

KIC 010867017

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})
010867017-01	OBS	7384.01	0.876931	132.276493	61.0	1.478	9.8	10.7	0.97	6018	0.88	3342.61
010867017-02	OBS	No	0.876945	131.828235	50.6	1.486	8.5	9.1	0.97	6018	0.82	3342.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010867017-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
010867017-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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.

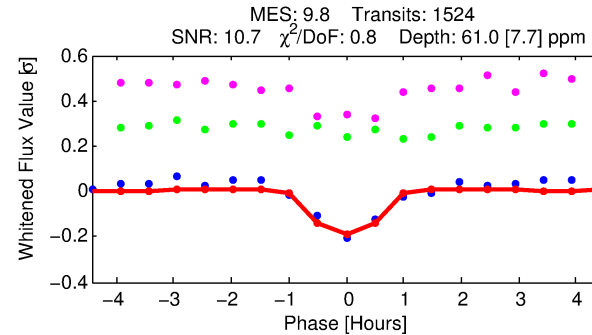
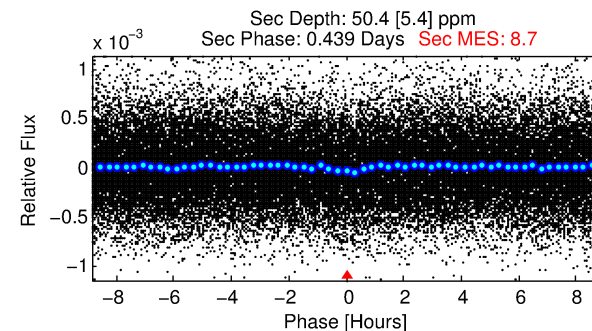
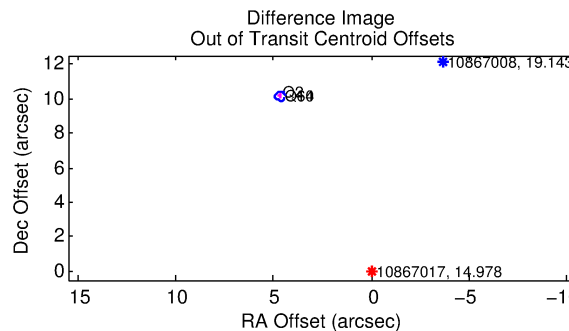
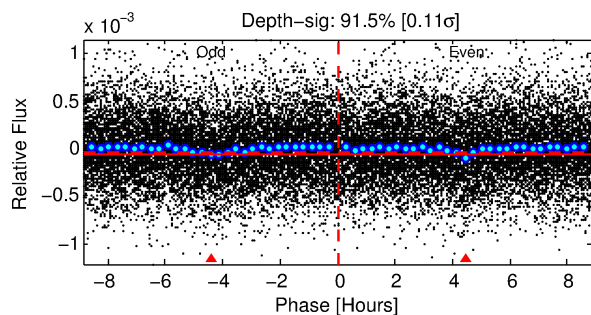
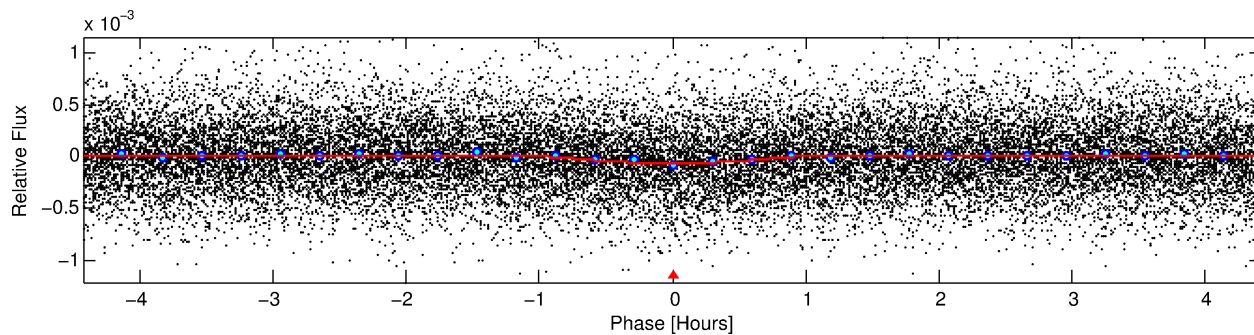
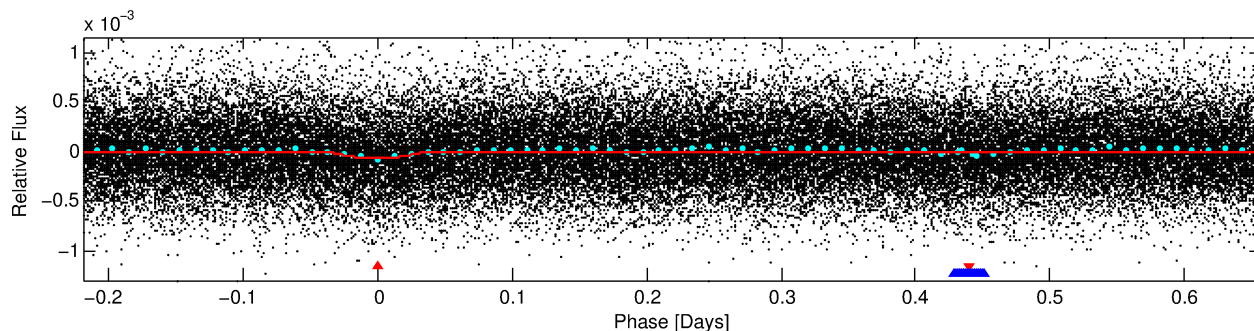
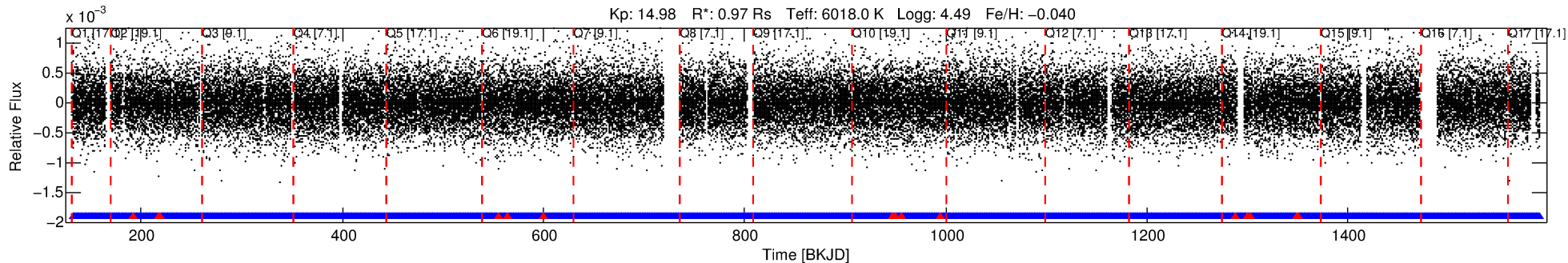
Ephemeris Match Information For 010867017-01

No Significant Match Found

DV One-Page Summary

KIC: 10867017 Candidate: 1 of 2 Period: 0.877 d
KOI: K07384.01 Corr: 0.935

Kp: 14.98 R*: 0.97 Rs Teff: 6018.0 K Logg: 4.49 Fe/H: -0.040



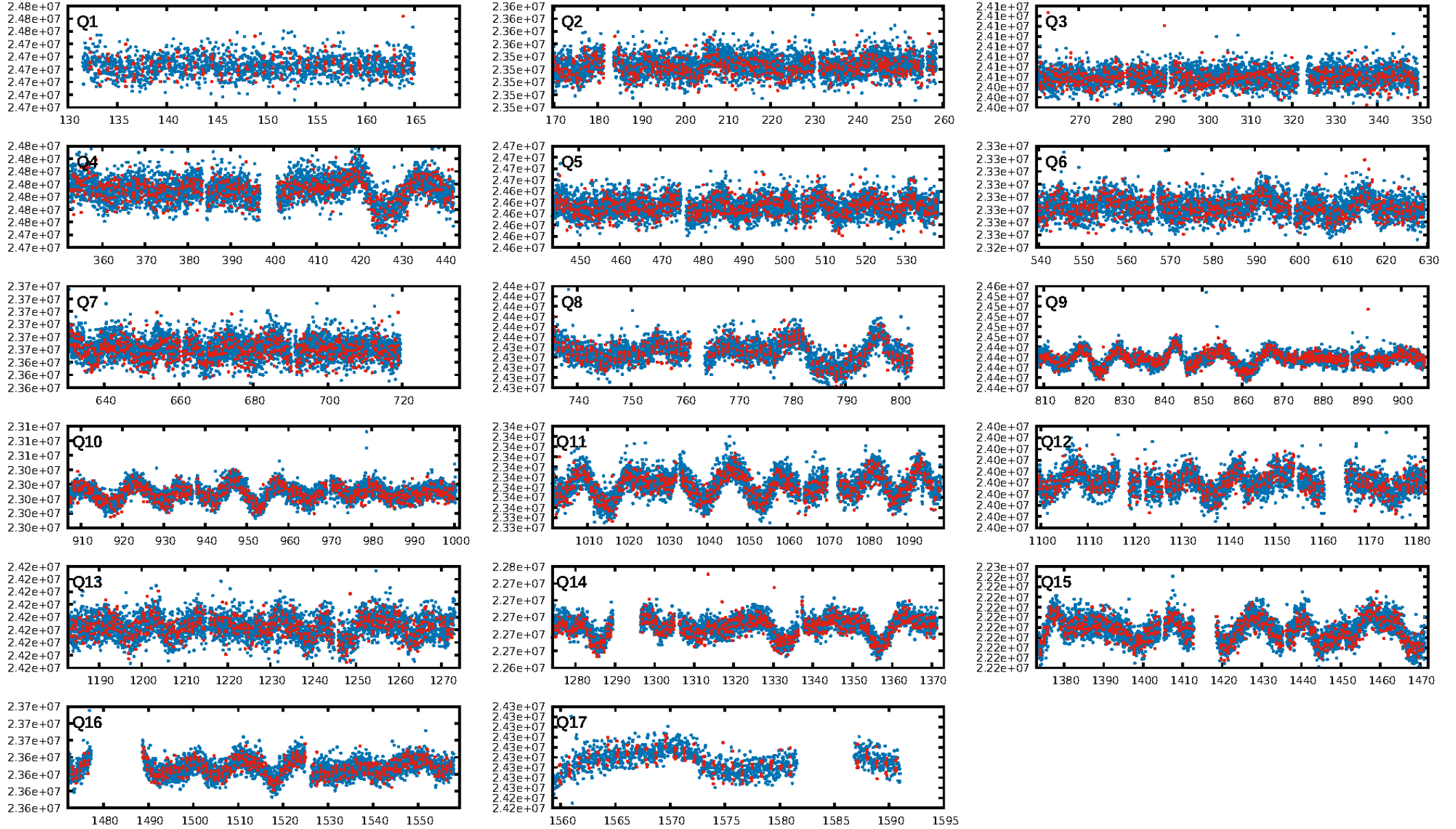
DV Fit Results:

Period = 0.87693 [0.00001] d
Epoch = 132.2765 [0.0021] BKJD
Rp/R* = 0.0083 [0.0036]
a/R* = 2.50 [4.49]
b = 0.87 [0.62]
Seff = 3342.61 [1301.96]
Teq = 1939 [189] K
Rp = 0.88 [0.46] Re
a = 0.0183 [0.0045] AU
Ag = 11.99 [11.26] [0.98σ]
Teff = 5578 [1224] K [2.94σ]

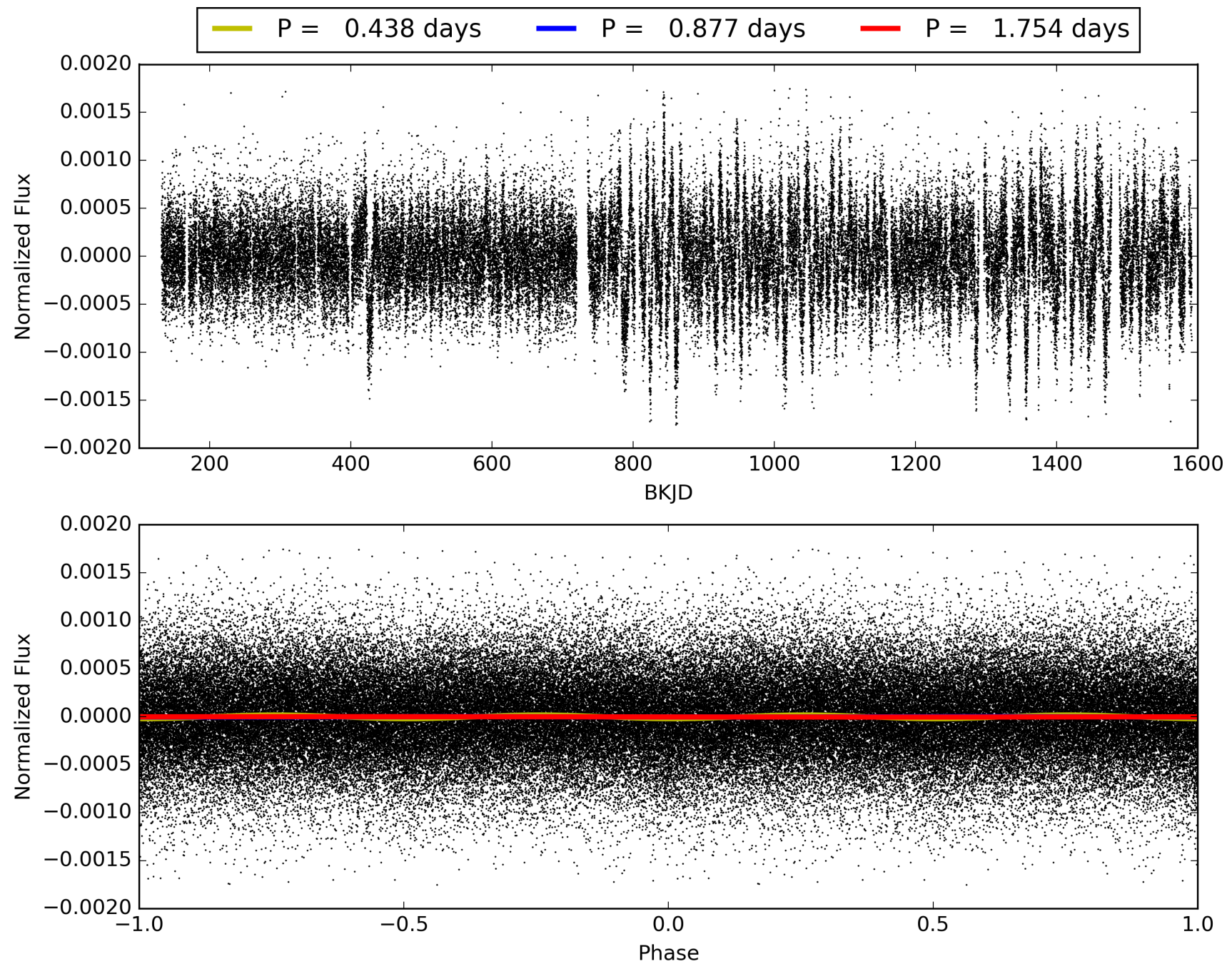
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.52e-24
RollingBand-fgt: 0.99 [1441/1456]
GhostDiagnostic-chr: -0.4021
Centroid-sig: 0.0%
Centroid-so: 20.078 arcsec [15.39σ]
OotOffset-rm: 11.179 arcsec [122.91σ]
KicOffset-rm: 11.373 arcsec [141.01σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010867017-01, PDC Light Curves

