

KIC 006228201

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})
006228201-01	OBS	No	2.217612	133.195783	60.6	2.227	23.3	21.3	3.40	7963	3.09	23098.72
006228201-02	OBS	No	1.108825	131.729054	11.0	8.663	18.1	7.1	3.40	7963	1.17	58203.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006228201-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
006228201-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—SAME_NTL_PERIOD—HALO_GHOST

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

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

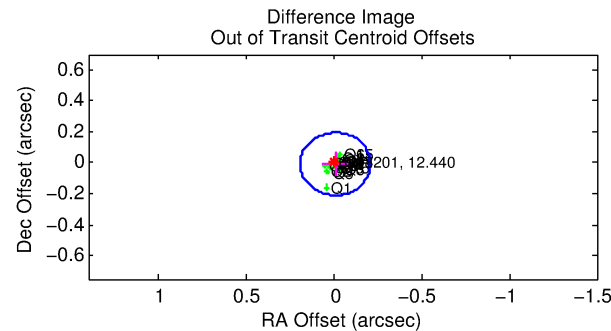
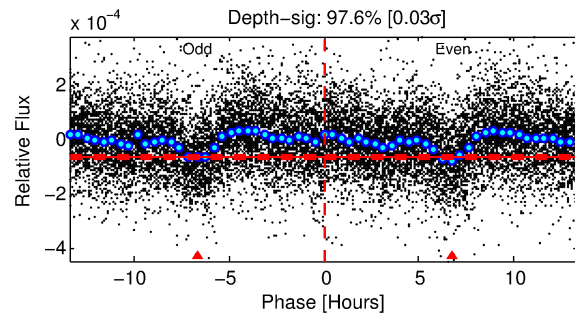
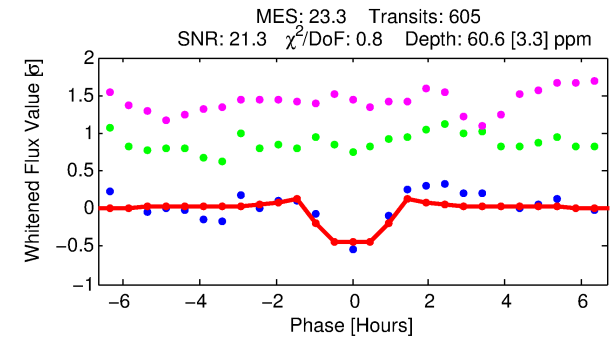
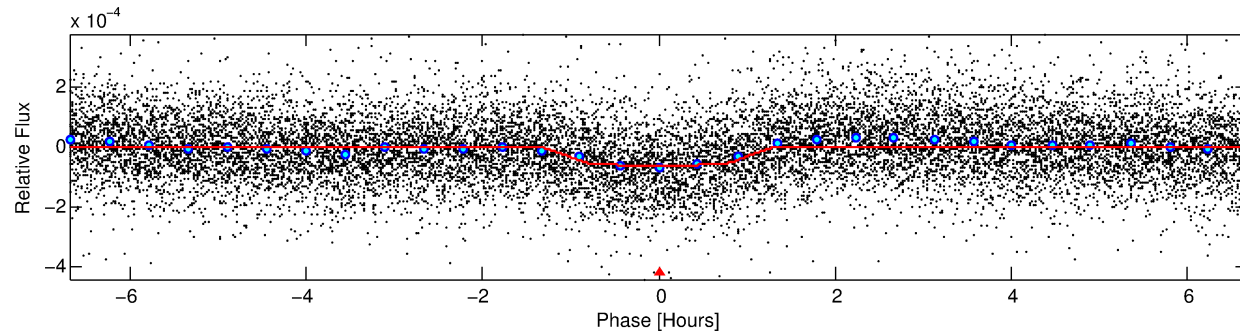
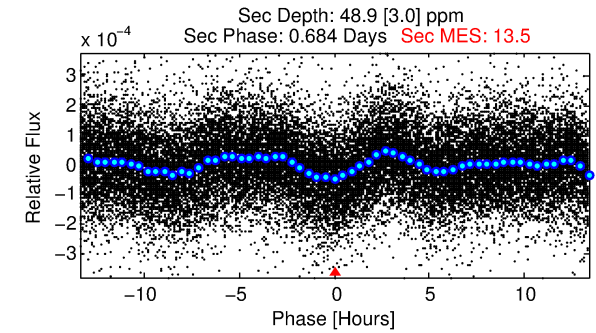
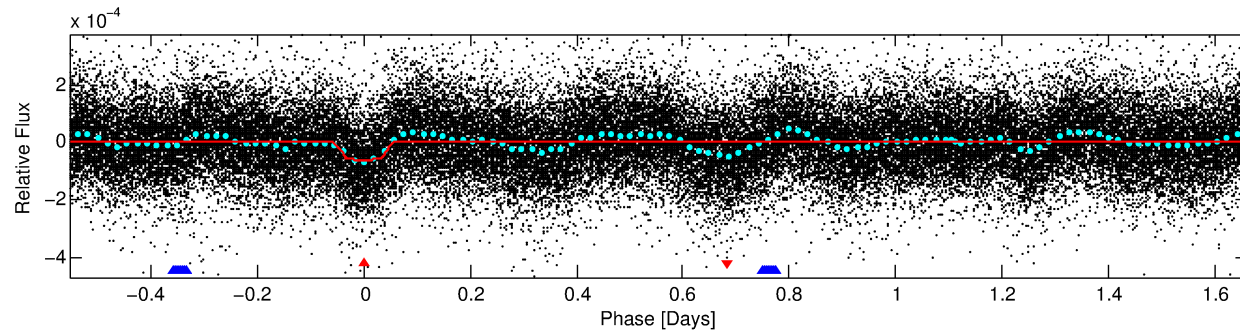
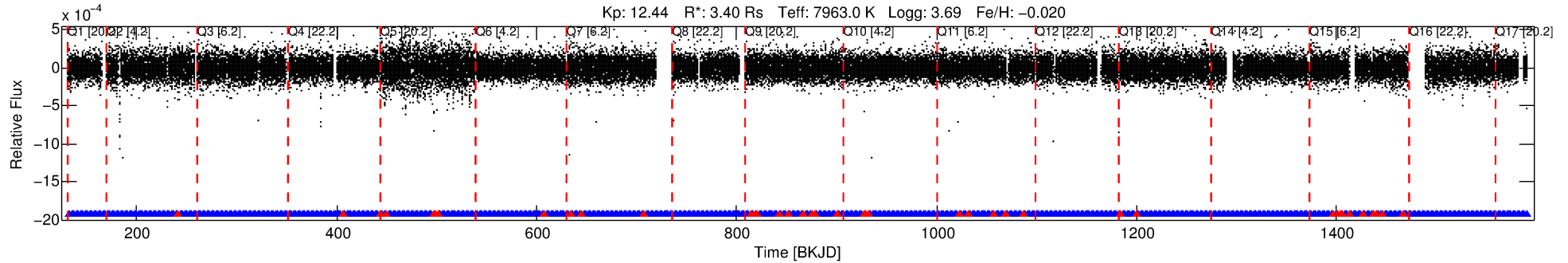
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006228201-01

No Significant Match Found

DV One-Page Summary

KIC: 6228201 Candidate: 1 of 2 Period: 2.218 d



DV Fit Results:

Period = 2.21761 [0.00001] d
Epoch = 133.1958 [0.0012] BKJD
Rp/R* = 0.0083 [0.0014]
a/R* = 3.58 [3.26]
b = 0.90 [0.21]
Seff = 23098.72 [17580.00]
Teq = 3144 [598] K
Rp = 3.09 [1.51] Re
a = 0.0424 [0.0194] AU
Ag = 5.09 [4.14] [0.99σ]
Teffp = 7299 [679] K [4.59σ]

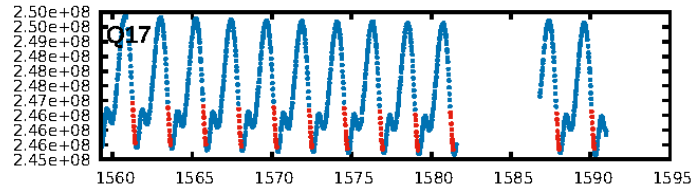
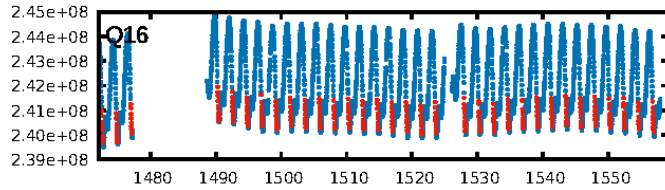
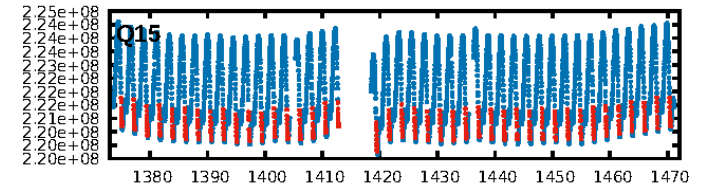
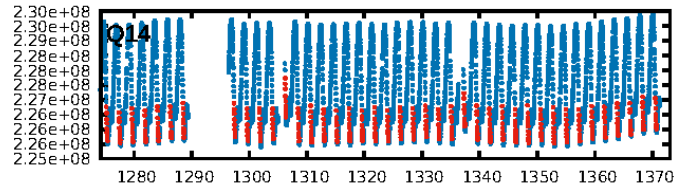
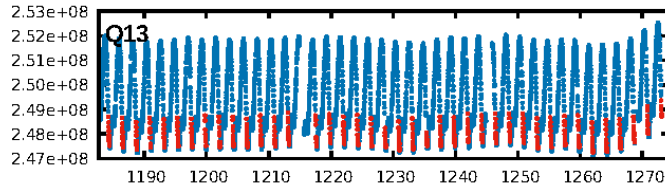
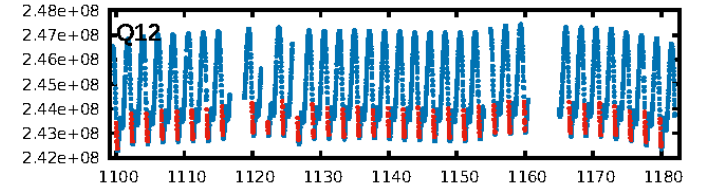
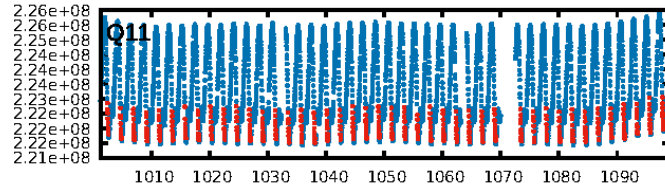
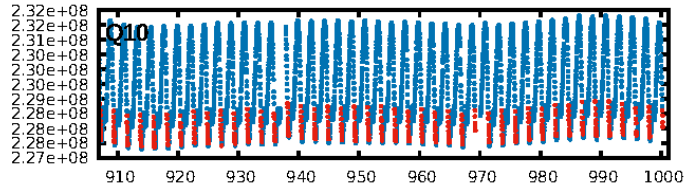
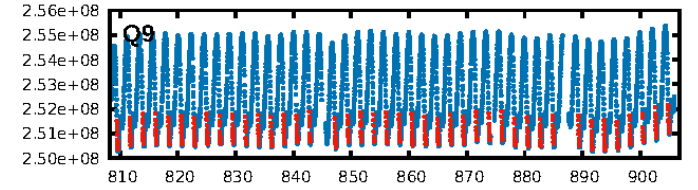
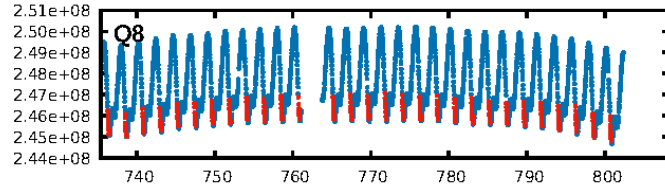
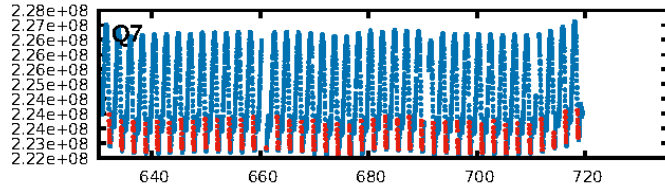
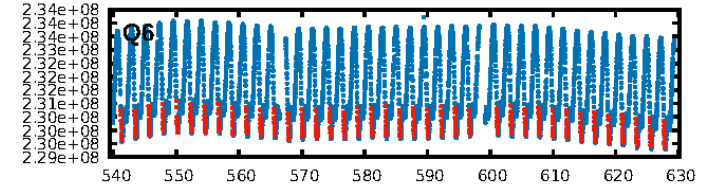
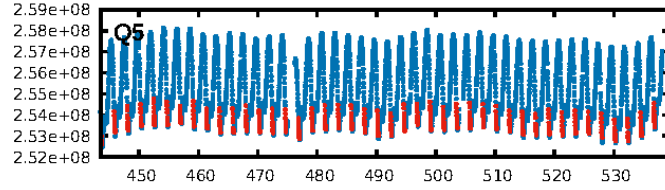
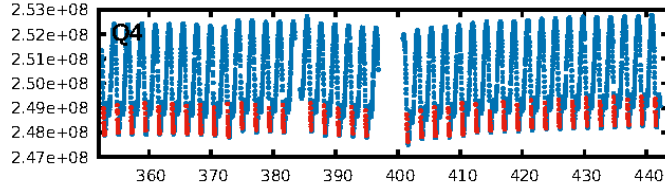
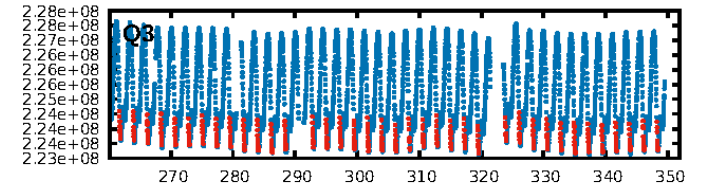
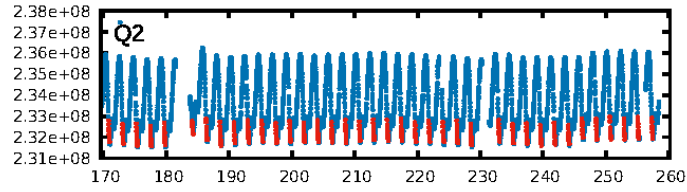
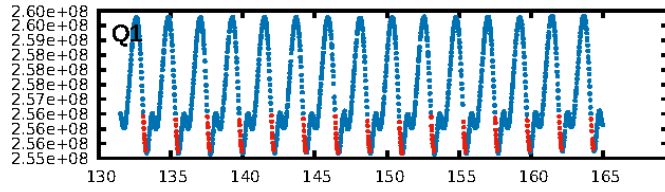
DV Diagnostic Results:

ShortPeriod-sig: 99.7% [2.97σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [538/578]
GhostDiagnostic-chr: -0.943
Centroid-sig: 0.0%
Centroid-so: 1.179 arcsec [2.73σ]
OotOffset-rm: 0.011 arcsec [0.16σ]
KicOffset-rm: 0.042 arcsec [0.61σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

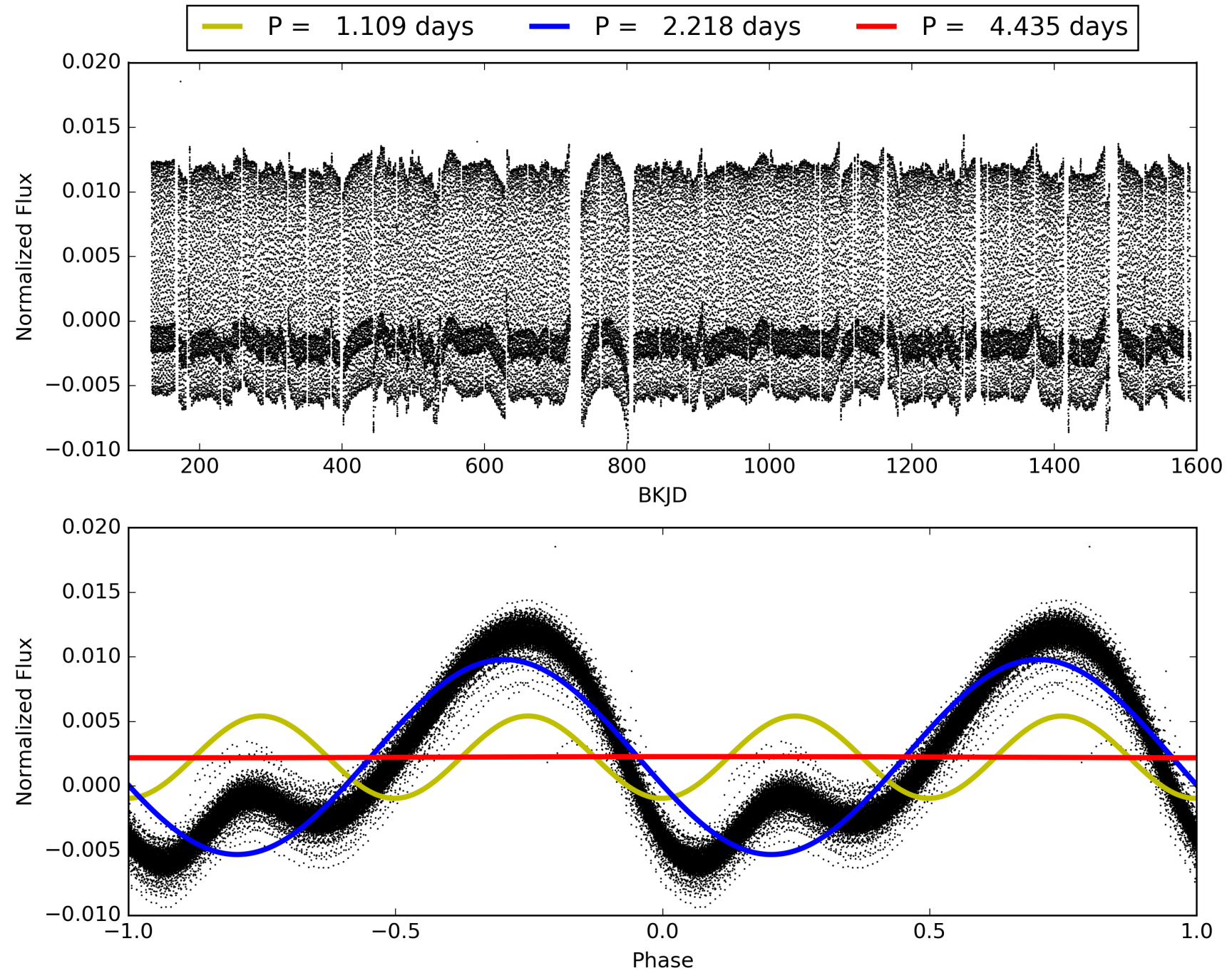
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:13:48 Z

