

KIC 004919818

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})
004919818-01	OBS	No	0.804566	131.540710	13.6	1.232	9.2	4.9	2.17	7531	0.92	33194.19
004919818-02	OBS	No	0.804559	131.957087	36.7	2.160	10.0	11.2	2.17	7531	1.52	33194.61
004919818-03	OBS	No	0.688274	132.182177	56.0	4.594	10.9	11.4	2.17	7531	1.88	40875.48
004919818-04	OBS	No	12.230459	139.218187	507.6	3.052	13.5	12.2	2.17	7531	7.03	881.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004919818-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004919818-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
004919818-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
004919818-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

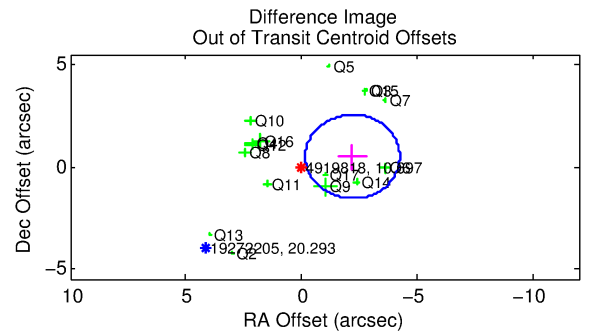
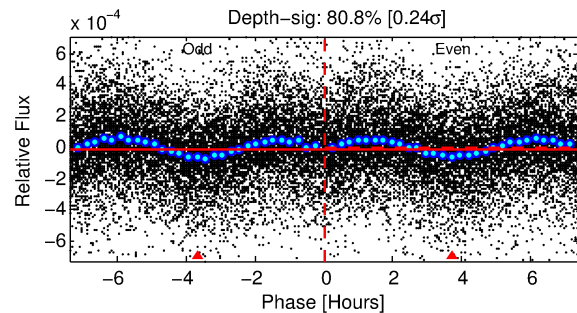
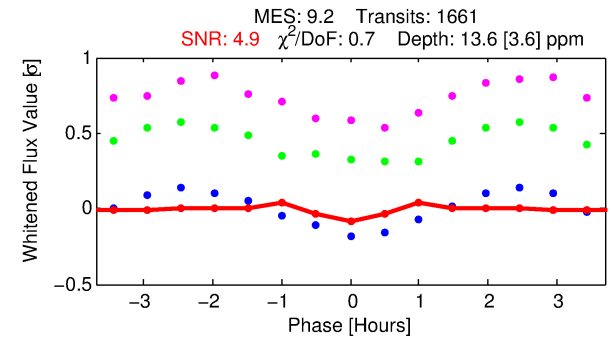
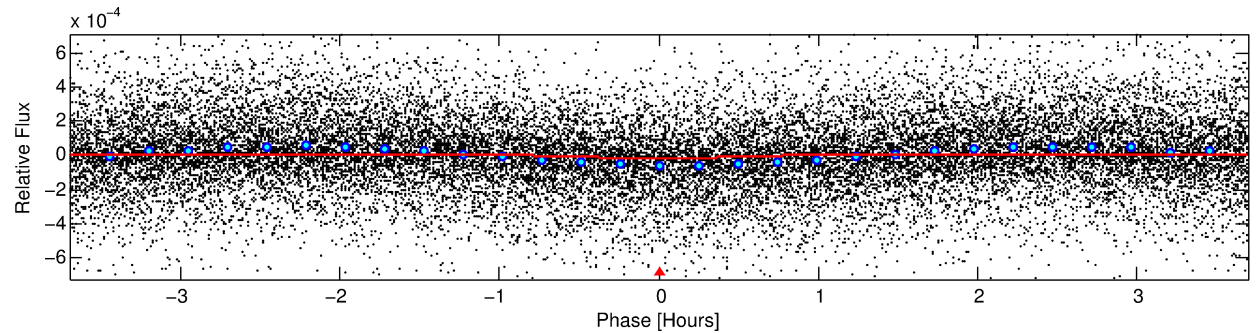
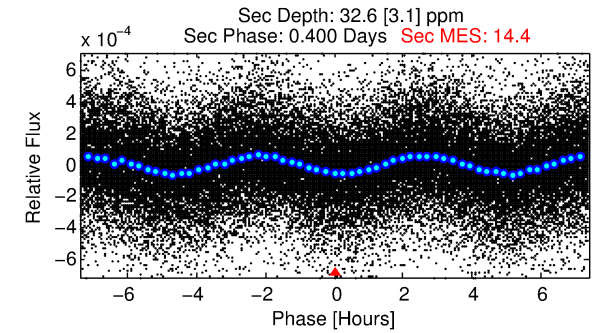
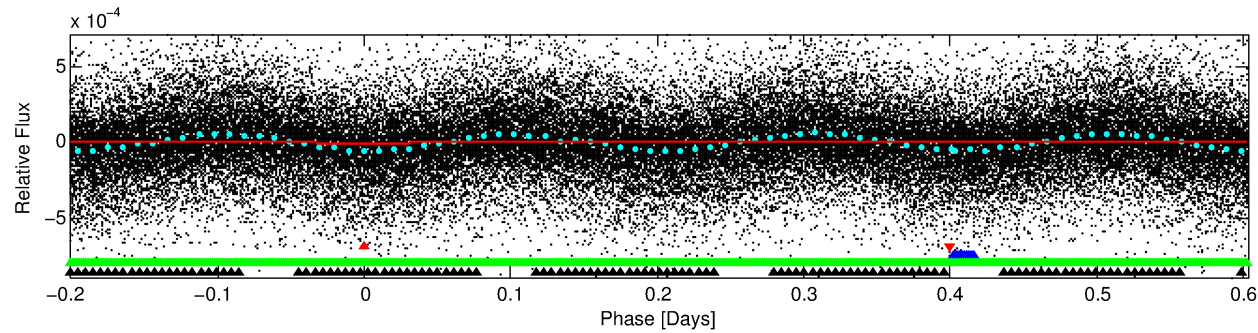
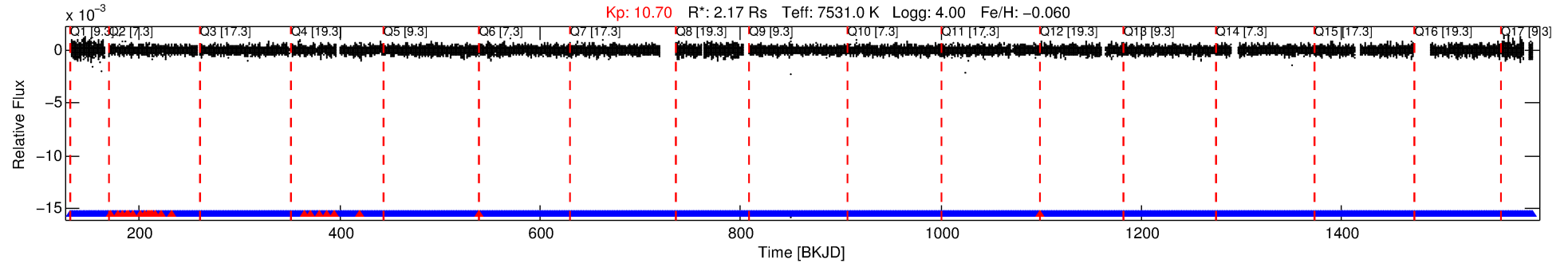
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004919818-01

No Significant Match Found

DV One-Page Summary

KIC: 4919818 Candidate: 1 of 4 Period: 0.805 d



DV Fit Results:

Period = 0.80457 [0.00002] d
Epoch = 131.5407 [0.0023] BKJD
Rp/R* = 0.0039 [0.0007]
a/R* = 2.53 [1.95]
b = 0.89 [0.22]
Seff = 33194.20 [13358.91]
Teq = 3442 [346] K
Rp = 0.92 [0.30] Re
a = 0.0203 [0.0048] AU
Ag = 8.64 [4.64] [1.65σ]
Teffp = 9123 [973] K [5.50σ]

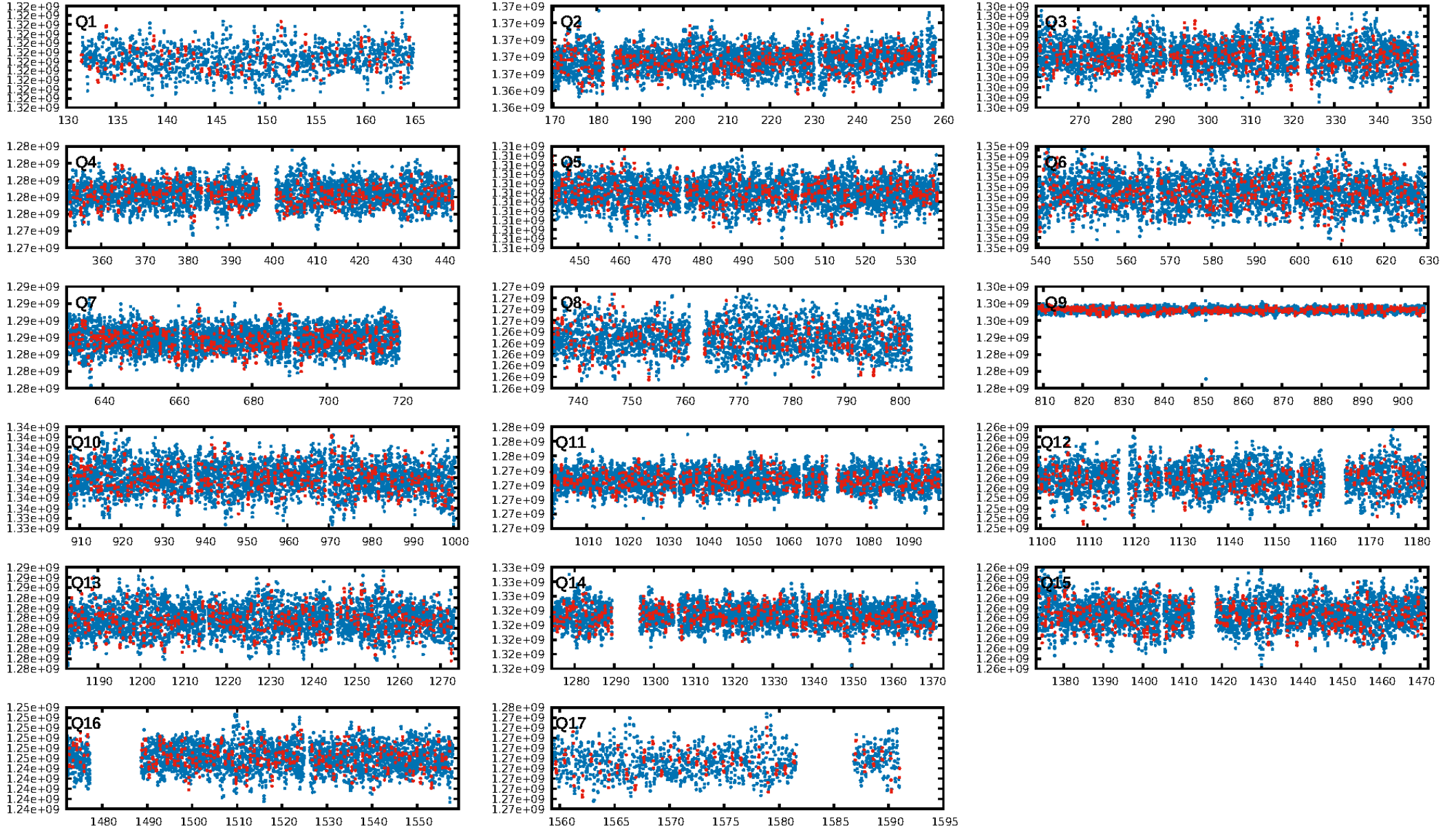
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [83.31σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.95e-08
RollingBand-fgt: 0.98 [1558/1585]
GhostDiagnostic-chr: 1.208
Centroid-sig: 18.7%
Centroid-so: 1.120 arcsec [0.96σ]
OotOffset-rm: 2.257 arcsec [3.31σ]
KicOffset-rm: 2.932 arcsec [4.13σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 1.00 [17/17]

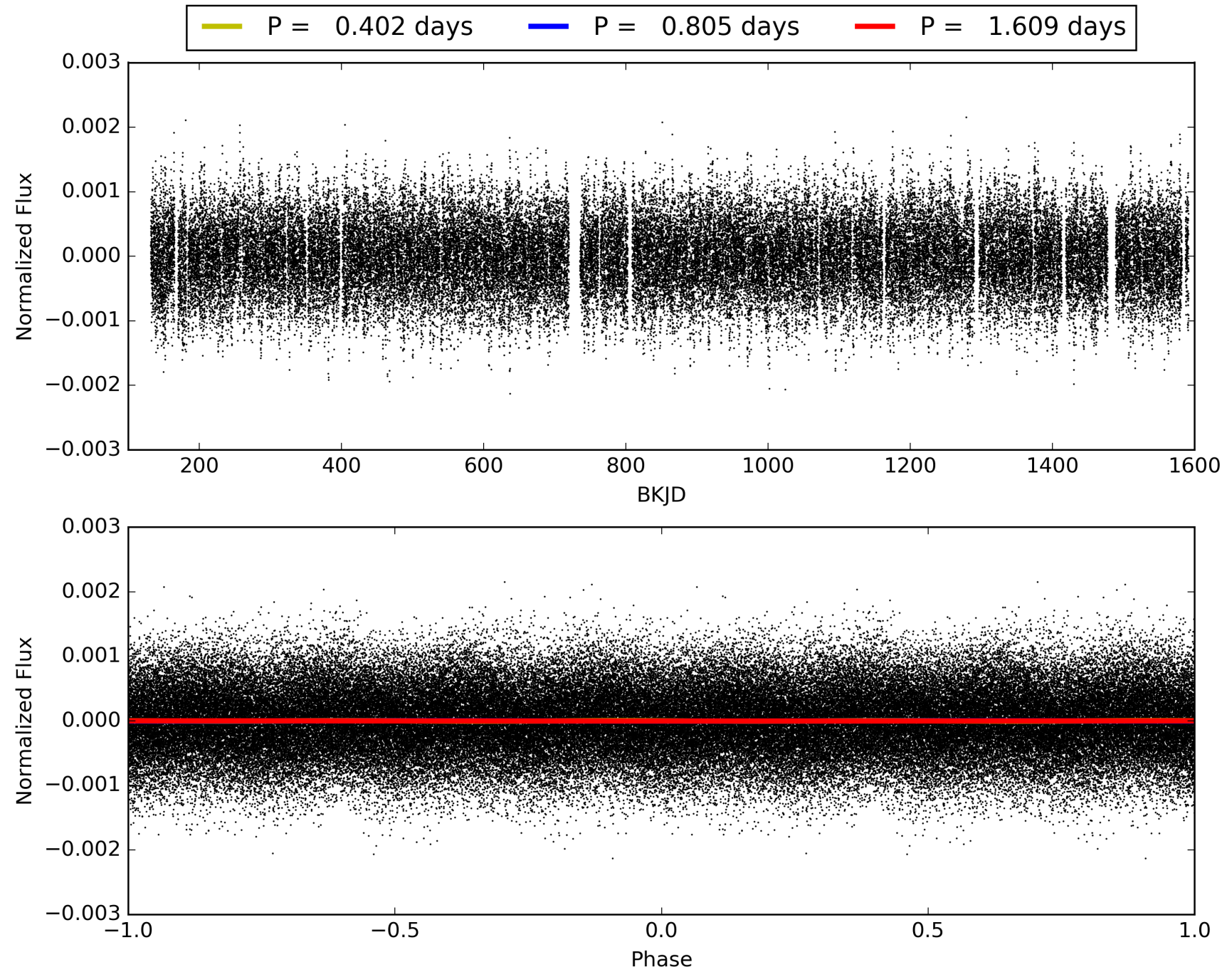
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:10:50 Z

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

TCE 004919818-01, PDC Light Curves

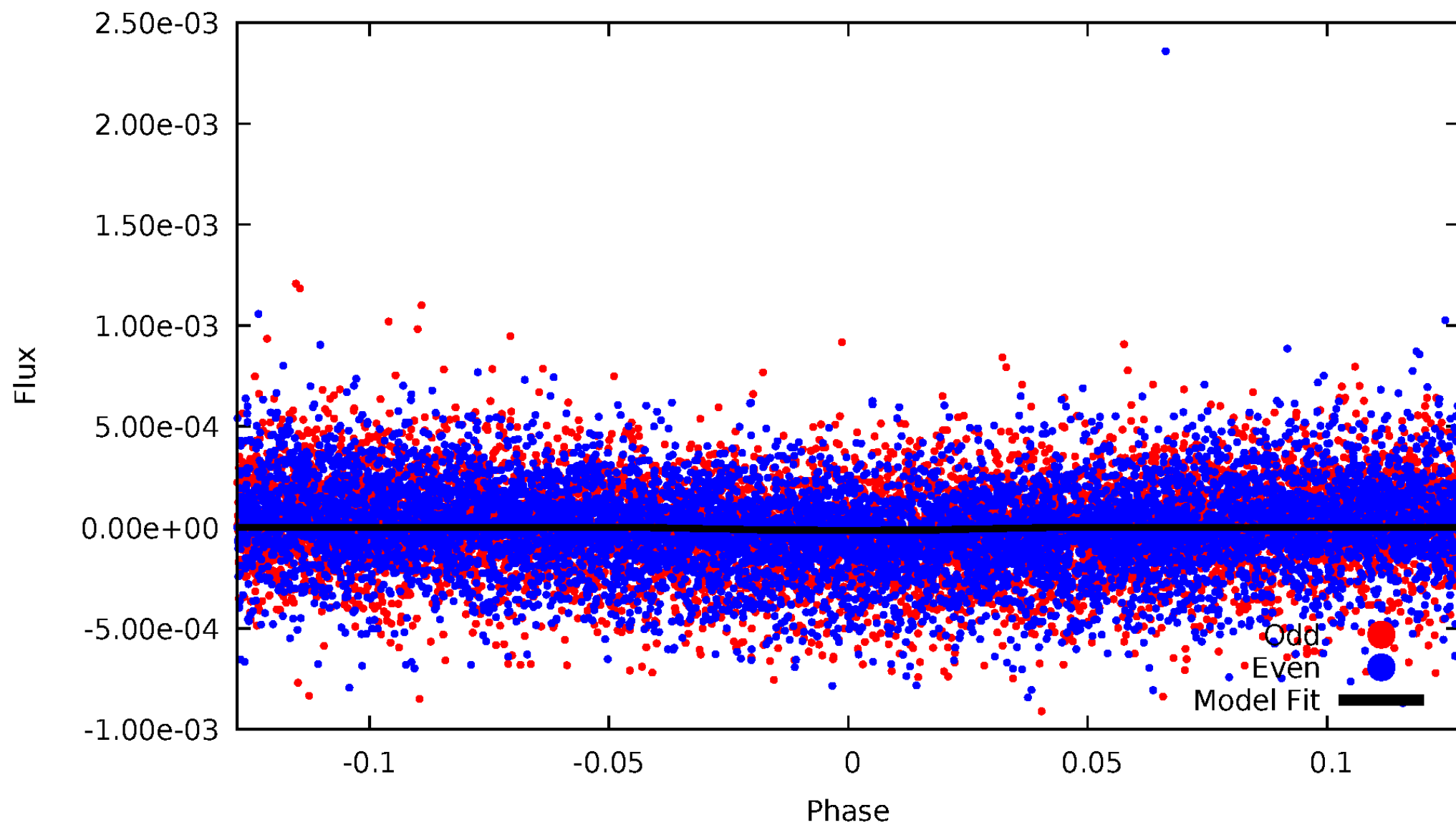


TCE 004919818-01



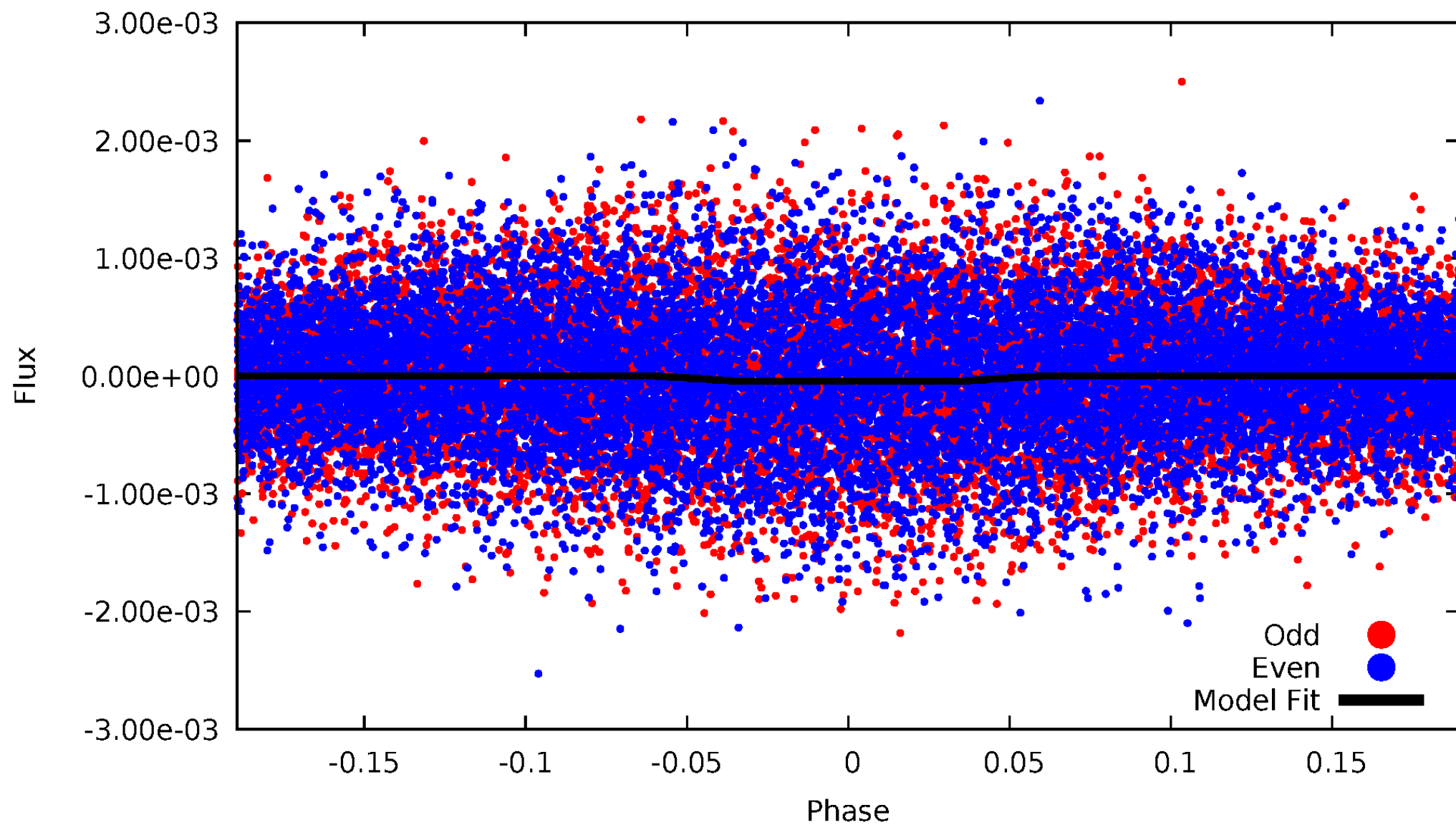
DV Odd/Even

TCE 004919818-01

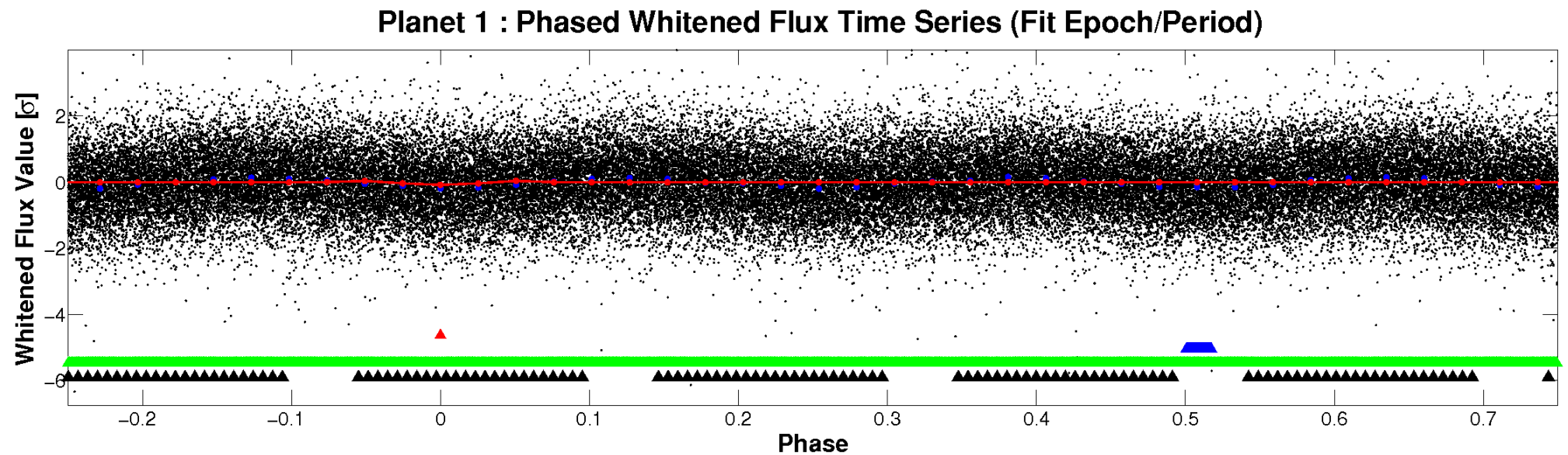
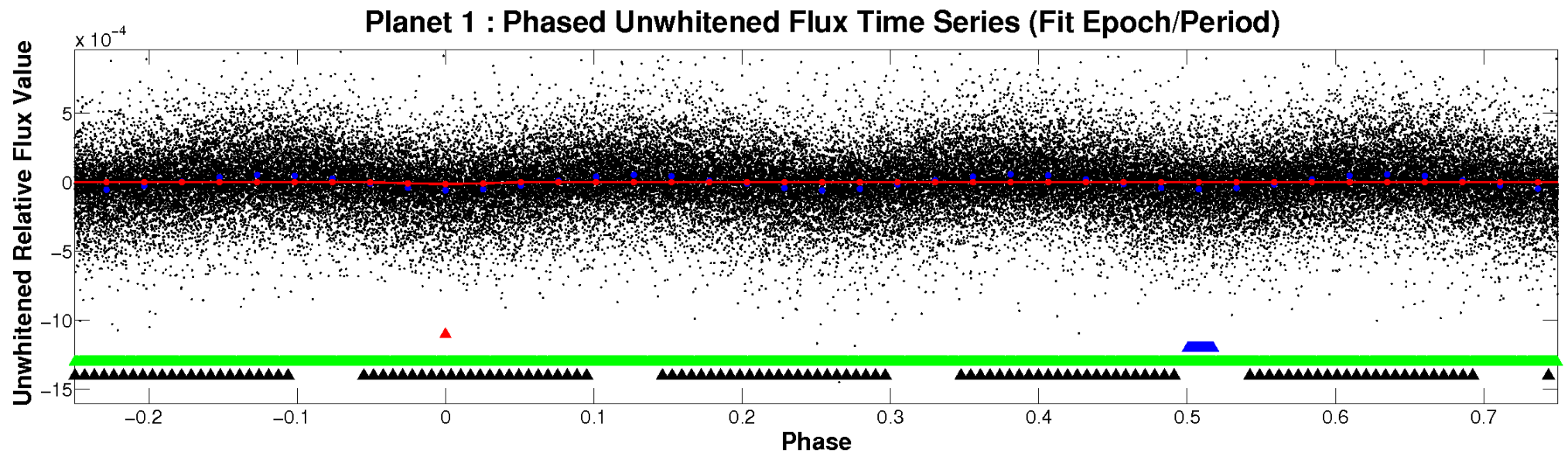


ALT Odd/Even

TCE 004919818-01

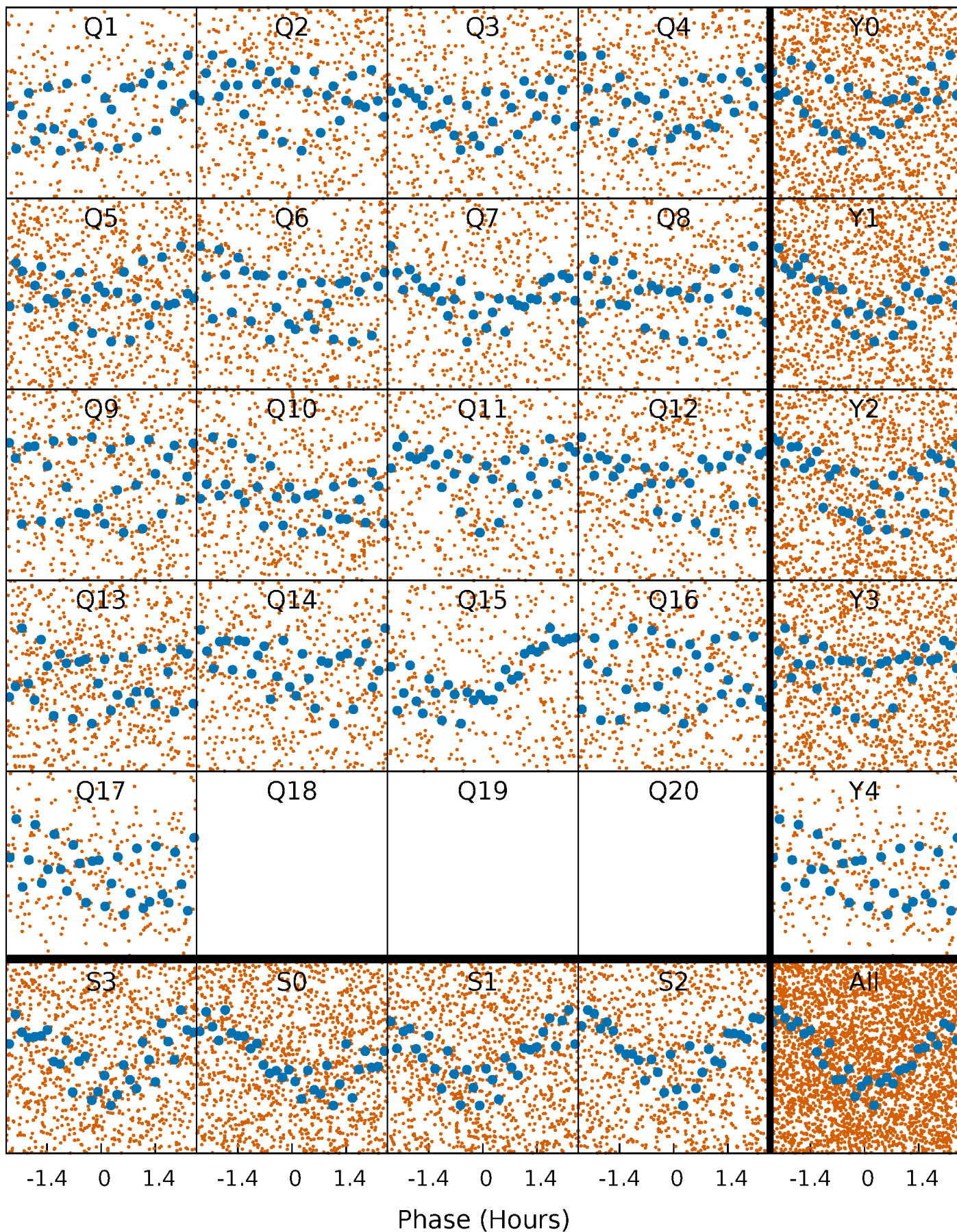


Non-Whitened Vs. Whitened Light Curve



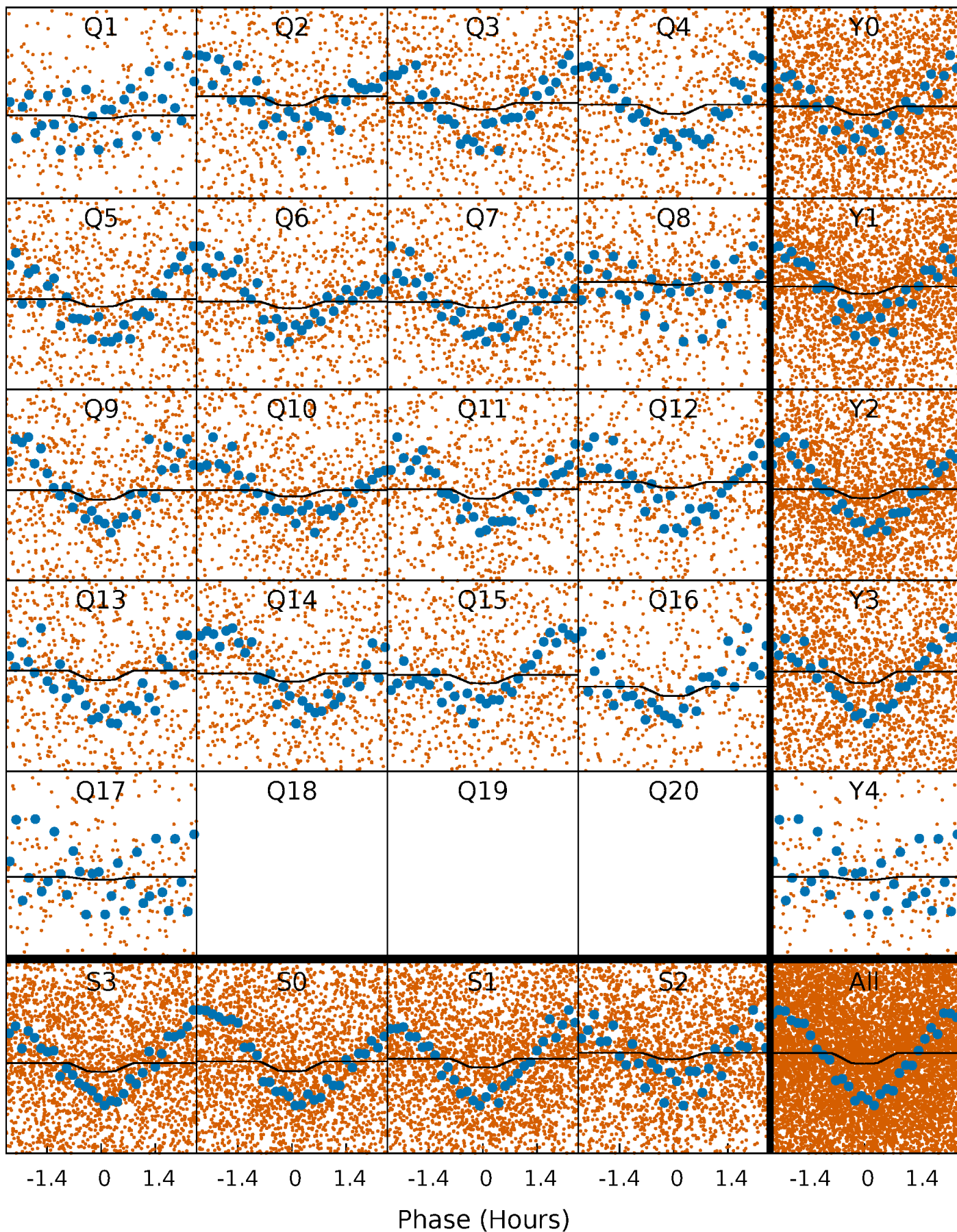
PDC Quarter-Phased Transit Curves

TCE 004919818-01 P= 0.804566 Days $T_0=131.540710$ (BKJD)



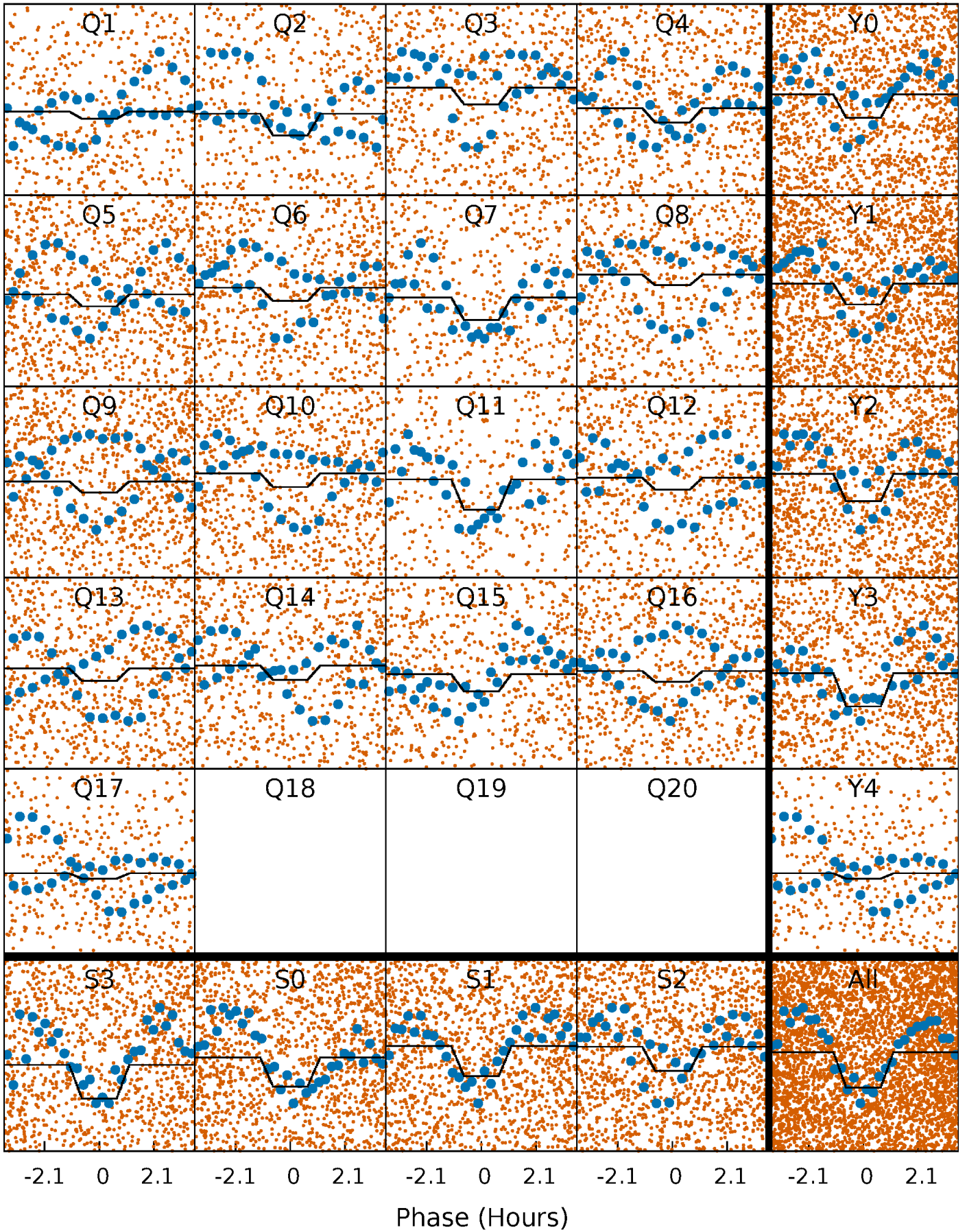
DV Quarter-Phased Transit Curves

TCE 004919818-01 P= 0.804566 Days $T_0=131.540710$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

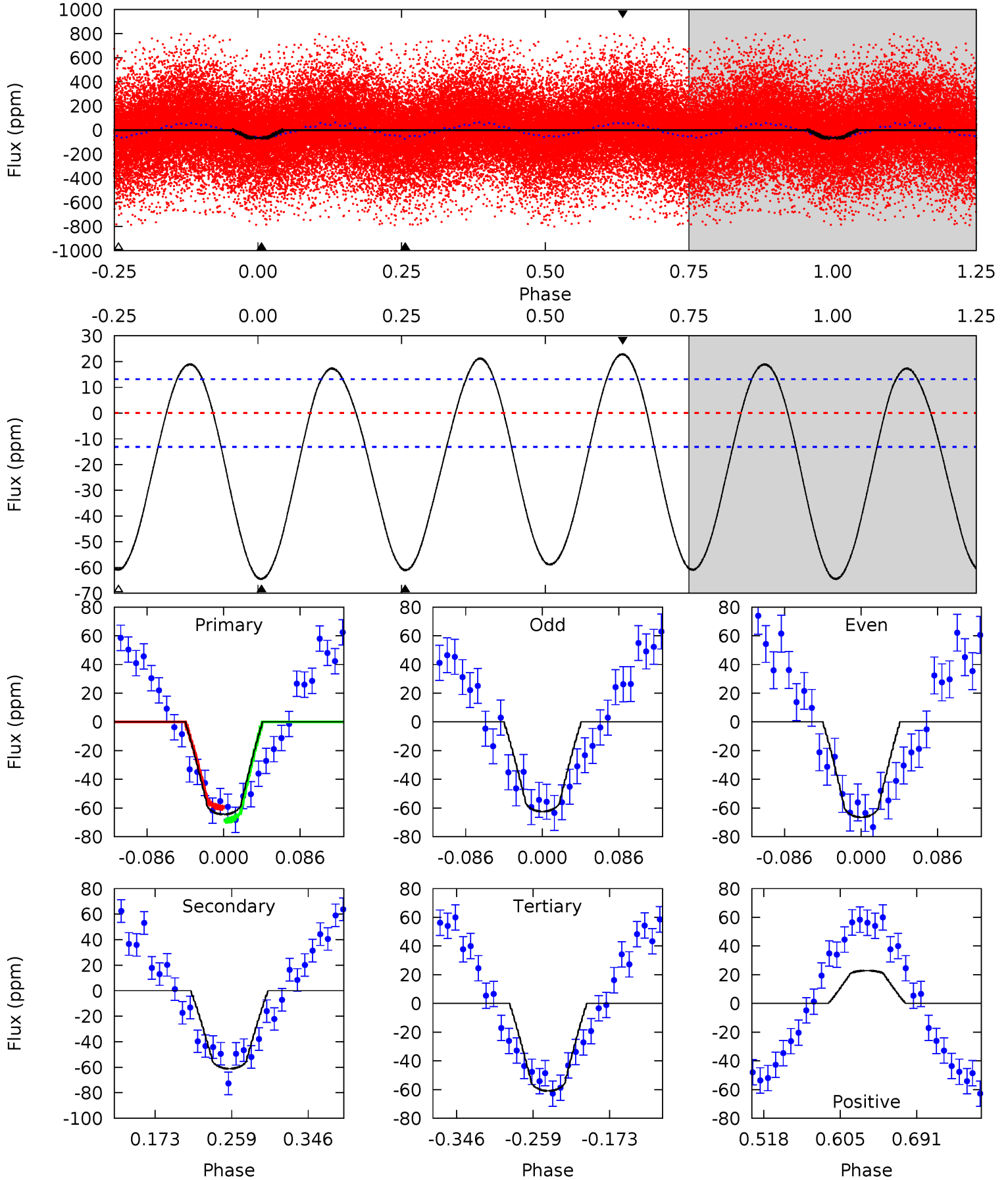
TCE 004919818-01 P= 0.804575 Days $T_0=131.538185$ (BKJD)



