

KIC 004454890

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})
004454890-01	OBS	No	337.801954	445.892720	727.0	3.430	19.9	3.4	0.54	4938	1.53	0.25
004454890-02	OBS	No	372.320709	325.917492	2121.7	7.349	12.7	7.0	0.54	4938	2.58	0.22
004454890-03	OBS	No	405.946442	209.884795	1512.0	4.879	15.1	6.7	0.54	4938	2.09	0.20
004454890-04	OBS	No	0.870067	131.789119	669.1	1.500	7.6	-1.0	0.54	4938	1.39	720.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004454890-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004454890-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
004454890-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
004454890-04	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS

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

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

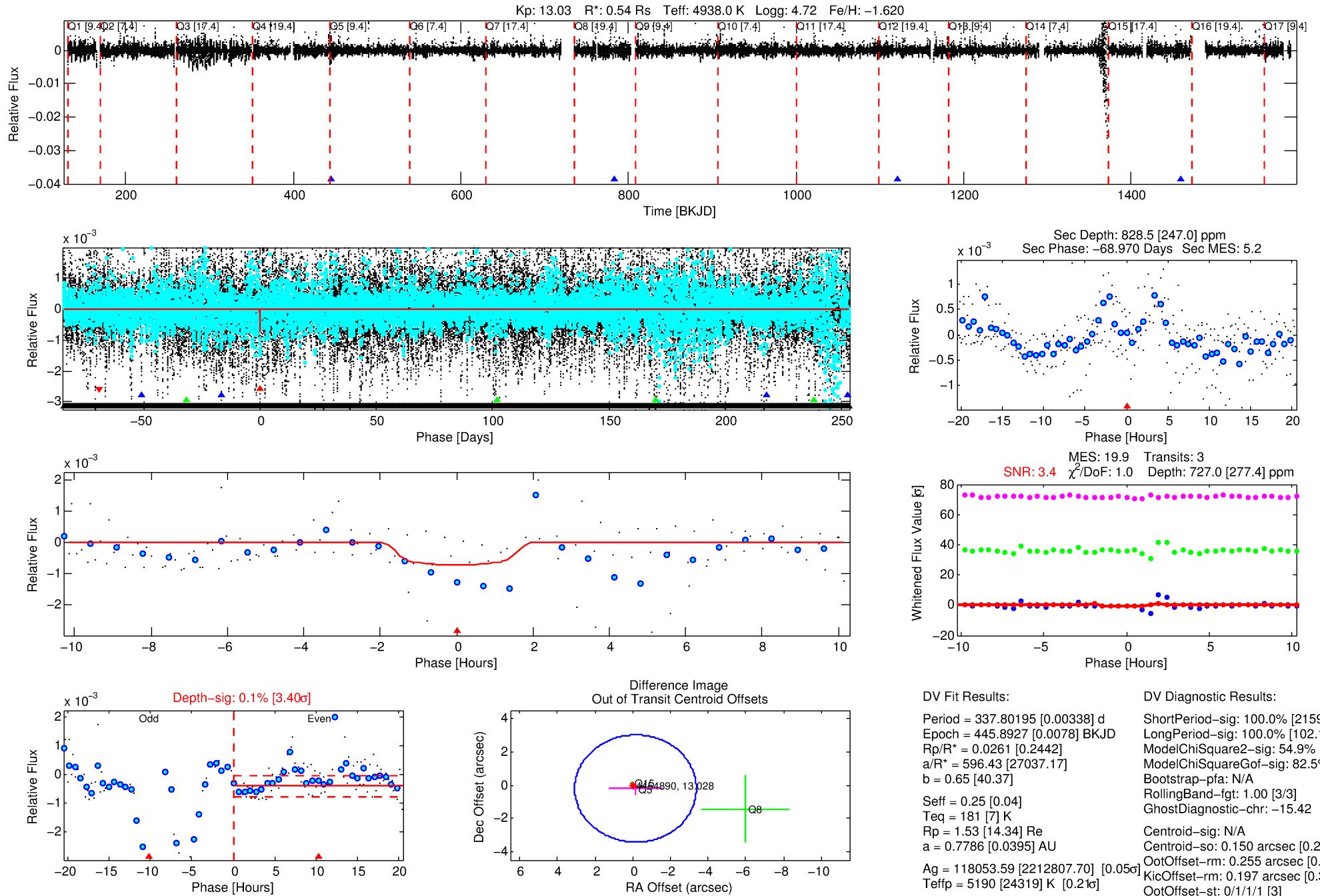
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004454890-01

No Significant Match Found

DV One-Page Summary

KIC: 4454890 Candidate: 1 of 4 Period: 337.802 d



DV Fit Results:

Period = 337.80195 [0.00338] d
Epoch = 445.8927 [0.0078] BKJD
Rp/R* = 0.0261 [0.2442]
a/R* = 596.43 [27037.17]
b = 0.65 [40.37]
Seff = 0.25 [0.04]
Teq = 181 [7] K
Rp = 1.53 [14.34] Re
a = 0.7786 [0.0395] AU
Ag = 118053.59 [2212807.70] [0.05σ]
Teff = 5190 [24319] K [0.21σ]

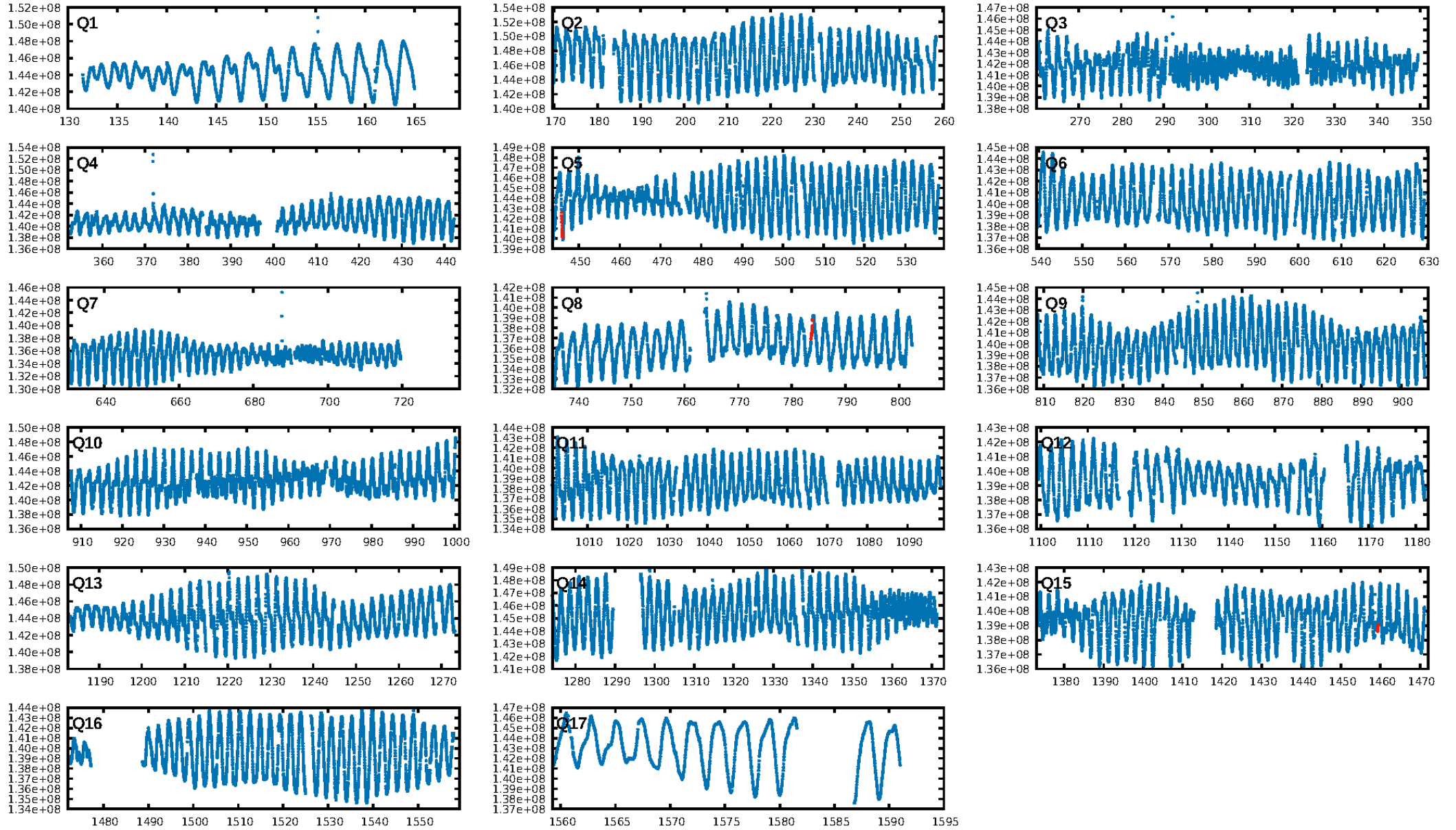
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [2159.81σ]
LongPeriod-sig: 100.0% [102.14σ]
ModelChiSquare2-sig: 54.9%
ModelChiSquareGof-sig: 82.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -15.42
Centroid-sig: N/A
Centroid-so: 0.150 arcsec [0.23σ]
OotOffset-rm: 0.255 arcsec [0.24σ]
KicOffset-rm: 0.197 arcsec [0.30σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

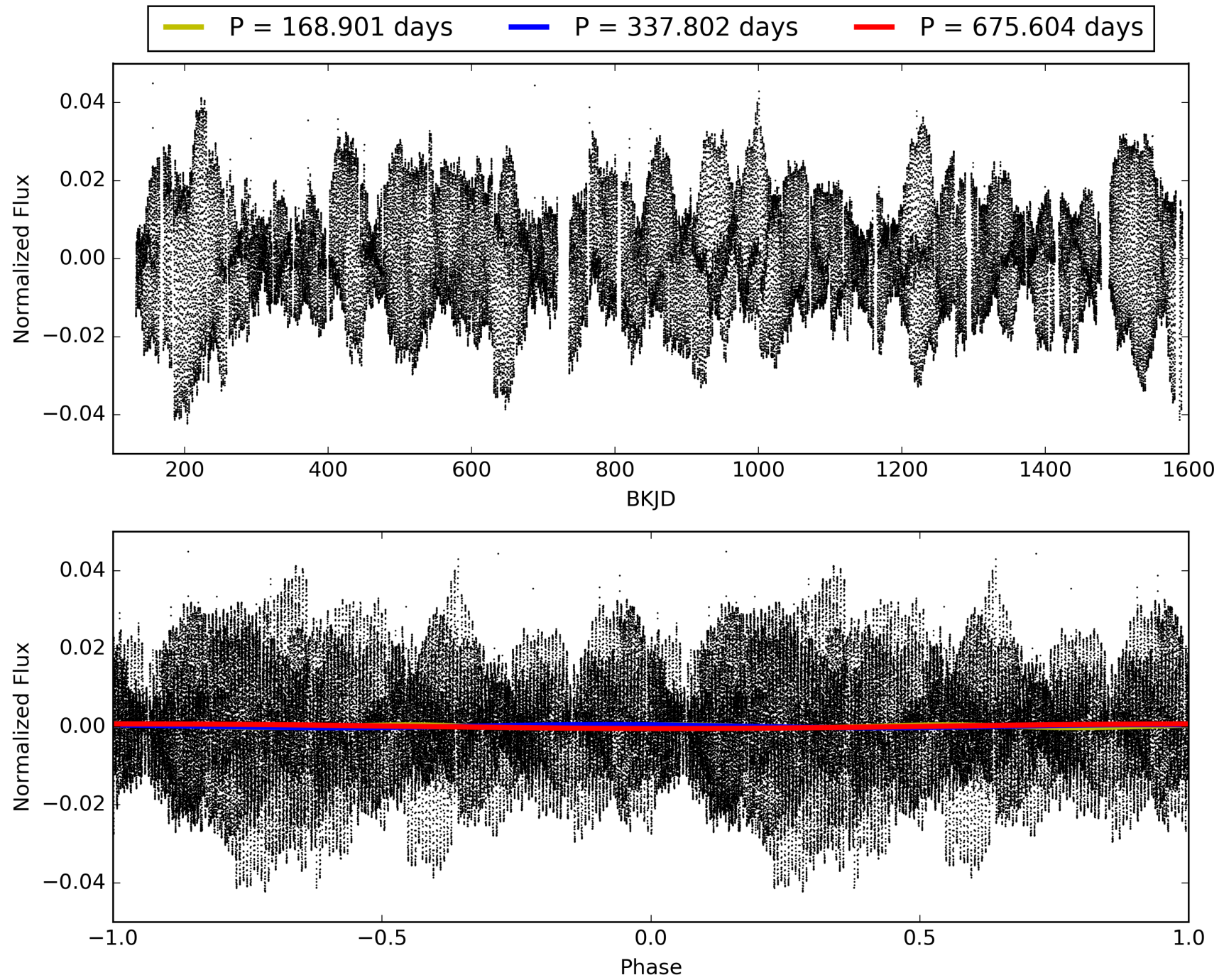
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:27:30 Z

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

TCE 004454890-01, PDC Light Curves

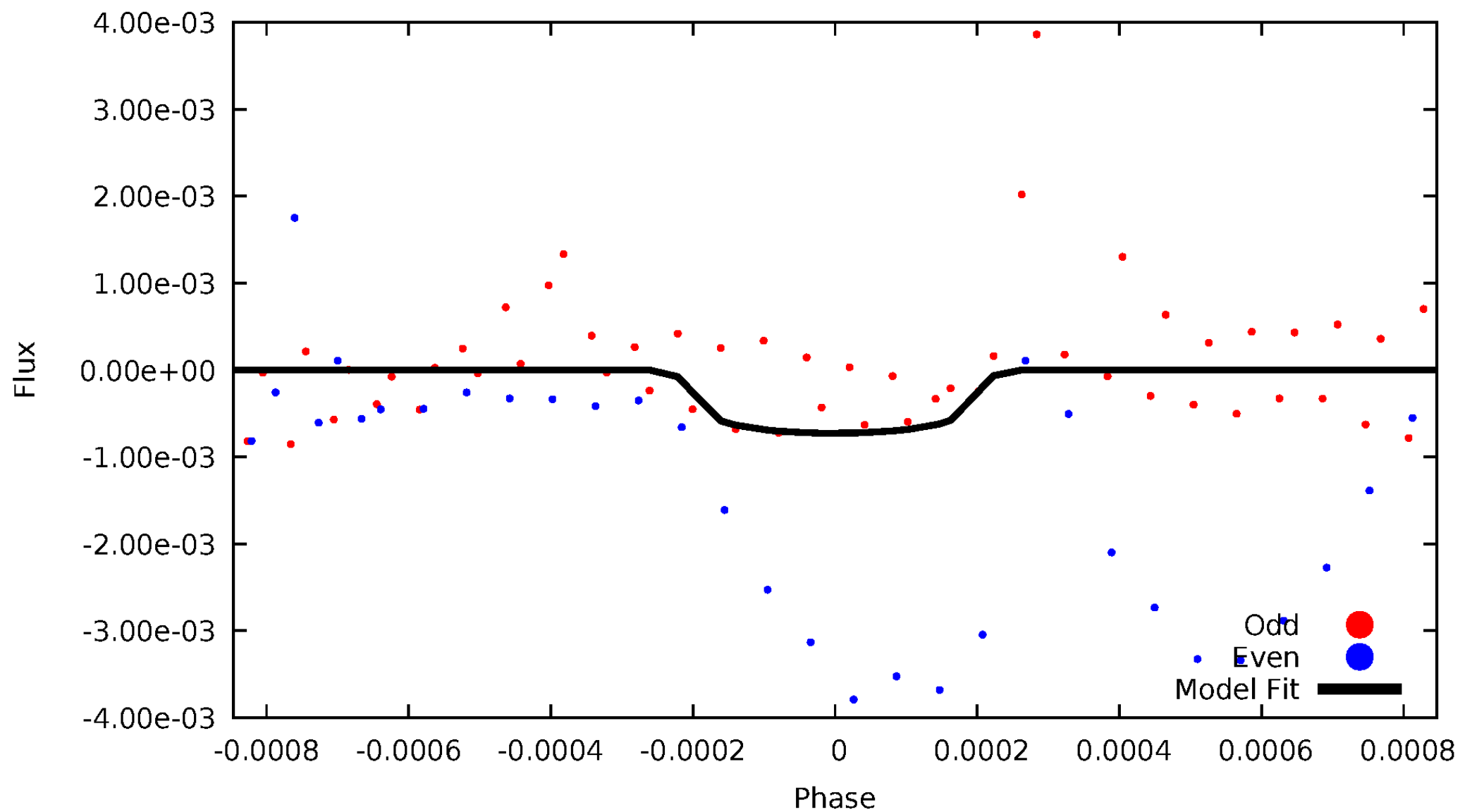


TCE 004454890-01



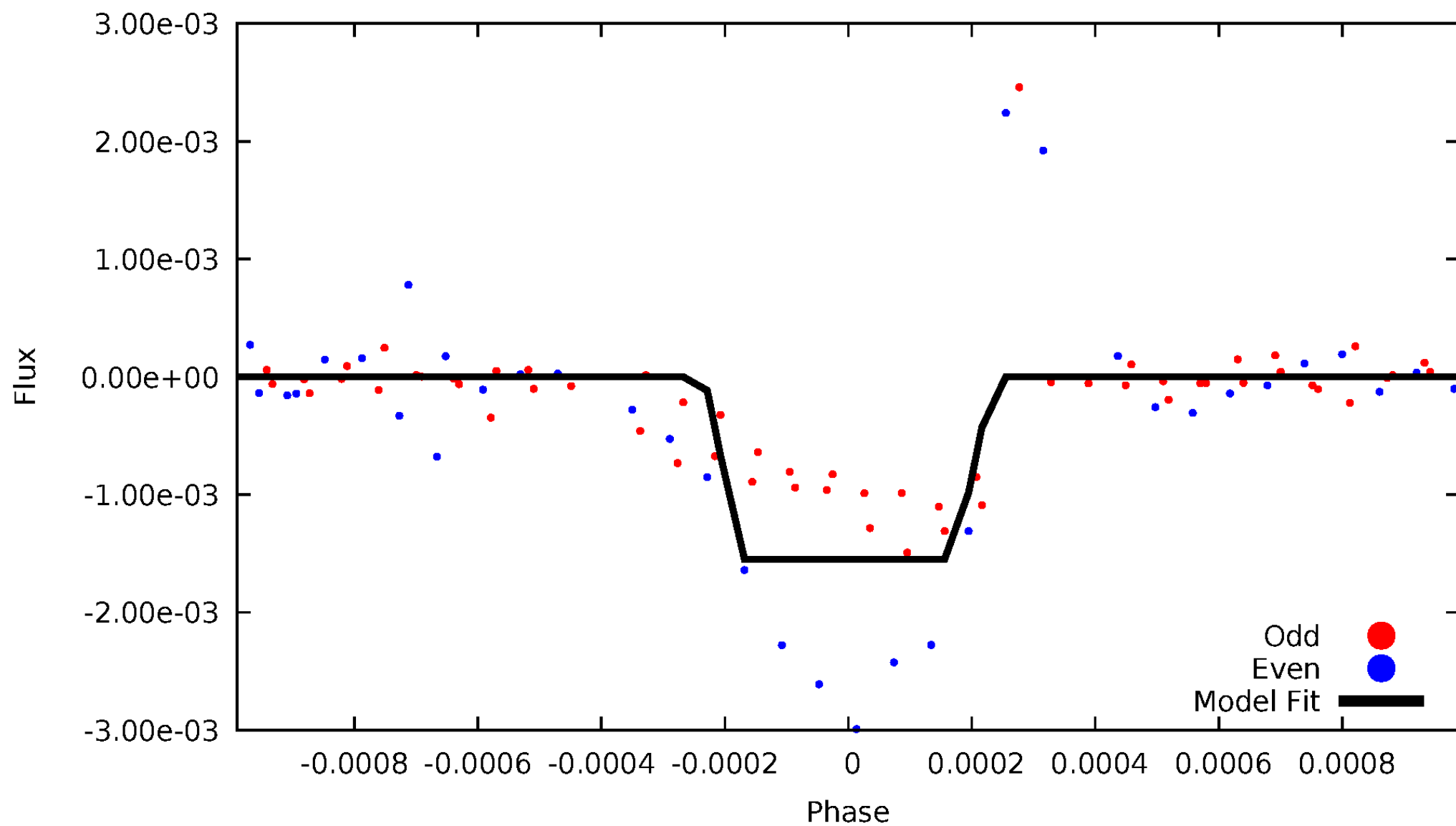
DV Odd/Even

TCE 004454890-01

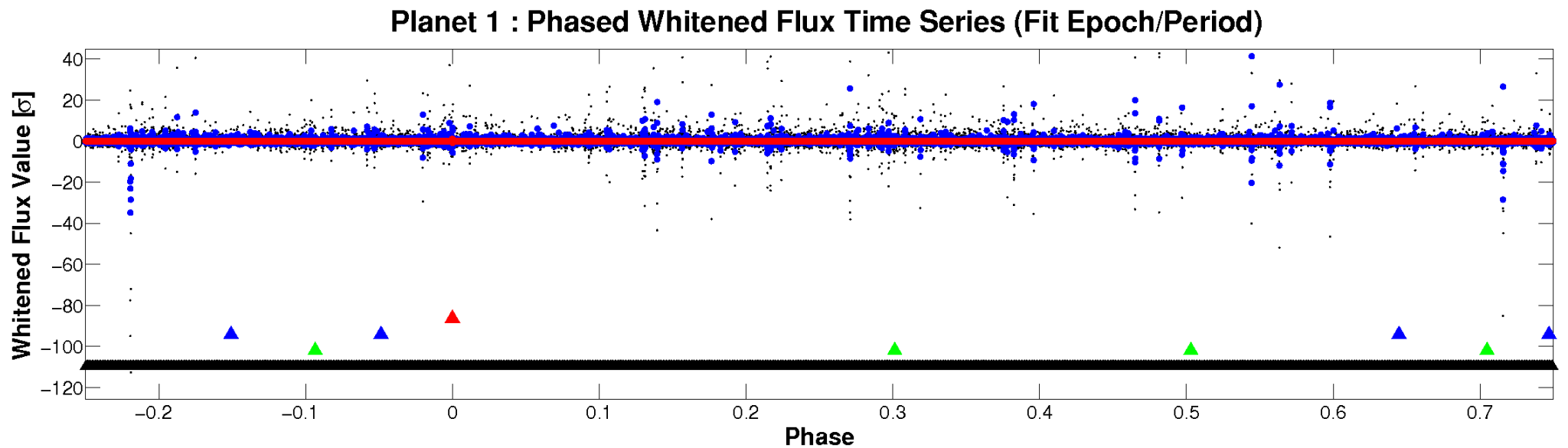
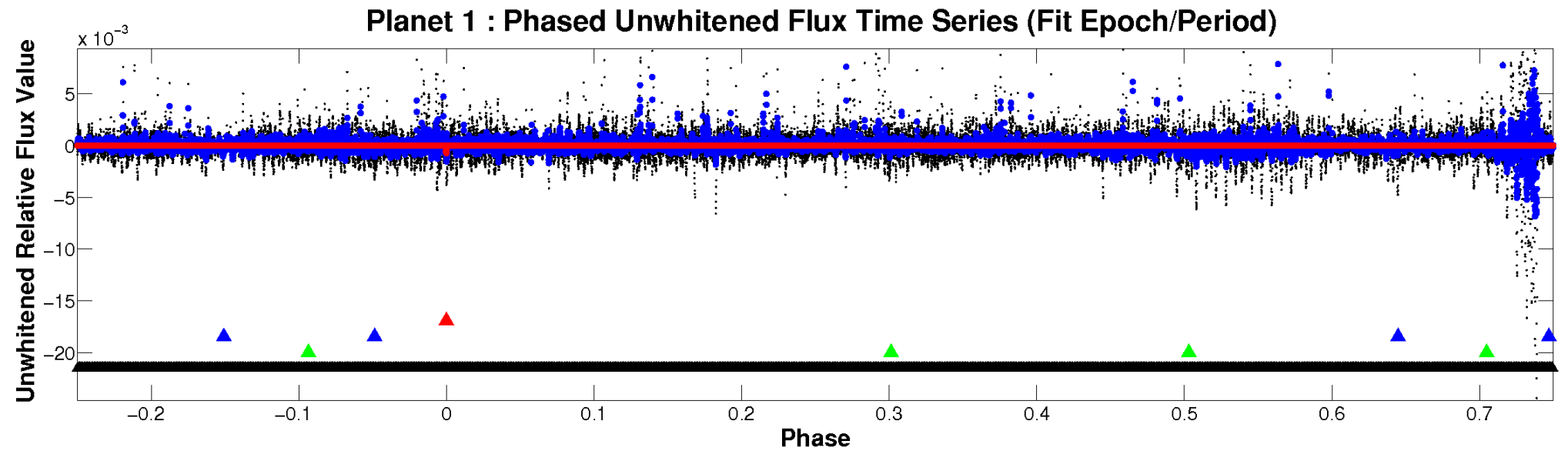


ALT Odd/Even

TCE 004454890-01

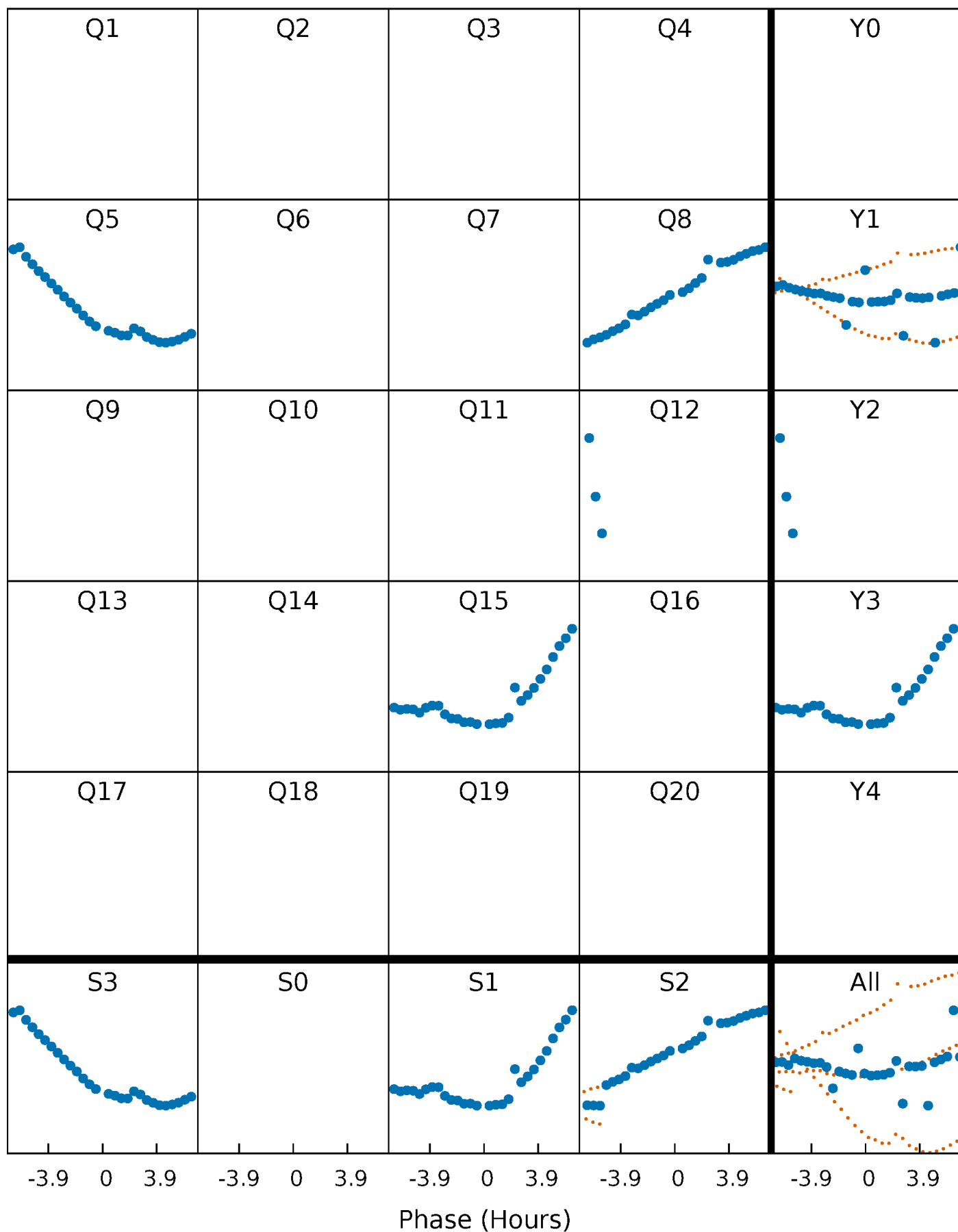


Non-Whitened Vs. Whitened Light Curve



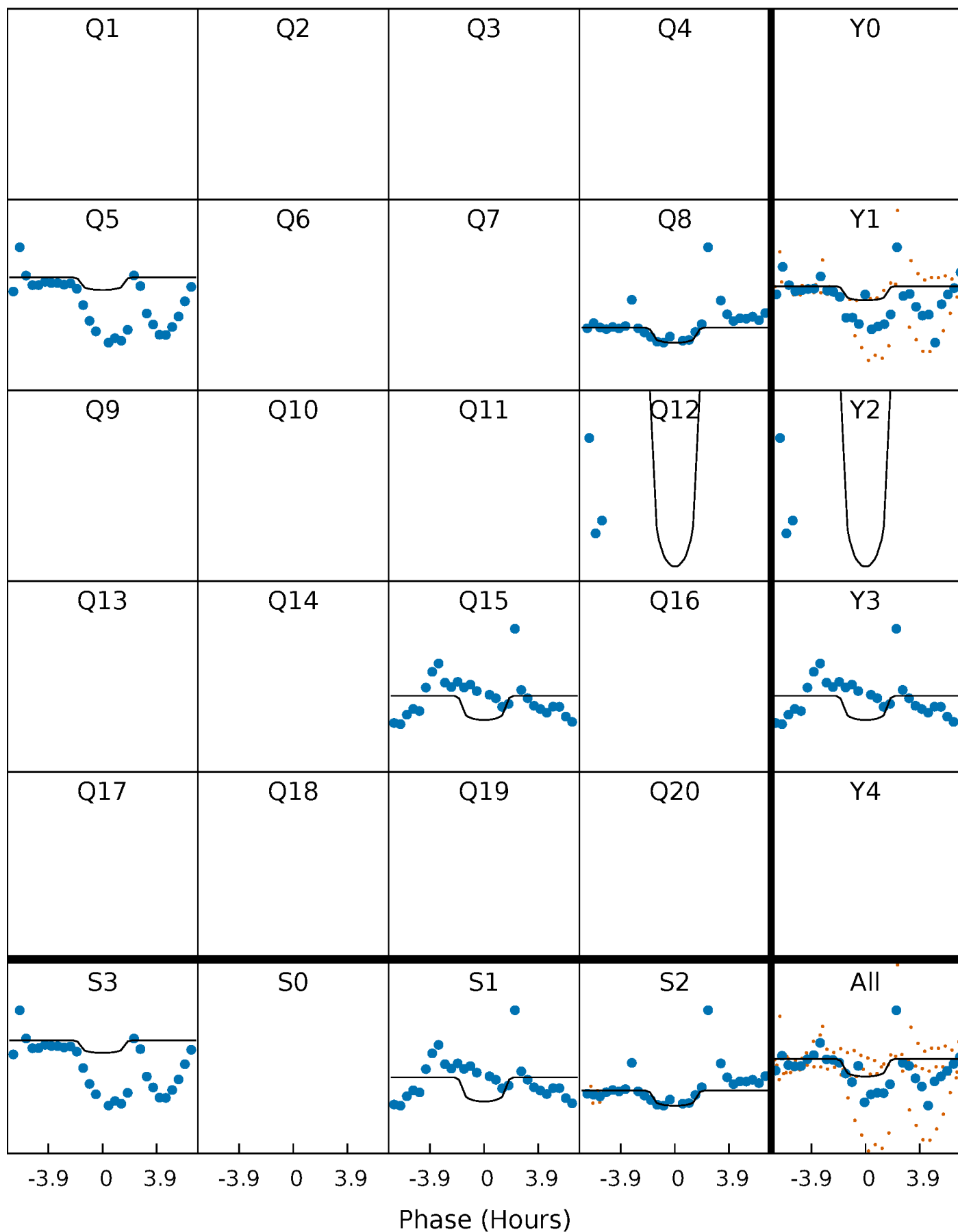
PDC Quarter-Phased Transit Curves

TCE 004454890-01 P=337.801954 Days $T_0=445.892720$ (BKJD)



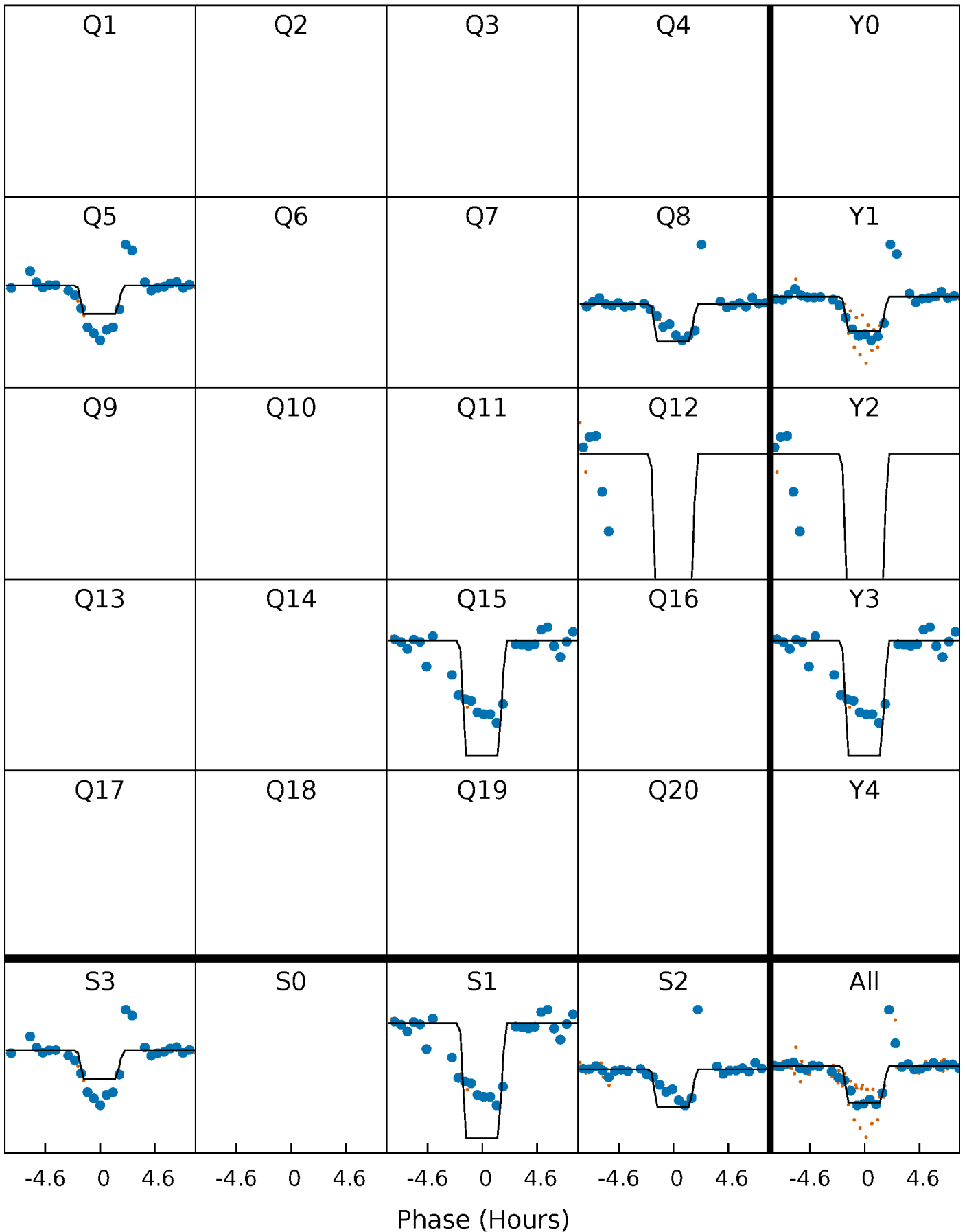
DV Quarter-Phased Transit Curves

TCE 004454890-01 P=337.801954 Days $T_0=445.892720$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

