

KIC 011824964

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})
011824964-01	OBS	No	0.909139	131.878474	23.8	3.538	8.8	11.0	2.22	7409	1.25	27407.15
011824964-02	OBS	No	2.244510	133.739740	22.4	10.321	9.4	7.5	2.22	7409	1.08	8213.76
011824964-03	OBS	No	1.803709	133.160241	71.0	8.259	12.2	12.3	2.22	7409	2.53	10993.83
011824964-04	OBS	No	28.740753	154.246615	217.9	3.667	7.7	7.9	2.22	7409	3.84	274.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011824964-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_SATURATED
011824964-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

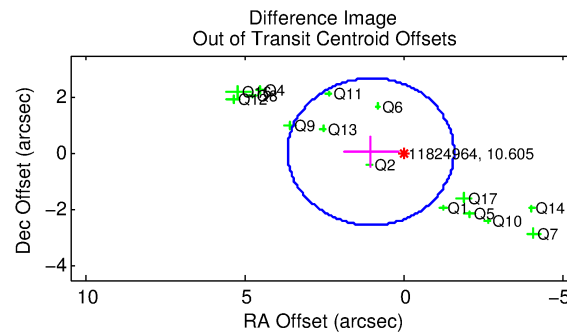
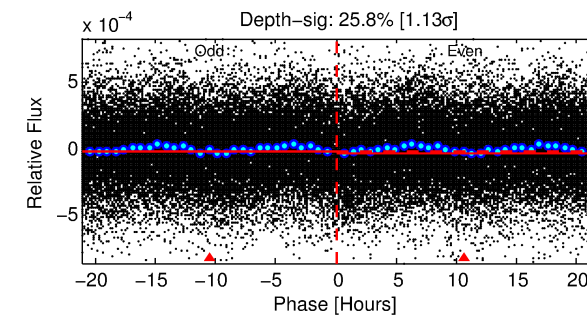
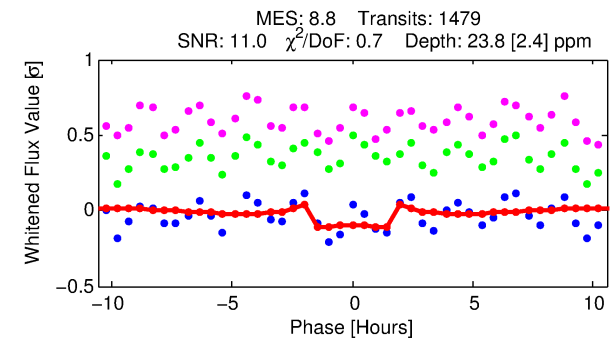
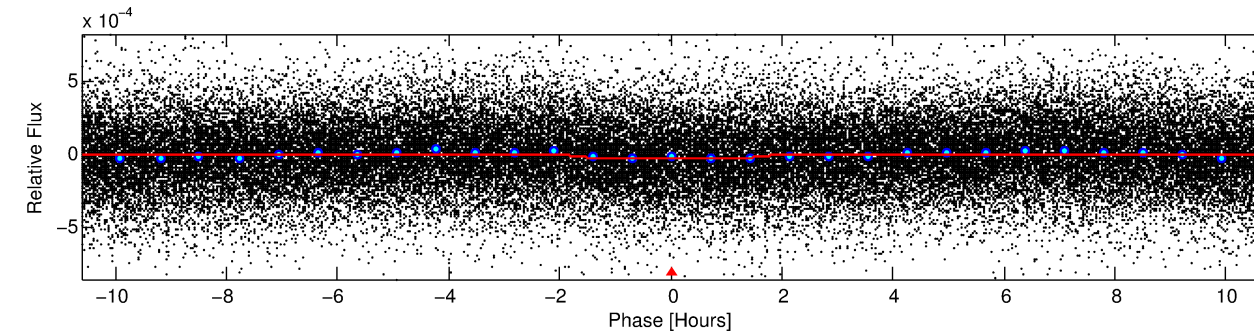
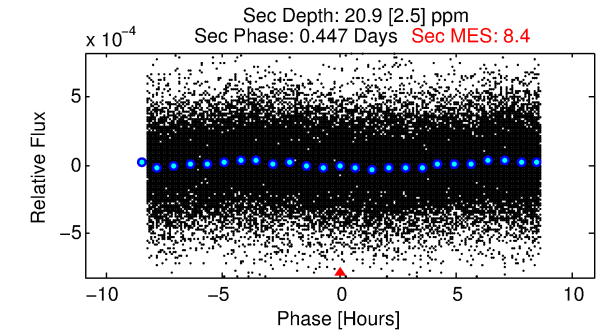
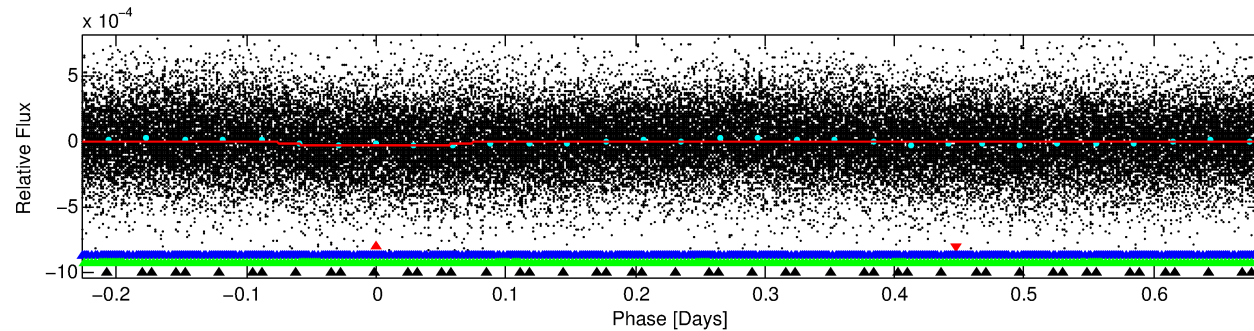
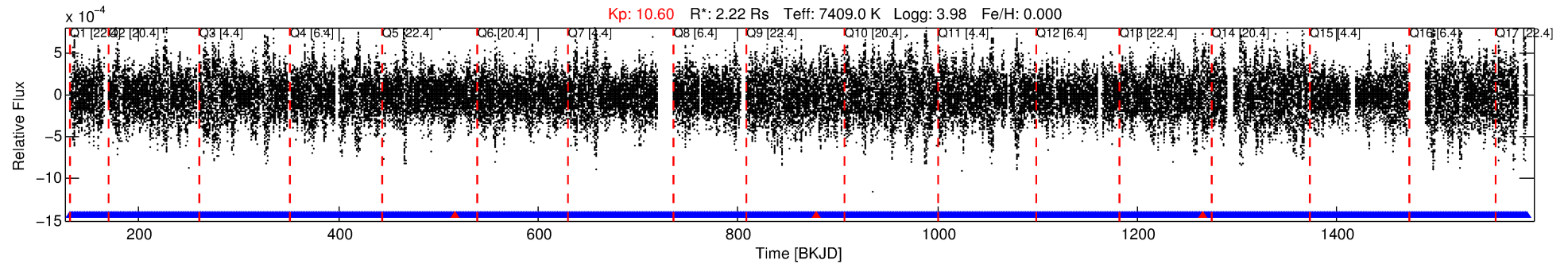
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011824964-01

No Significant Match Found

DV One-Page Summary

KIC: 11824964 Candidate: 1 of 4 Period: 0.909 d



DV Fit Results:

Period = 0.90914 [0.00001] d
Epoch = 131.8785 [0.0017] BKJD
Rp/R* = 0.0052 [0.0009]
a/R* = 1.29 [0.53]
b = 0.90 [0.22]
Seff = 27407.15 [11602.31]
Teq = 3281 [347] K
Rp = 1.25 [0.41] Re
a = 0.0220 [0.0056] AU
Ag = 3.57 [1.86] [1.38σ]
Teffp = 6971 [697] K [4.74σ]

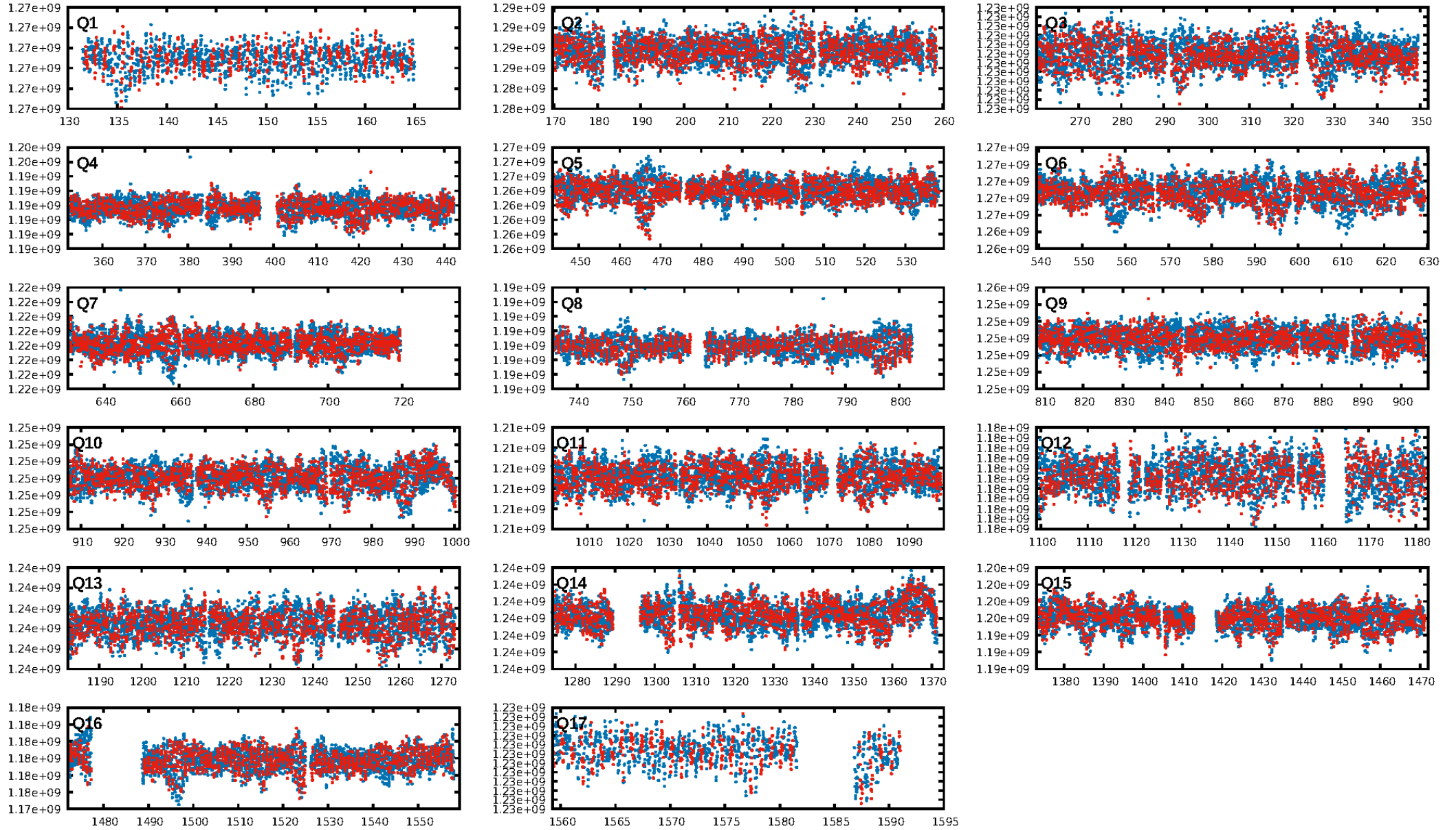
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 98.3% [2.39σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.58e-19
RollingBand-fgt: 1.00 [1409/1412]
GhostDiagnostic-chr: -5.349
Centroid-sig: 73.7%
Centroid-so: 0.312 arcsec [0.64σ]
OotOffset-rm: 1.048 arcsec [1.20σ]
OotOffset-st: 4/2/4/5 [15]
KicOffset-rm: 1.364 arcsec [1.31σ]
KicOffset-st: 4/2/4/5 [15]
DiffImageQuality-fgm: 0.40 [6/15]
DiffImageOverlap-fno: 1.00 [17/17]

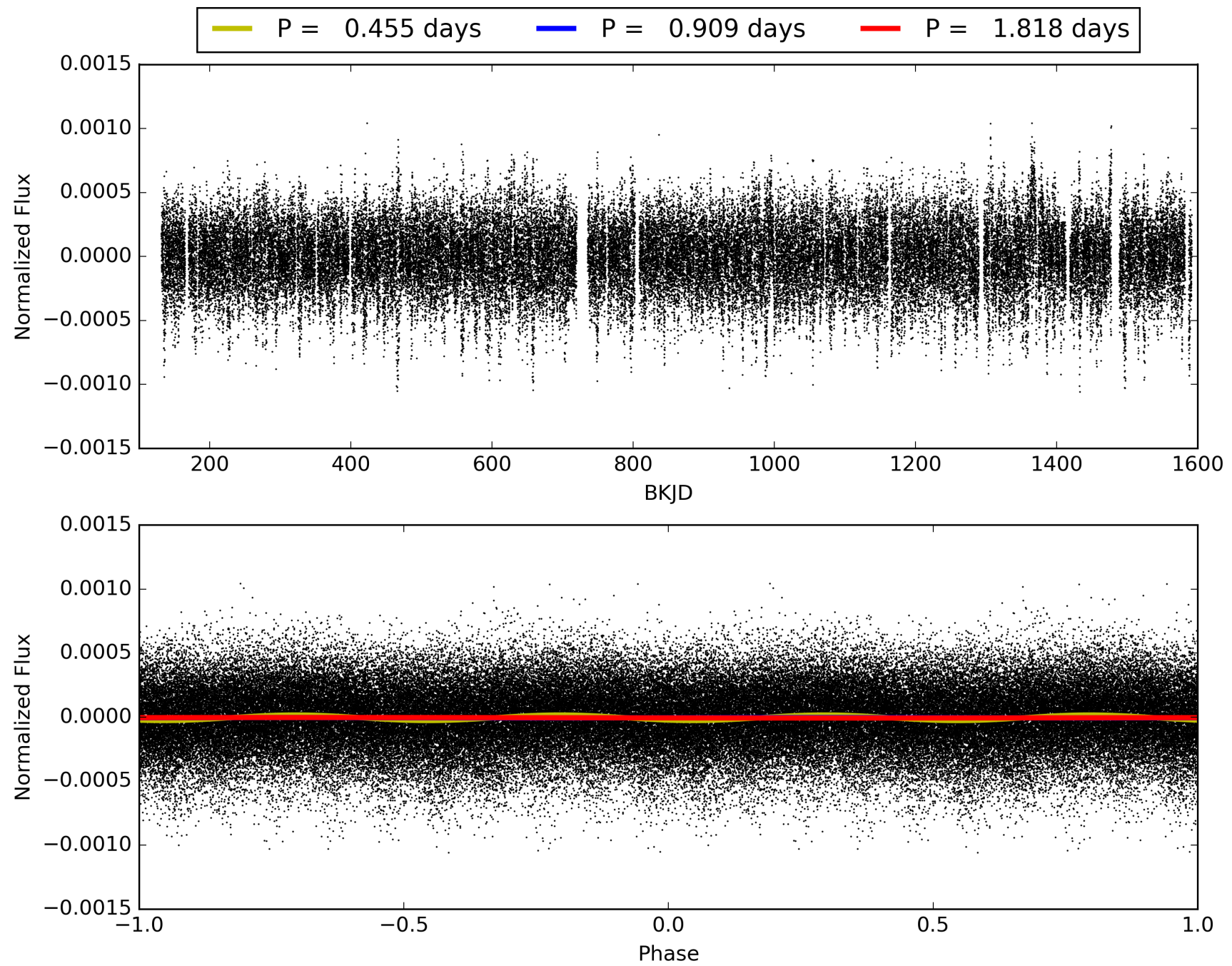
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:19:33 Z

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

TCE 011824964-01, PDC Light Curves

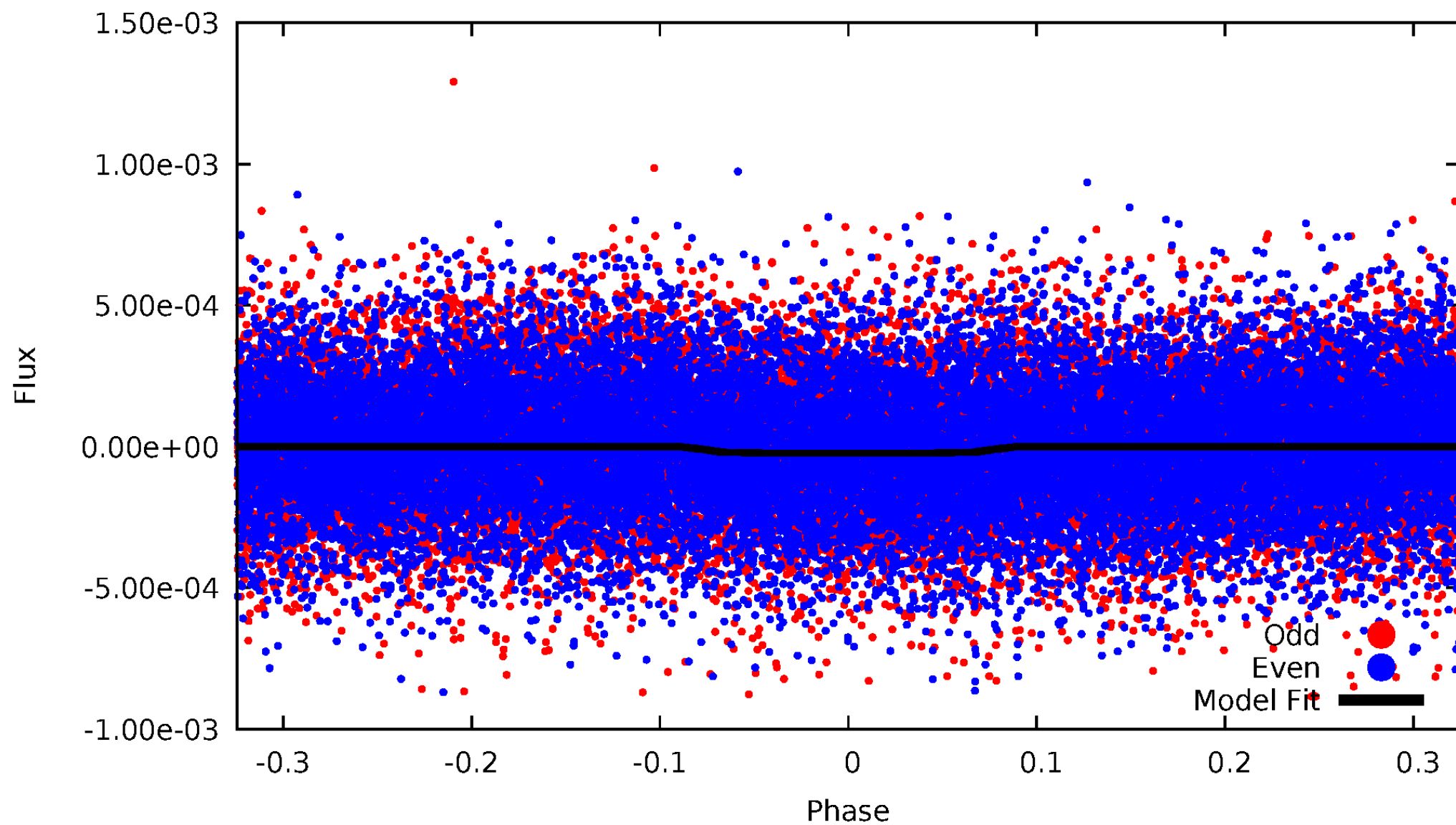


TCE 011824964-01



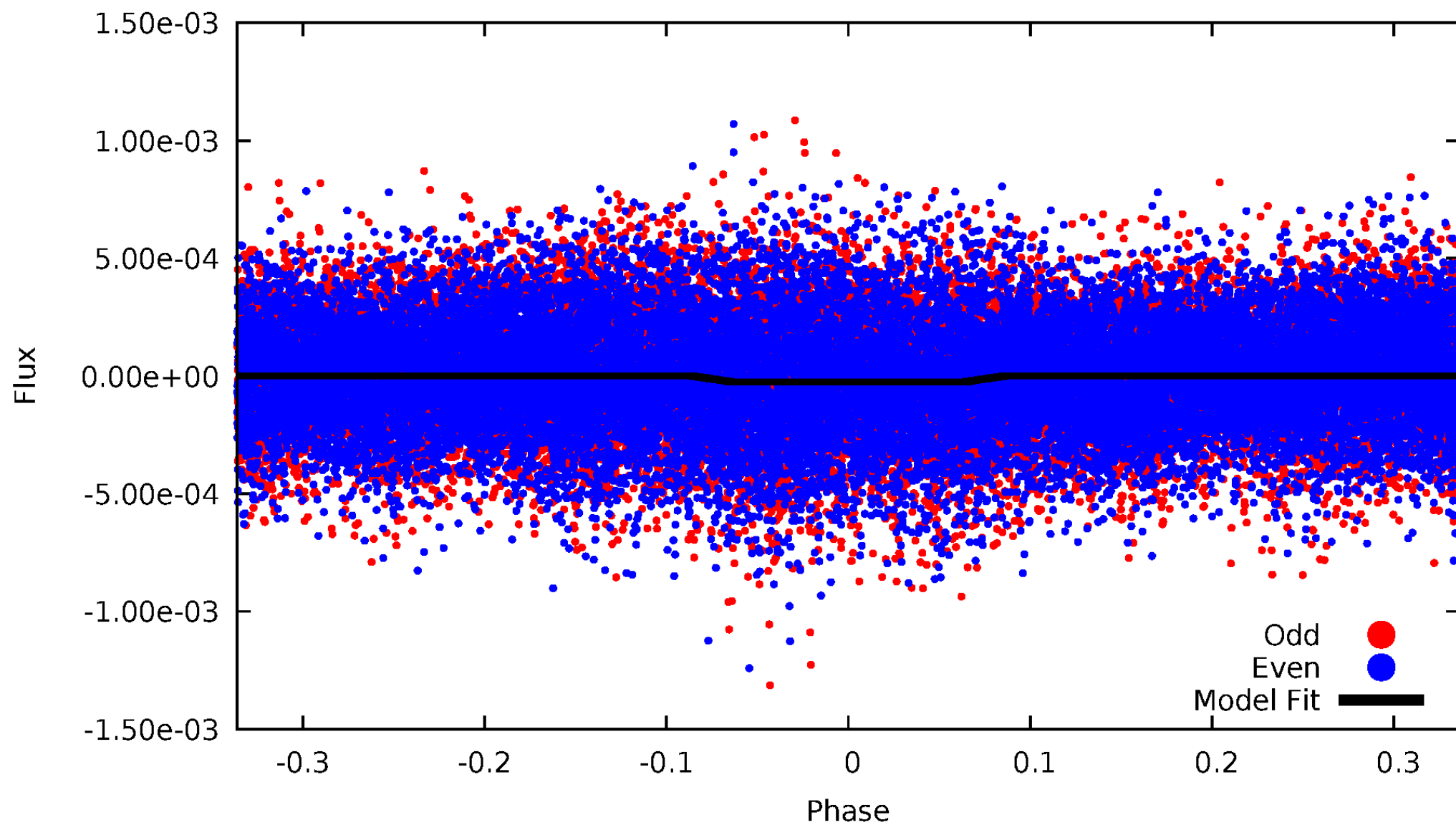
DV Odd/Even

TCE 011824964-01



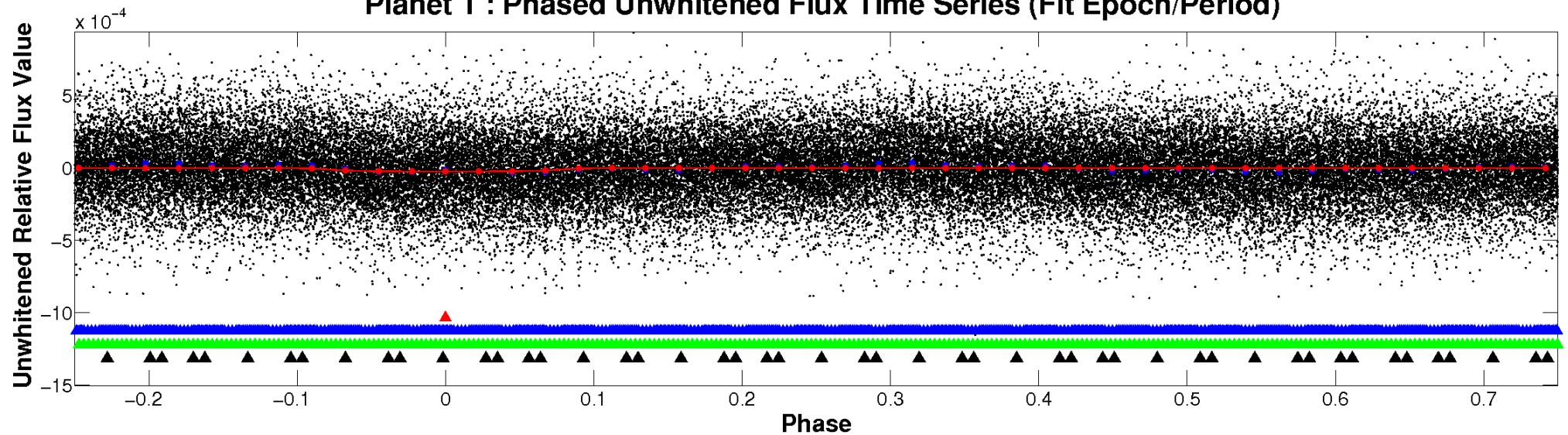
ALT Odd/Even

TCE 011824964-01

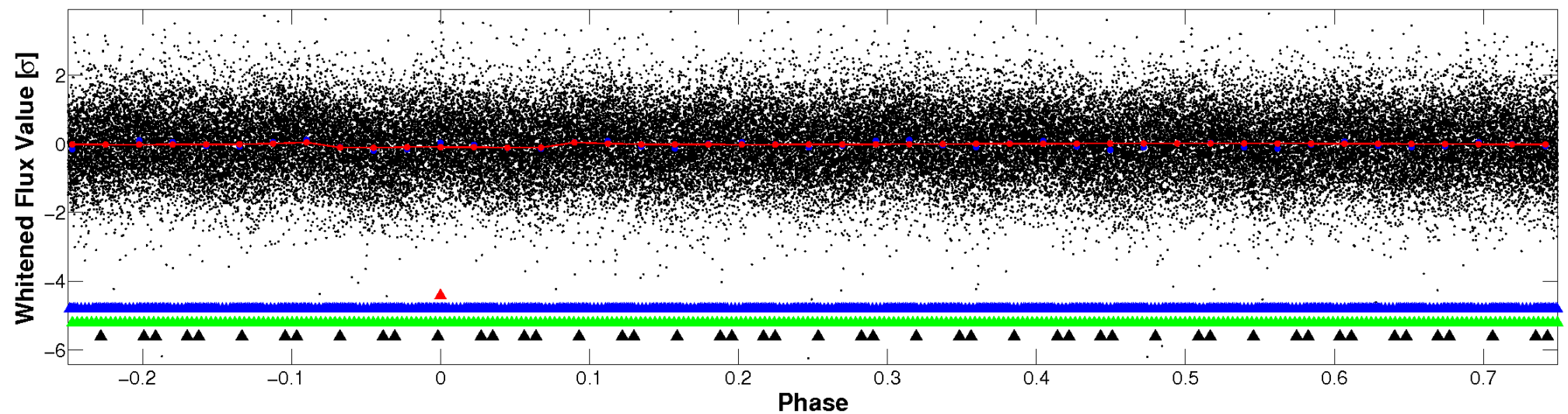


Non-Whitened Vs. Whitened Light Curve

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

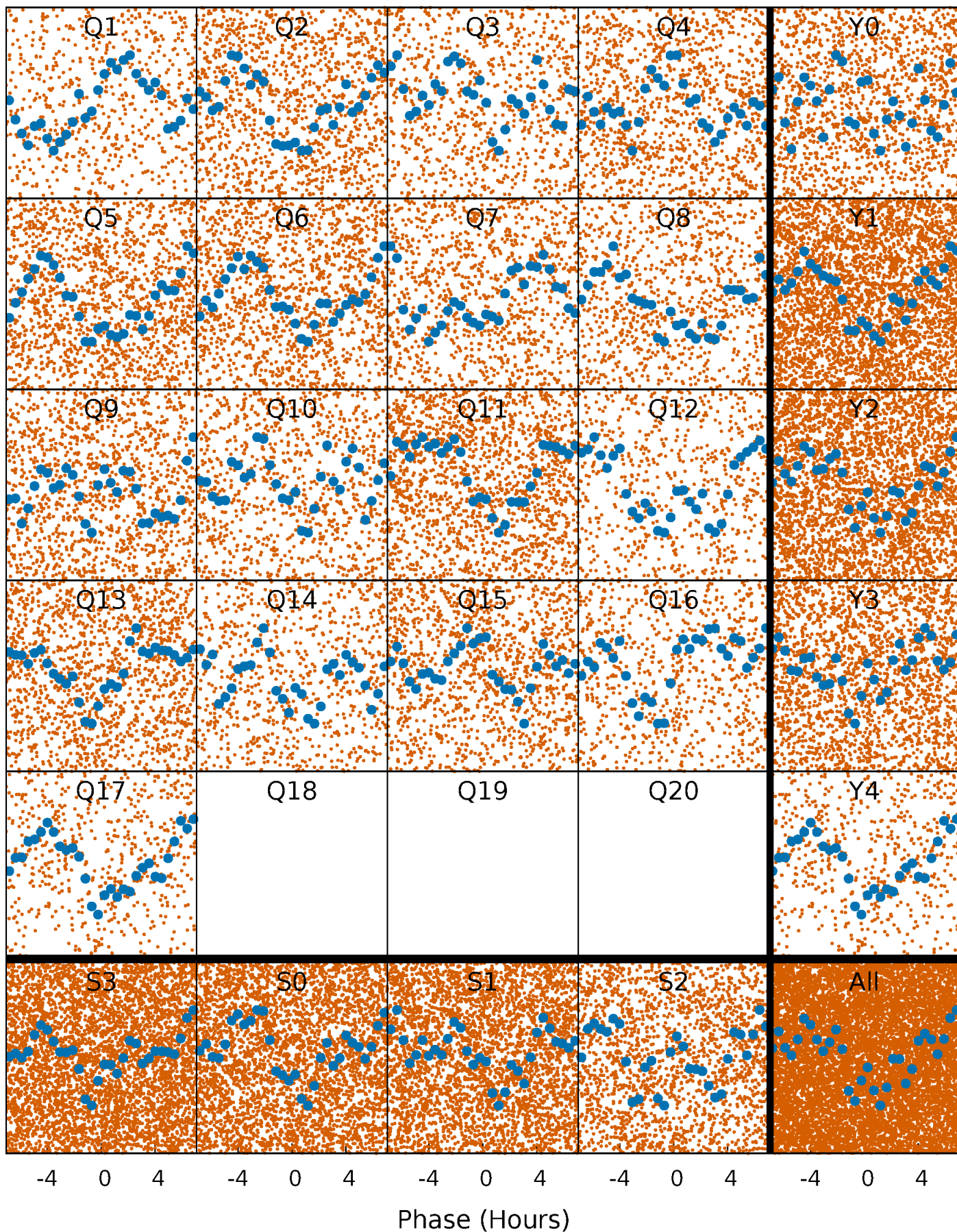


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



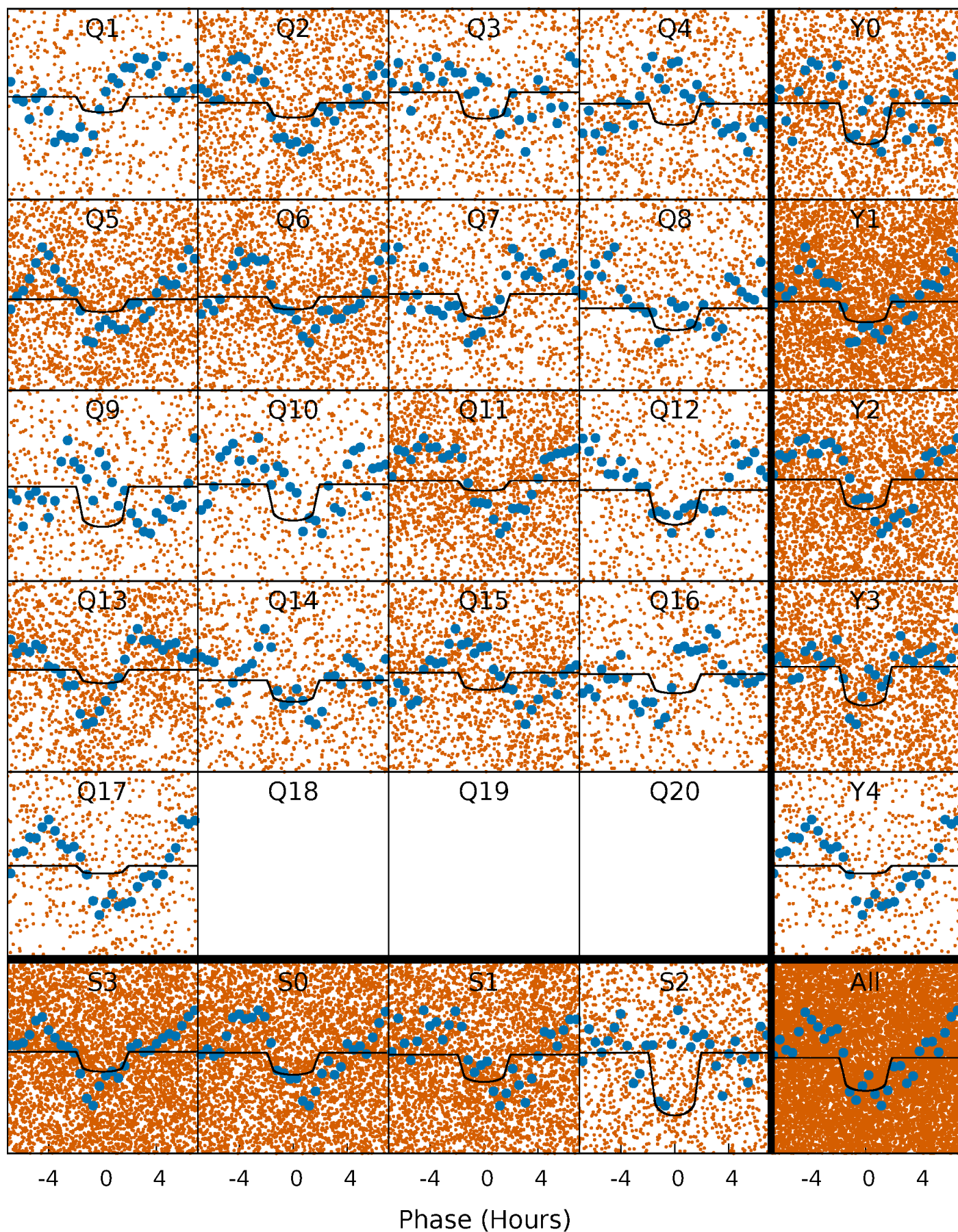
PDC Quarter-Phased Transit Curves

TCE 011824964-01 P= 0.909139 Days $T_0=131.878474$ (BKJD)



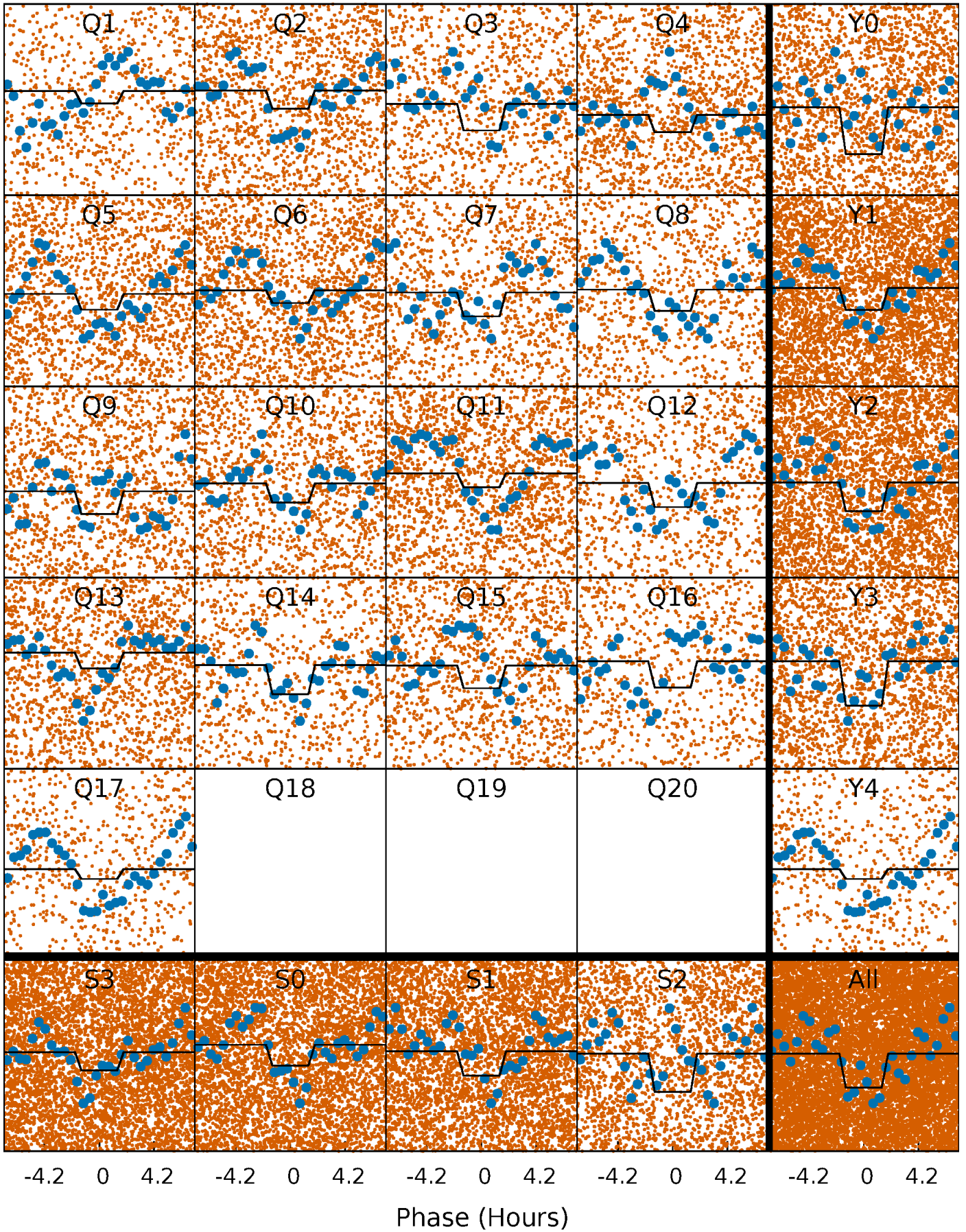
DV Quarter-Phased Transit Curves

TCE 011824964-01 P= 0.909139 Days $T_0=131.878474$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

