

KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	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.

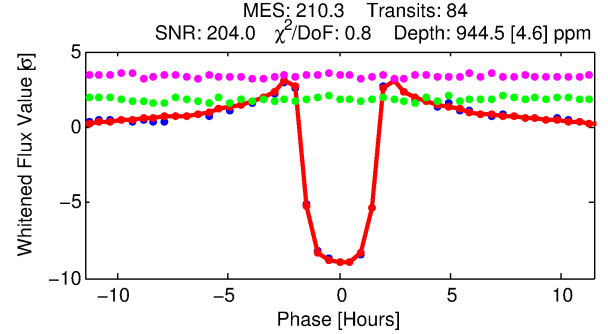
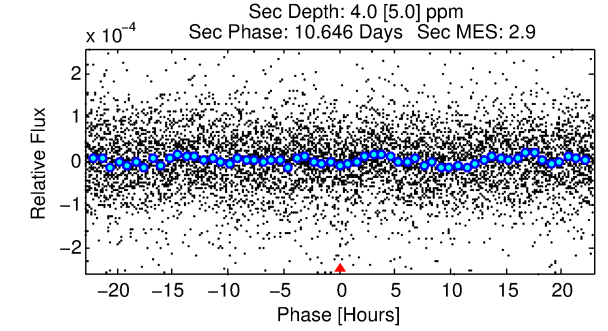
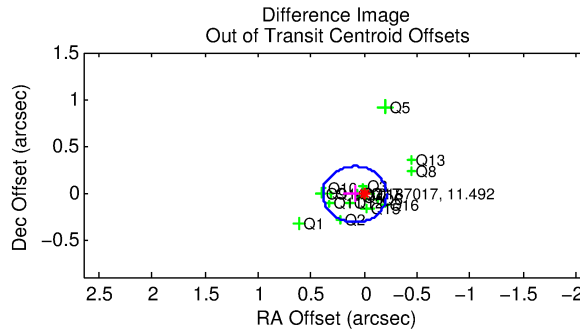
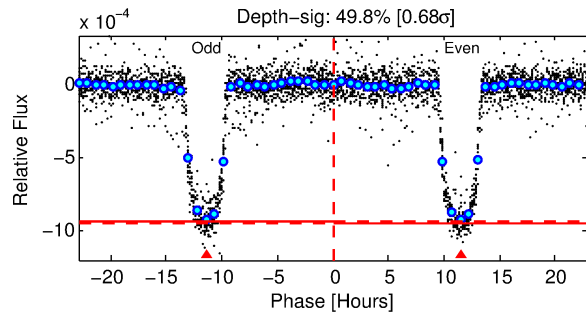
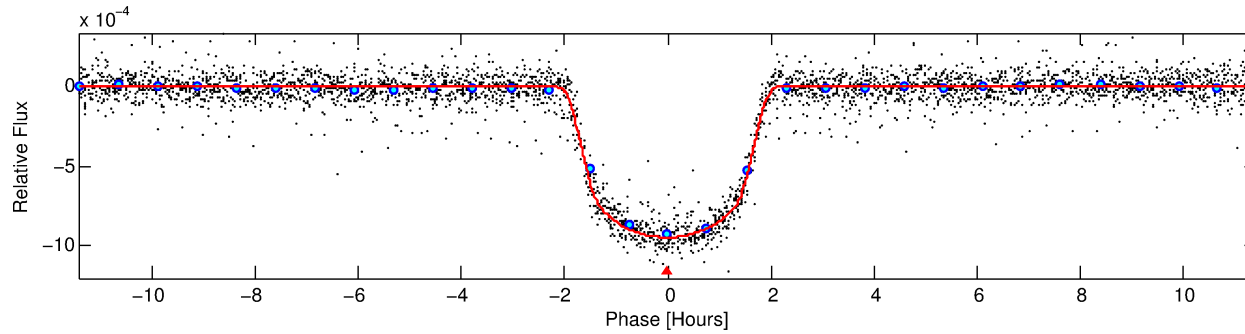
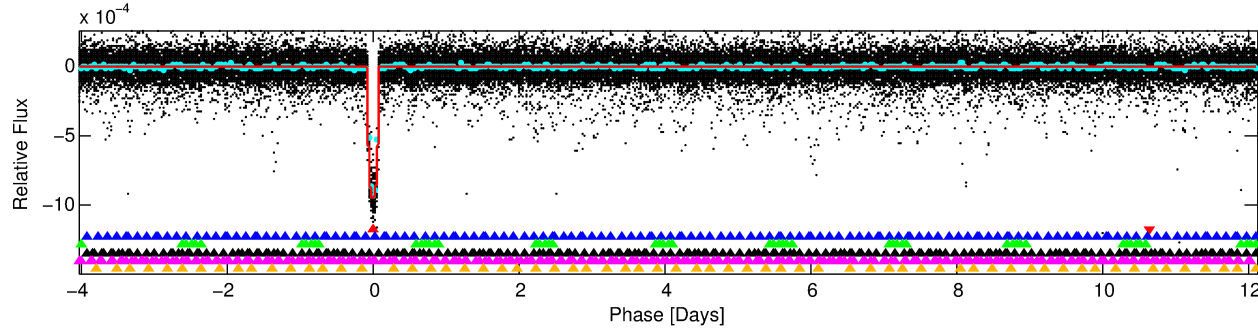
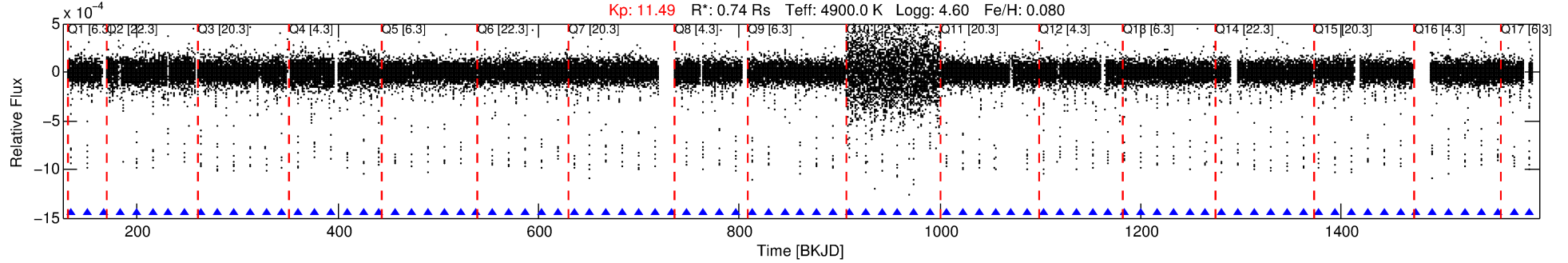
Ephemeris Match Information For 010187017-01

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 1 of 6 Period: 16.146 d
KOI: K00082.01 Name: Kepler-102e Corr: 0.988

Kp: 11.49 R*: 0.74 Rs Teff: 4900.0 K Logg: 4.60 Fe/H: 0.080



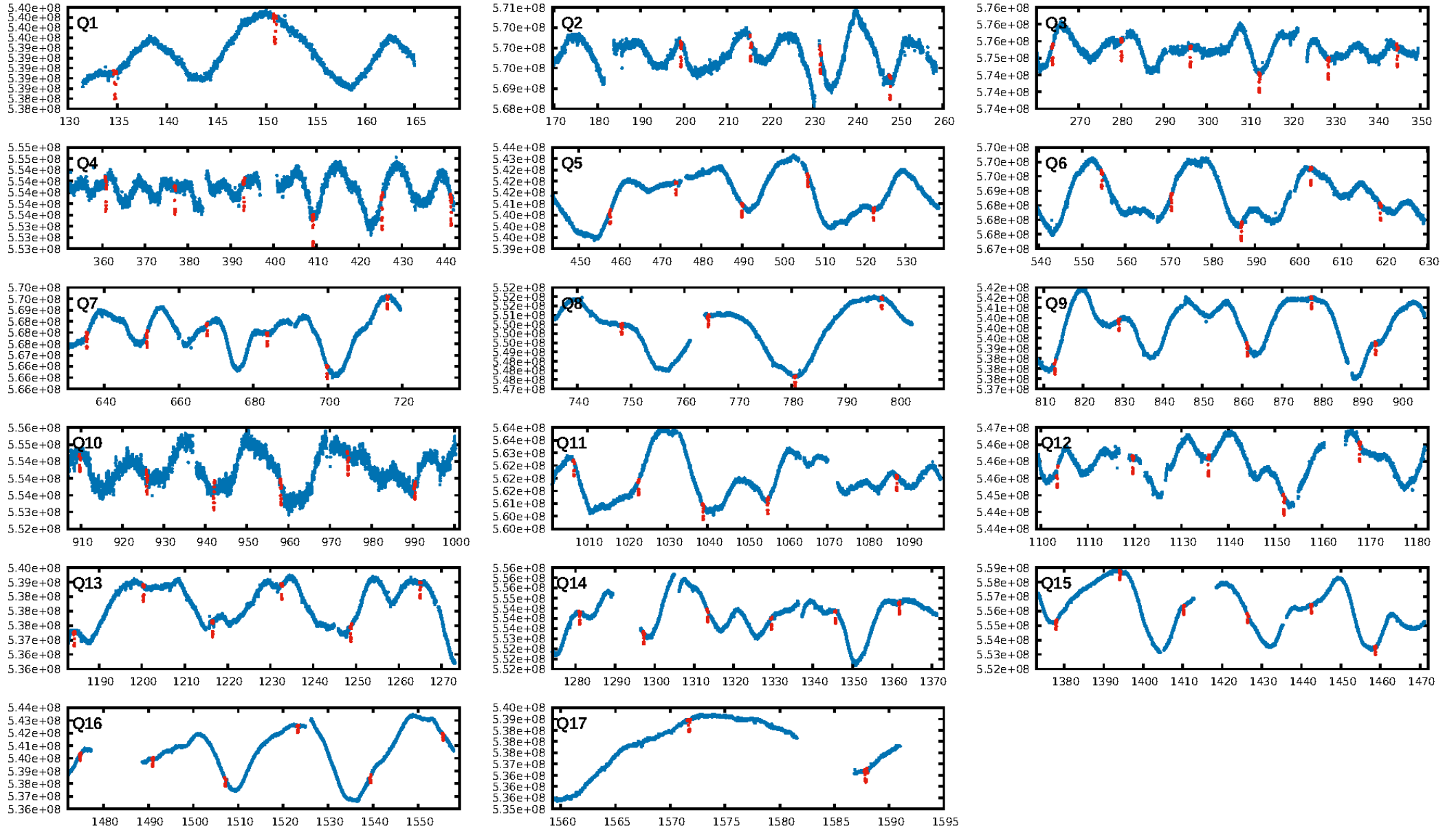
DV Fit Results:

Period = 16.14567 [0.00001] d
Epoch = 134.7546 [0.0003] BKJD
Rp/R* = 0.0324 [0.0006]
a/R* = 19.64 [1.23]
b = 0.84 [0.02]
Seff = 21.03 [2.48]
Teq = 546 [16] K
Rp = 2.62 [0.18] Re
a = 0.1161 [0.0067] AU
Ag = 4.35 [5.37] [0.62σ]
Teffp = 1219 [376] K [1.79σ]

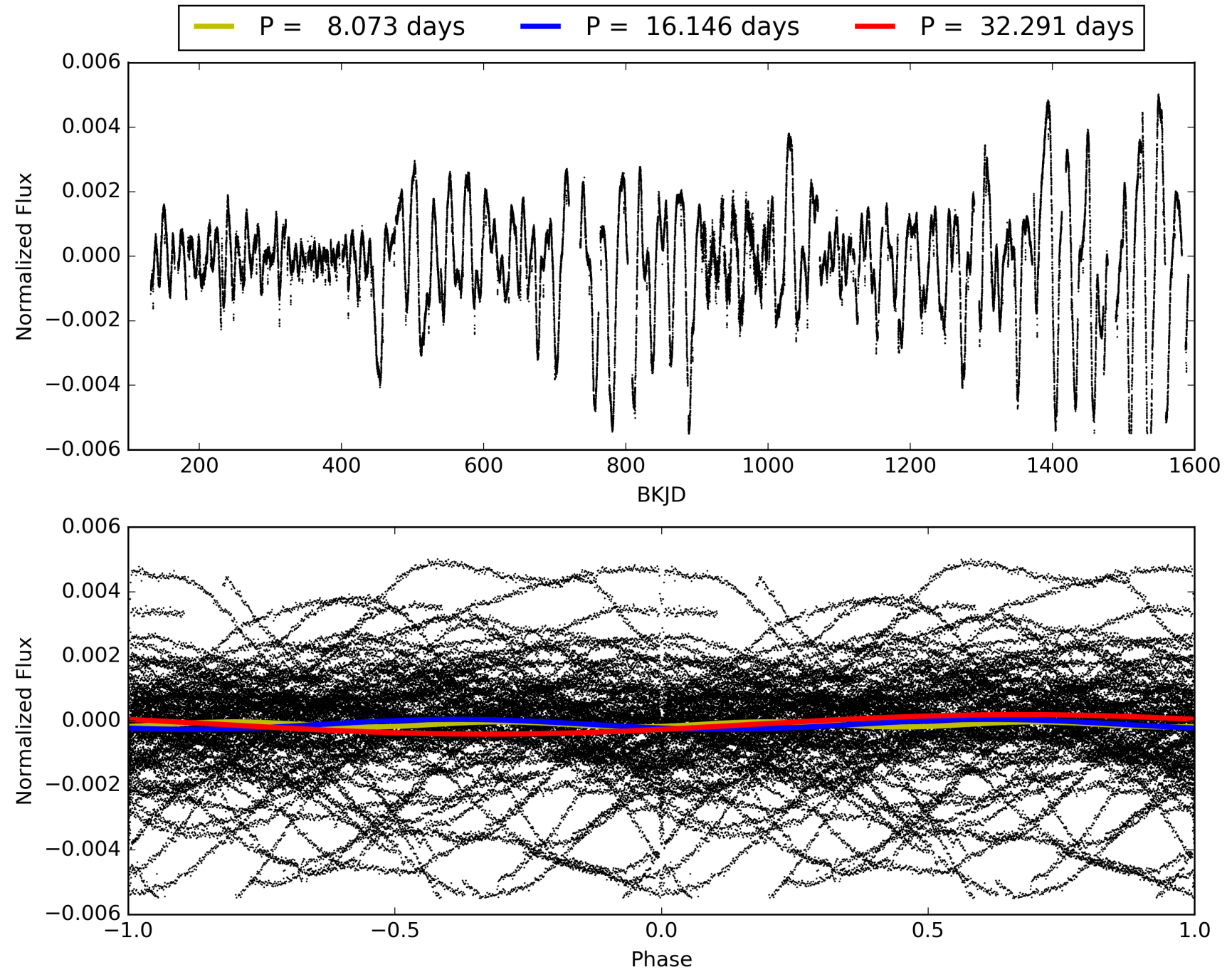
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.76σ]
LongPeriod-sig: 100.0% [34.55σ]
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [80/80]
GhostDiagnostic-chr: 7.252
Centroid-sig: 29.4%
Centroid-so: 0.746 arcsec [13.07σ]
OotOffset-rm: 0.092 arcsec [0.92σ]
KicOffset-rm: 0.706 arcsec [7.41σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.88 [15/17]

TCE 010187017-01, PDC Light Curves

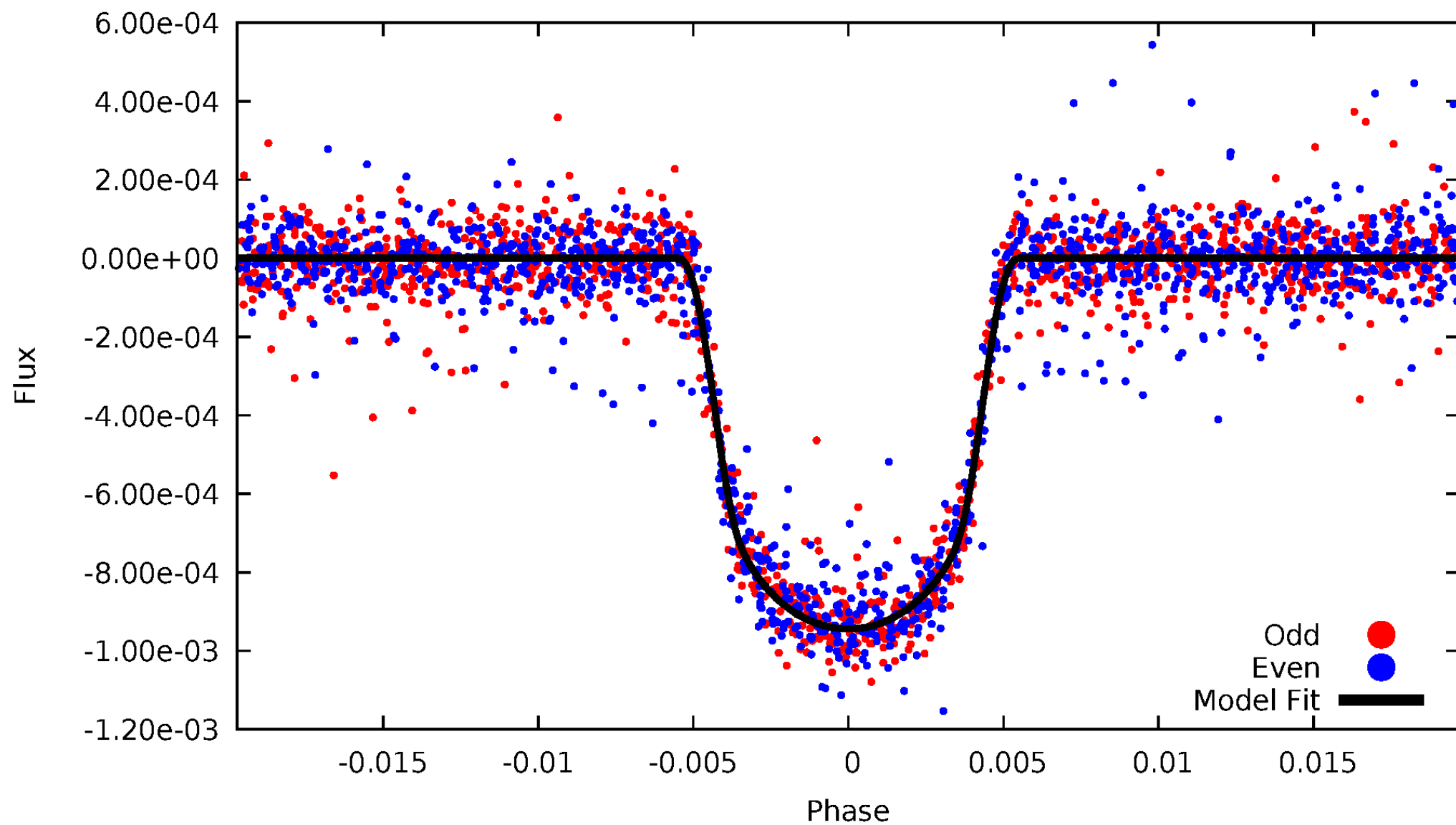


TCE 010187017-01



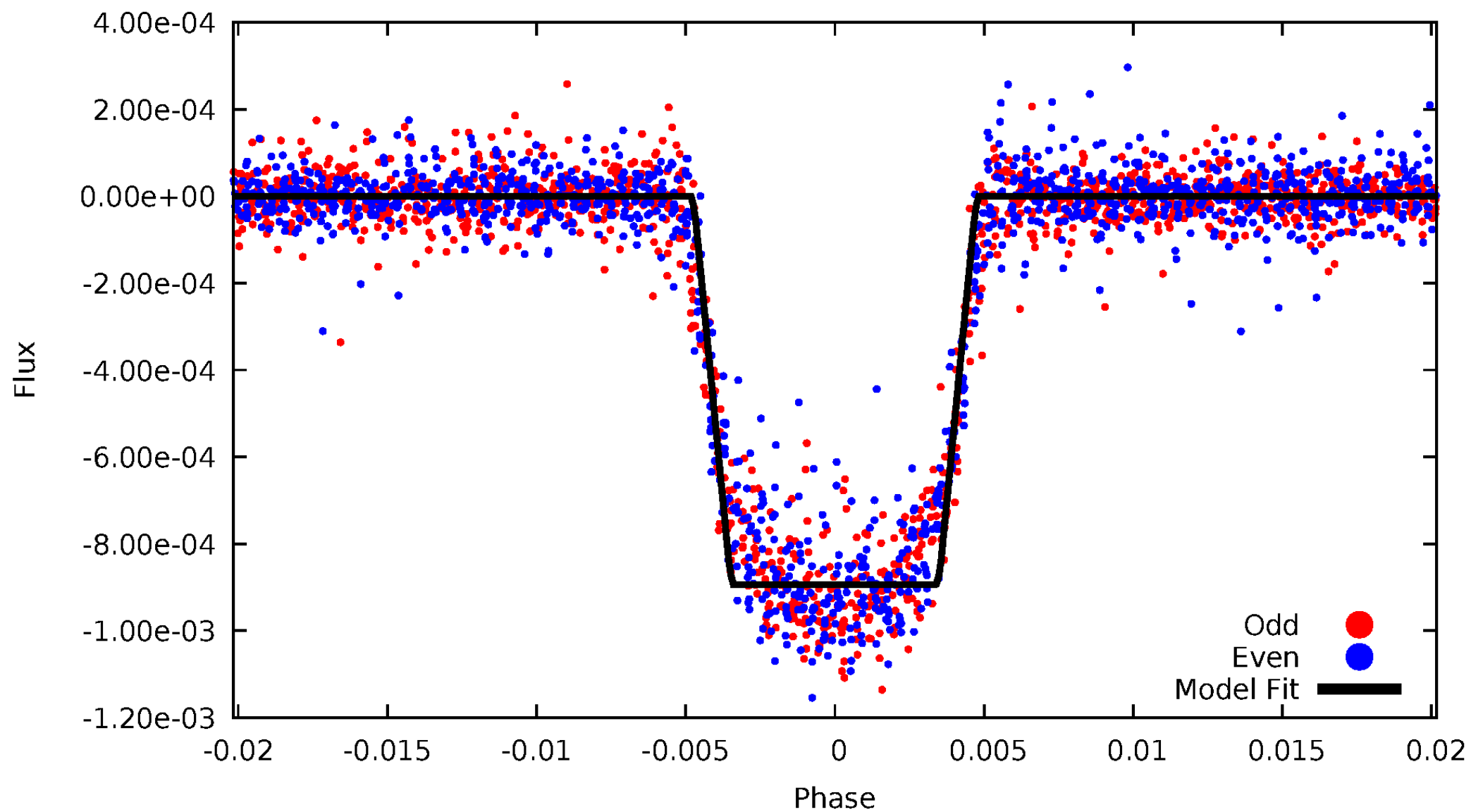
DV Odd/Even

TCE 010187017-01



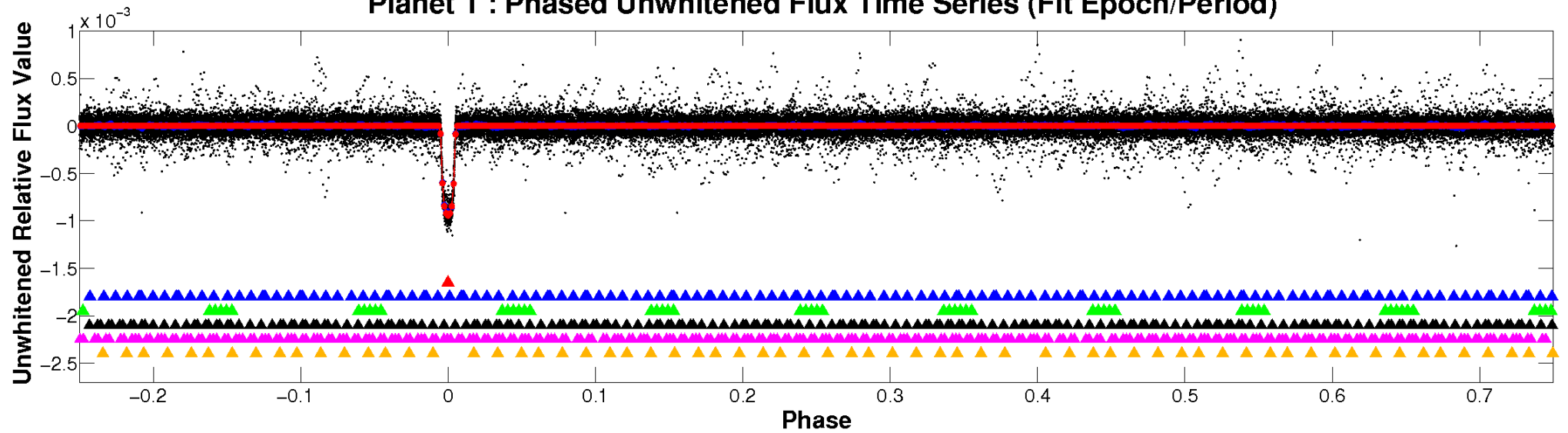
ALT Odd/Even

TCE 010187017-01

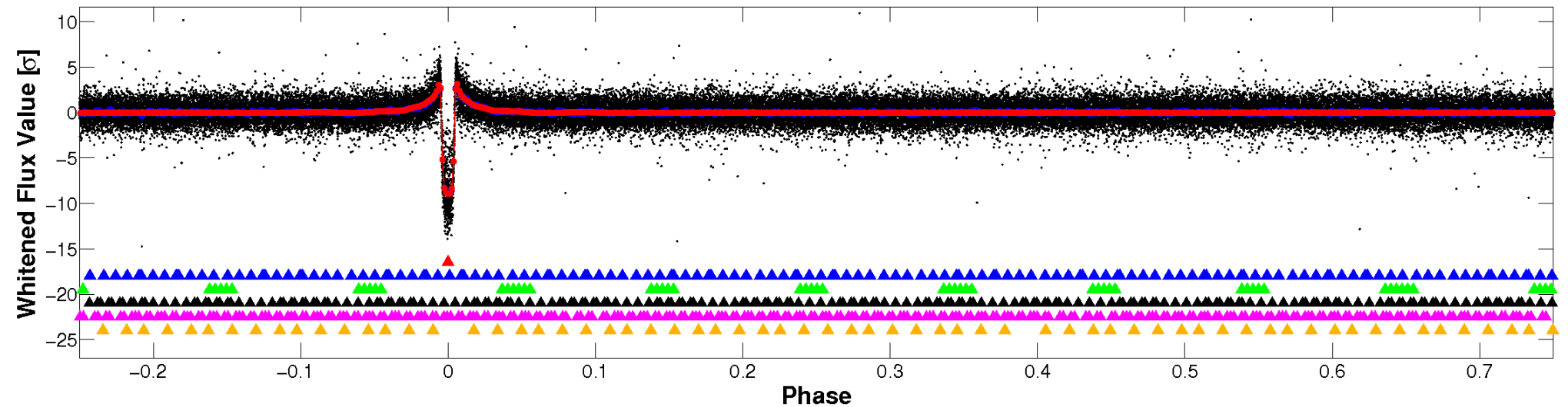


Non-Whitened Vs. Whitened Light Curve

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

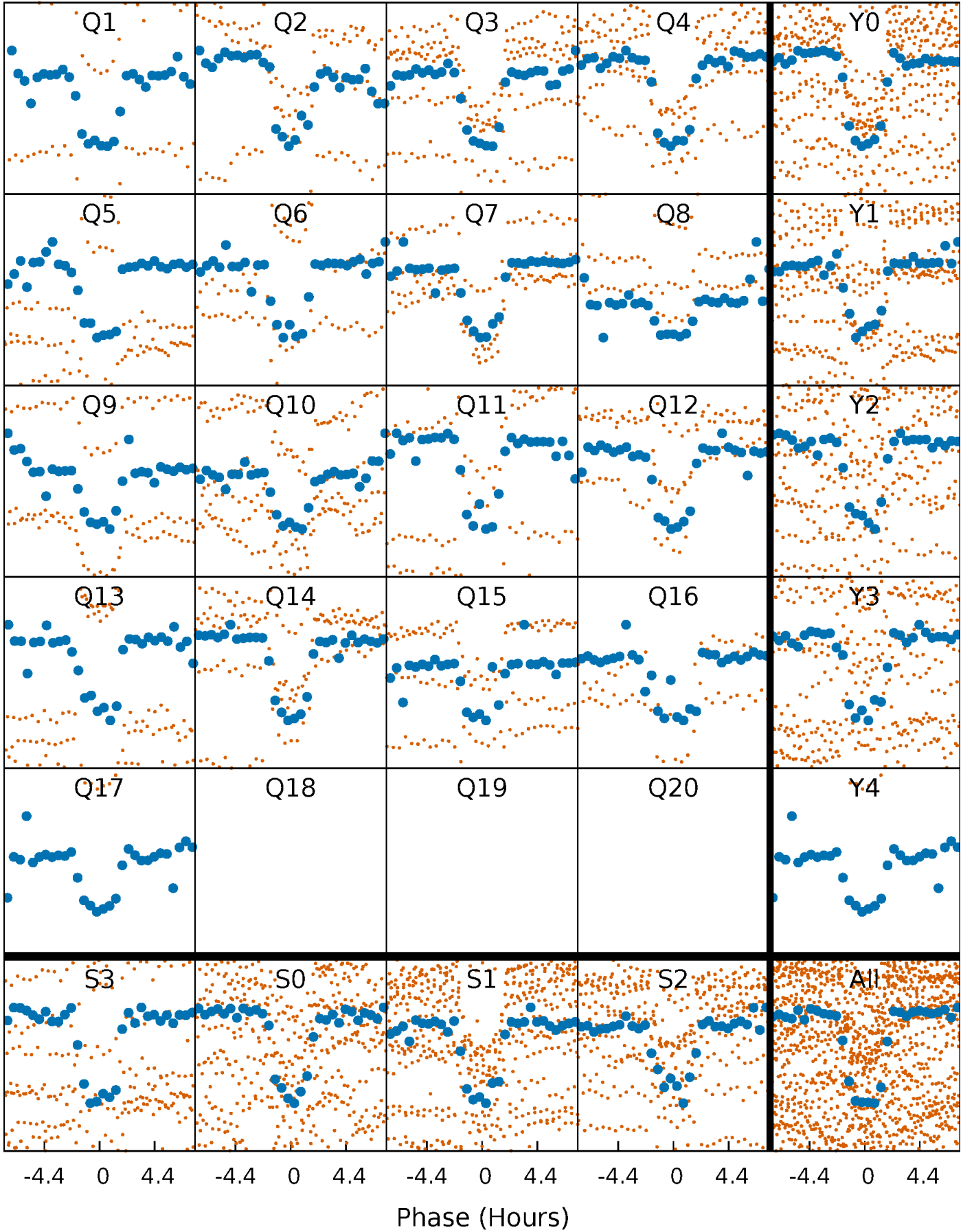


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



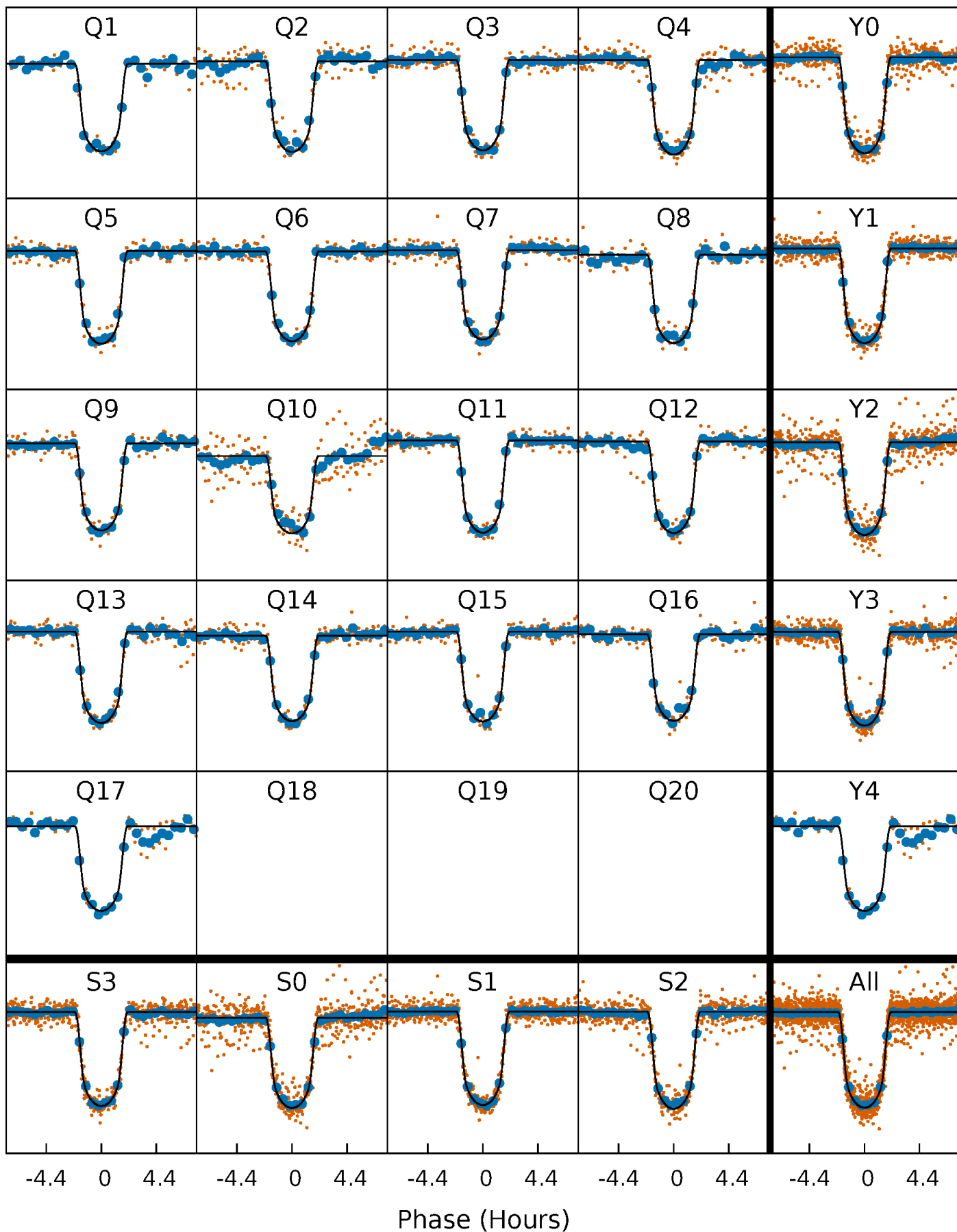
PDC Quarter-Phased Transit Curves

TCE 010187017-01 P= 16.145674 Days $T_0=134.754594$ (BKJD)



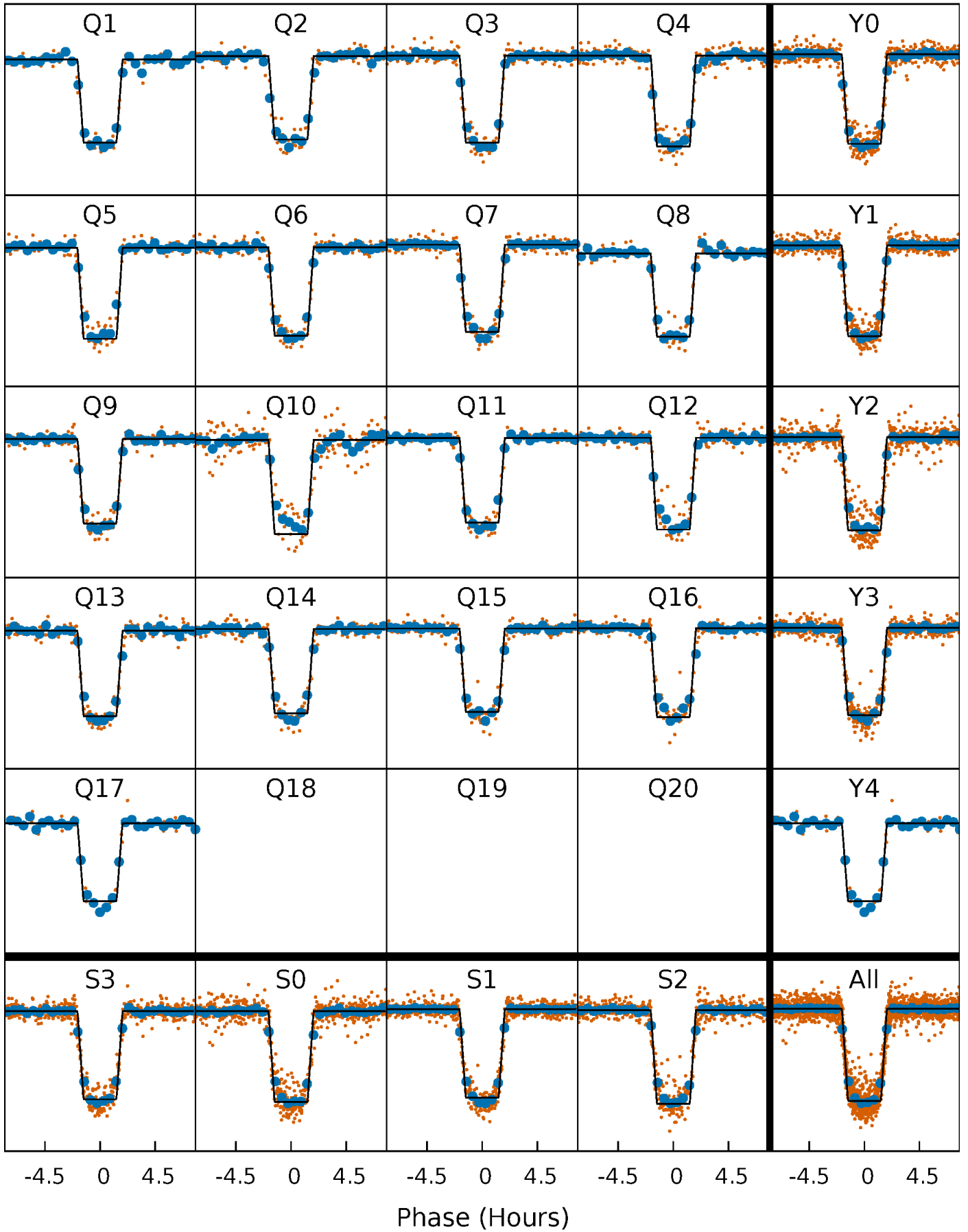
DV Quarter-Phased Transit Curves

TCE 010187017-01 P= 16.145674 Days $T_0=134.754594$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

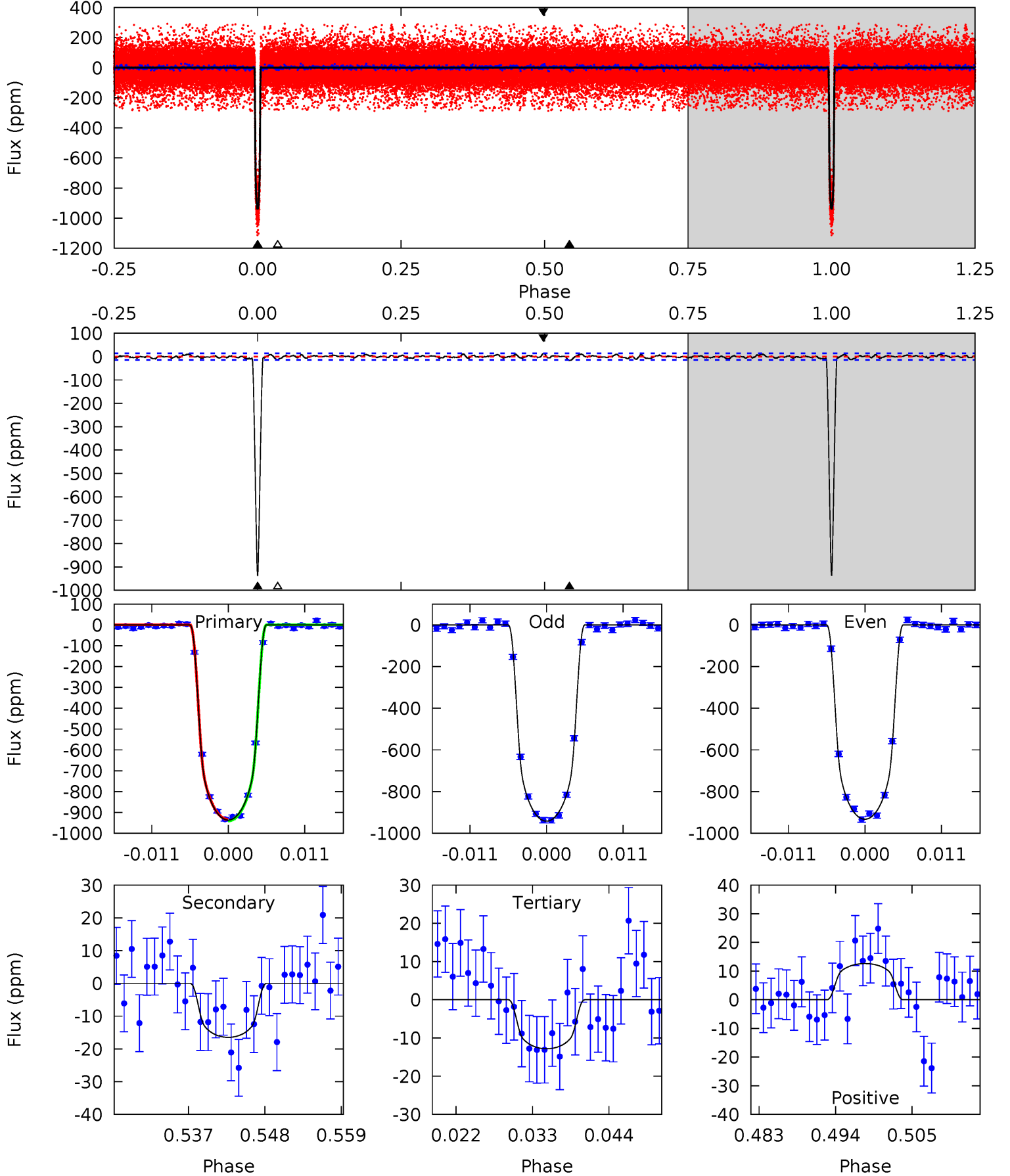
TCE 010187017-01 P= 16.145641 Days $T_0=134.755922$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-01, $P = 16.145674$ Days, $E = 118.608920$ Days

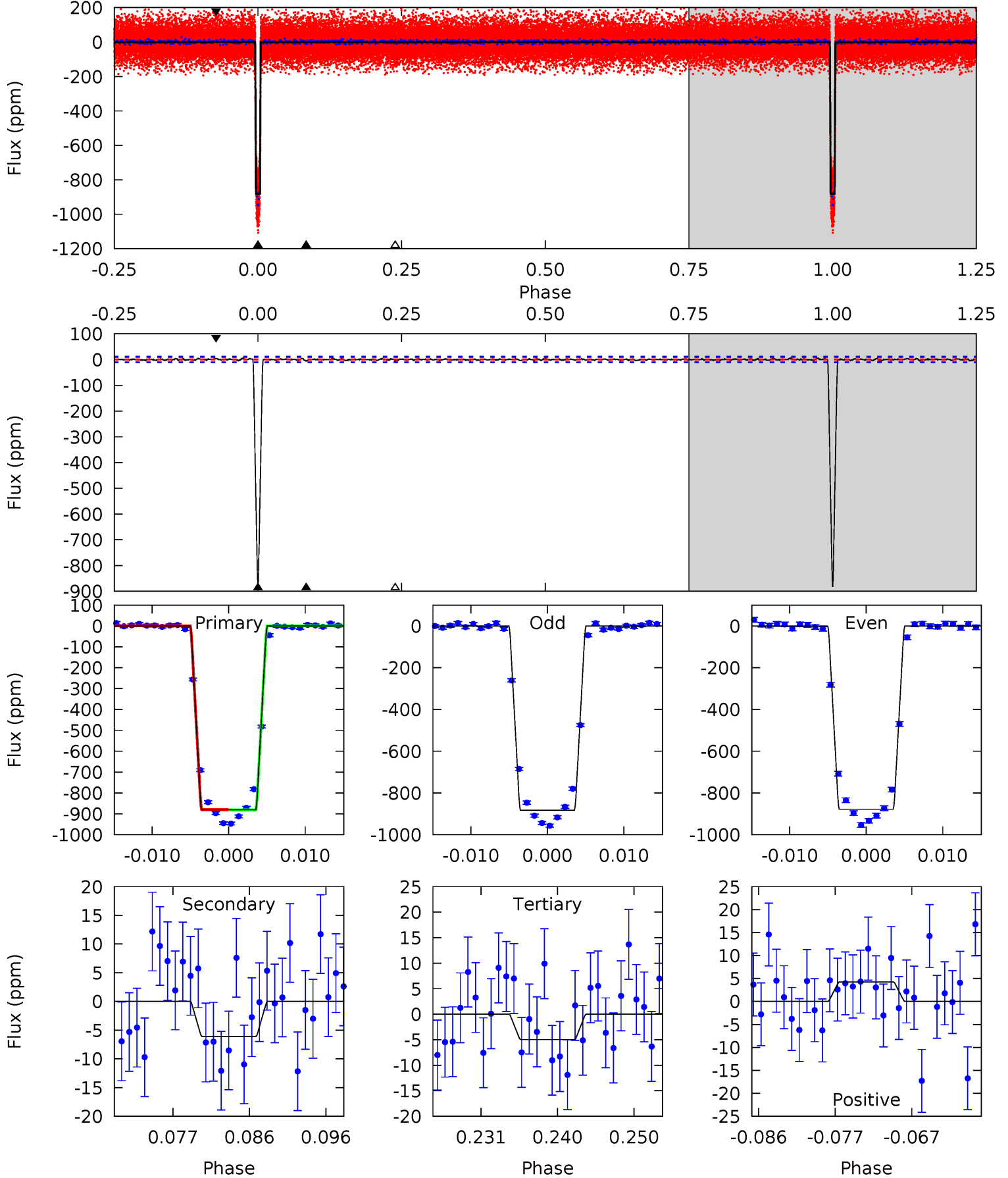
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
339.4	5.97	4.65	4.58	5.01	2.54	1.54	334.8	334.8	1.32	1.40	1.67	0.99	0.01	1.18



Alt Model-Shift Uniqueness Test

010187017-01, P = 16.145641 Days, E = 118.610281 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
410.1	2.83	2.31	1.98	5.03	2.59	0.75	407.8	408.1	0.52	0.85	1.14	0.99	0.01	0.36



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-01 / KOI 0082.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-16 ± 3	$2.65^{+0.10}_{-0.09}$	767^{+18}_{-18}	2529^{+62}_{-62}	17^{+3}_{-3}
Alt.	-6 ± 2	$2.45^{+0.10}_{-0.09}$	768^{+19}_{-19}	2285^{+95}_{-118}	$7.379^{+2.715}_{-2.661}$

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

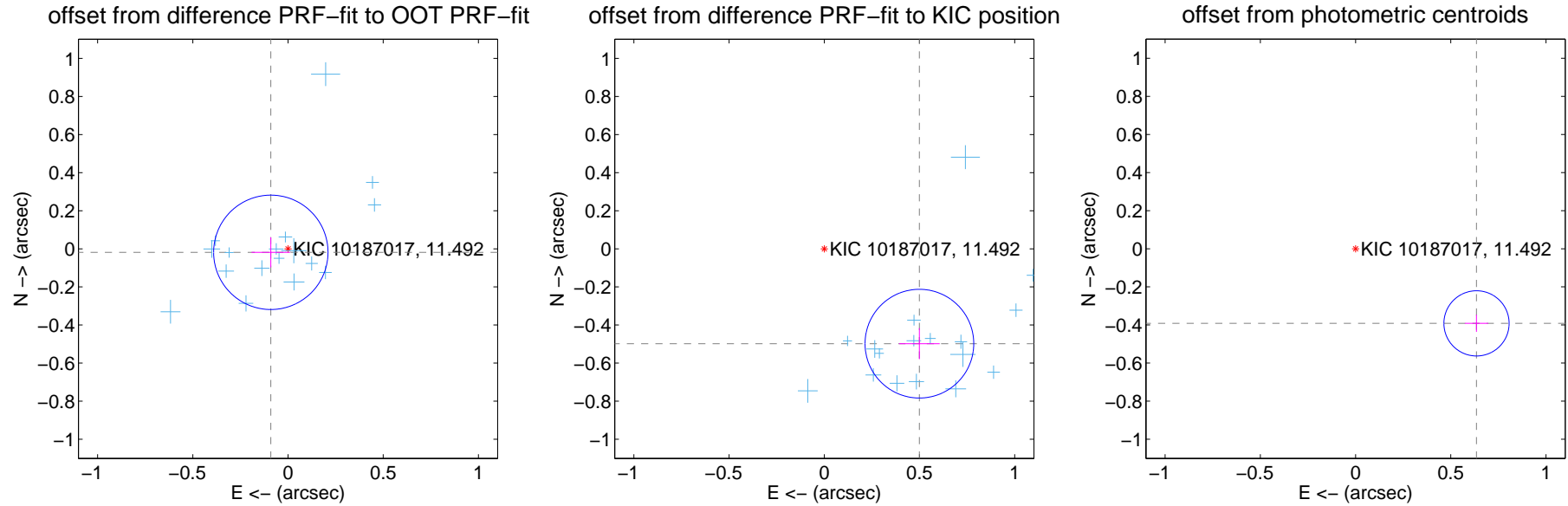
DV Centroid Data

Supplemental centroid analysis for 010187017-01. **Kepler magnitude: 11.49.** Transit SNR 204.00

There are 17 quarters with good PRF difference image offsets

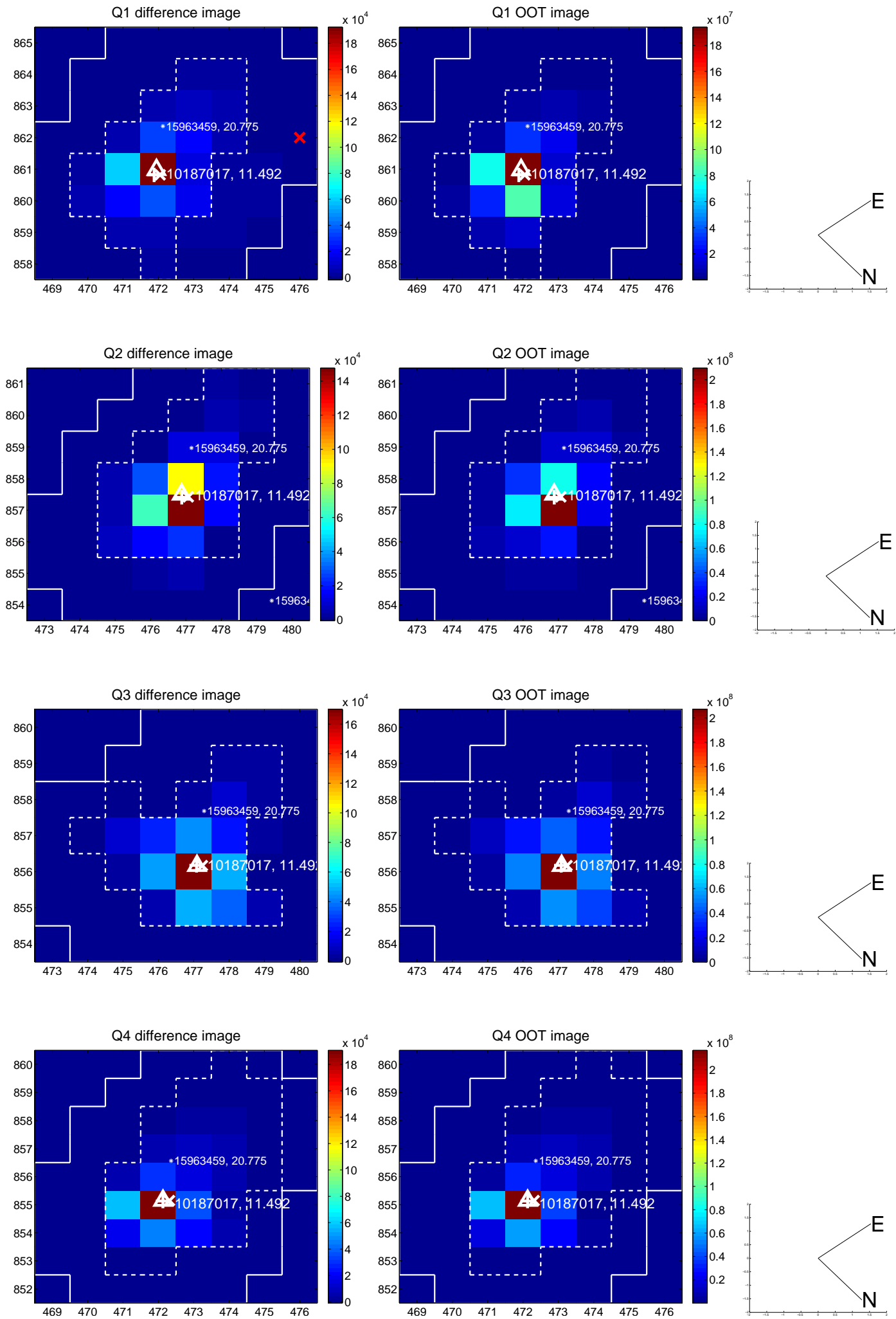
The direct PRF centroid is offset from the target star catalog position by about 0.88 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.092 ± 0.100	0.92	0.090 ± 0.101	-0.018 ± 0.079
PRF-fit source offset from KIC position	0.706 ± 0.095	7.41	-0.500 ± 0.107	-0.498 ± 0.082
photometric centroid source offset	0.75 ± 0.06	13.07	-0.64 ± 0.06	-0.39 ± 0.04

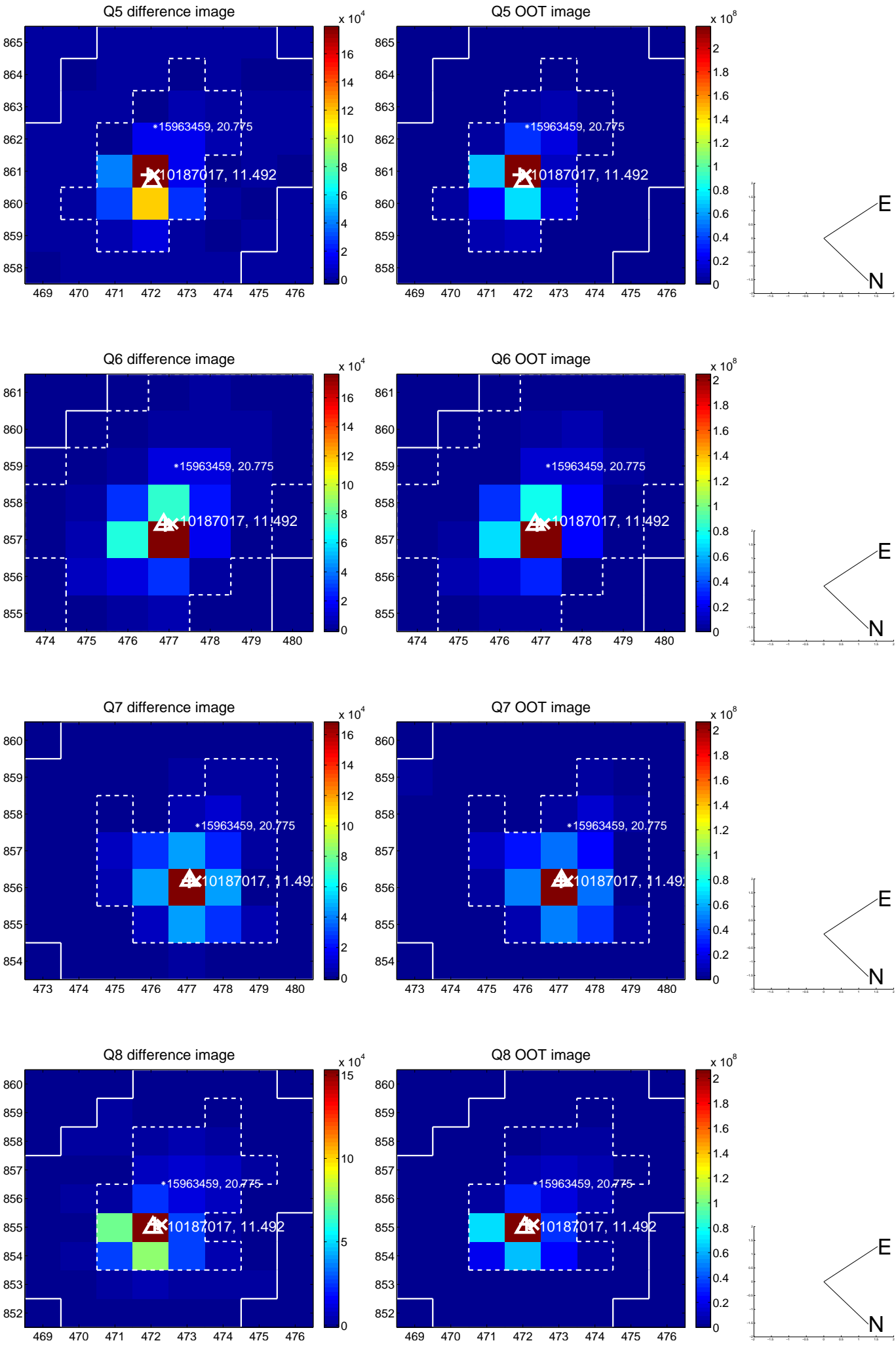


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

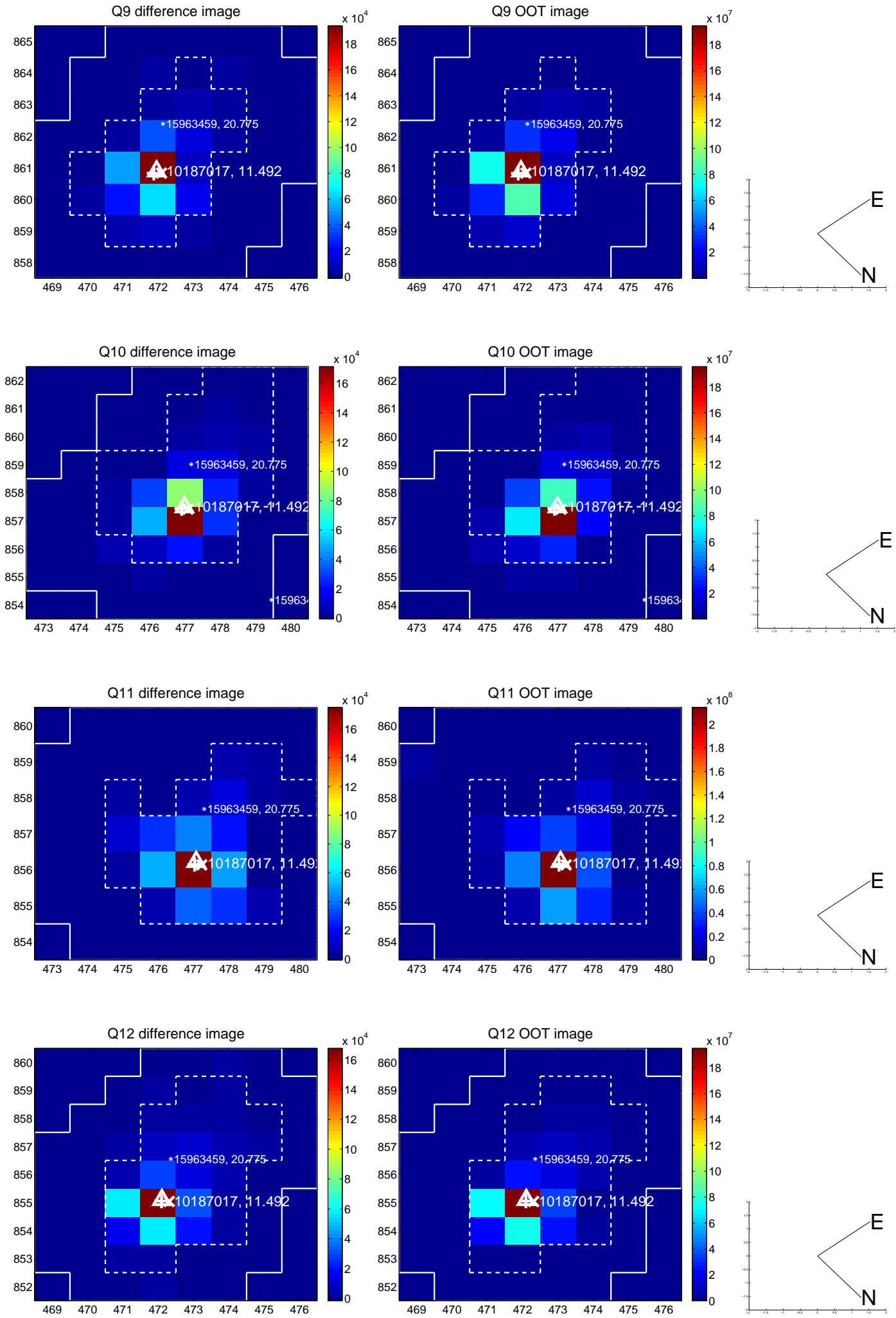
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