DV Model-Shift Uniqueness Test

004919818-01, P = 0.804566 Days, E = 130.736144 Days

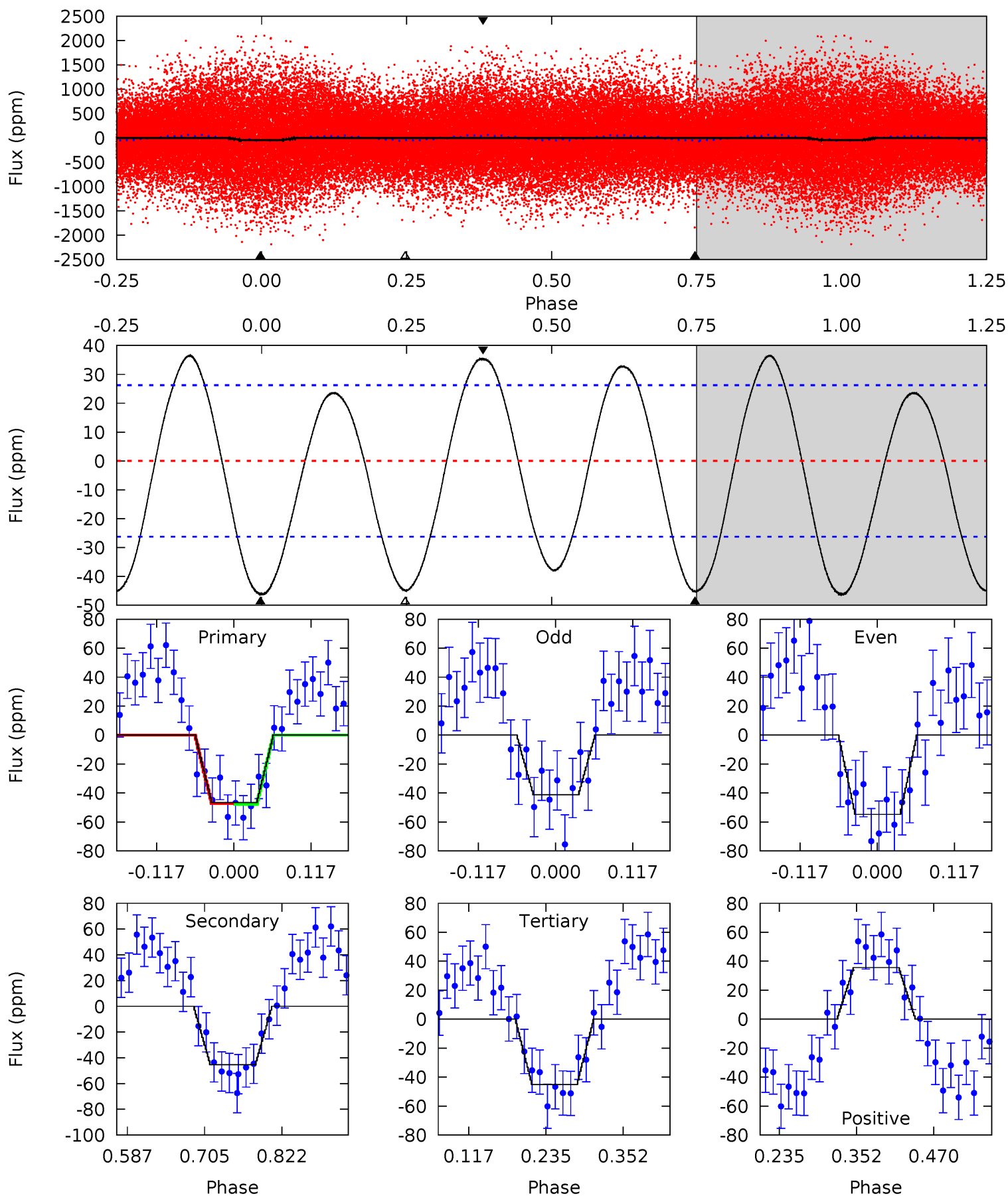
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	21.4	21.3	8.00	4.60	1.71	9.99	1.24	14.5	0.06	13.4	0.70	1.42	0.26	1.60



Alt Model-Shift Uniqueness Test

004919818-01, P = 0.804575 Days, E = 130.733610 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.04	7.84	7.79	6.16	4.53	1.57	4.64	0.25	1.89	0.05	1.68	1.13	1.20	0.44	0.05



Stellar Parameters For KIC 004919818

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7531^{+209}_{-314}	$3.997^{+0.210}_{-0.158}$	$-0.060^{+0.200}_{-0.350}$	$2.174^{+0.510}_{-0.567}$	$1.711^{+0.212}_{-0.291}$	$0.234^{+0.265}_{-0.109}$
	+3%/-4%	+5%/-4%	+333%/-583%	+23%/-26%	+12%/-17%	+113%/-47%
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 004919818-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-61 ± 3	$0.93^{+0.23}_{-0.22}$	4767^{+347}_{-344}	12005^{+2783}_{-1695}	16^{+12}_{-6}
Alt.	-45 ± 6	$1.58^{+0.29}_{-0.26}$	4760^{+347}_{-344}	7314^{+750}_{-554}	$4.093^{+1.832}_{-1.165}$

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

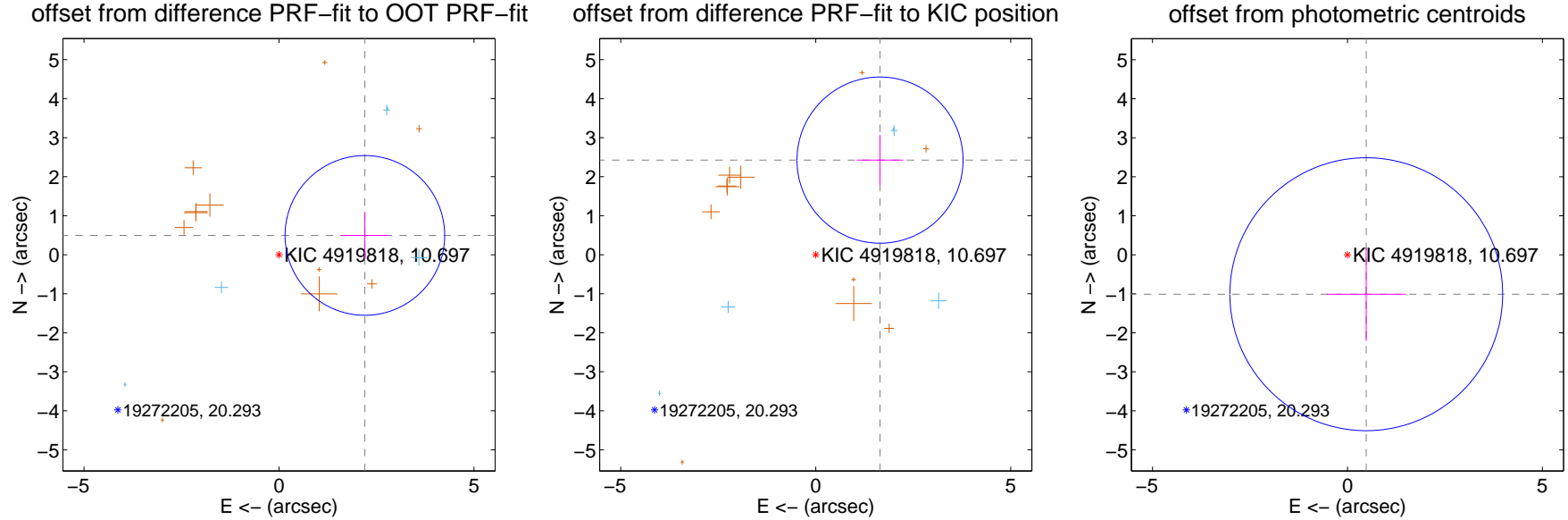
DV Centroid Data

Supplemental centroid analysis for 004919818-01. **Kepler magnitude: 10.70.** Transit SNR 4.91

There are 5 quarters with good PRF difference image offsets

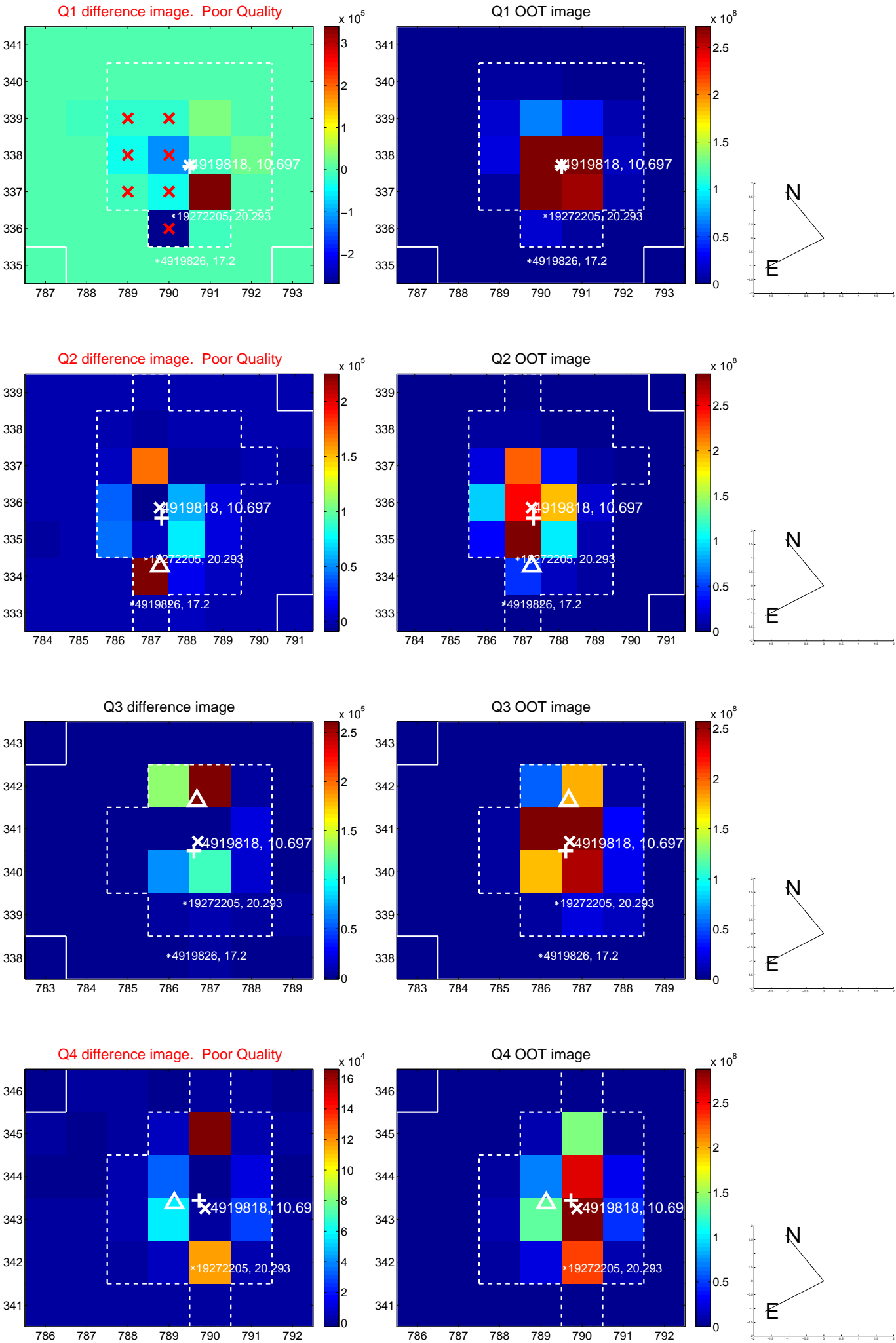
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.257 ± 0.682	3.31	-2.202 ± 0.624	0.495 ± 0.605
PRF-fit source offset from KIC position	2.932 ± 0.710	4.13	-1.649 ± 0.598	2.425 ± 0.645
photometric centroid source offset	1.12 ± 1.17	0.96	-0.48 ± 1.01	-1.01 ± 1.20

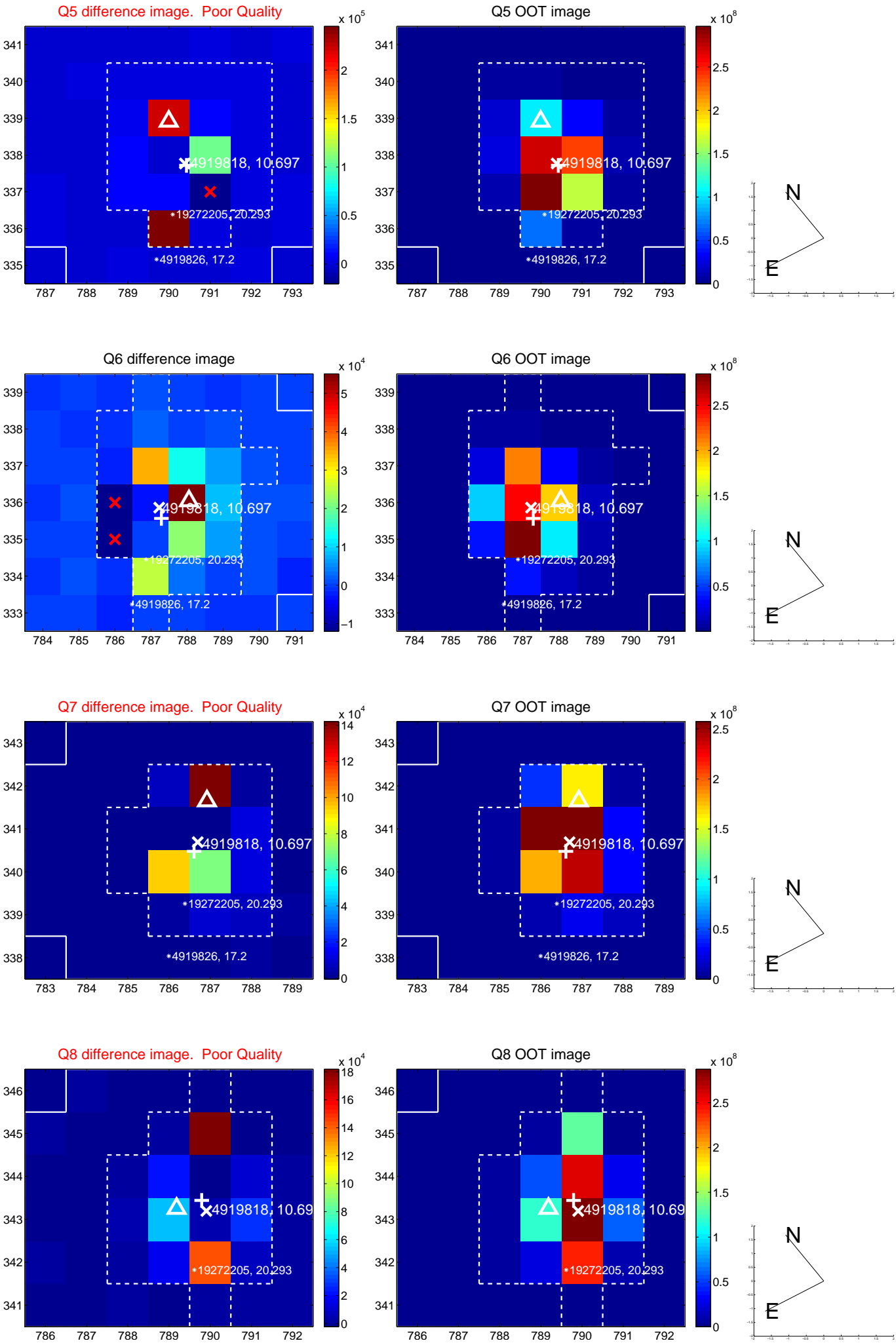


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

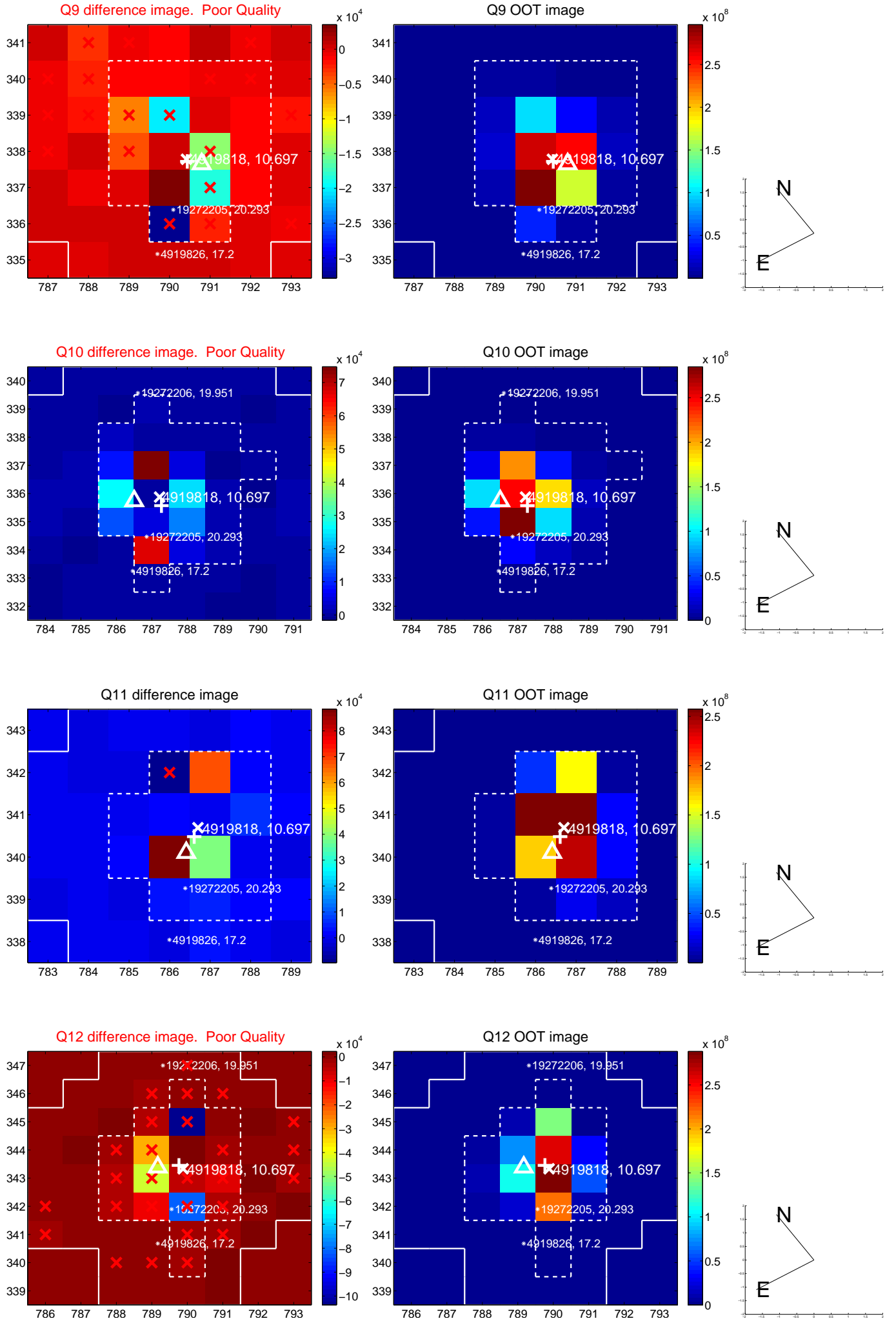
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



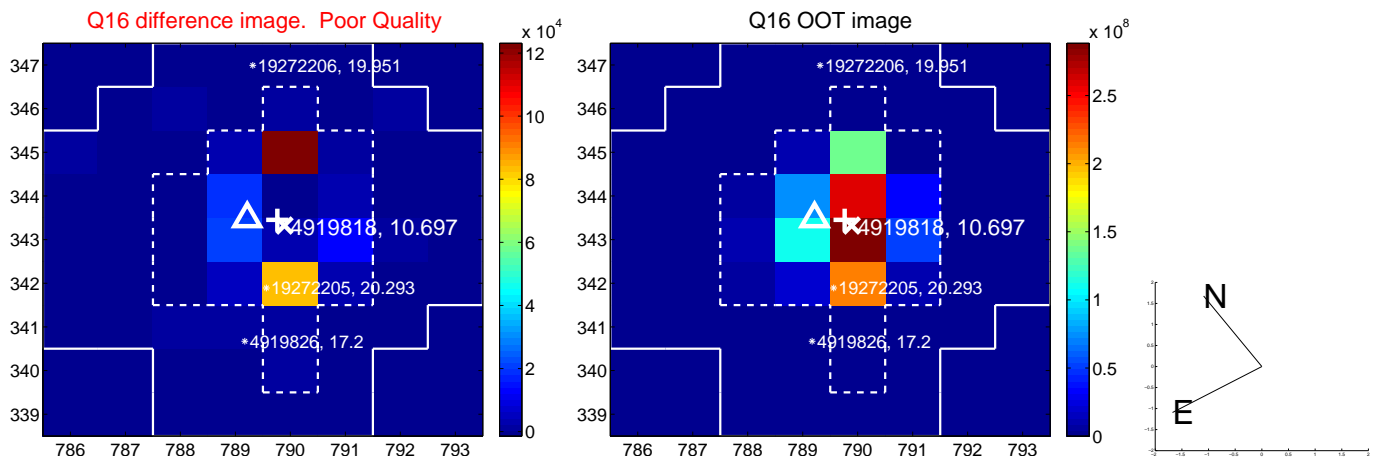
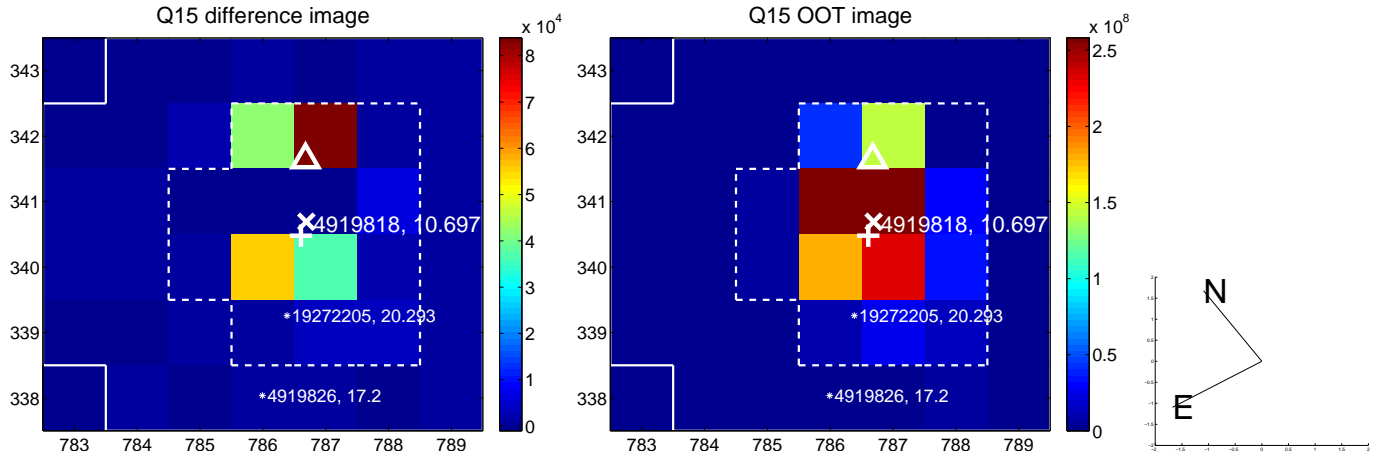
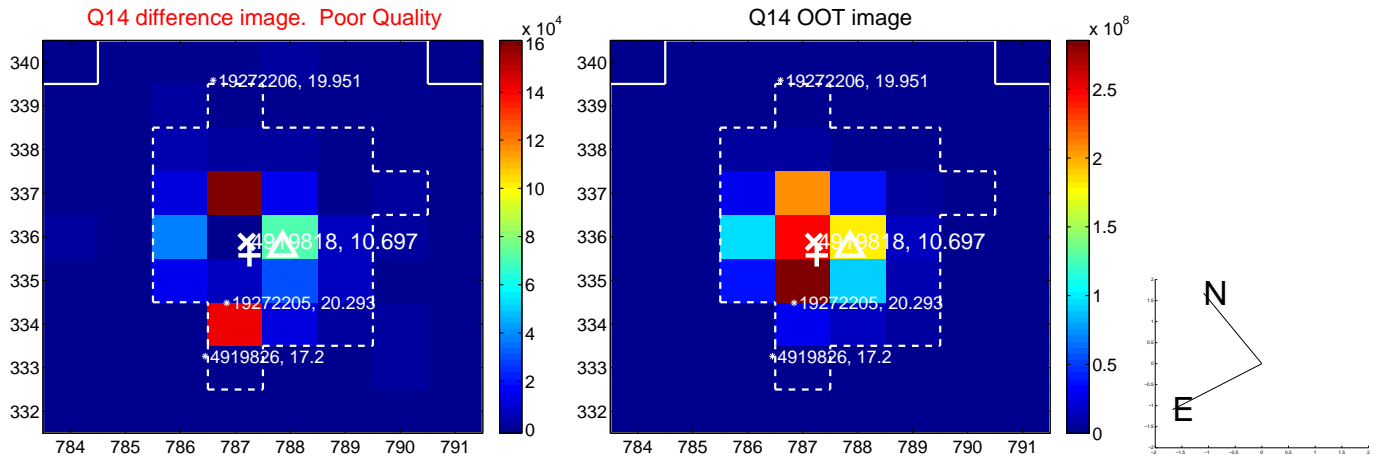
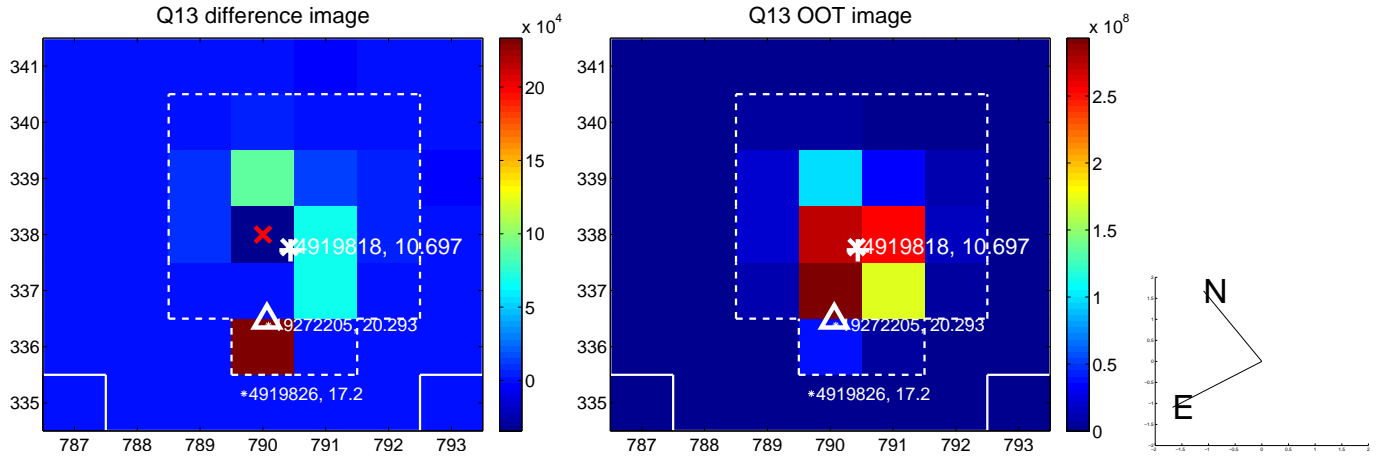
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



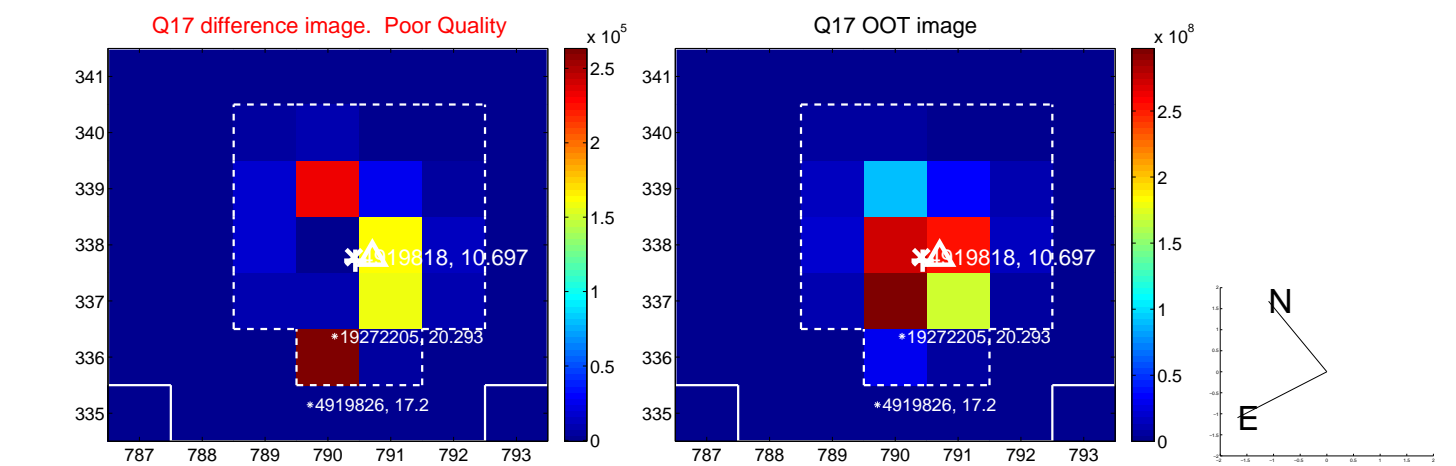
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



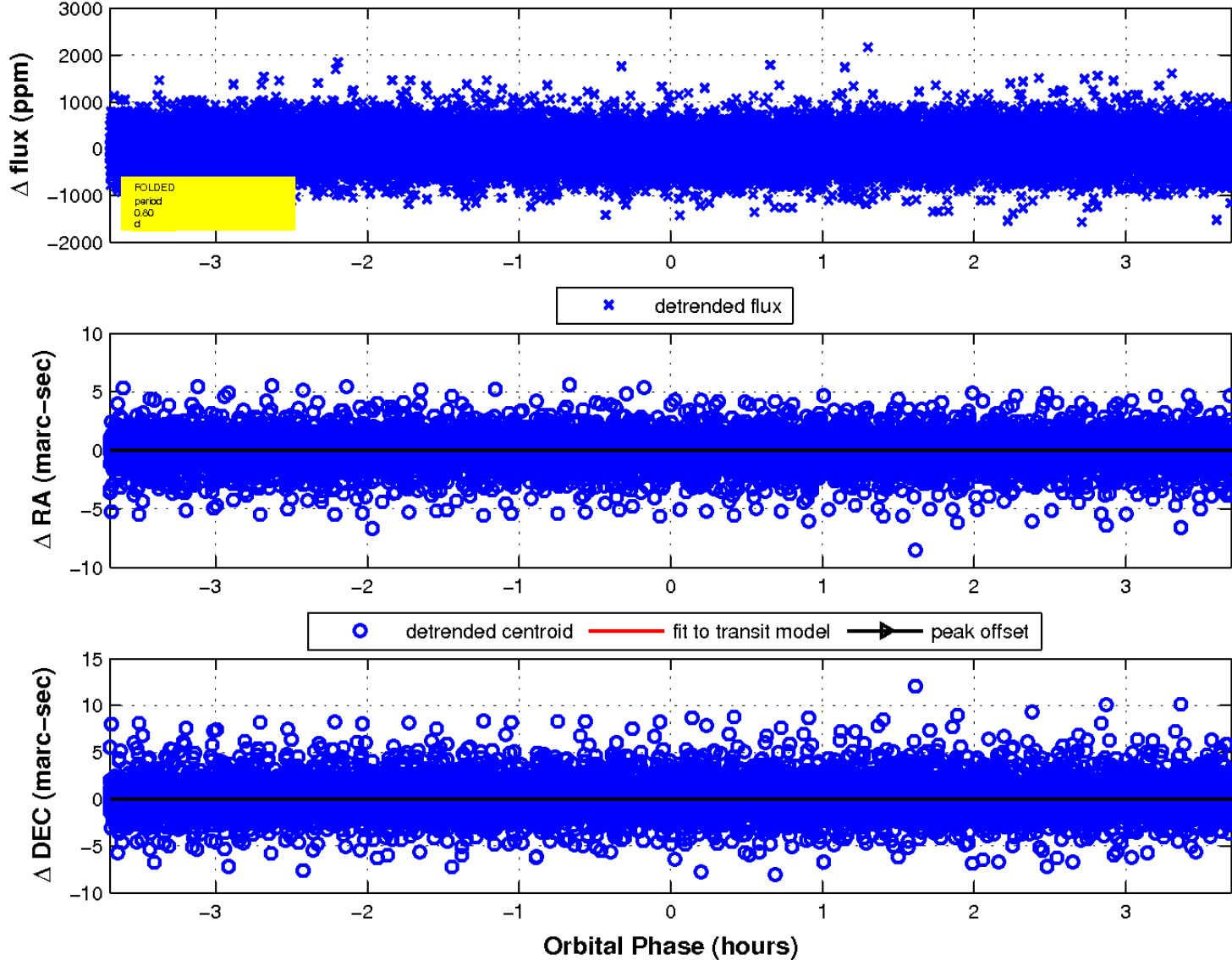
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

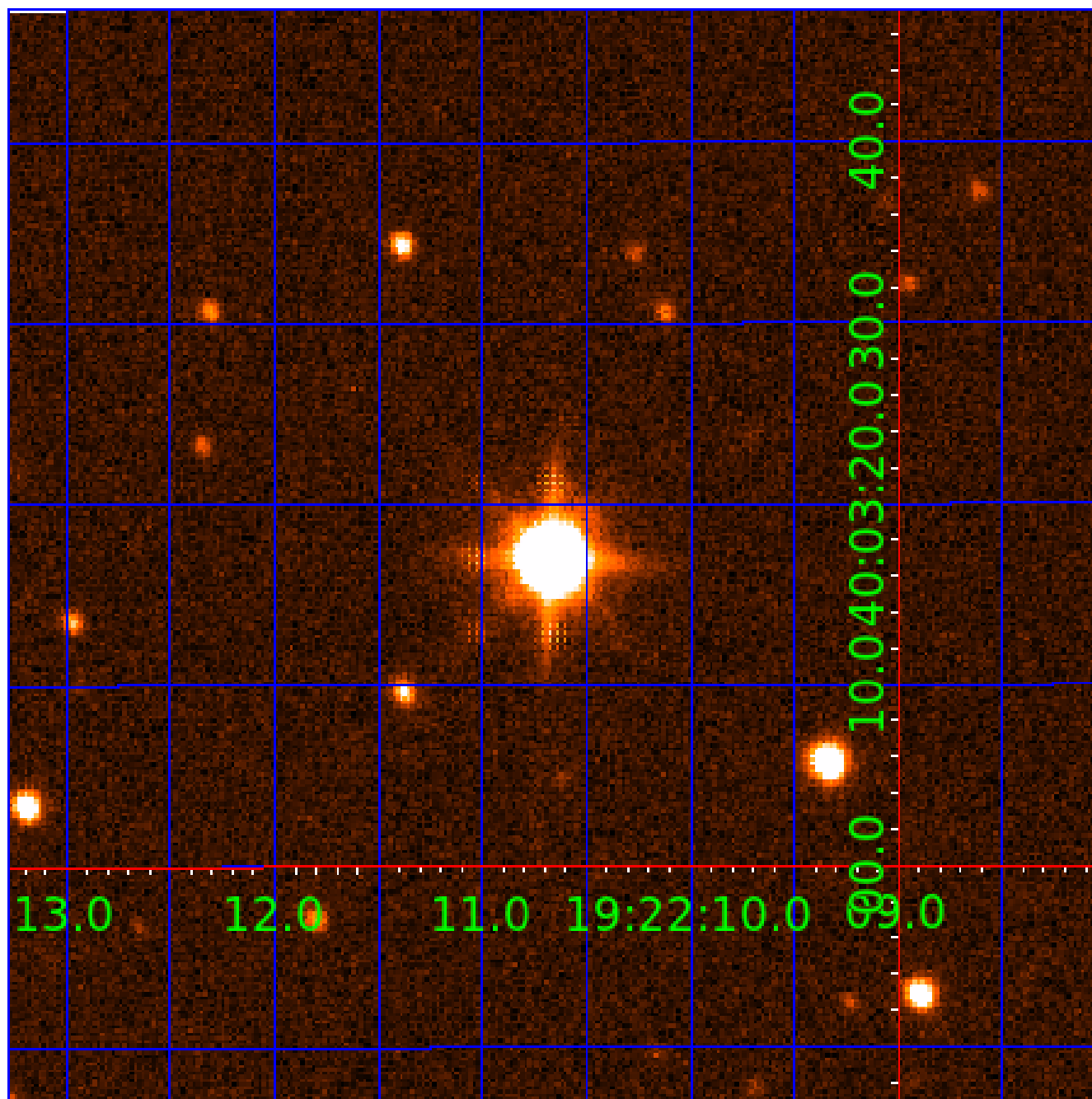


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 004919818

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})
004919818-01	OBS	No	0.804566	131.540710	13.6	1.232	9.2	4.9	2.17	7531	0.92	33194.19
004919818-02	OBS	No	0.804559	131.957087	36.7	2.160	10.0	11.2	2.17	7531	1.52	33194.61
004919818-03	OBS	No	0.688274	132.182177	56.0	4.594	10.9	11.4	2.17	7531	1.88	40875.48
004919818-04	OBS	No	12.230459	139.218187	507.6	3.052	13.5	12.2	2.17	7531	7.03	881.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004919818-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004919818-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
004919818-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
004919818-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

