

KIC 010405019

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})
010405019-01	OBS	No	4.269340	131.847570	47.0	13.007	8.2	7.2	3.84	7493	3.06	9629.90
010405019-02	OBS	No	2.426875	132.720015	51.9	5.587	8.2	6.4	3.84	7493	3.21	20450.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010405019-01	OBS	FP	0.00	1	0	0	0	LPP_DV
010405019-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

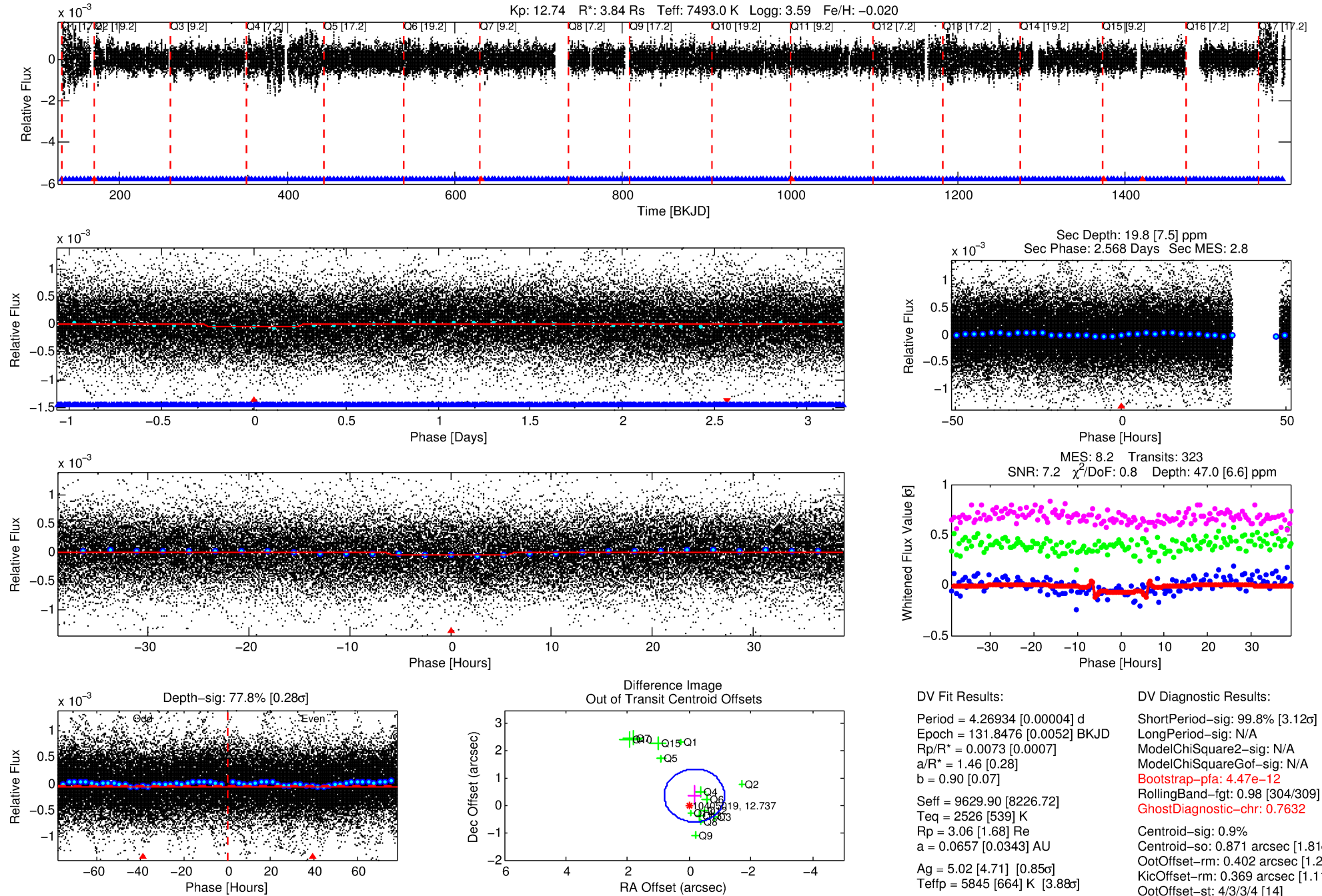
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010405019-01

No Significant Match Found

DV One-Page Summary

KIC: 10405019 Candidate: 1 of 2 Period: 4.269 d



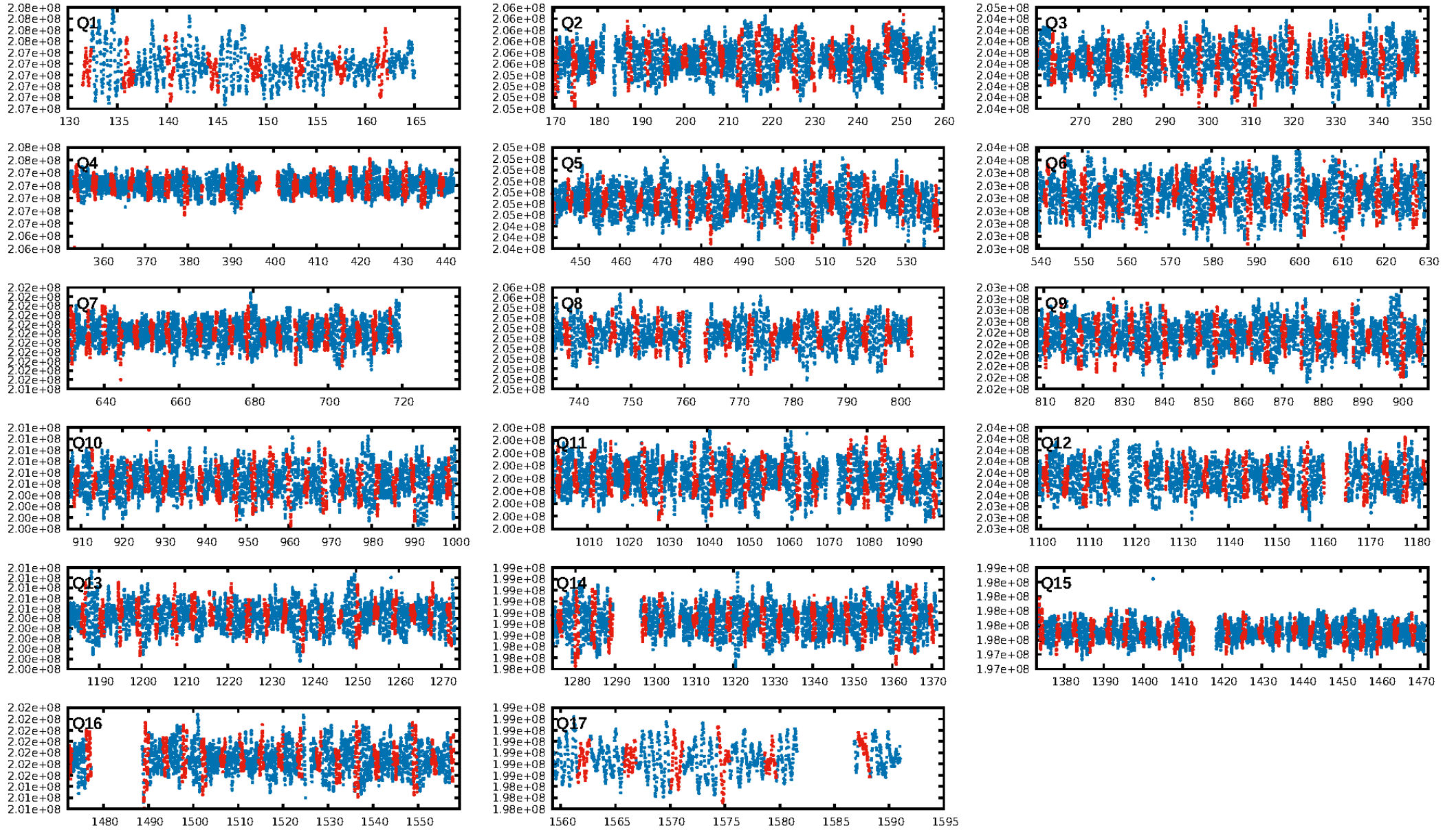
DV Fit Results:

Period = 4.26934 [0.00004] d
Epoch = 131.8476 [0.0052] BKJD
Rp/R* = 0.0073 [0.0007]
a/R* = 1.46 [0.28]
b = 0.90 [0.07]
Seff = 9629.90 [8226.72]
Teq = 2526 [539] K
Rp = 3.06 [1.68] Re
a = 0.0657 [0.0343] AU
Ag = 5.02 [4.71] [0.85 σ]
Teffp = 5845 [664] K [3.88 σ]

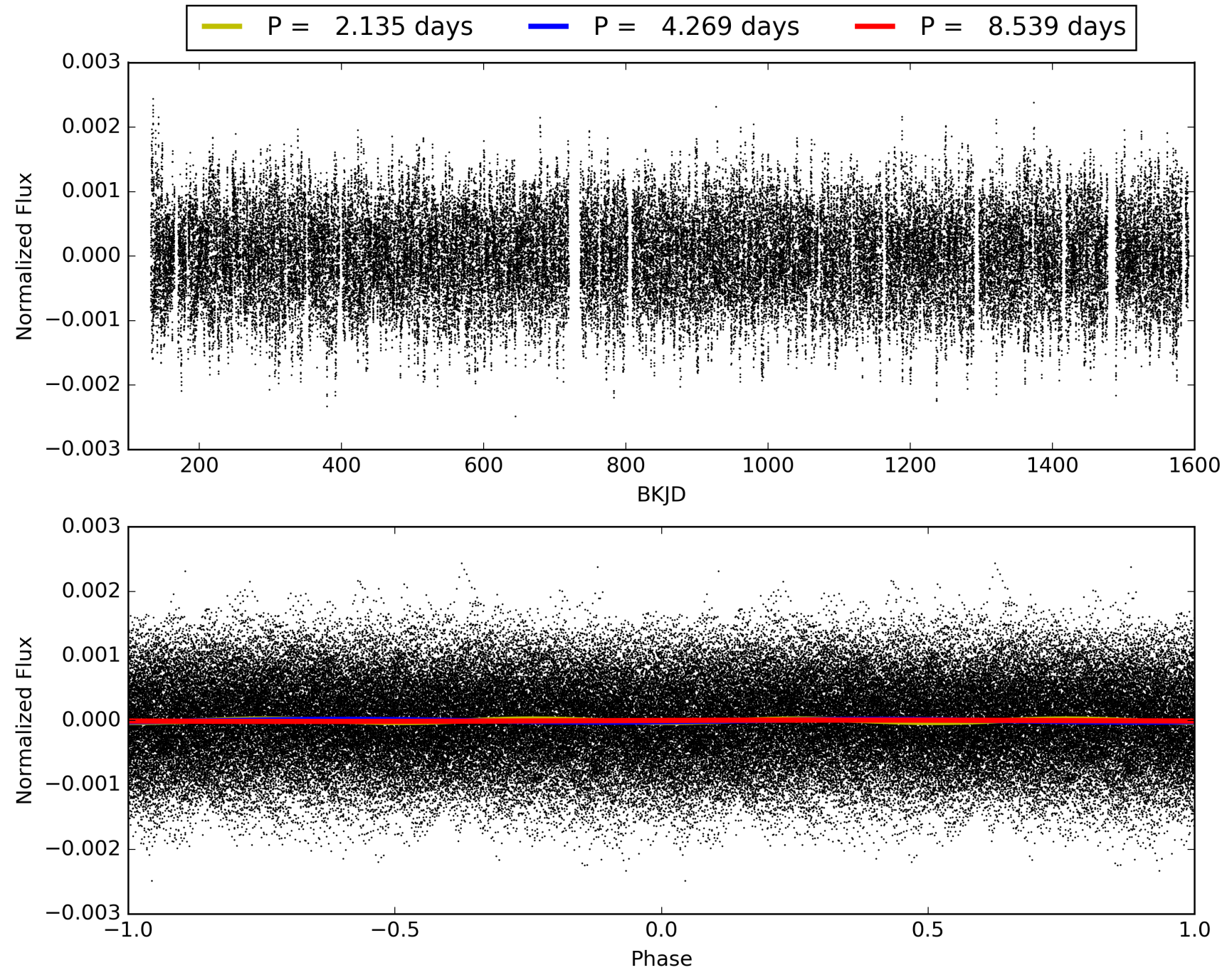
DV Diagnostic Results:

ShortPeriod-sig: 99.8% [3.12 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.47e-12
RollingBand-fgt: 0.98 [304/309]
GhostDiagnostic-chr: 0.7632
Centroid-sig: 0.9%
Centroid-so: 0.871 arcsec [1.81 σ]
OotOffset-rm: 0.402 arcsec [1.24 σ]
KicOffset-rm: 0.369 arcsec [1.11 σ]
OotOffset-st: 4/3/3/4 [14]
KicOffset-st: 4/3/3/4 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 0.88 [15/17]

