

KIC 005024138

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})
005024138-01	OBS	4819.01	0.833983	131.805712	71.1	1.102	8.1	9.9	0.78	6150	0.78	3295.74
005024138-02	OBS	No	0.833989	132.213842	68.2	1.110	8.2	9.6	0.78	6150	0.76	3295.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024138-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005024138-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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 005024138-01

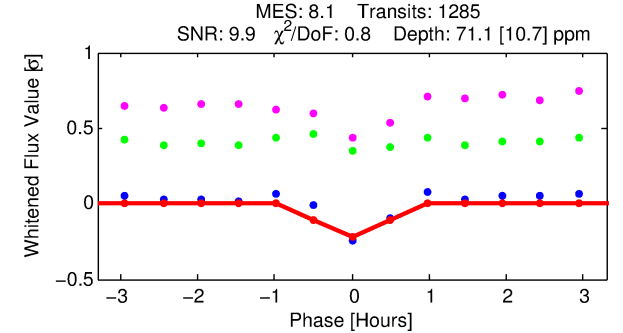
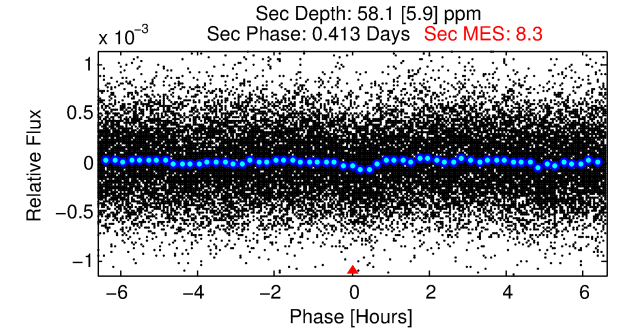
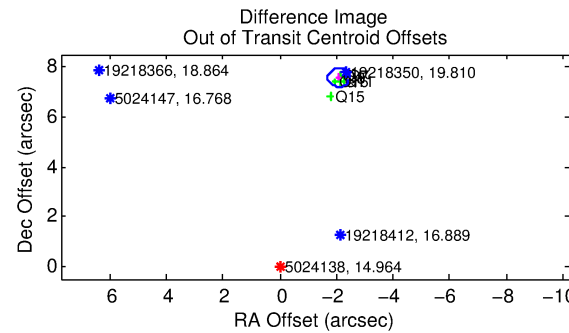
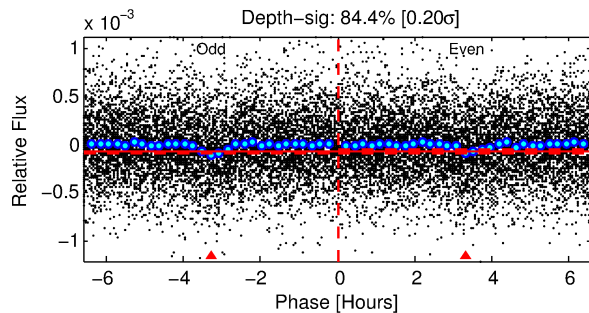
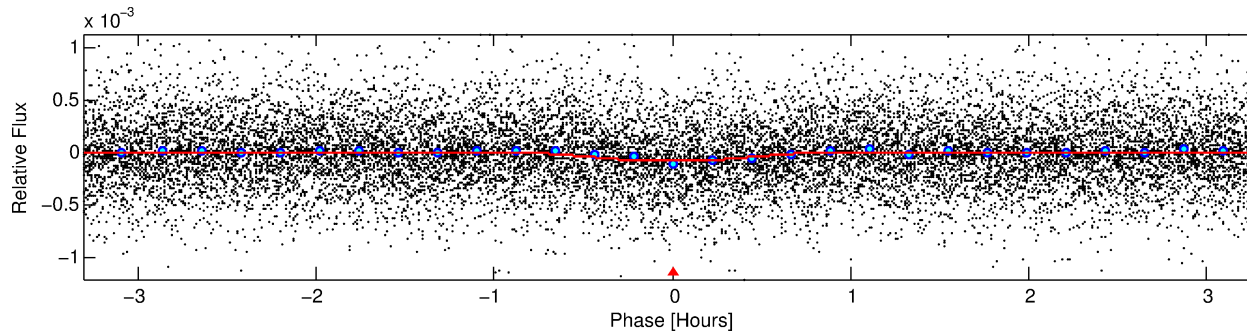
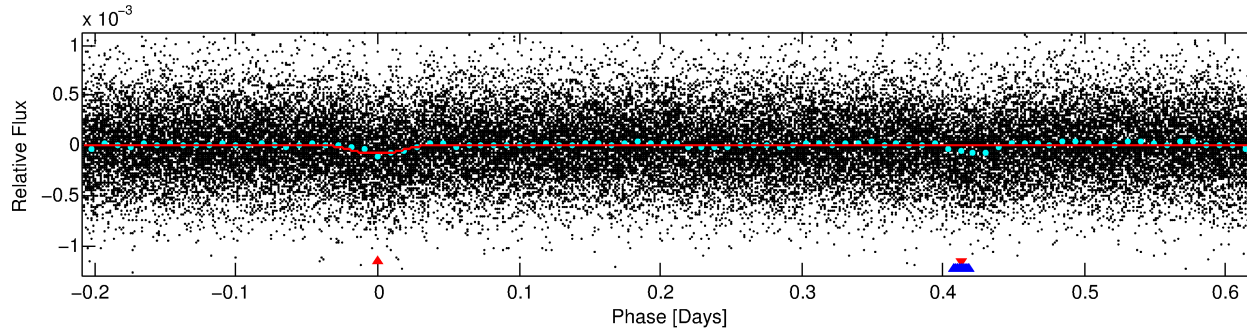
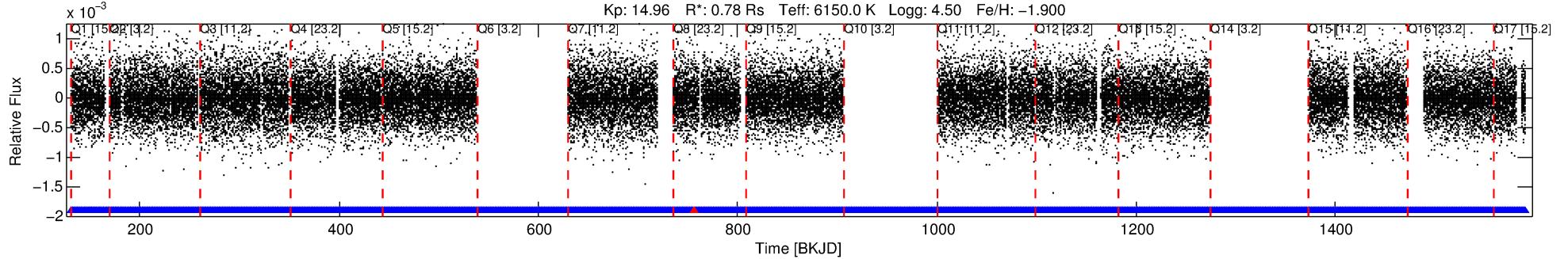
No Significant Match Found

DV One-Page Summary

KIC: 5024138 Candidate: 1 of 2 Period: 0.834 d

KOI: K04819 Corr: No Ephemeris Match

Kp: 14.96 R*: 0.78 Rs Teff: 6150.0 K Logg: 4.50 Fe/H: -1.900



DV Fit Results:

Period = 0.83398 [0.00001] d
Epoch = 131.8057 [0.0019] BKJD
Rp/R* = 0.0091 [0.0045]
a/R* = 2.71 [6.74]
b = 0.91 [0.56]
Seff = 3295.74 [863.49]
Teq = 1932 [127] K
Rp = 0.78 [0.40] Re
a = 0.0154 [0.0021] AU
Ag = 12.54 [12.85] [0.90σ]
Teffp = 5621 [1420] K [2.59σ]

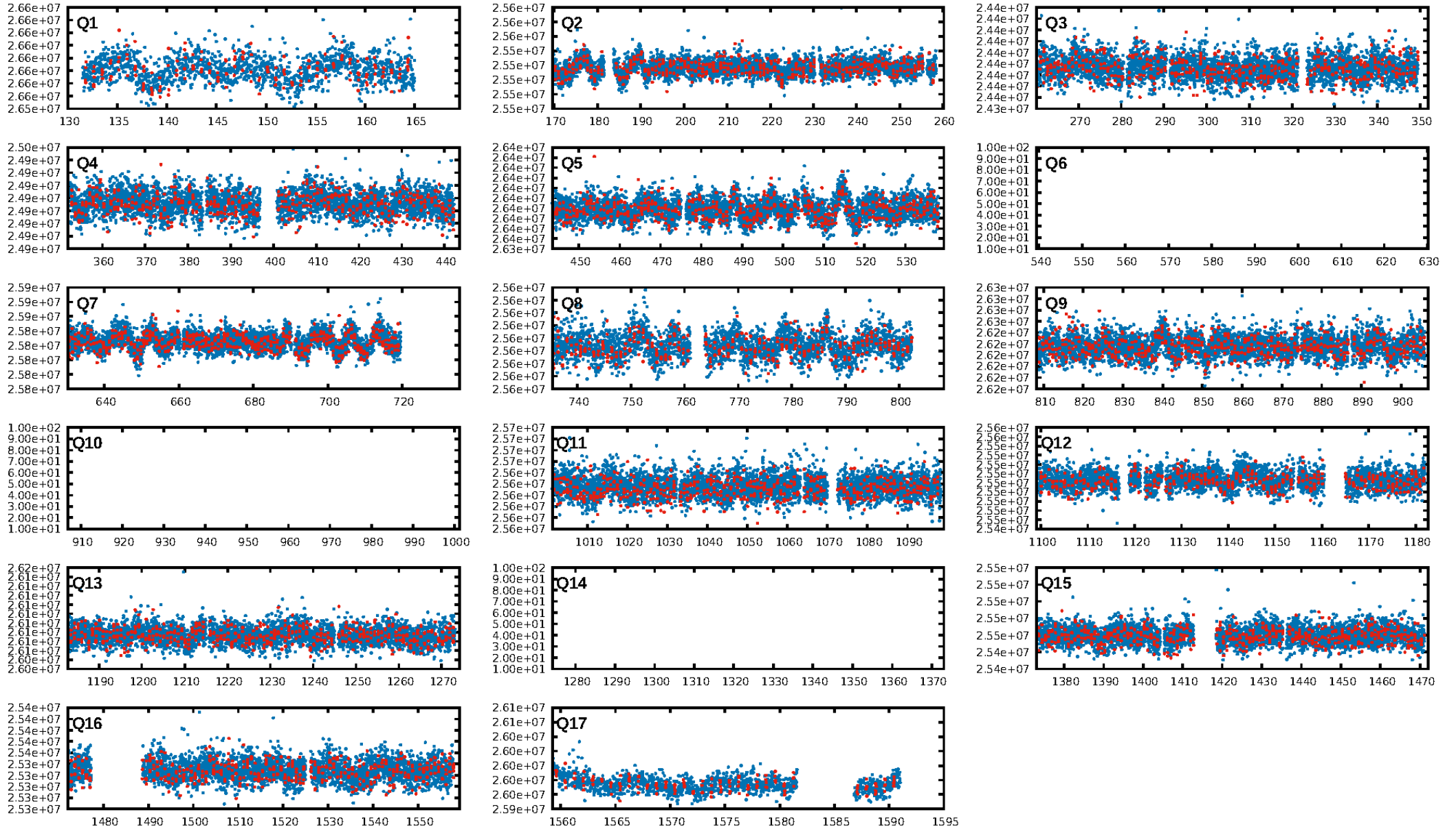
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.22e-19
RollingBand-fgt: 1.00 [1212/1213]
GhostDiagnostic-chr: -2.009
Centroid-sig: 0.0%
Centroid-so: 6.877 arcsec [5.31σ]
OotOffset-rm: 7.851 arcsec [62.52σ]
KicOffset-rm: 8.123 arcsec [61.08σ]
OotOffset-st: 0/4/3/0 [7]
KicOffset-st: 0/4/3/0 [7]
DiffImageQuality-fgm: 1.00 [7/7]
DiffImageOverlap-fno: 1.00 [14/14]

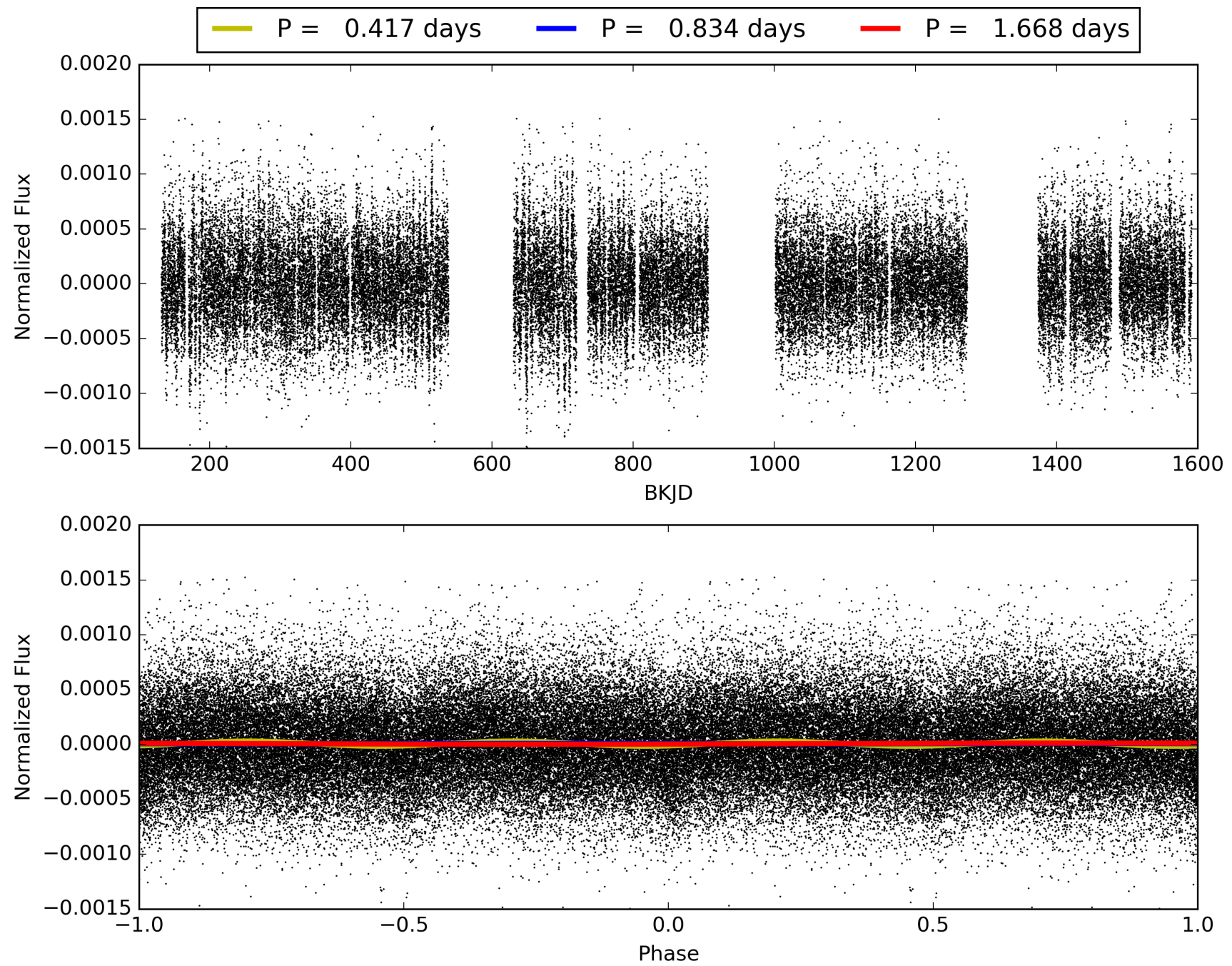
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:53:42 Z