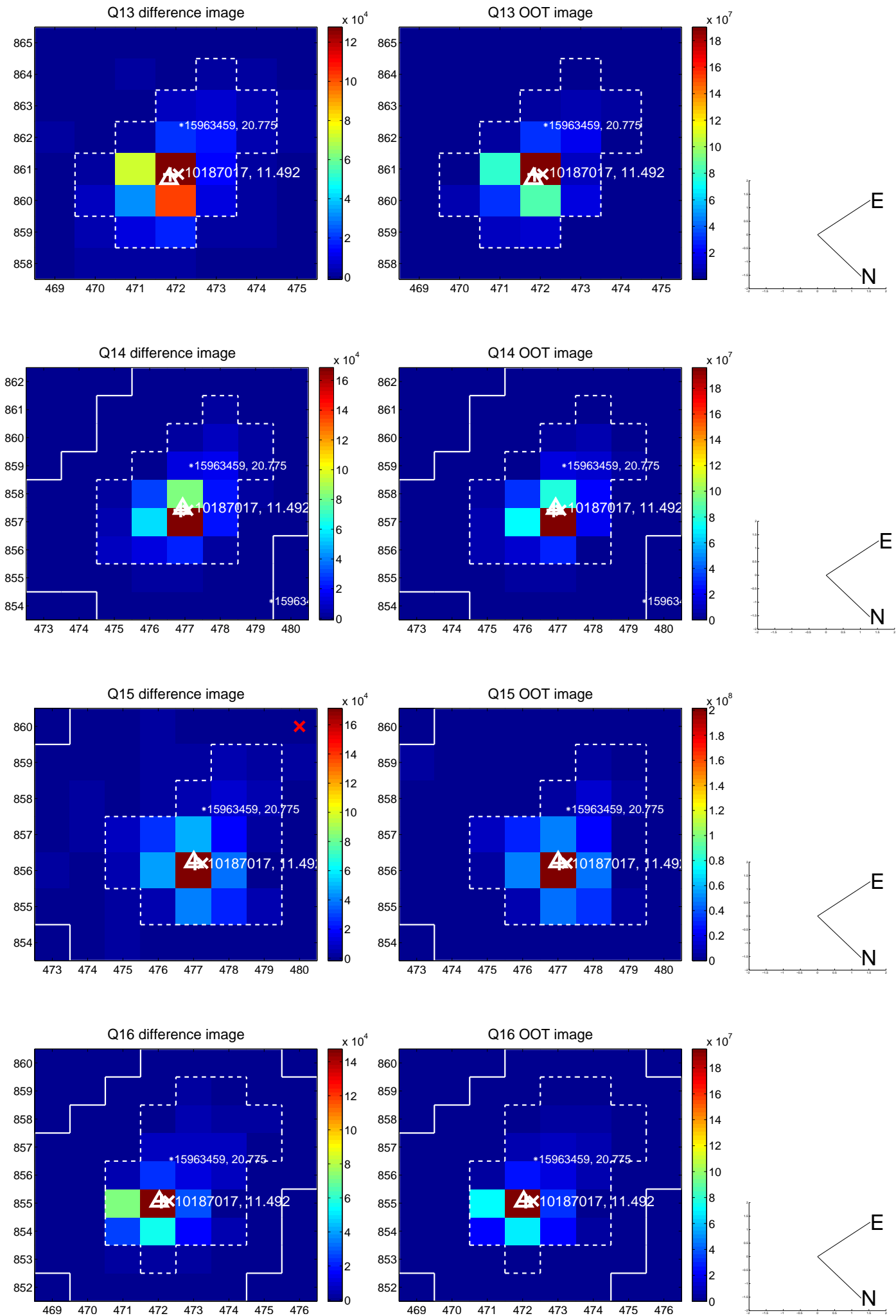
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



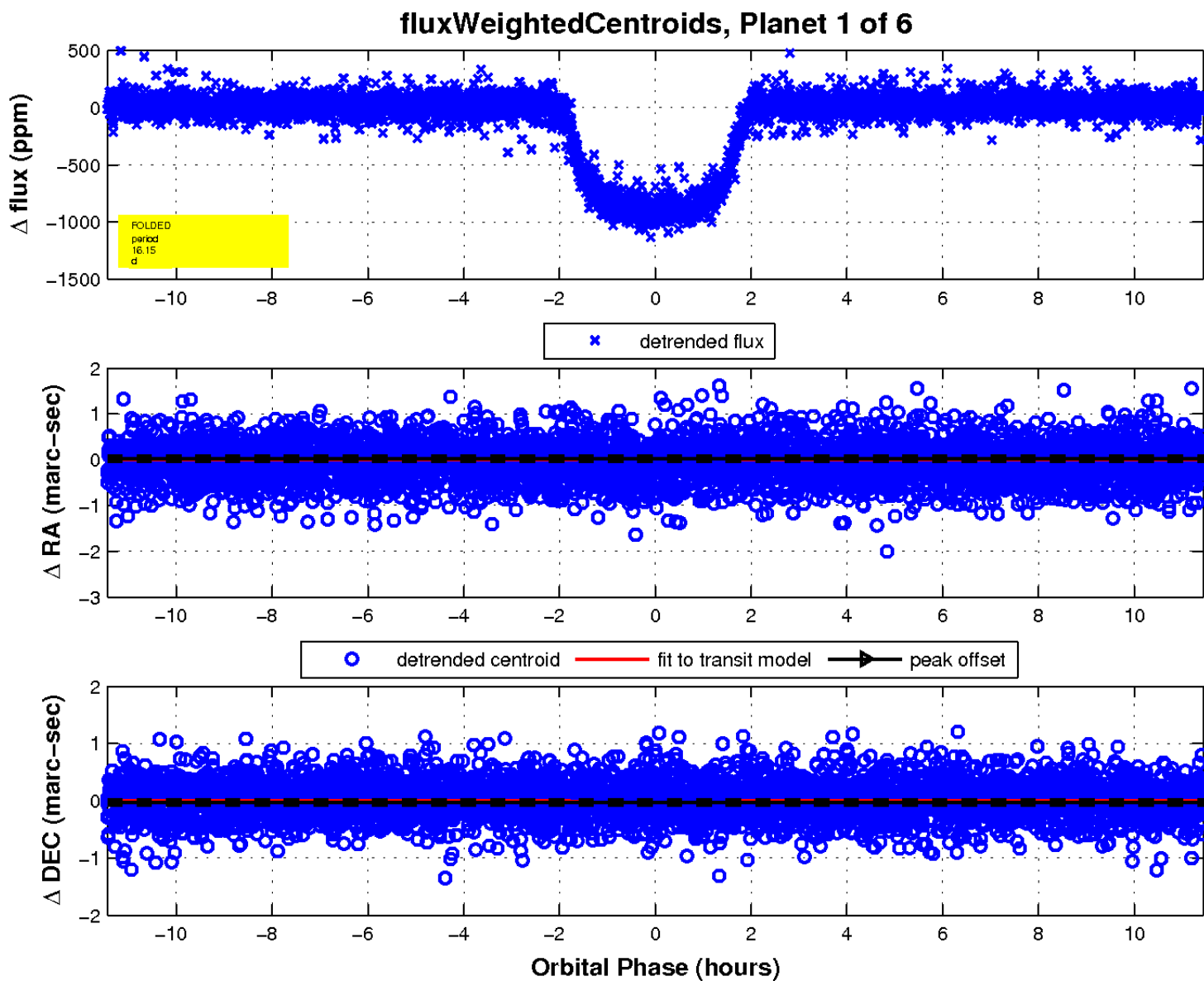
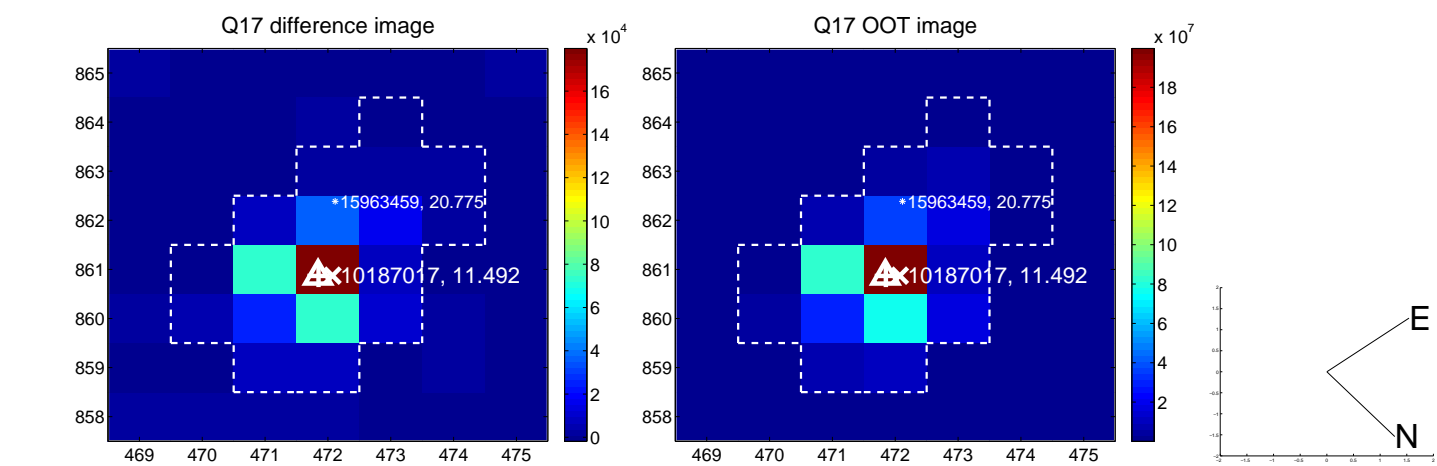
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



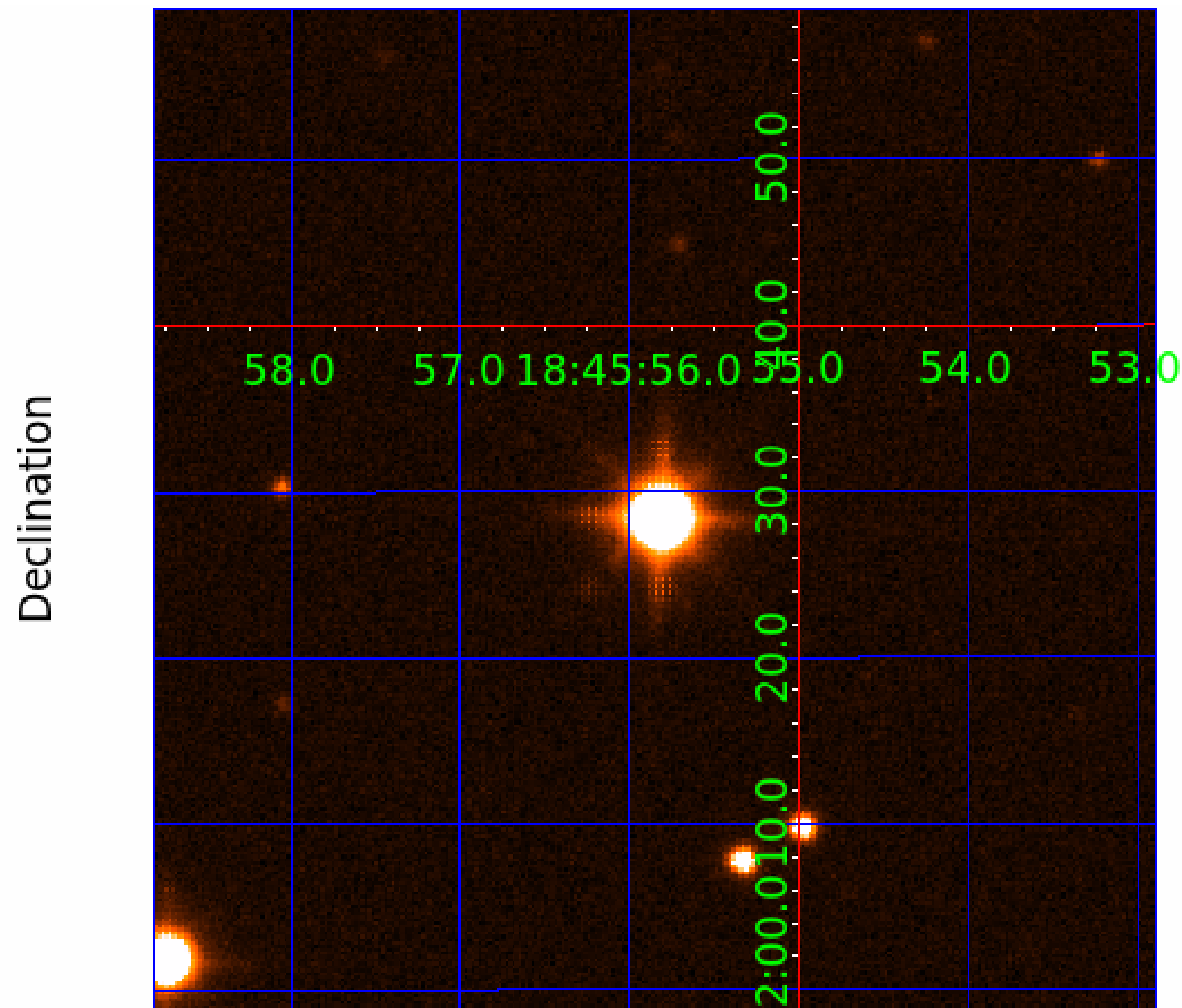
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

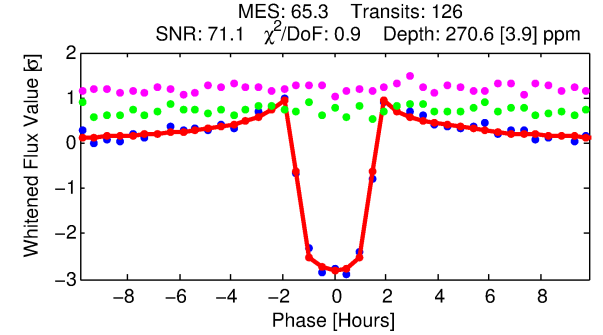
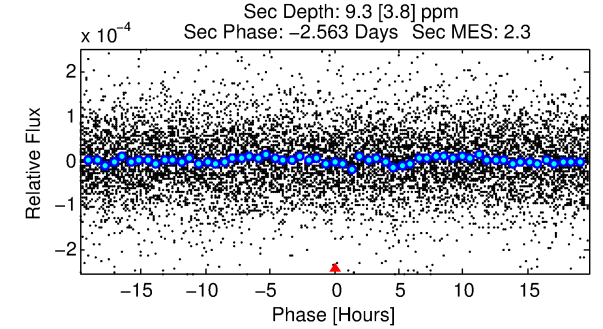
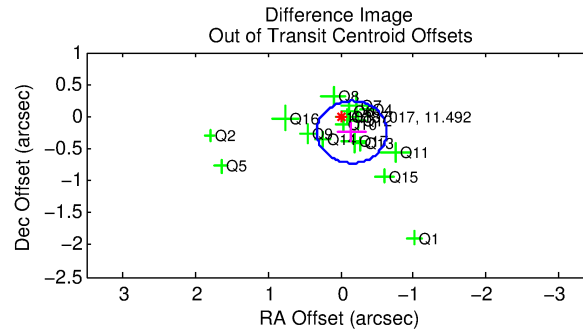
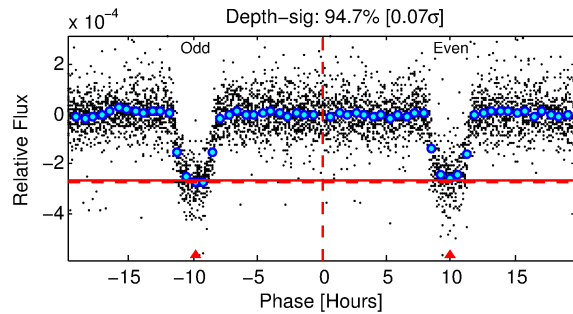
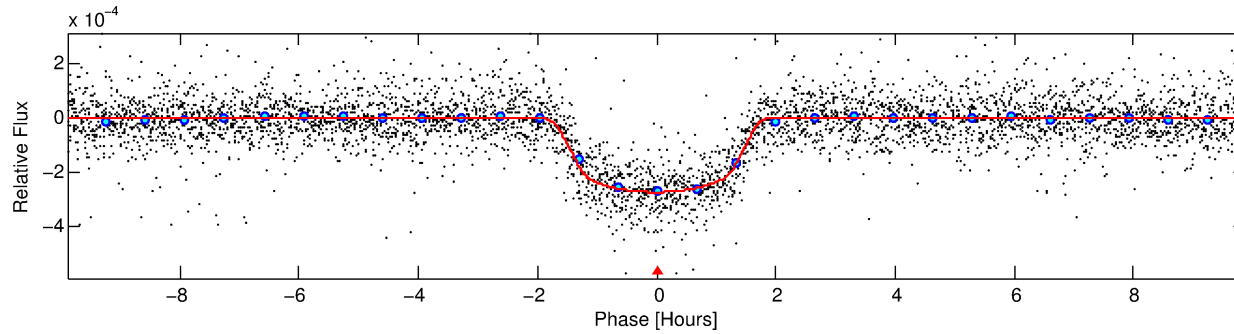
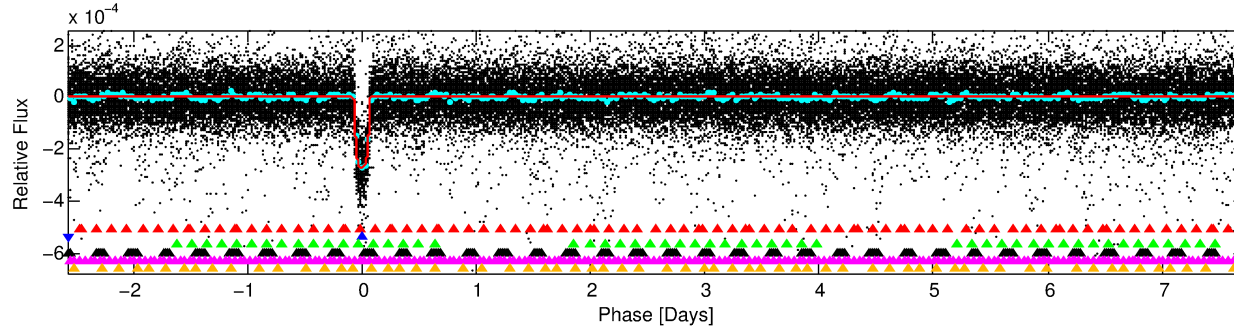
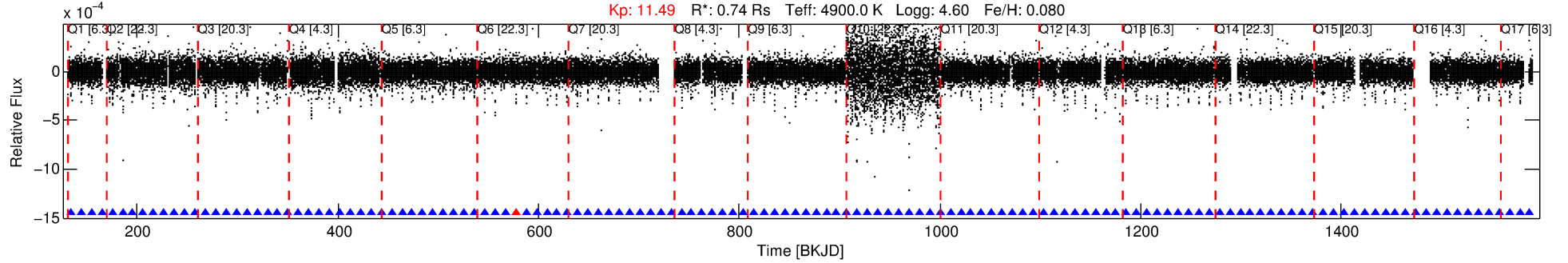
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187017-02

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 2 of 6 Period: 10.312 d
KOI: K00082.02 Name: Kepler-102d Corr: 0.986



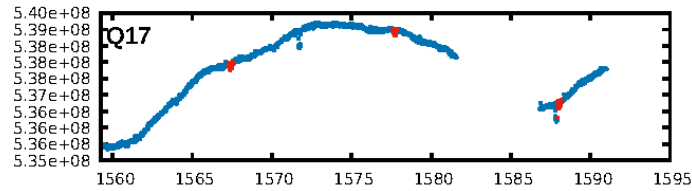
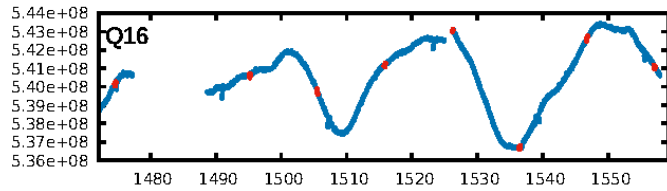
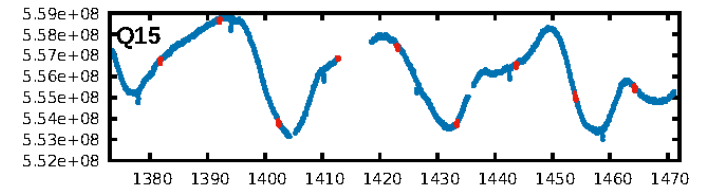
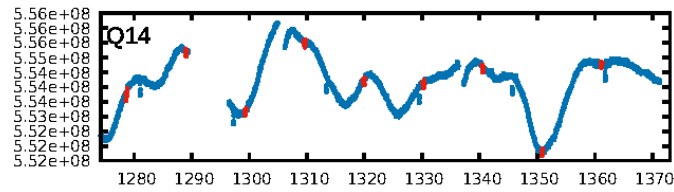
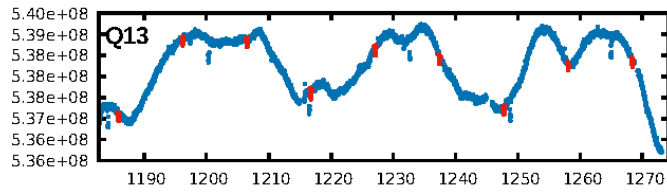
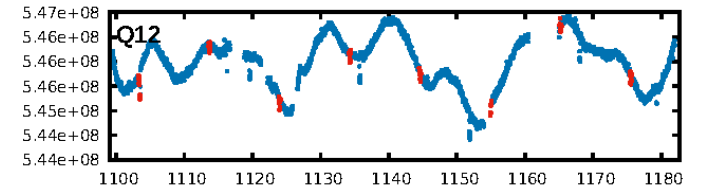
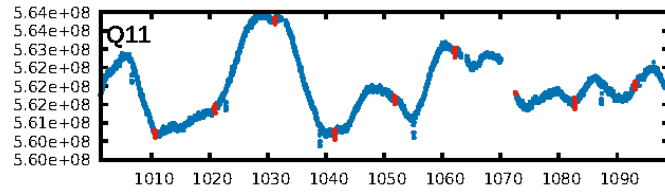
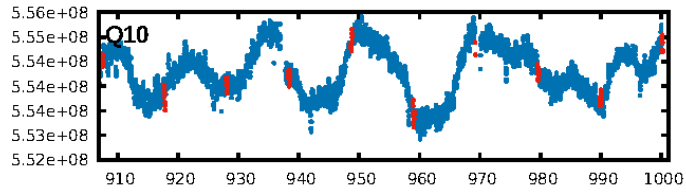
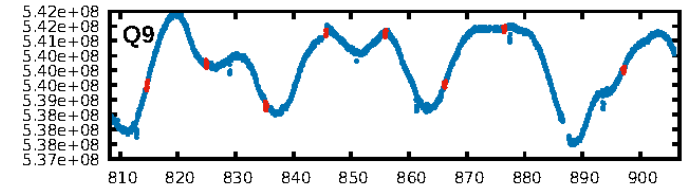
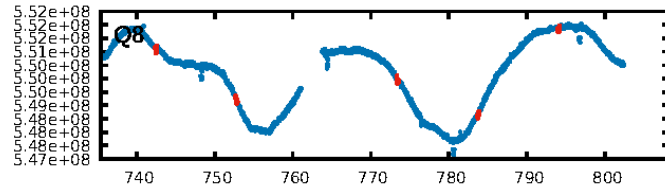
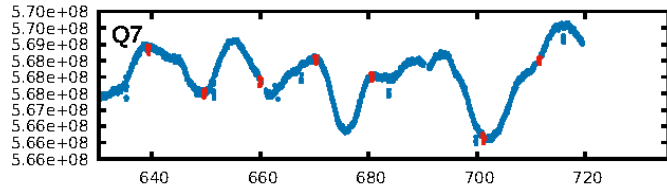
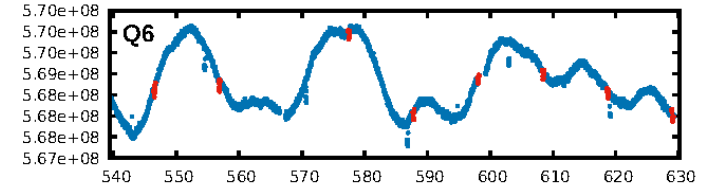
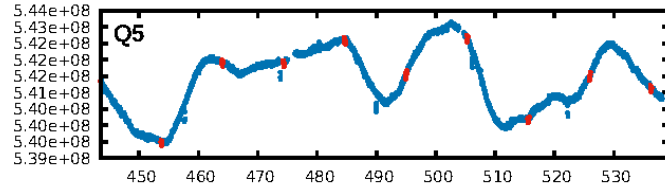
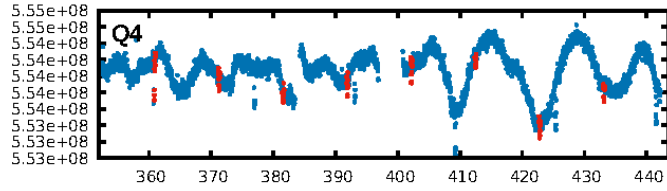
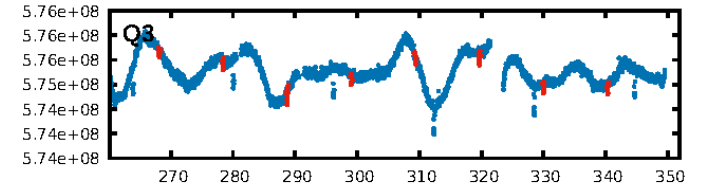
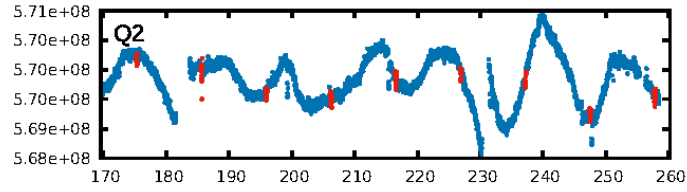
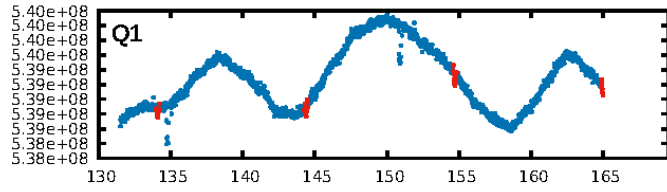
DV Fit Results:

Period = 10.31173 [0.00001] d
Epoch = 134.0809 [0.0008] BKJD
 $R_p/R^* = 0.0184$ [0.0011]
 $a/R^* = 11.45$ [2.53]
 $b = 0.90$ [0.05]
 $S_{\text{eff}} = 38.23$ [4.51]
 $T_{\text{eq}} = 634$ [19] K
 $R_p = 1.49$ [0.13] R_e
 $a = 0.0861$ [0.0049] AU
 $A_g = 17.04$ [7.44] [2.16 σ]
 $T_{\text{eff}} = 1992$ [217] K [6.24 σ]

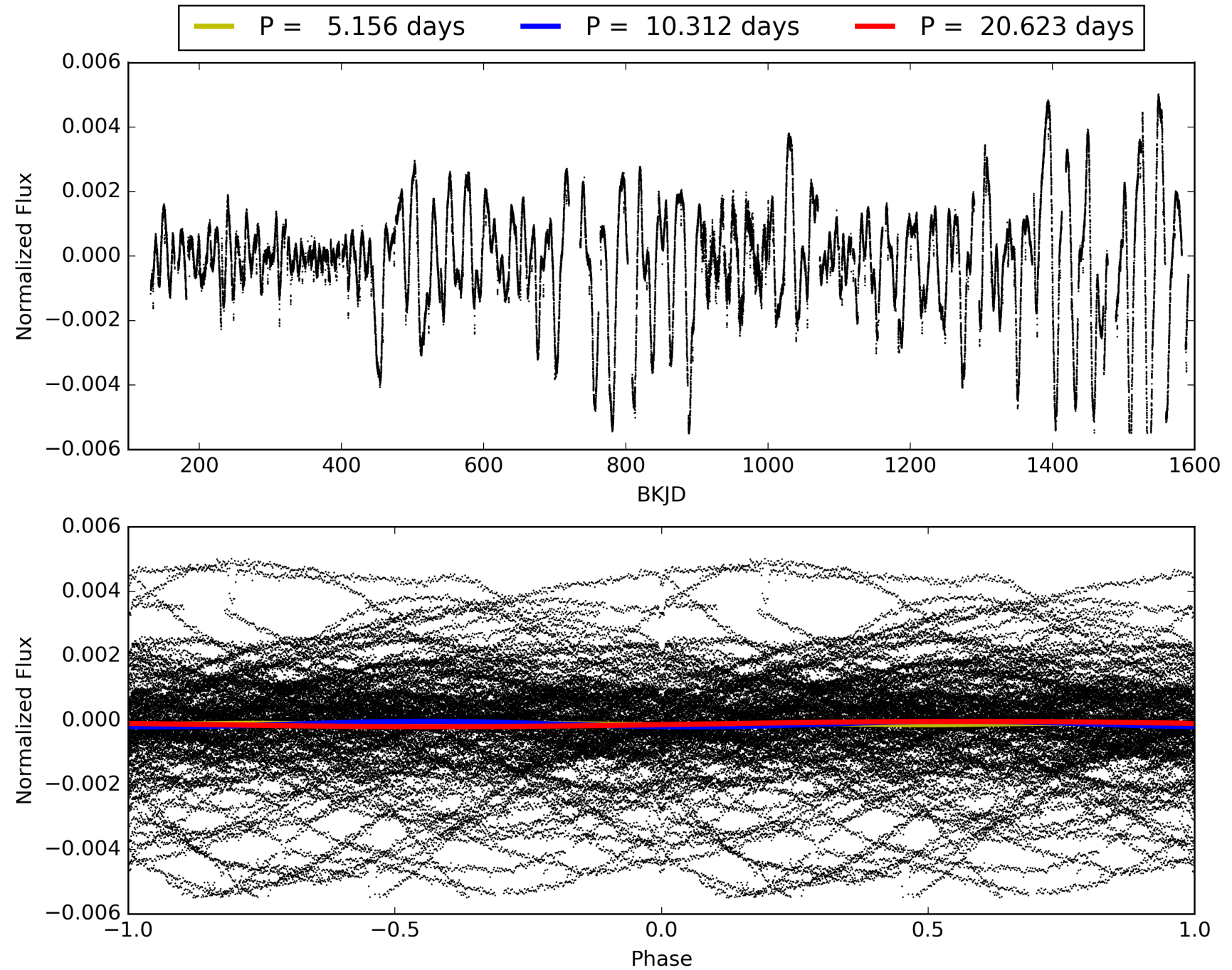
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.91 σ]
LongPeriod-sig: 100.0% [27.76 σ]
ModelChiSquare2-sig: 58.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [119/120]
GhostDiagnostic-chr: 4.947
Centroid-sig: 8.5%
Centroid-so: 1.013 arcsec [5.92 σ]
OotOffset-rm: 0.284 arcsec [1.76 σ]
KicOffset-rm: 1.063 arcsec [5.66 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 010187017-02, PDC Light Curves

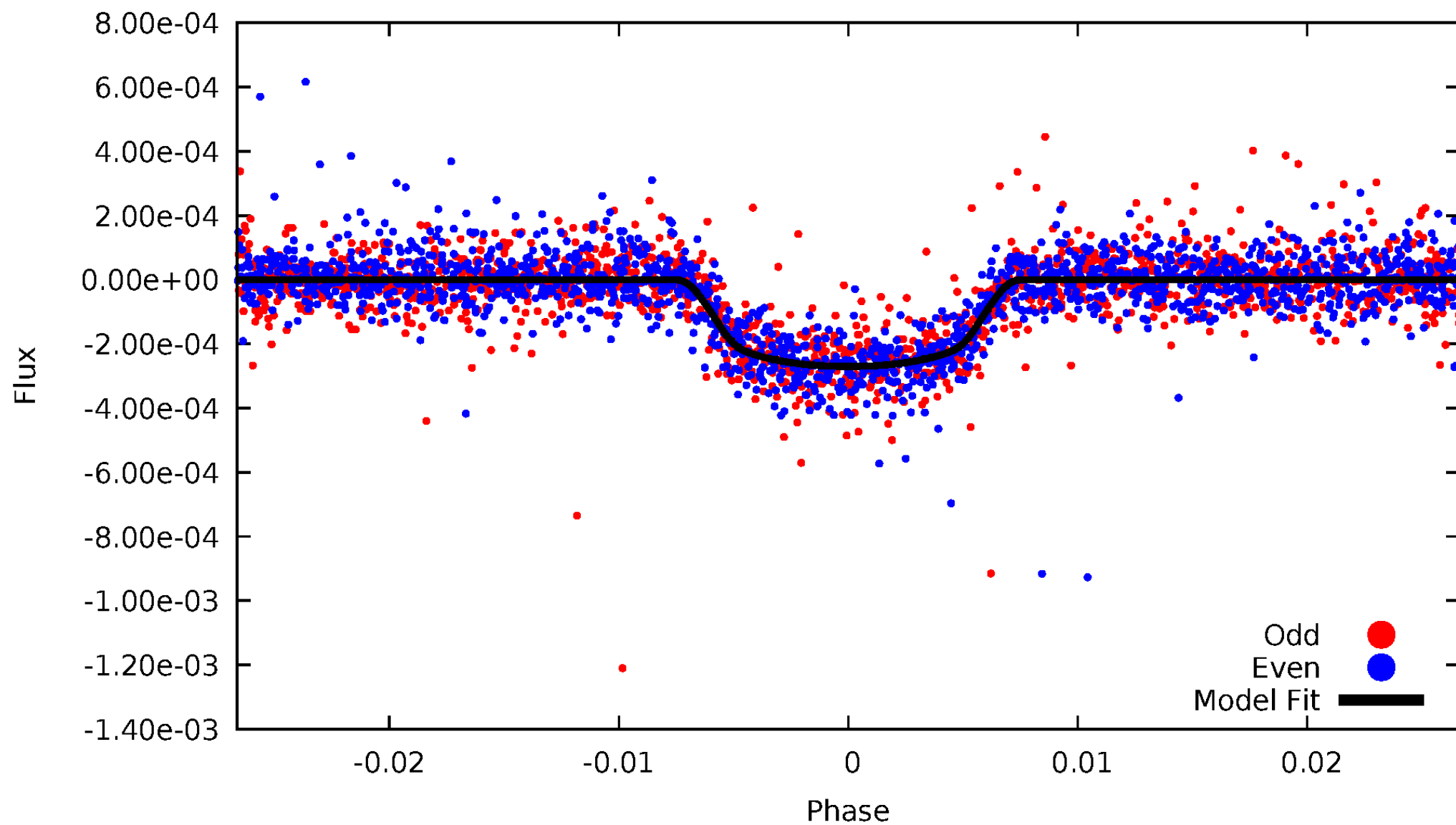


TCE 010187017-02



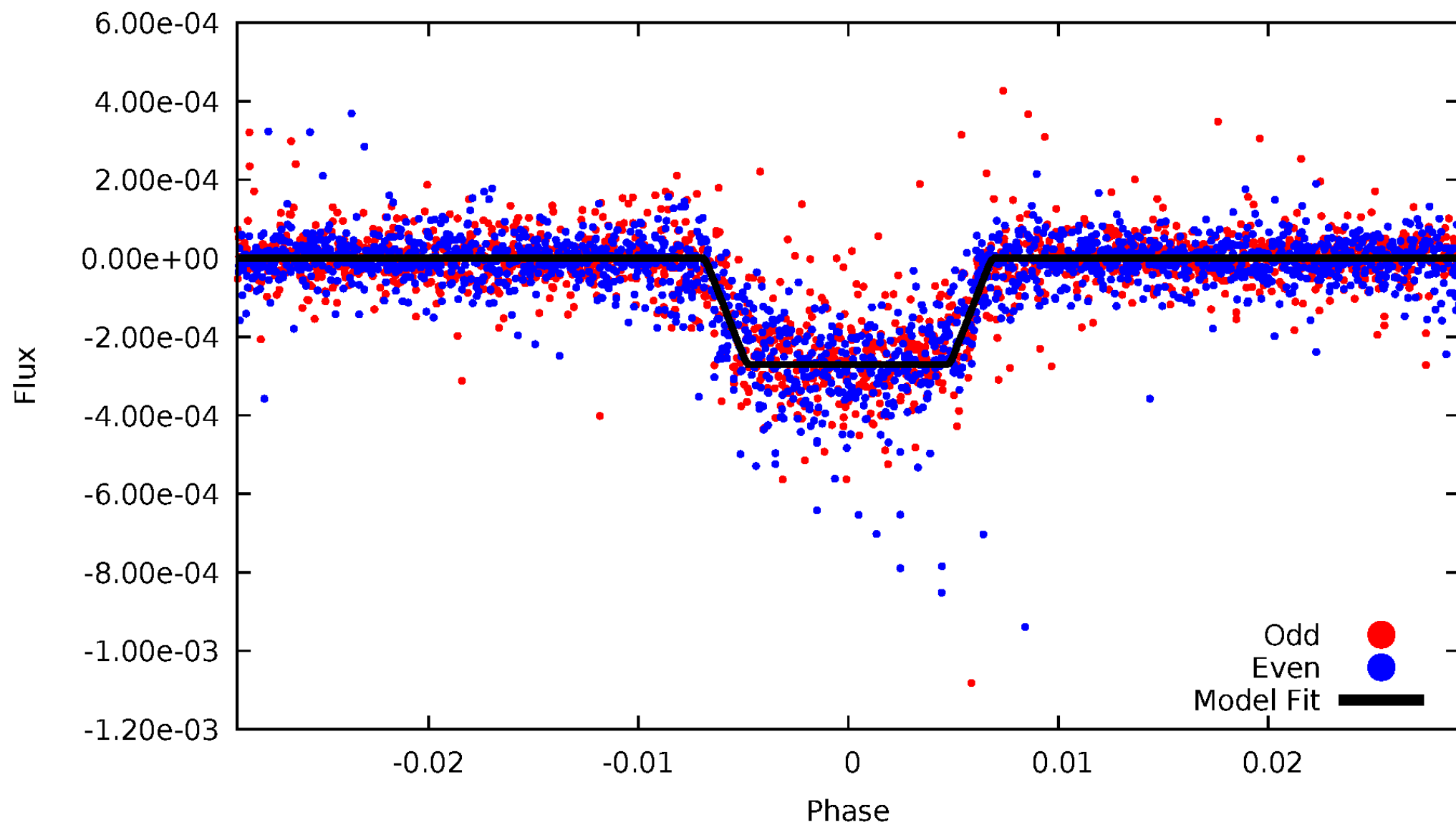
DV Odd/Even

TCE 010187017-02



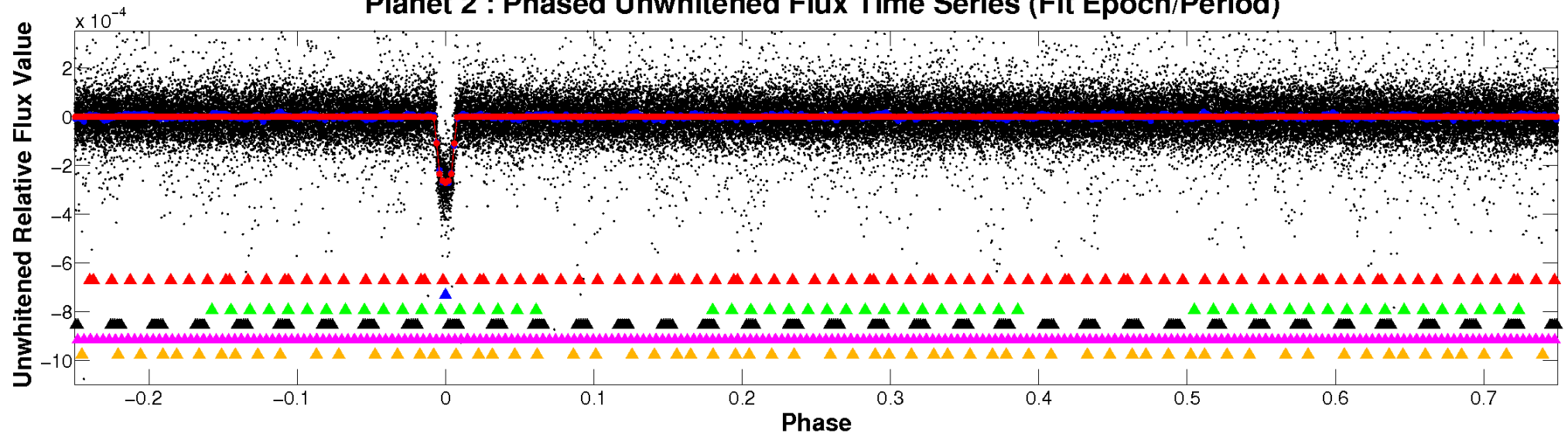
ALT Odd/Even

TCE 010187017-02

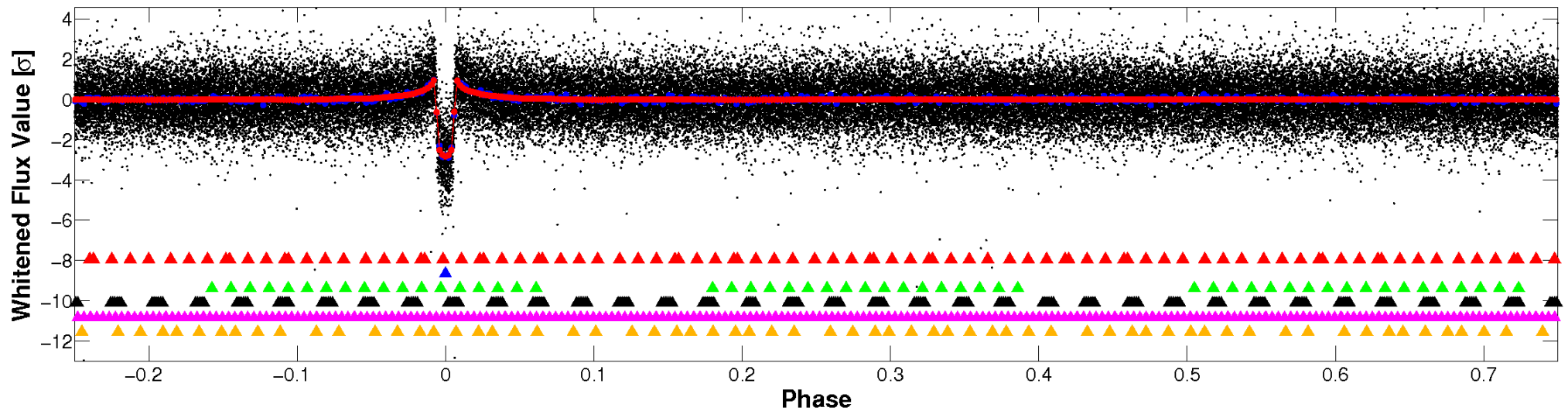


Non-Whitened Vs. Whitened Light Curve

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

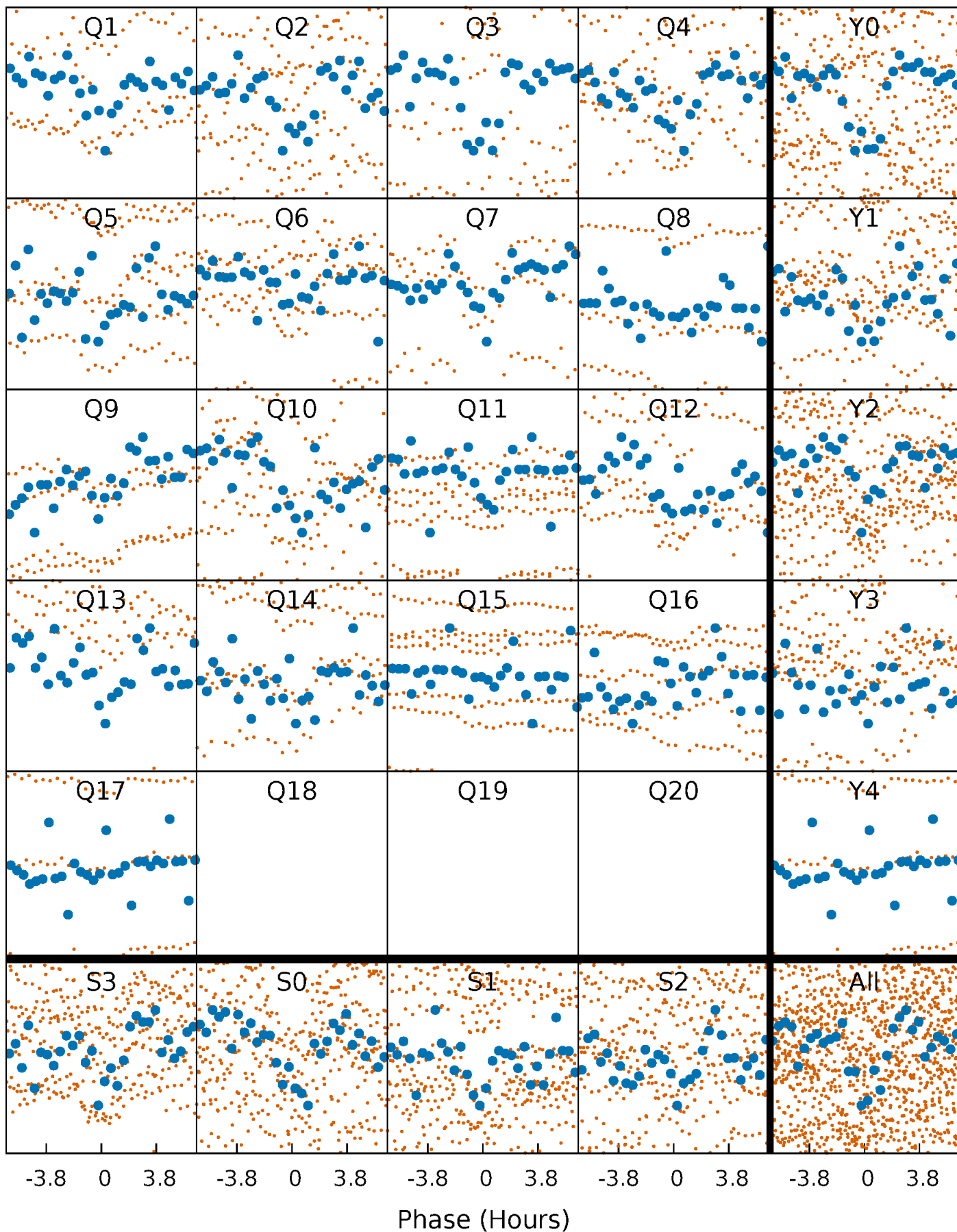


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



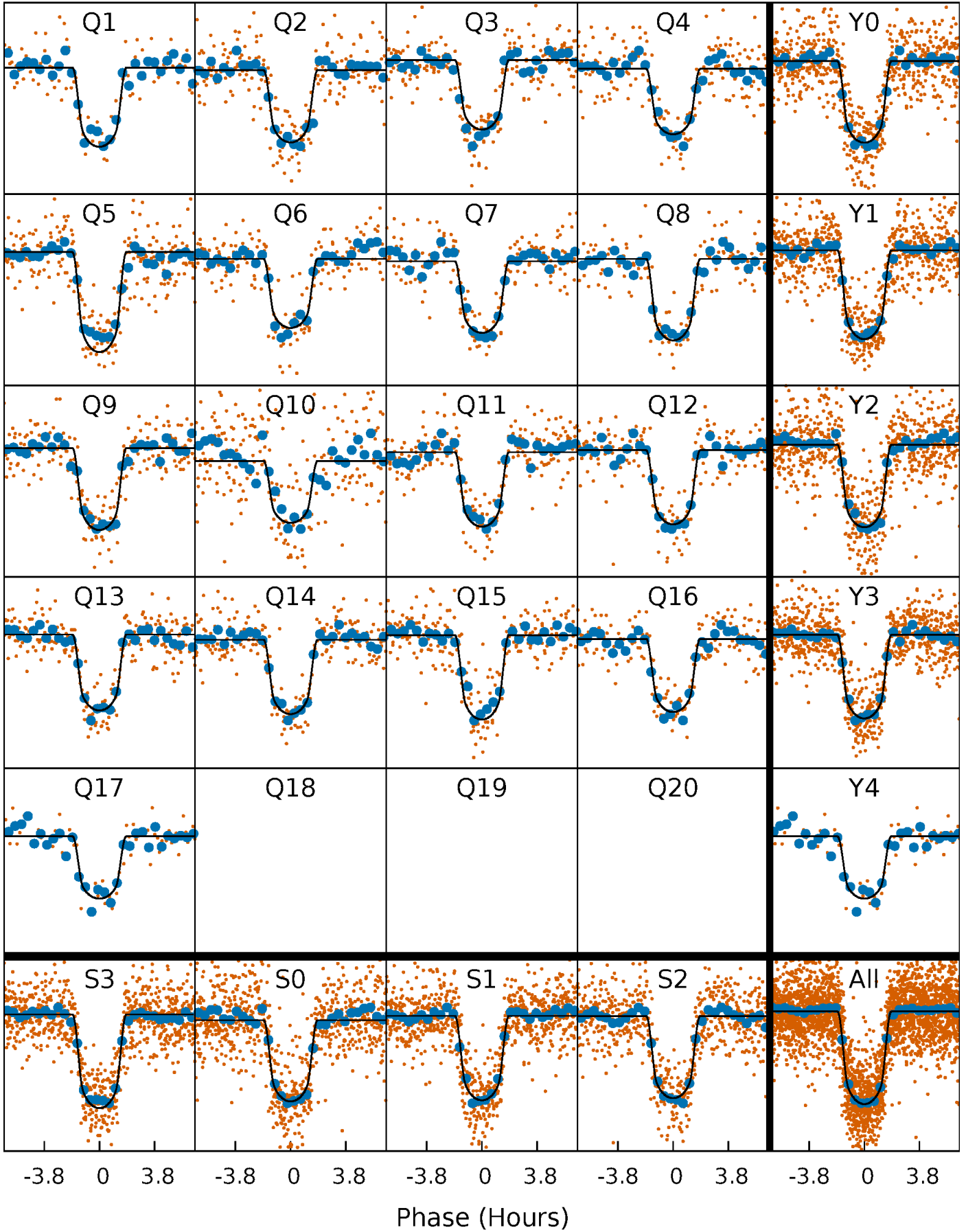
PDC Quarter-Phased Transit Curves

TCE 010187017-02 P= 10.311735 Days $T_0=134.080910$ (BKJD)



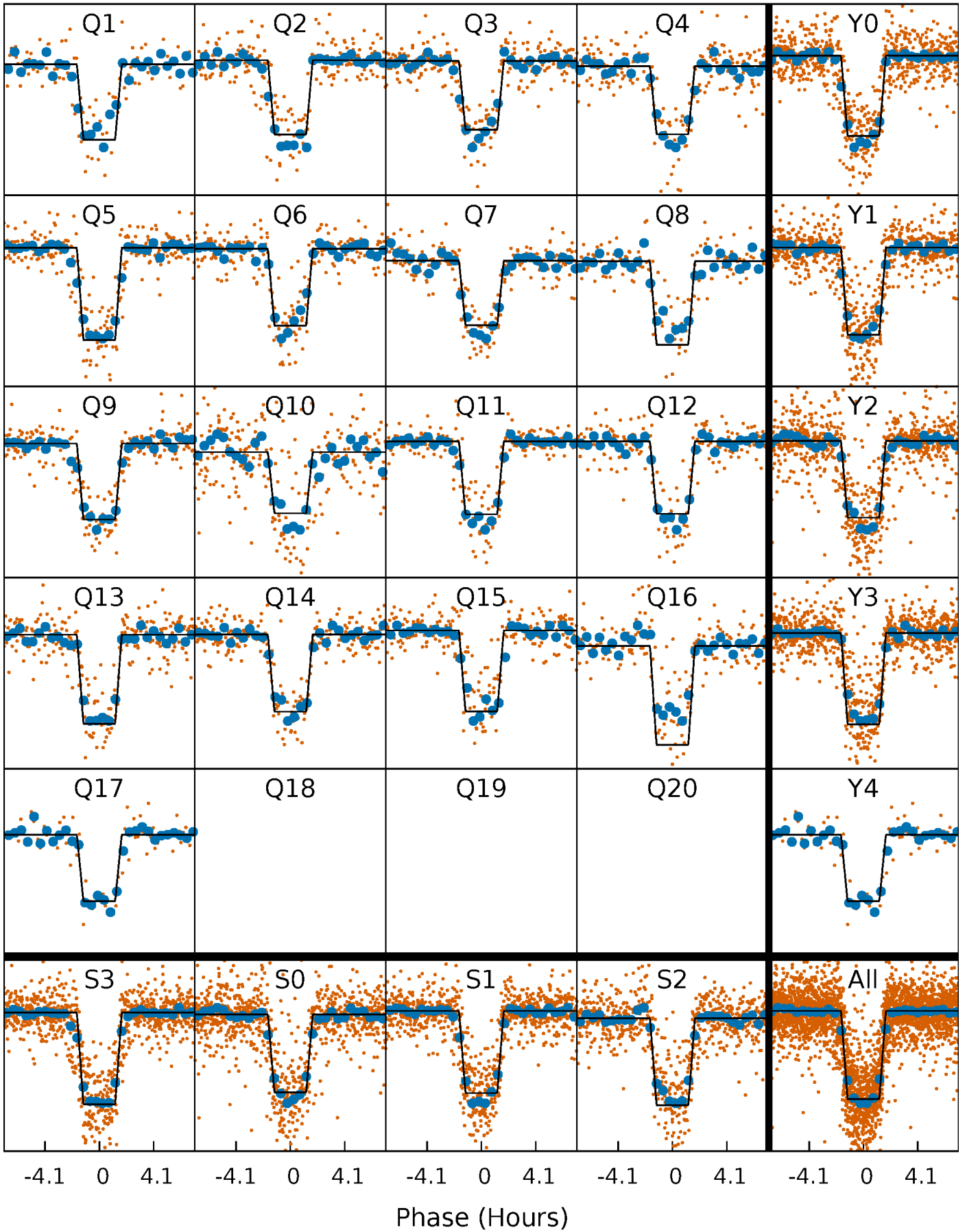
DV Quarter-Phased Transit Curves

TCE 010187017-02 P= 10.311735 Days $T_0=134.080910$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

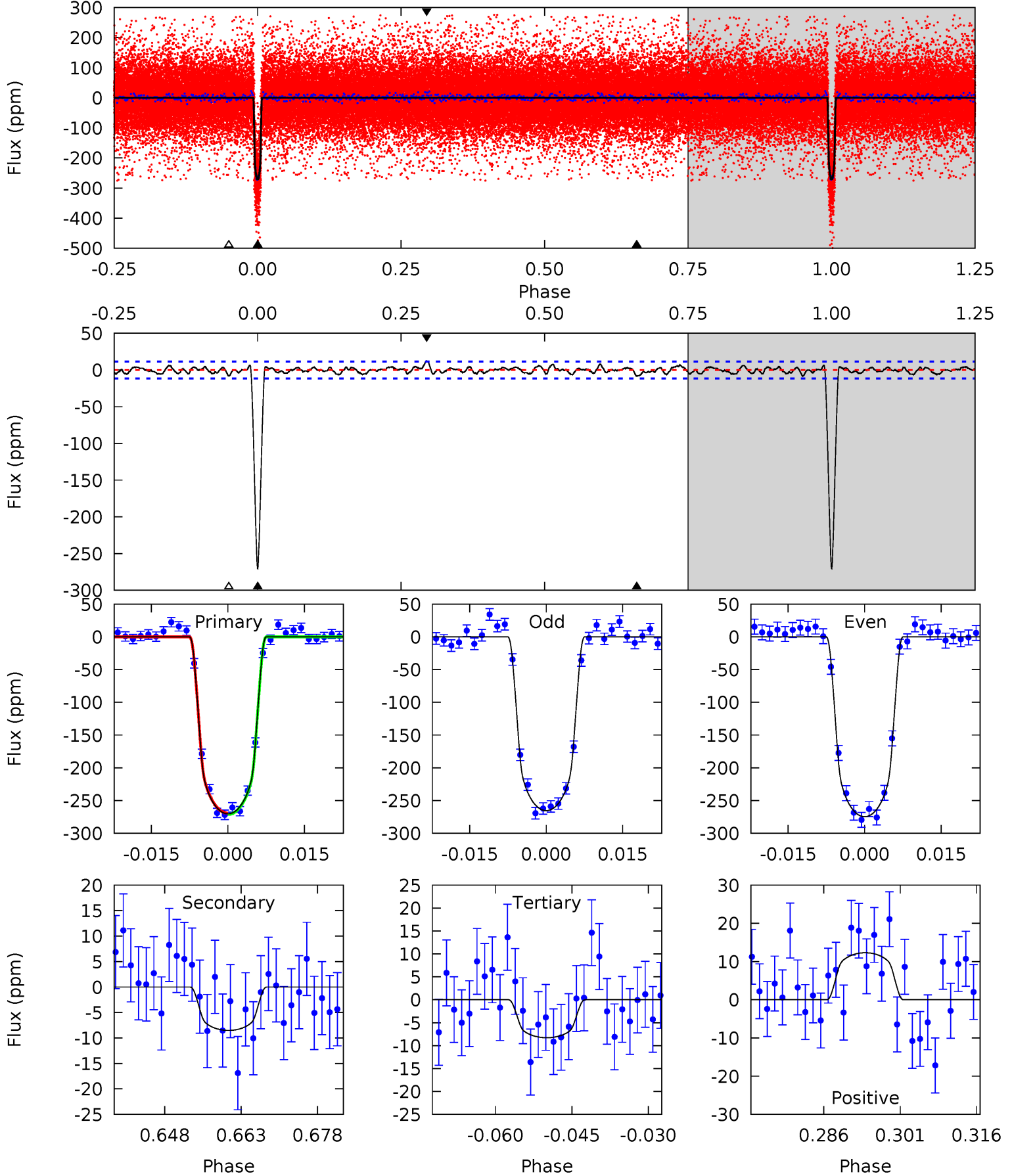
TCE 010187017-02 P= 10.311687 Days $T_0=134.084873$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-02, $P = 10.311735$ Days, $E = 123.769175$ Days

