

KIC 002854698

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})
002854698-01	OBS	0986.01	8.187372	138.059572	533.1	3.144	40.6	43.6	0.85	5251	2.21	88.64
002854698-02	OBS	0986.02	76.050664	161.709955	418.4	7.031	12.8	14.2	0.85	5251	1.96	4.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854698-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
002854698-02	OBS	PC	0.88	0	0	0	0	NO_COMMENT

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

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

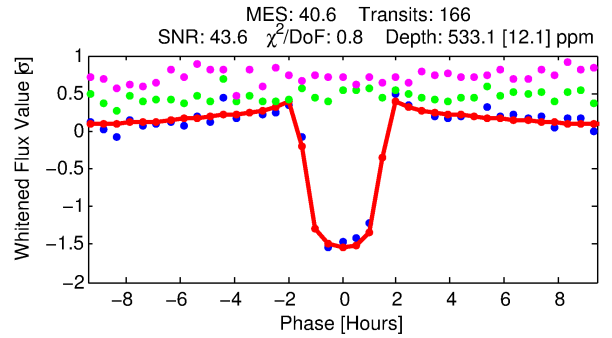
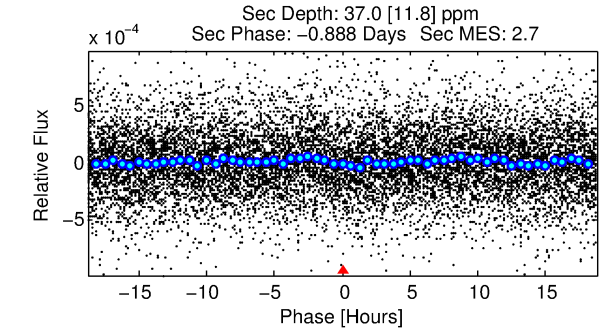
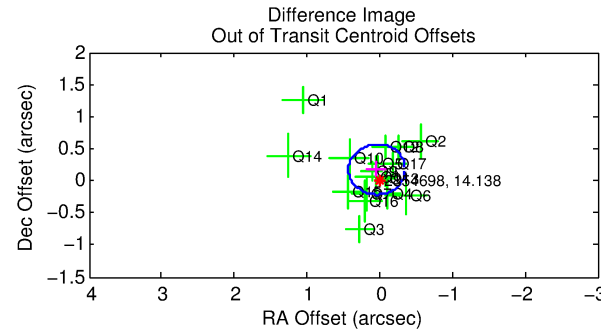
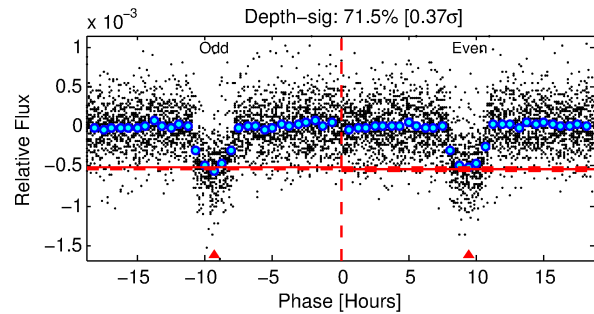
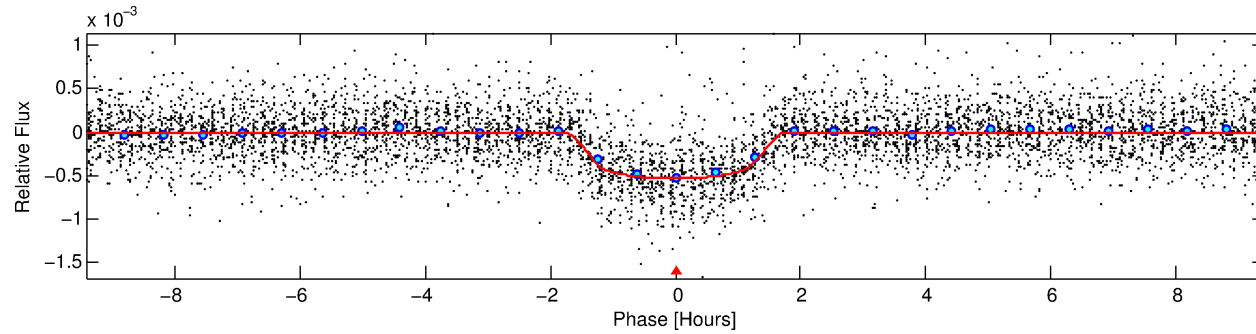
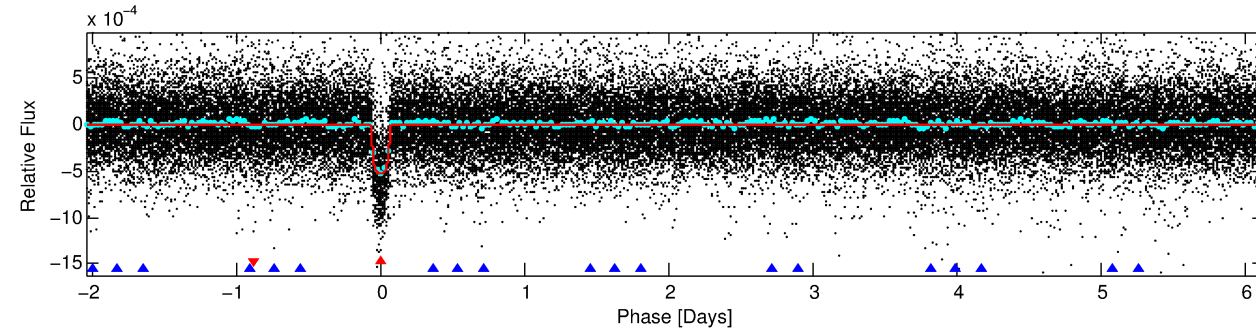
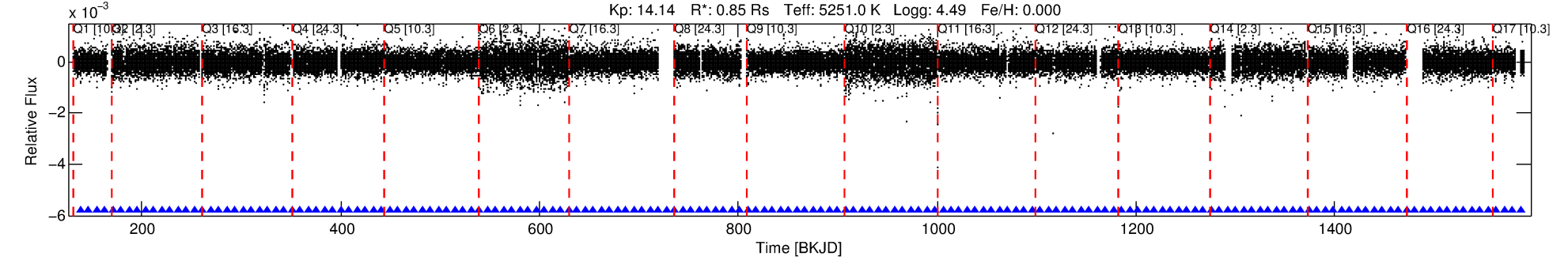
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002854698-01

No Significant Match Found

DV One-Page Summary

KIC: 2854698 Candidate: 1 of 2 Period: 8.187 d
KOI: K00986.01 Name: Kepler-260b Corr: 0.981



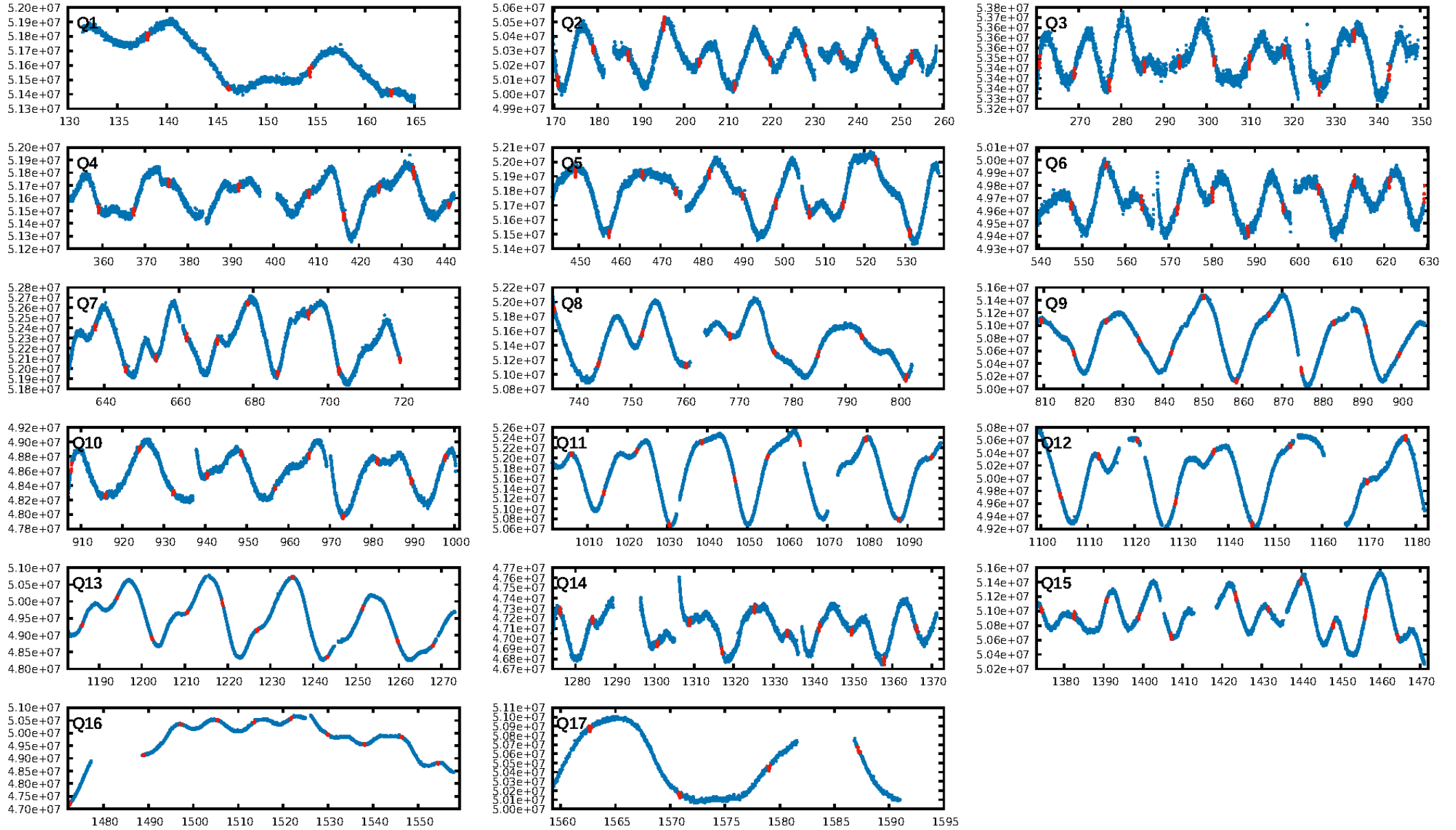
DV Fit Results:

Period = 8.18737 [0.00001] d
Epoch = 138.0596 [0.0013] BKJD
 R_p/R^* = 0.0238 [0.0039]
 a/R^* = 12.41 [7.79]
 b = 0.81 [0.27]
 Seff = 88.64 [12.86]
 T_{eq} = 782 [28] K
 R_p = 2.21 [0.40] R_e
 a = 0.0744 [0.0055] AU
 A_g = 23.16 [10.93] [2.03 σ]
 T_{effp} = 2654 [307] K [6.06 σ]

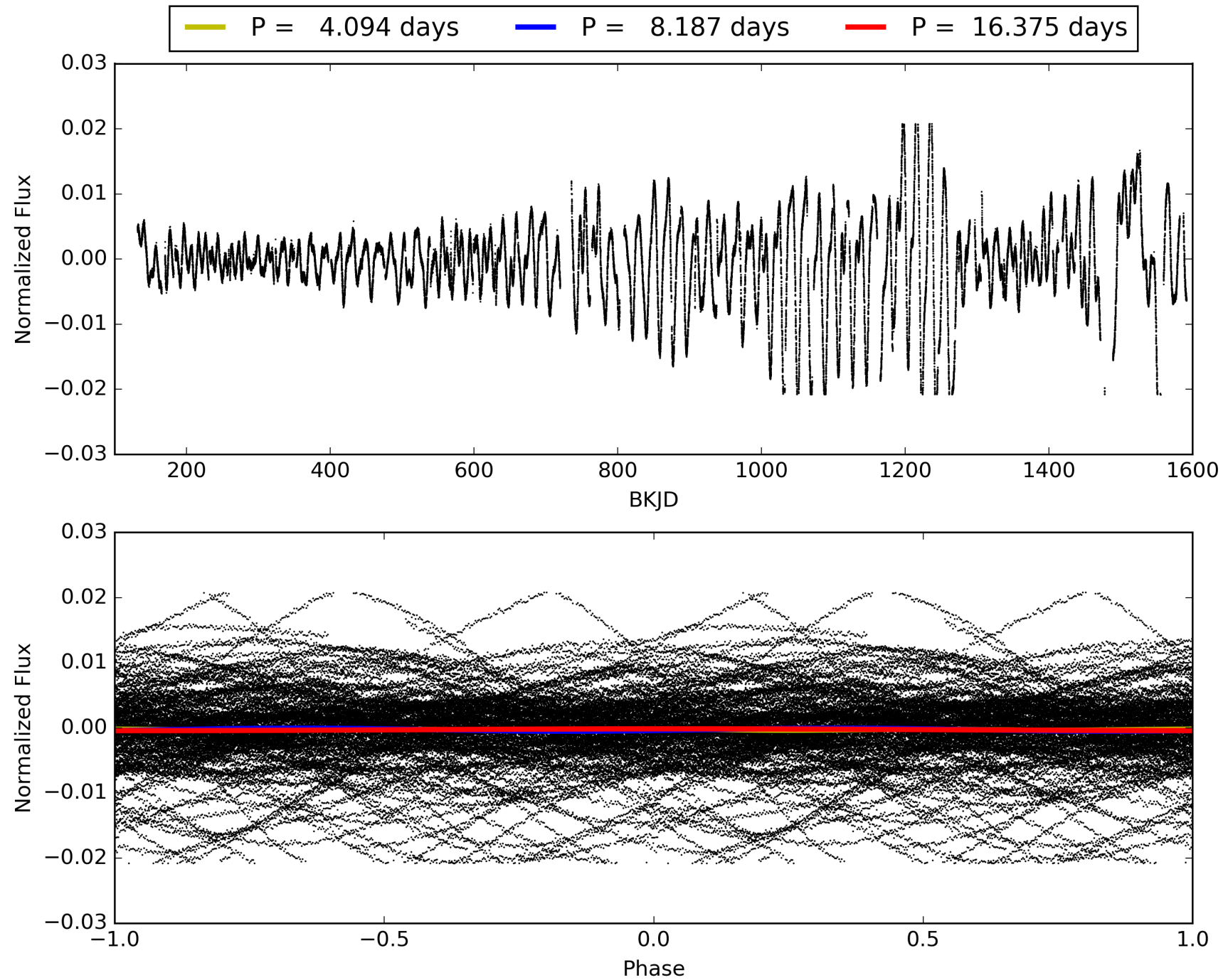
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [211.47 σ]
ModelChiSquare2-sig: 97.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [158/158]
GhostDiagnostic-chr: 2.458
Centroid-sig: 3.8%
Centroid-so: 0.349 arcsec [1.38 σ]
OotOffset-rm: 0.180 arcsec [1.37 σ]
KicOffset-rm: 0.052 arcsec [0.38 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 002854698-01, PDC Light Curves