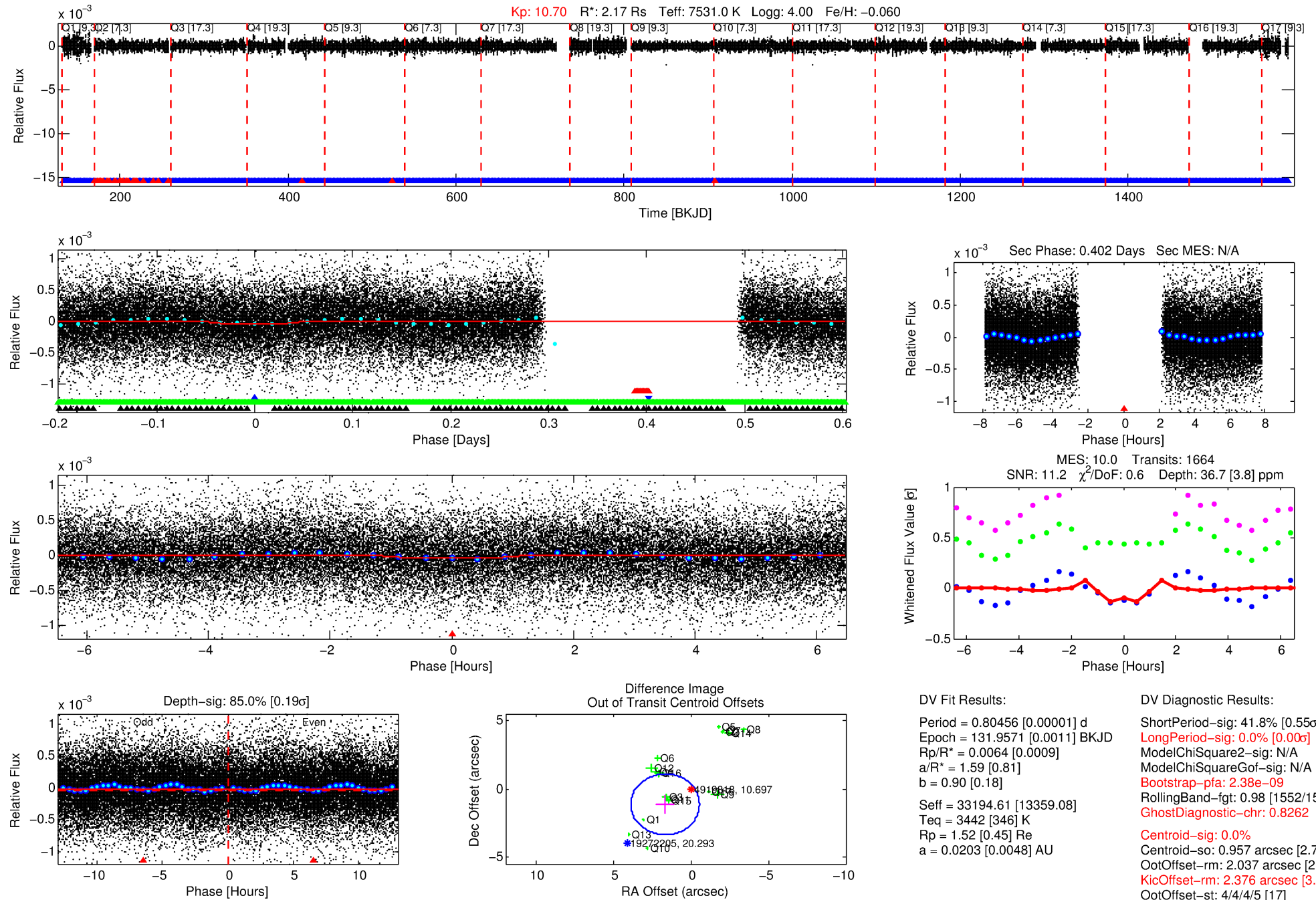
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004919818-02

No Significant Match Found

DV One-Page Summary

KIC: 4919818 Candidate: 2 of 4 Period: 0.805 d



DV Fit Results:

Period = 0.80456 [0.00001] d
Epoch = 131.9571 [0.0011] BKJD
 $R_p/R^* = 0.0064$ [0.0009]
 $a/R^* = 1.59$ [0.81]
 $b = 0.90$ [0.18]
 $\text{Seff} = 33194.61$ [13359.08]
 $T_{\text{eq}} = 3442$ [346] K
 $R_p = 1.52$ [0.45] R_{e}
 $a = 0.0203$ [0.0048] AU

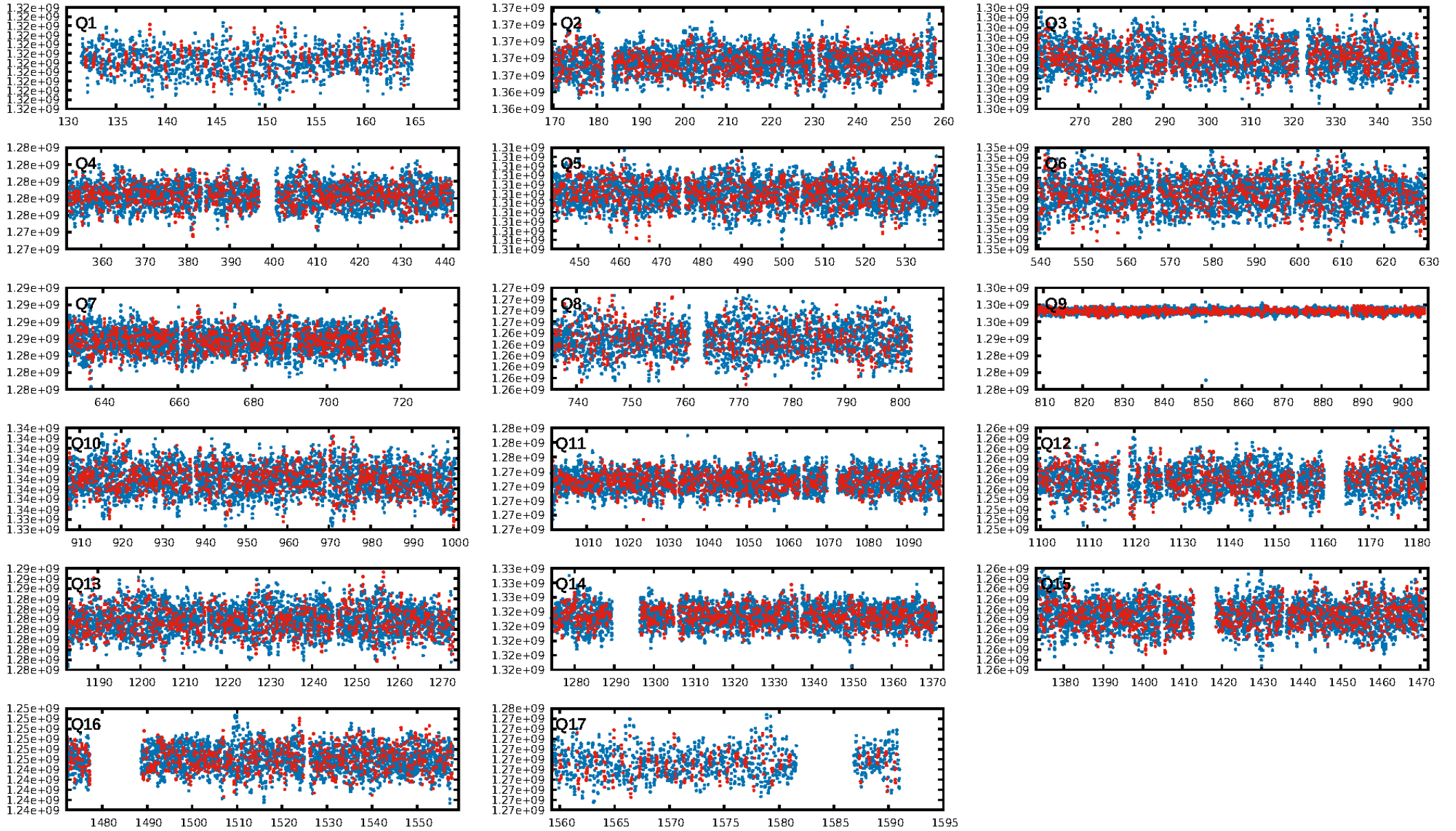
DV Diagnostic Results:

ShortPeriod-sig: 41.8% [0.55 σ]
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.38e-09
RollingBand-fgt: 0.98 [1552/1589]
GhostDiagnostic-chr: 0.8262
Centroid-sig: 0.0%
Centroid-so: 0.957 arcsec [2.71 σ]
OotOffset-rm: 2.037 arcsec [2.75 σ]
KicOffset-rm: 2.376 arcsec [3.00 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.41 [7/17]
DiffImageOverlap-fno: 0.00 [0/17]

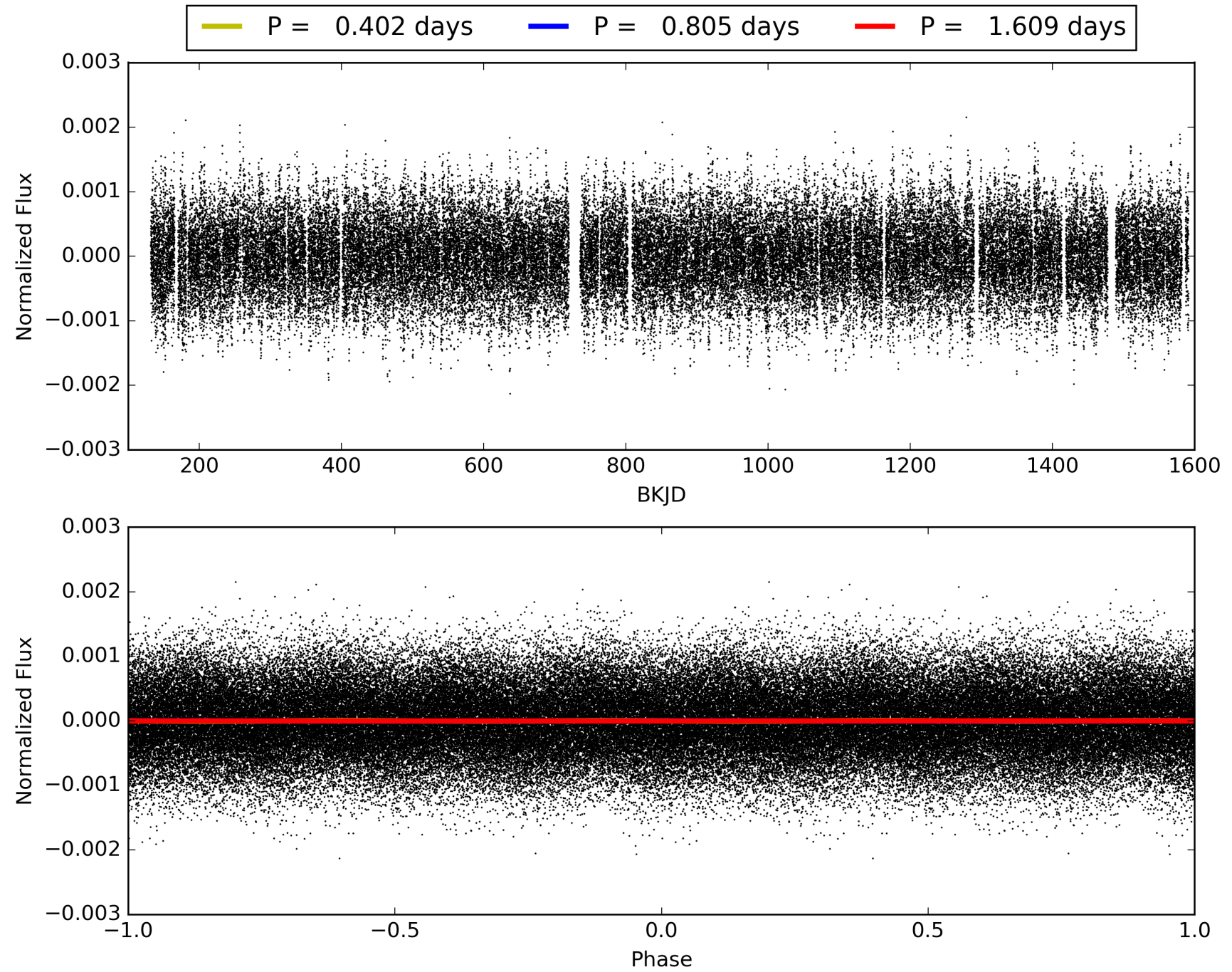
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004919818-02, PDC Light Curves

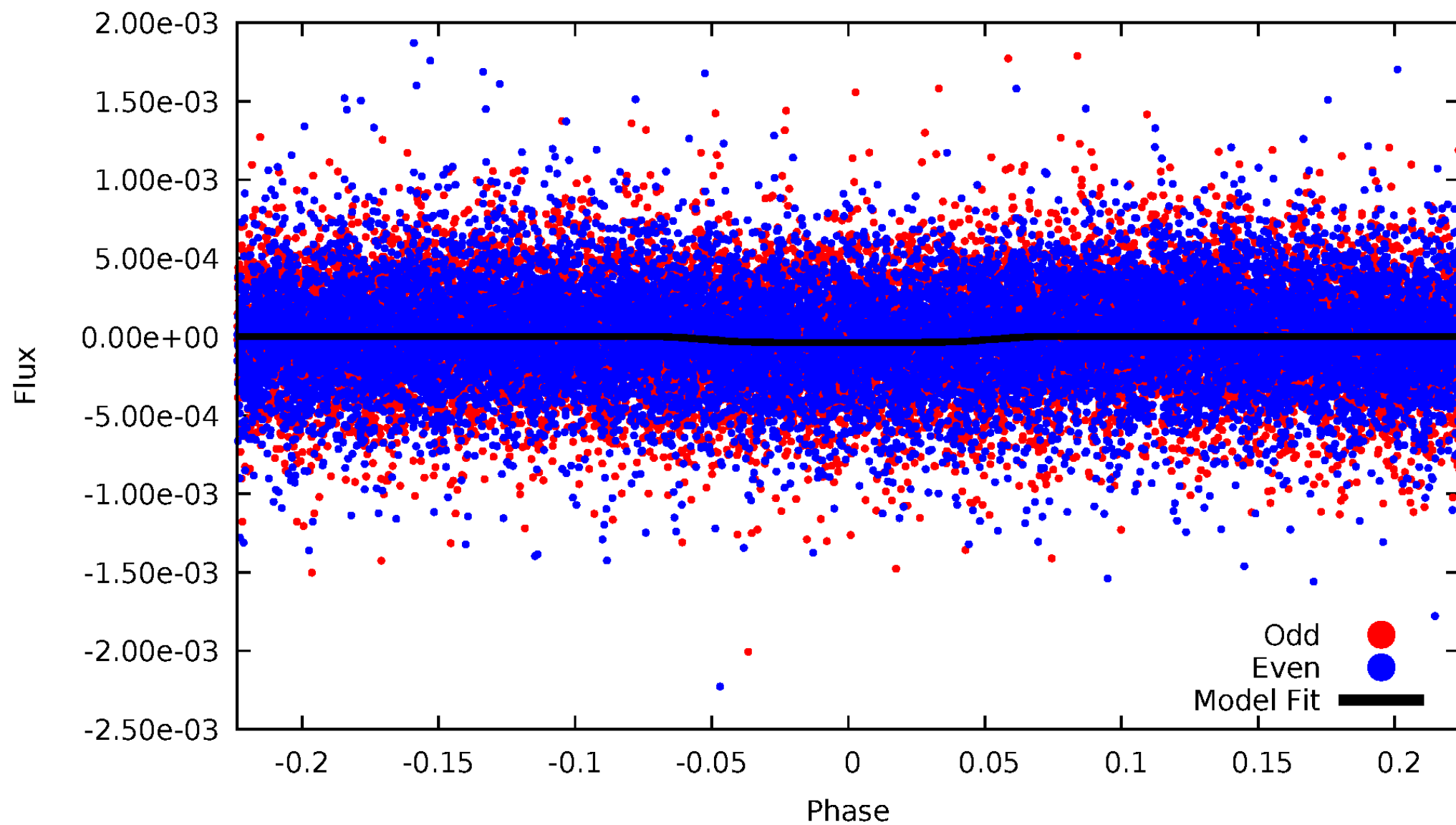


TCE 004919818-02



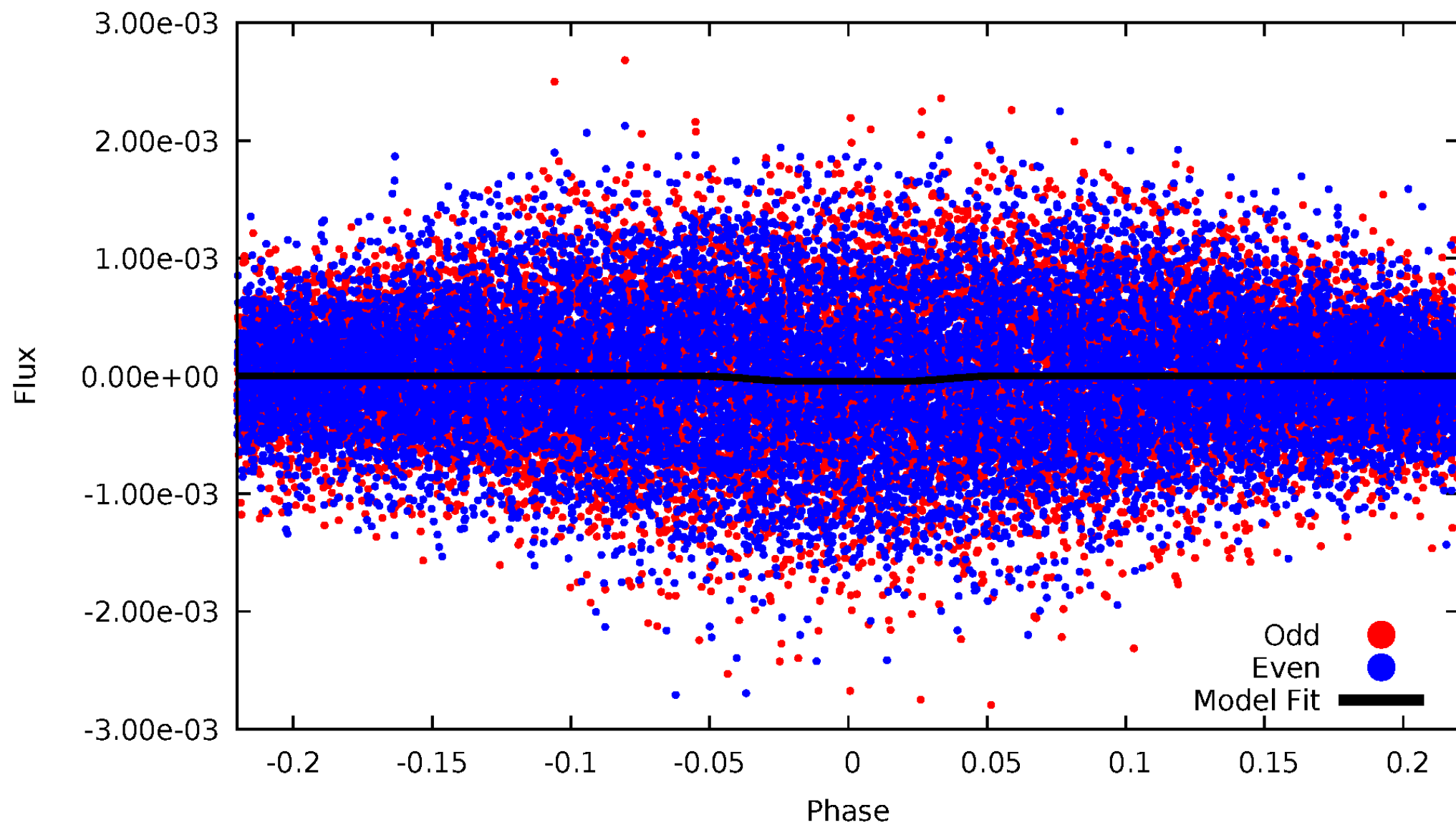
DV Odd/Even

TCE 004919818-02



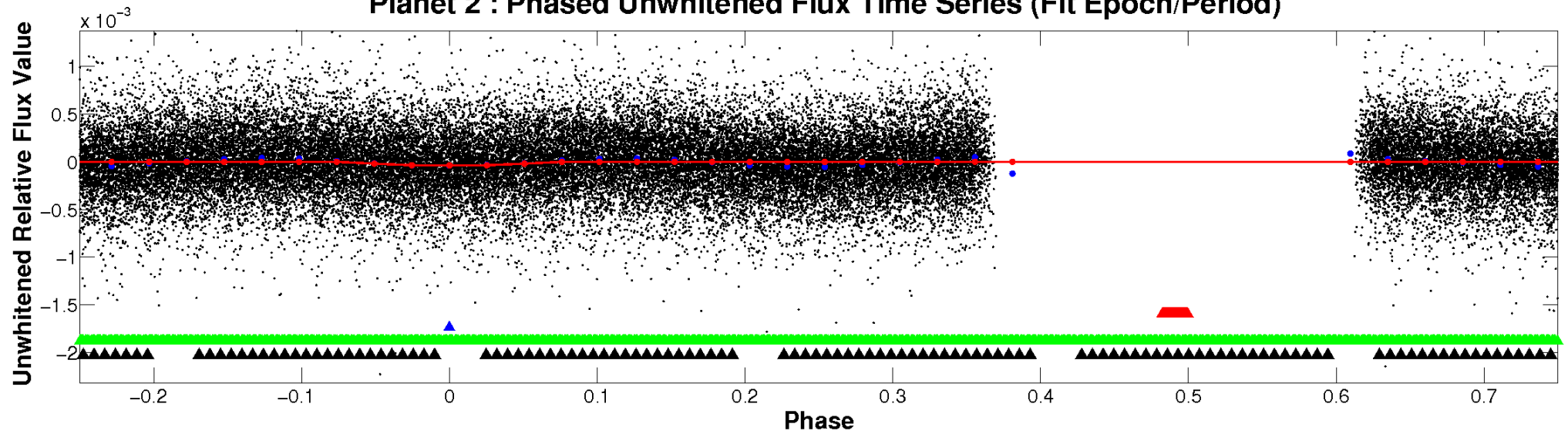
ALT Odd/Even

TCE 004919818-02

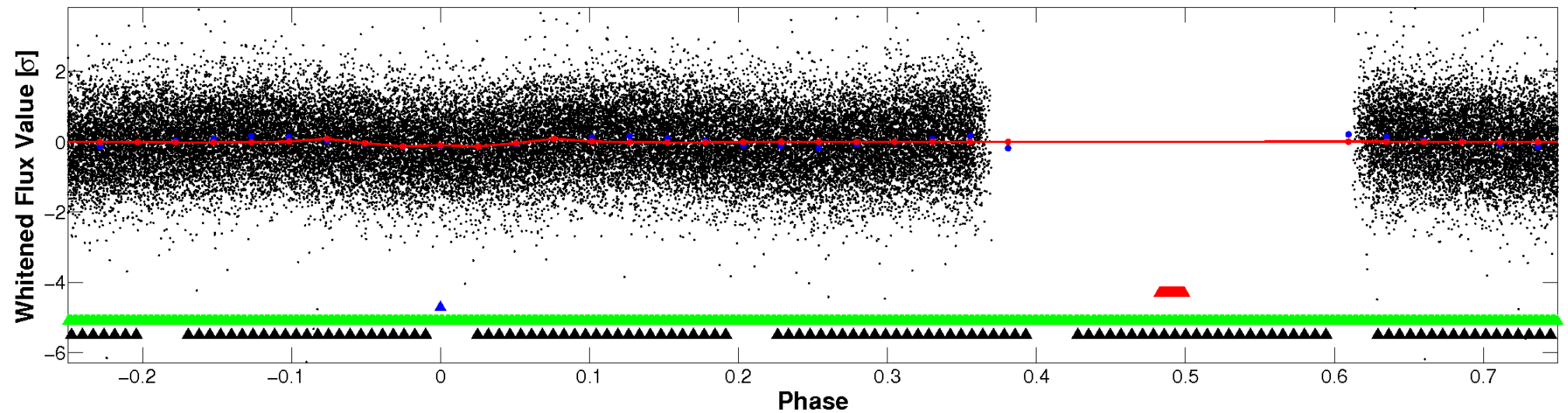


Non-Whitened Vs. Whitened Light Curve

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

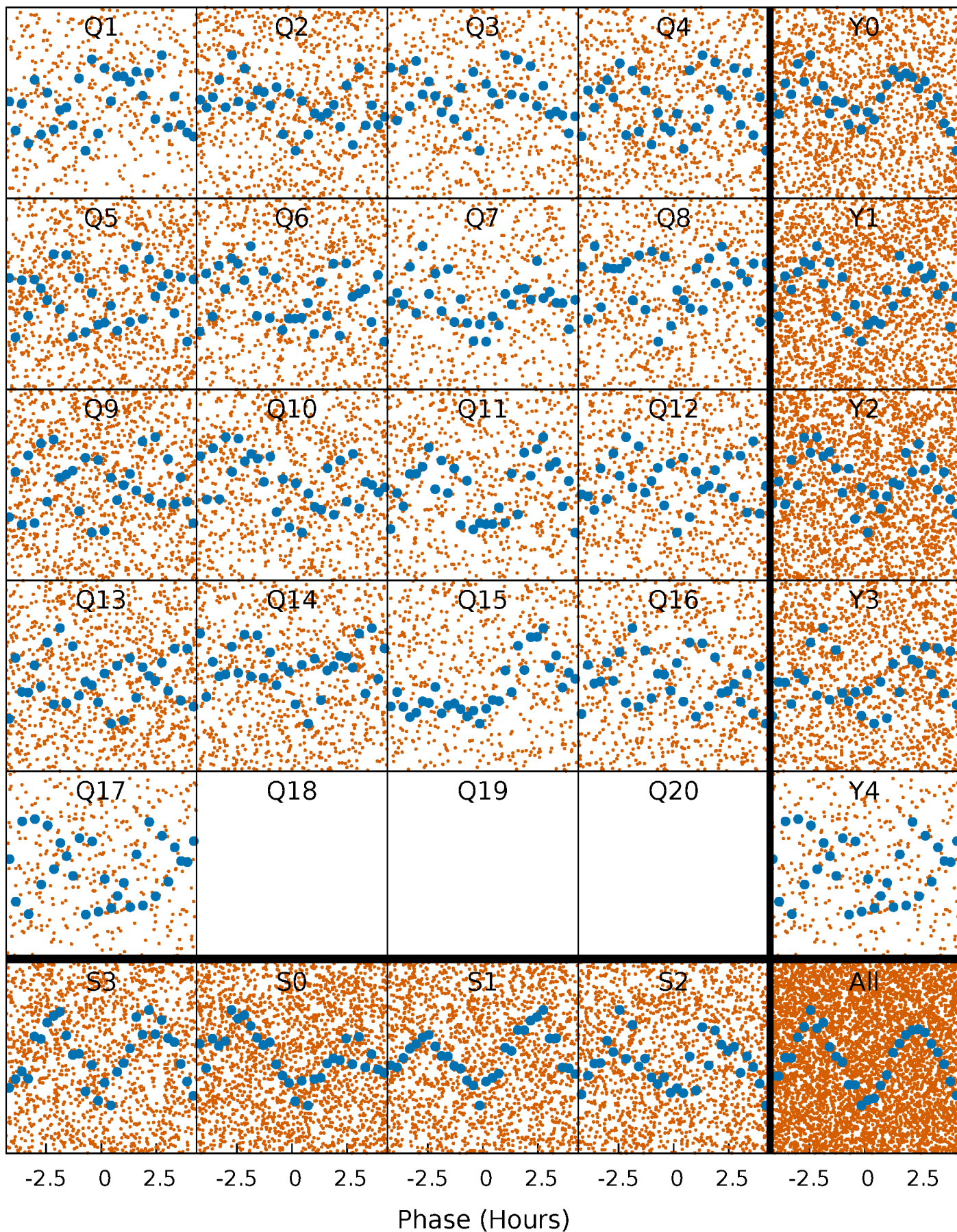


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



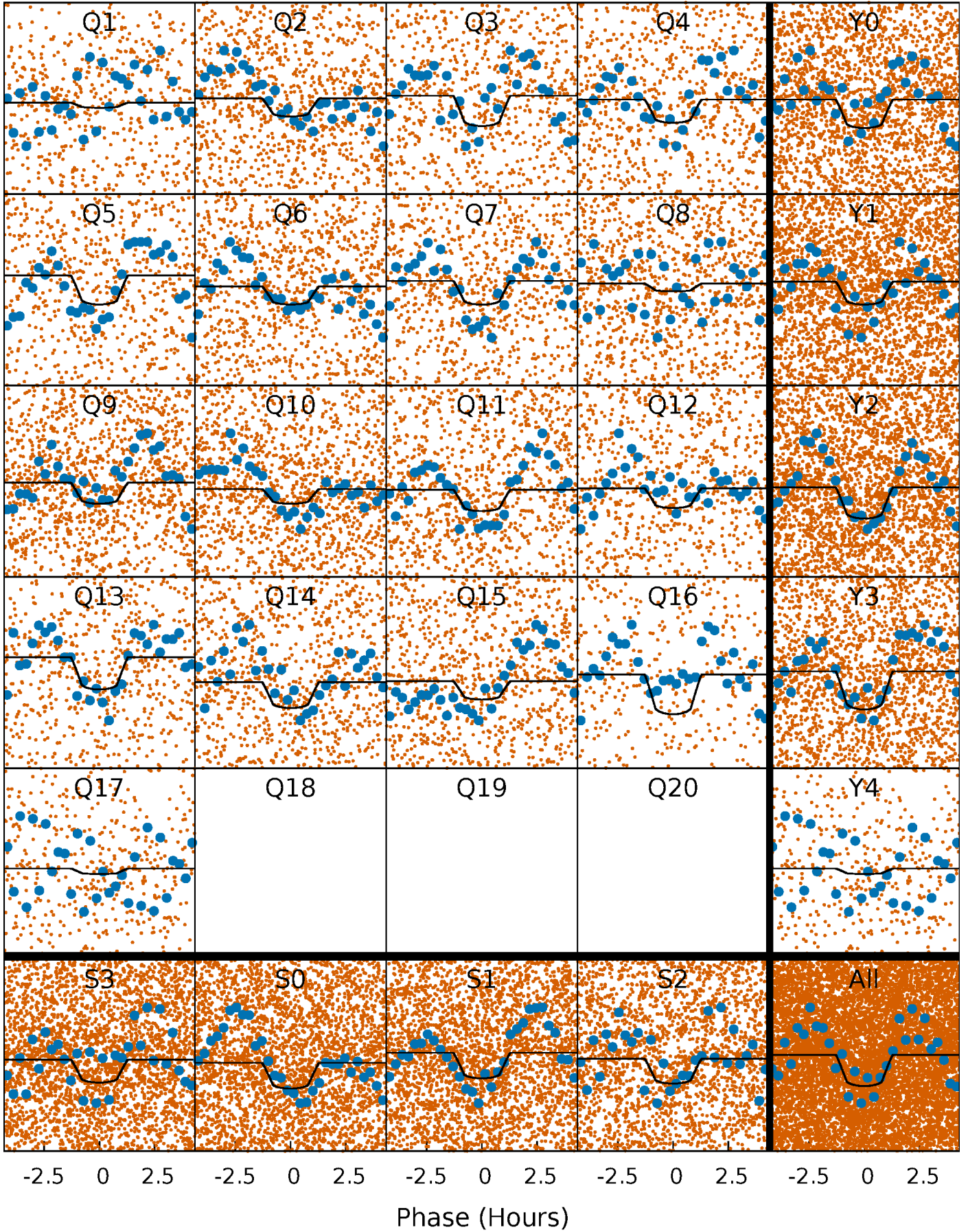
PDC Quarter-Phased Transit Curves

TCE 004919818-02 P= 0.804559 Days $T_0=131.957087$ (BKJD)



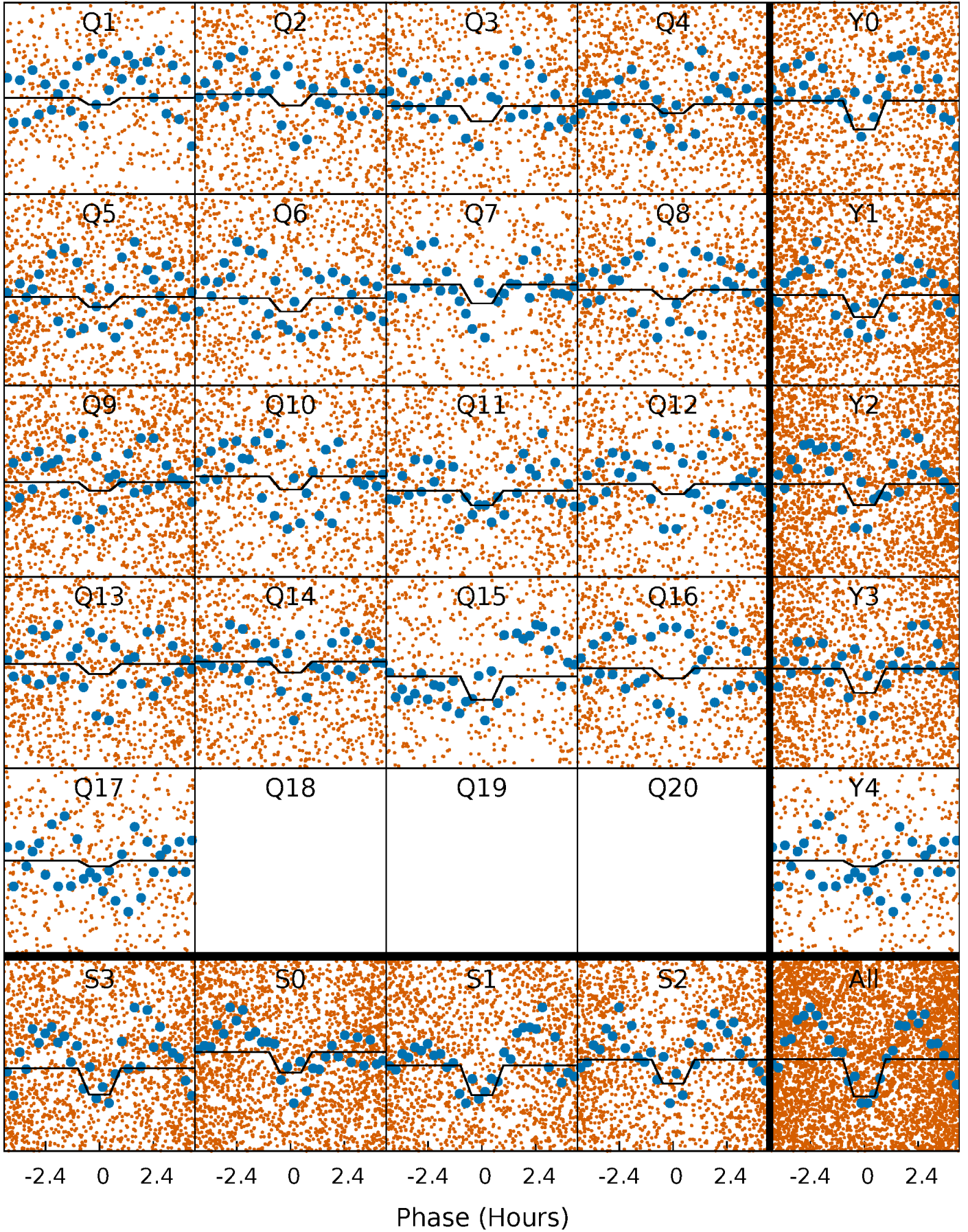
DV Quarter-Phased Transit Curves

TCE 004919818-02 P= 0.804559 Days $T_0=131.957087$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

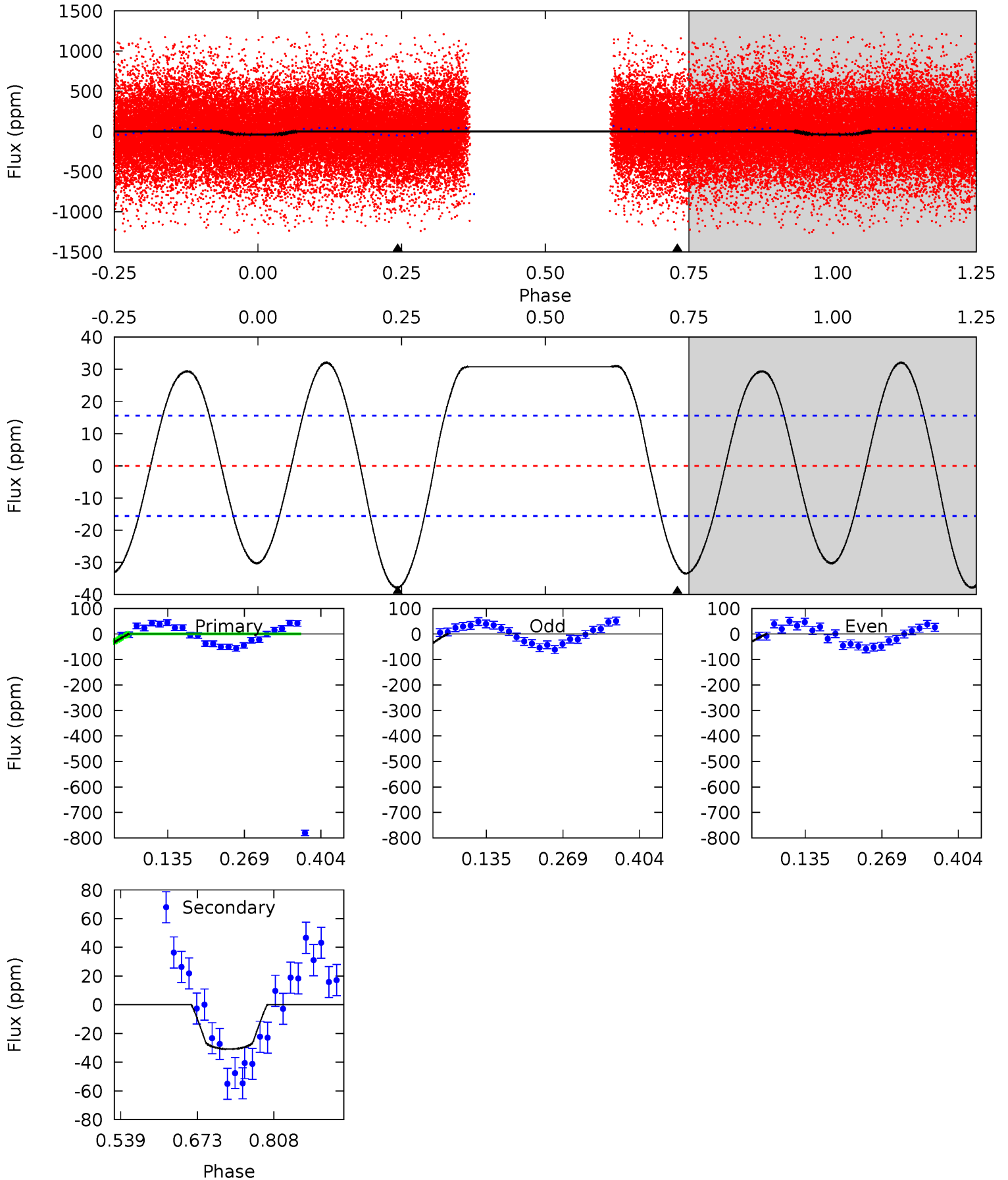
TCE 004919818-02 P= 0.804562 Days $T_0=131.956367$ (BKJD)



DV Model-Shift Uniqueness Test

004919818-02, P = 0.804559 Days, E = 131.152528 Days

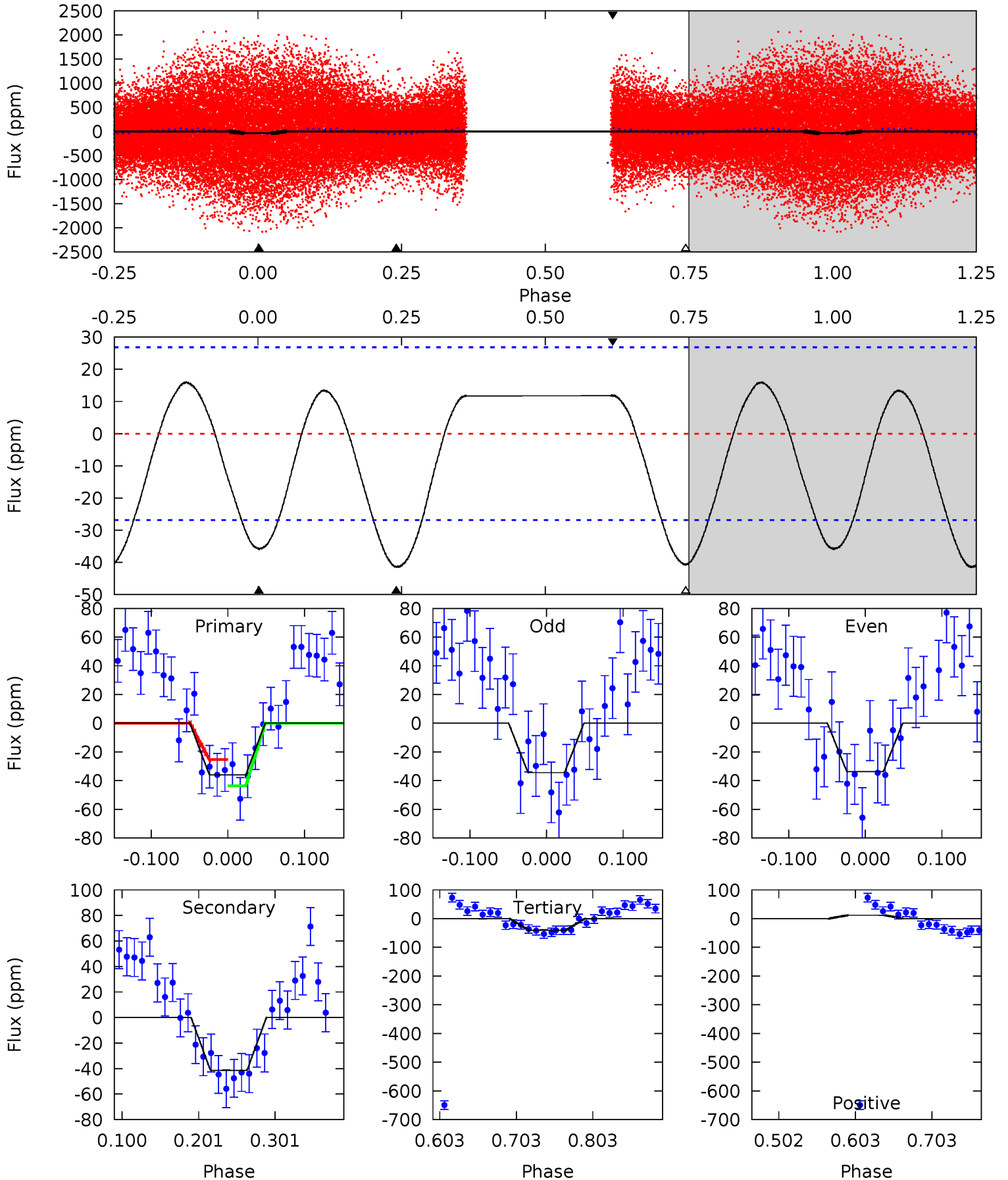
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	8.91	0	0	4.50	1.50	6.21	10.9	10.9	8.91	8.91	0.76	1.18	0.46	0.63



