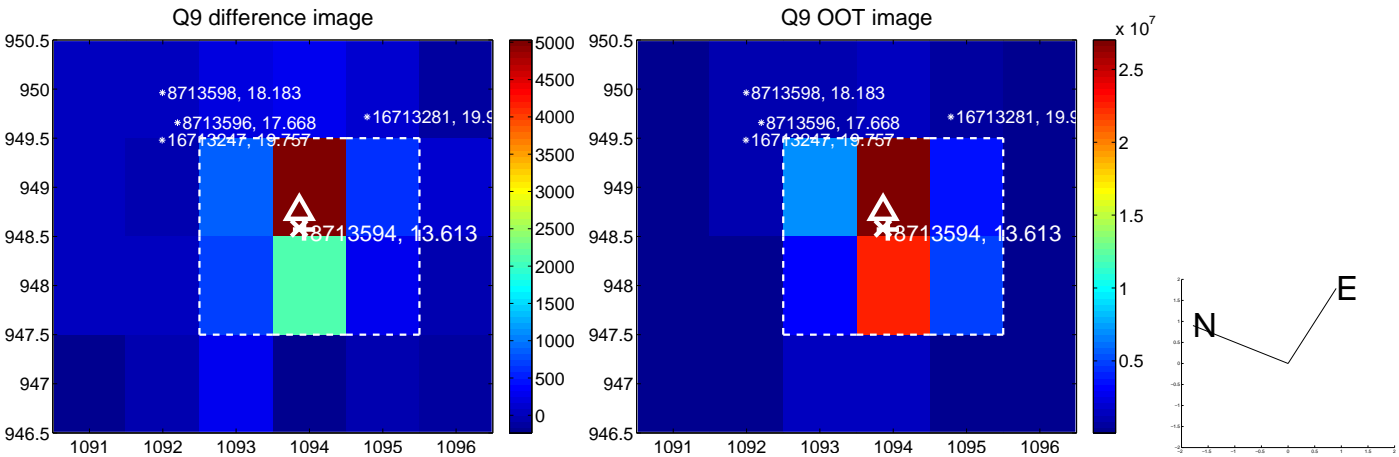
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



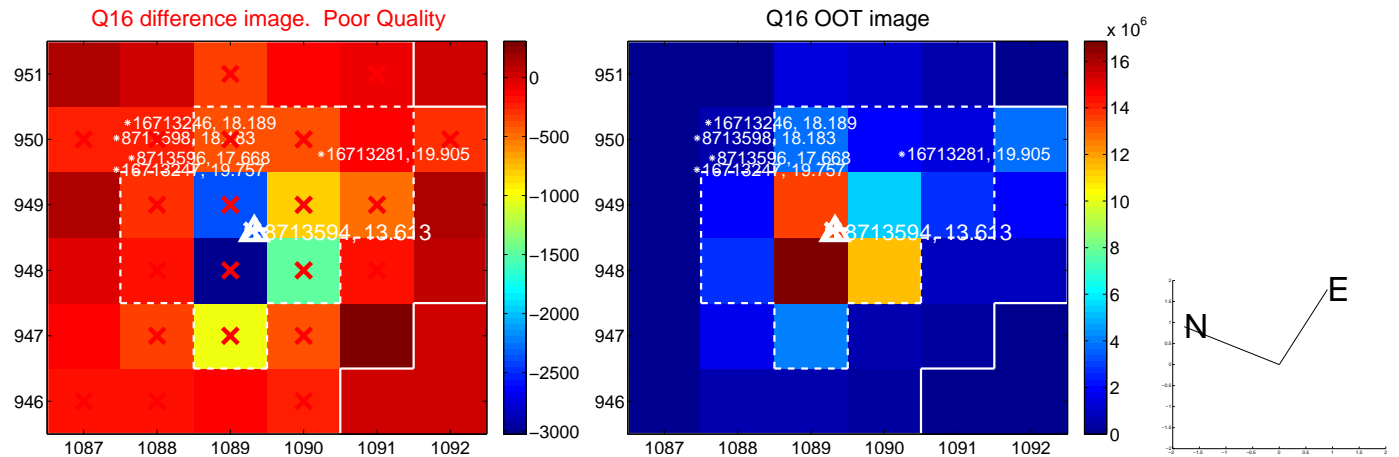
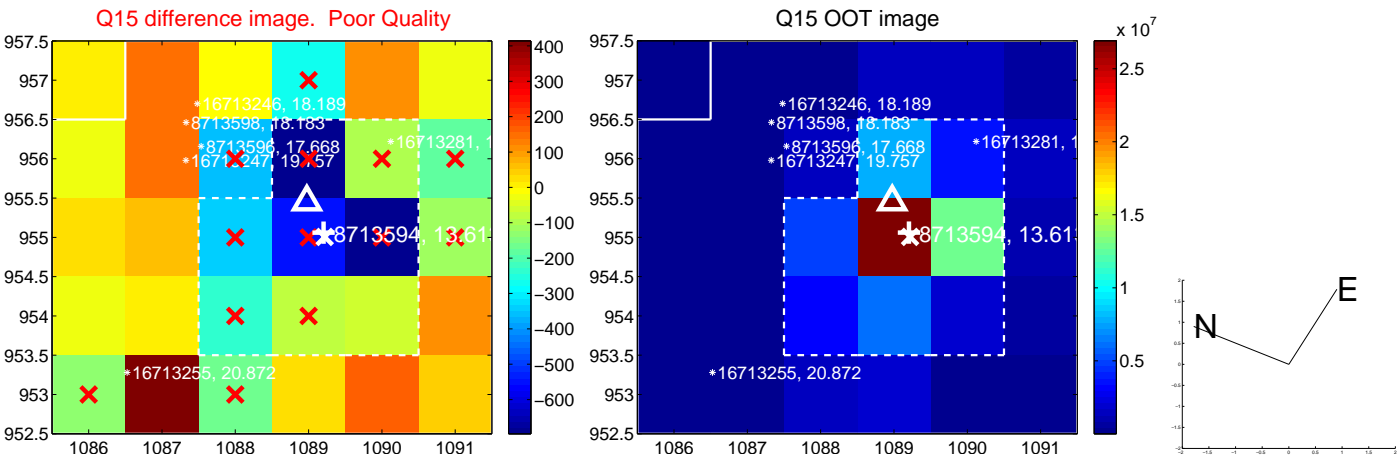
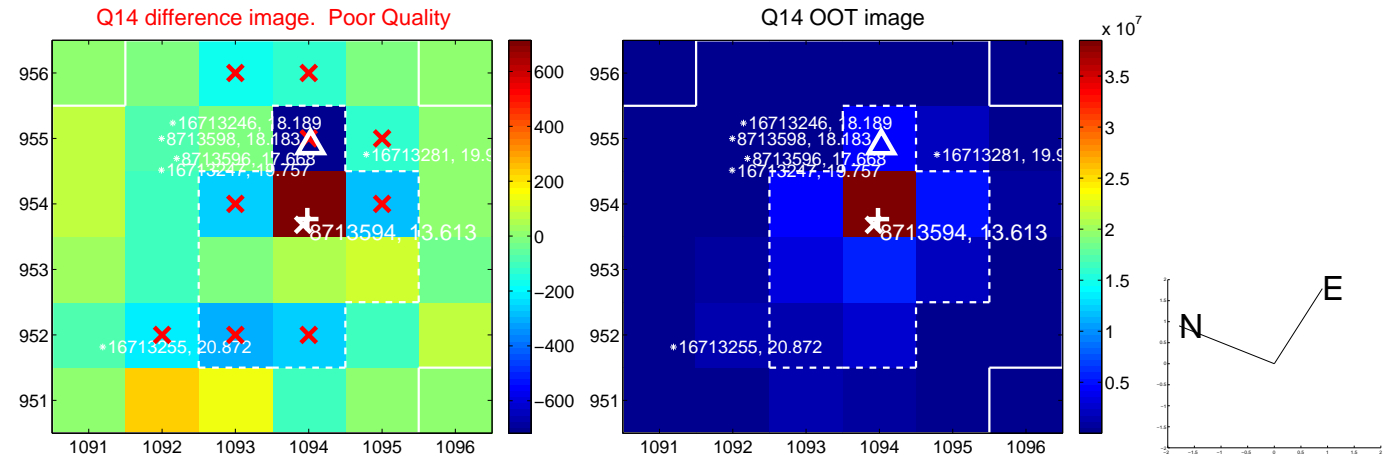
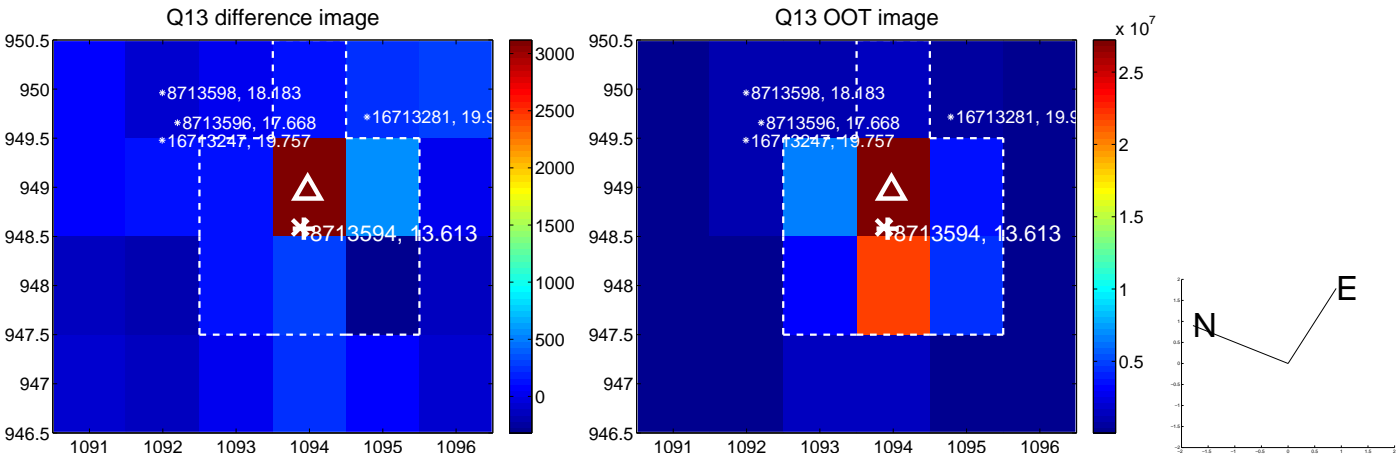
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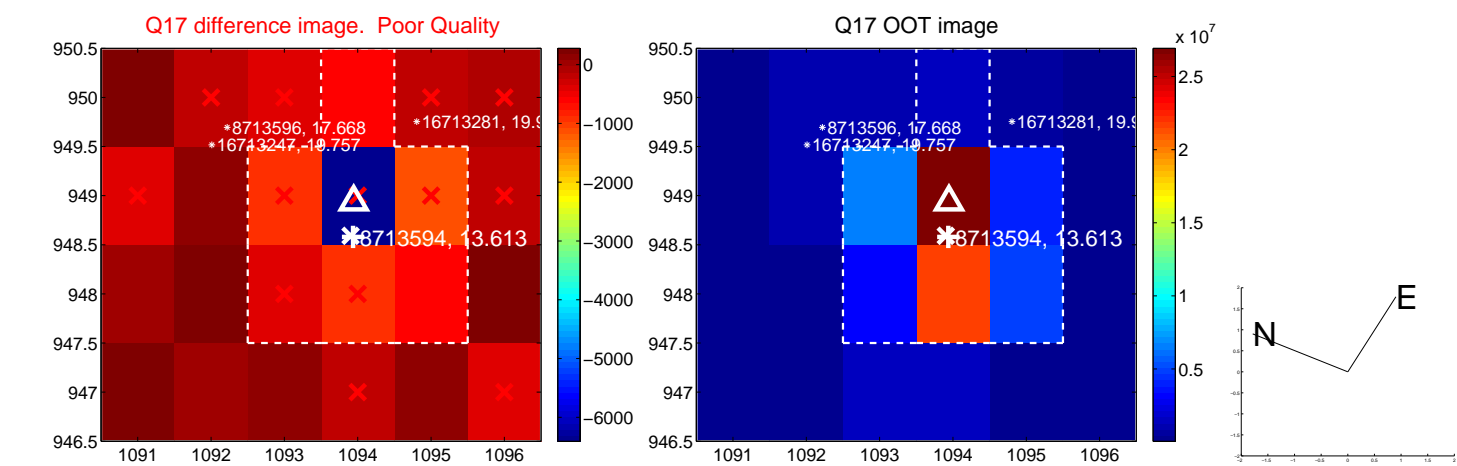
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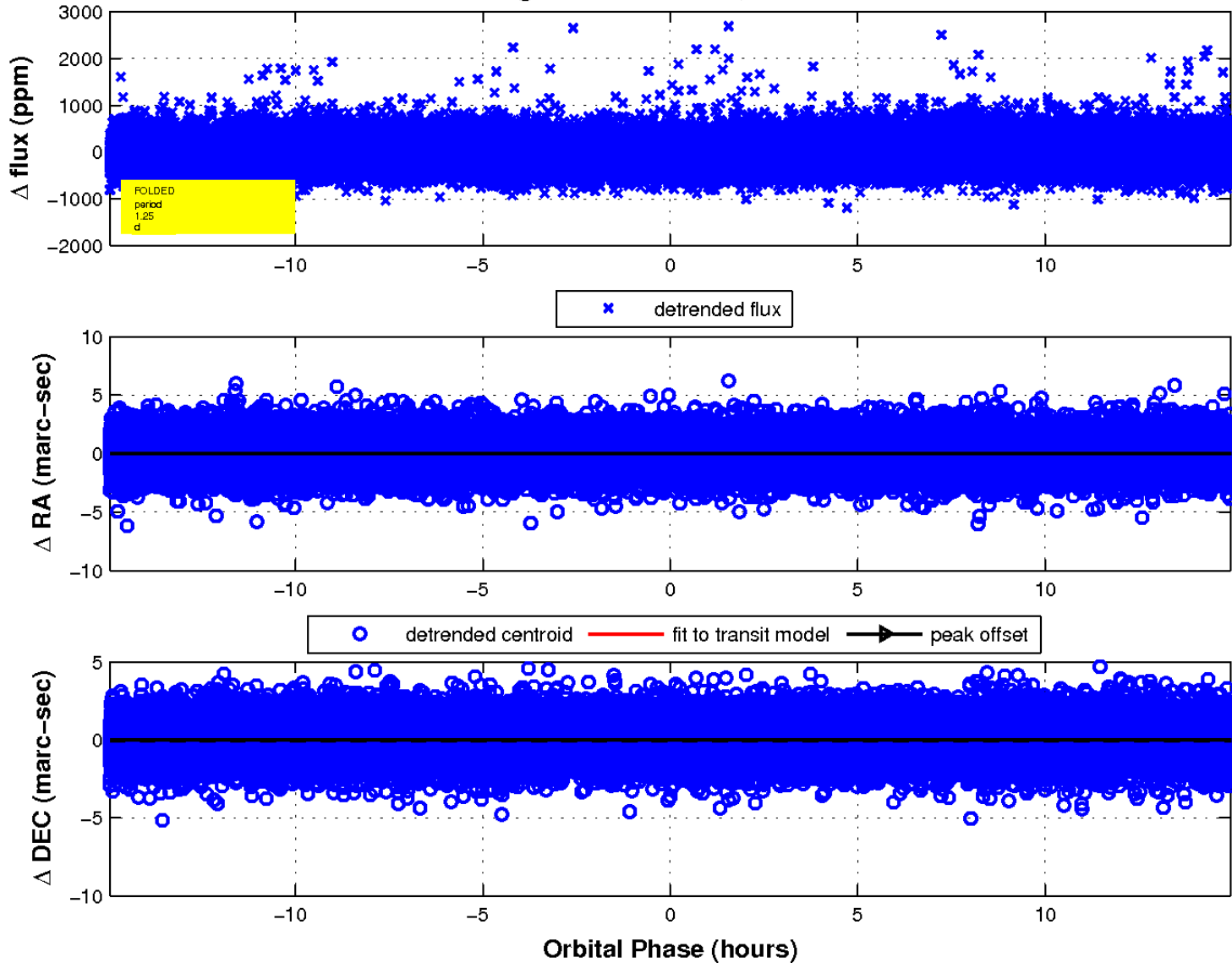
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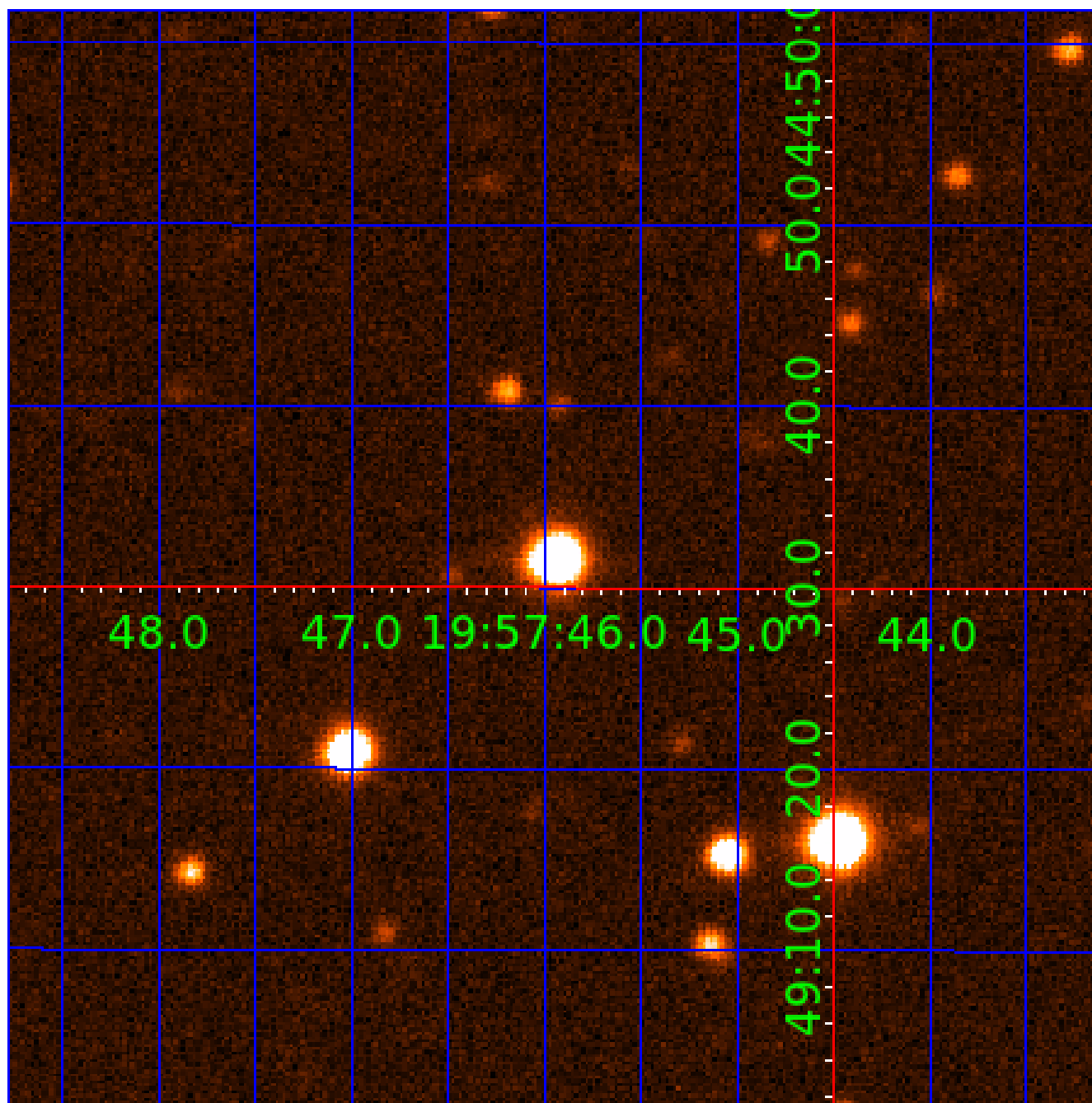


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 008713594

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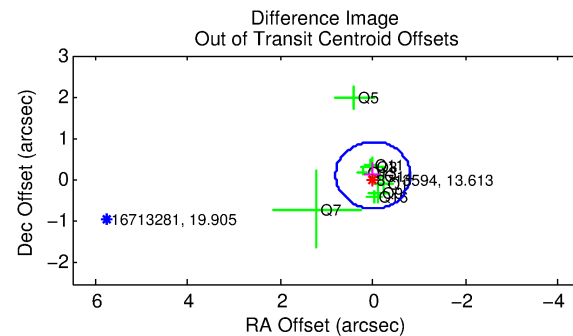
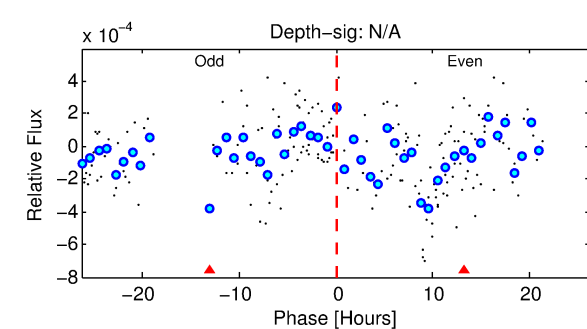
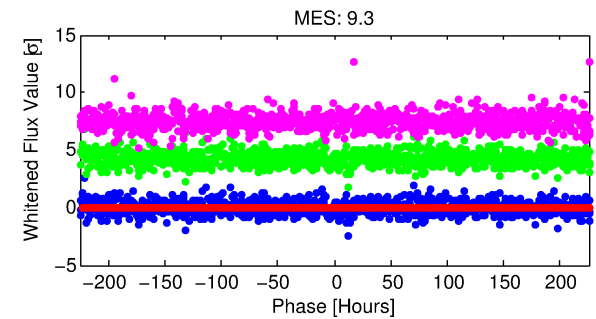
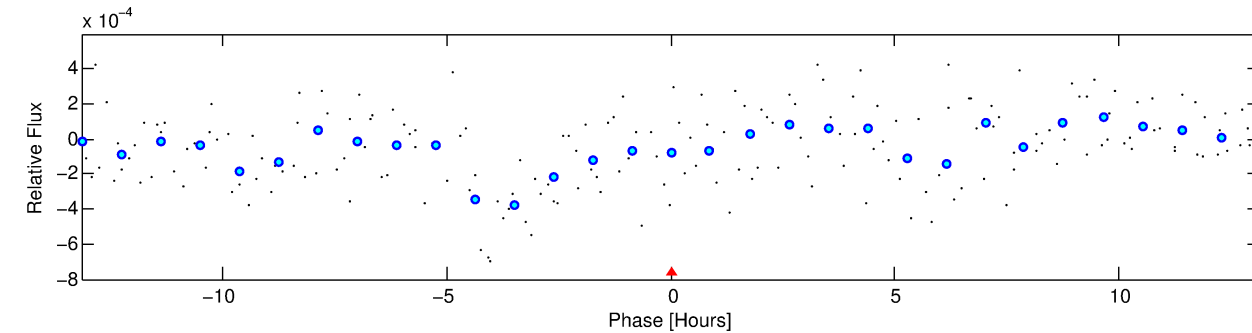
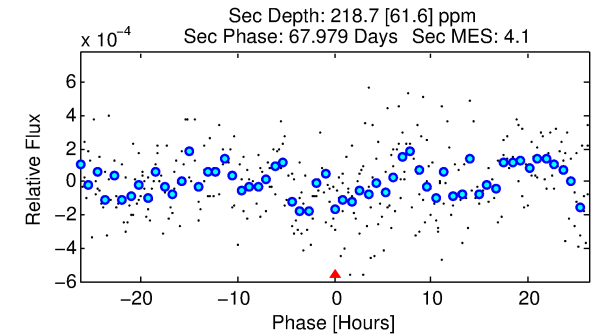
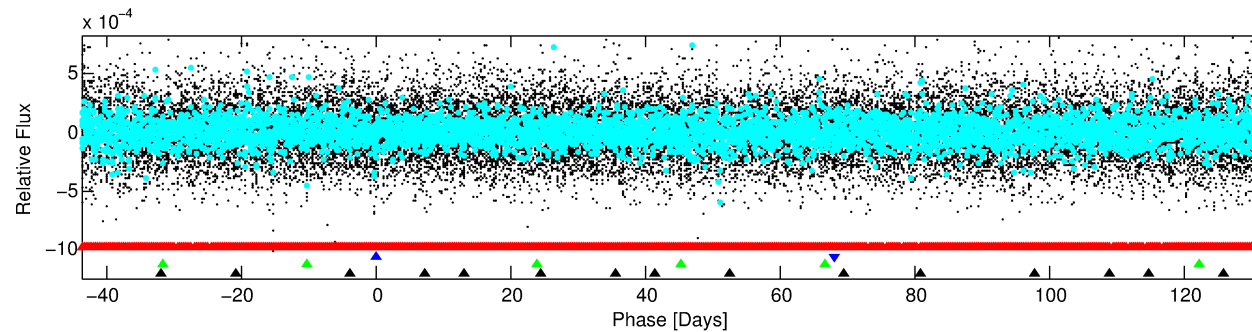
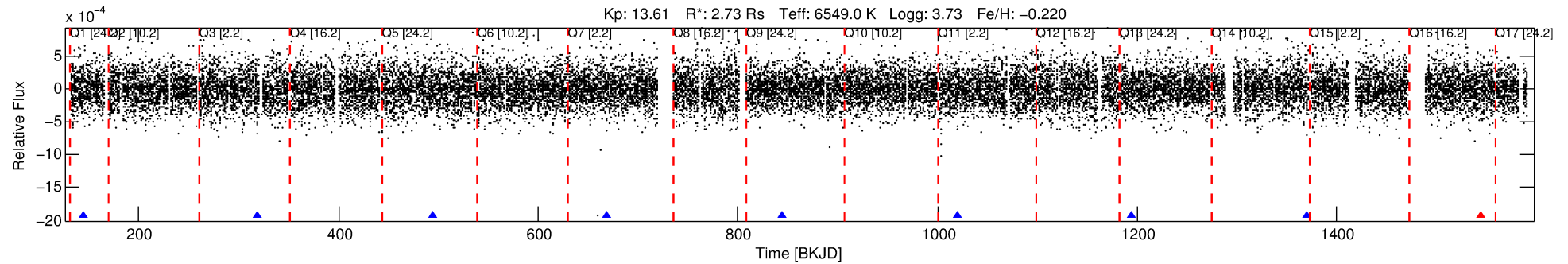
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008713594-02

No Significant Match Found

DV One-Page Summary

KIC: 8713594 Candidate: 2 of 4 Period: 175.089 d



TPS TCE Results:

Period = 175.08857 d
Epoch = 143.9850 BKJD

DV fit results are unavailable

DV Diagnostic Results:

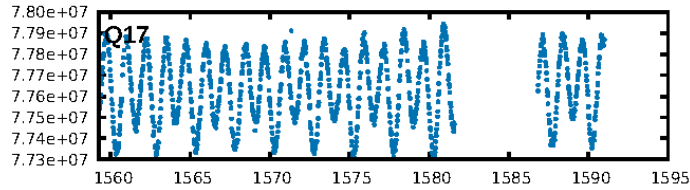
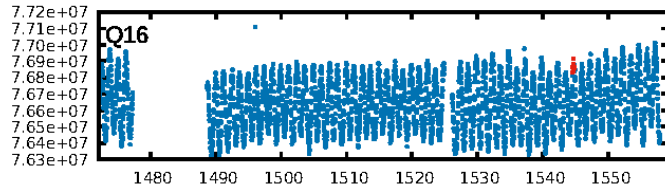
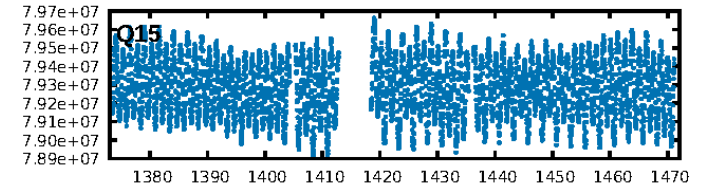
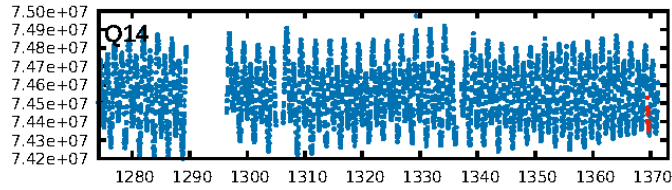
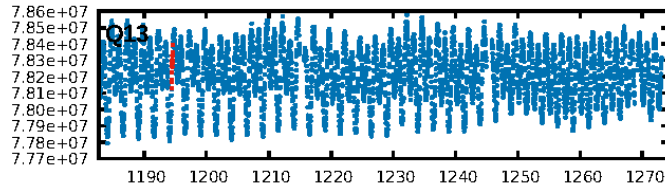
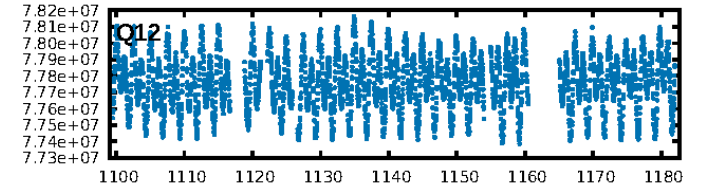
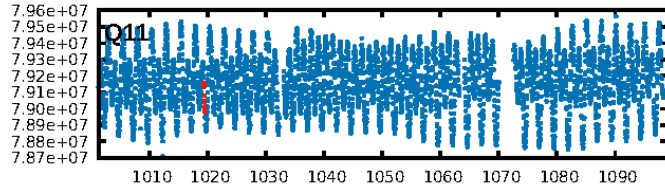
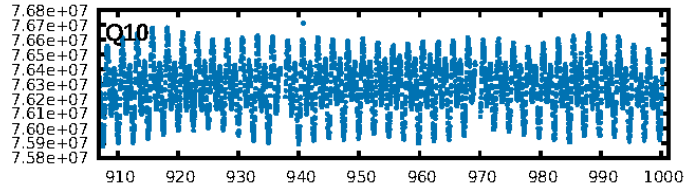
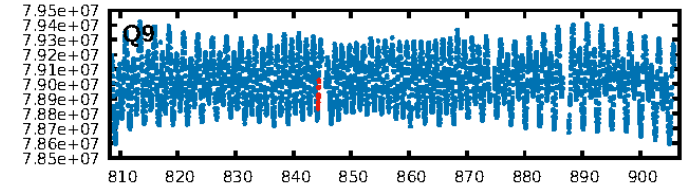
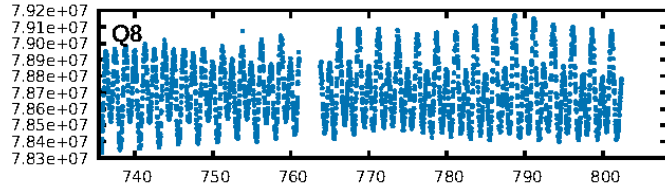
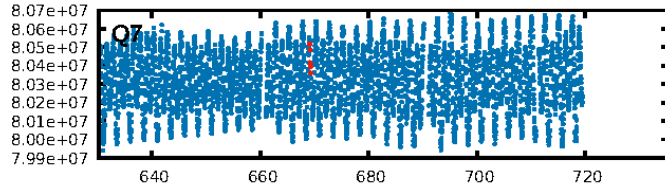
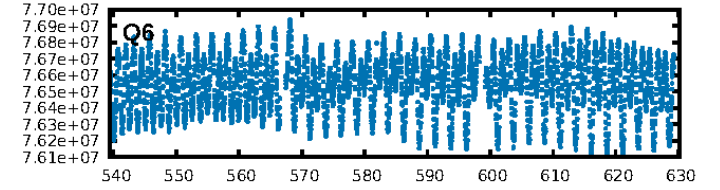
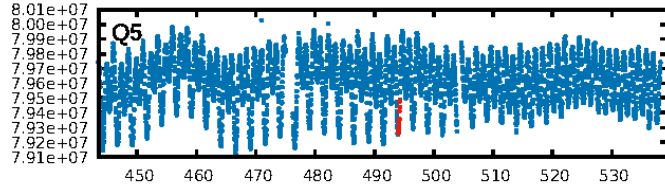
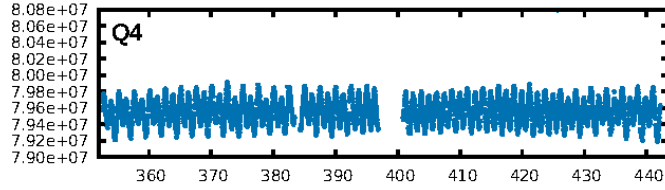
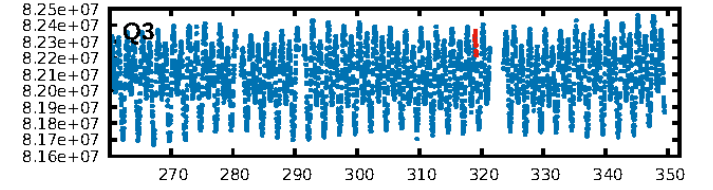
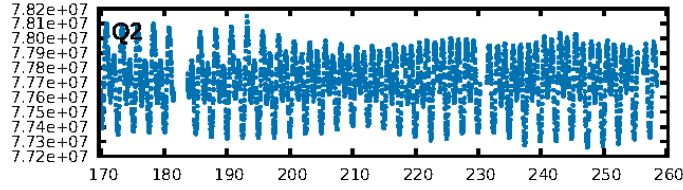
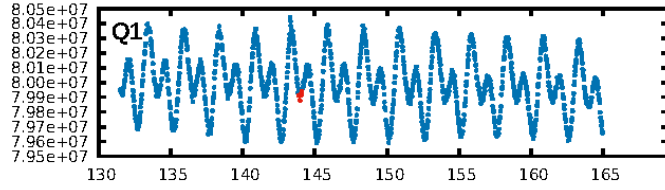
ShortPeriod-sig: 100.0% [271.17σ]
LongPeriod-sig: 100.0% [206.32σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.31e-14
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: 0.7366

