

KIC 003239945

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})
003239945-01	OBS	0490.02	535.616258	420.286981	19019.0	16.159	279.6	323.9	0.69	4799	9.26	0.17
003239945-02	OBS	0490.01	4.393163	133.328200	432.2	2.565	50.0	55.8	0.69	4799	1.75	100.28
003239945-03	OBS	0490.03	7.406119	134.074108	406.3	3.083	38.8	43.3	0.69	4799	1.70	49.98
003239945-04	OBS	0490.04	21.803951	139.065048	238.7	3.325	15.0	15.3	0.69	4799	1.31	11.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003239945-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003239945-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
003239945-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
003239945-04	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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.

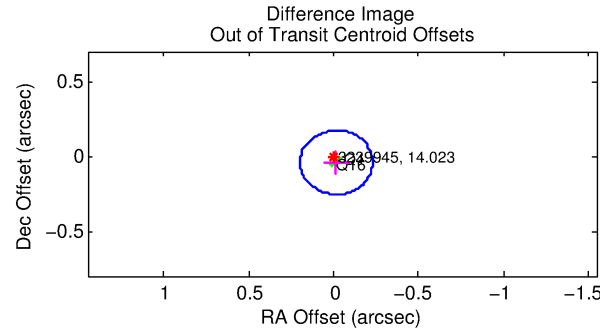
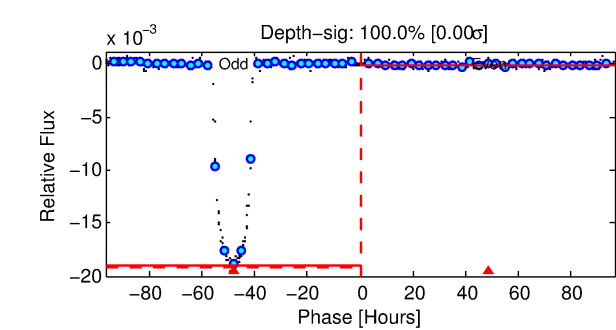
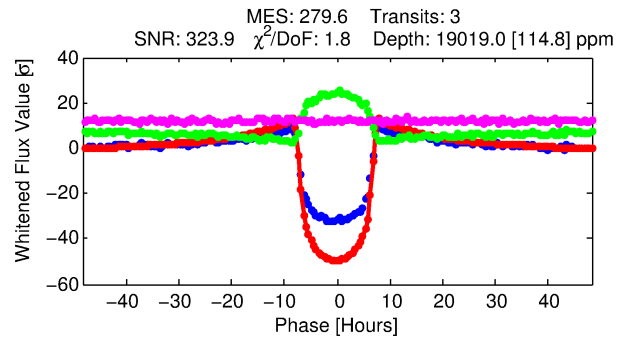
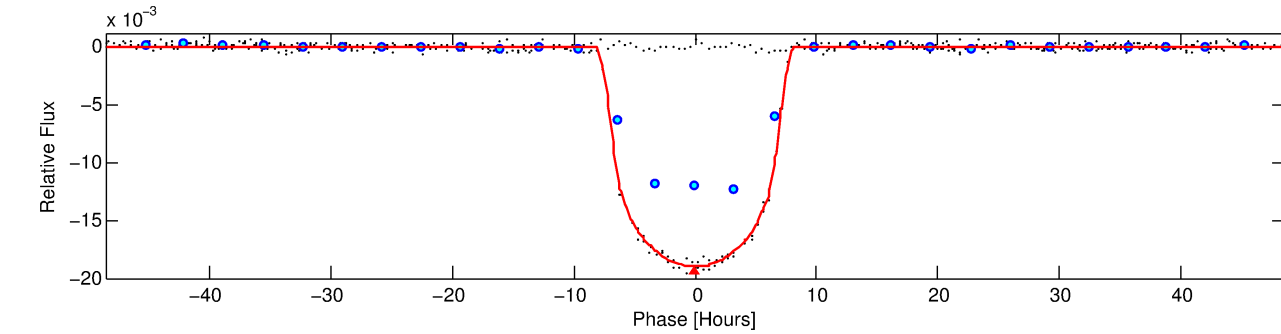
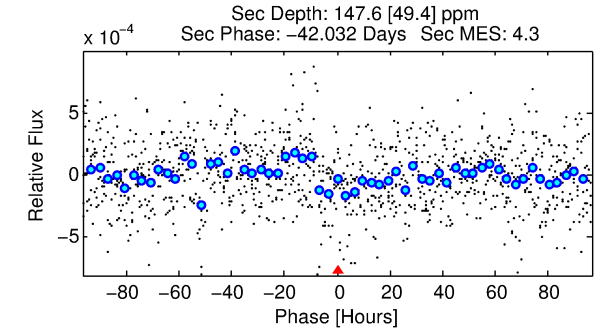
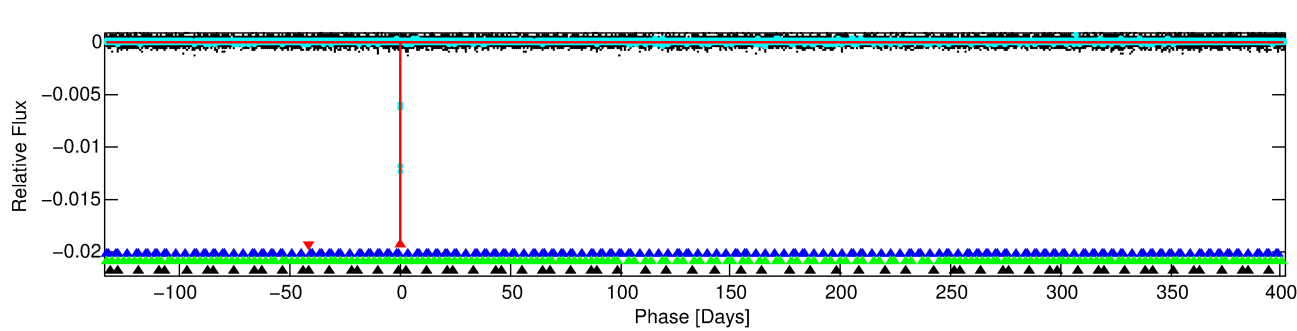
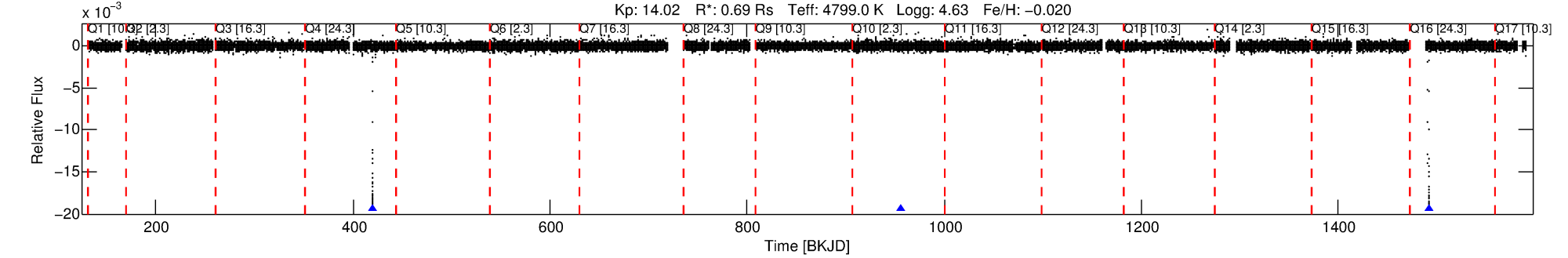
Ephemeris Match Information For 003239945-01

No Significant Match Found

DV One-Page Summary

KIC: 3239945 Candidate: 1 of 4 Period: 535.616 d
KOI: K00490.02 Corr: 0.816

Kp: 14.02 R*: 0.69 Rs Teff: 4799.0 K Logg: 4.63 Fe/H: -0.020



DV Fit Results:

Period = 535.61626 [0.00100] d
Epoch = 420.2870 [0.0013] BKJD
Rp/R* = 0.1226 [0.0013]
a/R* = 278.17 [8.08]
b = 0.23 [0.12]
Seff = 0.17 [0.02]
Teq = 163 [5] K
Rp = 9.26 [0.73] Re
a = 1.1713 [0.0747] AU
Ag = 1299.86 [451.33] [2.88σ]
Teff = 1511 [130] K [10.35σ]

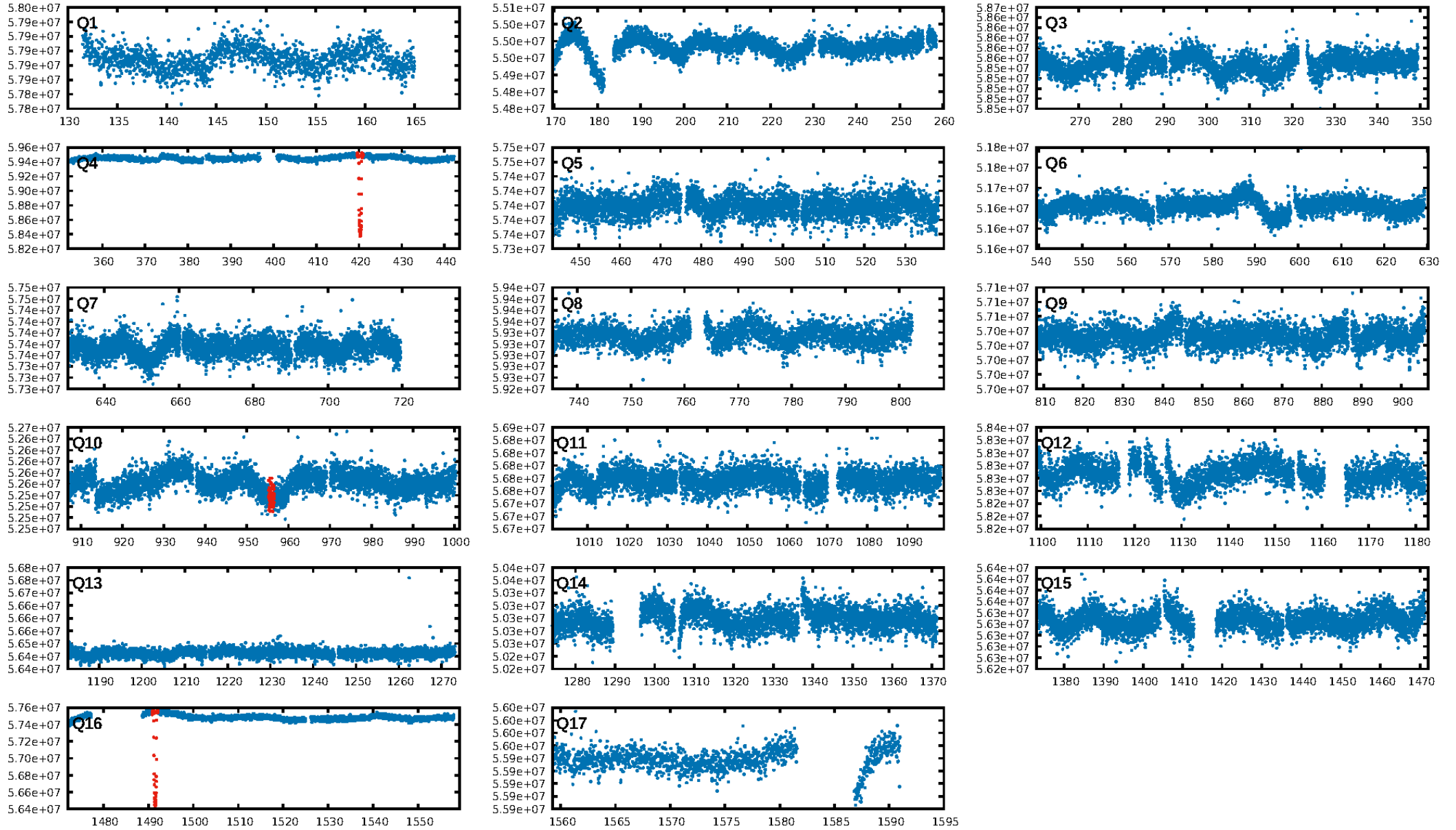
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [747.46σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 5.457
Centroid-sig: 0.0%
Centroid-so: 0.267 arcsec [10.07σ]
OotOffset-rm: 0.045 arcsec [0.63σ]
KicOffset-rm: 0.504 arcsec [5.13σ]
OotOffset-st: 0/0/2/0 [2]
KicOffset-st: 0/0/2/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.33 [1/3]

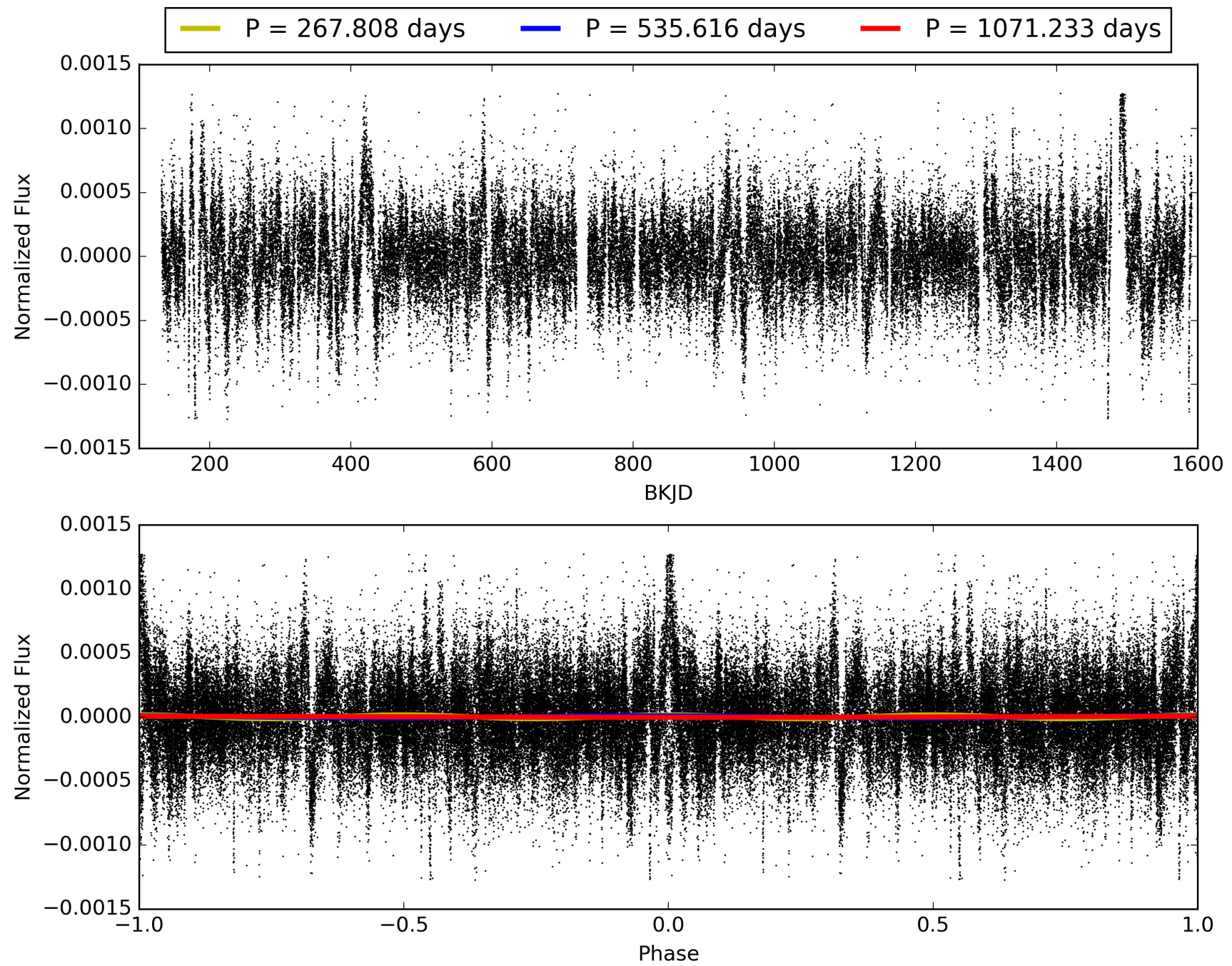
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:02:31 Z

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

TCE 003239945-01, PDC Light Curves

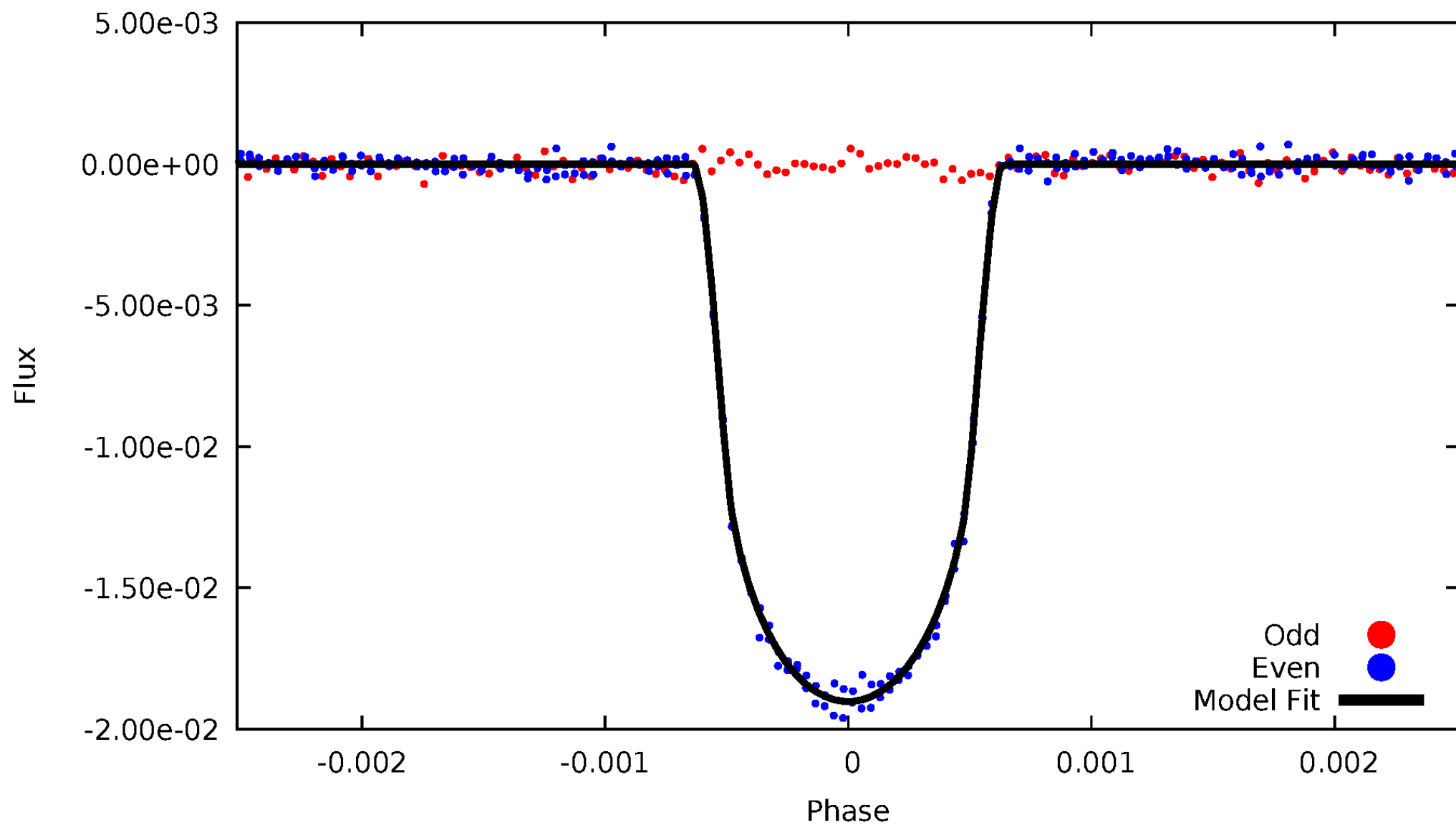


TCE 003239945-01



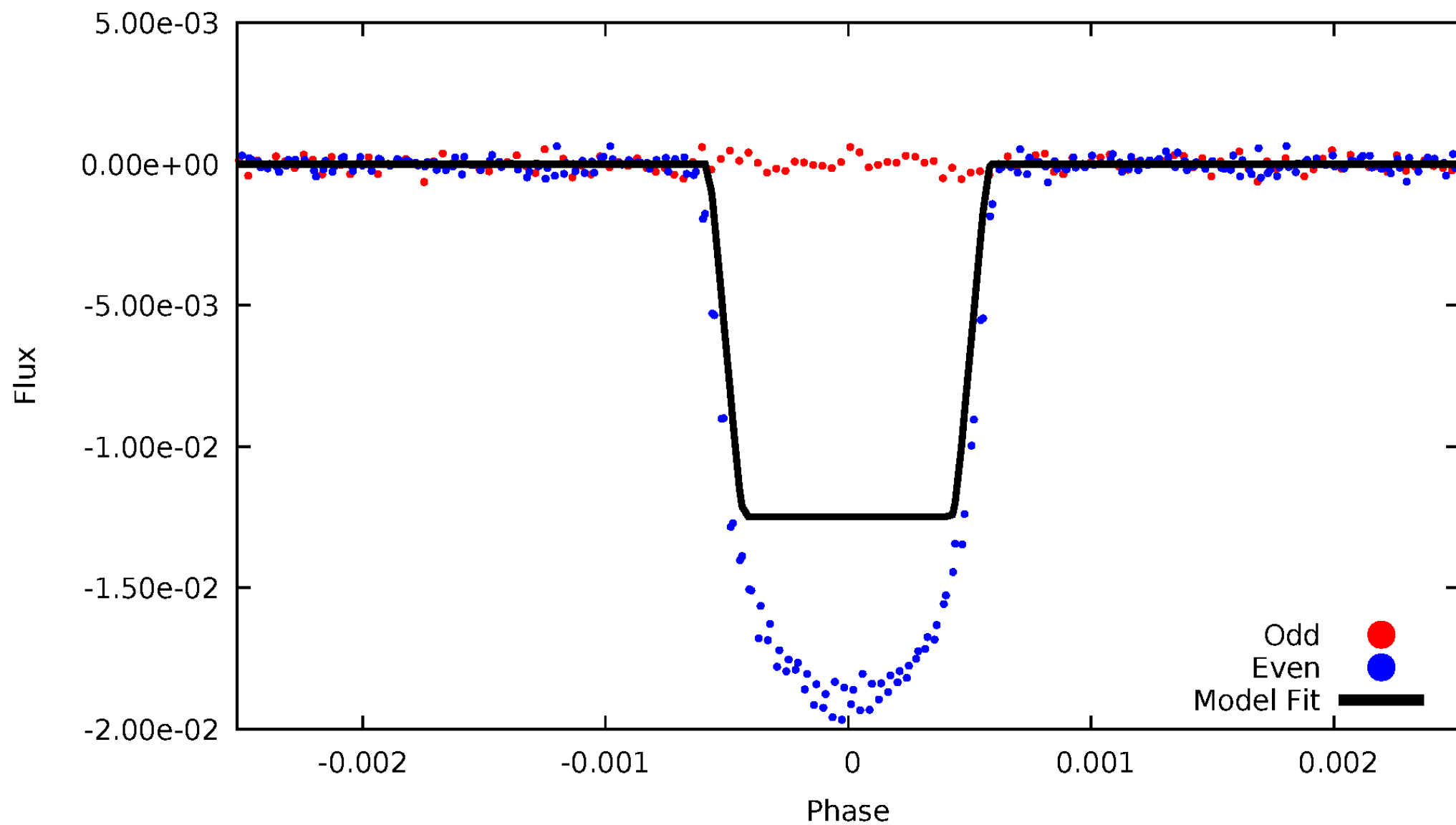
DV Odd/Even

TCE 003239945-01



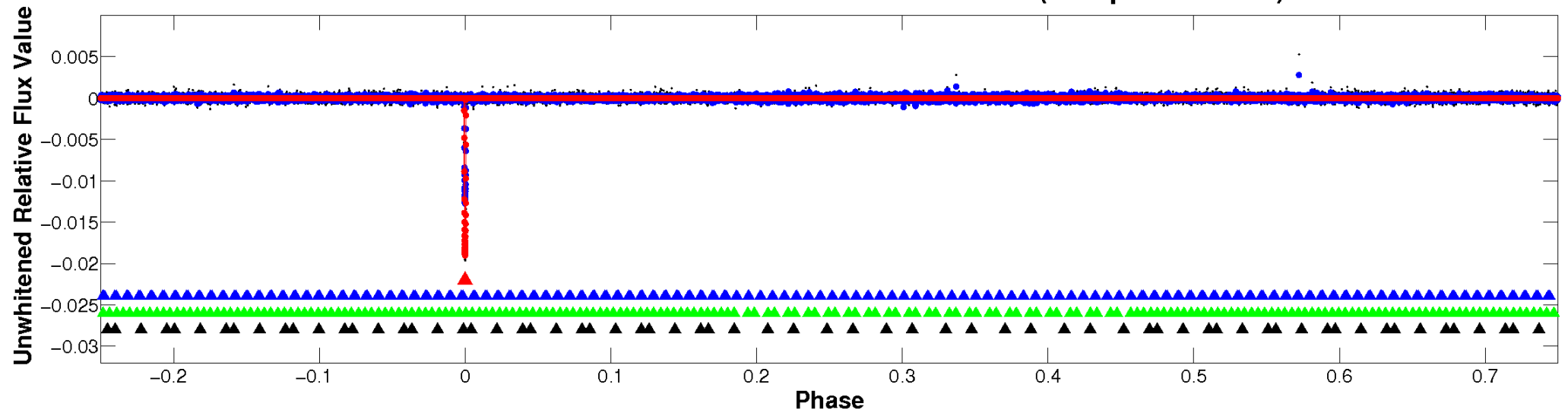
ALT Odd/Even

TCE 003239945-01

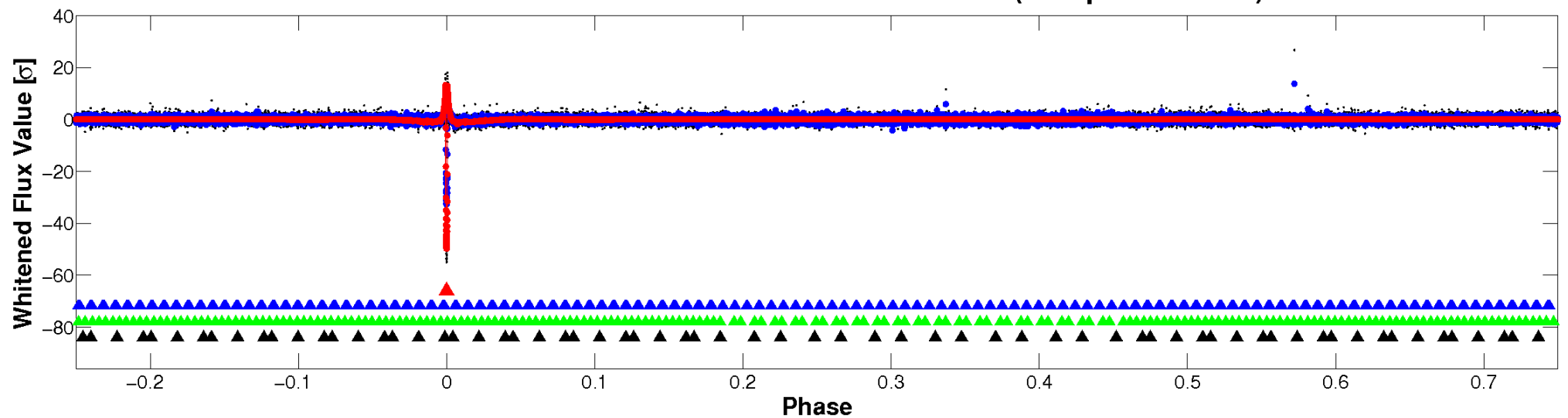


Non-Whitened Vs. Whitened Light Curve

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

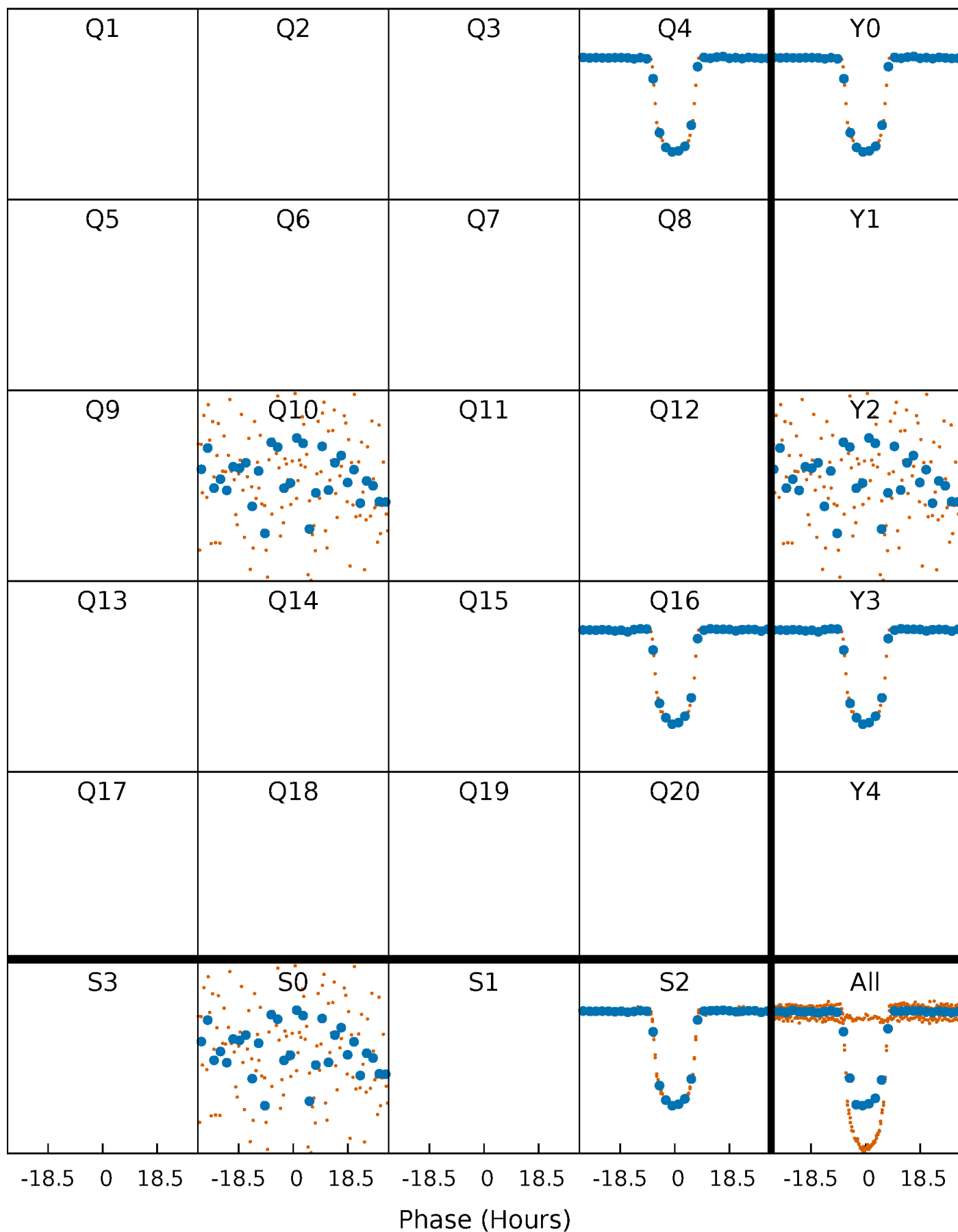


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



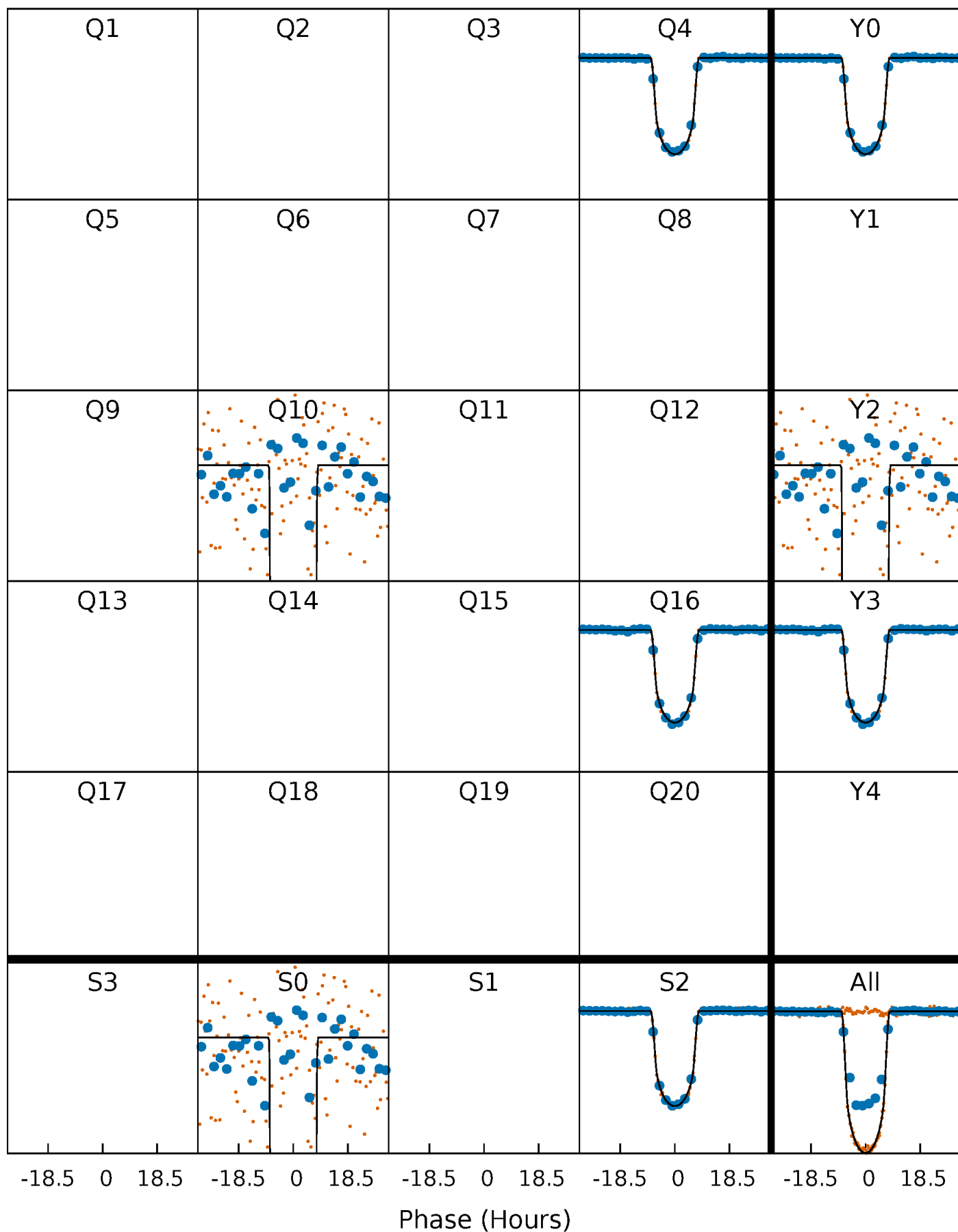
PDC Quarter-Phased Transit Curves

TCE 003239945-01 P=535.616258 Days $T_0=420.286981$ (BKJD)



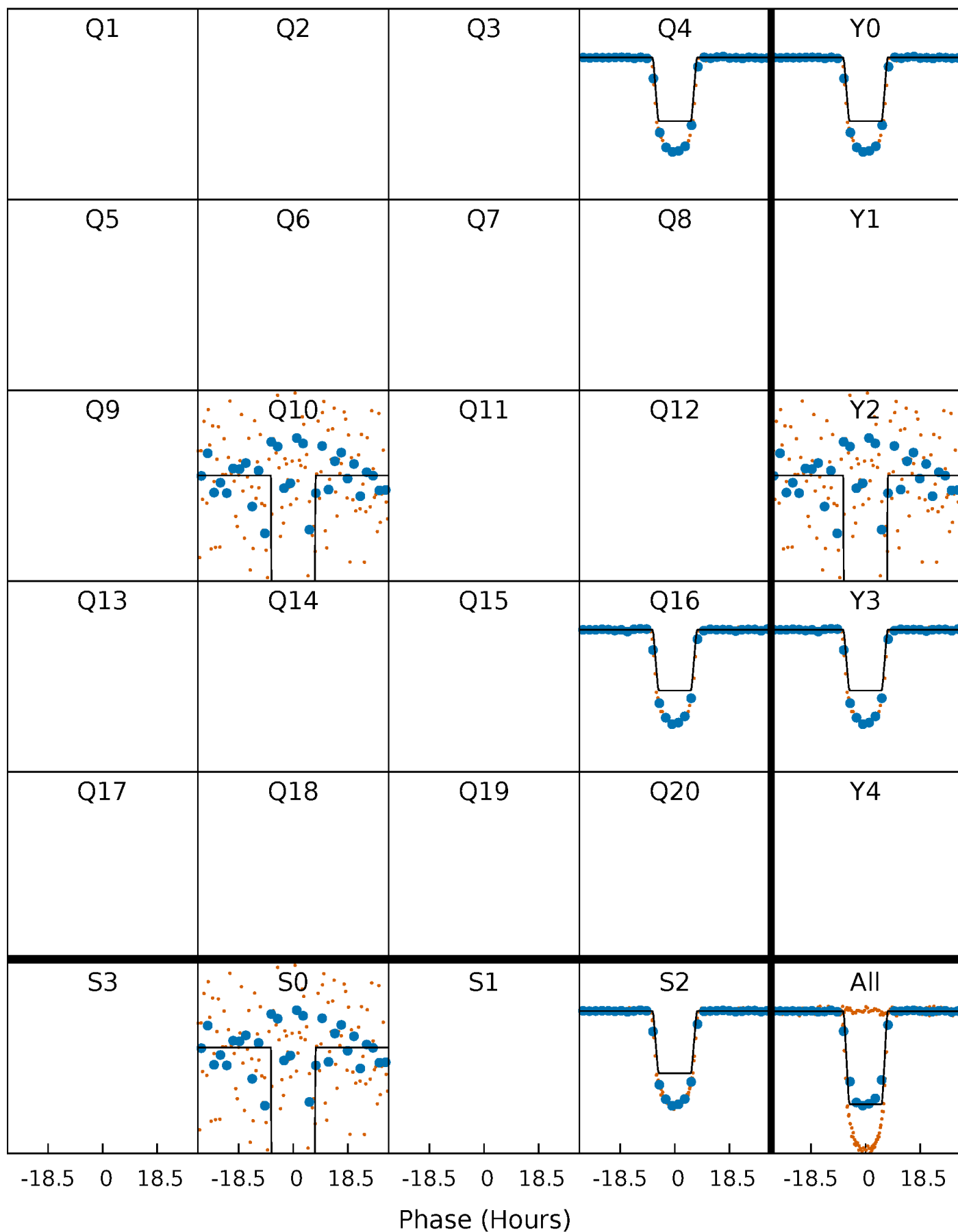
DV Quarter-Phased Transit Curves

TCE 003239945-01 P=535.616258 Days $T_0=420.286981$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