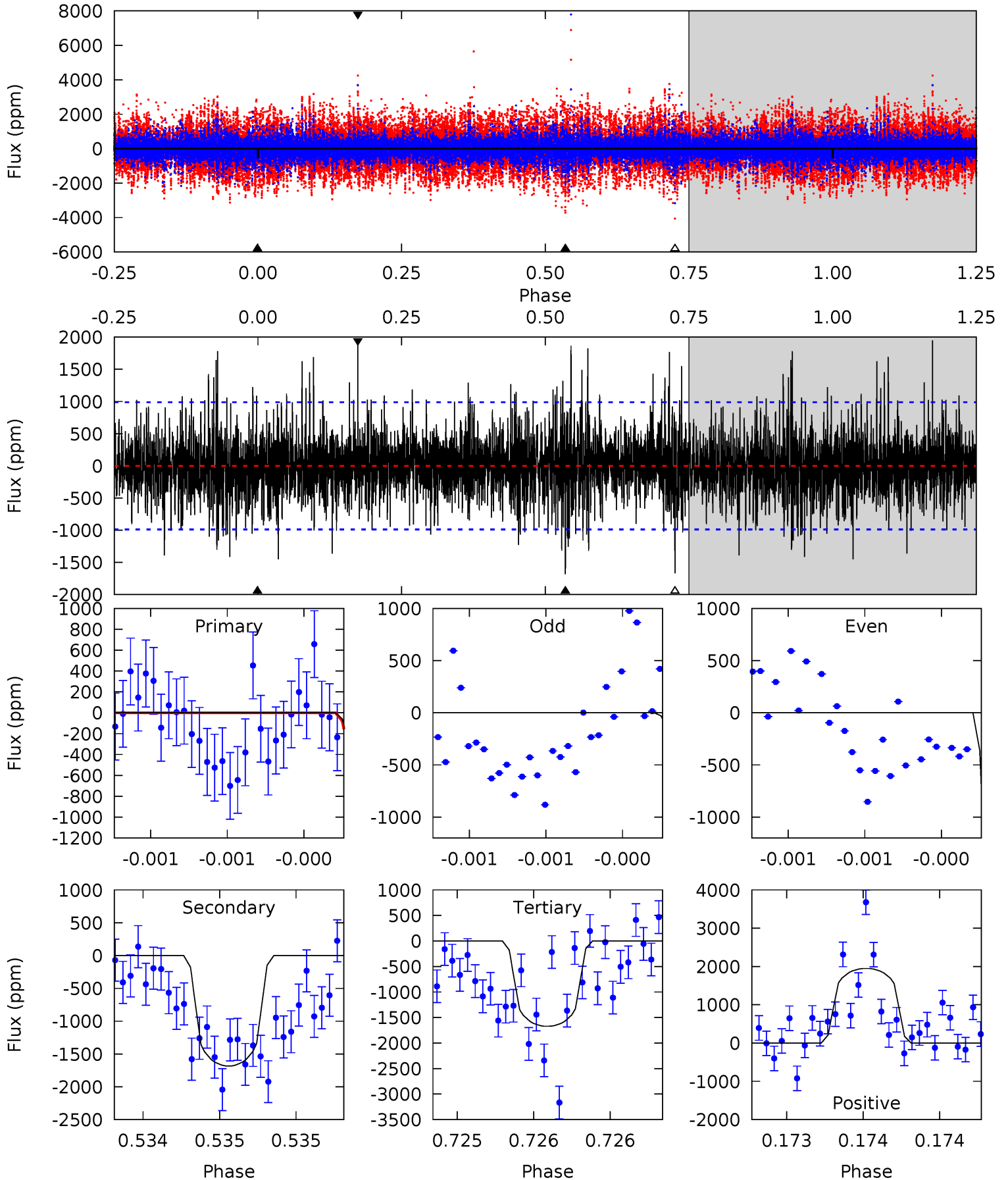
TCE 004454890-01 P=337.799907 Days $T_0=445.897043$ (BKJD)



DV Model-Shift Uniqueness Test

004454890-01, P = 337.801954 Days, E = 108.090766 Days

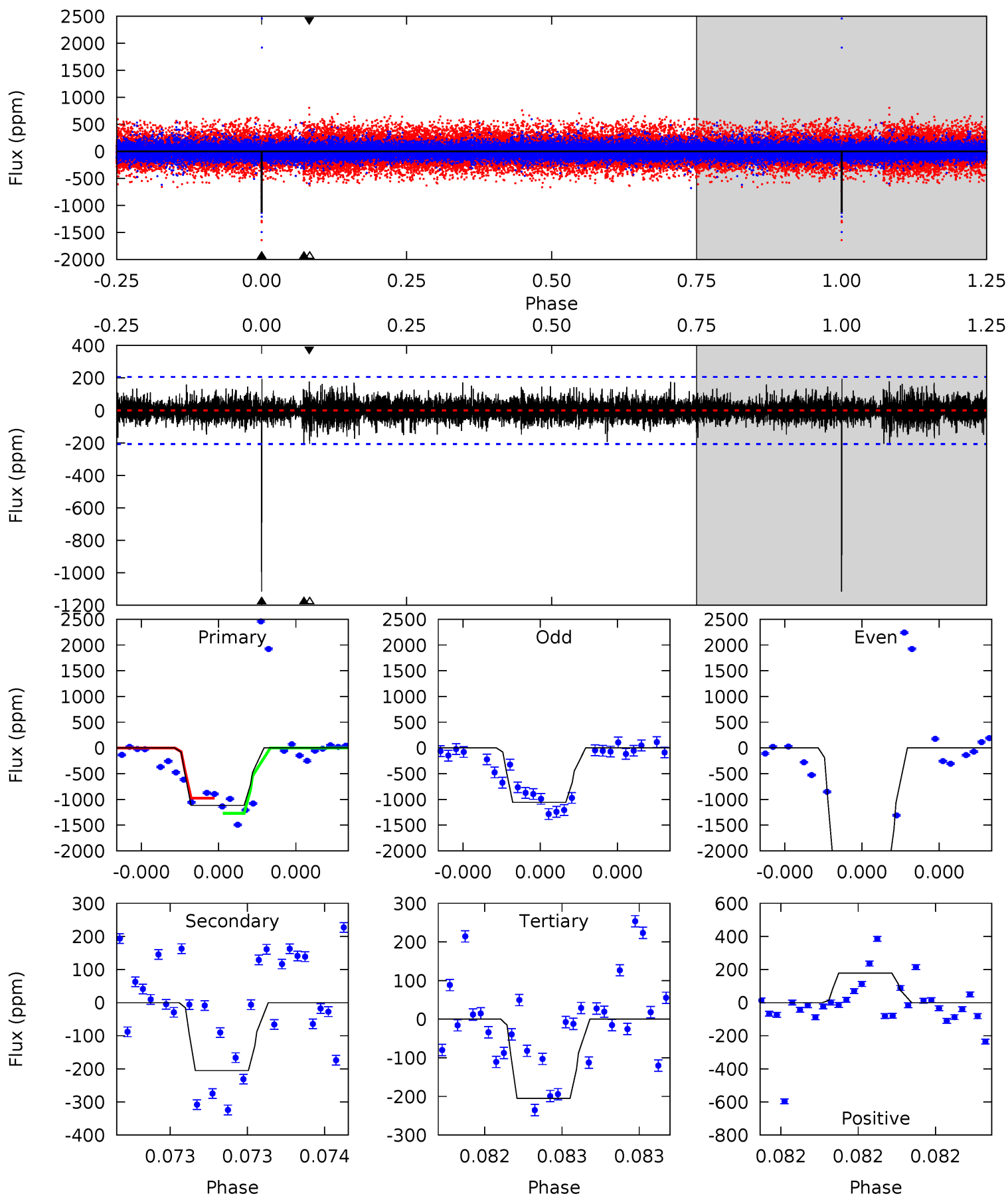
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.11	9.50	9.44	11.0	5.59	3.51	2.13	-6.33	-7.90	0.06	-1.51	7.92	2.18	0.54	1.10



Alt Model-Shift Uniqueness Test

004454890-01, P = 337.799907 Days, E = 108.097136 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.2	5.54	5.53	4.82	5.58	3.50	1.08	24.6	25.3	0.01	0.72	20.5	1.35	0.15	3.99



Stellar Parameters For KIC 004454890

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4938^{+148}_{-163}	$4.718^{+0.045}_{-0.021}$	$-1.620^{+0.300}_{-0.200}$	$0.538^{+0.024}_{-0.030}$	$0.551^{+0.034}_{-0.017}$	$4.991^{+0.872}_{-0.439}$
	+3%/-3%	+1%/-0%	+19%/-12%	+4%/-6%	+6%/-3%	+17%/-9%
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 004454890-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1681 ± 177	$10.12^{+11.36}_{-7.12}$	252^{+8}_{-8}	3012^{+1483}_{-551}	5533^{+57144}_{-4312}
Alt.	-205 ± 37	$10.71^{+11.51}_{-7.42}$	252^{+8}_{-9}	2263^{+825}_{-325}	581^{+5736}_{-448}

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 $A_{obs} \gg 1.0$

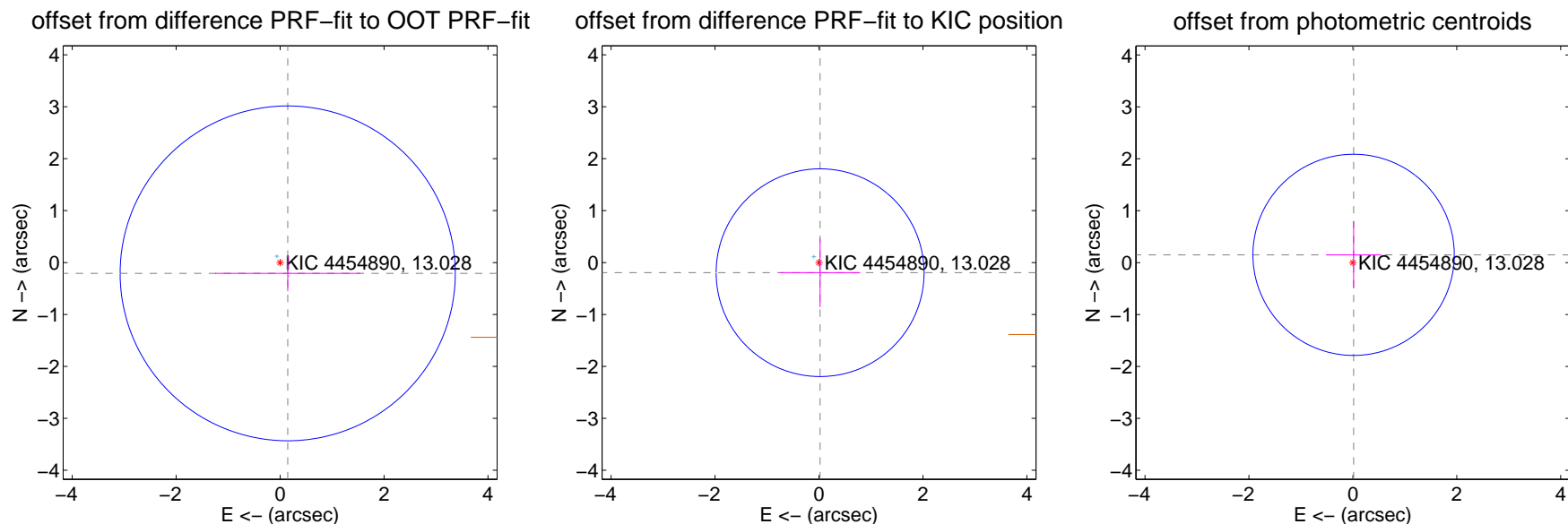
DV Centroid Data

Supplemental centroid analysis for 004454890-01. Kepler magnitude: 13.03. Transit SNR 3.41

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.255 ± 1.075	0.24	-0.146 ± 1.400	-0.208 ± 0.343
PRF-fit source offset from KIC position	0.197 ± 0.667	0.30	-0.022 ± 0.773	-0.196 ± 0.665
photometric centroid source offset	0.15 ± 0.65	0.23	-0.01 ± 0.53	0.15 ± 0.65

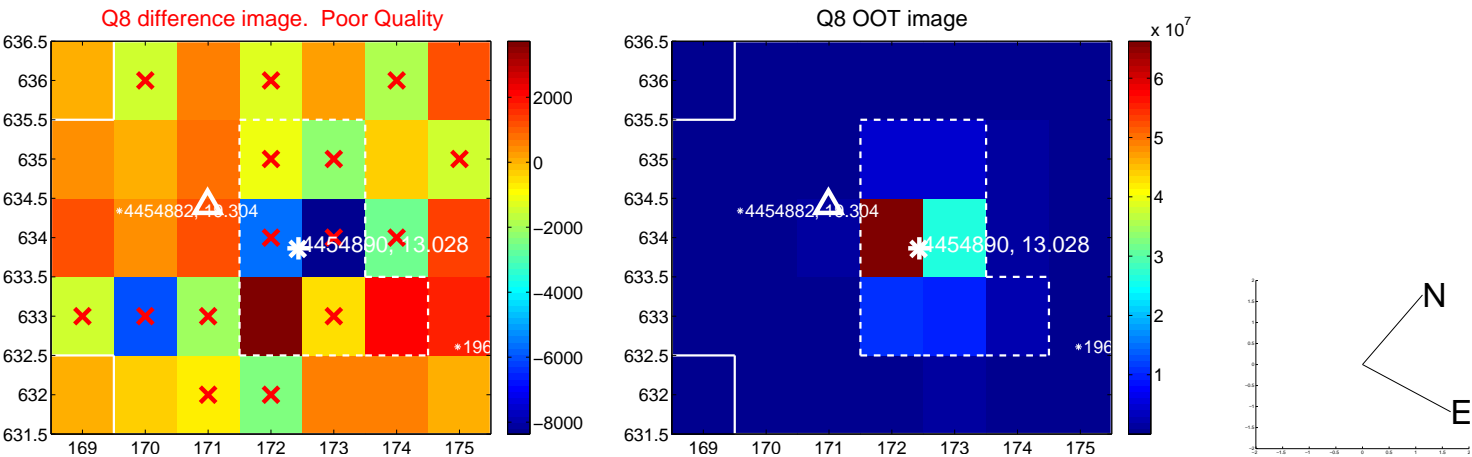
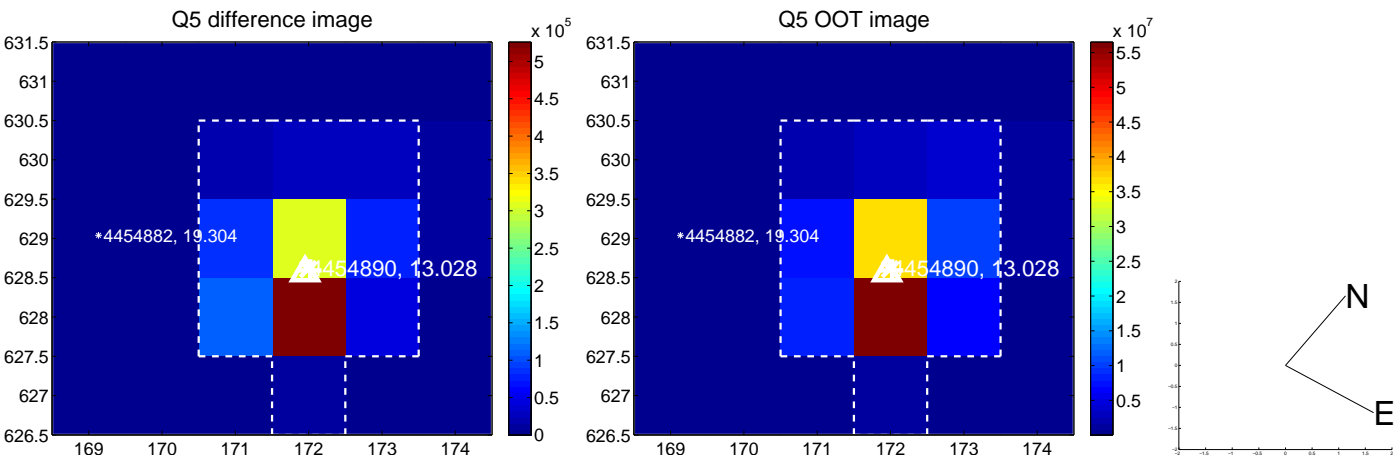


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

Q13 no difference image



Q13 no OOT image



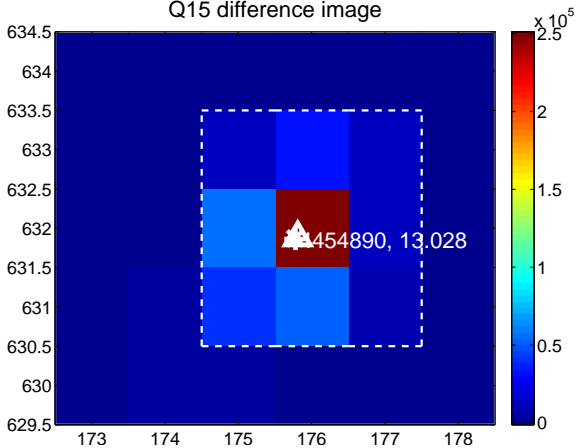
Q14 no difference image



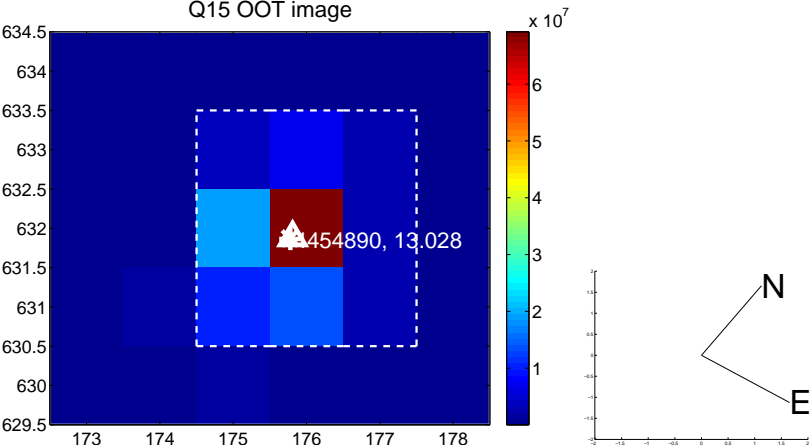
Q14 no OOT image



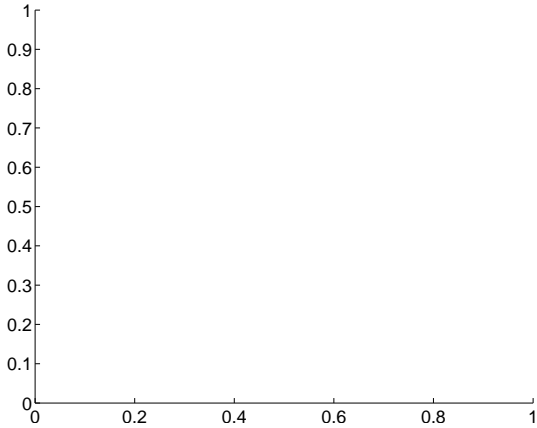
Q15 difference image



Q15 OOT image



Q16 no difference image

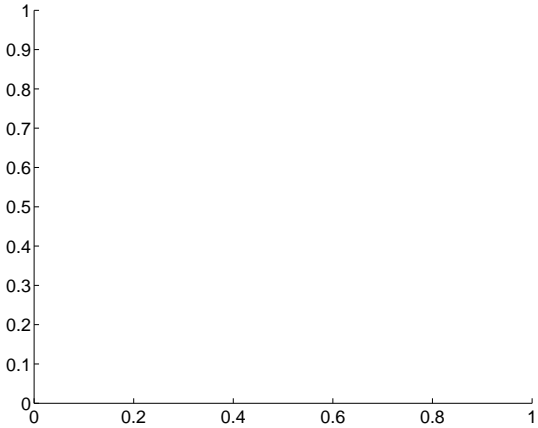


Q16 no OOT image

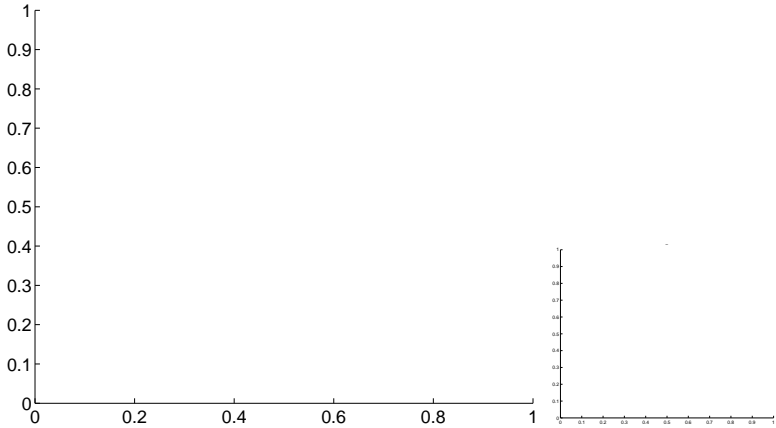


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

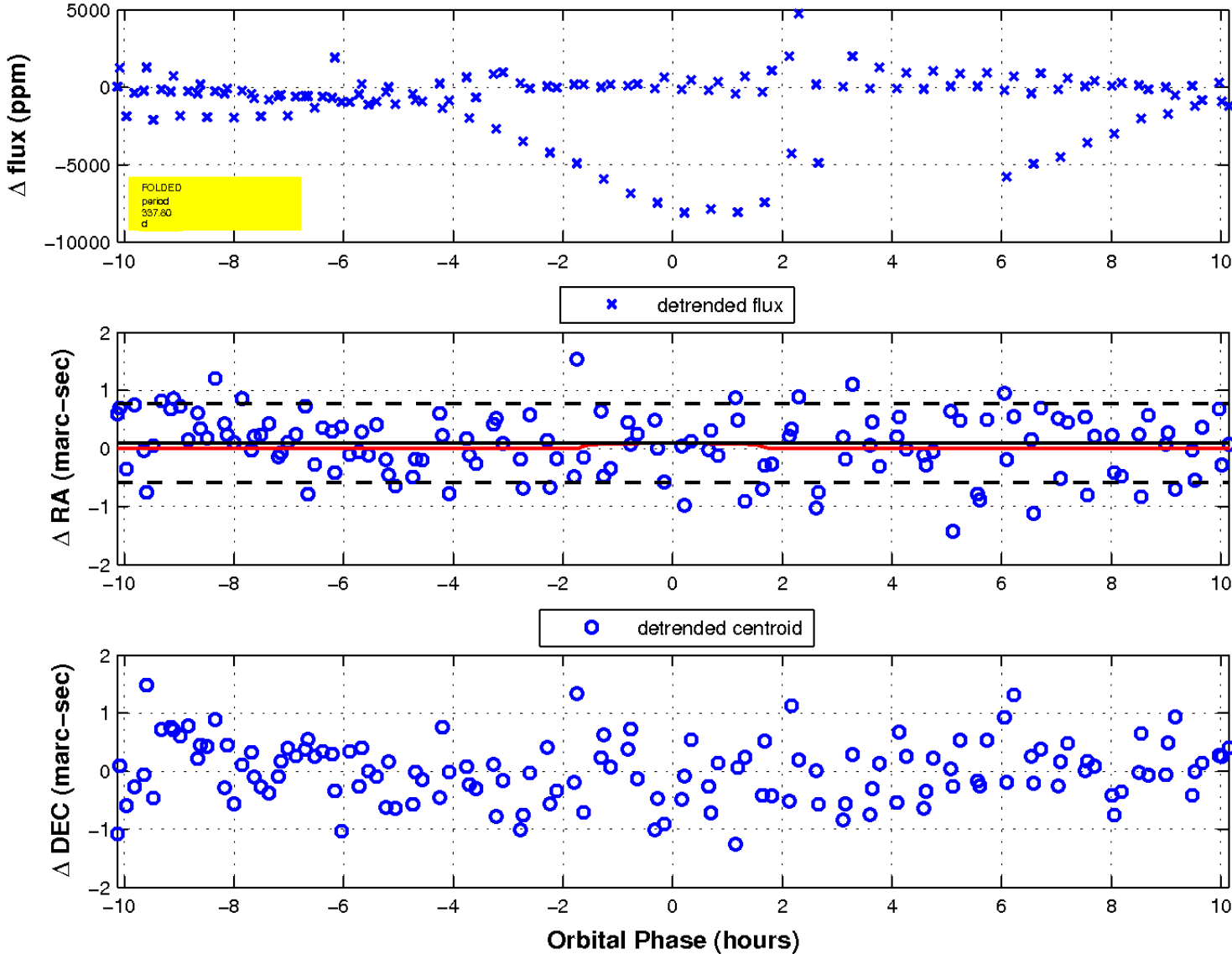
Q17 no difference image



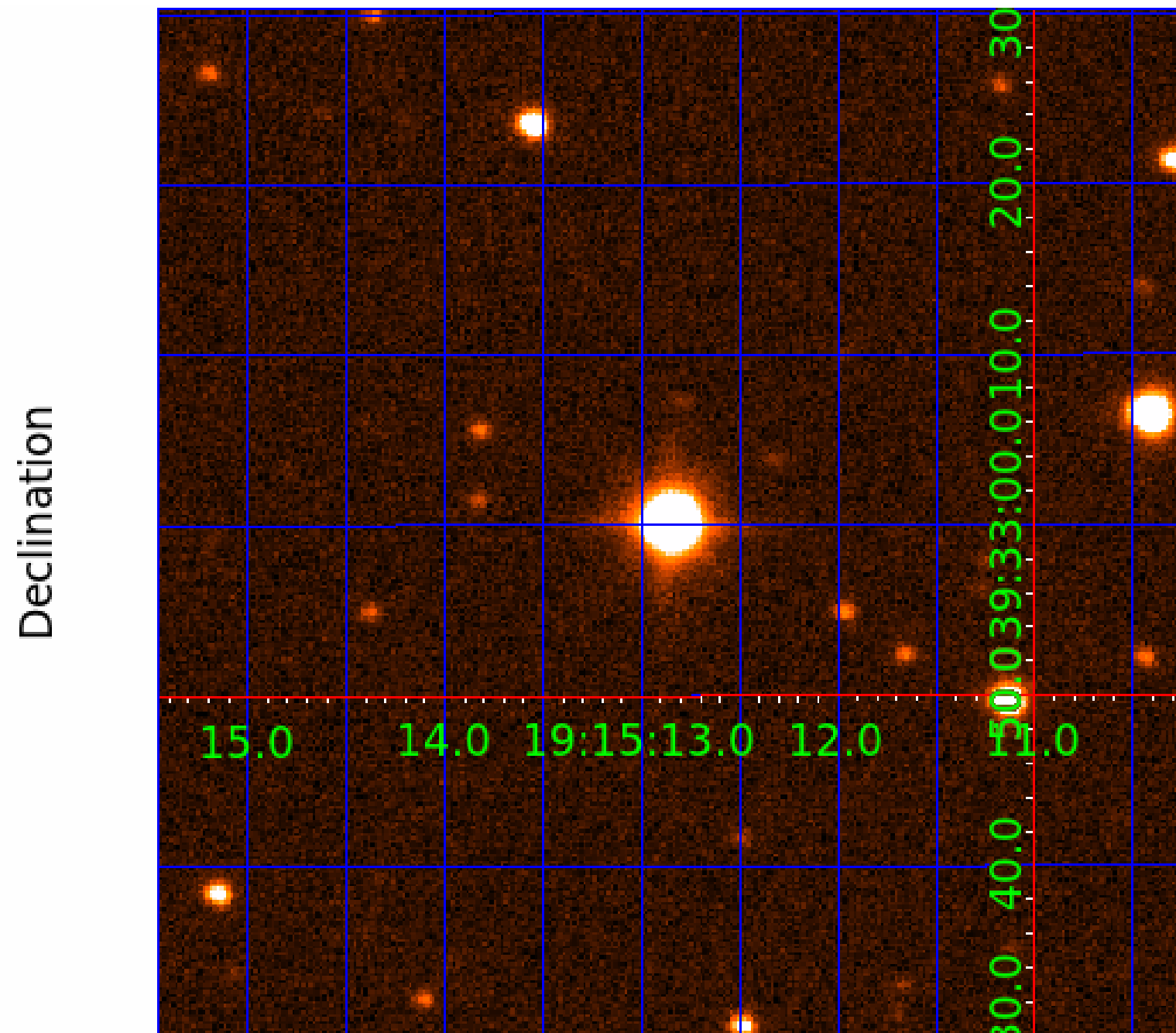
Q17 no OOT image



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 004454890

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})
004454890-01	OBS	No	337.801954	445.892720	727.0	3.430	19.9	3.4	0.54	4938	1.53	0.25
004454890-02	OBS	No	372.320709	325.917492	2121.7	7.349	12.7	7.0	0.54	4938	2.58	0.22
004454890-03	OBS	No	405.946442	209.884795	1512.0	4.879	15.1	6.7	0.54	4938	2.09	0.20
004454890-04	OBS	No	0.870067	131.789119	669.1	1.500	7.6	-1.0	0.54	4938	1.39	720.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004454890-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004454890-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
004454890-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
004454890-04	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS

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

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

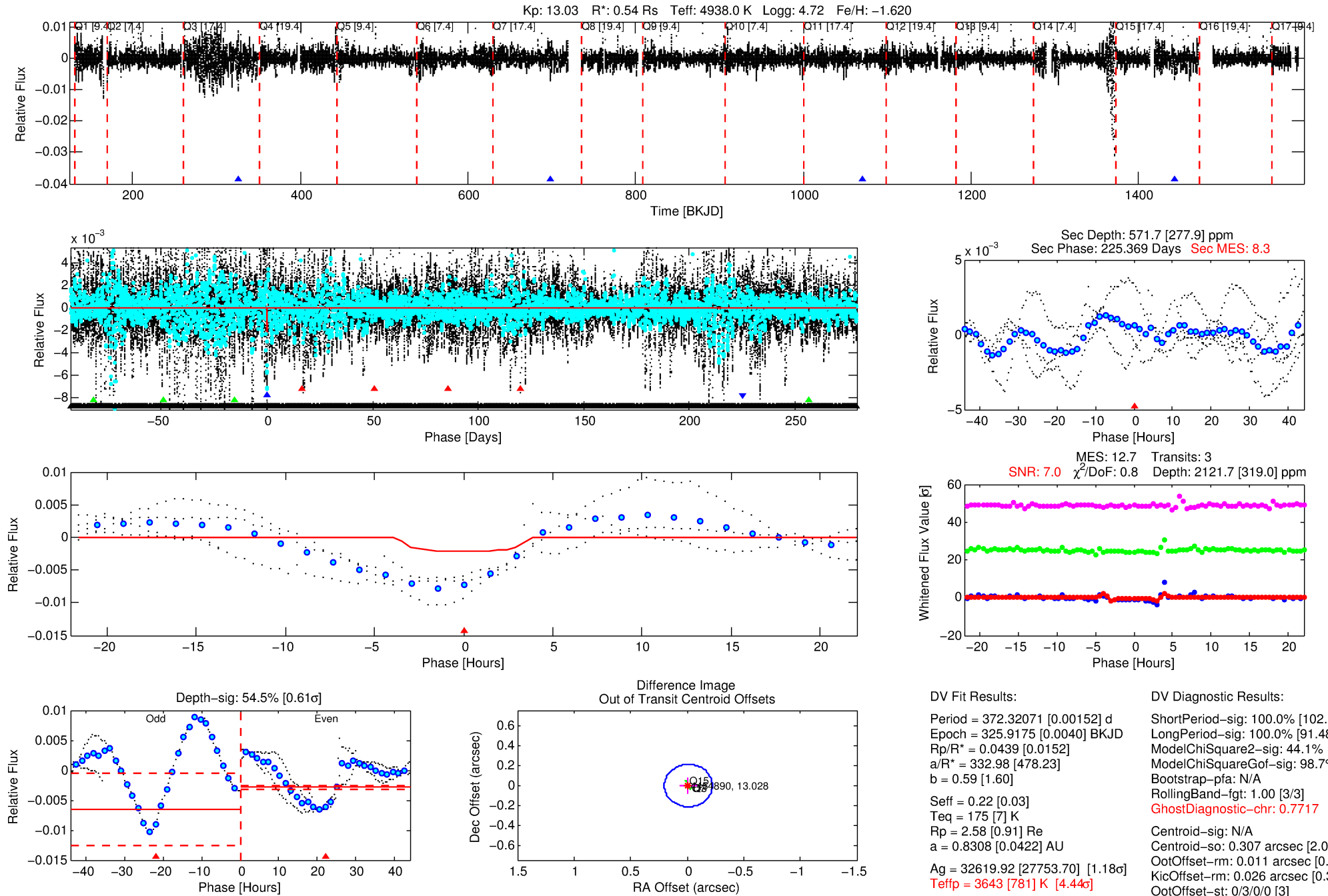
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004454890-02

