

KIC 009594857

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})
009594857-01	OBS	No	1.226888	132.519415	343.2	6.111	11.2	11.7	1.85	6865	3.75	10106.78
009594857-02	OBS	No	1.526293	131.974106	576.2	3.443	9.8	9.8	1.85	6865	5.19	7553.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009594857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009594857-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—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.

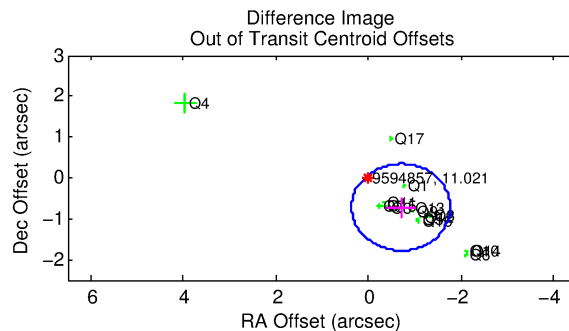
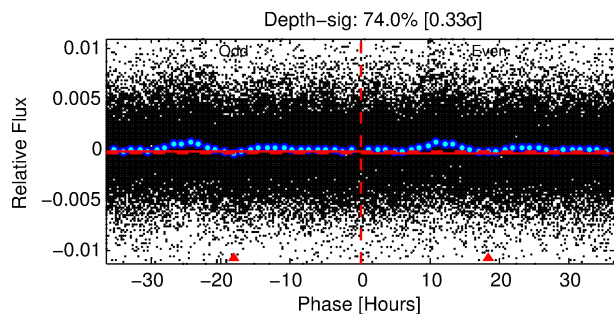
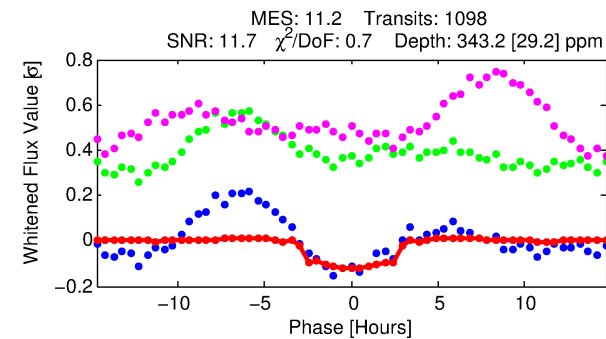
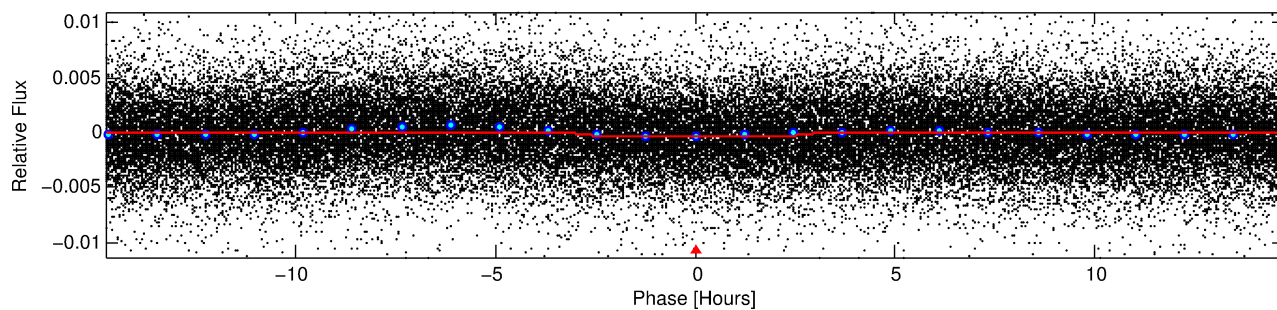
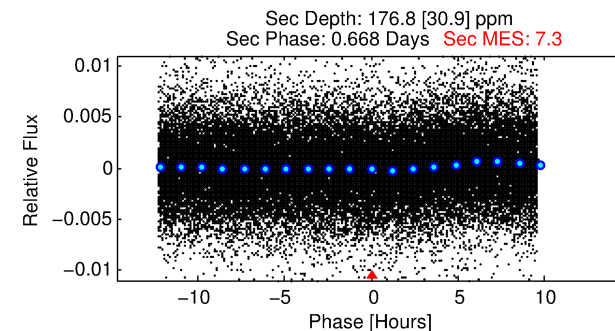
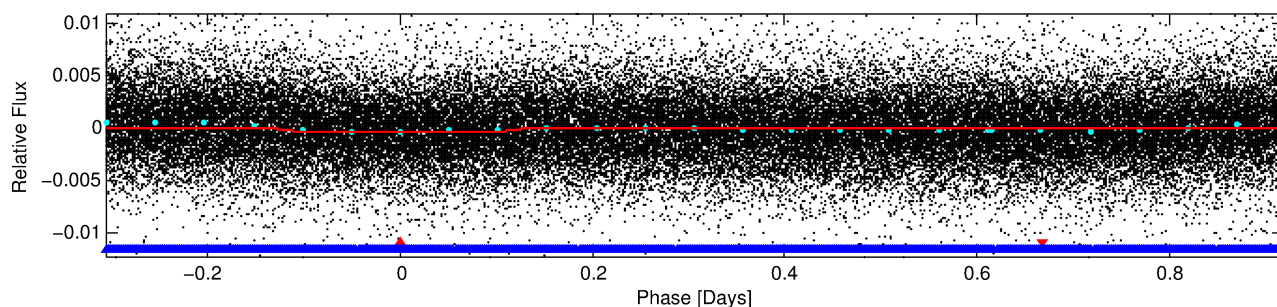
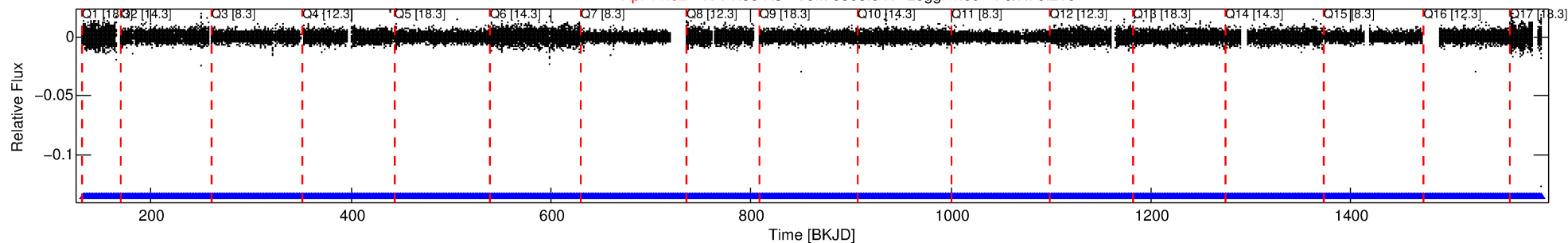
Ephemeris Match Information For 009594857-01

No Significant Match Found

DV One-Page Summary

KIC: 9594857 Candidate: 1 of 2 Period: 1.227 d

Kp: 11.02 R*: 1.85 Rs Teff: 6865.0 K Logg: 4.09 Fe/H: 0.210



DV Fit Results:

Period = 1.22689 [0.00001] d
Epoch = 132.5194 [0.0036] BKJD
Rp/R* = 0.0185 [0.0038]
a/R* = 1.34 [0.68]
b = 0.77 [0.61]
Seff = 10106.78 [3979.88]
Teq = 2557 [252] K
Rp = 3.75 [1.41] Re
a = 0.0260 [0.0066] AU
Ag = 4.68 [2.66] [1.38σ]
Teffp = 5815 [689] K [4.44σ]

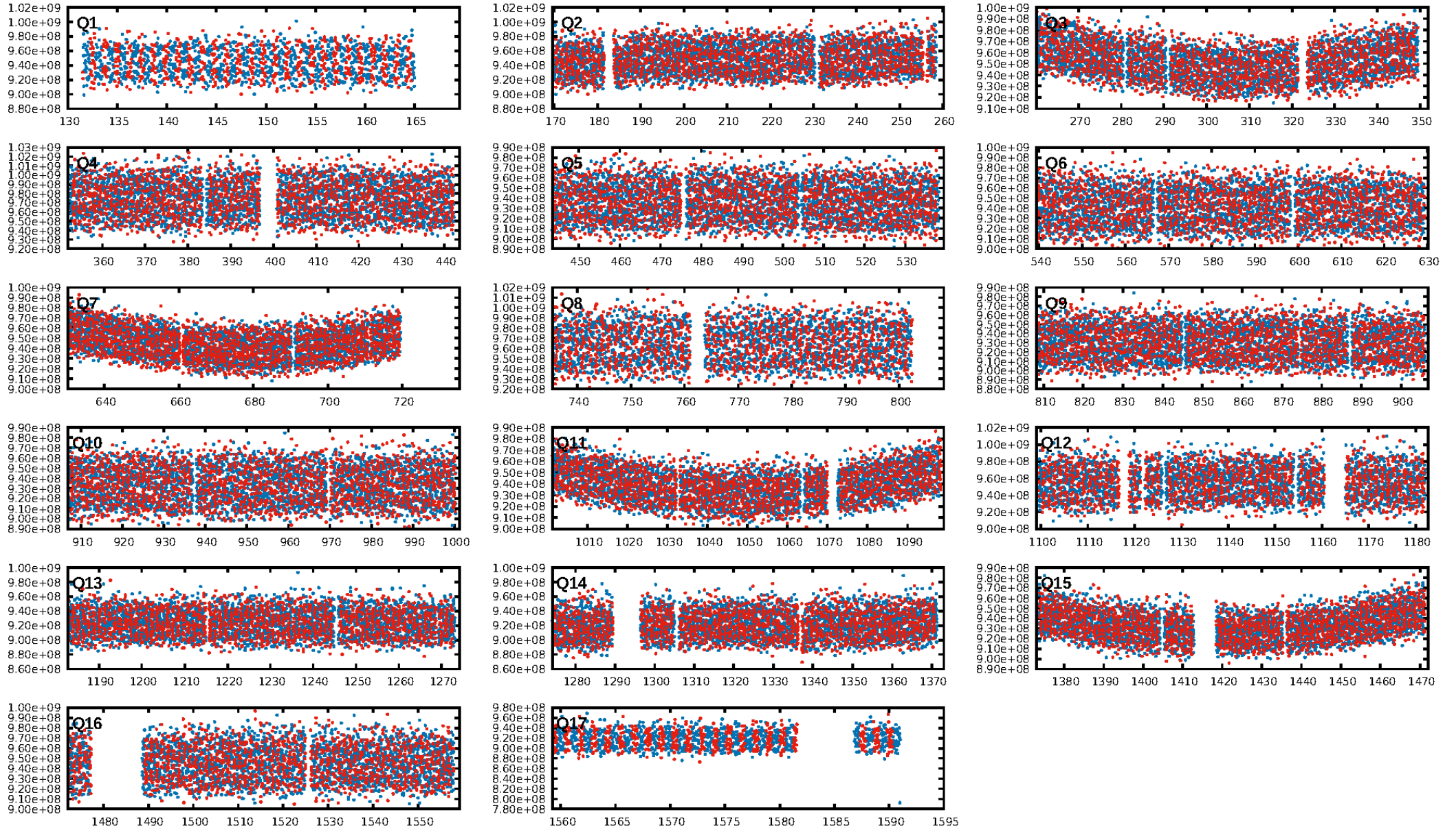
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 69.4% [1.02σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1049/1049]
GhostDiagnostic-chr: 0.8617
Centroid-sig: 68.3%
Centroid-so: 0.297 arcsec [3.89σ]
OotOffset-rm: 1.005 arcsec [2.83σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-rm: 1.845 arcsec [5.34σ]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 1.00 [17/17]

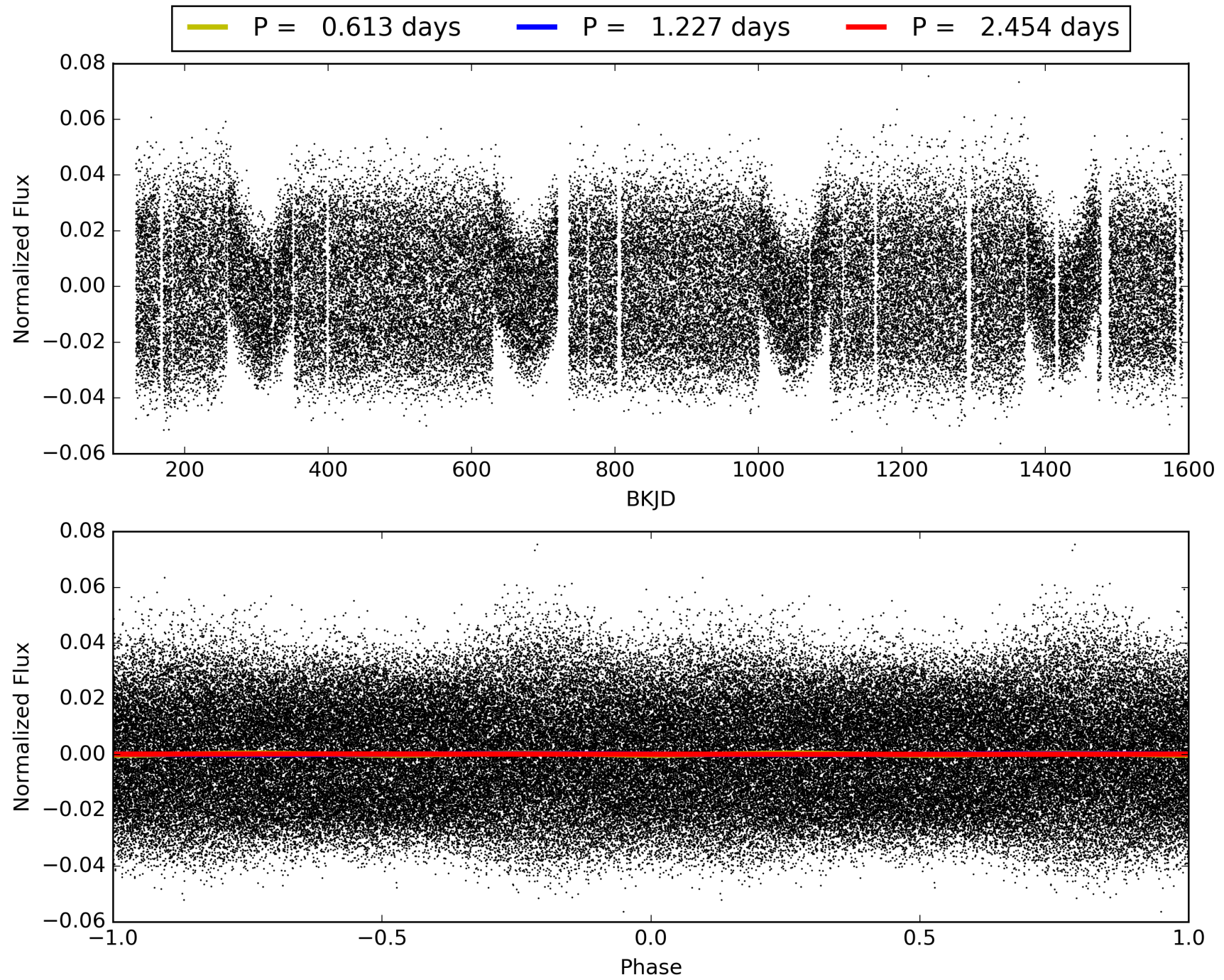
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:18:09 Z