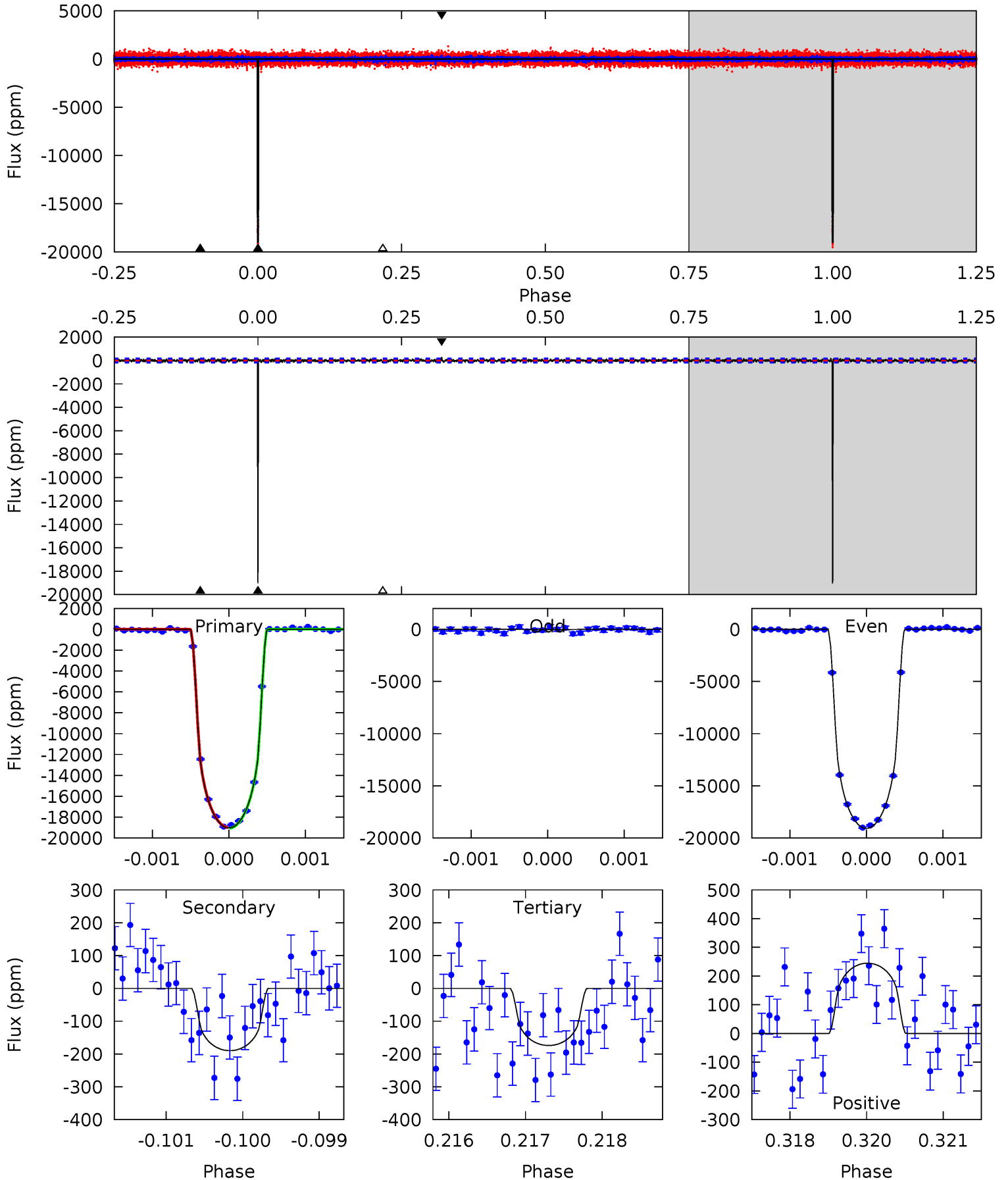
TCE 003239945-01 P=535.618097 Days $T_0=420.286014$ (BKJD)



DV Model-Shift Uniqueness Test

003239945-01, P = 535.616258 Days, E = 420.286981 Days

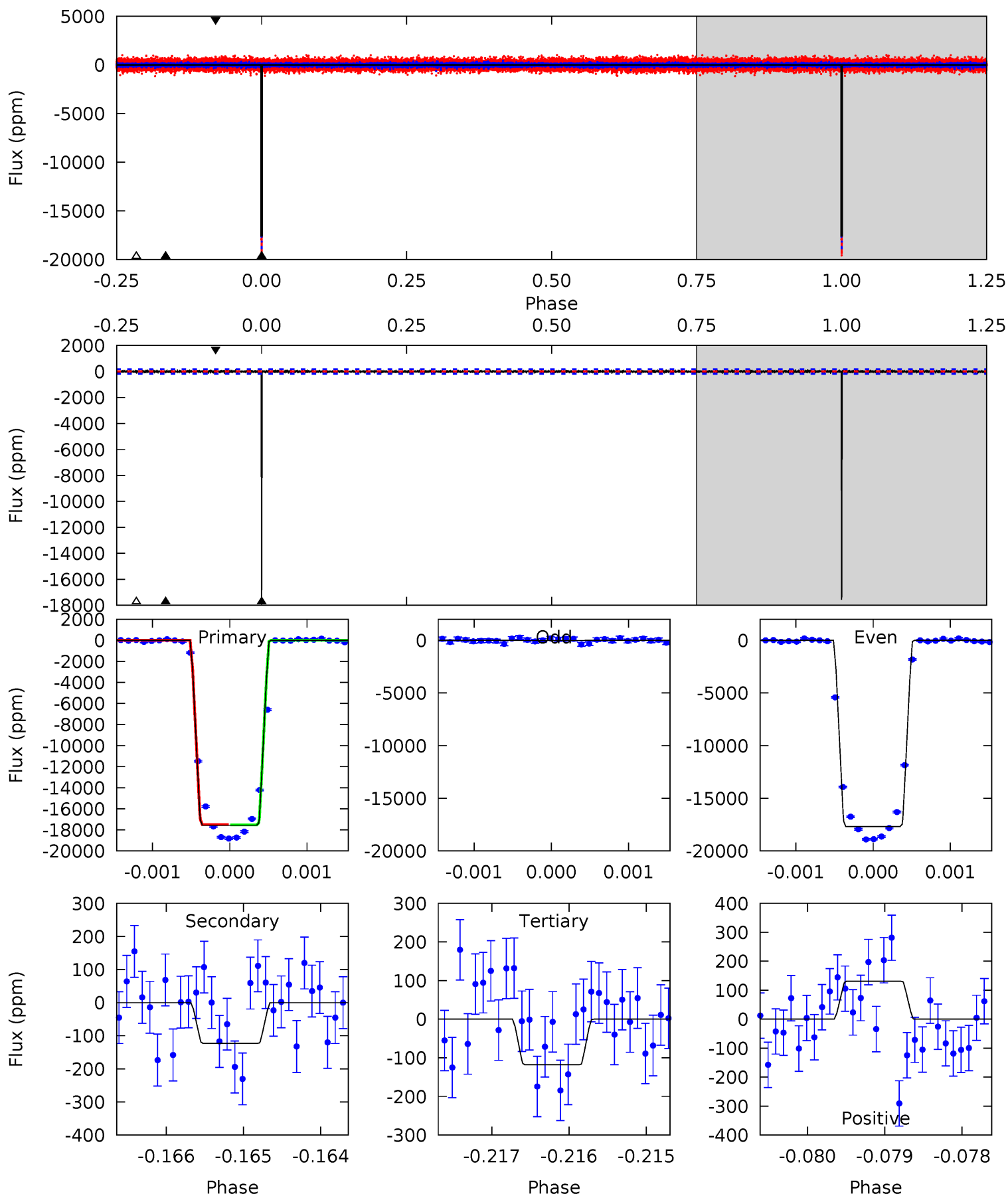
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
624.9	6.23	5.72	8.04	5.41	3.22	1.62	619.2	616.8	0.52	-1.80	379.3	0.68	0.01	0.96



Alt Model-Shift Uniqueness Test

003239945-01, P = 535.618097 Days, E = 420.286014 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
547.8	3.84	3.67	4.08	5.43	3.25	0.96	544.2	543.8	0.17	-0.24	338.9	0.68	0.01	0.33



Stellar Parameters For KIC 003239945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4799^{+95}_{-95}	$4.631^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.692^{+0.054}_{-0.021}$	$0.776^{+0.031}_{-0.053}$	$3.301^{+0.172}_{-0.643}$
	+2%/-2%	+0%/-1%	+750%/-750%	+8%/-3%	+4%/-7%	+5%/-19%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 003239945-01 / KOI 0490.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-190 ± 30	$9.48^{+0.38}_{-0.34}$	229^{+6}_{-5}	2442^{+51}_{-55}	1602^{+275}_{-267}
Alt.	-123 ± 32	$8.62^{+0.35}_{-0.31}$	229^{+5}_{-5}	2365^{+75}_{-88}	1252^{+357}_{-346}

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 $A_{obs} \gg 1.0$

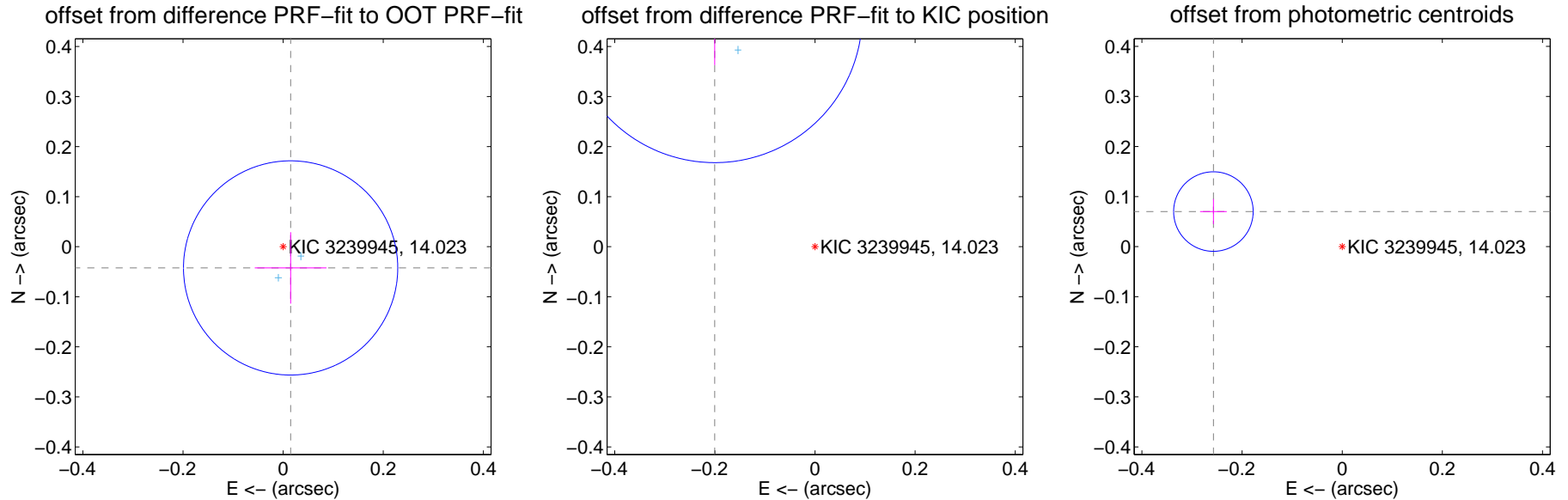
DV Centroid Data

Supplemental centroid analysis for 003239945-01. Kepler magnitude: 14.02. Transit SNR 323.90

There are 2 quarters with good PRF difference image offsets

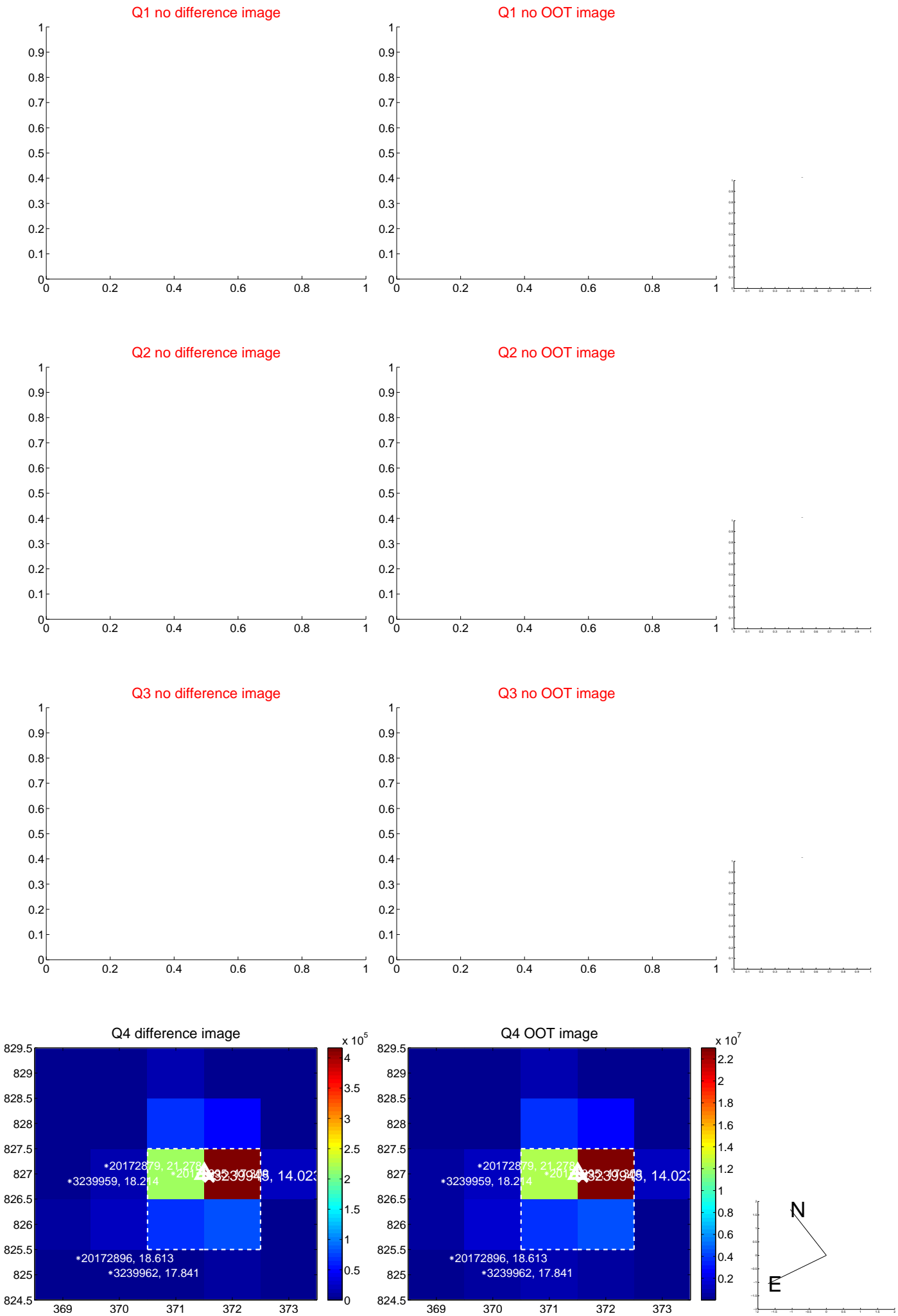
The direct PRF centroid is offset from the target star catalog position by about 0.63 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.045 ± 0.071	0.63	-0.015 ± 0.072	-0.042 ± 0.071
PRF-fit source offset from KIC position	0.504 ± 0.098	5.13	0.200 ± 0.089	0.463 ± 0.100
photometric centroid source offset	0.27 ± 0.03	10.07	0.26 ± 0.03	0.07 ± 0.03



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.

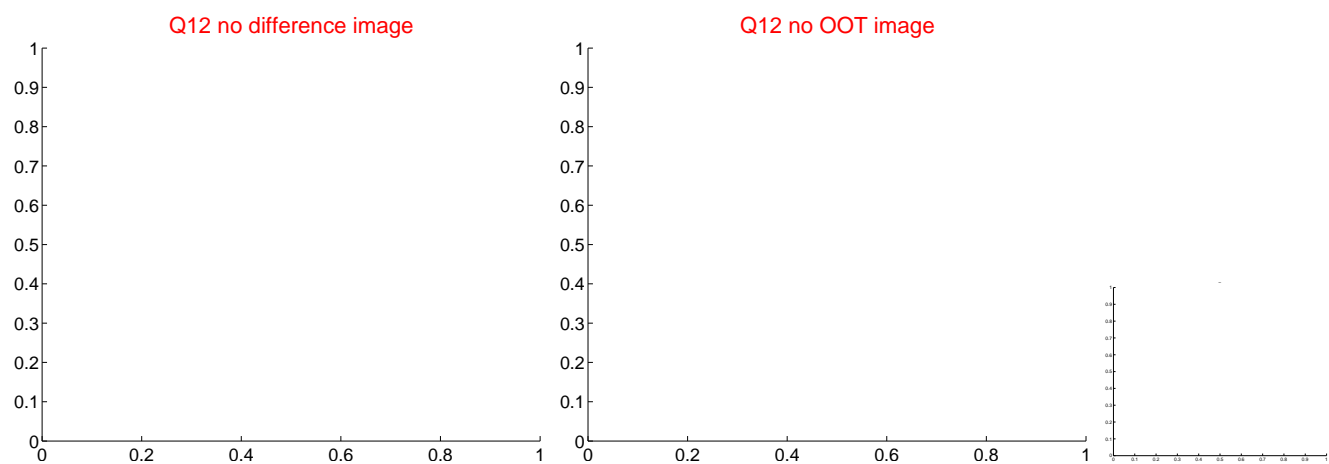
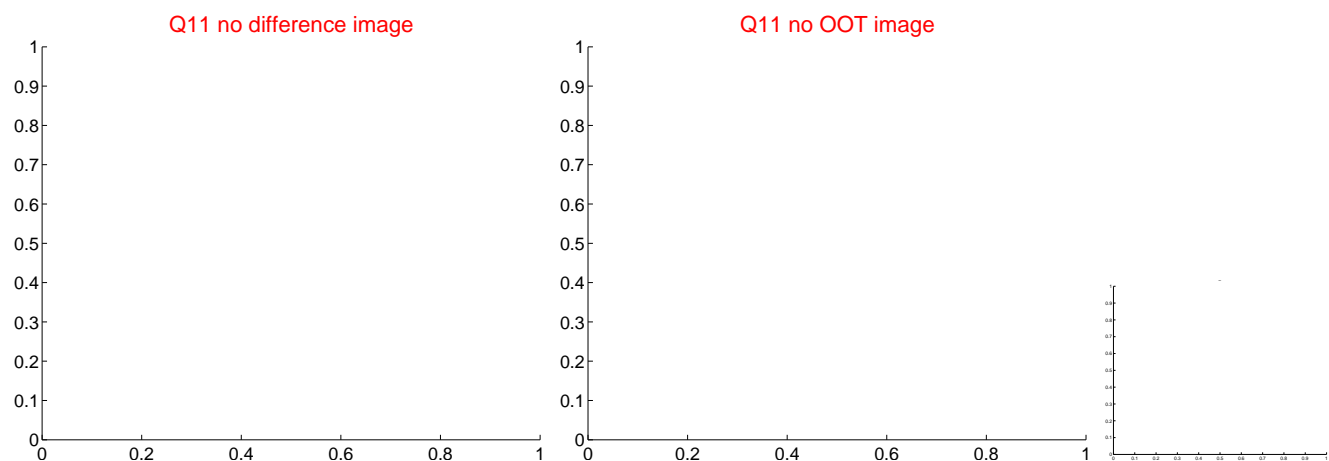
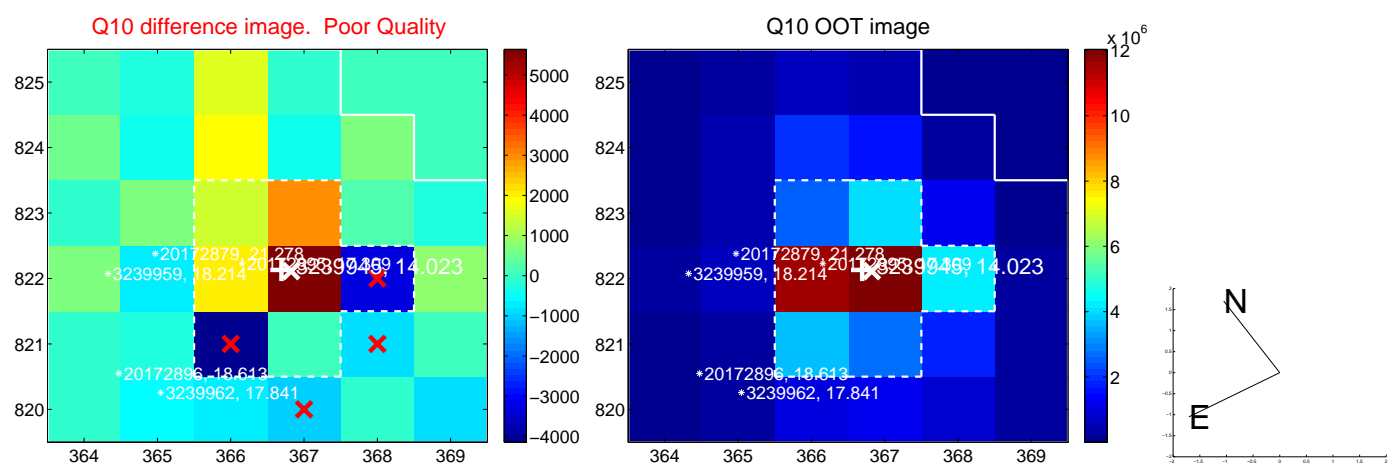
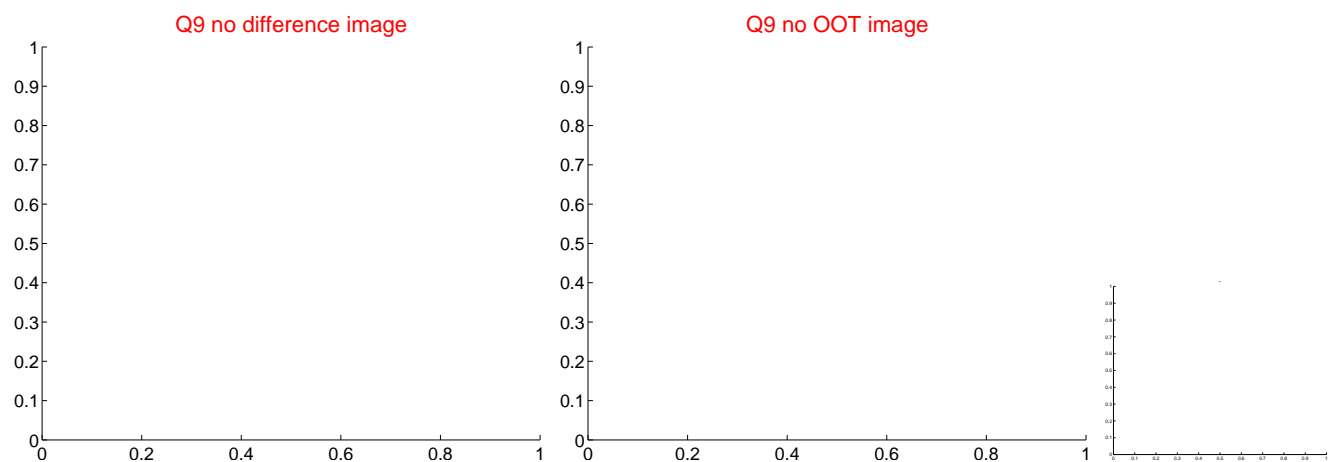
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



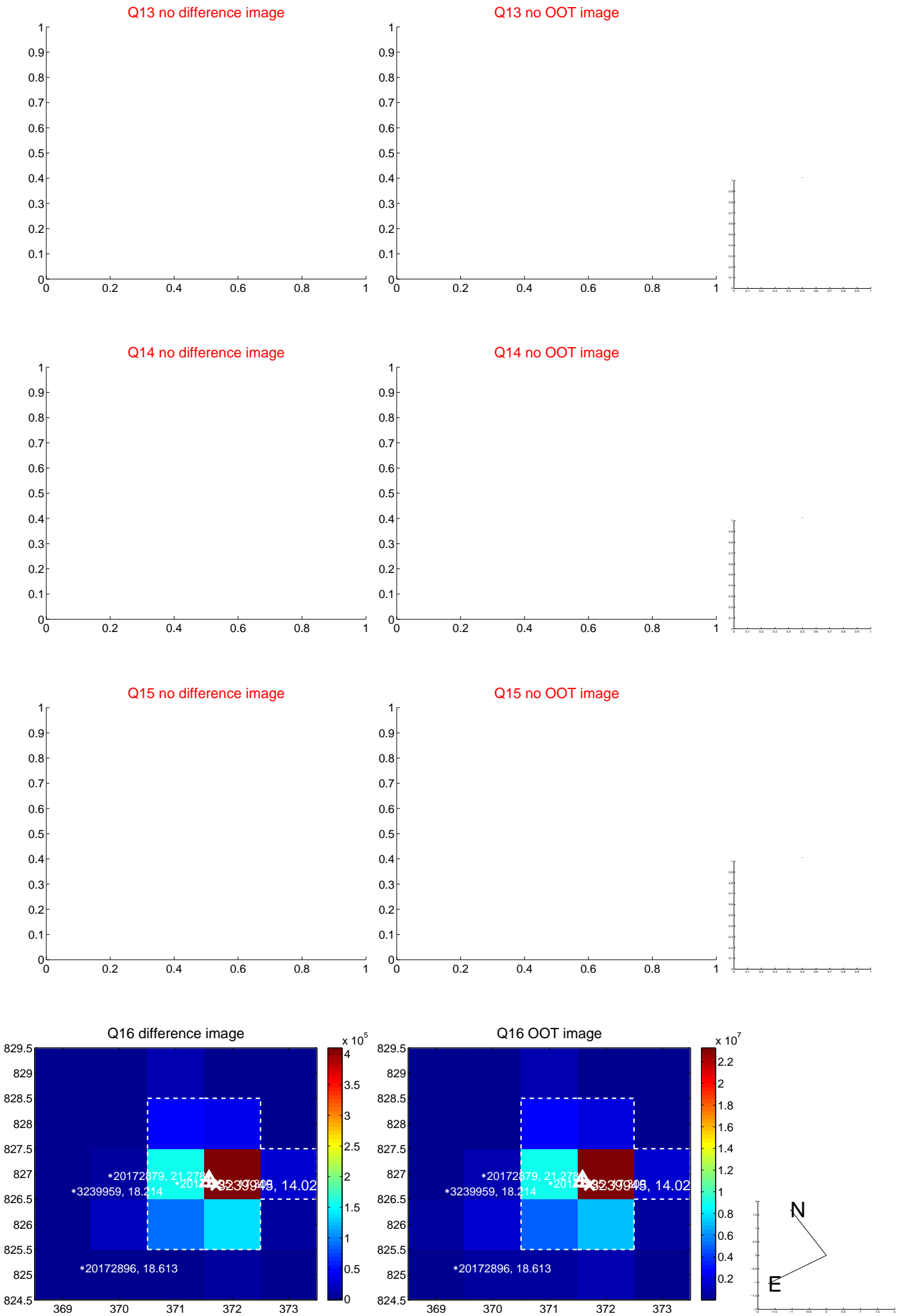
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

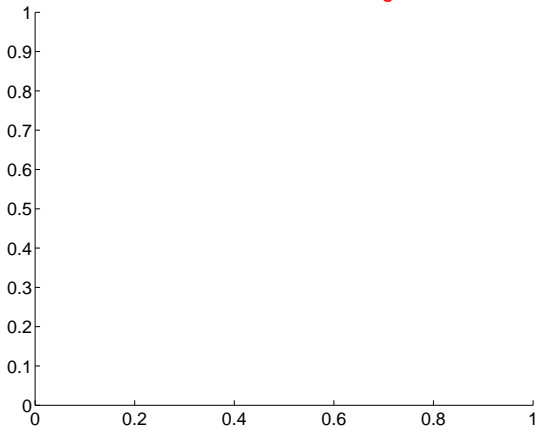


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

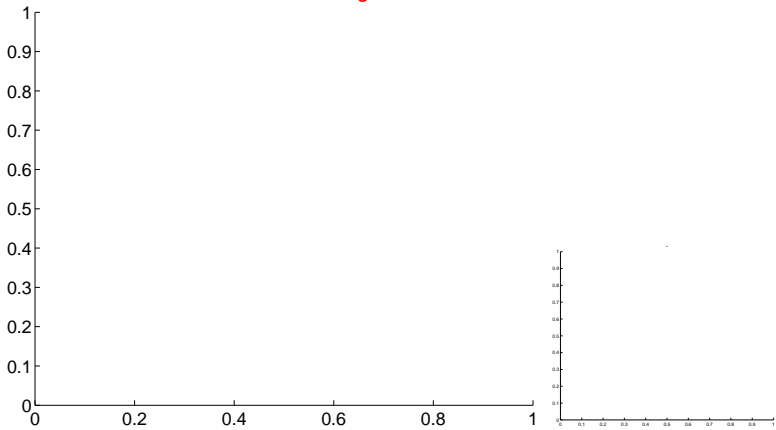


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

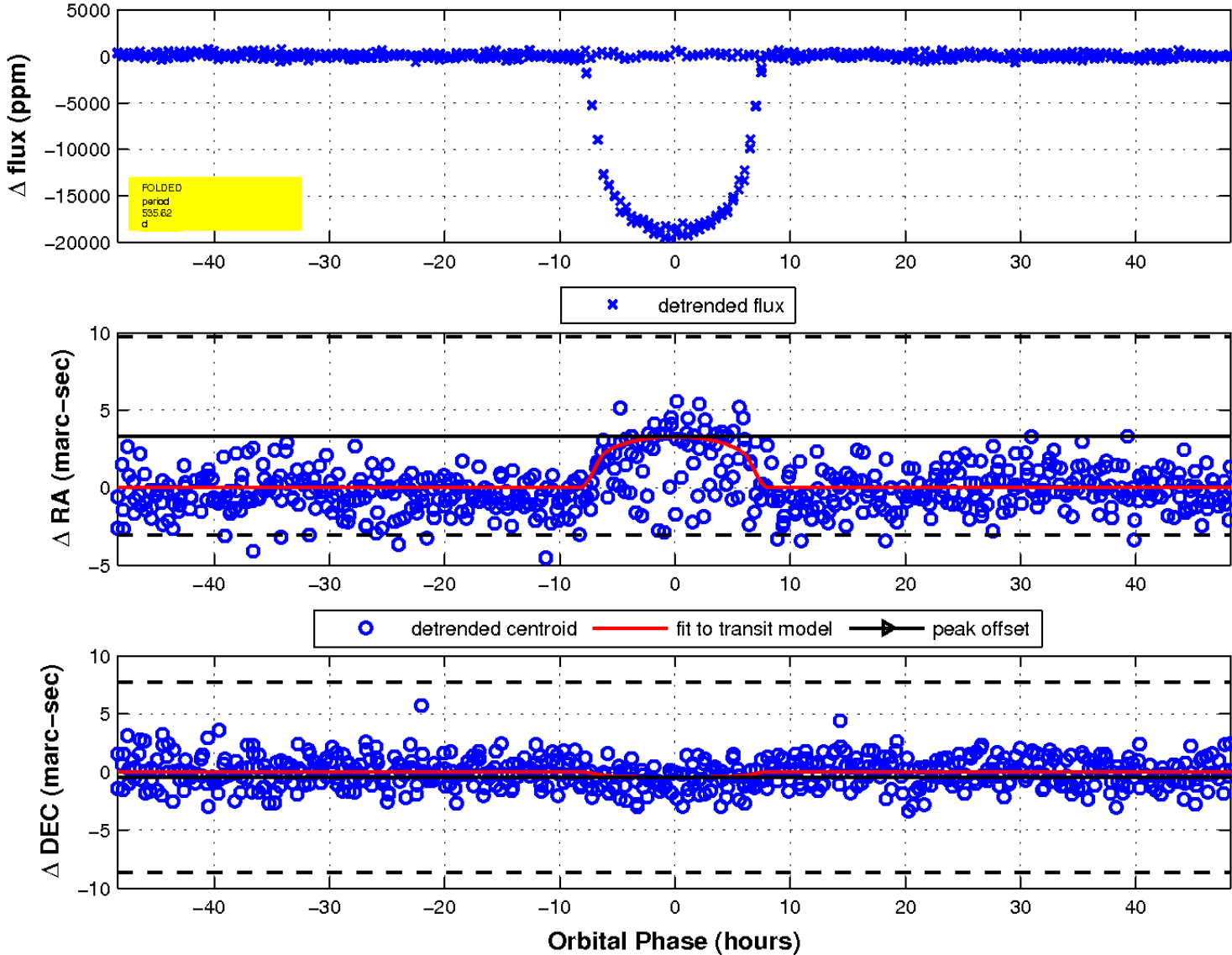
Q17 no difference image



Q17 no OOT image

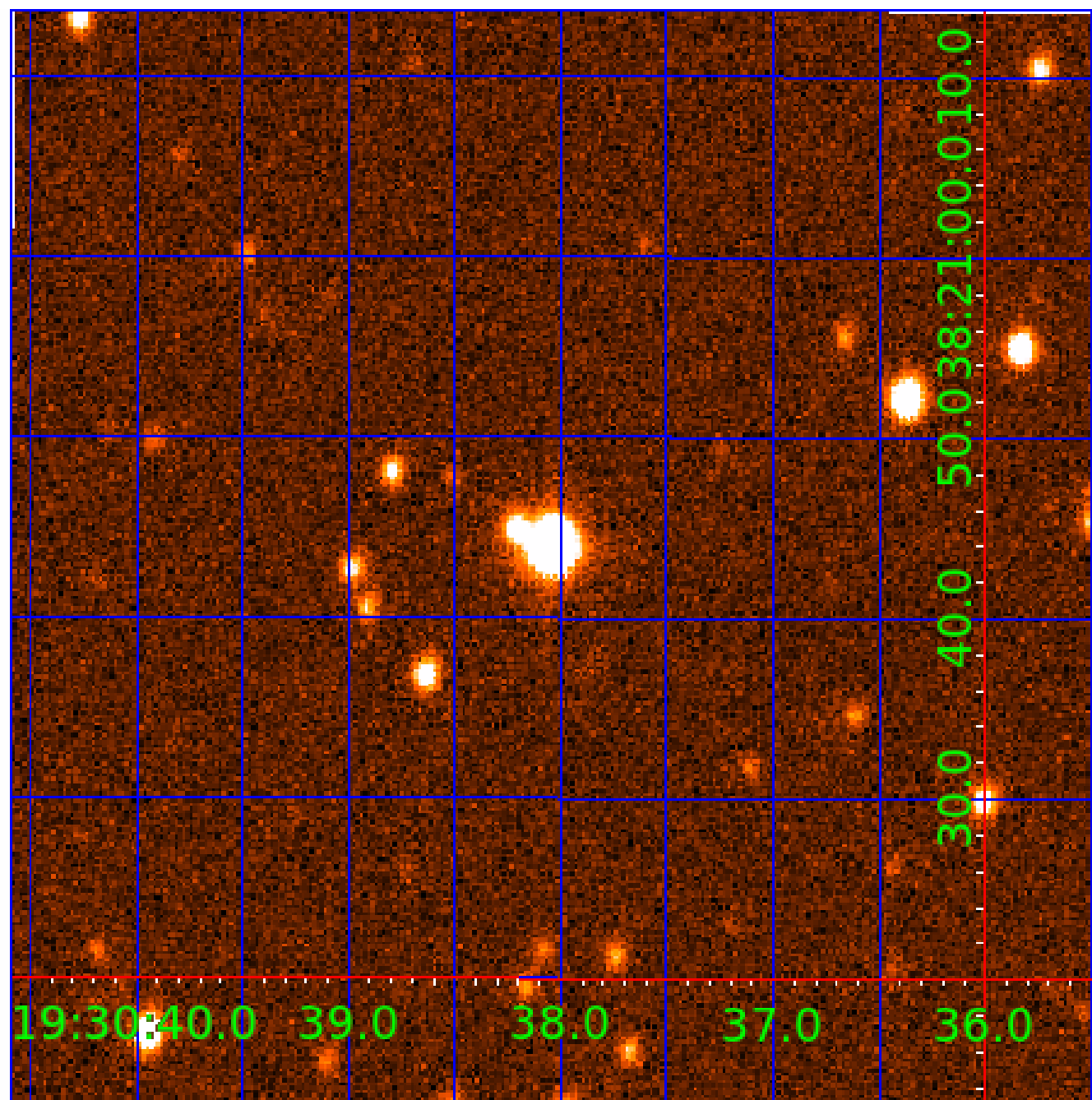


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 003239945

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})
003239945-01	OBS	0490.02	535.616258	420.286981	19019.0	16.159	279.6	323.9	0.69	4799	9.26	0.17
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003239945-04	OBS	0490.04	21.803951	139.065048	238.7	3.325	15.0	15.3	0.69	4799	1.31	11.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003239945-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003239945-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
003239945-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
003239945-04	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

