

KIC 009964614

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})
009964614-01	OBS	No	0.540887	131.760905	7.6	3.758	8.7	2.6	2.34	9128	0.74	117959.17
009964614-03	OBS	No	19.996844	138.527073	687.3	1.854	10.7	7.9	2.34	9128	6.63	957.76
009964614-05	OBS	No	19.479470	144.430919	760.9	3.149	7.4	7.1	2.34	9128	11.81	991.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009964614-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
009964614-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—CENT_SATURATED
009964614-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

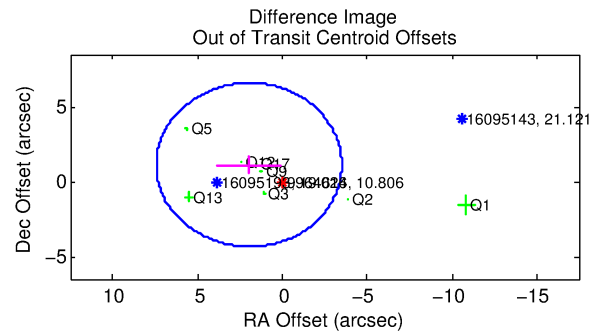
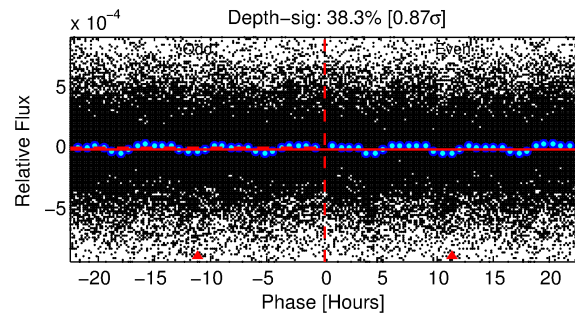
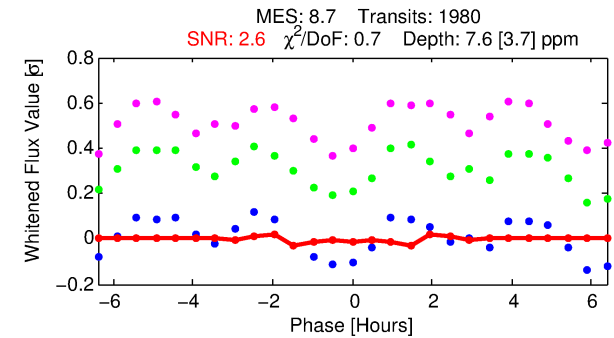
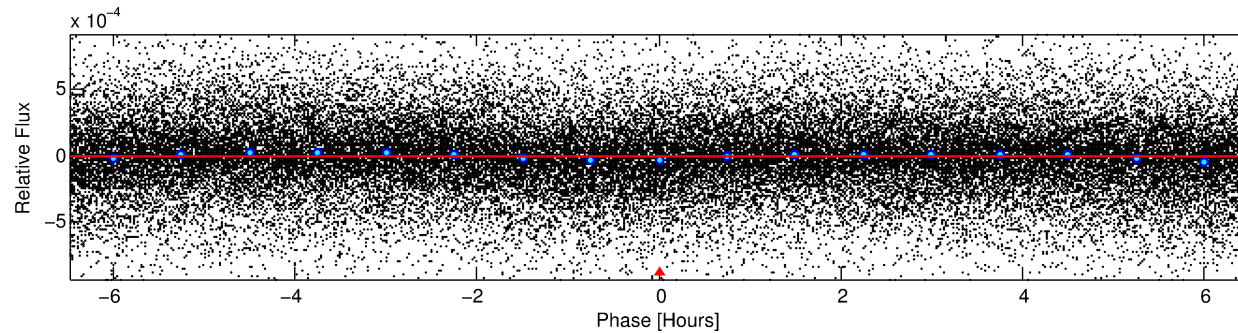
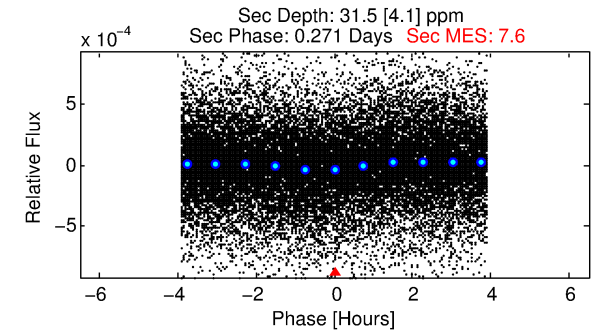
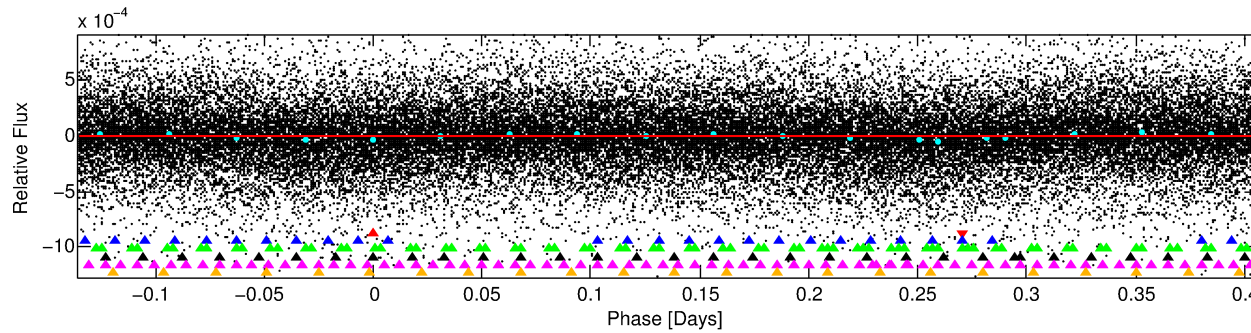
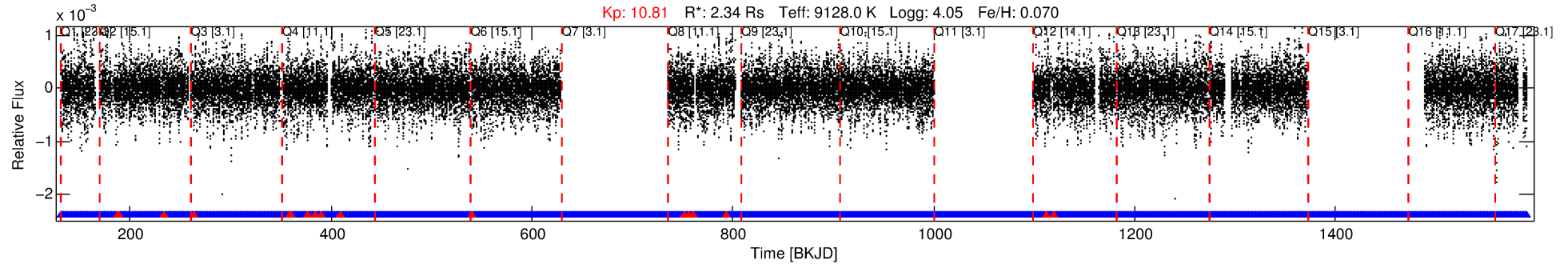
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009964614-01

No Significant Match Found

DV One-Page Summary

KIC: 9964614 Candidate: 1 of 6 Period: 0.541 d



DV Fit Results:

Period = 0.54089 [0.00003] d
Epoch = 131.7609 [0.0038] BKJD
Rp/R* = 0.0029 [0.0012]
a/R* = 1.06 [0.30]
b = 0.90 [0.54]
Seff = 117959.17 [48018.05]
Teq = 4726 [481] K
Rp = 0.74 [0.37] Re
a = 0.0170 [0.0043] AU
Ag = 9.05 [7.96] [1.01σ]
Teffp = 12673 [2608] K [3.00σ]

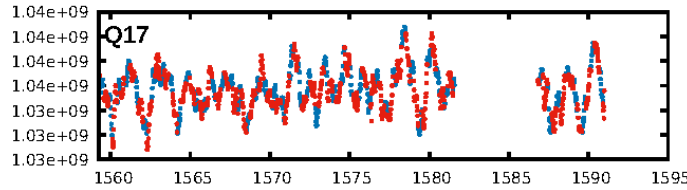
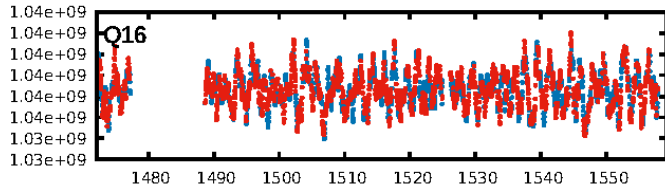
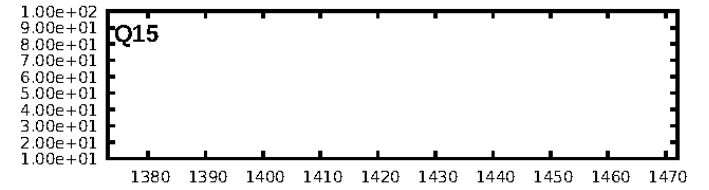
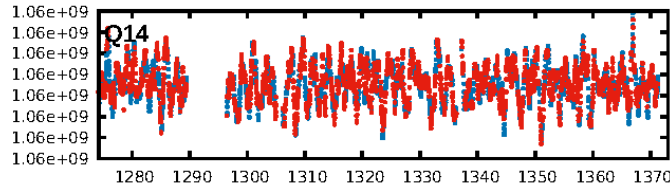
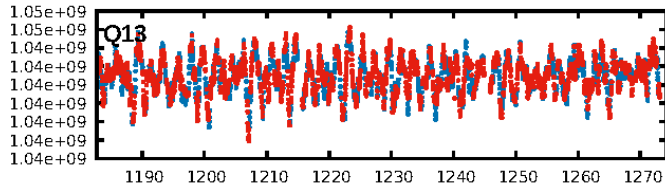
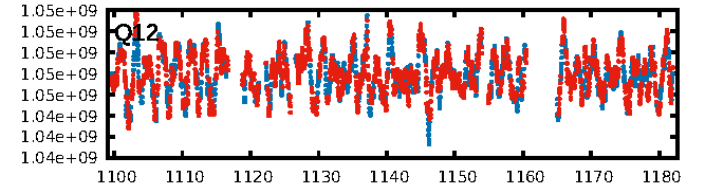
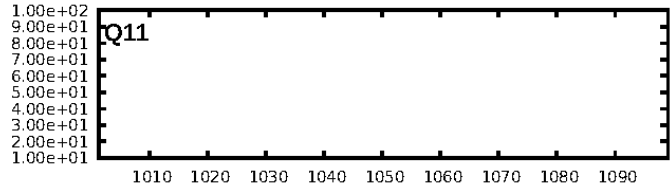
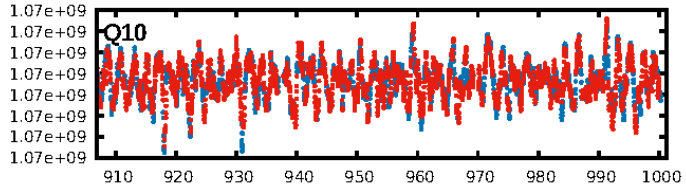
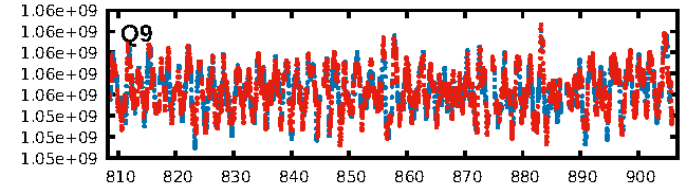
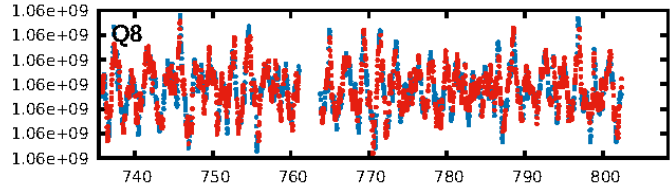
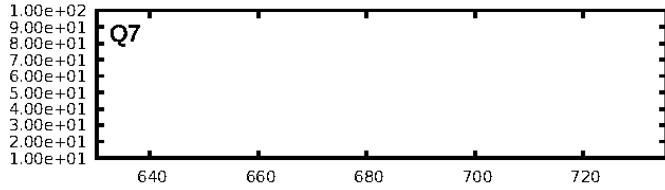
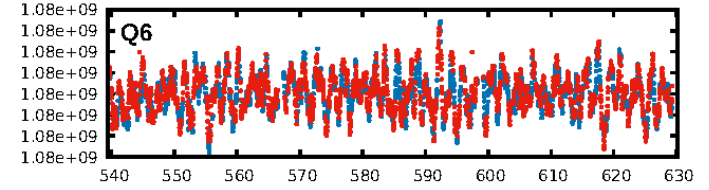
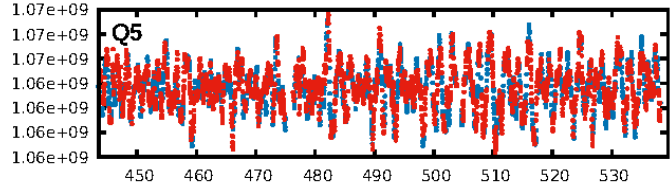
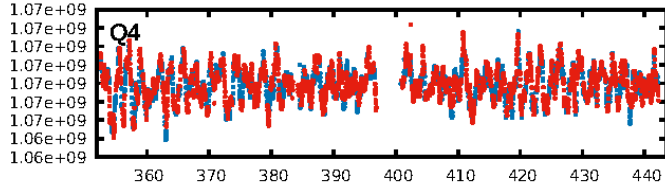
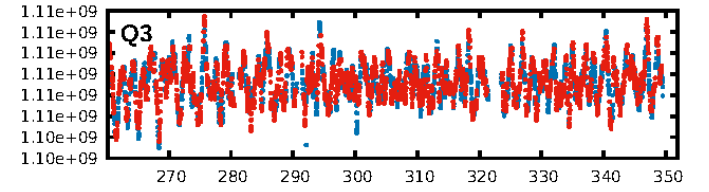
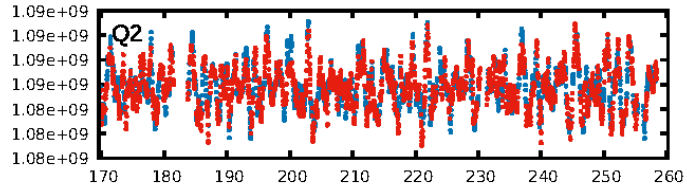
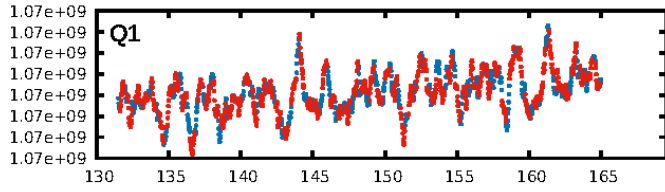
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [92.70σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.35e-14
RollingBand-fgt: 0.99 [1850/1867]
GhostDiagnostic-chr: 0.5684
Centroid-sig: N/A
Centroid-so: 0.749 arcsec [0.79σ]
OotOffset-rm: 2.252 arcsec [1.24σ]
KicOffset-rm: 2.603 arcsec [1.35σ]
OotOffset-st: 1/1/1/5 [8]
KicOffset-st: 1/1/1/5 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 1.00 [14/14]

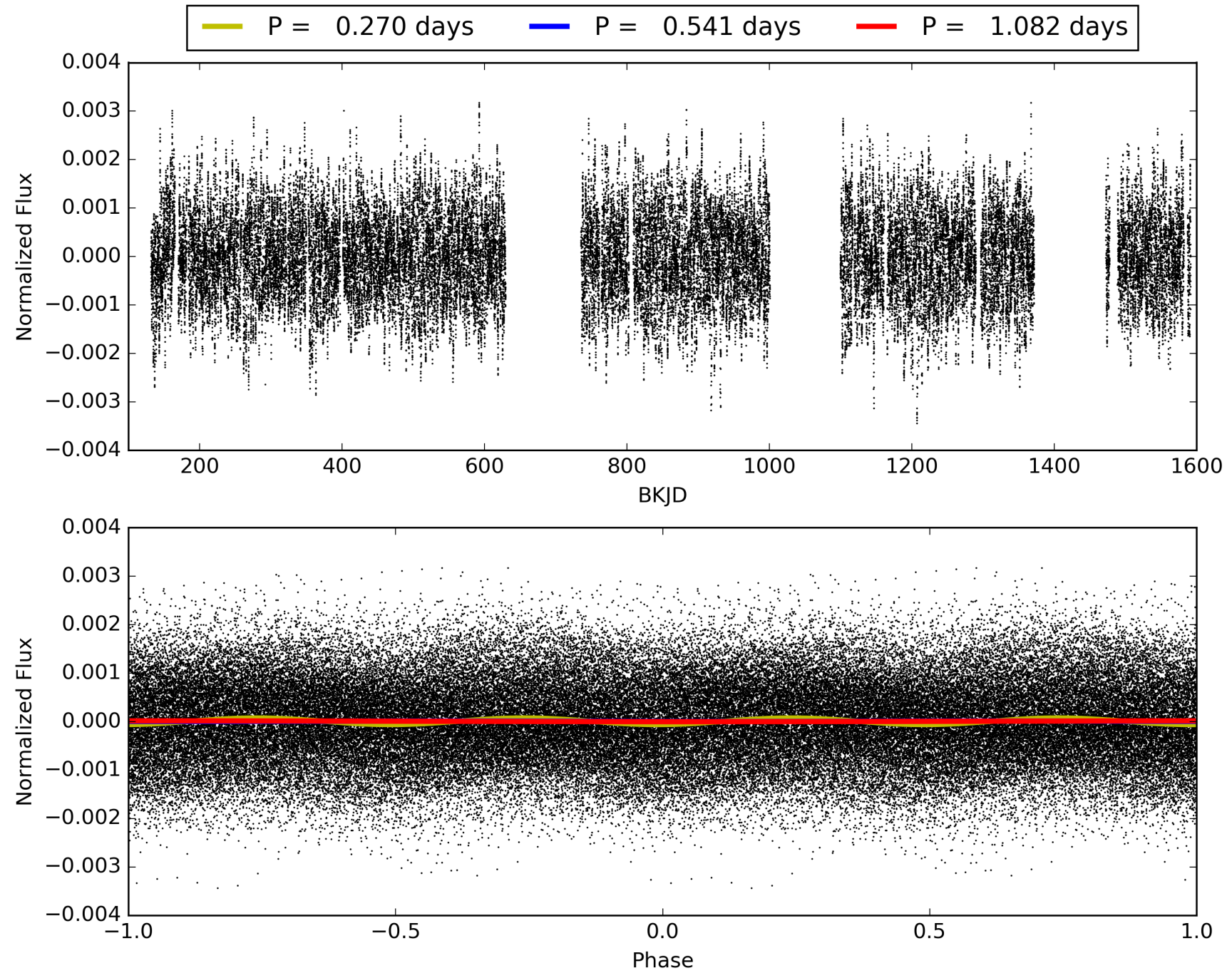
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:24:16 Z

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

TCE 009964614-01, PDC Light Curves

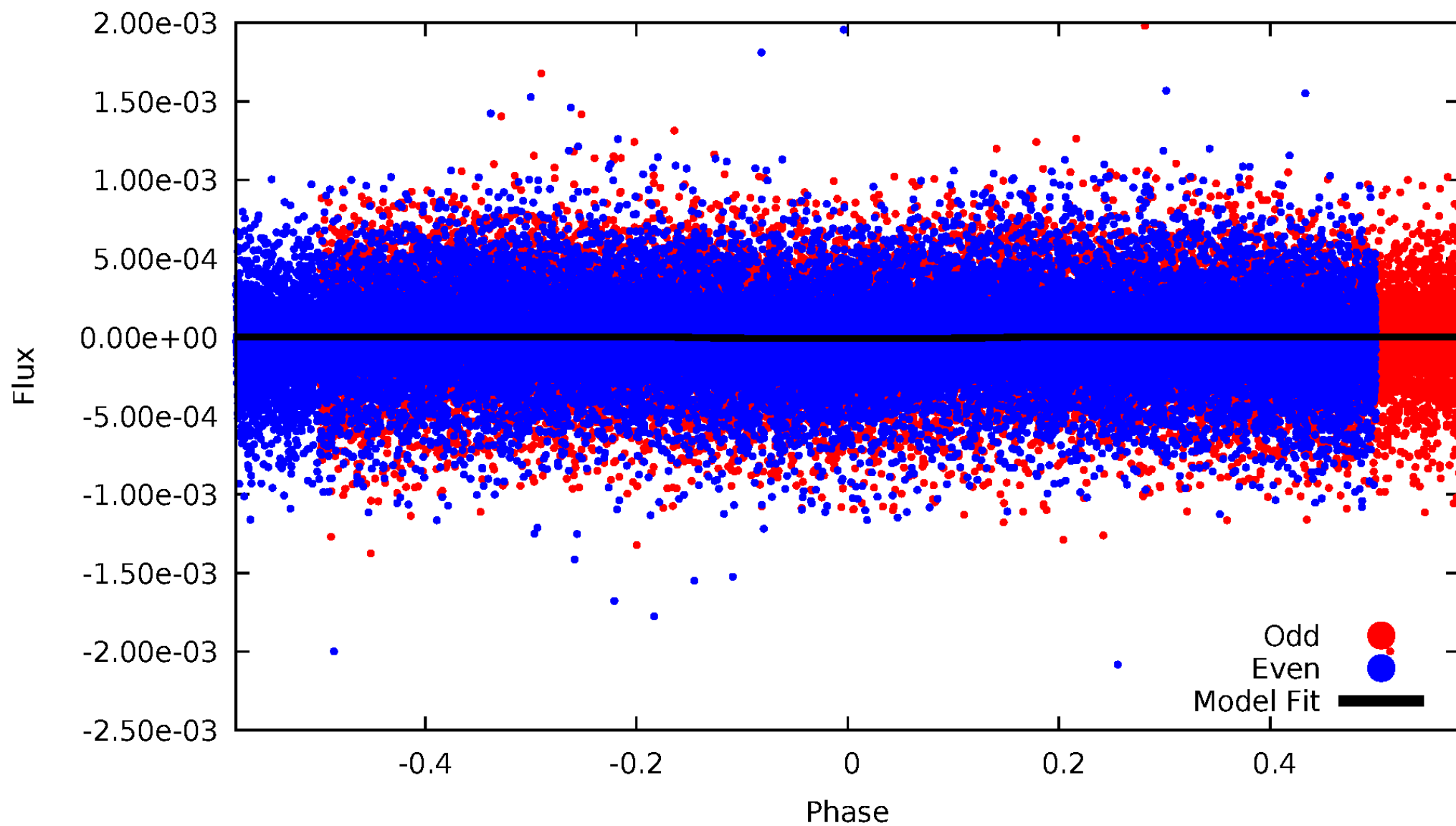


TCE 009964614-01



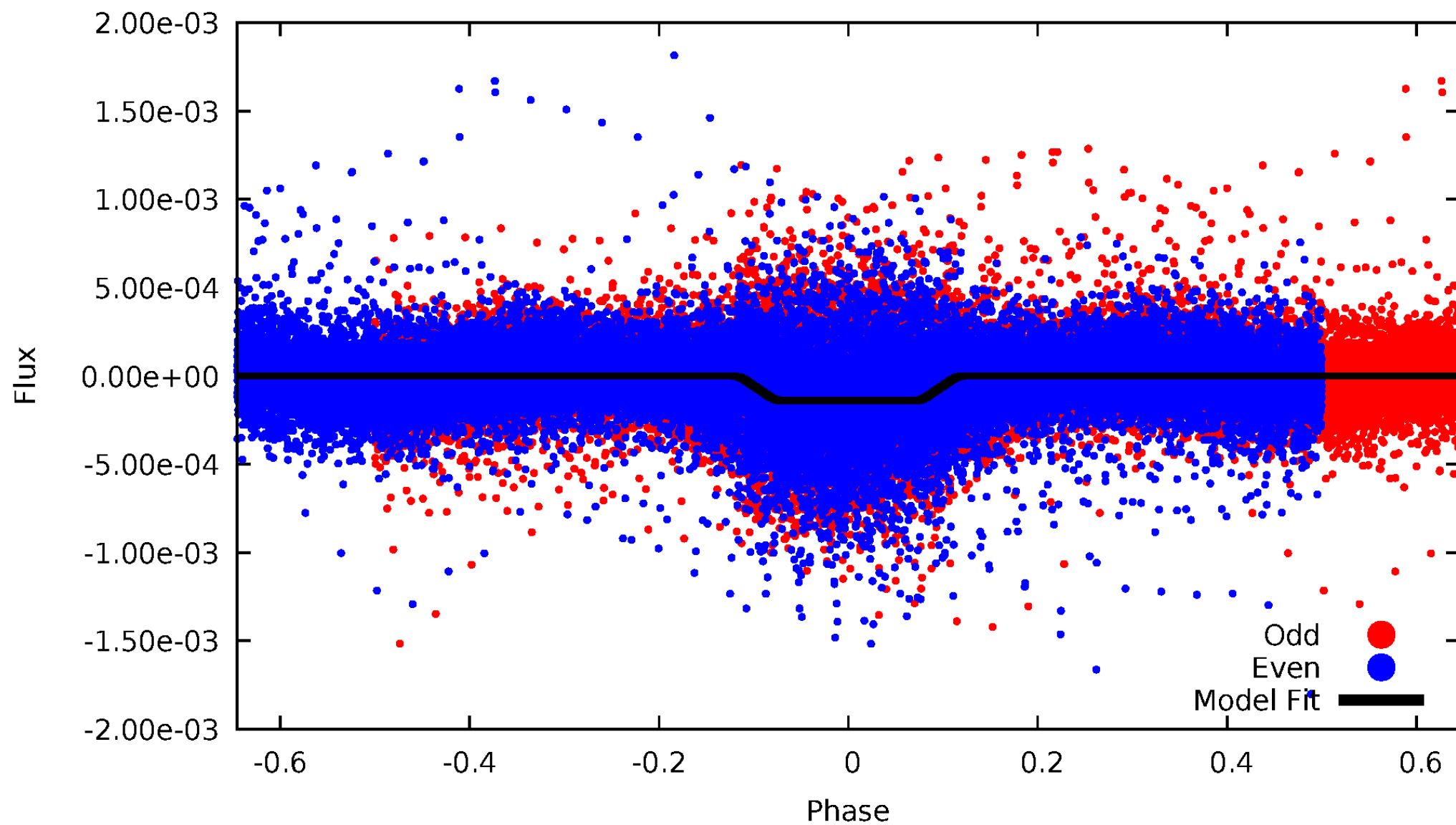
DV Odd/Even

TCE 009964614-01

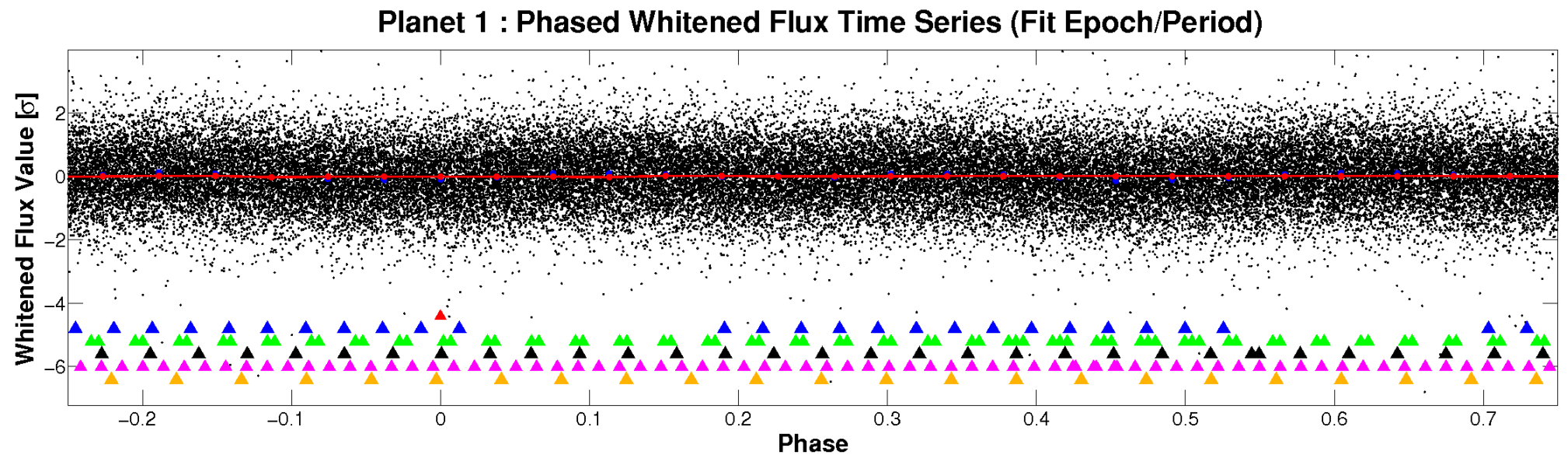
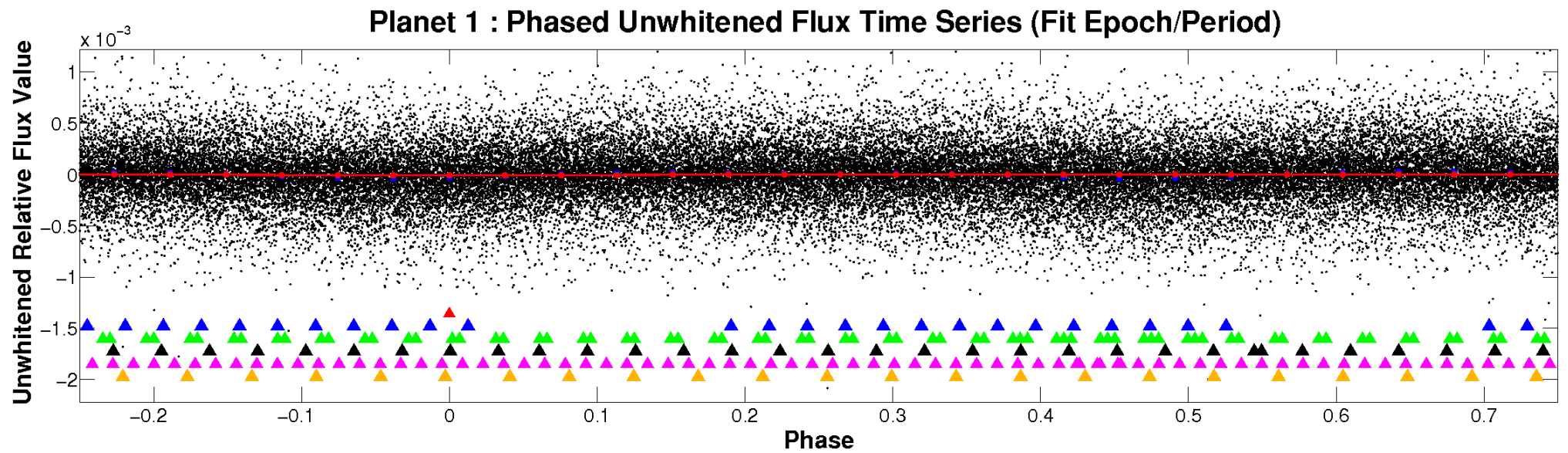