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

TCE 009594857-01, PDC Light Curves

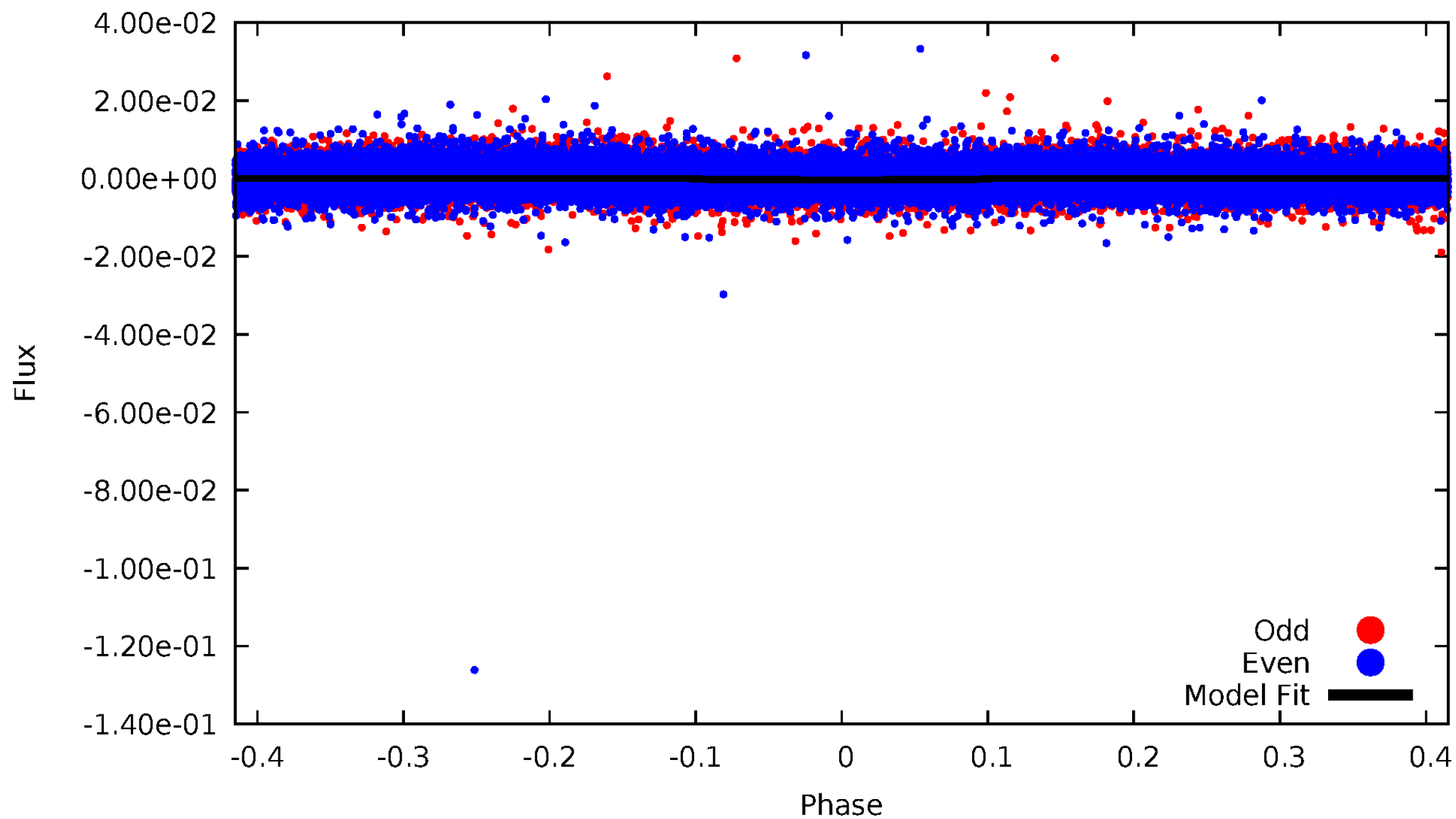


TCE 009594857-01



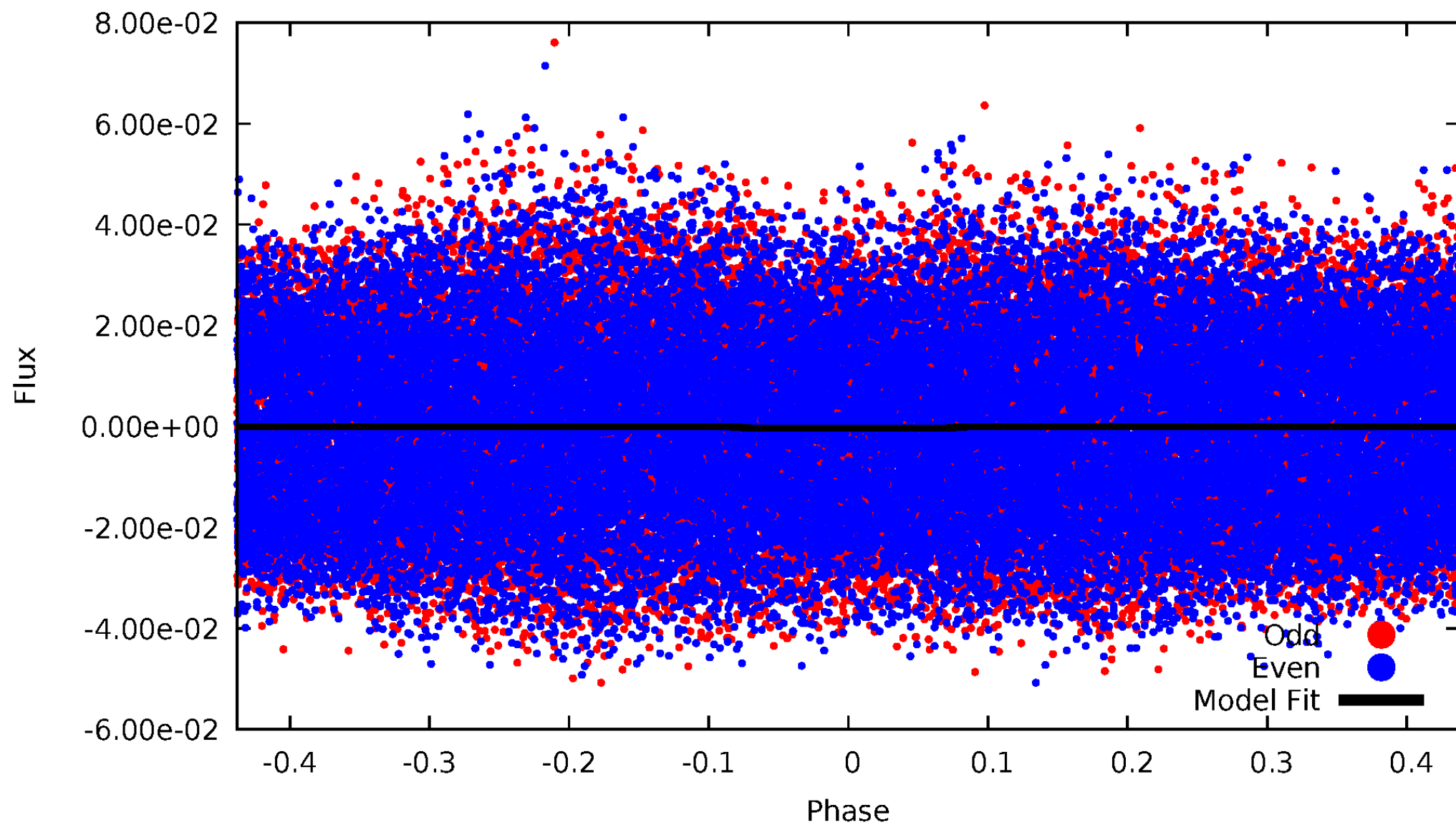
DV Odd/Even

TCE 009594857-01



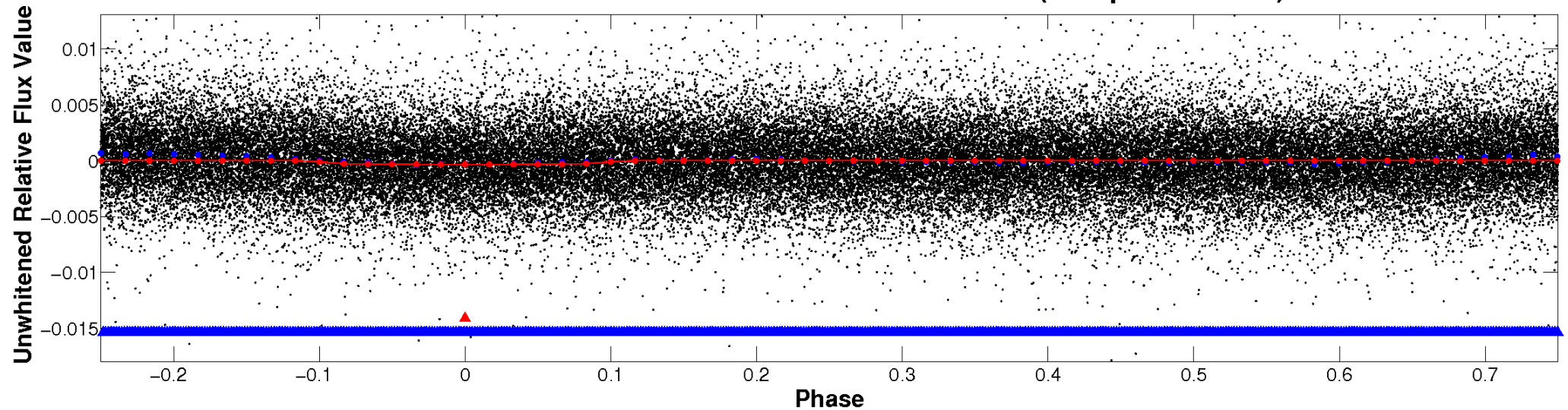
ALT Odd/Even

TCE 009594857-01

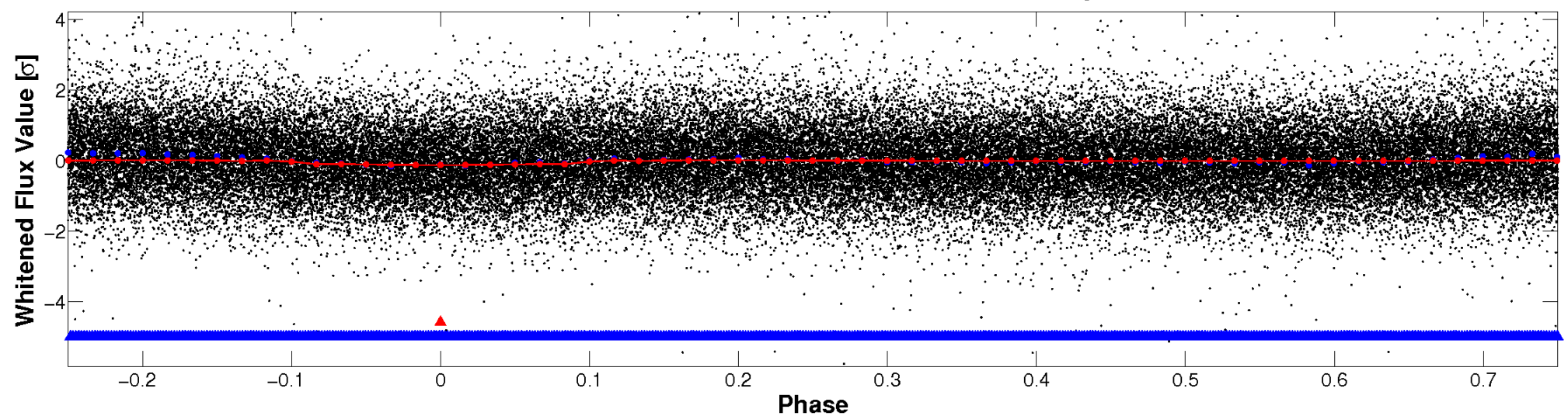


Non-Whitened Vs. Whitened Light Curve

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

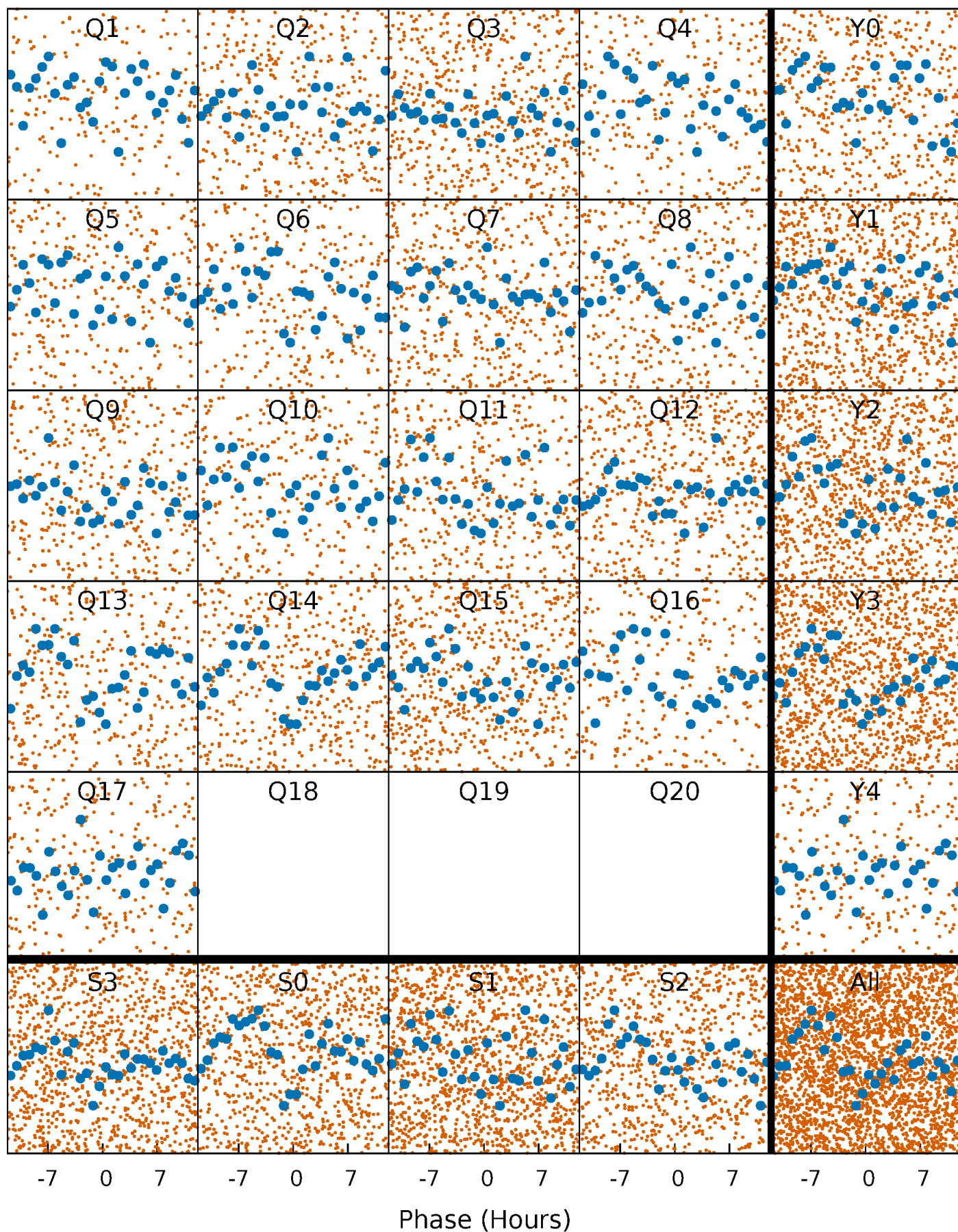


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



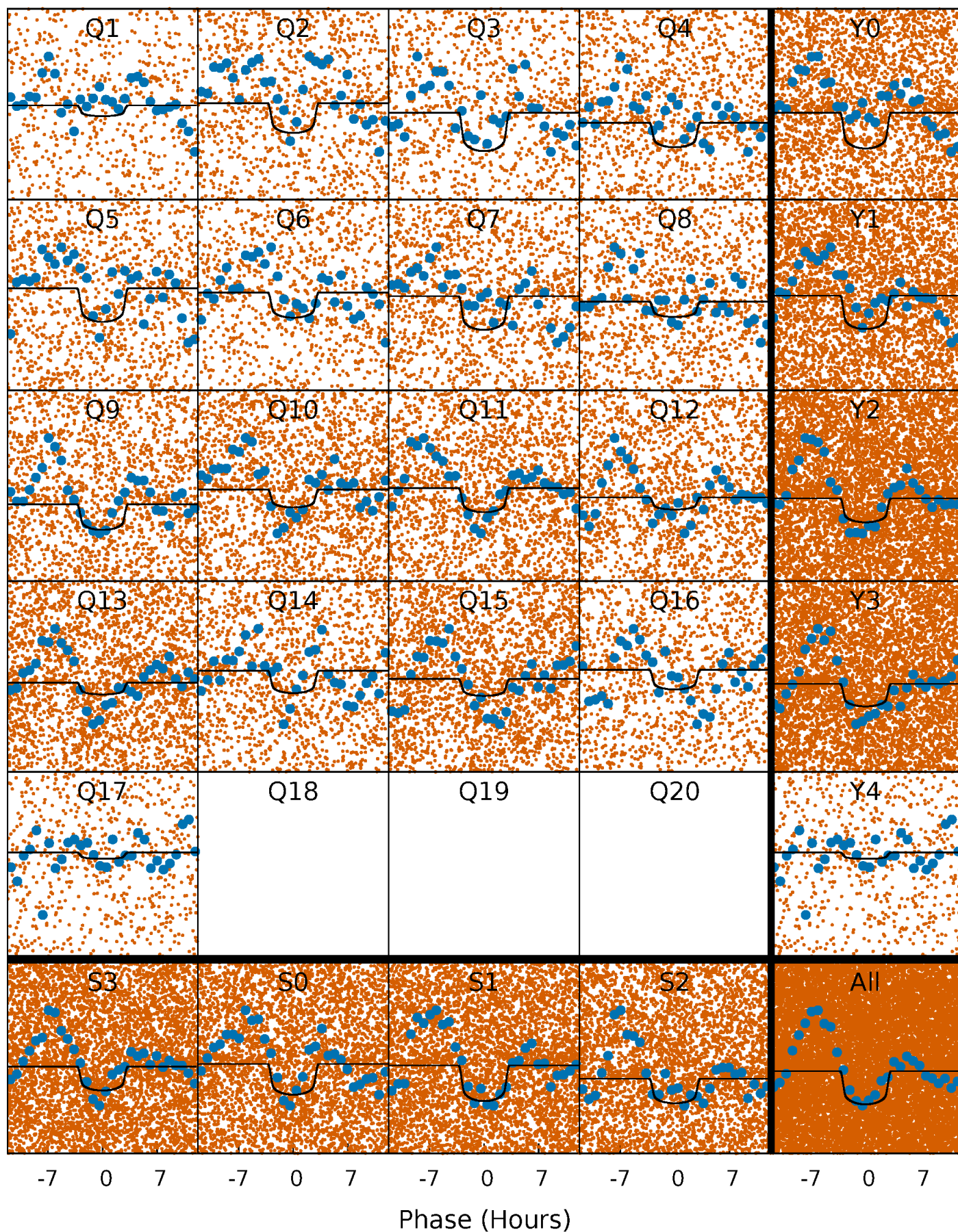
PDC Quarter-Phased Transit Curves

TCE 009594857-01 P= 1.226888 Days $T_0=132.519415$ (BKJD)