No Significant Match Found

DV One-Page Summary

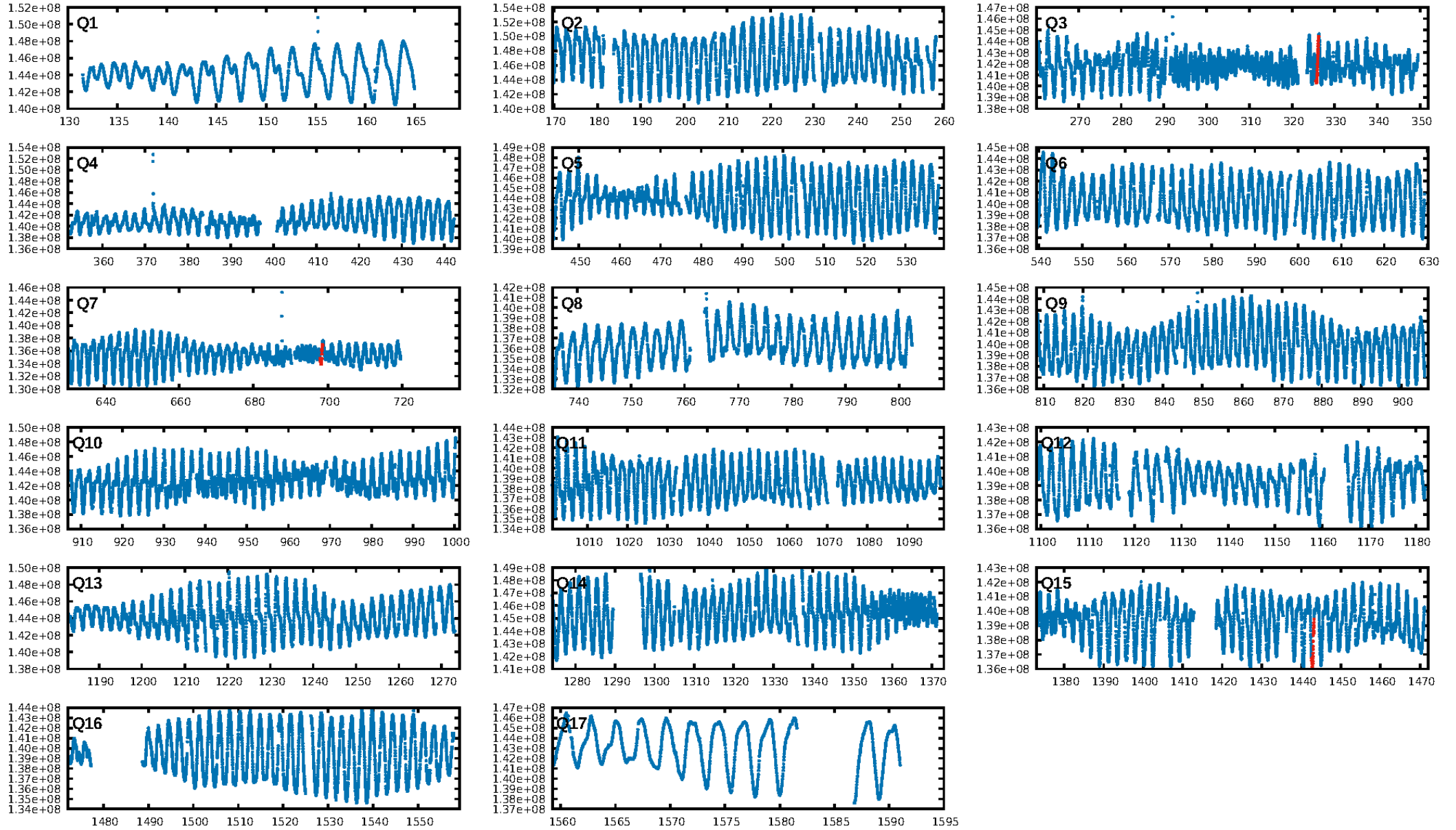
KIC: 4454890 Candidate: 2 of 4 Period: 372.321 d



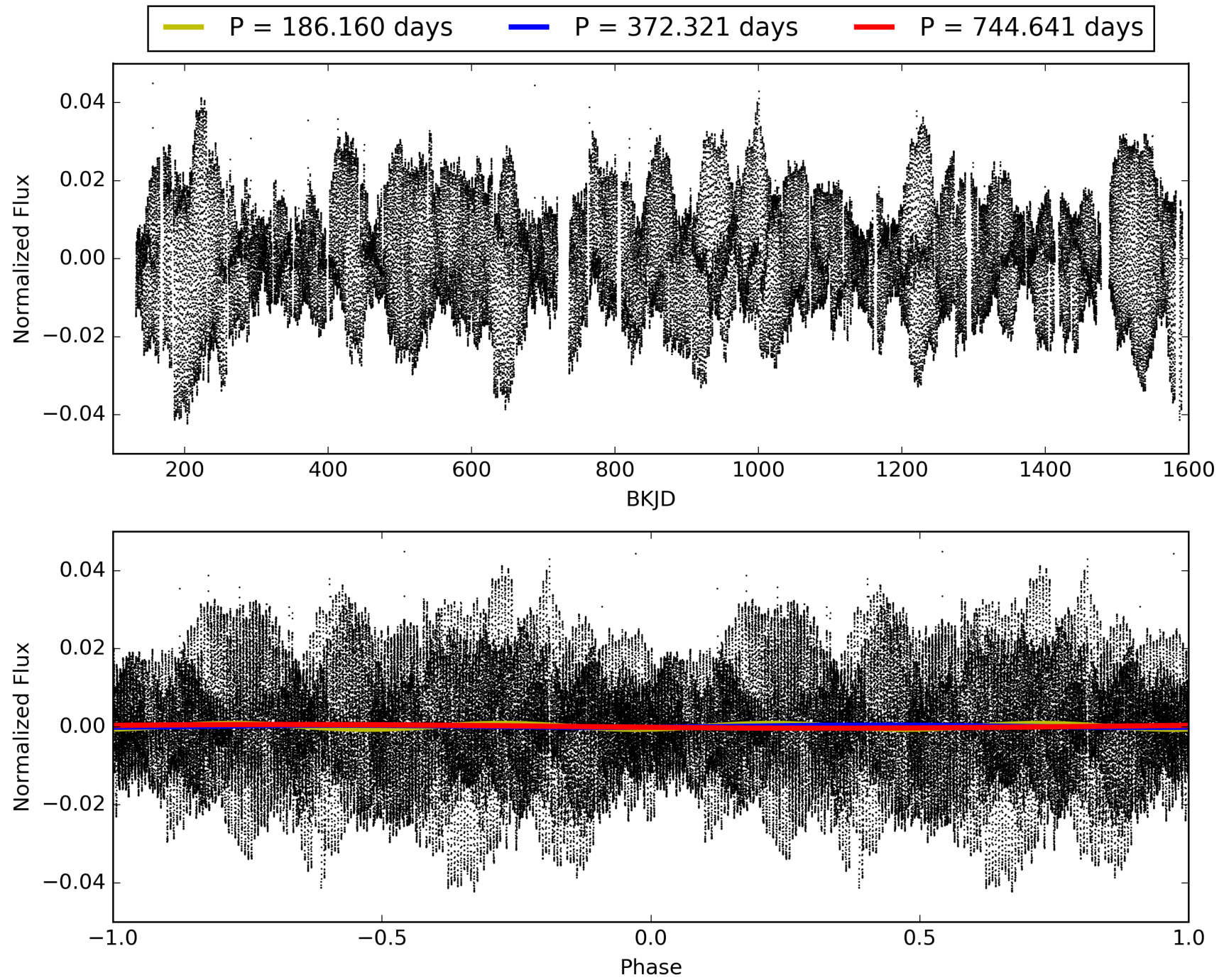
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:27:41 Z

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

TCE 004454890-02, PDC Light Curves

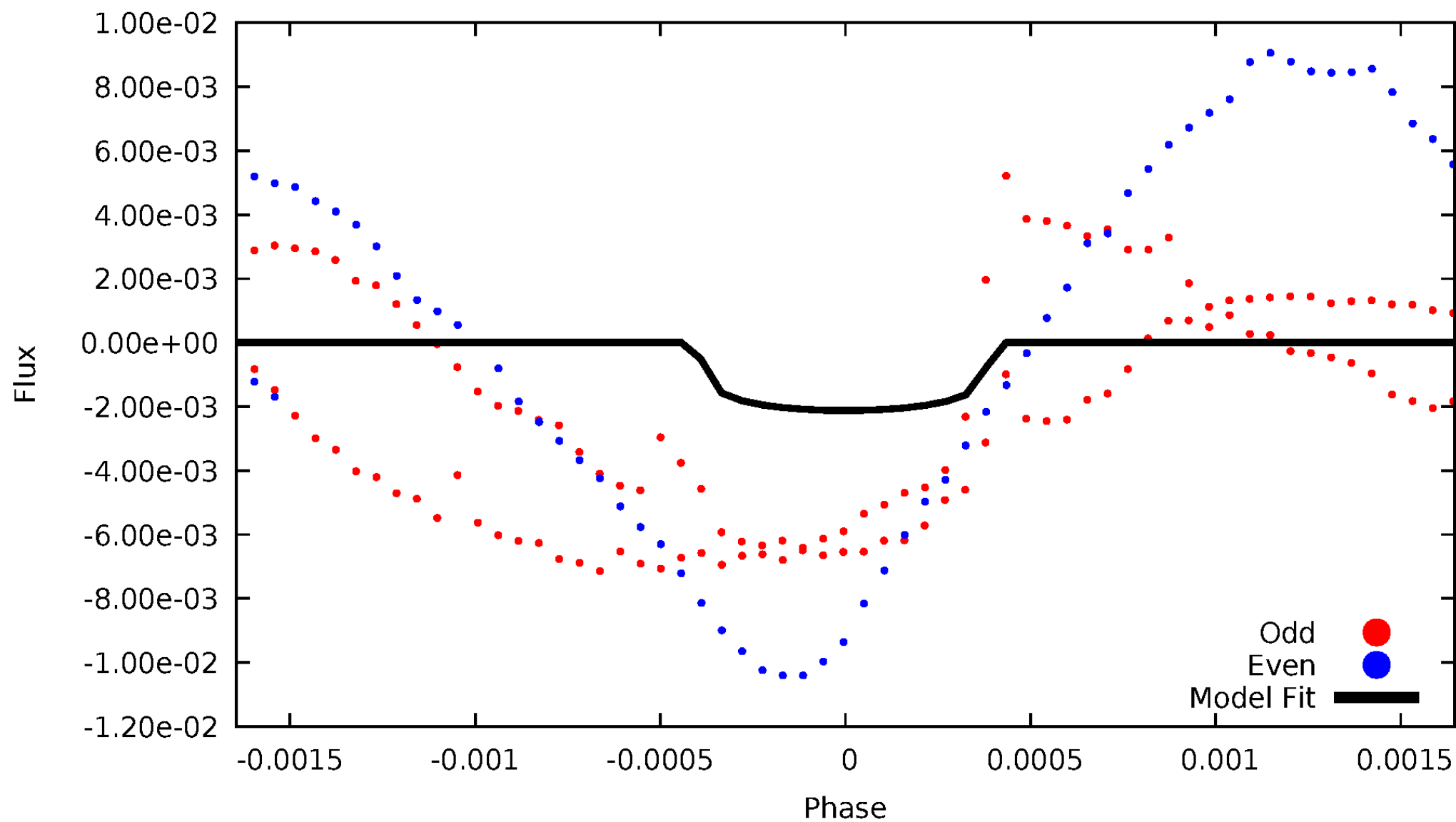


TCE 004454890-02



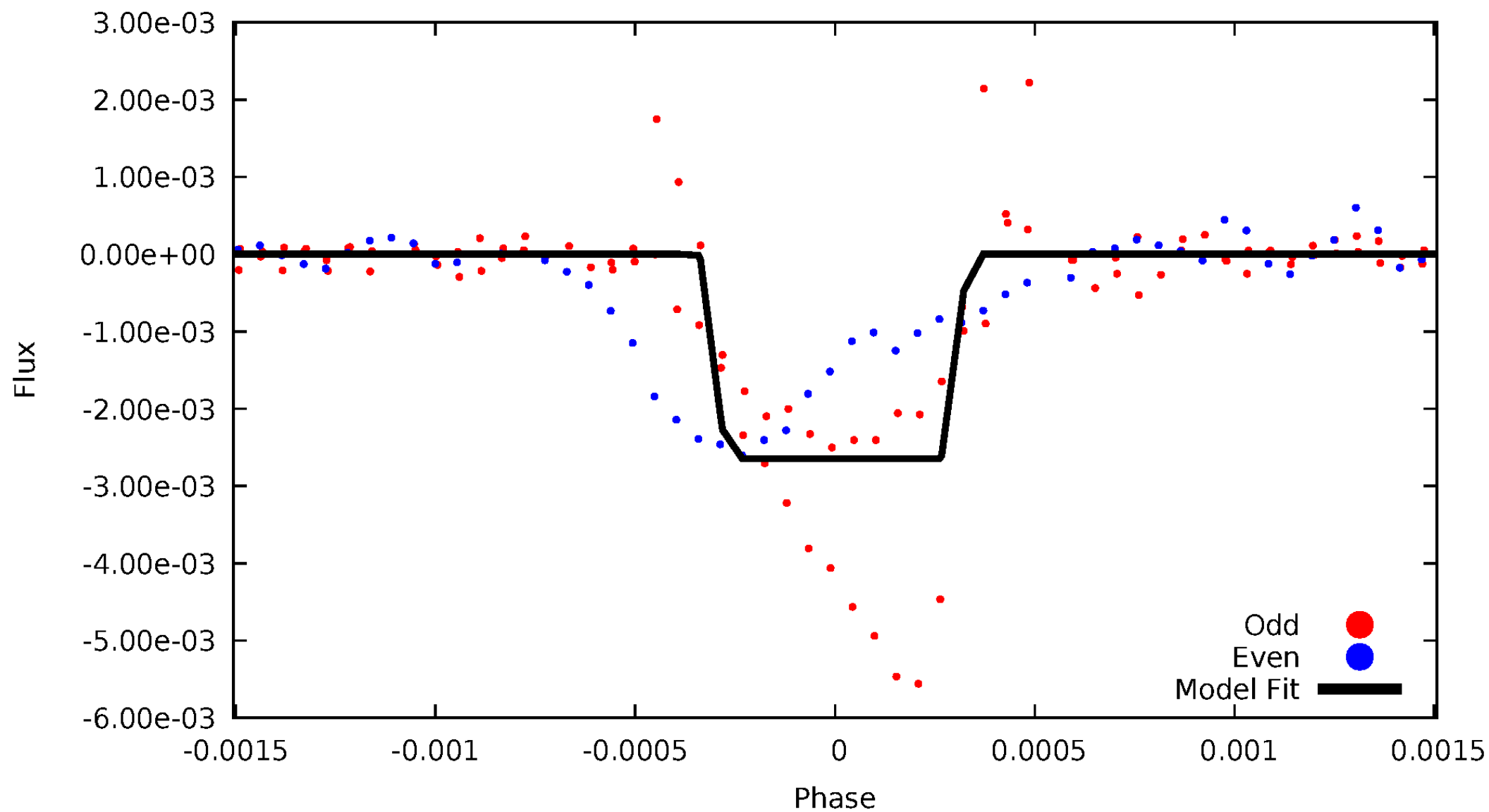
DV Odd/Even

TCE 004454890-02



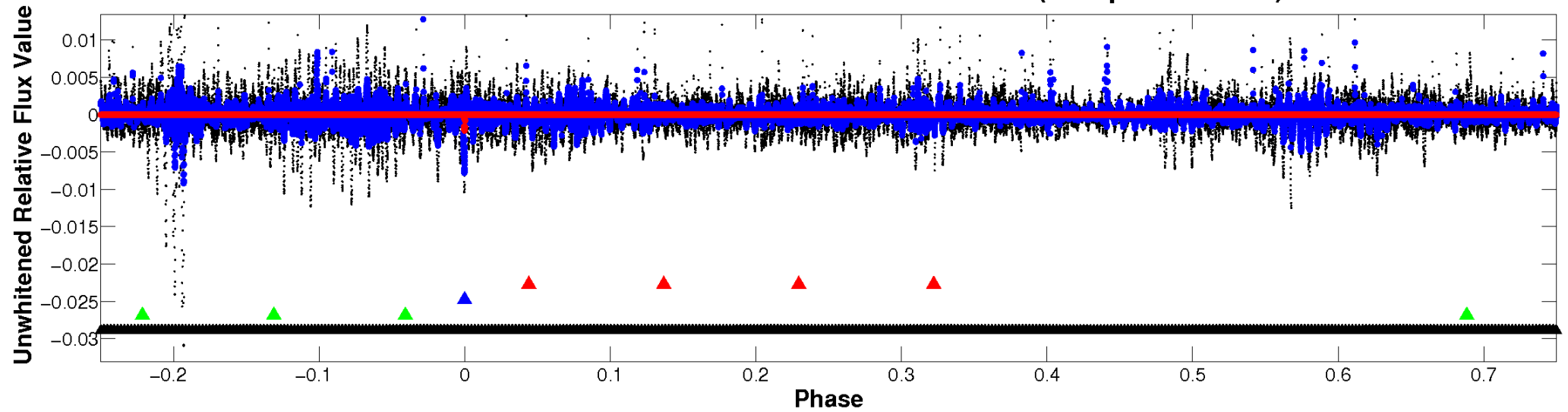
ALT Odd/Even

TCE 004454890-02

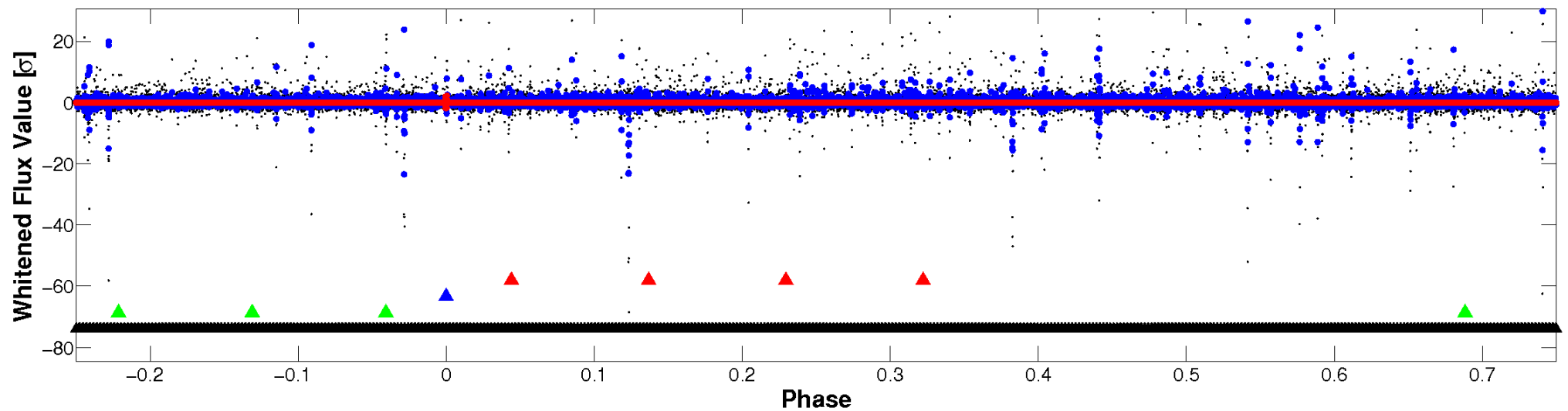


Non-Whitened Vs. Whitened Light Curve

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

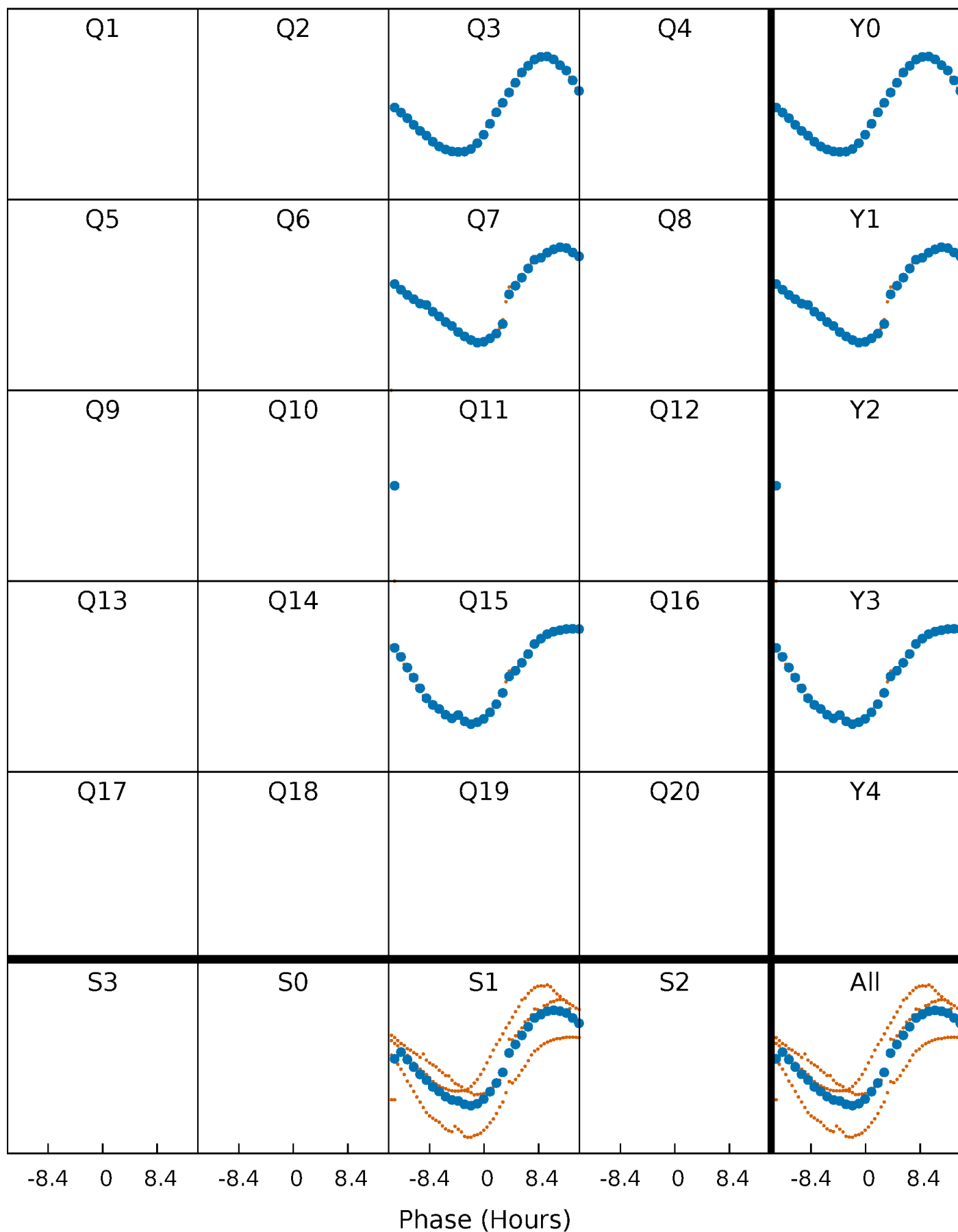


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



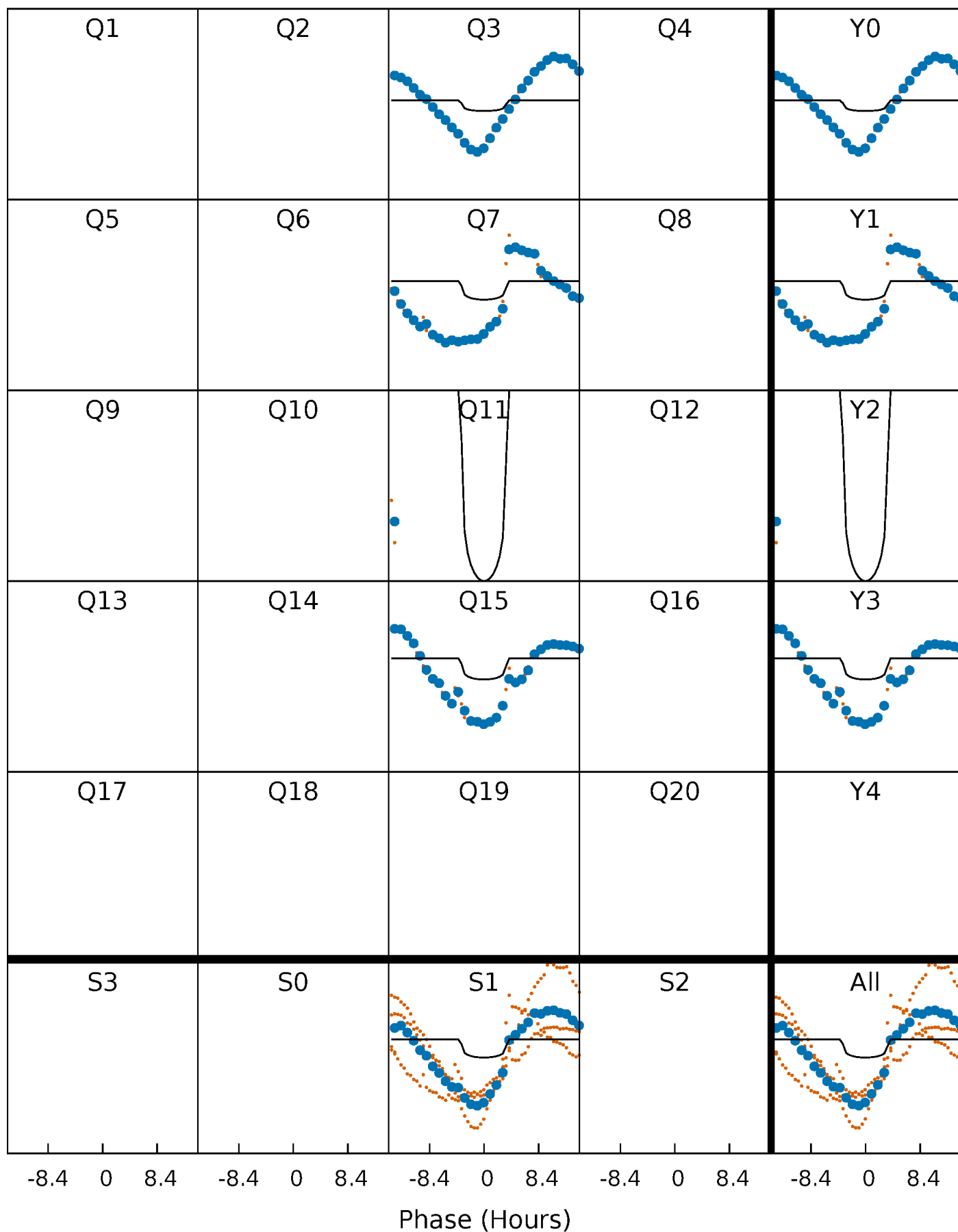
PDC Quarter-Phased Transit Curves

TCE 004454890-02 $P=372.320709$ Days $T_0=325.917492$ (BKJD)



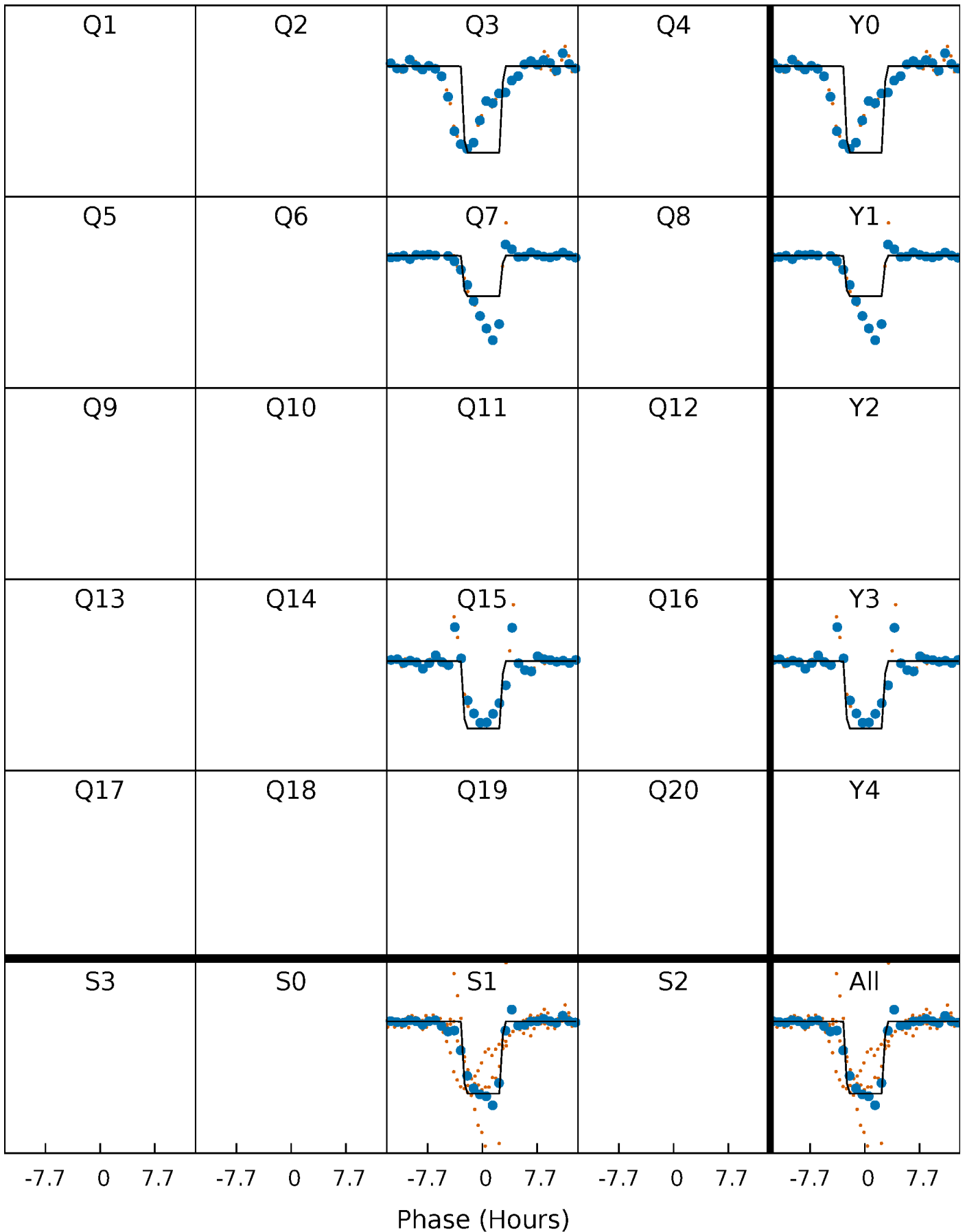
DV Quarter-Phased Transit Curves

TCE 004454890-02 $P=372.320709$ Days $T_0=325.917492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

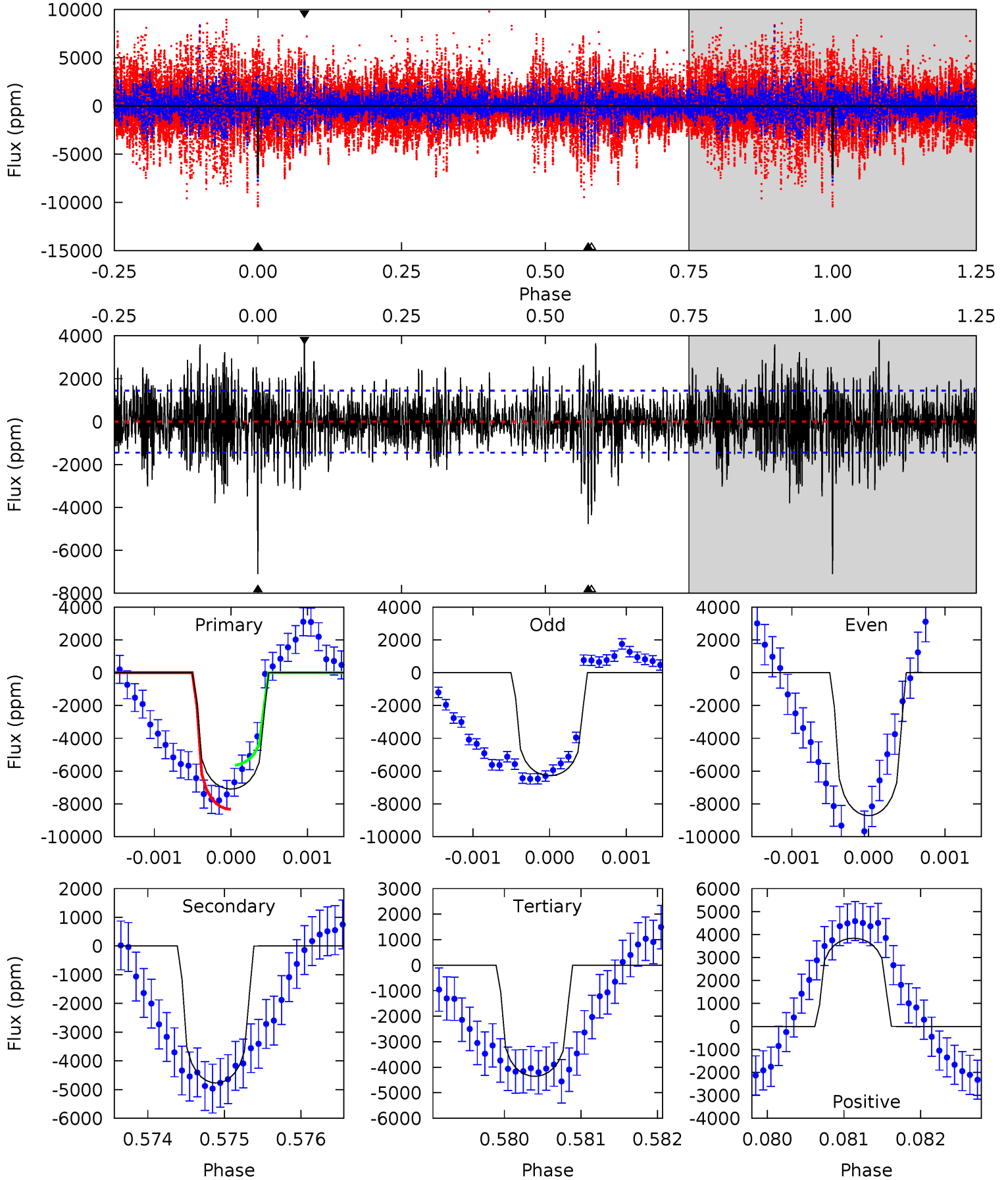
TCE 004454890-02 P=372.299463 Days $T_0=325.961559$ (BKJD)