Centroid-sig: 77.4%
Centroid-so: 0.803 arcsec [0.50σ]
OotOffset-rm: 0.117 arcsec [0.44σ]
KicOffset-rm: 0.183 arcsec [1.10σ]
OotOffset-st: 1/3/1/4 [9]
KicOffset-st: 1/3/1/4 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 0.22 [2/9]

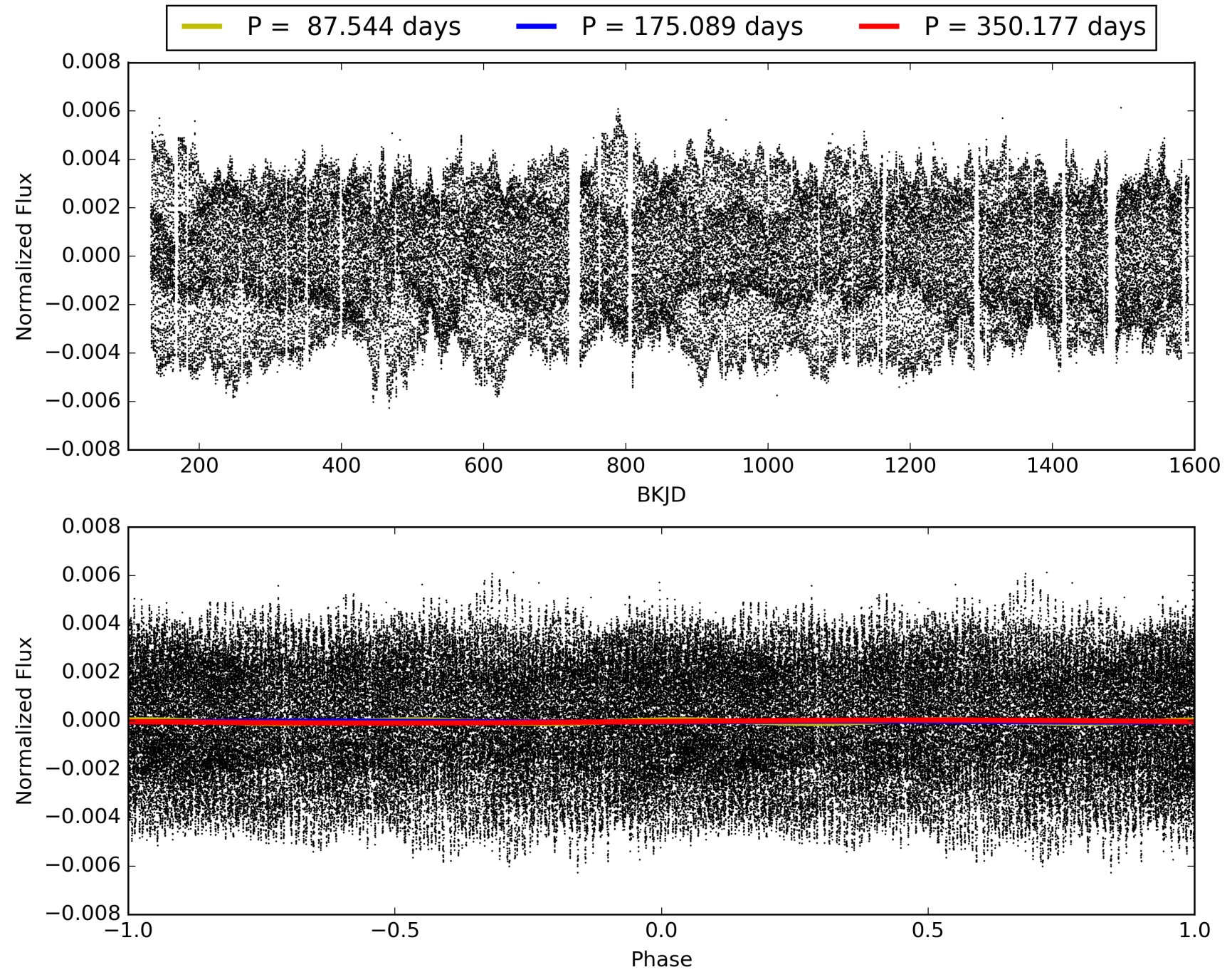
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:31:57 Z

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

TCE 008713594-02, PDC Light Curves

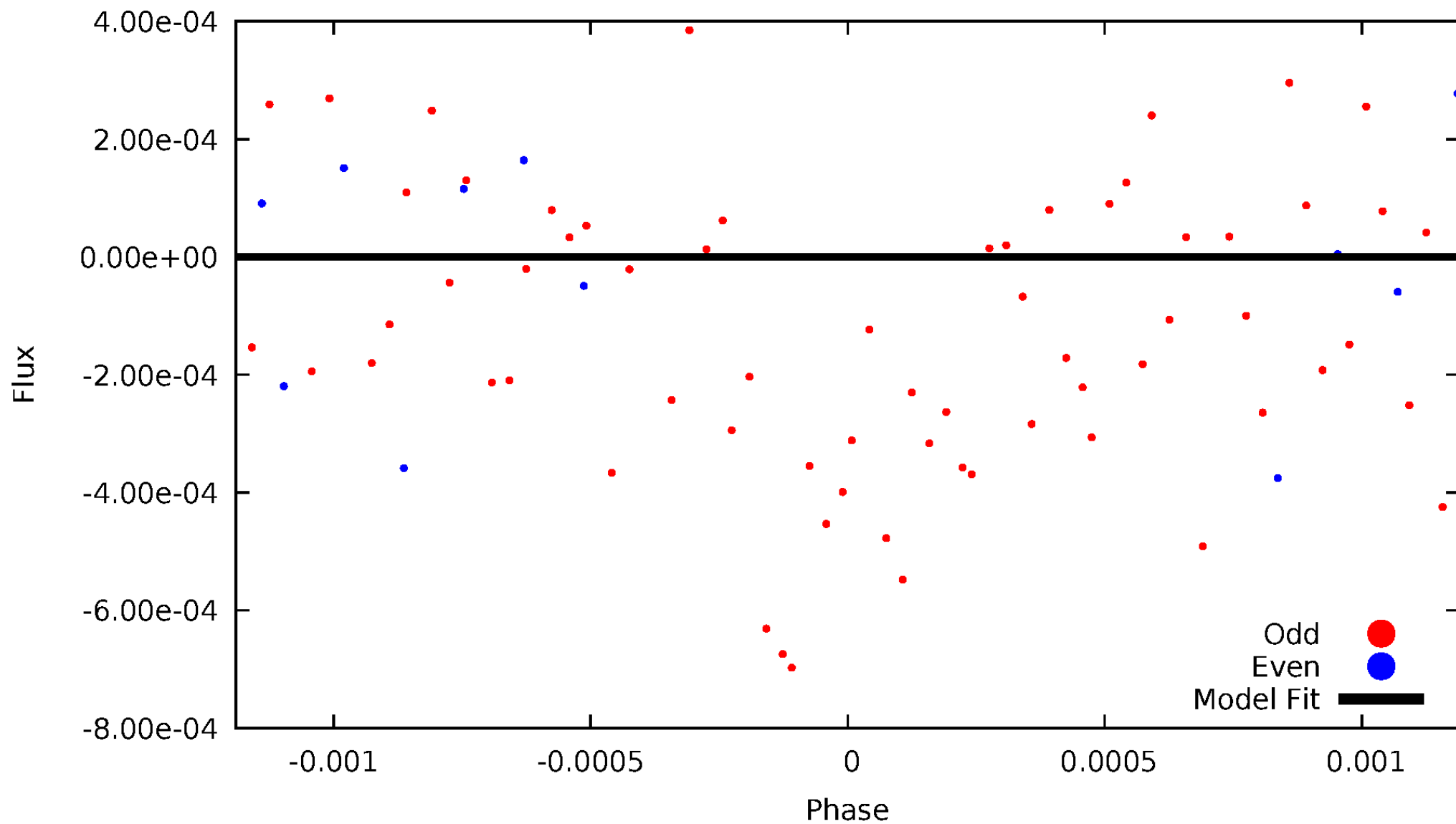


TCE 008713594-02



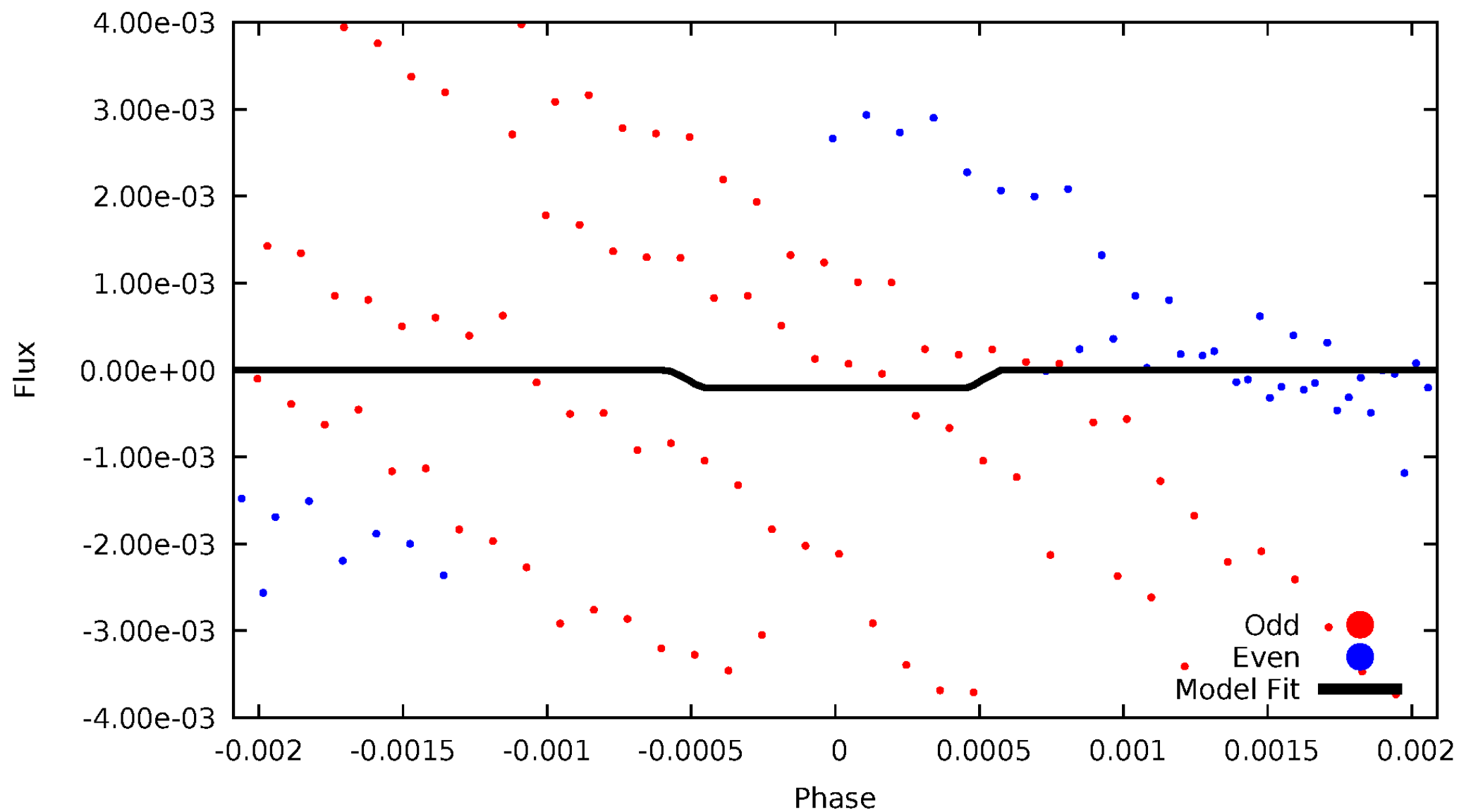
DV Odd/Even

TCE 008713594-02



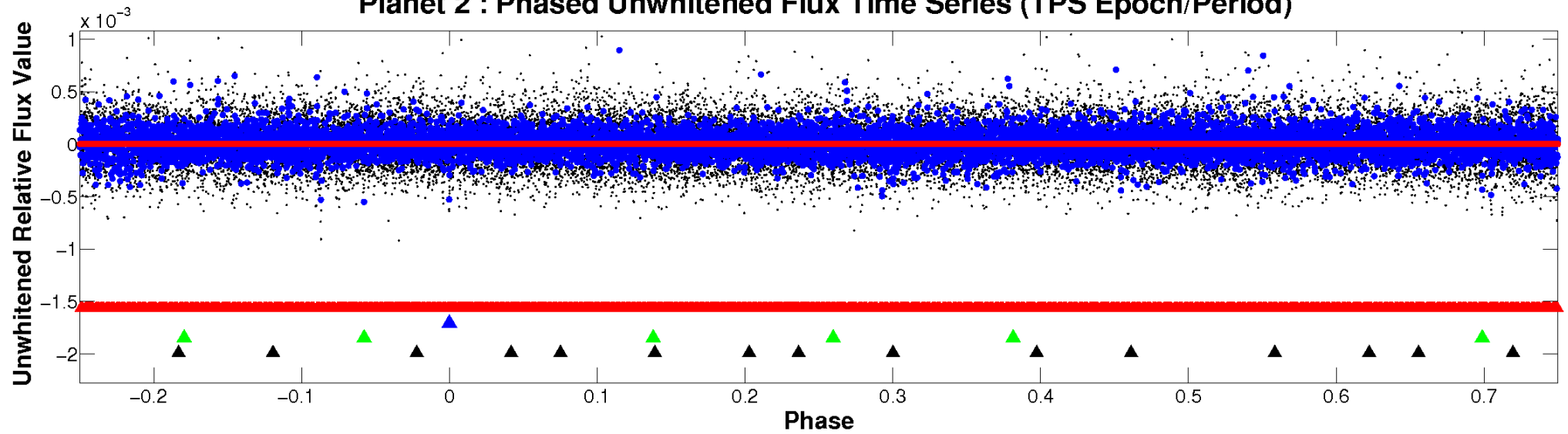
ALT Odd/Even

TCE 008713594-02

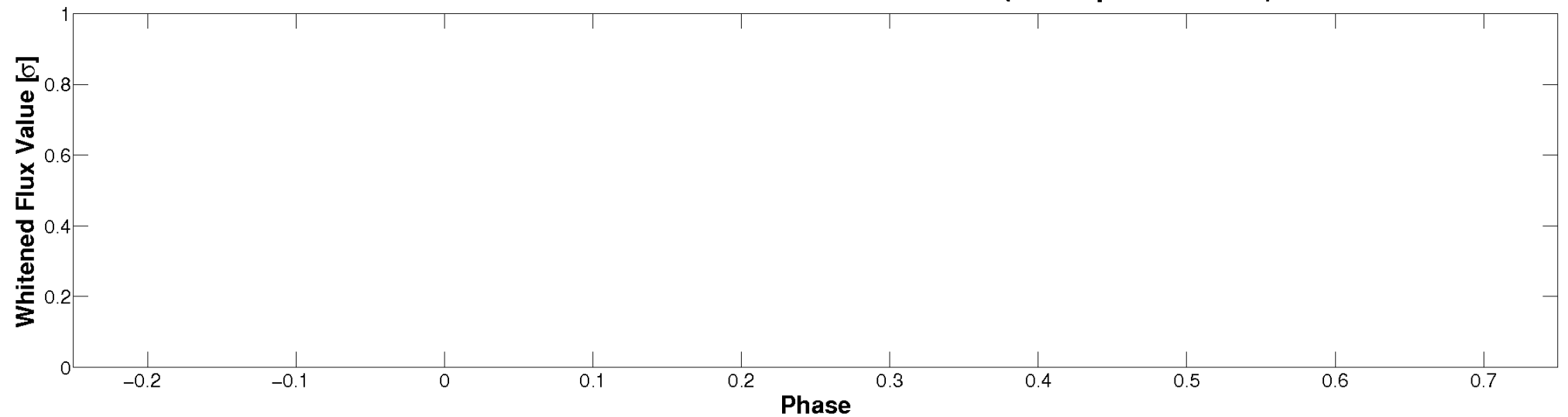


Non-Whitened Vs. Whitened Light Curve

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

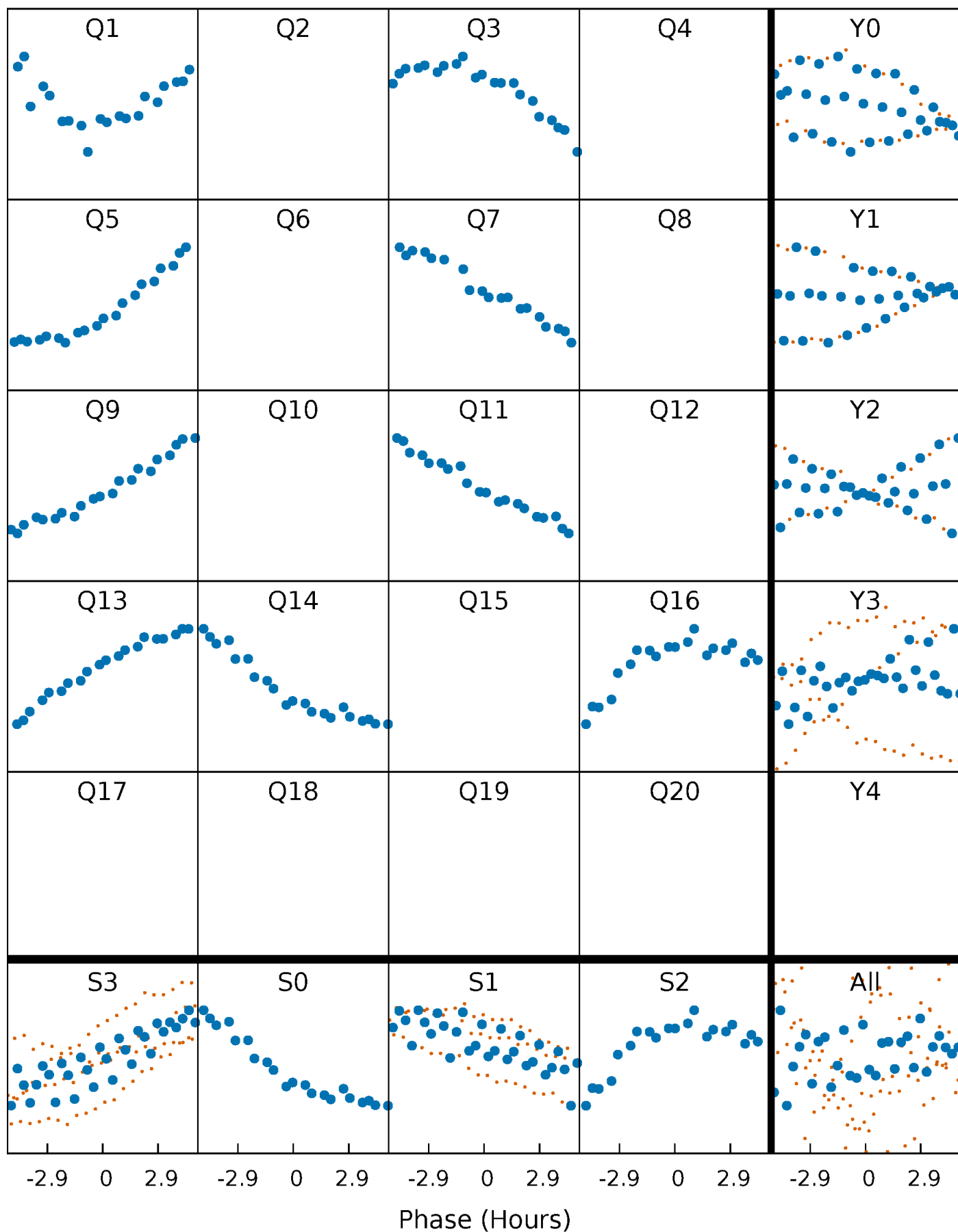


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



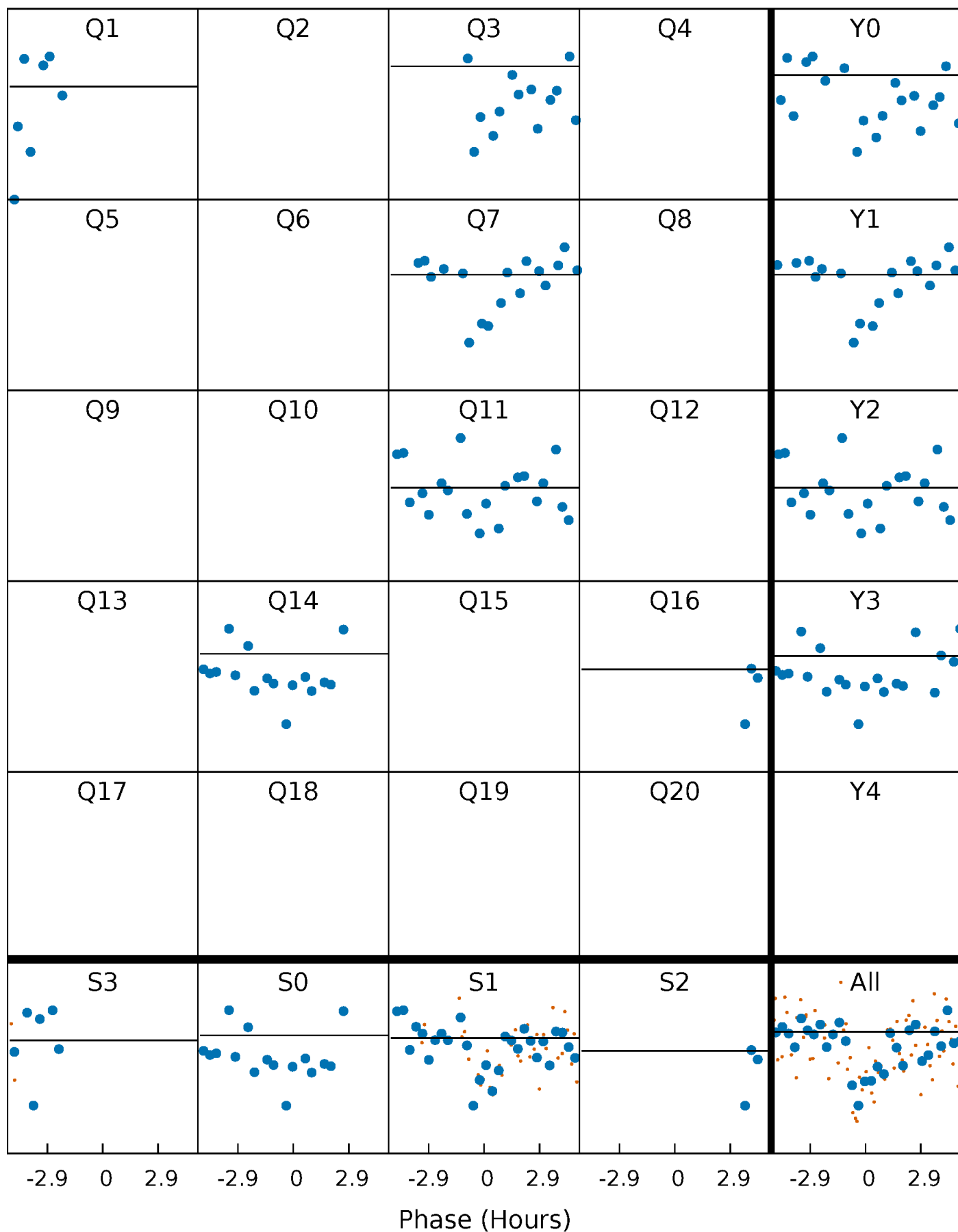
PDC Quarter-Phased Transit Curves

TCE 008713594-02 P=175.088571 Days $T_0=143.984955$ (BKJD)



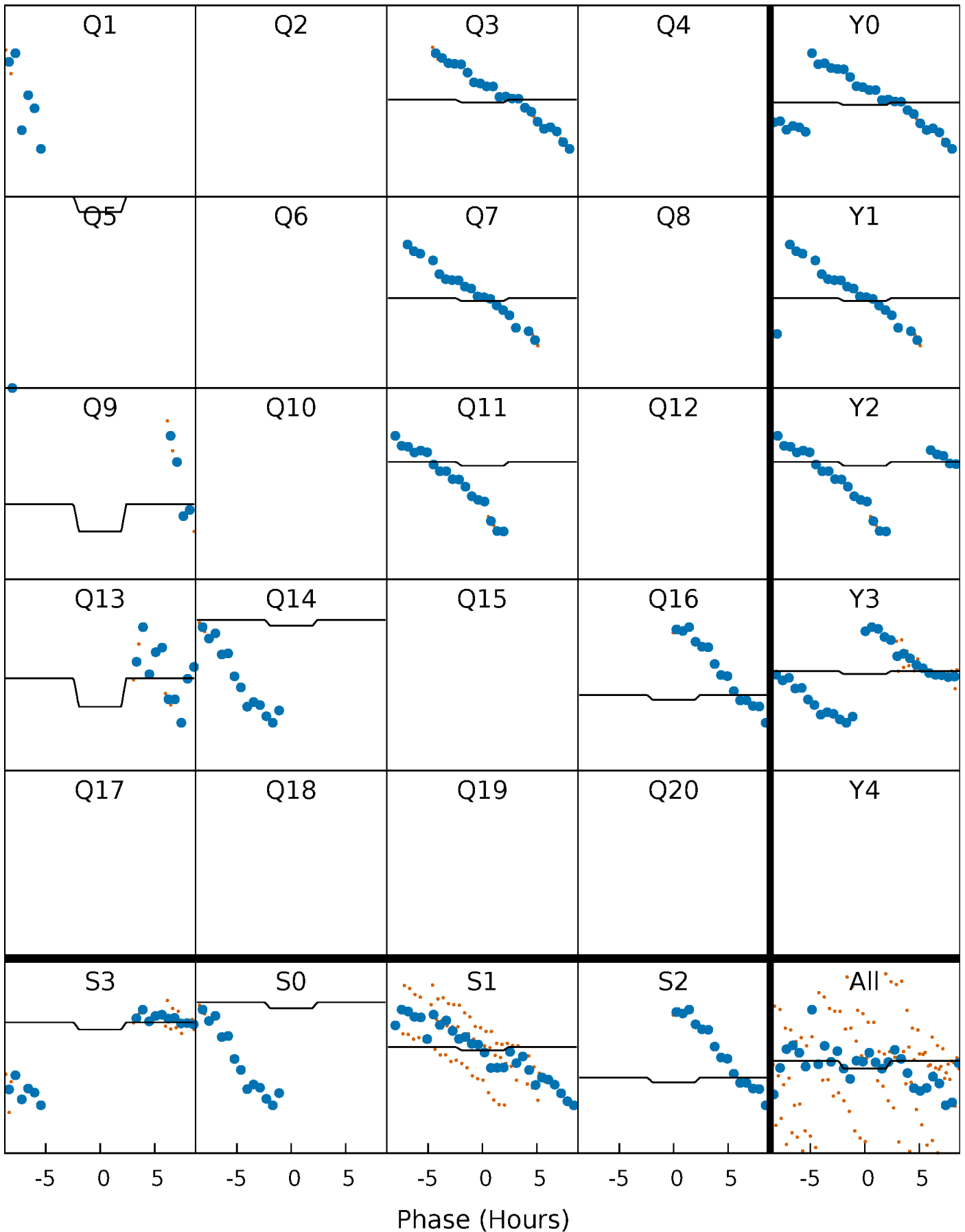
DV Quarter-Phased Transit Curves

TCE 008713594-02 P=175.088571 Days $T_0=143.984955$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

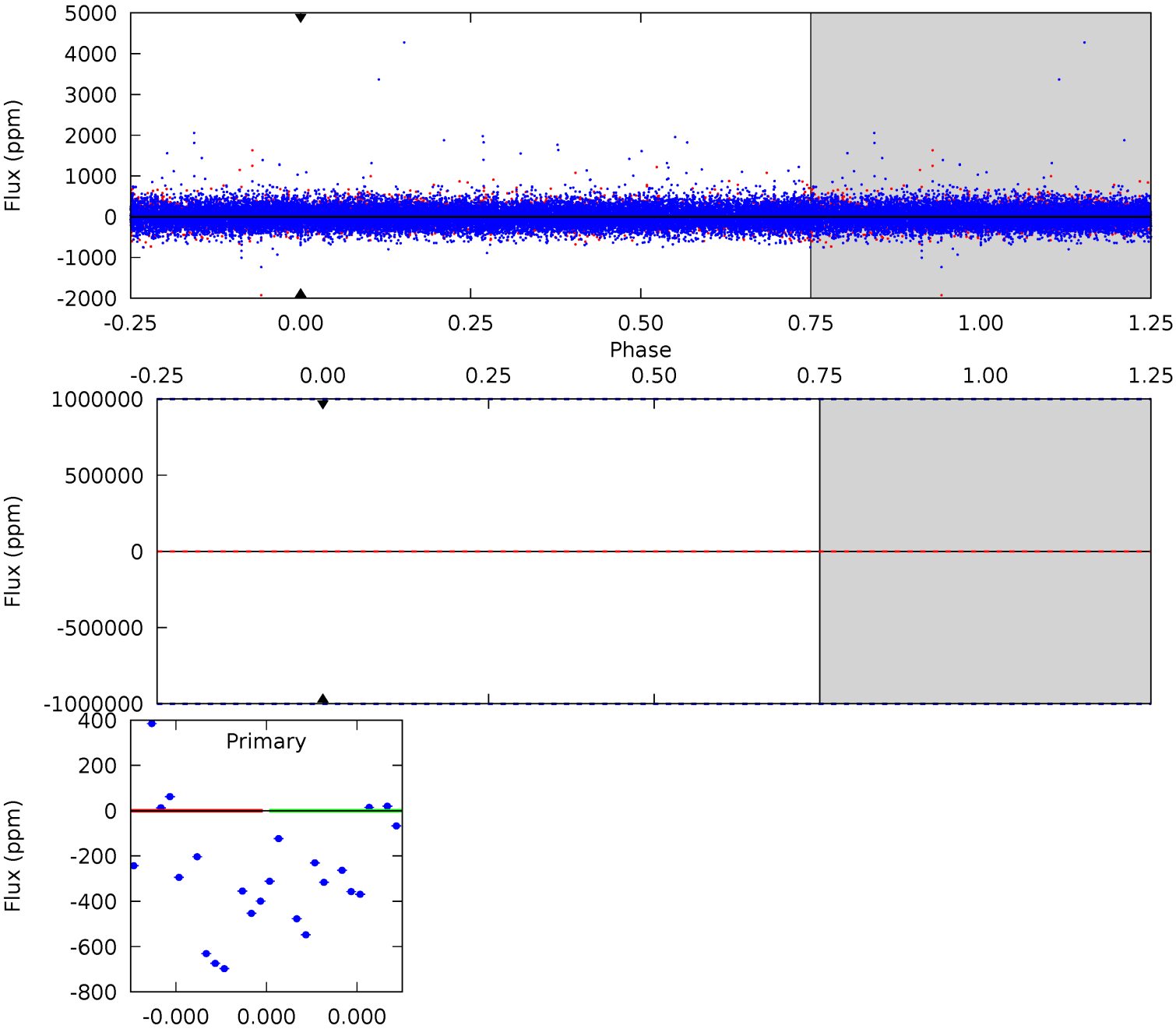
TCE 008713594-02 $P=175.088571$ Days $T_0=144.133030$ (BKJD)



