

KIC 012367310

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})
012367310-01	OBS	7530.01	8.627494	139.989375	36786.6	4.608	2277.7	1713.5	4.06	5146	120.08	1034.72
012367310-02	OBS	No	8.627424	135.743496	4797.6	5.220	311.4	308.5	4.06	5146	53.58	1034.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012367310-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
012367310-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

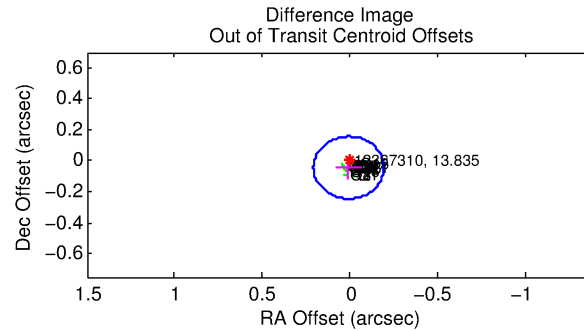
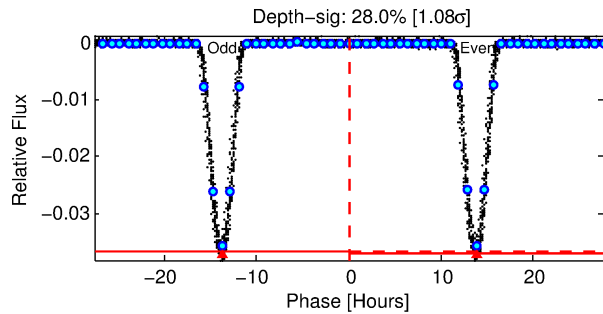
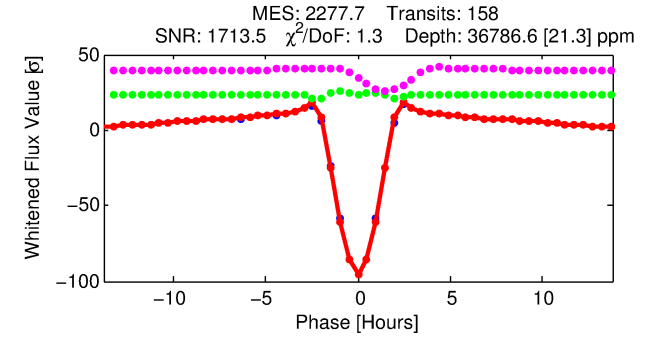
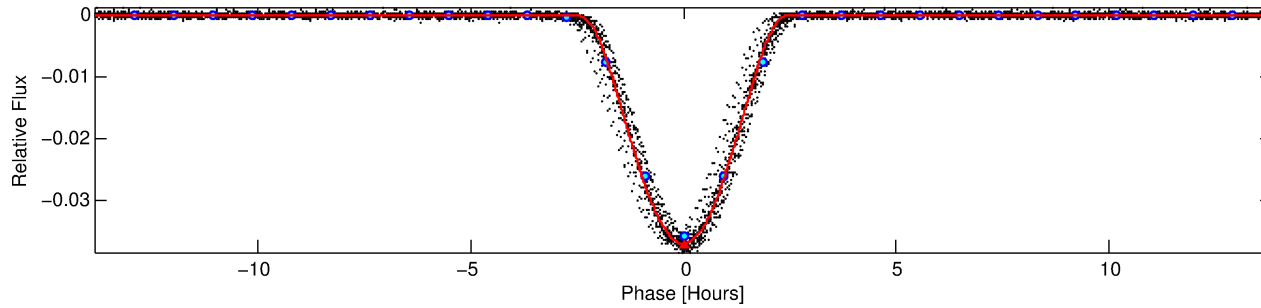
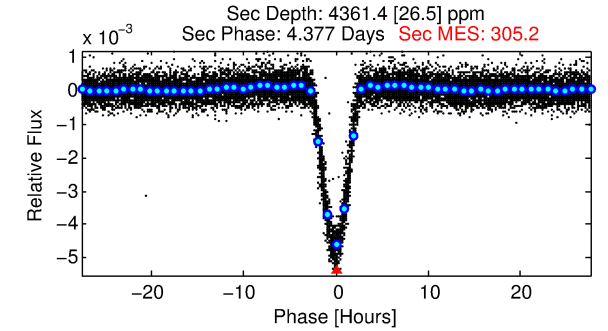
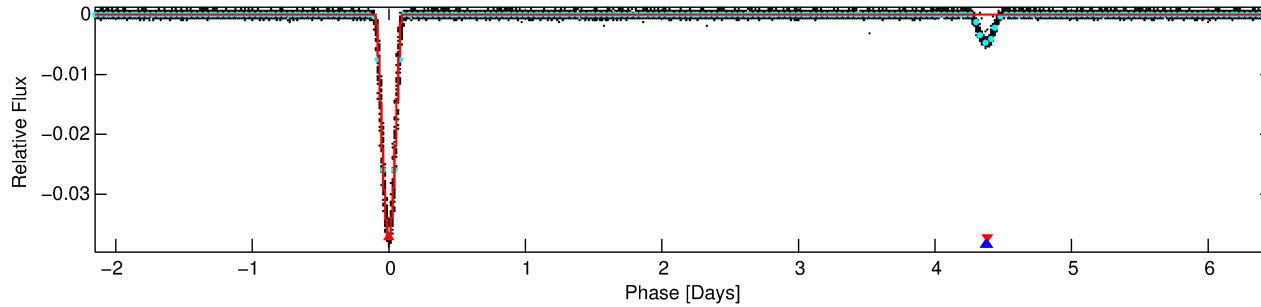
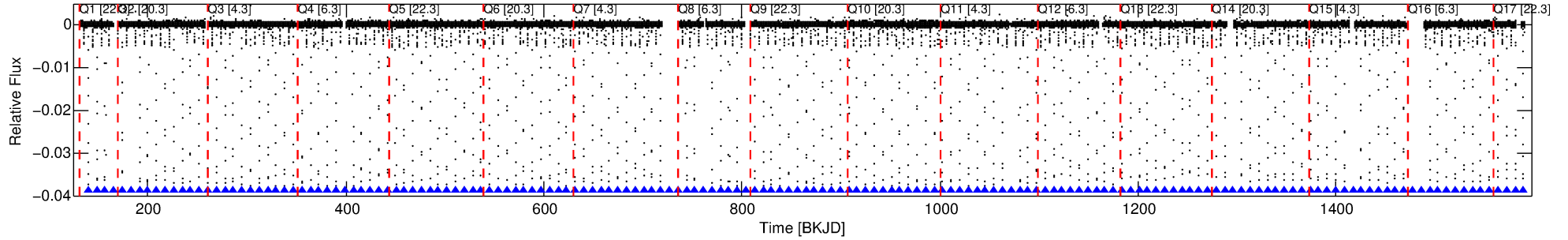
Ephemeris Match Information For 012367310-01