ALT Odd/Even

TCE 009964614-01

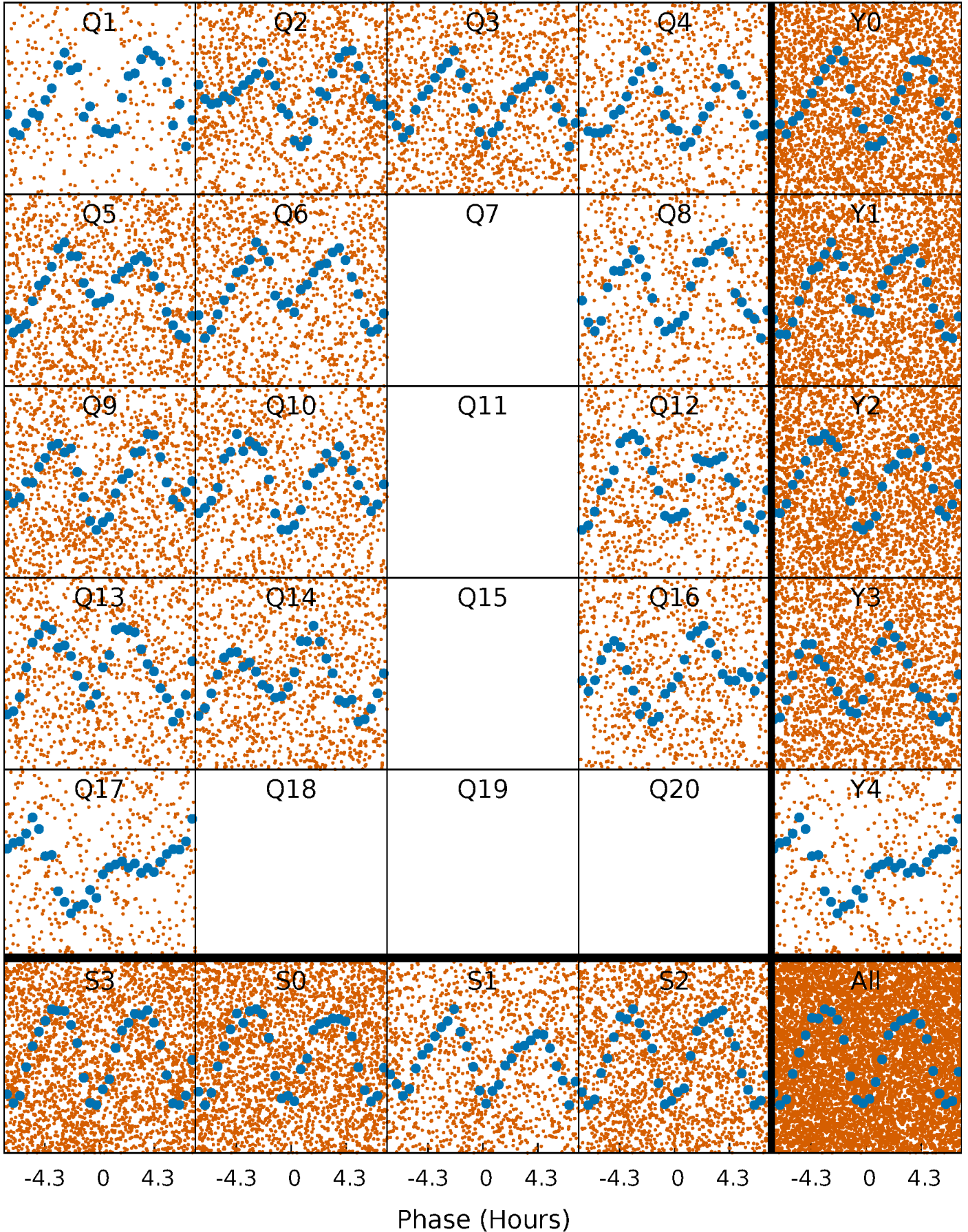


Non-Whitened Vs. Whitened Light Curve



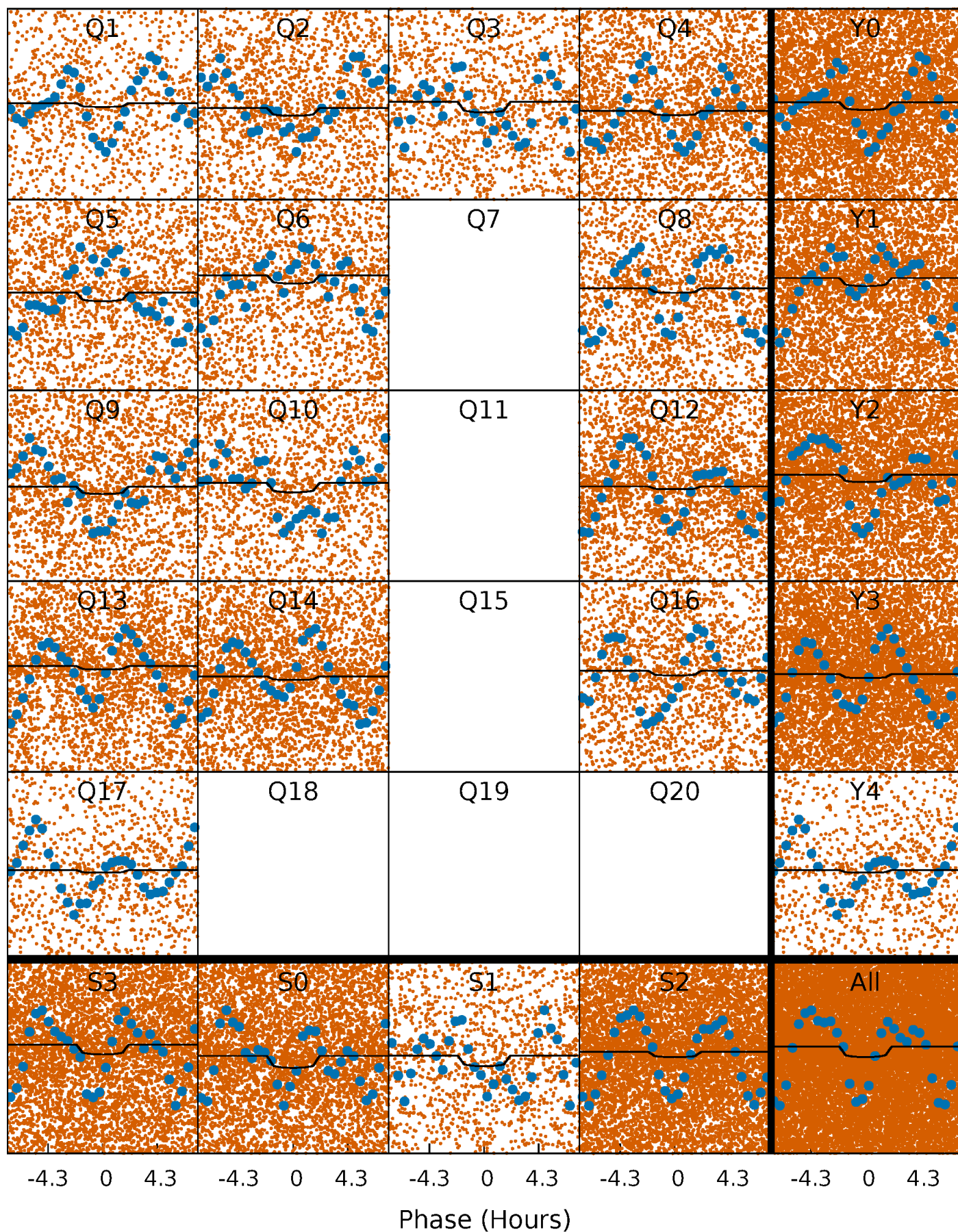
PDC Quarter-Phased Transit Curves

TCE 009964614-01 P= 0.540887 Days $T_0=131.760905$ (BKJD)



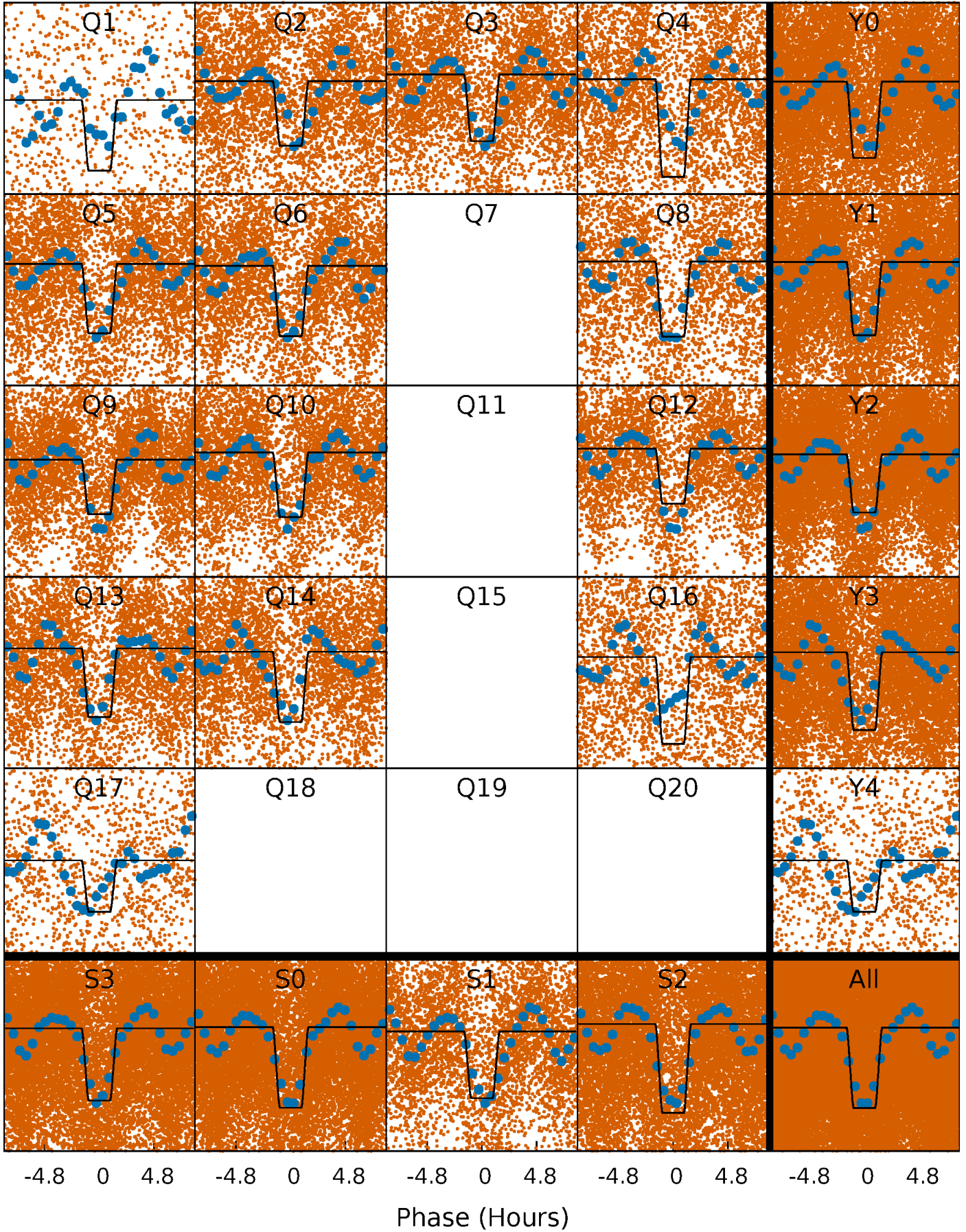
DV Quarter-Phased Transit Curves

TCE 009964614-01 P= 0.540887 Days $T_0=131.760905$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

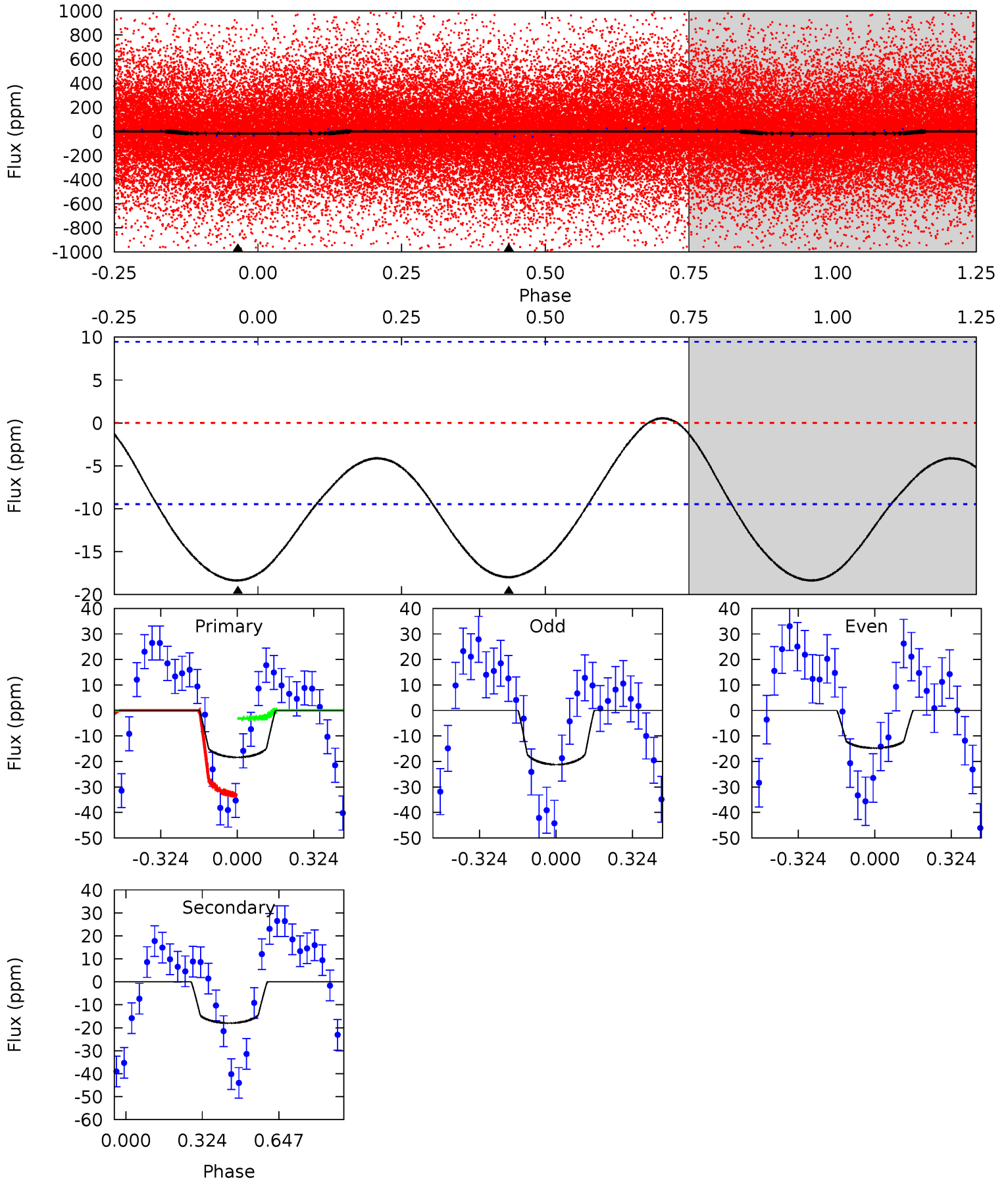
TCE 009964614-01 P= 0.540880 Days $T_0=131.758680$ (BKJD)



DV Model-Shift Uniqueness Test

009964614-01, P = 0.540887 Days, E = 131.220018 Days

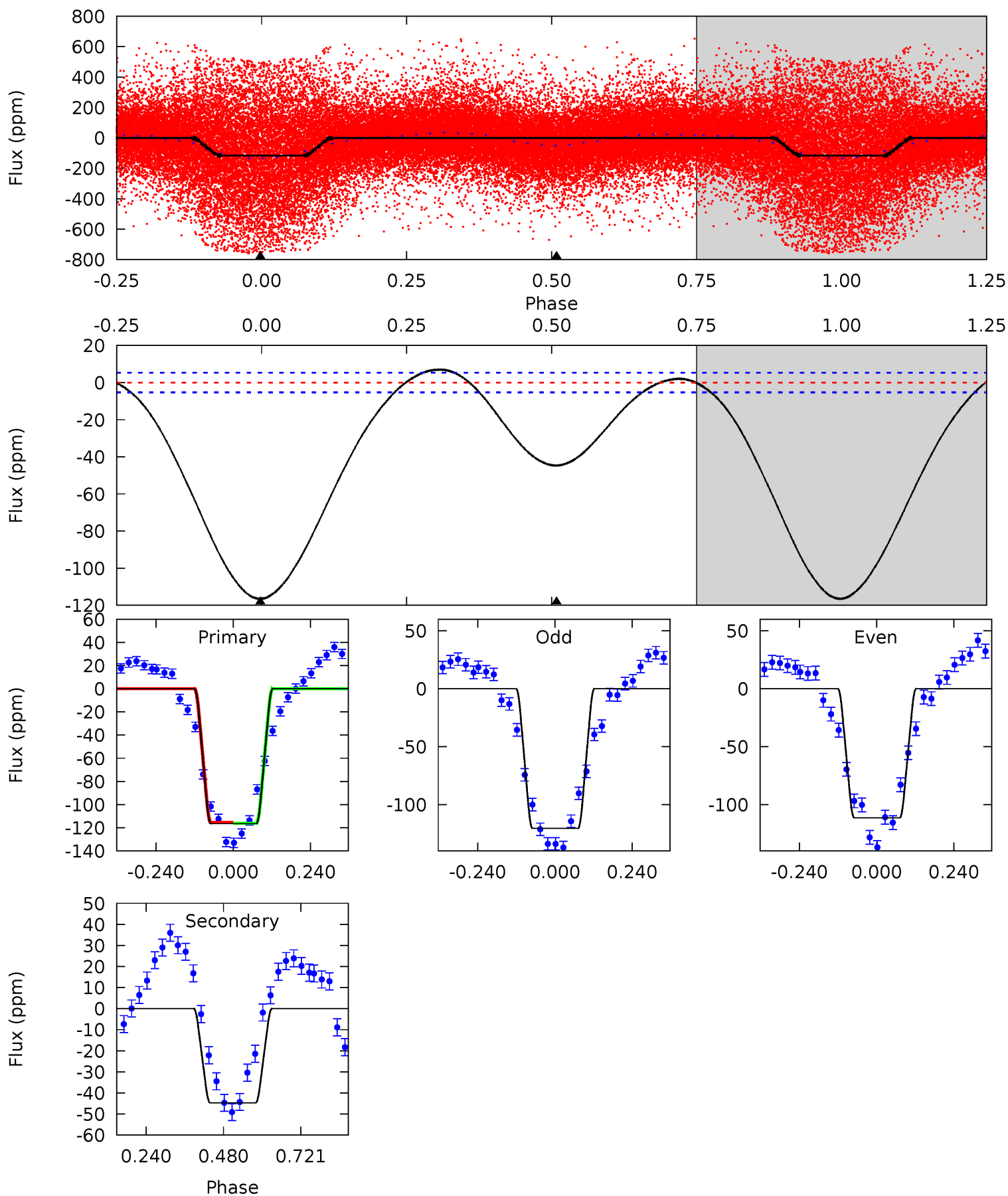
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.38	8.20	0	0	4.31	0.99	0.82	8.38	8.38	8.20	8.20	1.49	1.39	0.03	6.97



Alt Model-Shift Uniqueness Test

009964614-01, P = 0.540880 Days, E = 131.217800 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.8	36.8	0	0	4.38	1.17	2.74	95.8	95.8	36.8	36.8	3.78	1.02	0.06	0.32



Stellar Parameters For KIC 009964614

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9128^{+286}_{-430}	$4.049^{+0.193}_{-0.158}$	$0.070^{+0.200}_{-0.700}$	$2.340^{+0.723}_{-0.723}$	$2.236^{+0.349}_{-0.598}$	$0.246^{+0.304}_{-0.121}$
	+3%/-5%	+5%/-4%	+286%/-1000%	+31%/-31%	+16%/-27%	+124%/-49%
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 009964614-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-18 ± 2	$0.73^{+0.32}_{-0.31}$	6555^{+482}_{-531}	11680^{+8657}_{-2777}	$5.346^{+10.922}_{-2.826}$
Alt.	-45 ± 1	$3.01^{+0.57}_{-0.57}$	6581^{+515}_{-558}	5725^{+580}_{-530}	$0.783^{+0.347}_{-0.224}$

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

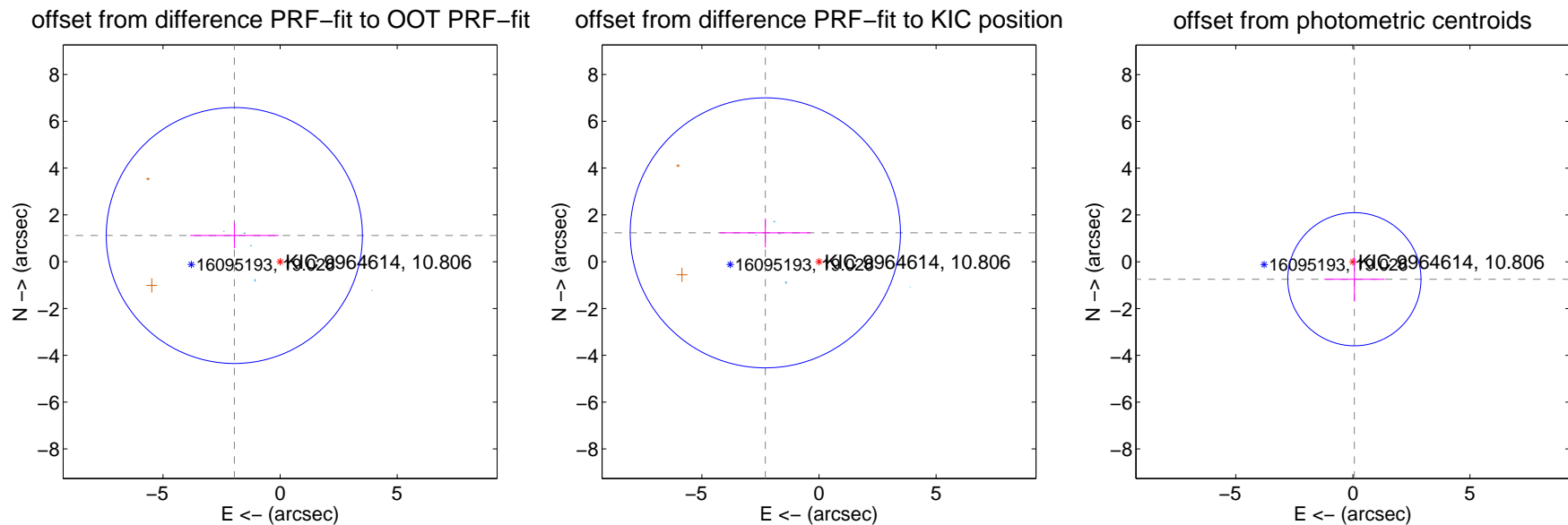
DV Centroid Data

Supplemental centroid analysis for 009964614-01. **Kepler magnitude: 10.81.** Transit SNR 2.63

There are 5 quarters with good PRF difference image offsets

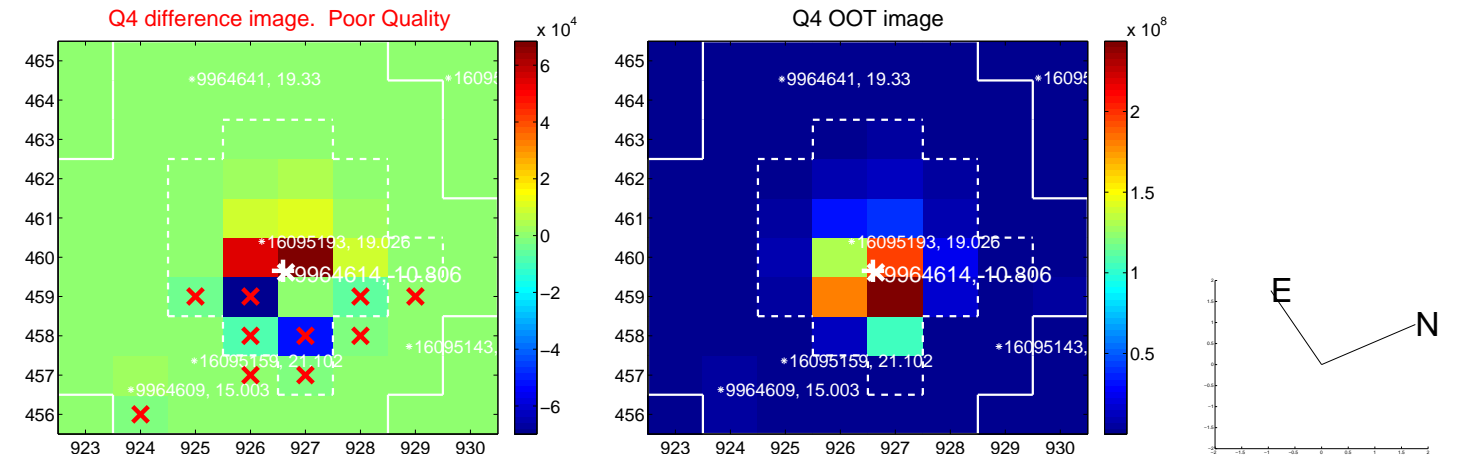
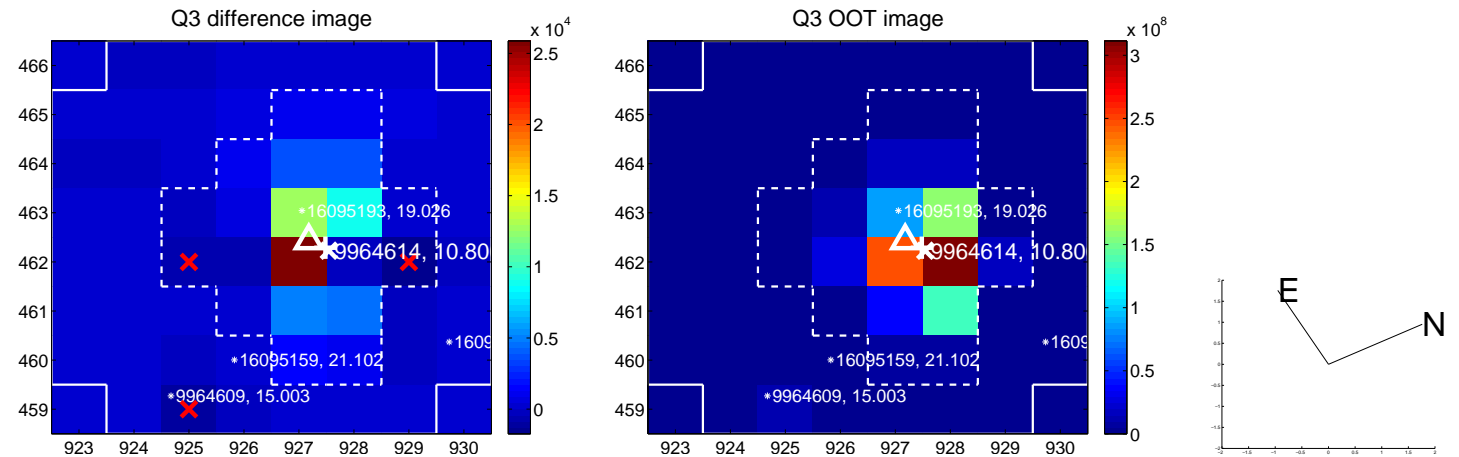
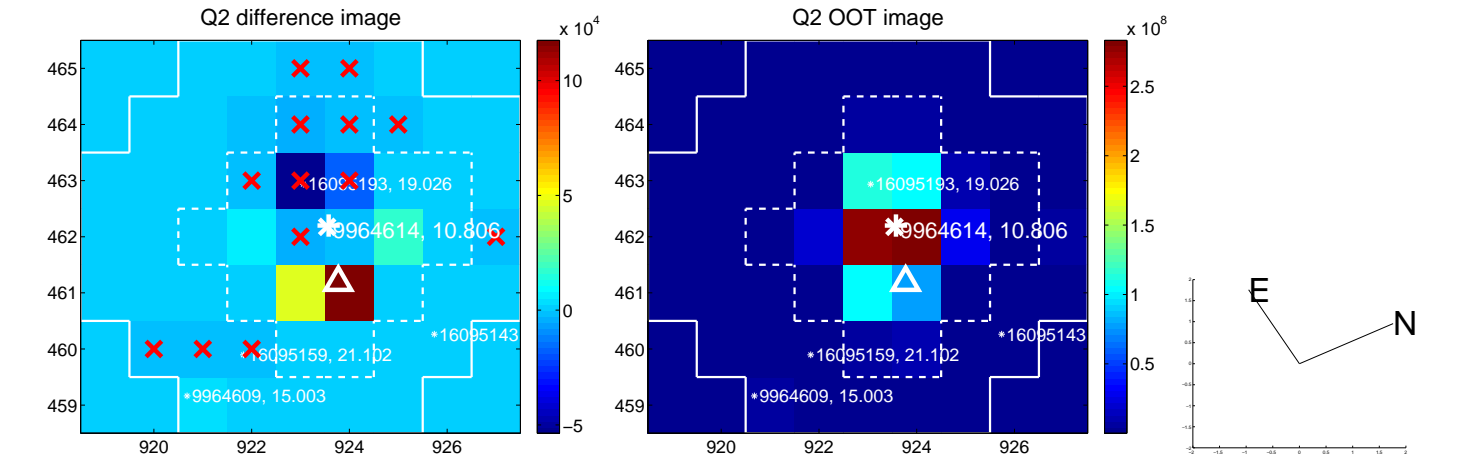
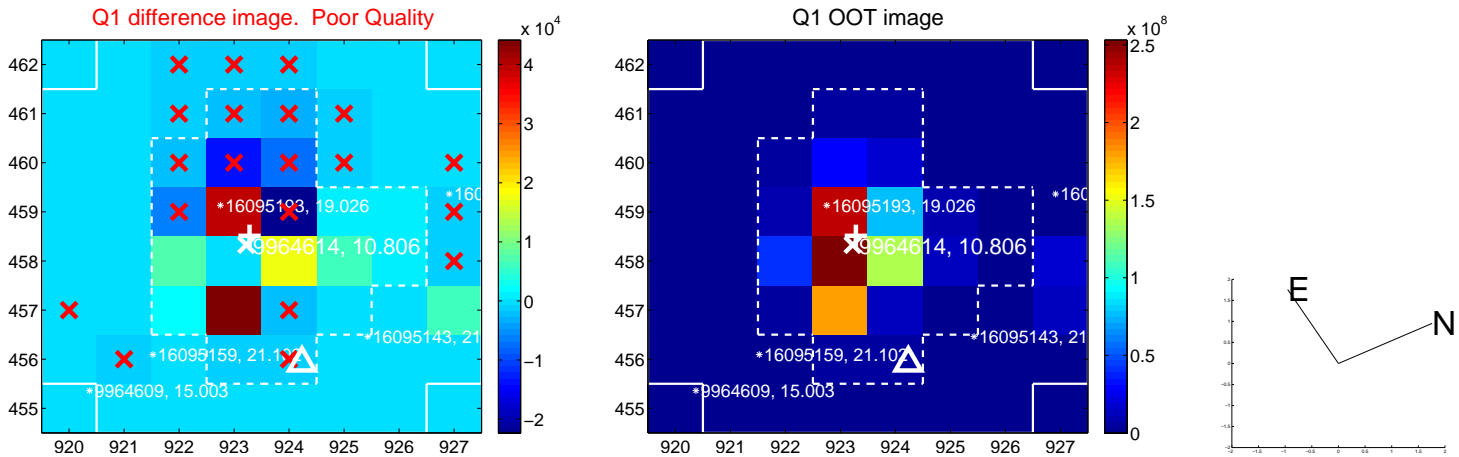
The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.252 ± 1.823	1.24	1.955 ± 1.890	1.118 ± 0.543
PRF-fit source offset from KIC position	2.603 ± 1.923	1.35	2.292 ± 1.937	1.233 ± 0.616
photometric centroid source offset	0.75 ± 0.95	0.79	-0.07 ± 1.29	-0.75 ± 0.95