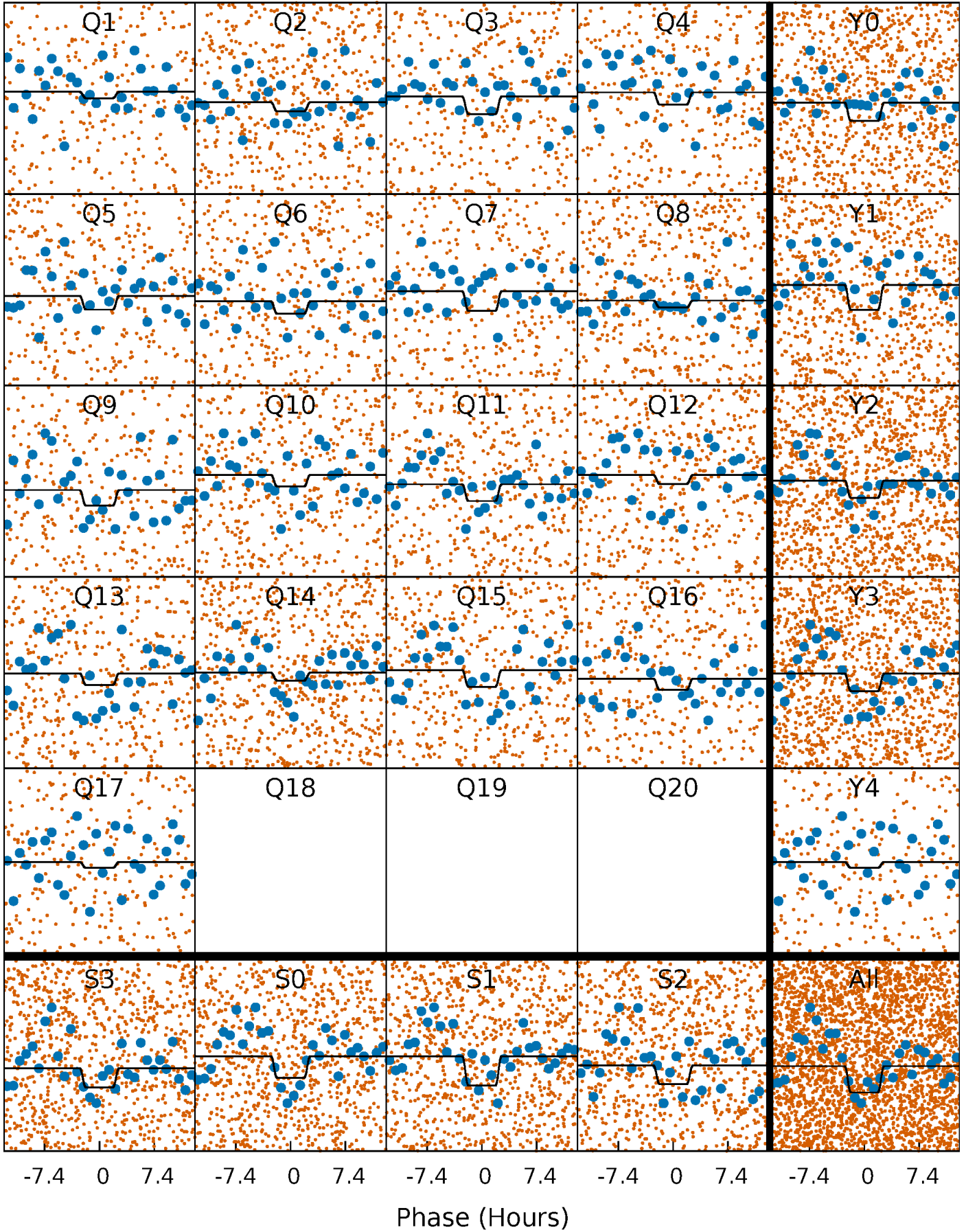
DV Quarter-Phased Transit Curves

TCE 009594857-01 P= 1.226888 Days $T_0=132.519415$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

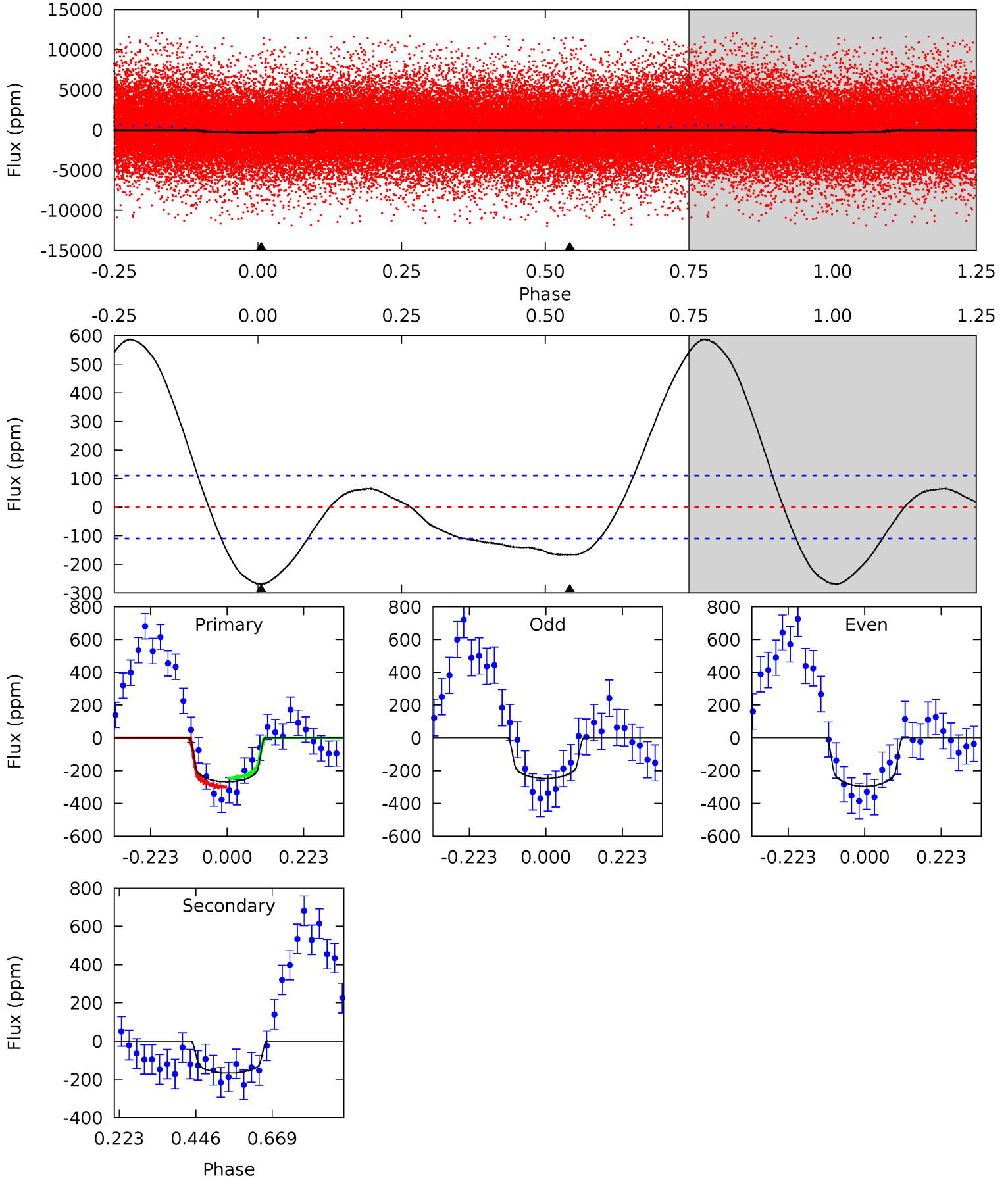
TCE 009594857-01 P= 1.226912 Days $T_0=132.496250$ (BKJD)



DV Model-Shift Uniqueness Test

009594857-01, P = 1.226888 Days, E = 131.292527 Days

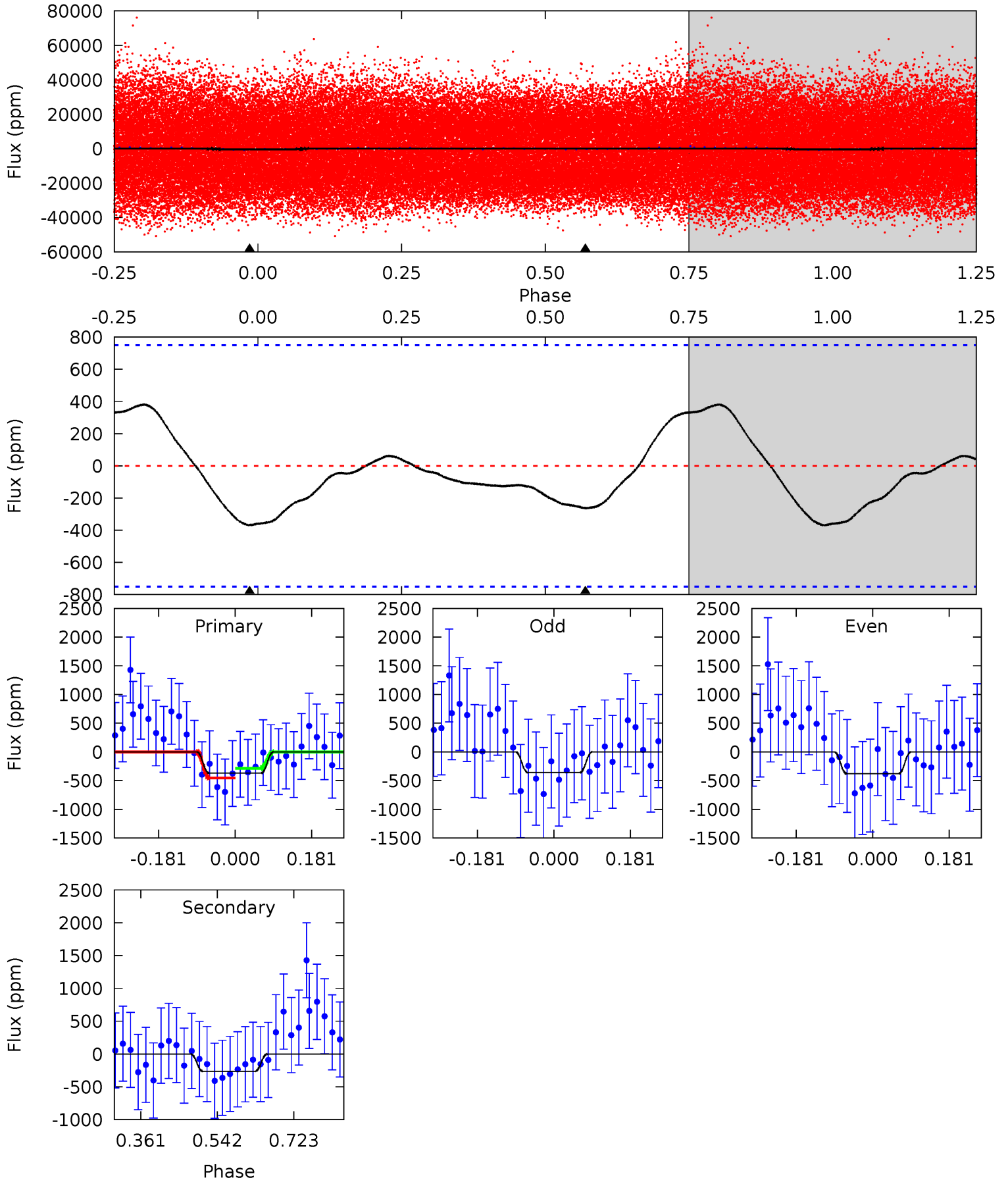
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.63	0	0	4.39	1.22	8.86	10.7	10.7	6.63	6.63	0.97	1.08	0.69	1.08



Alt Model-Shift Uniqueness Test

009594857-01, P = 1.226912 Days, E = 131.269338 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.19	1.56	0	0	4.44	1.34	0.95	2.19	2.19	1.56	1.56	0.06	1.02	0.51	0.48



Stellar Parameters For KIC 009594857

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6865^{+192}_{-288}	$4.095^{+0.153}_{-0.187}$	$0.210^{+0.150}_{-0.350}$	$1.855^{+0.587}_{-0.392}$	$1.561^{+0.208}_{-0.254}$	$0.344^{+0.277}_{-0.179}$
	+3%/-4%	+4%/-5%	+71%/-167%	+32%/-21%	+13%/-16%	+80%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009594857-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-167 ± 25	$3.70^{+0.96}_{-0.83}$	3565^{+264}_{-238}	5614^{+770}_{-556}	$4.406^{+3.119}_{-1.661}$
Alt.	-263 ± 169	$4.06^{+0.98}_{-0.86}$	3579^{+280}_{-231}	5960^{+1244}_{-1249}	$5.549^{+5.615}_{-3.650}$

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 $A_{obs} \gg 1.0$

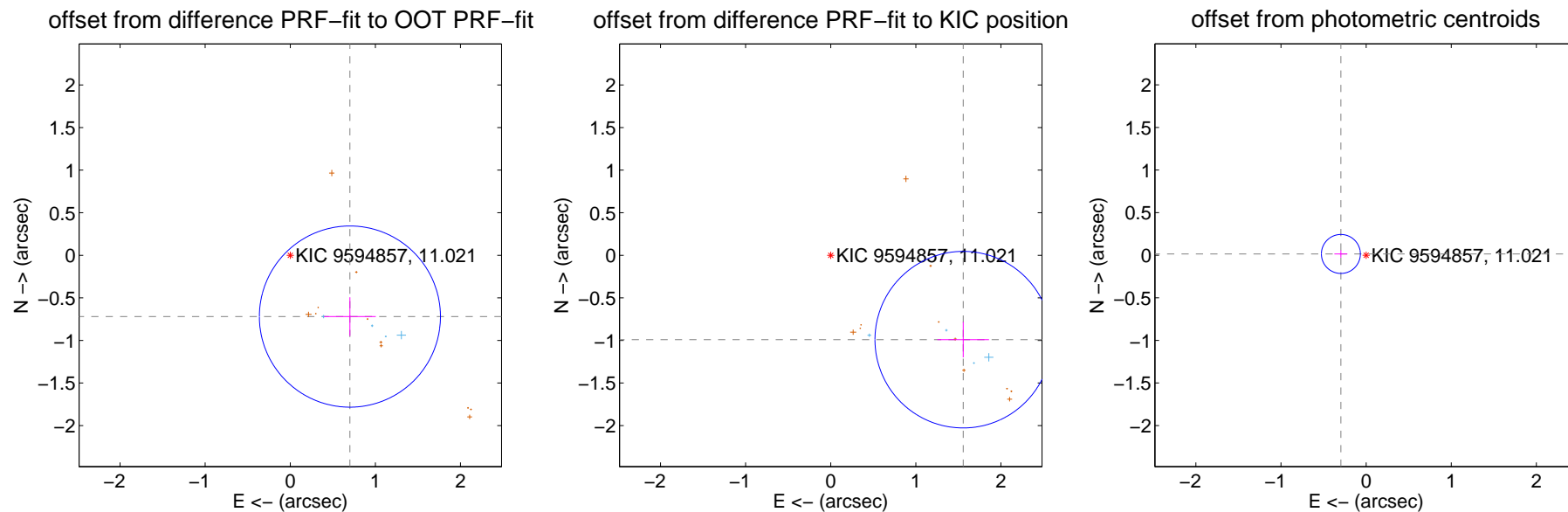
DV Centroid Data

Supplemental centroid analysis for 009594857-01. **Kepler magnitude: 11.02.** Transit SNR 11.67

There are 5 quarters with good PRF difference image offsets

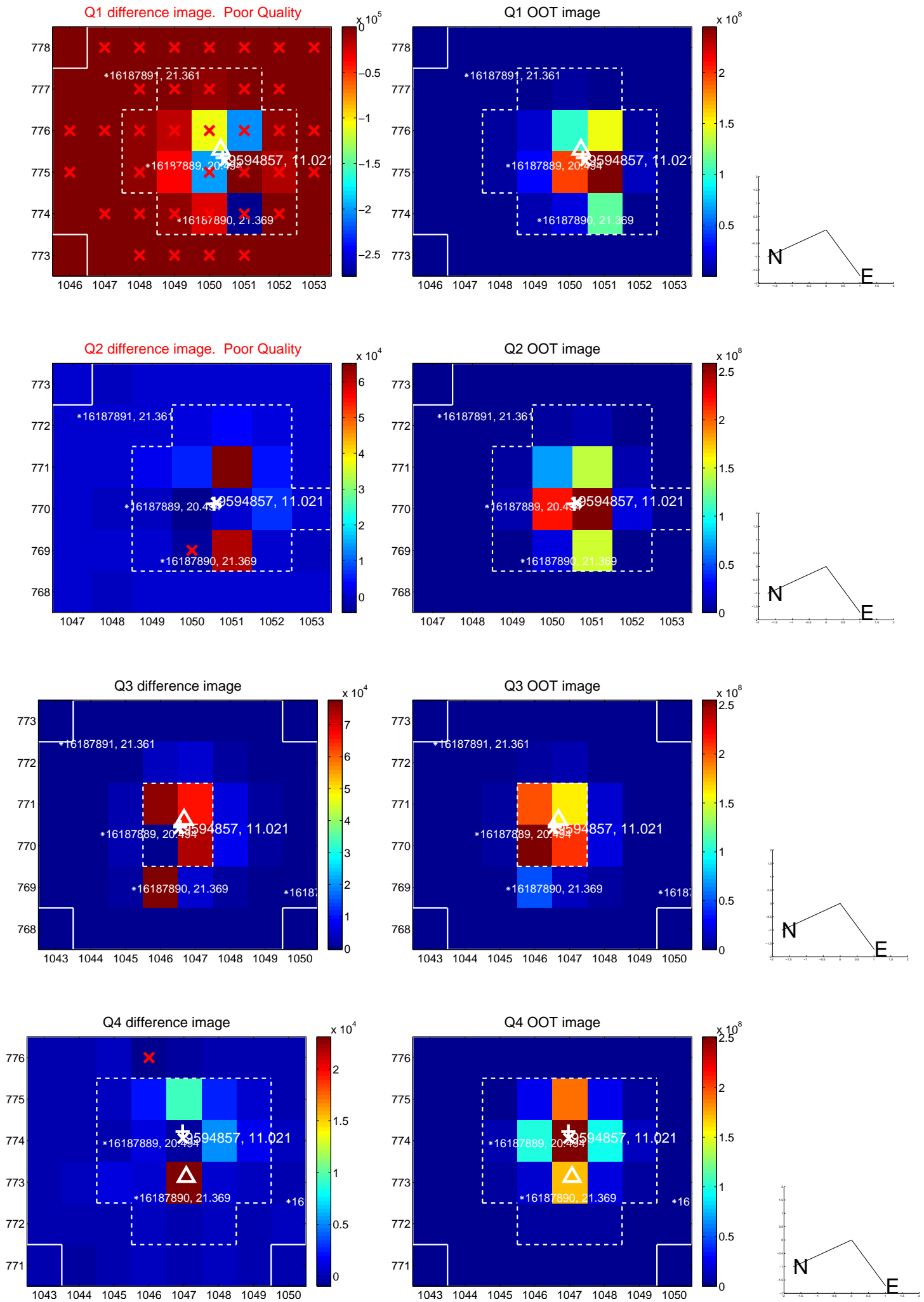
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.005 ± 0.355	2.83	-0.701 ± 0.304	-0.720 ± 0.227
PRF-fit source offset from KIC position	1.845 ± 0.346	5.34	-1.557 ± 0.304	-0.991 ± 0.208
photometric centroid source offset	0.30 ± 0.08	3.89	0.30 ± 0.08	0.01 ± 0.04