No Significant Match Found

DV One-Page Summary

KIC: 12367310 Candidate: 1 of 2 Period: 8.627 d
KOI: K07530.01 Corr: 0.991

Kp: 13.84 R*: 4.06 Rs Teff: 5146.0 K Logg: 3.48 Fe/H: 0.280



DV Fit Results:

Period = 8.62749 [0.00000] d
Epoch = 139.9894 [0.0001] BKJD
Rp/R* = 0.2708 [0.0056]
a/R* = 12.24 [0.02]
b = 0.94 [0.01]
Seff = 1034.73 [1484.68]
Teff = 1446 [519] K
Rp = 120.08 [88.67] Re
a = 0.1001 [0.0832] AU
Ag = 1.67 [2.38] [0.28σ]
Teffp = 2541 [104] K [2.07σ]

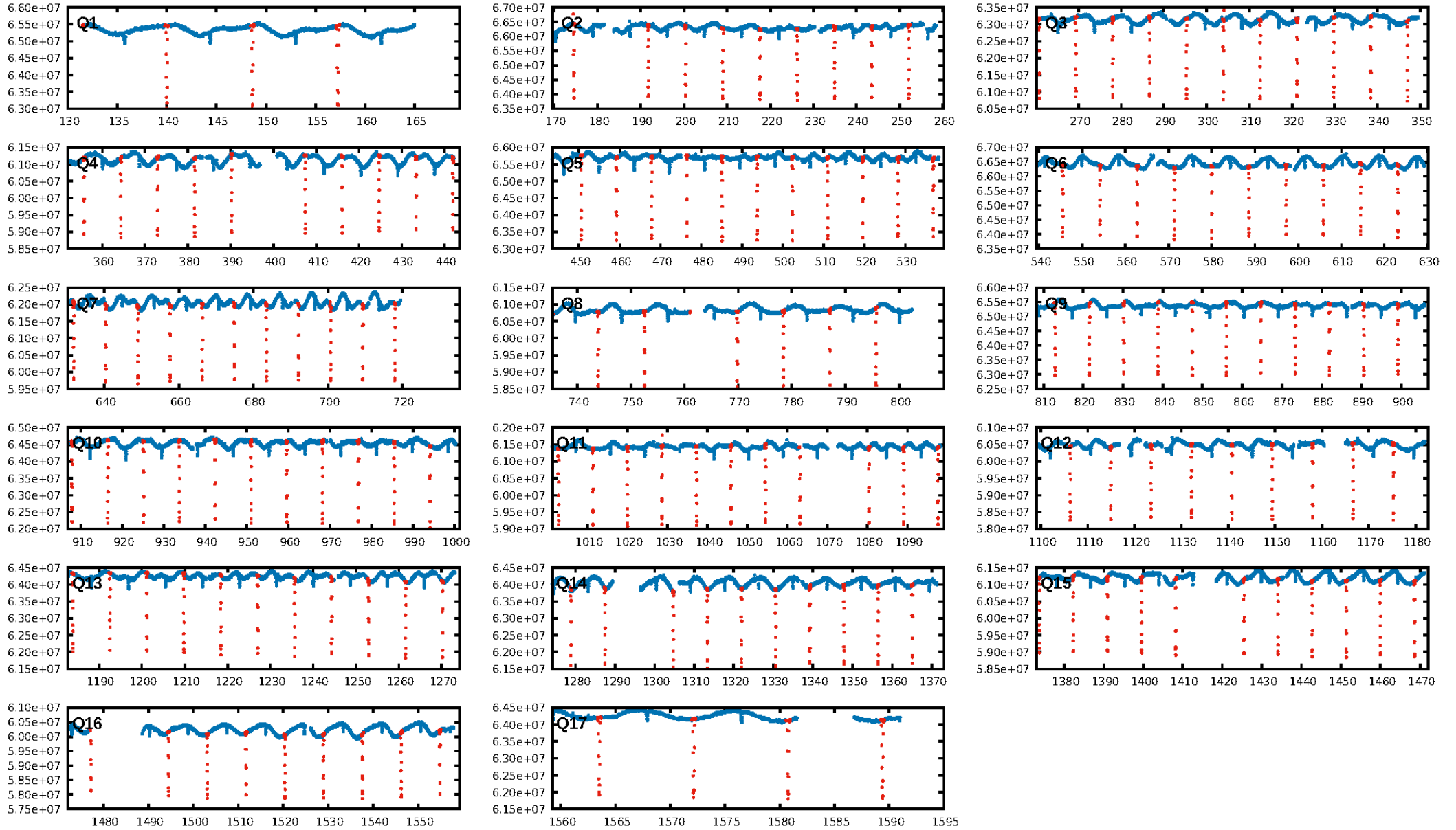
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 17.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [151/151]
GhostDiagnostic-chr: 3.719
Centroid-sig: 0.0%
Centroid-so: 0.574 arcsec [174.01σ]
OotOffset-rm: 0.045 arcsec [0.68σ]
KicOffset-rm: 0.046 arcsec [0.68σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