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

TCE 005024138-01, PDC Light Curves

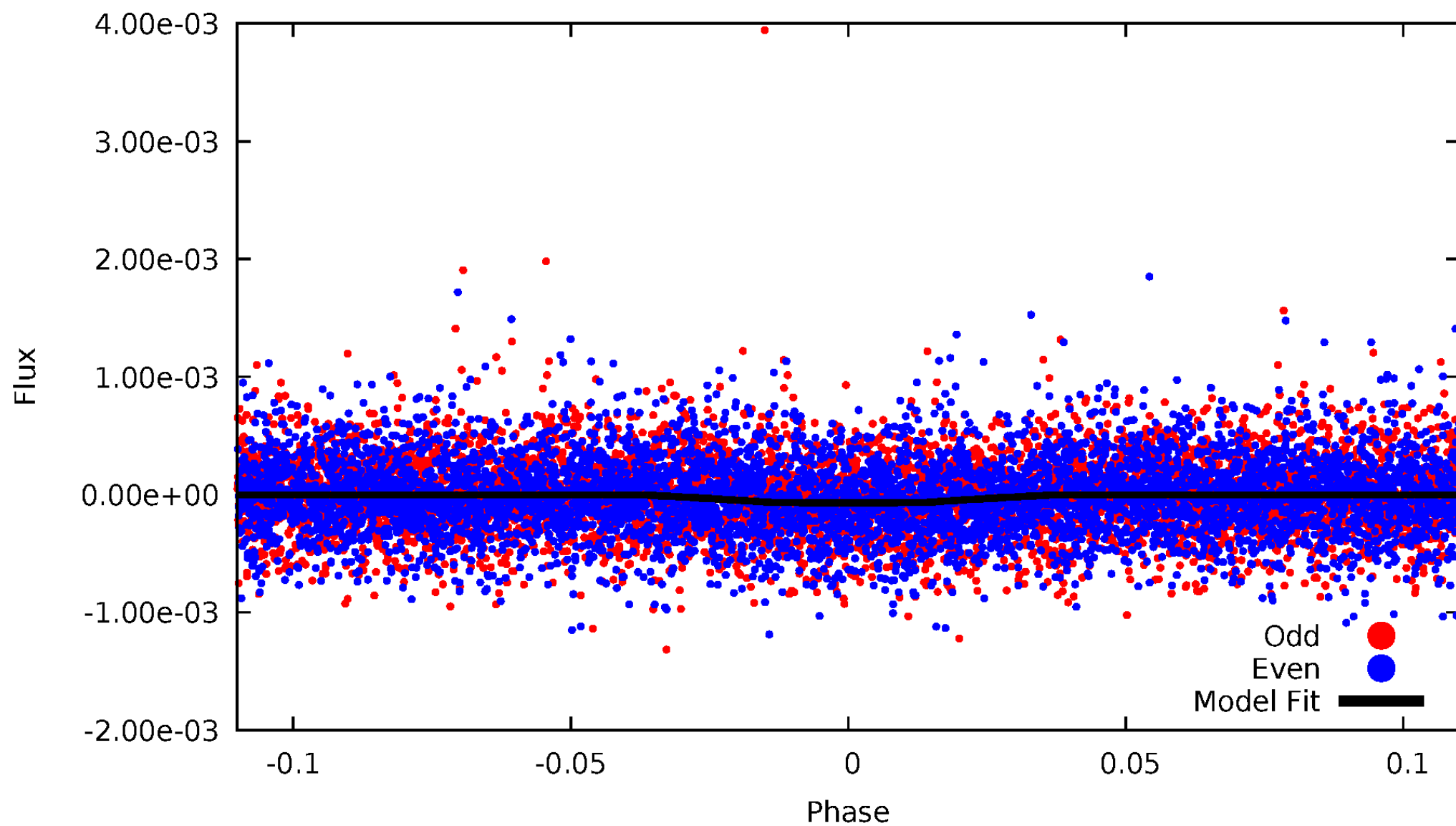


TCE 005024138-01



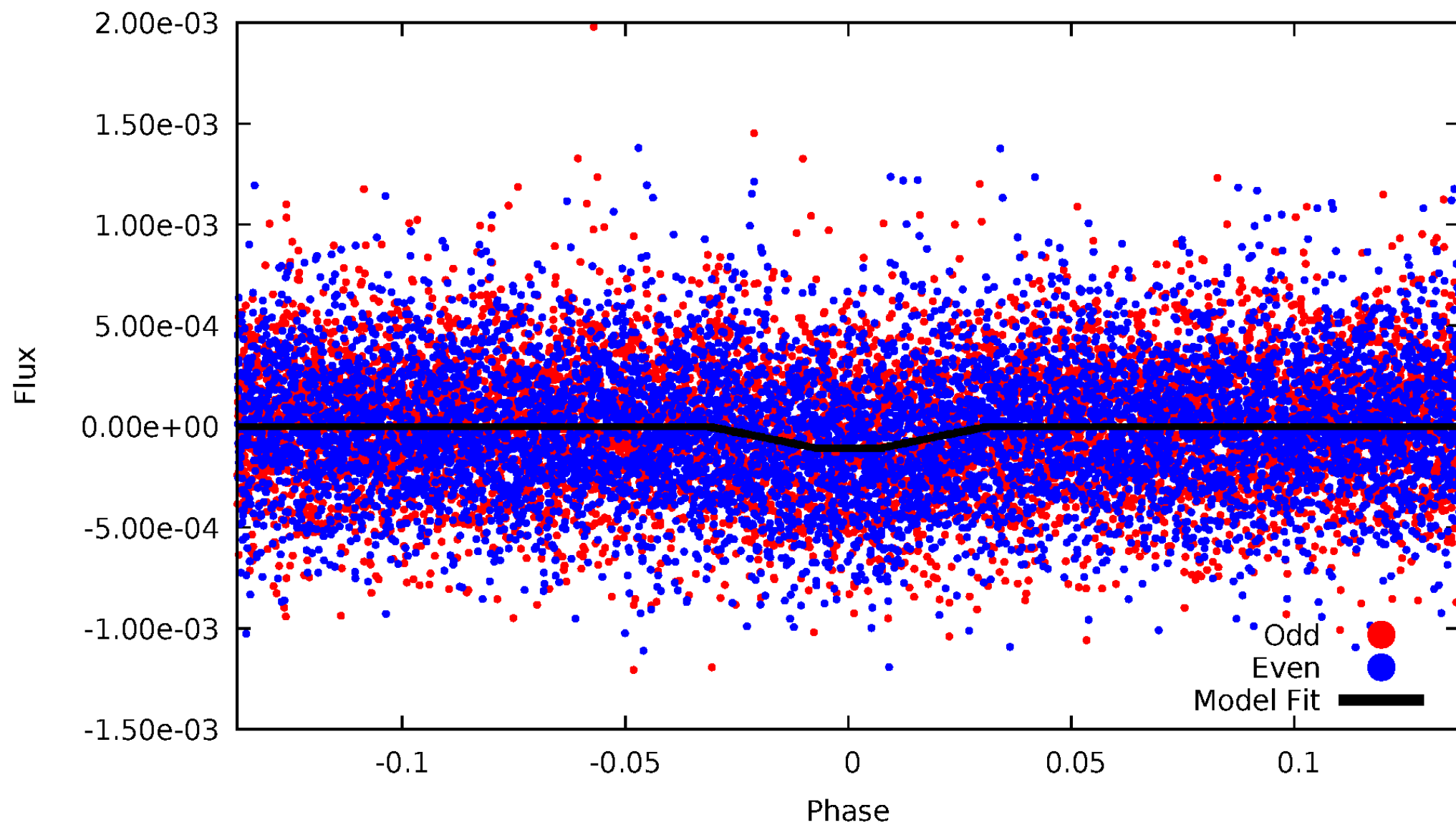
DV Odd/Even

TCE 005024138-01



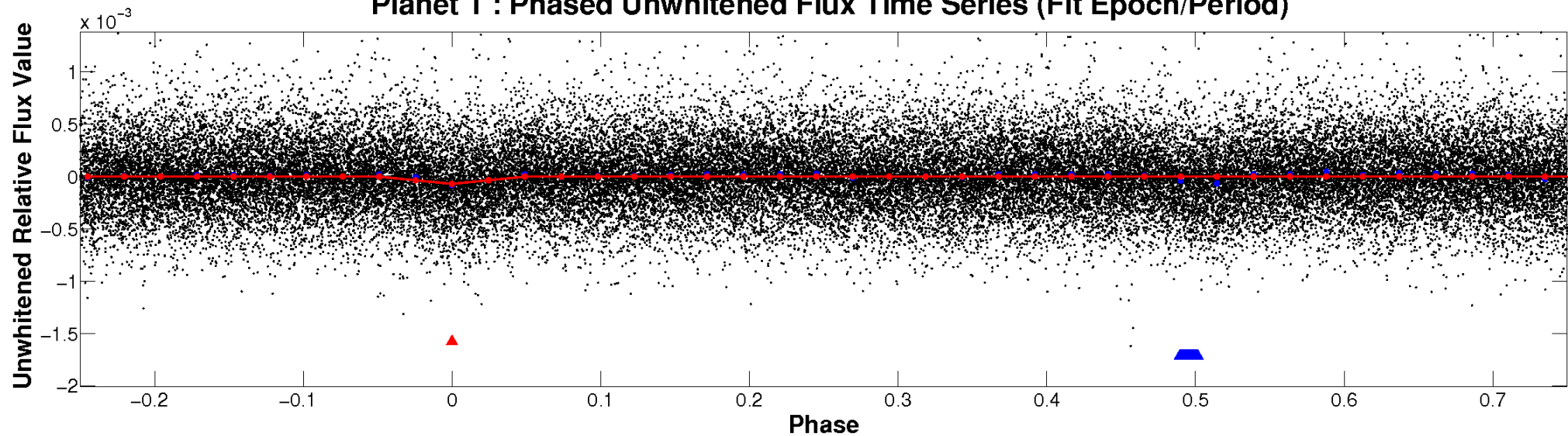
ALT Odd/Even

TCE 005024138-01

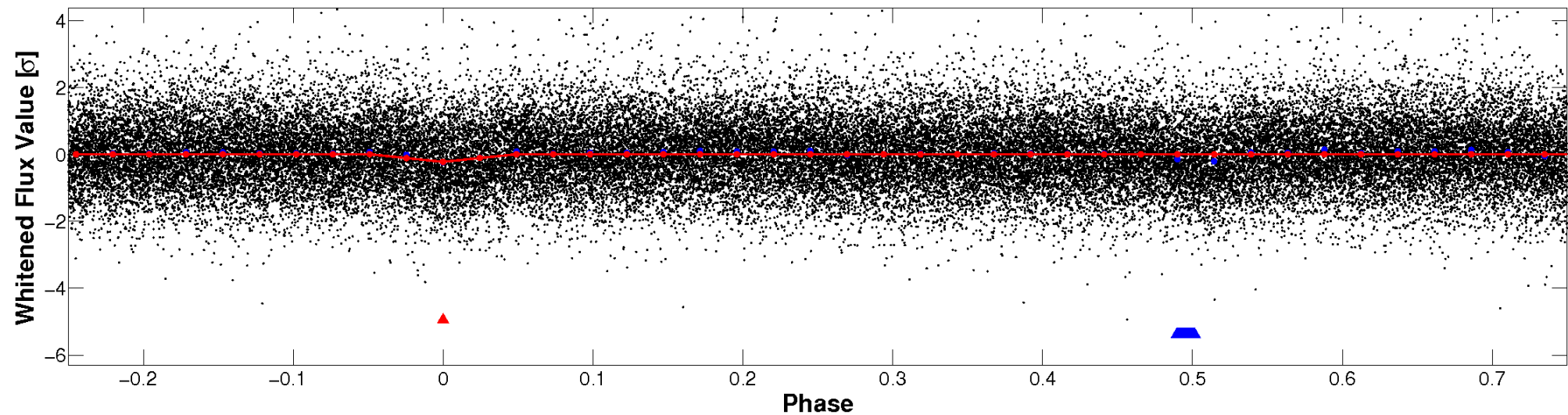


Non-Whitened Vs. Whitened Light Curve

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

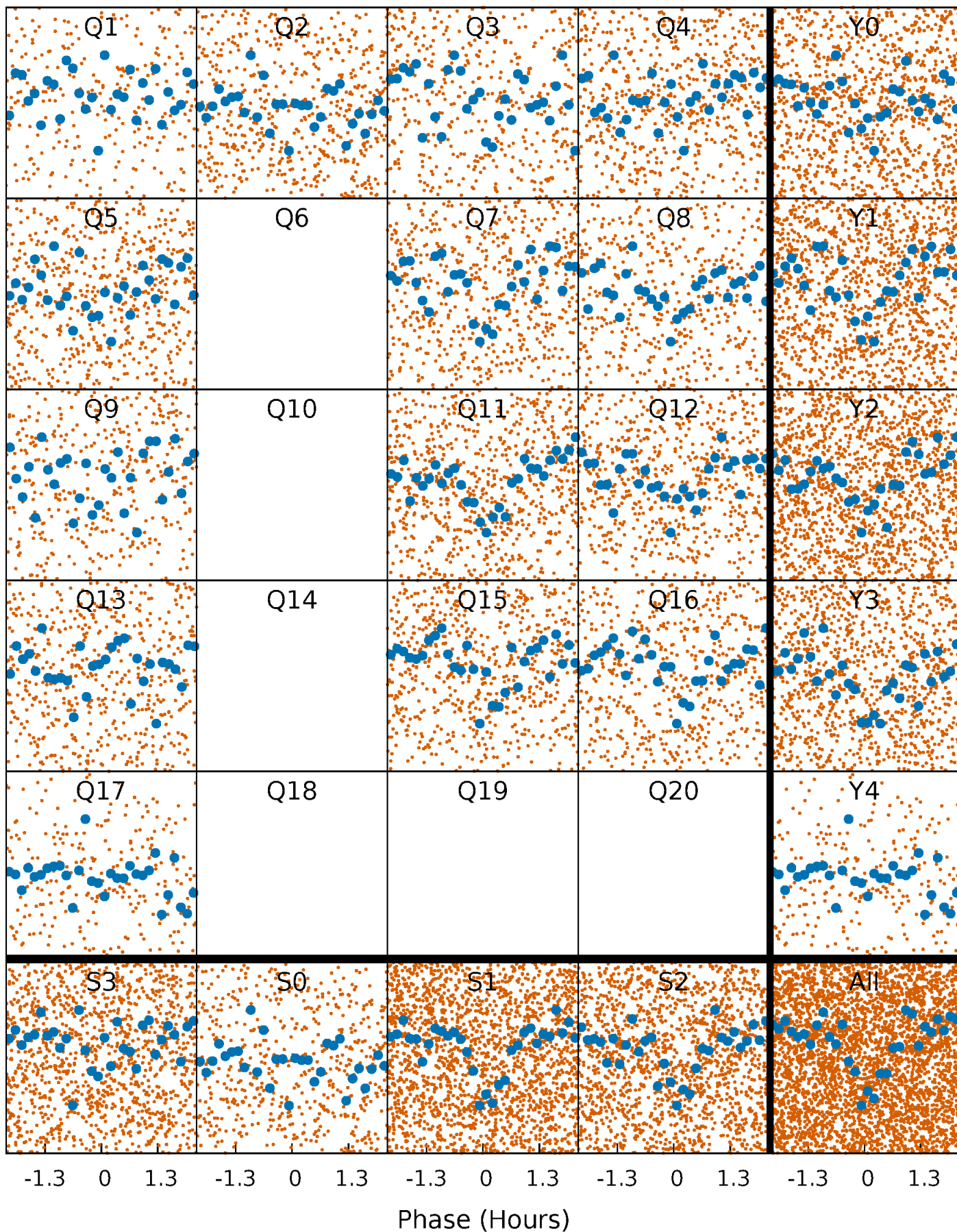


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



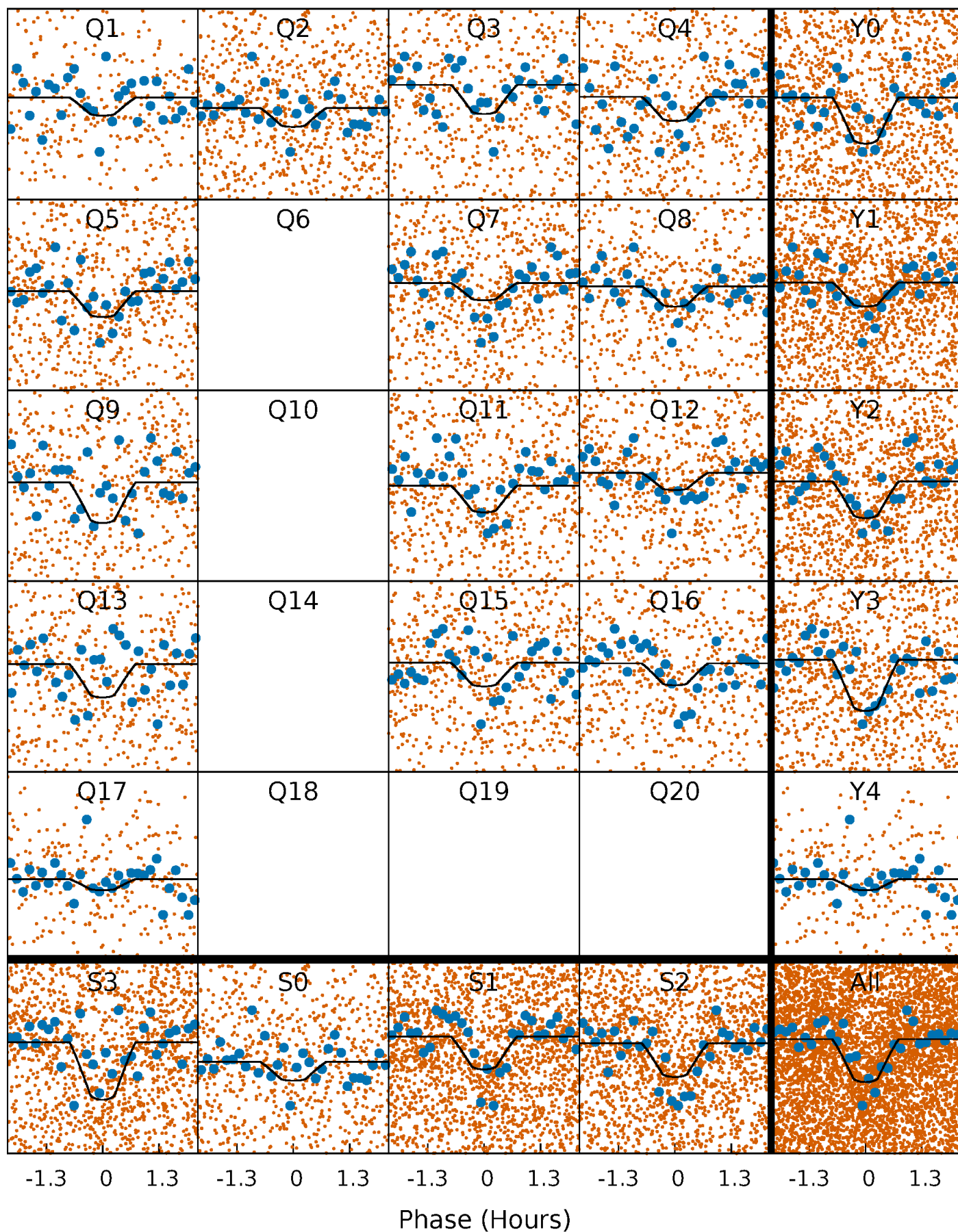
PDC Quarter-Phased Transit Curves

TCE 005024138-01 P= 0.833983 Days $T_0=131.805712$ (BKJD)



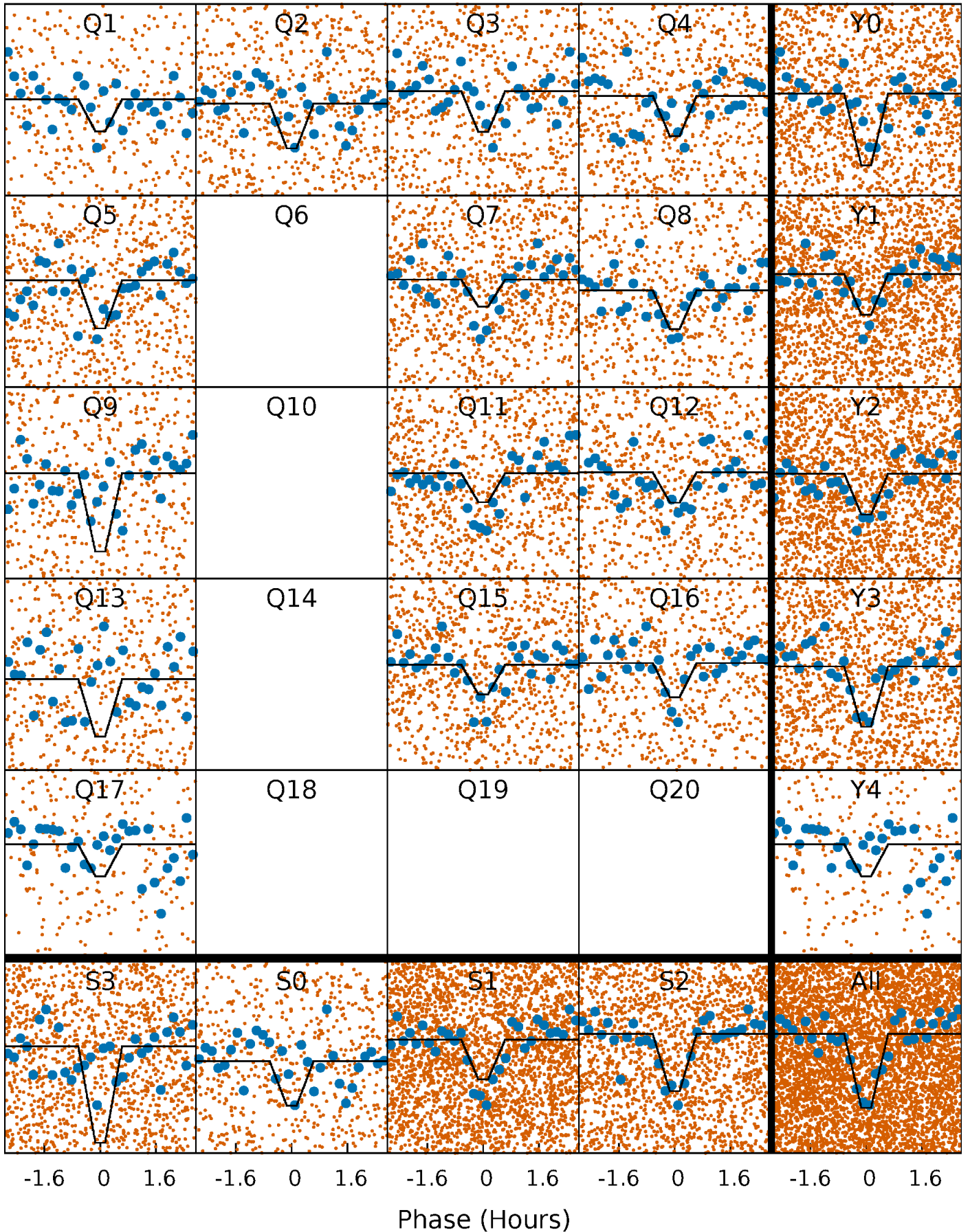
DV Quarter-Phased Transit Curves

TCE 005024138-01 P= 0.833983 Days $T_0=131.805712$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

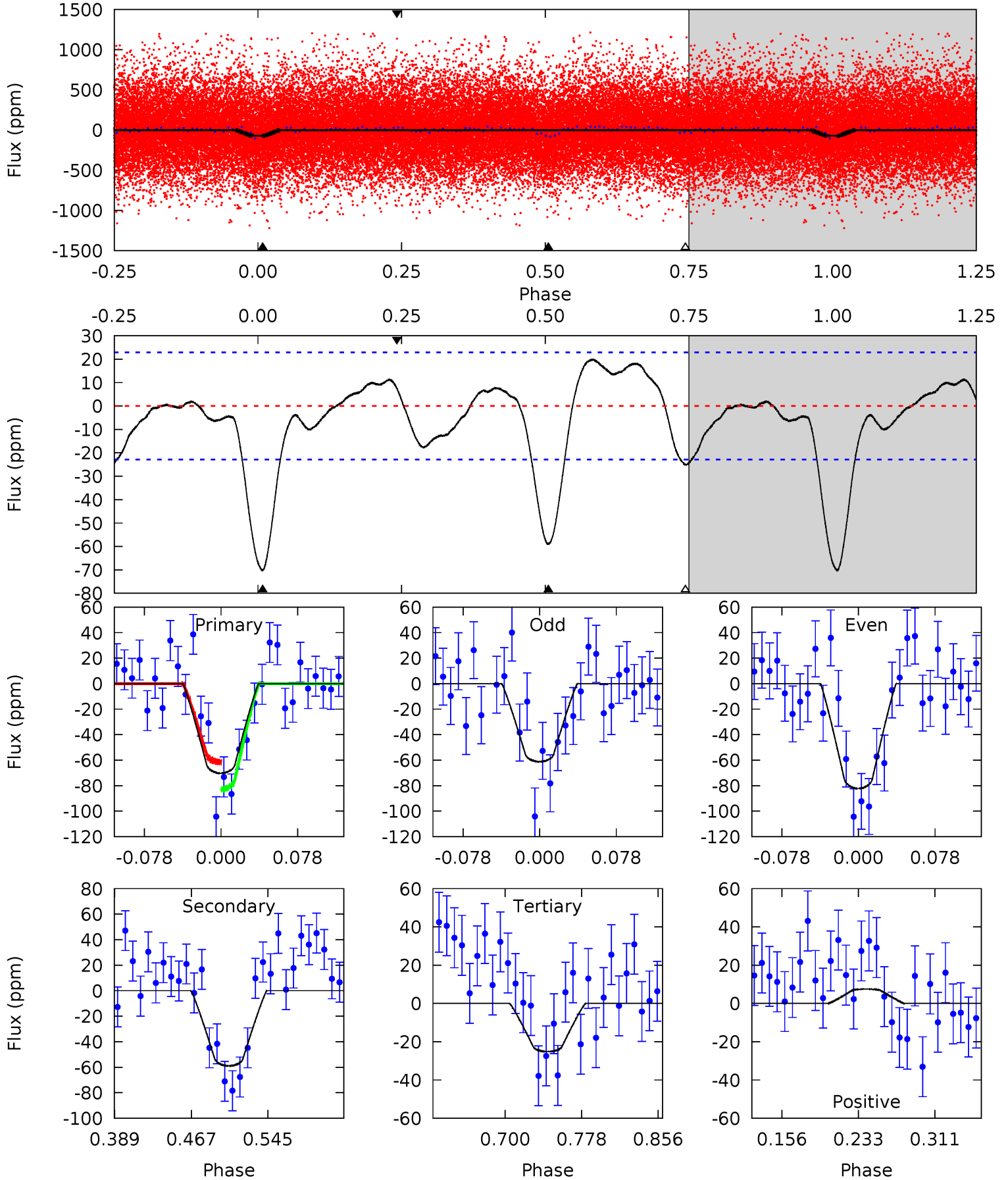
TCE 005024138-01 P= 0.833991 Days $T_0=131.802424$ (BKJD)