DV Model-Shift Uniqueness Test

008713594-02, P = 175.088571 Days, E = 143.984955 Days

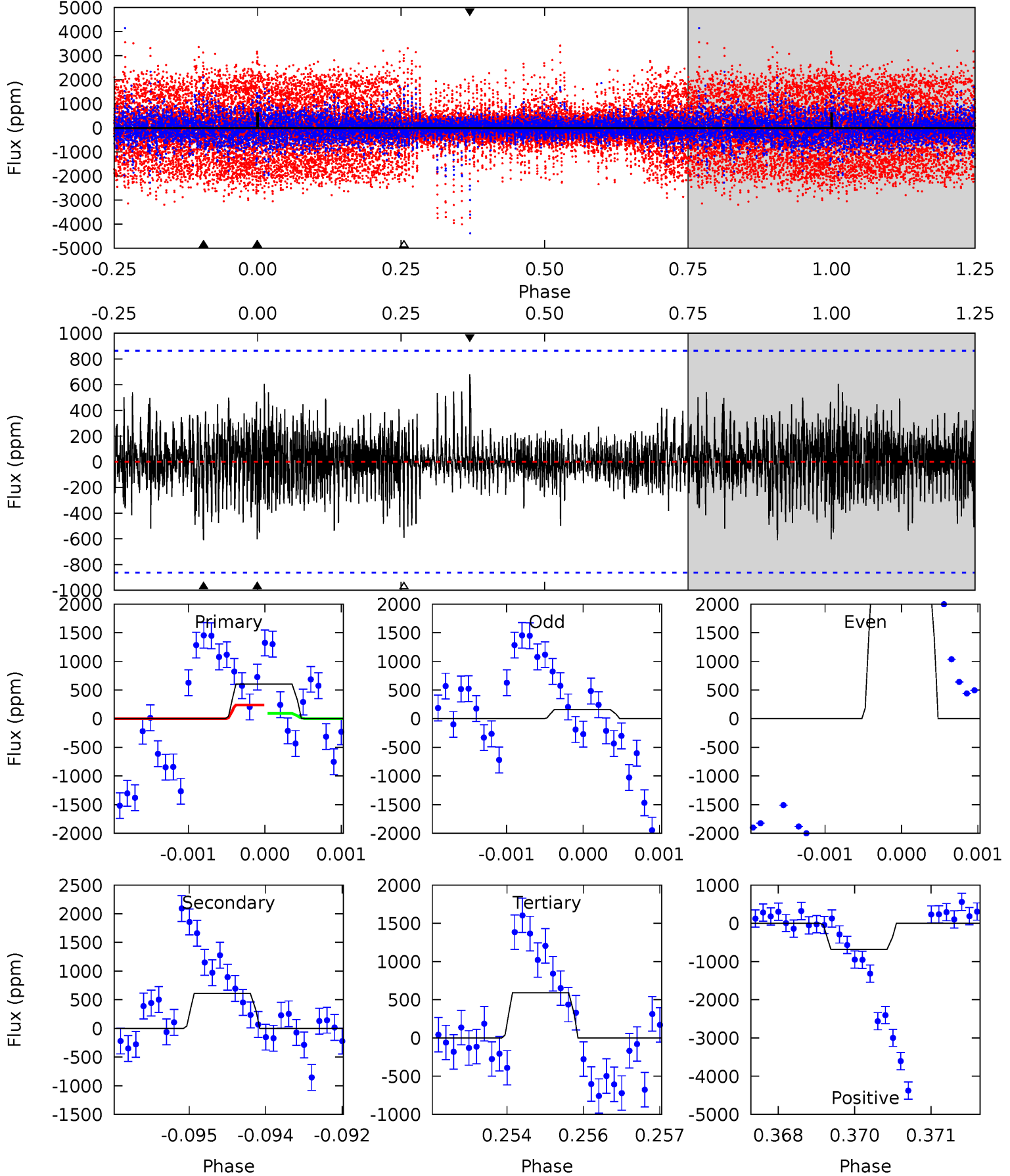
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008713594-02, $P = 175.088571$ Days, $E = 144.133030$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.79	3.83	3.72	4.27	5.42	3.24	0.94	0.07	-0.48	0.11	-0.44	6.21	-2.94	0.53	0.47



Stellar Parameters For KIC 008713594

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6549^{+182}_{-250}	$3.731^{+0.535}_{-0.094}$	$-0.220^{+0.250}_{-0.300}$	$2.727^{+0.479}_{-1.436}$	$1.461^{+0.211}_{-0.362}$	$0.101^{+0.636}_{-0.030}$
	+3%/-4%	+14%/-3%	+114%/-136%	+18%/-53%	+14%/-25%	+627%/-30%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008713594-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$19.48^{+21.31}_{-13.32}$	766^{+60}_{-104}	3822^{+25036}_{-27812}	$394^{+129785}_{-102660}$
Alt.	-610 ± 159	$18.56^{+24.08}_{-13.50}$	767^{+60}_{-98}	4109^{+2856}_{-954}	452^{+5107}_{-366}

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

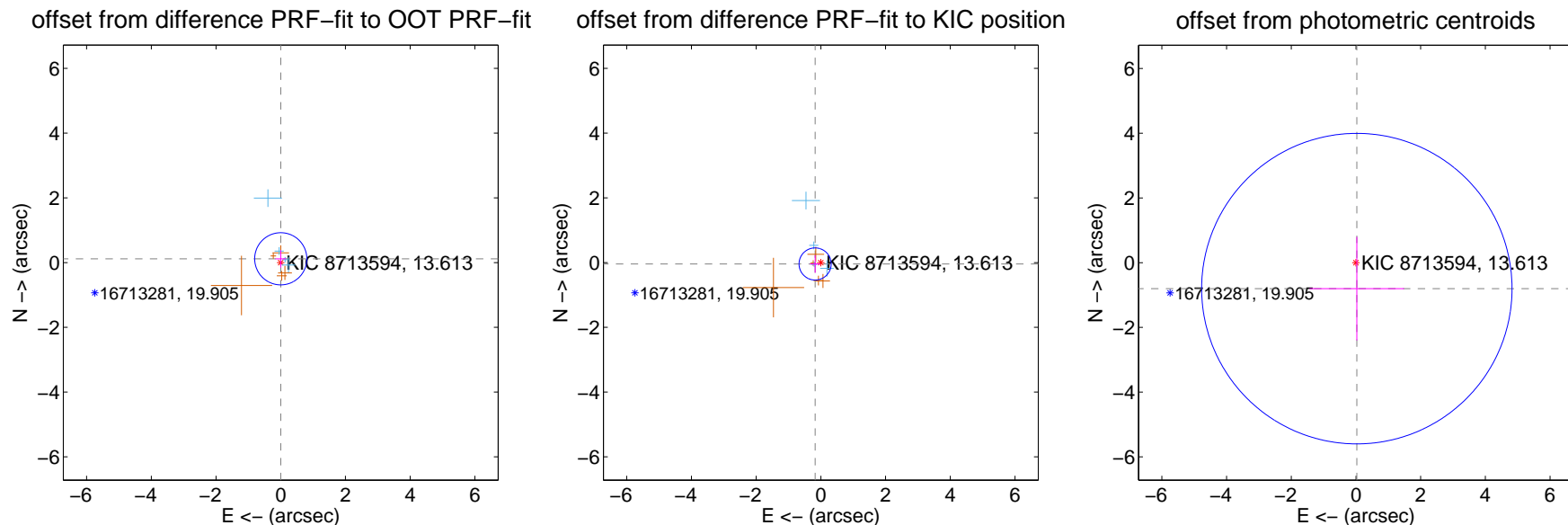
DV Centroid Data

Supplemental centroid analysis for 008713594-02. Kepler magnitude: 13.61. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

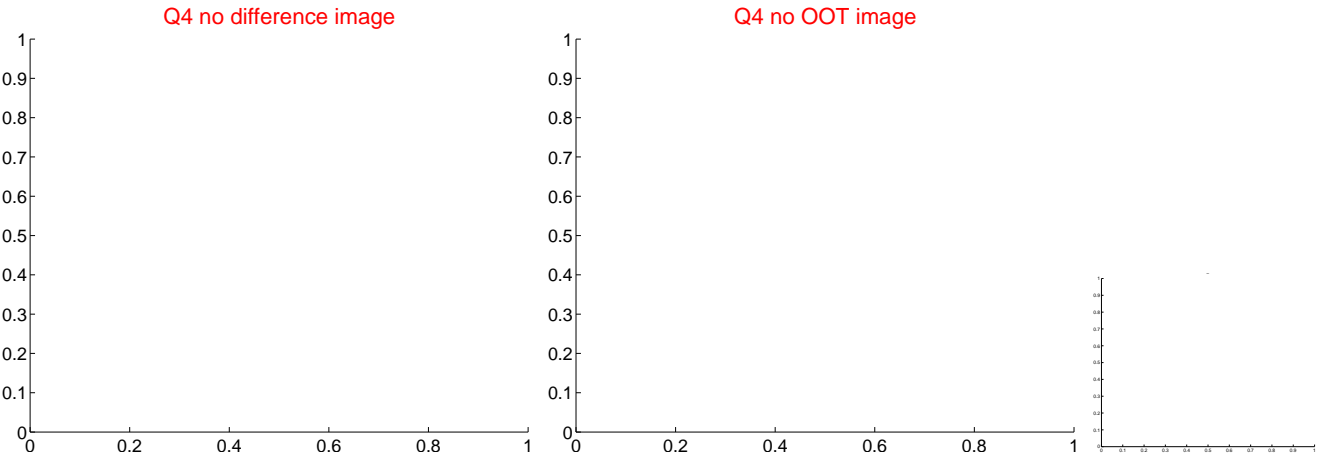
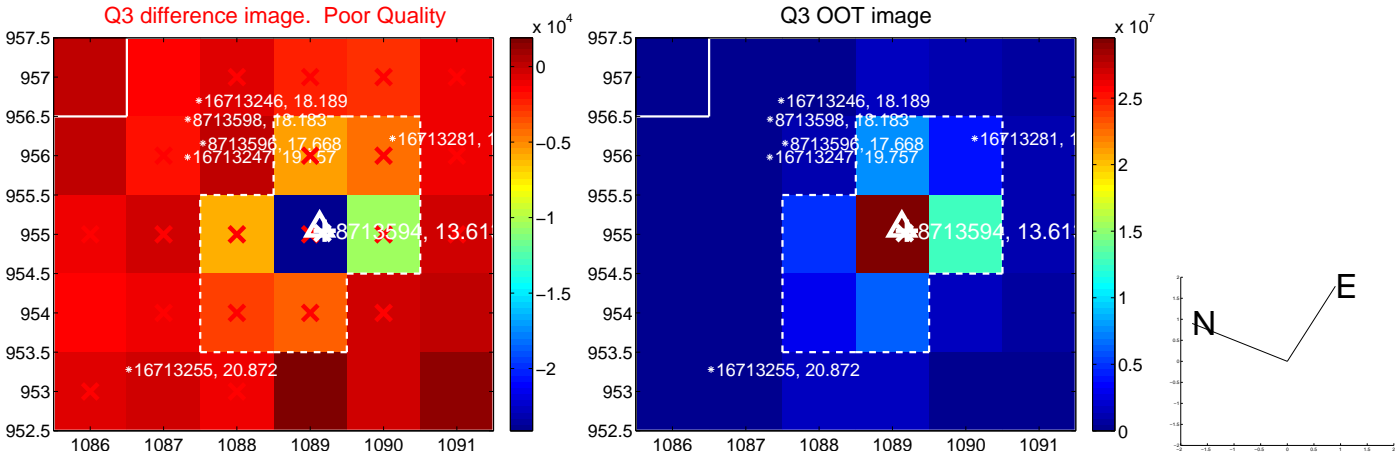
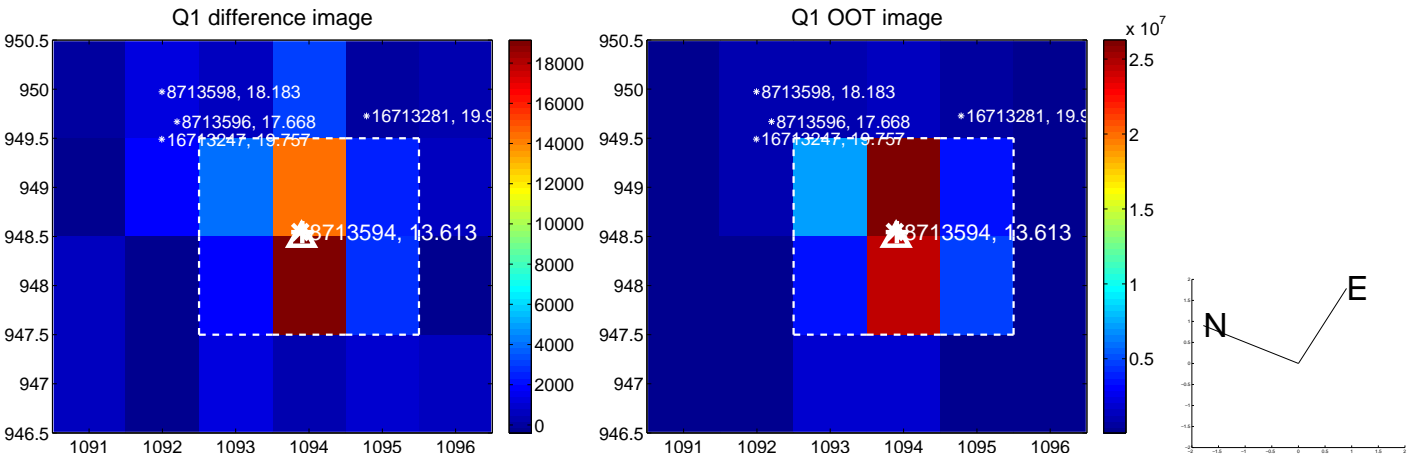
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.117 ± 0.269	0.44	-0.000 ± 0.165	0.117 ± 0.269
PRF-fit source offset from KIC position	0.183 ± 0.166	1.10	0.178 ± 0.159	-0.042 ± 0.274
photometric centroid source offset	0.80 ± 1.60	0.50	-0.03 ± 1.46	-0.80 ± 1.60

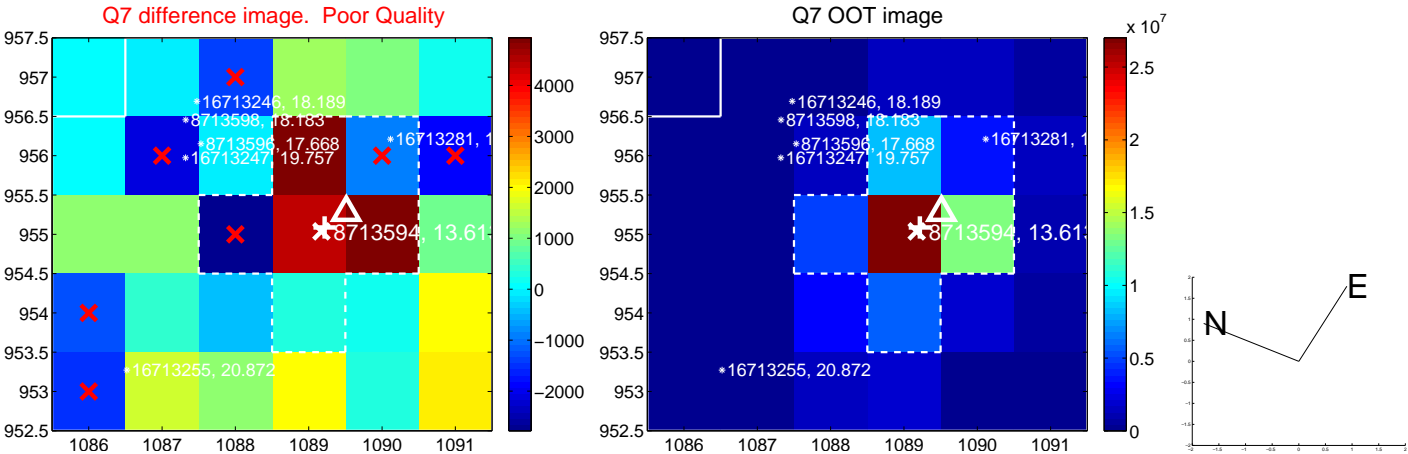
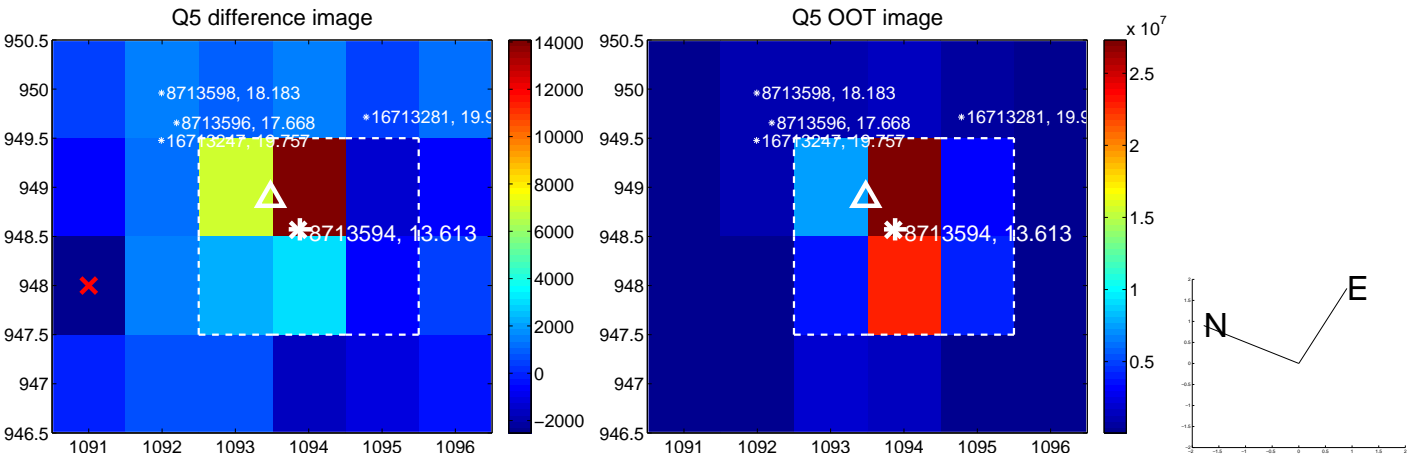


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

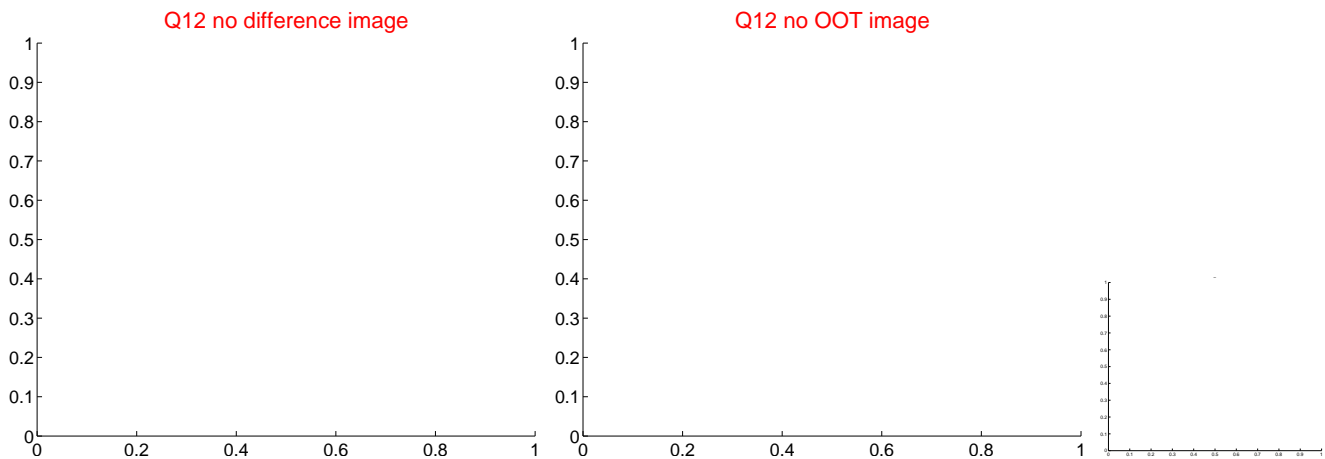
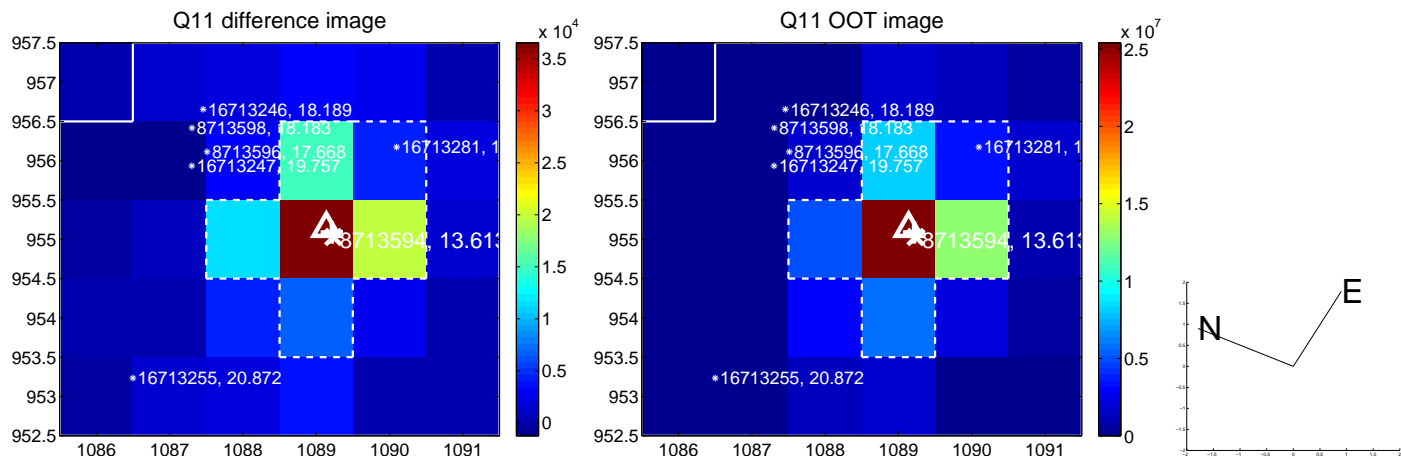
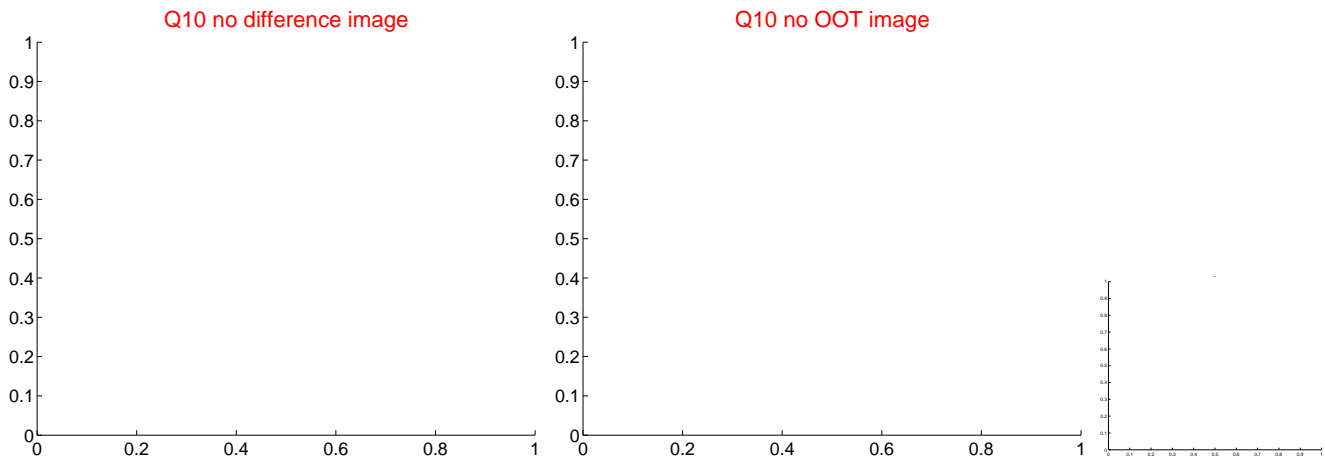
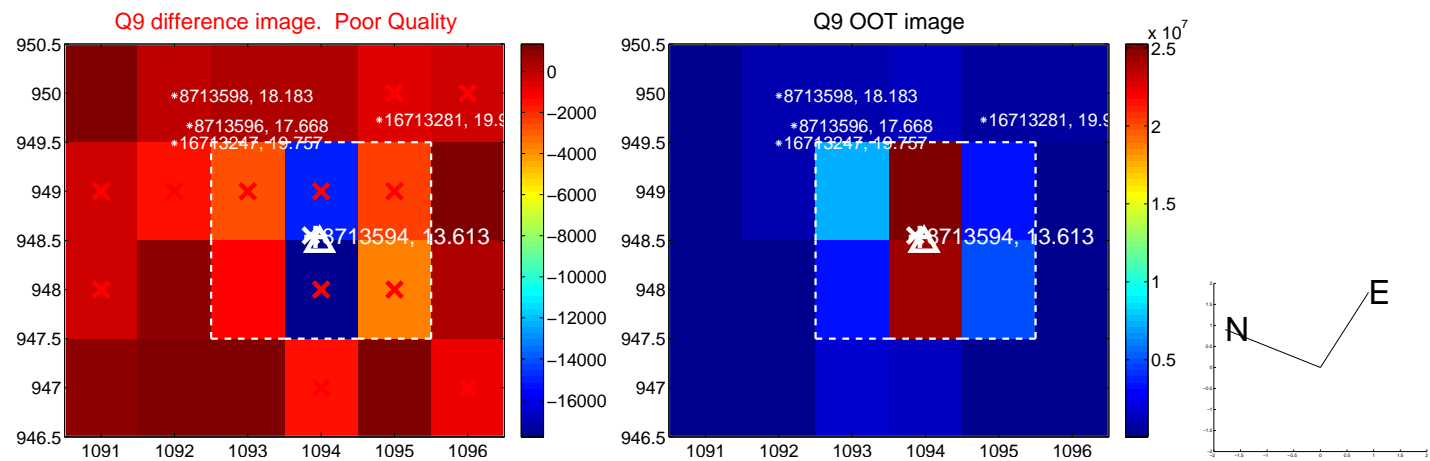
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



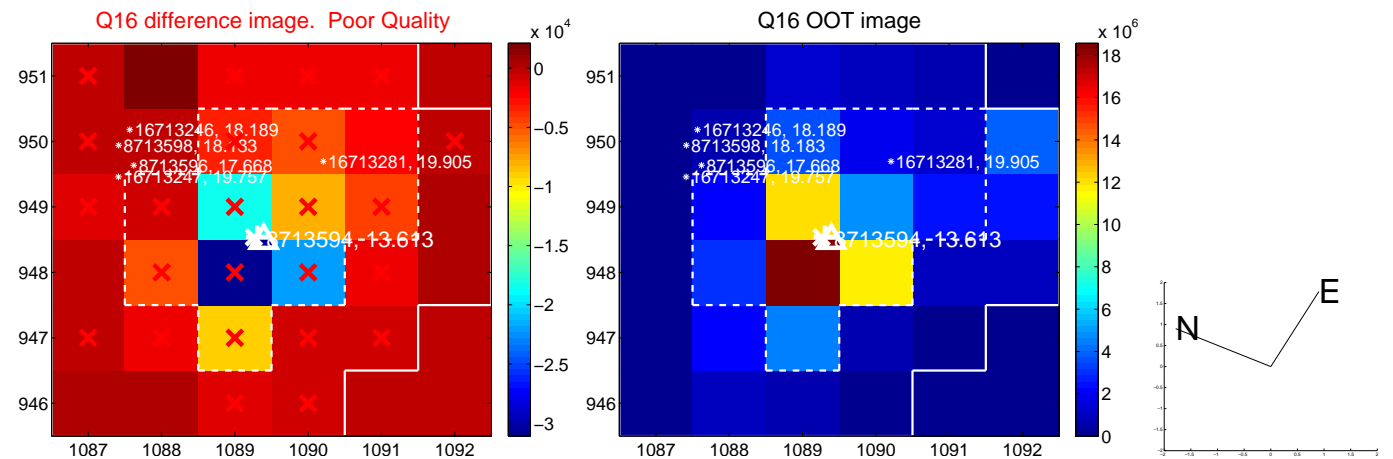
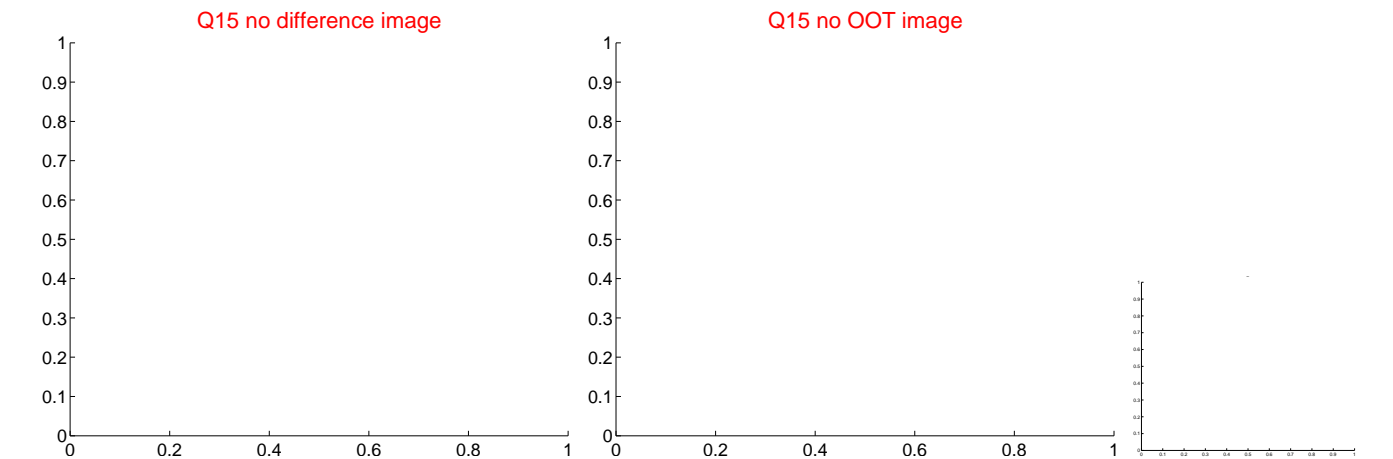
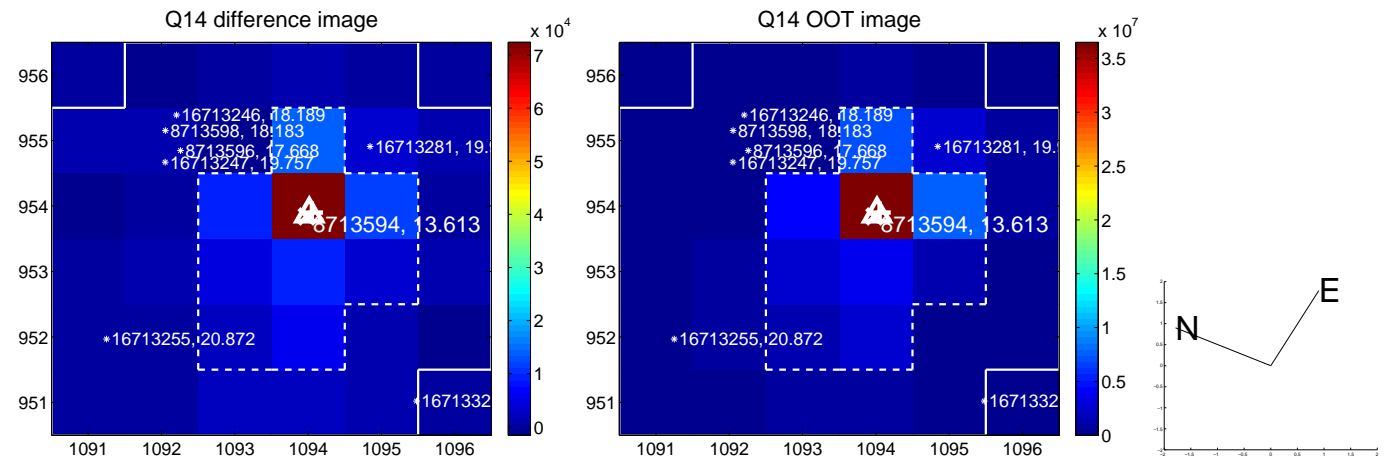
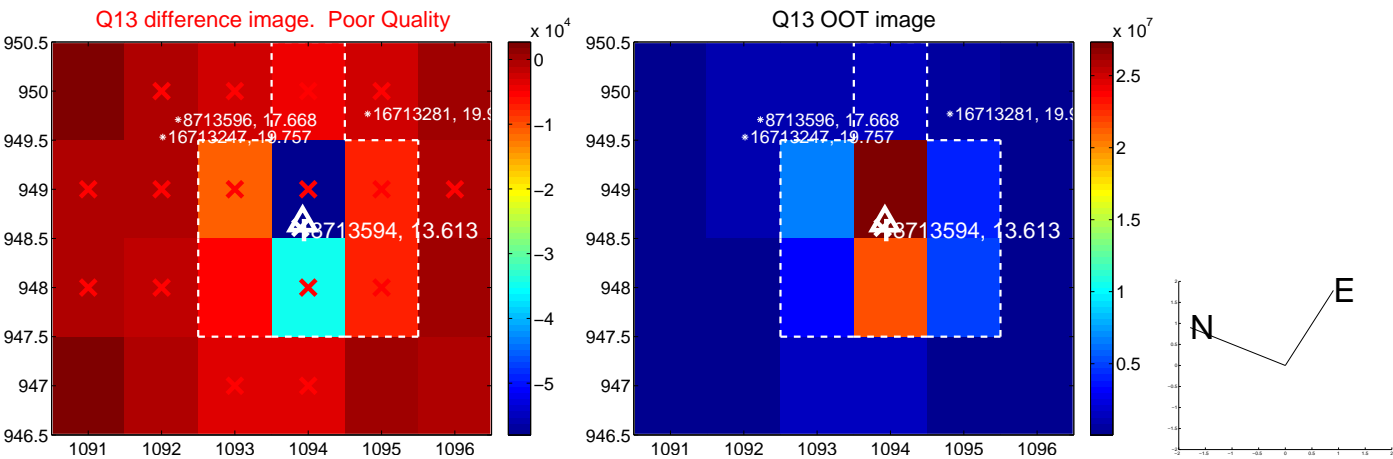
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