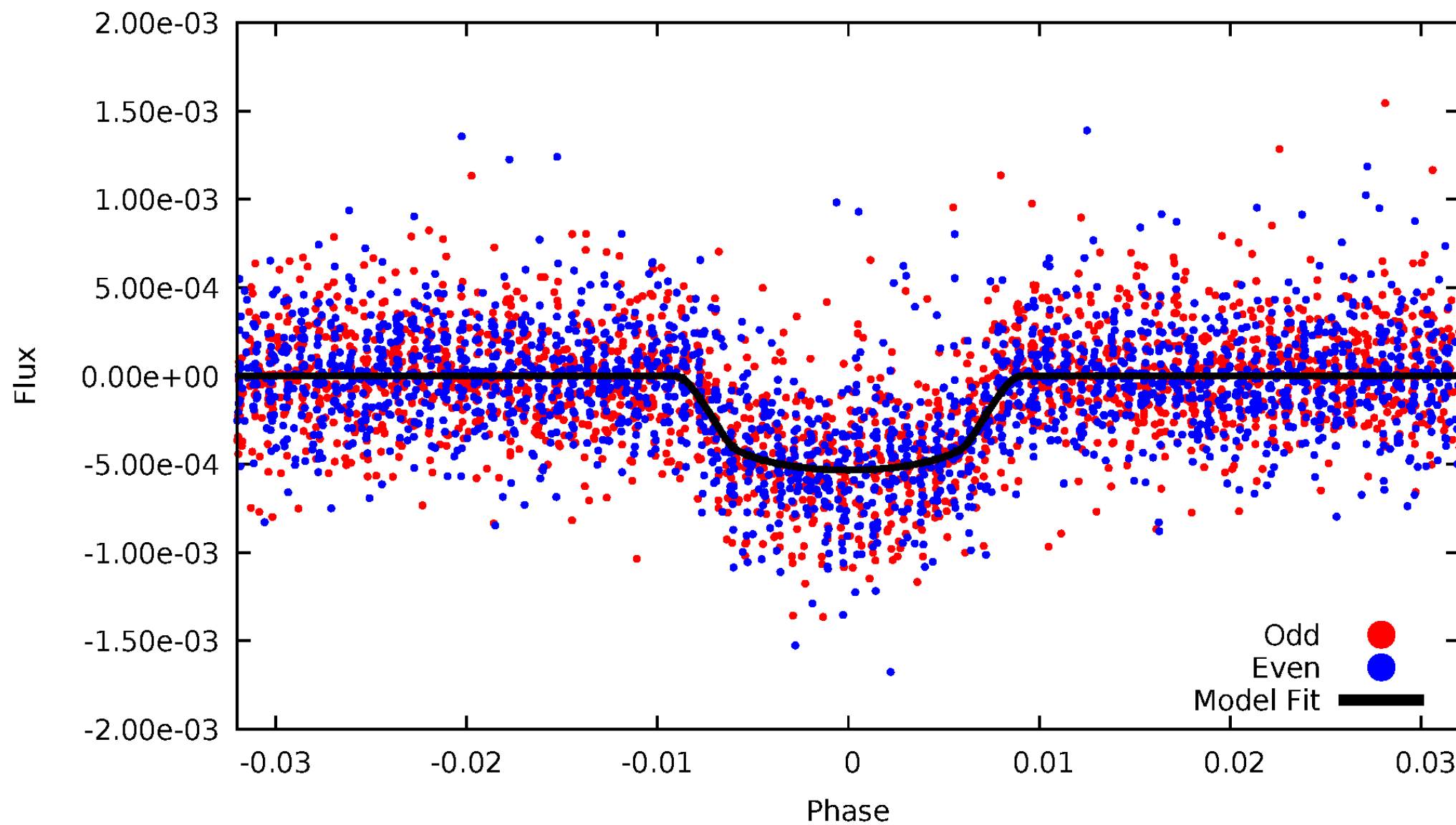


TCE 002854698-01



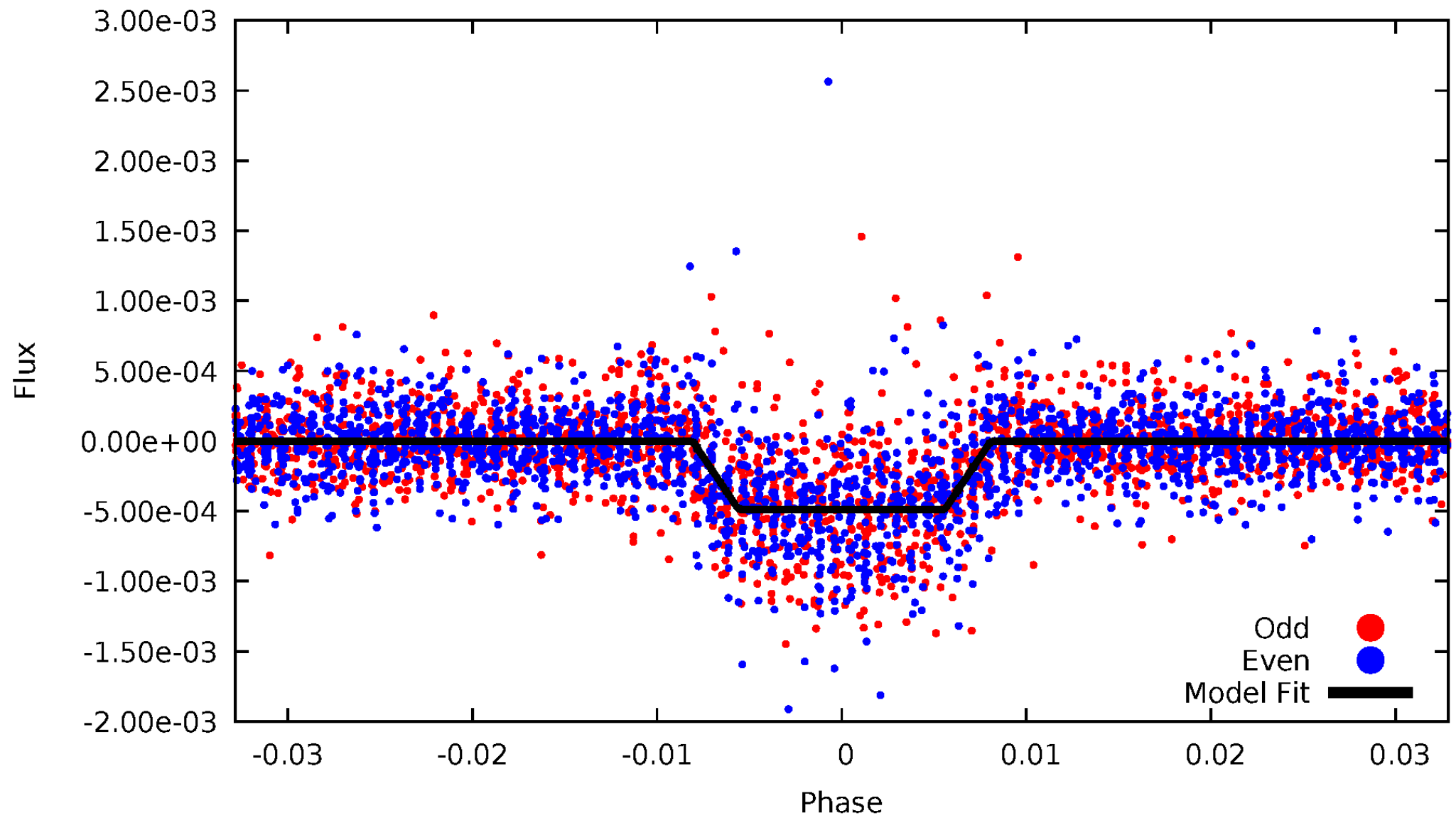
DV Odd/Even

TCE 002854698-01



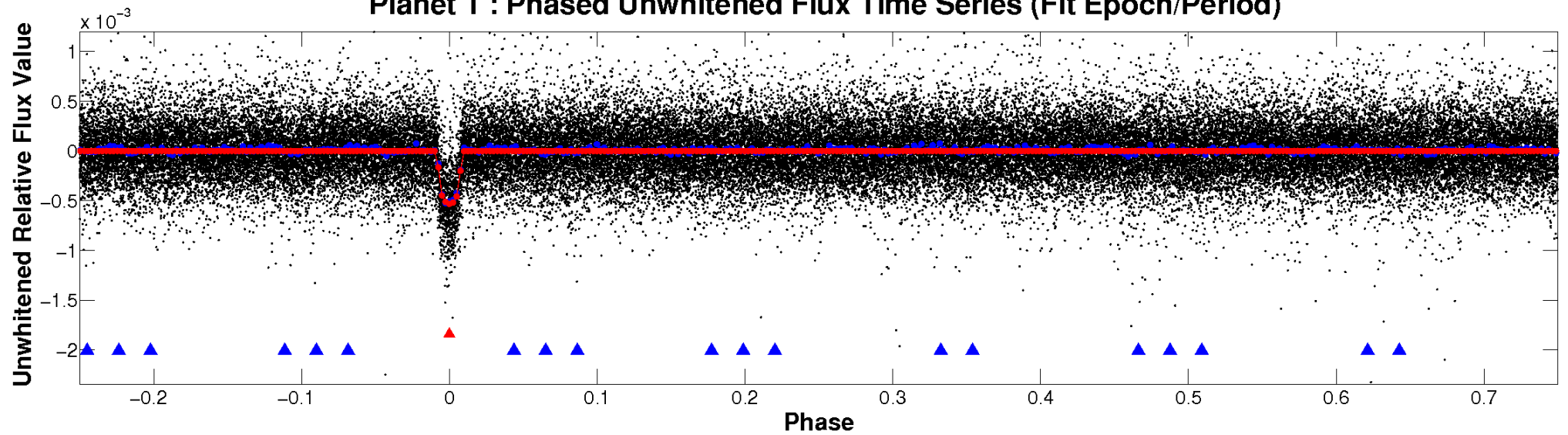
ALT Odd/Even

TCE 002854698-01

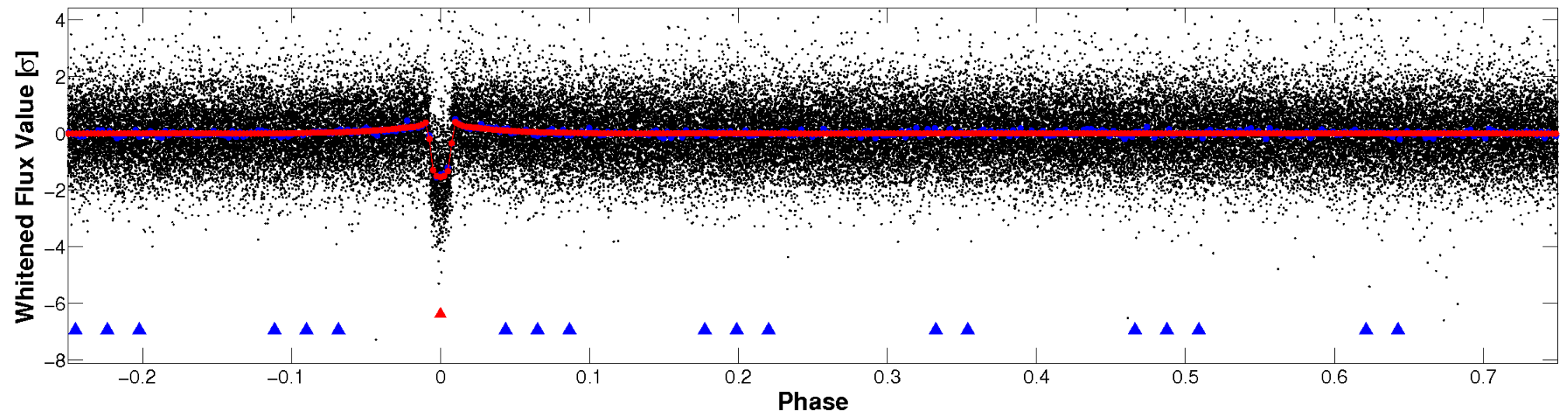


Non-Whitened Vs. Whitened Light Curve

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

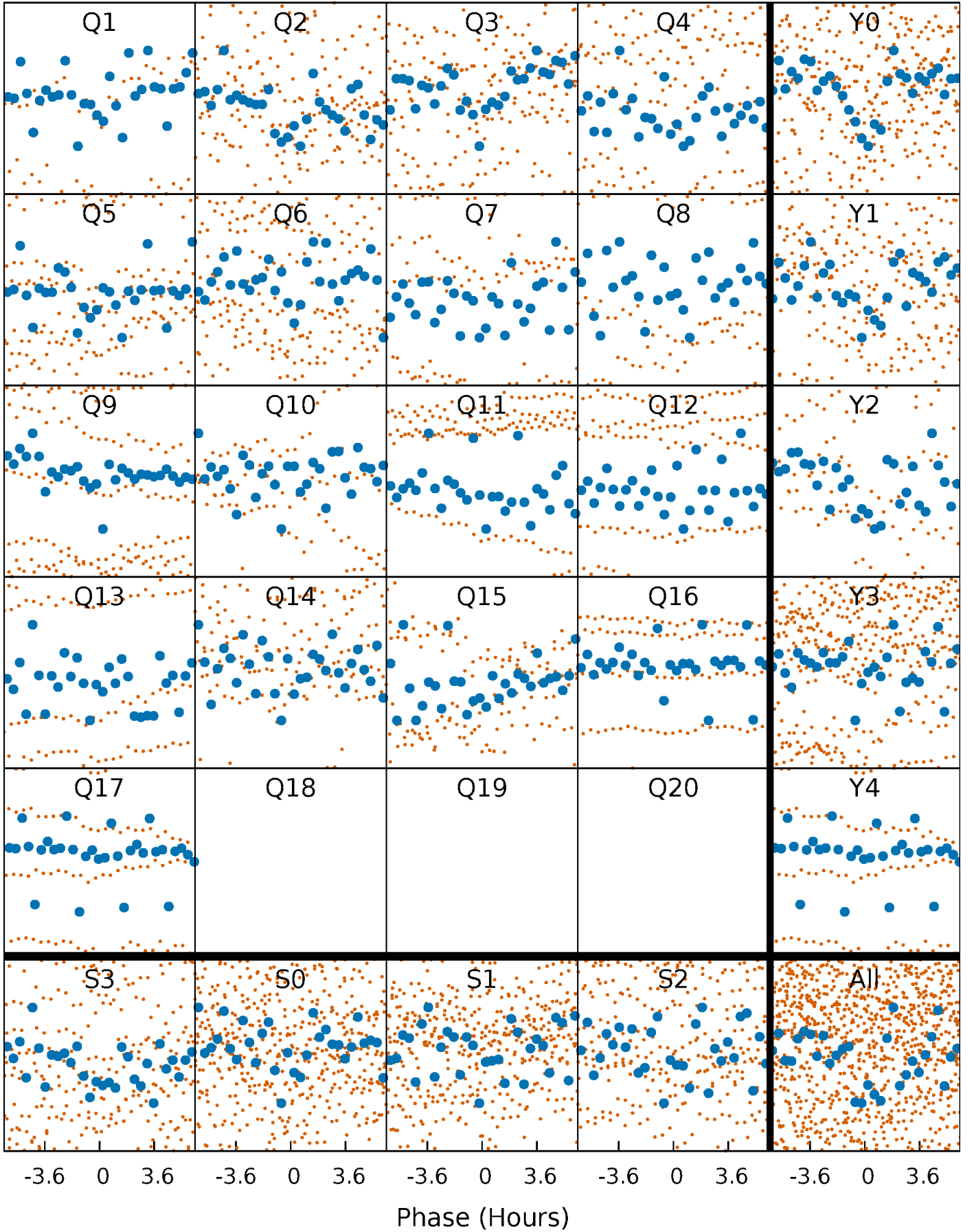


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



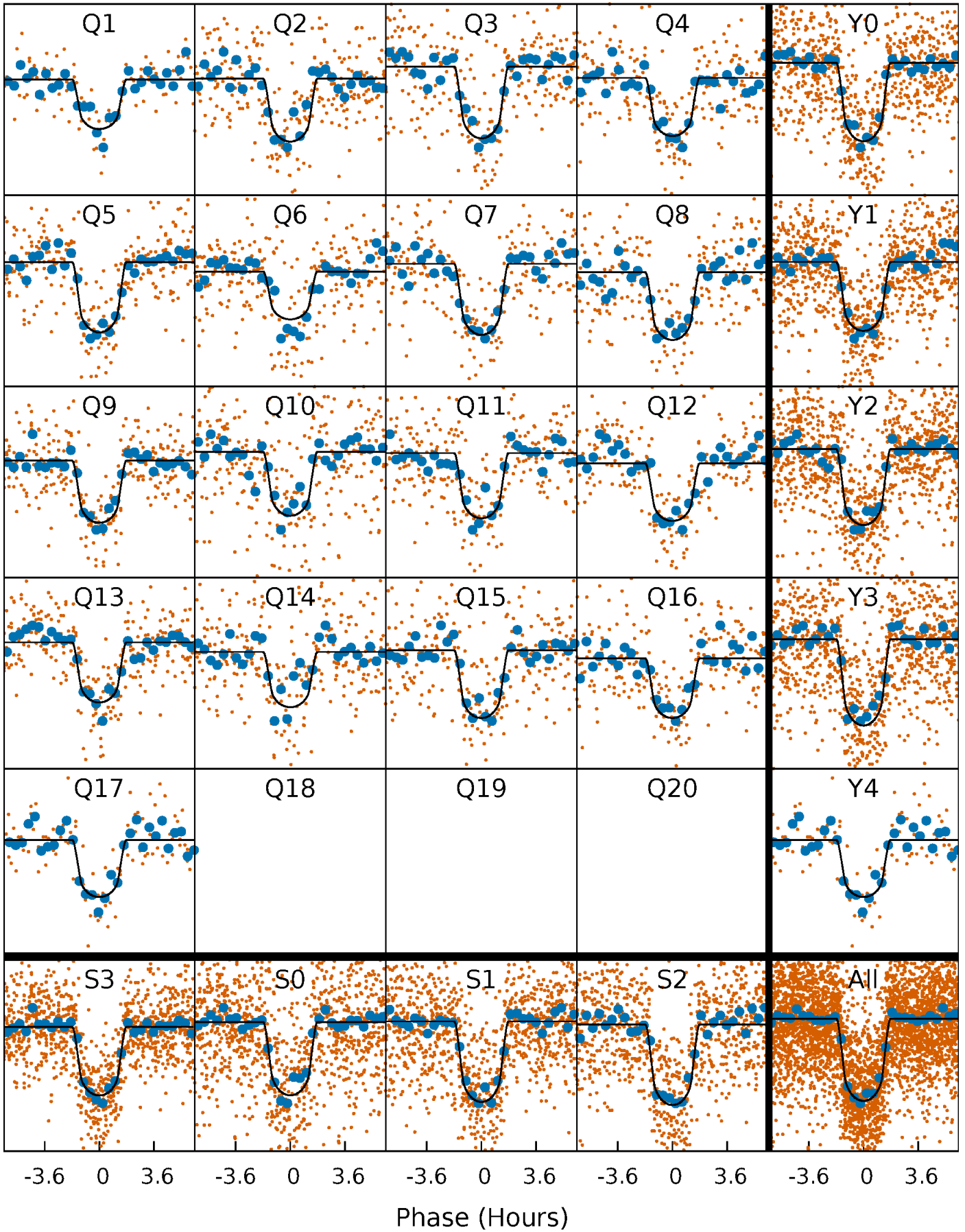
PDC Quarter-Phased Transit Curves

TCE 002854698-01 P= 8.187372 Days $T_0=138.059572$ (BKJD)



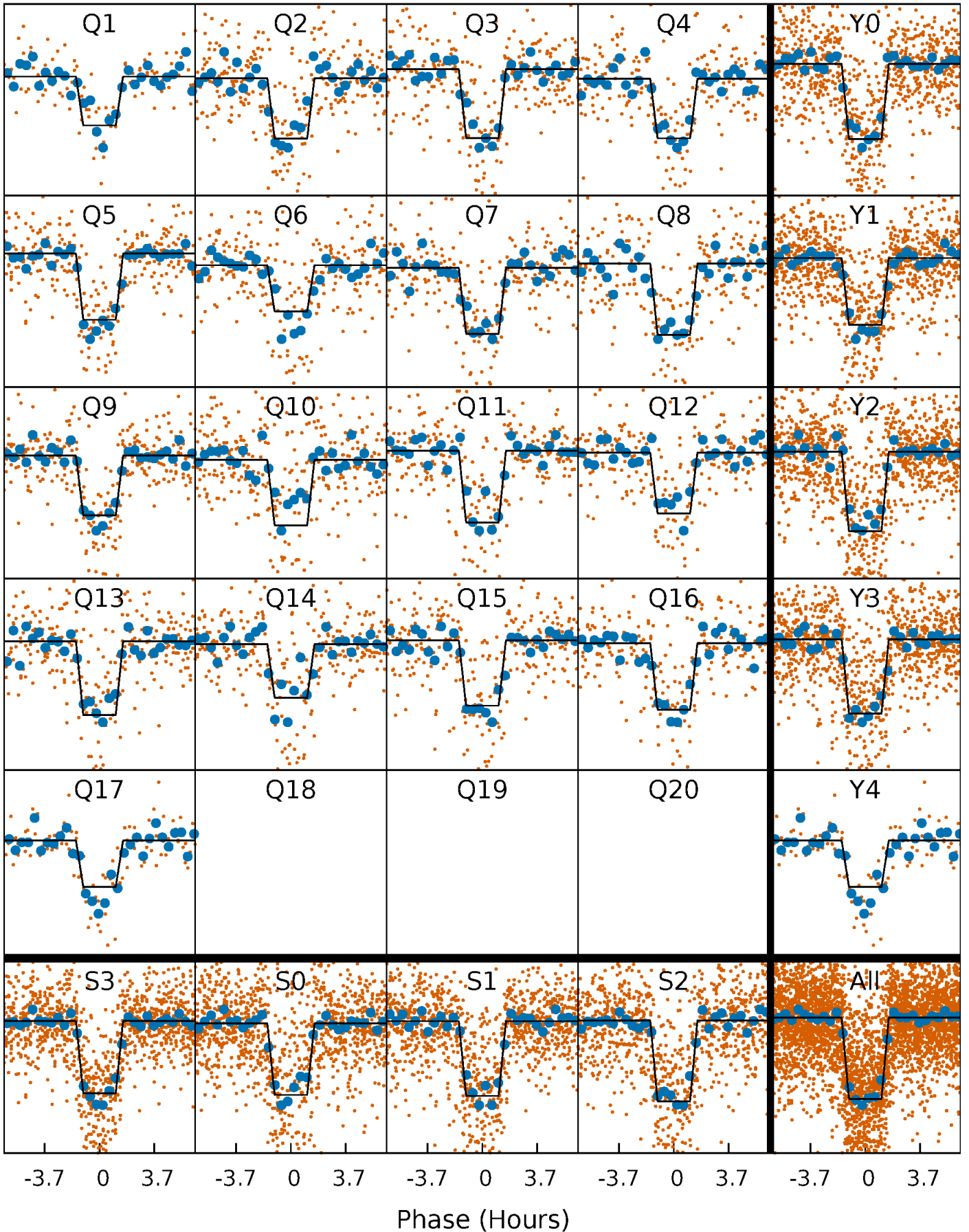
DV Quarter-Phased Transit Curves

TCE 002854698-01 P= 8.187372 Days $T_0=138.059572$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

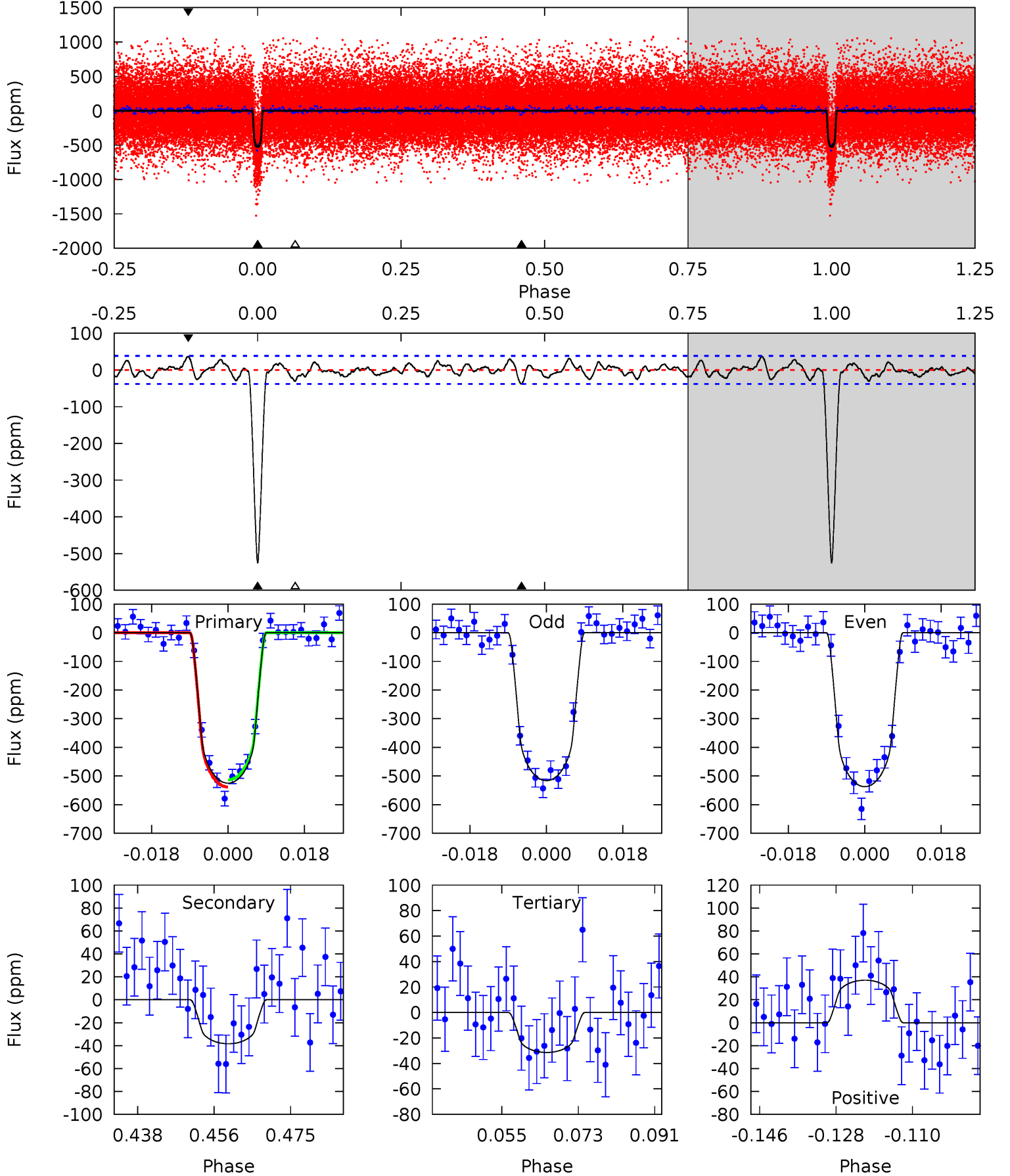
TCE 002854698-01 P= 8.187367 Days $T_0=138.060749$ (BKJD)