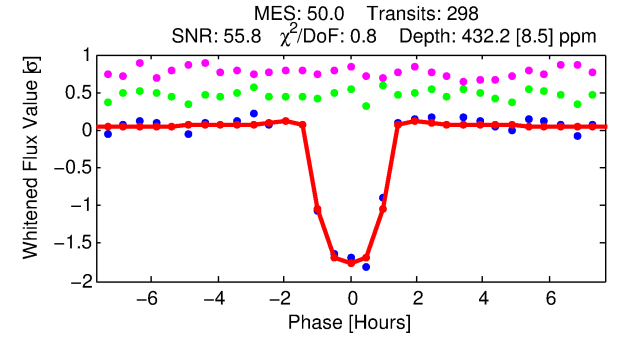
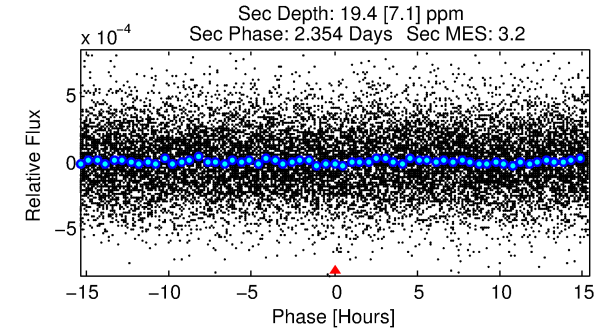
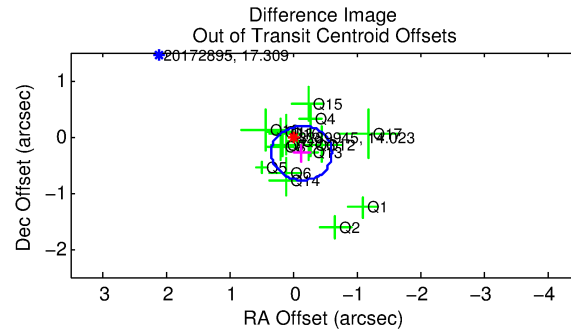
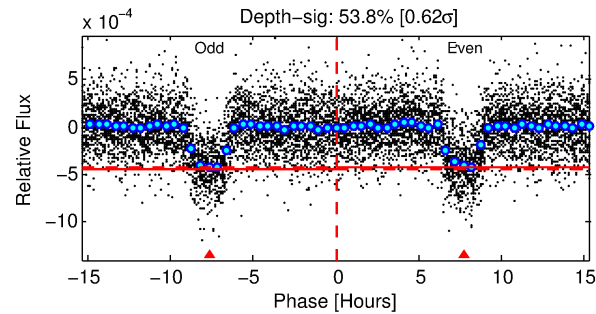
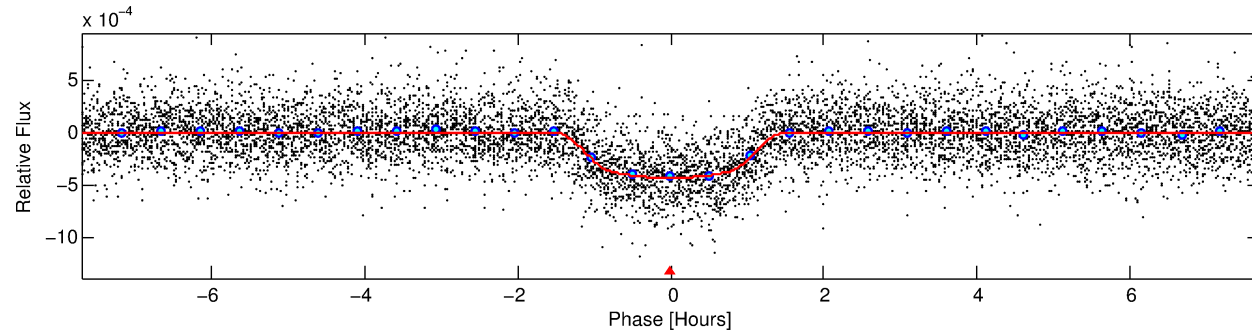
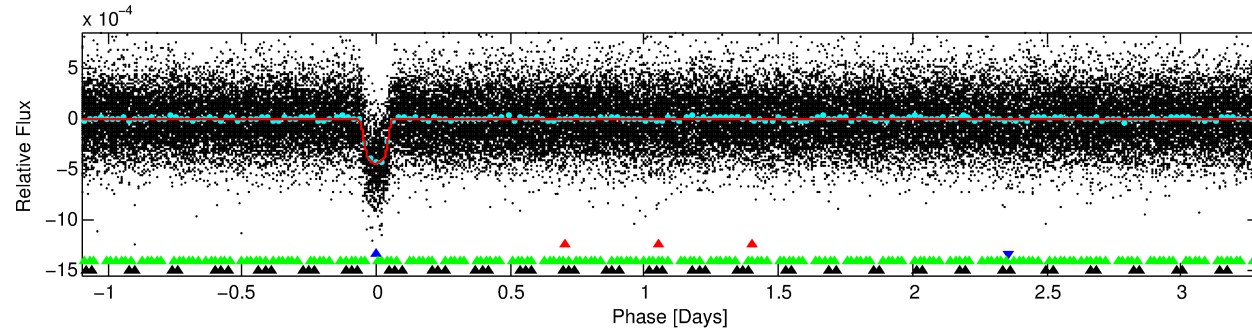
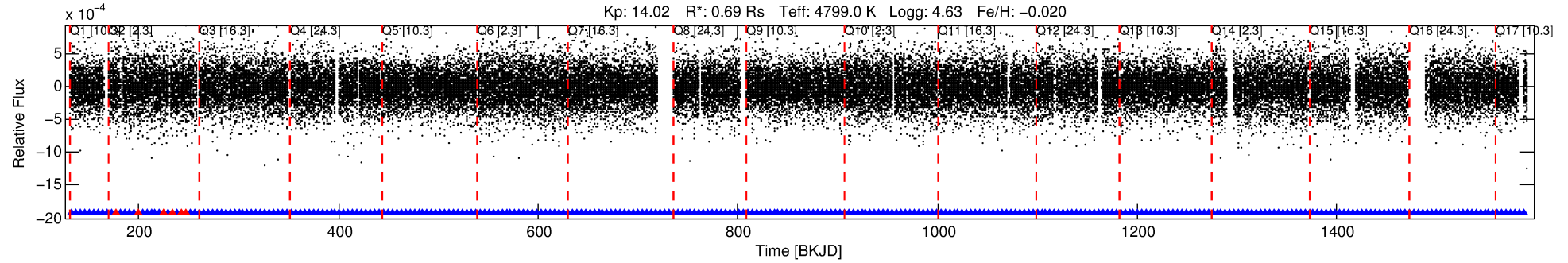
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003239945-02

No Significant Match Found

DV One-Page Summary

KIC: 3239945 Candidate: 2 of 4 Period: 4.393 d
KOI: K00490.01 Name: Kepler-167b Corr: 0.971



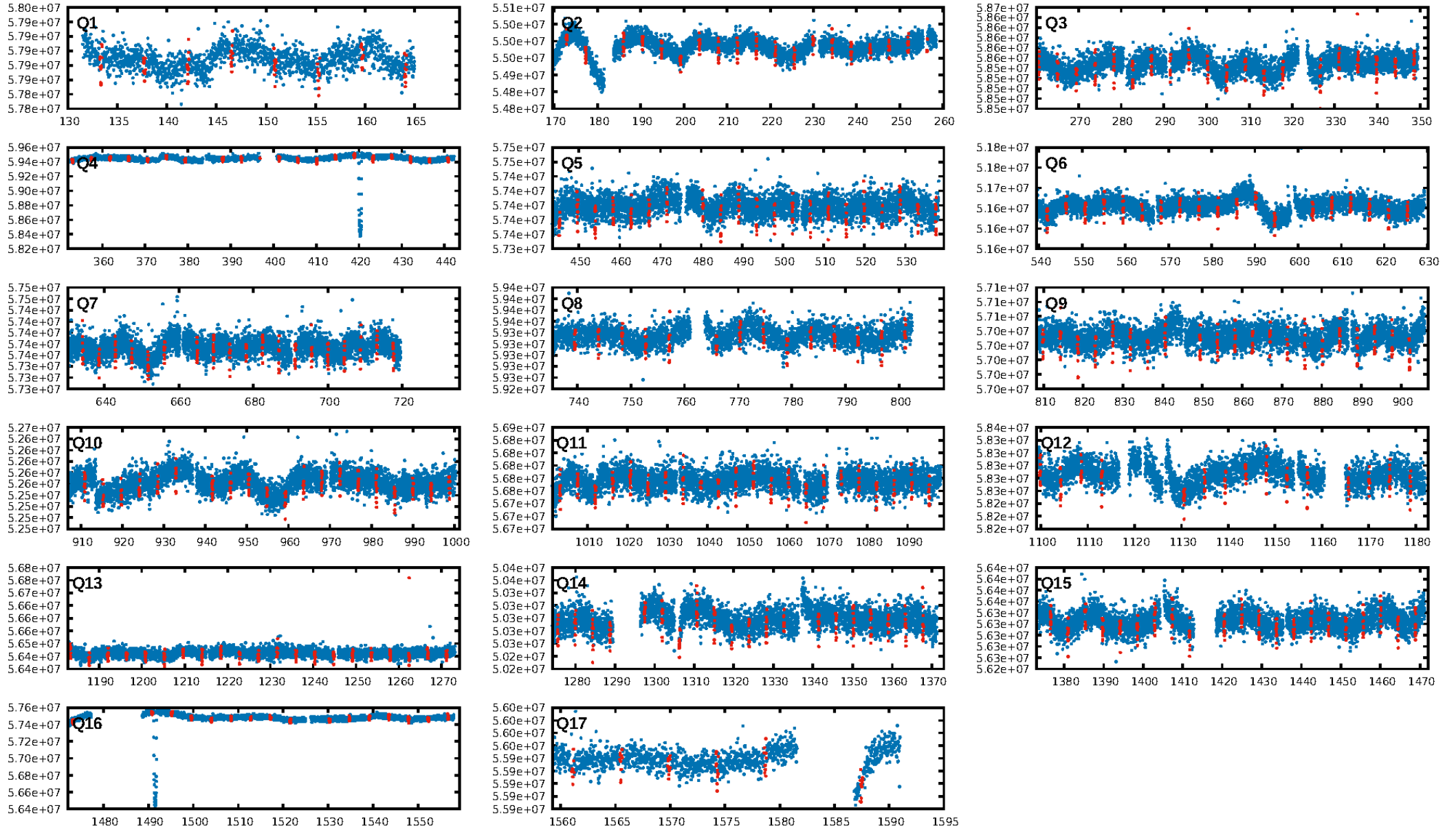
DV Fit Results:

Period = 4.39316 [0.00001] d
Epoch = 133.3282 [0.0008] BKJD
Rp/R* = 0.0232 [0.0026]
a/R* = 6.63 [2.68]
b = 0.89 [0.10]
Seff = 100.28 [12.04]
Teq = 807 [24] K
Rp = 1.75 [0.24] Re
a = 0.0476 [0.0030] AU
Ag = 7.92 [3.47] [1.99 σ]
Teffp = 2093 [228] K [5.61 σ]

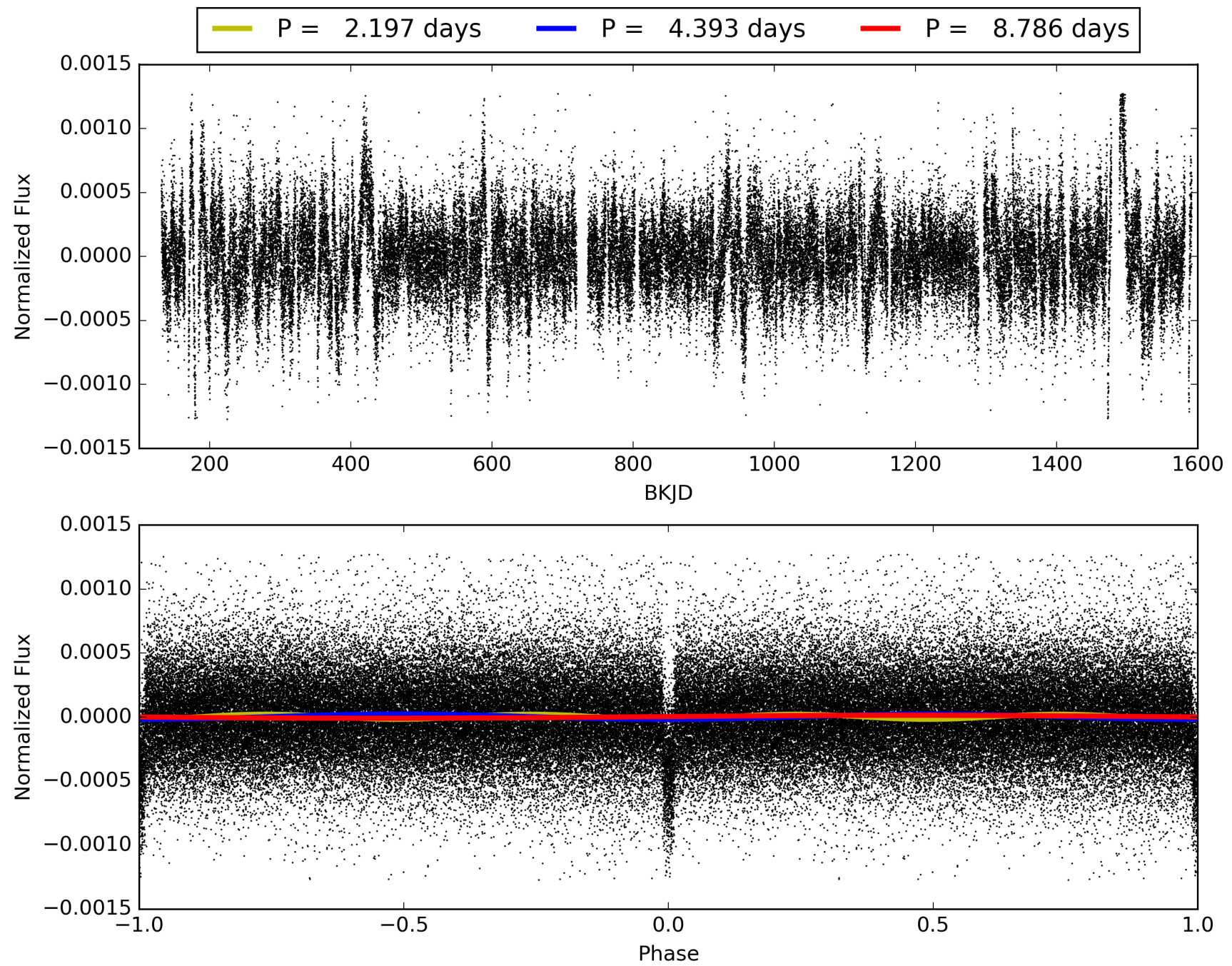
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [18.03 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [278/284]
GhostDiagnostic-chr: 3.857
Centroid-sig: 0.1%
Centroid-so: 0.161 arcsec [0.67 σ]
OotOffset-rm: 0.326 arcsec [2.03 σ]
KicOffset-rm: 0.293 arcsec [1.90 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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TCE 003239945-02, PDC Light Curves

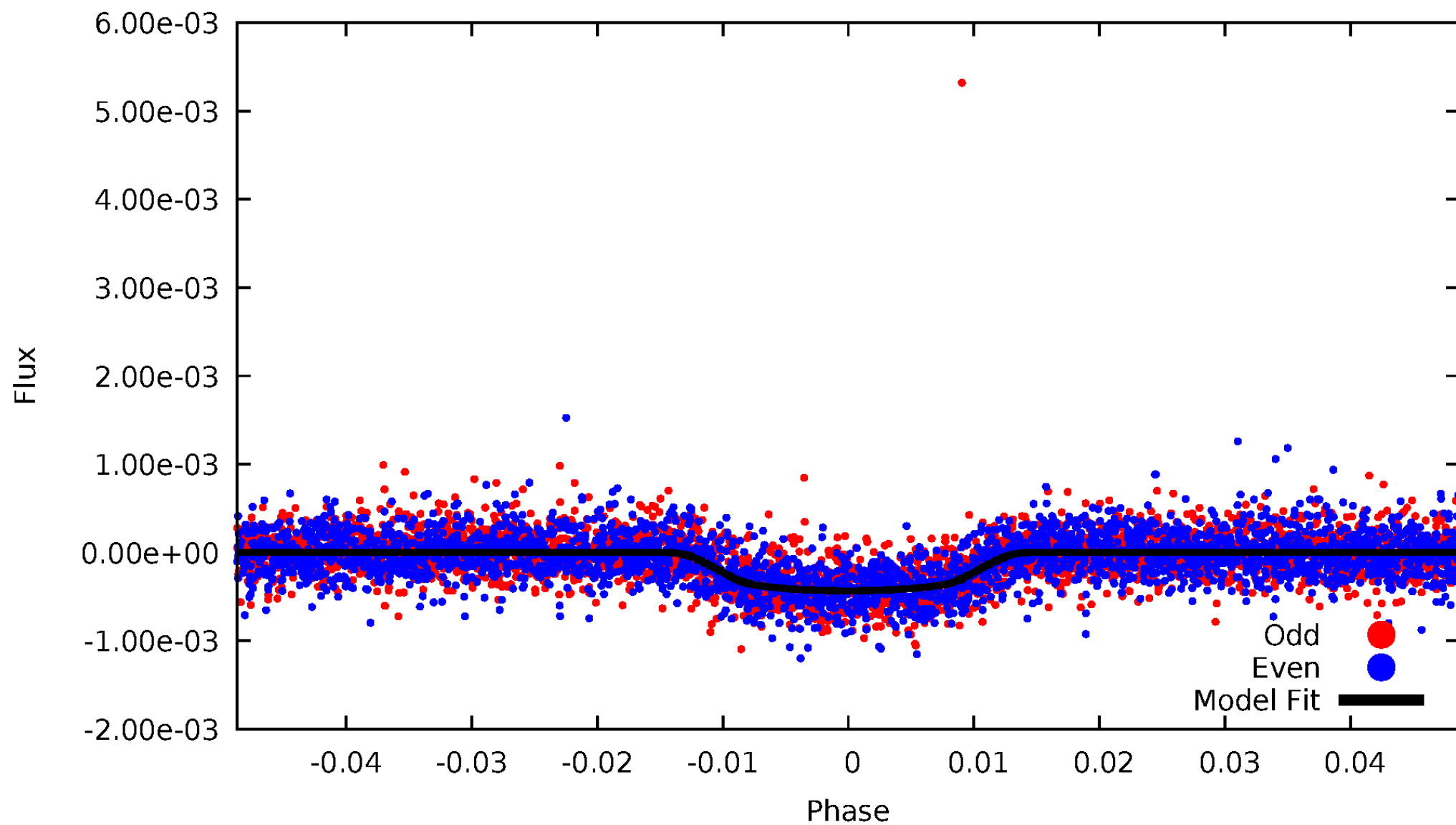


TCE 003239945-02



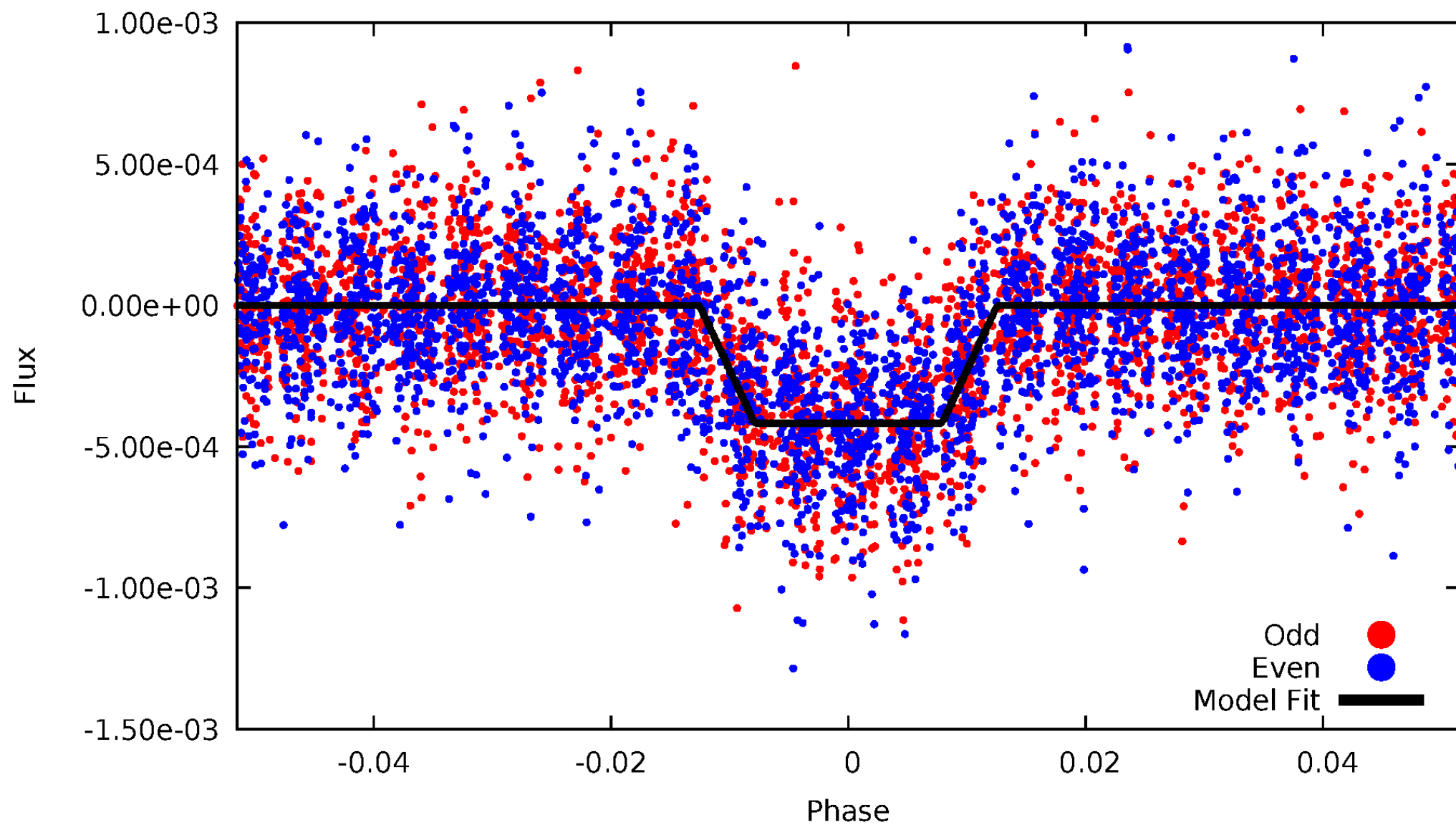
DV Odd/Even

TCE 003239945-02



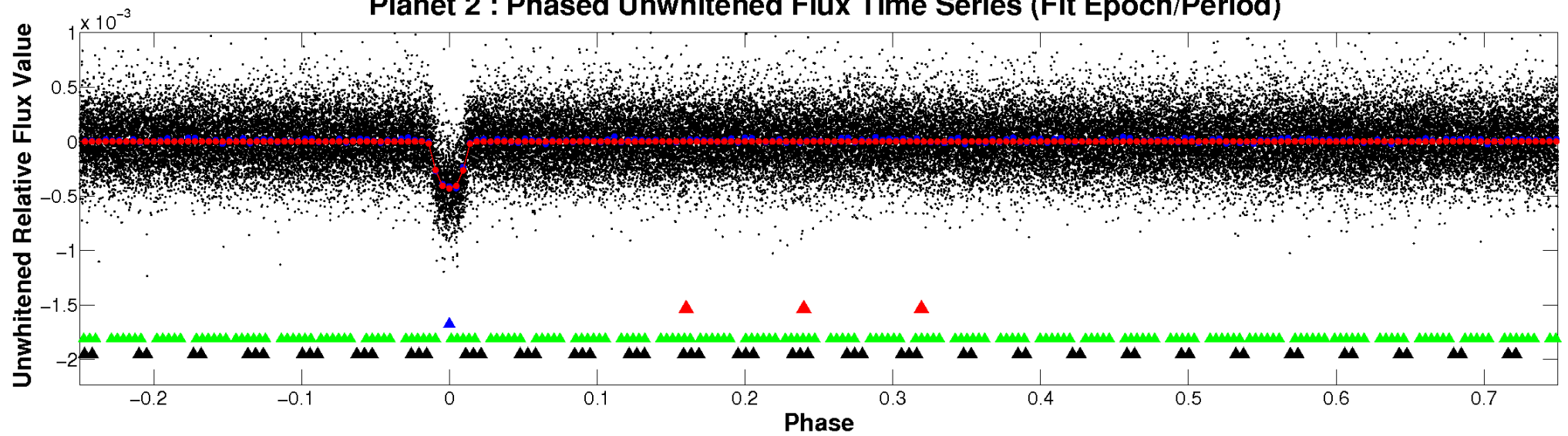
ALT Odd/Even

TCE 003239945-02

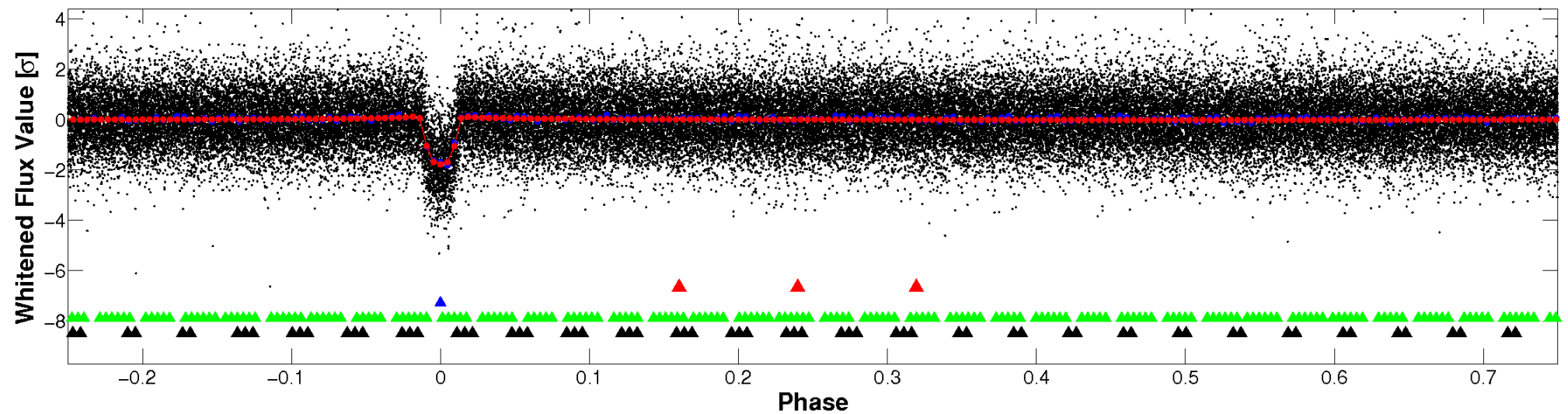


Non-Whitened Vs. Whitened Light Curve

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

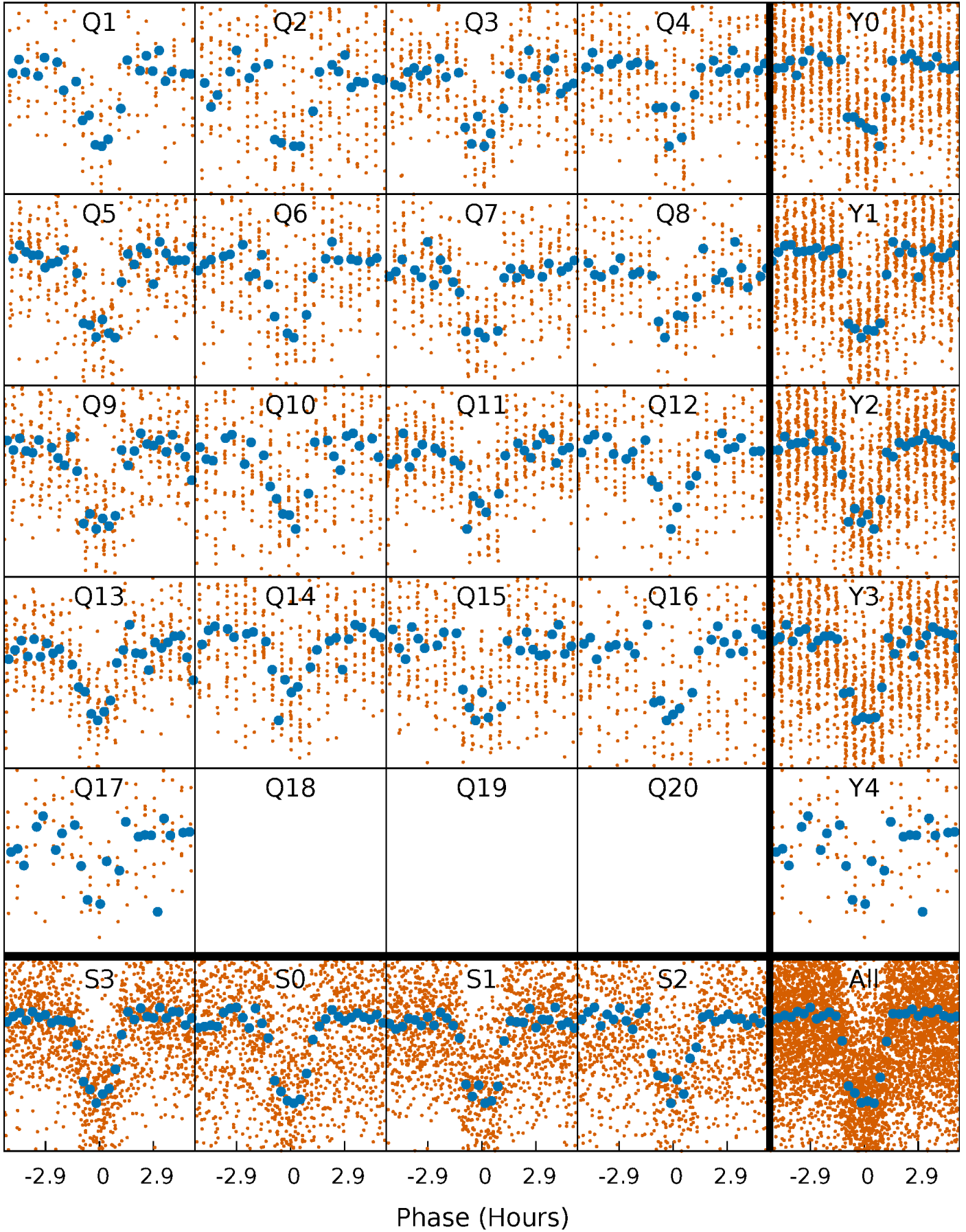


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



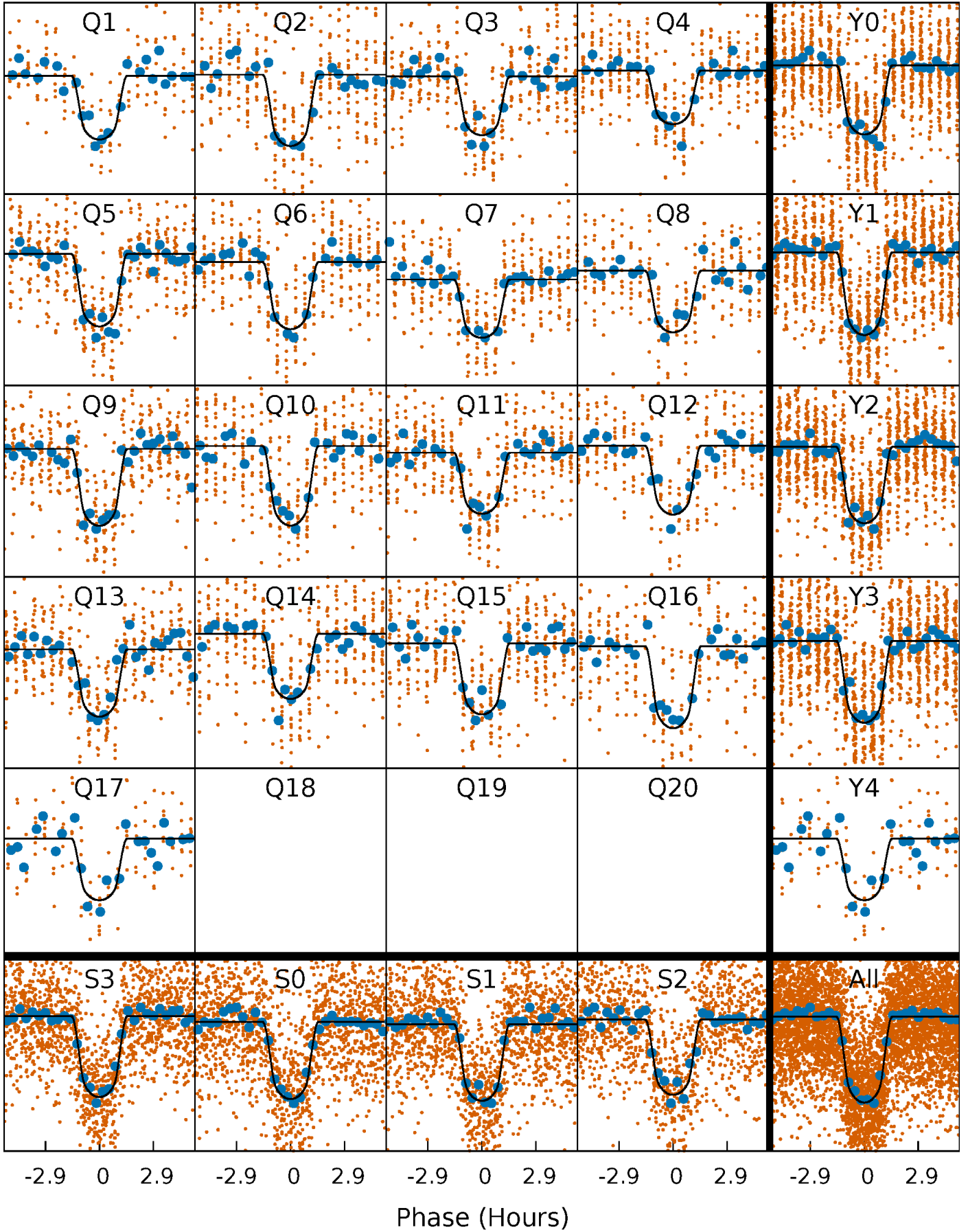
PDC Quarter-Phased Transit Curves

TCE 003239945-02 P= 4.393163 Days $T_0=133.328200$ (BKJD)



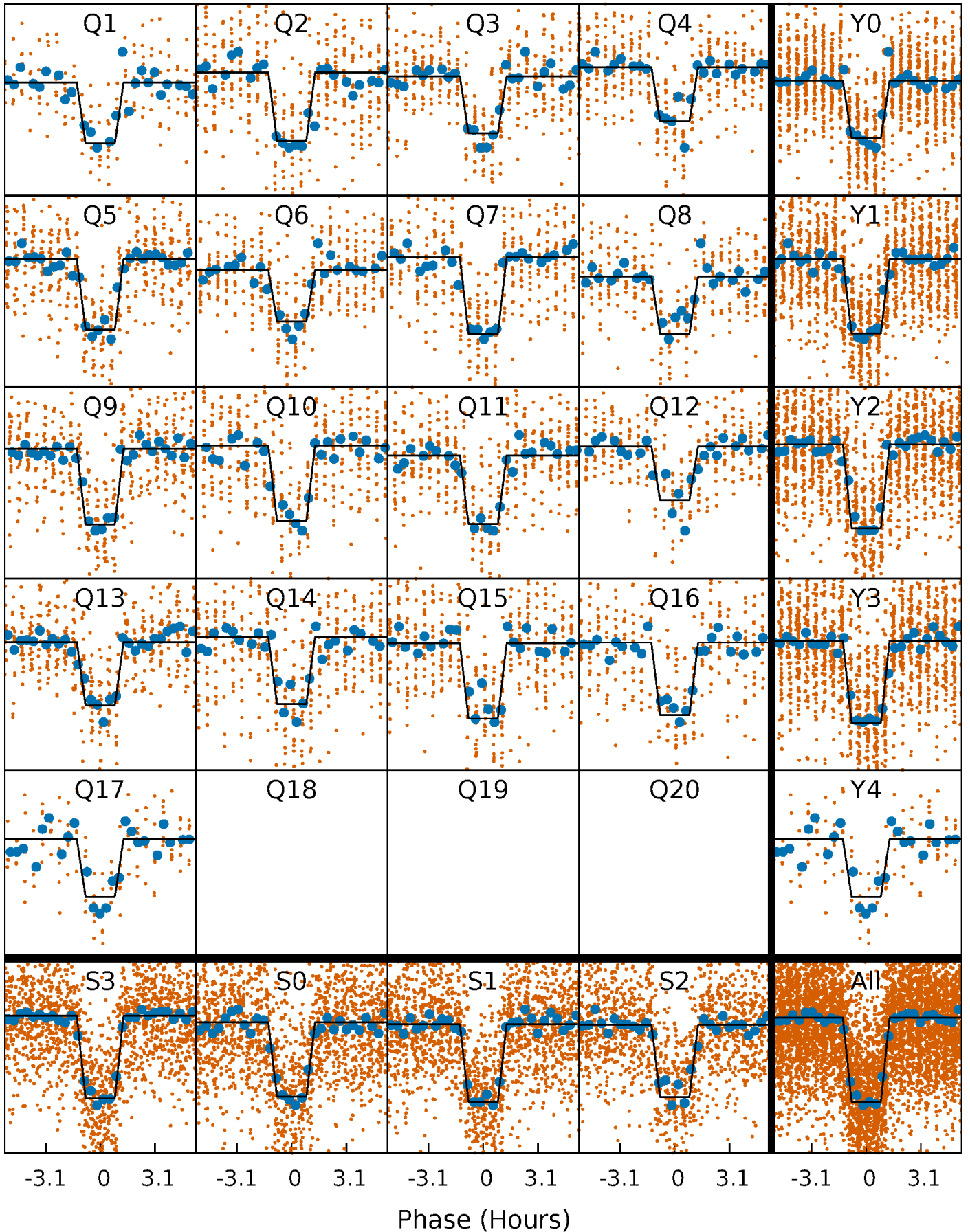
DV Quarter-Phased Transit Curves

TCE 003239945-02 P= 4.393163 Days $T_0=133.328200$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