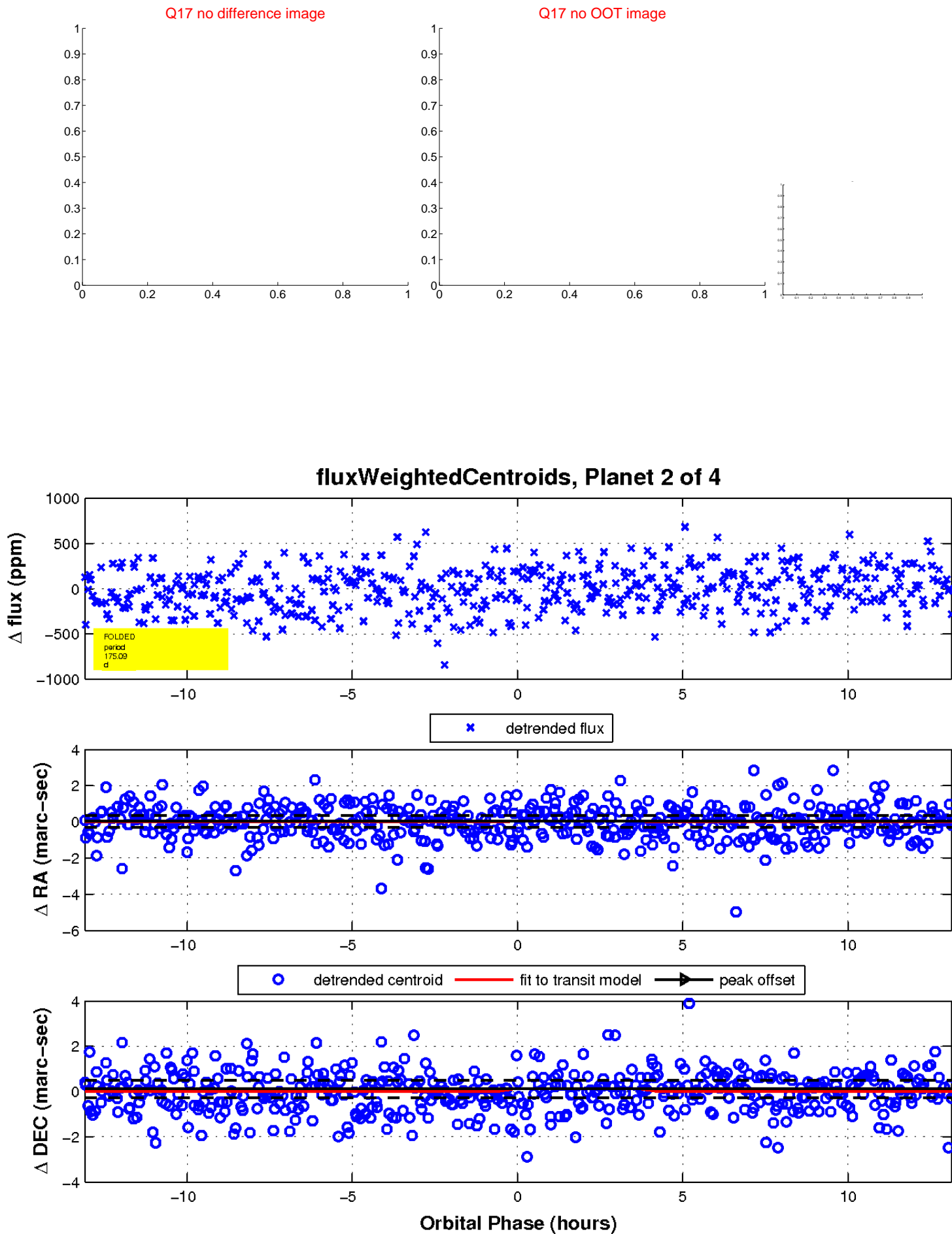
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

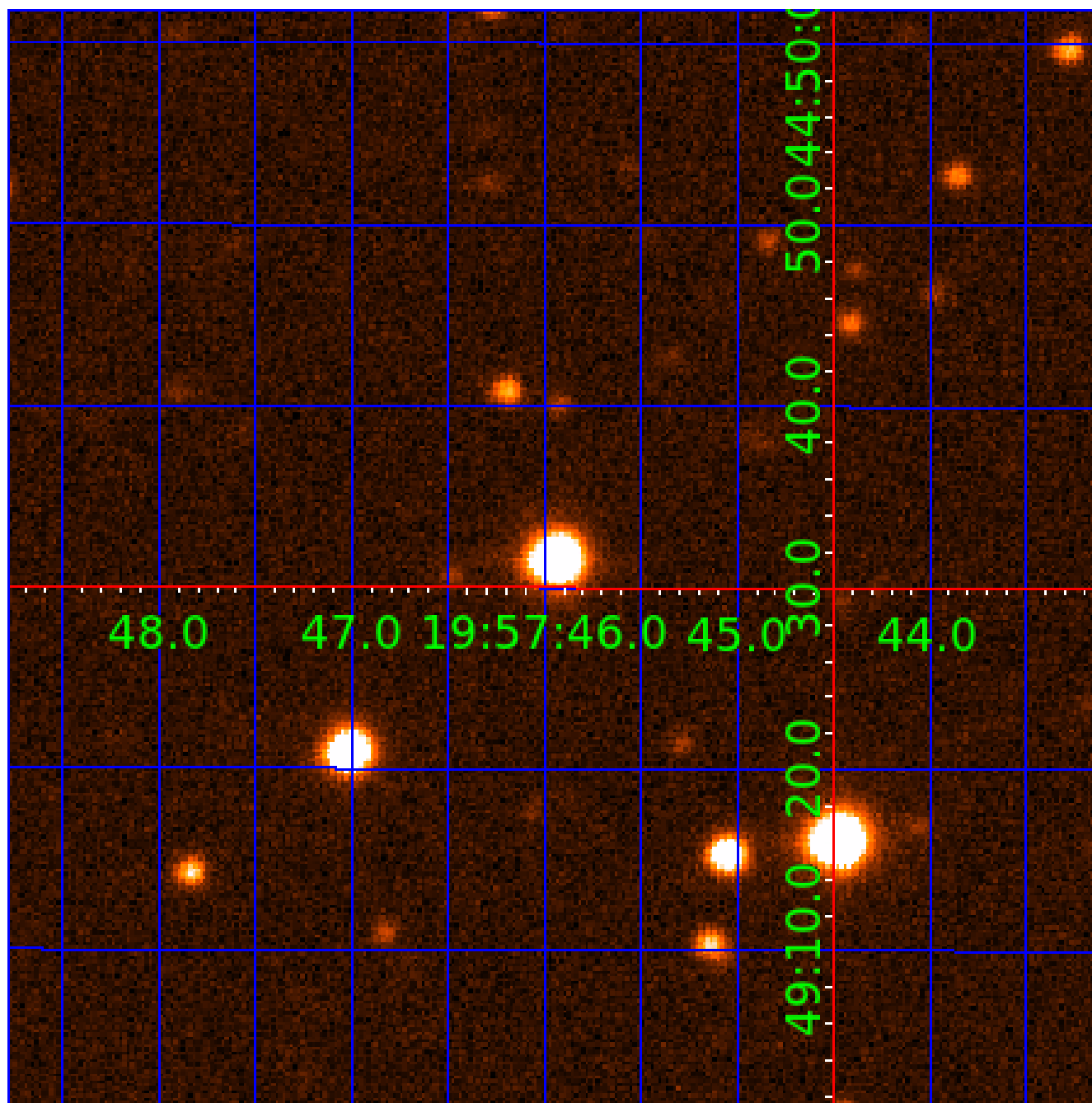


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008713594

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})
008713594-01	OBS	No	1.245742	131.811990	38.4	5.537	11.1	10.7	2.73	6549	1.80	18541.59
008713594-02	OBS	No	175.088571	143.984955	767.3	2.500	9.3	-1.0	2.73	6549	7.61	25.37
008713594-03	OBS	No	251.972855	133.891853	344.8	8.587	8.7	5.8	2.73	6549	5.31	15.62
008713594-04	OBS	No	101.647952	157.144895	337.4	6.000	7.9	-1.0	2.73	6549	5.04	52.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008713594-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008713594-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008713594-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008713594-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

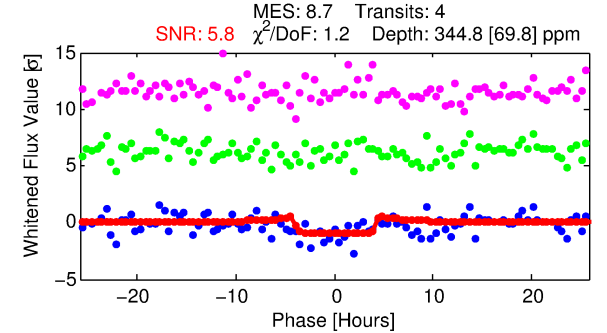
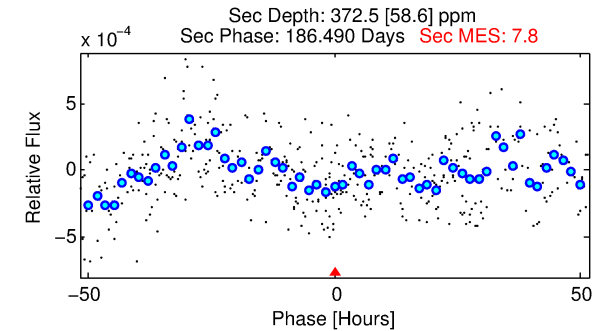
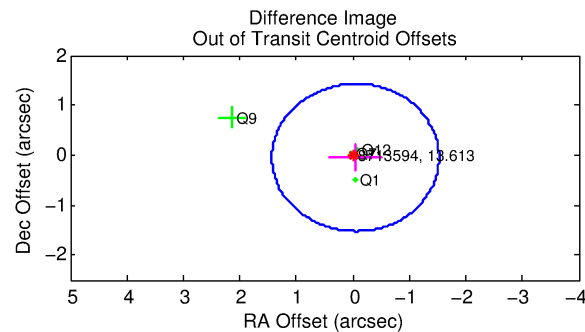
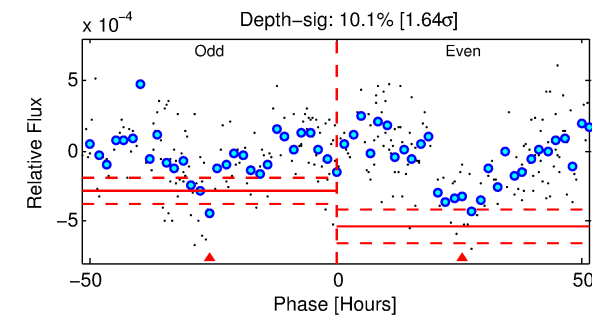
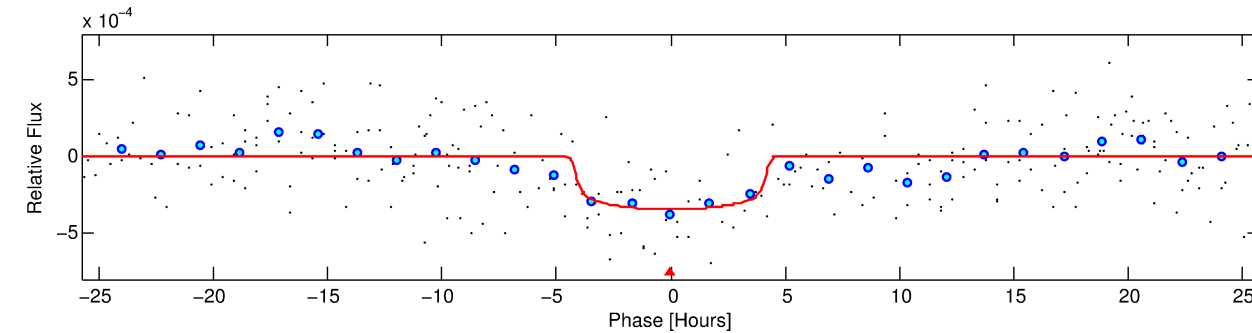
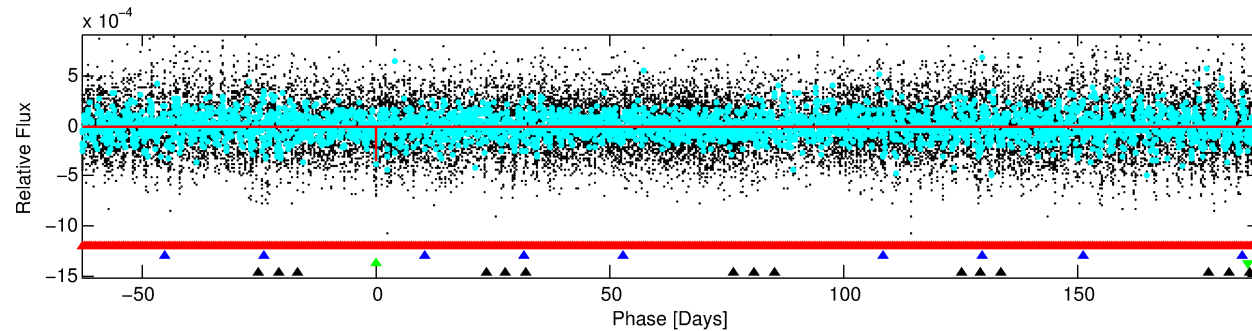
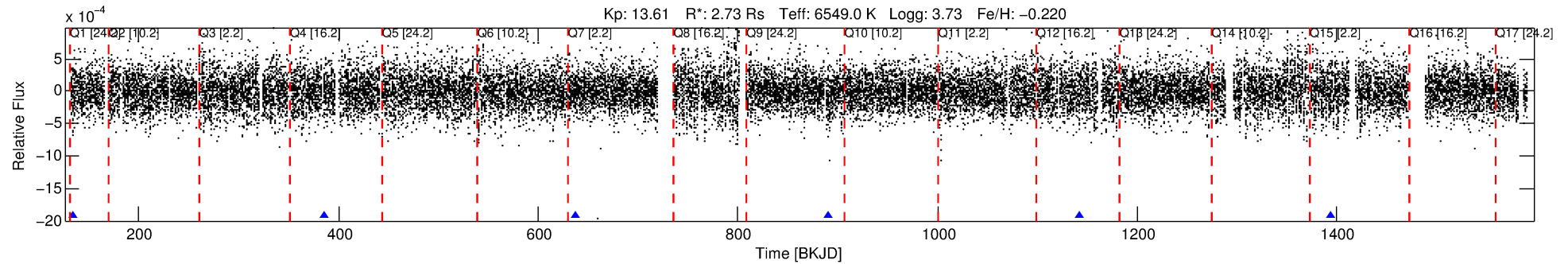
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008713594-03

No Significant Match Found

DV One-Page Summary

KIC: 8713594 Candidate: 3 of 4 Period: 251.973 d



DV Fit Results:

Period = 251.97285 [0.00591] d
Epoch = 133.8919 [0.0159] BKJD
Rp/R* = 0.0178 [0.0151]
a/R* = 184.63 [848.62]
b = 0.60 [4.97]
Seff = 15.62 [14.15]
Teq = 507 [115] K
Rp = 5.31 [5.30] Re
a = 0.8859 [0.4786] AU
Ag = 5711.15 [10994.46] [0.52 σ]
Teffp = 6813 [2916] K [2.16 σ]

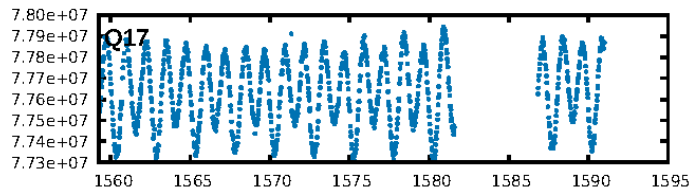
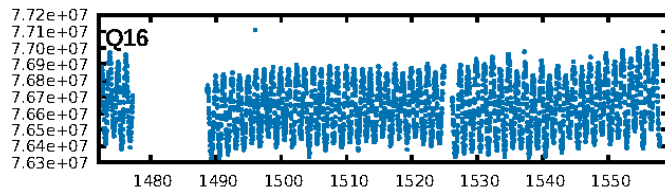
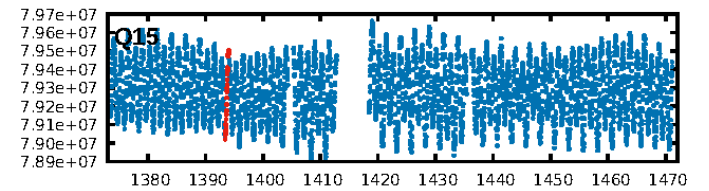
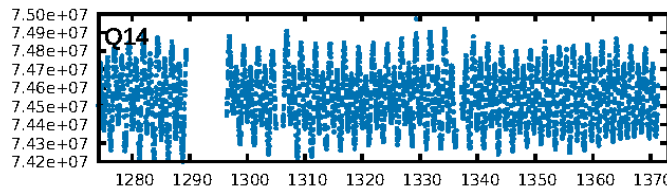
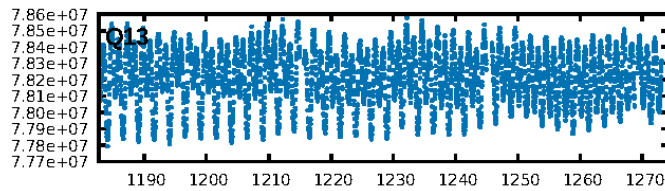
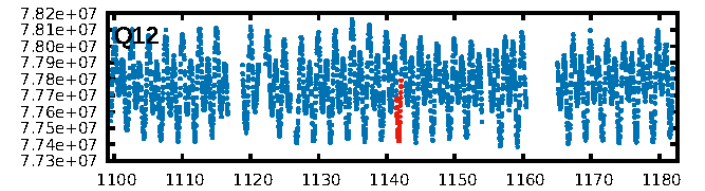
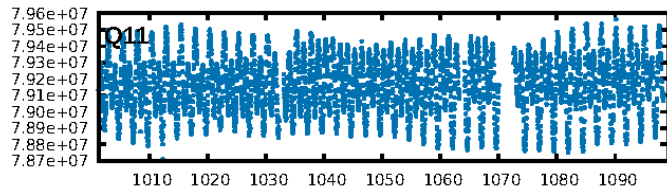
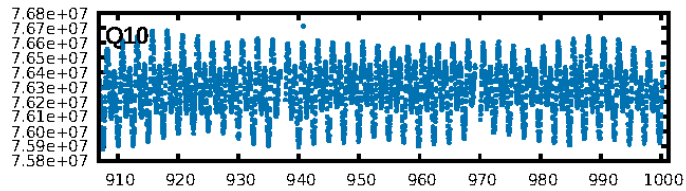
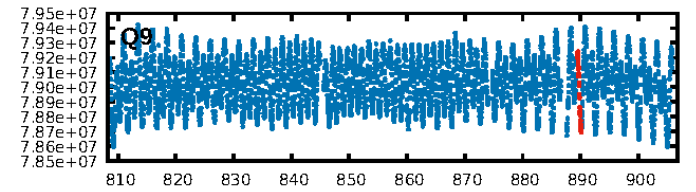
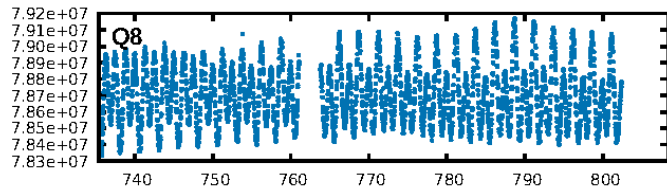
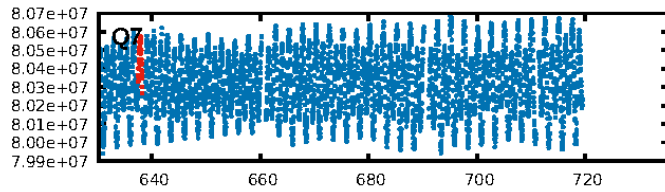
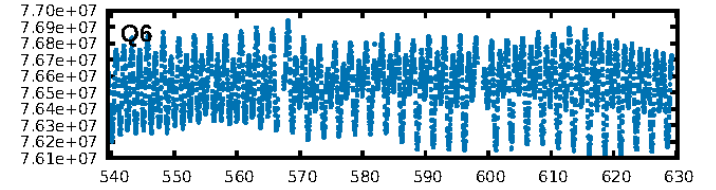
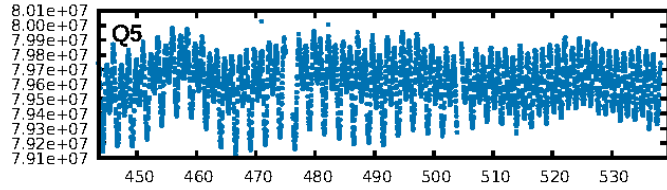
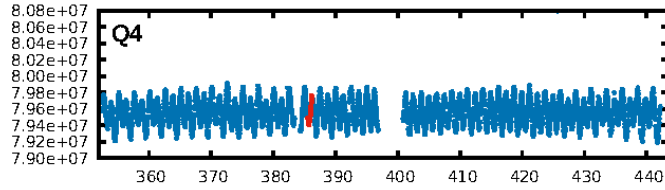
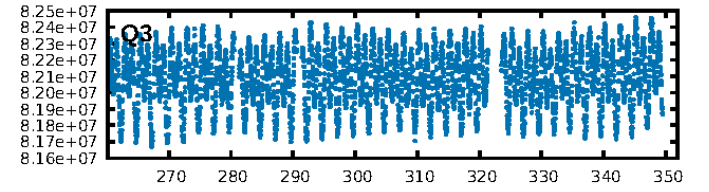
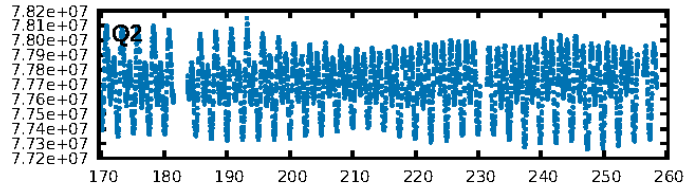
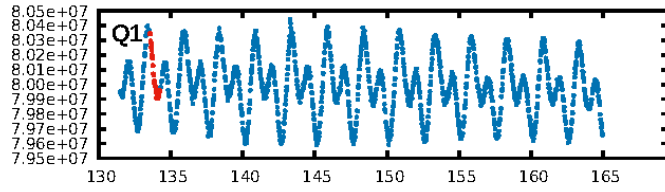
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [206.32 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 14.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.27e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.664
Centroid-sig: 3.0%
Centroid-so: 1.564 arcsec [1.59 σ]
OotOffset-rm: 0.067 arcsec [0.14 σ]
OotOffset-st: 0/1/1/2 [4]
KicOffset-rm: 0.307 arcsec [1.66 σ]
KicOffset-st: 0/1/1/2 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/4]

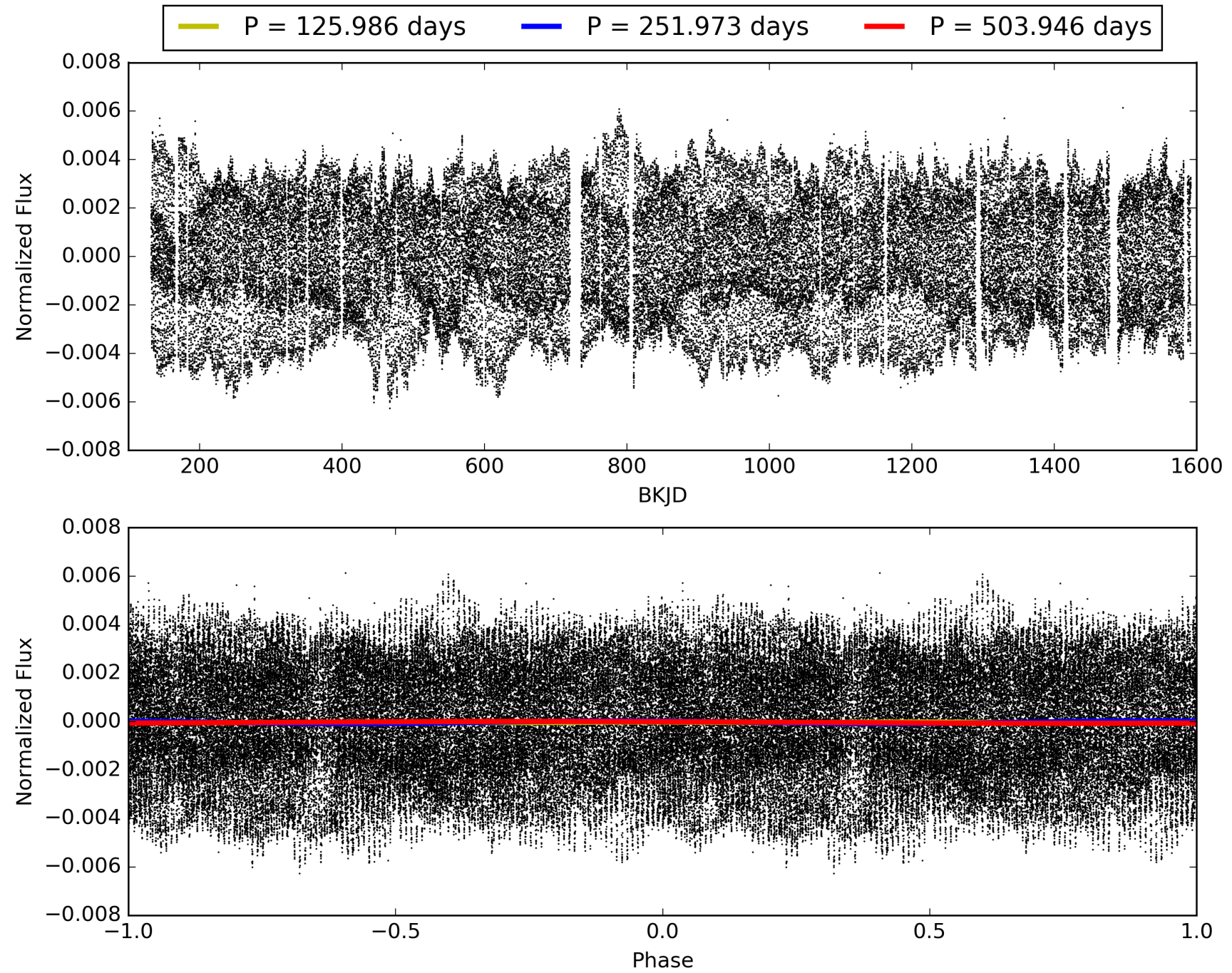
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:32:02 Z