DV Model-Shift Uniqueness Test

005024138-01, P = 0.833983 Days, E = 130.971729 Days

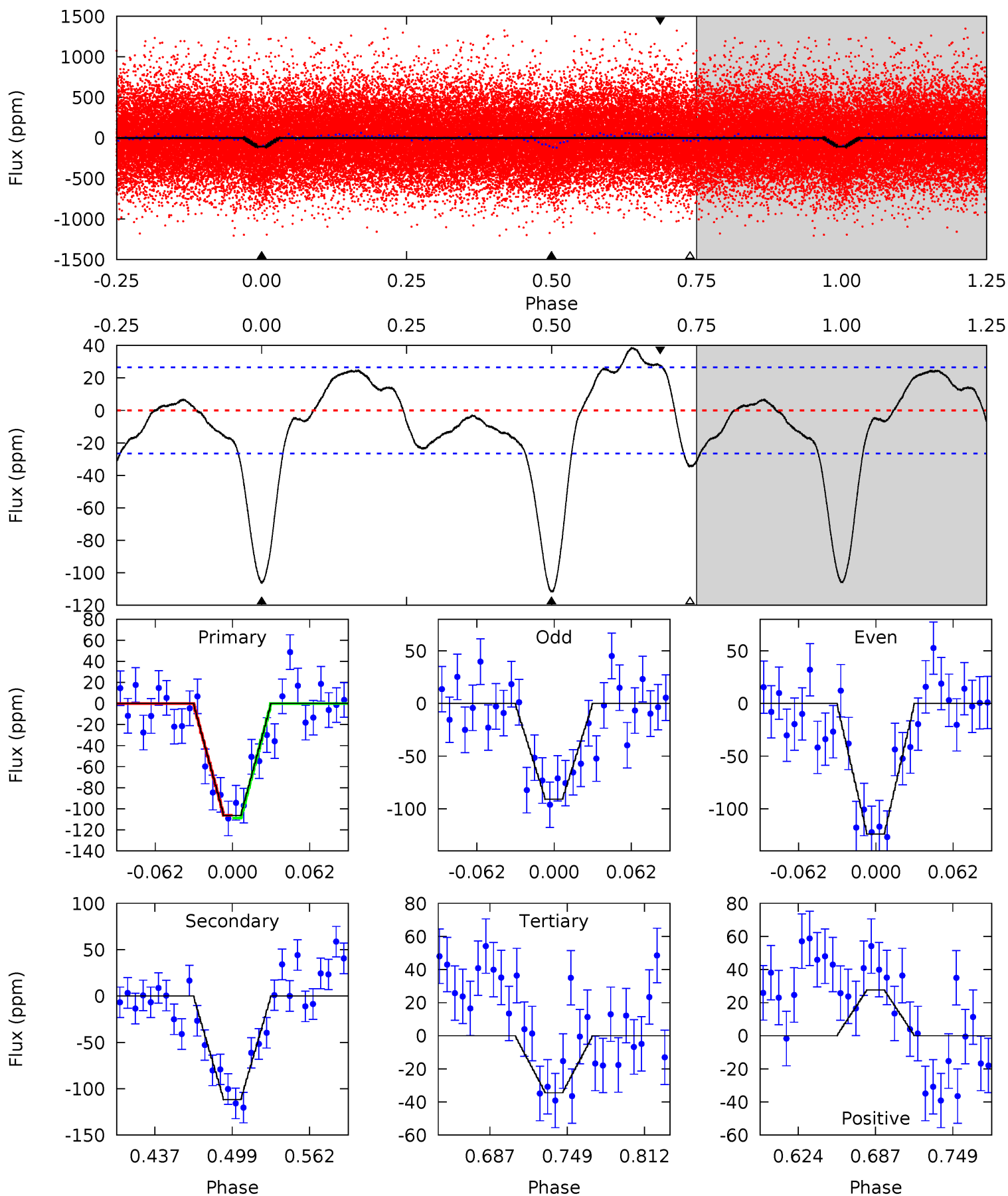
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	11.9	5.08	1.52	4.62	1.76	2.20	9.09	12.7	6.82	10.4	2.13	0.95	0.22	2.16



Alt Model-Shift Uniqueness Test

005024138-01, P = 0.833991 Days, E = 130.968433 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.7	19.6	6.05	4.87	4.66	1.86	3.15	12.6	13.8	13.6	14.8	2.93	0.85	0.26	0.23



Stellar Parameters For KIC 005024138

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6150^{+215}_{-215}	$4.498^{+0.132}_{-0.108}$	$-1.900^{+0.300}_{-0.050}$	$0.781^{+0.105}_{-0.086}$	$0.701^{+0.070}_{-0.022}$	$2.068^{+1.099}_{-0.606}$
	+3%/-3%	+3%/-2%	+16%/-3%	+13%/-11%	+10%/-3%	+53%/-29%
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 005024138-01 / KOI 4819.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-59 ± 5	$0.79^{+0.39}_{-0.37}$	2693^{+131}_{-139}	5619^{+2280}_{-943}	13^{+32}_{-7}
Alt.	-112 ± 6	$0.84^{+0.40}_{-0.35}$	2685^{+162}_{-135}	6288^{+2589}_{-1012}	21^{+43}_{-11}

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

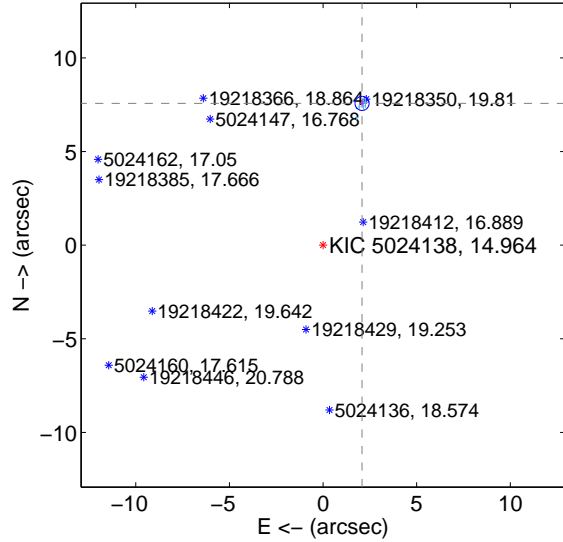
Supplemental centroid analysis for 005024138-01. Kepler magnitude: 14.96. Transit SNR 9.87

There are 7 quarters with good PRF difference image offsets

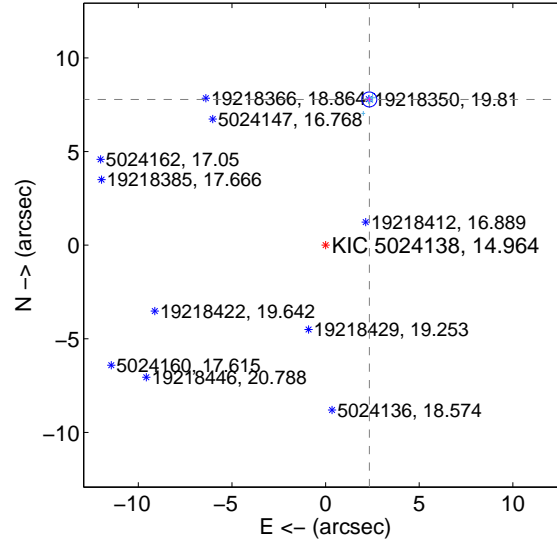
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.851 ± 0.126	62.52	-2.082 ± 0.090	7.570 ± 0.116
PRF-fit source offset from KIC position	8.123 ± 0.133	61.08	-2.335 ± 0.086	7.780 ± 0.124
photometric centroid source offset	6.88 ± 1.30	5.31	-5.91 ± 1.31	3.52 ± 1.24

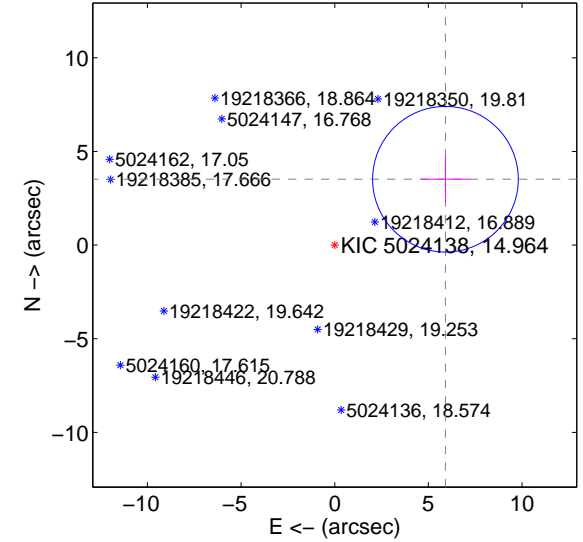
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

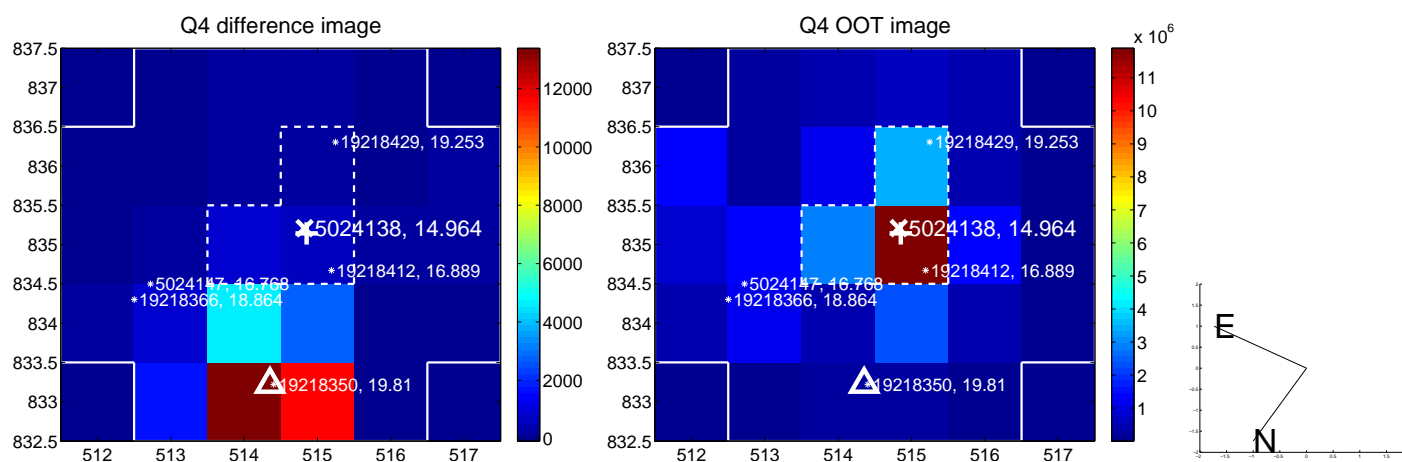
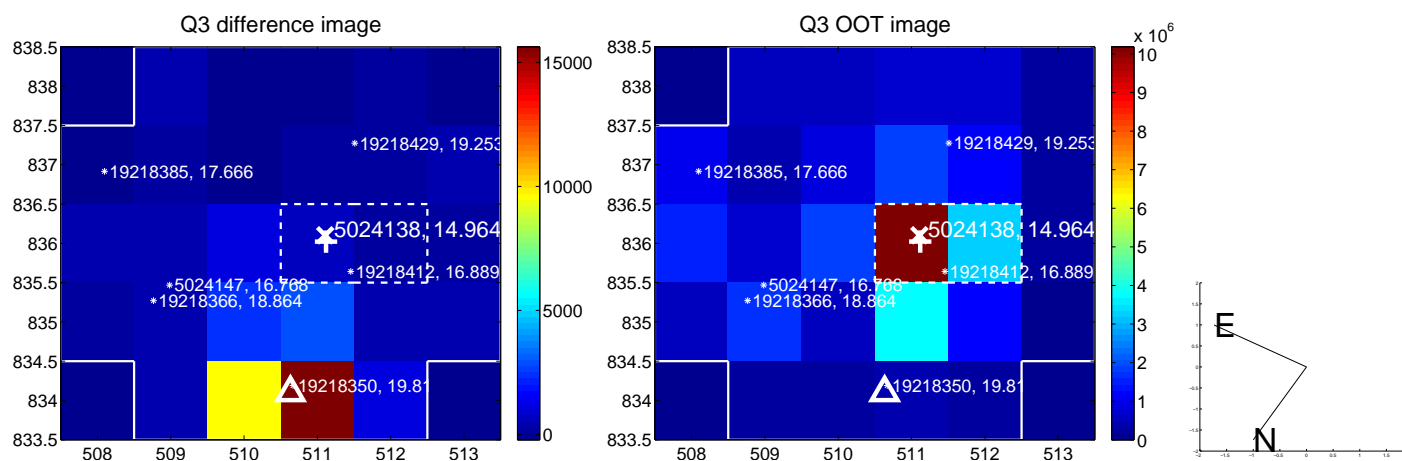
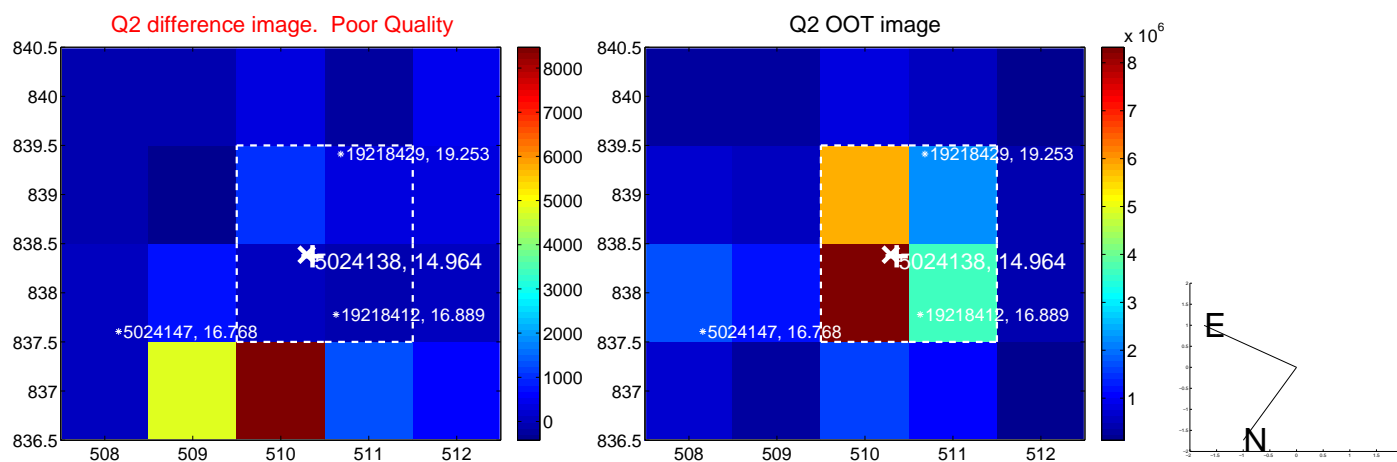
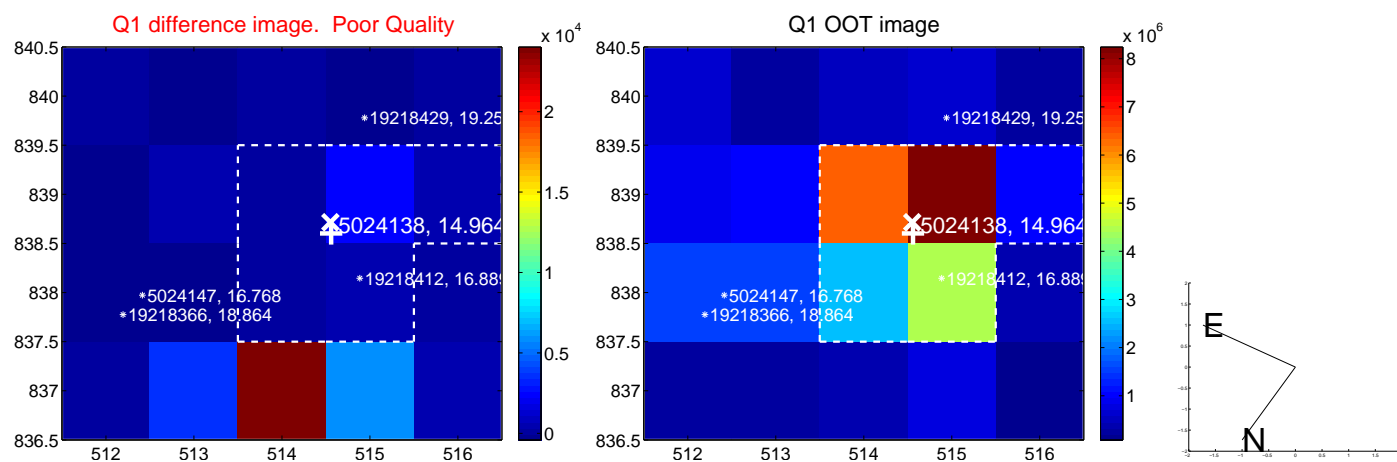


offset from photometric centroids

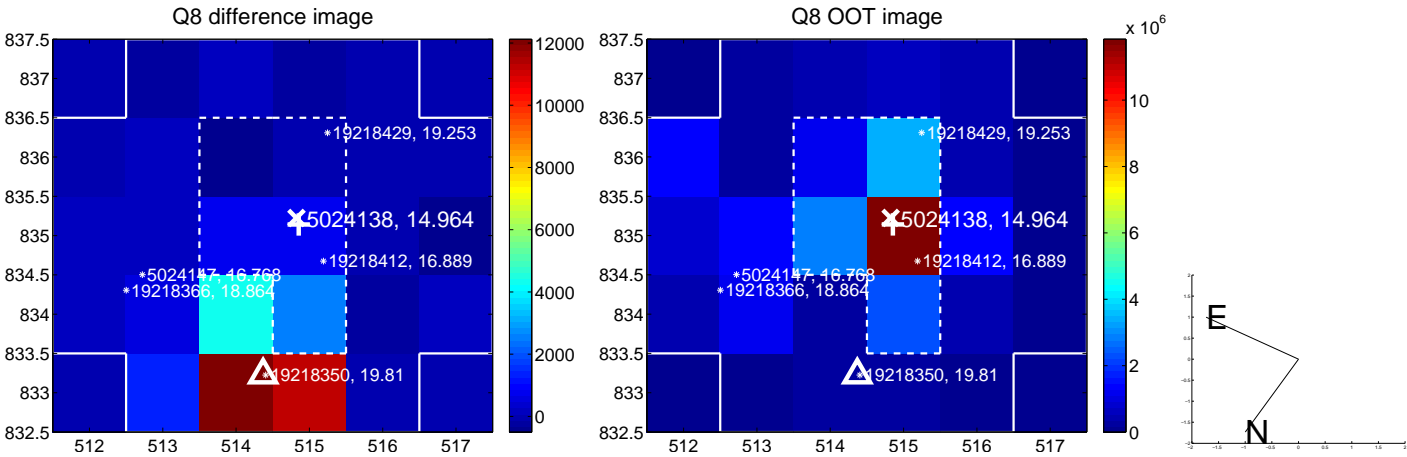
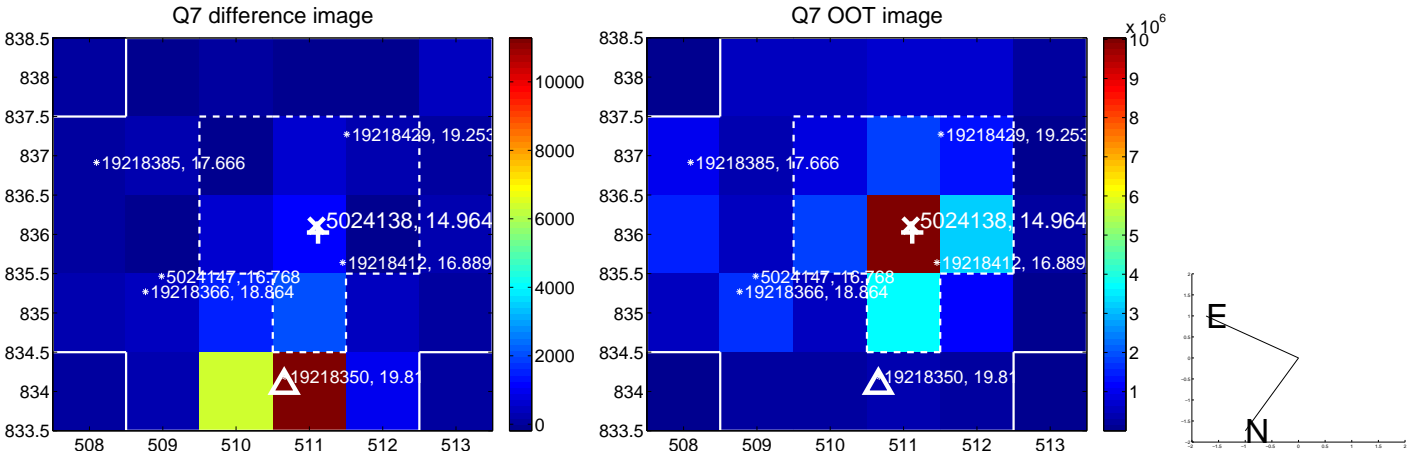
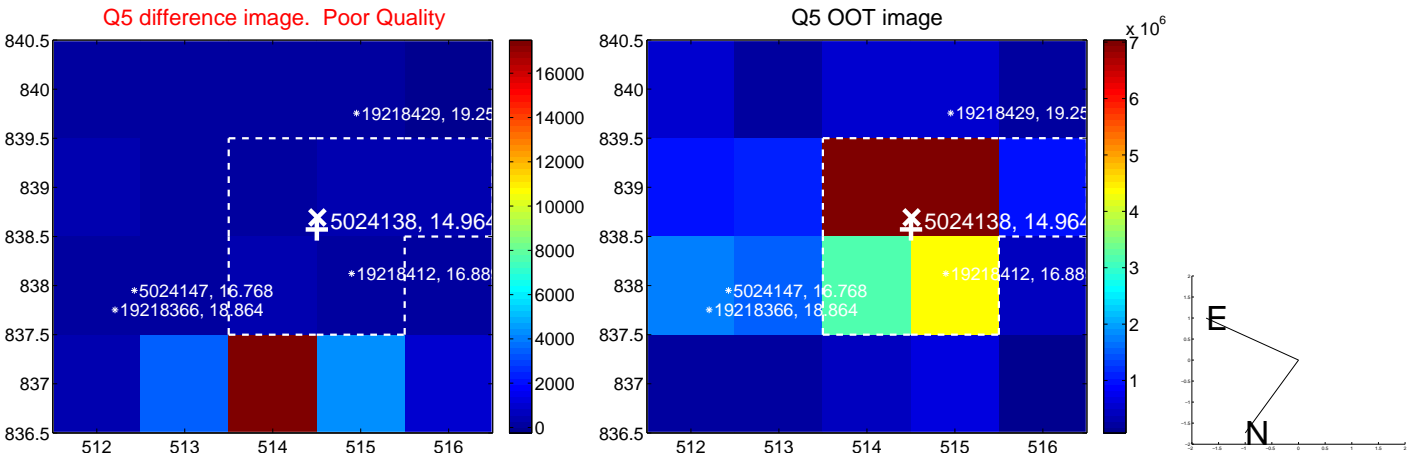