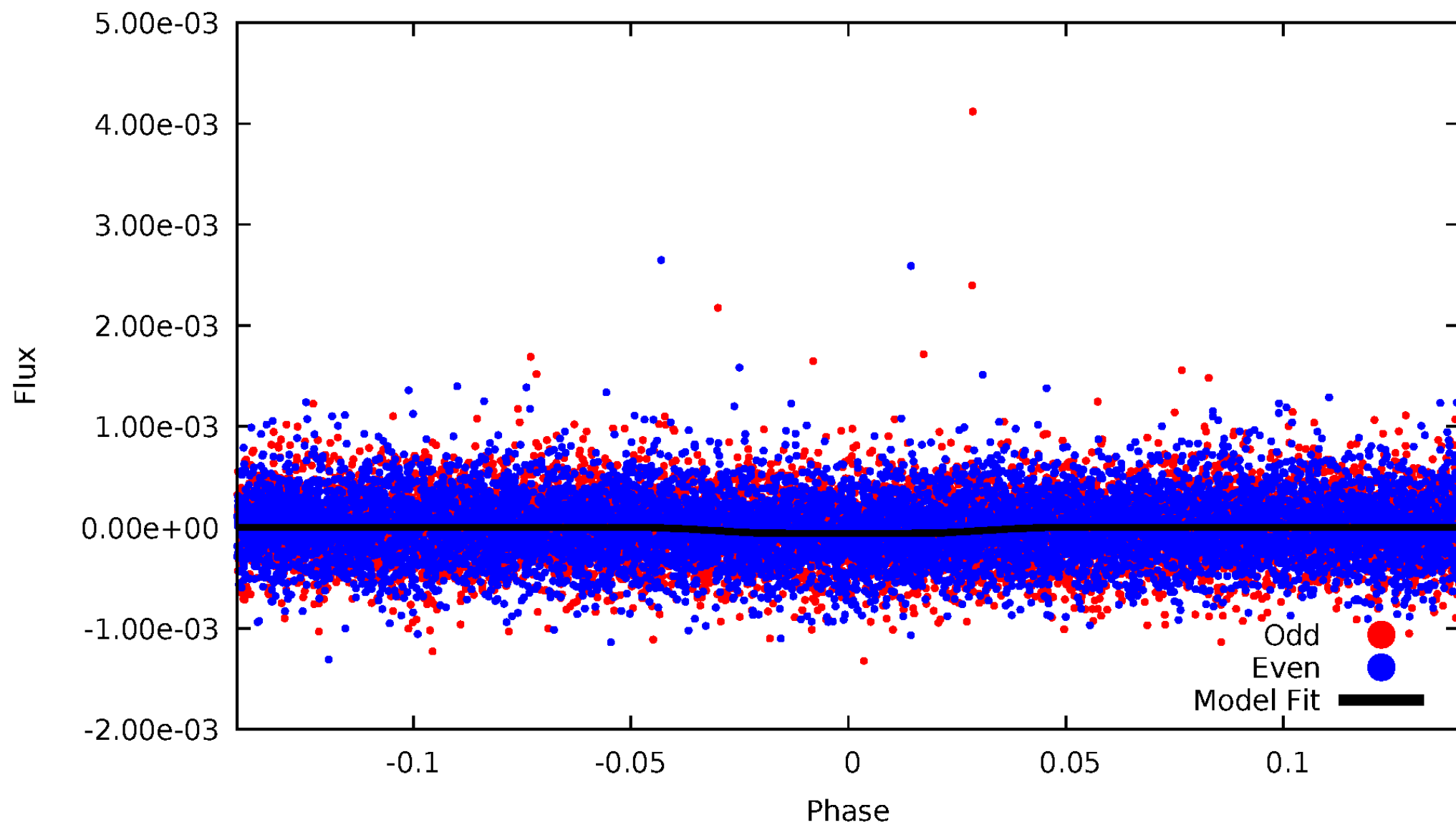


TCE 010867017-01



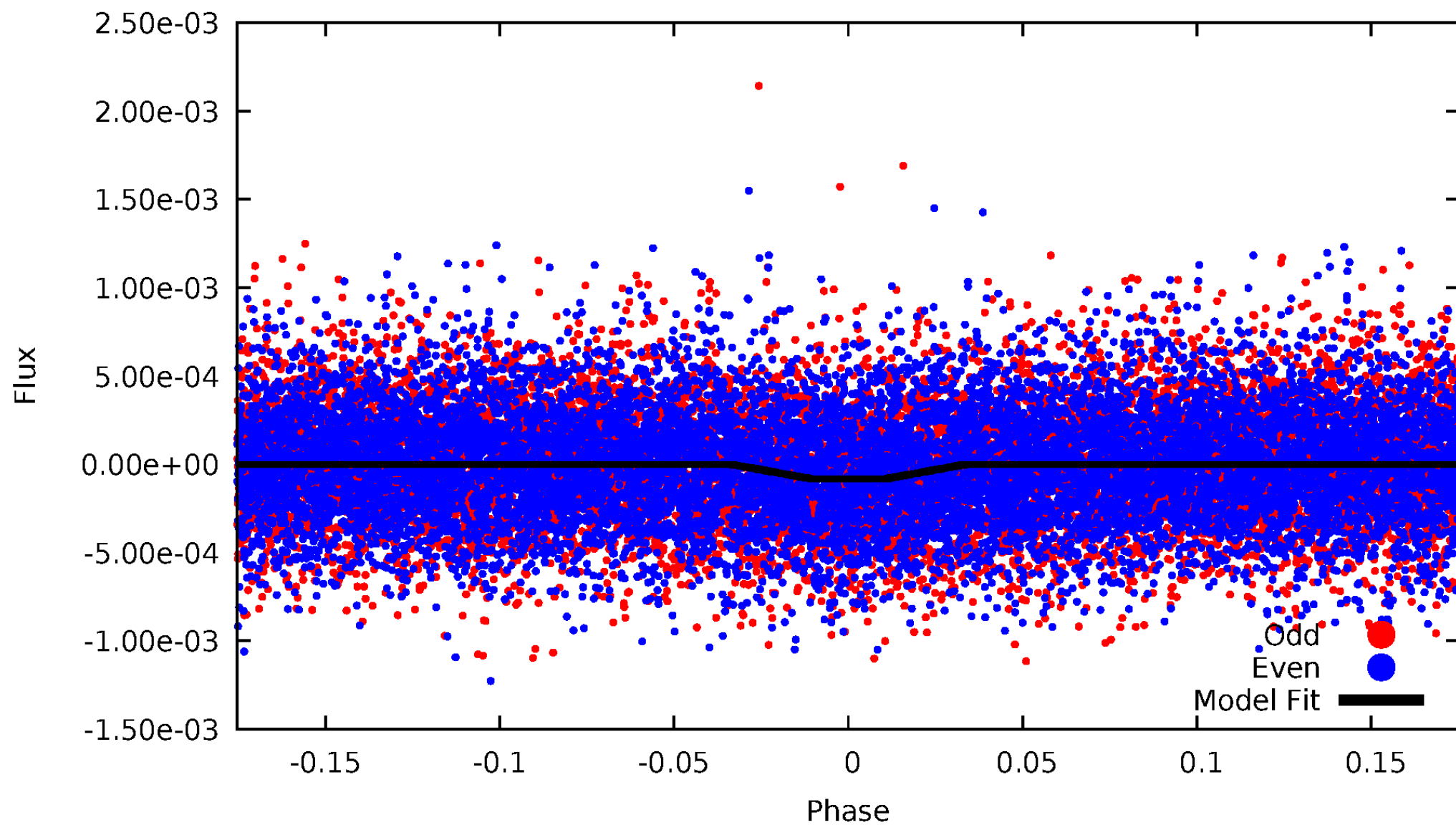
DV Odd/Even

TCE 010867017-01

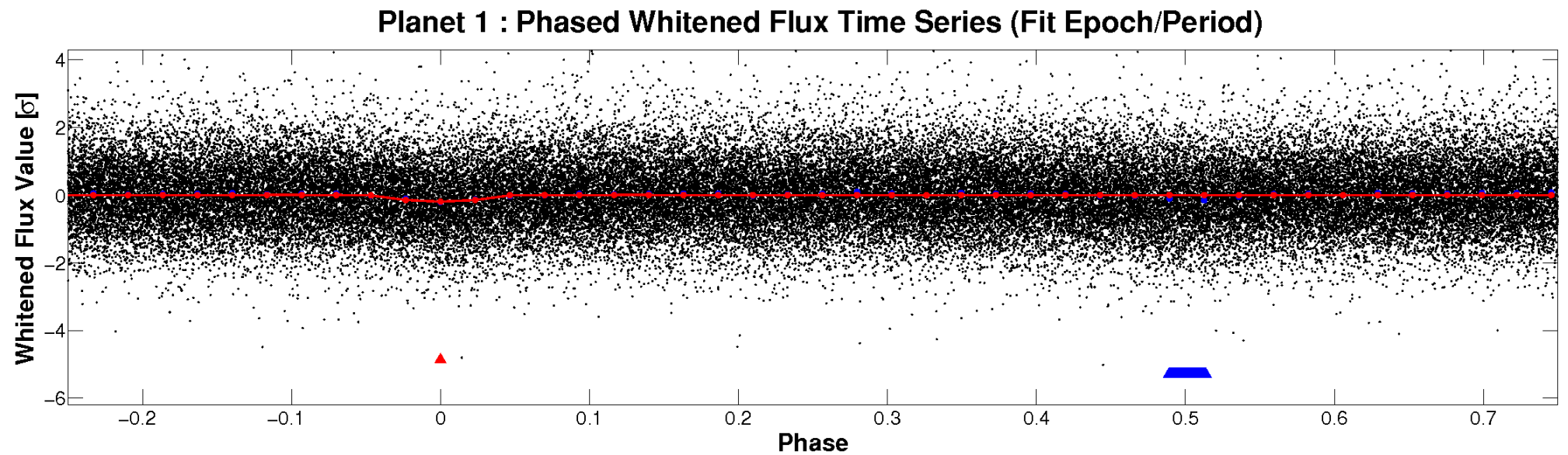
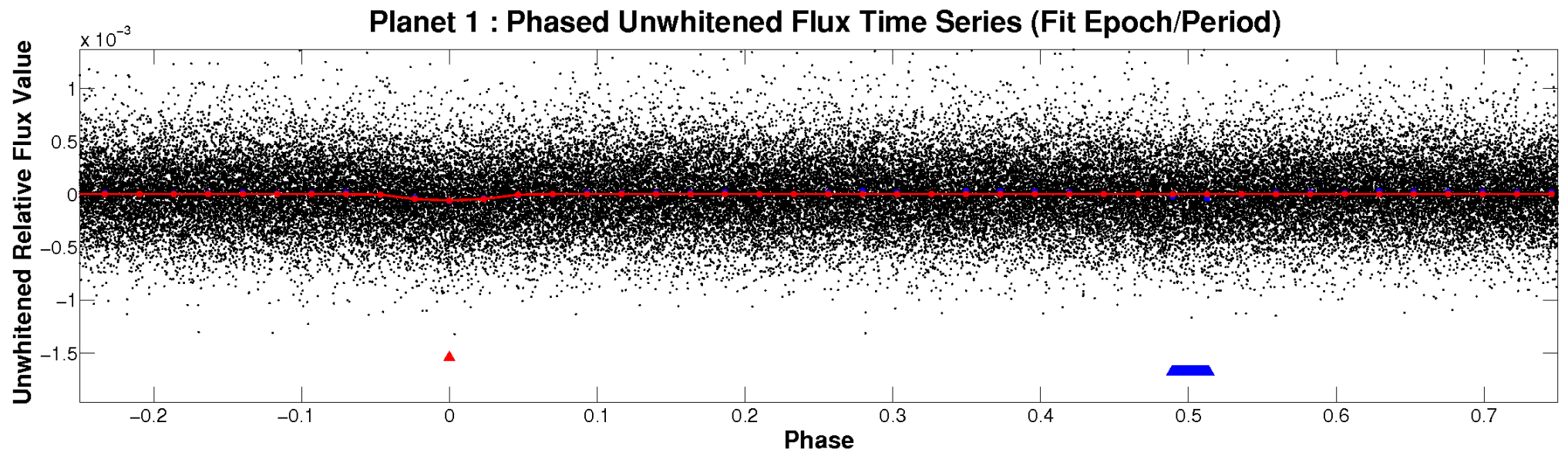


ALT Odd/Even

TCE 010867017-01

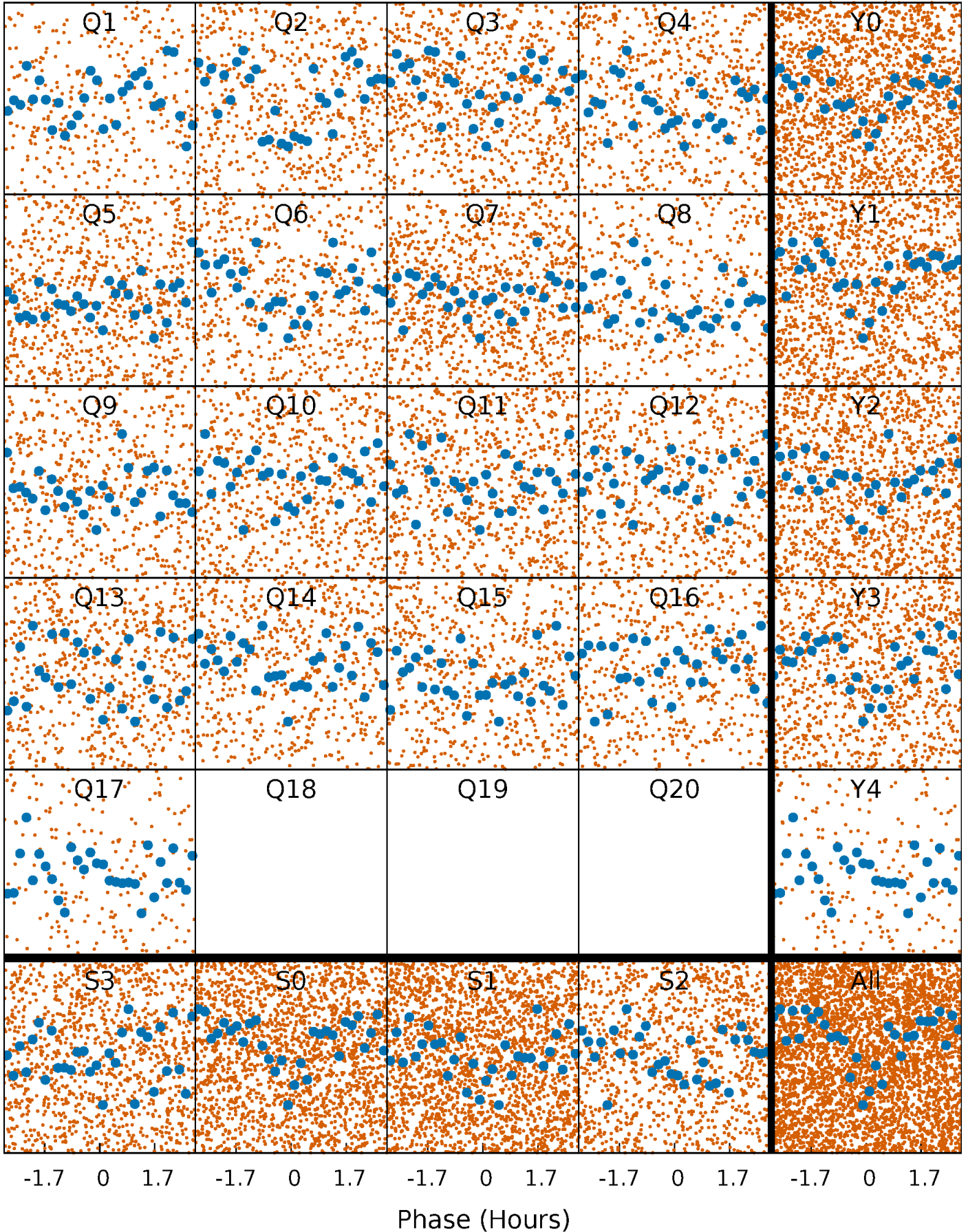


Non-Whitened Vs. Whitened Light Curve



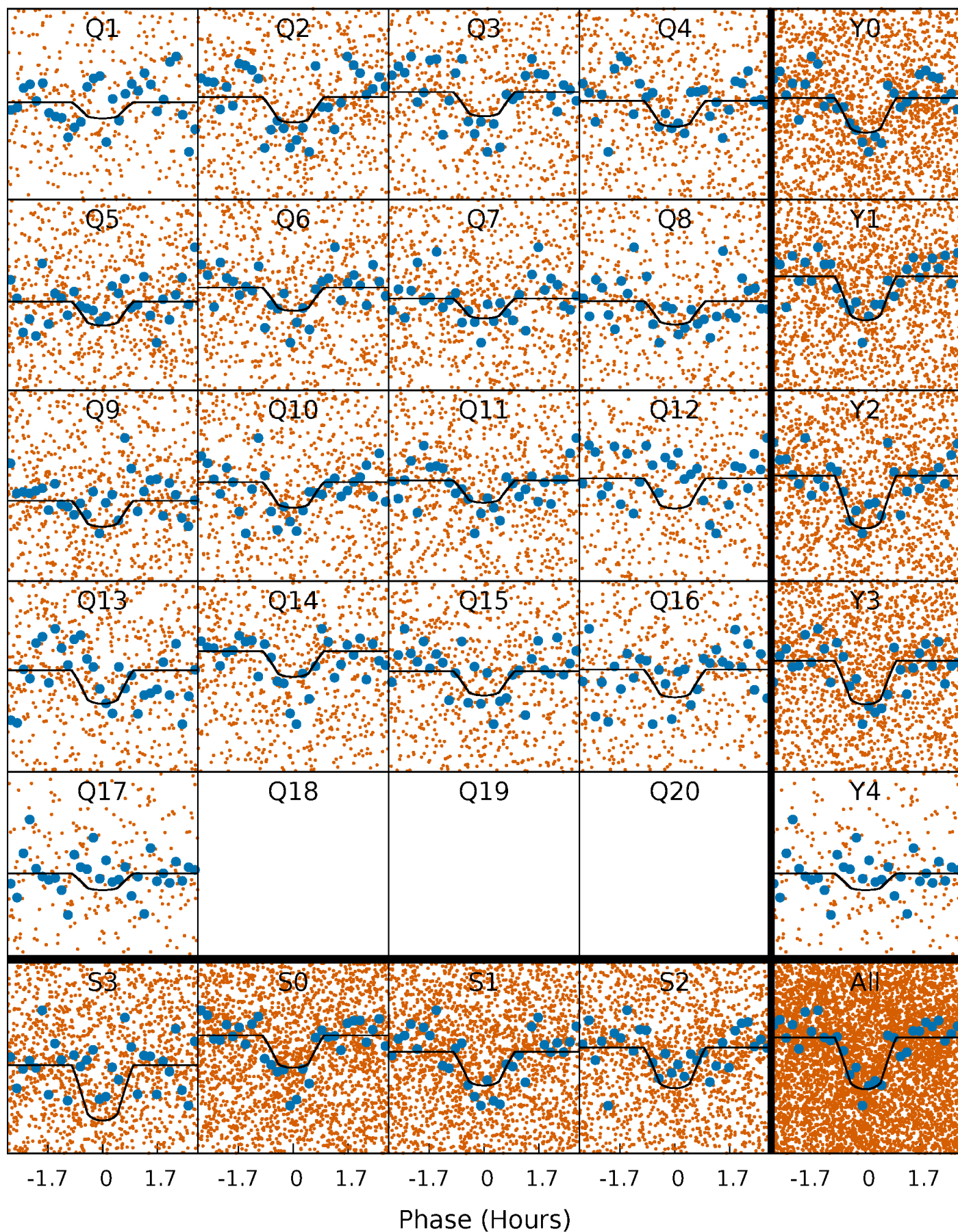
PDC Quarter-Phased Transit Curves

TCE 010867017-01 P= 0.876931 Days $T_0=132.276493$ (BKJD)



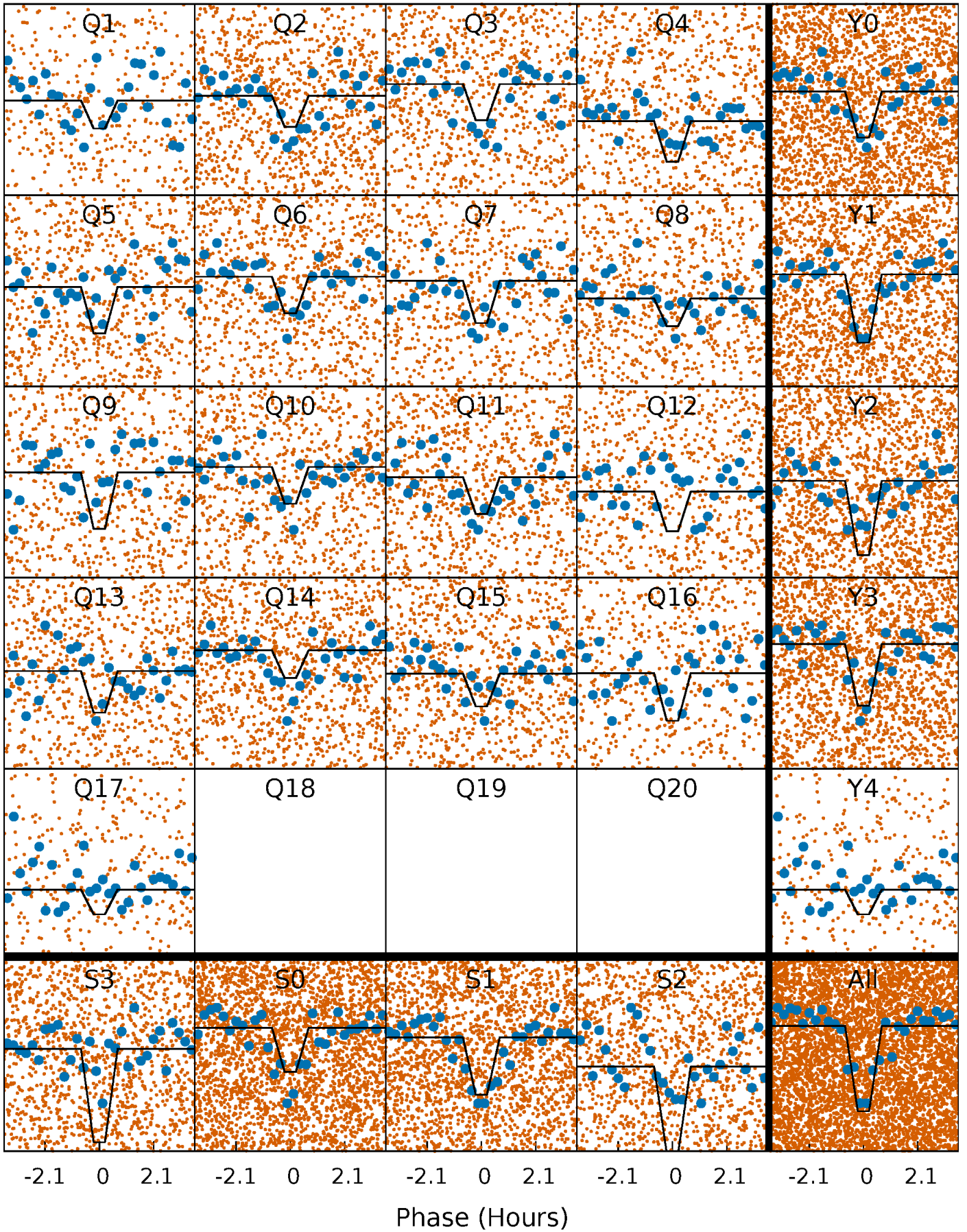
DV Quarter-Phased Transit Curves

TCE 010867017-01 P= 0.876931 Days $T_0=132.276493$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

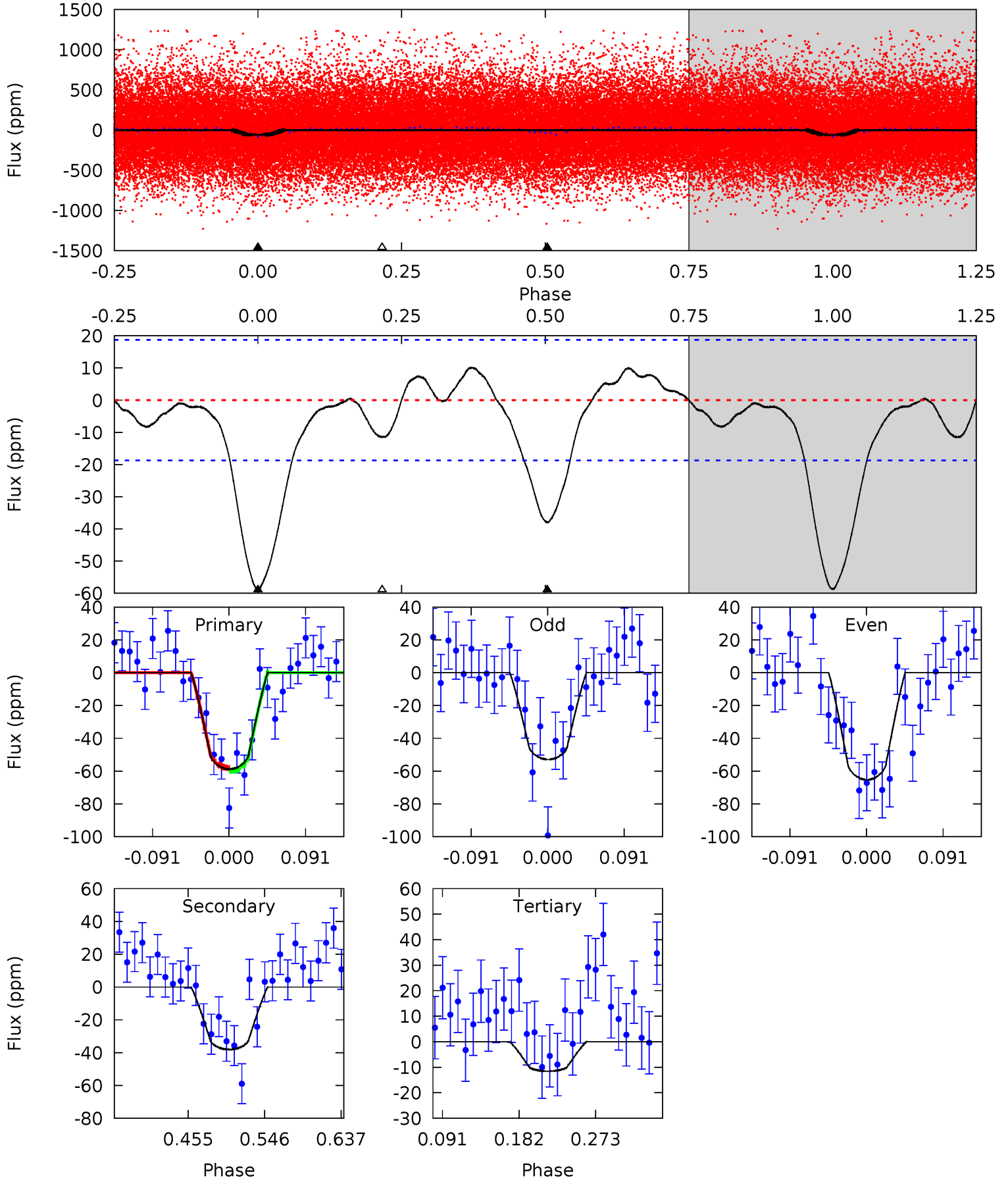
TCE 010867017-01 P= 0.876940 Days $T_0=132.271188$ (BKJD)