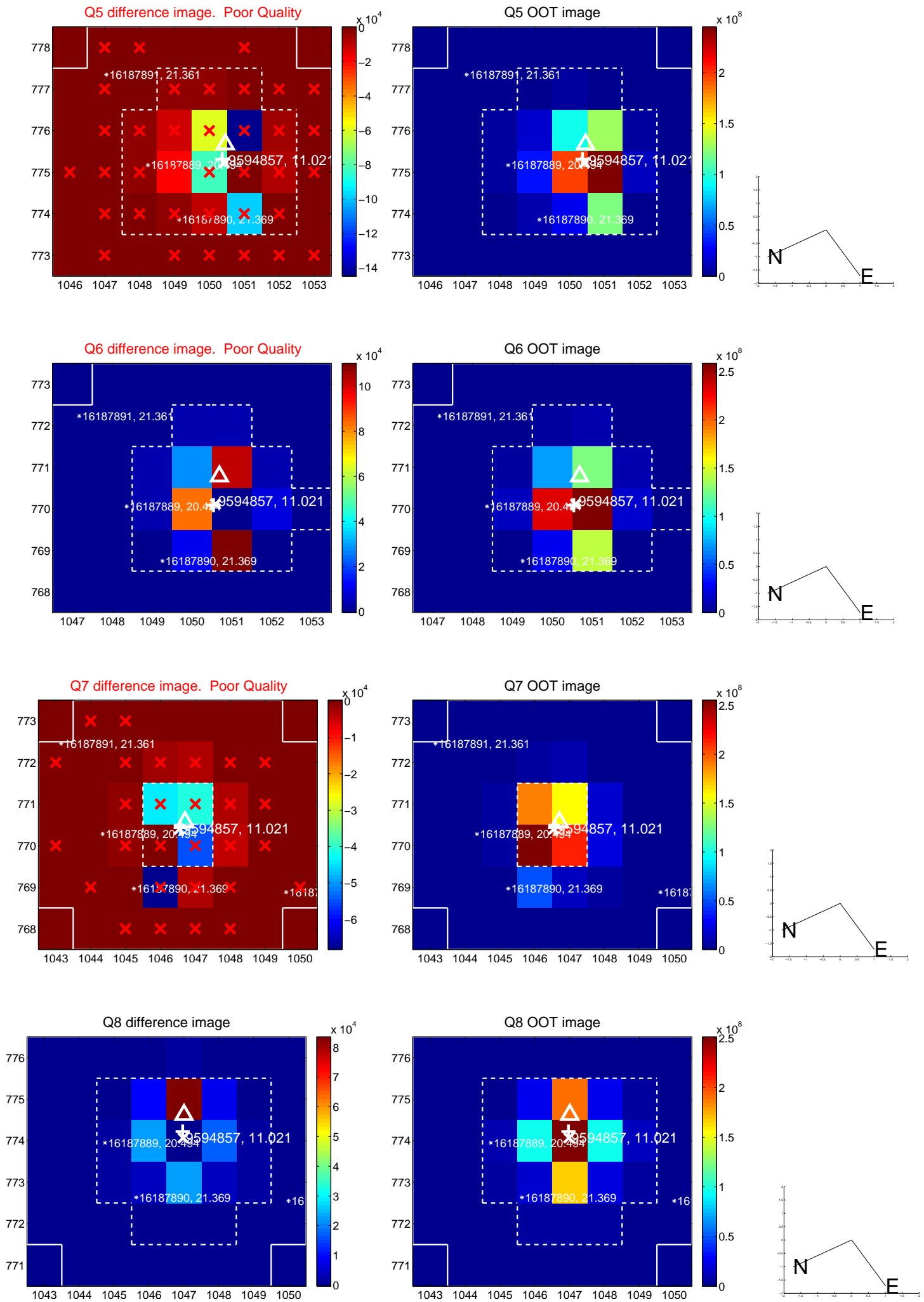


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

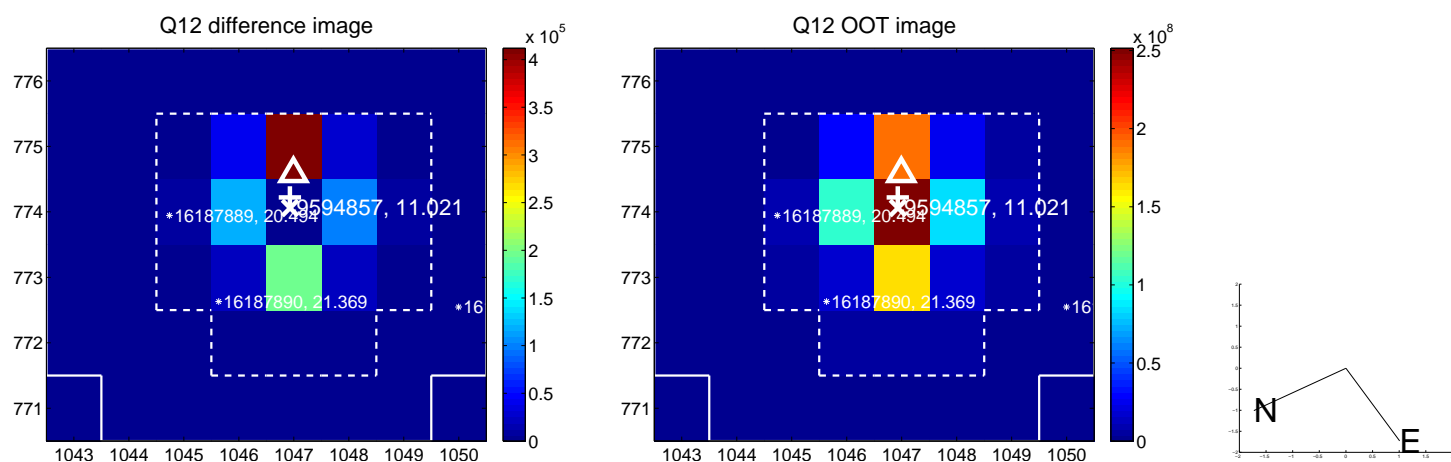
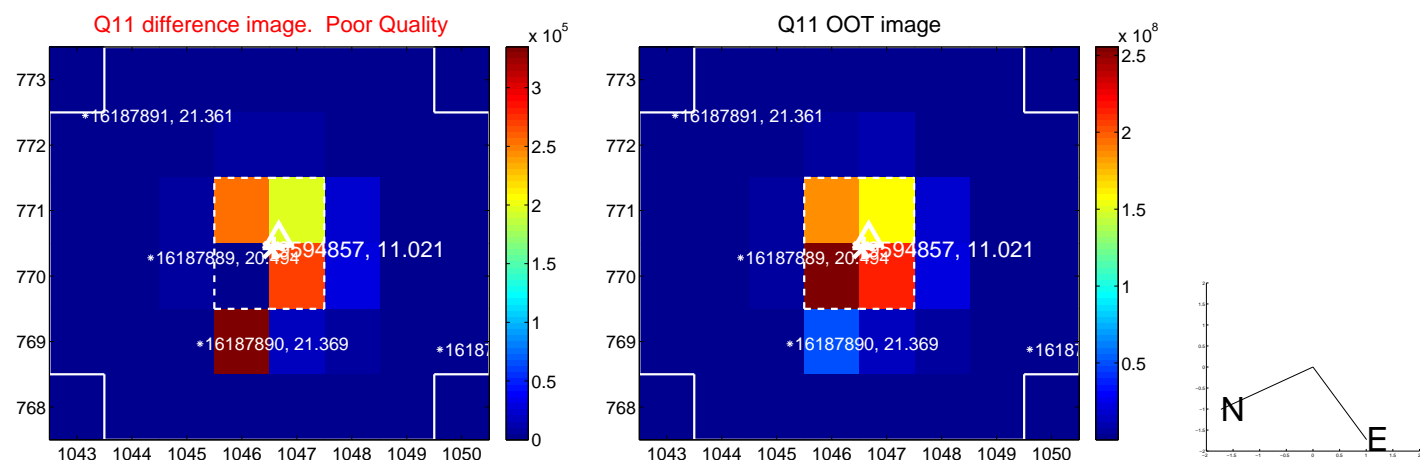
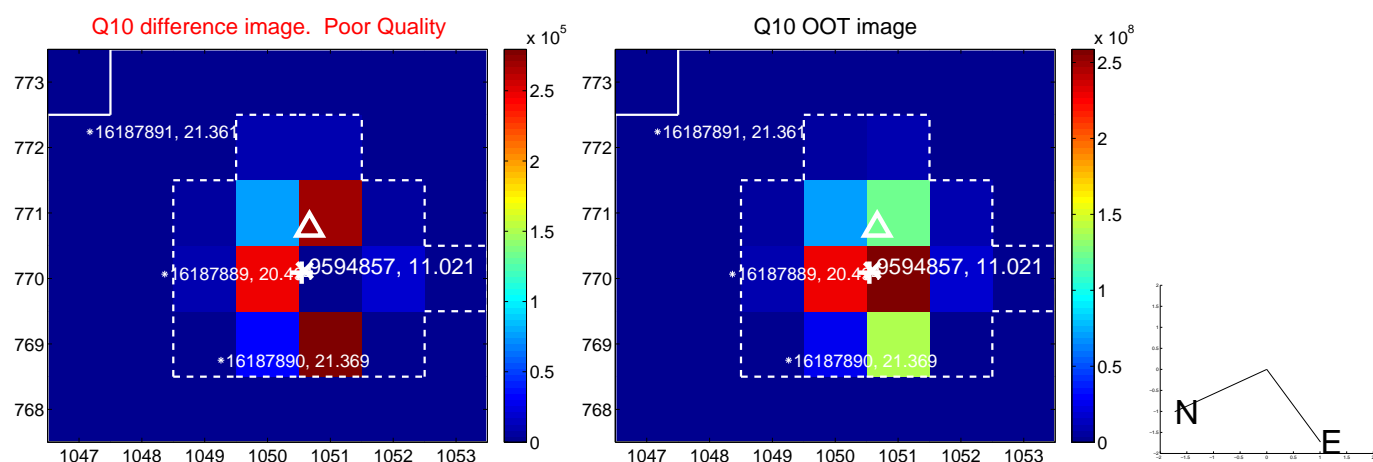
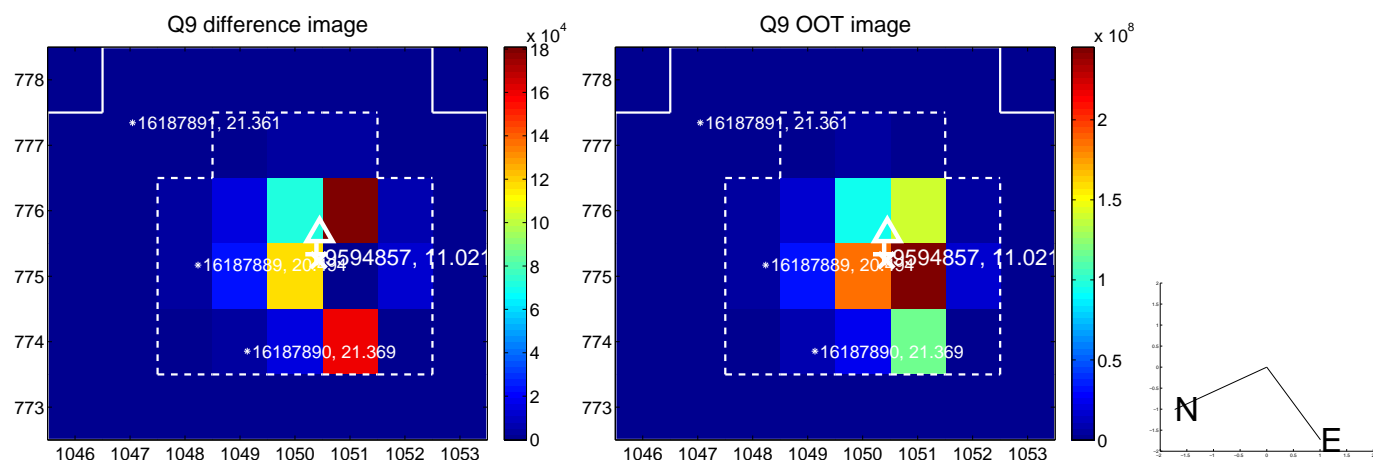
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



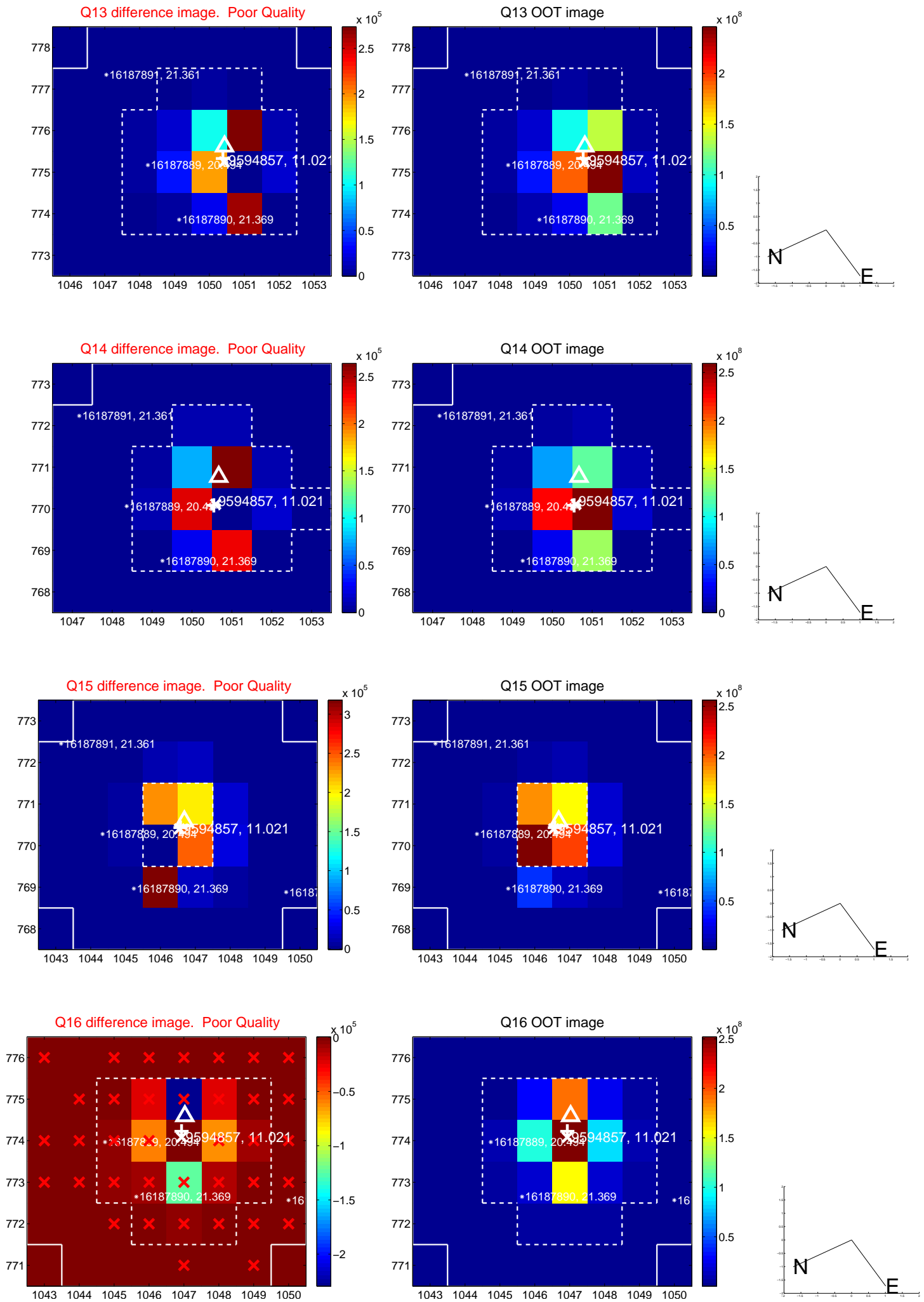
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

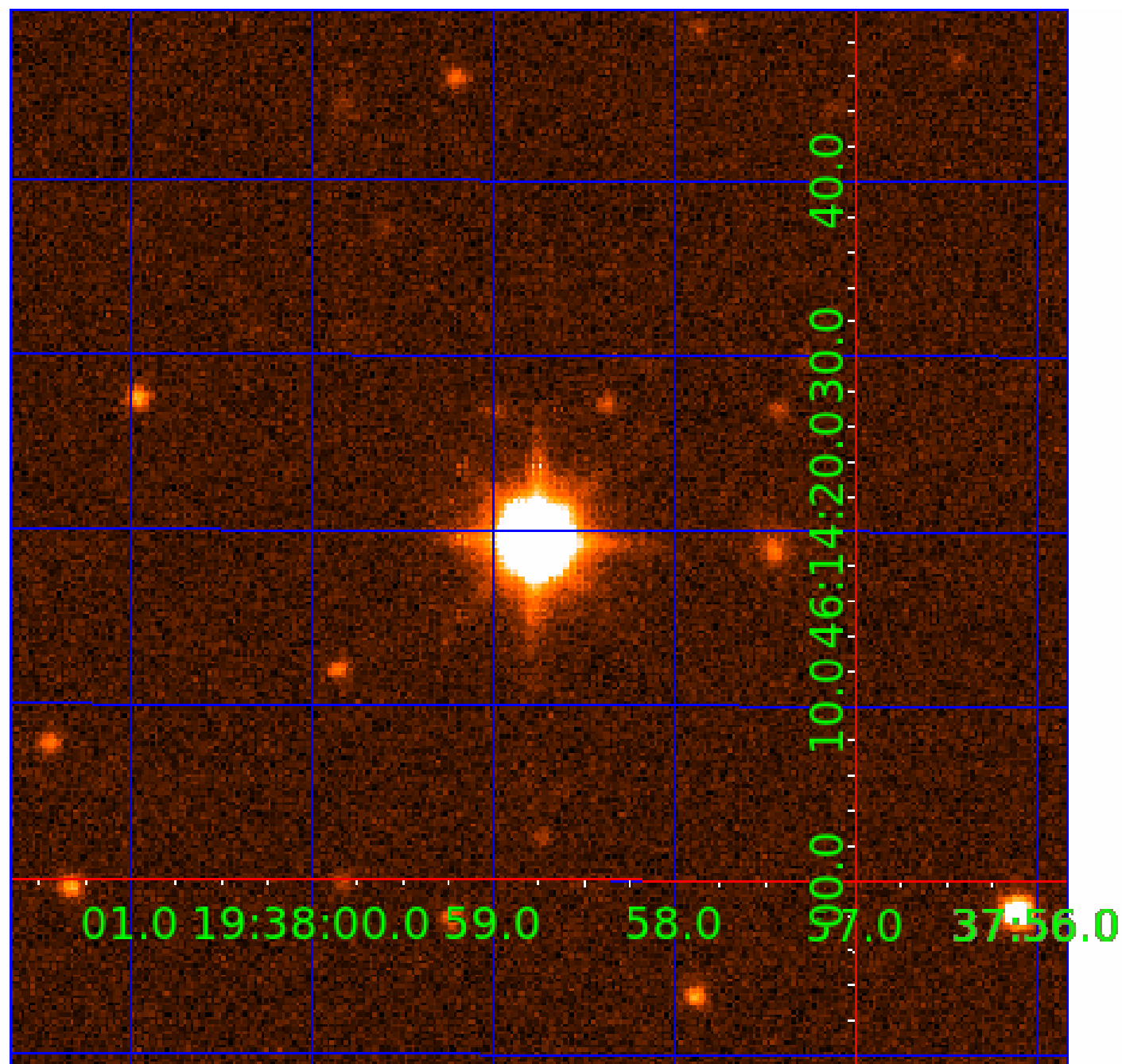


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009594857

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})
009594857-01	OBS	No	1.226888	132.519415	343.2	6.111	11.2	11.7	1.85	6865	3.75	10106.78
009594857-02	OBS	No	1.526293	131.974106	576.2	3.443	9.8	9.8	1.85	6865	5.19	7553.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009594857-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009594857-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—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.