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

TCE 006228201-01, PDC Light Curves

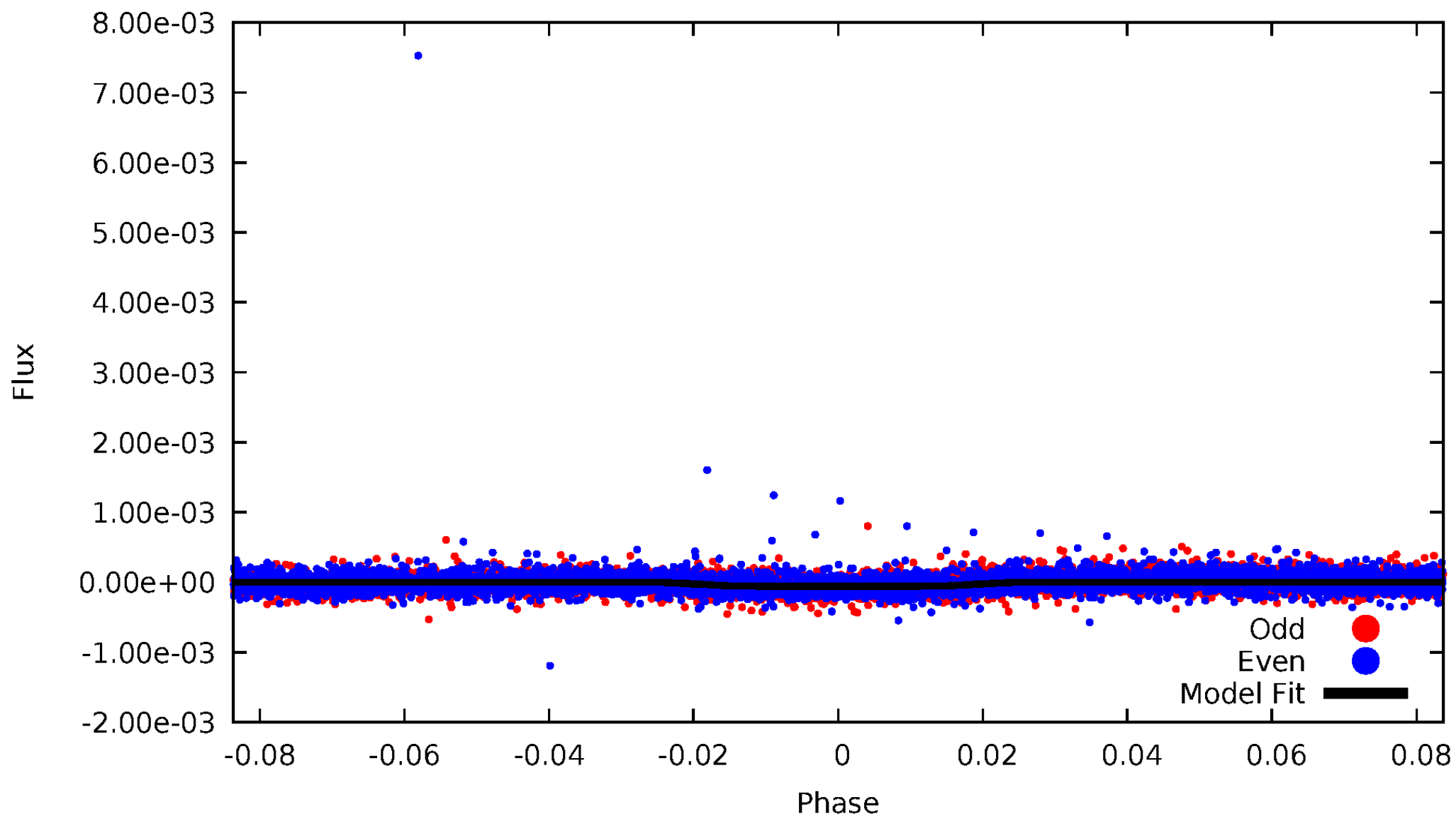


TCE 006228201-01



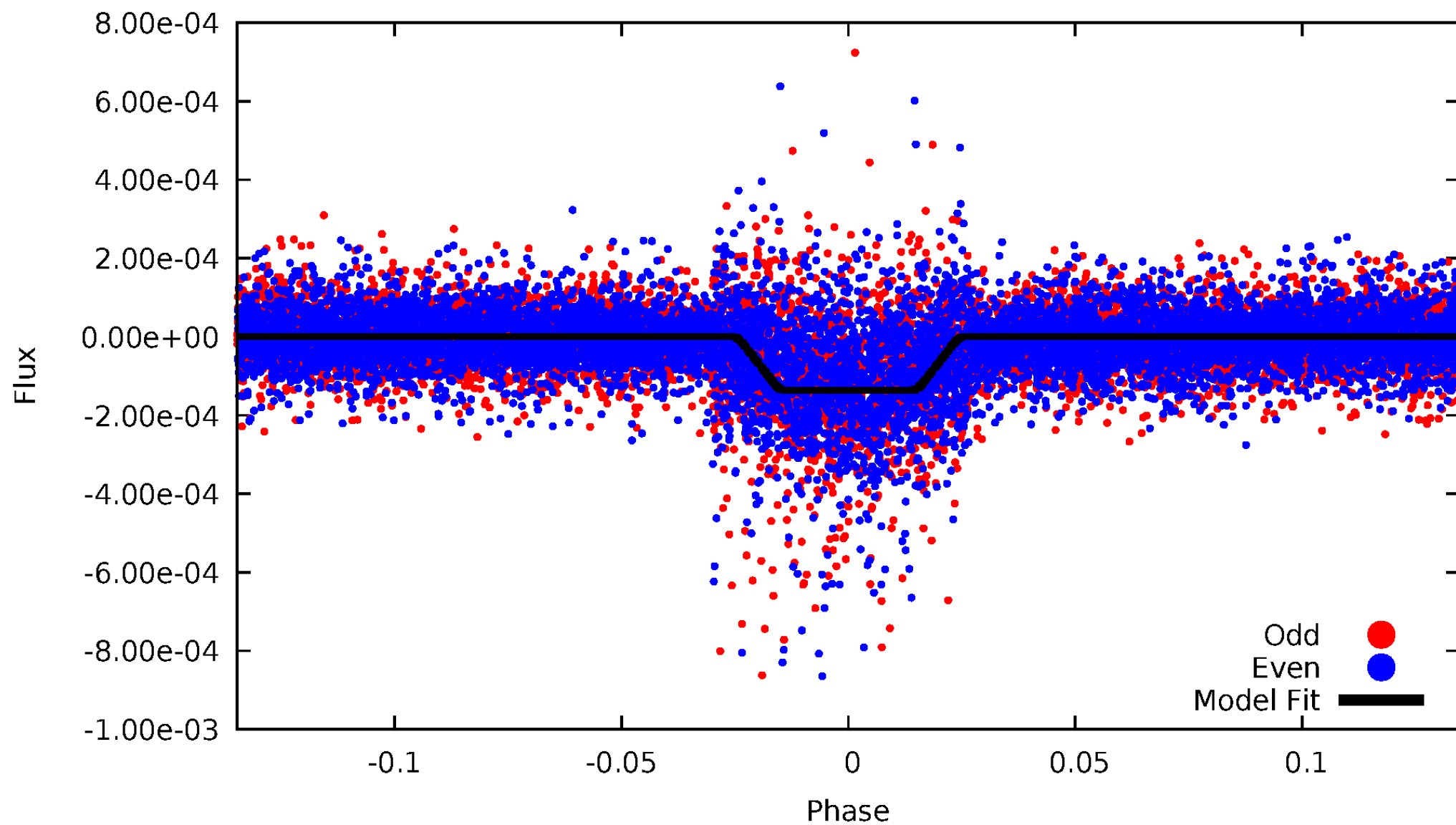
DV Odd/Even

TCE 006228201-01



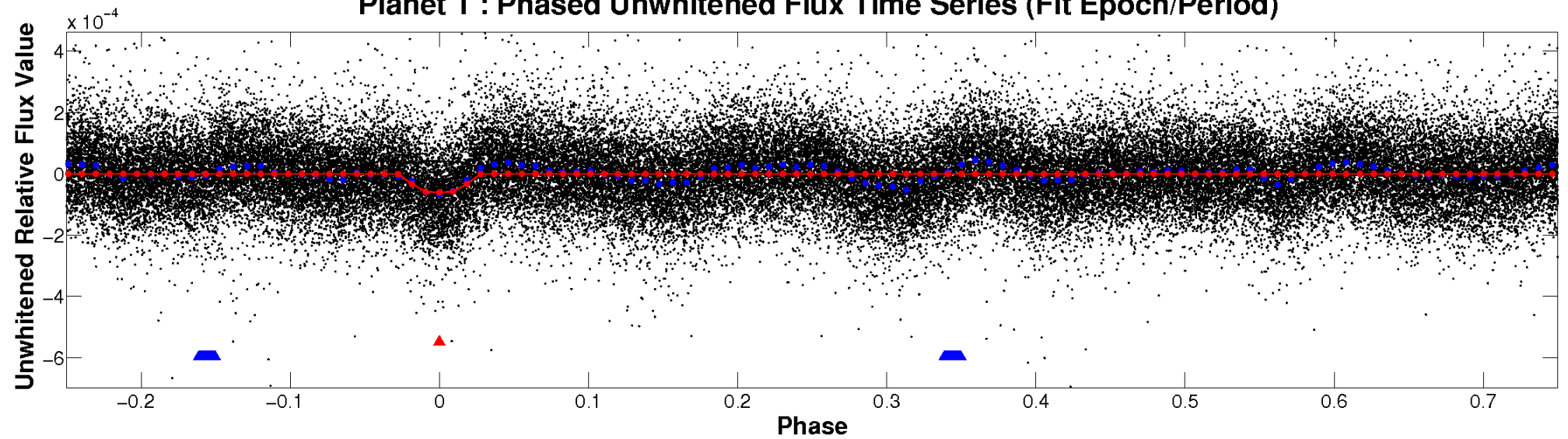
ALT Odd/Even

TCE 006228201-01

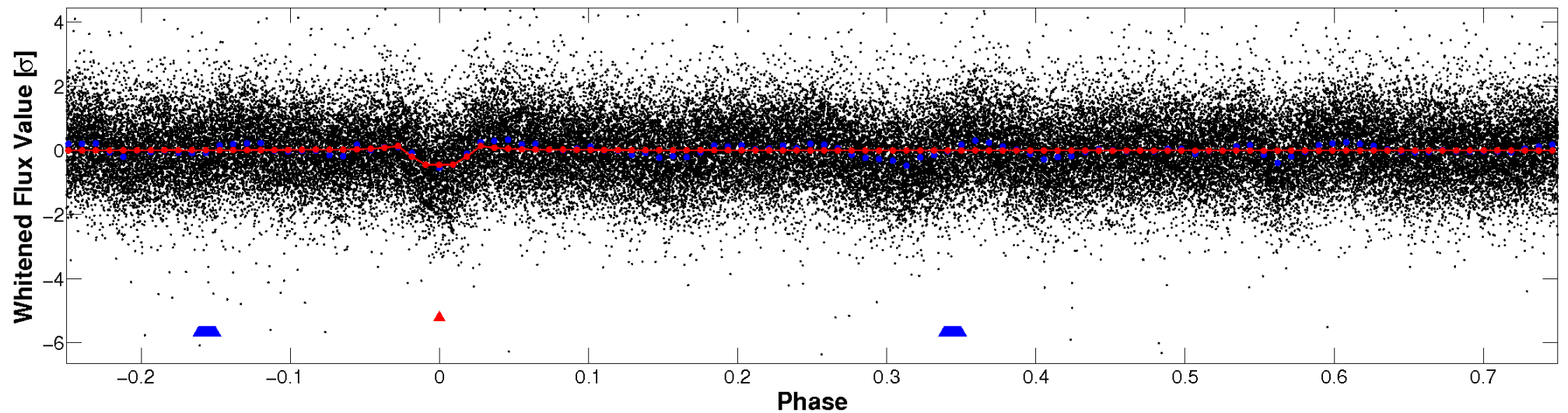


Non-Whitened Vs. Whitened Light Curve

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

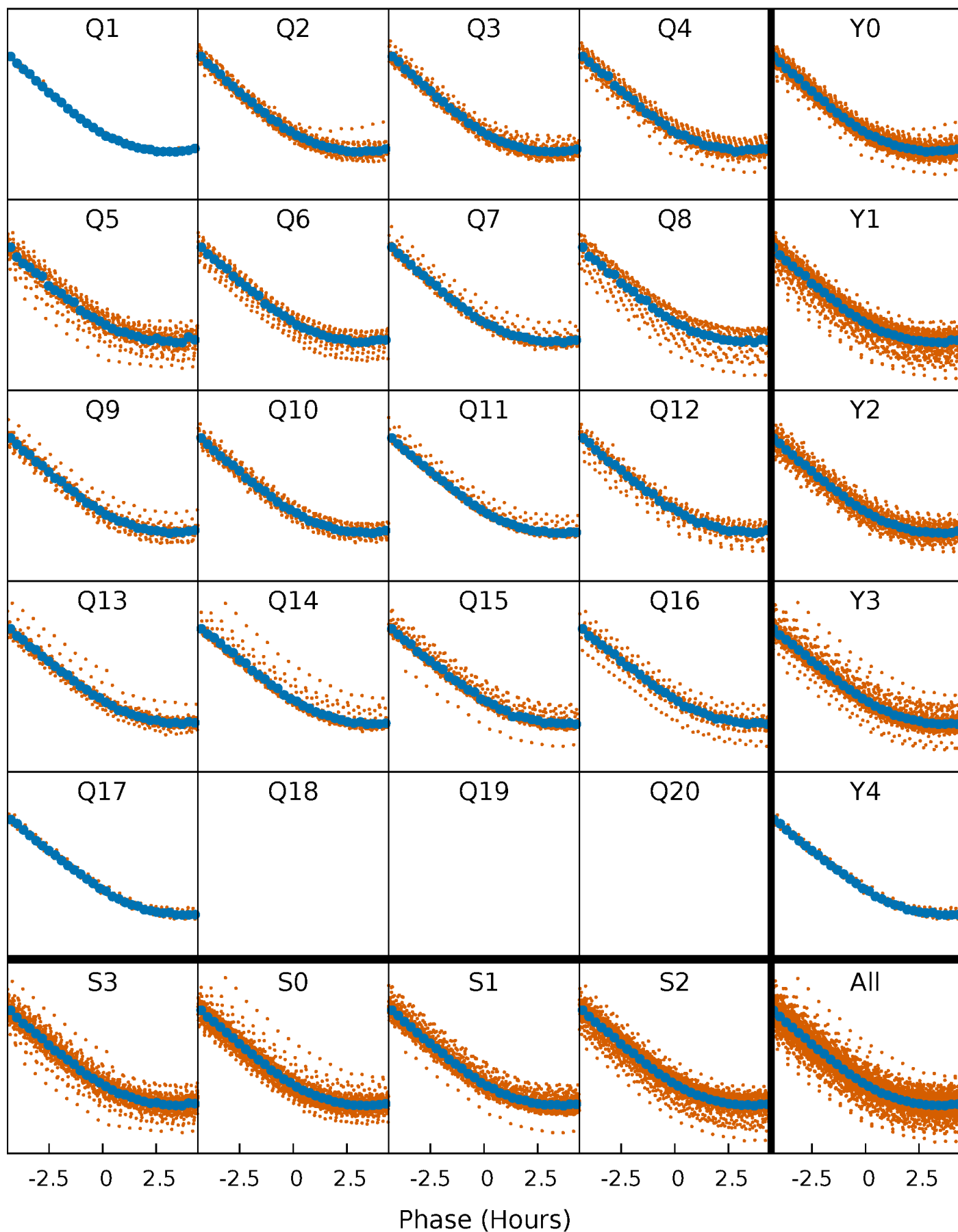


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



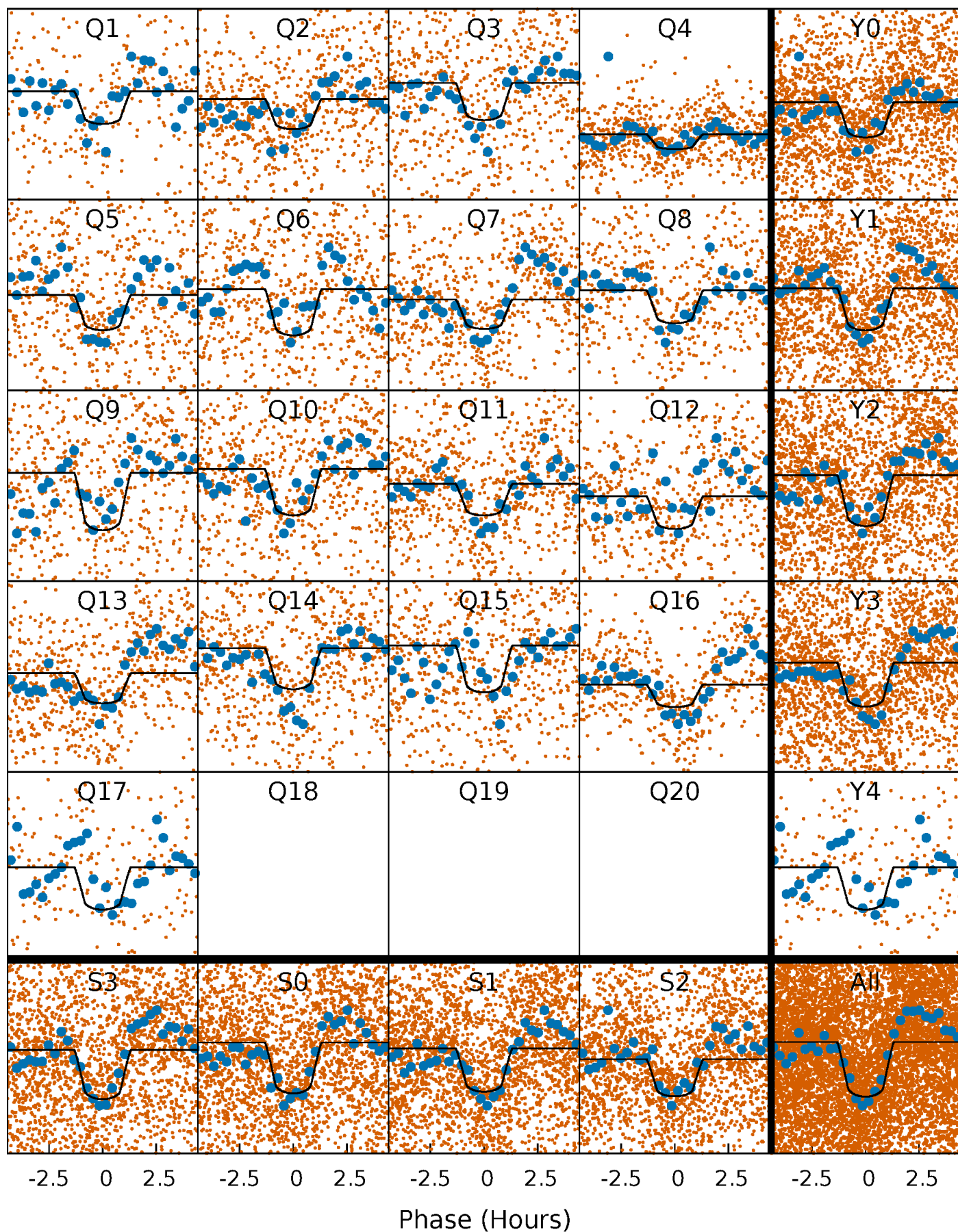
PDC Quarter-Phased Transit Curves

TCE 006228201-01 P= 2.217612 Days $T_0=133.195783$ (BKJD)