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

TCE 008713594-03, PDC Light Curves

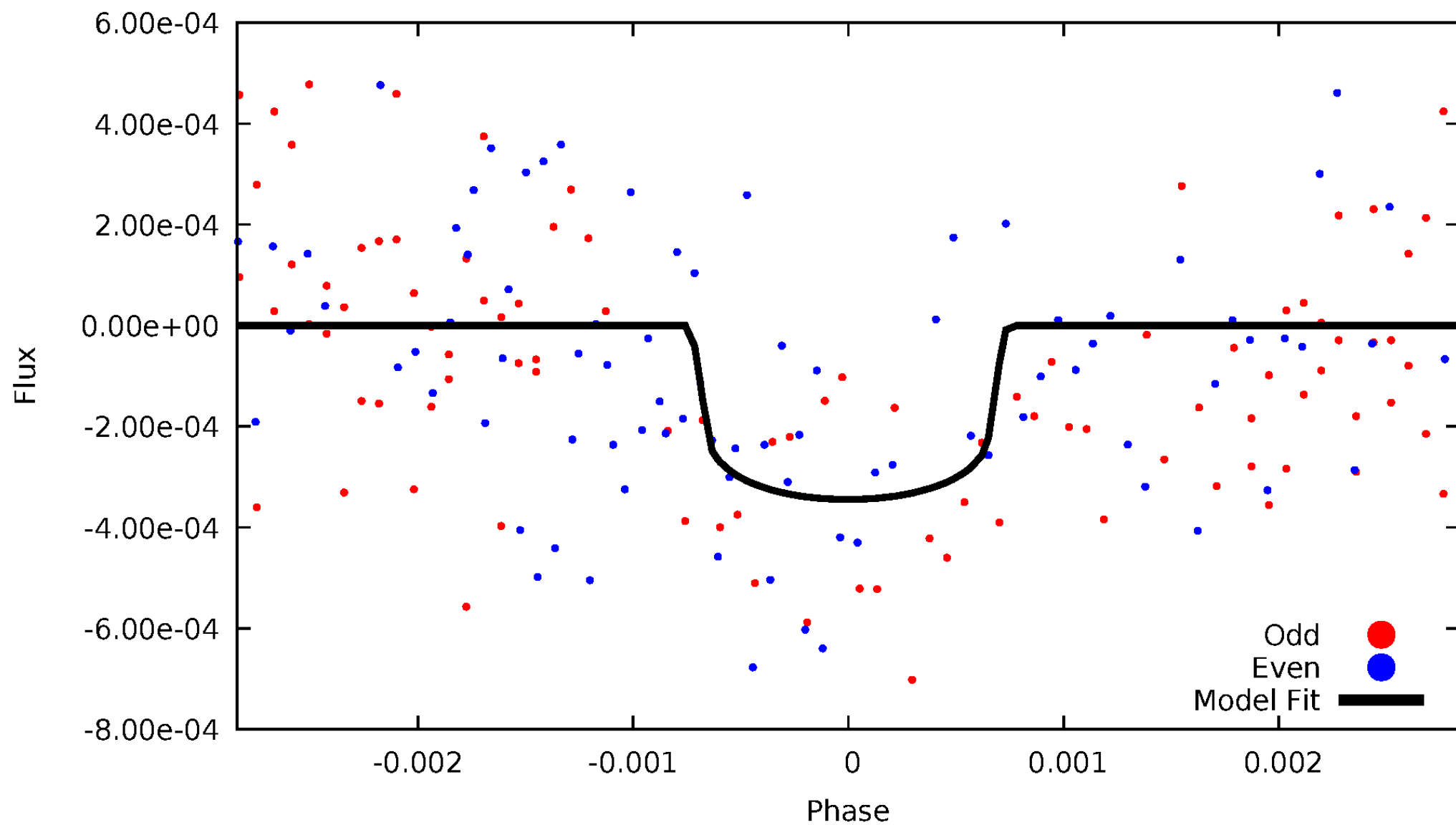


TCE 008713594-03



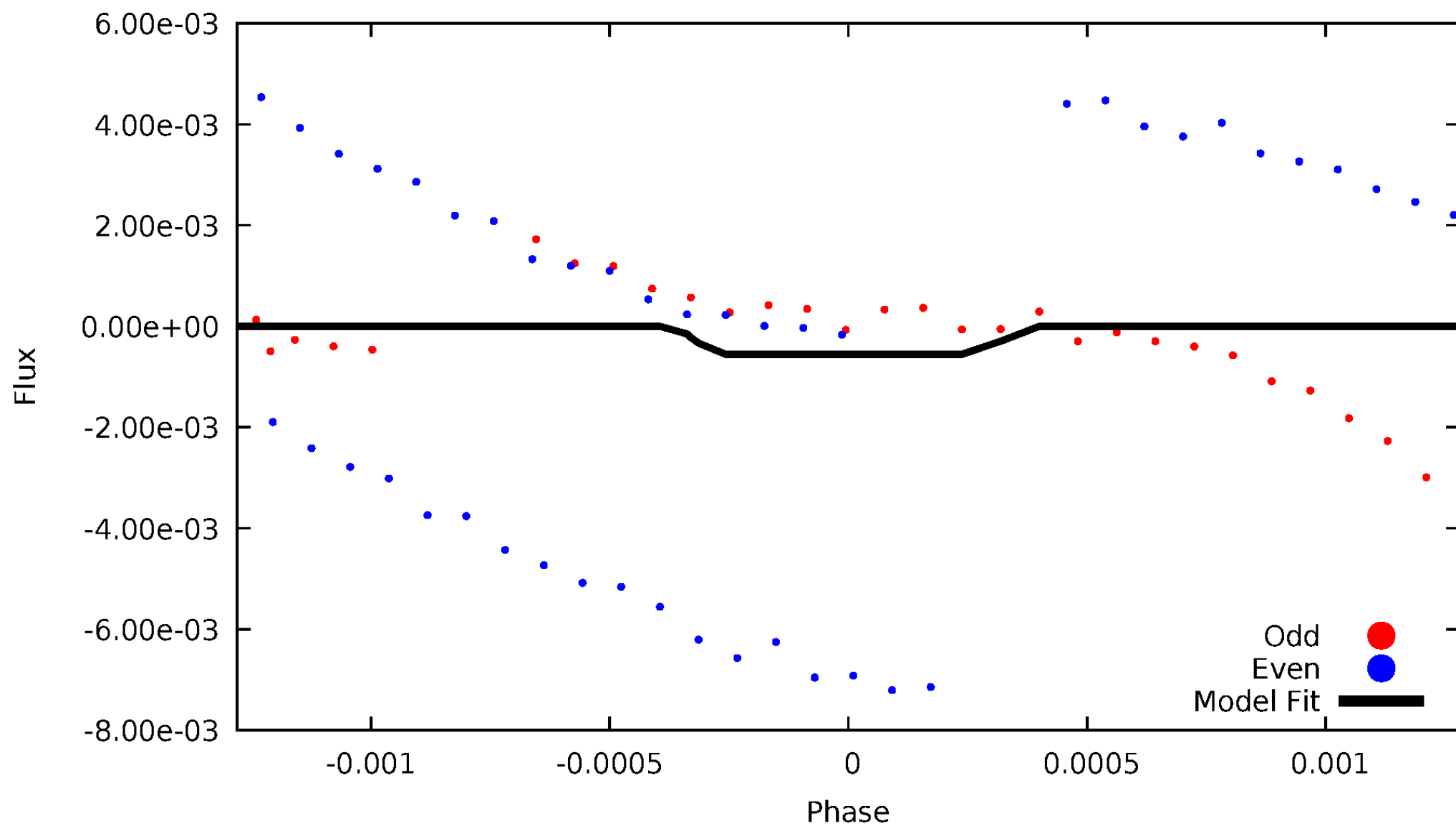
DV Odd/Even

TCE 008713594-03

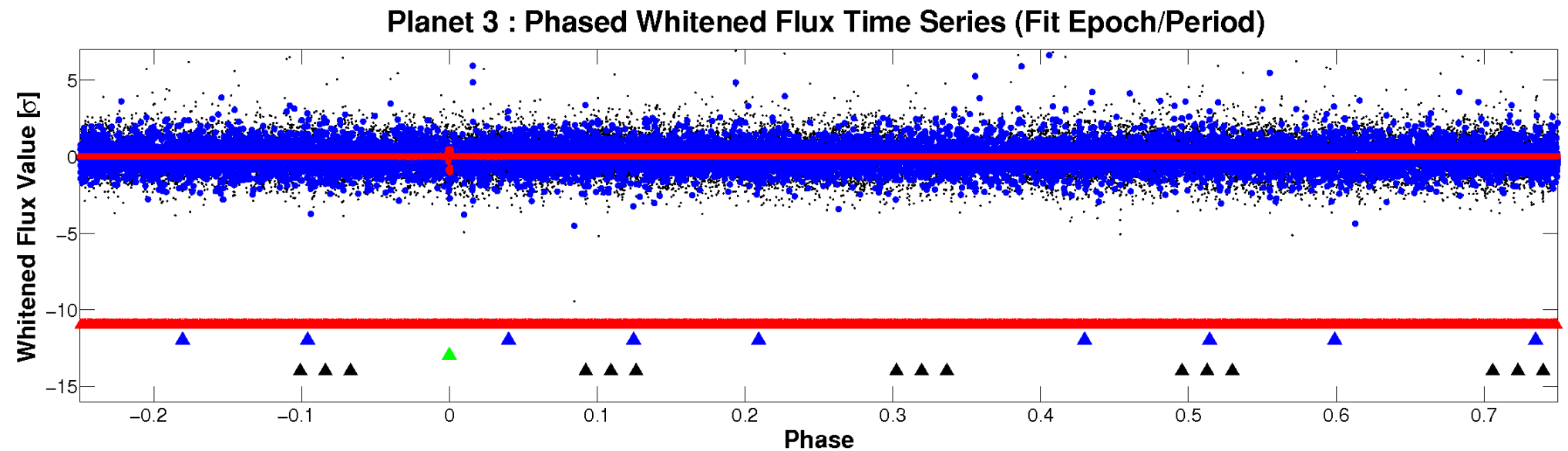
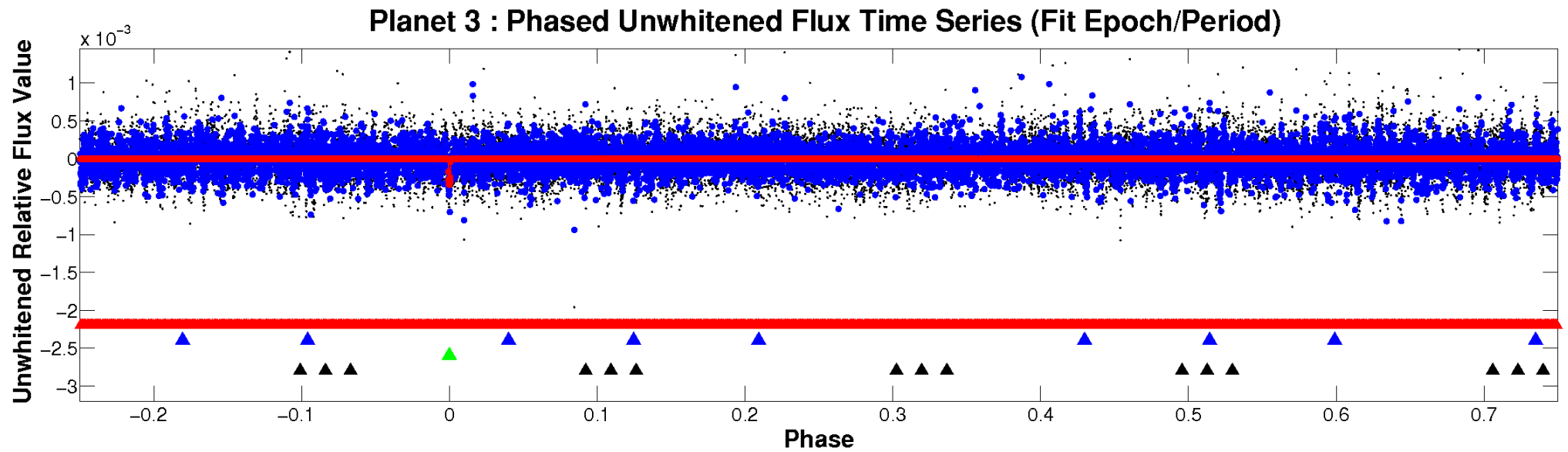


ALT Odd/Even

TCE 008713594-03

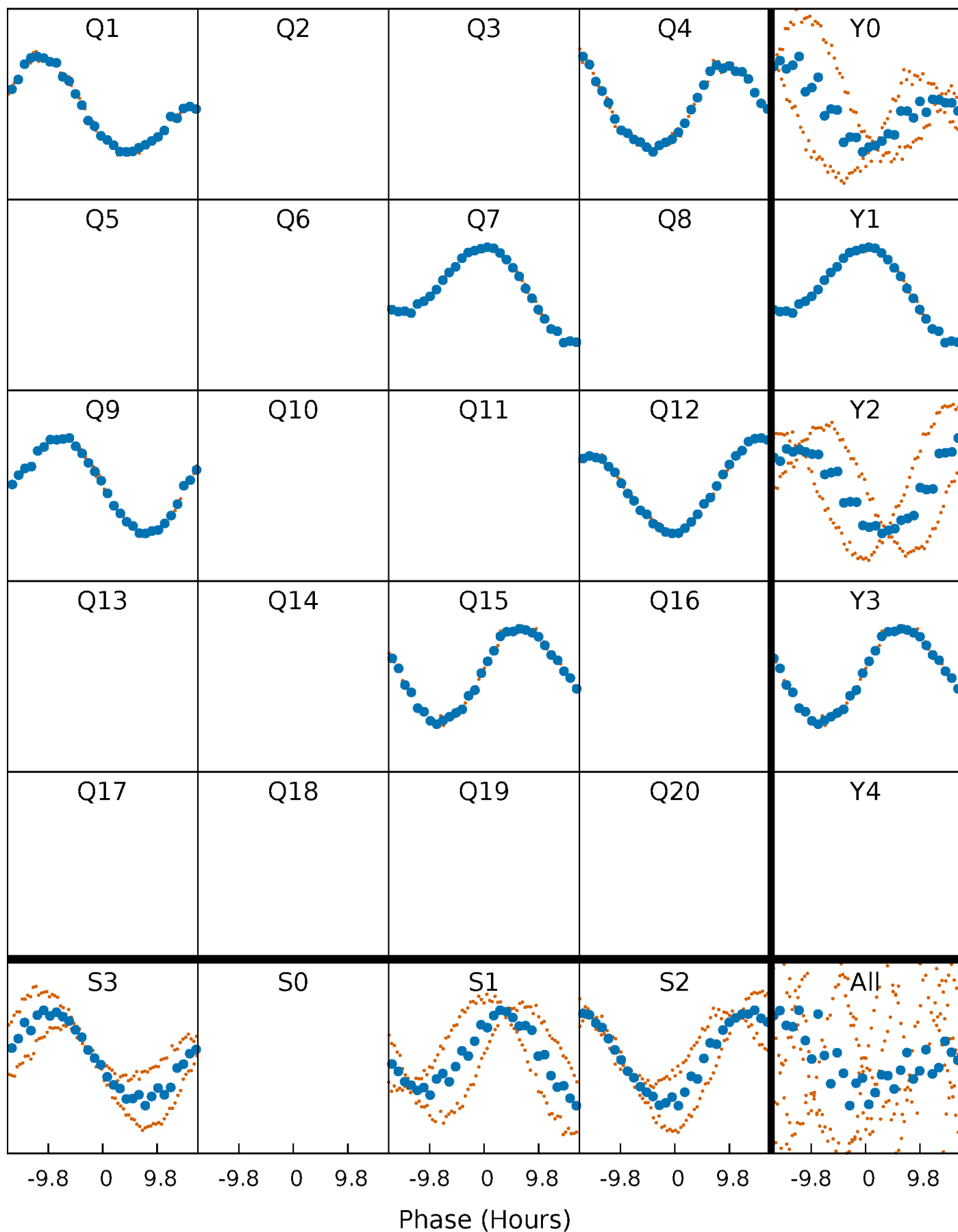


Non-Whitened Vs. Whitened Light Curve



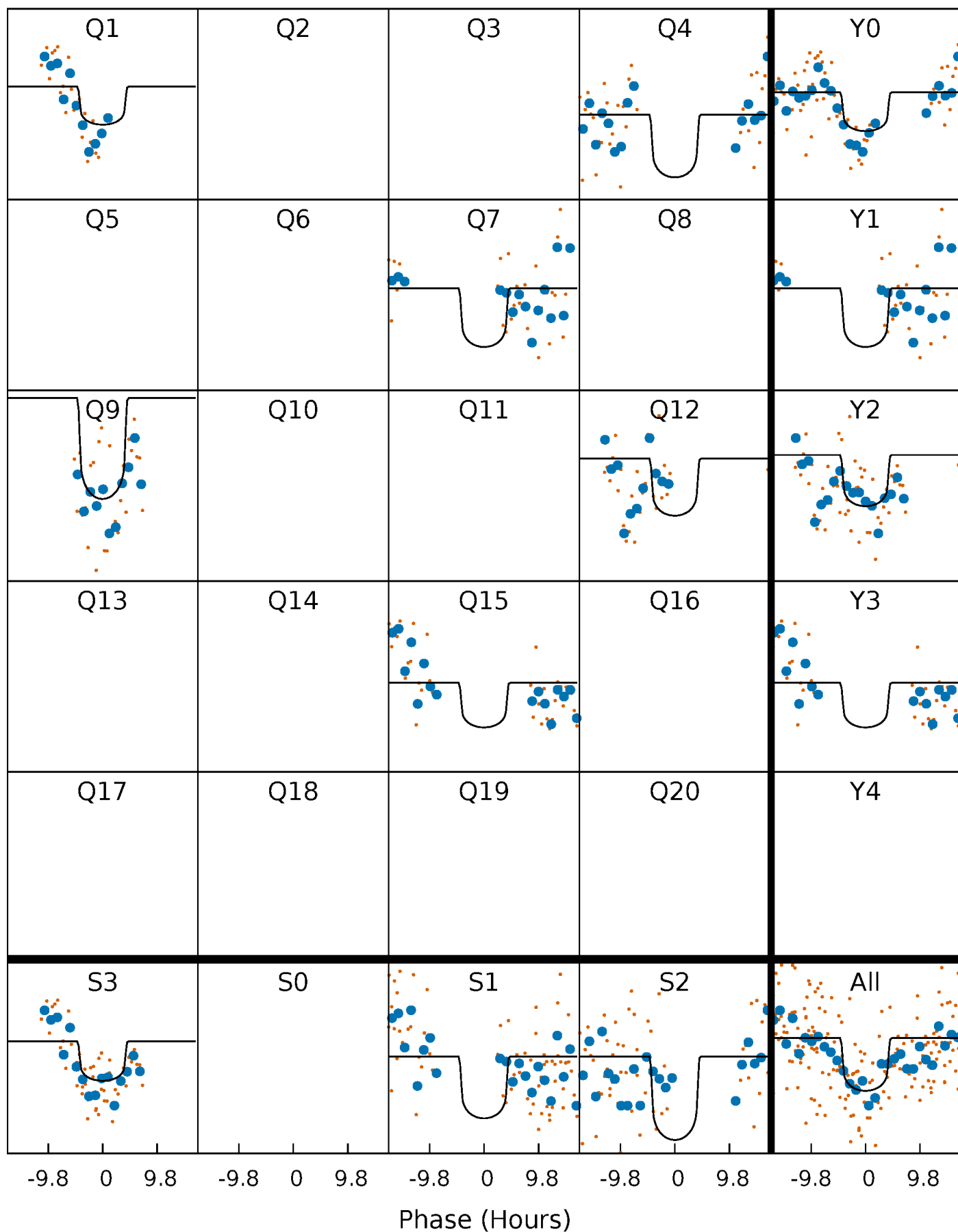
PDC Quarter-Phased Transit Curves

TCE 008713594-03 $P=251.972855$ Days $T_0=133.891853$ (BKJD)



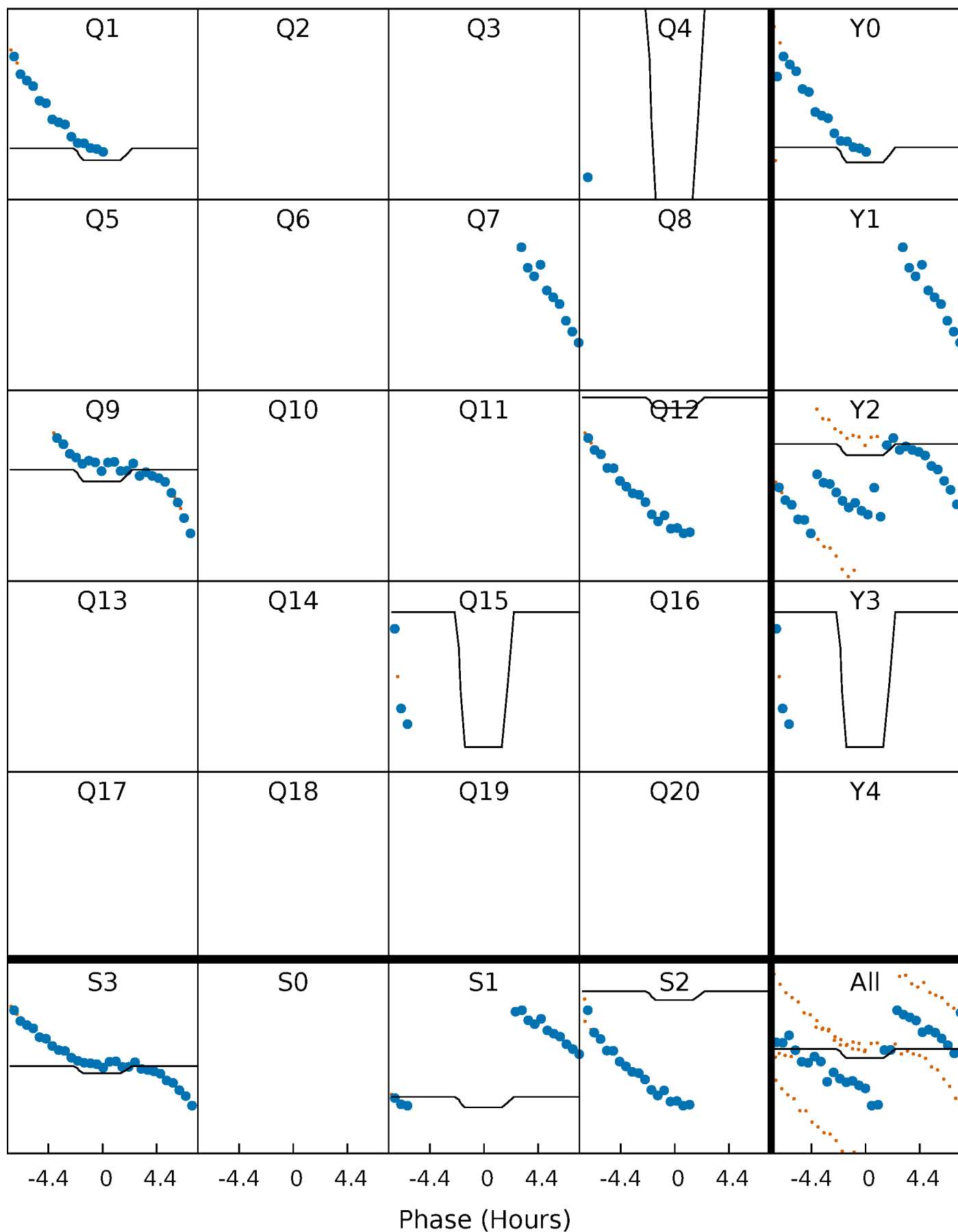
DV Quarter-Phased Transit Curves

TCE 008713594-03 $P=251.972855$ Days $T_0=133.891853$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

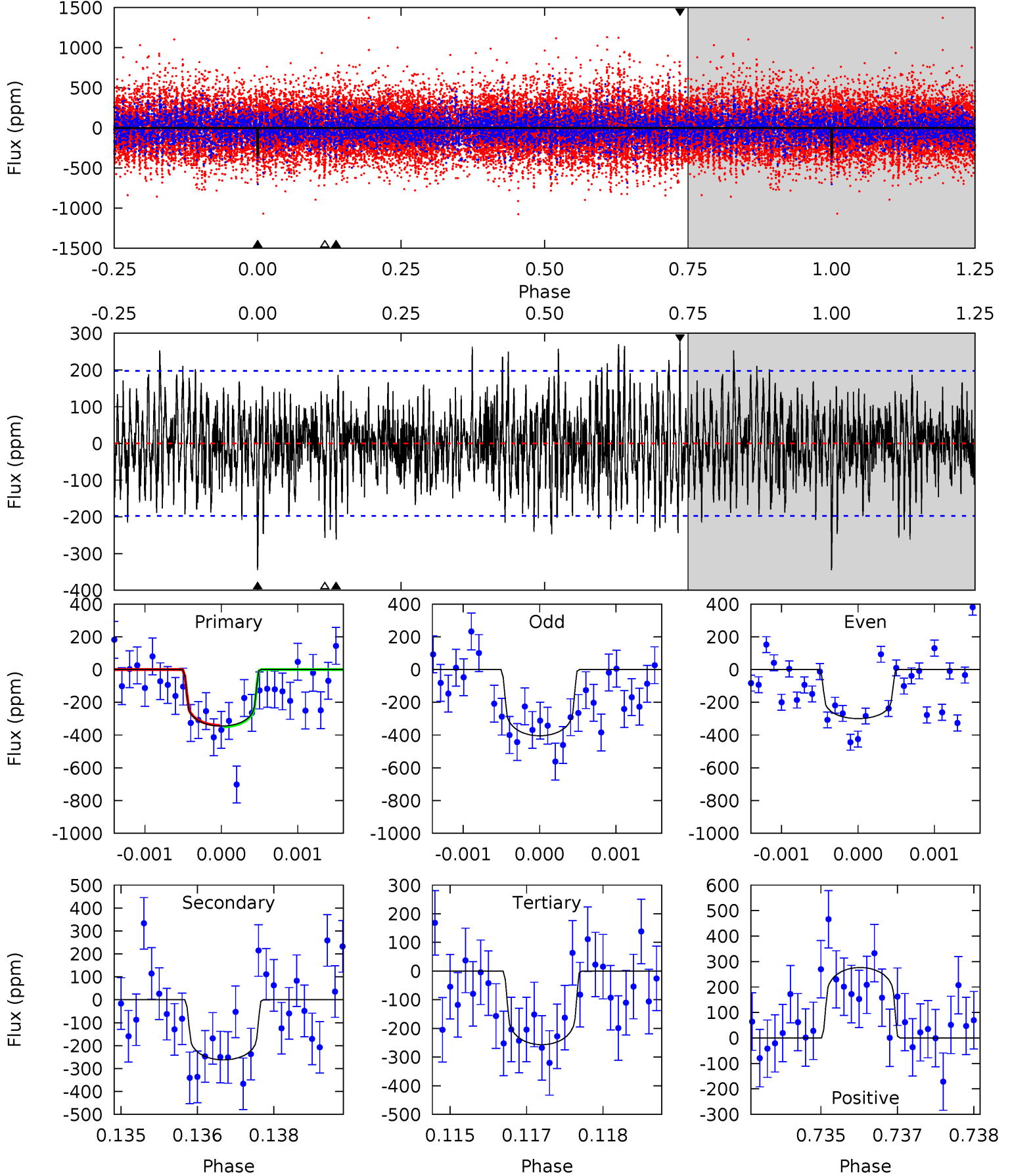
TCE 008713594-03 P=251.938984 Days $T_0=133.946826$ (BKJD)



DV Model-Shift Uniqueness Test

008713594-03, P = 251.972855 Days, E = 133.891853 Days

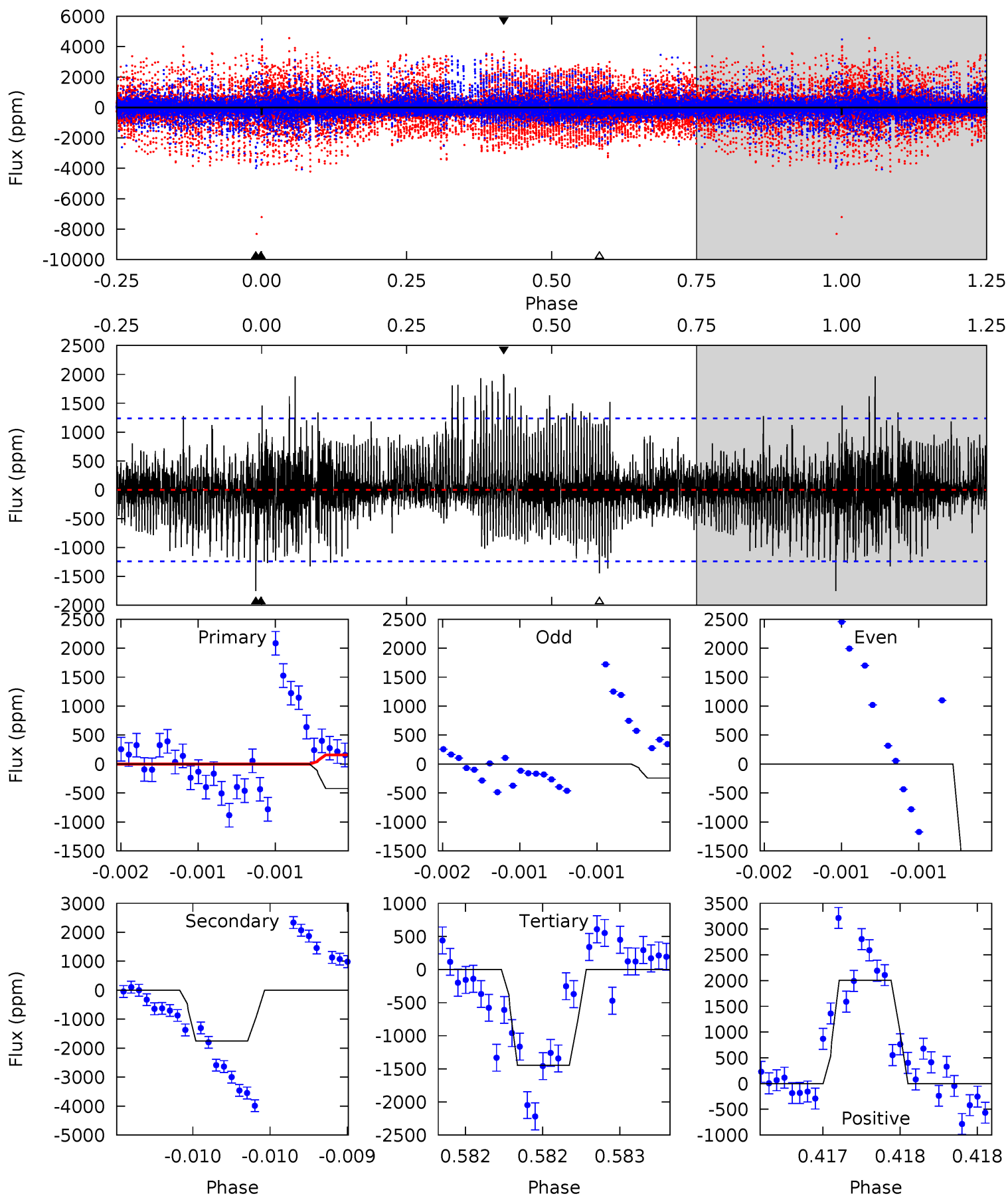
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.39	7.13	6.99	7.53	5.38	3.18	2.28	2.40	1.86	0.14	-0.40	1.40	1.00	0.45	0.13



Alt Model-Shift Uniqueness Test

008713594-03, P = 251.938984 Days, E = 133.946826 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.88	7.78	6.43	8.92	5.51	3.38	1.74	-4.55	-7.03	1.35	-1.14	11.2	-90.7	0.53	6.60



Stellar Parameters For KIC 008713594

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6549^{+182}_{-250}	$3.731^{+0.535}_{-0.094}$	$-0.220^{+0.250}_{-0.300}$	$2.727^{+0.479}_{-1.436}$	$1.461^{+0.211}_{-0.362}$	$0.101^{+0.636}_{-0.030}$
	+3%/-4%	+14%/-3%	+114%/-136%	+18%/-53%	+14%/-25%	+627%/-30%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008713594-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-262 ± 37	$5.35^{+4.02}_{-3.26}$	679^{+55}_{-95}	5735^{+3650}_{-1133}	3991^{+19687}_{-2691}
Alt.	-1750 ± 225	$6.56^{+4.89}_{-3.53}$	686^{+51}_{-86}	8818^{+7526}_{-2214}	17378^{+63272}_{-11316}

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

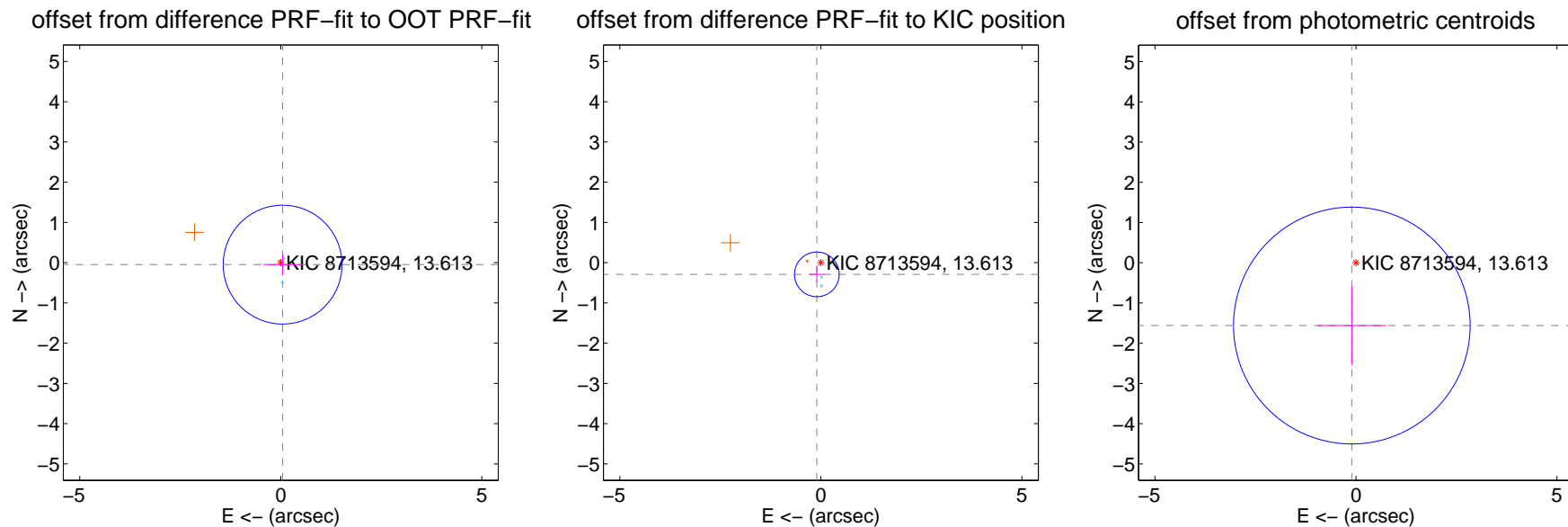
DV Centroid Data

Supplemental centroid analysis for 008713594-03. Kepler magnitude: 13.61. Transit SNR 5.75

There are 2 quarters with good PRF difference image offsets

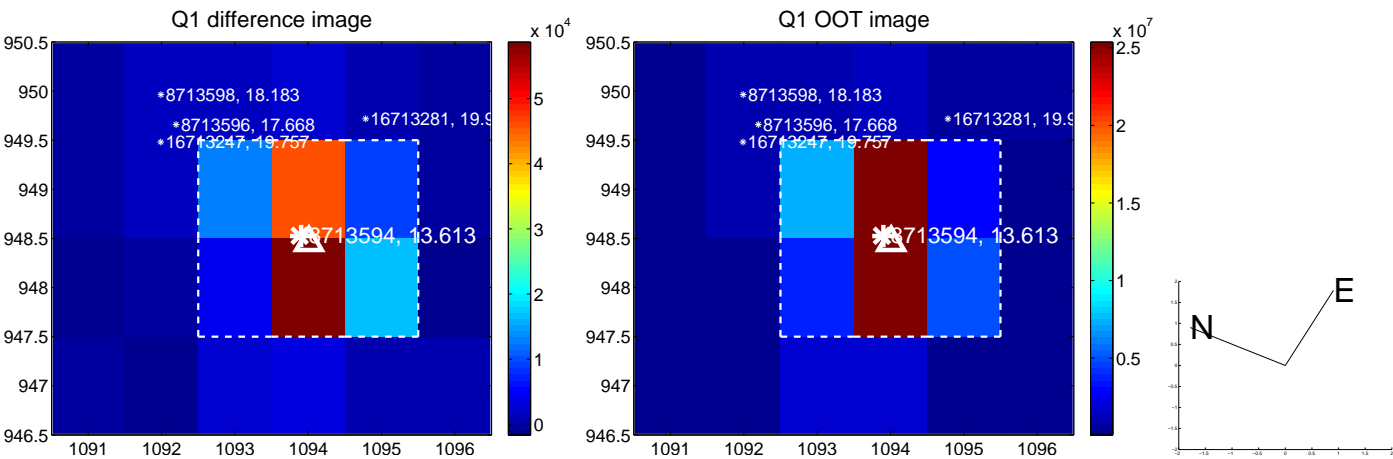
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.067 ± 0.492	0.14	-0.046 ± 0.469	-0.048 ± 0.257
PRF-fit source offset from KIC position	0.307 ± 0.185	1.66	0.100 ± 0.181	-0.290 ± 0.185
photometric centroid source offset	1.56 ± 0.98	1.59	0.10 ± 0.86	-1.56 ± 0.98