DV Model-Shift Uniqueness Test

004454890-02, P = 372.320709 Days, E = 325.917492 Days

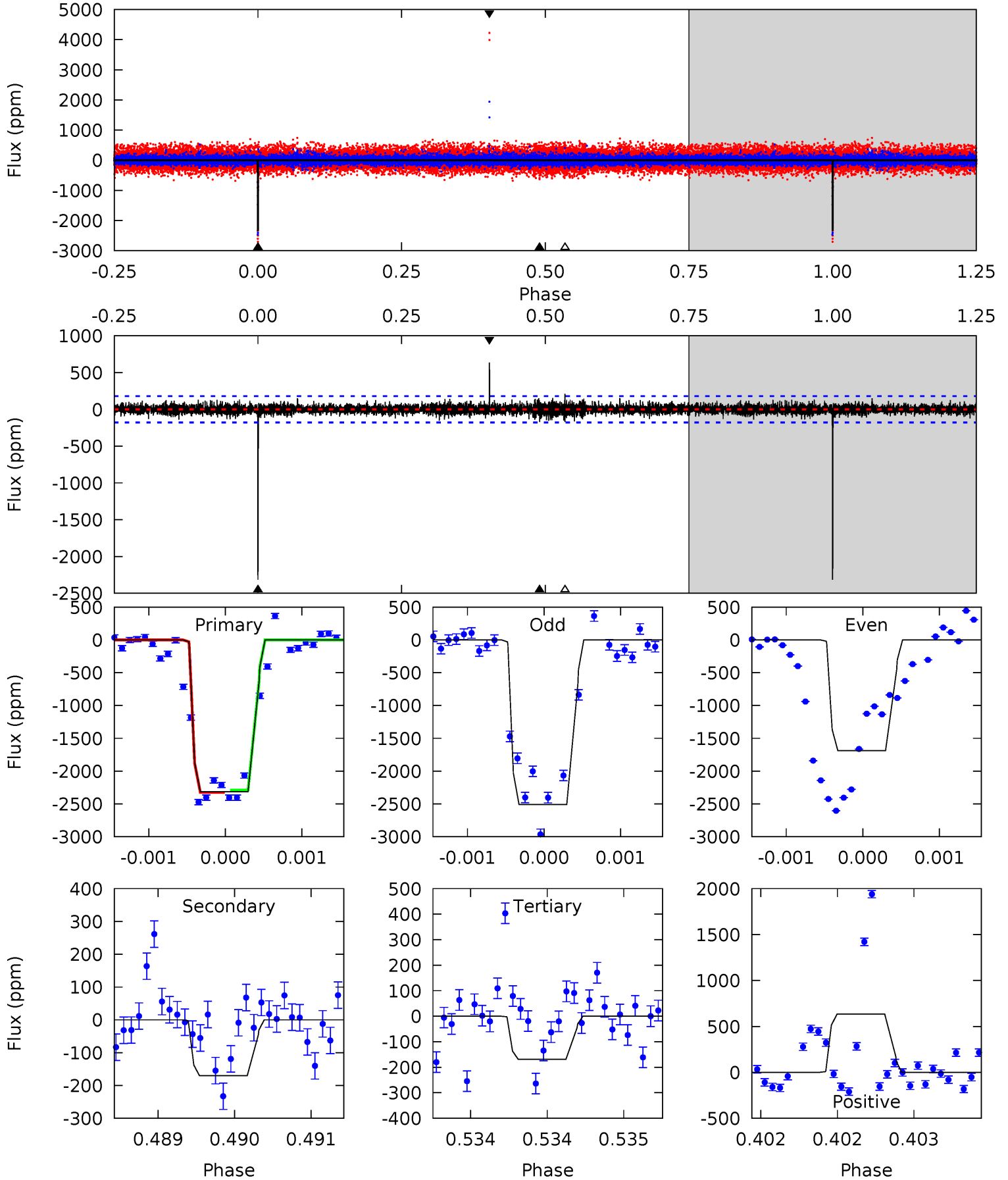
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	18.0	16.5	14.5	5.47	3.33	3.59	10.4	12.3	1.57	3.52	3.86	1.07	0.35	5.03



Alt Model-Shift Uniqueness Test

004454890-02, P = 372.299463 Days, E = 325.961559 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.2	5.24	5.20	19.5	5.51	3.38	1.15	66.0	51.7	0.04	-14.2	14.2	1.23	0.21	0.54



Stellar Parameters For KIC 004454890

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4938^{+148}_{-163}	$4.718^{+0.045}_{-0.021}$	$-1.620^{+0.300}_{-0.200}$	$0.538^{+0.024}_{-0.030}$	$0.551^{+0.034}_{-0.017}$	$4.991^{+0.872}_{-0.439}$
	+3%/-3%	+1%/-0%	+19%/-12%	+4%/-6%	+6%/-3%	+17%/-9%
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 004454890-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4772 ± 264	$2.54^{+0.81}_{-0.82}$	243^{+8}_{-8}	6090^{+1471}_{-788}	$289270^{+332544}_{-127959}$
Alt.	-170 ± 33	$2.97^{+0.90}_{-0.92}$	244^{+8}_{-9}	3091^{+354}_{-260}	7277^{+7768}_{-3077}

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

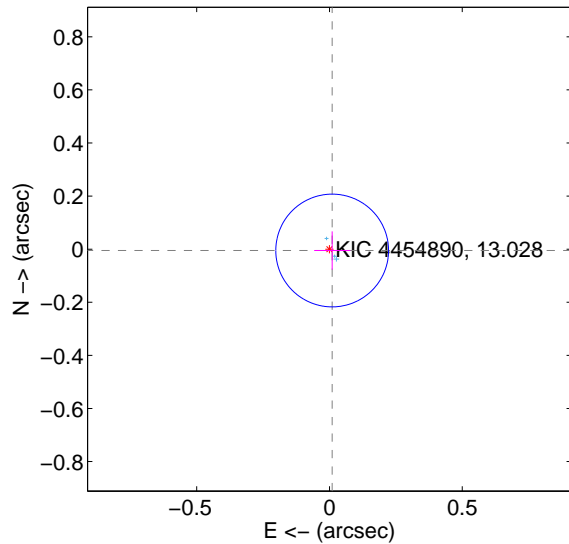
Supplemental centroid analysis for 004454890-02. Kepler magnitude: 13.03. Transit SNR 6.98

There are 3 quarters with good PRF difference image offsets

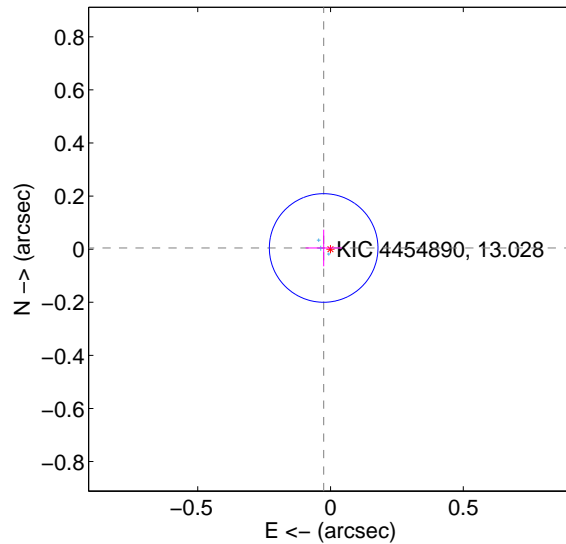
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.011 ± 0.071	0.16	-0.010 ± 0.068	-0.005 ± 0.072
PRF-fit source offset from KIC position	0.026 ± 0.068	0.38	0.026 ± 0.068	0.005 ± 0.069
photometric centroid source offset	0.31 ± 0.15	2.04	0.30 ± 0.15	-0.05 ± 0.20

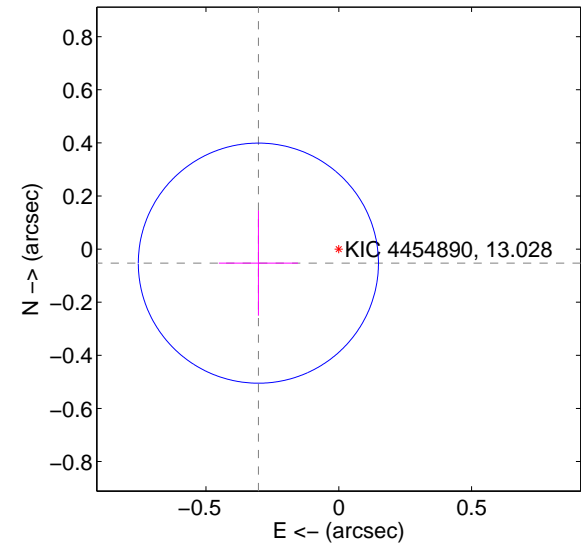
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



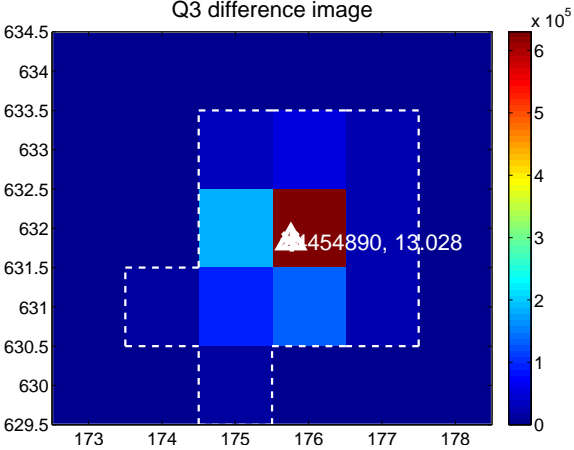
Q2 no difference image



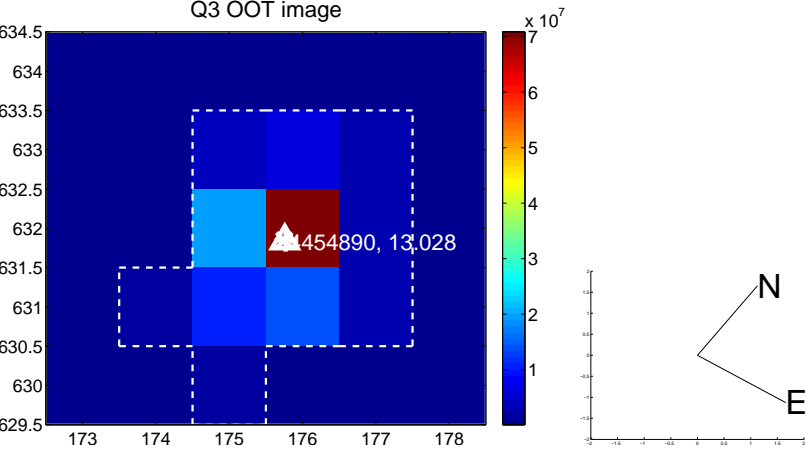
Q2 no OOT image



Q3 difference image



Q3 OOT image



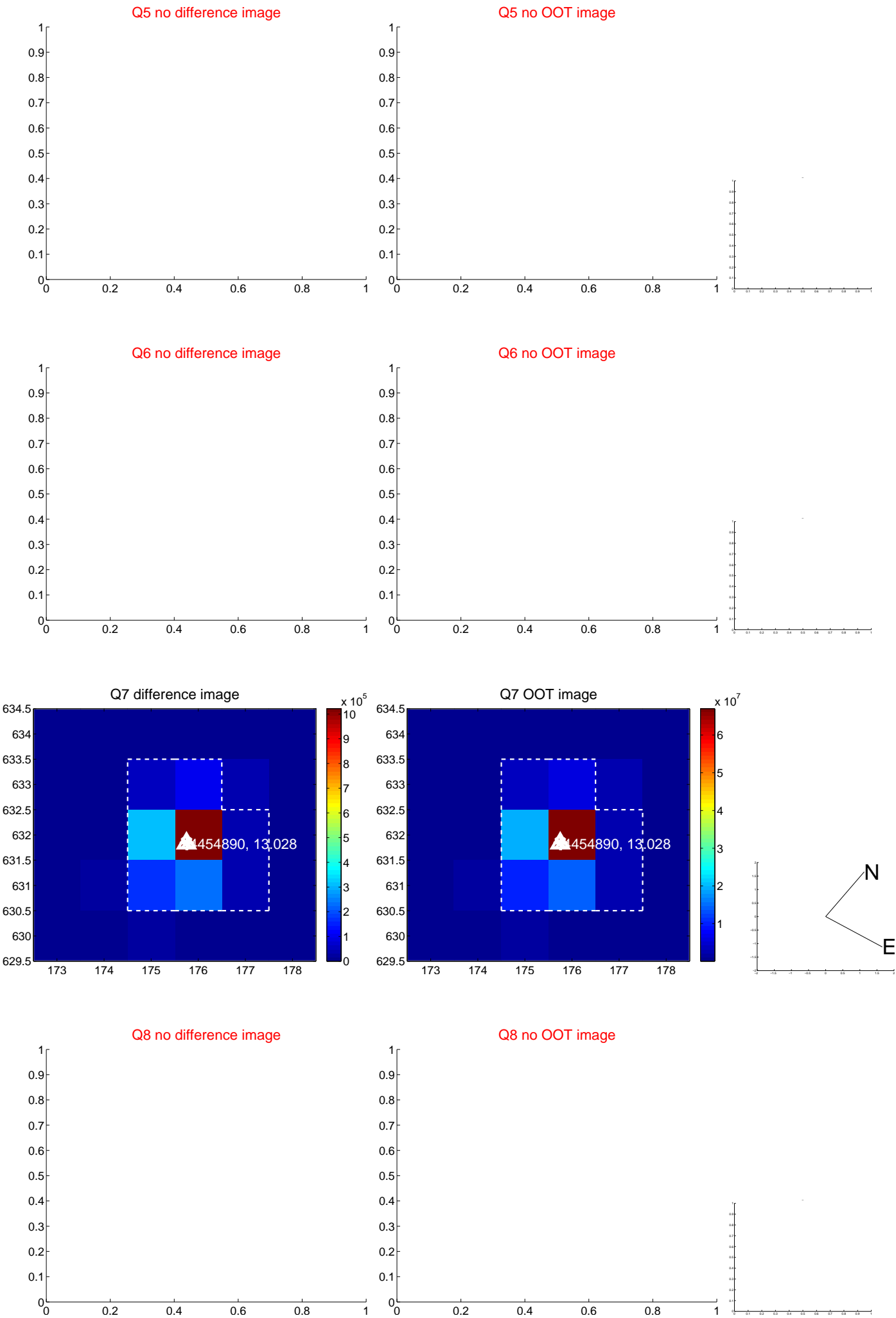
Q4 no difference image



Q4 no OOT image



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



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



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

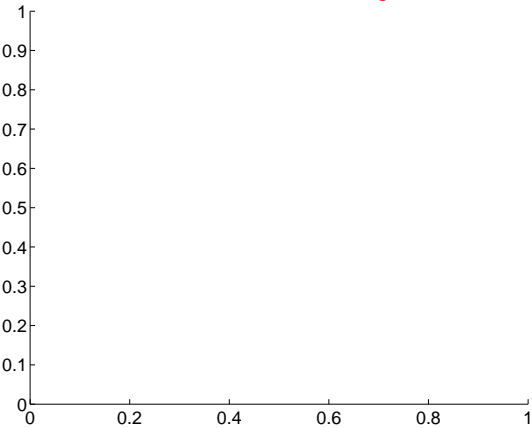
Q13 no difference image



Q13 no OOT image



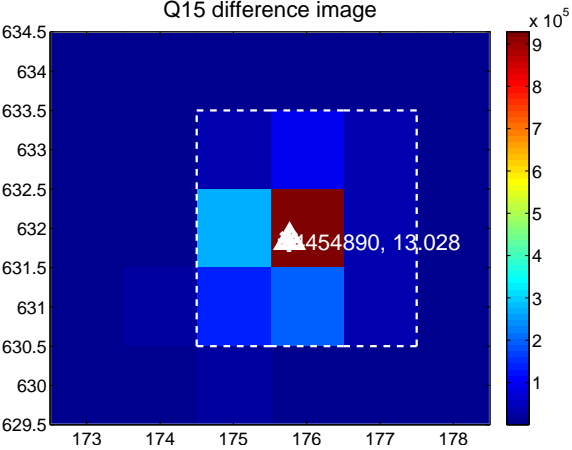
Q14 no difference image



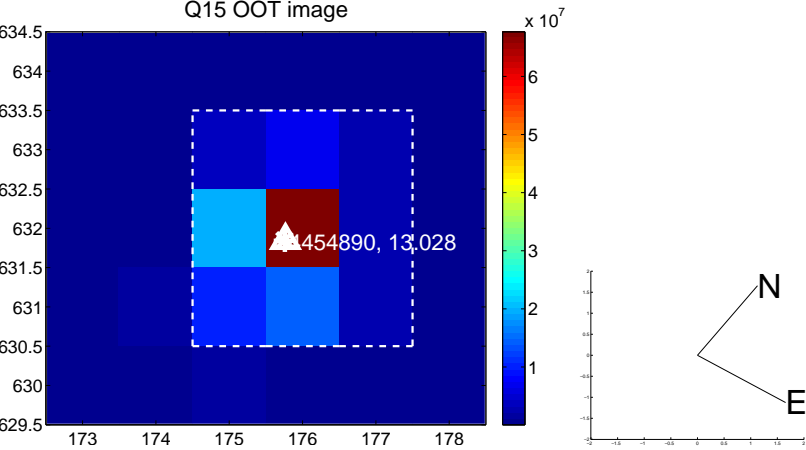
Q14 no OOT image



Q15 difference image



Q15 OOT image



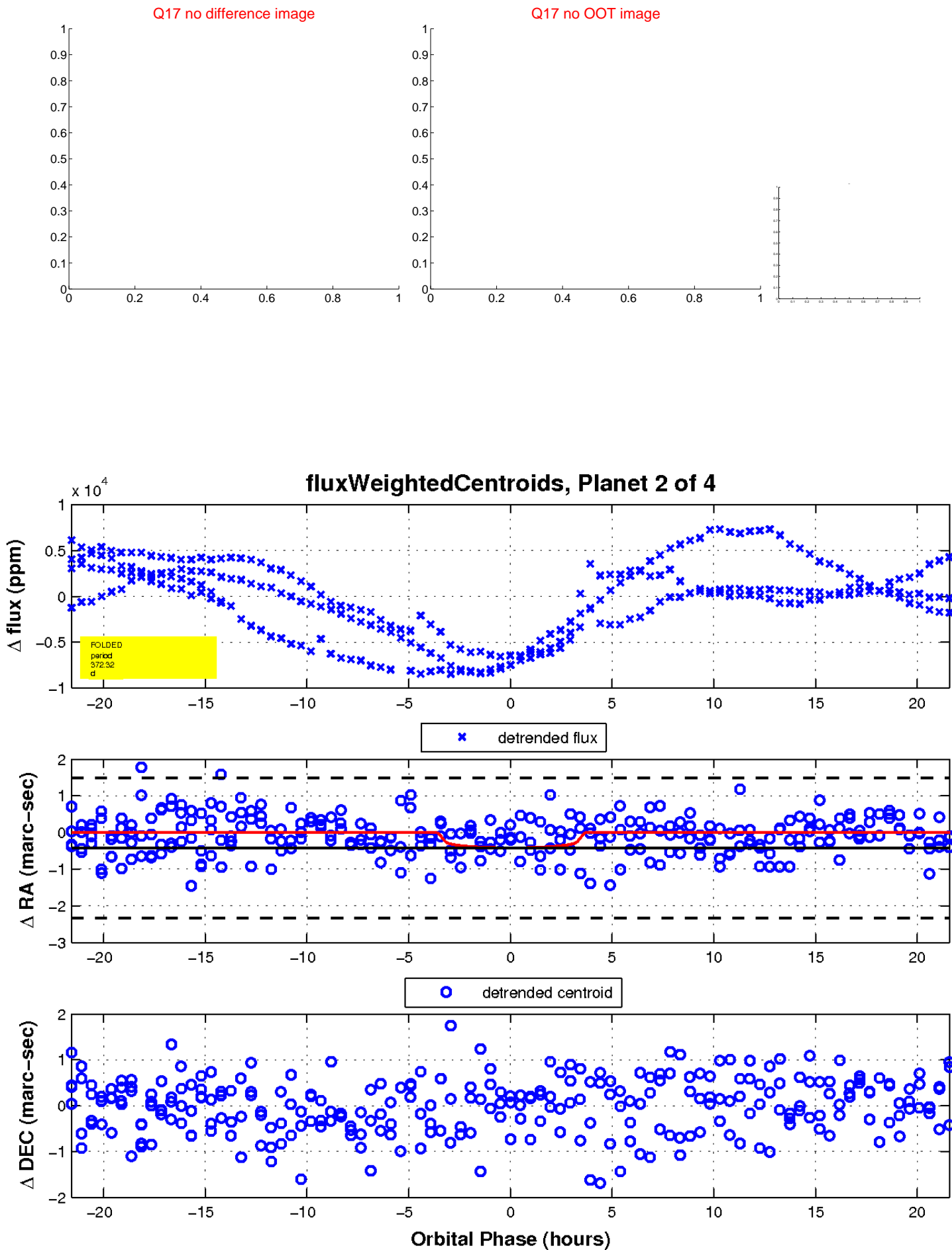
Q16 no difference image



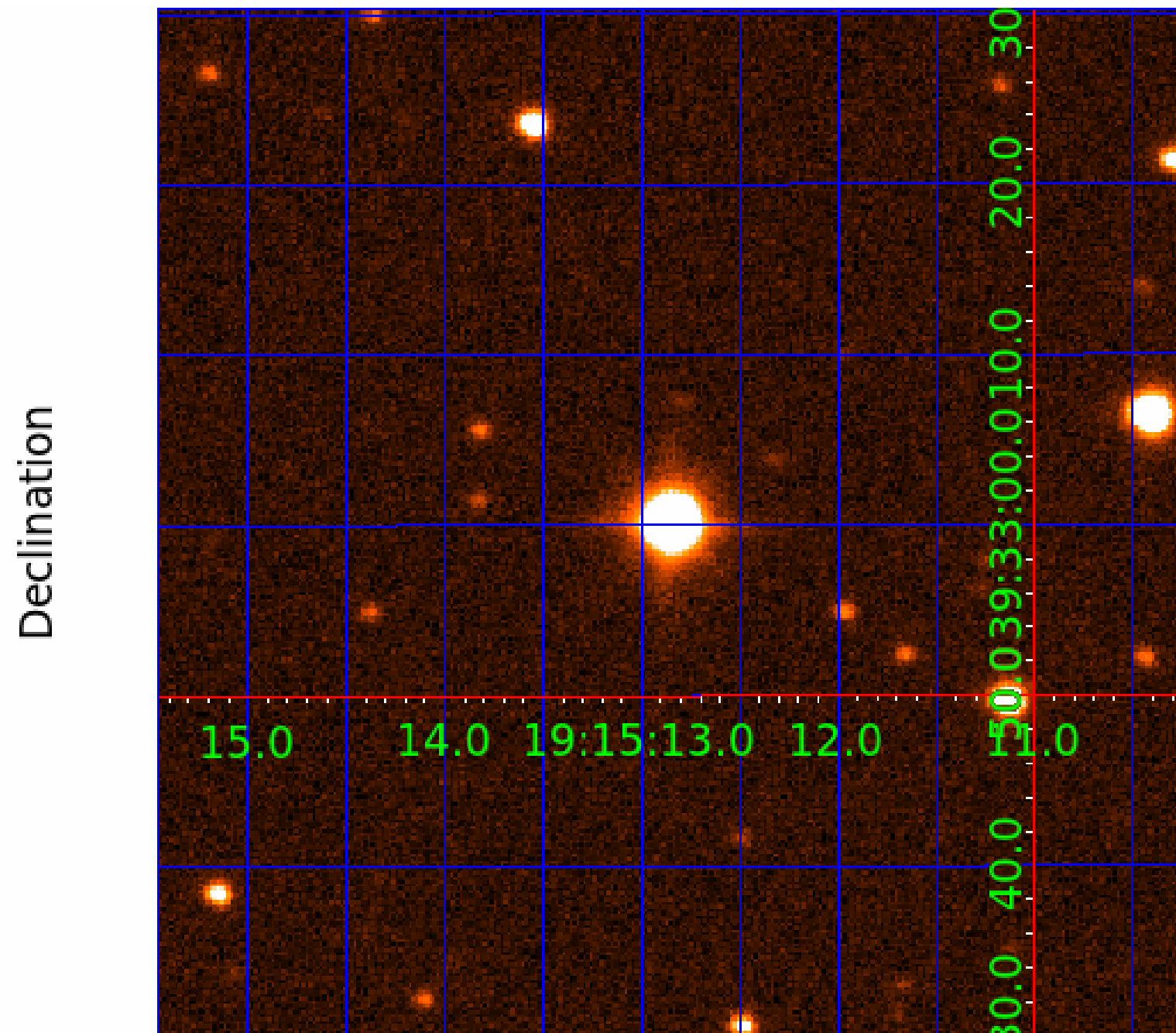
Q16 no OOT image



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



UKIRT Image



KIC 004454890

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})
004454890-01	OBS	No	337.801954	445.892720	727.0	3.430	19.9	3.4	0.54	4938	1.53	0.25
004454890-02	OBS	No	372.320709	325.917492	2121.7	7.349	12.7	7.0	0.54	4938	2.58	0.22
004454890-03	OBS	No	405.946442	209.884795	1512.0	4.879	15.1	6.7	0.54	4938	2.09	0.20
004454890-04	OBS	No	0.870067	131.789119	669.1	1.500	7.6	-1.0	0.54	4938	1.39	720.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004454890-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004454890-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
004454890-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
004454890-04	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS

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

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

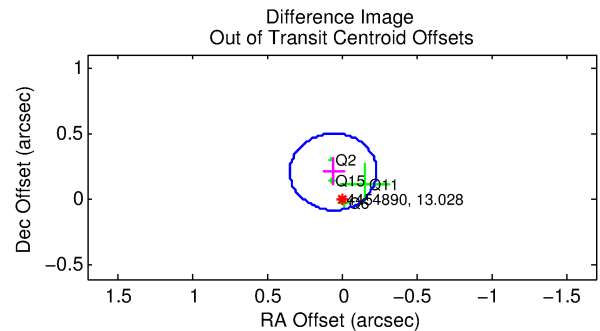
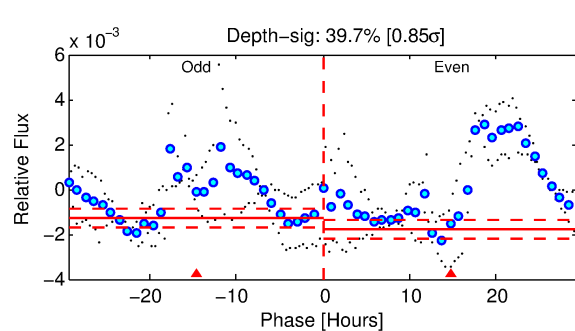
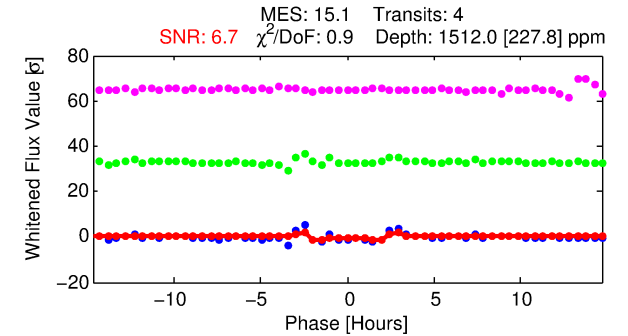
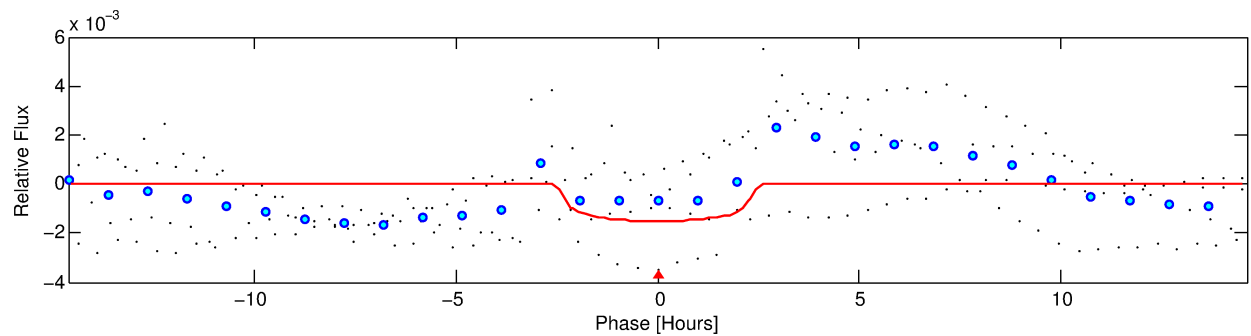
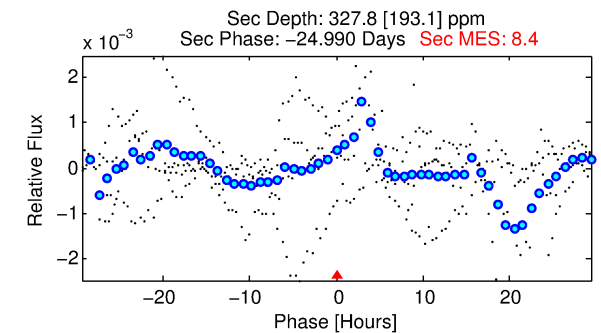
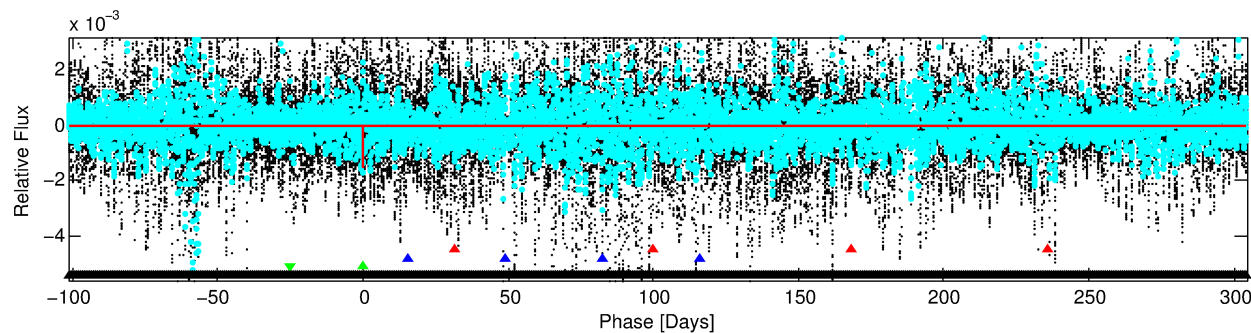
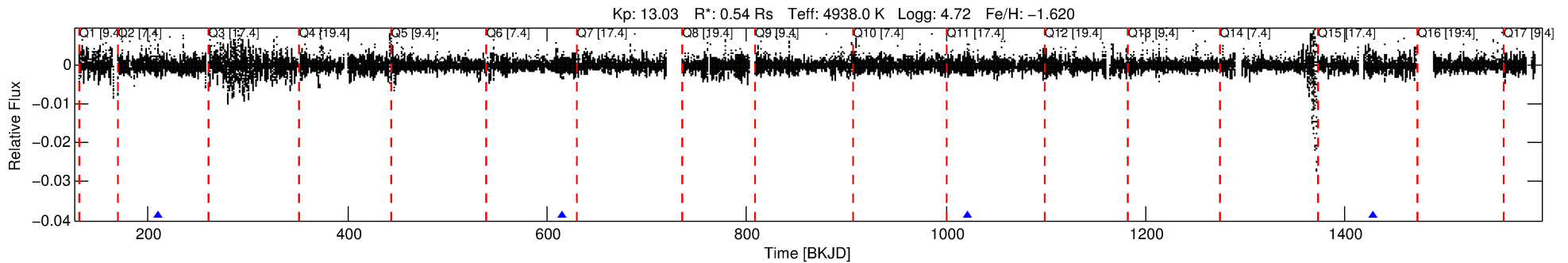
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004454890-03

No Significant Match Found

DV One-Page Summary

KIC: 4454890 Candidate: 3 of 4 Period: 405.946 d



DV Fit Results:

Period = 405.94644 [0.00166] d
Epoch = 209.8848 [0.0036] BKJD
Rp/R* = 0.0355 [0.0220]
a/R* = 651.81 [1841.11]
b = 0.14 [19.25]
Seff = 0.20 [0.03]
Teq = 170 [7] K
Rp = 2.09 [1.30] Re
a = 0.8801 [0.0447] AU
Ag = 32072.61 [44097.71] [0.73σ]
Teffp = 3524 [1215] K [2.76σ]