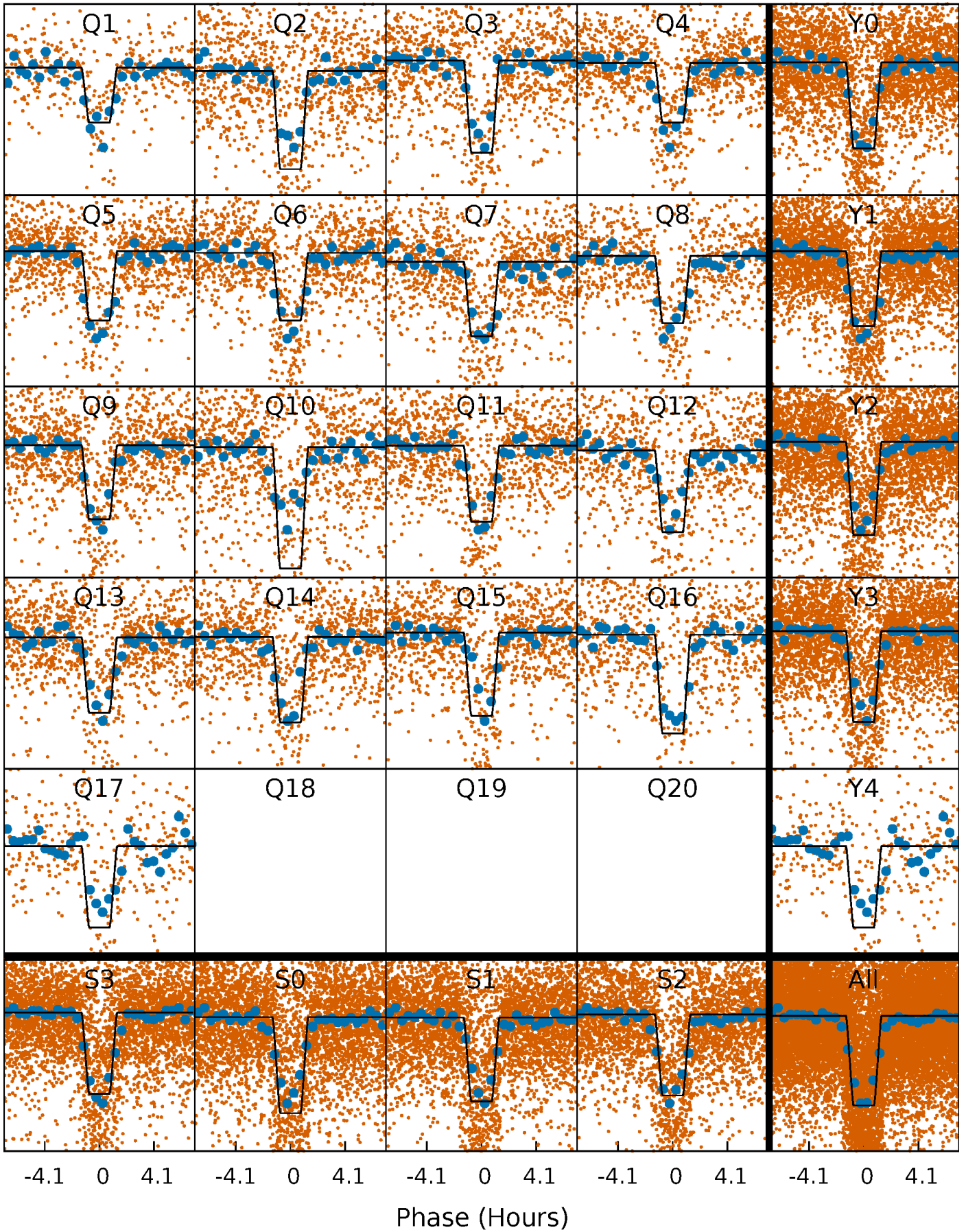
DV Quarter-Phased Transit Curves

TCE 006228201-01 P= 2.217612 Days $T_0=133.195783$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

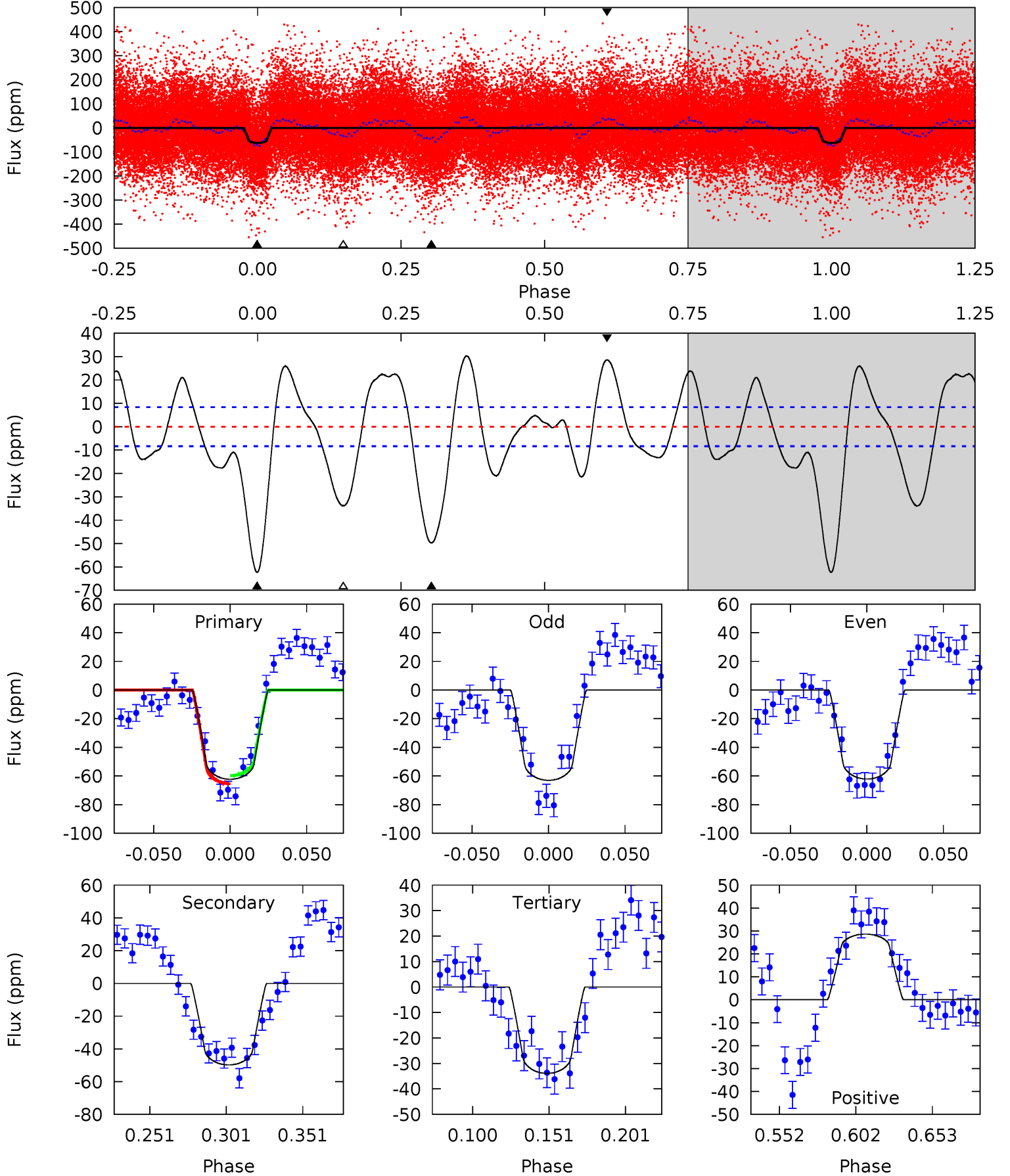
TCE 006228201-01 P= 2.217641 Days $T_0=133.191366$ (BKJD)



DV Model-Shift Uniqueness Test

006228201-01, P = 2.217612 Days, E = 130.978171 Days

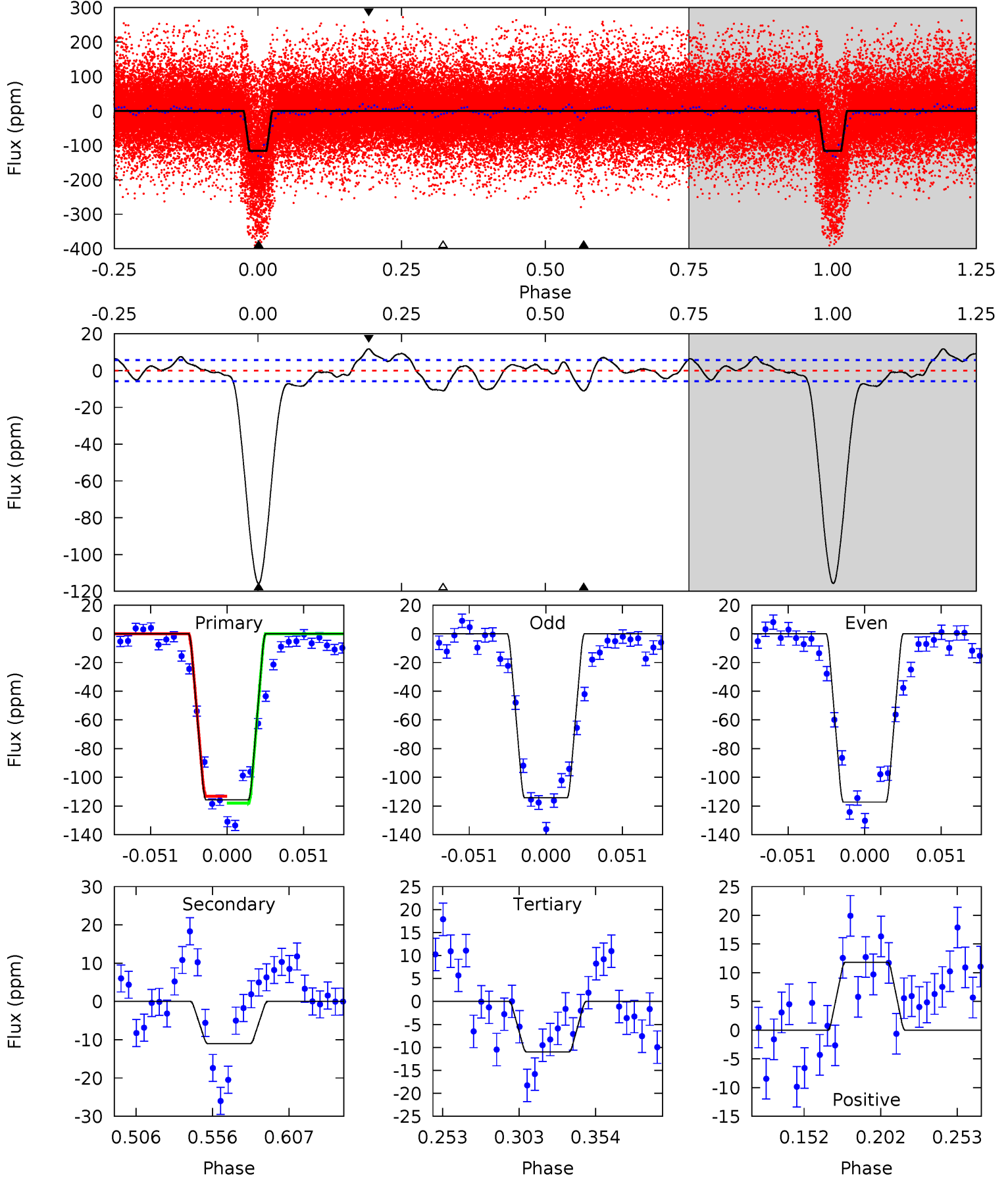
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.1	28.1	19.1	16.1	4.71	1.96	8.84	16.0	19.0	8.95	11.9	0.25	0.98	0.33	1.58



Alt Model-Shift Uniqueness Test

006228201-01, P = 2.217641 Days, E = 130.973725 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.4	9.09	9.06	9.75	4.71	1.96	4.10	86.3	85.6	0.03	-0.67	1.22	1.06	0.09	1.98



Stellar Parameters For KIC 006228201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7963^{+222}_{-333}	$3.692^{+0.440}_{-0.110}$	$-0.020^{+0.200}_{-0.350}$	$3.399^{+0.846}_{-1.572}$	$2.074^{+0.337}_{-0.506}$	$0.074^{+0.321}_{-0.025}$
	+3%/-4%	+12%/-3%	+1000%/-1750%	+25%/-46%	+16%/-24%	+432%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006228201-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-50 ± 2	$2.80^{+0.80}_{-0.77}$	4179^{+364}_{-464}	7071^{+832}_{-649}	$6.368^{+5.122}_{-2.400}$
Alt.	-11 ± 1	$4.01^{+0.96}_{-1.09}$	4227^{+337}_{-531}	3904^{+394}_{-463}	$0.691^{+0.518}_{-0.248}$

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

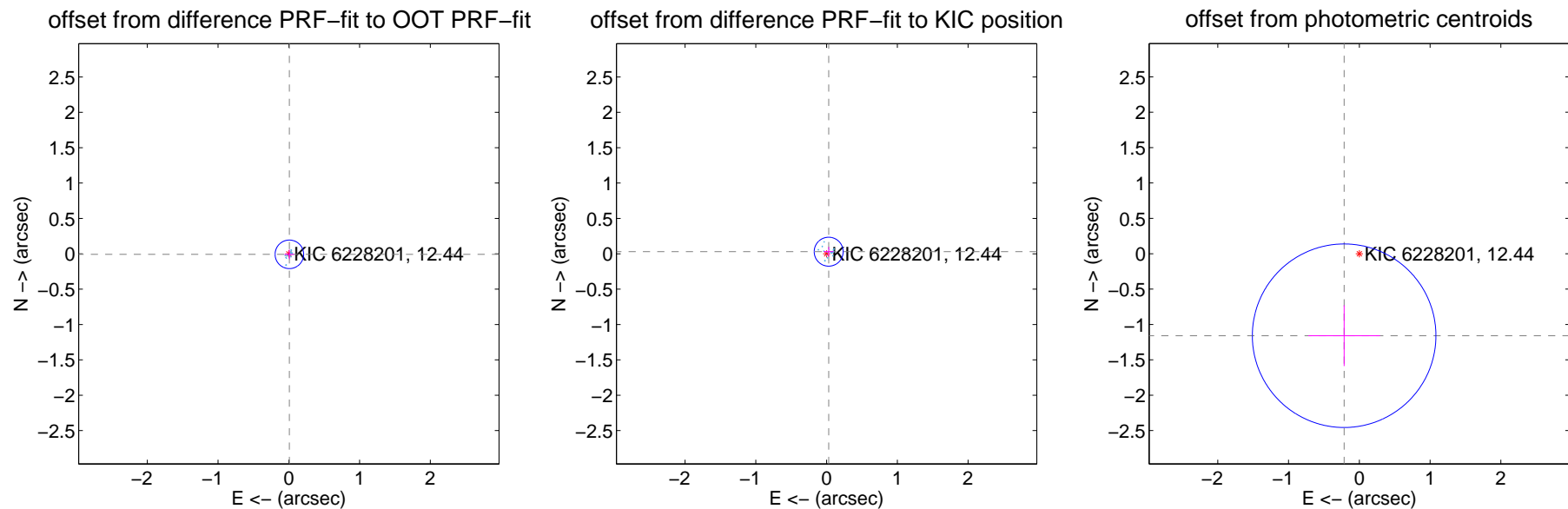
DV Centroid Data

Supplemental centroid analysis for 006228201-01. Kepler magnitude: 12.44. Transit SNR 21.32

There are 17 quarters with good PRF difference image offsets

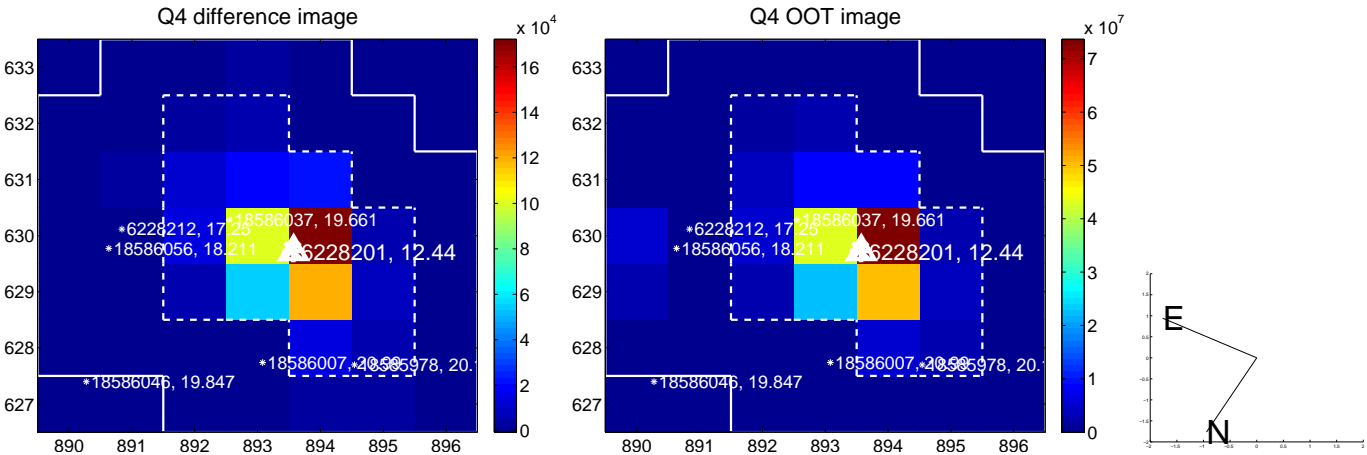
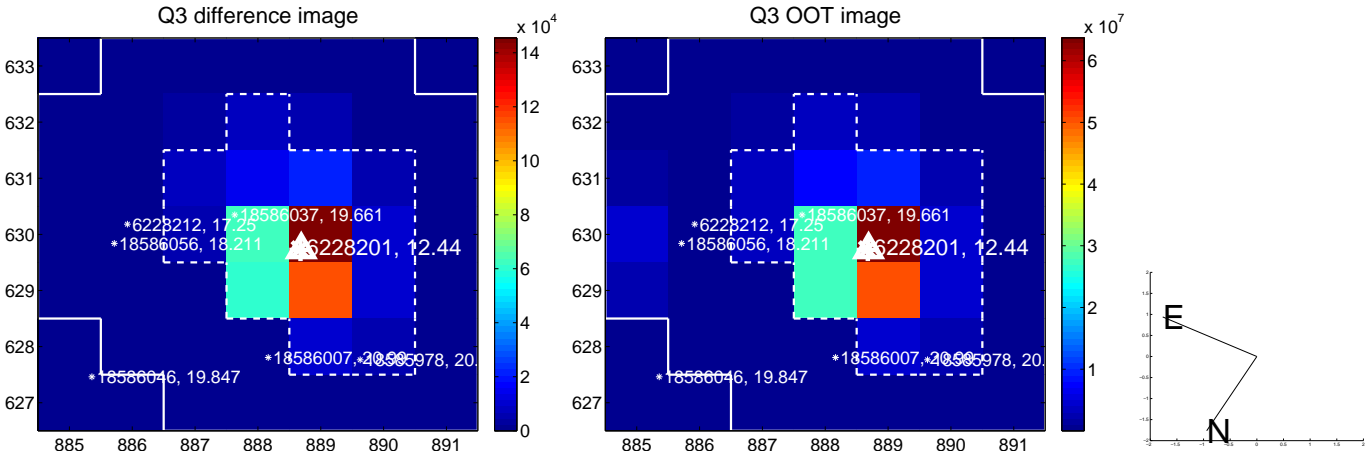
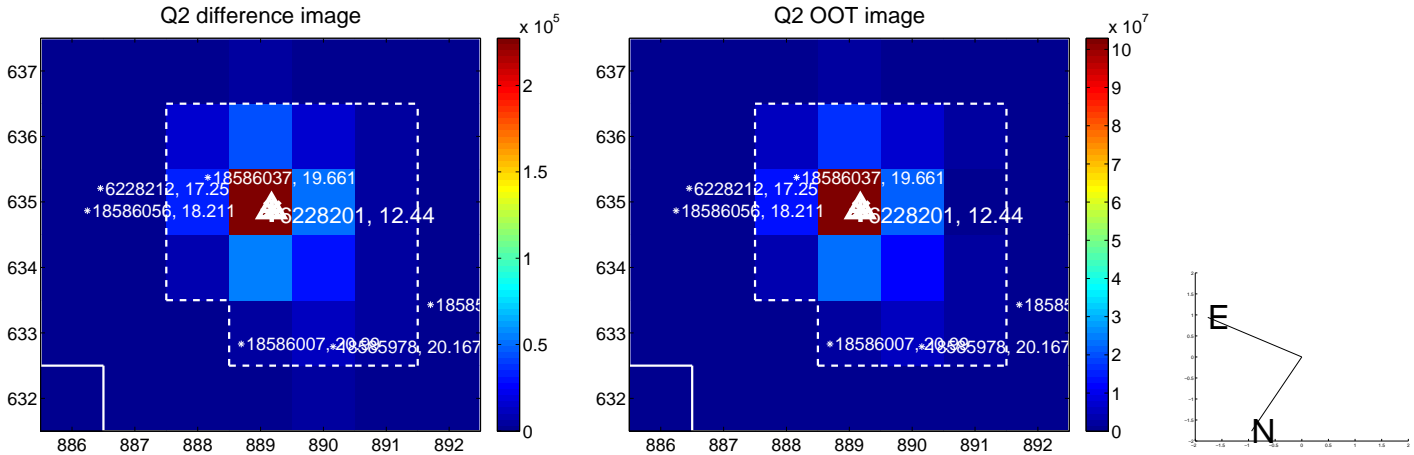
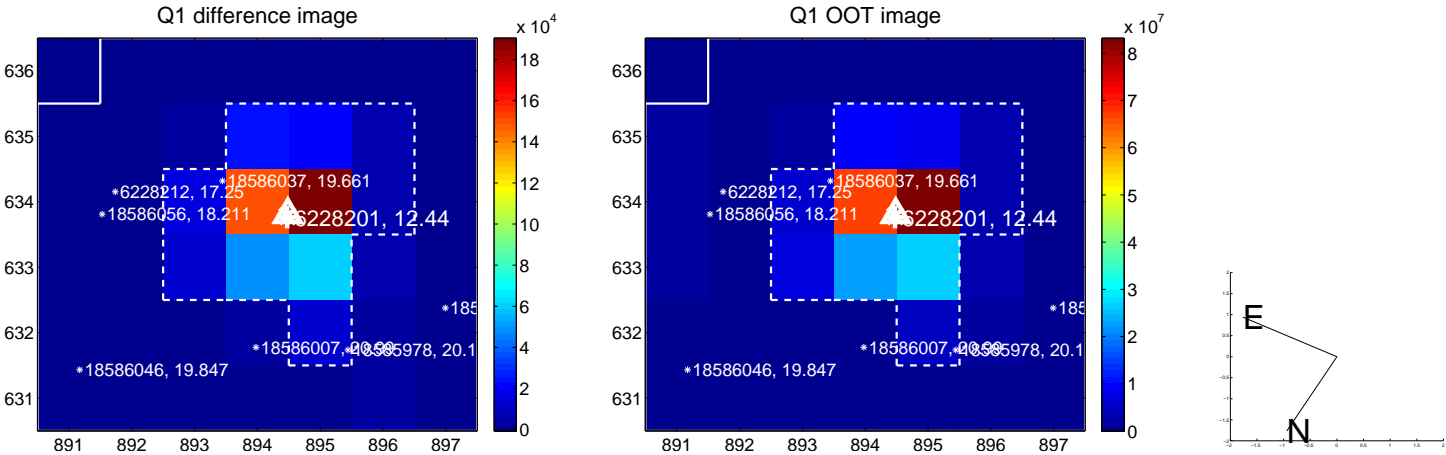
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.011 ± 0.067	0.16	-0.008 ± 0.067	-0.008 ± 0.067
PRF-fit source offset from KIC position	0.042 ± 0.068	0.61	-0.030 ± 0.068	0.030 ± 0.068
photometric centroid source offset	1.18 ± 0.43	2.73	0.21 ± 0.51	-1.16 ± 0.43