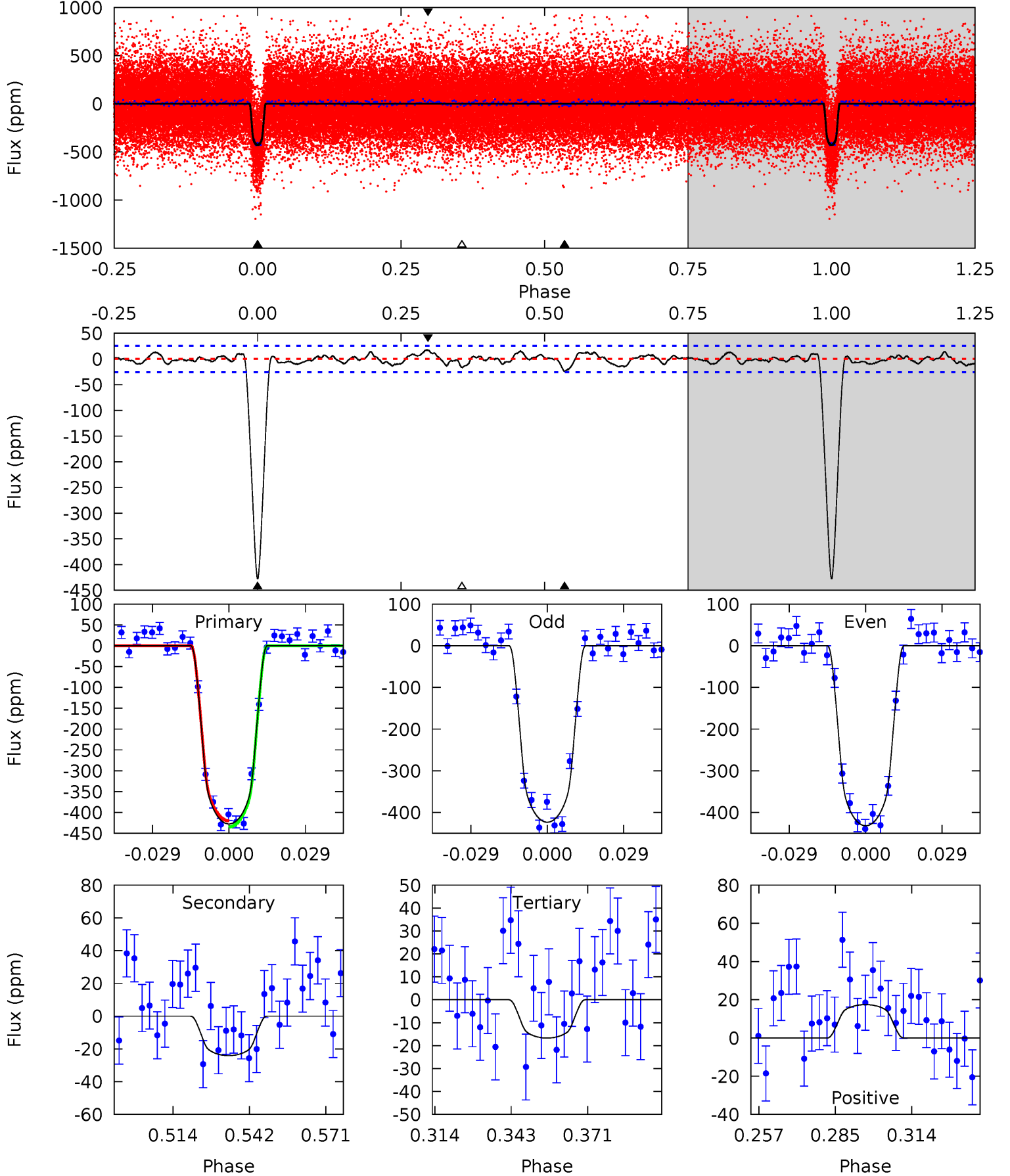
TCE 003239945-02 $P = 4.393129$ Days $T_0 = 133.333433$ (BKJD)



DV Model-Shift Uniqueness Test

003239945-02, P = 4.393163 Days, E = 128.935037 Days

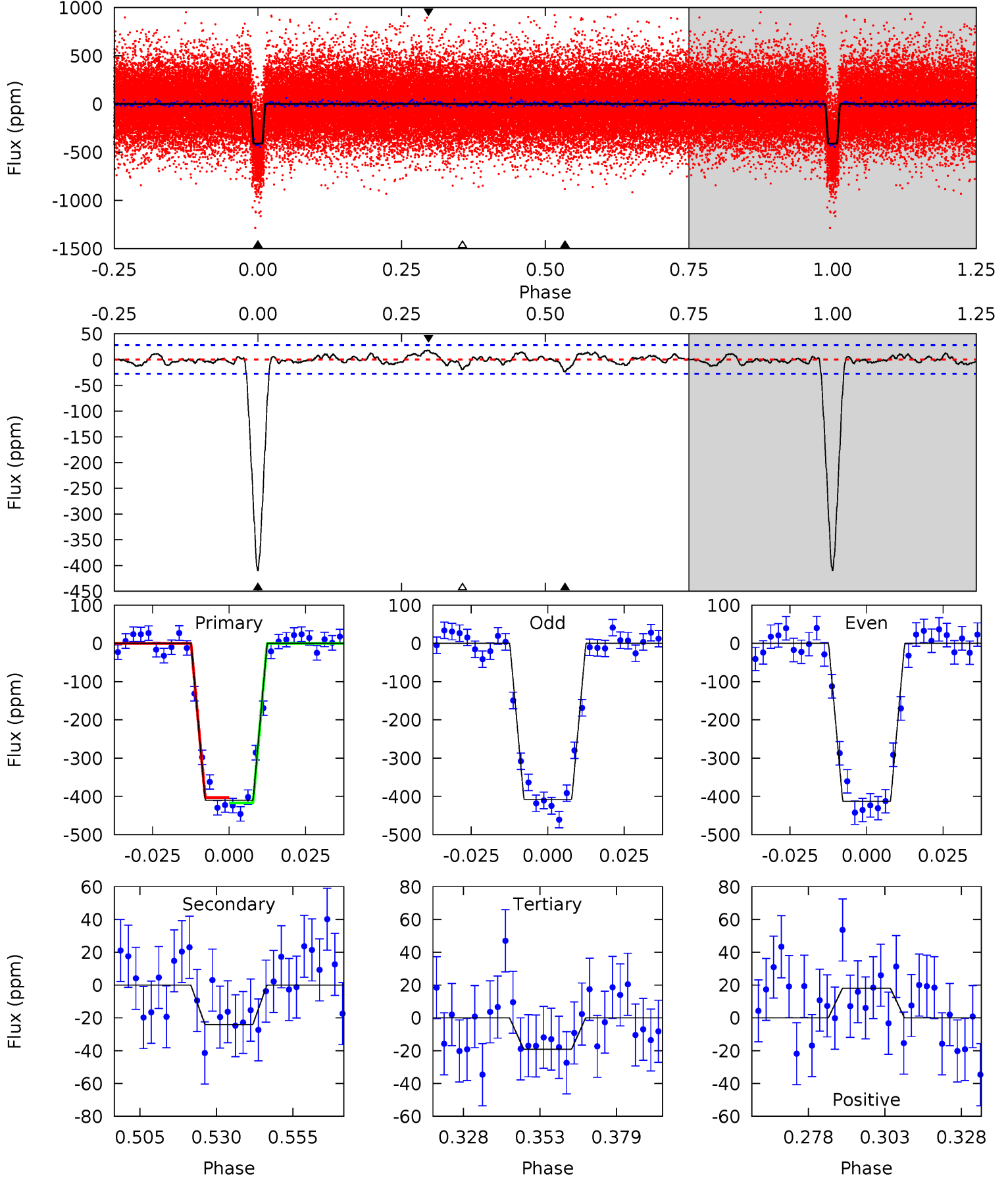
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.1	4.52	3.13	3.27	4.82	2.19	1.31	76.9	76.8	1.39	1.25	0.80	1.01	0.04	1.38



Alt Model-Shift Uniqueness Test

003239945-02, P = 4.393129 Days, E = 128.940304 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.2	4.18	3.32	3.14	4.85	2.24	1.15	67.9	68.0	0.87	1.04	0.44	1.03	0.04	1.23



Stellar Parameters For KIC 003239945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4799^{+95}_{-95}	$4.631^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.692^{+0.054}_{-0.021}$	$0.776^{+0.031}_{-0.053}$	$3.301^{+0.172}_{-0.643}$
	+2%/-2%	+0%/-1%	+750%/-750%	+8%/-3%	+4%/-7%	+5%/-19%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 003239945-02 / KOI 0490.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-24 ± 5	$1.79^{+0.21}_{-0.19}$	1139^{+26}_{-26}	2845^{+141}_{-122}	$9.196^{+3.580}_{-2.563}$
Alt.	-24 ± 6	$1.58^{+0.20}_{-0.20}$	1139^{+27}_{-26}	2965^{+147}_{-161}	12^{+5}_{-4}

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

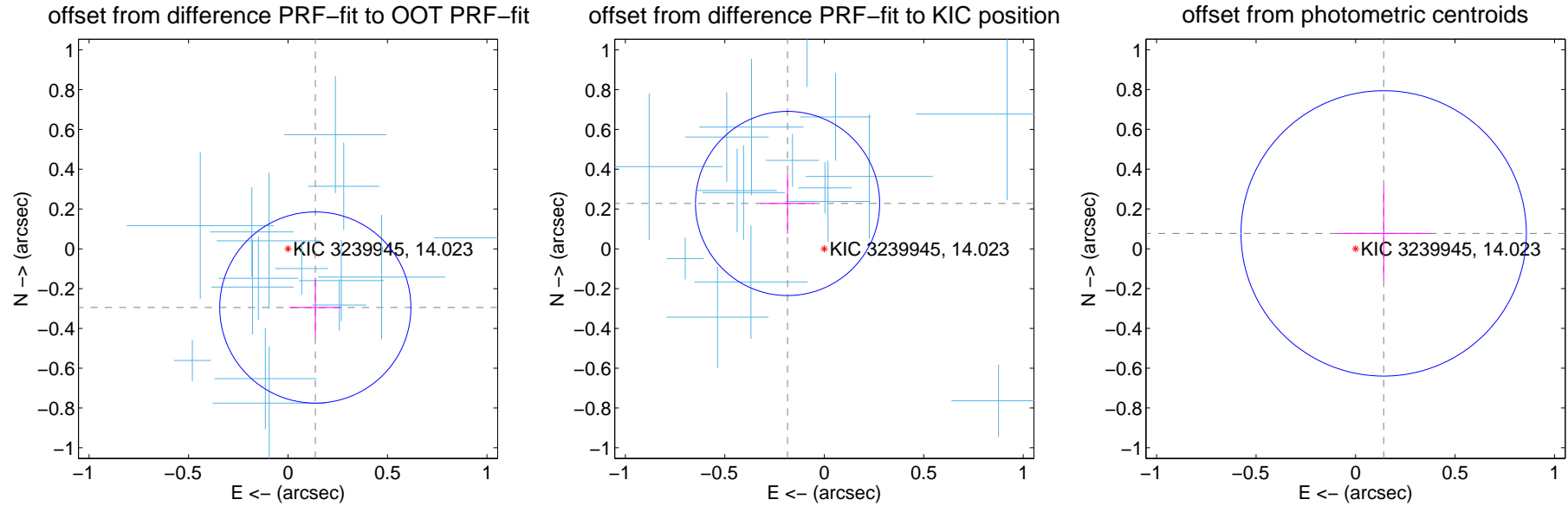
DV Centroid Data

Supplemental centroid analysis for 003239945-02. Kepler magnitude: 14.02. Transit SNR 55.77

There are 17 quarters with good PRF difference image offsets

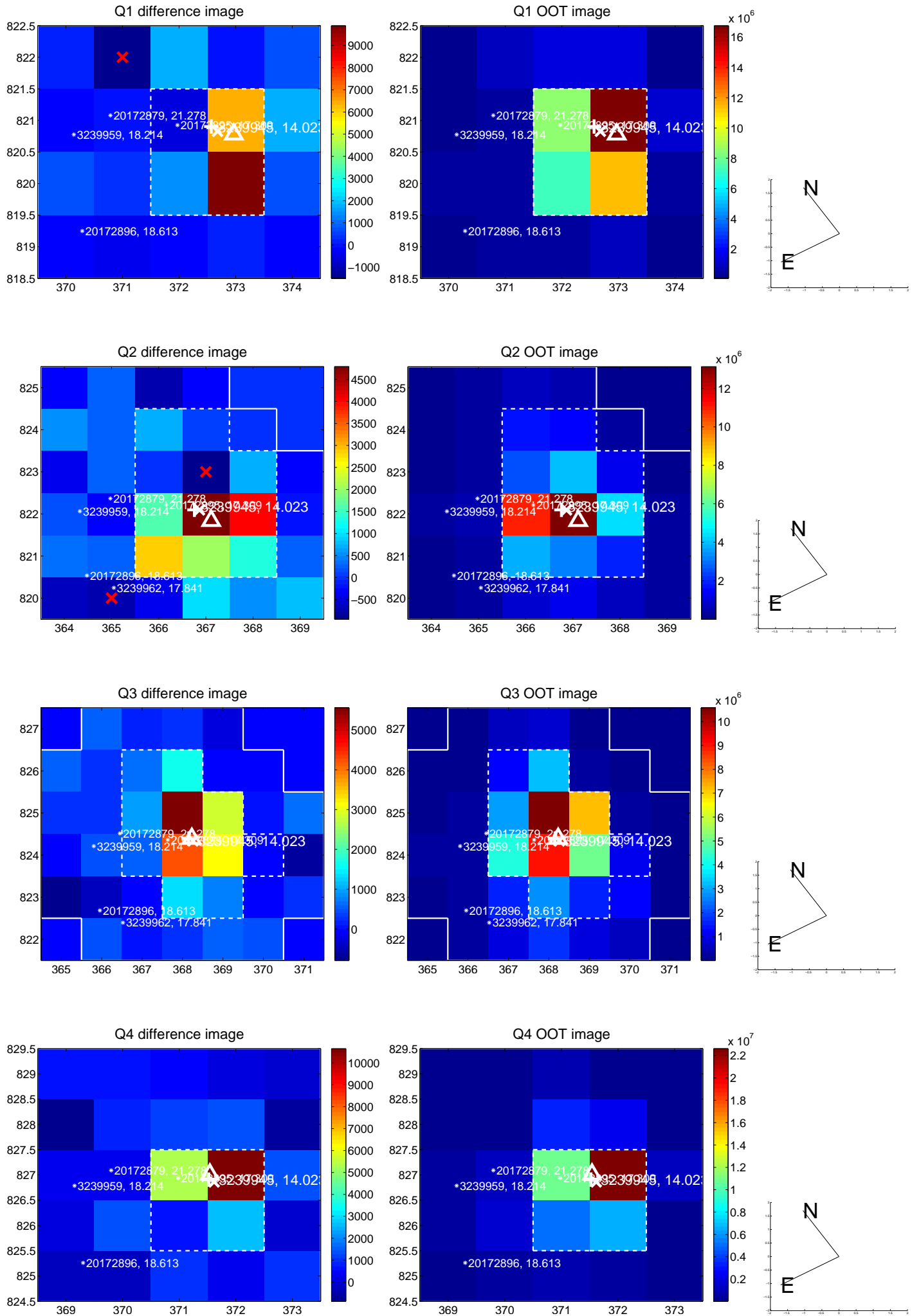
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.326 ± 0.160	2.03	-0.137 ± 0.130	-0.295 ± 0.150
PRF-fit source offset from KIC position	0.293 ± 0.154	1.90	0.185 ± 0.134	0.228 ± 0.152
photometric centroid source offset	0.16 ± 0.24	0.67	-0.14 ± 0.24	0.08 ± 0.23

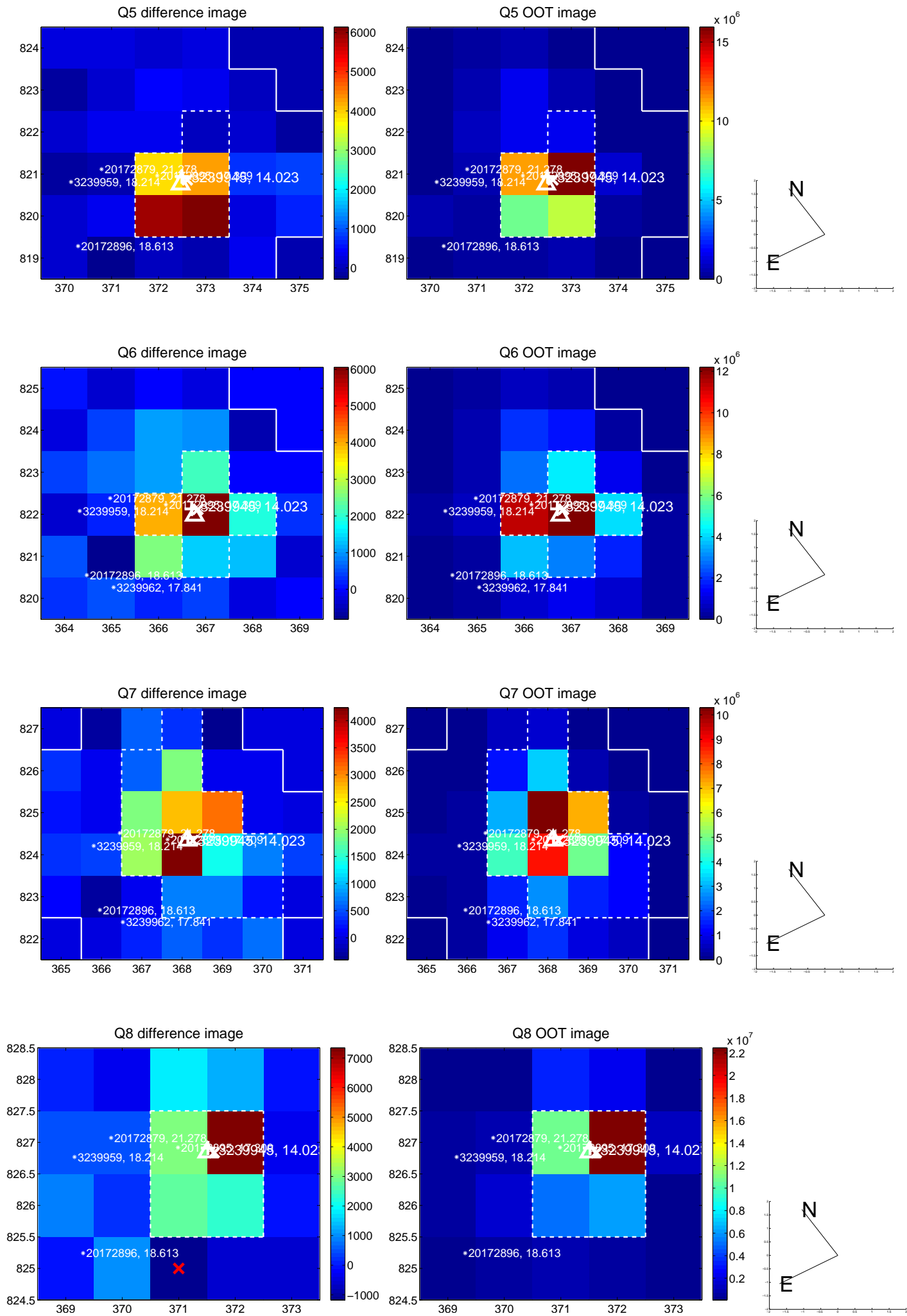


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

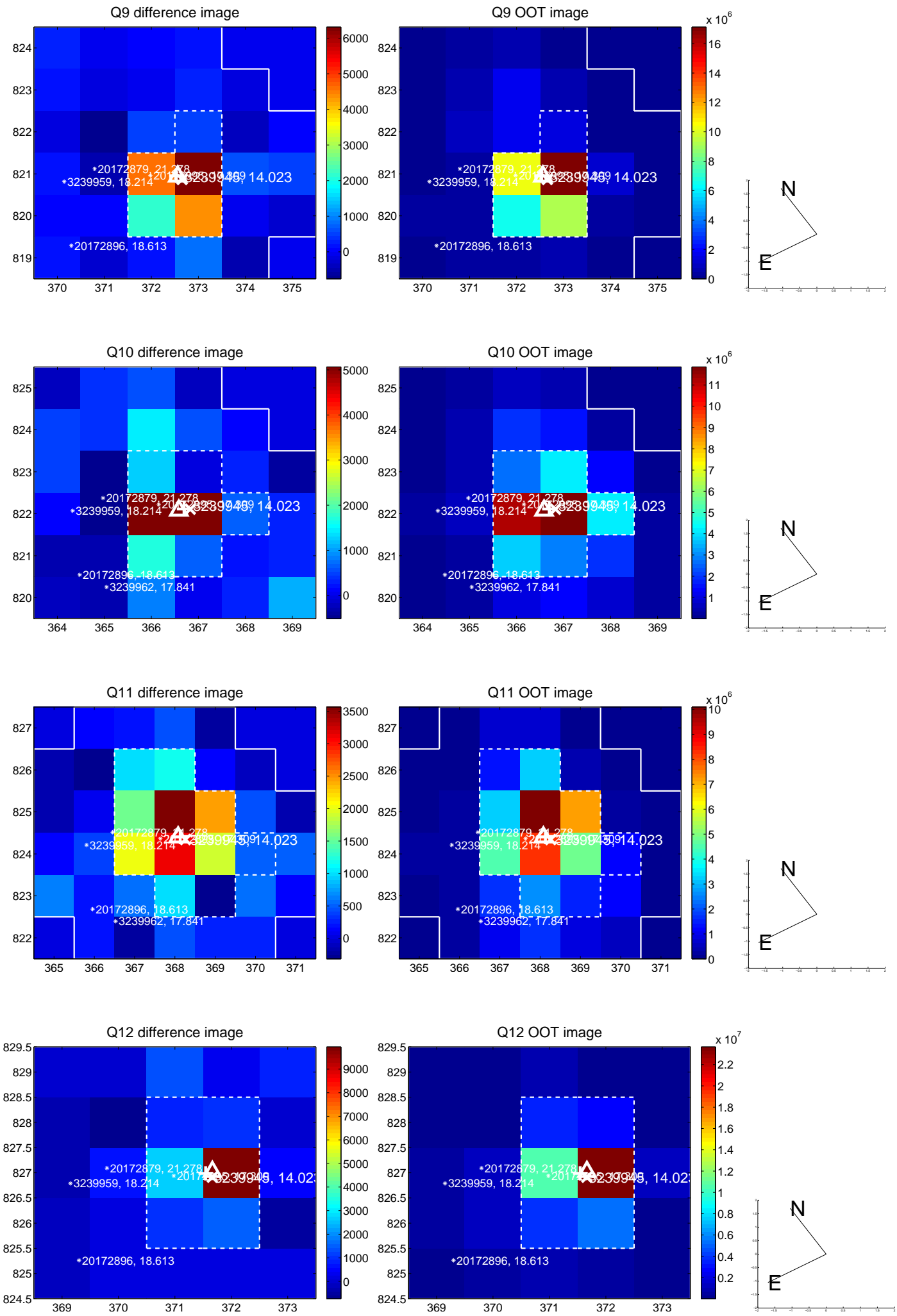
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



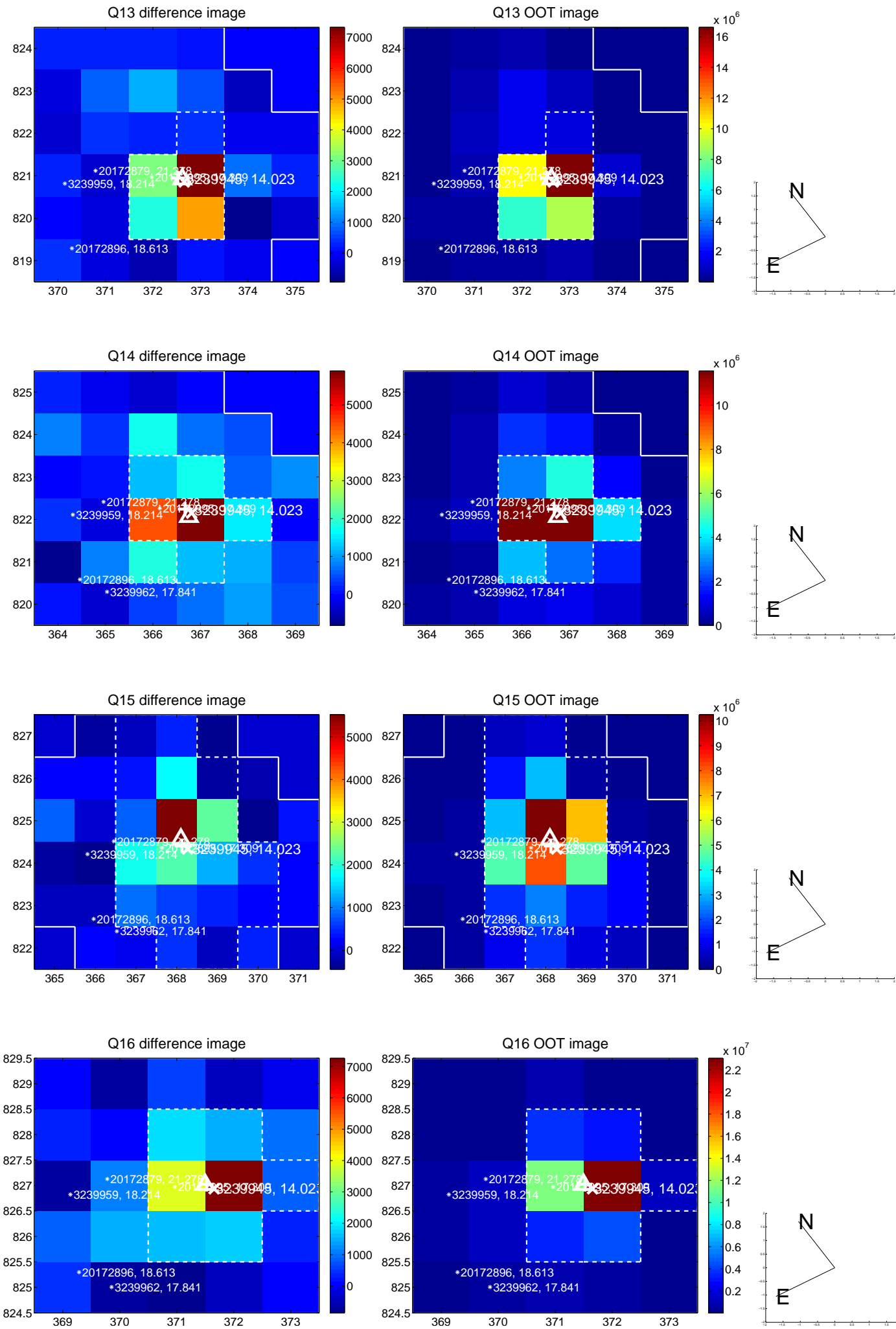
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



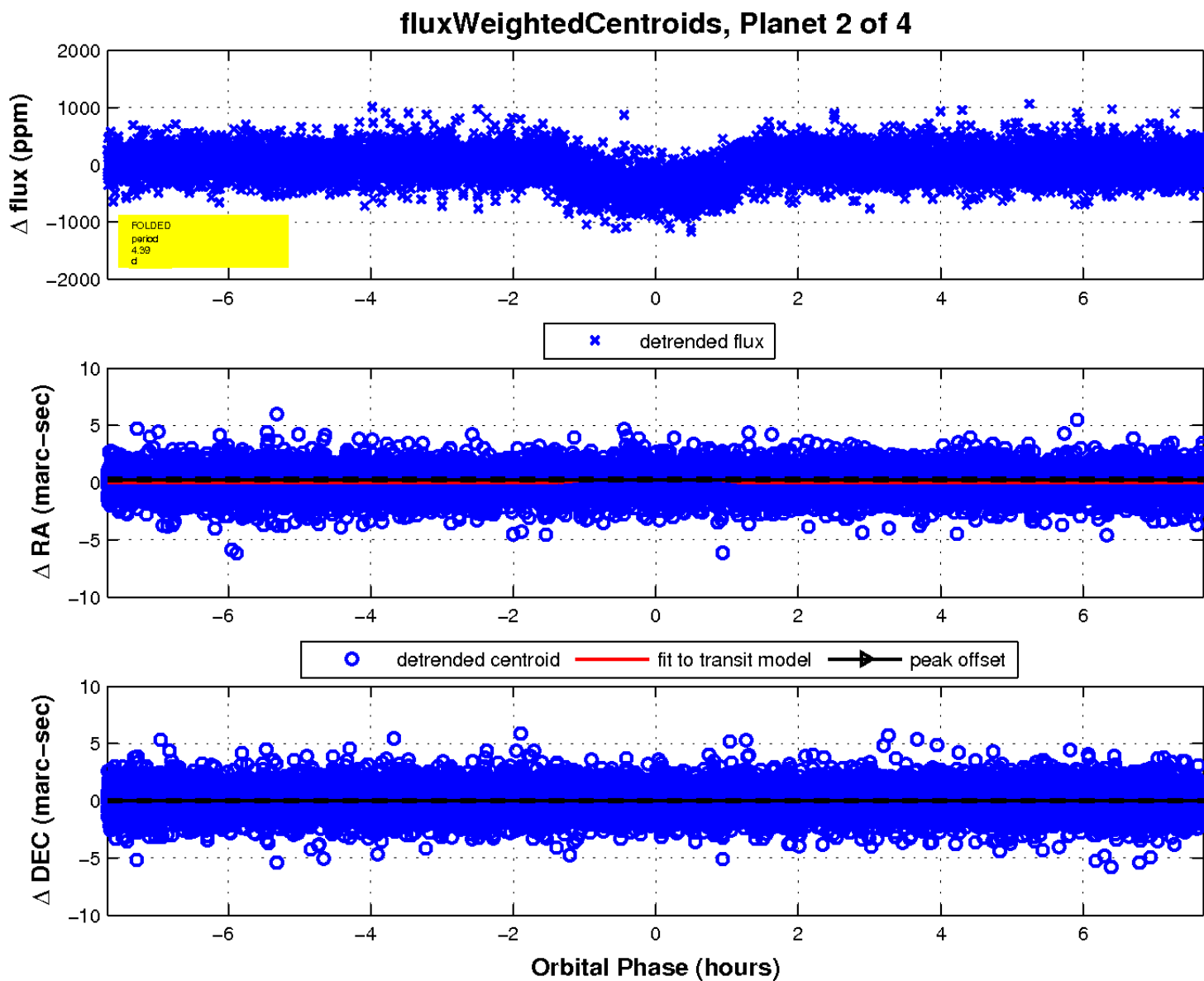
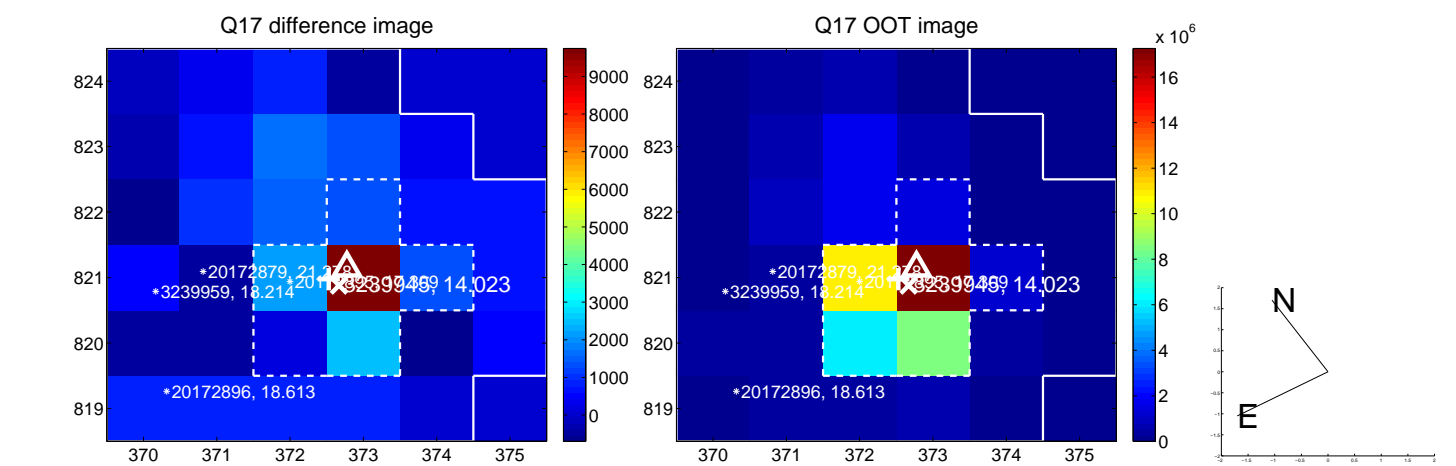
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

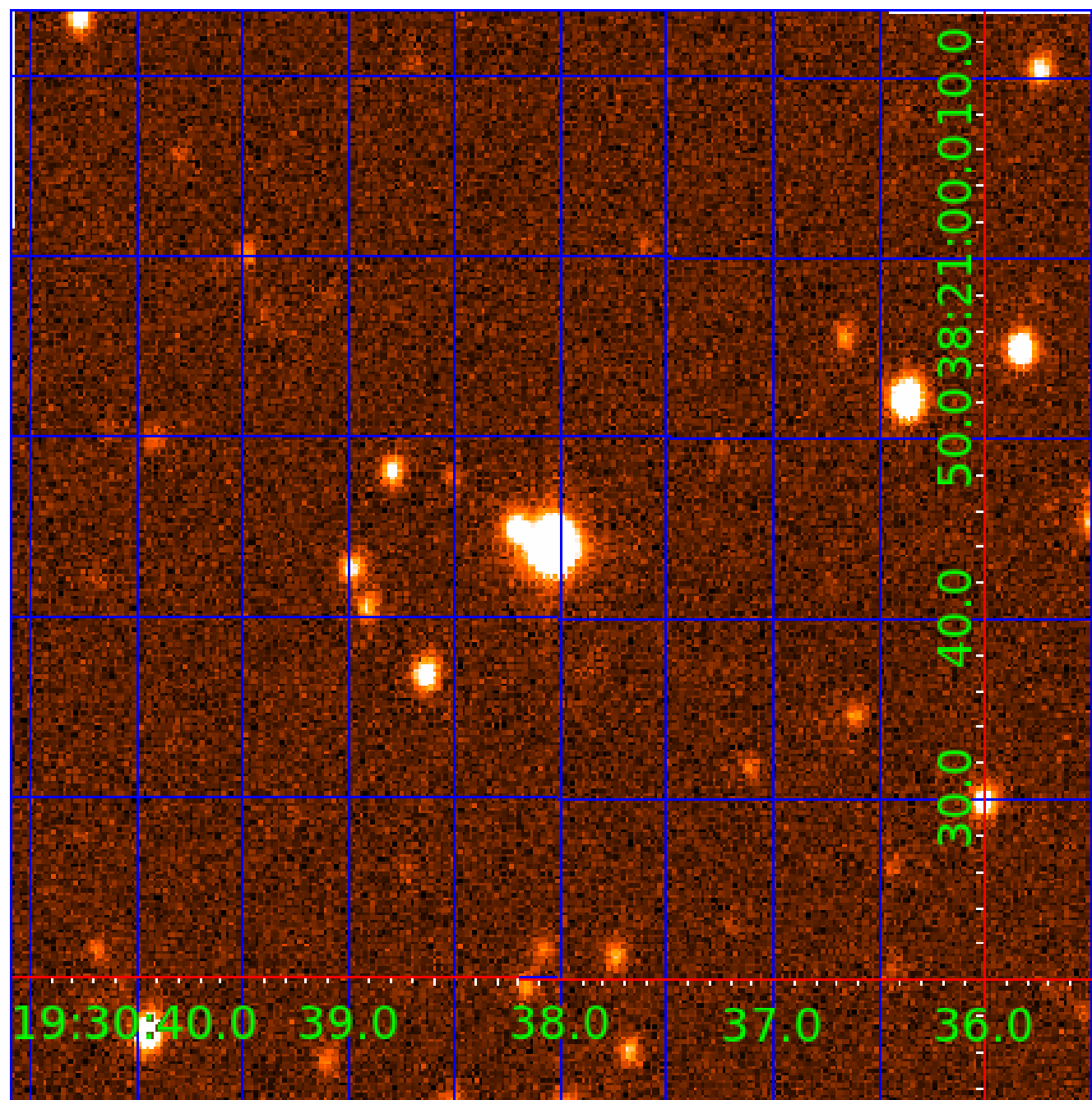


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003239945

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})
003239945-01	OBS	0490.02	535.616258	420.286981	19019.0	16.159	279.6	323.9	0.69	4799	9.26	0.17
003239945-02	OBS	0490.01	4.393163	133.328200	432.2	2.565	50.0	55.8	0.69	4799	1.75	100.28
003239945-03	OBS	0490.03	7.406119	134.074108	406.3	3.083	38.8	43.3	0.69	4799	1.70	49.98
003239945-04	OBS	0490.04	21.803951	139.065048	238.7	3.325	15.0	15.3	0.69	4799	1.31	11.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003239945-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003239945-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
003239945-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
003239945-04	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

