

KIC 001724222

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})
001724222-01	OBS	No	0.827889	131.810586	20.3	3.516	9.4	10.8	1.94	6932	1.02	20210.01
001724222-04	OBS	No	127.315065	168.776044	240.1	4.267	7.2	8.2	1.94	6932	3.86	24.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001724222-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001724222-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

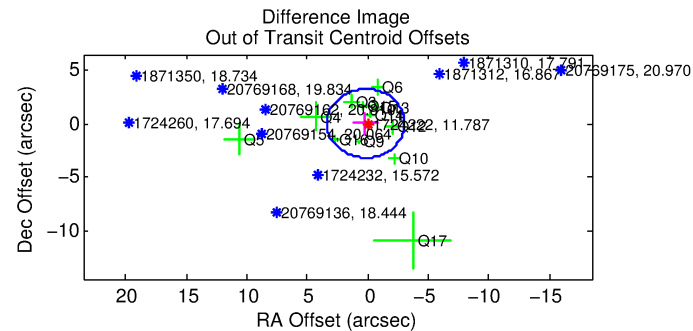
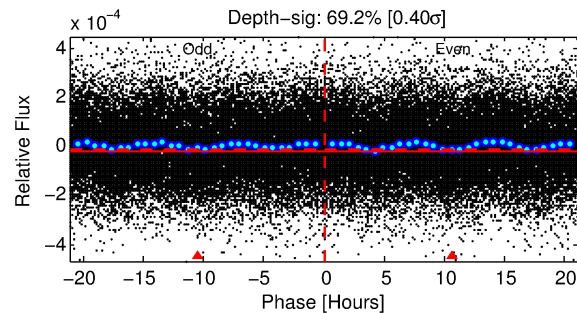
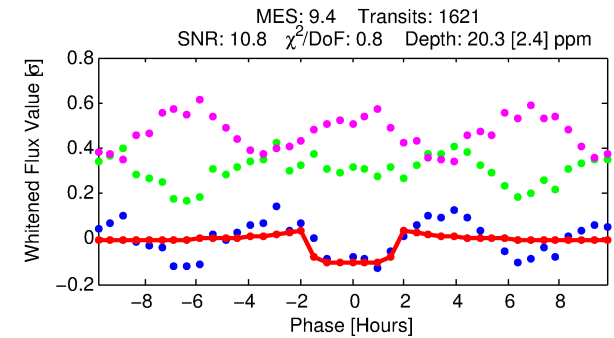
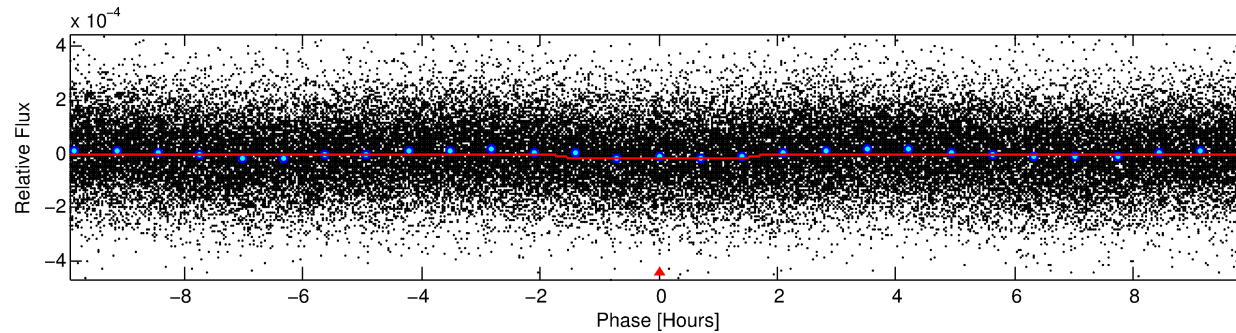
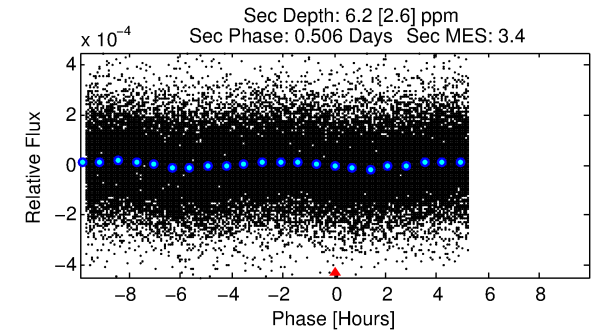
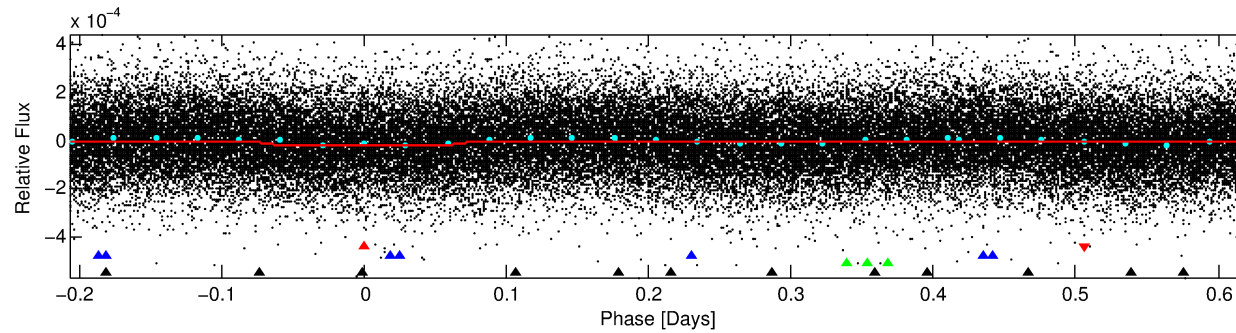
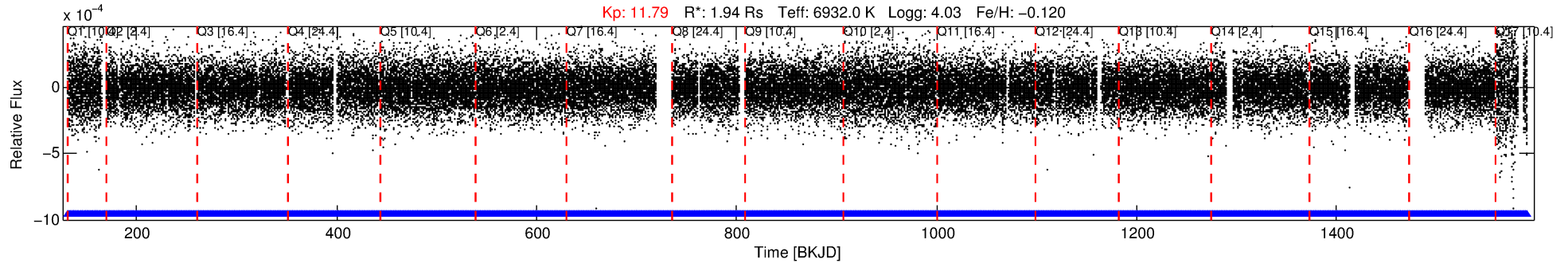
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001724222-01

No Significant Match Found

DV One-Page Summary

KIC: 1724222 Candidate: 1 of 4 Period: 0.828 d



DV Fit Results:

Period = 0.82789 [0.00001] d
Epoch = 131.8106 [0.0024] BKJD
Rp/R* = 0.0048 [0.0013]
a/R* = 1.23 [0.68]
b = 0.91 [0.34]
Seff = 20210.02 [5672.03]
Teq = 3040 [213] K
Rp = 1.02 [0.34] Re
a = 0.0196 [0.0034] AU
Ag = 1.27 [0.94] [0.29σ]
Teffp = 4989 [857] K [2.21σ]

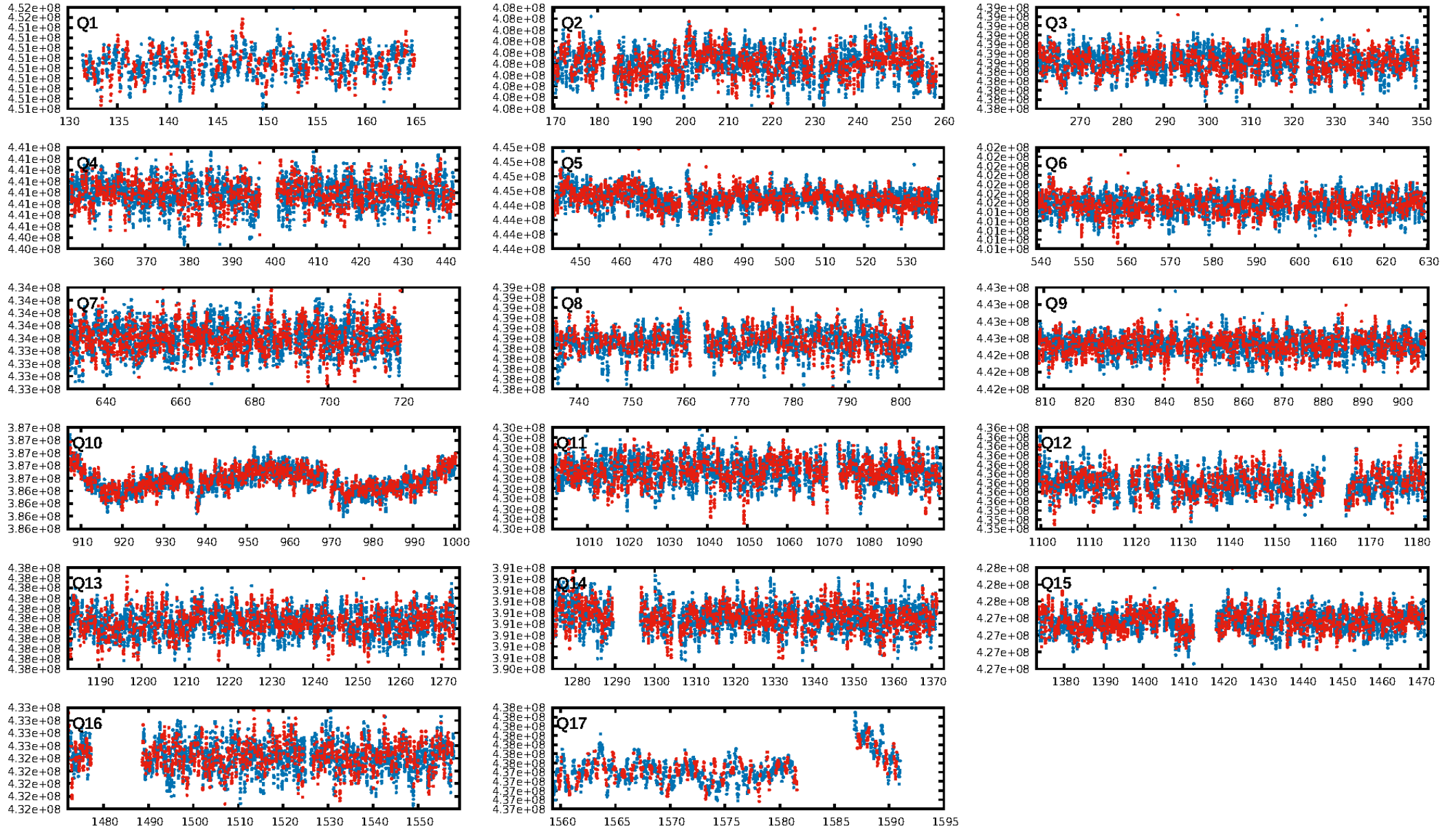
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [549.06σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.52e-14
RollingBand-fgt: 1.00 [1548/1548]
GhostDiagnostic-chr: 2.079
Centroid-sig: N/A
Centroid-so: 0.728 arcsec [1.33σ]
OotOffset-rm: 0.199 arcsec [0.19σ]
KicOffset-rm: 0.297 arcsec [0.30σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.38 [5/13]
DiffImageOverlap-fno: 1.00 [17/17]

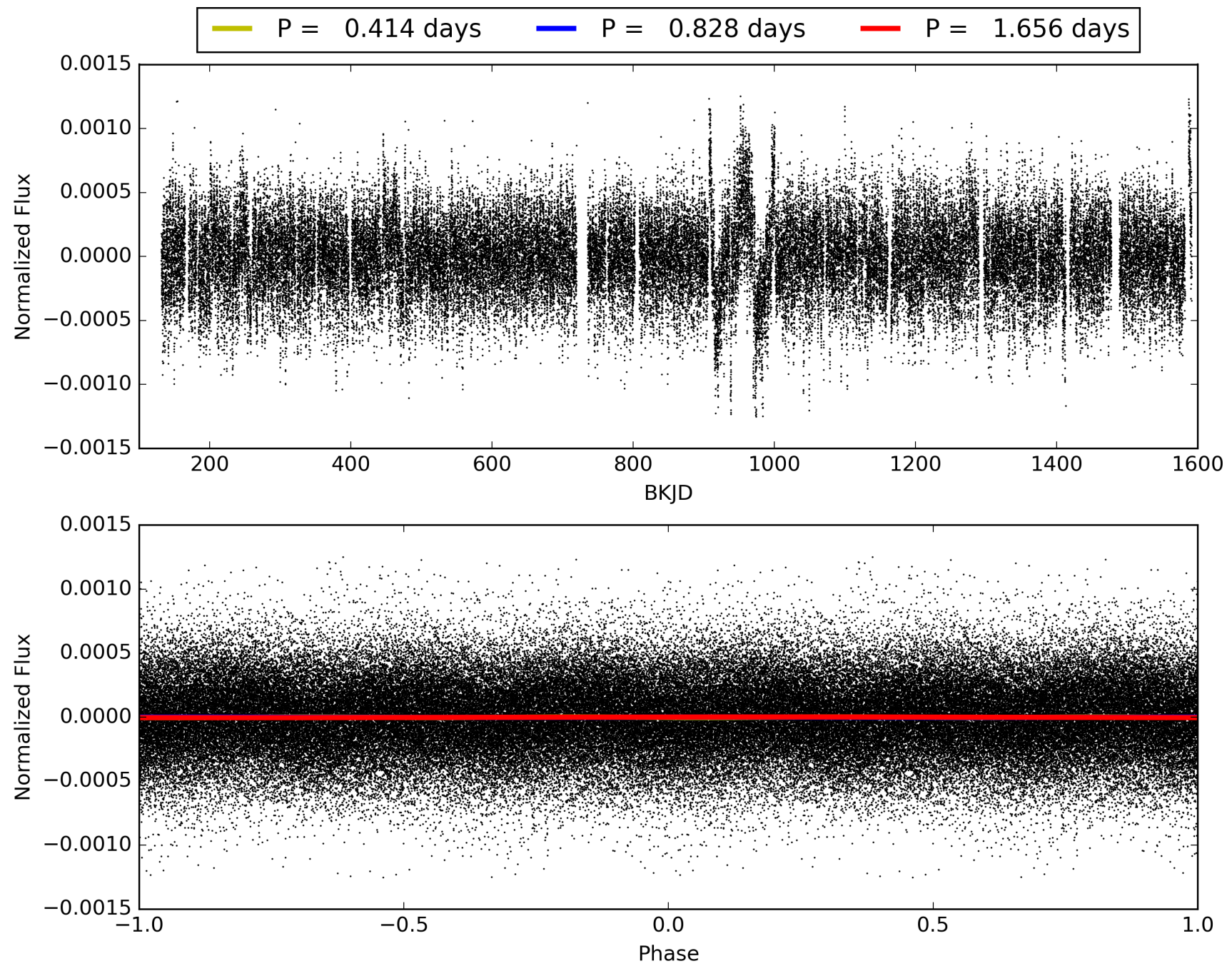
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:05:03 Z

