

KIC 010419312

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})
010419312-01	OBS	2412.01	2.493242	132.637114	234.1	2.067	14.1	16.4	4.13	5002	7.70	5977.05
010419312-02	OBS	No	254.764975	331.420940	880.8	10.879	7.5	7.8	4.13	5002	13.26	12.51

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010419312-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET—HALO_GHOST
010419312-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—INCONSISTENT_TRANS

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

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

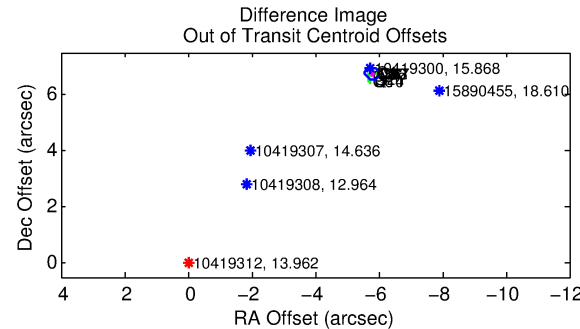
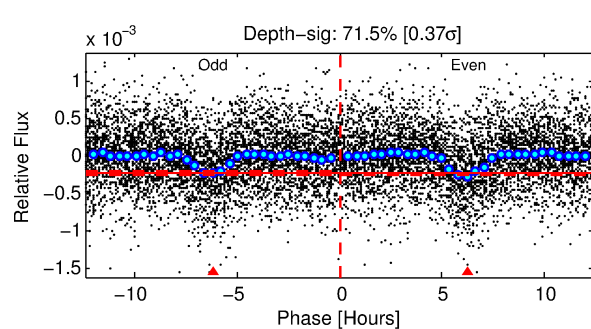
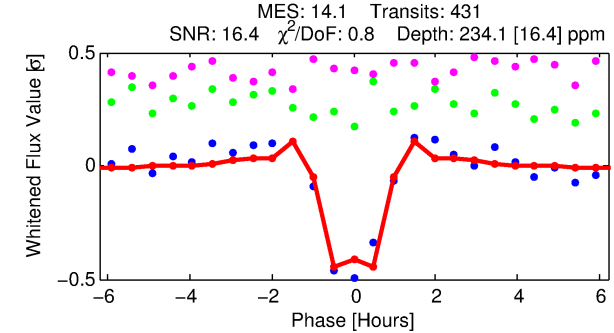
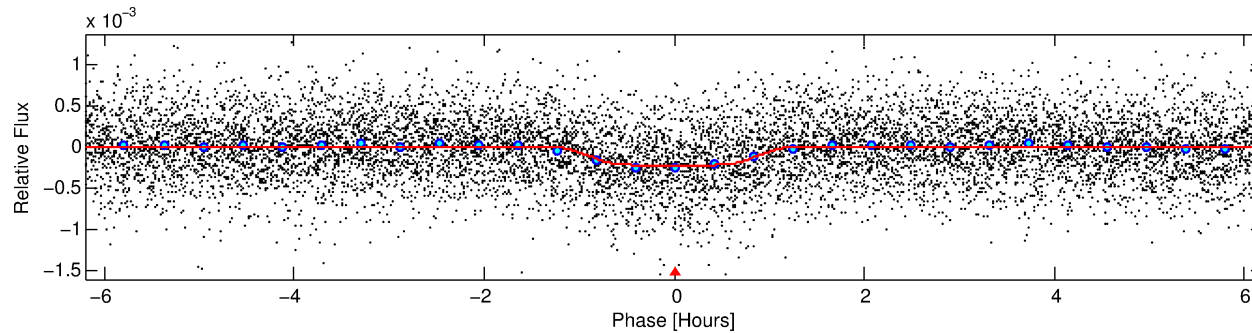
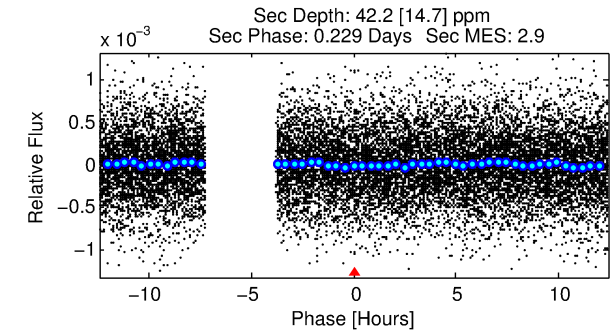
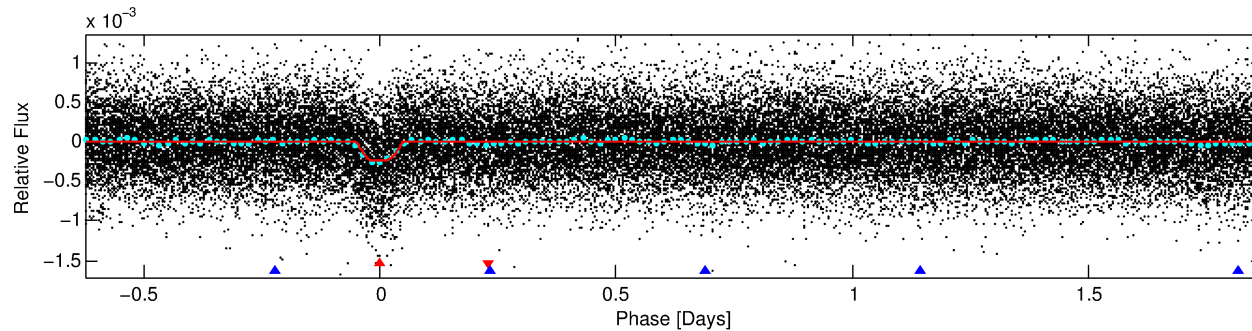
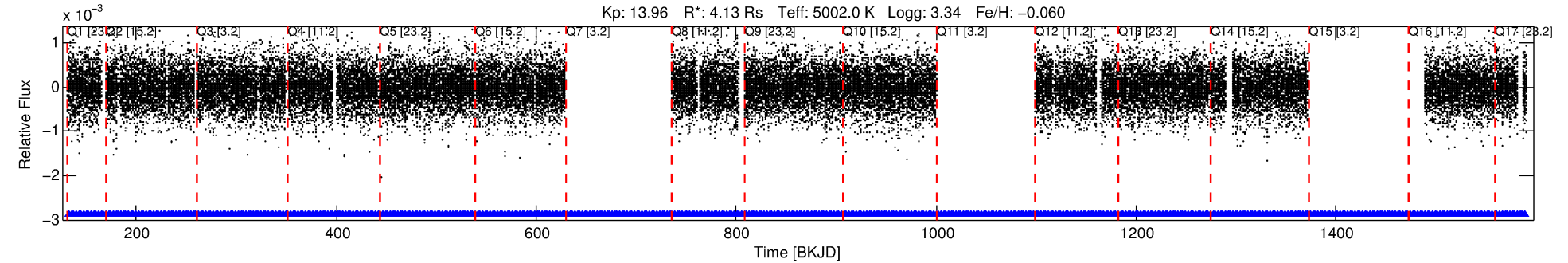
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010419312-01

No Significant Match Found

DV One-Page Summary

KIC: 10419312 Candidate: 1 of 2 Period: 2.493 d
KOI: K02412.01 Corr: 0.978



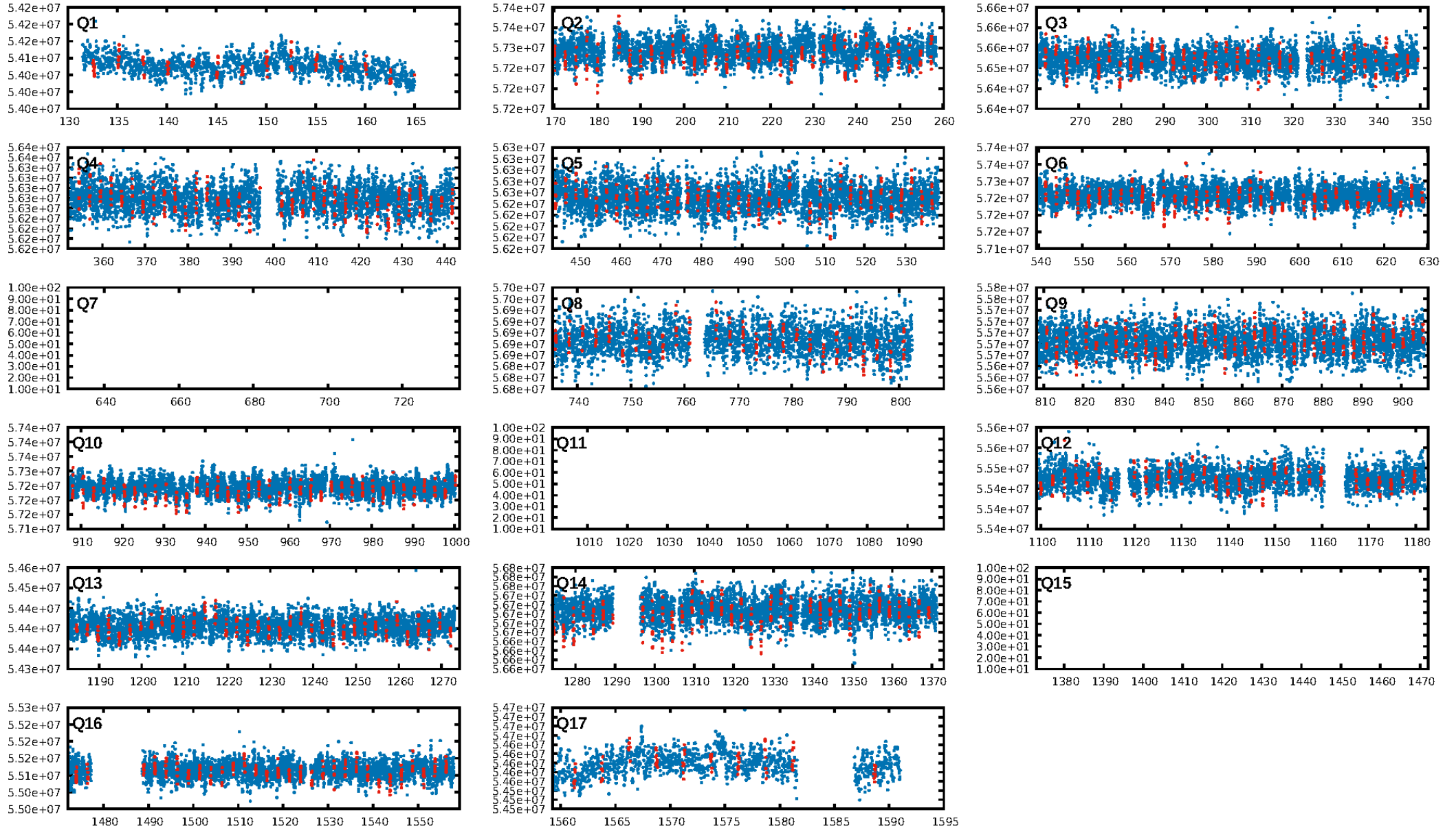
DV Fit Results:

Period = 2.49324 [0.00001] d
Epoch = 132.6371 [0.0012] BKJD
Rp/R* = 0.0171 [0.0046]
a/R* = 4.45 [4.49]
b = 0.90 [0.23]
Seff = 5977.05 [3552.70]
Teq = 2242 [333] K
Rp = 7.70 [3.78] Re
a = 0.0400 [0.0151] AU
Ag = 0.63 [0.54] [-0.69σ]
Teffp = 3083 [499] K [1.40σ]

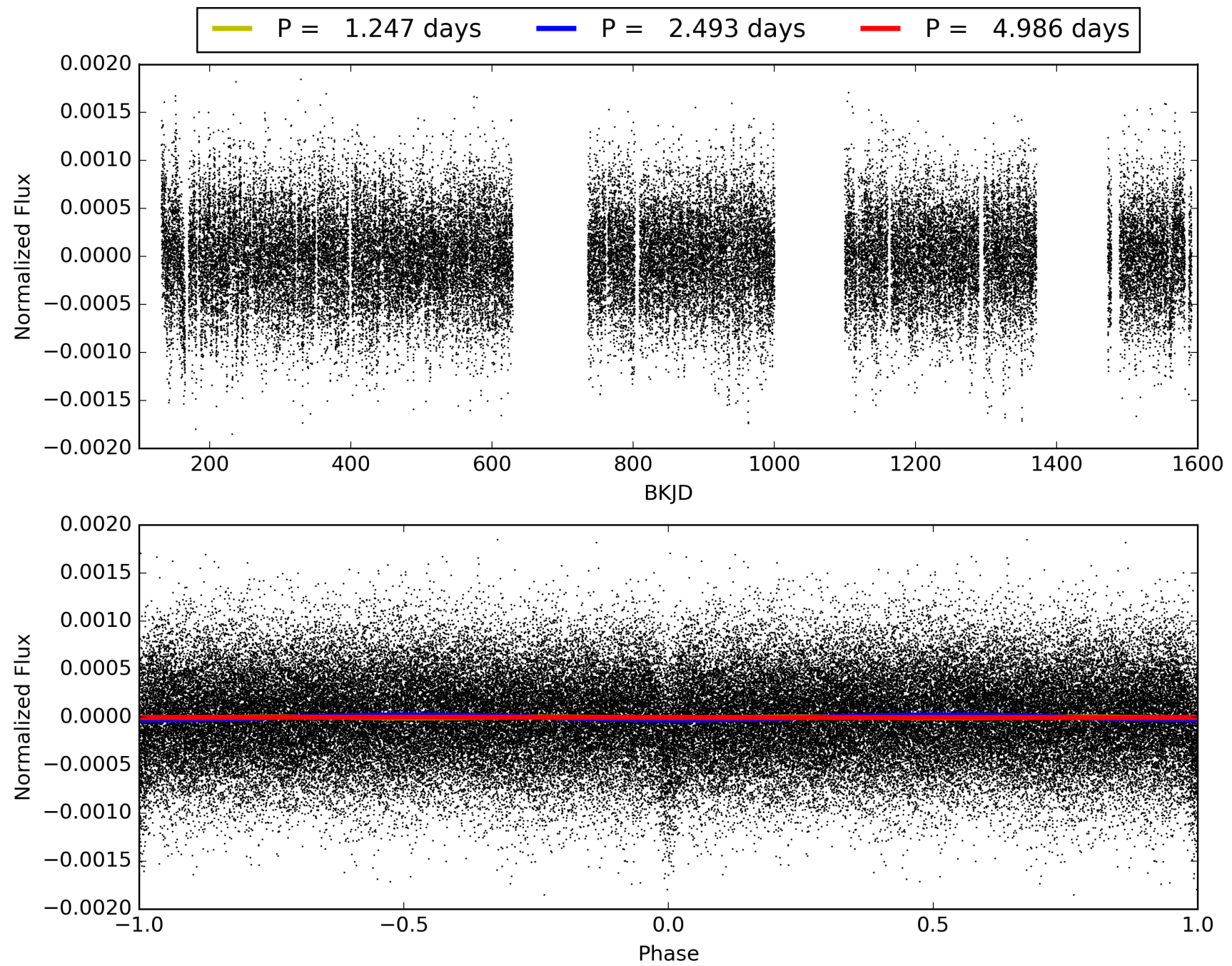
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [546.74σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.44e-39
RollingBand-fgt: 1.00 [408/408]
GhostDiagnostic-chr: -0.1964
Centroid-sig: N/A
Centroid-so: 45.716 arcsec [113.40σ]
OotOffset-rm: 8.883 arcsec [120.12σ]
KicOffset-rm: 8.986 arcsec [131.00σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010419312-01, PDC Light Curves