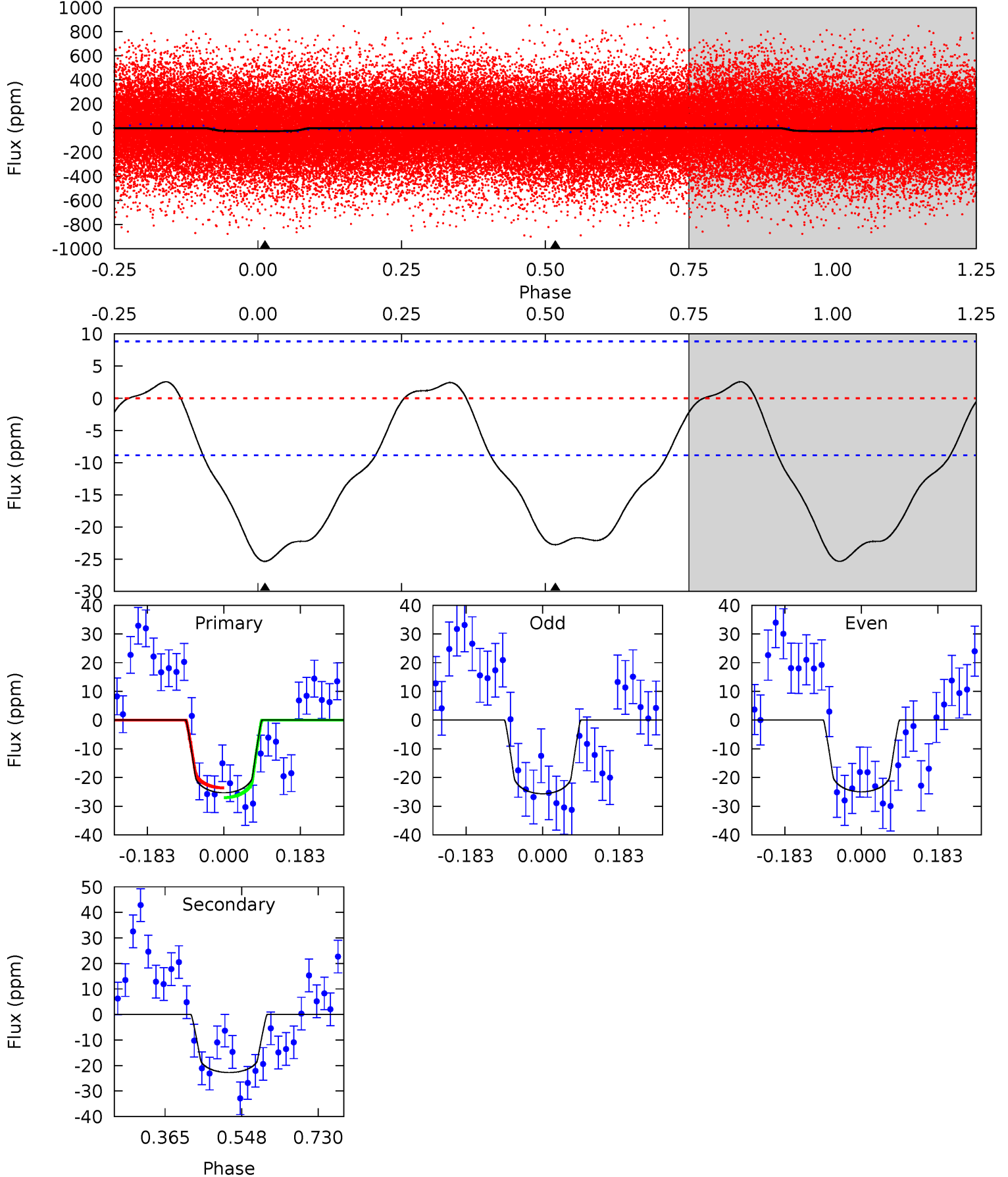
TCE 011824964-01 P= 0.909150 Days $T_0=131.879257$ (BKJD)



DV Model-Shift Uniqueness Test

011824964-01, P = 0.909139 Days, E = 130.969335 Days

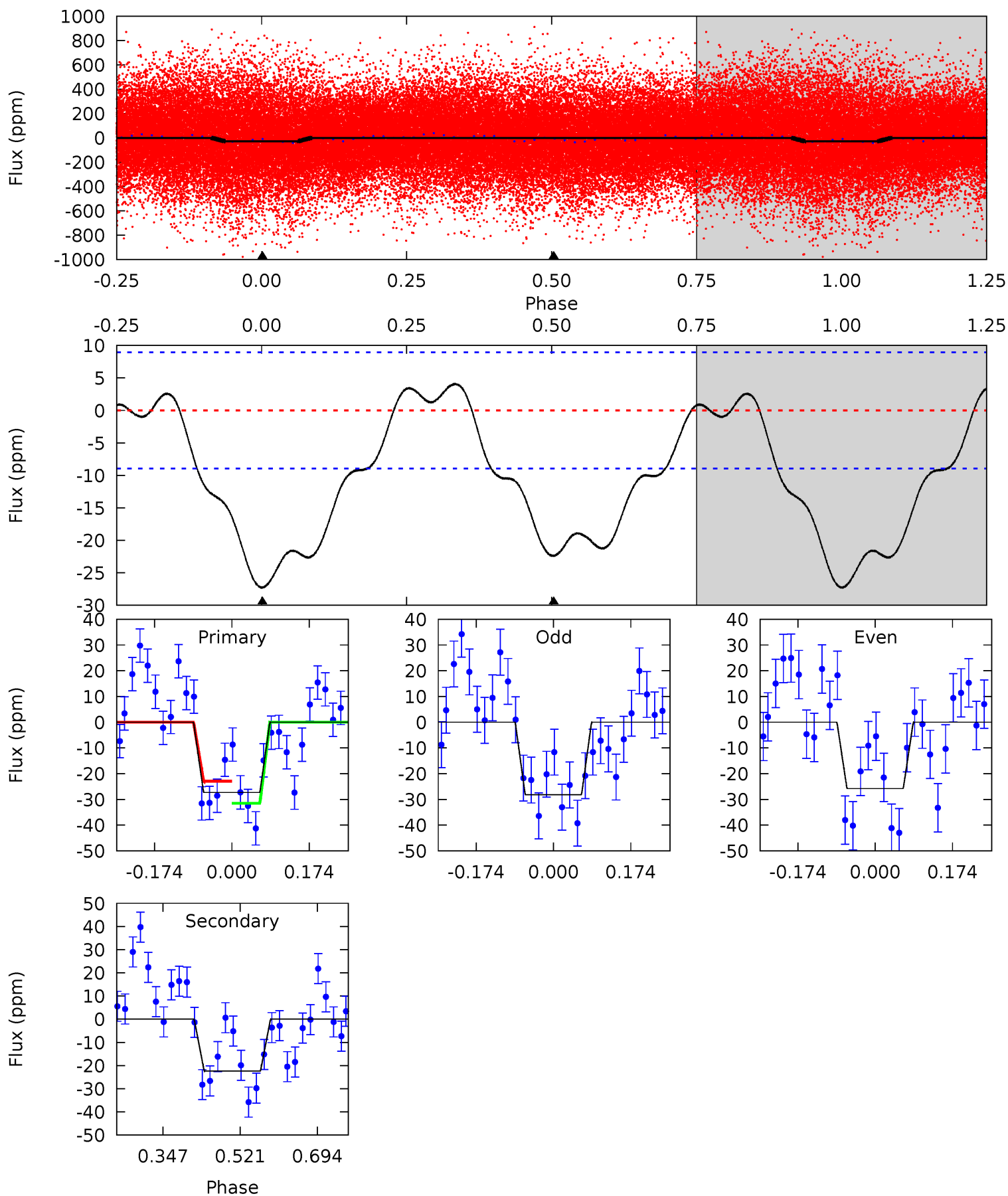
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	11.4	0	0	4.44	1.33	1.92	12.7	12.7	11.4	11.4	0.17	1.21	0.09	0.83



Alt Model-Shift Uniqueness Test

011824964-01, P = 0.909150 Days, E = 130.970107 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	11.1	0	0	4.45	1.36	2.09	13.6	13.6	11.1	11.1	0.59	0.94	0.13	2.10



Stellar Parameters For KIC 011824964

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7409^{+207}_{-337}	$3.982^{+0.216}_{-0.162}$	$0.000^{+0.200}_{-0.350}$	$2.219^{+0.518}_{-0.633}$	$1.724^{+0.186}_{-0.319}$	$0.222^{+0.284}_{-0.092}$
	+3%/-5%	+5%/-4%	+inf%/-inf%	+23%/-29%	+11%/-19%	+128%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011824964-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-23 ± 2	$1.22^{+0.28}_{-0.25}$	4561^{+318}_{-376}	6872^{+837}_{-635}	$3.960^{+2.394}_{-1.316}$
Alt.	-22 ± 2	$1.21^{+0.28}_{-0.27}$	4547^{+347}_{-353}	6911^{+915}_{-659}	$4.061^{+2.518}_{-1.418}$

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

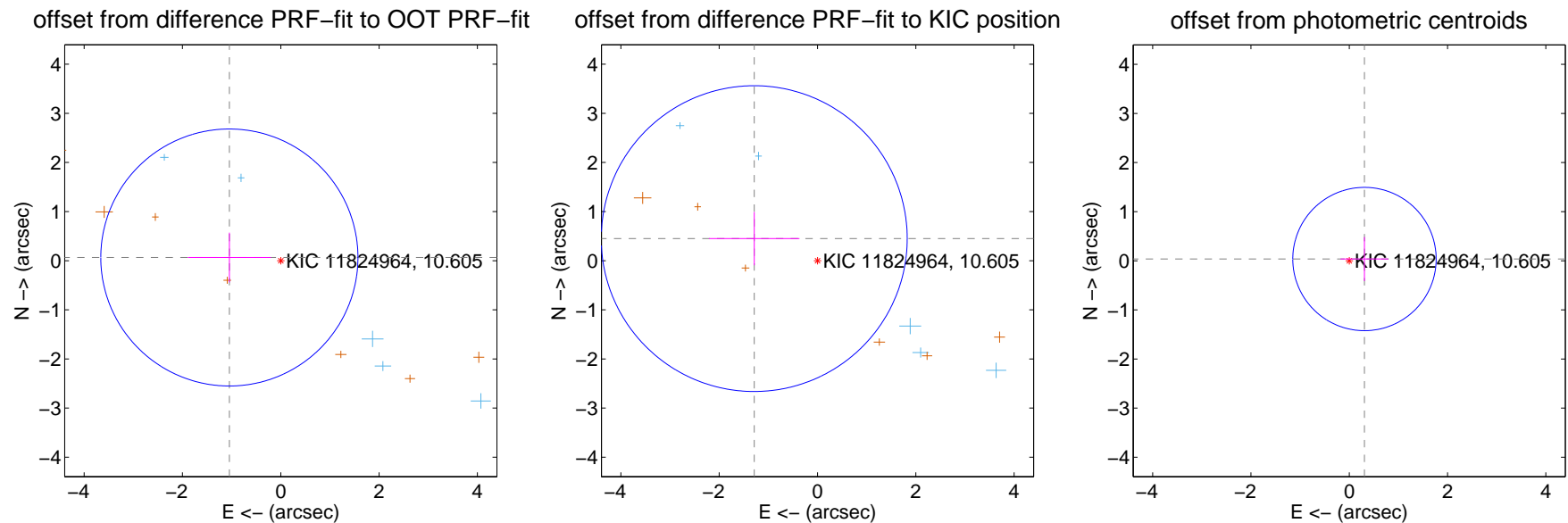
DV Centroid Data

Supplemental centroid analysis for 011824964-01. **Kepler magnitude: 10.61.** Transit SNR 10.96

There are 6 quarters with good PRF difference image offsets

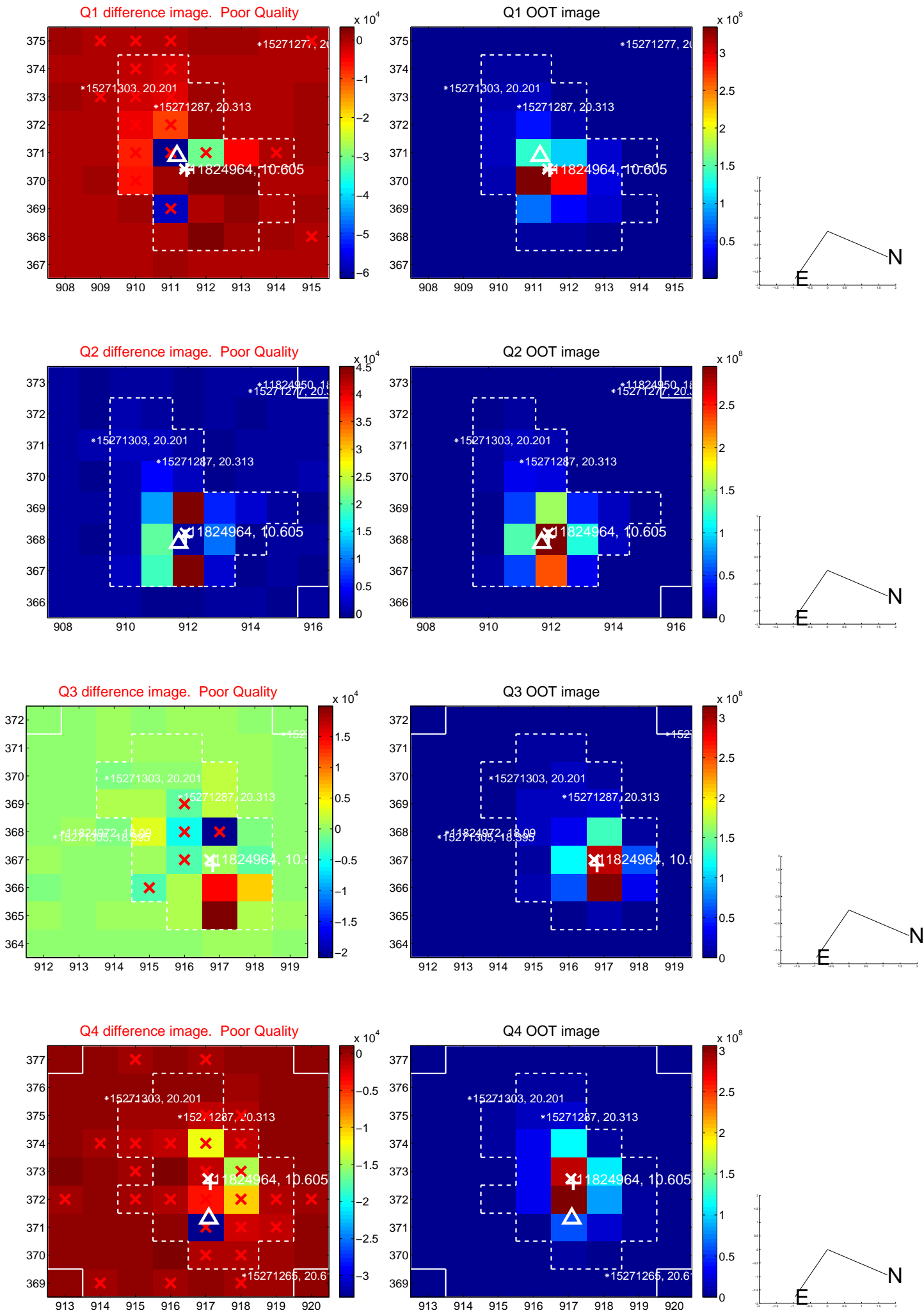
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.048 ± 0.872	1.20	1.046 ± 0.845	0.065 ± 0.506
PRF-fit source offset from KIC position	1.364 ± 1.037	1.31	1.287 ± 0.920	0.449 ± 0.542
photometric centroid source offset	0.31 ± 0.49	0.64	-0.31 ± 0.49	0.04 ± 0.45

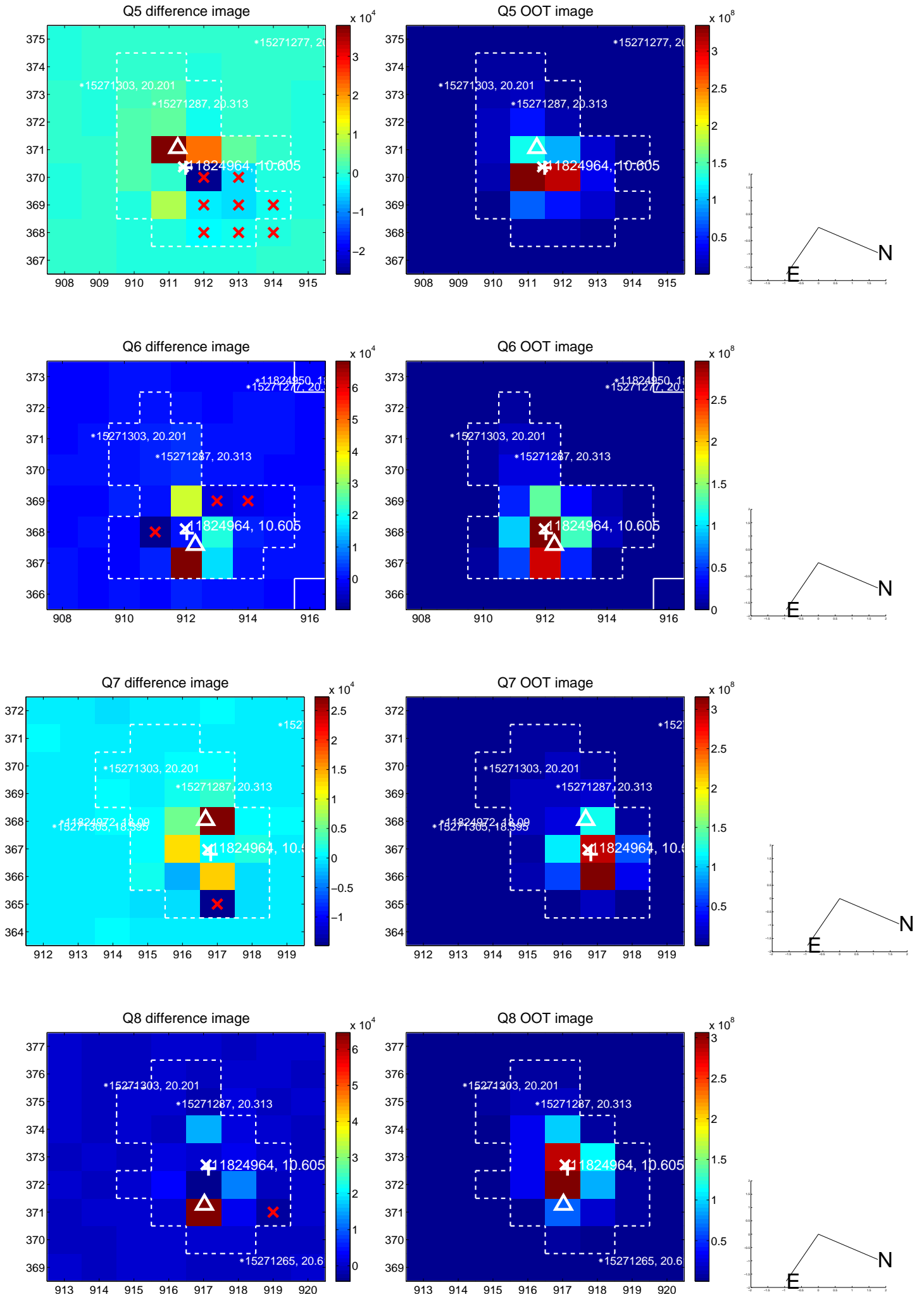


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

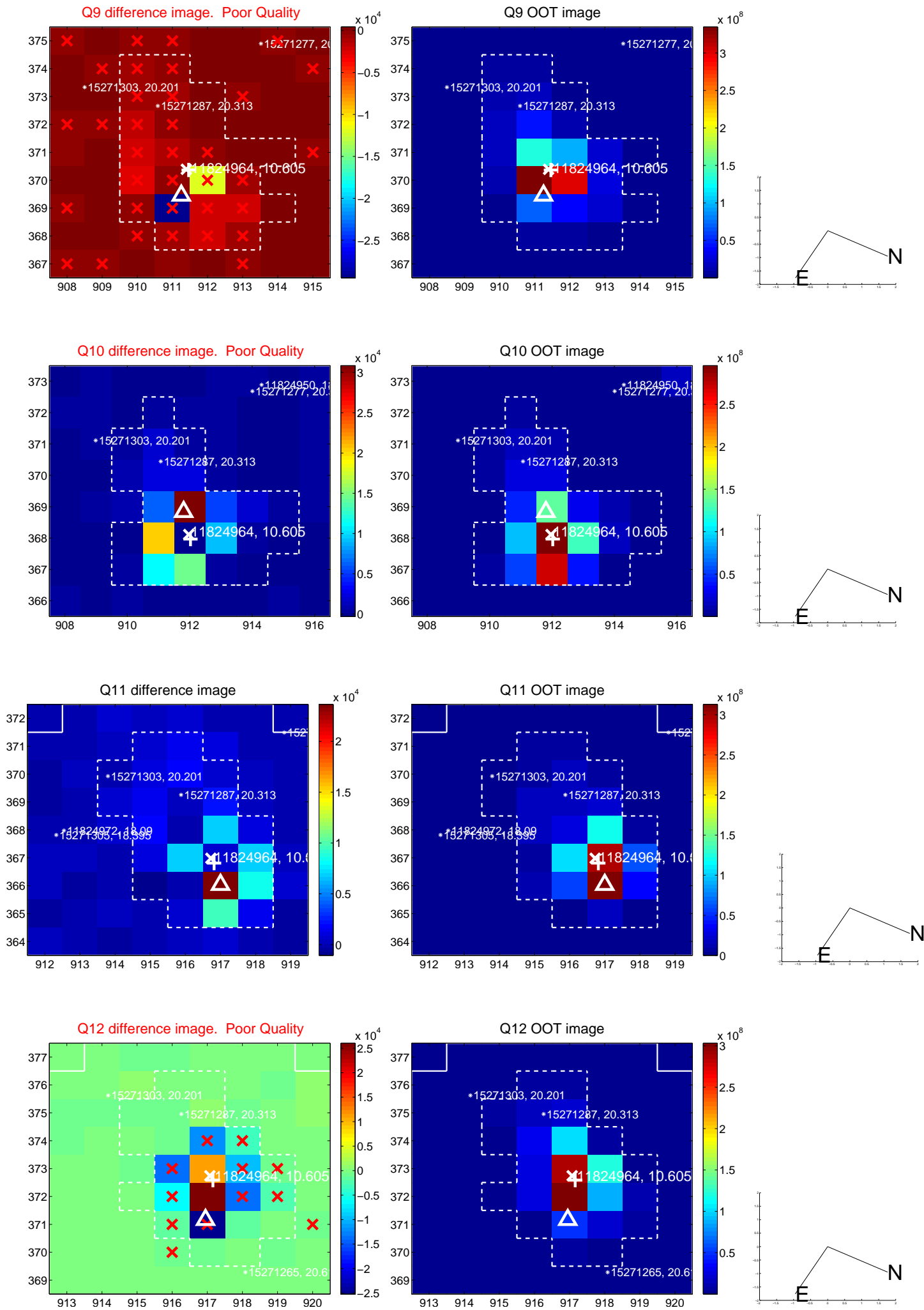
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



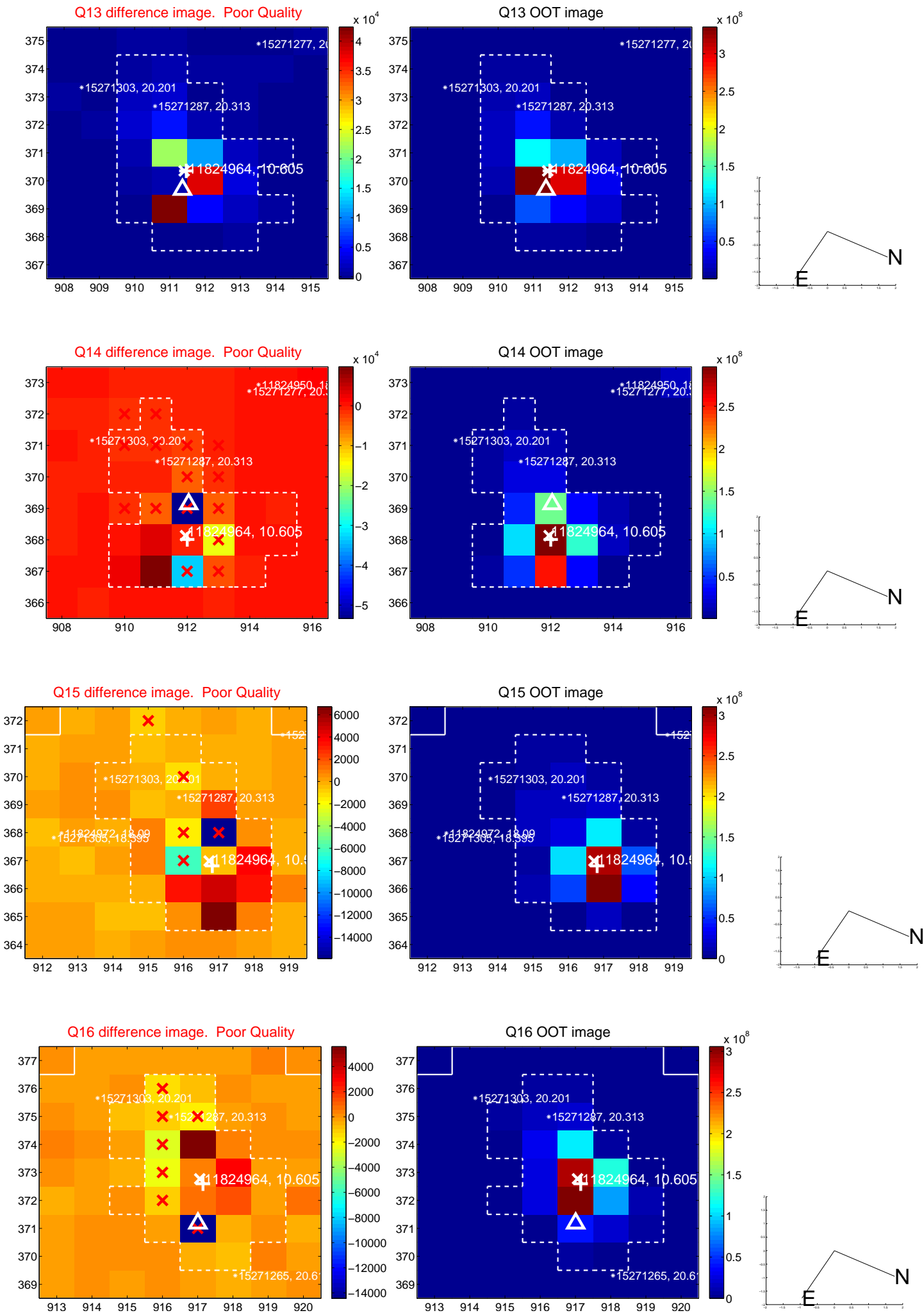
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



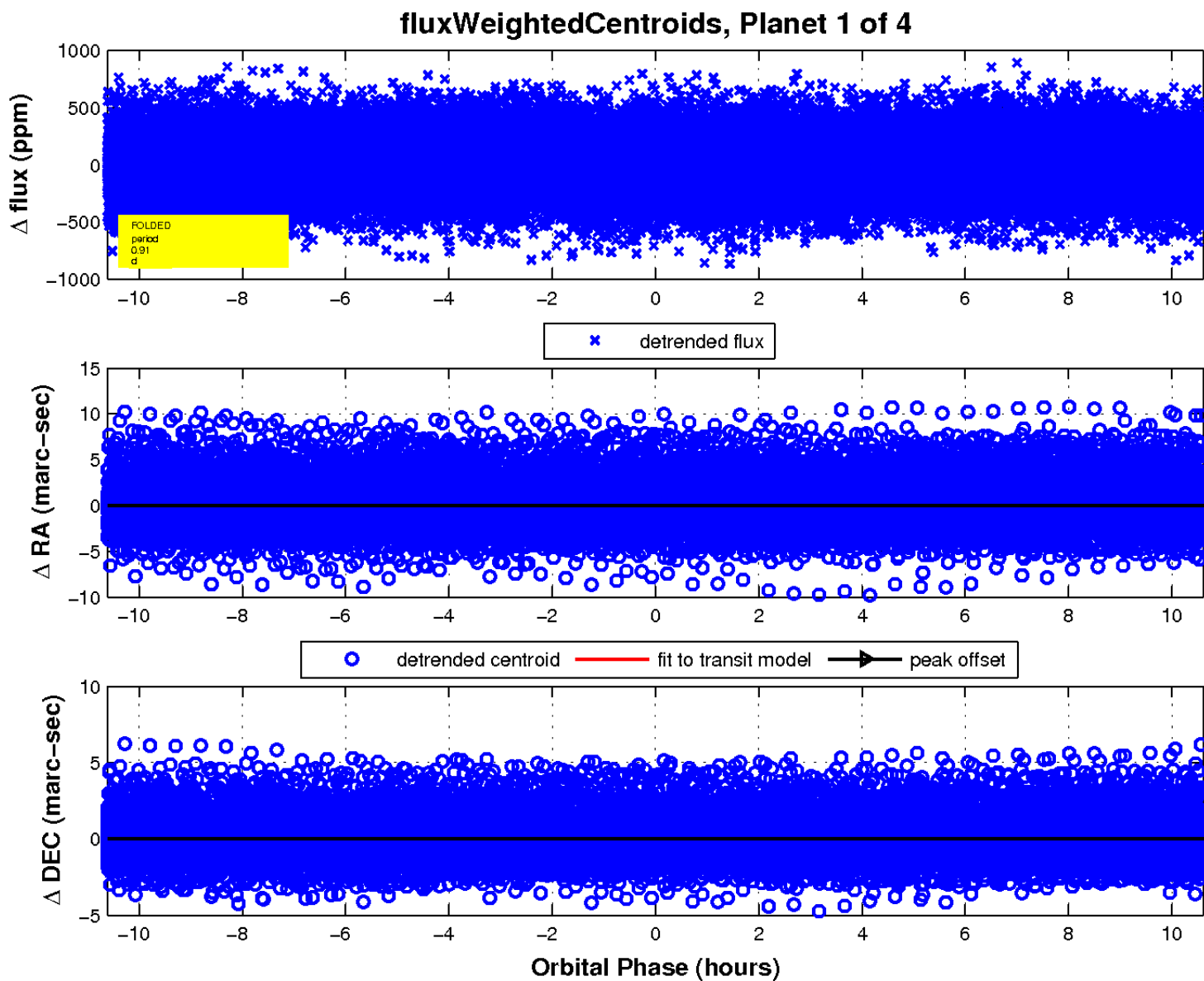
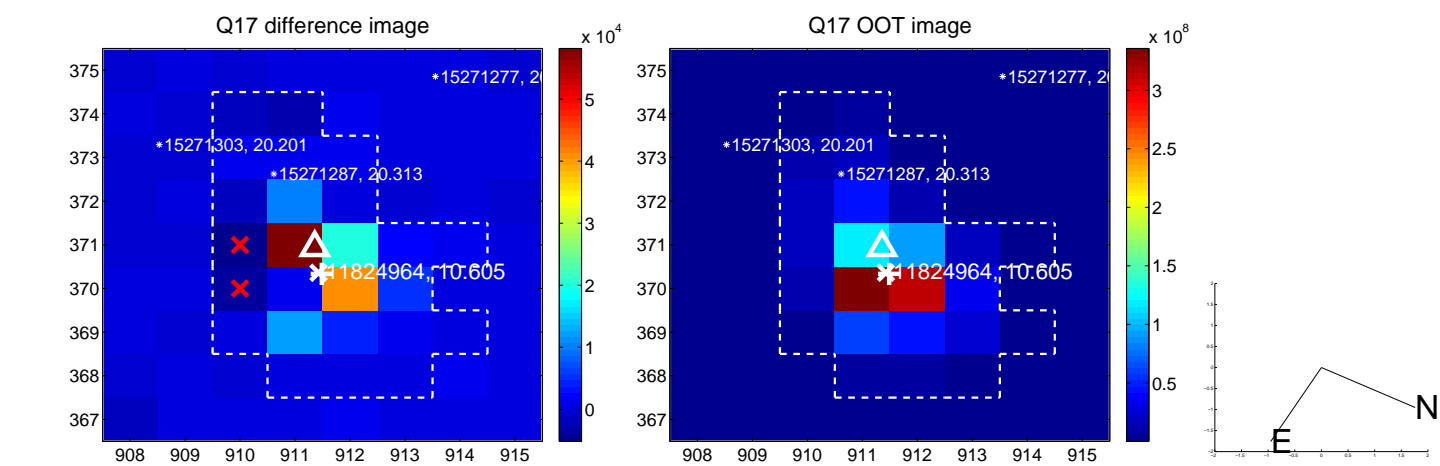
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

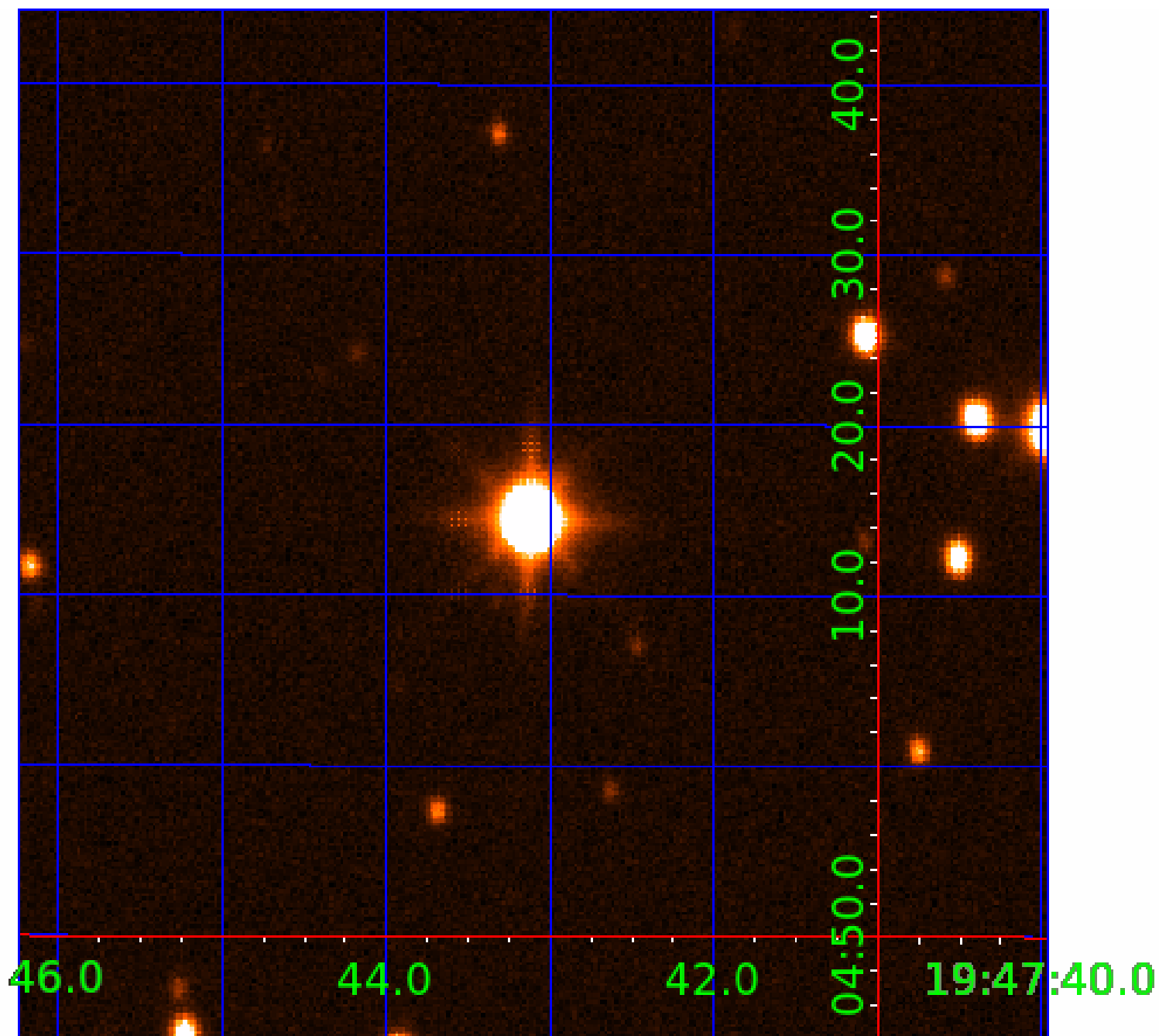


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011824964

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})
011824964-01	OBS	No	0.909139	131.878474	23.8	3.538	8.8	11.0	2.22	7409	1.25	27407.15
011824964-02	OBS	No	2.244510	133.739740	22.4	10.321	9.4	7.5	2.22	7409	1.08	8213.76
011824964-03	OBS	No	1.803709	133.160241	71.0	8.259	12.2	12.3	2.22	7409	2.53	10993.83
011824964-04	OBS	No	28.740753	154.246615	217.9	3.667	7.7	7.9	2.22	7409	3.84	274.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011824964-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_SATURATED
011824964-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