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

TCE 001724222-01, PDC Light Curves

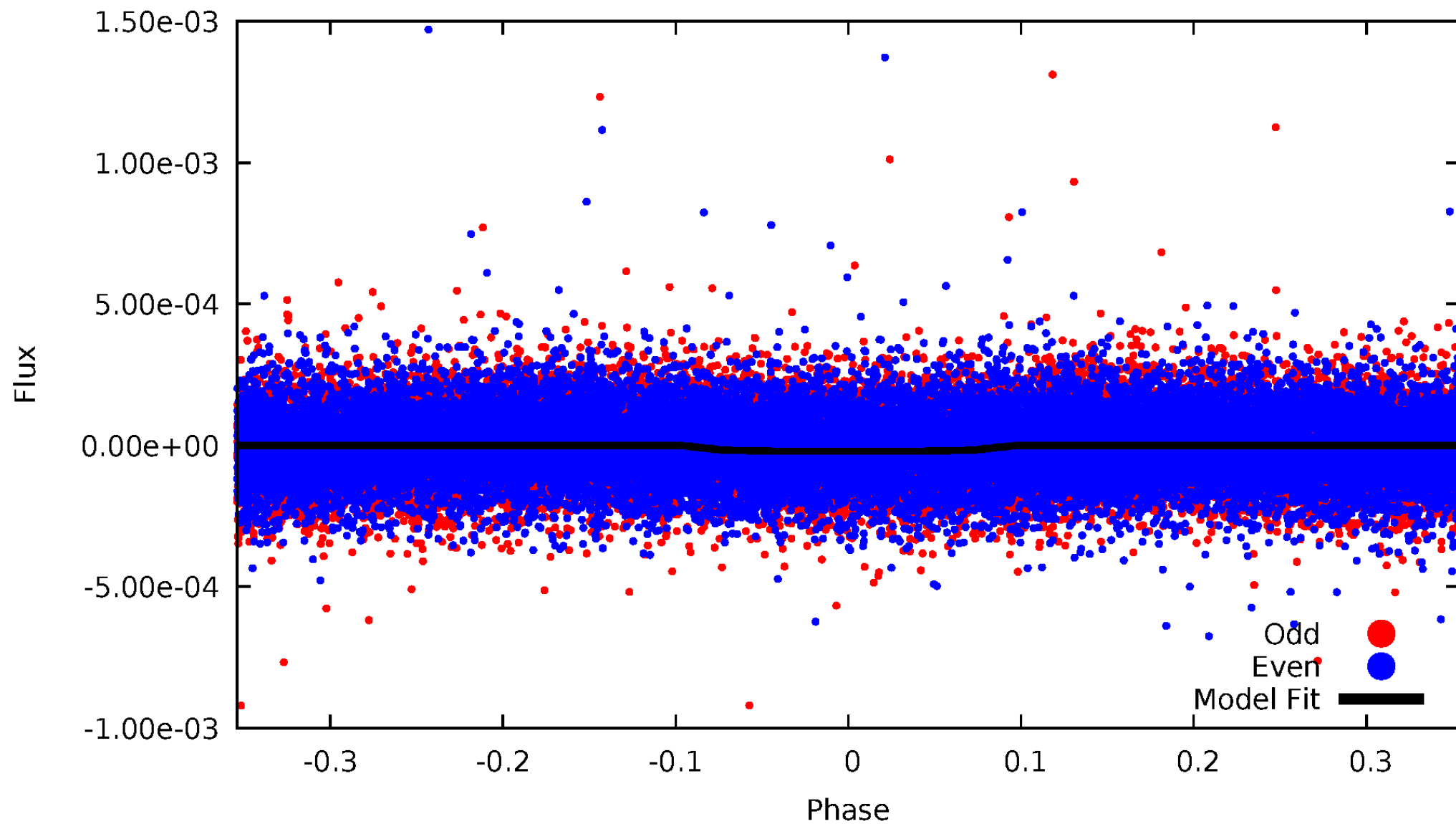


TCE 001724222-01



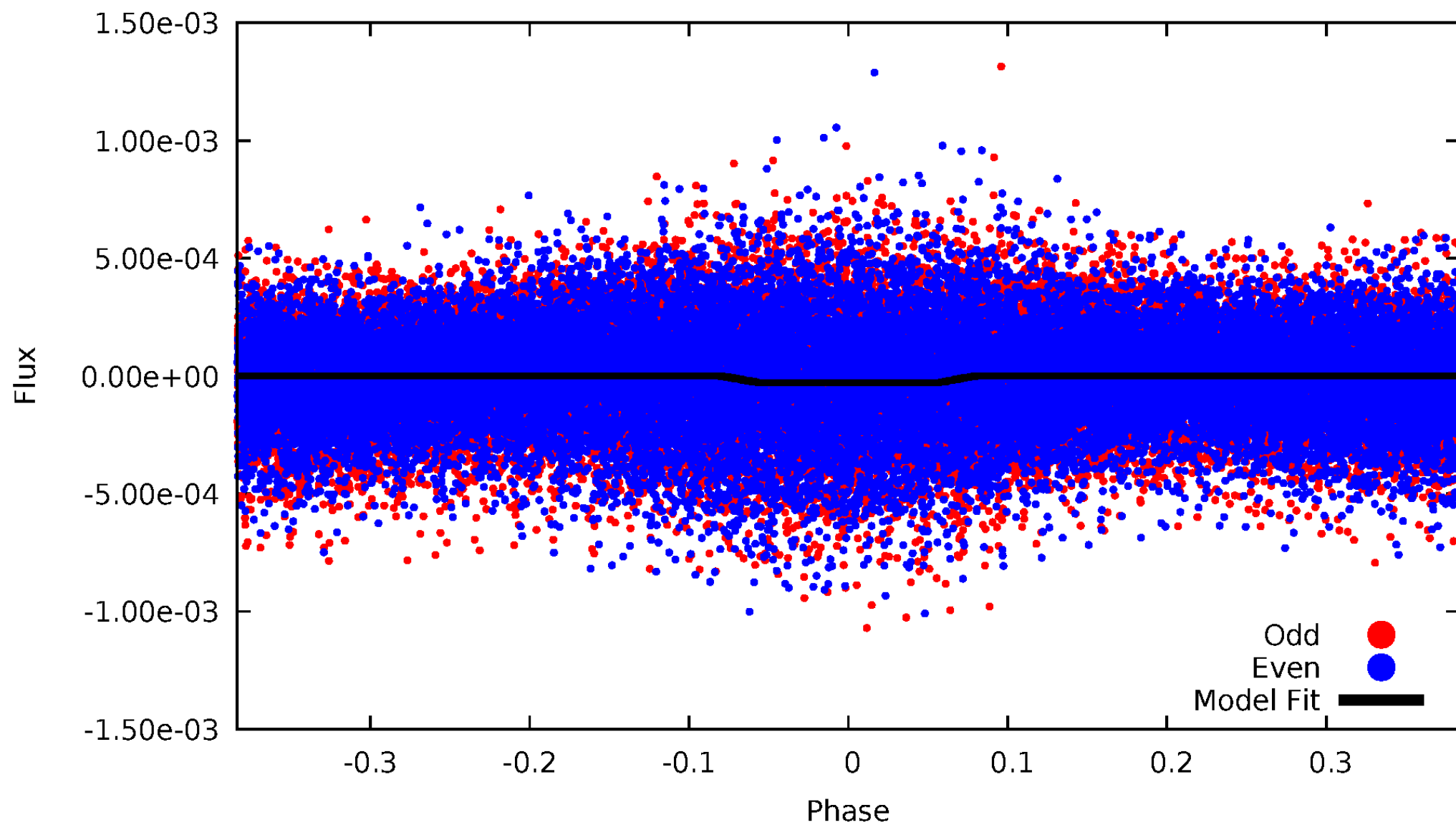
DV Odd/Even

TCE 001724222-01



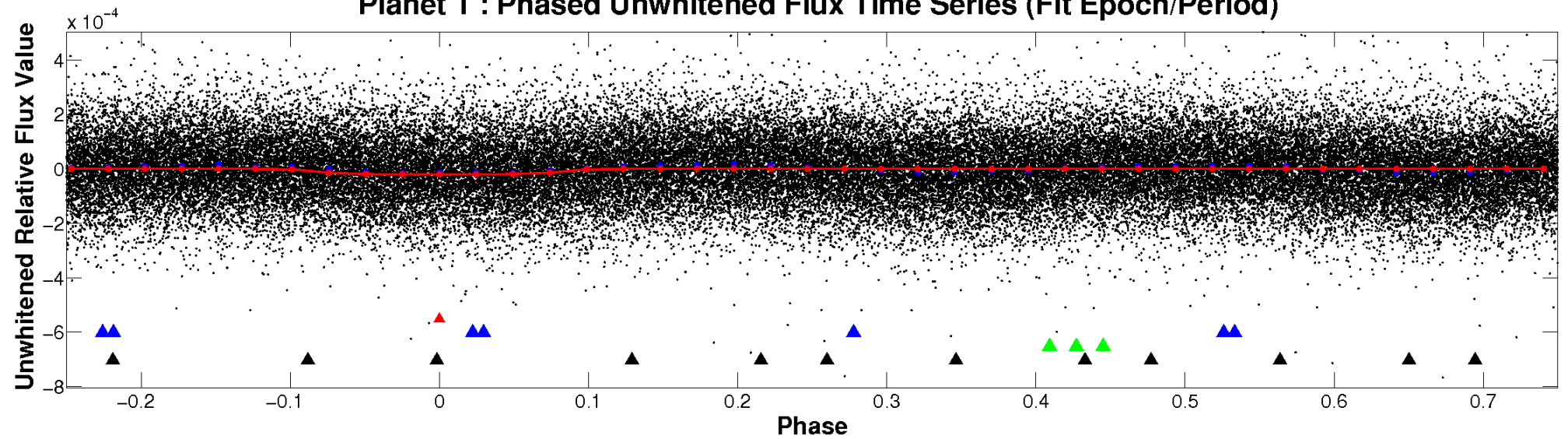
ALT Odd/Even

TCE 001724222-01

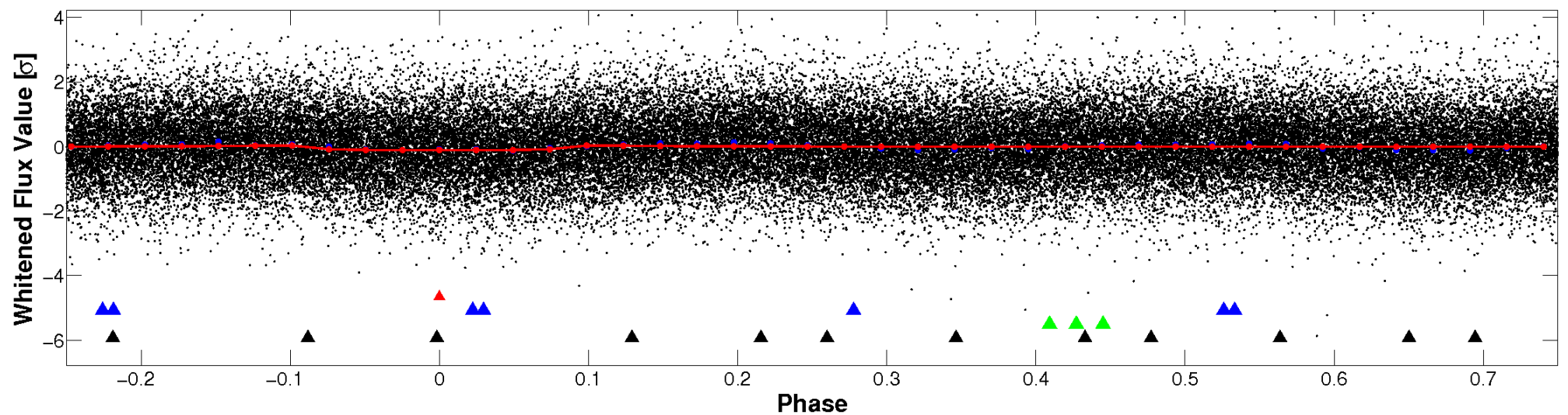


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

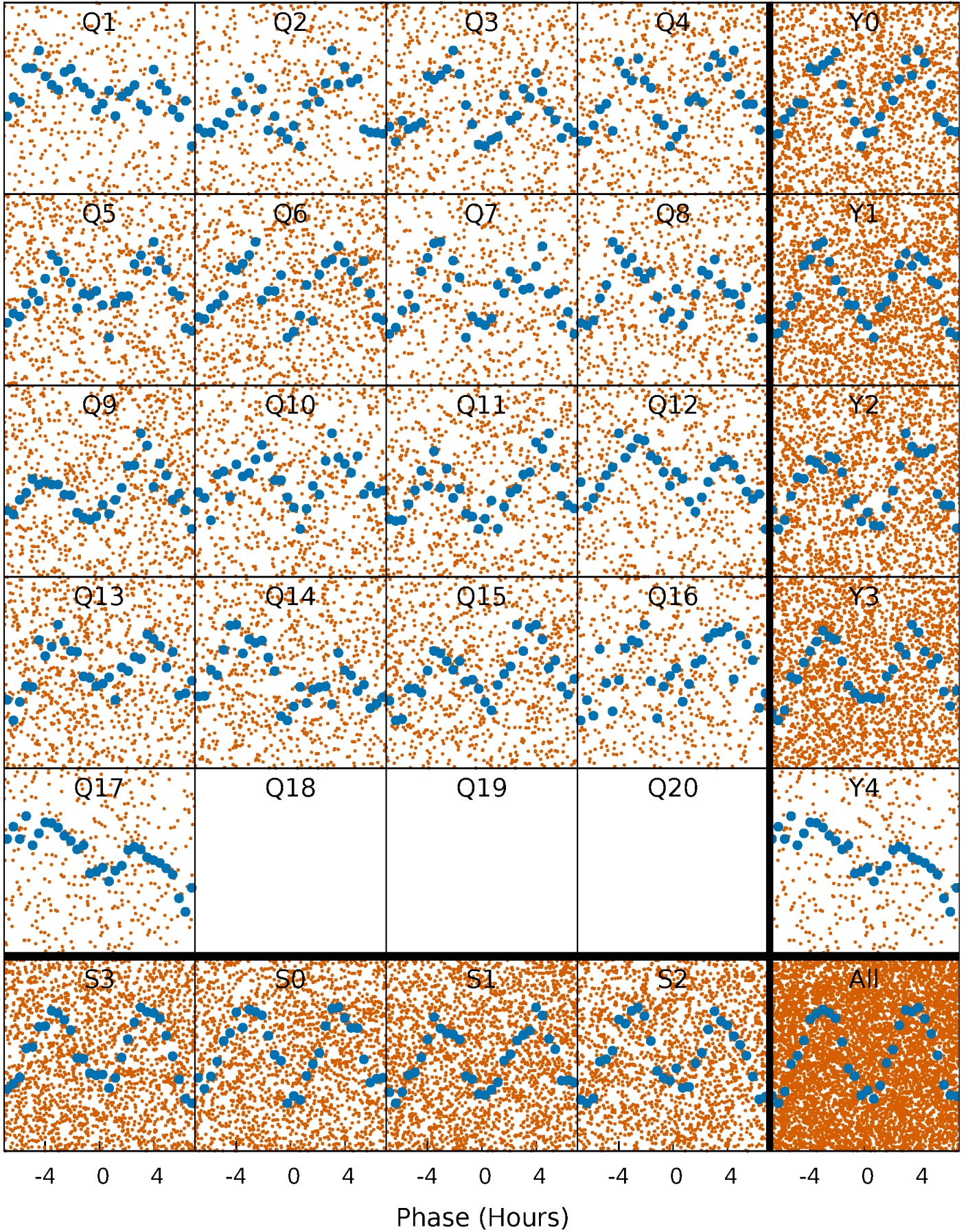


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



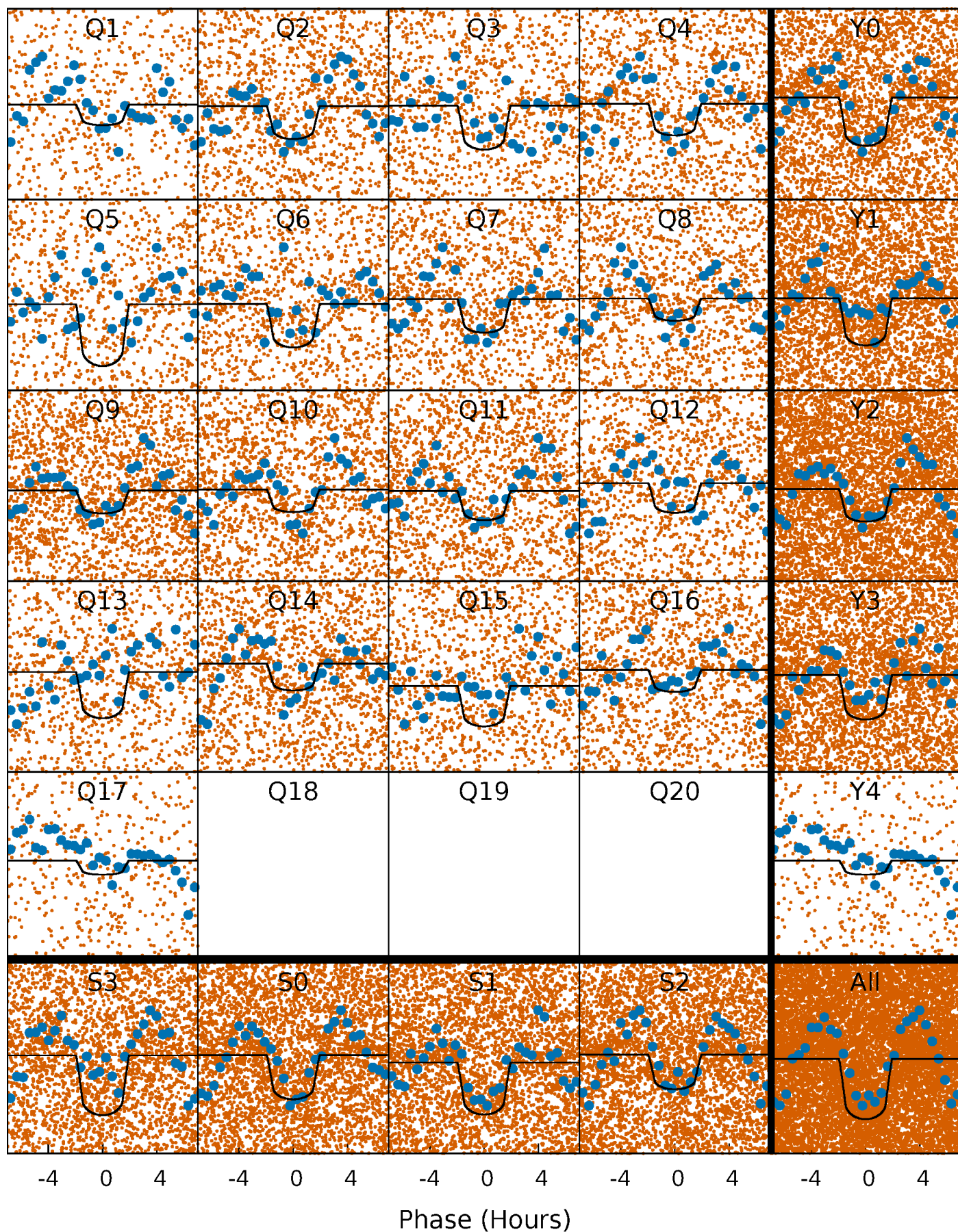
PDC Quarter-Phased Transit Curves

TCE 001724222-01 P= 0.827889 Days $T_0=131.810586$ (BKJD)



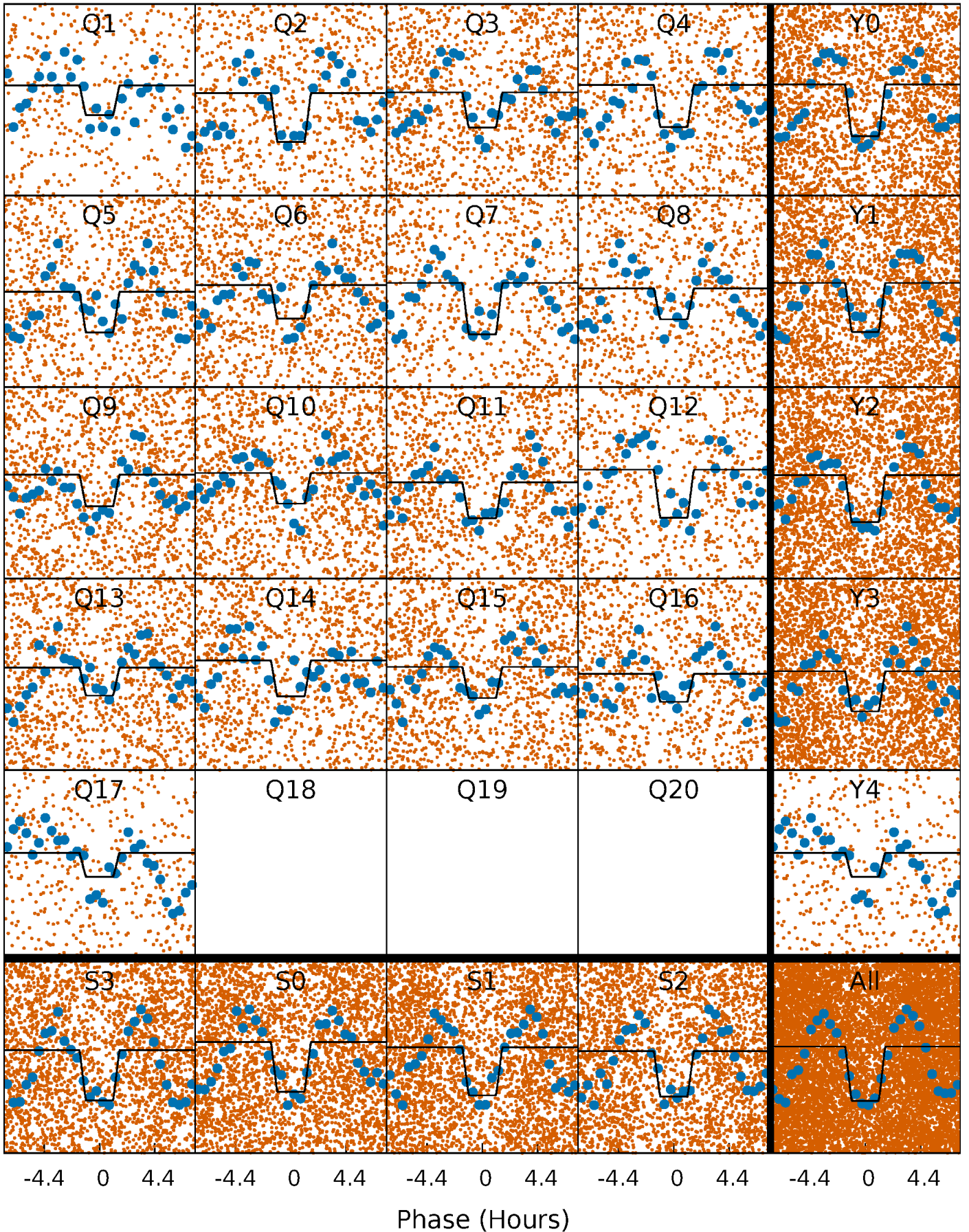
DV Quarter-Phased Transit Curves

TCE 001724222-01 P= 0.827889 Days $T_0=131.810586$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