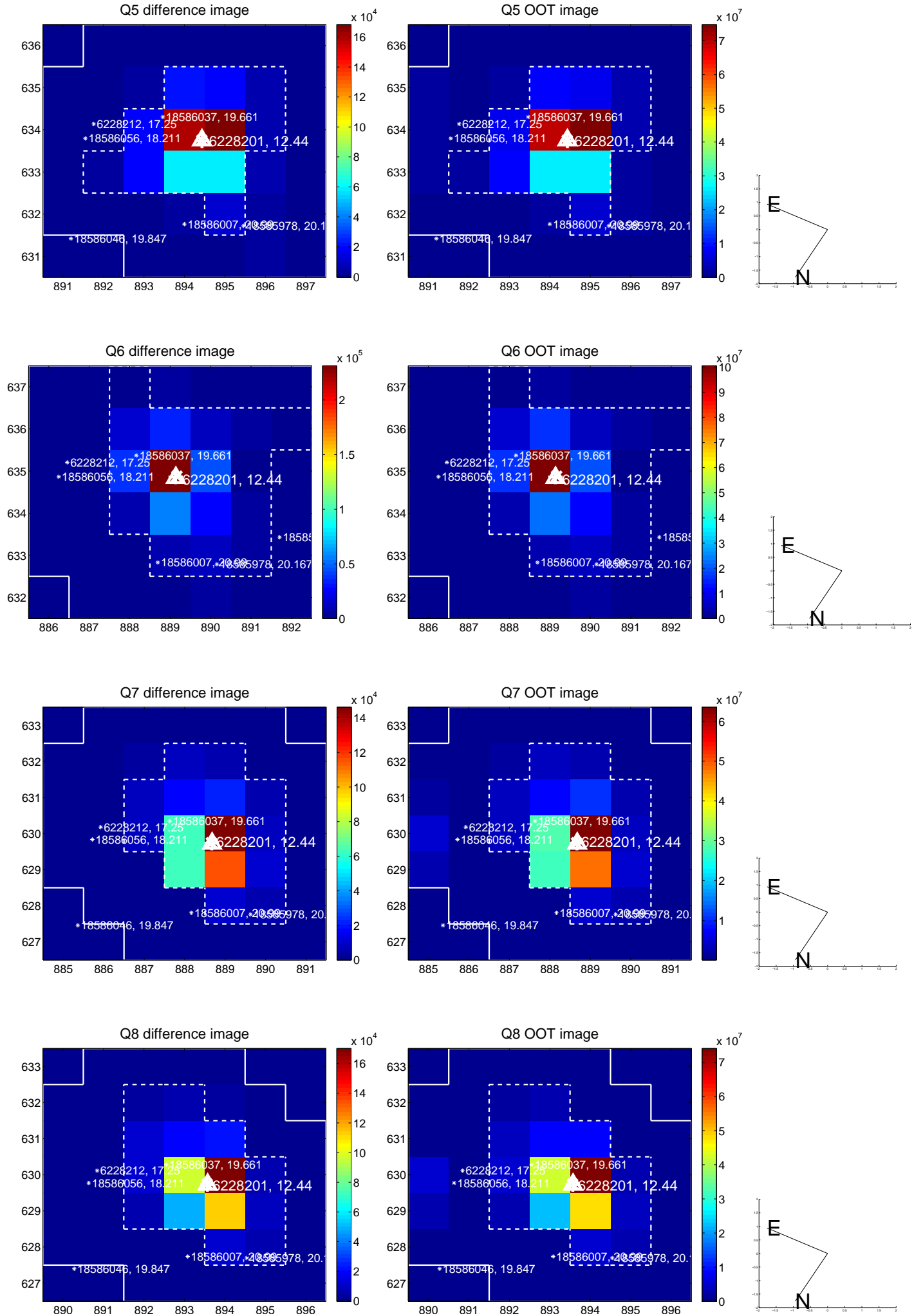


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

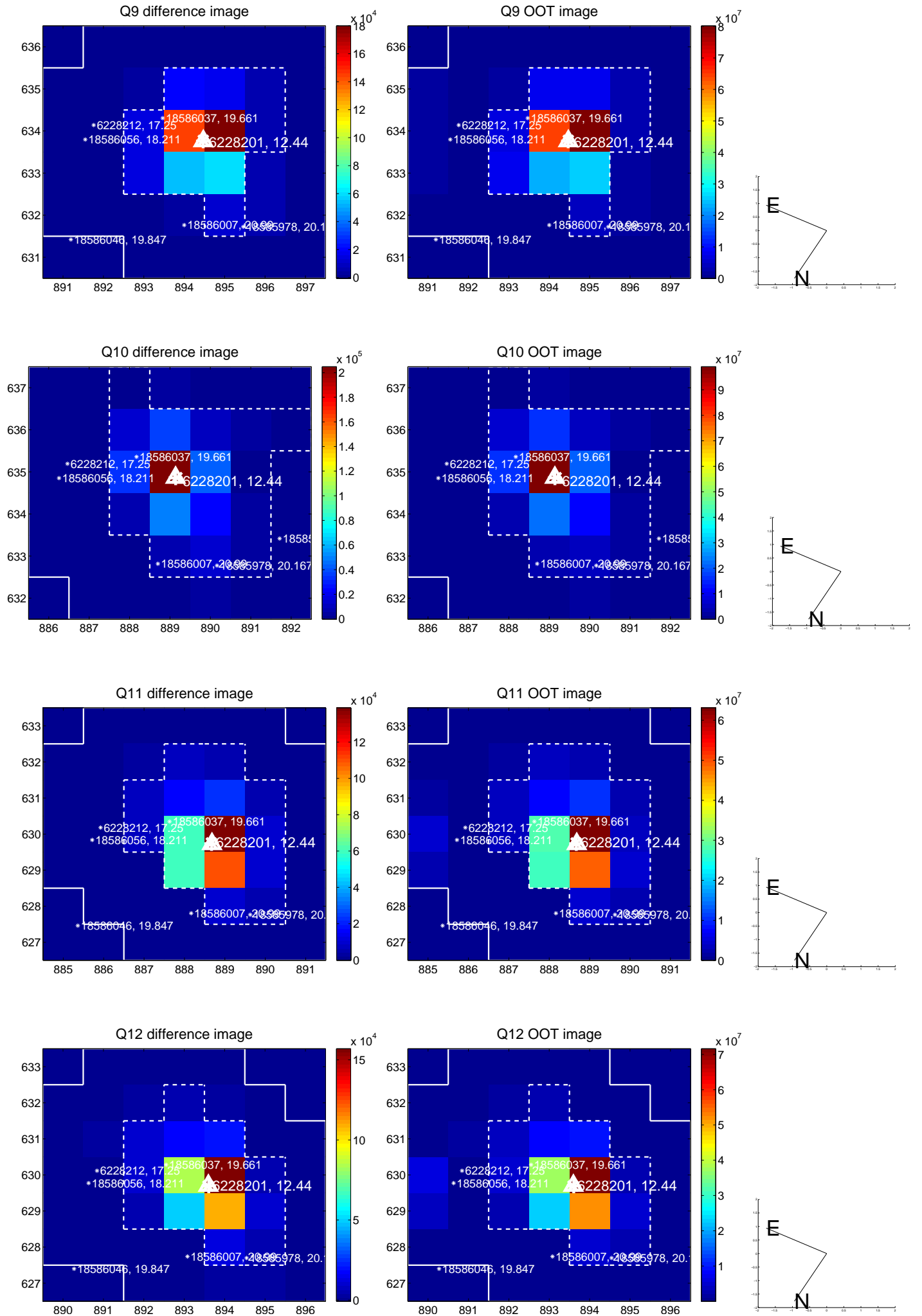
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



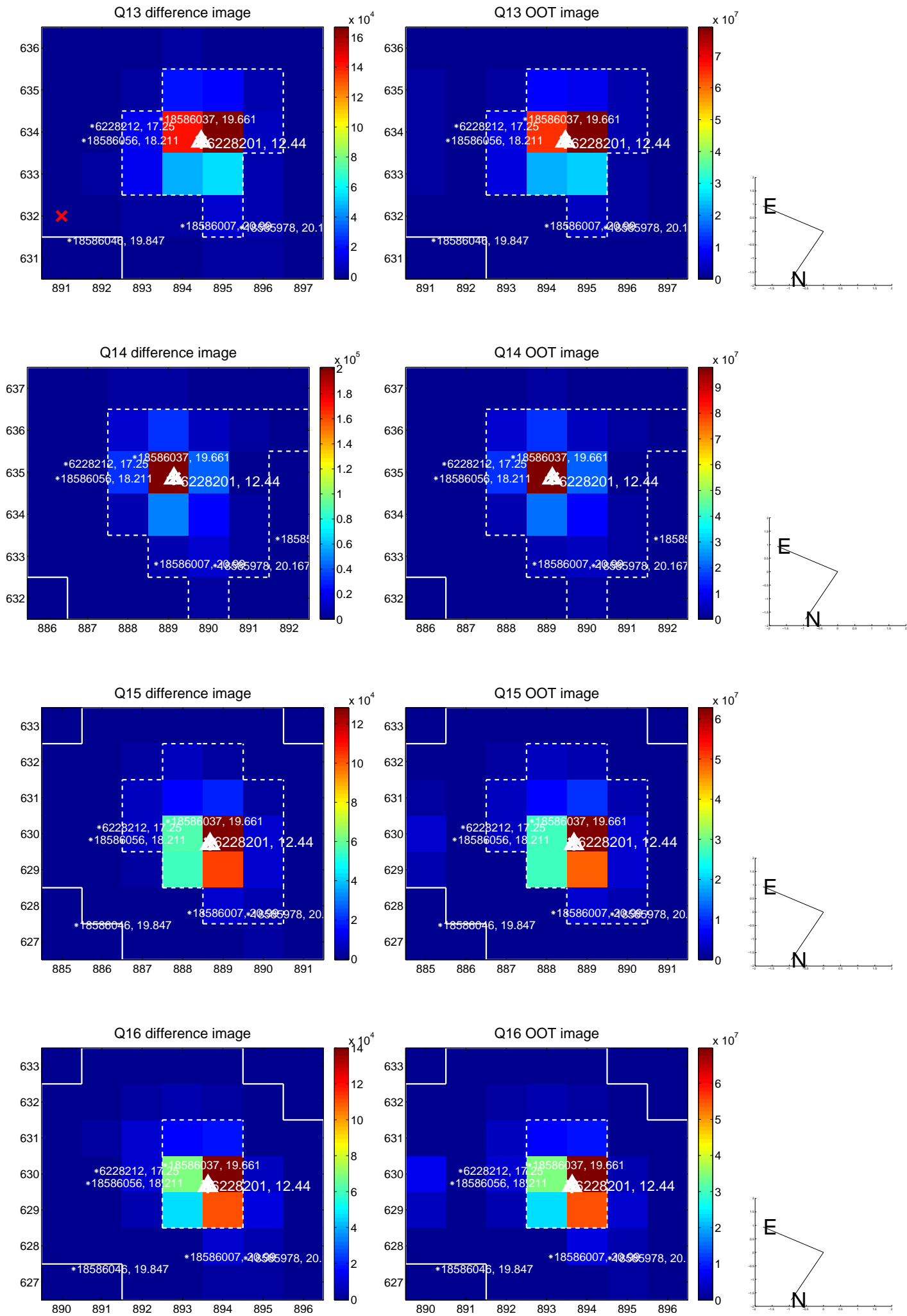
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



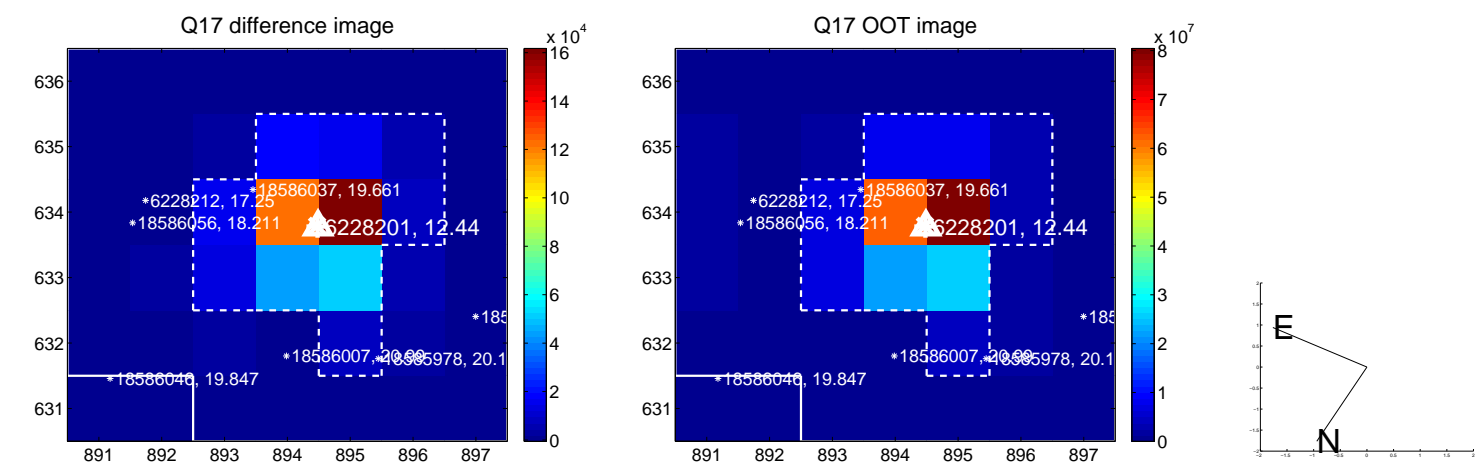
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



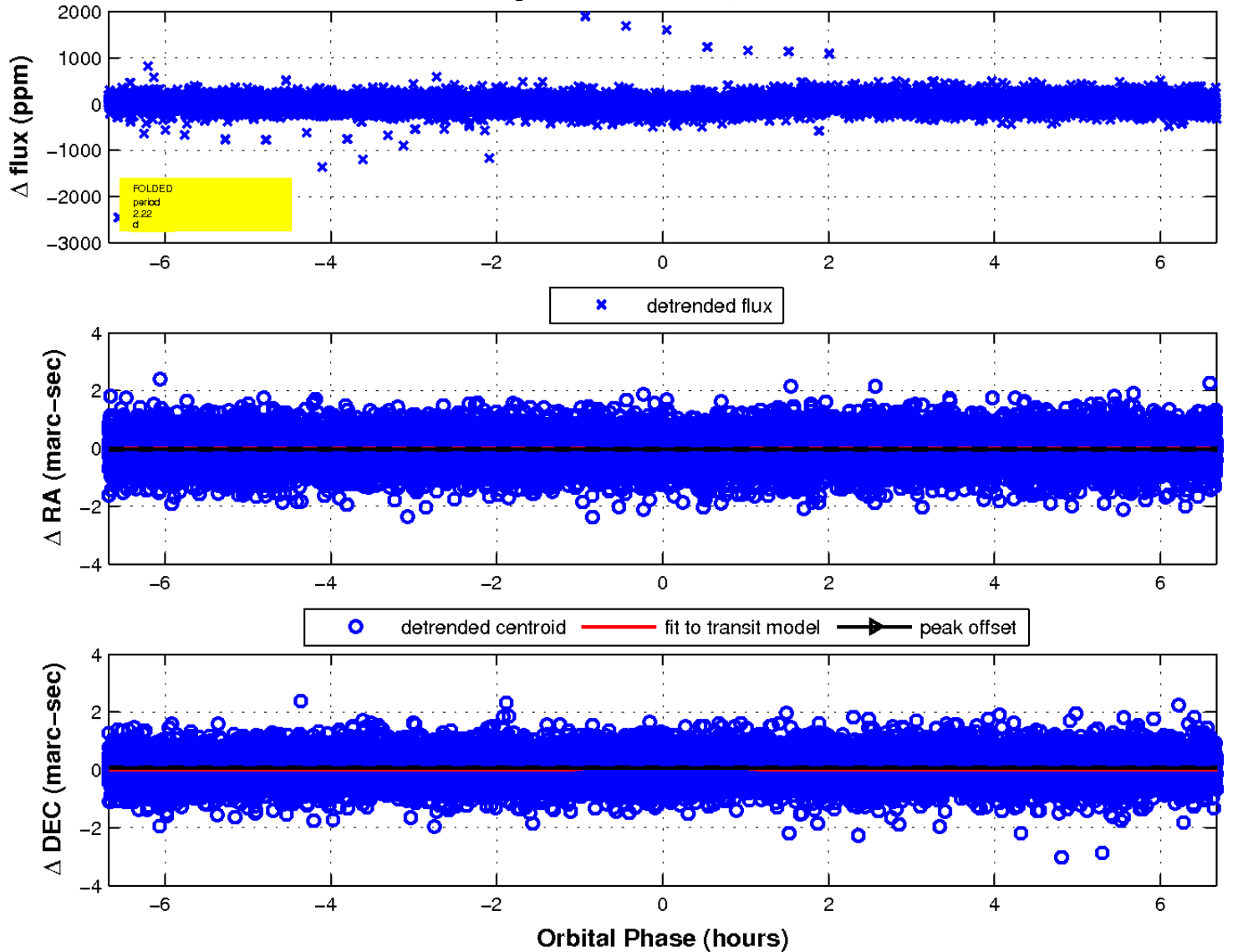
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