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

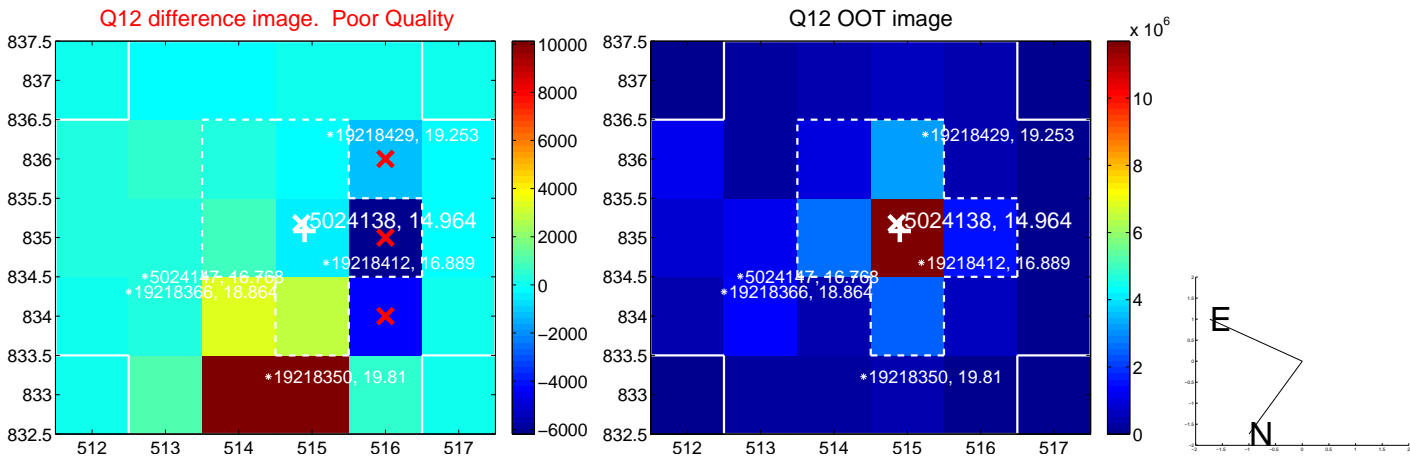
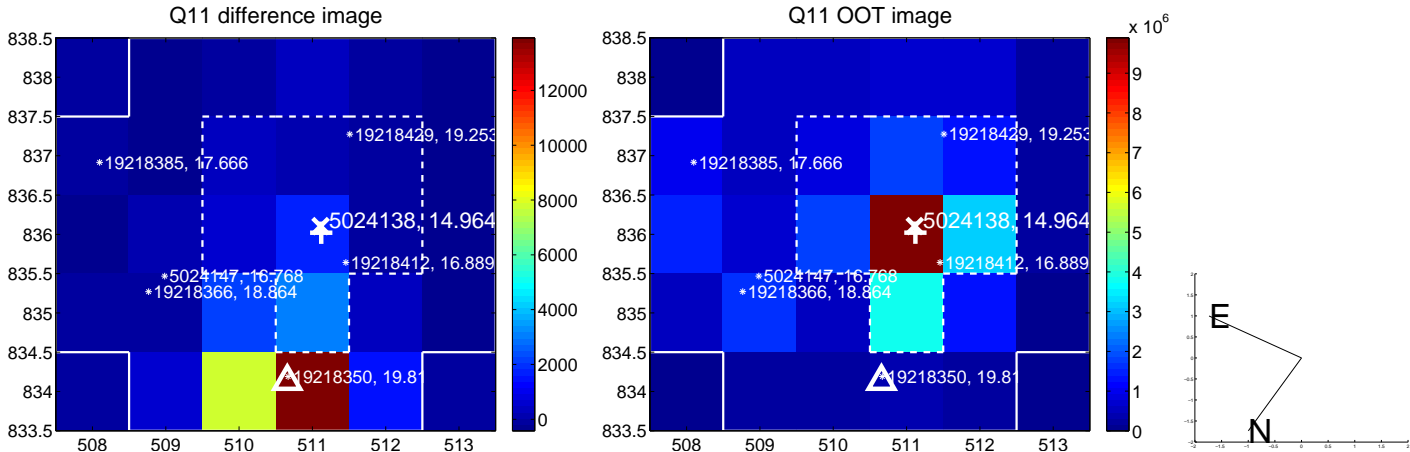
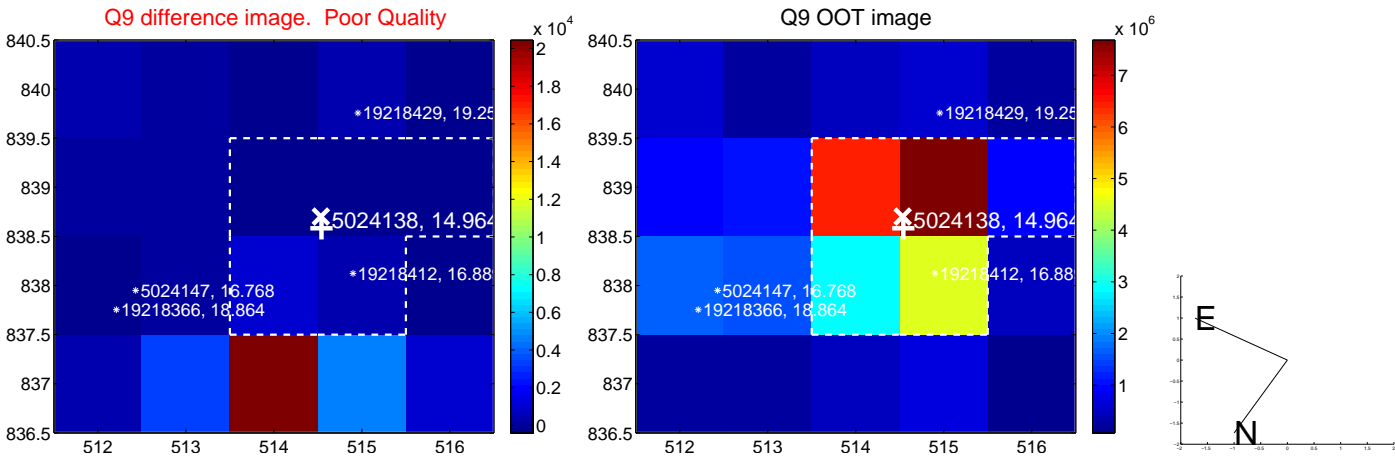
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



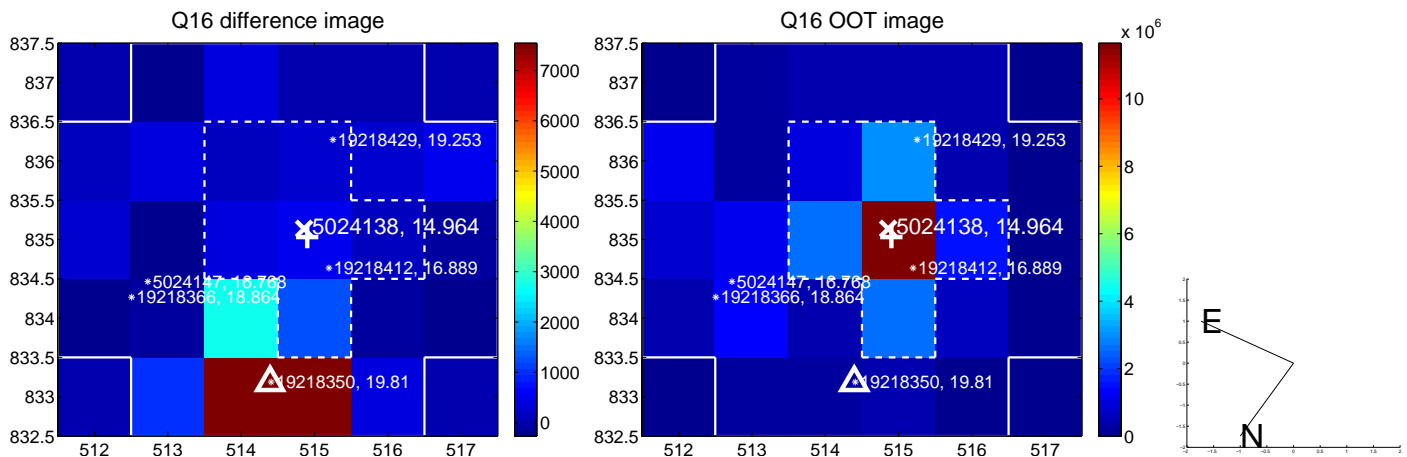
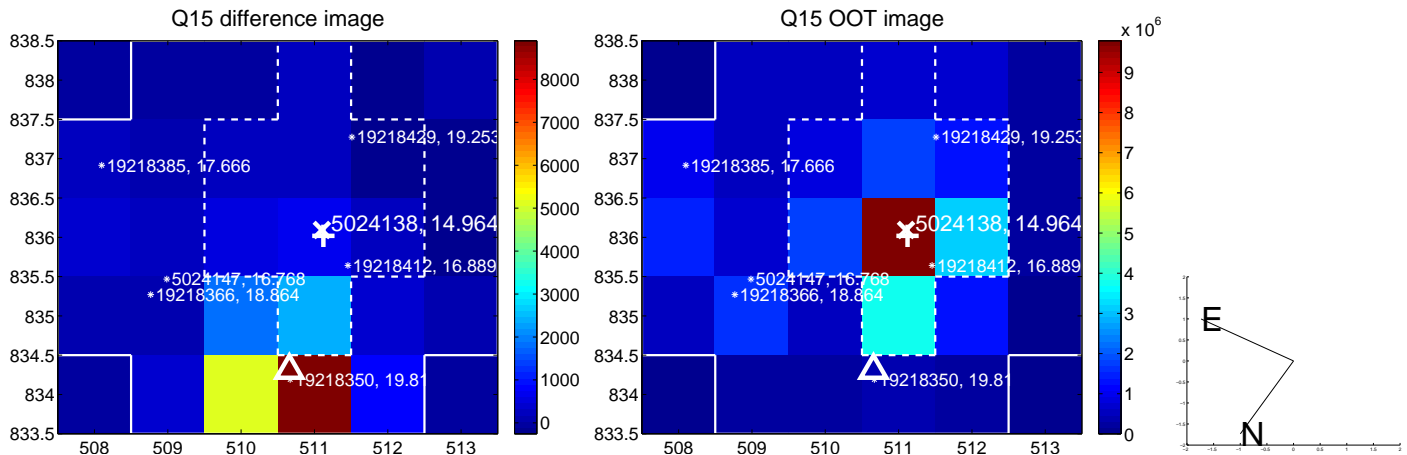
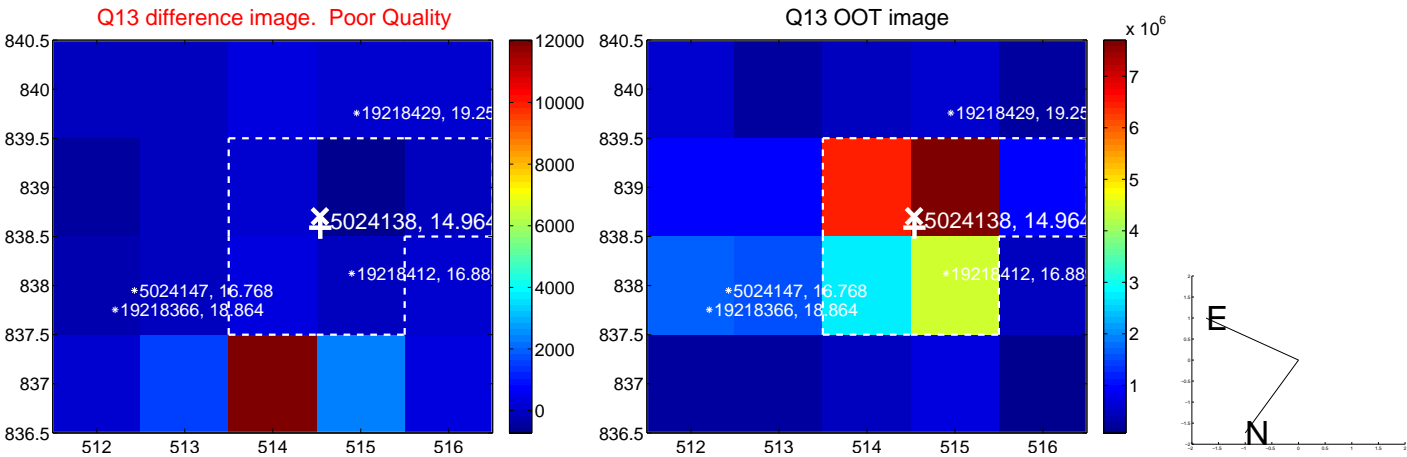
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



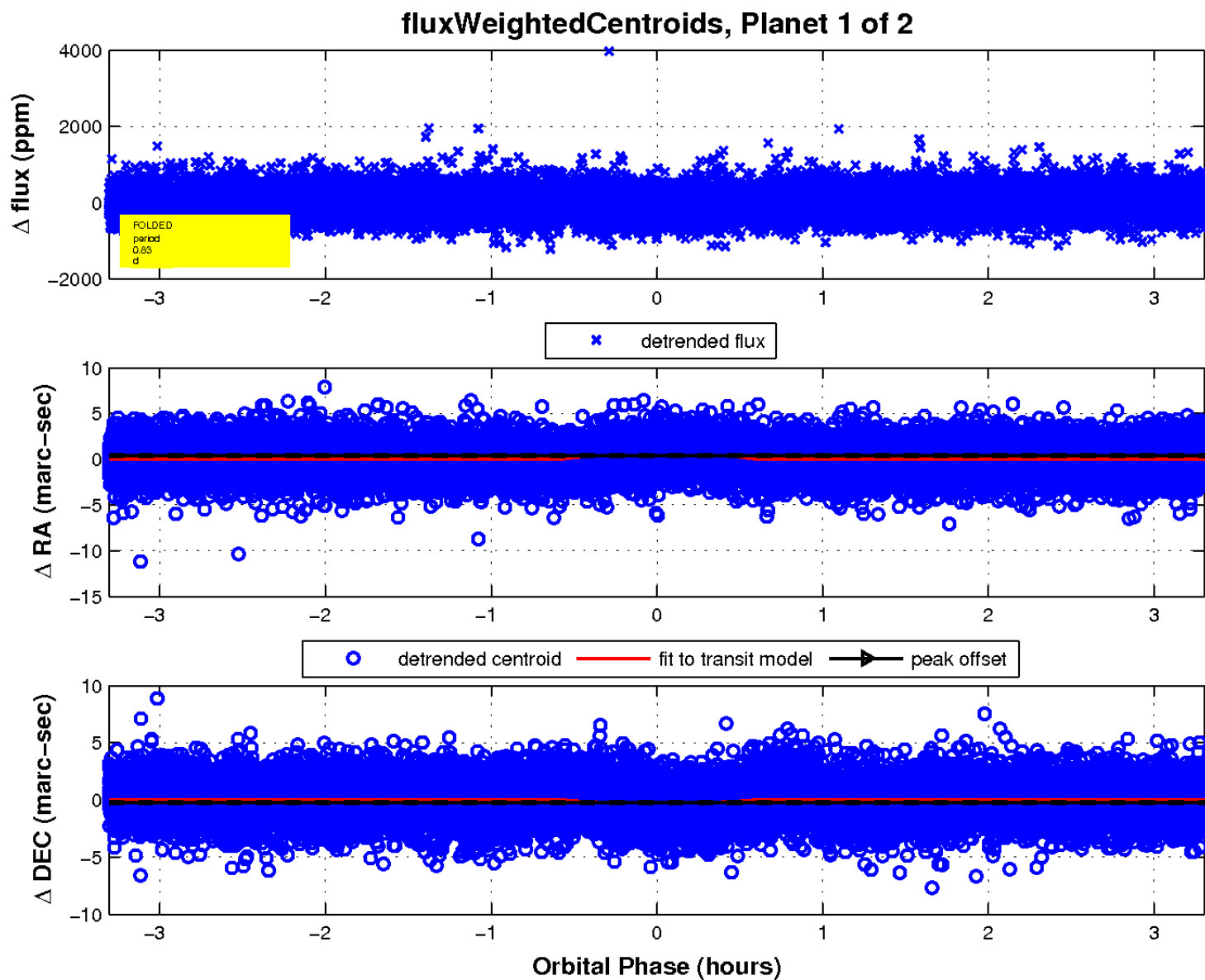
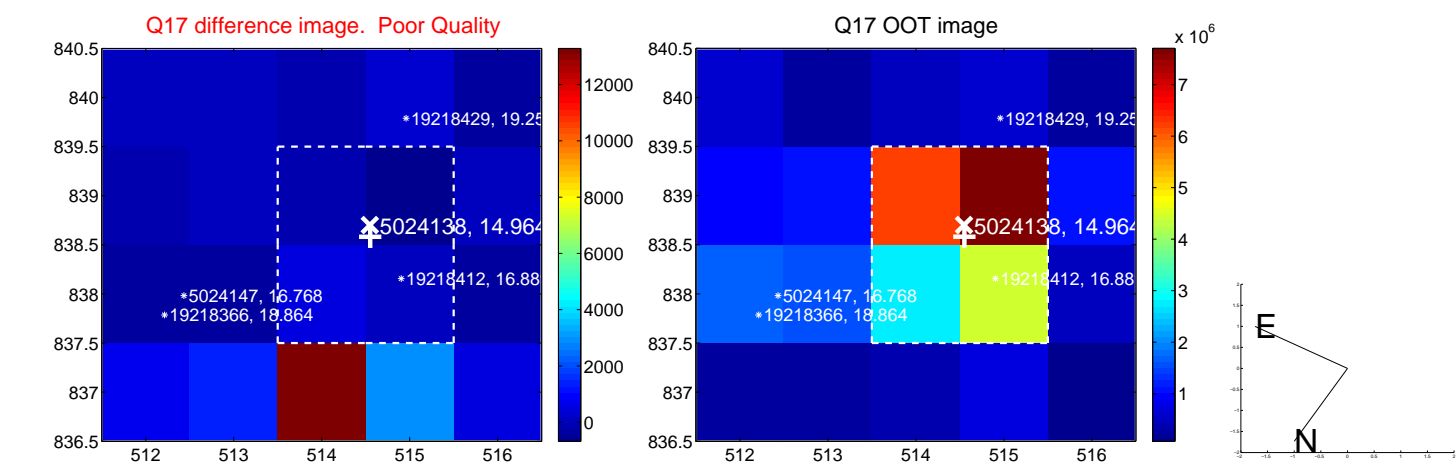
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