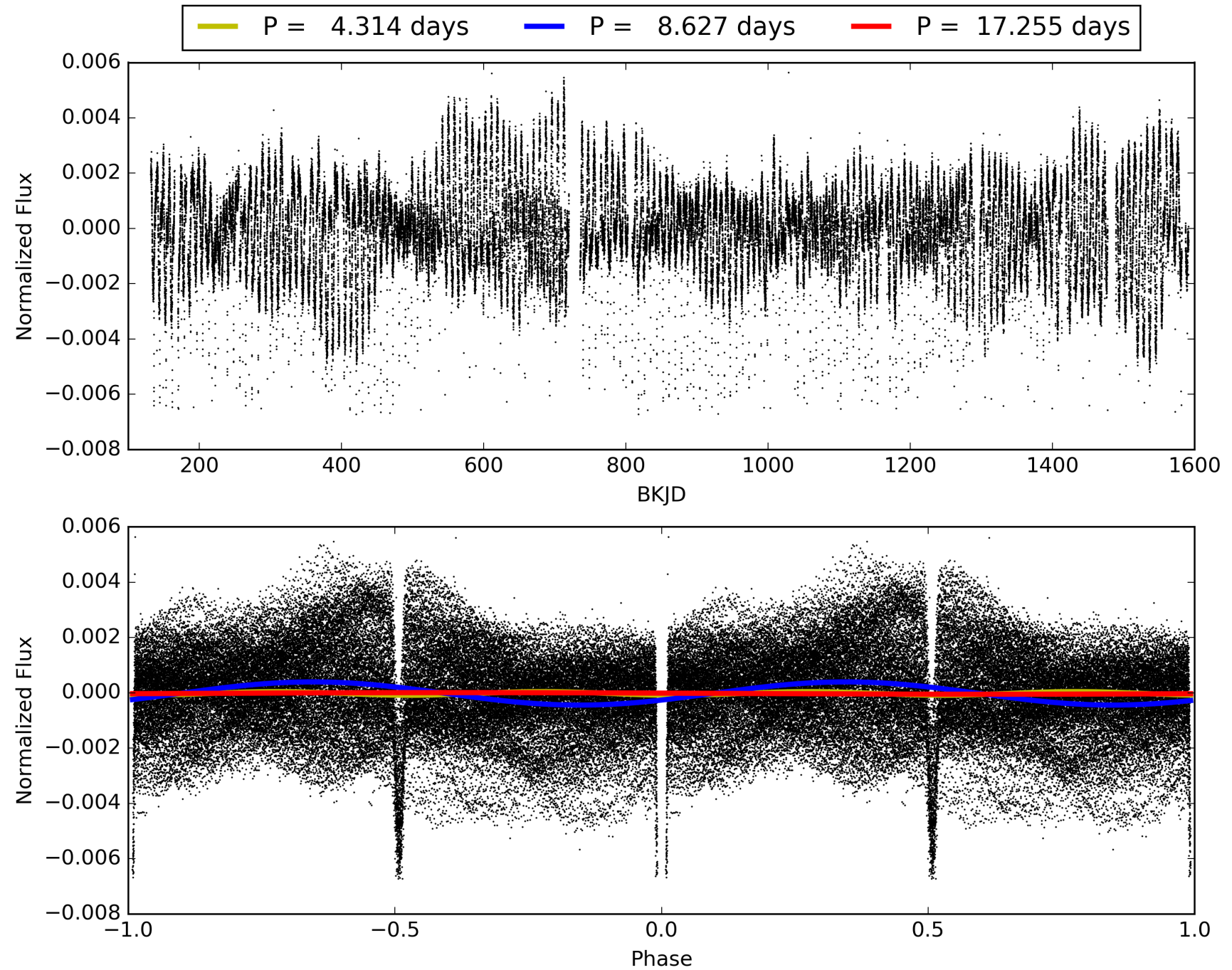
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012367310-01, PDC Light Curves