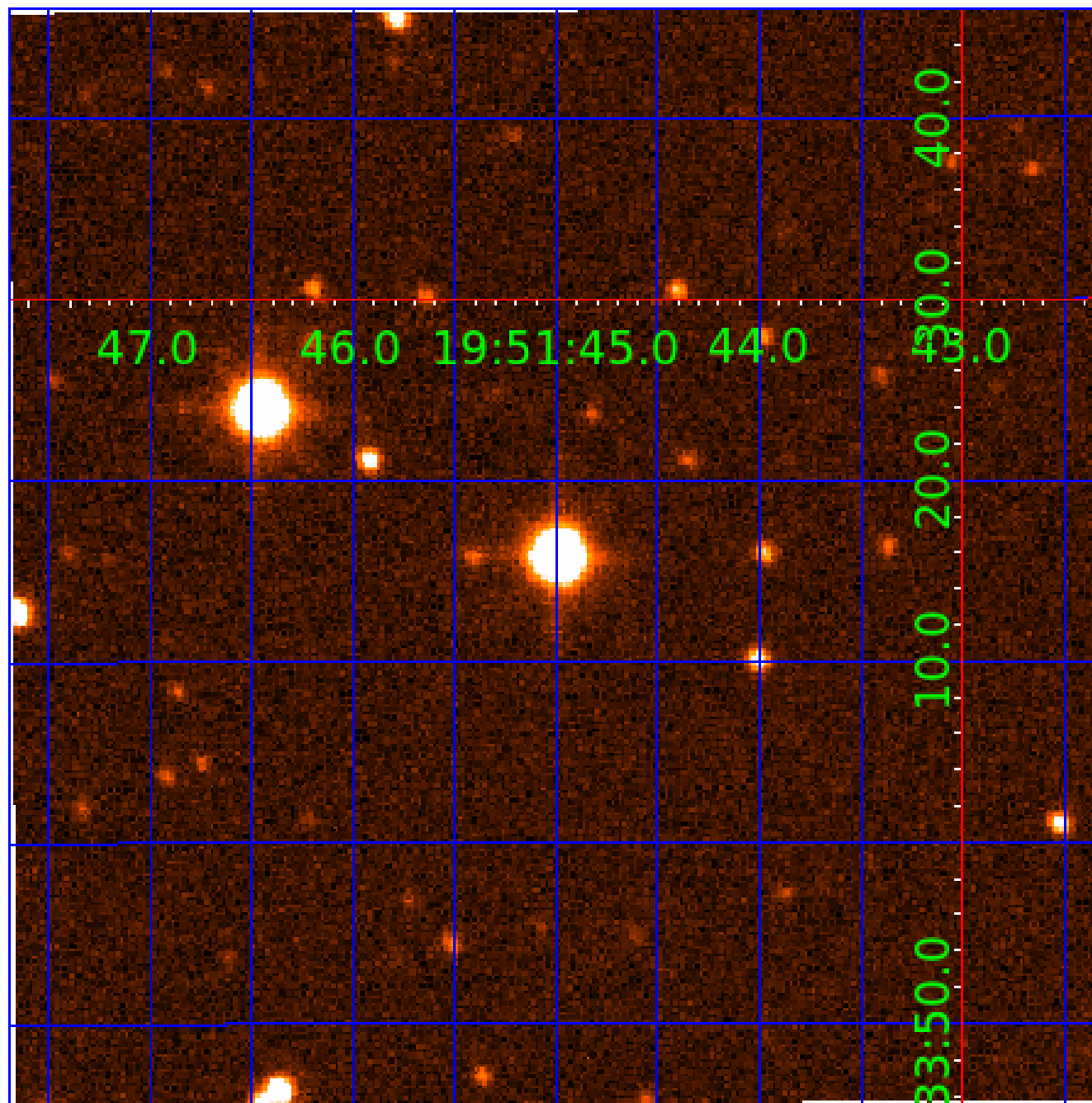


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 006228201

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006228201-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
006228201-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—SAME_NTL_PERIOD—HALO_GHOST

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

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

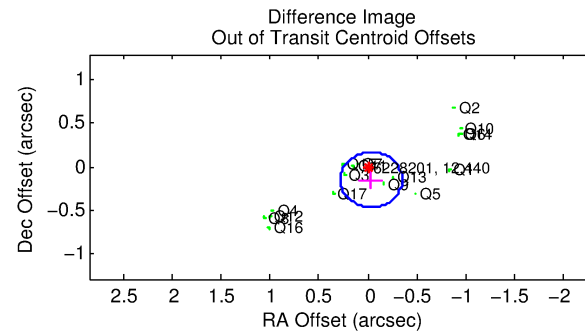
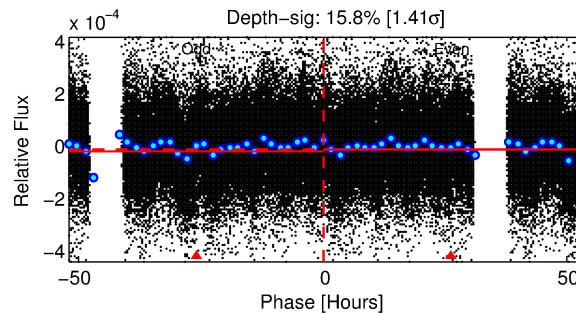
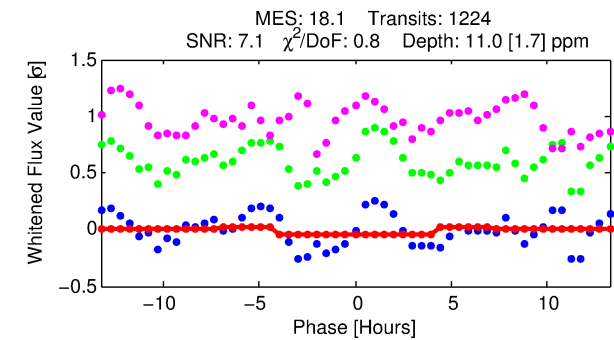
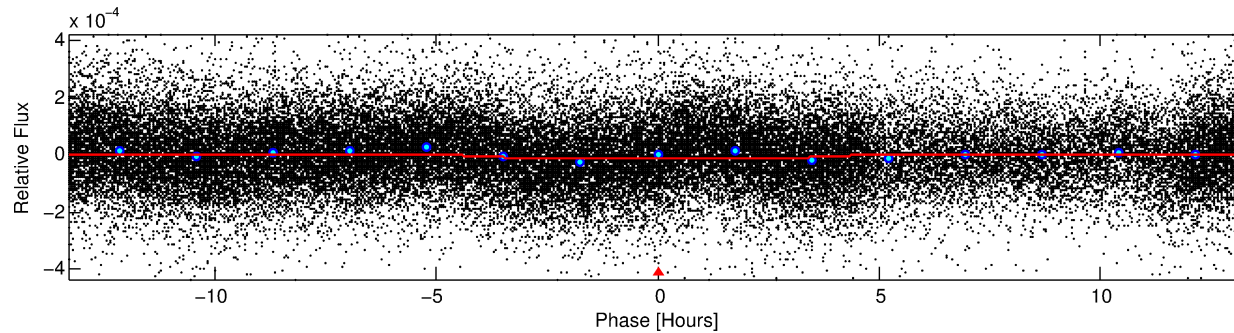
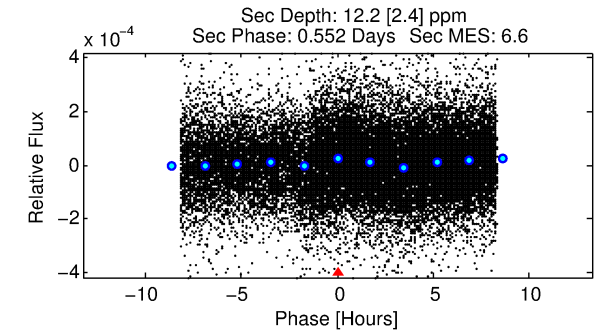
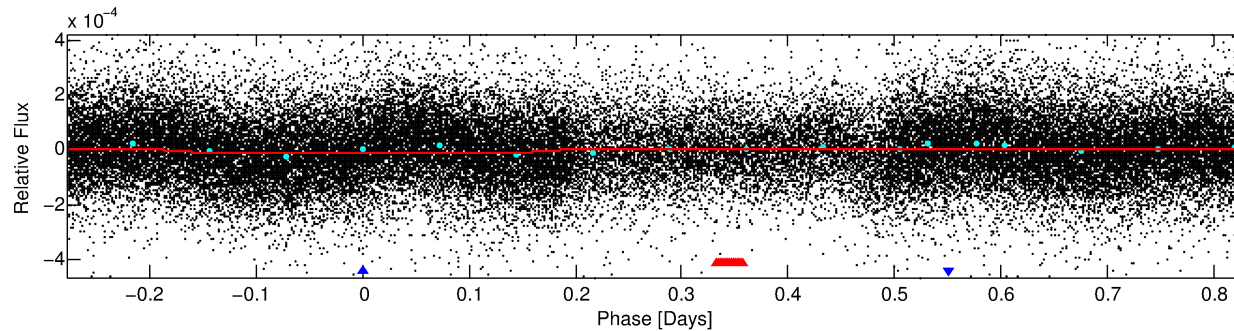
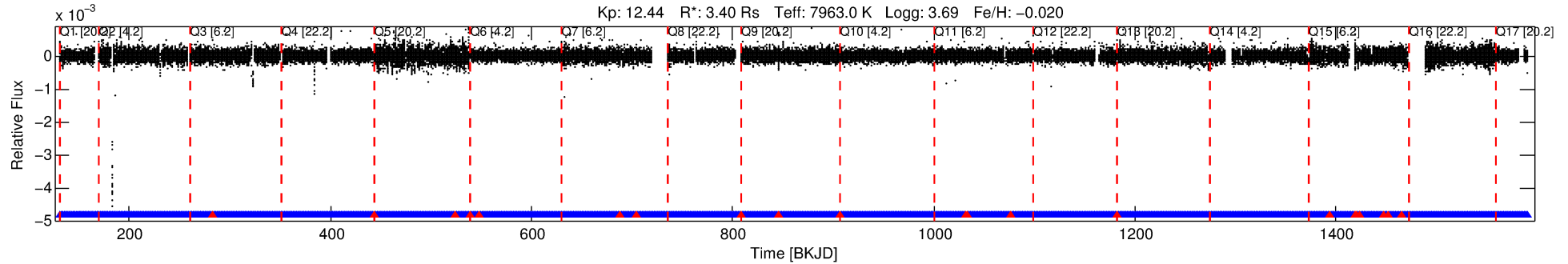
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006228201-02

No Significant Match Found

DV One-Page Summary

KIC: 6228201 Candidate: 2 of 2 Period: 1.109 d



DV Fit Results:

Period = 1.10882 [0.00002] d
Epoch = 131.7291 [0.0062] BKJD
Rp/R* = 0.0032 [0.0023]
a/R* = 1.13 [1.07]
b = 0.50 [6.37]
Seff = 58203.82 [44297.82]
Teff = 3961 [754] K
Rp = 1.17 [1.02] Re
a = 0.0267 [0.0122] AU
Ag = 3.51 [5.87] [0.43σ]
Teffp = 8382 [3160] K [1.36σ]

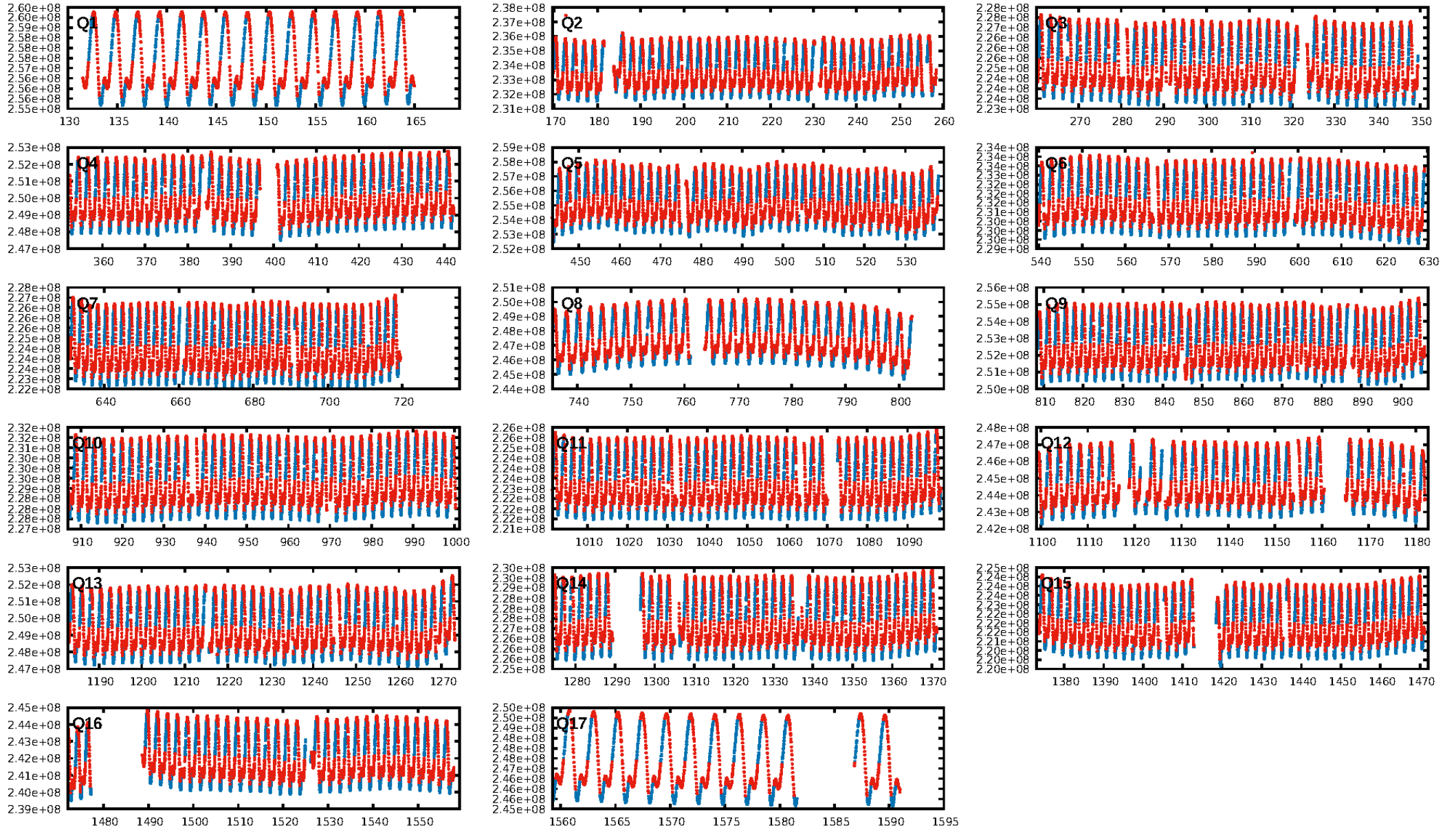
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.7% [2.97σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [1148/1169]
GhostDiagnostic-chr: 0.1363
Centroid-sig: 0.0%
Centroid-so: 6.263 arcsec [6.14σ]
OotOffset-rm: 0.155 arcsec [1.46σ]
KicOffset-rm: 0.130 arcsec [1.19σ]
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]

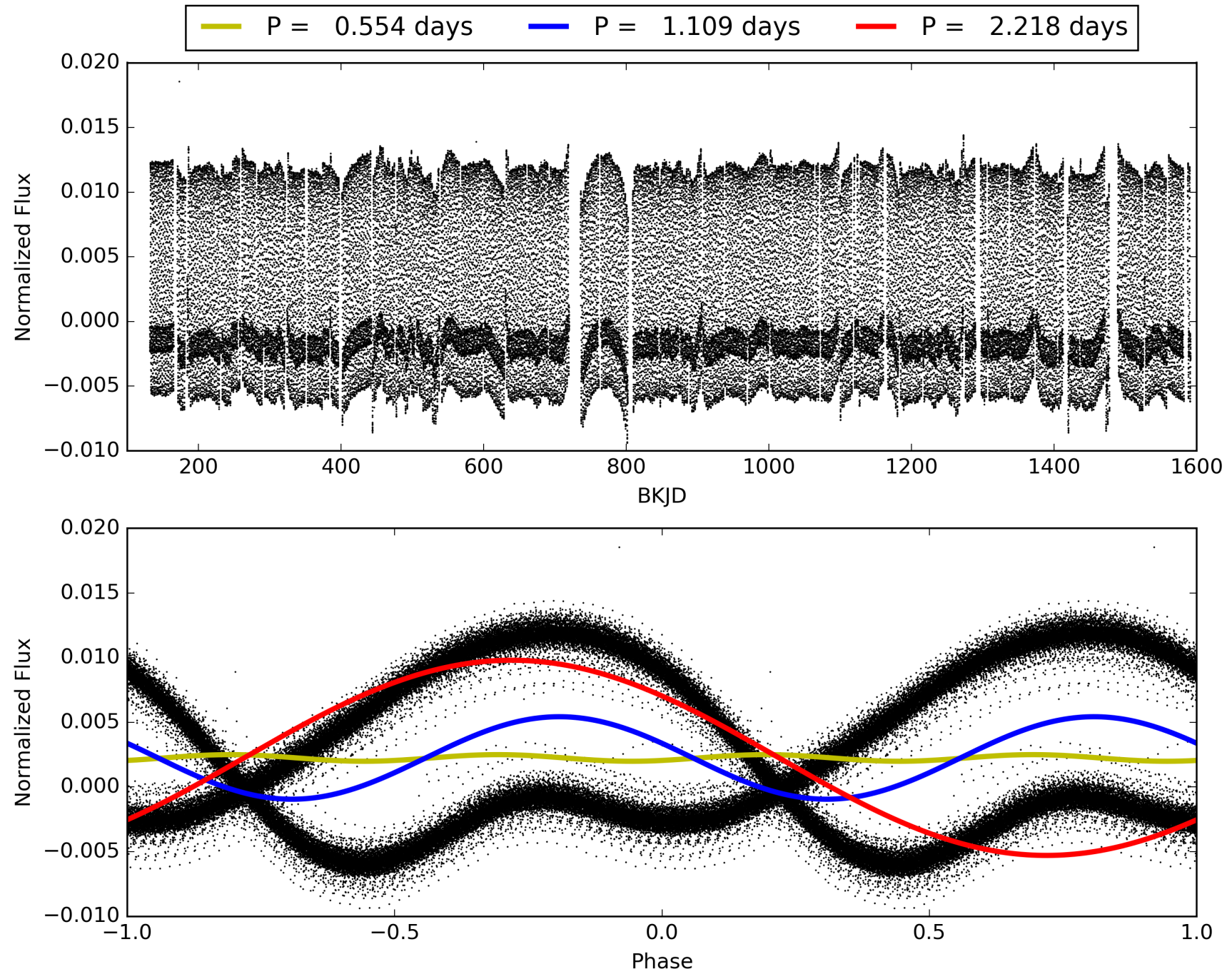
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:14:00 Z