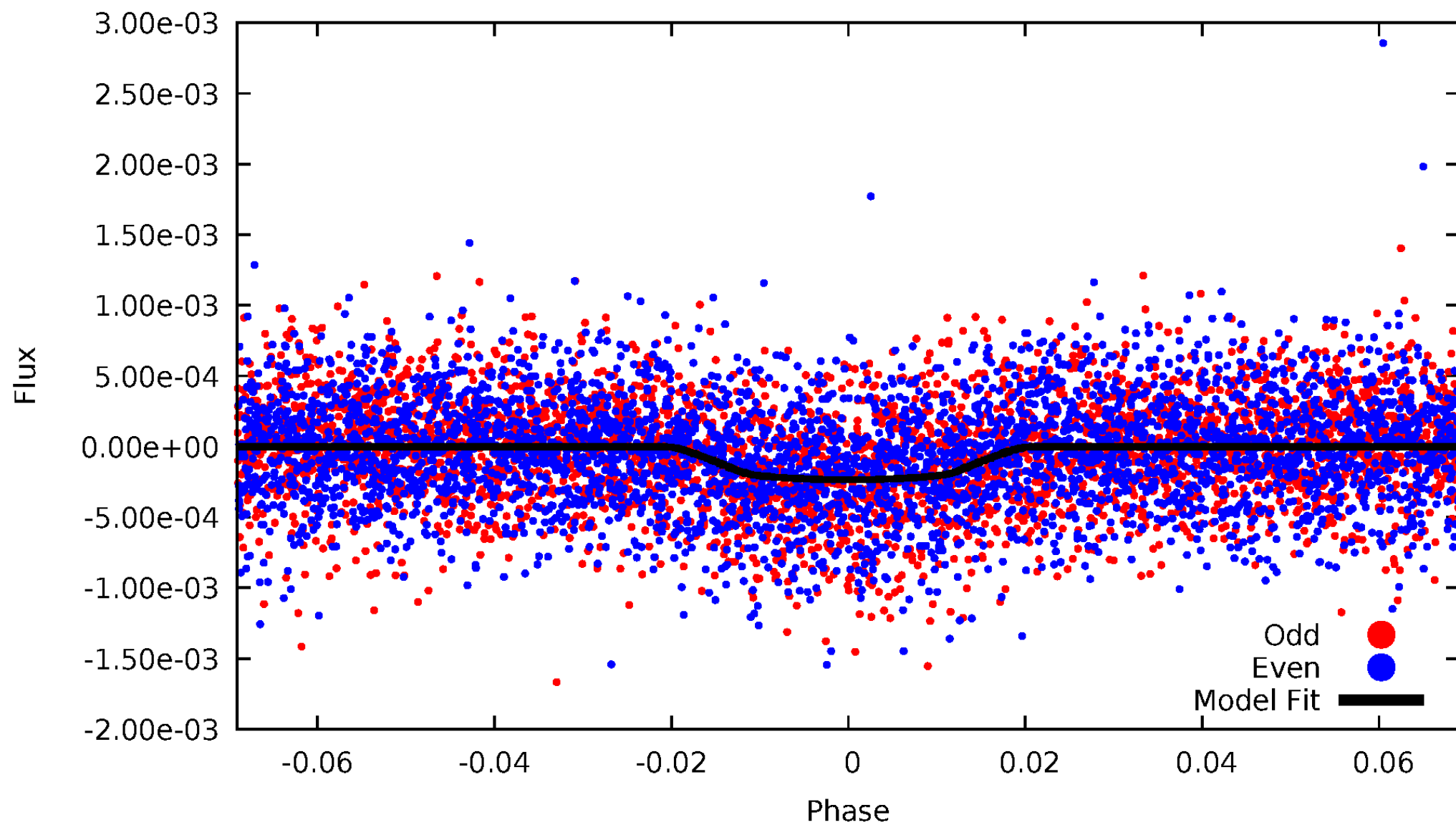


TCE 010419312-01



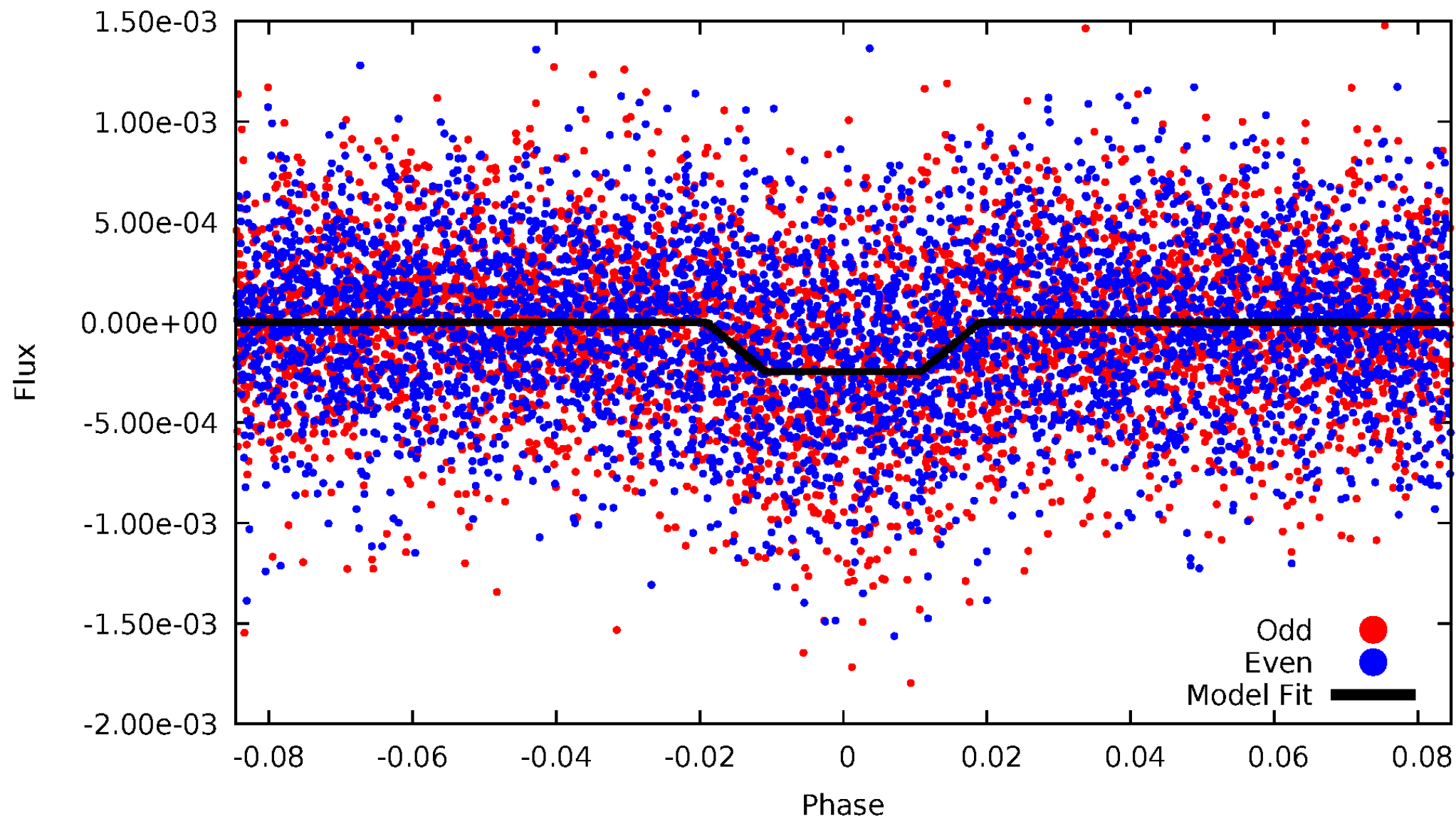
DV Odd/Even

TCE 010419312-01



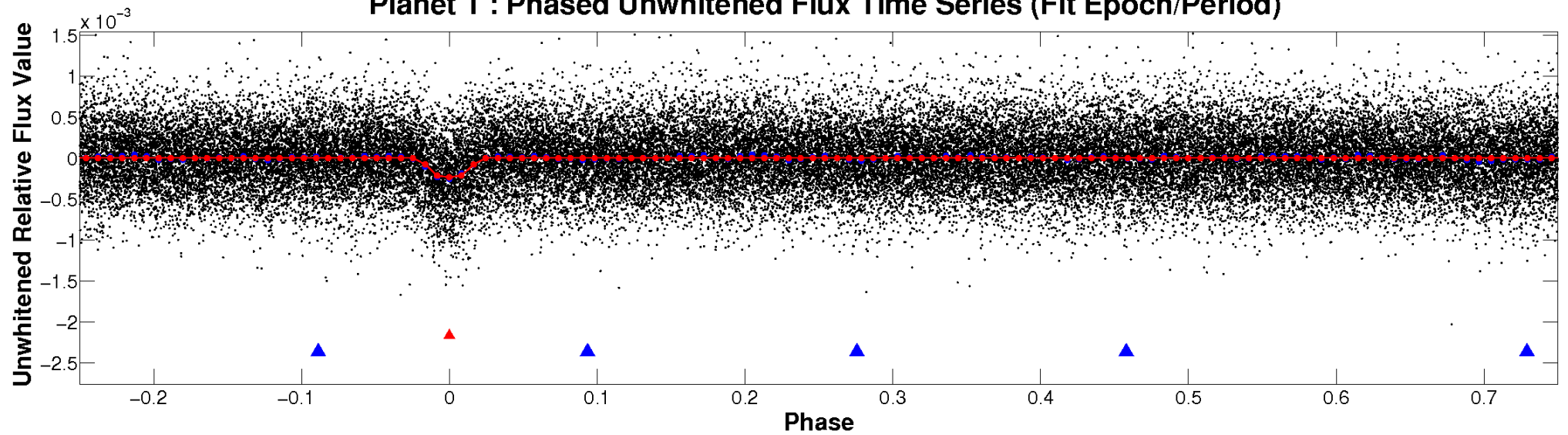
ALT Odd/Even

TCE 010419312-01

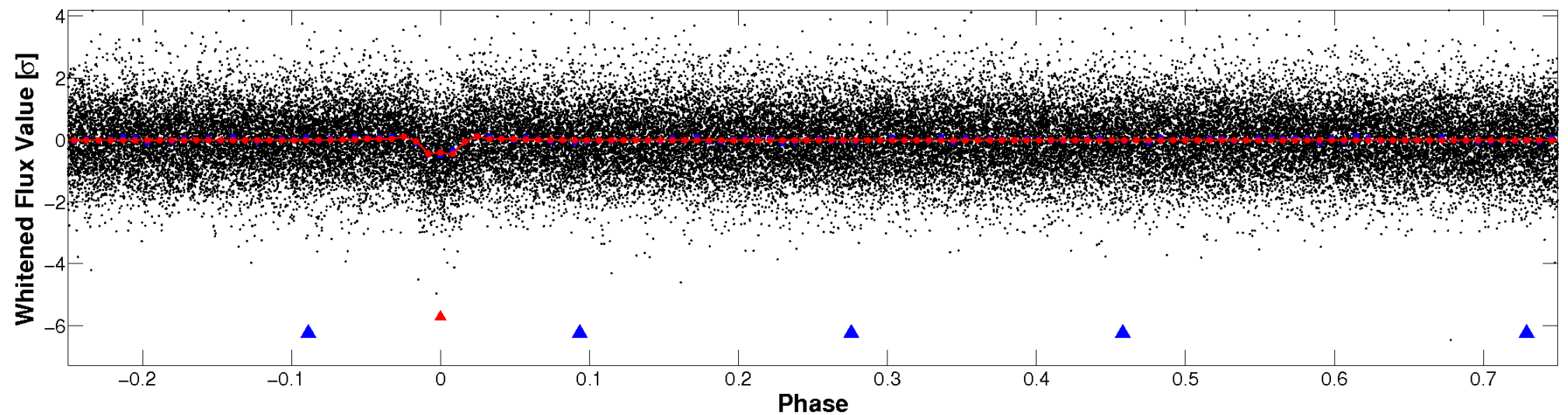


Non-Whitened Vs. Whitened Light Curve

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

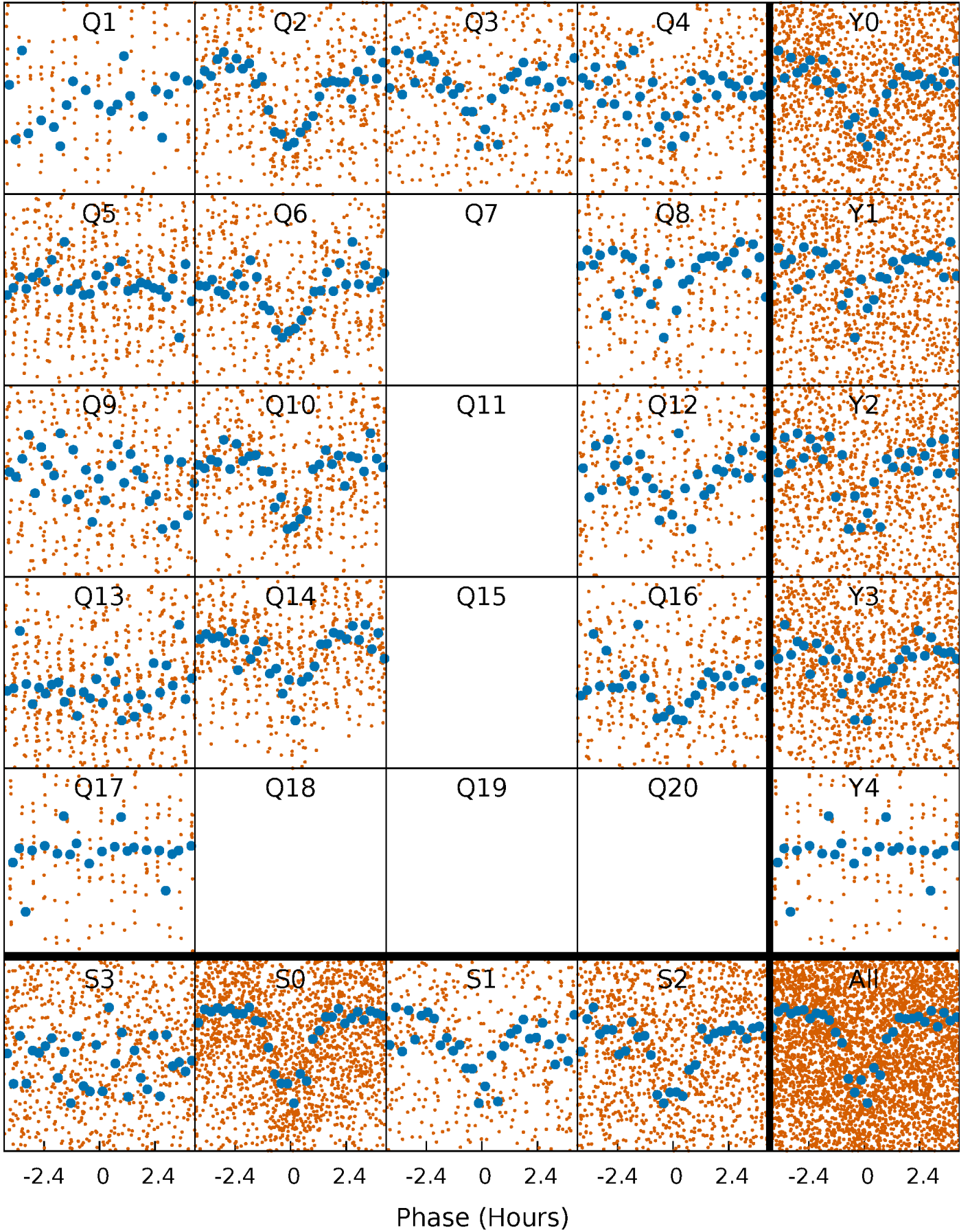


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



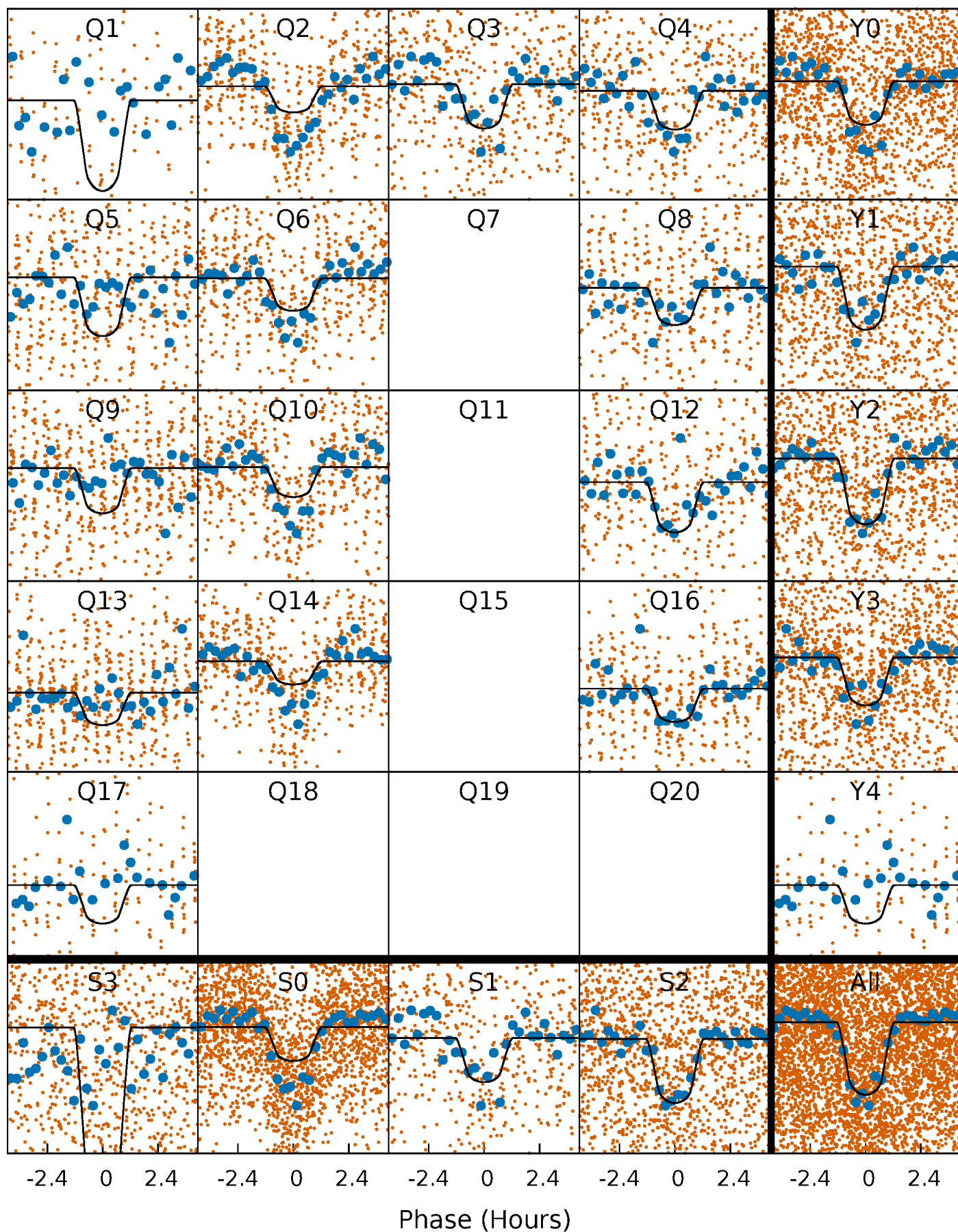
PDC Quarter-Phased Transit Curves

TCE 010419312-01 P= 2.493242 Days $T_0=132.637114$ (BKJD)



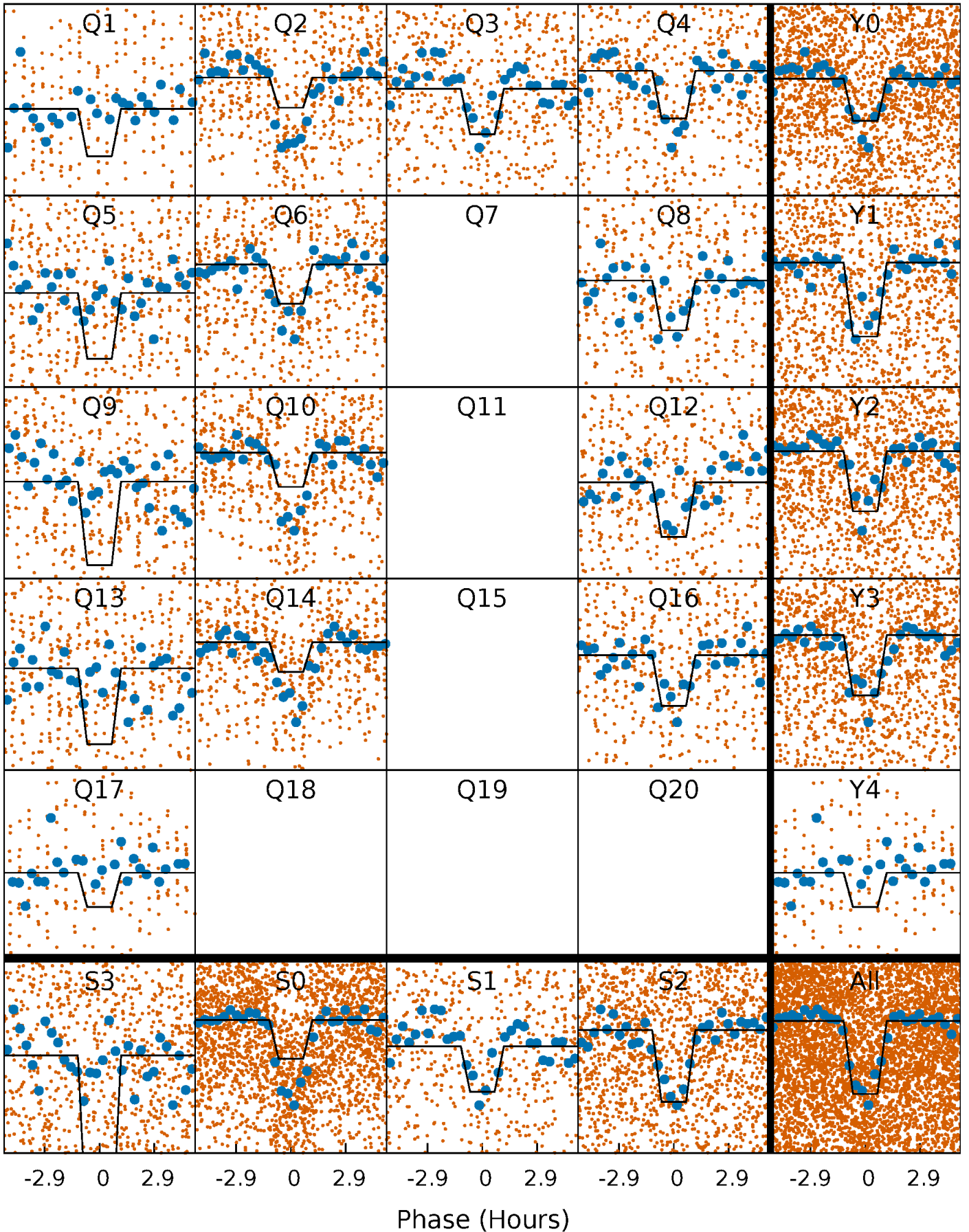
DV Quarter-Phased Transit Curves

TCE 010419312-01 P= 2.493242 Days $T_0=132.637114$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