TCE 010405019-01, PDC Light Curves

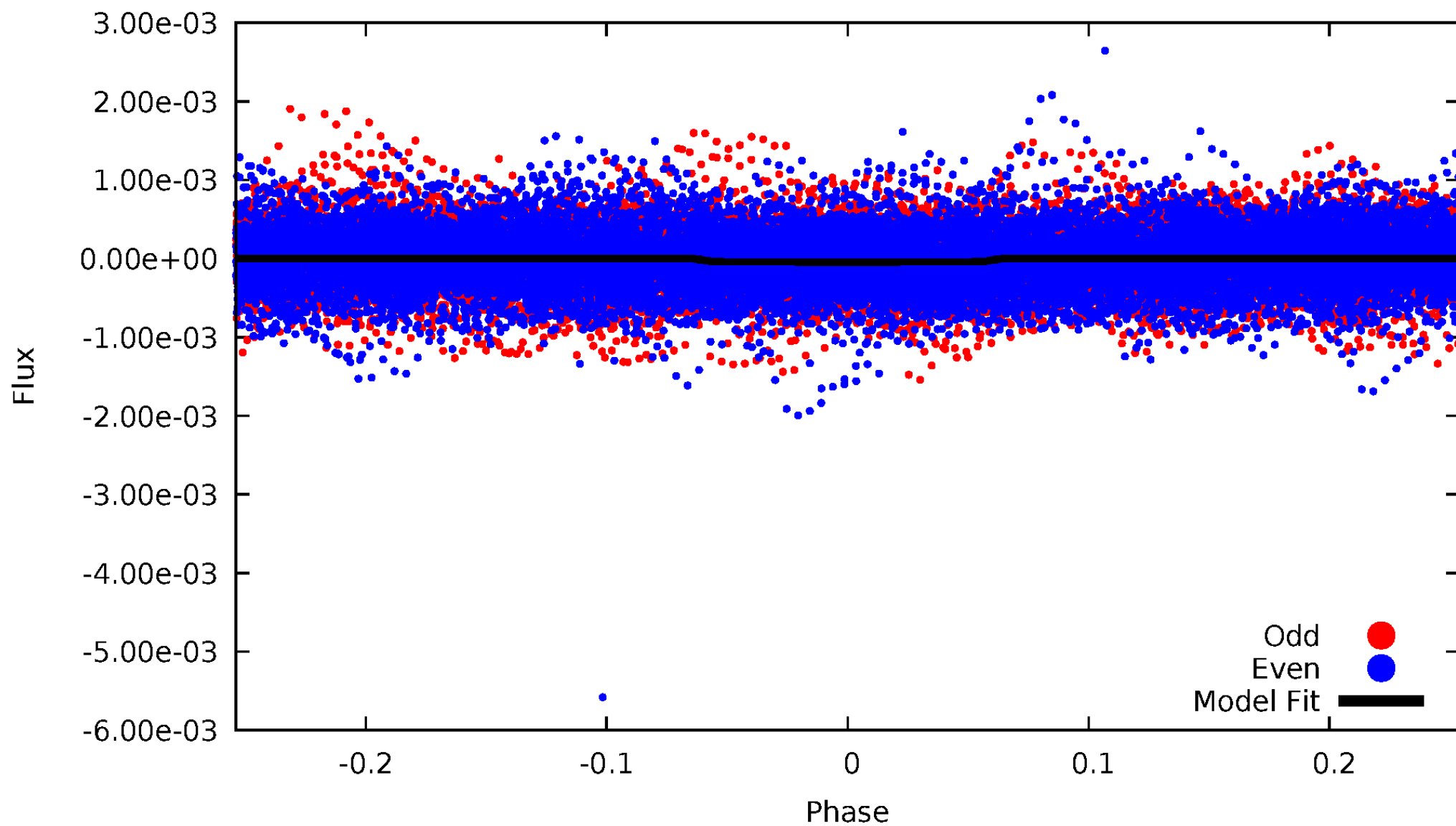


TCE 010405019-01



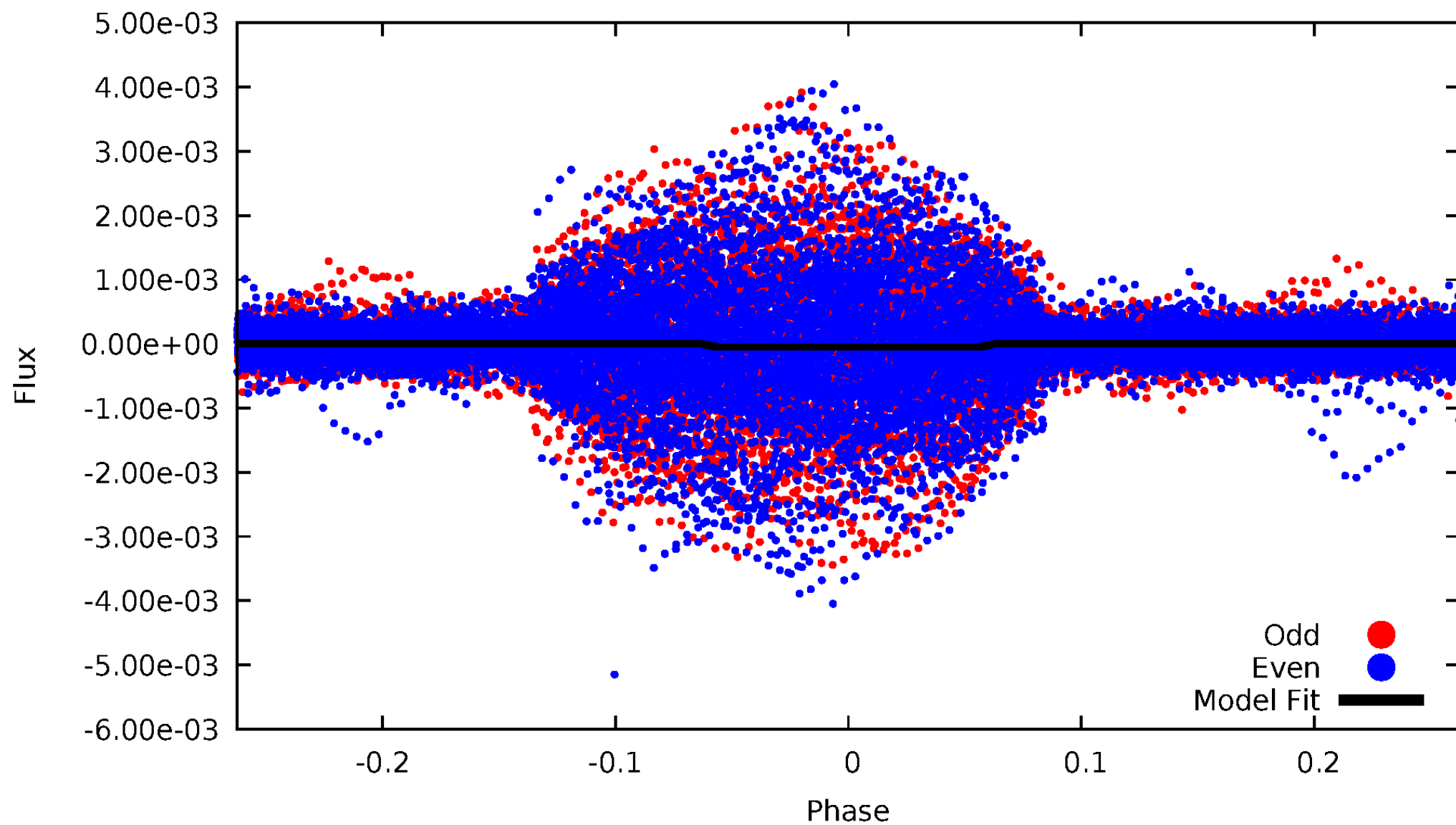
DV Odd/Even

TCE 010405019-01



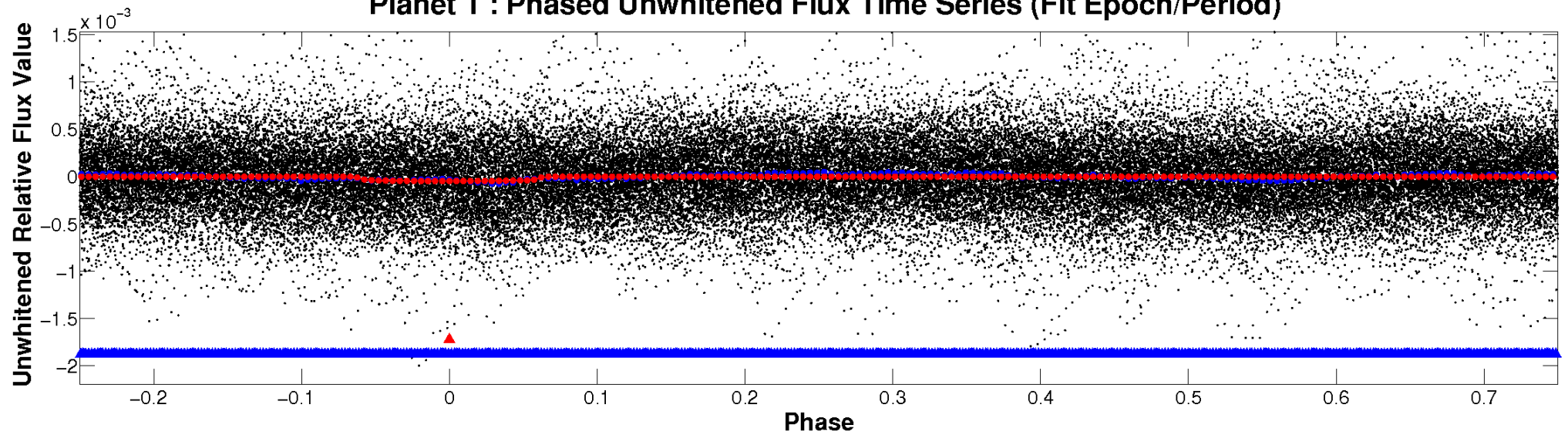
ALT Odd/Even

TCE 010405019-01

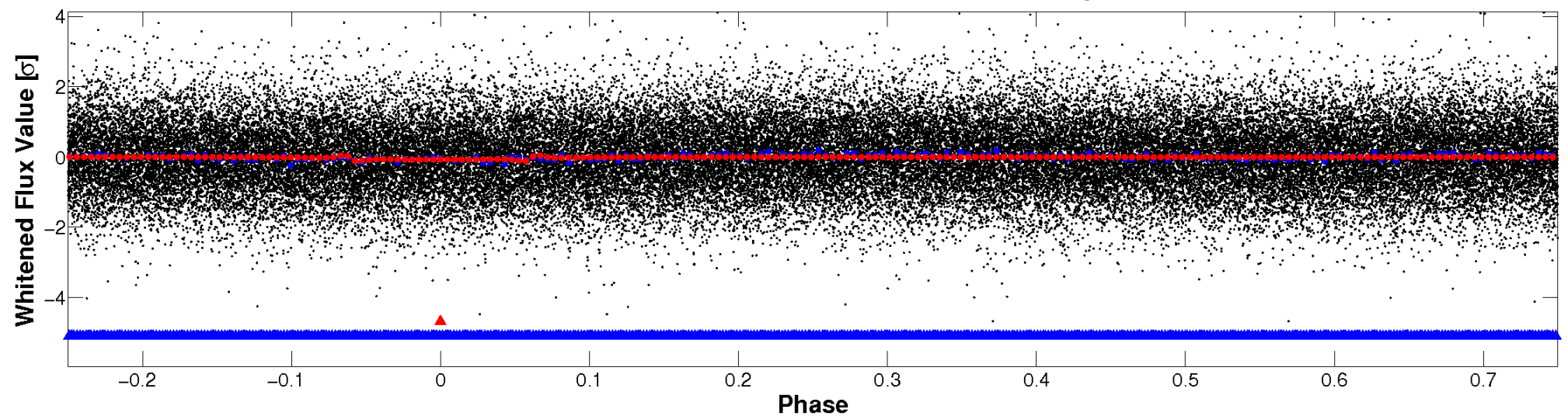


Non-Whitened Vs. Whitened Light Curve

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

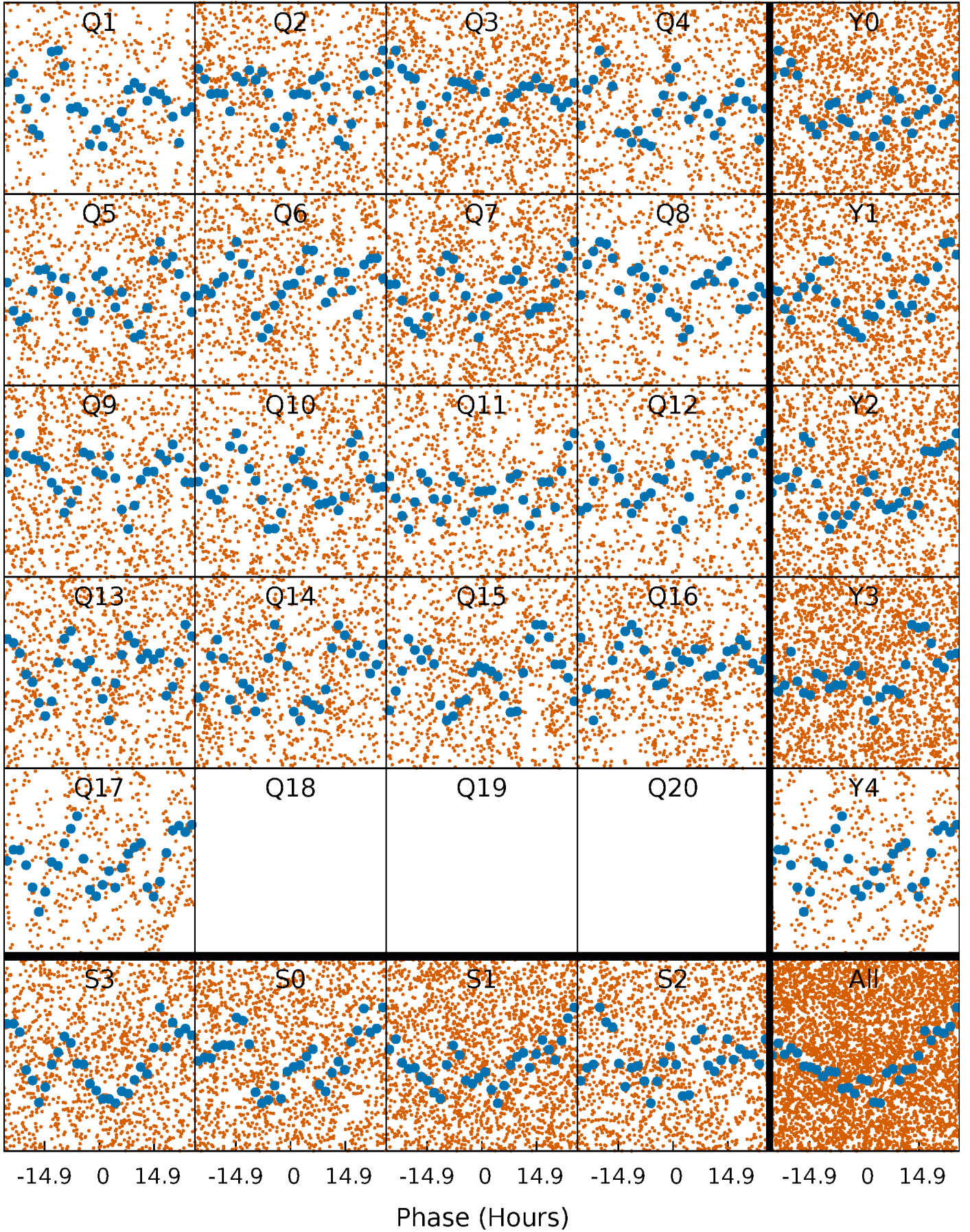


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



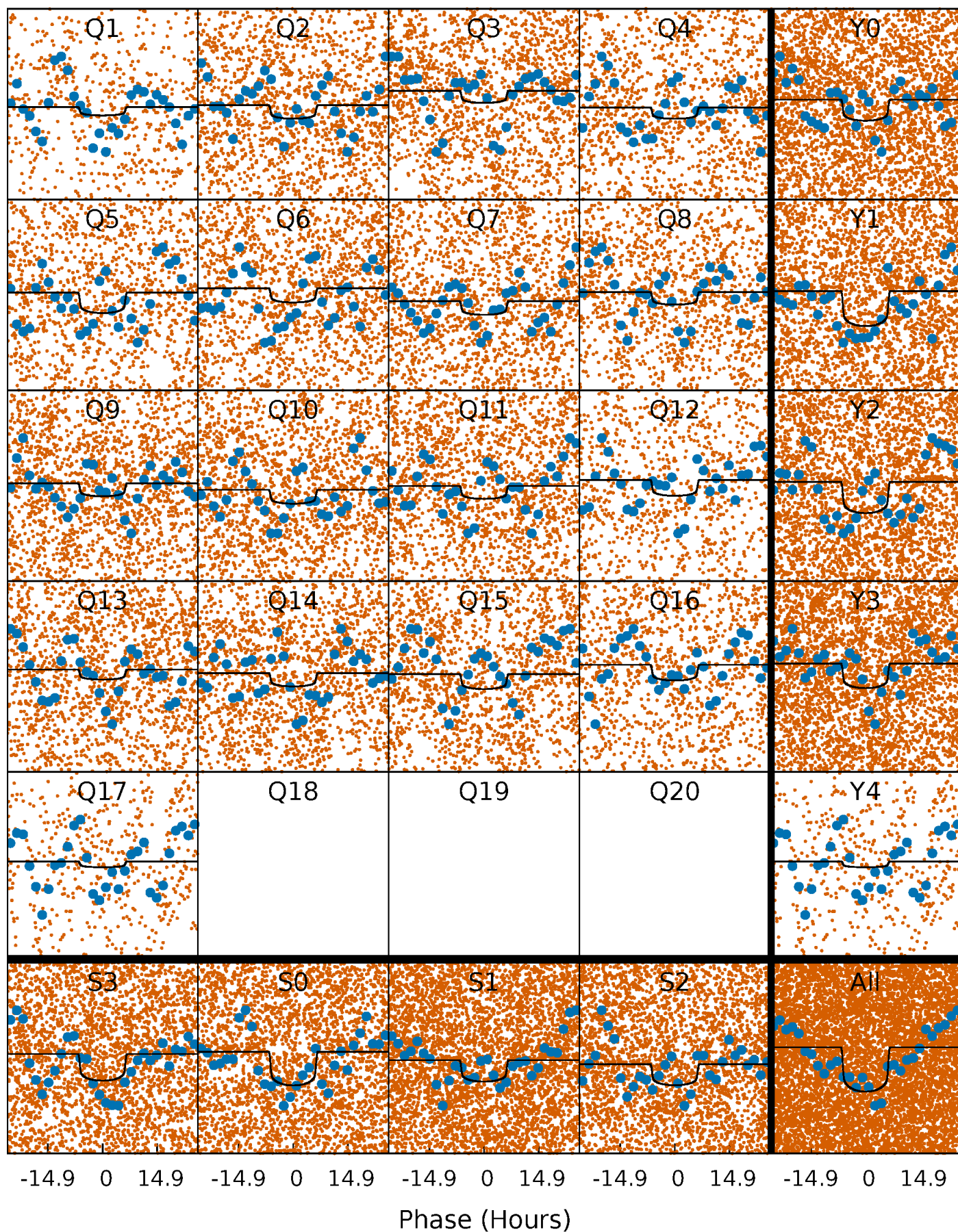
PDC Quarter-Phased Transit Curves

TCE 010405019-01 P= 4.269340 Days $T_0=131.847569$ (BKJD)



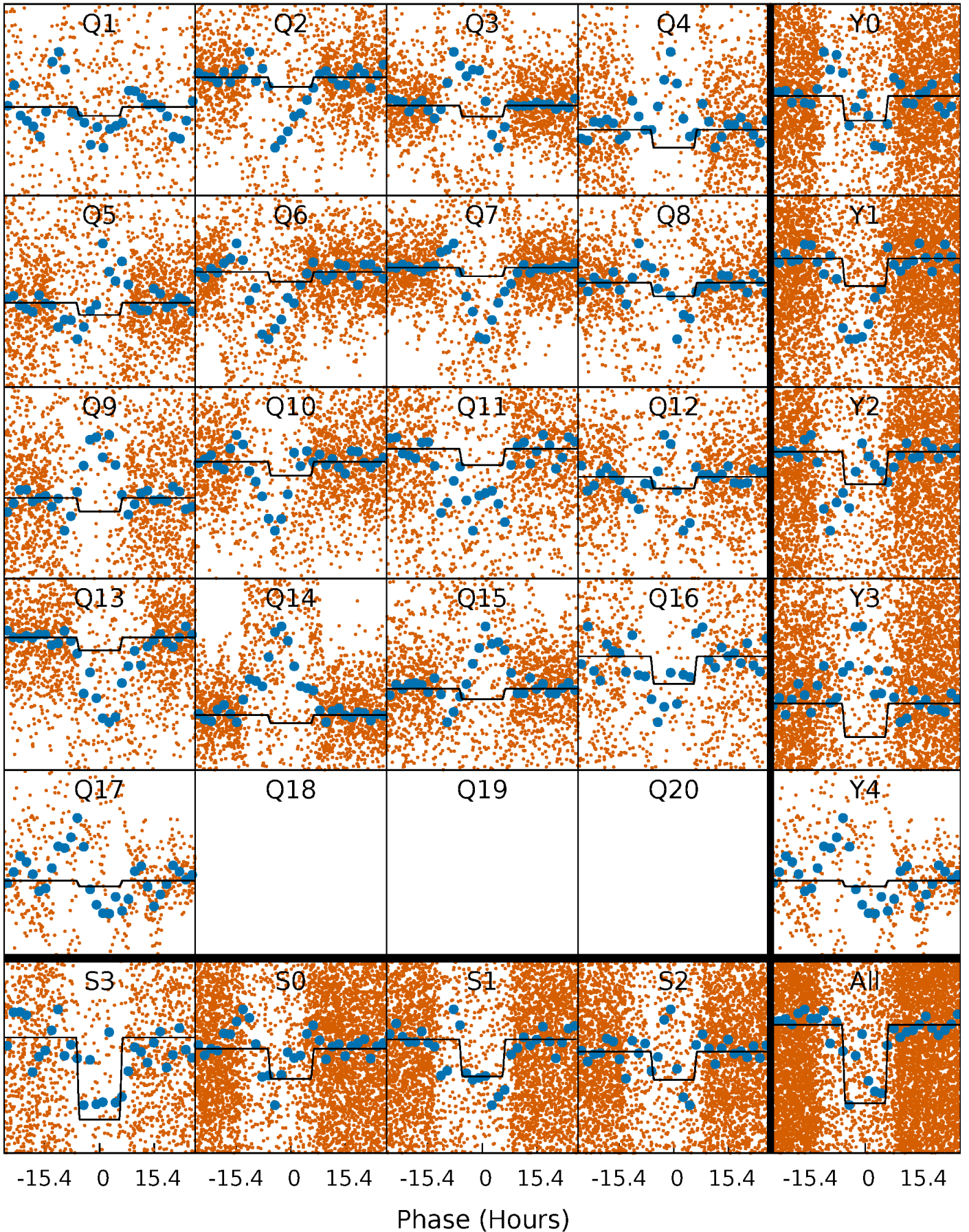
DV Quarter-Phased Transit Curves

TCE 010405019-01 P= 4.269340 Days $T_0=131.847569$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