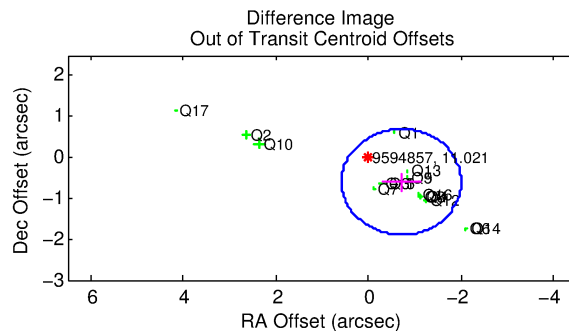
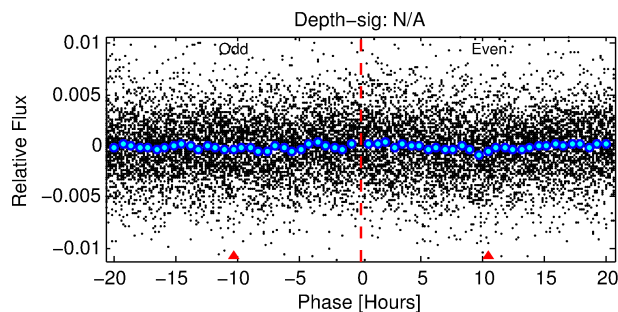
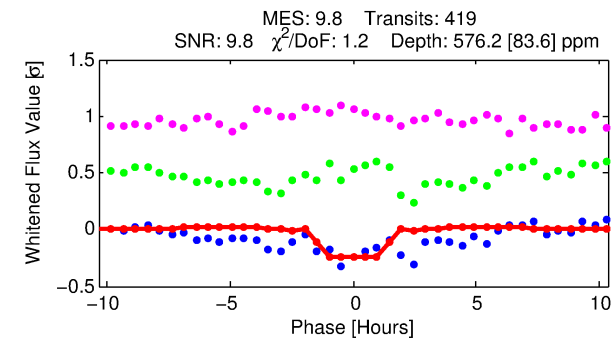
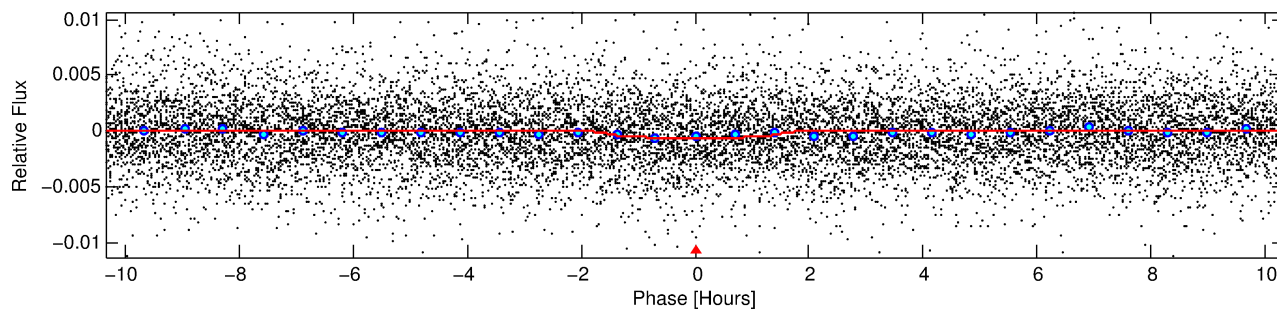
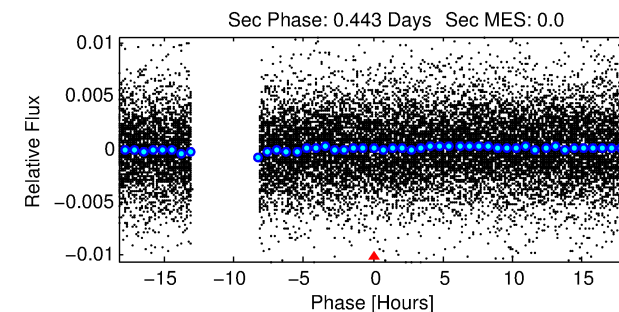
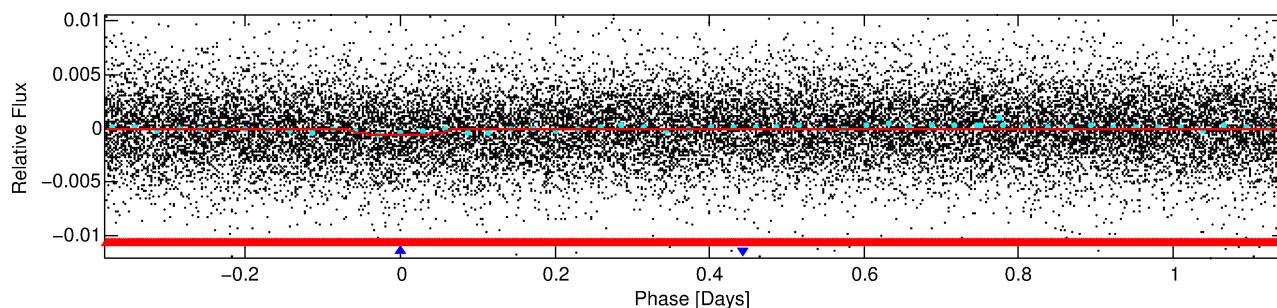
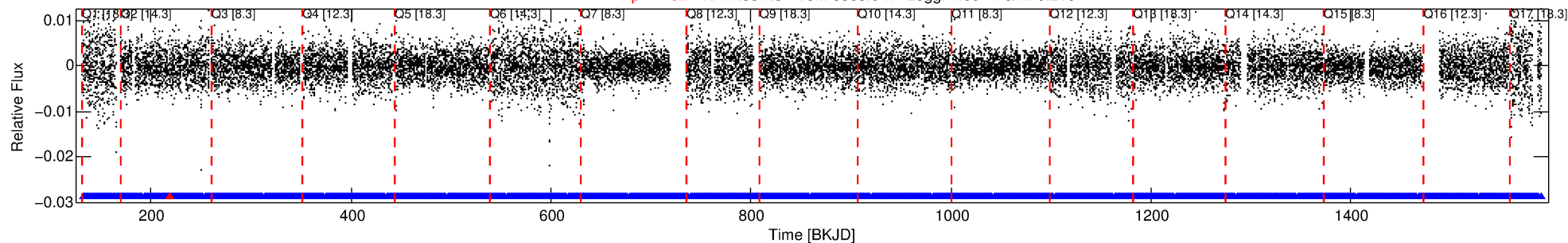
Ephemeris Match Information For 009594857-02

No Significant Match Found

DV One-Page Summary

KIC: 9594857 Candidate: 2 of 2 Period: 1.526 d

Kp: 11.02 R*: 1.85 Rs Teff: 6865.0 K Logg: 4.09 Fe/H: 0.210



DV Fit Results:

Period = 1.52629 [0.00002] d
Epoch = 131.9741 [0.0051] BKJD
Rp/R* = 0.0256 [0.0051]
a/R* = 1.91 [1.45]
b = 0.90 [0.22]
Seff = 7553.86 [2974.58]
Teq = 2377 [234] K
Rp = 5.19 [1.94] Re
a = 0.0301 [0.0077] AU
Ag = N/A
Teffp = N/A

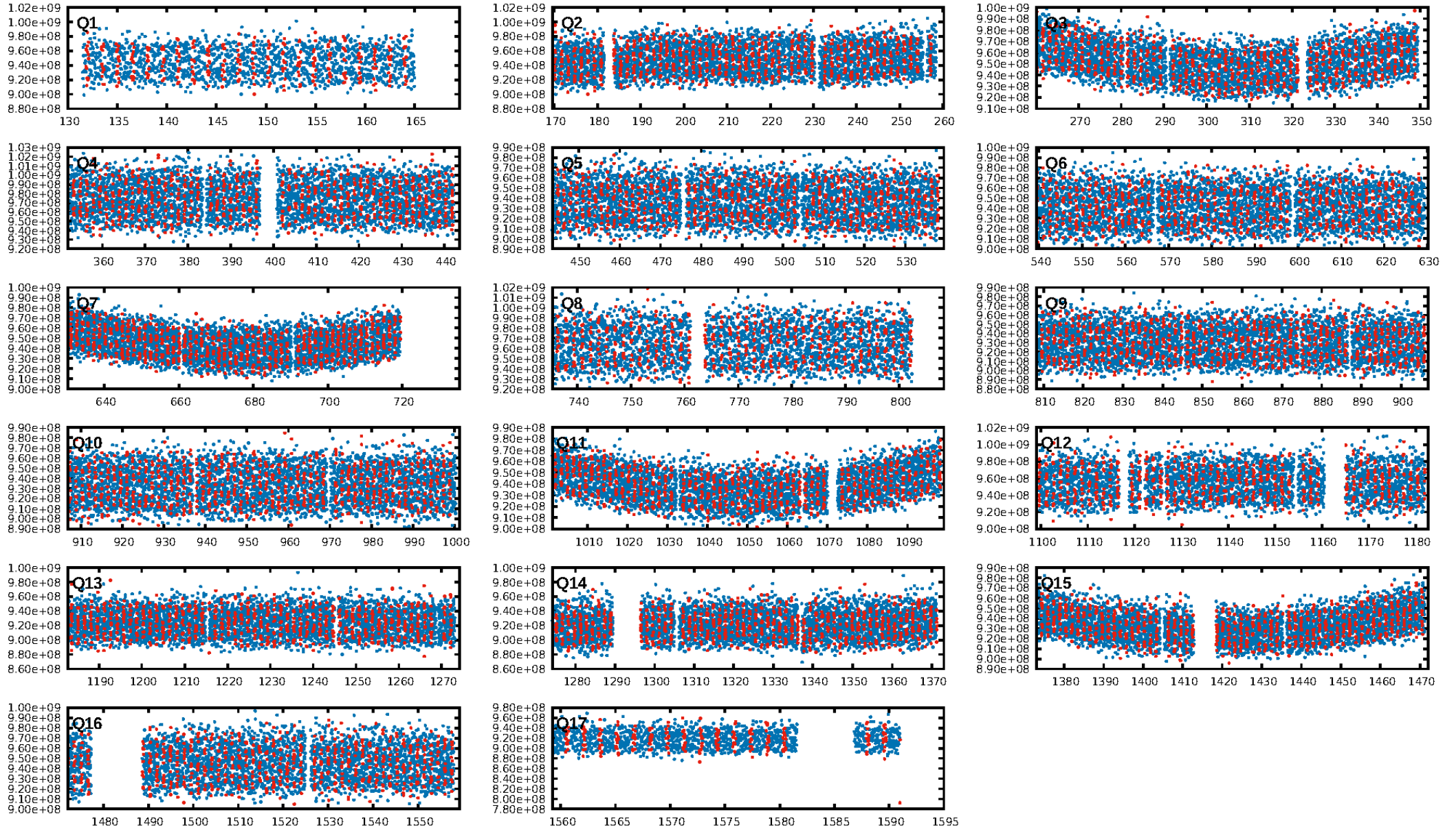
DV Diagnostic Results:

ShortPeriod-sig: 69.4% [1.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [399/400]
GhostDiagnostic-chr: 0.806
Centroid-sig: 70.2%
Centroid-so: 0.305 arcsec [4.47σ]
OotOffset-rm: 0.931 arcsec [2.16σ]
KicOffset-rm: 1.329 arcsec [3.05σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.29 [5/17]
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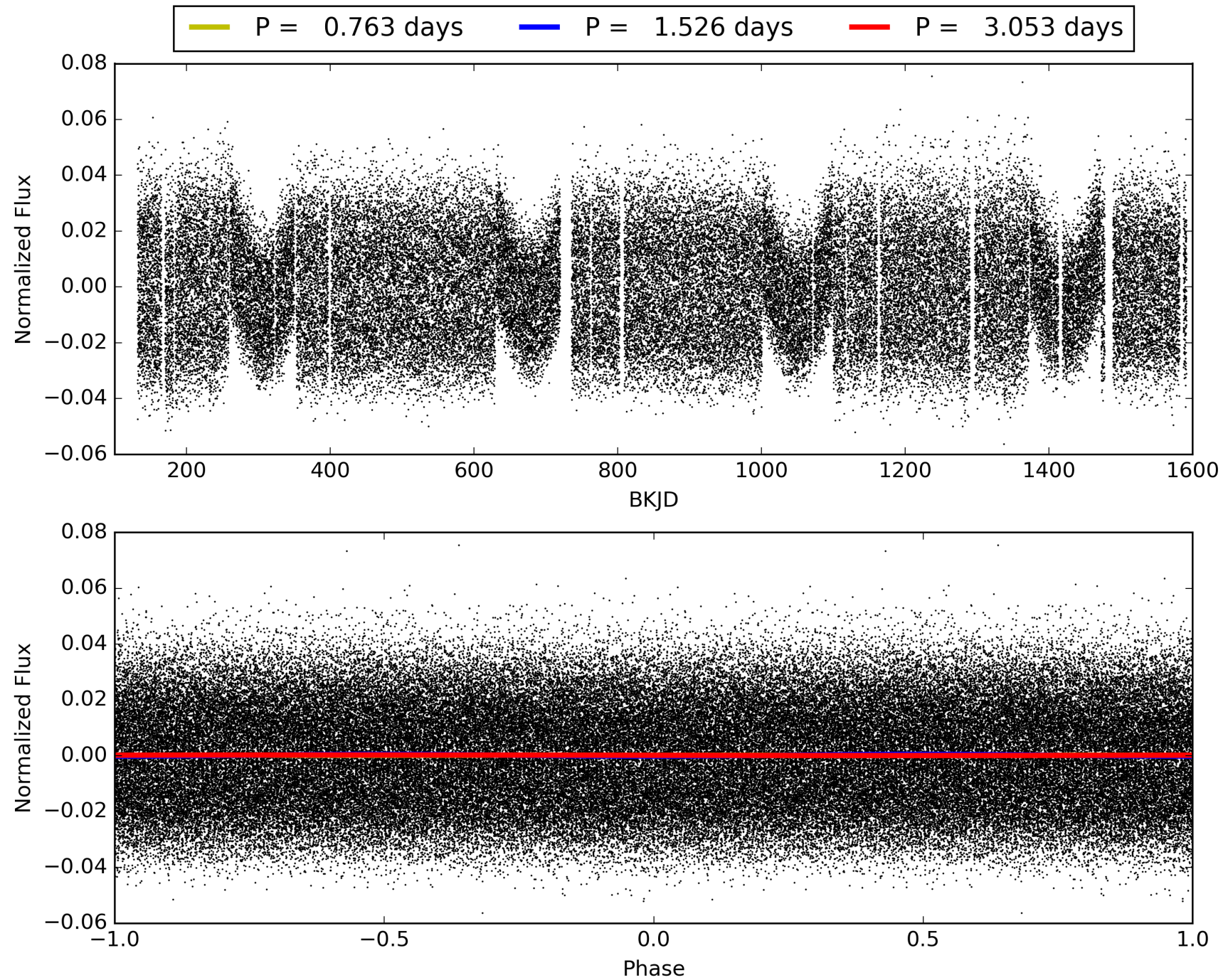
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009594857-02, PDC Light Curves