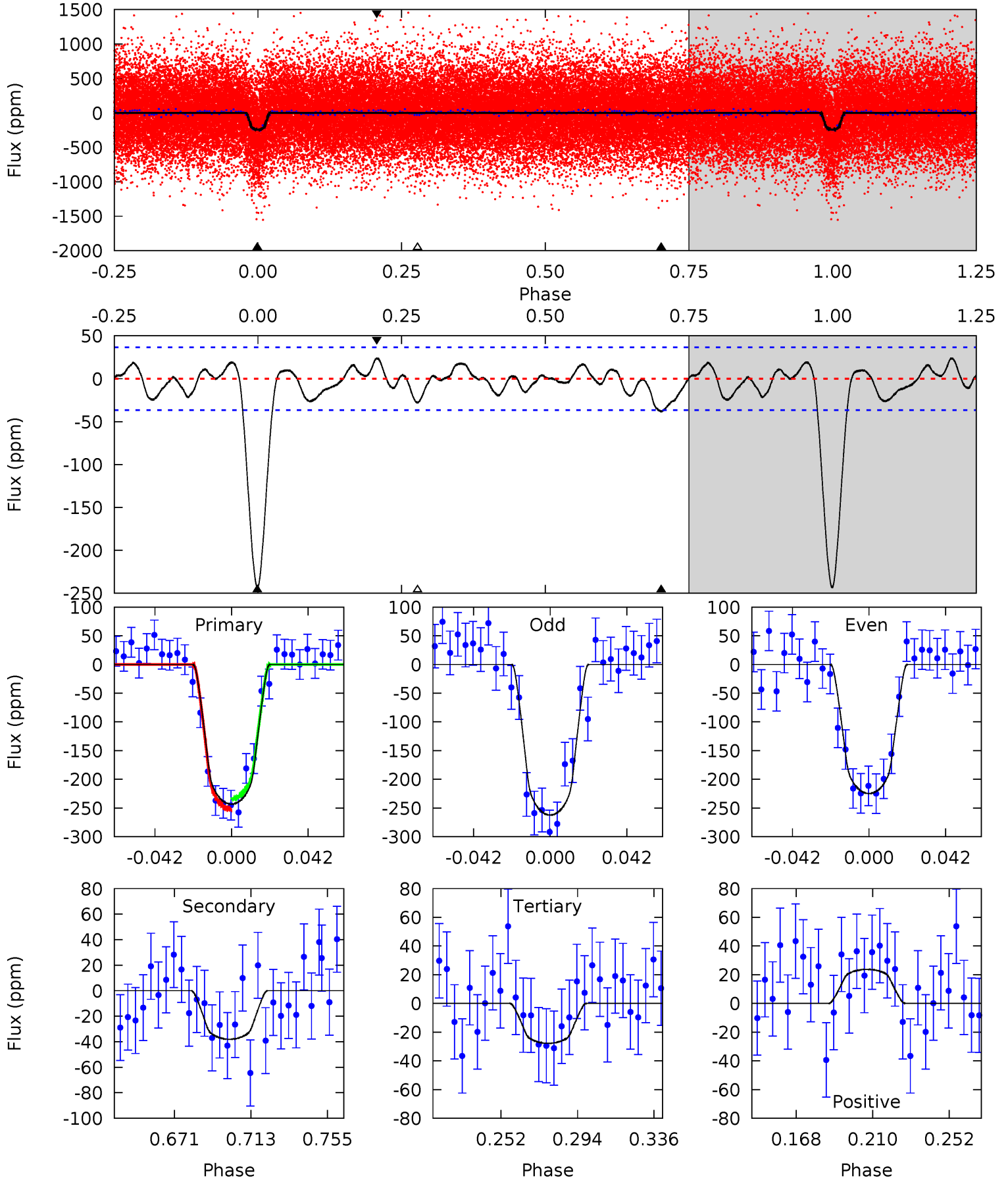
TCE 010419312-01 P= 2.493233 Days $T_0=132.637516$ (BKJD)



DV Model-Shift Uniqueness Test

010419312-01, P = 2.493242 Days, E = 130.143872 Days

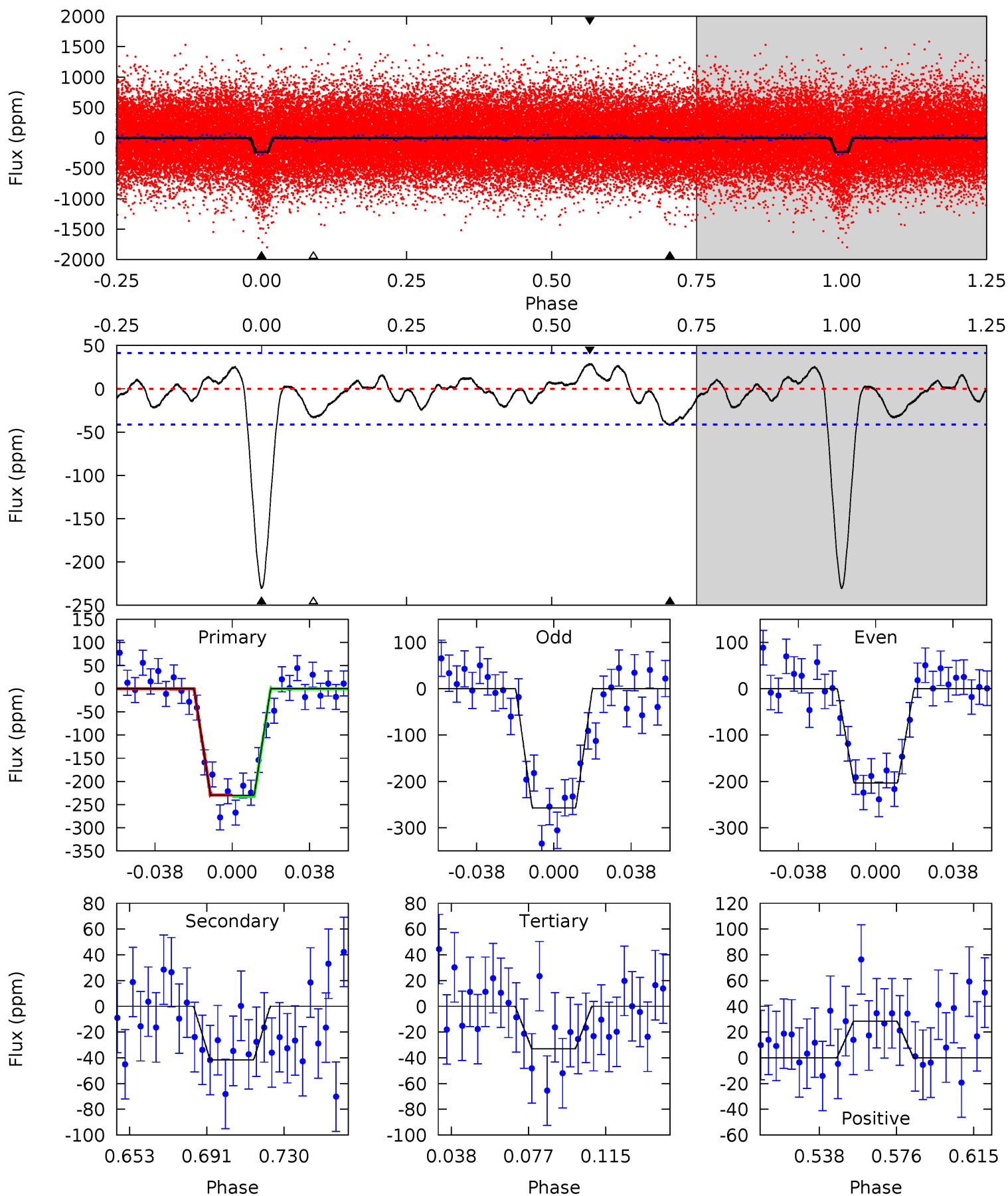
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.5	4.93	3.60	3.08	4.74	2.03	1.51	27.9	28.4	1.33	1.86	2.44	1.07	0.09	1.17



Alt Model-Shift Uniqueness Test

010419312-01, P = 2.493233 Days, E = 130.144283 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.6	4.80	3.82	3.29	4.76	2.07	1.51	22.7	23.3	0.99	1.51	3.09	1.09	0.11	0.19



Stellar Parameters For KIC 010419312

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5002^{+124}_{-136}	$3.344^{+0.336}_{-0.275}$	$-0.060^{+0.250}_{-0.250}$	$4.131^{+1.547}_{-1.702}$	$1.375^{+0.210}_{-0.390}$	$0.027^{+0.066}_{-0.016}$
	+2%/-3%	+10%/-8%	+417%/-417%	+37%/-41%	+15%/-28%	+240%/-60%
Source	PHO1	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 010419312-01 / KOI 2412.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-38 ± 8	$7.54^{+2.93}_{-2.47}$	3141^{+347}_{-319}	3062^{+583}_{-5070}	$0.576^{+0.650}_{-0.282}$
Alt.	-42 ± 9	$6.84^{+2.77}_{-2.47}$	3134^{+335}_{-353}	3273^{+673}_{-659}	$0.750^{+1.037}_{-0.385}$

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 $A_{obs} \gg 1.0$

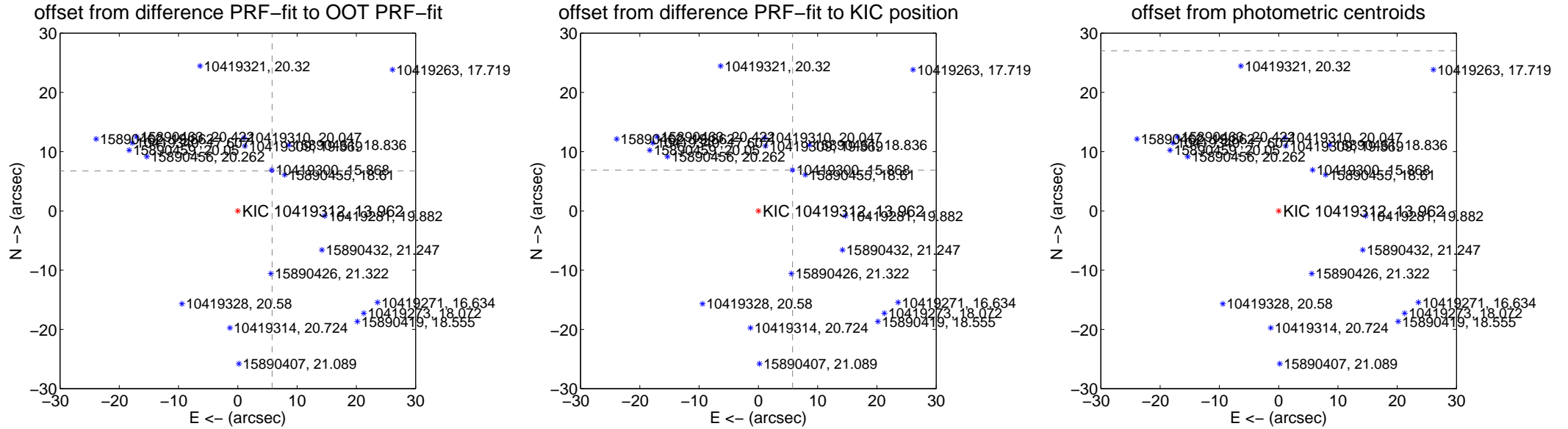
DV Centroid Data

Supplemental centroid analysis for 010419312-01. Kepler magnitude: 13.96. Transit SNR 16.43

There are 14 quarters with good PRF difference image offsets

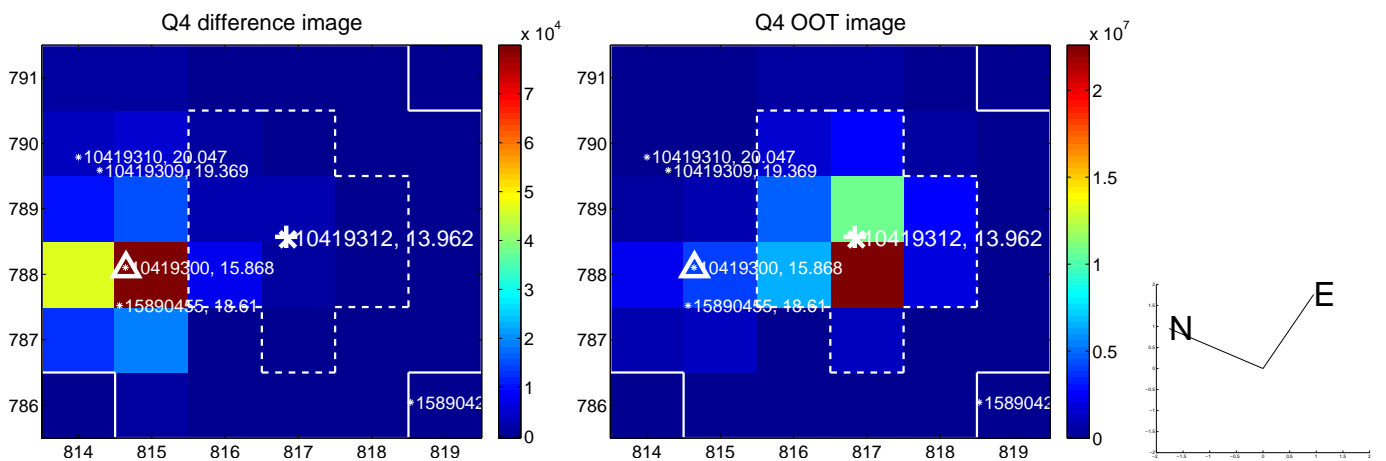
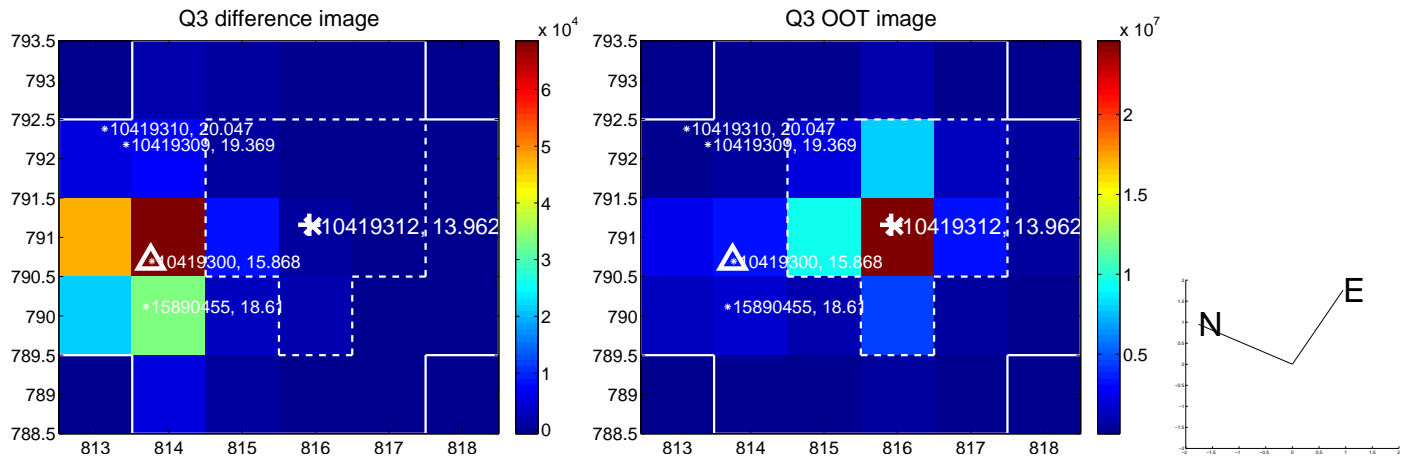
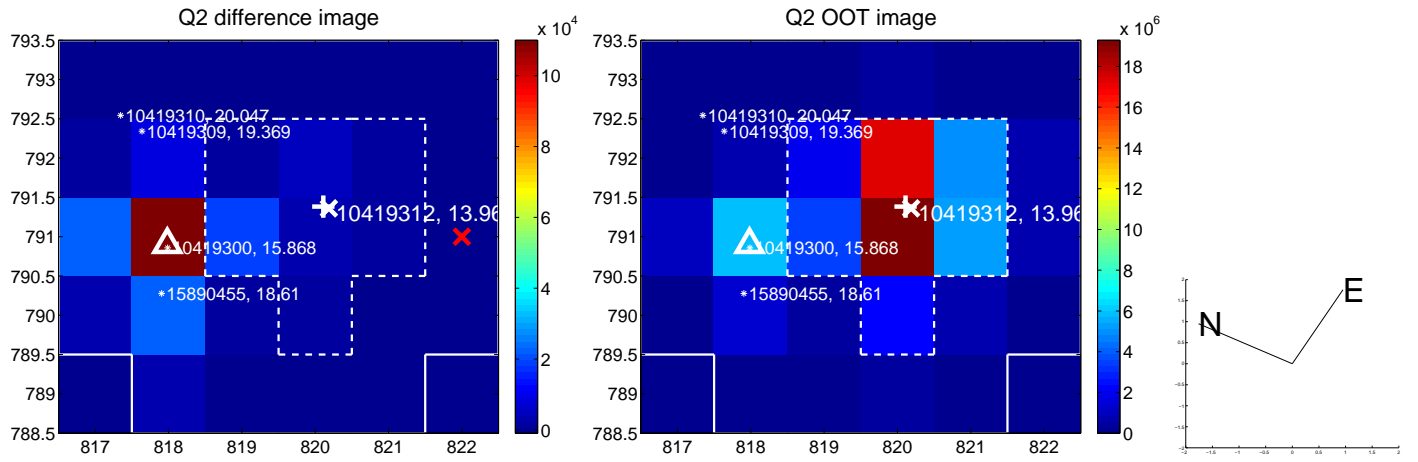
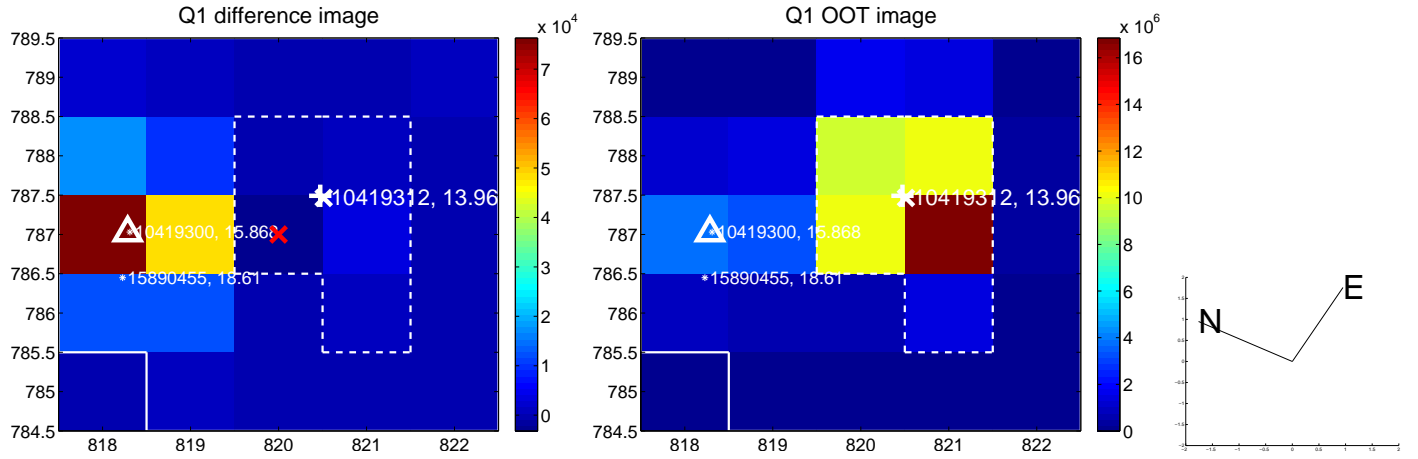
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.883 \pm 0.074	120.12	-5.786 \pm 0.069	6.740 \pm 0.073
PRF-fit source offset from KIC position	8.986 \pm 0.069	131.00	-5.773 \pm 0.067	6.886 \pm 0.069
photometric centroid source offset	45.71 \pm 0.40	113.40	-36.87 \pm 0.38	27.03 \pm 0.44