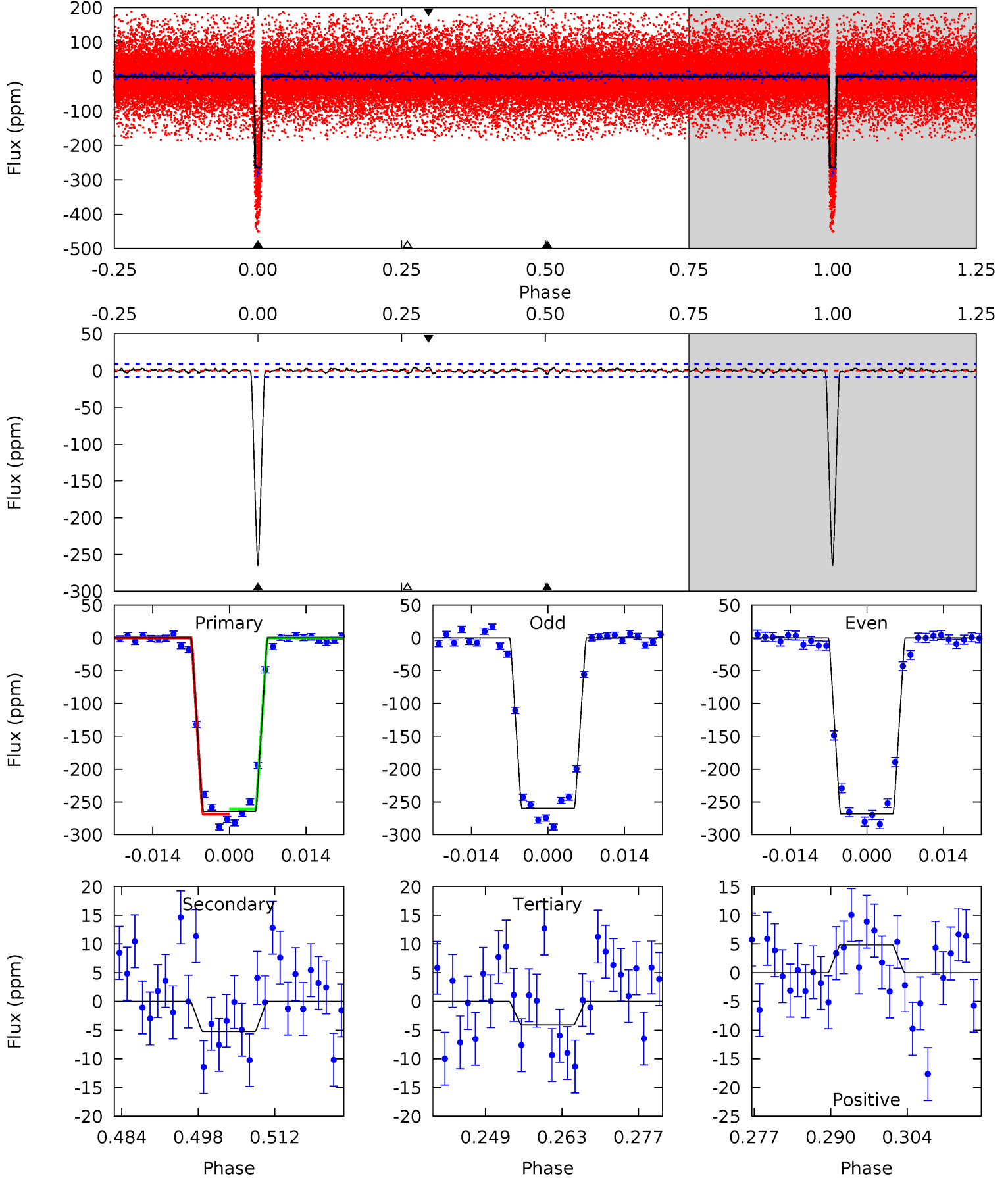
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
116.1	3.66	3.55	5.28	4.95	2.43	1.37	112.5	110.8	0.10	-1.62	2.01	1.01	0.04	0.44



Alt Model-Shift Uniqueness Test

010187017-02, $P = 10.311687$ Days, $E = 123.773186$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
145.5	2.87	2.24	2.67	4.96	2.46	0.86	143.3	142.8	0.63	0.20	2.23	1.02	0.02	2.06



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-02 / KOI 0082.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 2	$1.50^{+0.11}_{-0.09}$	891^{+21}_{-19}	2684^{+106}_{-114}	15^{+5}_{-4}
Alt.	-5 ± 2	$1.34^{+0.10}_{-0.10}$	890^{+21}_{-18}	2597^{+116}_{-148}	12^{+4}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

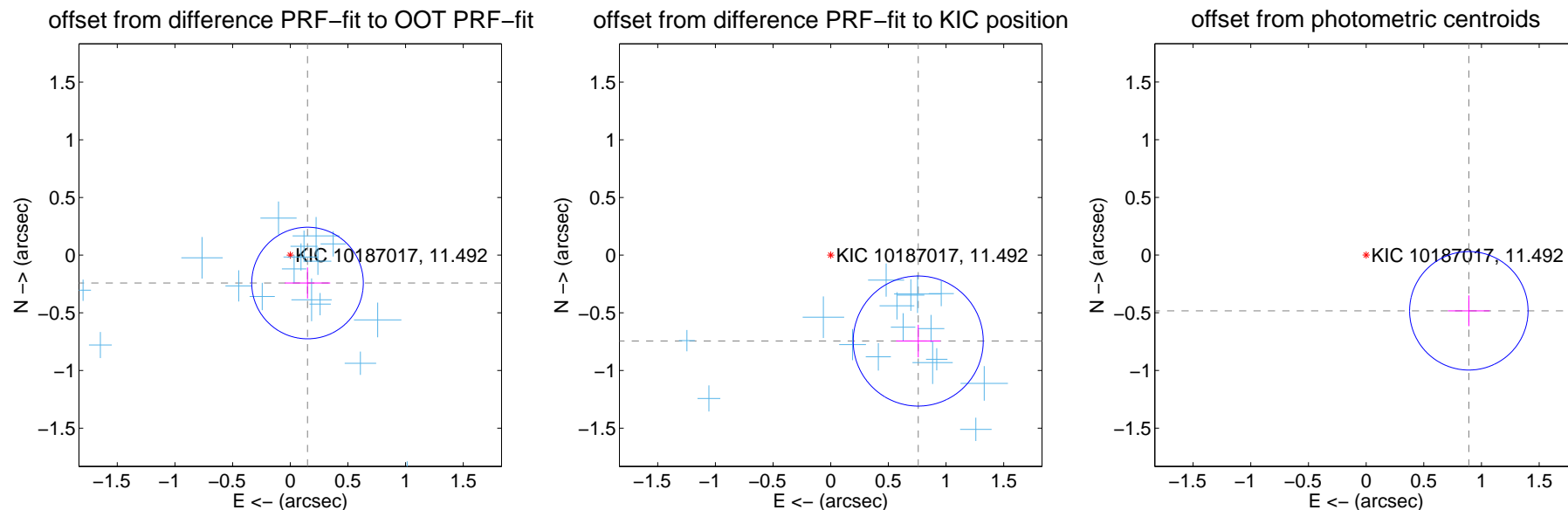
DV Centroid Data

Supplemental centroid analysis for 010187017-02. **Kepler magnitude: 11.49.** Transit SNR 71.07

There are 17 quarters with good PRF difference image offsets

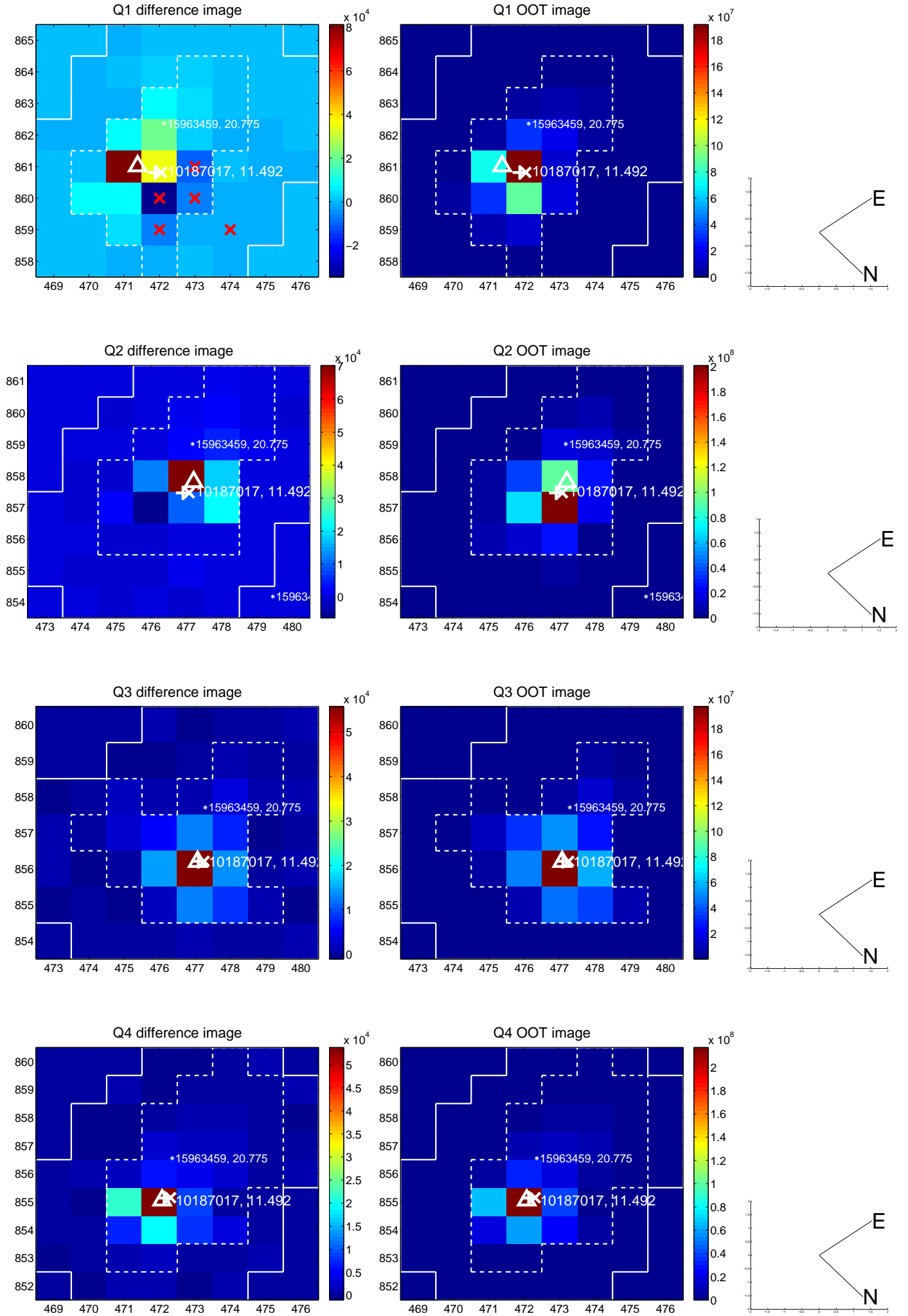
The direct PRF centroid is offset from the target star catalog position by about 0.89 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.284 ± 0.161	1.76	-0.150 ± 0.197	-0.242 ± 0.134
PRF-fit source offset from KIC position	1.063 ± 0.188	5.66	-0.759 ± 0.193	-0.745 ± 0.141
photometric centroid source offset	1.01 ± 0.17	5.92	-0.89 ± 0.18	-0.48 ± 0.13

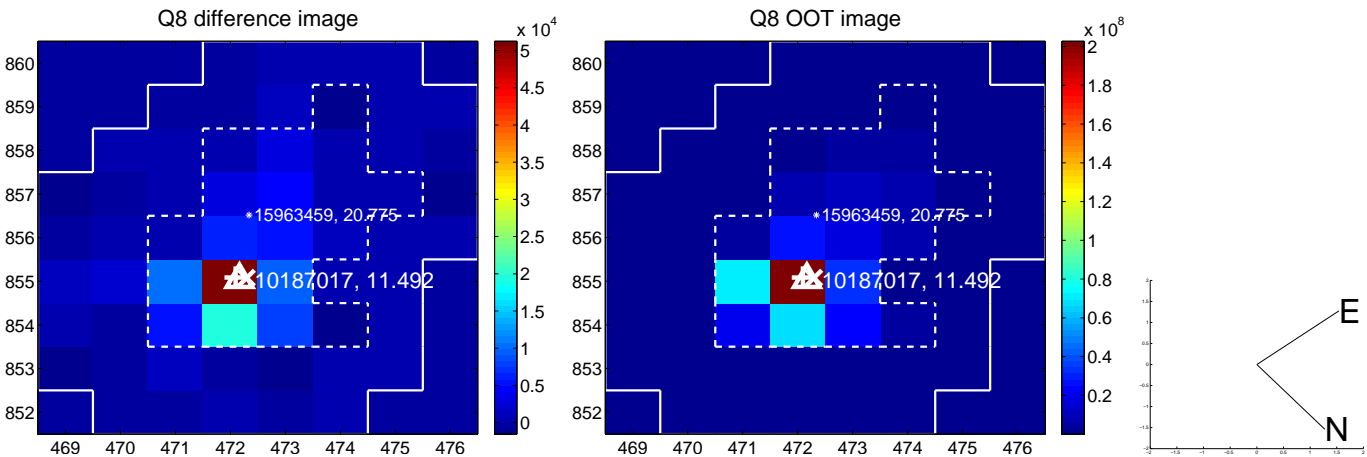
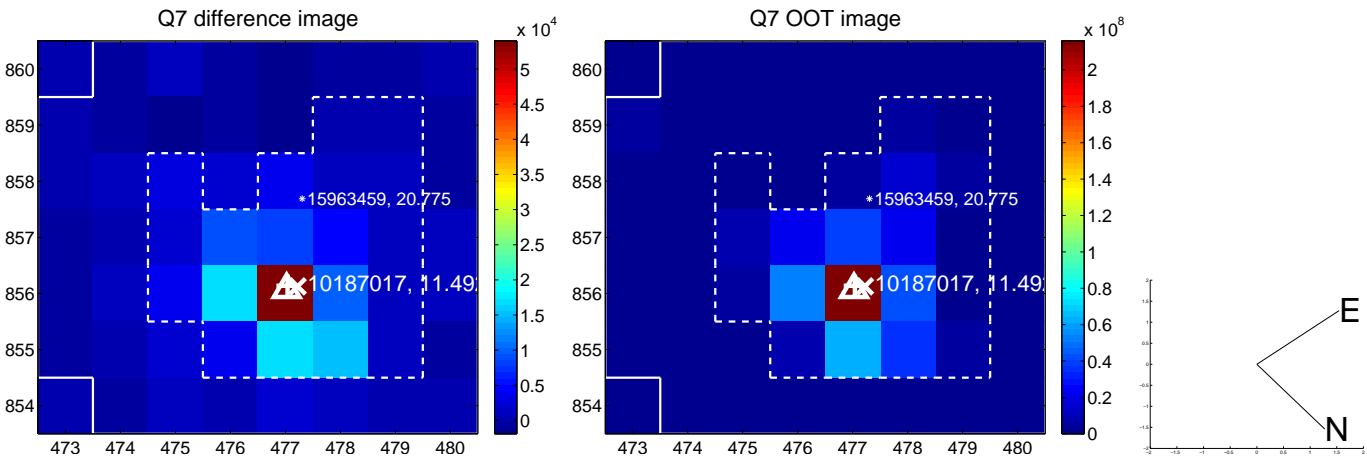
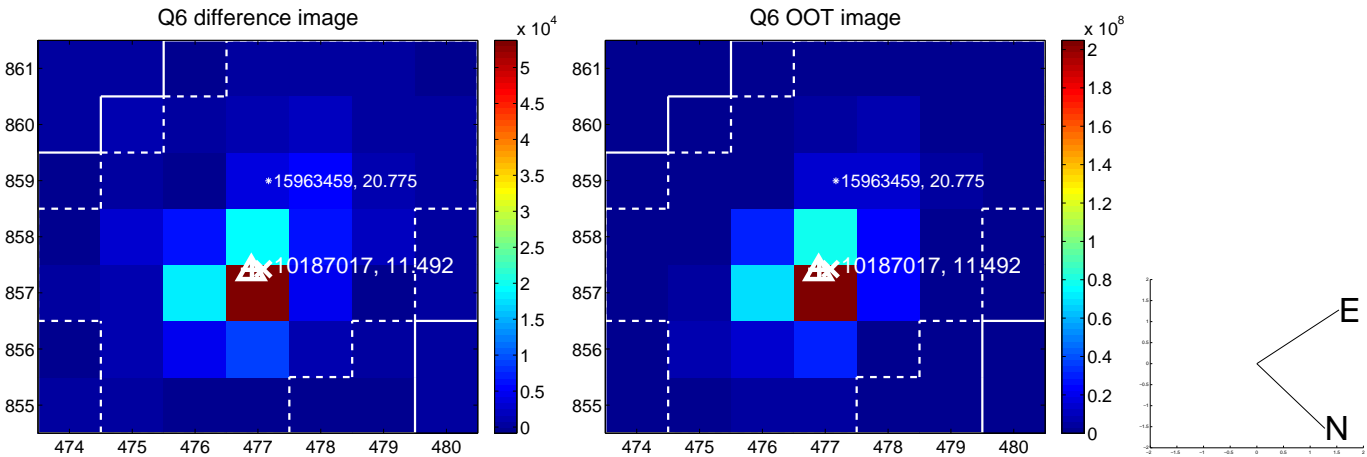
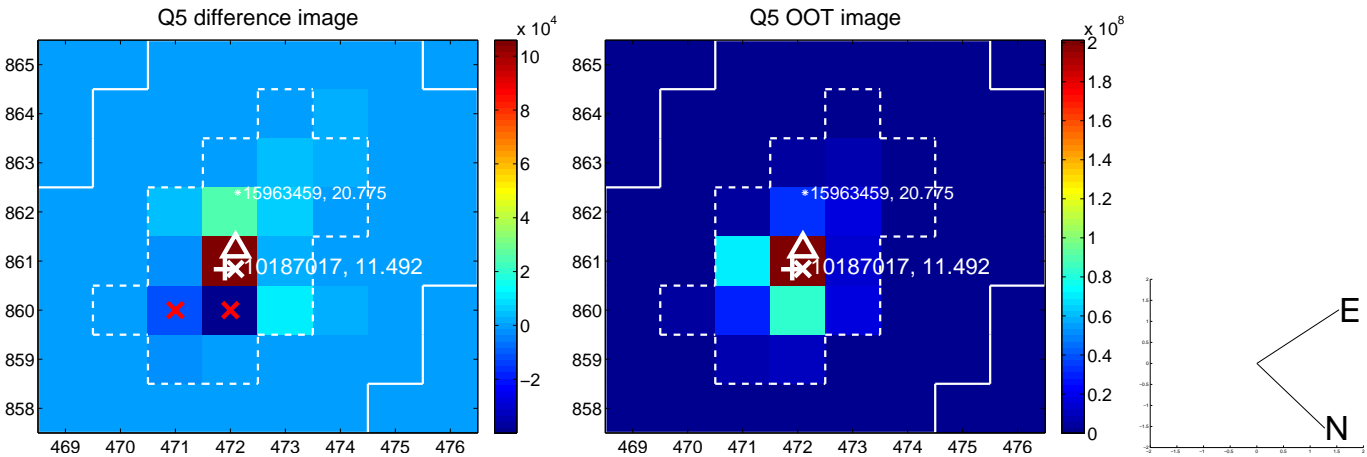


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

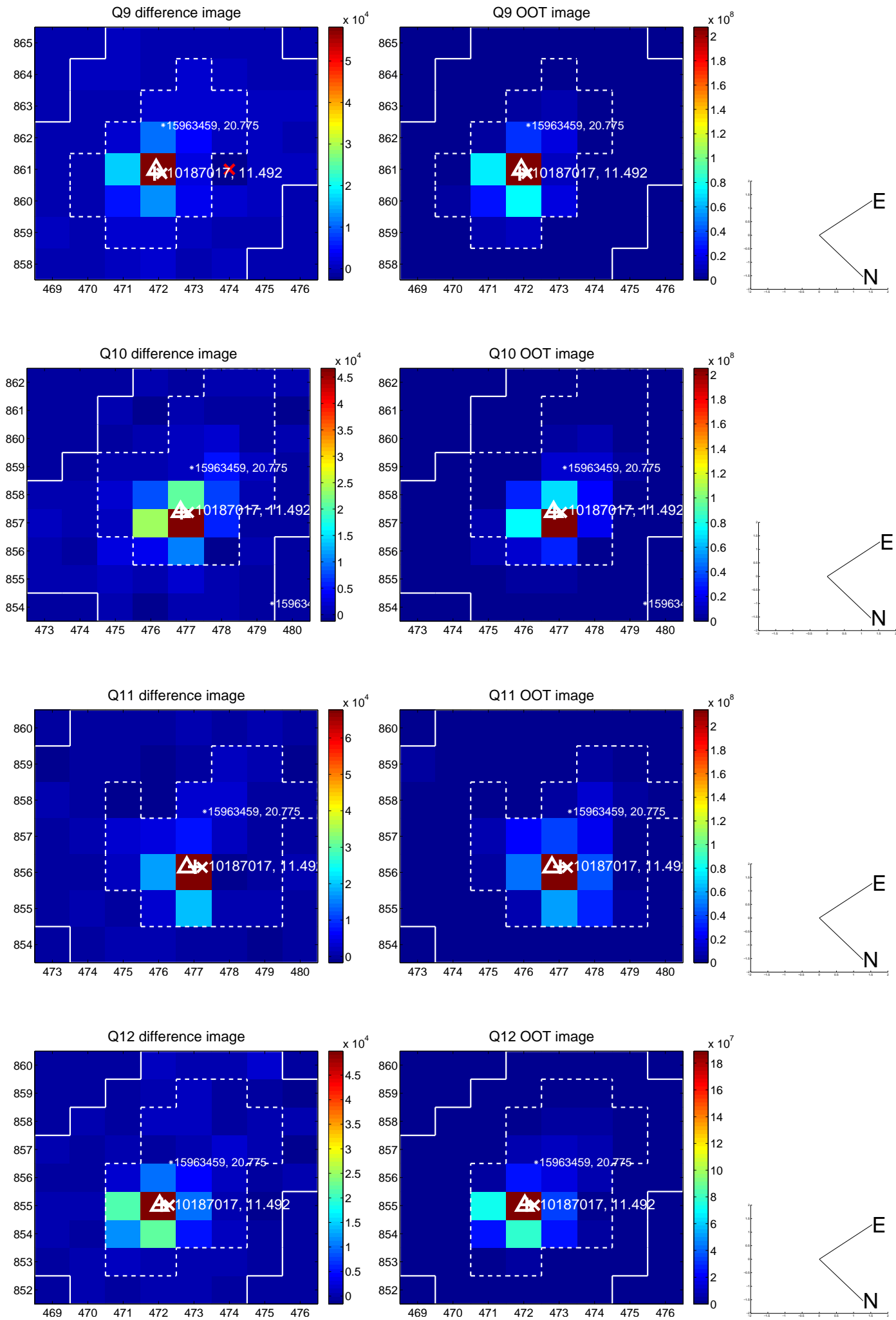
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



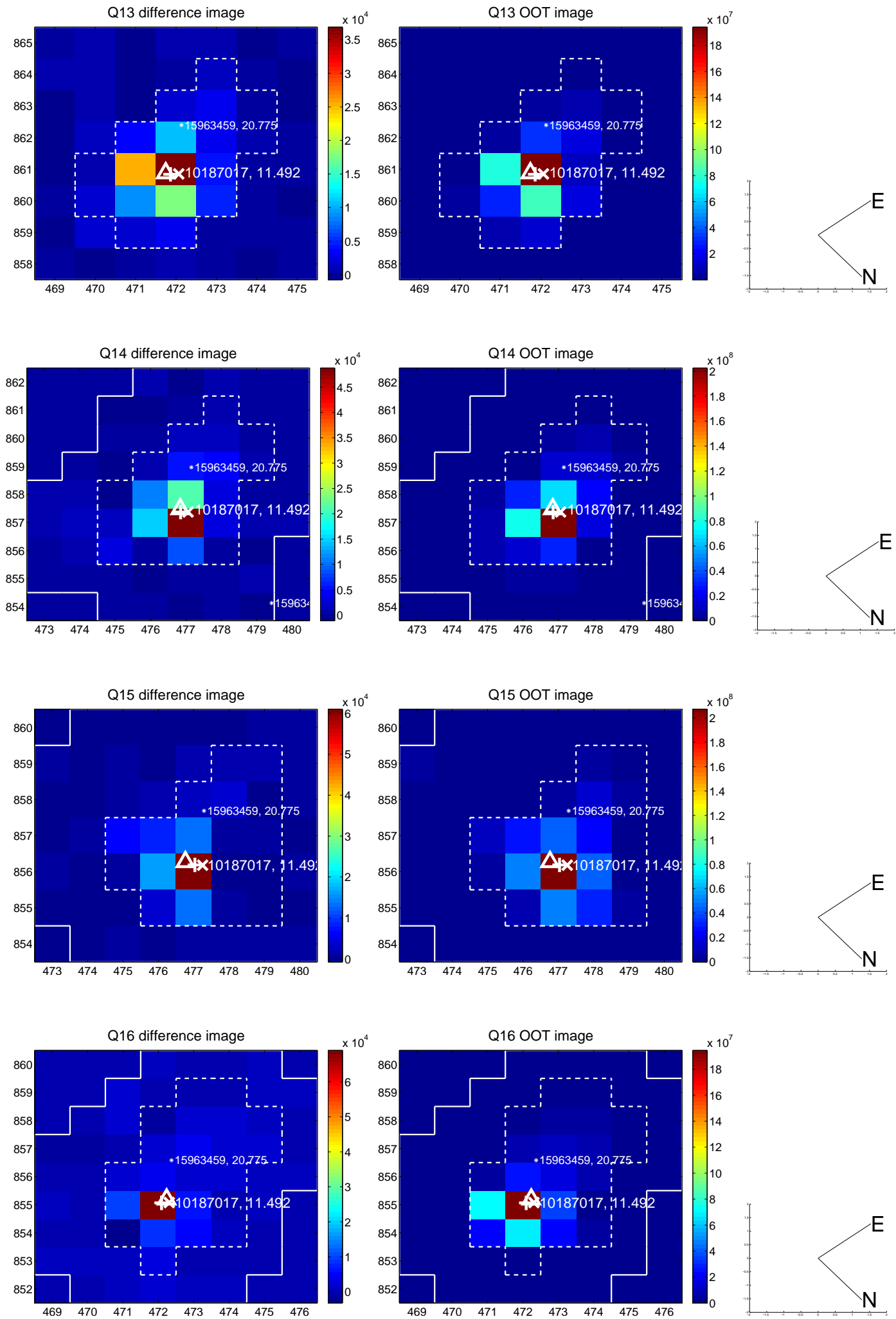
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



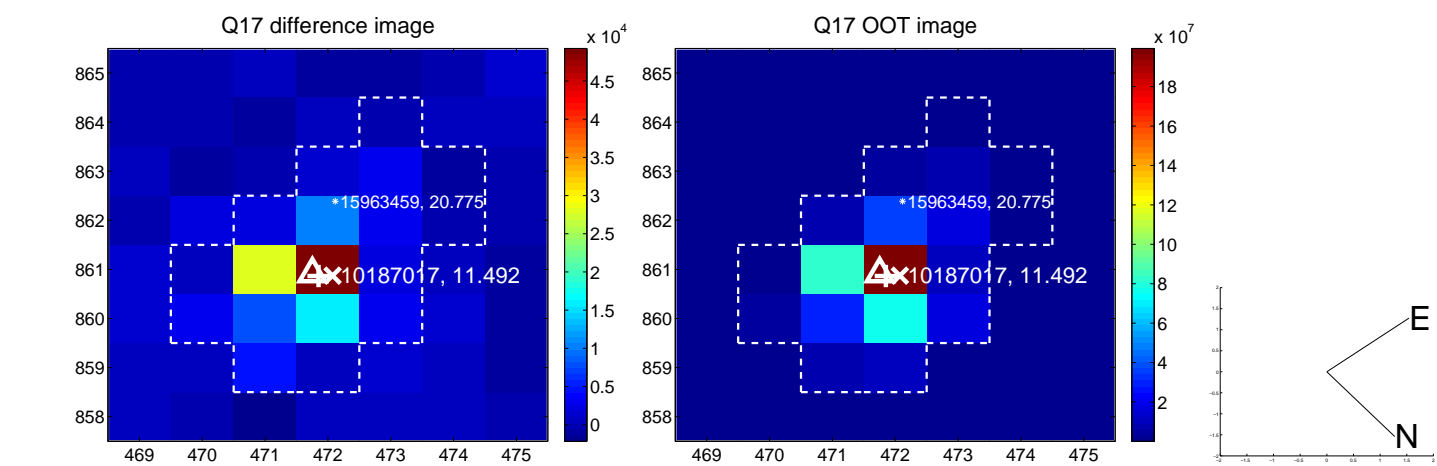
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



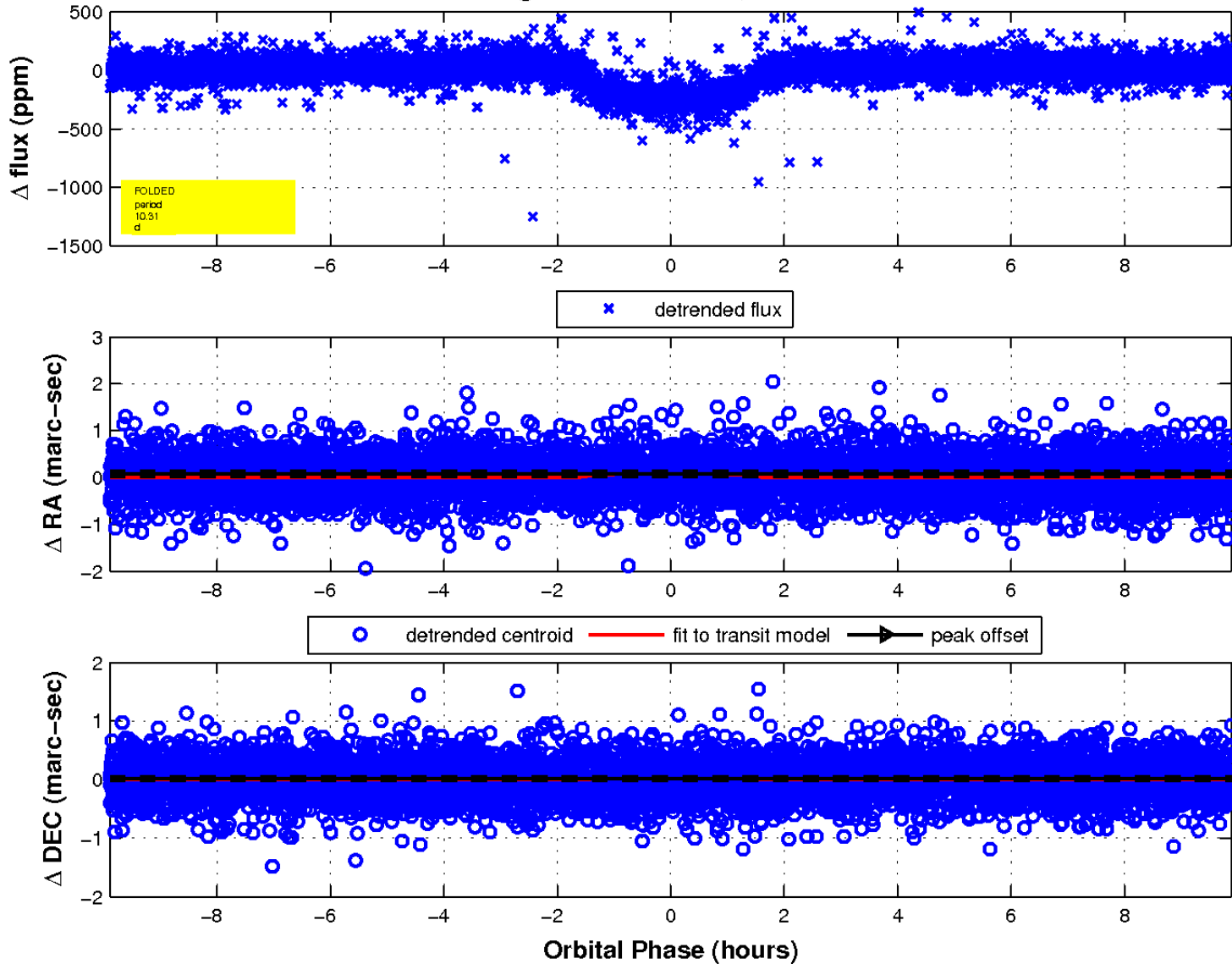
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



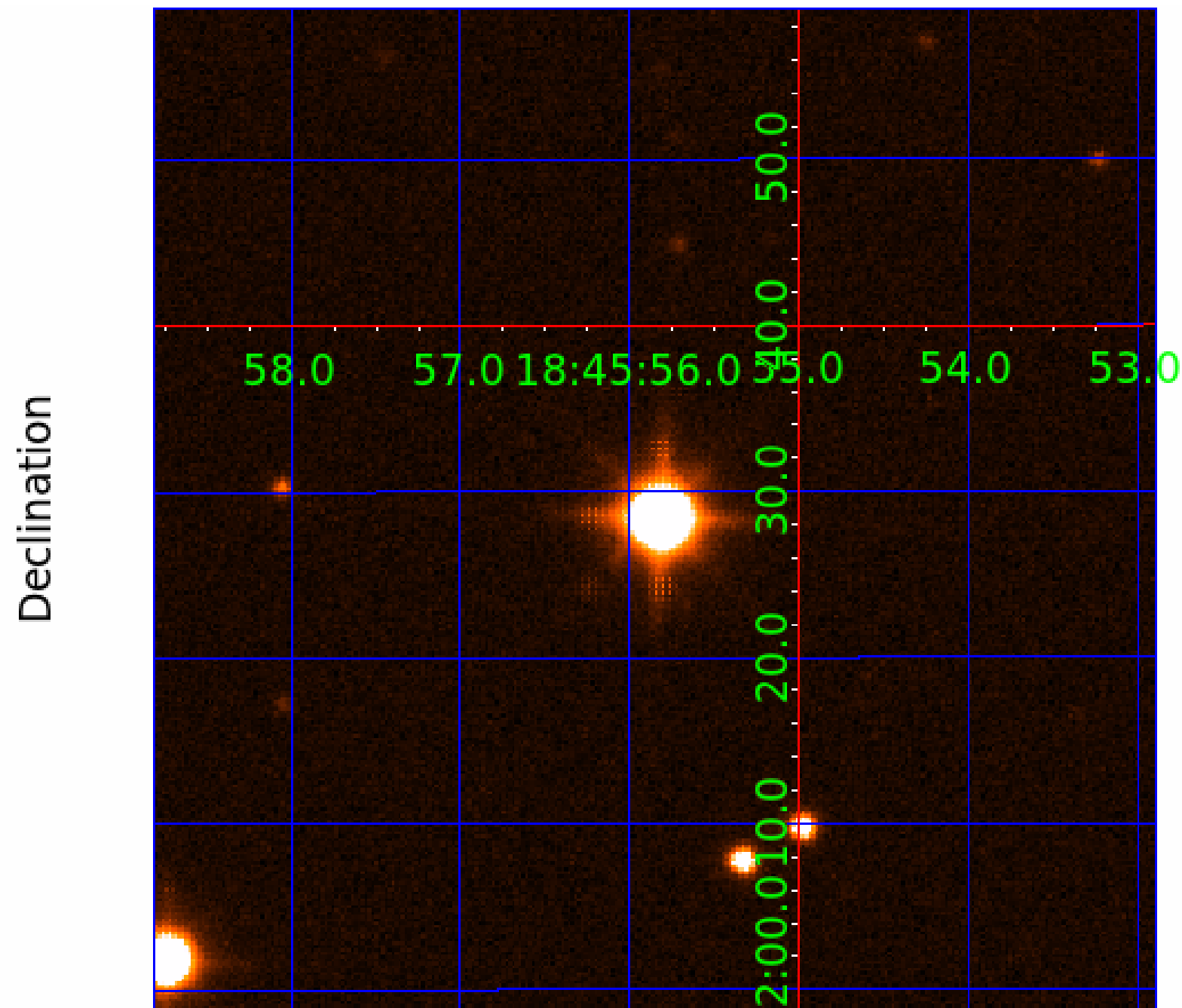
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 6



UKIRT Image



KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	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.

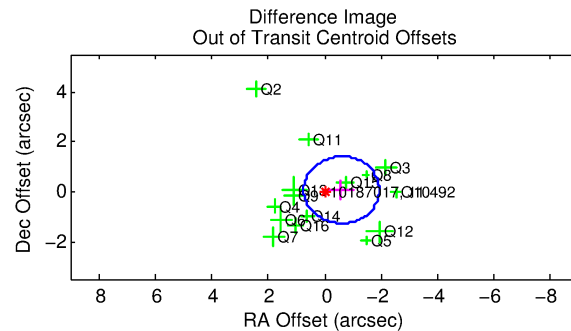
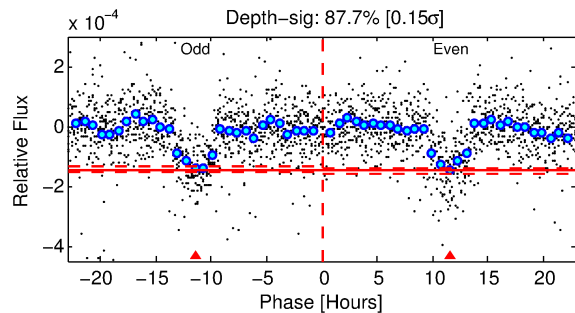
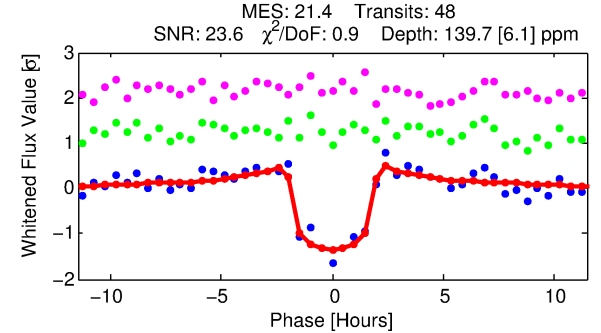
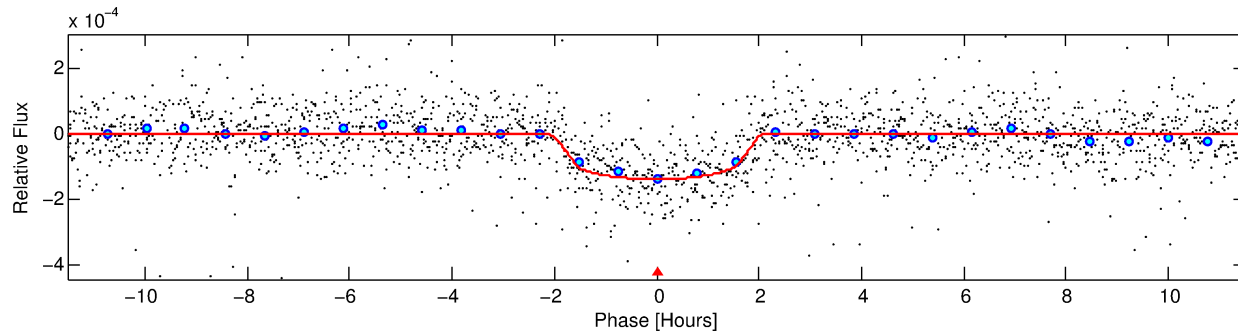
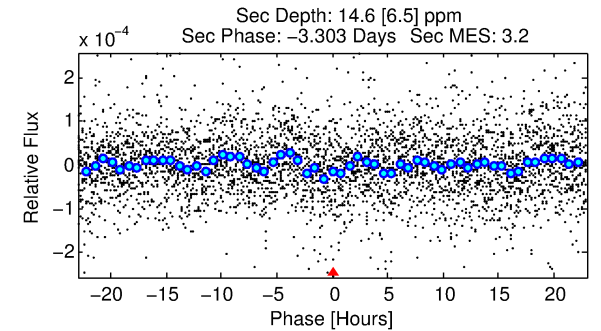
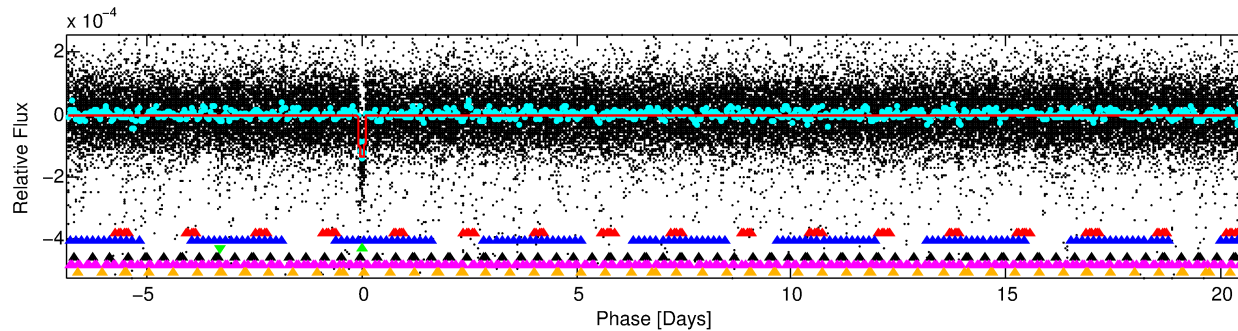
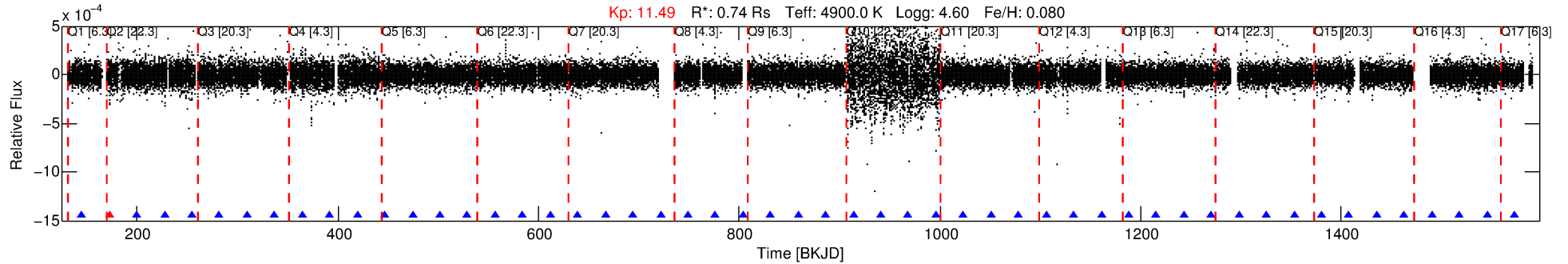
Ephemeris Match Information For 010187017-03

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 3 of 6 Period: 27.454 d
KOI: K00082.03 Name: Kepler-102f Corr: 0.960

Kp: 11.49 R*: 0.74 Rs Teff: 4900.0 K Logg: 4.60 Fe/H: 0.080



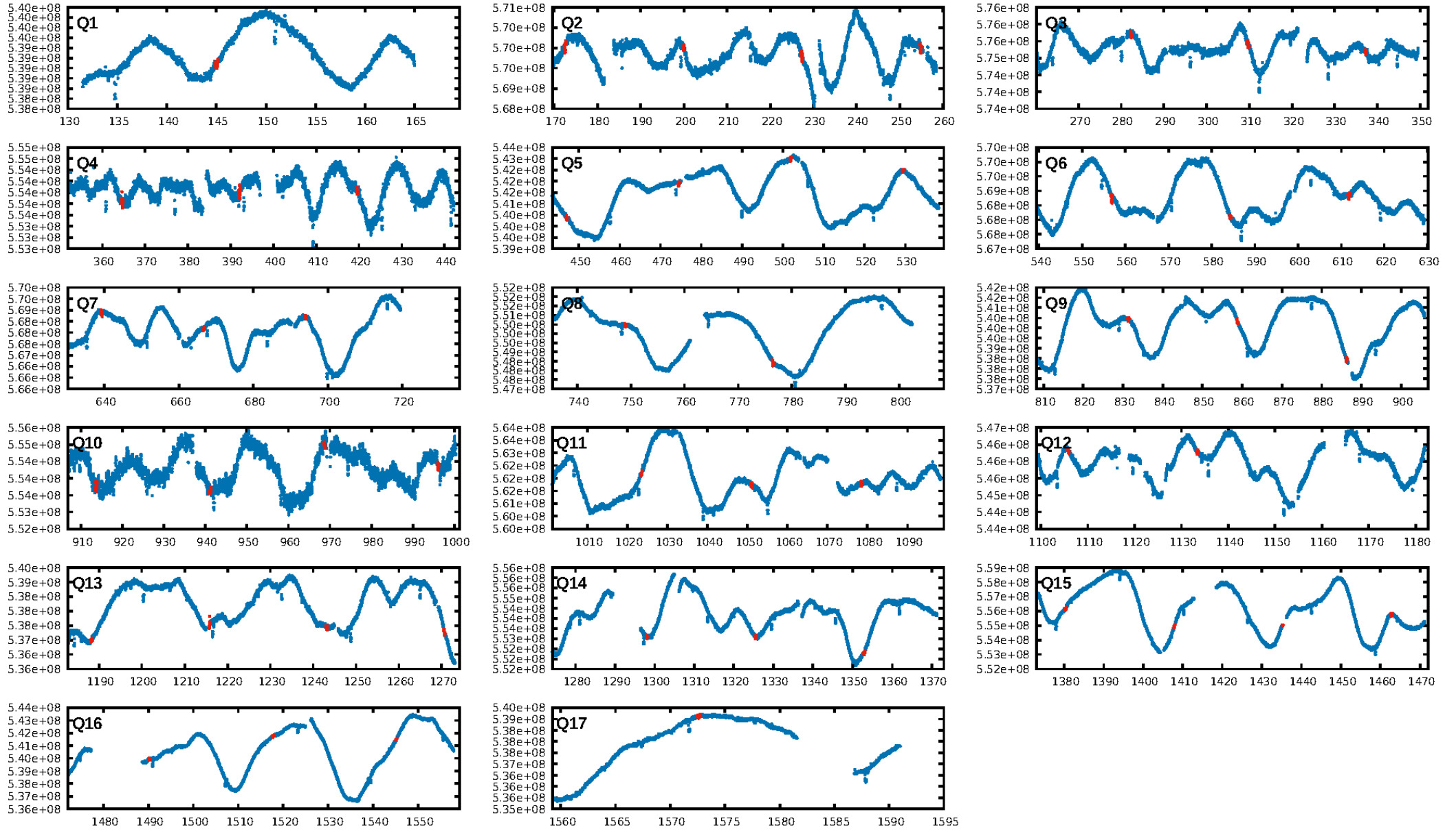
DV Fit Results:

Period = 27.45376 [0.00009] d
Epoch = 145.0228 [0.0029] BKJD
Rp/R* = 0.0129 [0.0029]
a/R* = 27.50 [23.80]
b = 0.88 [0.23]
Seff = 10.36 [1.22]
Teq = 457 [13] K
Rp = 1.05 [0.25] Re
a = 0.1654 [0.0095] AU
Ag = 201.01 [128.77] [1.55σ]
Teffp = 2663 [426] K [5.18σ]

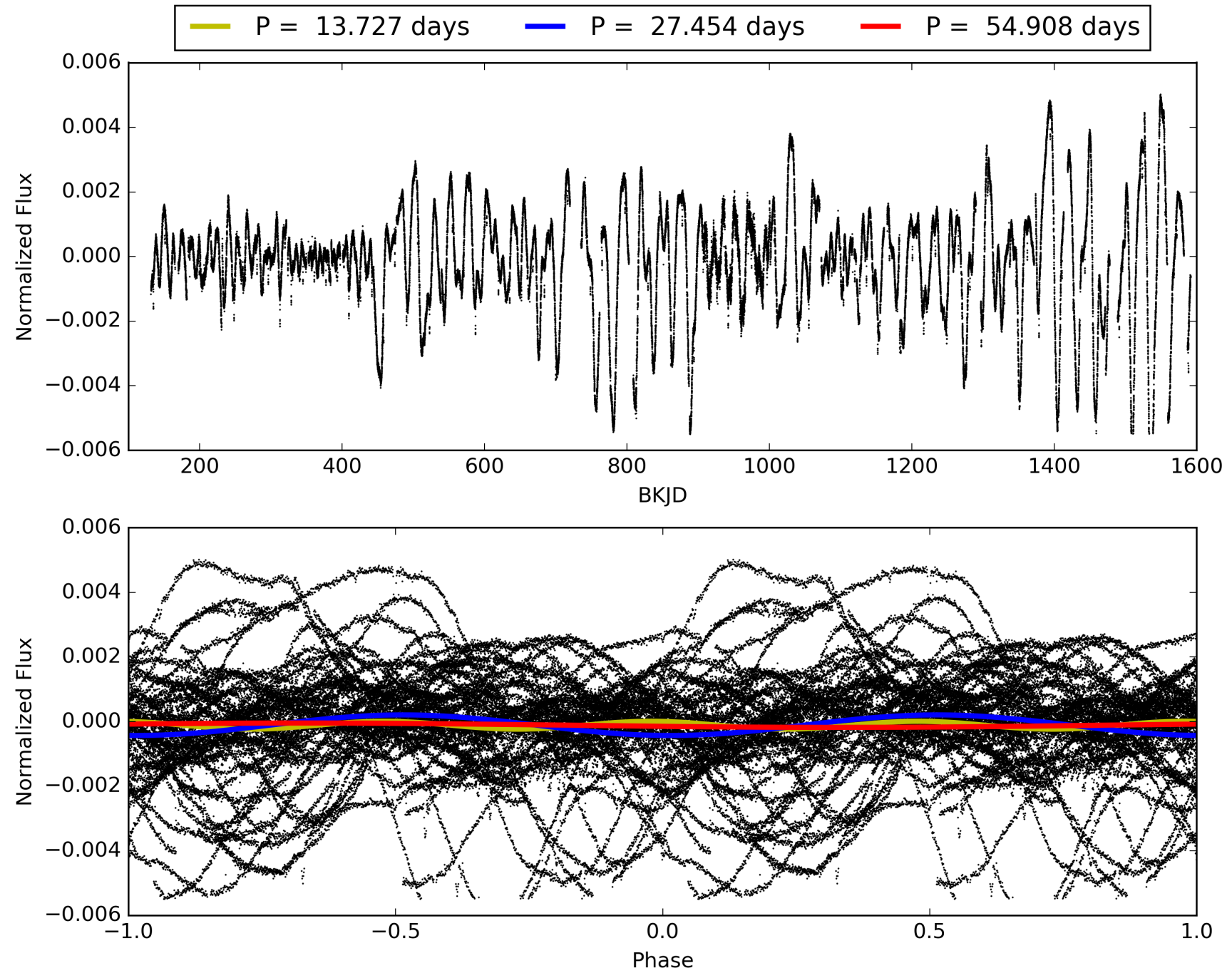
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.68σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 66.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.77e-84
RollingBand-fgt: 0.98 [45/46]
GhostDiagnostic-chr: 3.114
Centroid-sig: 63.0%
Centroid-so: 0.925 arcsec [1.98σ]
OotOffset-rm: 0.596 arcsec [1.33σ]
KicOffset-rm: 1.271 arcsec [2.93σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 0.94 [16/17]