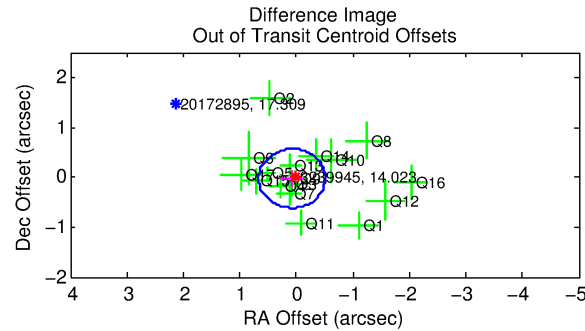
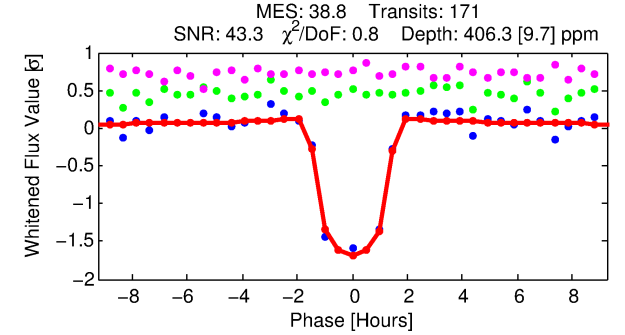
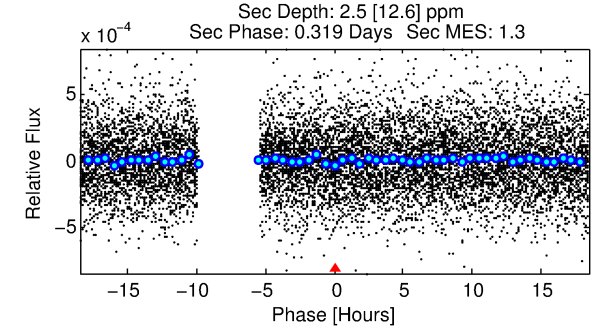
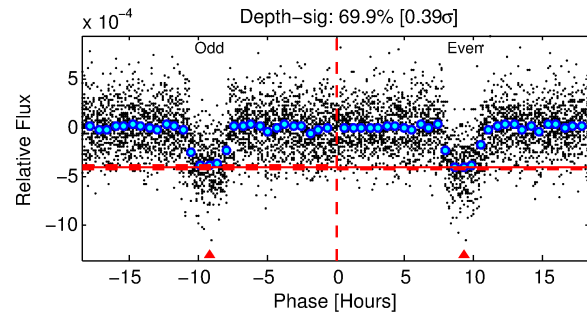
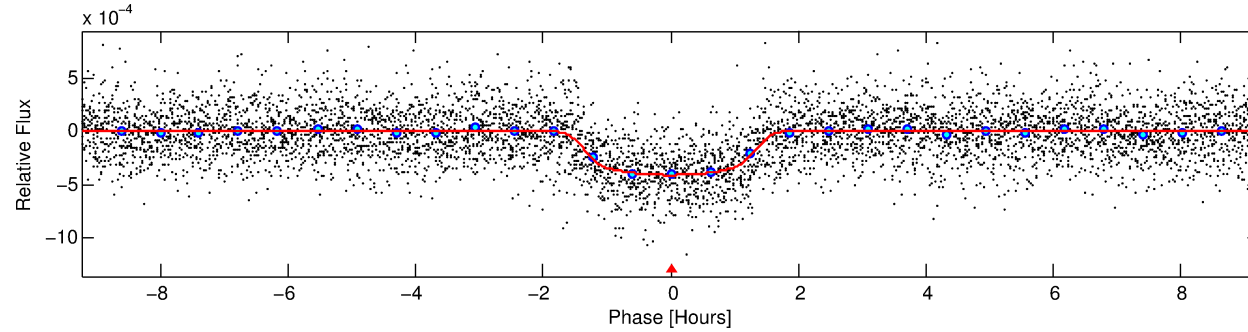
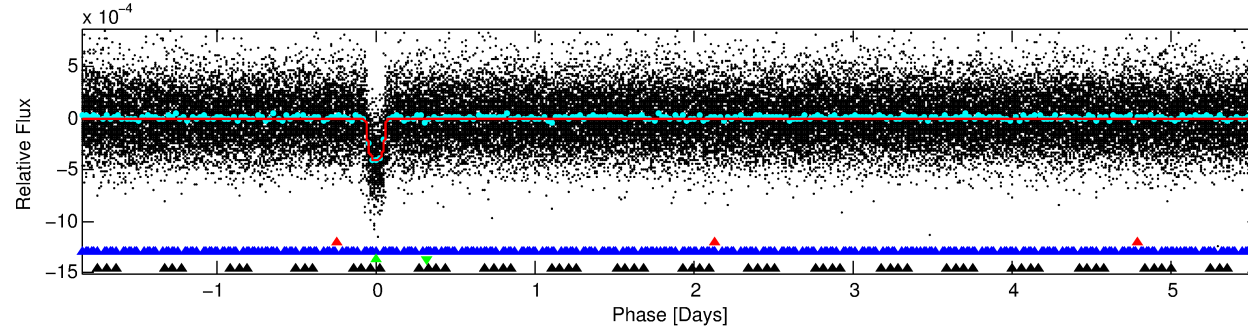
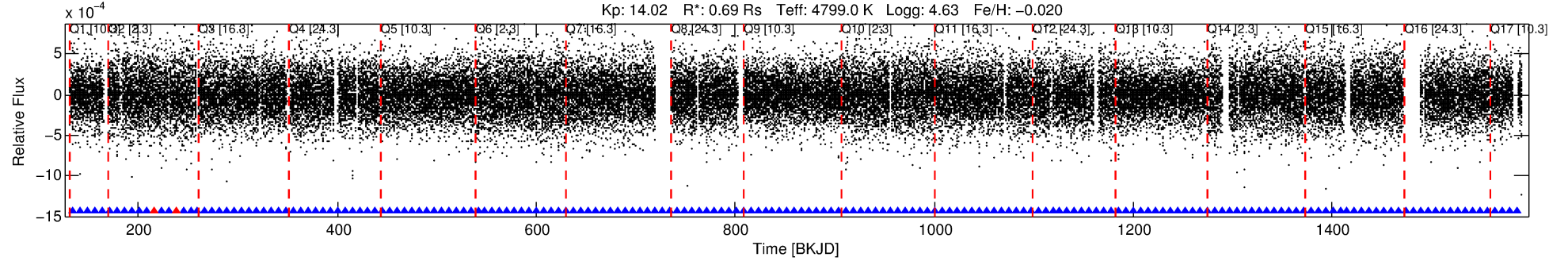
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003239945-03

No Significant Match Found

DV One-Page Summary

KIC: 3239945 Candidate: 3 of 4 Period: 7.406 d
KOI: K00490.03 Name: Kepler-167c Corr: 0.968



DV Fit Results:

Period = 7.40612 [0.00001] d
Epoch = 134.0741 [0.0014] BKJD
Rp/R* = 0.0225 [0.0026]
a/R* = 9.10 [3.94]
b = 0.90 [0.10]
Seff = 49.98 [6.00]
Teq = 678 [20] K
Rp = 1.70 [0.24] Re
a = 0.0675 [0.0043] AU
Ag = 2.17 [10.91] [0.11 σ]
Teffp = 1272 [1599] K [0.37 σ]

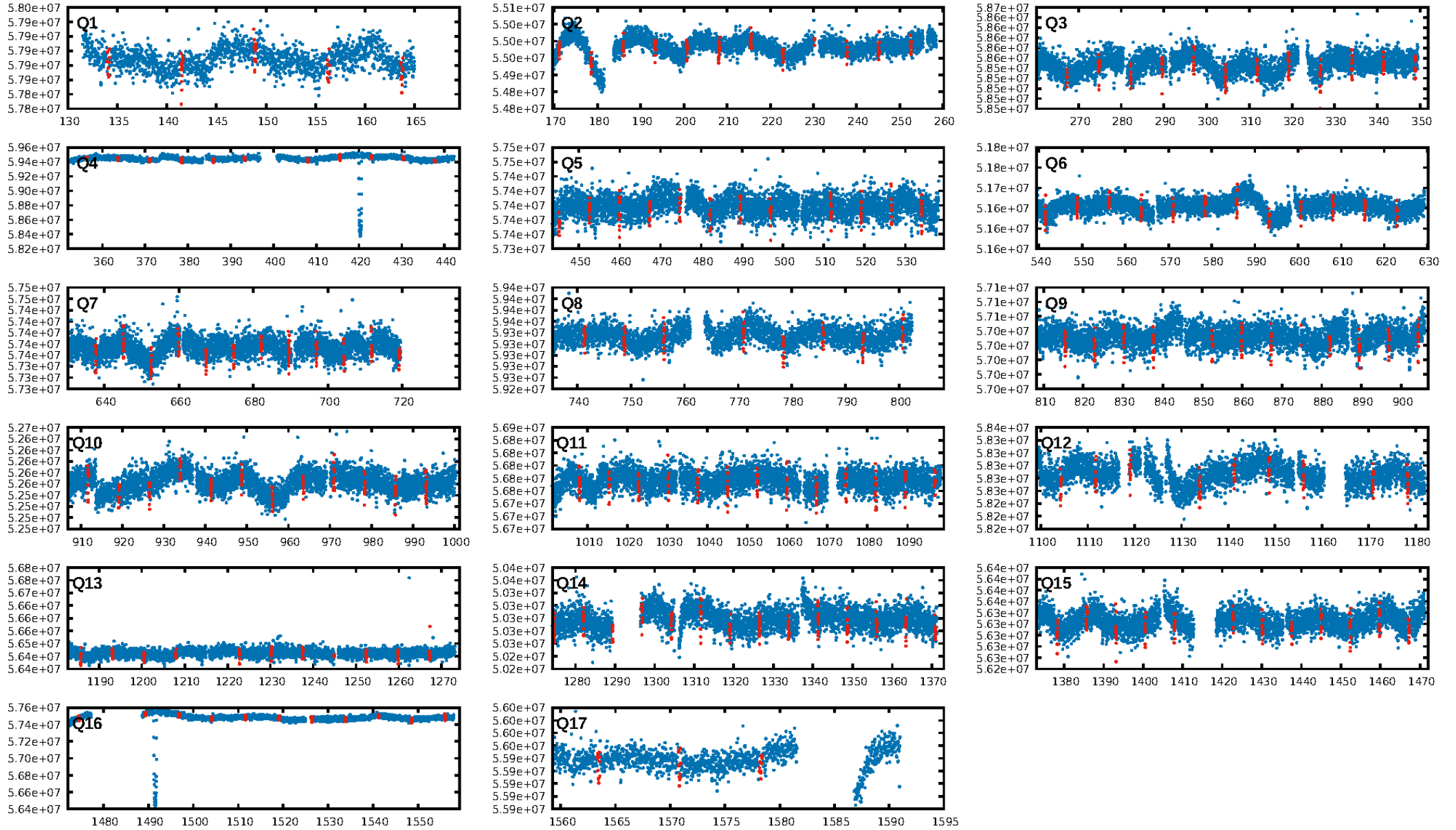
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.03 σ]
LongPeriod-sig: 100.0% [76.20 σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [161/163]
GhostDiagnostic-chr: 3.126
Centroid-sig: 58.3%
Centroid-so: 0.588 arcsec [1.94 σ]
OotOffset-rm: 0.085 arcsec [0.43 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.586 arcsec [3.06 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

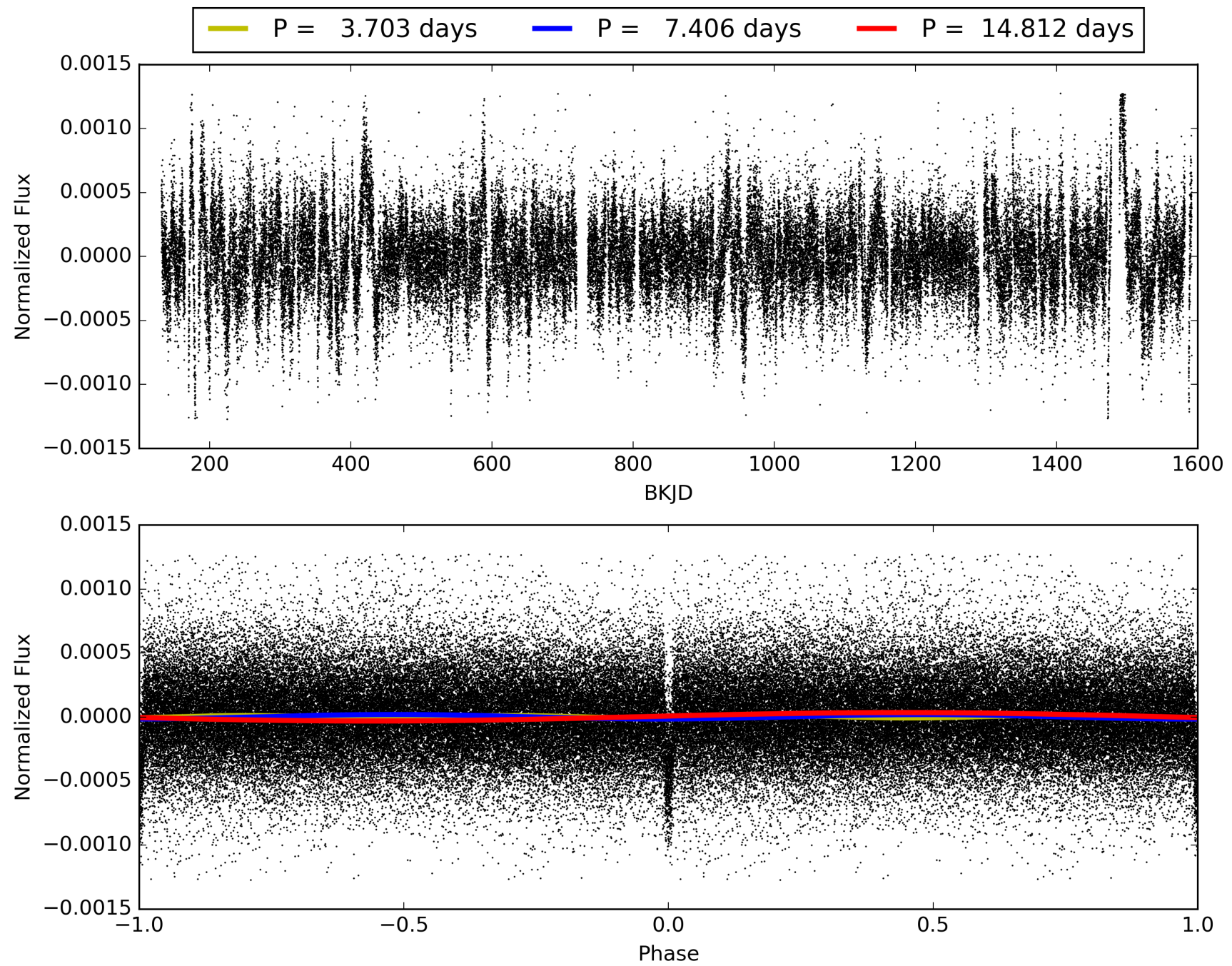
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:02:44 Z

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

TCE 003239945-03, PDC Light Curves

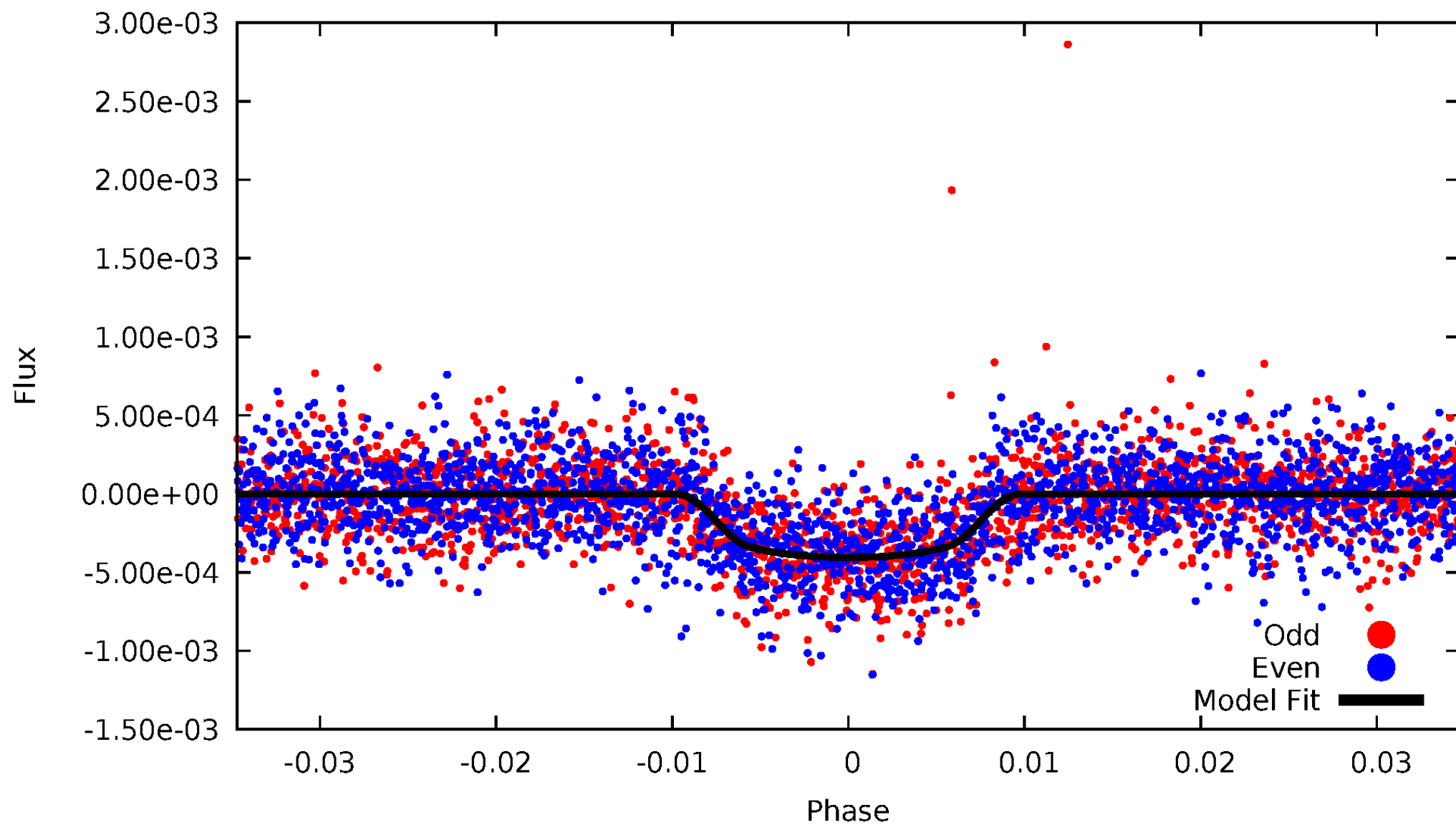


TCE 003239945-03



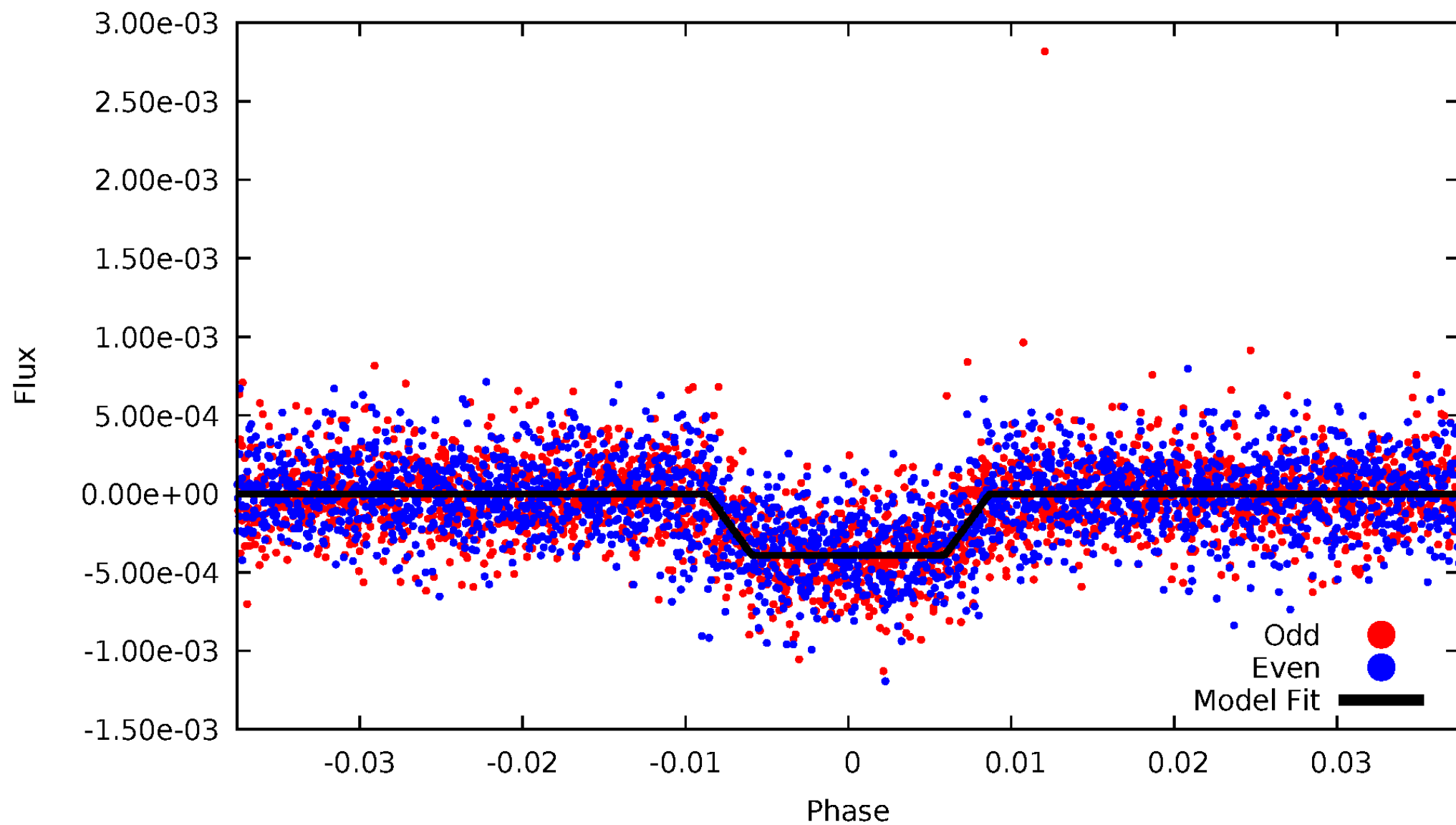
DV Odd/Even

TCE 003239945-03



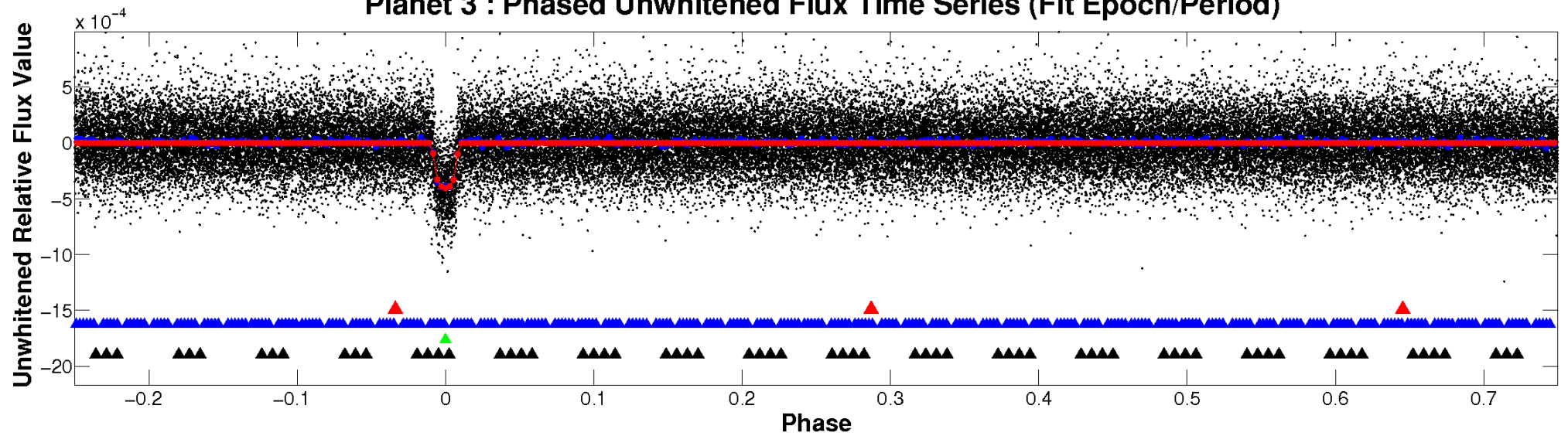
ALT Odd/Even

TCE 003239945-03

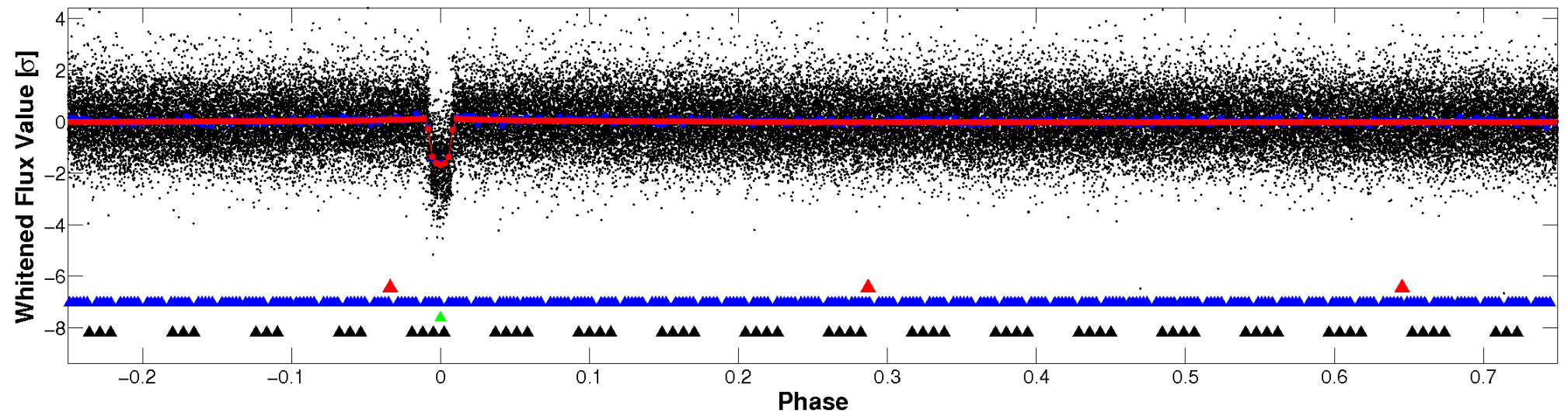


Non-Whitened Vs. Whitened Light Curve

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

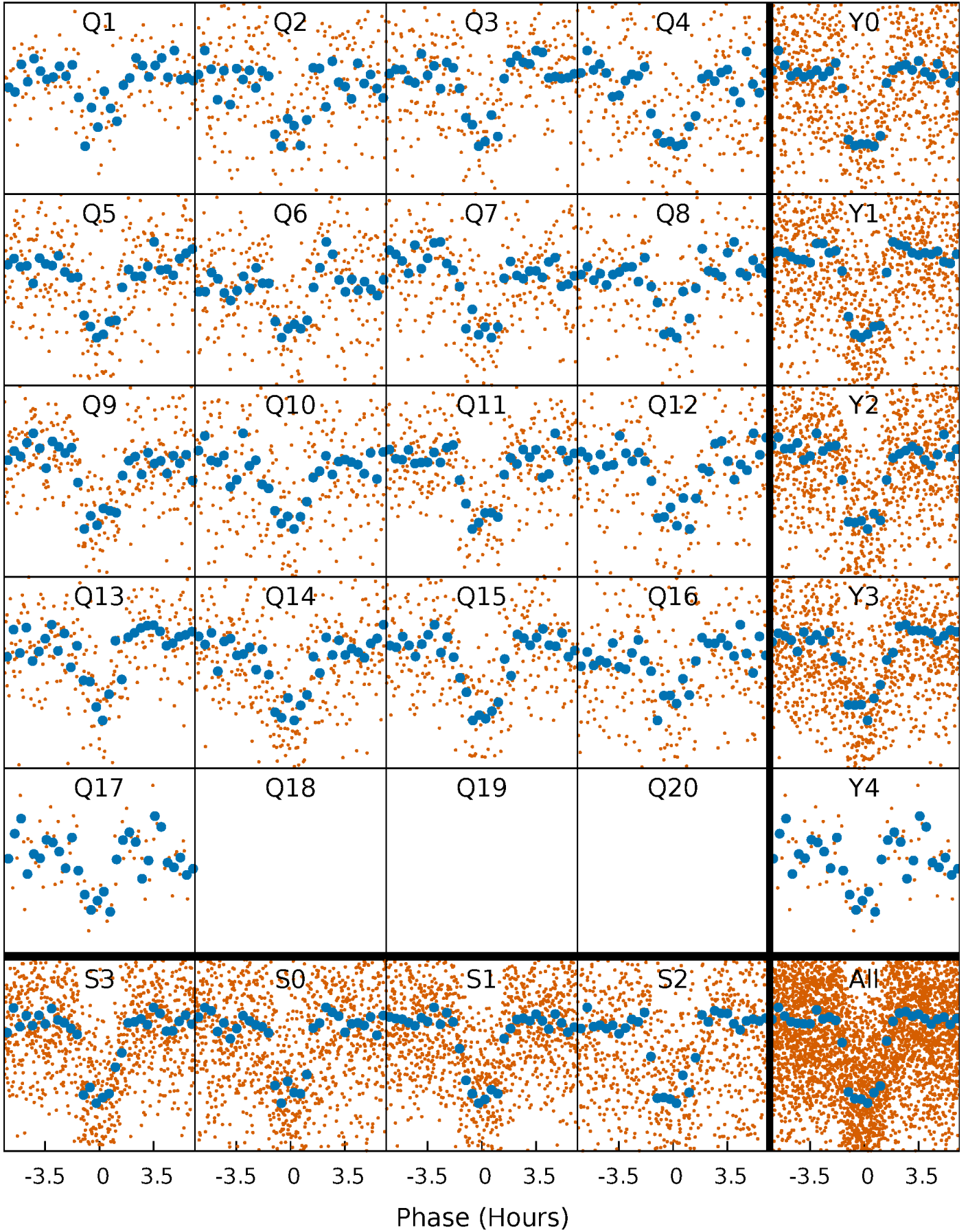


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



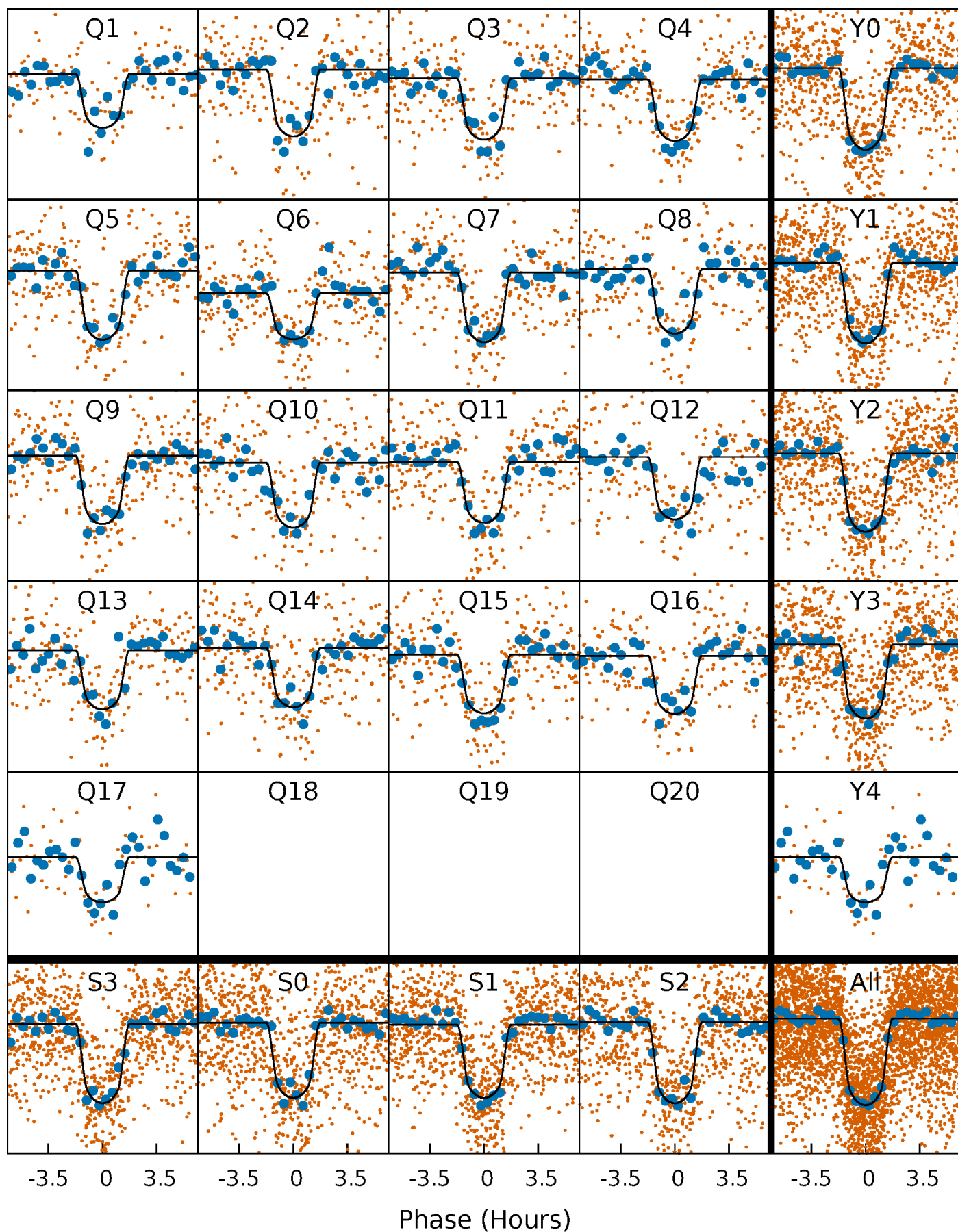
PDC Quarter-Phased Transit Curves

TCE 003239945-03 P= 7.406119 Days $T_0=134.074108$ (BKJD)



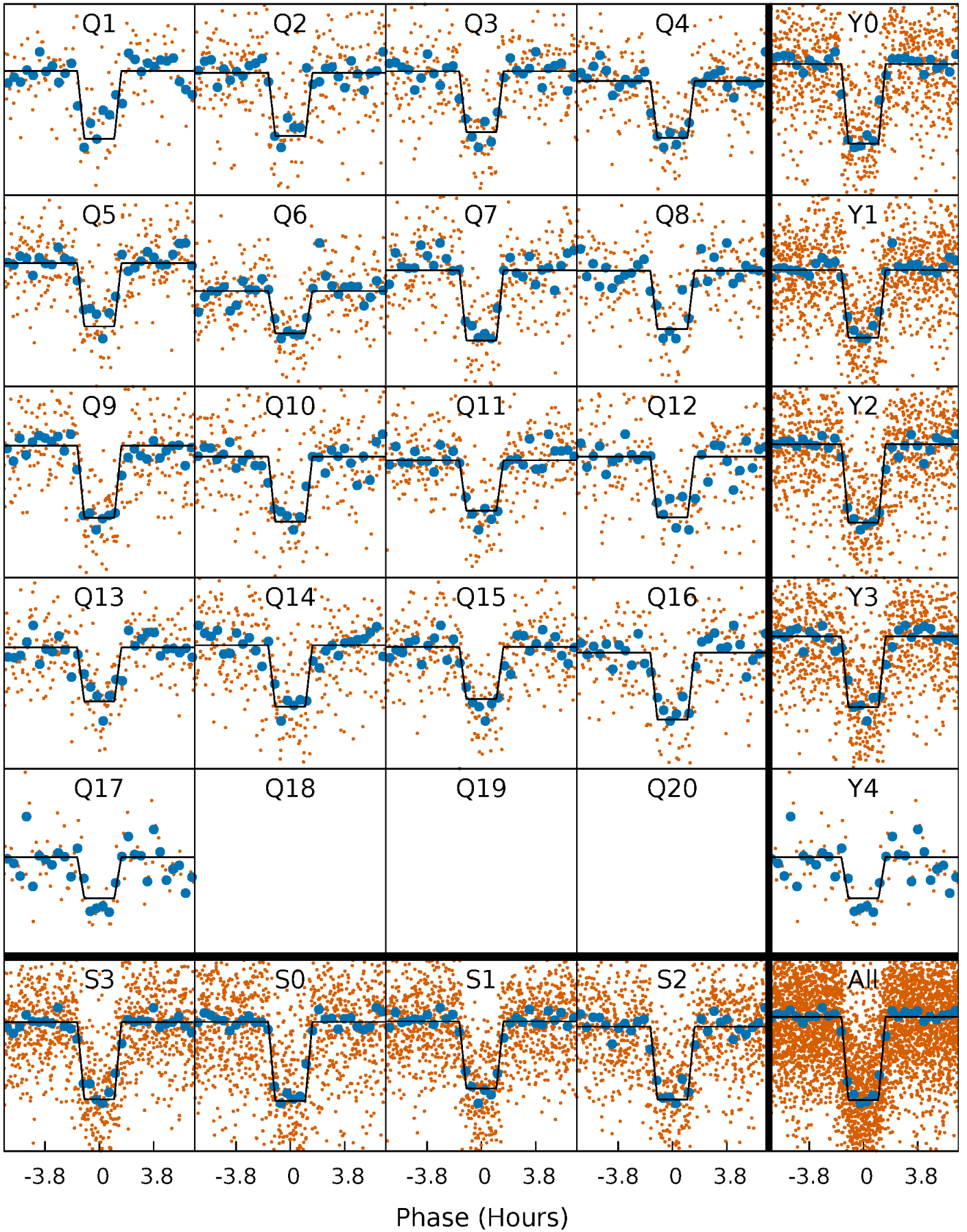
DV Quarter-Phased Transit Curves

TCE 003239945-03 P= 7.406119 Days $T_0=134.074108$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

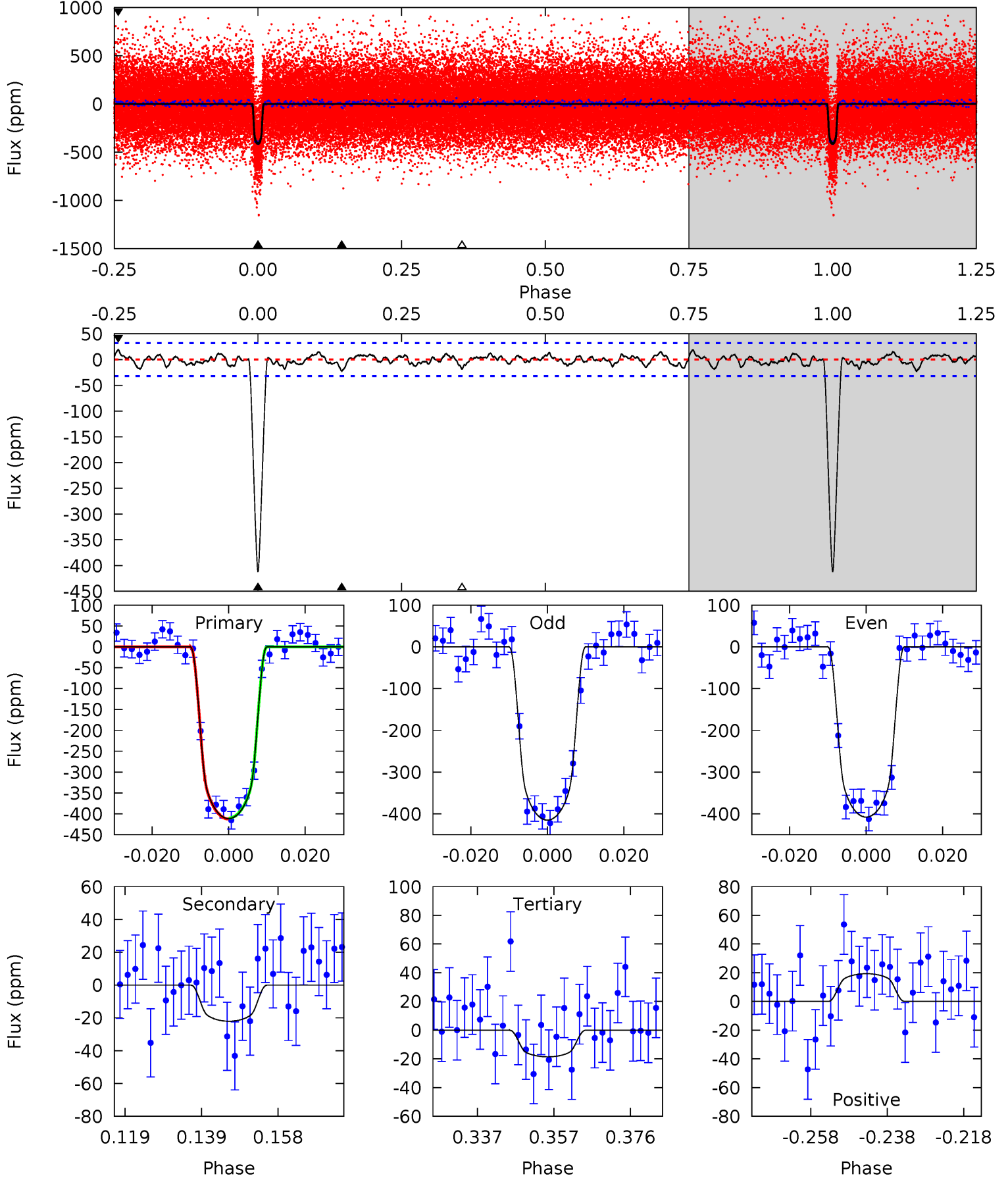
TCE 003239945-03 P= 7.406029 Days $T_0=134.082702$ (BKJD)