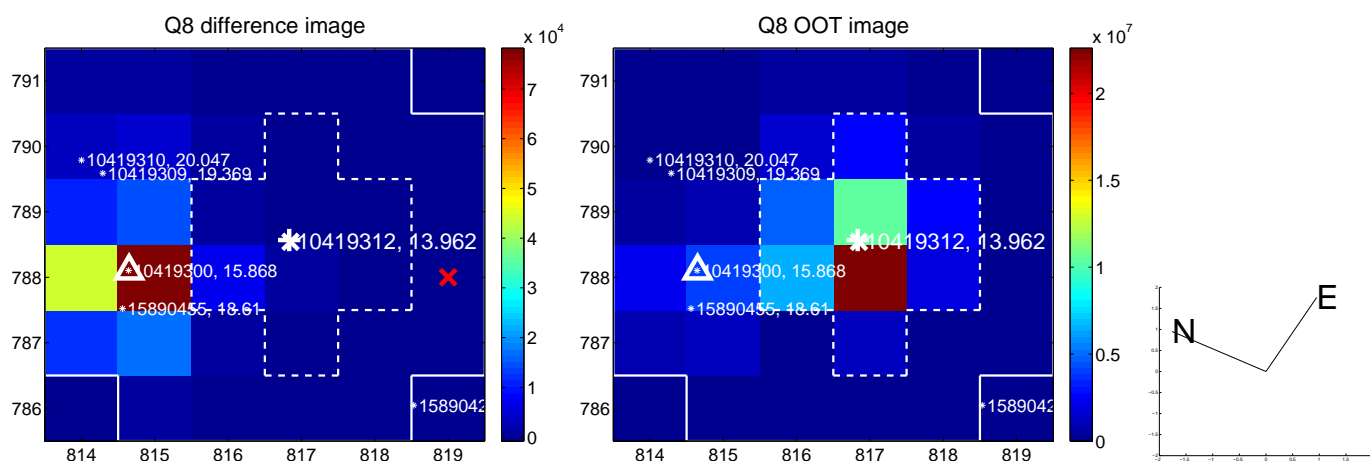
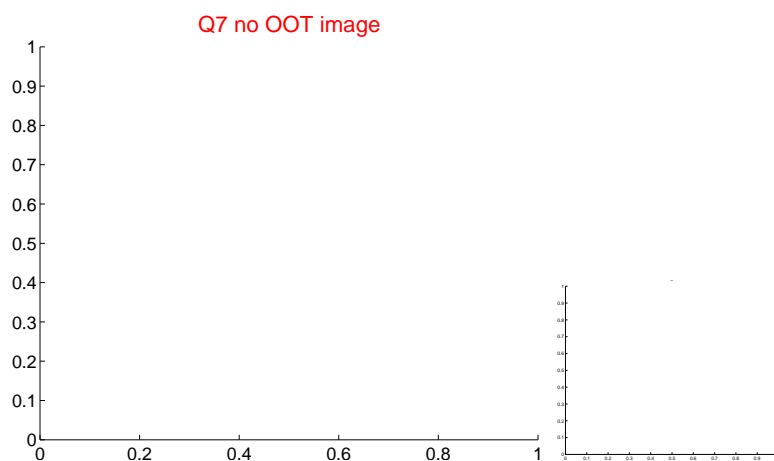
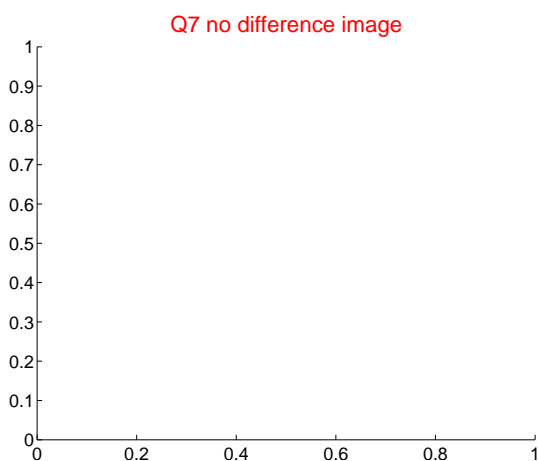
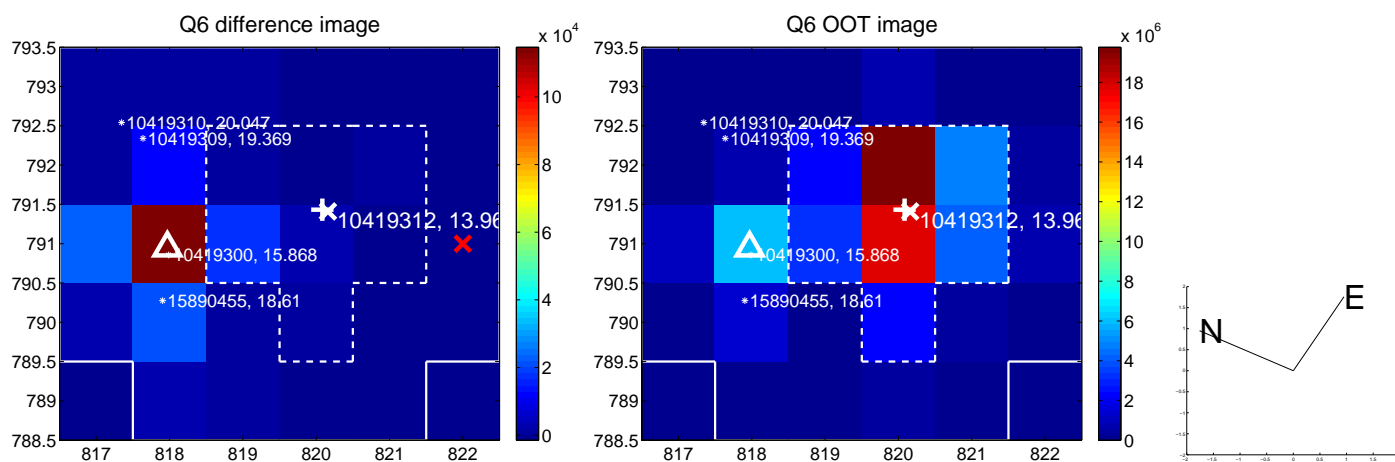
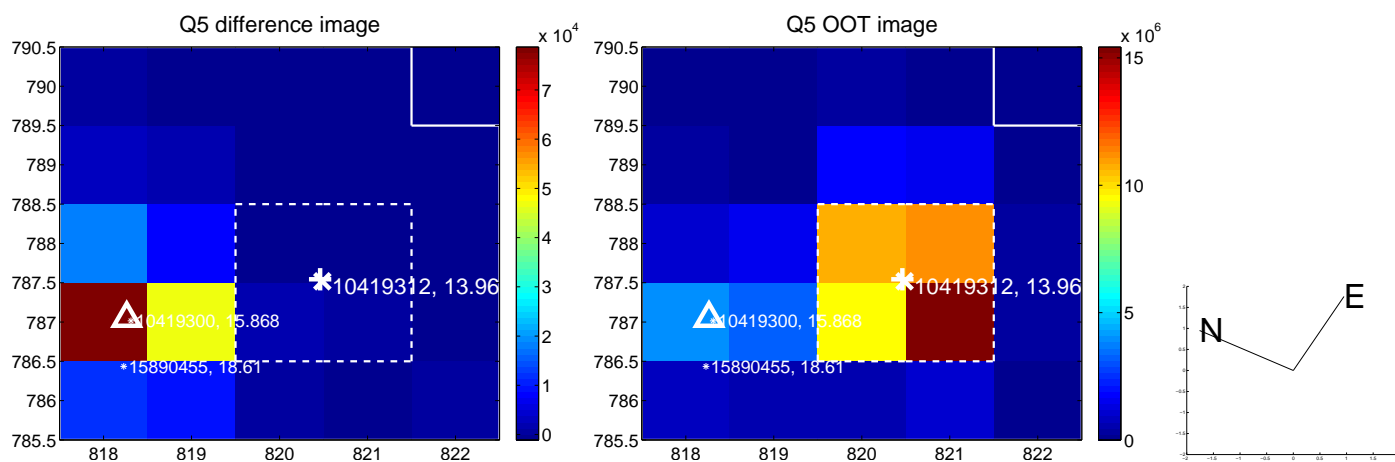


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

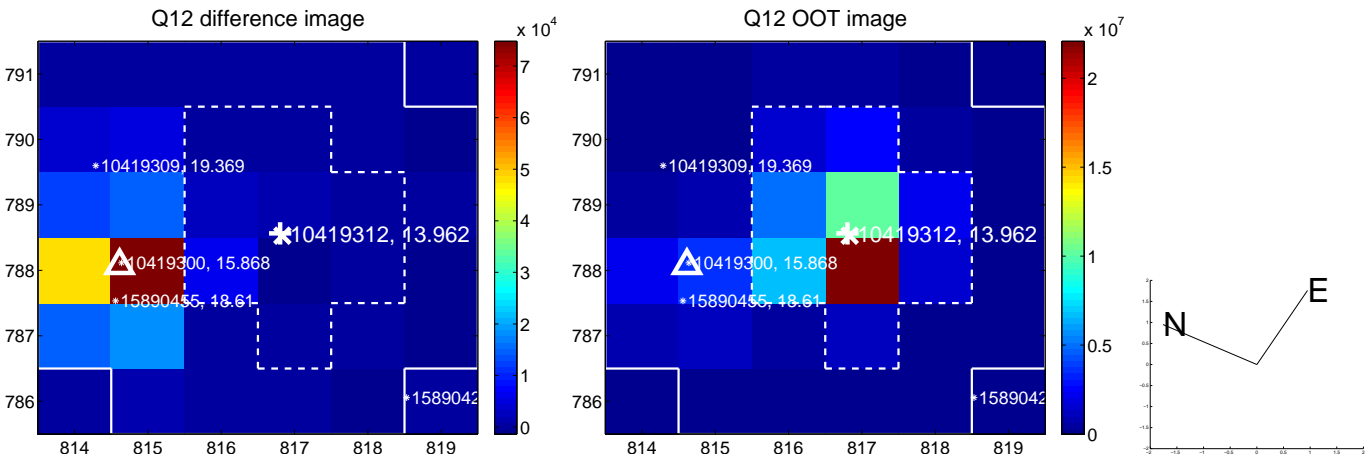
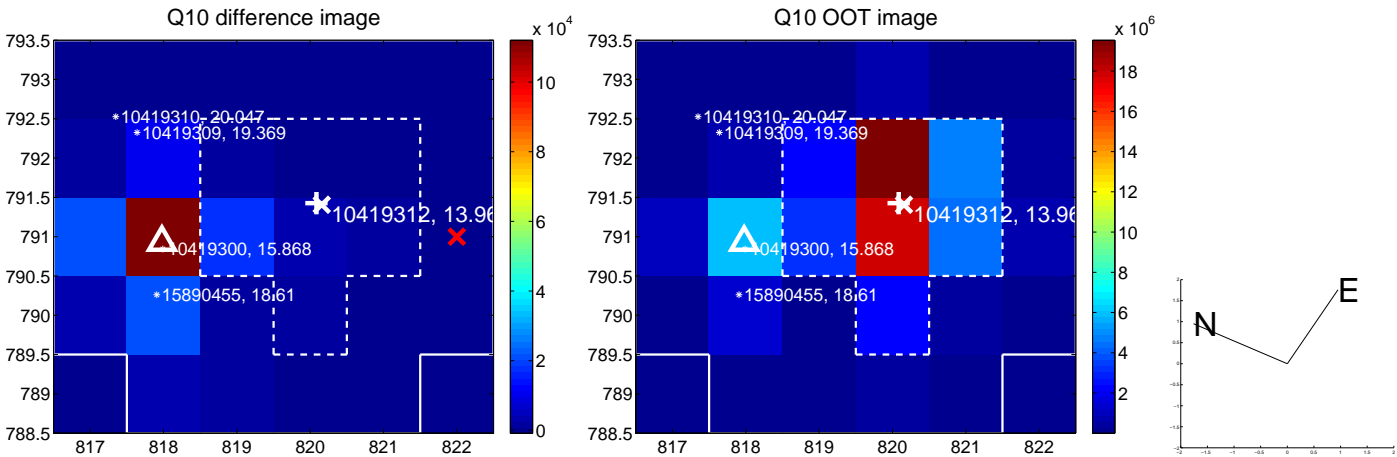
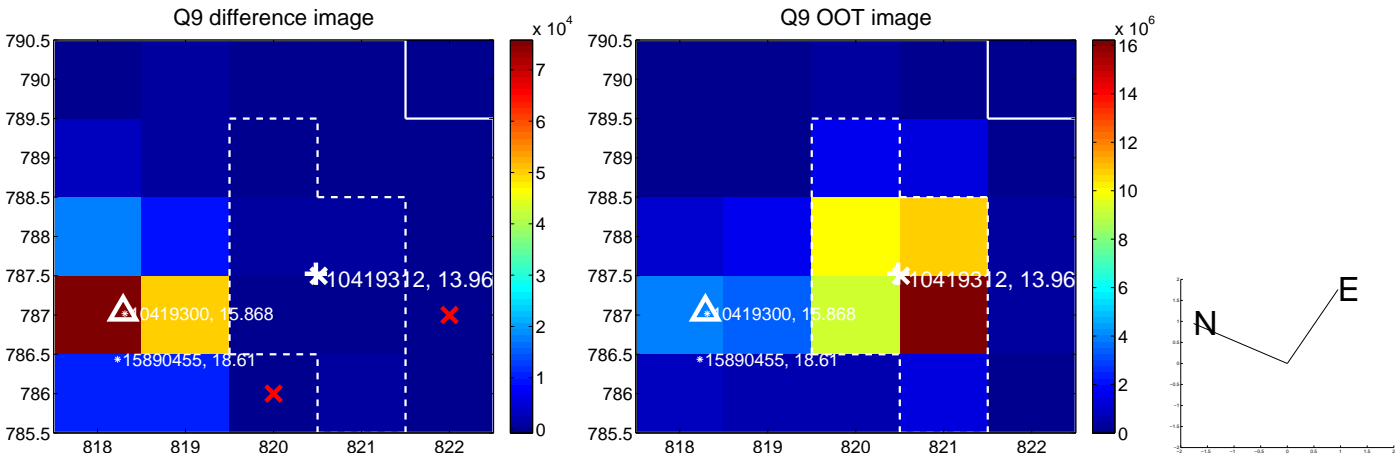
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



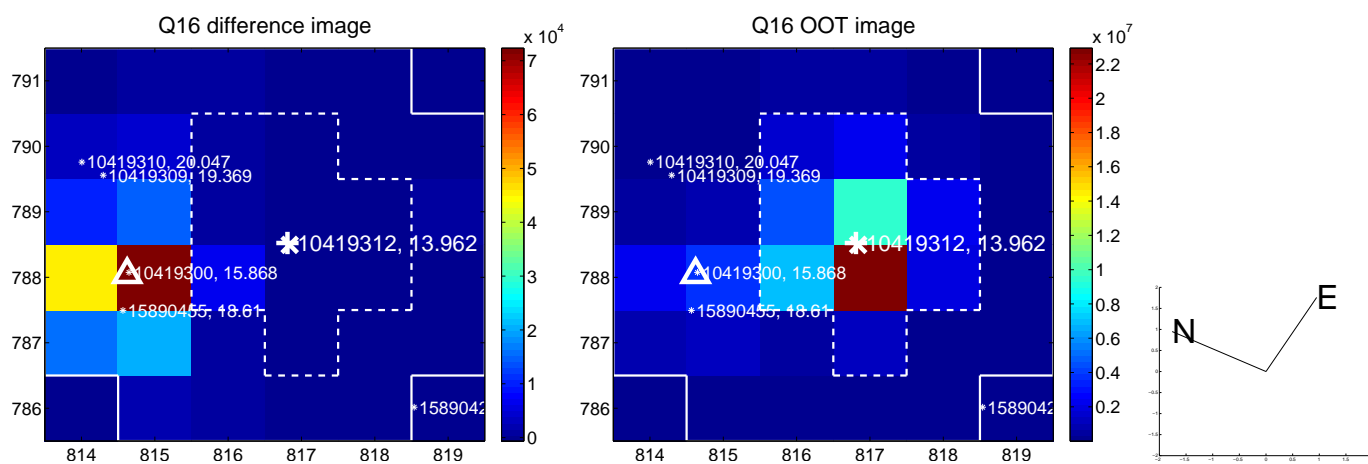
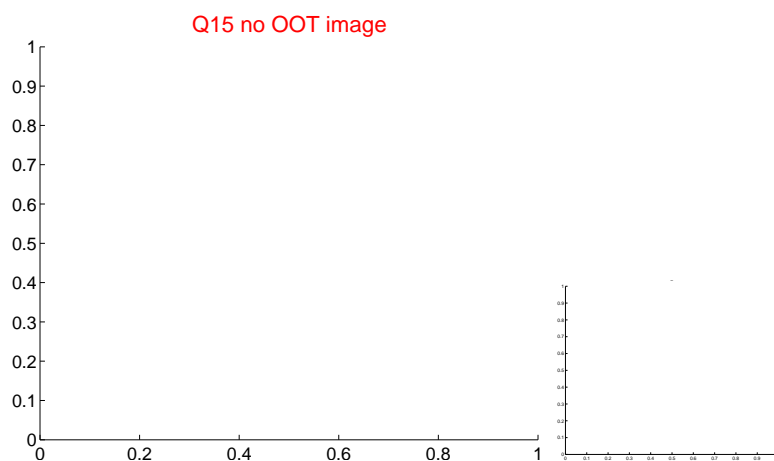
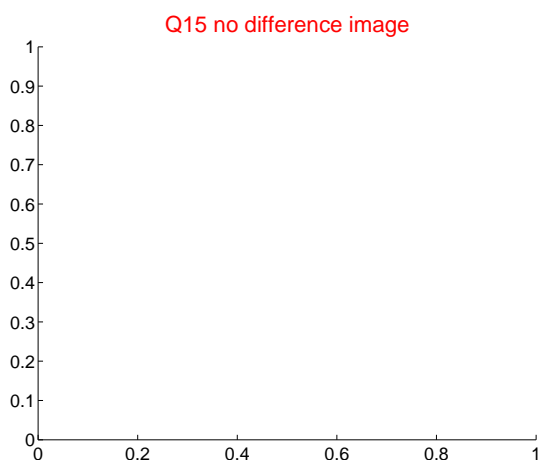
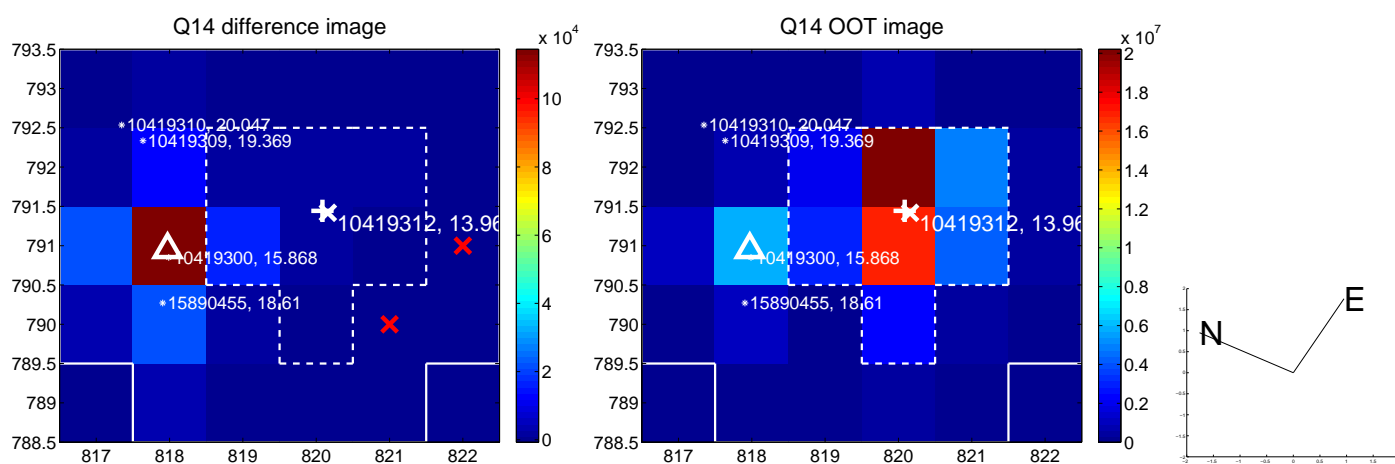
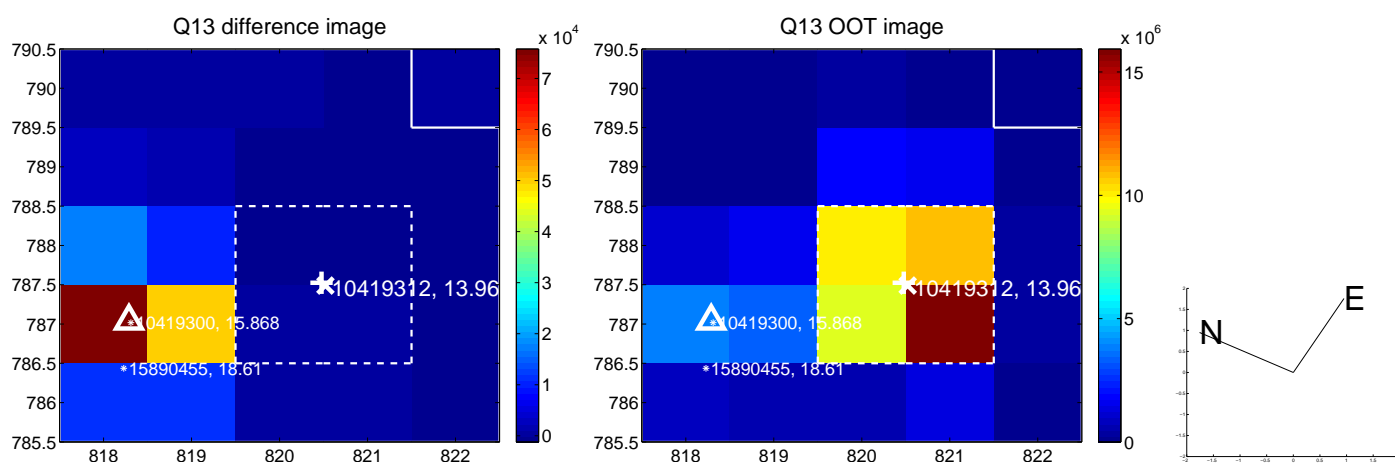
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