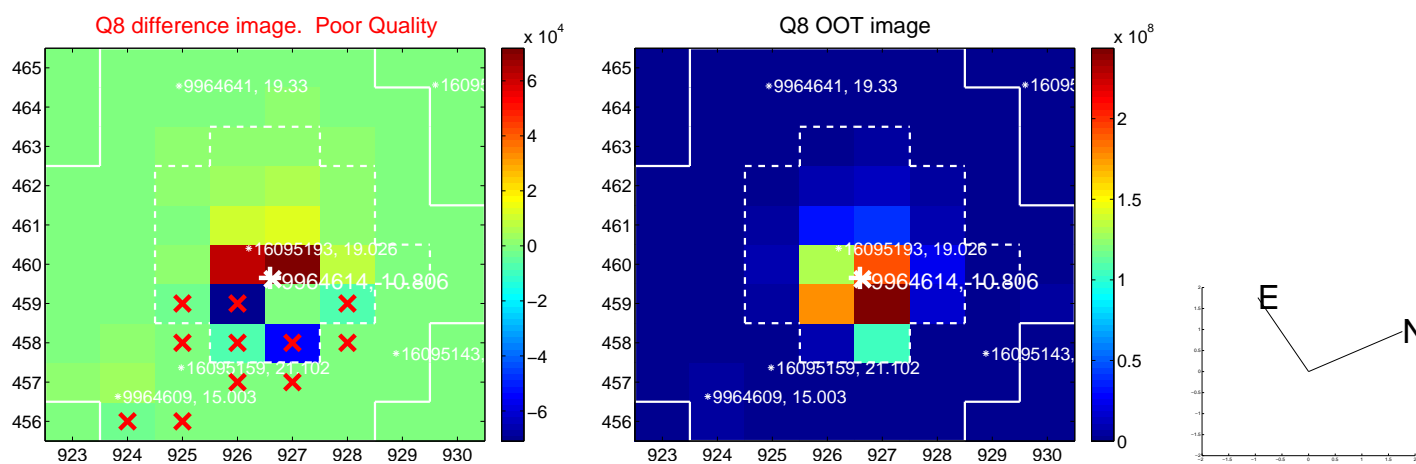
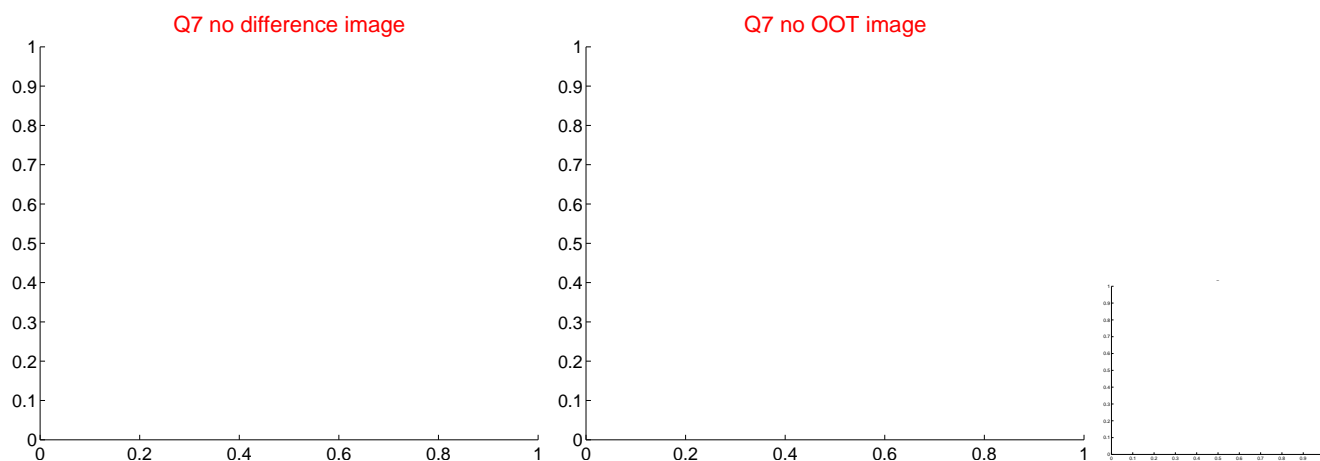
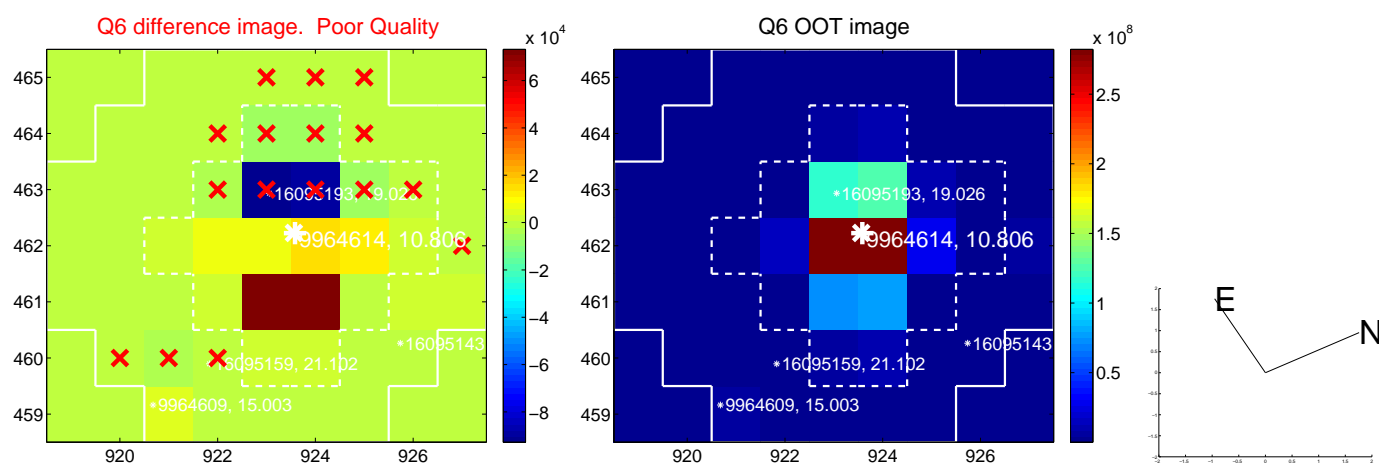
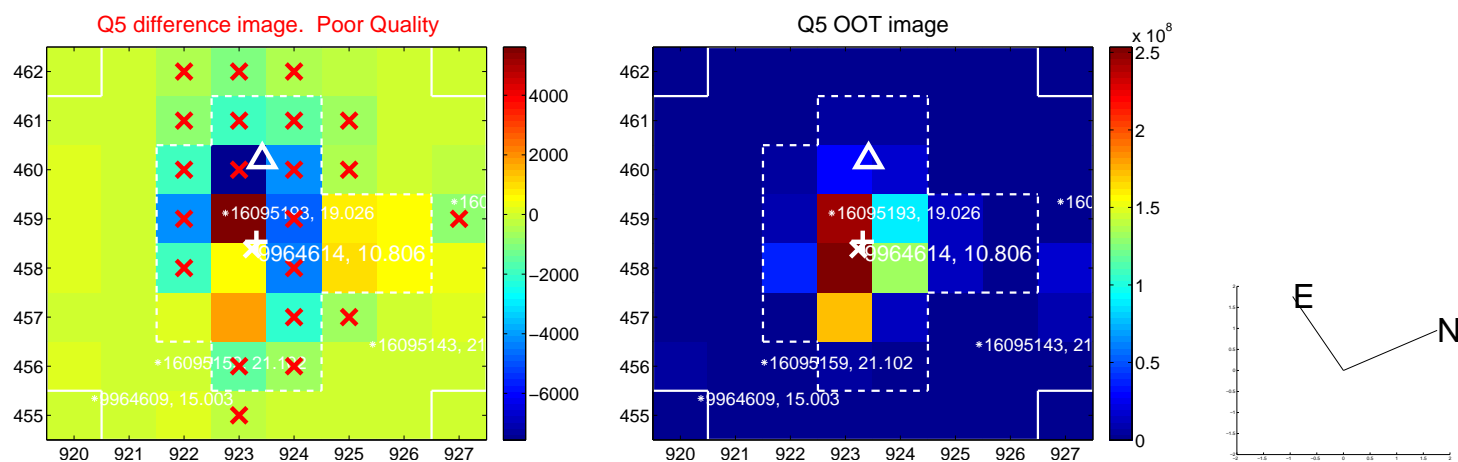


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

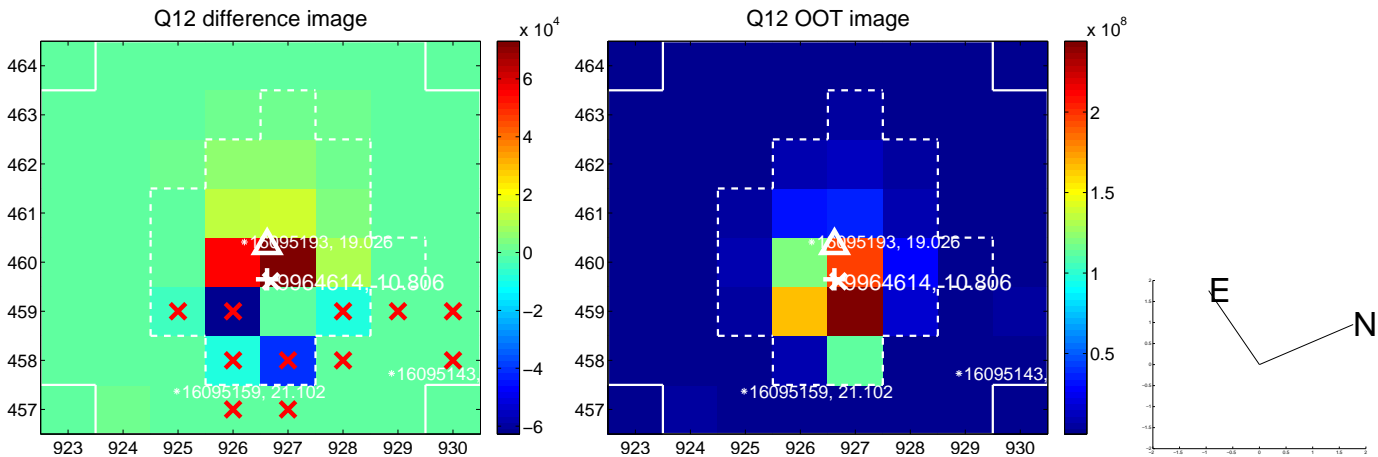
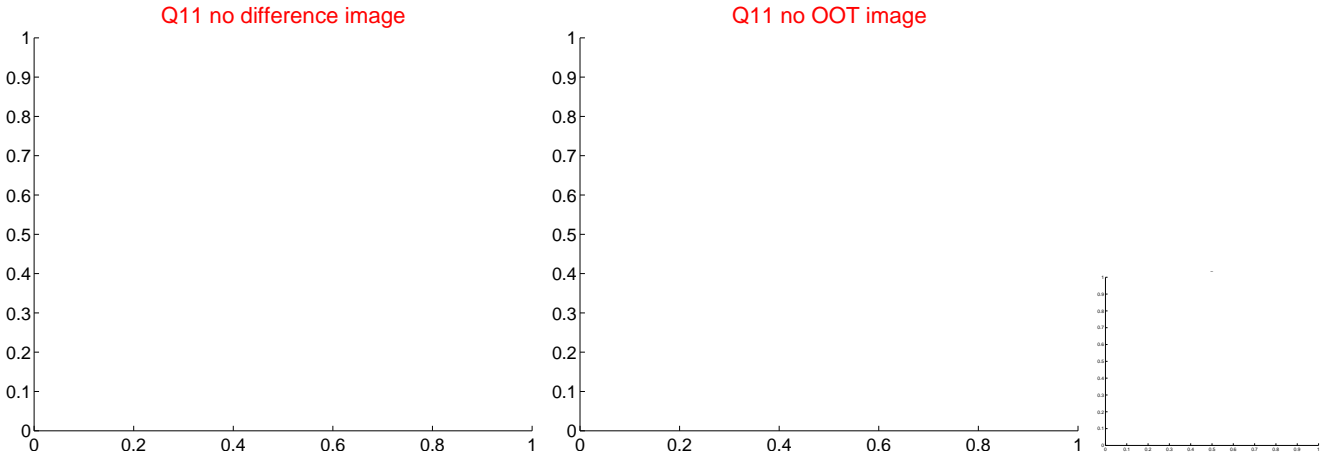
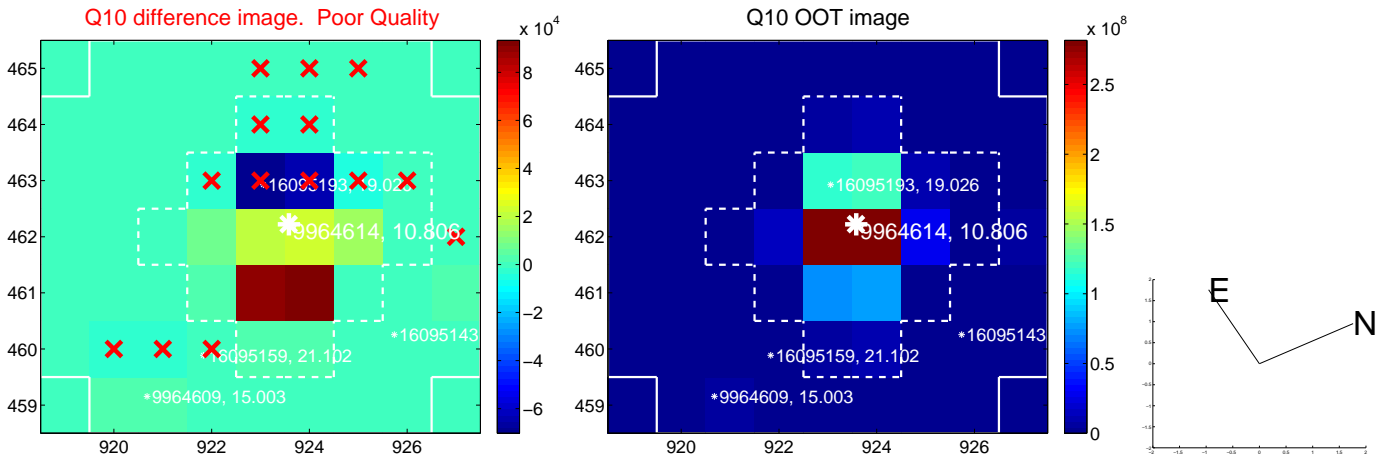
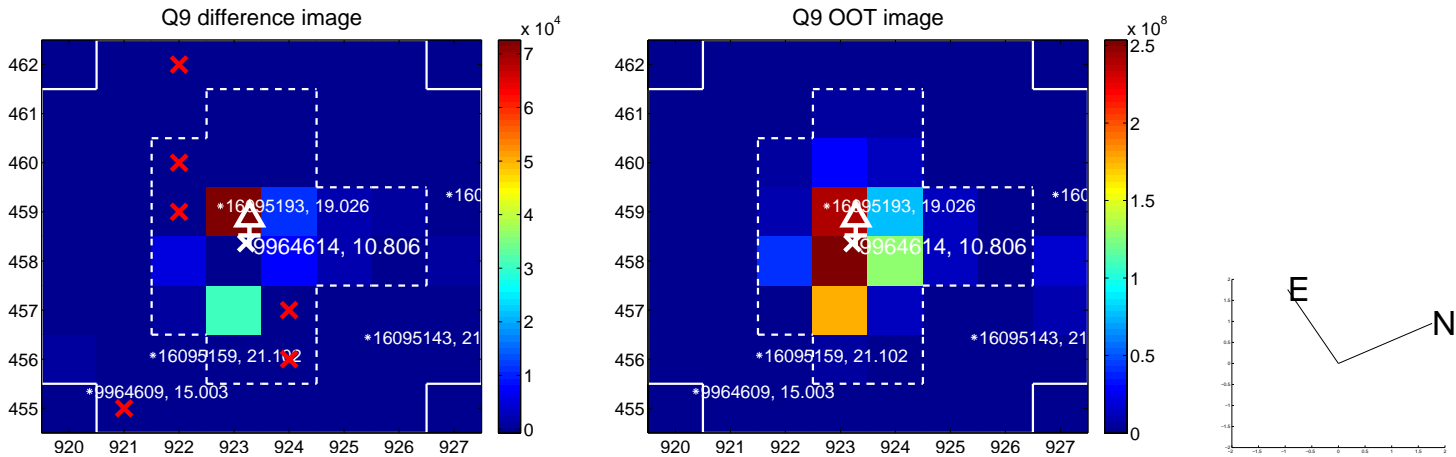
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



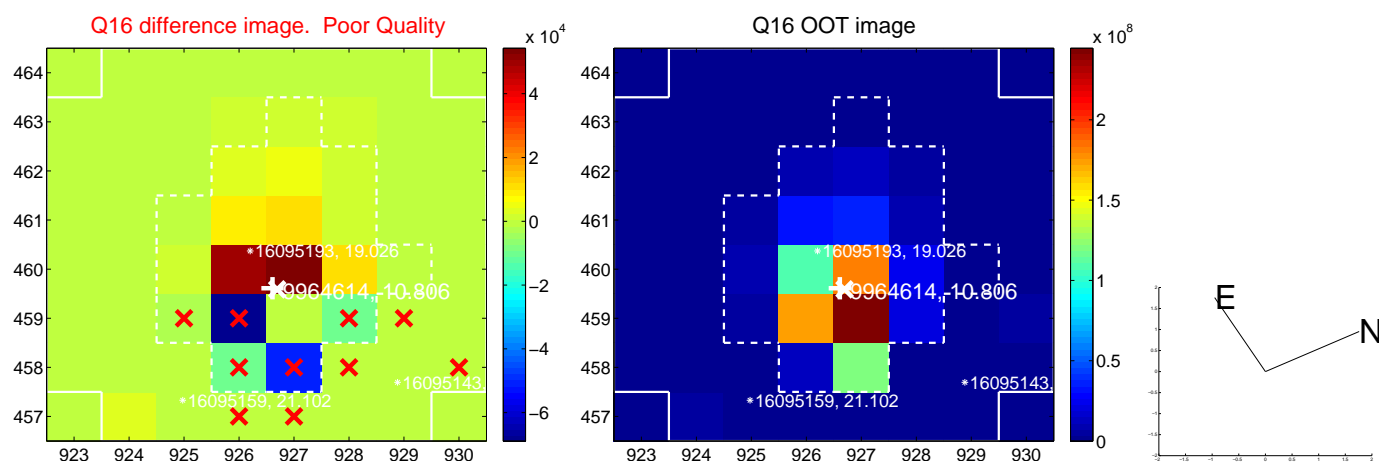
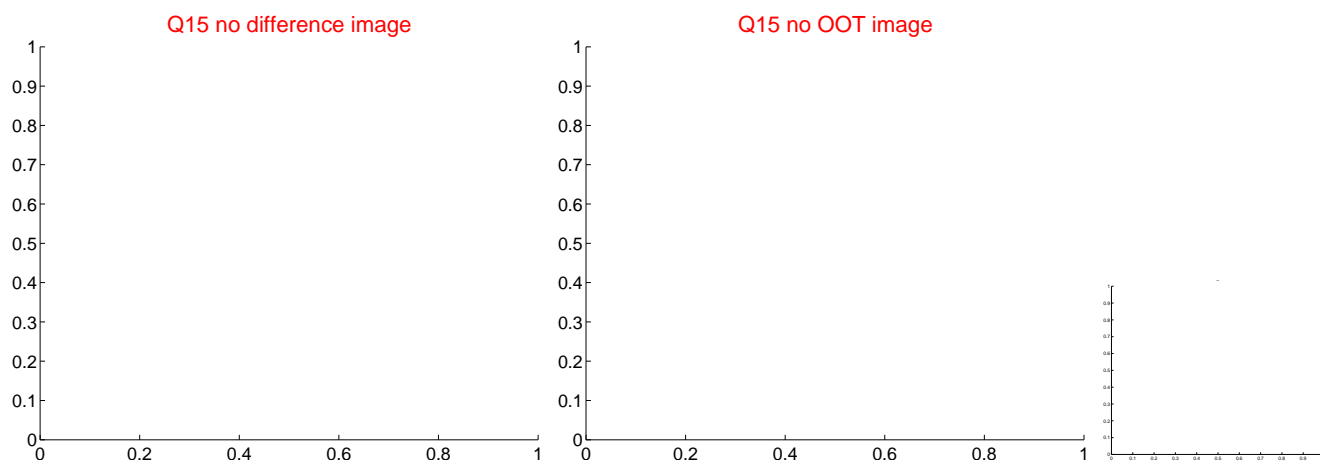
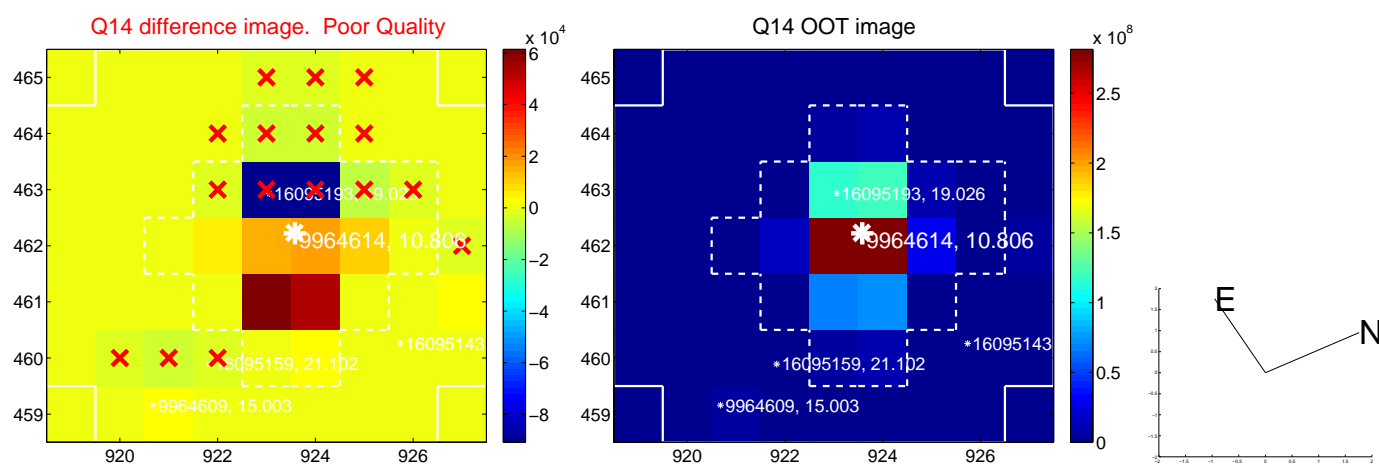
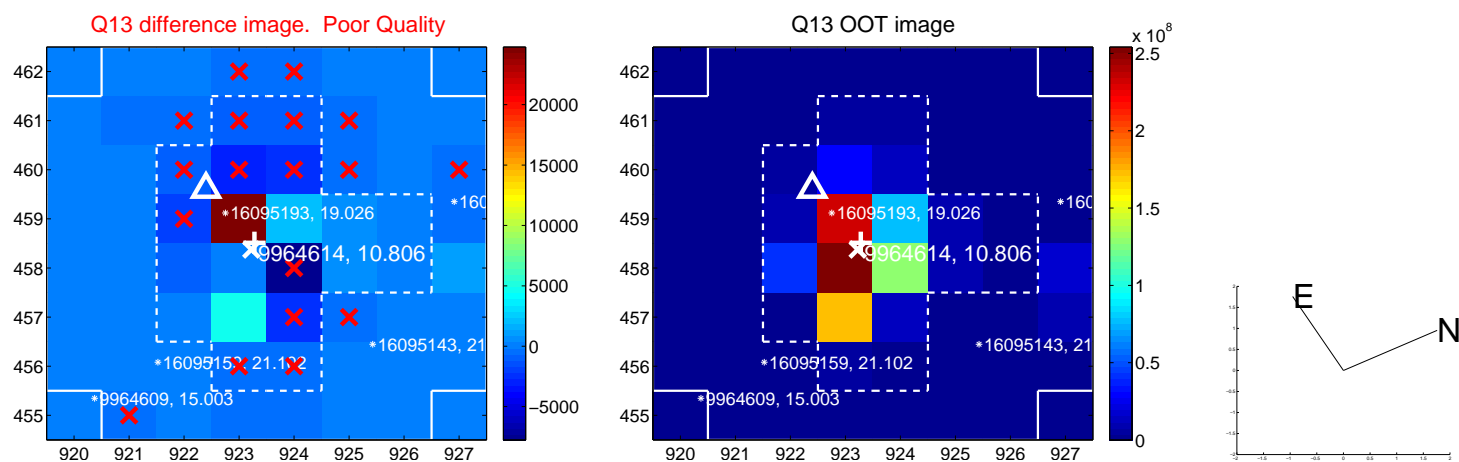
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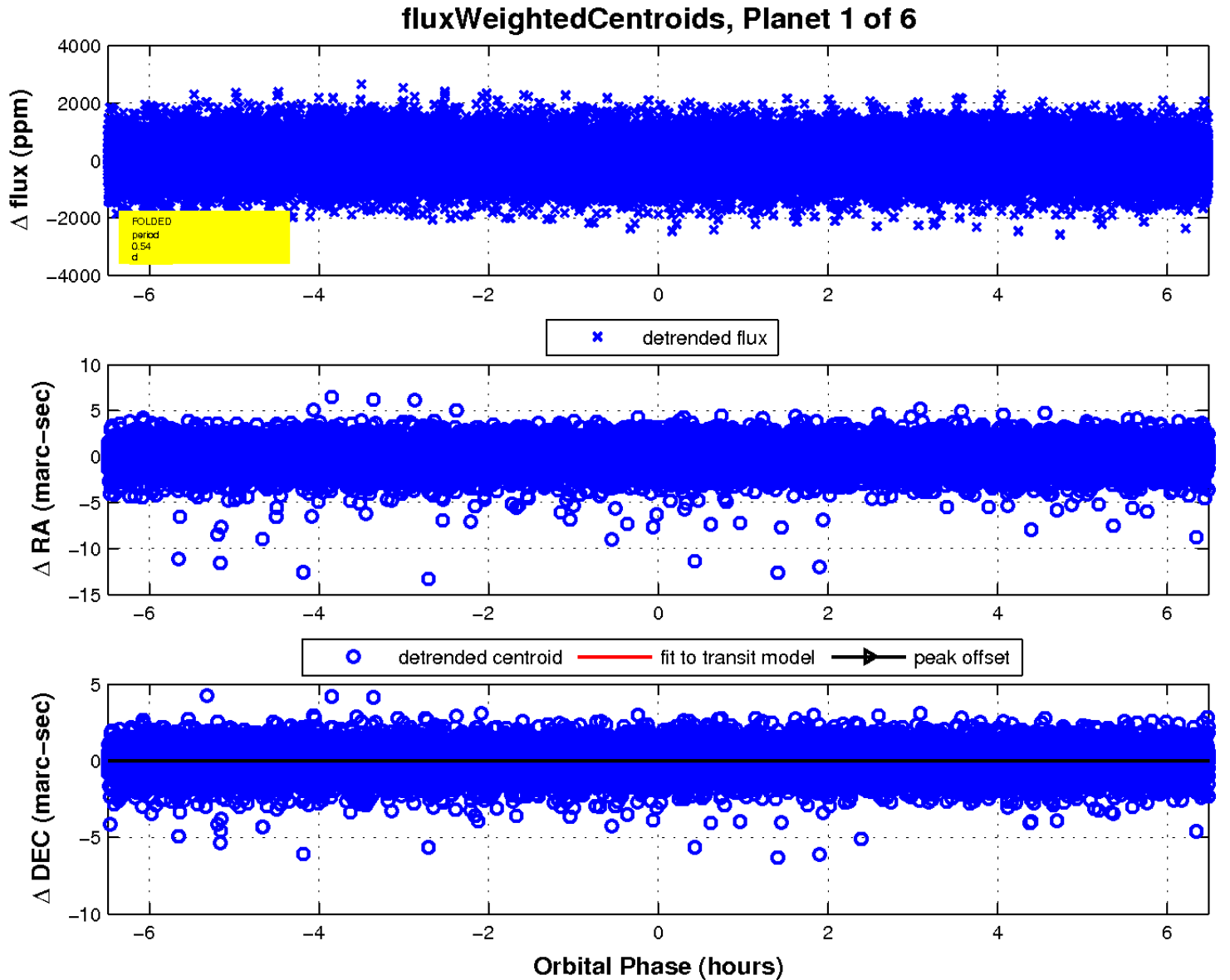
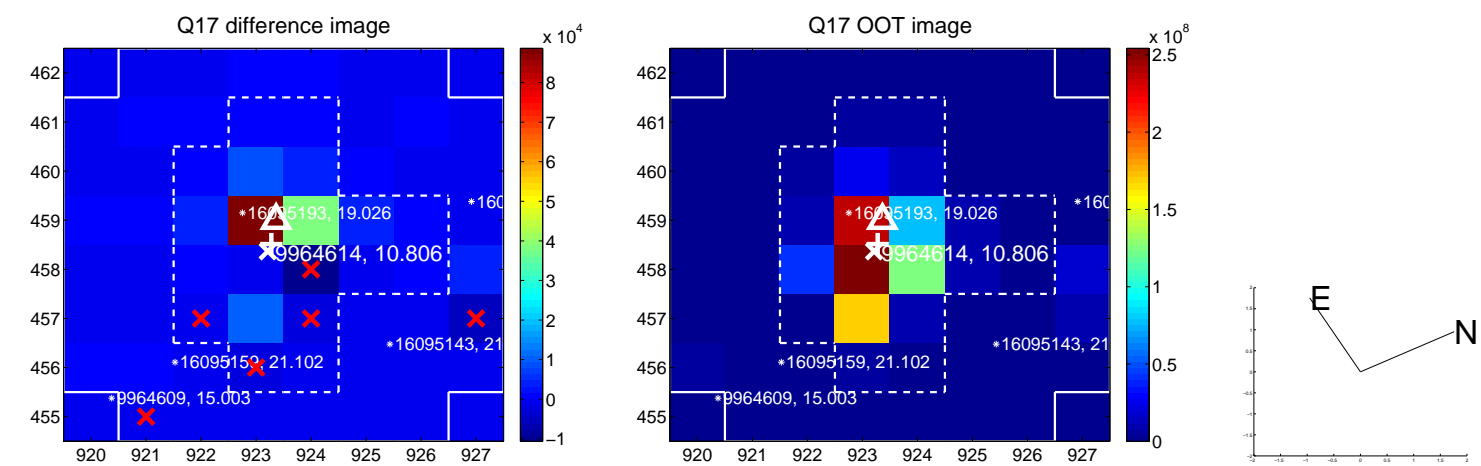
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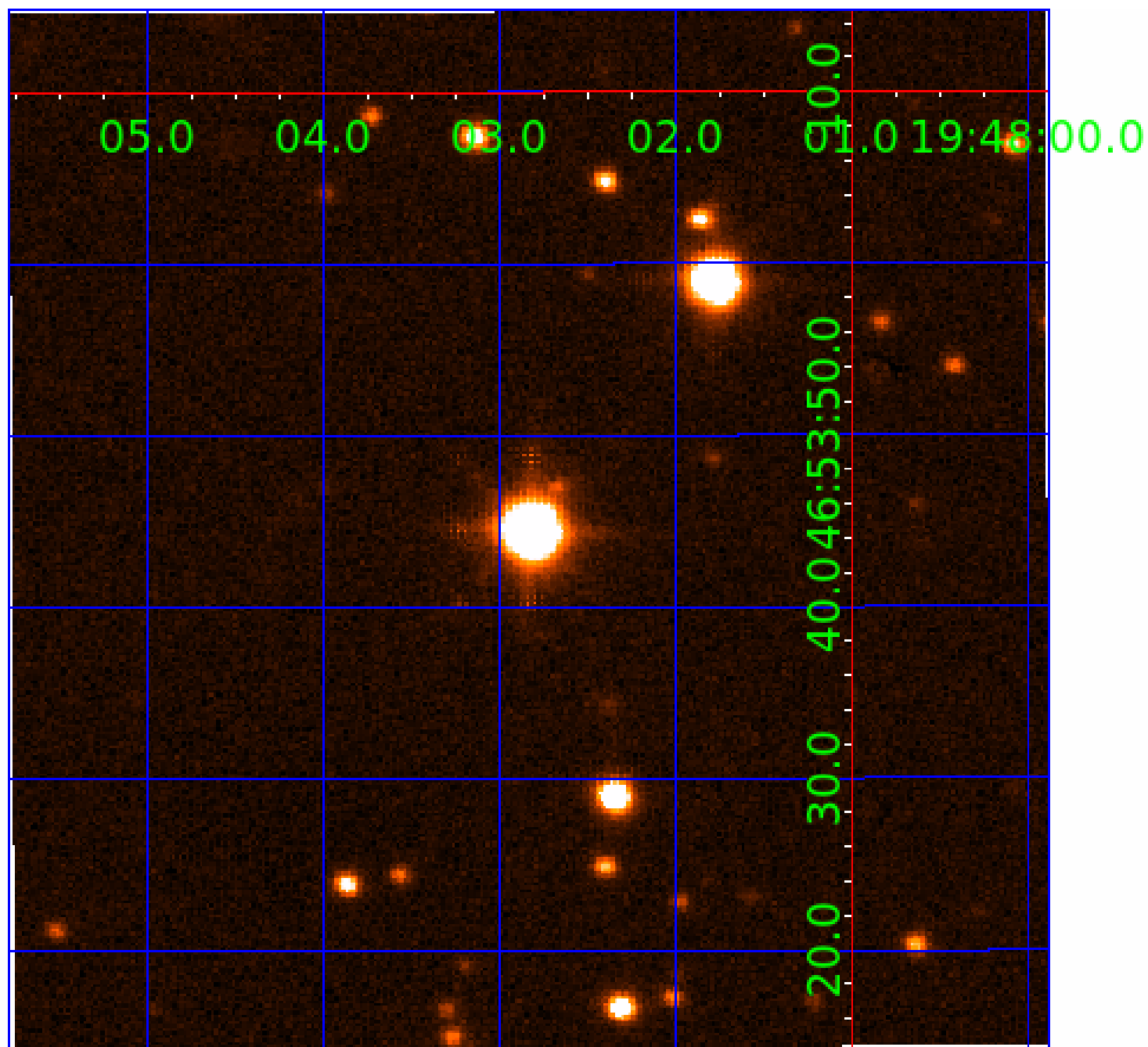


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009964614

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009964614-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
009964614-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—CENT_SATURATED
009964614-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

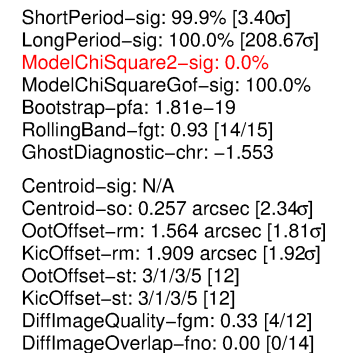
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