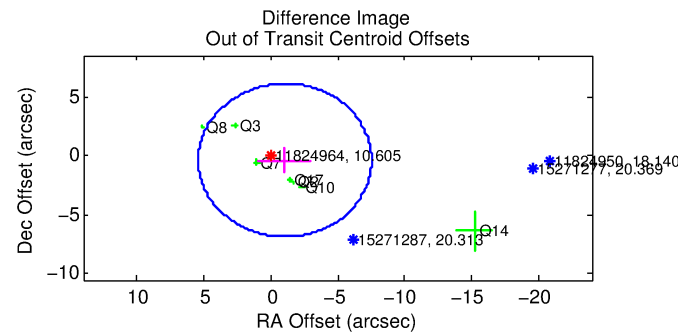
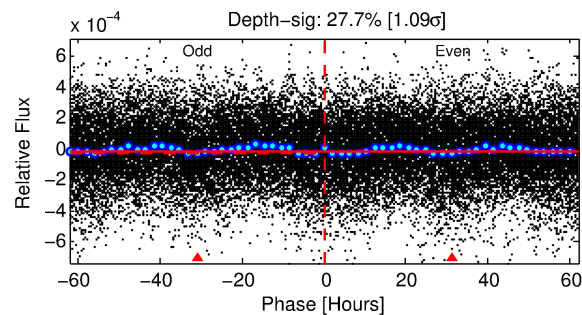
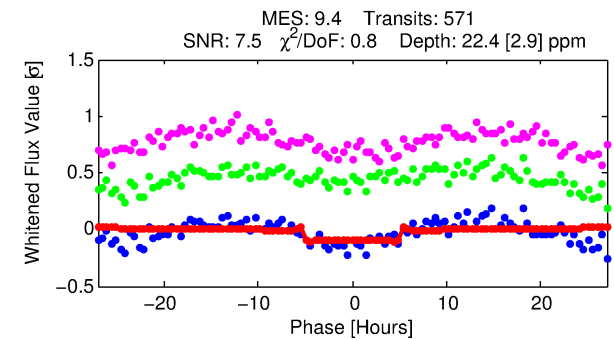
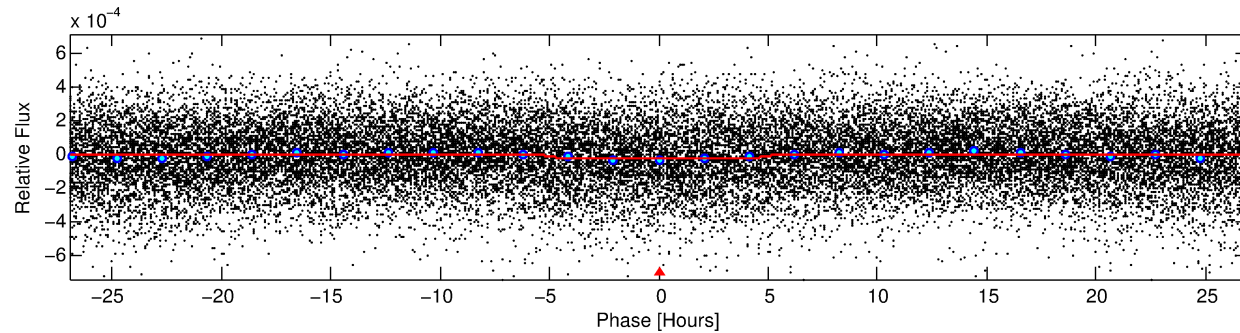
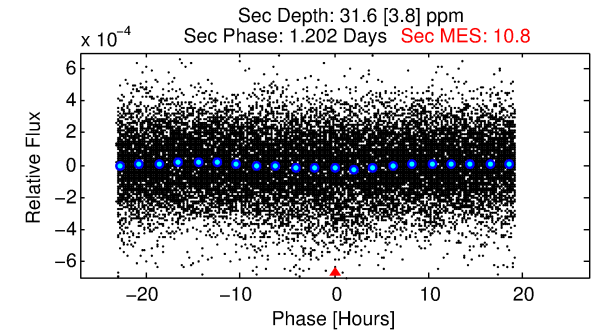
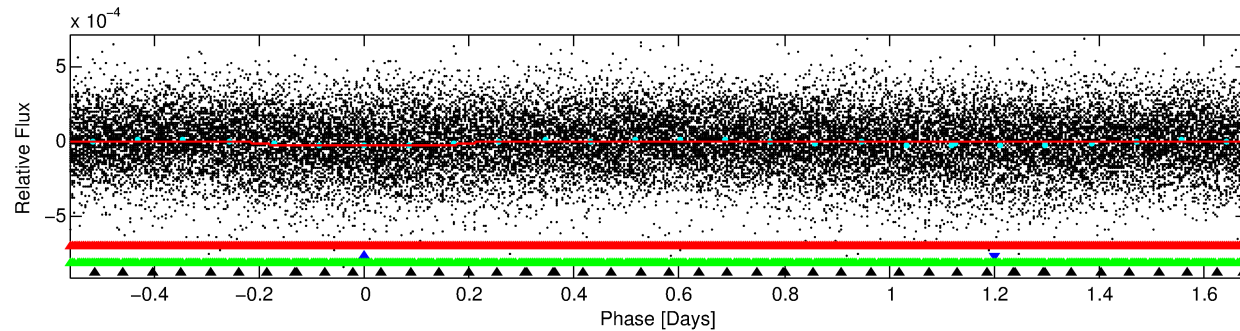
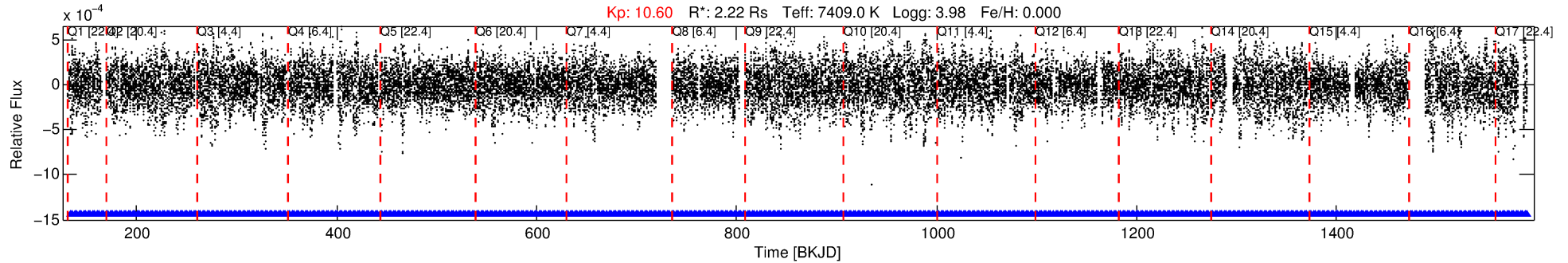
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011824964-02

No Significant Match Found

DV One-Page Summary

KIC: 11824964 Candidate: 2 of 4 Period: 2.245 d



DV Fit Results:

Period = 2.24451 [0.00003] d
Epoch = 133.7397 [0.0062] BKJD
 $R_p/R^* = 0.0045$ [0.0019]
 $a/R^* = 1.68$ [2.78]
 $b = 0.40$ [5.48]
 $\text{Seff} = 8213.76$ [3477.14]
 $T_{\text{eq}} = 2428$ [257] K
 $R_p = 1.08$ [0.55] R_e
 $a = 0.0402$ [0.0101] AU
 $A_g = 24.06$ [22.31] [1.03σ]
 $T_{\text{eff}} = 8312$ [1796] K [3.24σ]

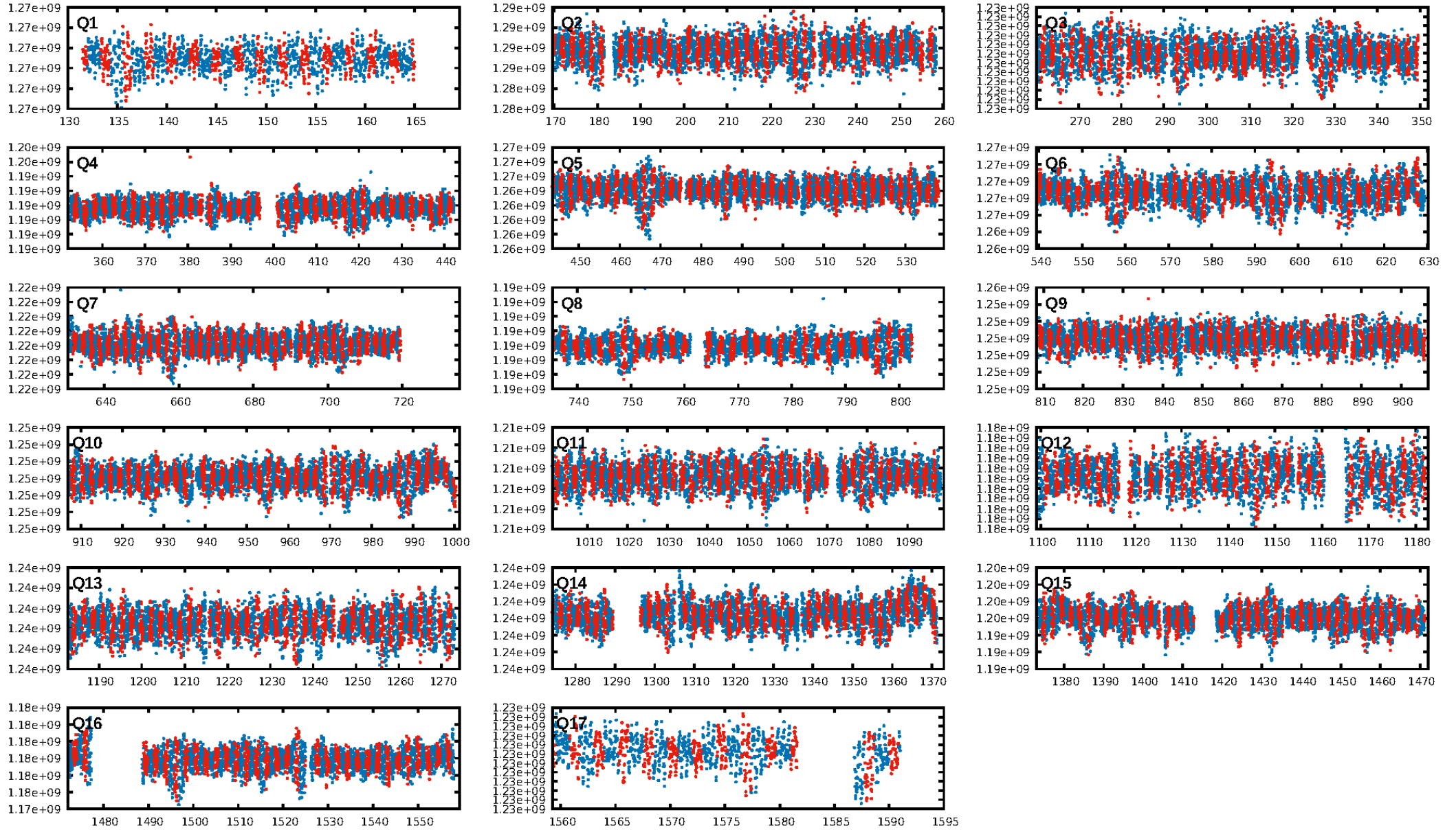
DV Diagnostic Results:

ShortPeriod-sig: 57.6% [0.80σ]
LongPeriod-sig: 100.0% [58.06σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.51e-13
RollingBand-fgt: 1.00 [543/543]
GhostDiagnostic-chr: 0.4676
Centroid-sig: 0.7%
Centroid-so: 1.076 arcsec [1.82σ]
OotOffset-rm: 1.121 arcsec [0.52σ]
OotOffset-st: 3/2/1/1 [7]
KicOffset-rm: 0.765 arcsec [0.38σ]
KicOffset-st: 3/2/1/1 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 0.00 [0/17]

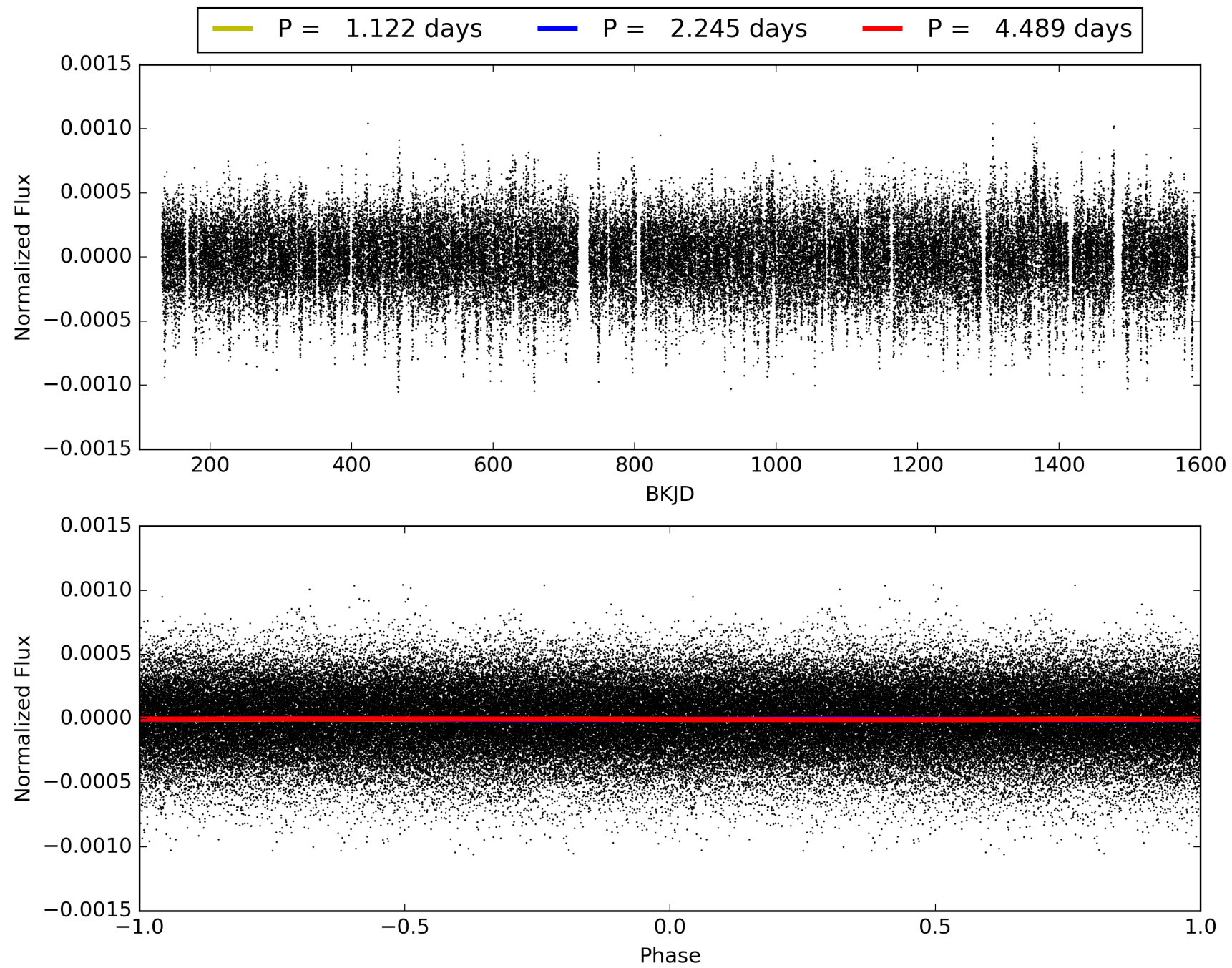
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:19:46 Z

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

TCE 011824964-02, PDC Light Curves

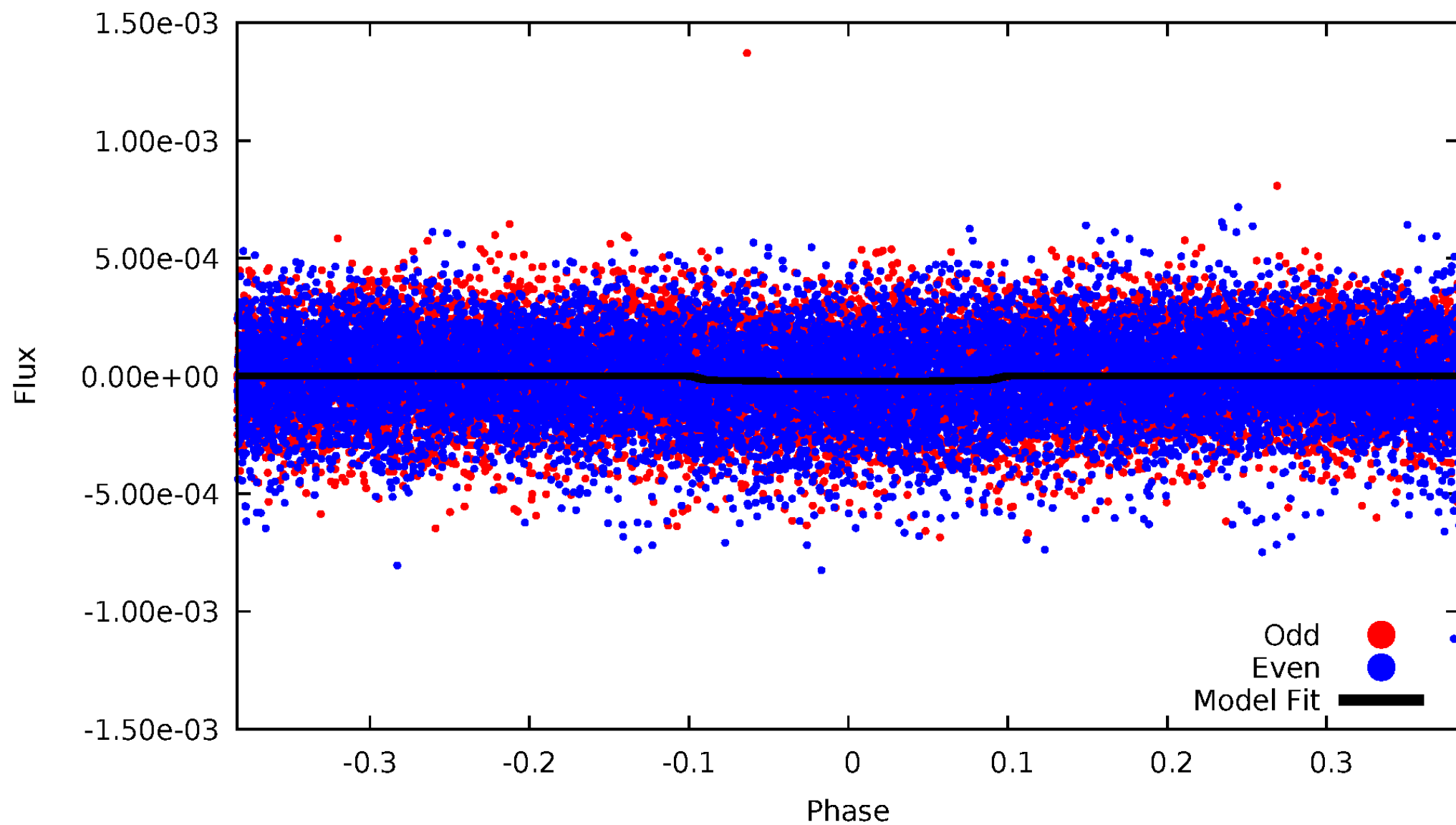


TCE 011824964-02



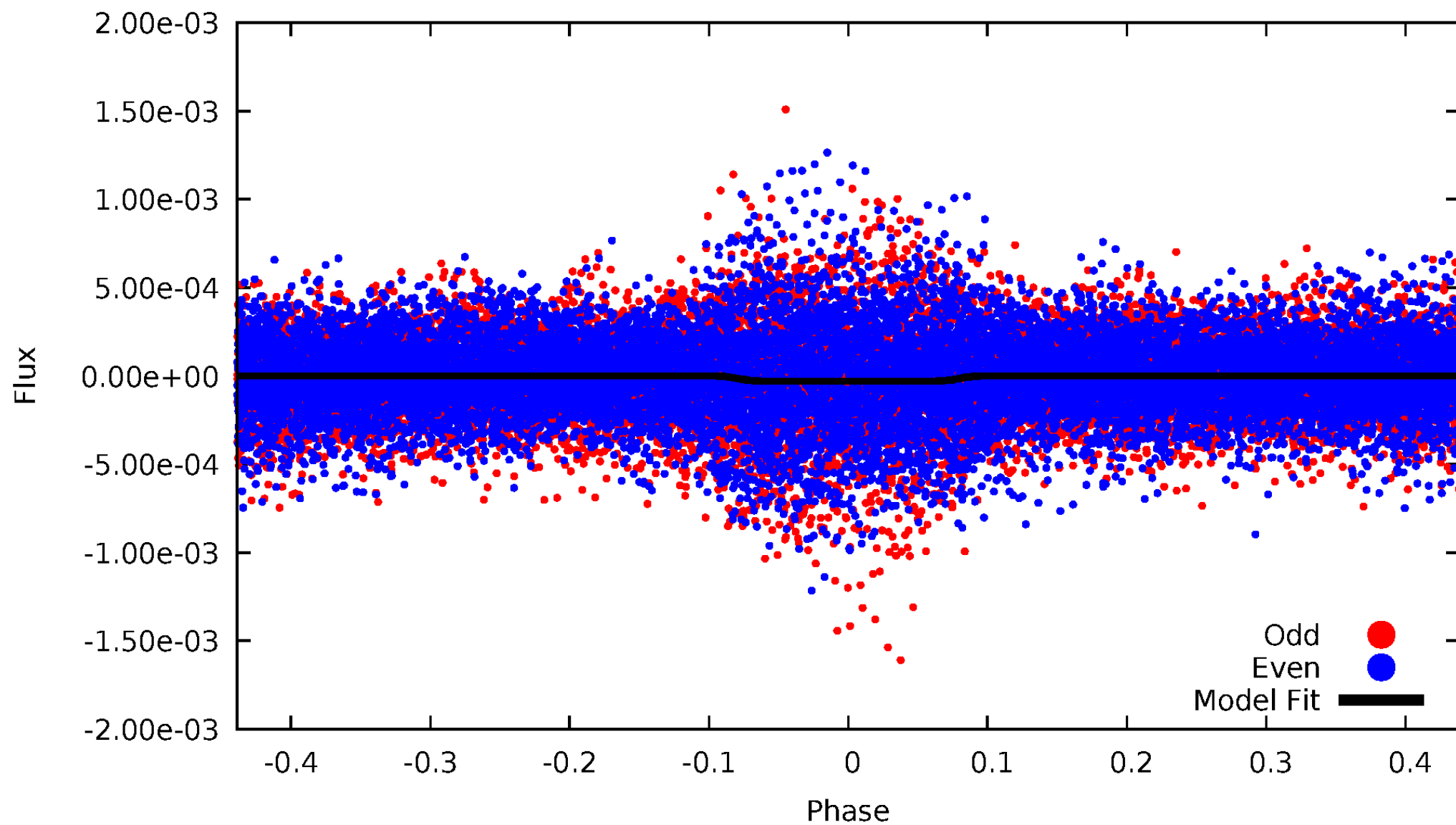
DV Odd/Even

TCE 011824964-02



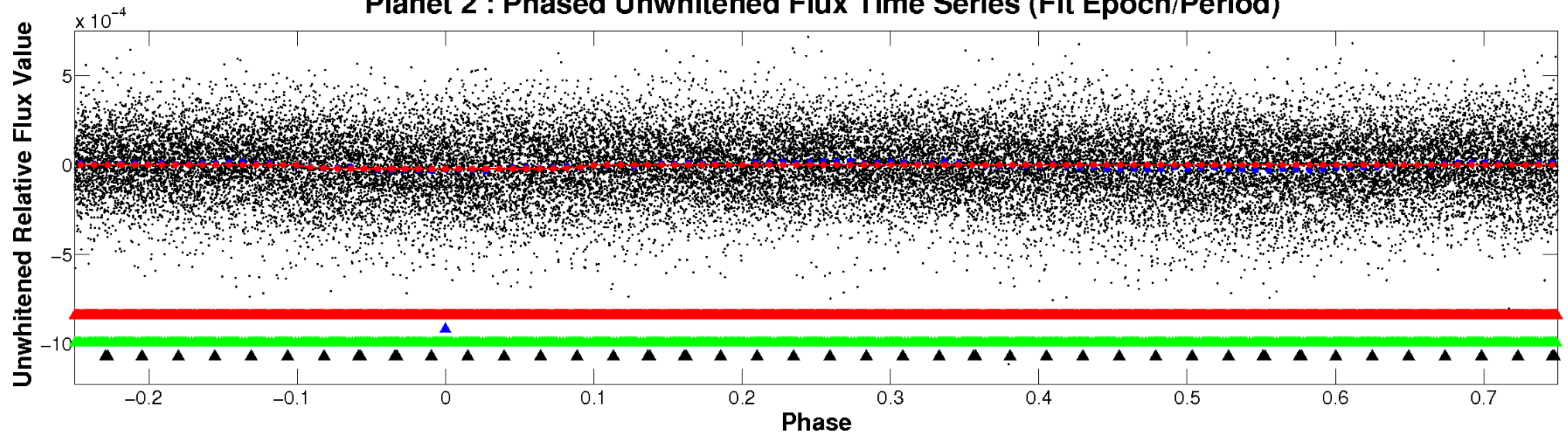
ALT Odd/Even

TCE 011824964-02

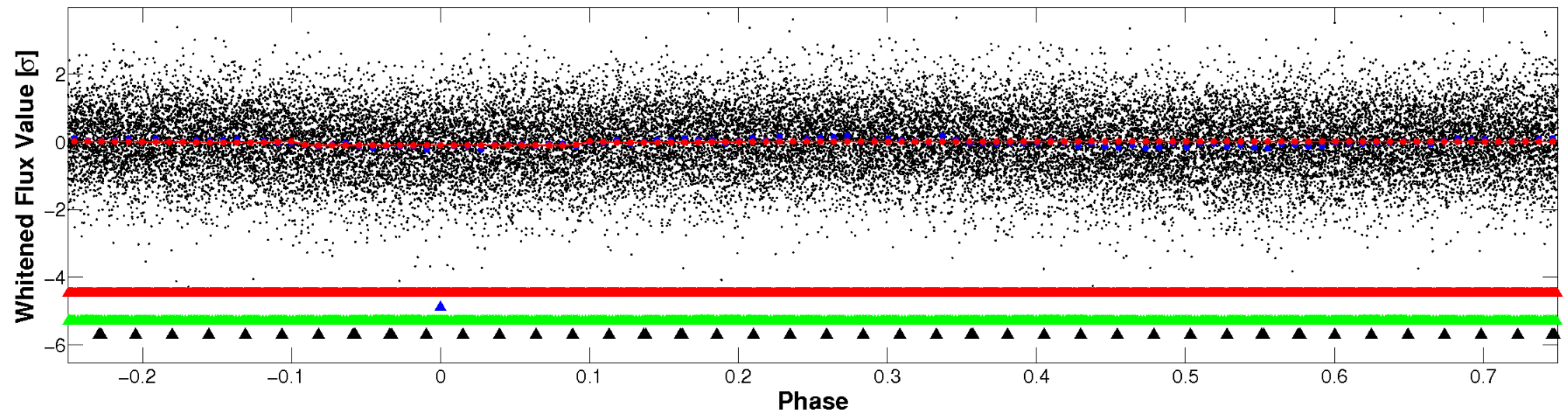


Non-Whitened Vs. Whitened Light Curve

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

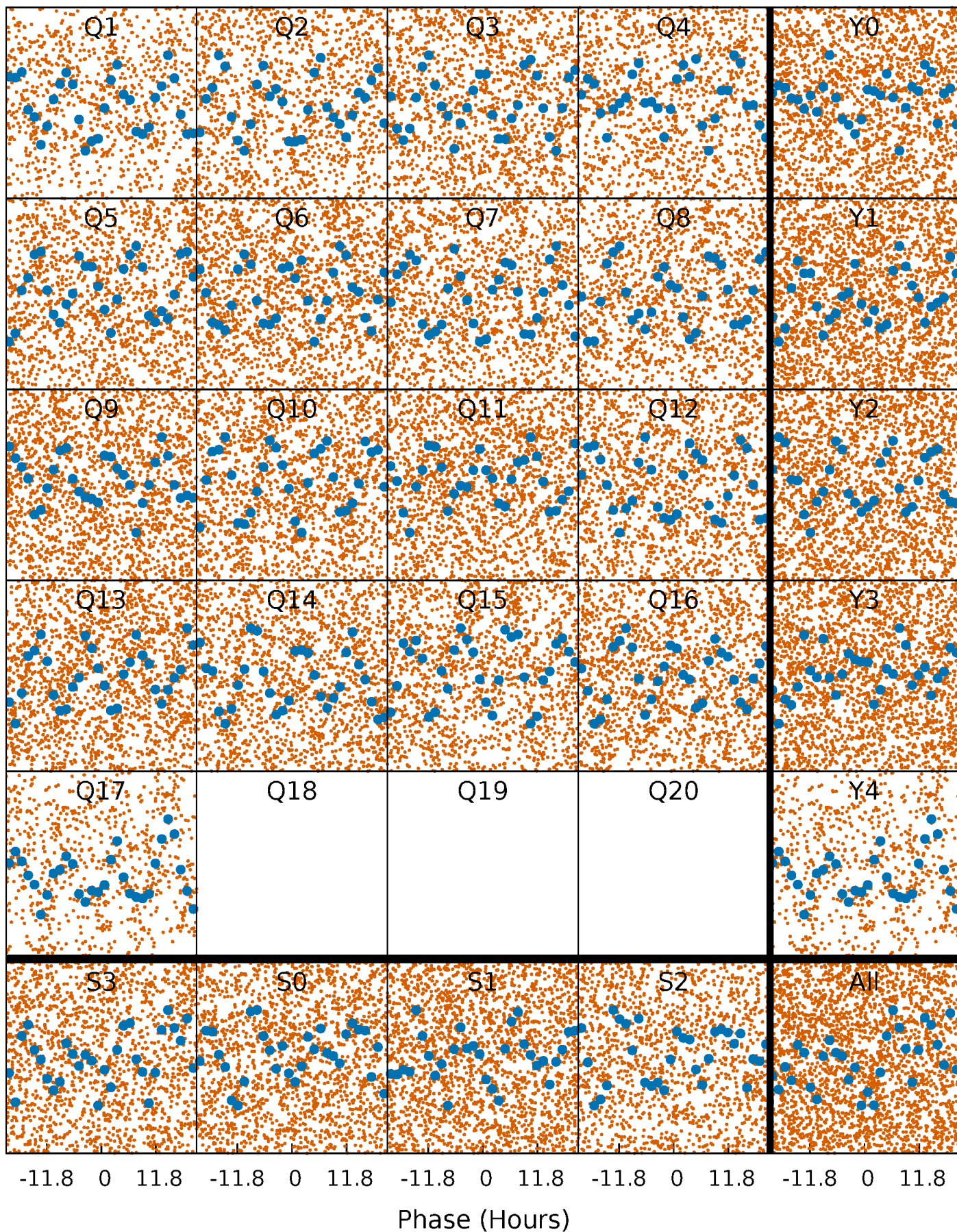


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



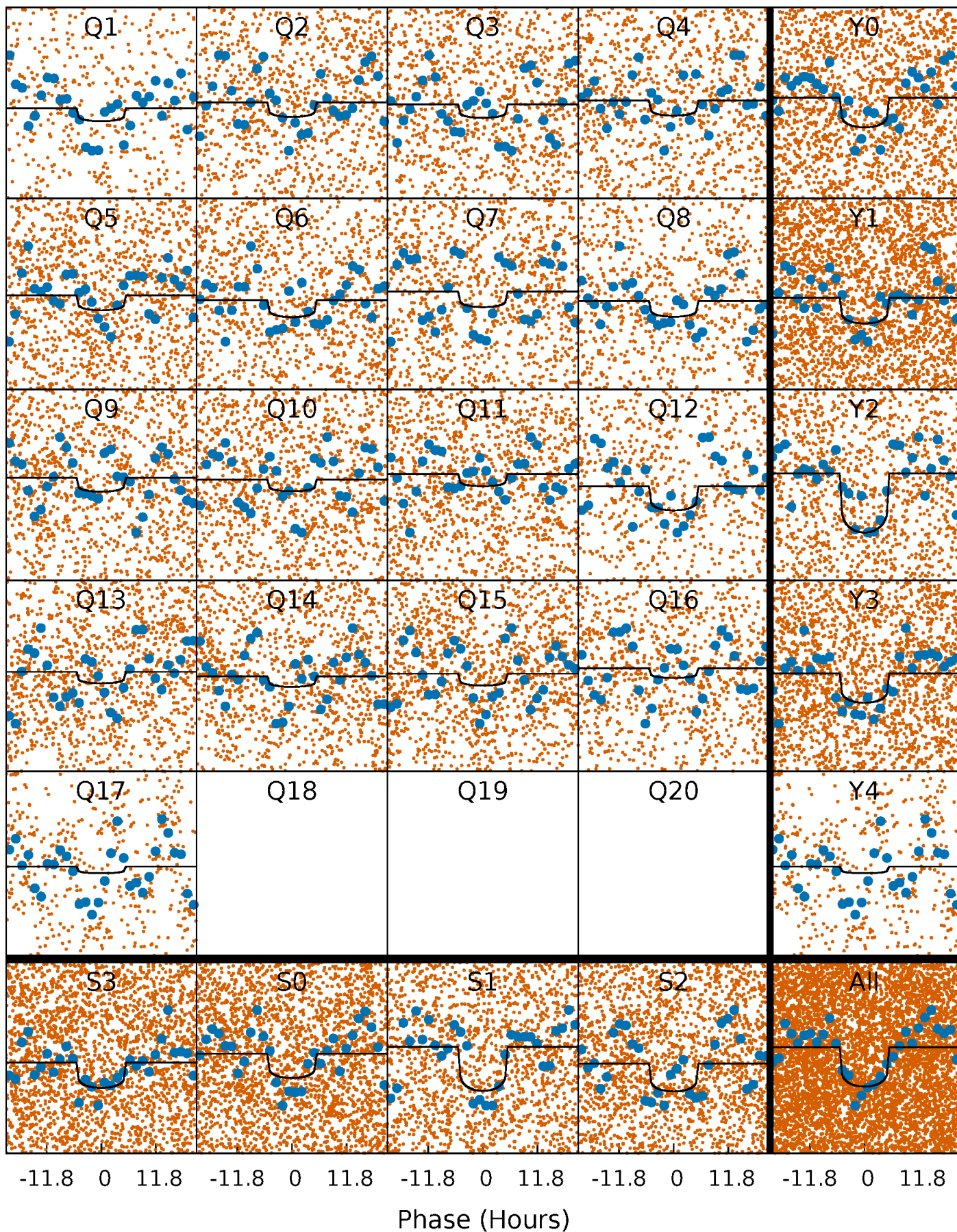
PDC Quarter-Phased Transit Curves

TCE 011824964-02 P= 2.244510 Days $T_0=133.739740$ (BKJD)