TCE 010187017-03, PDC Light Curves

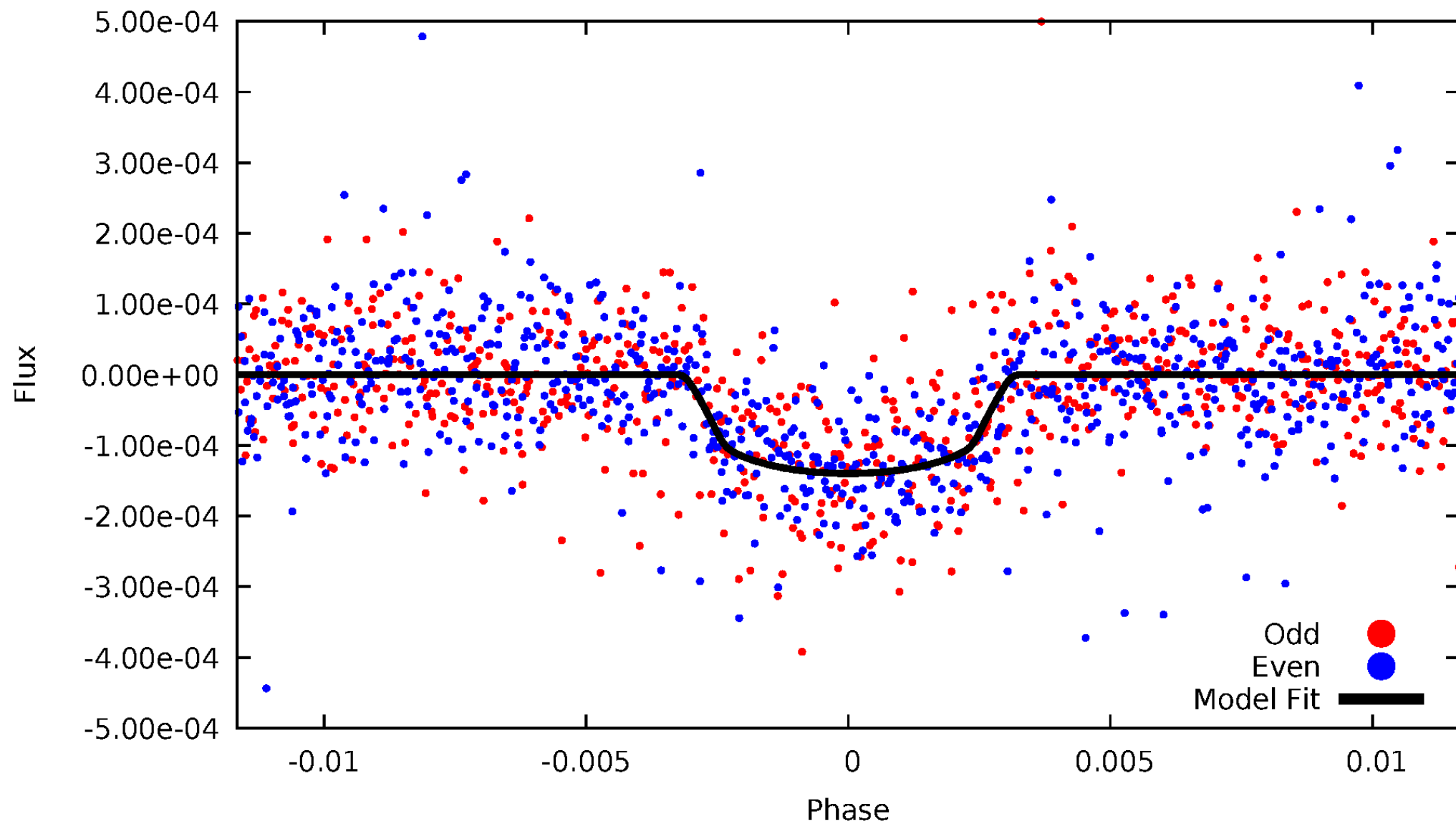


TCE 010187017-03



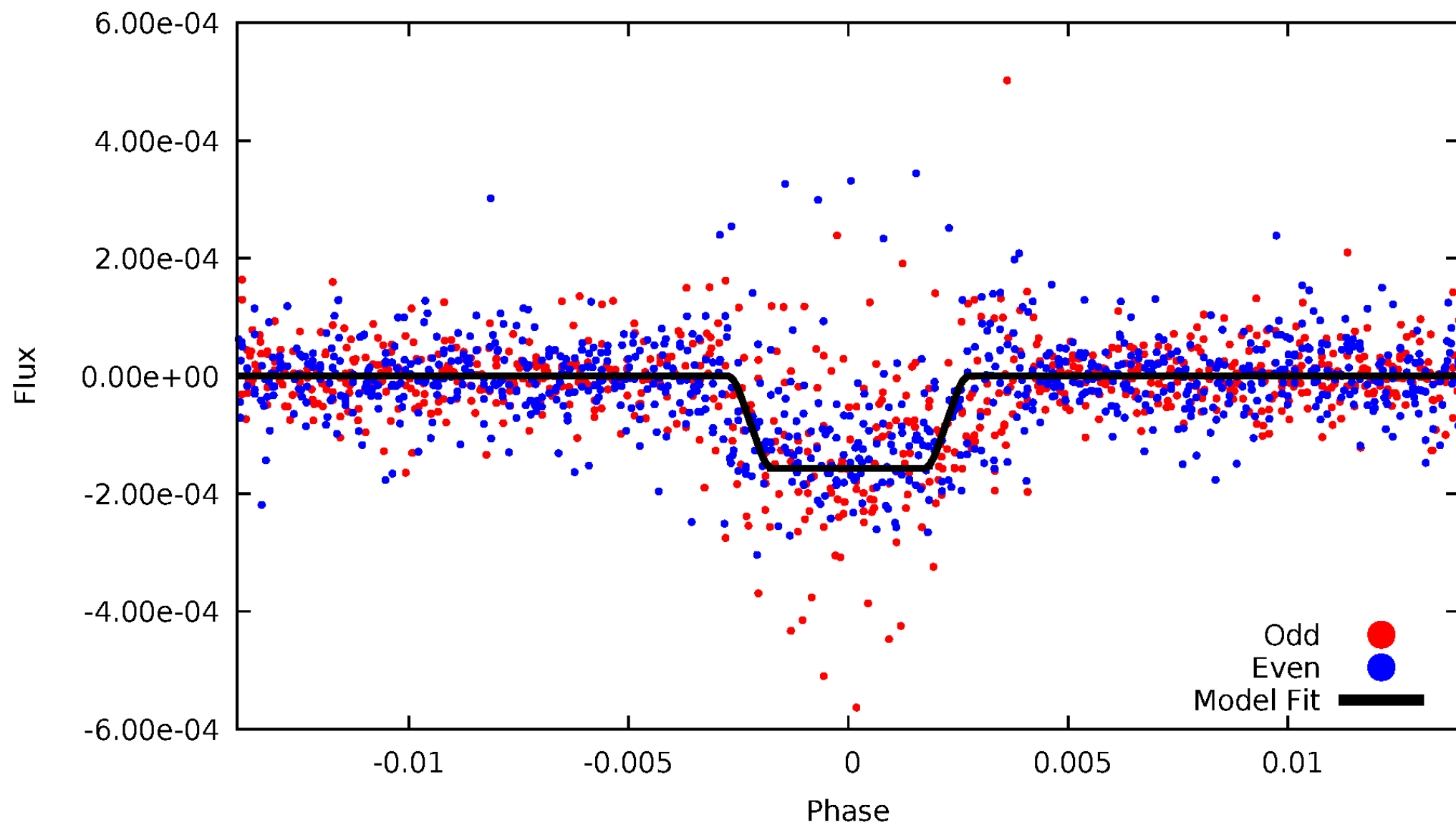
DV Odd/Even

TCE 010187017-03



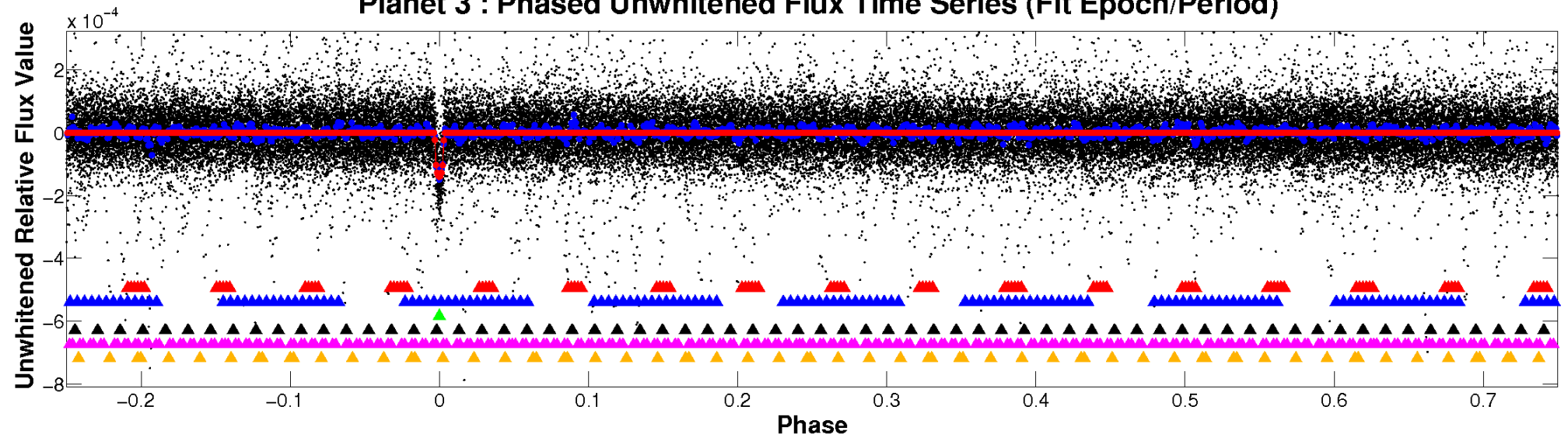
ALT Odd/Even

TCE 010187017-03

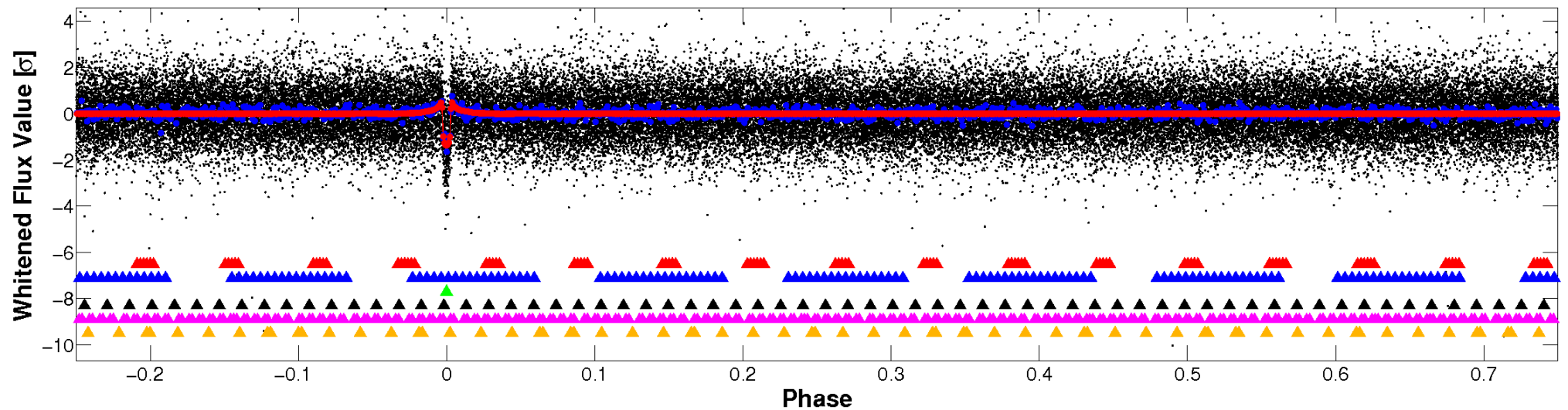


Non-Whitened Vs. Whitened Light Curve

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

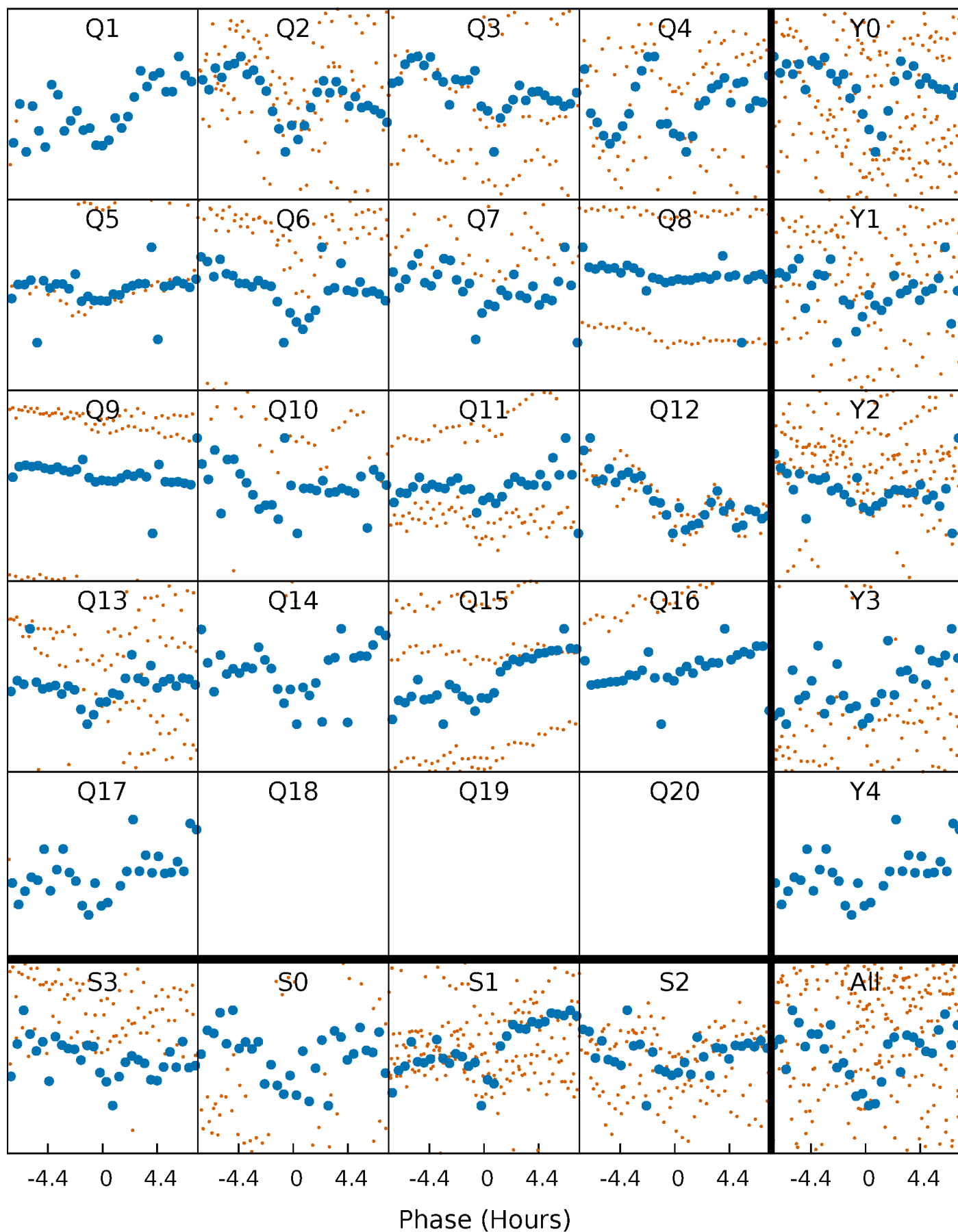


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



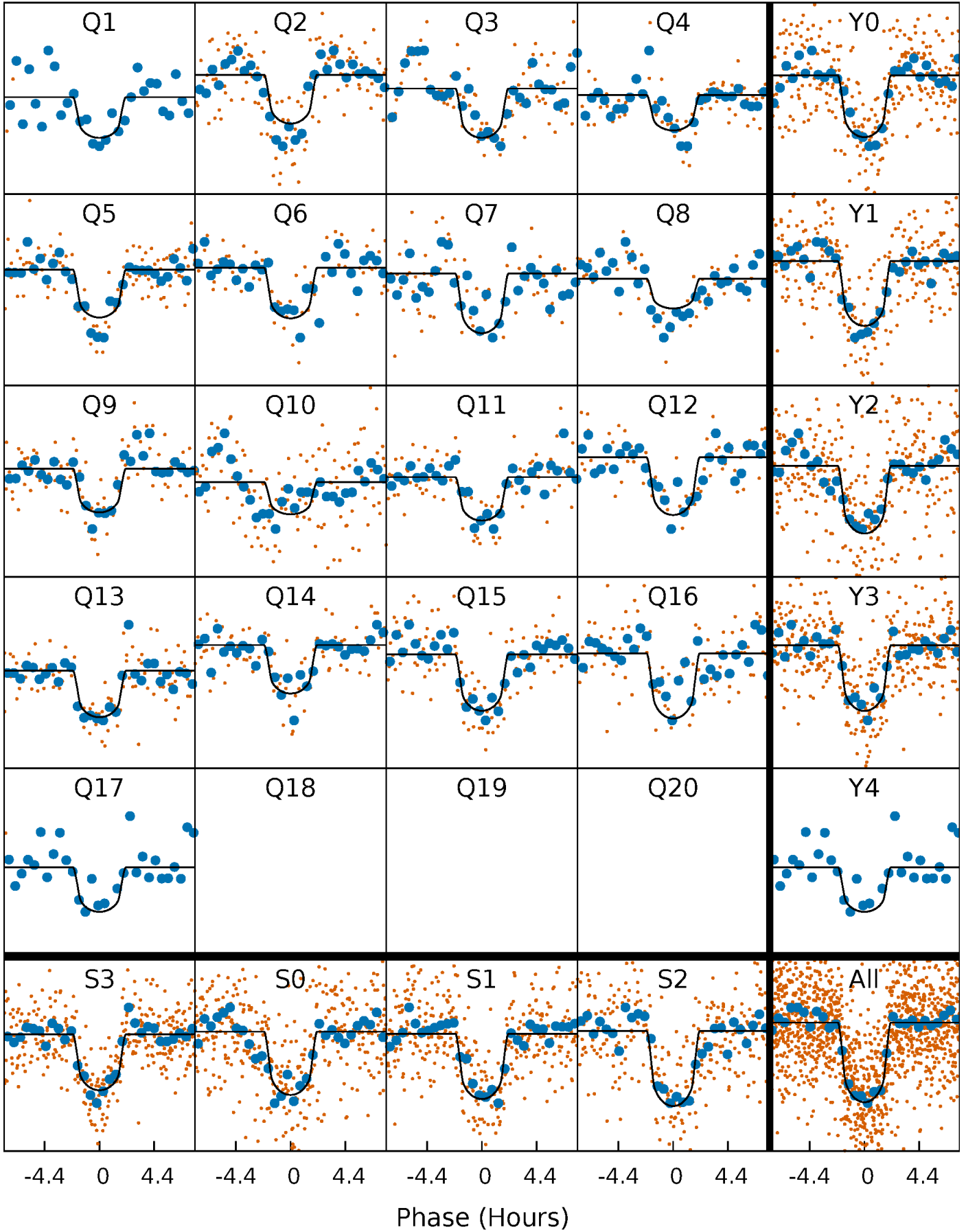
PDC Quarter-Phased Transit Curves

TCE 010187017-03 P= 27.453761 Days $T_0=145.022821$ (BKJD)



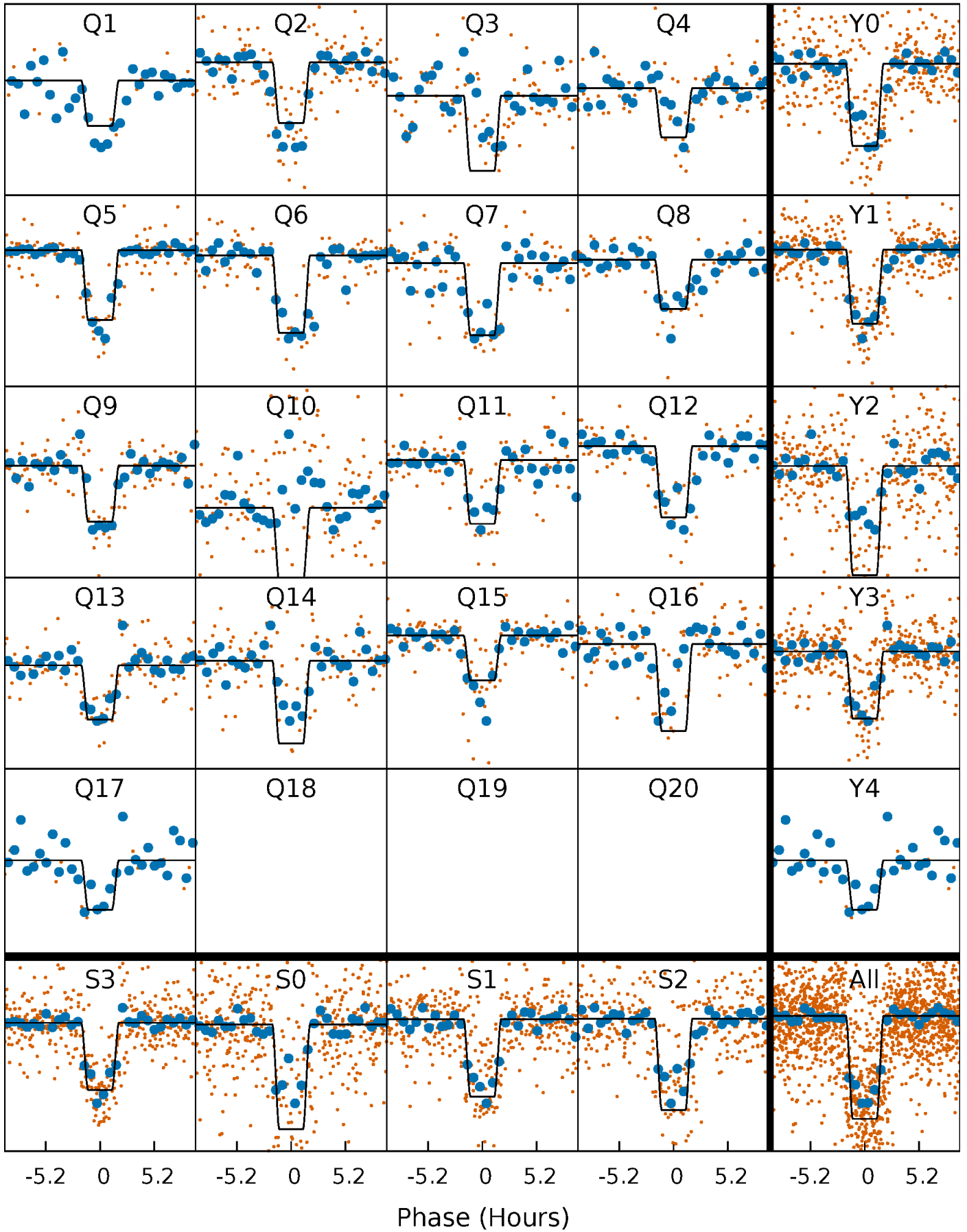
DV Quarter-Phased Transit Curves

TCE 010187017-03 P= 27.453761 Days $T_0=145.022821$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

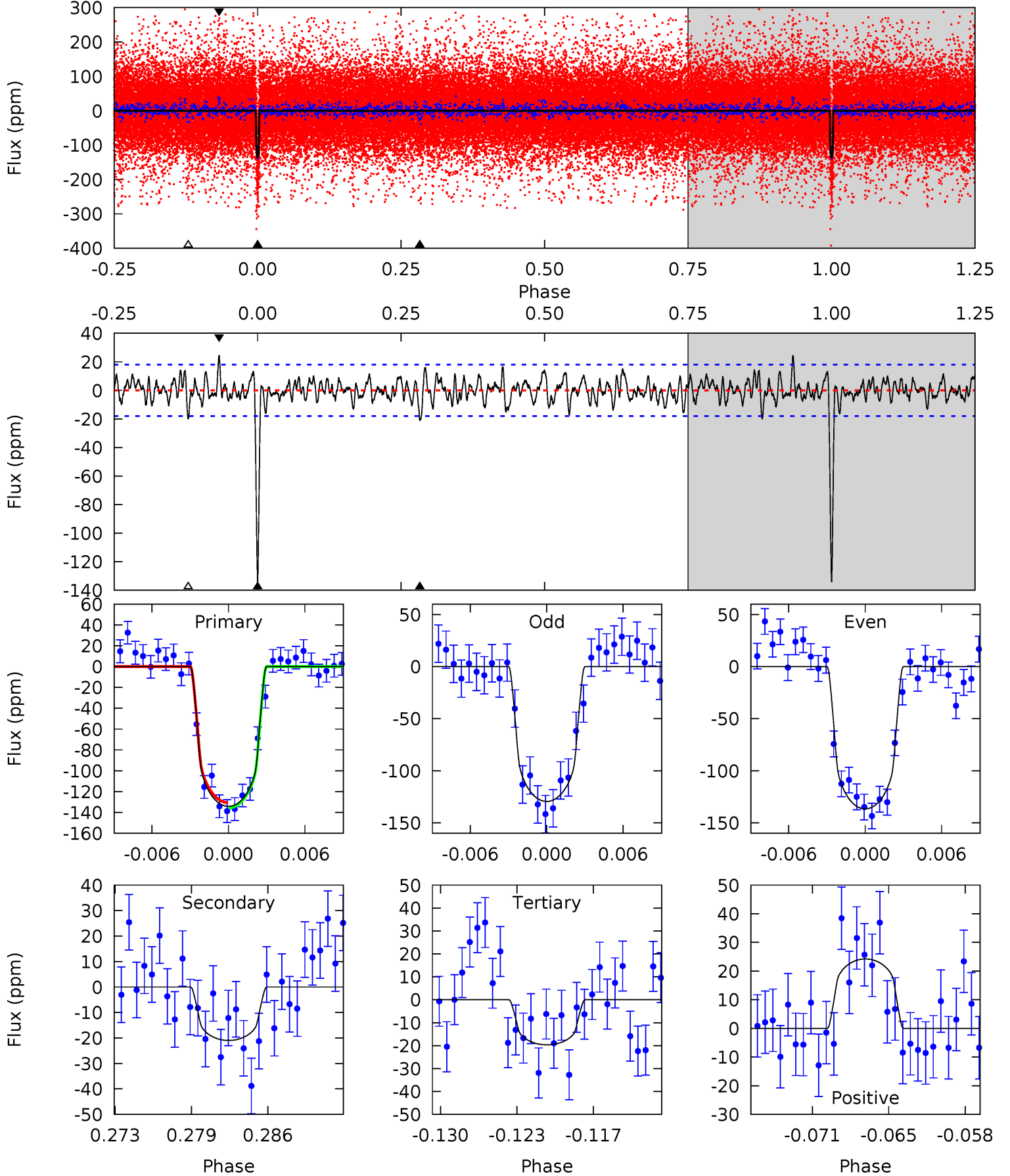
TCE 010187017-03 P= 27.453969 Days $T_0=145.016715$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-03, $P = 27.453761$ Days, $E = 117.569060$ Days

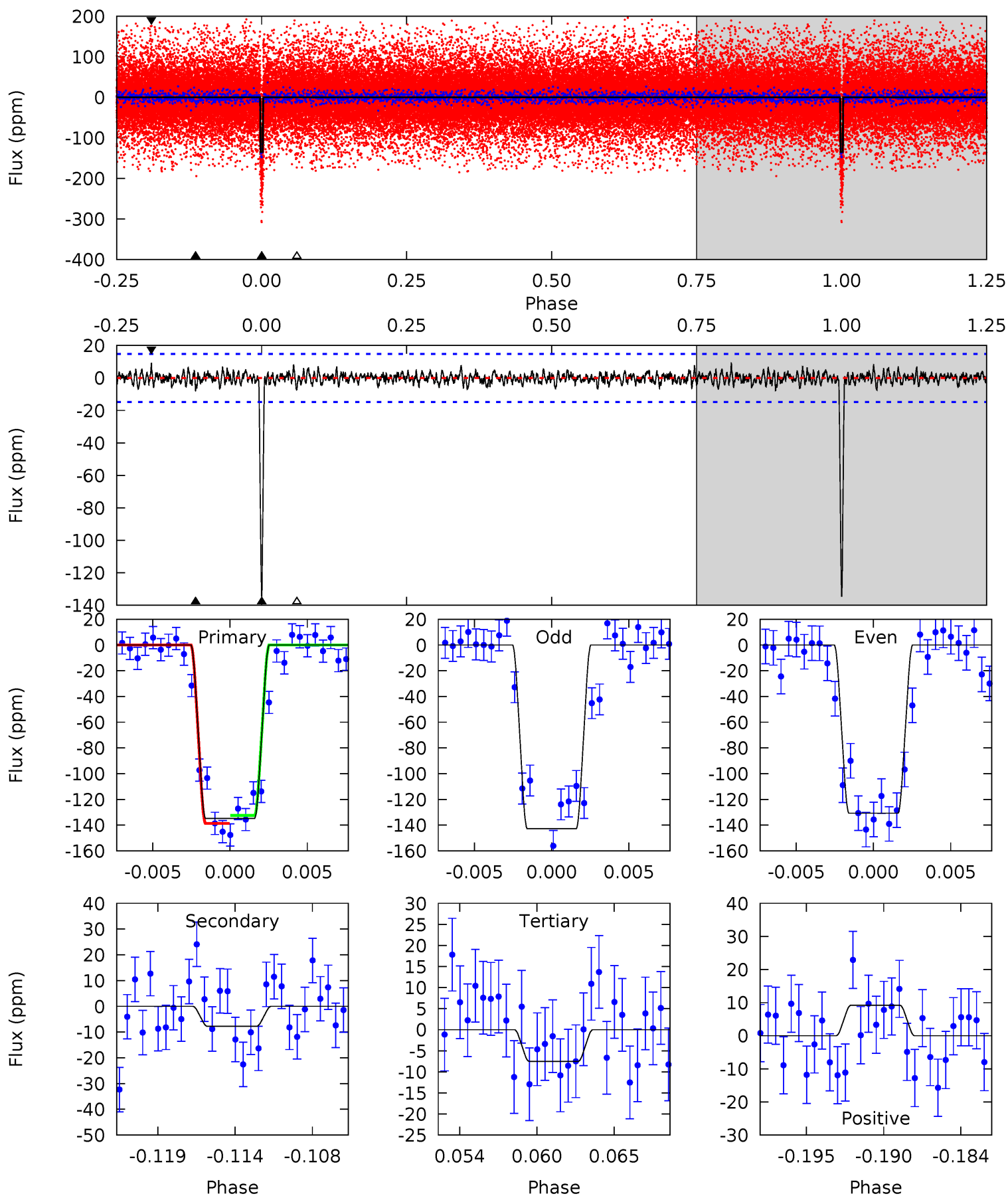
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.0	5.95	5.57	6.87	5.11	2.72	1.76	32.5	31.2	0.38	-0.92	1.01	0.98	0.15	0.71



Alt Model-Shift Uniqueness Test

010187017-03, $P = 27.453969$ Days, $E = 117.562746$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.8	2.71	2.61	3.20	5.14	2.78	0.86	44.2	43.6	0.10	-0.49	2.07	0.94	0.06	1.07



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-03 / KOI 0082.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-21 ± 4	$1.07^{+0.23}_{-0.25}$	644^{+16}_{-15}	3370^{+342}_{-203}	276^{+212}_{-95}
Alt.	-8 ± 3	$1.03^{+0.23}_{-0.25}$	643^{+16}_{-15}	2936^{+277}_{-244}	109^{+90}_{-51}

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 $A_{obs} \gg 1.0$

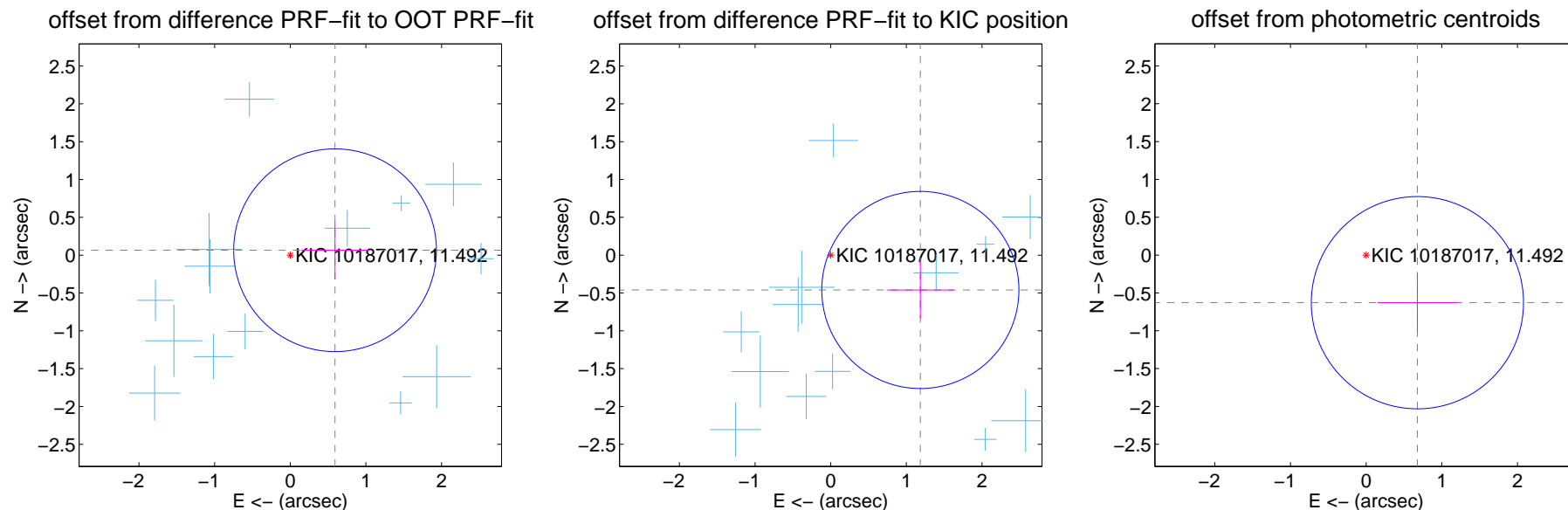
DV Centroid Data

Supplemental centroid analysis for 010187017-03. **Kepler magnitude: 11.49.** Transit SNR 23.56

There are 14 quarters with good PRF difference image offsets

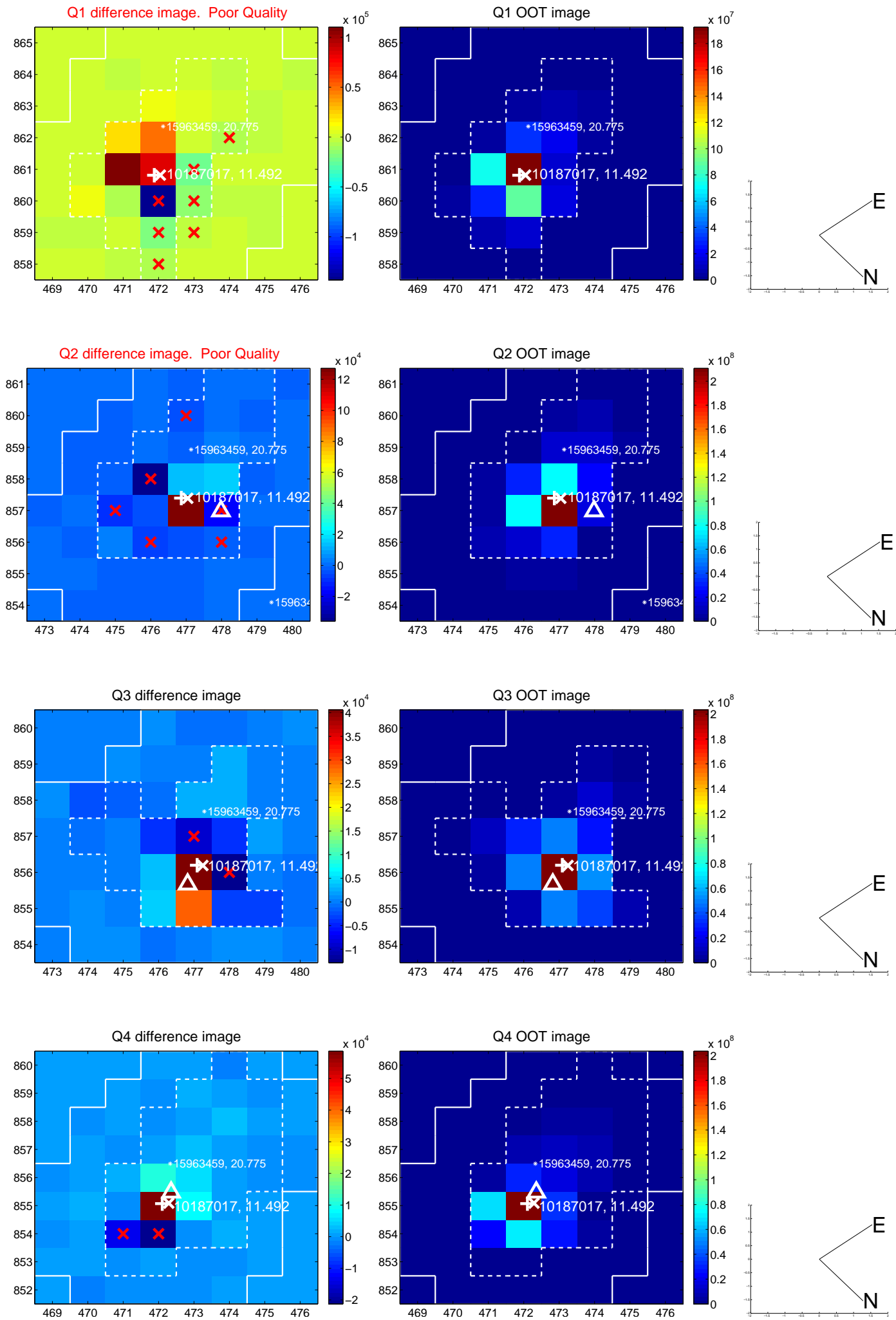
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.596 ± 0.447	1.33	-0.592 ± 0.447	0.065 ± 0.383
PRF-fit source offset from KIC position	1.271 ± 0.434	2.93	-1.185 ± 0.442	-0.460 ± 0.379
photometric centroid source offset	0.92 ± 0.47	1.98	-0.68 ± 0.53	-0.63 ± 0.38

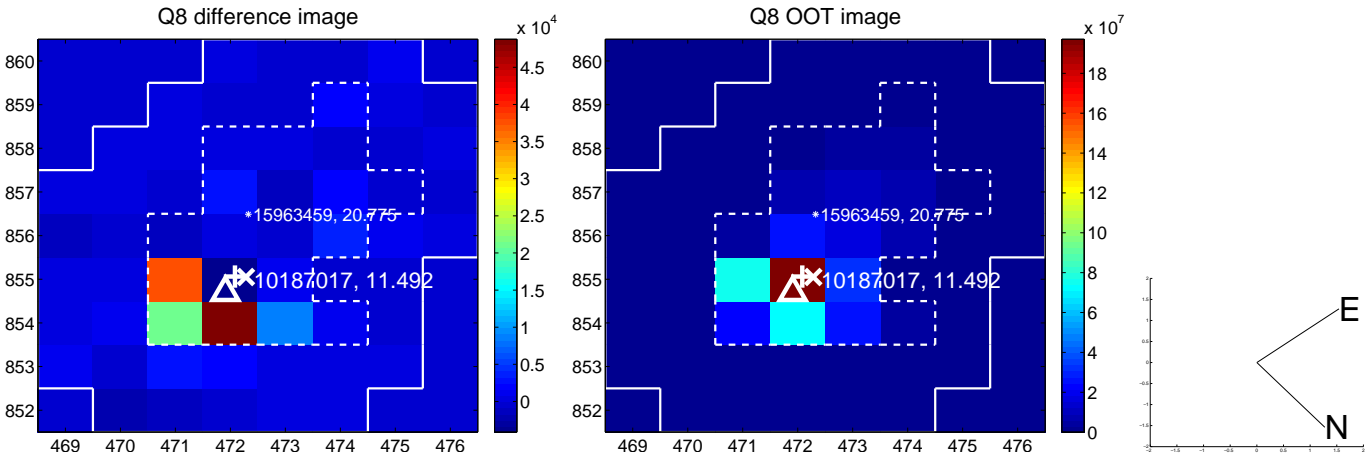
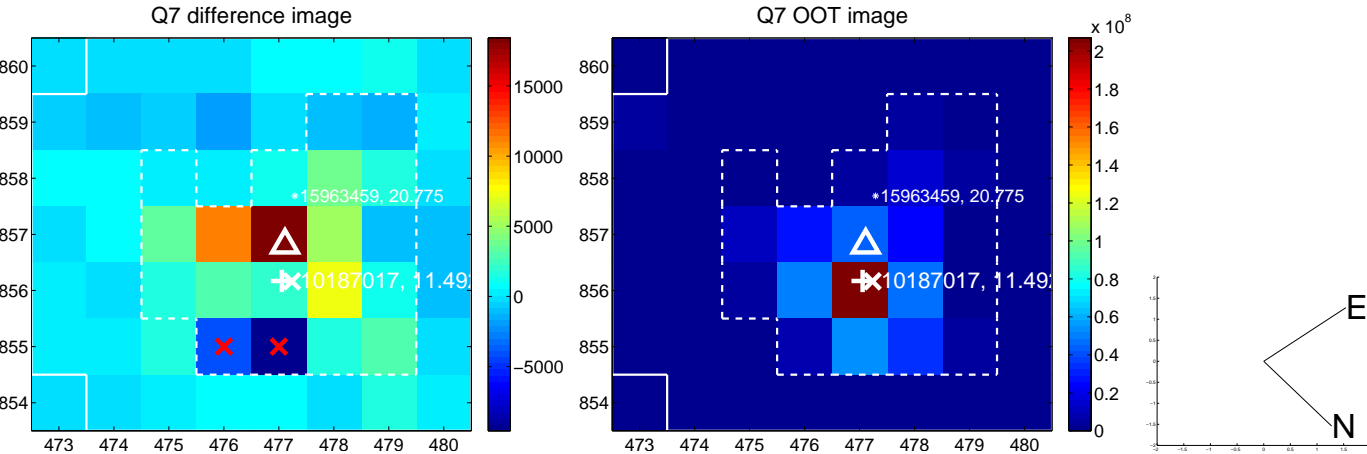
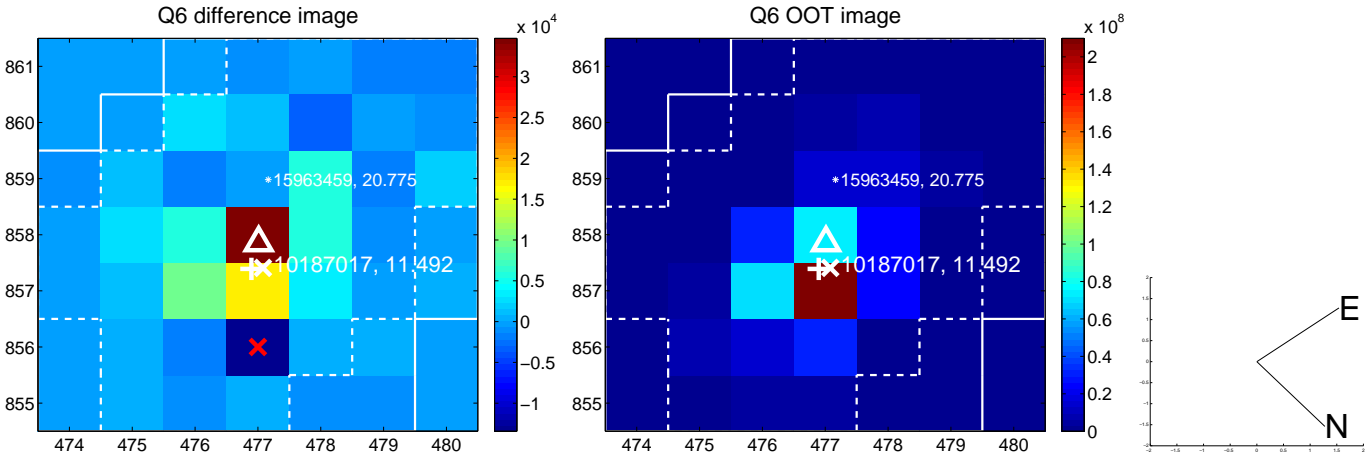
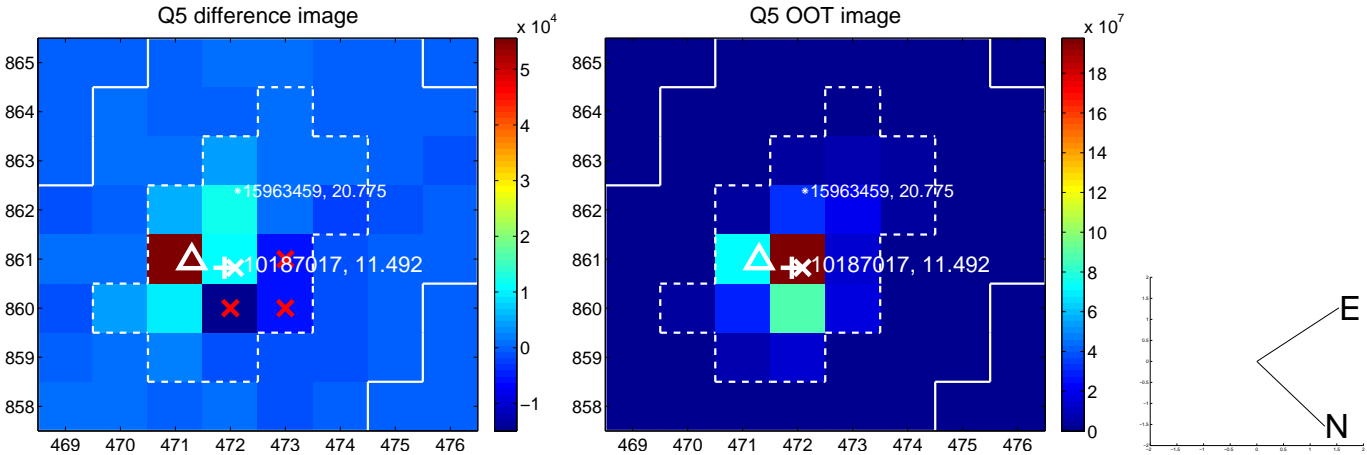


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

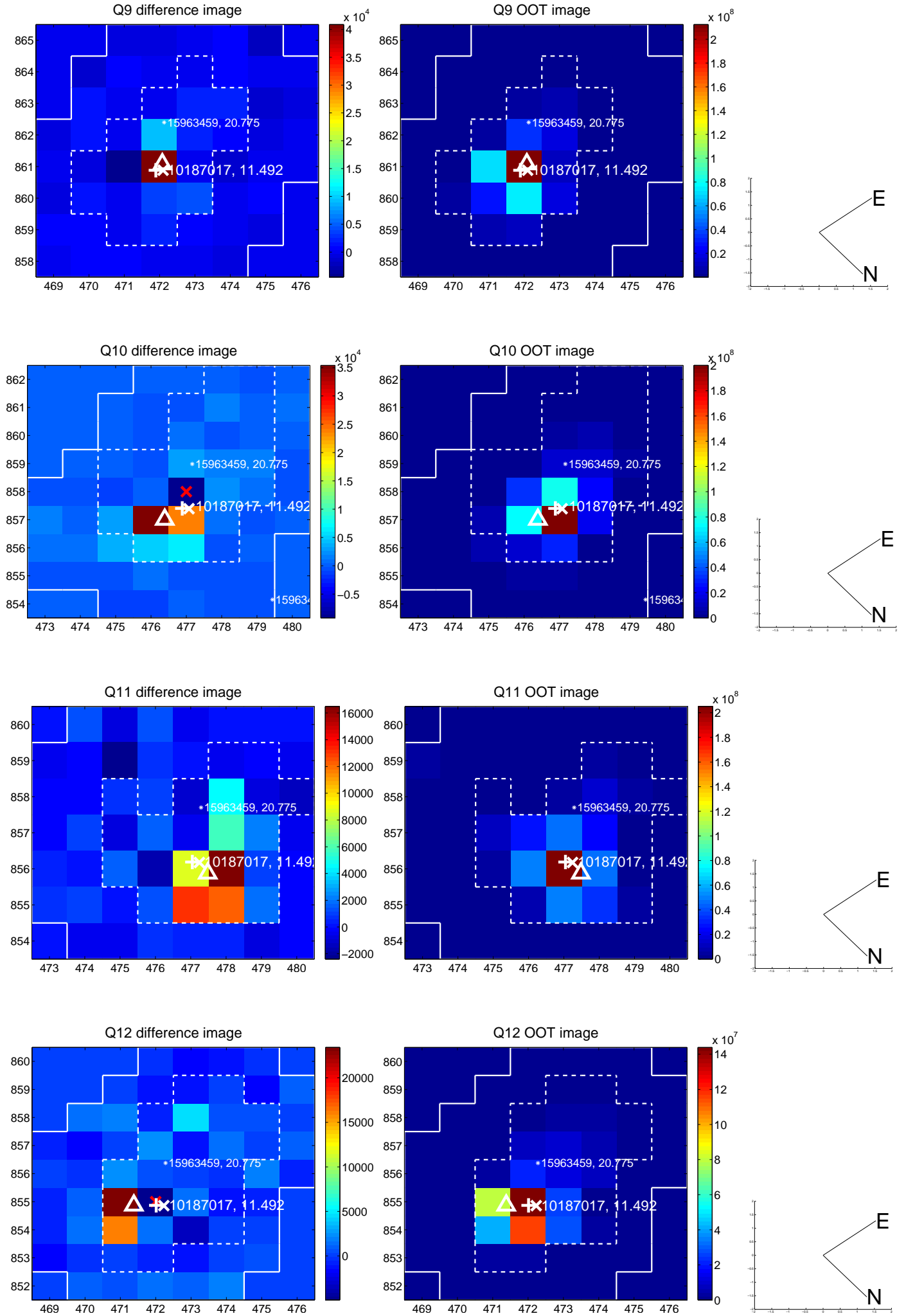
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



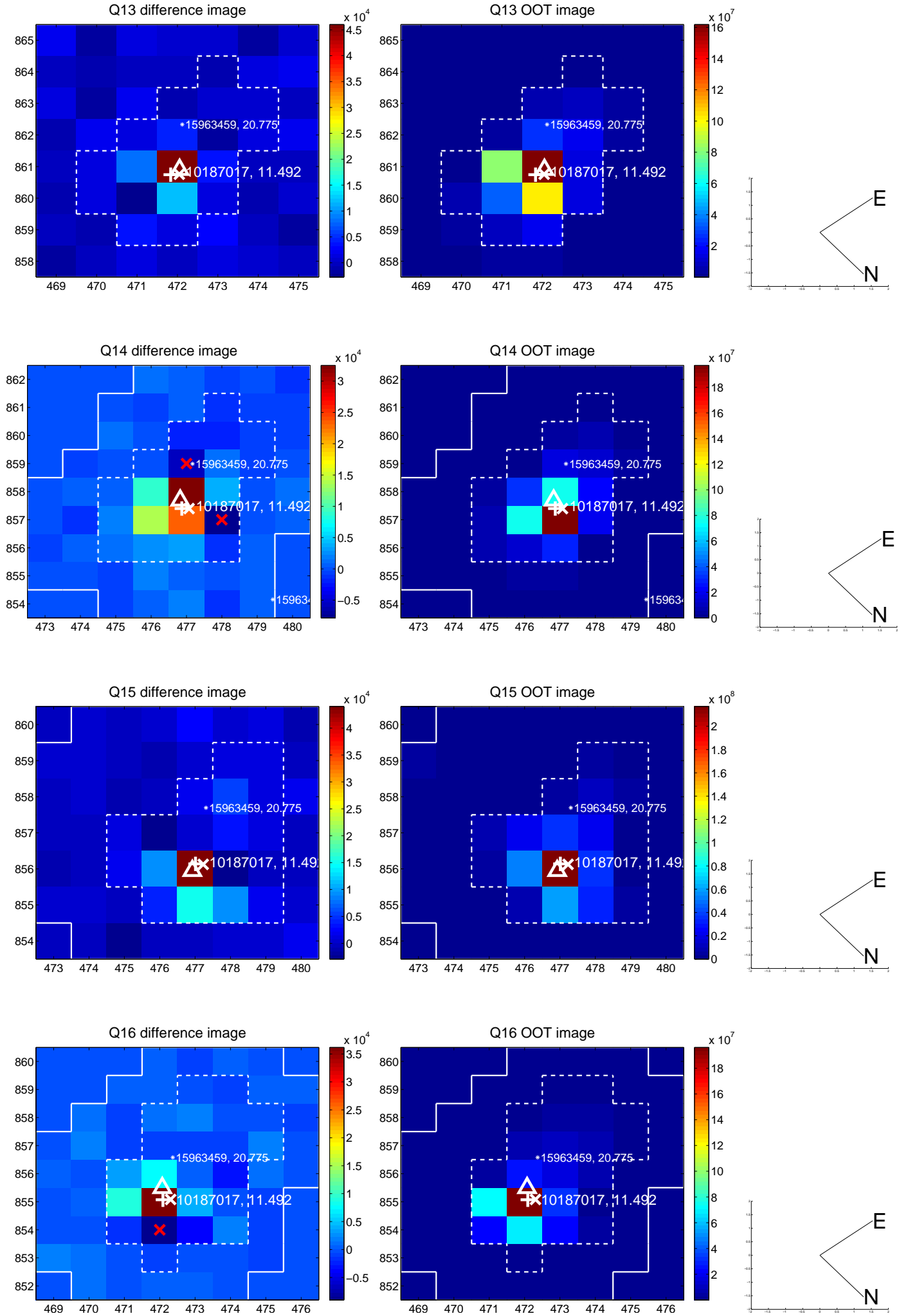
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



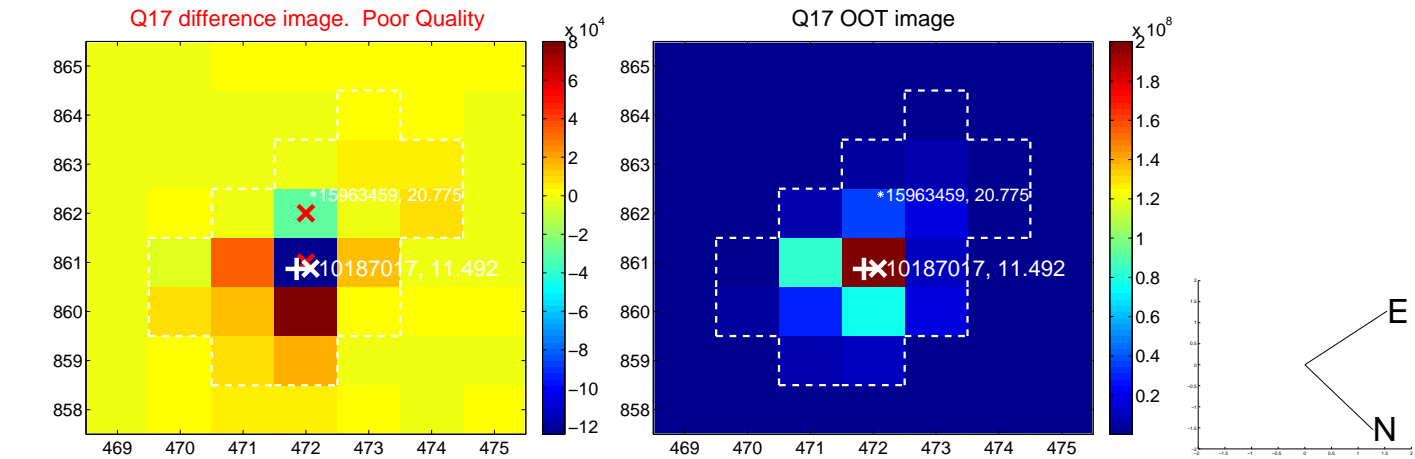
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



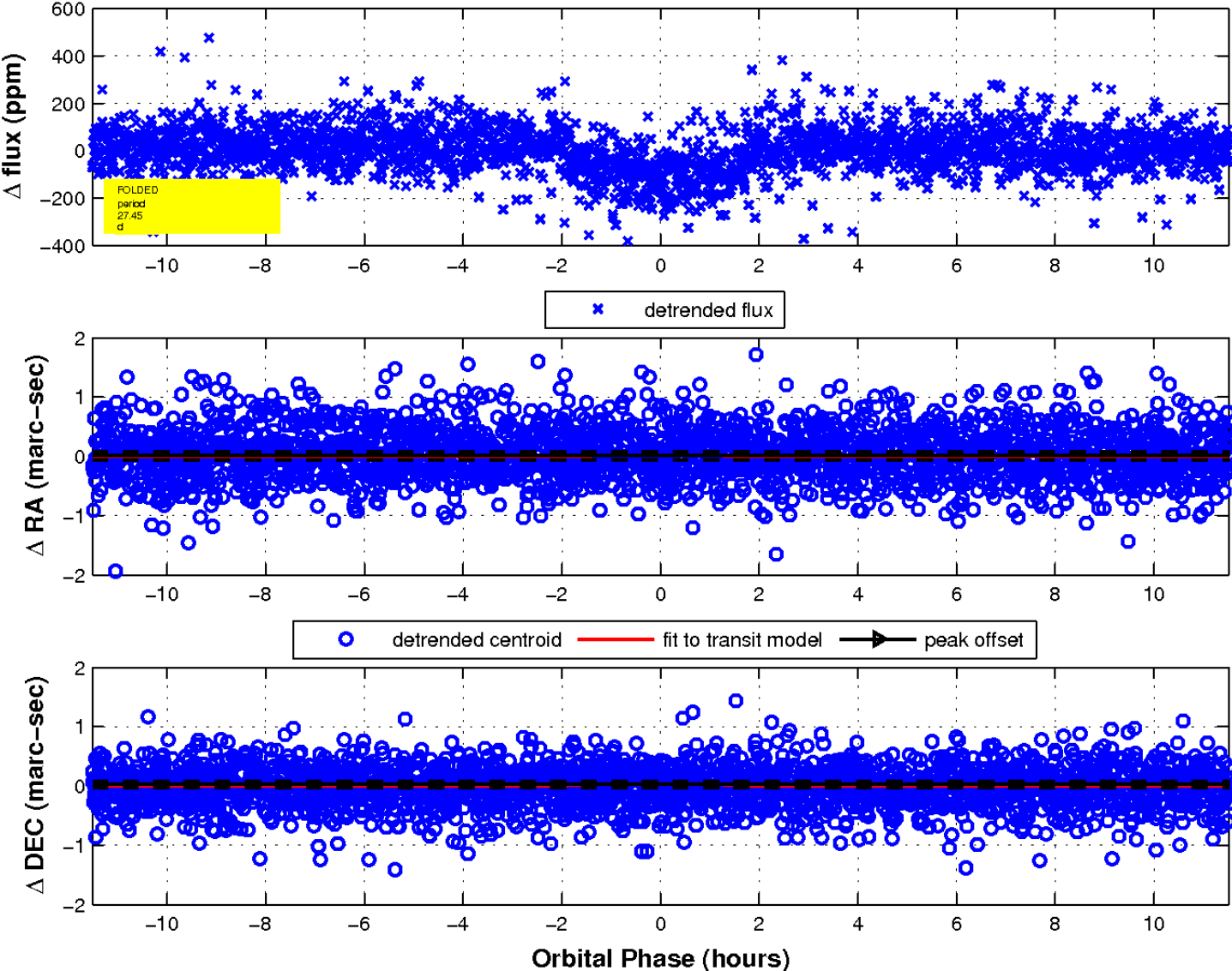
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



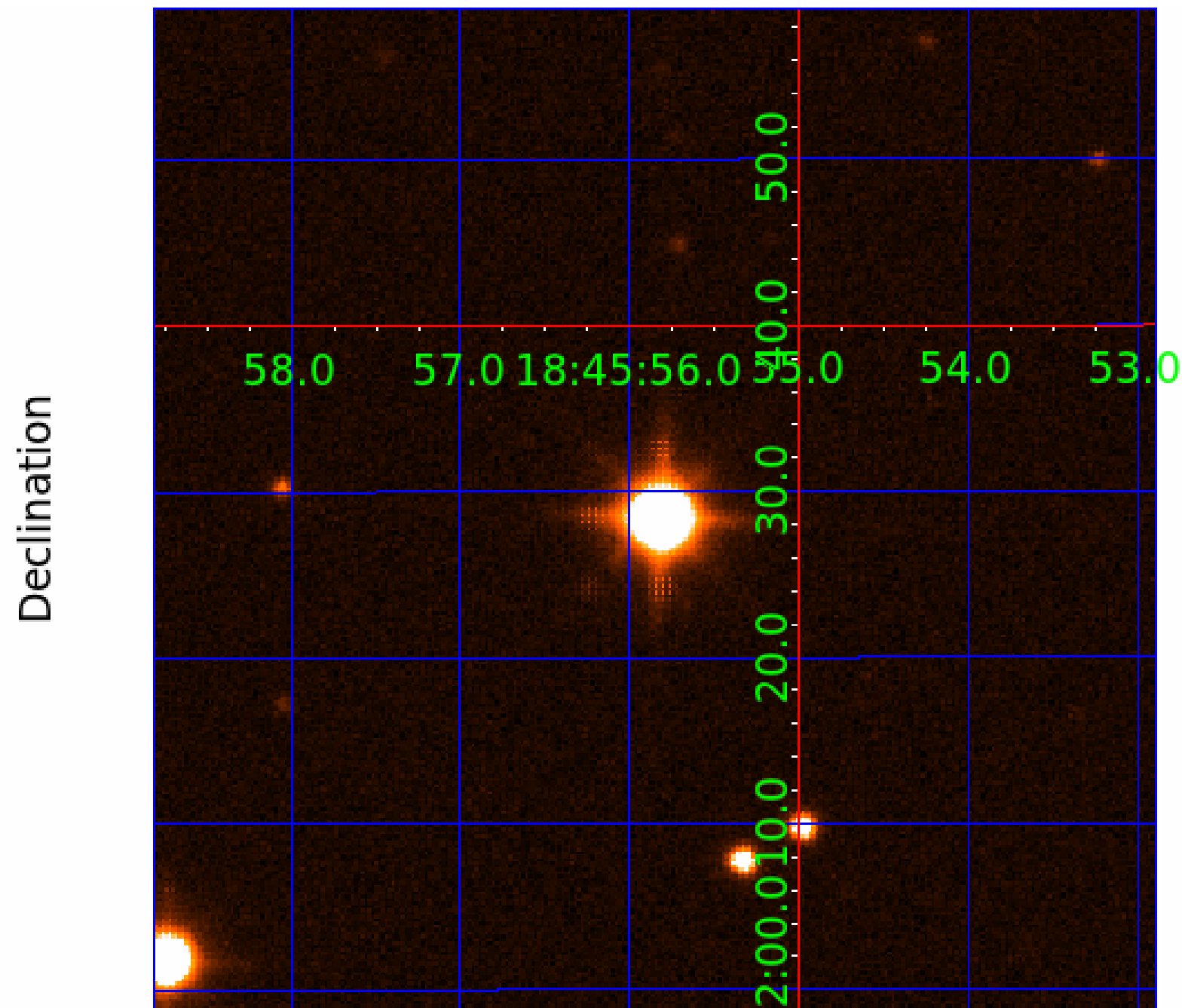
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 6



UKIRT Image



KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

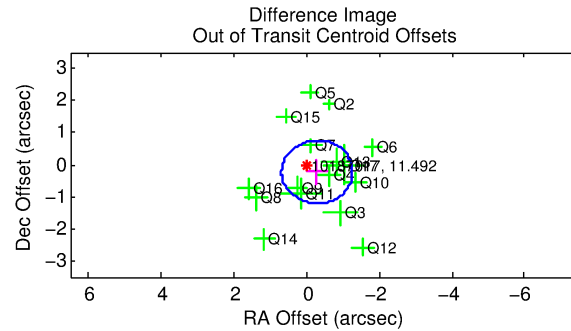
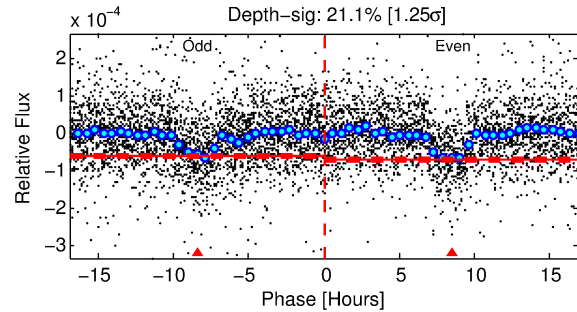
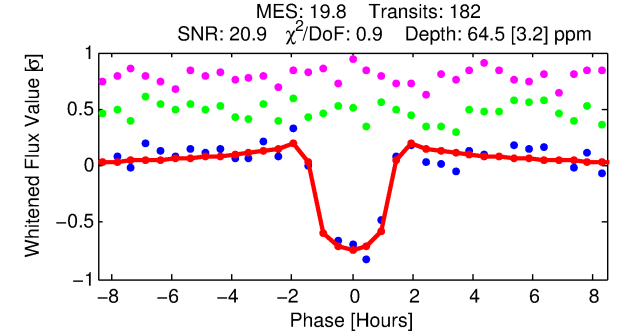
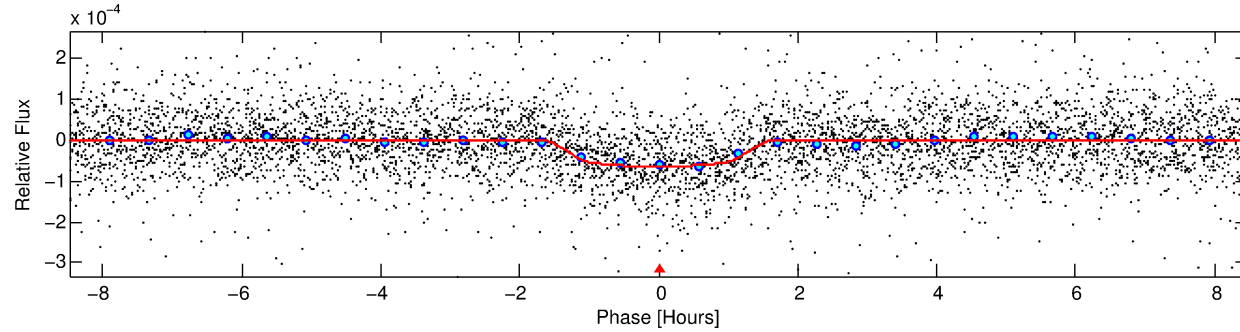
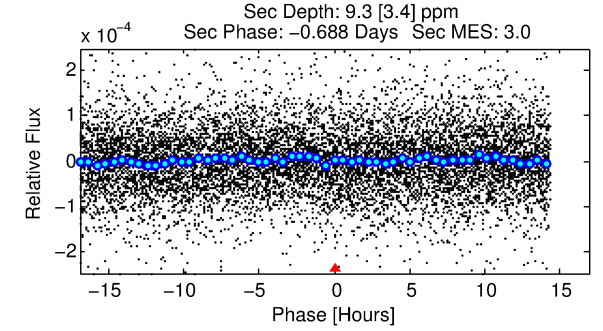
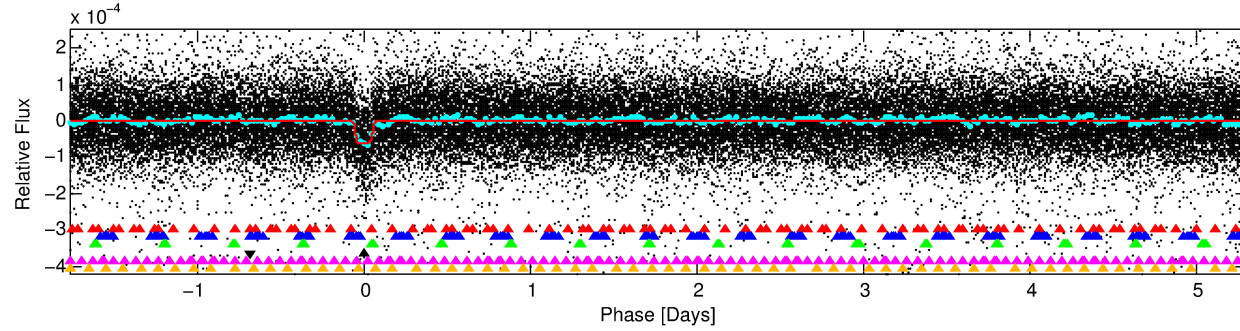
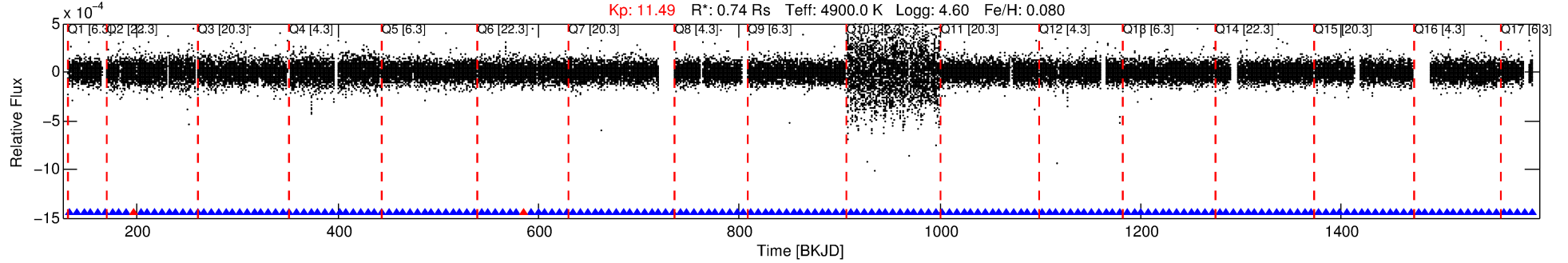
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187017-04