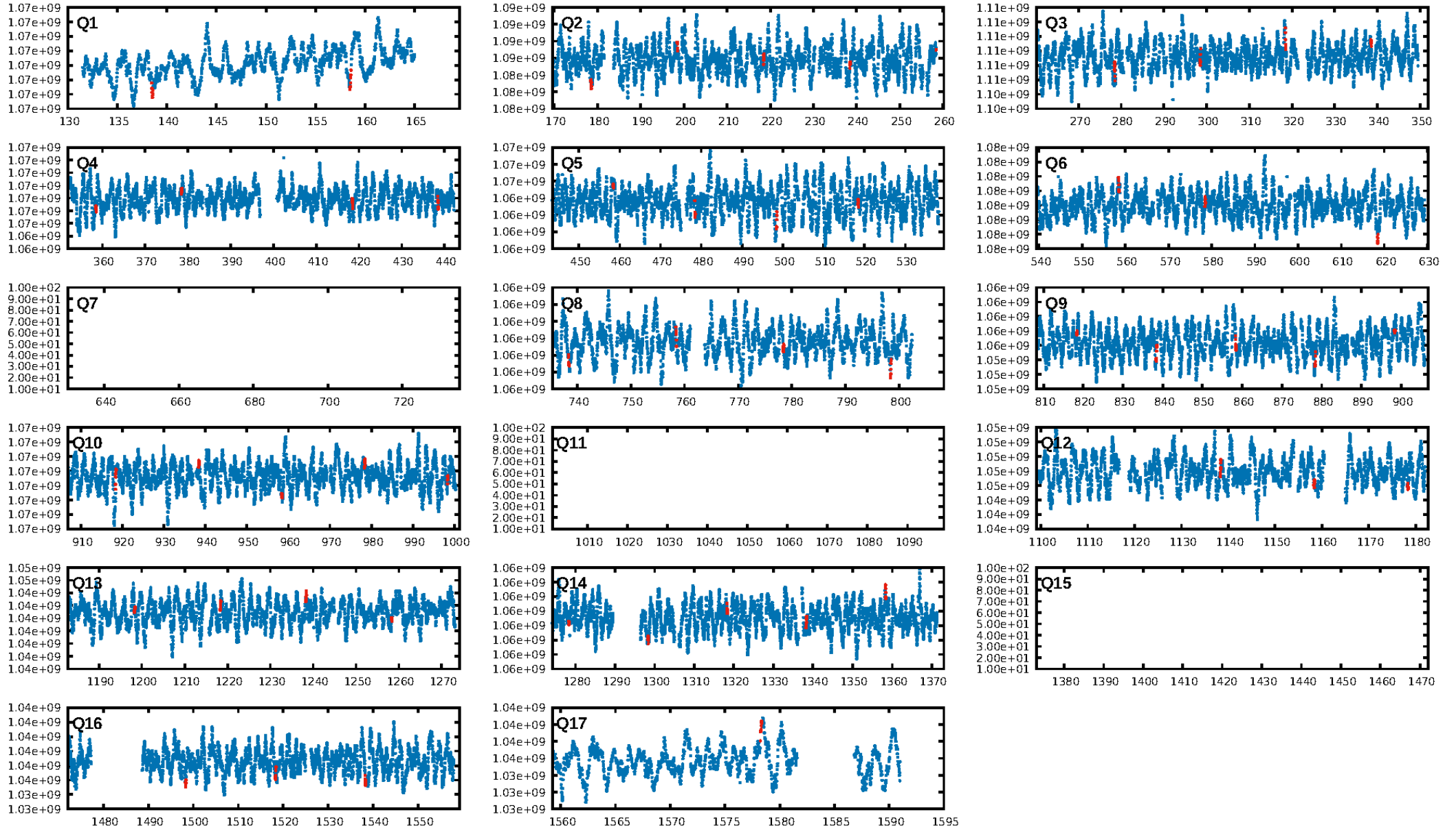
Ephemeris Match Information For 009964614-03

No Significant Match Found

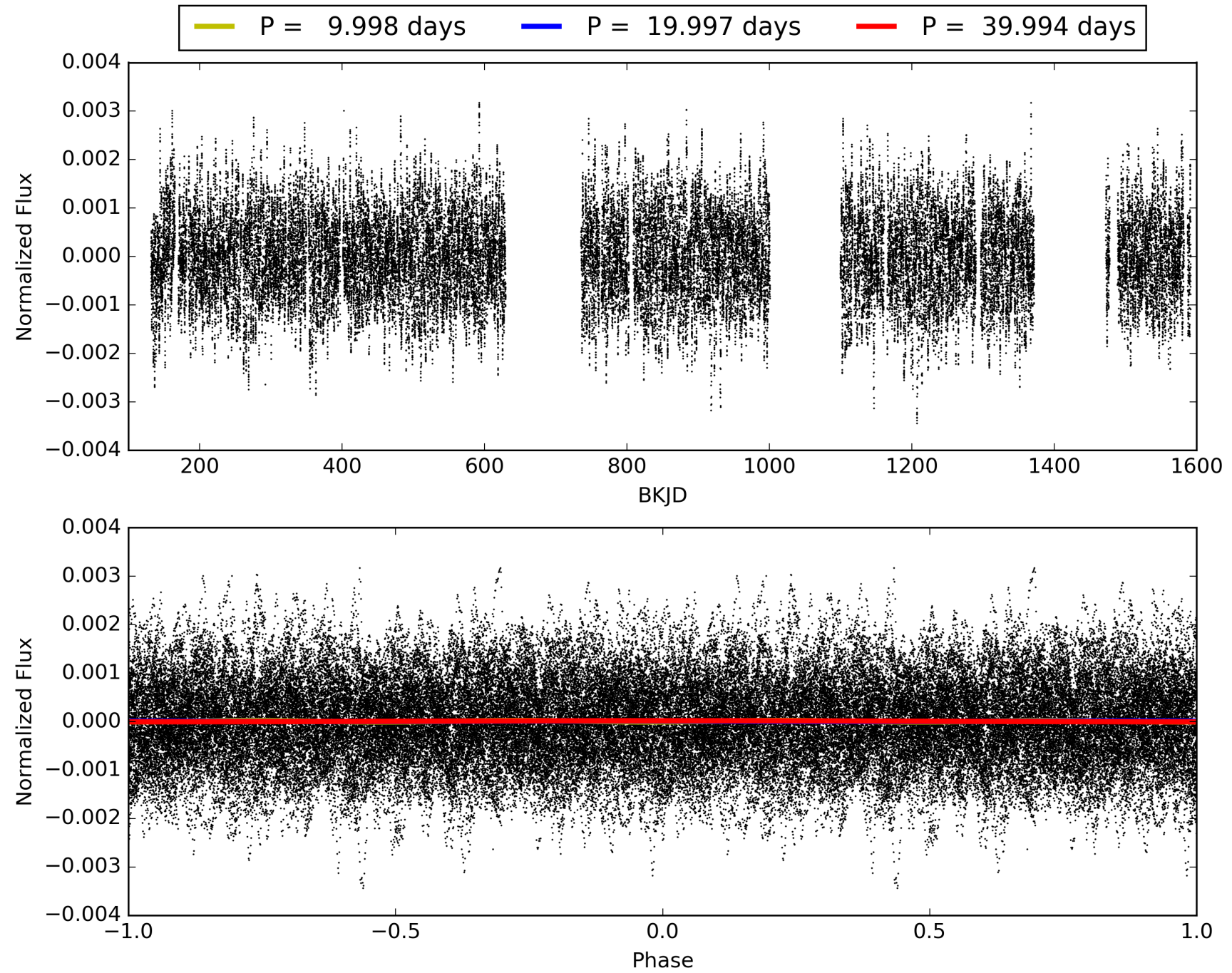
KIC: 9964614 Candidate: 3 of 6 Period: 19.997 d



TCE 009964614-03, PDC Light Curves

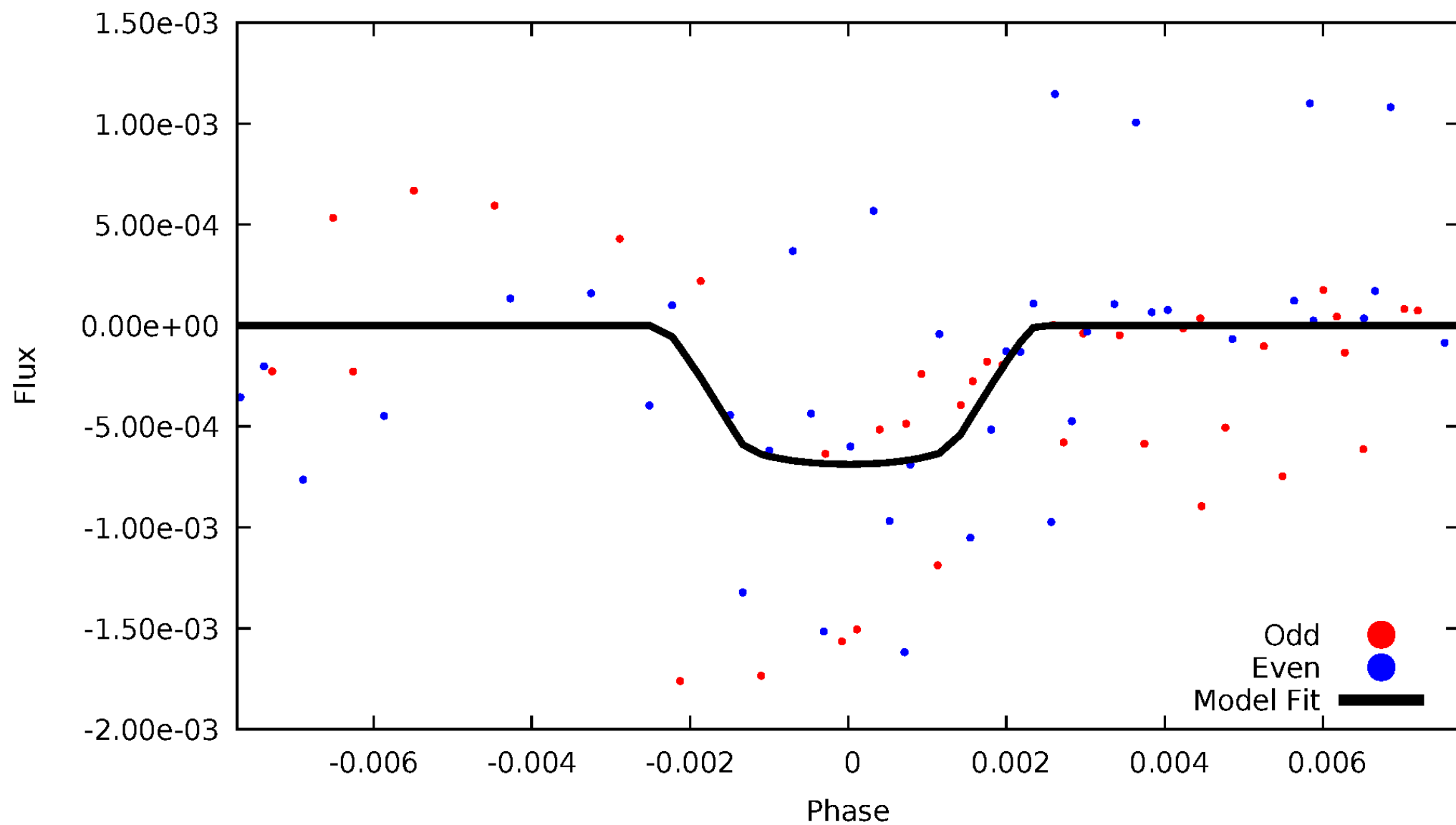


TCE 009964614-03



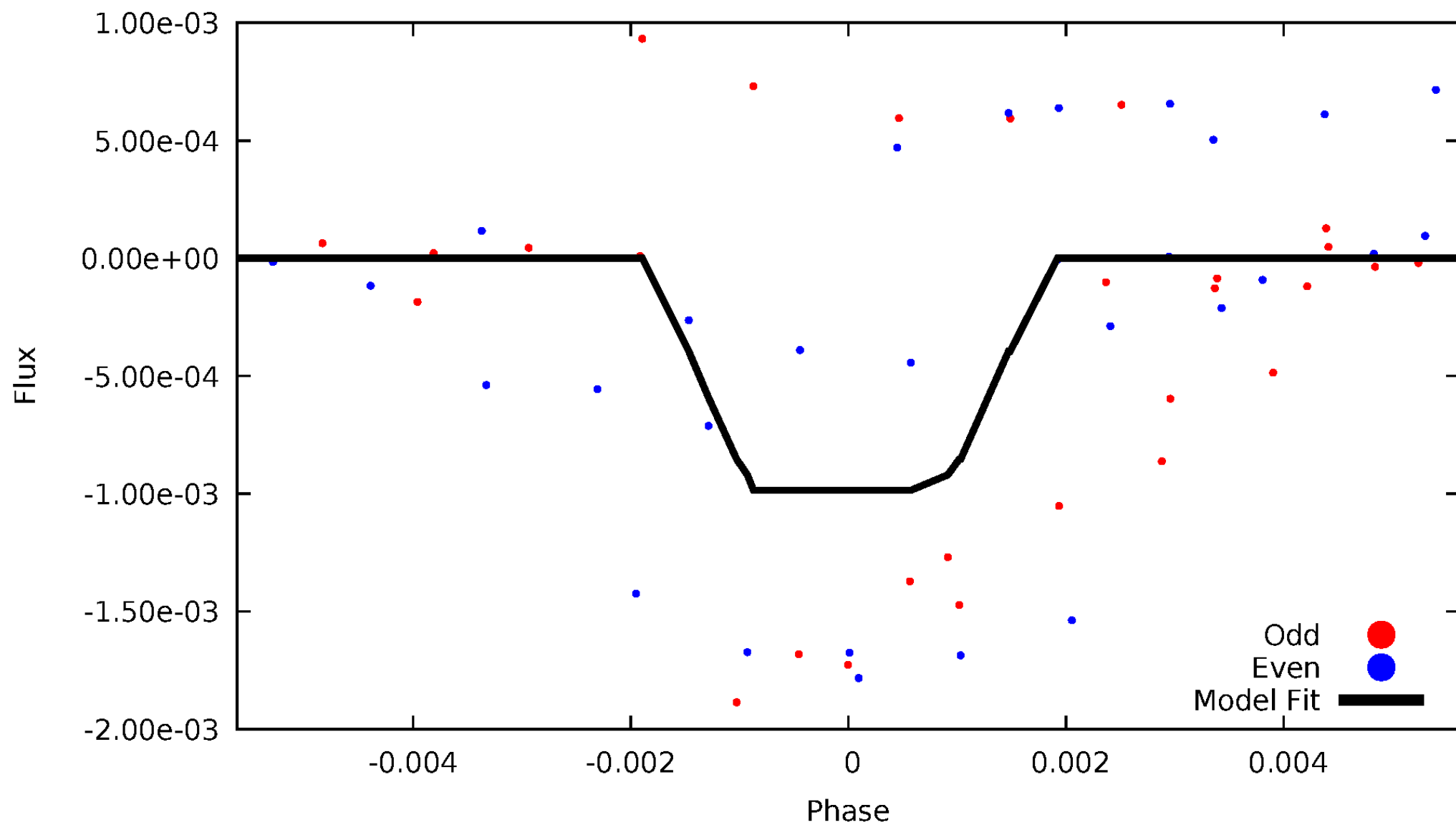
DV Odd/Even

TCE 009964614-03



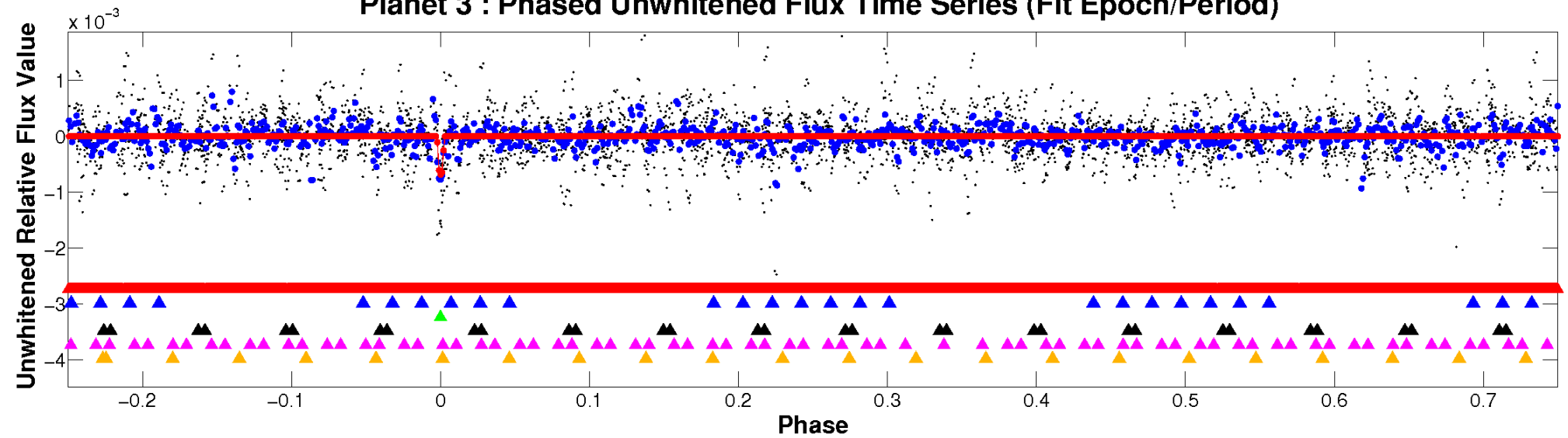
ALT Odd/Even

TCE 009964614-03

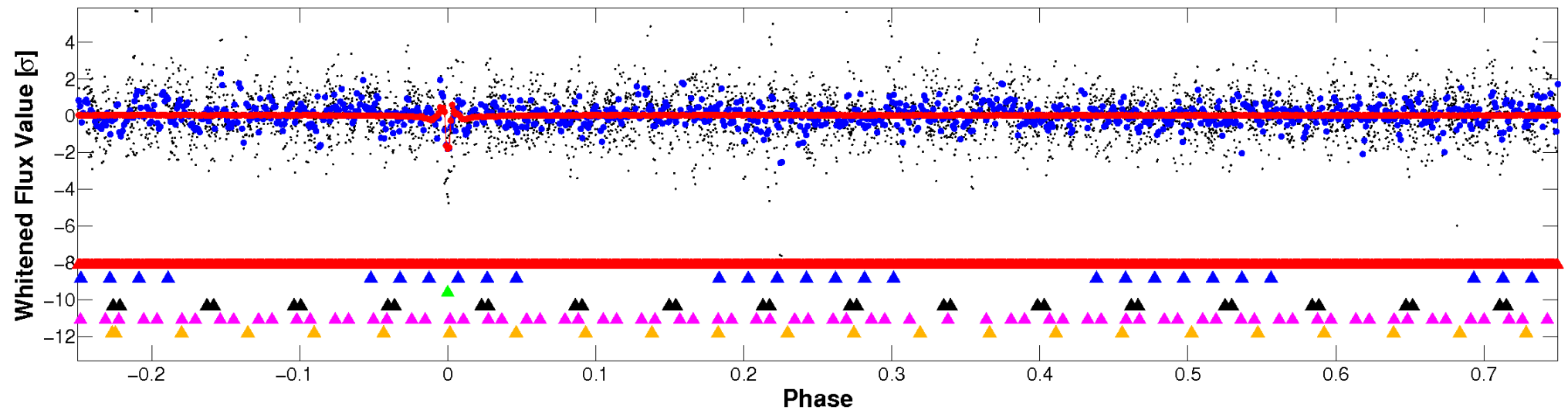


Non-Whitened Vs. Whitened Light Curve

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

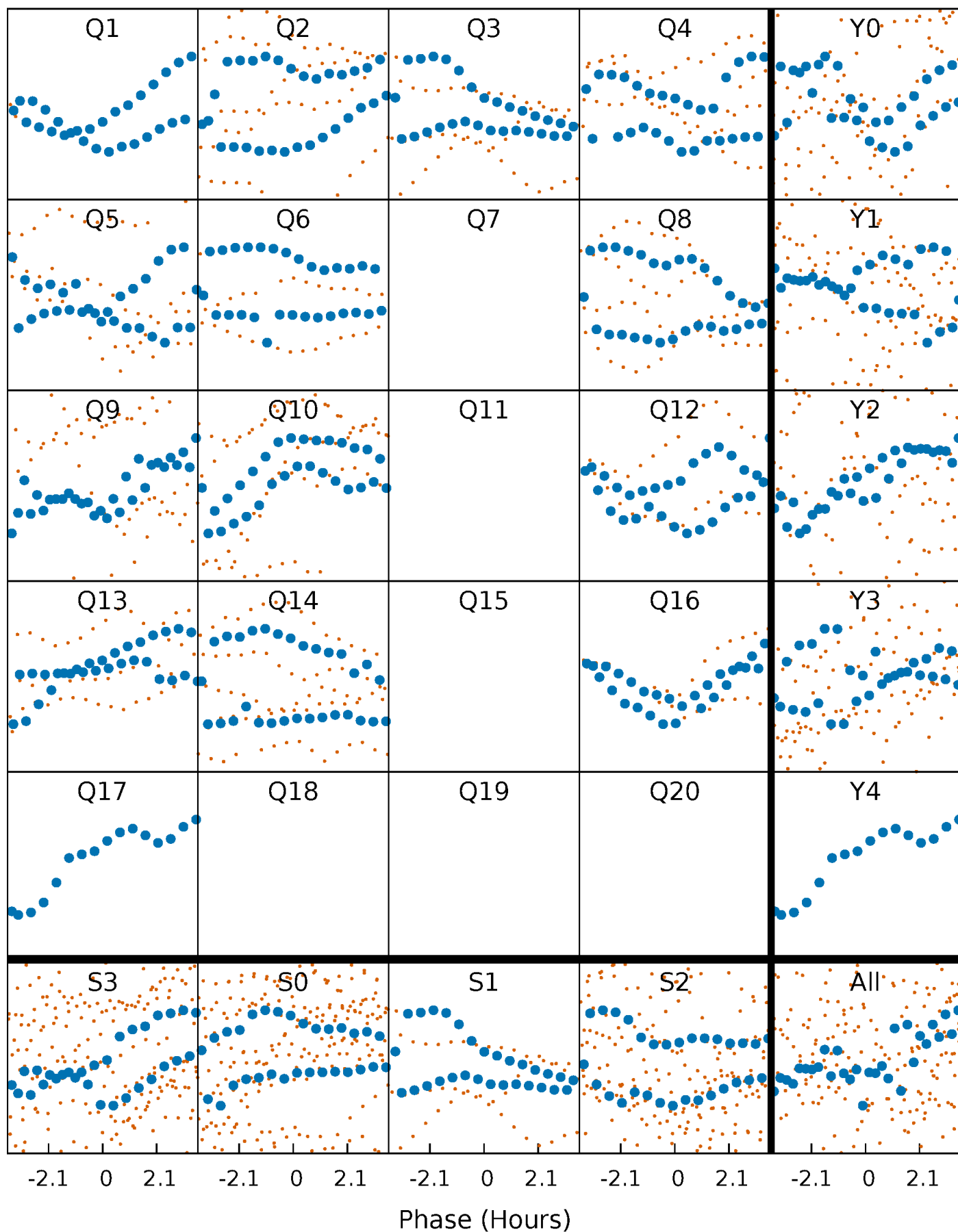


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



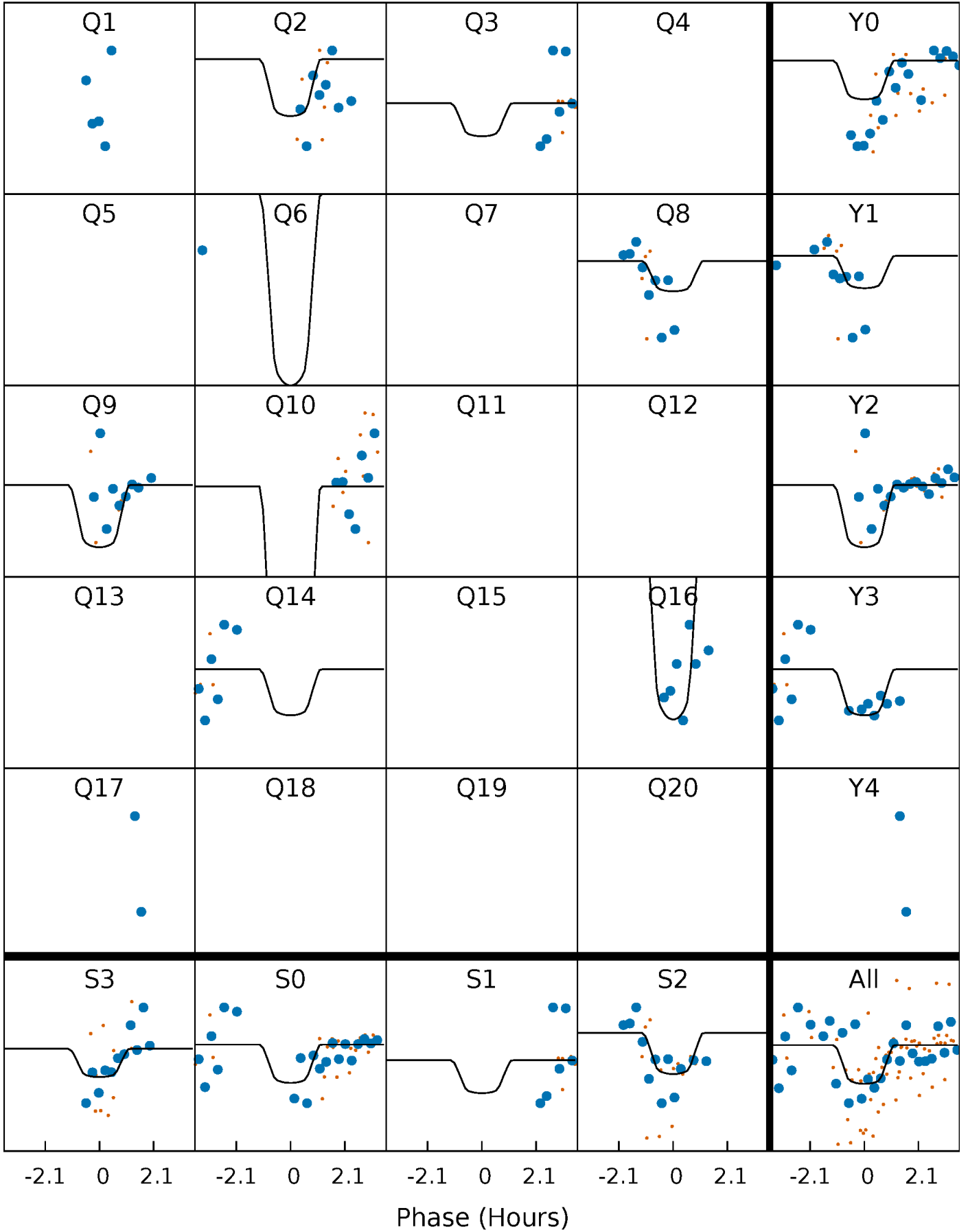
PDC Quarter-Phased Transit Curves

TCE 009964614-03 P= 19.996844 Days $T_0=138.527073$ (BKJD)



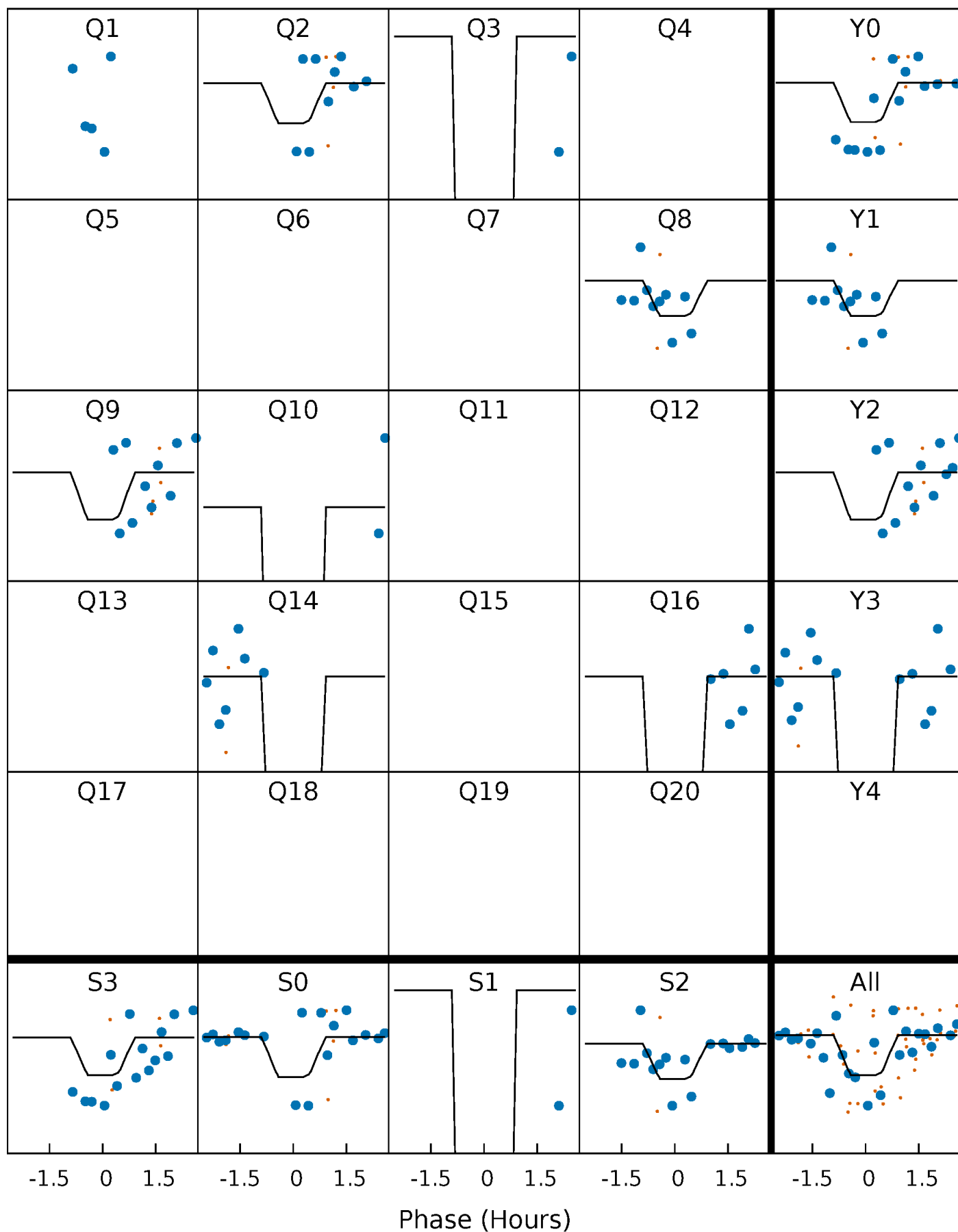
DV Quarter-Phased Transit Curves

TCE 009964614-03 P= 19.996844 Days $T_0=138.527073$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

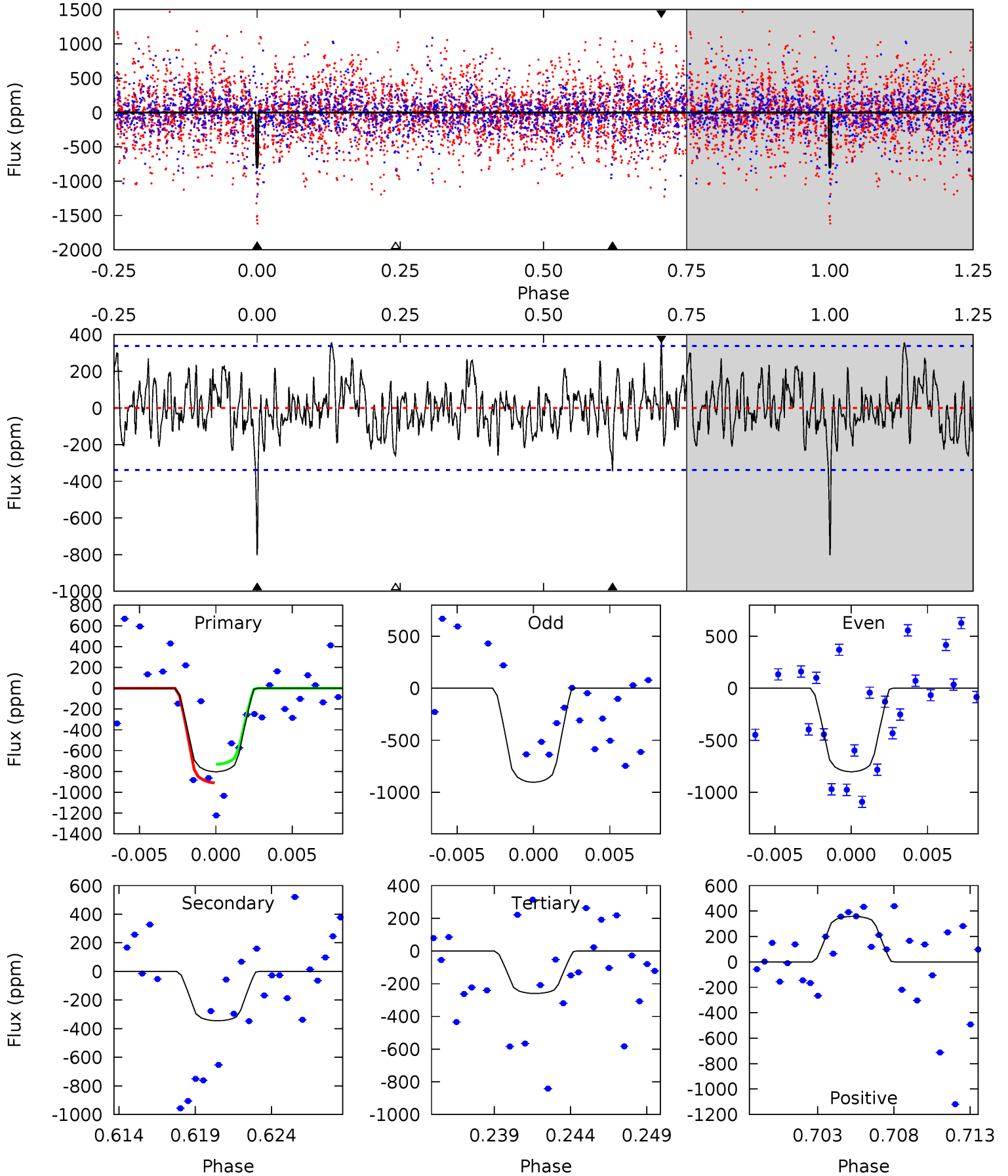
TCE 009964614-03 P= 19.995805 Days $T_0=138.539375$ (BKJD)