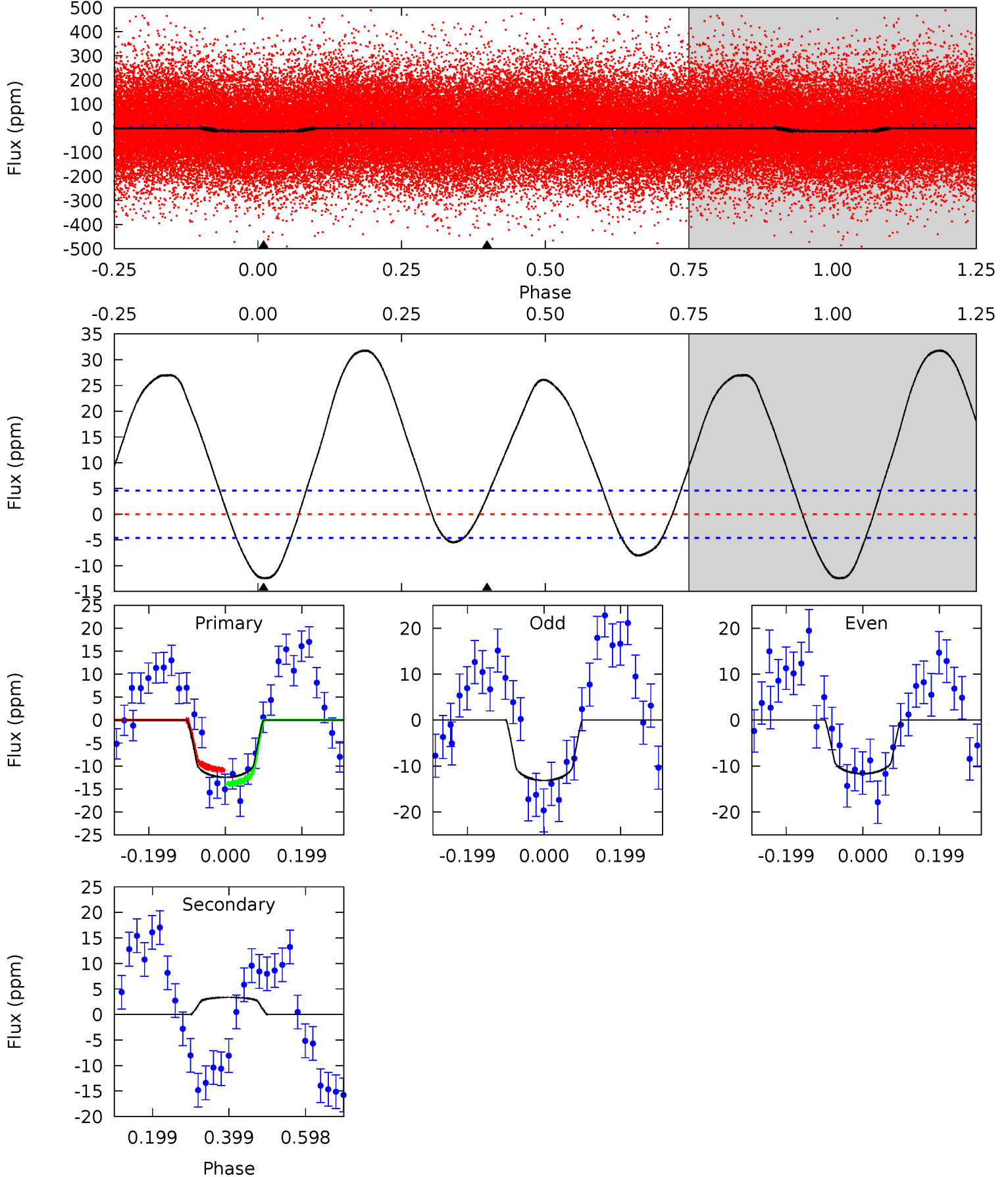
TCE 001724222-01 P= 0.827902 Days $T_0=131.809450$ (BKJD)



DV Model-Shift Uniqueness Test

001724222-01, P = 0.827889 Days, E = 130.982697 Days

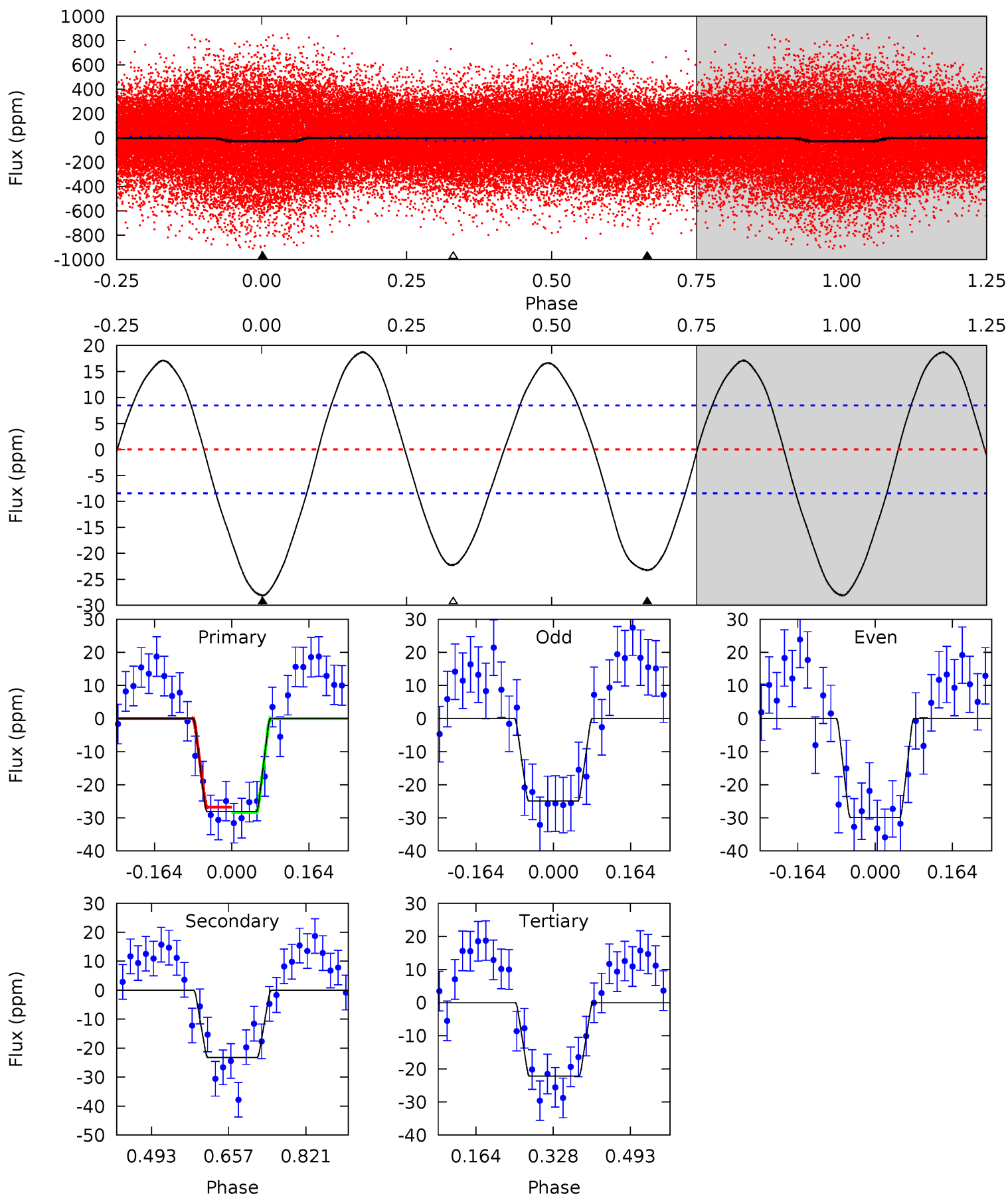
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	-3.24	0	0	4.42	1.28	10.3	12.0	12.0	-3.24	-3.24	0.71	0.89	0.72	1.49



Alt Model-Shift Uniqueness Test

001724222-01, P = 0.827902 Days, E = 130.981548 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	12.2	11.7	0	4.46	1.39	7.49	3.10	14.8	0.53	12.2	1.23	1.27	0.40	0.37



Stellar Parameters For KIC 001724222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6932^{+83}_{-76}	$4.030^{+0.162}_{-0.108}$	$-0.120^{+0.150}_{-0.150}$	$1.940^{+0.352}_{-0.352}$	$1.471^{+0.127}_{-0.116}$	$0.284^{+0.213}_{-0.095}$
	+1%/-1%	+4%/-3%	+125%/-125%	+18%/-18%	+9%/-8%	+75%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 001724222-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	3 ± 1	$0.99^{+0.29}_{-0.29}$	4224^{+190}_{-210}	-4777^{+352}_{-641}	$-0.720^{+0.357}_{-0.789}$
Alt.	-23 ± 2	$1.16^{+0.32}_{-0.28}$	4232^{+199}_{-218}	6284^{+996}_{-693}	$3.727^{+2.653}_{-1.454}$

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 $A_{obs} \gg 1.0$

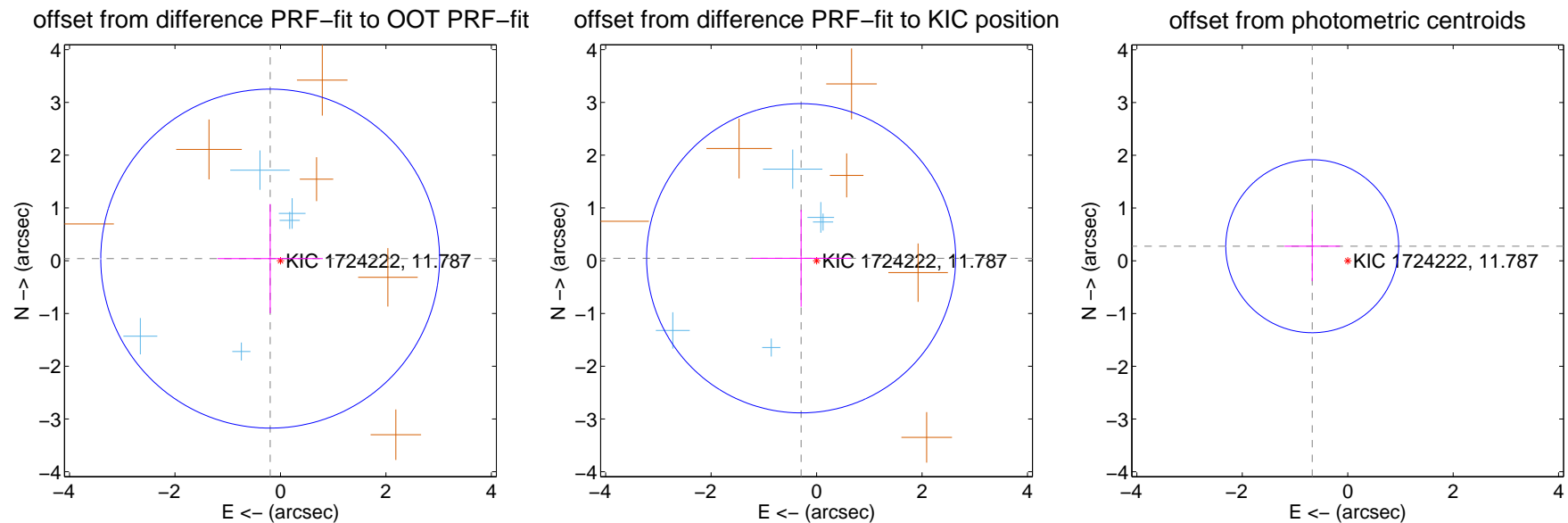
DV Centroid Data

Supplemental centroid analysis for 001724222-01. **Kepler magnitude: 11.79.** Transit SNR 10.76

There are 5 quarters with good PRF difference image offsets

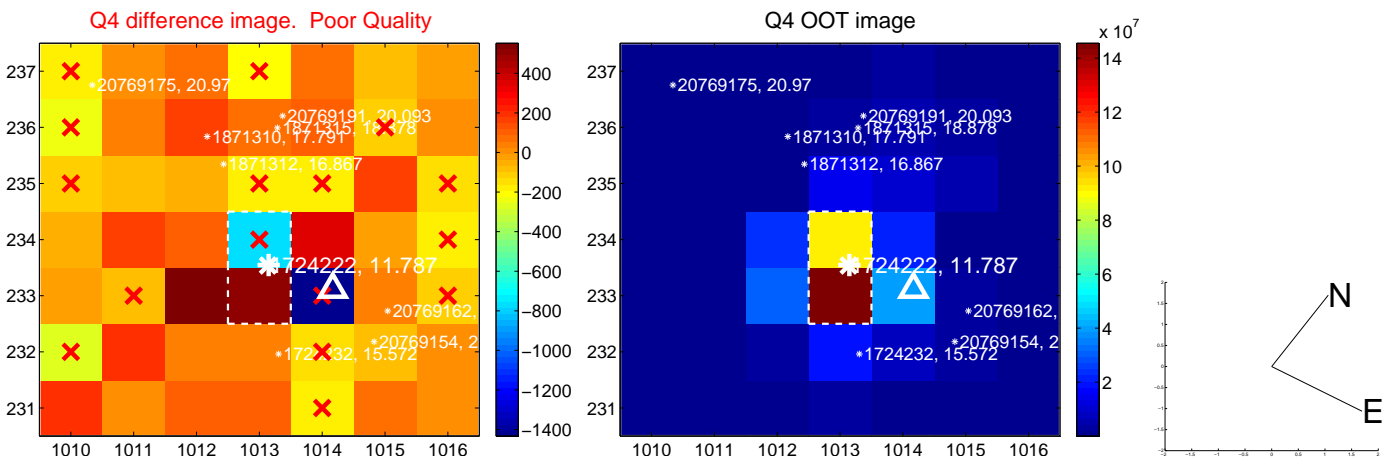
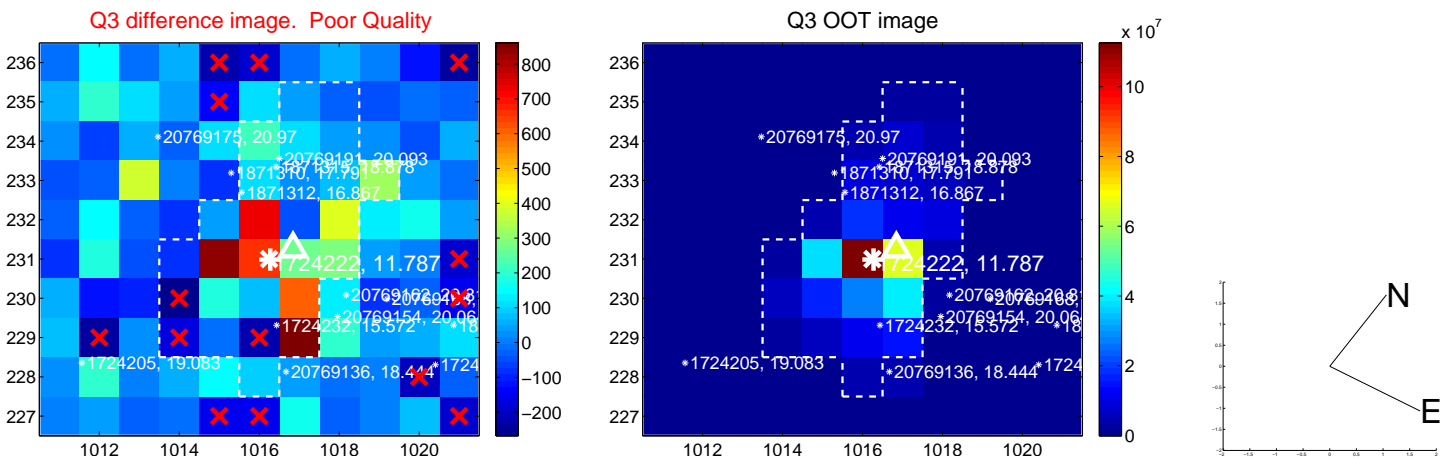
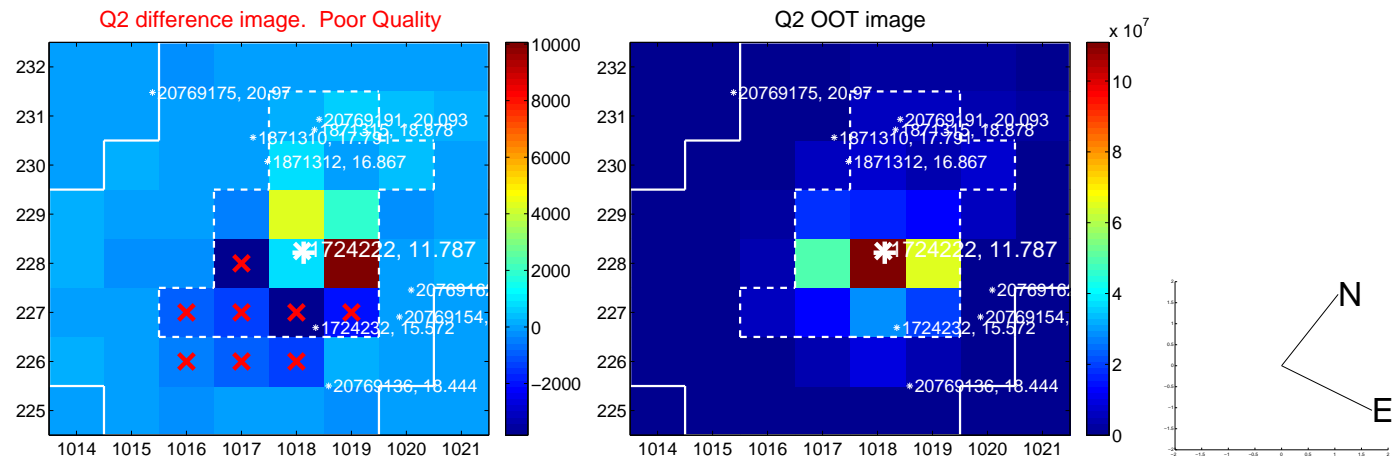
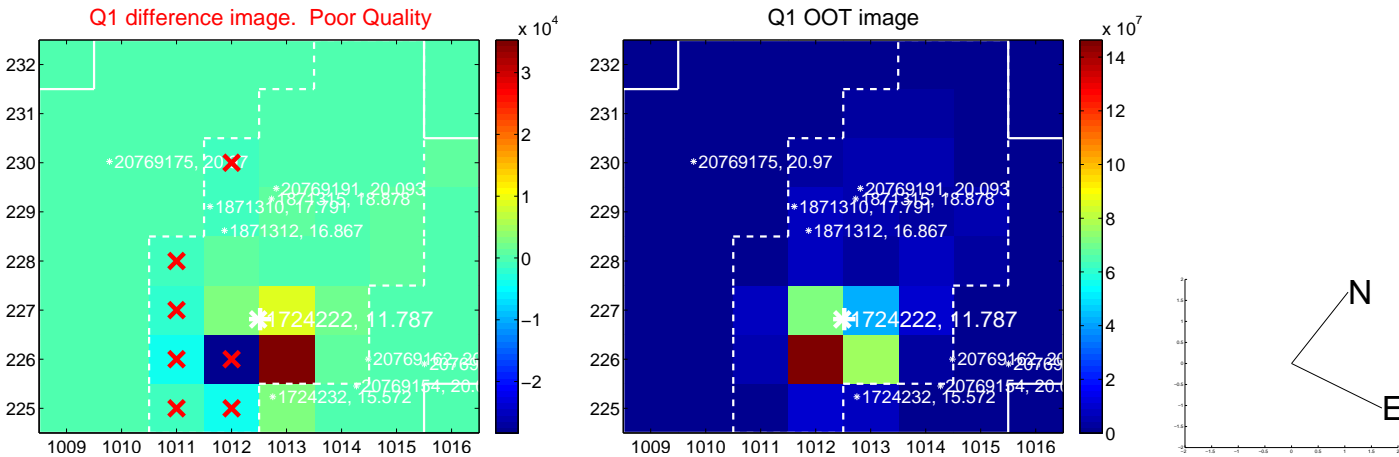
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.199 ± 1.071	0.19	0.195 ± 0.998	0.039 ± 1.035
PRF-fit source offset from KIC position	0.297 ± 0.977	0.30	0.293 ± 0.941	0.046 ± 0.918
photometric centroid source offset	0.73 ± 0.55	1.33	0.67 ± 0.52	0.28 ± 0.66