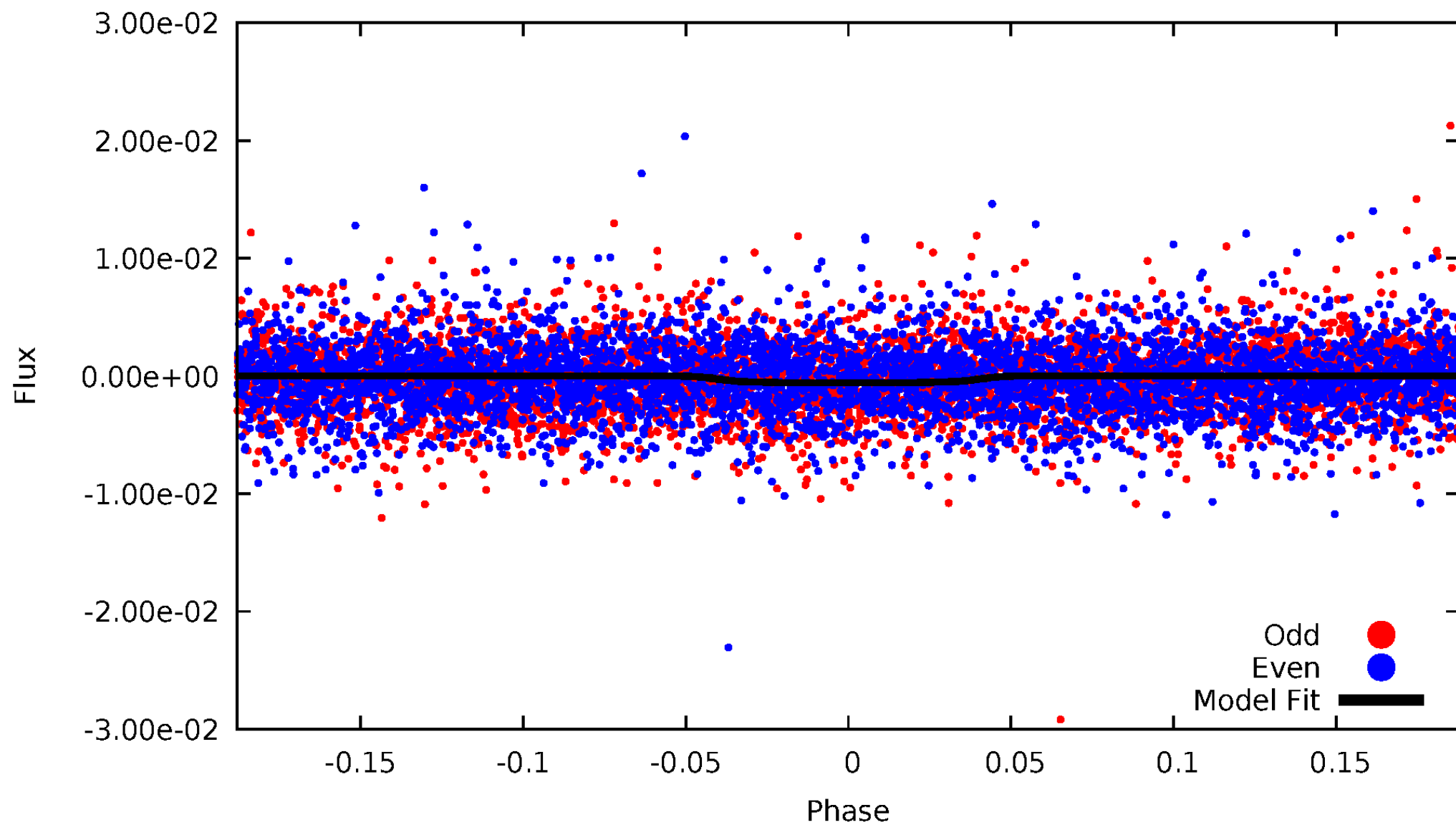


TCE 009594857-02



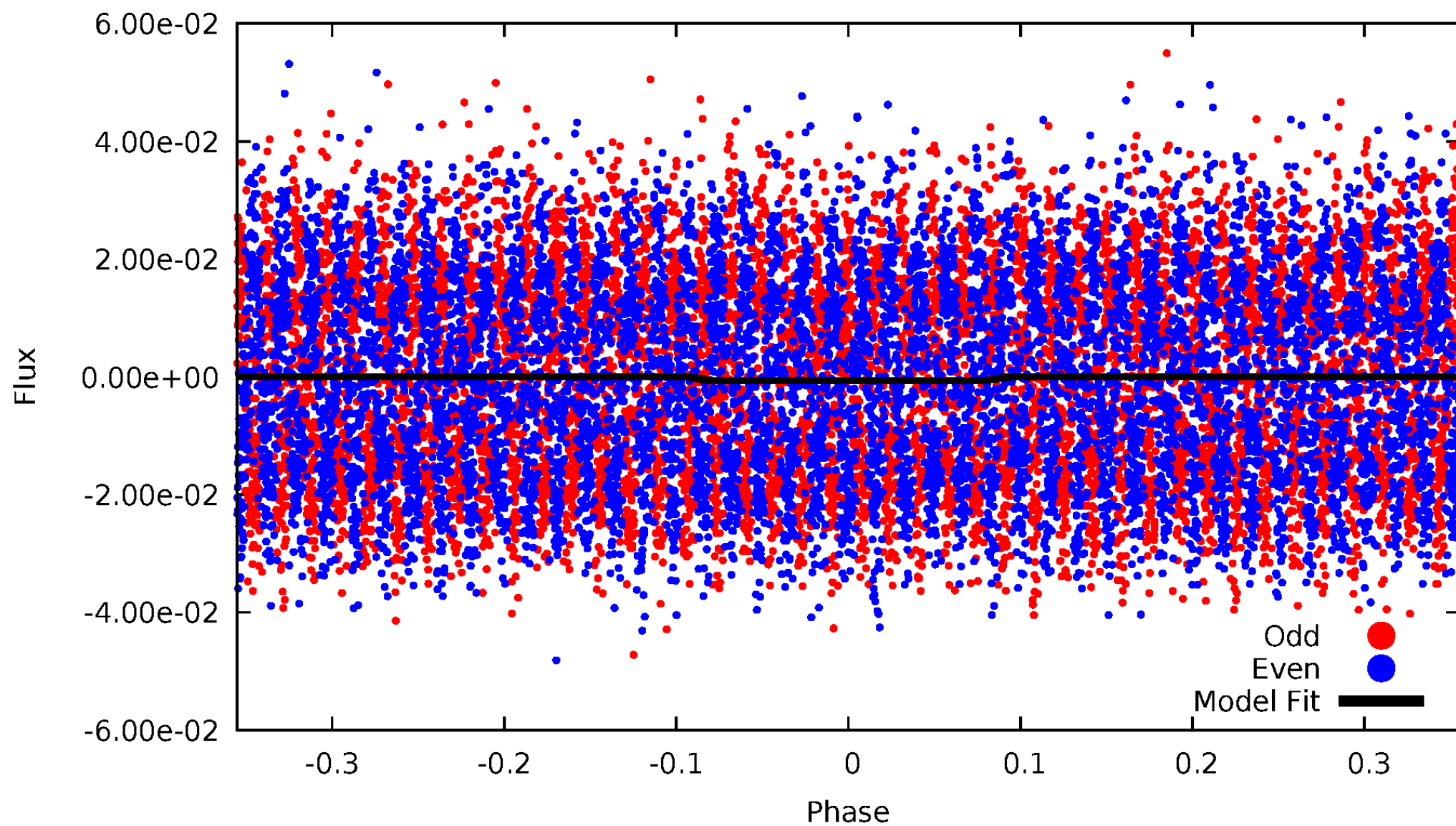
DV Odd/Even

TCE 009594857-02



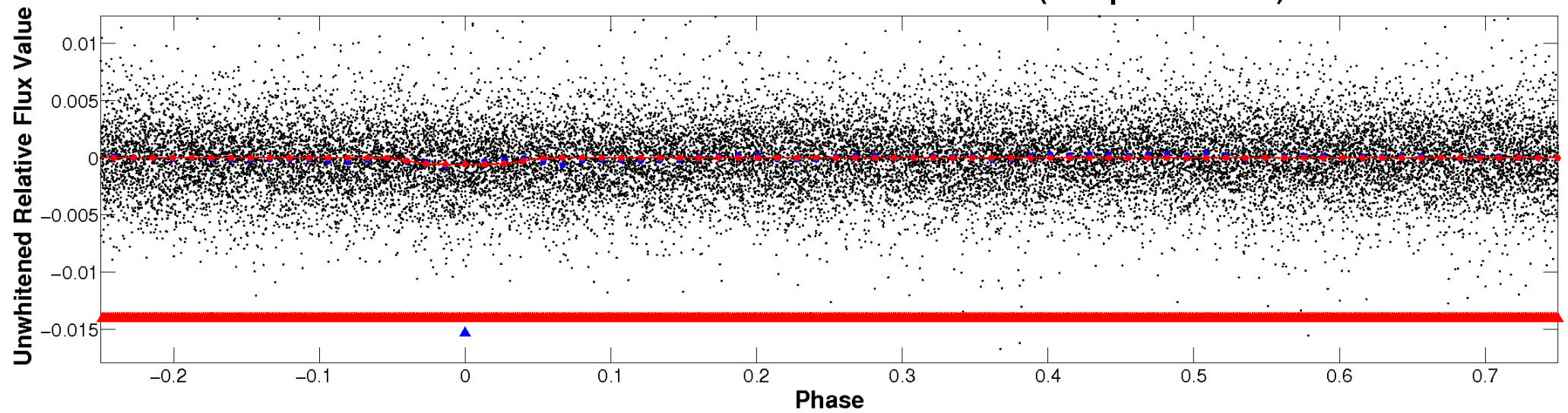
ALT Odd/Even

TCE 009594857-02

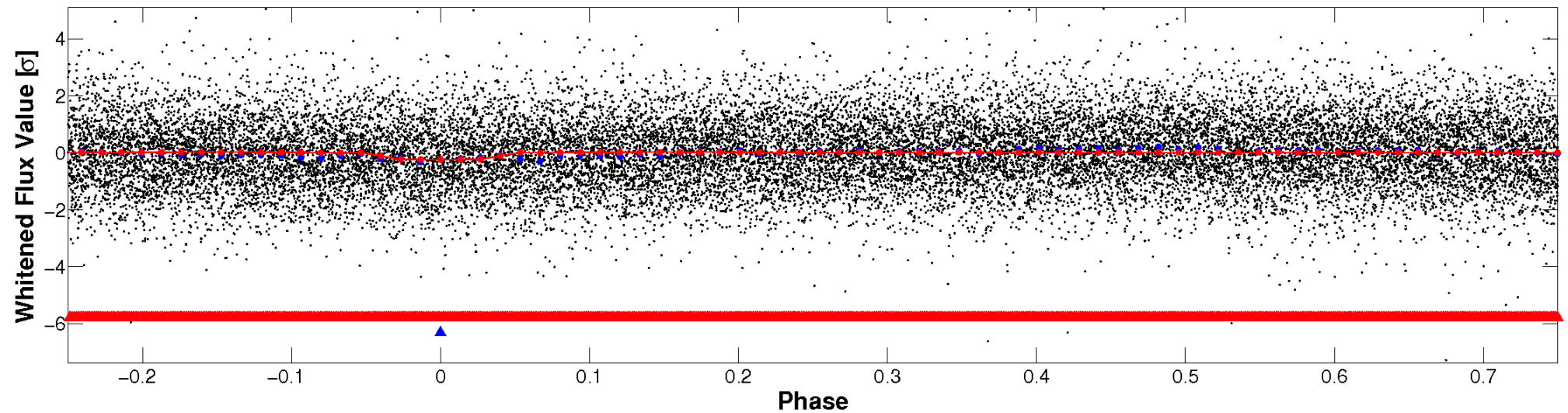


Non-Whitened Vs. Whitened Light Curve

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

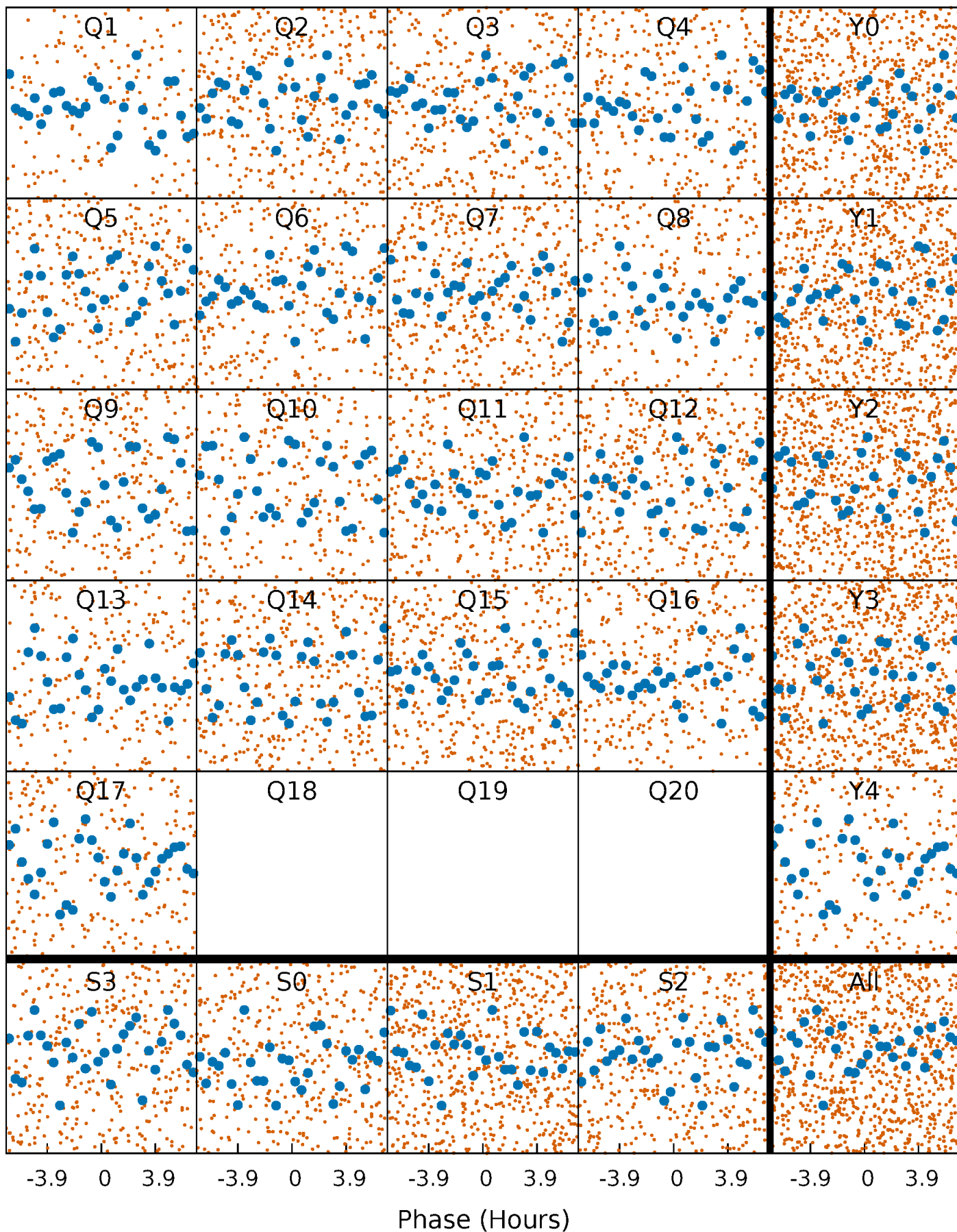


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



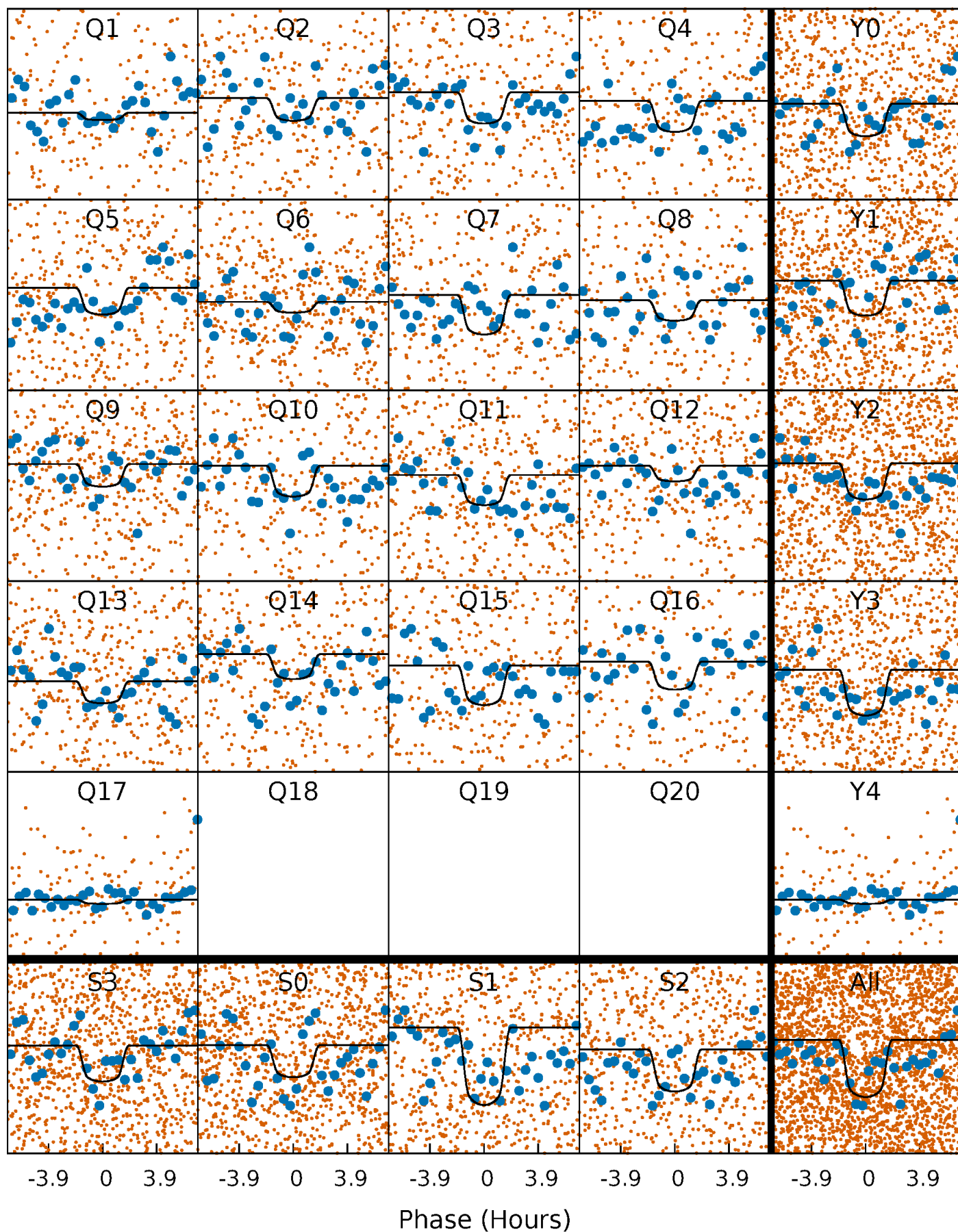
PDC Quarter-Phased Transit Curves

TCE 009594857-02 P= 1.526293 Days $T_0=131.974106$ (BKJD)