DV Model-Shift Uniqueness Test

002854698-01, P = 8.187372 Days, E = 129.872200 Days

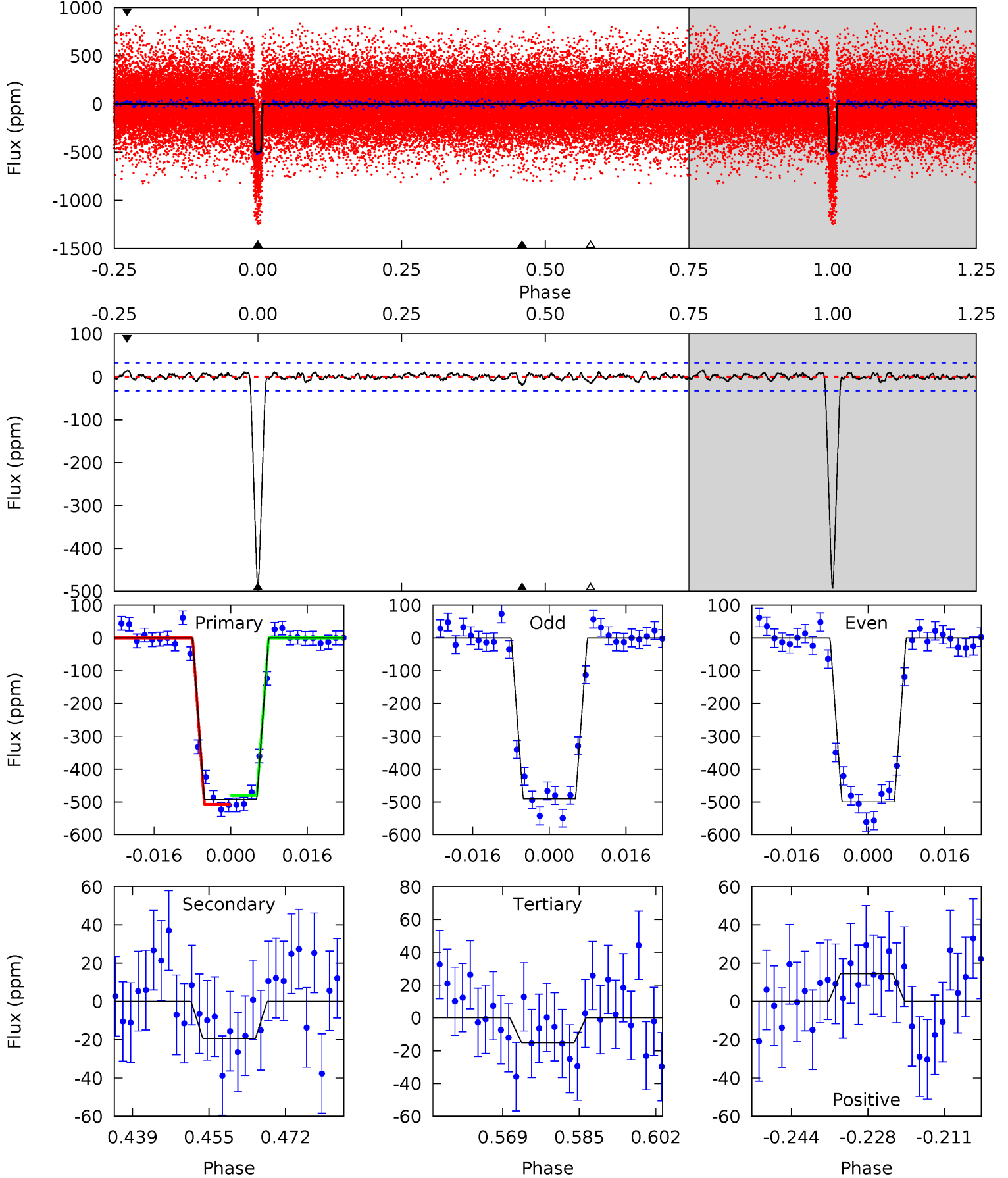
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
67.4	4.93	4.03	4.76	4.91	2.36	1.62	63.4	62.6	0.90	0.17	1.35	0.97	0.07	1.61



Alt Model-Shift Uniqueness Test

002854698-01, P = 8.187367 Days, E = 129.873382 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
75.5	2.97	2.33	2.22	4.93	2.40	0.78	73.2	73.3	0.64	0.75	0.75	0.97	0.03	2.05



Stellar Parameters For KIC 002854698

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5251^{+105}_{-105}	$4.494^{+0.072}_{-0.048}$	$0.000^{+0.150}_{-0.150}$	$0.849^{+0.056}_{-0.063}$	$0.821^{+0.057}_{-0.036}$	$1.887^{+0.485}_{-0.322}$
	+2%/-2%	+2%/-1%	+inf%/-inf%	+7%/-7%	+7%/-4%	+26%/-17%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 002854698-01 / KOI 0986.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-38 ± 8	$2.20^{+0.36}_{-0.36}$	1090^{+32}_{-32}	3232^{+206}_{-187}	25^{+11}_{-9}
Alt.	-19 ± 7	$2.05^{+0.36}_{-0.39}$	1092^{+30}_{-32}	2986^{+229}_{-221}	14^{+9}_{-6}

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

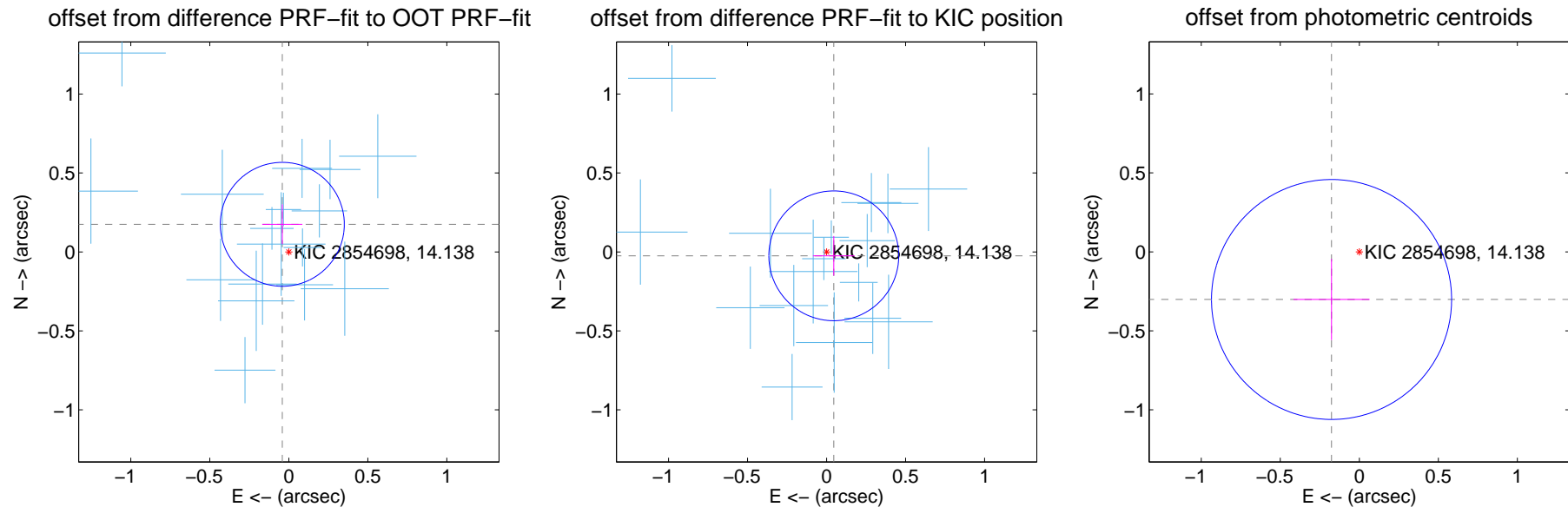
DV Centroid Data

Supplemental centroid analysis for 002854698-01. Kepler magnitude: 14.14. Transit SNR 43.57

There are 17 quarters with good PRF difference image offsets

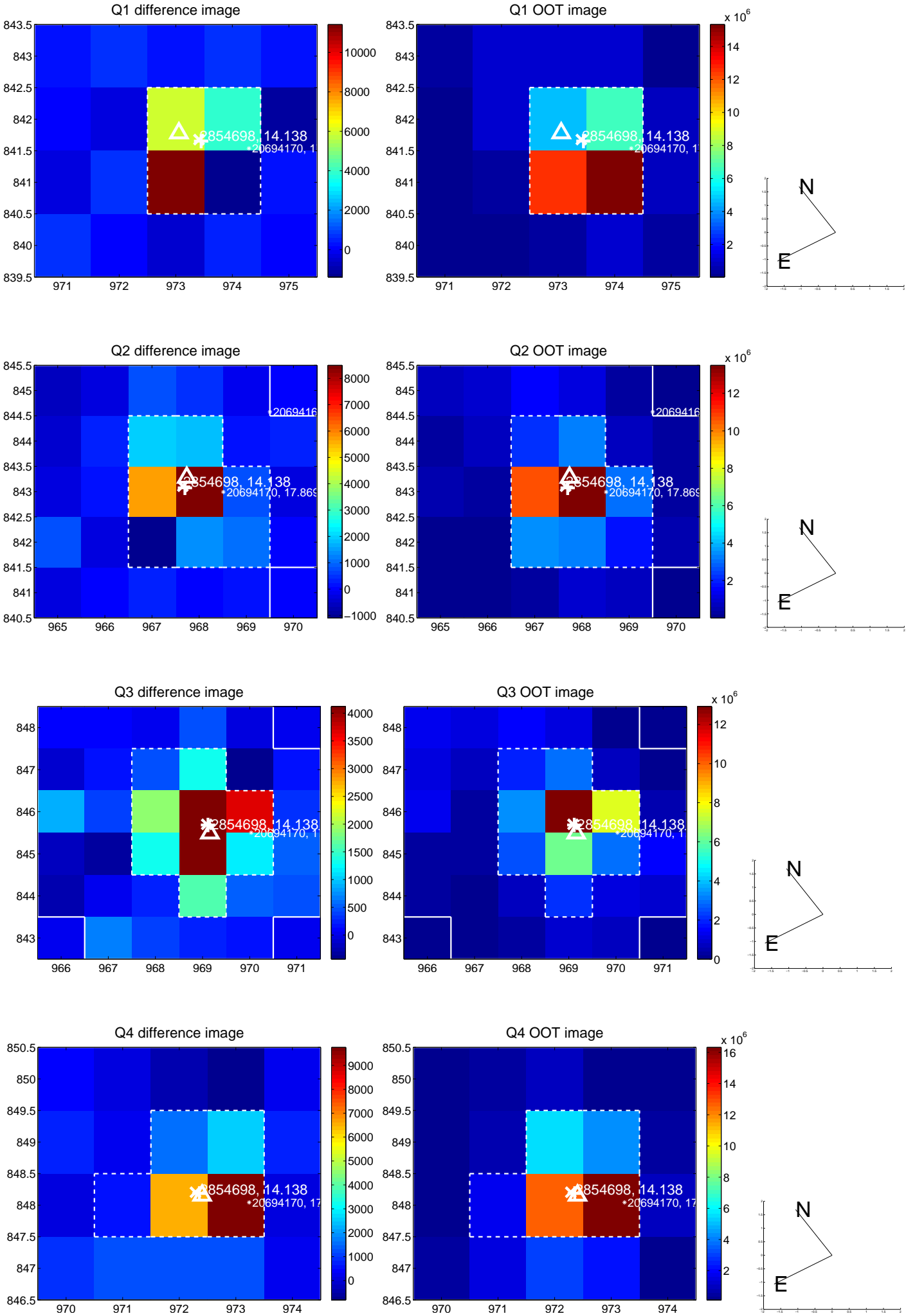
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.180 ± 0.131	1.37	0.041 ± 0.127	0.175 ± 0.126
PRF-fit source offset from KIC position	0.052 ± 0.137	0.38	-0.046 ± 0.132	-0.025 ± 0.125
photometric centroid source offset	0.35 ± 0.25	1.38	0.18 ± 0.24	-0.30 ± 0.26

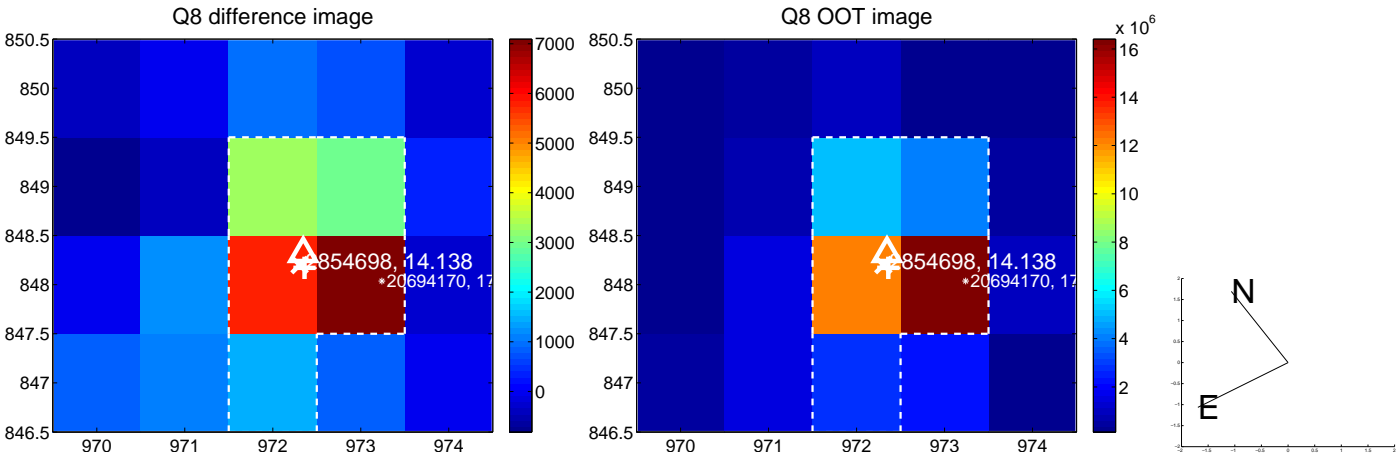
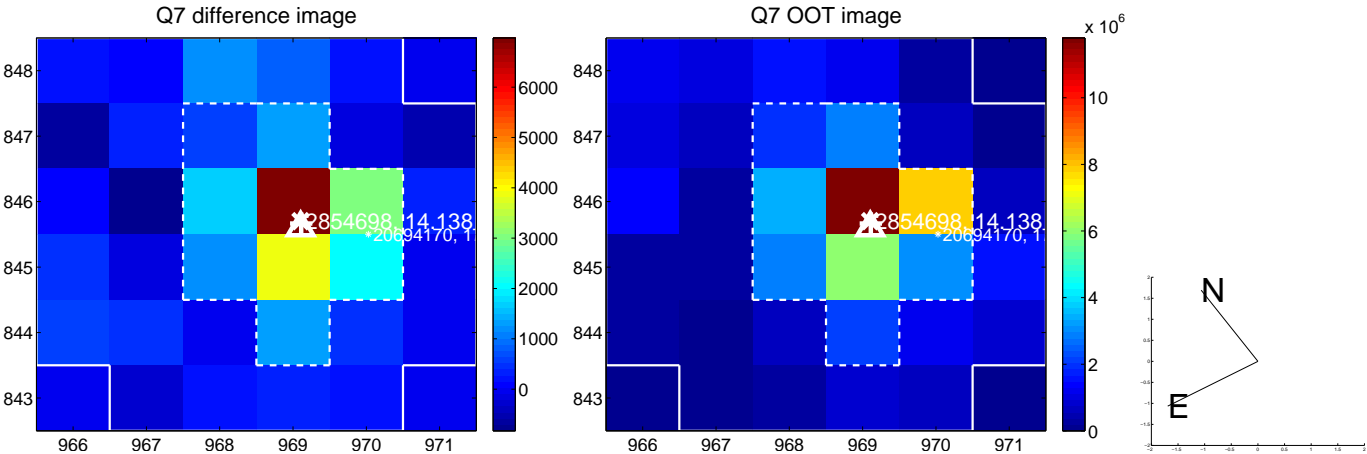
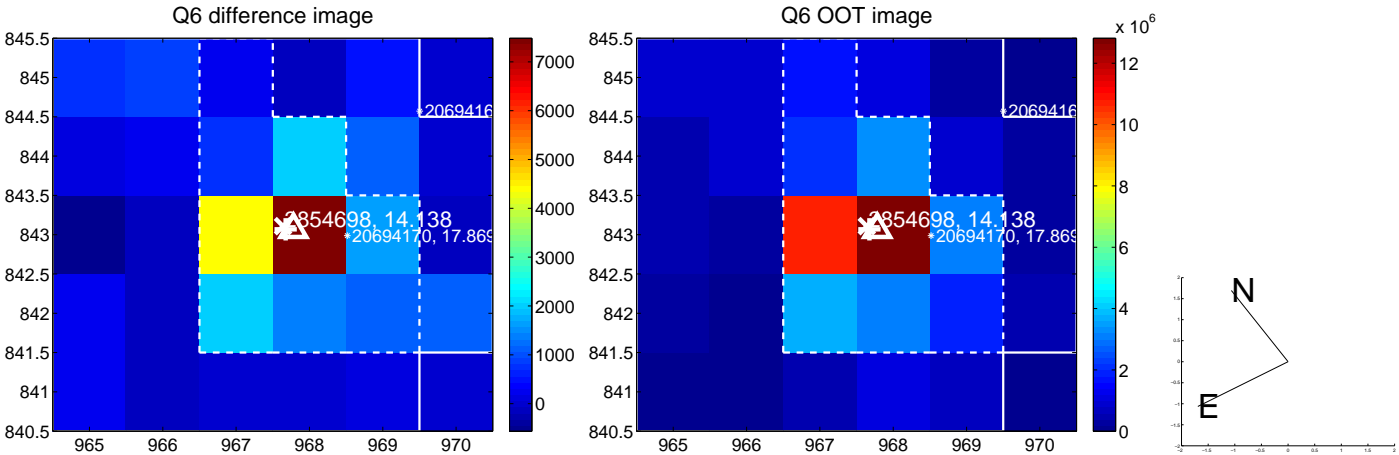
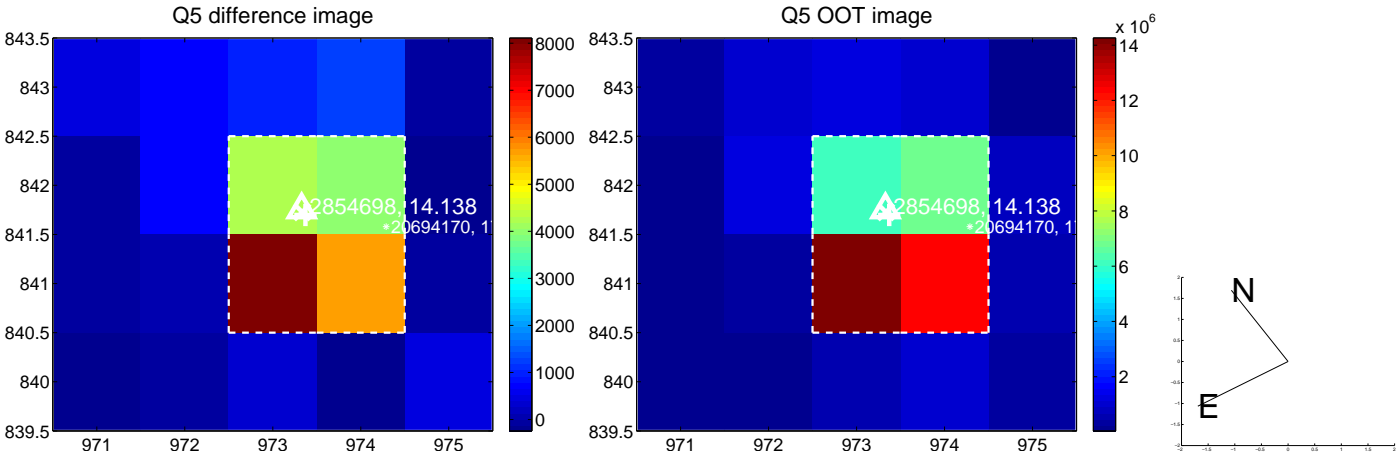