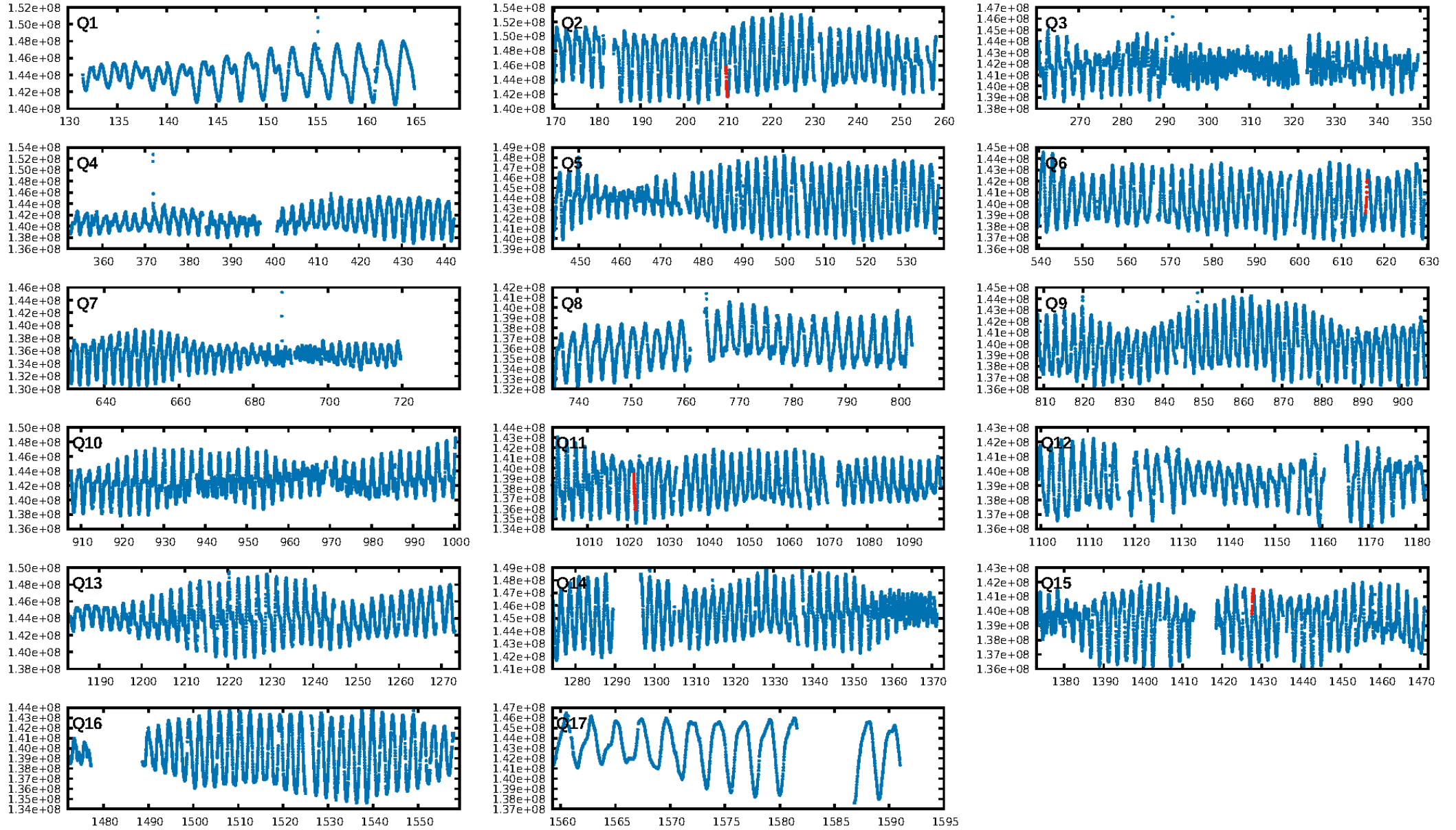
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [91.48σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 52.8%
ModelChiSquareGof-sig: 97.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 11.28
Centroid-sig: N/A
Centroid-so: 0.844 arcsec [3.46σ]
OotOffset-rm: 0.218 arcsec [2.25σ]
KicOffset-rm: 0.242 arcsec [2.38σ]
OotOffset-st: 2/2/0/0 [4]
KicOffset-st: 2/2/0/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

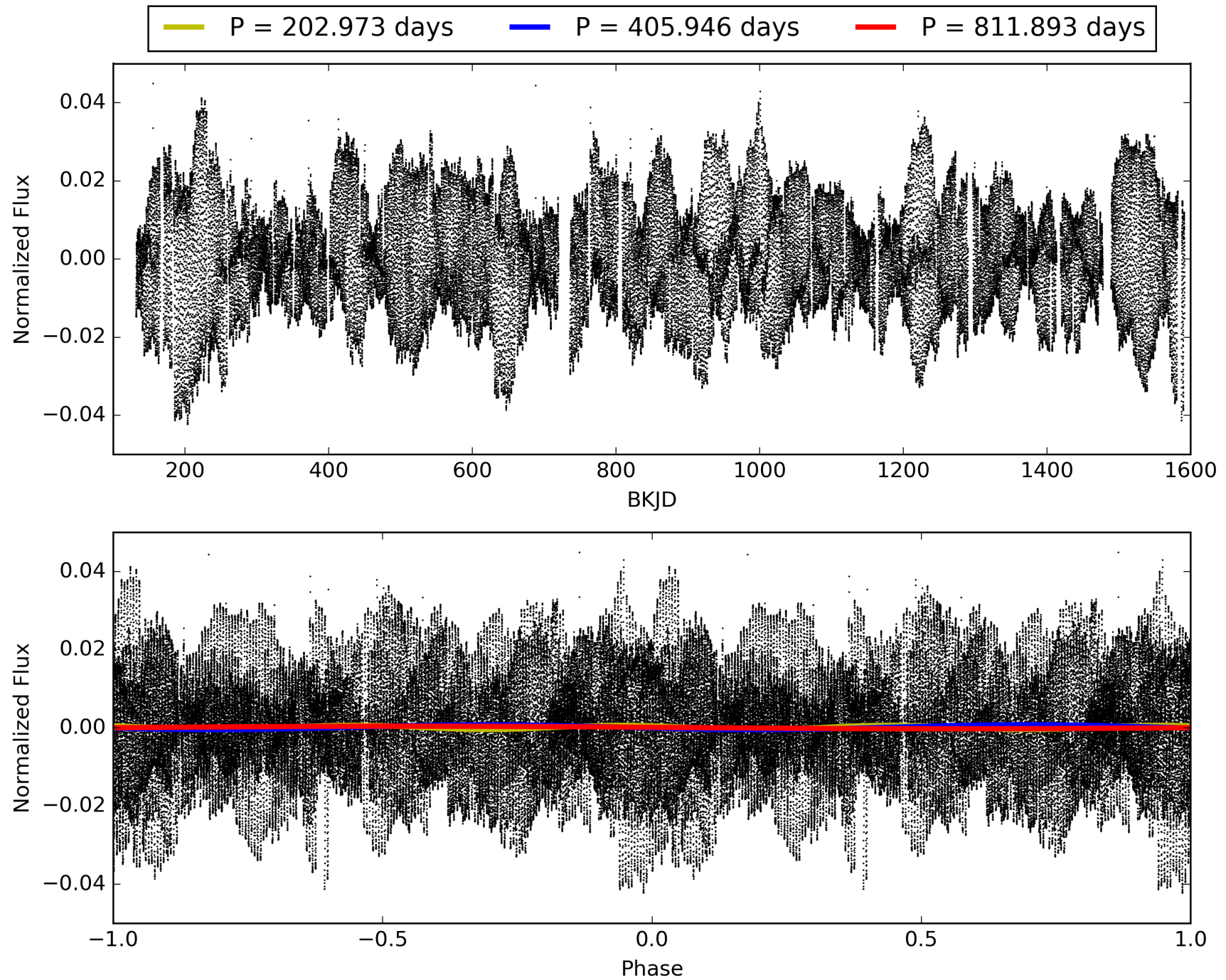
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:27:54 Z

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

TCE 004454890-03, PDC Light Curves

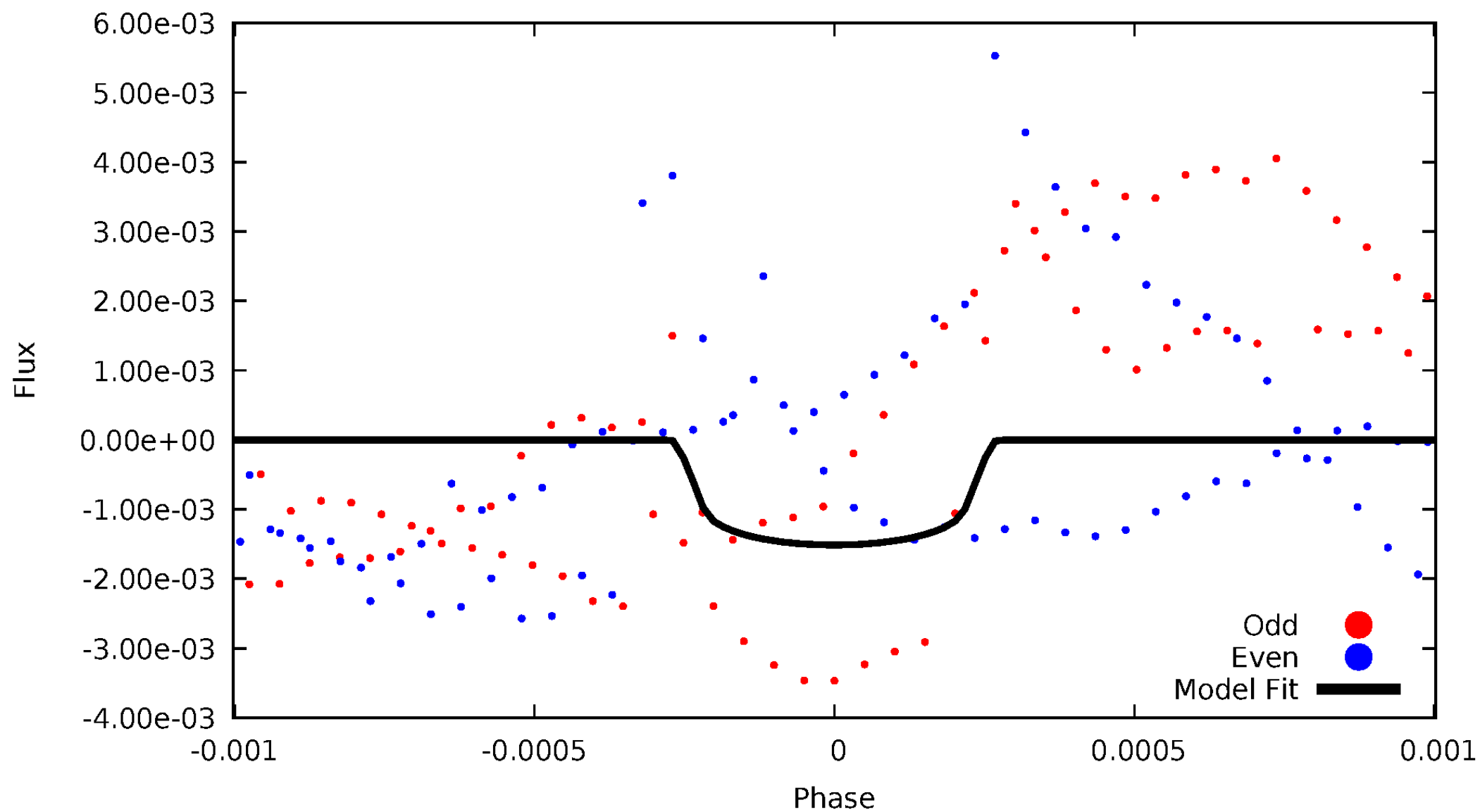


TCE 004454890-03



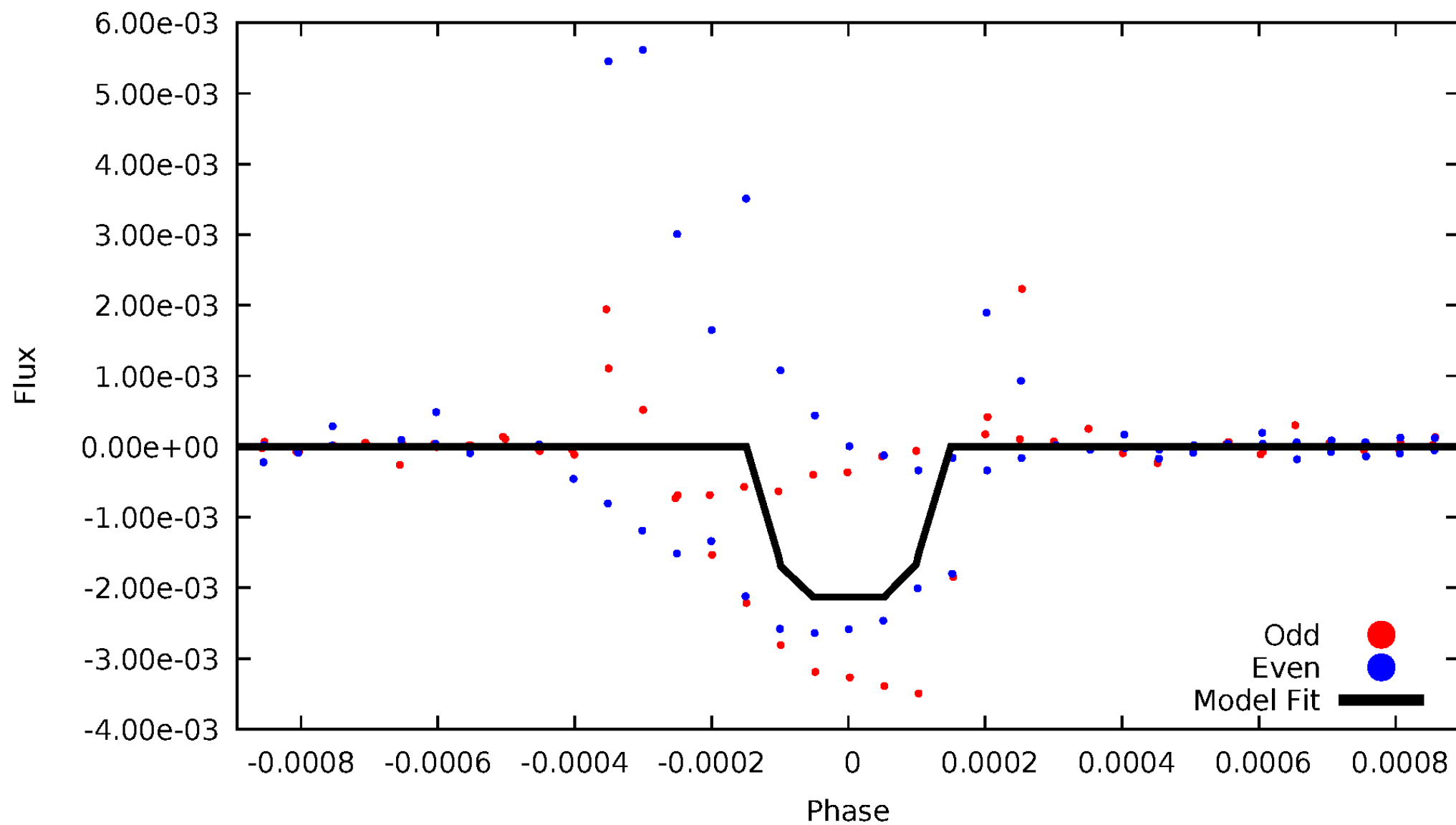
DV Odd/Even

TCE 004454890-03



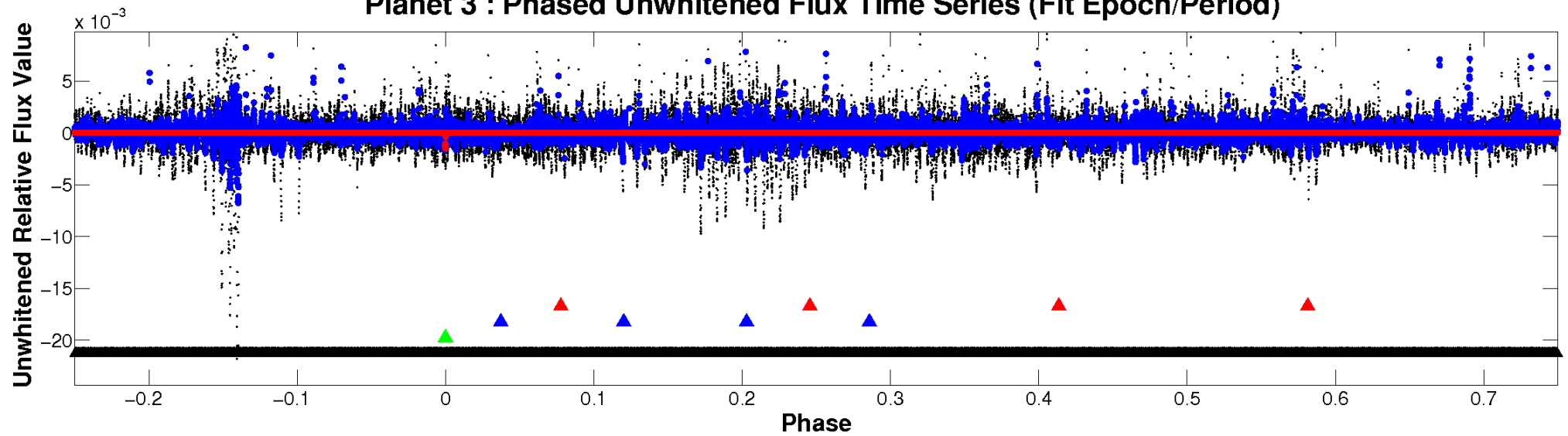
ALT Odd/Even

TCE 004454890-03

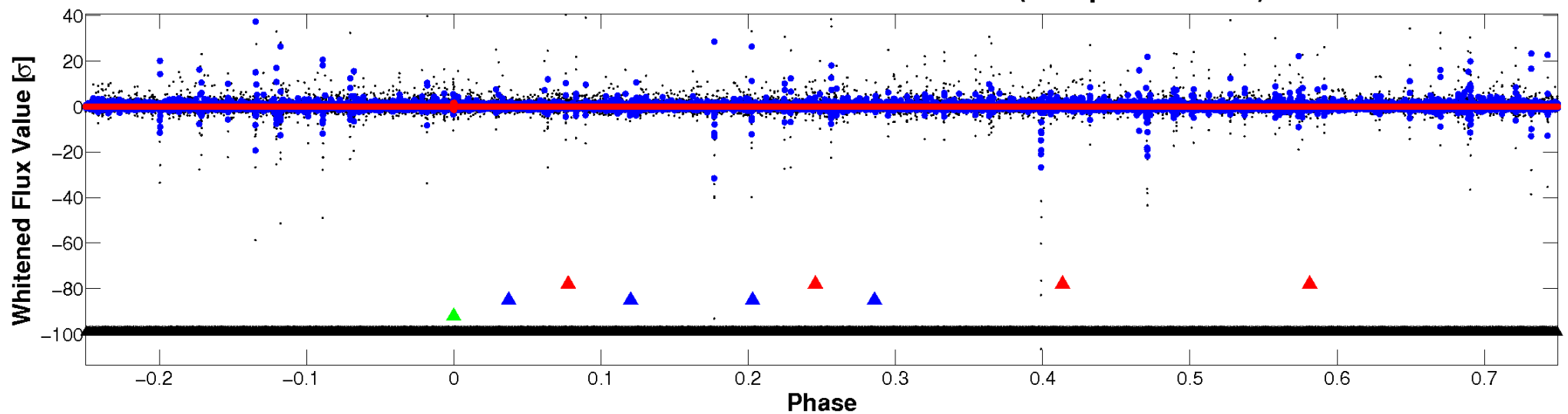


Non-Whitened Vs. Whitened Light Curve

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

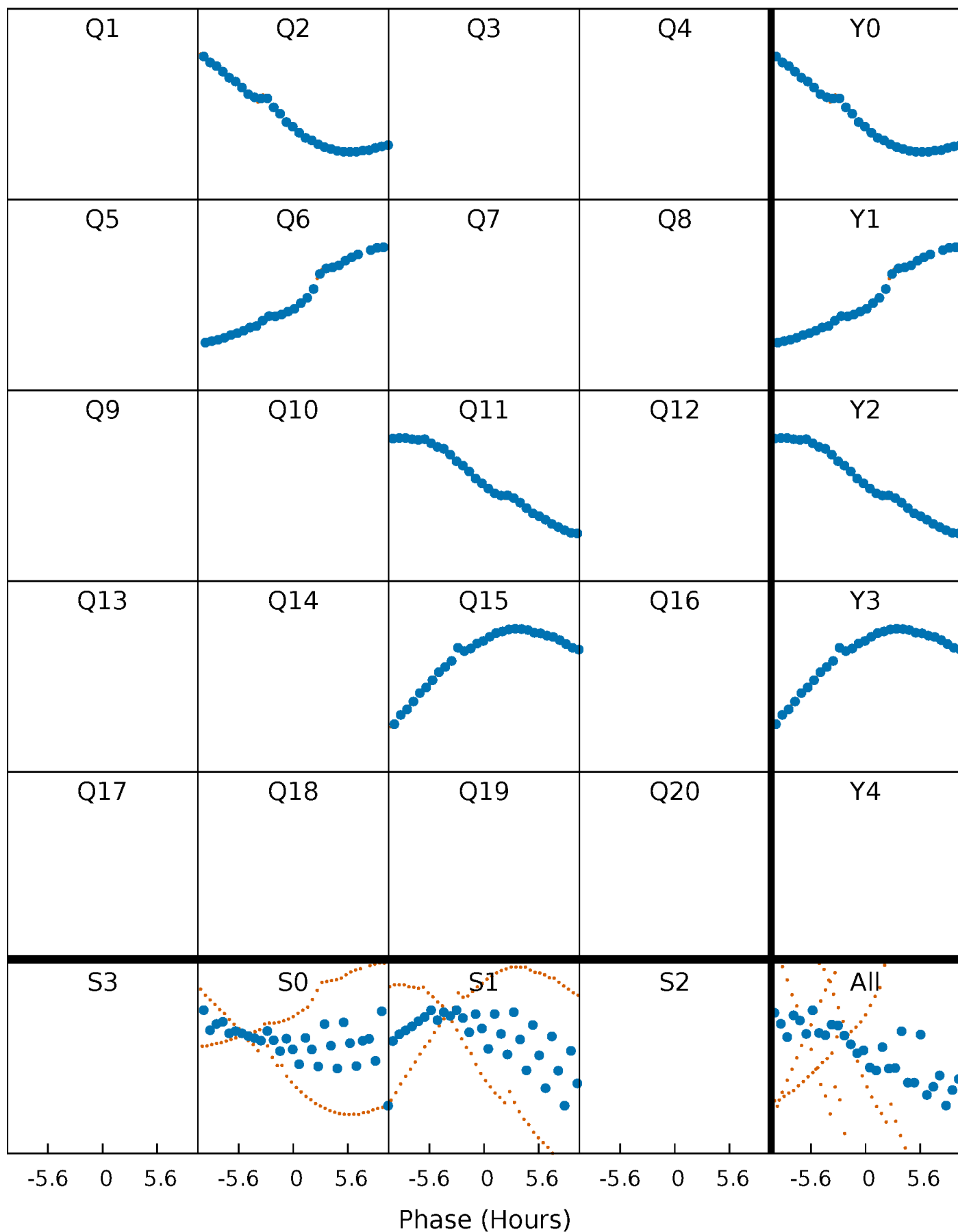


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



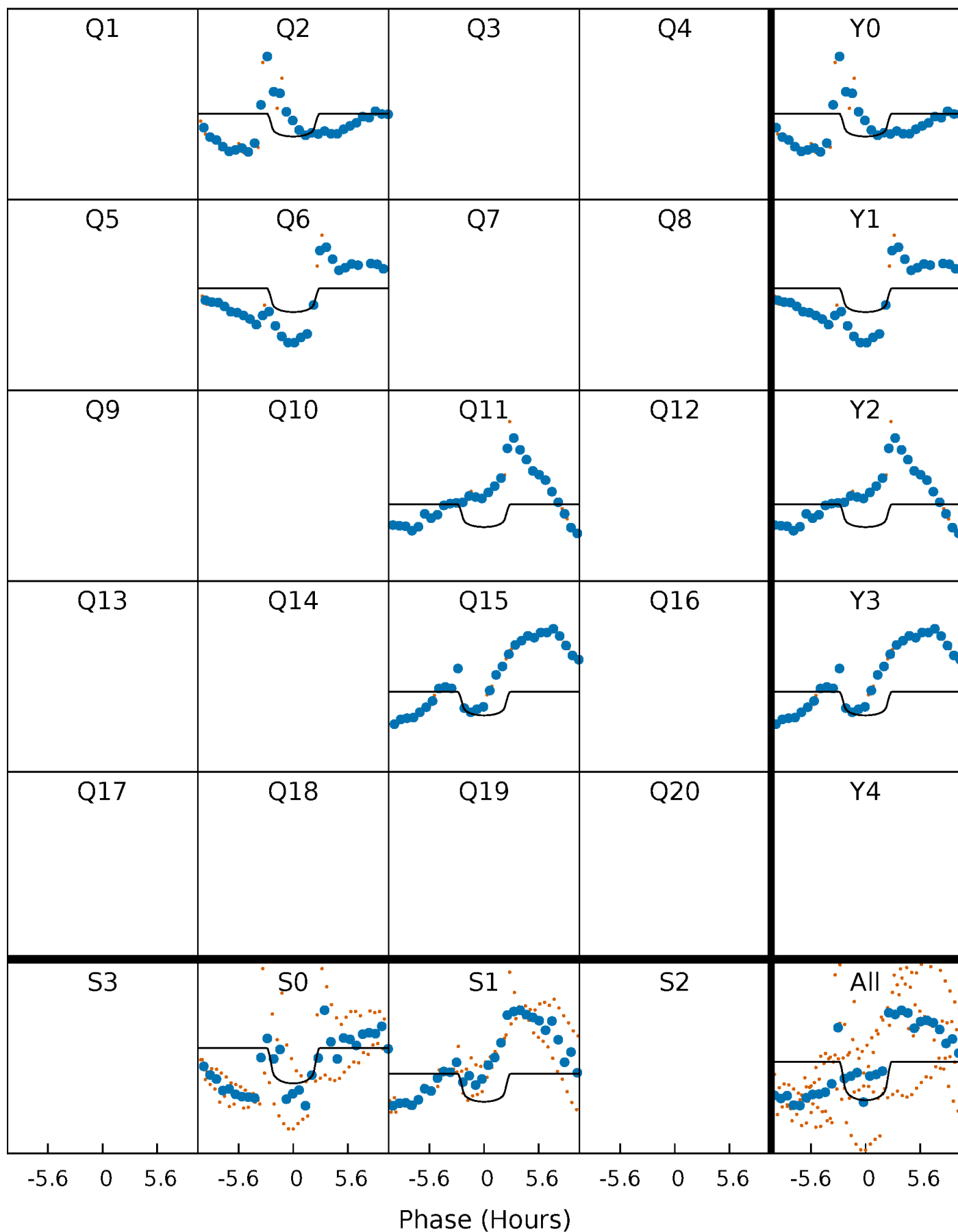
PDC Quarter-Phased Transit Curves

TCE 004454890-03 P=405.946442 Days $T_0=209.884795$ (BKJD)



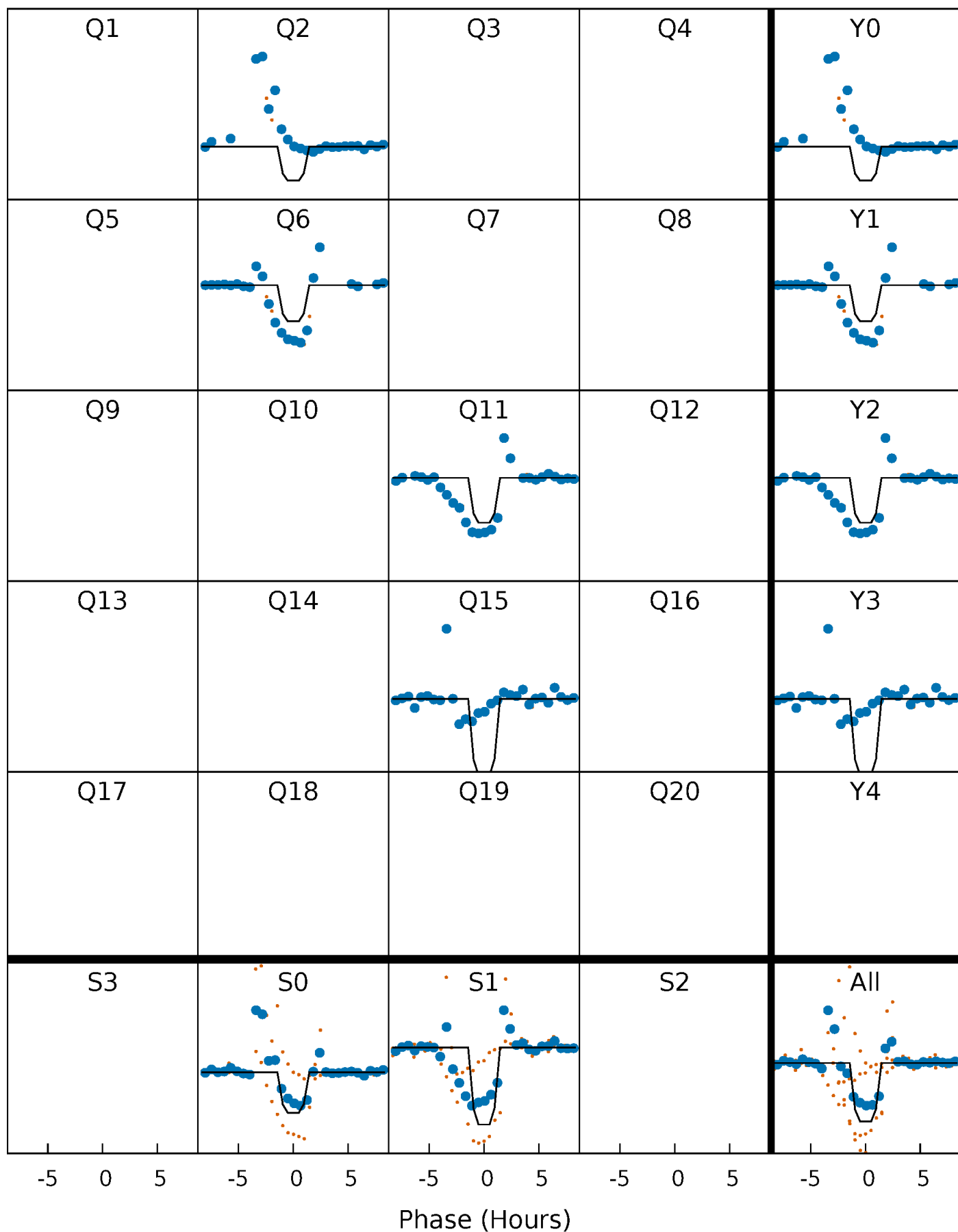
DV Quarter-Phased Transit Curves

TCE 004454890-03 $P=405.946442$ Days $T_0=209.884795$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

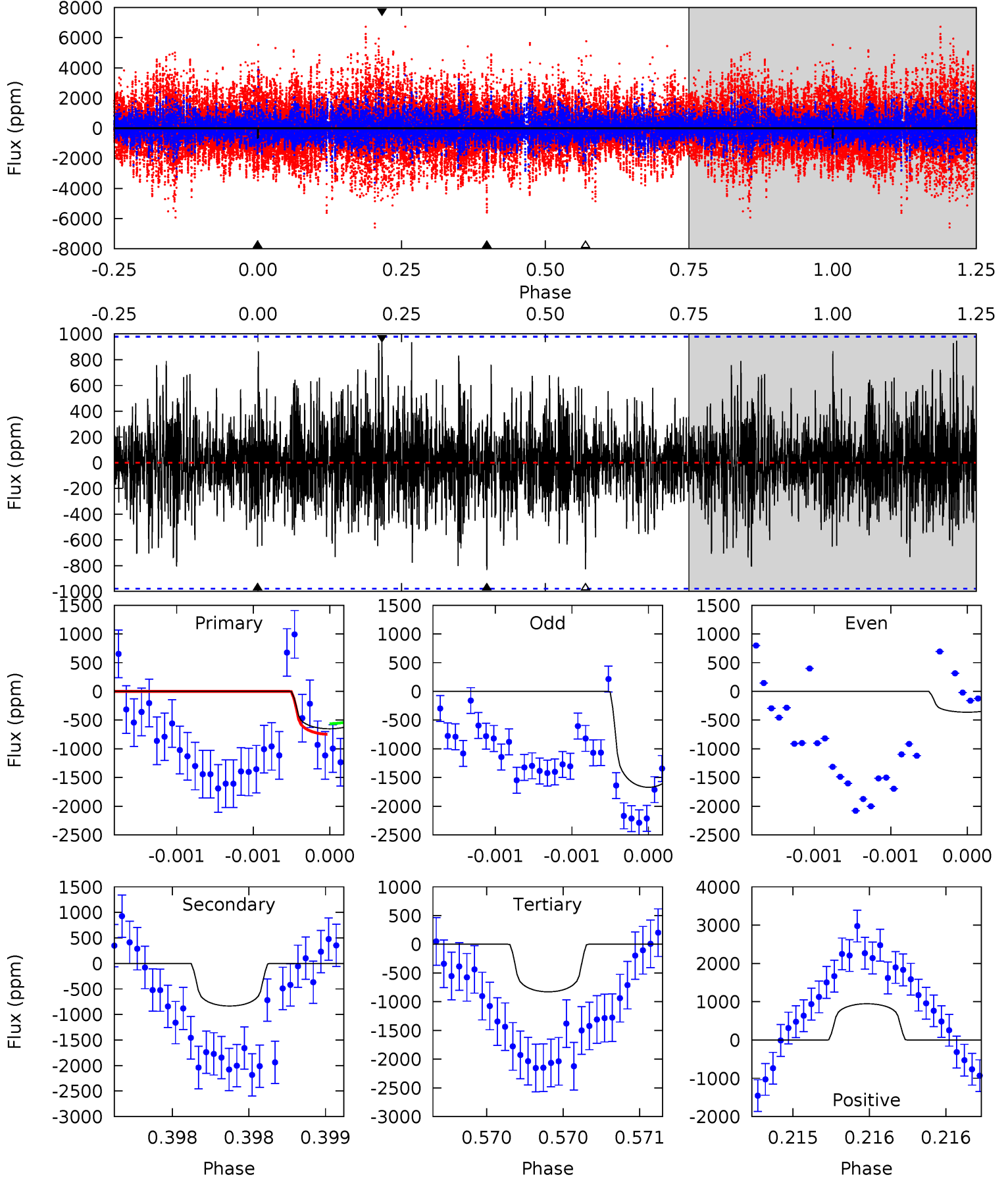
TCE 004454890-03 P=405.953536 Days $T_0=209.897313$ (BKJD)