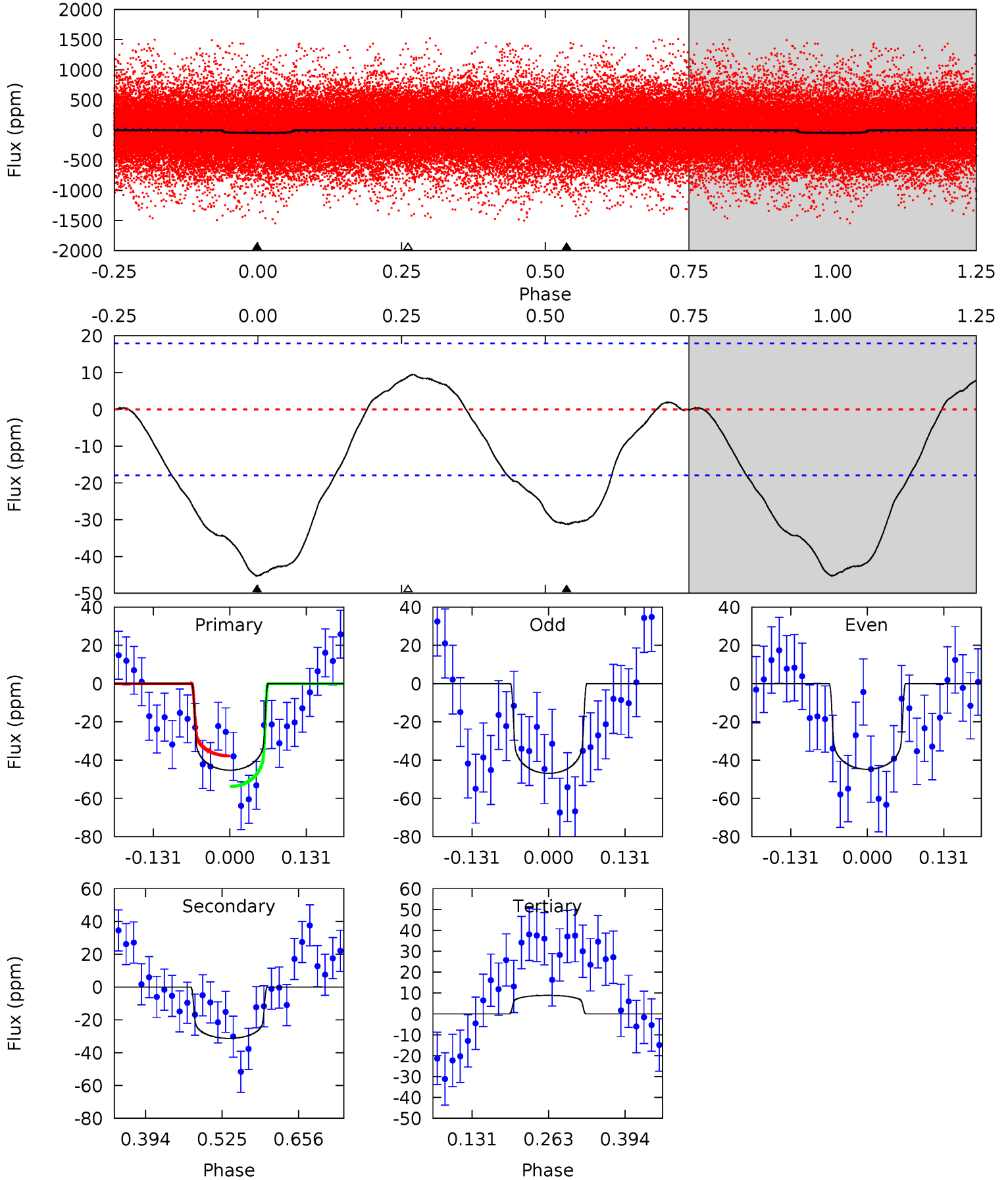
TCE 010405019-01 P= 4.269234 Days $T_0=131.847838$ (BKJD)



DV Model-Shift Uniqueness Test

010405019-01, P = 4.269340 Days, E = 127.578229 Days

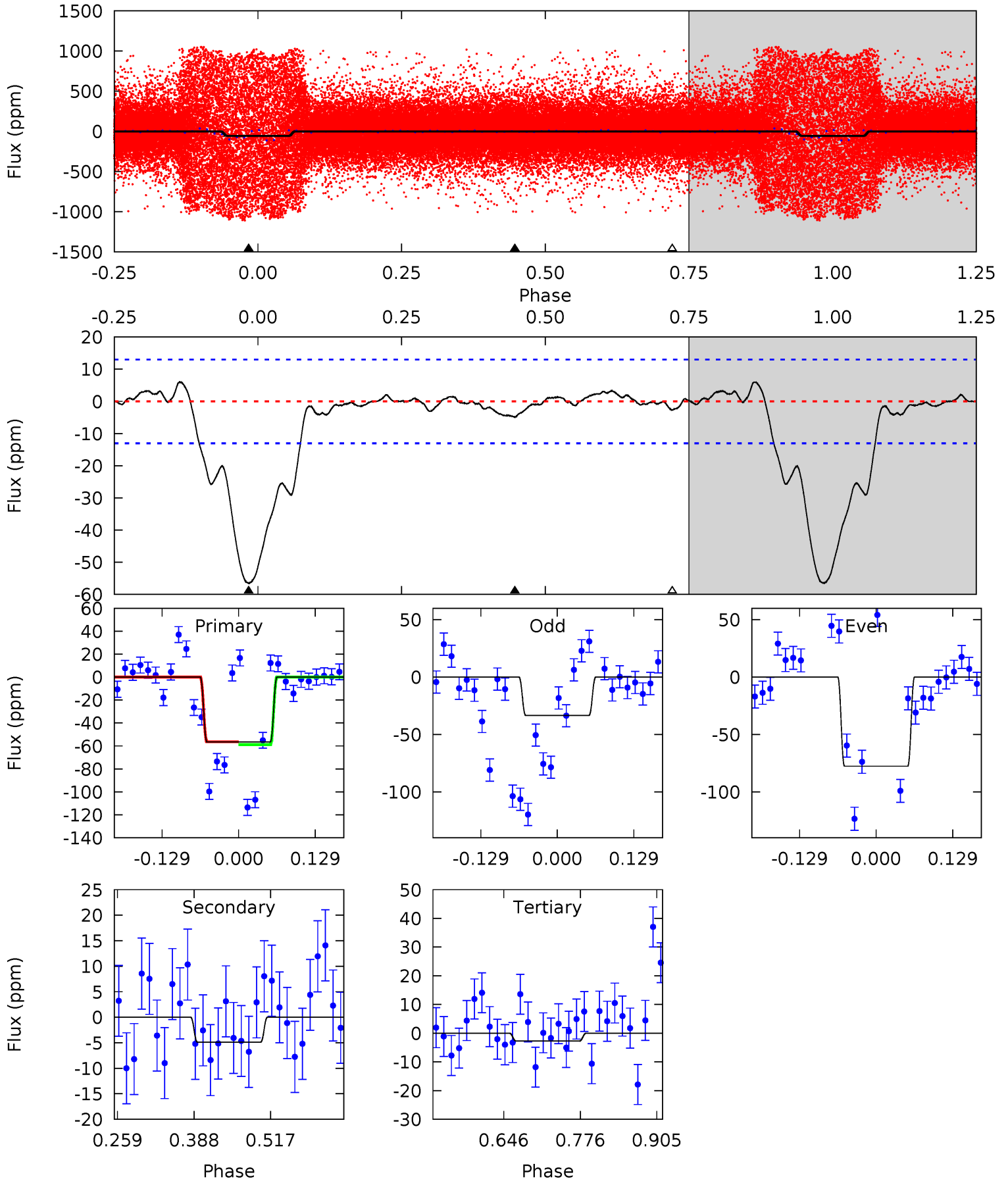
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	7.87	-2.23	0	4.51	1.51	1.99	13.6	11.4	10.1	7.87	0.27	1.05	0.17	2.02



Alt Model-Shift Uniqueness Test

010405019-01, P = 4.269234 Days, E = 127.578604 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	1.69	0.95	0	4.51	1.52	0.58	18.6	19.6	0.74	1.69	7.13	0.73	0.10	0.41



Stellar Parameters For KIC 010405019

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7493^{+235}_{-313}	$3.587^{+0.493}_{-0.058}$	$-0.020^{+0.200}_{-0.300}$	$3.836^{+0.517}_{-2.068}$	$2.075^{+0.242}_{-0.524}$	$0.052^{+0.289}_{-0.015}$
	+3%/-4%	+14%/-2%	+1000%/-1500%	+13%/-54%	+12%/-25%	+558%/-29%
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 010405019-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-31 ± 4	$2.78^{+0.55}_{-0.73}$	3378^{+250}_{-448}	6412^{+450}_{-409}	$9.794^{+7.455}_{-2.995}$
Alt.	-5 ± 3	$2.83^{+0.54}_{-0.78}$	3365^{+243}_{-418}	4074^{+529}_{-794}	$1.476^{+1.506}_{-0.906}$

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 $A_{obs} \gg 1.0$

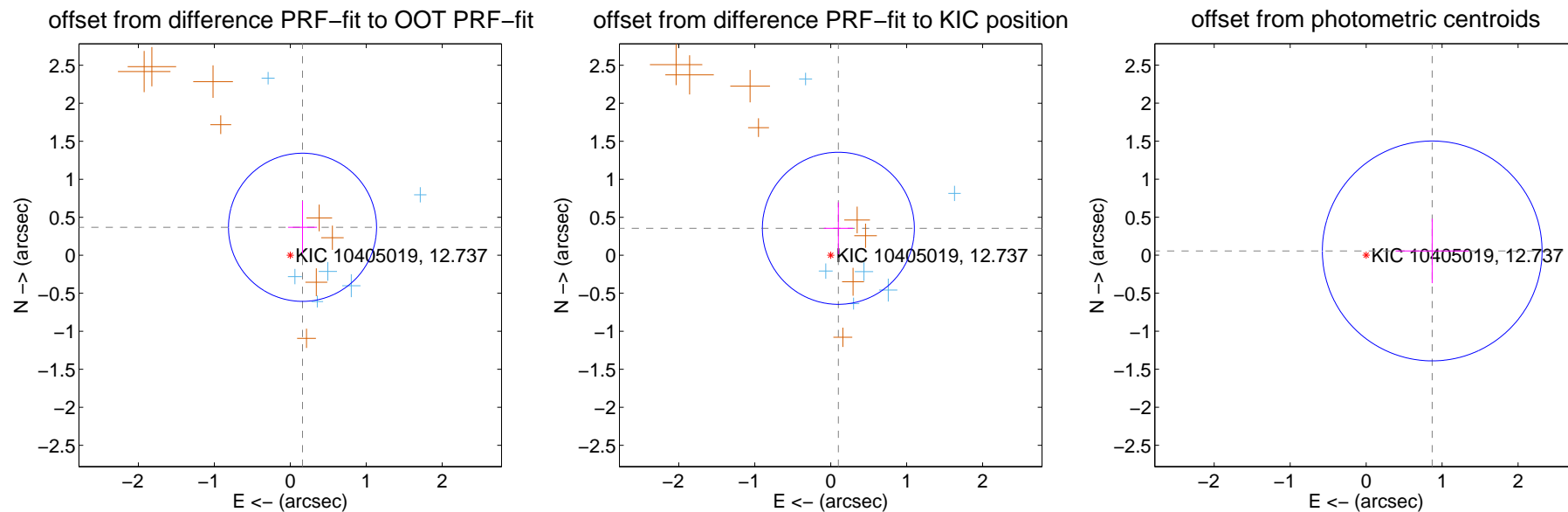
DV Centroid Data

Supplemental centroid analysis for 010405019-01. Kepler magnitude: 12.74. Transit SNR 7.17