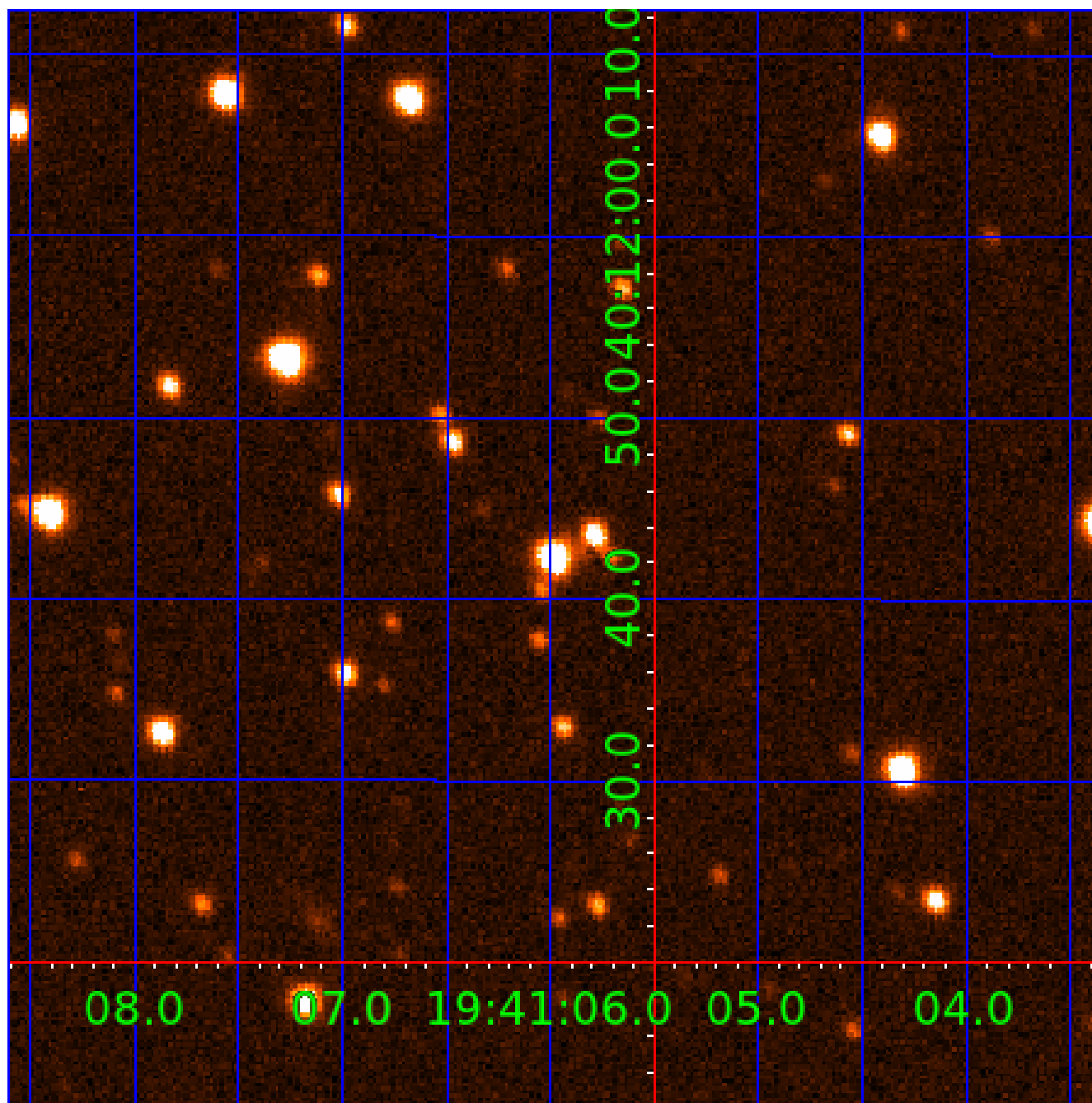


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005024138

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})
005024138-01	OBS	4819.01	0.833983	131.805712	71.1	1.102	8.1	9.9	0.78	6150	0.78	3295.74
005024138-02	OBS	No	0.833989	132.213842	68.2	1.110	8.2	9.6	0.78	6150	0.76	3295.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005024138-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005024138-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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 005024138-02

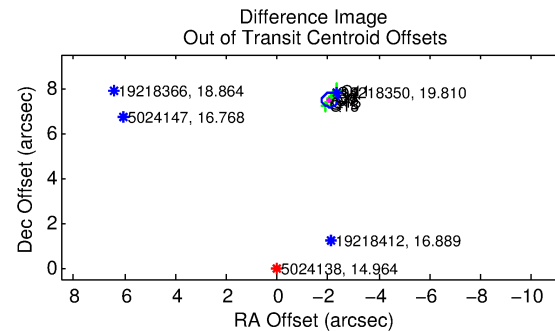
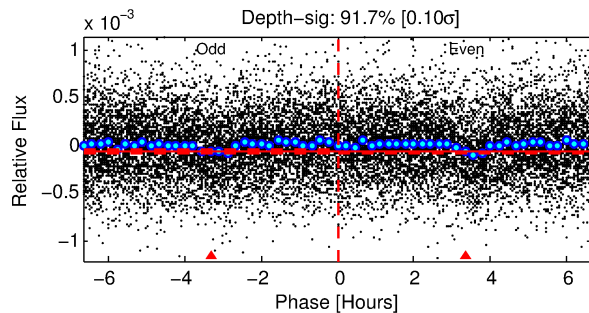
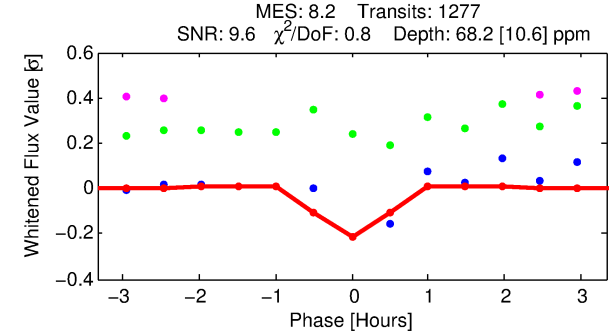
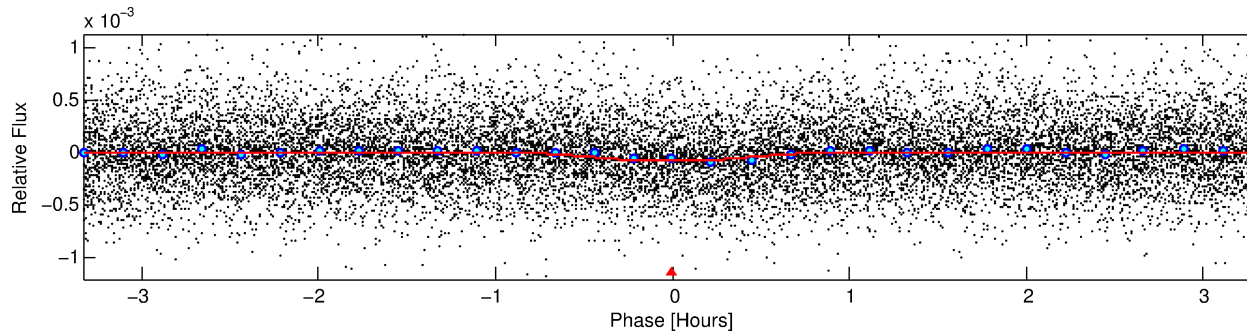
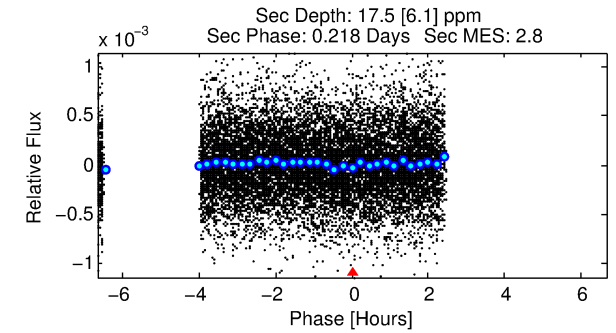
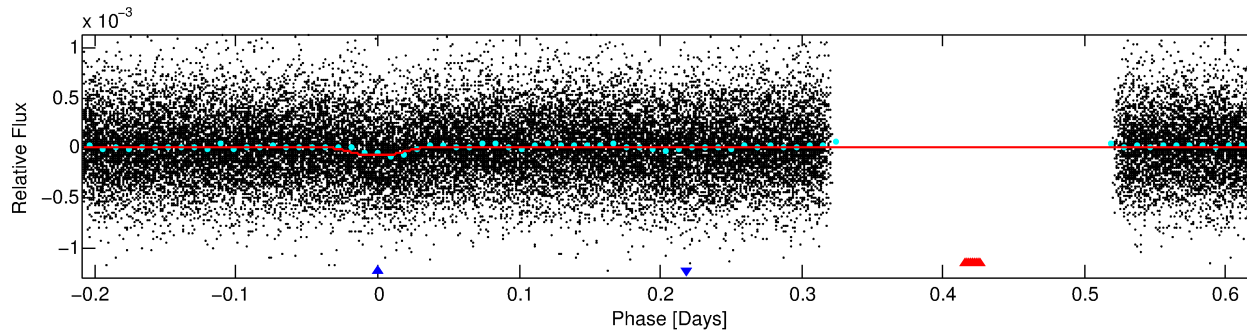
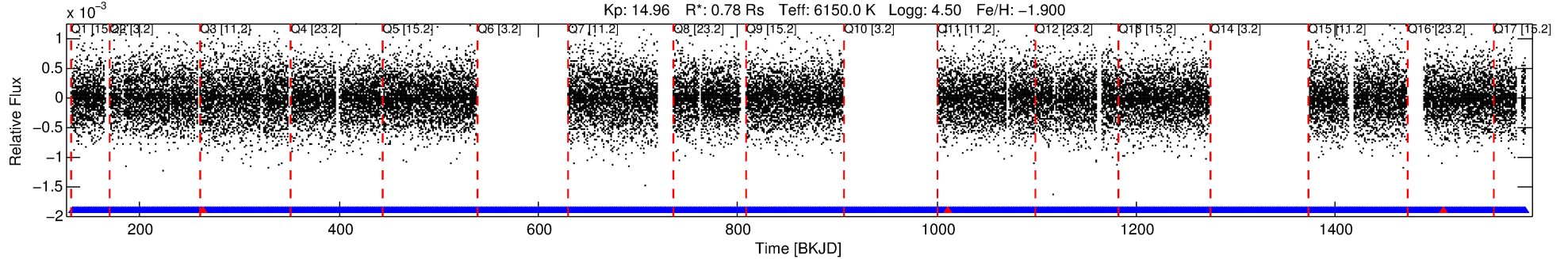
No Significant Match Found

DV One-Page Summary

KIC: 5024138 Candidate: 2 of 2 Period: 0.834 d

KOI: K04819 Corr: No Ephemeris Match

Kp: 14.96 R*: 0.78 Rs Teff: 6150.0 K Logg: 4.50 Fe/H: -1.900



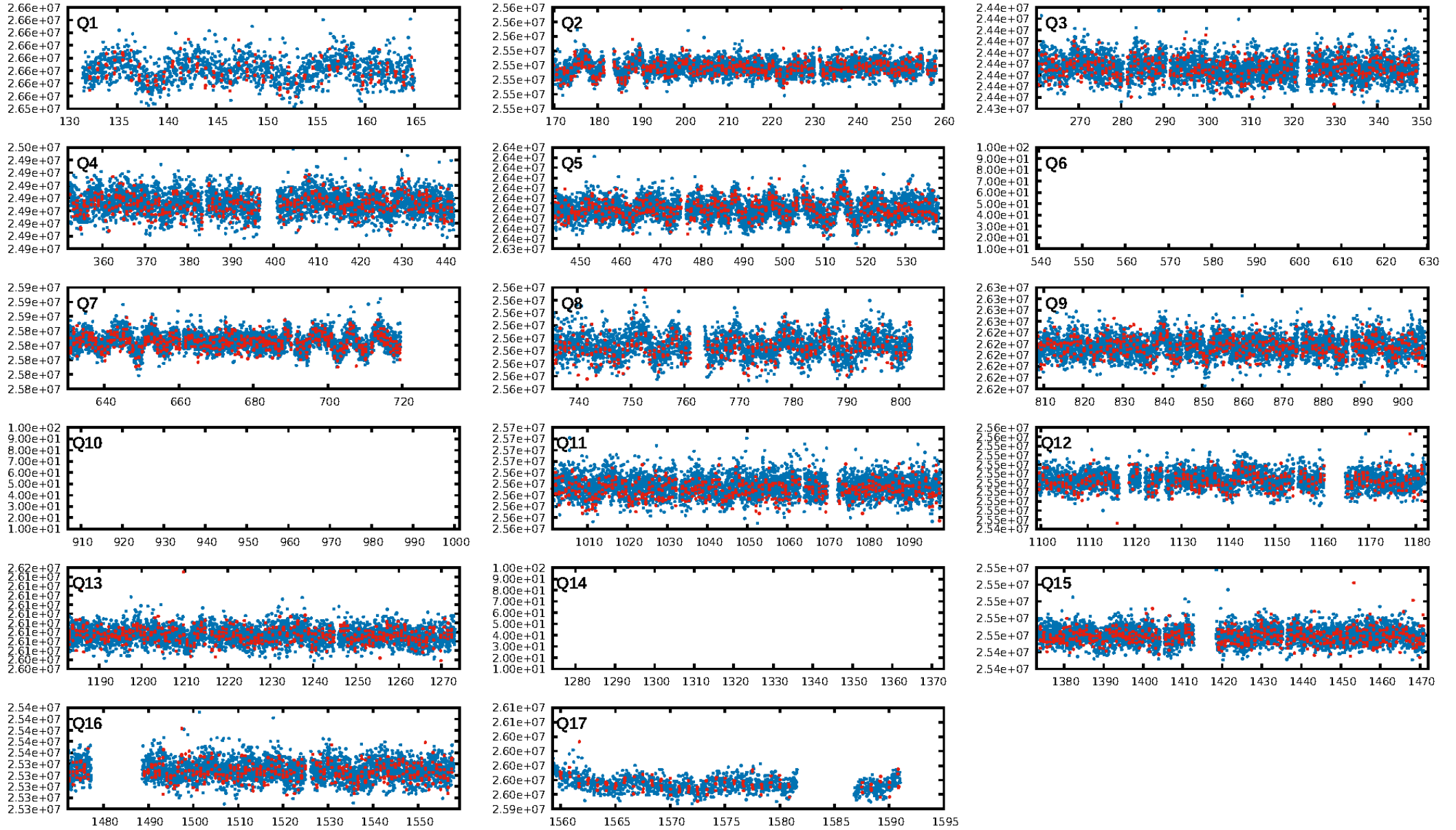
DV Fit Results:

Period = 0.83399 [0.00001] d
Epoch = 132.2138 [0.0020] BKJD
Rp/R* = 0.0089 [0.0041]
a/R* = 2.74 [6.32]
b = 0.90 [0.55]
Seff = 3295.71 [863.49]
Teq = 1932 [127] K
Rp = 0.76 [0.37] Re
a = 0.0154 [0.0021] AU
Ag = 3.98 [4.03] [0.74σ]
Teffp = 4218 [1052] K [2.16σ]

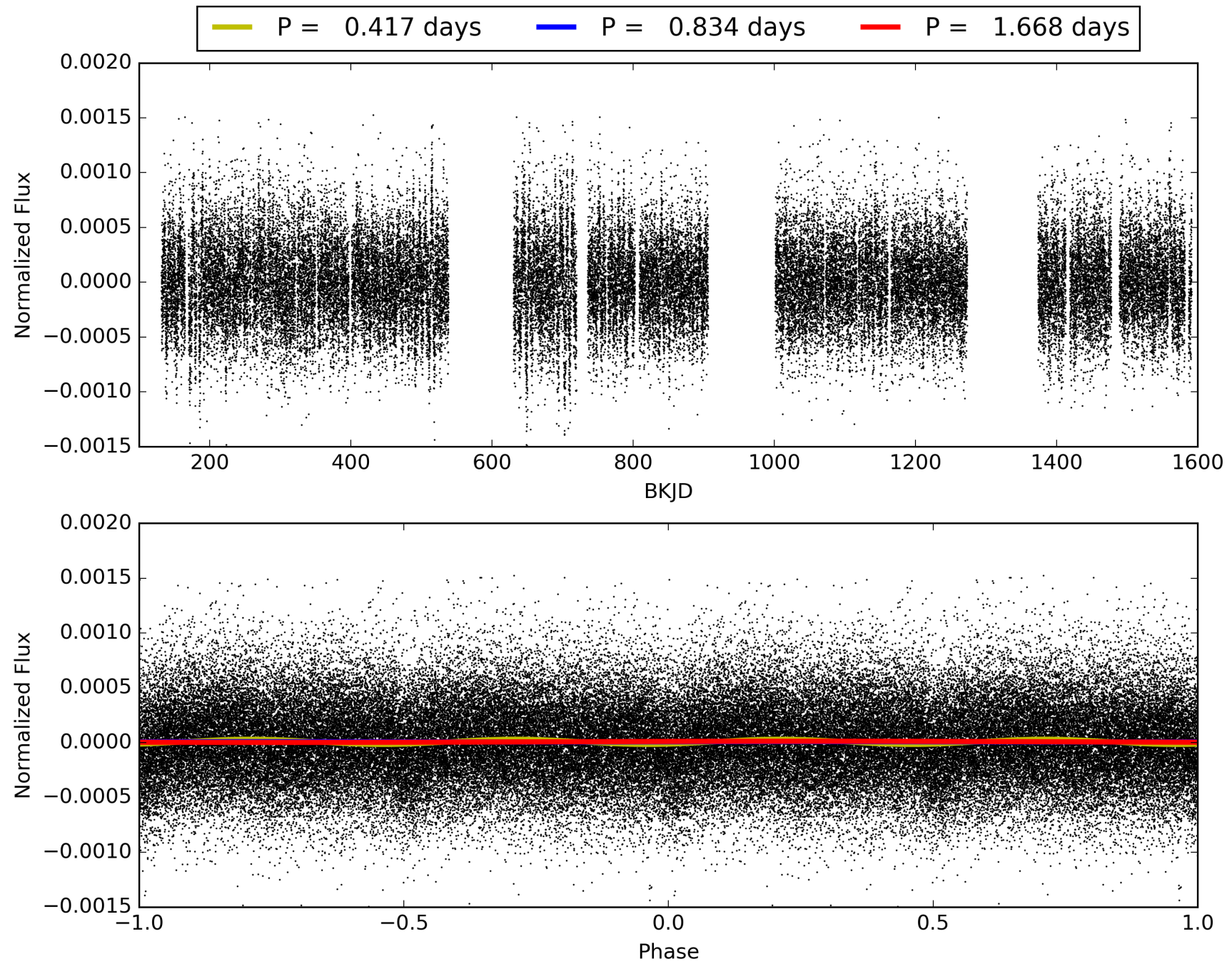
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.07e-19
RollingBand-fgt: 1.00 [1203/1206]
GhostDiagnostic-chr: -0.7677
Centroid-sig: 0.0%
Centroid-so: 9.822 arcsec [7.36σ]
OotOffset-rm: 7.765 arcsec [71.69σ]
KicOffset-rm: 8.080 arcsec [69.41σ]
OotOffset-st: 0/4/4/0 [8]
KicOffset-st: 0/4/4/0 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 005024138-02, PDC Light Curves