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 4 of 6 Period: 7.071 d
KOI: K00082.04 Name: Kepler-102c Corr: 0.983



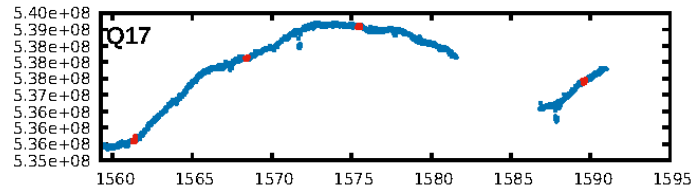
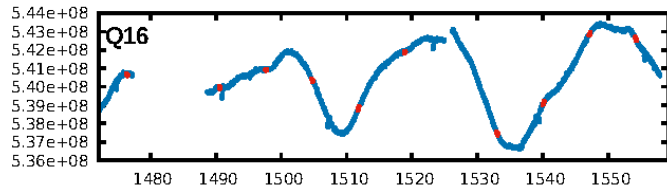
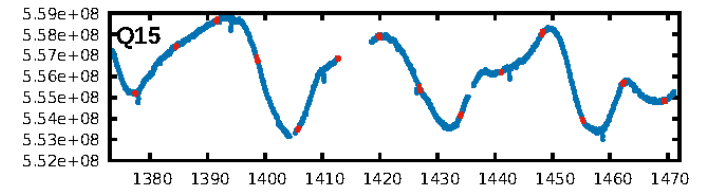
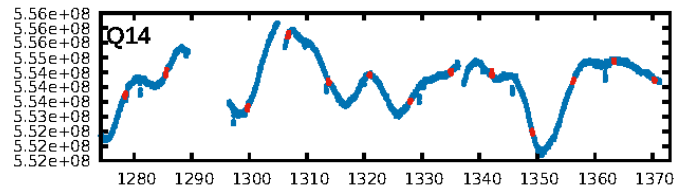
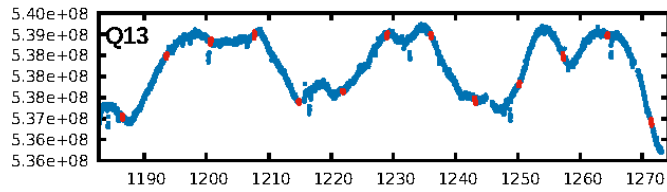
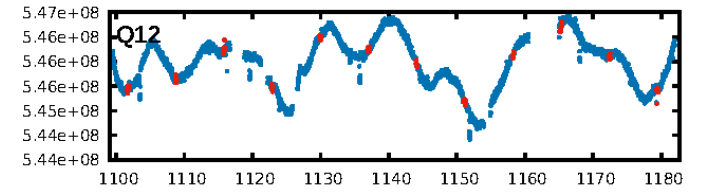
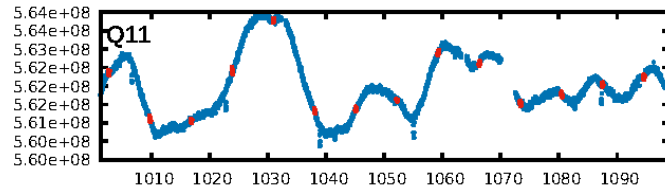
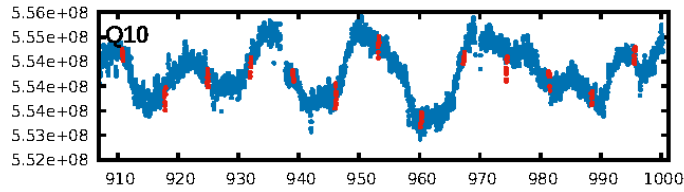
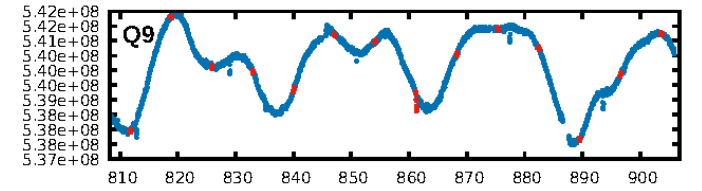
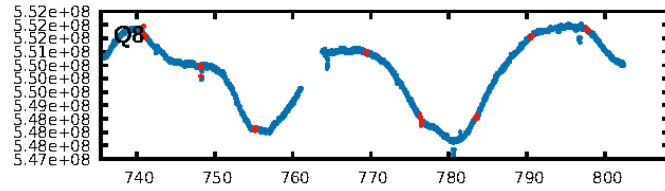
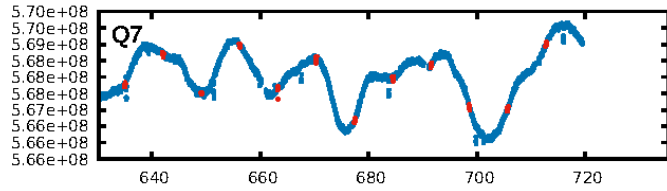
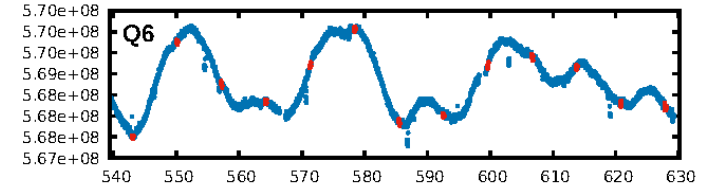
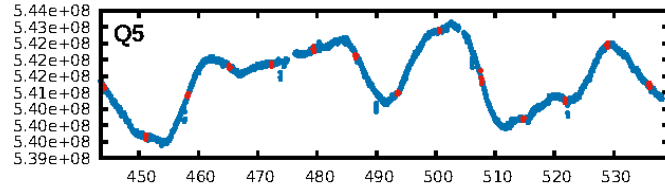
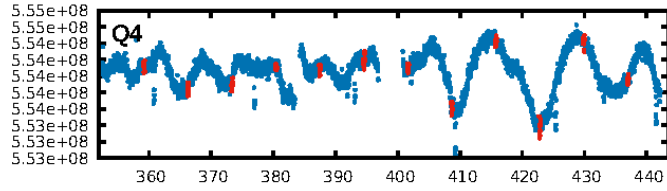
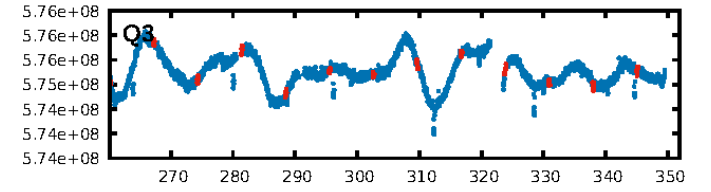
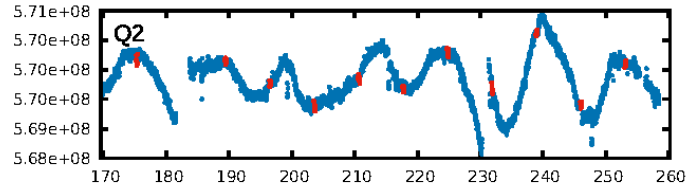
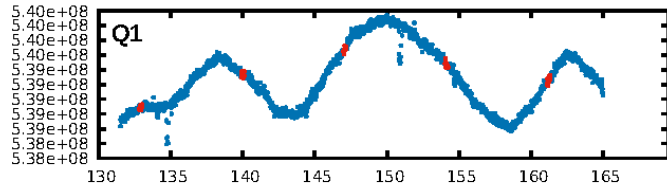
DV Fit Results:

Period = 7.07133 [0.00002] d
Epoch = 132.9184 [0.0024] BKJD
Rp/R* = 0.0090 [0.0024]
a/R* = 8.81 [9.12]
b = 0.90 [0.23]
Seff = 63.23 [7.46]
Teq = 719 [21] K
Rp = 0.73 [0.20] Re
a = 0.0670 [0.0038] AU
Ag = 43.37 [28.20] [1.50σ]
Teffp = 2853 [463] K [4.60σ]

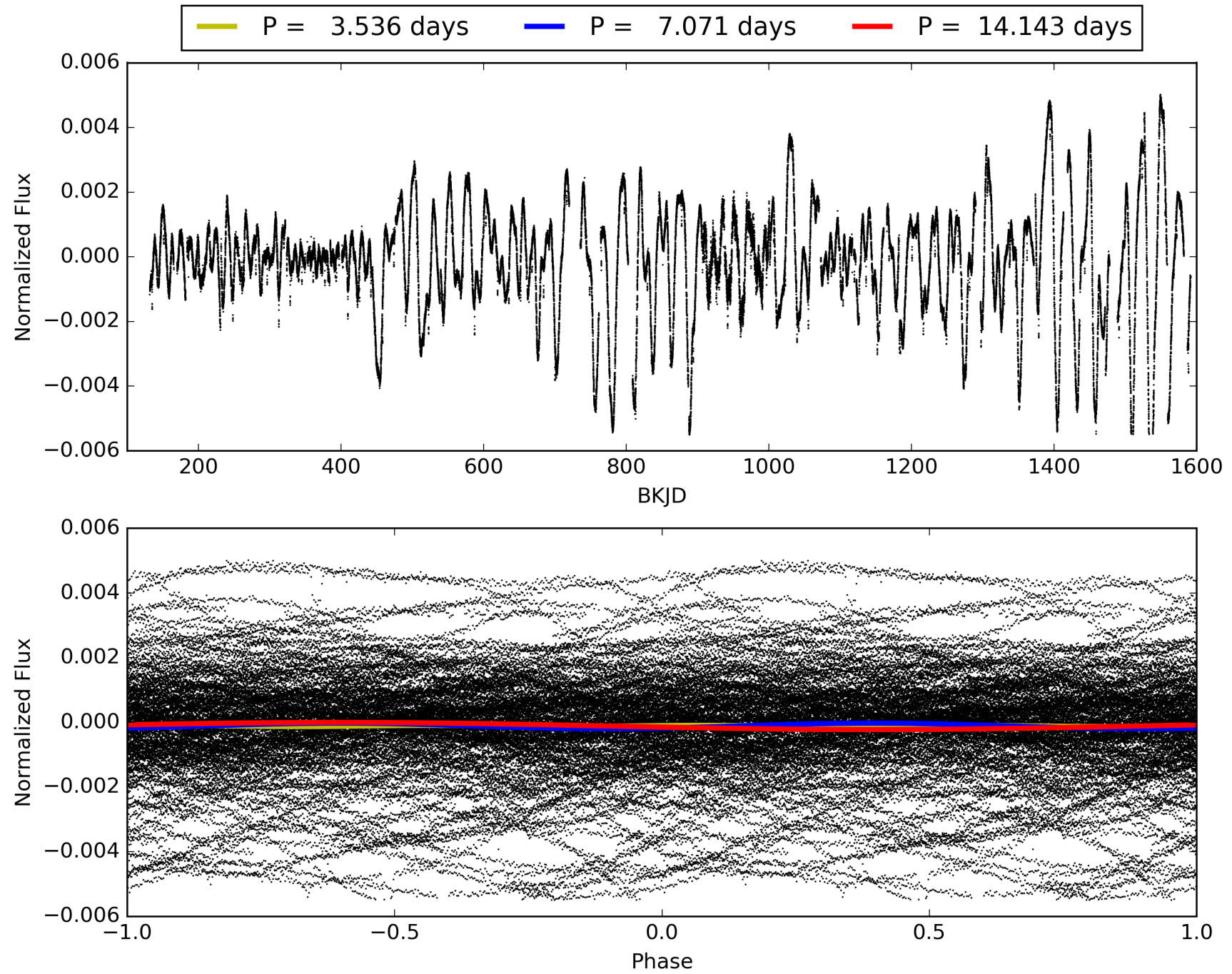
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.92σ]
LongPeriod-sig: 100.0% [17.91σ]
ModelChiSquare2-sig: 95.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.51e-78
RollingBand-fgt: 0.99 [171/173]
GhostDiagnostic-chr: -10.01
Centroid-sig: 17.7%
Centroid-so: 1.393 arcsec [2.41σ]
OotOffset-rm: 0.369 arcsec [1.13σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 1.069 arcsec [3.23σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010187017-04, PDC Light Curves

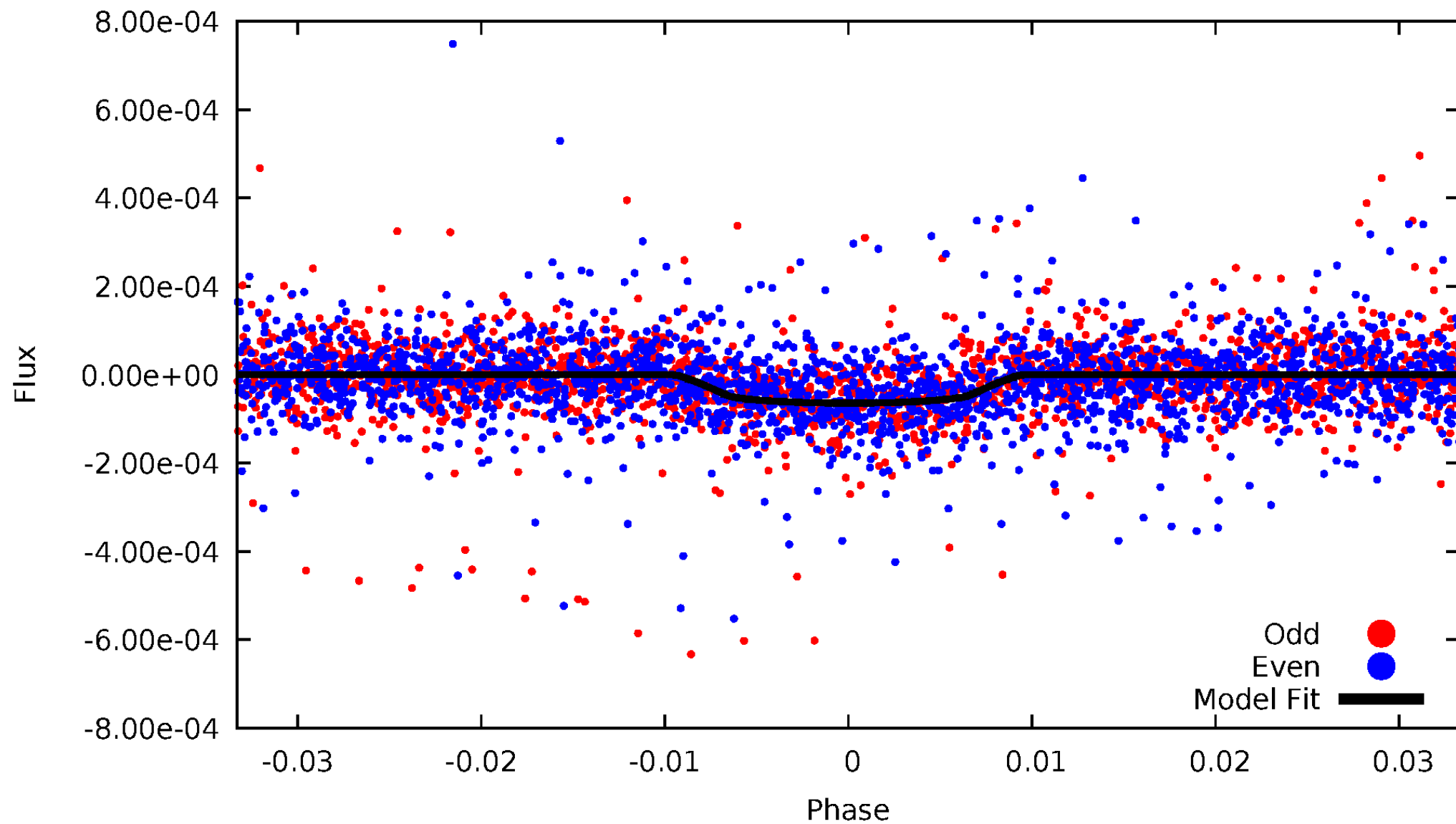


TCE 010187017-04



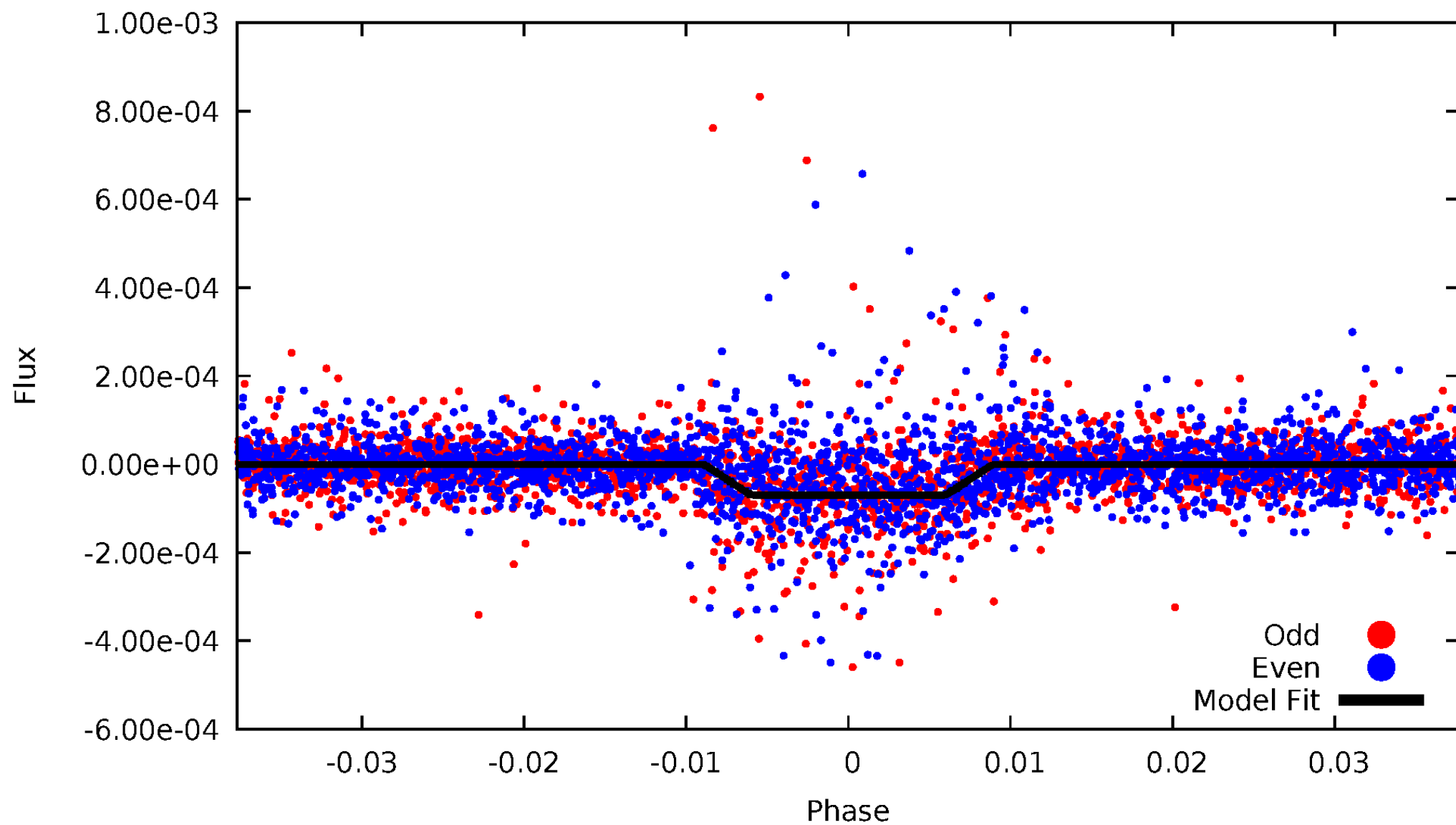
DV Odd/Even

TCE 010187017-04



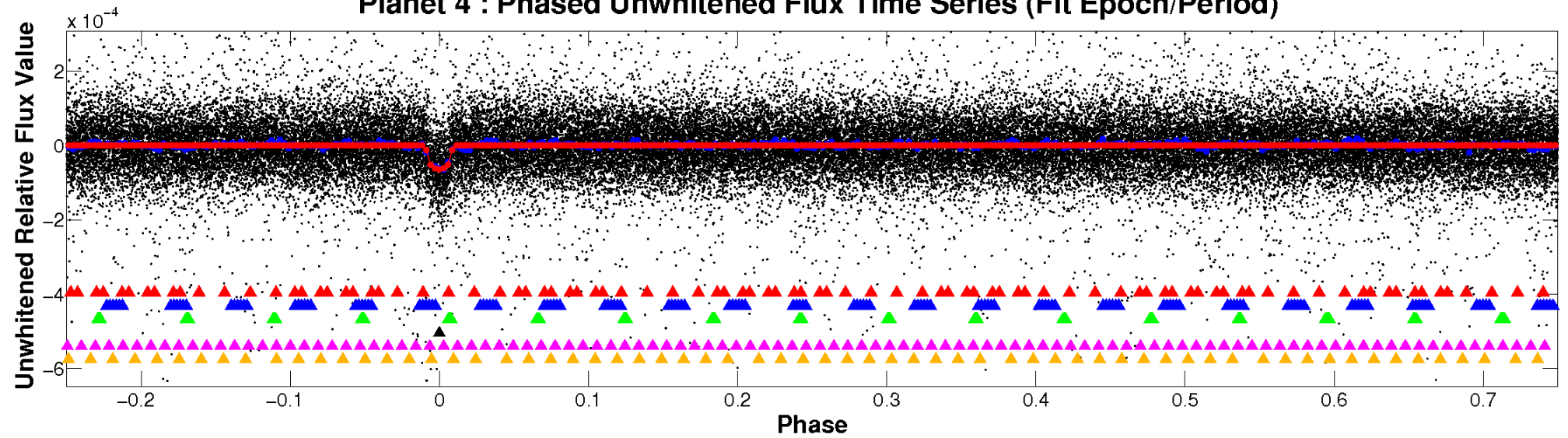
ALT Odd/Even

TCE 010187017-04

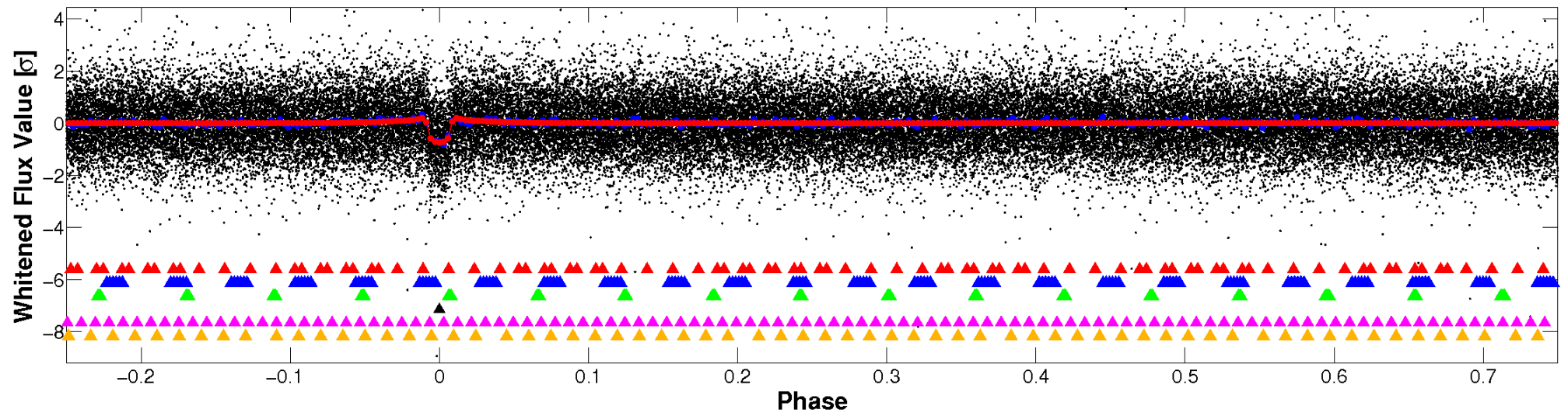


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

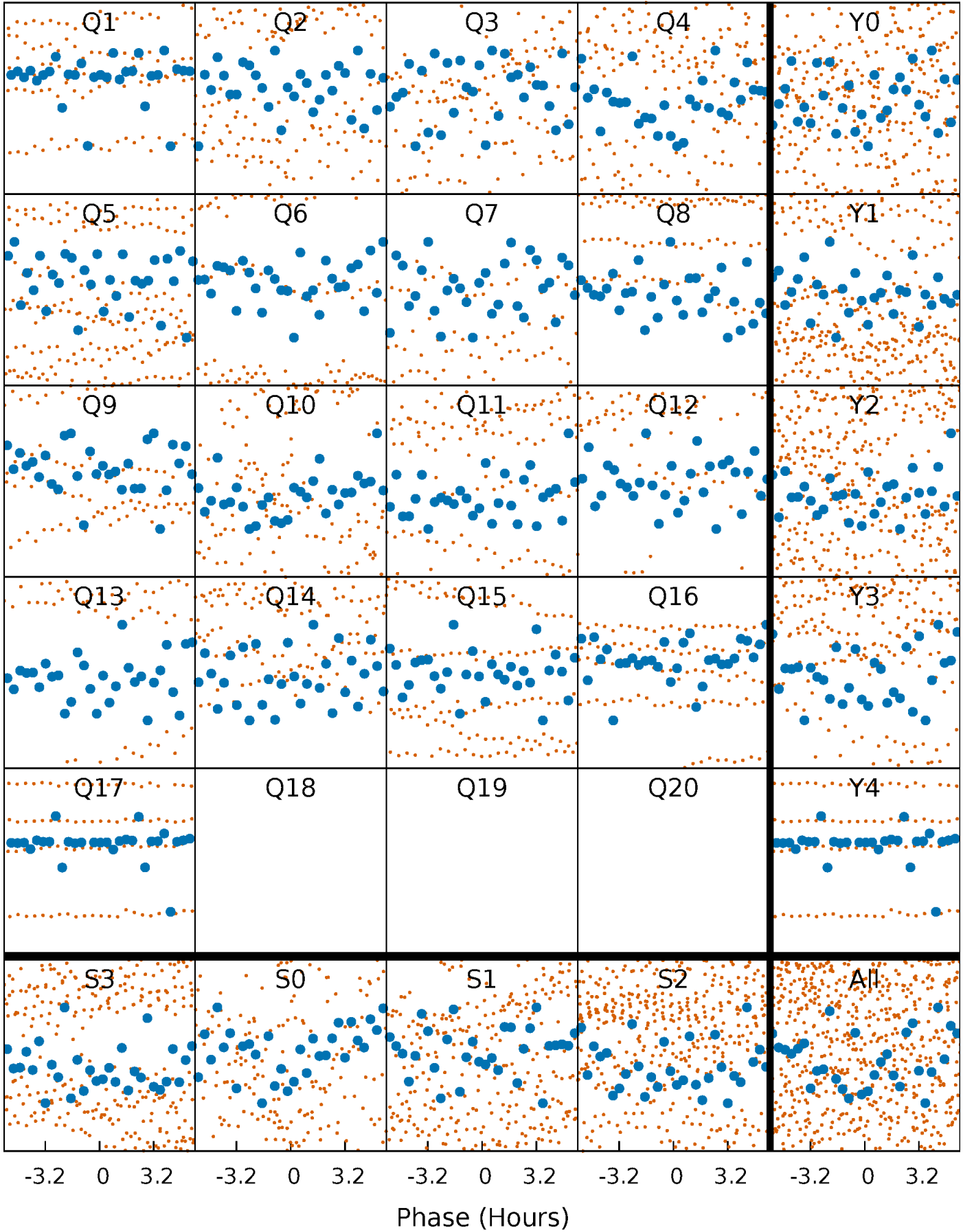


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



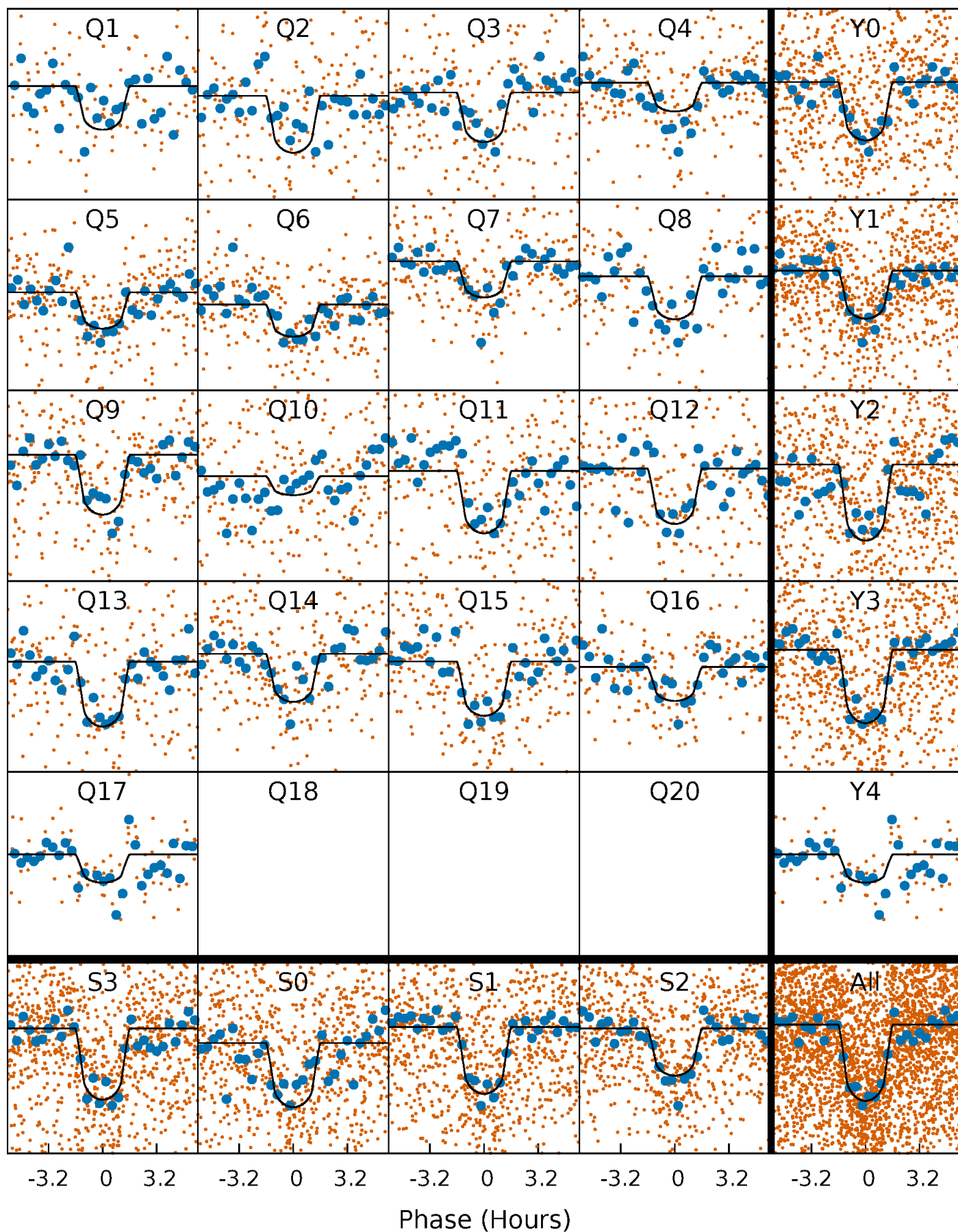
PDC Quarter-Phased Transit Curves

TCE 010187017-04 $P = 7.071332$ Days $T_0 = 132.918441$ (BKJD)



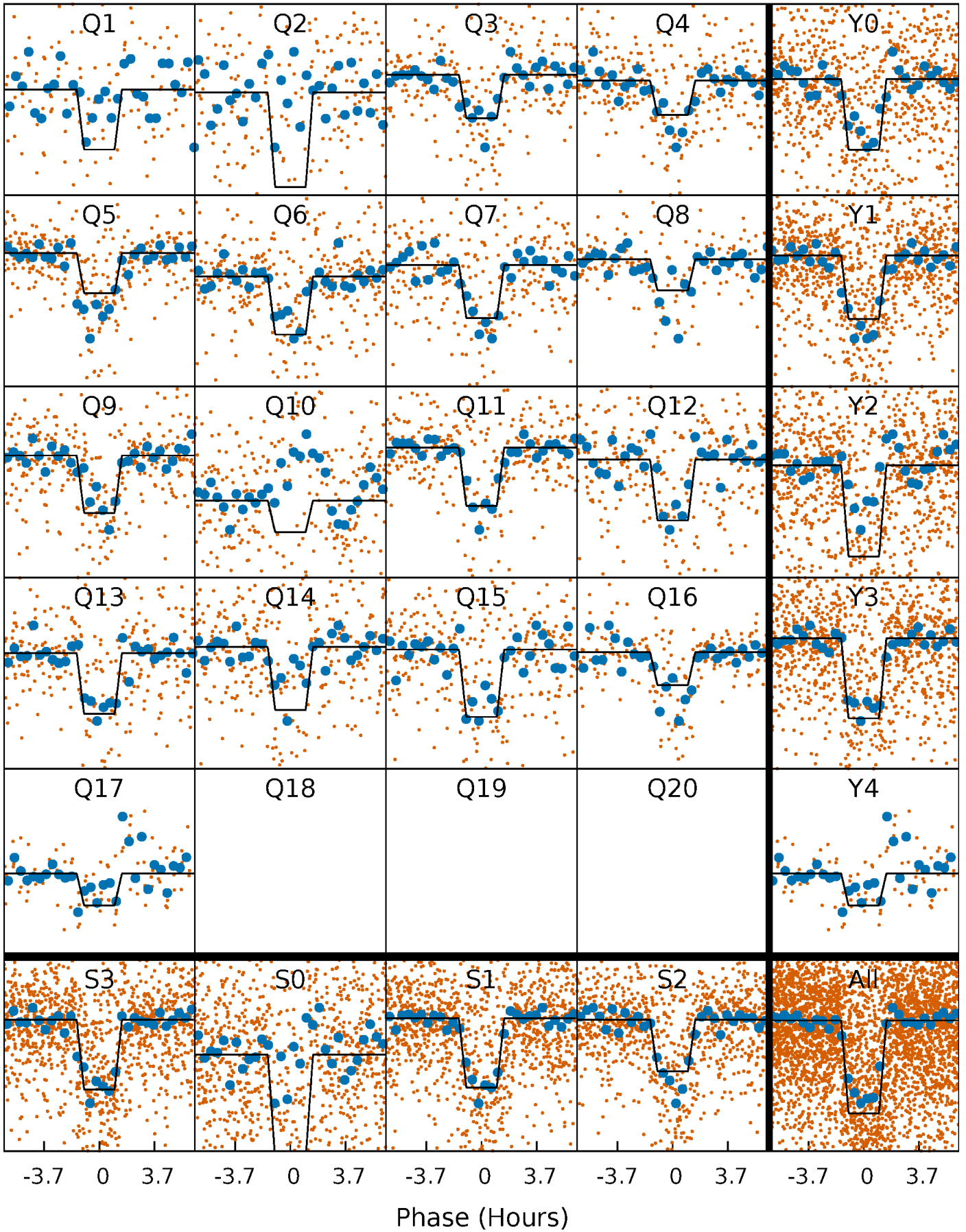
DV Quarter-Phased Transit Curves

TCE 010187017-04 P= 7.071332 Days $T_0=132.918441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

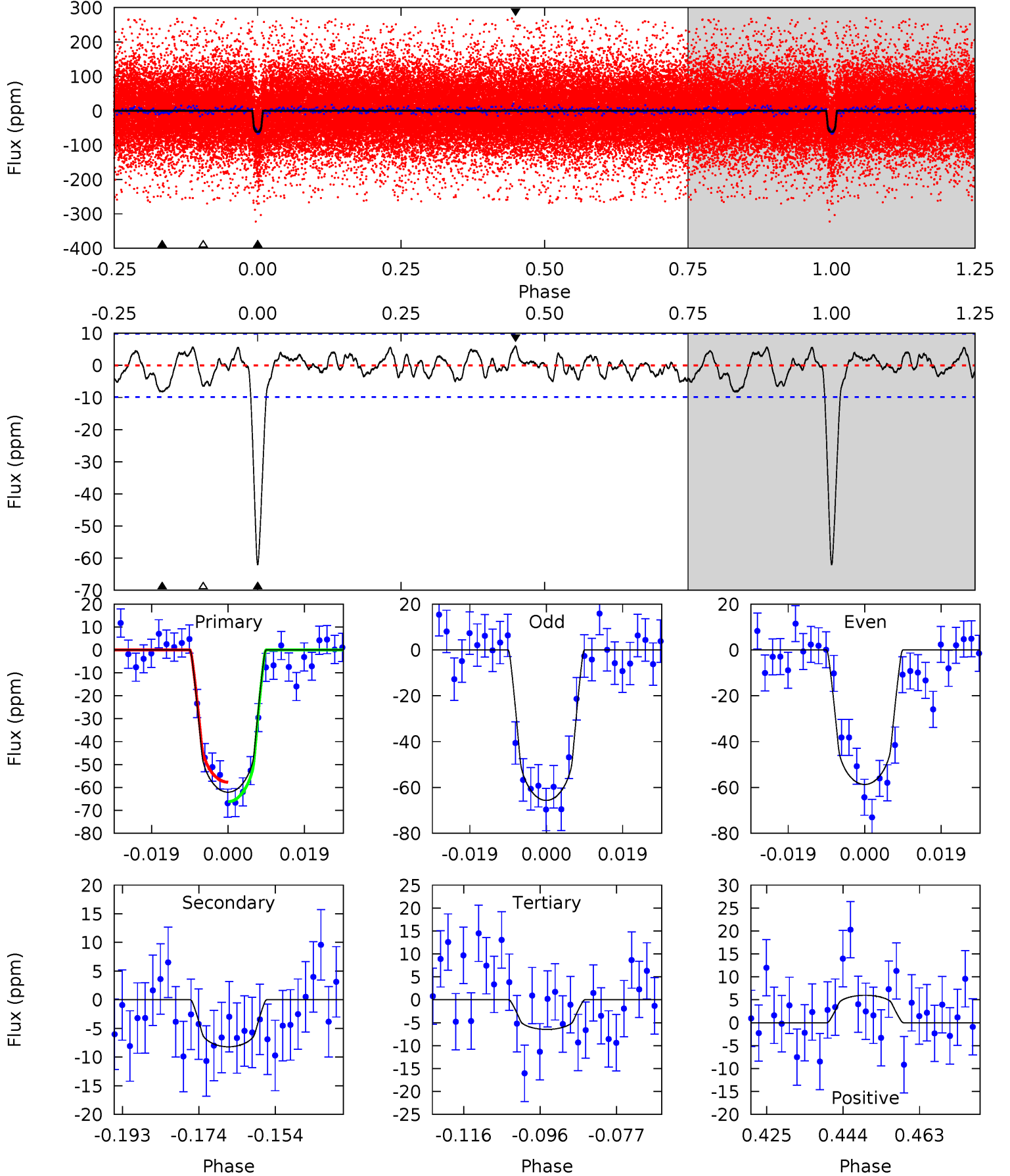
TCE 010187017-04 P= 7.071353 Days $T_0=132.911830$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-04, P = 7.071332 Days, E = 125.847109 Days

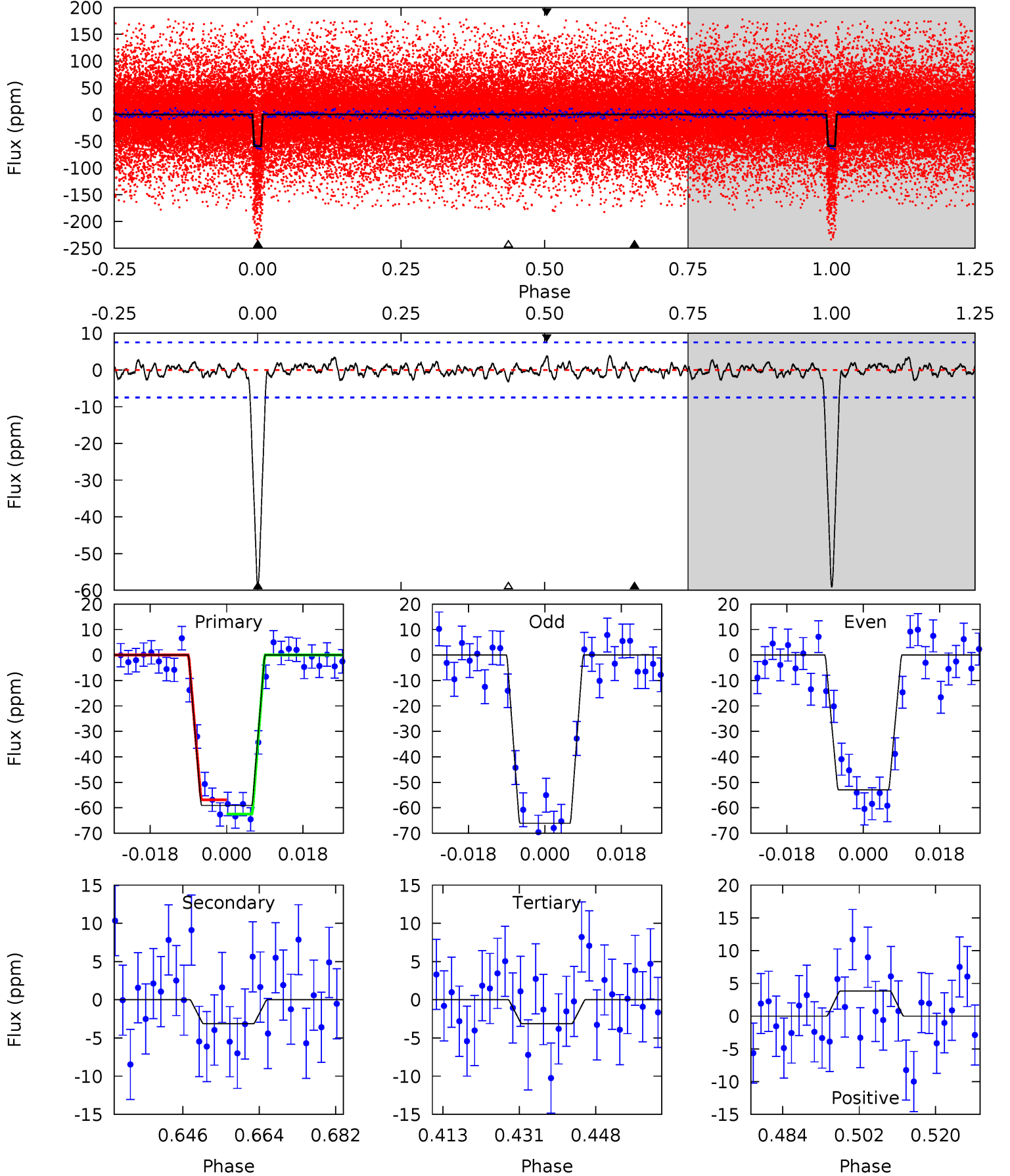
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.8	4.08	3.22	2.97	4.90	2.34	1.31	27.6	27.9	0.86	1.11	1.73	1.02	0.09	2.13



Alt Model-Shift Uniqueness Test

010187017-04, P = 7.071353 Days, E = 125.840477 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.7	2.05	2.04	2.50	4.91	2.37	0.80	36.6	36.2	0.00	-0.46	4.30	0.96	0.06	1.85



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-04 / KOI 0082.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-8 ± 2	$0.74^{+0.18}_{-0.19}$	1011^{+25}_{-24}	3261^{+336}_{-259}	37^{+32}_{-15}
Alt.	-3 ± 2	$0.68^{+0.19}_{-0.19}$	1012^{+22}_{-25}	2895^{+355}_{-286}	16^{+19}_{-9}

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 $A_{obs} \gg 1.0$

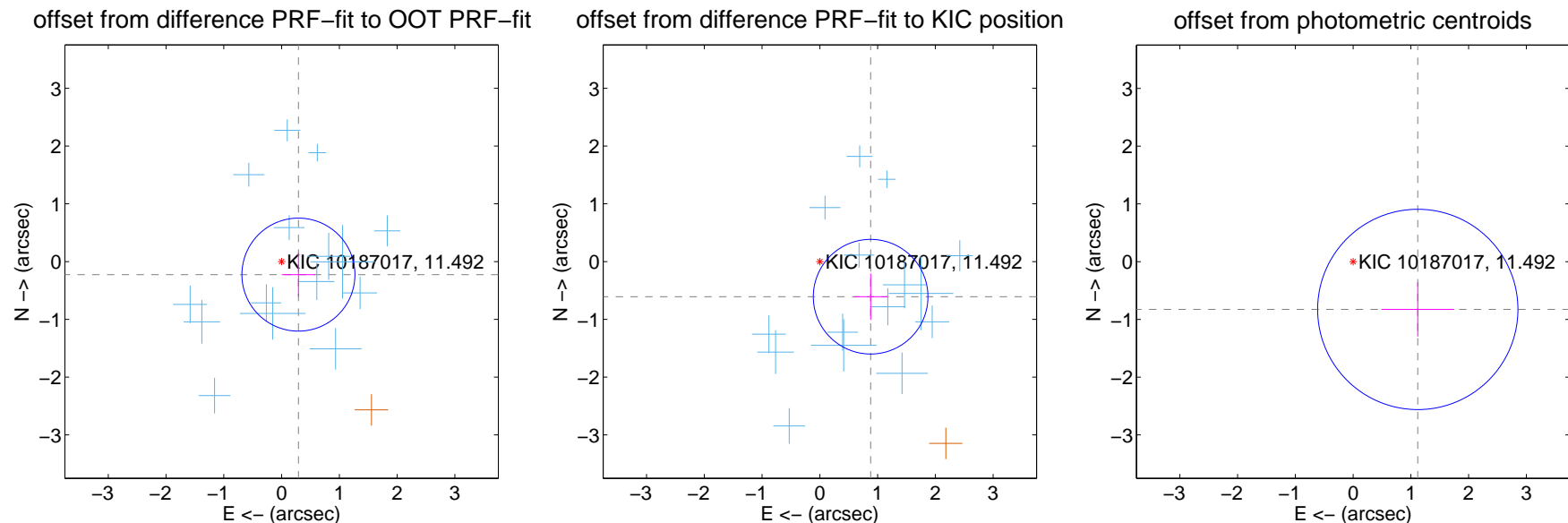
DV Centroid Data

Supplemental centroid analysis for 010187017-04. **Kepler magnitude: 11.49.** Transit SNR 20.95

There are 15 quarters with good PRF difference image offsets

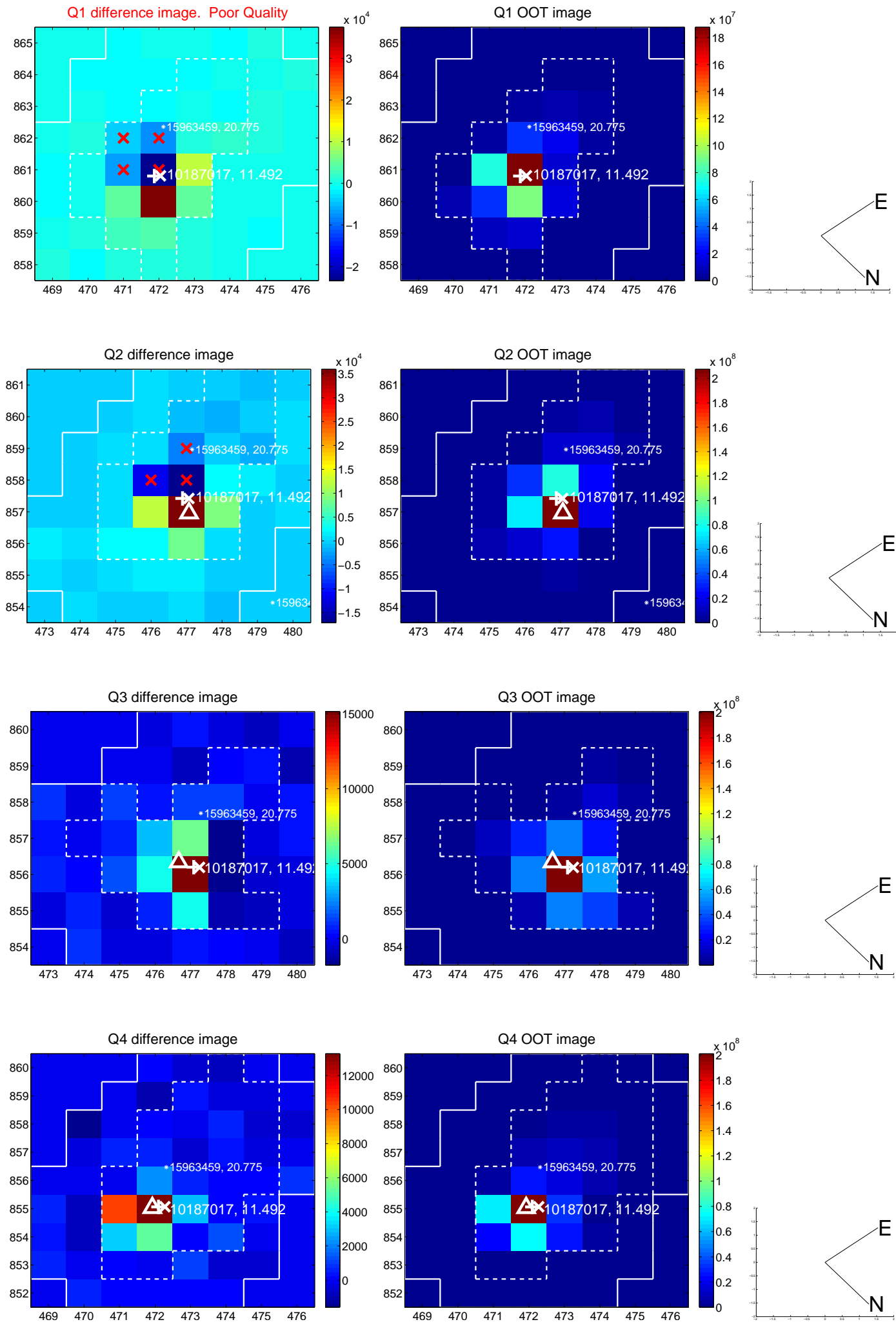
The direct PRF centroid is offset from the target star catalog position by about 0.89 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.369 ± 0.326	1.13	-0.292 ± 0.288	-0.226 ± 0.381
PRF-fit source offset from KIC position	1.069 ± 0.331	3.23	-0.879 ± 0.291	-0.608 ± 0.401
photometric centroid source offset	1.39 ± 0.58	2.41	-1.12 ± 0.63	-0.83 ± 0.47

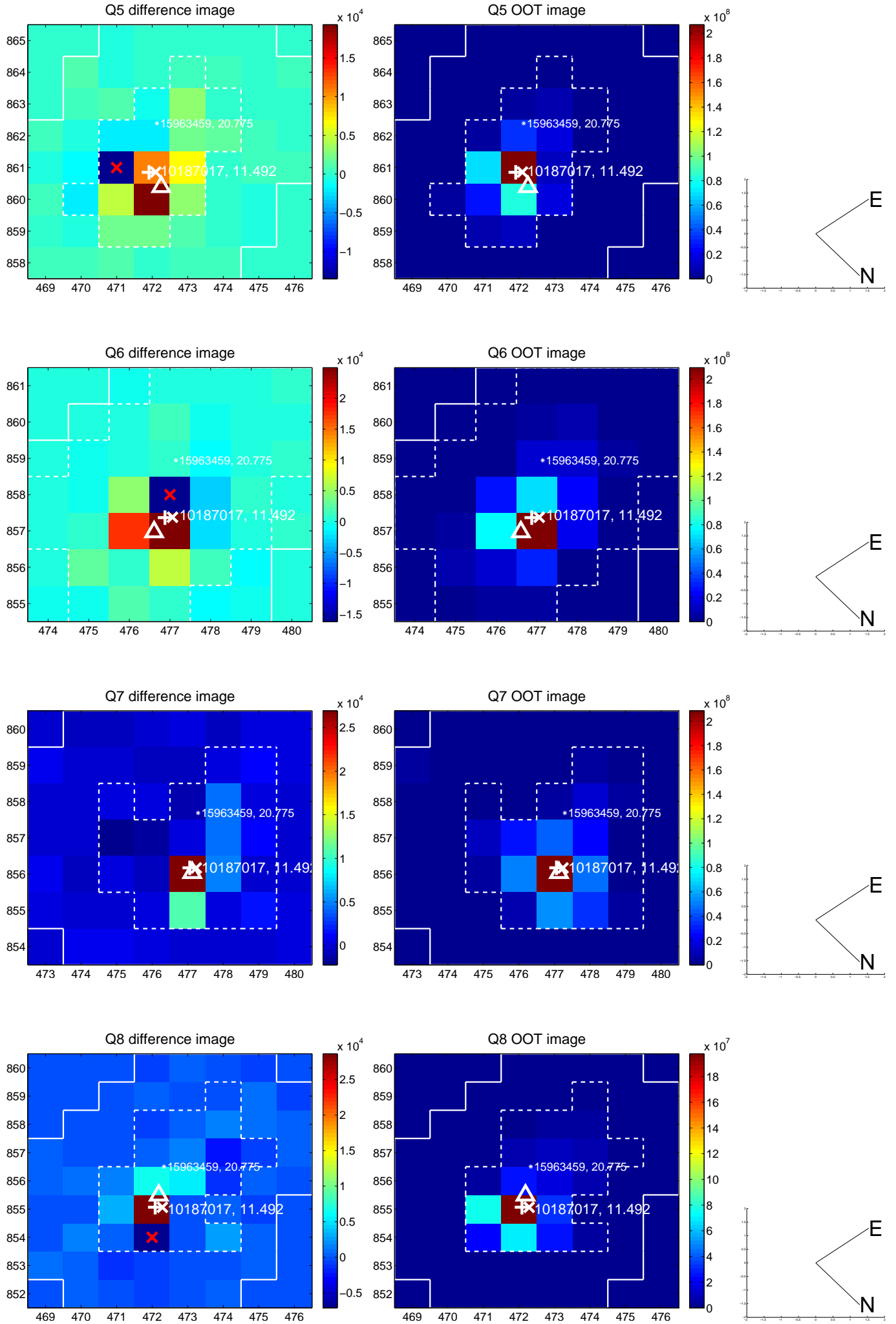


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

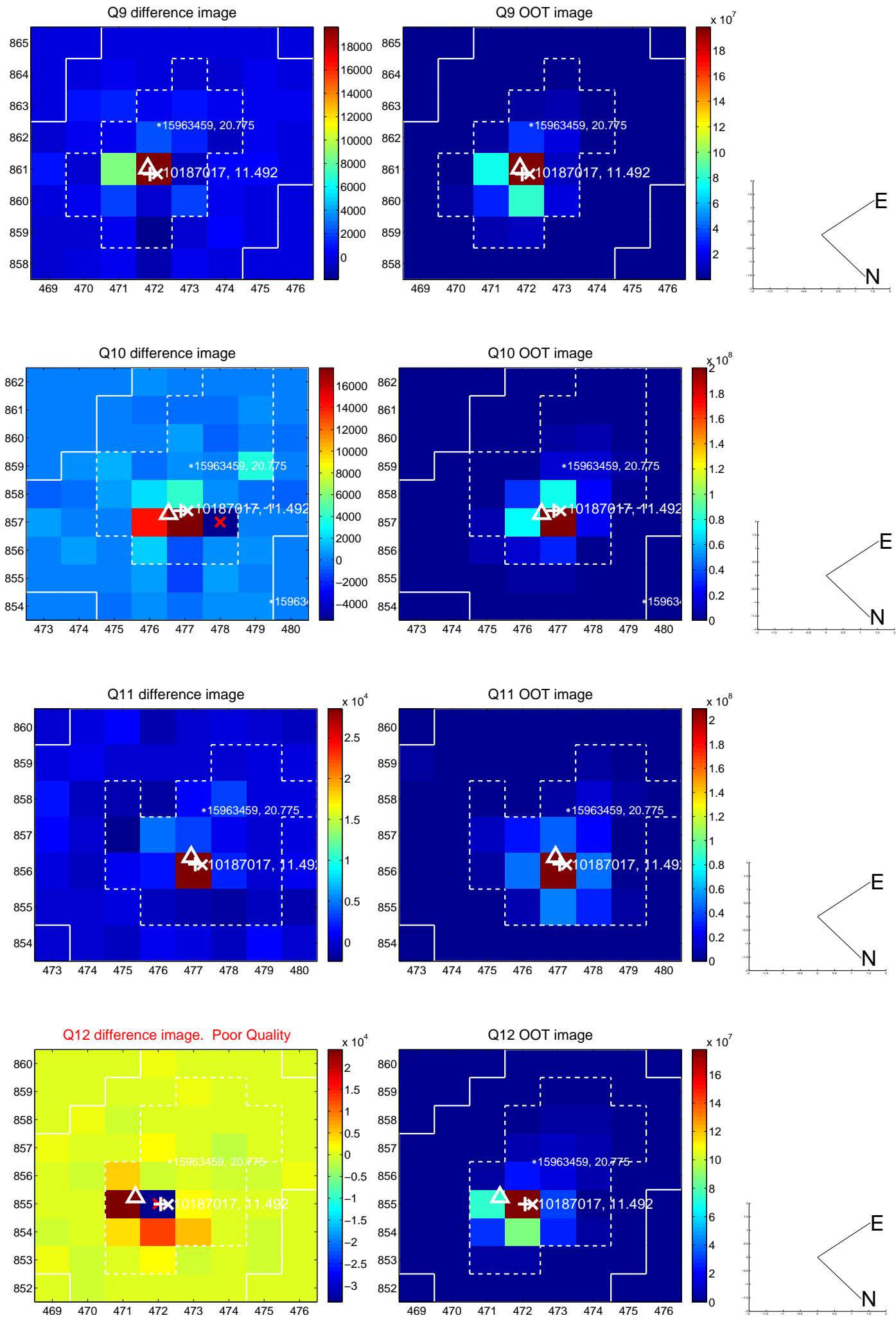
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