DV Model-Shift Uniqueness Test

010867017-01, P = 0.876931 Days, E = 131.399562 Days

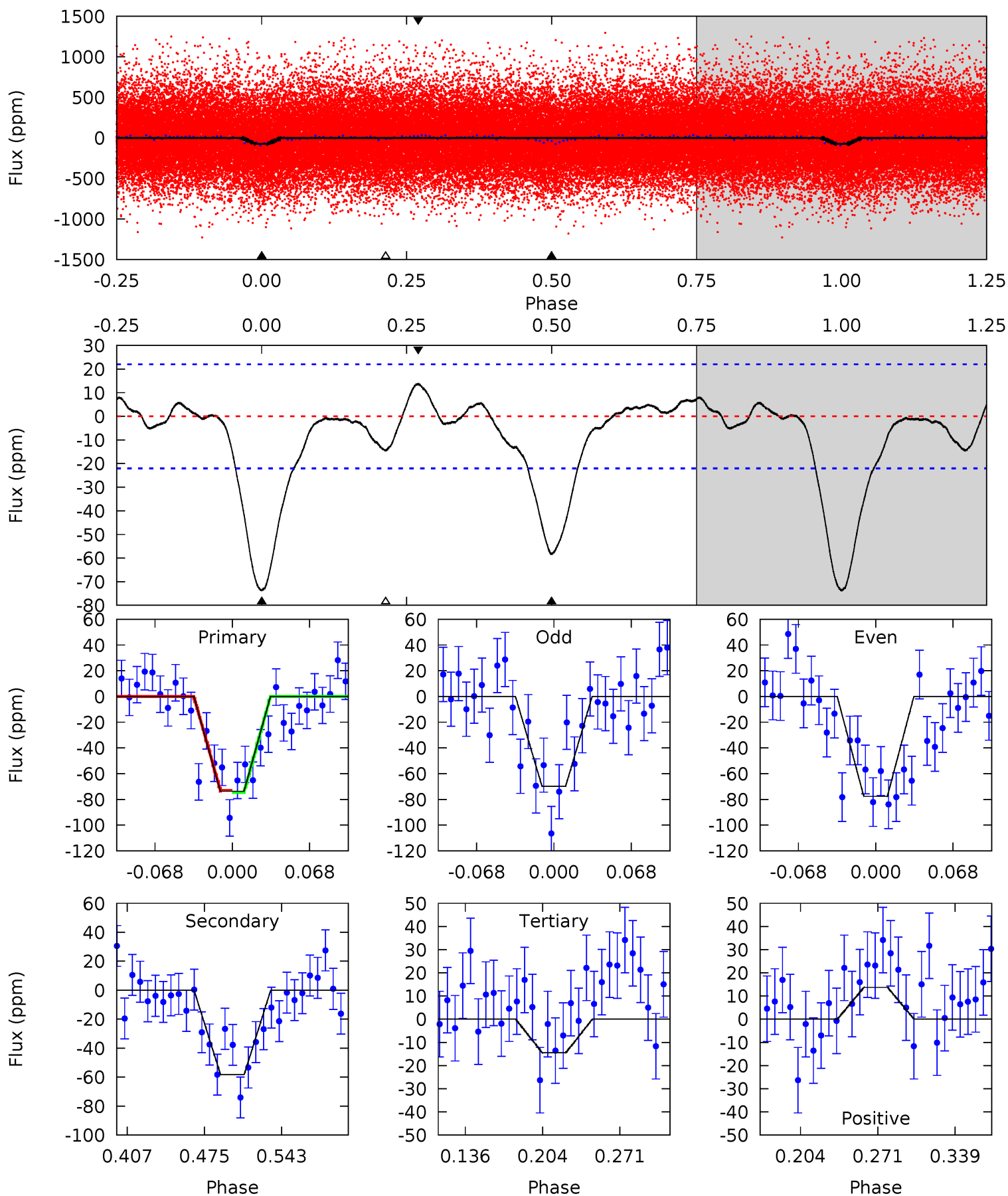
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	9.32	2.83	0	4.58	1.69	1.38	11.6	14.4	6.49	9.32	1.52	0.96	0.15	0.23



Alt Model-Shift Uniqueness Test

010867017-01, P = 0.876940 Days, E = 131.394248 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	12.3	3.05	2.89	4.65	1.83	1.20	12.5	12.6	9.23	9.38	0.82	0.91	0.16	0.17



Stellar Parameters For KIC 010867017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6018^{+168}_{-210}	$4.485^{+0.050}_{-0.200}$	$-0.040^{+0.250}_{-0.300}$	$0.975^{+0.285}_{-0.095}$	$1.058^{+0.126}_{-0.139}$	$1.608^{+0.434}_{-0.827}$
	+3%/-3%	+1%/-4%	+625%/-750%	+29%/-10%	+12%/-13%	+27%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010867017-01 / KOI 7384.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-38 ± 4	$0.93^{+0.40}_{-0.41}$	2758^{+189}_{-134}	5143^{+1749}_{-713}	$8.141^{+18.101}_{-4.257}$
Alt.	-58 ± 5	$1.02^{+0.40}_{-0.40}$	2756^{+183}_{-133}	5430^{+1693}_{-684}	10^{+18}_{-5}

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

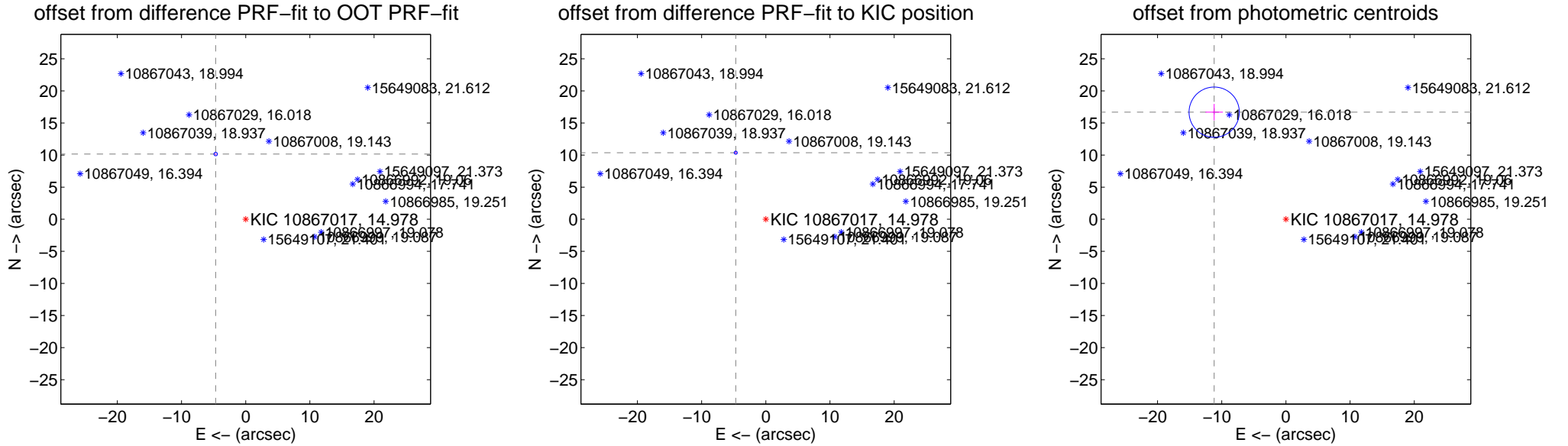
DV Centroid Data

Supplemental centroid analysis for 010867017-01. Kepler magnitude: 14.98. Transit SNR 10.72

There are 4 quarters with good PRF difference image offsets

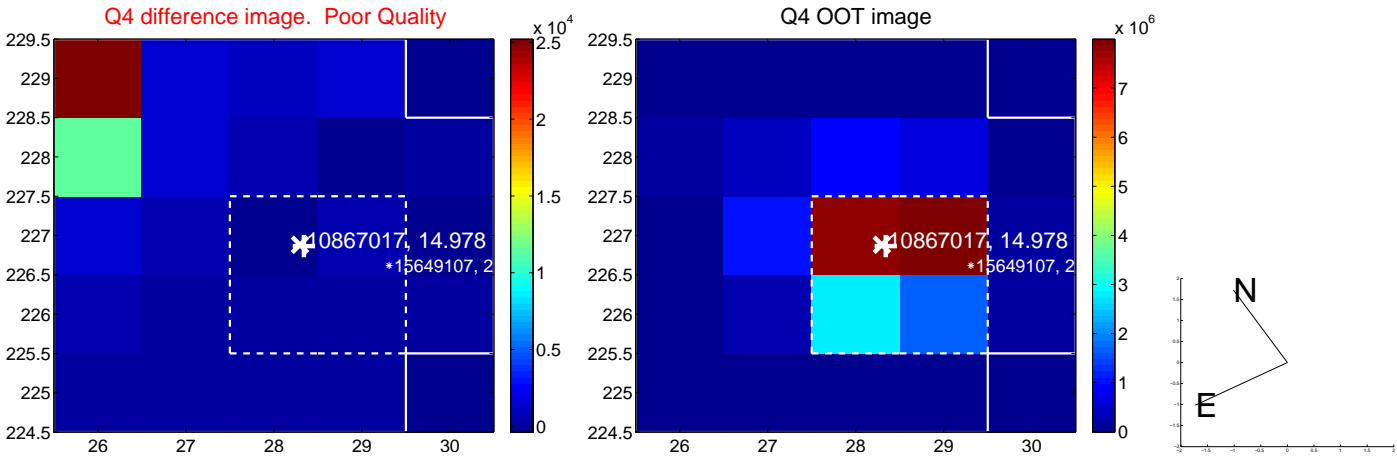
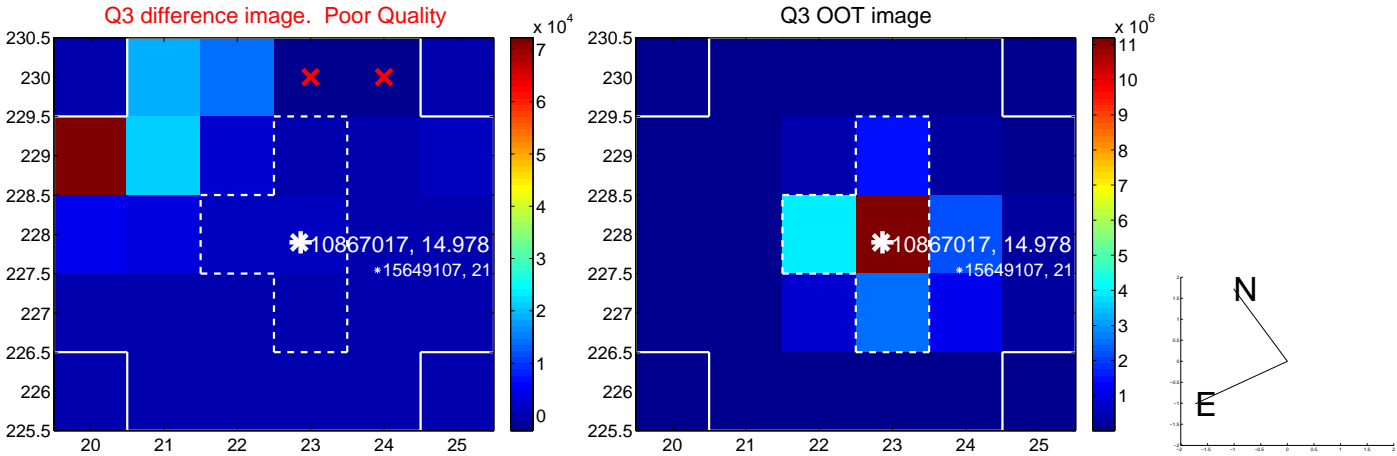
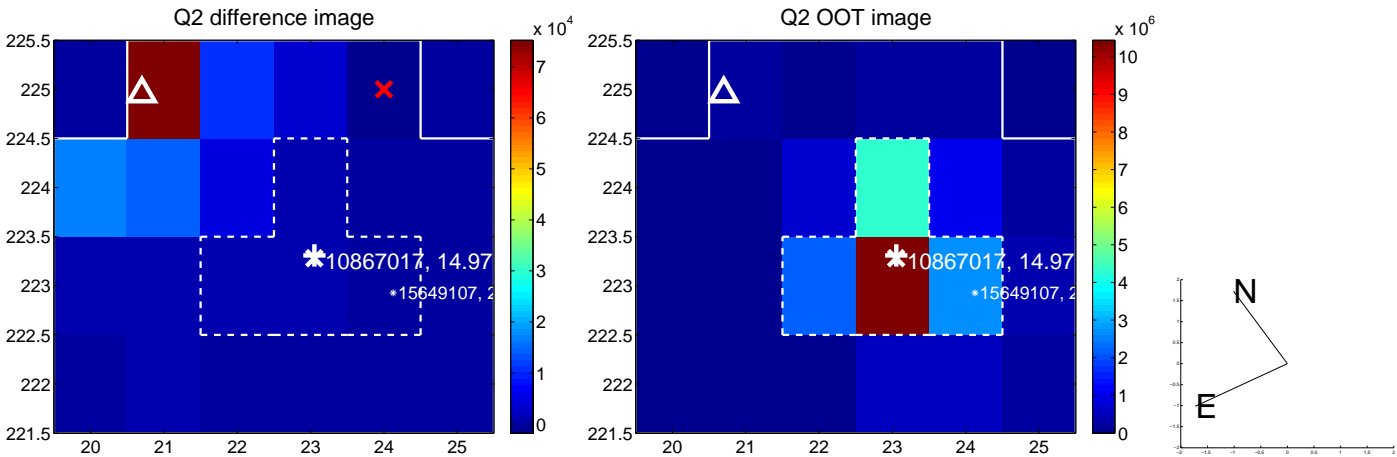
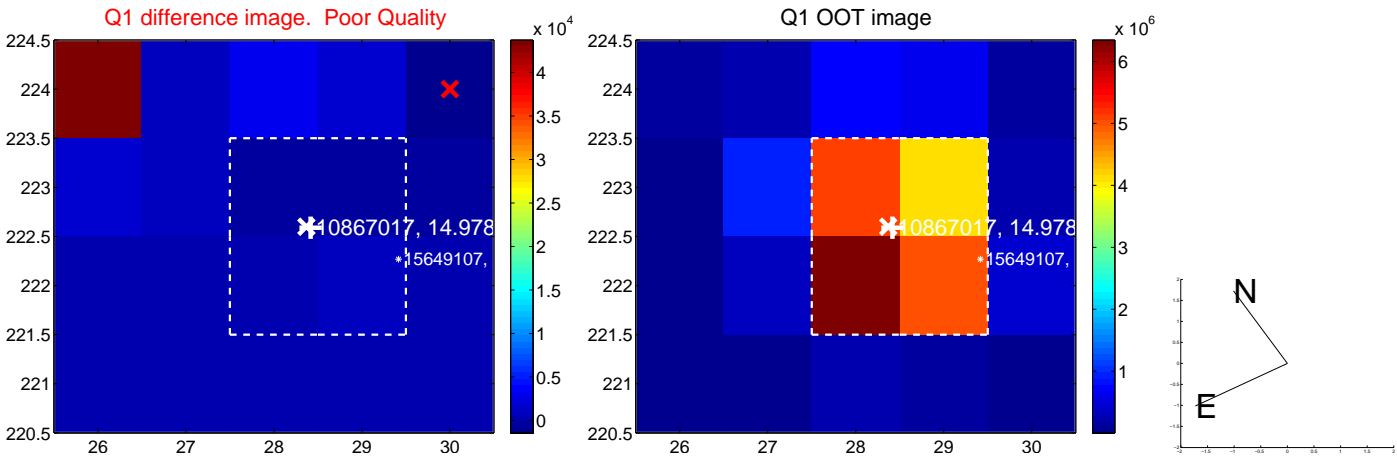
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.179 \pm 0.091	122.91	4.675 \pm 0.070	10.154 \pm 0.089
PRF-fit source offset from KIC position	11.373 \pm 0.081	141.01	4.683 \pm 0.069	10.365 \pm 0.083
photometric centroid source offset	20.08 \pm 1.30	15.39	11.17 \pm 1.35	16.68 \pm 1.28

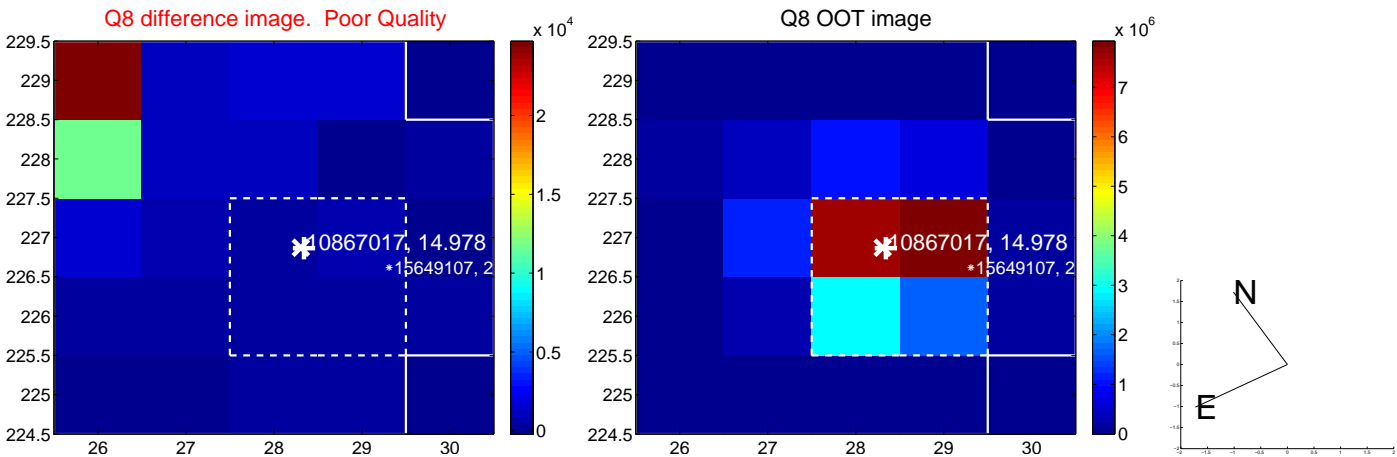
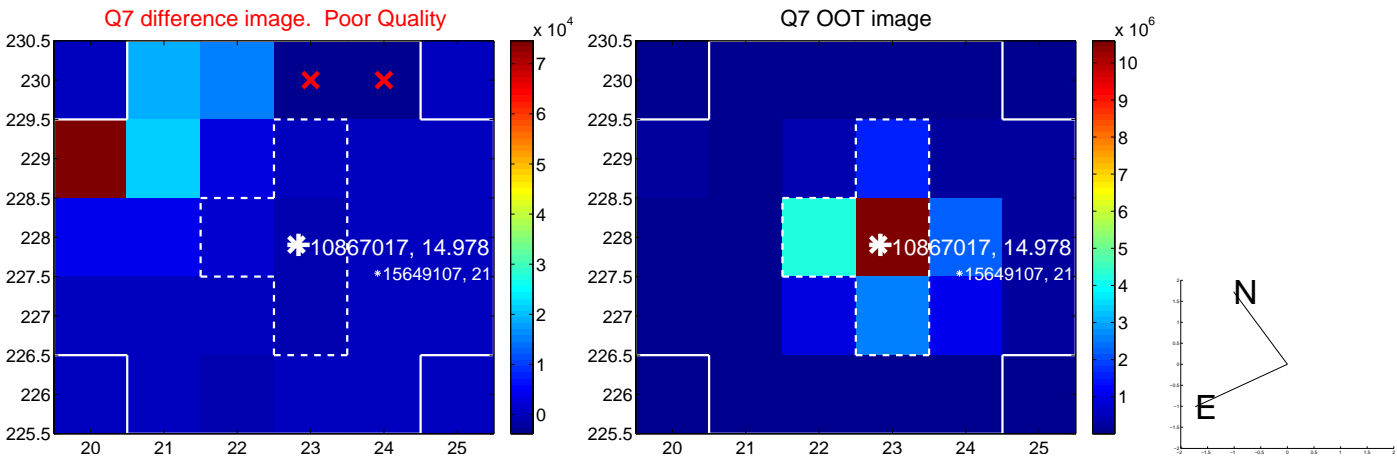
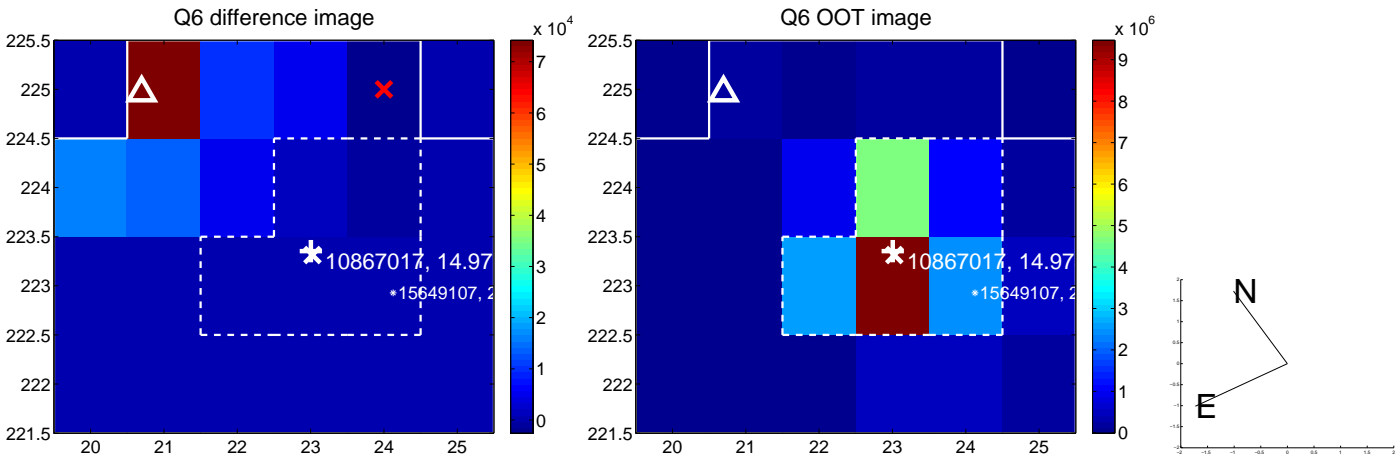
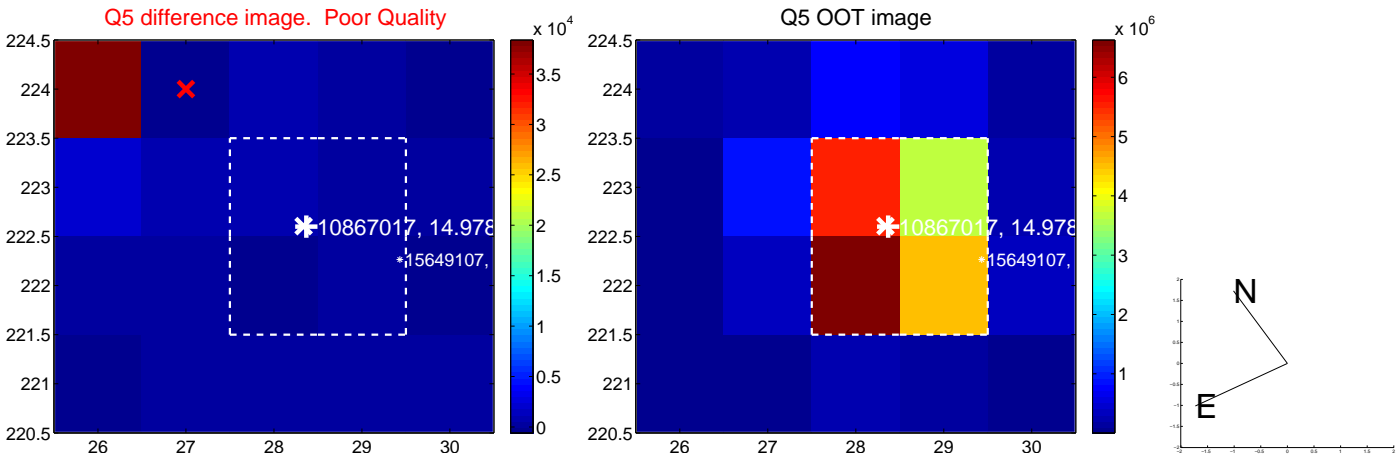