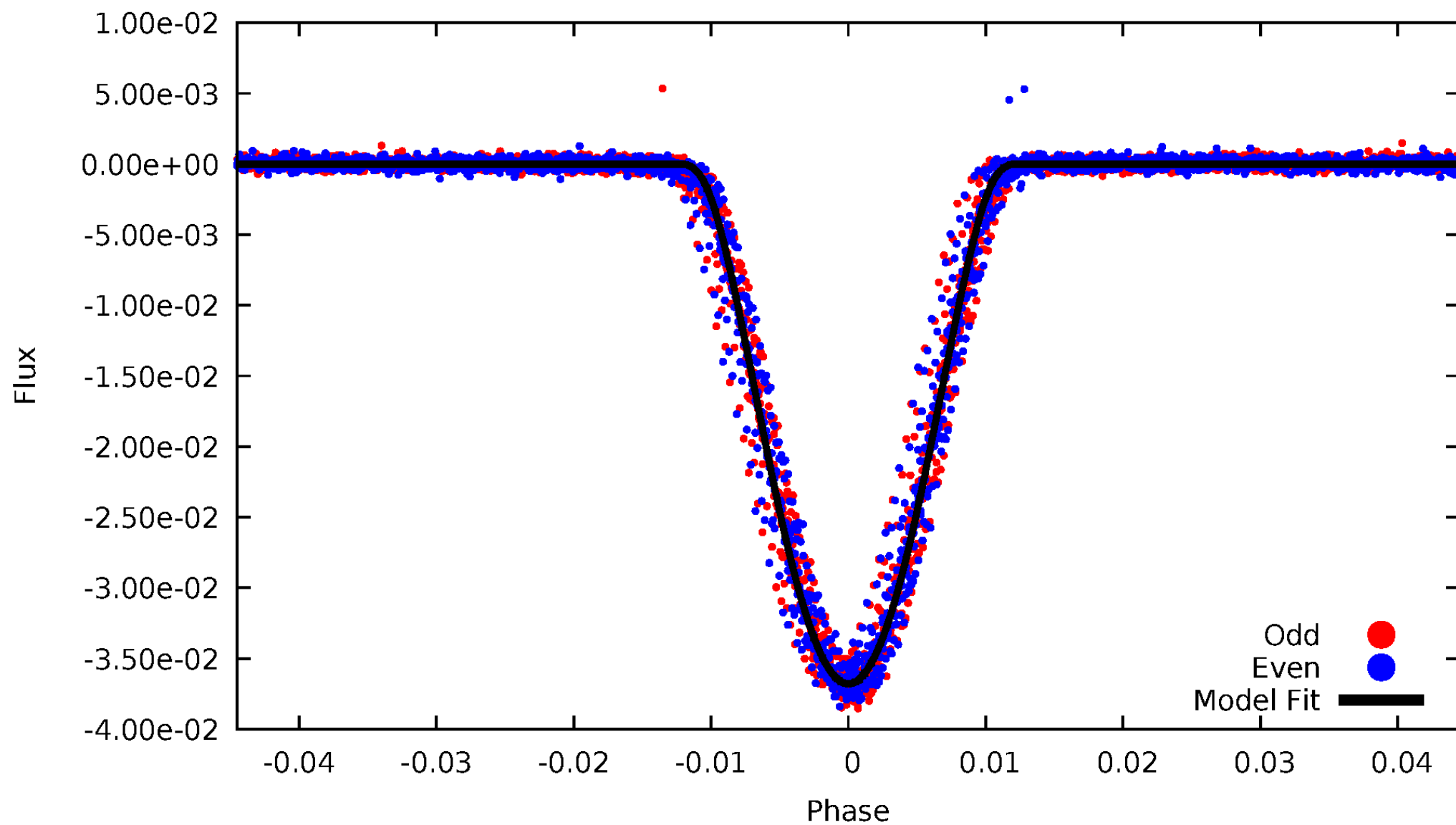


TCE 012367310-01