There are 6 quarters with good PRF difference image offsets

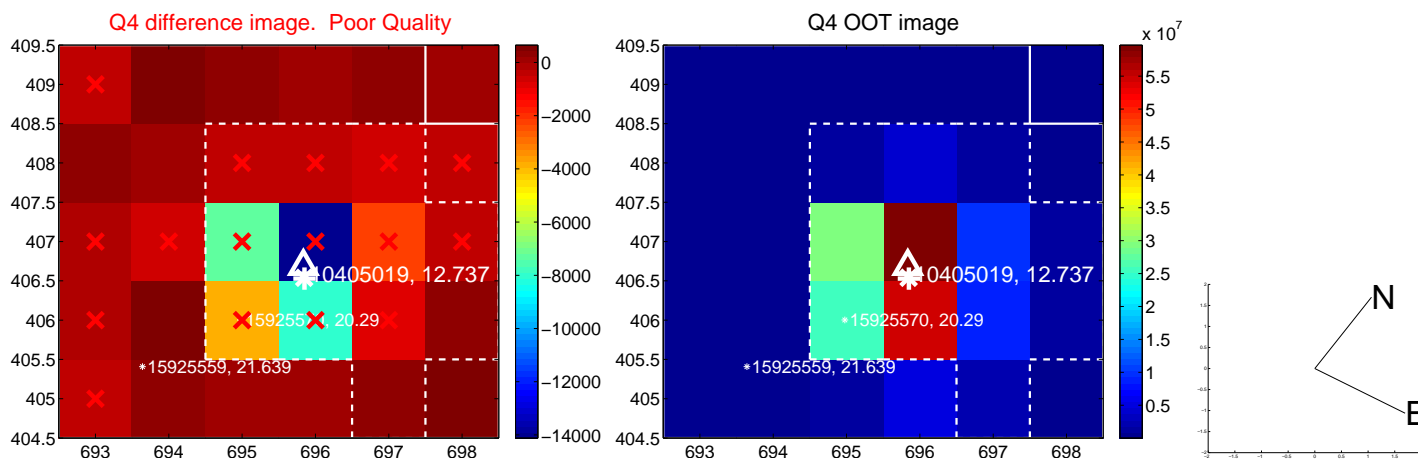
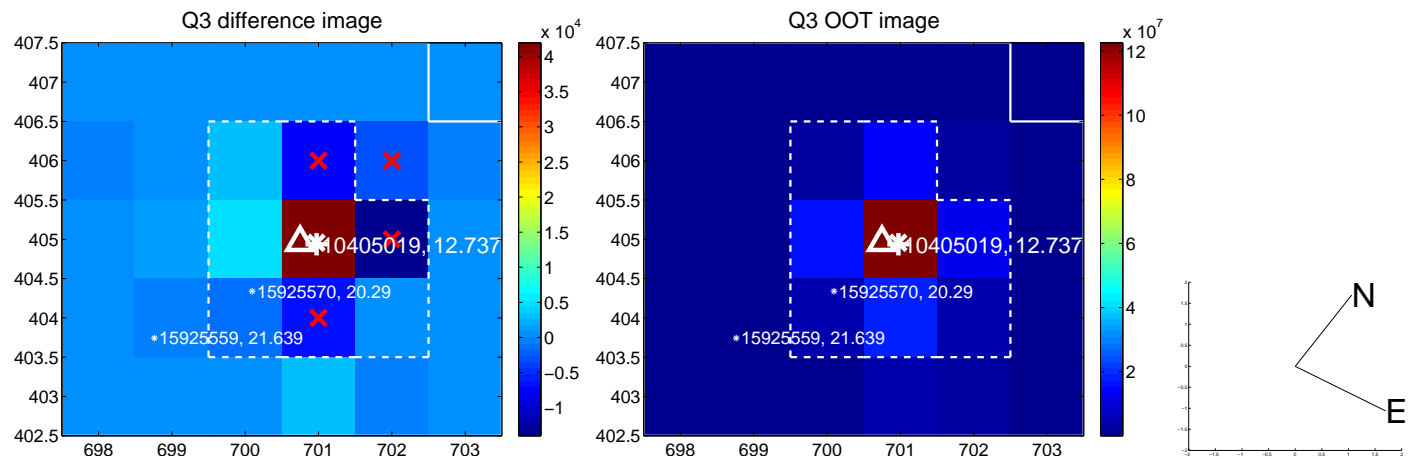
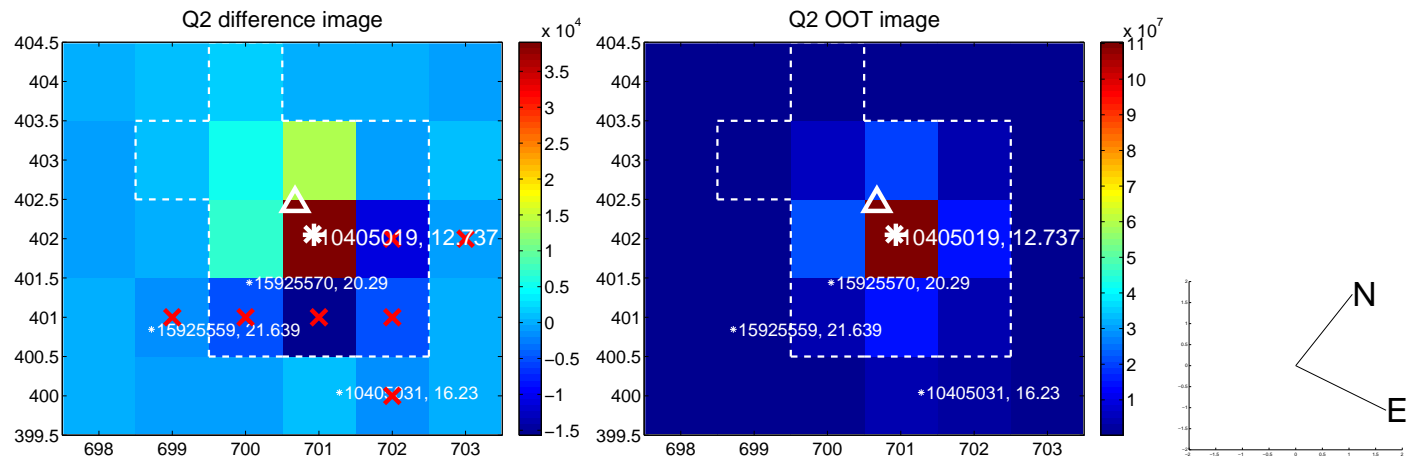
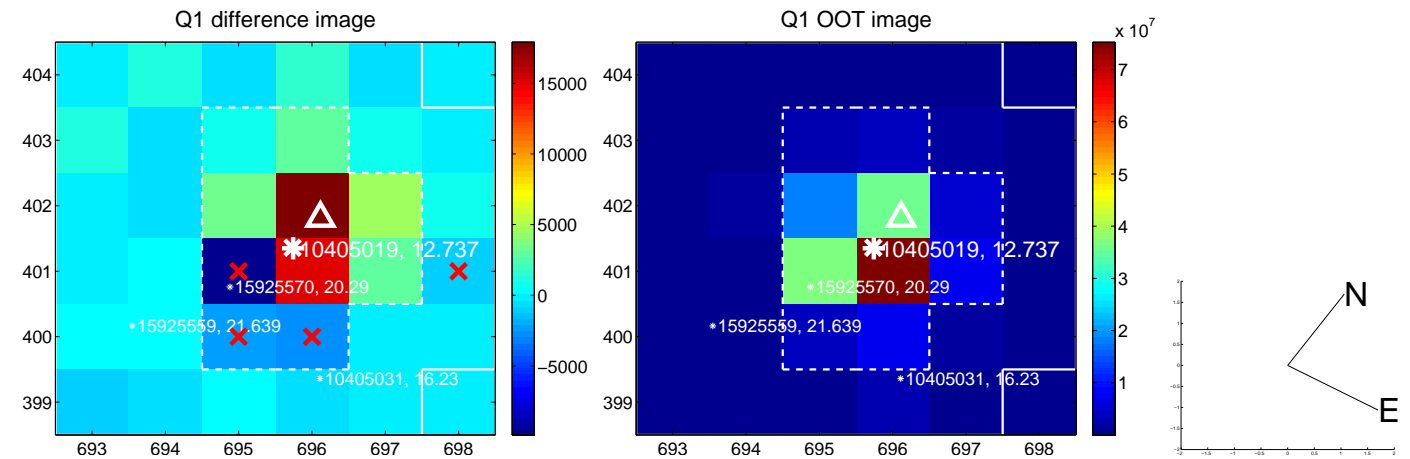
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.402 ± 0.325	1.24	-0.161 ± 0.190	0.368 ± 0.345
PRF-fit source offset from KIC position	0.369 ± 0.333	1.11	-0.101 ± 0.191	0.355 ± 0.342
photometric centroid source offset	0.87 ± 0.48	1.81	-0.87 ± 0.48	0.06 ± 0.42

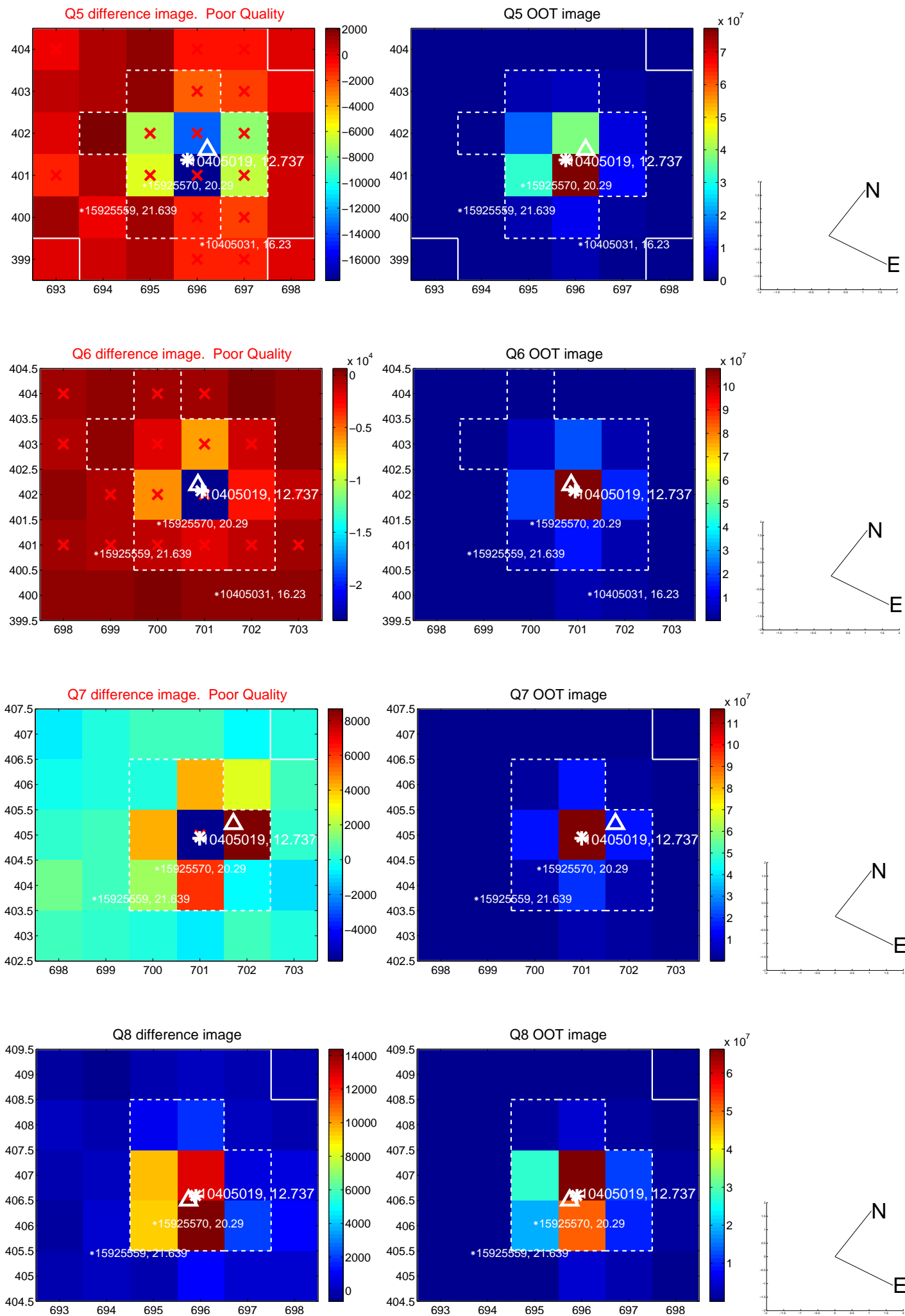


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

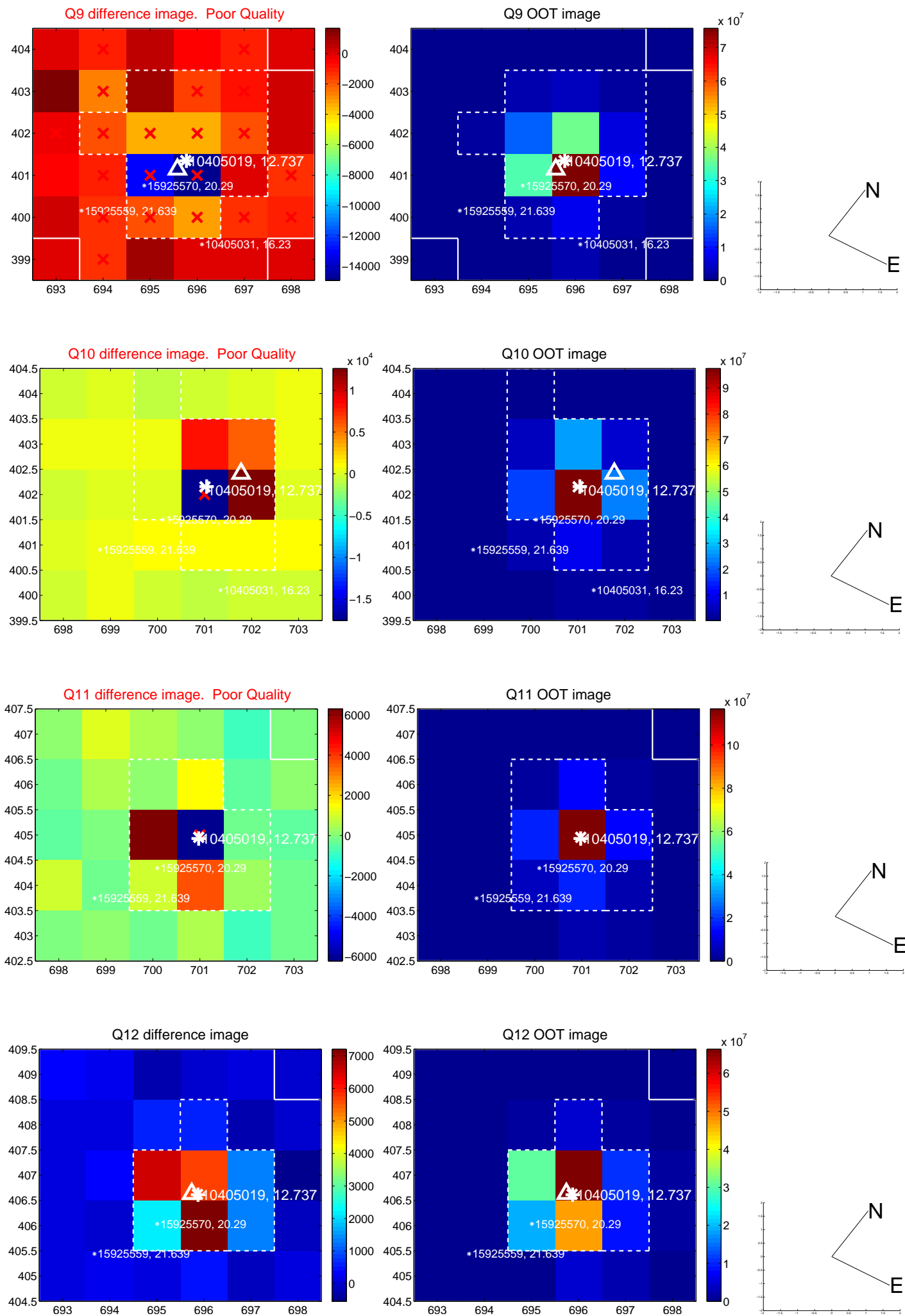
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



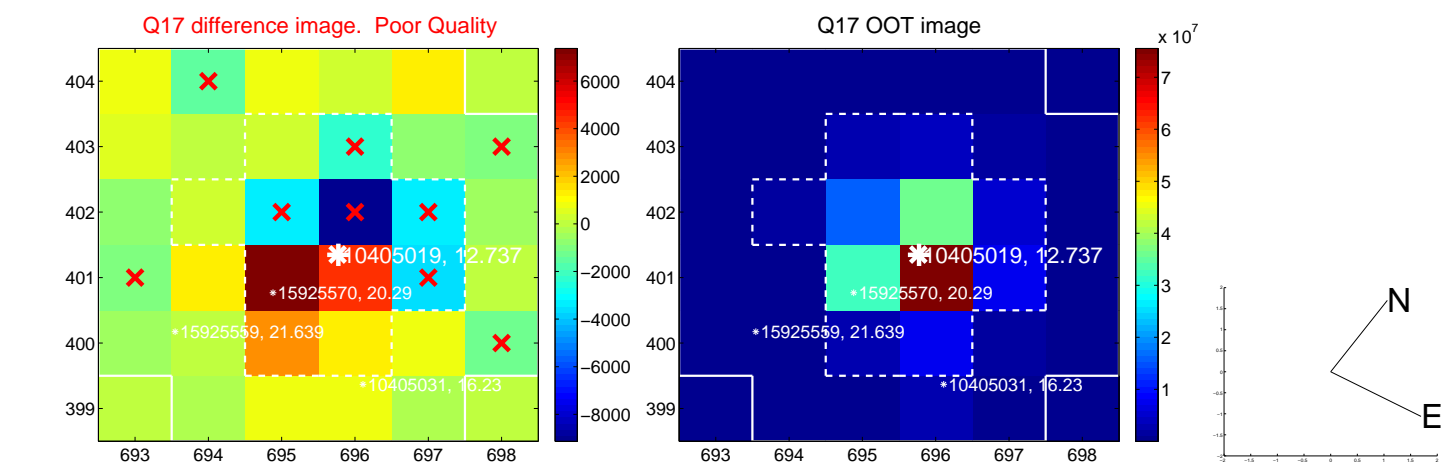
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



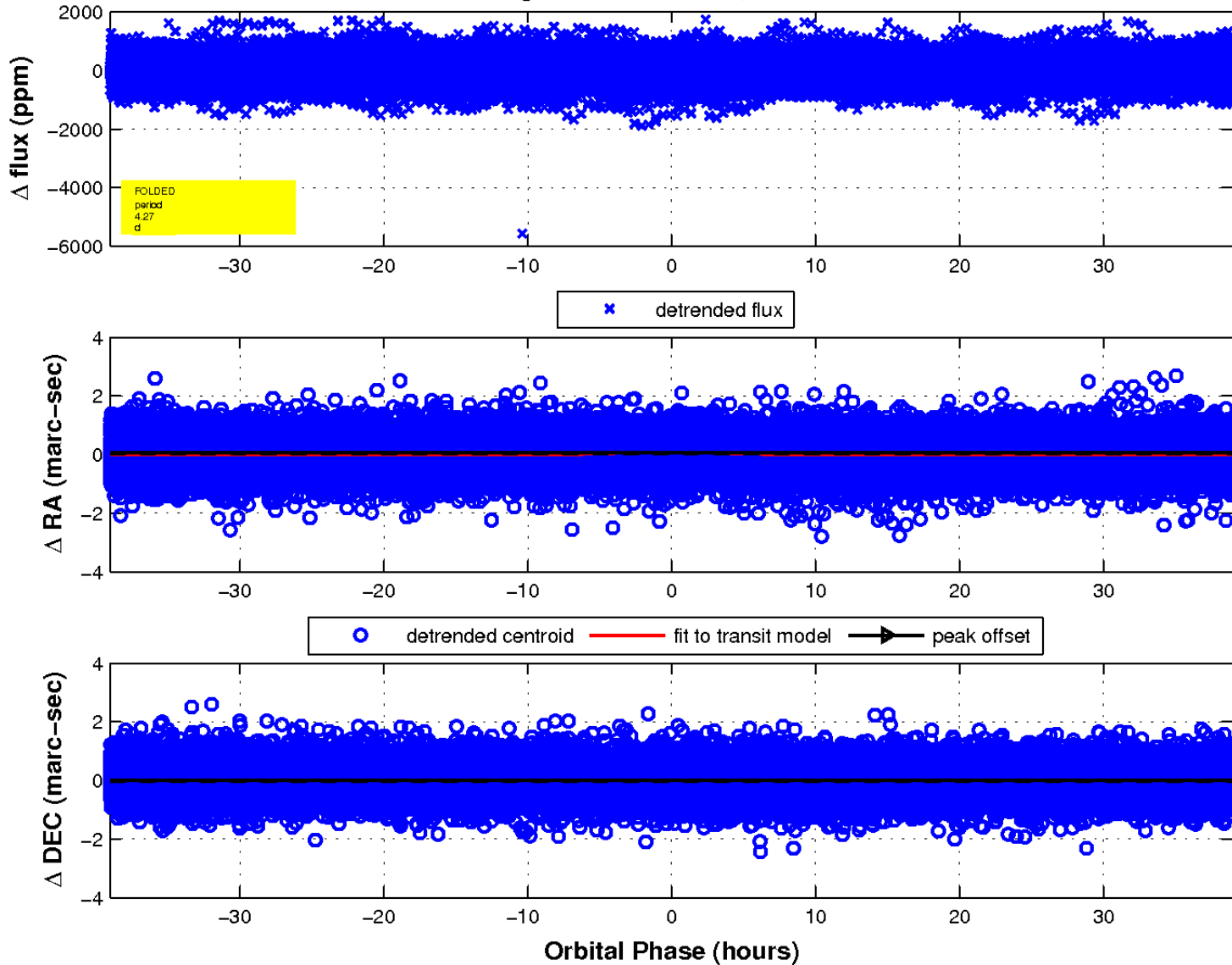
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