DV Model-Shift Uniqueness Test

003239945-03, P = 7.406119 Days, E = 126.667989 Days

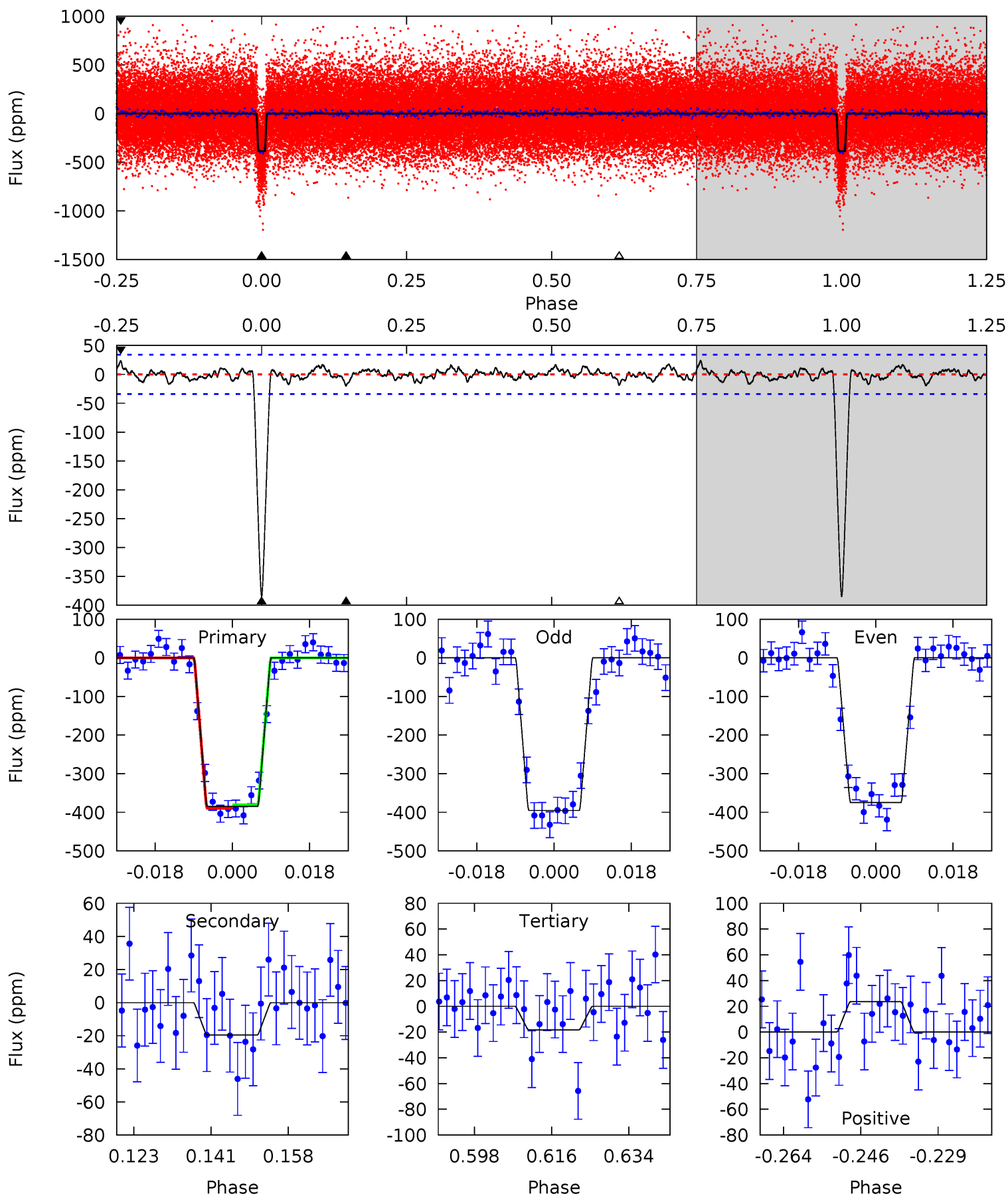
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
62.9	3.37	2.84	2.95	4.89	2.33	1.09	60.0	59.9	0.53	0.42	0.55	1.00	0.04	0.16



Alt Model-Shift Uniqueness Test

003239945-03, P = 7.406029 Days, E = 126.676673 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.4	2.81	2.63	3.39	4.92	2.37	1.02	52.8	52.1	0.18	-0.58	1.46	0.99	0.06	0.65



Stellar Parameters For KIC 003239945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4799^{+95}_{-95}	$4.631^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.692^{+0.054}_{-0.021}$	$0.776^{+0.031}_{-0.053}$	$3.301^{+0.172}_{-0.643}$
	+2%/-2%	+0%/-1%	+750%/-750%	+8%/-3%	+4%/-7%	+5%/-19%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 003239945-03 / KOI 0490.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-22 ± 7	$1.75^{+0.21}_{-0.20}$	958^{+22}_{-24}	2841^{+161}_{-163}	18^{+8}_{-6}
Alt.	-19 ± 7	$1.53^{+0.20}_{-0.21}$	956^{+22}_{-20}	2911^{+177}_{-197}	21^{+11}_{-8}

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 $A_{obs} \gg 1.0$

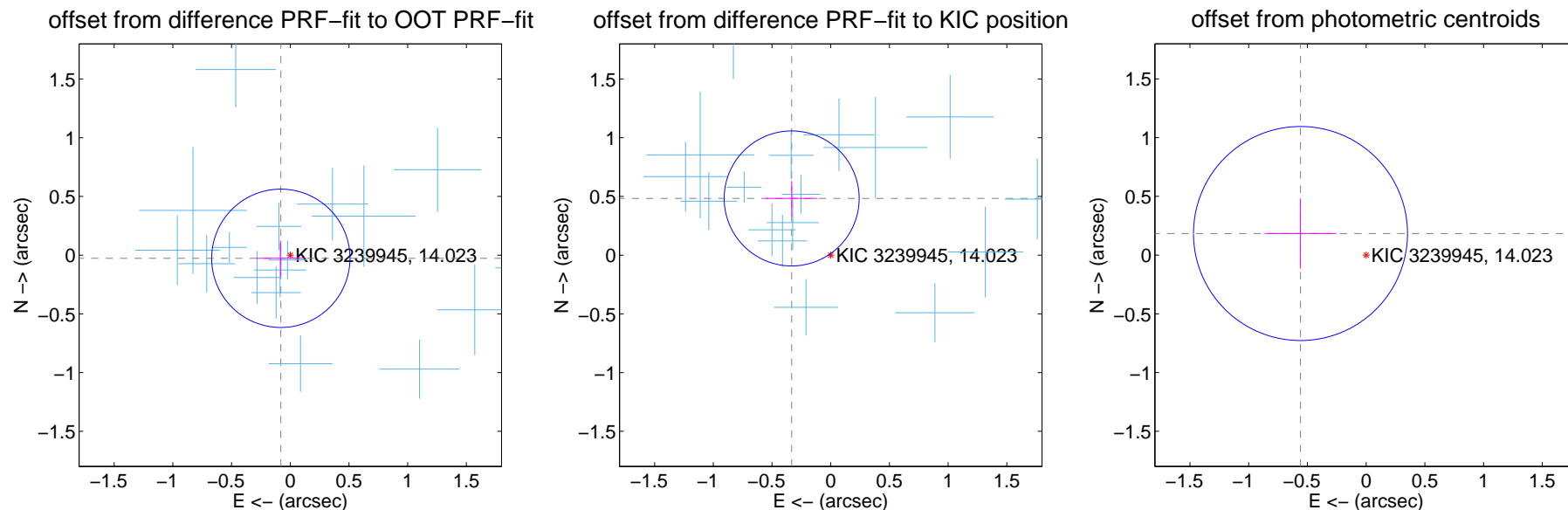
DV Centroid Data

Supplemental centroid analysis for 003239945-03. Kepler magnitude: 14.02. Transit SNR 43.27

There are 17 quarters with good PRF difference image offsets

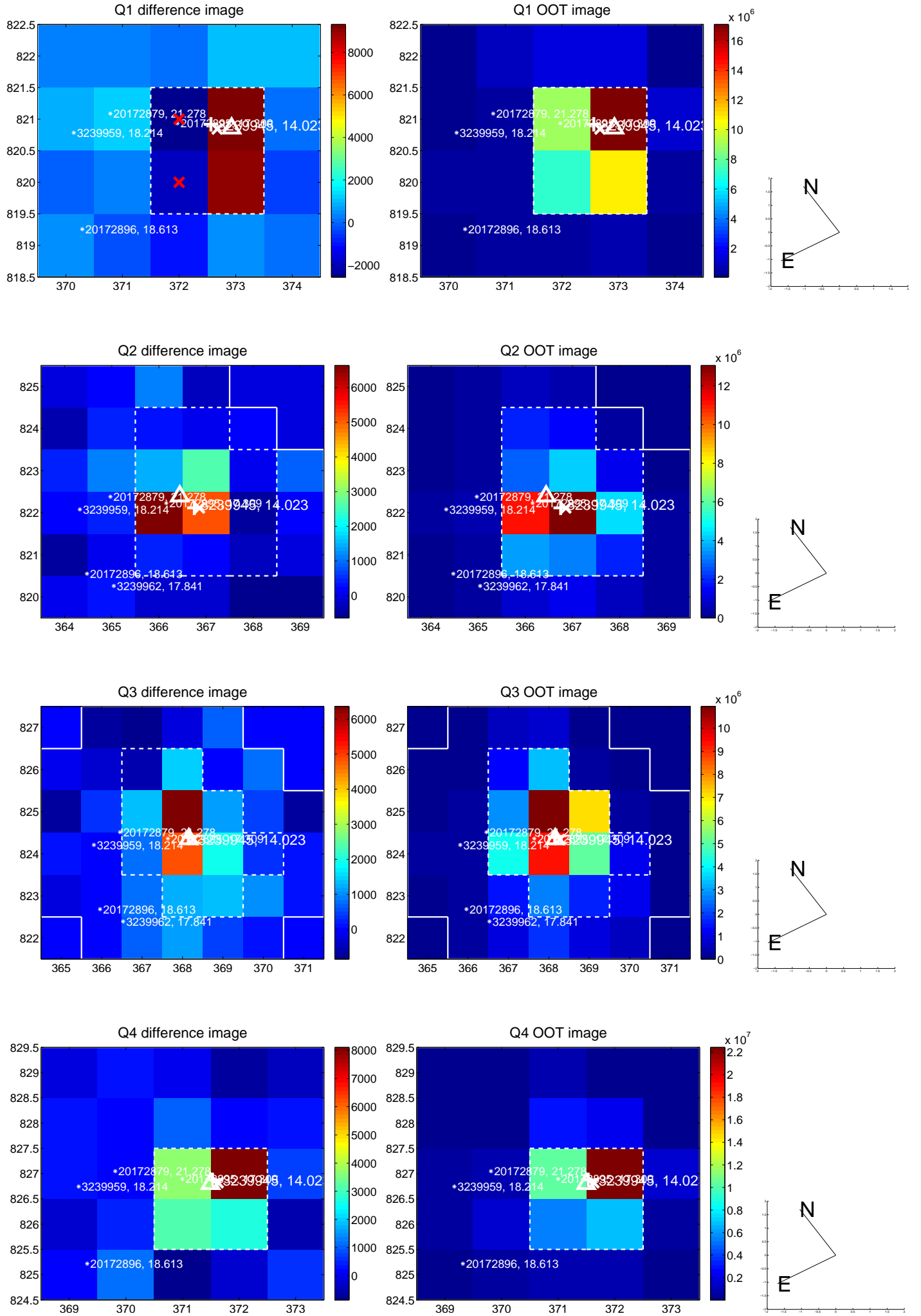
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.085 ± 0.196	0.43	0.080 ± 0.211	-0.027 ± 0.150
PRF-fit source offset from KIC position	0.586 ± 0.192	3.06	0.333 ± 0.222	0.483 ± 0.150
photometric centroid source offset	0.59 ± 0.30	1.94	0.56 ± 0.30	0.18 ± 0.30

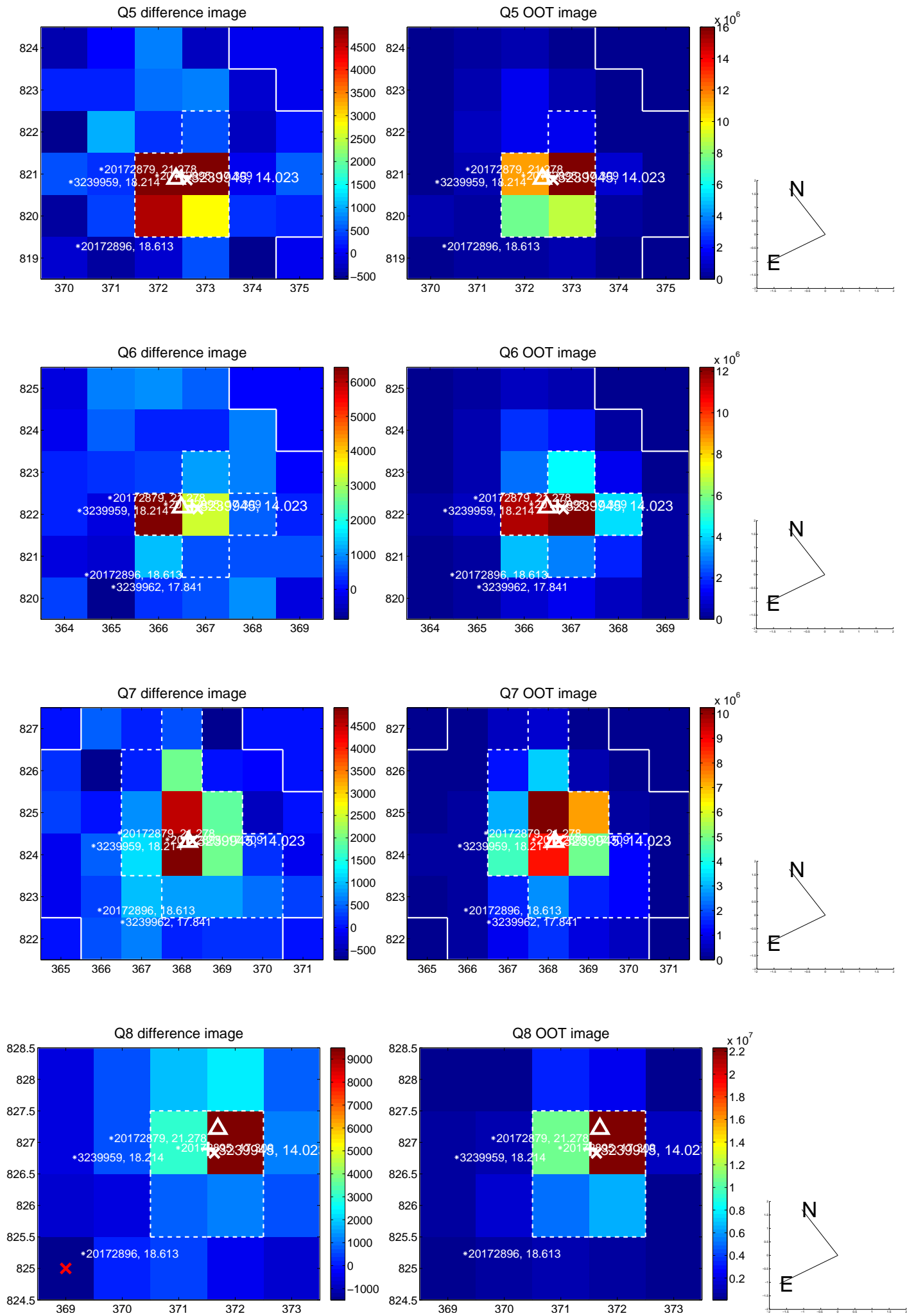


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

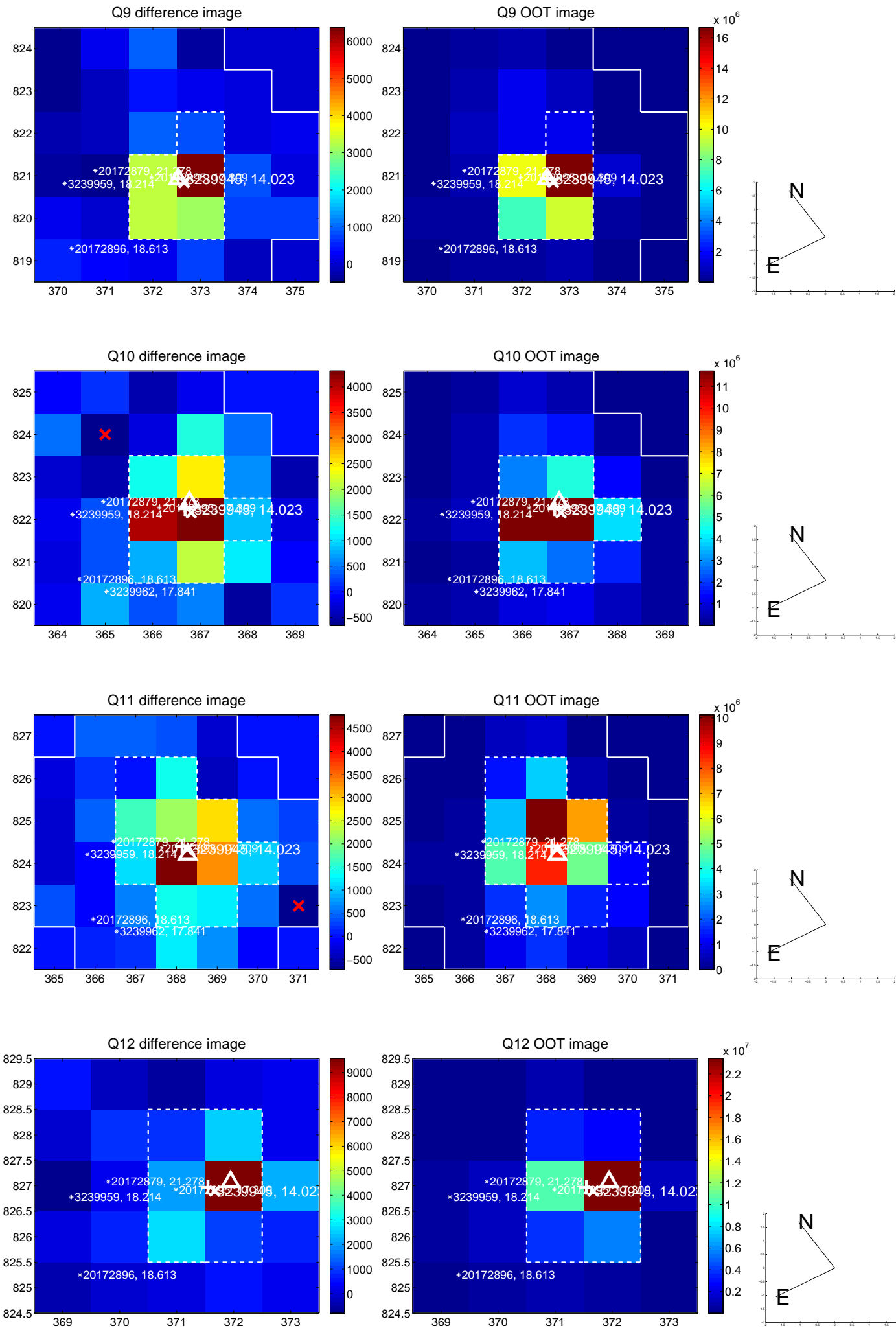
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



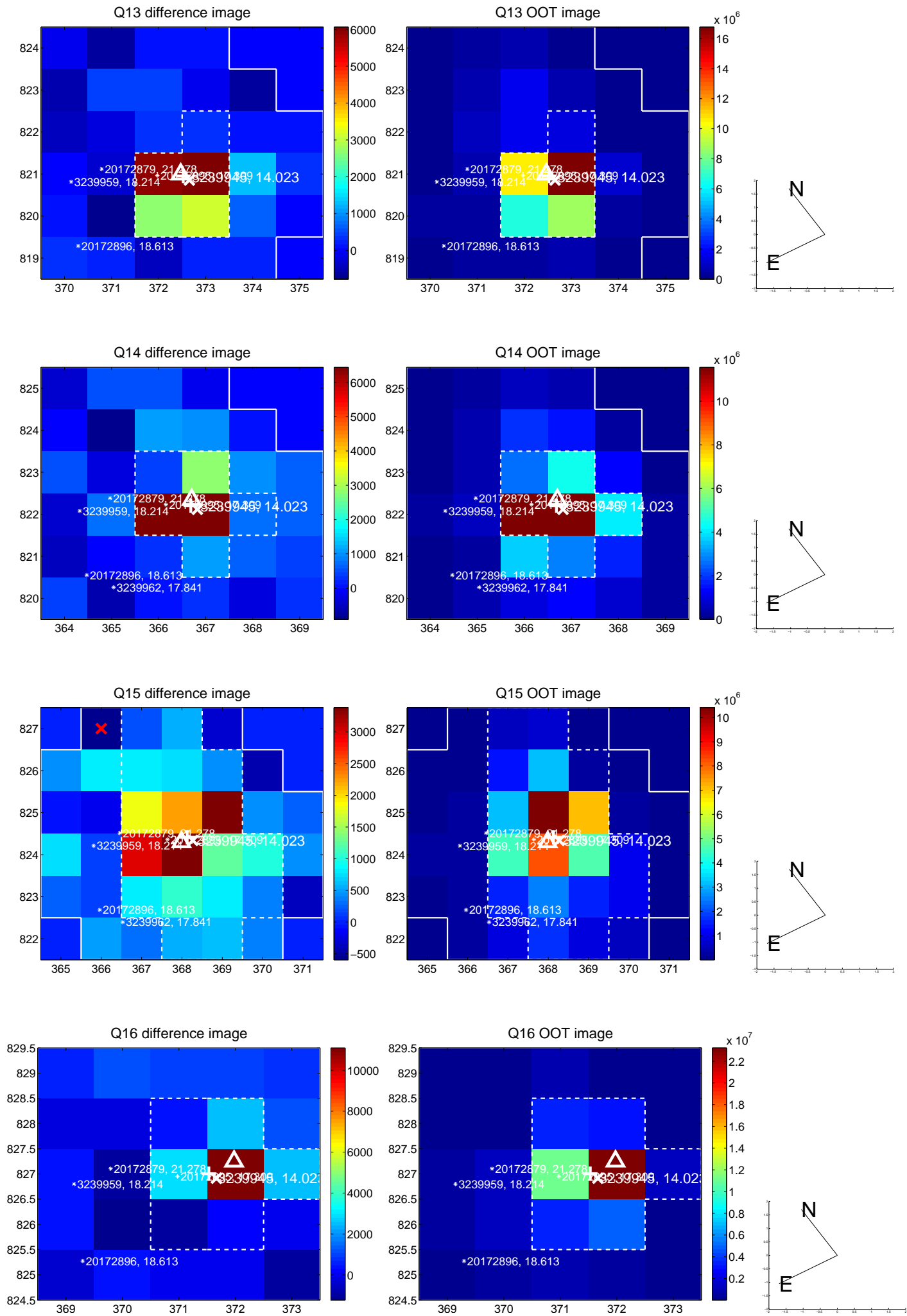
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



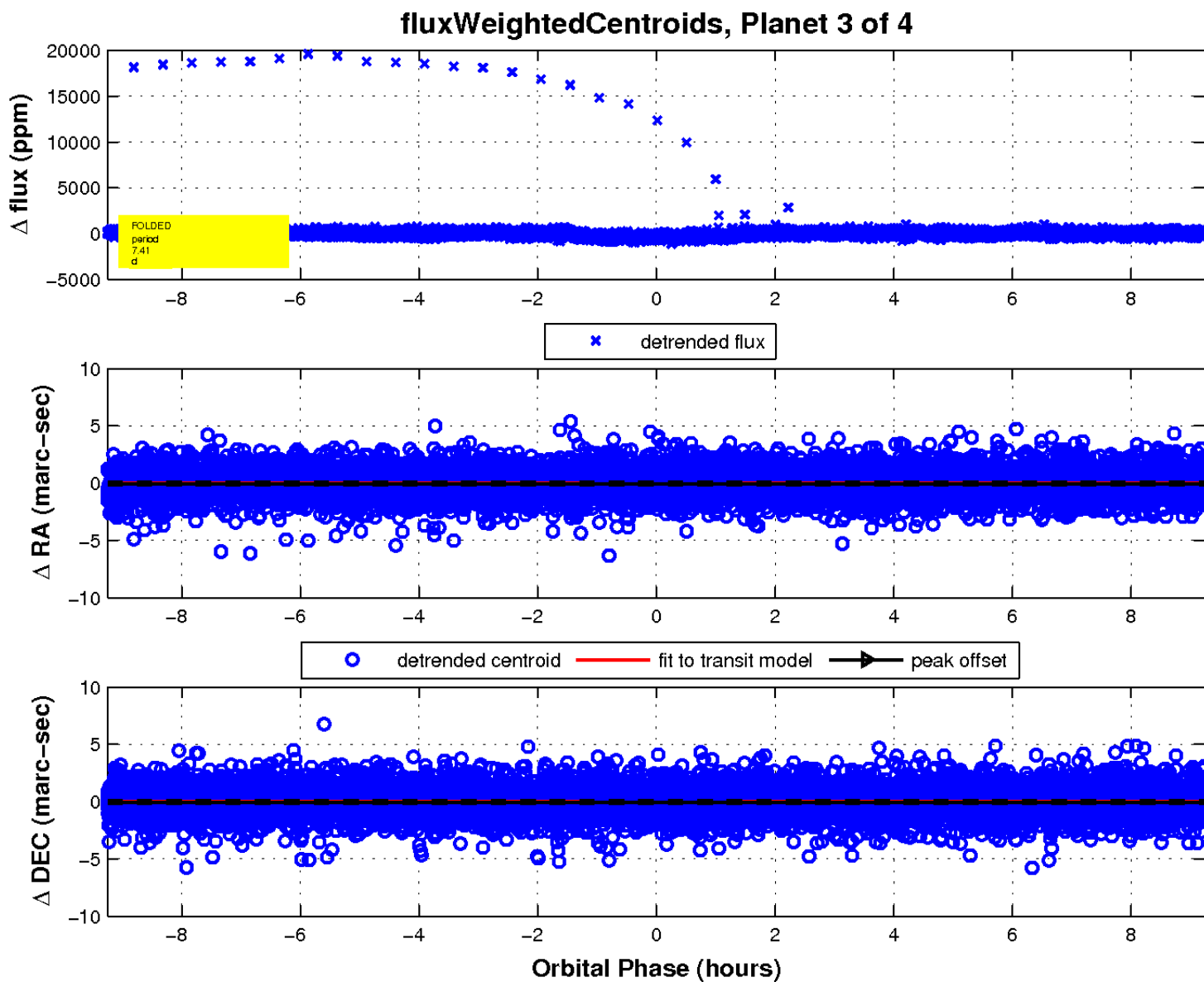
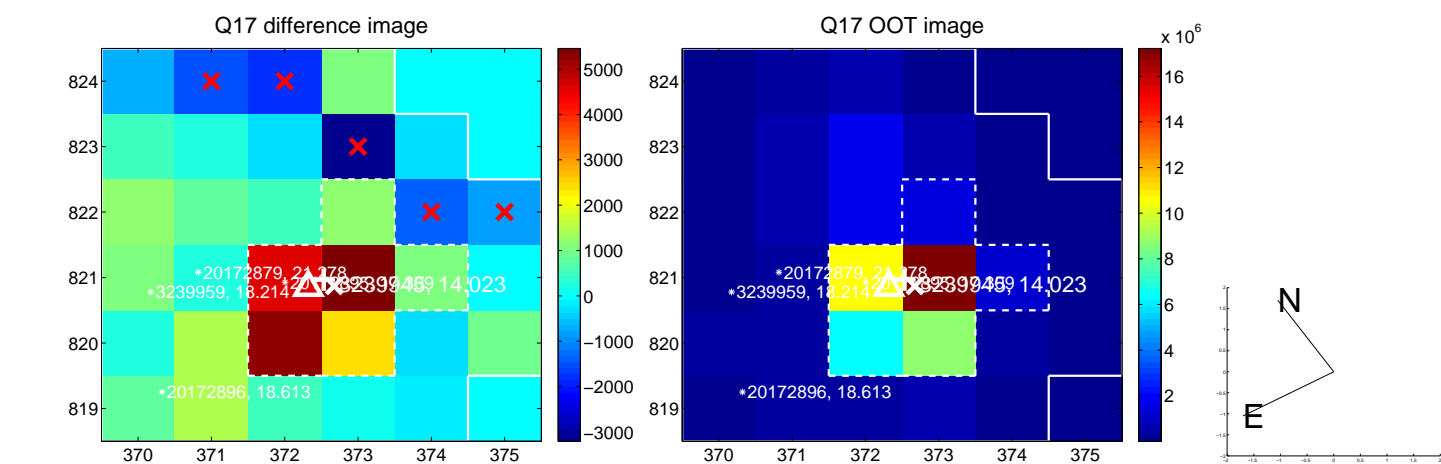
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

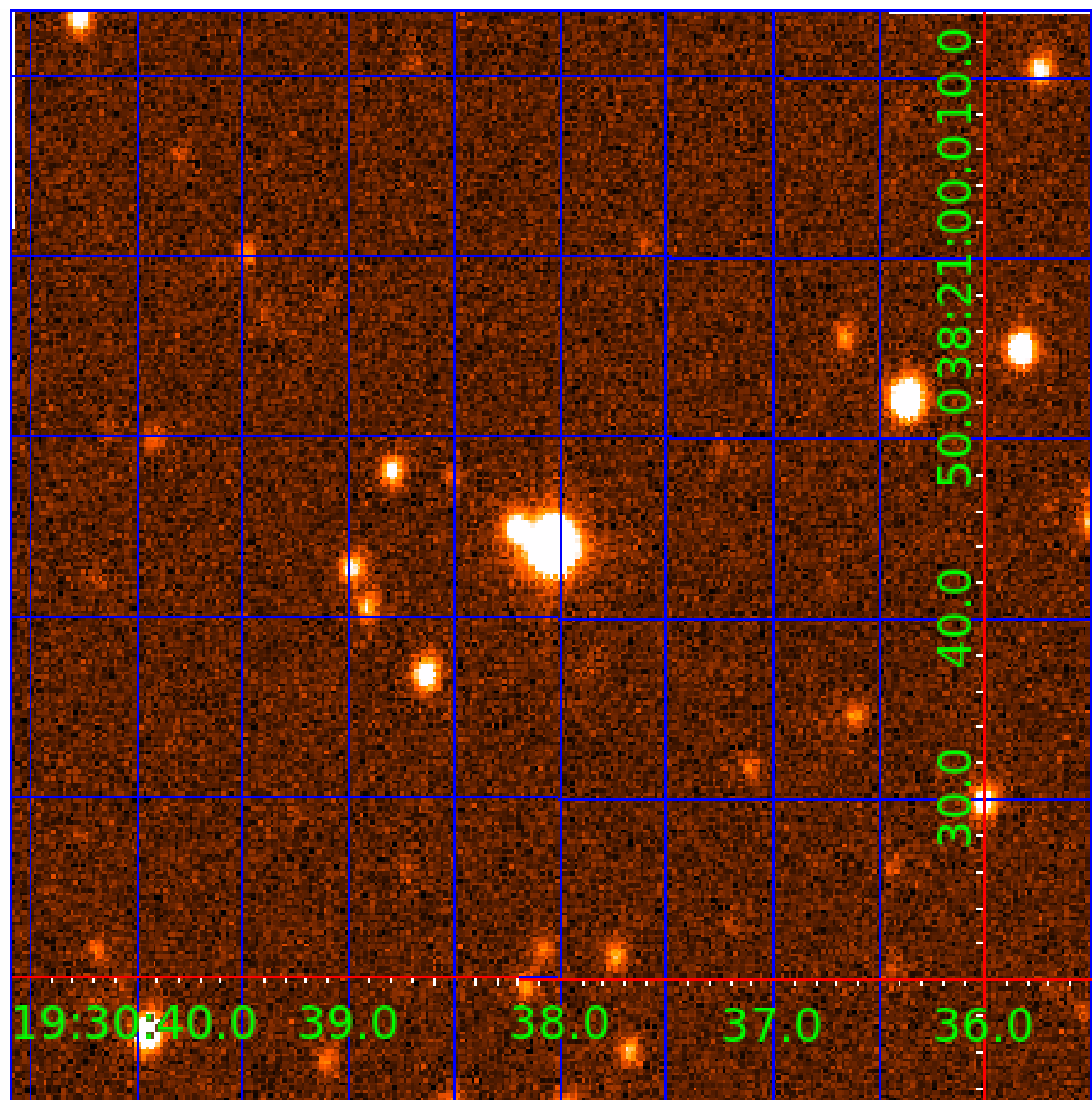


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003239945

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})
003239945-01	OBS	0490.02	535.616258	420.286981	19019.0	16.159	279.6	323.9	0.69	4799	9.26	0.17
003239945-02	OBS	0490.01	4.393163	133.328200	432.2	2.565	50.0	55.8	0.69	4799	1.75	100.28
003239945-03	OBS	0490.03	7.406119	134.074108	406.3	3.083	38.8	43.3	0.69	4799	1.70	49.98
003239945-04	OBS	0490.04	21.803951	139.065048	238.7	3.325	15.0	15.3	0.69	4799	1.31	11.85

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003239945-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_ZUMA—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003239945-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
003239945-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
003239945-04	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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.