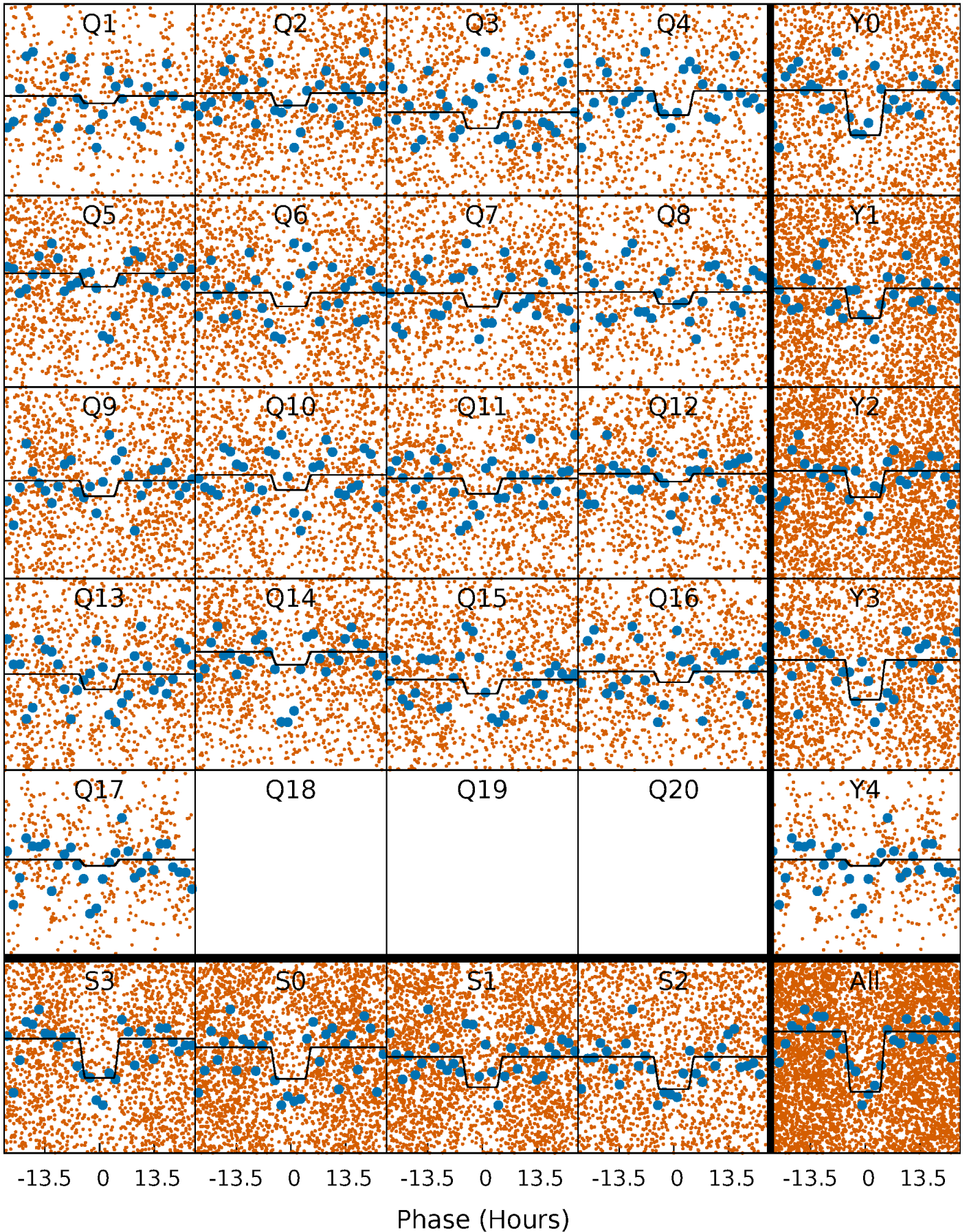
DV Quarter-Phased Transit Curves

TCE 011824964-02 P= 2.244510 Days $T_0=133.739740$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

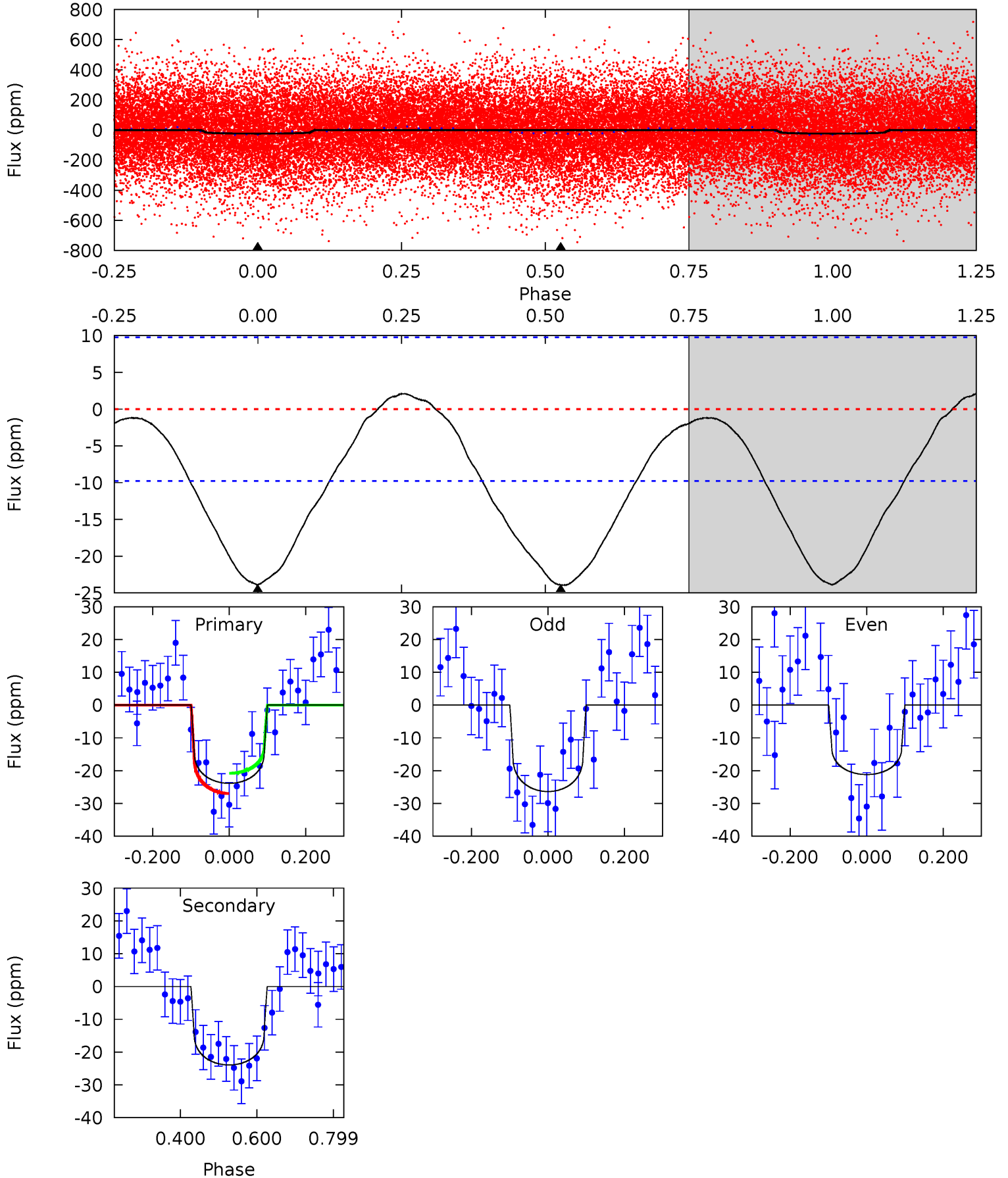
TCE 011824964-02 P= 2.244446 Days $T_0=133.705350$ (BKJD)



DV Model-Shift Uniqueness Test

011824964-02, P = 2.244510 Days, E = 131.495230 Days

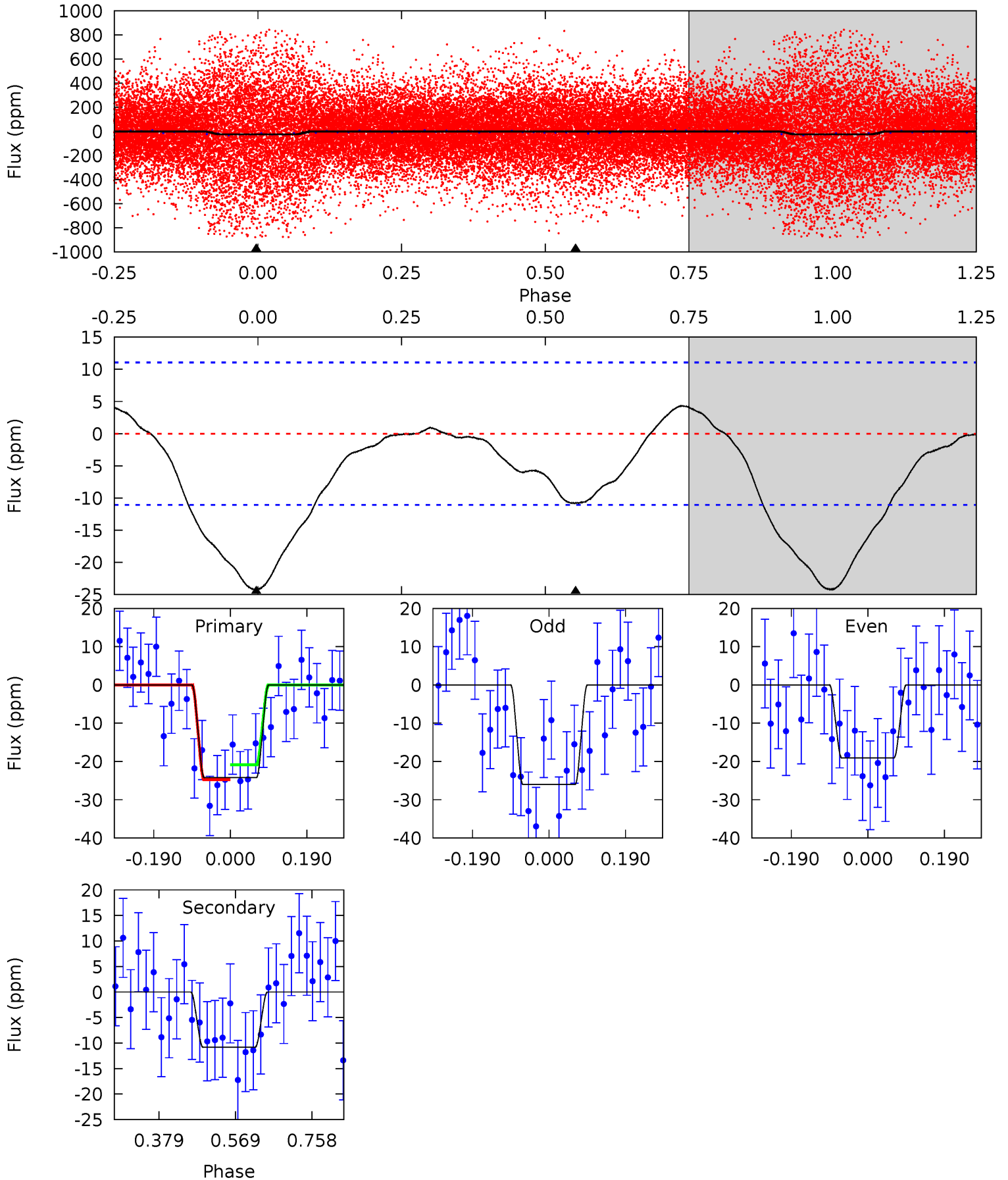
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	10.8	0	0	4.42	1.28	0.67	10.8	10.8	10.8	10.8	1.17	0.66	0.08	1.34



Alt Model-Shift Uniqueness Test

011824964-02, P = 2.244446 Days, E = 131.460904 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.68	4.32	0	0	4.43	1.31	0.64	9.68	9.68	4.32	4.32	1.37	0.61	0.15	0.77



Stellar Parameters For KIC 011824964

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7409^{+207}_{-337}	$3.982^{+0.216}_{-0.162}$	$0.000^{+0.200}_{-0.350}$	$2.219^{+0.518}_{-0.633}$	$1.724^{+0.186}_{-0.319}$	$0.222^{+0.284}_{-0.092}$
	+3%/-5%	+5%/-4%	+inf%/-inf%	+23%/-29%	+11%/-19%	+128%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011824964-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-24 ± 2	$1.04^{+0.52}_{-0.45}$	3377^{+239}_{-272}	7731^{+3682}_{-1418}	19^{+40}_{-10}
Alt.	-11 ± 3	$1.25^{+0.50}_{-0.43}$	3356^{+243}_{-270}	5599^{+1481}_{-752}	$6.023^{+7.904}_{-3.102}$

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 $A_{obs} \gg 1.0$

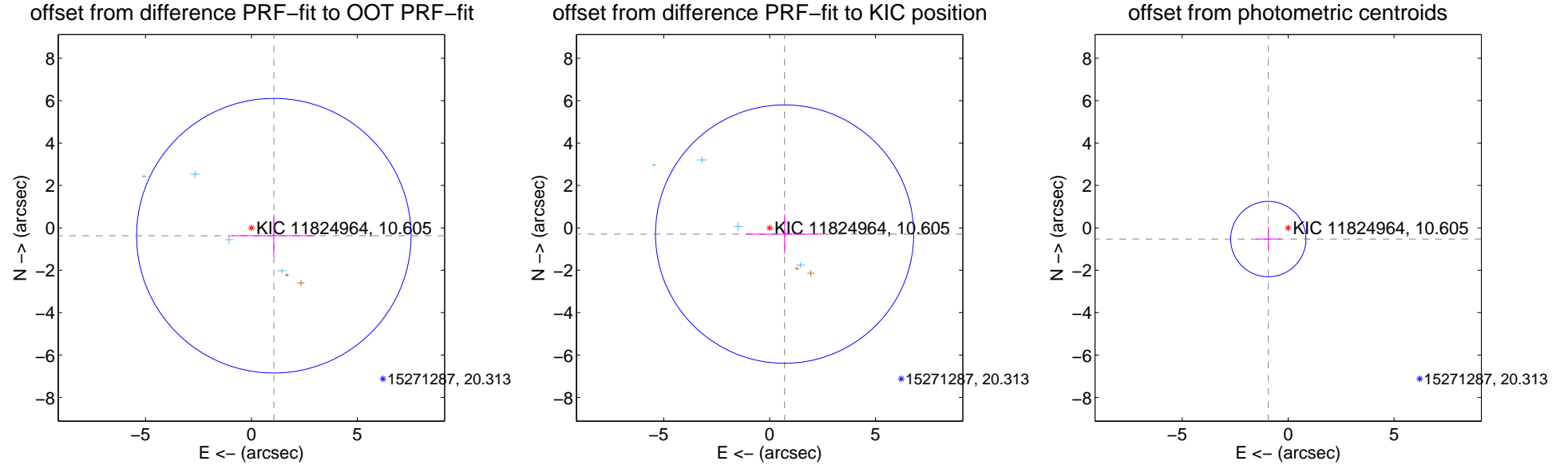
DV Centroid Data

Supplemental centroid analysis for 011824964-02. **Kepler magnitude: 10.61.** Transit SNR 7.52

There are 4 quarters with good PRF difference image offsets

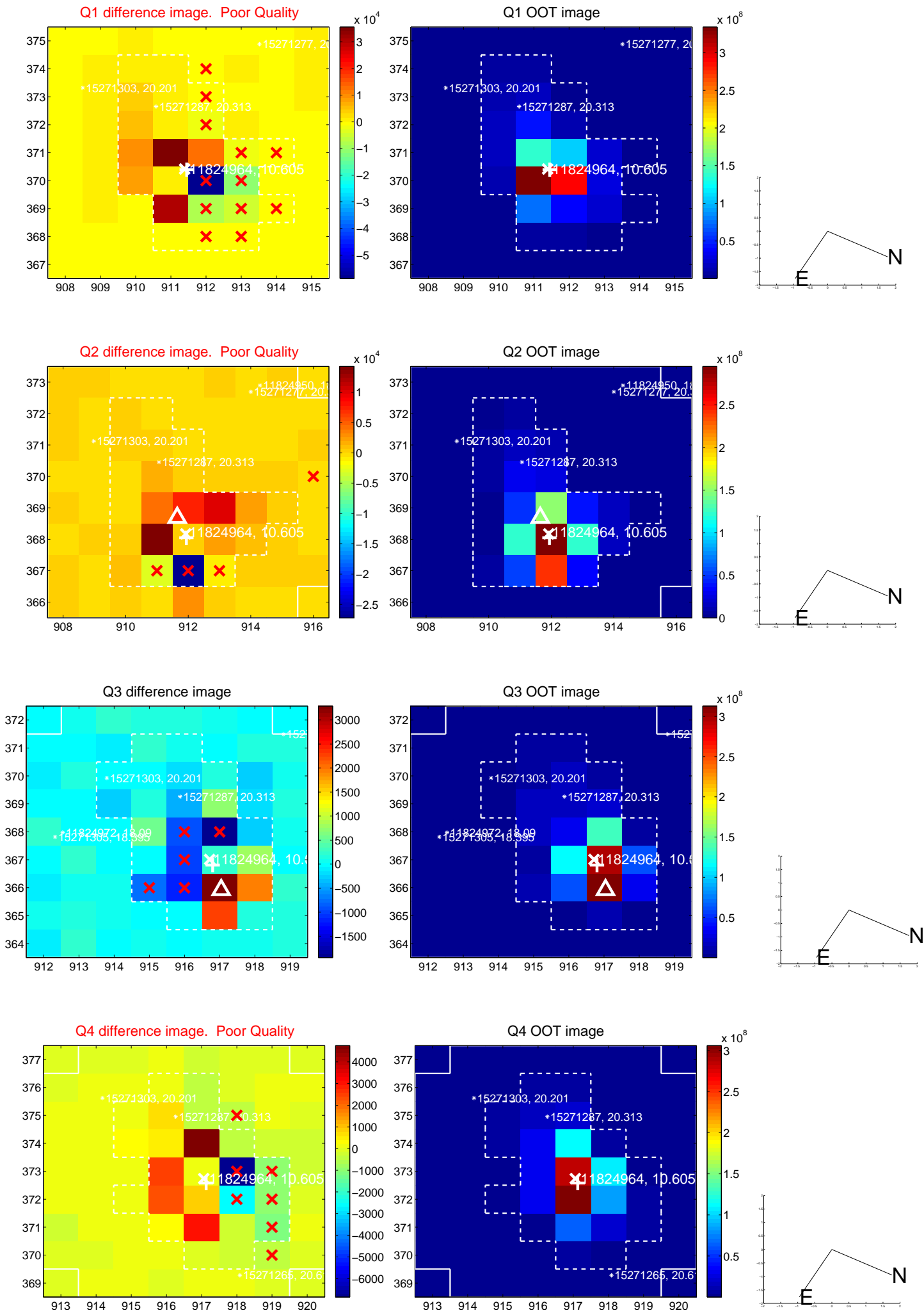
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.121 ± 2.159	0.52	-1.058 ± 1.962	-0.372 ± 0.991
PRF-fit source offset from KIC position	0.765 ± 2.031	0.38	-0.706 ± 1.849	-0.295 ± 0.918
photometric centroid source offset	1.08 ± 0.59	1.82	0.94 ± 0.60	-0.53 ± 0.58

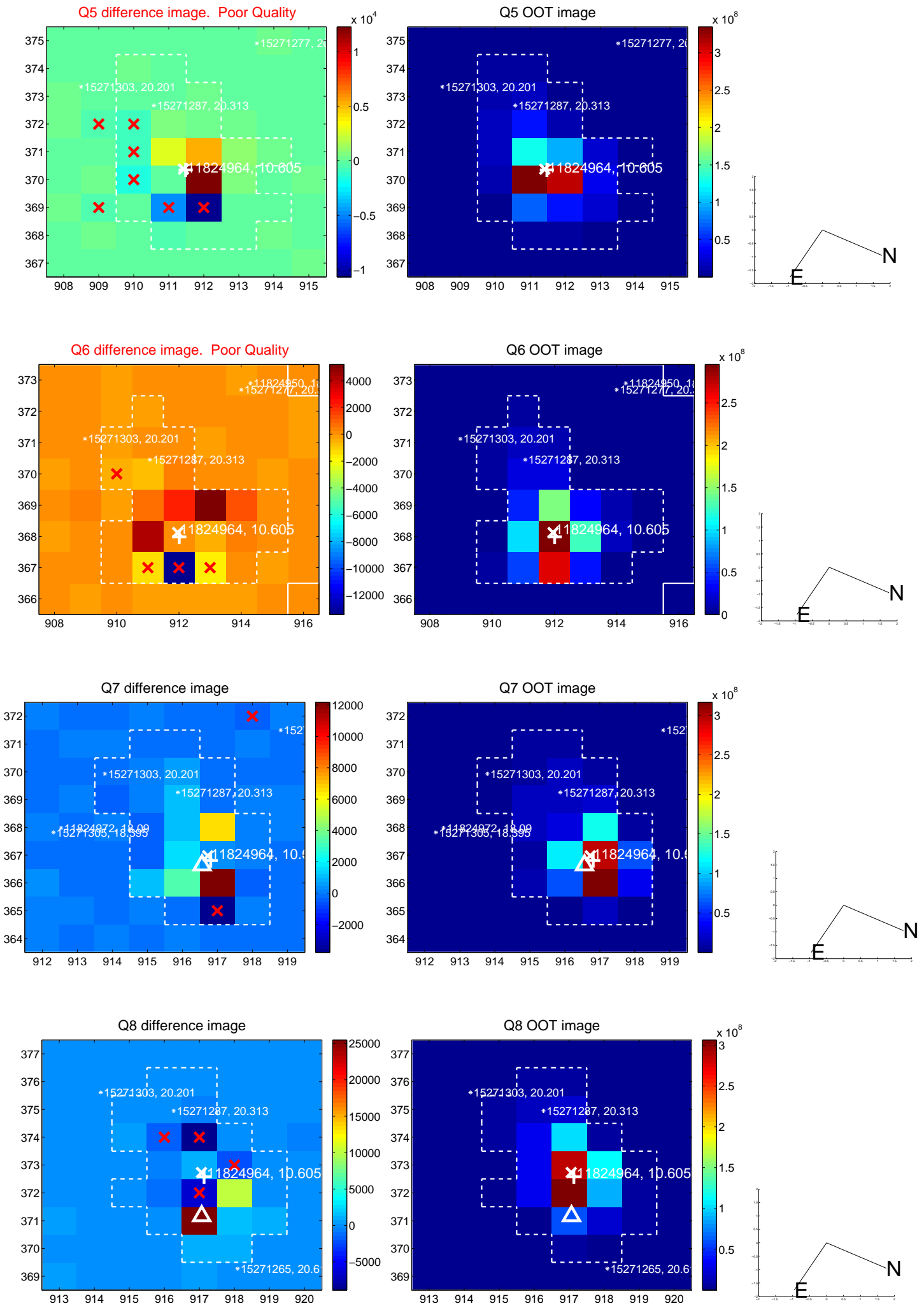


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

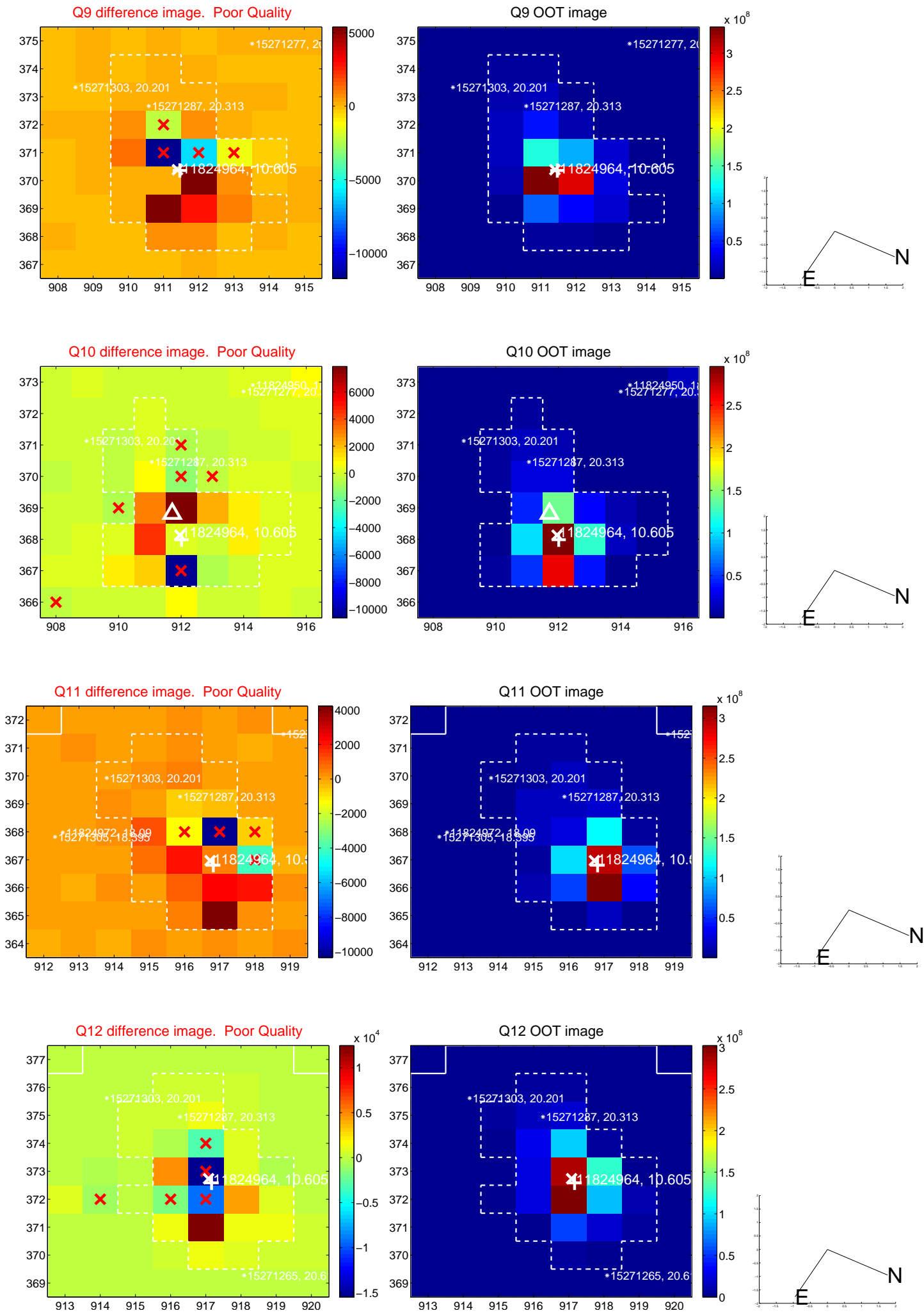
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



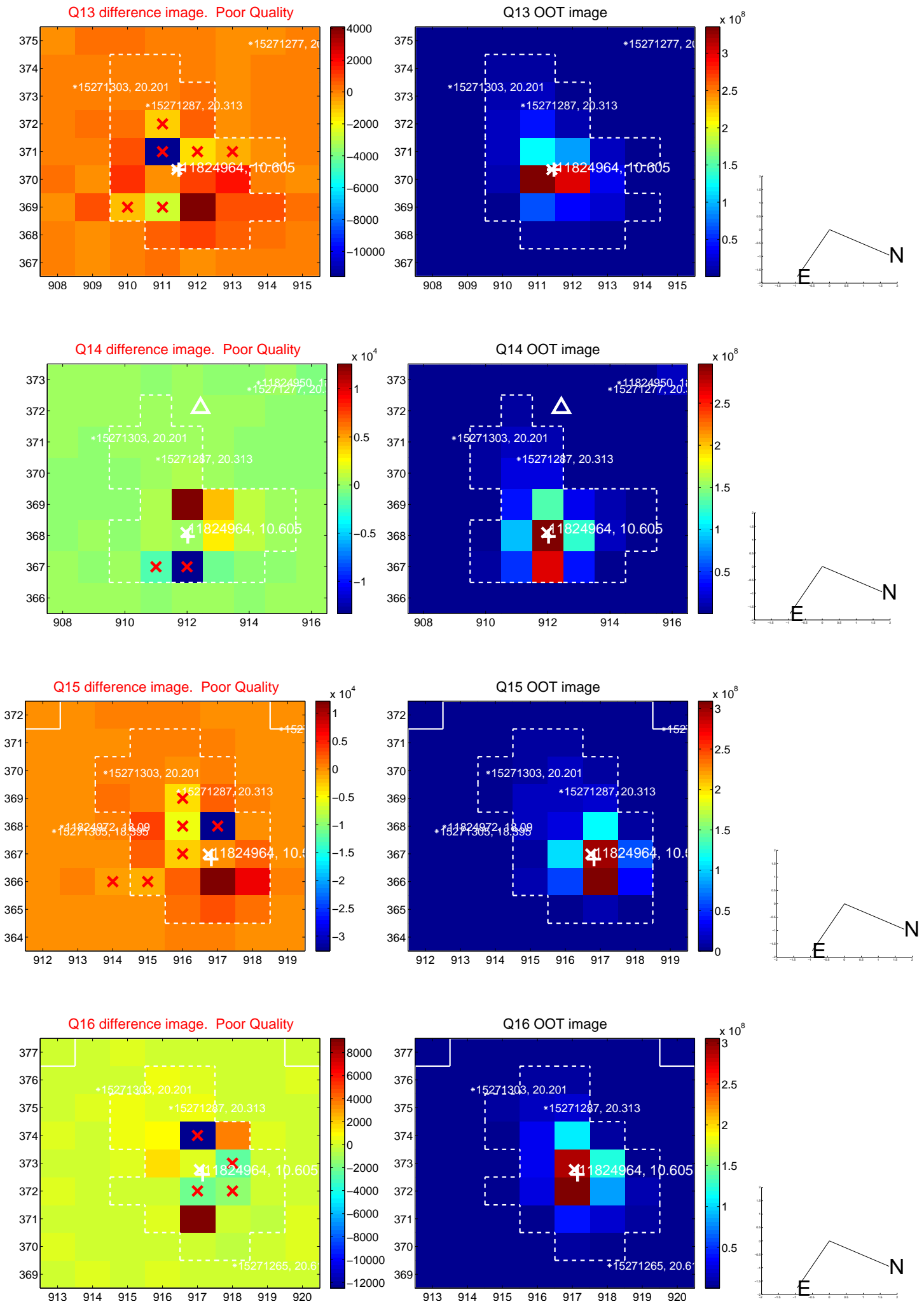
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



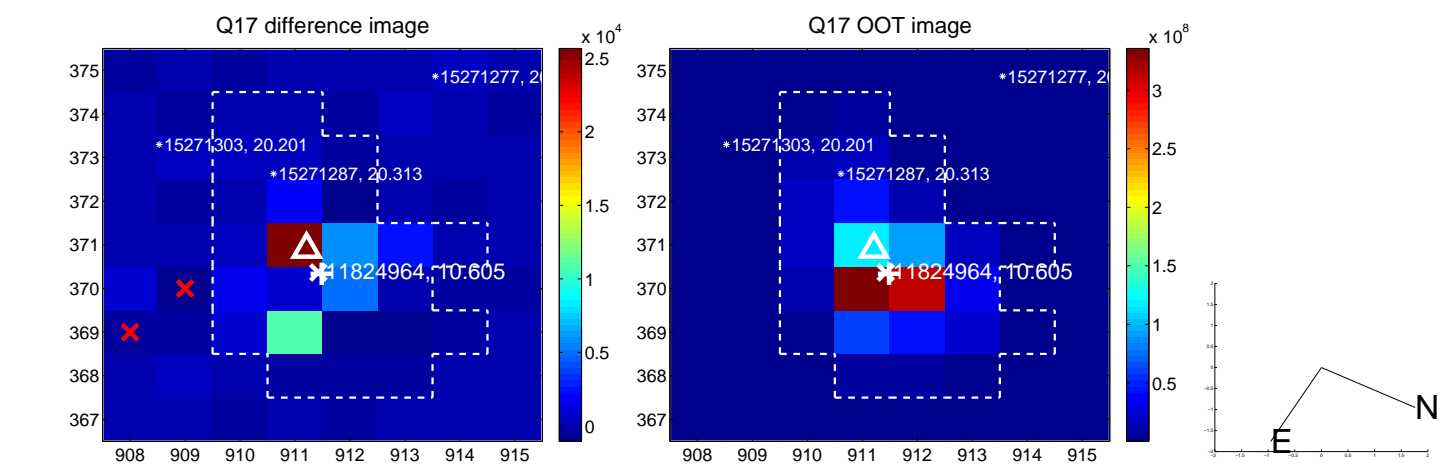
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



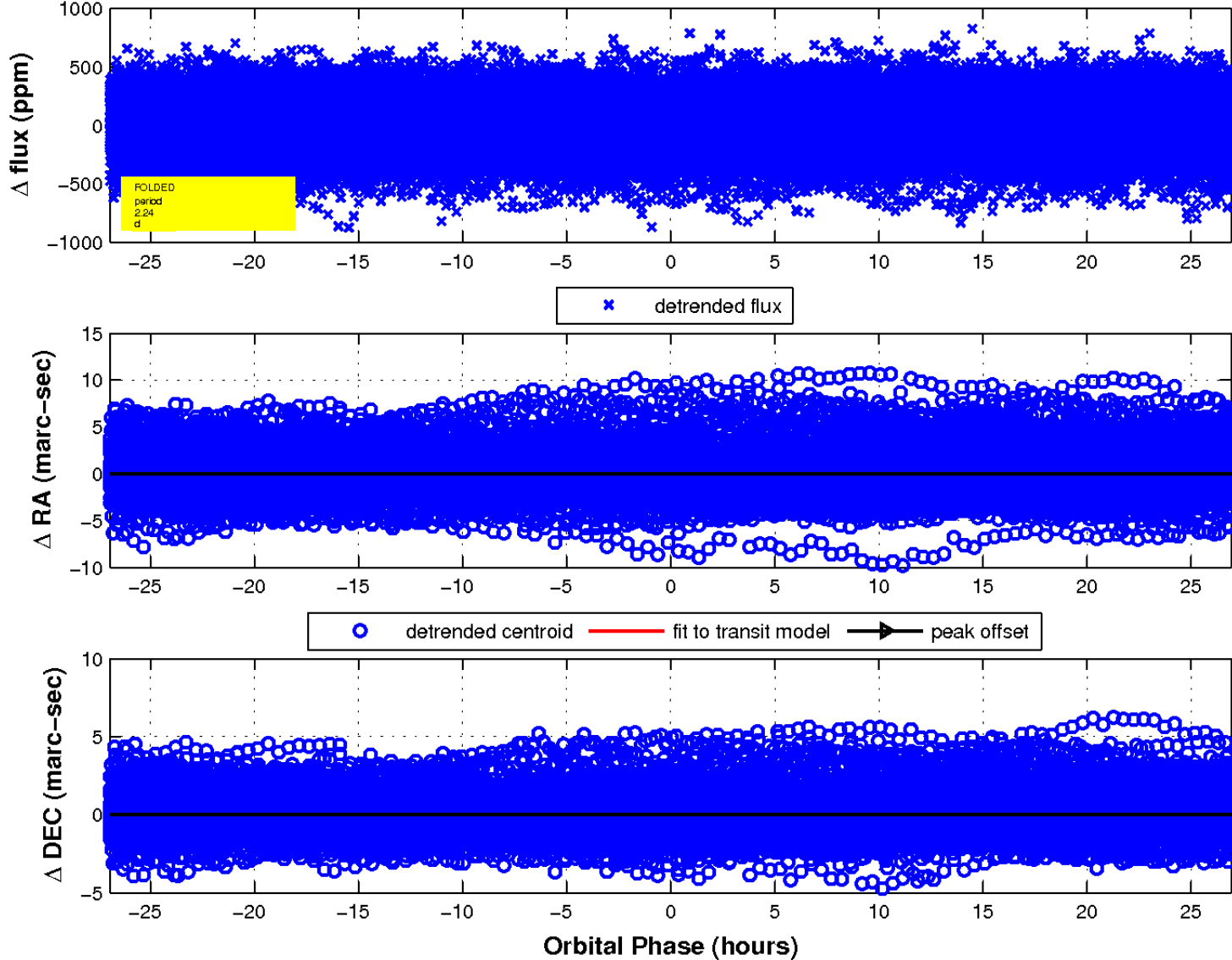
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

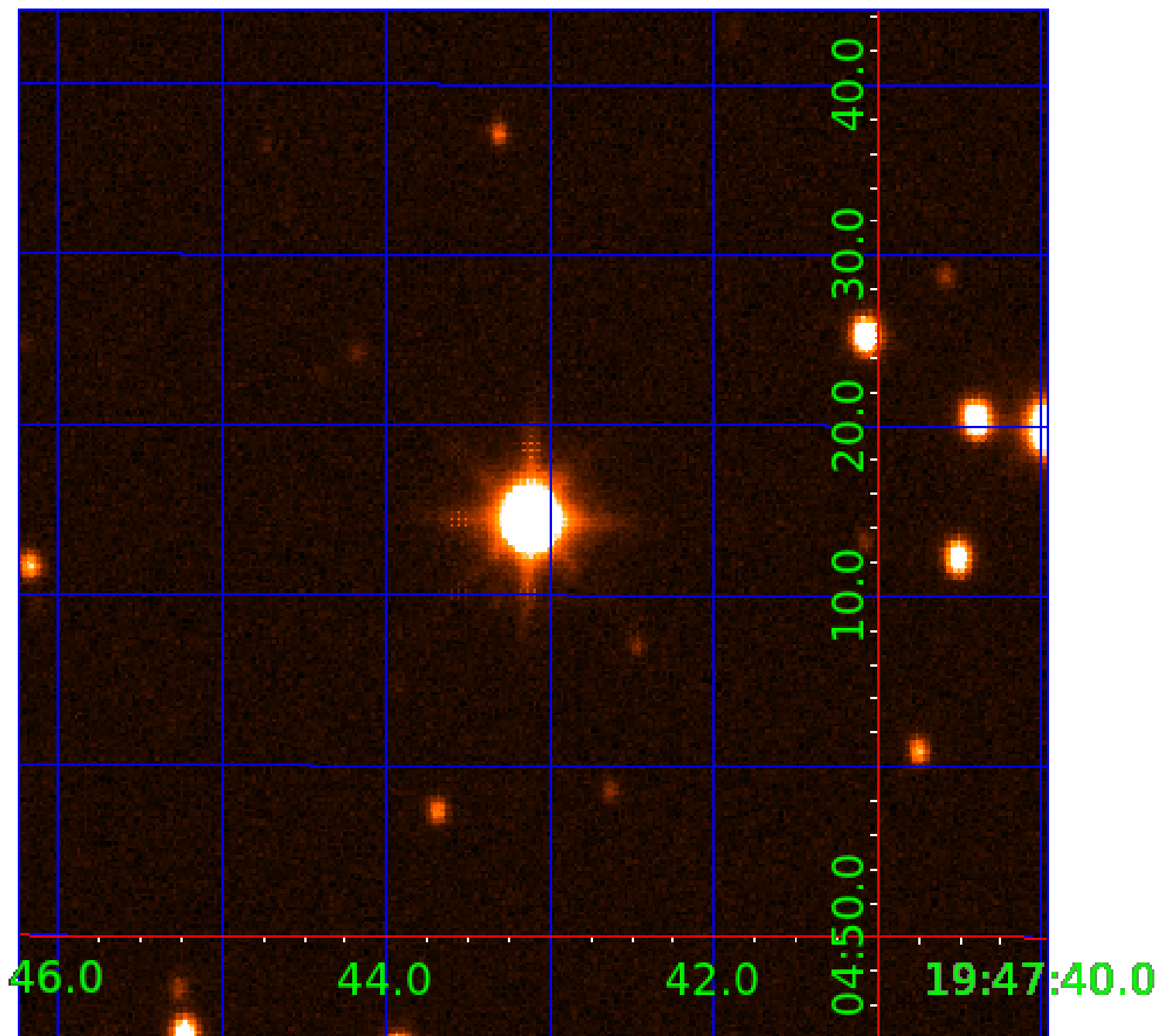


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 011824964

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})
011824964-01	OBS	No	0.909139	131.878474	23.8	3.538	8.8	11.0	2.22	7409	1.25	27407.15
011824964-02	OBS	No	2.244510	133.739740	22.4	10.321	9.4	7.5	2.22	7409	1.08	8213.76
011824964-03	OBS	No	1.803709	133.160241	71.0	8.259	12.2	12.3	2.22	7409	2.53	10993.83
011824964-04	OBS	No	28.740753	154.246615	217.9	3.667	7.7	7.9	2.22	7409	3.84	274.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011824964-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_SATURATED
011824964-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