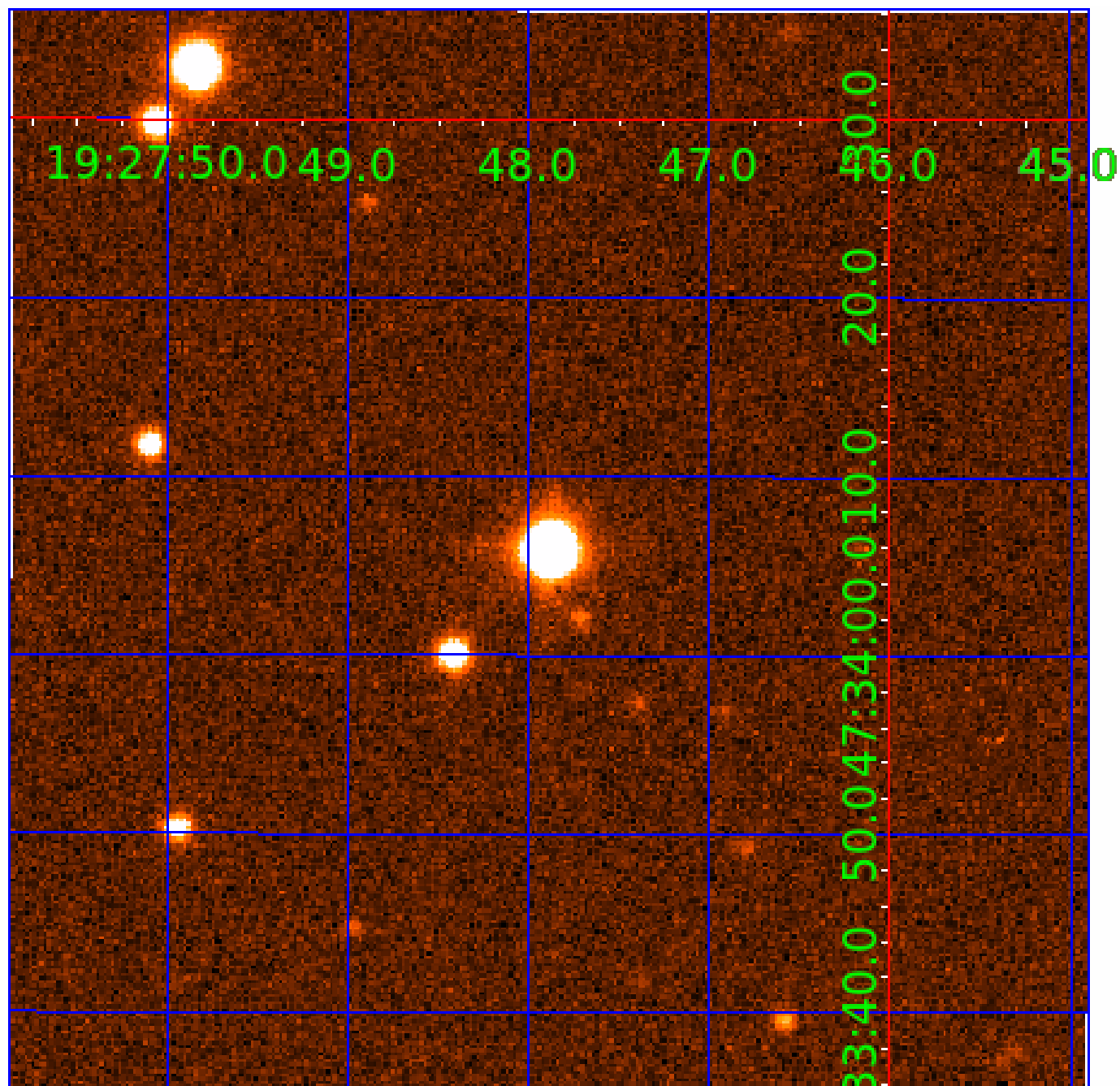


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010405019

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})
010405019-01	OBS	No	4.269340	131.847570	47.0	13.007	8.2	7.2	3.84	7493	3.06	9629.90
010405019-02	OBS	No	2.426875	132.720015	51.9	5.587	8.2	6.4	3.84	7493	3.21	20450.62

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010405019-01	OBS	FP	0.00	1	0	0	0	LPP_DV
010405019-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

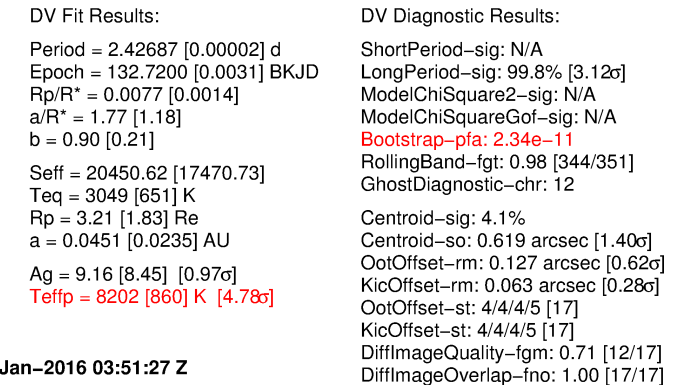
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 010405019-02

No Significant Match Found

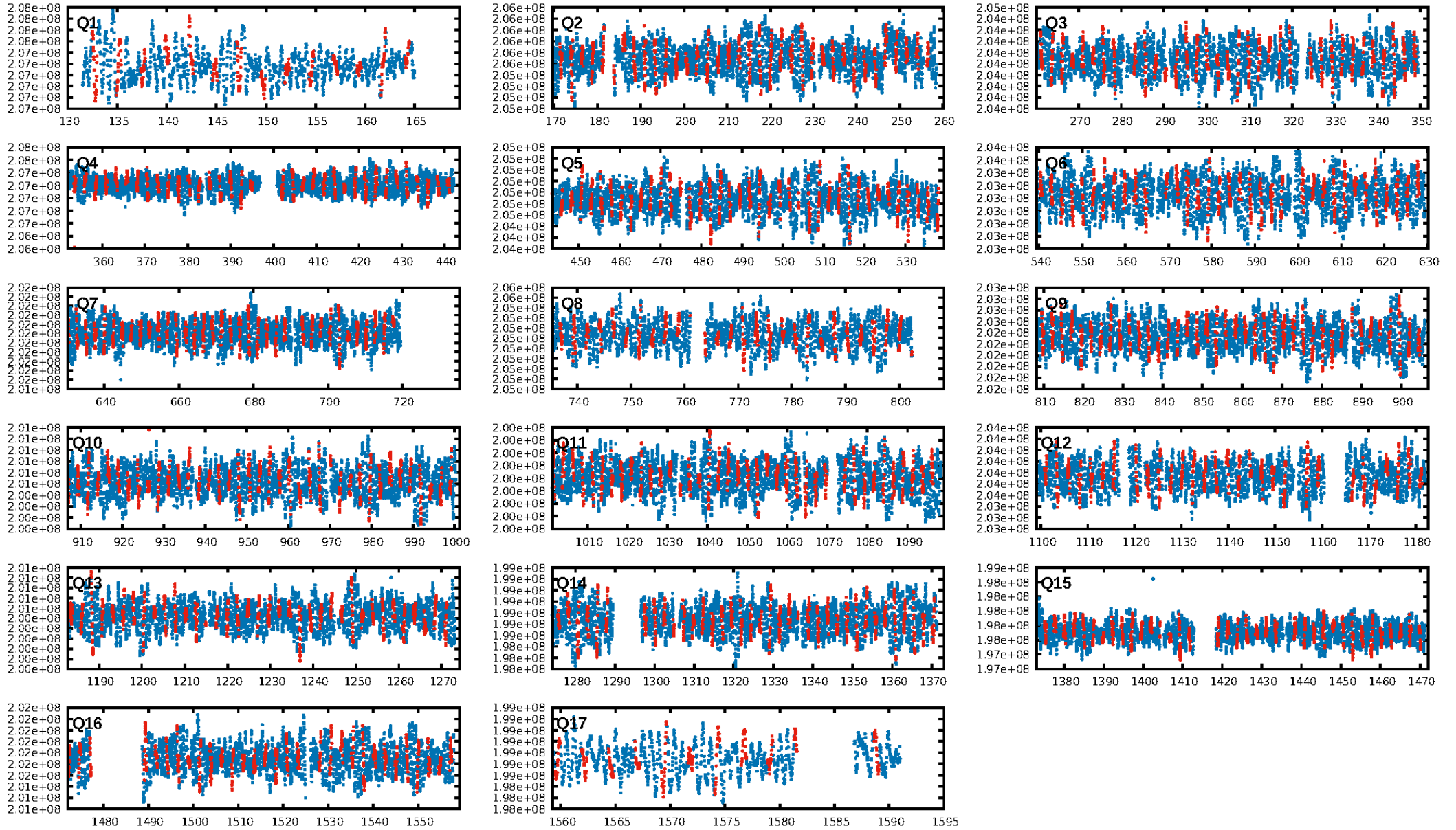
KIC: 10405019 Candidate: 2 of 2 Period: 2.427 d



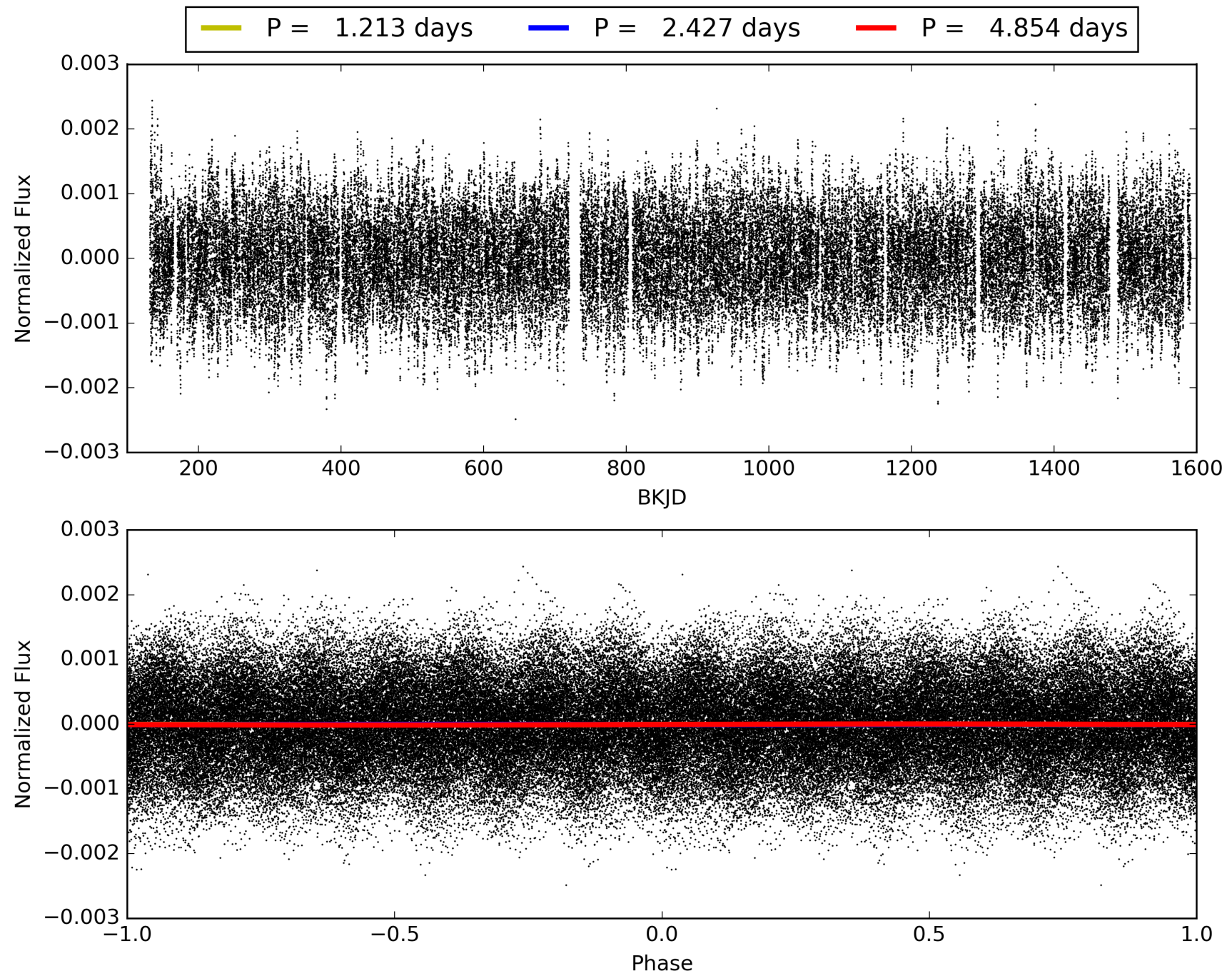
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:51:27 Z