DV Model-Shift Uniqueness Test

009964614-03, P = 19.996844 Days, E = 118.530229 Days

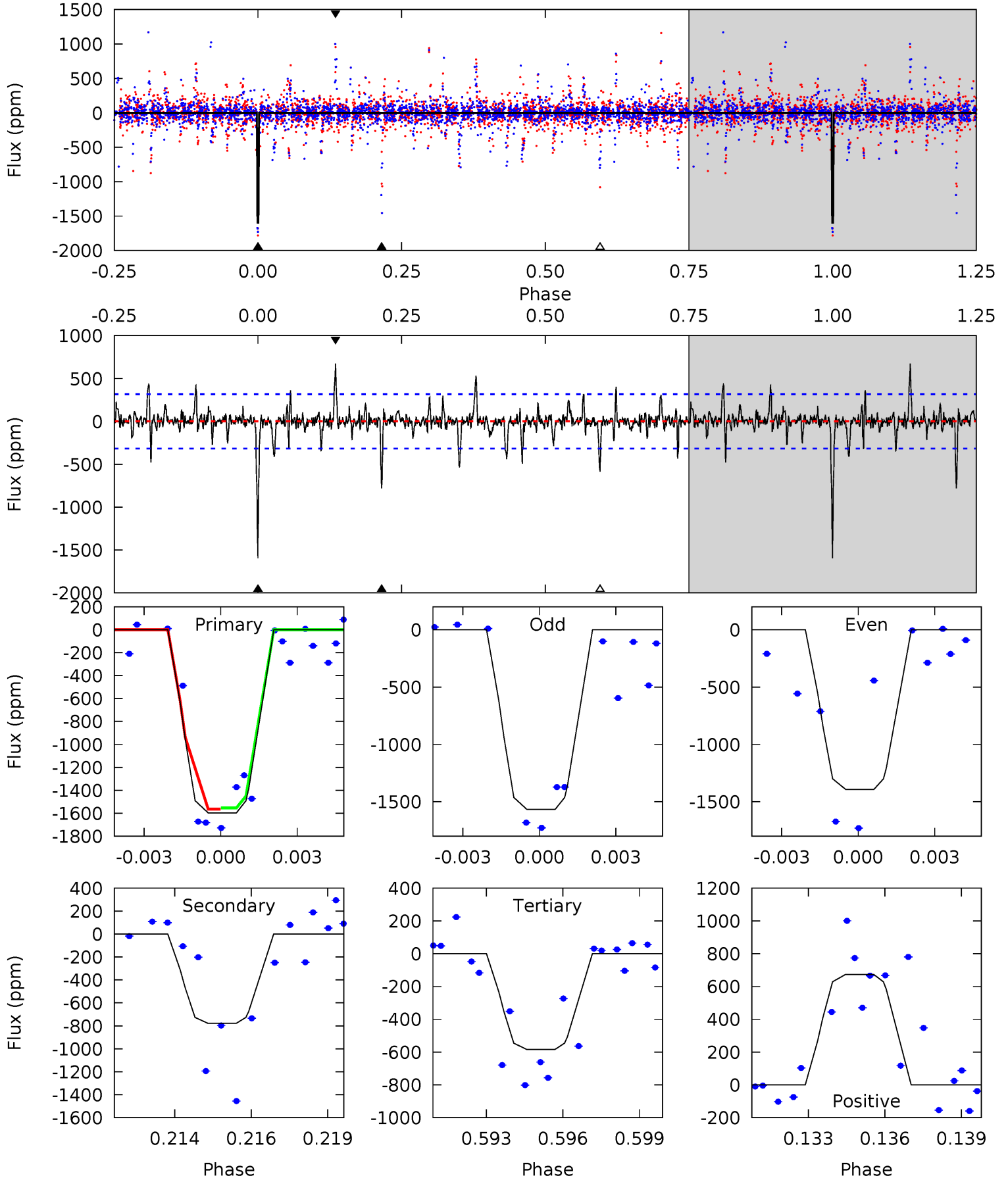
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	5.26	3.97	5.47	5.17	2.83	1.61	8.29	6.79	1.30	-0.20	0.77	1.25	0.31	1.30



Alt Model-Shift Uniqueness Test

009964614-03, P = 19.995805 Days, E = 118.543570 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	12.9	9.71	11.2	5.27	2.99	1.56	16.8	15.3	3.22	1.74	1.00	0.57	0.30	0.07



Stellar Parameters For KIC 009964614

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9128^{+286}_{-430}	$4.049^{+0.193}_{-0.158}$	$0.070^{+0.200}_{-0.700}$	$2.340^{+0.723}_{-0.723}$	$2.236^{+0.349}_{-0.598}$	$0.246^{+0.304}_{-0.121}$
	+3%/-5%	+5%/-4%	+286%/-1000%	+31%/-31%	+16%/-27%	+124%/-49%
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 009964614-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-345 ± 65	$7.71^{+5.83}_{-4.62}$	1964^{+145}_{-146}	6619^{+5411}_{-1548}	104^{+578}_{-68}
Alt.	-778 ± 60	$8.59^{+5.56}_{-5.13}$	1964^{+151}_{-156}	7864^{+8204}_{-1808}	203^{+1032}_{-128}

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 $A_{obs} \gg 1.0$

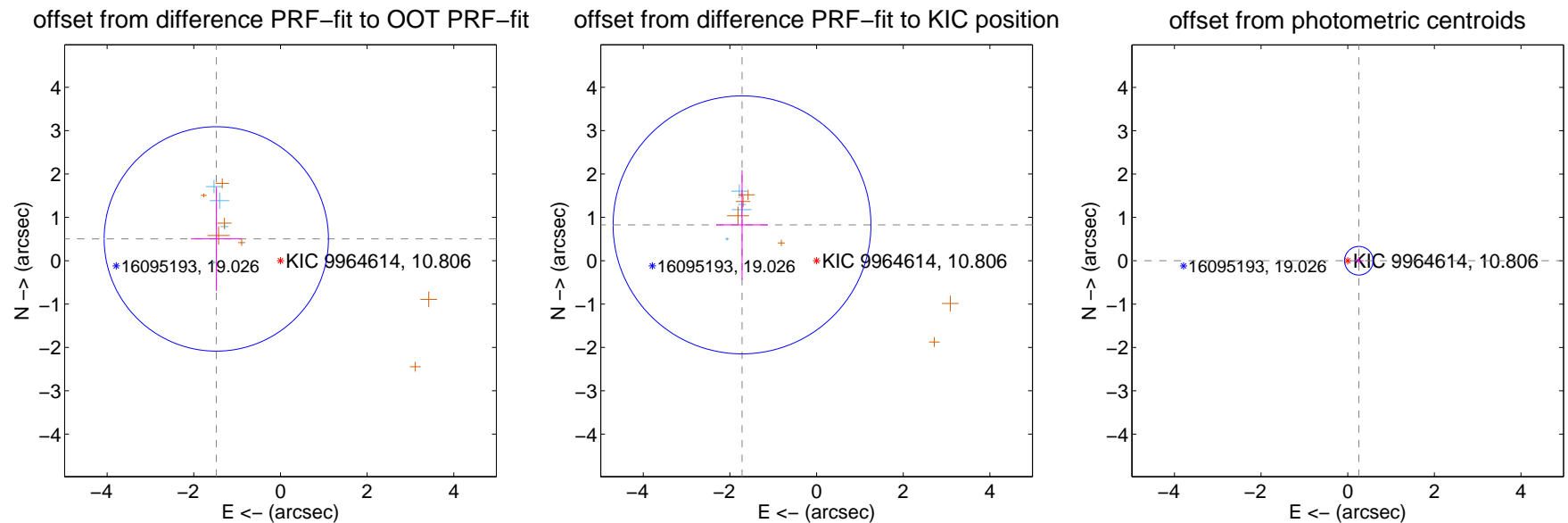
DV Centroid Data

Supplemental centroid analysis for 009964614-03. **Kepler magnitude: 10.81.** Transit SNR 7.89

There are 4 quarters with good PRF difference image offsets

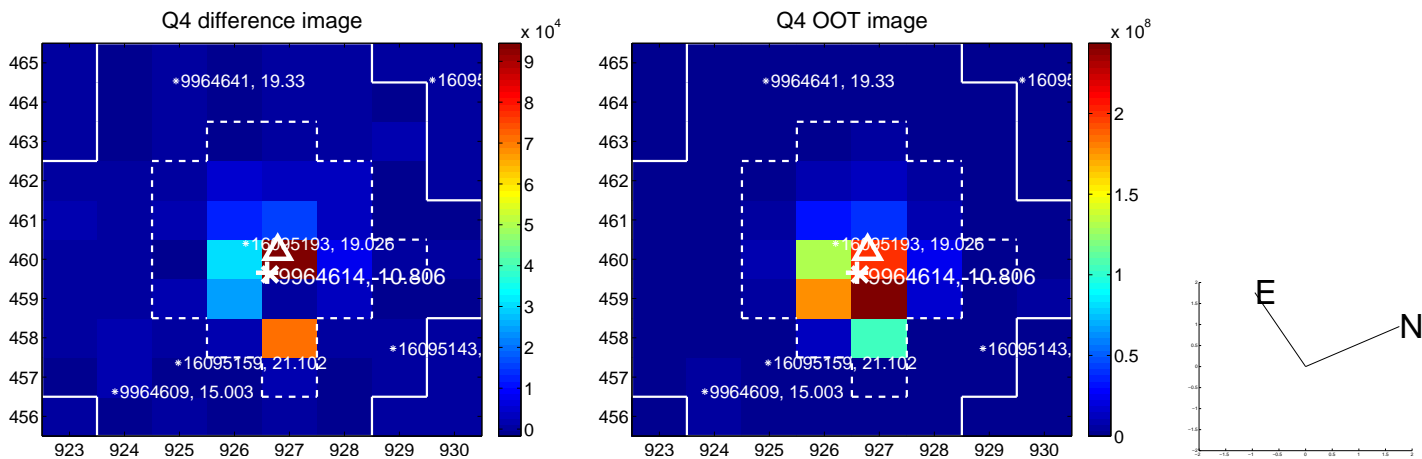
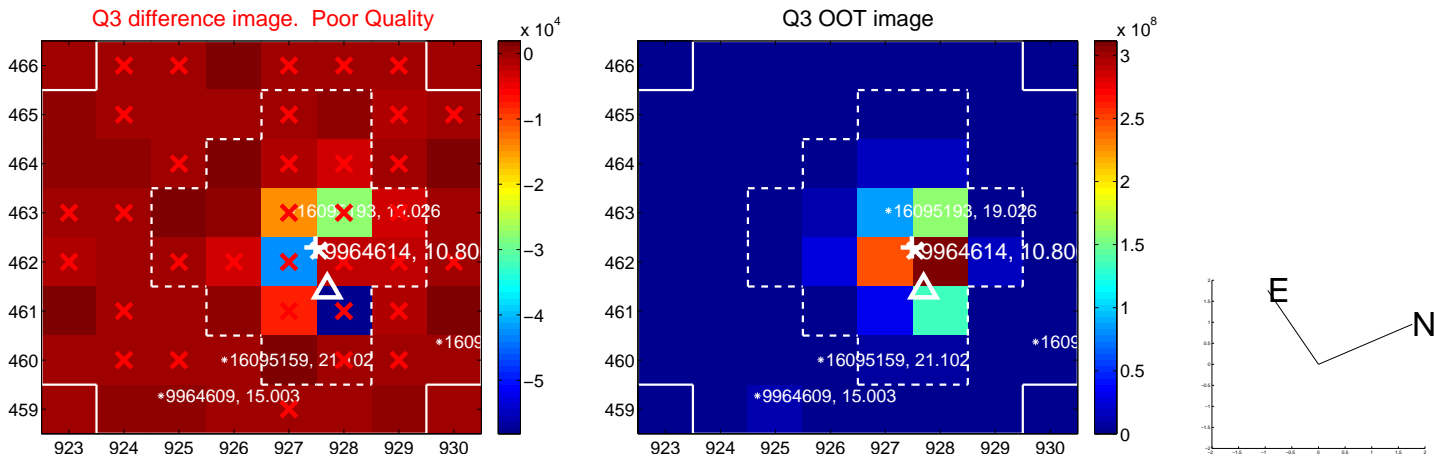
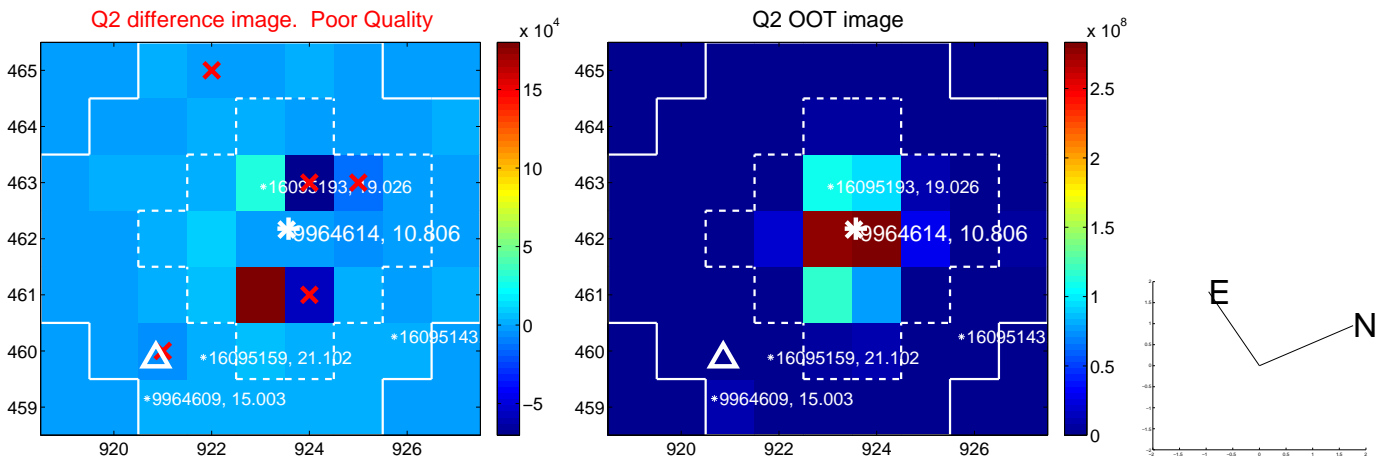
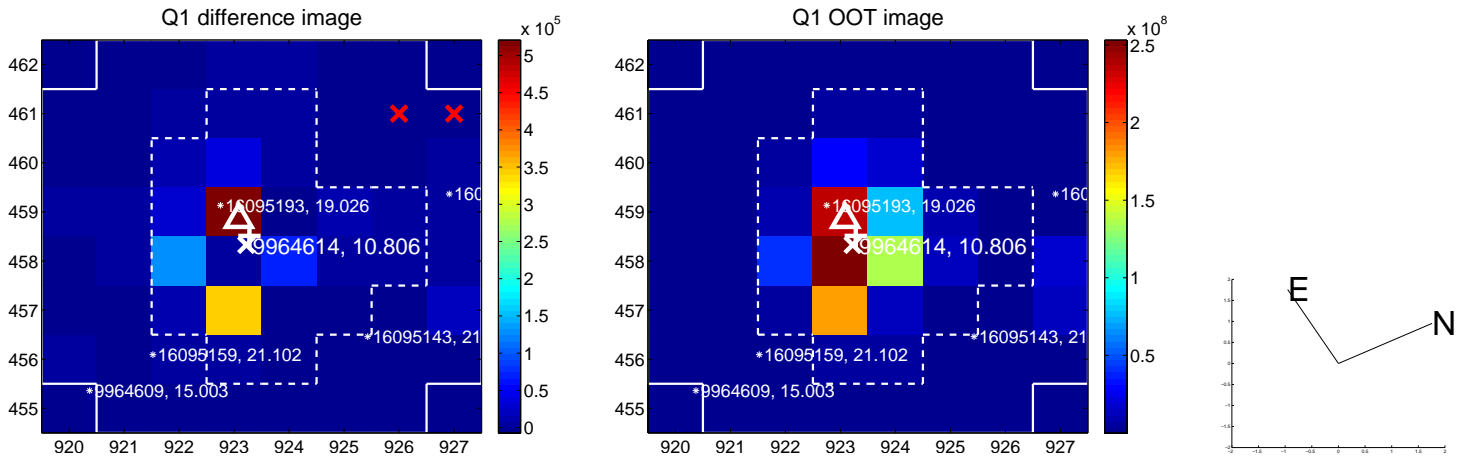
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.564 ± 0.863	1.81	1.481 ± 0.583	0.502 ± 1.200
PRF-fit source offset from KIC position	1.909 ± 0.992	1.92	1.721 ± 0.596	0.826 ± 1.263
photometric centroid source offset	0.26 ± 0.11	2.34	-0.26 ± 0.11	0.00 ± 0.09

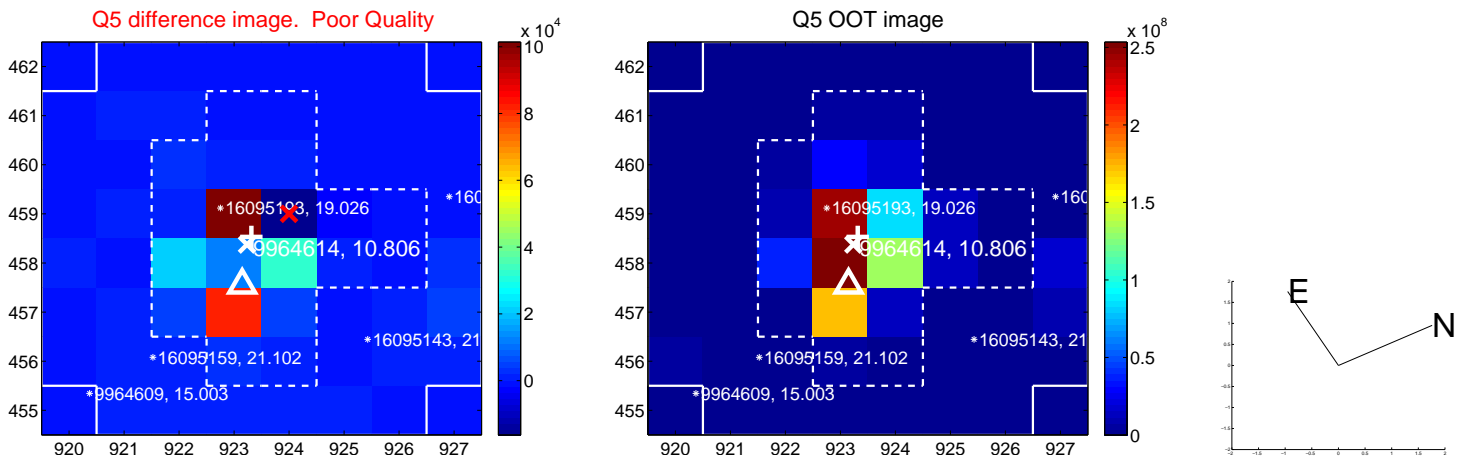


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

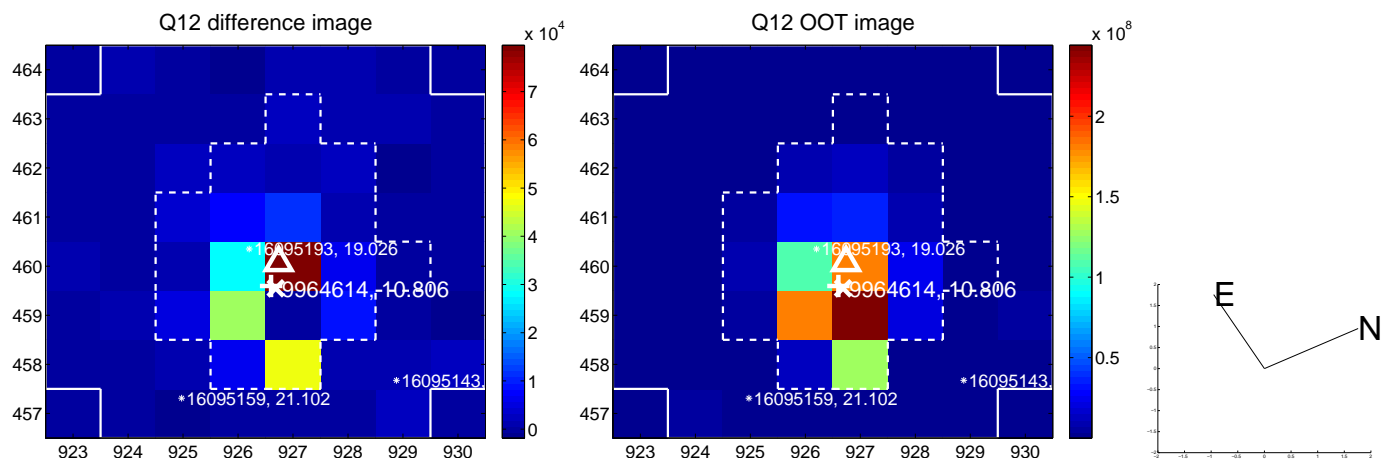
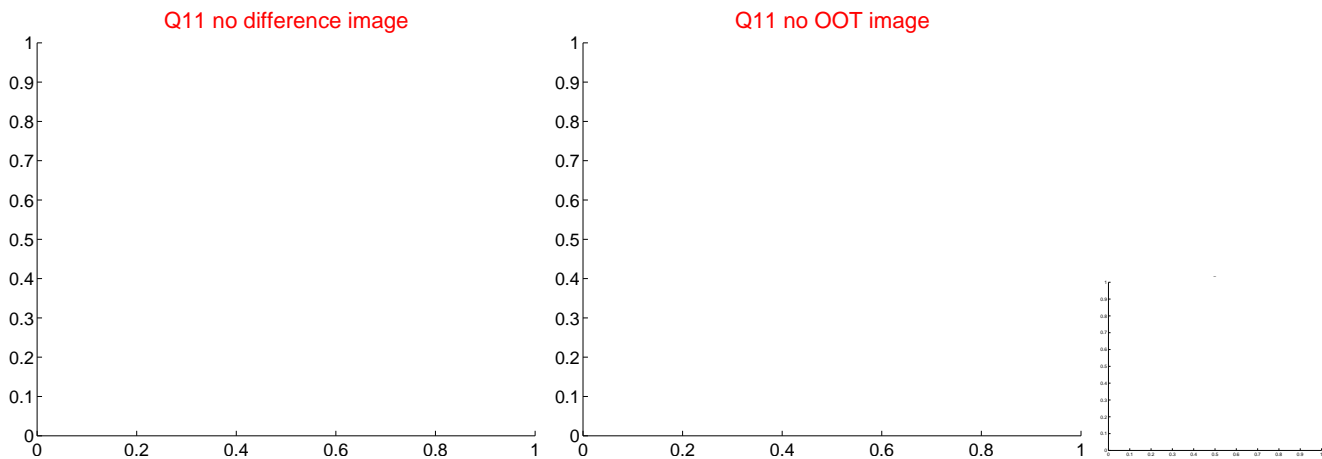
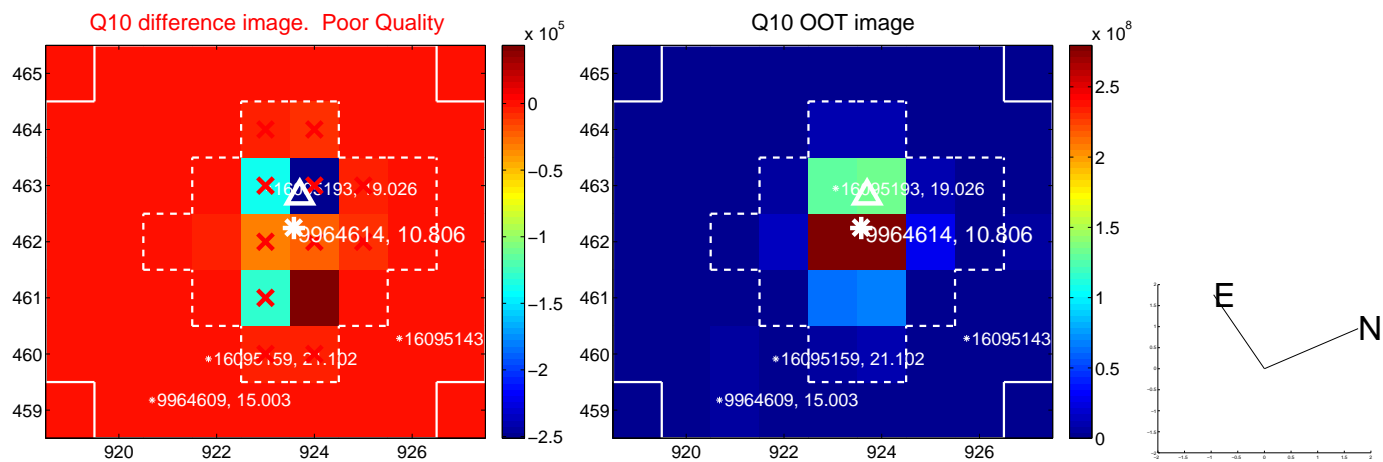
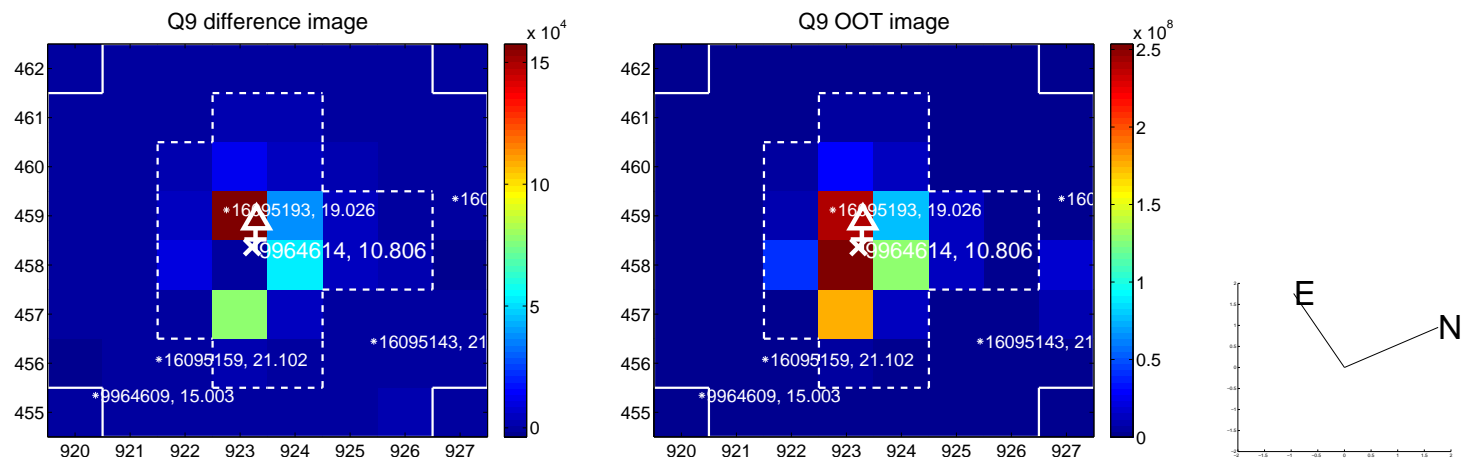
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



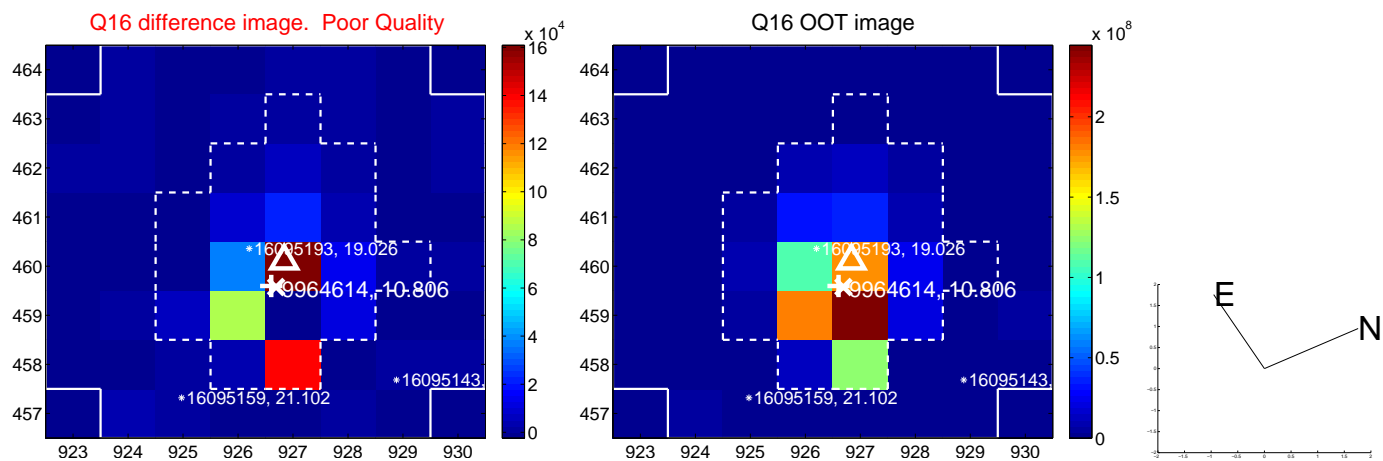
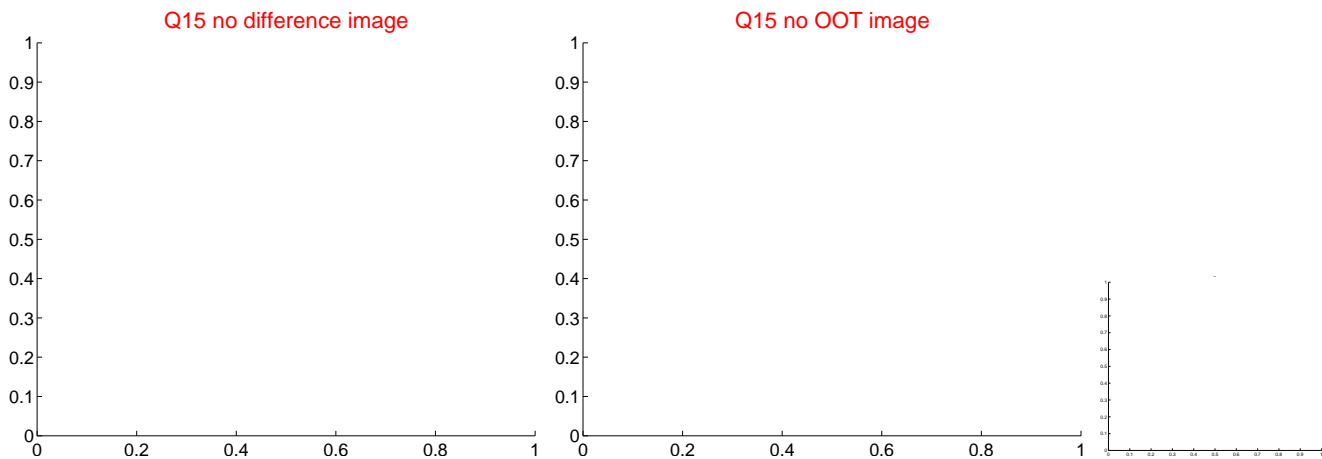
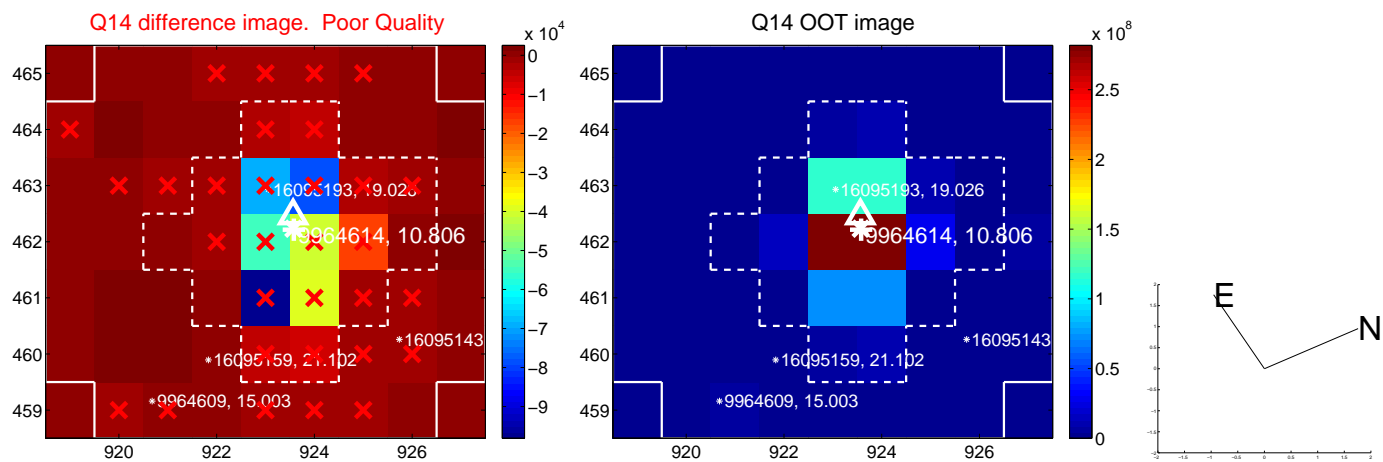
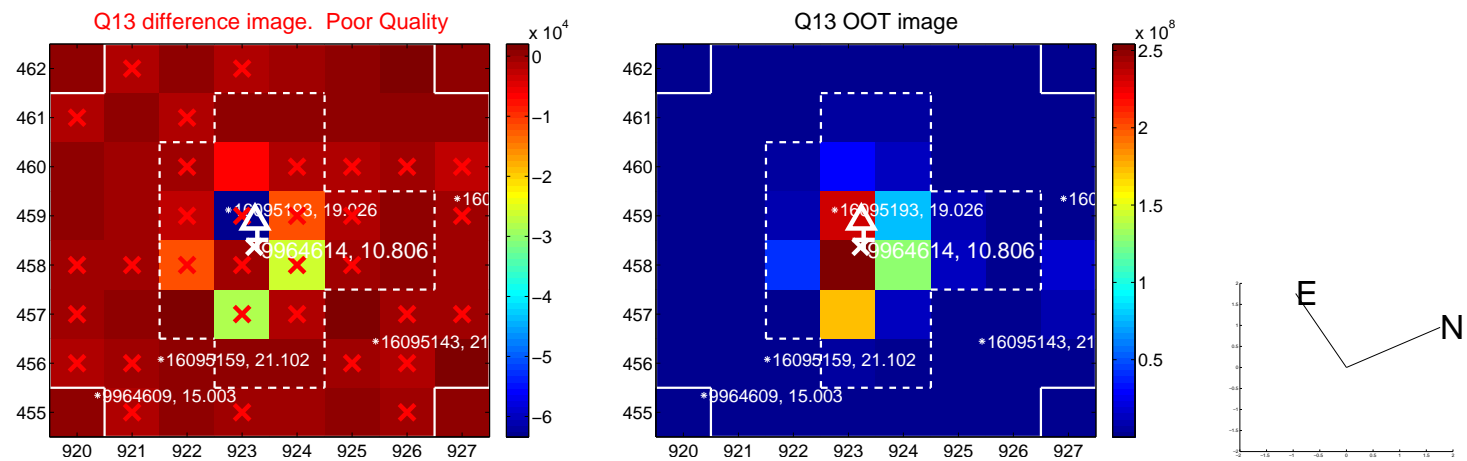
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