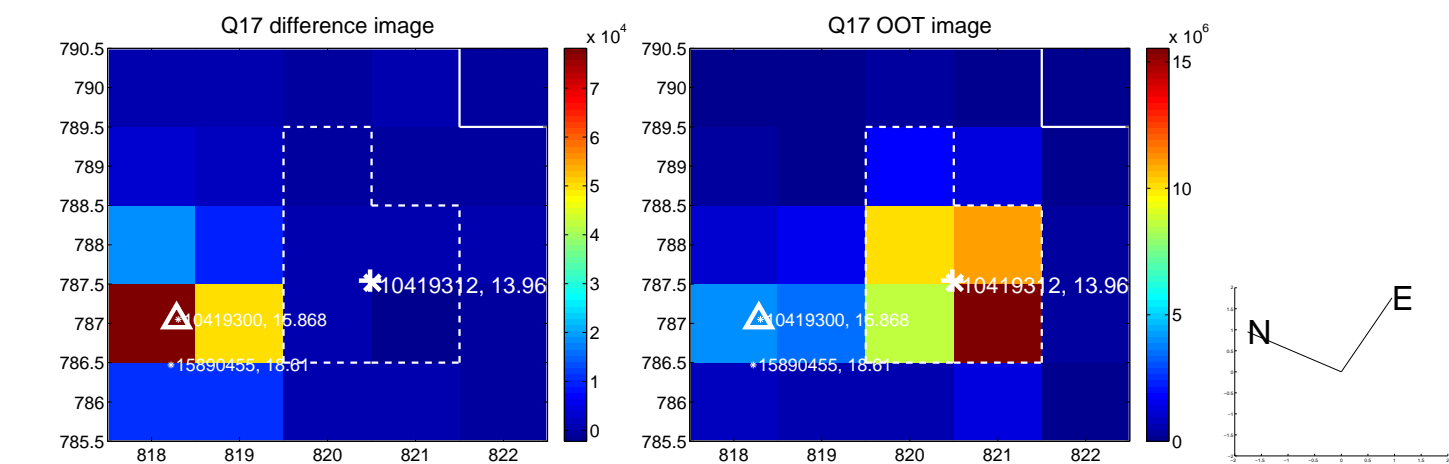
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



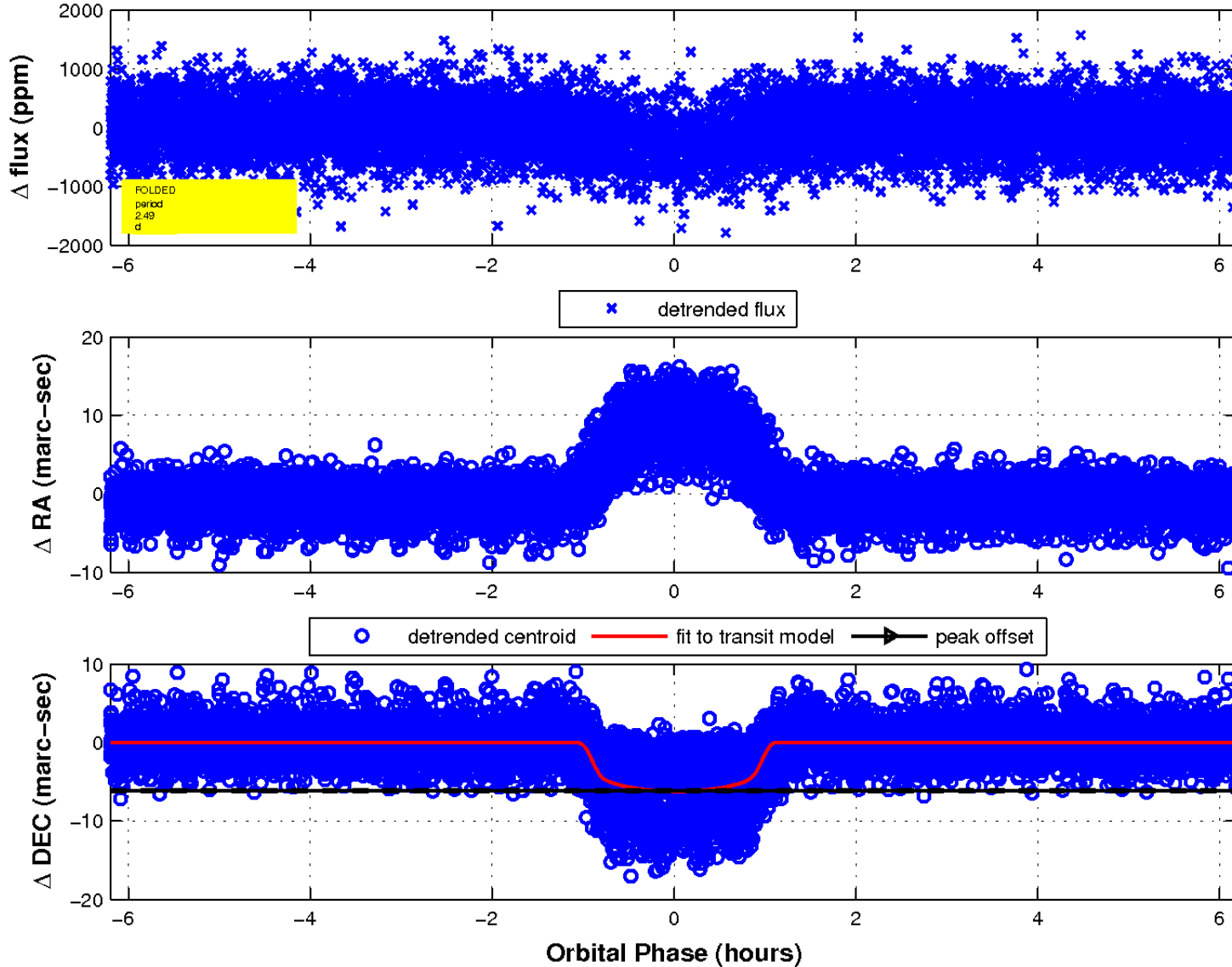
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

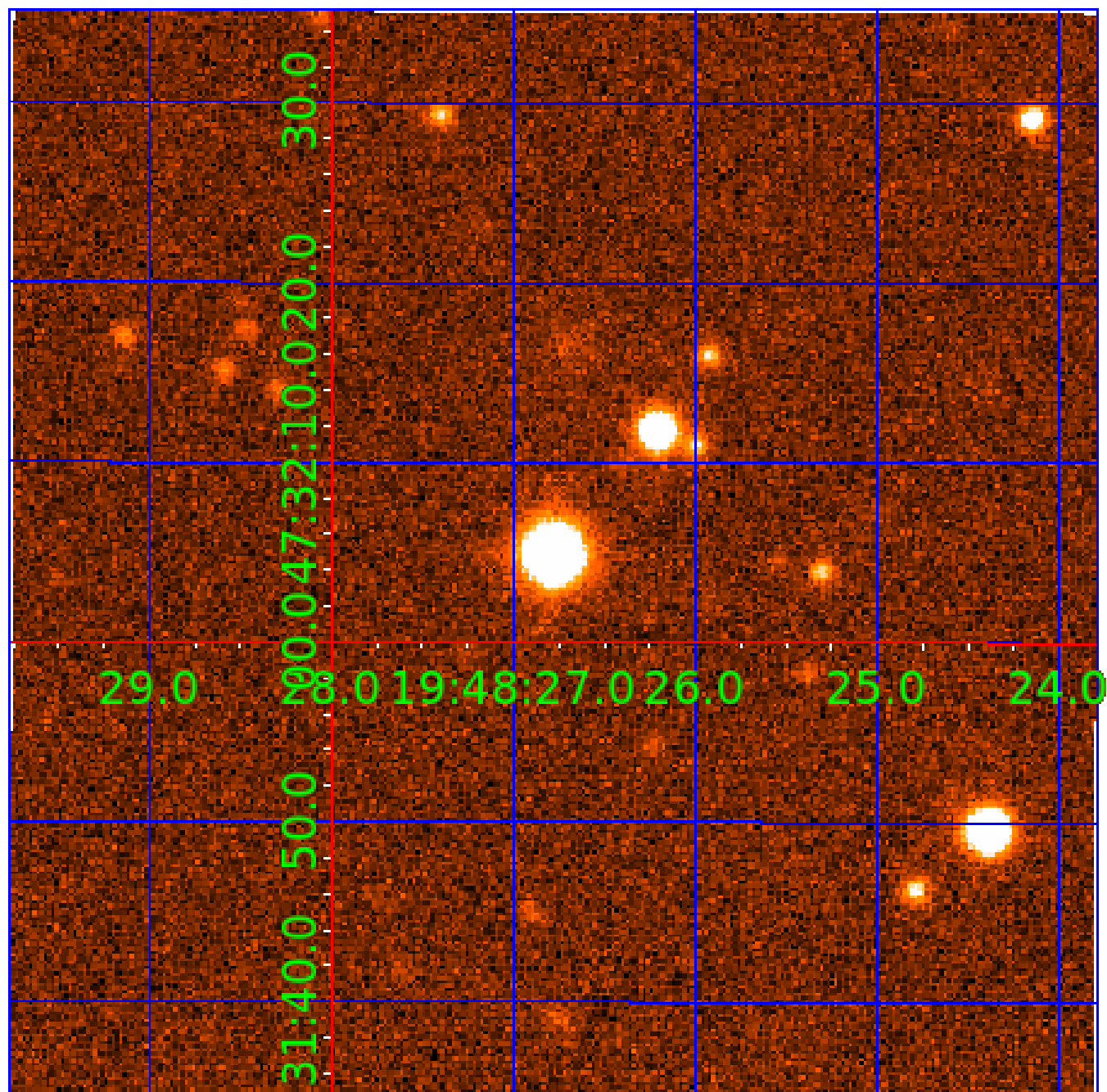


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010419312

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})
010419312-01	OBS	2412.01	2.493242	132.637114	234.1	2.067	14.1	16.4	4.13	5002	7.70	5977.05
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010419312-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET—HALO_GHOST
010419312-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—INCONSISTENT_TRANS

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.

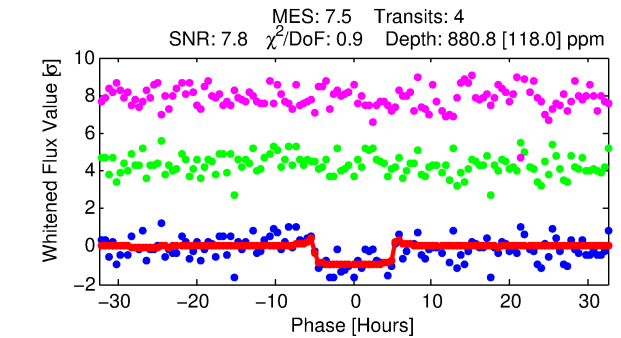
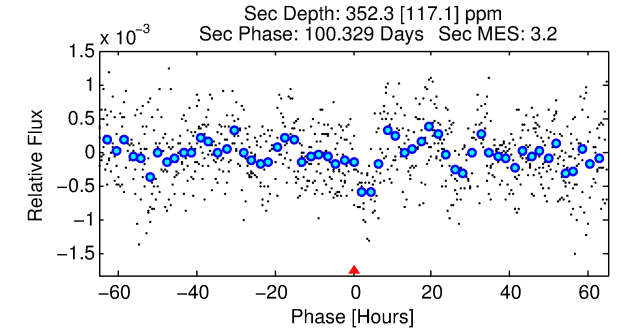
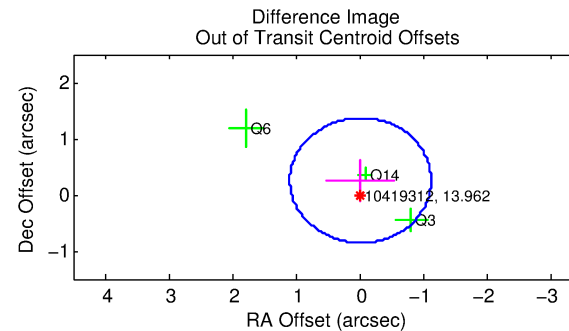
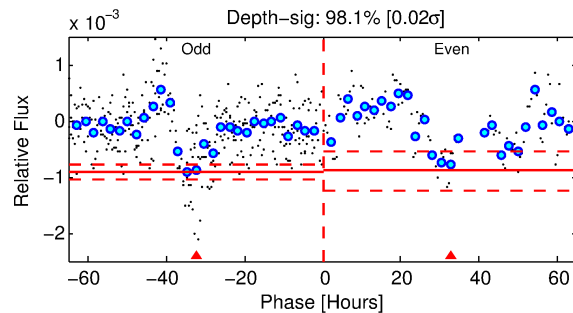
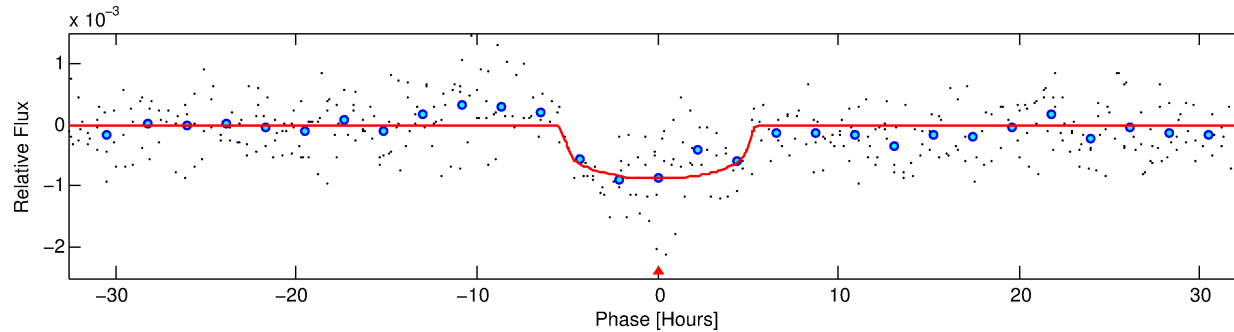
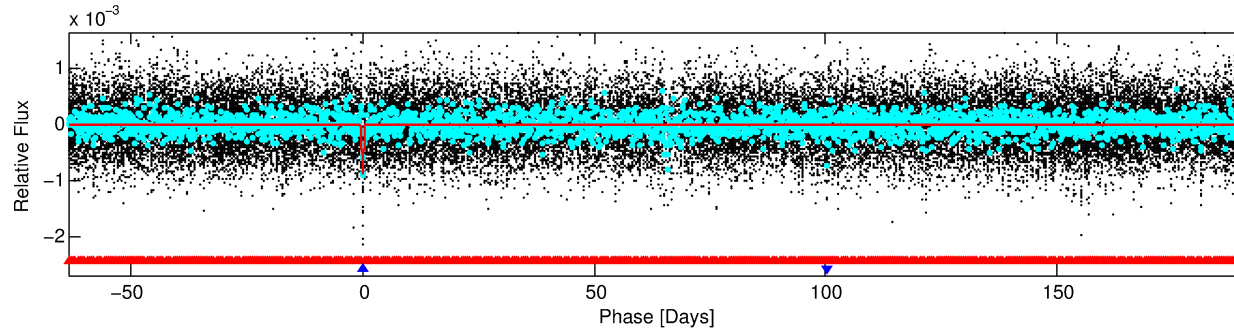
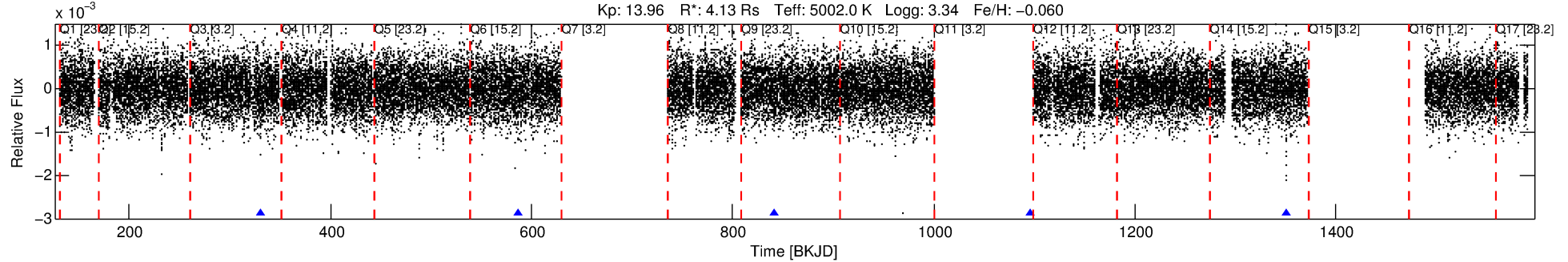
Ephemeris Match Information For 010419312-02

No Significant Match Found

DV One-Page Summary

KIC: 10419312 Candidate: 2 of 2 Period: 254.765 d
KOI: K02412 Corr: No Ephemeris Match

Kp: 13.96 R*: 4.13 Rs Teff: 5002.0 K Logg: 3.34 Fe/H: -0.060



DV Fit Results:

Period = 254.76498 [0.00471] d
Epoch = 331.4209 [0.0106] BKJD
Rp/R* = 0.0294 [0.0064]
a/R* = 128.96 [93.55]
b = 0.73 [0.46]
Seff = 12.51 [7.44]
Teq = 480 [71] K
Rp = 13.26 [6.18] Re
a = 0.8746 [0.3295] AU
Ag = 843.24 [675.31] [1.25σ]
Teffp = 3996 [558] K [6.25σ]

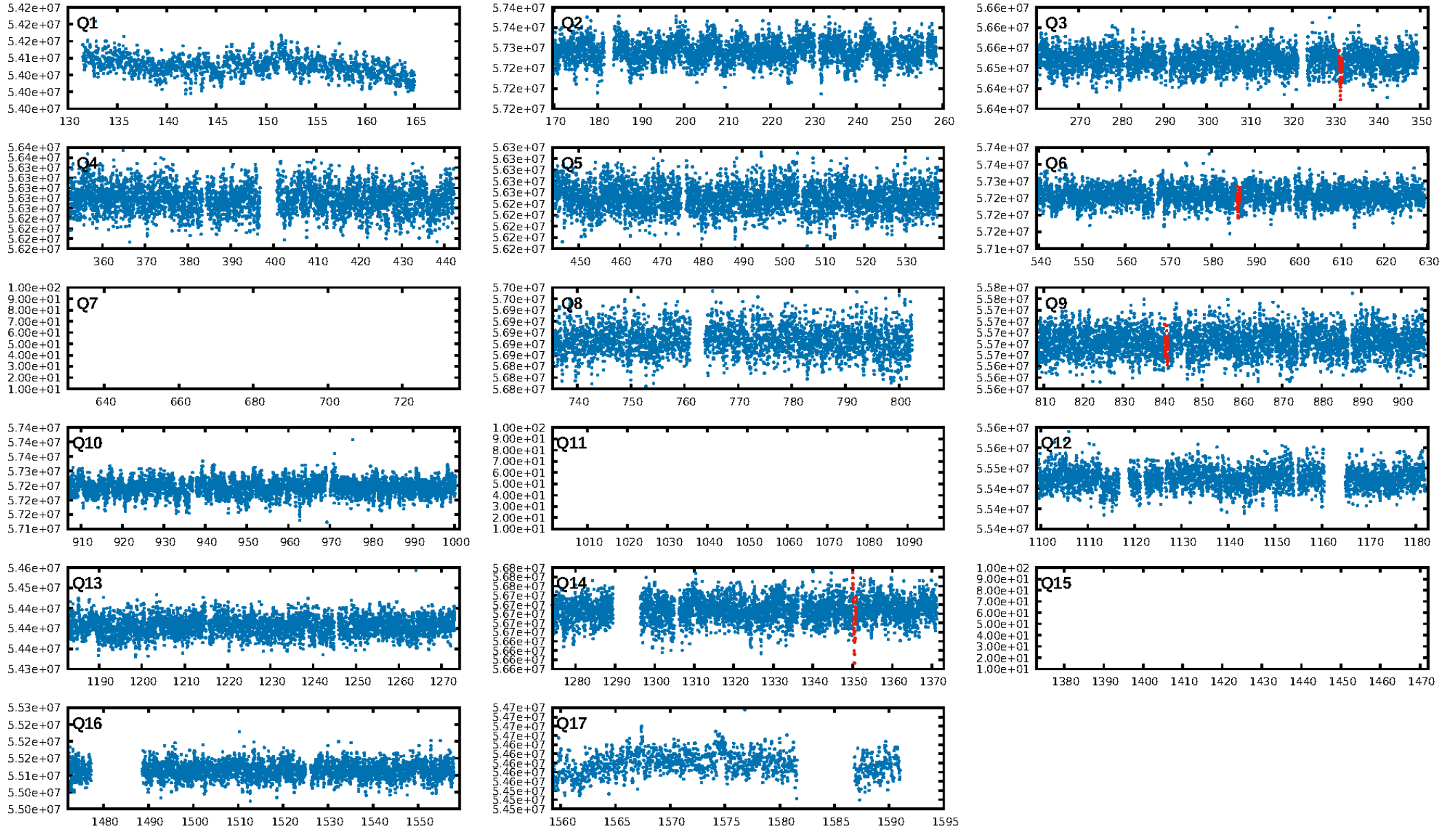
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [546.74σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.80e-12
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.498
Centroid-sig: N/A
Centroid-so: 1.258 arcsec [1.19σ]
OotOffset-rm: 0.256 arcsec [0.69σ]
KicOffset-rm: 0.538 arcsec [1.24σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
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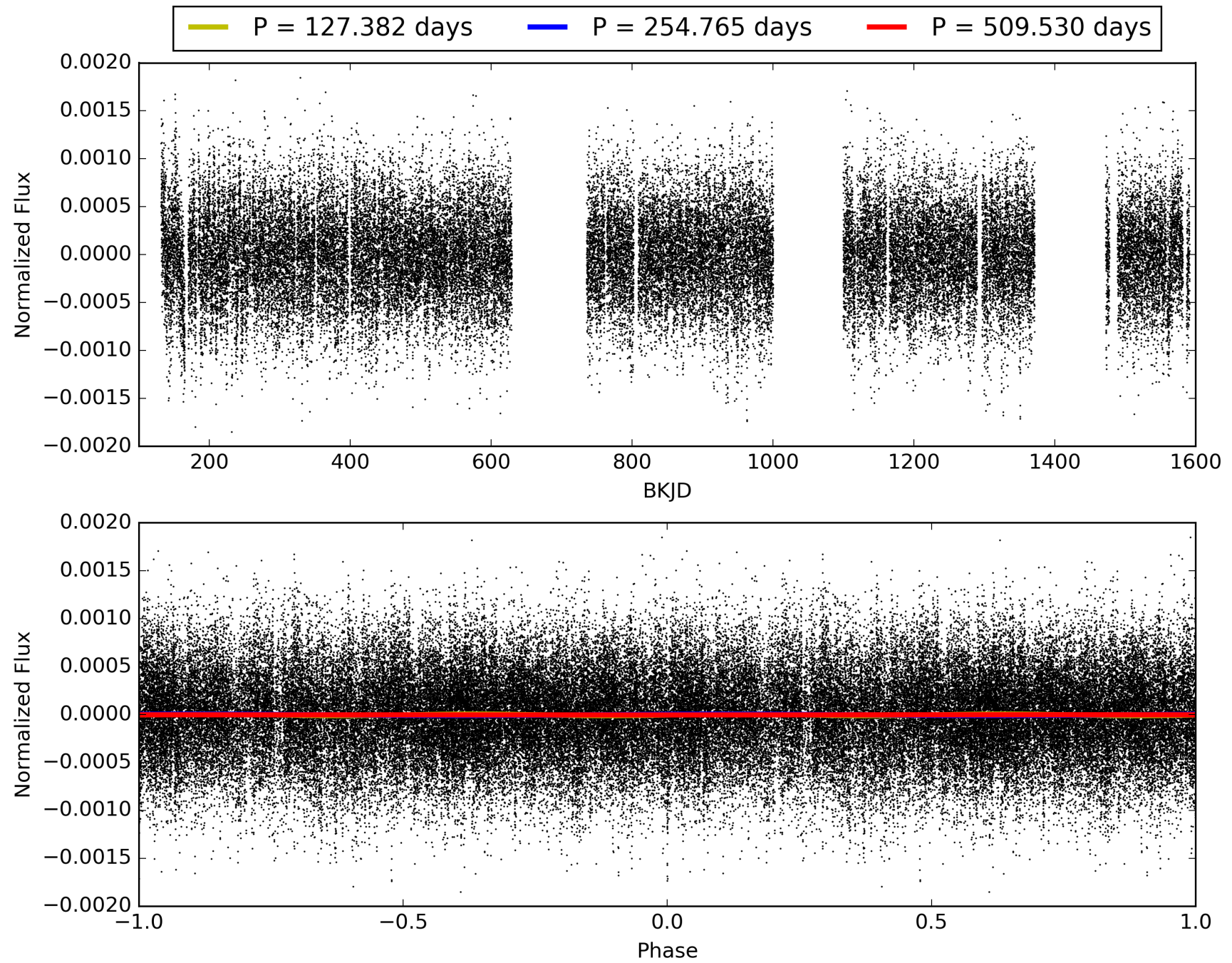
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:21:50 Z