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

TCE 010405019-02, PDC Light Curves

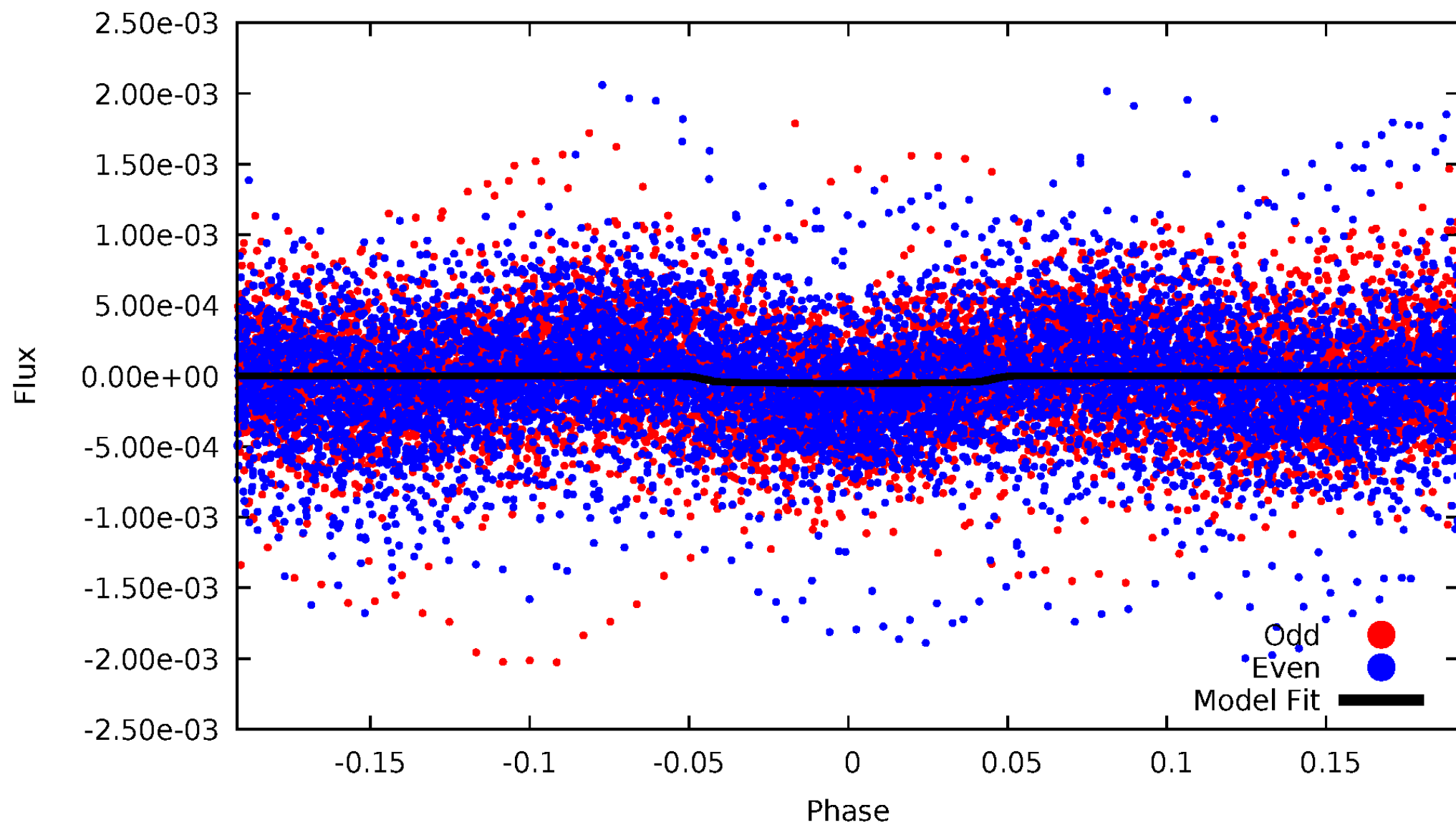


TCE 010405019-02



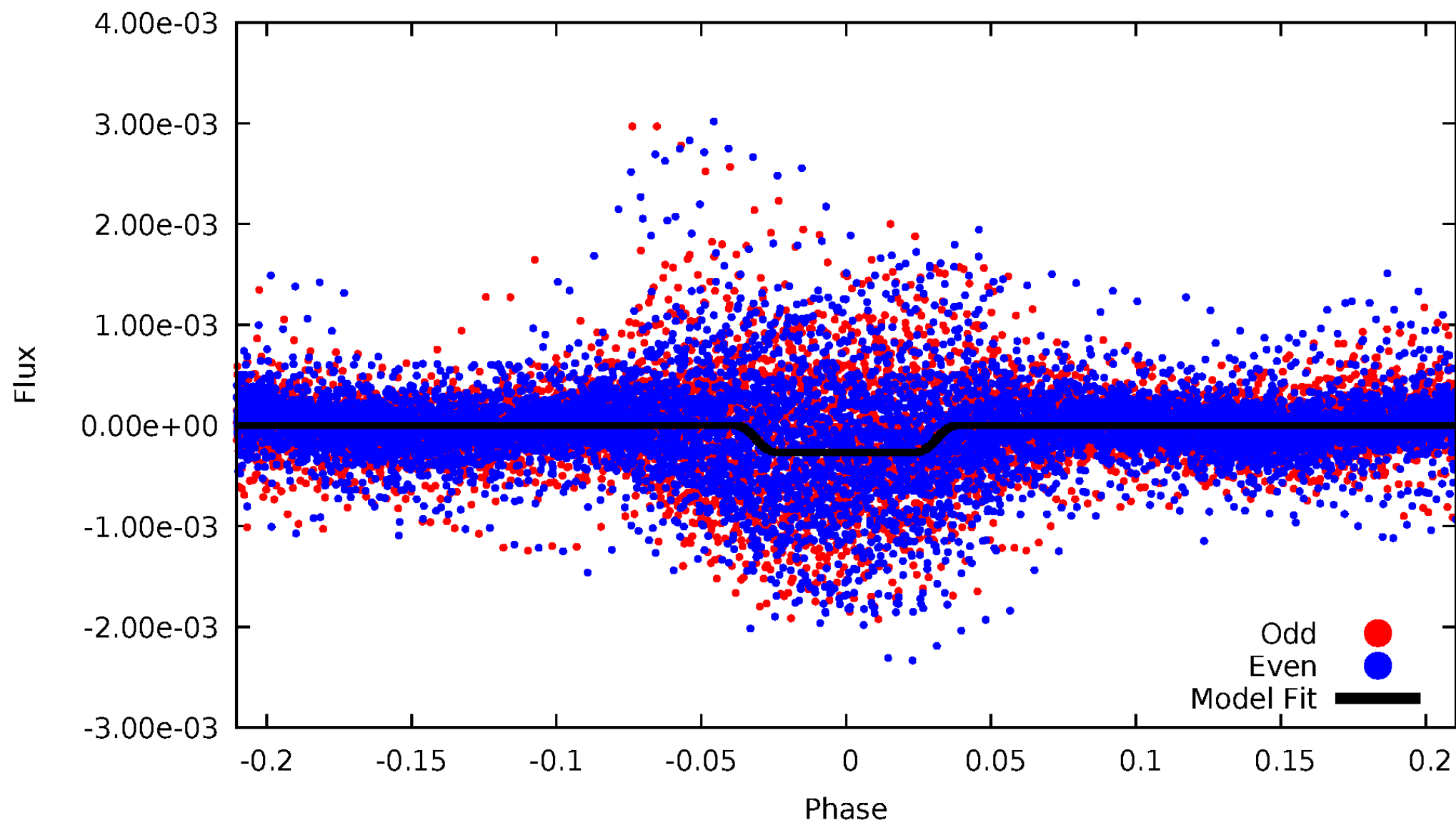
DV Odd/Even

TCE 010405019-02



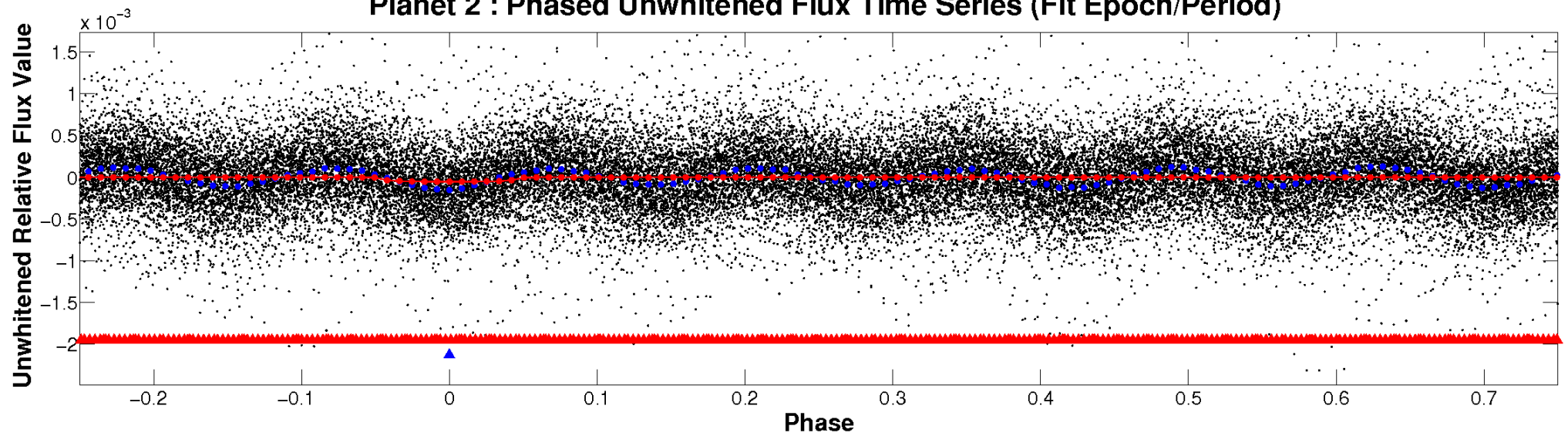
ALT Odd/Even

TCE 010405019-02

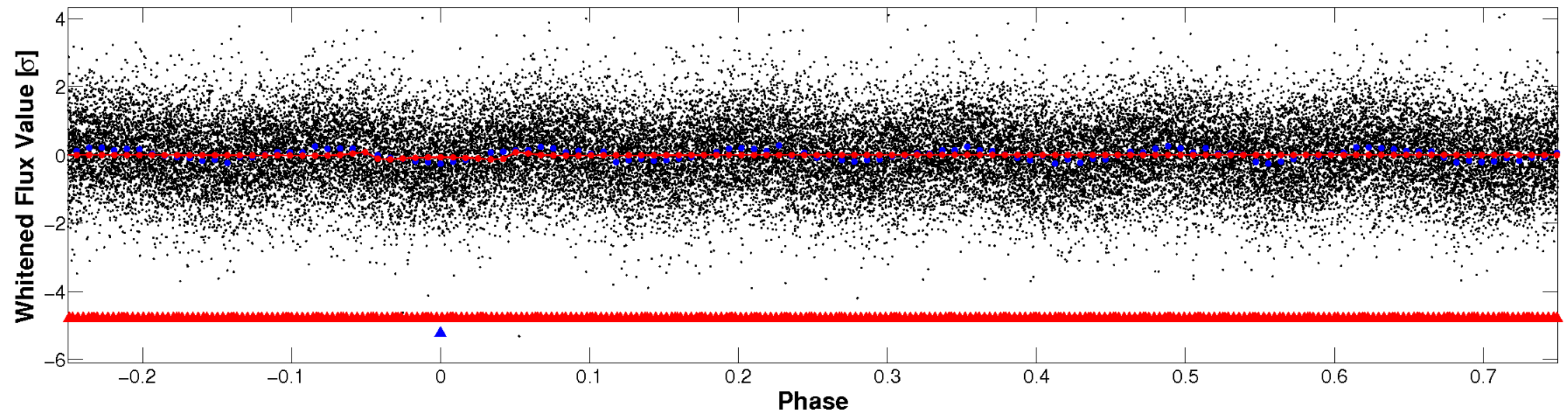


Non-Whitened Vs. Whitened Light Curve

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

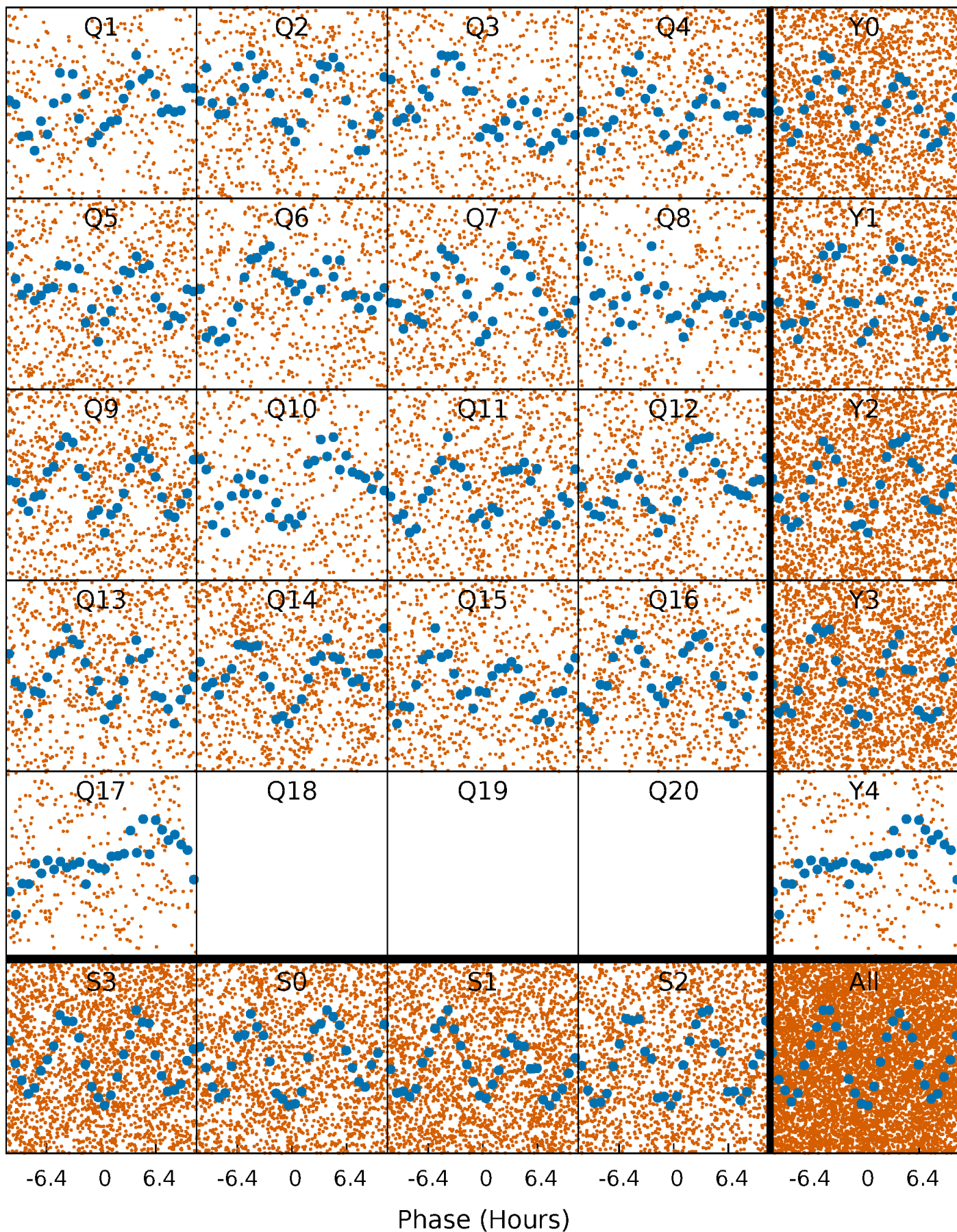


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



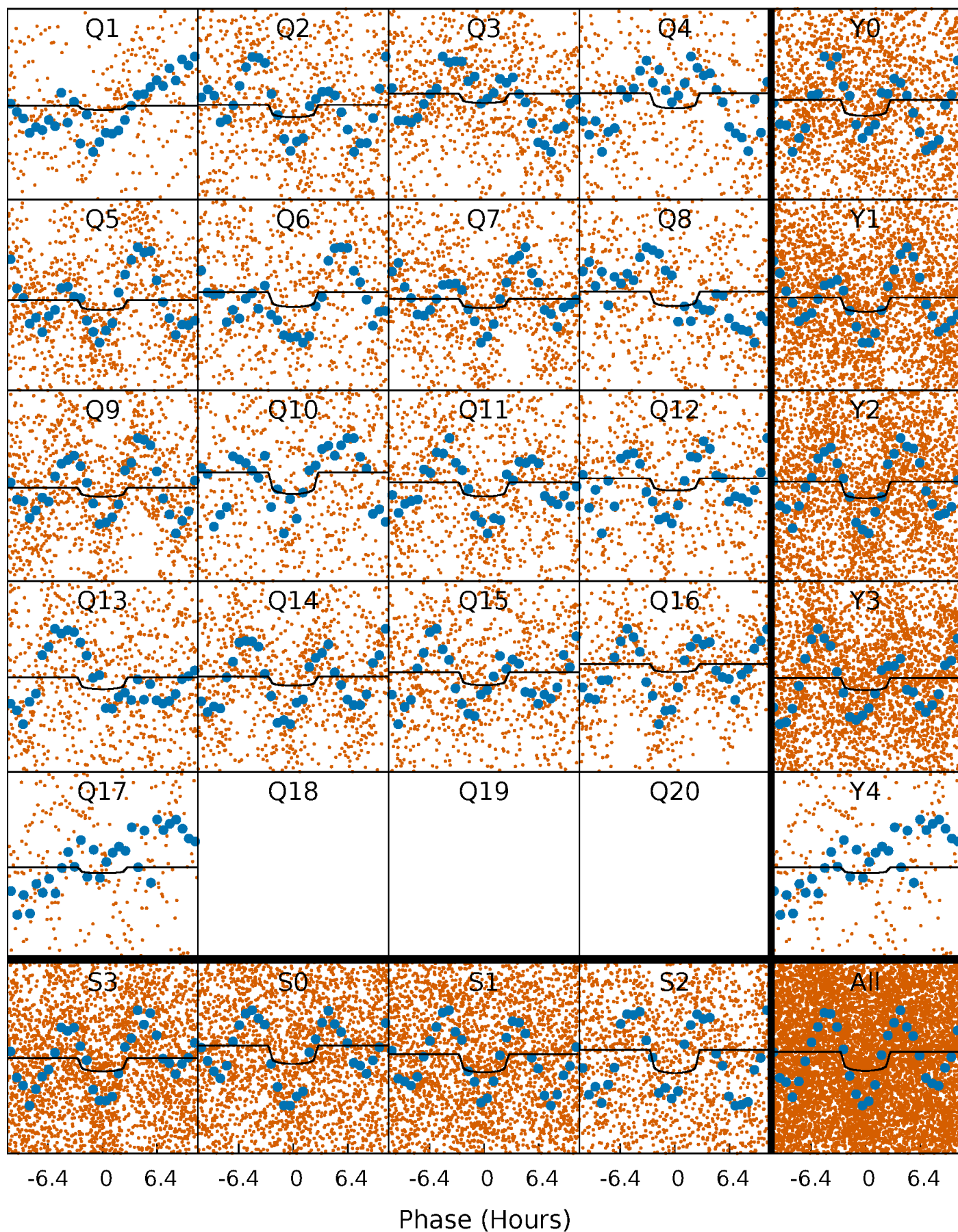
PDC Quarter-Phased Transit Curves

TCE 010405019-02 P= 2.426875 Days $T_0=132.720015$ (BKJD)



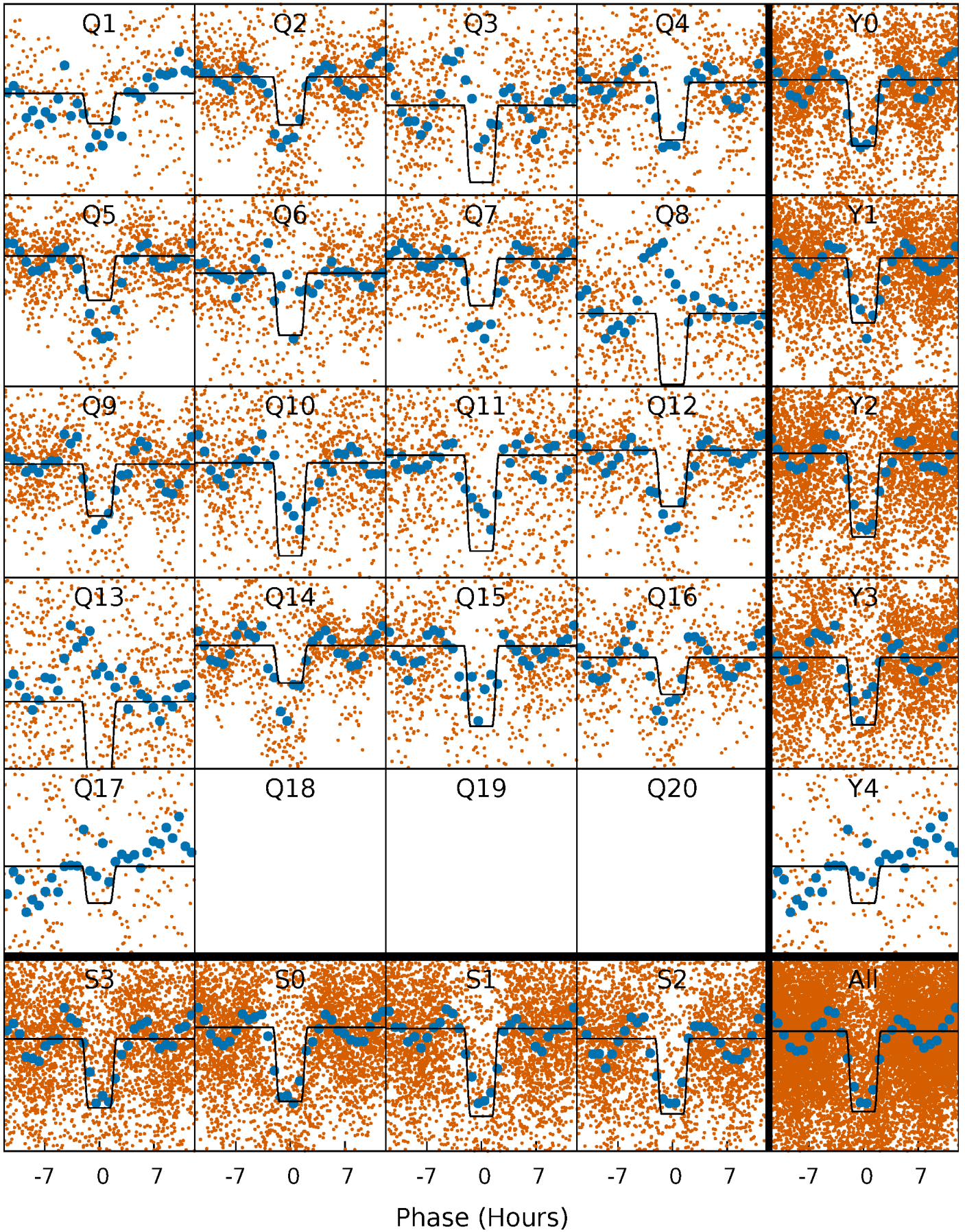
DV Quarter-Phased Transit Curves

TCE 010405019-02 P= 2.426875 Days $T_0=132.720015$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