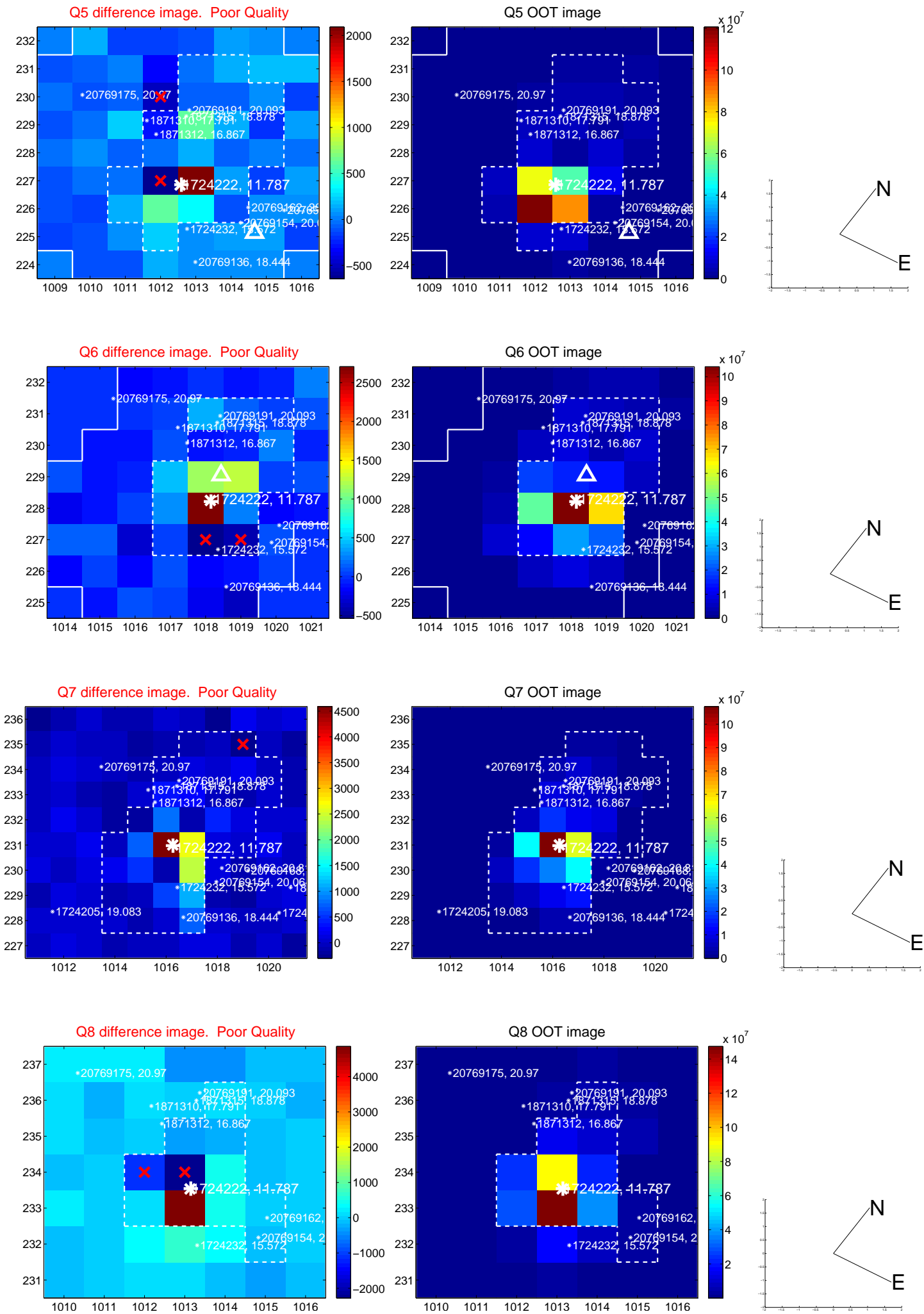


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

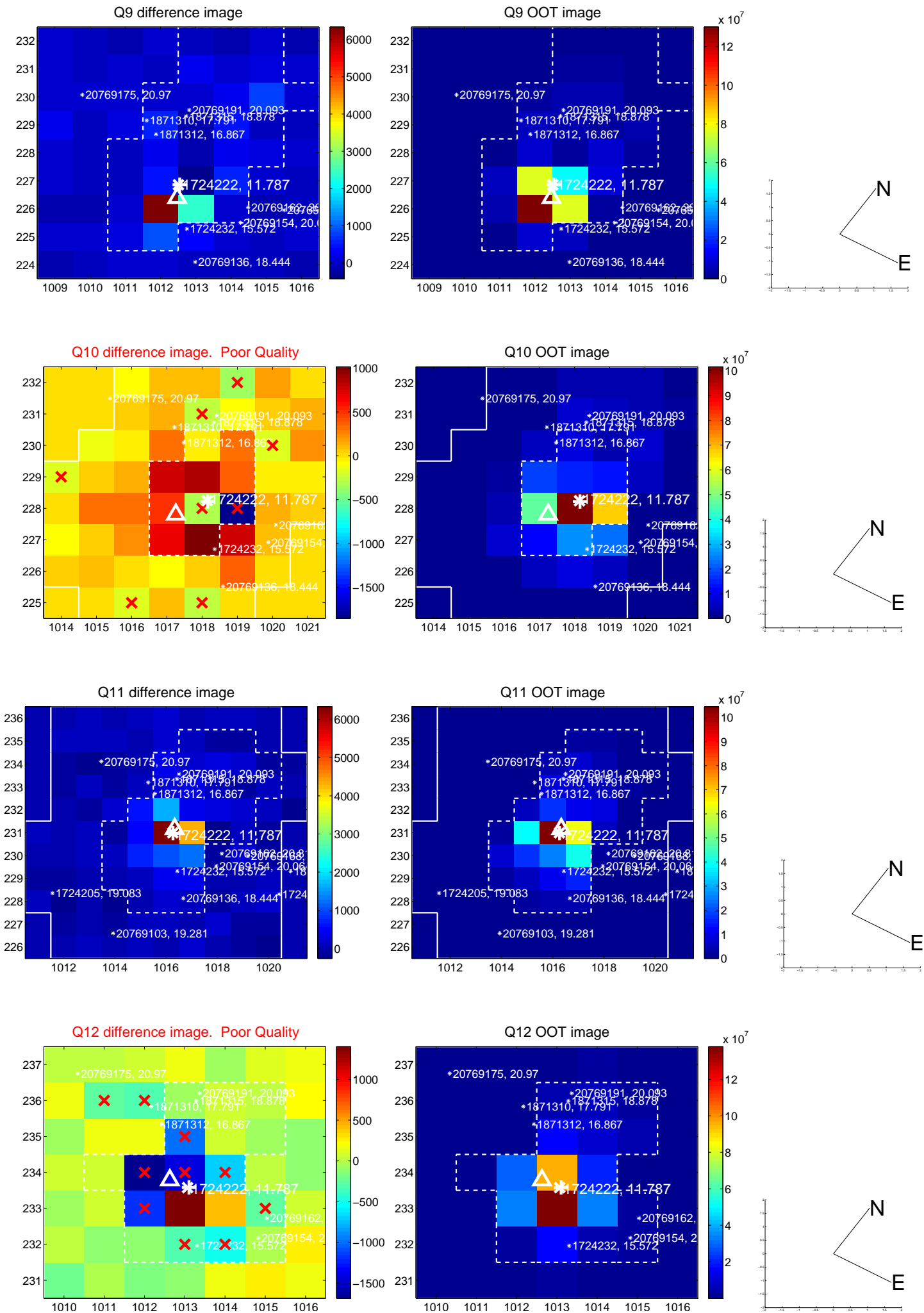
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



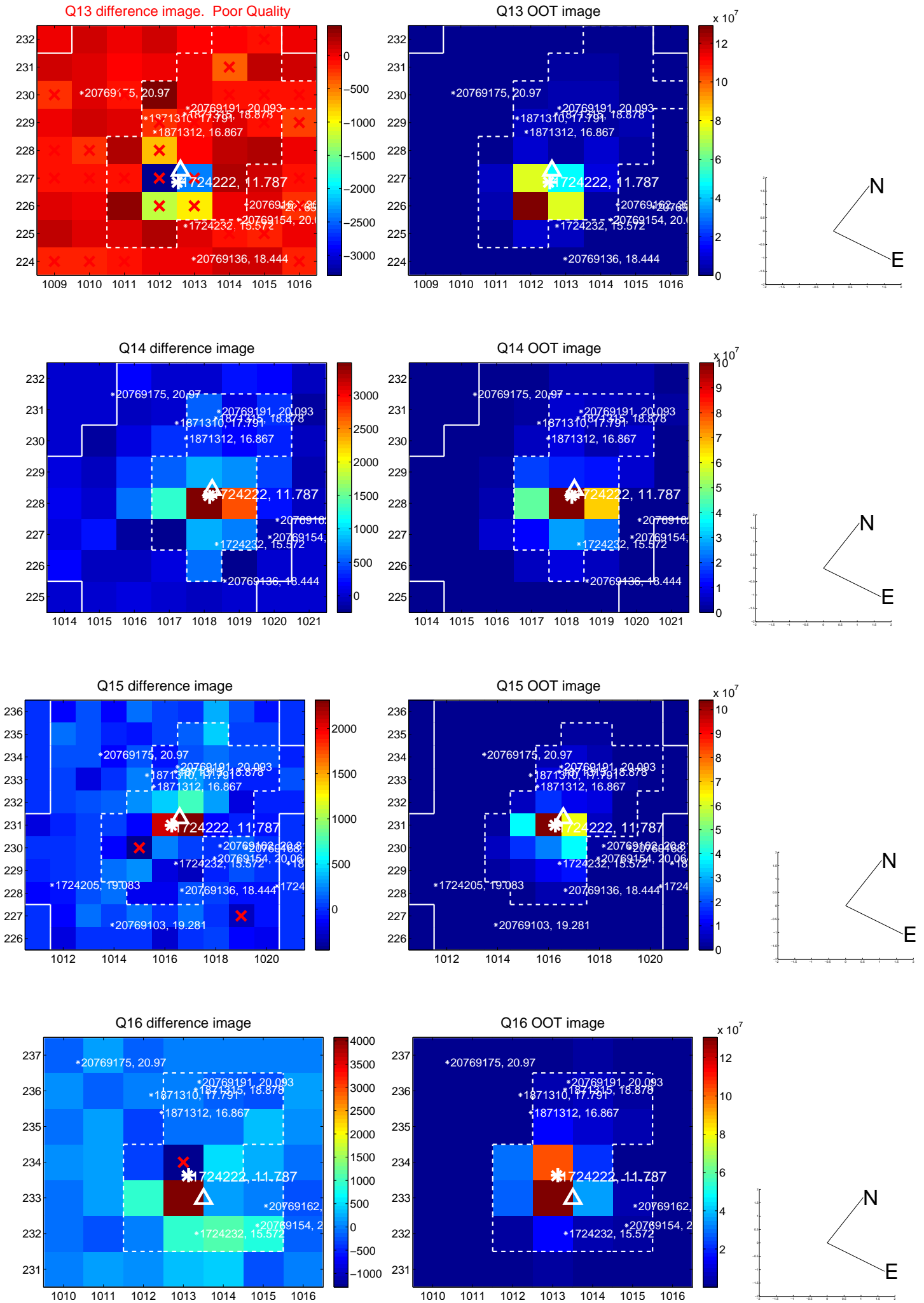
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



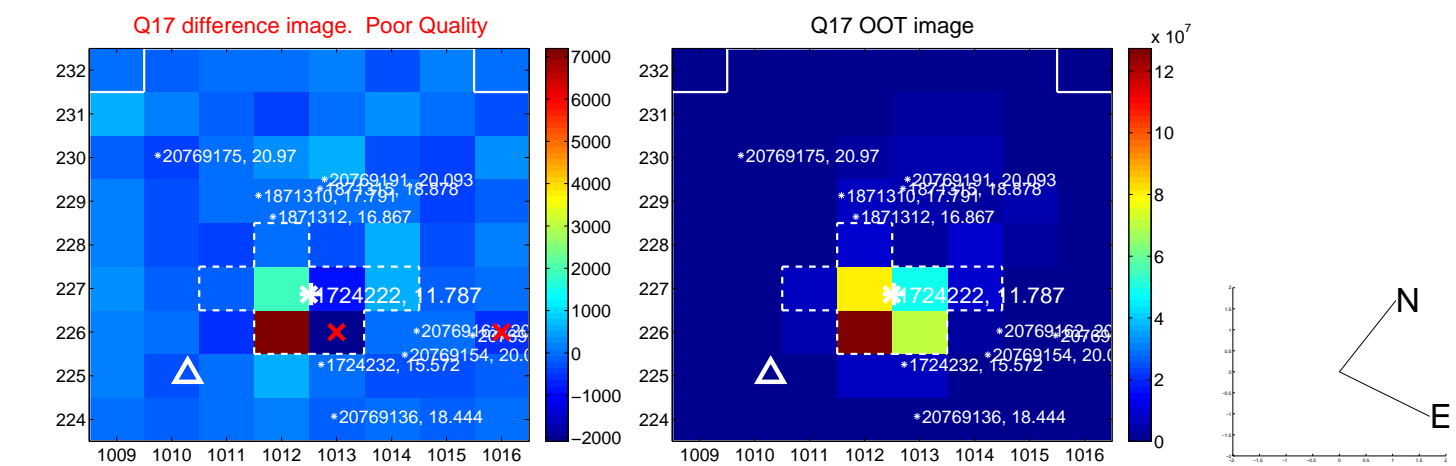
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



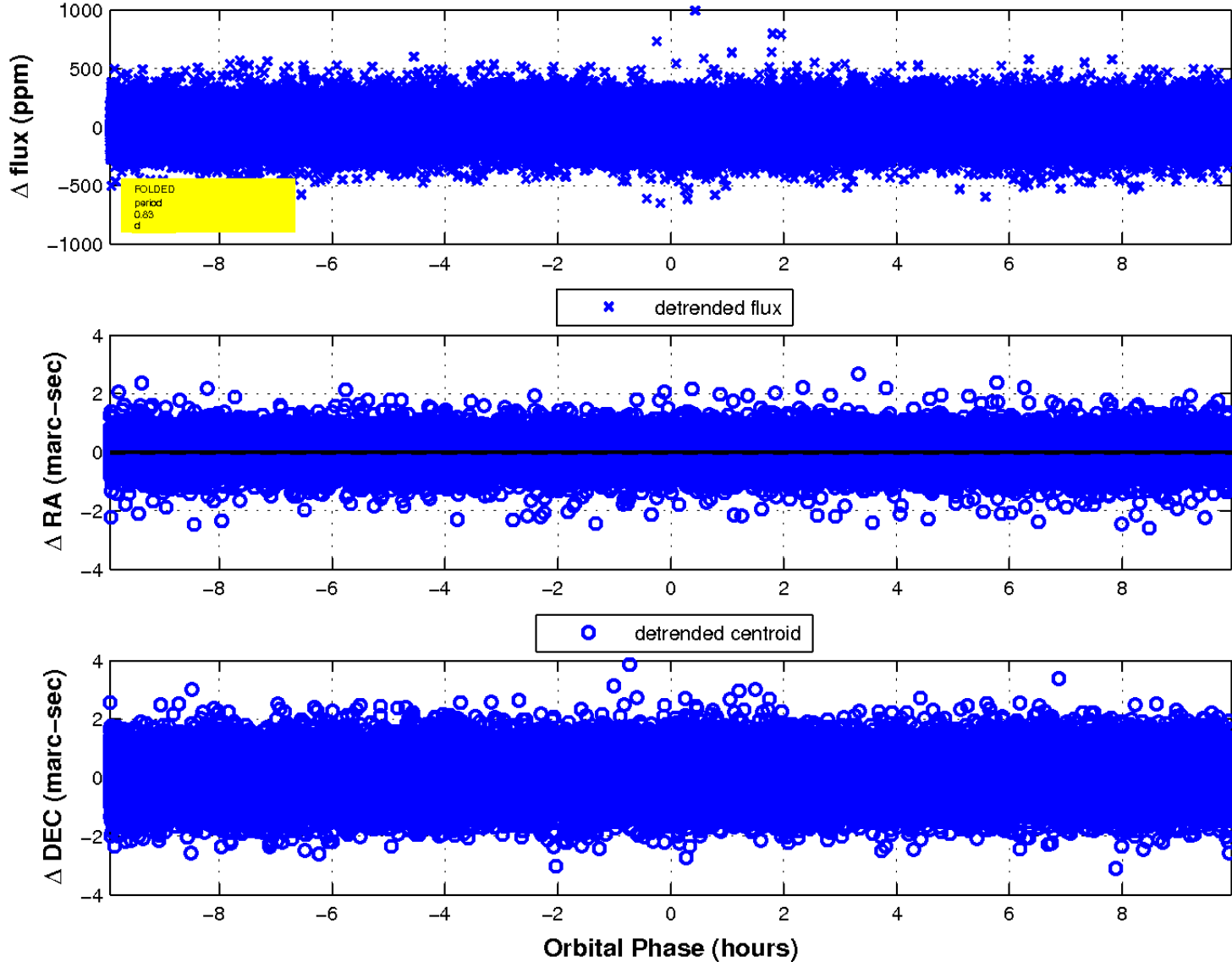
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

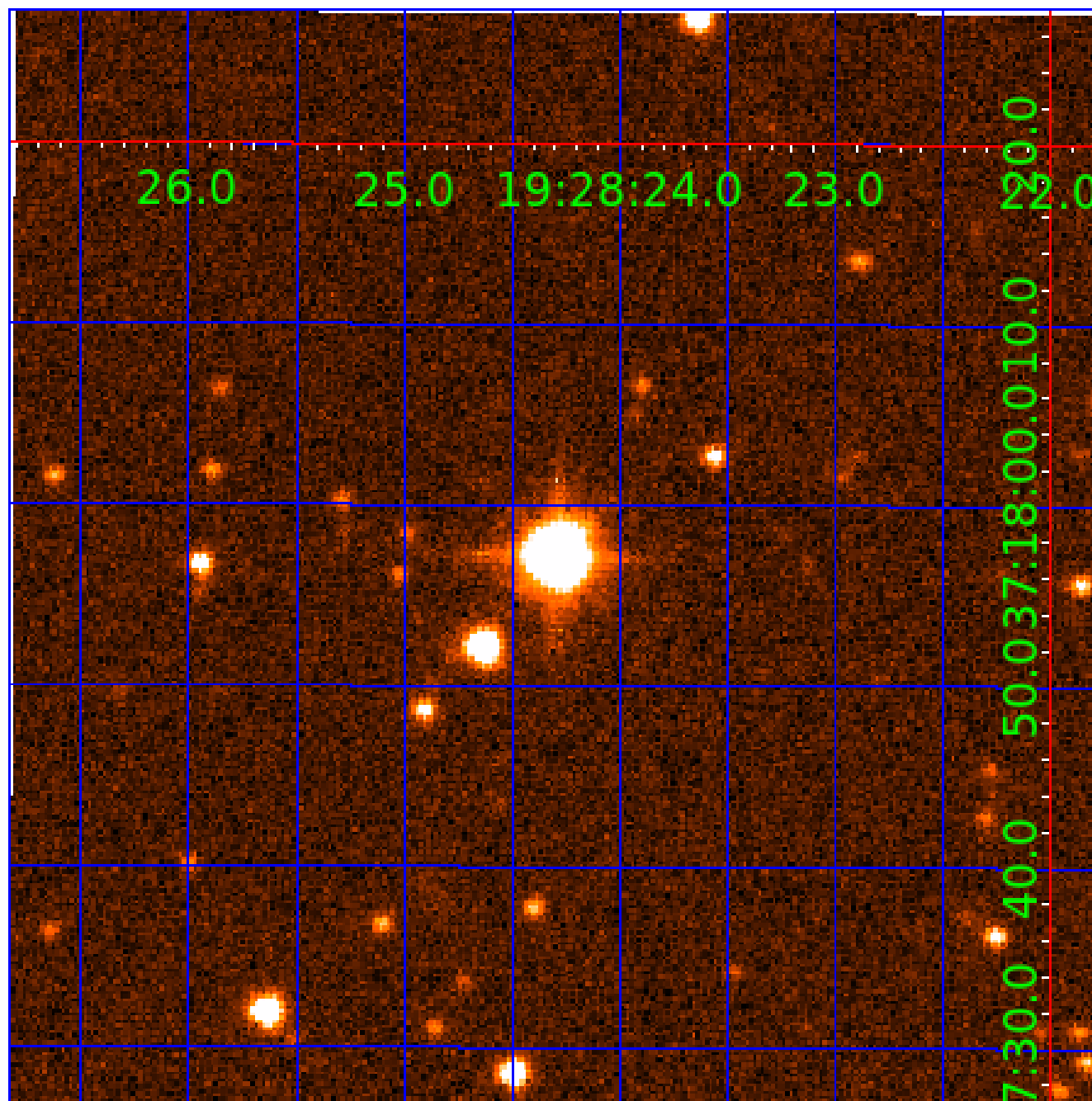


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 001724222

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})
001724222-01	OBS	No	0.827889	131.810586	20.3	3.516	9.4	10.8	1.94	6932	1.02	20210.01
001724222-04	OBS	No	127.315065	168.776044	240.1	4.267	7.2	8.2	1.94	6932	3.86	24.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001724222-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
001724222-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