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

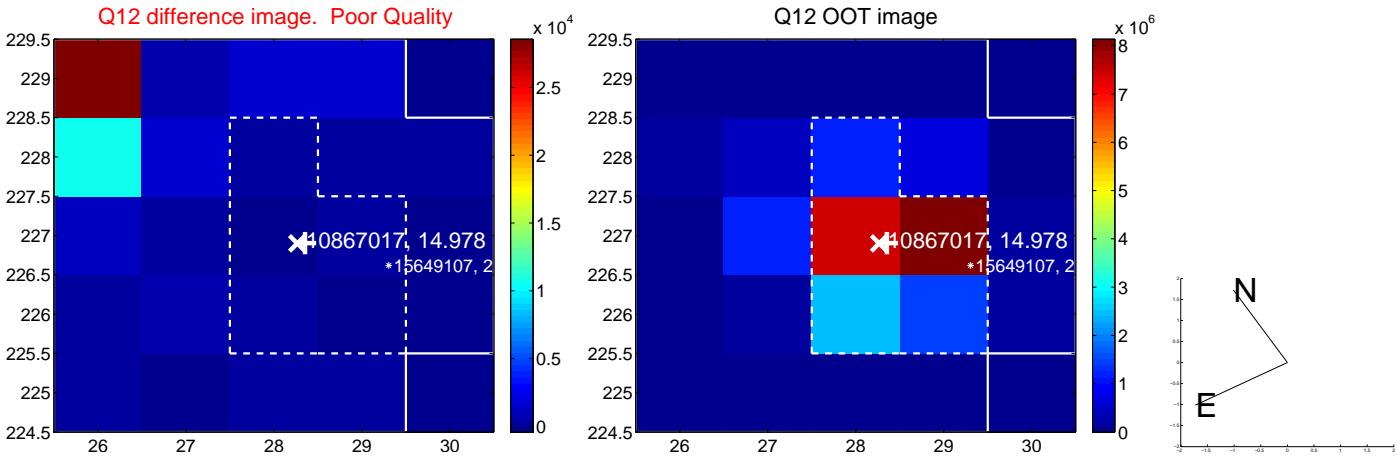
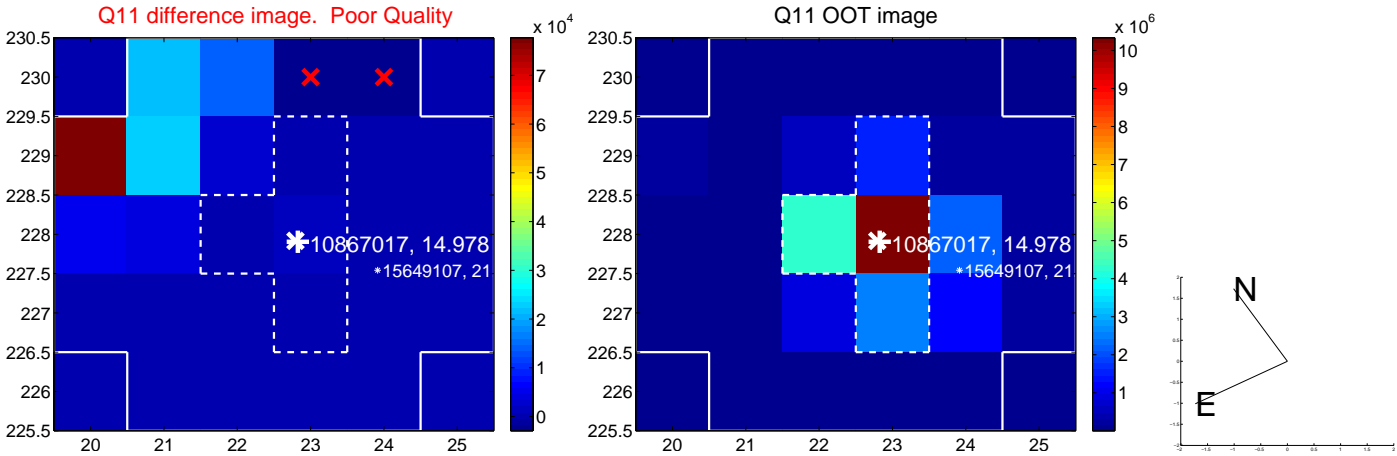
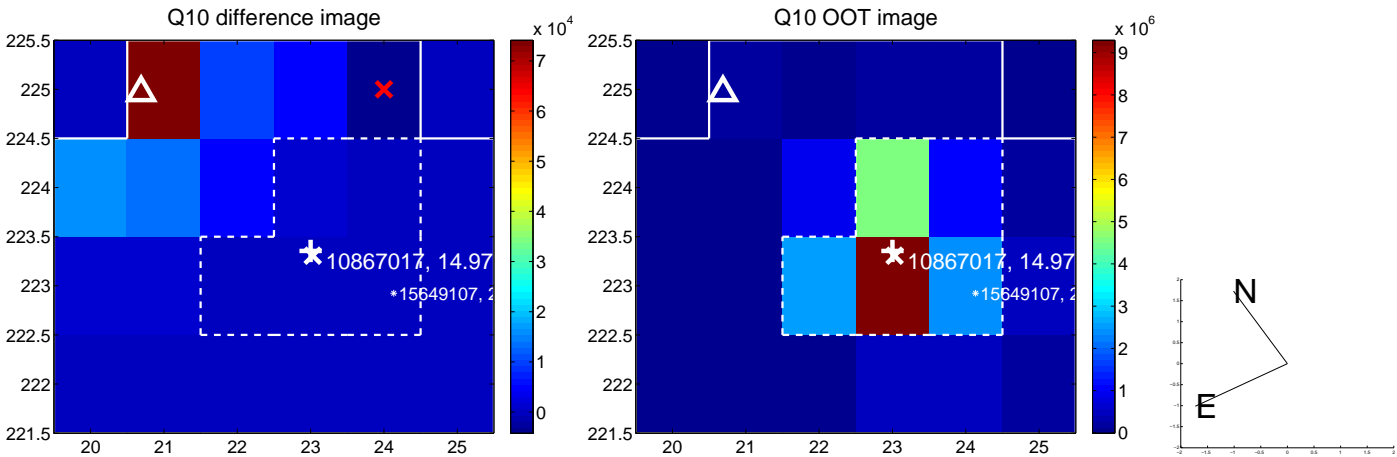
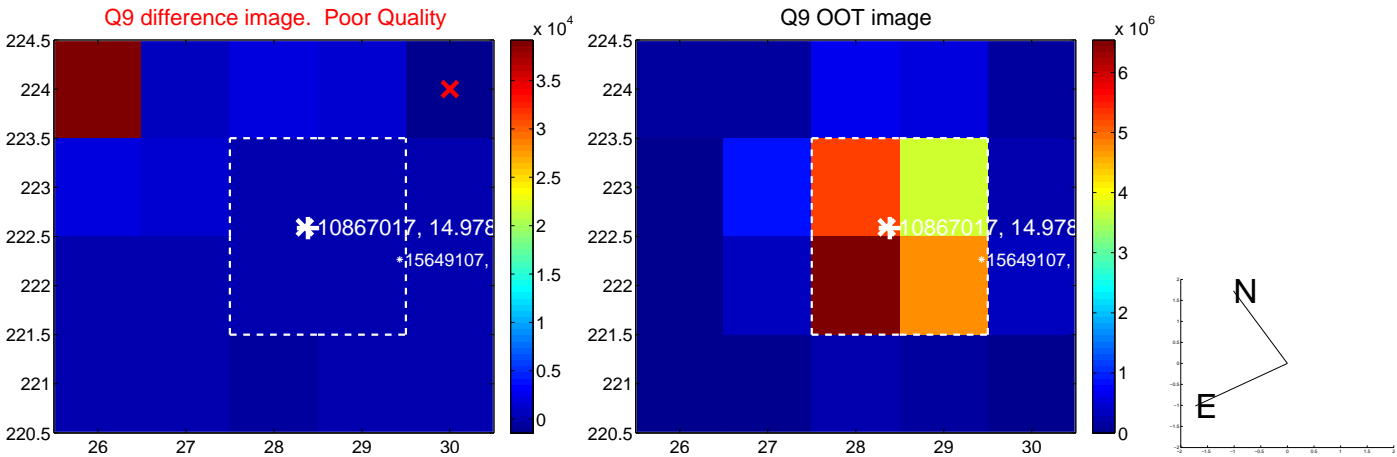
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



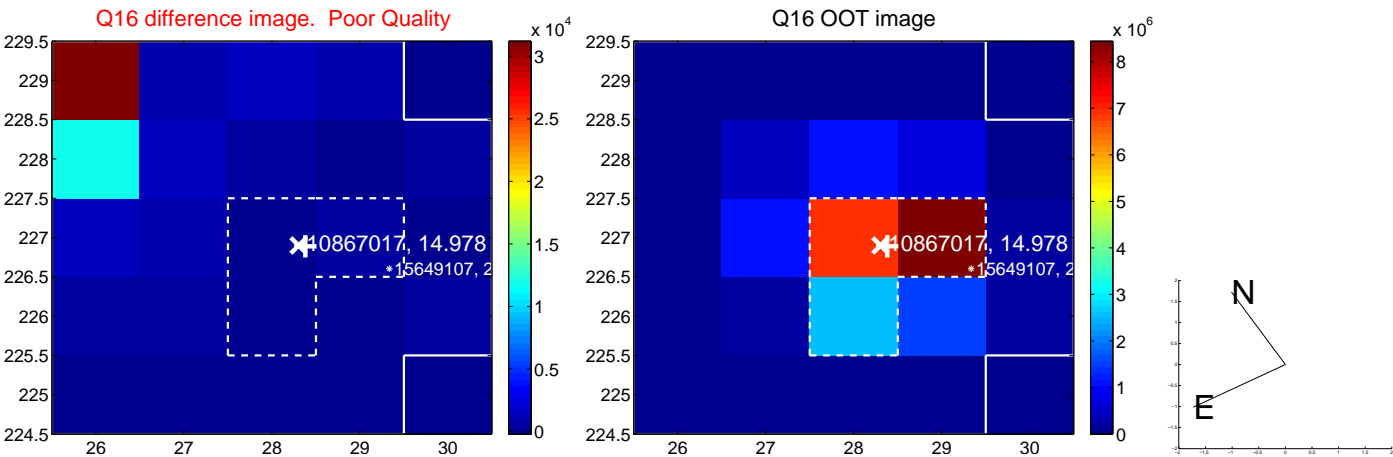
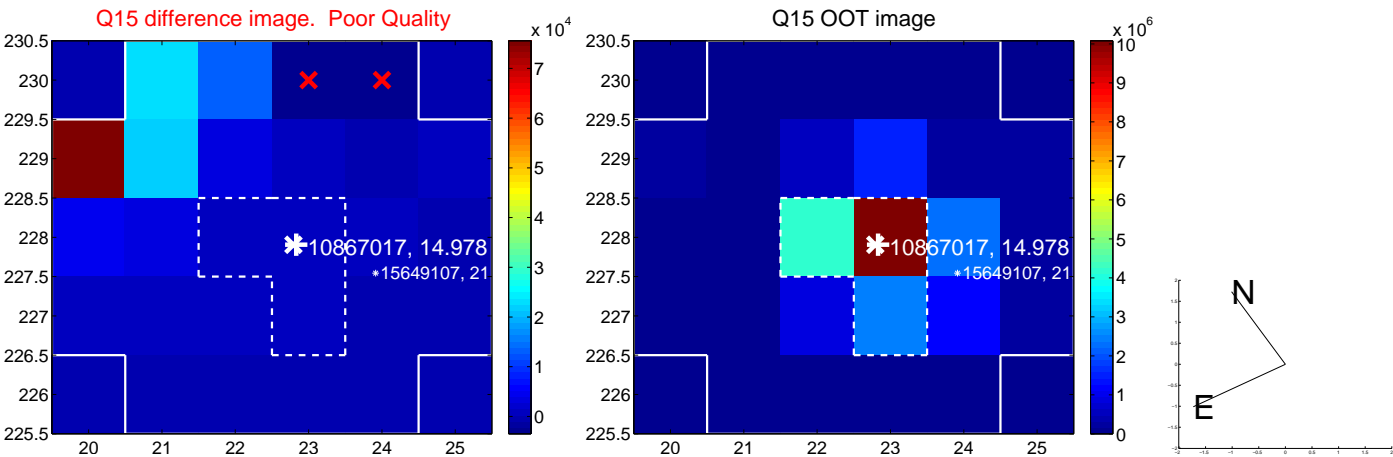
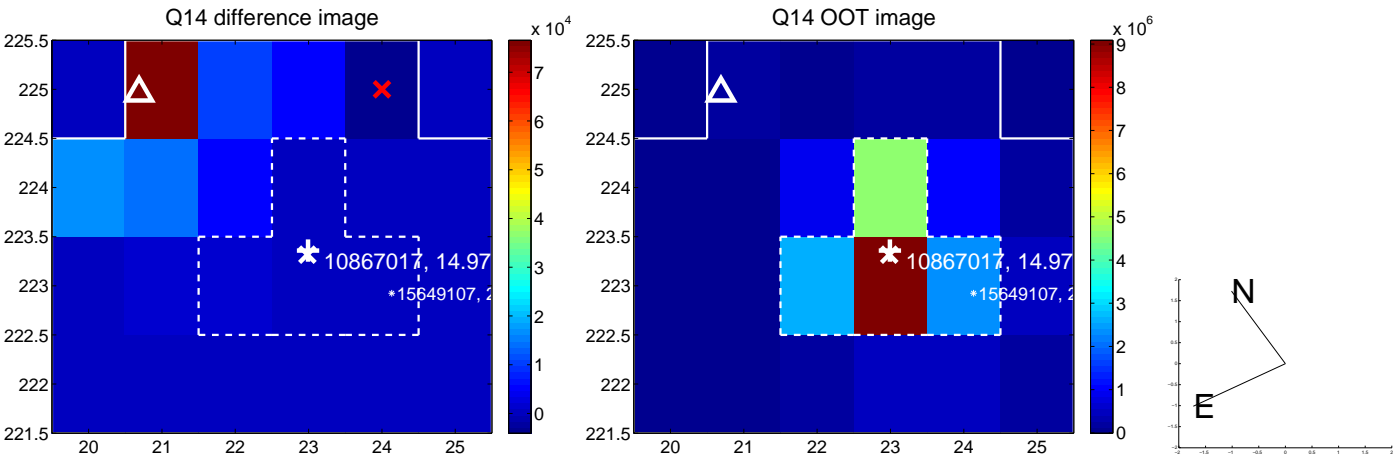
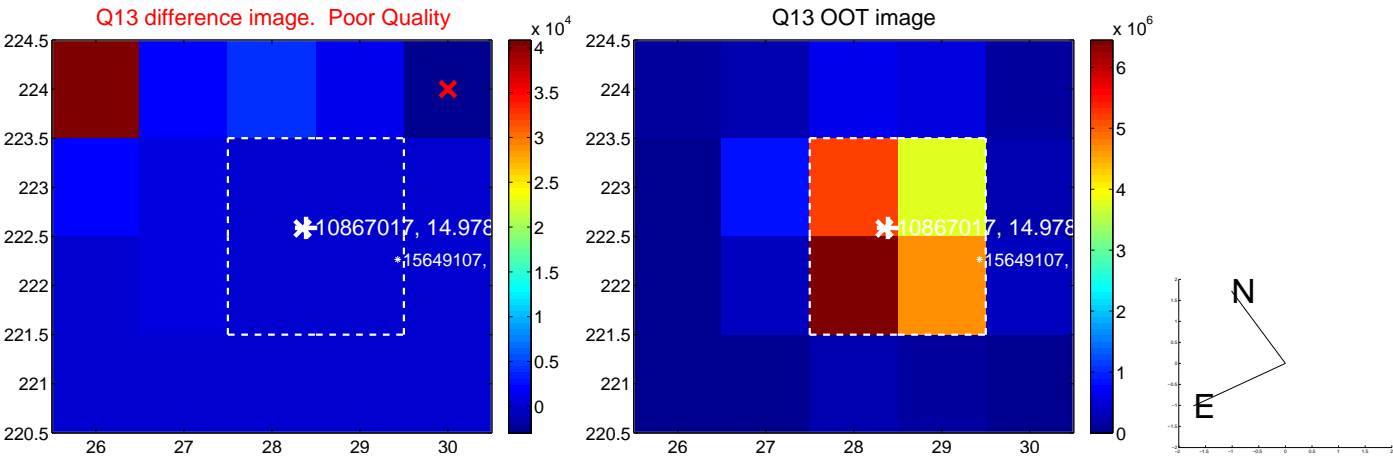
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



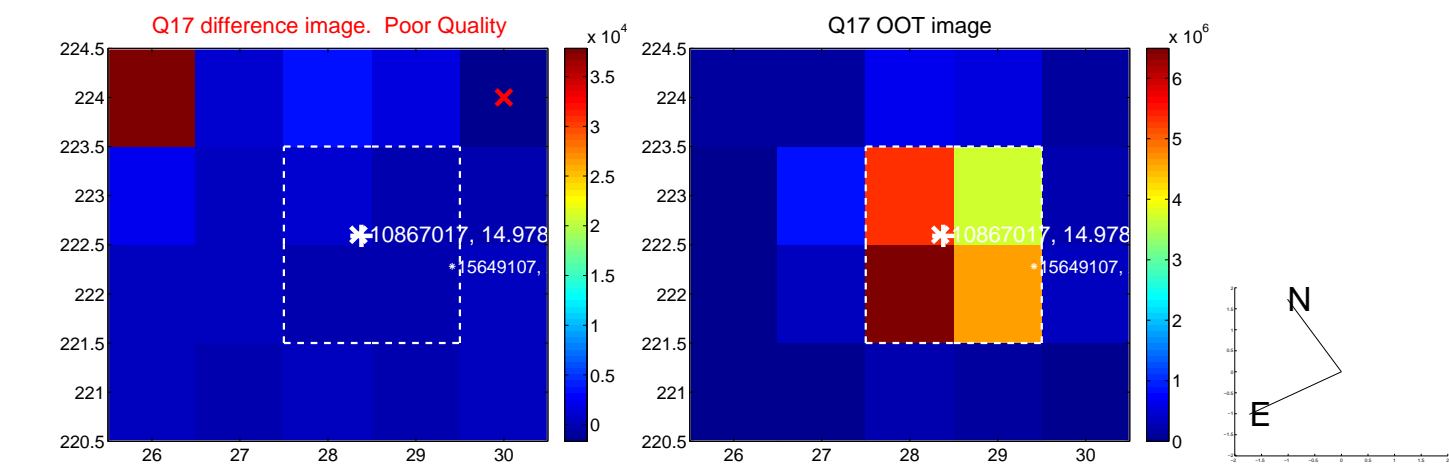
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



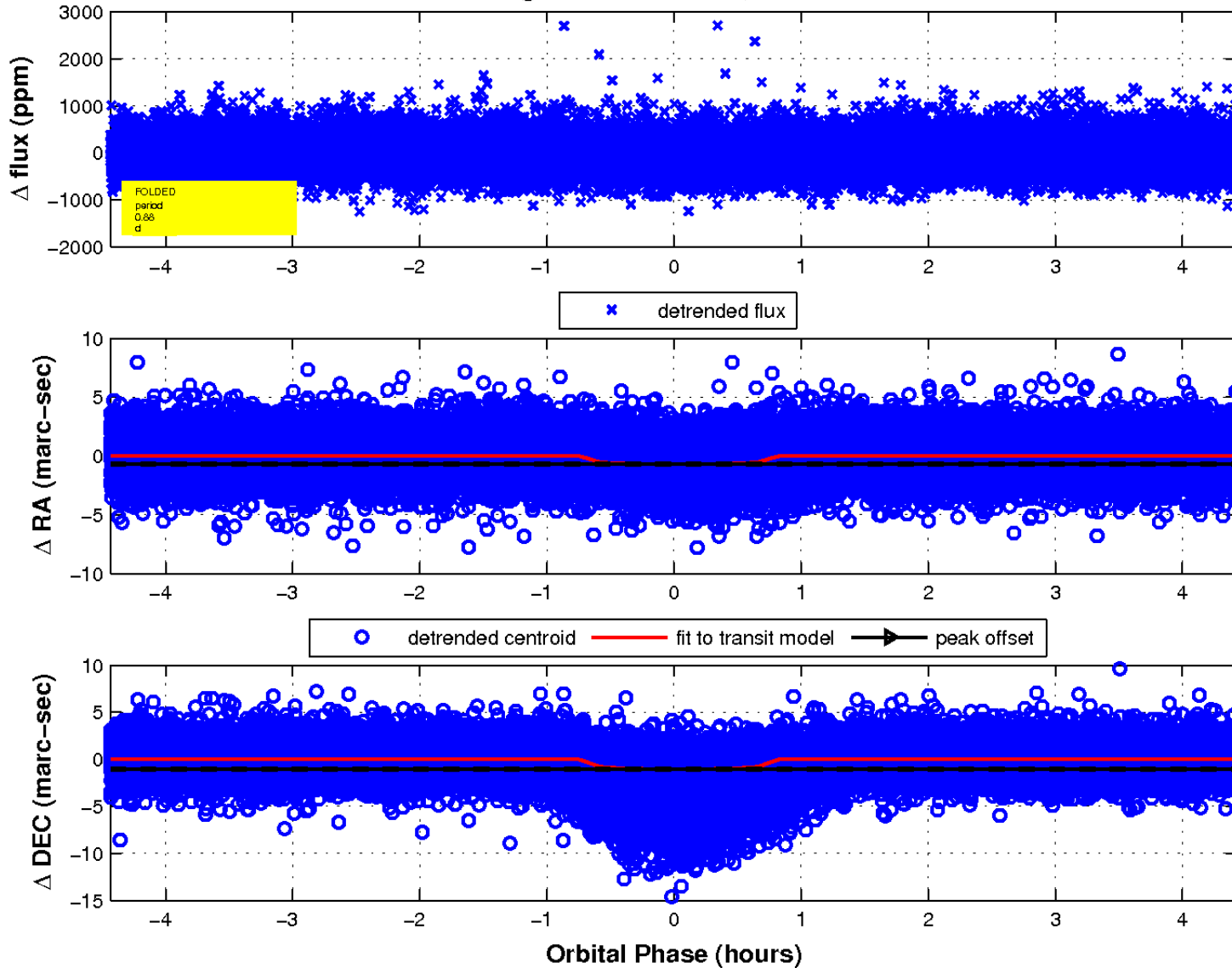
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