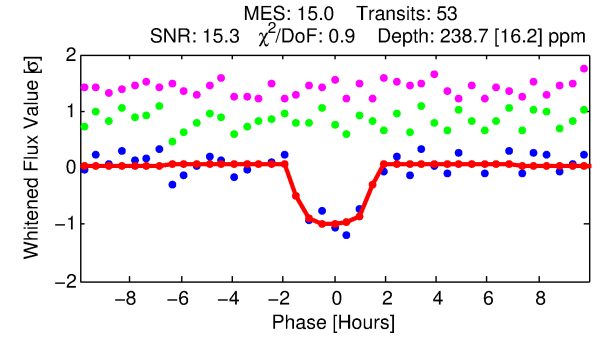
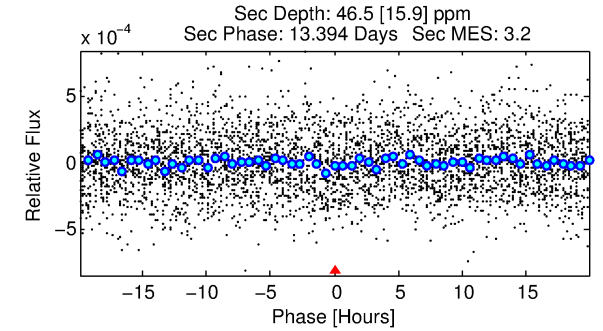
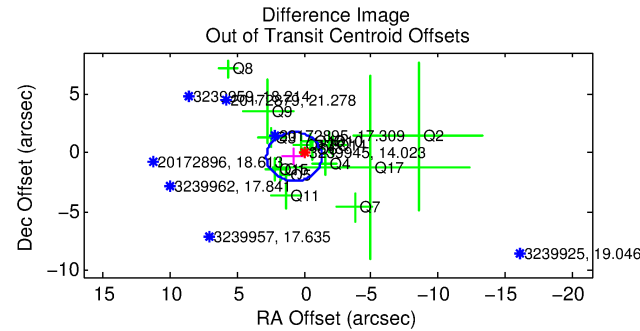
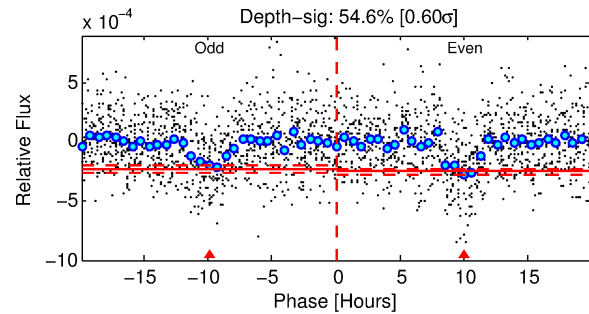
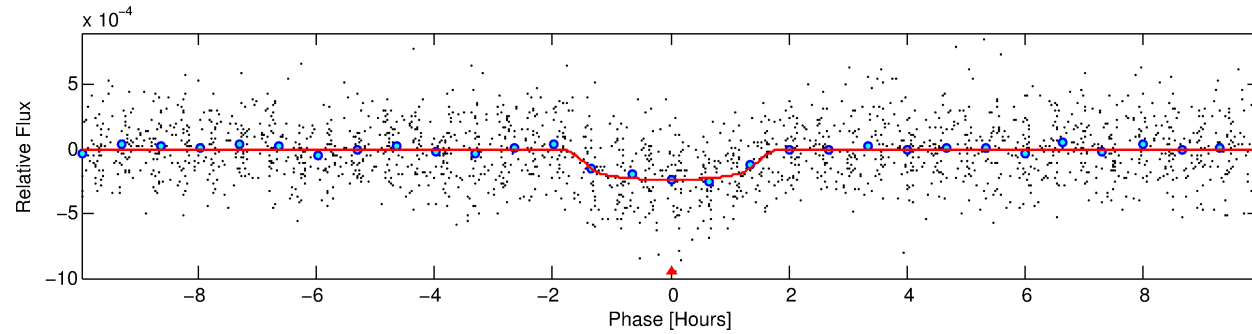
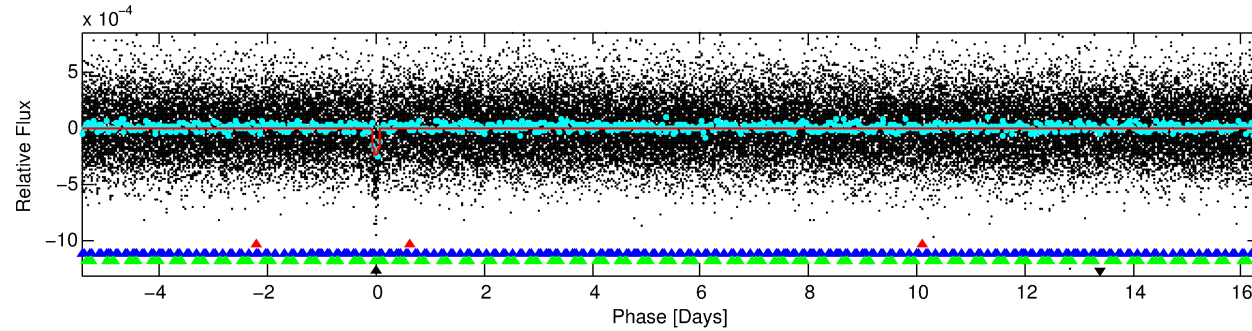
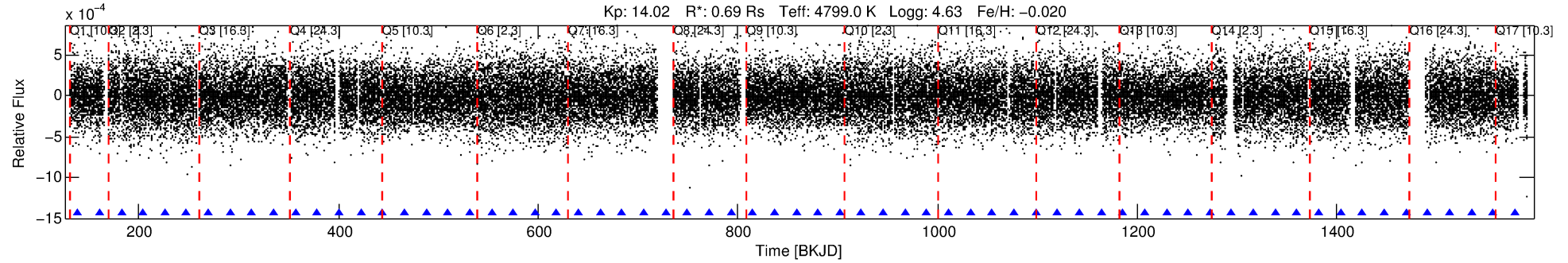
Ephemeris Match Information For 003239945-04

No Significant Match Found

DV One-Page Summary

KIC: 3239945 Candidate: 4 of 4 Period: 21.804 d

KOI: K00490.04 Corr: 0.982



DV Fit Results:

Period = 21.80395 [0.00014] d
Epoch = 139.0650 [0.0050] BKJD
Rp/R* = 0.0173 [0.0067]
a/R* = 23.80 [35.32]
b = 0.90 [0.32]
Seff = 11.84 [1.42]
Teq = 473 [14] K
Rp = 1.31 [0.51] Re
a = 0.1386 [0.0088] AU
Ag = 286.24 [242.13] [1.18 σ]
Teffp = 3008 [635] K [3.99 σ]

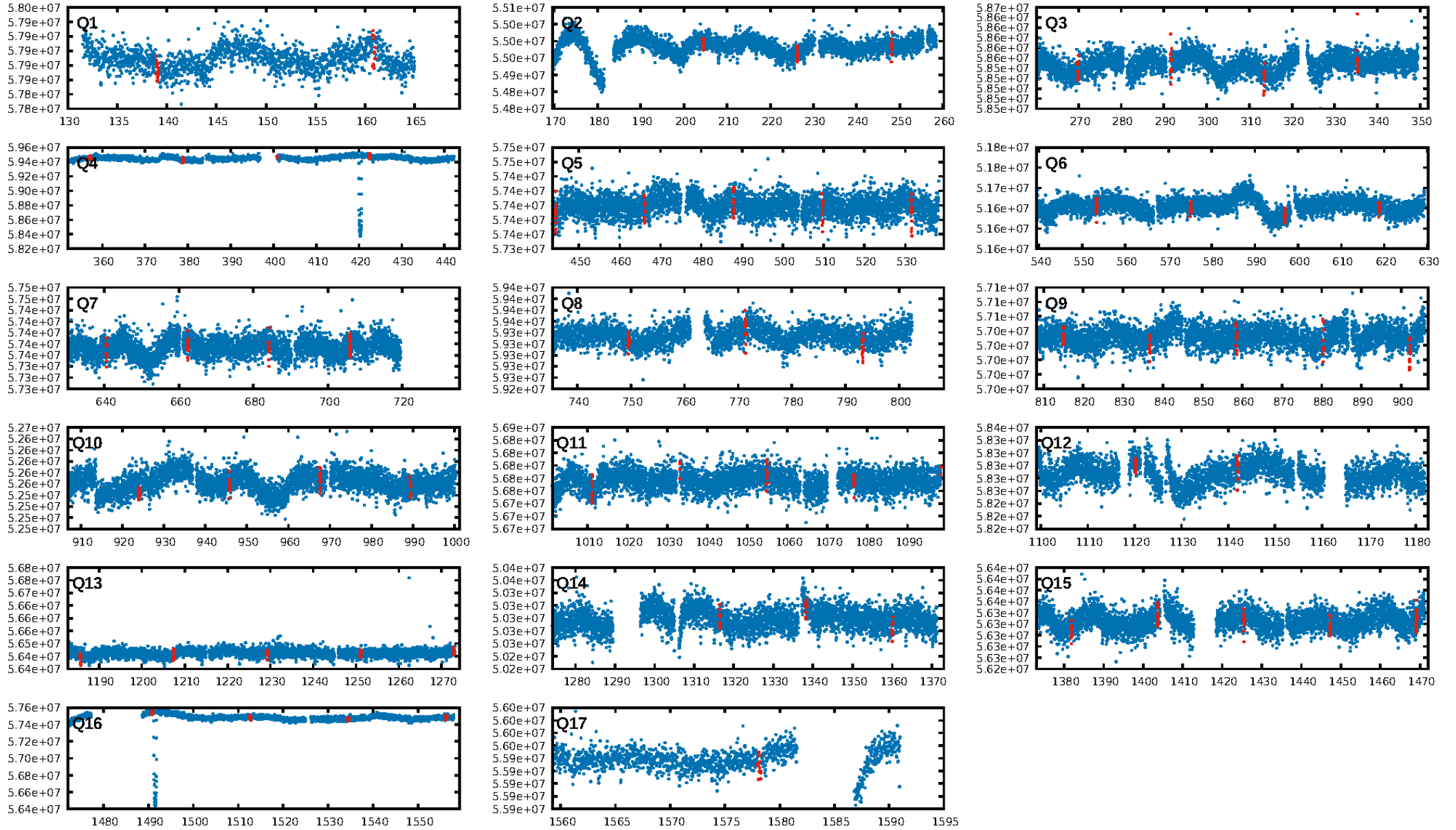
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [76.20 σ]
LongPeriod-sig: 100.0% [747.46 σ]
ModelChiSquare2-sig: 99.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.51e-48
RollingBand-fgt: 1.00 [51/51]
GhostDiagnostic-chr: 12.61
Centroid-sig: 42.7%
Centroid-so: 0.797 arcsec [0.98 σ]
OotOffset-rm: 0.825 arcsec [1.20 σ]
KicOffset-rm: 1.024 arcsec [1.29 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 0.82 [14/17]

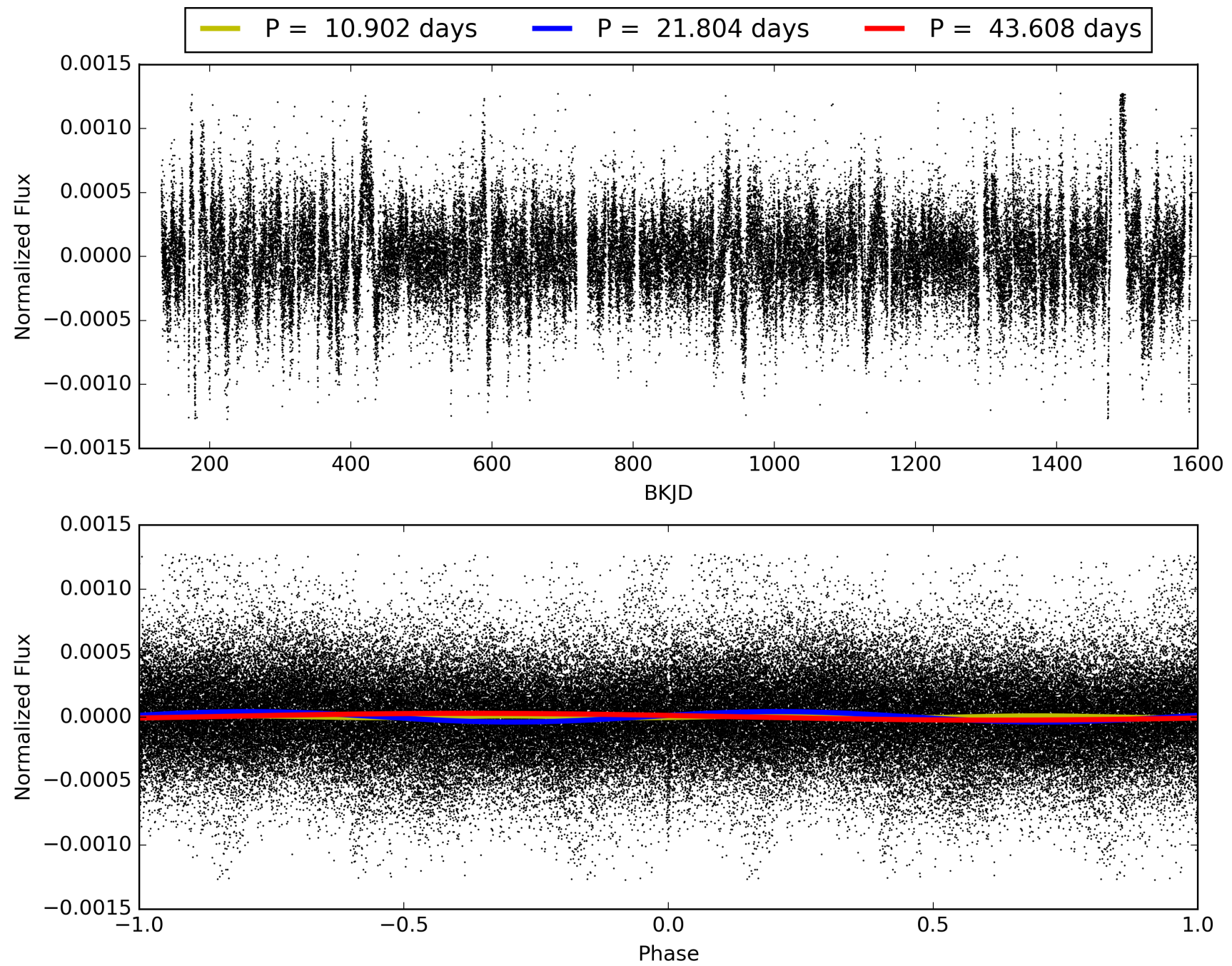
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:02:51 Z

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

TCE 003239945-04, PDC Light Curves

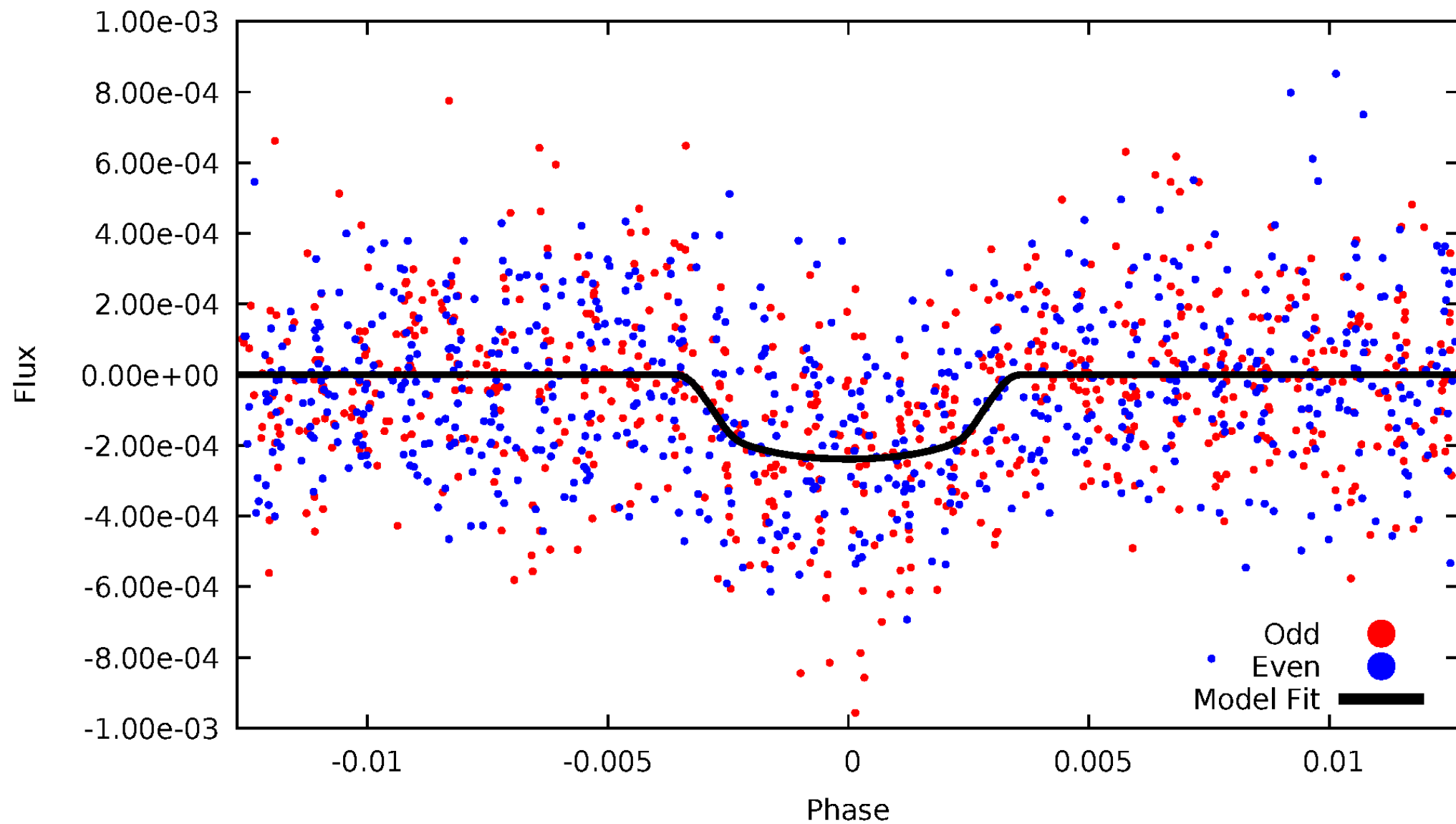


TCE 003239945-04



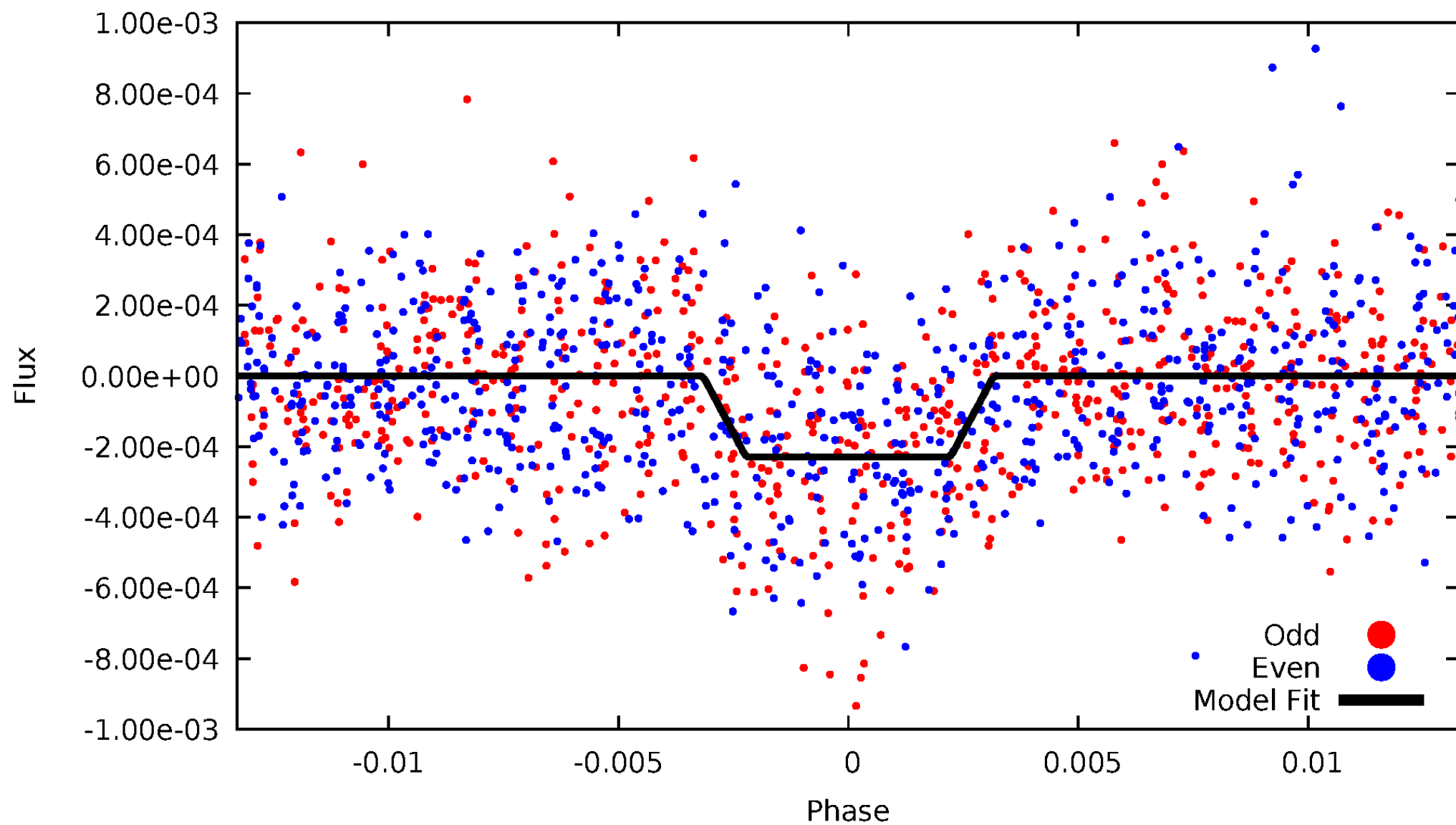
DV Odd/Even

TCE 003239945-04



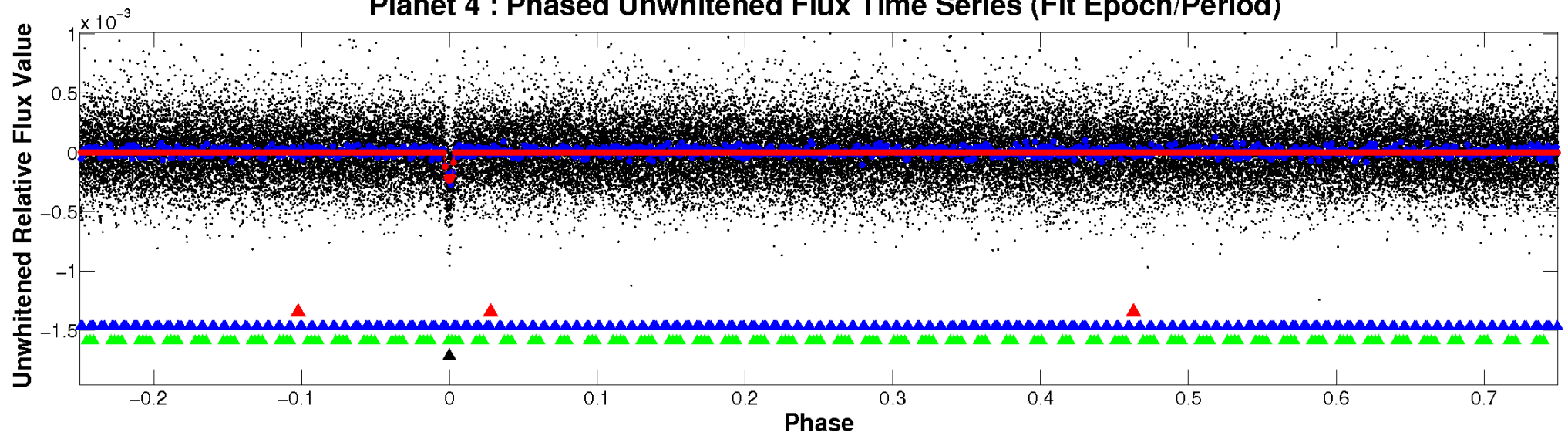
ALT Odd/Even

TCE 003239945-04

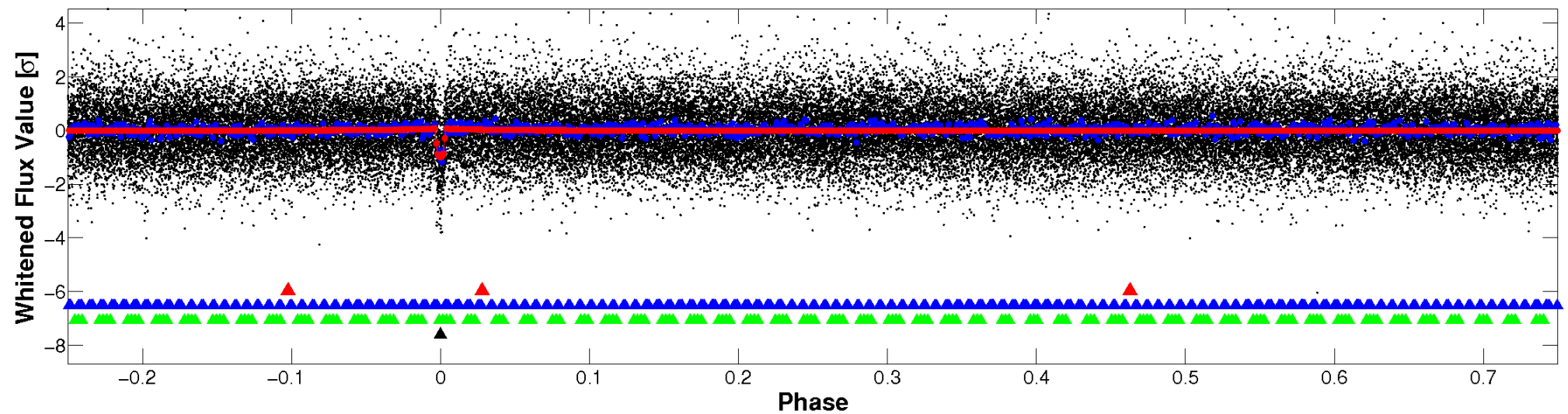


Non-Whitened Vs. Whitened Light Curve

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

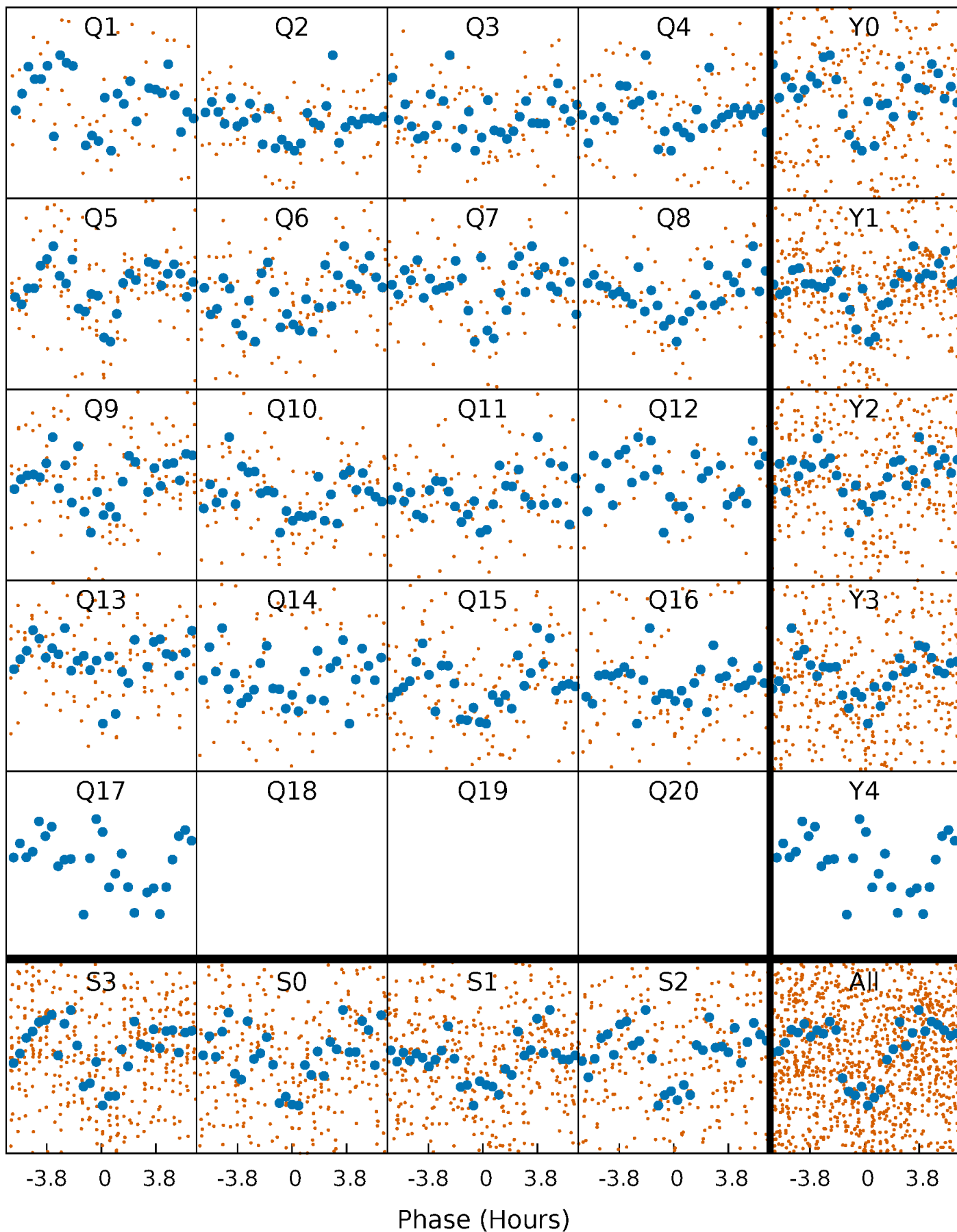


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



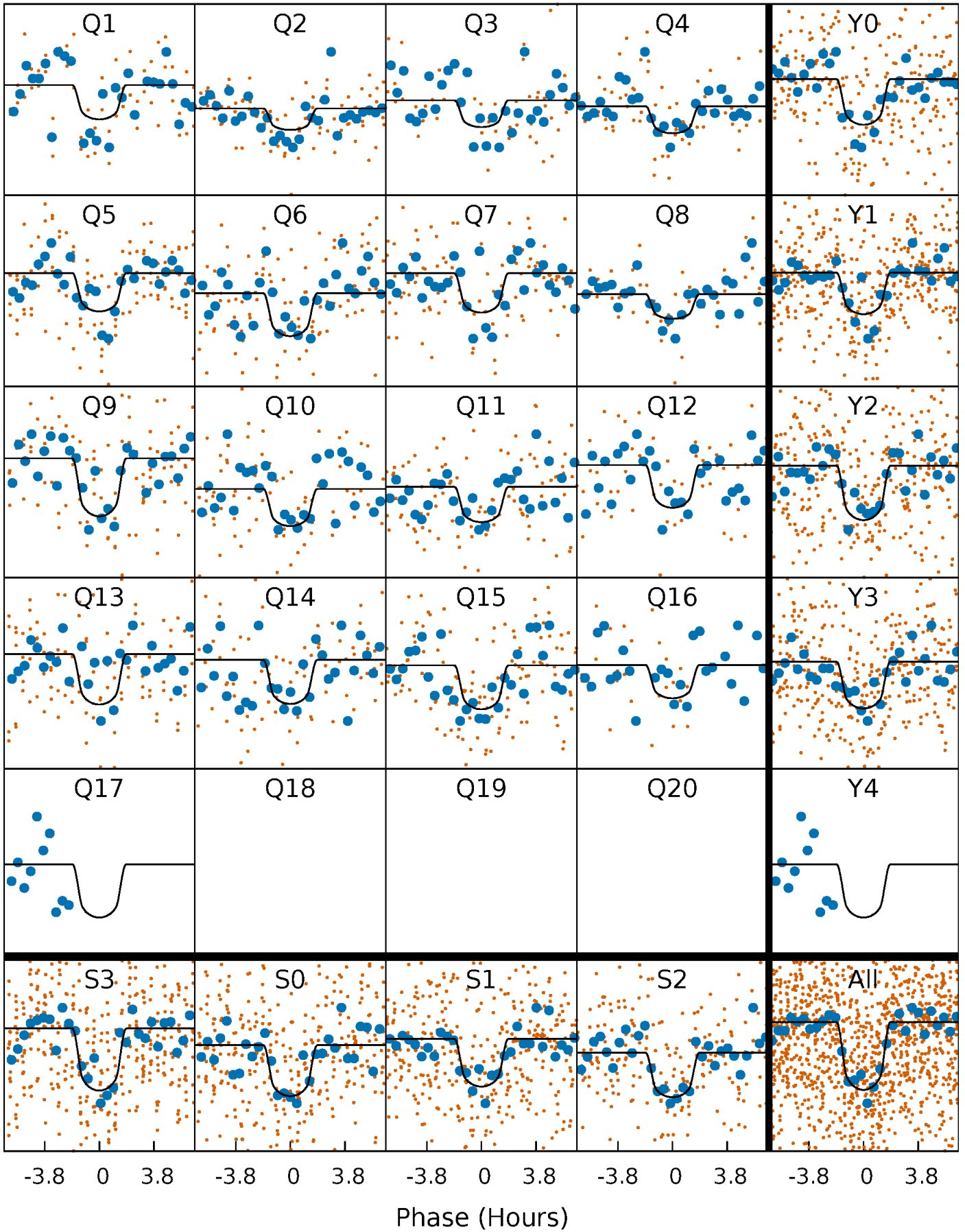
PDC Quarter-Phased Transit Curves

TCE 003239945-04 P= 21.803951 Days $T_0=139.065048$ (BKJD)



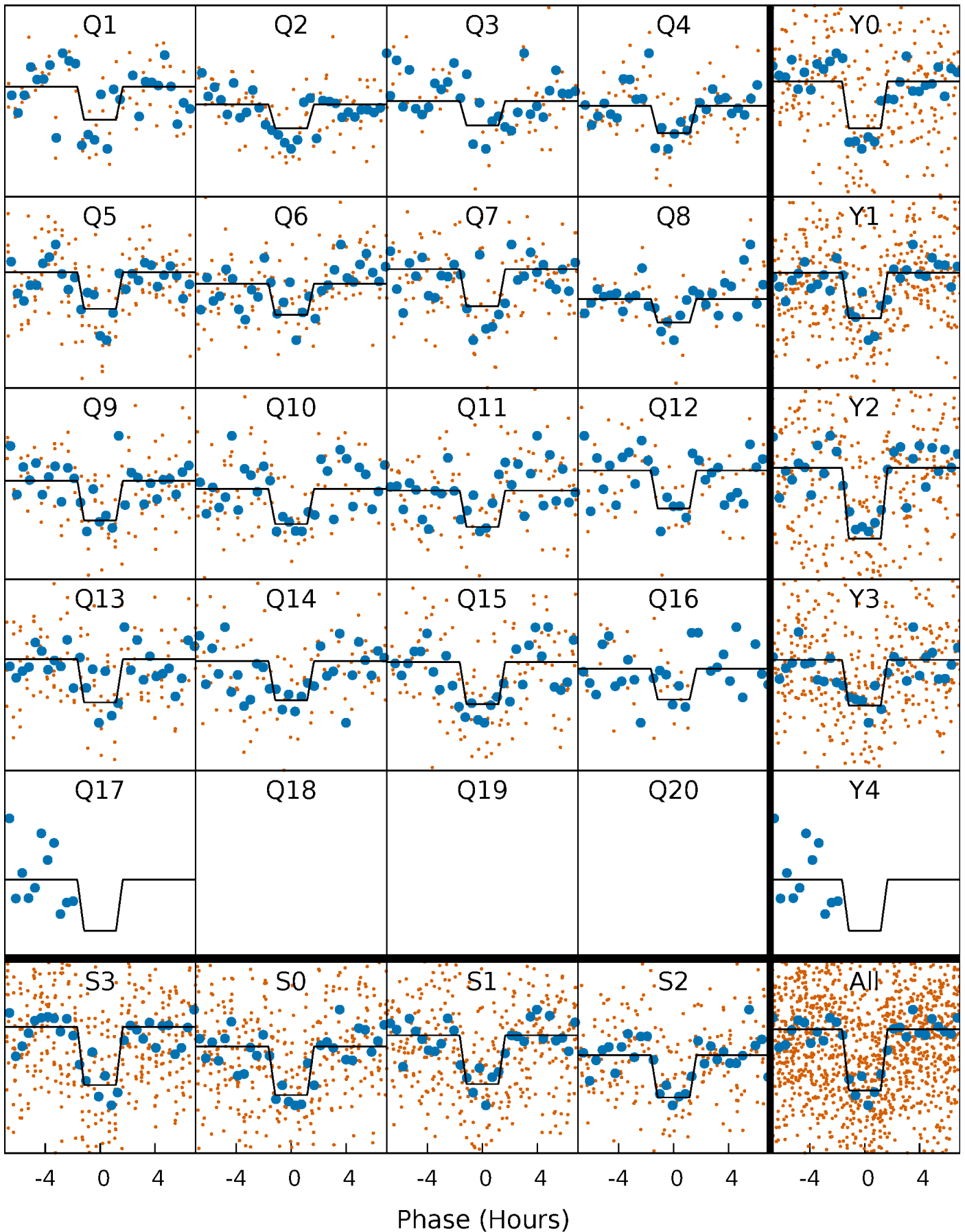
DV Quarter-Phased Transit Curves

TCE 003239945-04 P= 21.803951 Days $T_0=139.065048$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

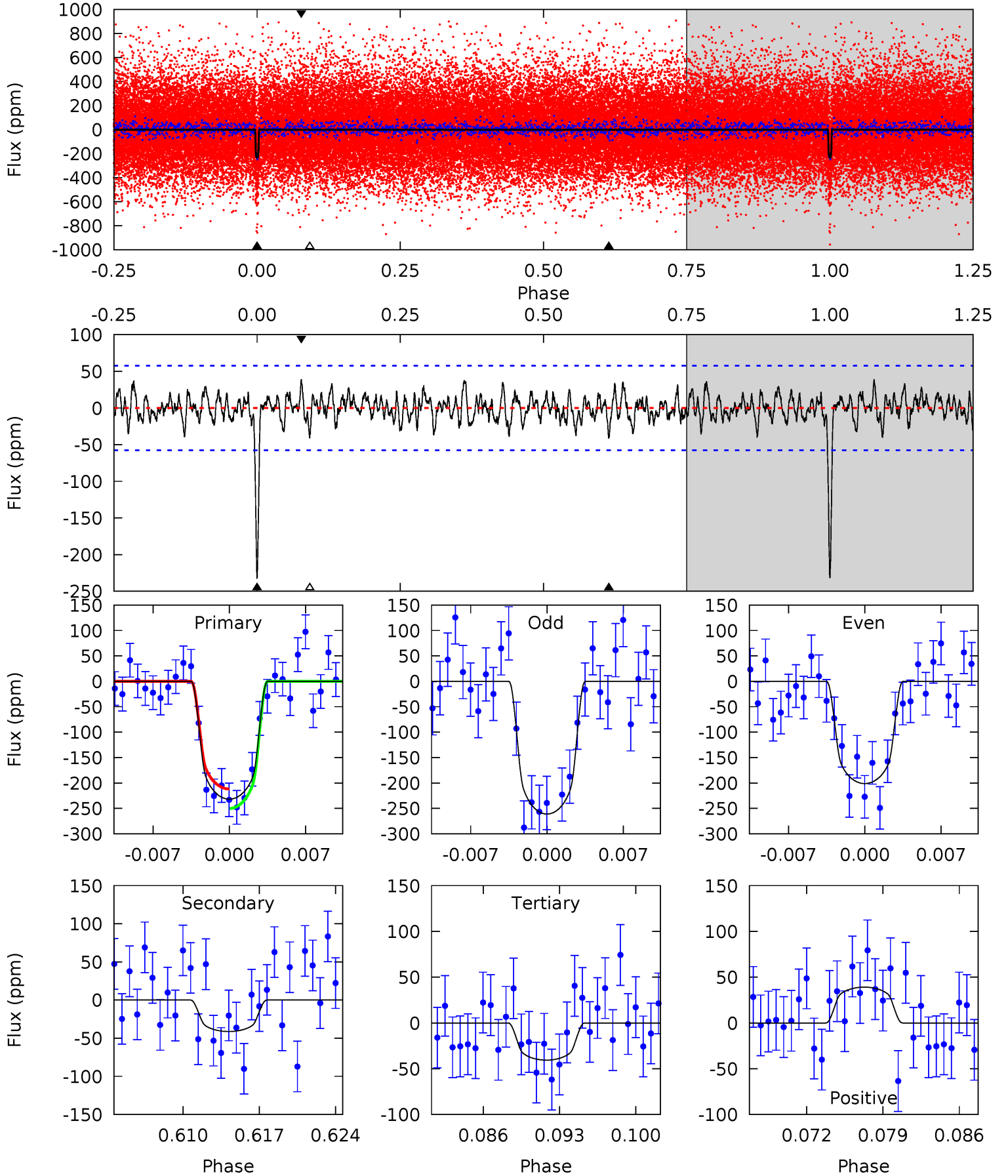
TCE 003239945-04 P= 21.803964 Days $T_0=139.064446$ (BKJD)