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

TCE 006228201-02, PDC Light Curves

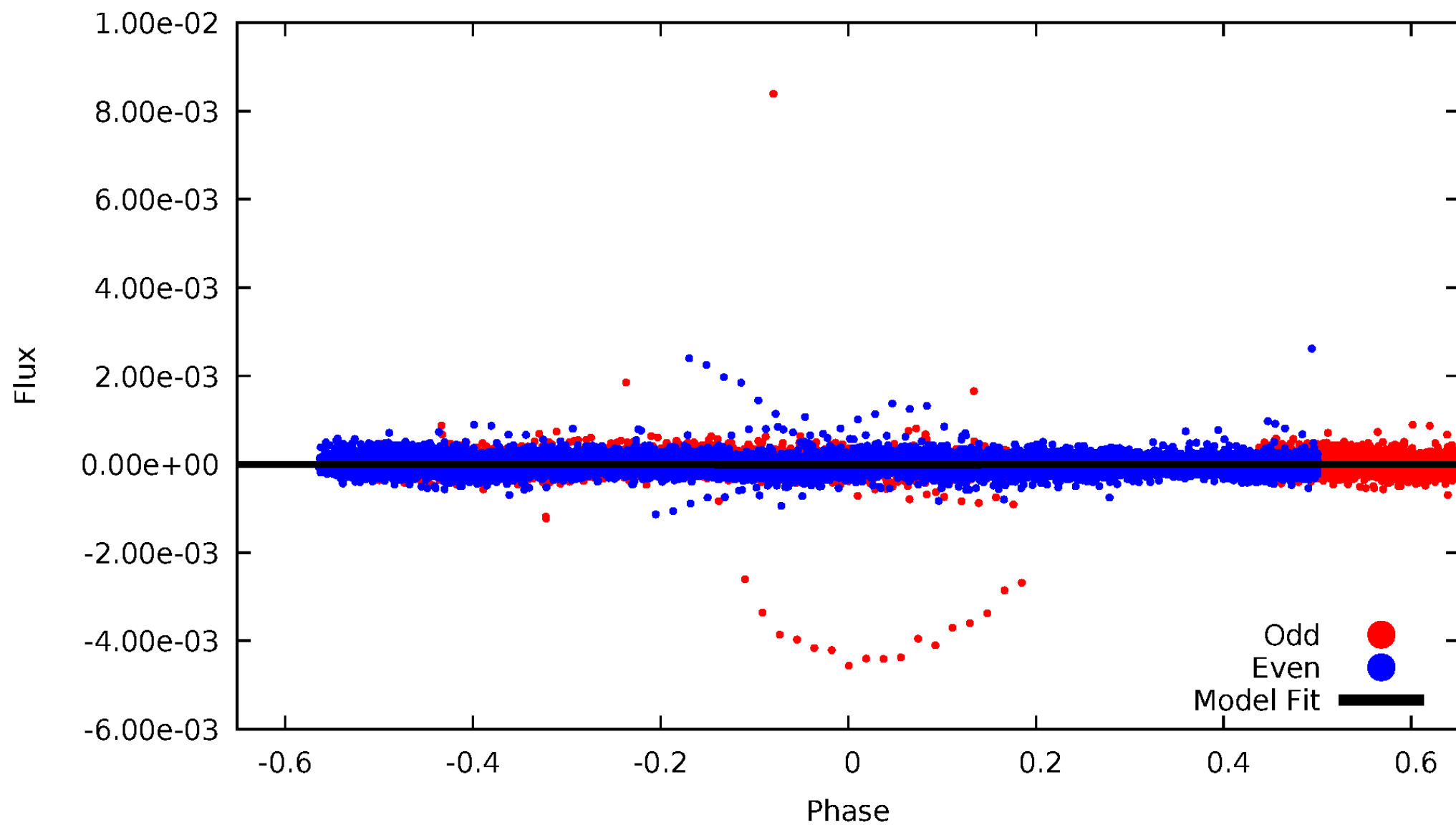


TCE 006228201-02



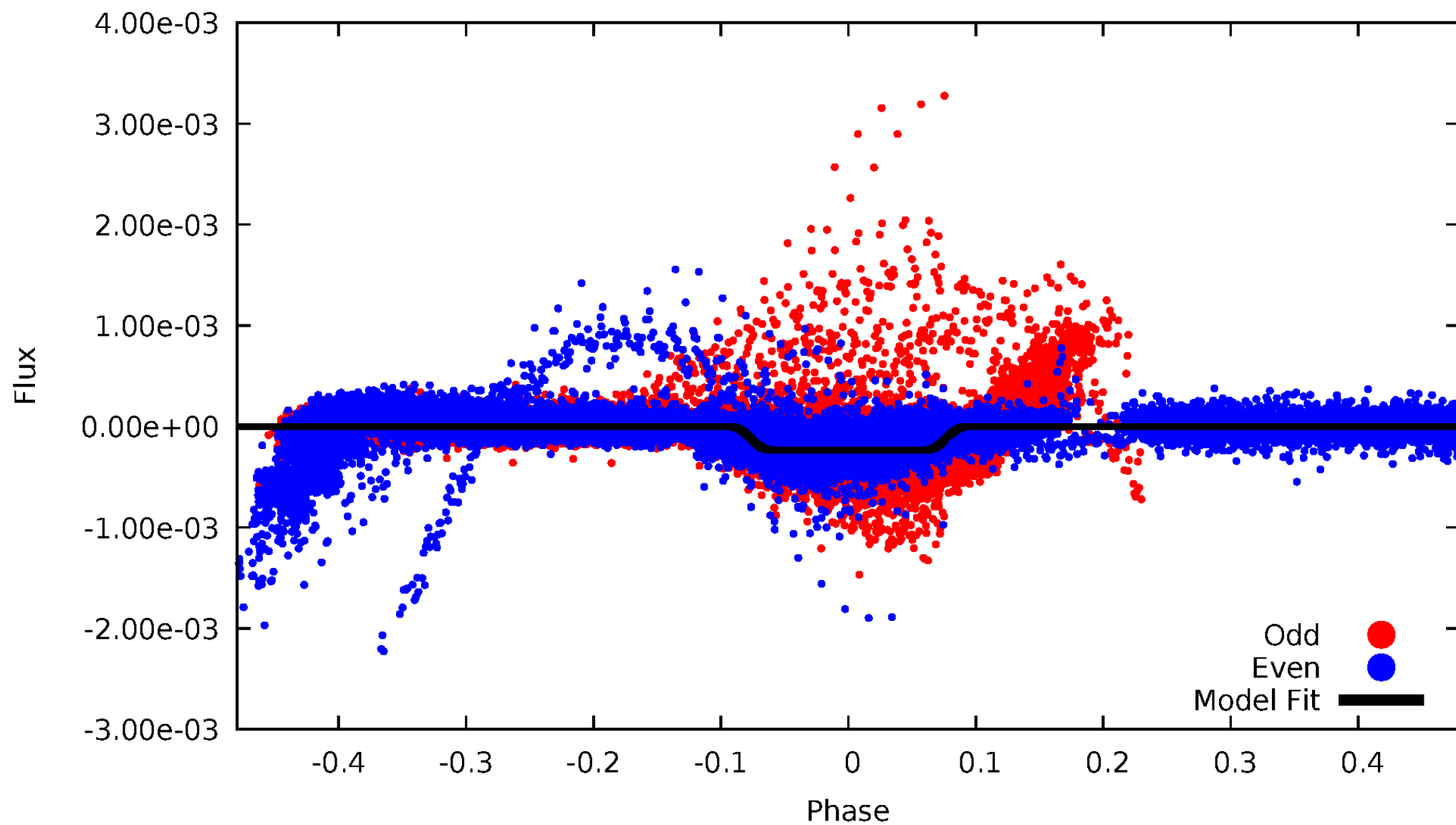
DV Odd/Even

TCE 006228201-02



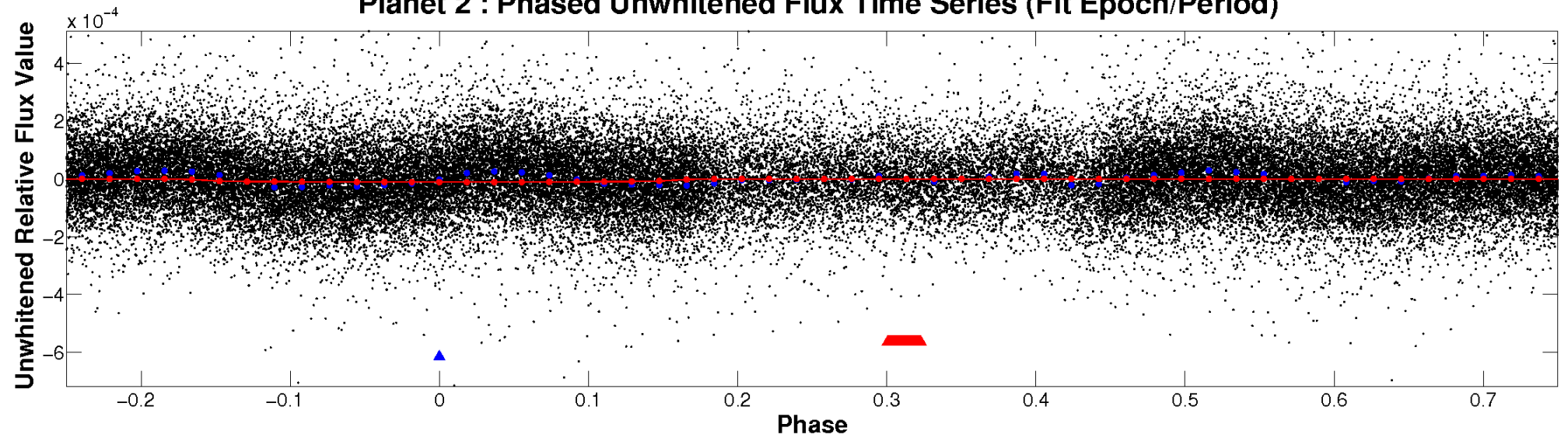
ALT Odd/Even

TCE 006228201-02

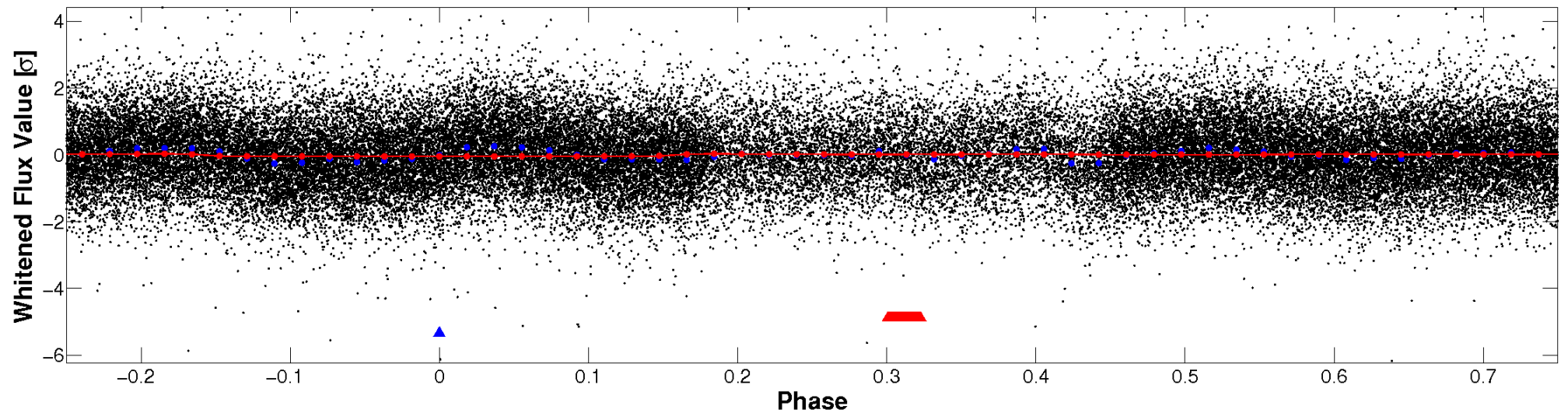


Non-Whitened Vs. Whitened Light Curve

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

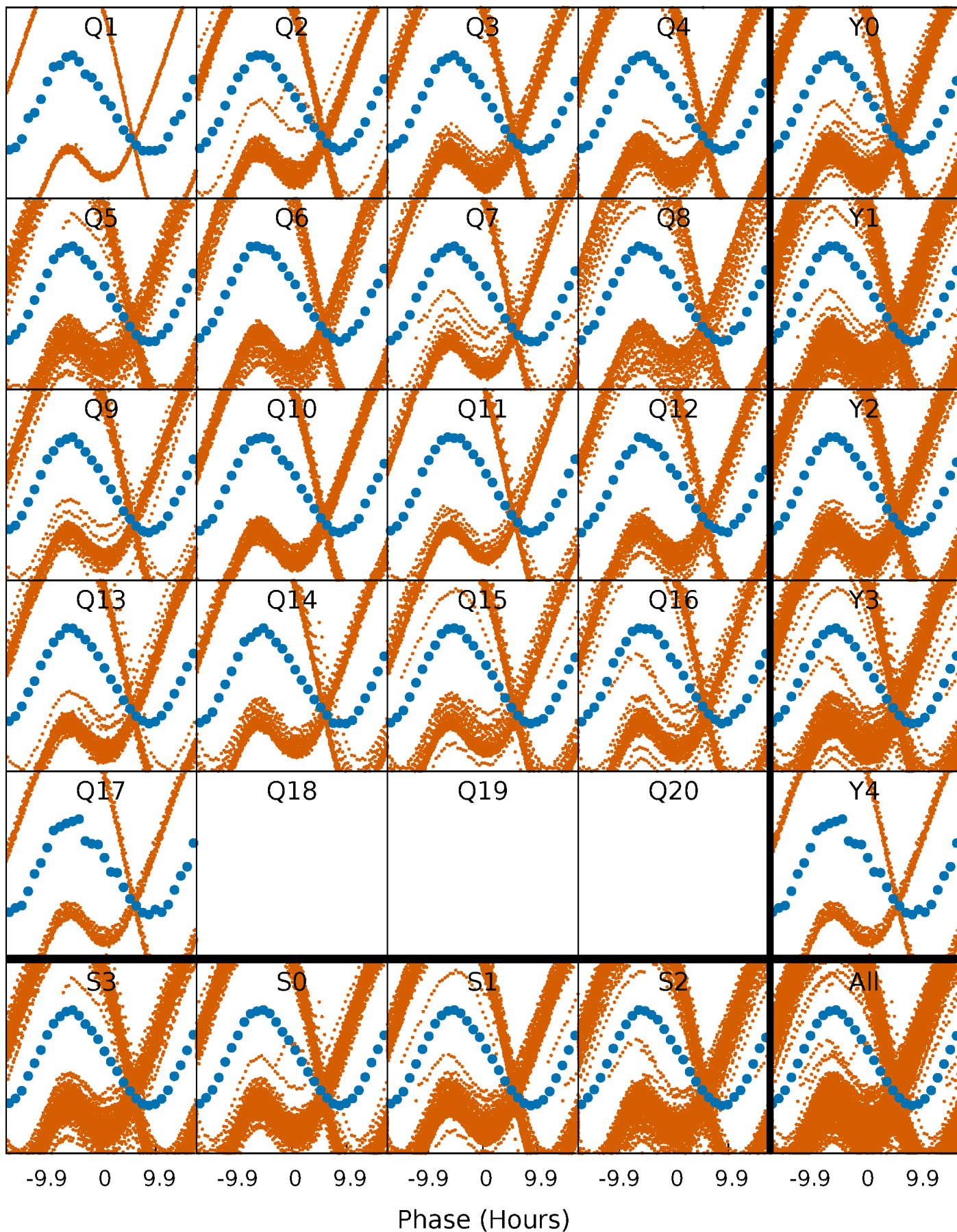


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



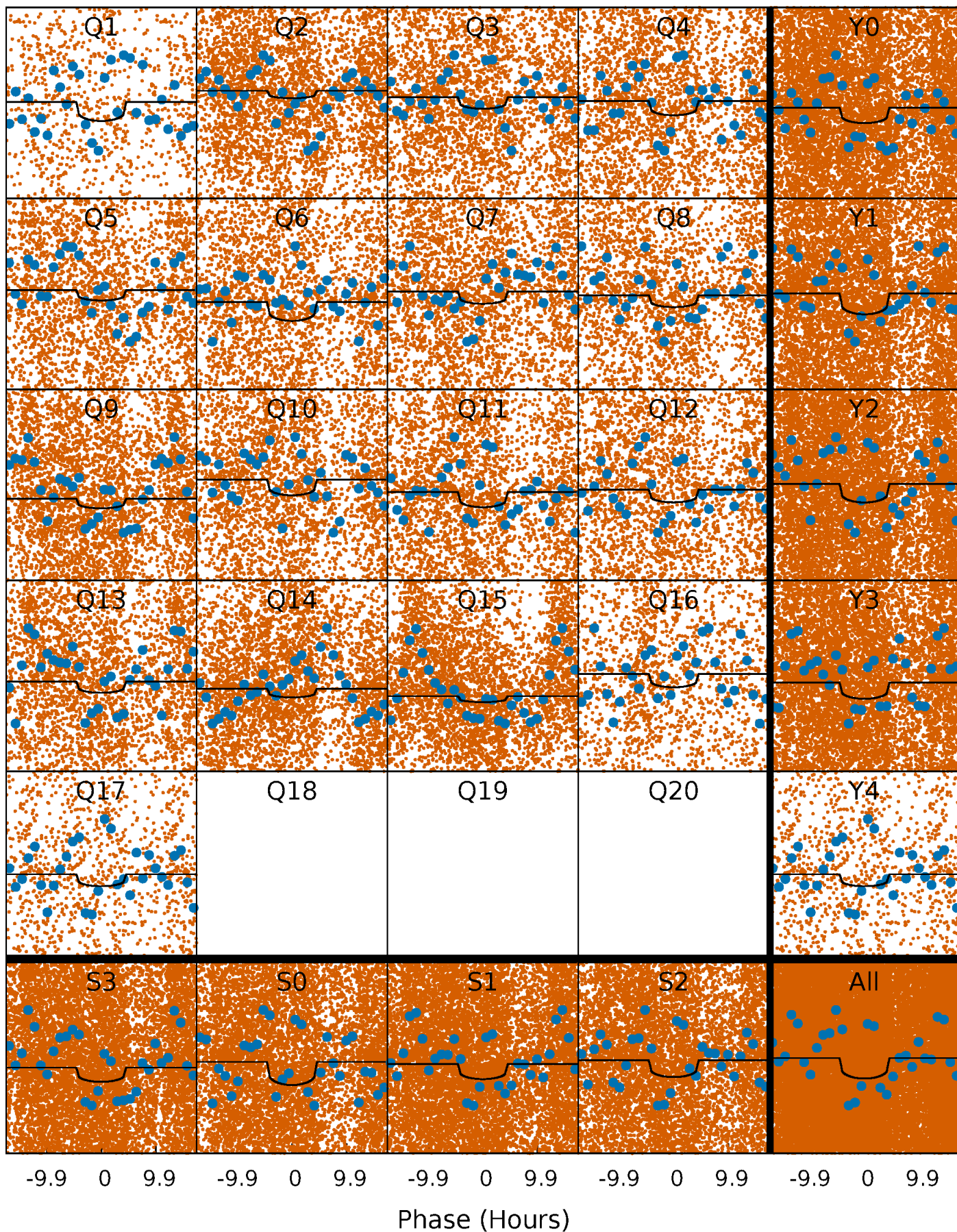
PDC Quarter-Phased Transit Curves

TCE 006228201-02 P= 1.108825 Days $T_0=131.729054$ (BKJD)