Alt Model-Shift Uniqueness Test

004919818-02, P = 0.804562 Days, E = 131.151805 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.11	7.05	6.93	2.03	4.56	1.64	3.37	-0.82	4.08	0.12	5.03	0.06	0.85	0.28	1.43



Stellar Parameters For KIC 004919818

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7531^{+209}_{-314}	$3.997^{+0.210}_{-0.158}$	$-0.060^{+0.200}_{-0.350}$	$2.174^{+0.510}_{-0.567}$	$1.711^{+0.212}_{-0.291}$	$0.234^{+0.265}_{-0.109}$
	+3%/-4%	+5%/-4%	+333%/-583%	+23%/-26%	+12%/-17%	+113%/-47%
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 004919818-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-31 ± 3	$1.48^{+0.33}_{-0.28}$	4738^{+376}_{-376}	6686^{+734}_{-566}	$3.116^{+1.643}_{-0.995}$
Alt.	-41 ± 6	$1.55^{+0.34}_{-0.28}$	4785^{+338}_{-361}	7199^{+780}_{-692}	$3.807^{+2.007}_{-1.243}$

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

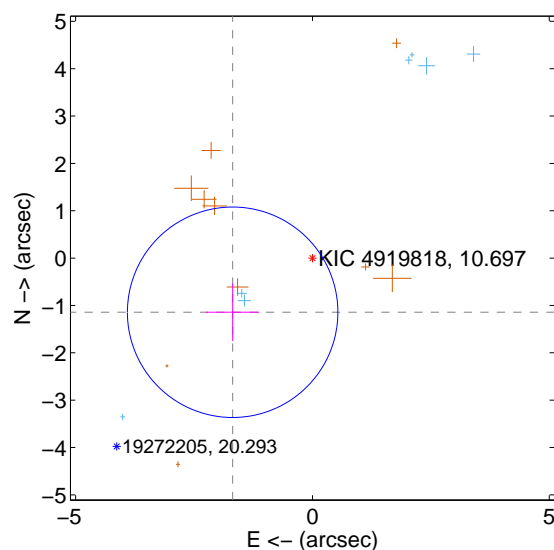
Supplemental centroid analysis for 004919818-02. **Kepler magnitude: 10.70.** Transit SNR 11.23

There are 7 quarters with good PRF difference image offsets

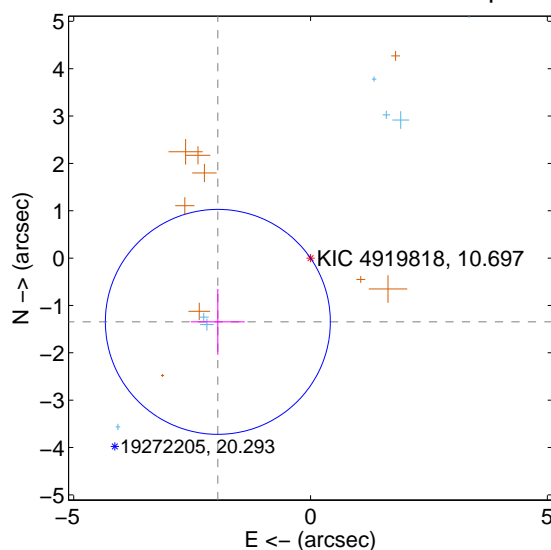
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.037 ± 0.741	2.75	1.685 ± 0.561	-1.144 ± 0.609
PRF-fit source offset from KIC position	2.376 ± 0.792	3.00	1.957 ± 0.568	-1.347 ± 0.695
photometric centroid source offset	0.96 ± 0.35	2.71	-0.82 ± 0.33	-0.49 ± 0.40

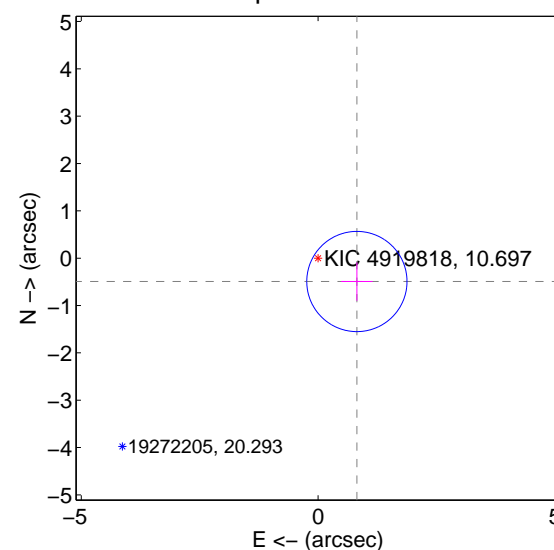
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

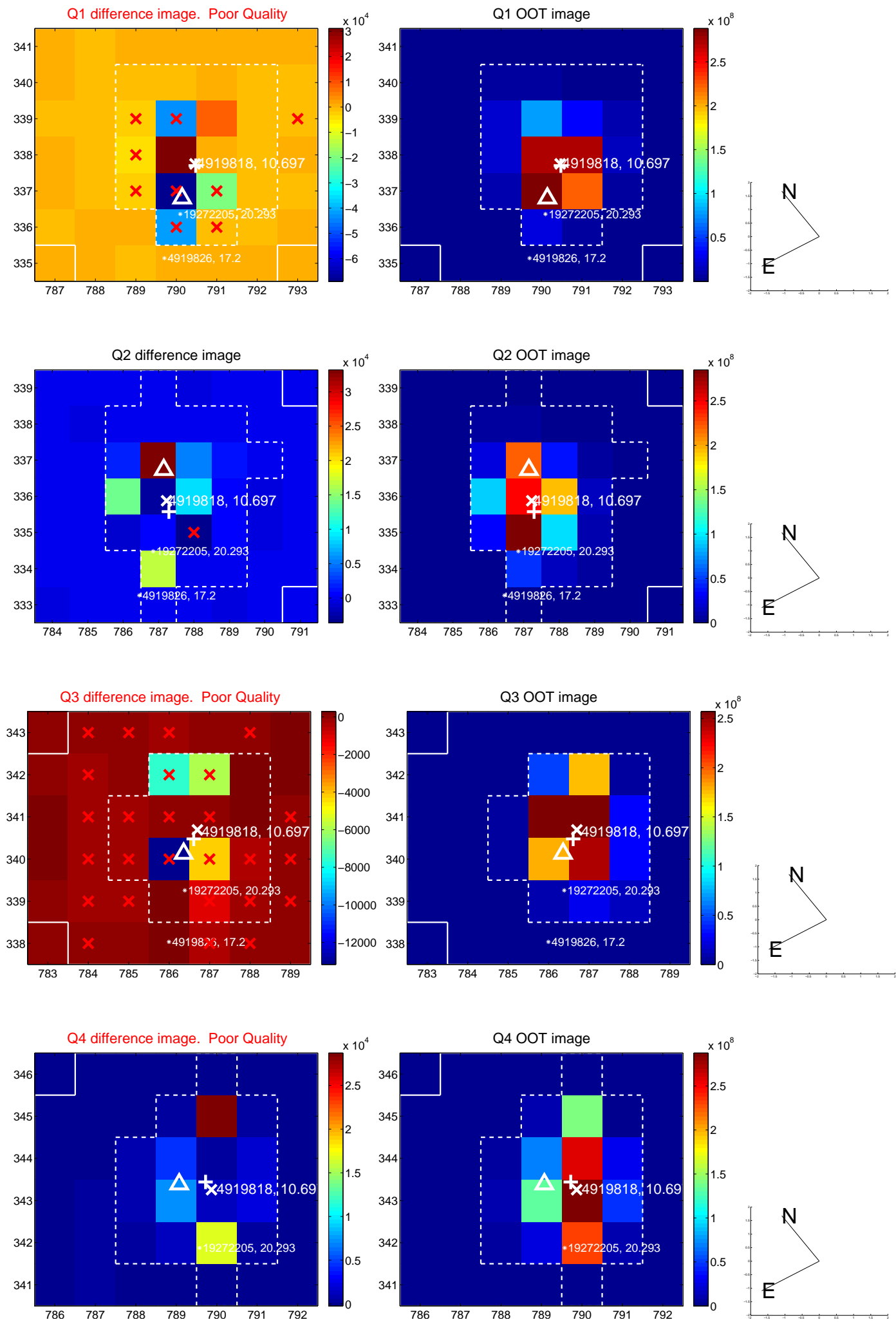


offset from photometric centroids

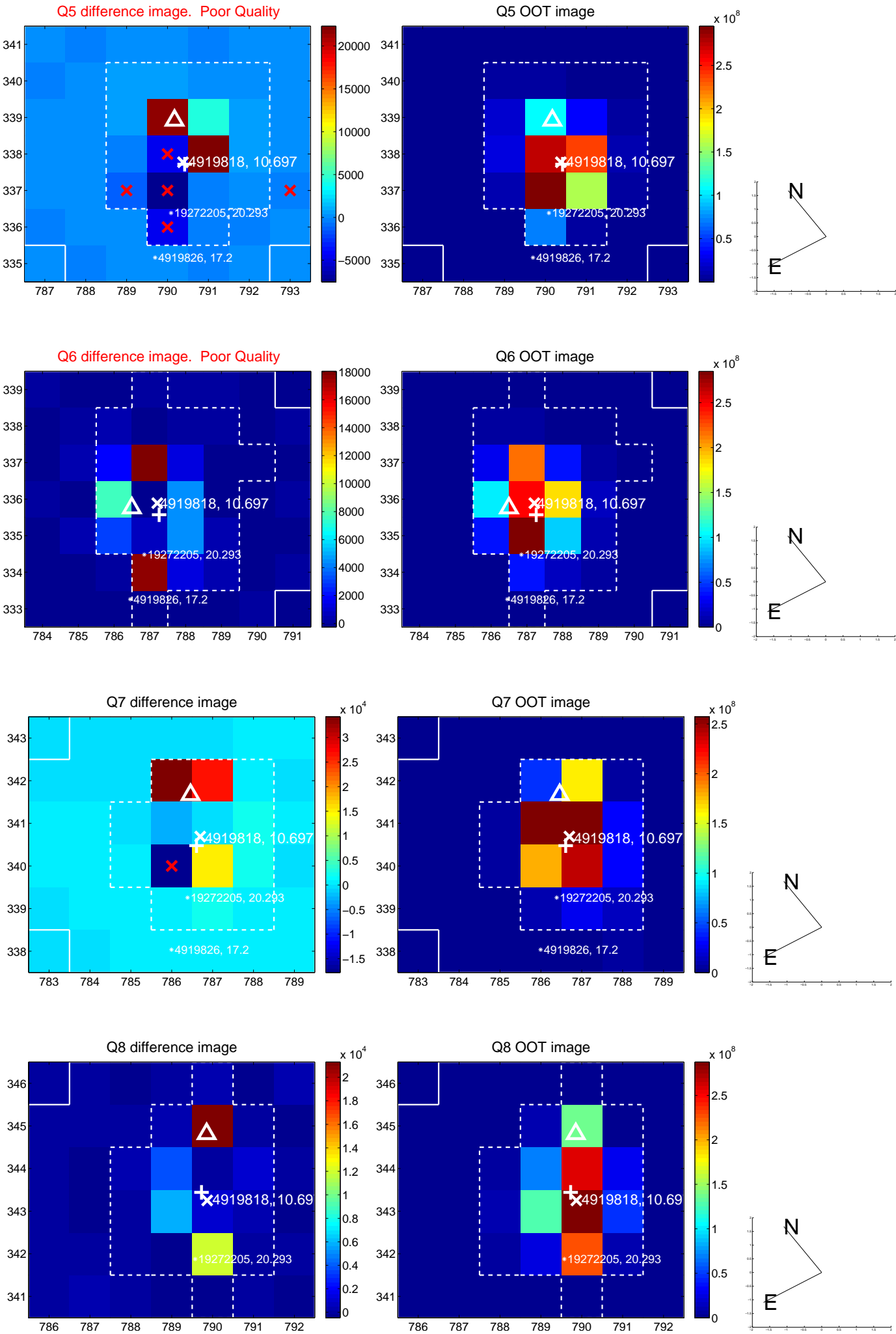


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

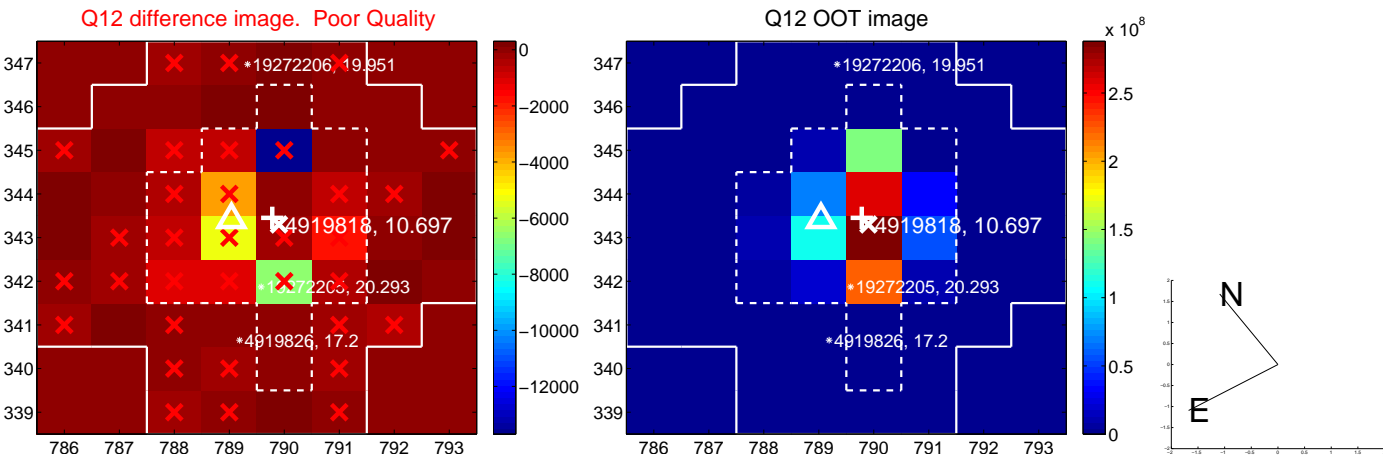
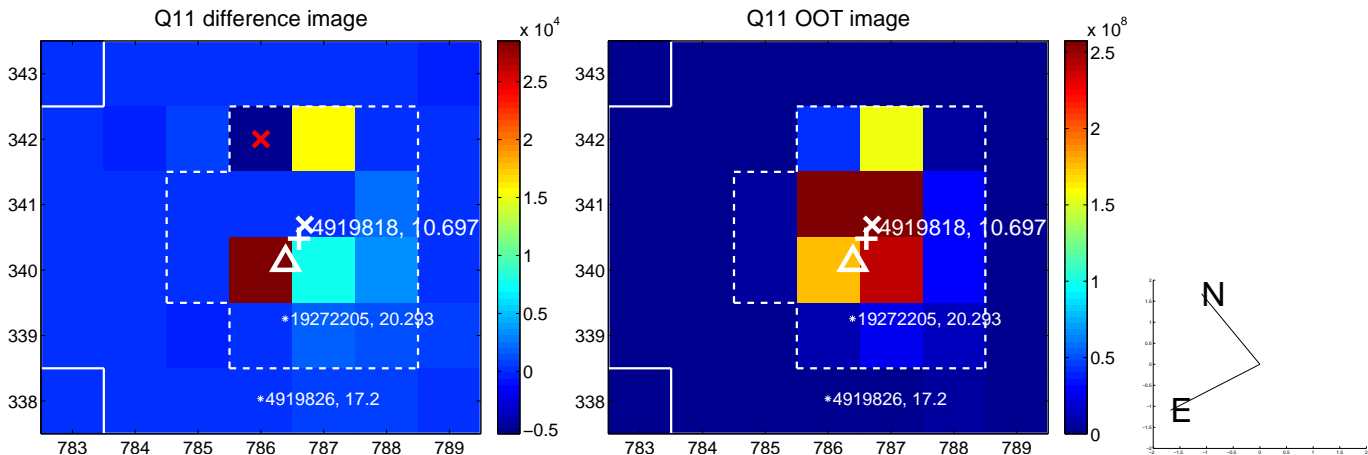
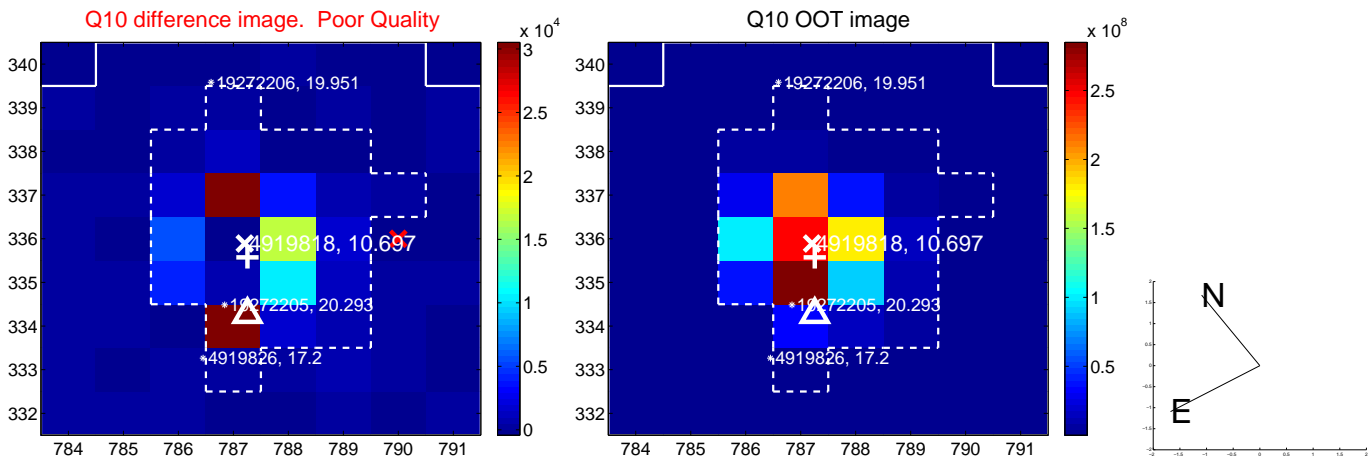
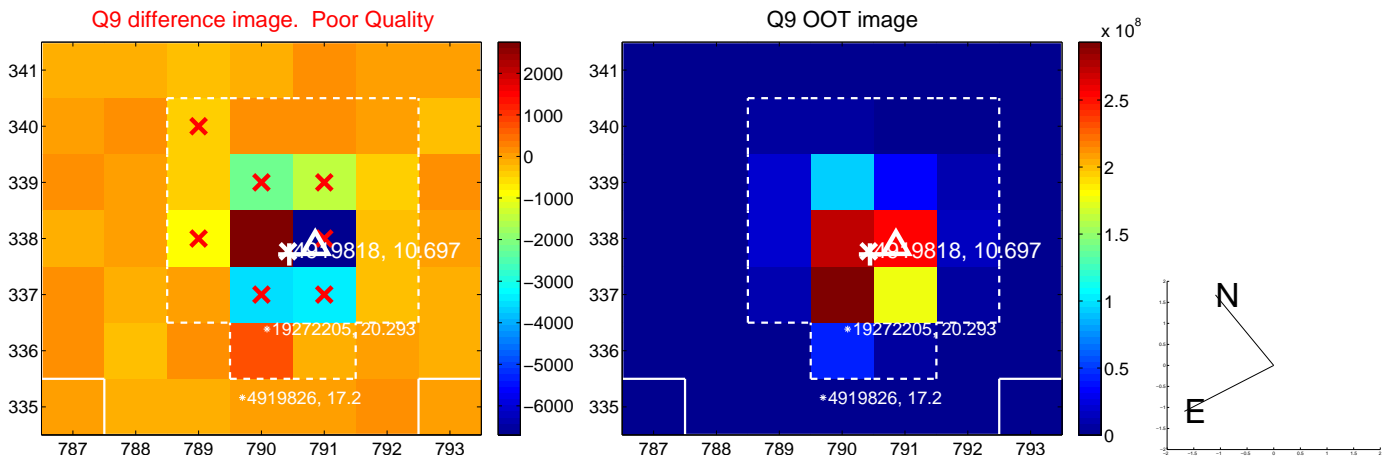
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



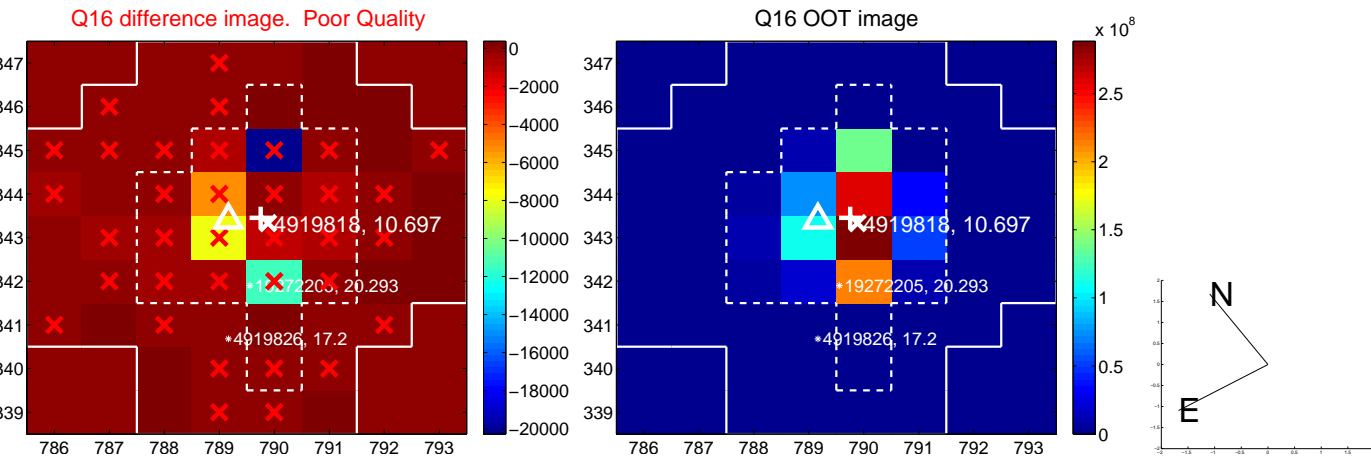
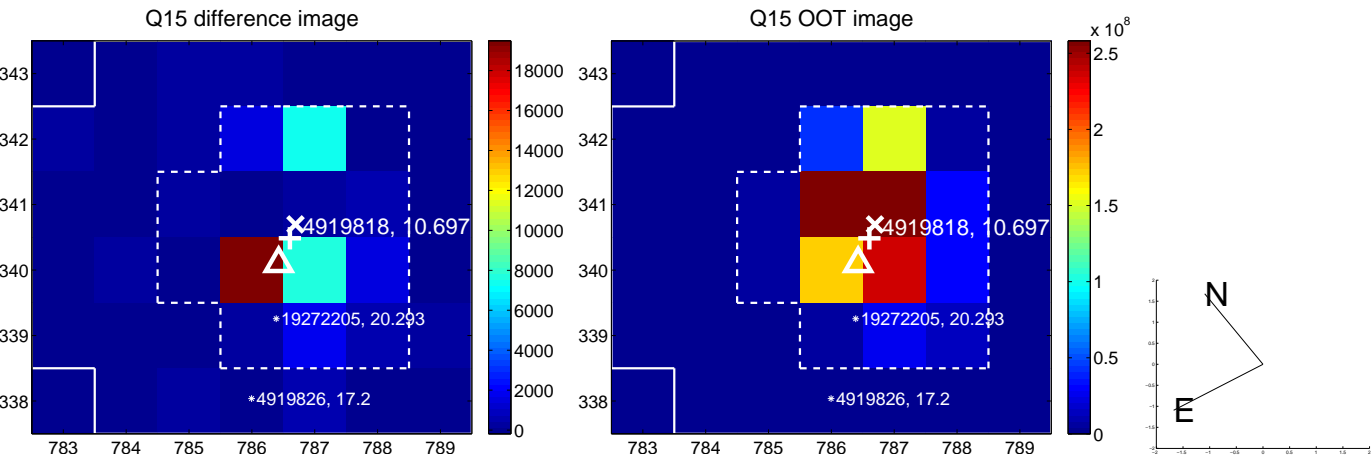
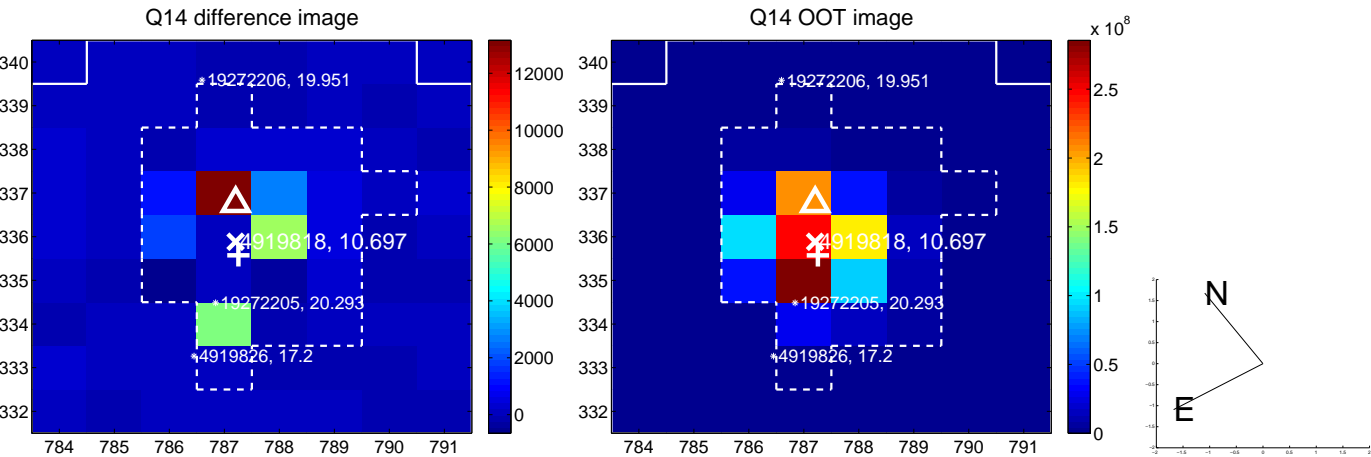
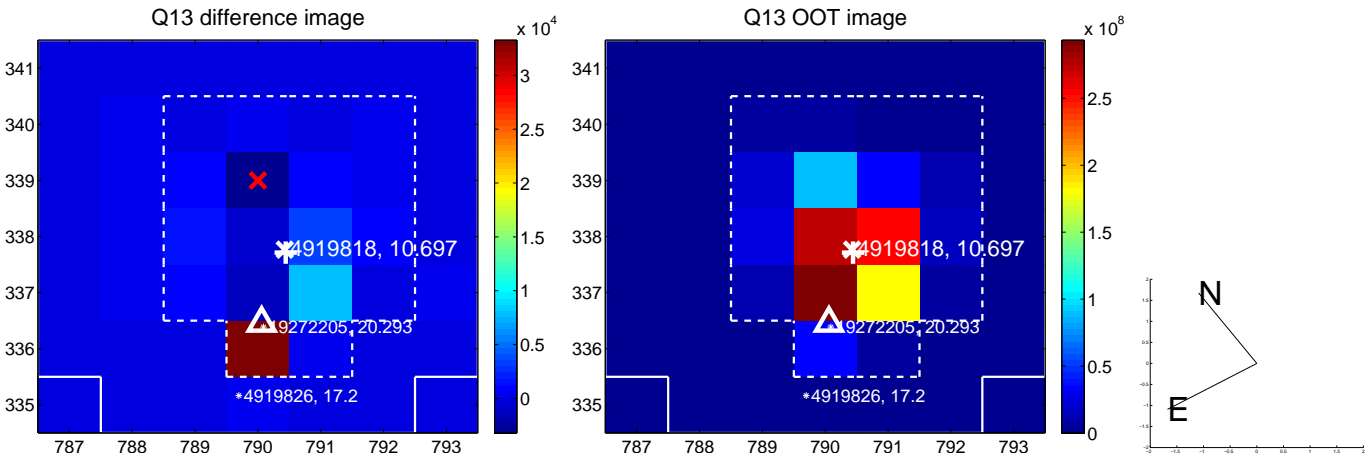
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



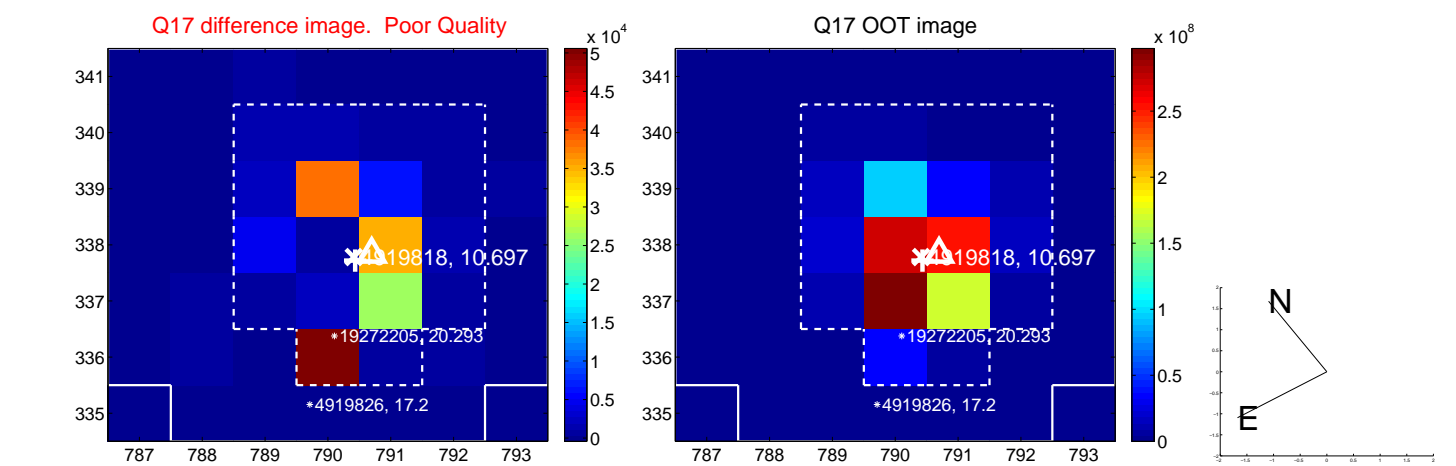
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



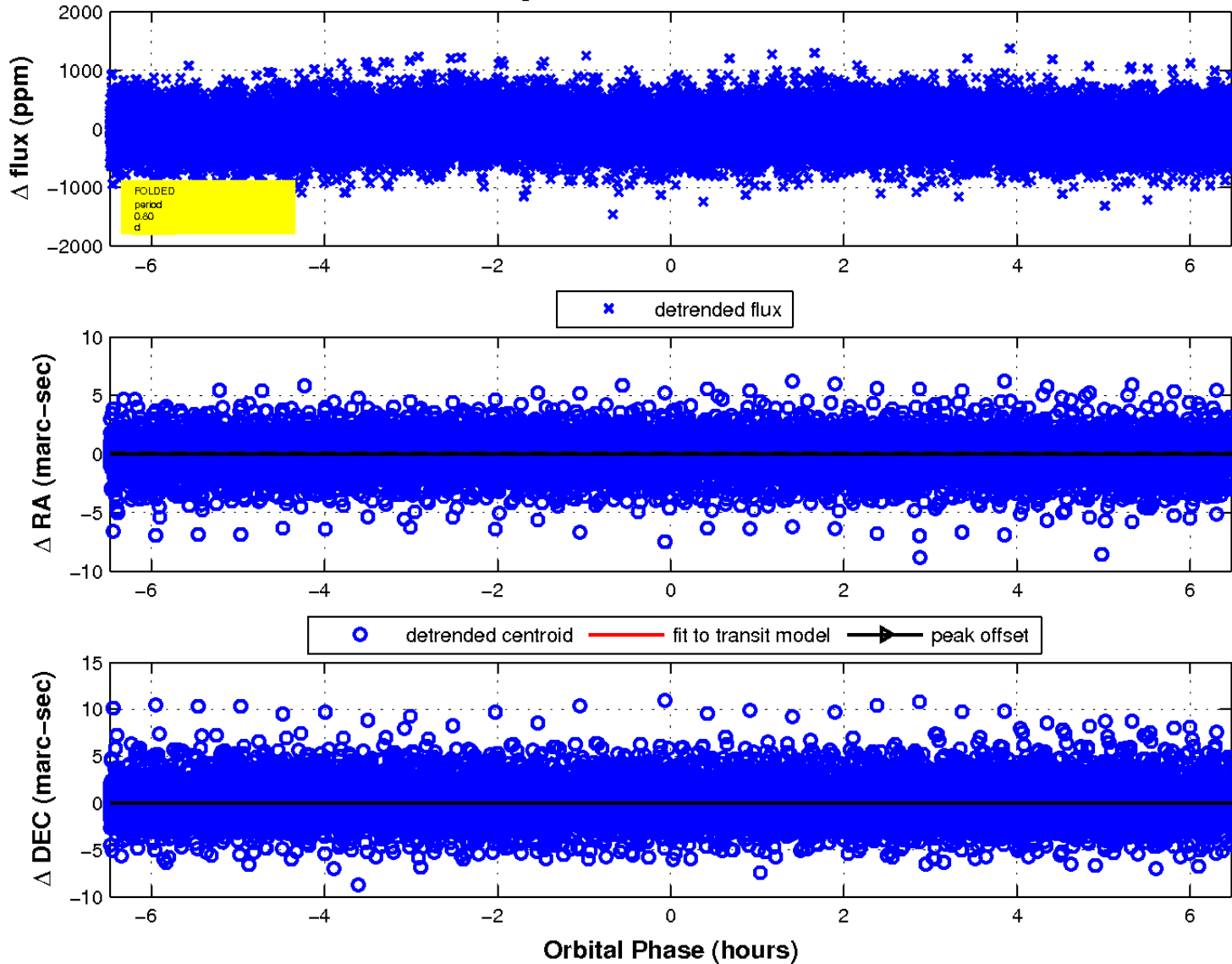
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

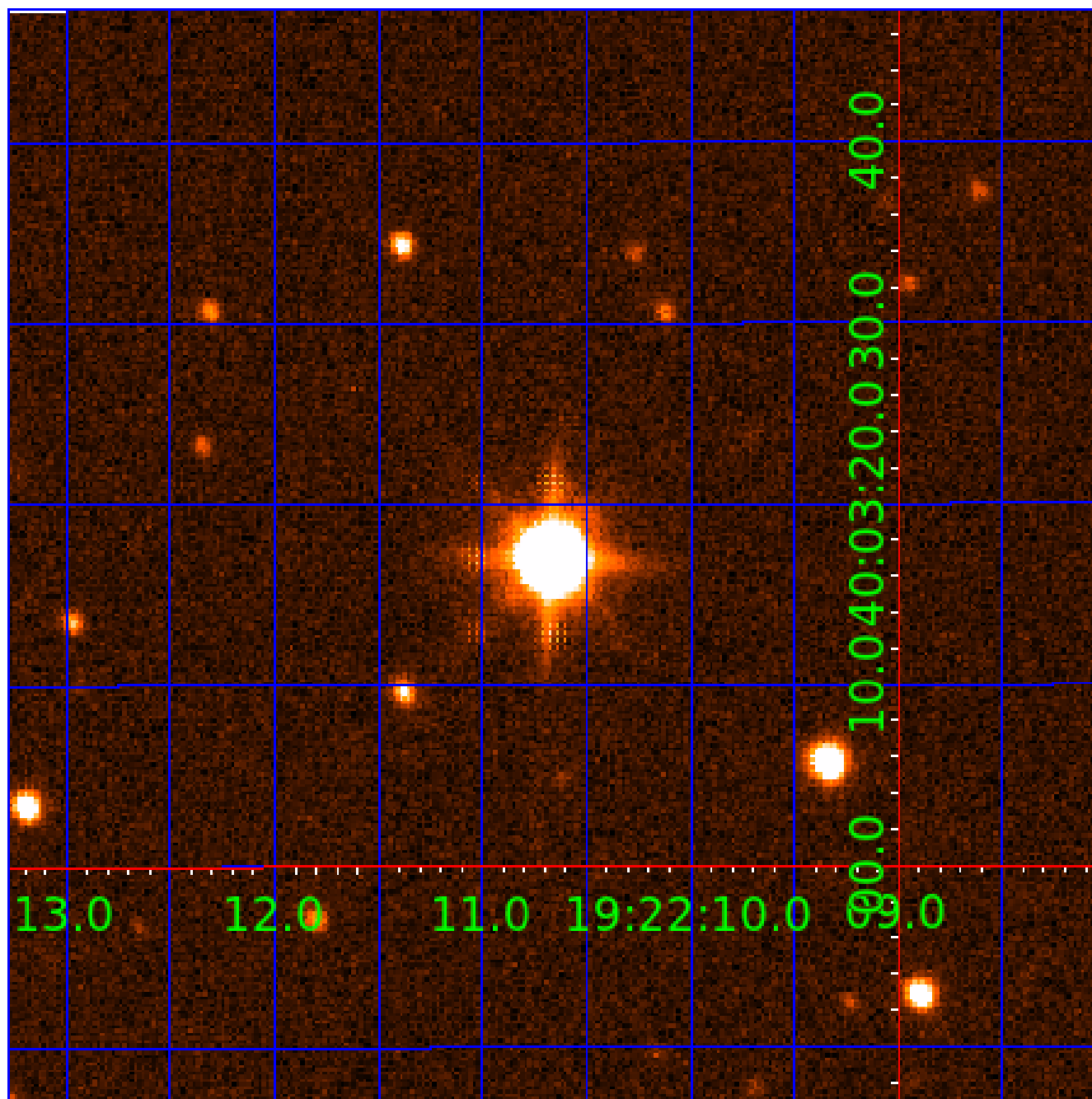


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 004919818

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})
004919818-01	OBS	No	0.804566	131.540710	13.6	1.232	9.2	4.9	2.17	7531	0.92	33194.19
004919818-02	OBS	No	0.804559	131.957087	36.7	2.160	10.0	11.2	2.17	7531	1.52	33194.61
004919818-03	OBS	No	0.688274	132.182177	56.0	4.594	10.9	11.4	2.17	7531	1.88	40875.48
004919818-04	OBS	No	12.230459	139.218187	507.6	3.052	13.5	12.2	2.17	7531	7.03	881.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004919818-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004919818-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
004919818-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
004919818-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