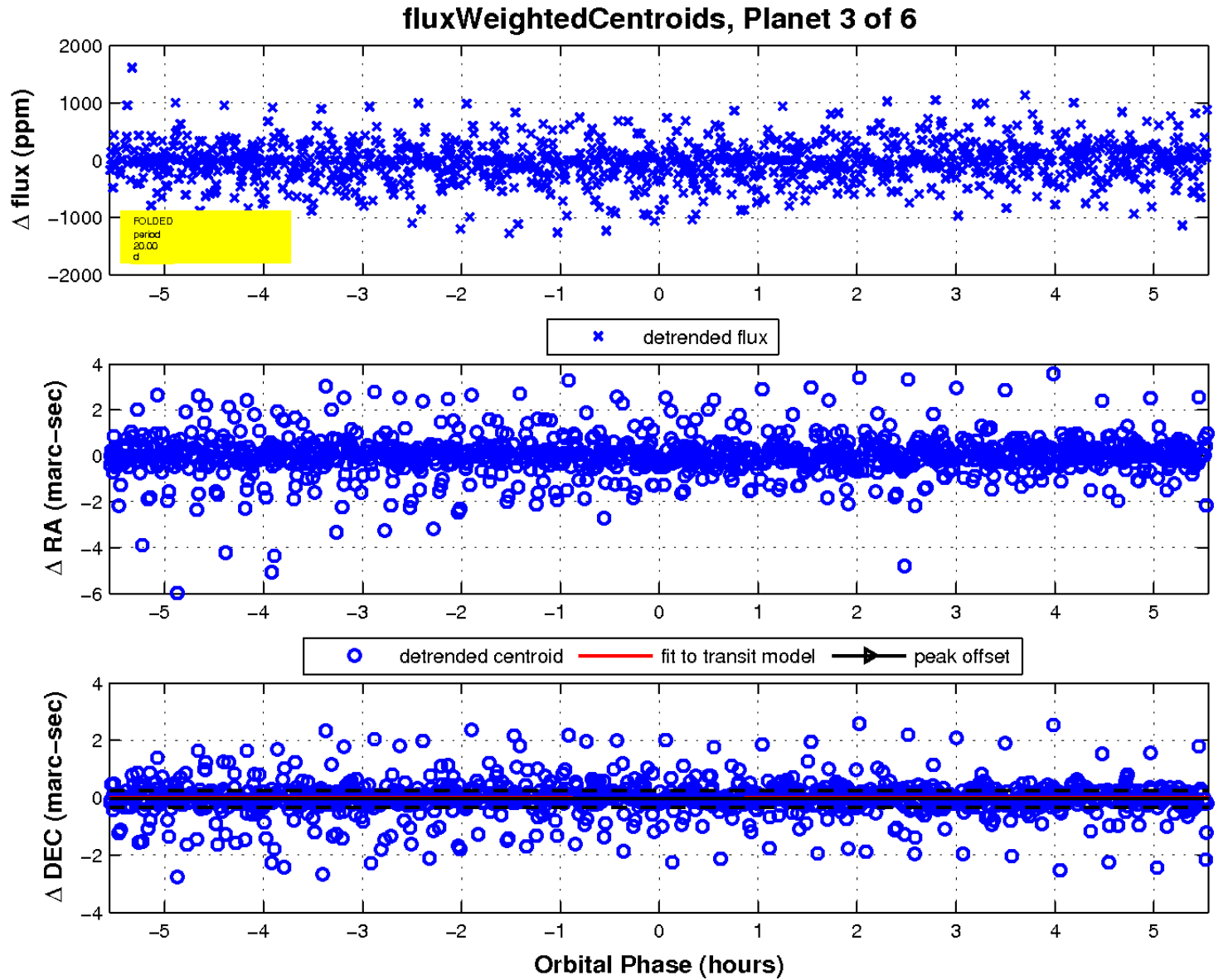
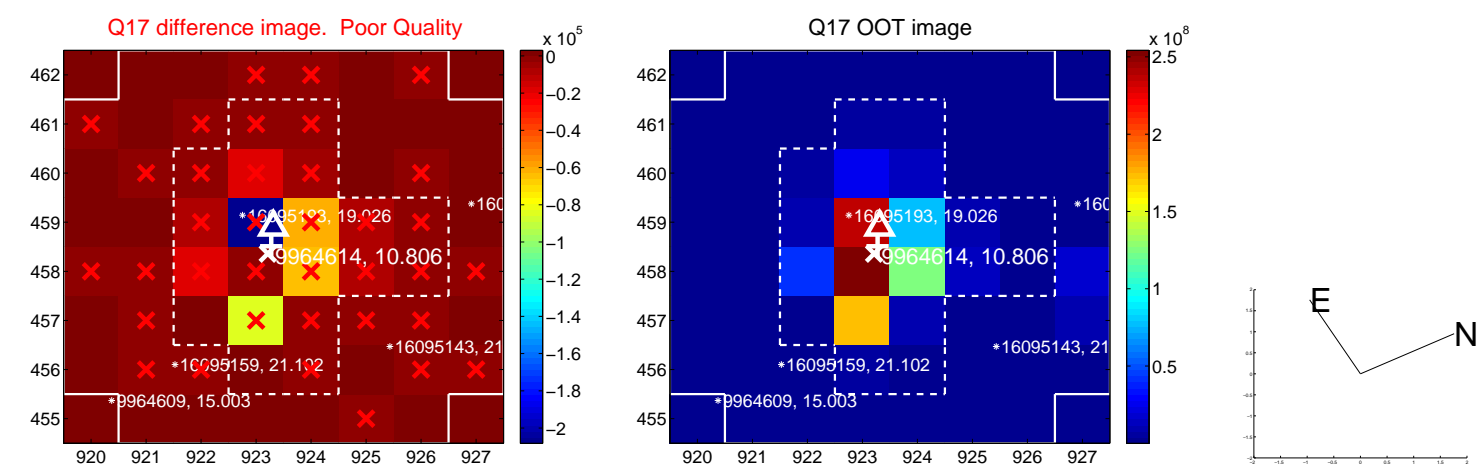
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

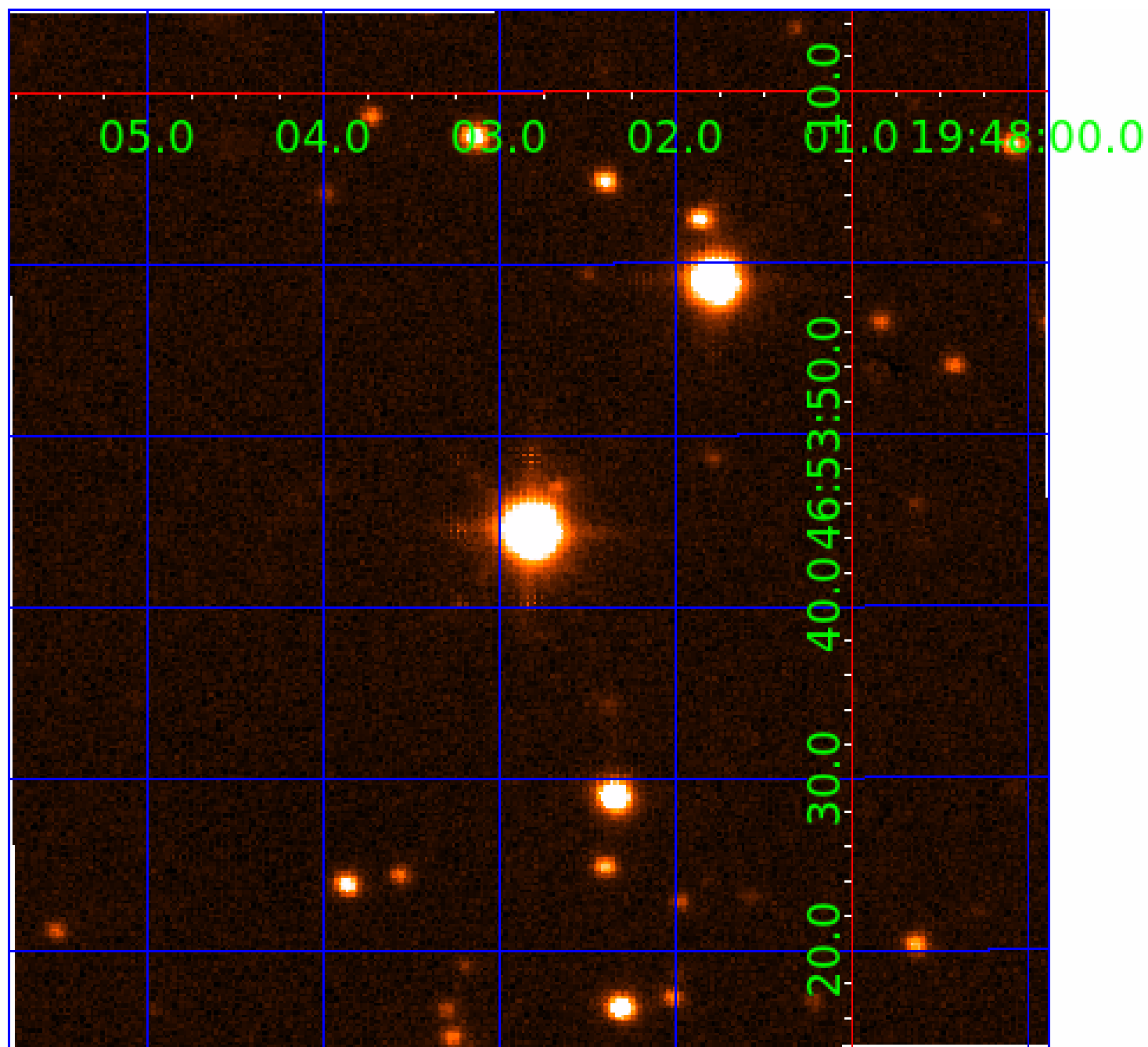


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009964614

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})
009964614-01	OBS	No	0.540887	131.760905	7.6	3.758	8.7	2.6	2.34	9128	0.74	117959.17
009964614-03	OBS	No	19.996844	138.527073	687.3	1.854	10.7	7.9	2.34	9128	6.63	957.76
009964614-05	OBS	No	19.479470	144.430919	760.9	3.149	7.4	7.1	2.34	9128	11.81	991.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009964614-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
009964614-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—CENT_SATURATED
009964614-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

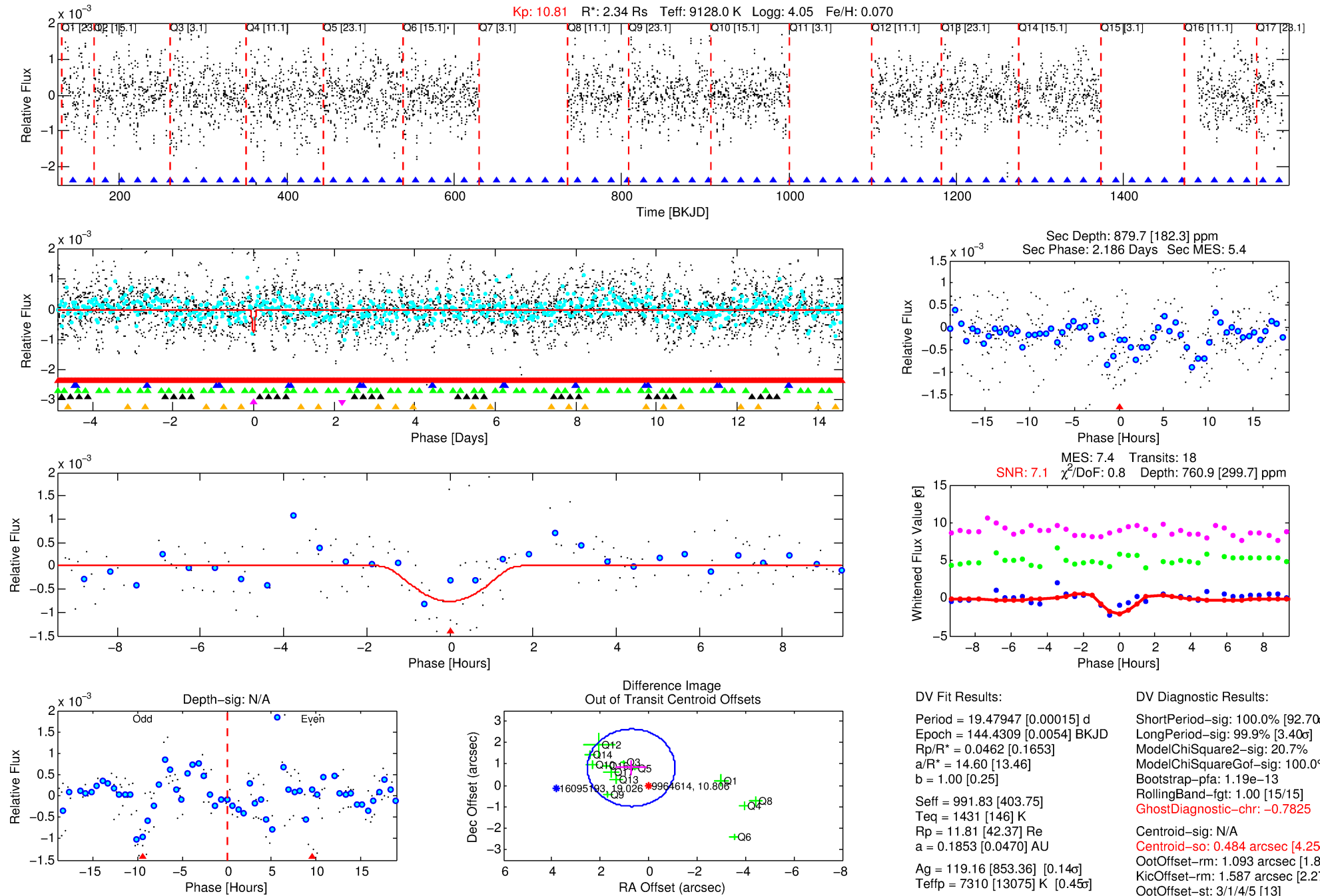
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009964614-05

No Significant Match Found

DV One-Page Summary

KIC: 9964614 Candidate: 5 of 6 Period: 19.479 d



DV Fit Results:

Period = 19.47947 [0.00015] d
Epoch = 144.4309 [0.0054] BKJD
Rp/R* = 0.0462 [0.1653]
a/R* = 14.60 [13.46]
b = 1.00 [0.25]
Seff = 991.83 [403.75]
Teff = 1431 [146] K
Rp = 11.81 [42.37] Re
a = 0.1853 [0.0470] AU
Ag = 119.16 [853.36] [0.14] σ
Teffp = 7310 [13075] K [0.45] σ

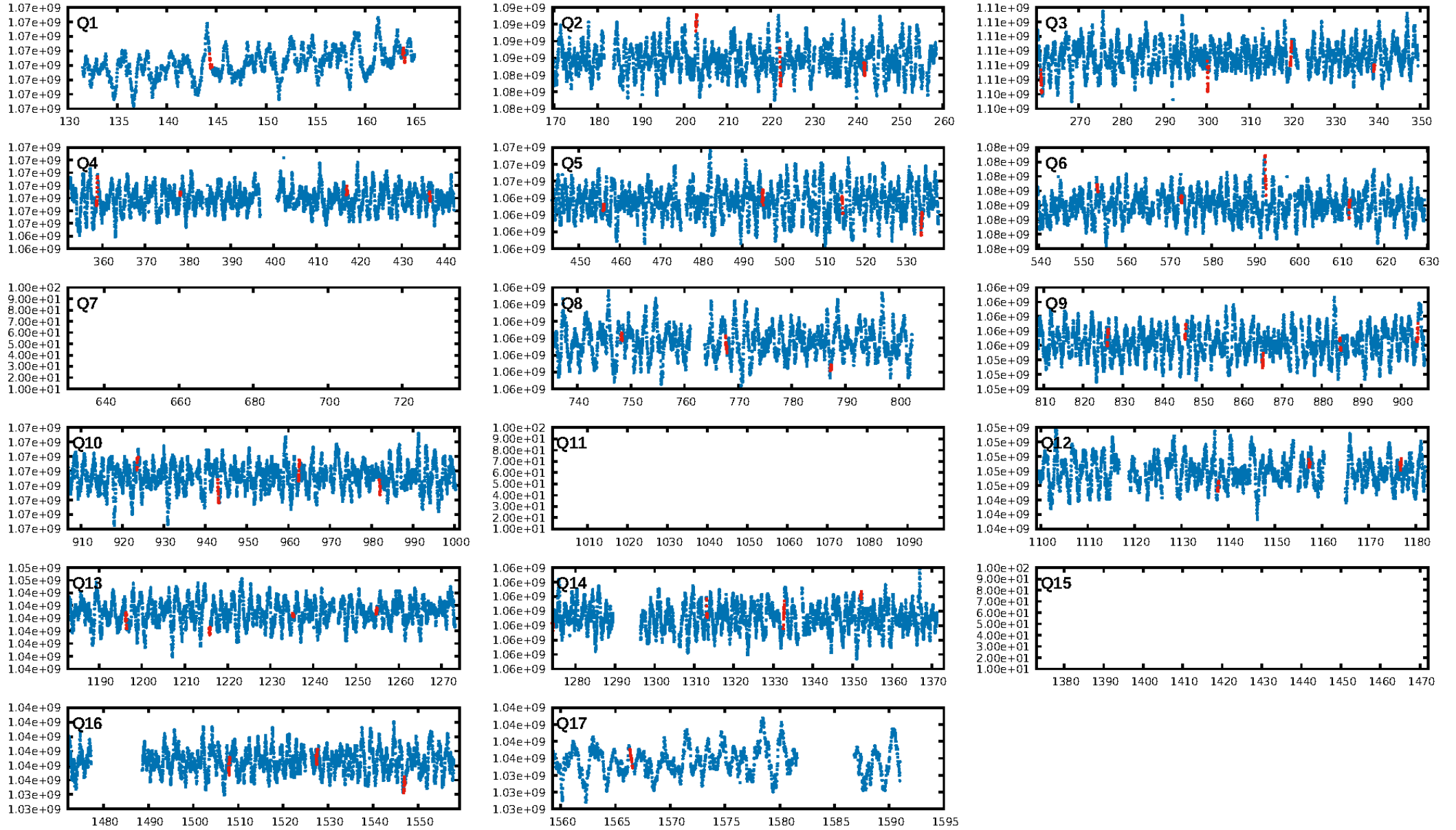
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [92.70] σ
LongPeriod-sig: 99.9% [3.40] σ
ModelChiSquare2-sig: 20.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.19e-13
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -0.7825
Centroid-sig: N/A
Centroid-so: 0.484 arcsec [4.25] σ
OotOffset-rm: 1.093 arcsec [1.81] σ
KicOffset-rm: 1.587 arcsec [2.27] σ
OotOffset-st: 3/1/4/5 [13]
KicOffset-st: 3/1/4/5 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 0.00 [0/14]

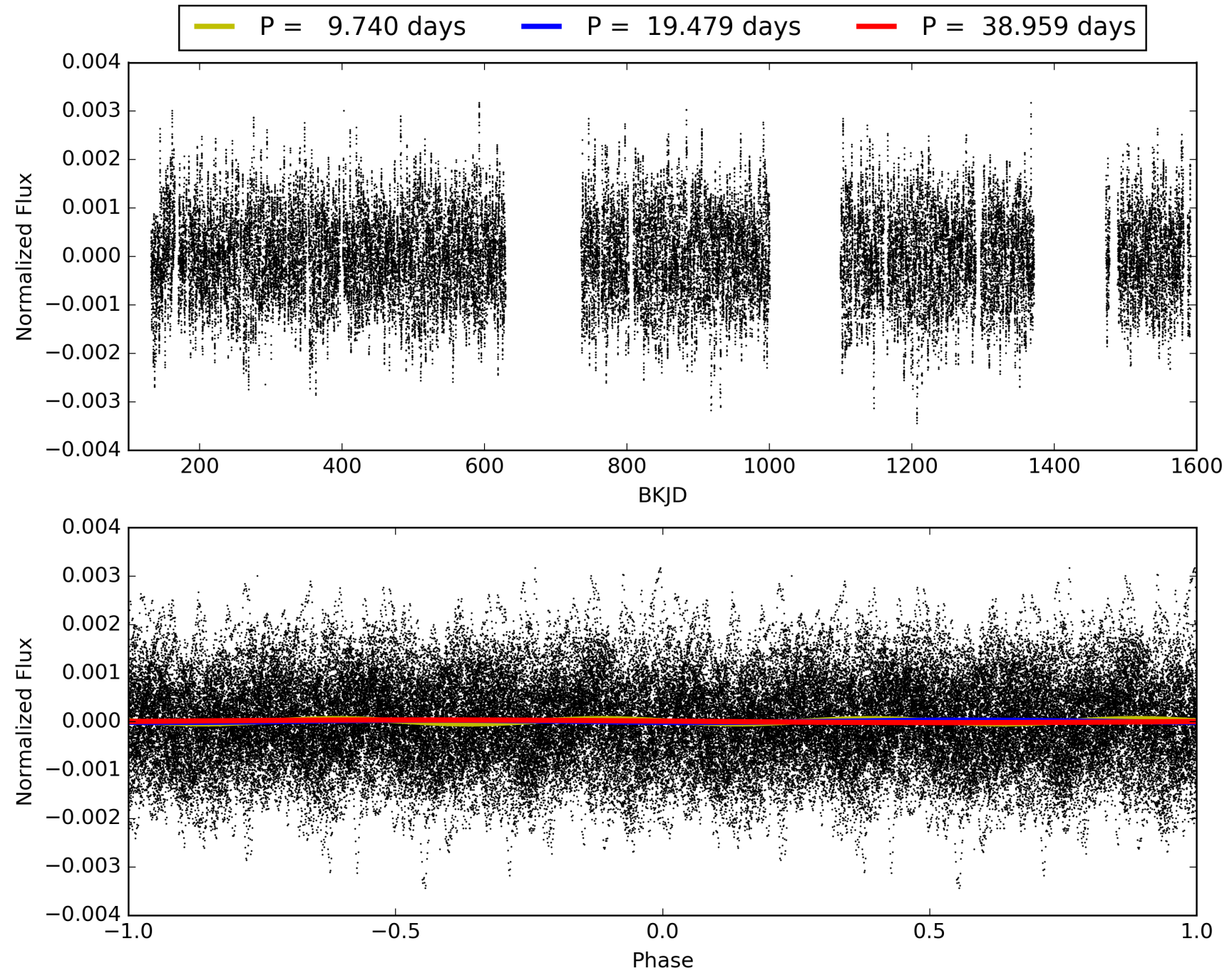
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 04:24:35 Z