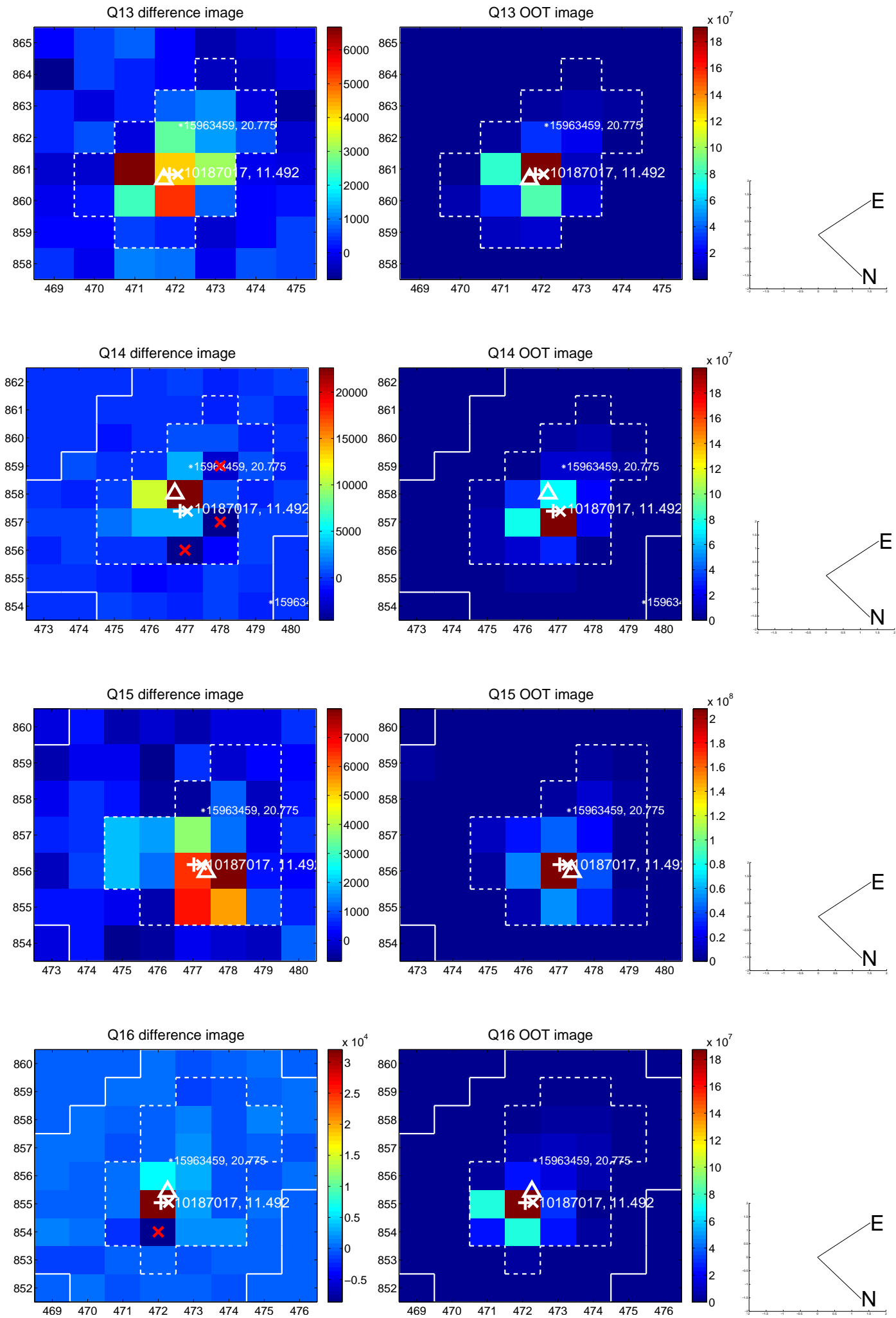
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



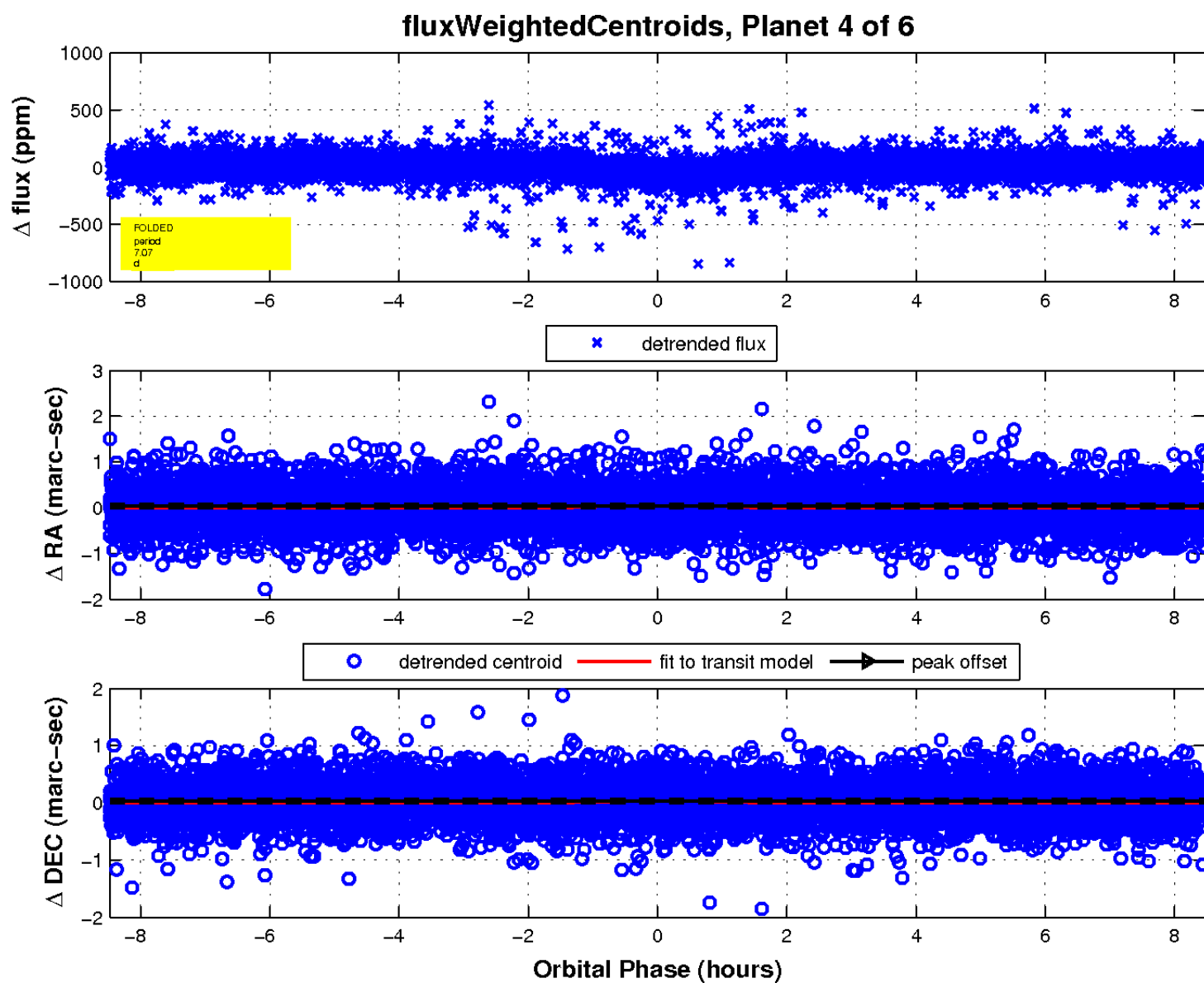
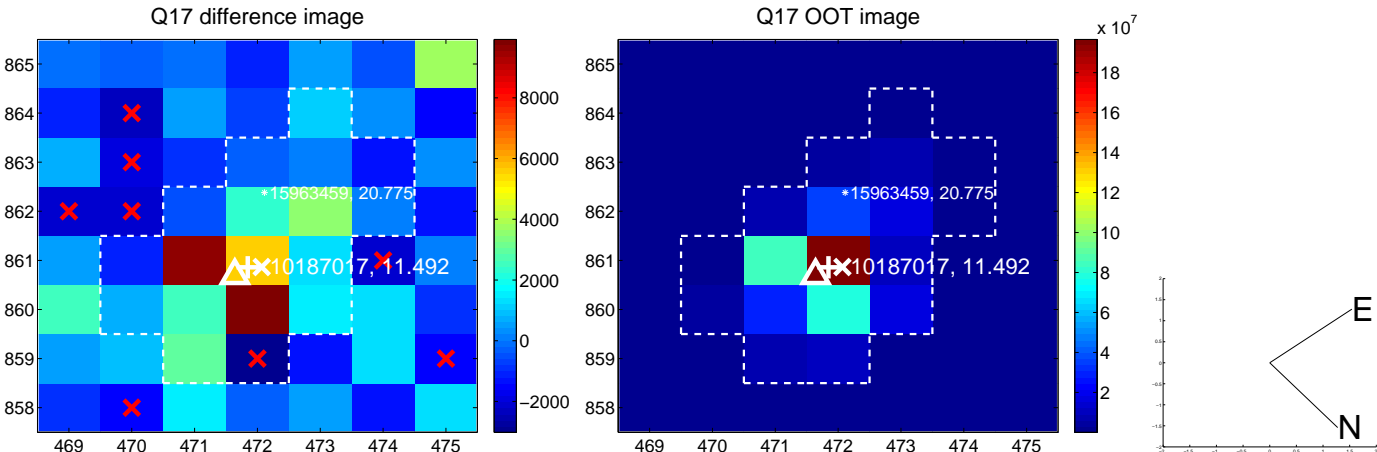
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



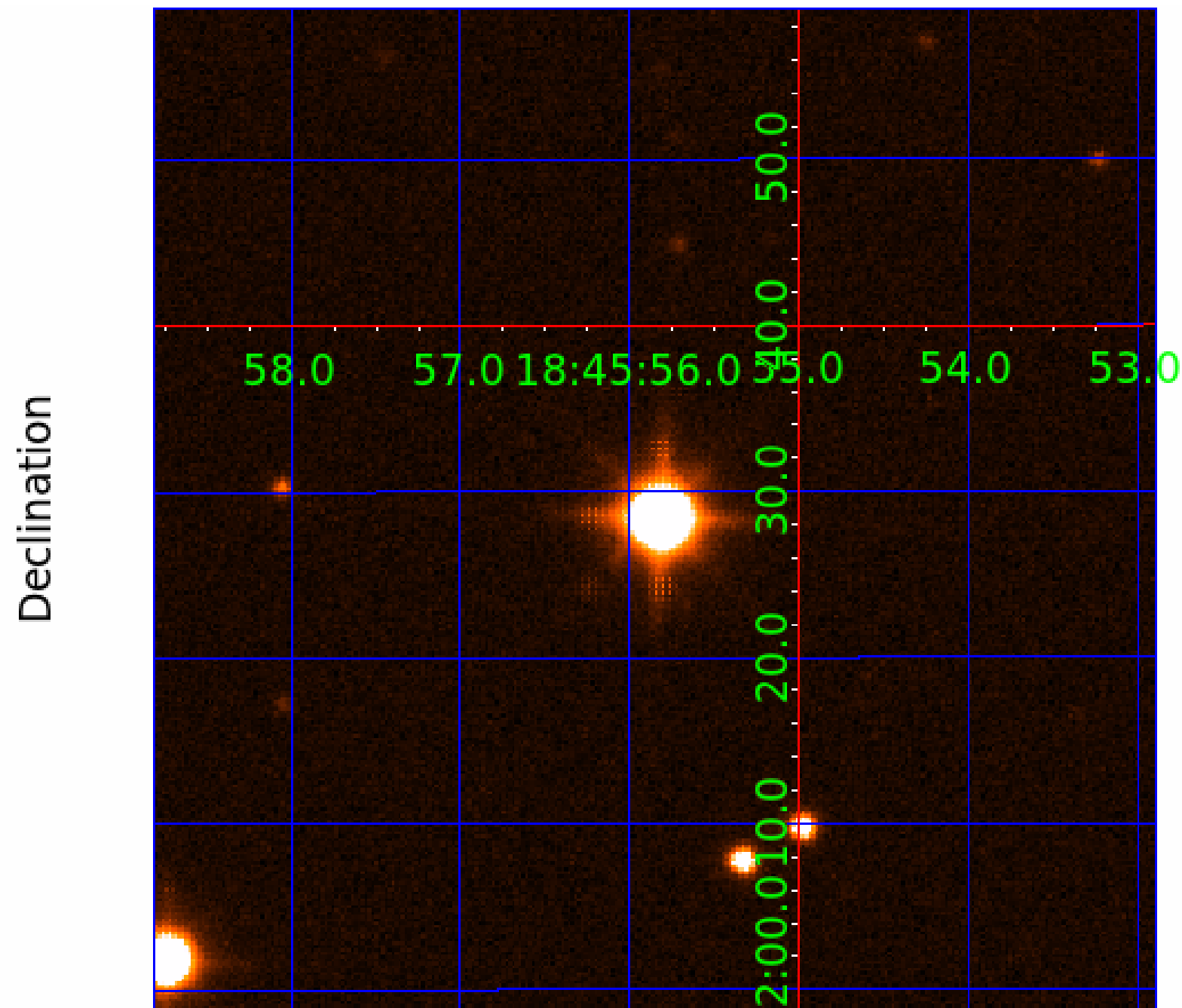
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

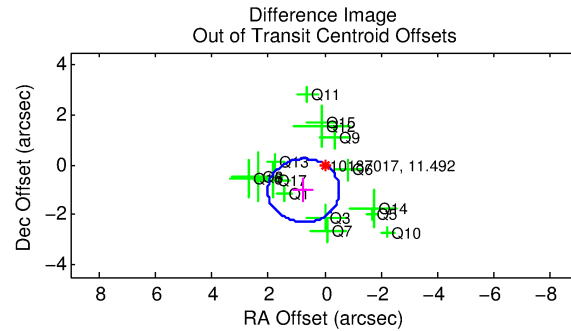
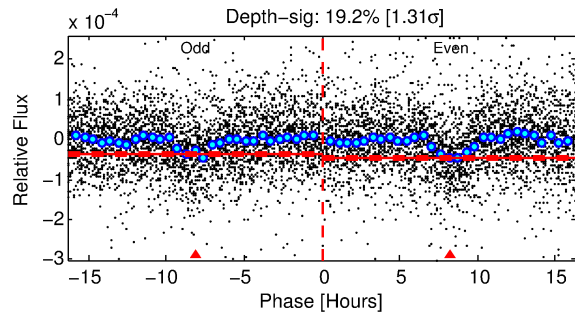
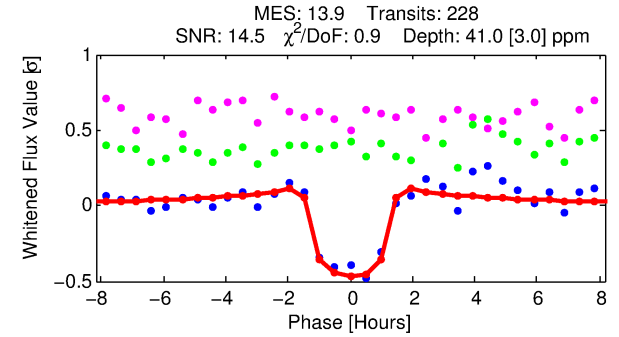
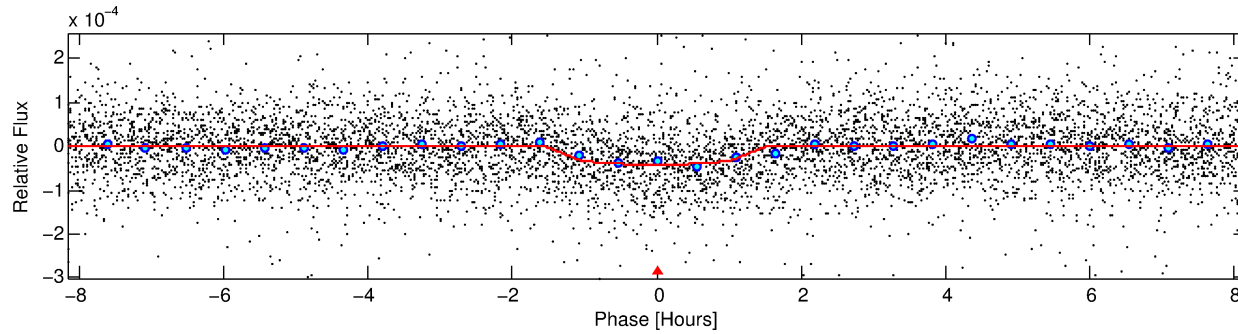
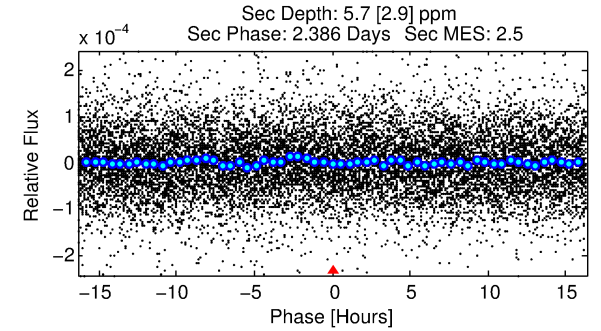
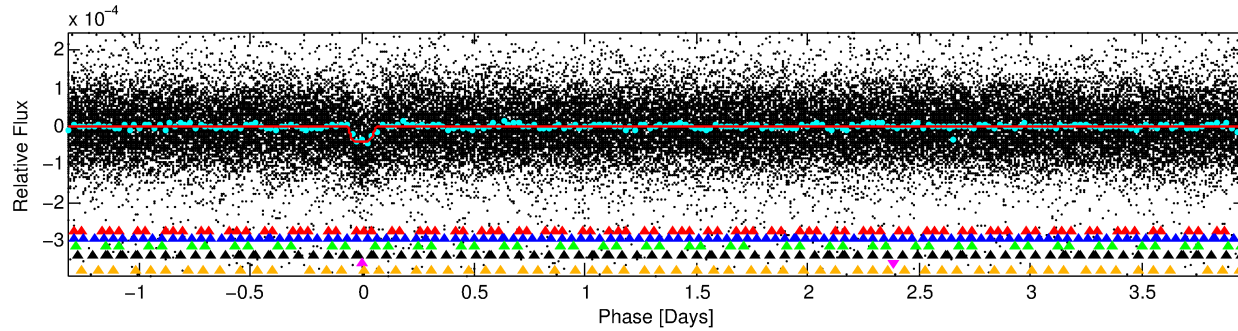
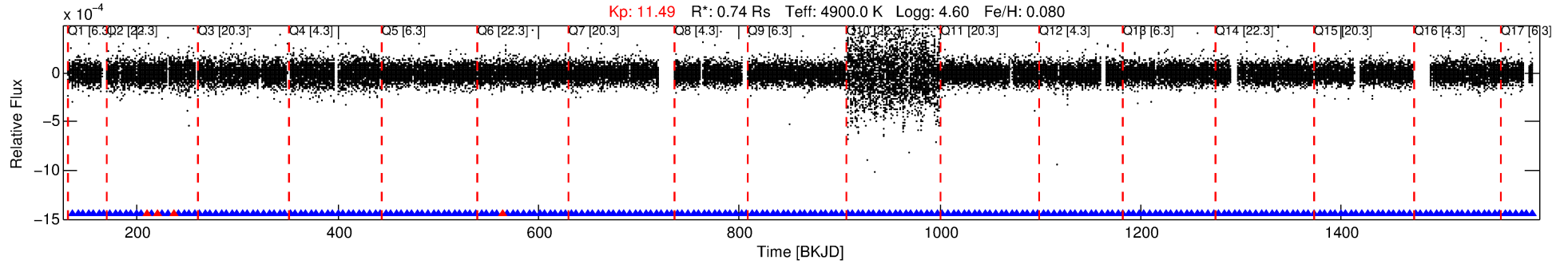
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187017-05

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 5 of 6 Period: 5.287 d
KOI: K00082.05 Name: Kepler-102b Corr: 0.975



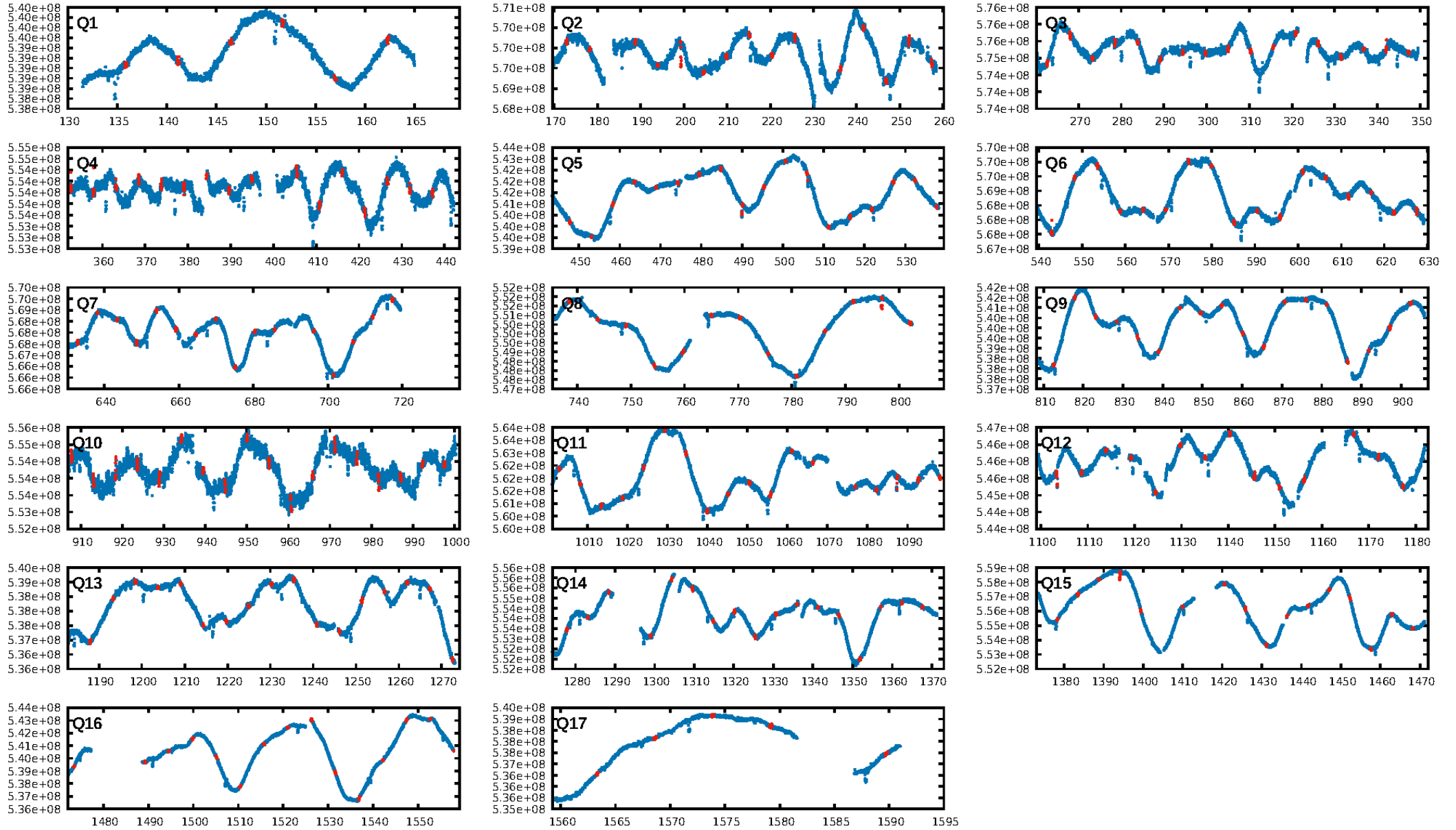
DV Fit Results:

Period = 5.28696 [0.00002] d
Epoch = 135.8484 [0.0029] BKJD
 $R_p/R^* = 0.0072$ [0.0026]
 $a/R^* = 6.81$ [9.46]
 $b = 0.90$ [0.31]
 $\text{Seff} = 93.17$ [10.99]
 $T_{\text{eq}} = 792$ [23] K
 $R_p = 0.58$ [0.21] R_e
 $a = 0.0552$ [0.0032] AU
 $A_g = 28.15$ [24.90] [1.09σ]
 $T_{\text{eff}} = 2821$ [623] K [3.25σ]

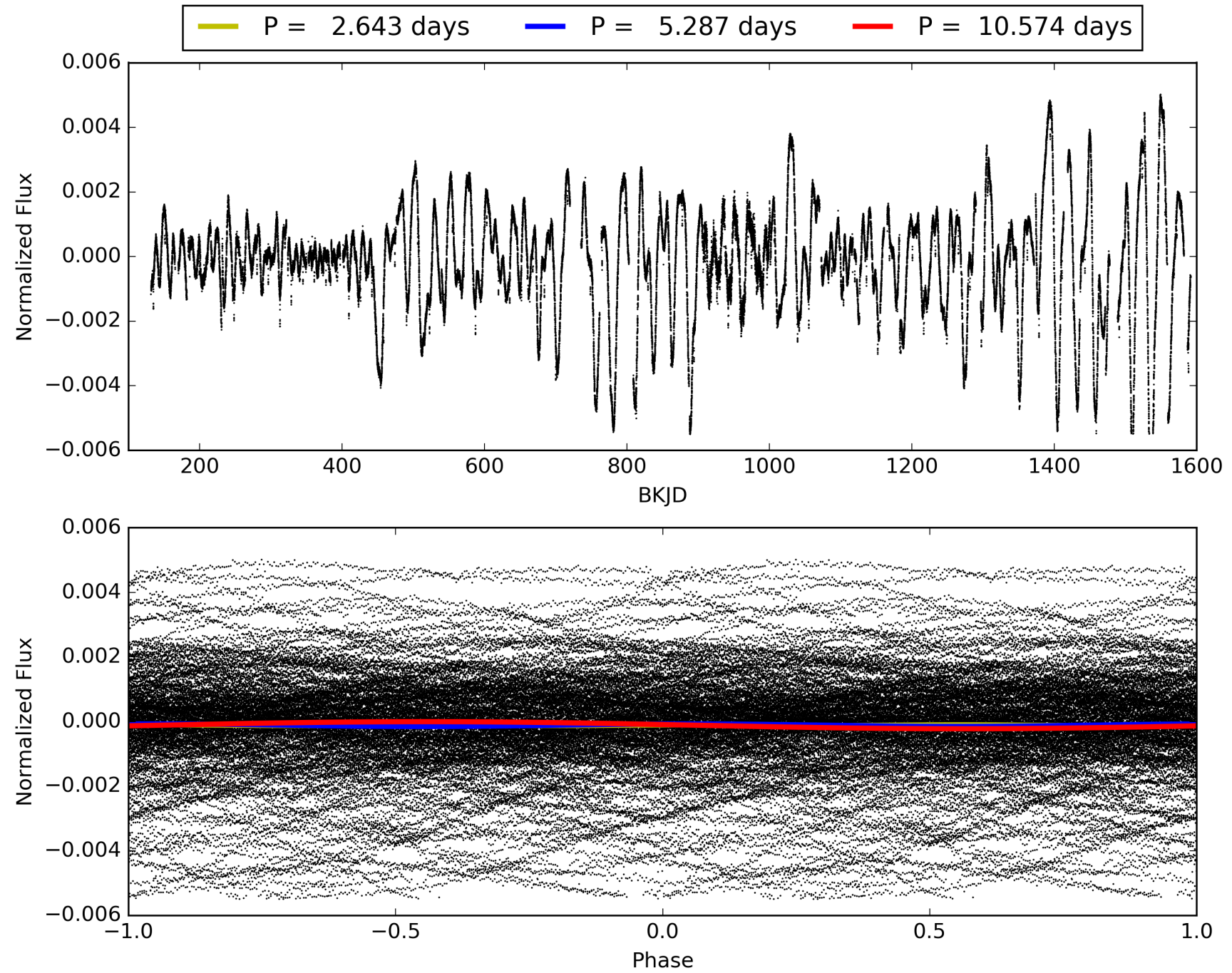
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [10.92σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.57e-40
RollingBand-fgt: 0.98 [213/217]
GhostDiagnostic-chr: 3.667
Centroid-sig: 7.6%
Centroid-so: 0.407 arcsec [0.49σ]
OotOffset-rm: 1.274 arcsec [3.02σ]
KicOffset-rm: 1.507 arcsec [3.30σ]
OotOffset-st: 3/4/3/5 [15]
KicOffset-st: 3/4/3/5 [15]
DiffImageQuality-fgm: 0.80 [12/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010187017-05, PDC Light Curves

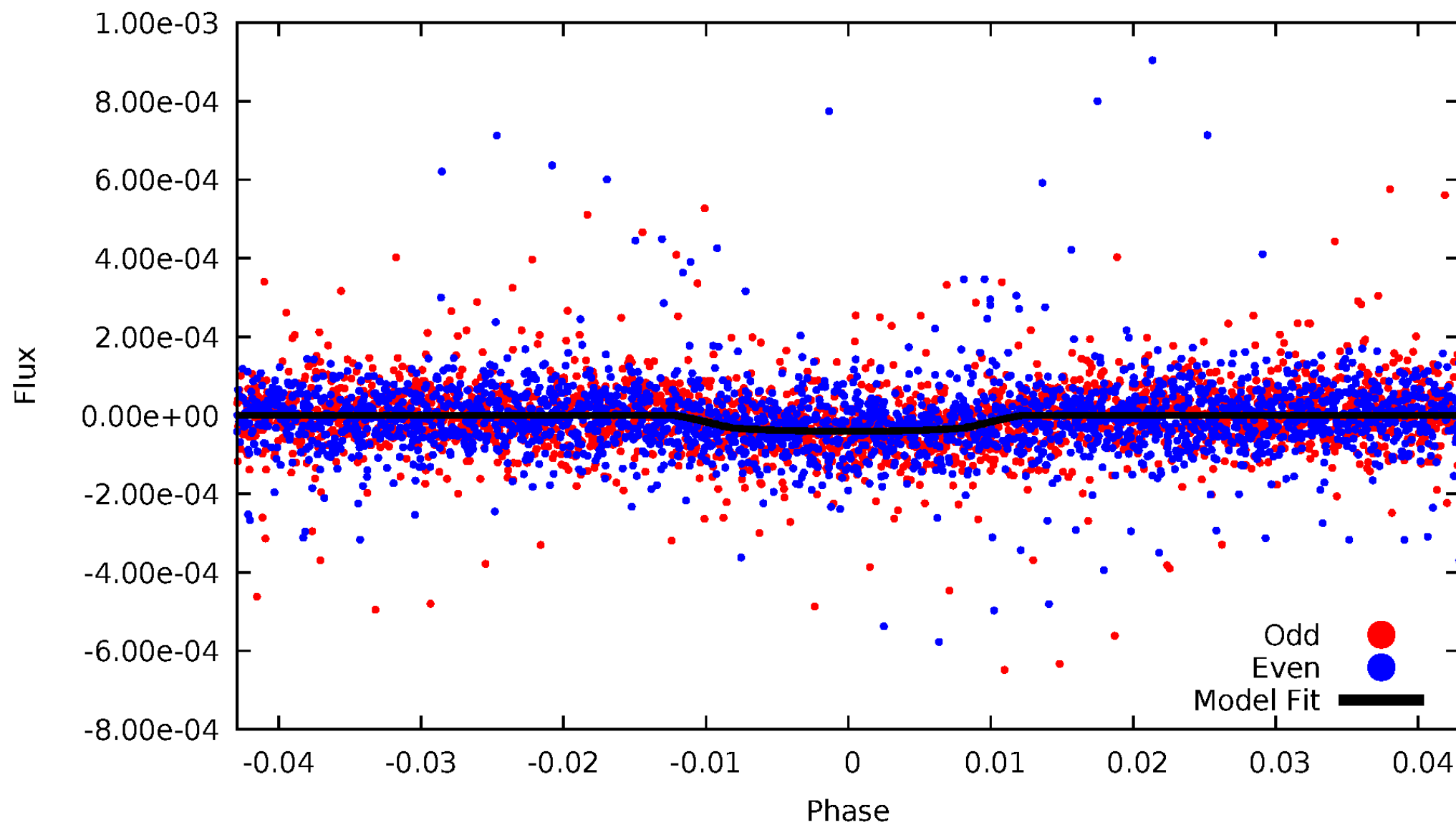


TCE 010187017-05



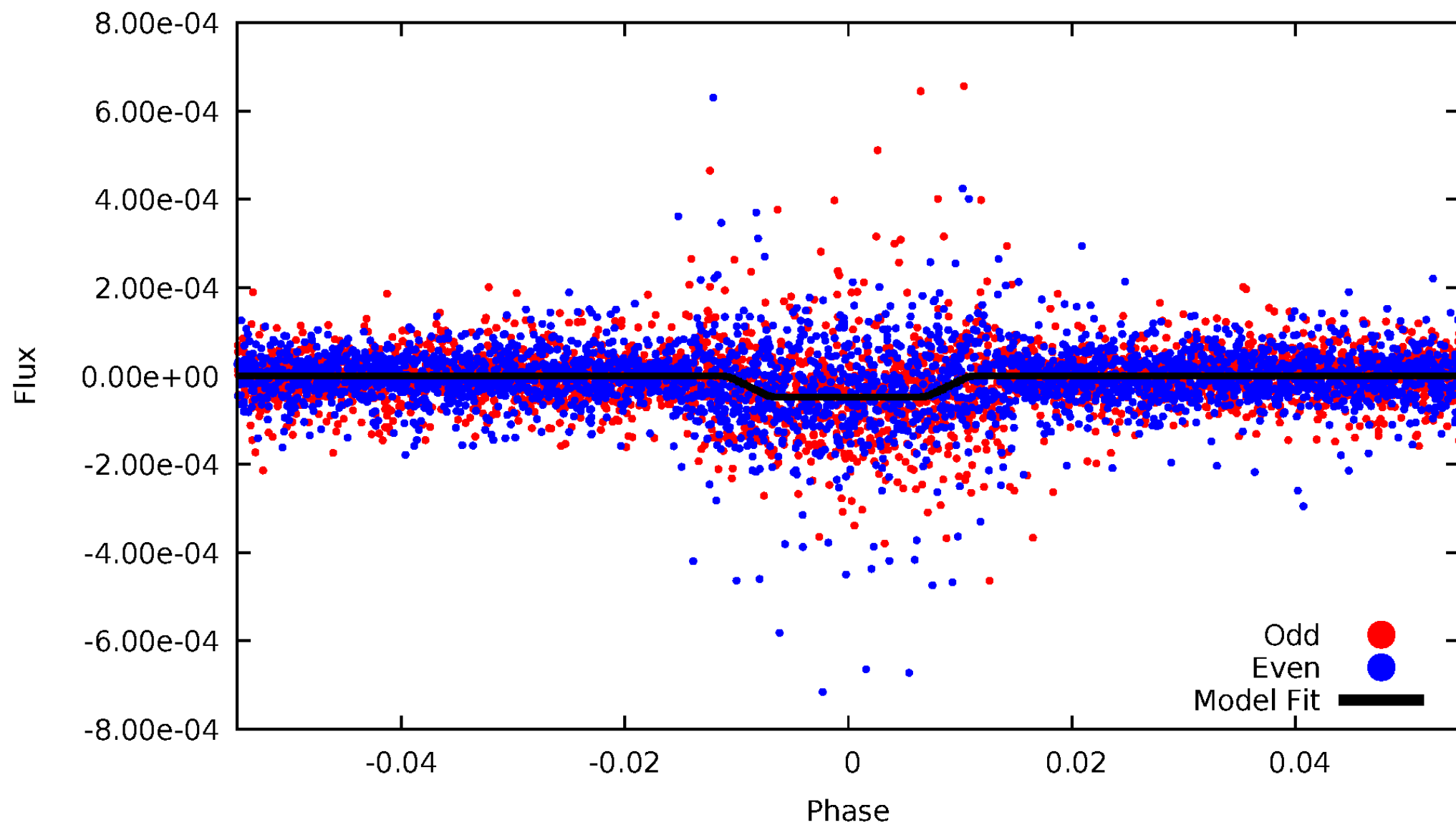
DV Odd/Even

TCE 010187017-05



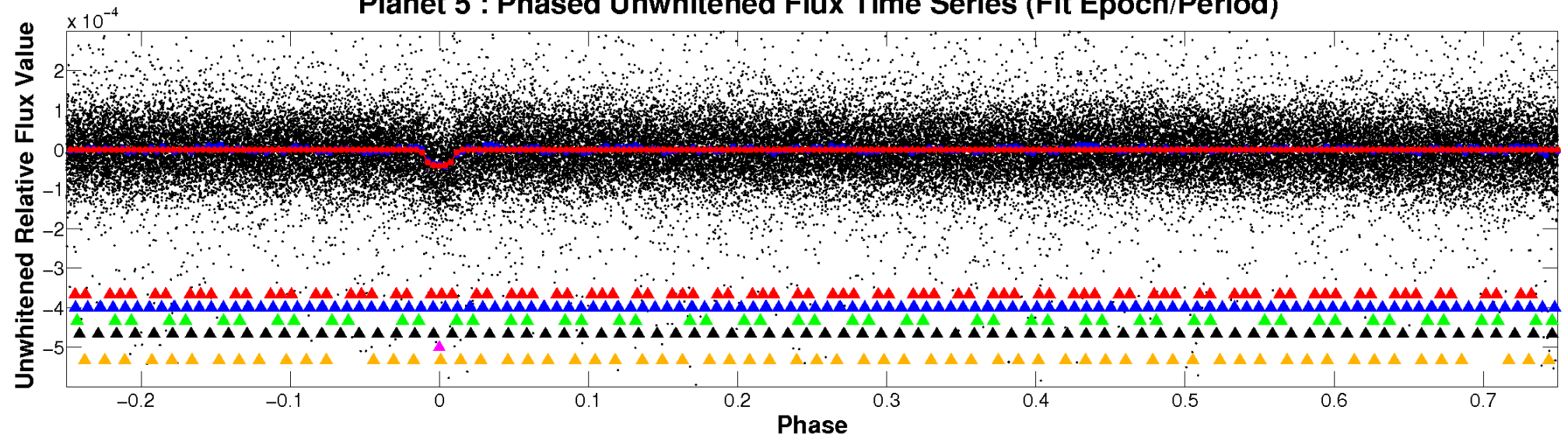
ALT Odd/Even

TCE 010187017-05

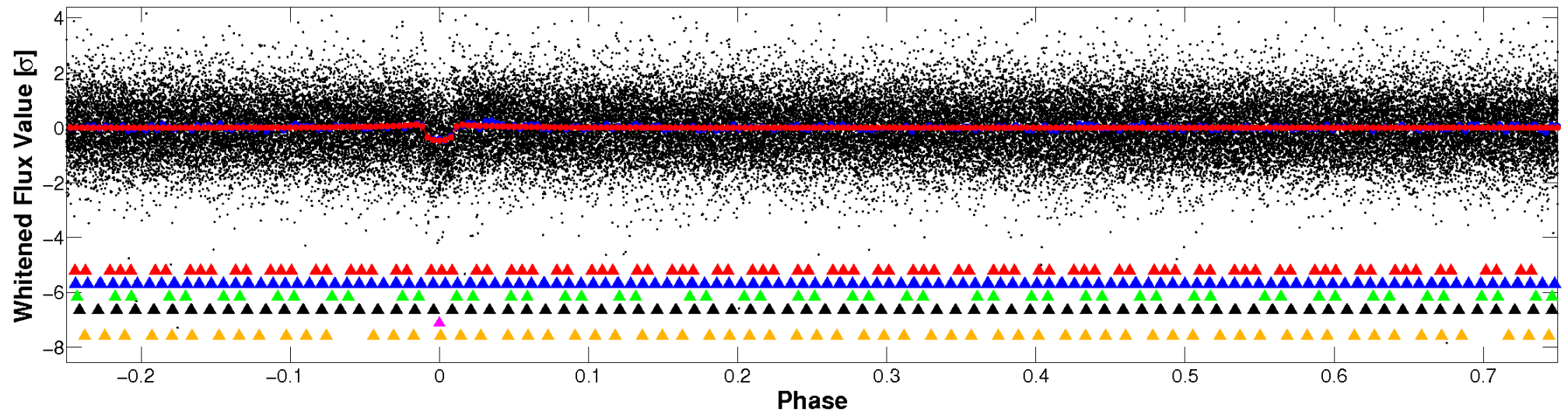


Non-Whitened Vs. Whitened Light Curve

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

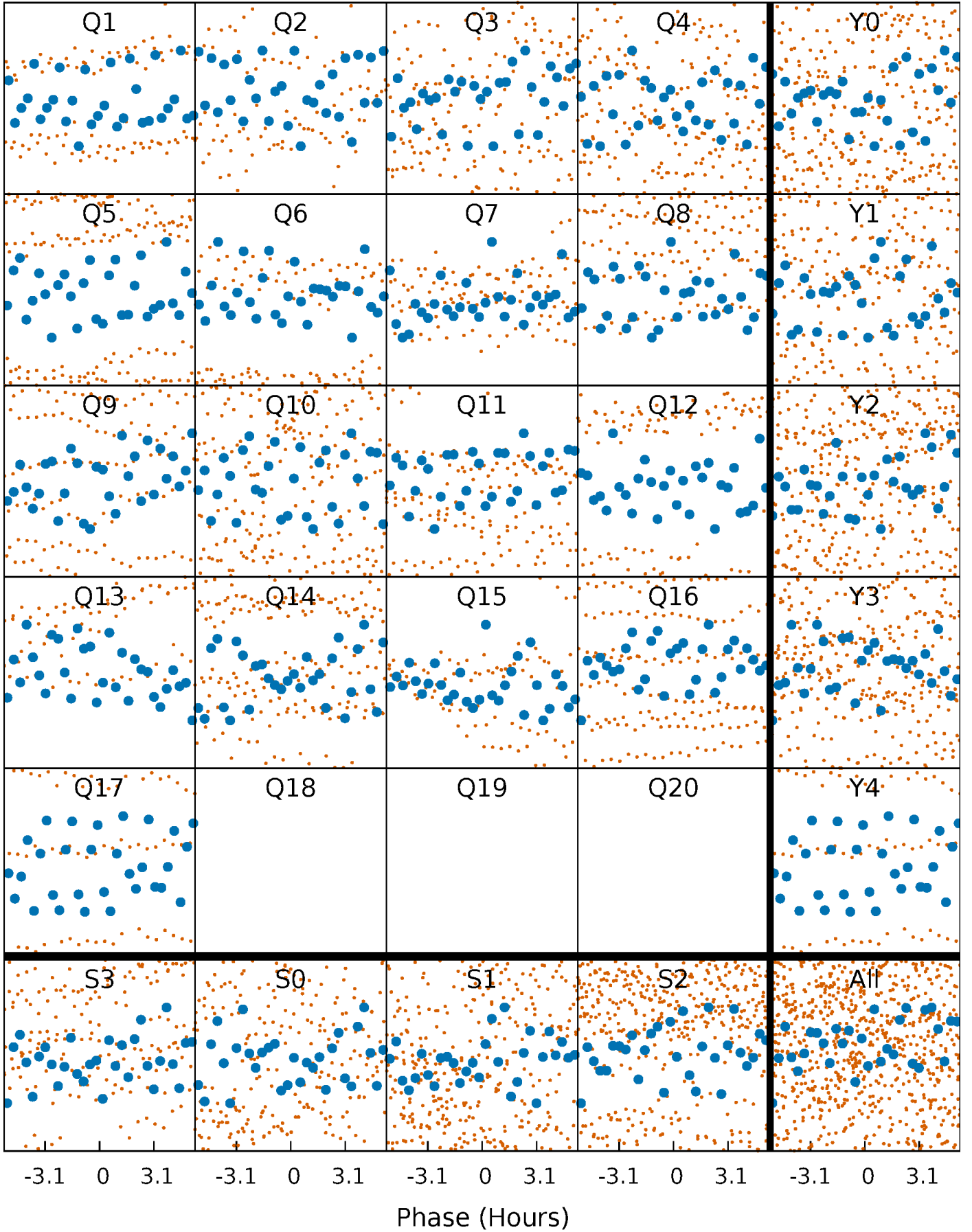


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



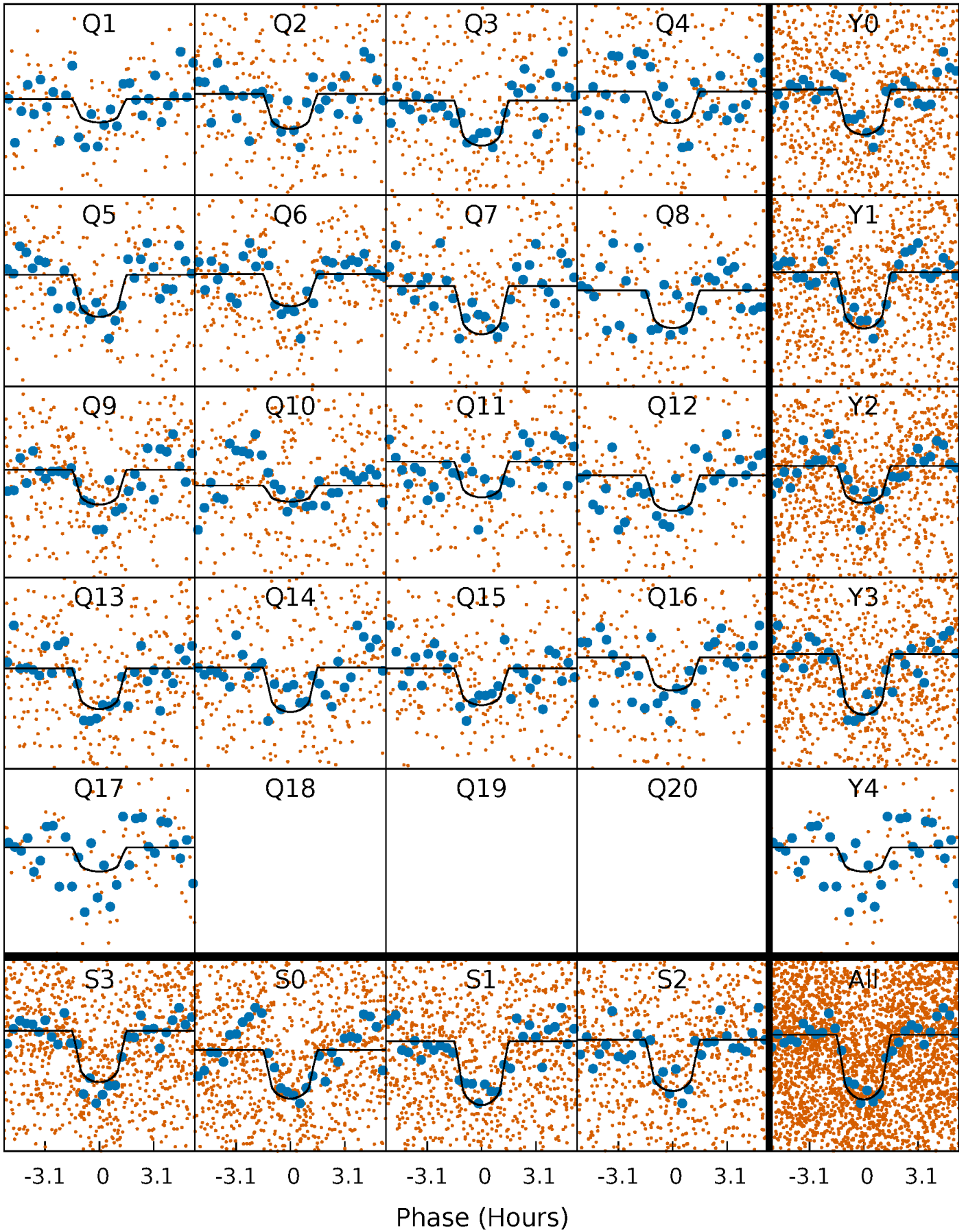
PDC Quarter-Phased Transit Curves

TCE 010187017-05 P= 5.286964 Days $T_0=135.848417$ (BKJD)



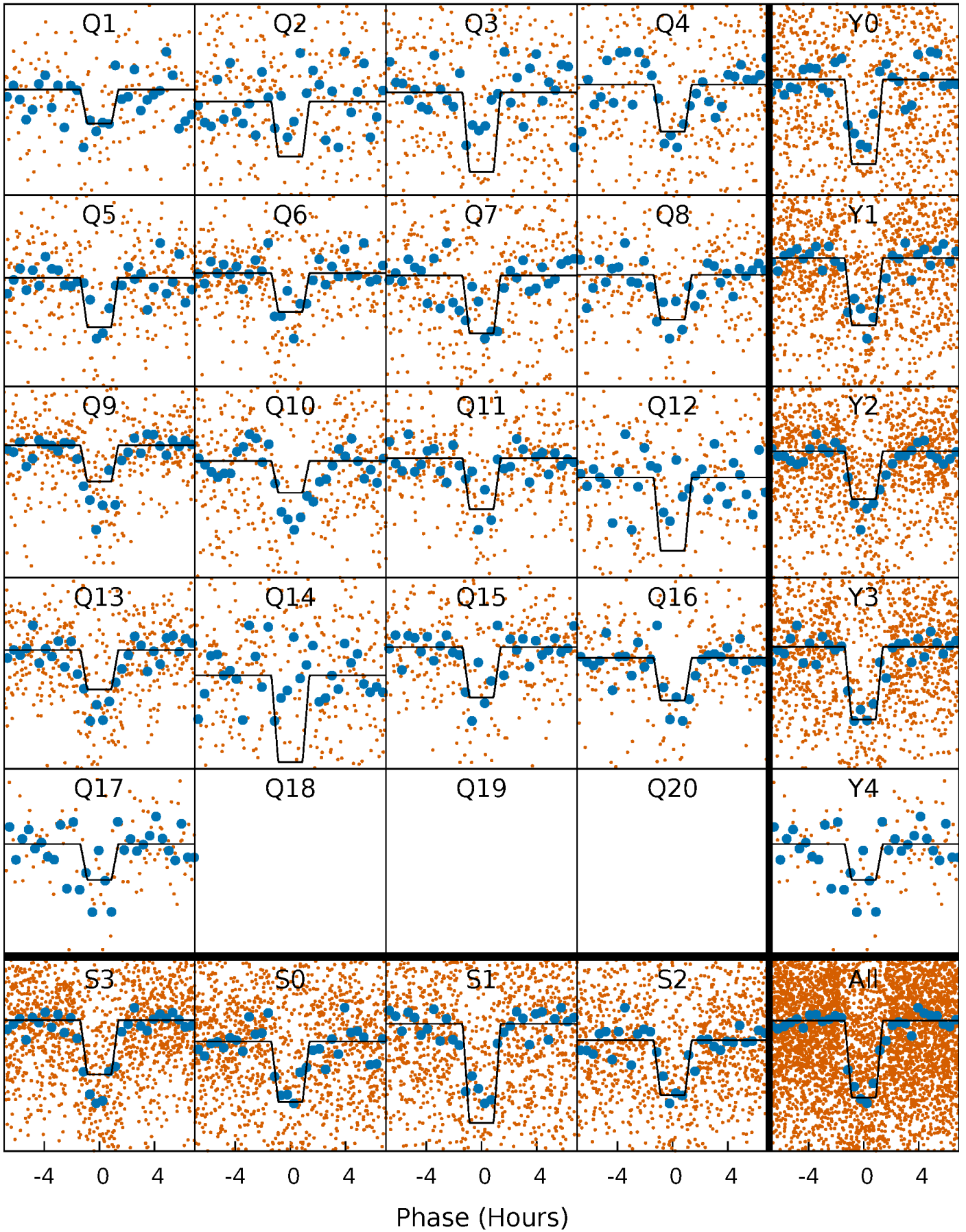
DV Quarter-Phased Transit Curves

TCE 010187017-05 $P = 5.286964$ Days $T_0 = 135.848417$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

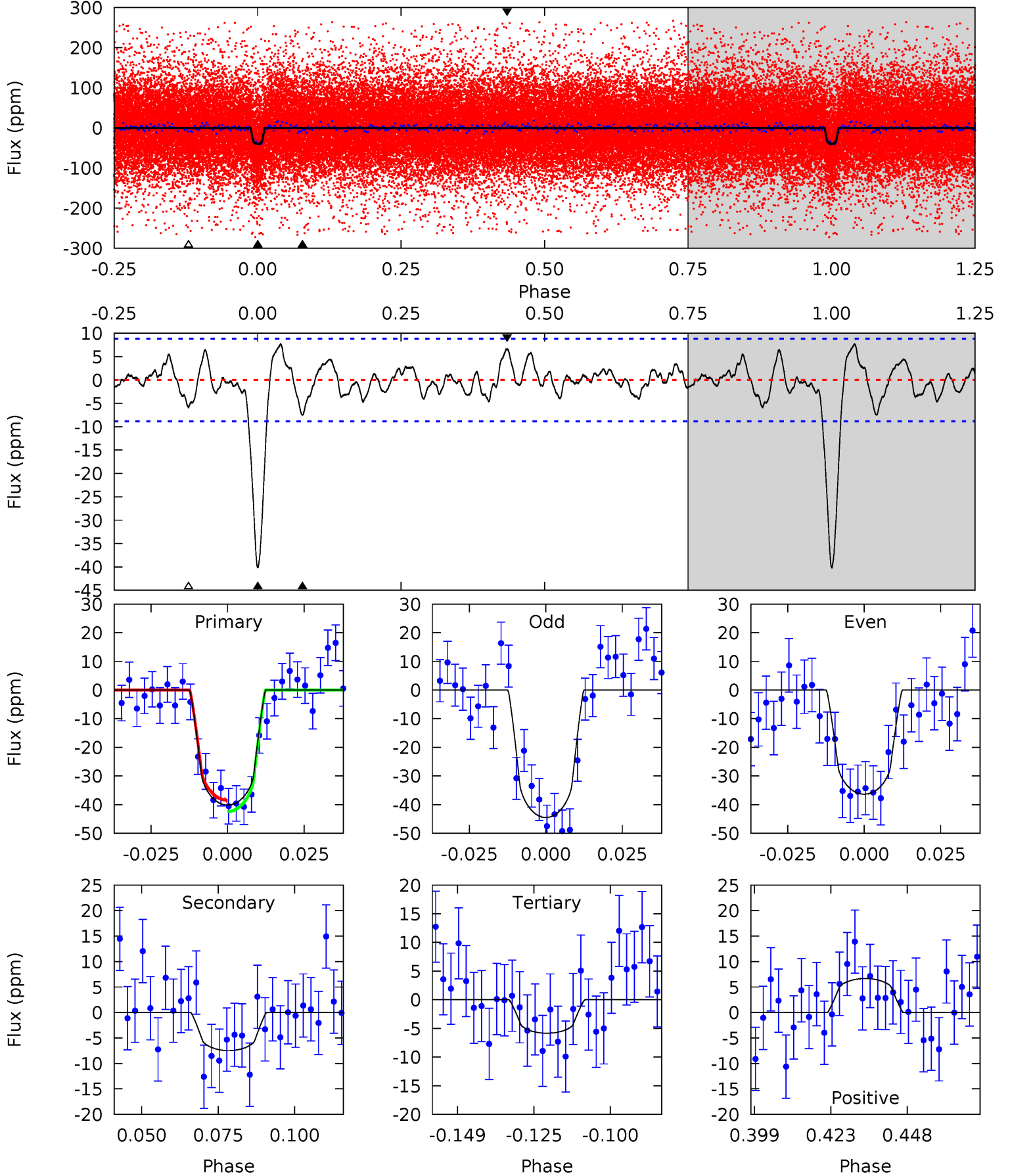
TCE 010187017-05 $P = 5.286873$ Days $T_0 = 135.864321$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-05, P = 5.286964 Days, E = 130.561453 Days

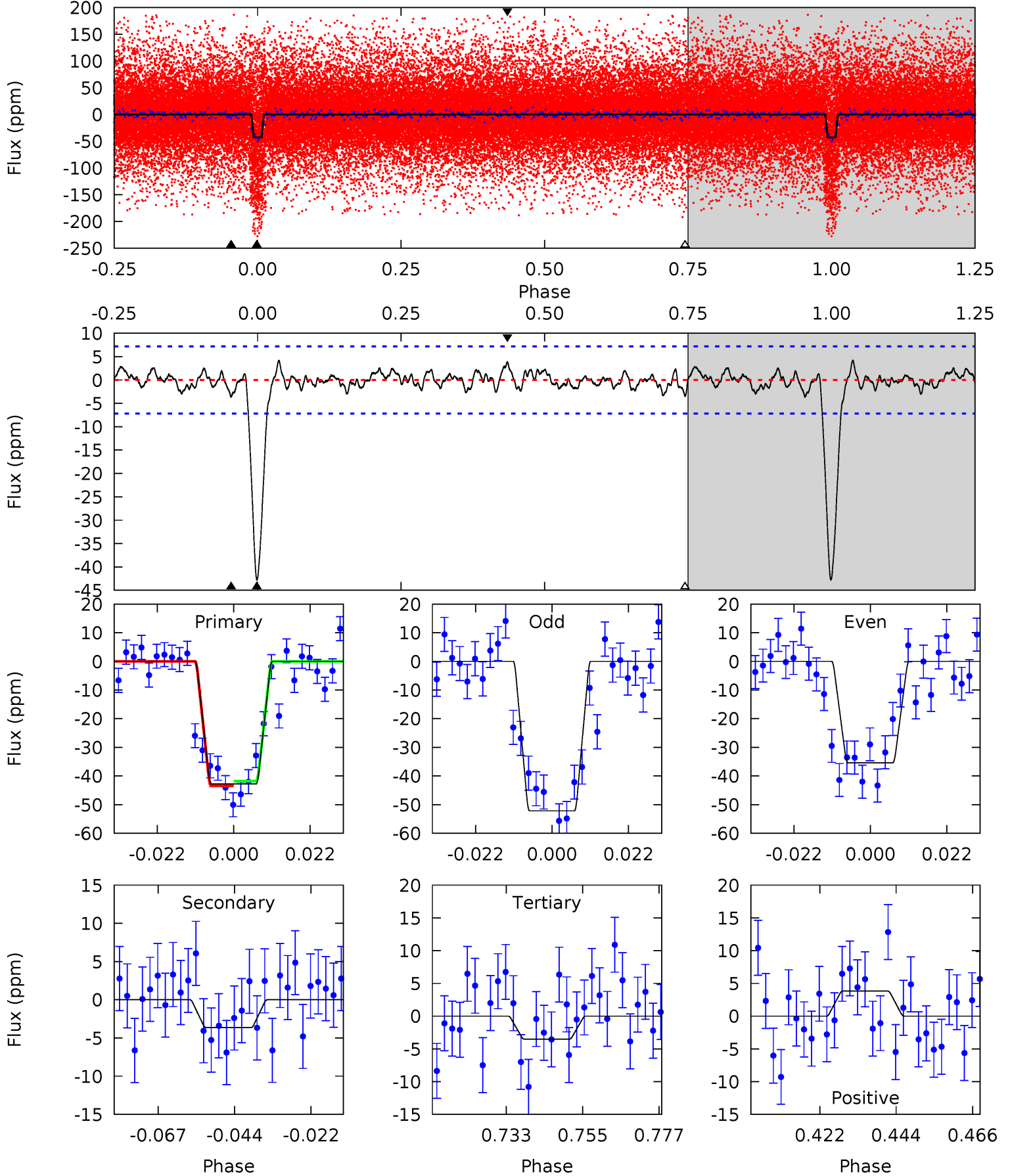
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	4.11	3.21	3.66	4.85	2.24	1.40	18.9	18.4	0.90	0.45	2.25	0.94	0.16	1.09