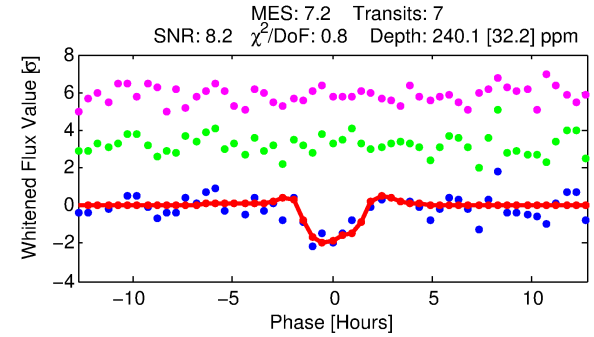
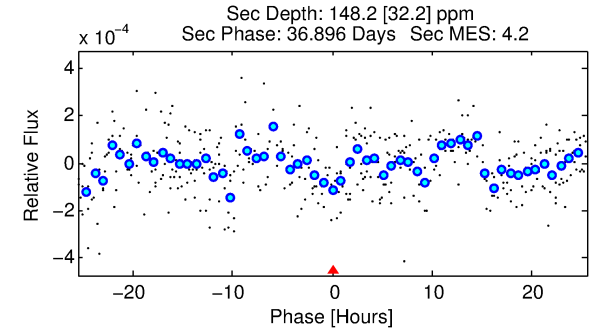
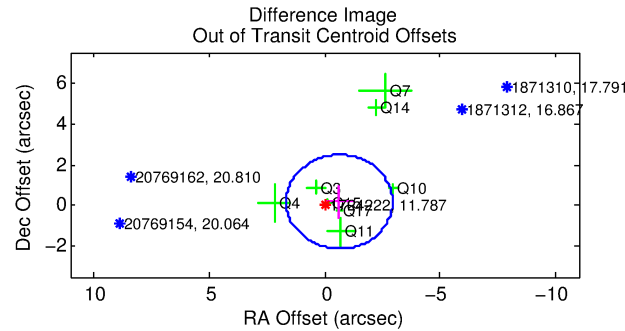
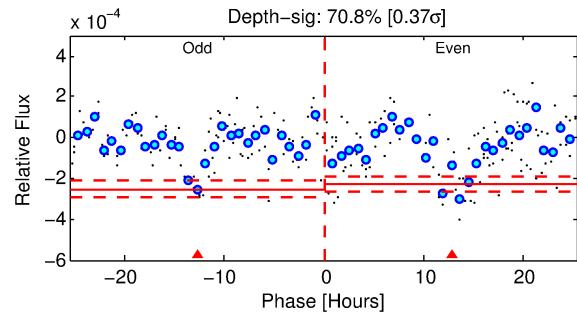
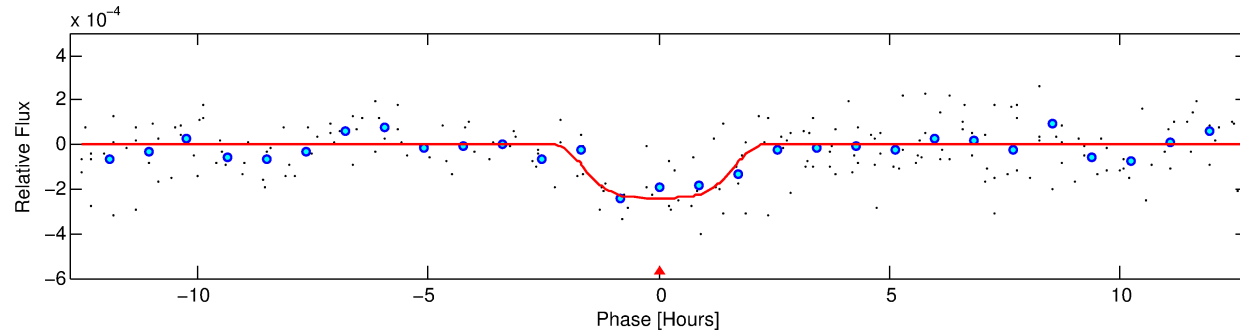
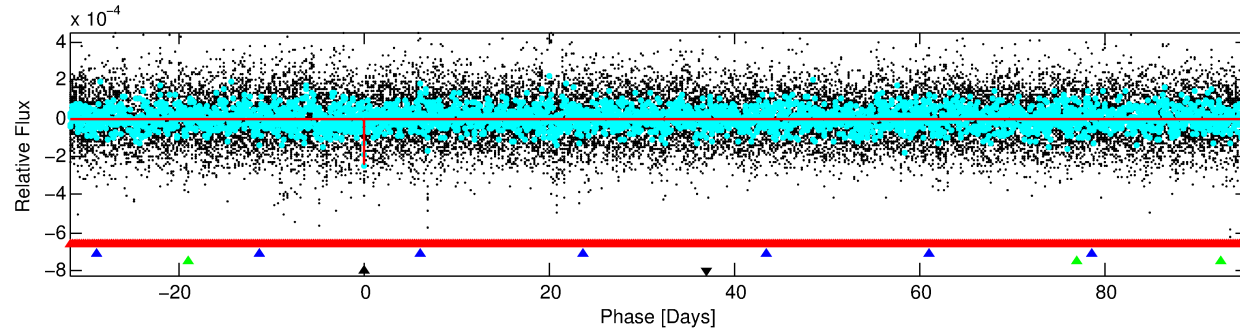
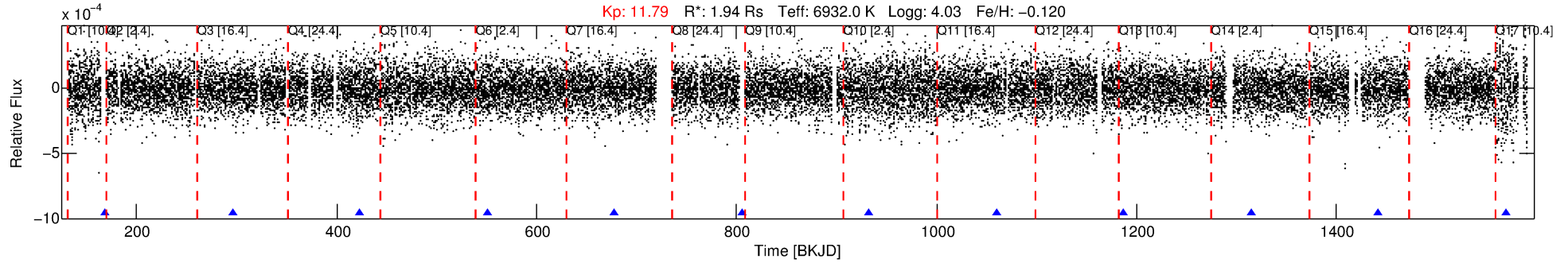
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 001724222-04

No Significant Match Found

DV One-Page Summary

KIC: 1724222 Candidate: 4 of 4 Period: 127.315 d



DV Fit Results:

Period = 127.31507 [0.00120] d
Epoch = 168.7760 [0.0080] BKJD
Rp/R* = 0.0182 [0.0016]
a/R* = 68.59 [16.75]
b = 0.97 [0.01]
Seff = 24.53 [6.88]
Teq = 567 [40] K
Rp = 3.86 [0.78] Re
a = 0.5634 [0.0977] AU
Ag = 1736.65 [682.55] [2.54 σ]
Teffp = 5664 [401] K [12.64 σ]

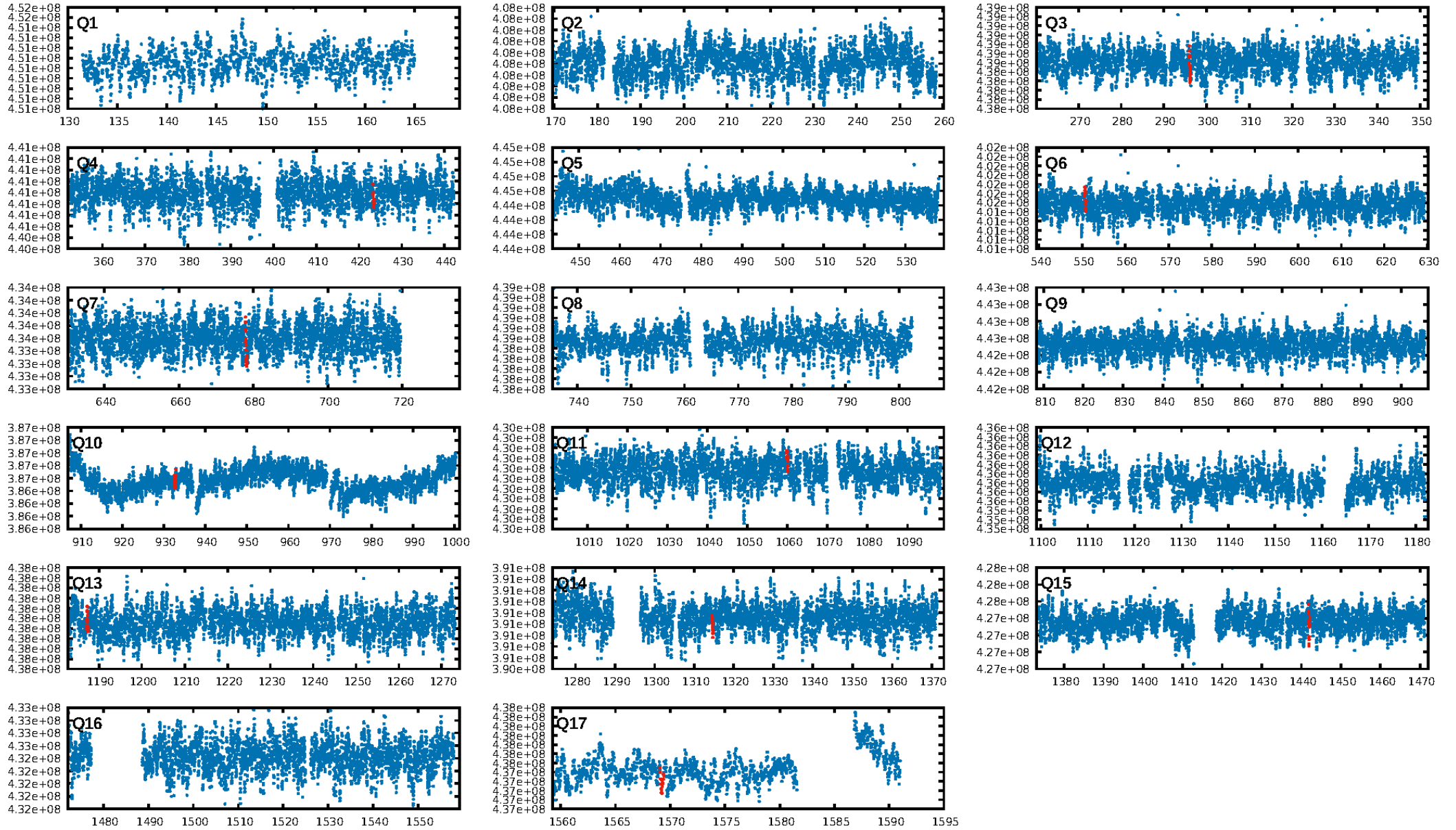
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [549.06 σ]
LongPeriod-sig: 100.0% [227.47 σ]
ModelChiSquare2-sig: 88.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.31e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -3.772
Centroid-sig: N/A
Centroid-so: 0.196 arcsec [0.33 σ]
OotOffset-rm: 0.658 arcsec [0.86 σ]
KicOffset-rm: 0.566 arcsec [0.87 σ]
OotOffset-st: 2/4/1/1 [8]
KicOffset-st: 2/4/1/1 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 0.00 [0/9]

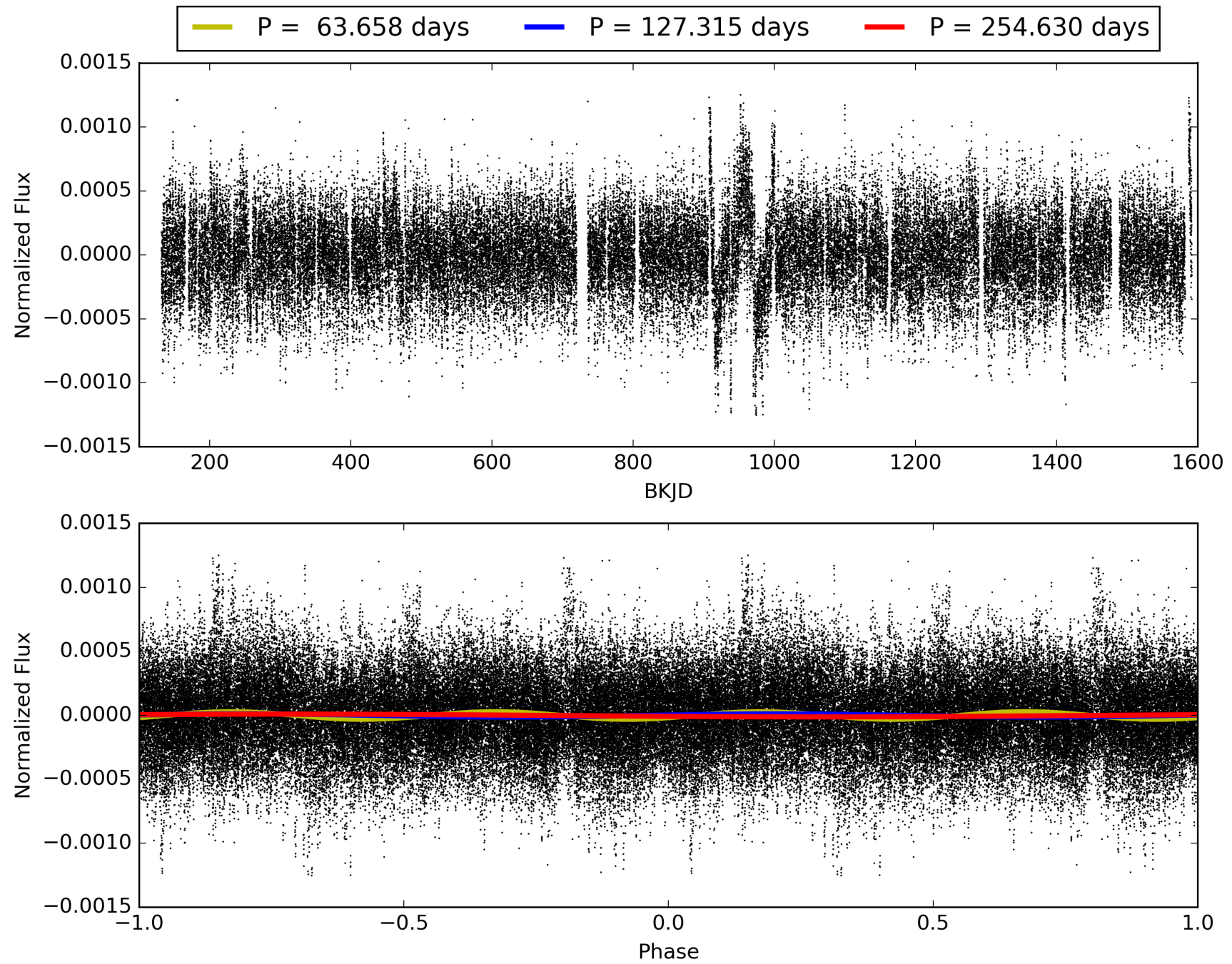
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:05:27 Z