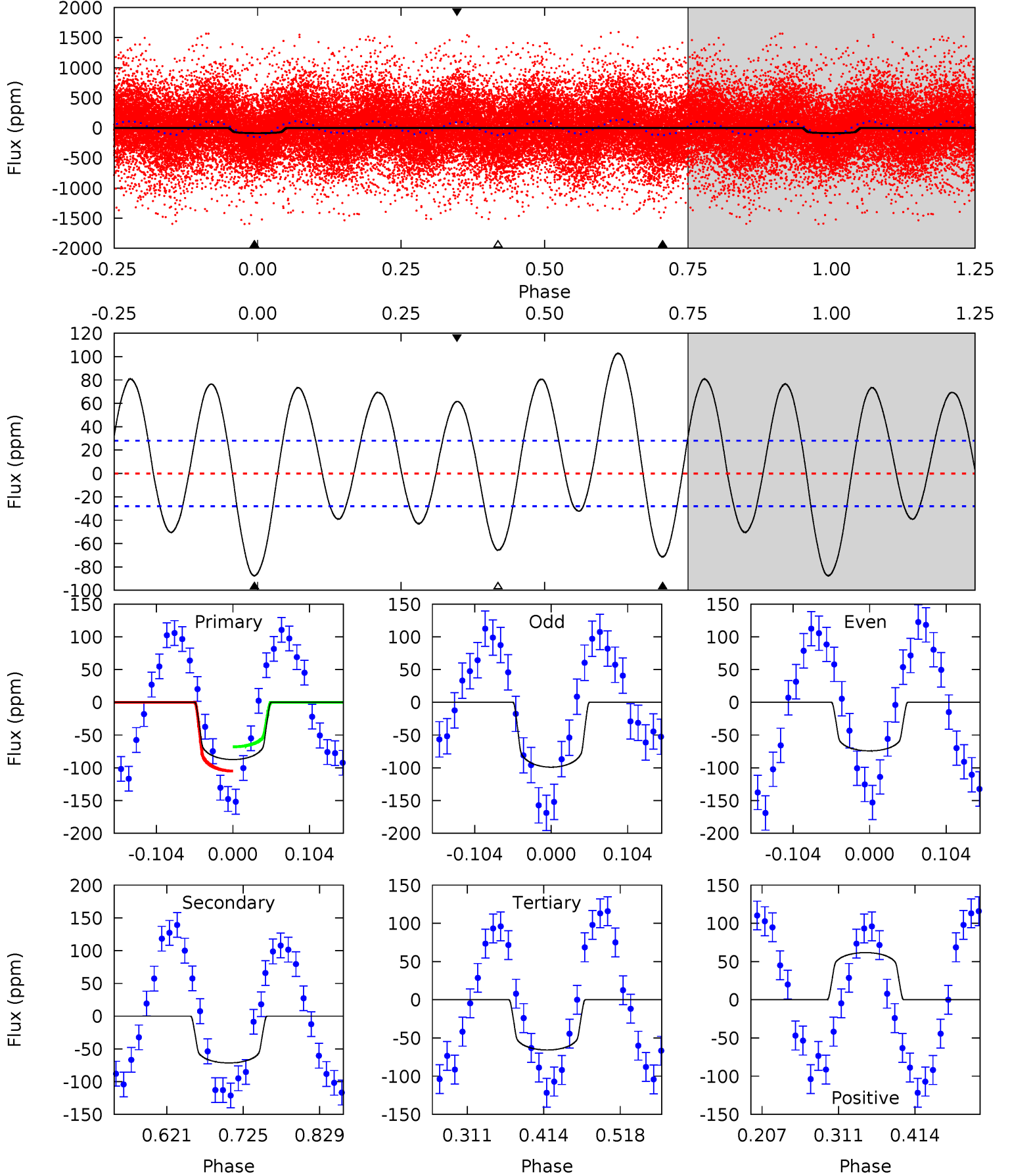
TCE 010405019-02 P= 2.426825 Days $T_0=132.723585$ (BKJD)



DV Model-Shift Uniqueness Test

010405019-02, P = 2.426875 Days, E = 130.293140 Days

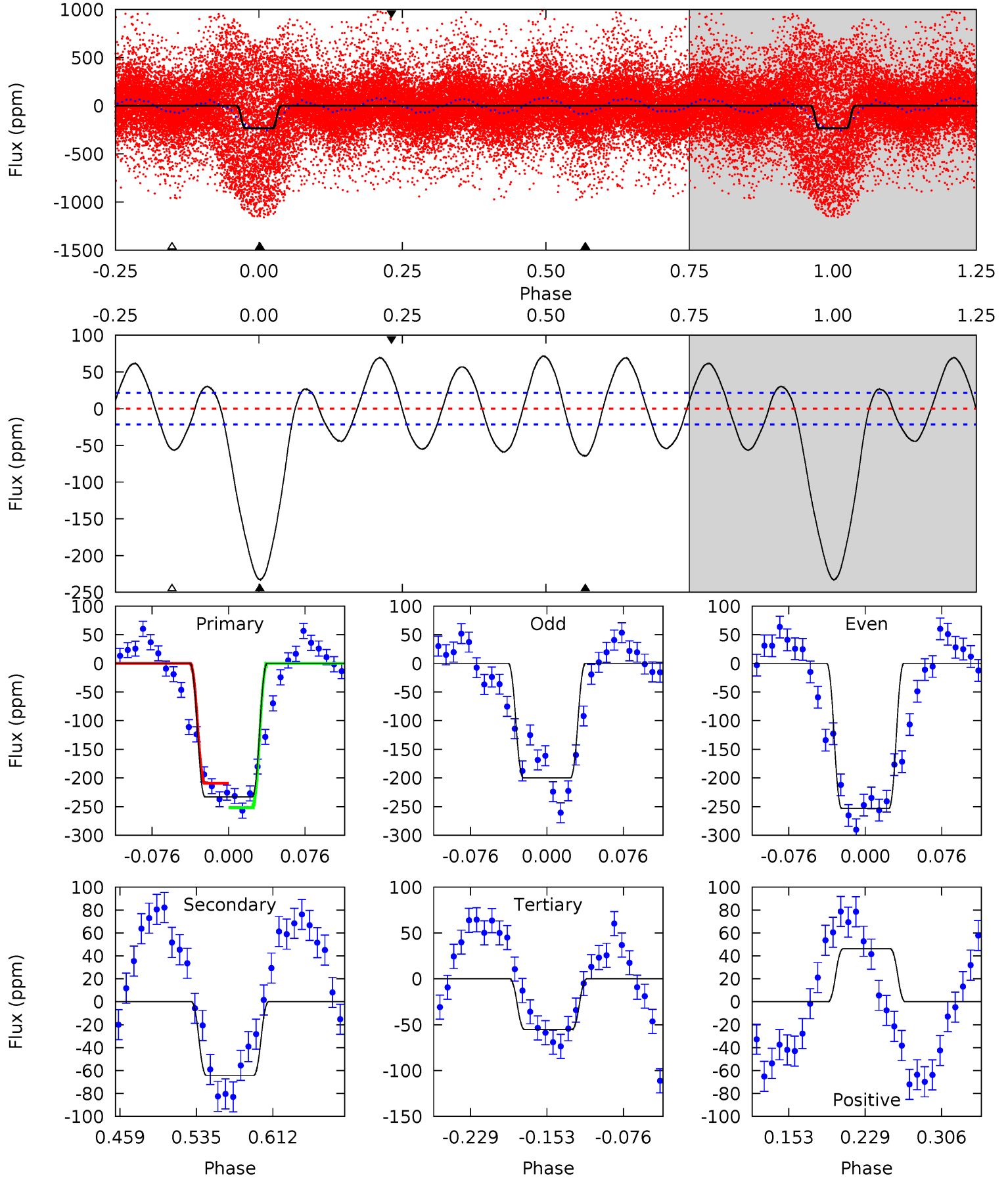
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	11.6	10.7	10.0	4.56	1.63	6.61	3.53	4.19	0.93	1.59	2.04	1.04	0.54	3.10



Alt Model-Shift Uniqueness Test

010405019-02, P = 2.426825 Days, E = 130.296760 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.3	13.9	12.0	9.97	4.62	1.77	8.57	38.3	40.3	1.92	3.92	5.74	0.99	0.24	4.54



Stellar Parameters For KIC 010405019

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7493^{+235}_{-313}	$3.587^{+0.493}_{-0.058}$	$-0.020^{+0.200}_{-0.300}$	$3.836^{+0.517}_{-2.068}$	$2.075^{+0.242}_{-0.524}$	$0.052^{+0.289}_{-0.015}$
	+3%/-4%	+14%/-2%	+1000%/-1500%	+13%/-54%	+12%/-25%	+558%/-29%
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 010405019-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-71 ± 6	$2.82^{+0.77}_{-0.83}$	4048^{+304}_{-526}	7847^{+1303}_{-848}	$9.978^{+8.775}_{-3.687}$
Alt.	-64 ± 5	$6.24^{+1.21}_{-1.73}$	4061^{+308}_{-519}	5027^{+276}_{-279}	$1.848^{+1.375}_{-0.483}$

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 $A_{obs} \gg 1.0$

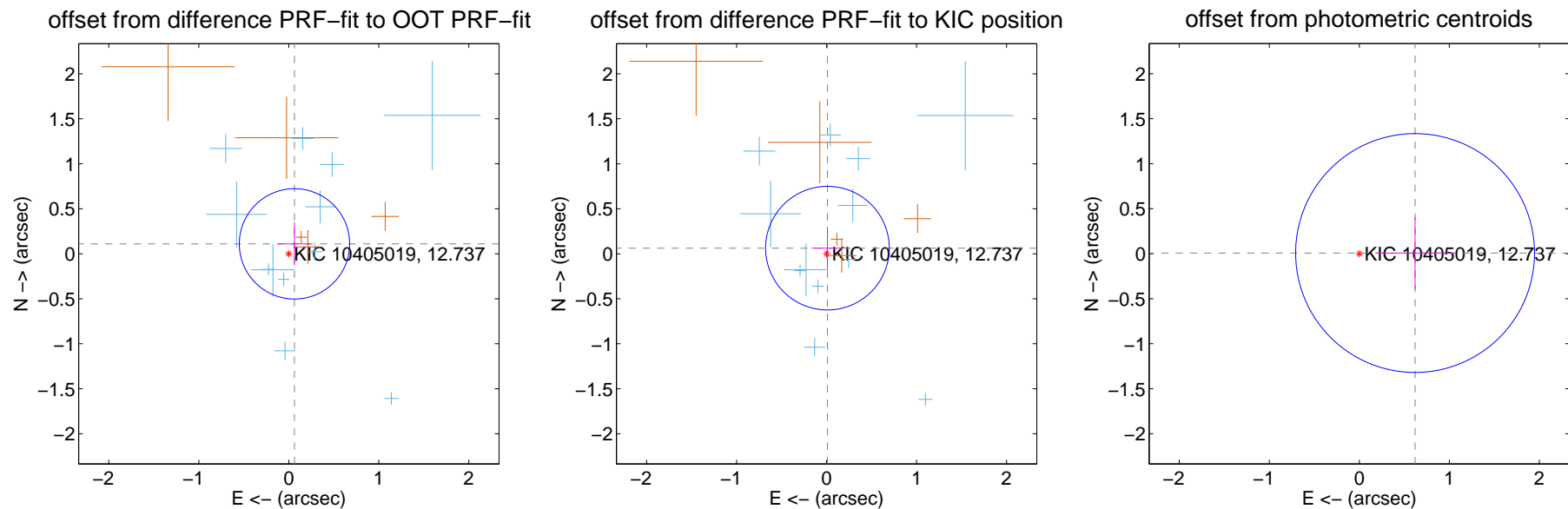
DV Centroid Data

Supplemental centroid analysis for 010405019-02. Kepler magnitude: 12.74. Transit SNR 6.40

There are 12 quarters with good PRF difference image offsets

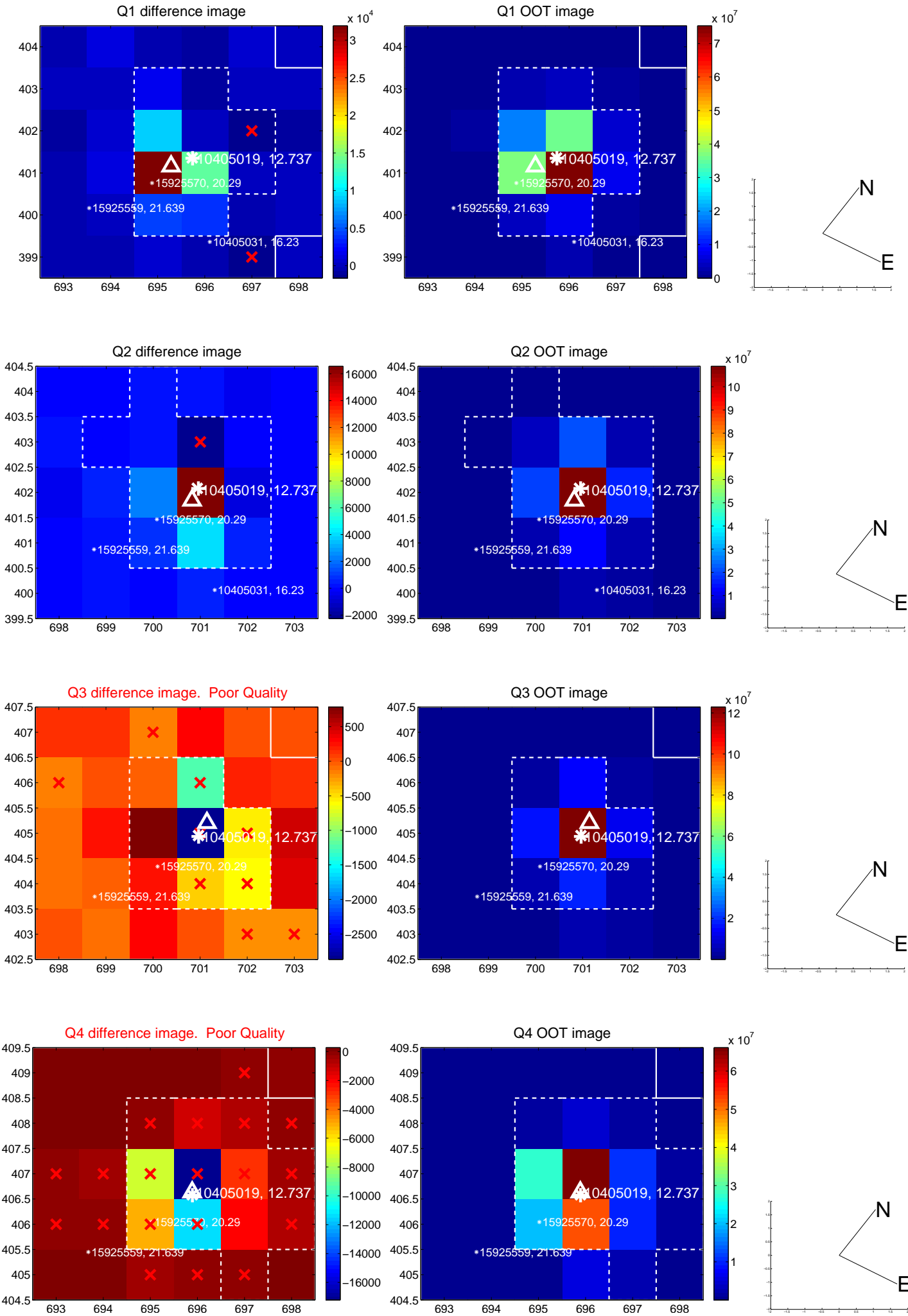
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.127 ± 0.204	0.62	-0.063 ± 0.183	0.110 ± 0.241
PRF-fit source offset from KIC position	0.063 ± 0.229	0.28	-0.010 ± 0.175	0.063 ± 0.237
photometric centroid source offset	0.62 ± 0.44	1.40	-0.62 ± 0.44	0.01 ± 0.40