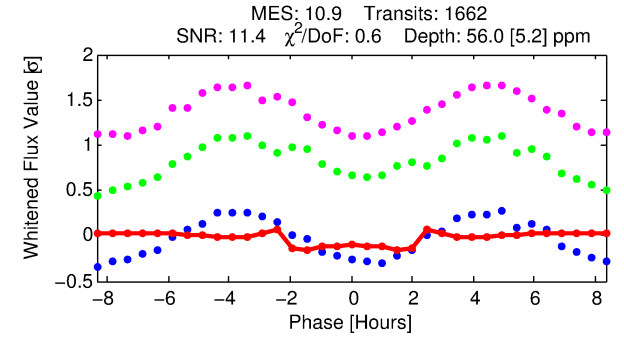
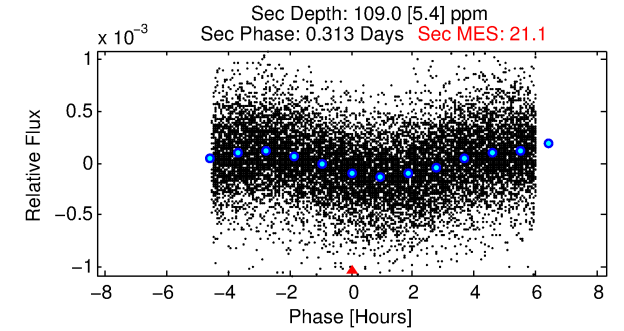
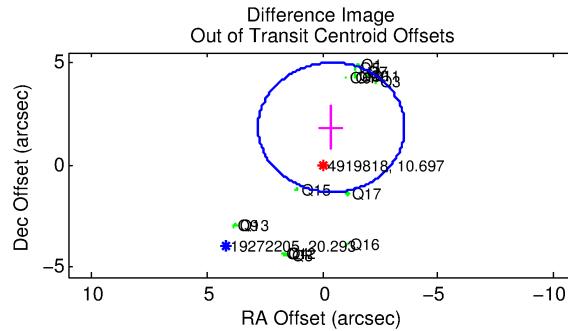
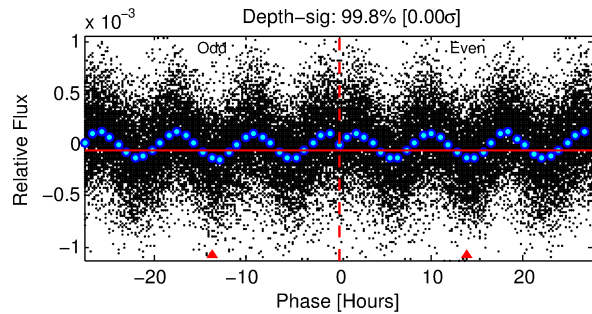
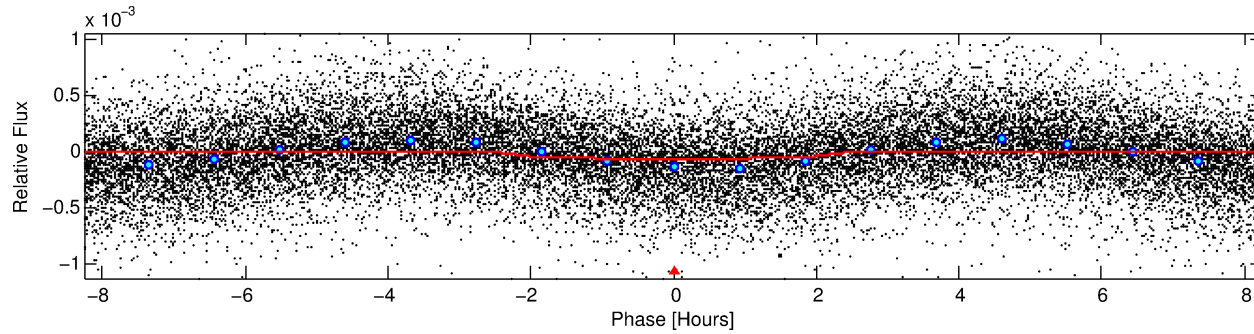
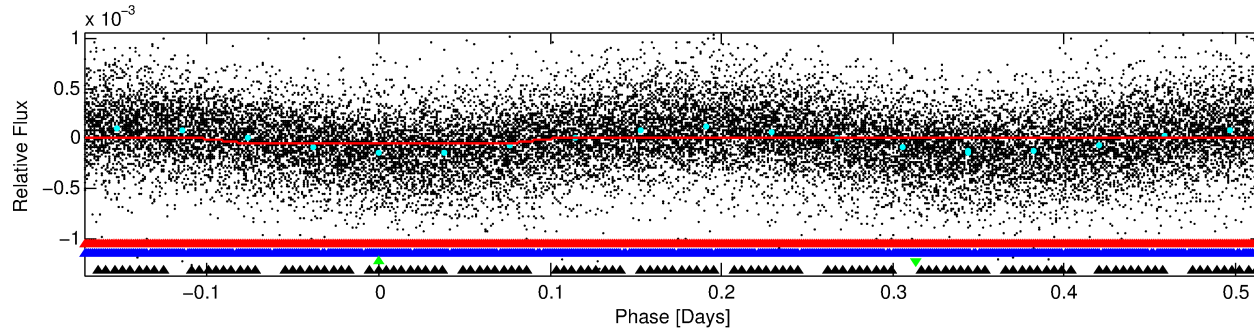
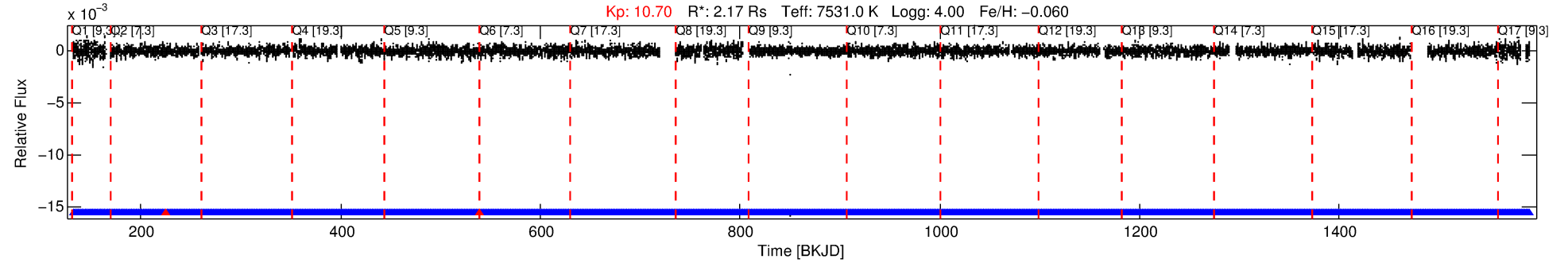
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004919818-03

No Significant Match Found

DV One-Page Summary

KIC: 4919818 Candidate: 3 of 4 Period: 0.688 d



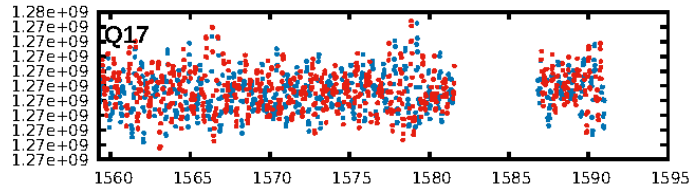
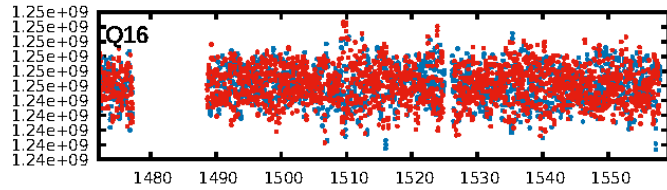
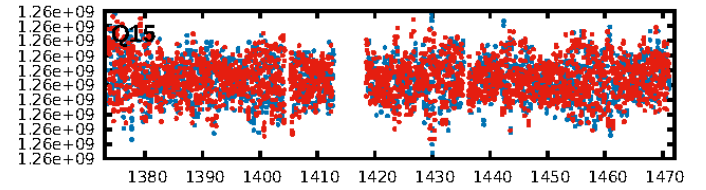
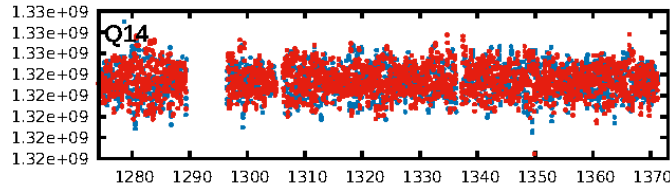
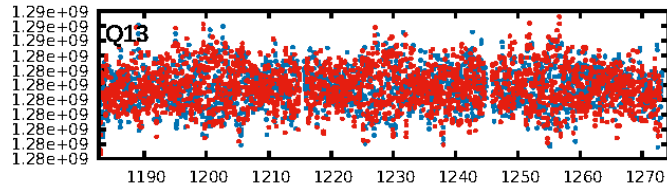
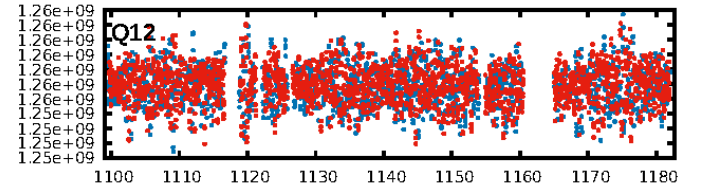
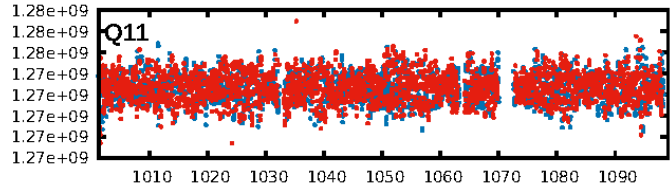
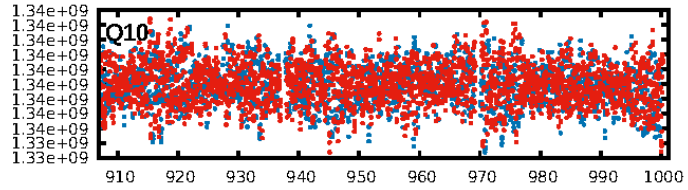
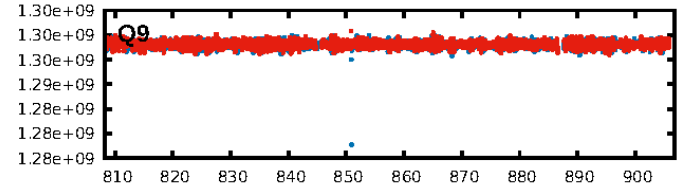
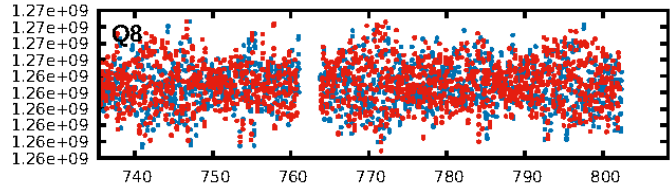
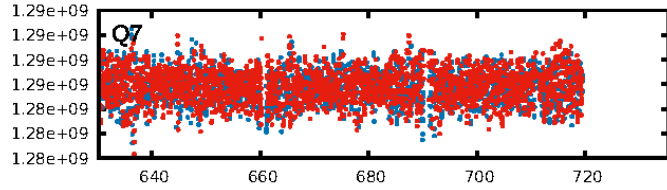
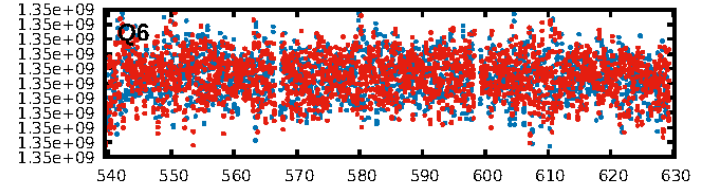
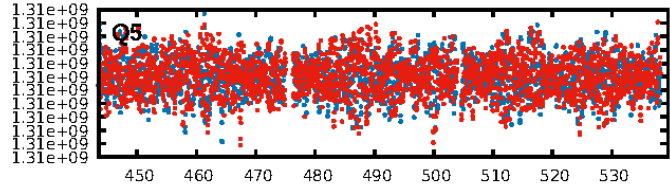
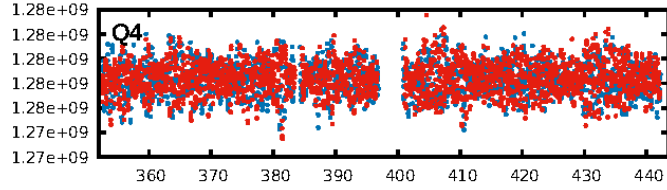
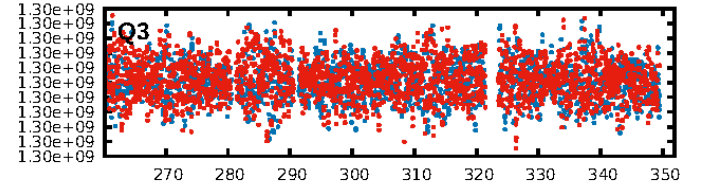
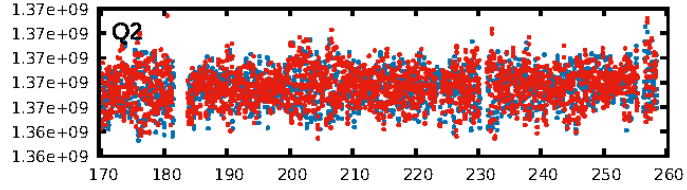
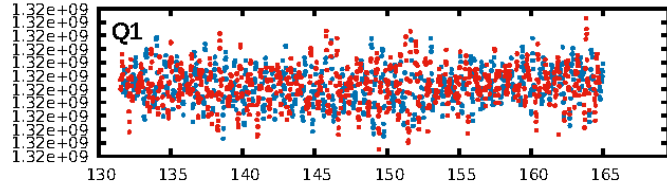
DV Fit Results:

Period = 0.68827 [0.00001] d
Epoch = 132.1822 [0.0016] BKJD
Rp/R* = 0.0079 [0.0011]
a/R* = 1.08 [0.12]
b = 0.90 [0.17]
Seff = 40875.48 [16450.22]
Teq = 3626 [365] K
Rp = 1.88 [0.55] Re
a = 0.0183 [0.0043] AU
Ag = 5.64 [2.58] [1.80 σ]
Teffp = 8640 [691] K [6.41 σ]

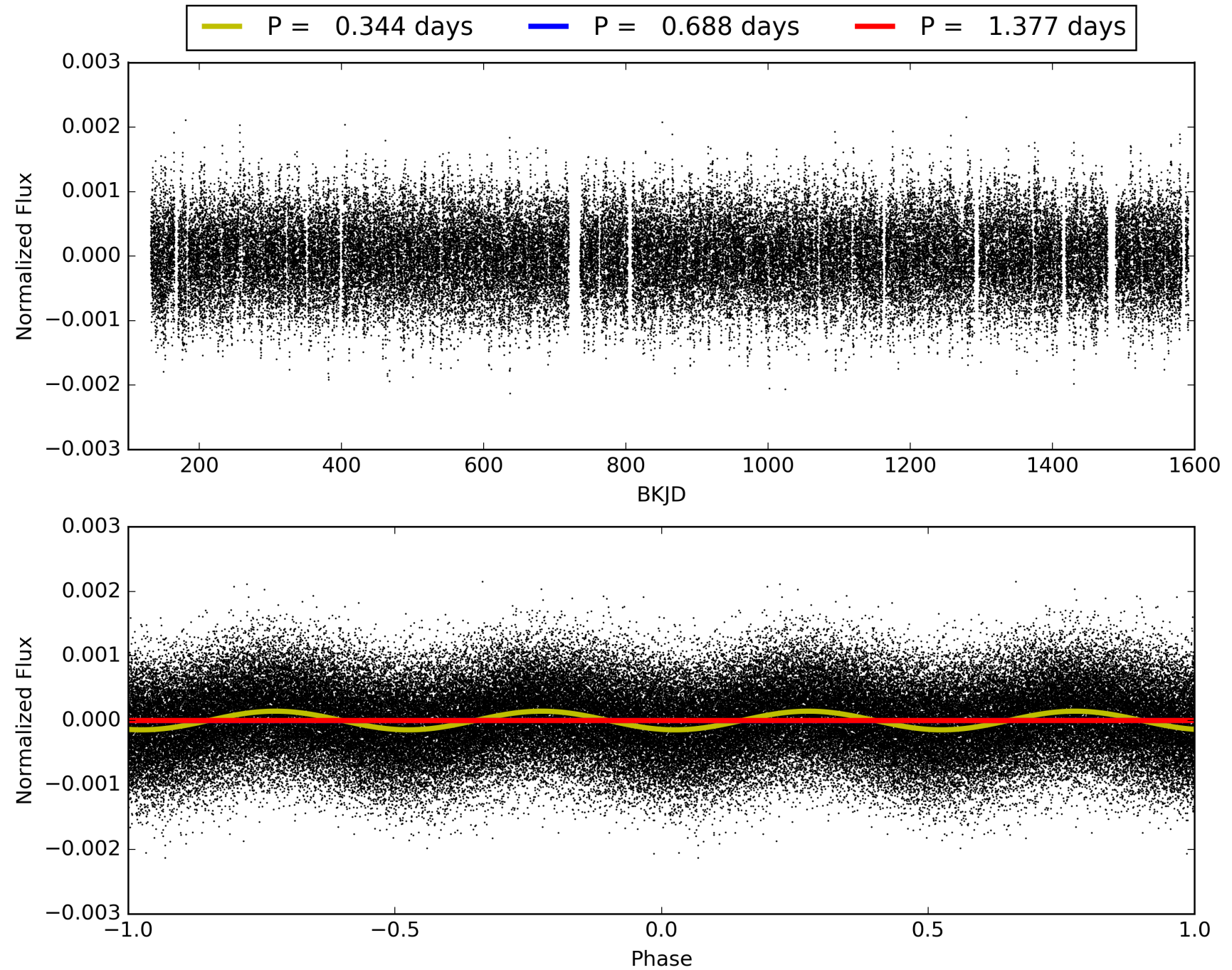
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 41.8% [0.55 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.43e-06
RollingBand-fgt: 1.00 [1582/1584]
GhostDiagnostic-chr: -2.744
Centroid-sig: 0.8%
Centroid-so: 0.378 arcsec [2.03 σ]
OotOffset-rm: 1.867 arcsec [1.77 σ]
KicOffset-rm: 1.328 arcsec [1.48 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.47 [8/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 004919818-03, PDC Light Curves

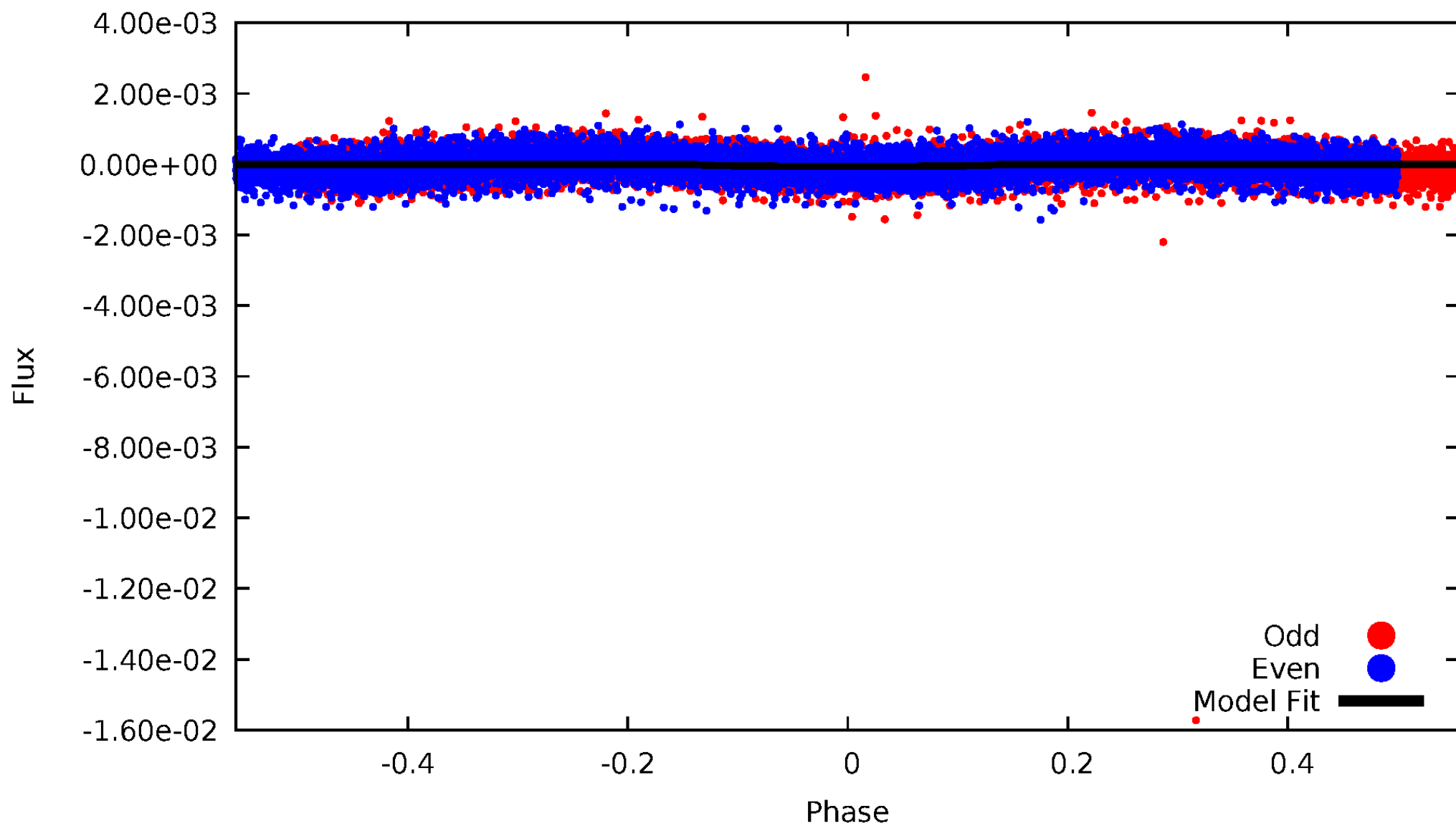


TCE 004919818-03



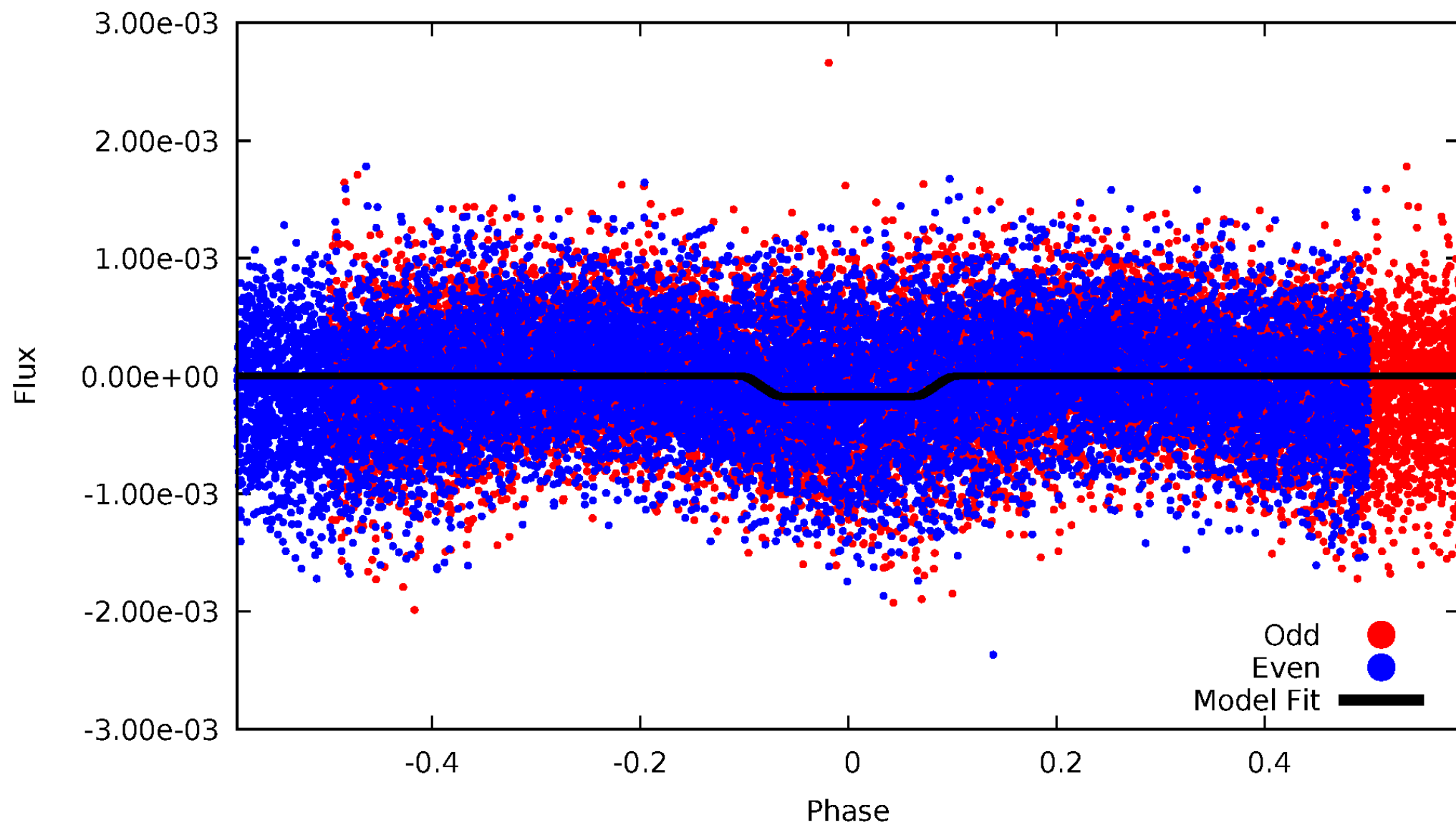
DV Odd/Even

TCE 004919818-03

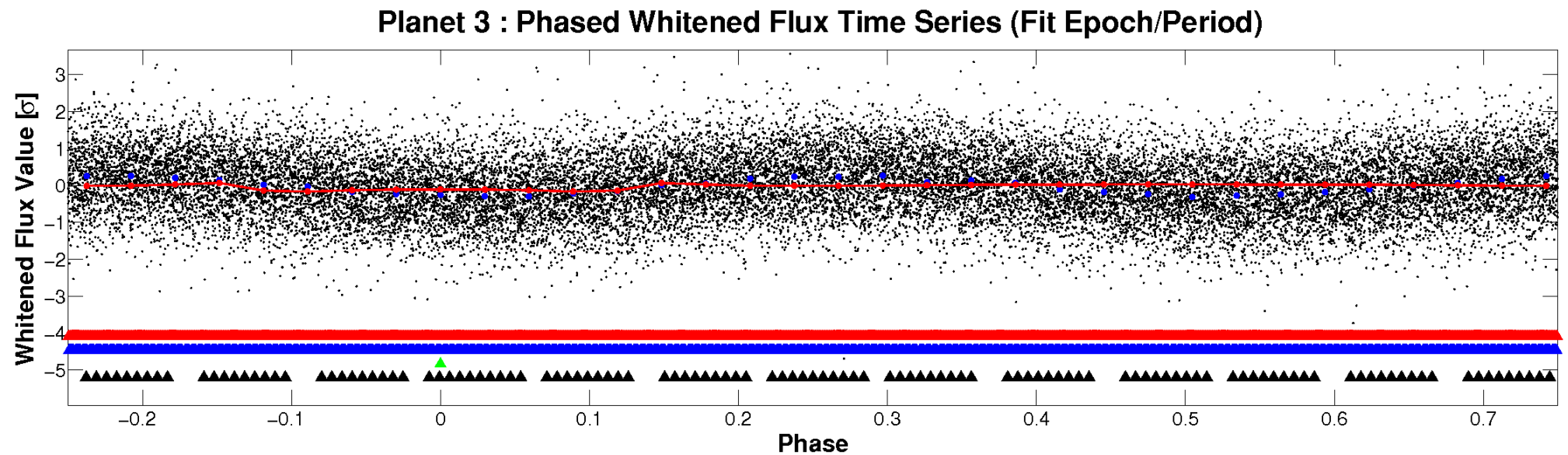
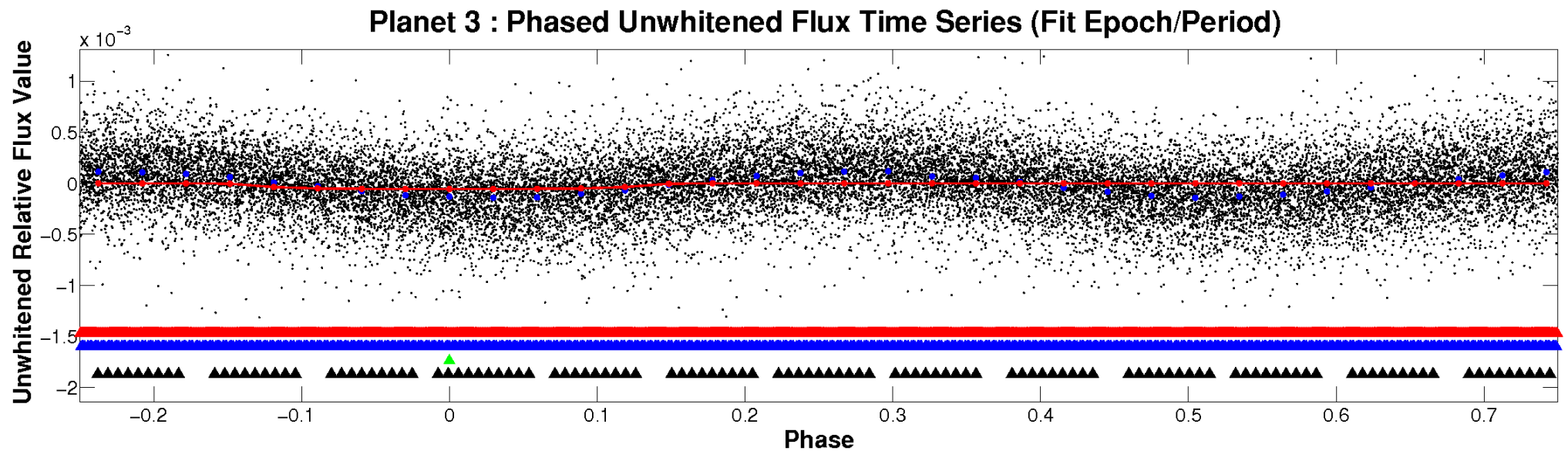


ALT Odd/Even

TCE 004919818-03

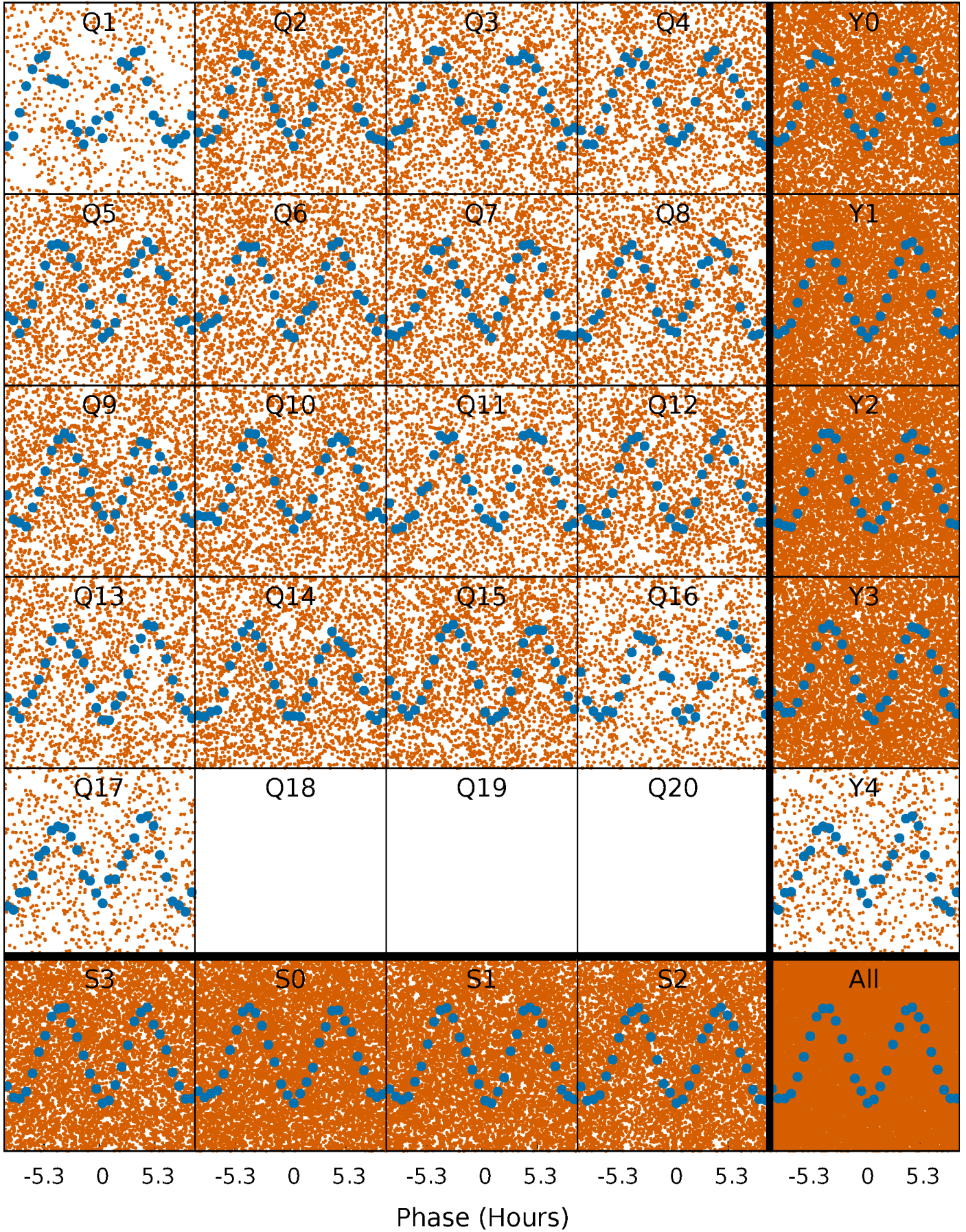


Non-Whitened Vs. Whitened Light Curve



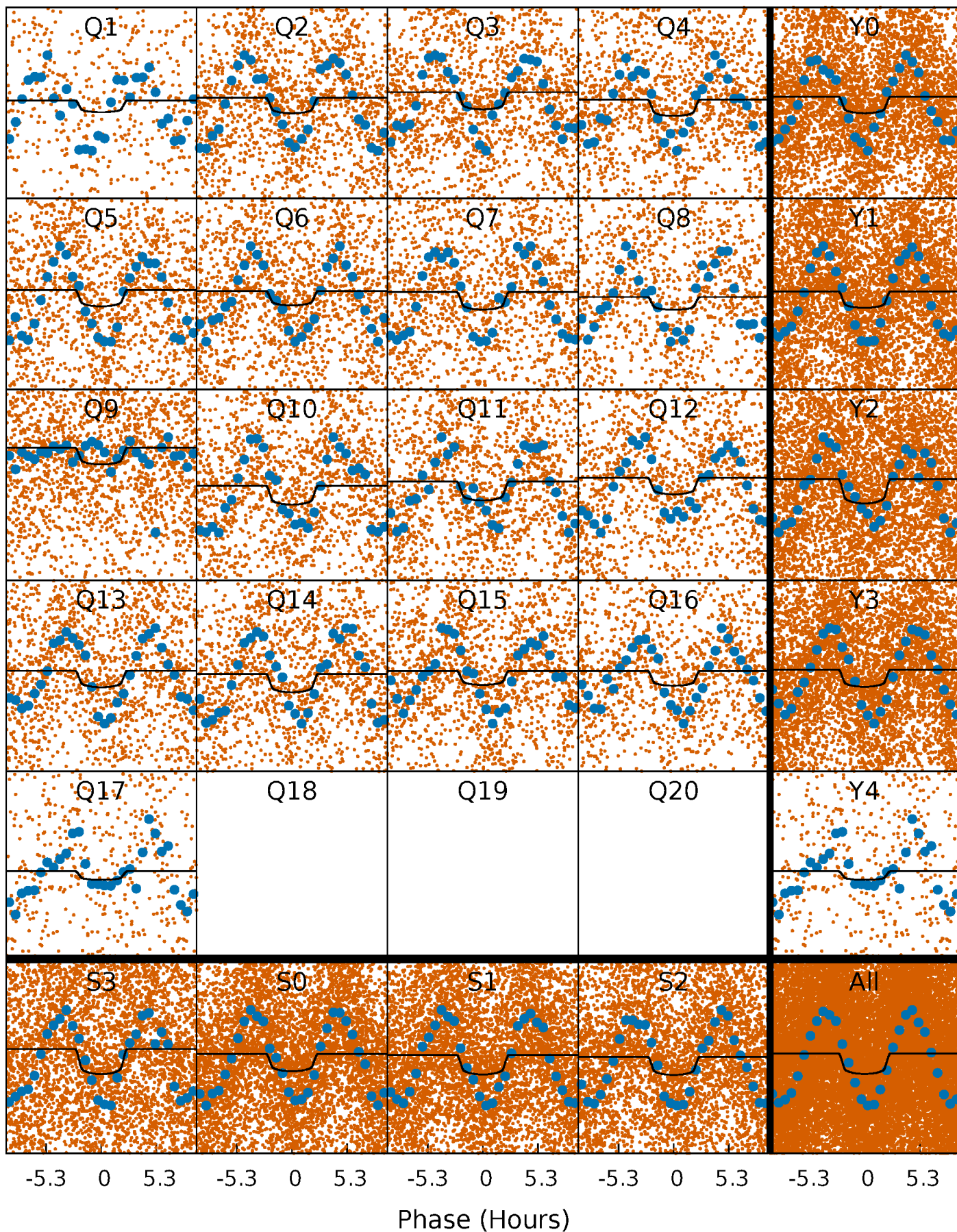
PDC Quarter-Phased Transit Curves

TCE 004919818-03 P= 0.688274 Days $T_0=132.182177$ (BKJD)



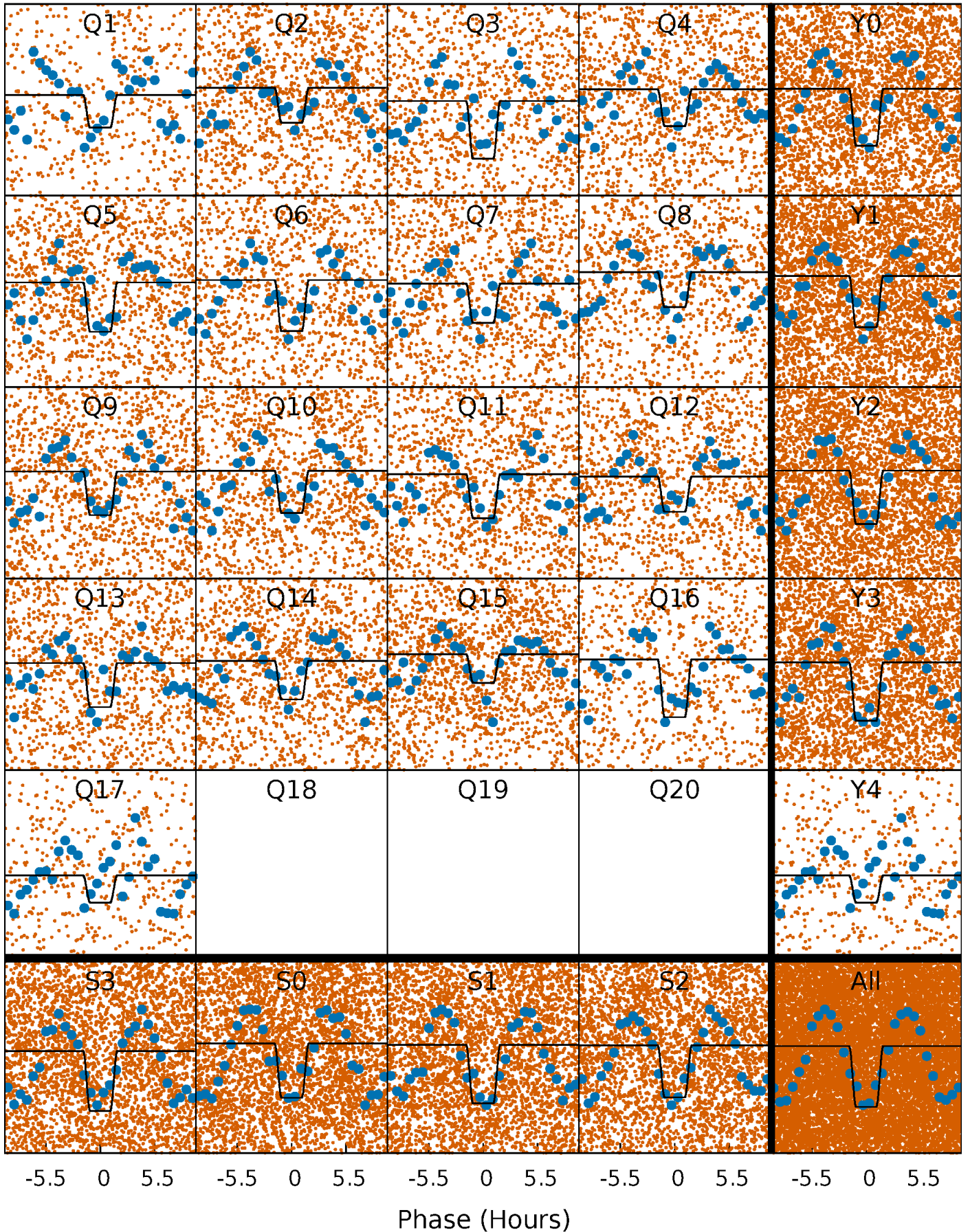
DV Quarter-Phased Transit Curves

TCE 004919818-03 P= 0.688274 Days $T_0=132.182177$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