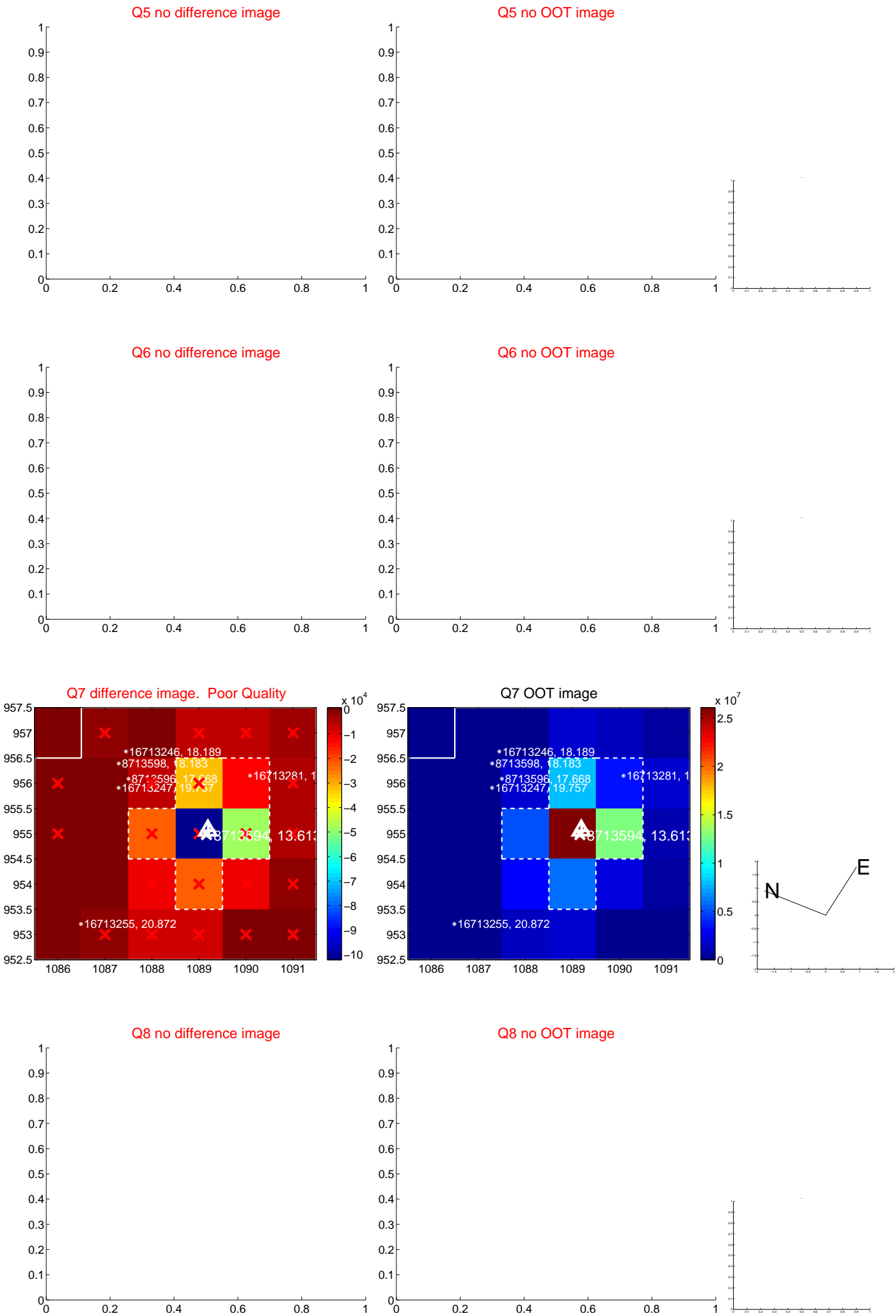


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

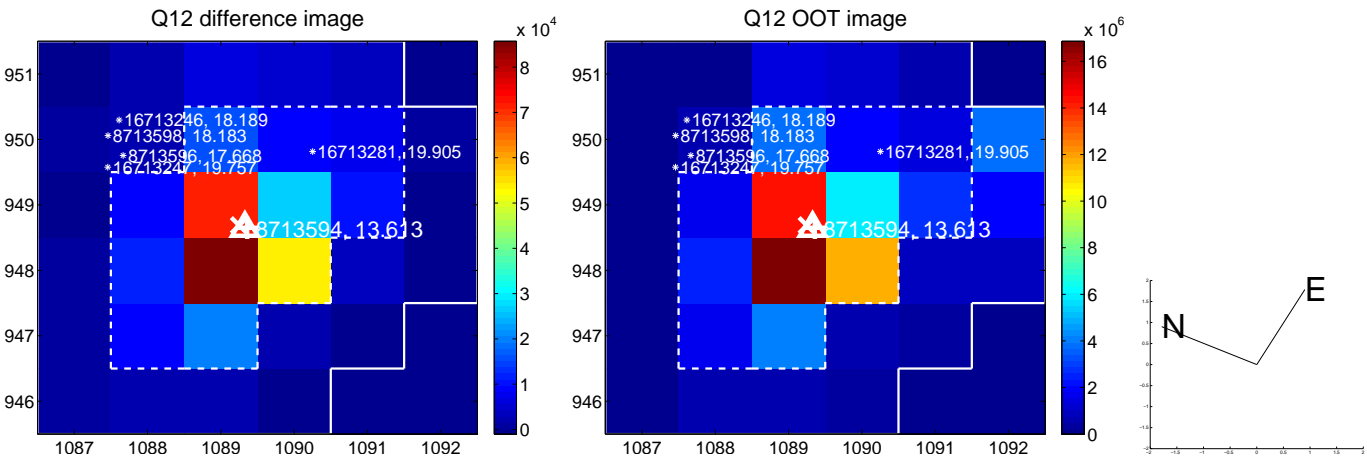
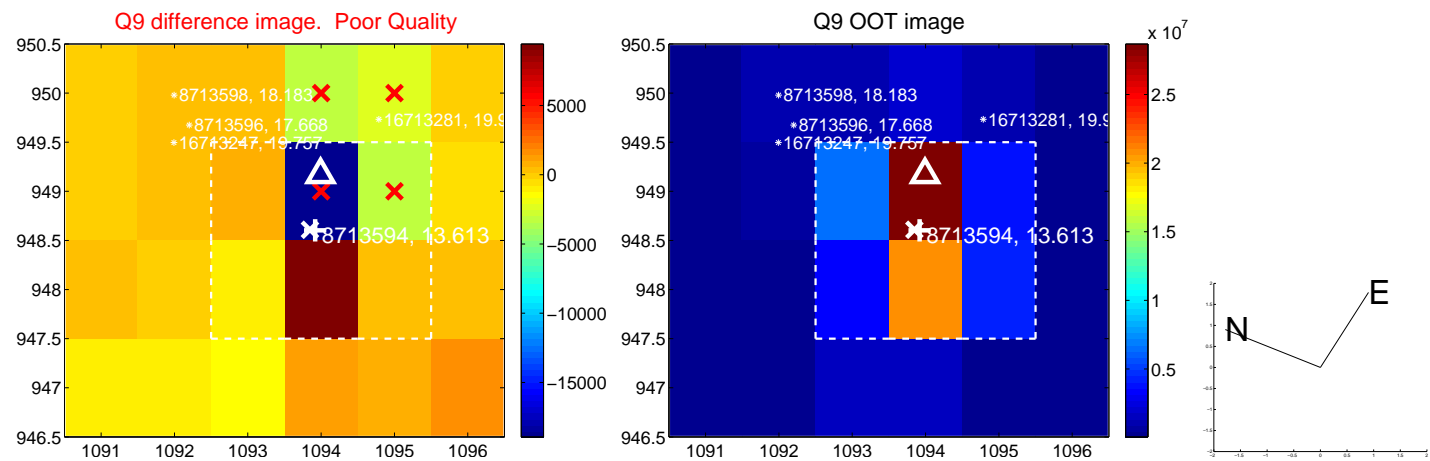
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



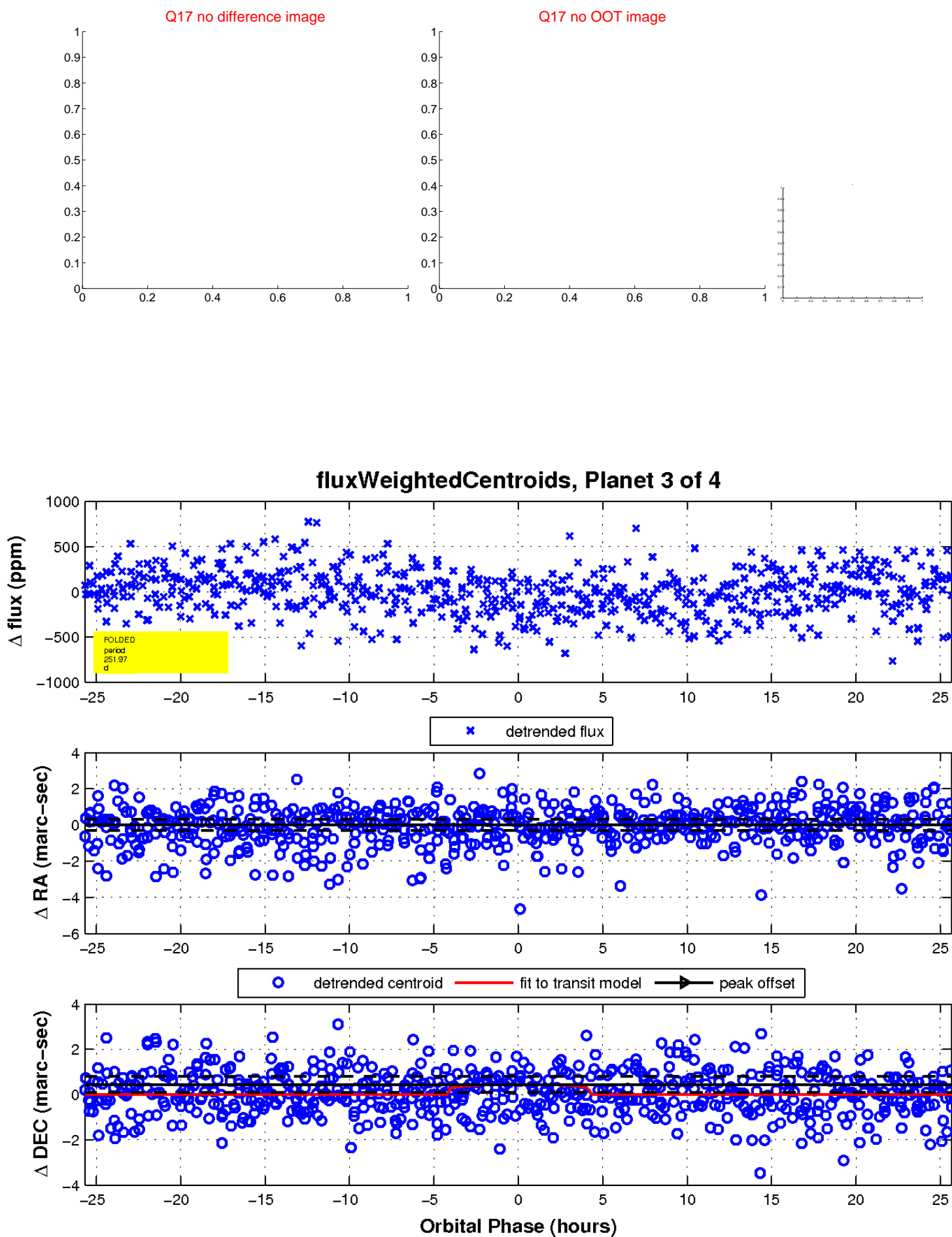
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

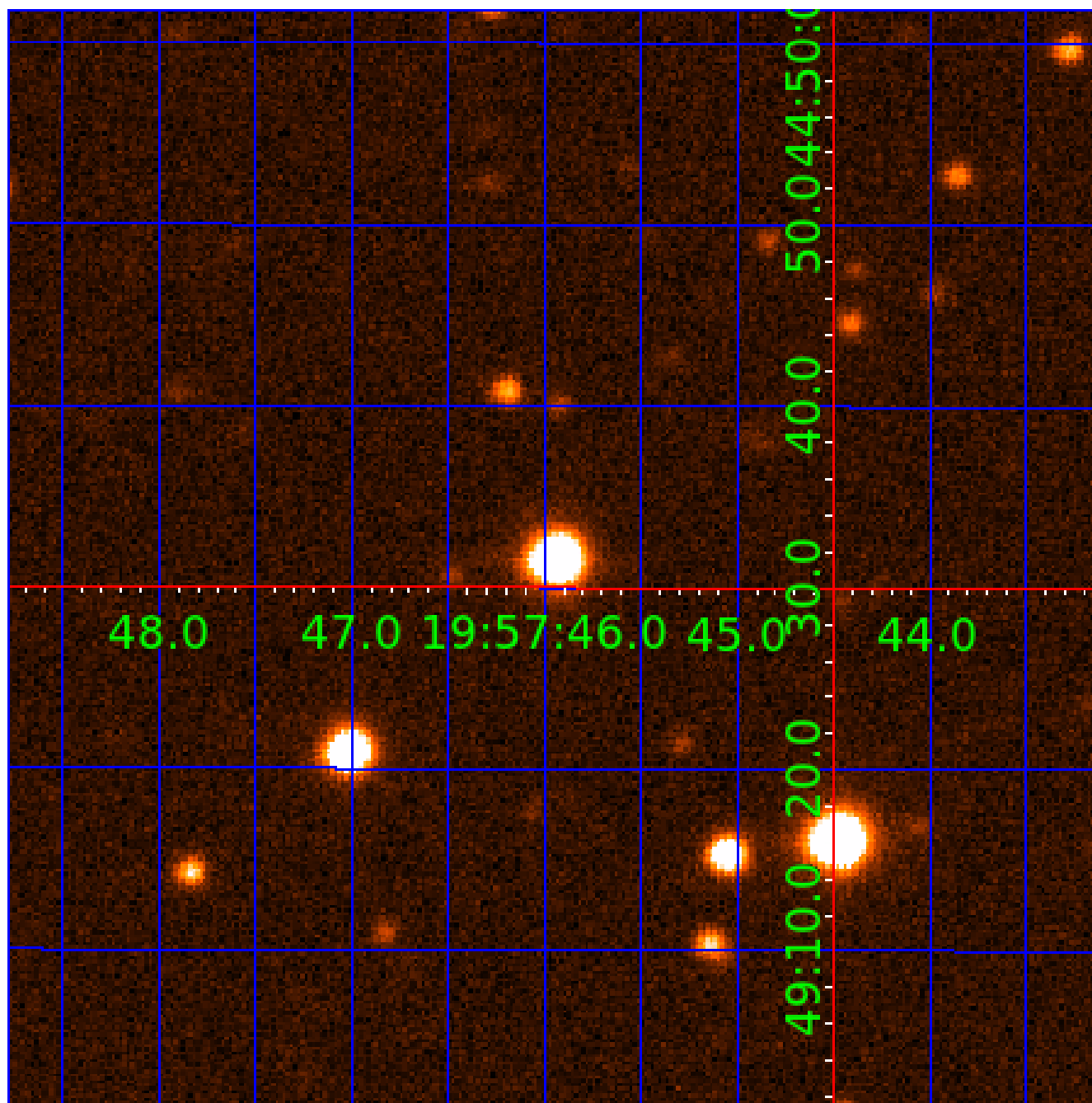


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008713594

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})
008713594-01	OBS	No	1.245742	131.811990	38.4	5.537	11.1	10.7	2.73	6549	1.80	18541.59
008713594-02	OBS	No	175.088571	143.984955	767.3	2.500	9.3	-1.0	2.73	6549	7.61	25.37
008713594-03	OBS	No	251.972855	133.891853	344.8	8.587	8.7	5.8	2.73	6549	5.31	15.62
008713594-04	OBS	No	101.647952	157.144895	337.4	6.000	7.9	-1.0	2.73	6549	5.04	52.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008713594-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008713594-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008713594-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008713594-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

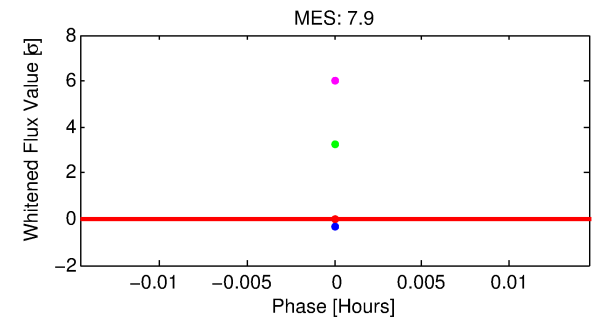
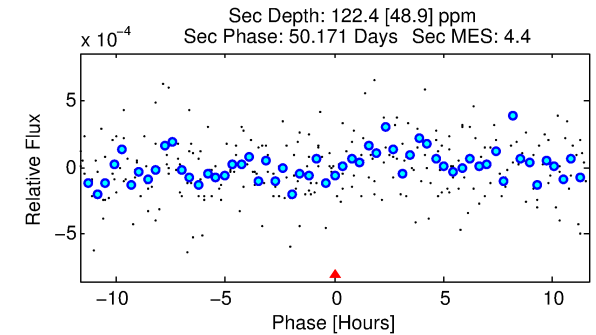
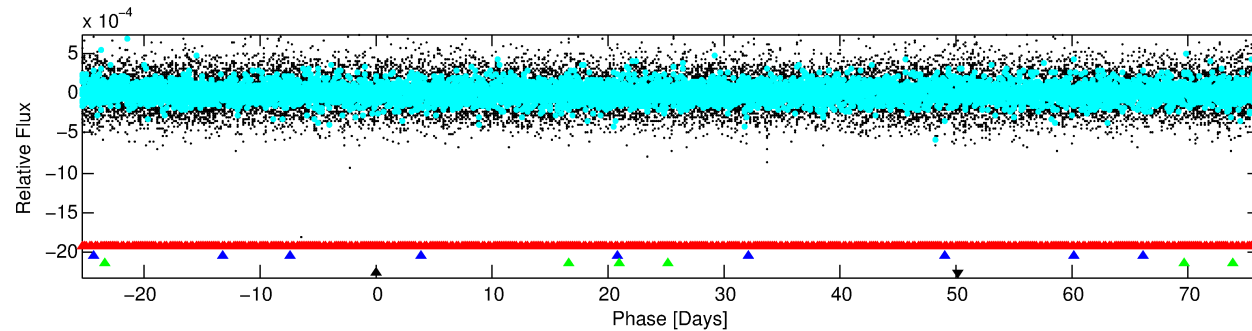
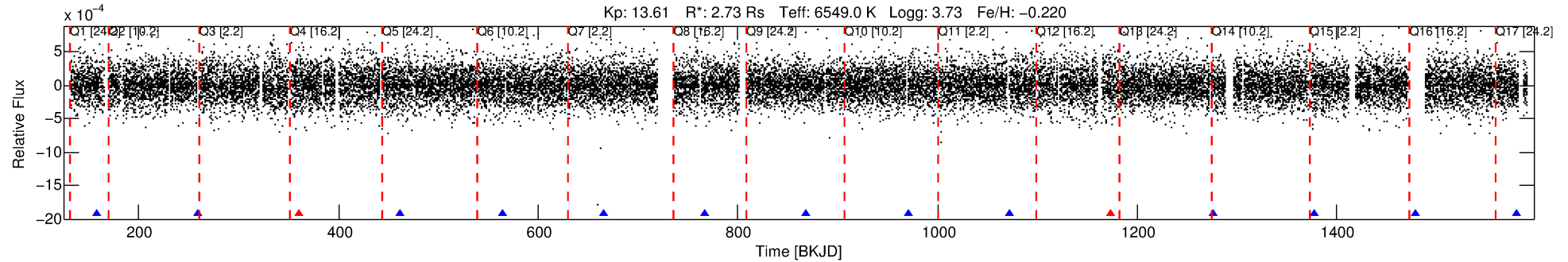
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008713594-04

No Significant Match Found

DV One-Page Summary

KIC: 8713594 Candidate: 4 of 4 Period: 101.648 d



TPS TCE Results:

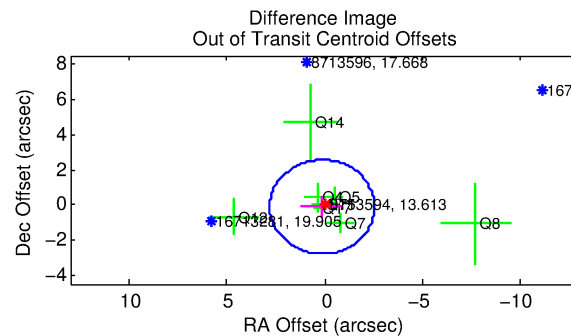
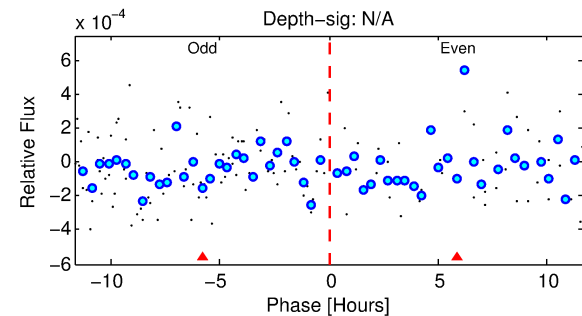
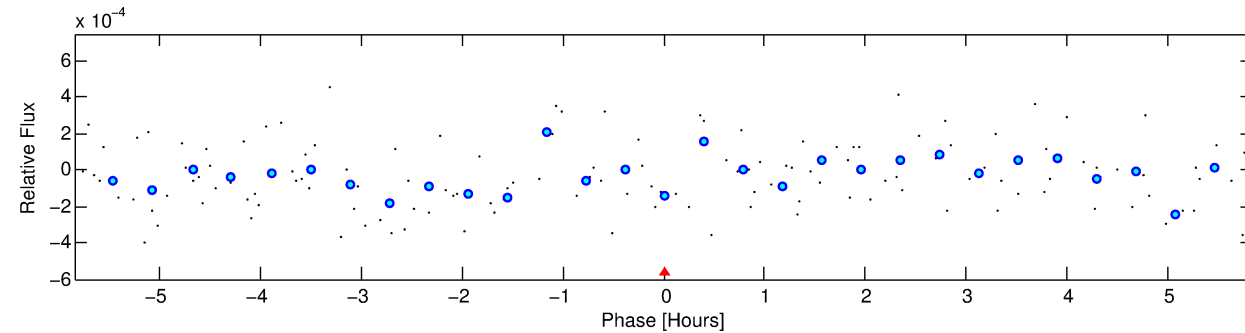
Period = 101.64795 d
Epoch = 157.1449 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [295.15 σ]
LongPeriod-sig: 100.0% [271.17 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.12e-11
RollingBand-fgt: 0.71 [5/7]
GhostDiagnostic-chr: 0.4896

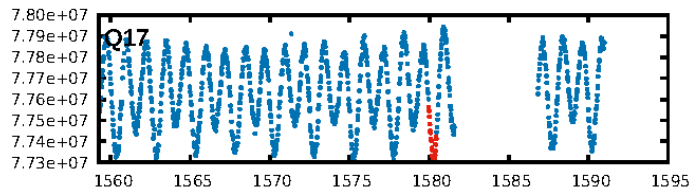
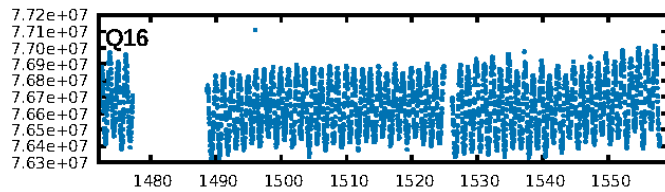
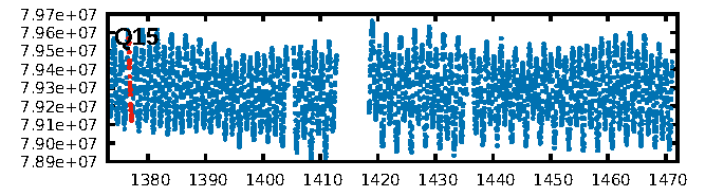
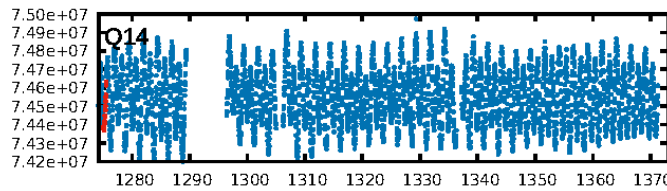
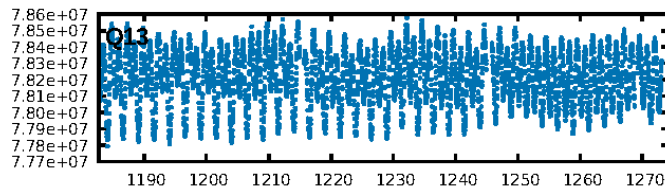
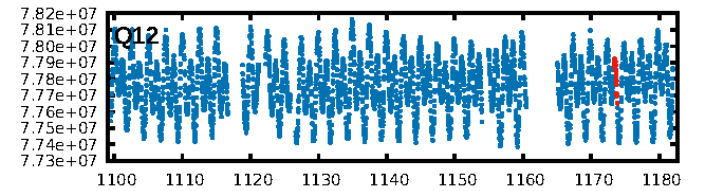
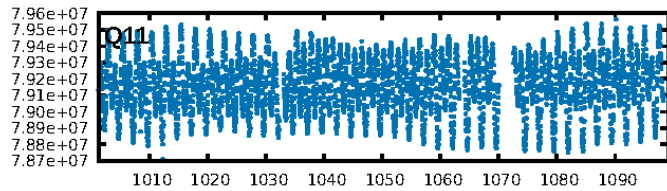
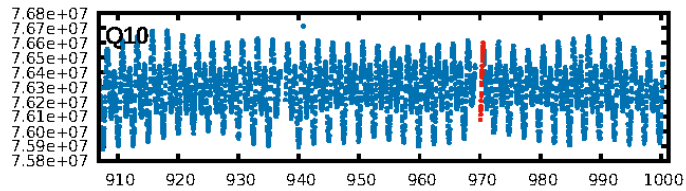
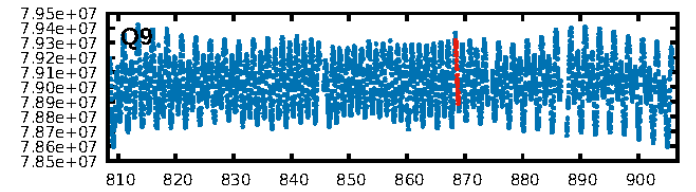
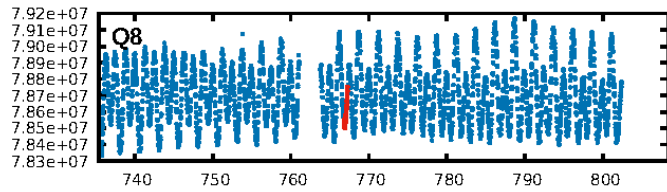
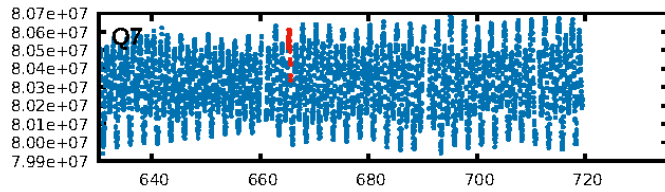
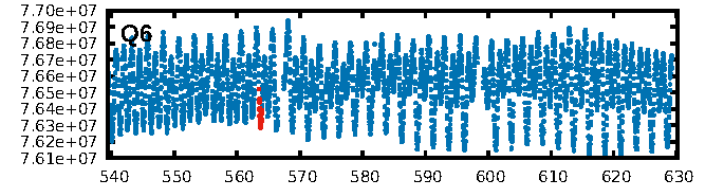
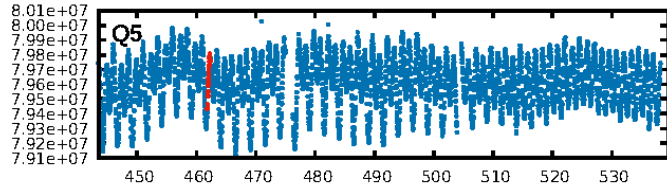
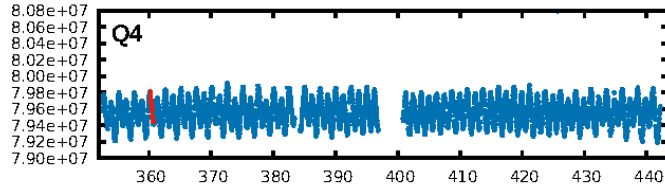
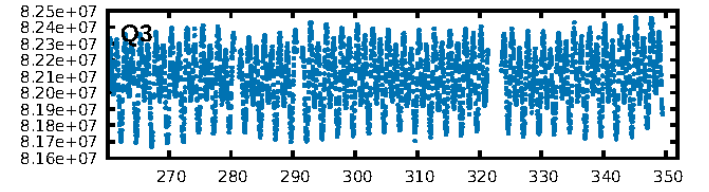
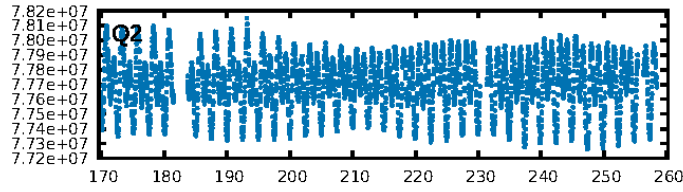
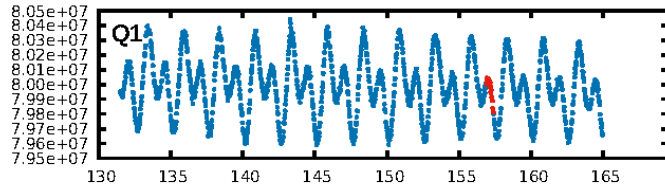
Centroid-sig: 24.7%
Centroid-so: 0.374 arcsec [1.58 σ]
OotOffset-rm: 0.175 arcsec [0.20 σ]
KicOffset-rm: 0.308 arcsec [0.43 σ]
OotOffset-st: 1/2/3/2 [8]
KicOffset-st: 1/2/3/2 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 0.55 [6/11]



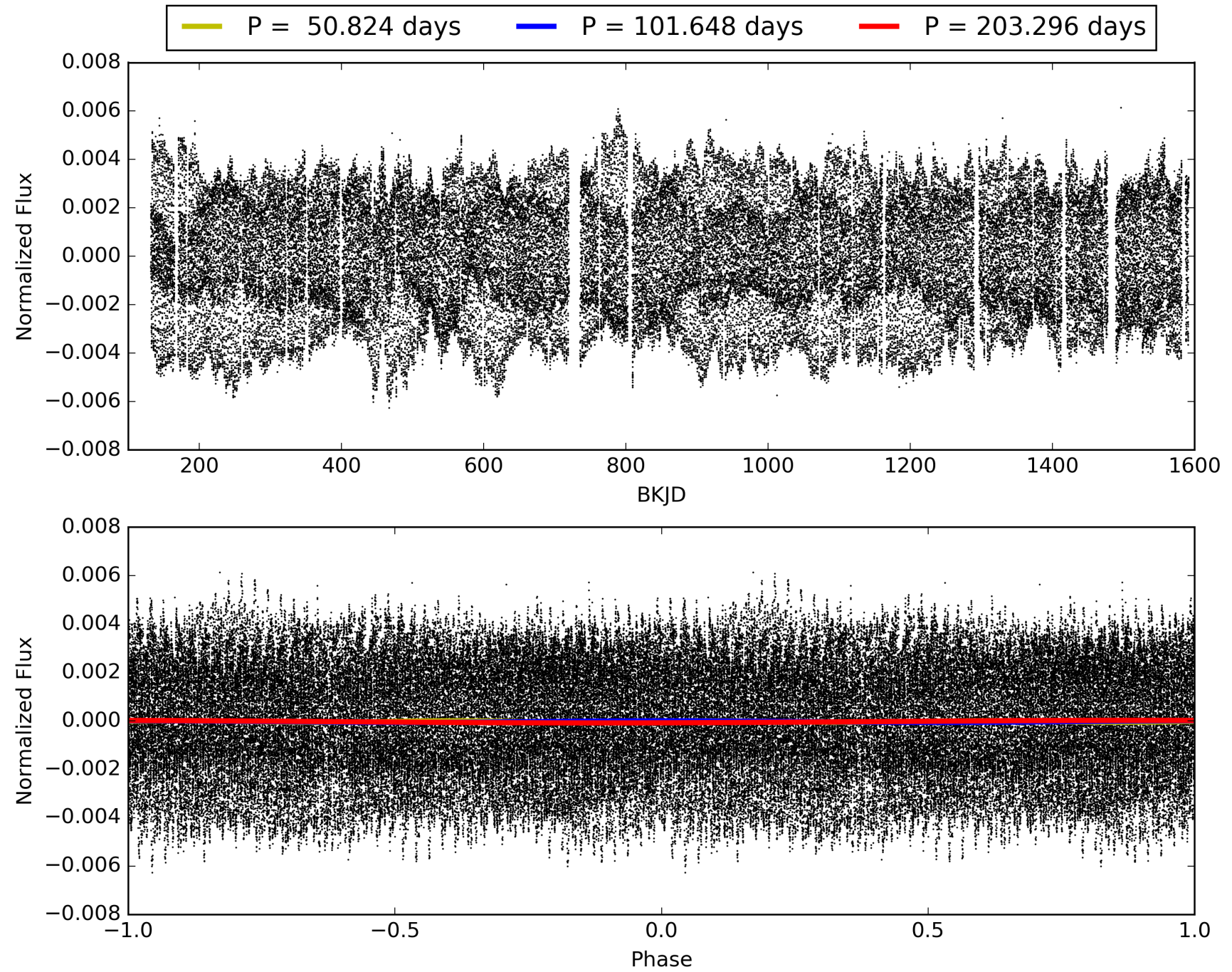
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:32:09 Z