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

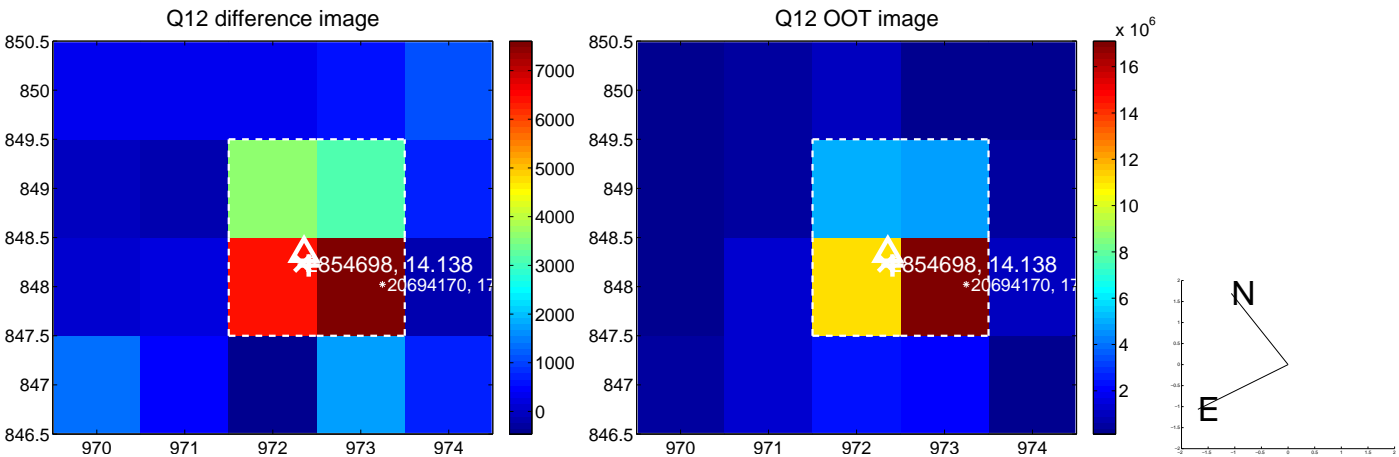
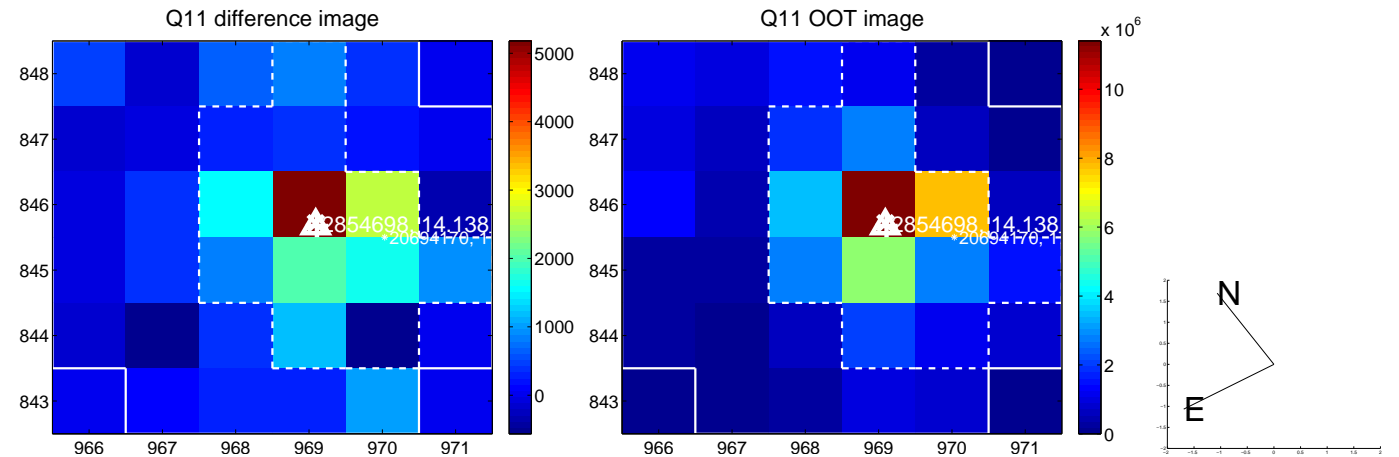
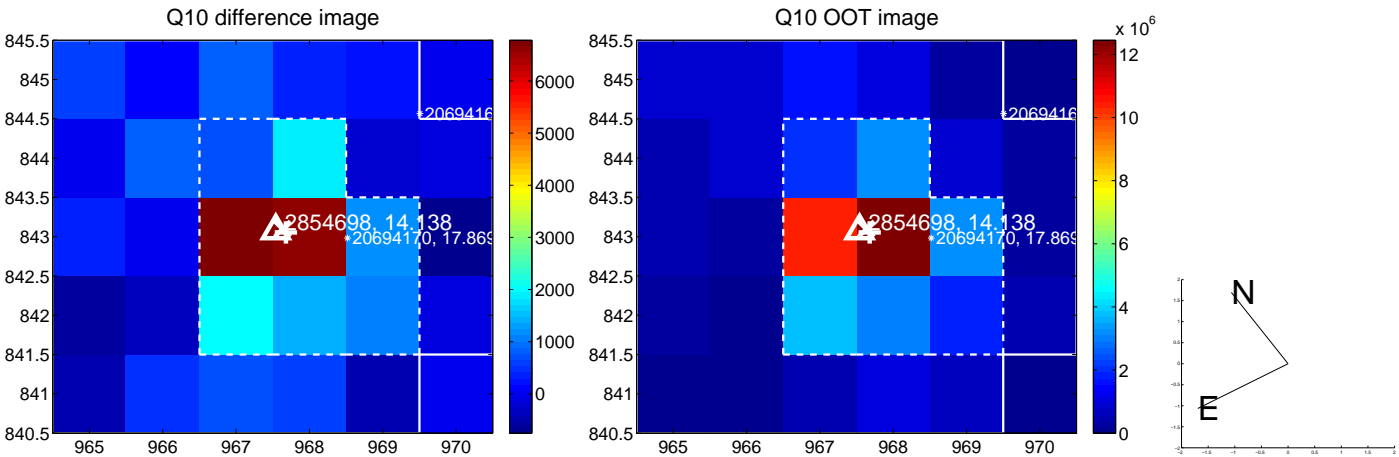
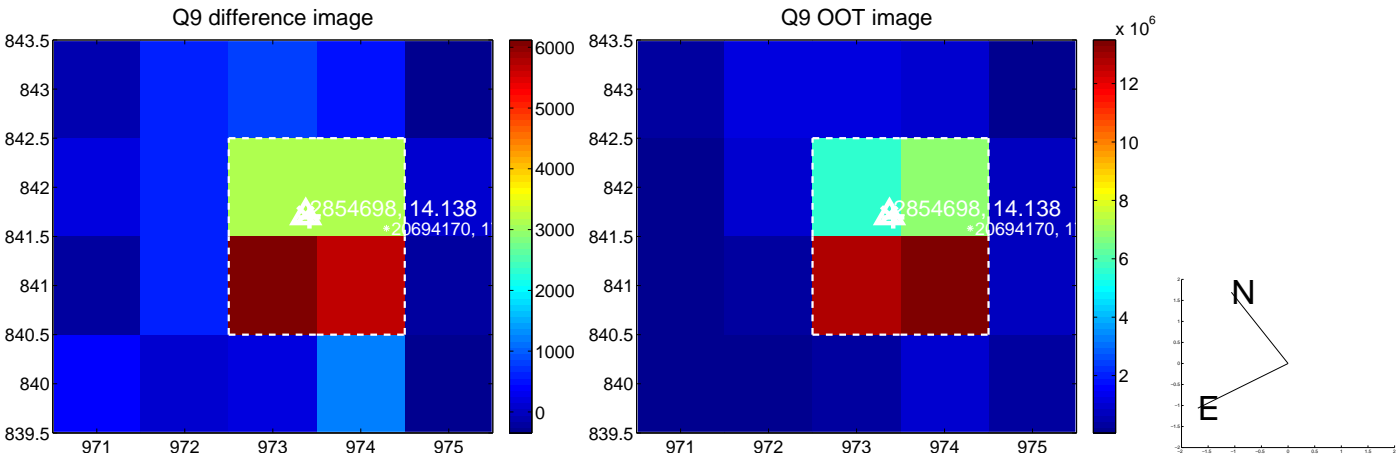
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



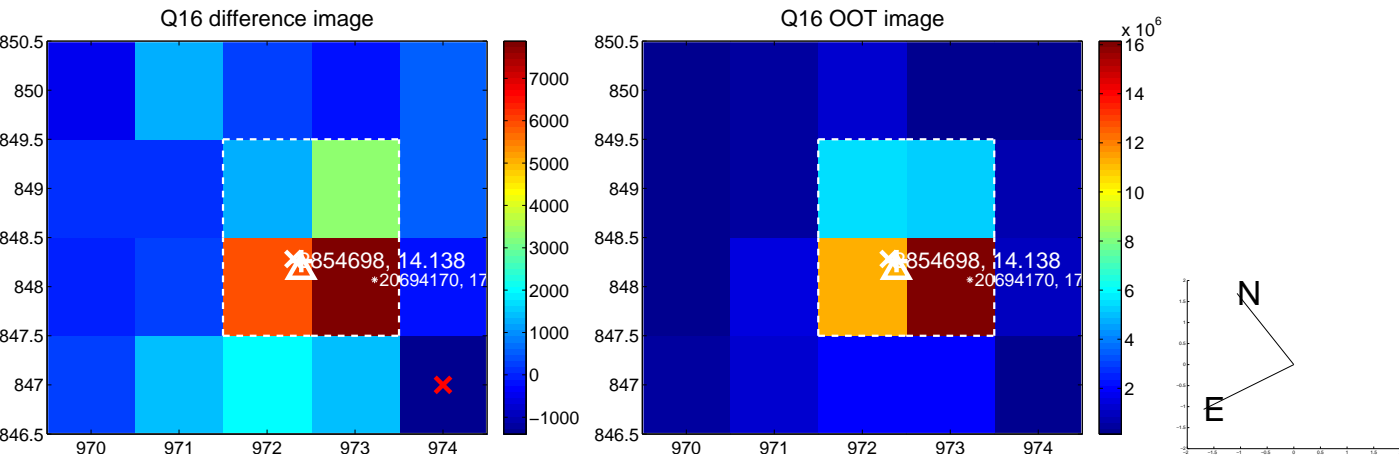
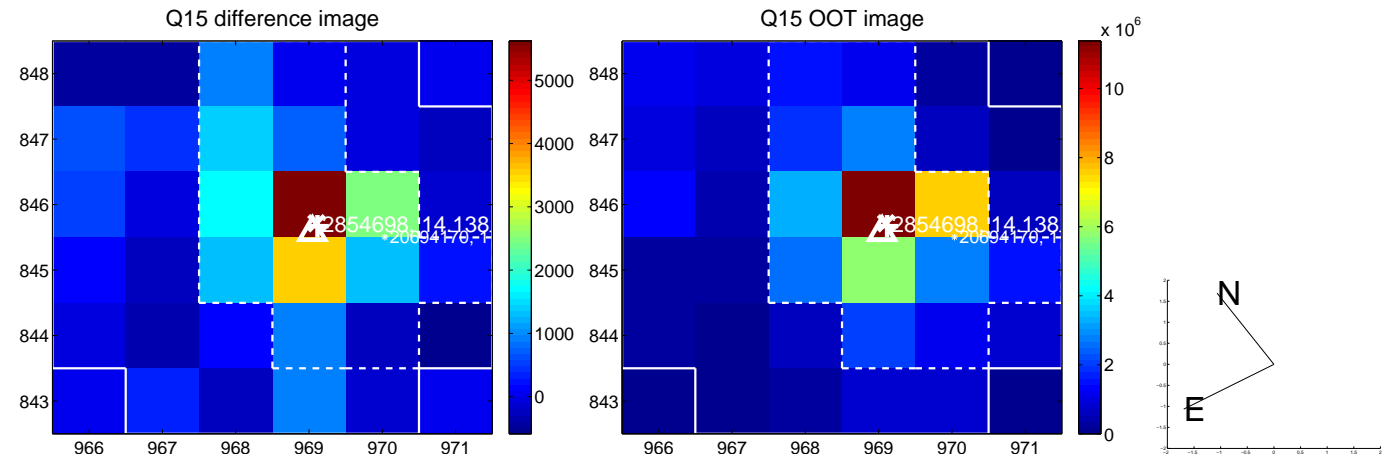
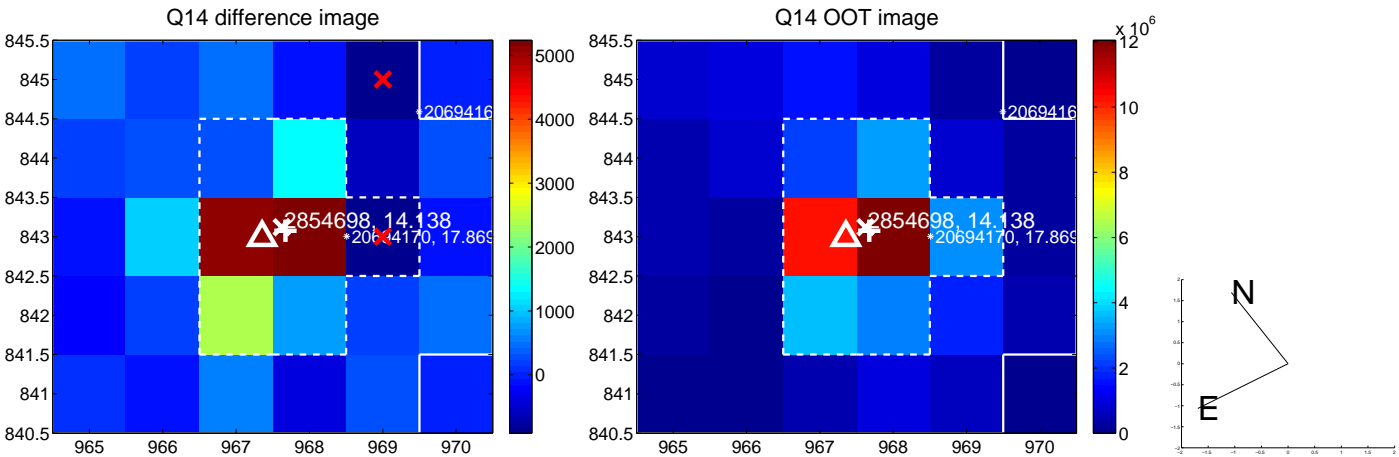
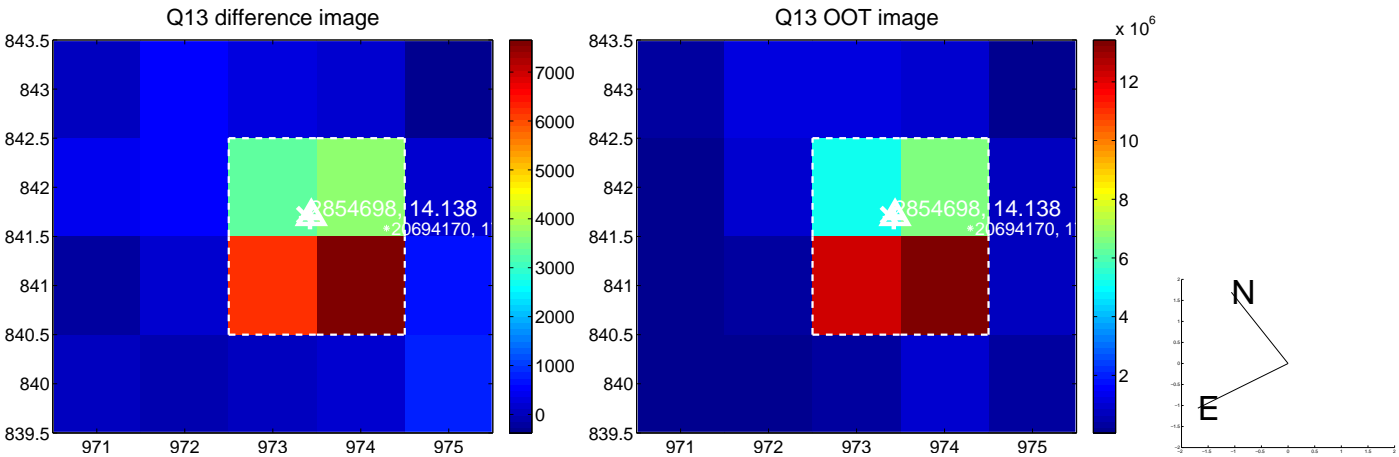
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



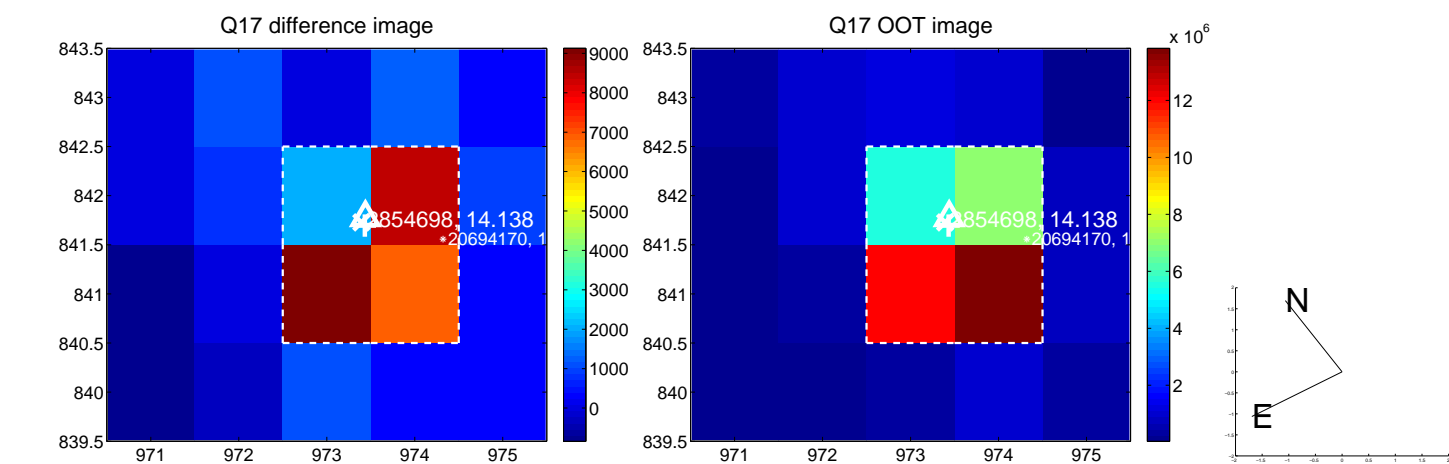
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



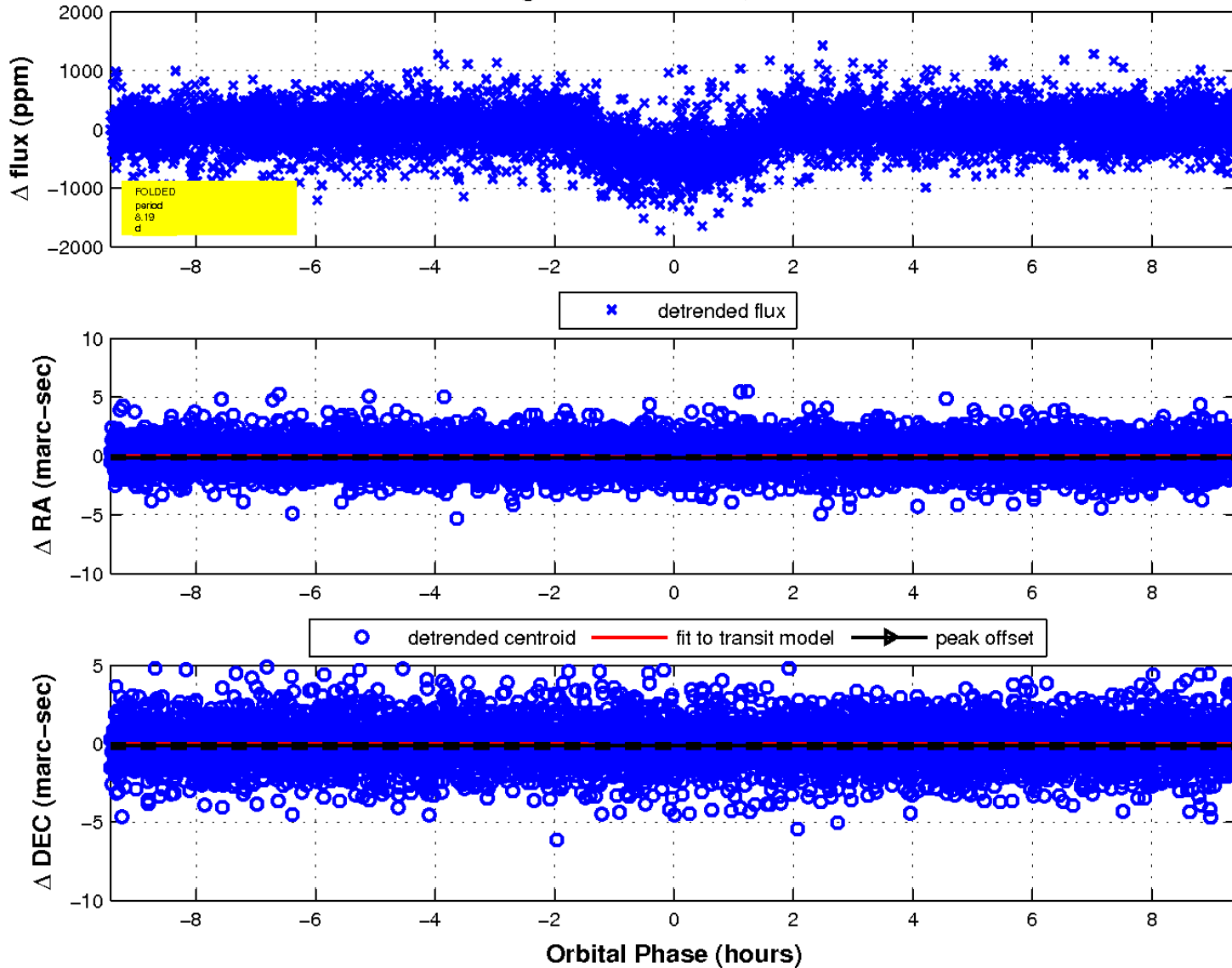
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