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

TCE 010419312-02, PDC Light Curves

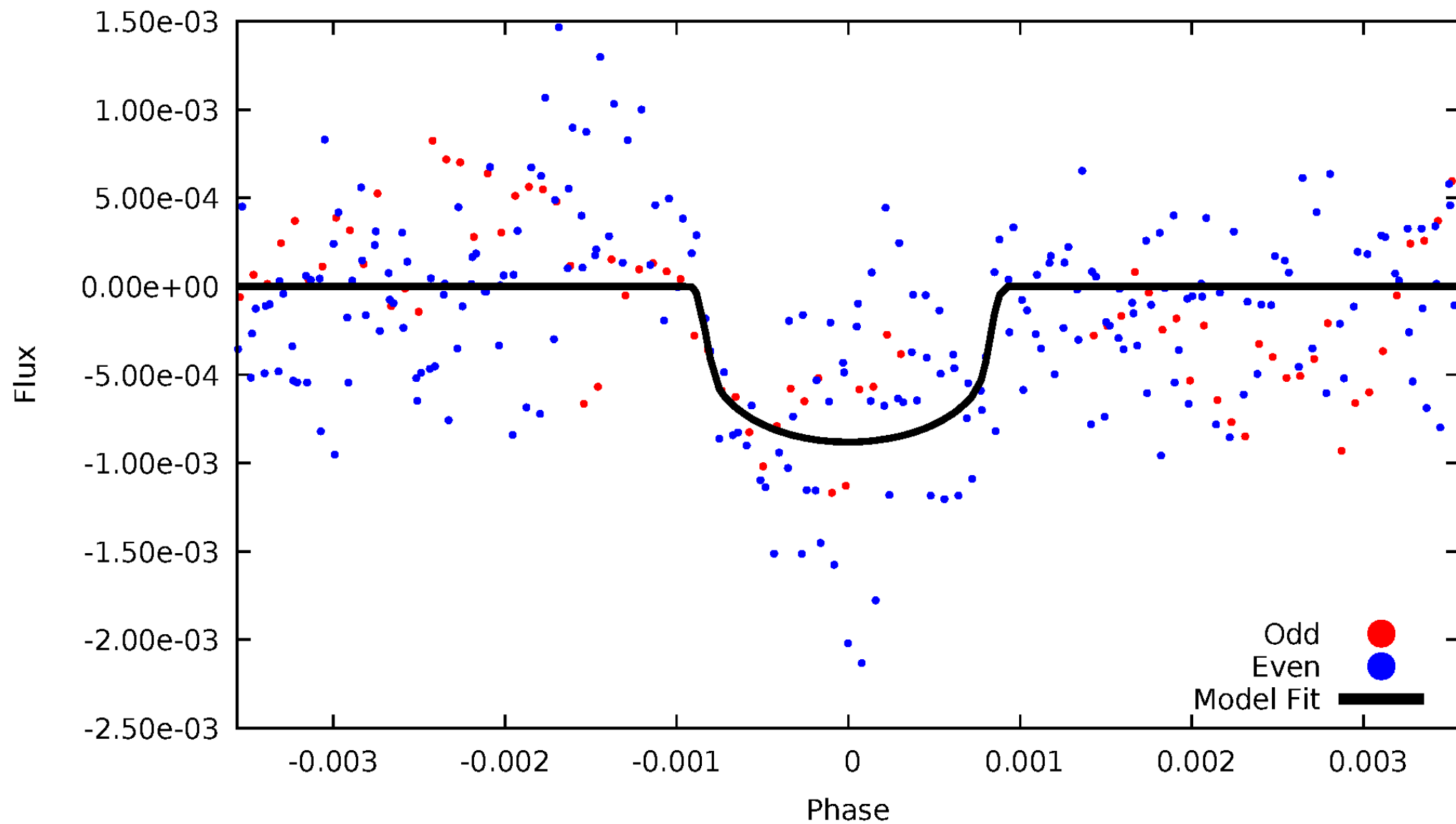


TCE 010419312-02



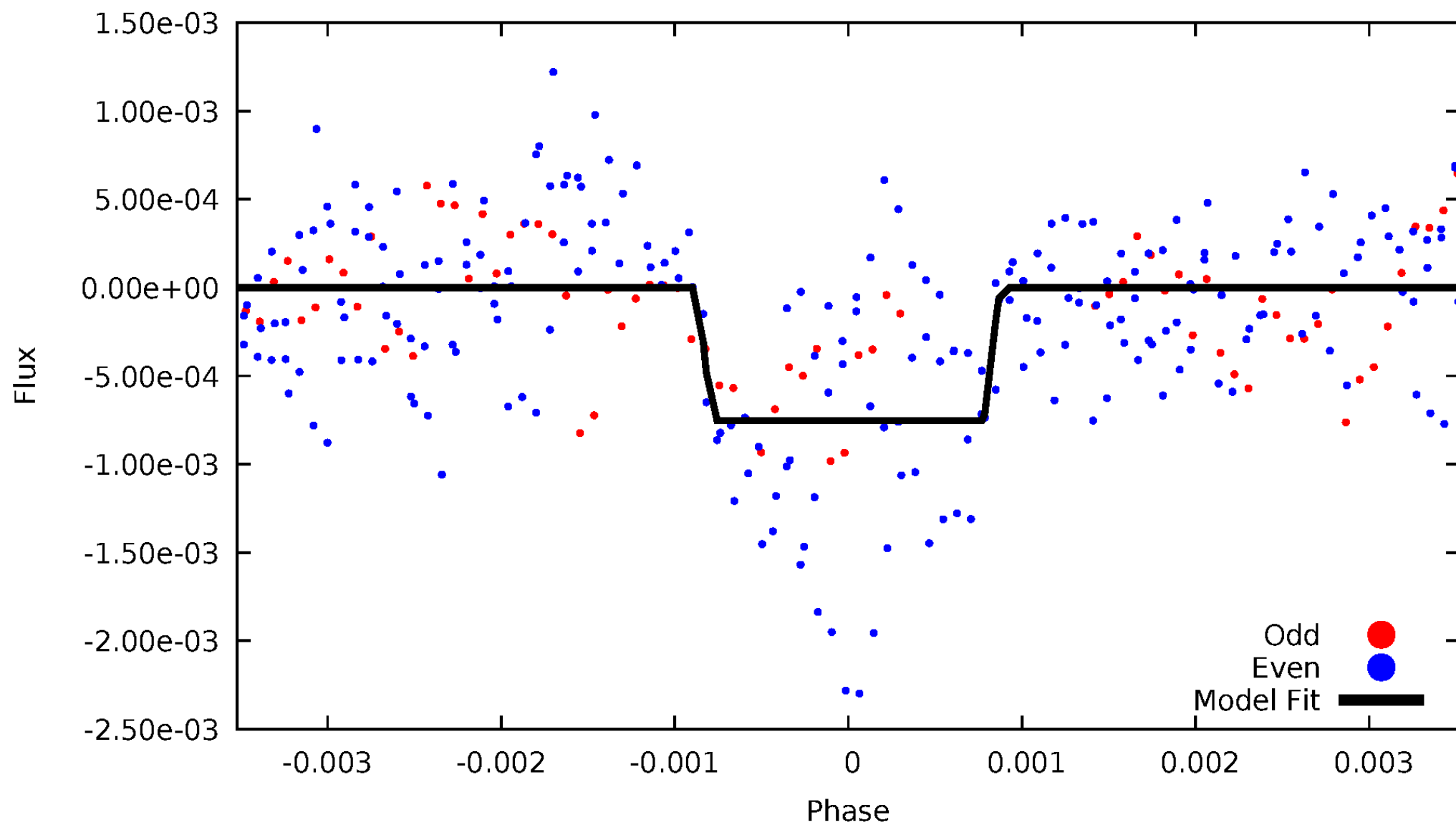
DV Odd/Even

TCE 010419312-02



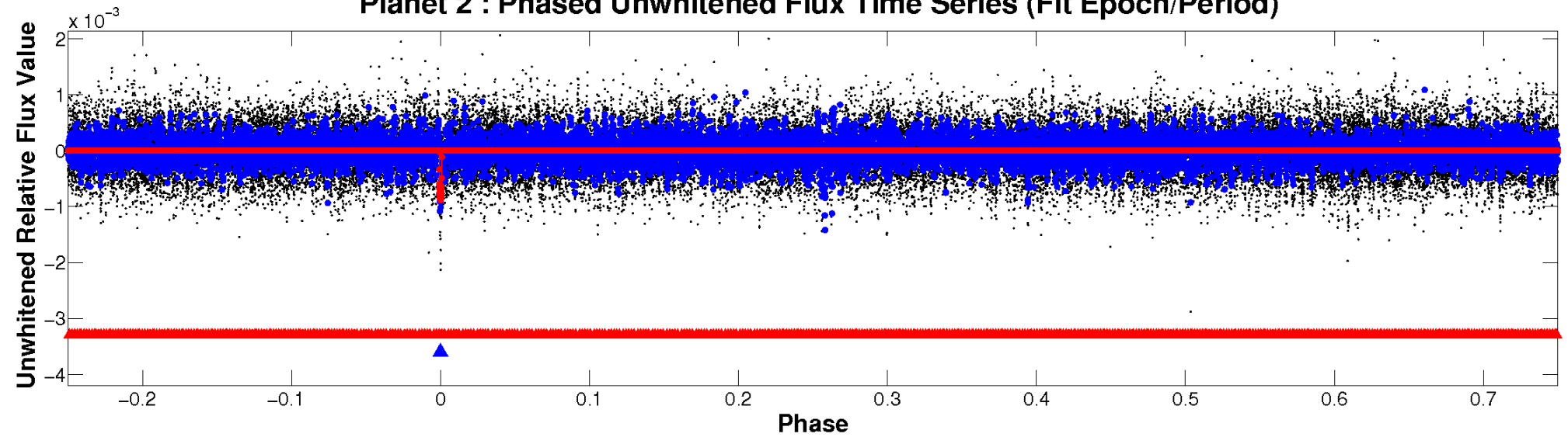
ALT Odd/Even

TCE 010419312-02

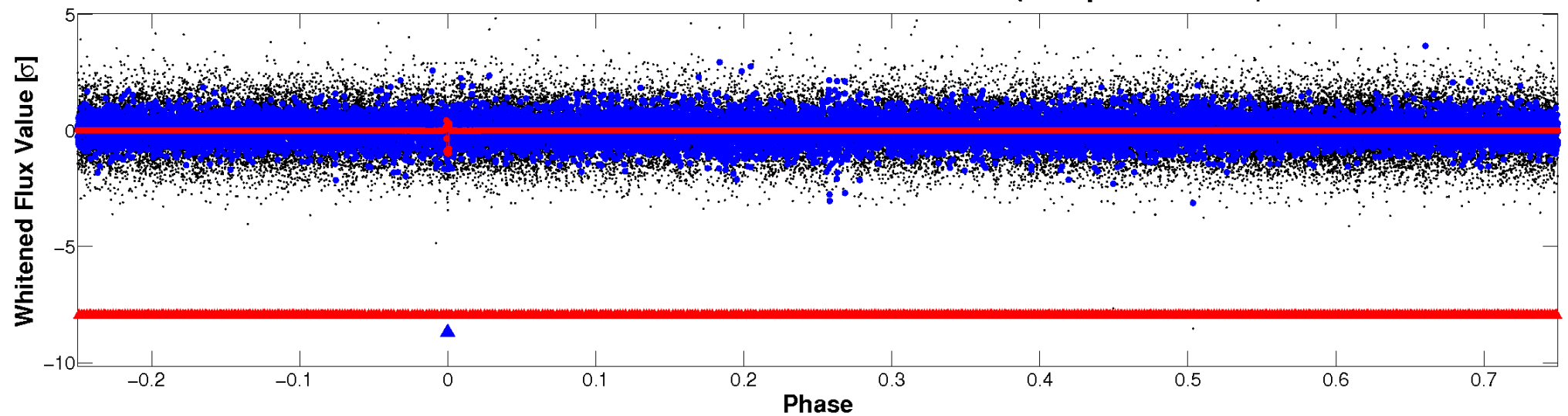


Non-Whitened Vs. Whitened Light Curve

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

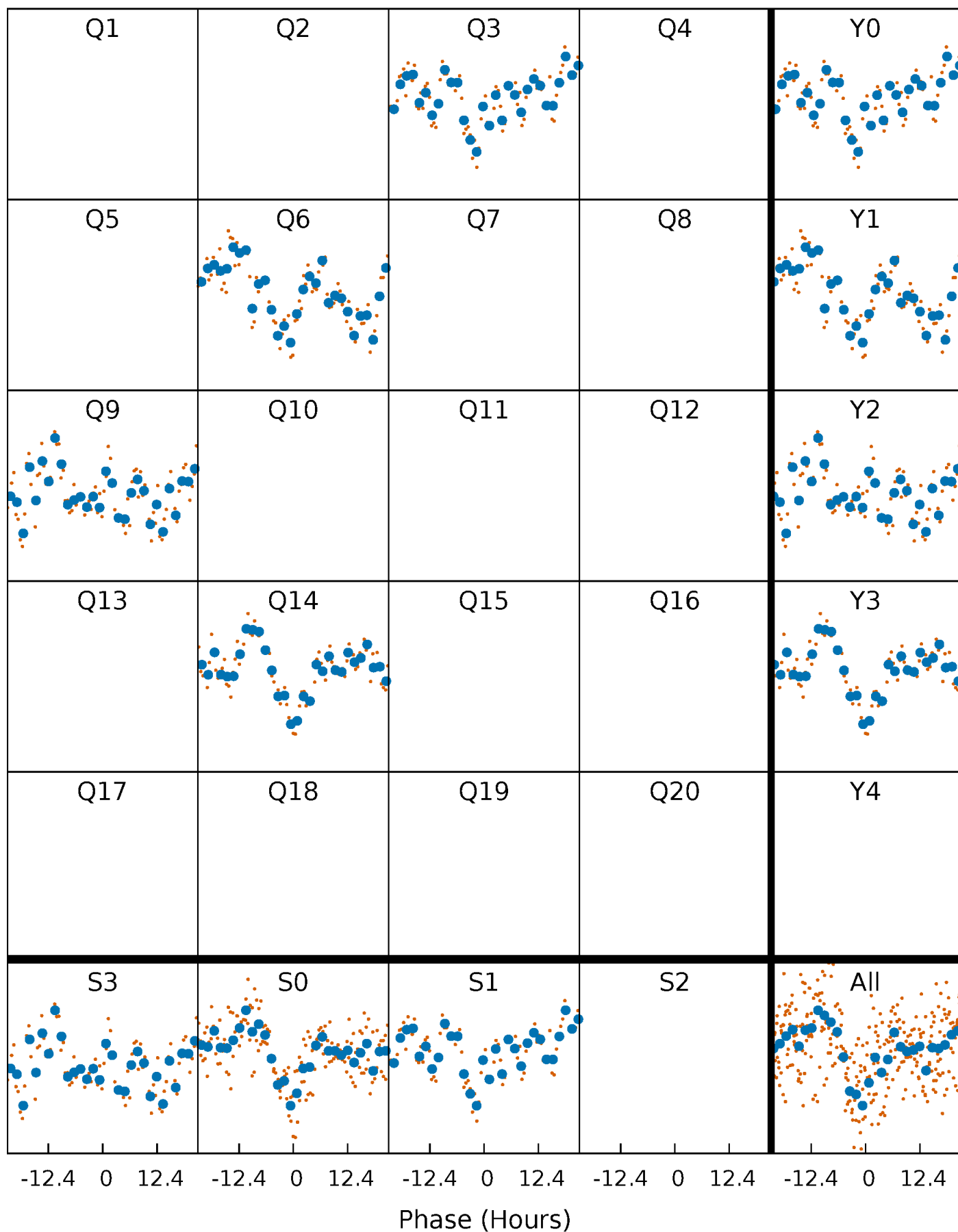


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 010419312-02 $P=254.764975$ Days $T_0=331.420940$ (BKJD)



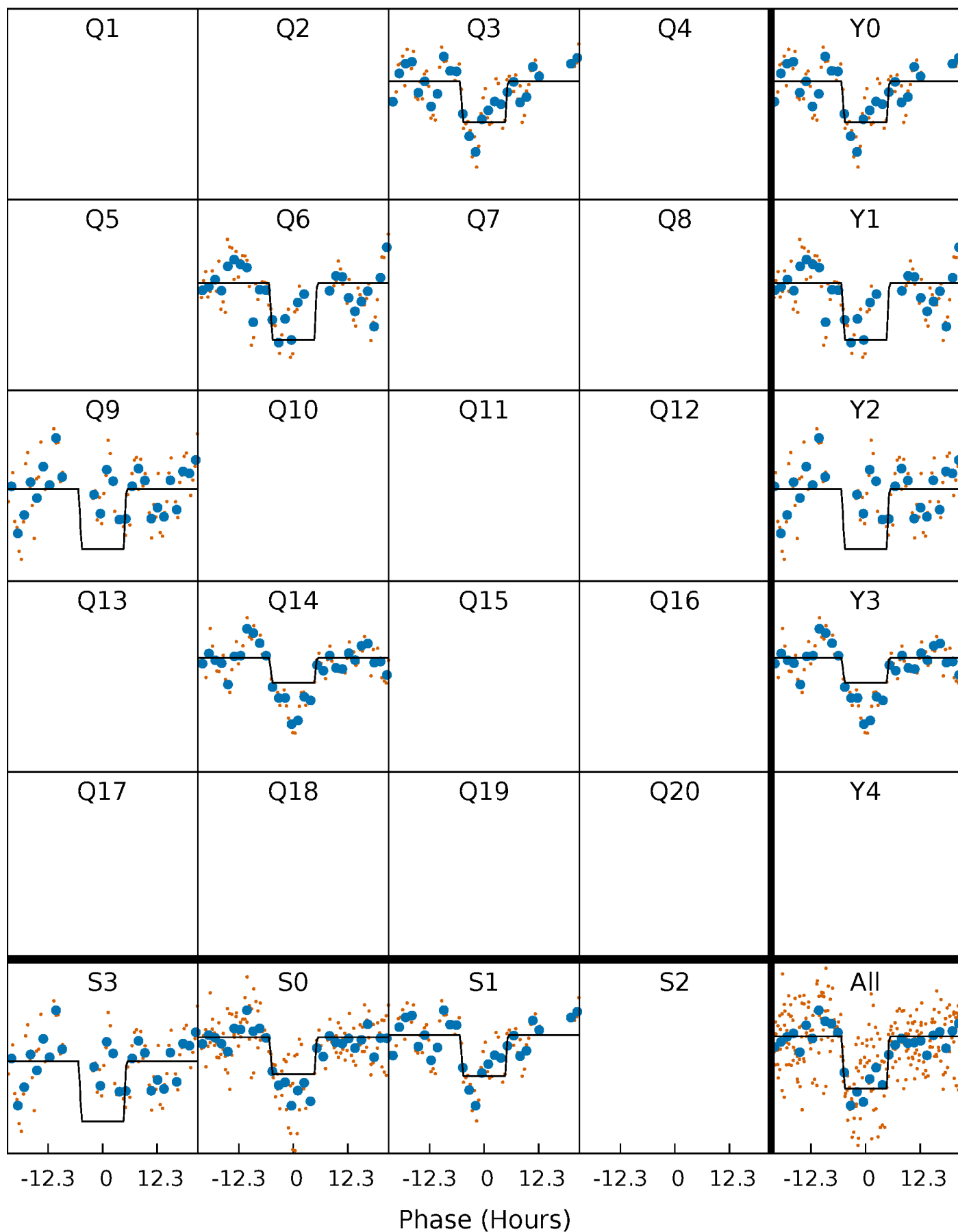
DV Quarter-Phased Transit Curves

TCE 010419312-02 $P=254.764975$ Days $T_0=331.420940$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

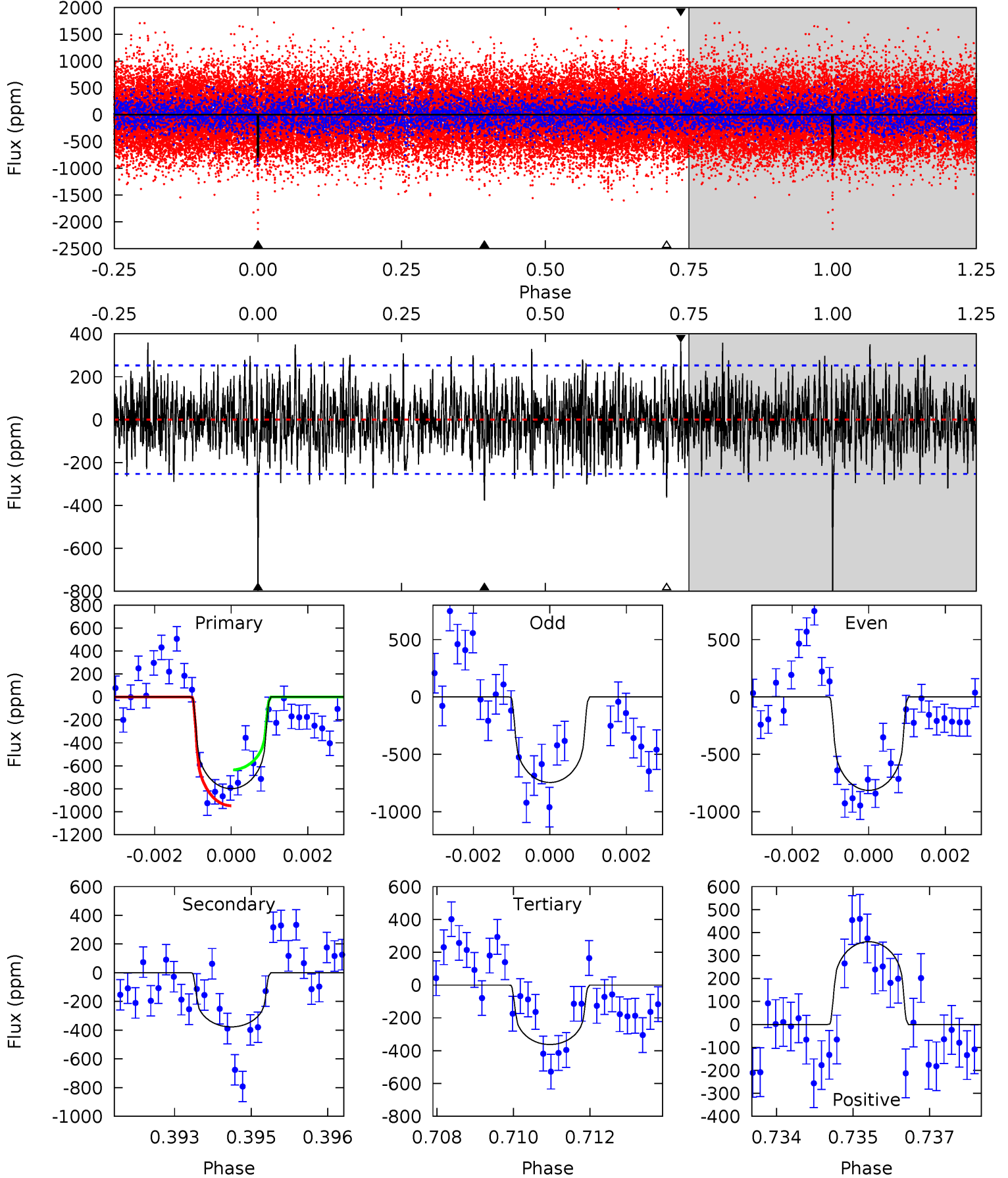
TCE 010419312-02 $P=254.765626$ Days $T_0=331.421872$ (BKJD)



DV Model-Shift Uniqueness Test

010419312-02, P = 254.764975 Days, E = 76.655965 Days

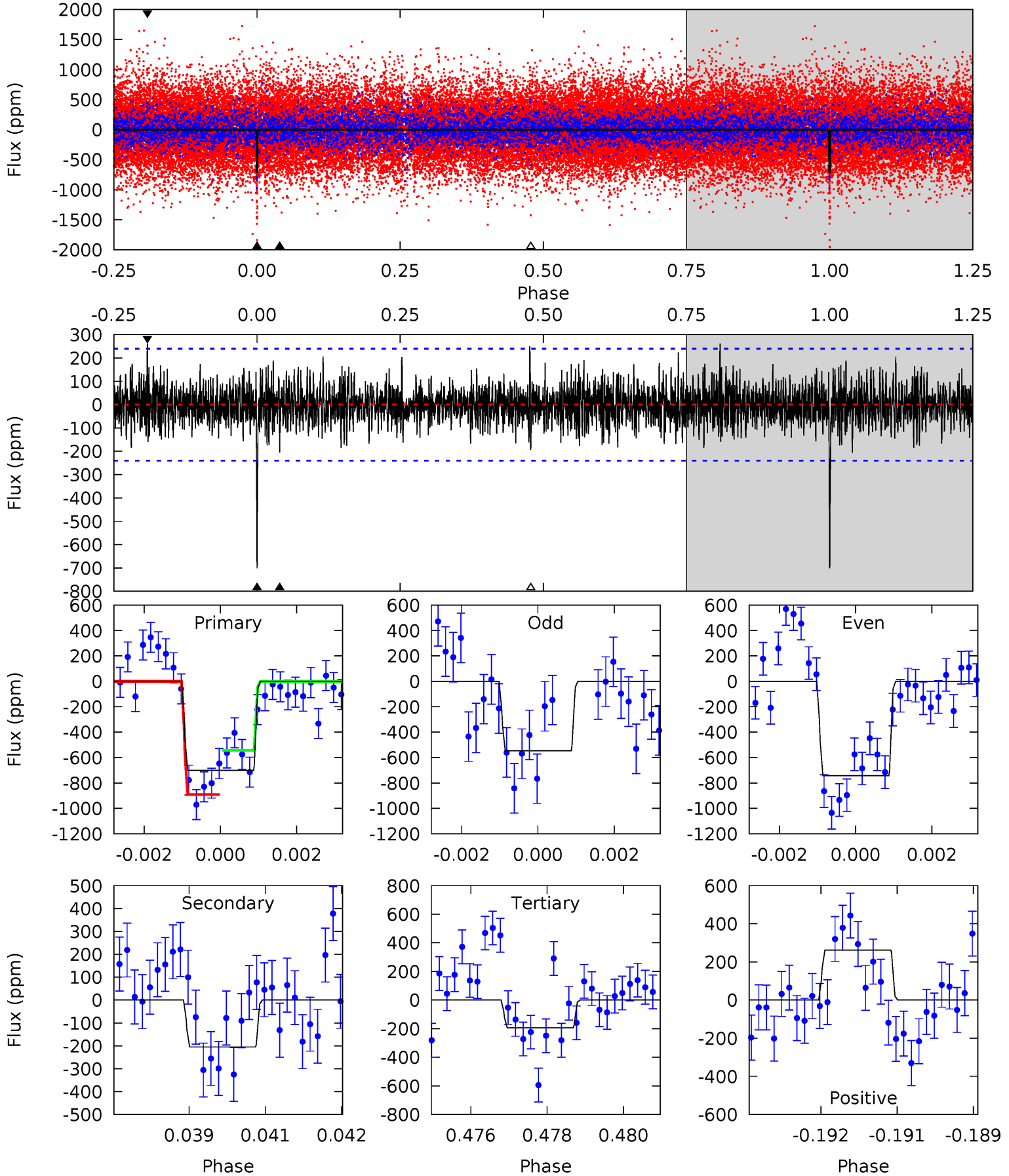
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	7.97	7.67	7.61	5.35	3.12	2.26	9.23	9.28	0.31	0.36	0.59	0.99	0.31	3.29



Alt Model-Shift Uniqueness Test

010419312-02, P = 254.765626 Days, E = 76.656246 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	4.57	4.32	5.83	5.35	3.13	1.39	11.3	9.78	0.24	-1.27	1.79	1.11	0.27	3.91



Stellar Parameters For KIC 010419312

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5002^{+124}_{-136}	$3.344^{+0.336}_{-0.275}$	$-0.060^{+0.250}_{-0.250}$	$4.131^{+1.547}_{-1.702}$	$1.375^{+0.210}_{-0.390}$	$0.027^{+0.066}_{-0.016}$
	+2%/-3%	+10%/-8%	+417%/-417%	+37%/-41%	+15%/-28%	+240%/-60%
Source	PHO1	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 010419312-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-377 ± 47	$12.78^{+4.47}_{-3.40}$	675^{+70}_{-73}	4259^{+463}_{-342}	928^{+815}_{-409}
Alt.	-205 ± 45	$12.42^{+4.55}_{-3.74}$	675^{+74}_{-70}	3870^{+439}_{-301}	533^{+571}_{-253}

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

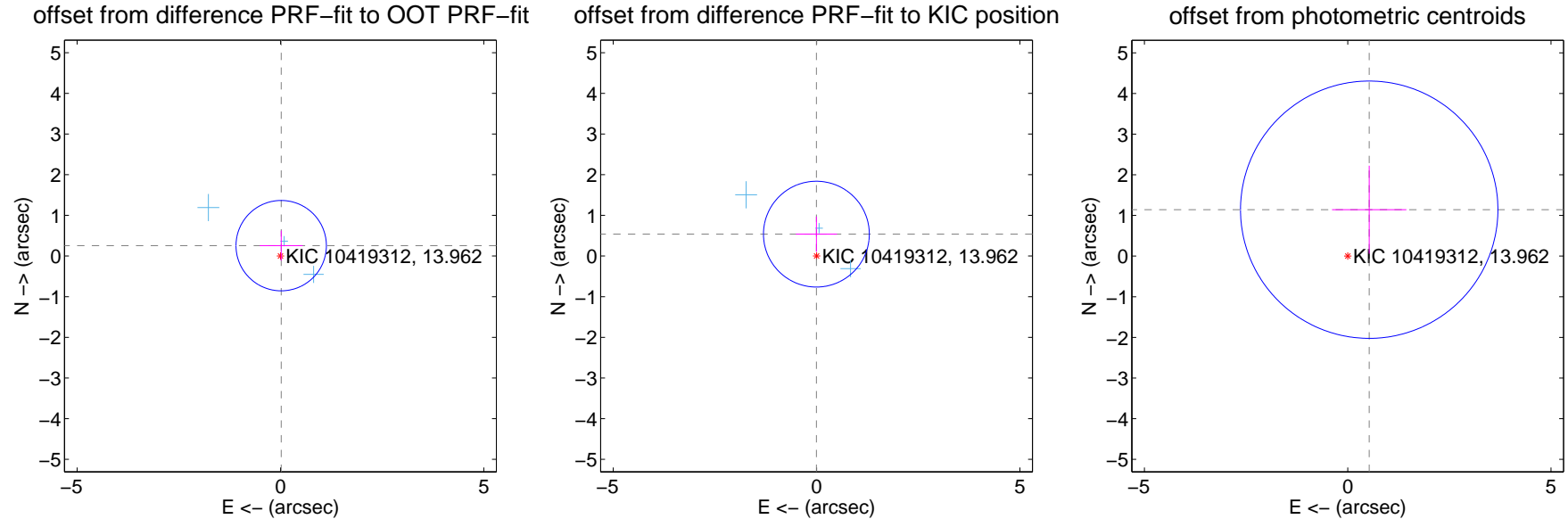
DV Centroid Data

Supplemental centroid analysis for 010419312-02. Kepler magnitude: 13.96. Transit SNR 7.75