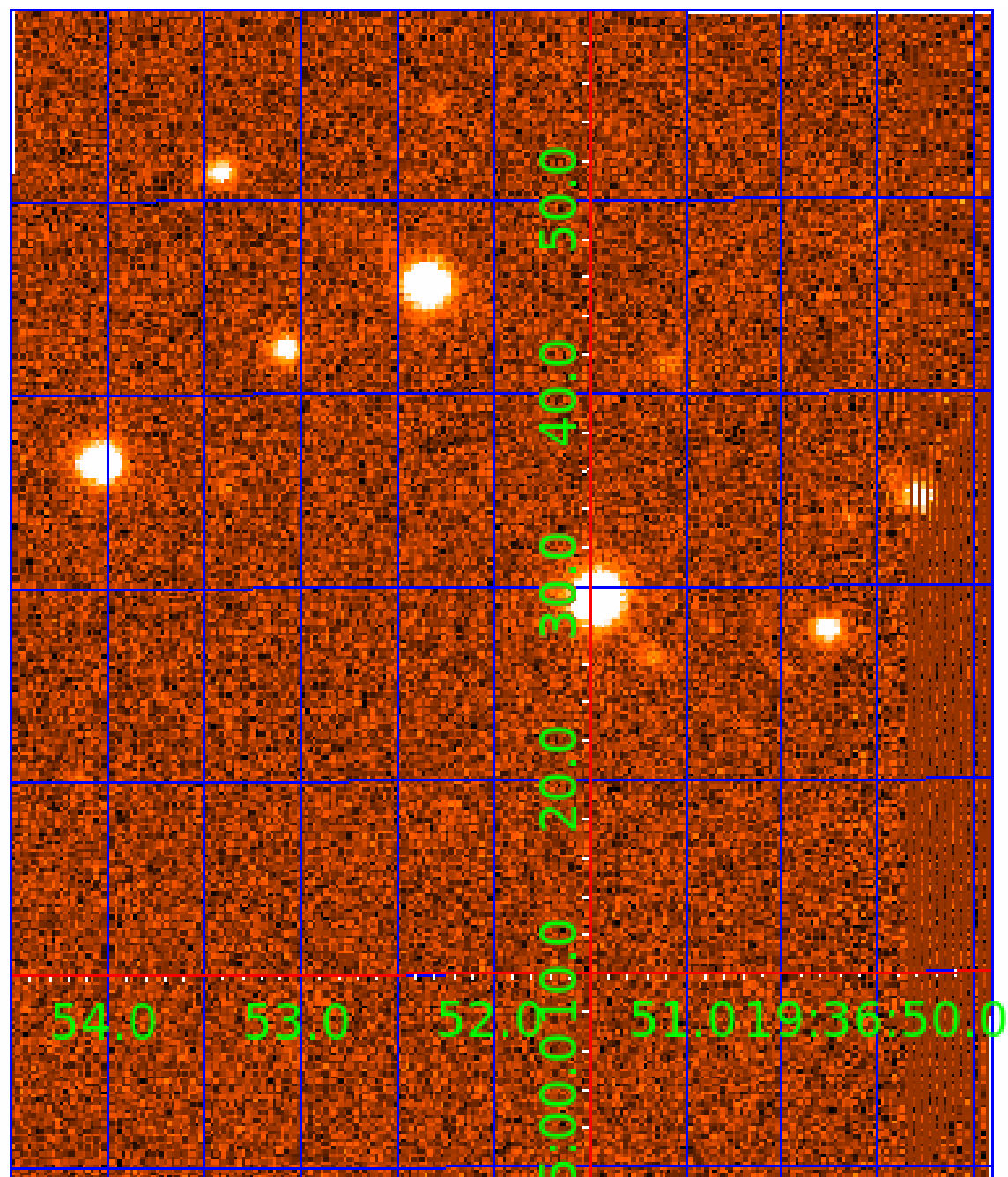


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010867017

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})
010867017-01	OBS	7384.01	0.876931	132.276493	61.0	1.478	9.8	10.7	0.97	6018	0.88	3342.61
010867017-02	OBS	No	0.876945	131.828235	50.6	1.486	8.5	9.1	0.97	6018	0.82	3342.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010867017-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
010867017-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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.

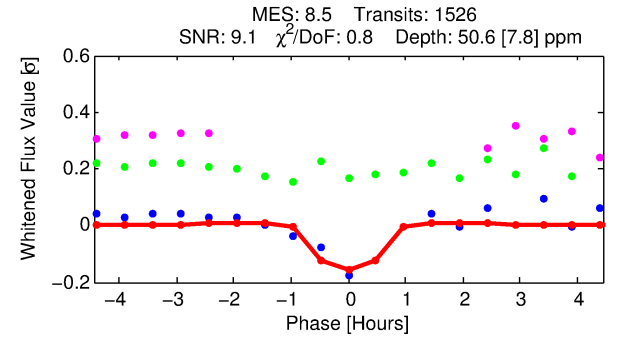
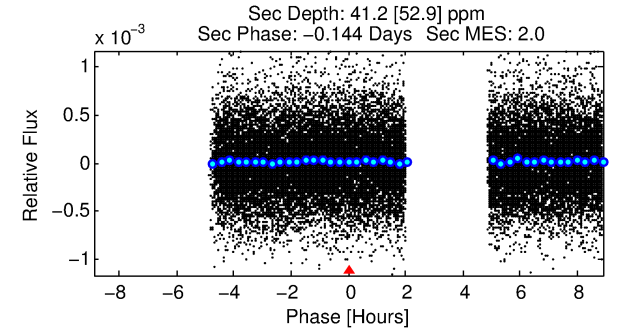
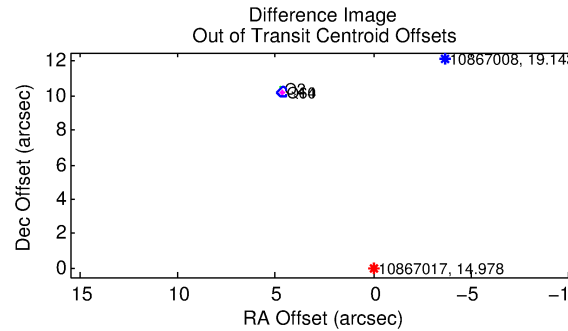
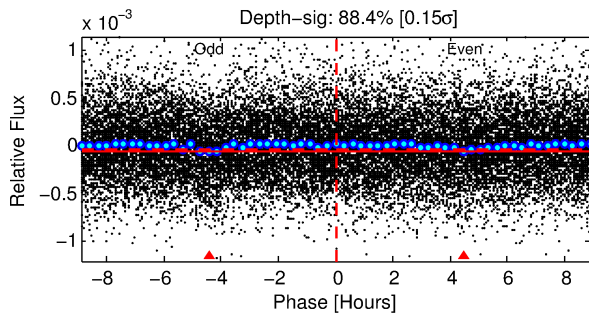
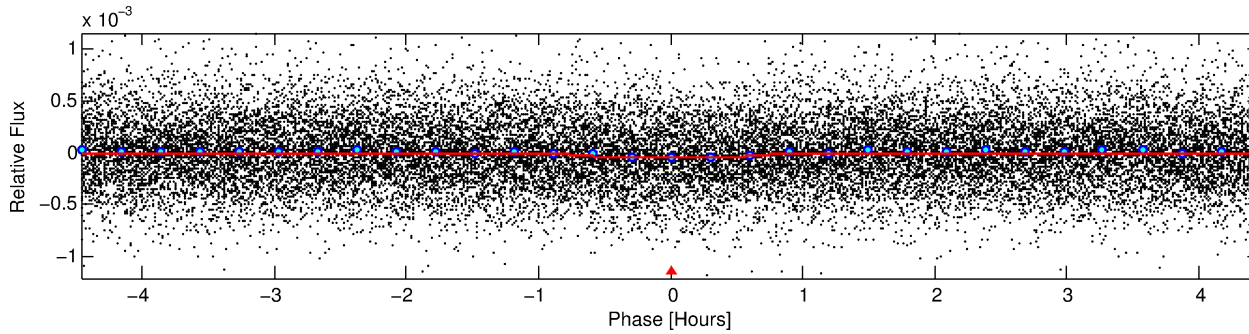
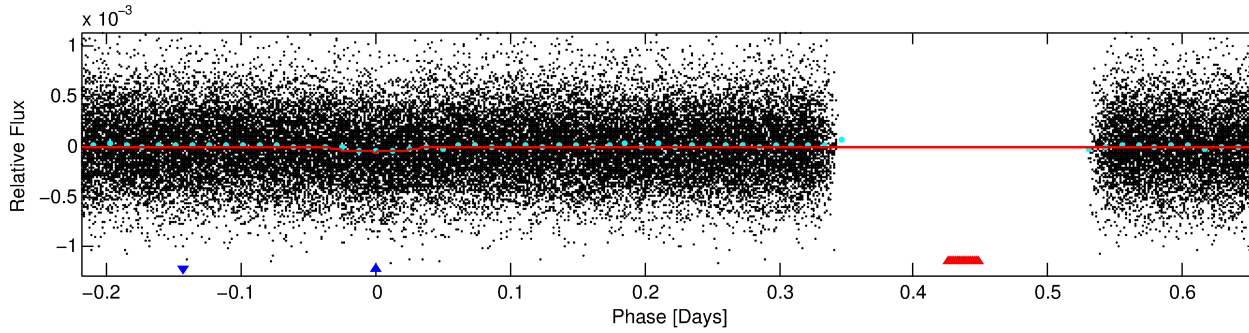
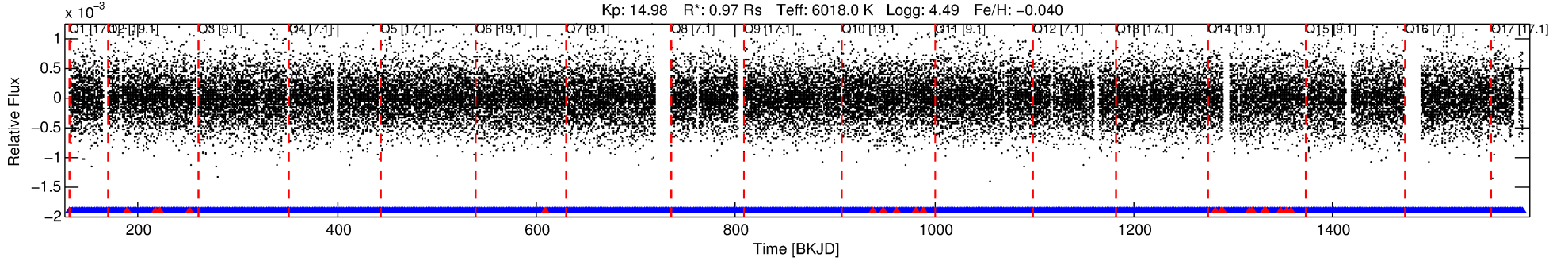
Ephemeris Match Information For 010867017-02

No Significant Match Found

DV One-Page Summary

KIC: 10867017 Candidate: 2 of 2 Period: 0.877 d
KOI: K07384 Corr: No Ephemeris Match

Kp: 14.98 R*: 0.97 Rs Teff: 6018.0 K Logg: 4.49 Fe/H: -0.040



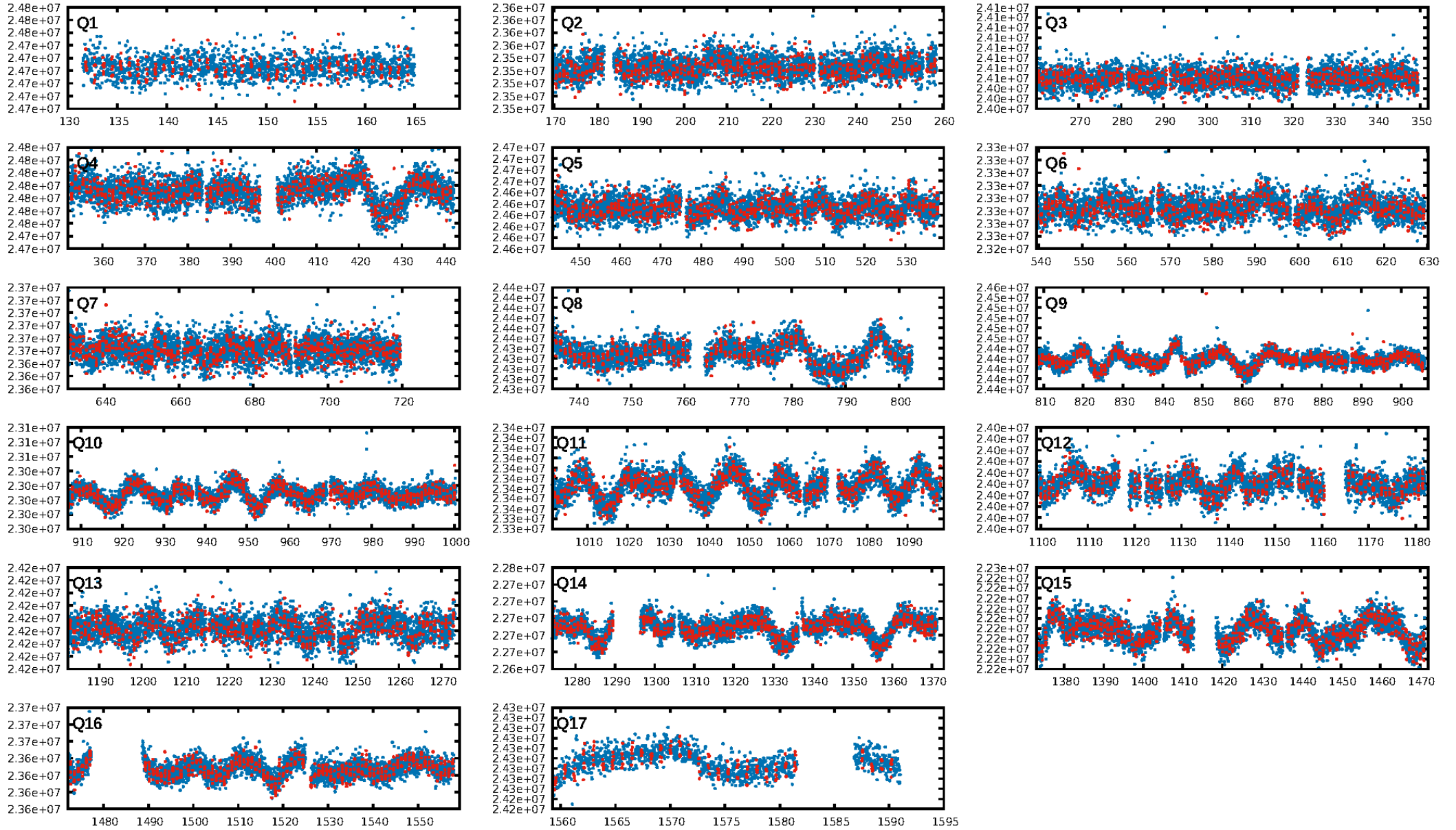
DV Fit Results:

Period = 0.87694 [0.00001] d
Epoch = 131.8282 [0.0025] BKJD
Rp/R* = 0.0077 [0.0052]
a/R* = 2.25 [6.16]
b = 0.90 [0.73]
Seff = 3342.54 [1301.93]
Teq = 1939 [189] K
Rp = 0.82 [0.60] Re
a = 0.0183 [0.0045] AU
Ag = 11.21 [21.17] [0.48σ]
Teff = 5485 [2549] K [1.39σ]

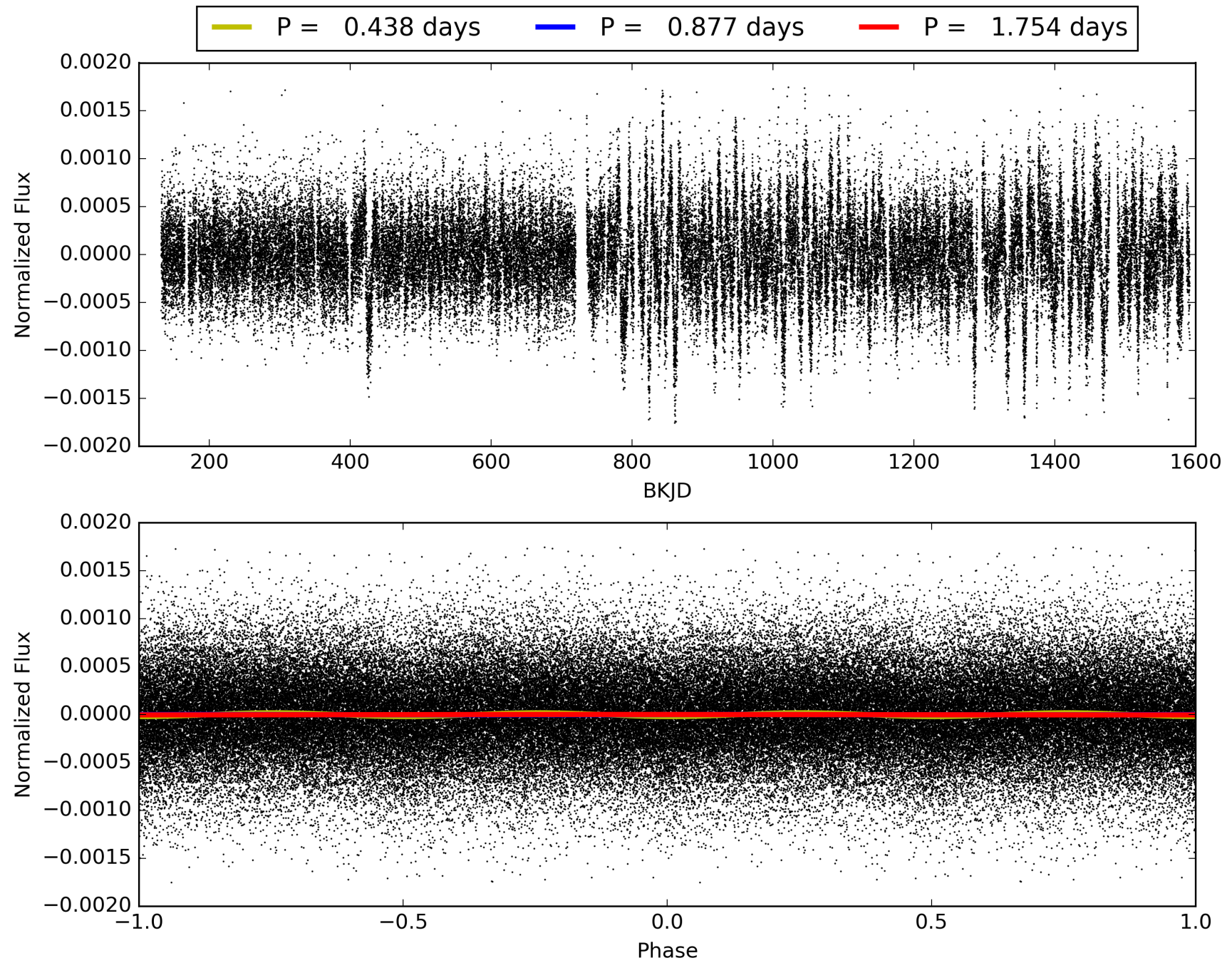
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.00e-19
RollingBand-fgt: 0.99 [1438/1458]
GhostDiagnostic-chr: 0.1882
Centroid-sig: 0.0%
Centroid-so: 10.558 arcsec [6.80σ]
OotOffset-rm: 11.190 arcsec [120.99σ]
KicOffset-rm: 11.384 arcsec [129.73σ]
OotOffset-st: 4/0/0/0 [4]
KicOffset-st: 4/0/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010867017-02, PDC Light Curves