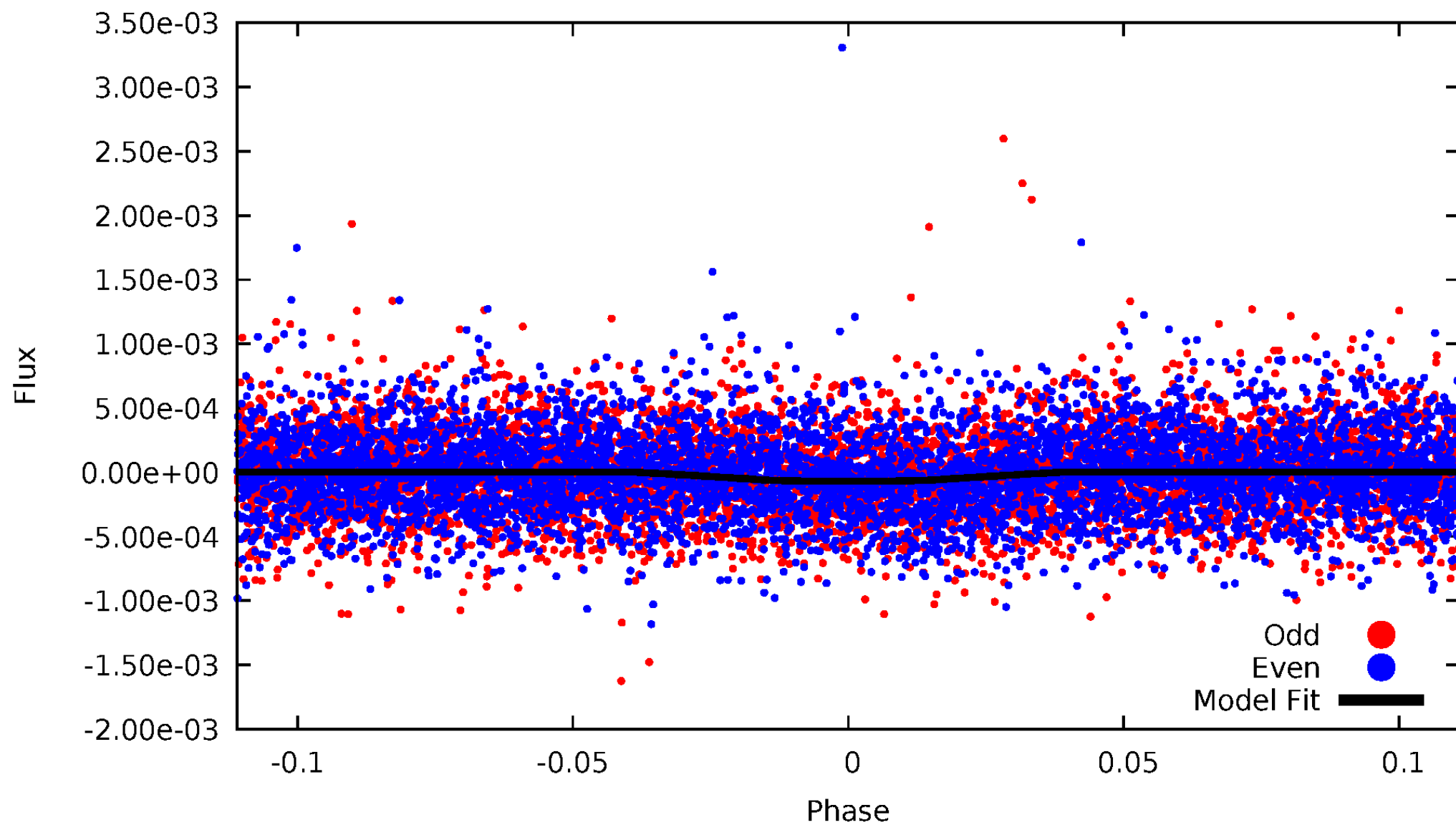


TCE 005024138-02



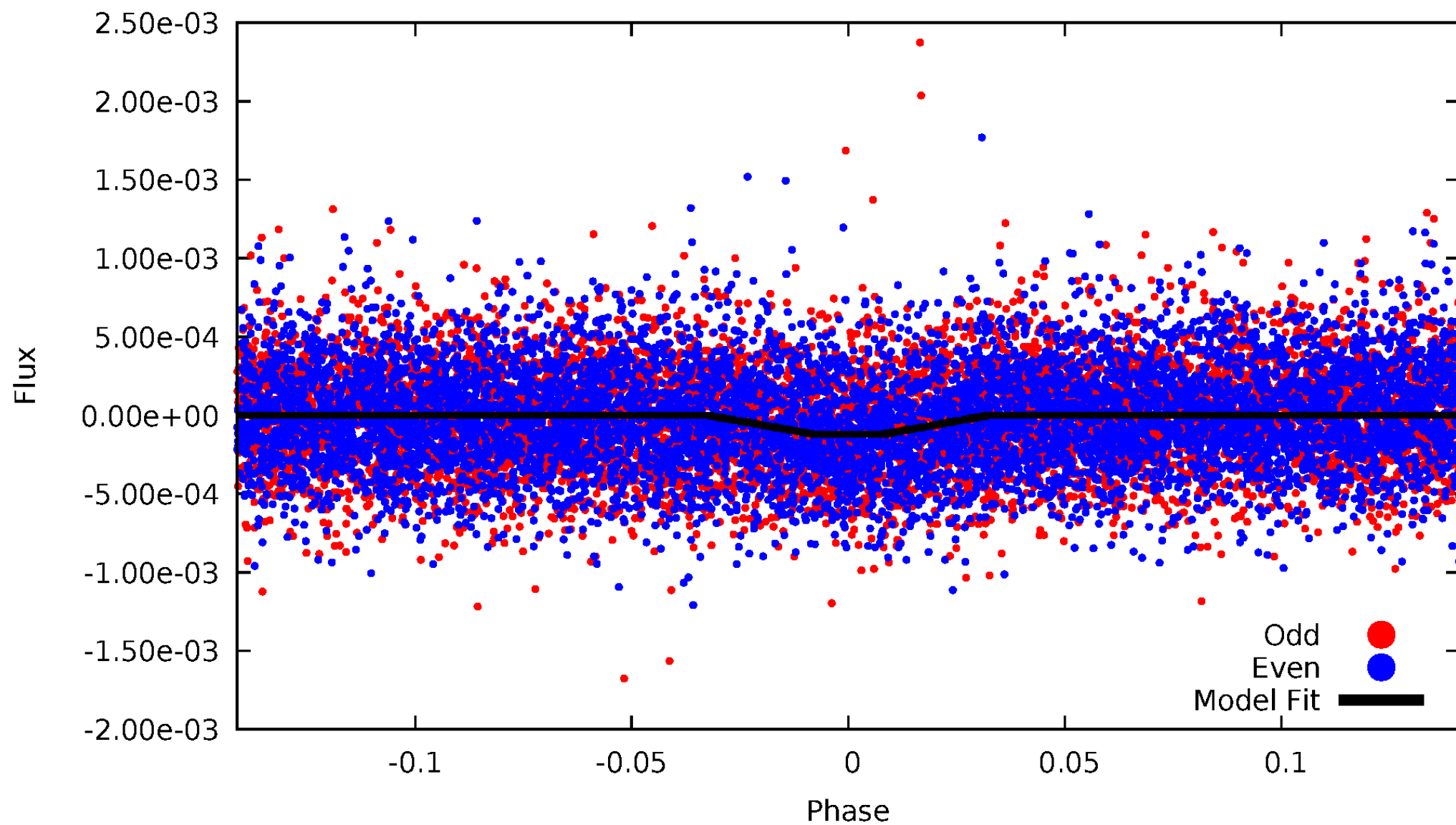
DV Odd/Even

TCE 005024138-02



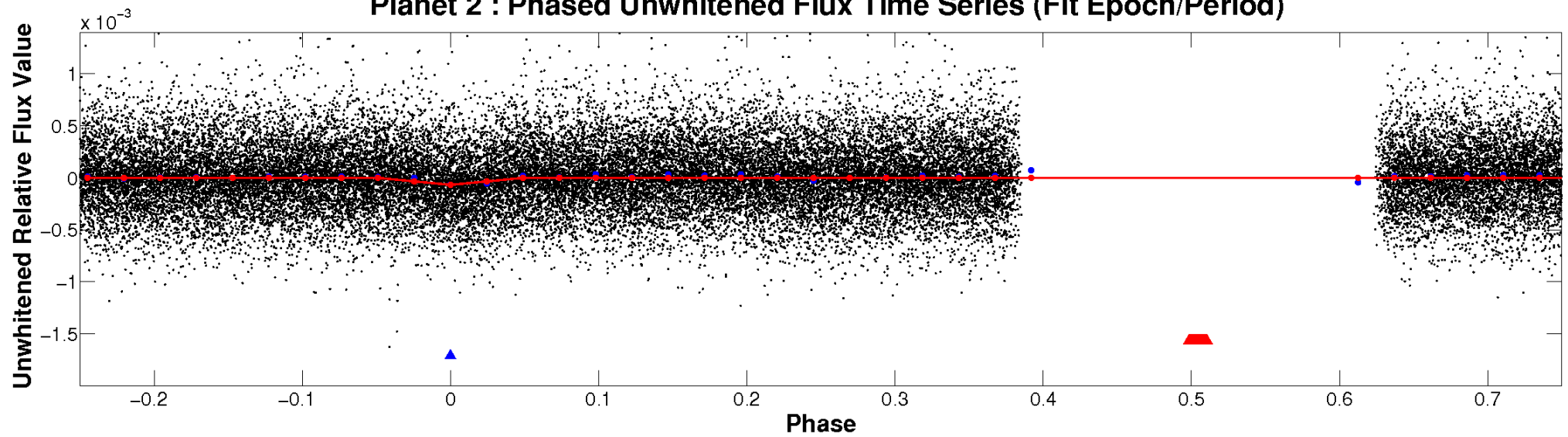
ALT Odd/Even

TCE 005024138-02

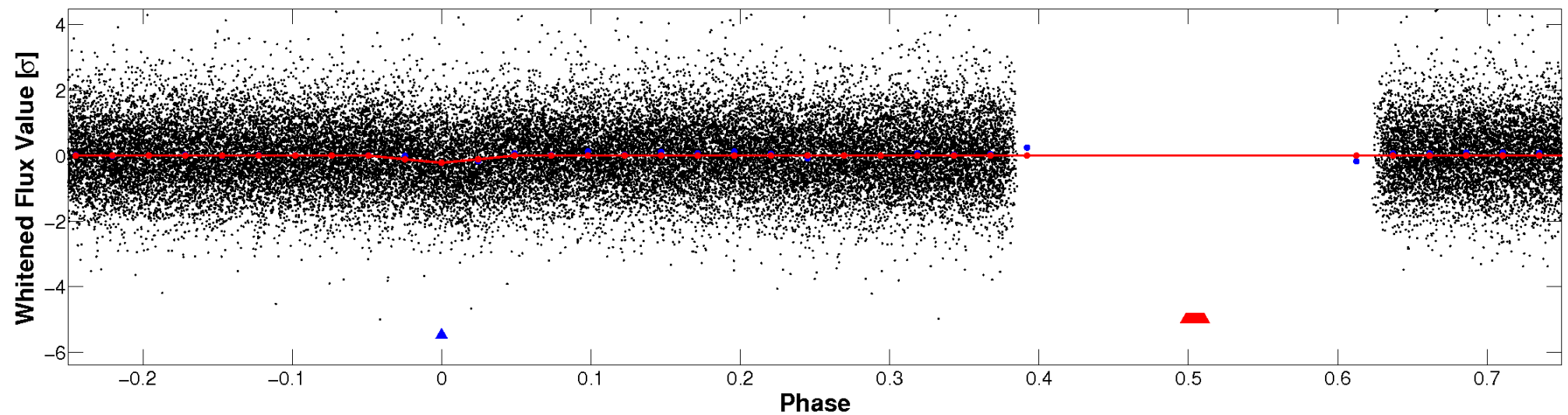


Non-Whitened Vs. Whitened Light Curve

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

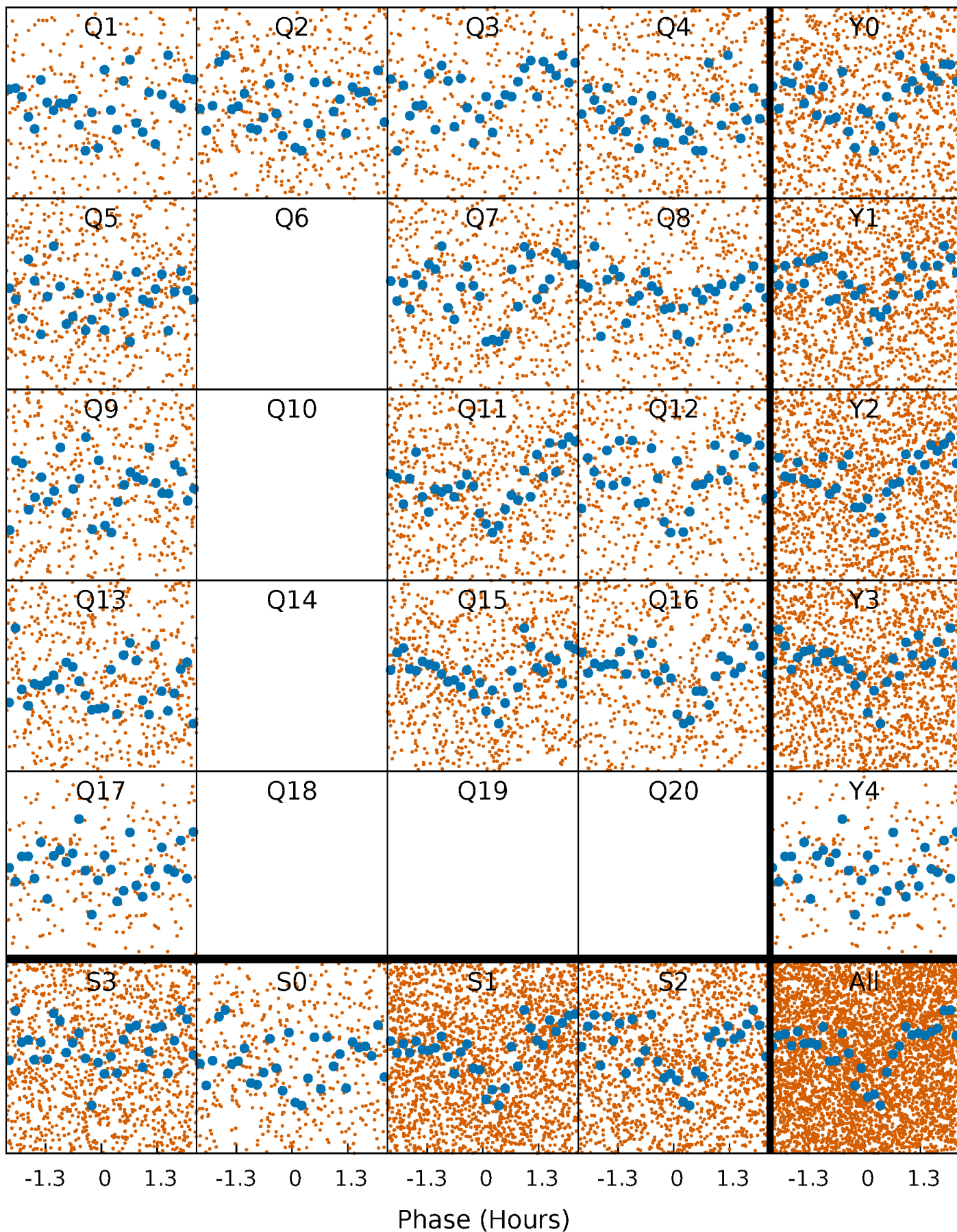


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



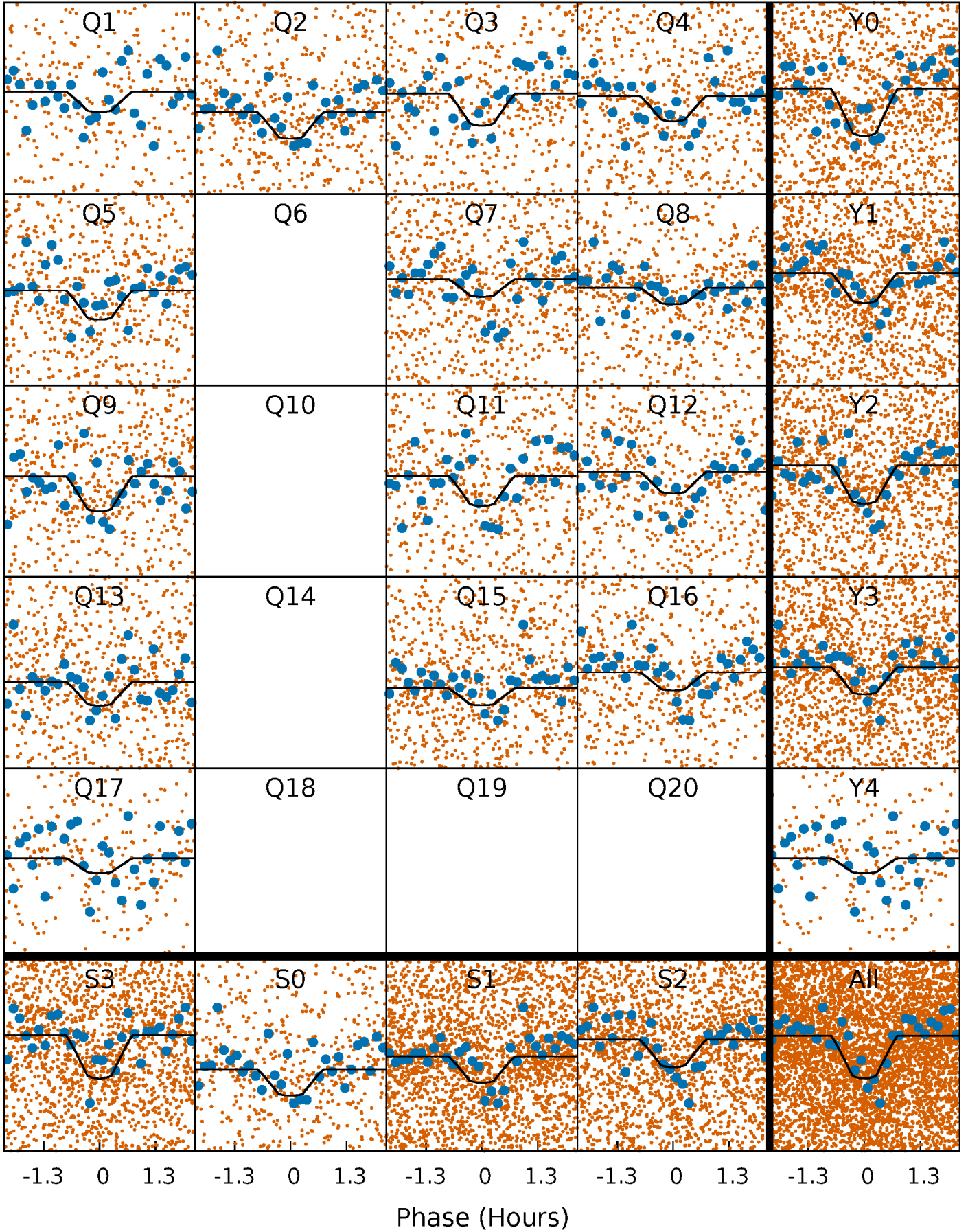
PDC Quarter-Phased Transit Curves

TCE 005024138-02 P= 0.833989 Days $T_0=132.213842$ (BKJD)



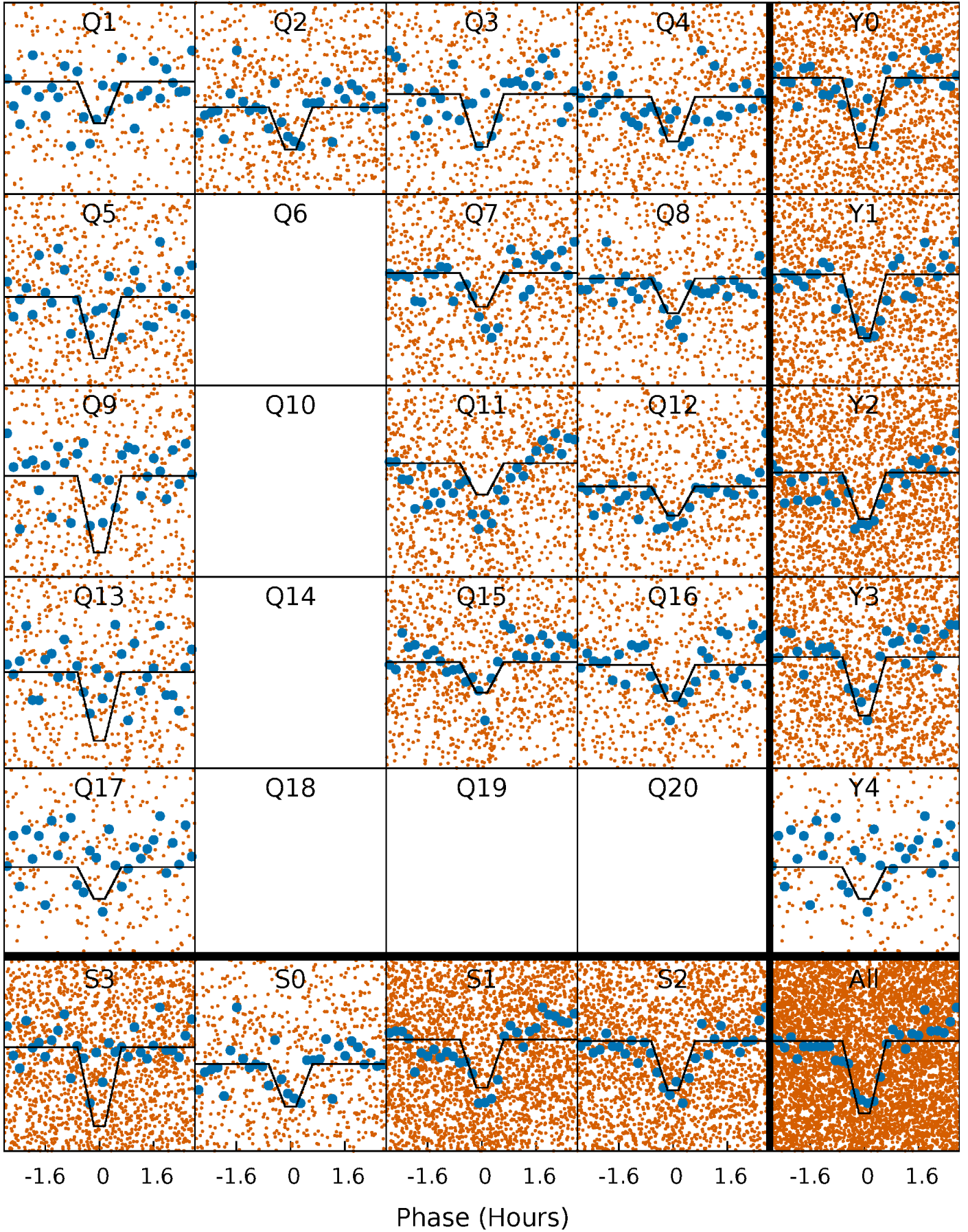
DV Quarter-Phased Transit Curves

TCE 005024138-02 P= 0.833989 Days $T_0=132.213842$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