There are 3 quarters with good PRF difference image offsets

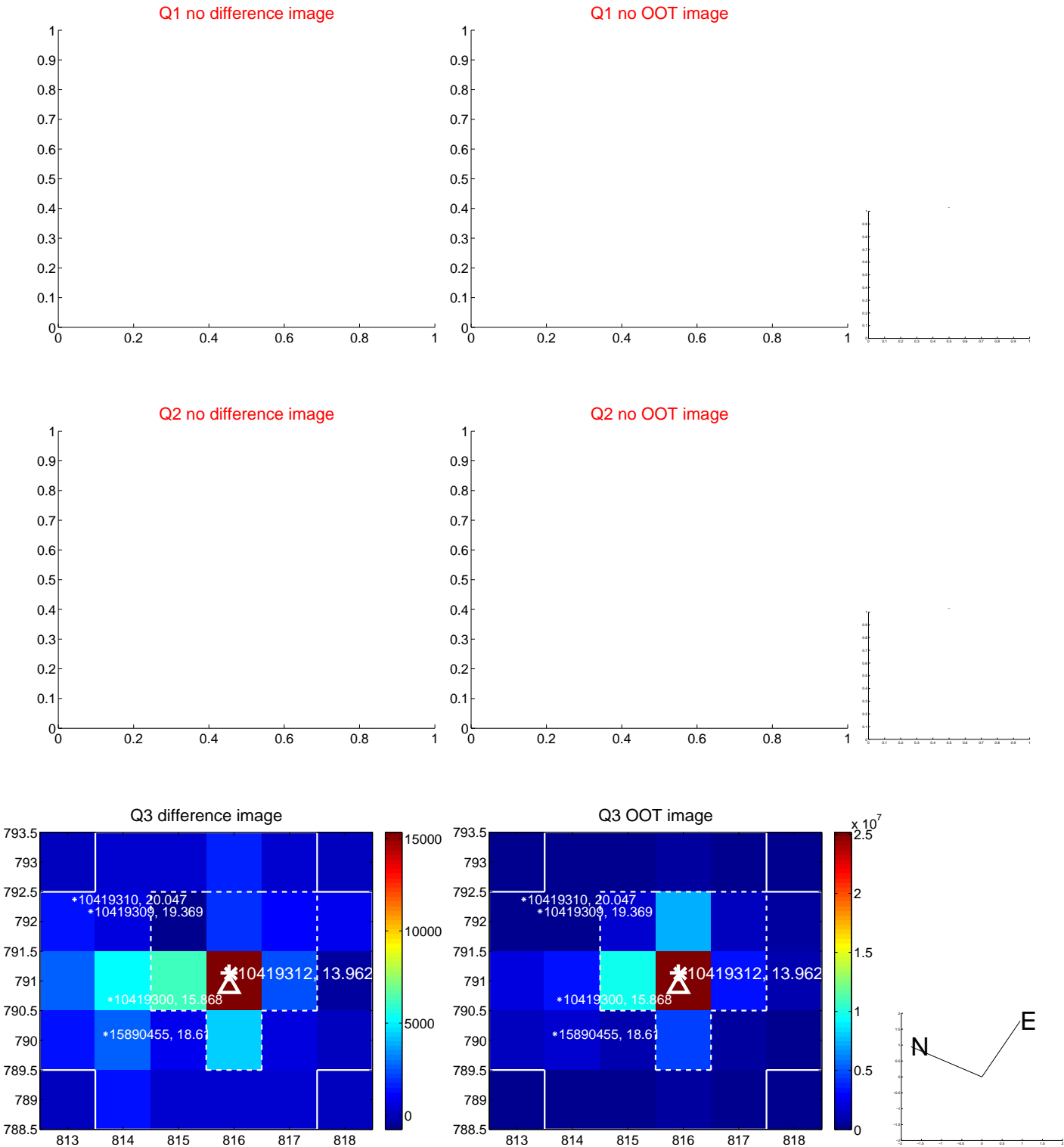
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.256 ± 0.370	0.69	-0.018 ± 0.525	0.255 ± 0.369
PRF-fit source offset from KIC position	0.538 ± 0.434	1.24	0.004 ± 0.505	0.538 ± 0.434
photometric centroid source offset	1.26 ± 1.05	1.19	-0.53 ± 0.91	1.14 ± 1.08

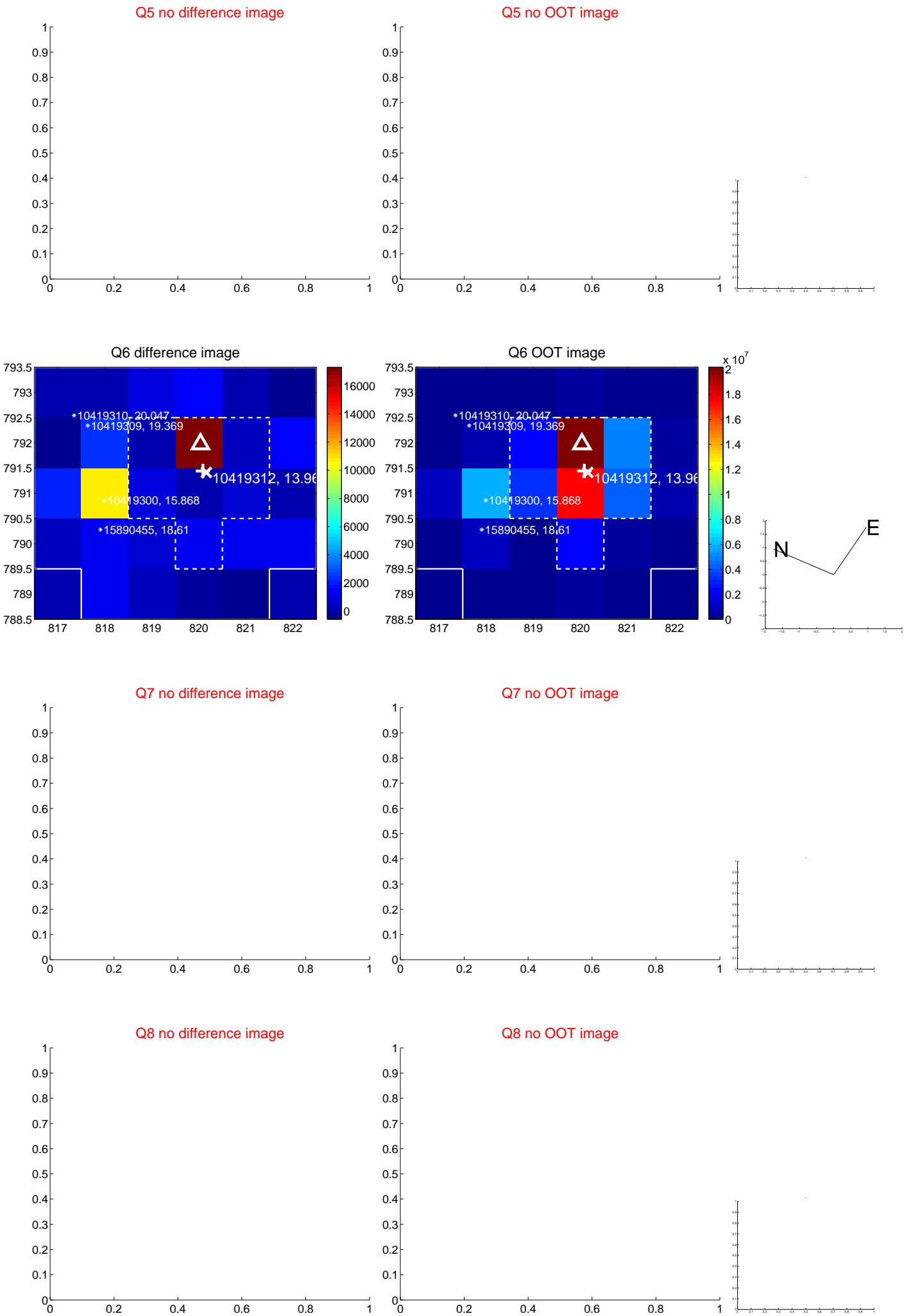


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

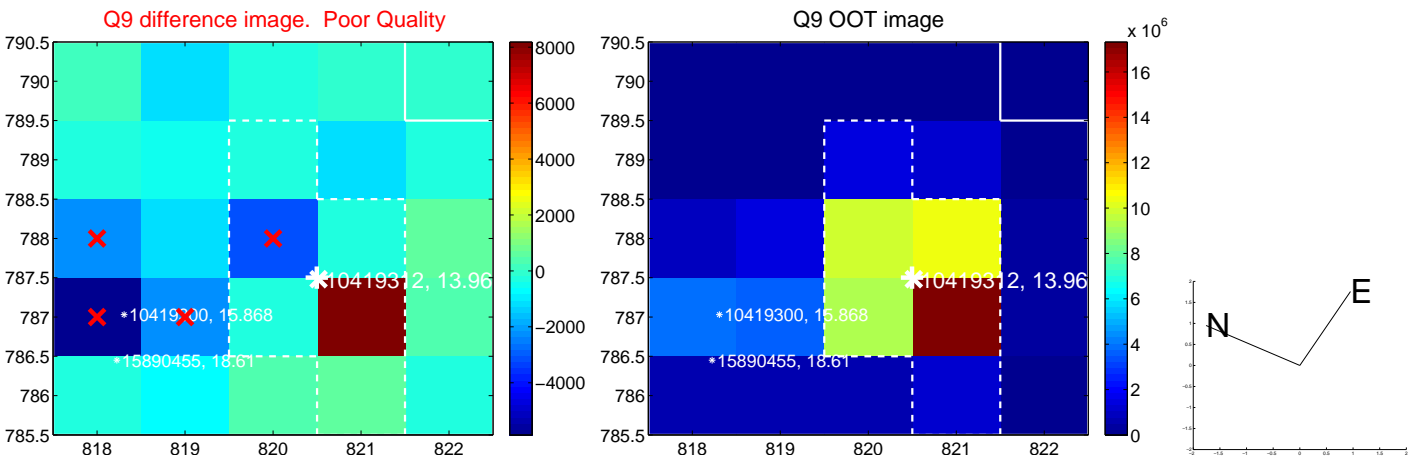
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

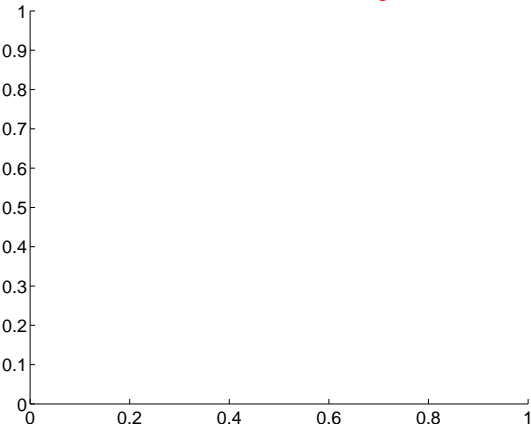


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

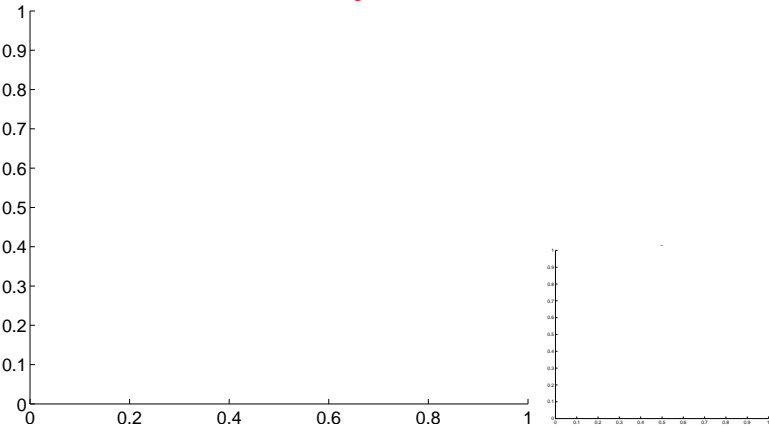


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

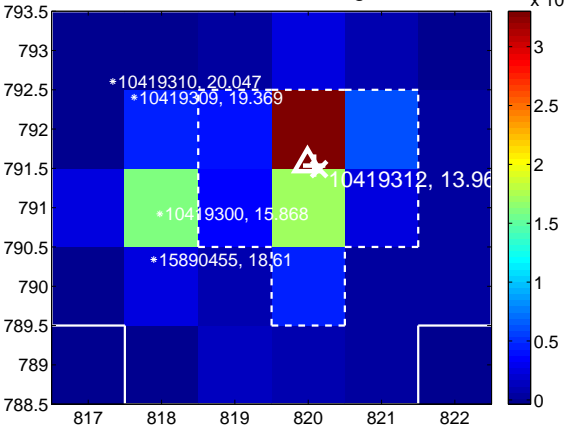
Q13 no difference image



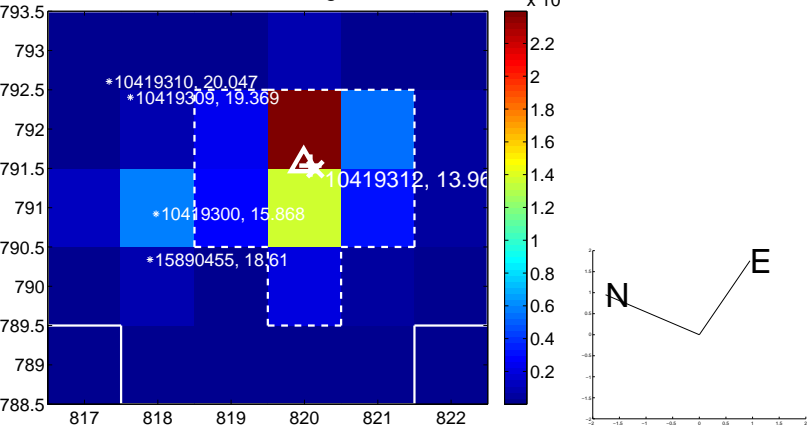
Q13 no OOT image



Q14 difference image



Q14 OOT image



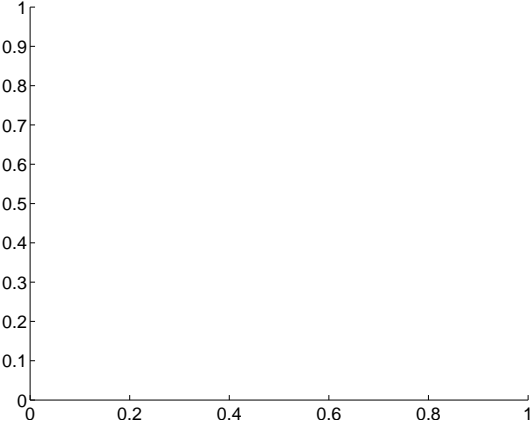
Q15 no difference image



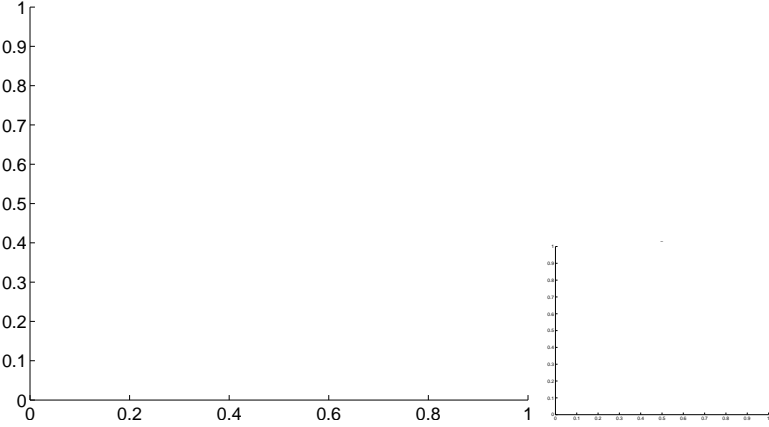
Q15 no OOT image



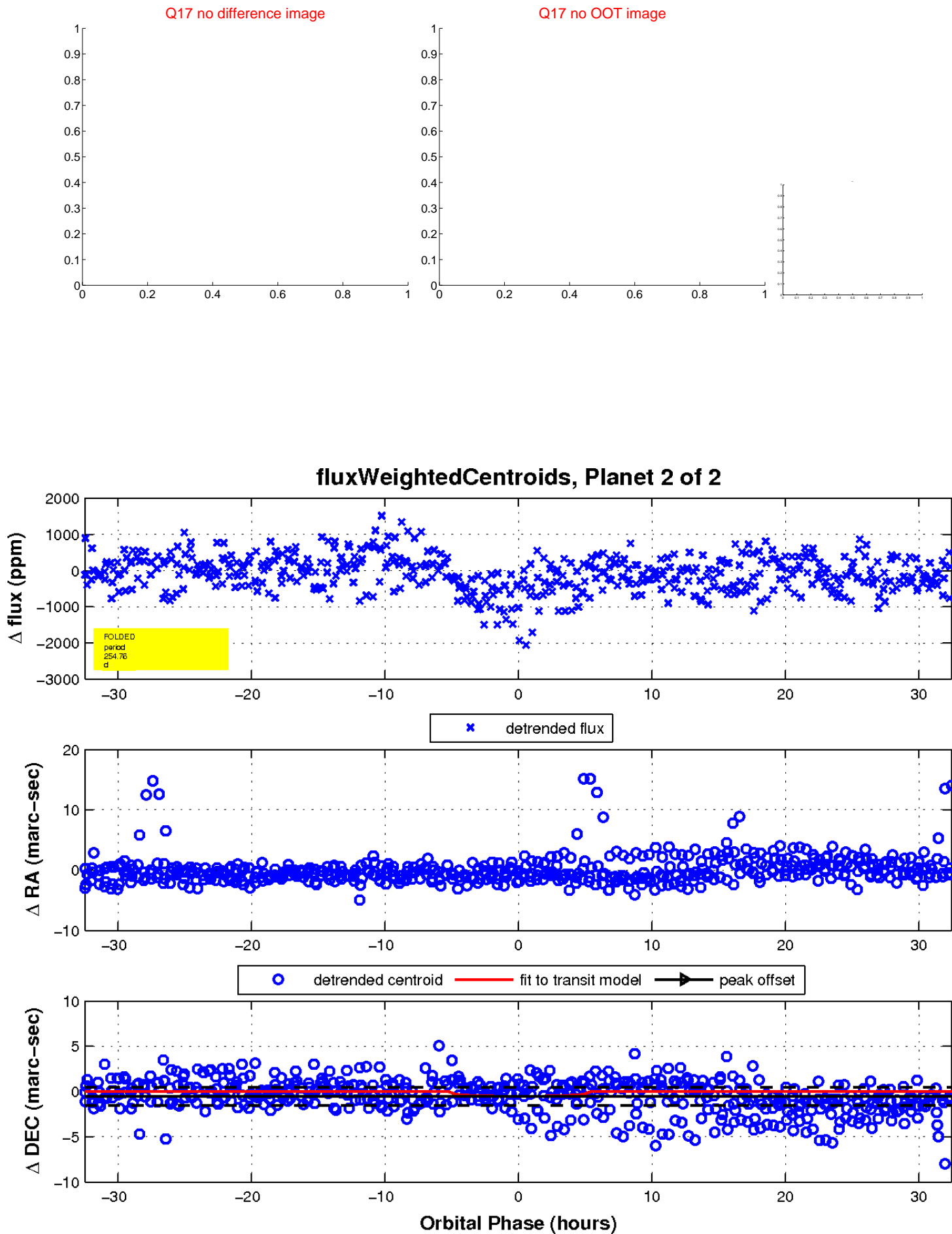
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