DV Model-Shift Uniqueness Test

004454890-03, P = 405.946442 Days, E = 209.884795 Days

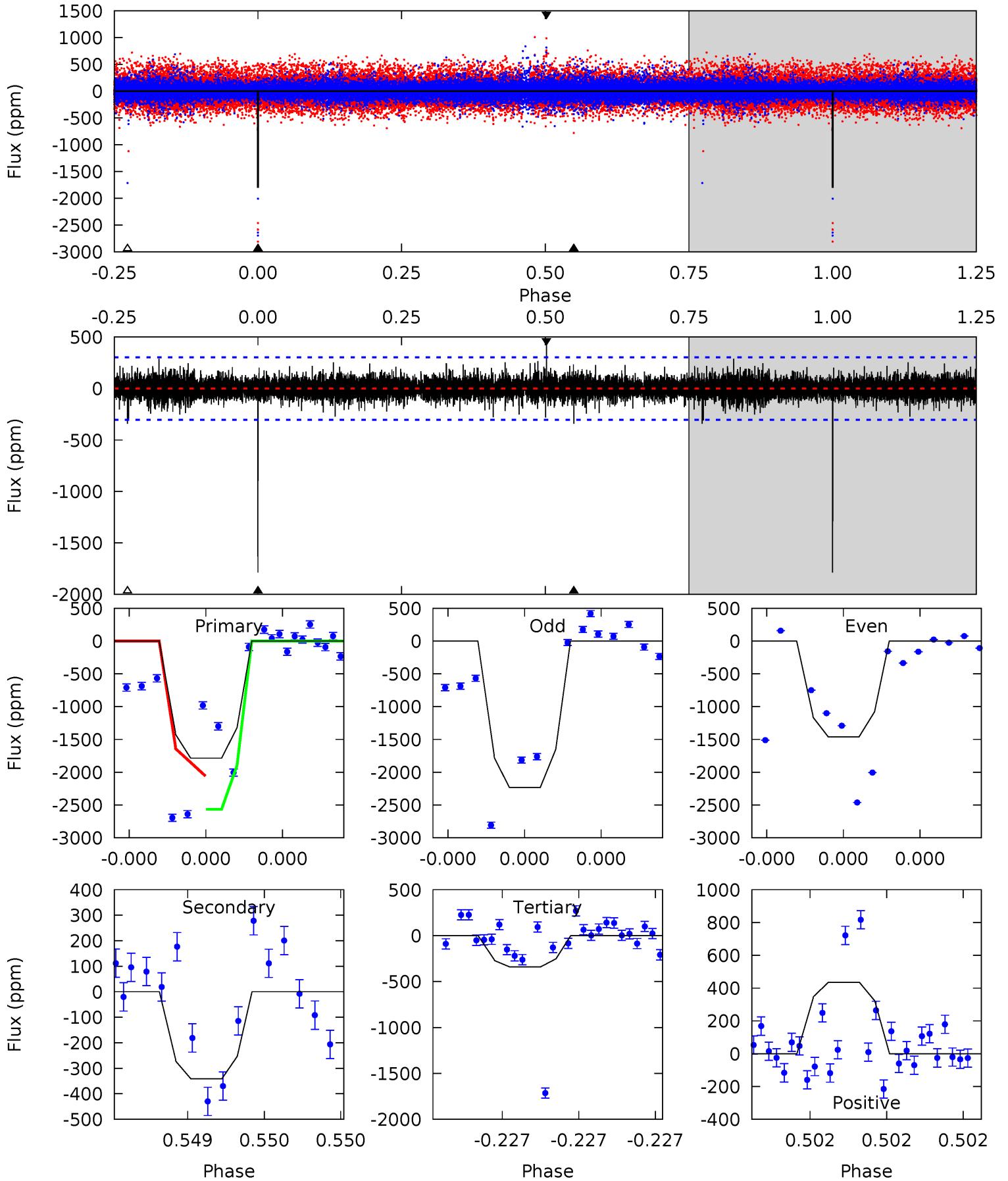
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.70	4.74	4.70	5.38	5.56	3.46	1.34	-1.00	-1.68	0.04	-0.64	3.10	2.83	0.53	0.53



Alt Model-Shift Uniqueness Test

004454890-03, P = 405.953536 Days, E = 209.897313 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.5	6.42	6.40	8.17	5.69	3.66	1.08	27.1	25.4	0.02	-1.76	8.81	1.04	0.20	3.70



Stellar Parameters For KIC 004454890

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4938^{+148}_{-163}	$4.718^{+0.045}_{-0.021}$	$-1.620^{+0.300}_{-0.200}$	$0.538^{+0.024}_{-0.030}$	$0.551^{+0.034}_{-0.017}$	$4.991^{+0.872}_{-0.439}$
	+3%/-3%	+1%/-0%	+19%/-12%	+4%/-6%	+6%/-3%	+17%/-9%
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 004454890-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-834 ± 176	$2.15^{+1.19}_{-1.18}$	237^{+8}_{-8}	4450^{+1882}_{-708}	$75490^{+294113}_{-46467}$
Alt.	-342 ± 53	$2.74^{+1.23}_{-1.20}$	237^{+7}_{-9}	3515^{+748}_{-387}	19514^{+41931}_{-10561}

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 $A_{obs} \gg 1.0$

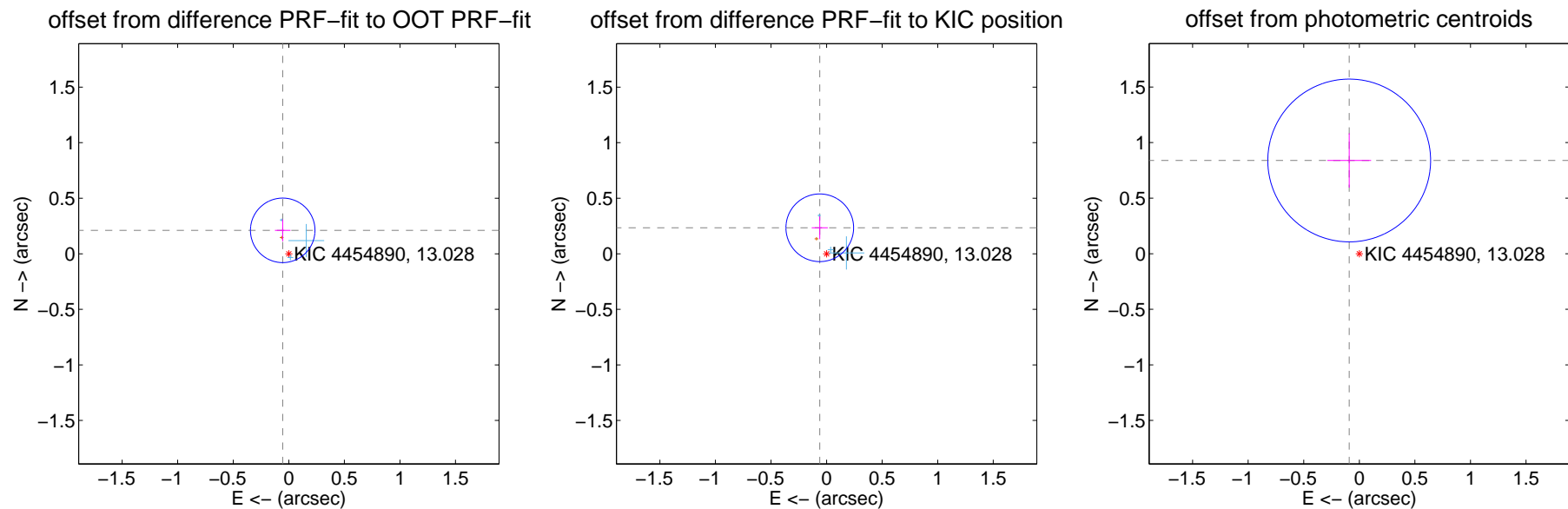
DV Centroid Data

Supplemental centroid analysis for 004454890-03. Kepler magnitude: 13.03. Transit SNR 6.68

There are 3 quarters with good PRF difference image offsets

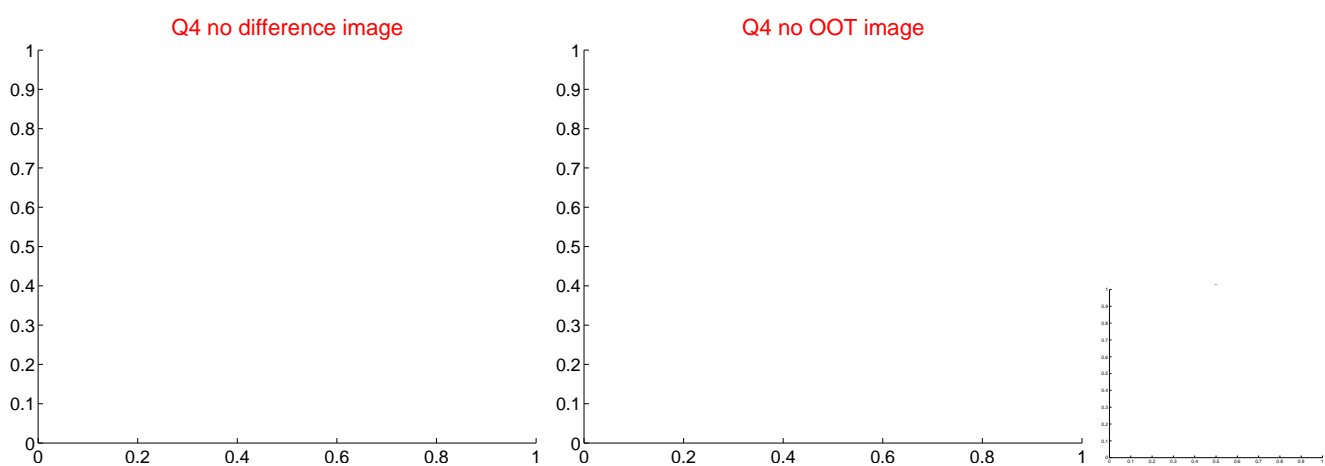
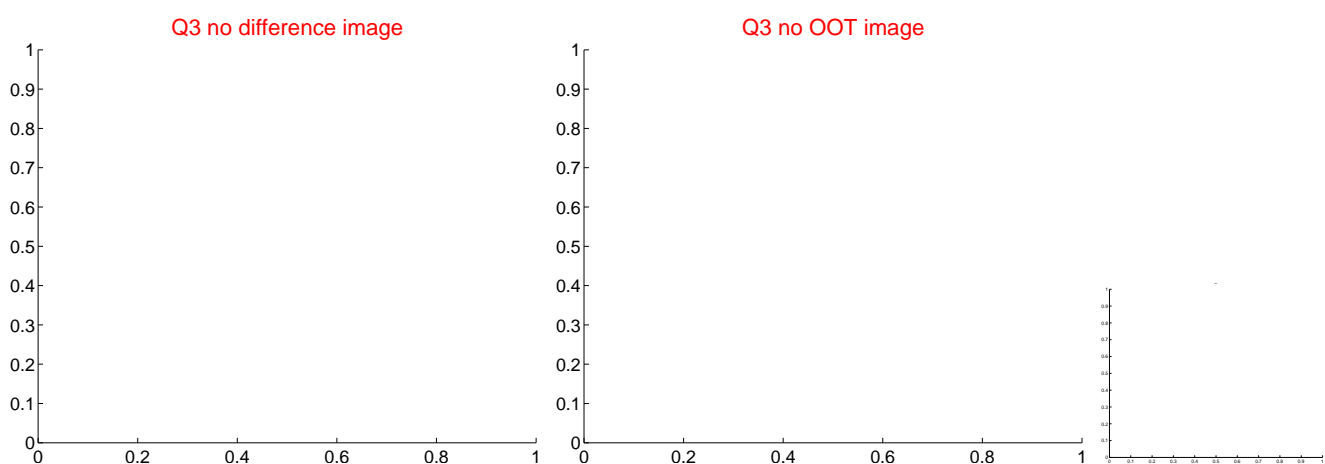
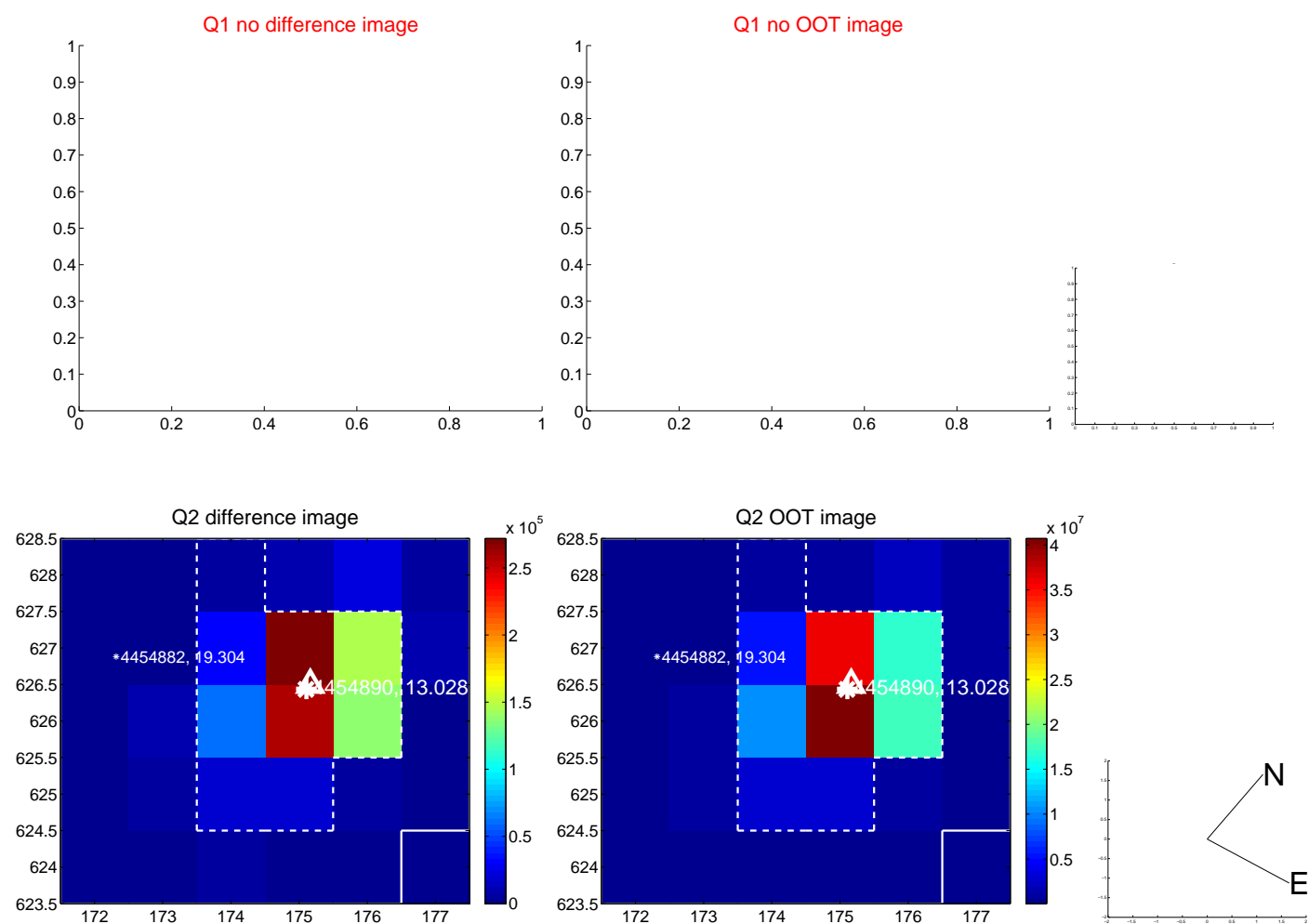
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.218 ± 0.097	2.25	0.055 ± 0.070	0.211 ± 0.098
PRF-fit source offset from KIC position	0.242 ± 0.101	2.38	0.061 ± 0.073	0.234 ± 0.103
photometric centroid source offset	0.84 ± 0.24	3.46	0.09 ± 0.20	0.84 ± 0.24

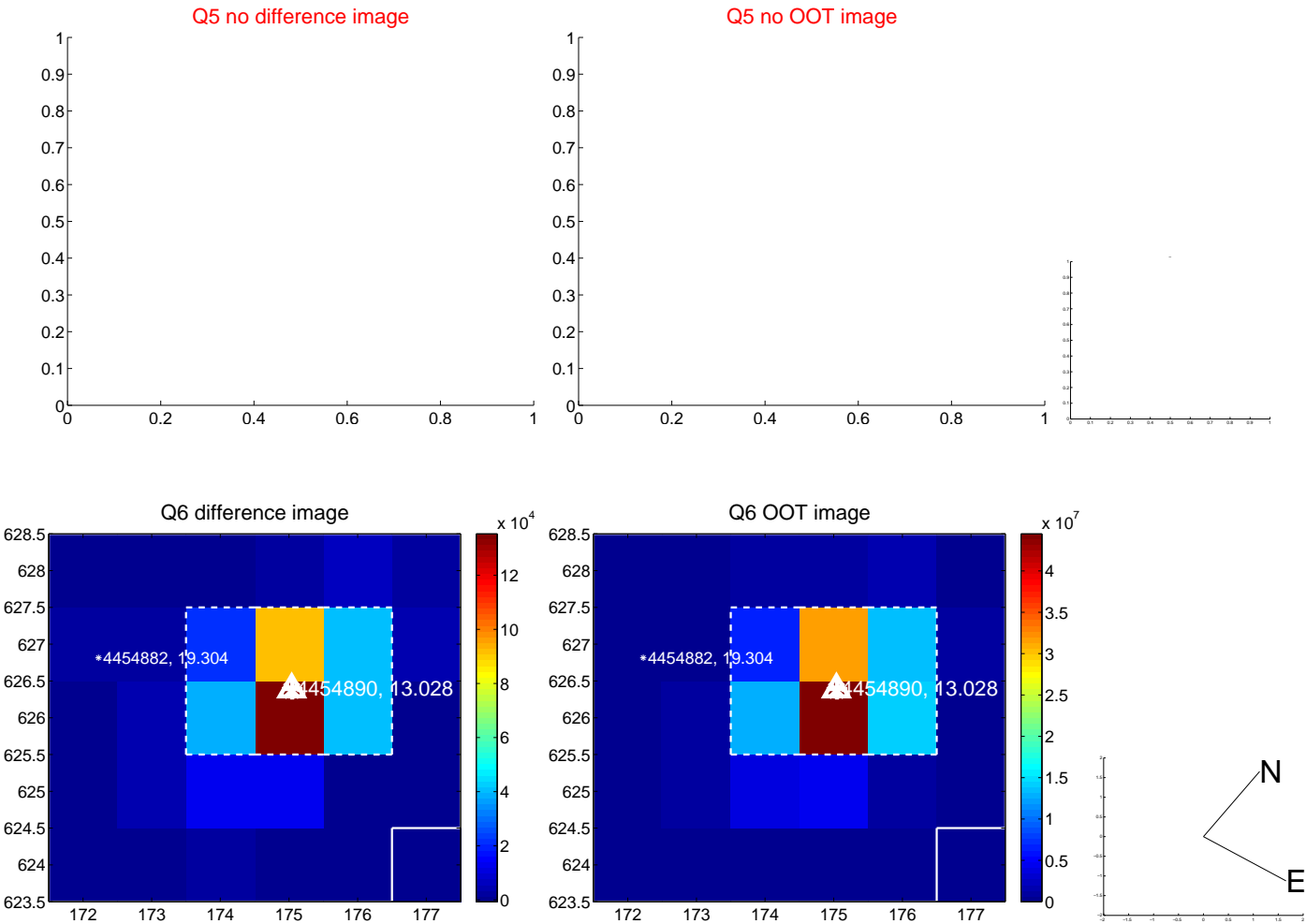


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

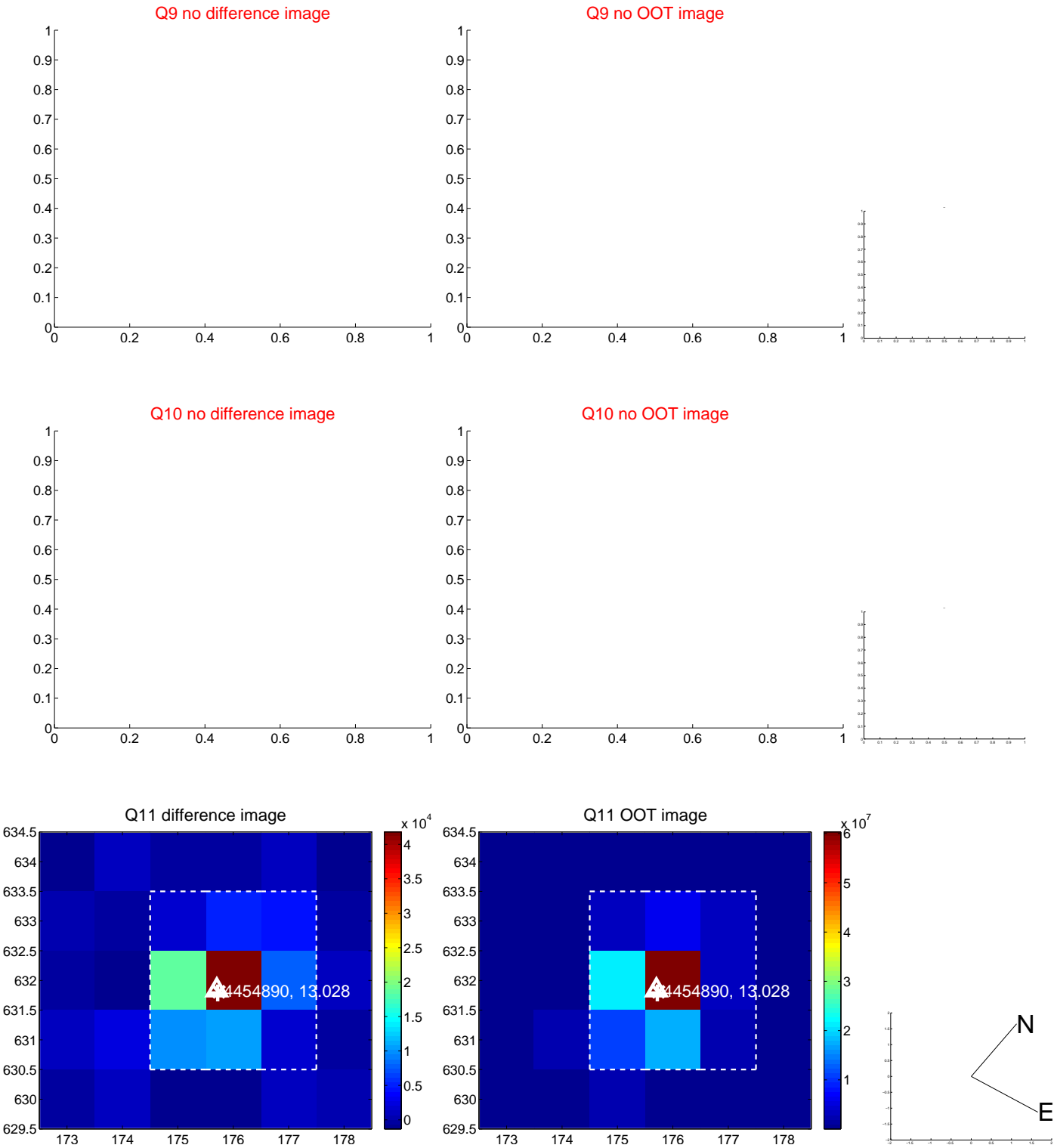
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



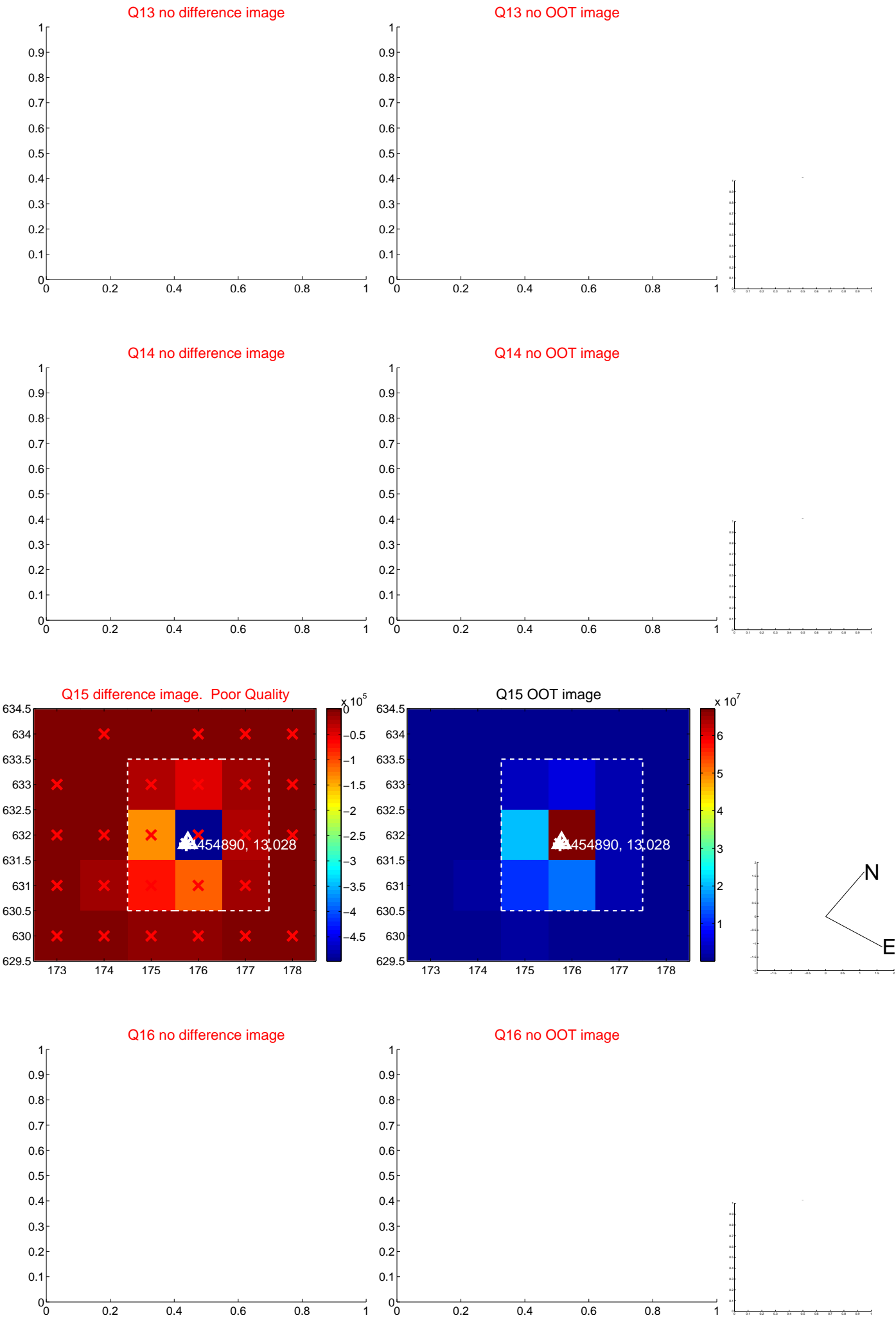
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



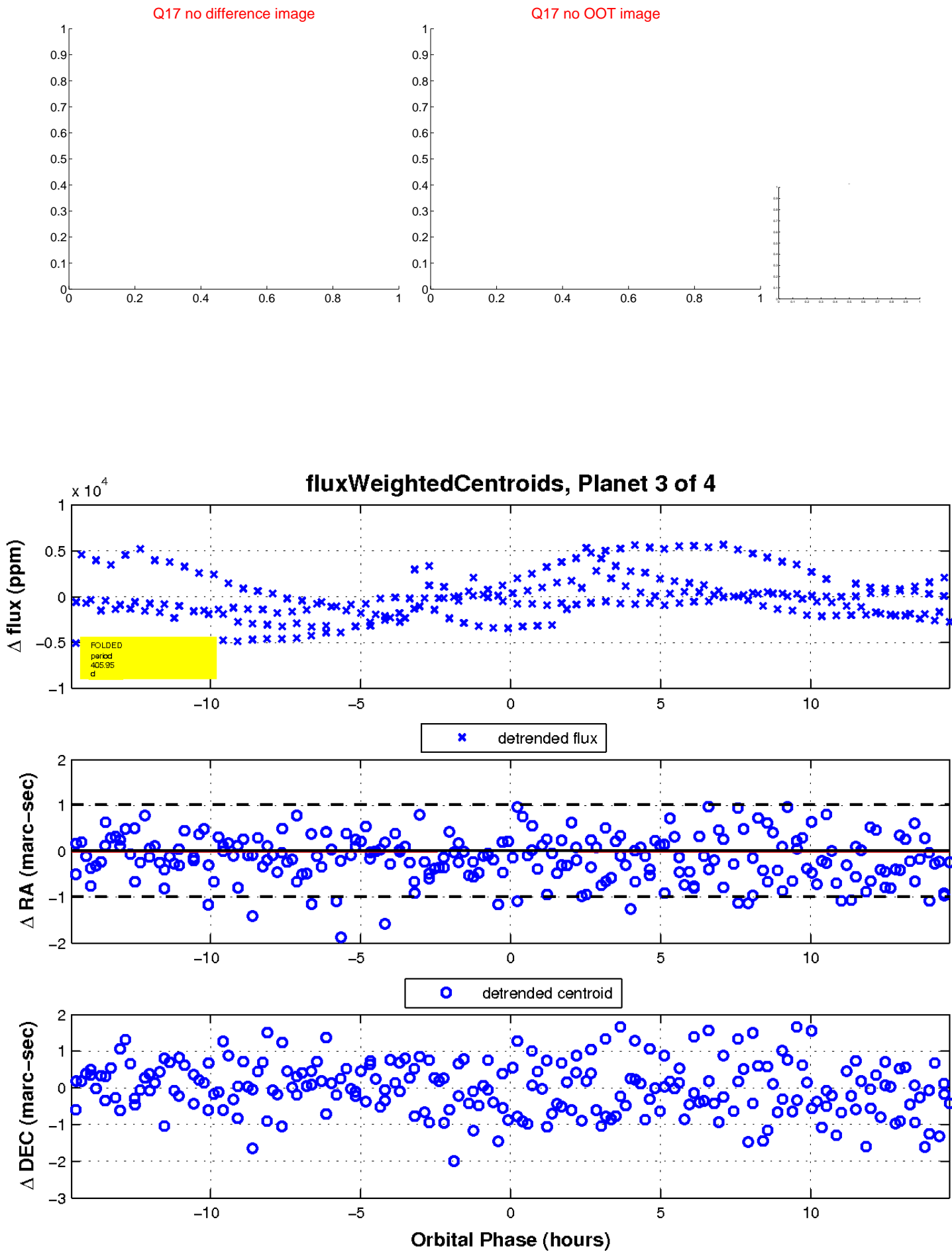
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

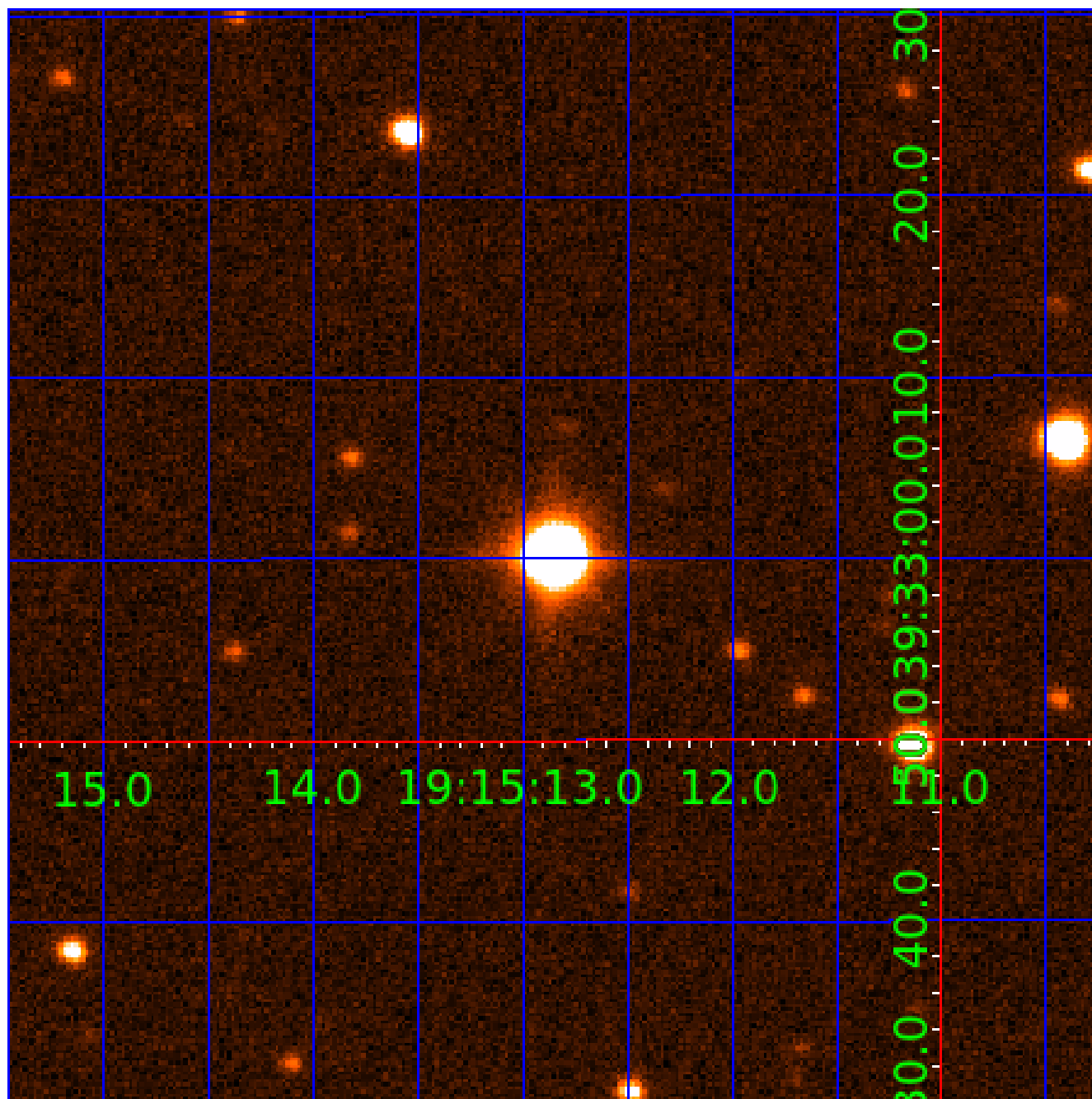


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004454890

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})
004454890-01	OBS	No	337.801954	445.892720	727.0	3.430	19.9	3.4	0.54	4938	1.53	0.25
004454890-02	OBS	No	372.320709	325.917492	2121.7	7.349	12.7	7.0	0.54	4938	2.58	0.22
004454890-03	OBS	No	405.946442	209.884795	1512.0	4.879	15.1	6.7	0.54	4938	2.09	0.20
004454890-04	OBS	No	0.870067	131.789119	669.1	1.500	7.6	-1.0	0.54	4938	1.39	720.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004454890-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
004454890-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
004454890-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
004454890-04	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_NOFITS