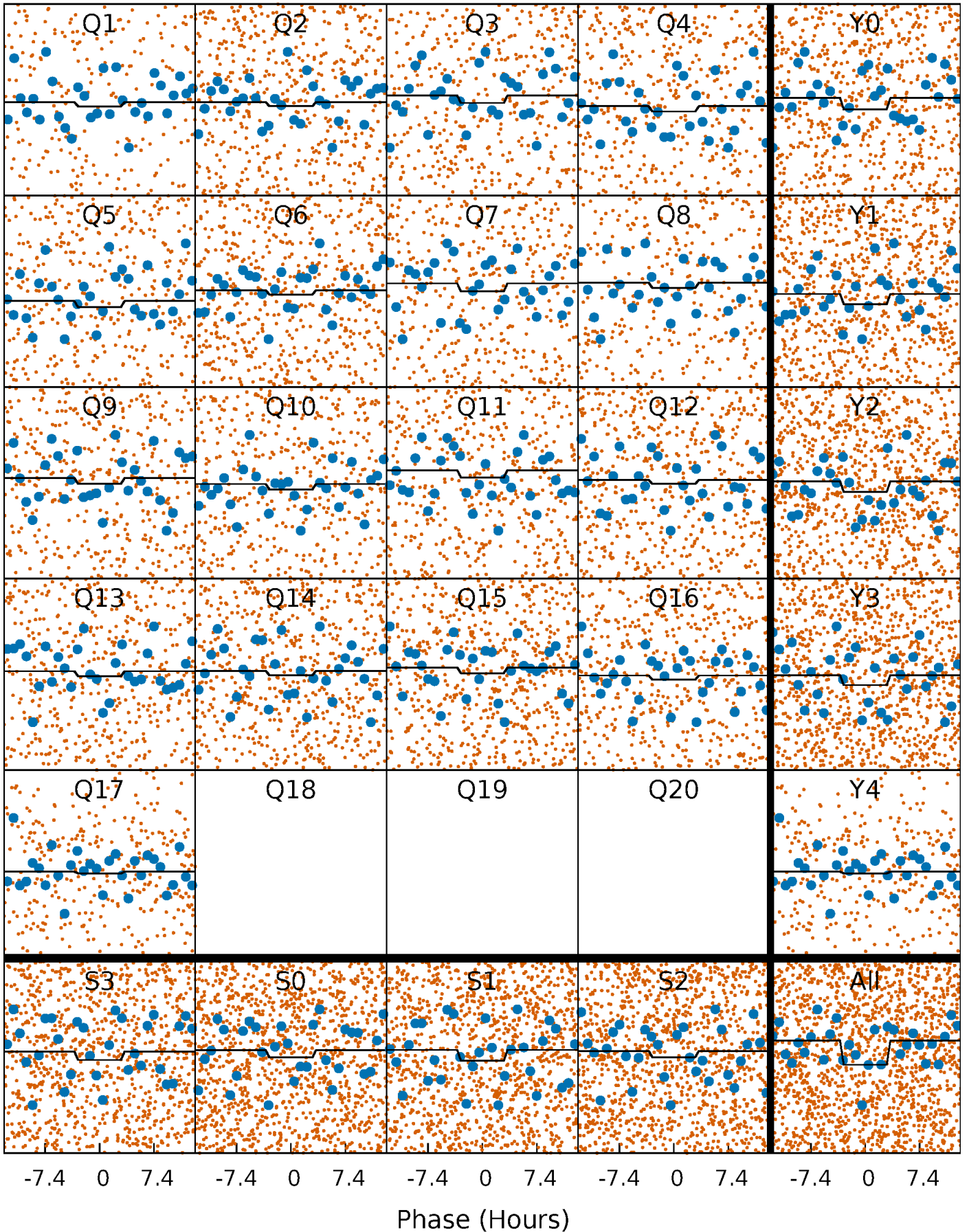
DV Quarter-Phased Transit Curves

TCE 009594857-02 P= 1.526293 Days $T_0=131.974106$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

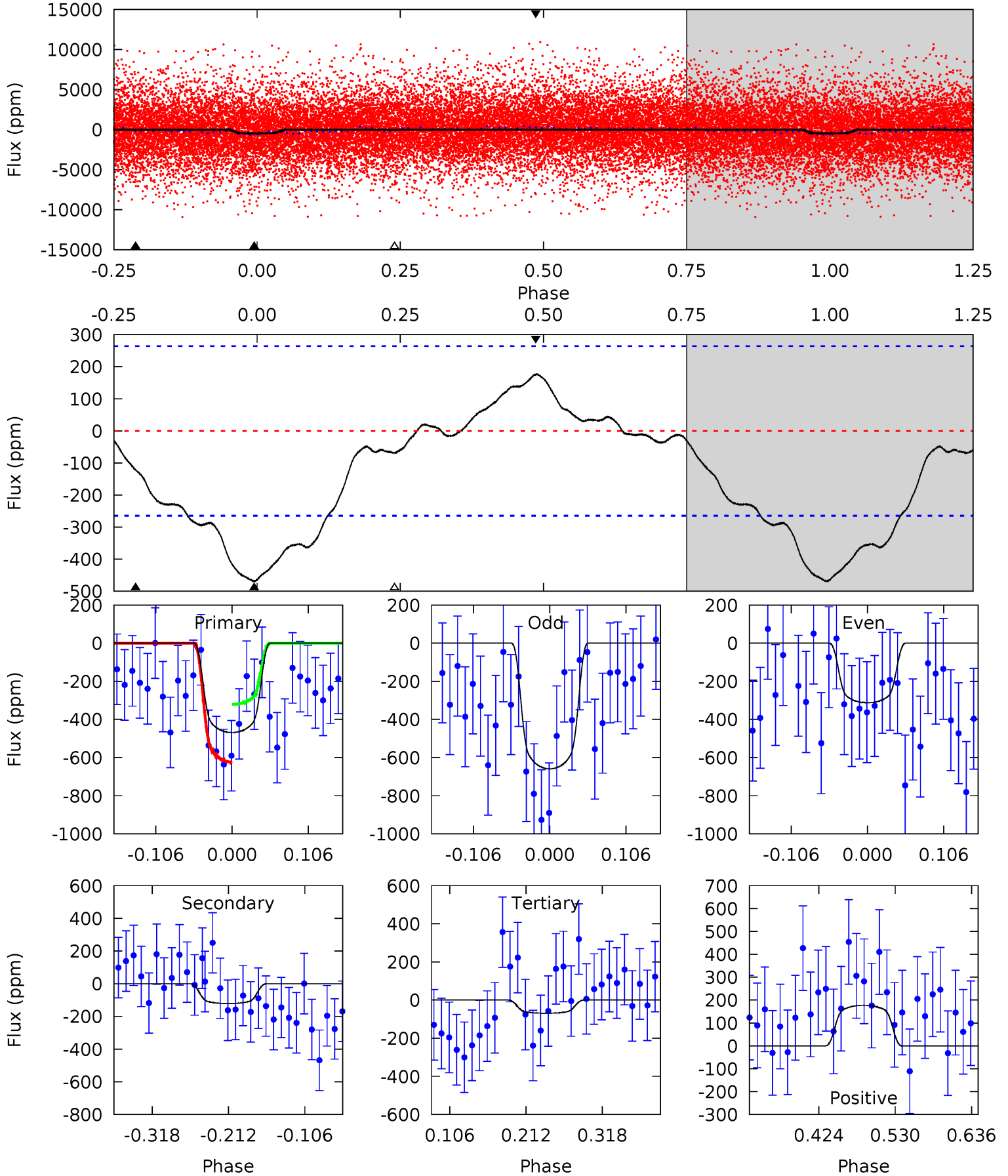
TCE 009594857-02 P= 1.526293 Days $T_0=131.974106$ (BKJD)



DV Model-Shift Uniqueness Test

009594857-02, P = 1.526293 Days, E = 130.447813 Days

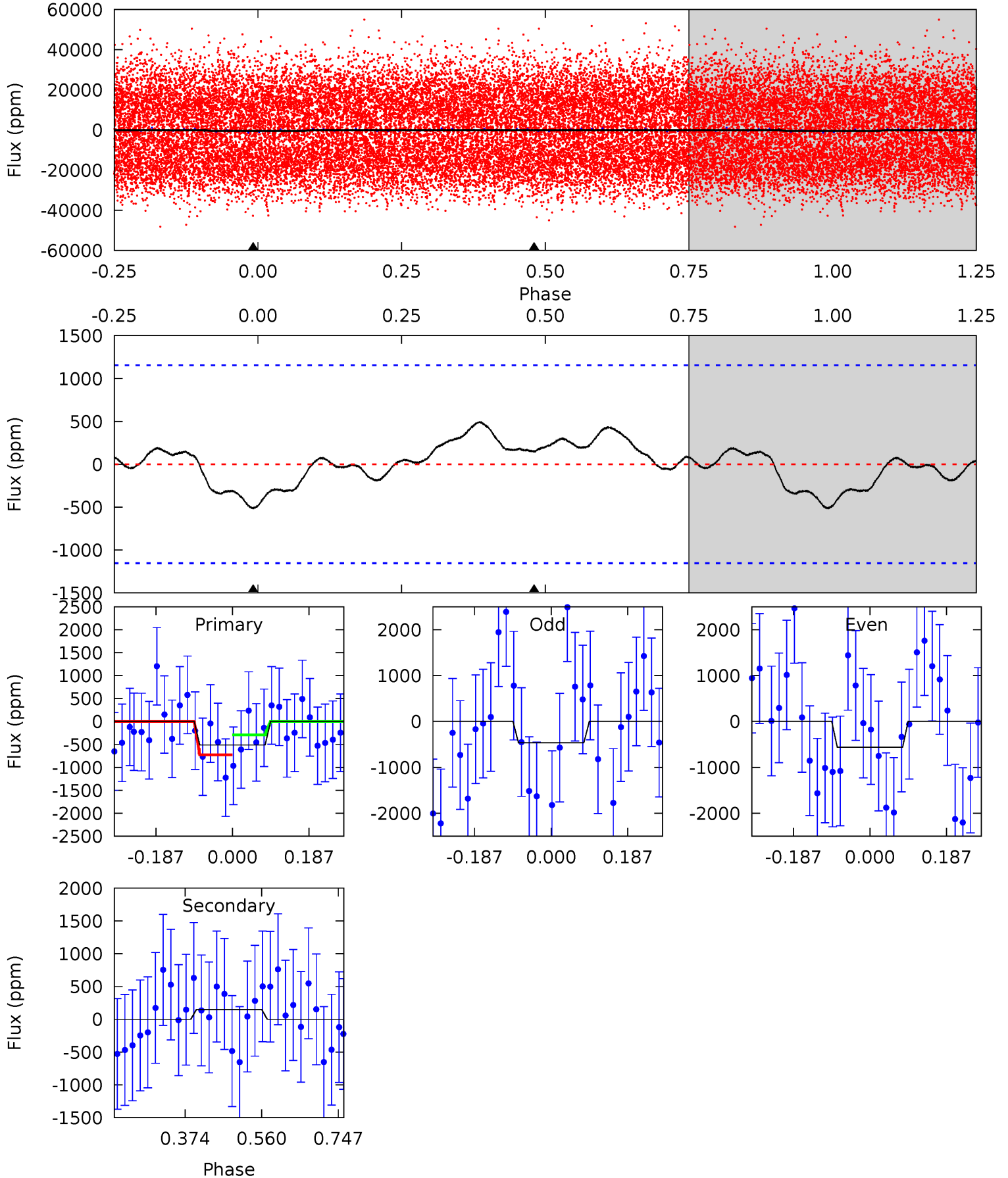
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.08	2.10	1.19	3.05	4.55	1.62	1.77	6.88	5.03	0.90	-0.95	2.98	0.99	0.27	2.62



Alt Model-Shift Uniqueness Test

009594857-02, P = 1.526293 Days, E = 130.447813 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.96	-0.57	0	0	4.43	1.32	0.30	1.96	1.96	-0.57	-0.57	0.19	0.51	0.49	0.83



Stellar Parameters For KIC 009594857

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6865^{+192}_{-288}	$4.095^{+0.153}_{-0.187}$	$0.210^{+0.150}_{-0.350}$	$1.855^{+0.587}_{-0.392}$	$1.561^{+0.208}_{-0.254}$	$0.344^{+0.277}_{-0.179}$
	+3%/-4%	+4%/-5%	+71%/-167%	+32%/-21%	+13%/-16%	+80%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009594857-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-122 ± 58	$5.26^{+1.40}_{-1.26}$	3331^{+258}_{-232}	4474^{+632}_{-658}	$2.098^{+1.990}_{-1.077}$
Alt.	148 ± 261	$5.21^{+1.38}_{-1.29}$	3317^{+242}_{-217}	-4858^{+9328}_{-1407}	$-2.399^{+4.539}_{-6.284}$

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 $A_{obs} \gg 1.0$

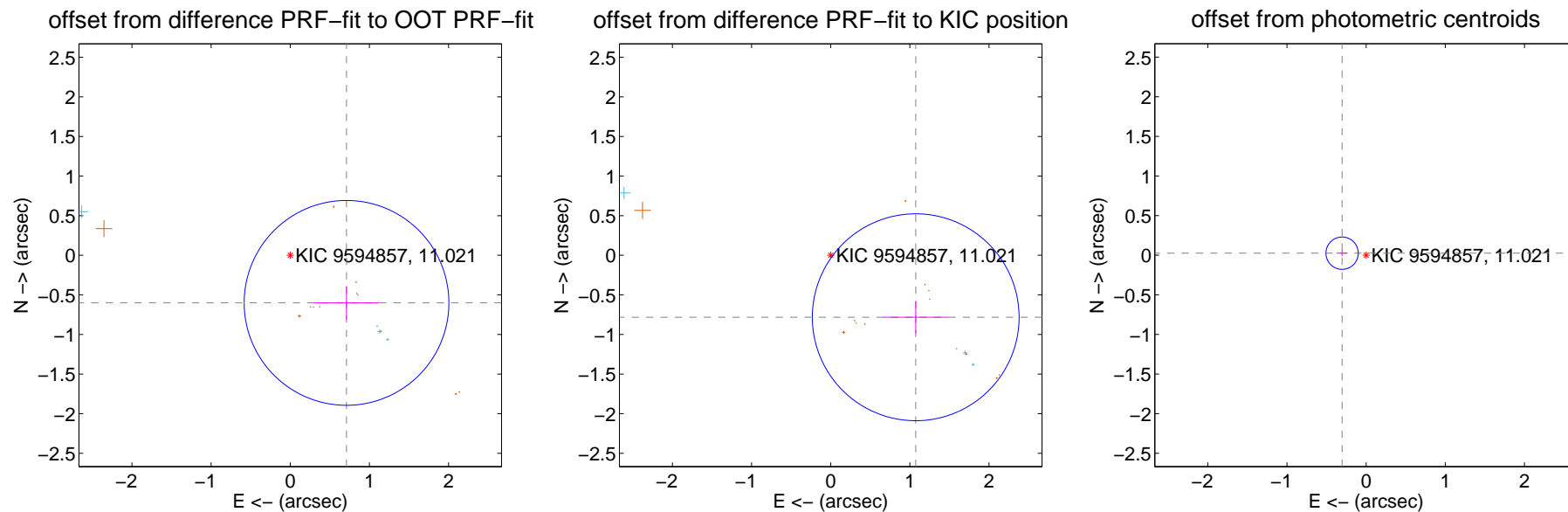
DV Centroid Data

Supplemental centroid analysis for 009594857-02. **Kepler magnitude: 11.02.** Transit SNR 9.80

There are 5 quarters with good PRF difference image offsets

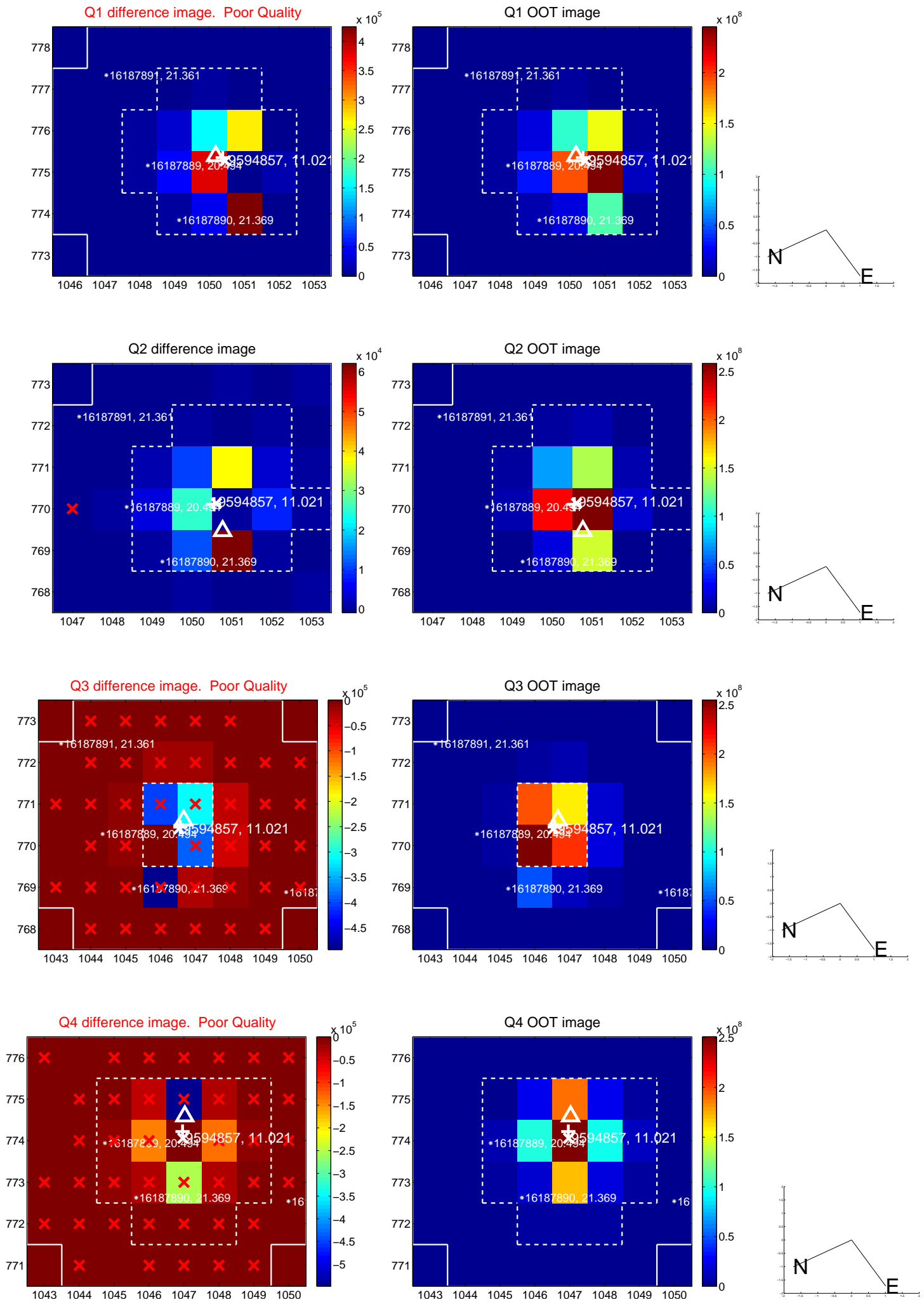
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.931 ± 0.431	2.16	-0.711 ± 0.410	-0.601 ± 0.211
PRF-fit source offset from KIC position	1.329 ± 0.435	3.05	-1.074 ± 0.414	-0.783 ± 0.204
photometric centroid source offset	0.30 ± 0.07	4.47	0.30 ± 0.07	0.03 ± 0.04