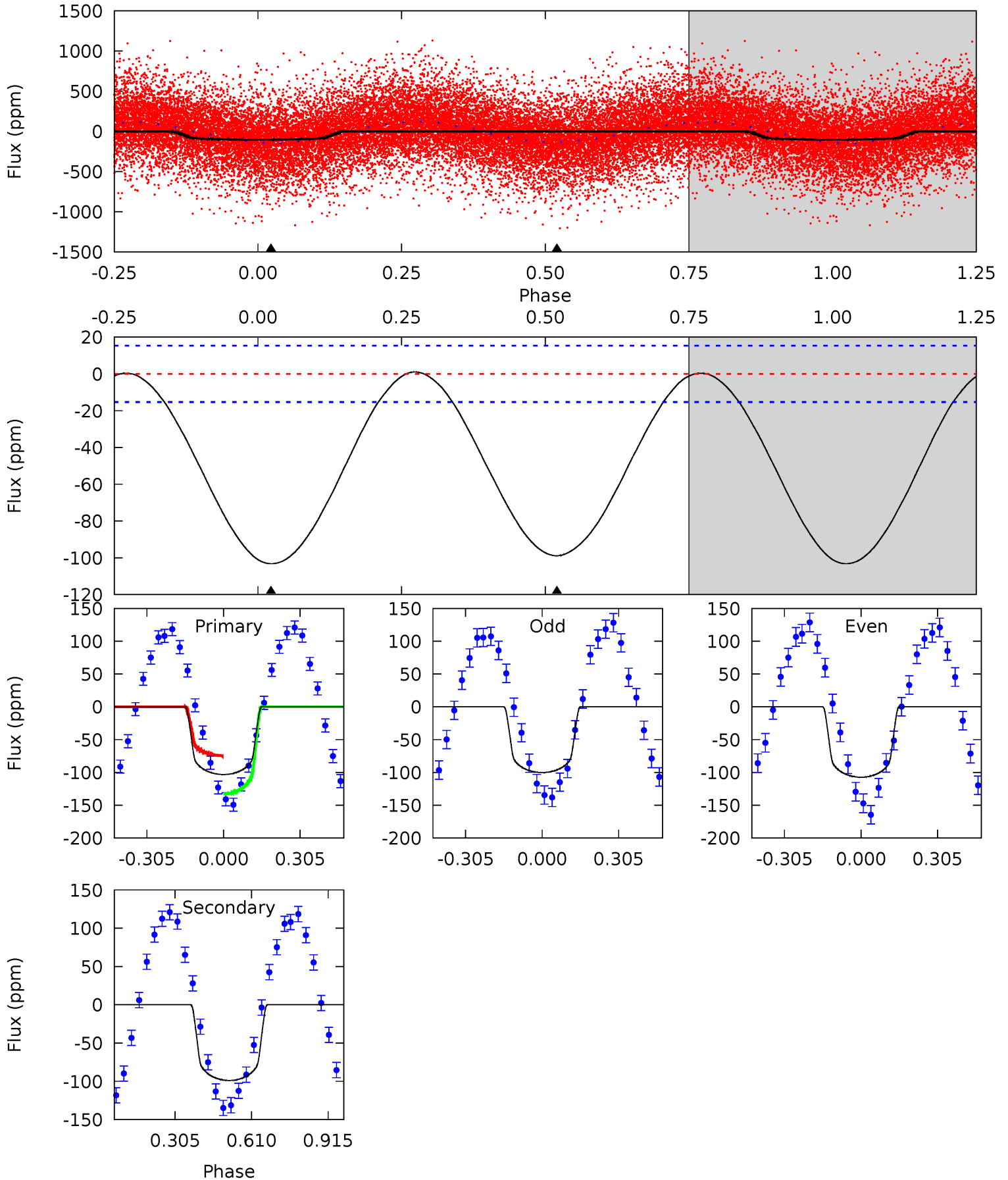
TCE 004919818-03 P= 0.688294 Days $T_0=132.180275$ (BKJD)



DV Model-Shift Uniqueness Test

004919818-03, P = 0.688274 Days, E = 131.493903 Days

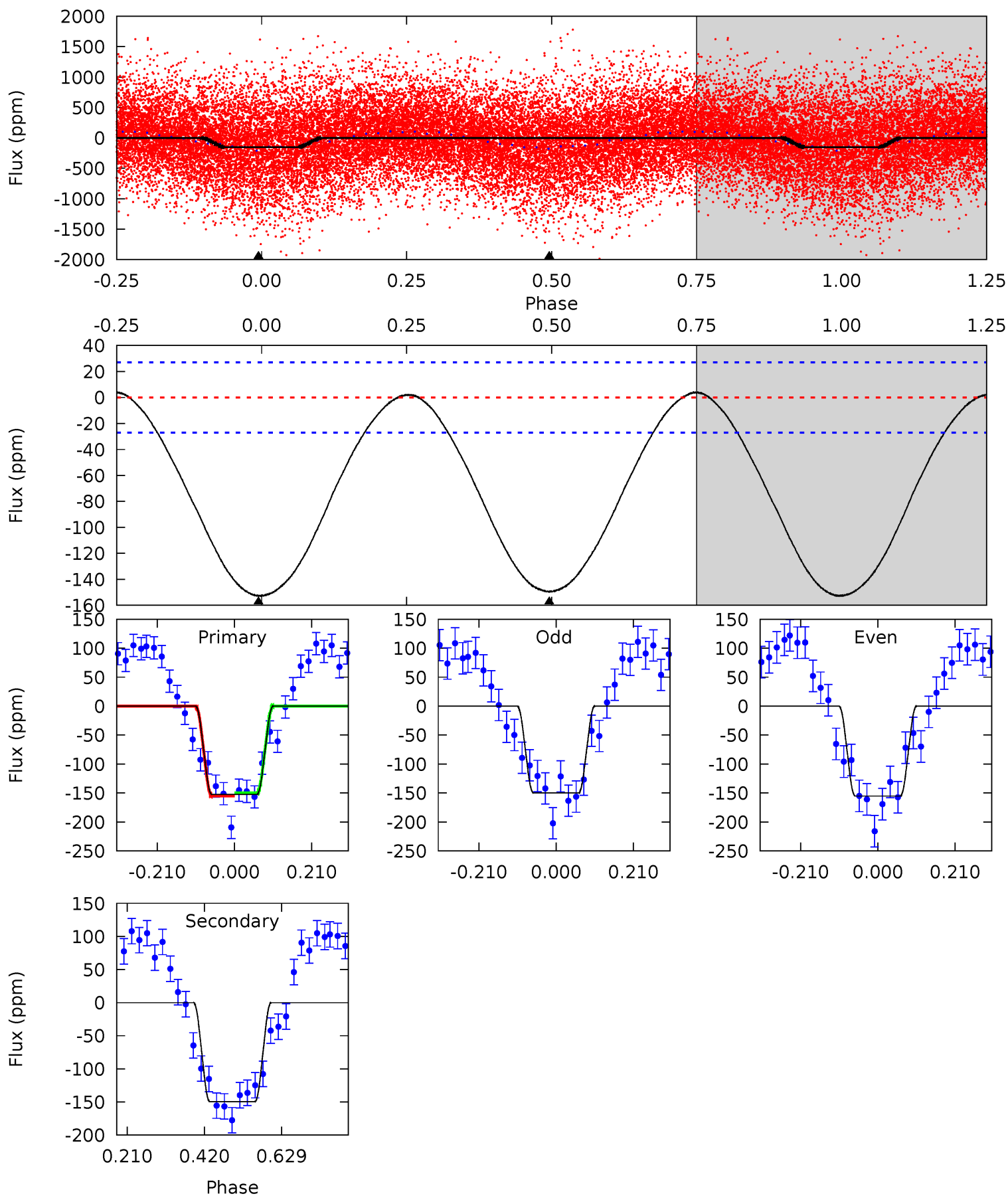
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.1	27.9	0	0	4.33	1.03	0.25	29.1	29.1	27.9	27.9	1.00	1.28	0.01	9.06



Alt Model-Shift Uniqueness Test

004919818-03, P = 0.688294 Days, E = 131.491981 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	24.3	0	0	4.41	1.25	0.57	24.9	24.9	24.3	24.3	0.43	1.03	0.03	0.41



Stellar Parameters For KIC 004919818

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7531^{+209}_{-314}	$3.997^{+0.210}_{-0.158}$	$-0.060^{+0.200}_{-0.350}$	$2.174^{+0.510}_{-0.567}$	$1.711^{+0.212}_{-0.291}$	$0.234^{+0.265}_{-0.109}$
	+3%/-4%	+5%/-4%	+333%/-583%	+23%/-26%	+12%/-17%	+113%/-47%
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 004919818-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-99 ± 4	$1.84^{+0.40}_{-0.34}$	5012^{+365}_{-386}	8455^{+964}_{-759}	$5.245^{+2.555}_{-1.636}$
Alt.	-149 ± 6	$3.10^{+0.52}_{-0.49}$	5031^{+367}_{-398}	6933^{+456}_{-432}	$2.847^{+1.014}_{-0.731}$

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

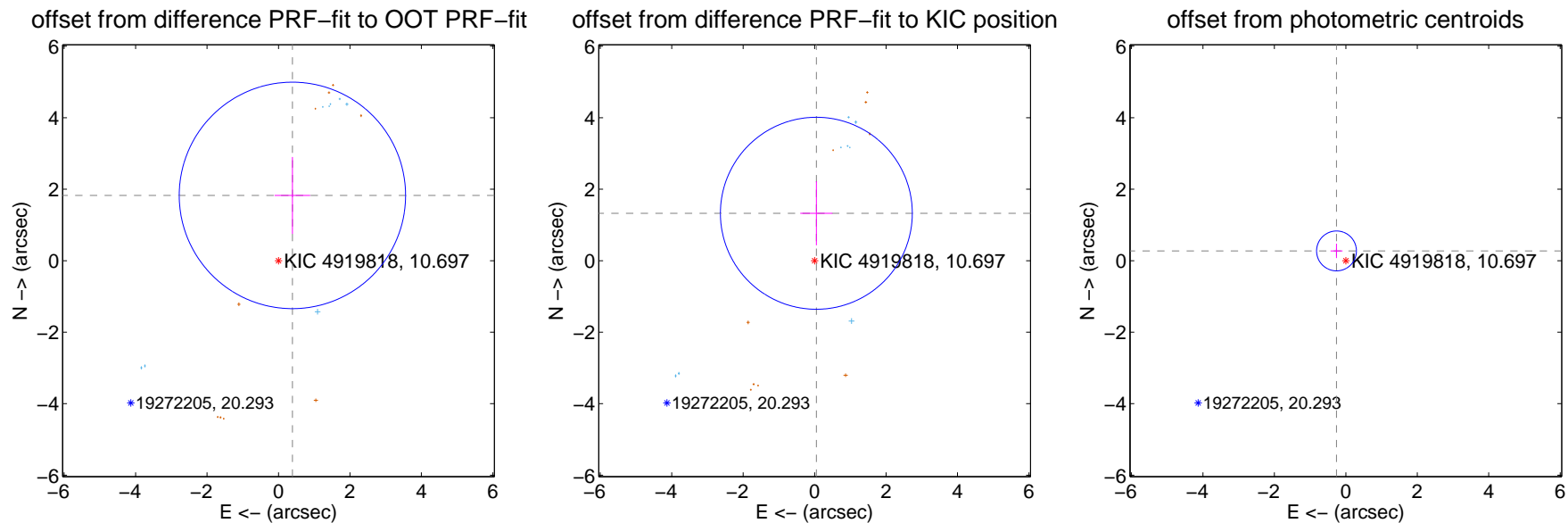
DV Centroid Data

Supplemental centroid analysis for 004919818-03. **Kepler magnitude: 10.70.** Transit SNR 11.36

There are 8 quarters with good PRF difference image offsets

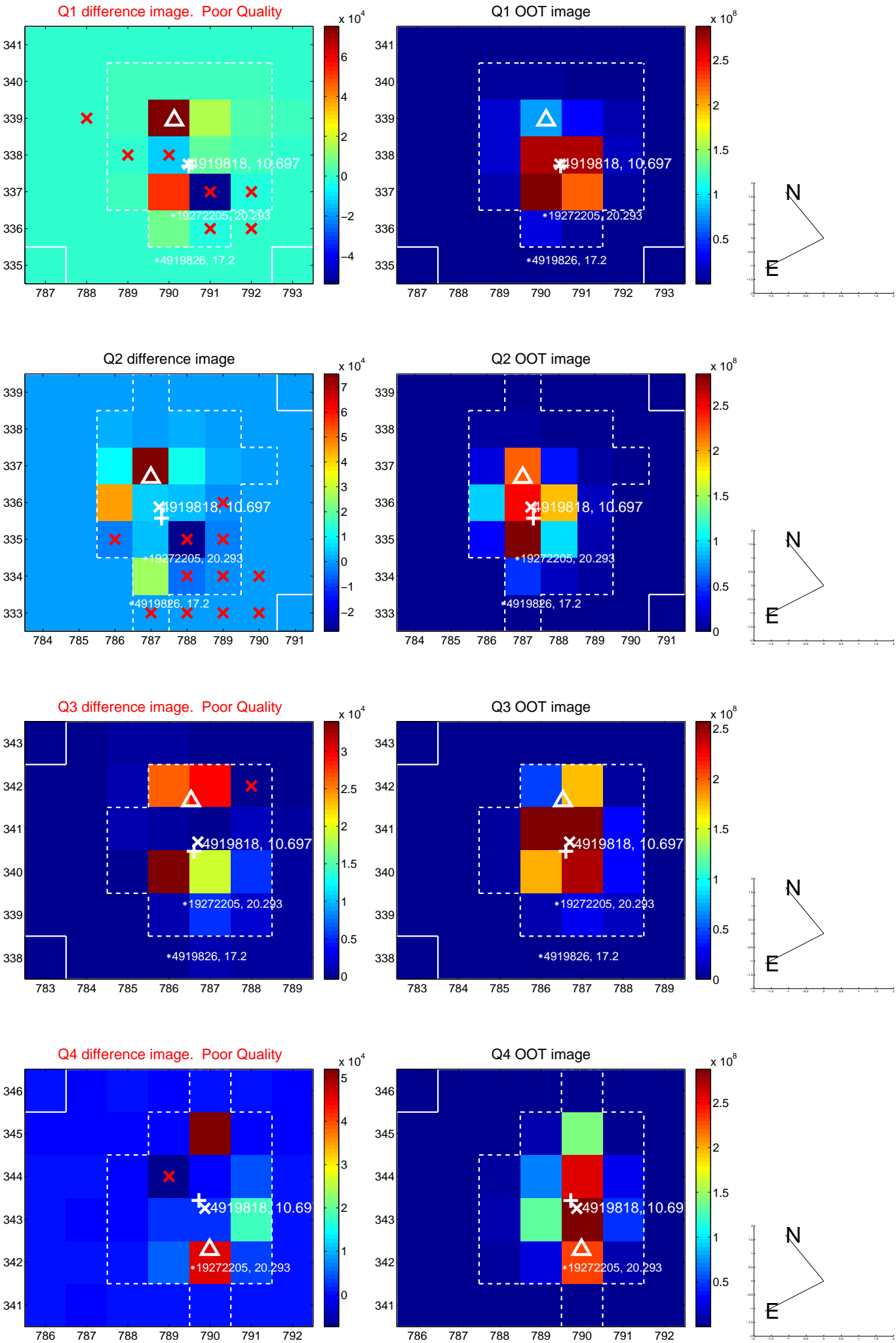
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.867 ± 1.056	1.77	-0.389 ± 0.499	1.826 ± 1.074
PRF-fit source offset from KIC position	1.328 ± 0.895	1.48	-0.049 ± 0.452	1.327 ± 0.896
photometric centroid source offset	0.38 ± 0.19	2.03	0.26 ± 0.17	0.27 ± 0.20

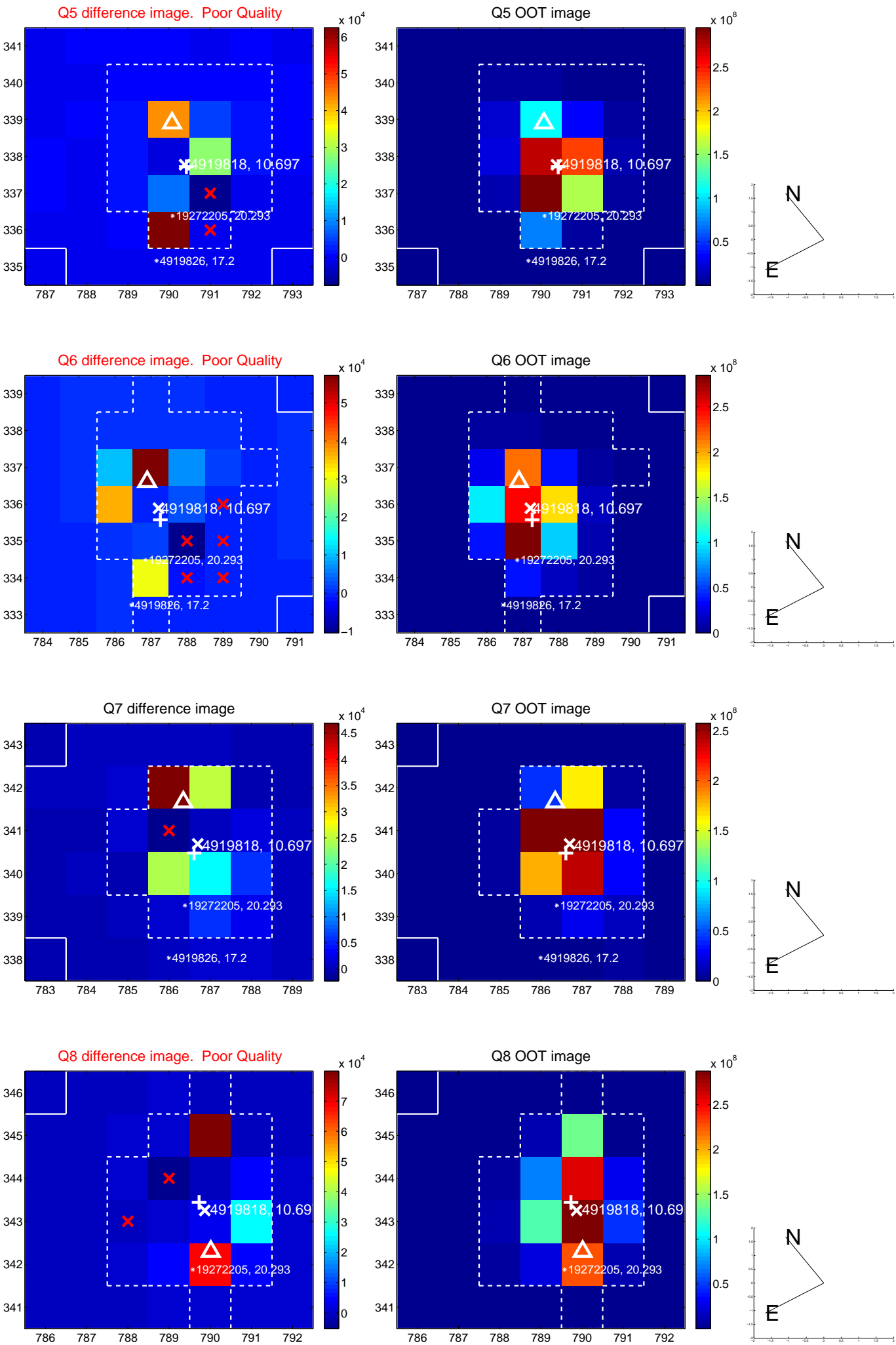


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

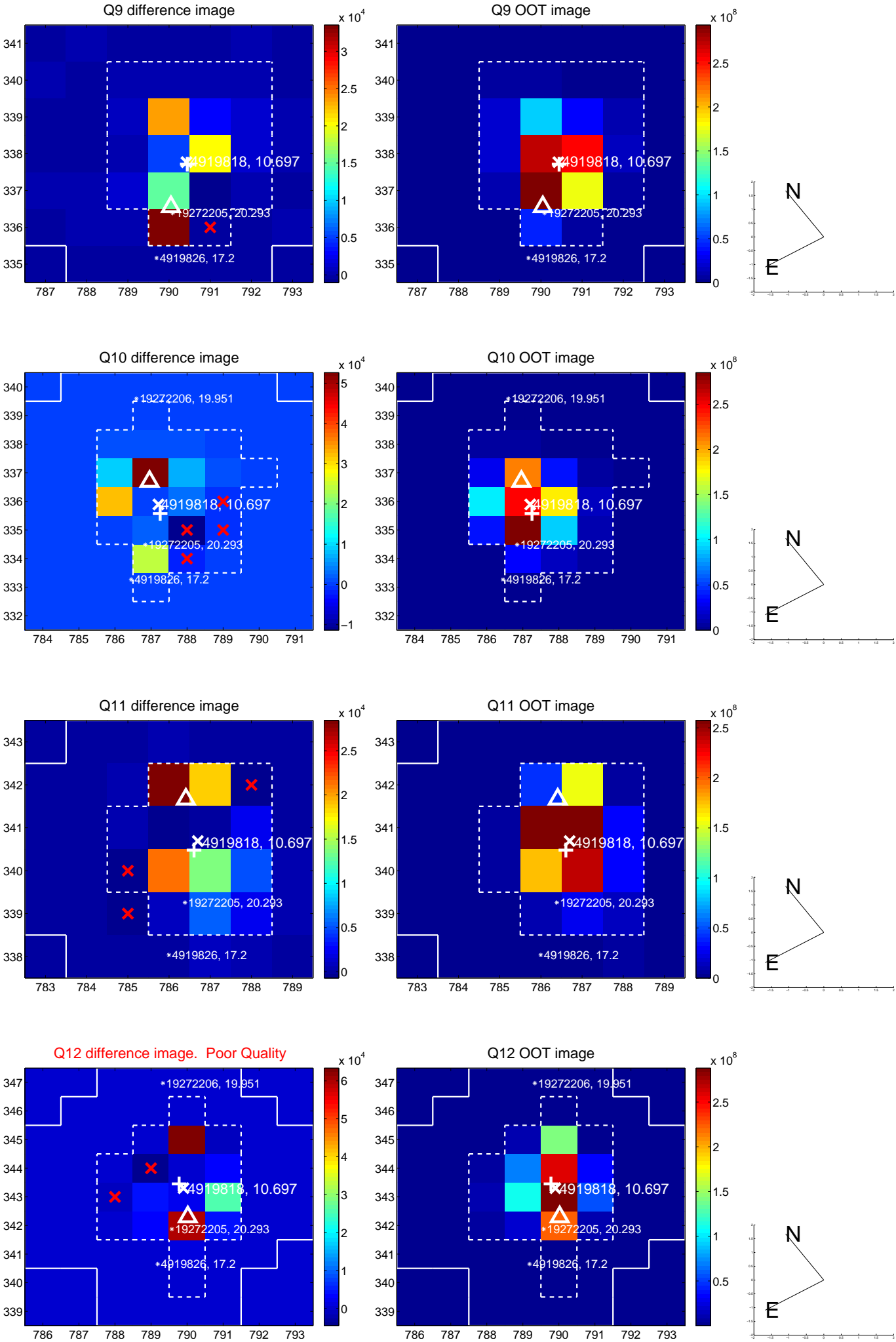
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



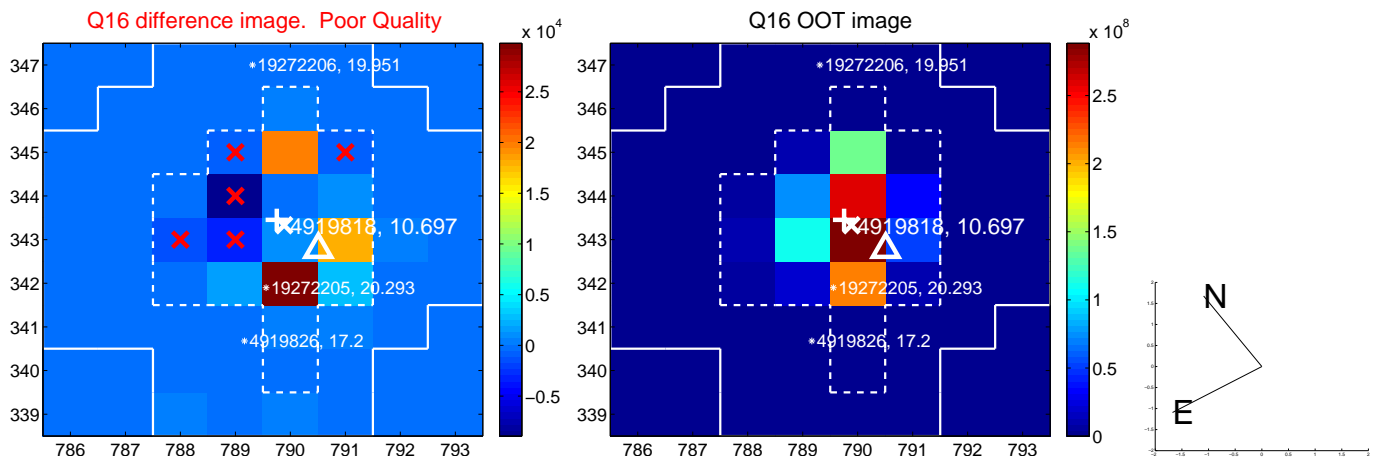
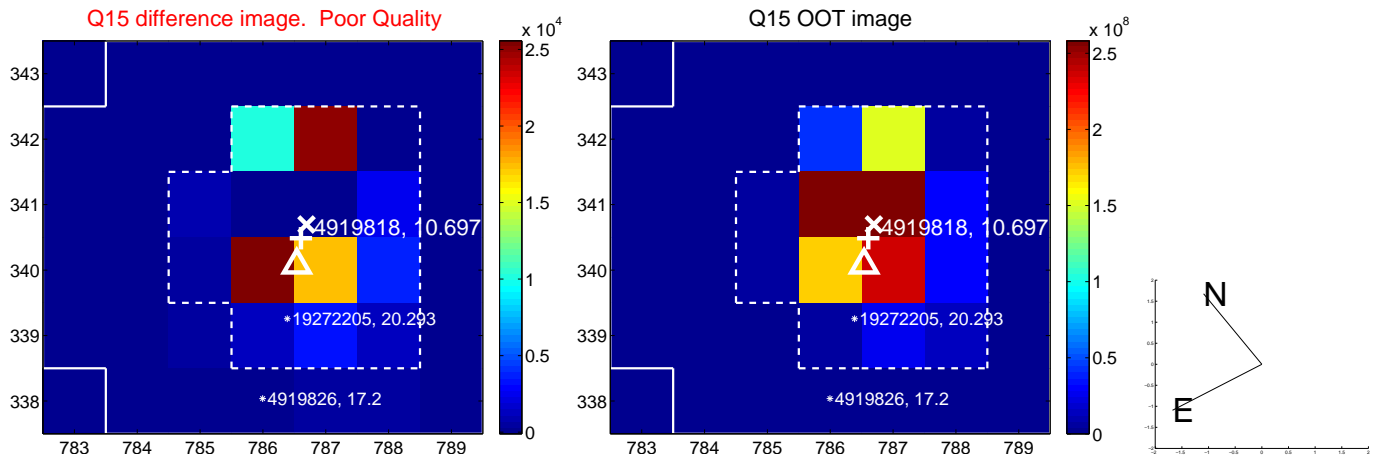
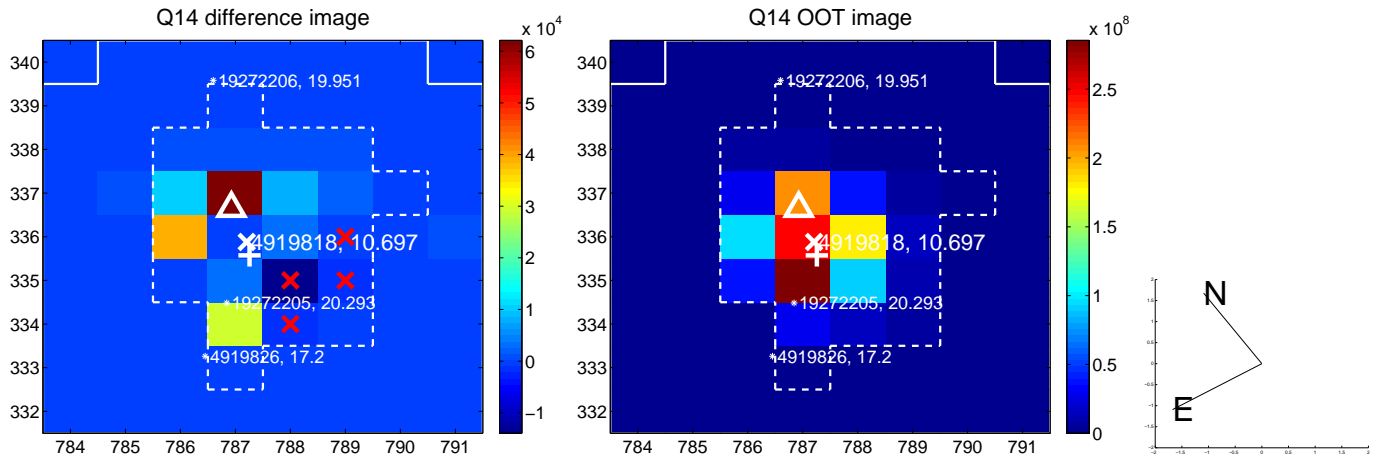
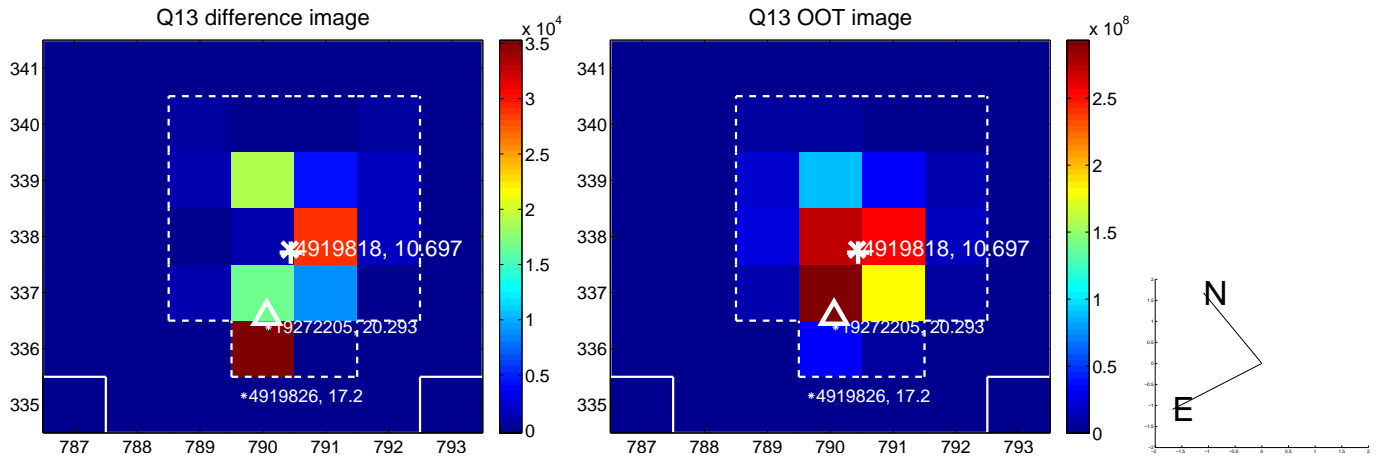
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



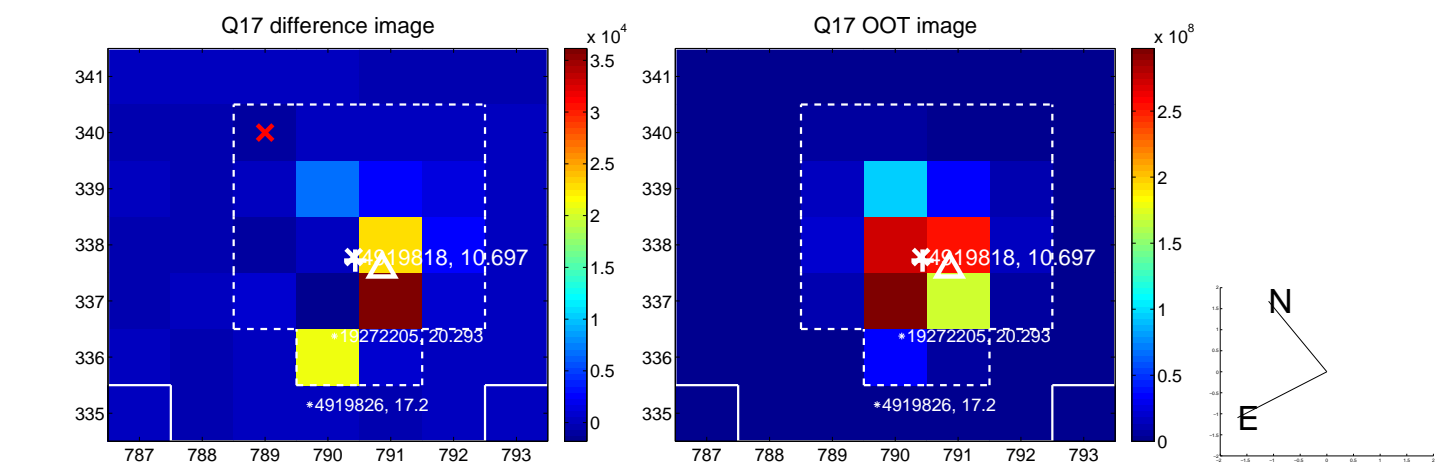
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



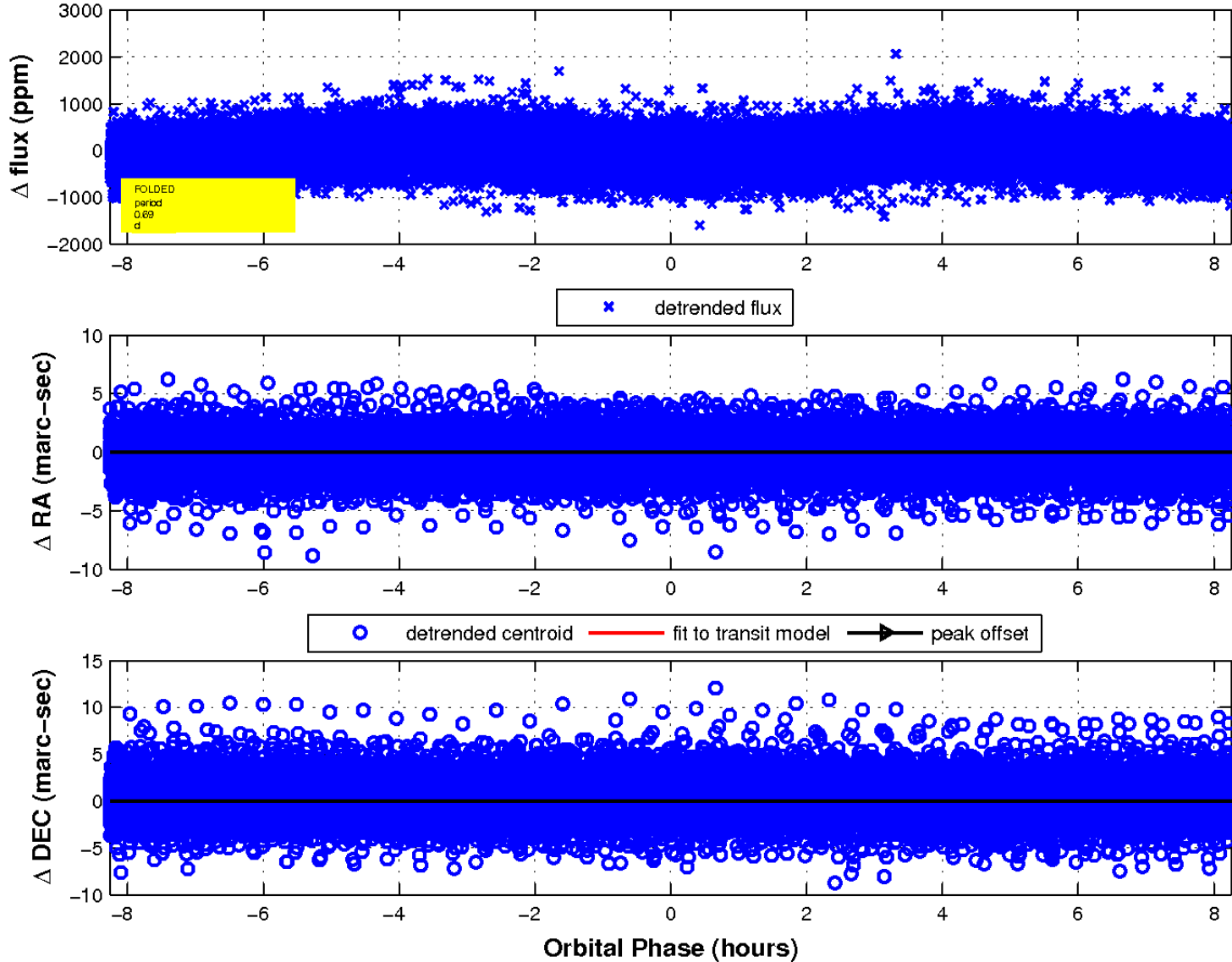
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

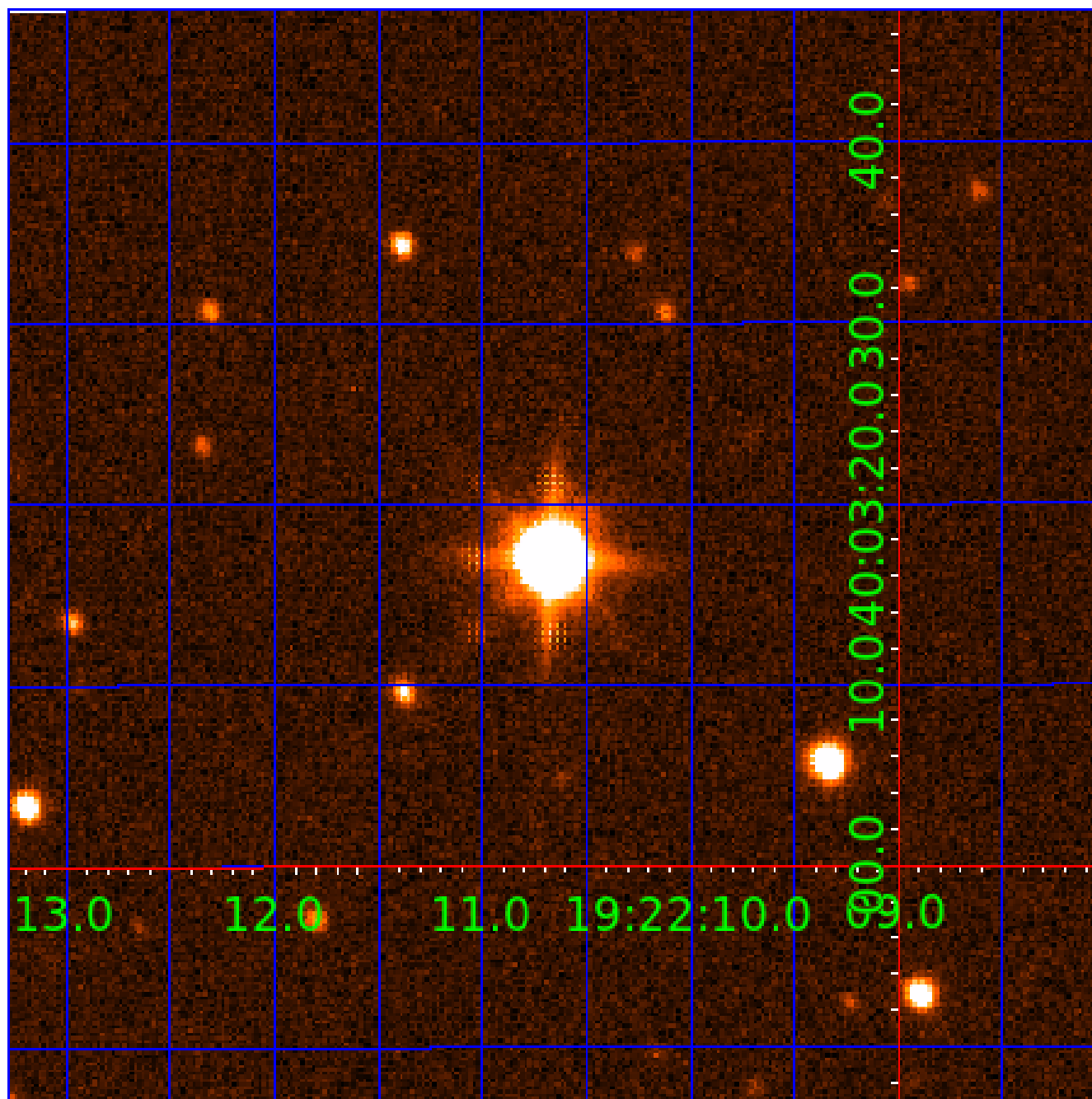


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 004919818

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})
004919818-01	OBS	No	0.804566	131.540710	13.6	1.232	9.2	4.9	2.17	7531	0.92	33194.19
004919818-02	OBS	No	0.804559	131.957087	36.7	2.160	10.0	11.2	2.17	7531	1.52	33194.61
004919818-03	OBS	No	0.688274	132.182177	56.0	4.594	10.9	11.4	2.17	7531	1.88	40875.48
004919818-04	OBS	No	12.230459	139.218187	507.6	3.052	13.5	12.2	2.17	7531	7.03	881.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004919818-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
004919818-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
004919818-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED
004919818-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