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

TCE 008713594-04, PDC Light Curves

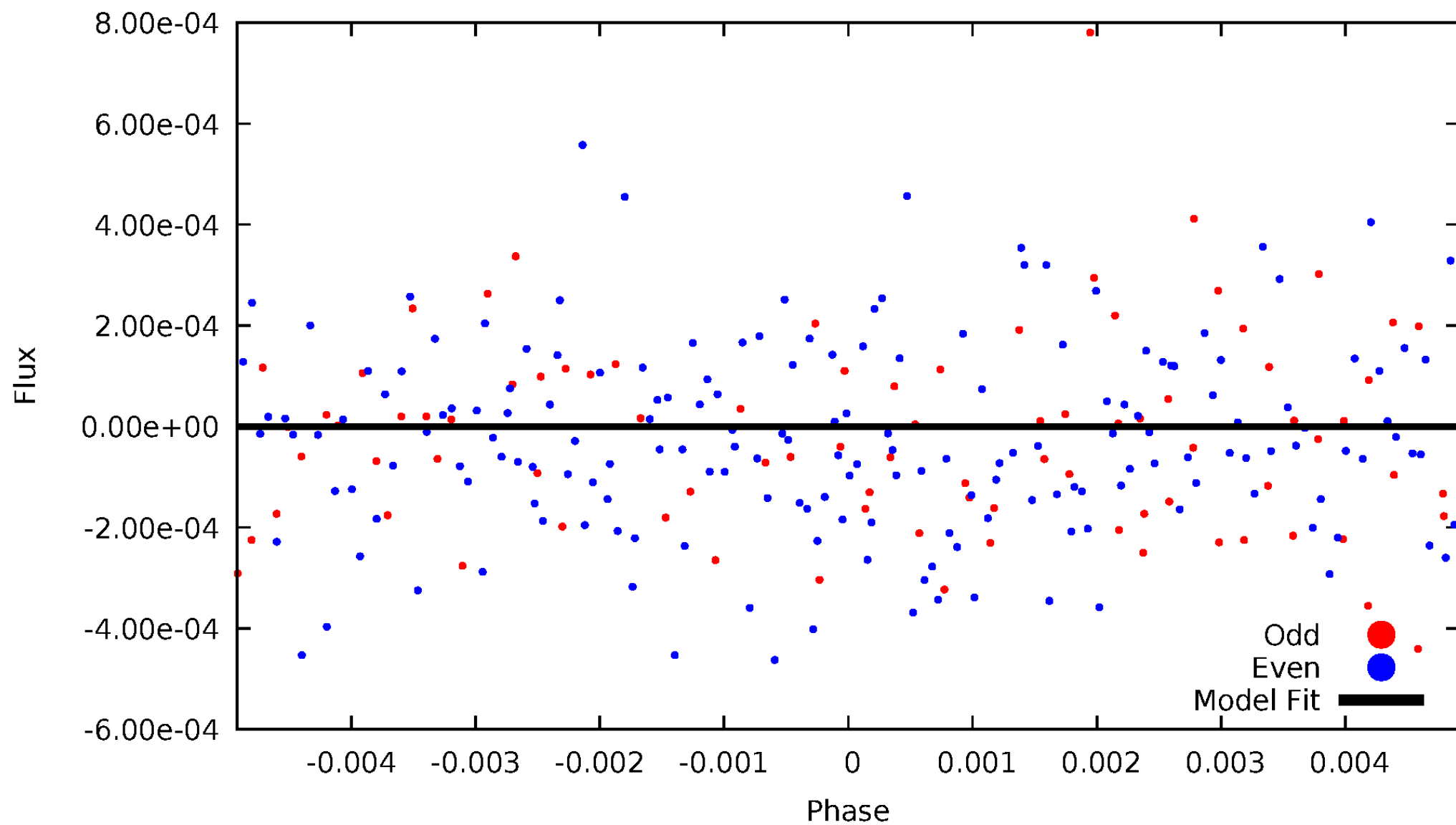


TCE 008713594-04



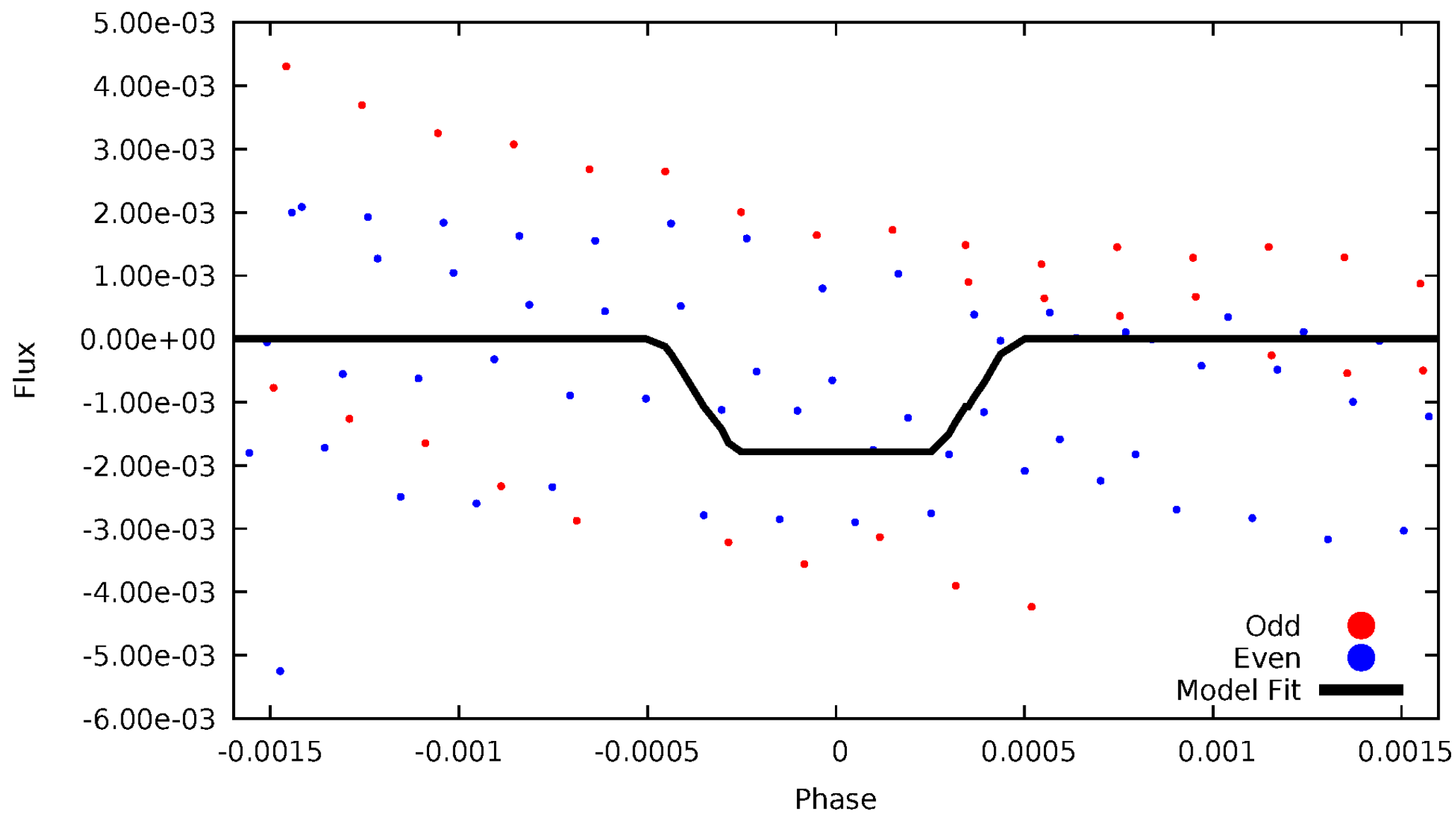
DV Odd/Even

TCE 008713594-04



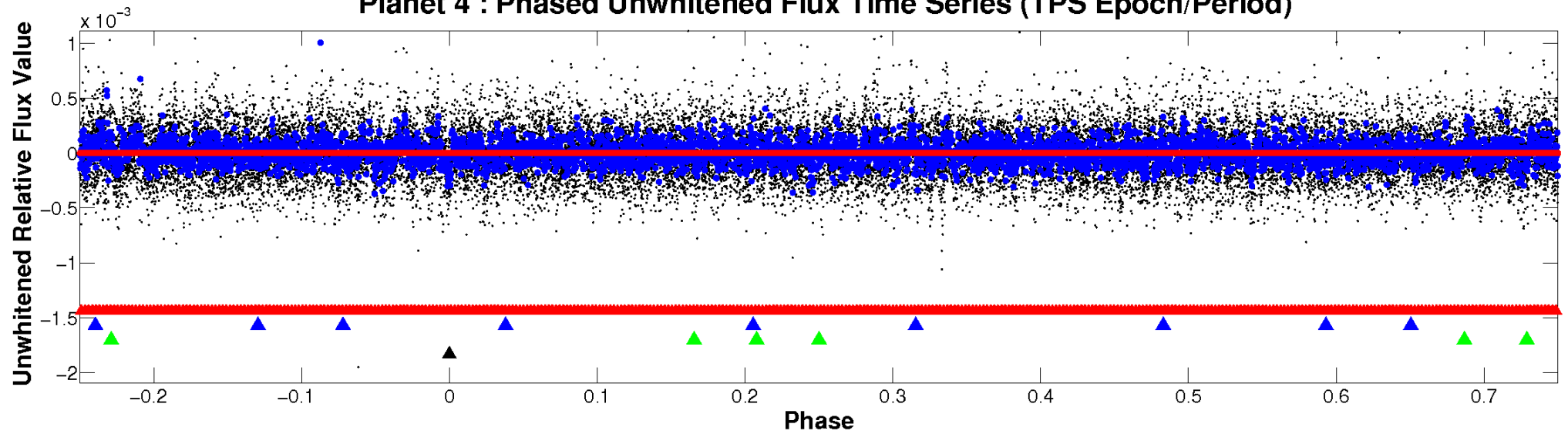
ALT Odd/Even

TCE 008713594-04

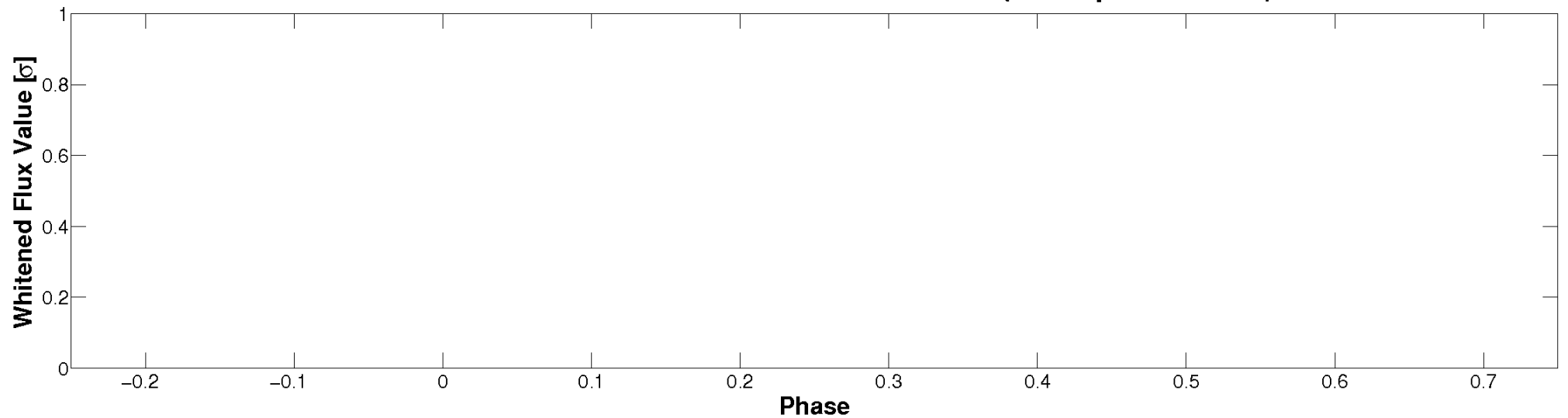


Non-Whitened Vs. Whitened Light Curve

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

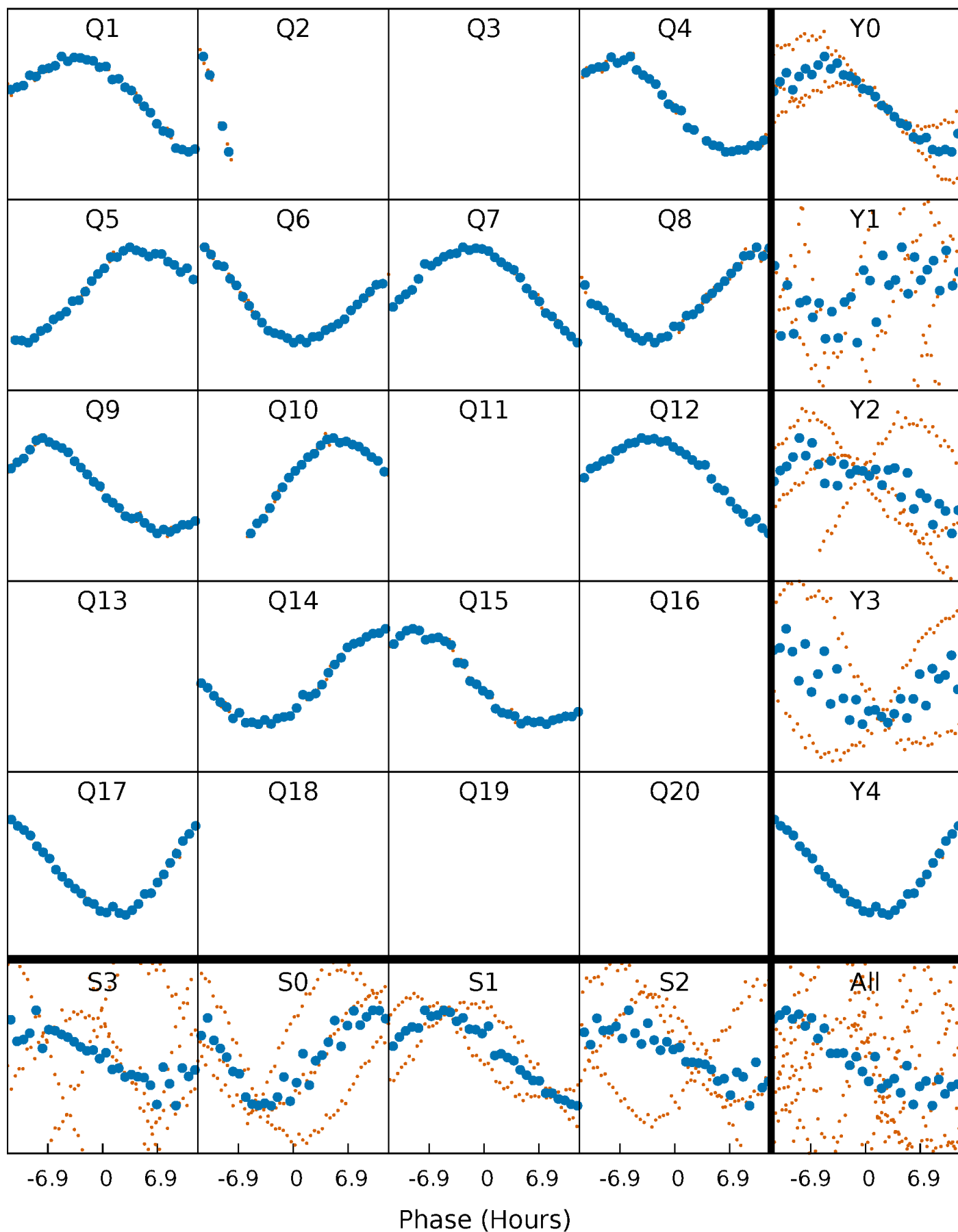


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



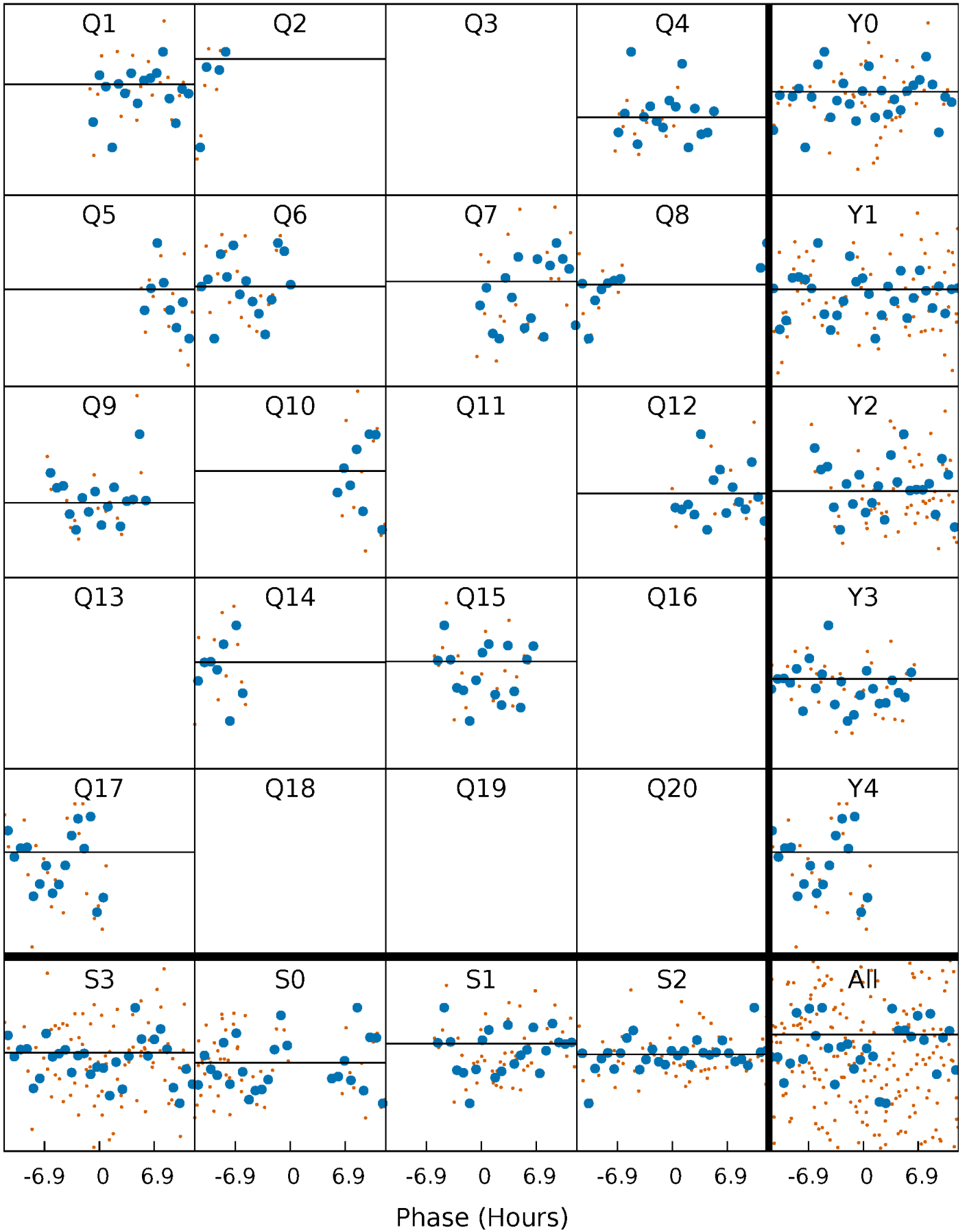
PDC Quarter-Phased Transit Curves

TCE 008713594-04 P=101.647952 Days $T_0=157.144895$ (BKJD)



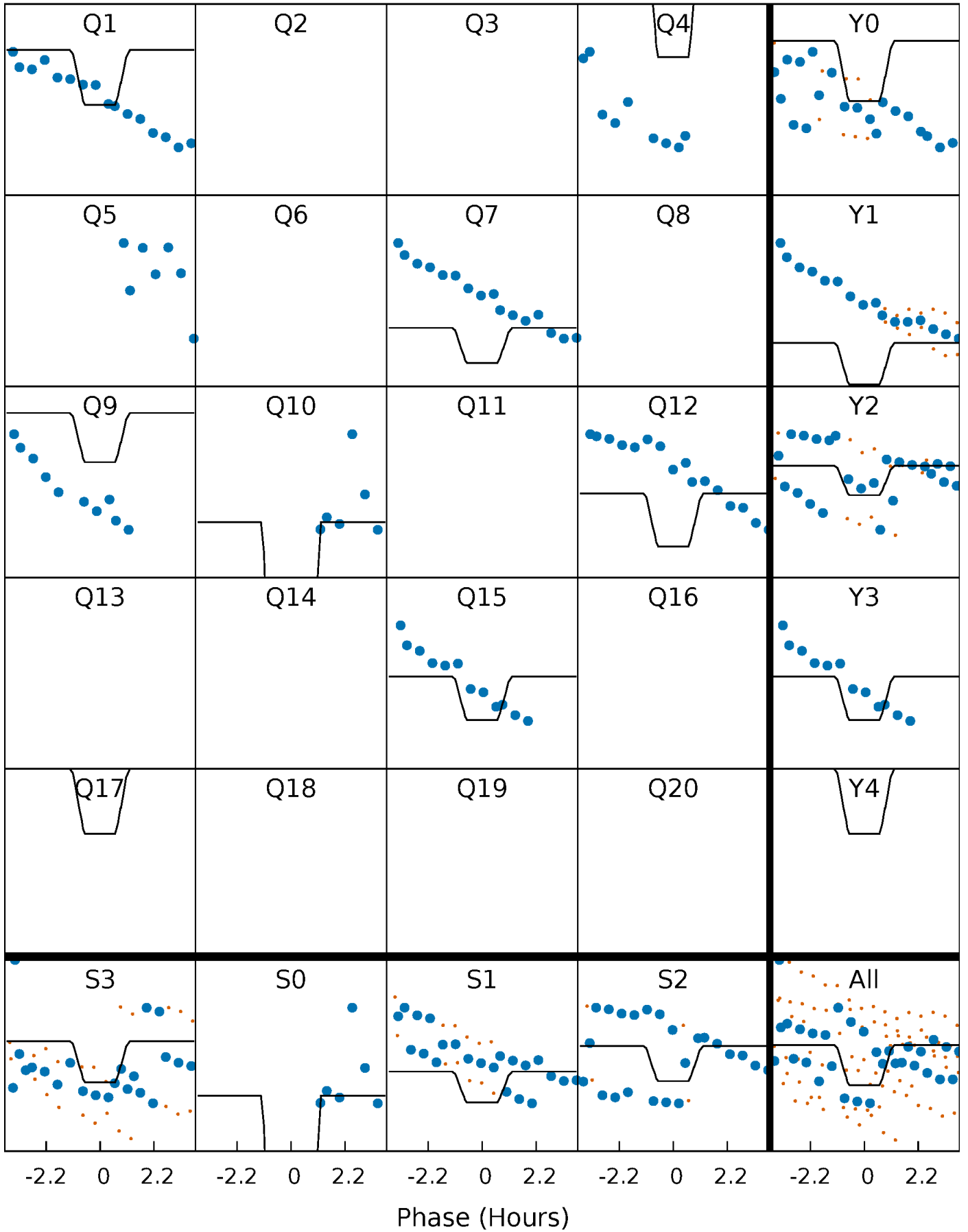
DV Quarter-Phased Transit Curves

TCE 008713594-04 $P=101.647952$ Days $T_0=157.144895$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

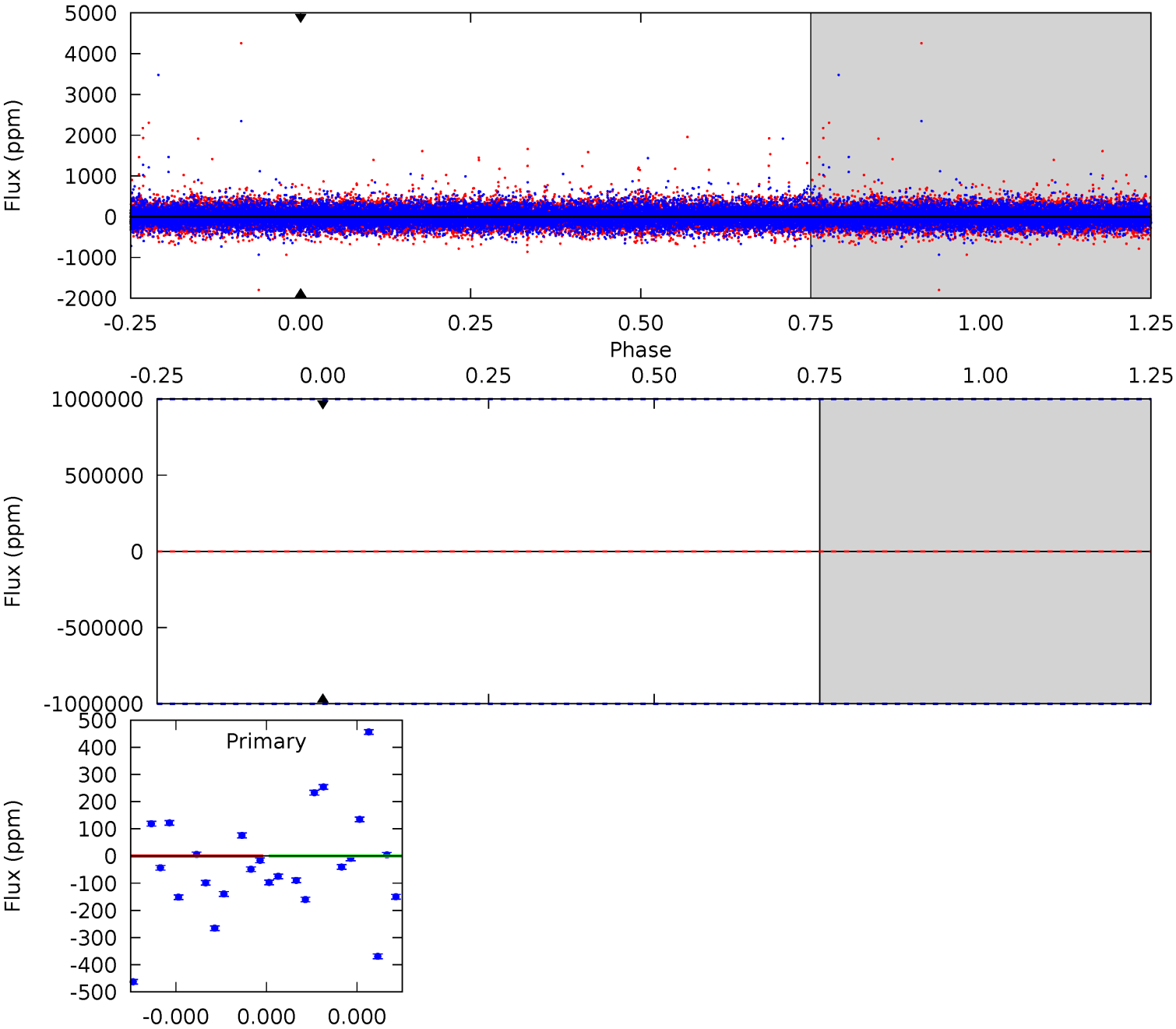
TCE 008713594-04 P=101.647952 Days $T_0=157.330853$ (BKJD)



DV Model-Shift Uniqueness Test

008713594-04, P = 101.647952 Days, E = 55.496943 Days

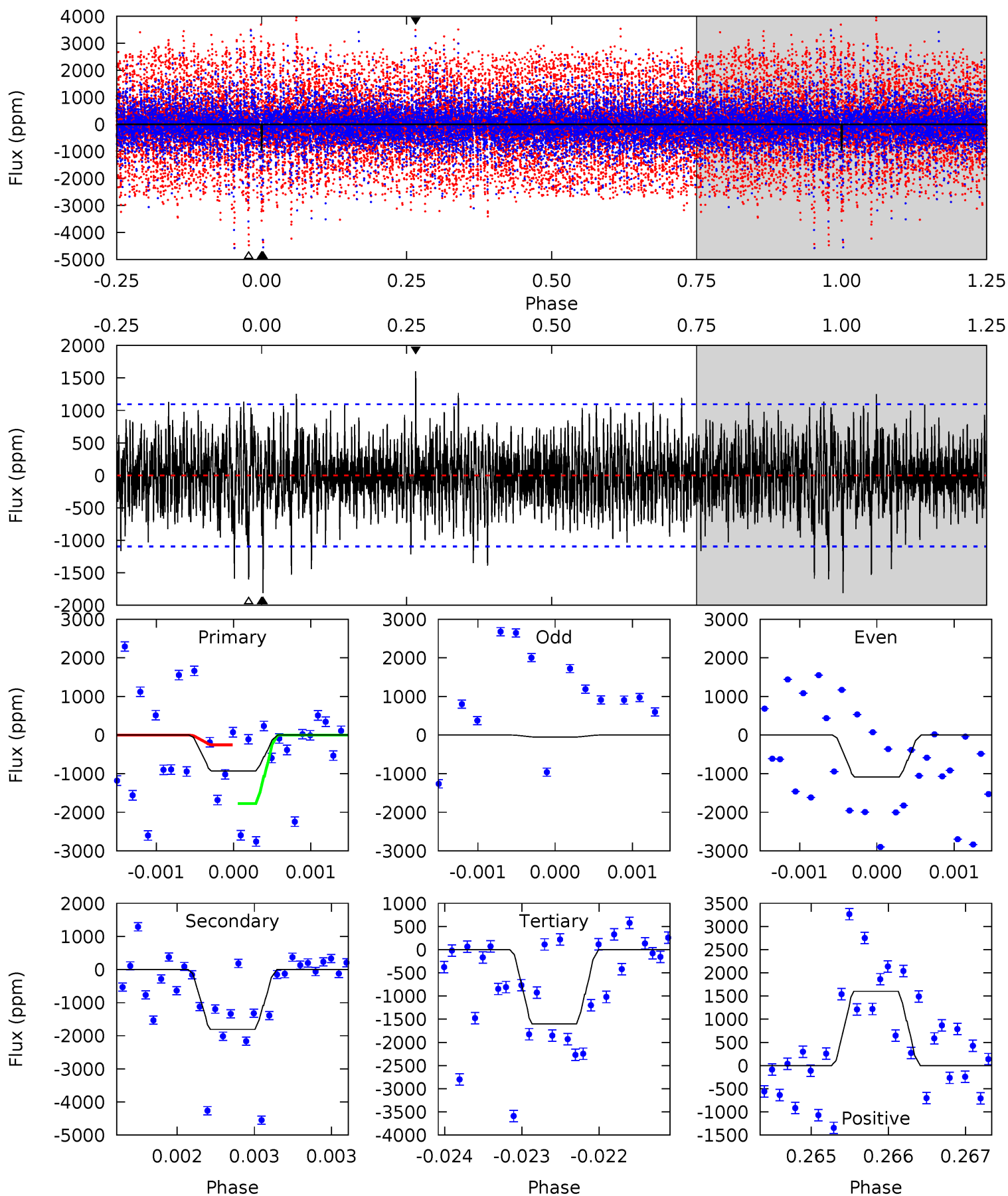
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008713594-04, $P = 101.647952$ Days, $E = 55.682901$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.64	9.05	8.00	8.00	5.48	3.33	2.00	-3.36	-3.36	1.05	1.05	2.29	0.85	0.47	3.69



Stellar Parameters For KIC 008713594

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6549^{+182}_{-250}	$3.731^{+0.535}_{-0.094}$	$-0.220^{+0.250}_{-0.300}$	$2.727^{+0.479}_{-1.436}$	$1.461^{+0.211}_{-0.362}$	$0.101^{+0.636}_{-0.030}$
	+3%/-4%	+14%/-3%	+114%/-136%	+18%/-53%	+14%/-25%	+627%/-30%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008713594-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$18.68^{+22.44}_{-13.62}$	928^{+63}_{-131}	-5208^{+35836}_{-22900}	$-843.823^{+77293.394}_{-59244.927}$
Alt.	-1811 ± 200	$22.50^{+24.89}_{-14.84}$	926^{+67}_{-123}	4744^{+3331}_{-1084}	465^{+3674}_{-360}