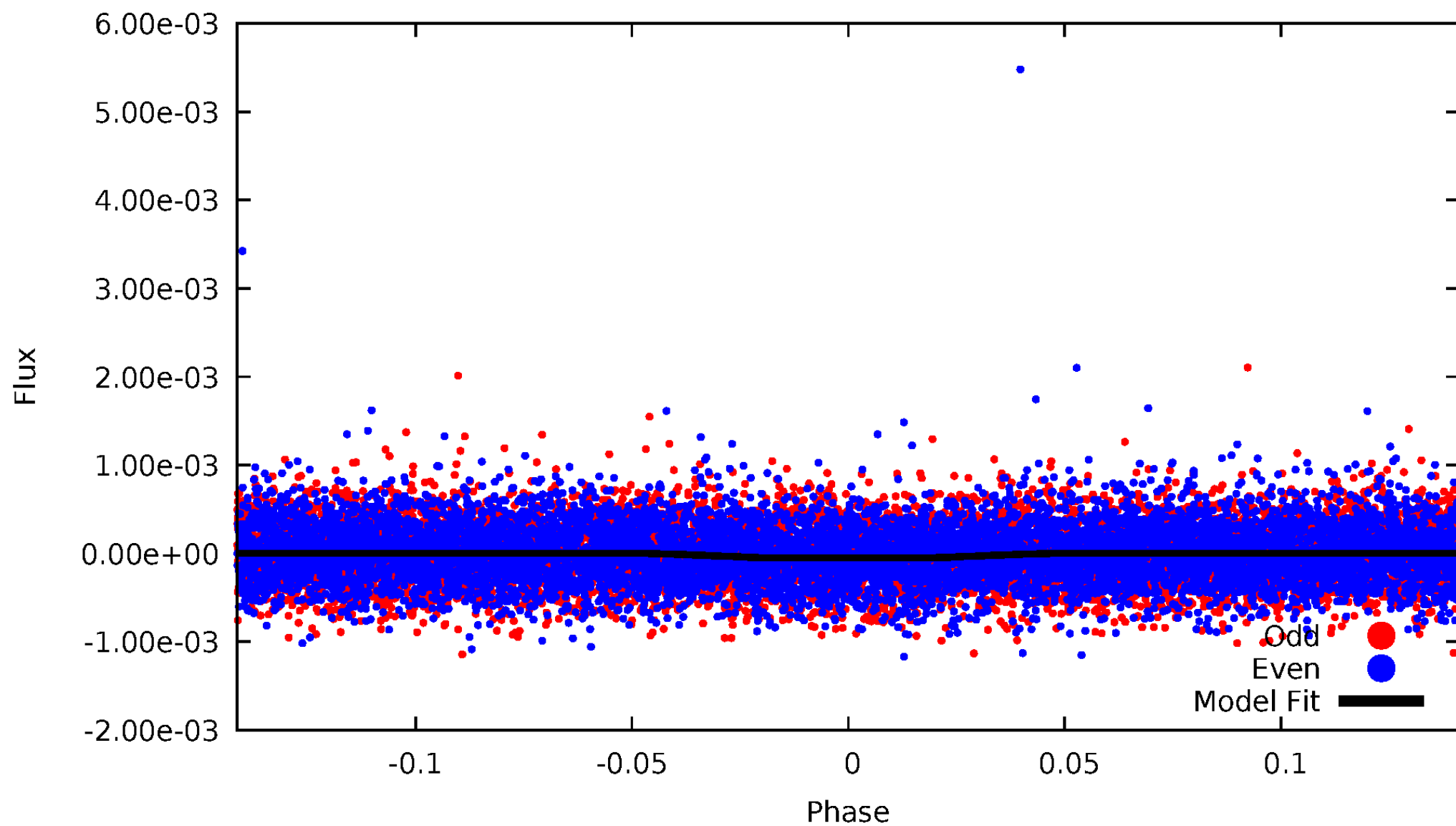


TCE 010867017-02



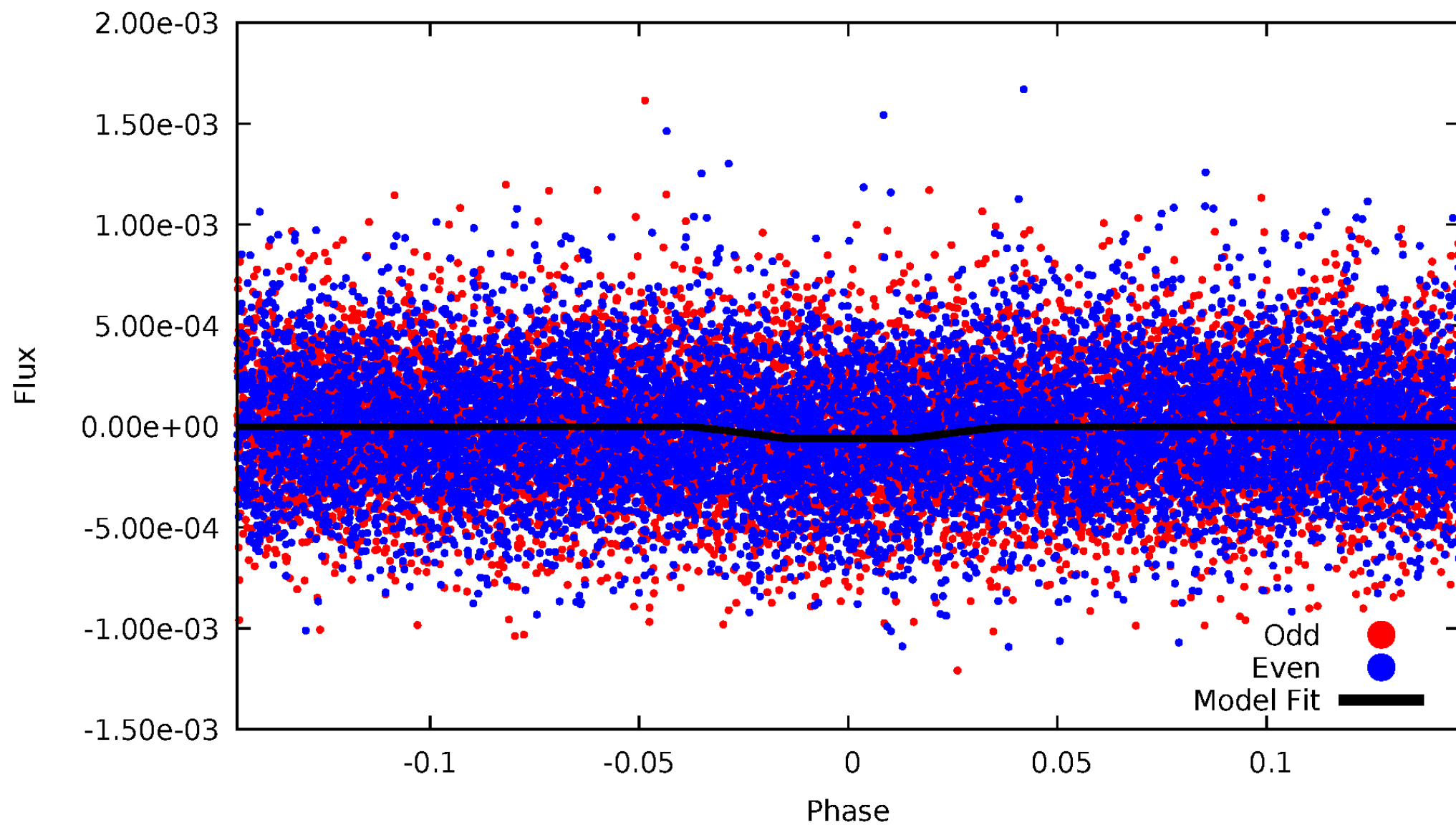
DV Odd/Even

TCE 010867017-02



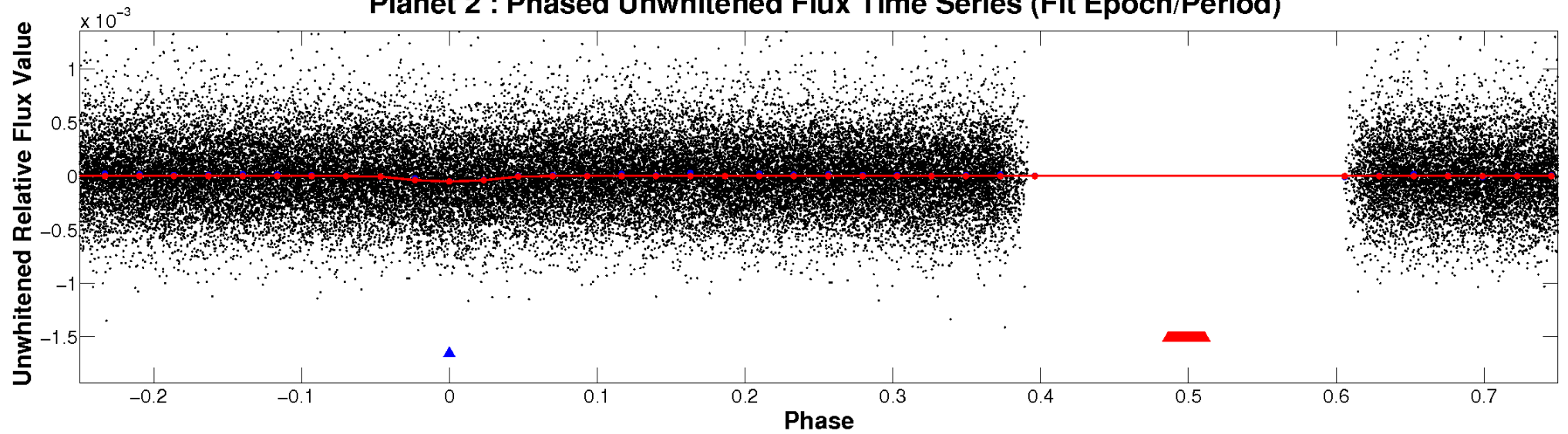
ALT Odd/Even

TCE 010867017-02

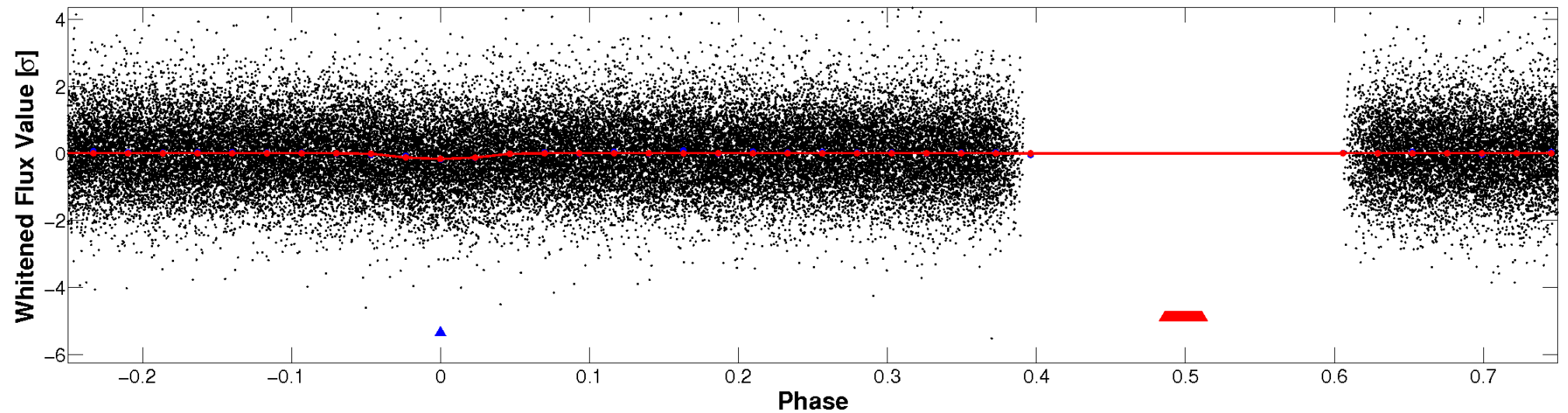


Non-Whitened Vs. Whitened Light Curve

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

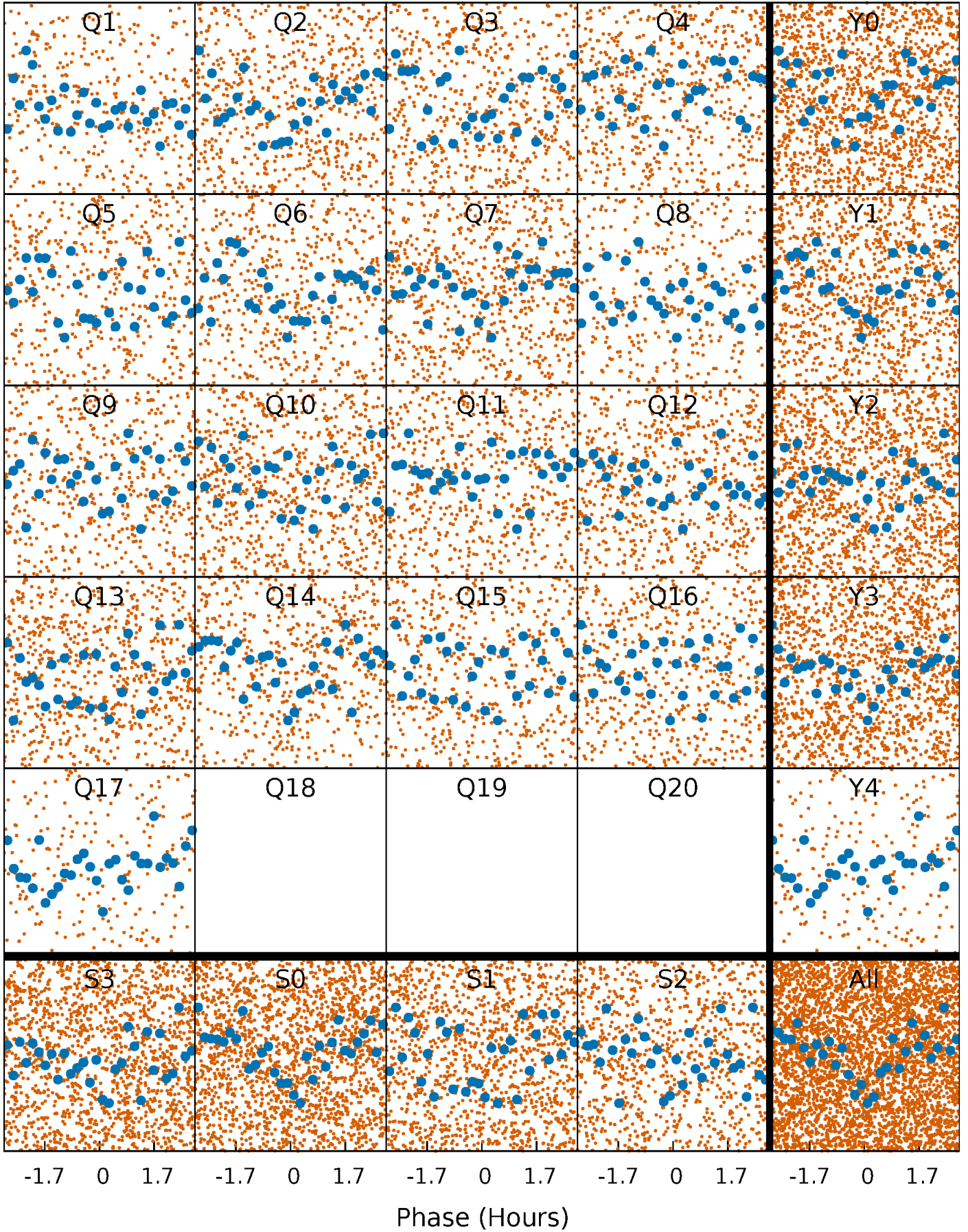


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



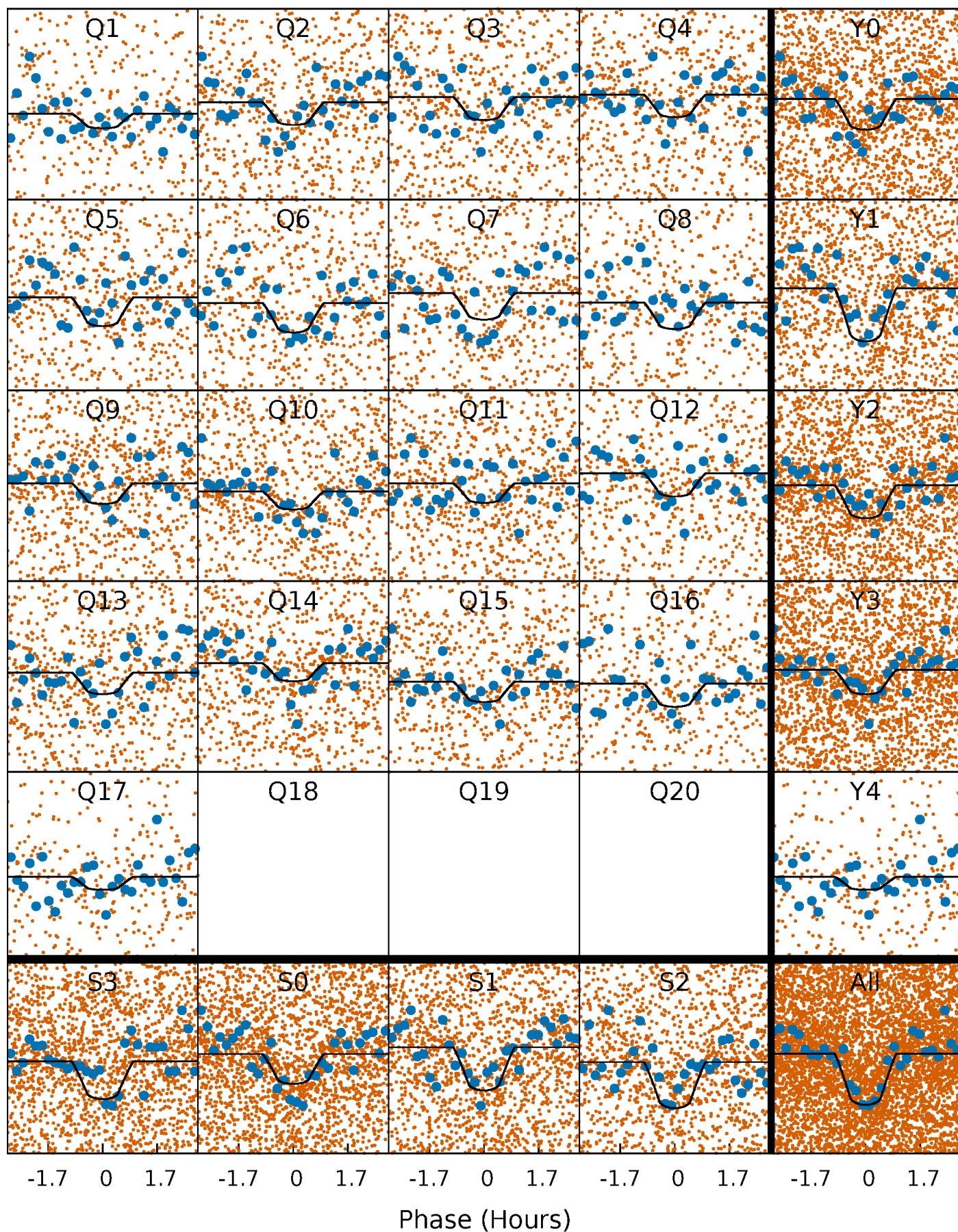
PDC Quarter-Phased Transit Curves

TCE 010867017-02 P= 0.876945 Days $T_0=131.828235$ (BKJD)



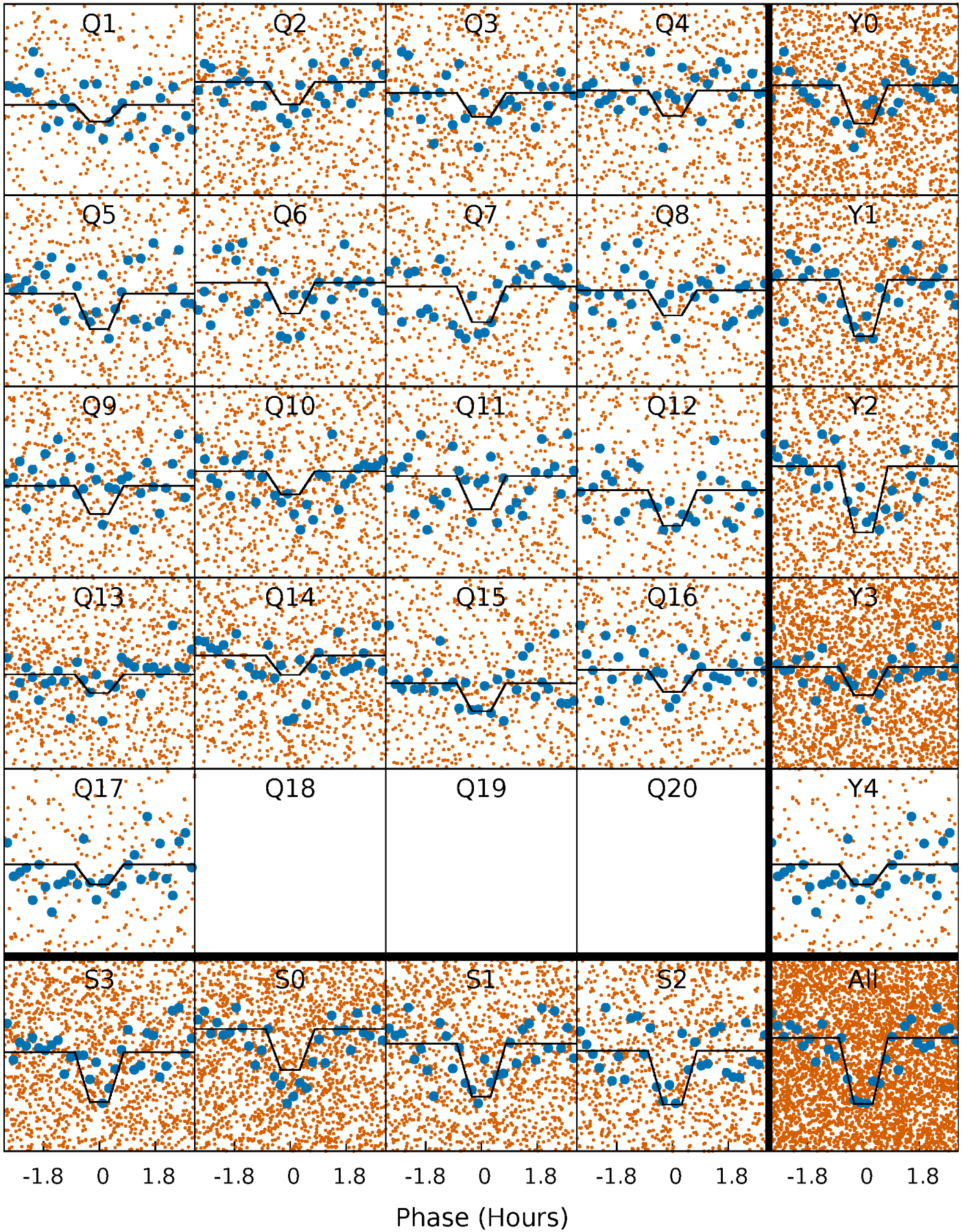
DV Quarter-Phased Transit Curves

TCE 010867017-02 P= 0.876945 Days $T_0=131.828235$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