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

TCE 001724222-04, PDC Light Curves

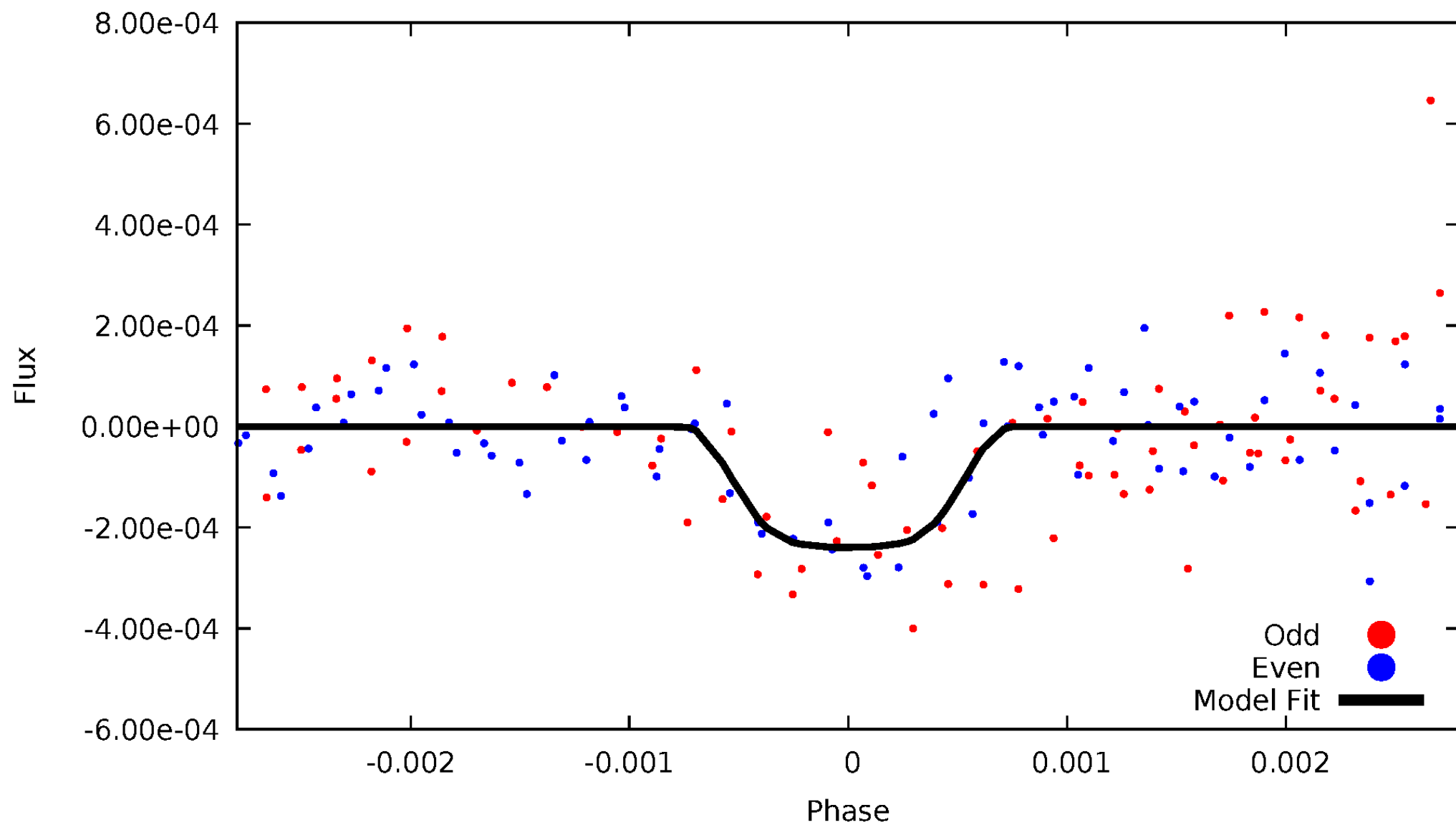


TCE 001724222-04



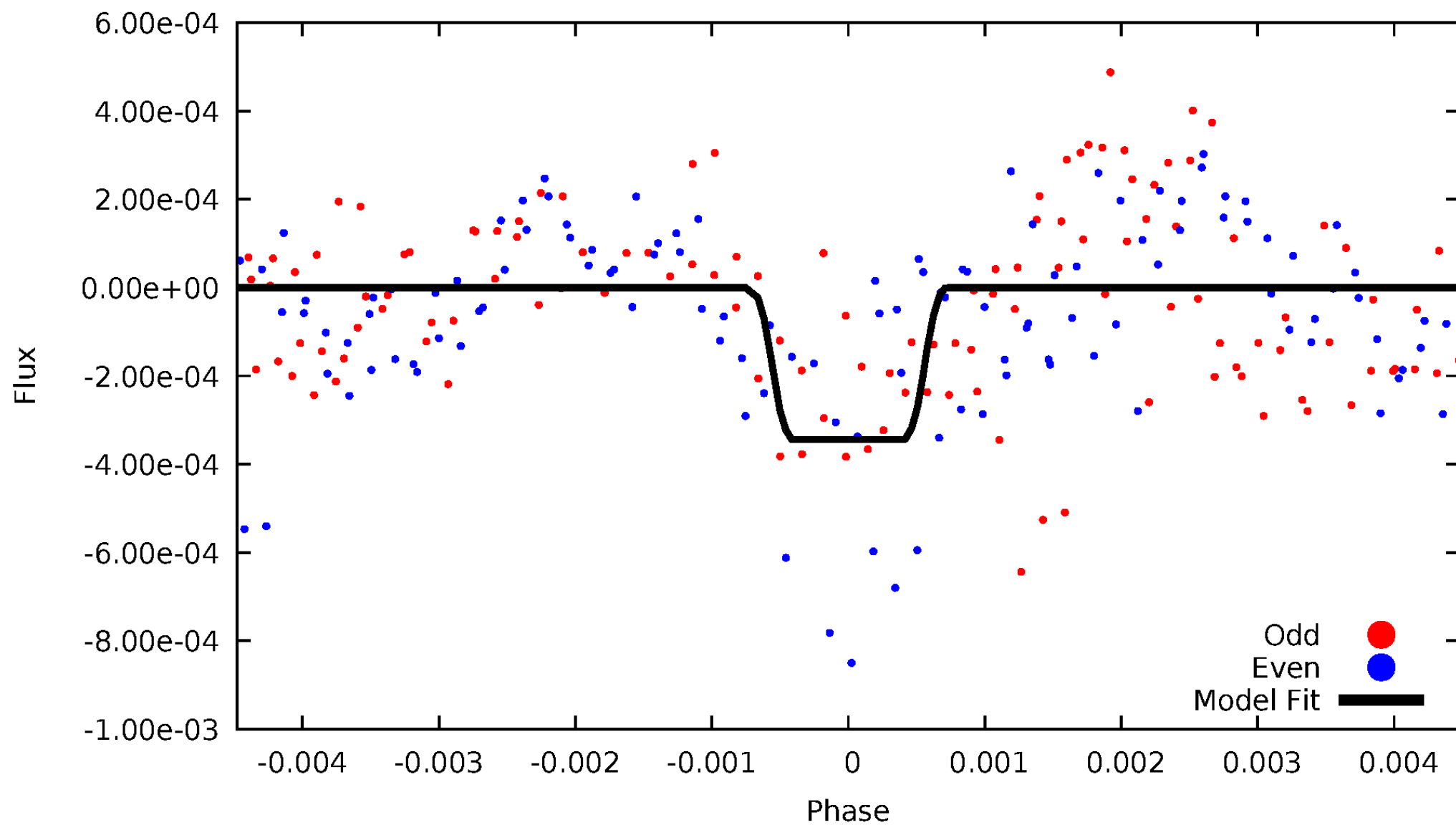
DV Odd/Even

TCE 001724222-04



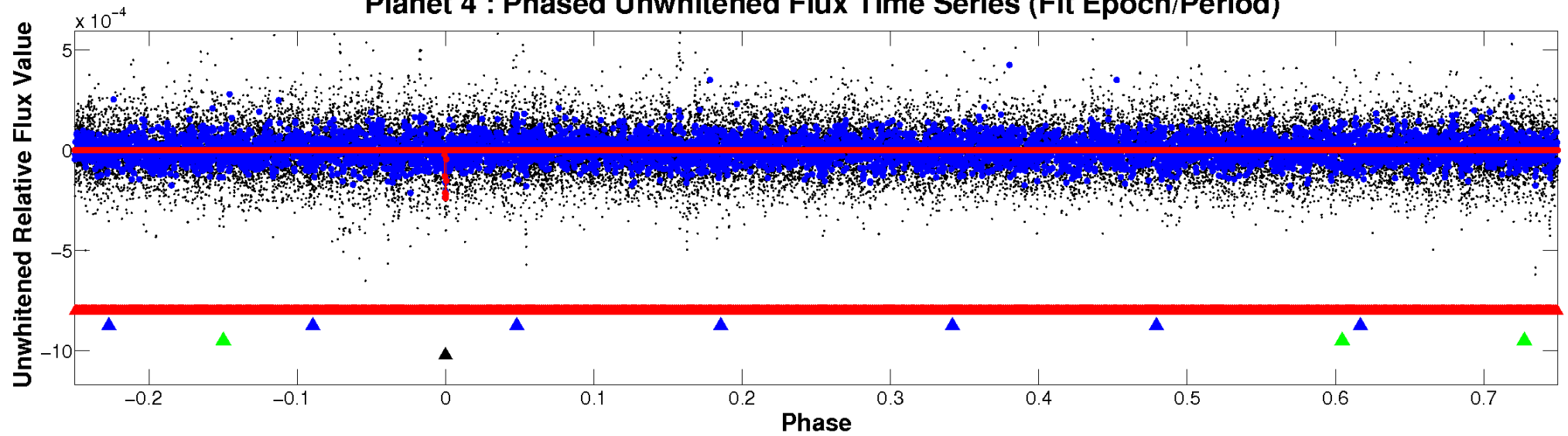
ALT Odd/Even

TCE 001724222-04

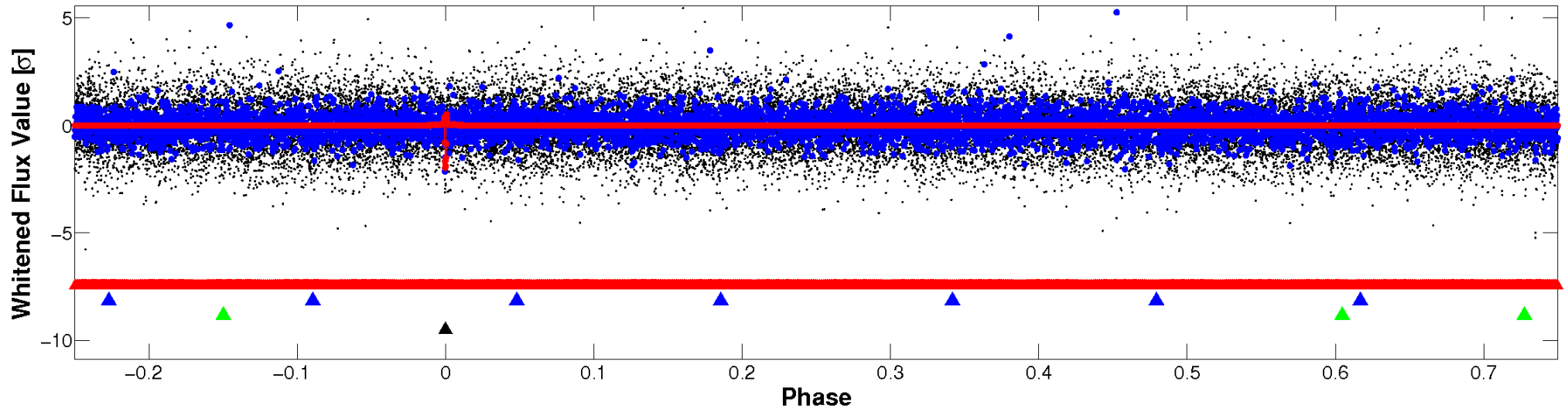


Non-Whitened Vs. Whitened Light Curve

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

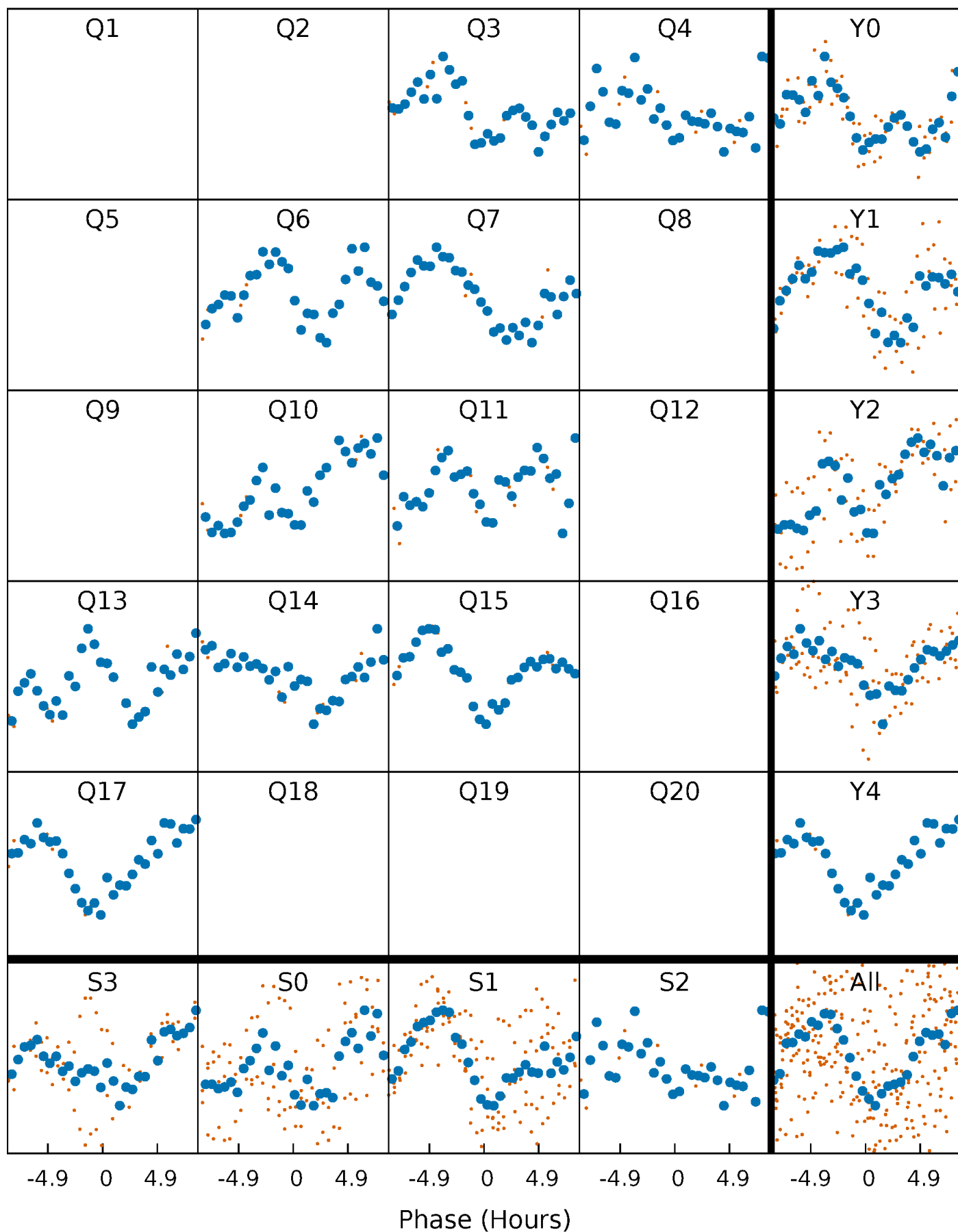


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



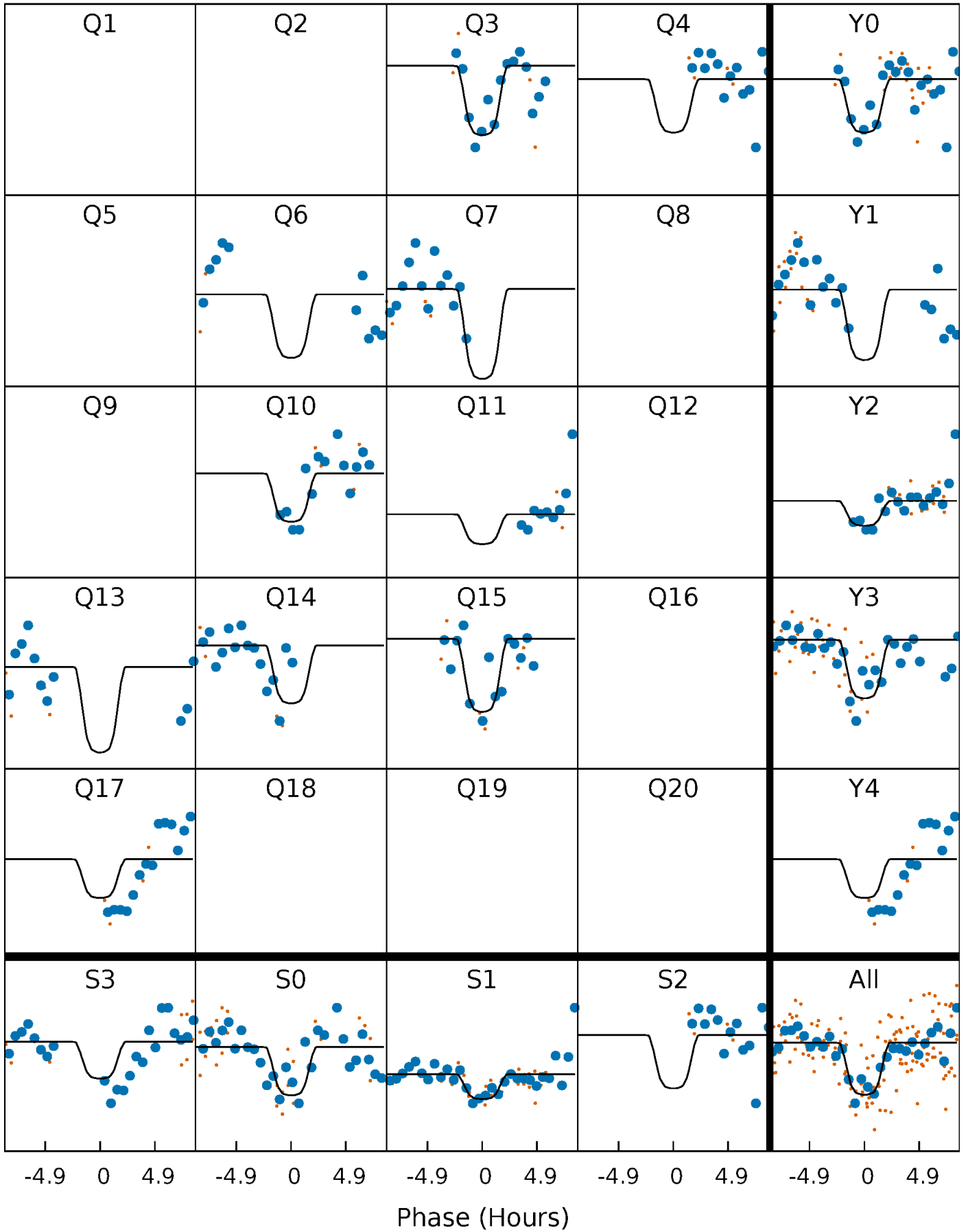
PDC Quarter-Phased Transit Curves

TCE 001724222-04 P=127.315065 Days $T_0=168.776044$ (BKJD)



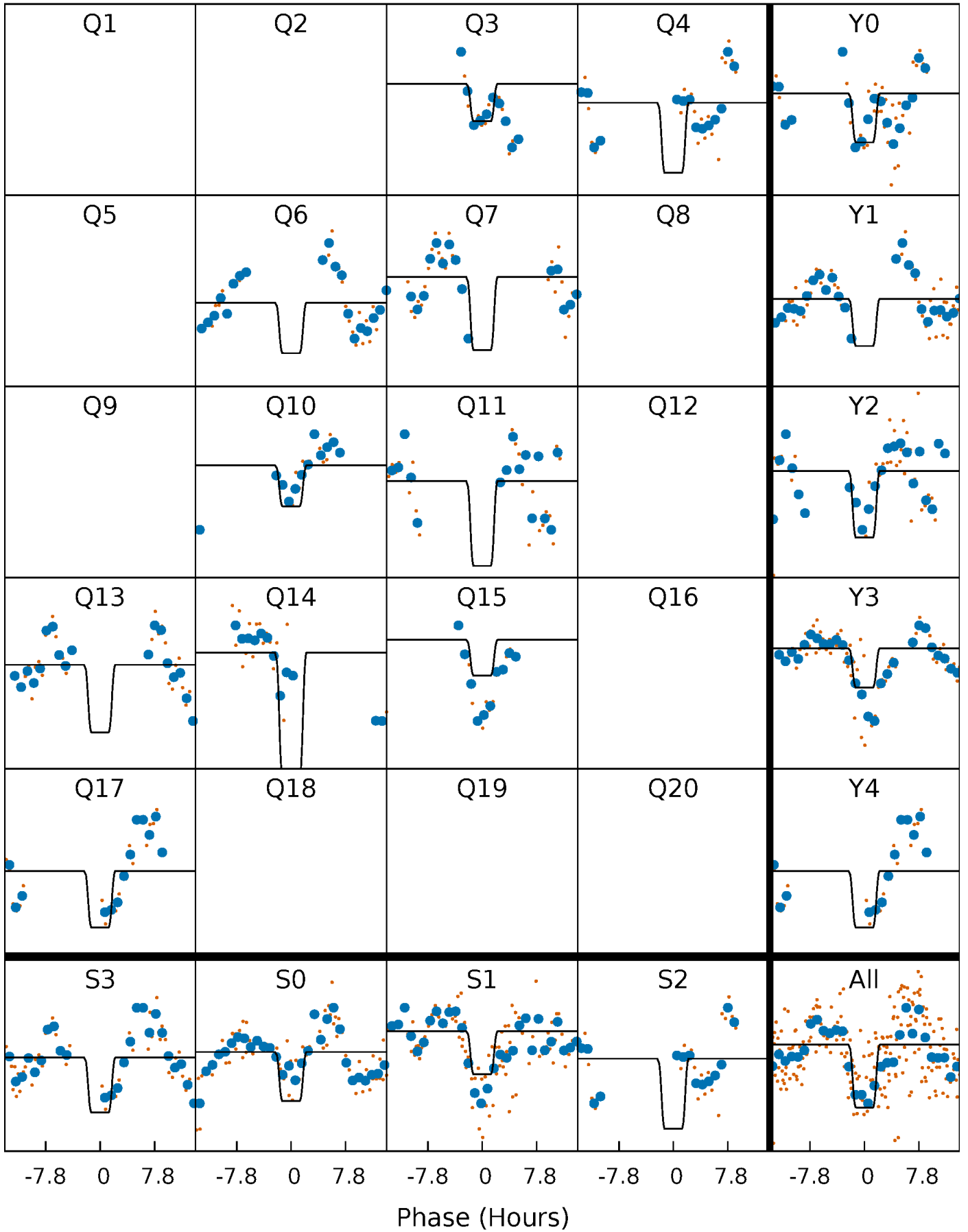
DV Quarter-Phased Transit Curves

TCE 001724222-04 P=127.315065 Days $T_0=168.776044$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