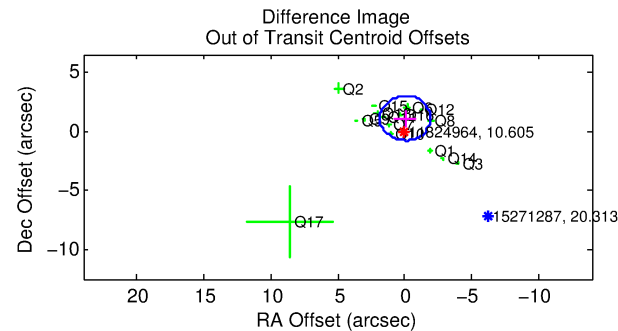
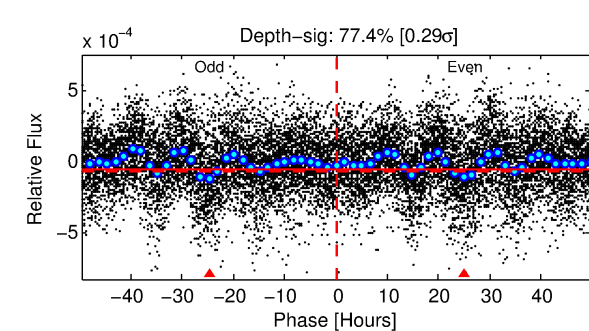
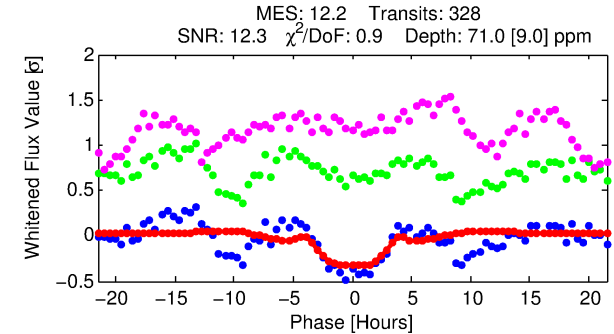
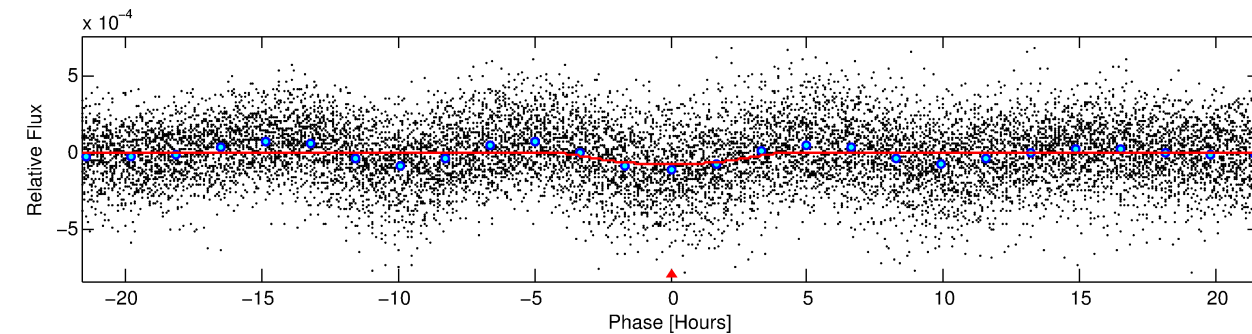
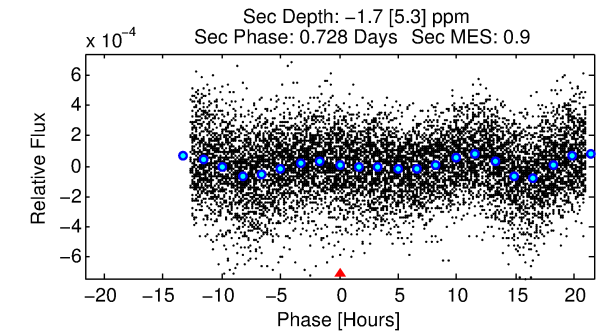
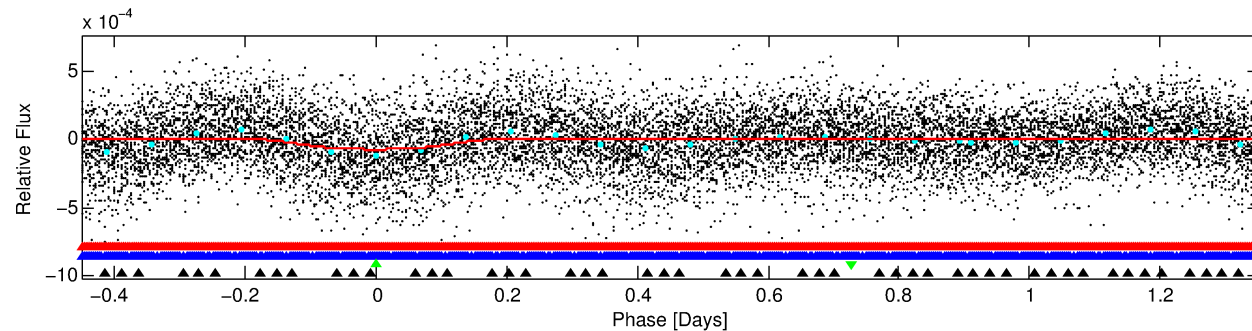
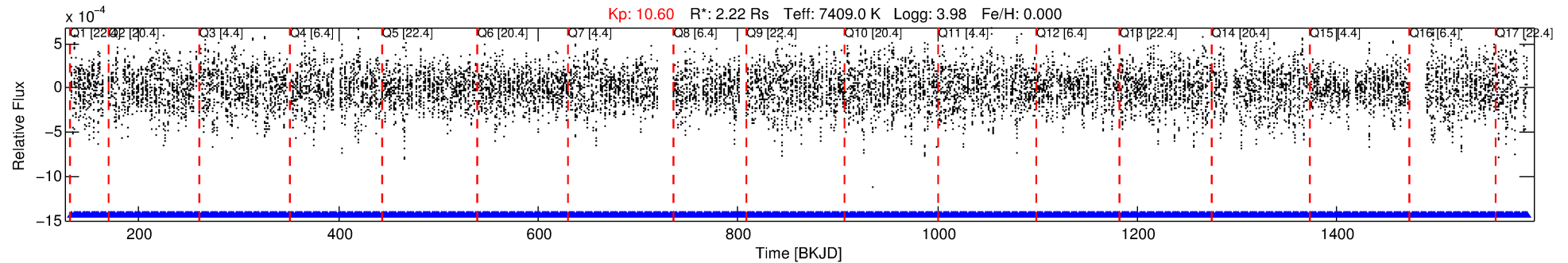
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011824964-03

No Significant Match Found

DV One-Page Summary

KIC: 11824964 Candidate: 3 of 4 Period: 1.804 d



DV Fit Results:

Period = 1.80371 [0.00003] d
Epoch = 133.1602 [0.0119] BKJD
Rp/R* = 0.0104 [0.0008]
a/R* = 1.05 [0.01]
b = 0.99 [0.00]
Seff = 10993.83 [4654.03]
Teq = 2611 [276] K
Rp = 2.53 [0.75] Re
a = 0.0348 [0.0088] AU
Ag = N/A
Teffp = N/A

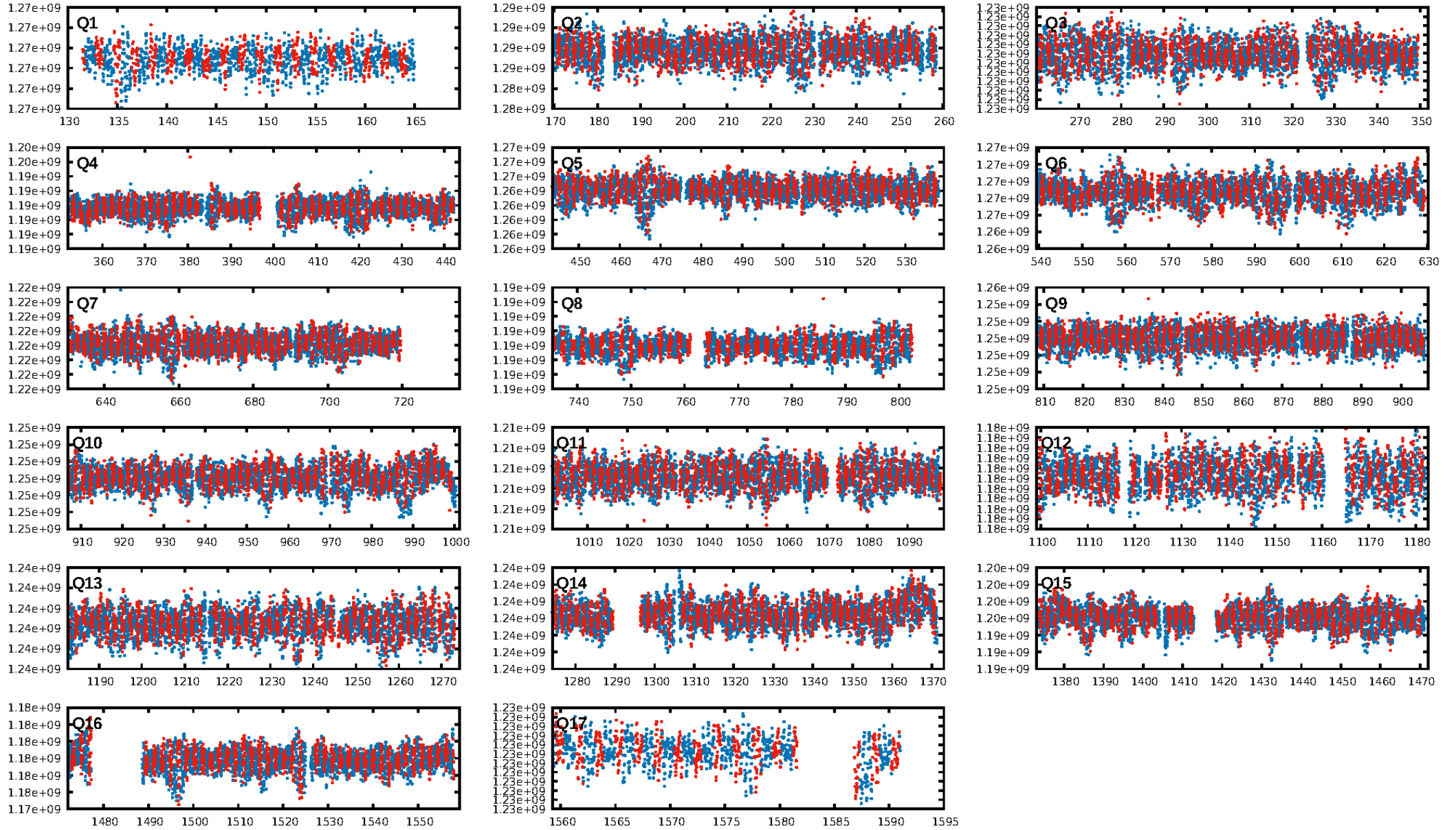
DV Diagnostic Results:

ShortPeriod-sig: 98.3% [2.39σ]
LongPeriod-sig: 57.6% [0.80σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.29e-19
RollingBand-fgt: 1.00 [311/311]
GhostDiagnostic-chr: 2.041
Centroid-sig: 19.9%
Centroid-so: 0.238 arcsec [1.01σ]
OotOffset-rm: 1.101 arcsec [1.75σ]
KicOffset-rm: 1.614 arcsec [2.53σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.56 [9/16]
DiffImageOverlap-fno: 0.00 [0/17]

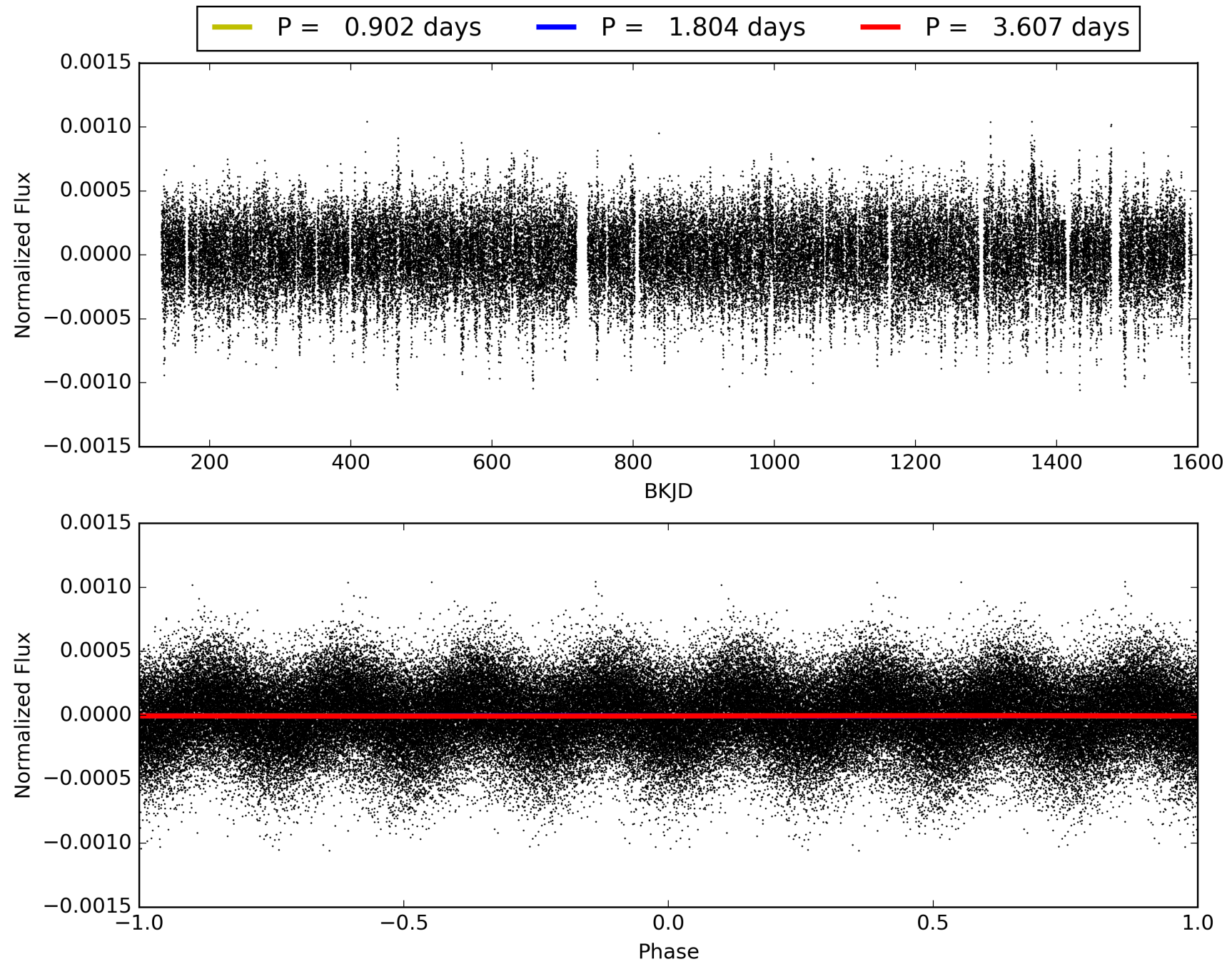
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:19:57 Z

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

TCE 011824964-03, PDC Light Curves

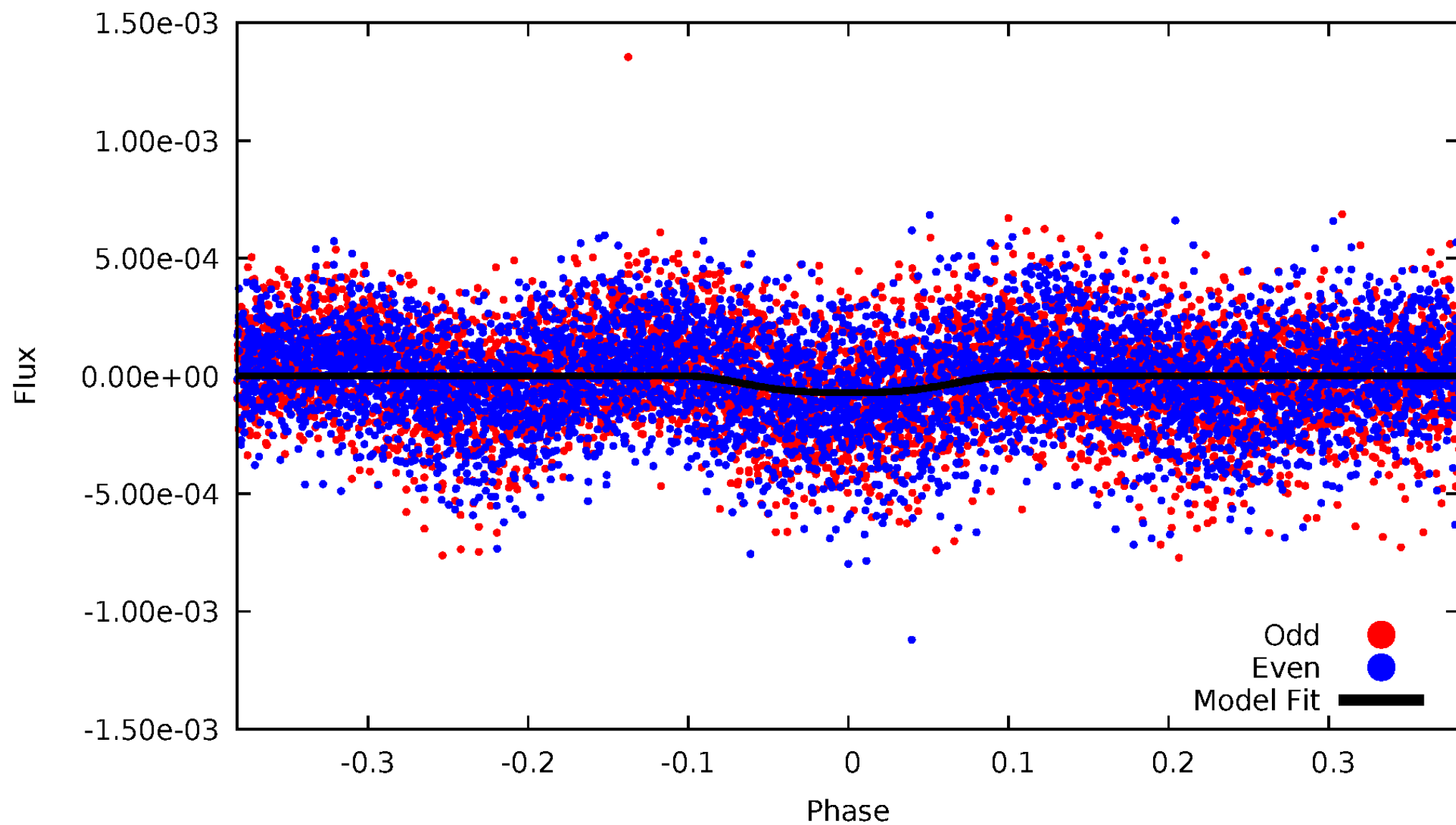


TCE 011824964-03



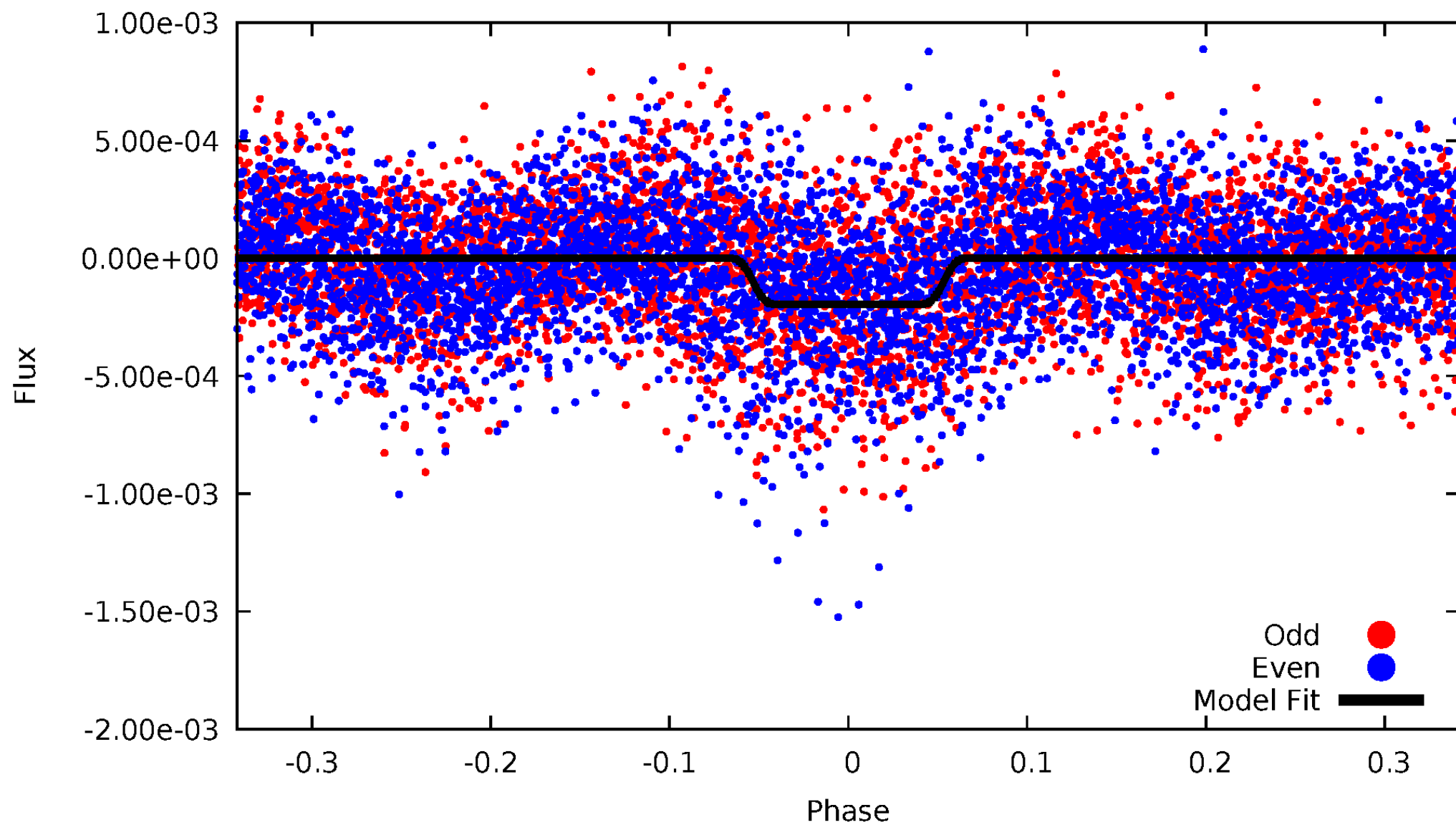
DV Odd/Even

TCE 011824964-03

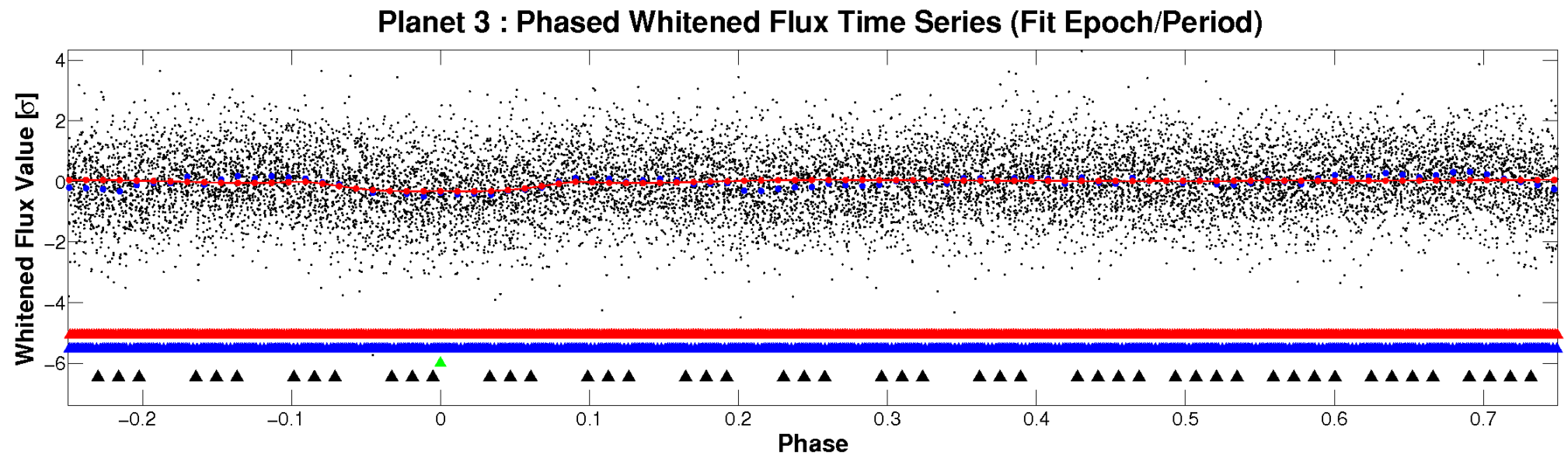
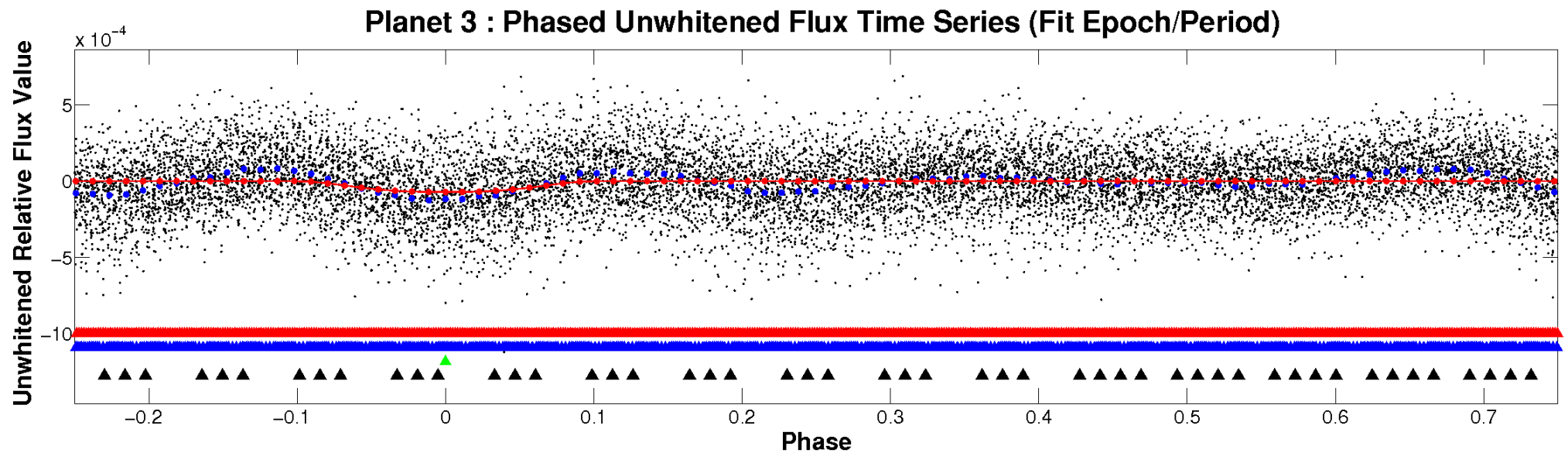


ALT Odd/Even

TCE 011824964-03

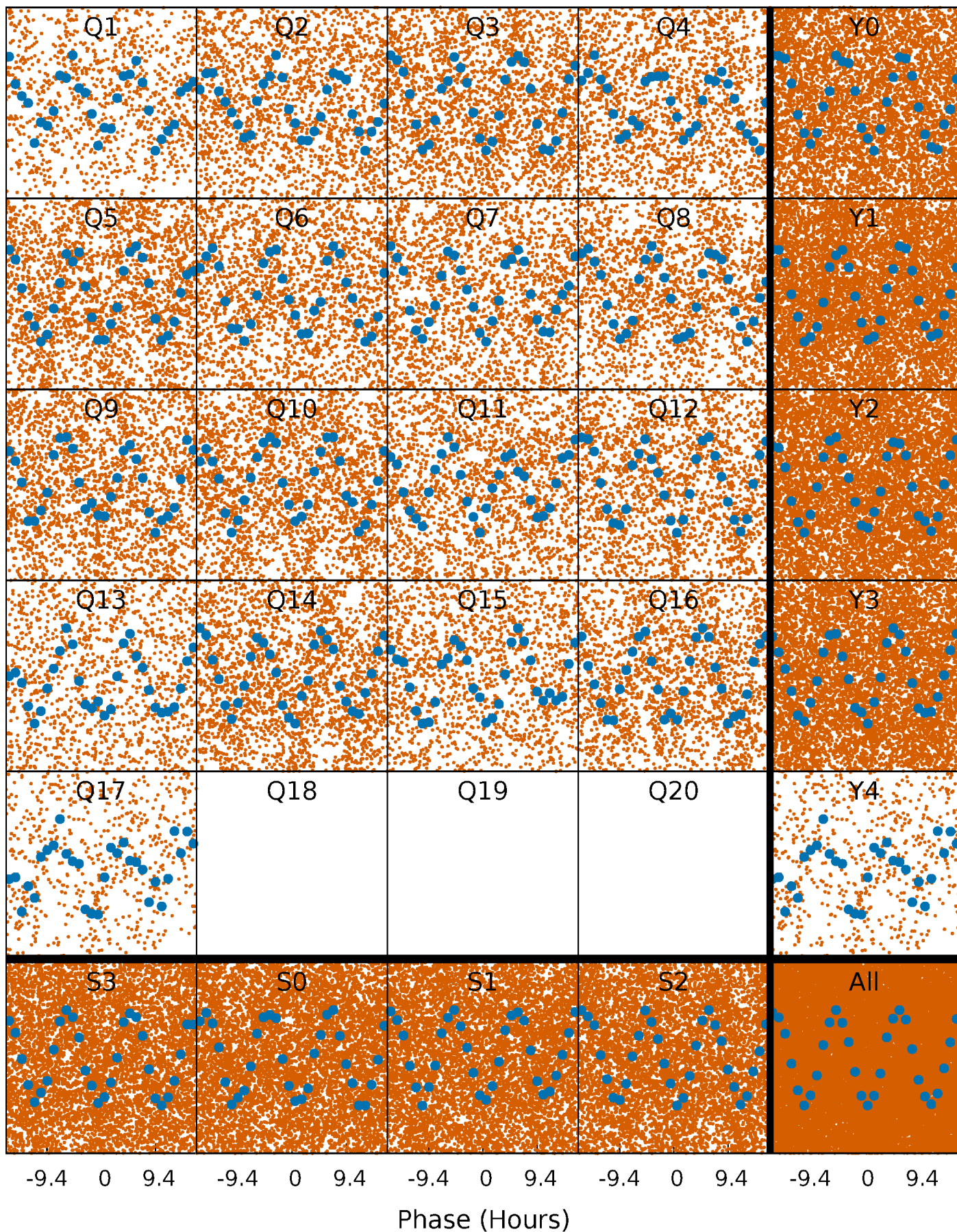


Non-Whitened Vs. Whitened Light Curve



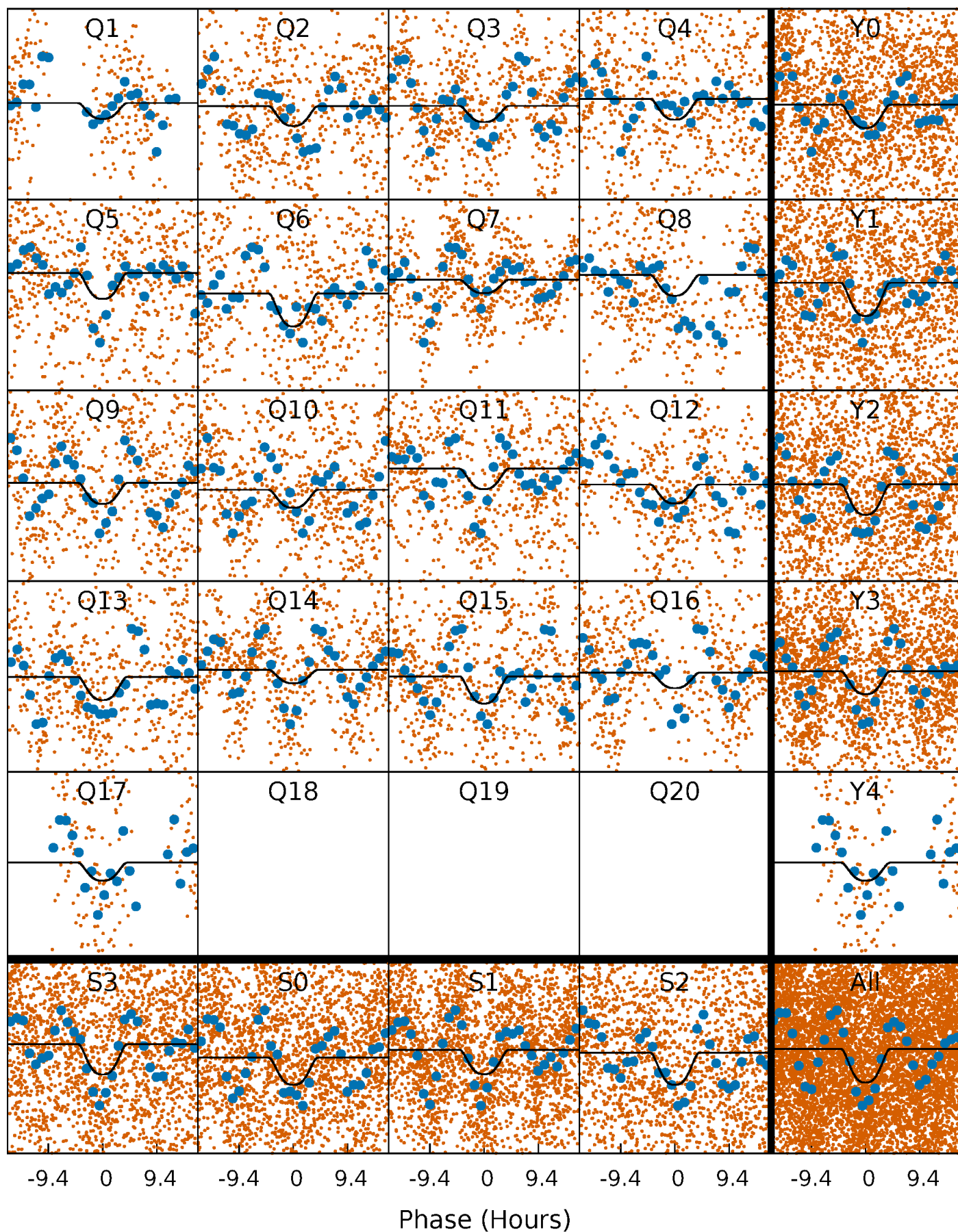
PDC Quarter-Phased Transit Curves

TCE 011824964-03 P= 1.803709 Days $T_0=133.160241$ (BKJD)