Alt Model-Shift Uniqueness Test

010187017-05, P = 5.286873 Days, E = 130.577448 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.0	2.47	2.39	2.60	4.87	2.29	0.92	26.6	26.4	0.08	-0.14	5.72	1.13	0.09	0.57



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-05 / KOI 0082.05

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-7 ± 2	$0.59^{+0.22}_{-0.21}$	1114^{+28}_{-25}	3431^{+590}_{-333}	35^{+56}_{-17}
Alt.	-4 ± 1	$0.56^{+0.22}_{-0.19}$	1113^{+27}_{-24}	3118^{+478}_{-325}	18^{+29}_{-10}

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 $A_{obs} \gg 1.0$

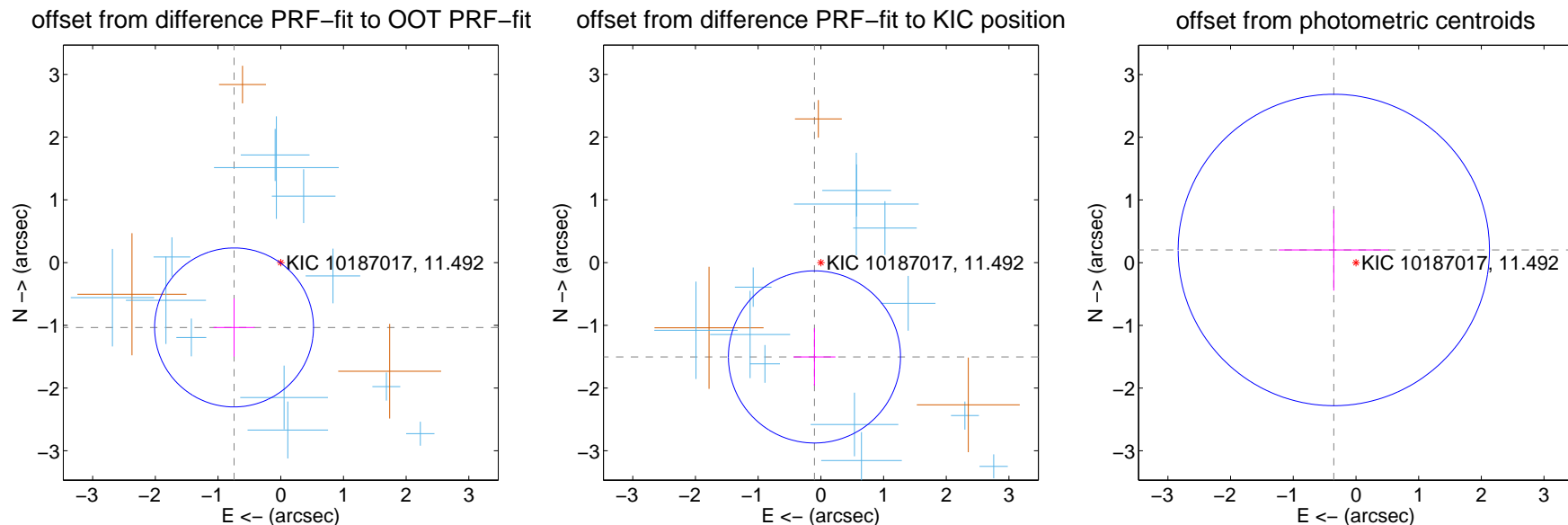
DV Centroid Data

Supplemental centroid analysis for 010187017-05. **Kepler magnitude: 11.49.** Transit SNR 14.54

There are 12 quarters with good PRF difference image offsets

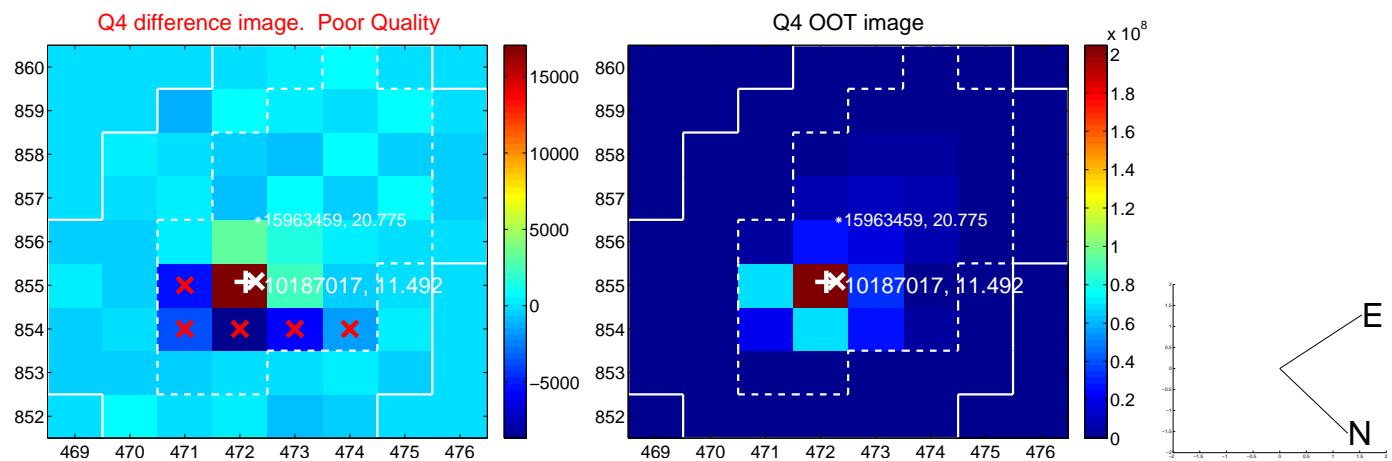
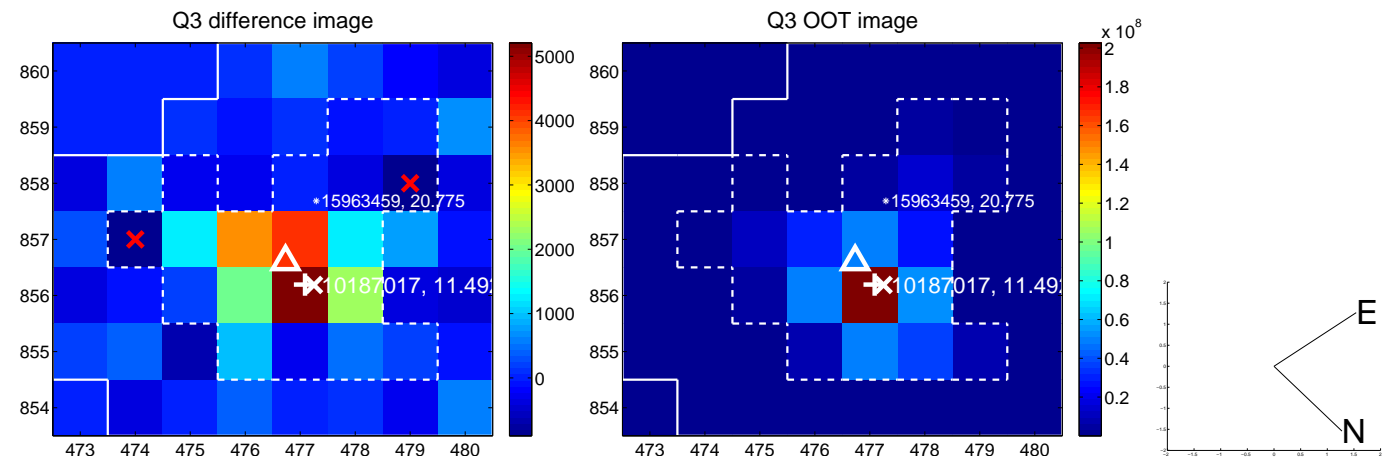
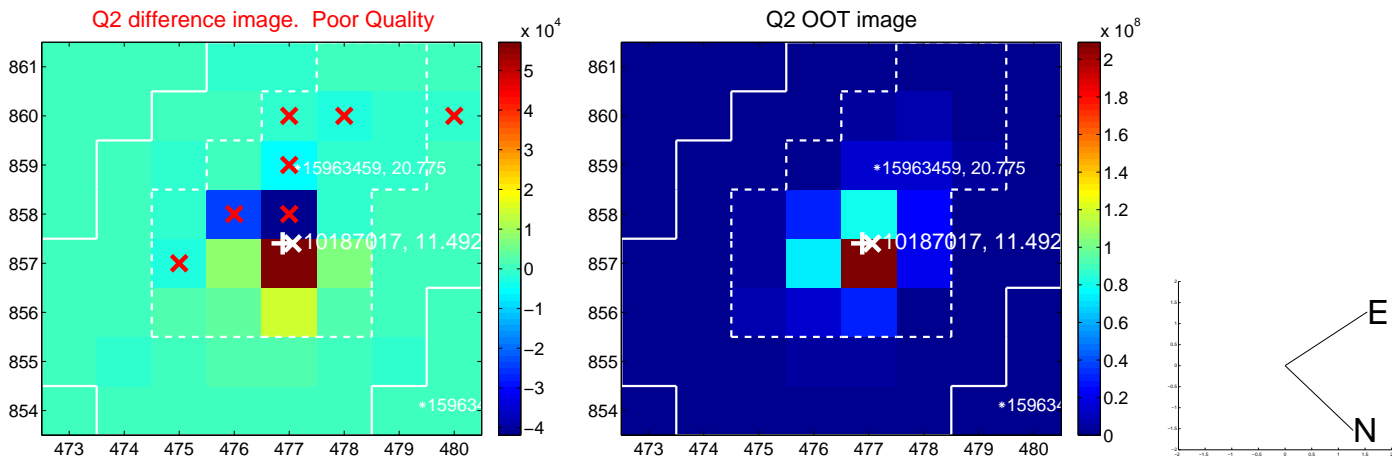
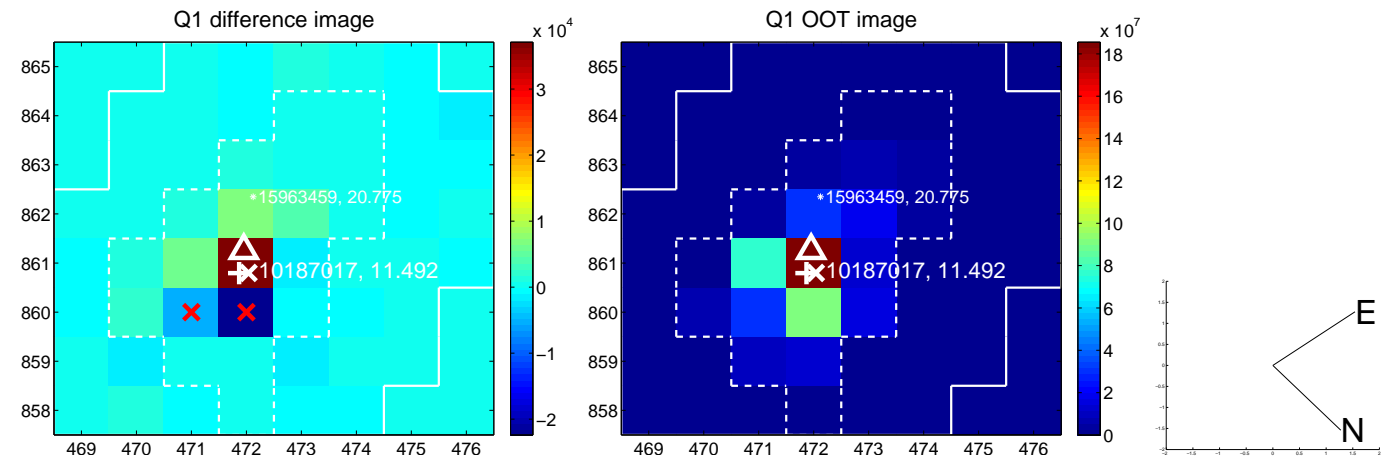
The direct PRF centroid is offset from the target star catalog position by about 0.89 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.274 ± 0.422	3.02	0.745 ± 0.328	-1.034 ± 0.464
PRF-fit source offset from KIC position	1.507 ± 0.457	3.30	0.102 ± 0.335	-1.504 ± 0.458
photometric centroid source offset	0.41 ± 0.83	0.49	0.35 ± 0.88	0.20 ± 0.65

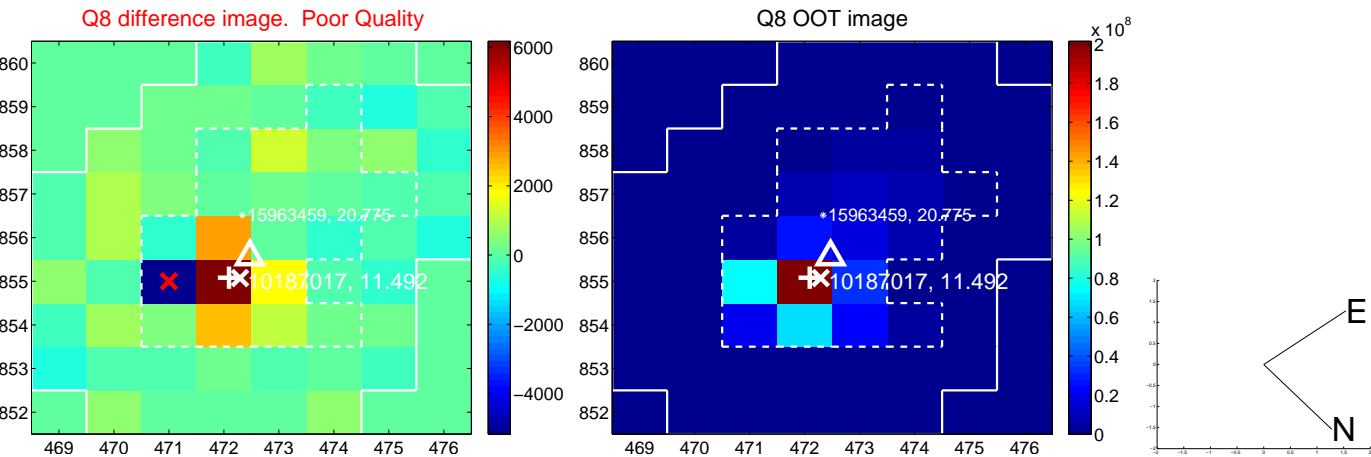
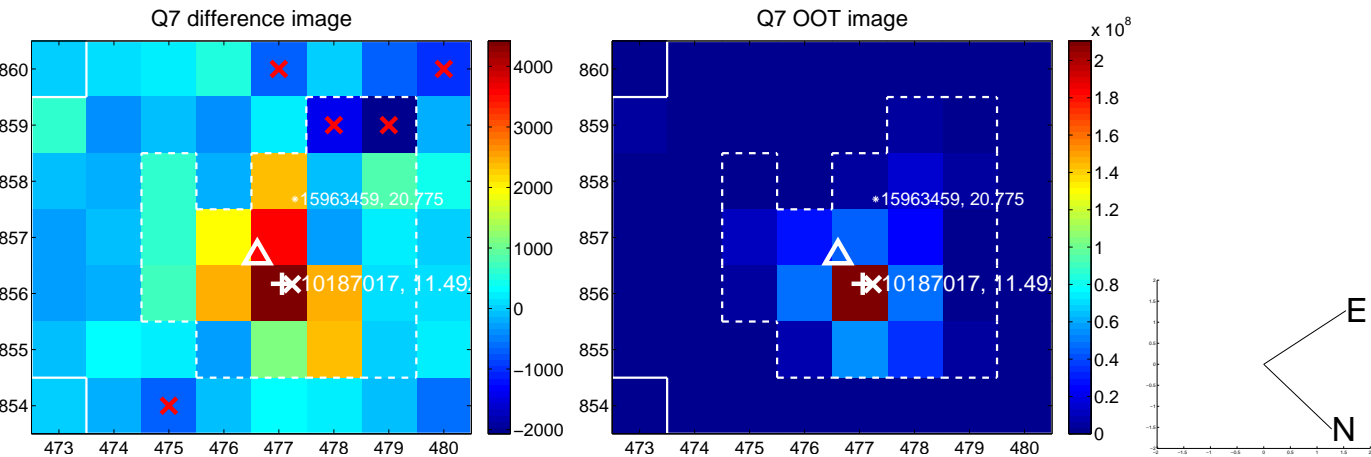
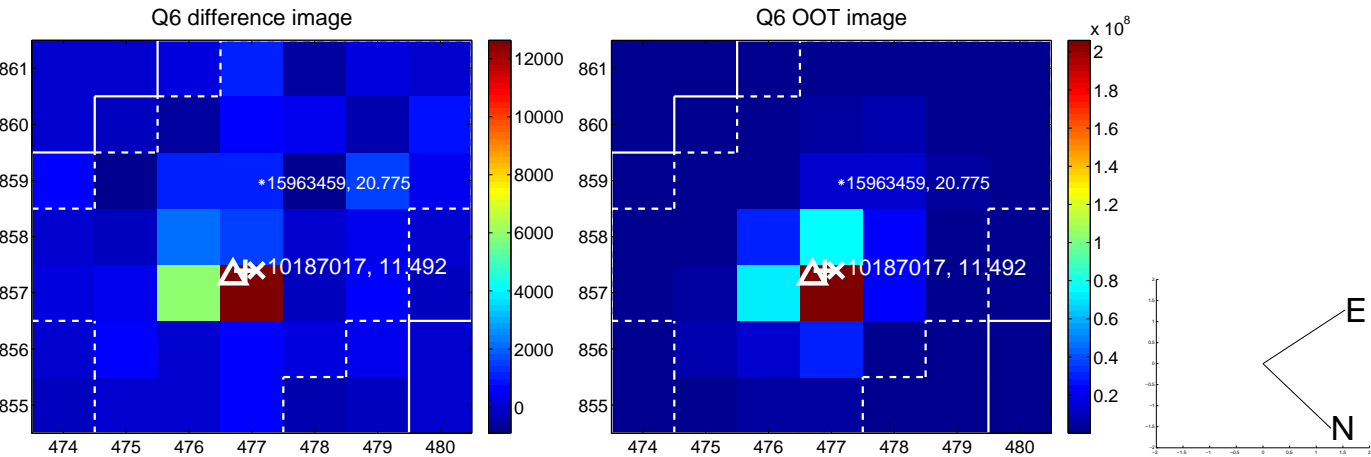
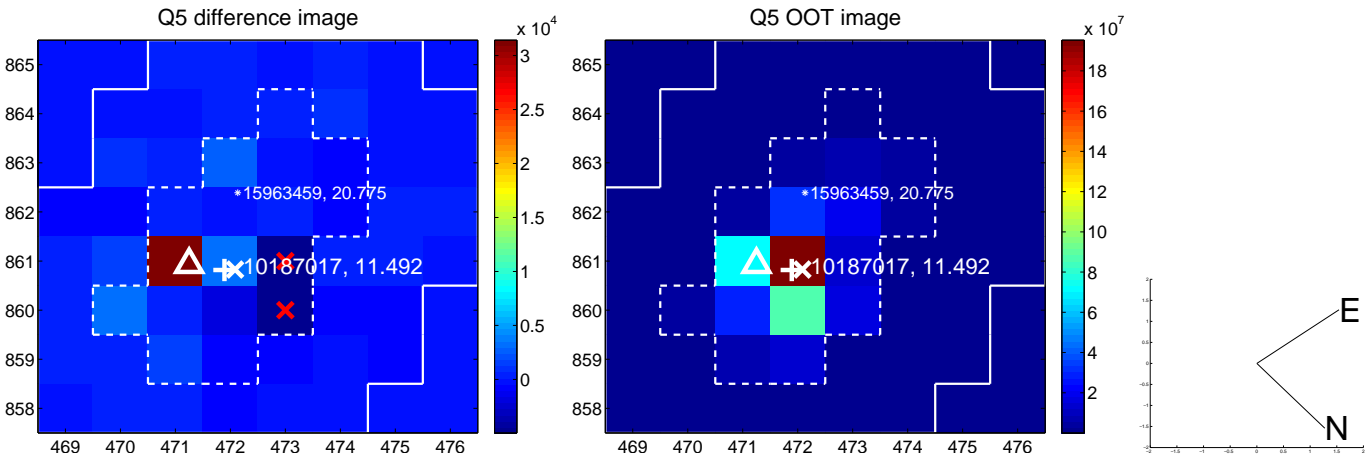


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

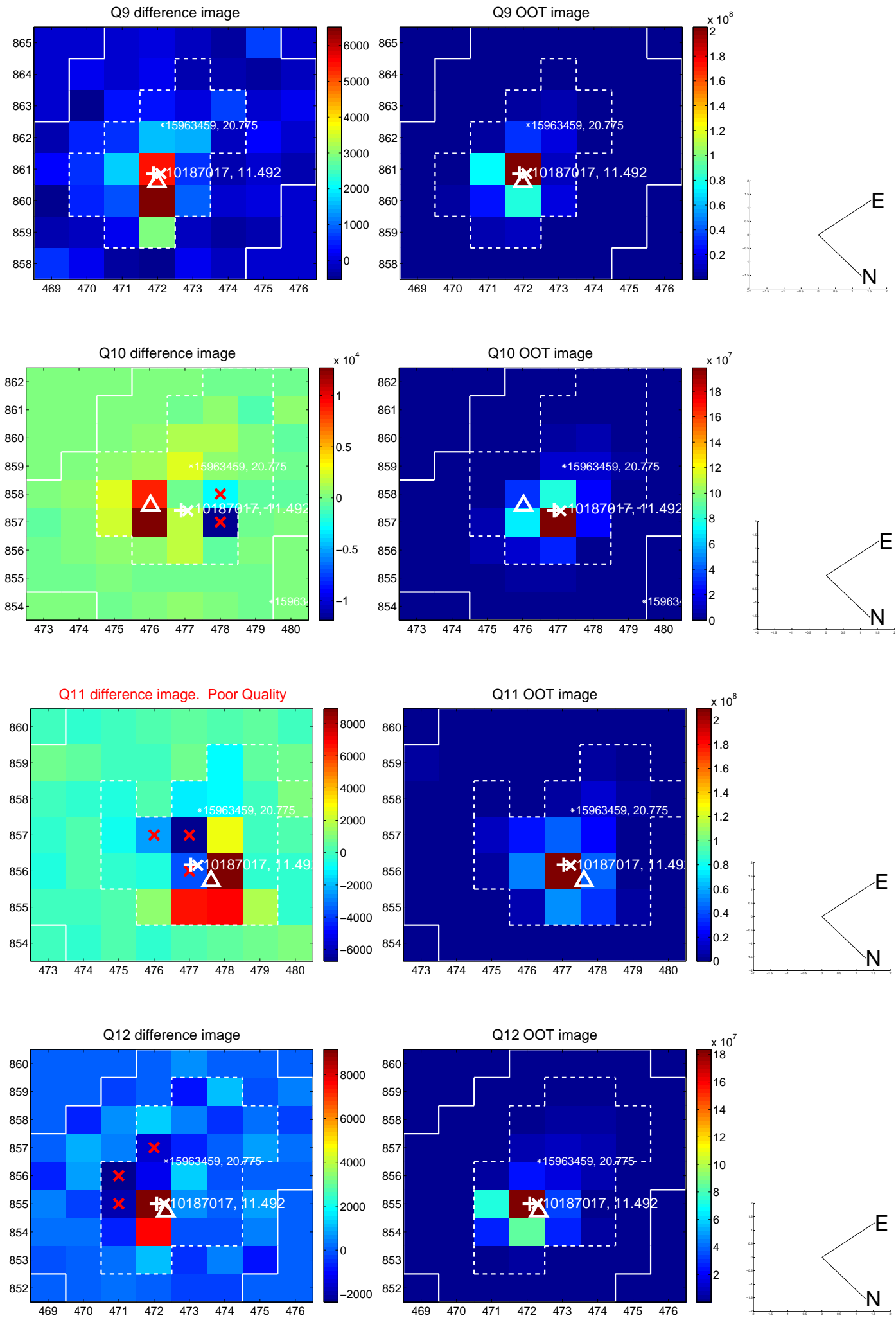
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



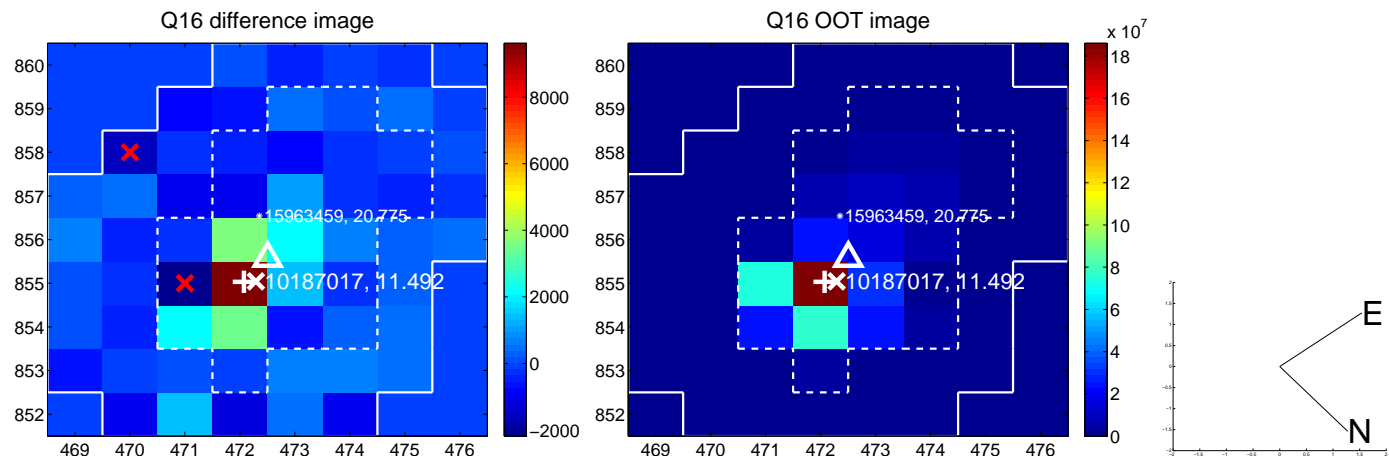
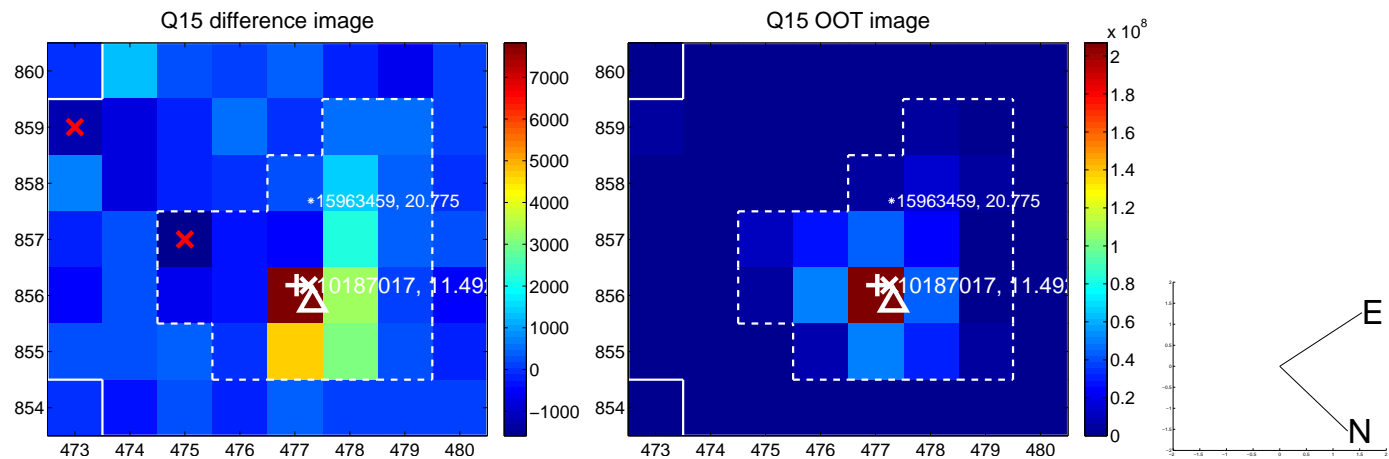
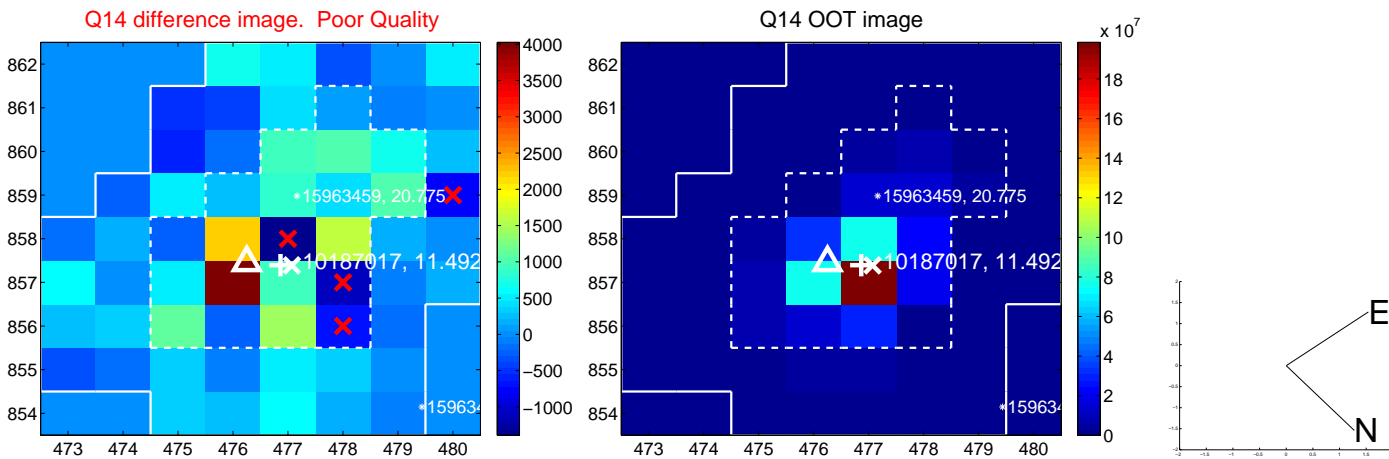
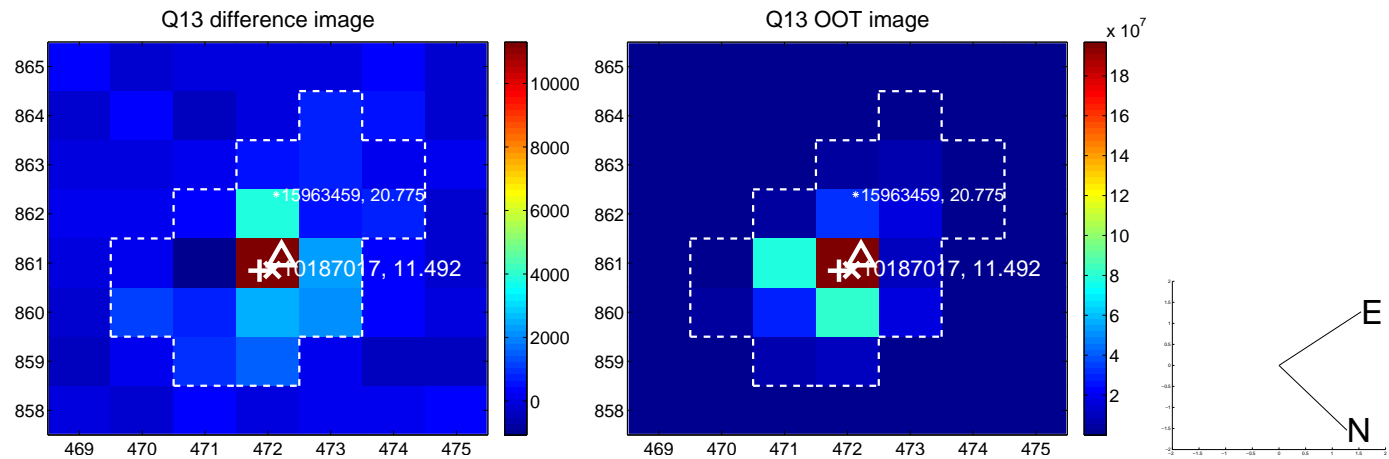
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



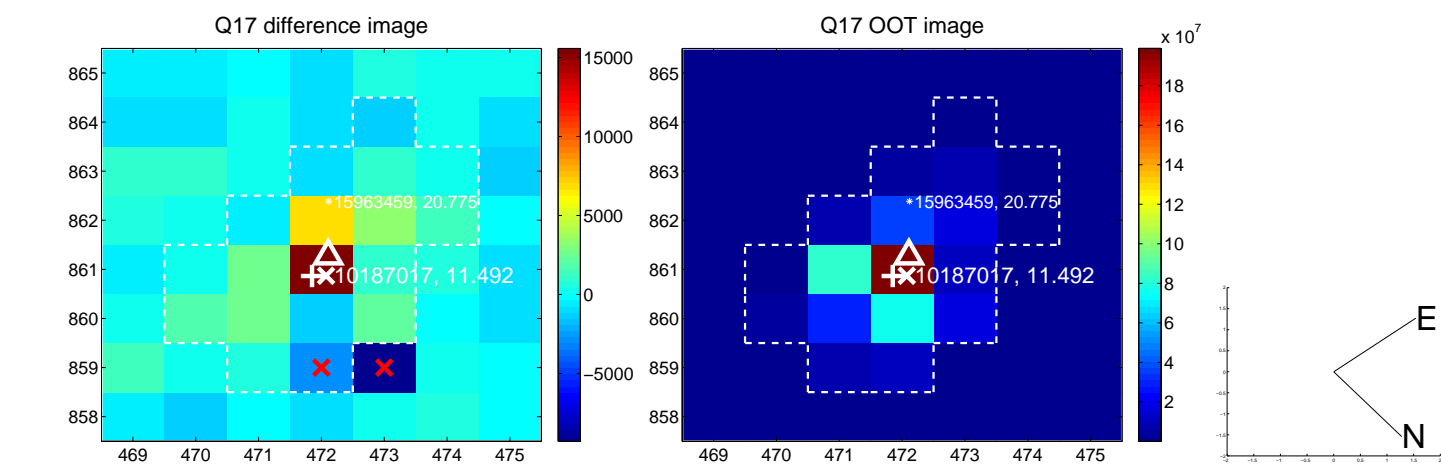
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



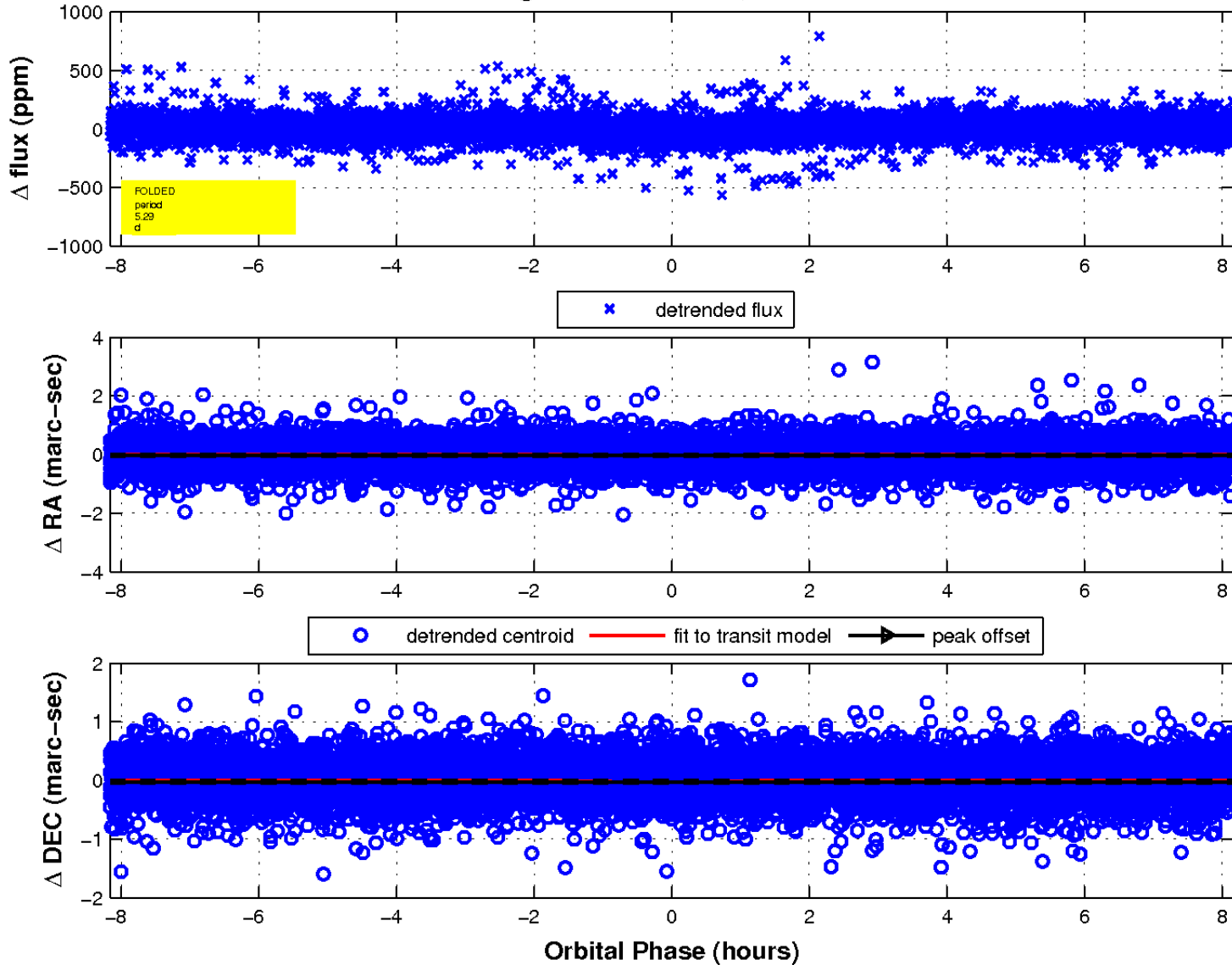
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



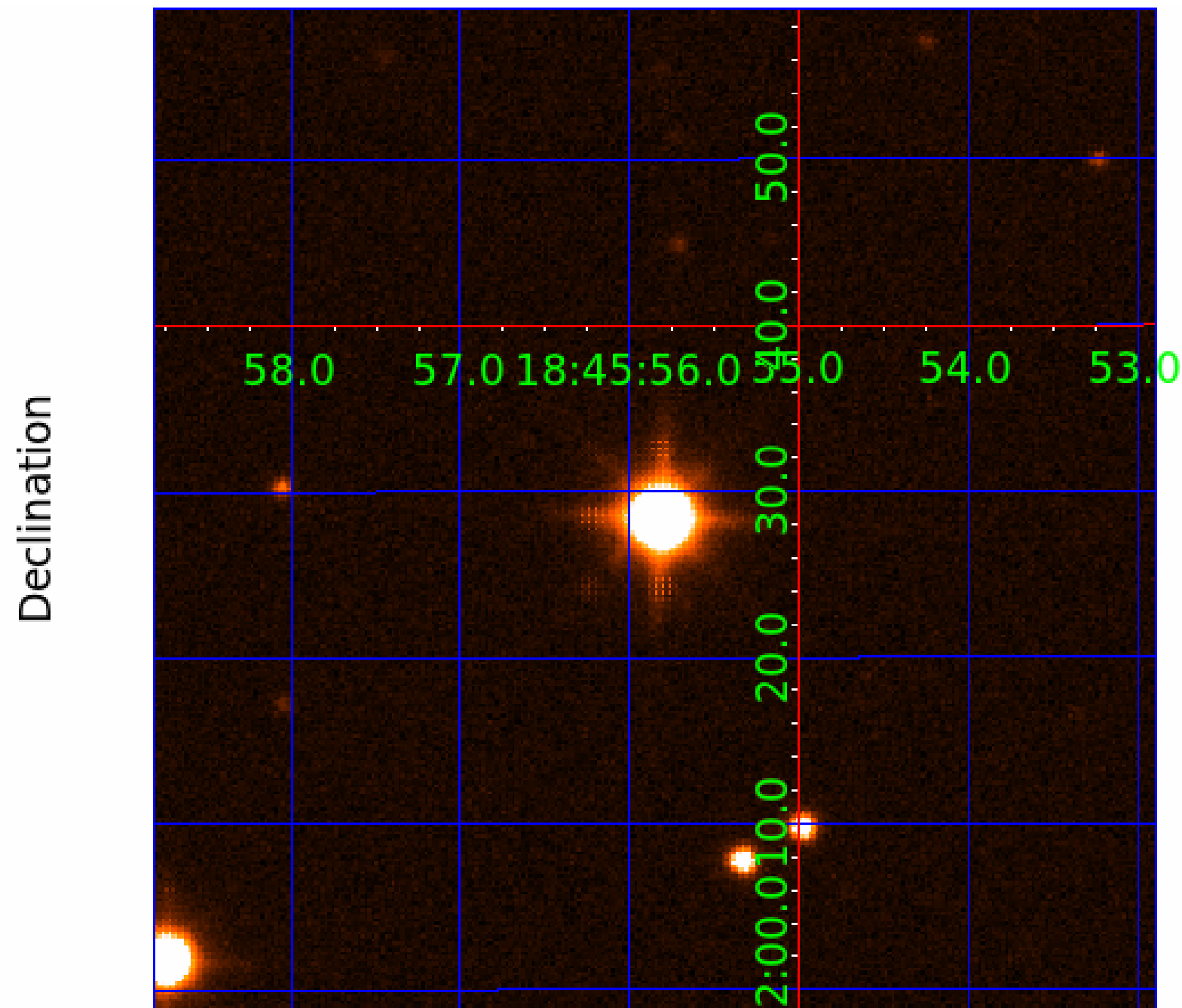
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 5 of 6



UKIRT Image



KIC 010187017

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})
010187017-01	OBS	0082.01	16.145674	134.754594	944.5	3.817	210.3	204.0	0.74	4900	2.62	21.03
010187017-02	OBS	0082.02	10.311735	134.080910	270.6	3.296	65.3	71.1	0.74	4900	1.49	38.23
010187017-03	OBS	0082.03	27.453761	145.022821	139.7	3.841	21.4	23.6	0.74	4900	1.05	10.36
010187017-04	OBS	0082.04	7.071332	132.918441	64.5	2.825	19.8	20.9	0.74	4900	0.73	63.23
010187017-05	OBS	0082.05	5.286964	135.848417	41.0	2.722	13.9	14.5	0.74	4900	0.58	93.17
010187017-06	OBS	0082.06	22.410042	147.380025	58.3	2.091	8.5	9.2	0.74	4900	0.59	13.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010187017-01	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-02	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-03	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-04	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-05	OBS	PC	1.00	0	0	0	0	CENT_SATURATED
010187017-06	OBS	PC	1.00	0	0	0	0	CENT_SATURATED

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

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

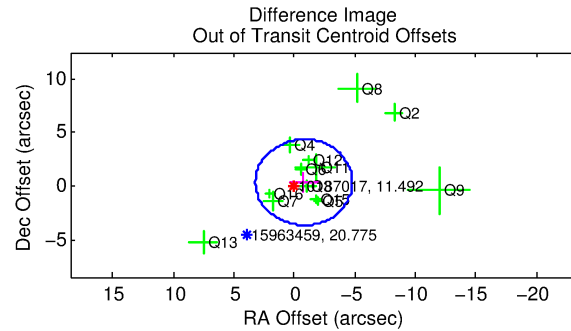
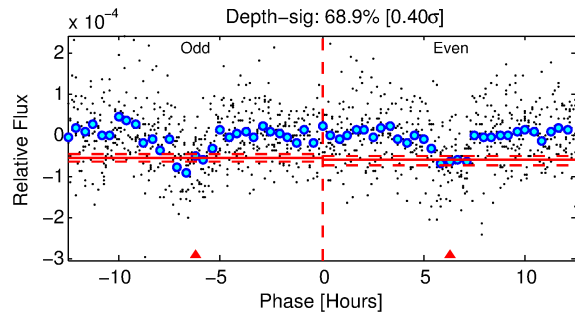
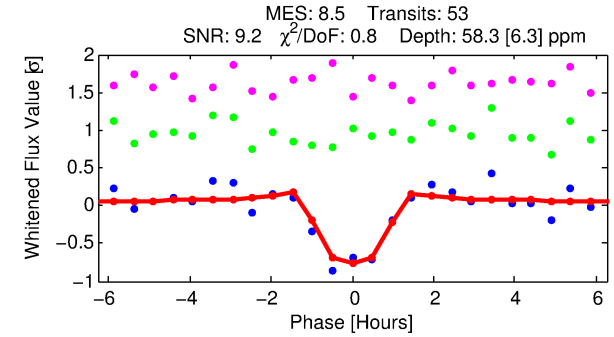
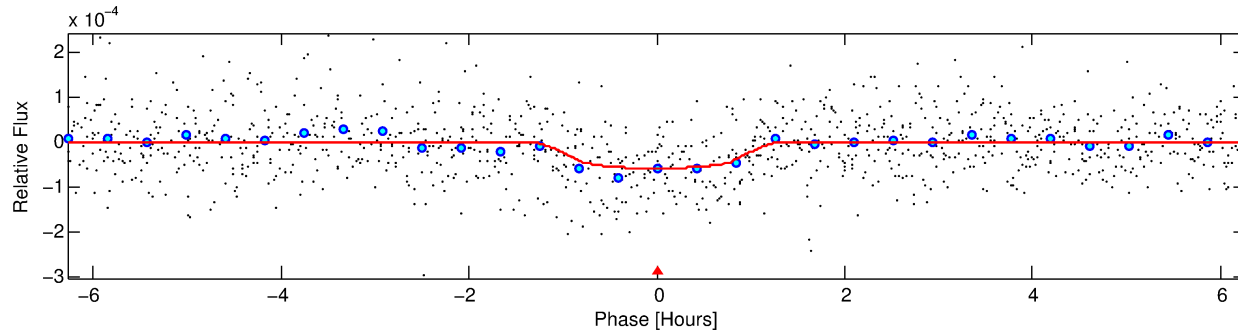
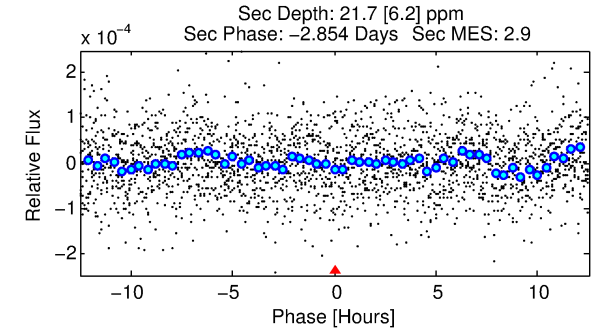
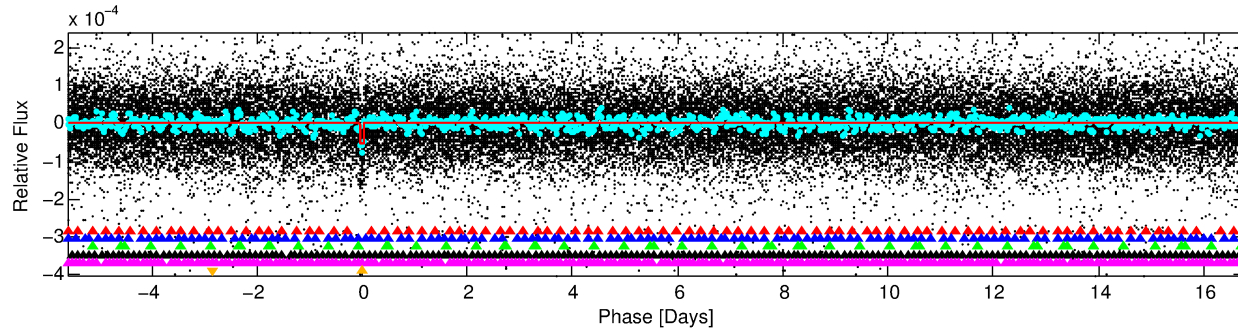
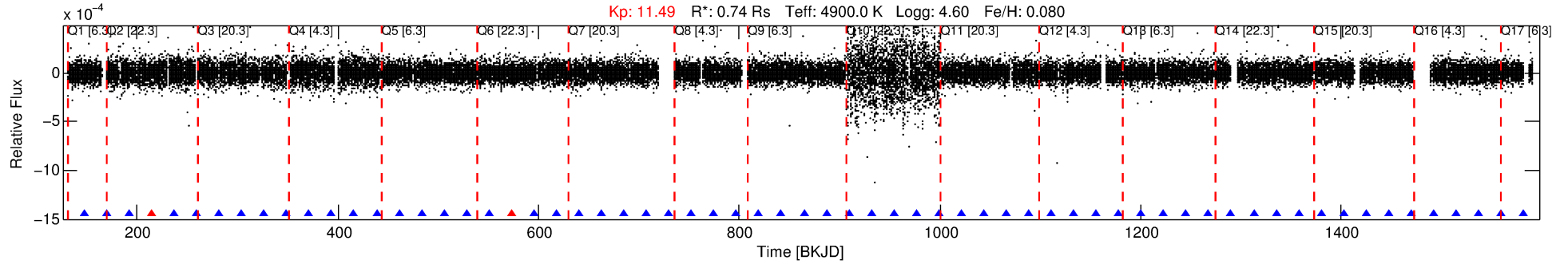
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010187017-06

No Significant Match Found

DV One-Page Summary

KIC: 10187017 Candidate: 6 of 6 Period: 22.410 d
KOI: K00082 Name: Kepler-102 Corr: No Ephemeris Match



DV Fit Results:

Period = 22.41004 [0.00015] d
Epoch = 147.3800 [0.0051] BKJD
Rp/R* = 0.0073 [0.0034]
a/R* = 63.68 [97.53]
b = 0.64 [1.45]
Seff = 13.58 [1.60]
Teq = 490 [14] K
Rp = 0.59 [0.28] Re
a = 0.1445 [0.0083] AU
Ag = 710.99 [699.16] [1.02σ]
Teffp = 3908 [960] K [3.56σ]

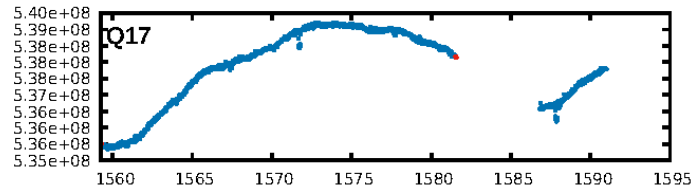
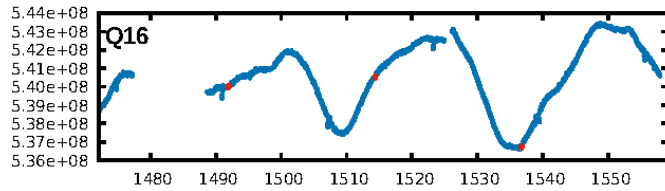
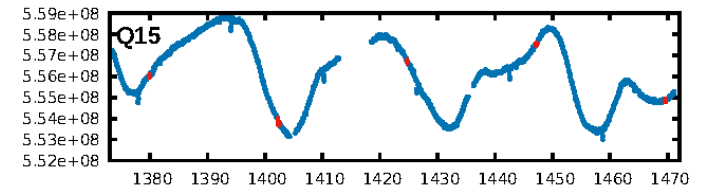
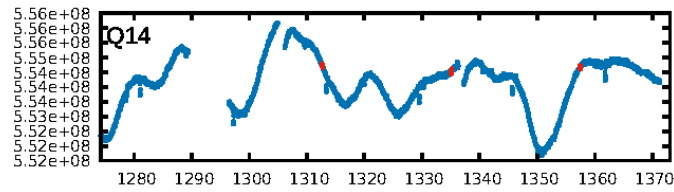
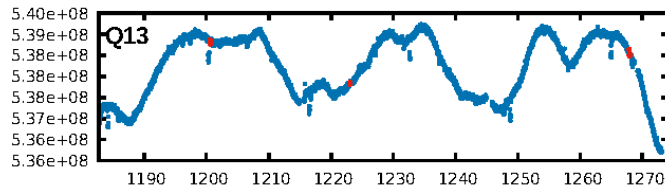
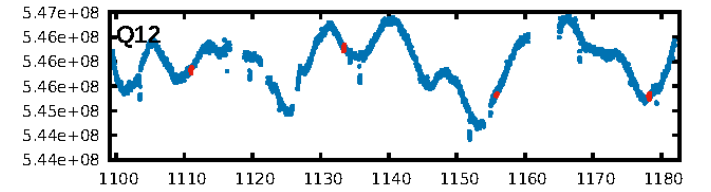
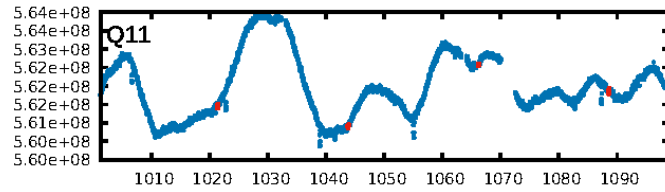
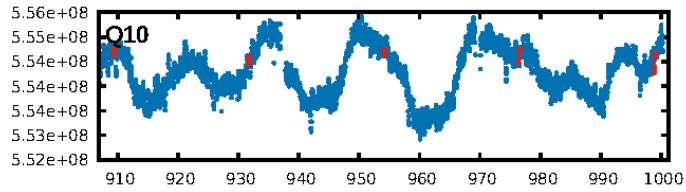
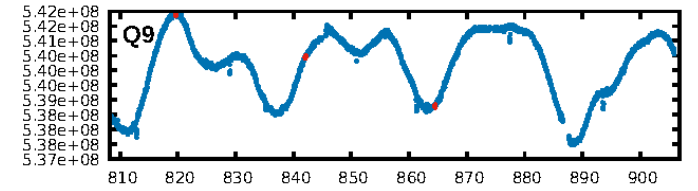
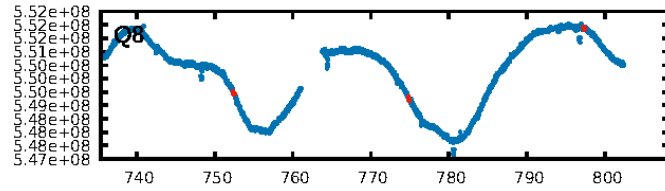
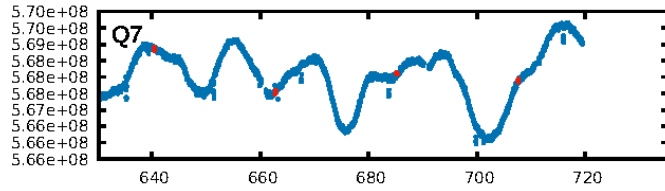
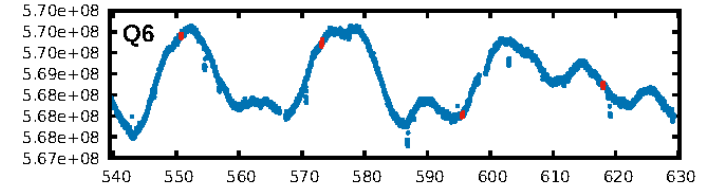
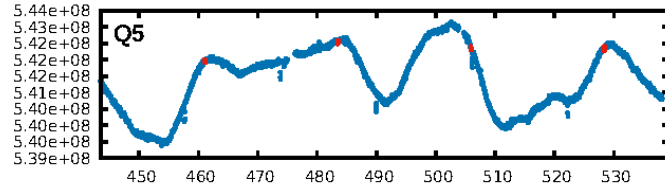
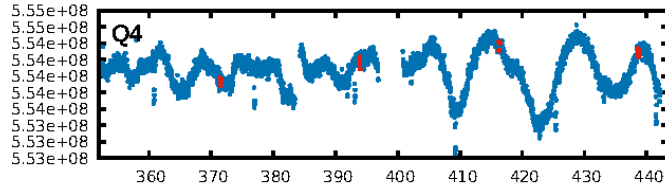
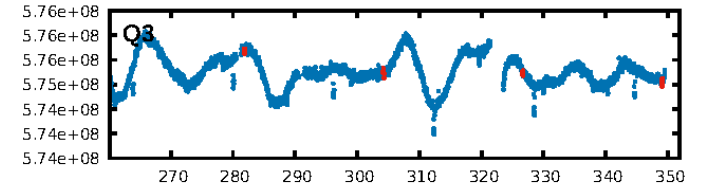
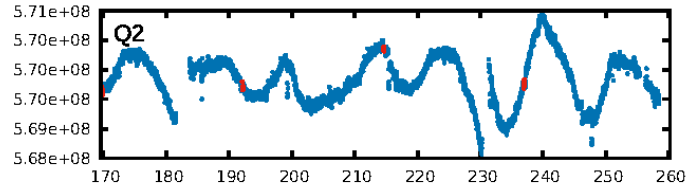
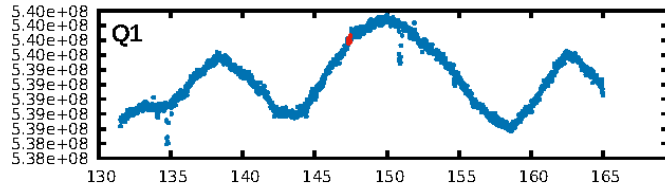
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.55σ]
LongPeriod-sig: 100.0% [27.68σ]
ModelChiSquare2-sig: 99.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.55e-16
RollingBand-fgt: 0.96 [48/50]
GhostDiagnostic-chr: 3.127
Centroid-sig: 51.9%
Centroid-so: 0.187 arcsec [0.15σ]
OotOffset-rm: 0.859 arcsec [0.64σ]
OotOffset-st: 2/4/4/3 [13]
KicOffset-rm: 1.399 arcsec [1.09σ]
KicOffset-st: 2/4/4/3 [13]
DiffImageQuality-fgm: 0.46 [6/13]
DiffImageOverlap-fno: 0.94 [15/16]

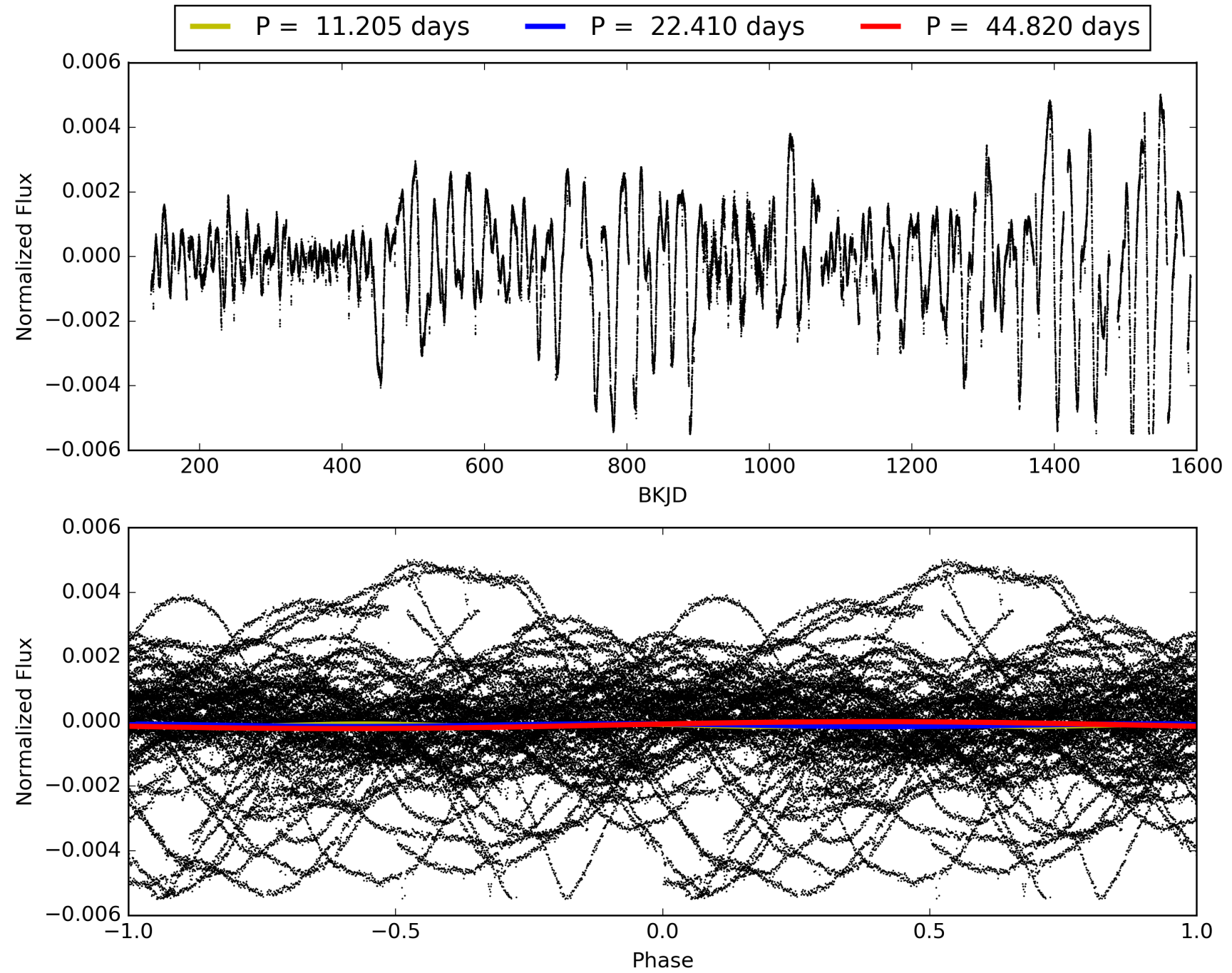
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:52:52 Z