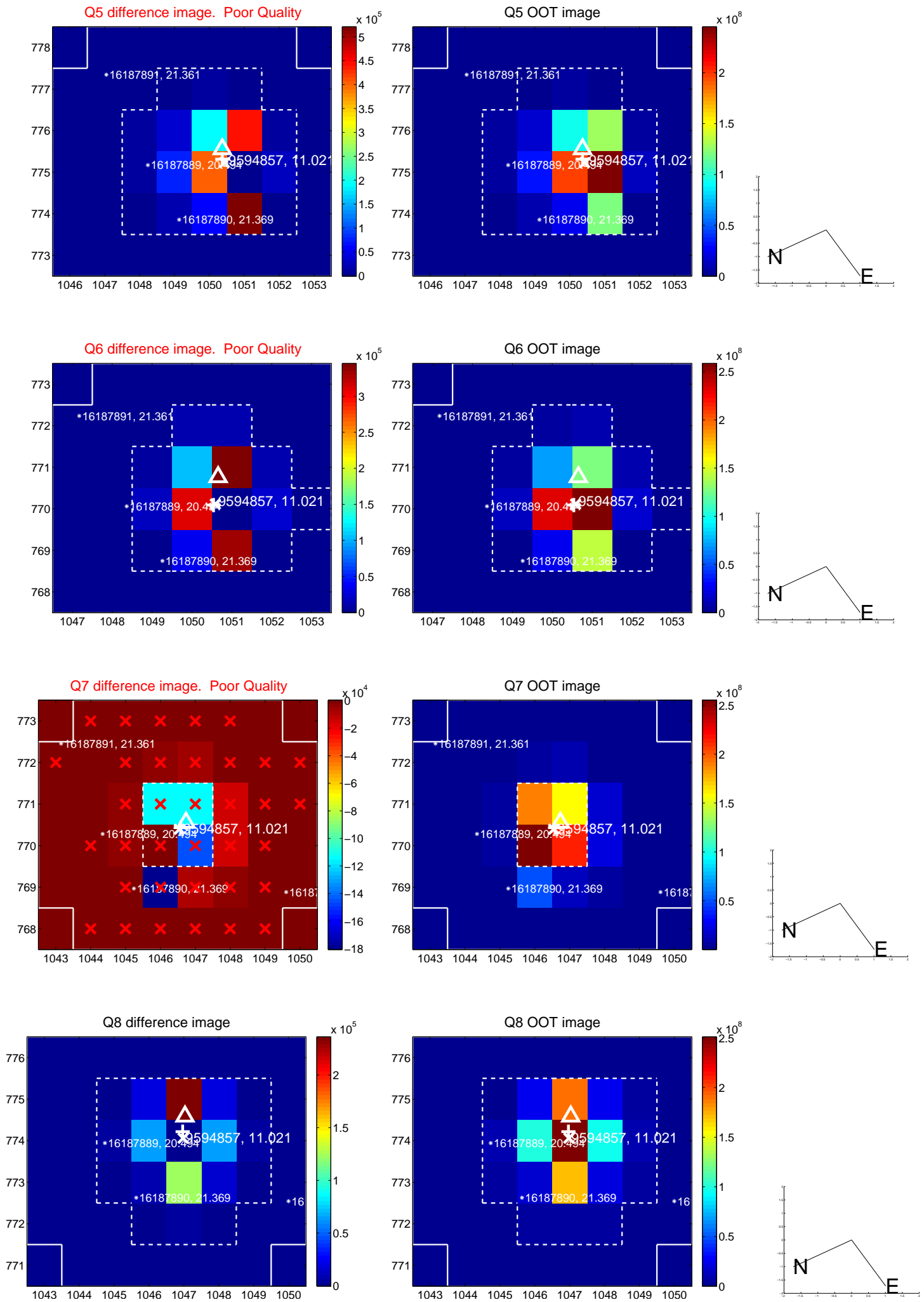


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

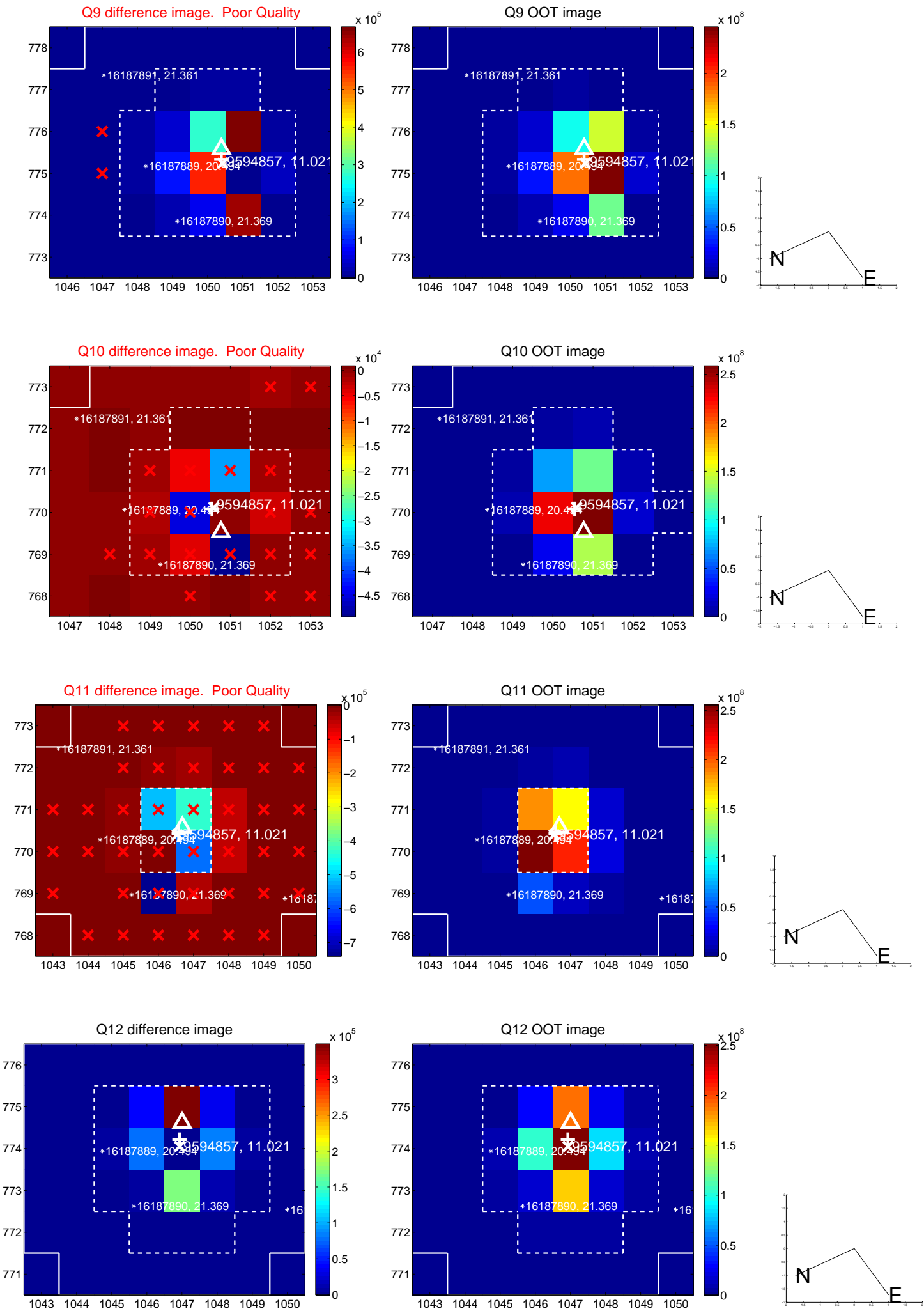
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



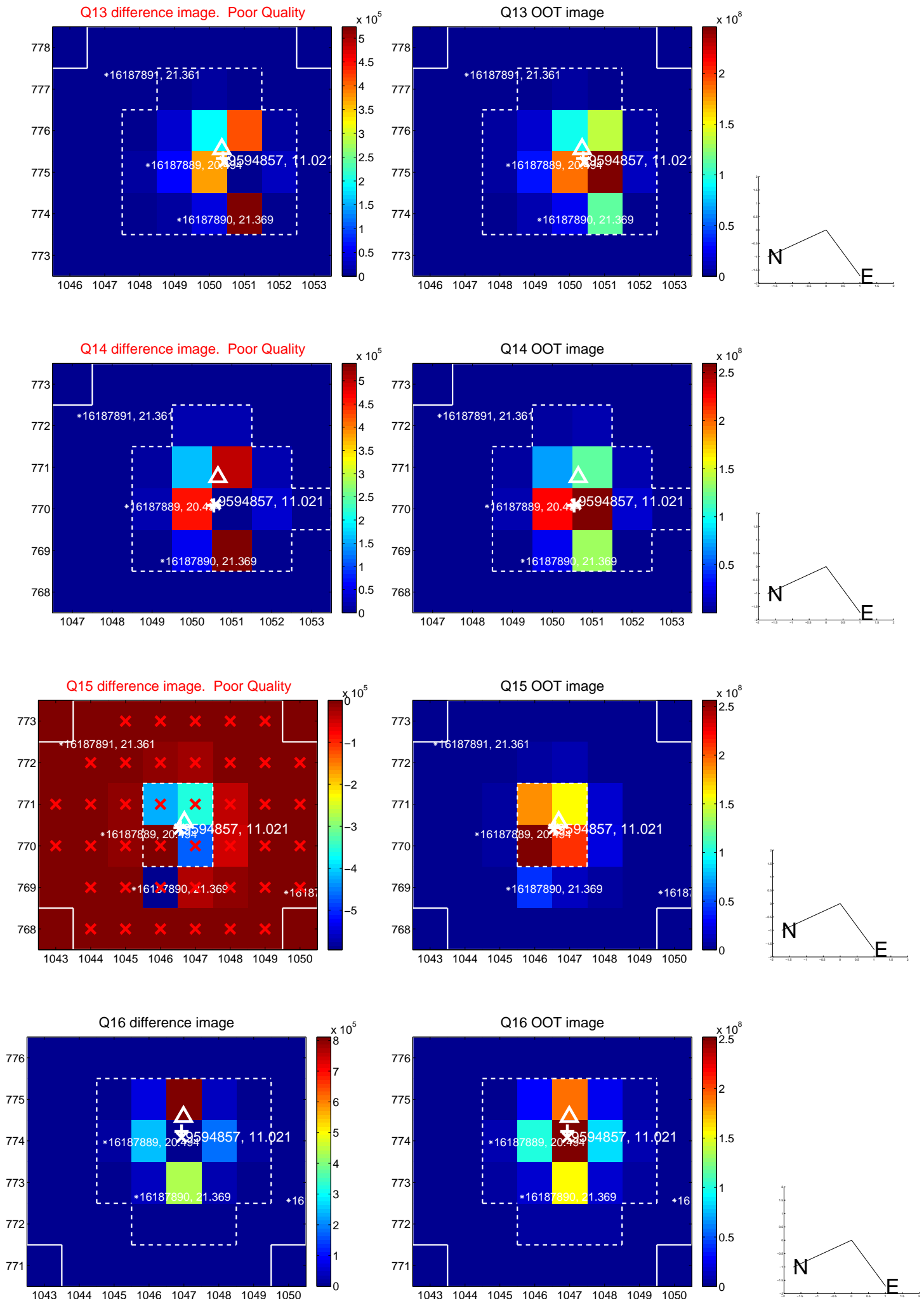
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



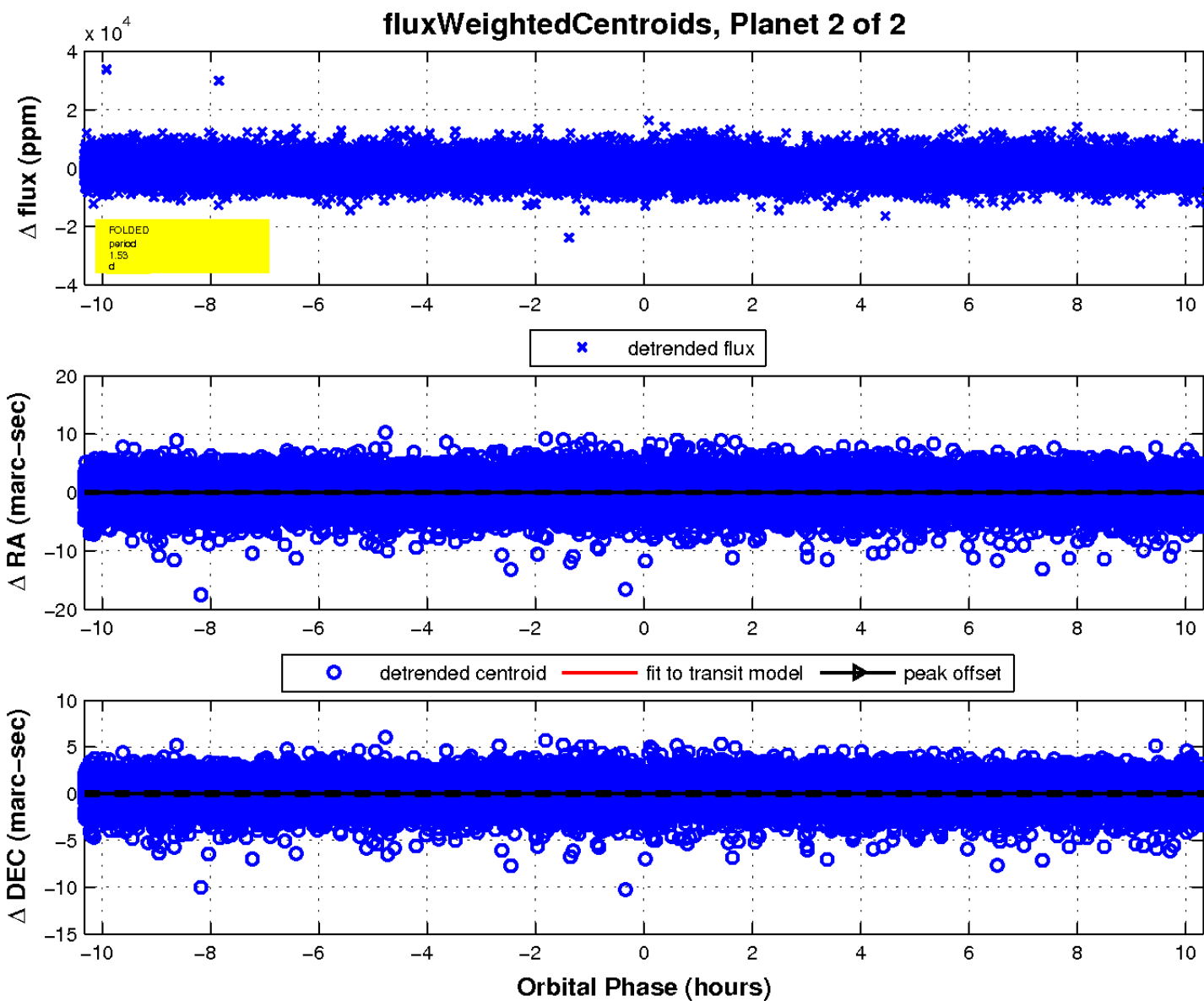
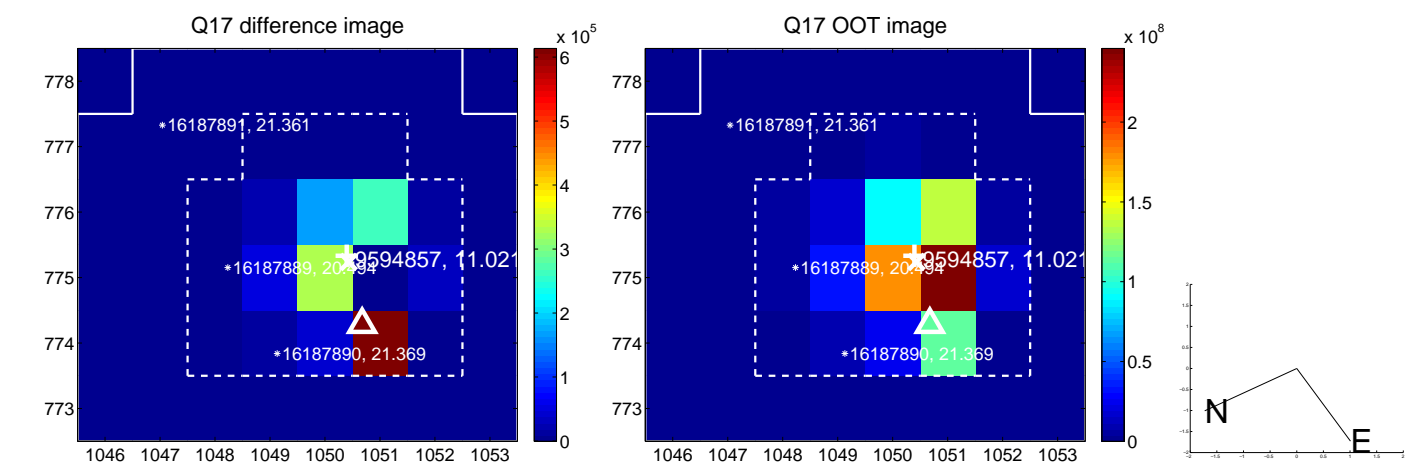
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