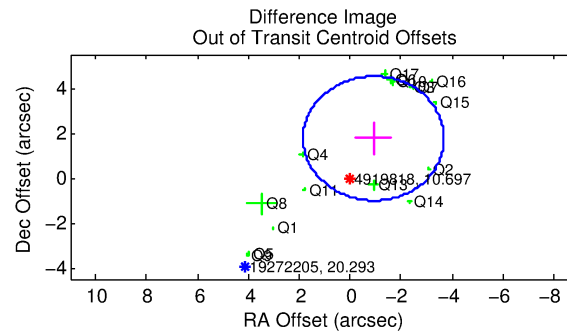
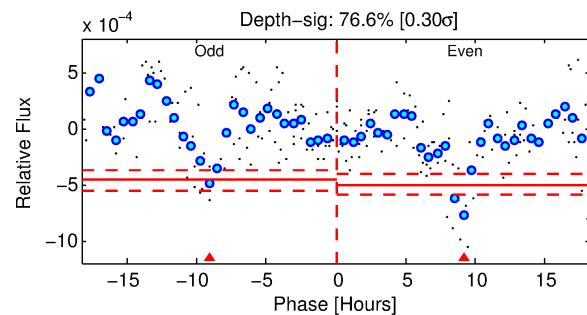
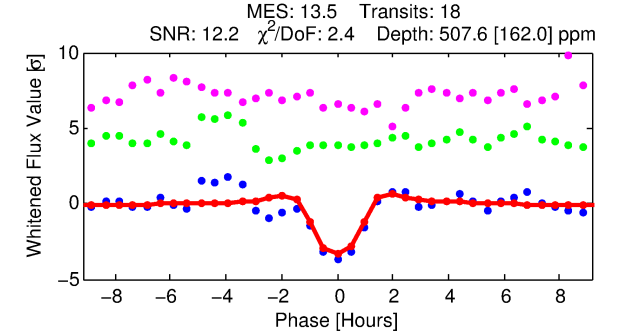
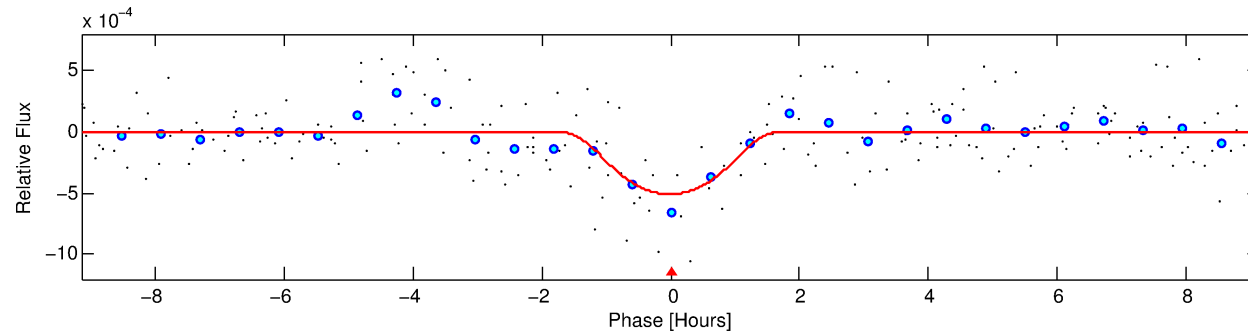
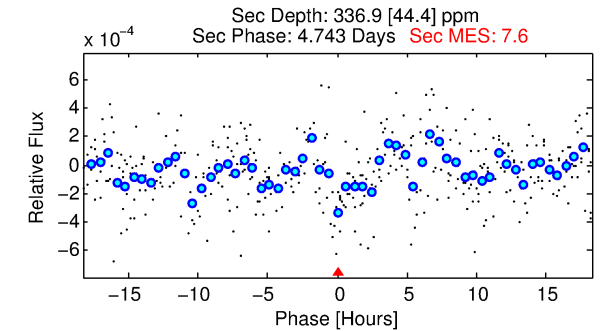
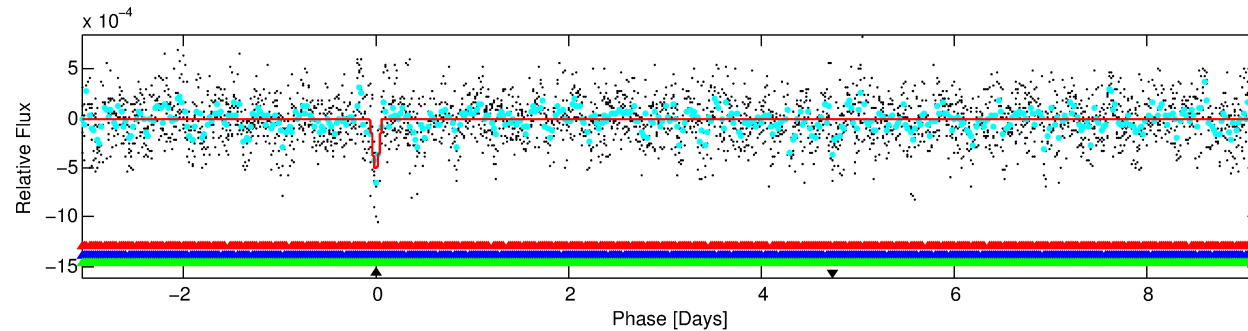
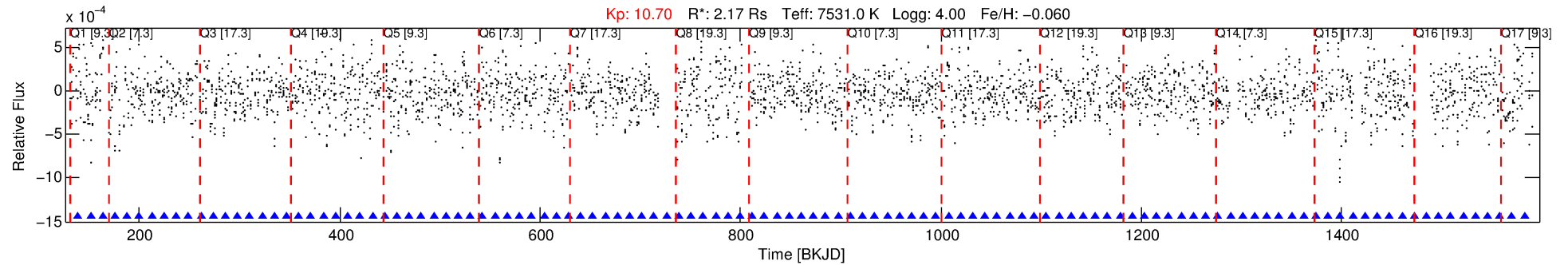
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004919818-04

No Significant Match Found

DV One-Page Summary

KIC: 4919818 Candidate: 4 of 4 Period: 12.230 d



DV Fit Results:

Period = 12.23046 [0.00011] d
Epoch = 139.2182 [0.0080] BKJD
Rp/R* = 0.0296 [0.0331]
a/R* = 9.38 [5.04]
b = 0.98 [0.07]
Seff = 881.50 [354.76]
Teq = 1389 [140] K
Rp = 7.03 [8.07] Re
a = 0.1243 [0.0295] AU
Ag = 57.92 [131.46] [0.43σ]
Teffp = 5926 [3328] K [1.36σ]

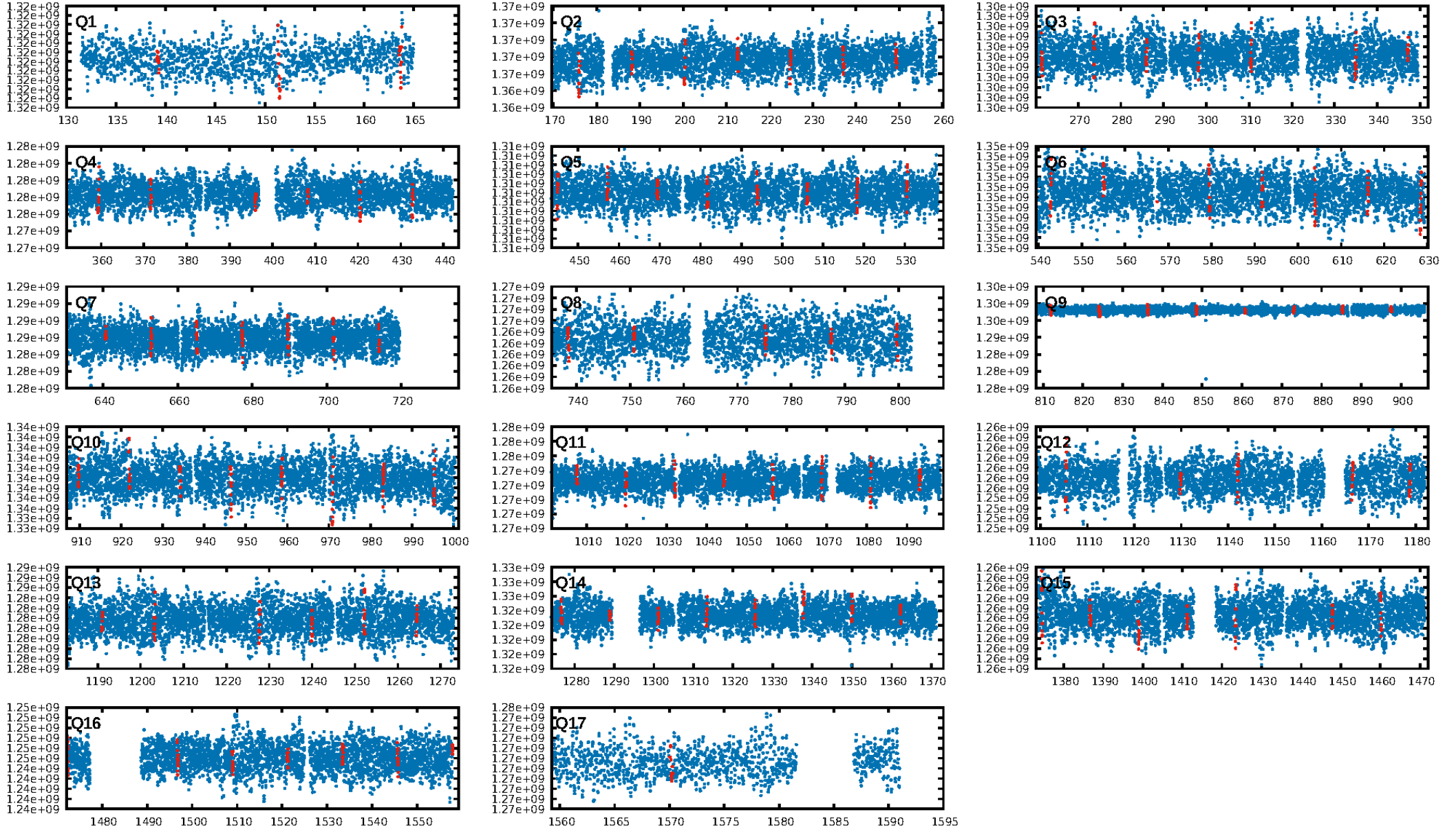
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.31σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.33e-18
RollingBand-fgt: 1.00 [18/18]
GhostDiagnostic-chr: -5.499
Centroid-sig: 65.0%
Centroid-so: 0.072 arcsec [0.65σ]
OotOffset-rm: 1.982 arcsec [2.15σ]
KicOffset-rm: 1.133 arcsec [1.46σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 0.00 [0/17]

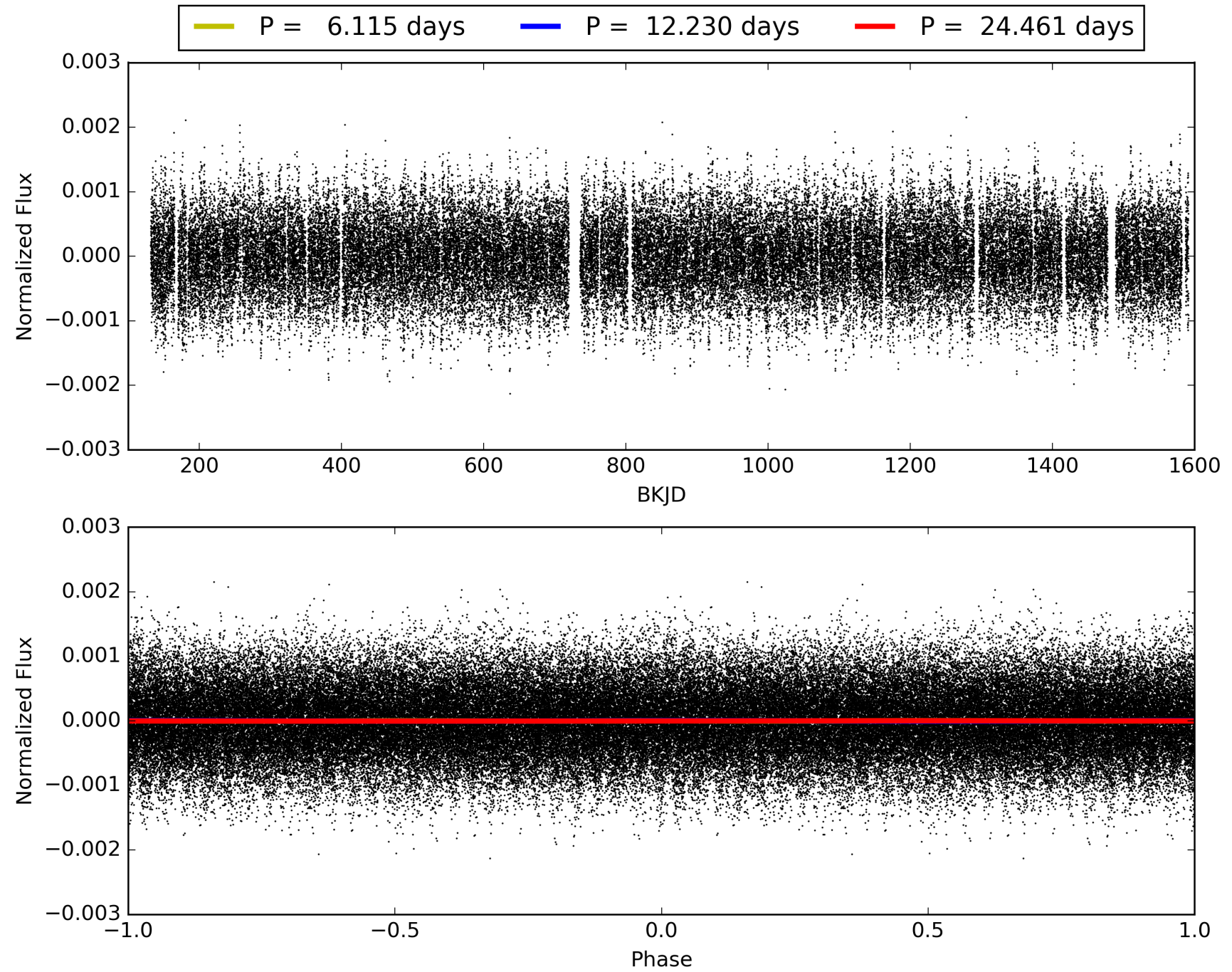
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:11:19 Z

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

TCE 004919818-04, PDC Light Curves

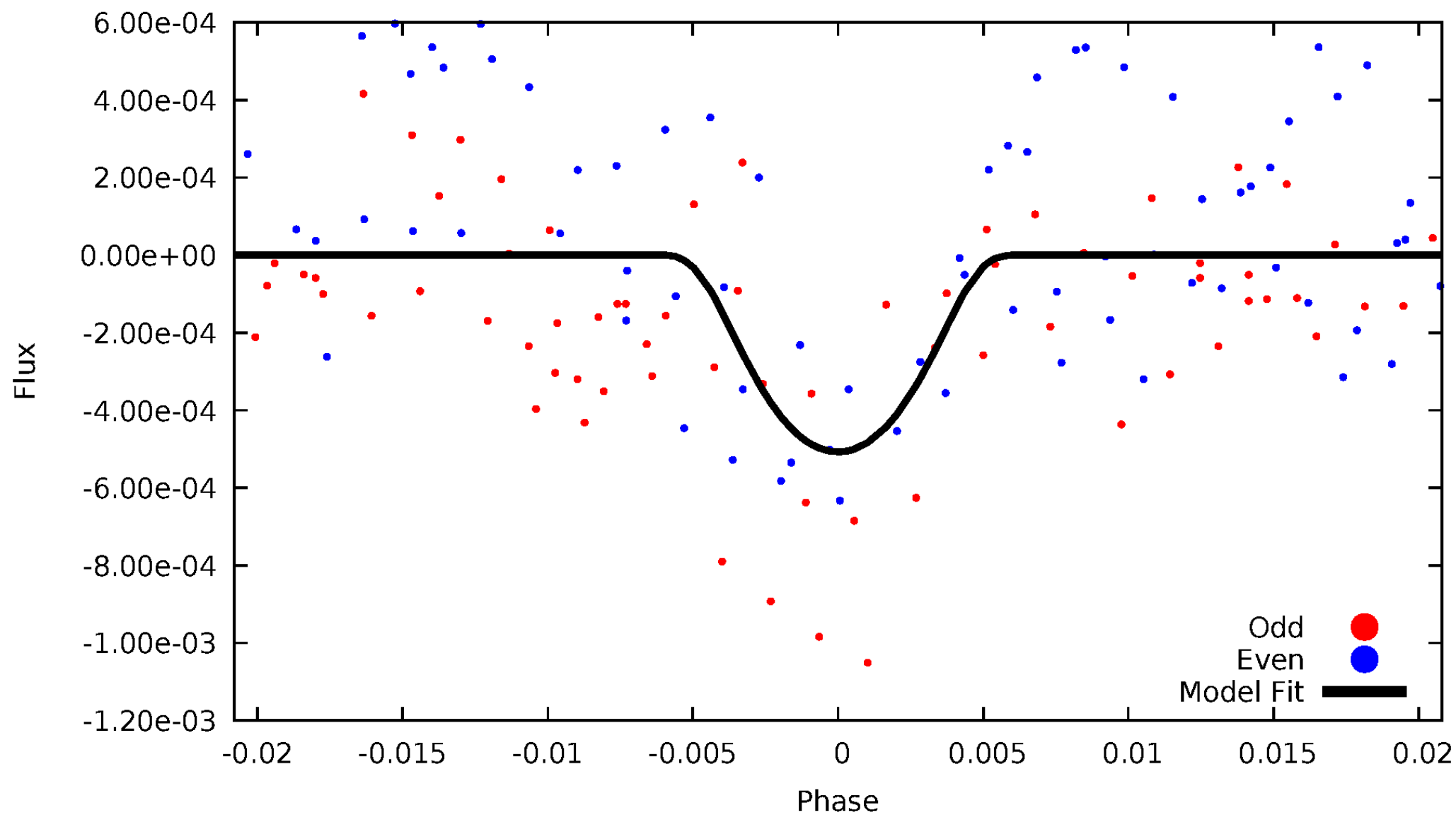


TCE 004919818-04



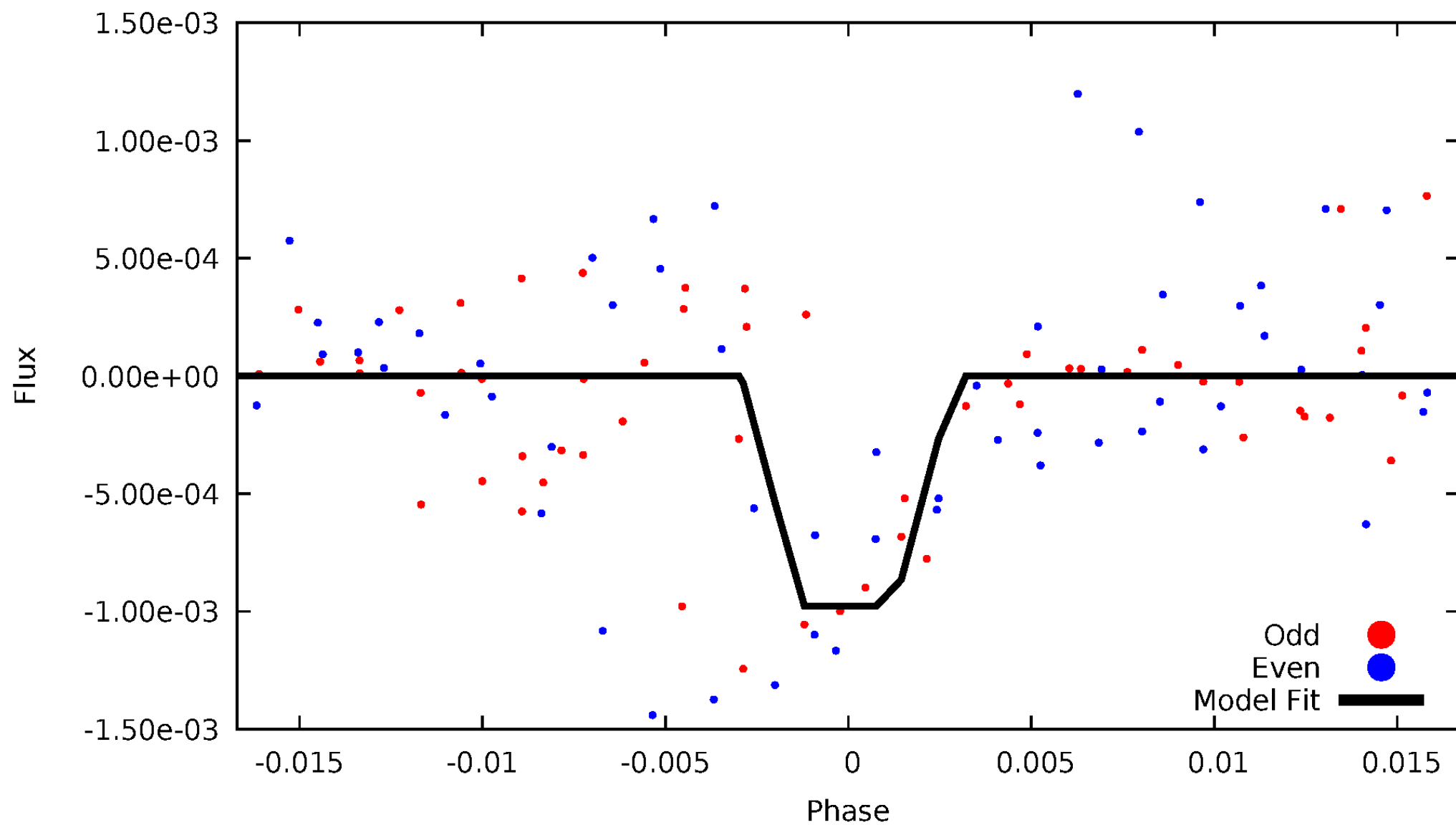
DV Odd/Even

TCE 004919818-04



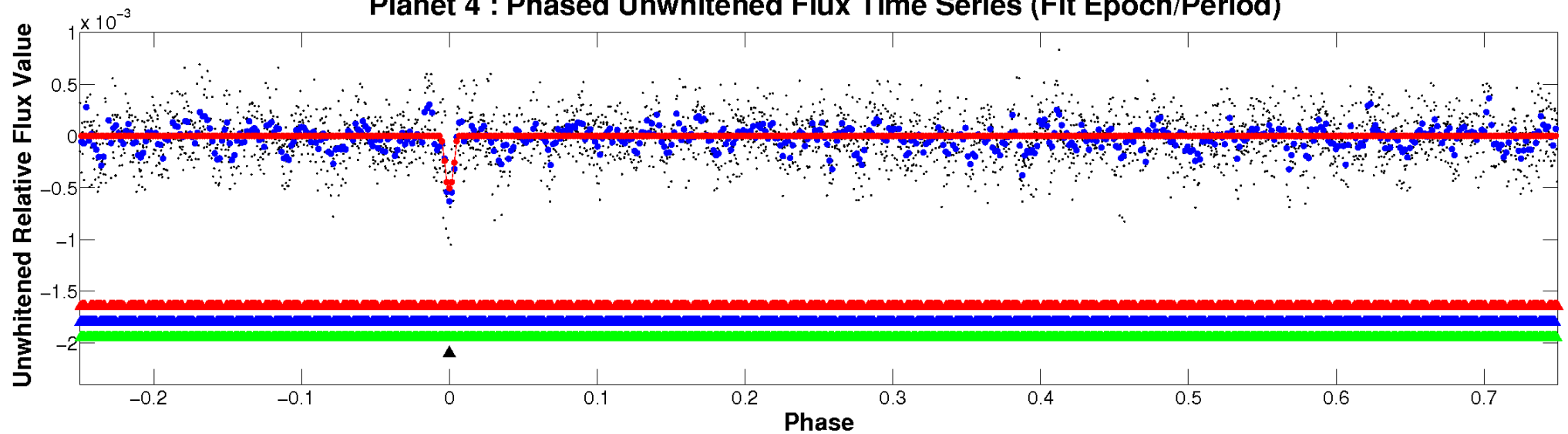
ALT Odd/Even

TCE 004919818-04

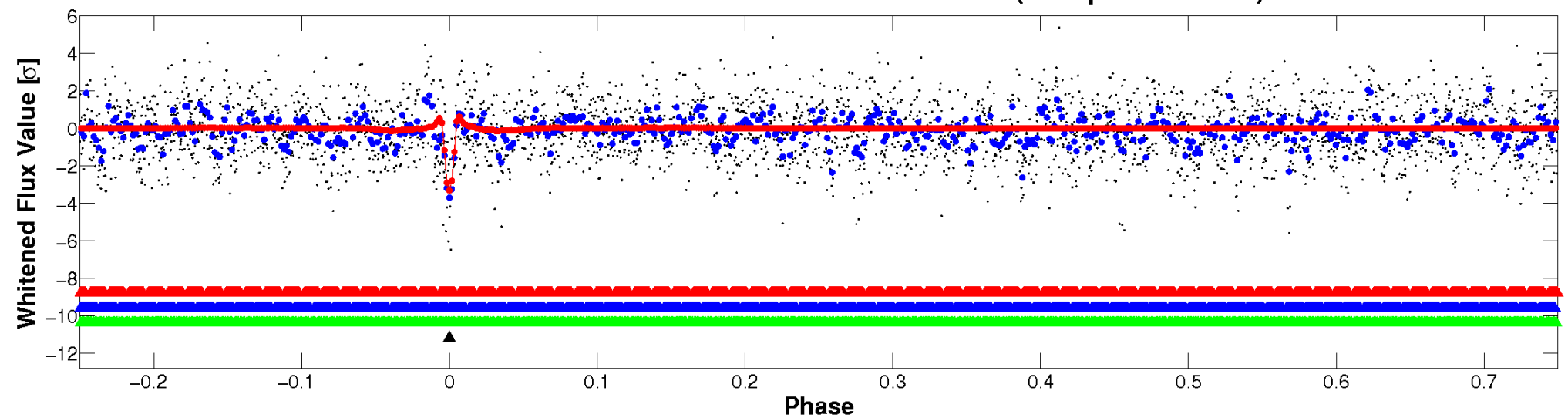


Non-Whitened Vs. Whitened Light Curve

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

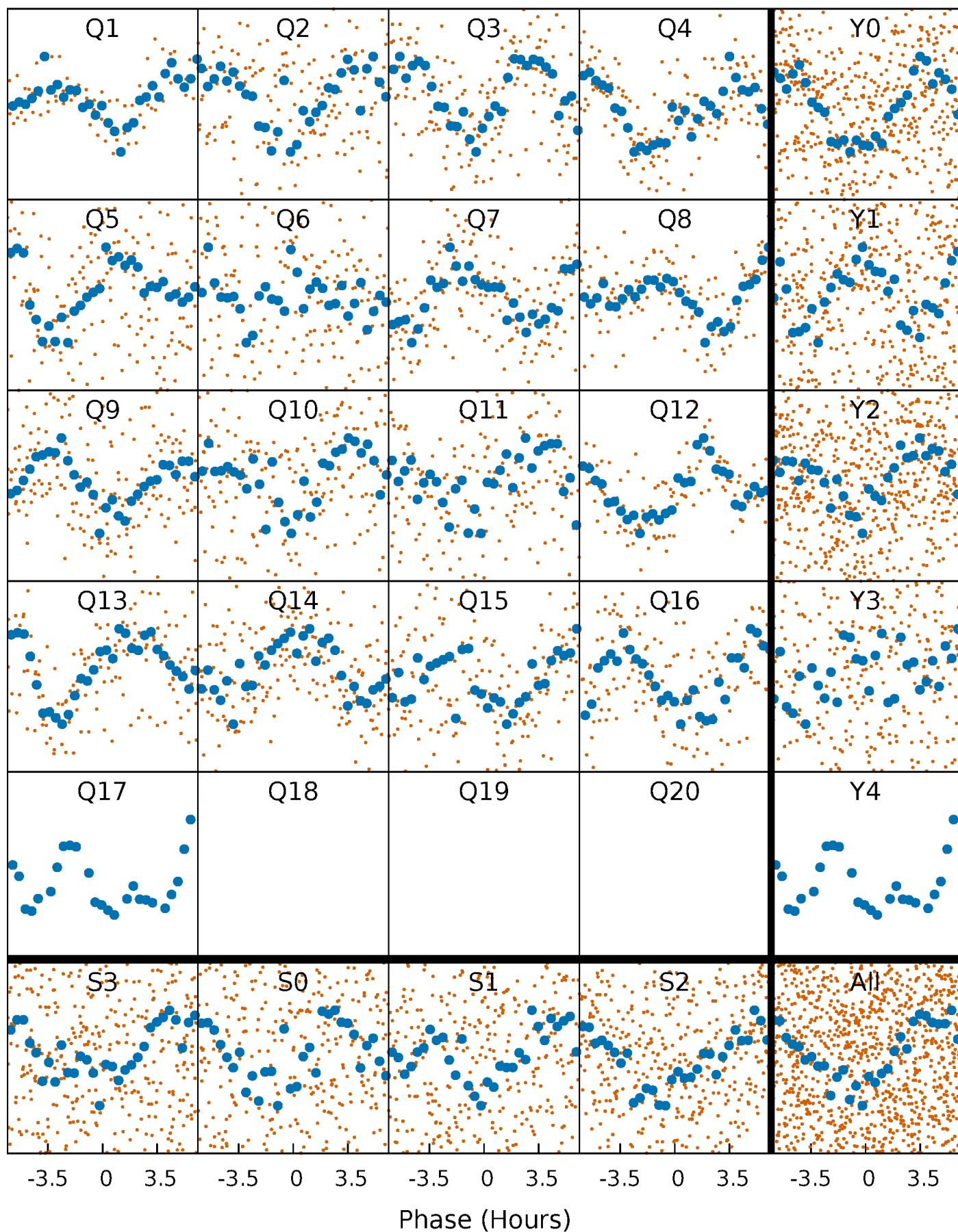


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



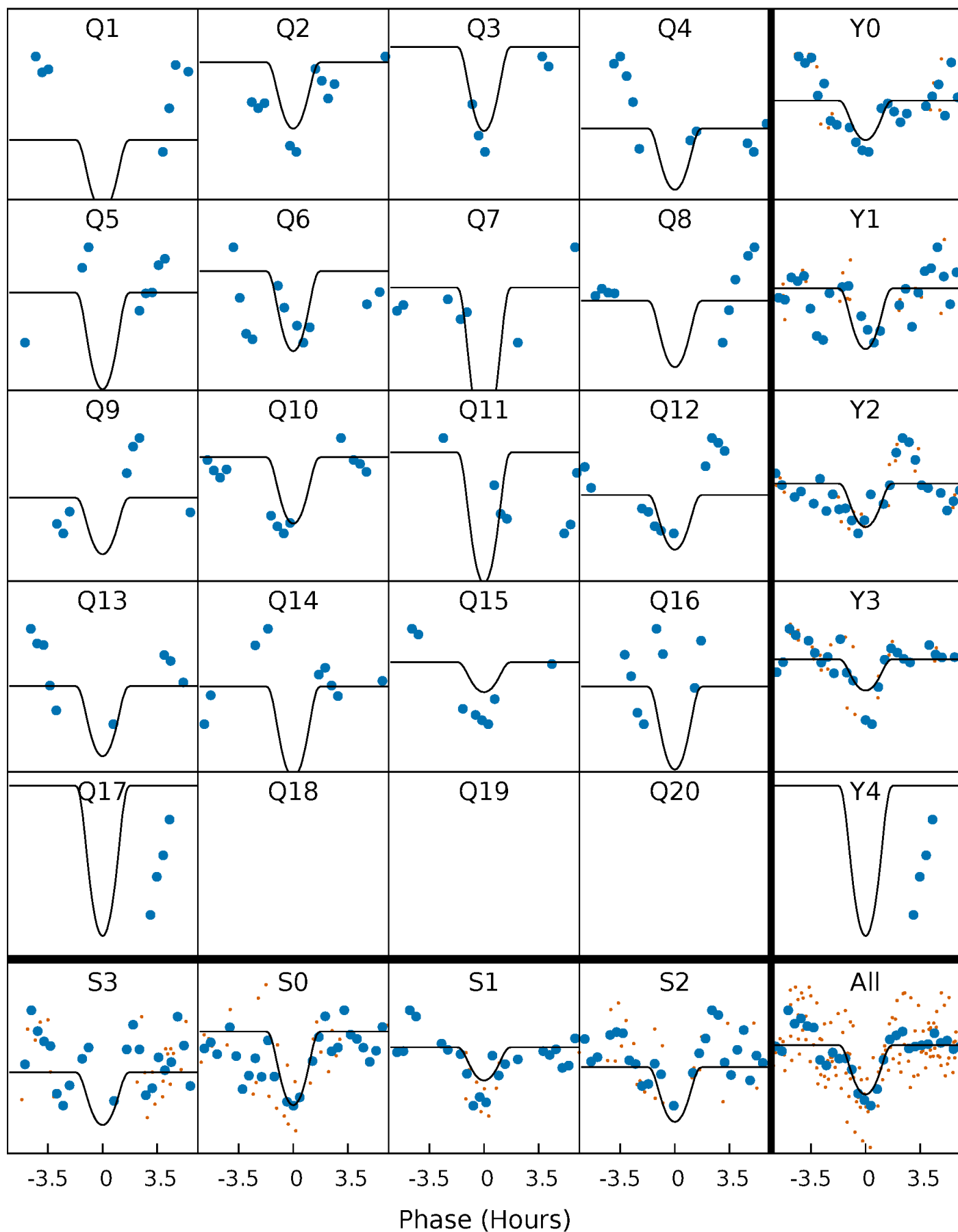
PDC Quarter-Phased Transit Curves

TCE 004919818-04 P= 12.230459 Days $T_0=139.218187$ (BKJD)



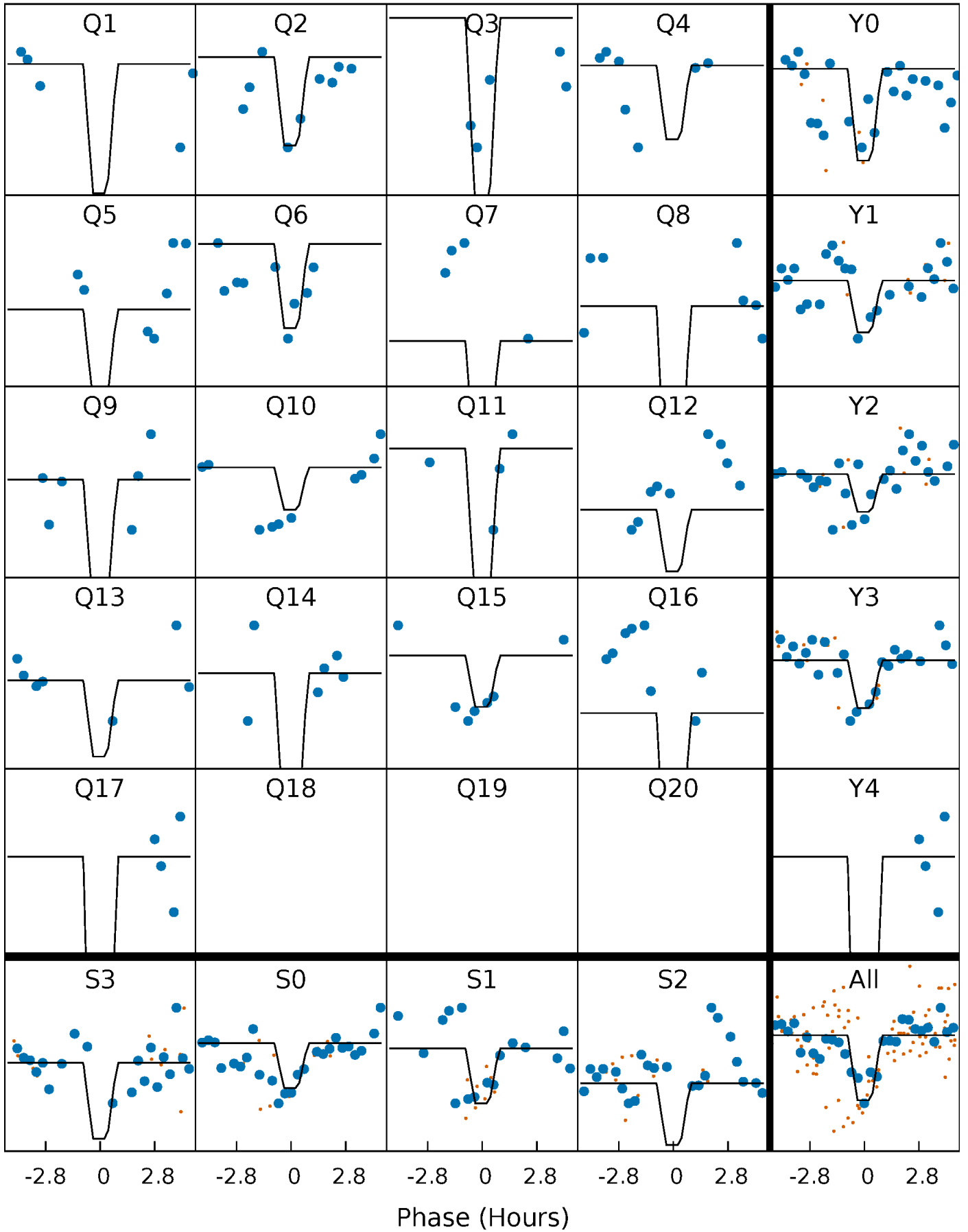
DV Quarter-Phased Transit Curves

TCE 004919818-04 P= 12.230459 Days $T_0=139.218187$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

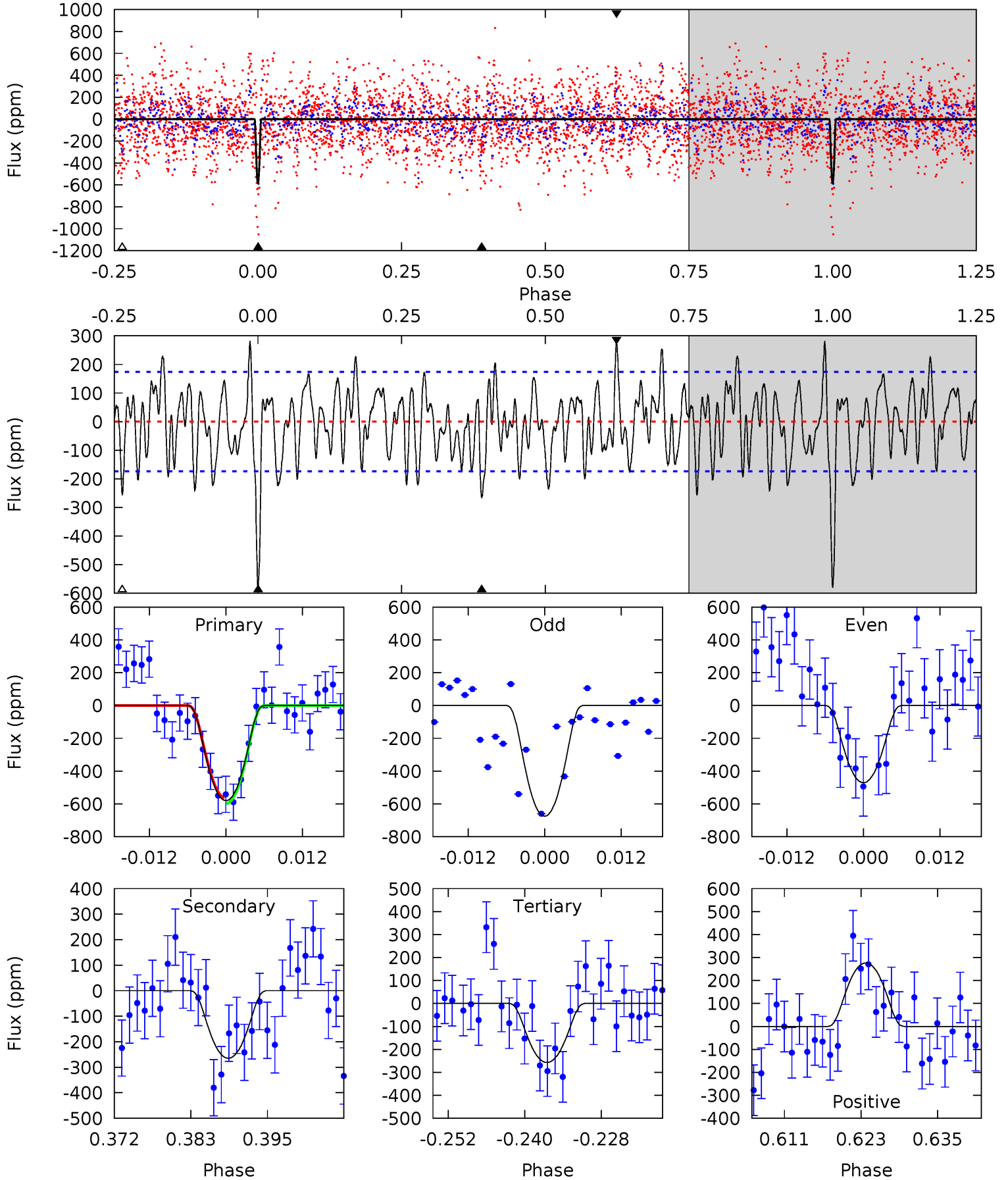
TCE 004919818-04 P= 12.230635 Days $T_0=139.206832$ (BKJD)