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

TCE 009964614-05, PDC Light Curves

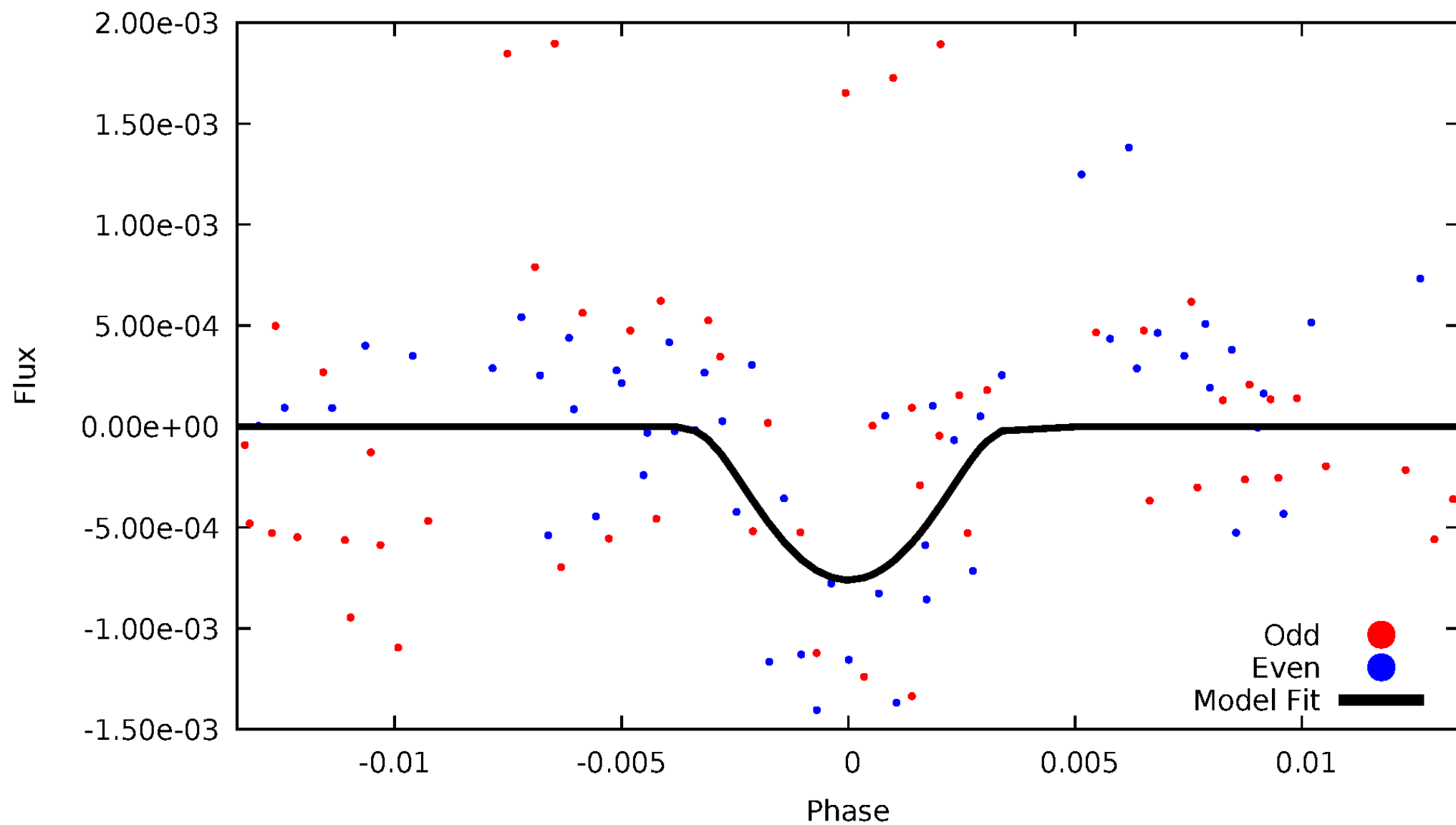


TCE 009964614-05



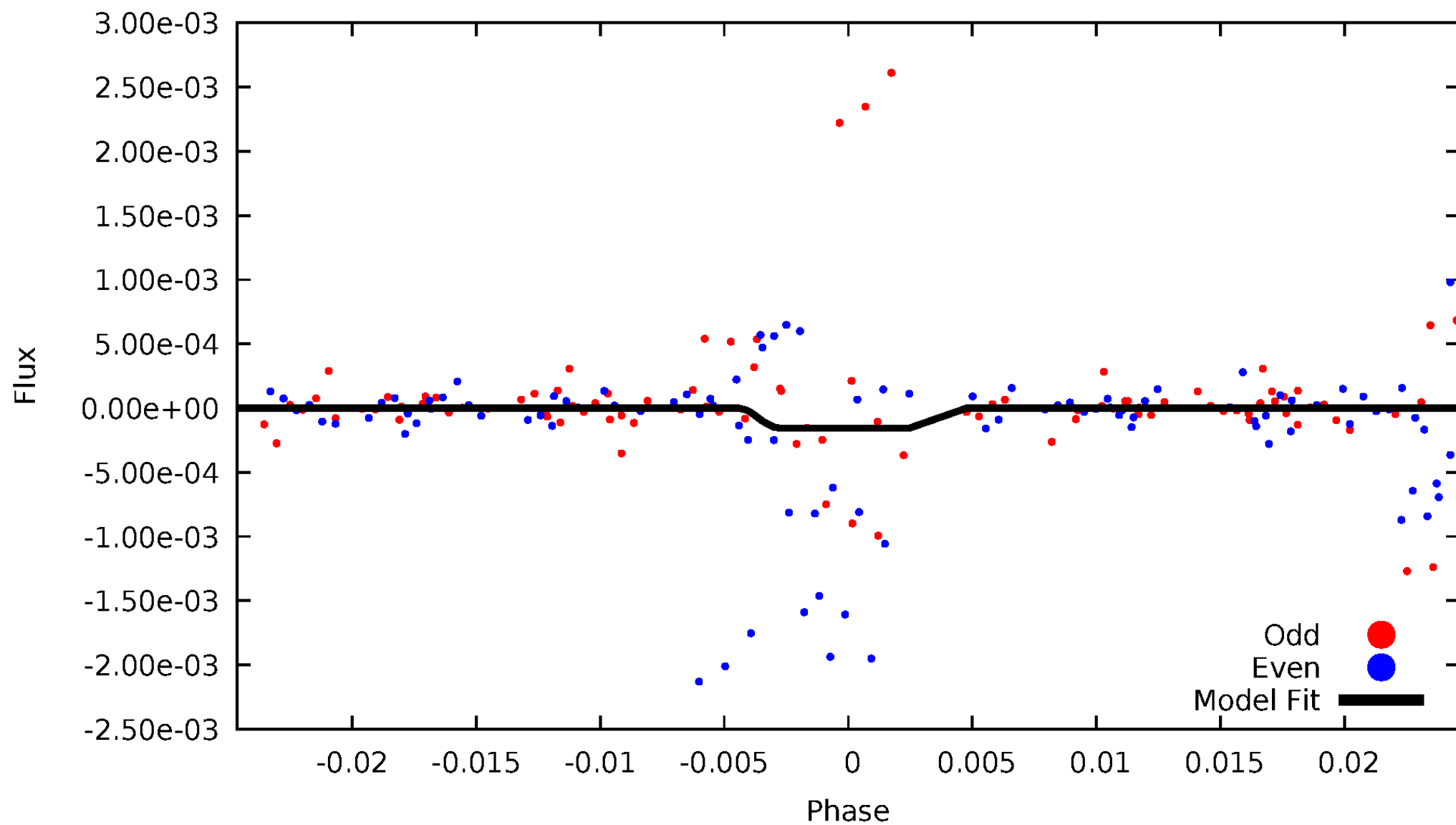
DV Odd/Even

TCE 009964614-05



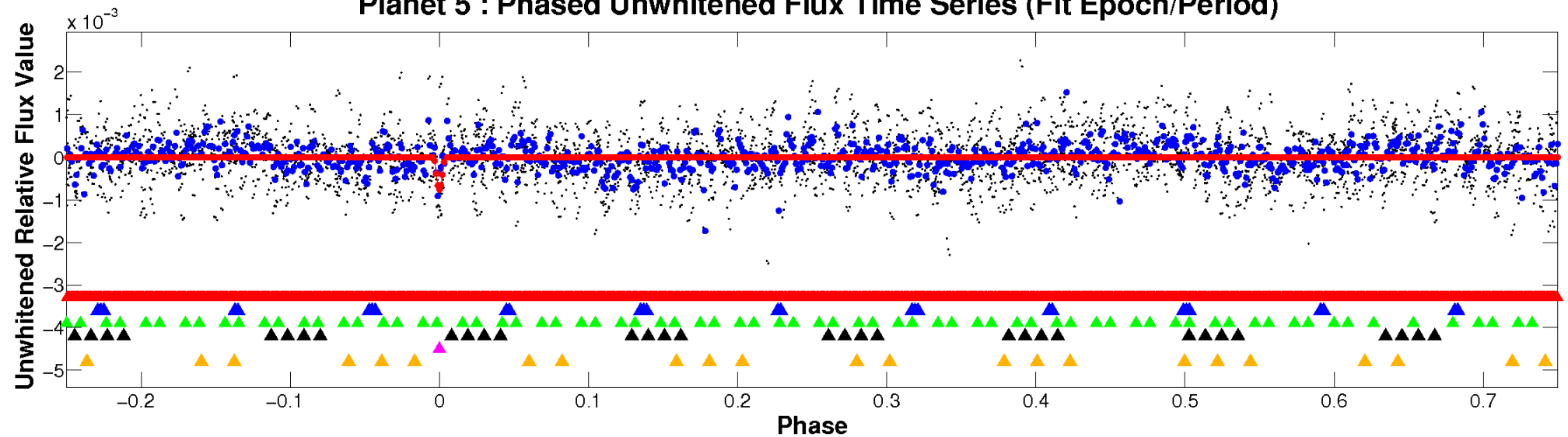
ALT Odd/Even

TCE 009964614-05

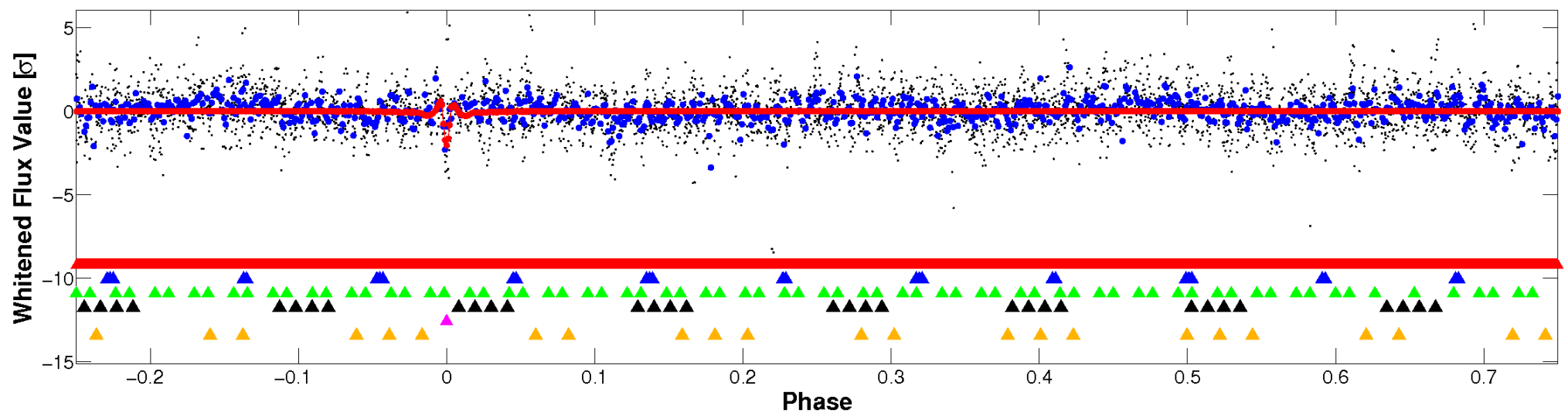


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

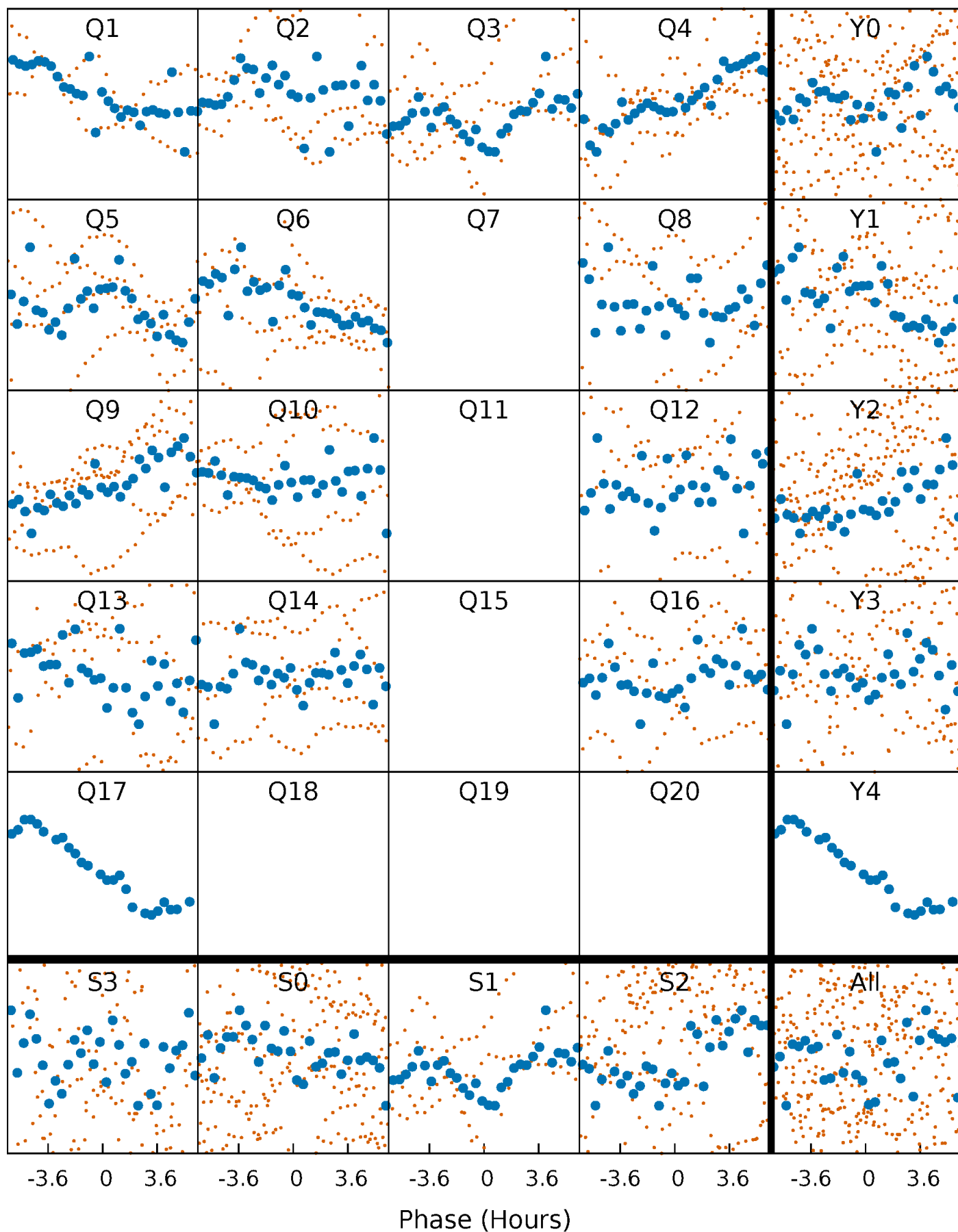


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



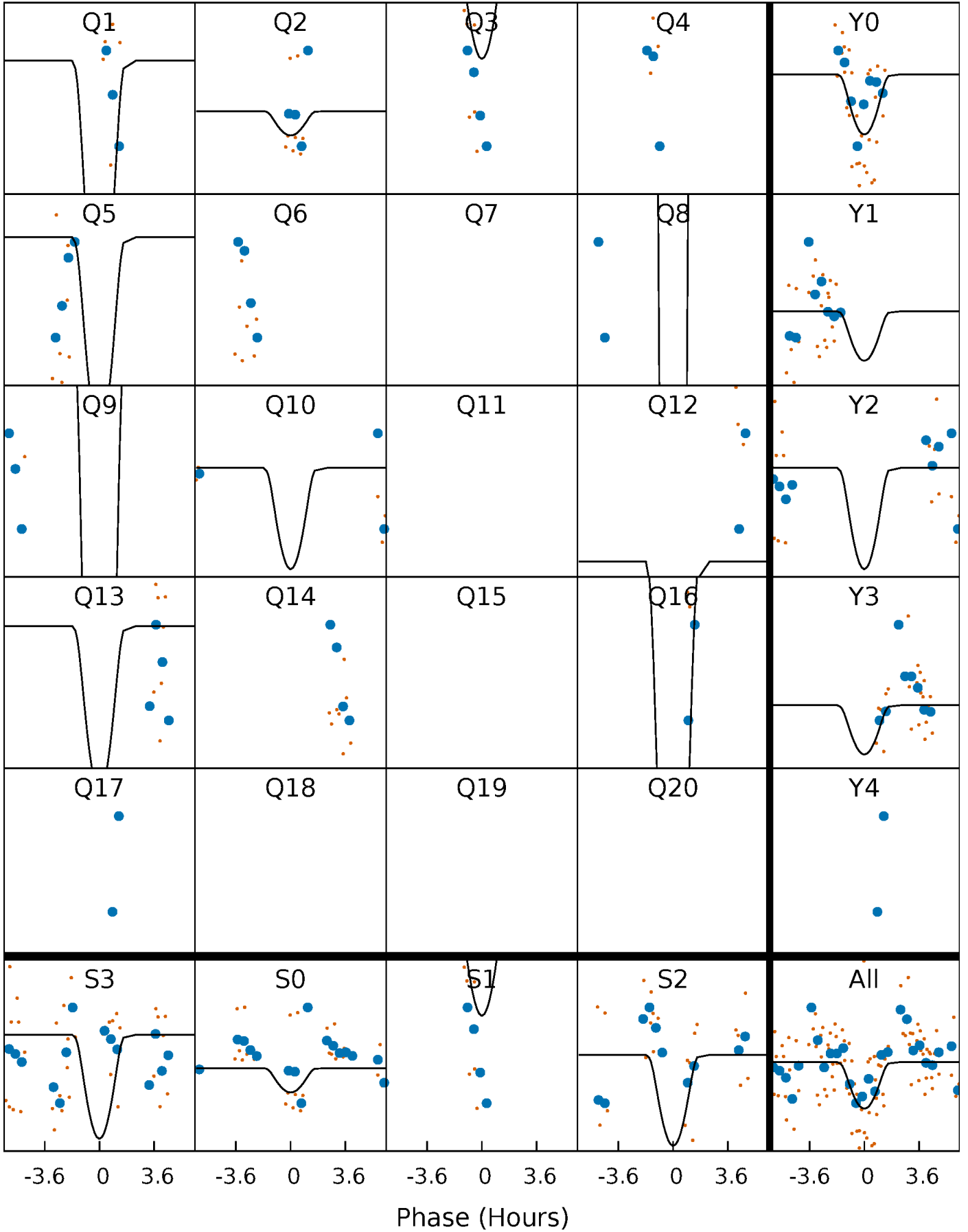
PDC Quarter-Phased Transit Curves

TCE 009964614-05 P= 19.479470 Days $T_0=144.430919$ (BKJD)



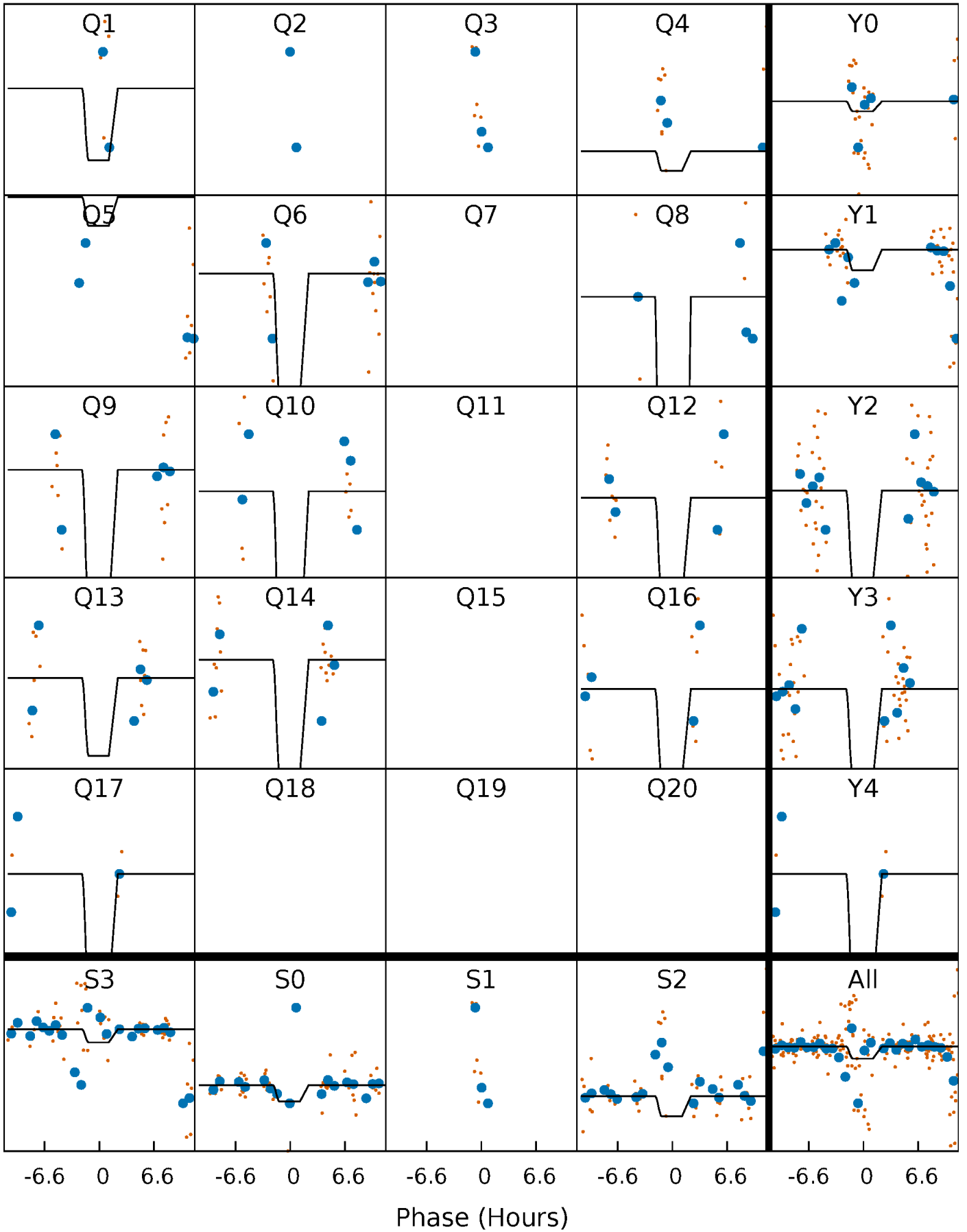
DV Quarter-Phased Transit Curves

TCE 009964614-05 P= 19.479470 Days $T_0=144.430919$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

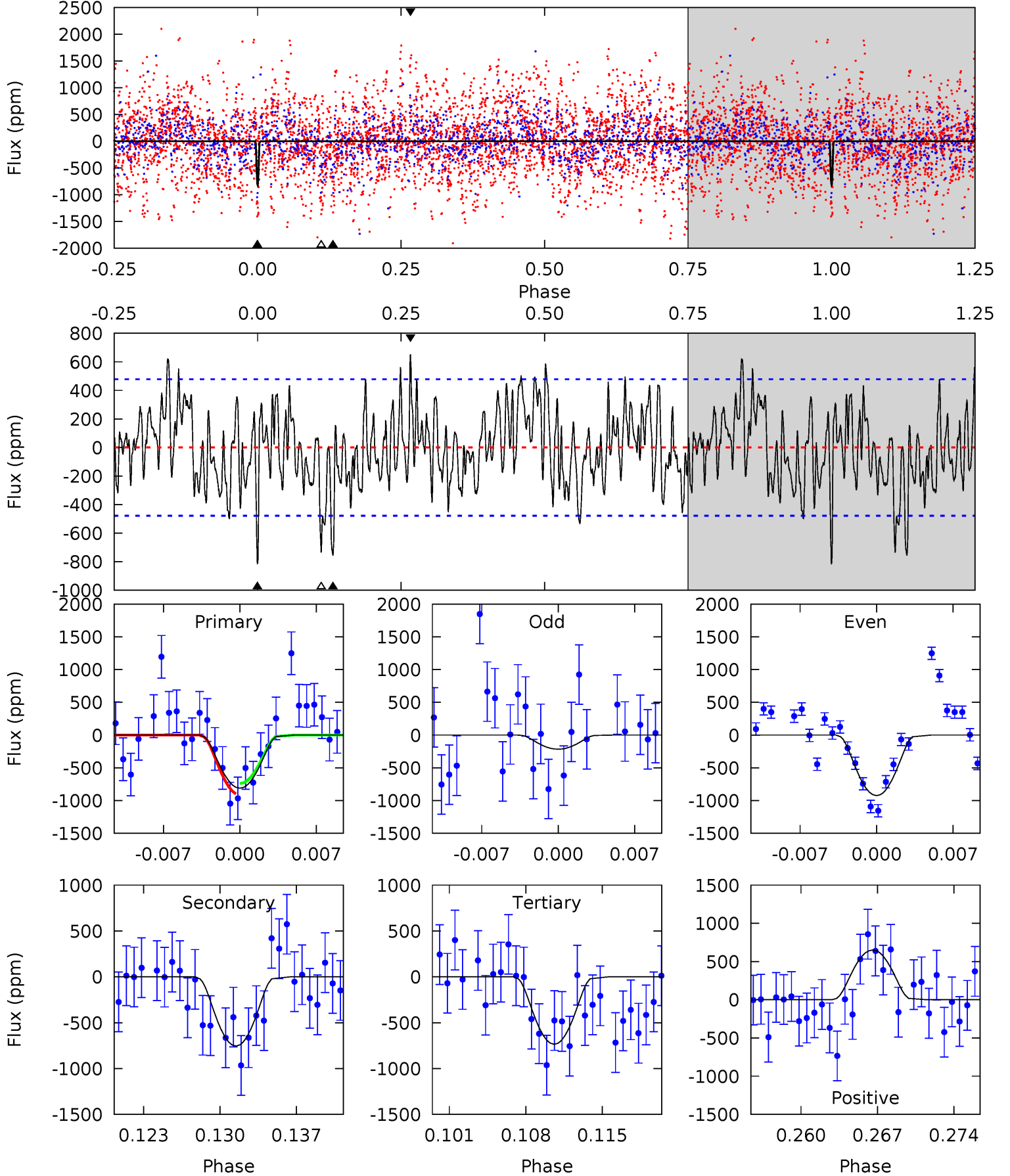
TCE 009964614-05 P= 19.478451 Days $T_0=144.439742$ (BKJD)



DV Model-Shift Uniqueness Test

009964614-05, P = 19.479470 Days, E = 124.951449 Days

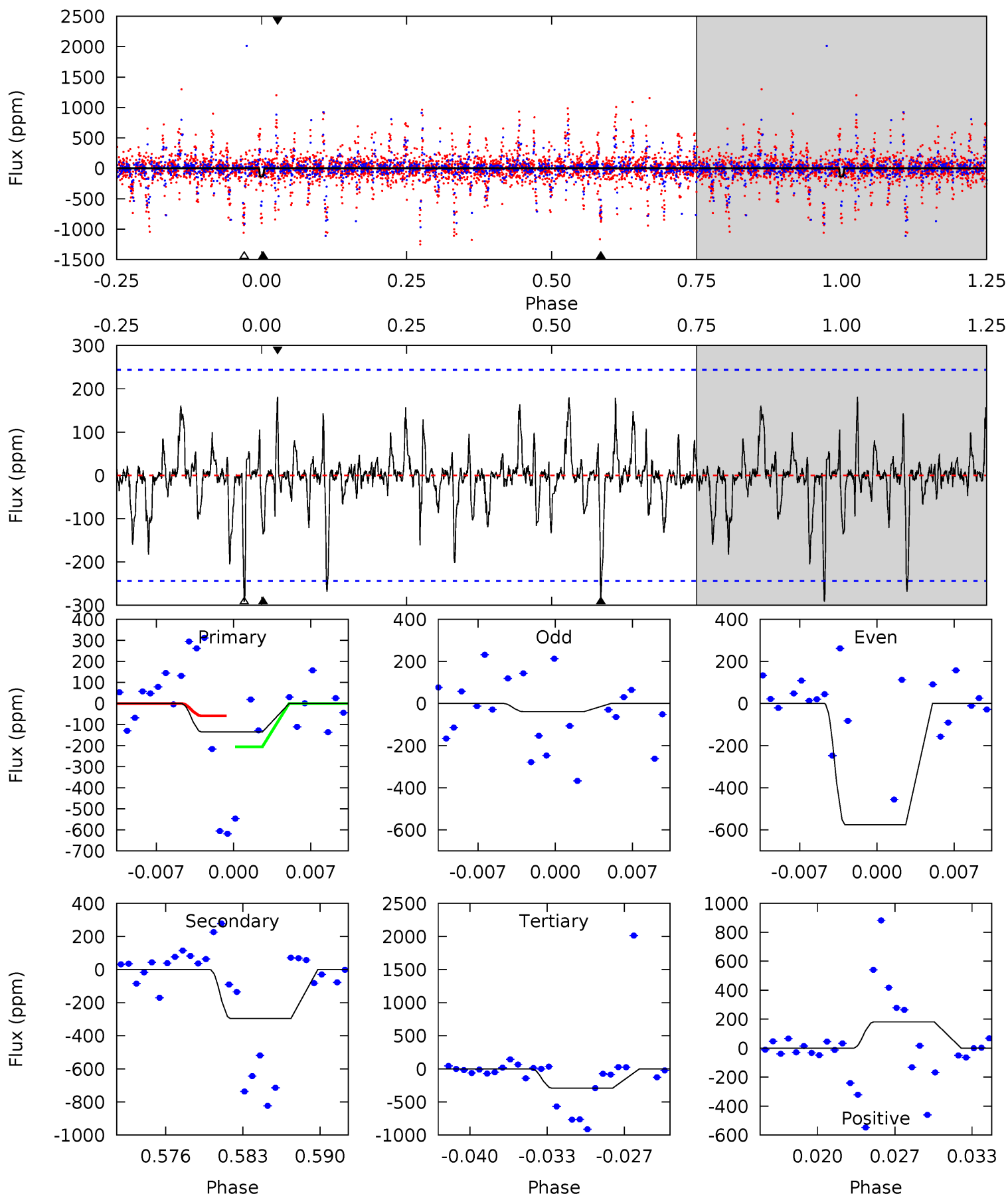
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.65	8.04	7.83	6.94	5.09	2.69	2.45	0.81	1.71	0.21	1.11	3.87	1.69	0.45	0



Alt Model-Shift Uniqueness Test

009964614-05, P = 19.478451 Days, E = 124.961291 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.84	6.20	6.11	3.80	5.10	2.72	1.06	-3.27	-0.96	0.10	2.40	4.22	1.04	0.38	0



Stellar Parameters For KIC 009964614

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9128^{+286}_{-430}	$4.049^{+0.193}_{-0.158}$	$0.070^{+0.200}_{-0.700}$	$2.340^{+0.723}_{-0.723}$	$2.236^{+0.349}_{-0.598}$	$0.246^{+0.304}_{-0.121}$
	+3%/-5%	+5%/-4%	+286%/-1000%	+31%/-31%	+16%/-27%	+124%/-49%
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 009964614-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-755 ± 94	$34.64^{+33.47}_{-24.33}$	1982^{+173}_{-159}	4127^{+3098}_{-872}	12^{+132}_{-9}
Alt.	-296 ± 48	$29.32^{+31.04}_{-20.72}$	1989^{+151}_{-162}	3676^{+2409}_{-763}	$6.820^{+67.146}_{-5.298}$

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

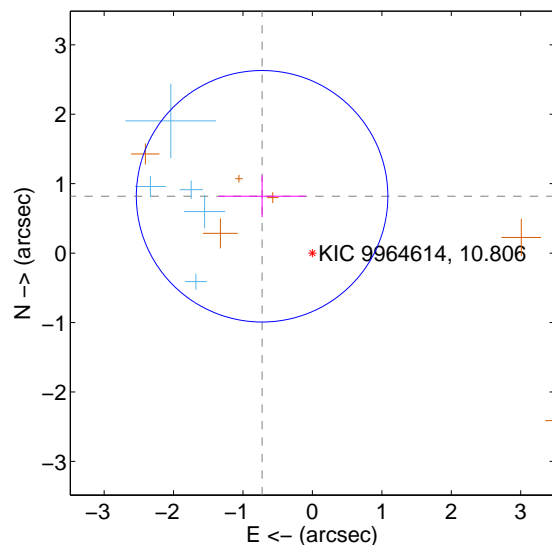
Supplemental centroid analysis for 009964614-05. **Kepler magnitude: 10.81.** Transit SNR 7.09

There are 6 quarters with good PRF difference image offsets

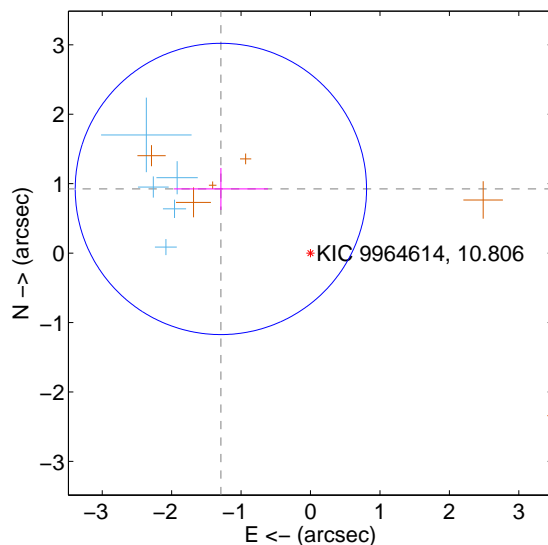
The direct PRF centroid is offset from the target star catalog position by about 0.61 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.093 ± 0.604	1.81	0.725 ± 0.627	0.818 ± 0.301
PRF-fit source offset from KIC position	1.587 ± 0.699	2.27	1.291 ± 0.678	0.924 ± 0.303
photometric centroid source offset	0.48 ± 0.11	4.25	-0.48 ± 0.11	-0.06 ± 0.09

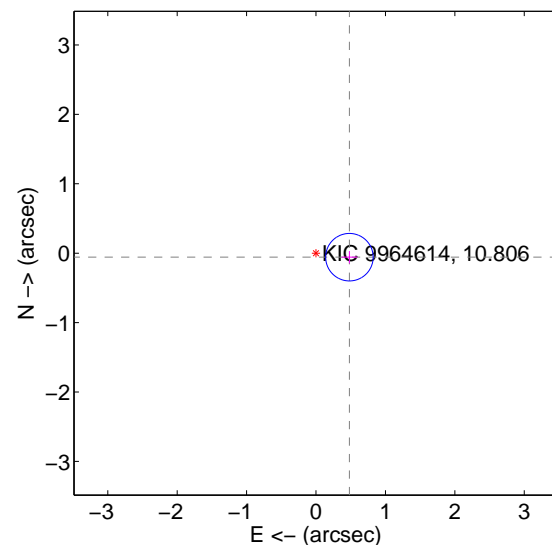
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

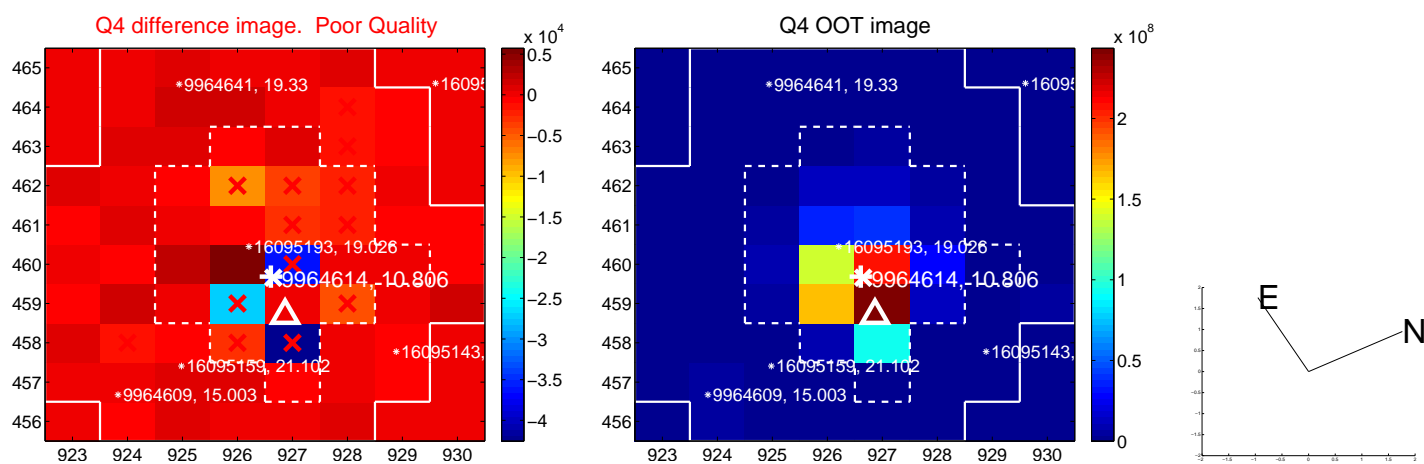
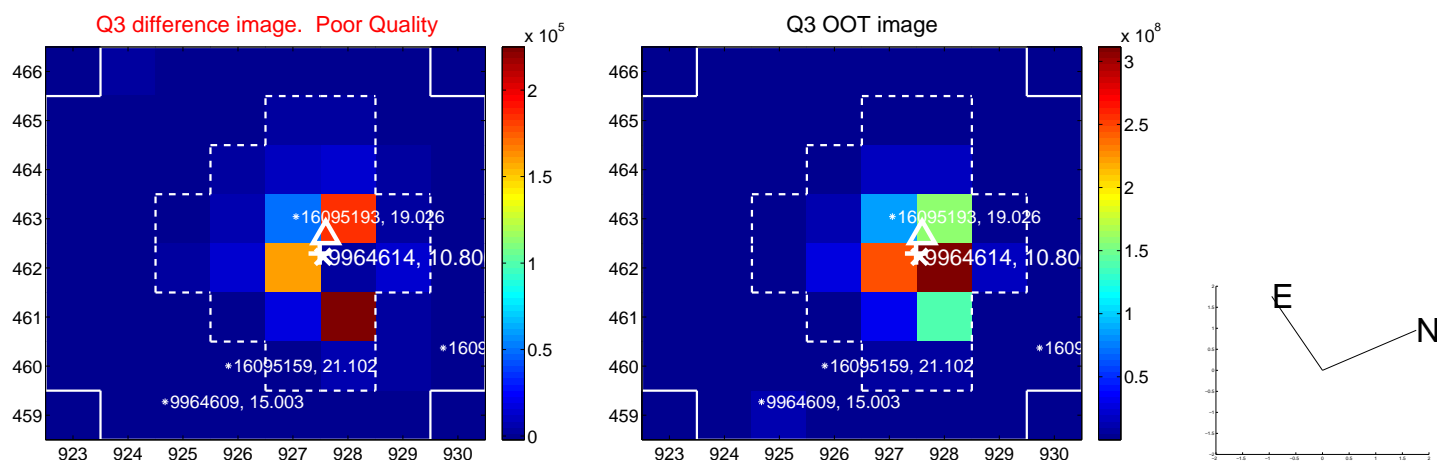
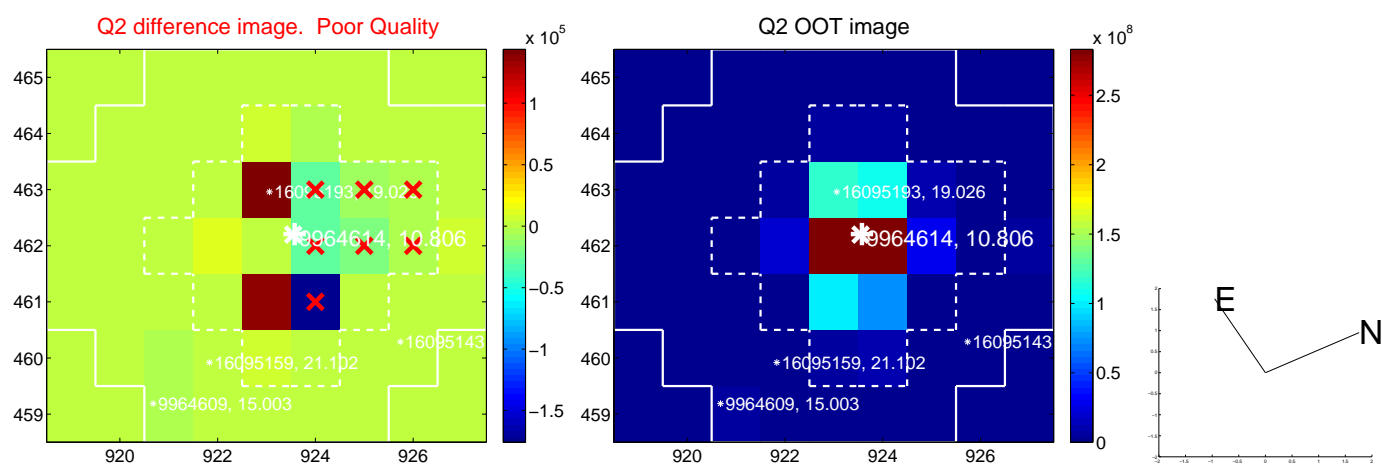
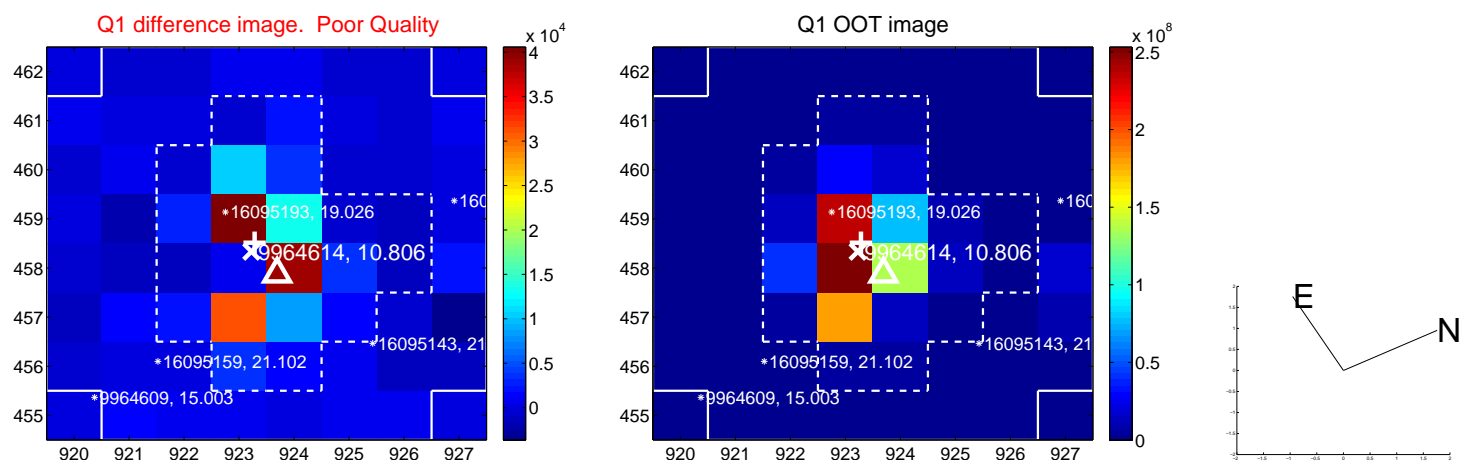