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

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

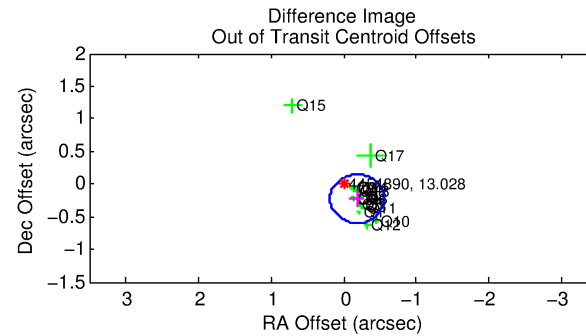
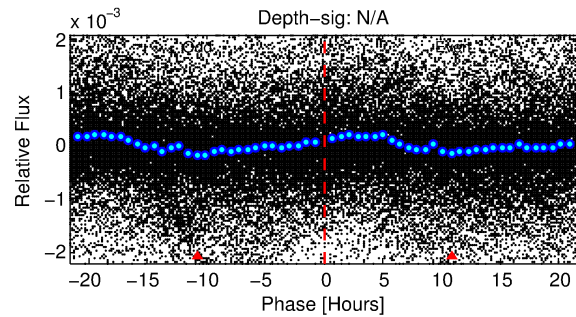
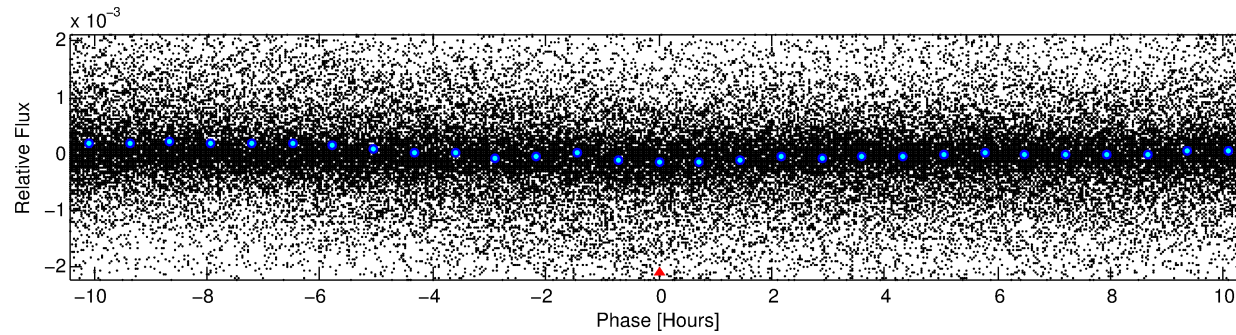
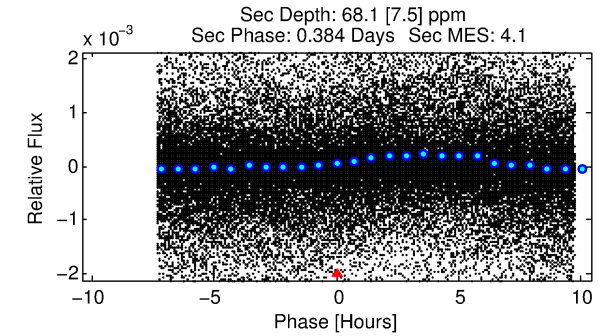
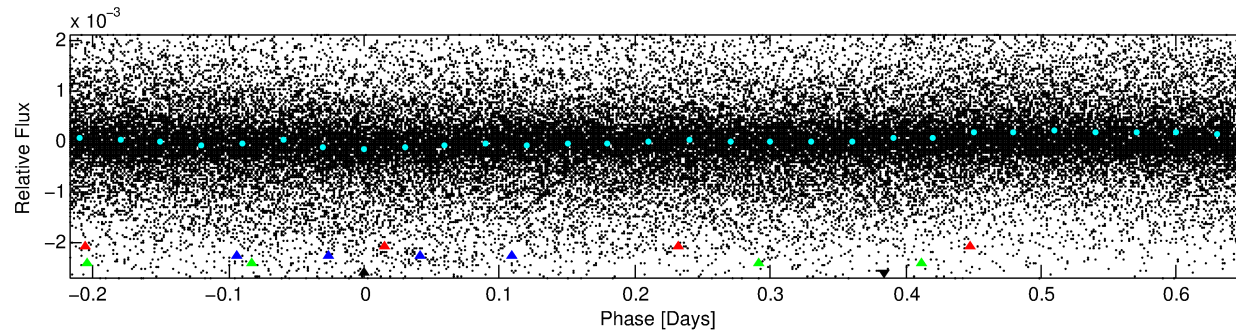
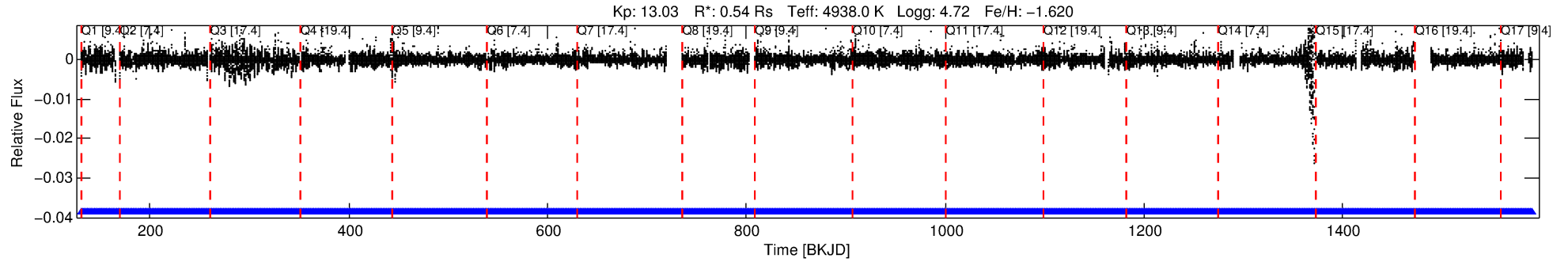
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004454890-04

No Significant Match Found

DV One-Page Summary

KIC: 4454890 Candidate: 4 of 4 Period: 0.870 d



TPS TCE Results:

Period = 0.87007 d
Epoch = 131.7891 BKJD

DV fit results are unavailable

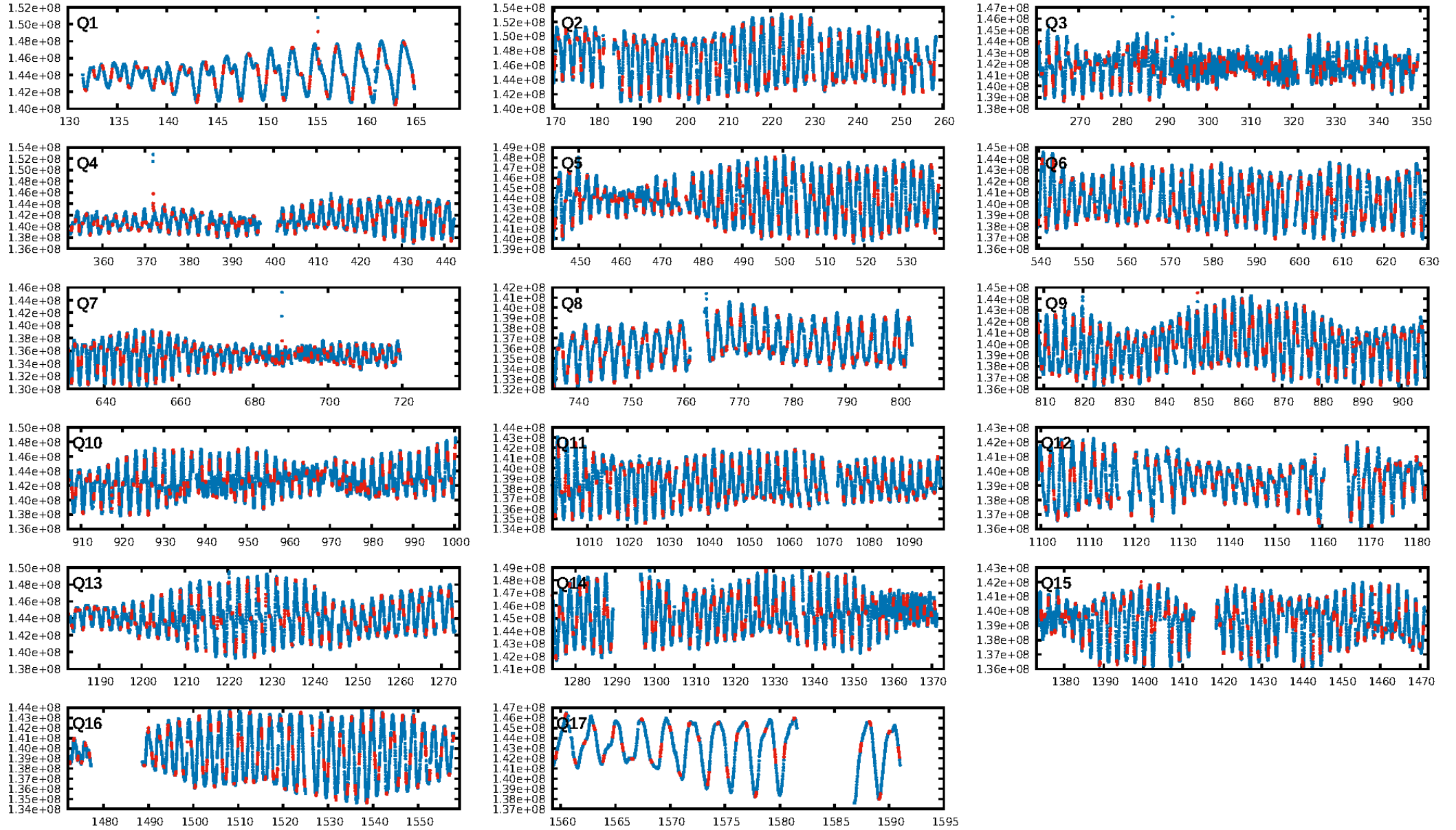
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [2159.81σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1464/1464]
GhostDiagnostic-chr: 0.3543
Centroid-sig: N/A
Centroid-so: 0.677 arcsec [2.45σ]
OotOffset-rm: 0.290 arcsec [2.33σ]
KicOffset-rm: 0.248 arcsec [1.99σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 1.00 [17/17]

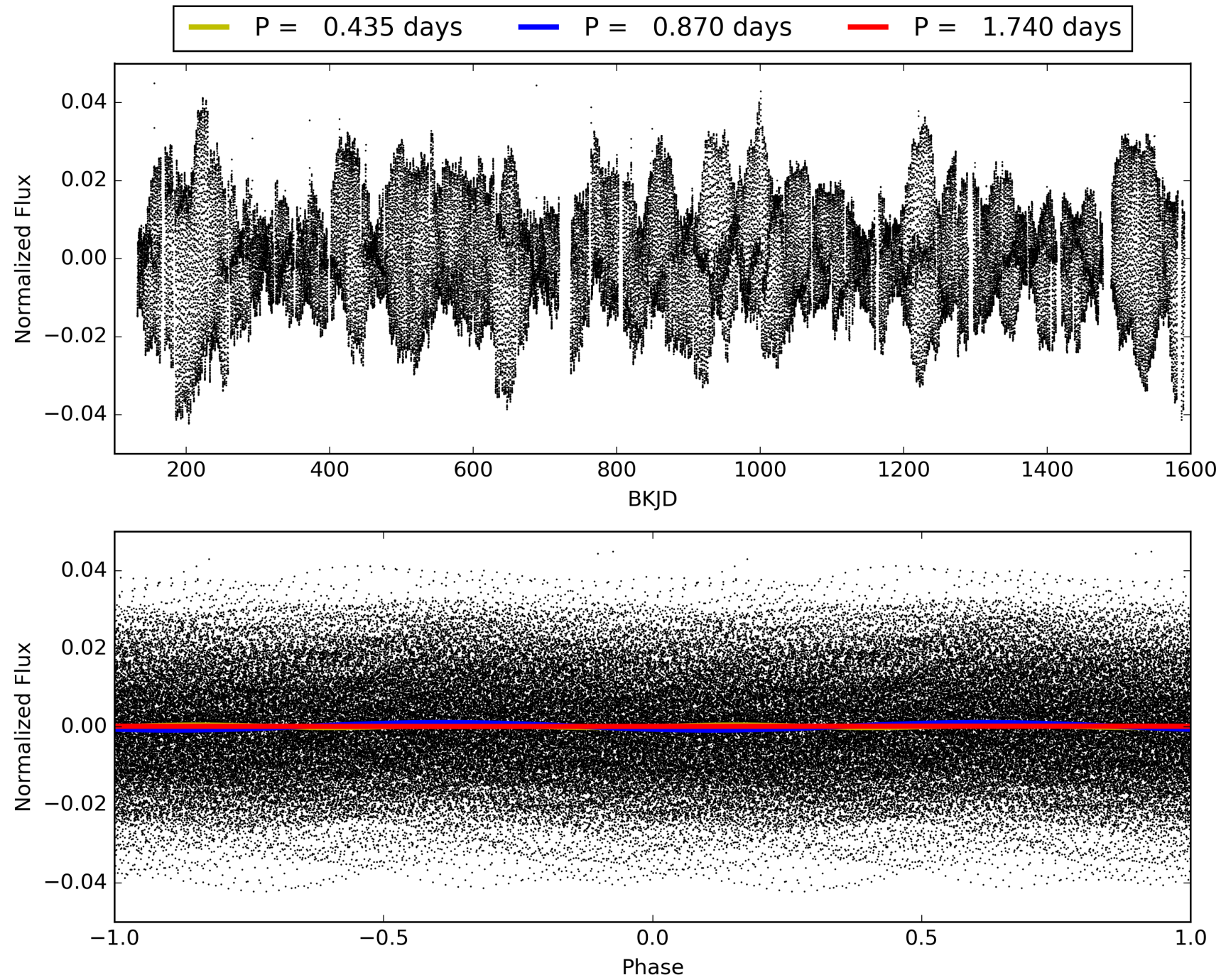
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:28:02 Z

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

TCE 004454890-04, PDC Light Curves

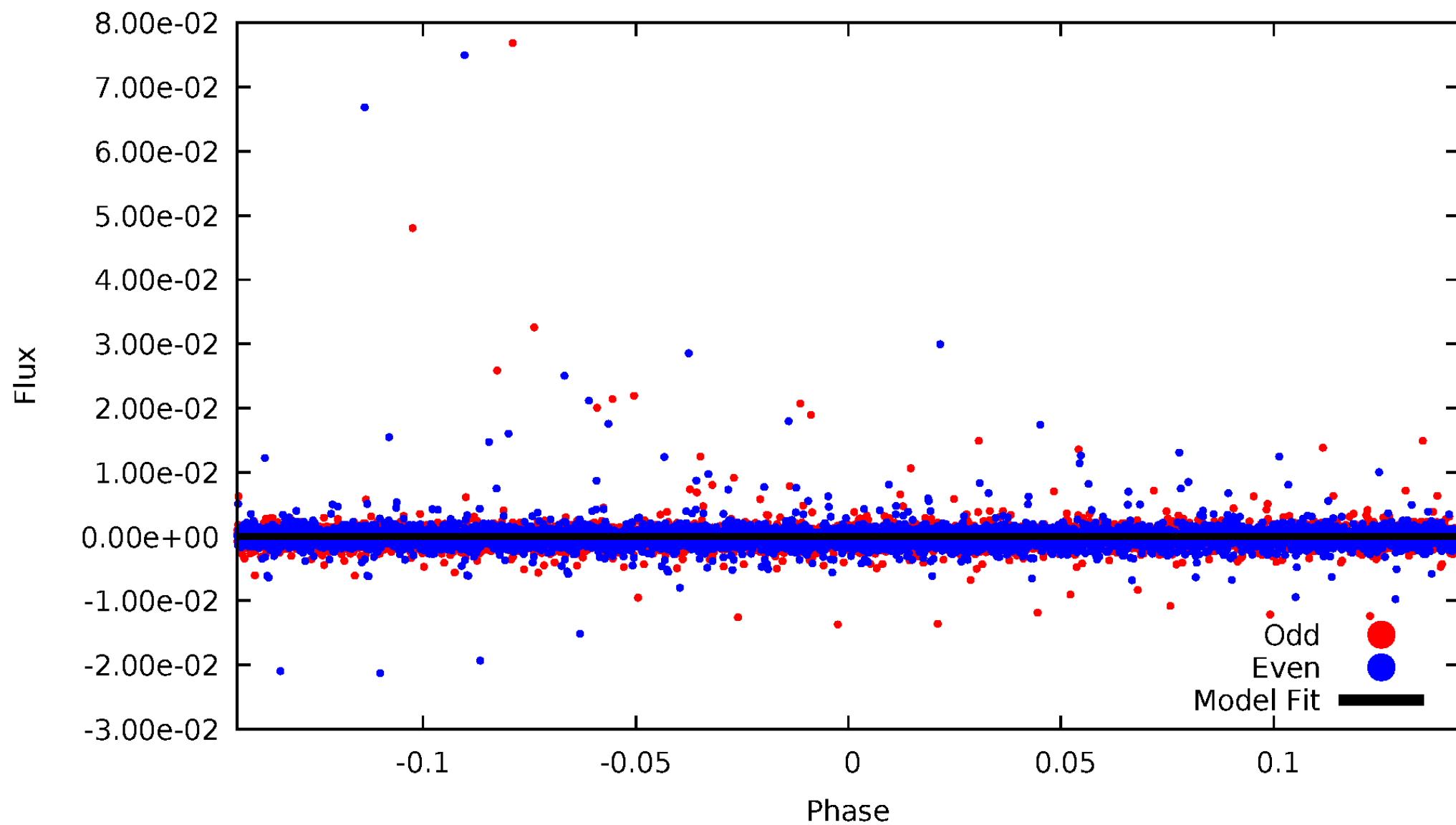


TCE 004454890-04



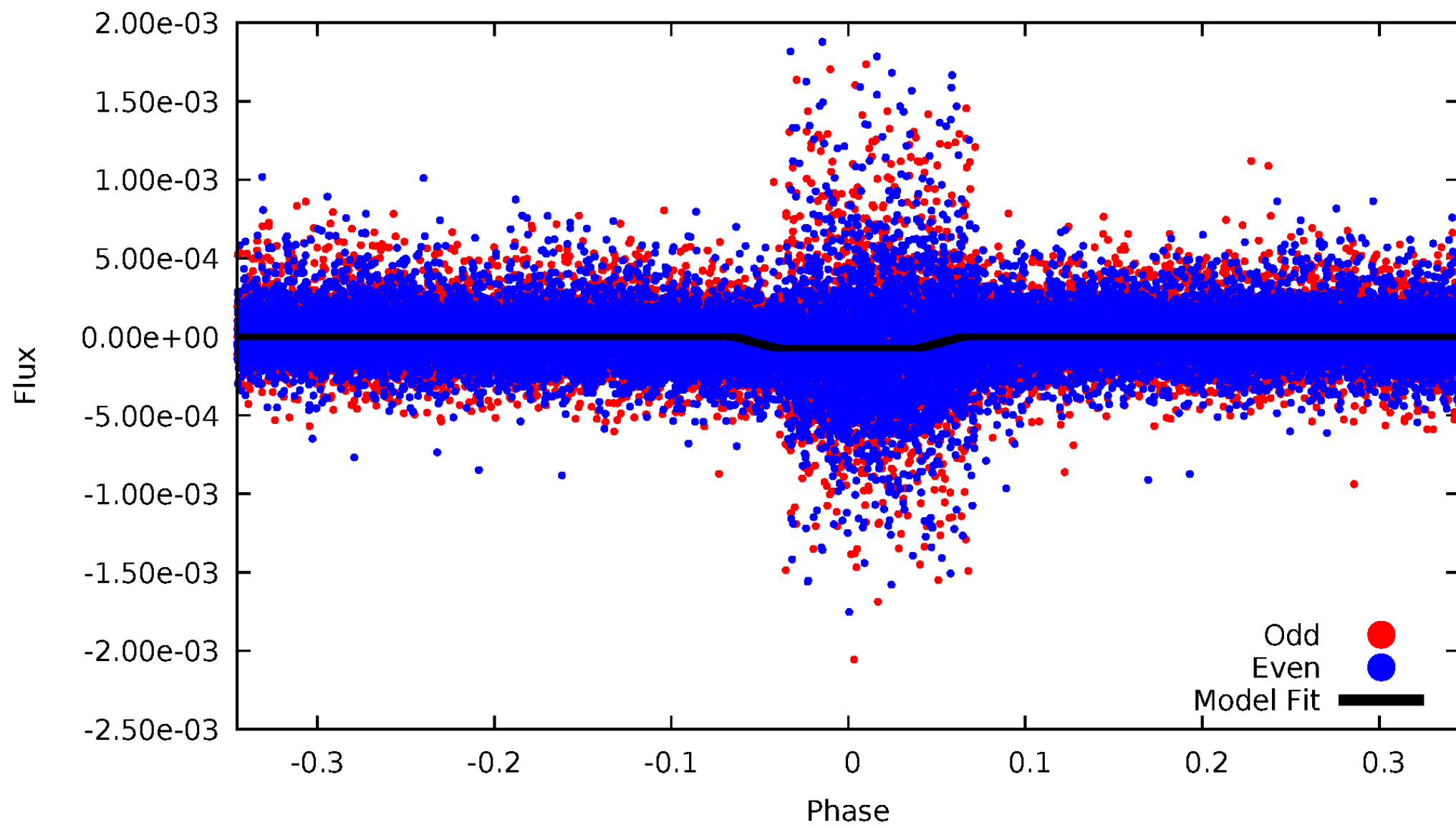
DV Odd/Even

TCE 004454890-04



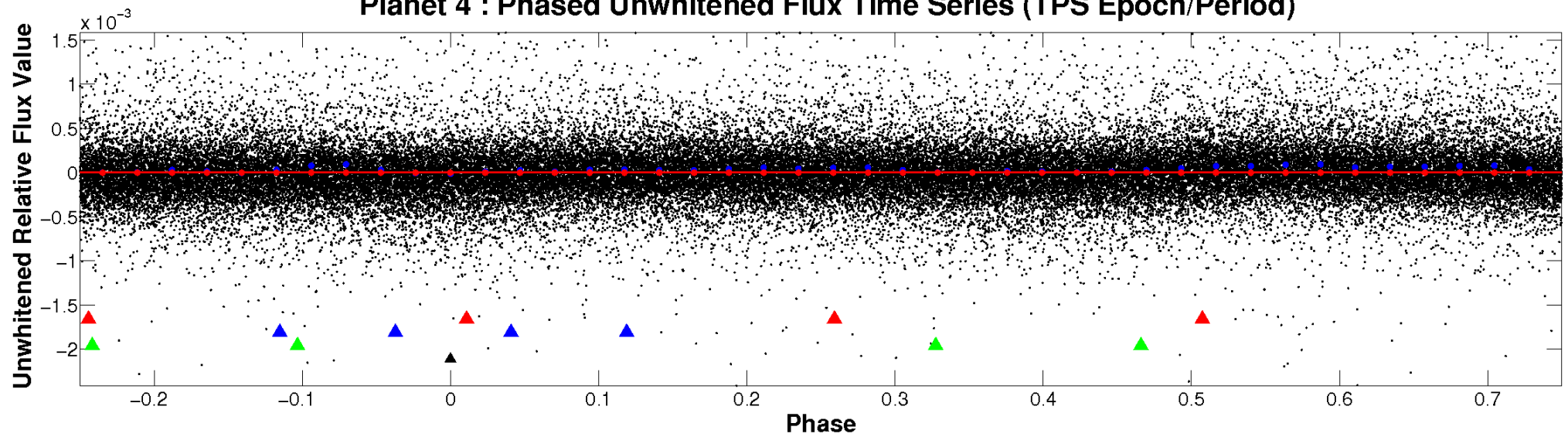
ALT Odd/Even

TCE 004454890-04

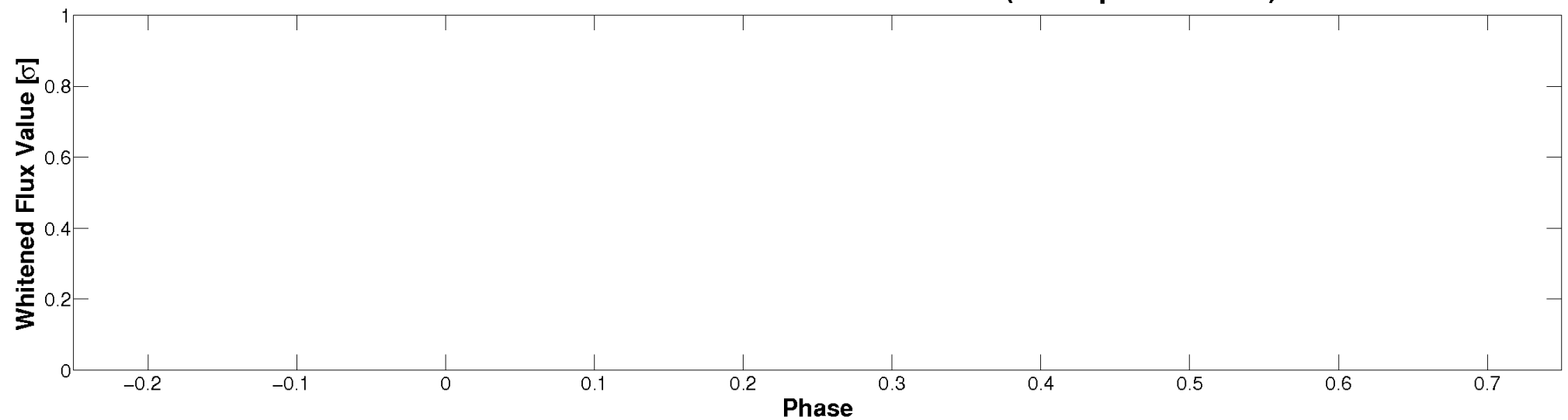


Non-Whitened Vs. Whitened Light Curve

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

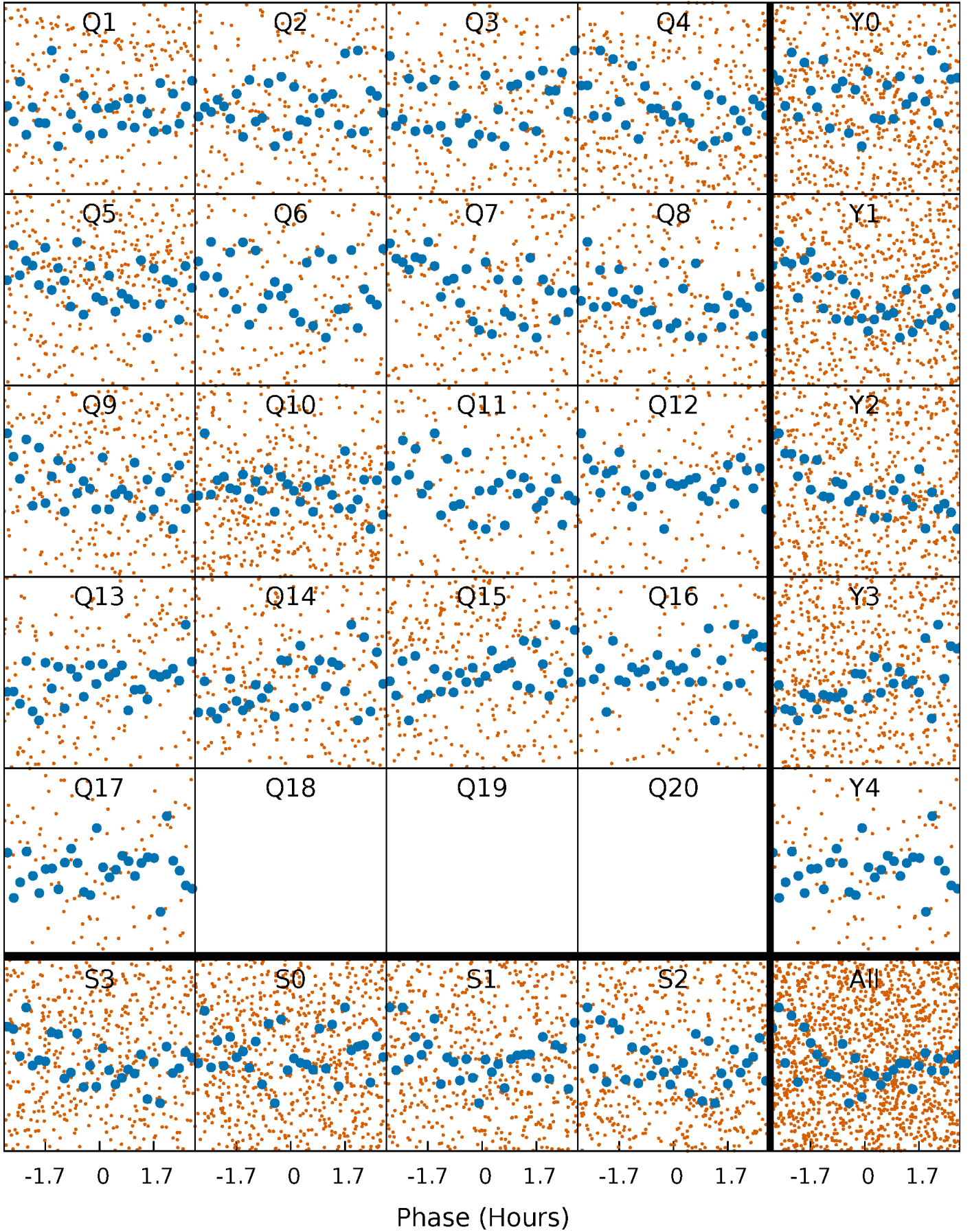


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



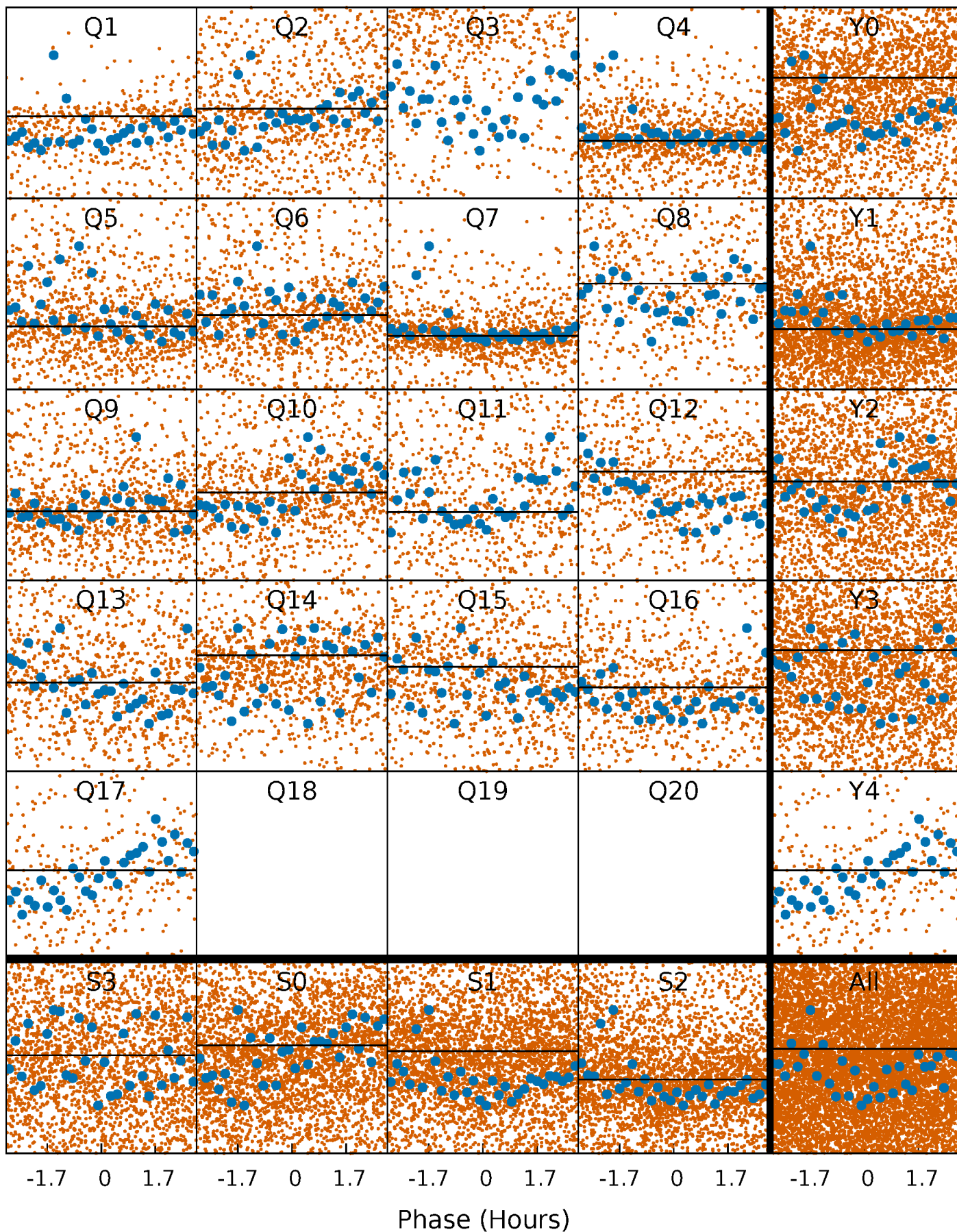
PDC Quarter-Phased Transit Curves

TCE 004454890-04 P= 0.870067 Days $T_0=131.789119$ (BKJD)



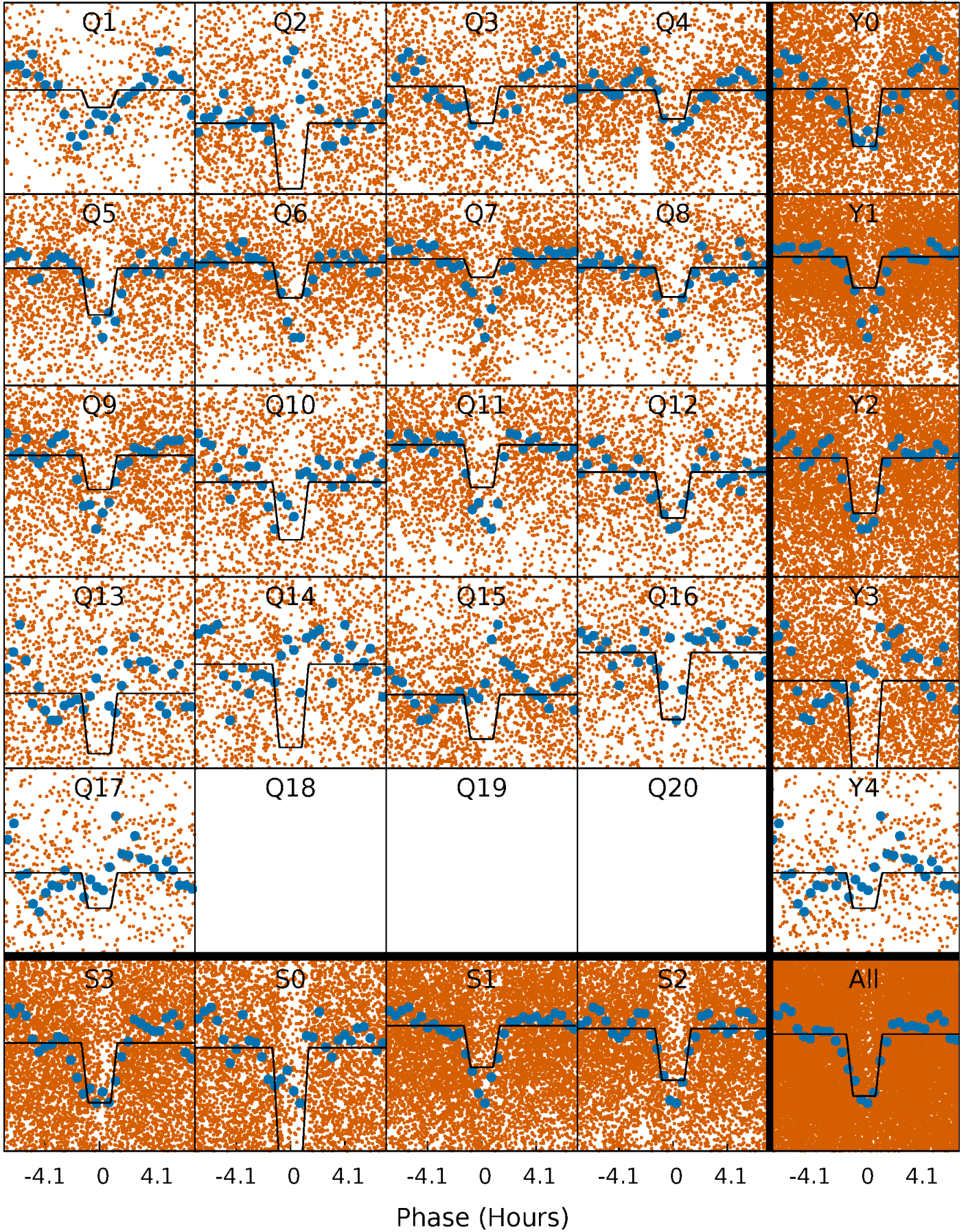
DV Quarter-Phased Transit Curves

TCE 004454890-04 P= 0.870067 Days $T_0=131.789119$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