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

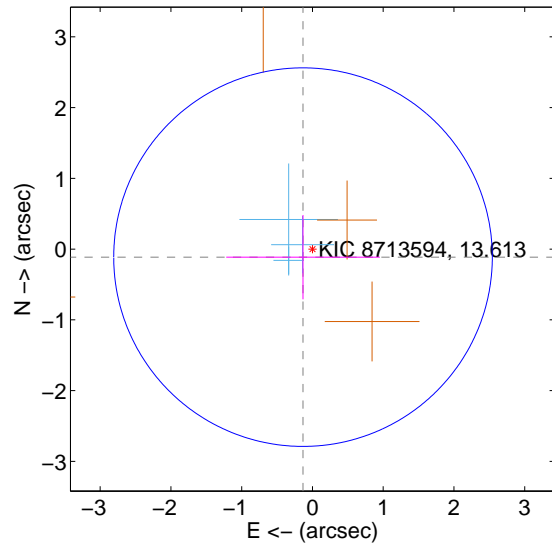
Supplemental centroid analysis for 008713594-04. Kepler magnitude: 13.61. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

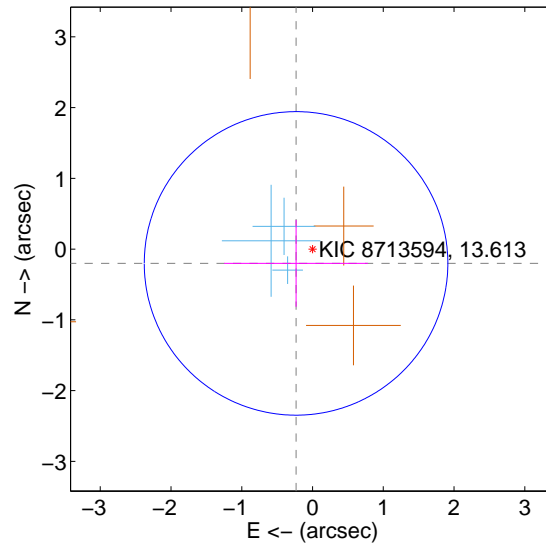
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.175 ± 0.891	0.20	0.133 ± 1.085	-0.114 ± 0.595
PRF-fit source offset from KIC position	0.308 ± 0.715	0.43	0.233 ± 1.015	-0.202 ± 0.612
photometric centroid source offset	0.37 ± 0.24	1.58	0.35 ± 0.24	-0.14 ± 0.25

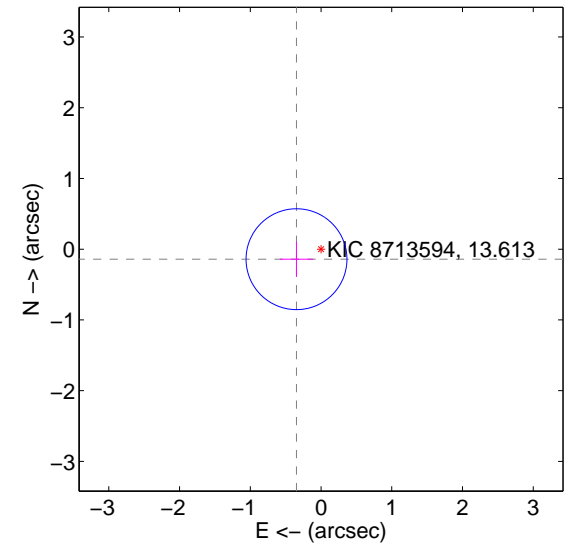
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

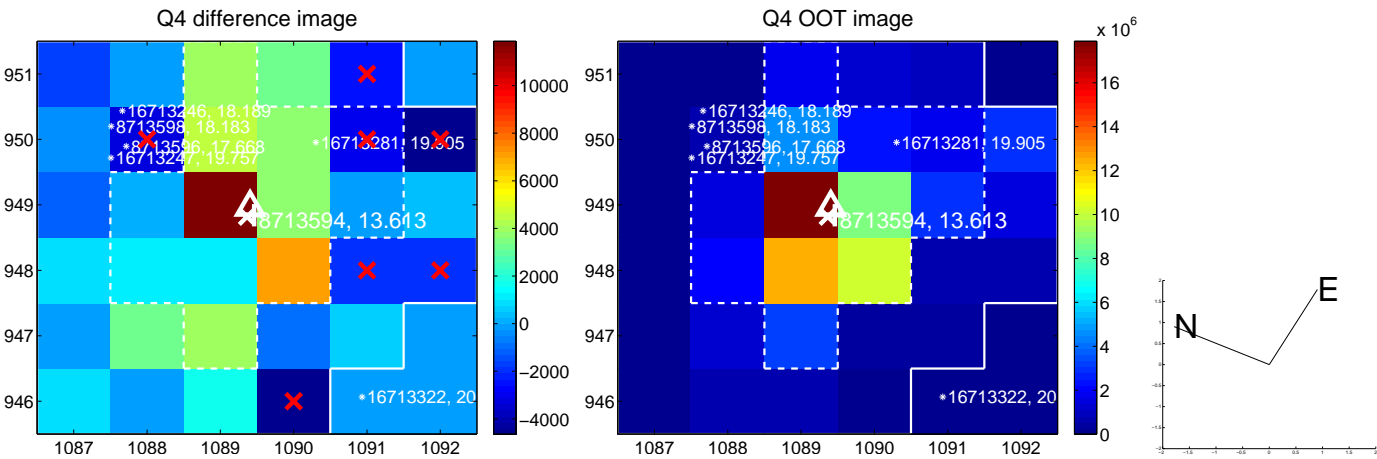
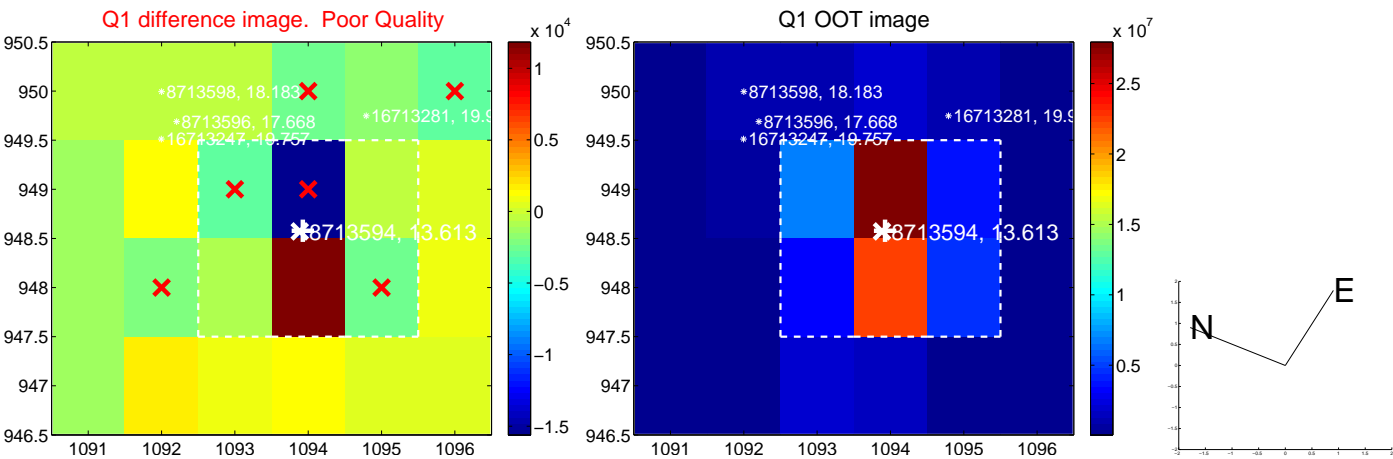


offset from photometric centroids

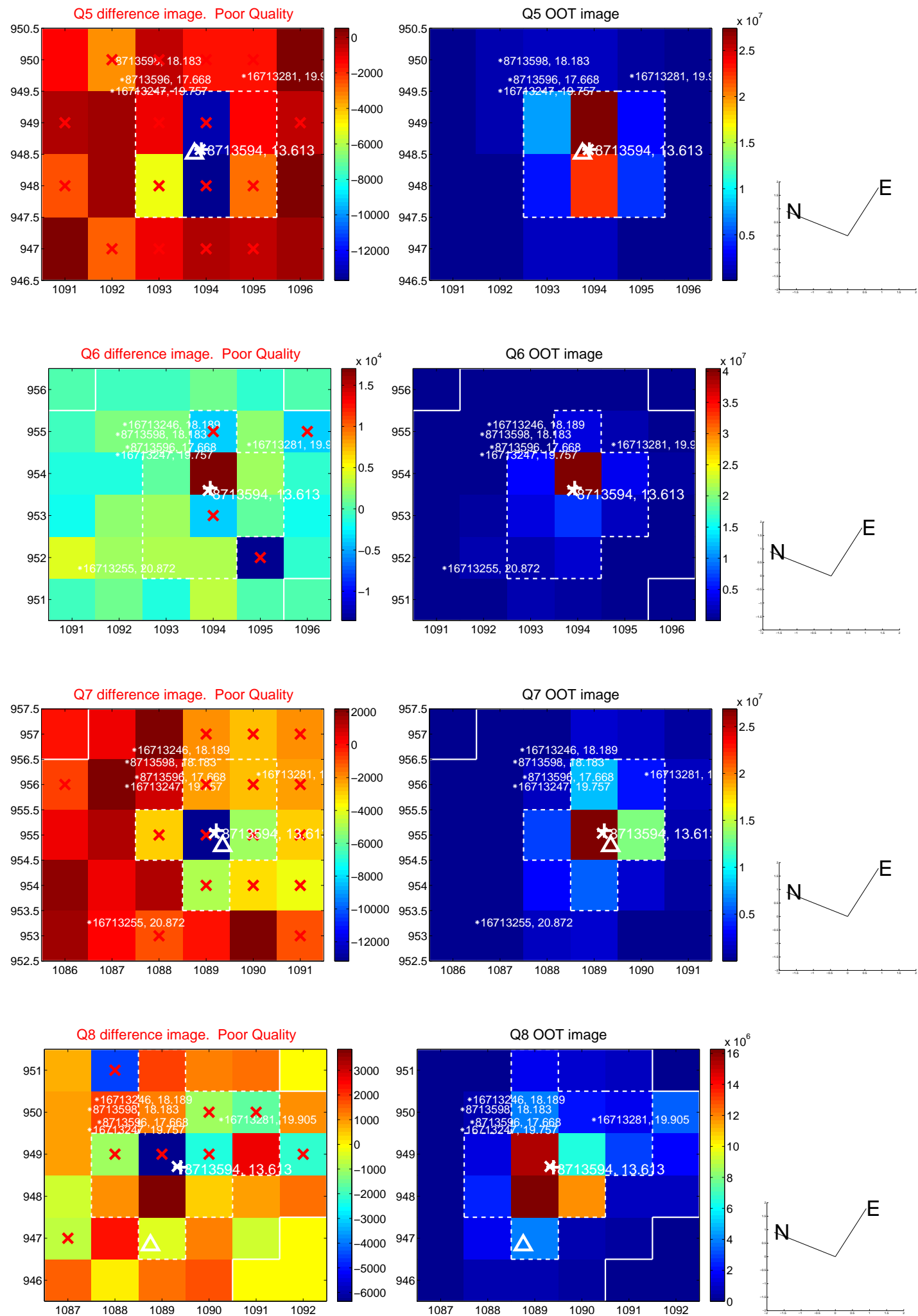


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

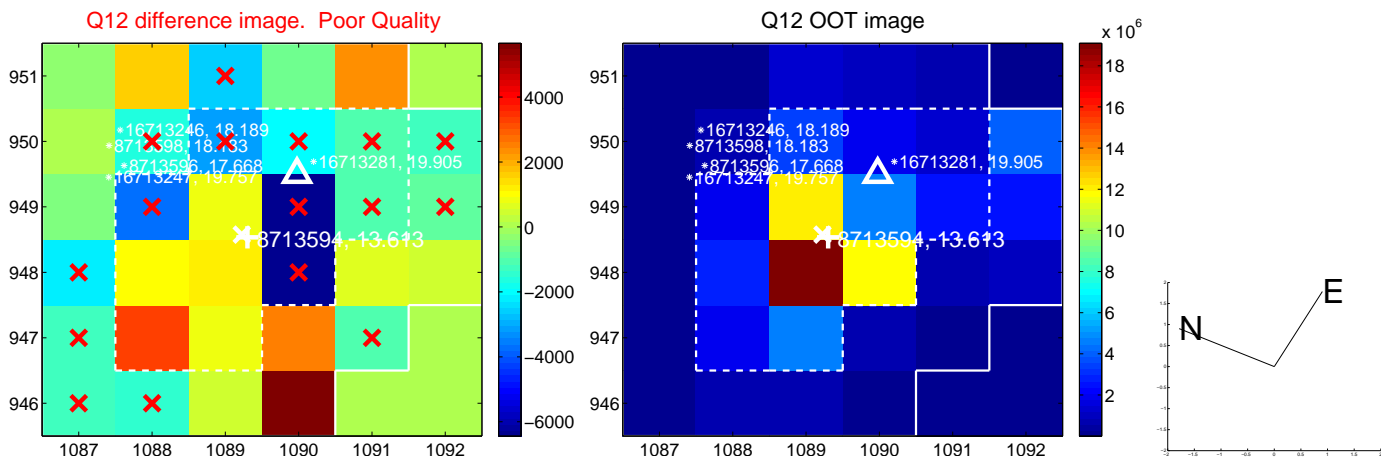
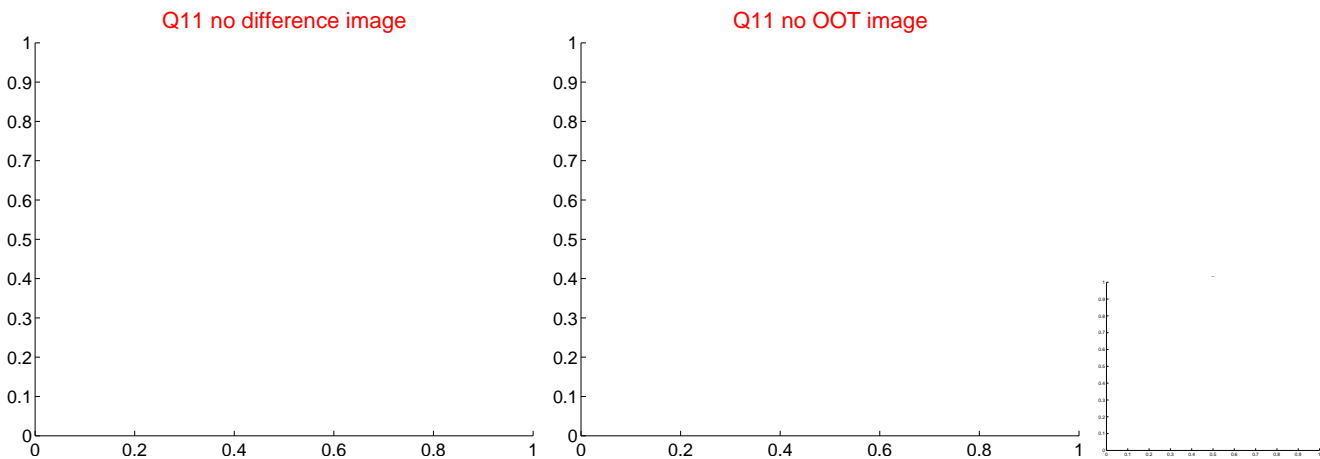
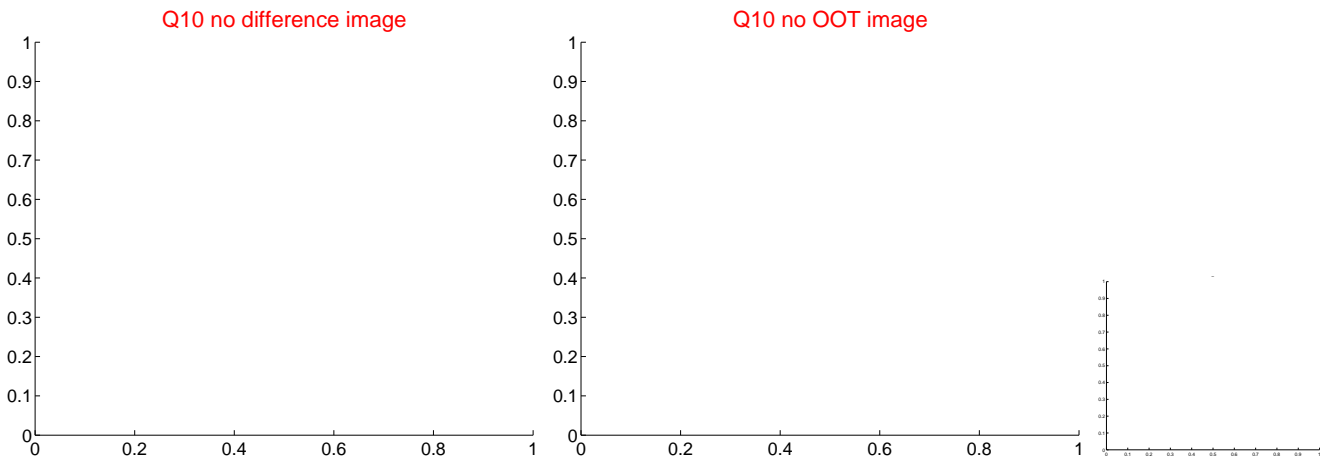
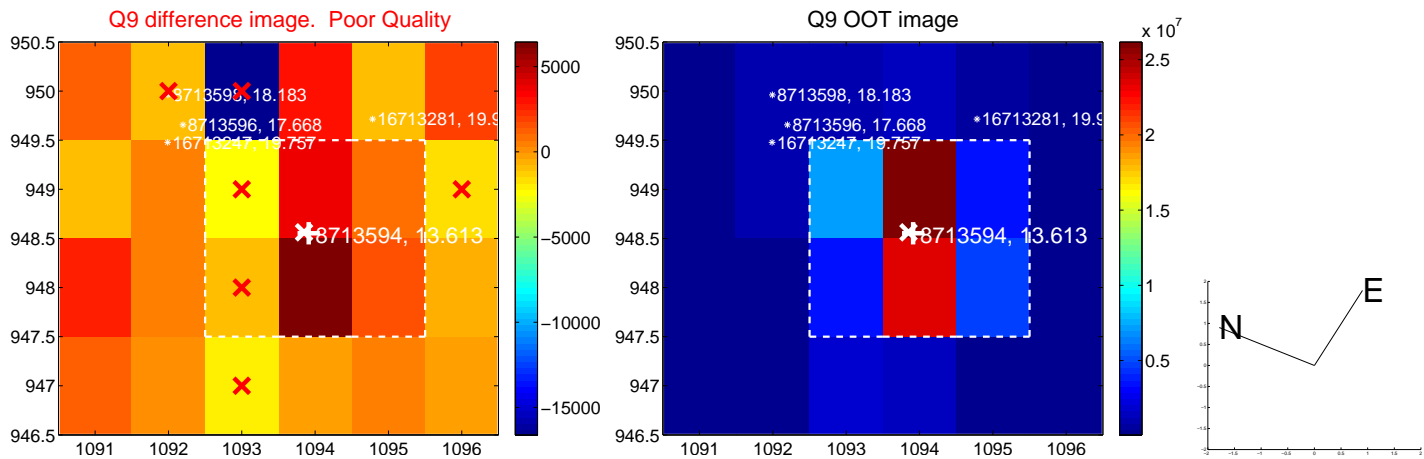
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



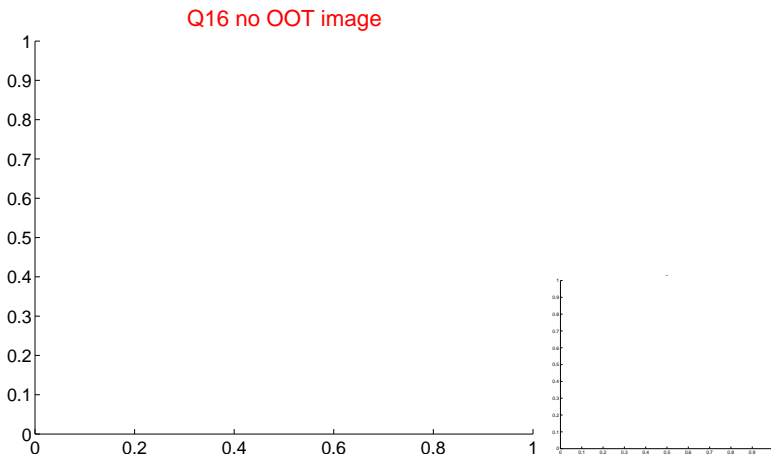
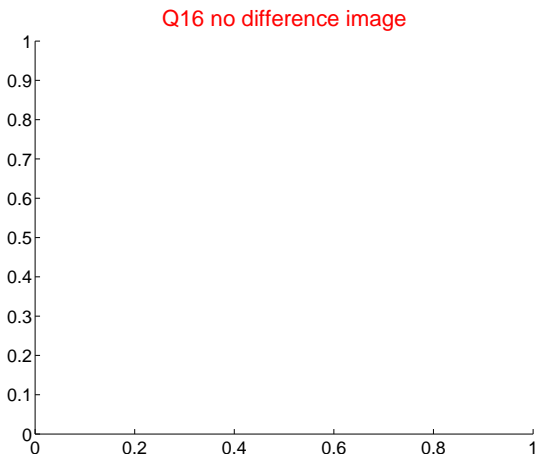
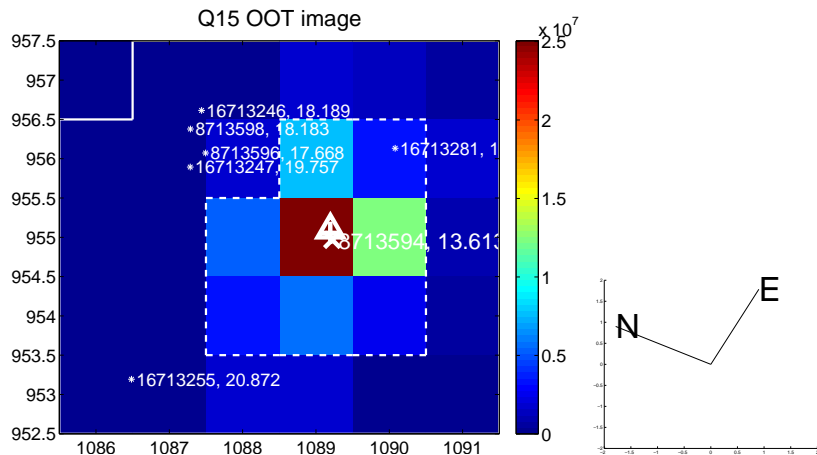
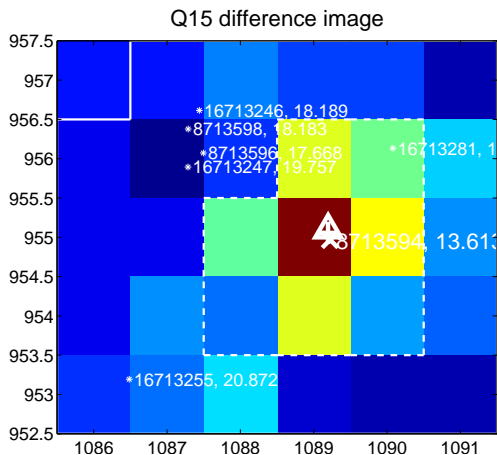
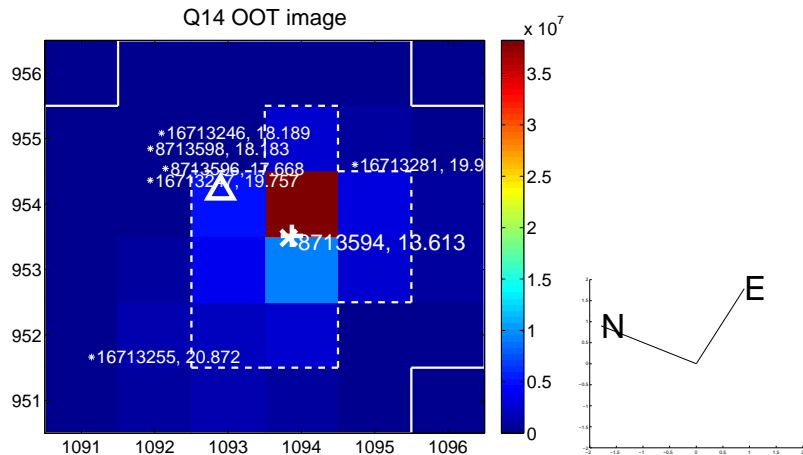
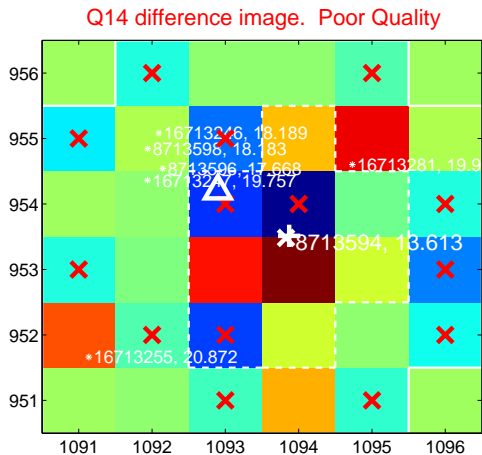
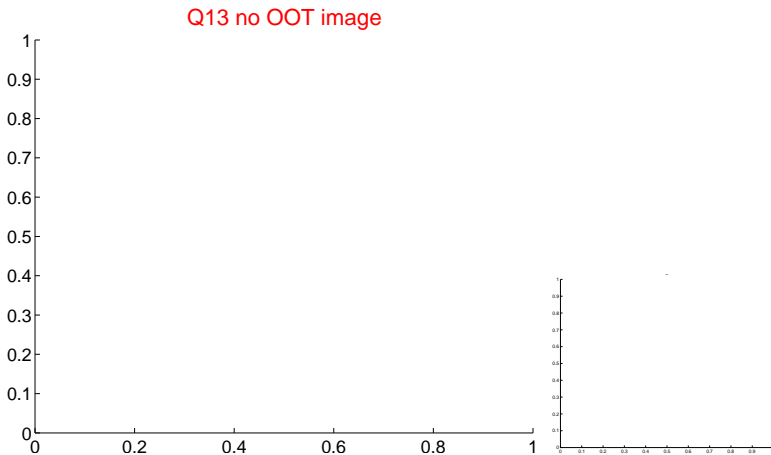
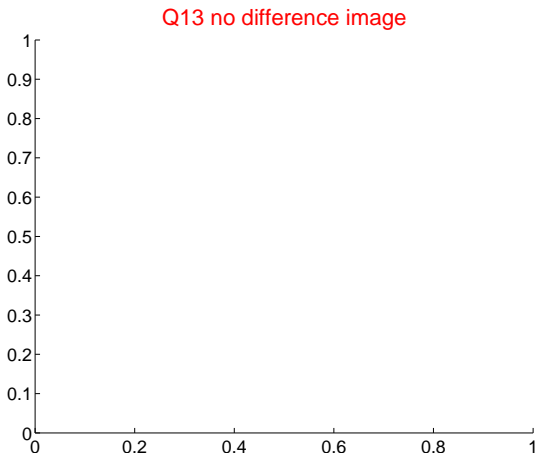
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



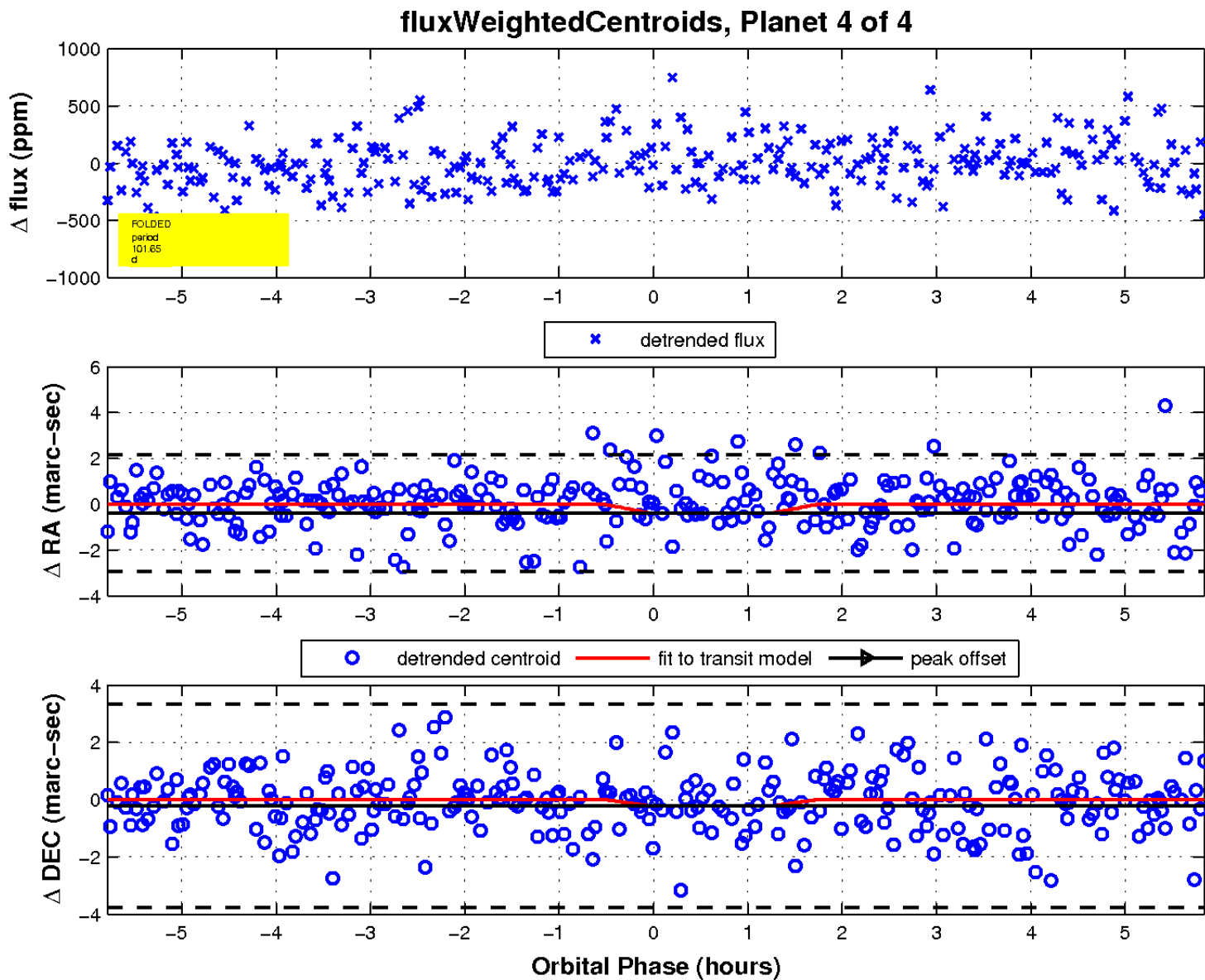
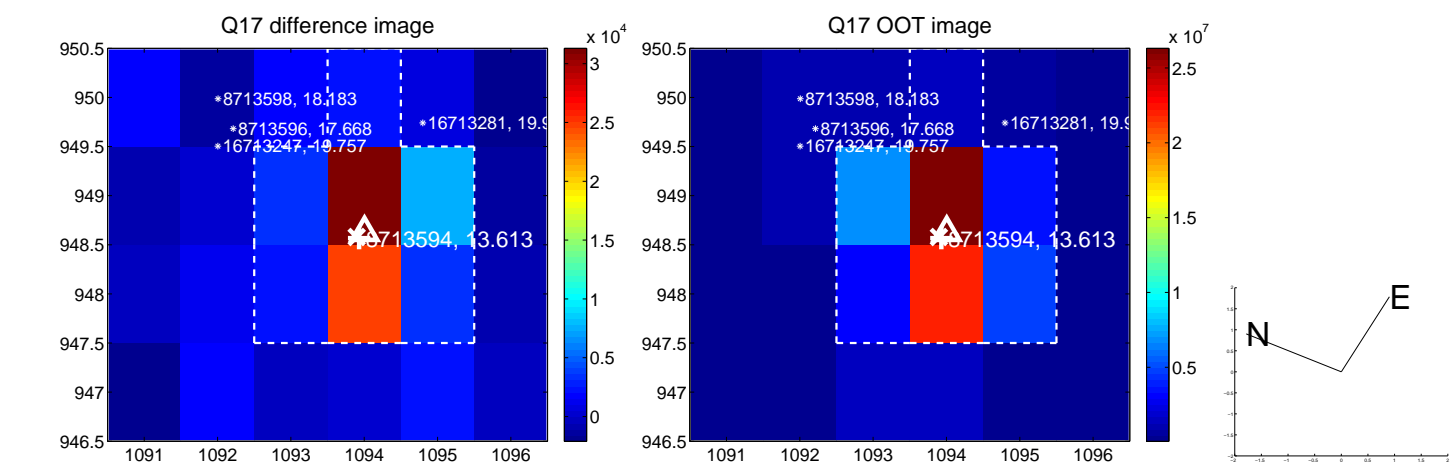
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