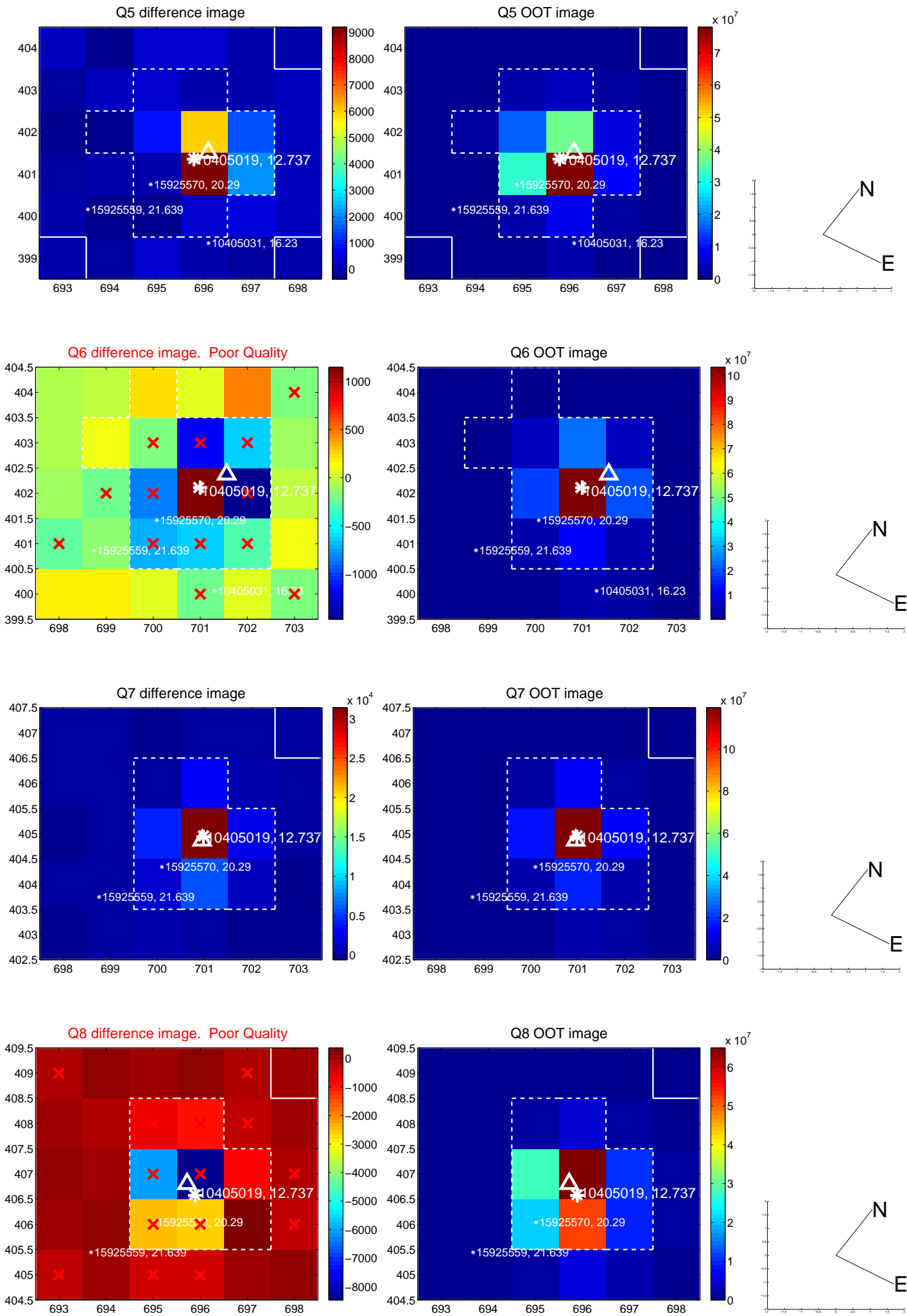


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

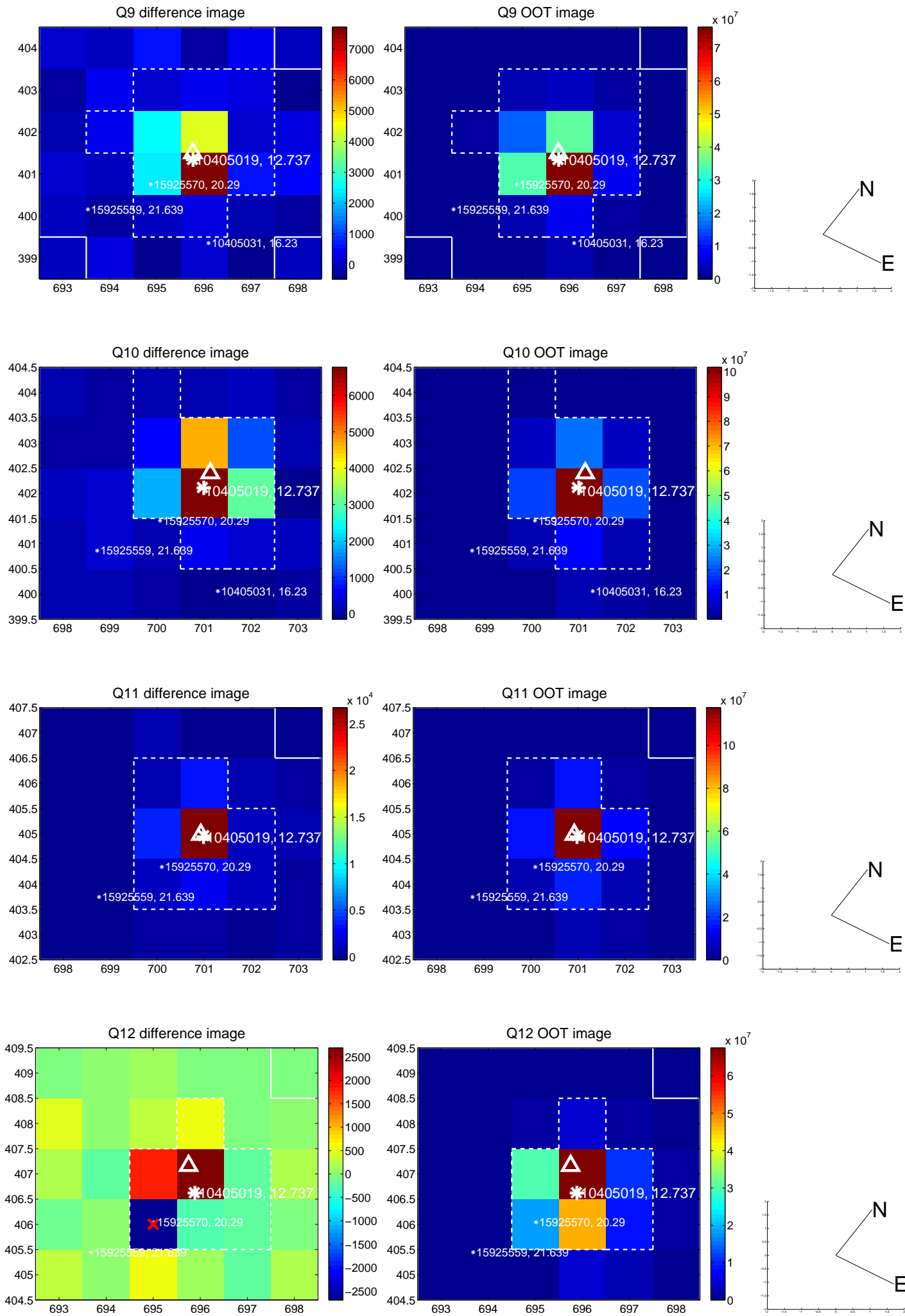
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



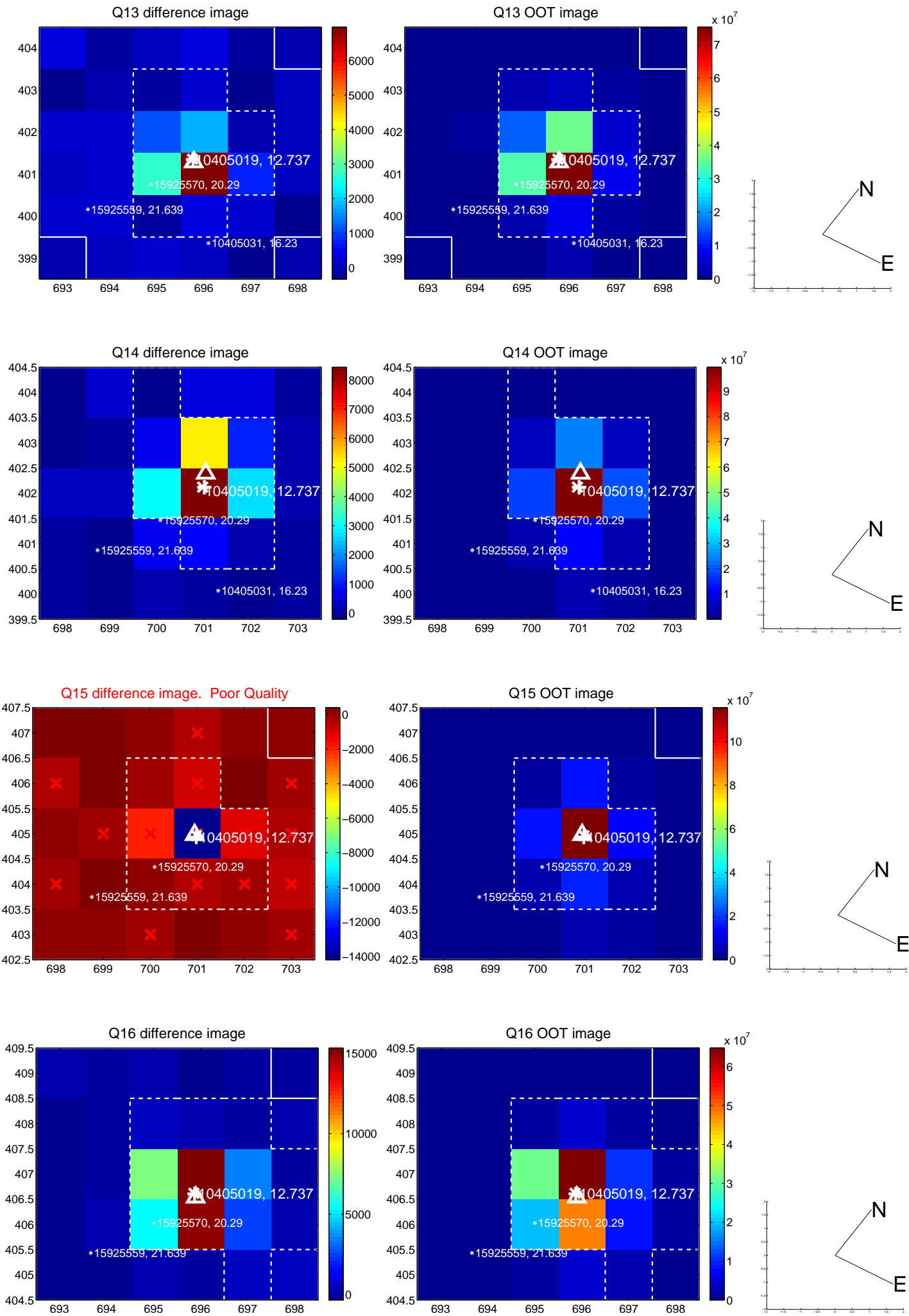
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



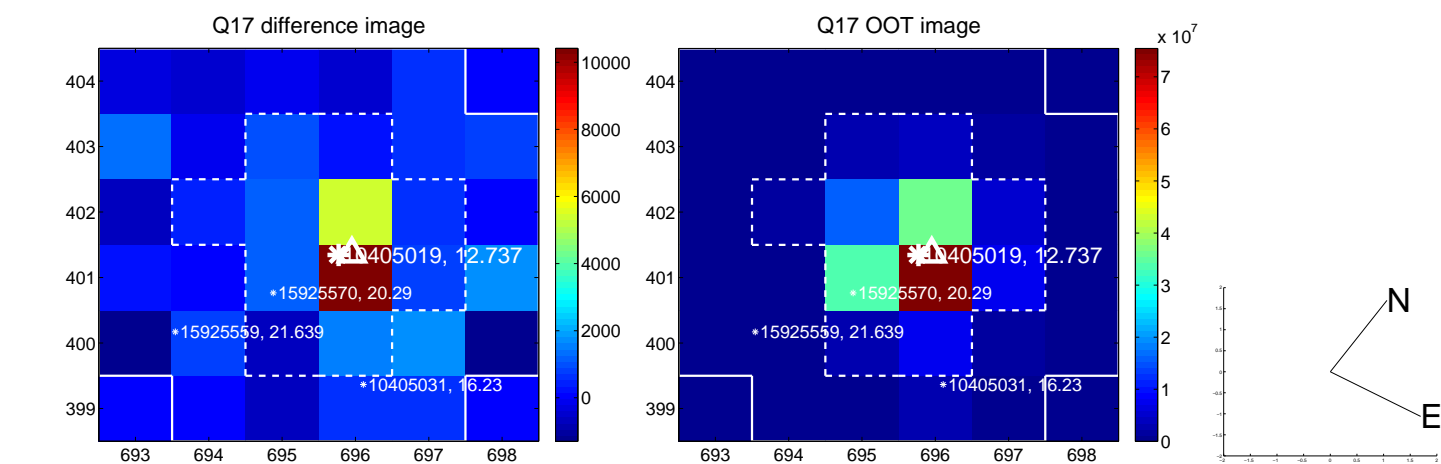
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



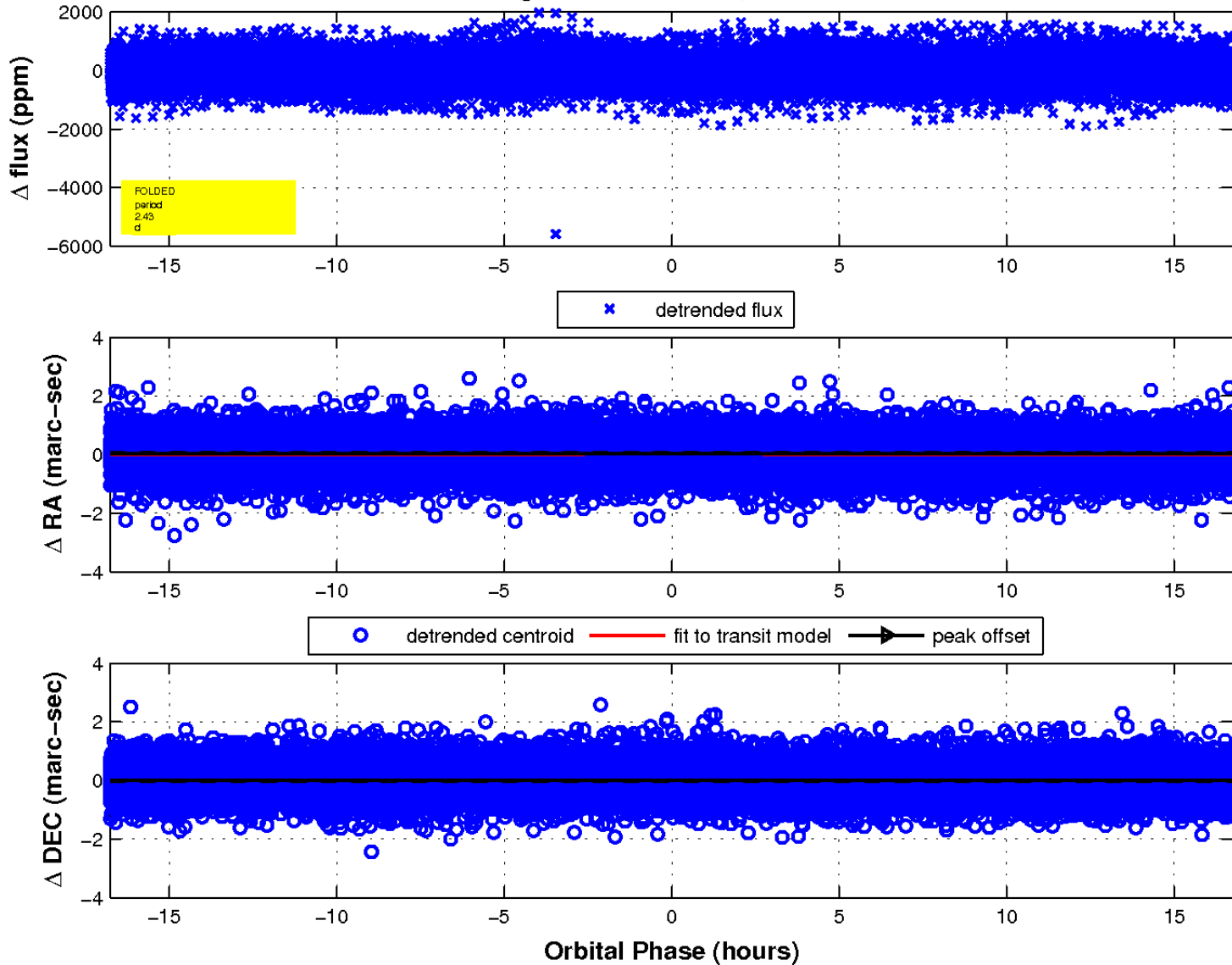
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