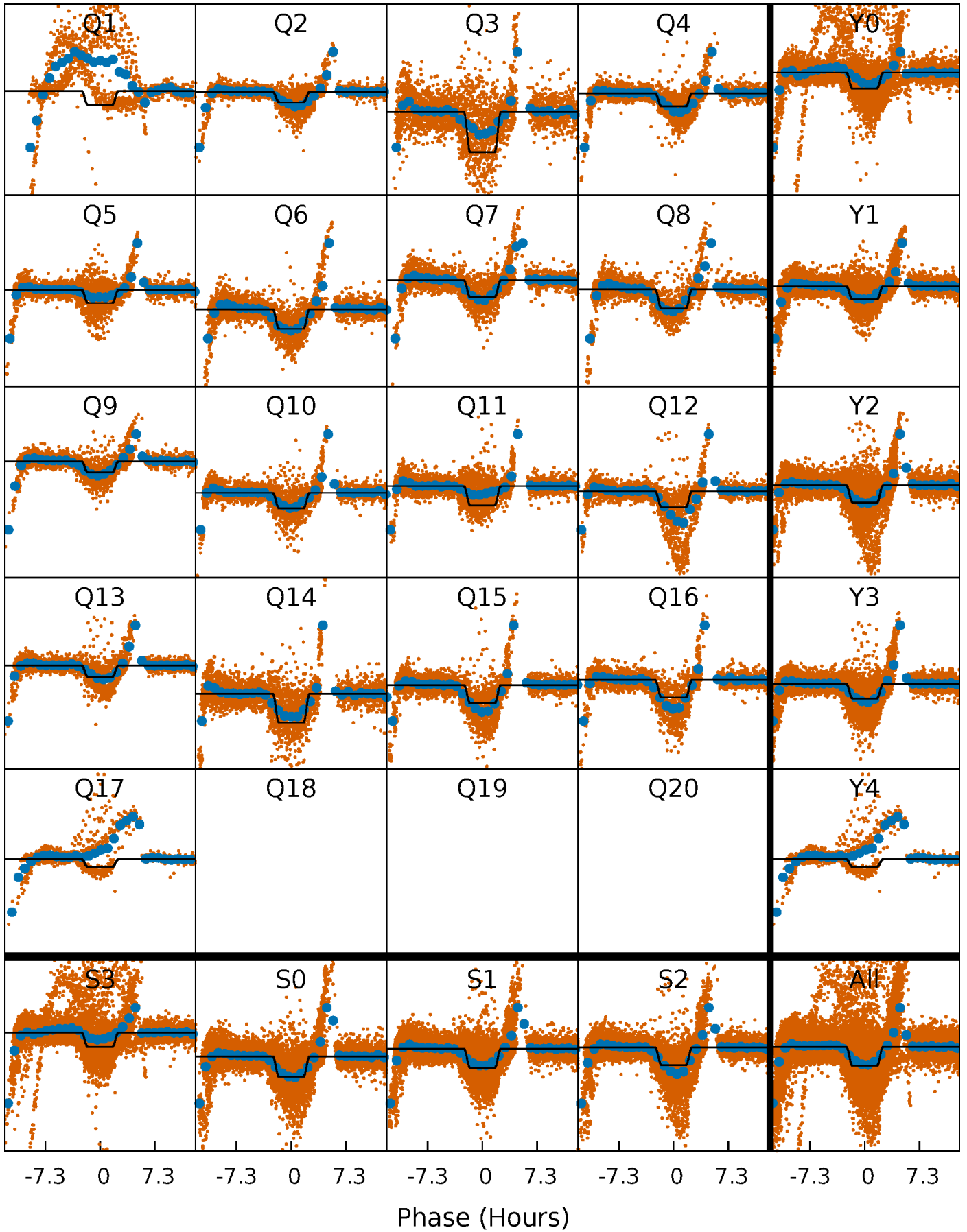
DV Quarter-Phased Transit Curves

TCE 006228201-02 P= 1.108825 Days $T_0=131.729054$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

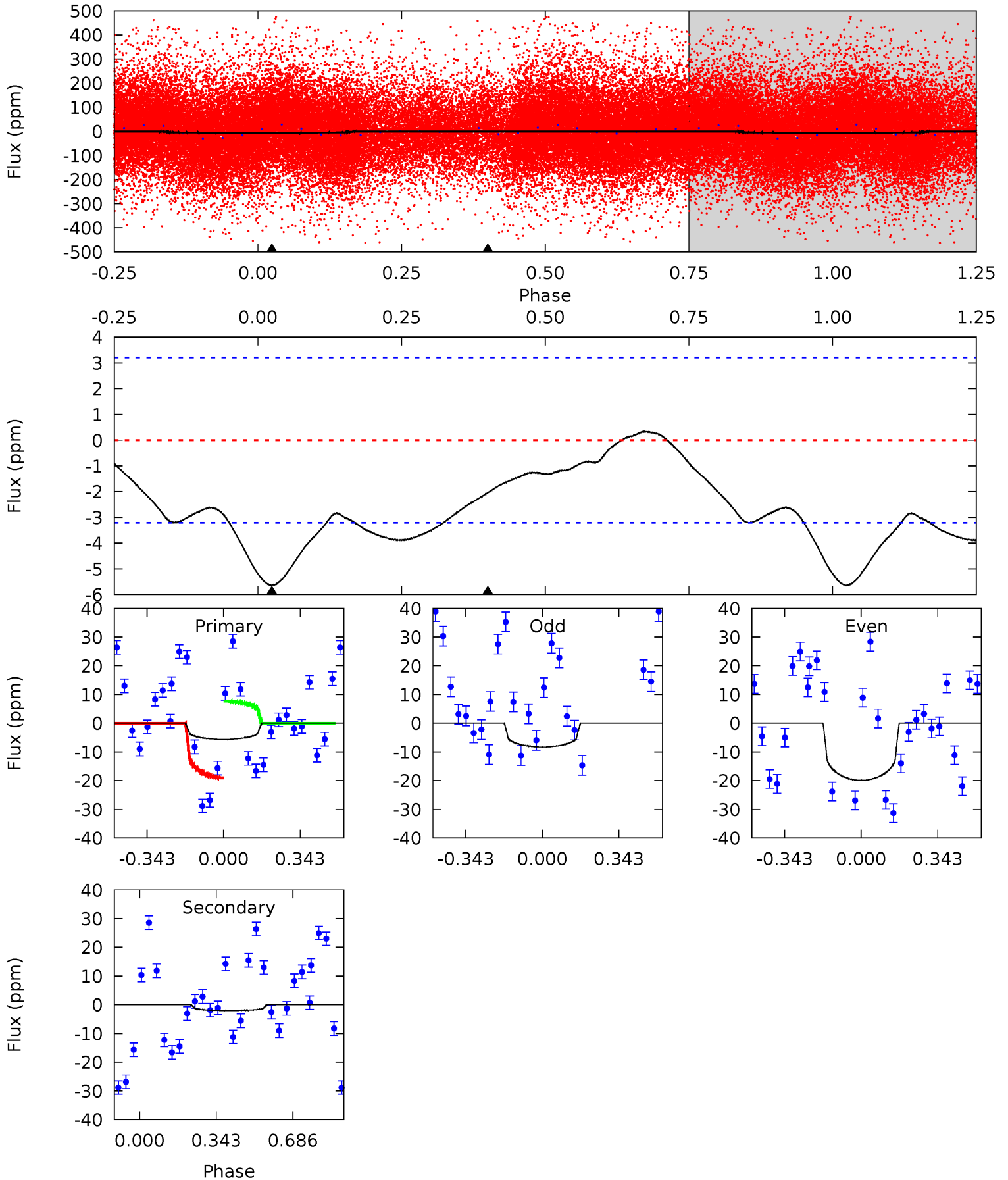
TCE 006228201-02 P= 1.108827 Days $T_0=131.680753$ (BKJD)



DV Model-Shift Uniqueness Test

006228201-02, P = 1.108825 Days, E = 130.620229 Days

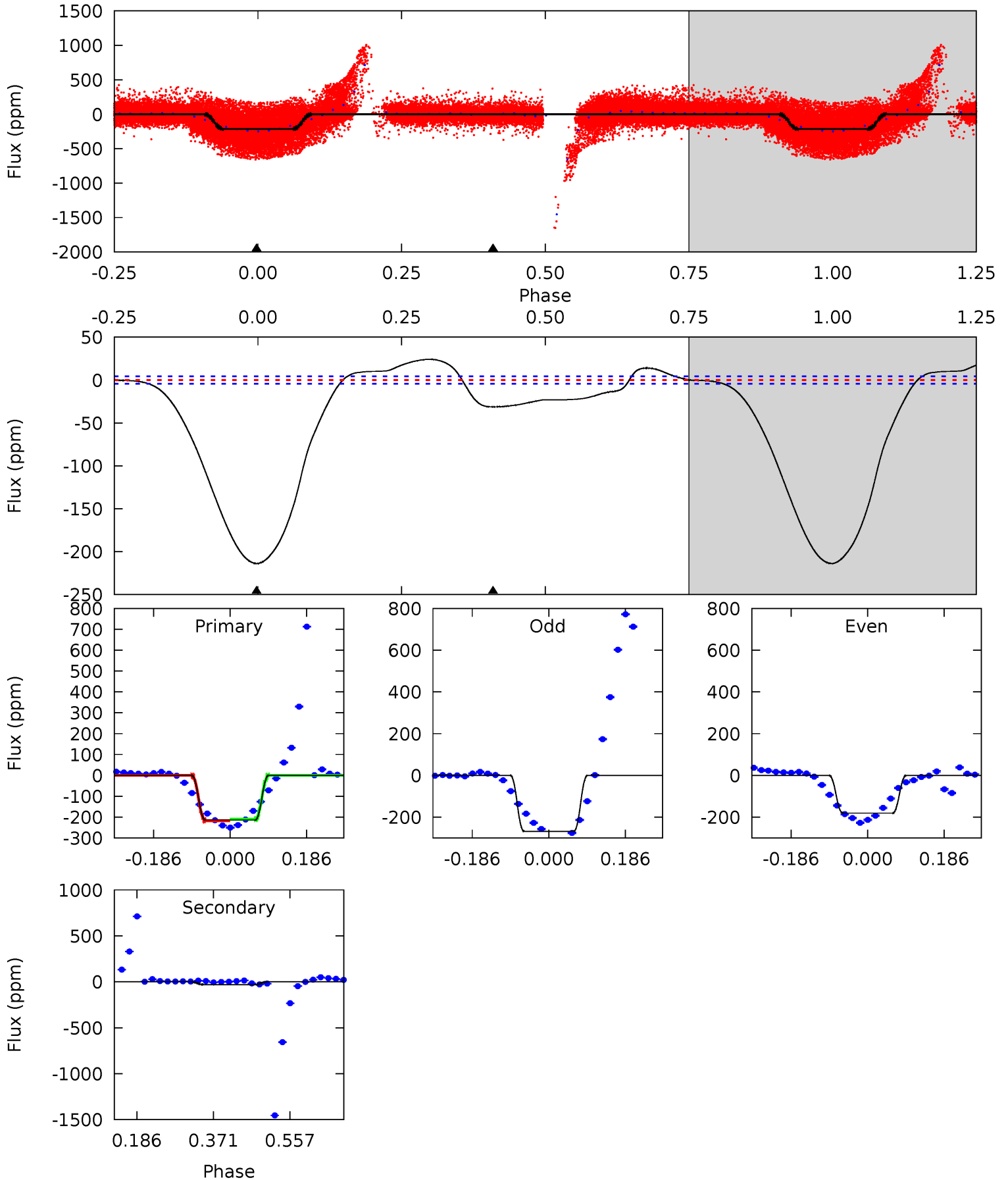
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.55	2.73	0	0	4.30	0.95	0.59	7.55	7.55	2.73	2.73	7.71	1.83	0.06	7.34



Alt Model-Shift Uniqueness Test

006228201-02, P = 1.108827 Days, E = 130.571926 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
219.6	32.1	0	0	4.43	1.32	9.08	219.6	219.6	32.1	32.1	28.5	0.94	0.10	3.80



Stellar Parameters For KIC 006228201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7963^{+222}_{-333}	$3.692^{+0.440}_{-0.110}$	$-0.020^{+0.200}_{-0.350}$	$3.399^{+0.846}_{-1.572}$	$2.074^{+0.337}_{-0.506}$	$0.074^{+0.321}_{-0.025}$
	+3%/-4%	+12%/-3%	+1000%/-1750%	+25%/-46%	+16%/-24%	+432%/-34%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 006228201-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2 ± 1	$1.08^{+0.82}_{-0.65}$	5311^{+429}_{-655}	4542^{+3109}_{-8247}	$0.683^{+3.545}_{-0.483}$
Alt.	-31 ± 1	$5.21^{+1.35}_{-1.34}$	5318^{+419}_{-612}	3927^{+651}_{-5689}	$0.459^{+0.350}_{-0.159}$

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 $A_{obs} \gg 1.0$

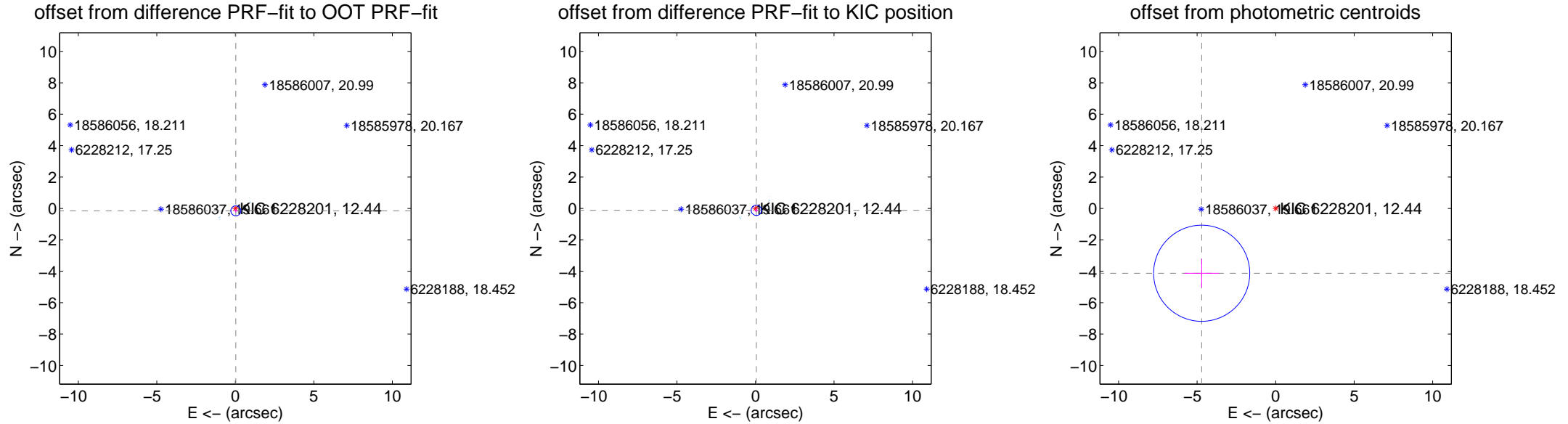
DV Centroid Data

Supplemental centroid analysis for 006228201-02. Kepler magnitude: 12.44. Transit SNR 7.14

There are 17 quarters with good PRF difference image offsets

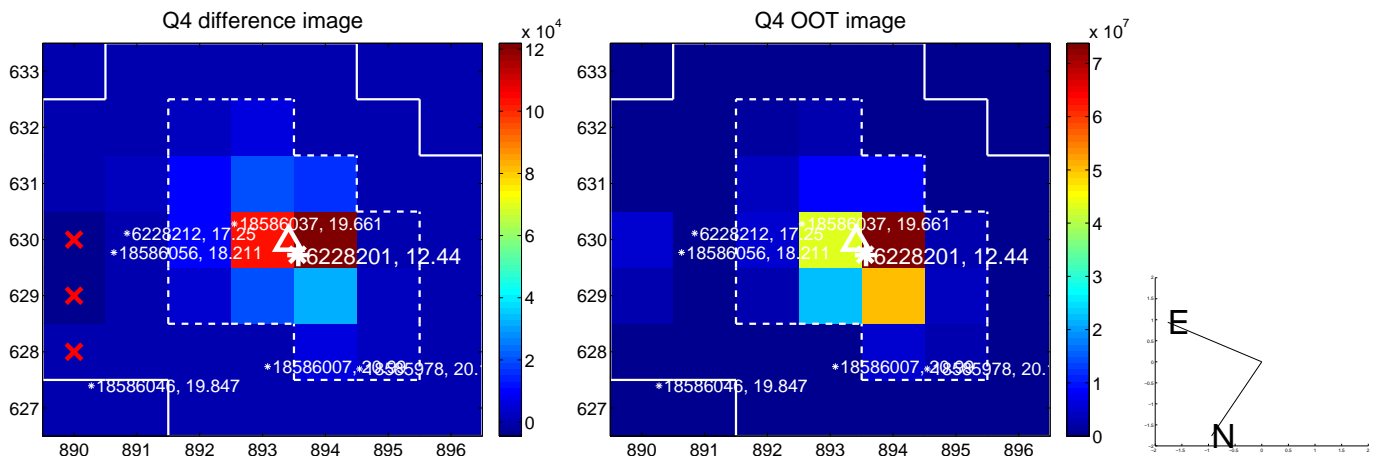
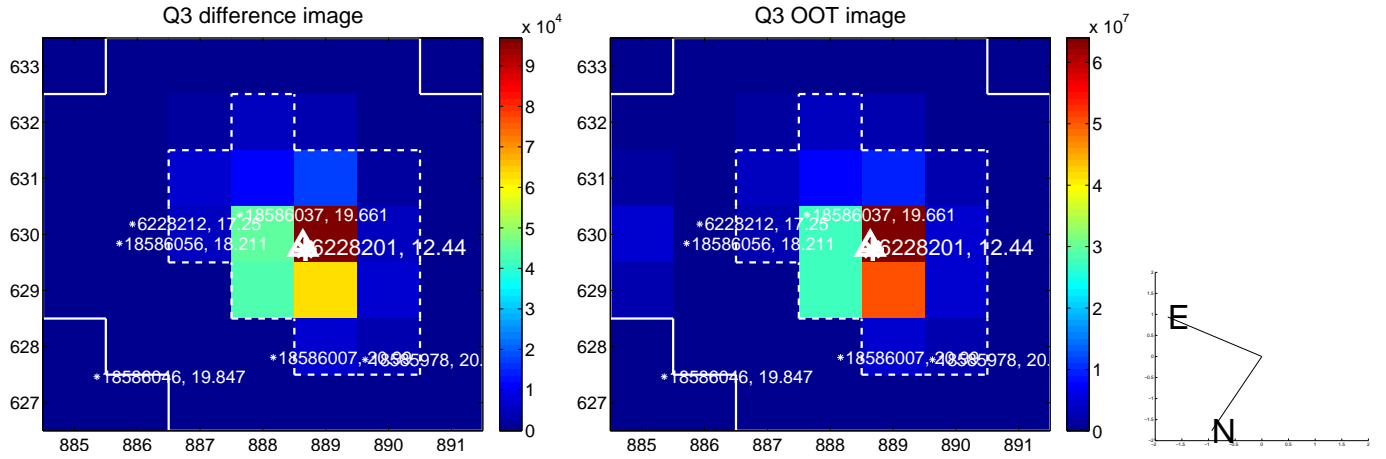
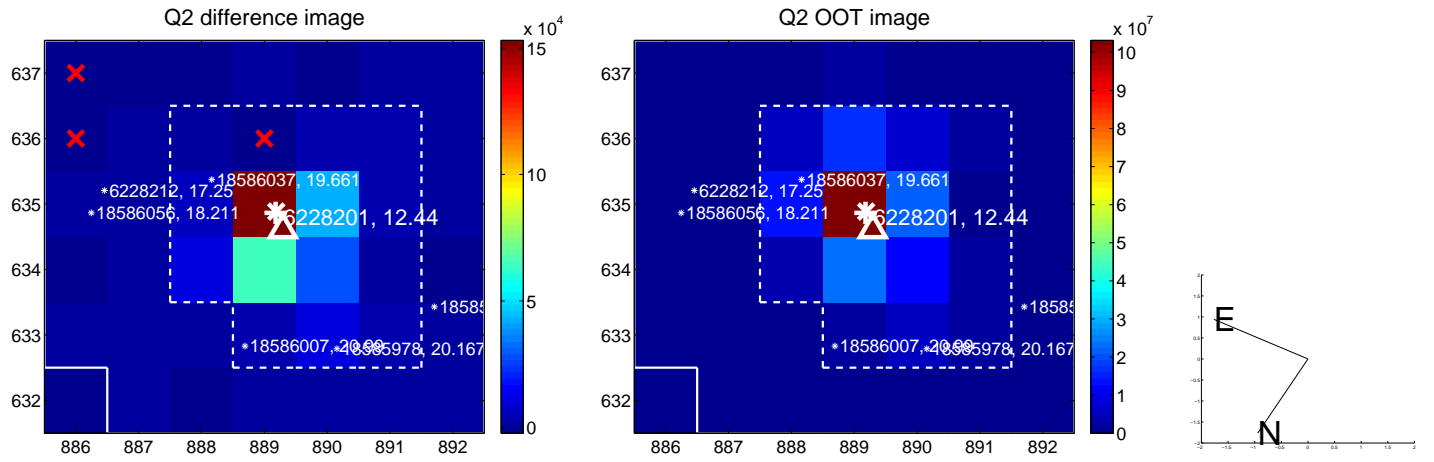
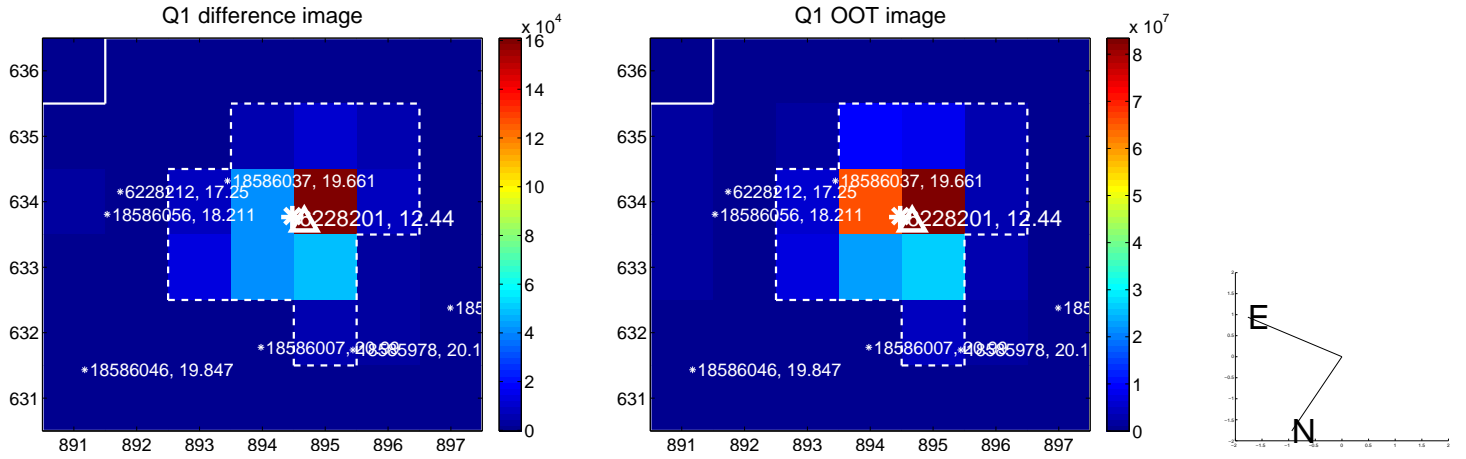
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.155 ± 0.106	1.46	-0.032 ± 0.113	-0.152 ± 0.106
PRF-fit source offset from KIC position	0.130 ± 0.109	1.19	-0.054 ± 0.110	-0.118 ± 0.109
photometric centroid source offset	6.26 ± 1.02	6.14	4.71 ± 1.10	-4.13 ± 0.91