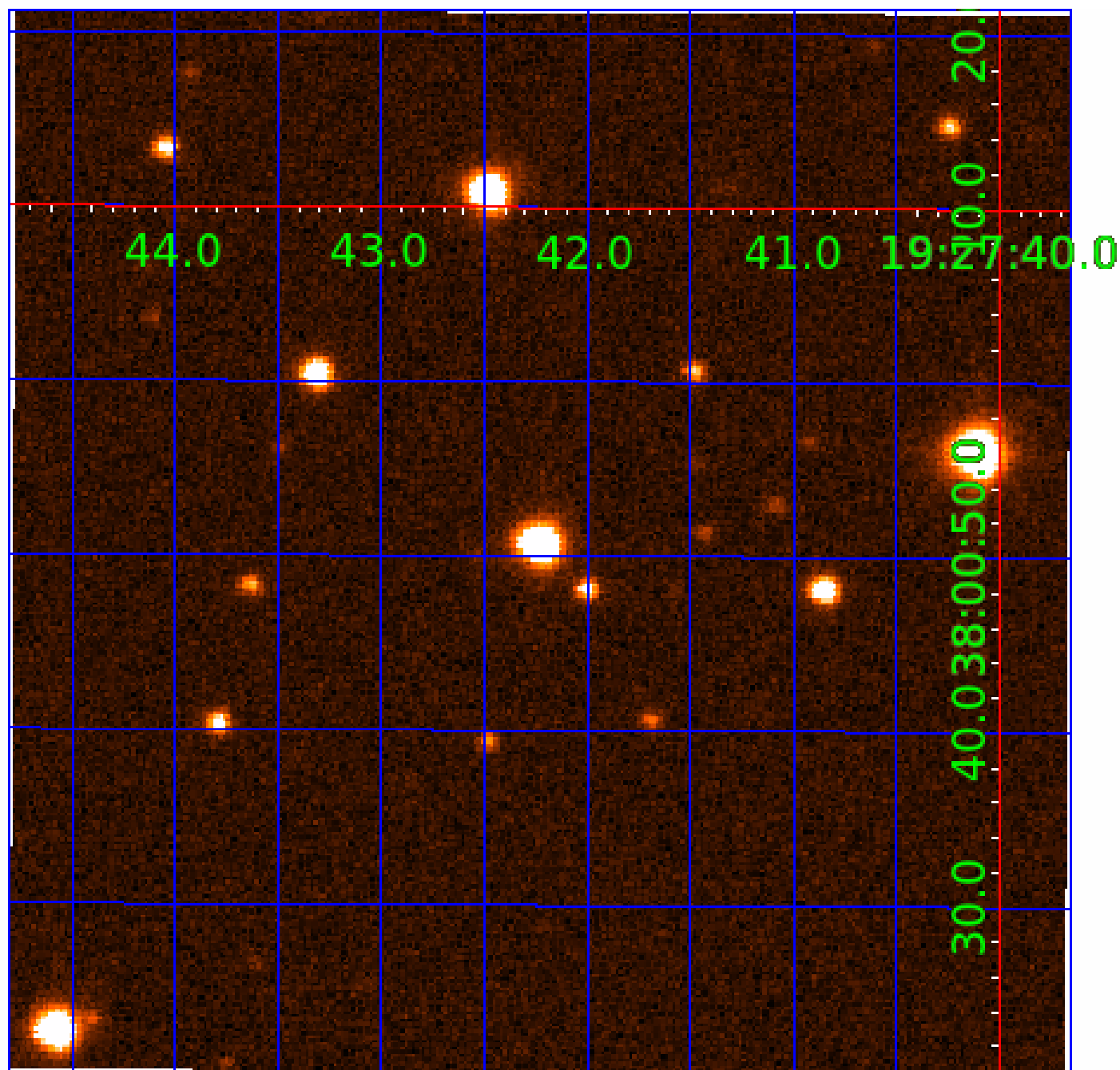


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 002854698

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})
002854698-01	OBS	0986.01	8.187372	138.059572	533.1	3.144	40.6	43.6	0.85	5251	2.21	88.64
002854698-02	OBS	0986.02	76.050664	161.709955	418.4	7.031	12.8	14.2	0.85	5251	1.96	4.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854698-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
002854698-02	OBS	PC	0.88	0	0	0	0	NO_COMMENT

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

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

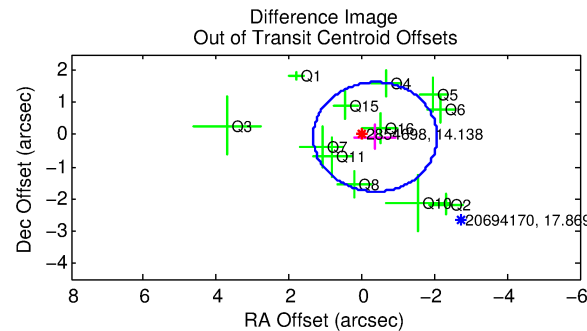
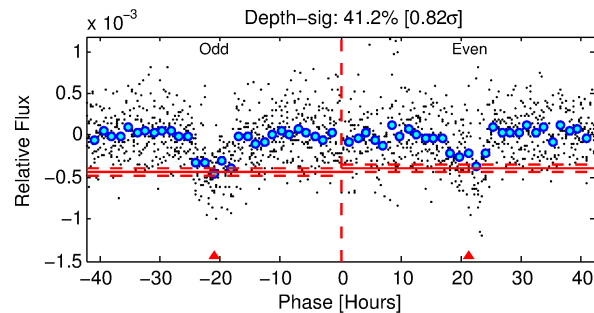
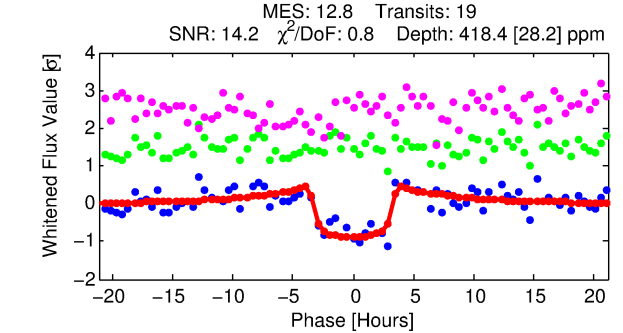
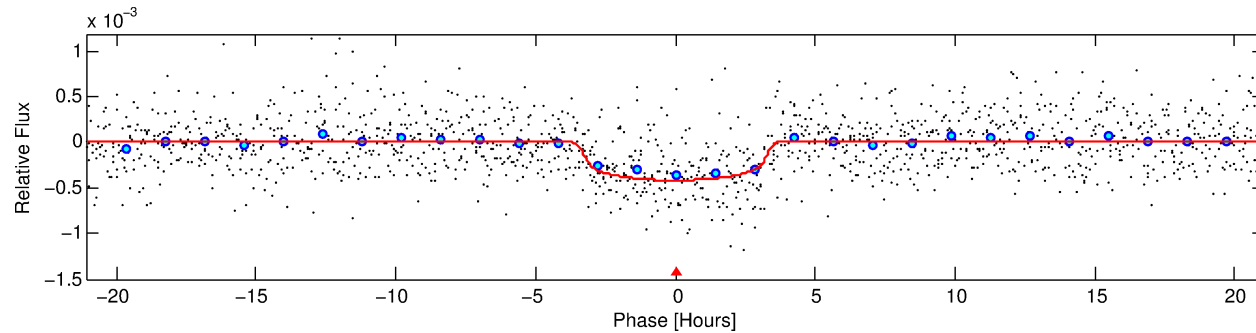
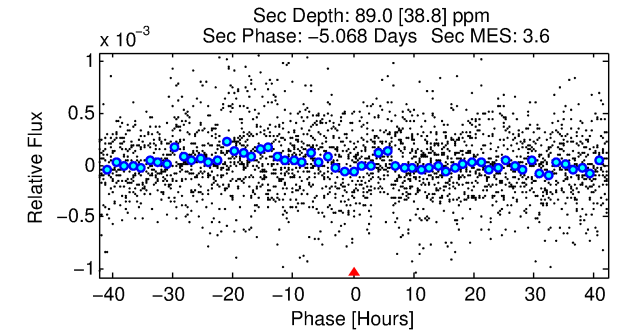
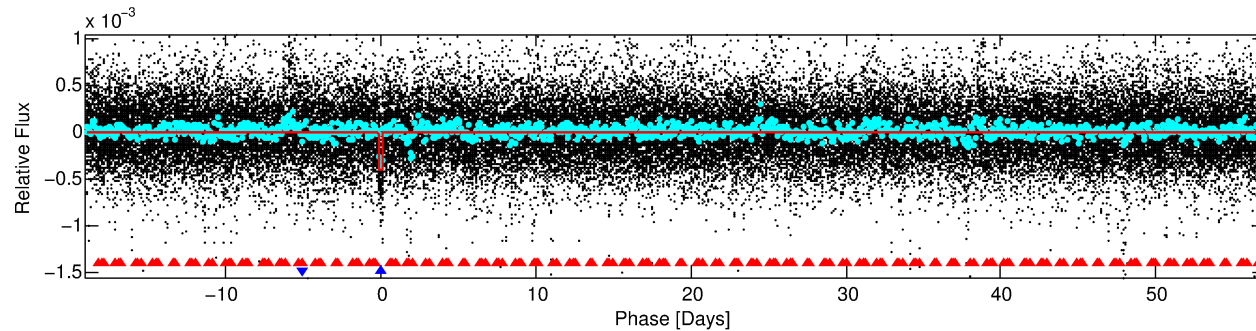
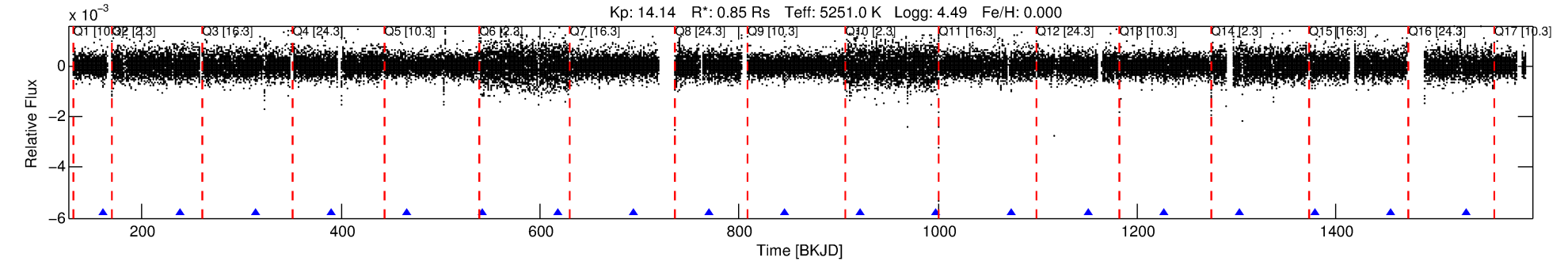
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002854698-02

No Significant Match Found

DV One-Page Summary

KIC: 2854698 Candidate: 2 of 2 Period: 76.051 d
KOI: K00986.02 Name: Kepler-260c Corr: 0.957



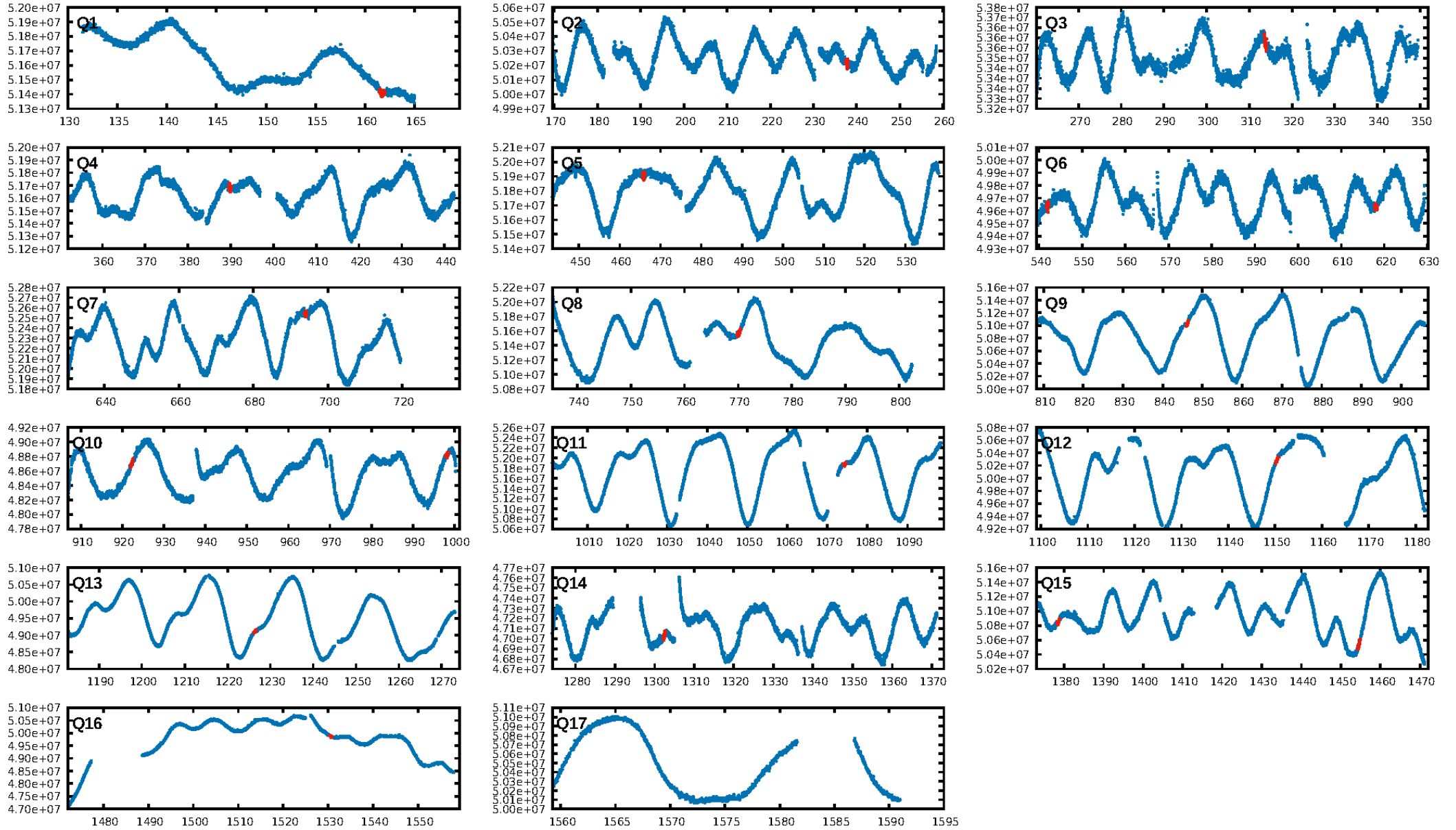
DV Fit Results:

Period = 76.05066 [0.00061] d
Epoch = 161.7100 [0.0065] BKJD
Rp/R* = 0.0212 [0.0046]
a/R* = 50.22 [41.89]
b = 0.82 [0.34]
Seff = 4.54 [0.66]
Teq = 372 [14] K
Rp = 1.96 [0.45] Re
a = 0.3289 [0.0244] AU
Ag = 1374.29 [863.02] [1.59 σ]
Teff = 3504 [544] K [5.75 σ]

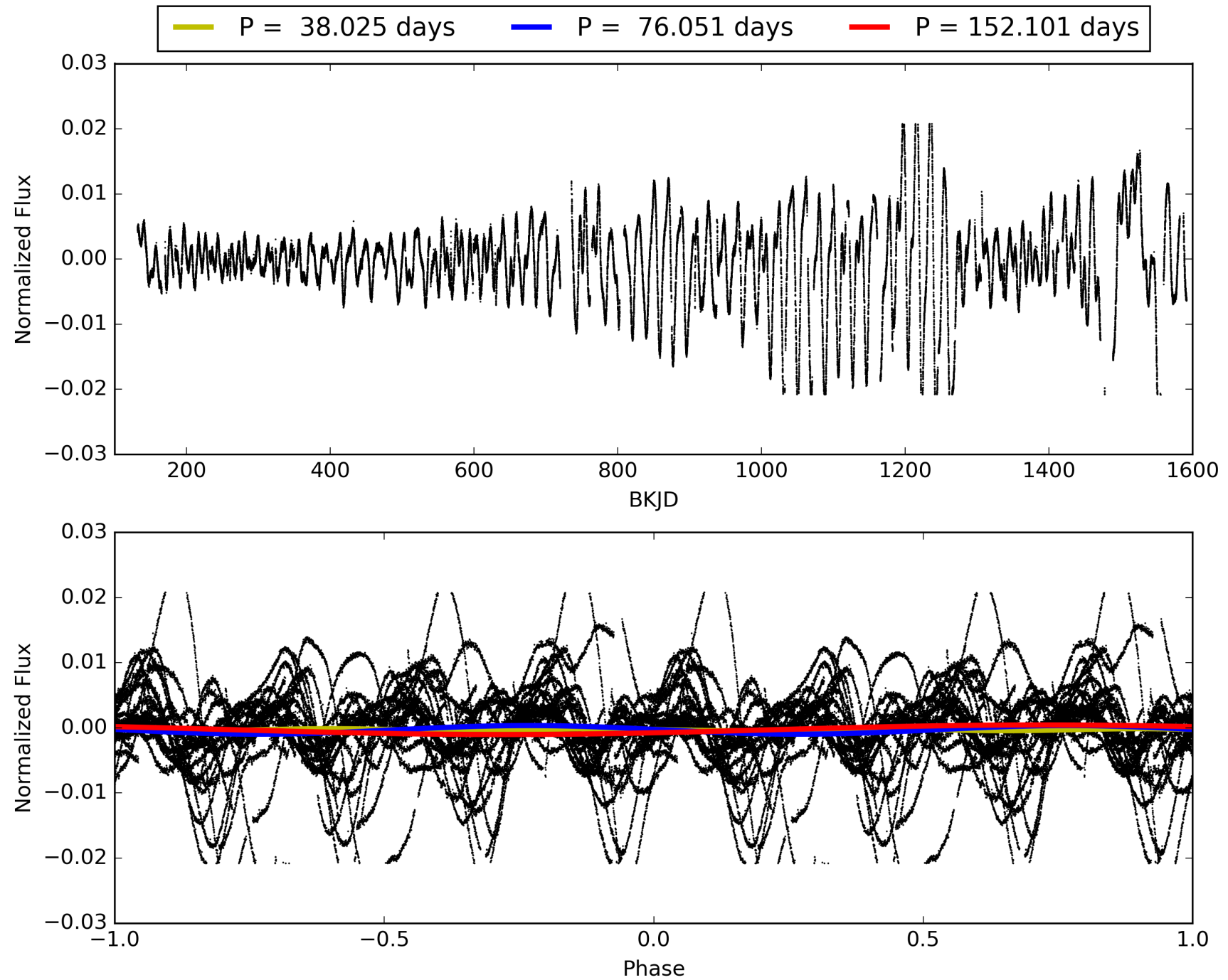
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [211.47 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.36e-27
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: 1.447
Centroid-sig: 0.1%
Centroid-so: 1.815 arcsec [2.76 σ]
OotOffset-rm: 0.374 arcsec [0.66 σ]
KicOffset-rm: 0.450 arcsec [0.77 σ]
OotOffset-st: 3/4/3/2 [12]
KicOffset-st: 3/4/3/2 [12]
DiffImageQuality-fgm: 0.75 [9/12]
DiffImageOverlap-fno: 0.93 [13/14]