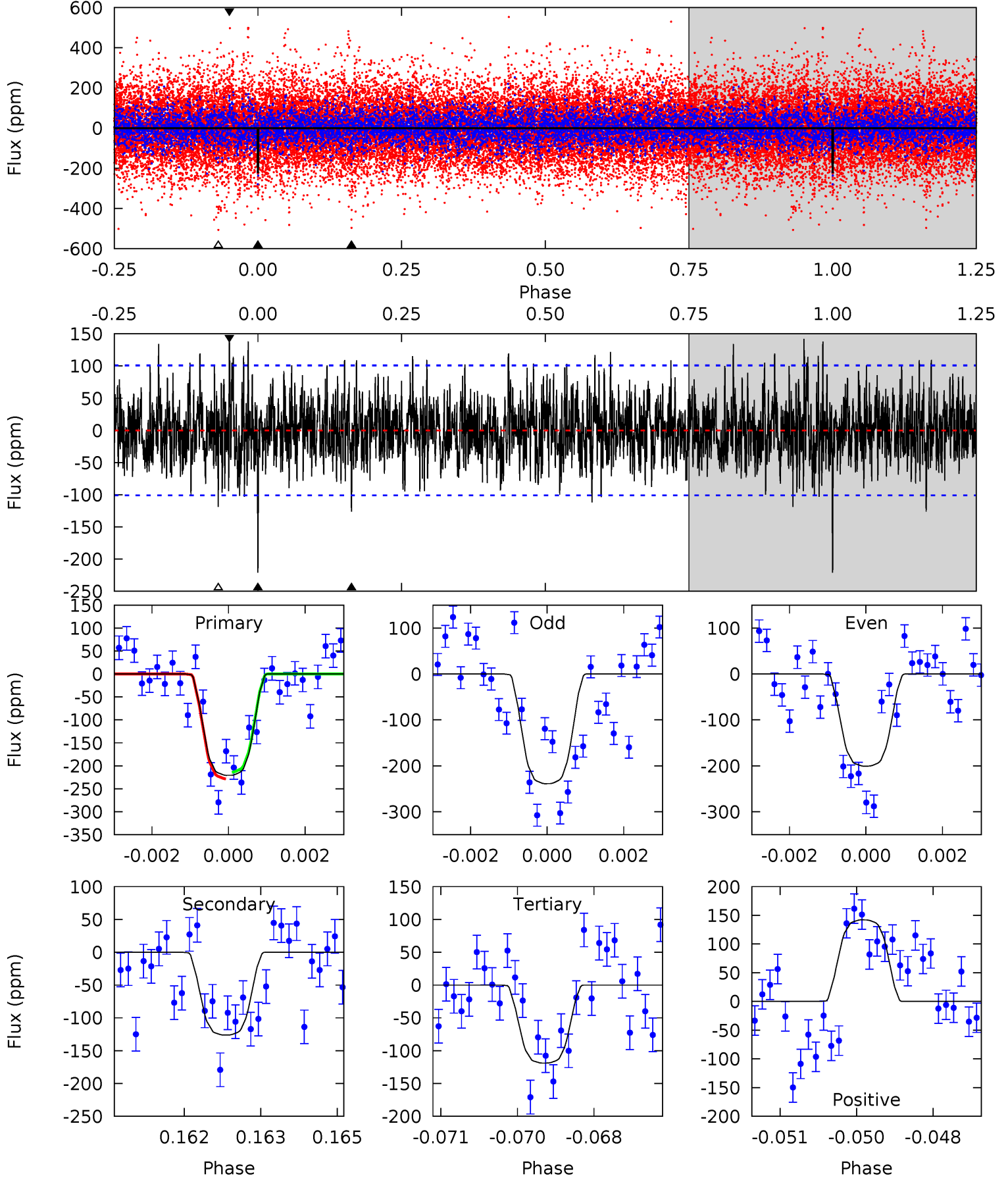
TCE 001724222-04 P=127.311918 Days $T_0=168.815600$ (BKJD)



DV Model-Shift Uniqueness Test

001724222-04, P = 127.315065 Days, E = 41.460979 Days

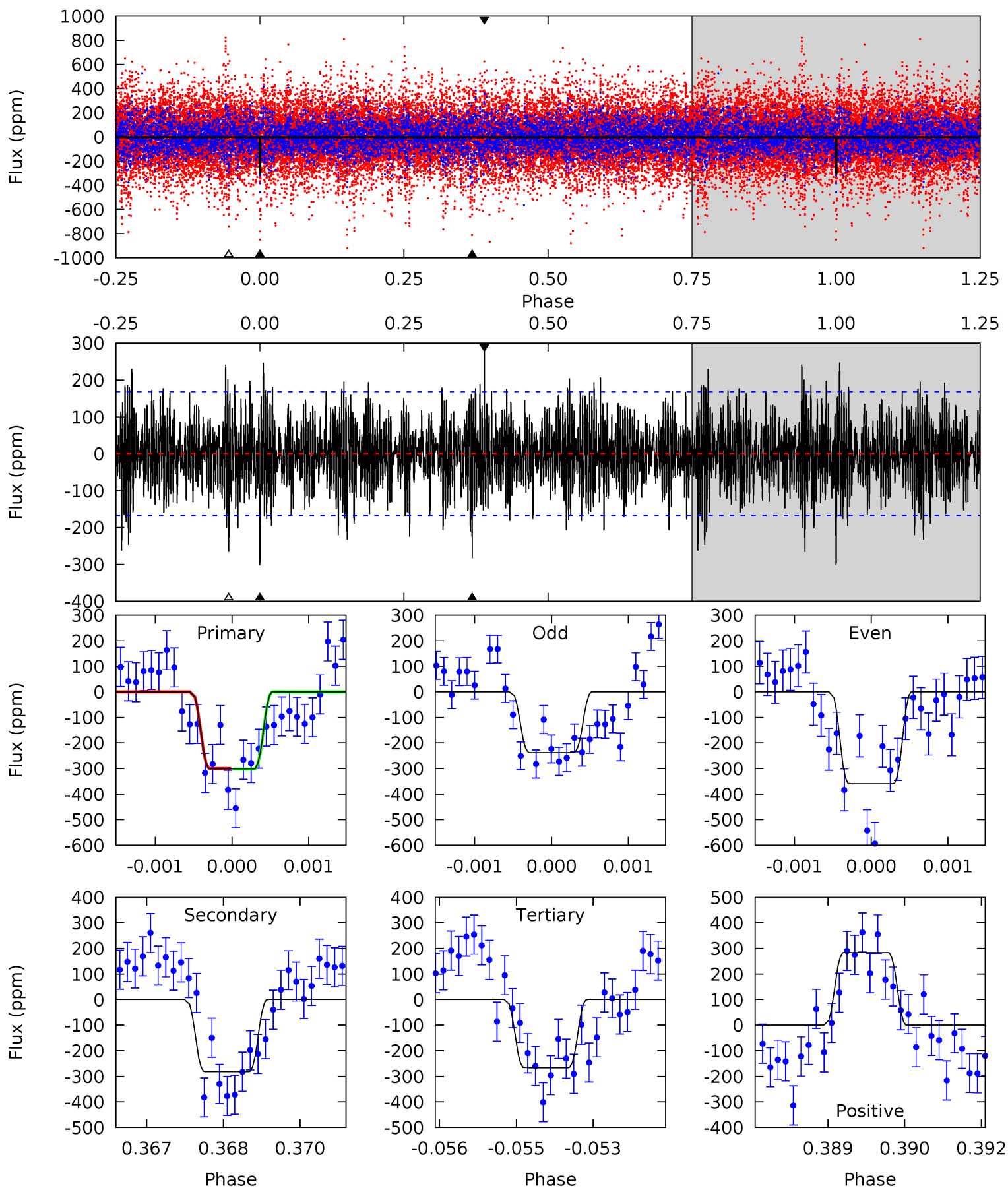
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	6.73	6.34	7.58	5.38	3.17	2.03	5.43	4.19	0.39	-0.85	1.01	0.94	0.39	0.38



Alt Model-Shift Uniqueness Test

001724222-04, P = 127.311918 Days, E = 41.503682 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.70	9.07	8.56	9.14	5.40	3.20	2.56	1.14	0.56	0.51	-0.07	1.94	1.15	0.49	0.04



Stellar Parameters For KIC 001724222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6932^{+83}_{-76}	$4.030^{+0.162}_{-0.108}$	$-0.120^{+0.150}_{-0.150}$	$1.940^{+0.352}_{-0.352}$	$1.471^{+0.127}_{-0.116}$	$0.284^{+0.213}_{-0.095}$
	+1%/-1%	+4%/-3%	+125%/-125%	+18%/-18%	+9%/-8%	+75%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 001724222-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-126 ± 19	$3.80^{+0.54}_{-0.47}$	788^{+36}_{-38}	5440^{+283}_{-286}	1540^{+526}_{-402}
Alt.	-282 ± 31	$3.88^{+0.53}_{-0.51}$	791^{+35}_{-40}	6581^{+384}_{-362}	3304^{+1054}_{-877}

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 $A_{obs} \gg 1.0$

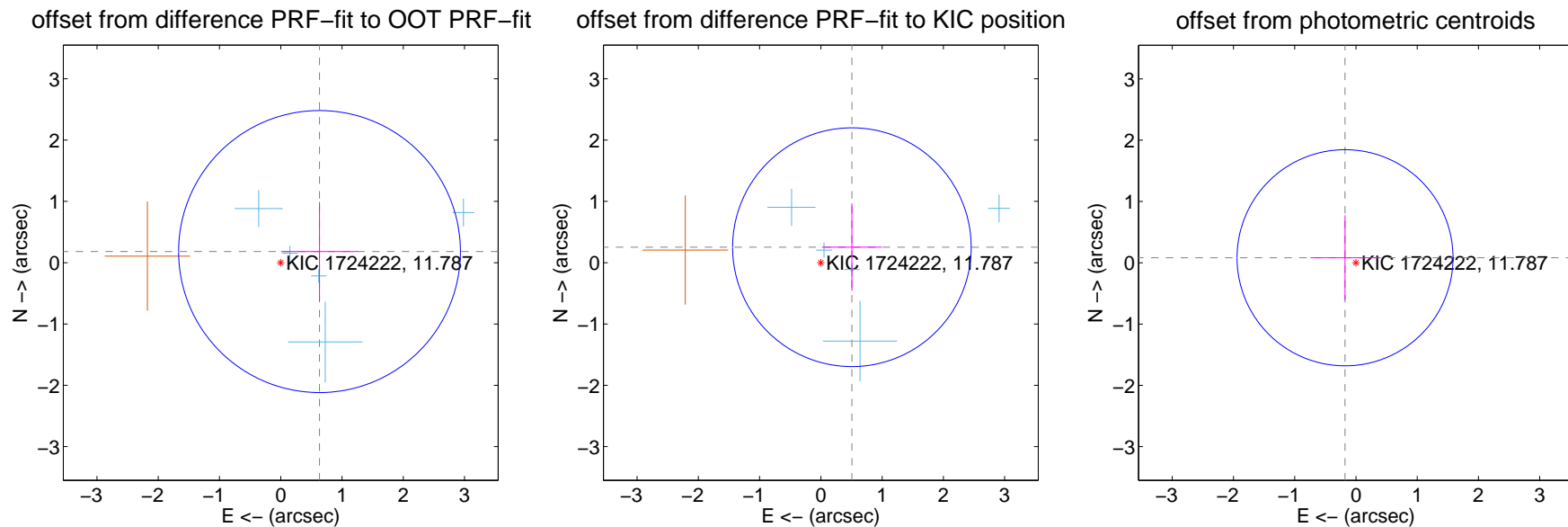
DV Centroid Data

Supplemental centroid analysis for 001724222-04. **Kepler magnitude: 11.79.** Transit SNR 8.25

There are 5 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	0.658 ± 0.767	0.86	-0.633 ± 0.629	0.182 ± 0.809
PRF-fit source offset from KIC position	0.566 ± 0.649	0.87	-0.507 ± 0.489	0.253 ± 0.713
photometric centroid source offset	0.20 ± 0.59	0.33	0.18 ± 0.56	0.08 ± 0.69



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



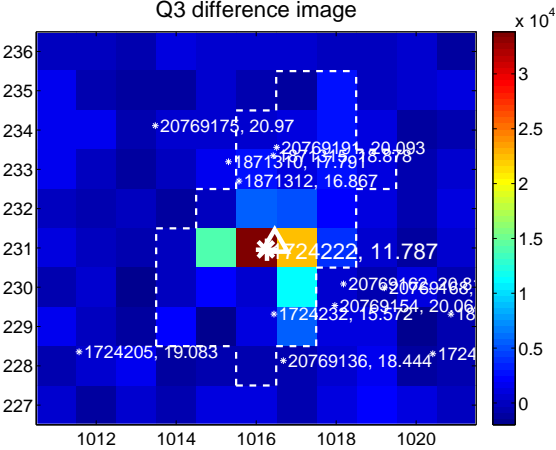
Q2 no difference image



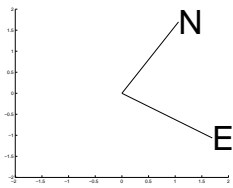
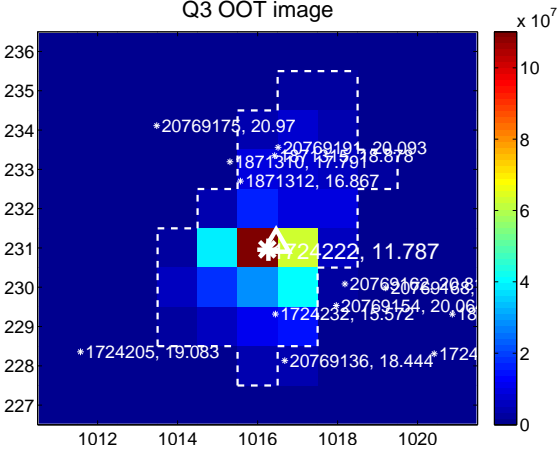
Q2 no OOT image



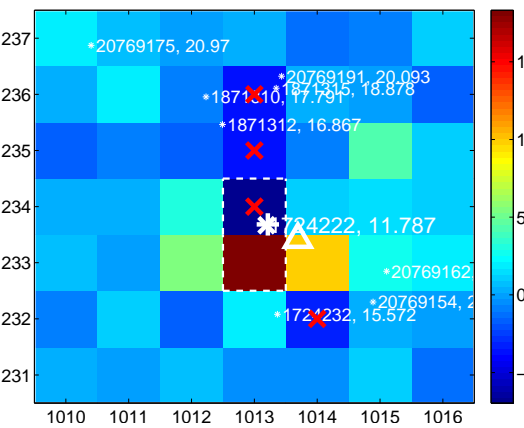
Q3 difference image



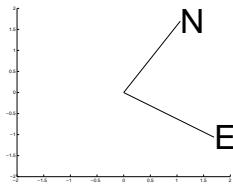
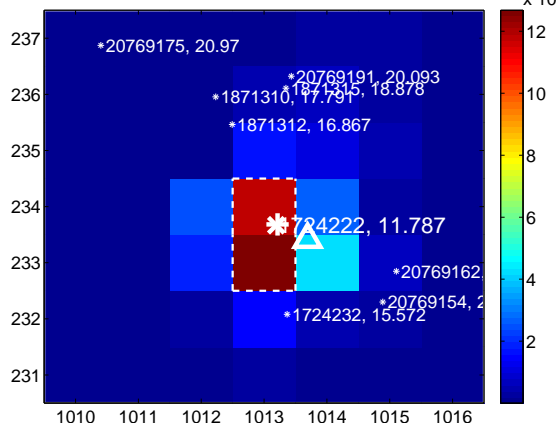
Q3 OOT image



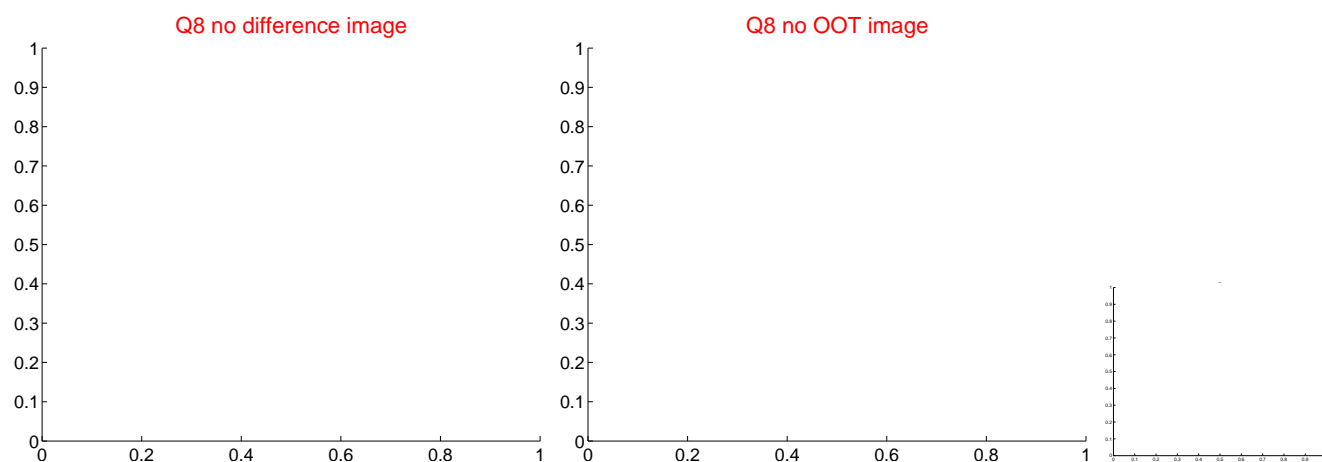
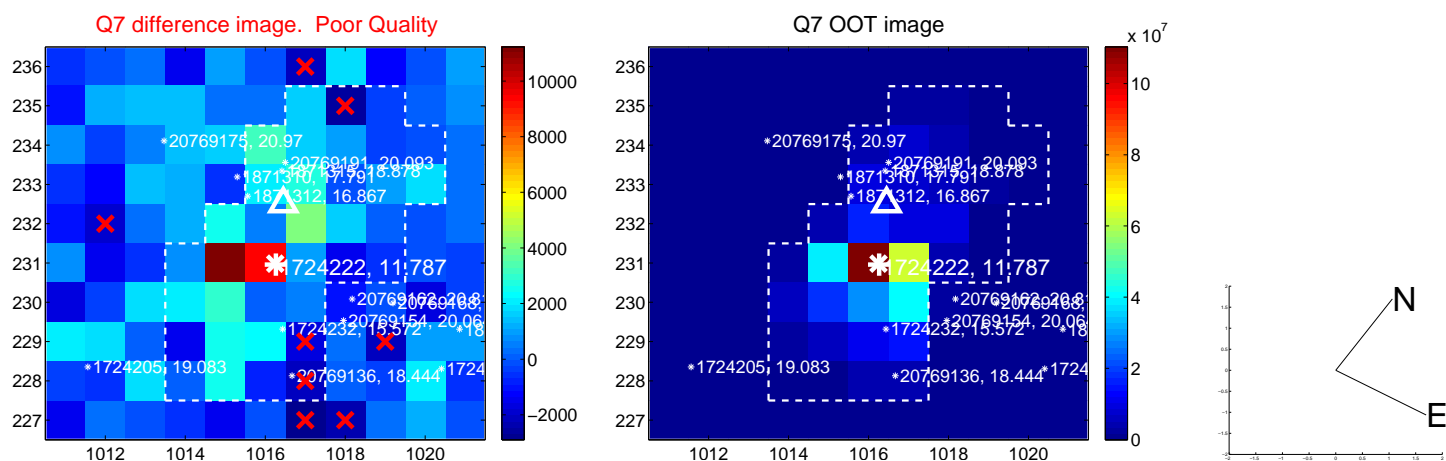
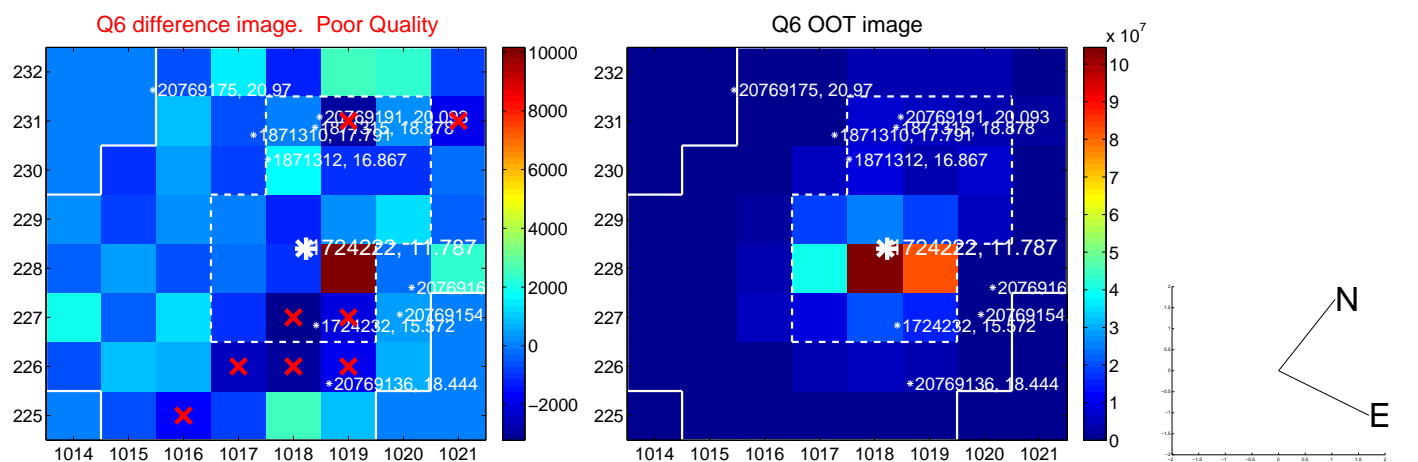
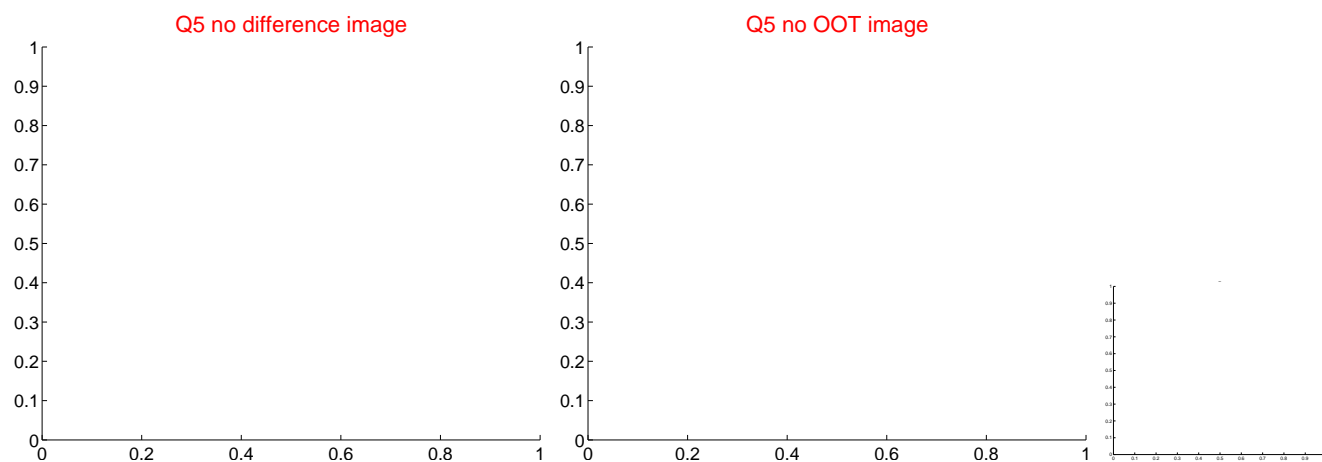
Q4 difference image. Poor Quality