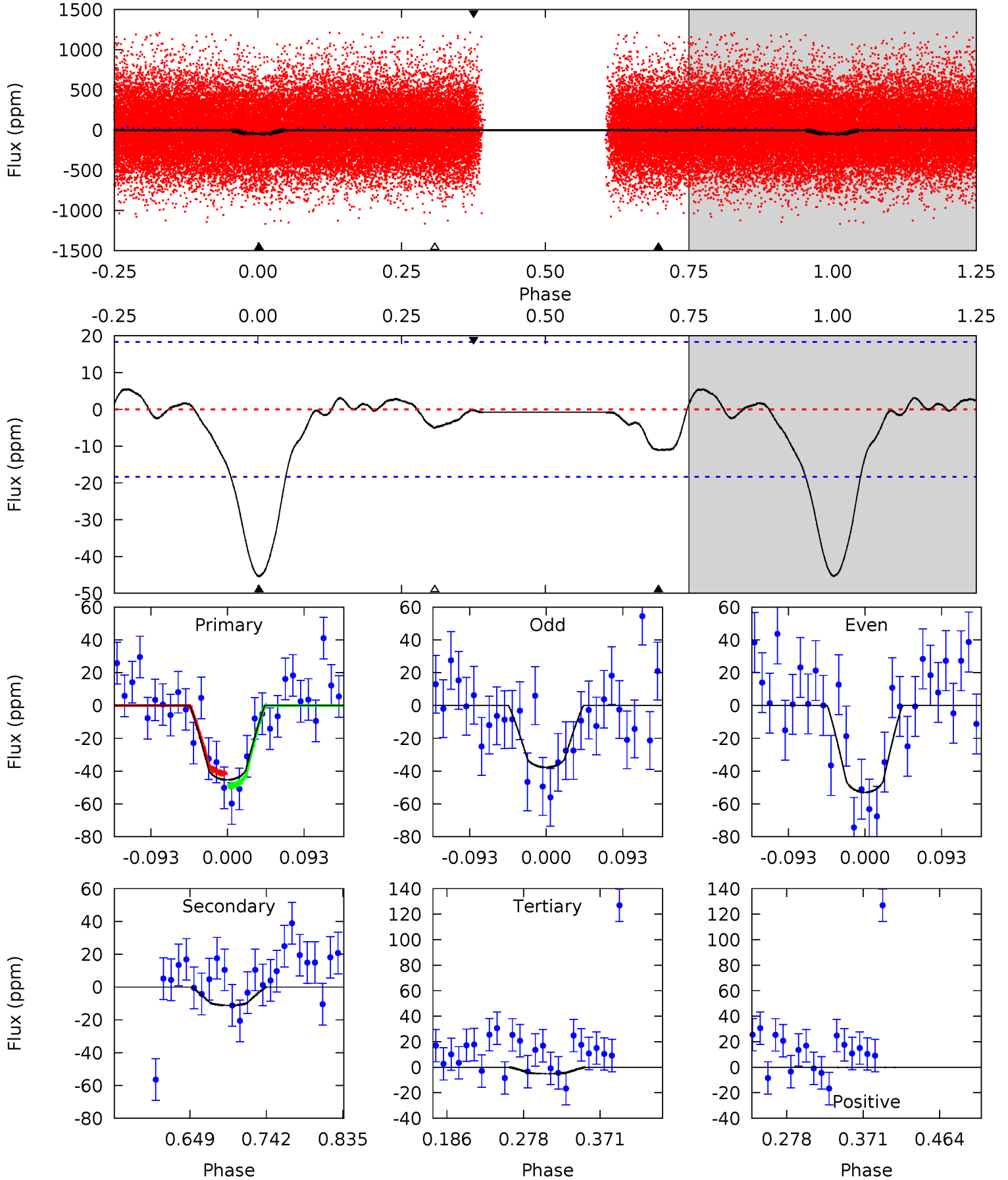
TCE 010867017-02 P= 0.876947 Days $T_0=131.828160$ (BKJD)



DV Model-Shift Uniqueness Test

010867017-02, P = 0.876945 Days, E = 130.951290 Days

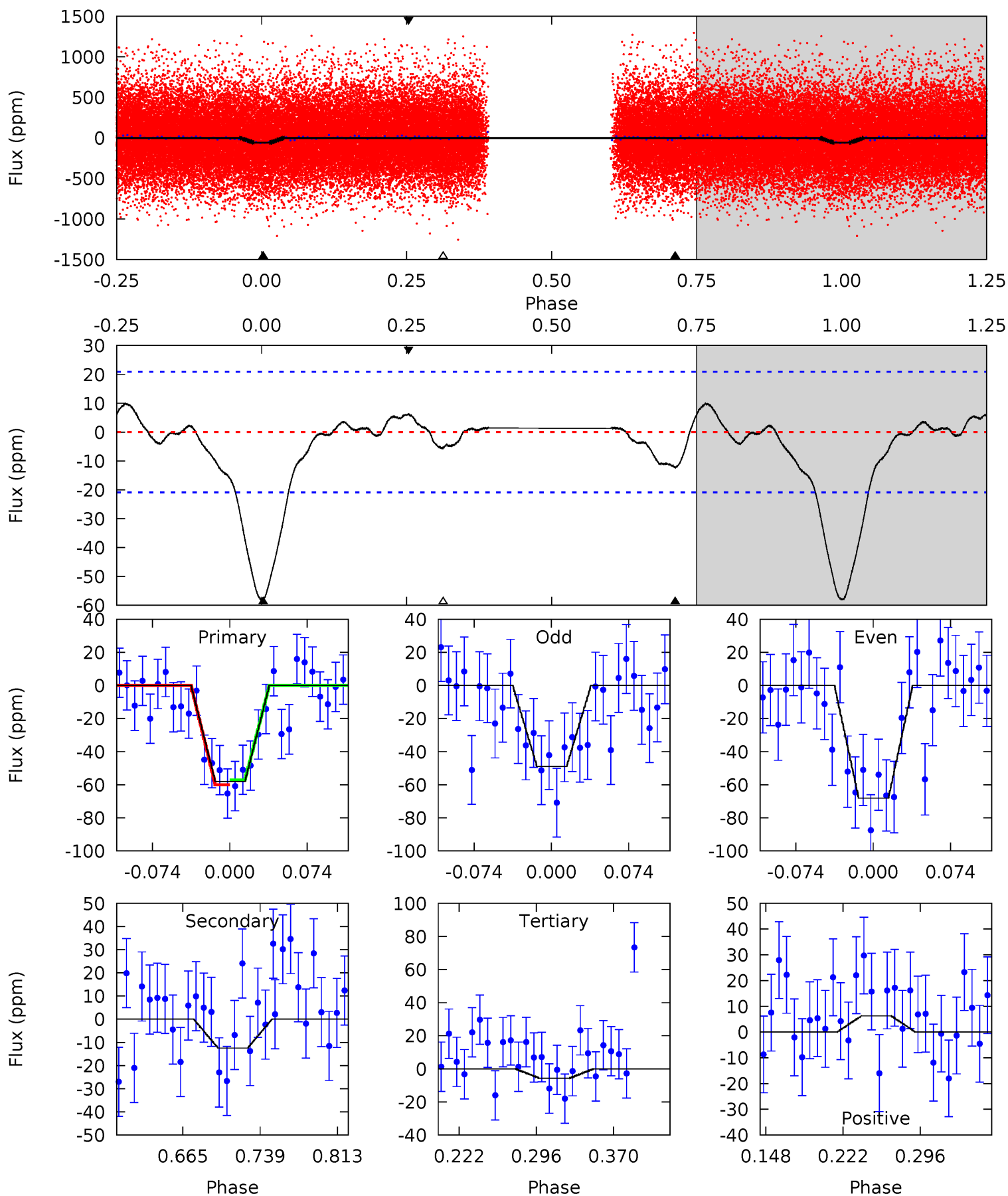
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	2.78	1.26	-0.04	4.58	1.68	0.55	10.1	11.4	1.52	2.82	1.91	0.88	0.11	0.95



Alt Model-Shift Uniqueness Test

010867017-02, P = 0.876947 Days, E = 130.951213 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	2.76	1.26	1.39	4.63	1.79	0.79	11.6	11.5	1.49	1.37	2.13	0.95	0.15	0.33



Stellar Parameters For KIC 010867017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6018^{+168}_{-210}	$4.485^{+0.050}_{-0.200}$	$-0.040^{+0.250}_{-0.300}$	$0.975^{+0.285}_{-0.095}$	$1.058^{+0.126}_{-0.139}$	$1.608^{+0.434}_{-0.827}$
	+3%/-3%	+1%/-4%	+625%/-750%	+29%/-10%	+12%/-13%	+27%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010867017-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11 ± 4	$0.91^{+0.52}_{-0.51}$	2766^{+190}_{-140}	3988^{+1659}_{-754}	$2.286^{+9.058}_{-1.424}$
Alt.	-12 ± 5	$0.92^{+0.58}_{-0.51}$	2760^{+200}_{-126}	4060^{+1602}_{-846}	$2.670^{+9.386}_{-1.870}$

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 $A_{obs} \gg 1.0$

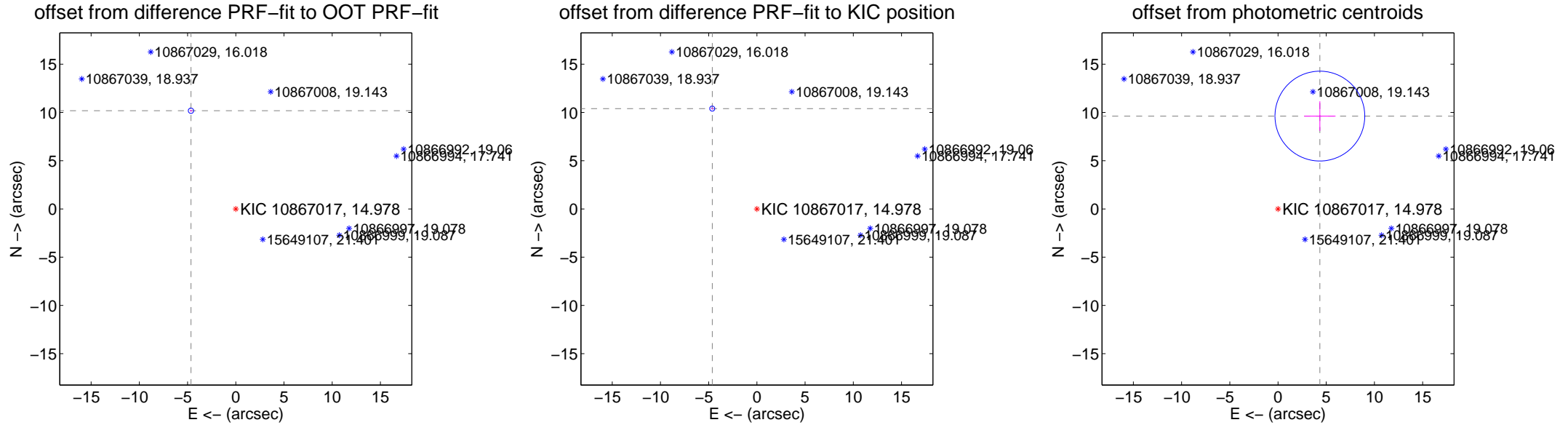
DV Centroid Data

Supplemental centroid analysis for 010867017-02. Kepler magnitude: 14.98. Transit SNR 9.09

There are 4 quarters with good PRF difference image offsets

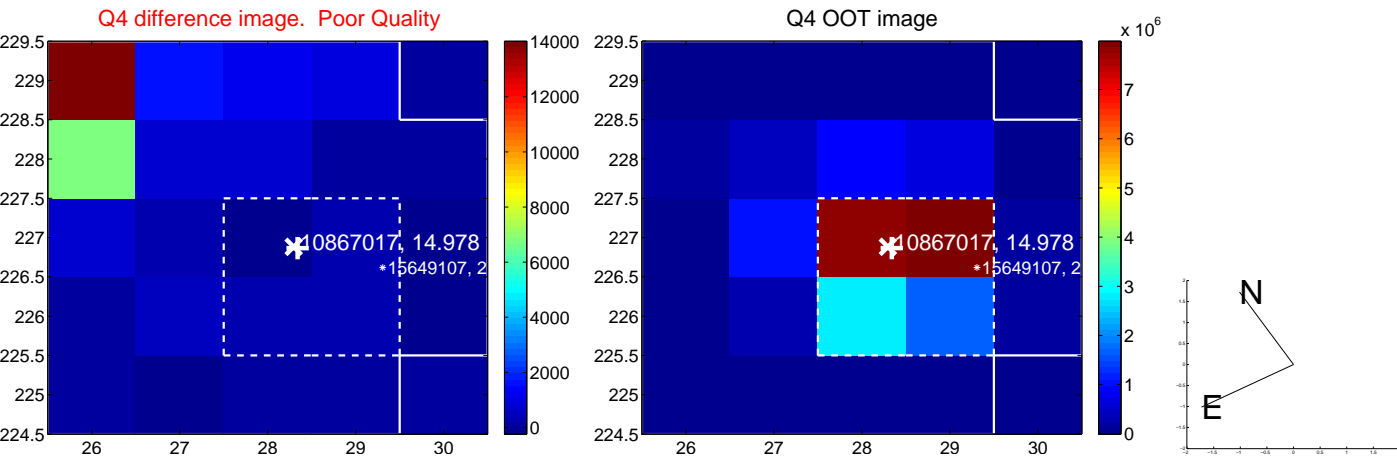
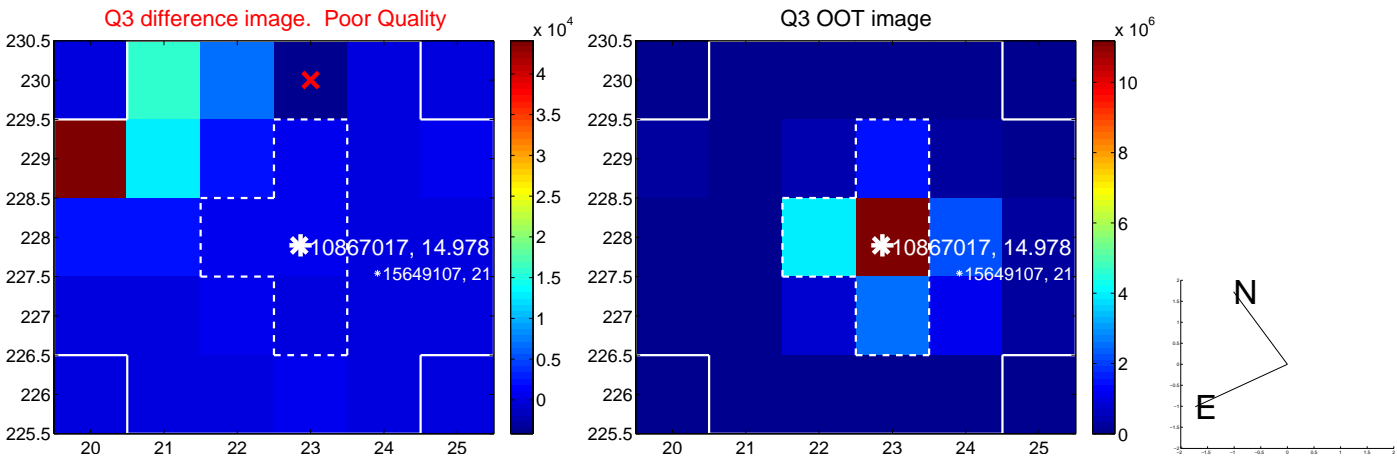
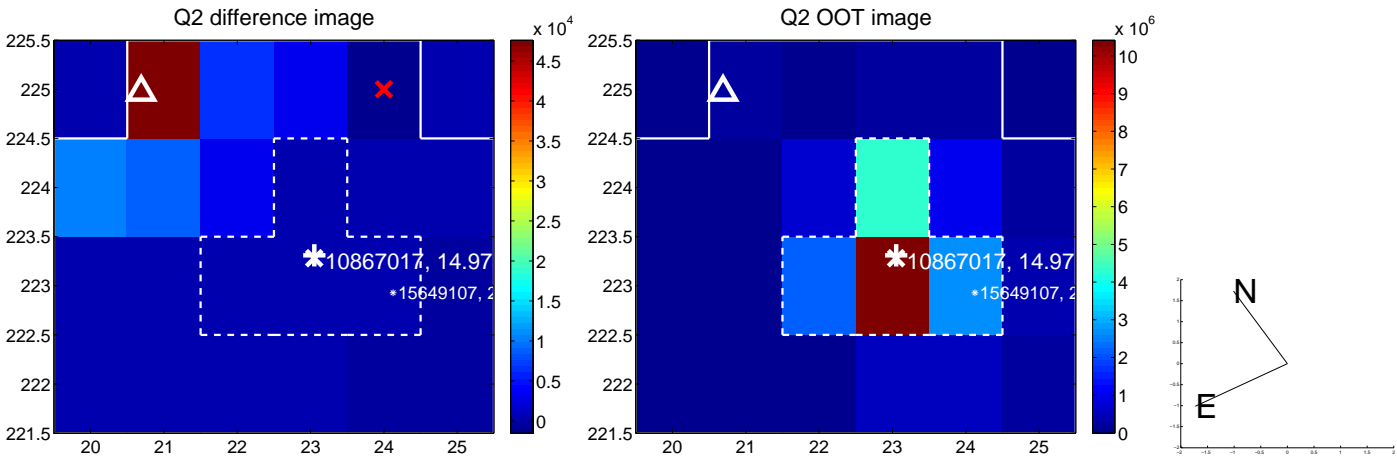
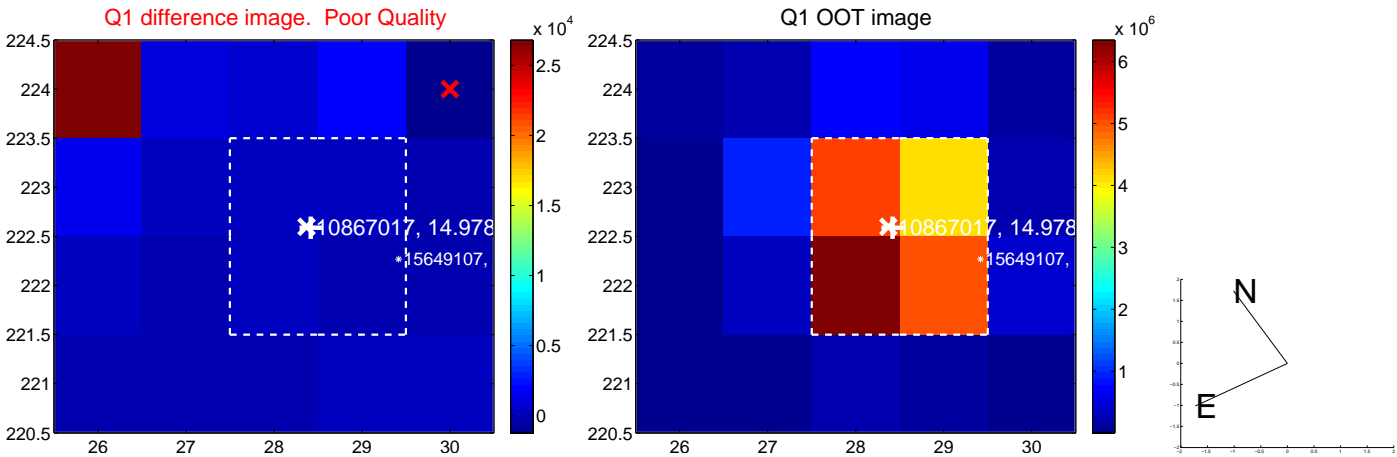
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	11.190 \pm 0.092	120.99	4.648 \pm 0.071	10.179 \pm 0.089
PRF-fit source offset from KIC position	11.384 \pm 0.088	129.73	4.631 \pm 0.078	10.399 \pm 0.090
photometric centroid source offset	10.56 \pm 1.55	6.80	-4.34 \pm 1.63	9.62 \pm 1.54