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

TCE 010187017-06, PDC Light Curves

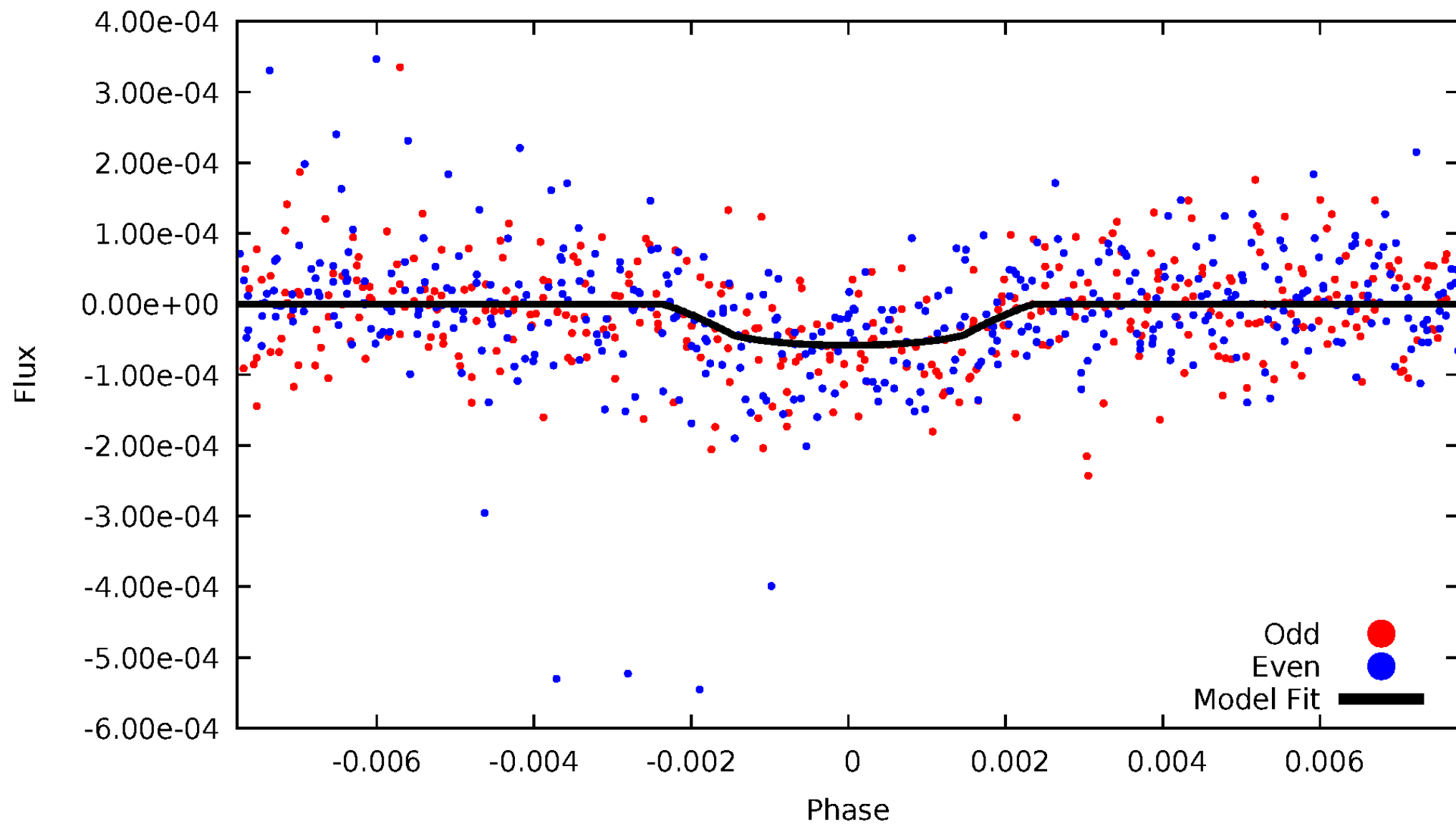


TCE 010187017-06



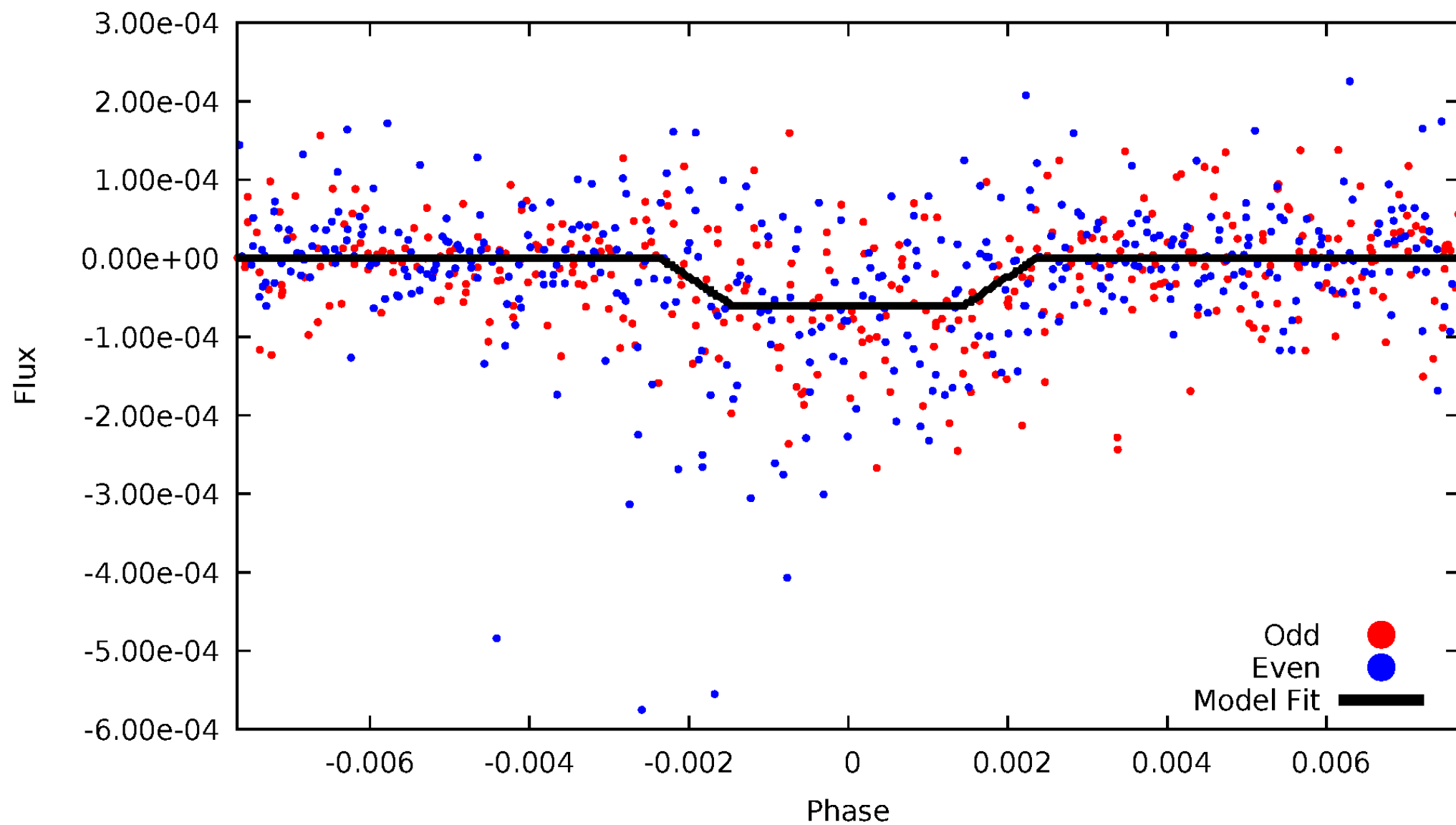
DV Odd/Even

TCE 010187017-06



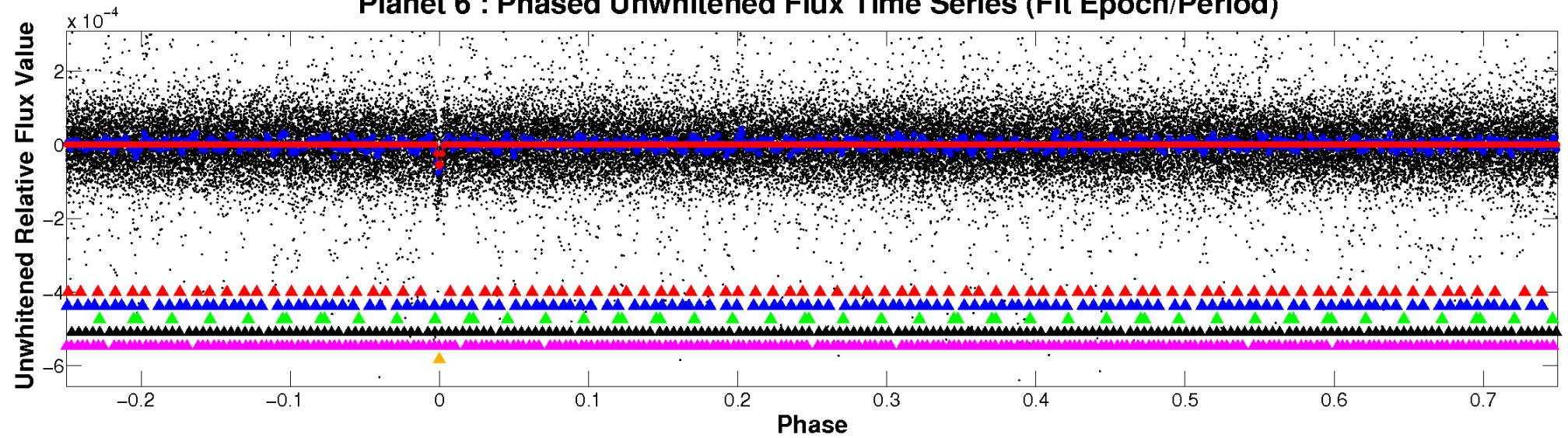
ALT Odd/Even

TCE 010187017-06

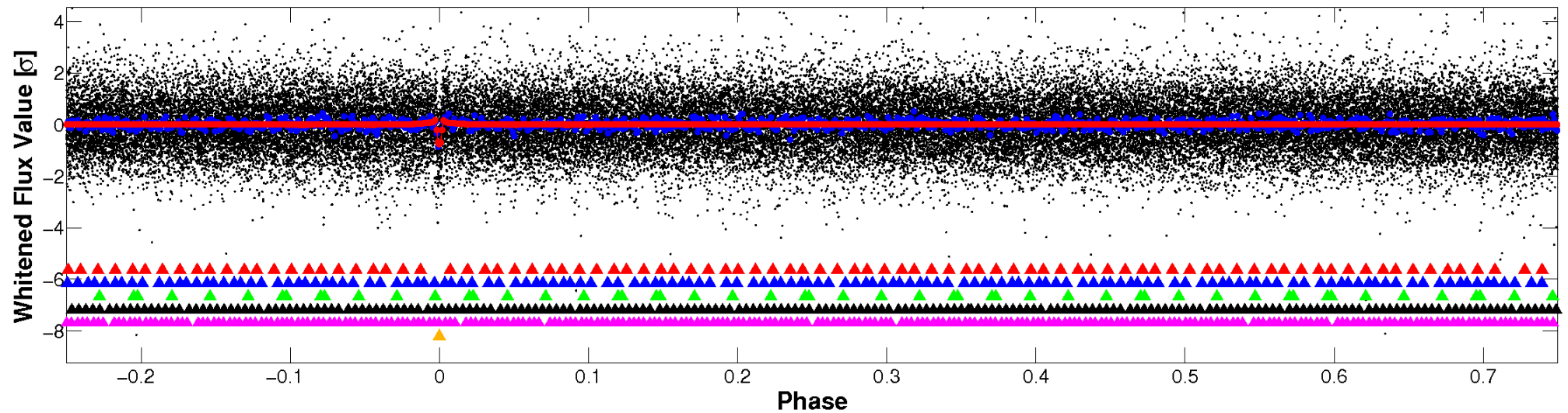


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

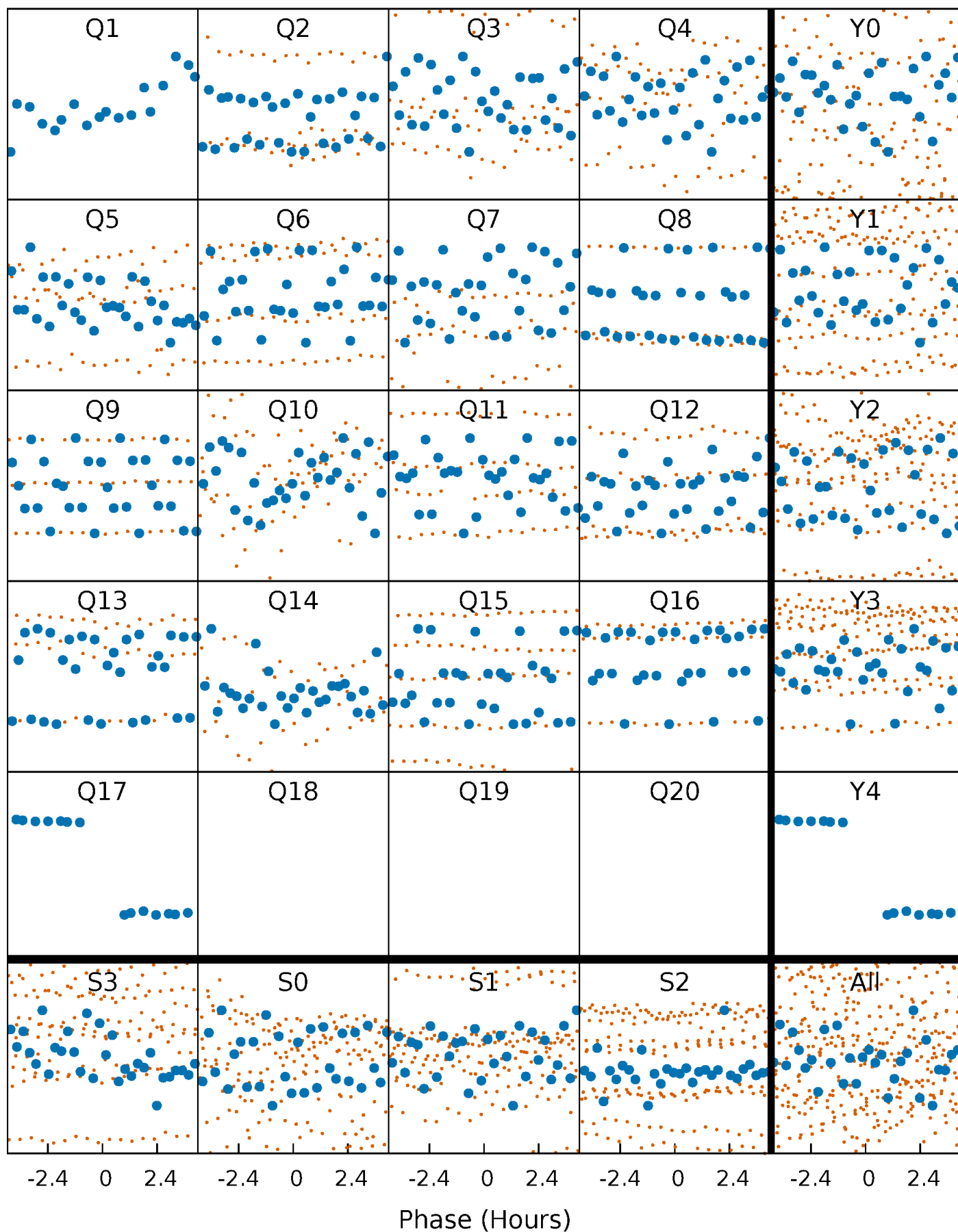


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



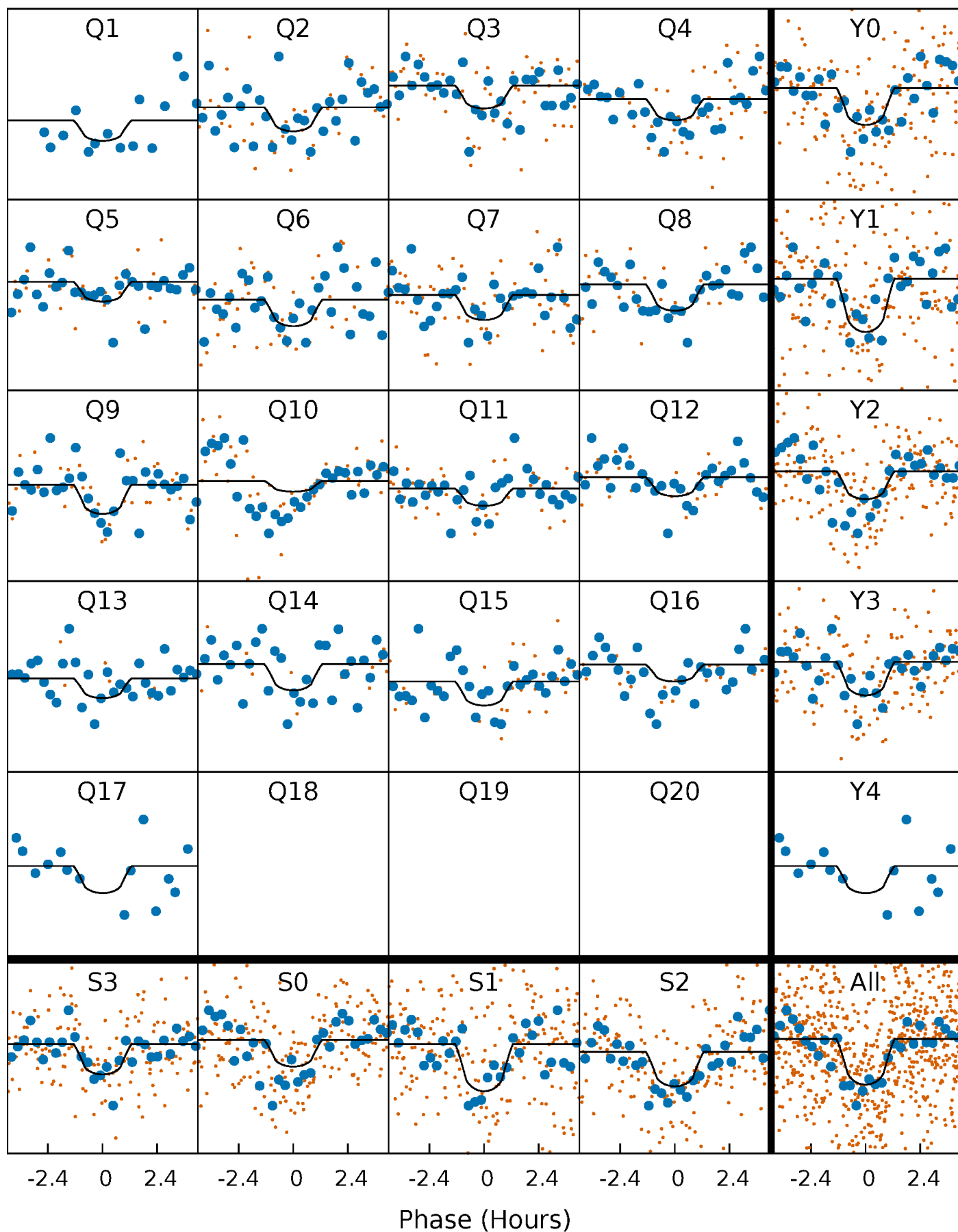
PDC Quarter-Phased Transit Curves

TCE 010187017-06 P= 22.410042 Days $T_0=147.380025$ (BKJD)



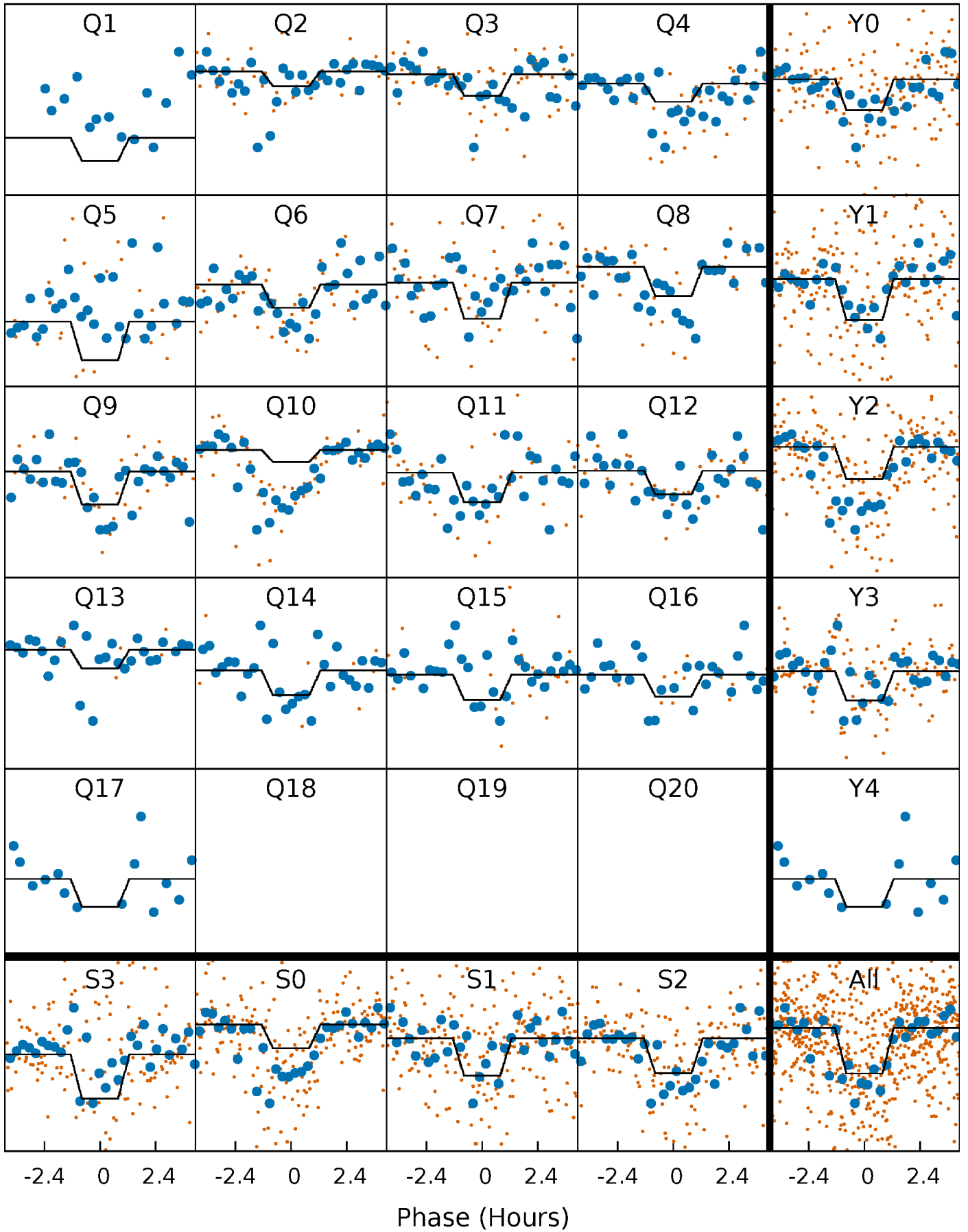
DV Quarter-Phased Transit Curves

TCE 010187017-06 P= 22.410042 Days $T_0=147.380025$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

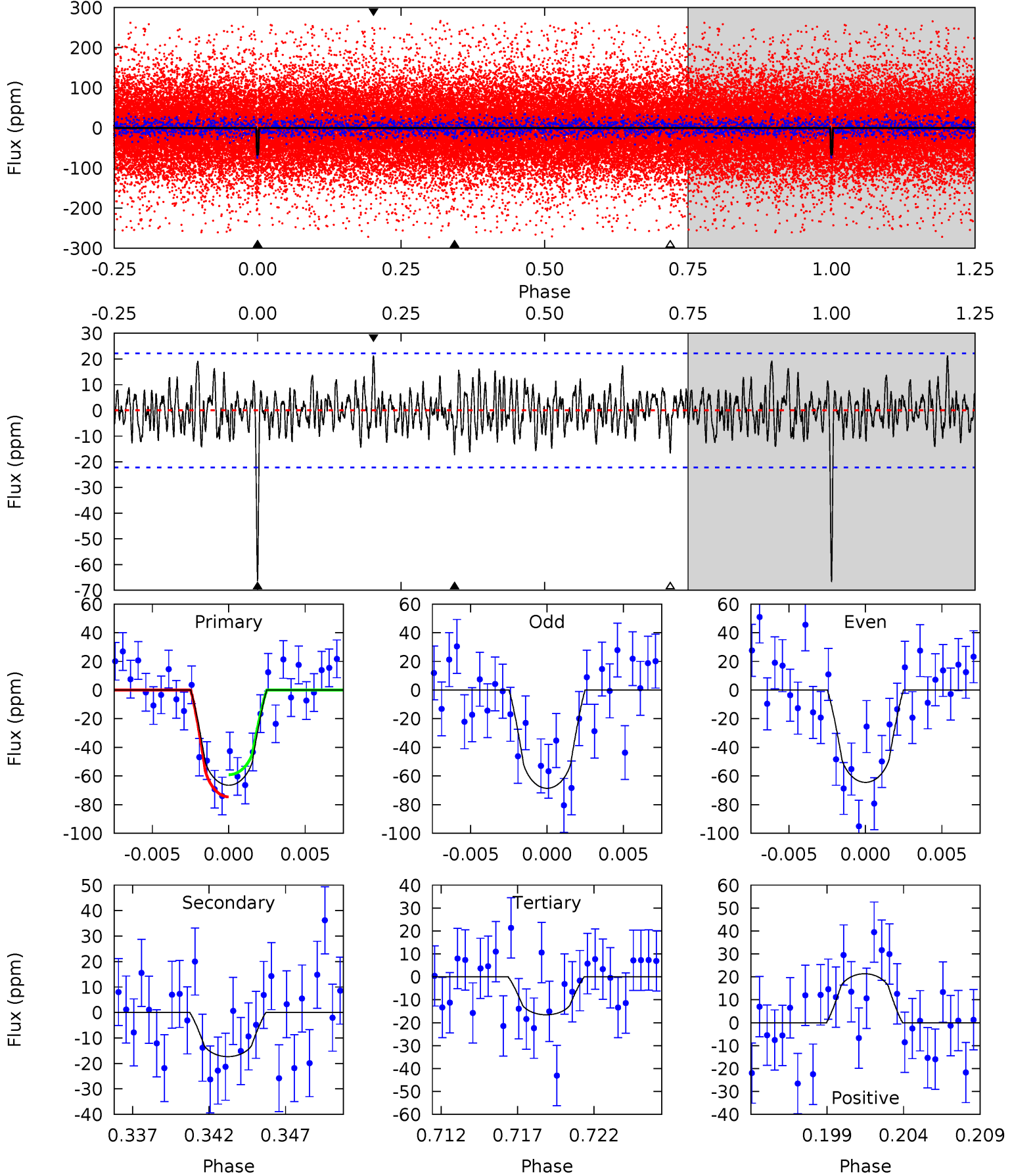
TCE 010187017-06 P= 22.410136 Days $T_0=147.371707$ (BKJD)



DV Model-Shift Uniqueness Test

010187017-06, P = 22.410042 Days, E = 124.969983 Days

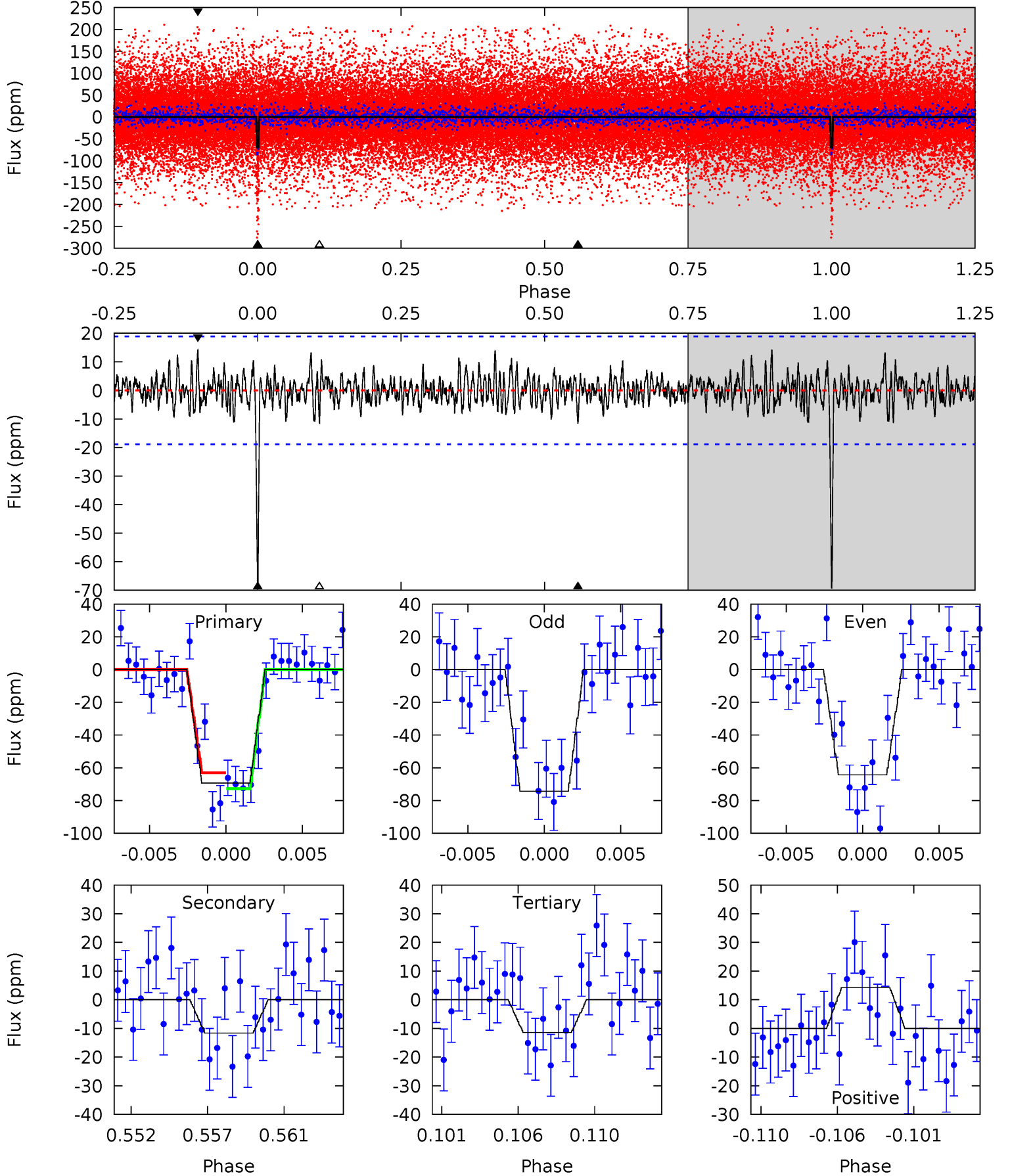
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	4.03	3.86	4.97	5.17	2.82	1.42	11.6	10.5	0.17	-0.94	0.48	1.14	0.24	1.82



Alt Model-Shift Uniqueness Test

010187017-06, $P = 22.410136$ Days, $E = 124.961571$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	3.19	3.12	3.90	5.17	2.83	1.11	15.9	15.1	0.07	-0.71	1.38	1.20	0.17	1.32



Stellar Parameters For KIC 010187017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4900^{+98}_{-98}	$4.602^{+0.017}_{-0.049}$	$0.080^{+0.150}_{-0.150}$	$0.741^{+0.048}_{-0.030}$	$0.806^{+0.033}_{-0.049}$	$2.785^{+0.239}_{-0.423}$
	+2%/-2%	+0%/-1%	+188%/-188%	+6%/-4%	+4%/-6%	+9%/-15%
Source	SPE61	SPE61	SPE61	DSEP		

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

Secondary Eclipse Parameters for KIC 010187017-06 / KOI 0082.06

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-17 ± 4	$0.59^{+0.29}_{-0.27}$	689^{+18}_{-17}	3944^{+1046}_{-504}	538^{+1328}_{-292}
Alt.	-12 ± 4	$0.63^{+0.28}_{-0.28}$	688^{+17}_{-15}	3613^{+840}_{-432}	324^{+707}_{-174}

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 $A_{obs} \gg 1.0$

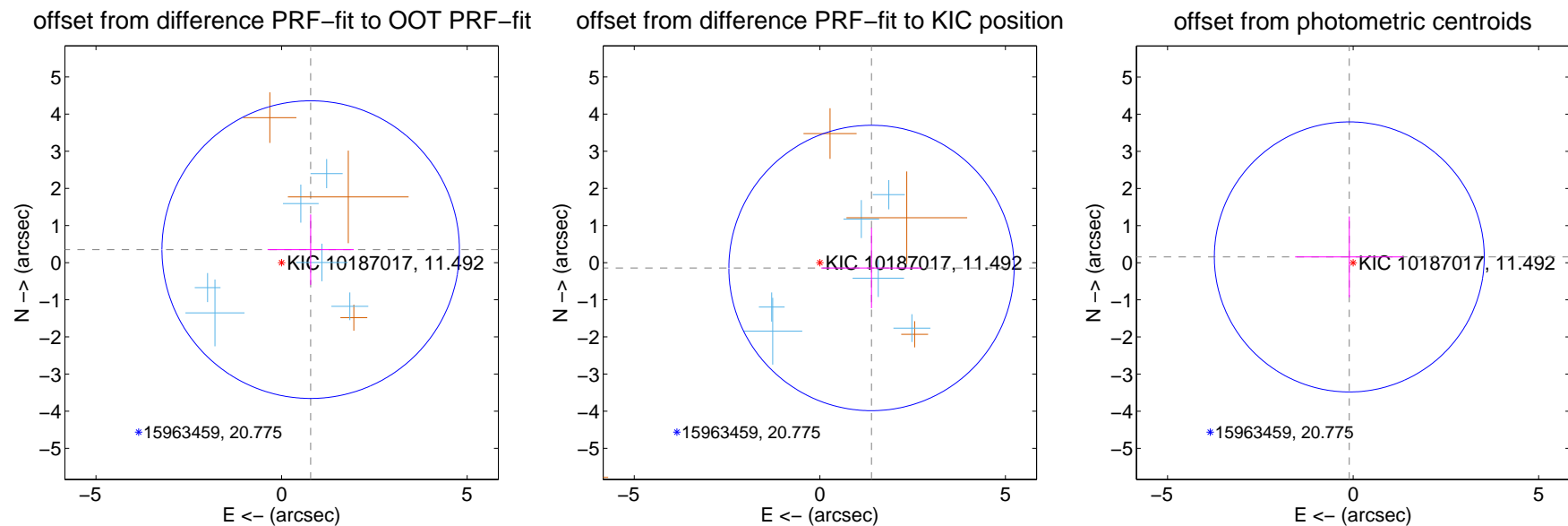
DV Centroid Data

Supplemental centroid analysis for 010187017-06. **Kepler magnitude: 11.49.** Transit SNR 9.24

There are 6 quarters with good PRF difference image offsets

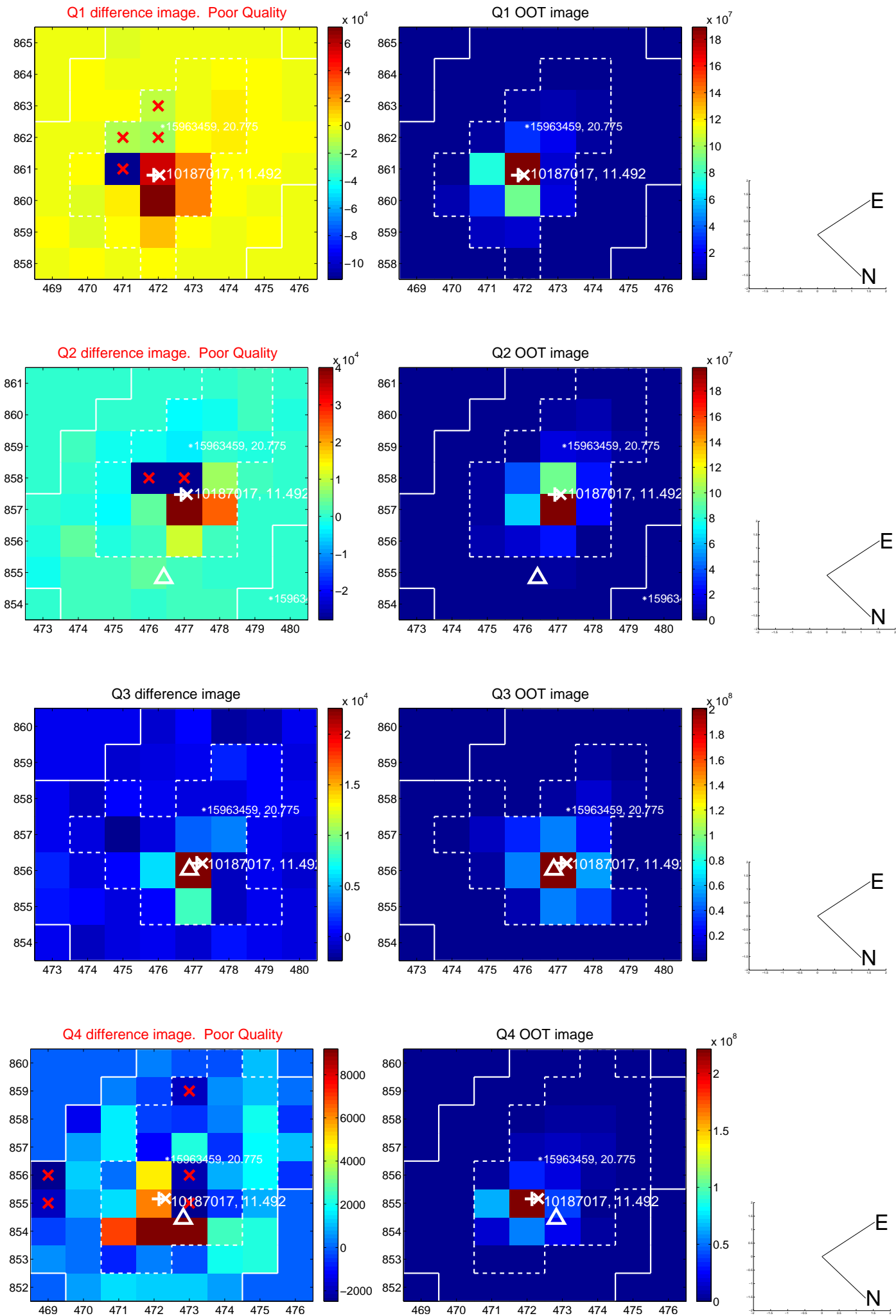
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.859 ± 1.336	0.64	-0.784 ± 1.161	0.350 ± 0.948
PRF-fit source offset from KIC position	1.399 ± 1.281	1.09	-1.392 ± 1.354	-0.144 ± 1.083
photometric centroid source offset	0.19 ± 1.21	0.15	0.10 ± 1.46	0.16 ± 1.09

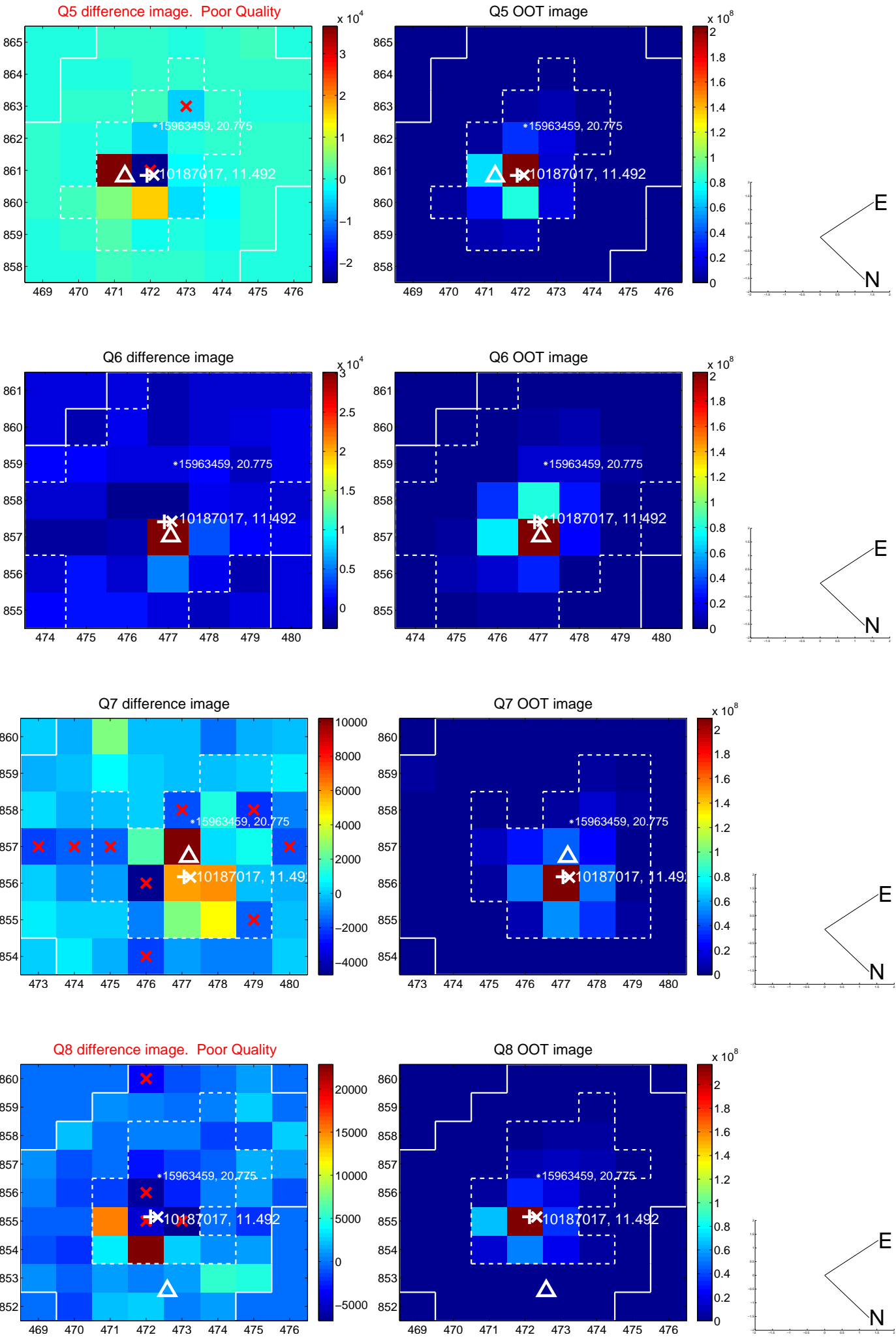


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

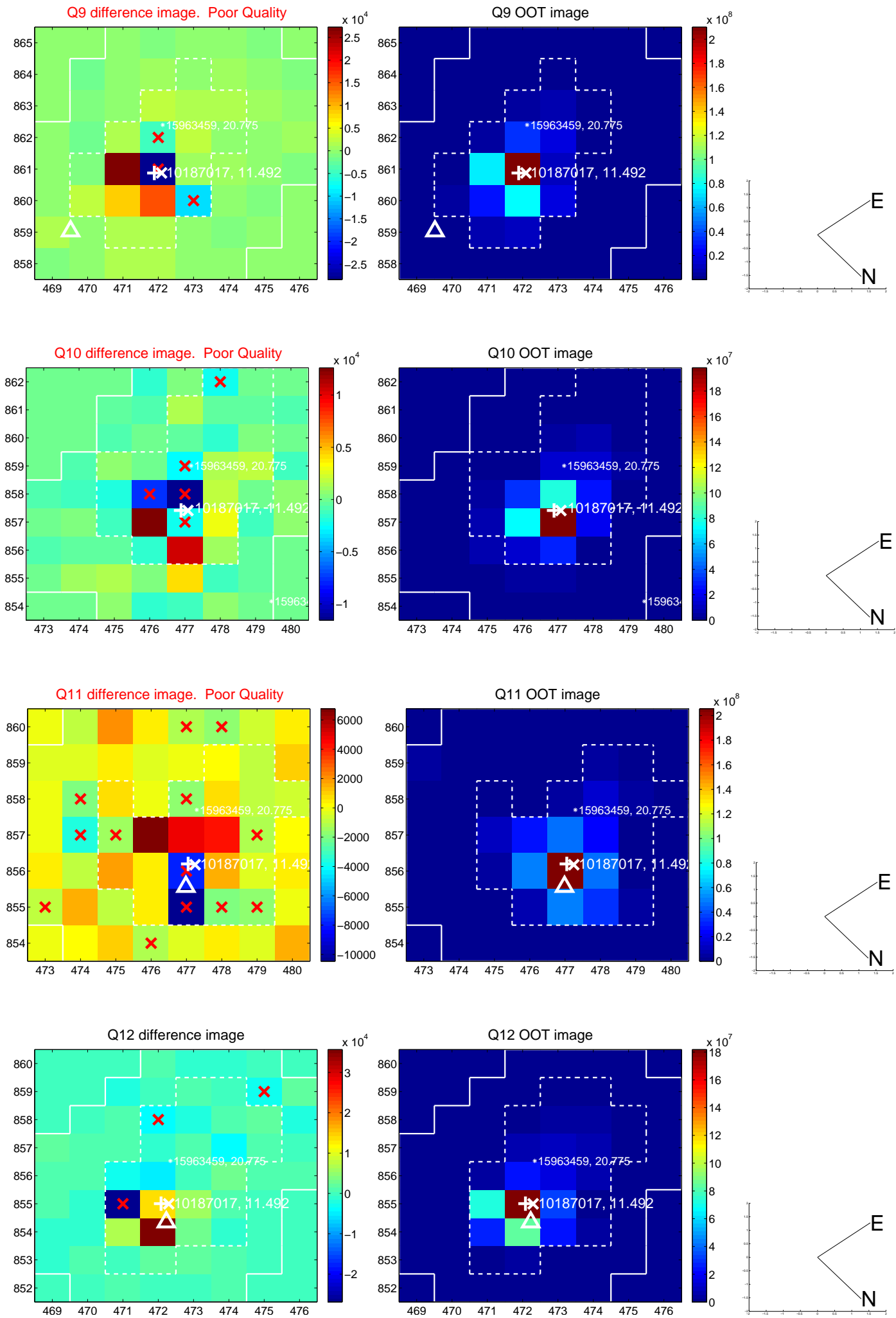
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



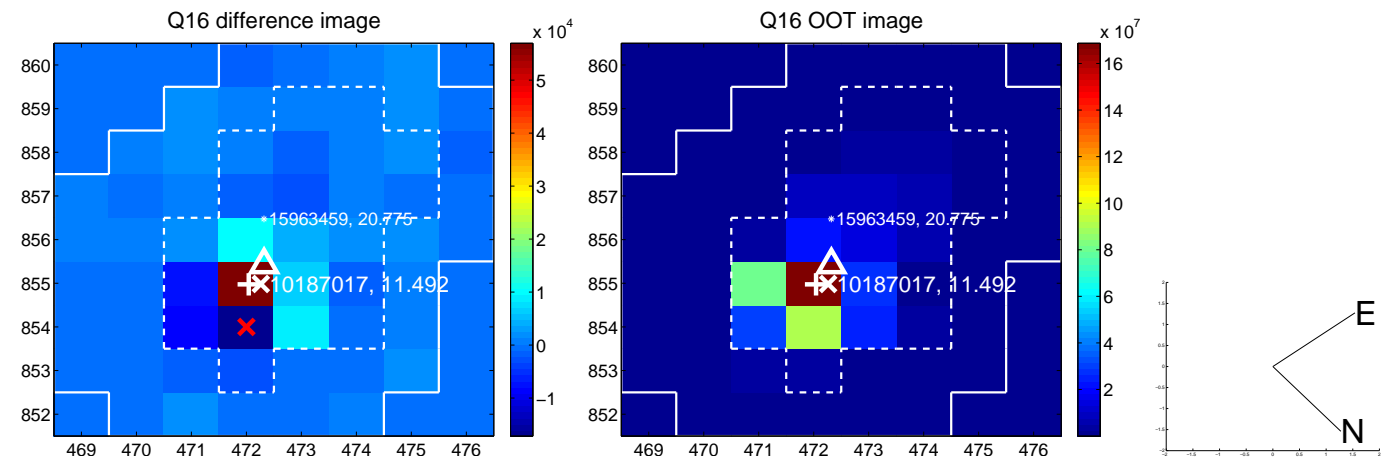
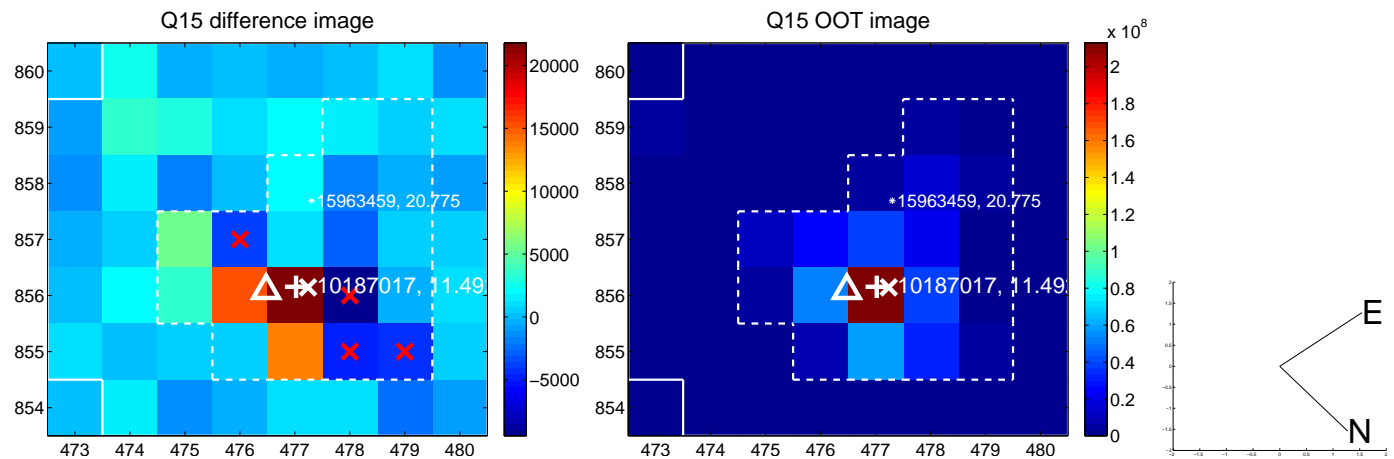
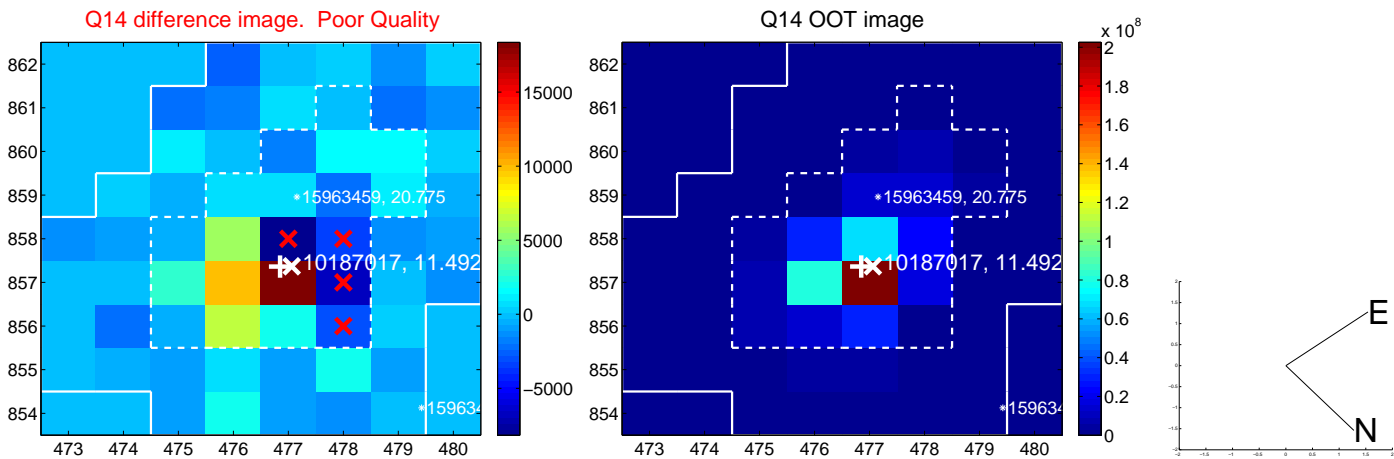
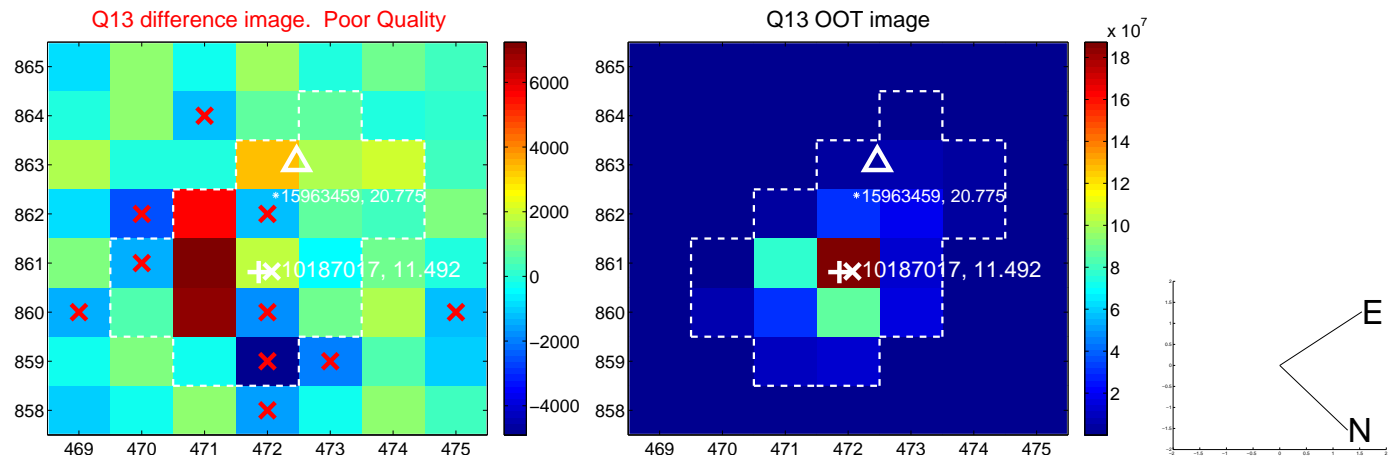
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



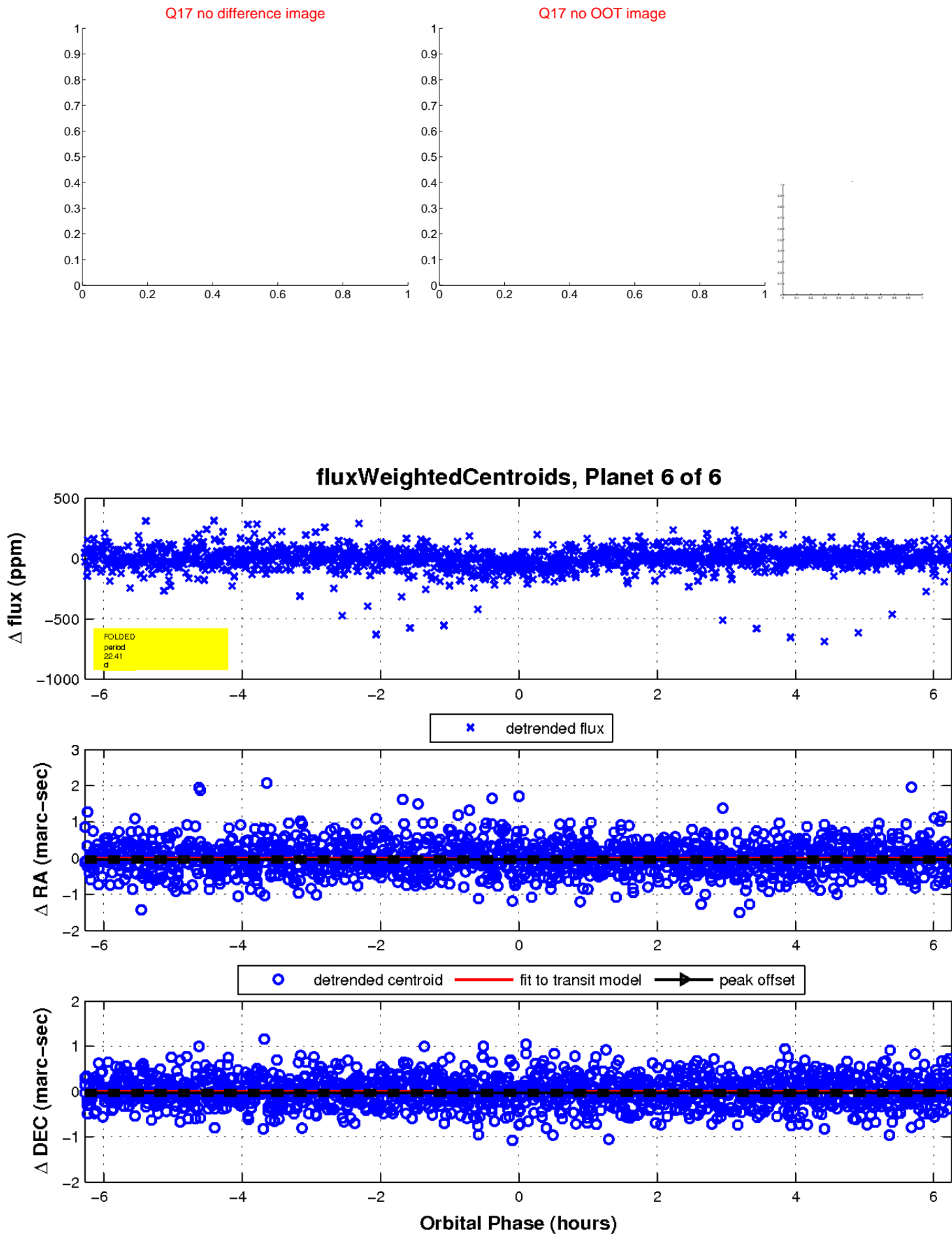
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