DV Model-Shift Uniqueness Test

004919818-04, P = 12.230459 Days, E = 126.987728 Days

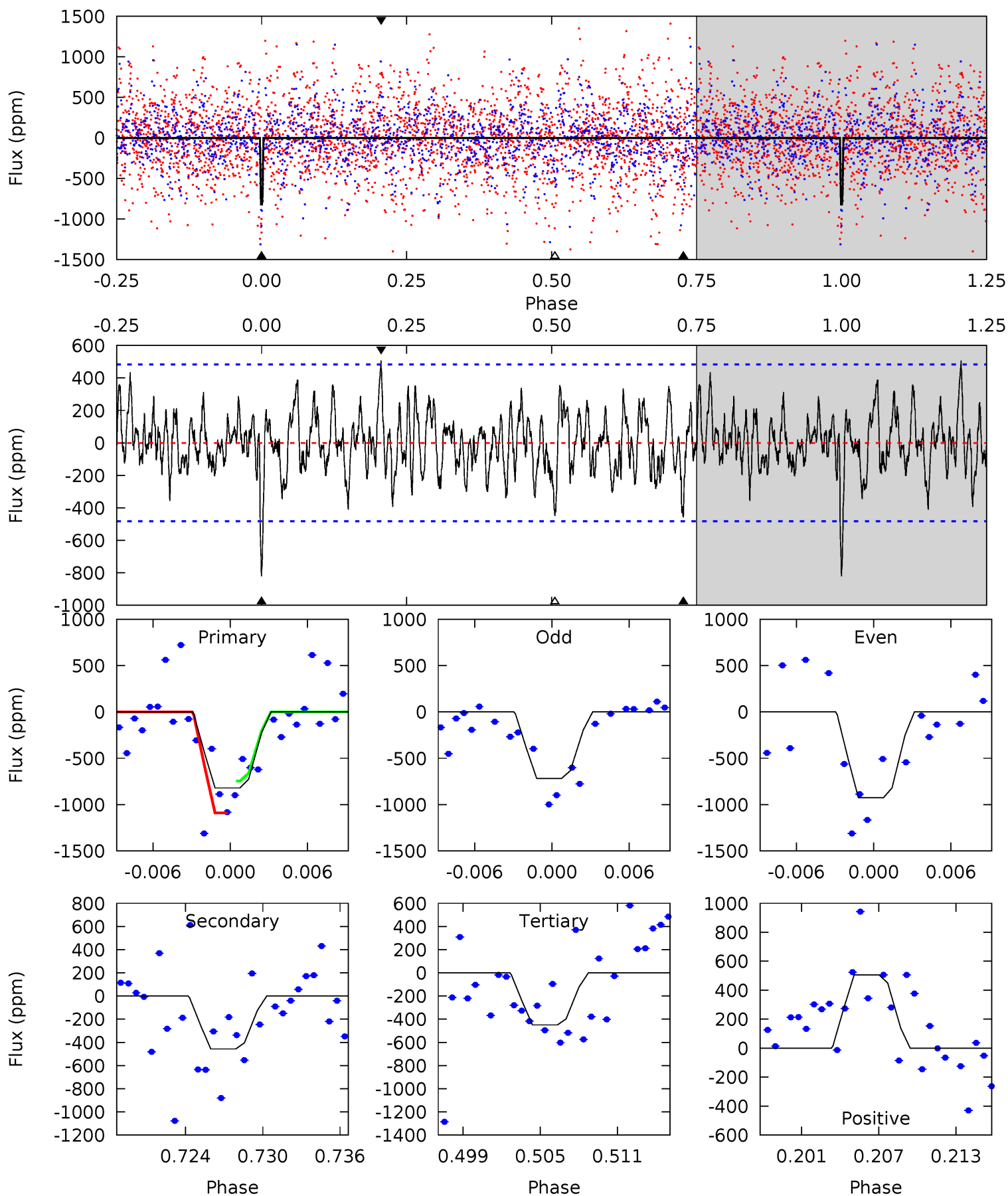
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	7.61	7.39	7.94	4.99	2.51	2.90	9.29	8.73	0.22	-0.33	3.01	0.94	0.33	0.48



Alt Model-Shift Uniqueness Test

004919818-04, P = 12.230635 Days, E = 126.976197 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.71	4.85	4.77	5.38	5.12	2.74	1.63	3.94	3.33	0.08	-0.52	1.11	0.84	0.38	1.78



Stellar Parameters For KIC 004919818

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7531^{+209}_{-314}	$3.997^{+0.210}_{-0.158}$	$-0.060^{+0.200}_{-0.350}$	$2.174^{+0.510}_{-0.567}$	$1.711^{+0.212}_{-0.291}$	$0.234^{+0.265}_{-0.109}$
	+3%/-4%	+5%/-4%	+333%/-583%	+23%/-26%	+12%/-17%	+113%/-47%
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 004919818-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-265 ± 35	$8.19^{+7.11}_{-5.04}$	1921^{+143}_{-150}	5092^{+3568}_{-1140}	34^{+202}_{-24}
Alt.	-457 ± 94	$9.49^{+7.33}_{-6.01}$	1926^{+152}_{-143}	5382^{+4139}_{-1134}	41^{+283}_{-28}

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 $A_{obs} \gg 1.0$

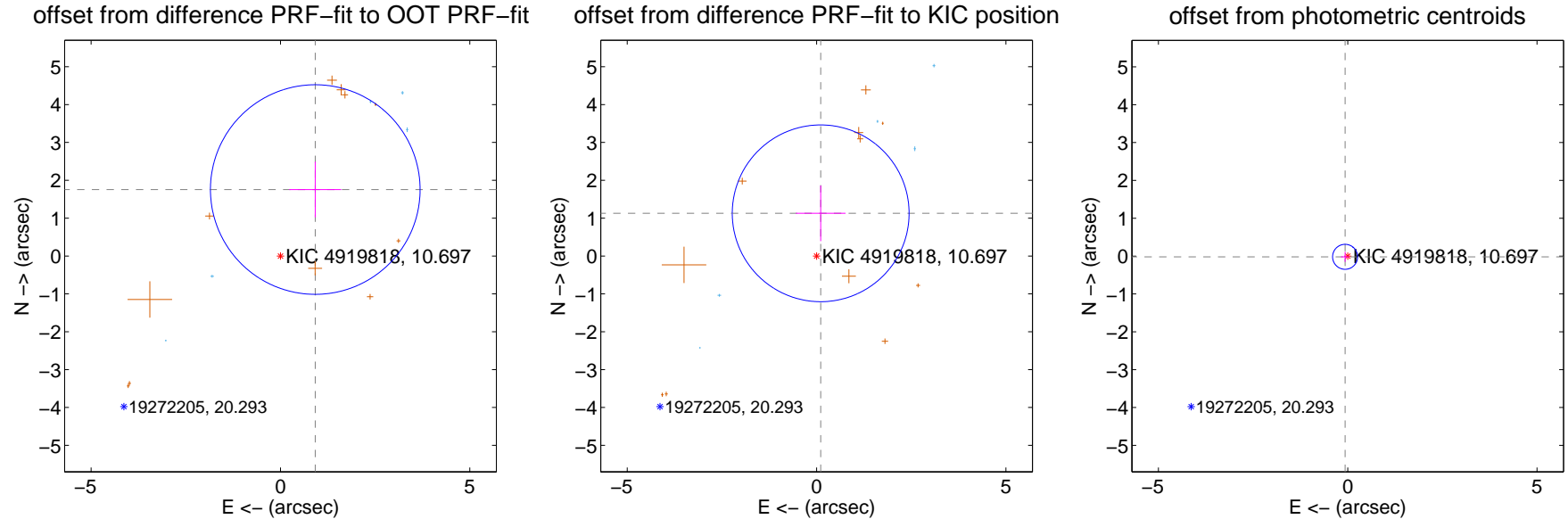
DV Centroid Data

Supplemental centroid analysis for 004919818-04. **Kepler magnitude: 10.70.** Transit SNR 12.21

There are 5 quarters with good PRF difference image offsets

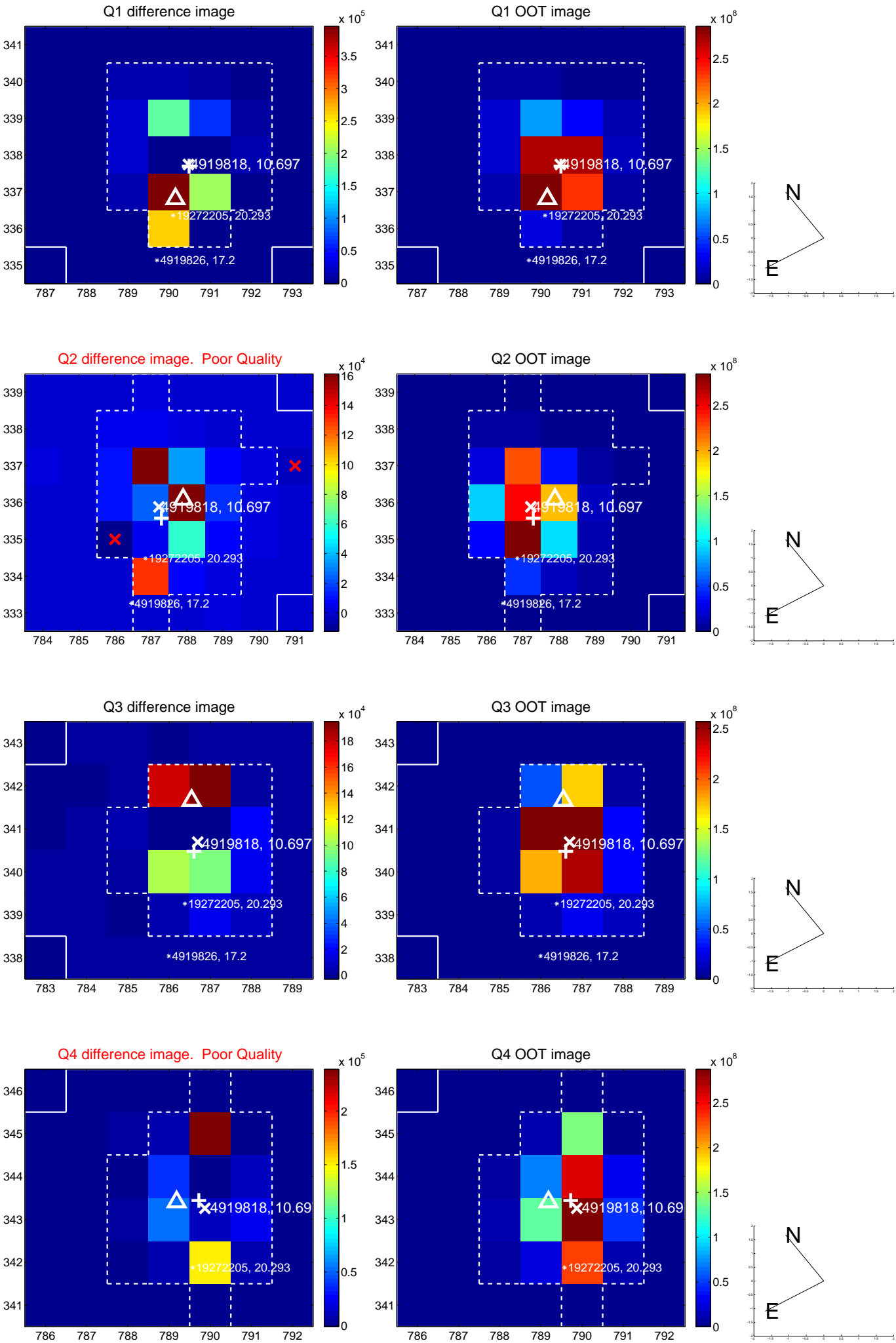
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.982 ± 0.923	2.15	-0.919 ± 0.688	1.756 ± 0.735
PRF-fit source offset from KIC position	1.133 ± 0.778	1.46	-0.108 ± 0.655	1.128 ± 0.735
photometric centroid source offset	0.07 ± 0.11	0.65	0.07 ± 0.11	-0.02 ± 0.13

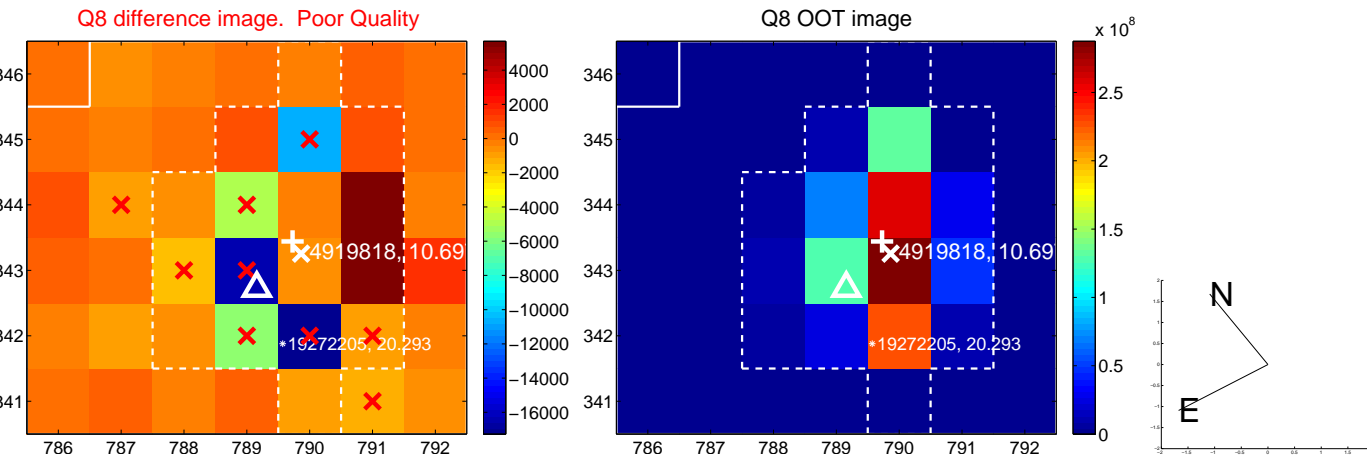
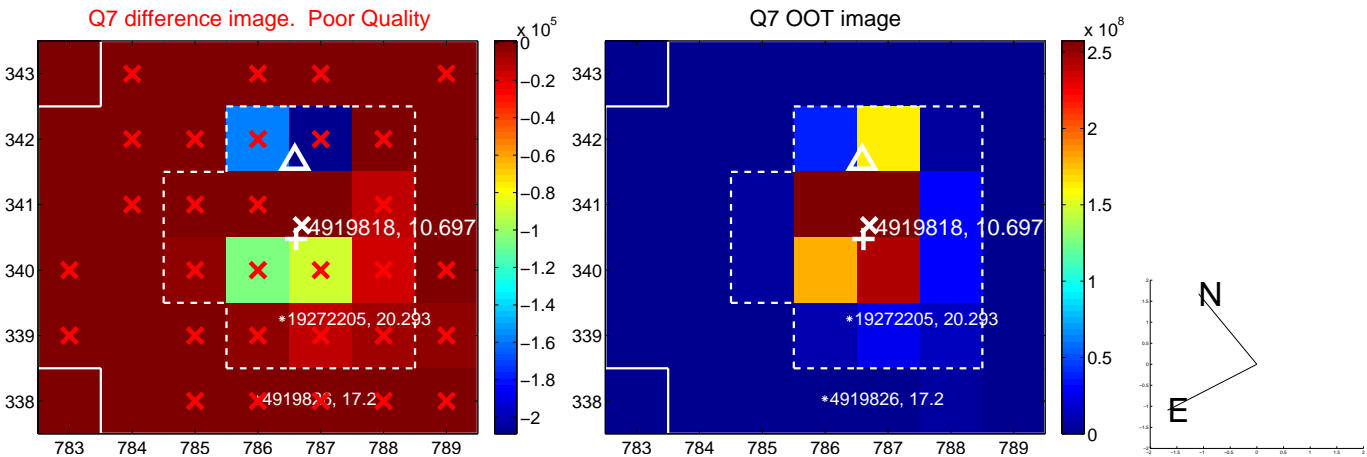
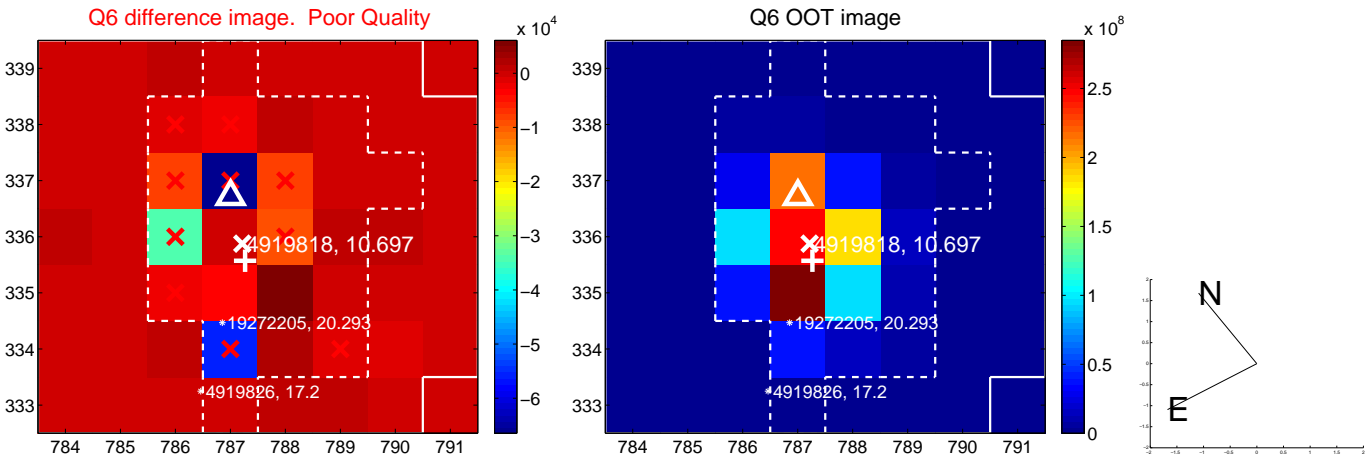
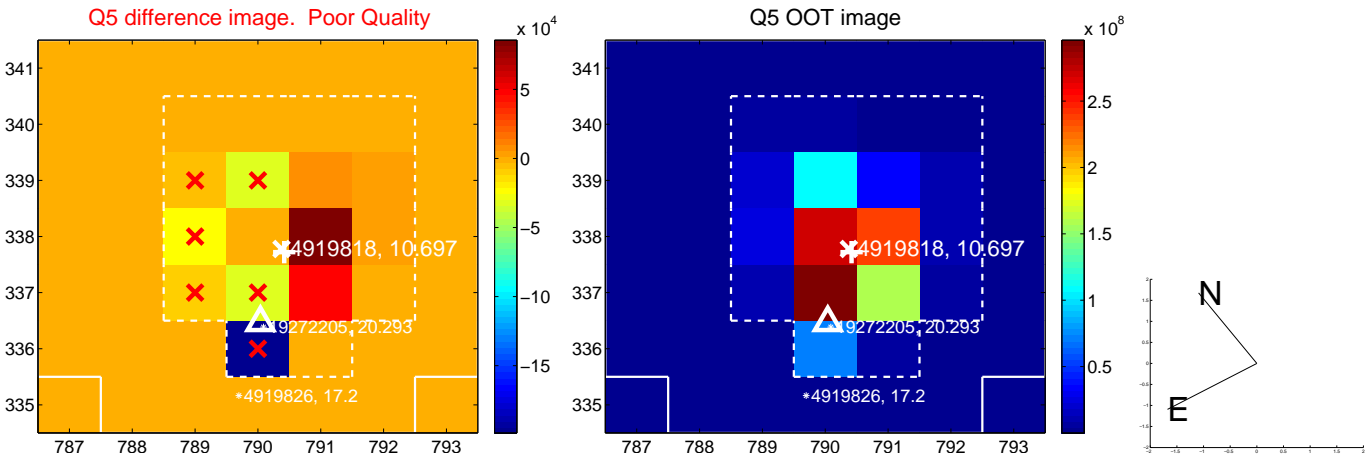


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

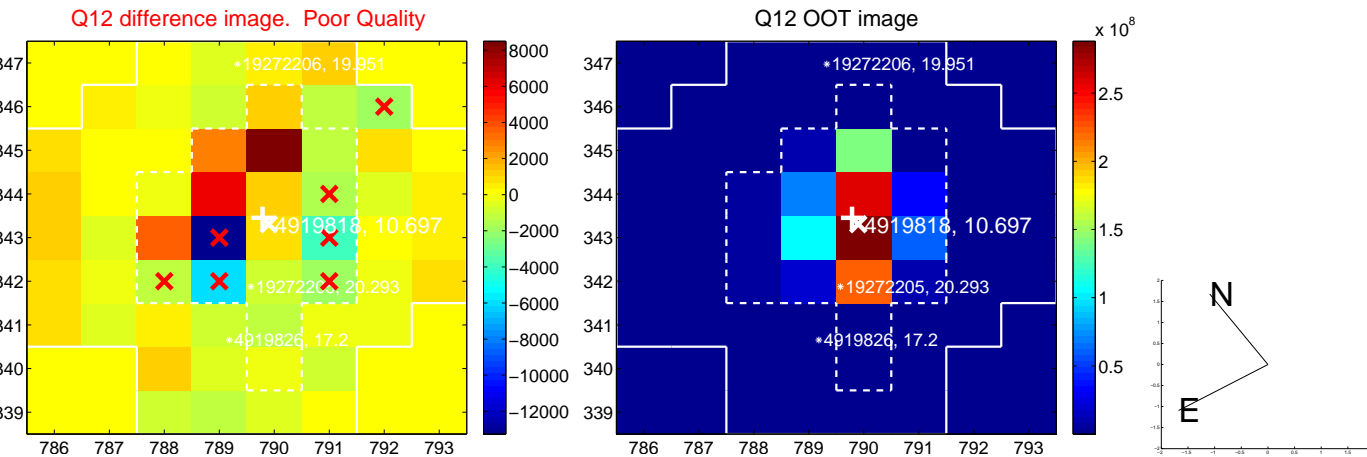
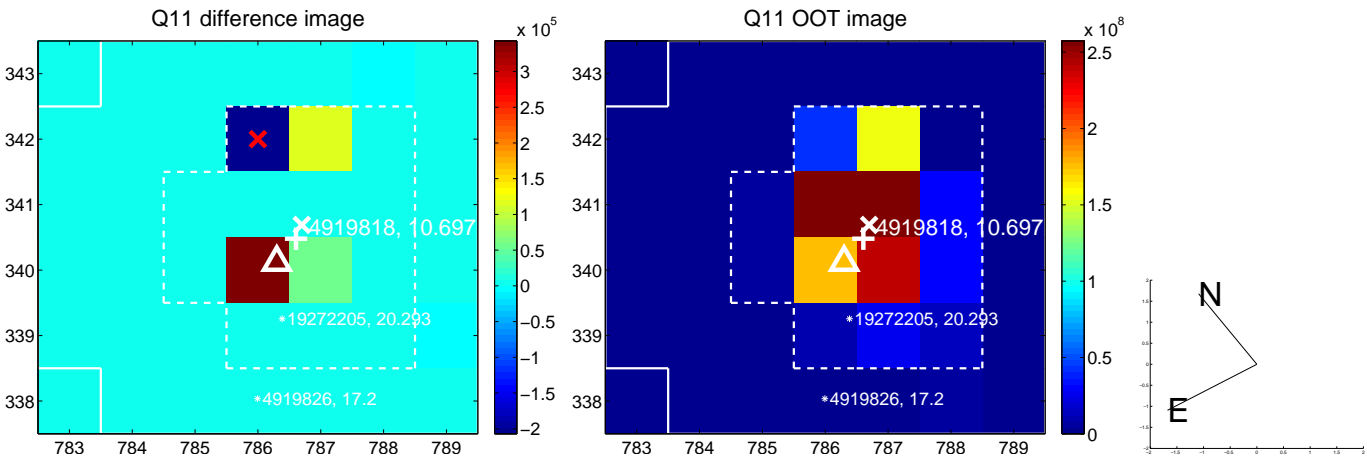
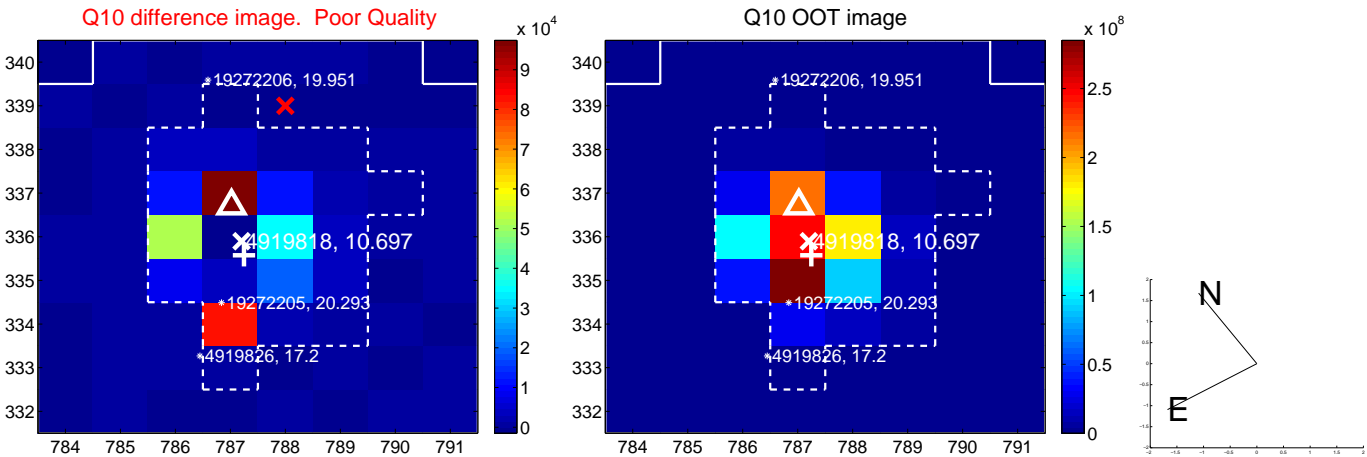
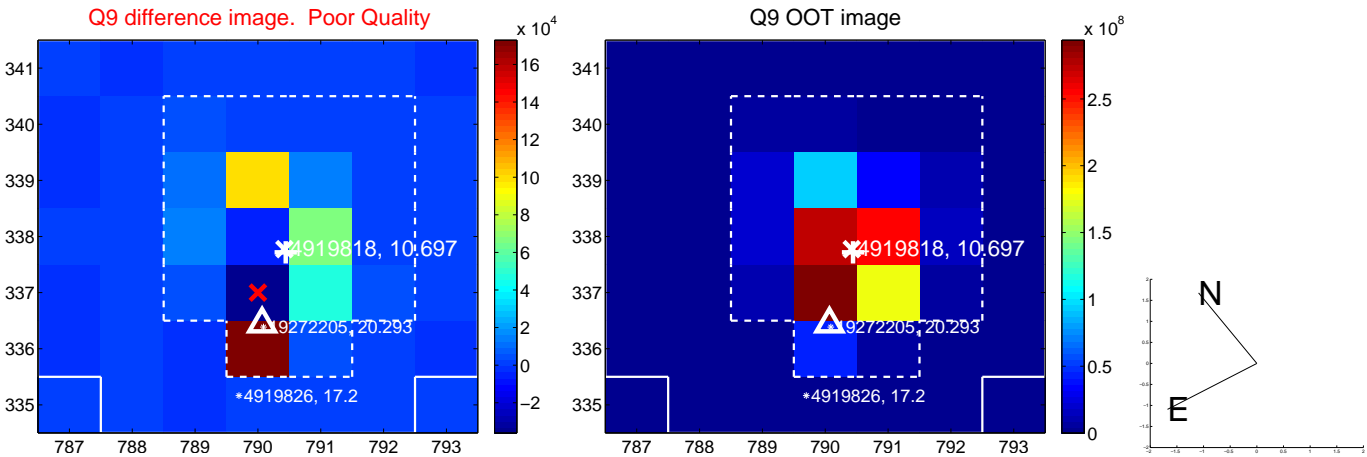
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



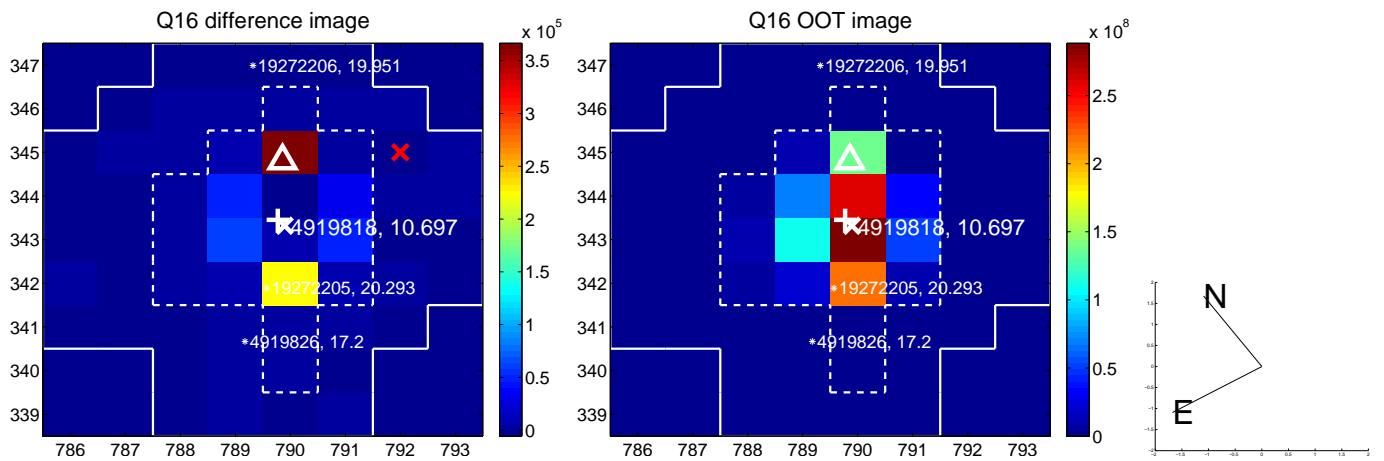
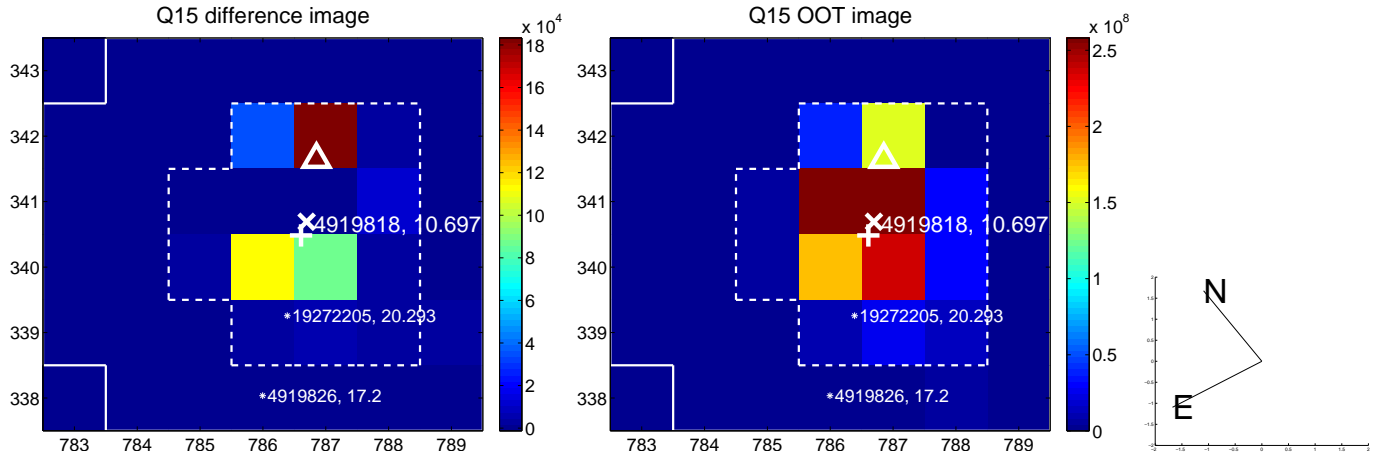
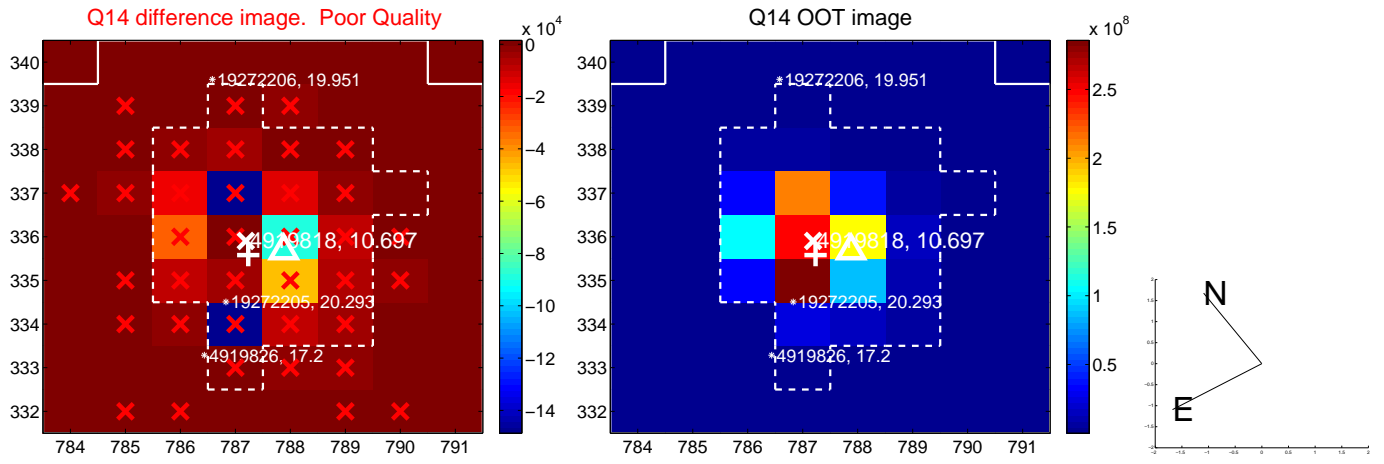
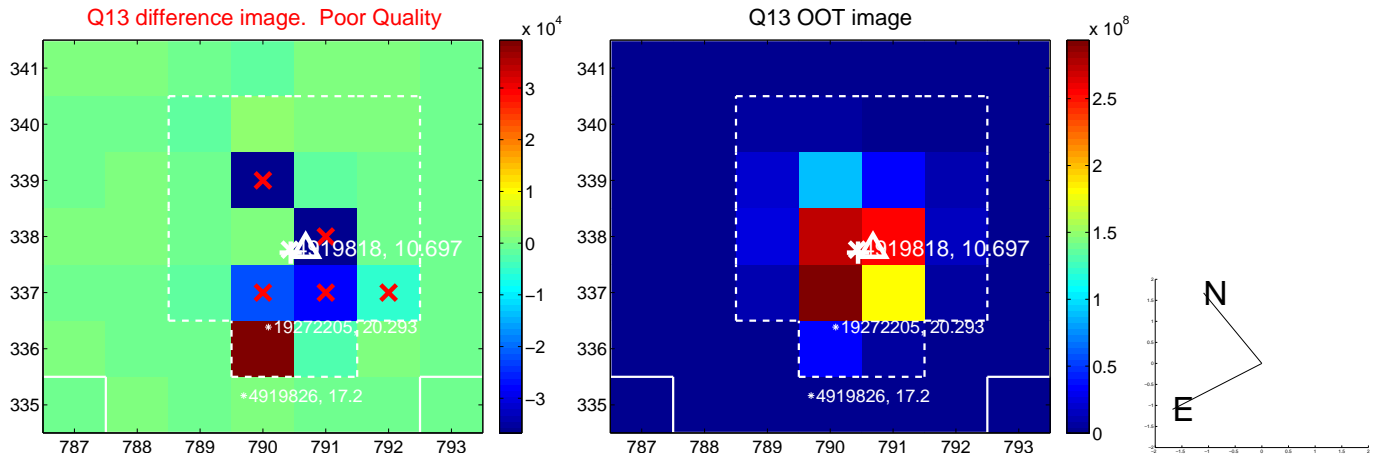
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



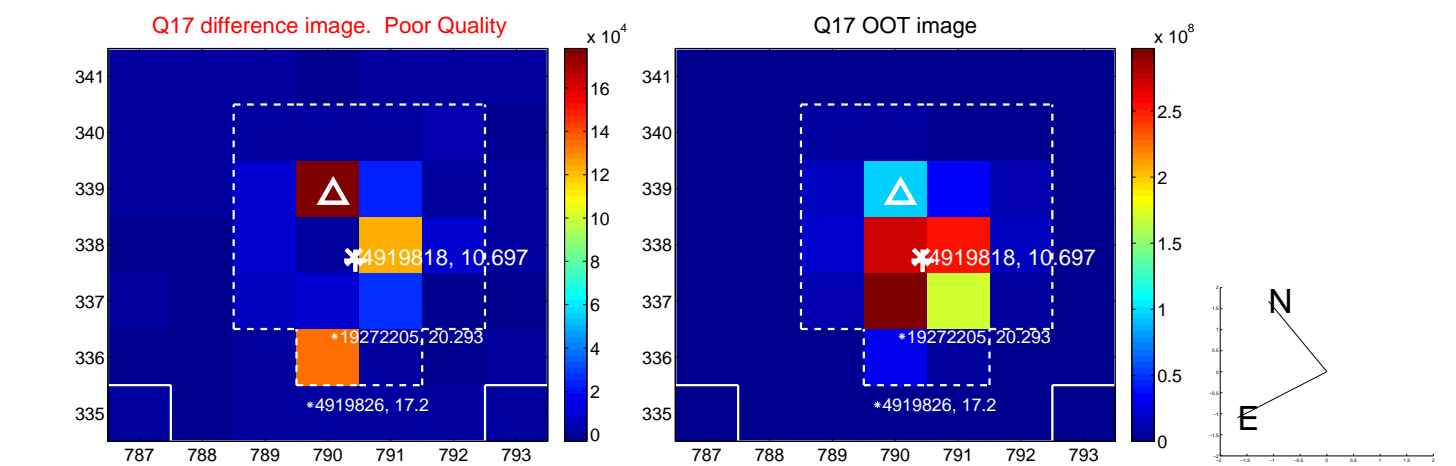
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



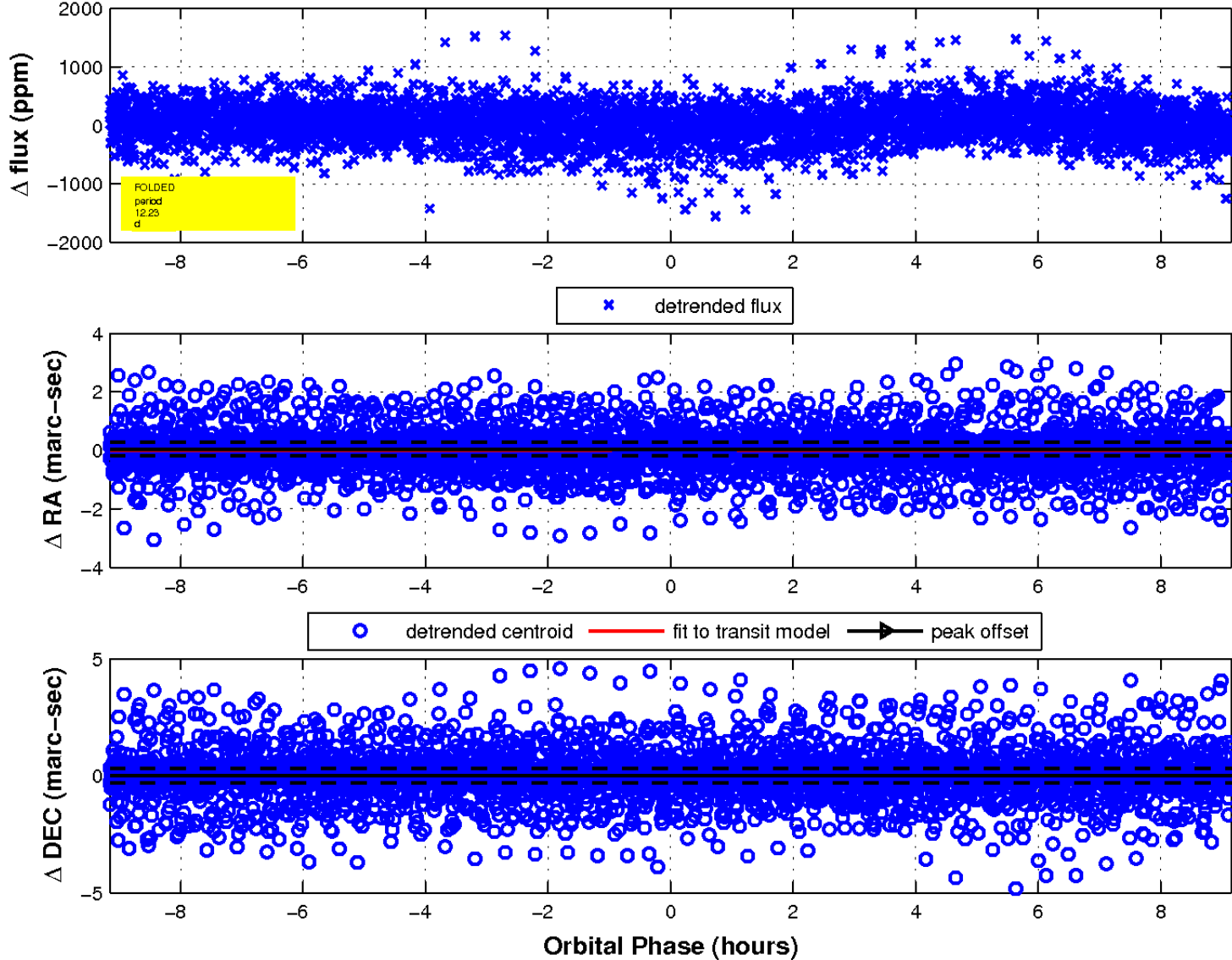
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