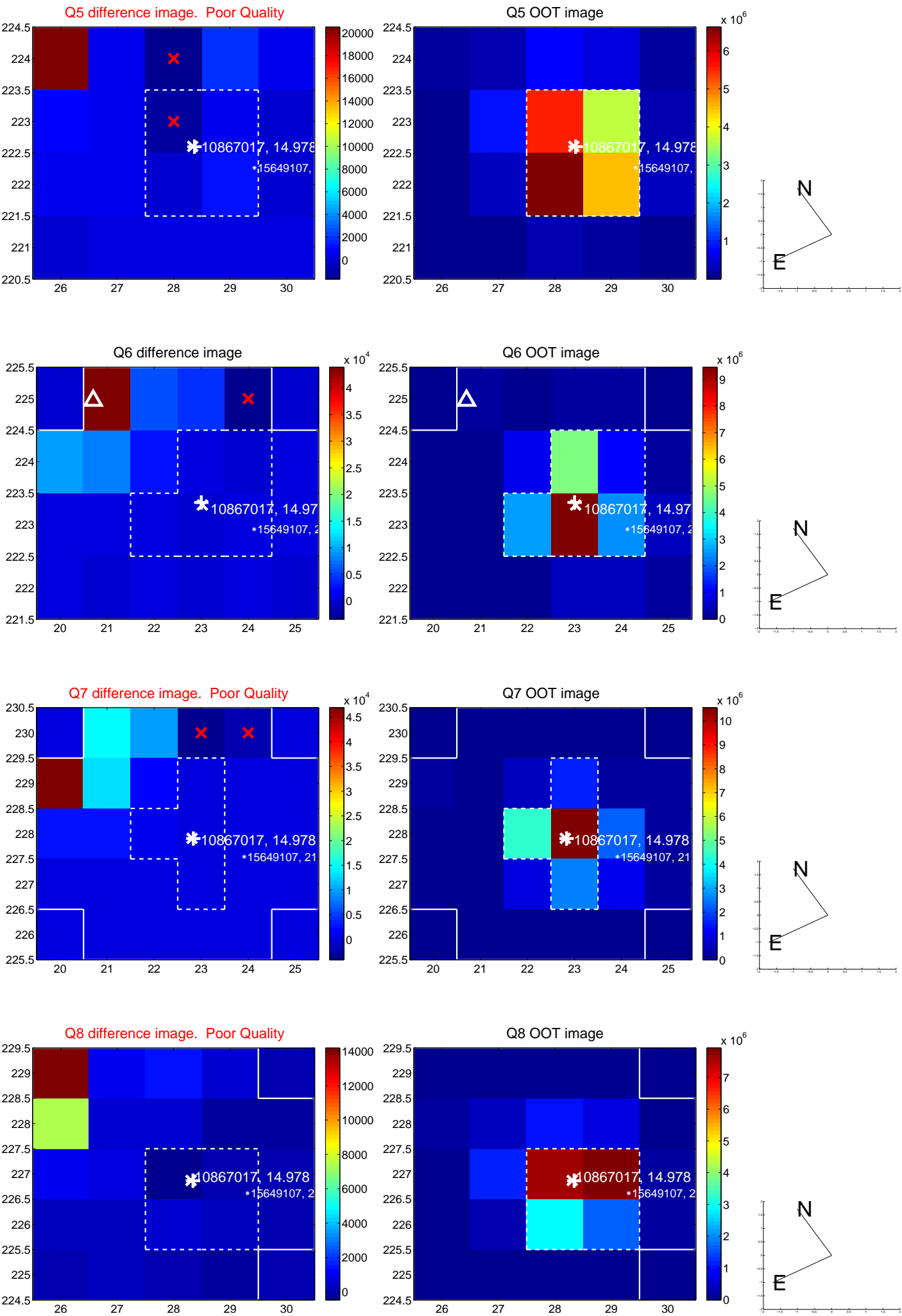


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

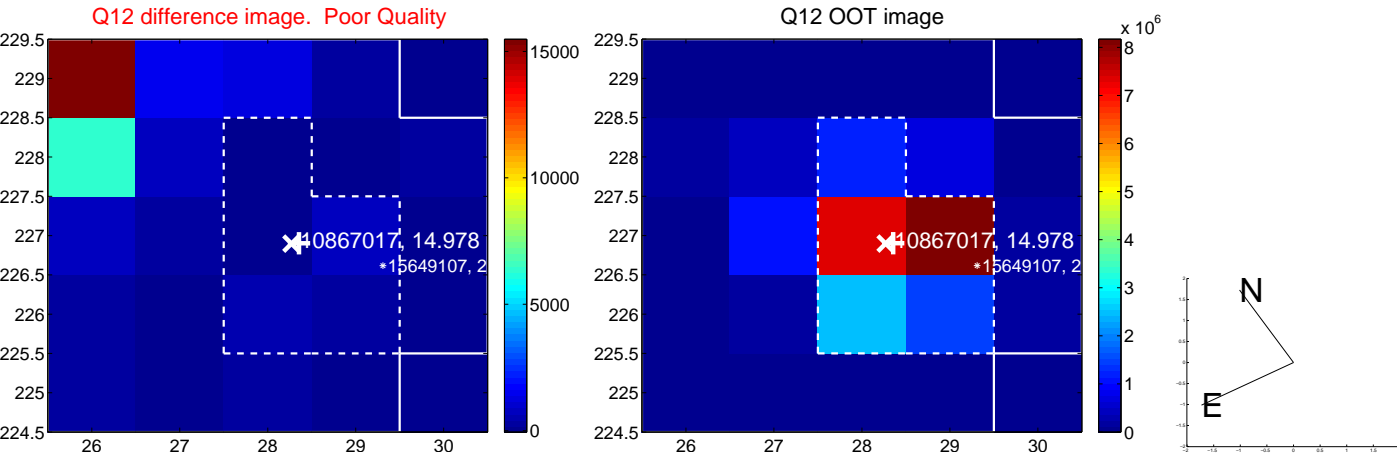
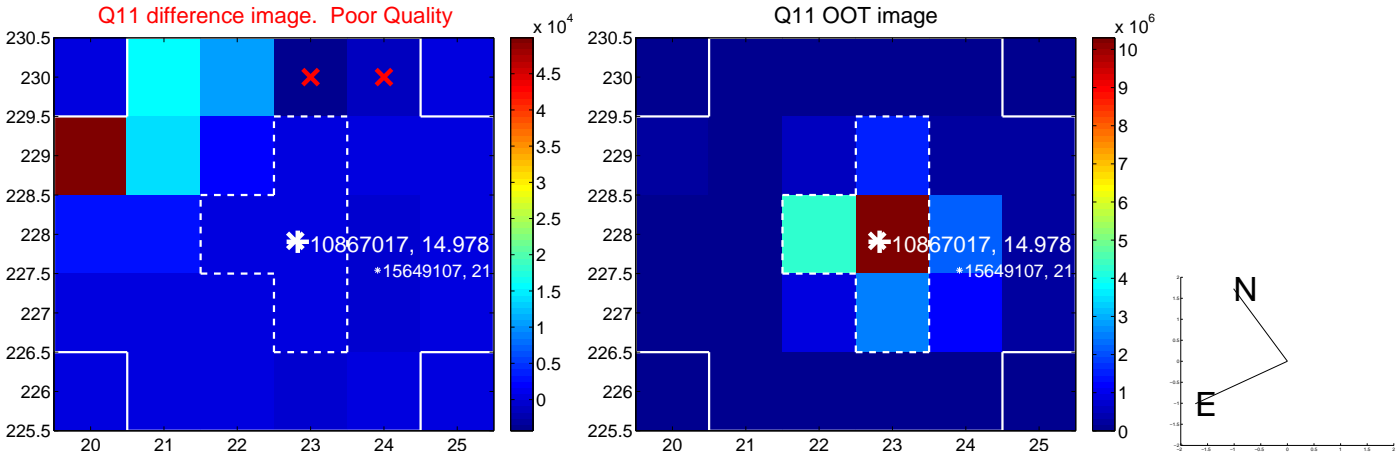
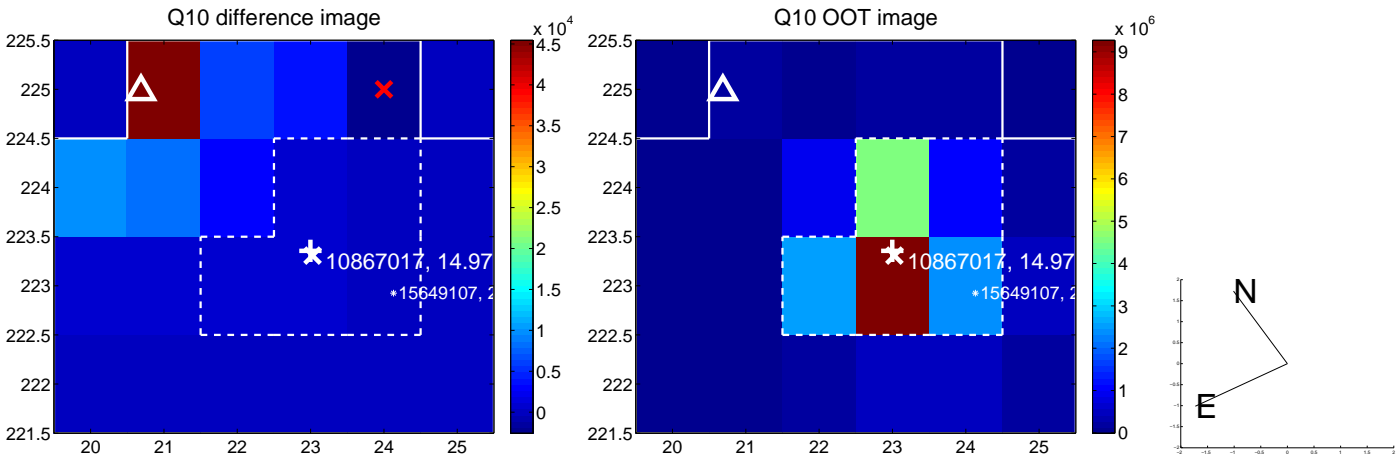
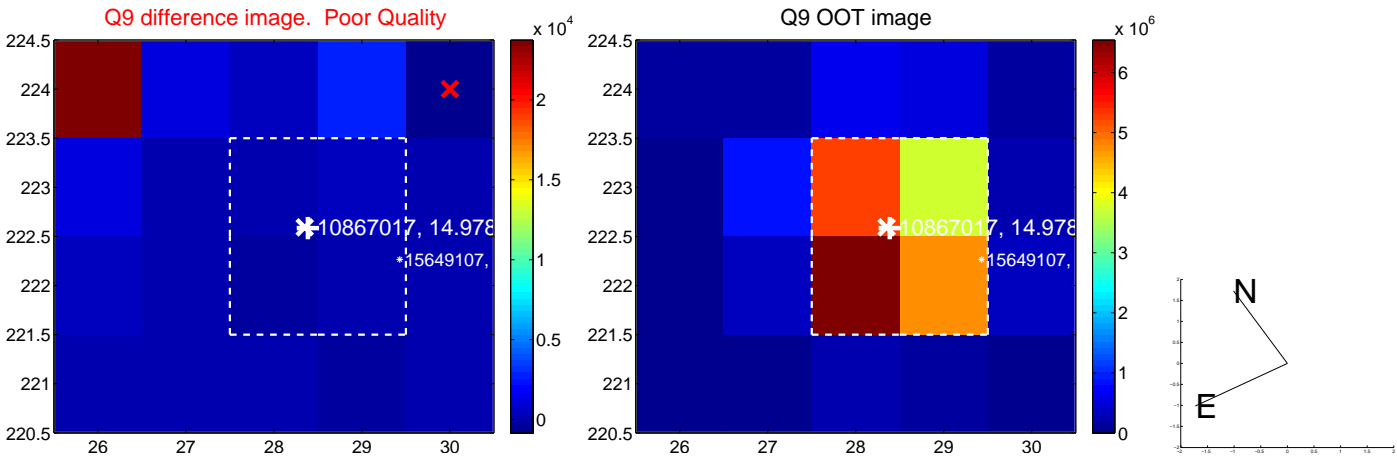
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



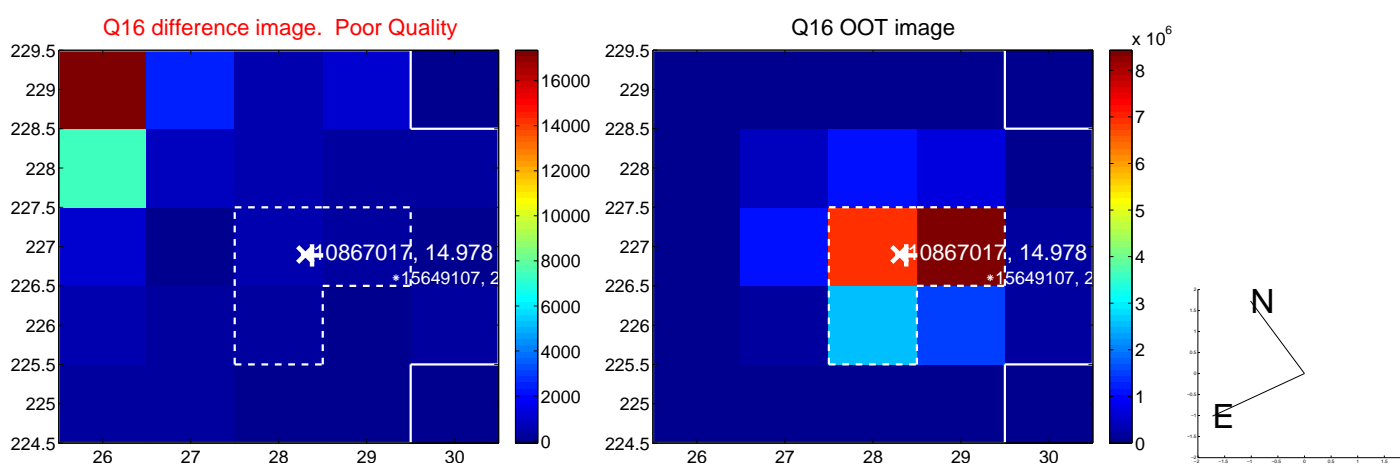
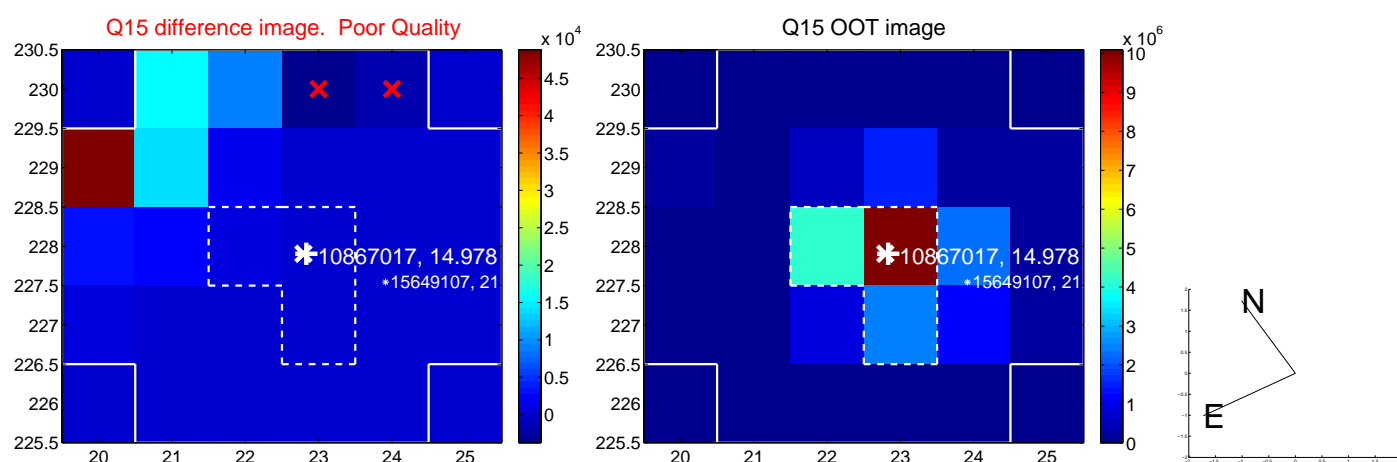
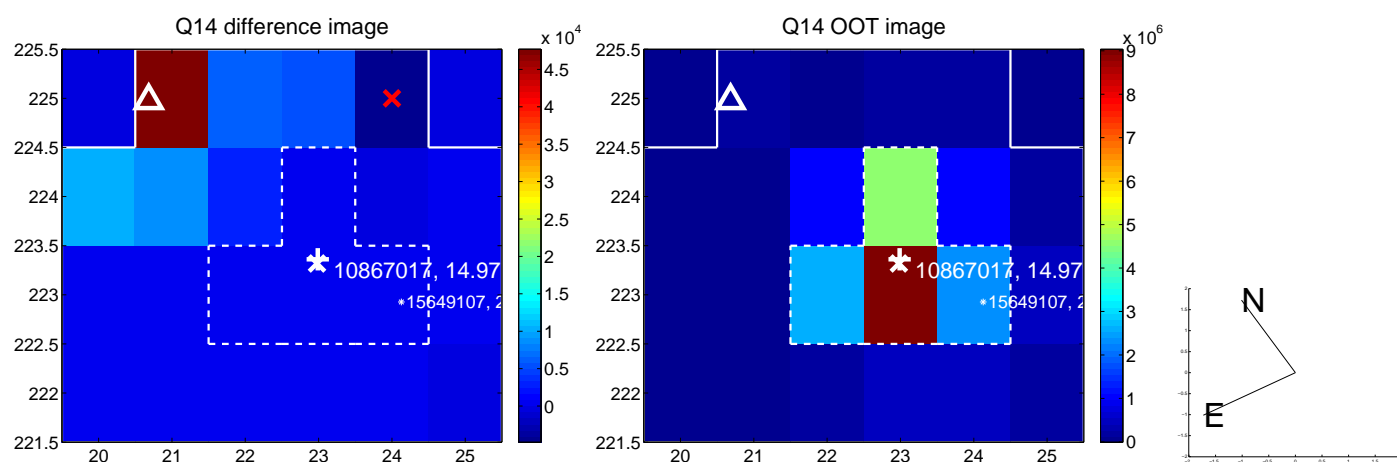
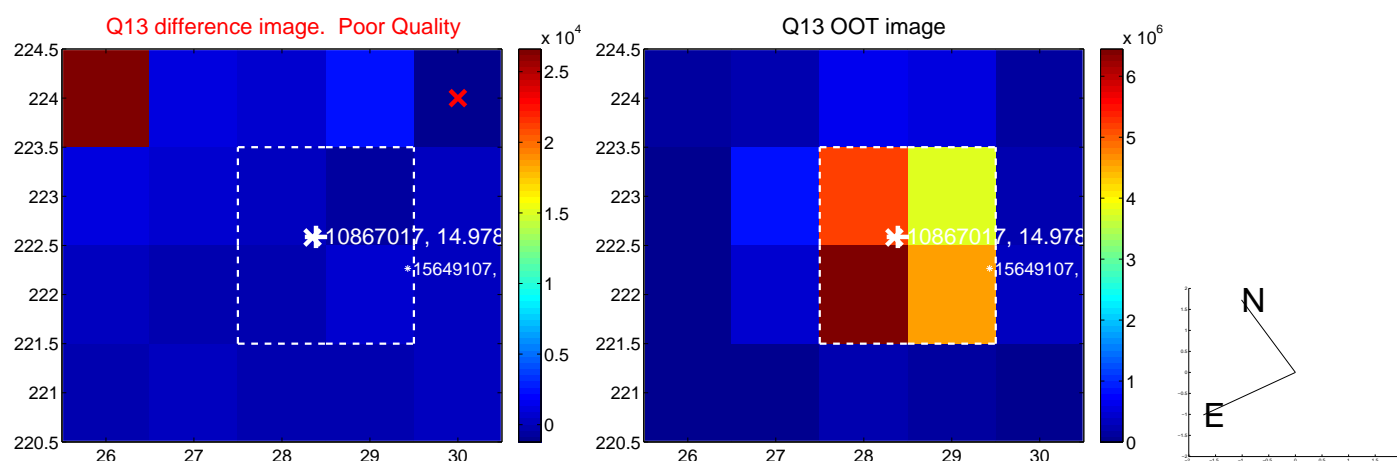
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



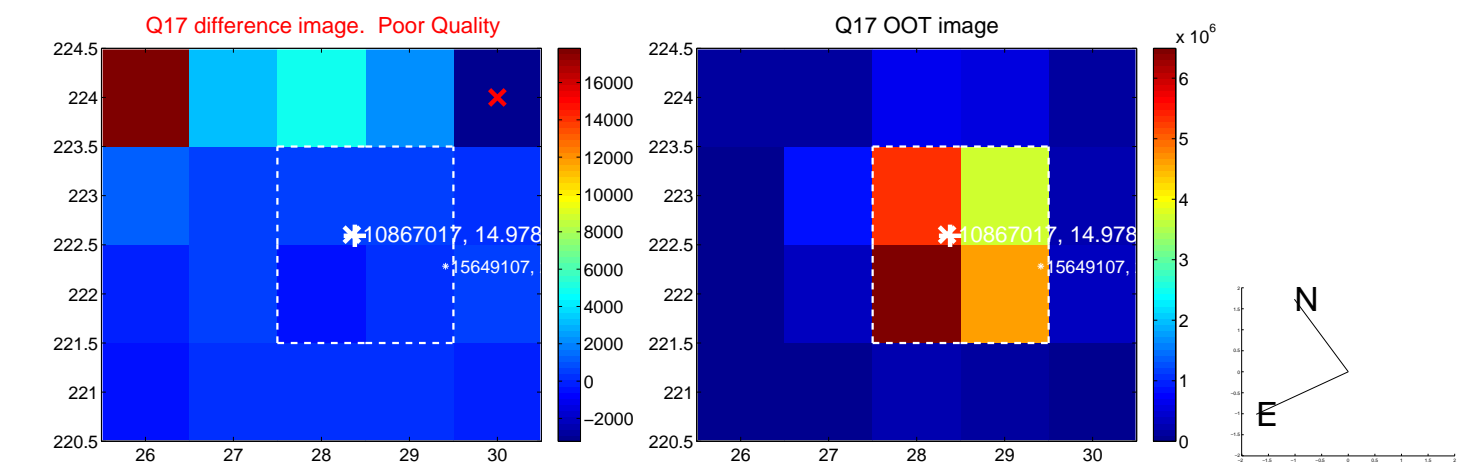
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



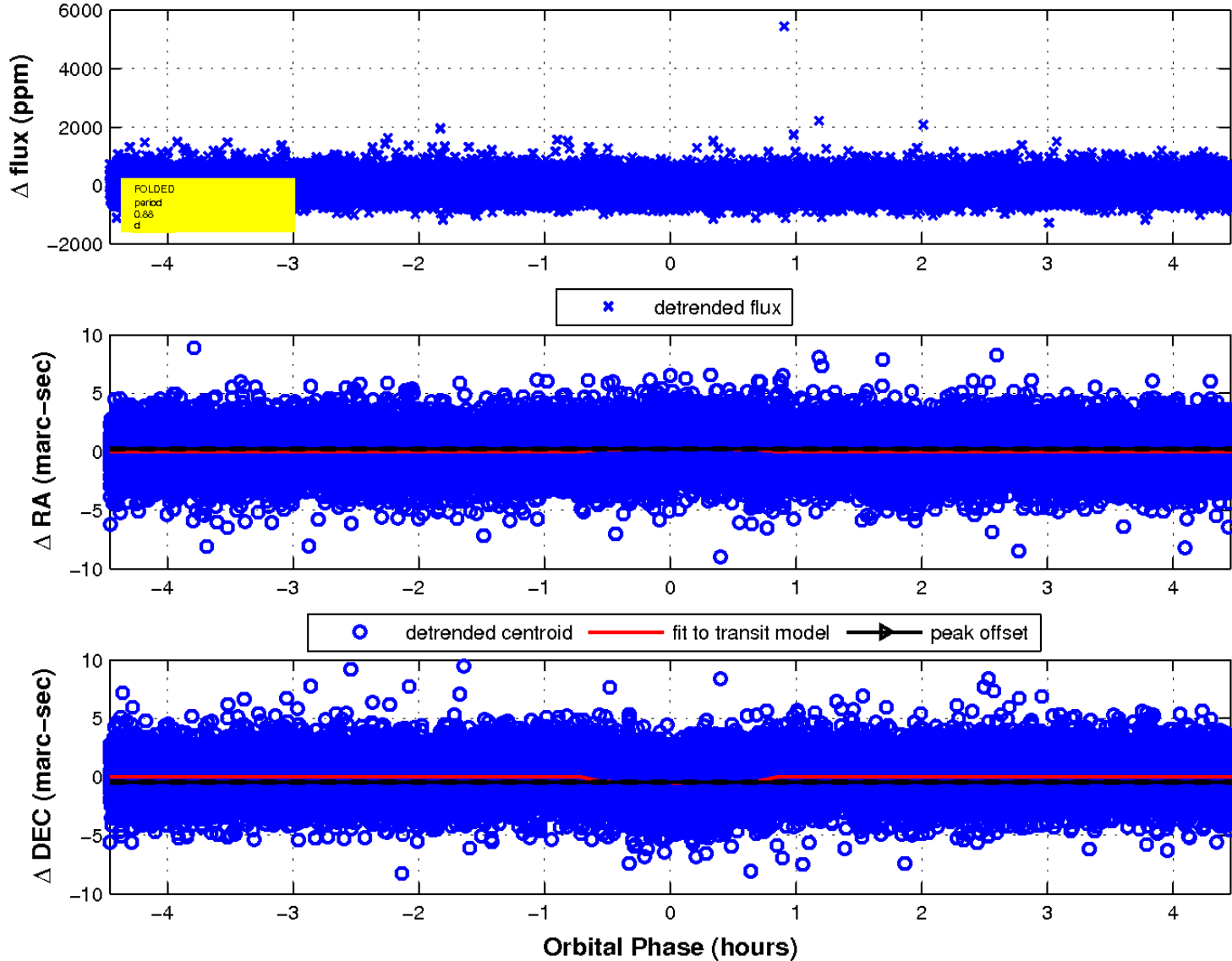
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