Q4 OOT image



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

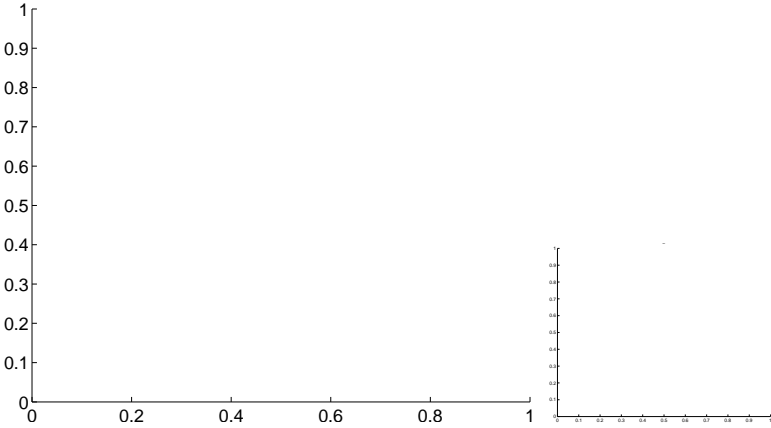


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

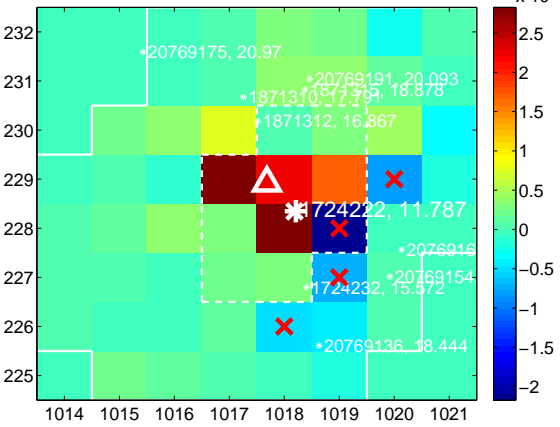
Q9 no difference image



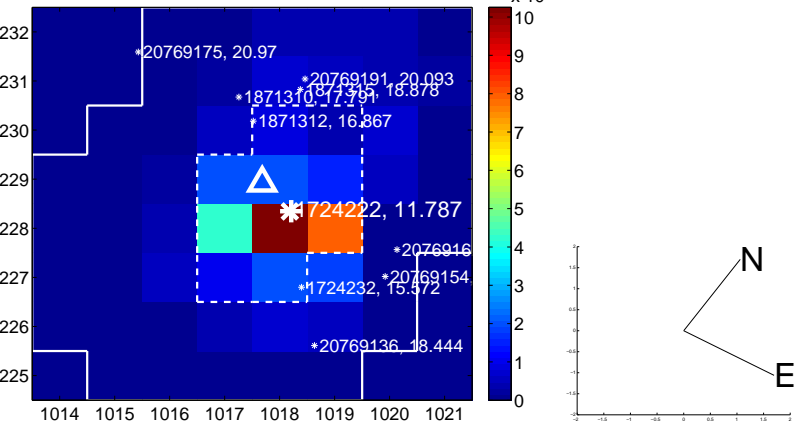
Q9 no OOT image



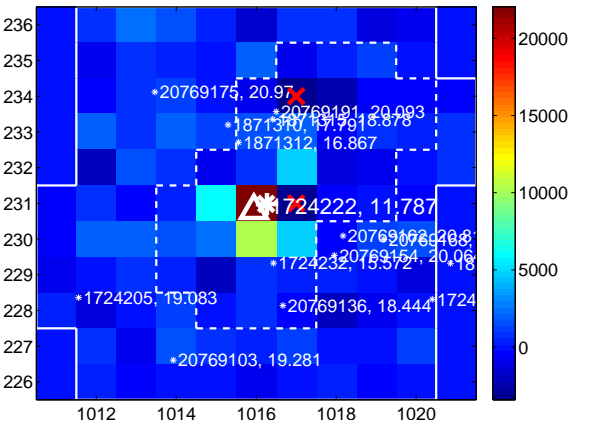
Q10 difference image



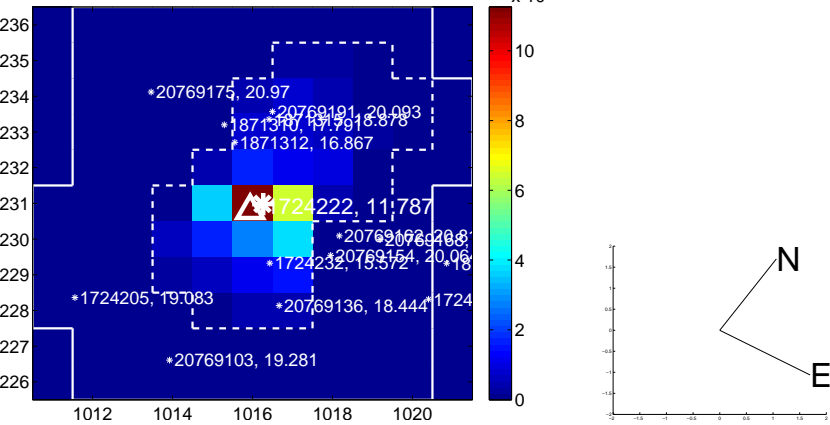
Q10 OOT image



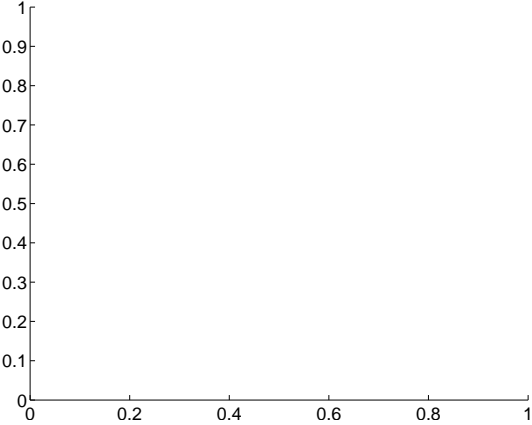
Q11 difference image



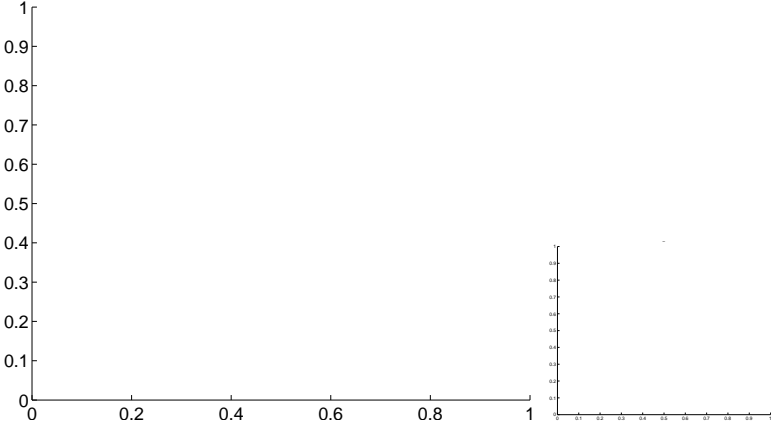
Q11 OOT image



Q12 no difference image



Q12 no OOT image



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

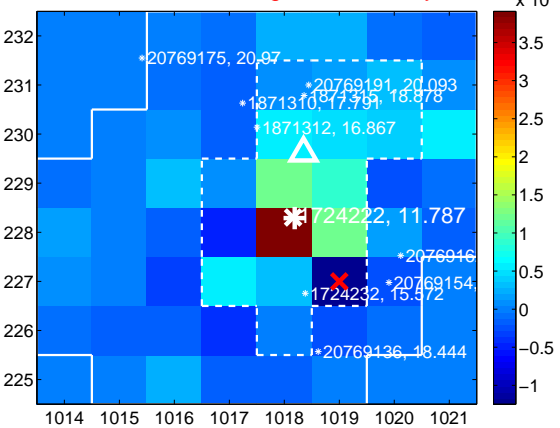
Q13 no difference image



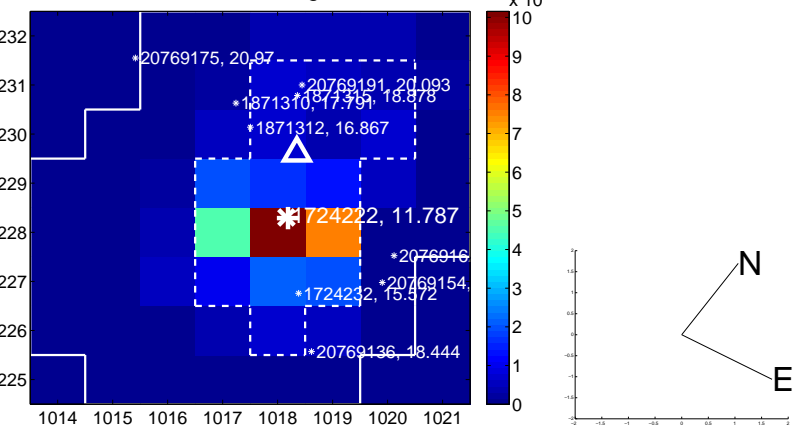
Q13 no OOT image



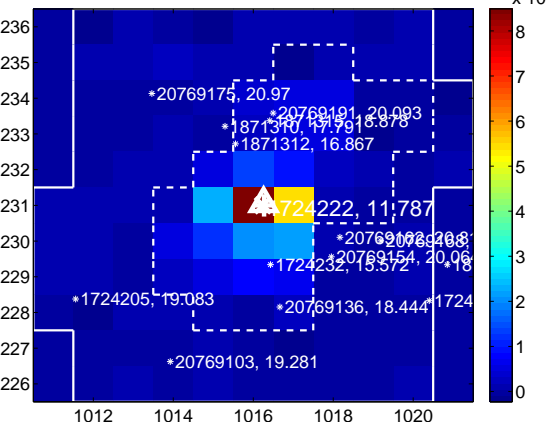
Q14 difference image. Poor Quality



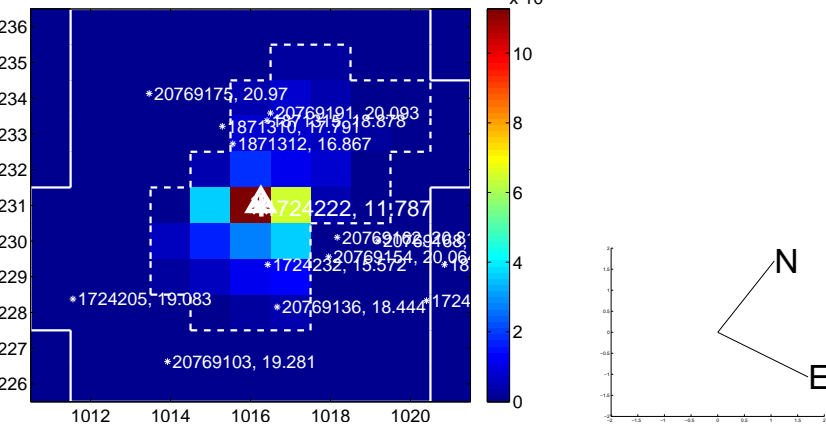
Q14 OOT image



Q15 difference image



Q15 OOT image



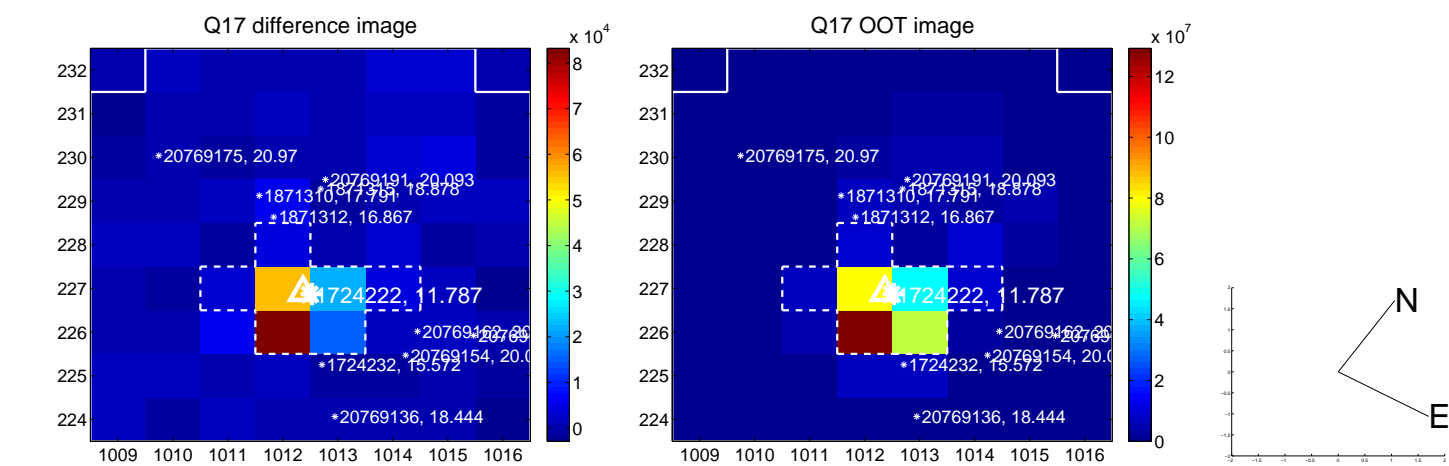
Q16 no difference image



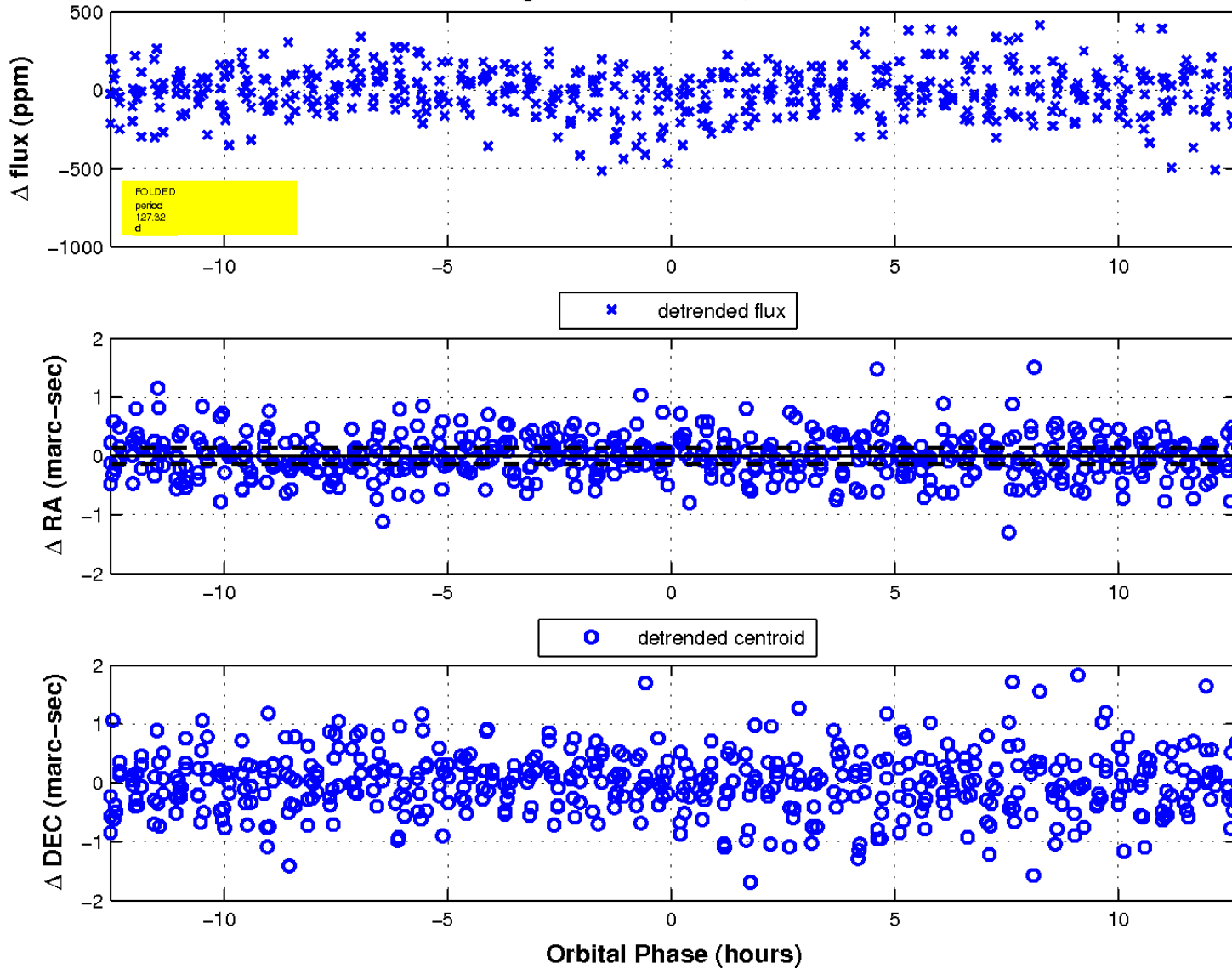
Q16 no OOT image



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