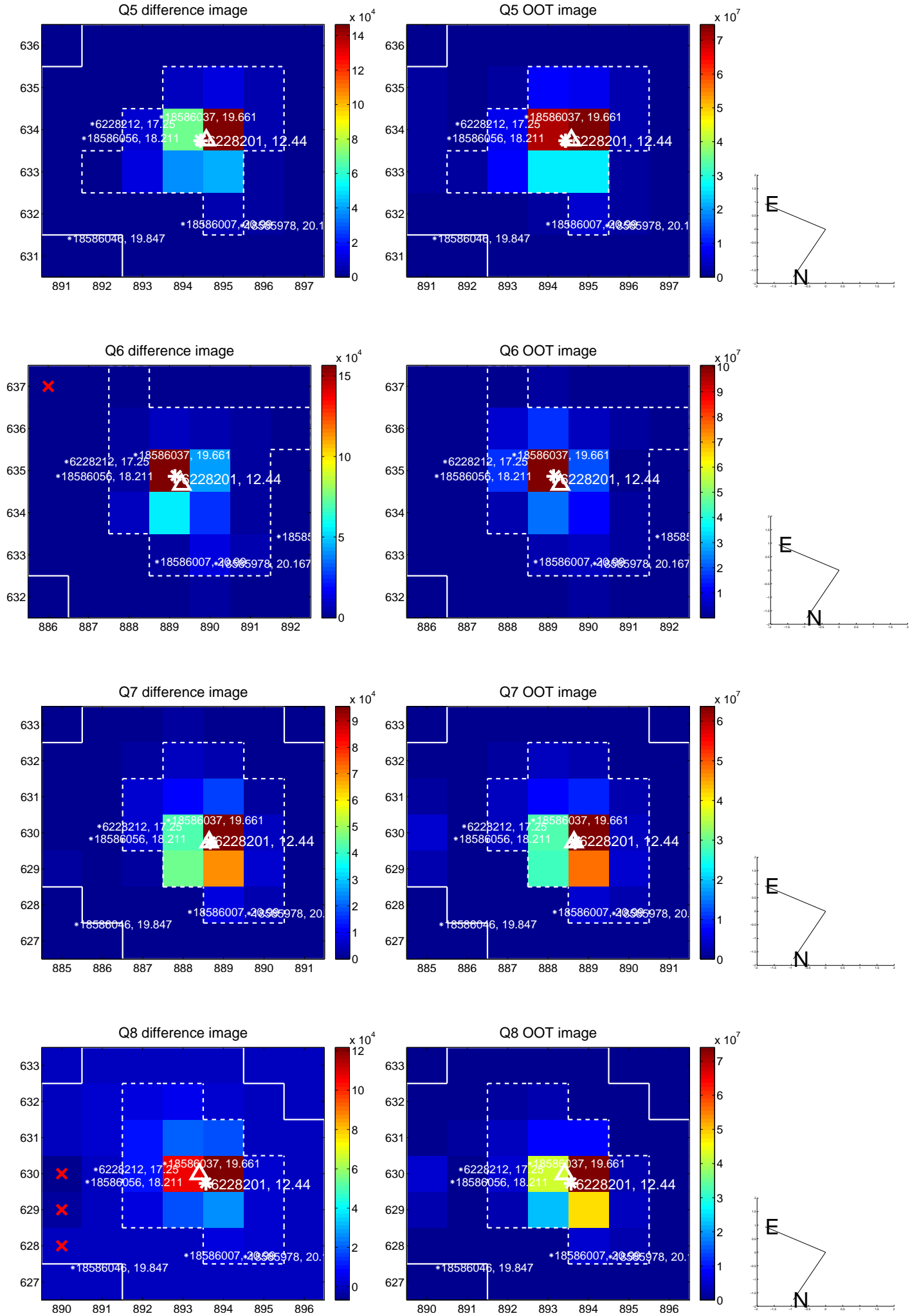


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

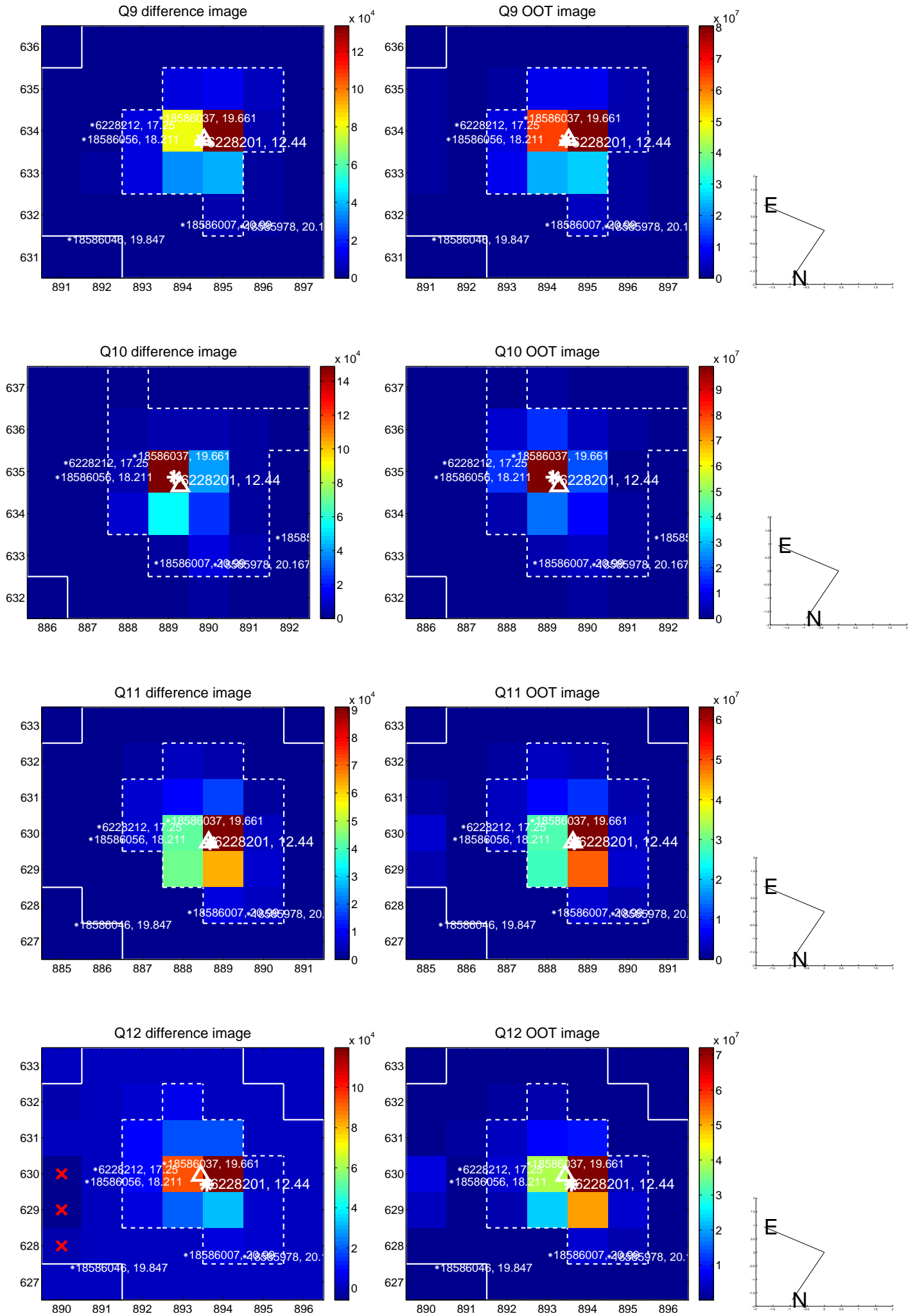
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



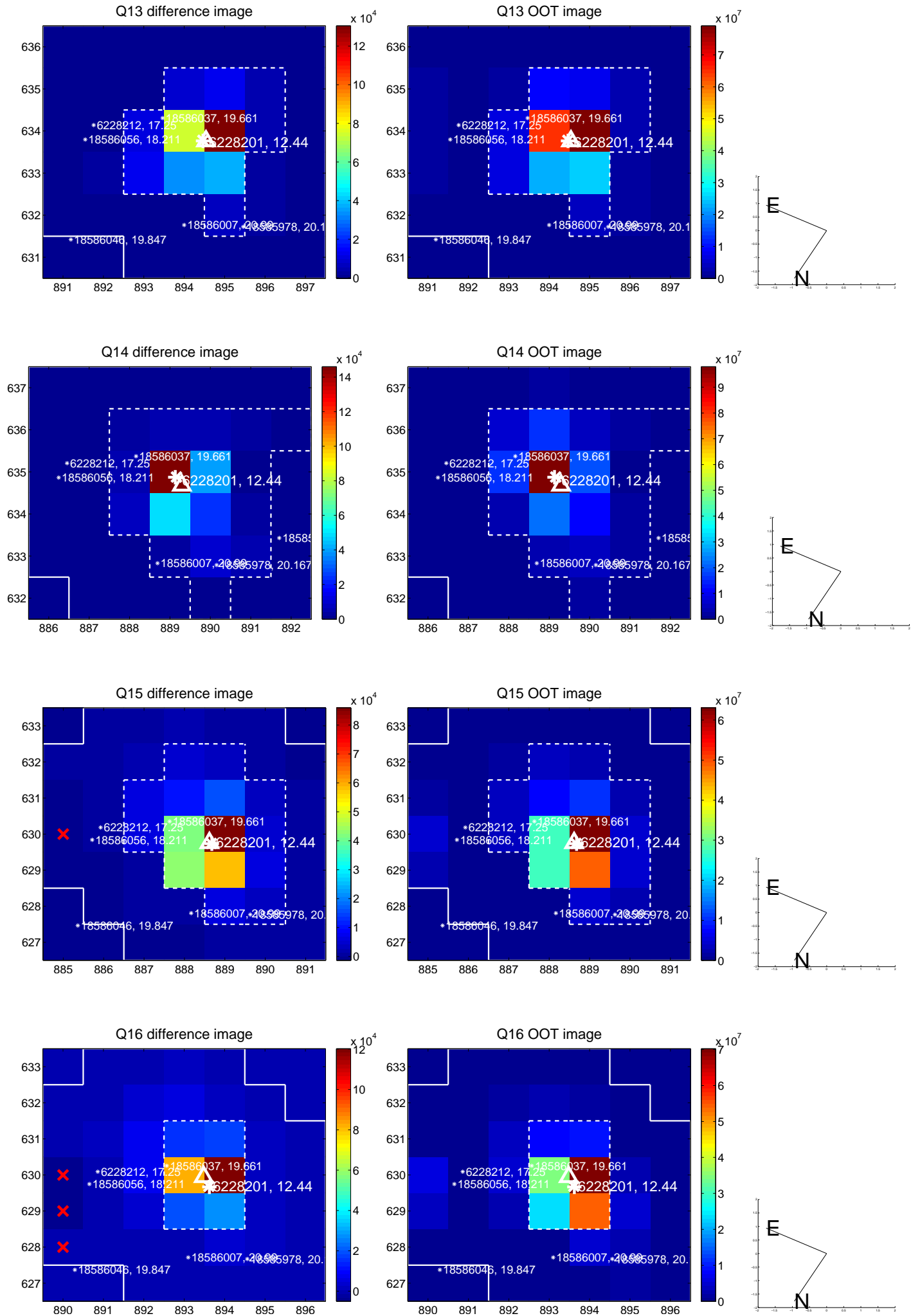
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



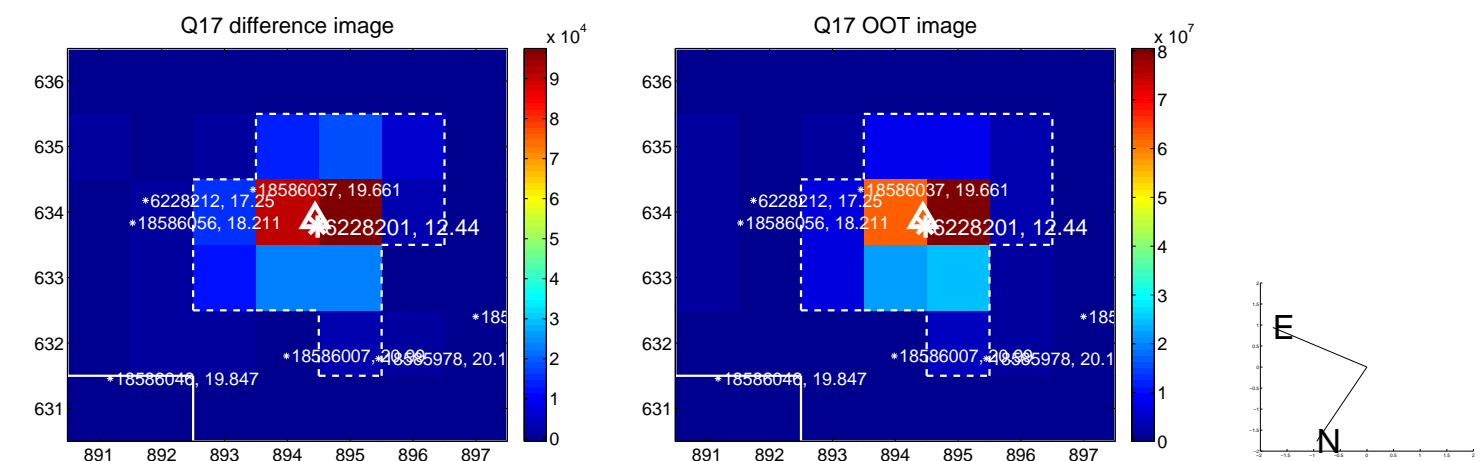
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



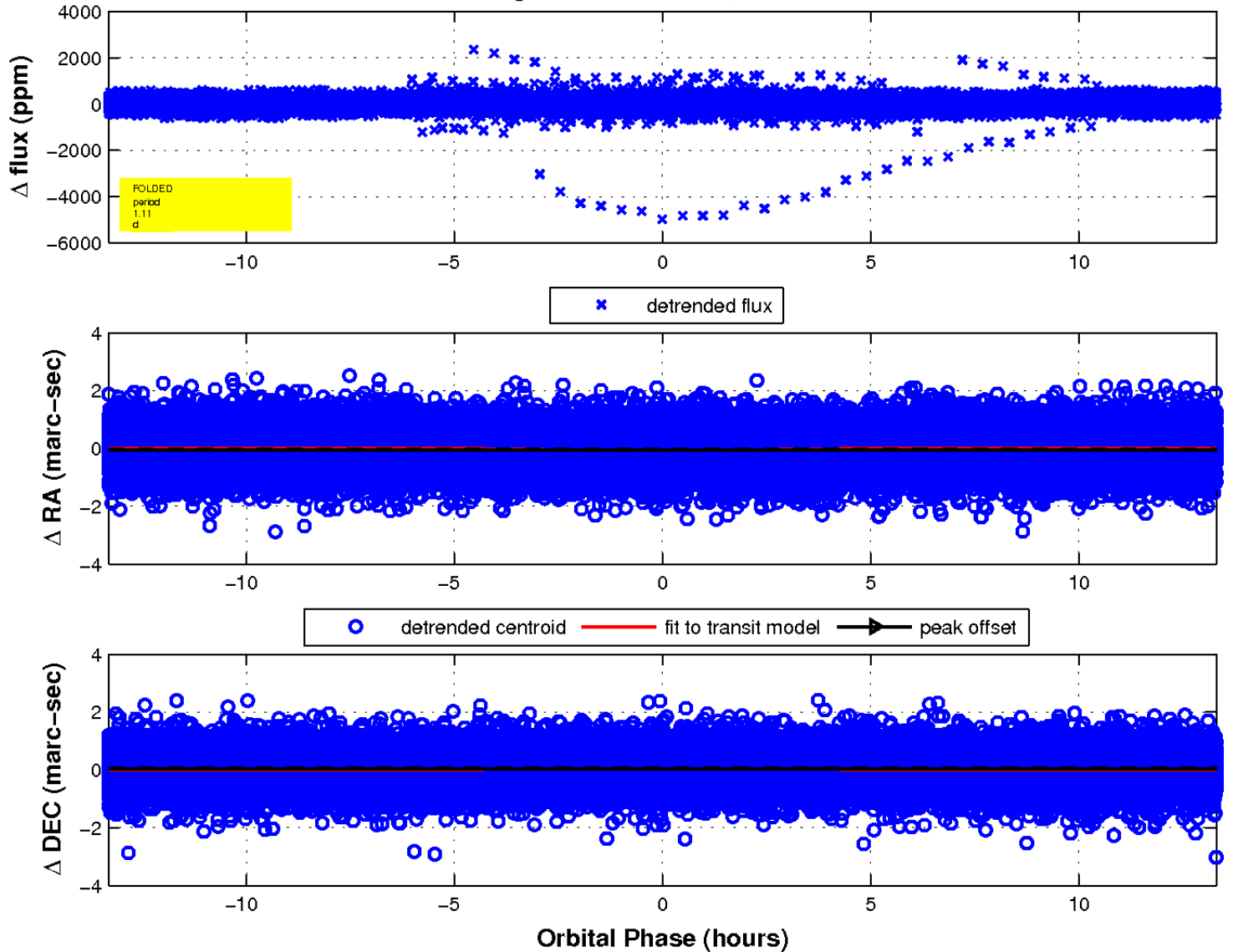
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