offset from photometric centroids

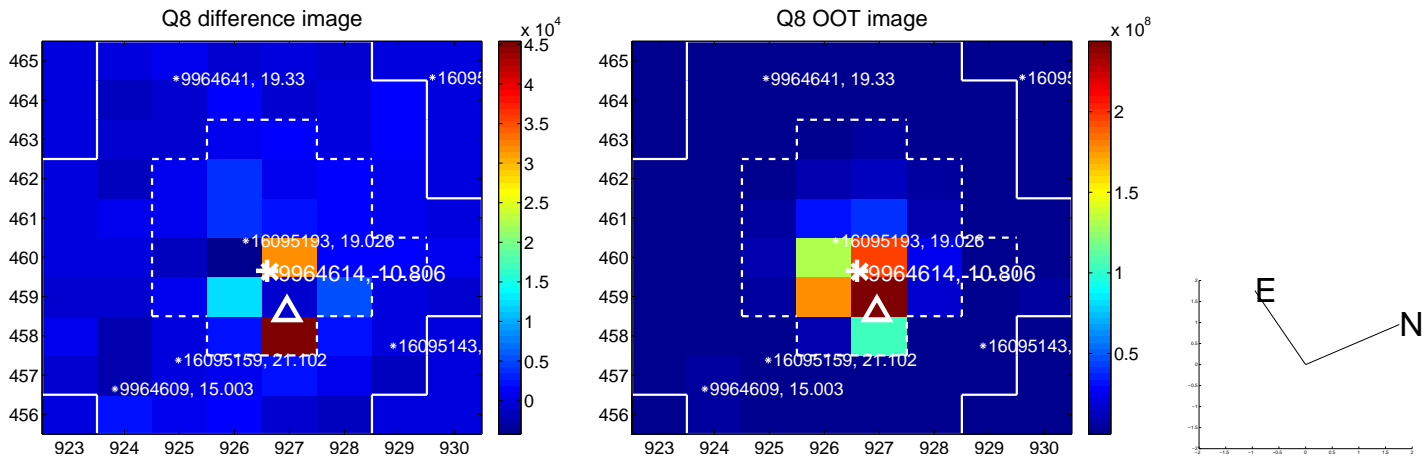
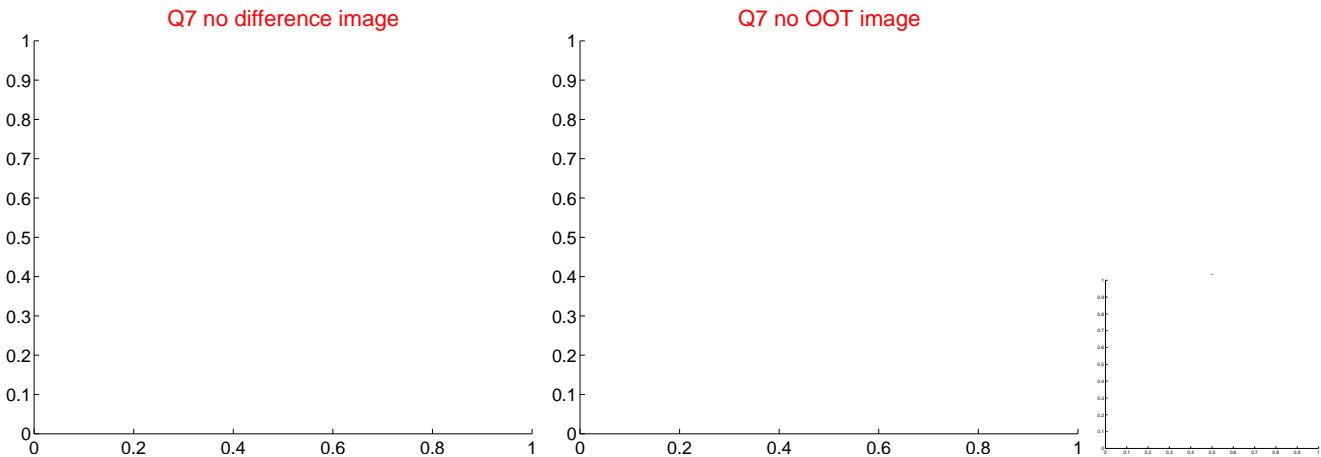
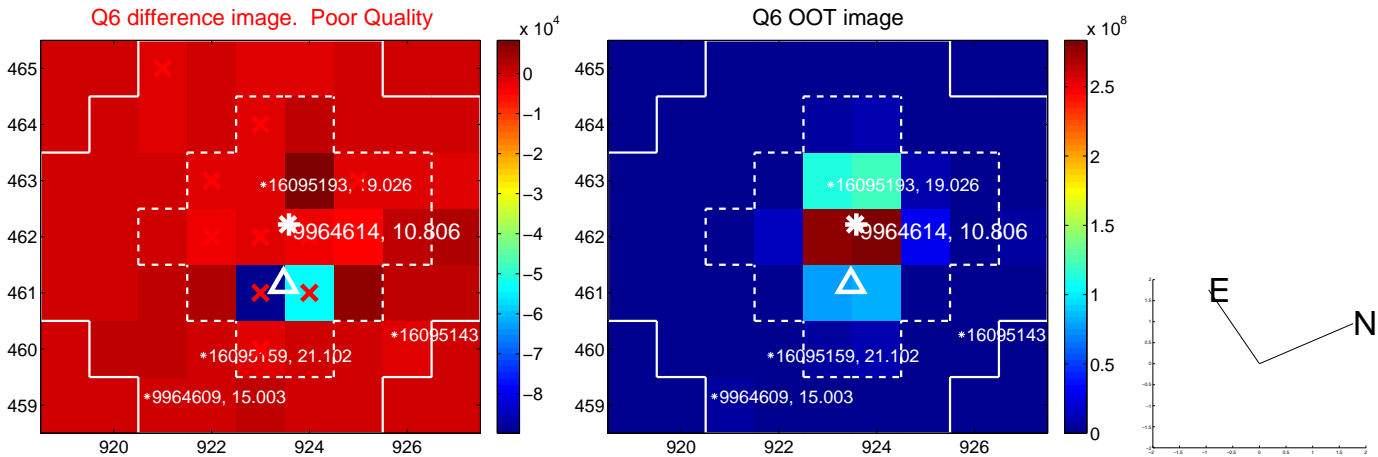
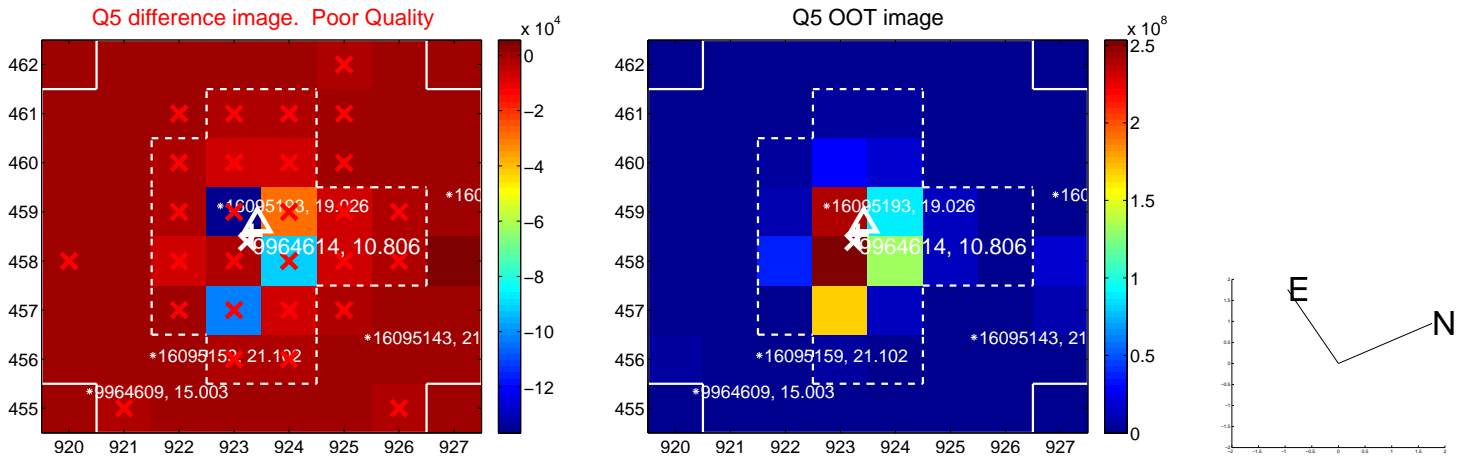


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

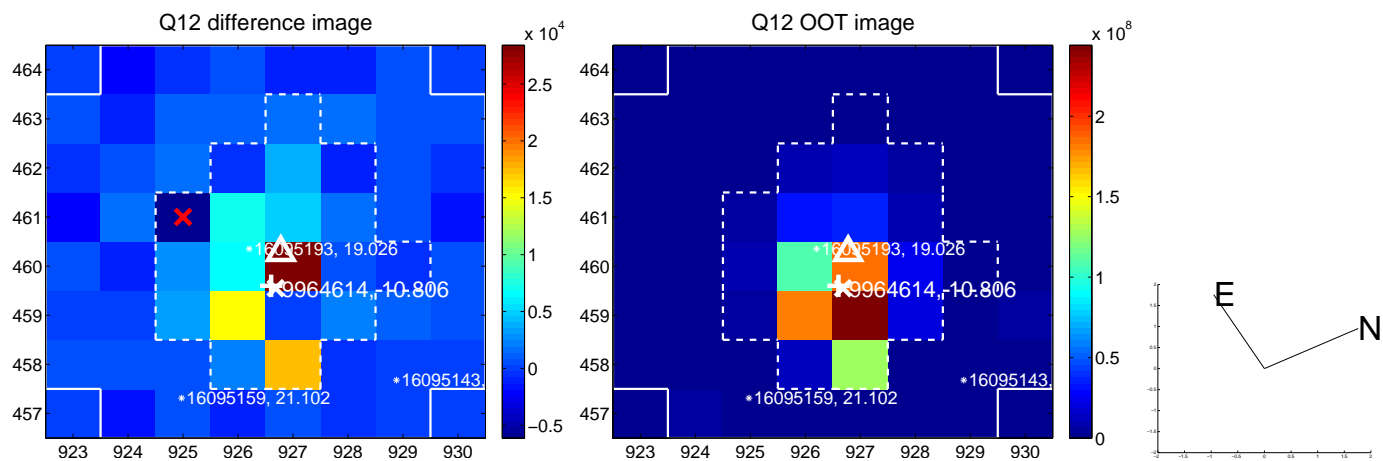
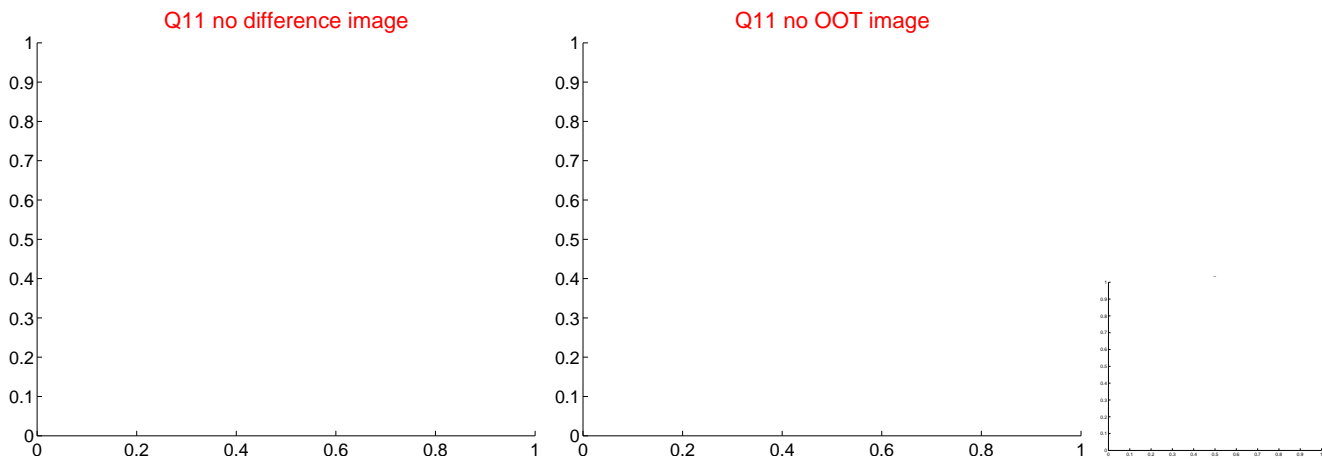
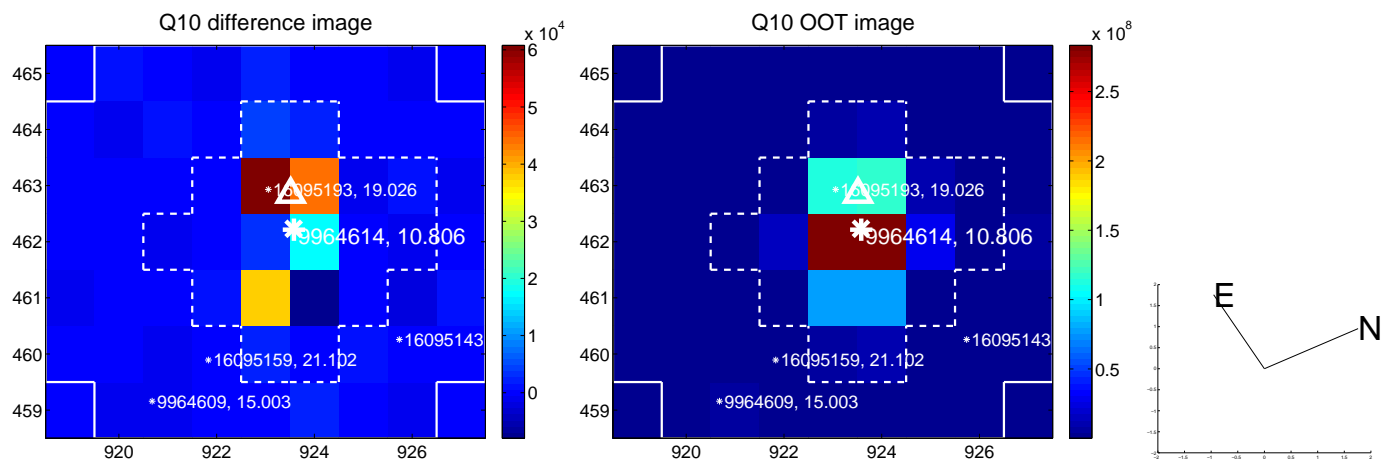
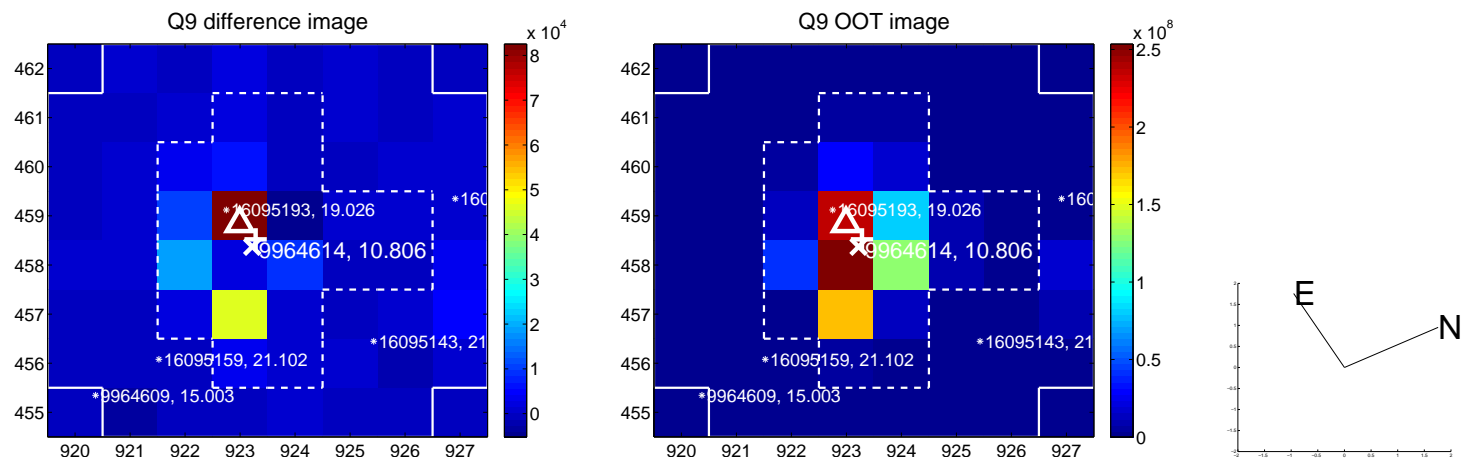
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



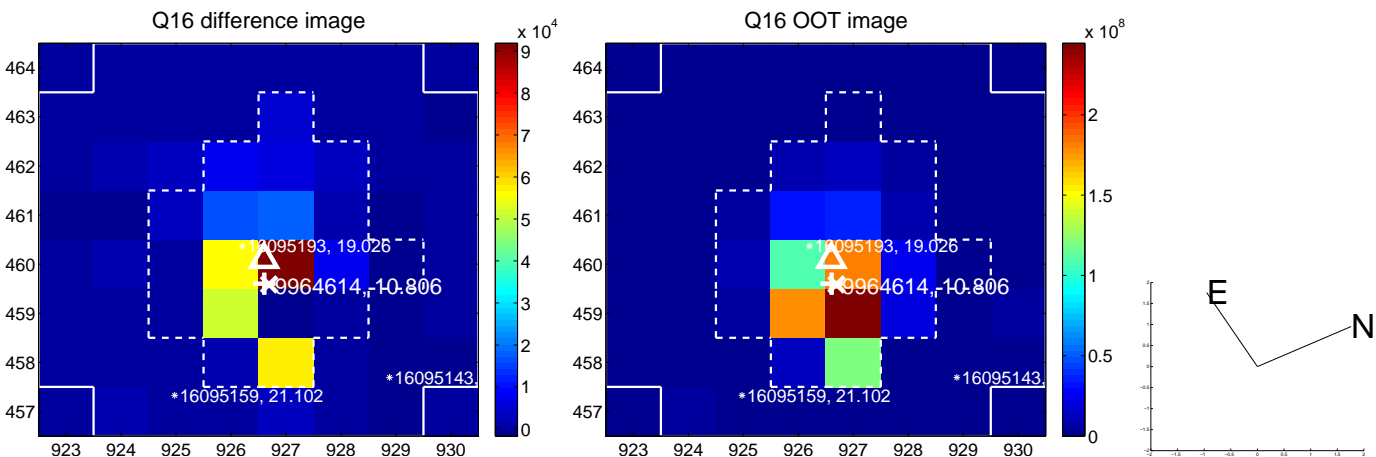
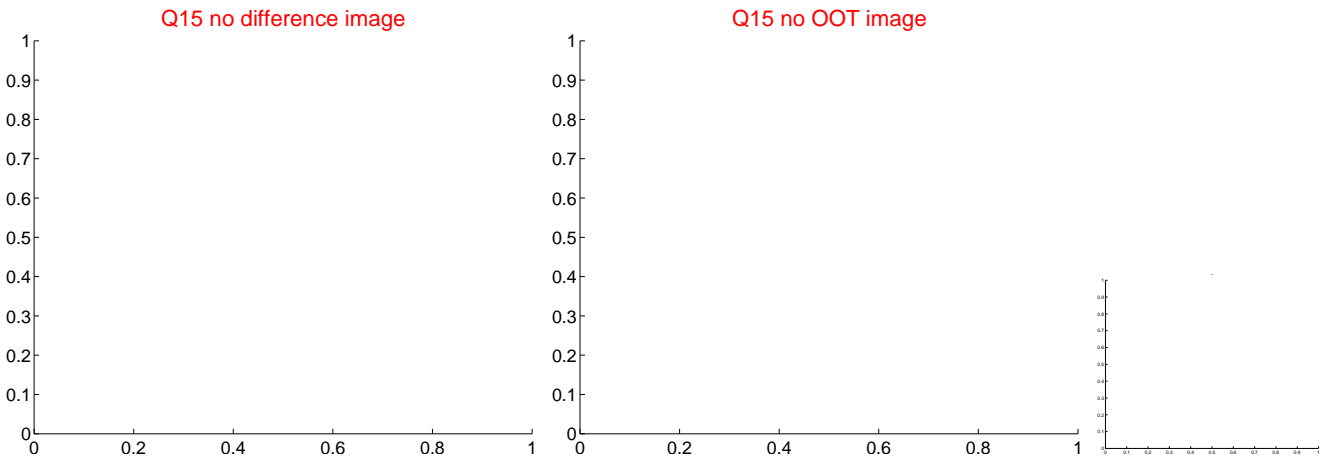
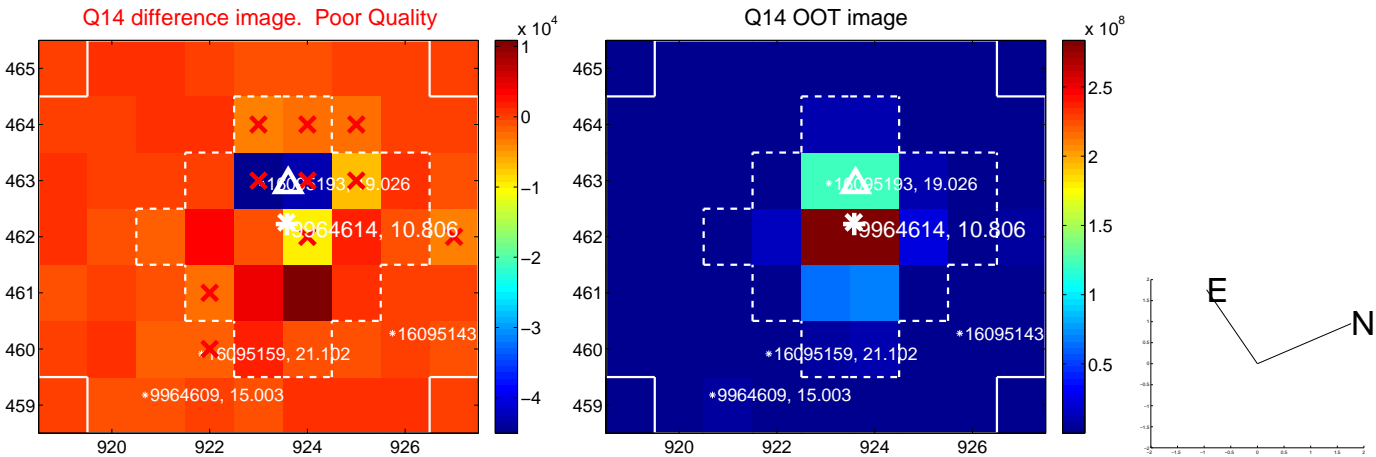
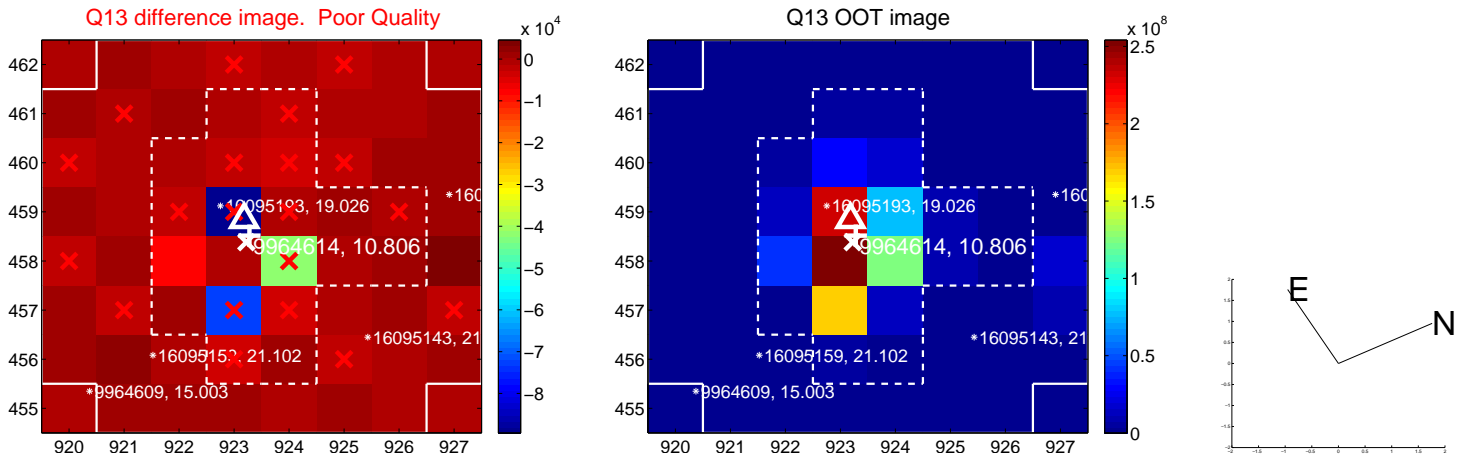
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



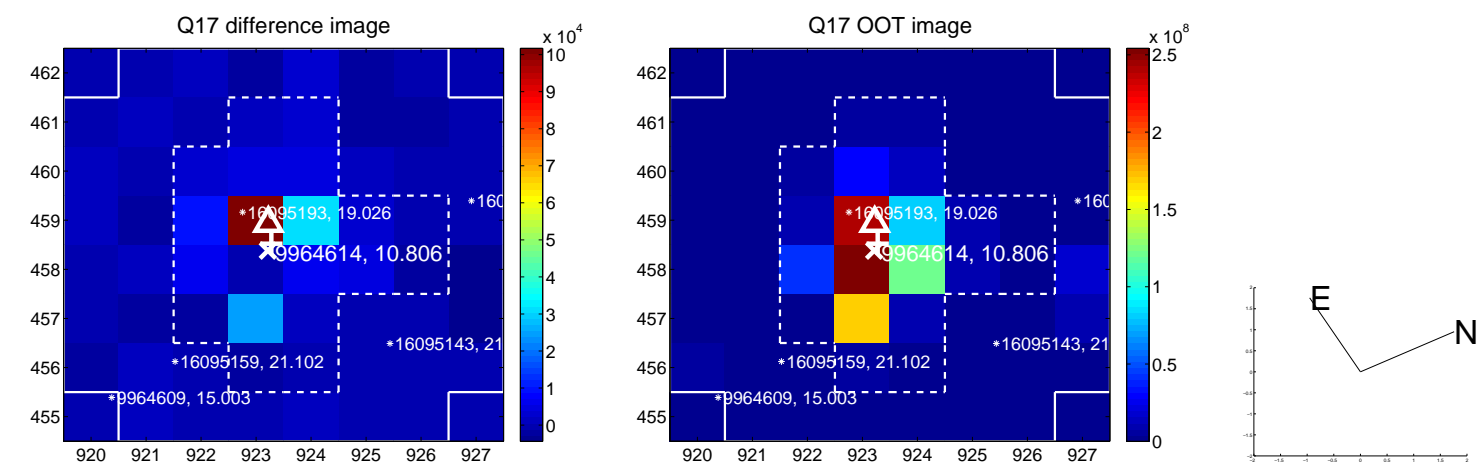
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



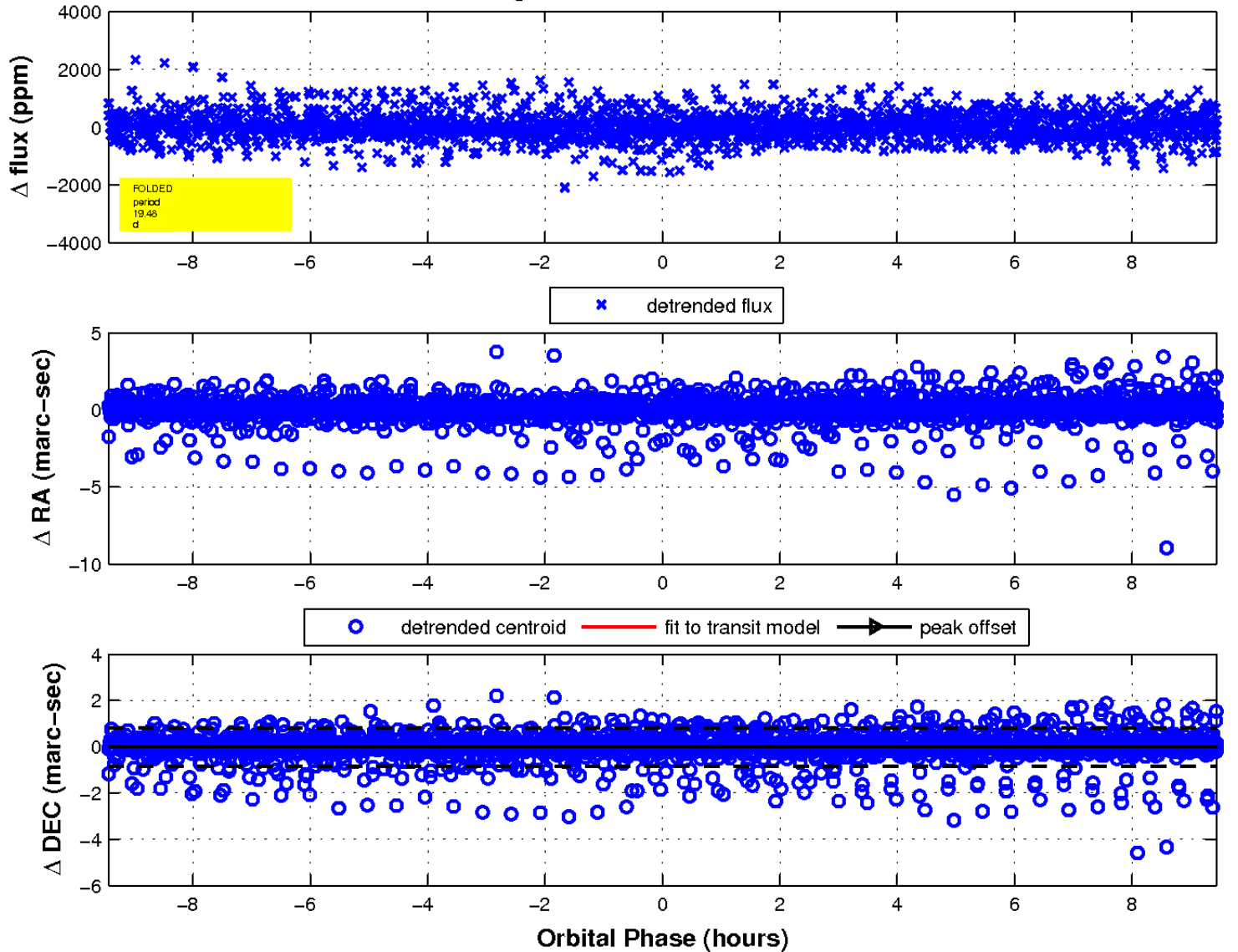
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination