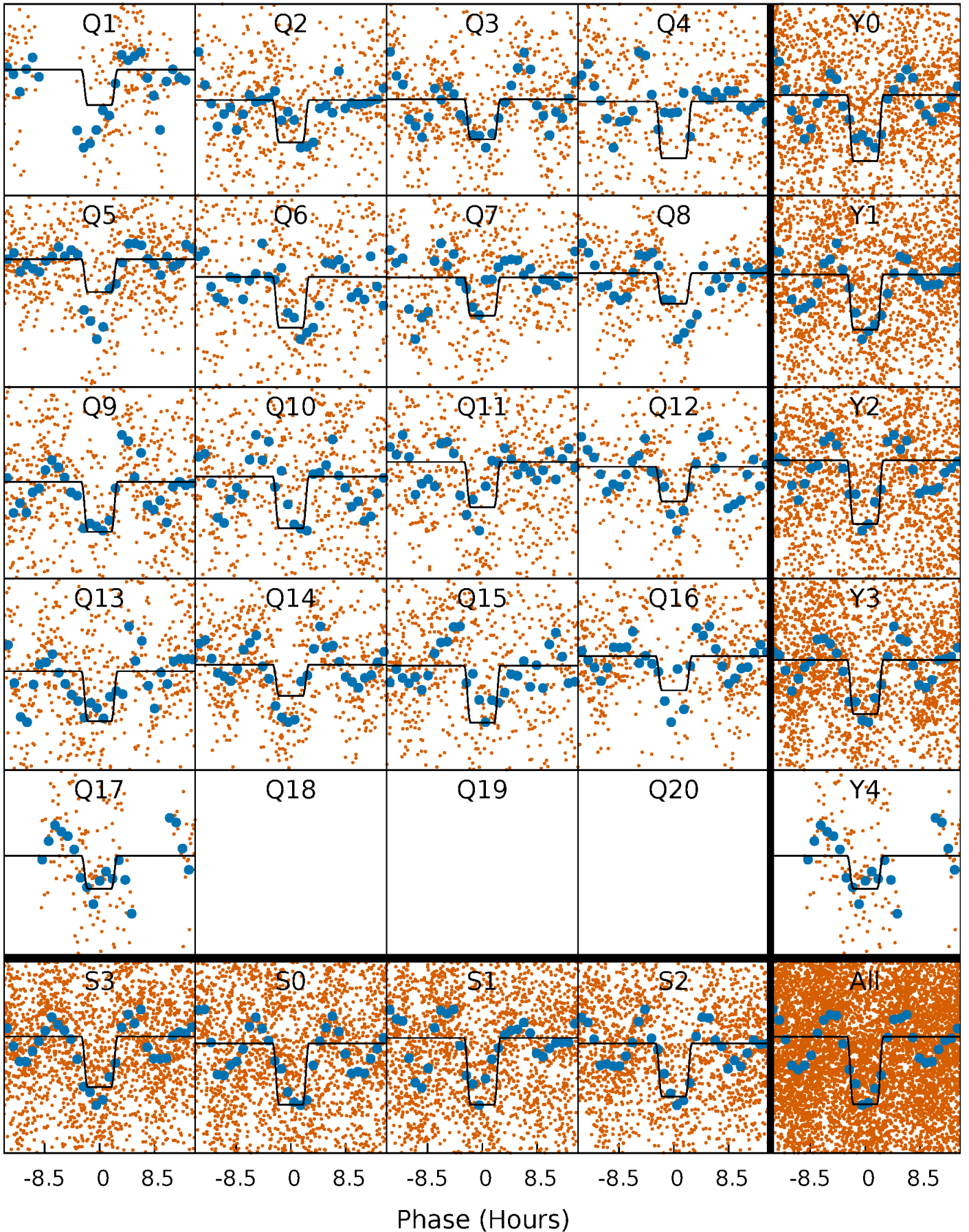
DV Quarter-Phased Transit Curves

TCE 011824964-03 P= 1.803709 Days $T_0=133.160241$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

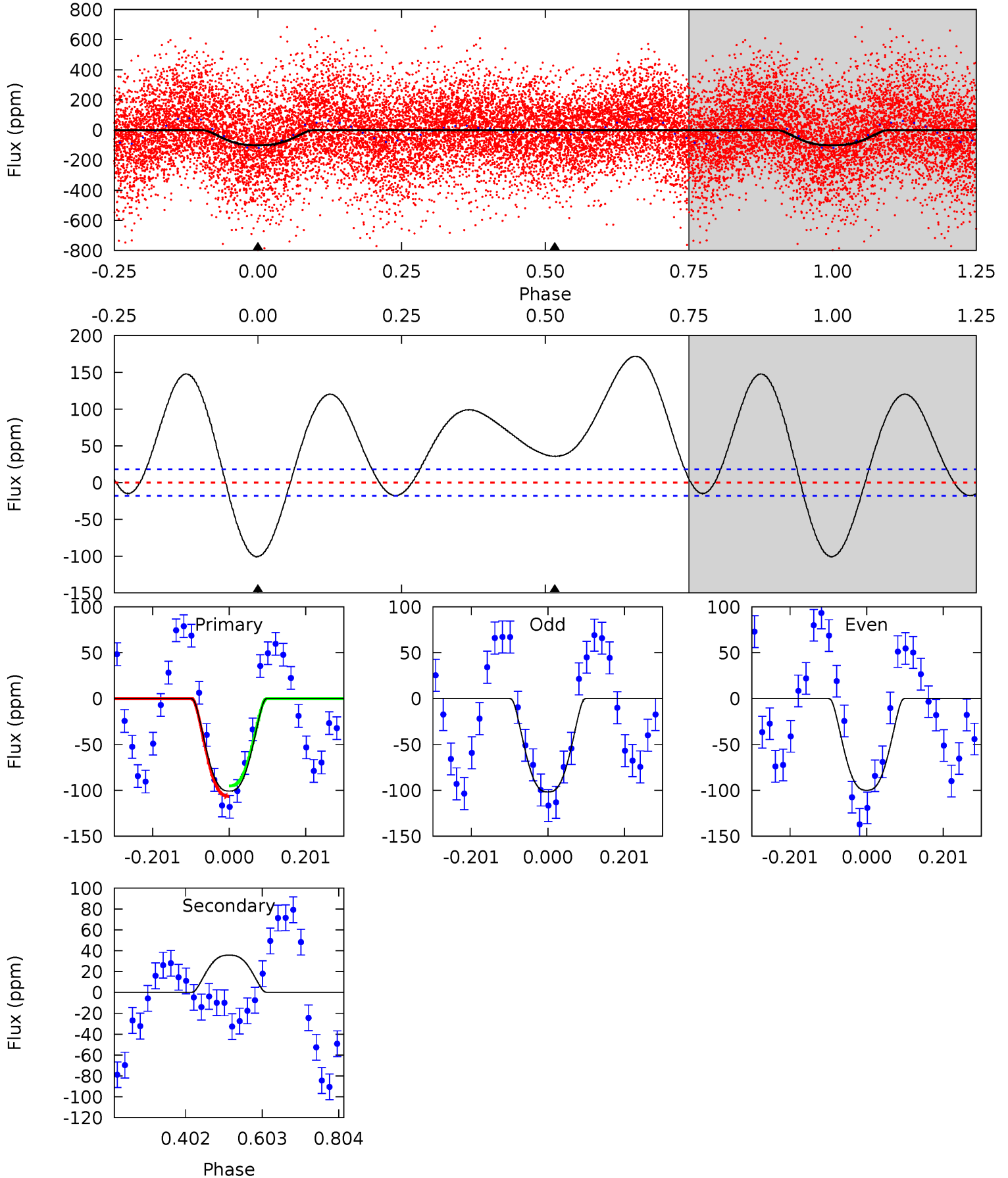
TCE 011824964-03 P= 1.803711 Days $T_0=133.169816$ (BKJD)



DV Model-Shift Uniqueness Test

011824964-03, P = 1.803709 Days, E = 131.356532 Days

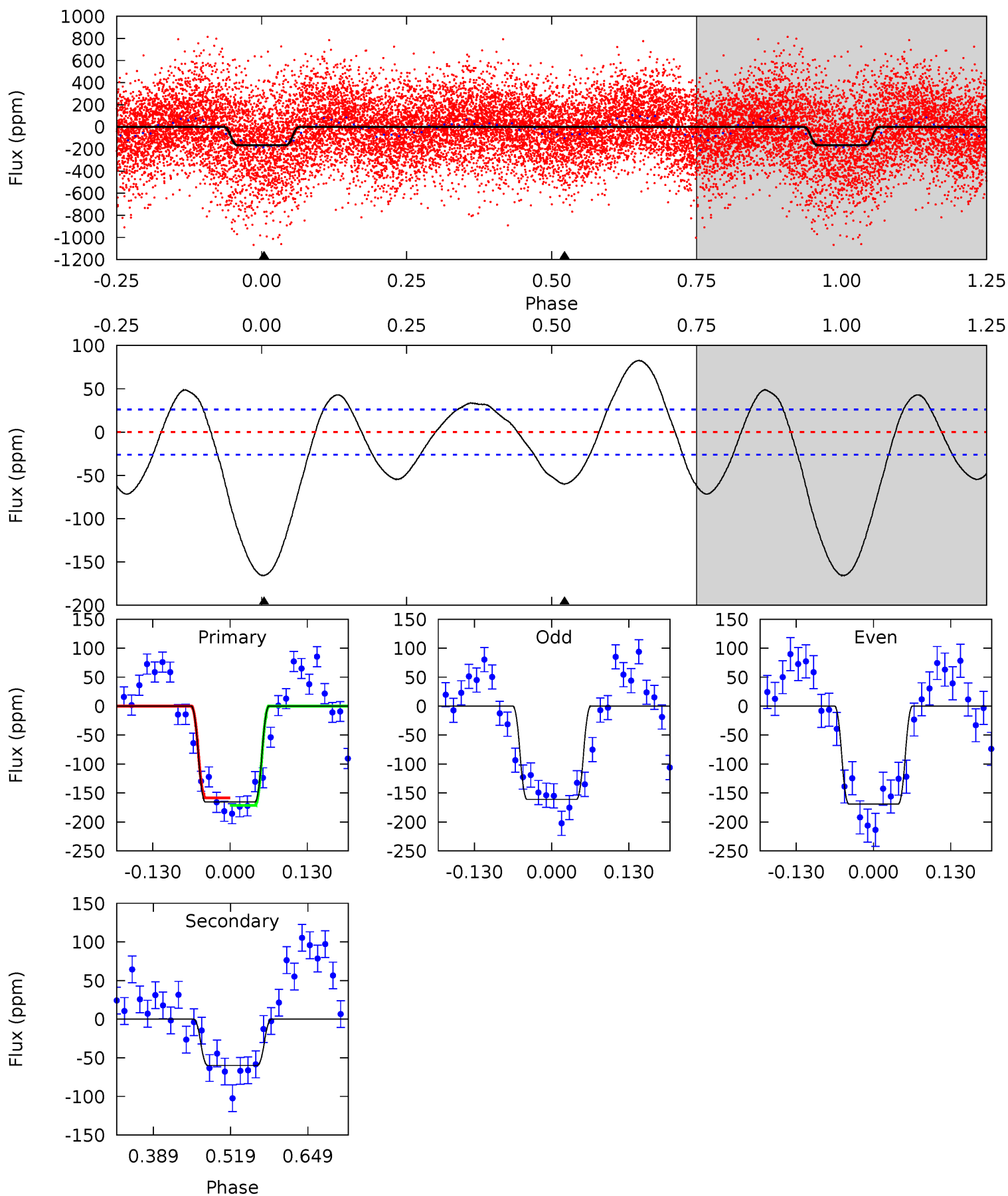
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.6	-8.71	0	0	4.42	1.28	6.26	24.6	24.6	-8.71	-8.71	0.22	0.14	0.63	1.38



Alt Model-Shift Uniqueness Test

011824964-03, P = 1.803711 Days, E = 131.366105 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	10.3	0	0	4.51	1.51	7.08	28.6	28.6	10.3	10.3	0.69	1.08	0.33	1.13



Stellar Parameters For KIC 011824964

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7409^{+207}_{-337}	$3.982^{+0.216}_{-0.162}$	$0.000^{+0.200}_{-0.350}$	$2.219^{+0.518}_{-0.633}$	$1.724^{+0.186}_{-0.319}$	$0.222^{+0.284}_{-0.092}$
	+3%/-5%	+5%/-4%	+inf%/-inf%	+23%/-29%	+11%/-19%	+128%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011824964-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	36 ± 4	$2.49^{+0.43}_{-0.42}$	3613^{+261}_{-311}	-5638^{+293}_{-308}	$-3.791^{+1.077}_{-1.731}$
Alt.	-60 ± 6	$3.32^{+0.51}_{-0.51}$	3615^{+270}_{-289}	5342^{+241}_{-250}	$3.543^{+1.370}_{-0.921}$

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 $A_{obs} \gg 1.0$

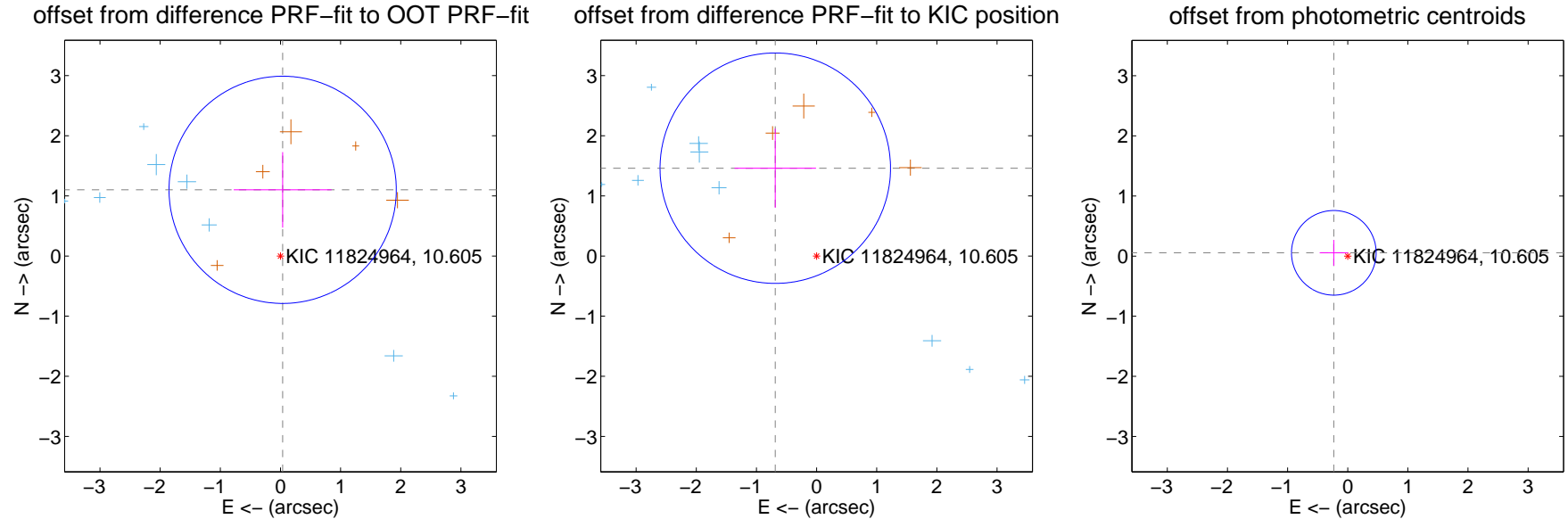
DV Centroid Data

Supplemental centroid analysis for 011824964-03. **Kepler magnitude: 10.61.** Transit SNR 12.27

There are 9 quarters with good PRF difference image offsets

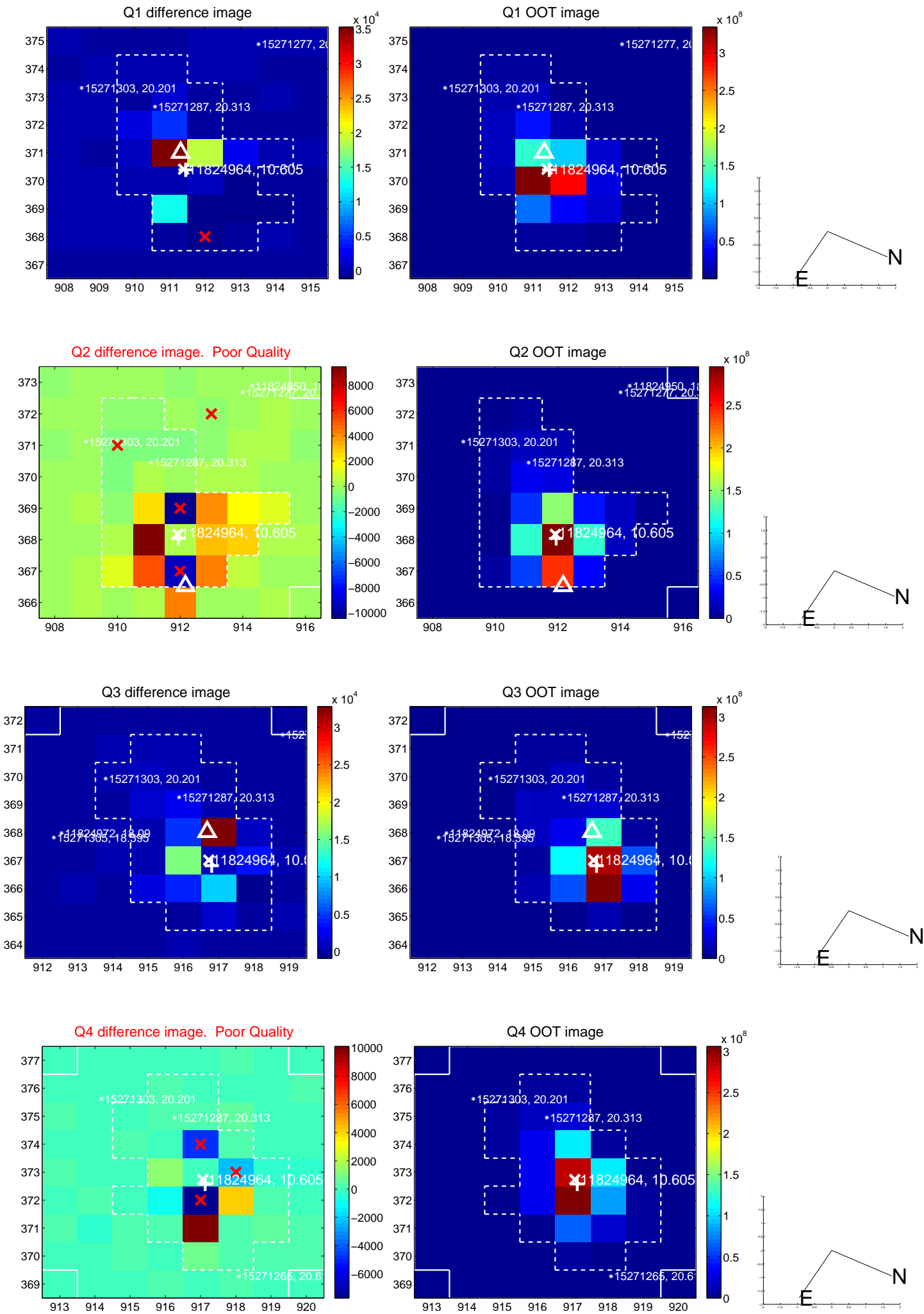
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.101 ± 0.630	1.75	-0.037 ± 0.813	1.101 ± 0.628
PRF-fit source offset from KIC position	1.614 ± 0.639	2.53	0.687 ± 0.678	1.461 ± 0.658
photometric centroid source offset	0.24 ± 0.23	1.01	0.23 ± 0.24	0.05 ± 0.21

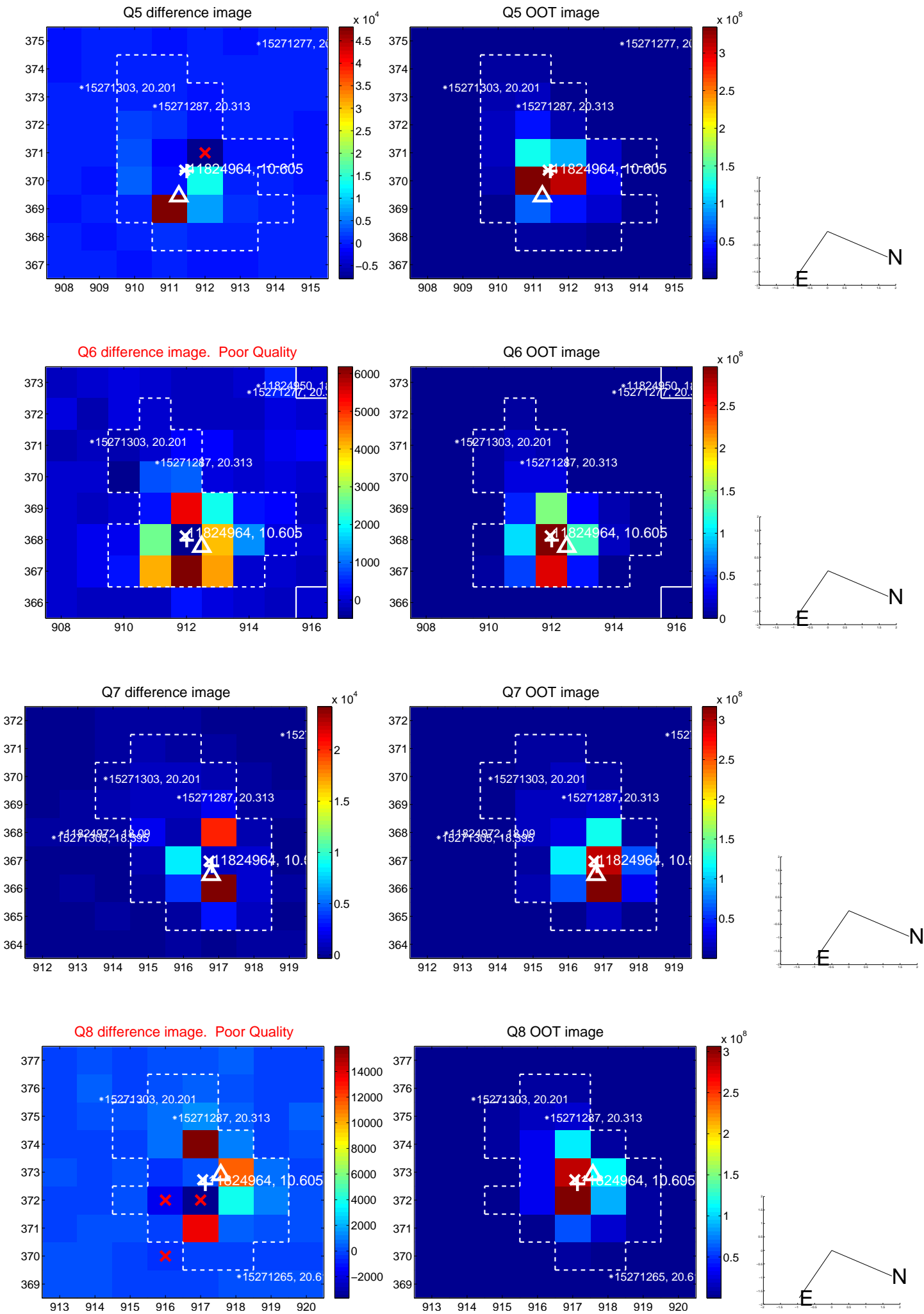


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

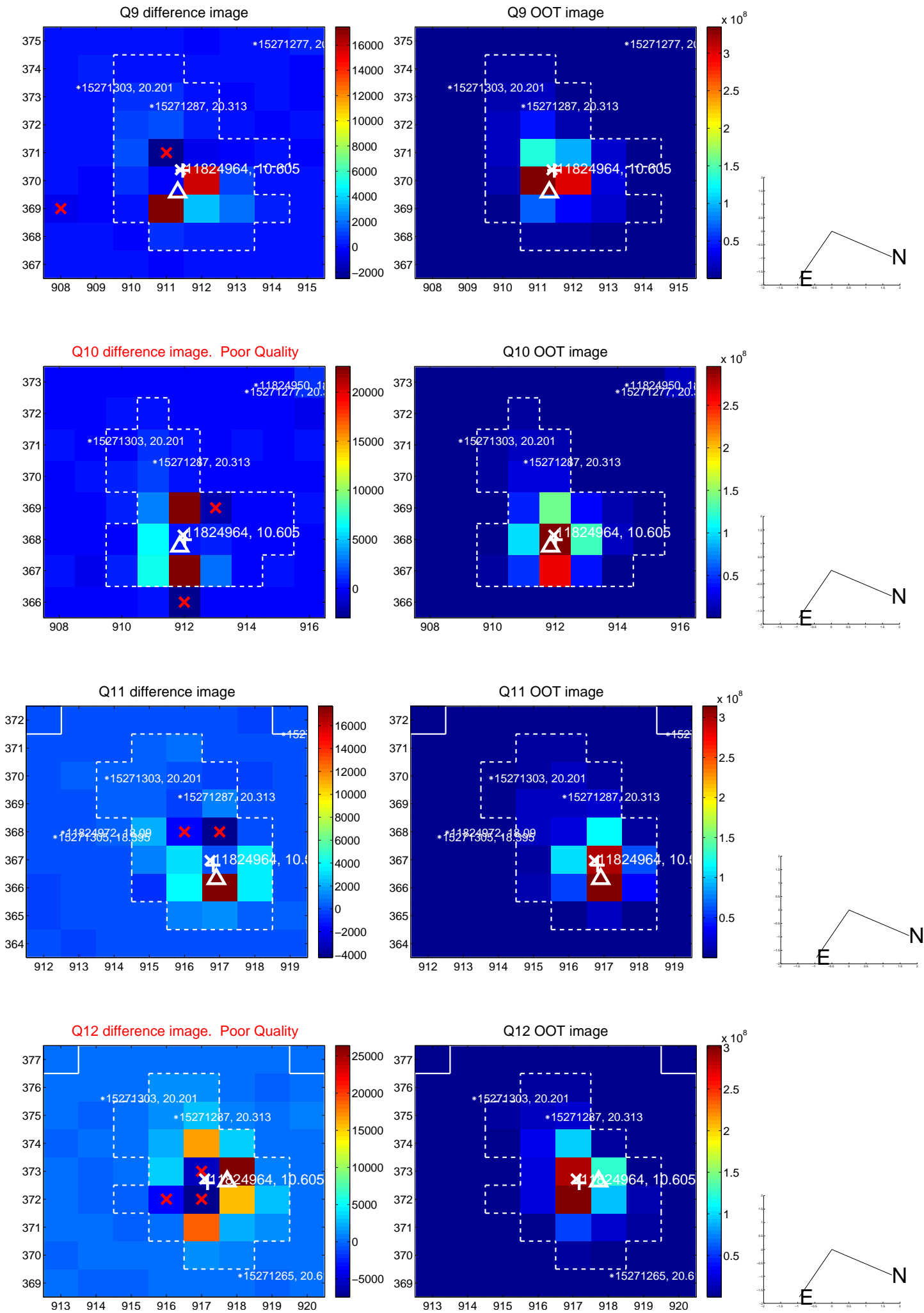
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



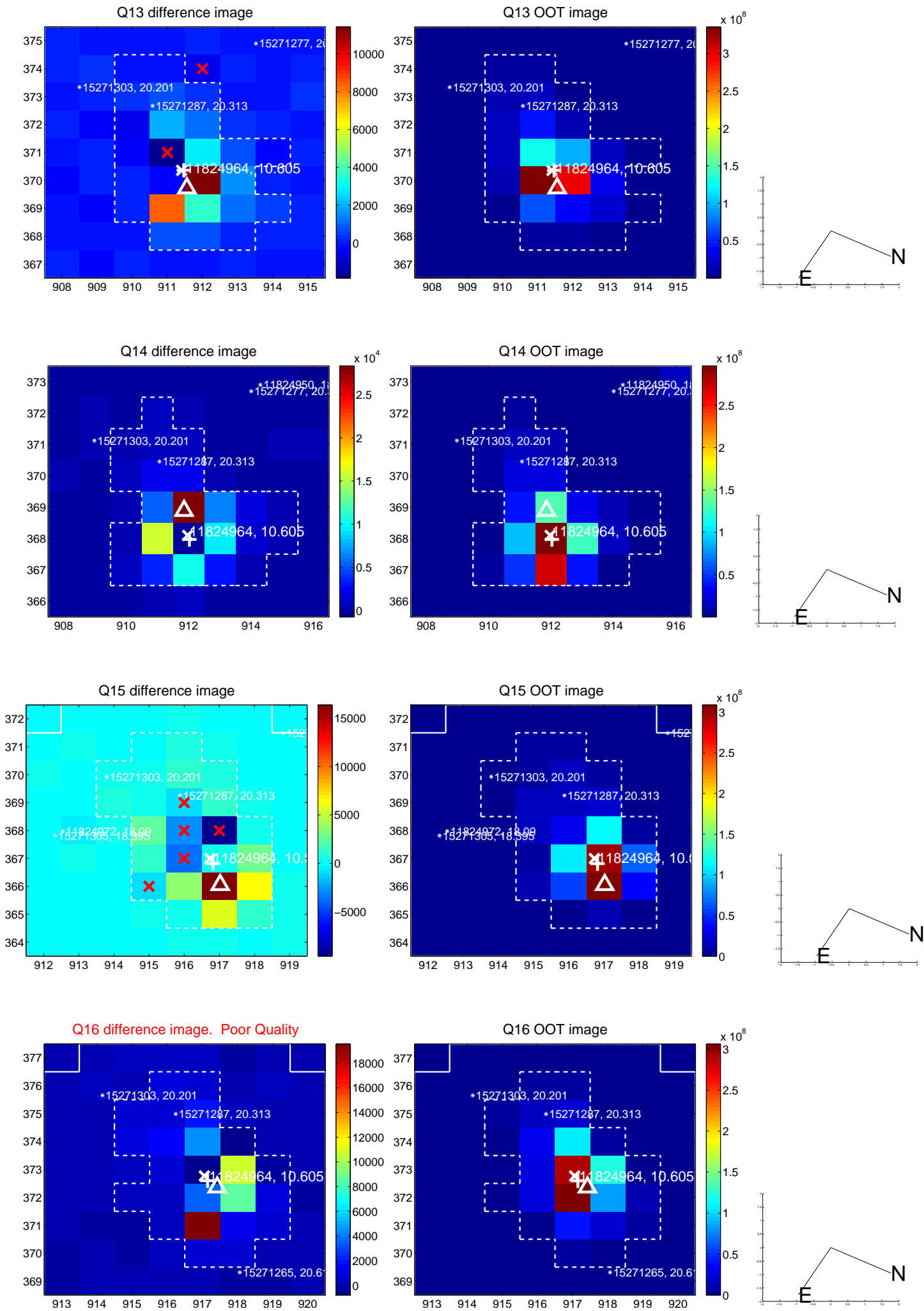
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



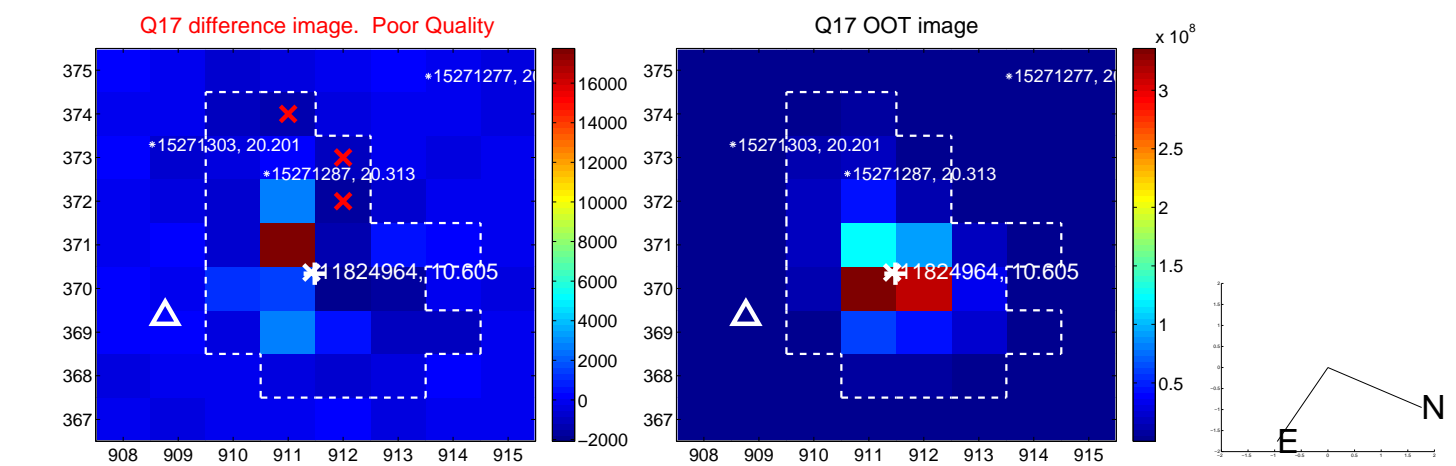
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



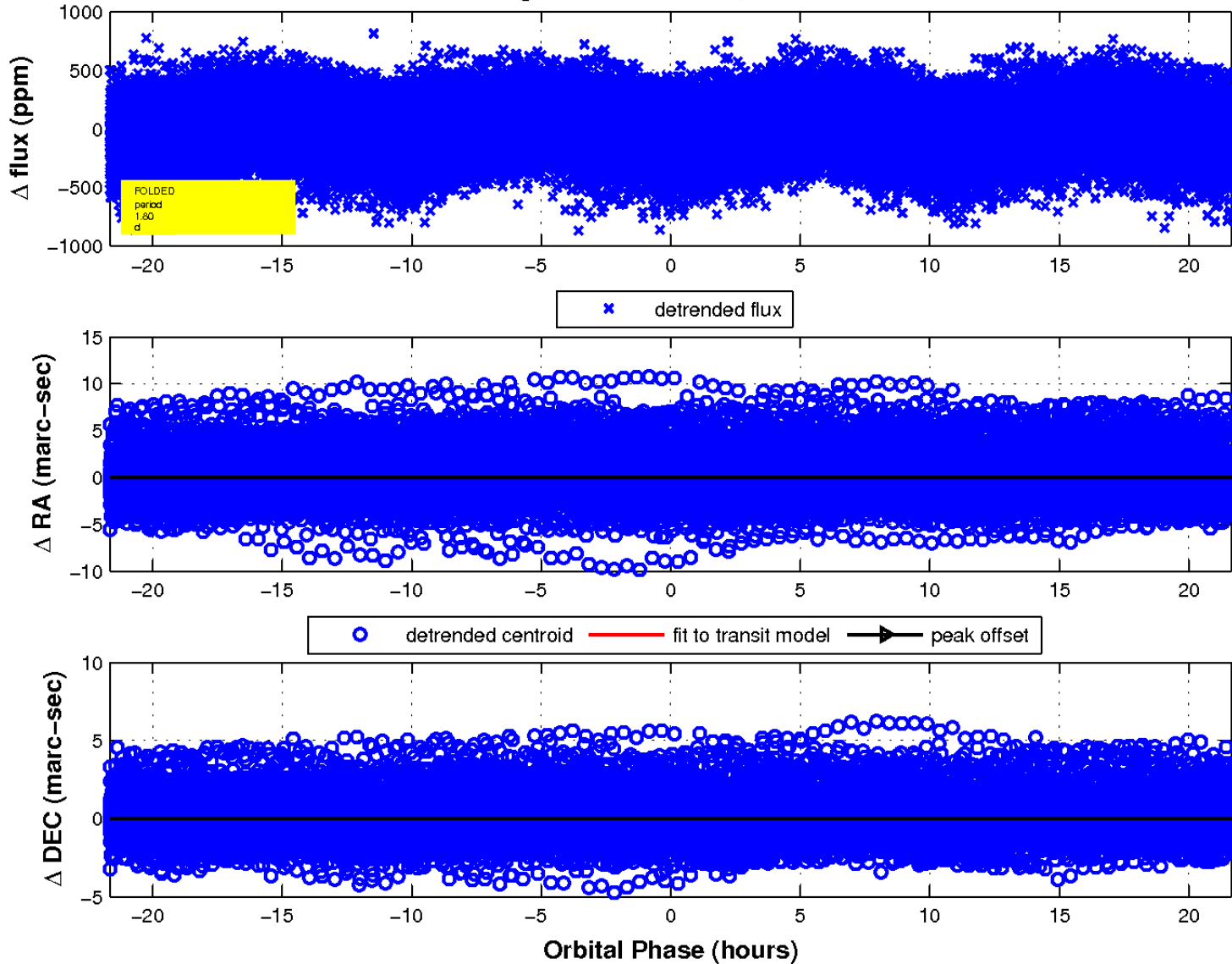
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