TCE 002854698-02, PDC Light Curves

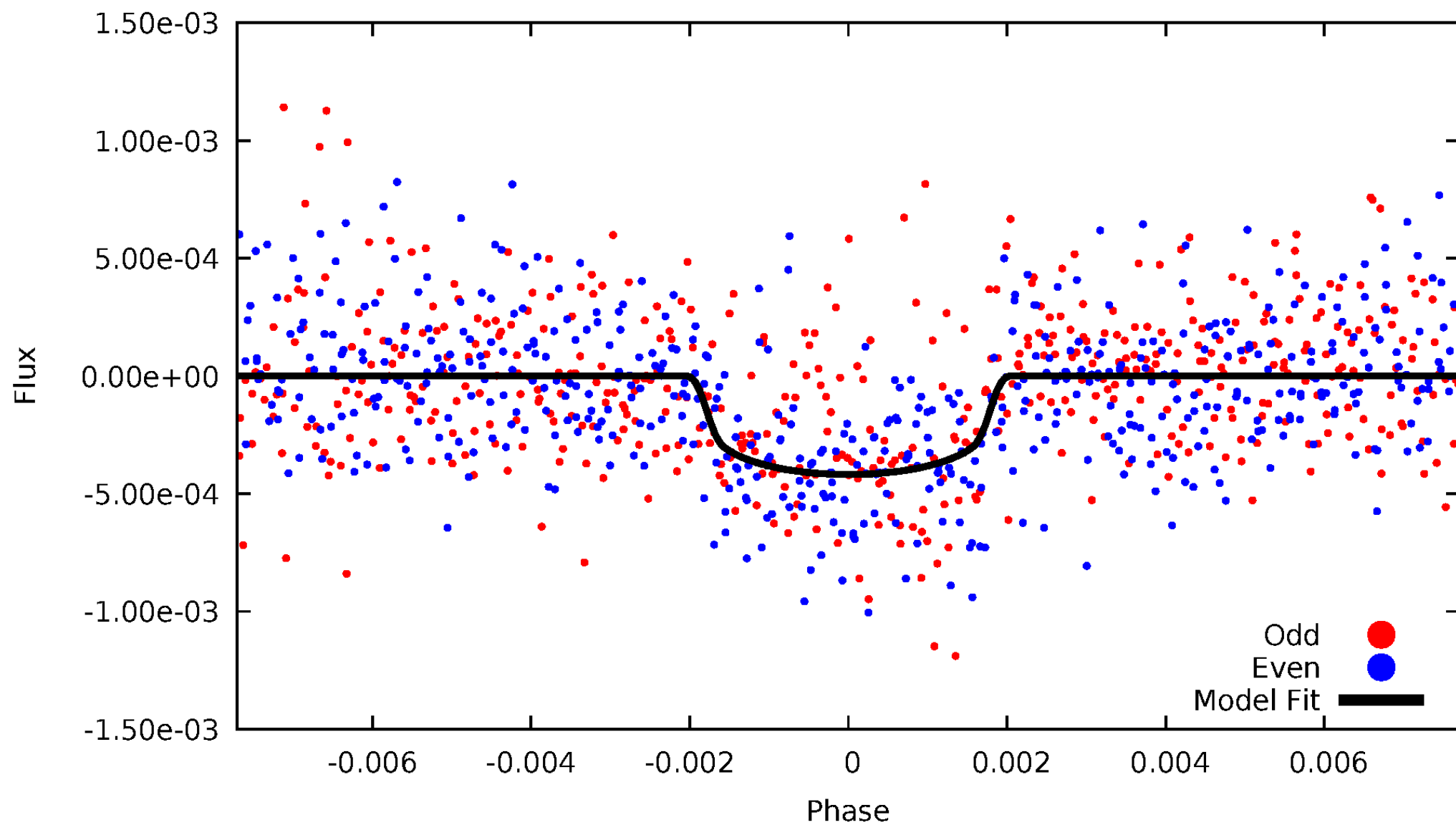


TCE 002854698-02



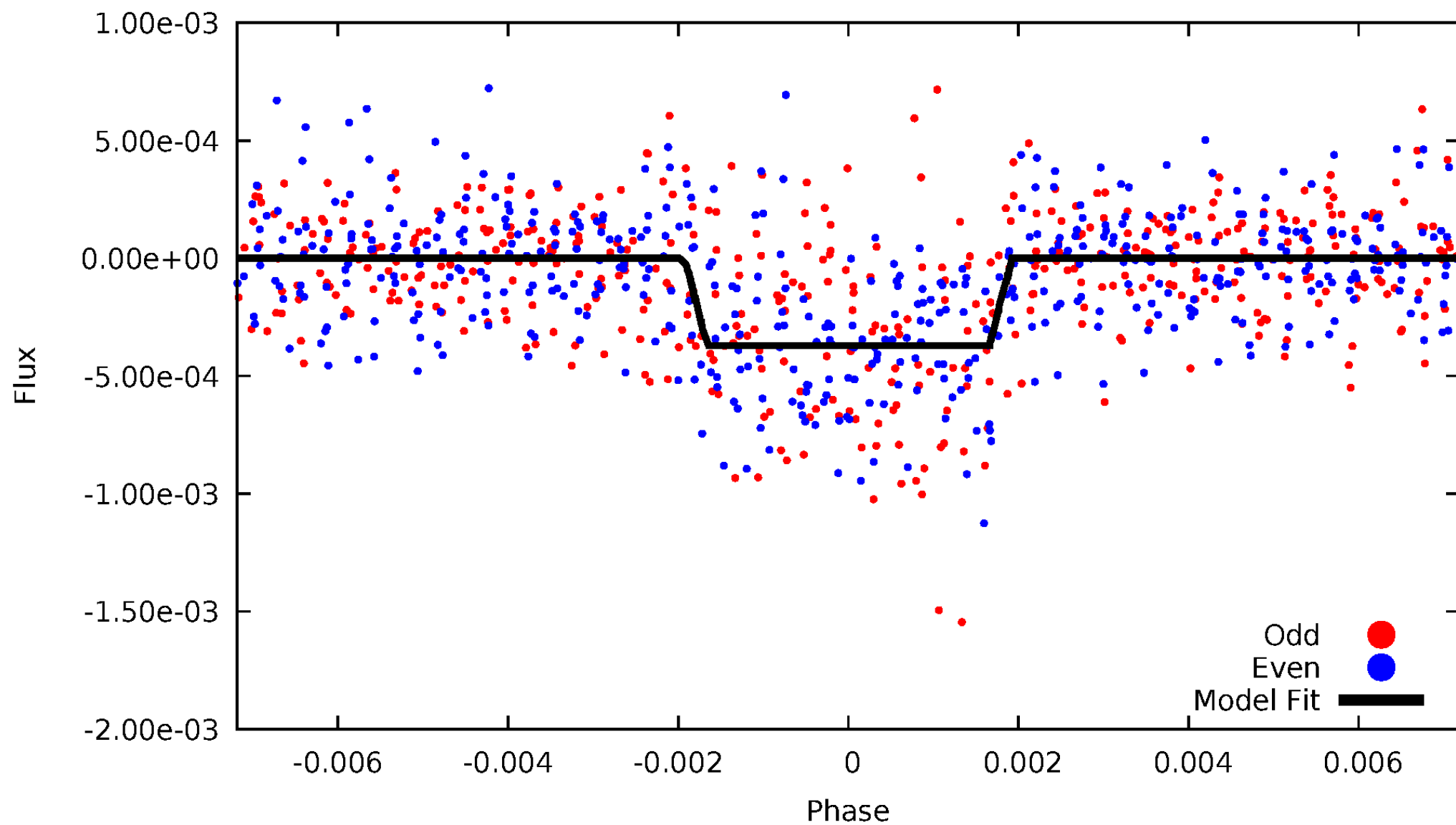
DV Odd/Even

TCE 002854698-02



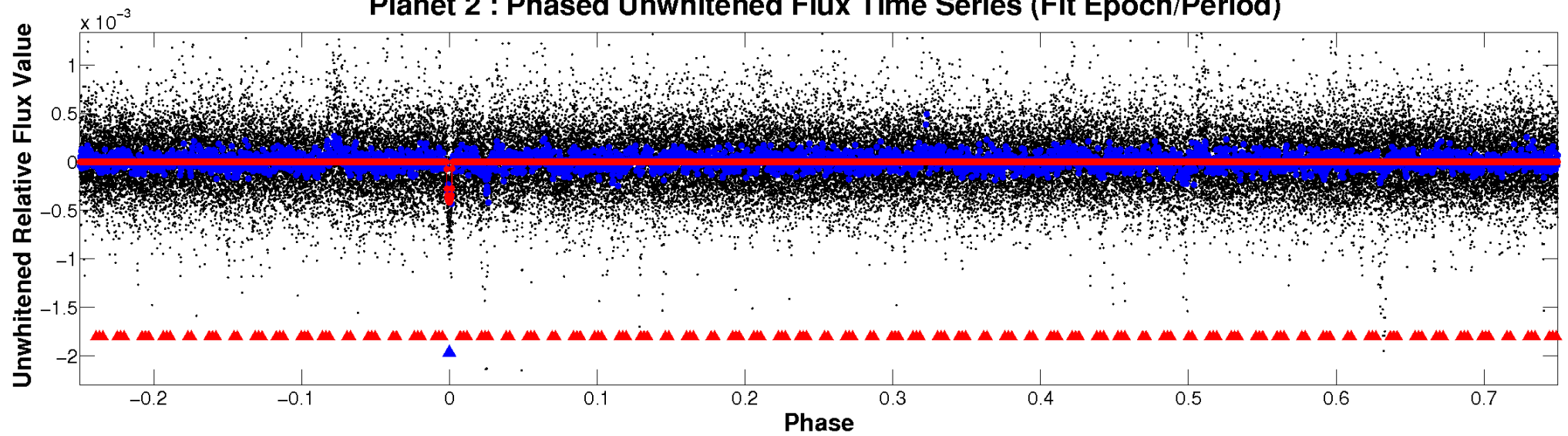
ALT Odd/Even

TCE 002854698-02

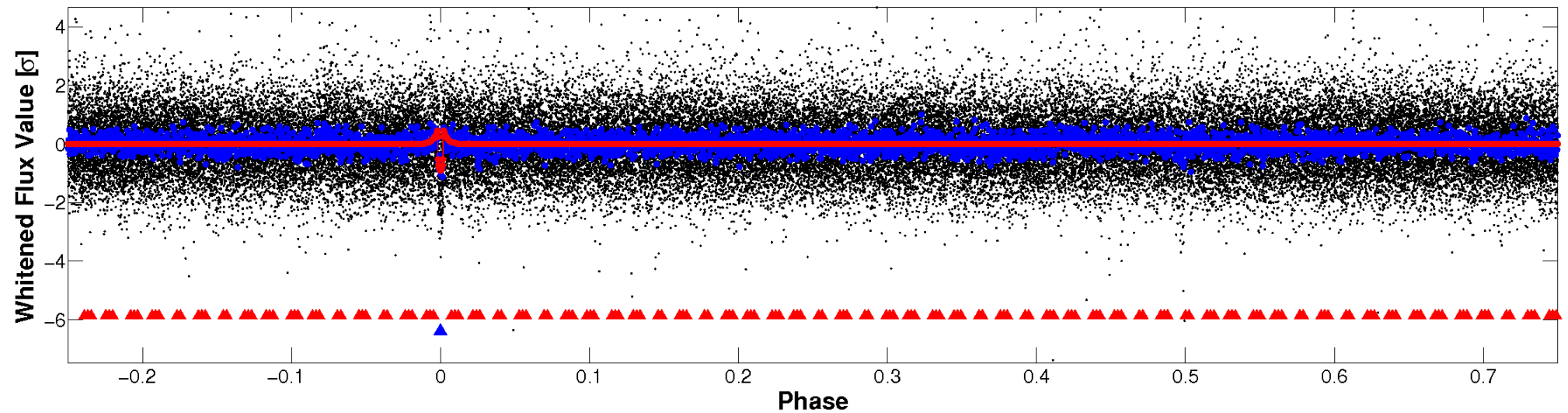


Non-Whitened Vs. Whitened Light Curve

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

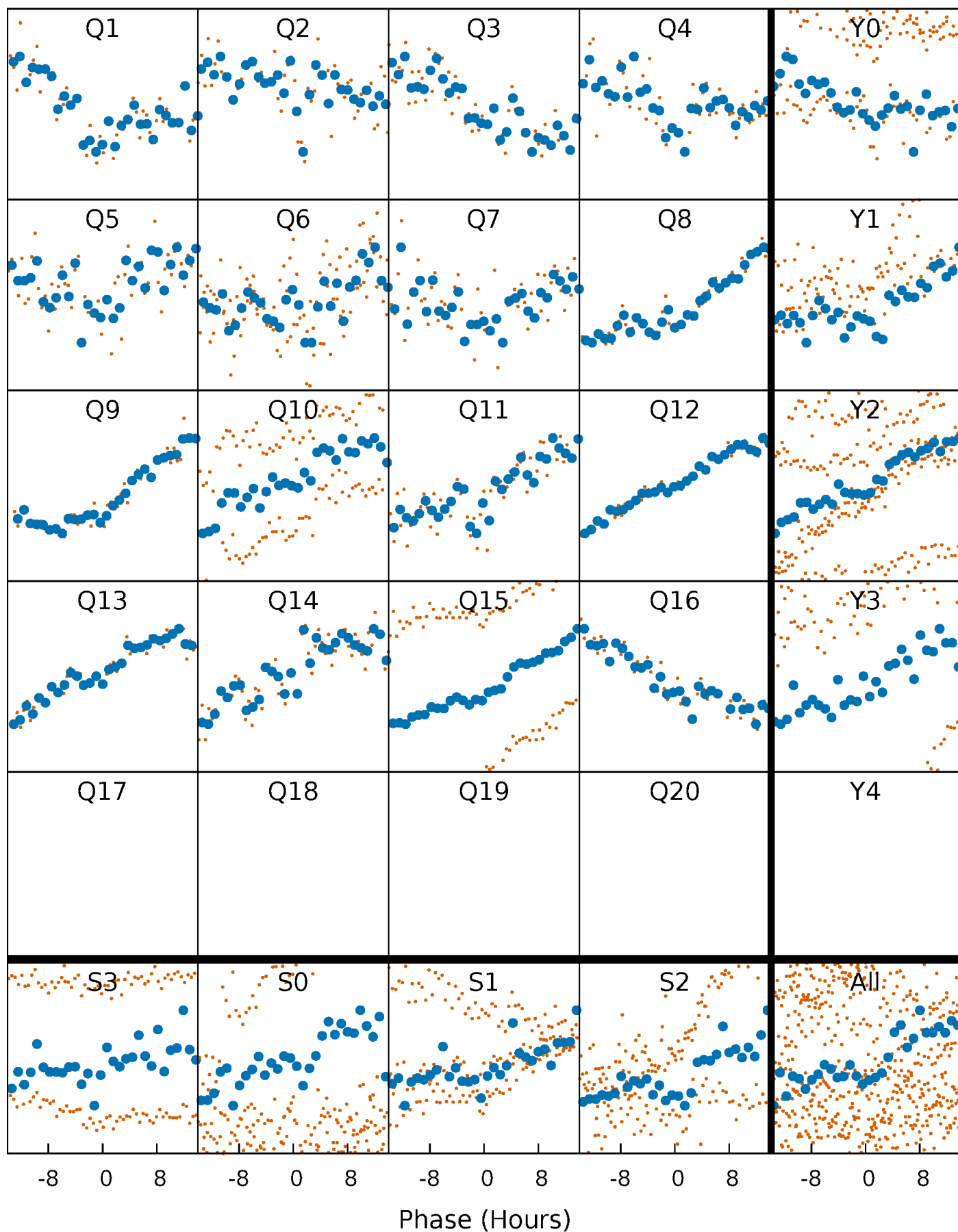


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



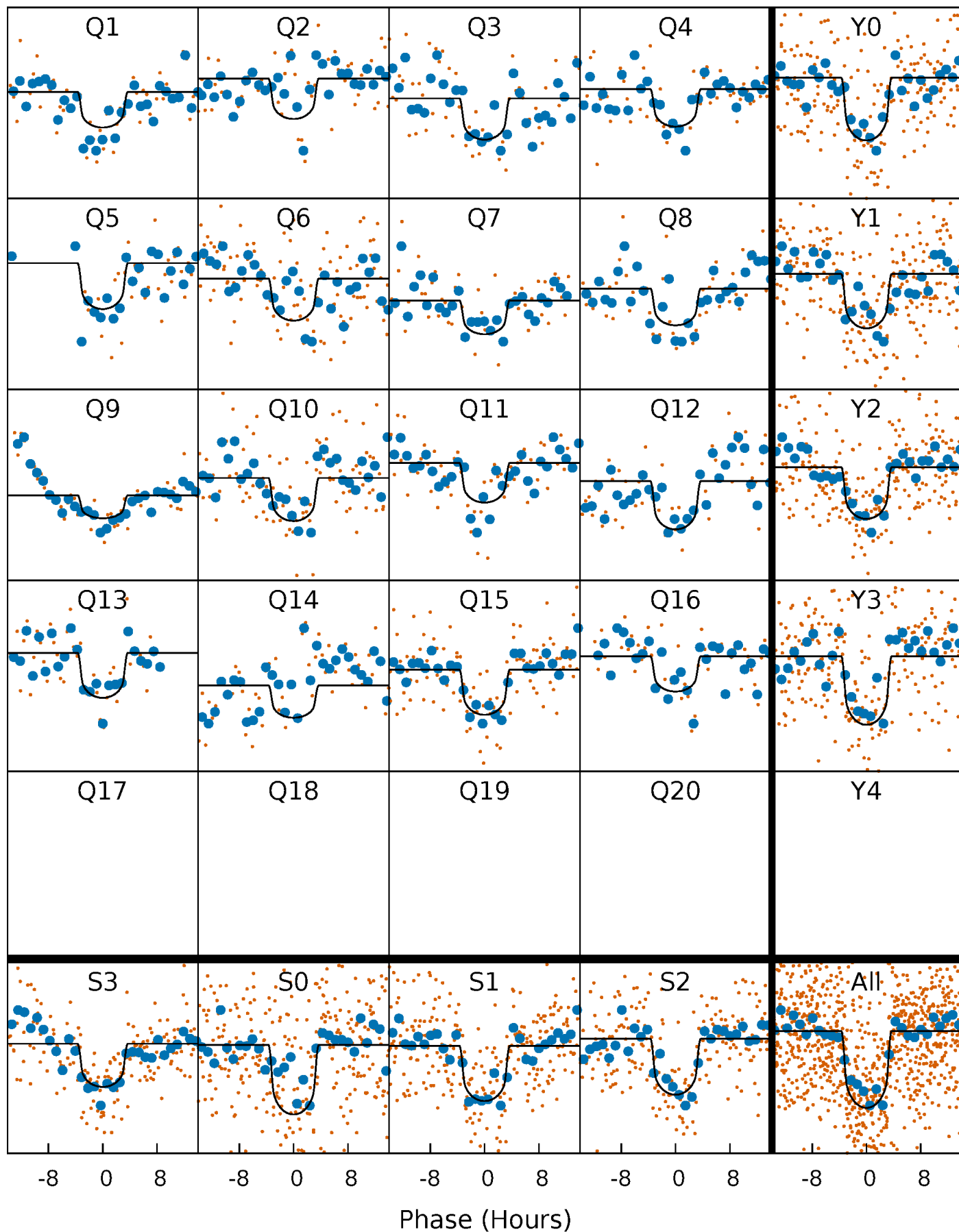
PDC Quarter-Phased Transit Curves

TCE 002854698-02 P= 76.050664 Days $T_0=161.709955$ (BKJD)