DV Model-Shift Uniqueness Test

003239945-04, P = 21.803951 Days, E = 117.261097 Days

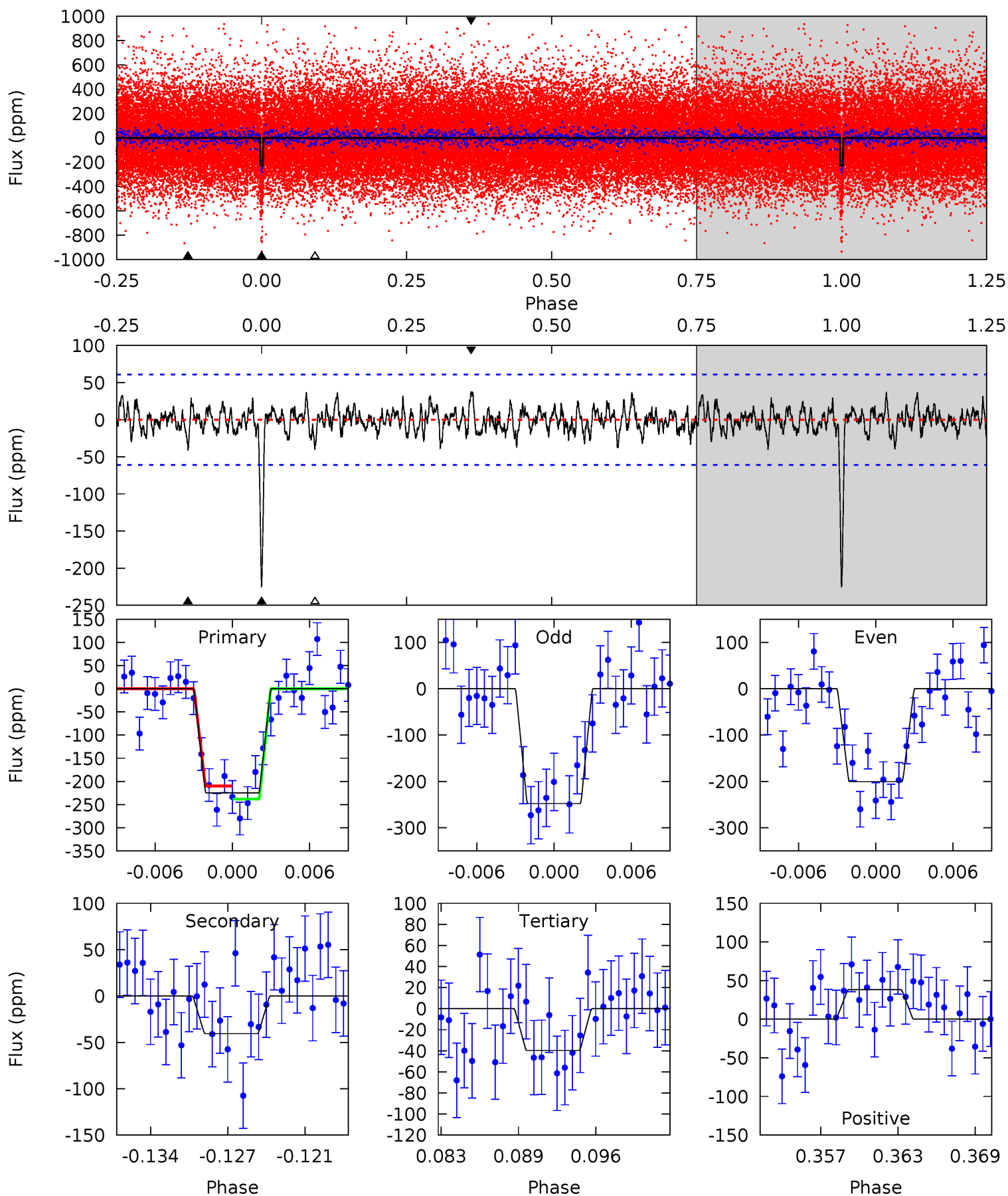
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	3.64	3.59	3.45	5.09	2.69	1.25	16.9	17.0	0.05	0.19	2.65	1.04	0.14	1.69



Alt Model-Shift Uniqueness Test

003239945-04, P = 21.803964 Days, E = 117.260482 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	3.41	3.34	3.20	5.11	2.73	1.11	15.5	15.7	0.07	0.20	1.99	1.01	0.15	1.19



Stellar Parameters For KIC 003239945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4799^{+95}_{-95}	$4.631^{+0.012}_{-0.048}$	$-0.020^{+0.150}_{-0.150}$	$0.692^{+0.054}_{-0.021}$	$0.776^{+0.031}_{-0.053}$	$3.301^{+0.172}_{-0.643}$
	+2%/-2%	+0%/-1%	+750%/-750%	+8%/-3%	+4%/-7%	+5%/-19%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 003239945-04 / KOI 0490.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-41 ± 11	$1.31^{+0.52}_{-0.47}$	668^{+17}_{-15}	3384^{+590}_{-337}	247^{+396}_{-124}
Alt.	-41 ± 12	$1.15^{+0.51}_{-0.48}$	668^{+15}_{-16}	3489^{+770}_{-381}	305^{+654}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

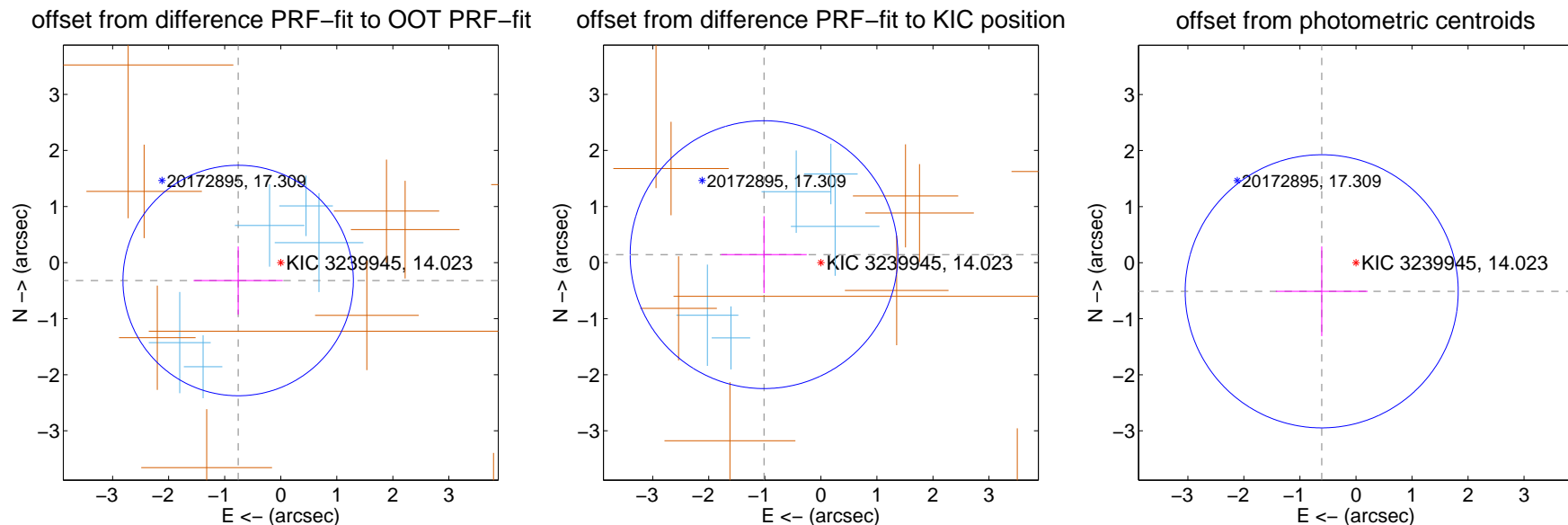
DV Centroid Data

Supplemental centroid analysis for 003239945-04. Kepler magnitude: 14.02. Transit SNR 15.26

There are 5 quarters with good PRF difference image offsets

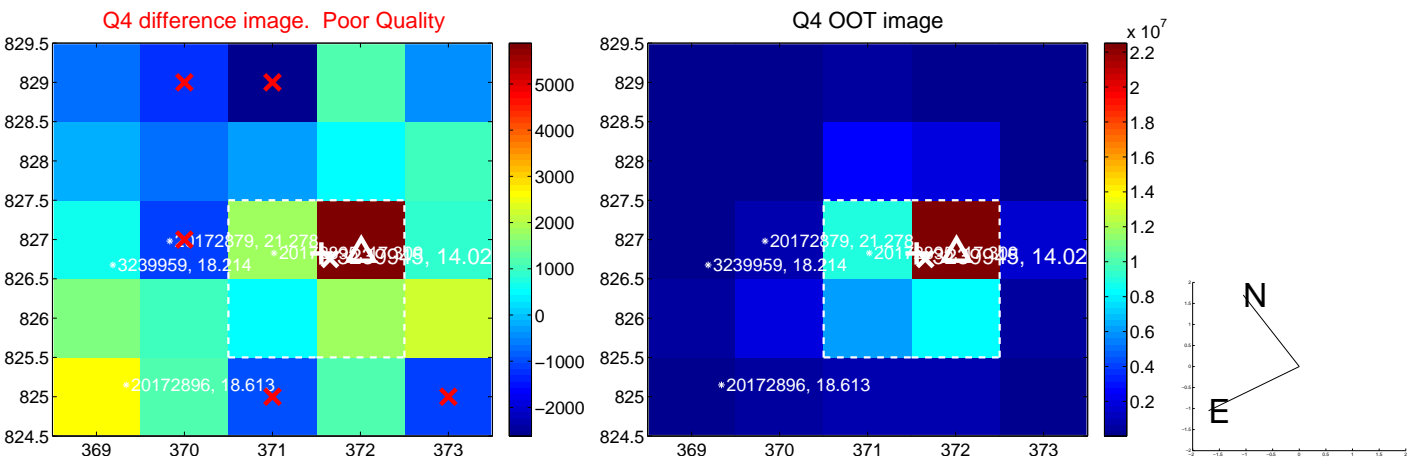
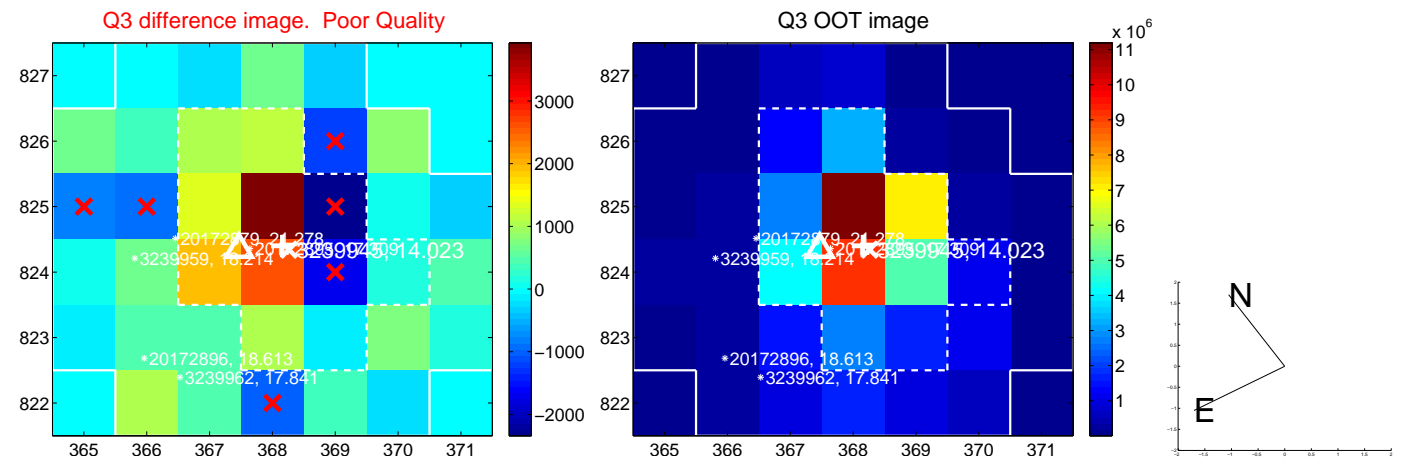
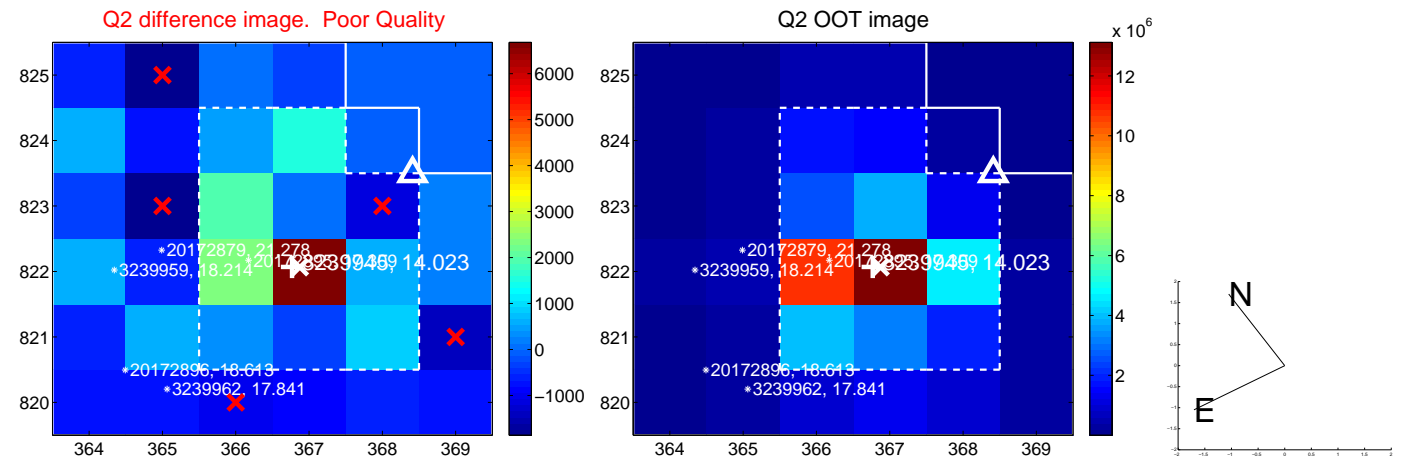
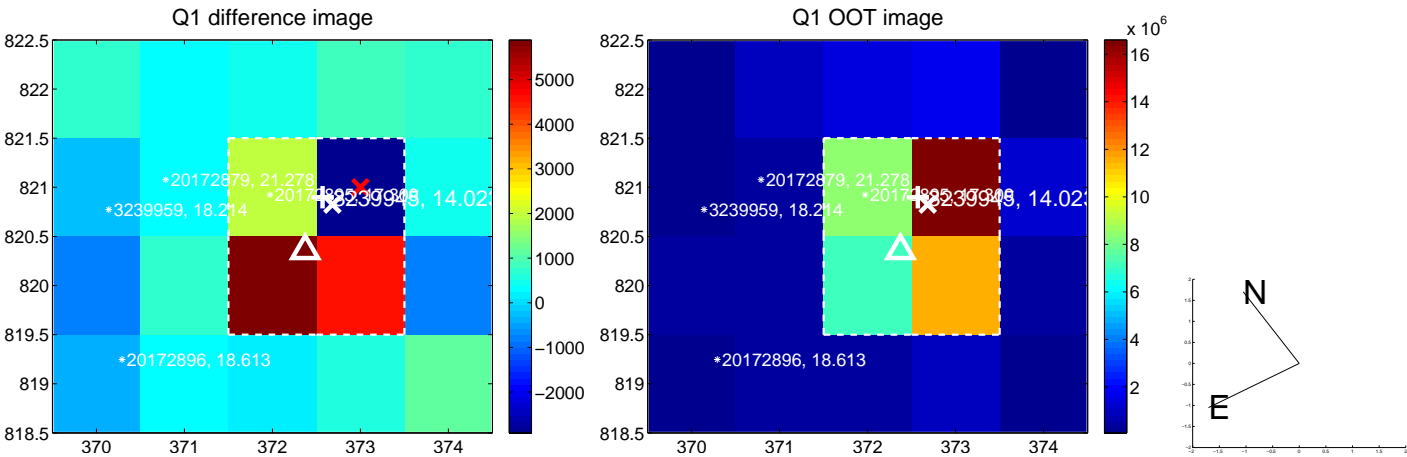
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.825 ± 0.685	1.20	0.760 ± 0.796	-0.320 ± 0.607
PRF-fit source offset from KIC position	1.024 ± 0.796	1.29	1.014 ± 0.763	0.141 ± 0.685
photometric centroid source offset	0.80 ± 0.81	0.98	0.61 ± 0.82	-0.51 ± 0.80

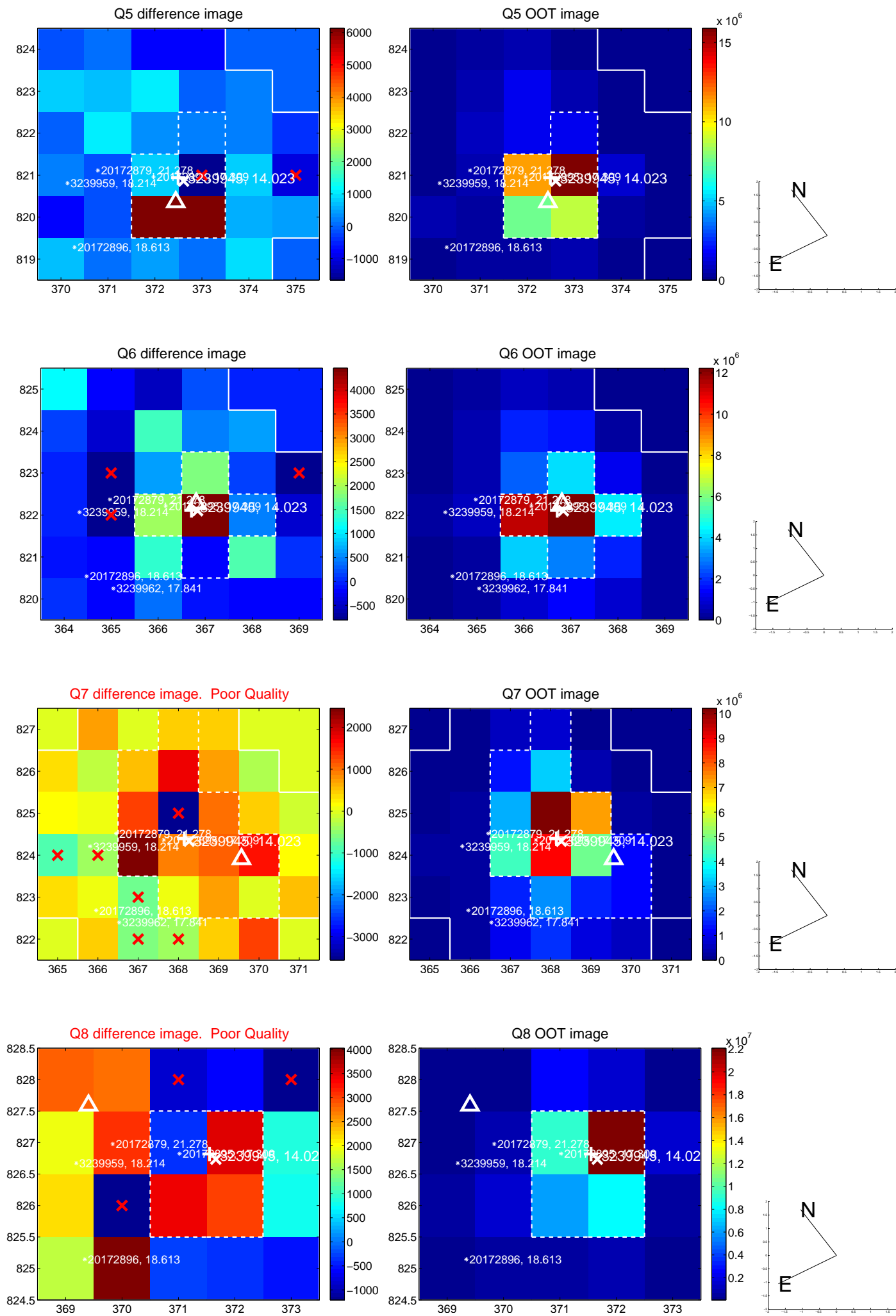


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

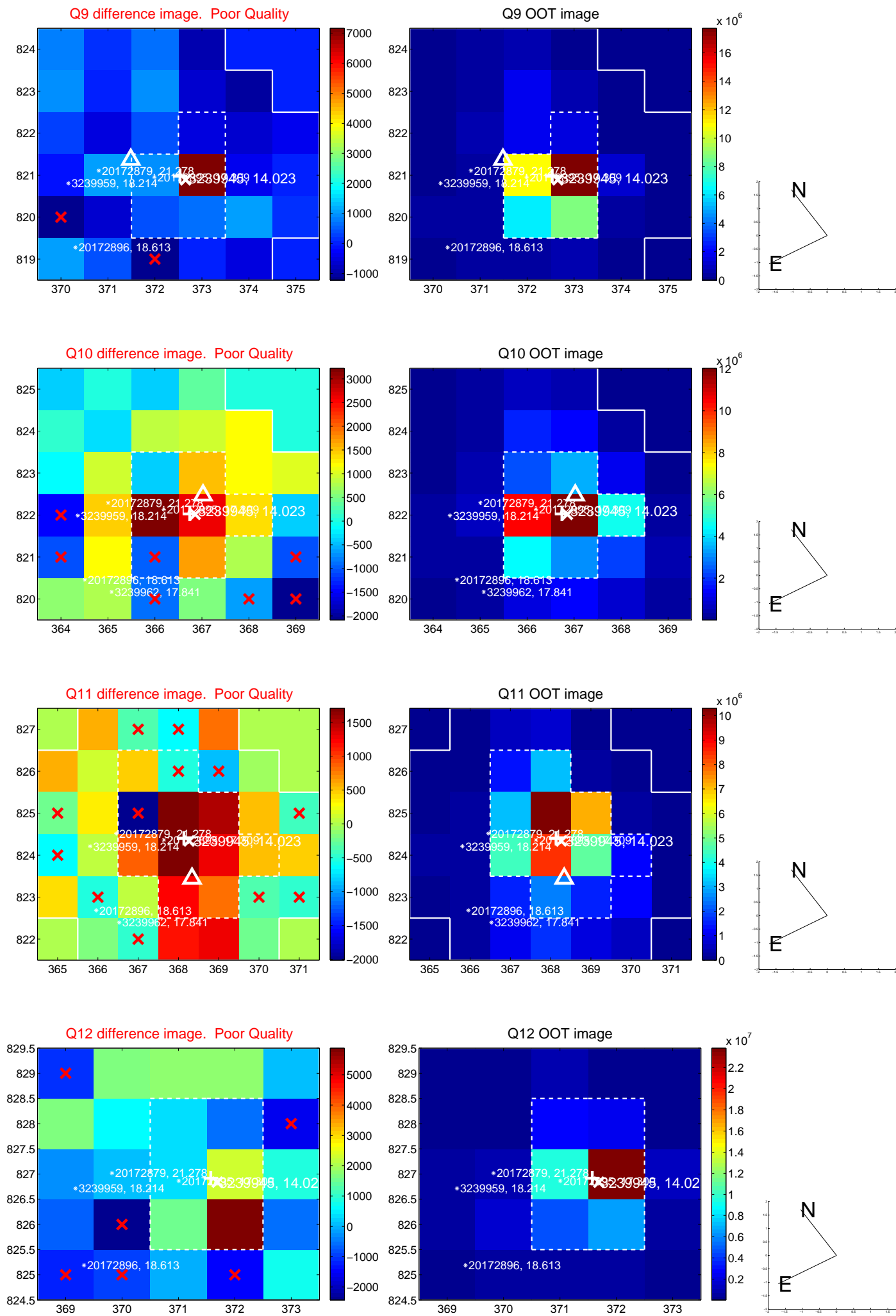
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



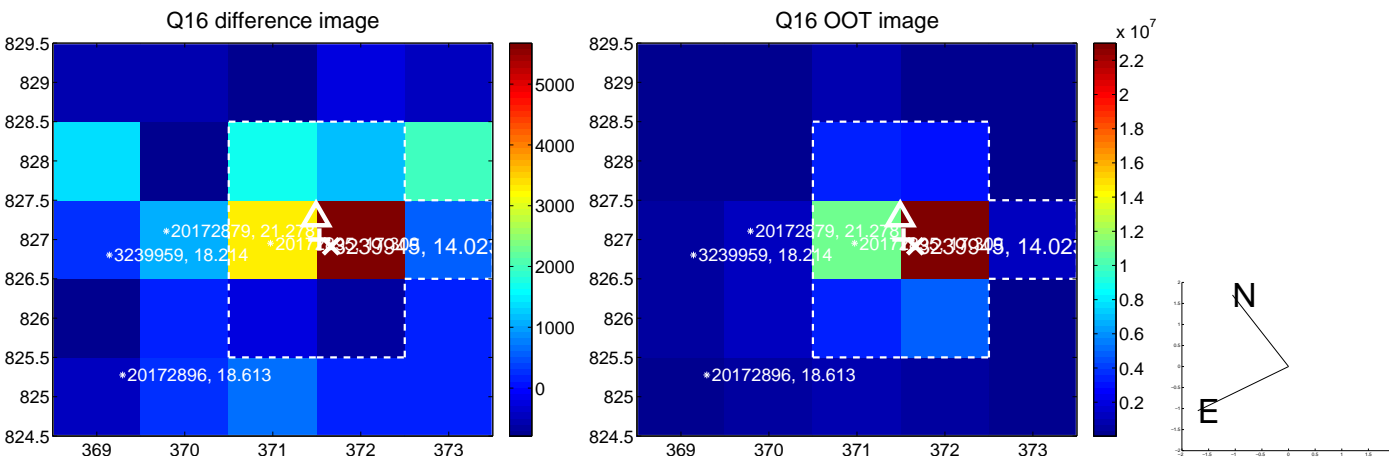
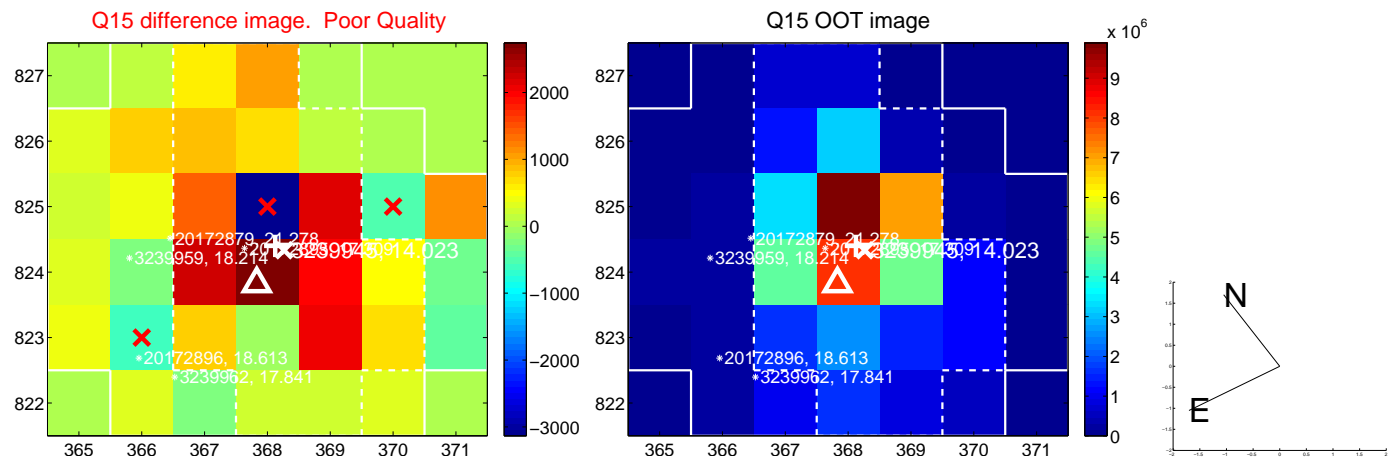
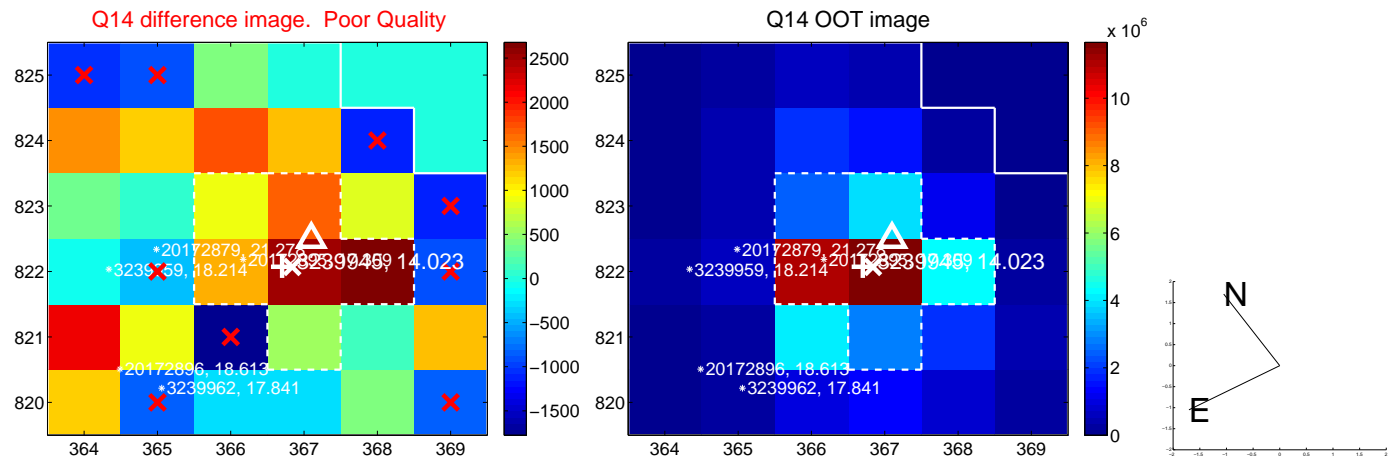
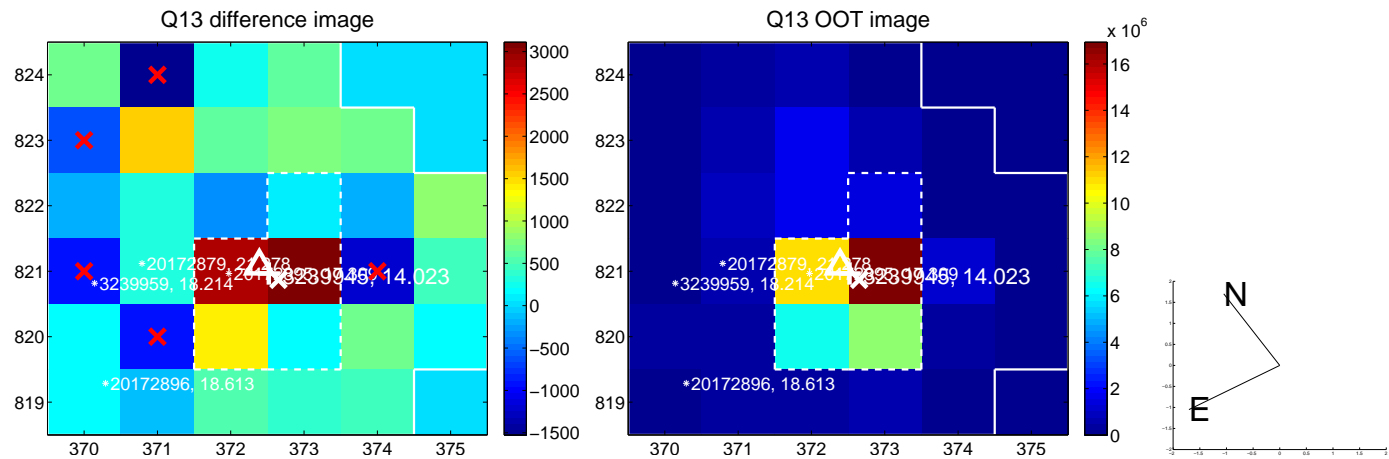
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



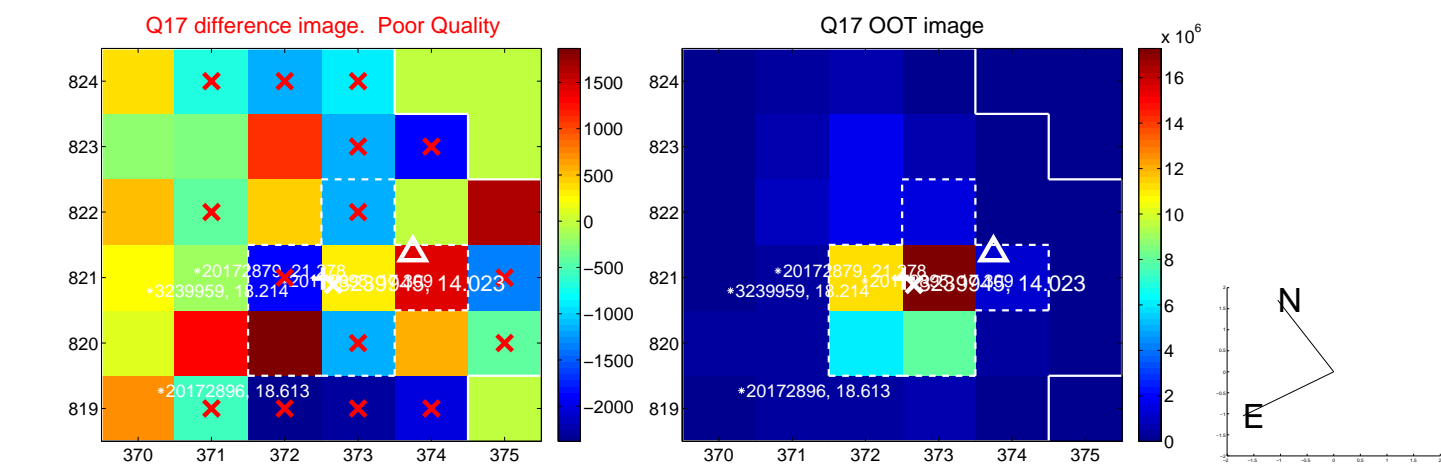
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



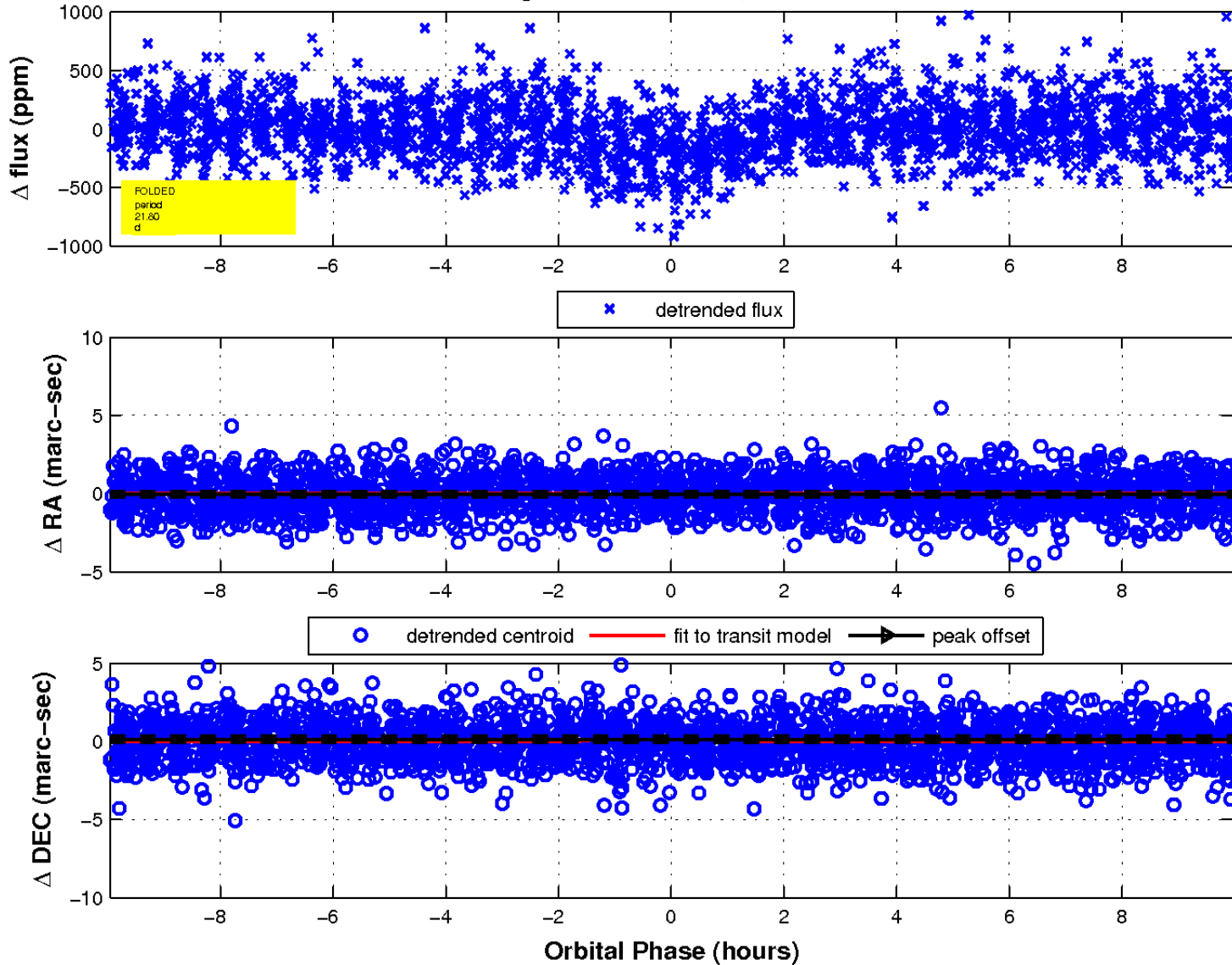
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