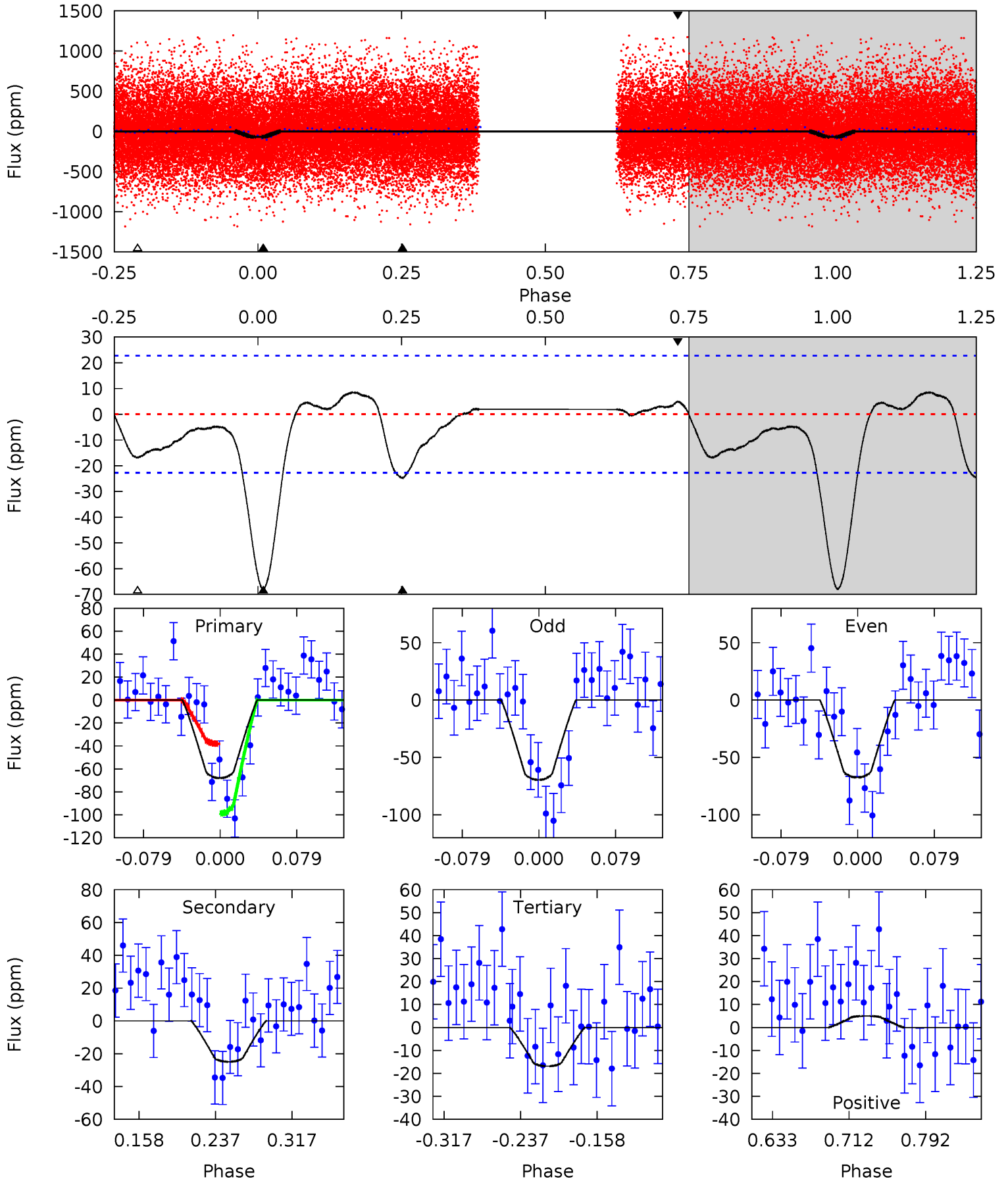
TCE 005024138-02 P= 0.833998 Days $T_0=132.211672$ (BKJD)



DV Model-Shift Uniqueness Test

005024138-02, P = 0.833989 Days, E = 131.379853 Days

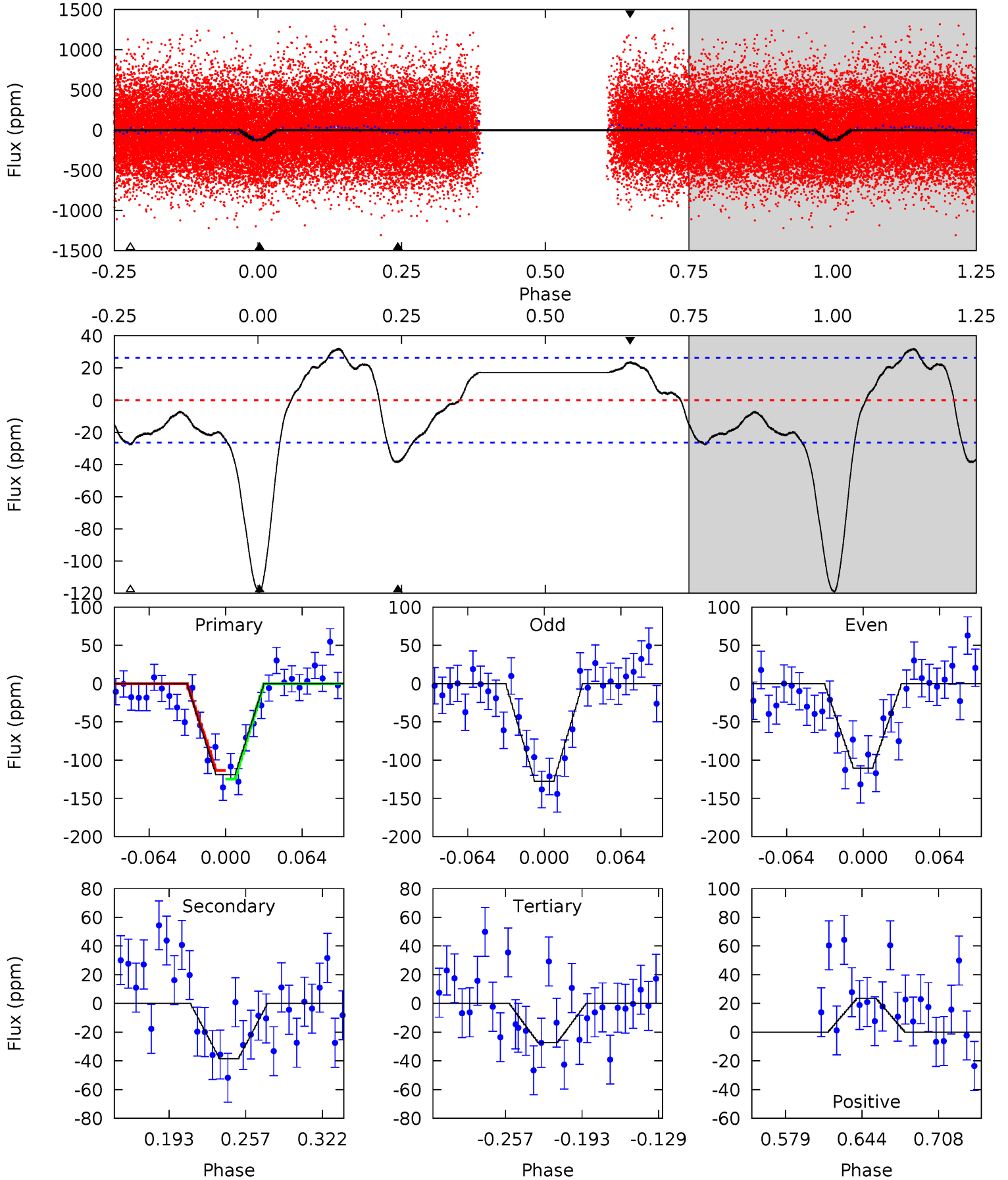
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	5.05	3.42	1.01	4.61	1.76	1.43	10.4	12.8	1.63	4.04	0.21	0.91	0.11	6.16



Alt Model-Shift Uniqueness Test

005024138-02, P = 0.833998 Days, E = 131.377674 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	6.79	4.84	4.17	4.66	1.85	3.18	16.2	16.9	1.95	2.62	1.51	0.98	0.21	1.01



Stellar Parameters For KIC 005024138

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6150^{+215}_{-215}	$4.498^{+0.132}_{-0.108}$	$-1.900^{+0.300}_{-0.050}$	$0.781^{+0.105}_{-0.086}$	$0.701^{+0.070}_{-0.022}$	$2.068^{+1.099}_{-0.606}$
	+3%/-3%	+3%/-2%	+16%/-3%	+13%/-11%	+10%/-3%	+53%/-29%
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 005024138-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-25 ± 5	$0.77^{+0.35}_{-0.35}$	2688^{+154}_{-140}	4646^{+1517}_{-677}	$5.505^{+12.713}_{-2.920}$
Alt.	-38 ± 6	$0.95^{+0.34}_{-0.38}$	2678^{+149}_{-141}	4657^{+1141}_{-562}	$5.662^{+9.430}_{-2.656}$

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 $A_{obs} \gg 1.0$

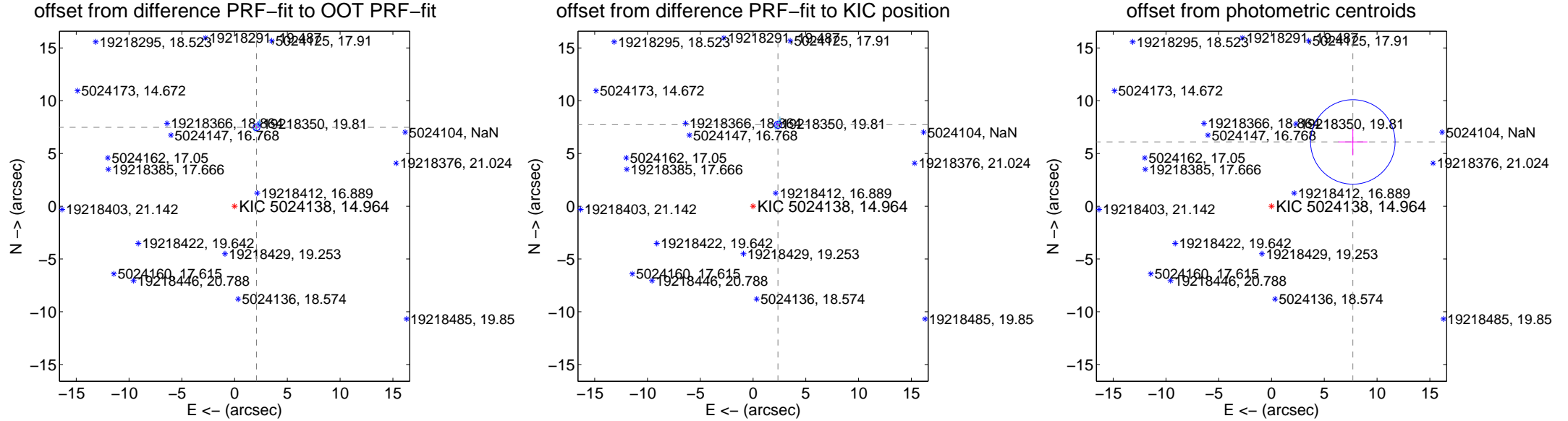
DV Centroid Data

Supplemental centroid analysis for 005024138-02. Kepler magnitude: 14.96. Transit SNR 9.63

There are 8 quarters with good PRF difference image offsets

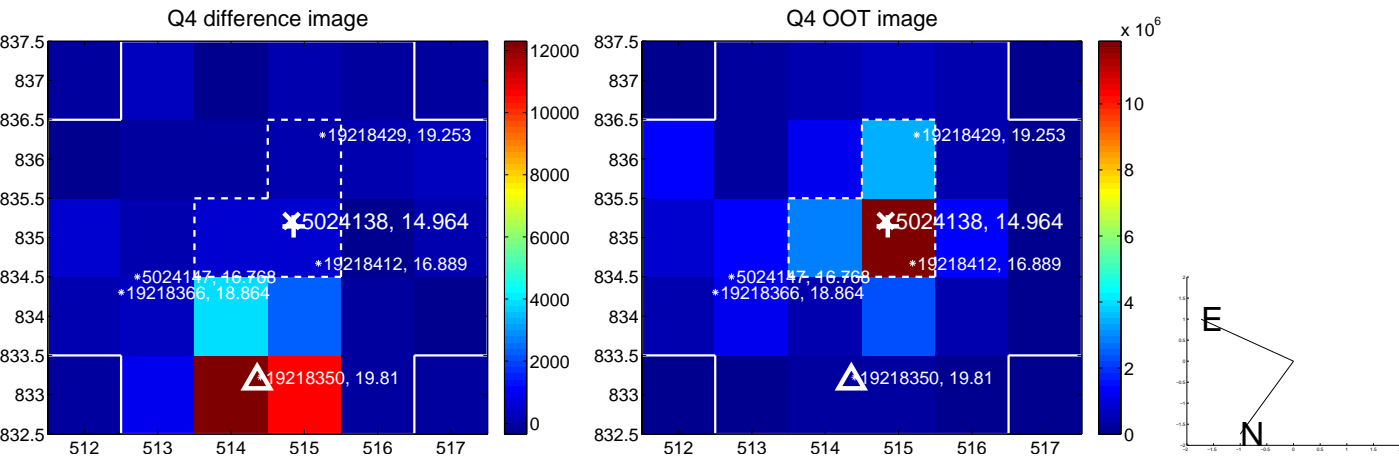
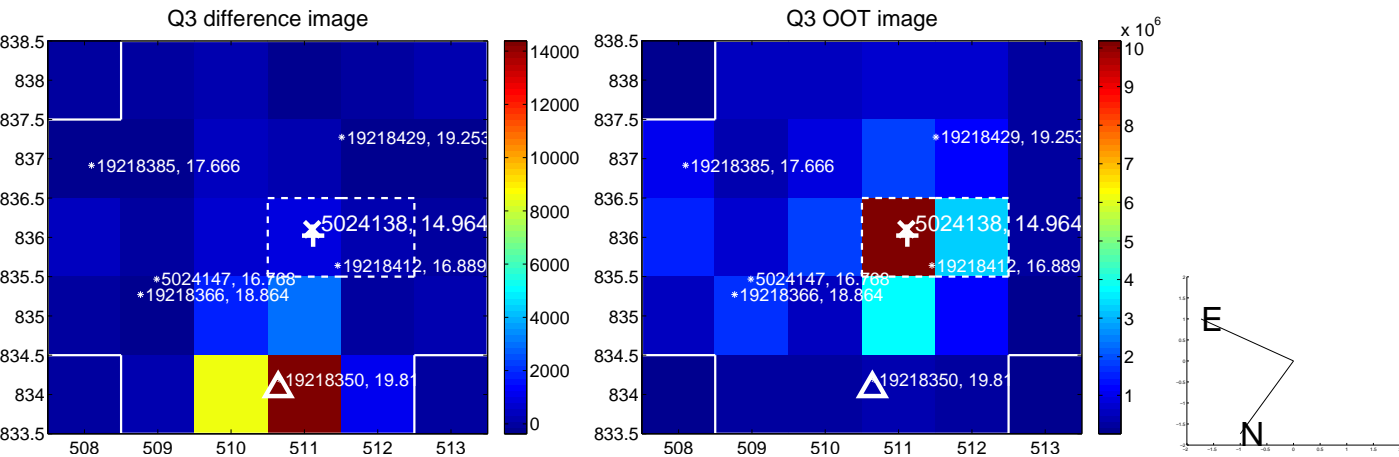
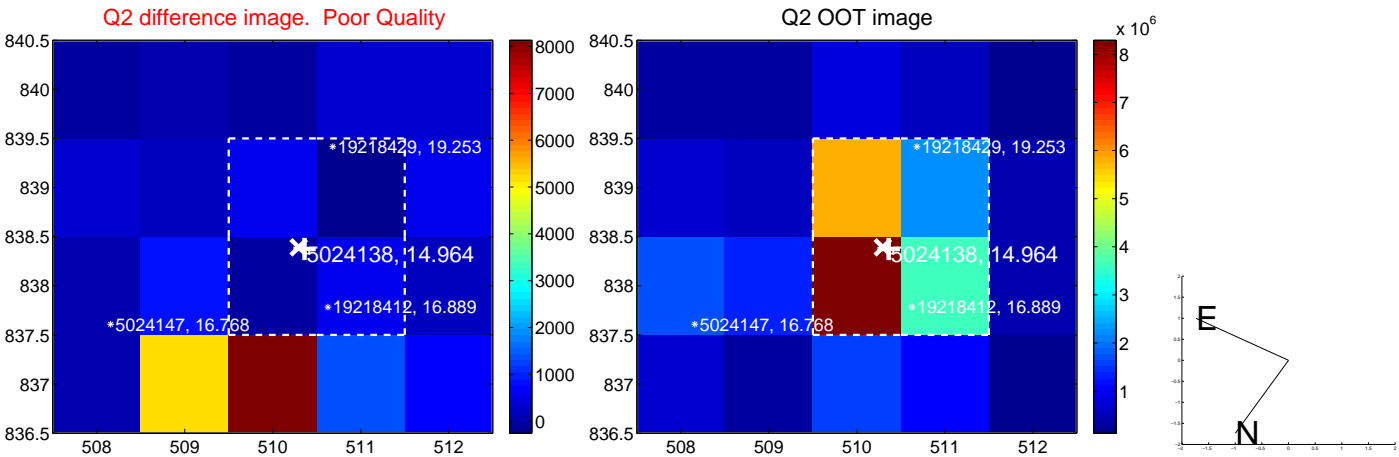
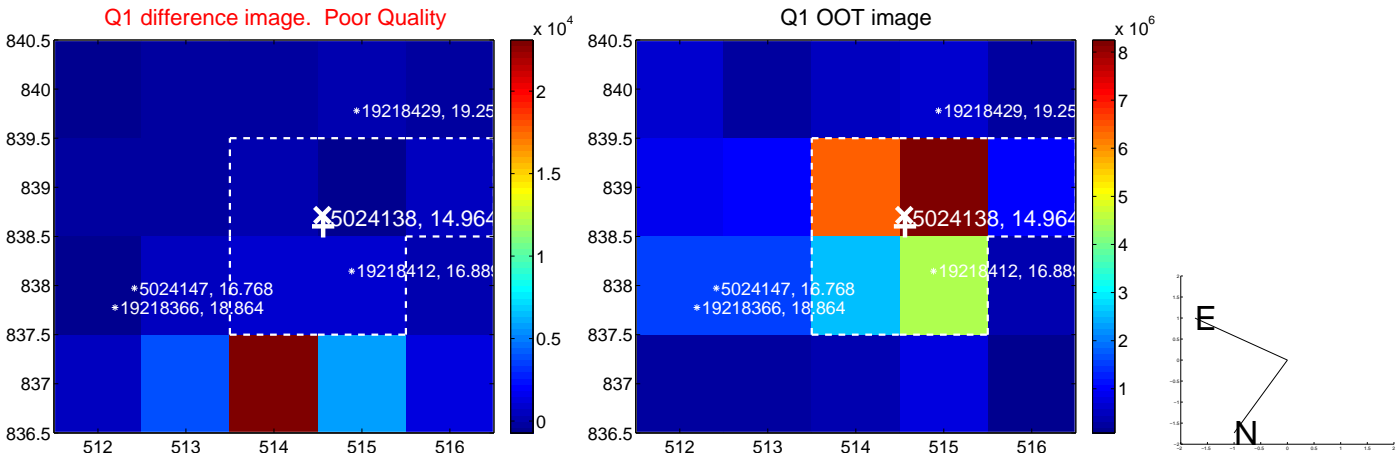
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.765 \pm 0.108	71.69	-2.078 \pm 0.083	7.482 \pm 0.101
PRF-fit source offset from KIC position	8.080 \pm 0.116	69.41	-2.358 \pm 0.080	7.728 \pm 0.109
photometric centroid source offset	9.82 \pm 1.33	7.36	-7.70 \pm 1.37	6.09 \pm 1.27

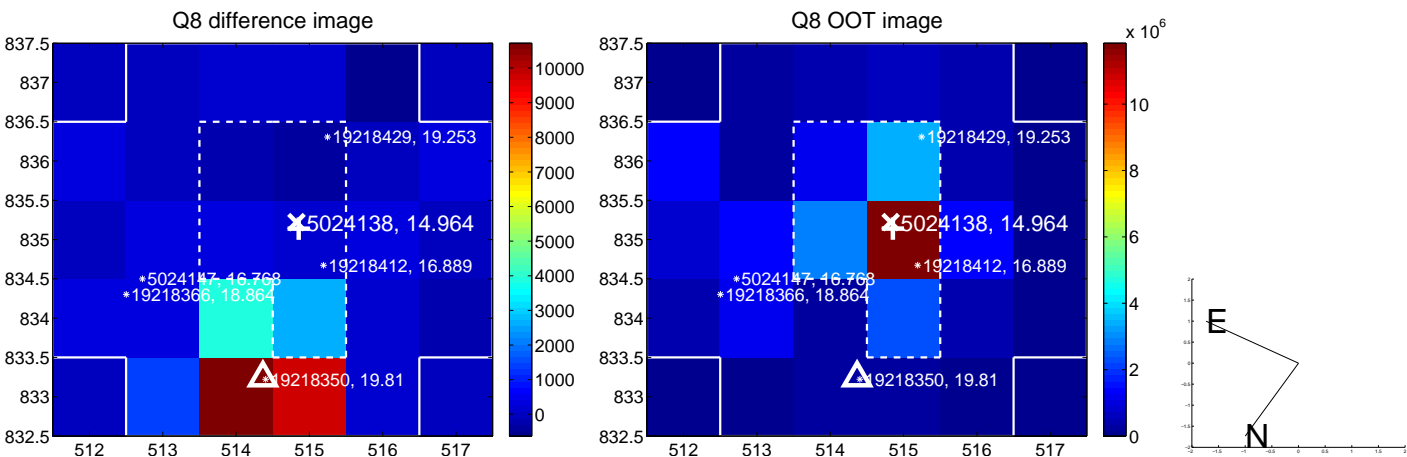
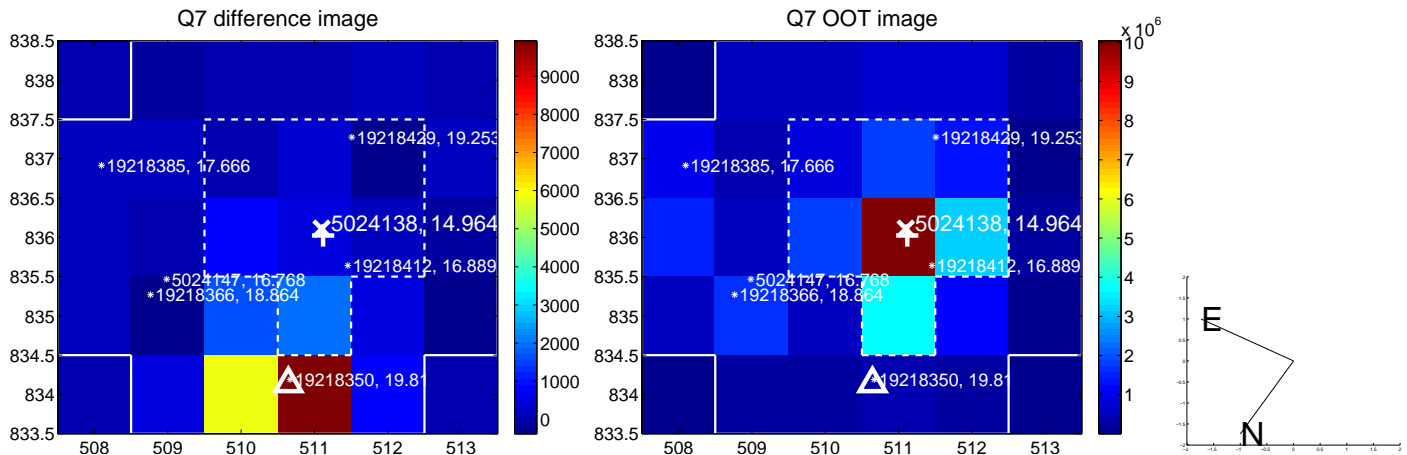
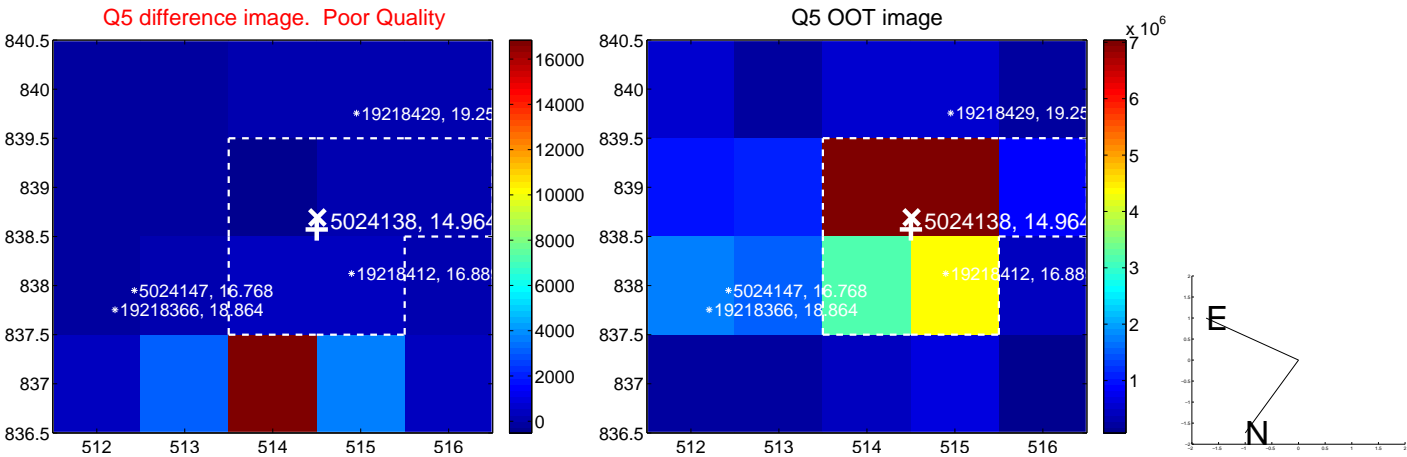