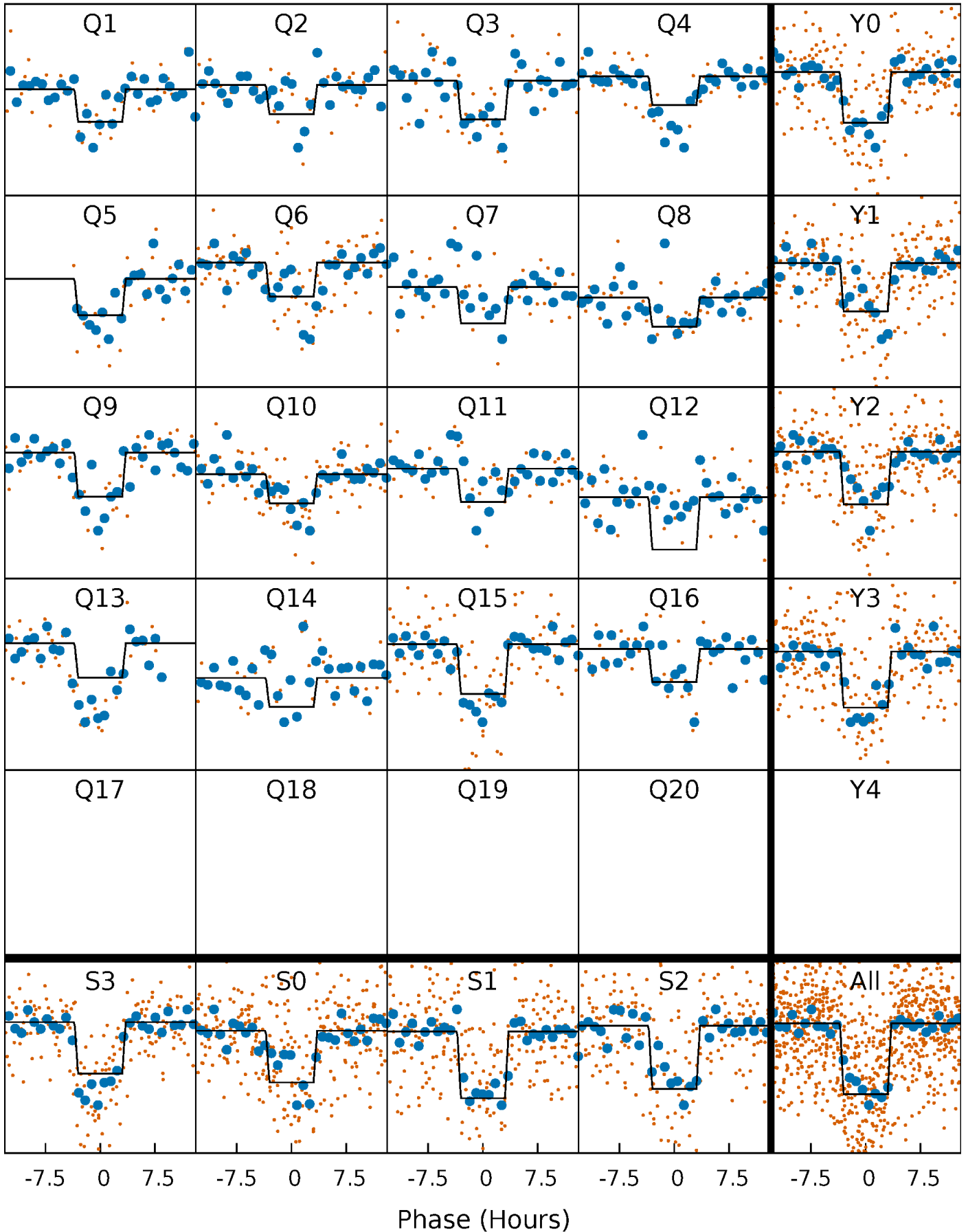
DV Quarter-Phased Transit Curves

TCE 002854698-02 P= 76.050664 Days $T_0=161.709955$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

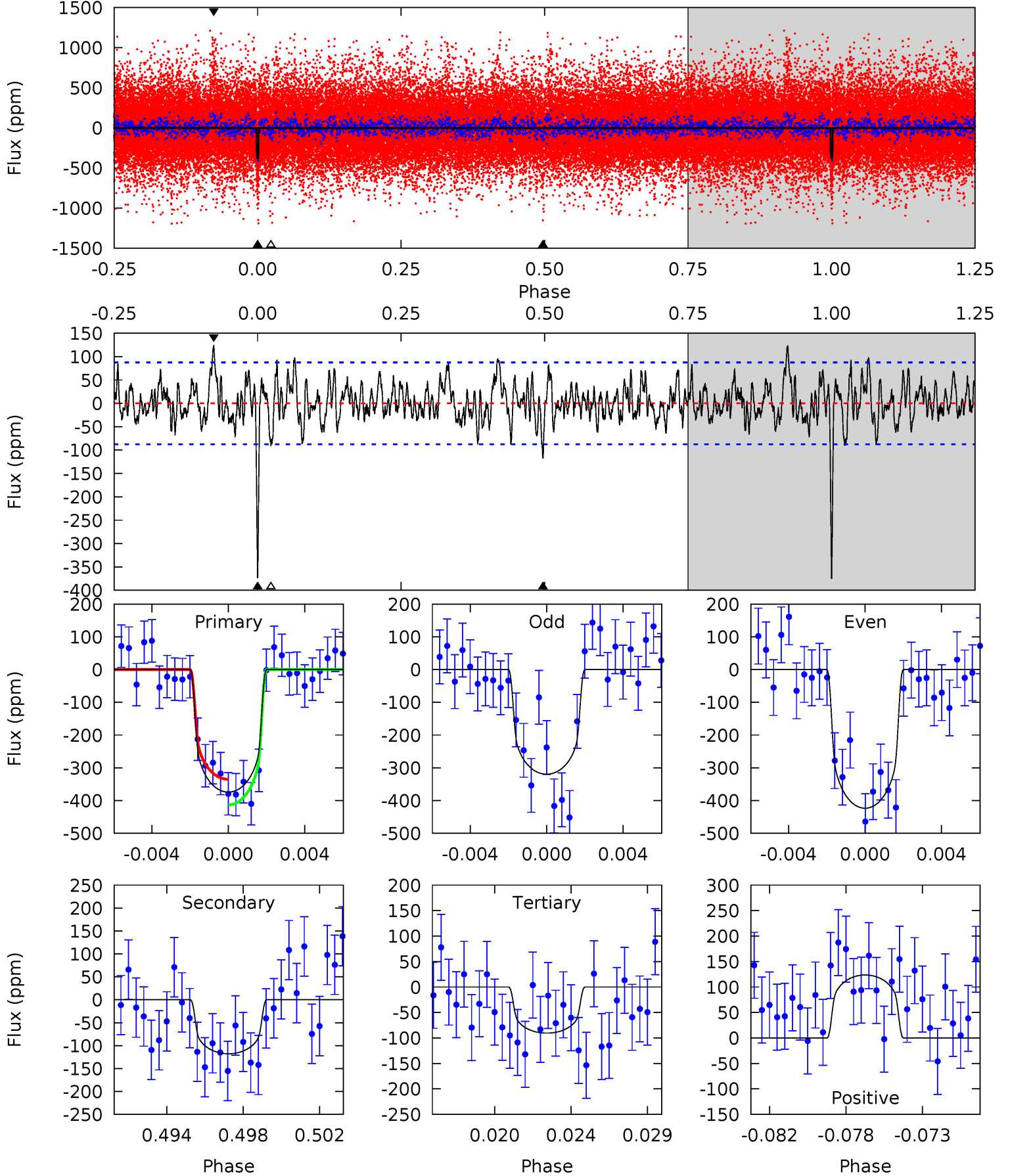
TCE 002854698-02 P= 76.049958 Days $T_0=161.714812$ (BKJD)



DV Model-Shift Uniqueness Test

002854698-02, P = 76.050664 Days, E = 85.659291 Days

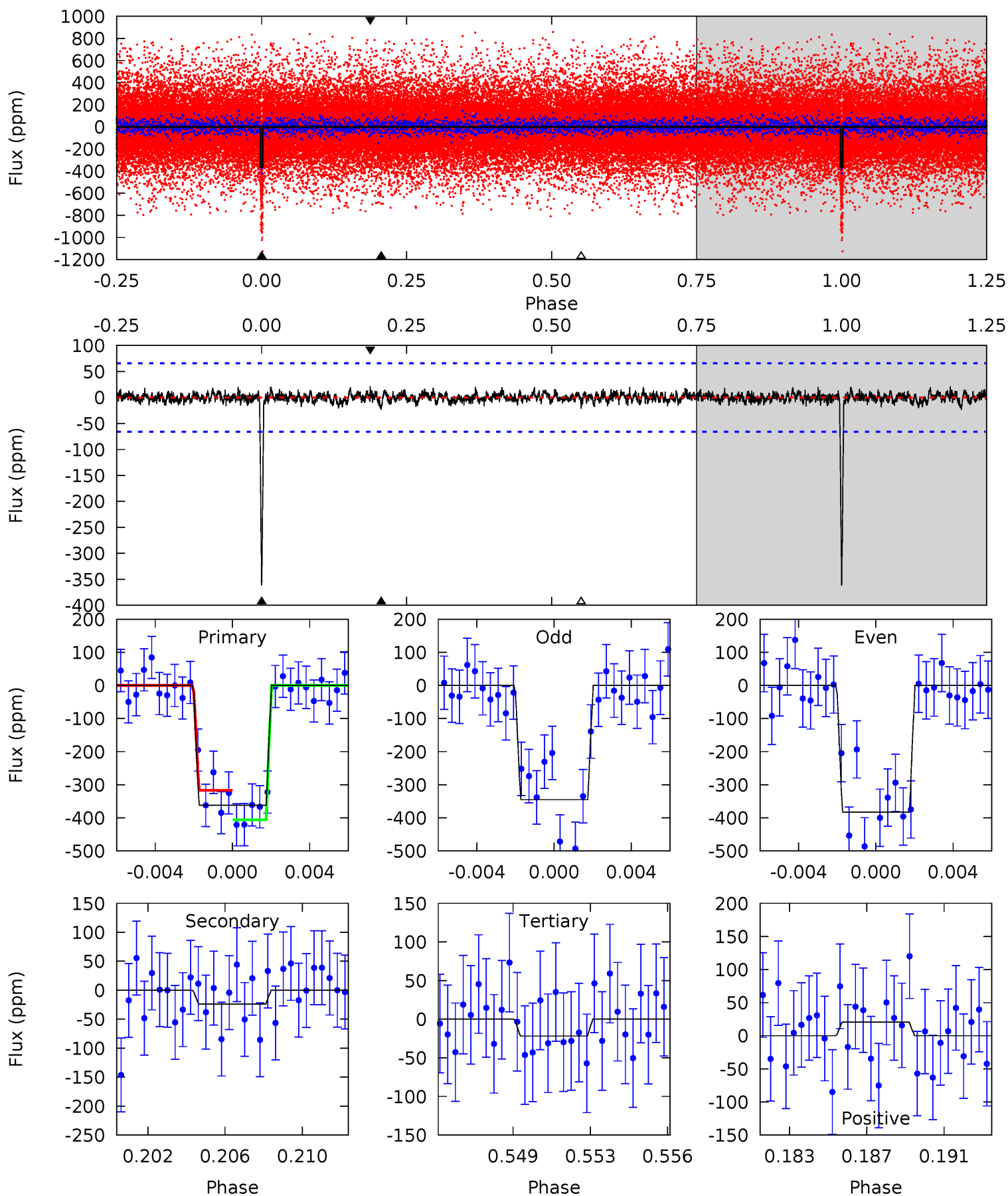
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	6.98	5.36	7.32	5.20	2.87	2.01	16.8	14.9	1.61	-0.35	3.08	0.93	0.25	2.33



Alt Model-Shift Uniqueness Test

002854698-02, P = 76.049958 Days, E = 85.664854 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.7	1.88	1.72	1.64	5.21	2.89	0.49	26.9	27.0	0.16	0.24	1.48	0.99	0.05	3.54



Stellar Parameters For KIC 002854698

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5251^{+105}_{-105}	$4.494^{+0.072}_{-0.048}$	$0.000^{+0.150}_{-0.150}$	$0.849^{+0.056}_{-0.063}$	$0.821^{+0.057}_{-0.036}$	$1.887^{+0.485}_{-0.322}$
	+2%/-2%	+2%/-1%	+inf%/-inf%	+7%/-7%	+7%/-4%	+26%/-17%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 002854698-02 / KOI 0986.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-118 ± 17	$1.94^{+0.39}_{-0.41}$	518^{+15}_{-15}	4045^{+382}_{-283}	1883^{+1135}_{-641}
Alt.	-24 ± 13	$1.76^{+0.45}_{-0.41}$	519^{+15}_{-14}	3218^{+403}_{-380}	469^{+494}_{-283}

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 $A_{obs} \gg 1.0$

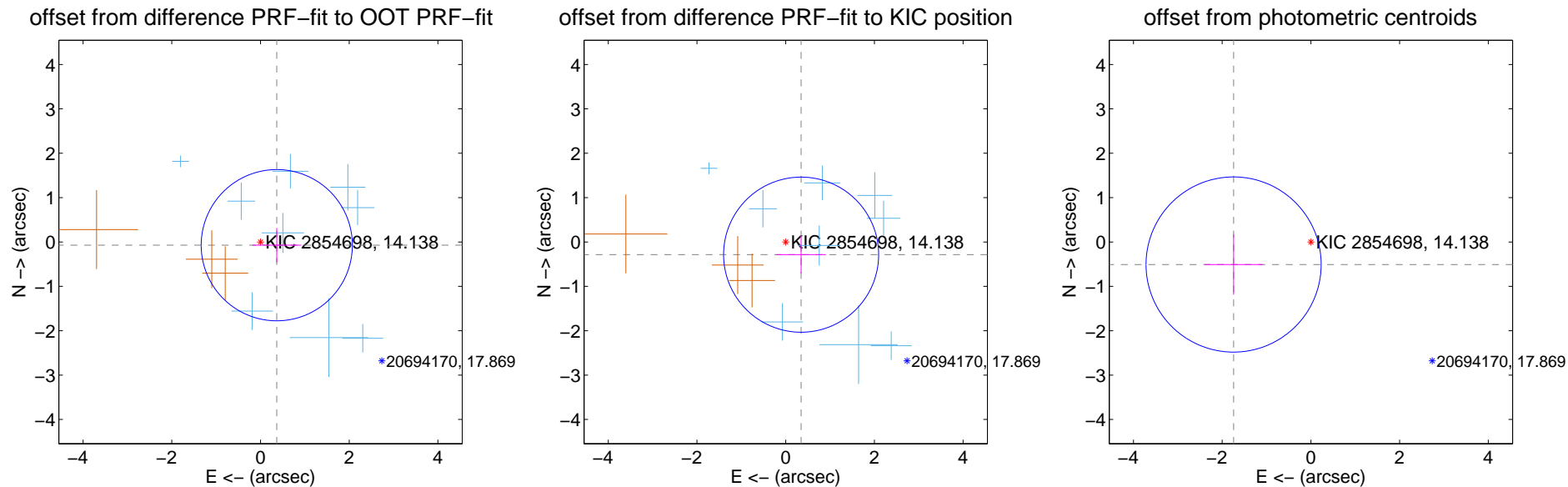
DV Centroid Data

Supplemental centroid analysis for 002854698-02. Kepler magnitude: 14.14. Transit SNR 14.16

There are 9 quarters with good PRF difference image offsets

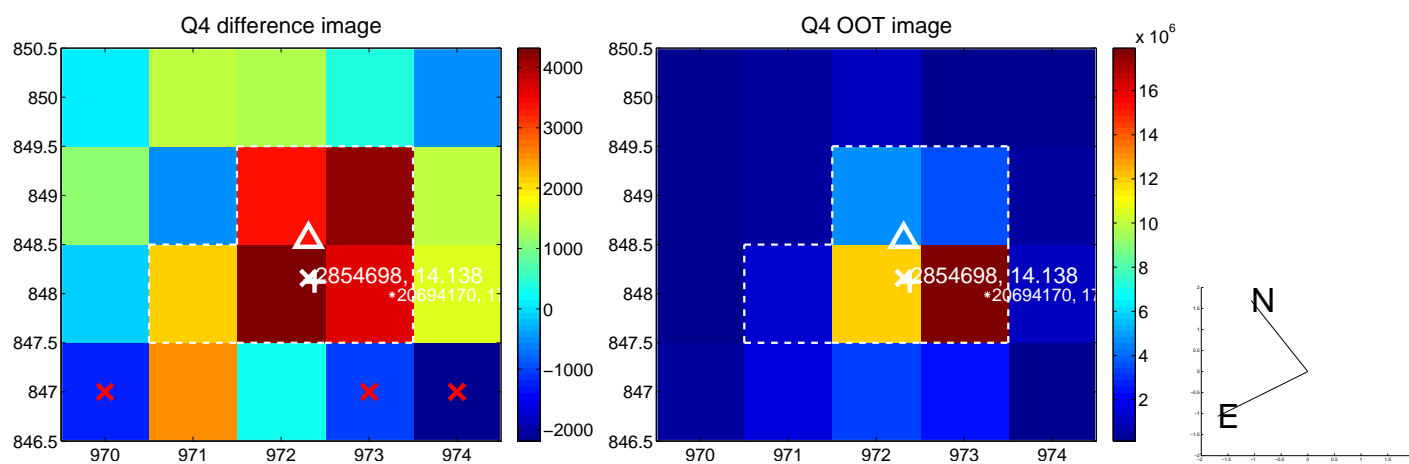
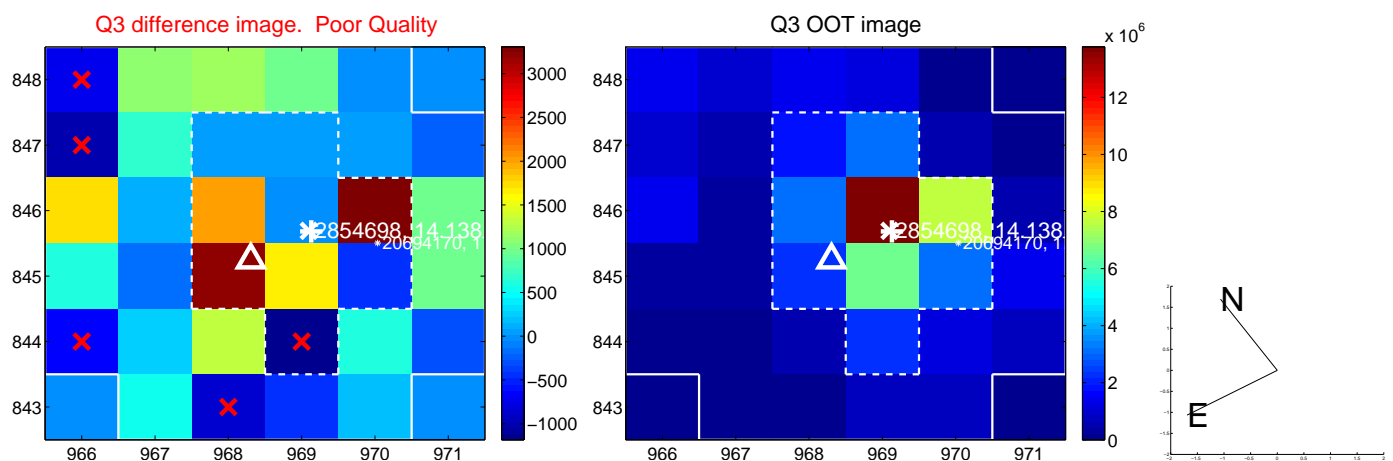
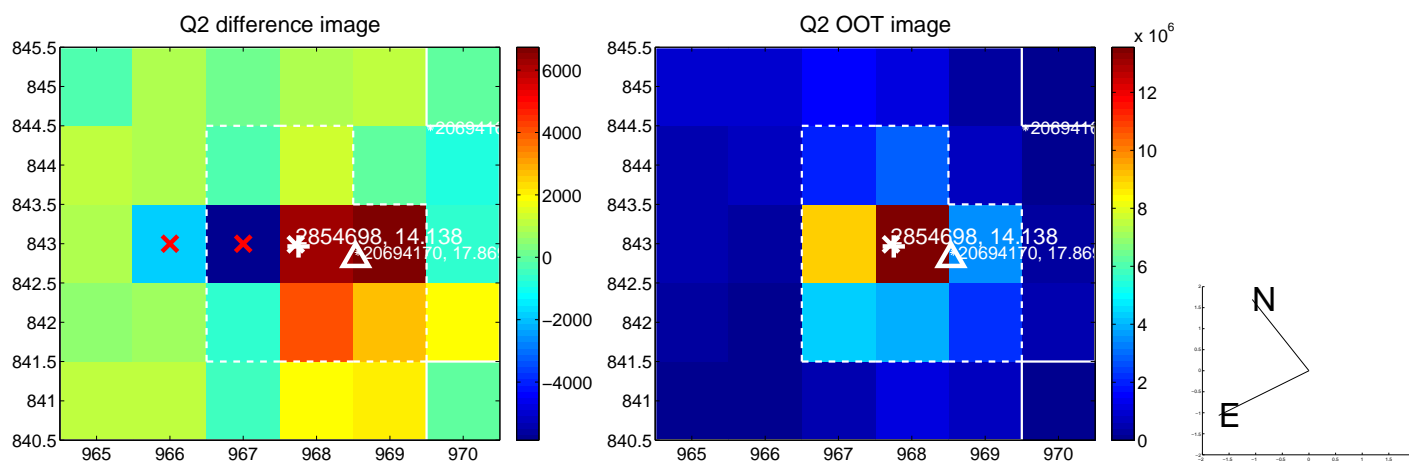
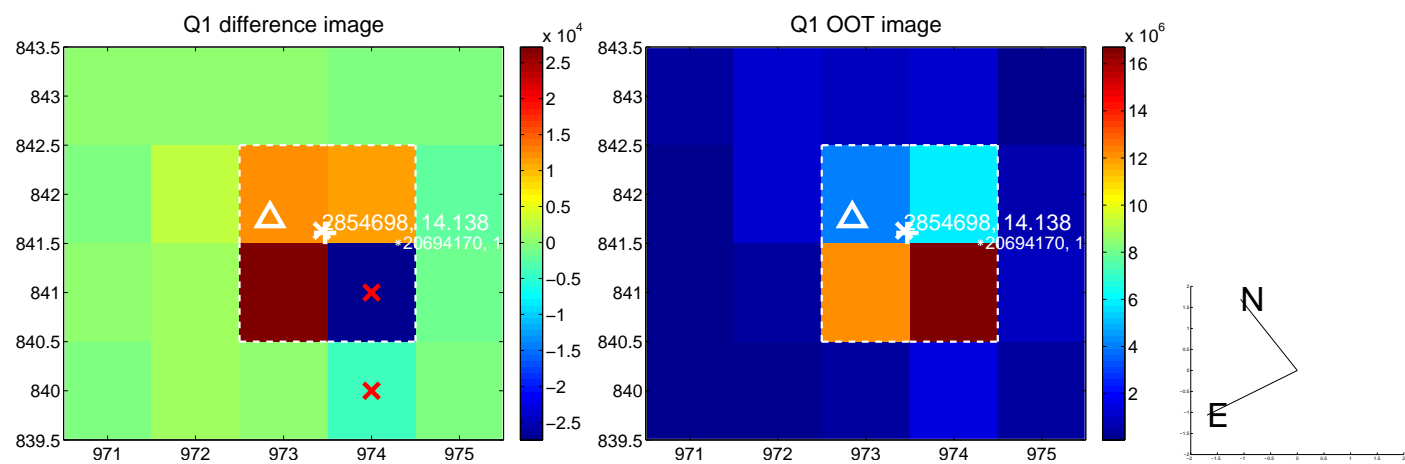
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.374 ± 0.568	0.66	-0.367 ± 0.552	-0.072 ± 0.387
PRF-fit source offset from KIC position	0.450 ± 0.583	0.77	-0.348 ± 0.558	-0.286 ± 0.419
photometric centroid source offset	1.82 ± 0.66	2.76	1.74 ± 0.66	-0.51 ± 0.68