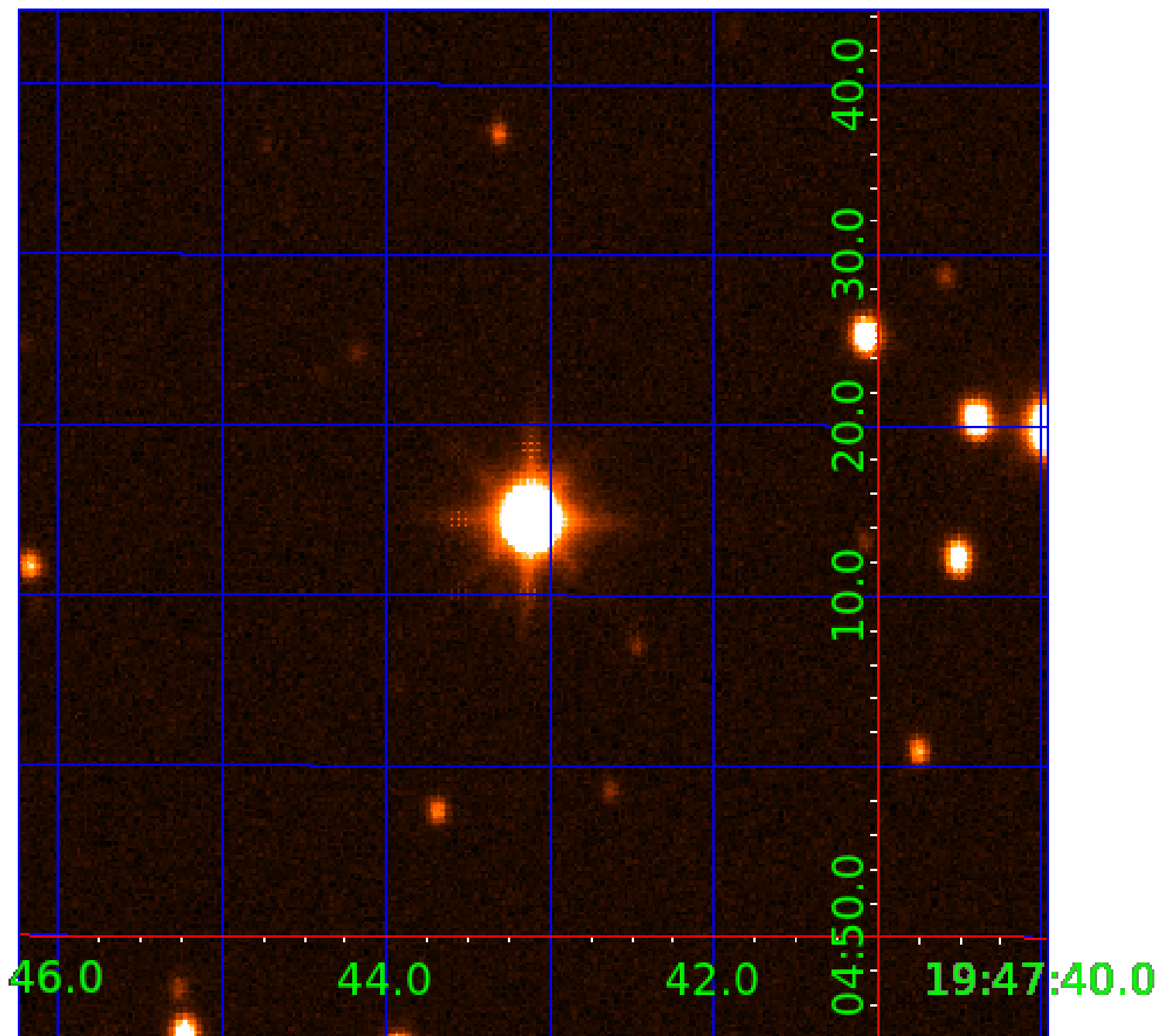


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 011824964

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})
011824964-01	OBS	No	0.909139	131.878474	23.8	3.538	8.8	11.0	2.22	7409	1.25	27407.15
011824964-02	OBS	No	2.244510	133.739740	22.4	10.321	9.4	7.5	2.22	7409	1.08	8213.76
011824964-03	OBS	No	1.803709	133.160241	71.0	8.259	12.2	12.3	2.22	7409	2.53	10993.83
011824964-04	OBS	No	28.740753	154.246615	217.9	3.667	7.7	7.9	2.22	7409	3.84	274.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011824964-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—CENT_SATURATED
011824964-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011824964-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

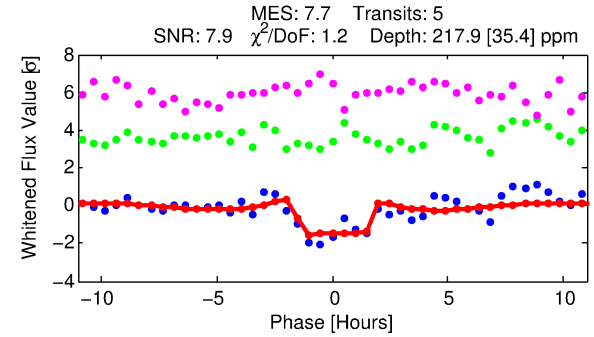
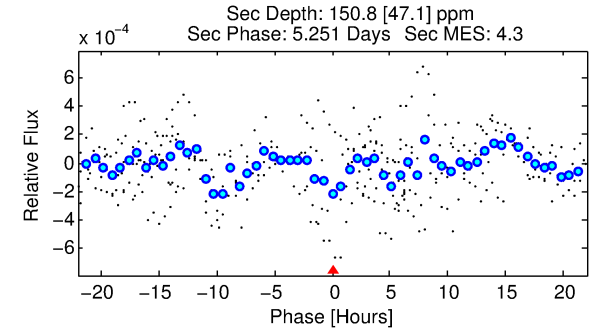
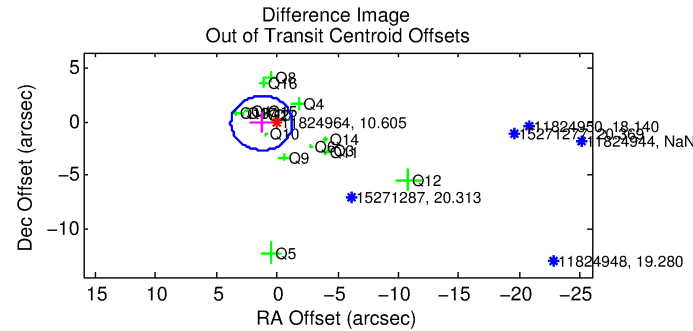
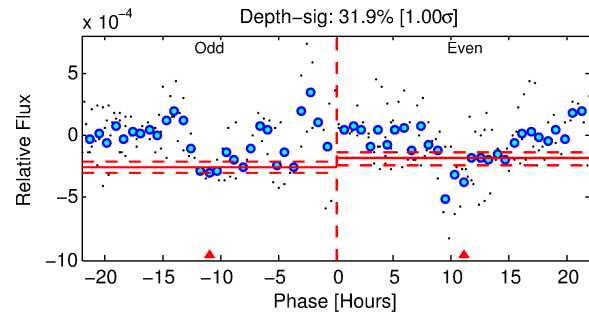
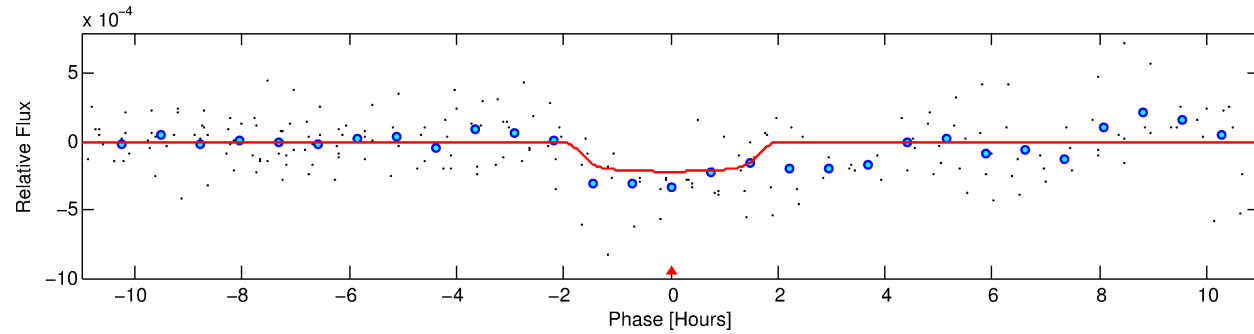
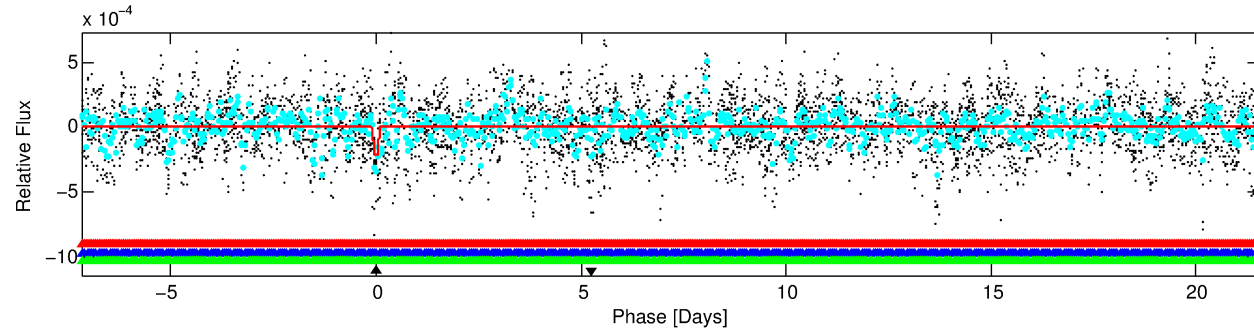
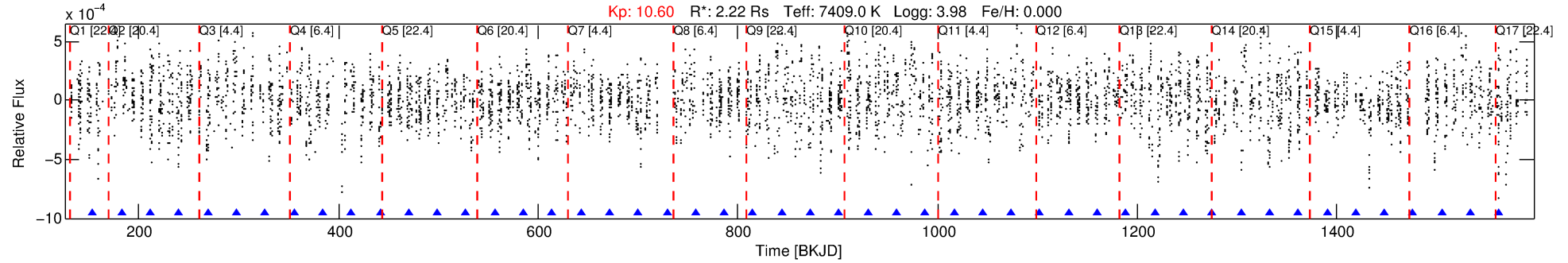
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011824964-04

No Significant Match Found

DV One-Page Summary

KIC: 11824964 Candidate: 4 of 4 Period: 28.741 d



DV Fit Results:

Period = 28.74075 [0.00032] d
Epoch = 154.2466 [0.0088] BKJD
Rp/R* = 0.0159 [0.0042]
a/R* = 26.15 [40.62]
b = 0.92 [0.27]
Seff = 274.18 [116.07]
Teq = 1038 [110] K
Rp = 3.84 [1.50] Re
a = 0.2202 [0.0556] AU
Ag = 272.41 [197.40] [1.37 σ]
Teffp = 6518 [1046] K [5.21 σ]

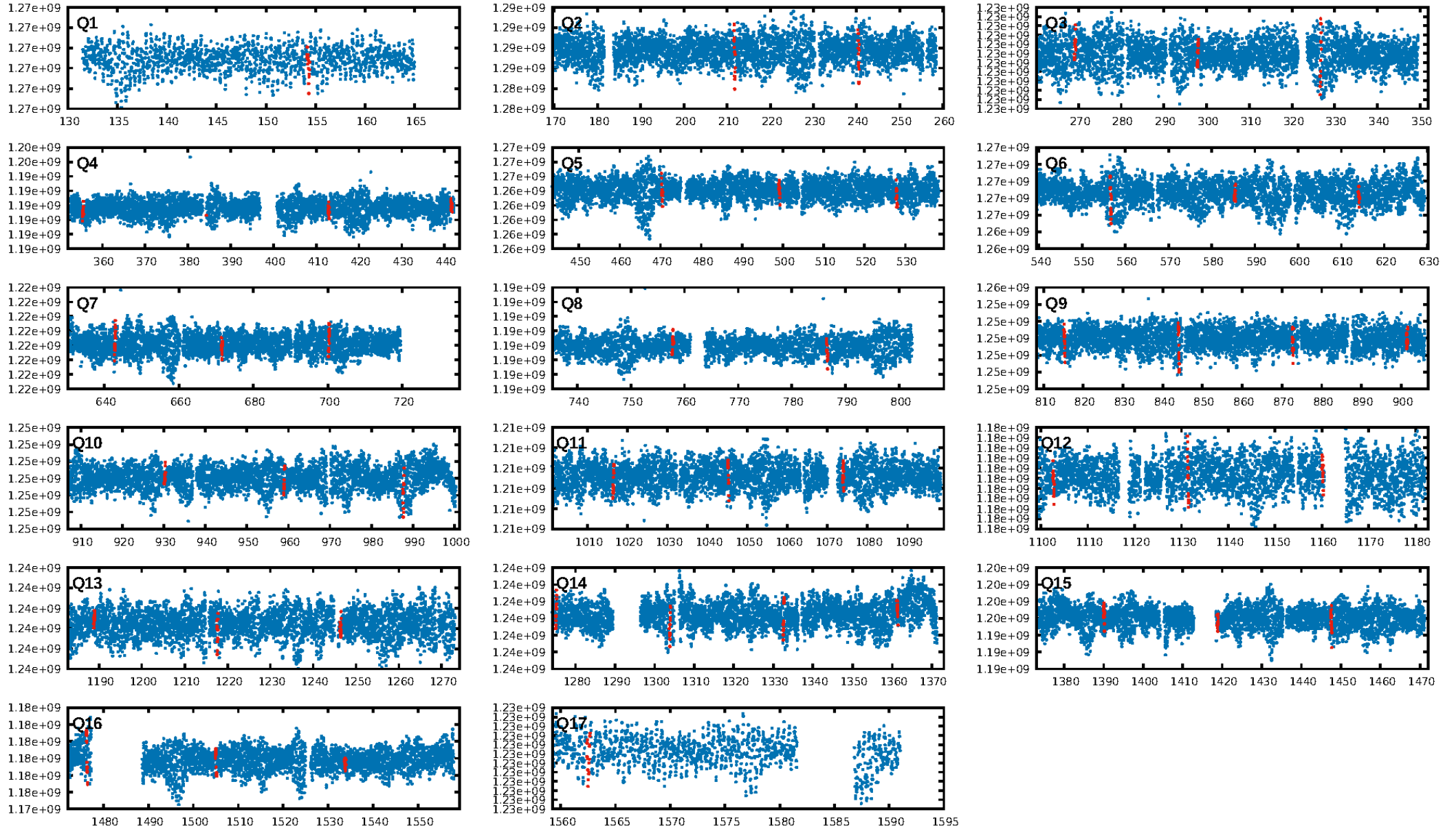
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.06 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 12.9%
ModelChiSquareGof-sig: 96.6%
Bootstrap-pfa: 2.73e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.4324
Centroid-sig: 3.0%
Centroid-so: 0.543 arcsec [1.86 σ]
OotOffset-rm: 1.283 arcsec [1.52 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 1.674 arcsec [1.91 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.29 [5/17]
DiffImageOverlap-fno: 0.00 [0/17]

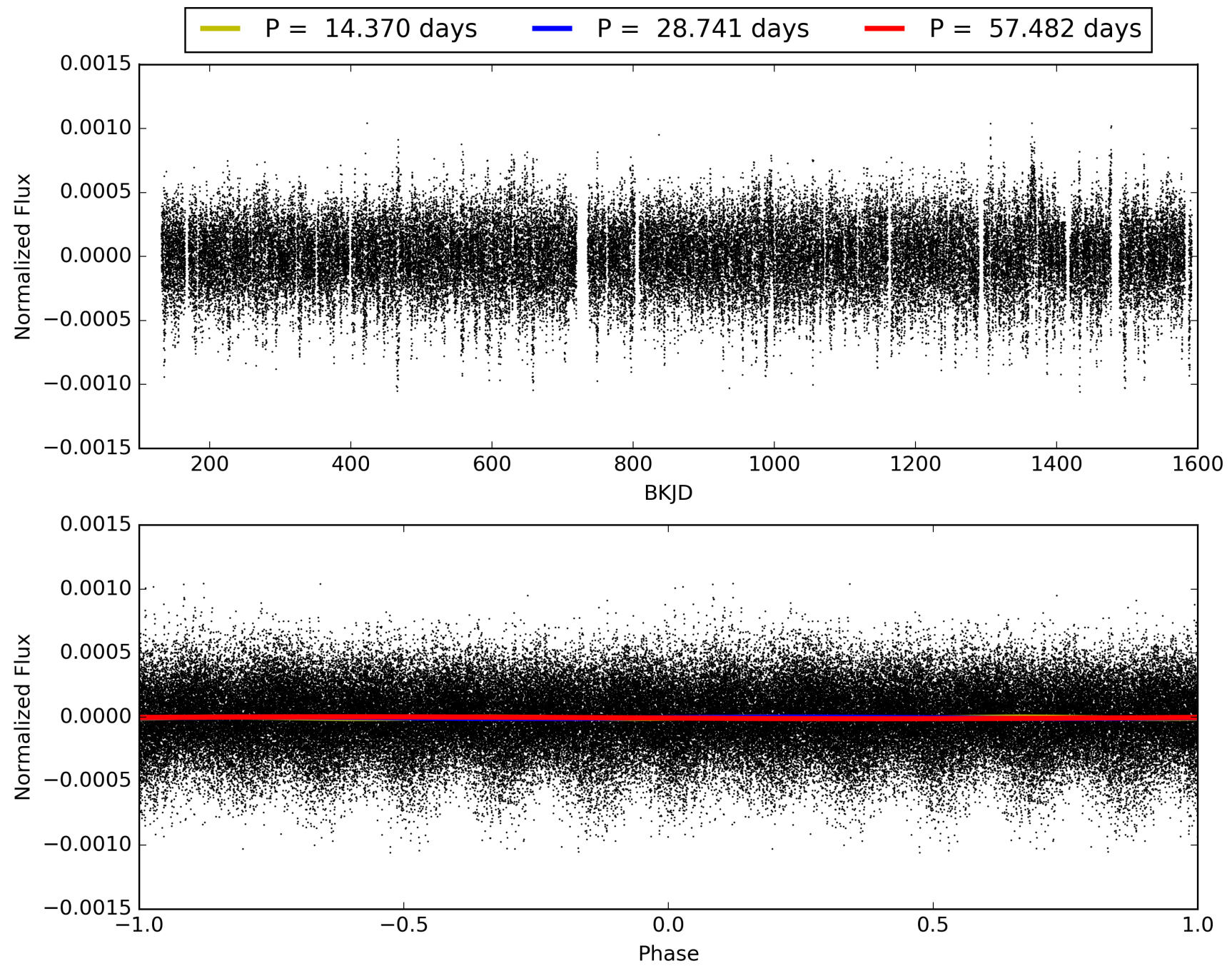
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:20:02 Z

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

TCE 011824964-04, PDC Light Curves

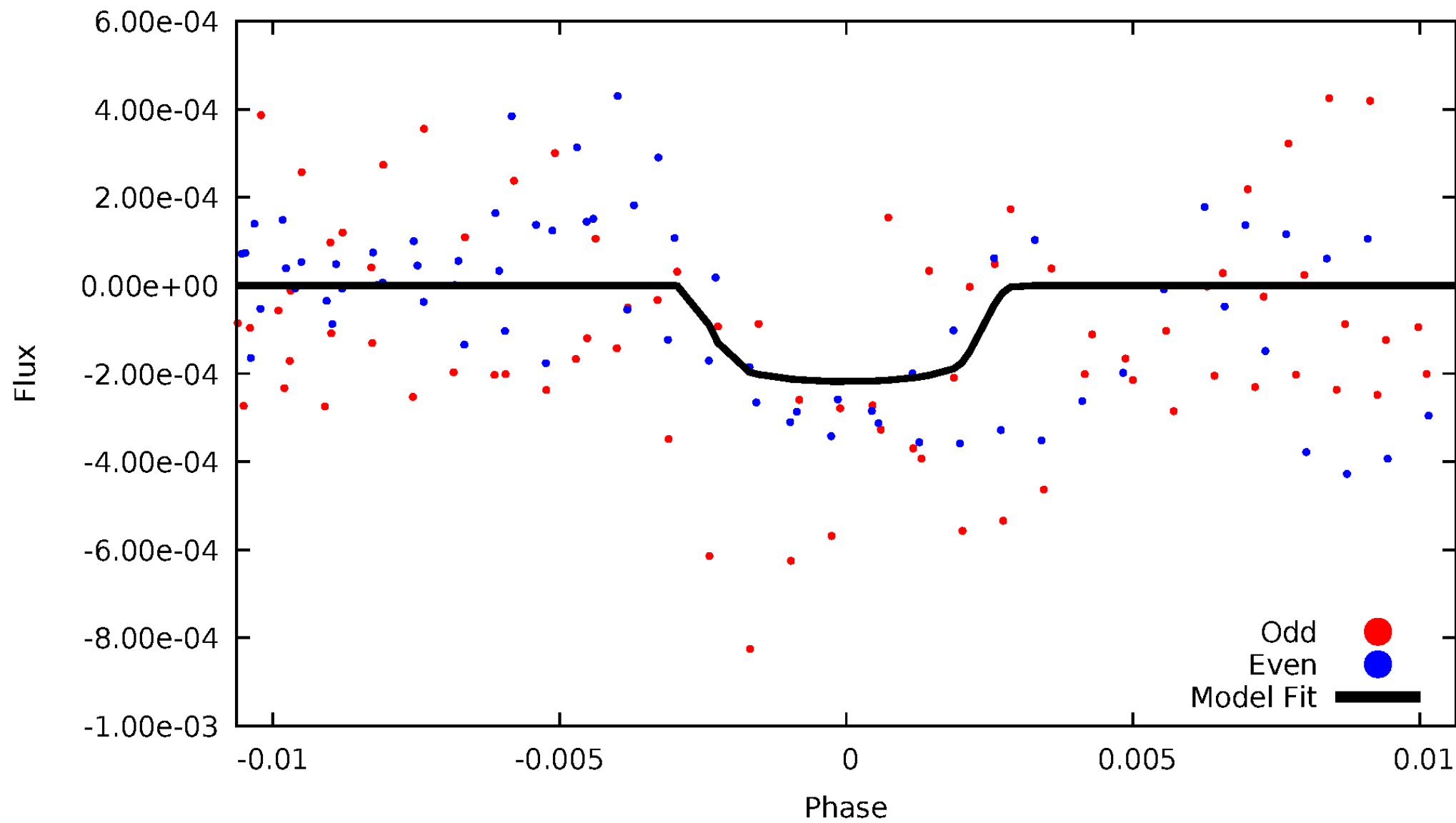


TCE 011824964-04



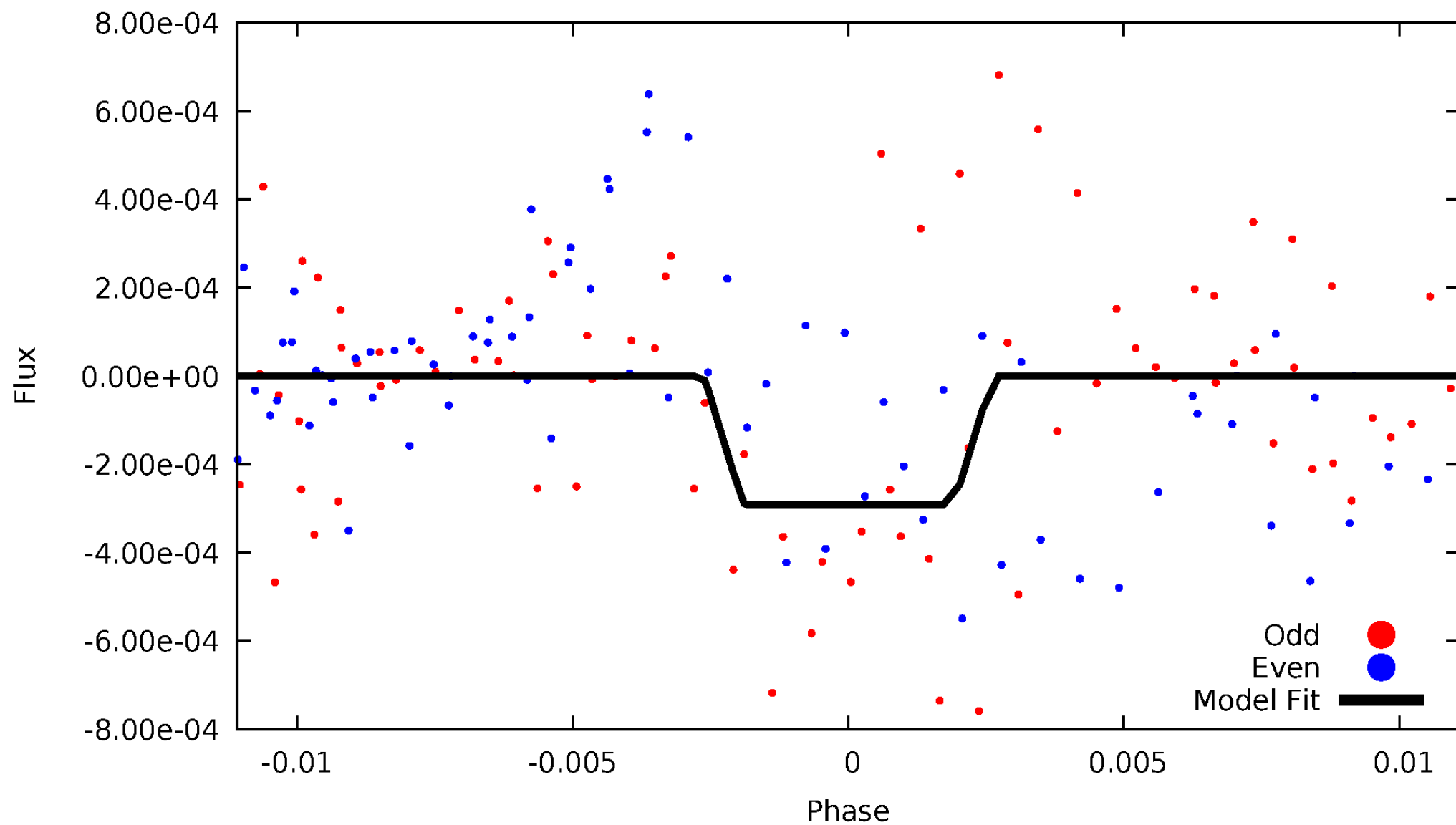
DV Odd/Even

TCE 011824964-04



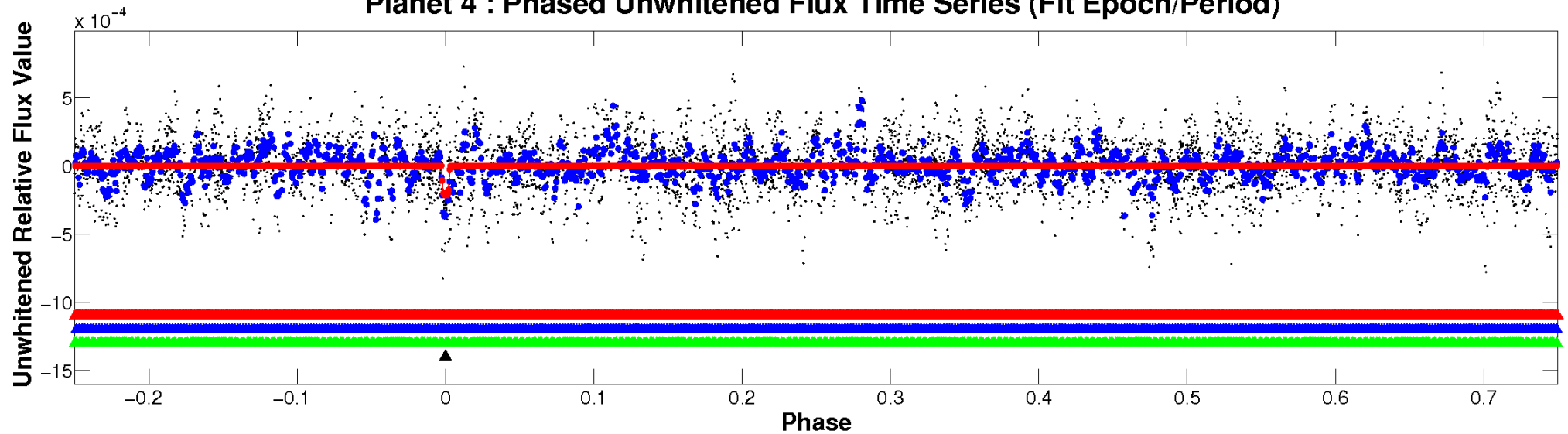
ALT Odd/Even

TCE 011824964-04

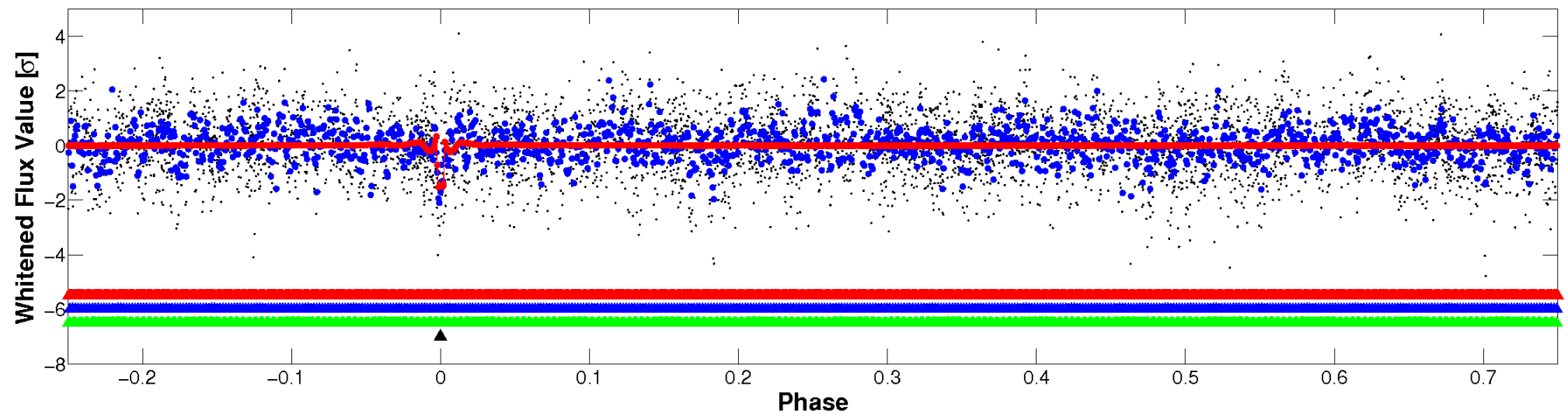


Non-Whitened Vs. Whitened Light Curve

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

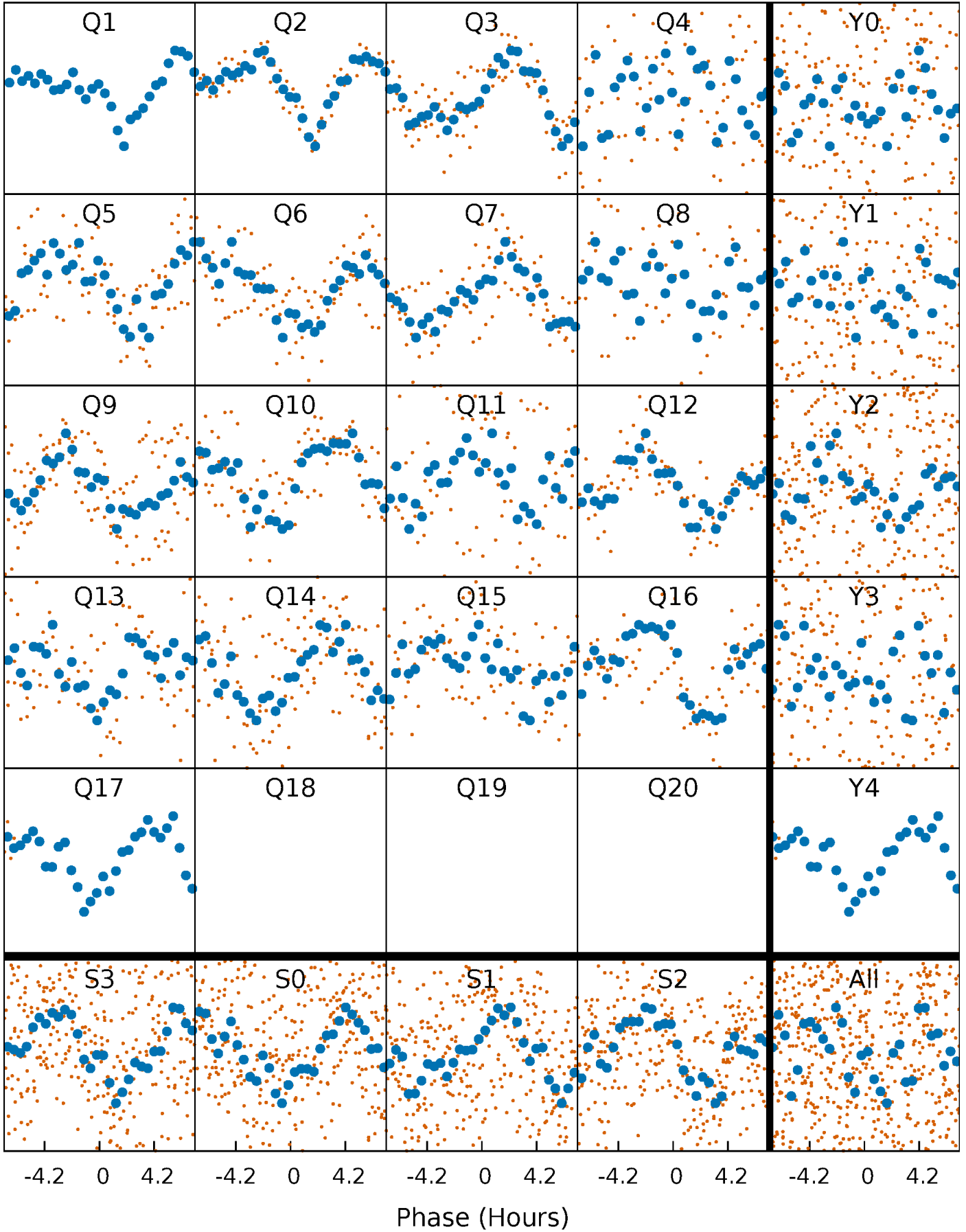


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



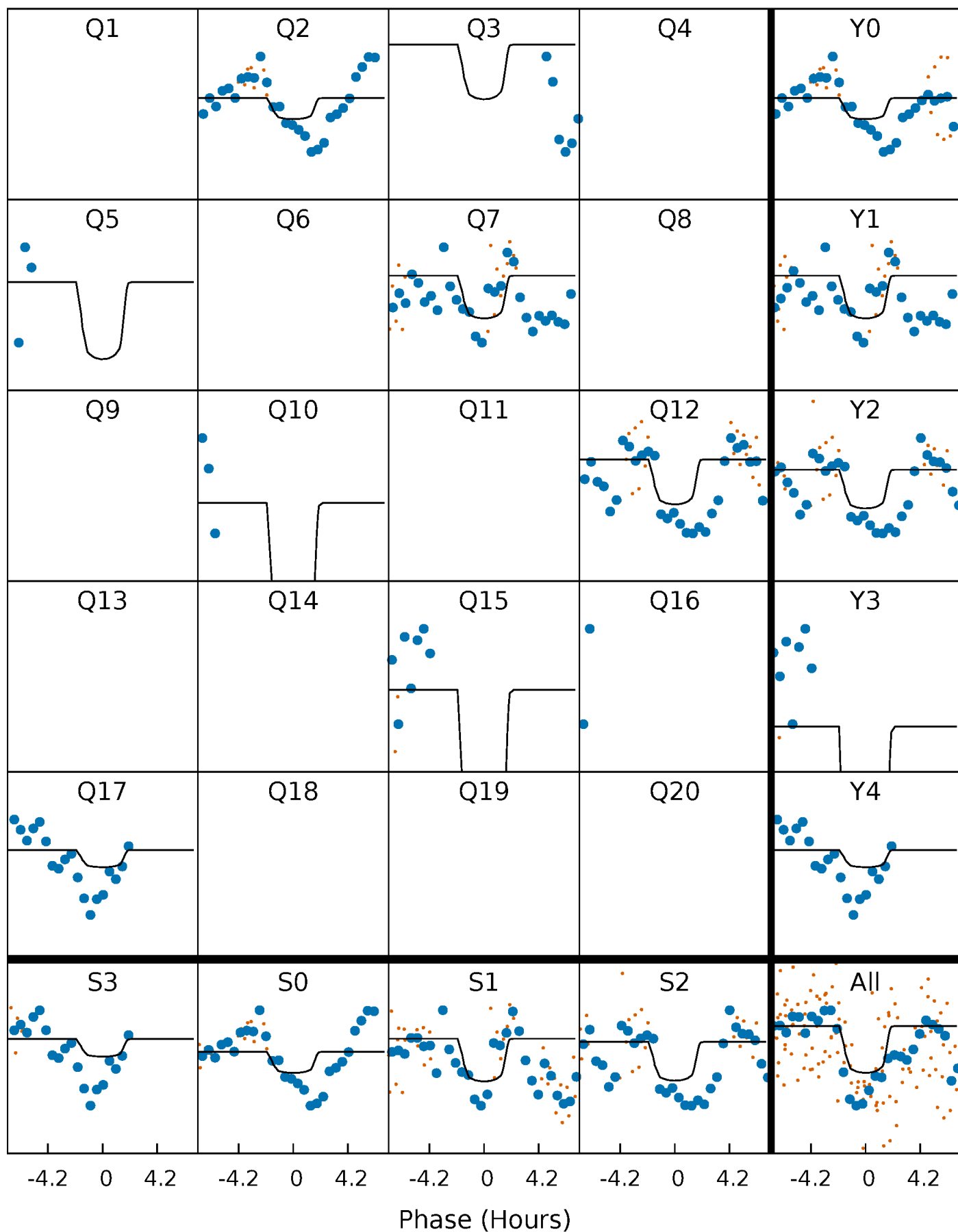
PDC Quarter-Phased Transit Curves

TCE 011824964-04 P= 28.740753 Days $T_0=154.246615$ (BKJD)