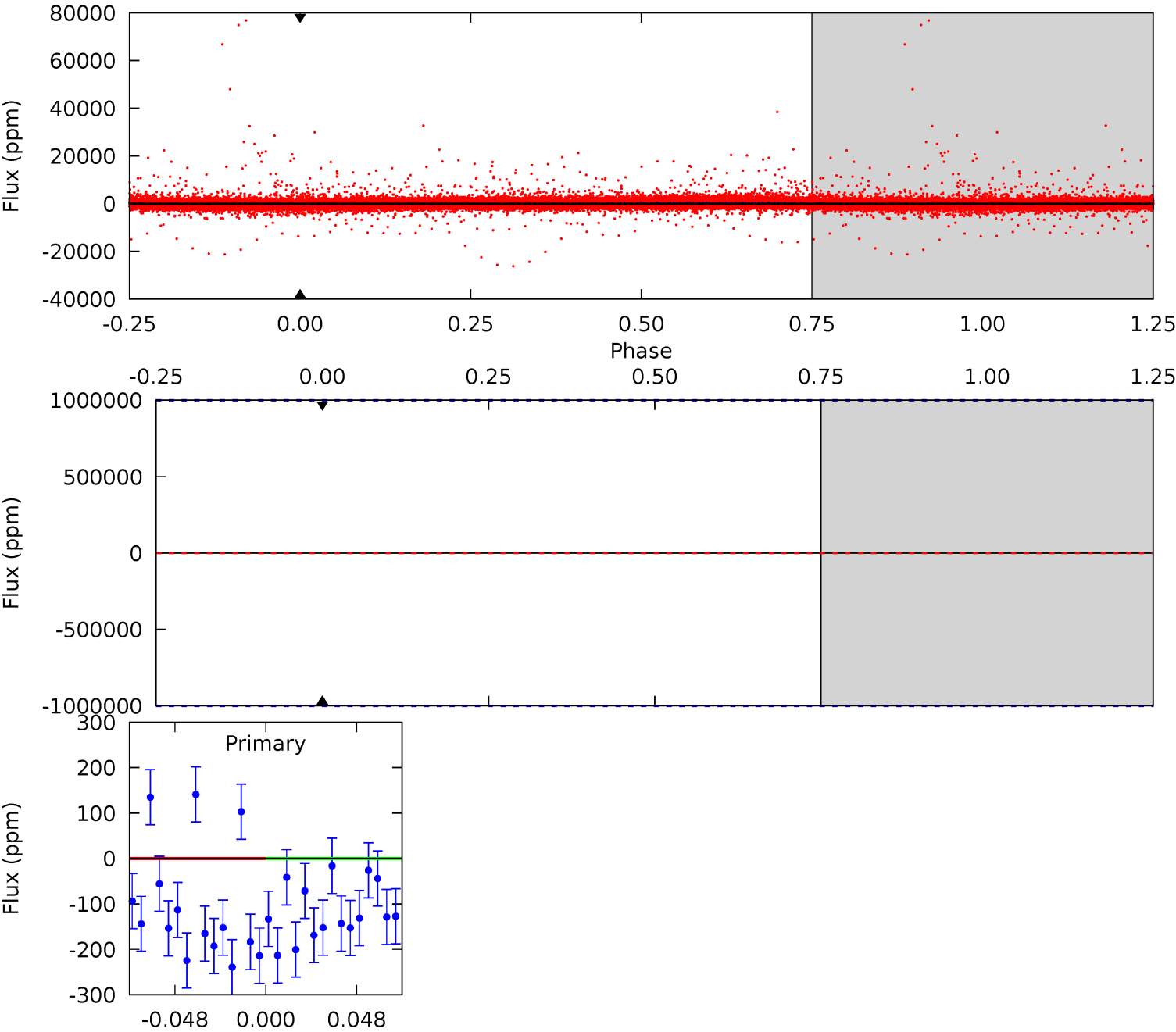
TCE 004454890-04 P= 0.870067 Days $T_0=131.782817$ (BKJD)



DV Model-Shift Uniqueness Test

004454890-04, P = 0.870067 Days, E = 130.919052 Days

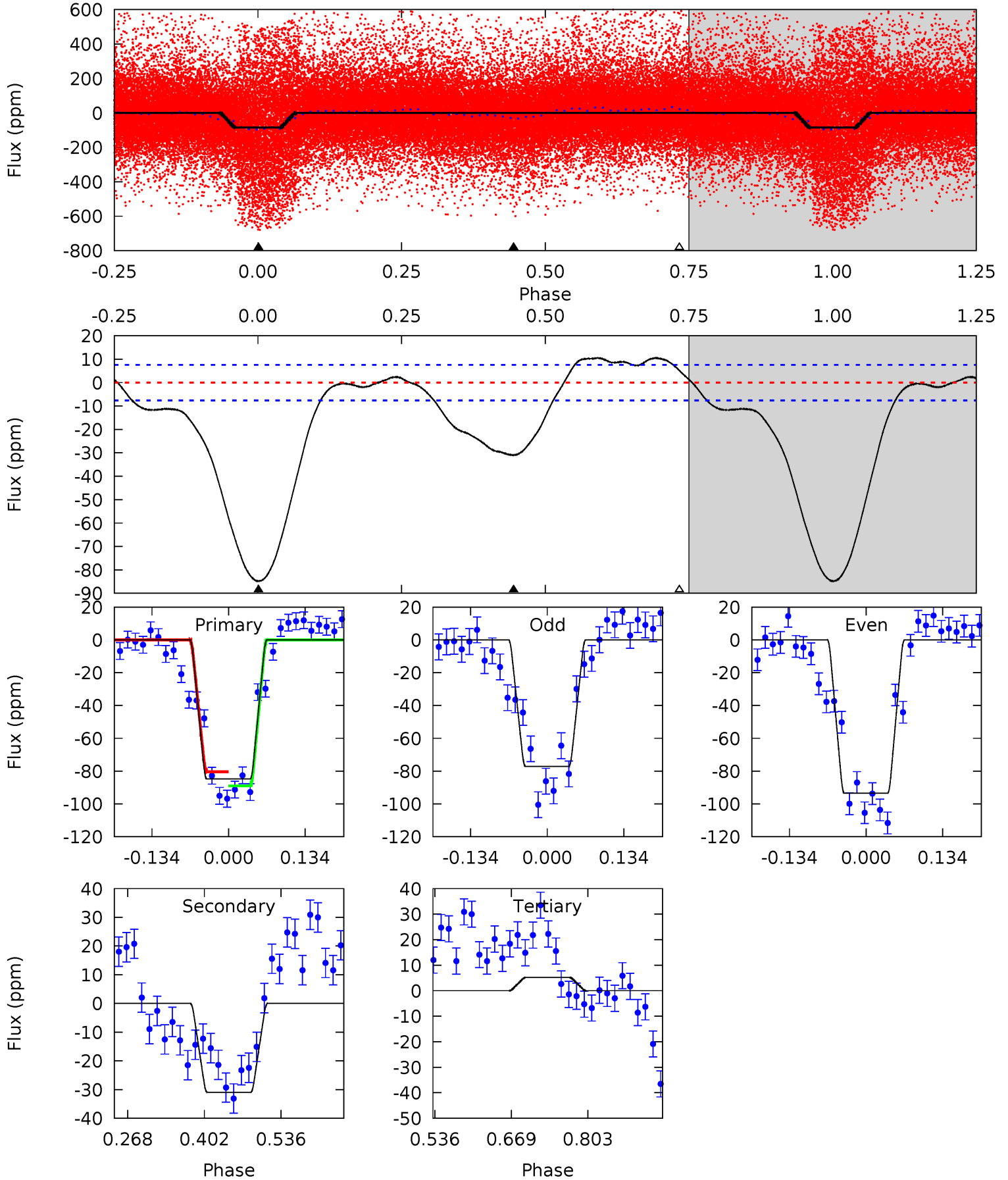
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004454890-04, P = 0.870067 Days, E = 130.912750 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.1	18.3	-3.06	0	4.50	1.50	4.33	53.2	50.1	21.4	18.3	4.84	0.99	0.11	2.57



Stellar Parameters For KIC 004454890

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4938^{+148}_{-163}	$4.718^{+0.045}_{-0.021}$	$-1.620^{+0.300}_{-0.200}$	$0.538^{+0.024}_{-0.030}$	$0.551^{+0.034}_{-0.017}$	$4.991^{+0.872}_{-0.439}$
	+3%/-3%	+1%/-0%	+19%/-12%	+4%/-6%	+6%/-3%	+17%/-9%
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 004454890-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$4.88^{+4.26}_{-3.46}$	1832^{+60}_{-63}	-3753^{+16926}_{-9145}	$-9.303^{+849.005}_{-887.932}$
Alt.	-31 ± 2	$3.93^{+4.42}_{-2.72}$	1837^{+55}_{-67}	-2003^{+5101}_{-307}	$0.232^{+2.367}_{-0.178}$

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

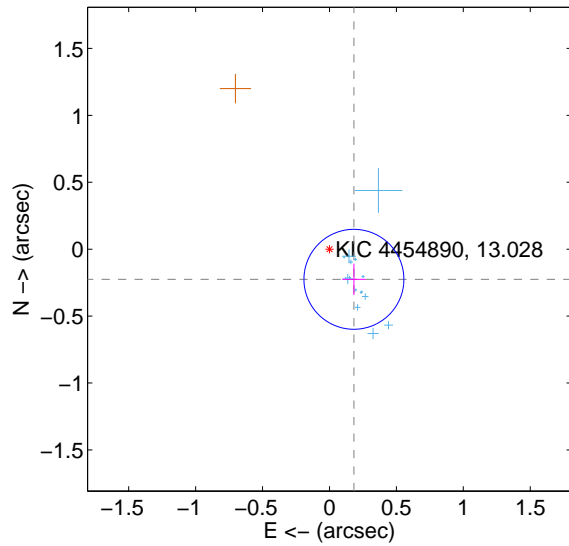
Supplemental centroid analysis for 004454890-04. Kepler magnitude: 13.03. Transit SNR -1.00

There are 16 quarters with good PRF difference image offsets

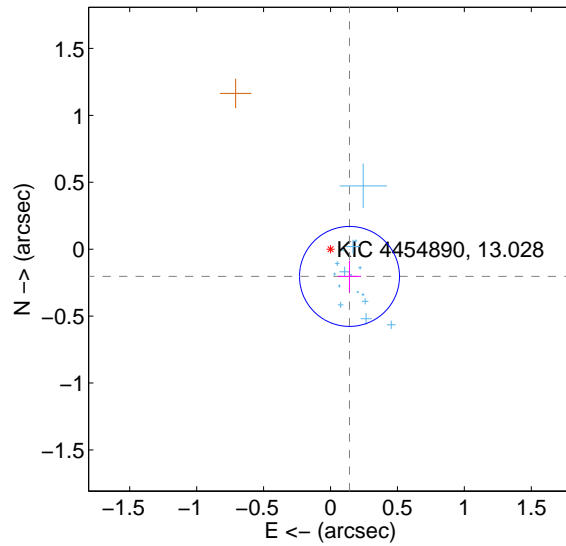
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.290 ± 0.124	2.33	-0.183 ± 0.087	-0.225 ± 0.117
PRF-fit source offset from KIC position	0.248 ± 0.124	1.99	-0.142 ± 0.086	-0.204 ± 0.117
photometric centroid source offset	0.68 ± 0.28	2.45	-0.52 ± 0.26	-0.43 ± 0.30

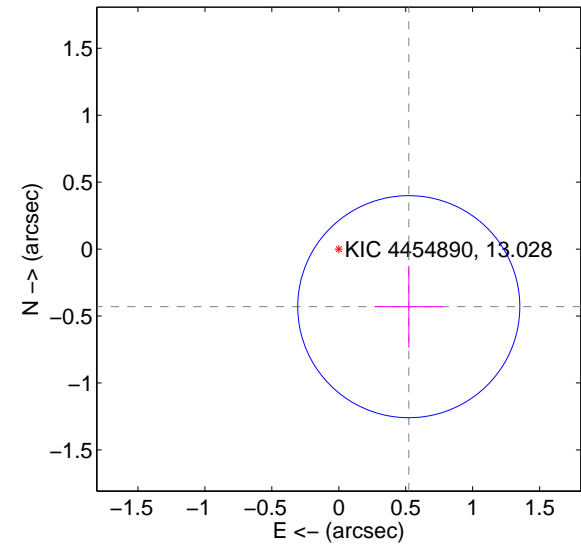
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

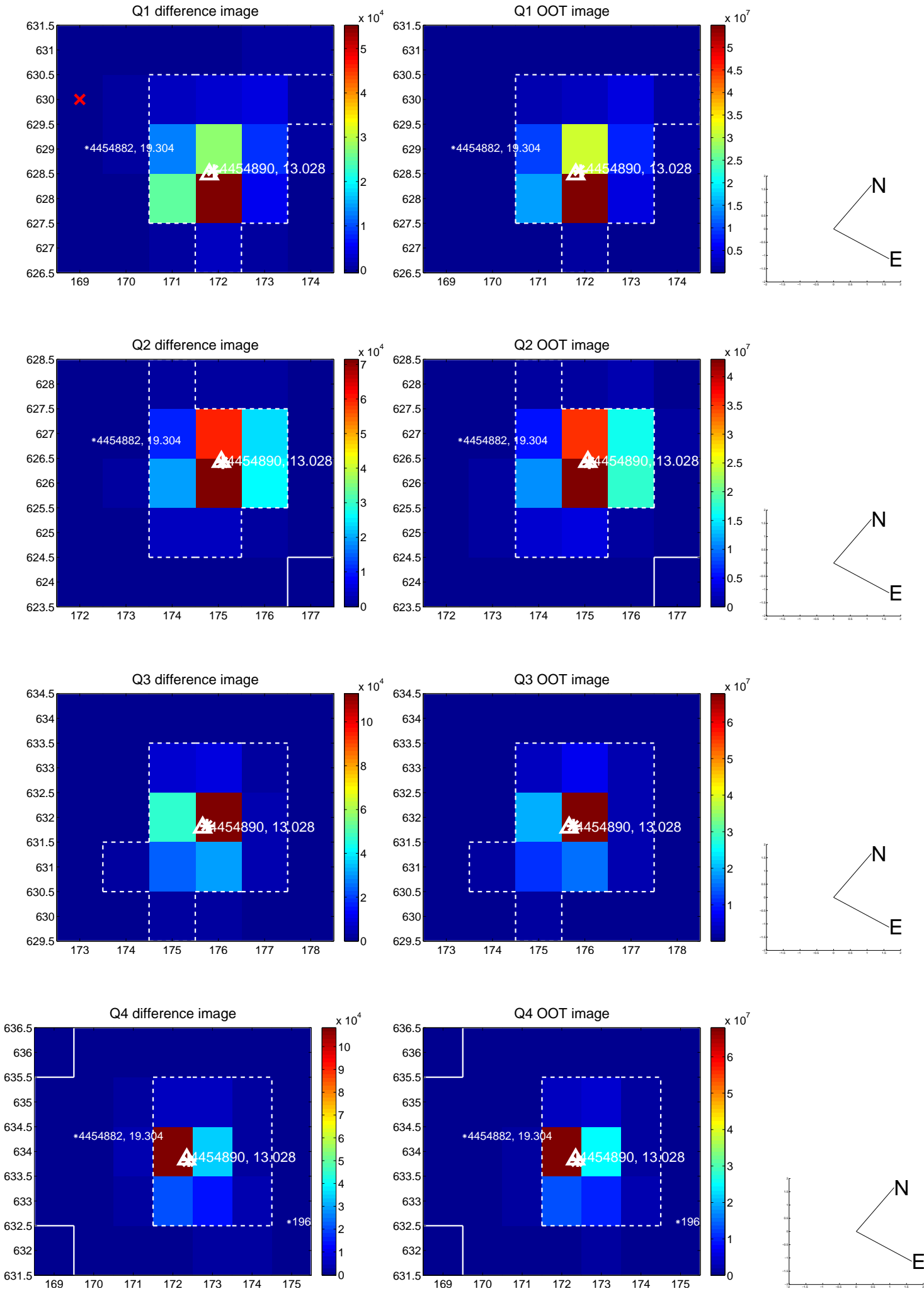


offset from photometric centroids

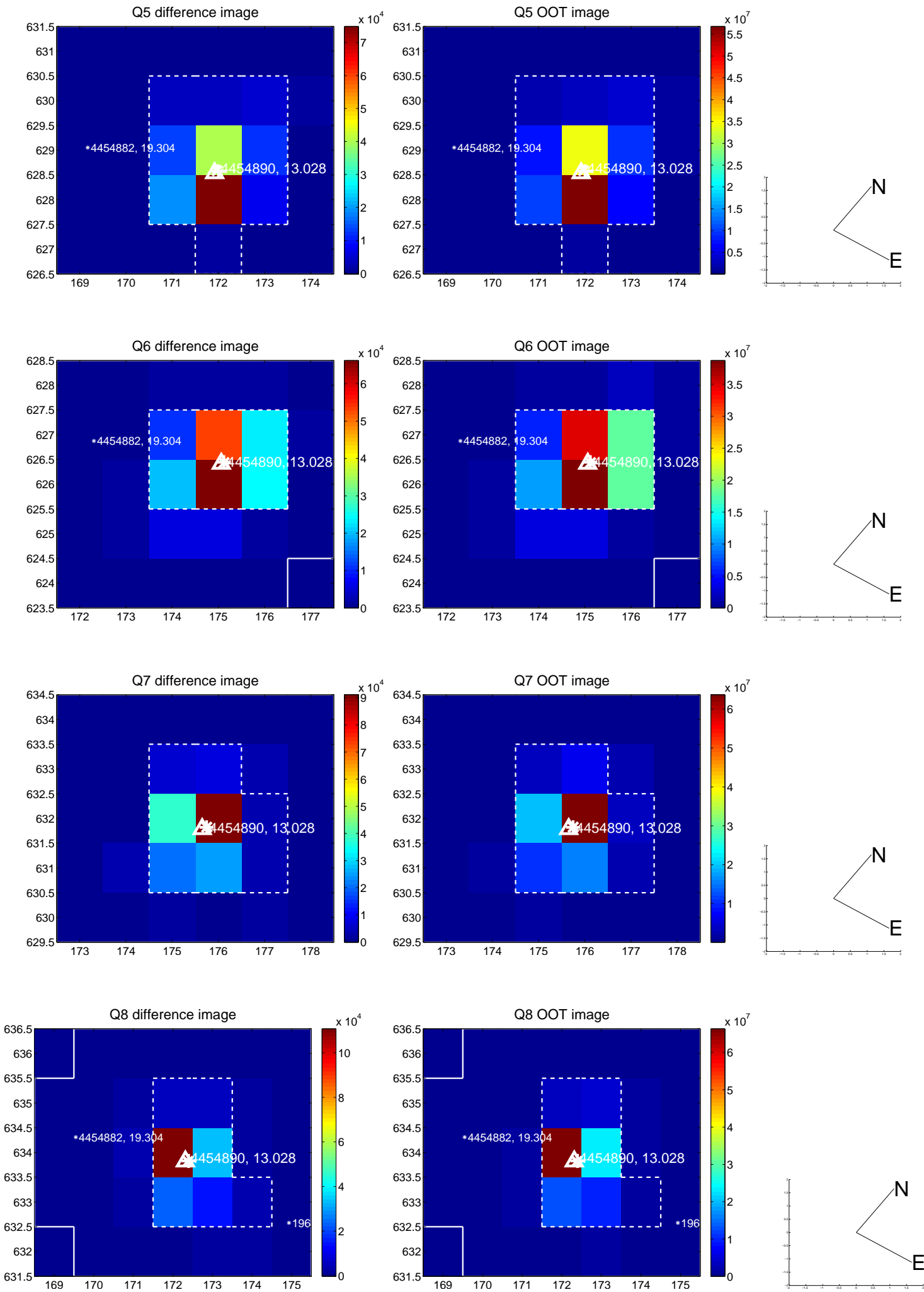


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

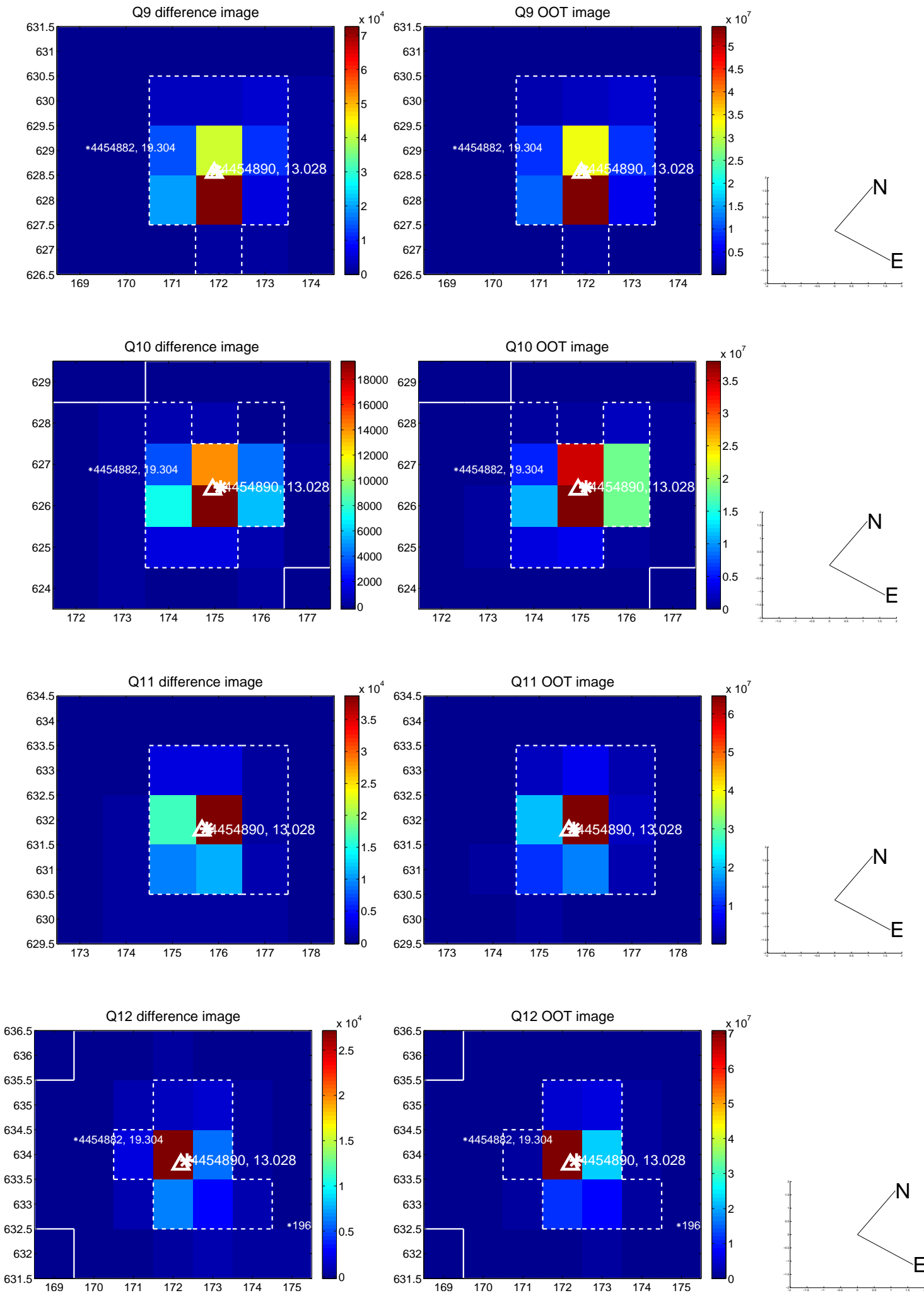
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



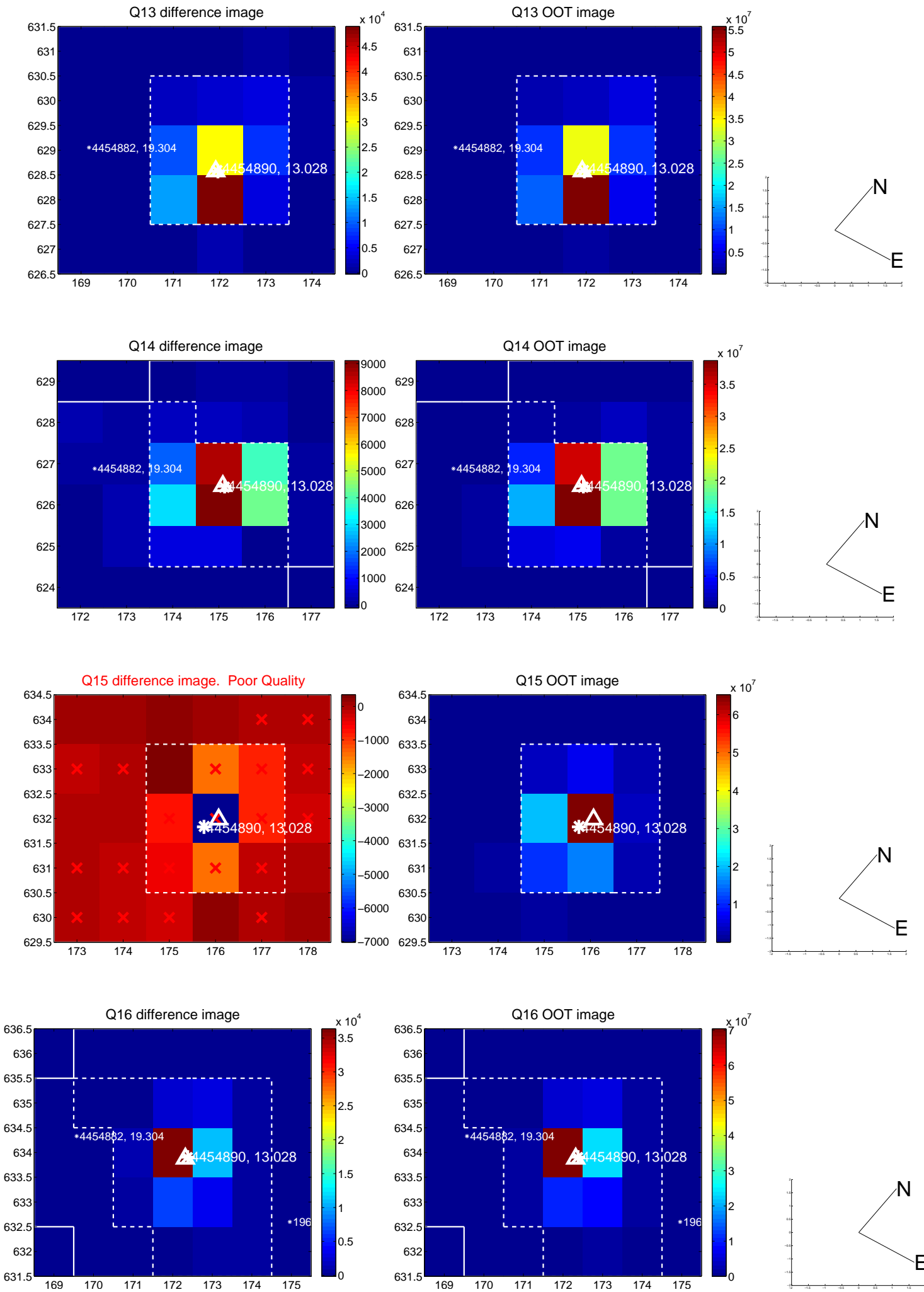
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



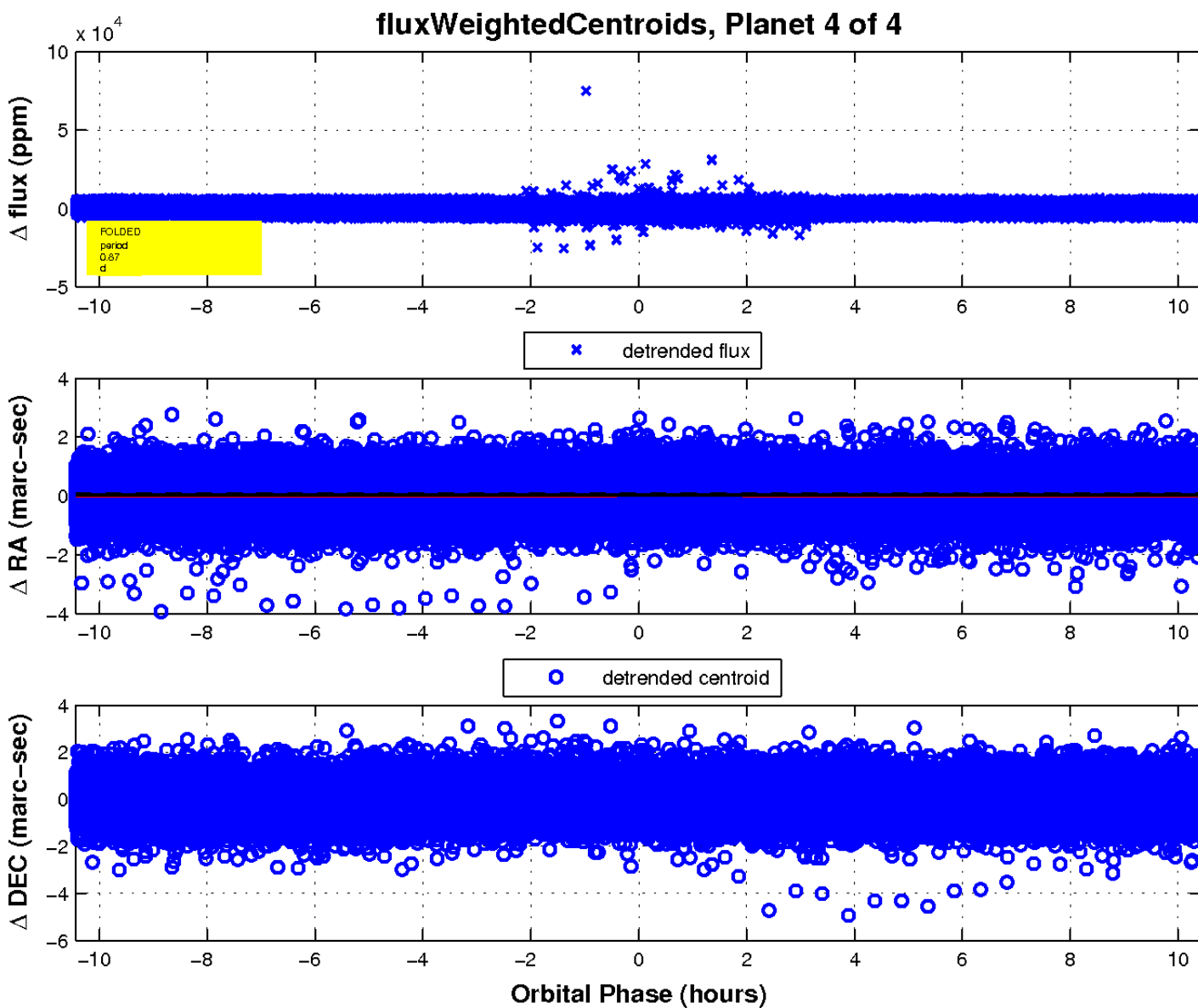
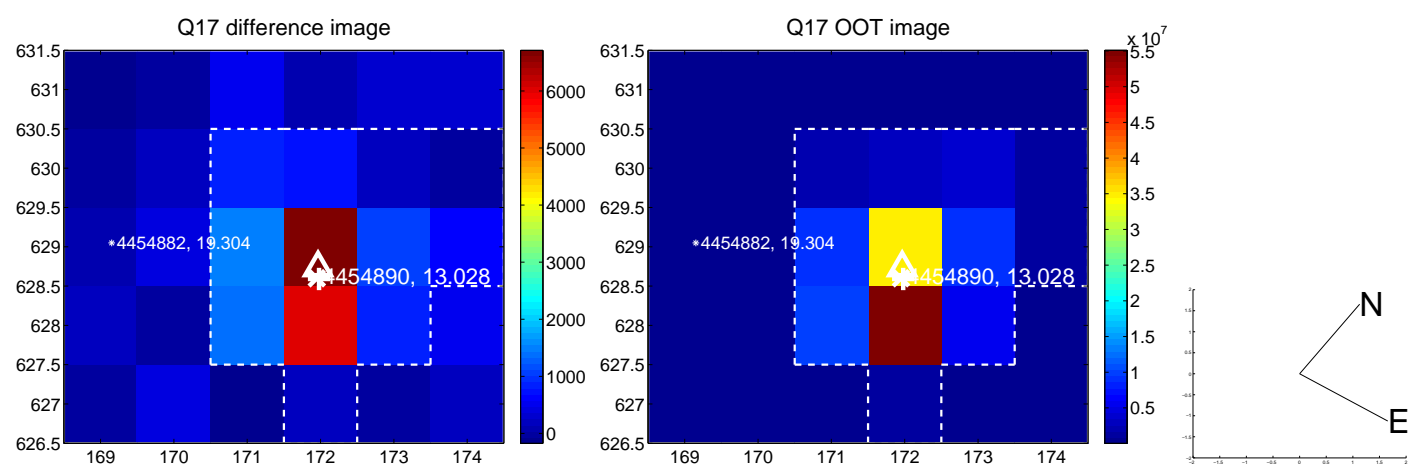
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