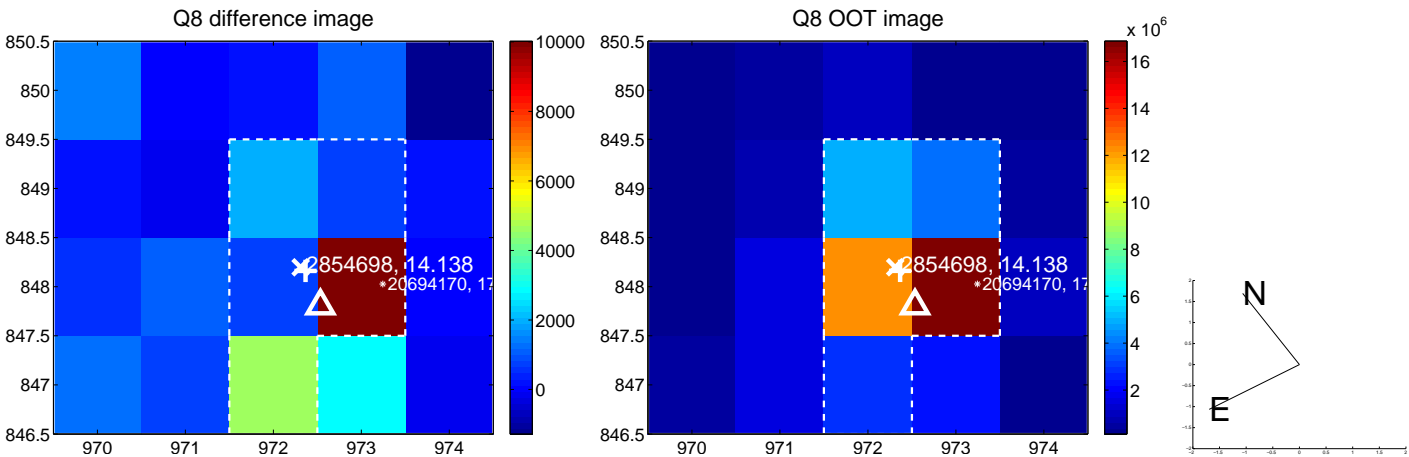
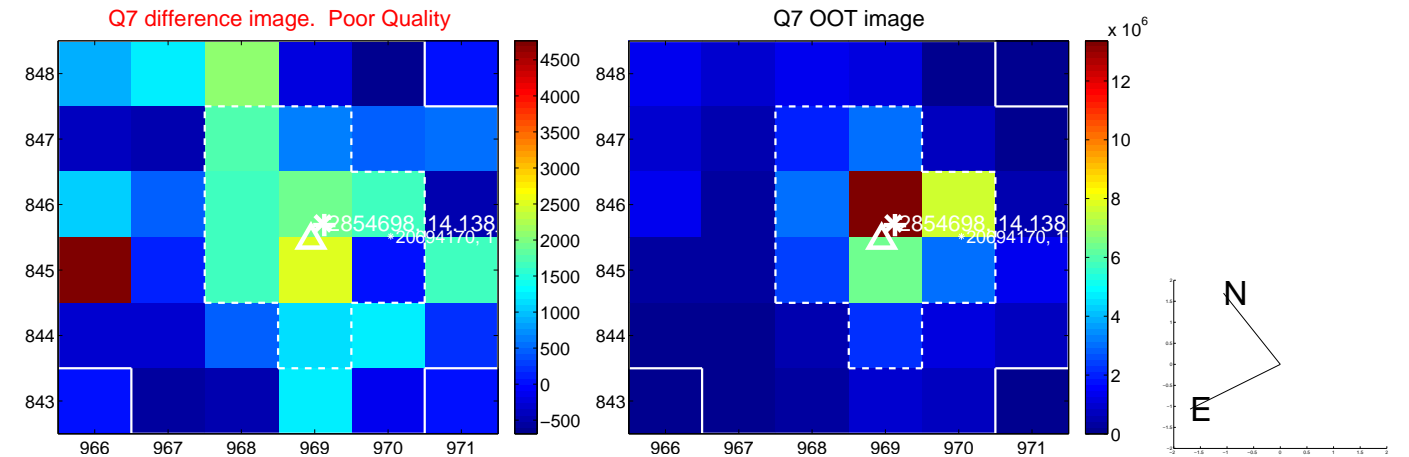
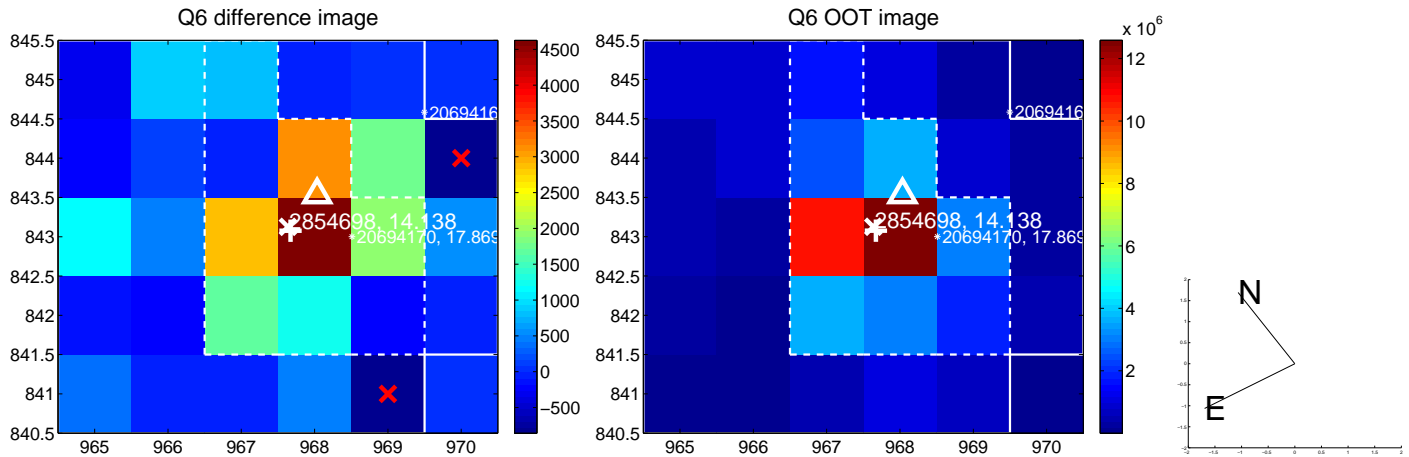
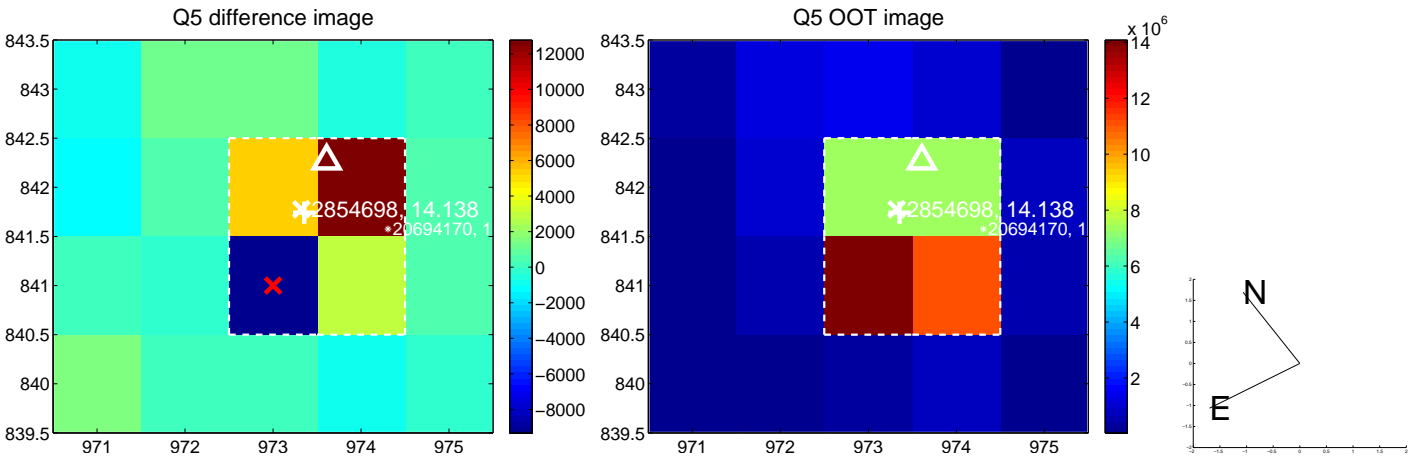


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

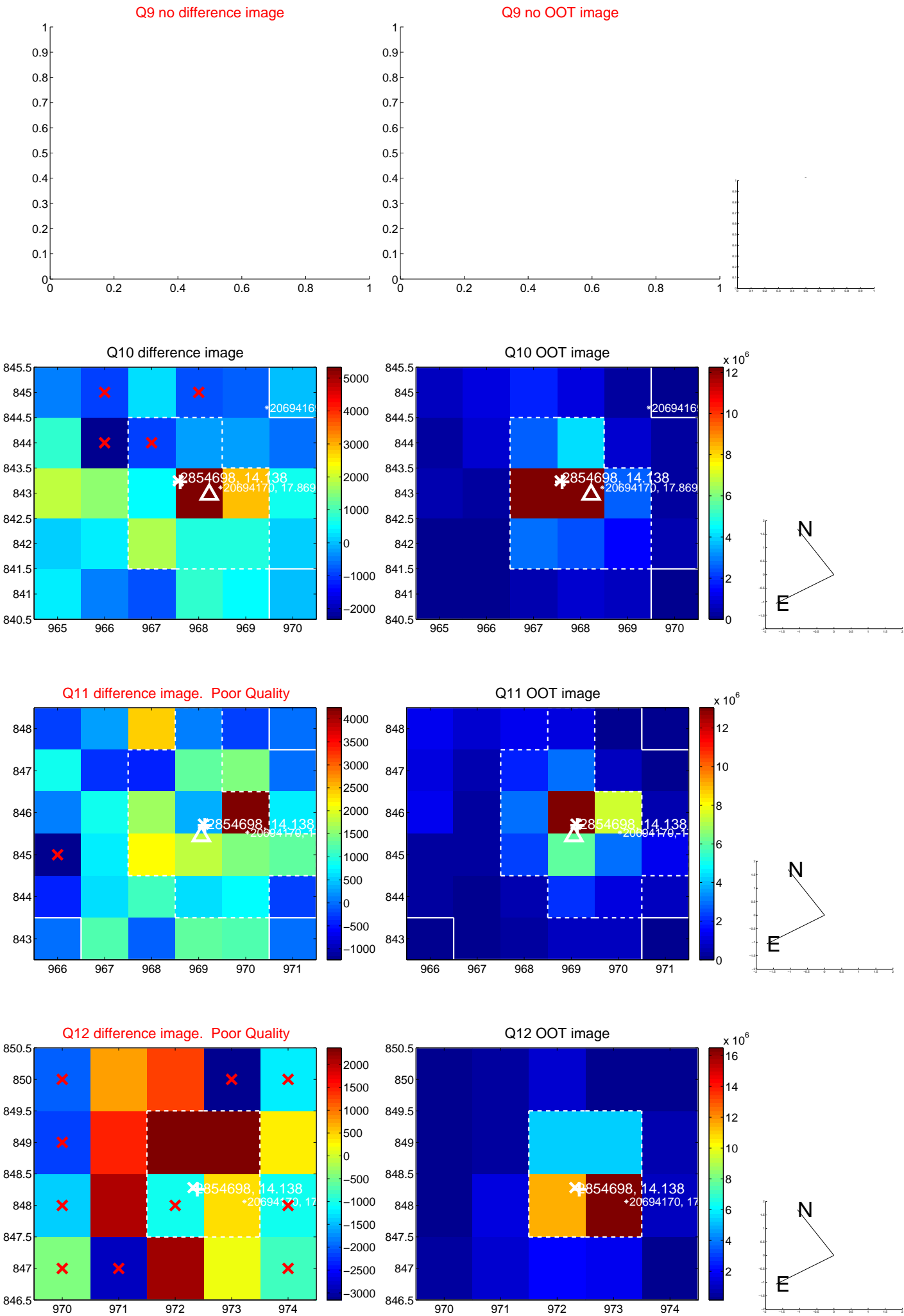
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



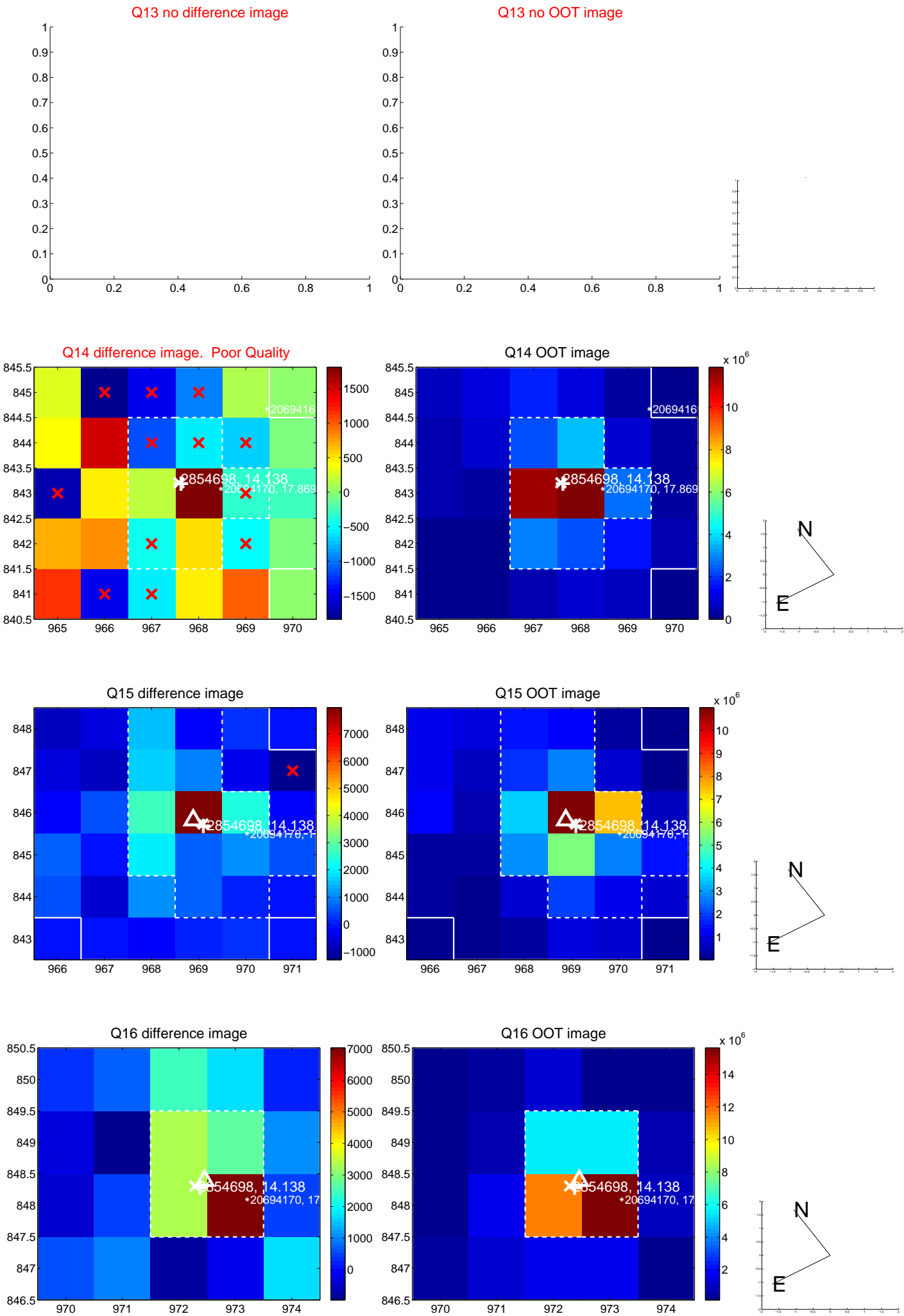
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



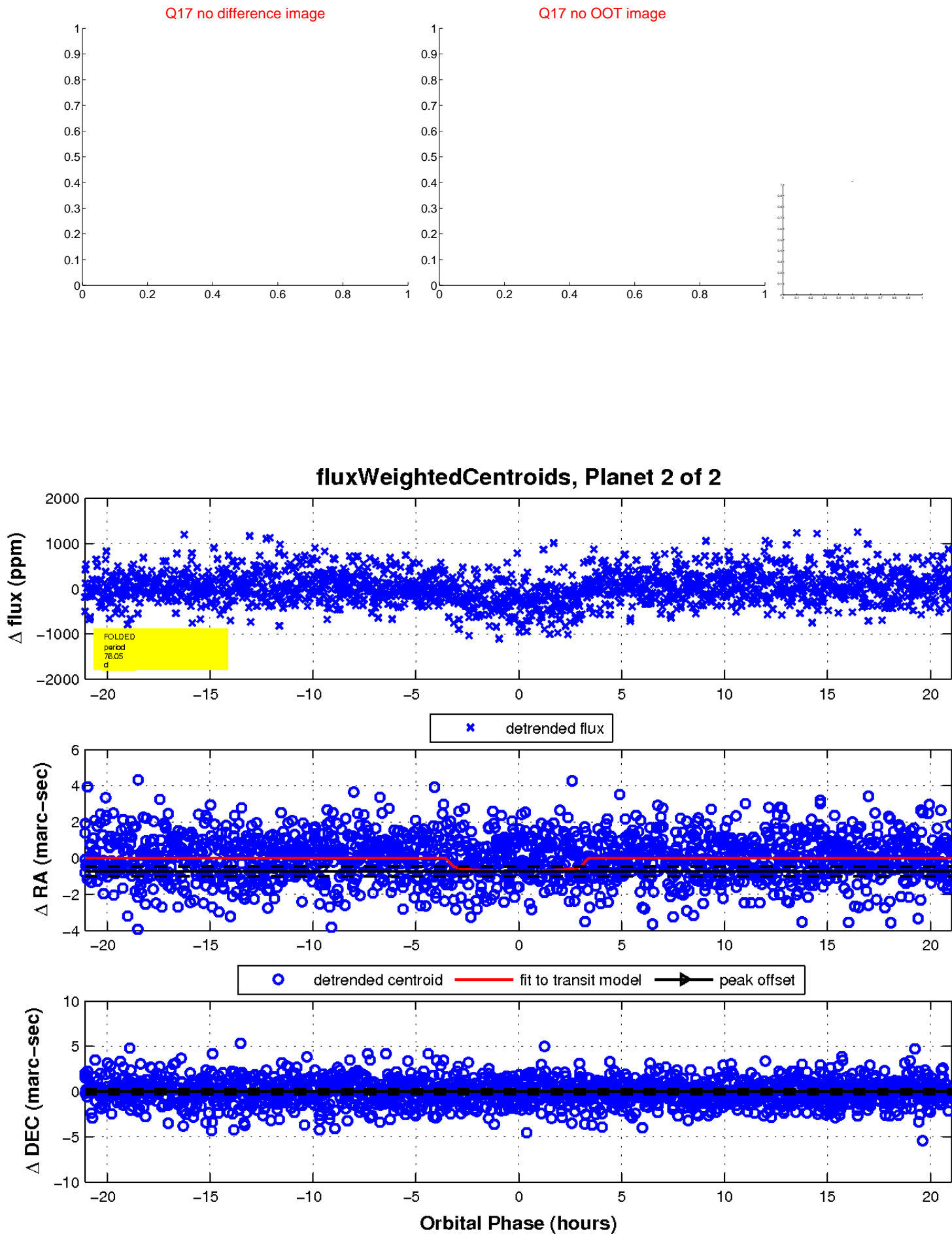
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