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

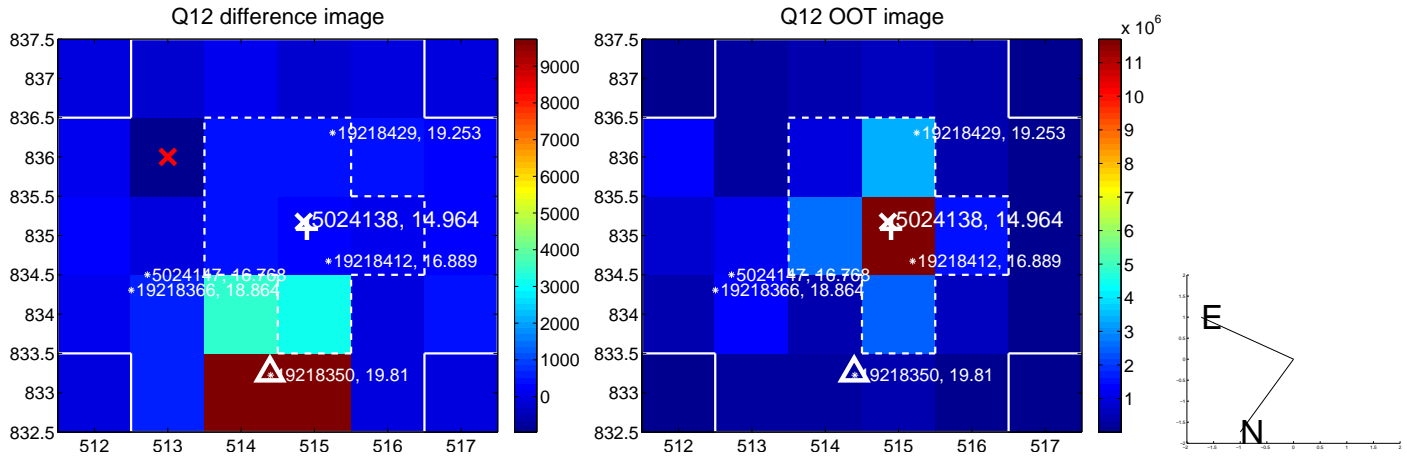
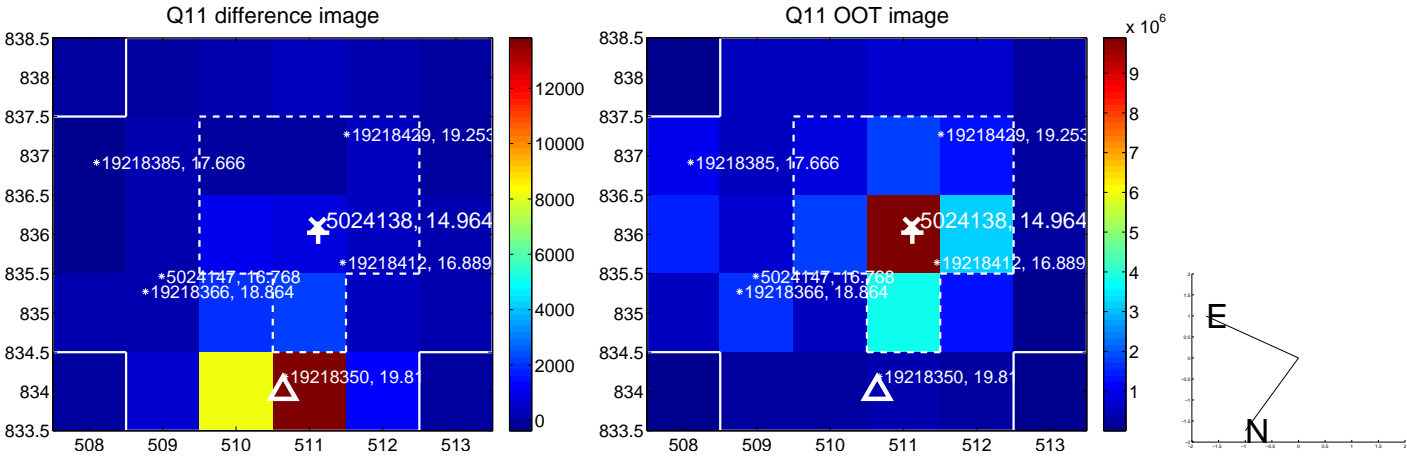
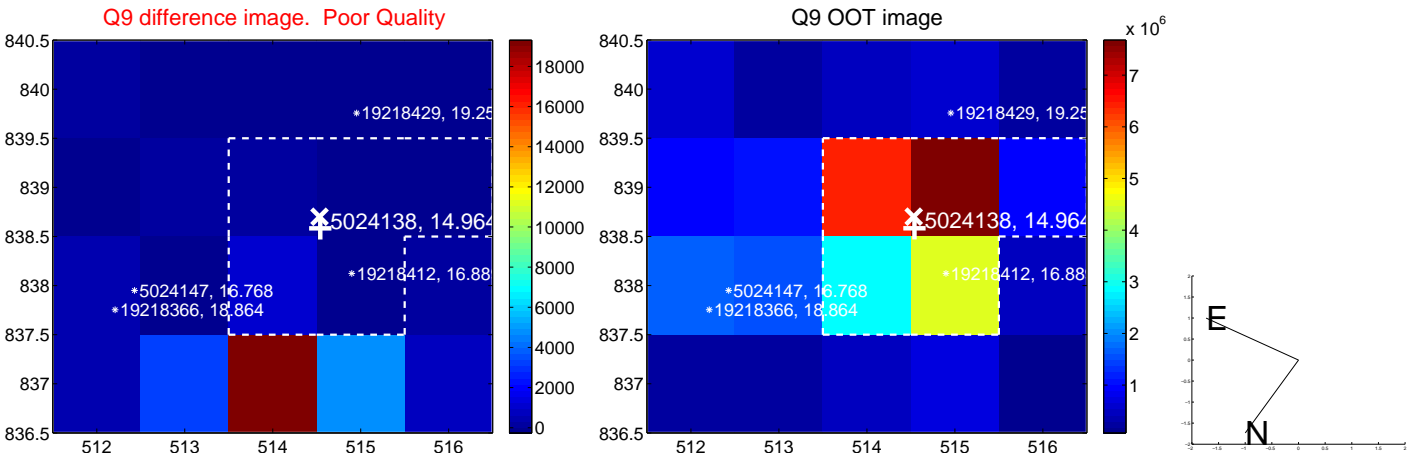
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



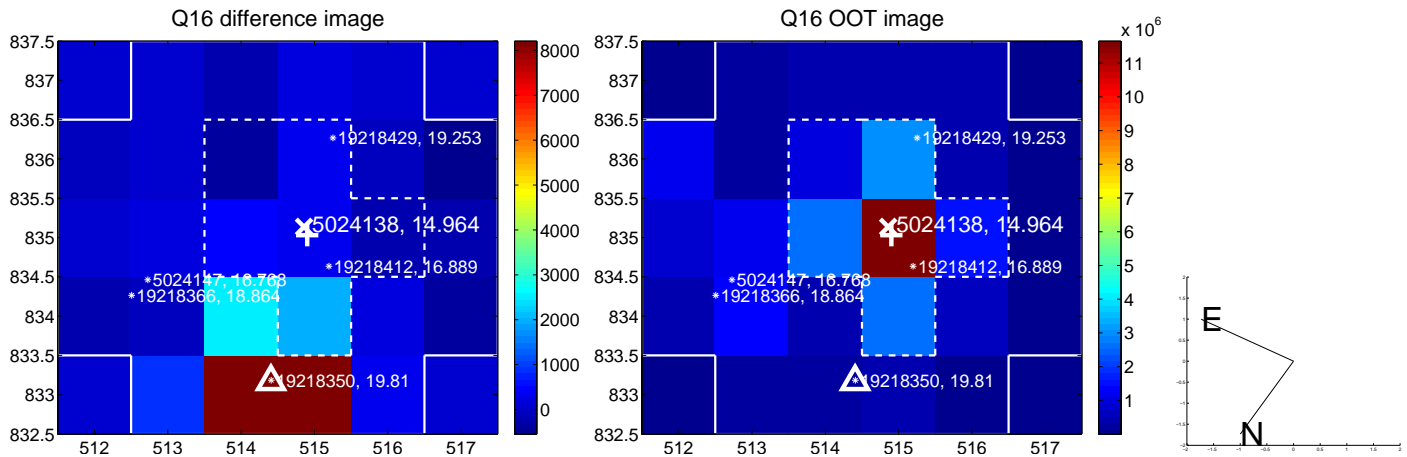
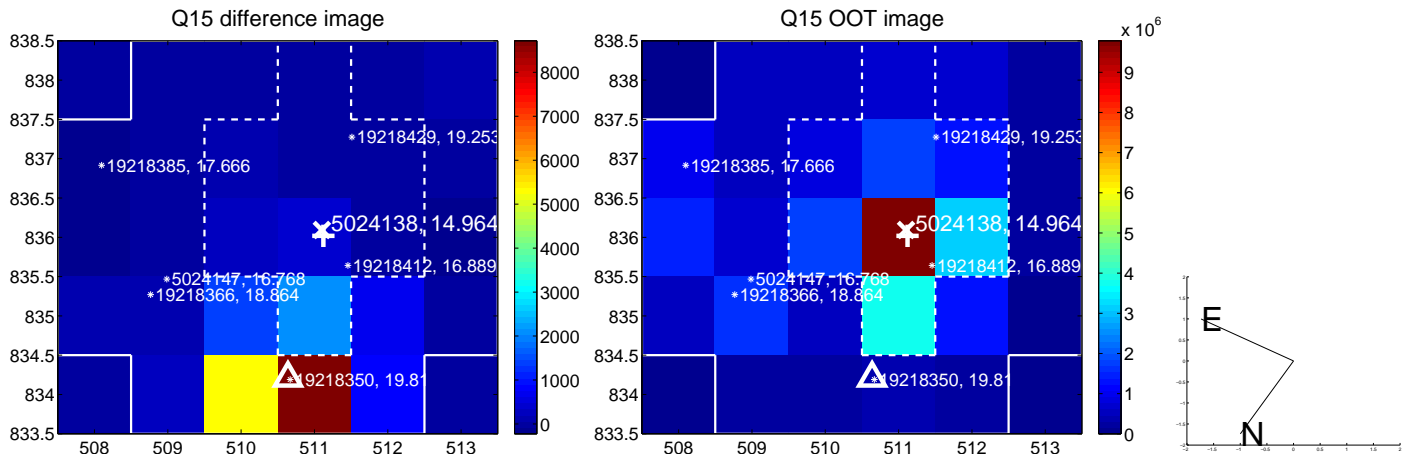
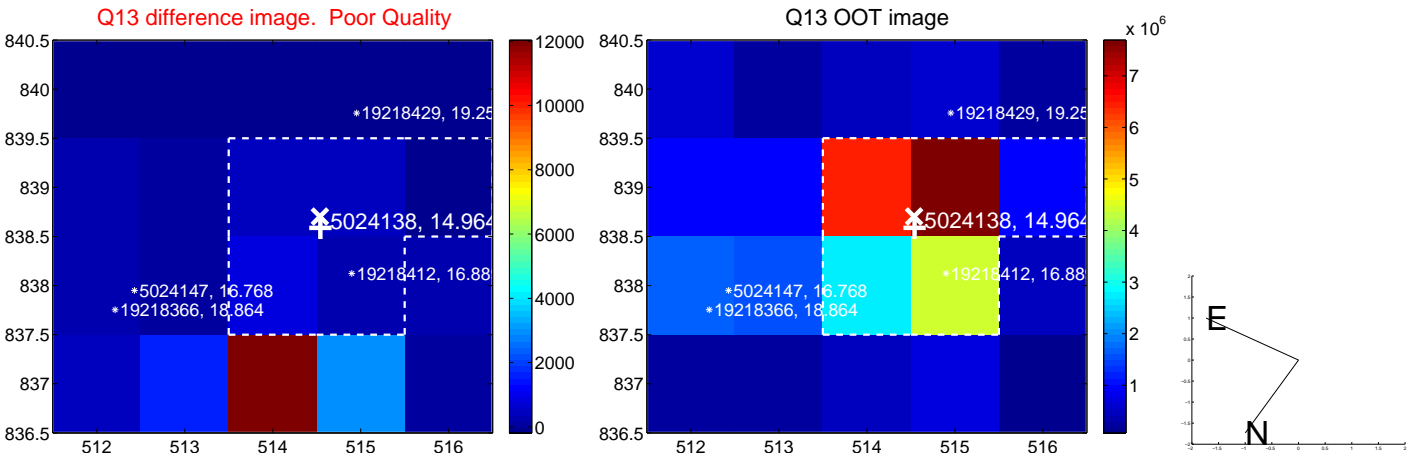
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



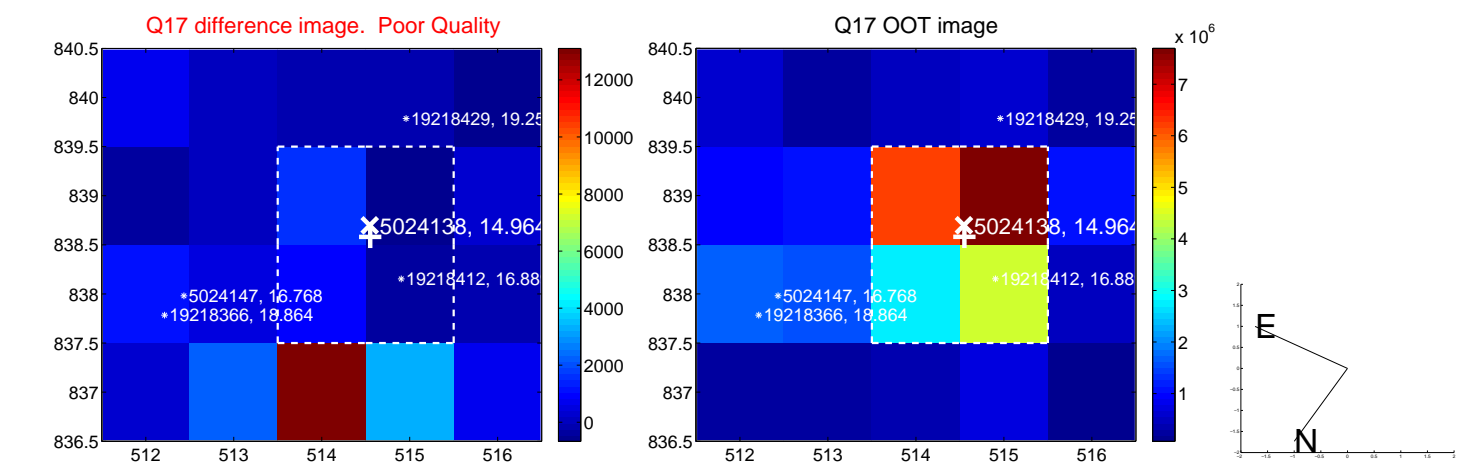
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



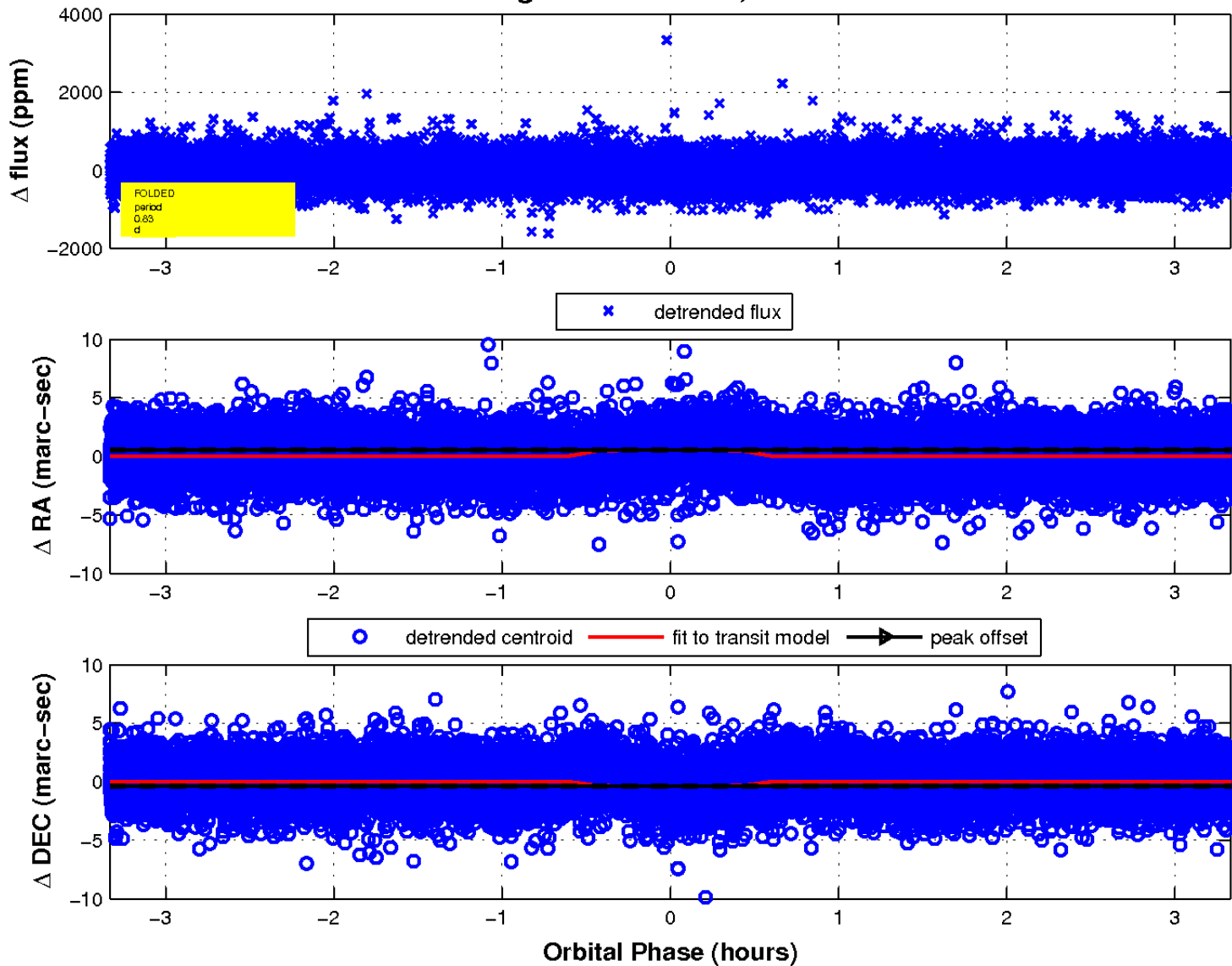
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