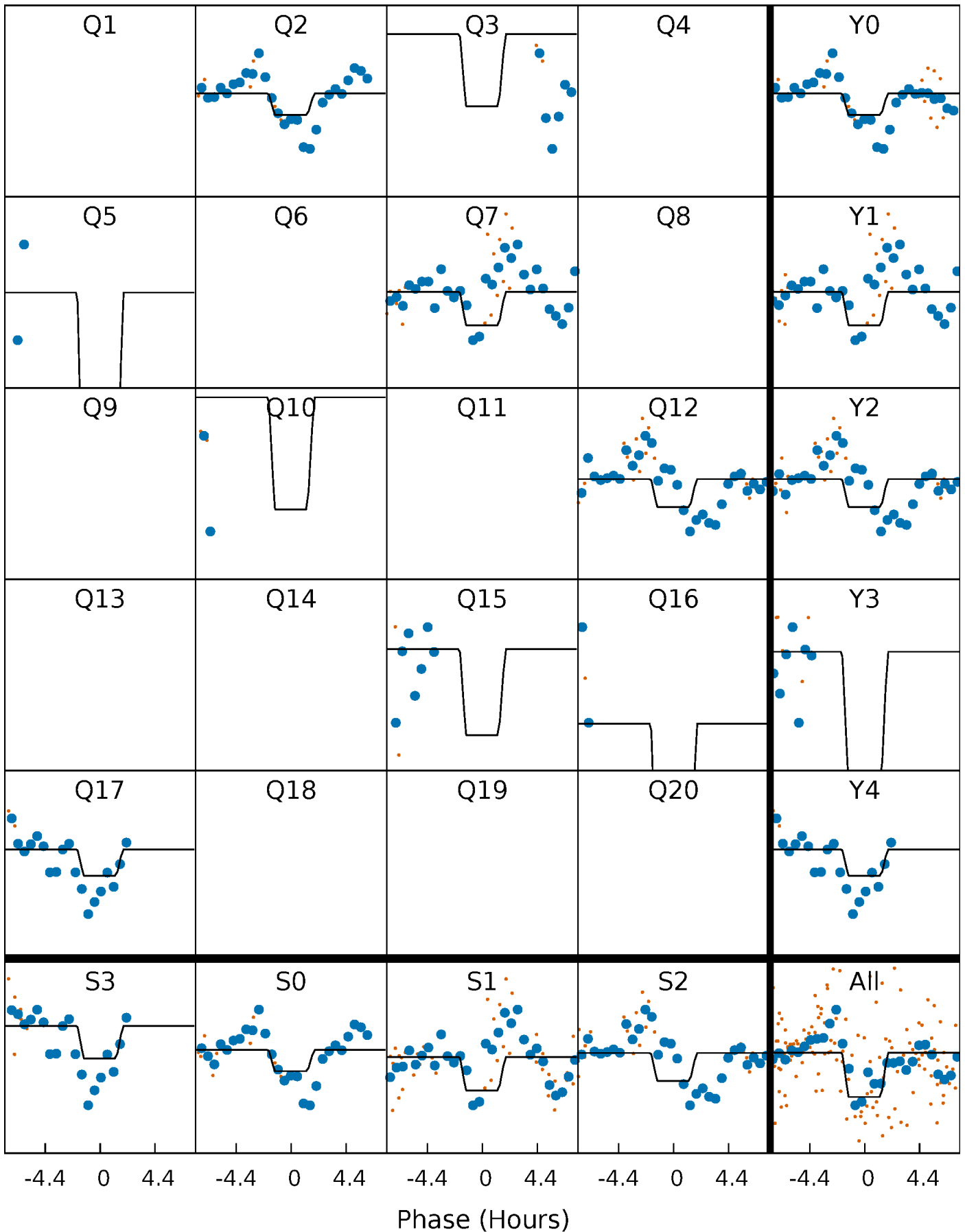
DV Quarter-Phased Transit Curves

TCE 011824964-04 P= 28.740753 Days $T_0=154.246615$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

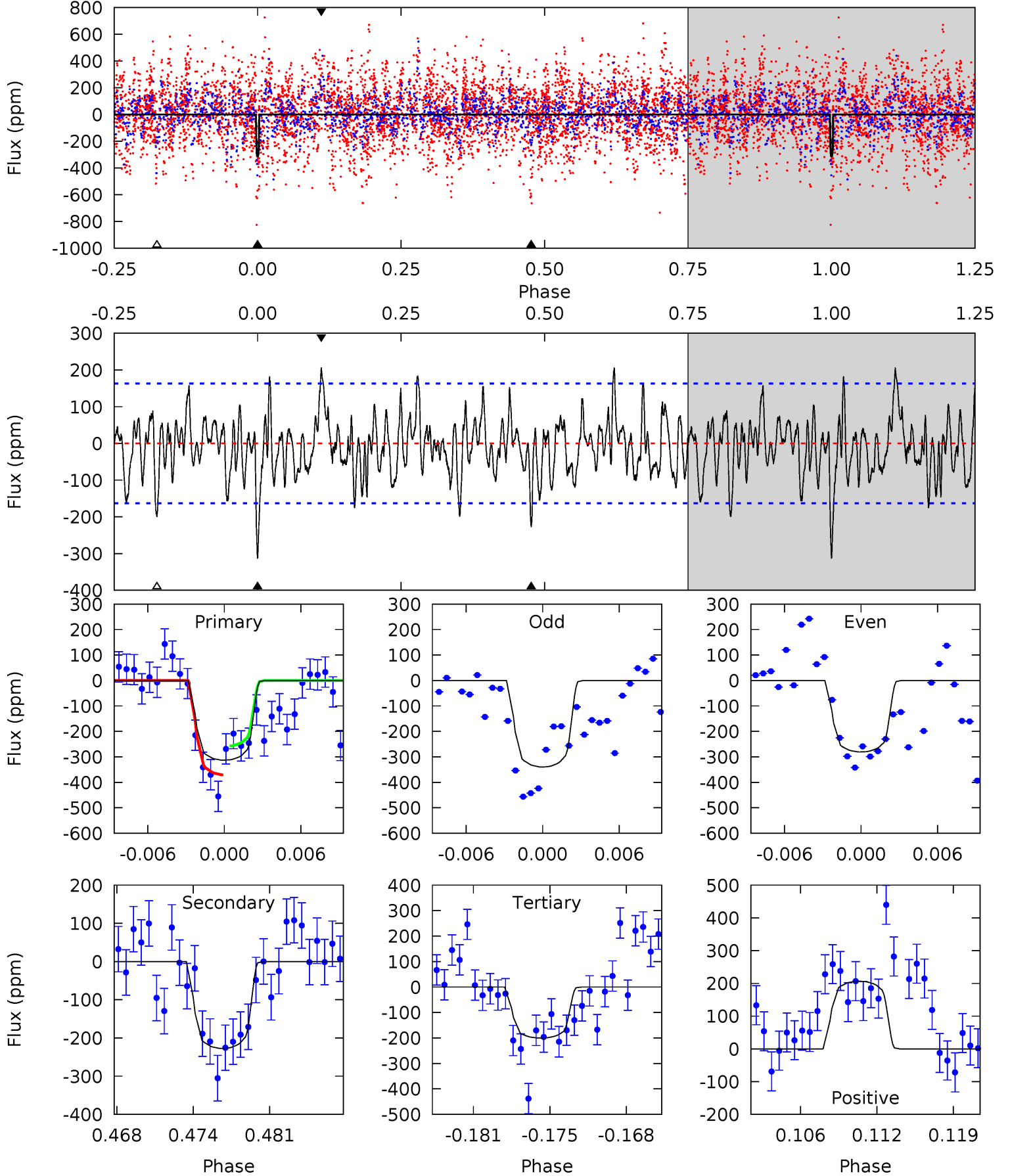
TCE 011824964-04 P= 28.740338 Days $T_0=154.258341$ (BKJD)



DV Model-Shift Uniqueness Test

011824964-04, P = 28.740753 Days, E = 125.505862 Days

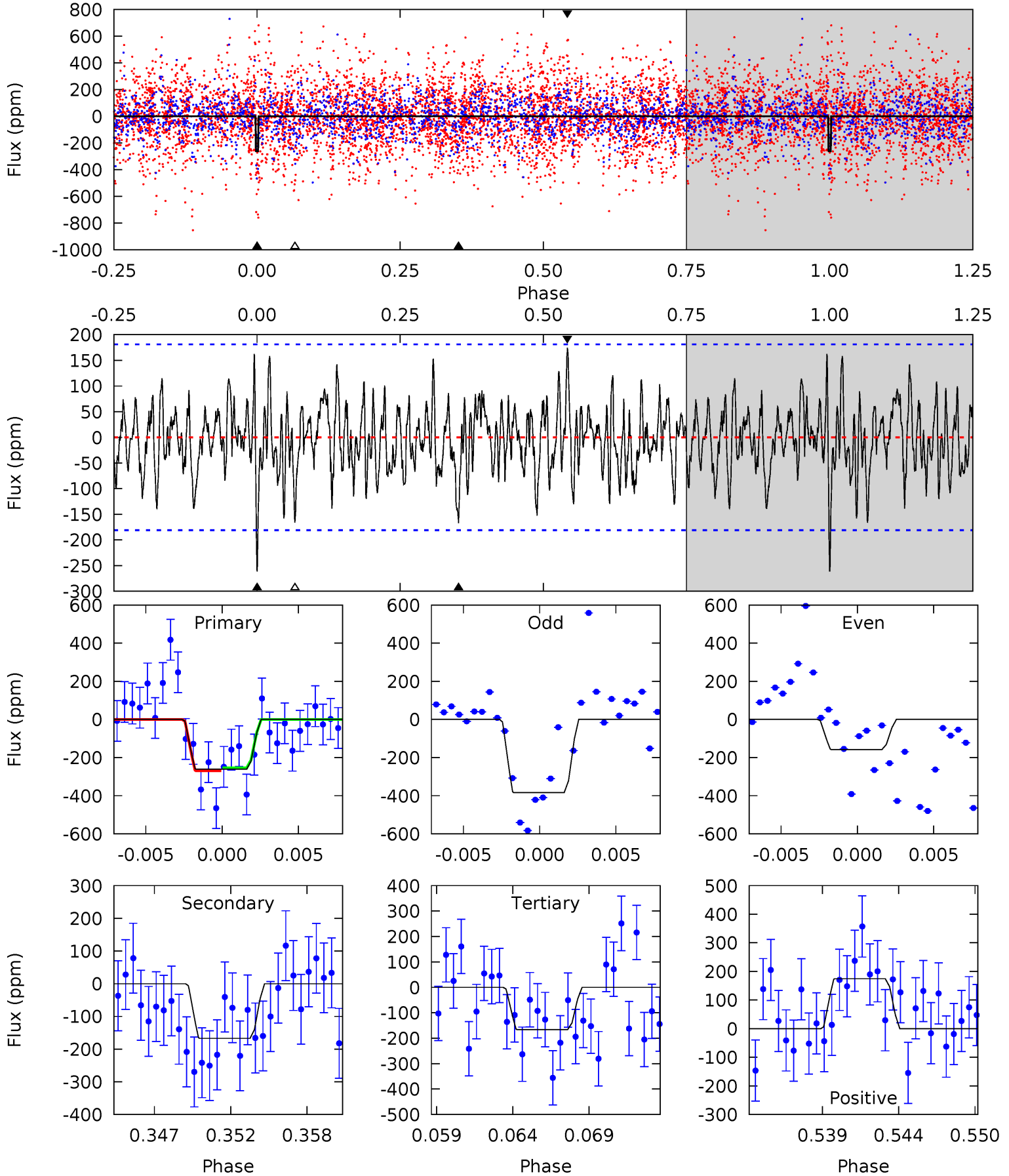
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.83	7.14	6.29	6.48	5.12	2.73	2.11	3.54	3.34	0.85	0.65	0.94	0.87	0.40	1.77



Alt Model-Shift Uniqueness Test

011824964-04, P = 28.740338 Days, E = 125.518003 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.41	4.75	4.72	4.96	5.15	2.79	1.59	2.69	2.45	0.02	-0.22	3.08	0.67	0.40	0.20



Stellar Parameters For KIC 011824964

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7409^{+207}_{-337}	$3.982^{+0.216}_{-0.162}$	$0.000^{+0.200}_{-0.350}$	$2.219^{+0.518}_{-0.633}$	$1.724^{+0.186}_{-0.319}$	$0.222^{+0.284}_{-0.092}$
	+3%/-5%	+5%/-4%	+inf%/-inf%	+23%/-29%	+11%/-19%	+128%/-42%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 011824964-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-228 ± 32	$3.76^{+1.23}_{-1.13}$	1438^{+112}_{-115}	7124^{+1722}_{-923}	423^{+436}_{-191}
Alt.	-167 ± 35	$4.05^{+1.20}_{-1.16}$	1440^{+107}_{-104}	6346^{+1183}_{-763}	267^{+244}_{-118}

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 $A_{obs} \gg 1.0$

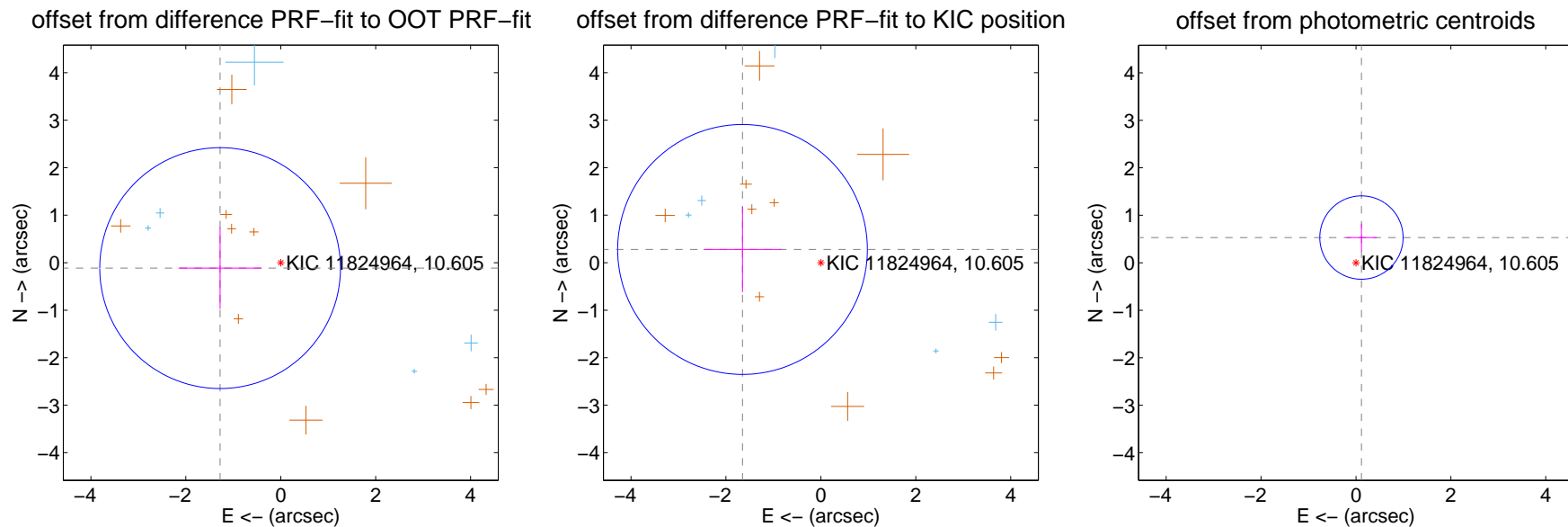
DV Centroid Data

Supplemental centroid analysis for 011824964-04. **Kepler magnitude: 10.61.** Transit SNR 7.86

There are 5 quarters with good PRF difference image offsets

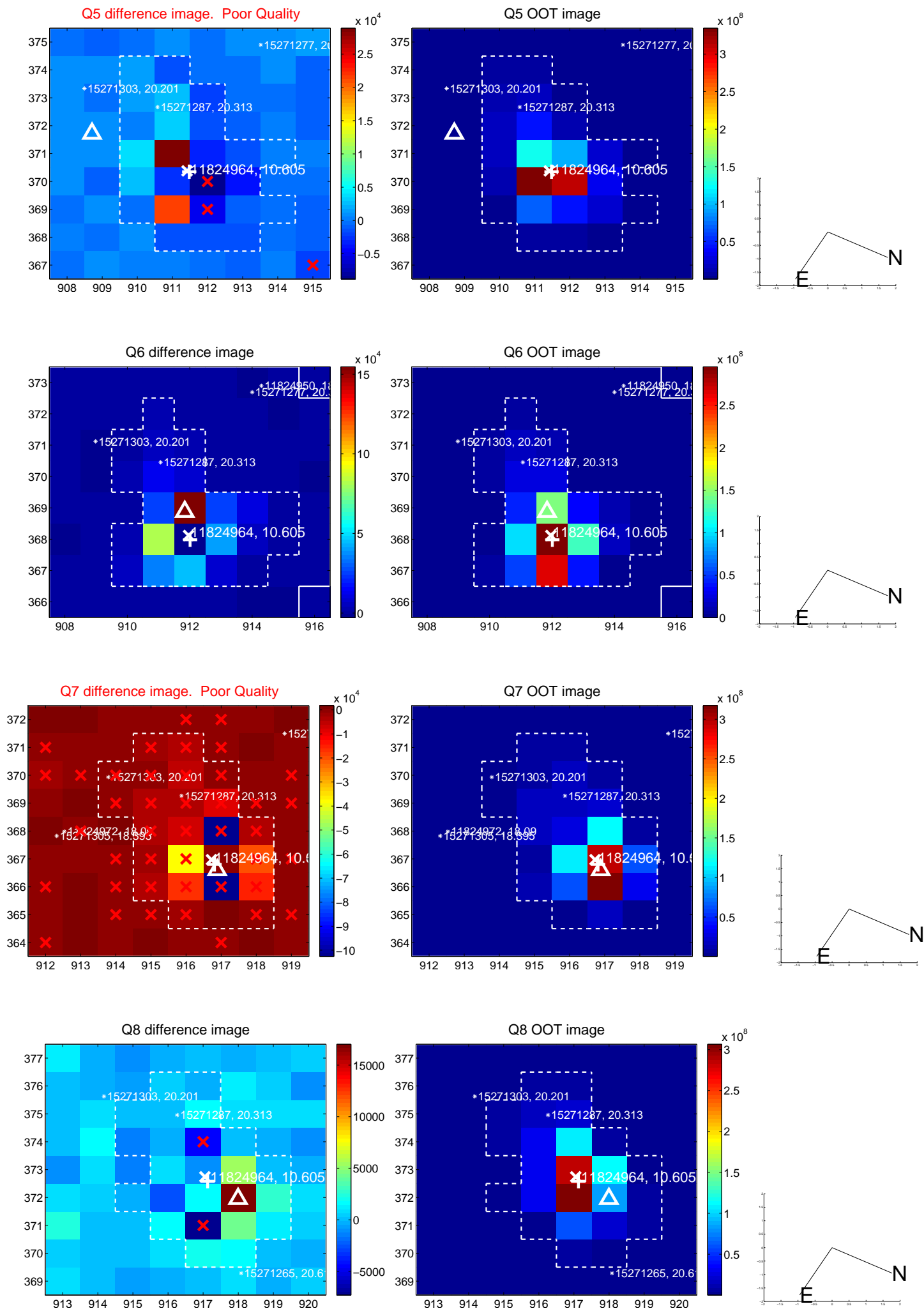
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.283 ± 0.845	1.52	1.277 ± 0.876	-0.114 ± 0.857
PRF-fit source offset from KIC position	1.674 ± 0.877	1.91	1.651 ± 0.819	0.279 ± 0.899
photometric centroid source offset	0.54 ± 0.29	1.86	-0.12 ± 0.32	0.53 ± 0.29

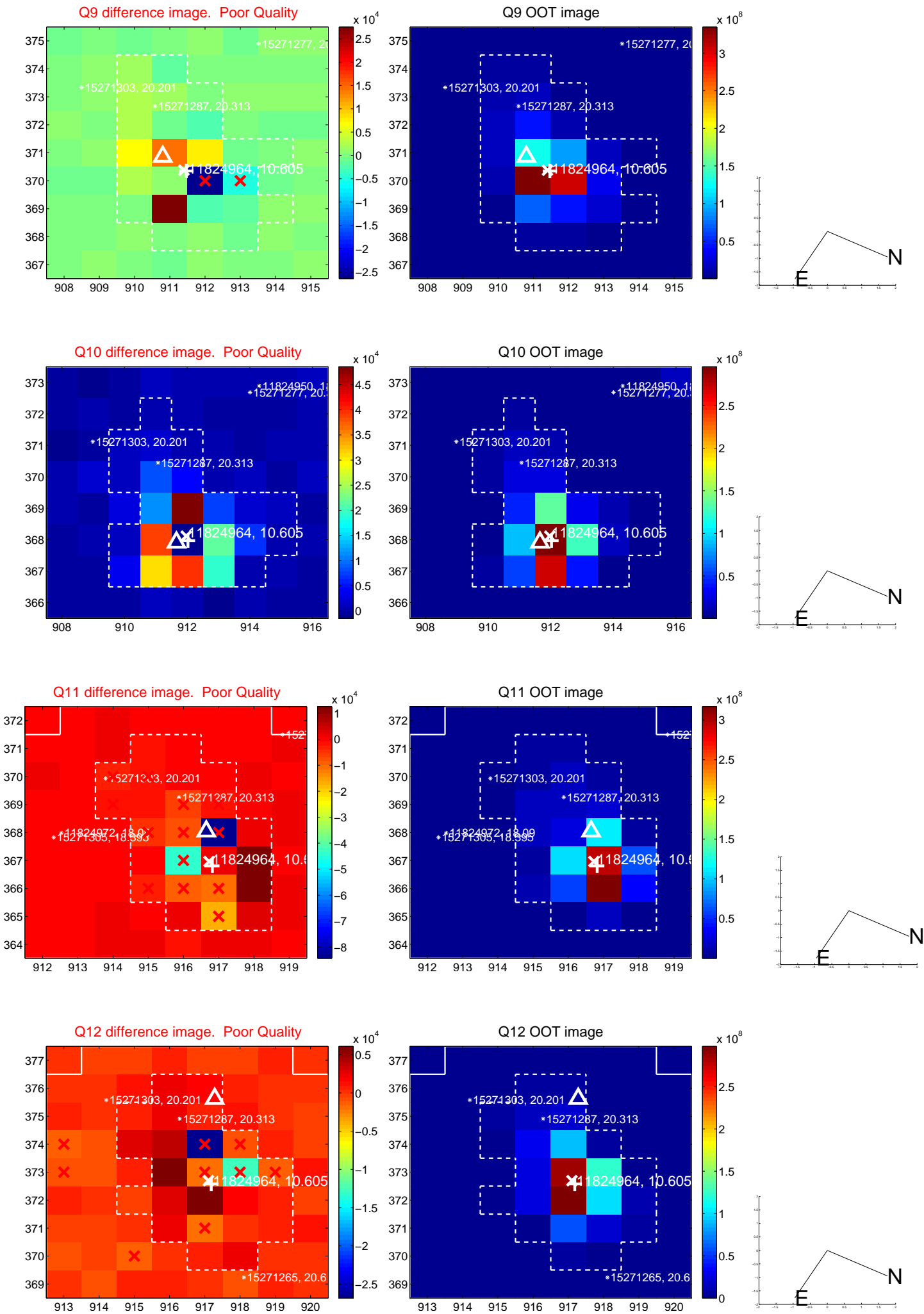


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

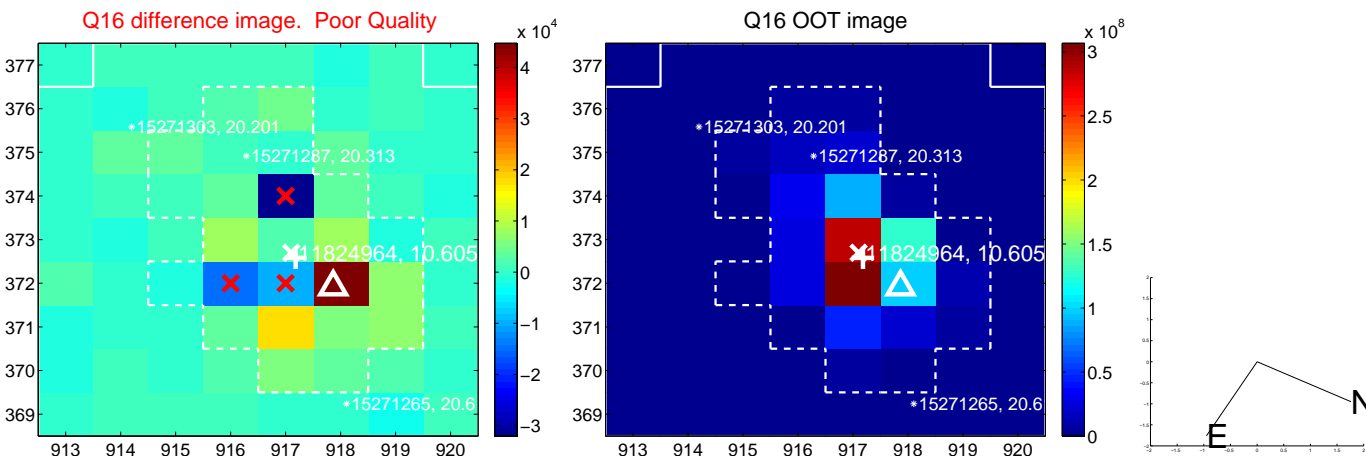
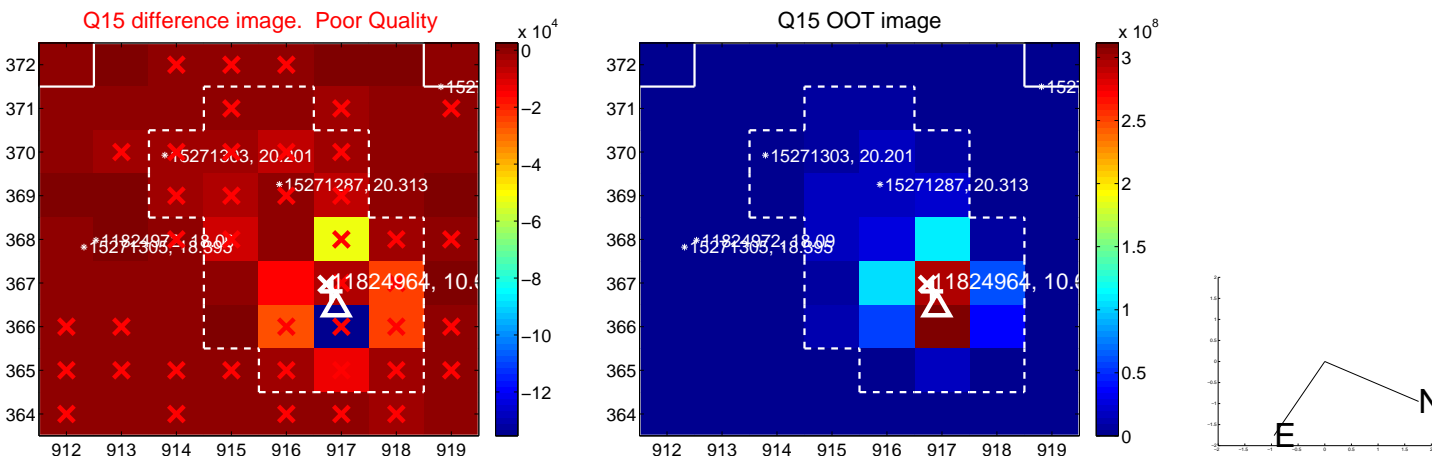
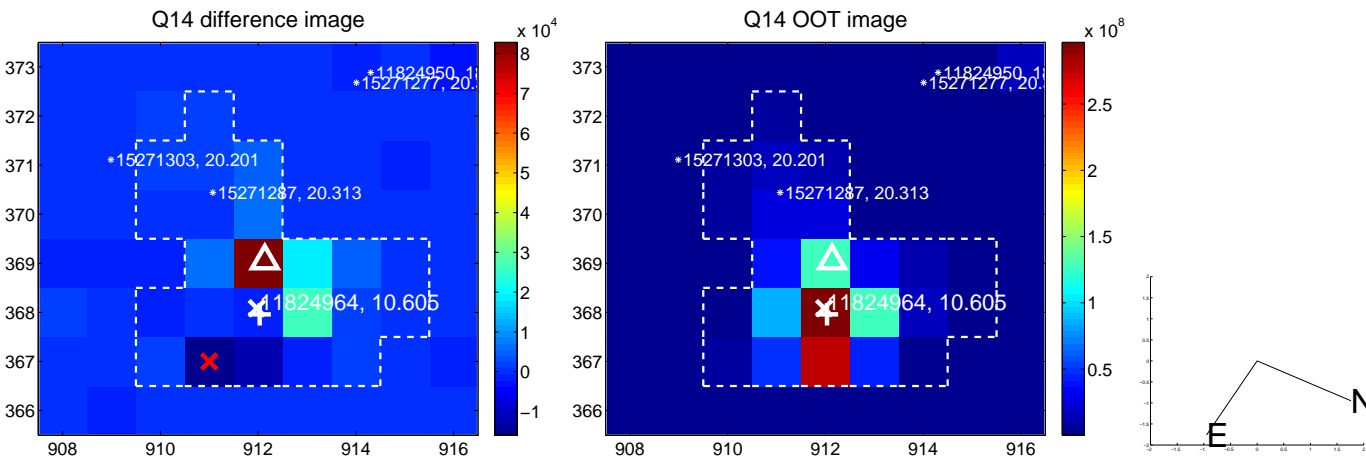
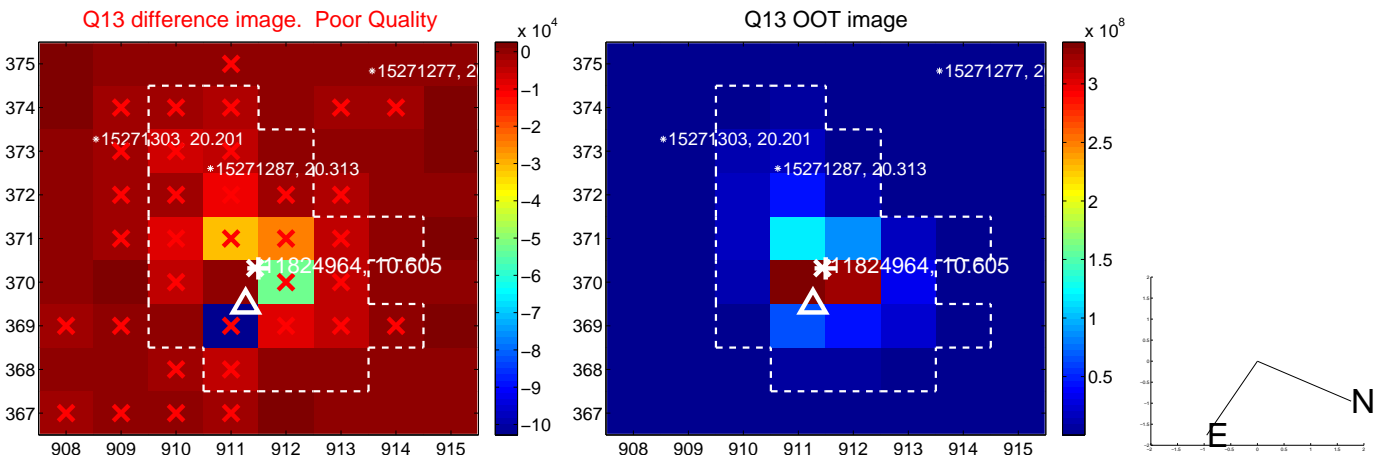
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



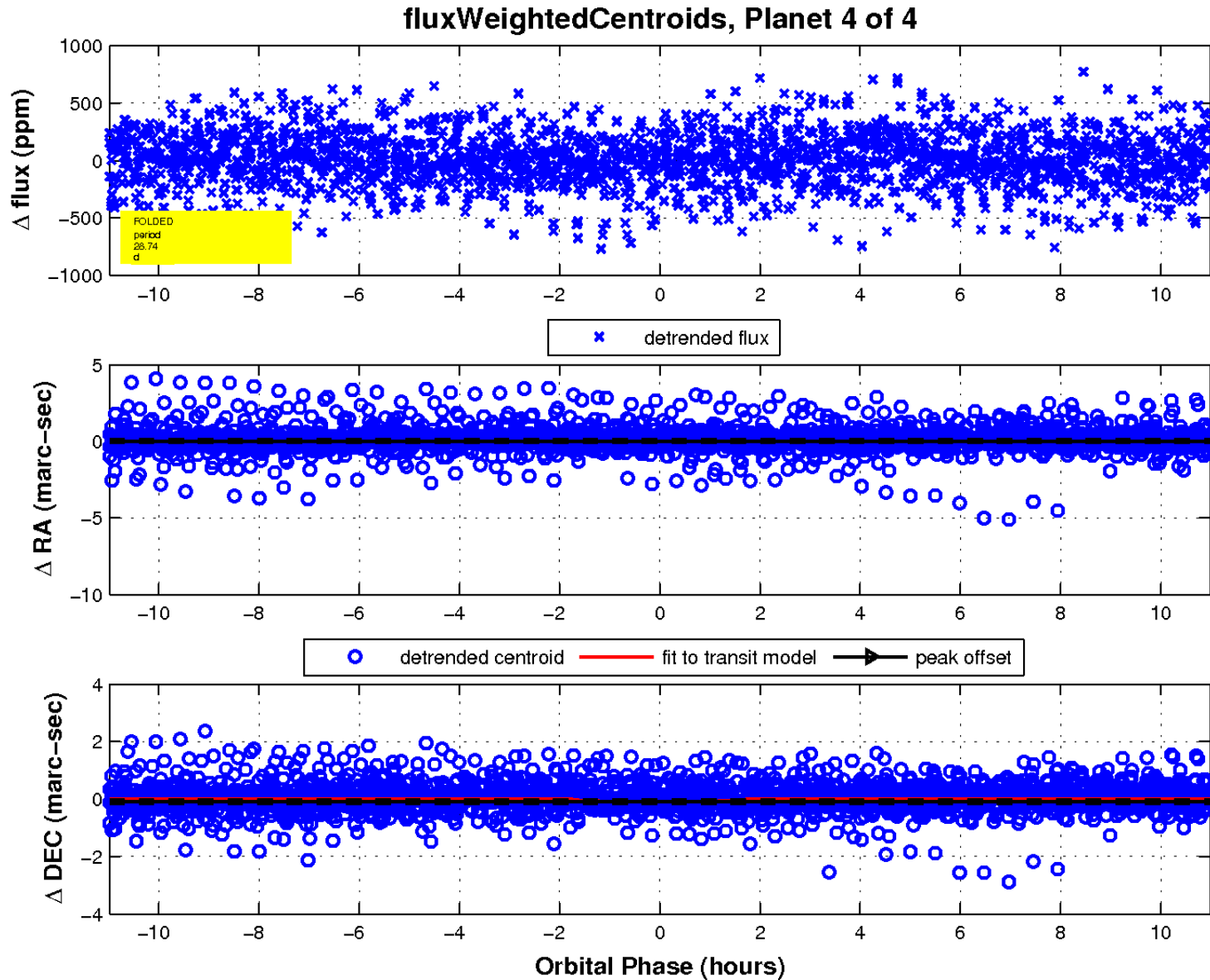
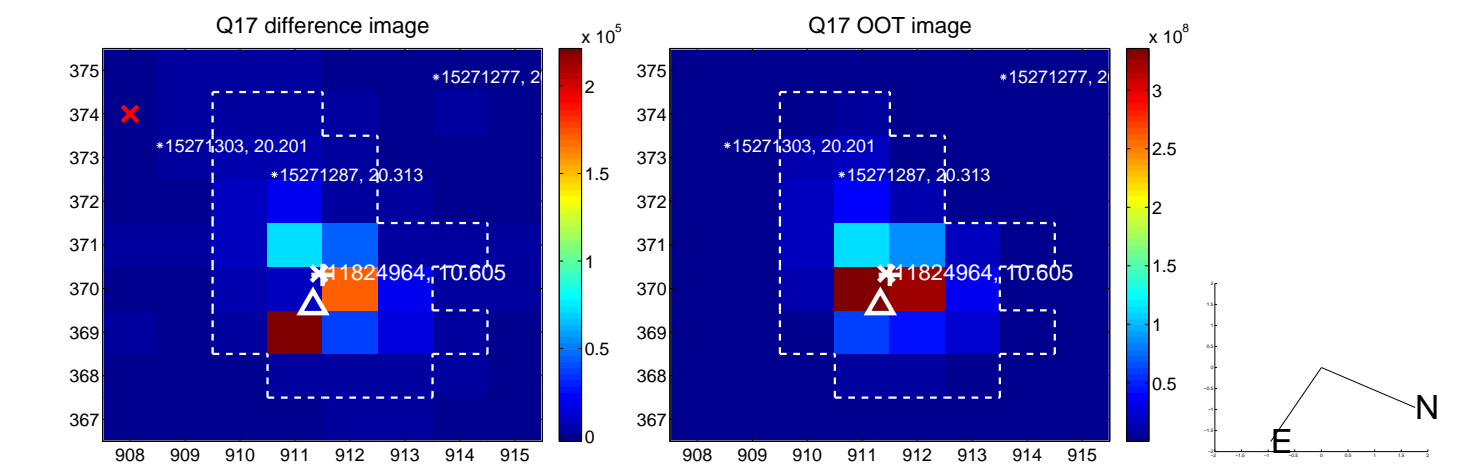
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