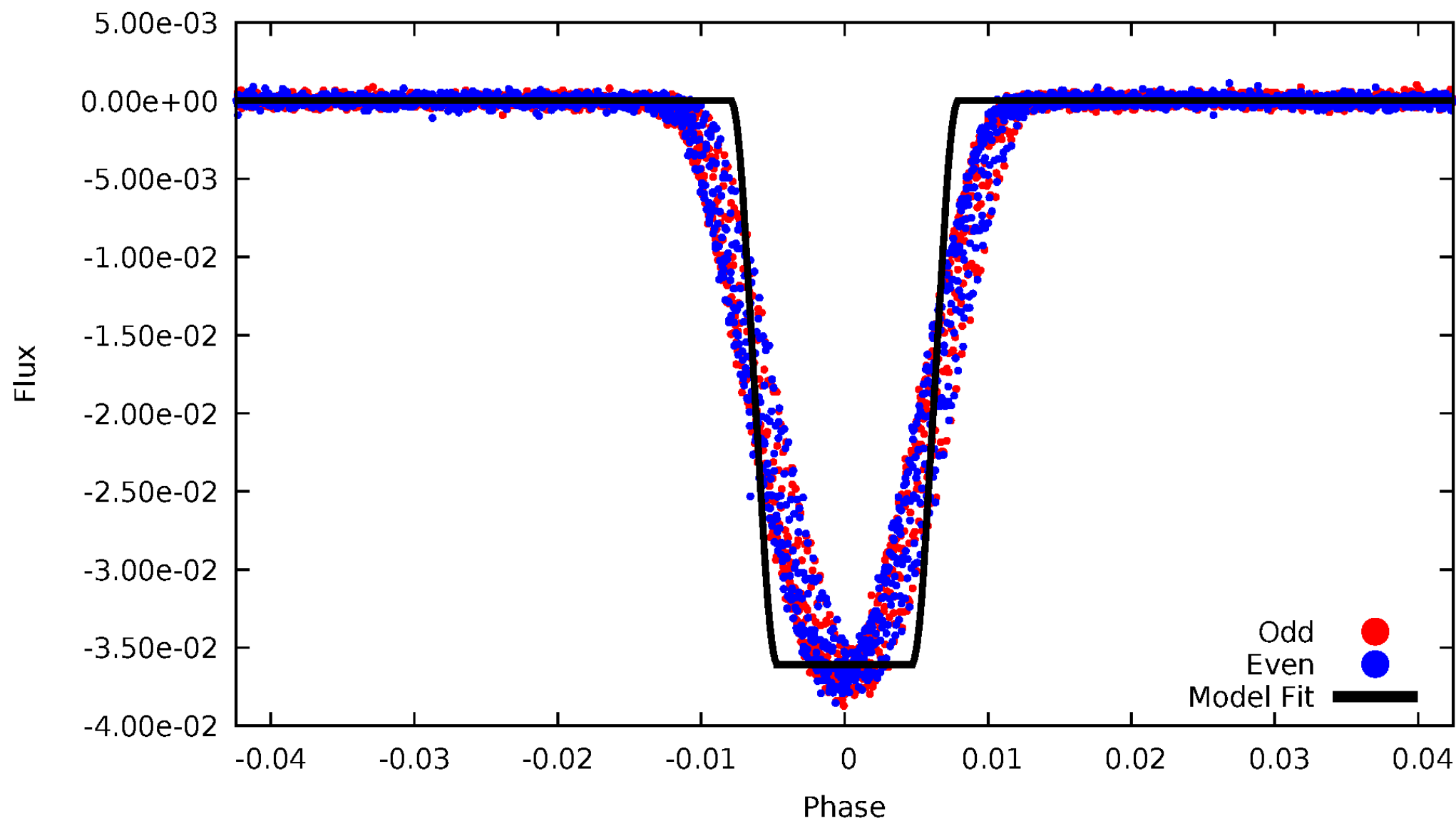
DV Odd/Even

TCE 012367310-01



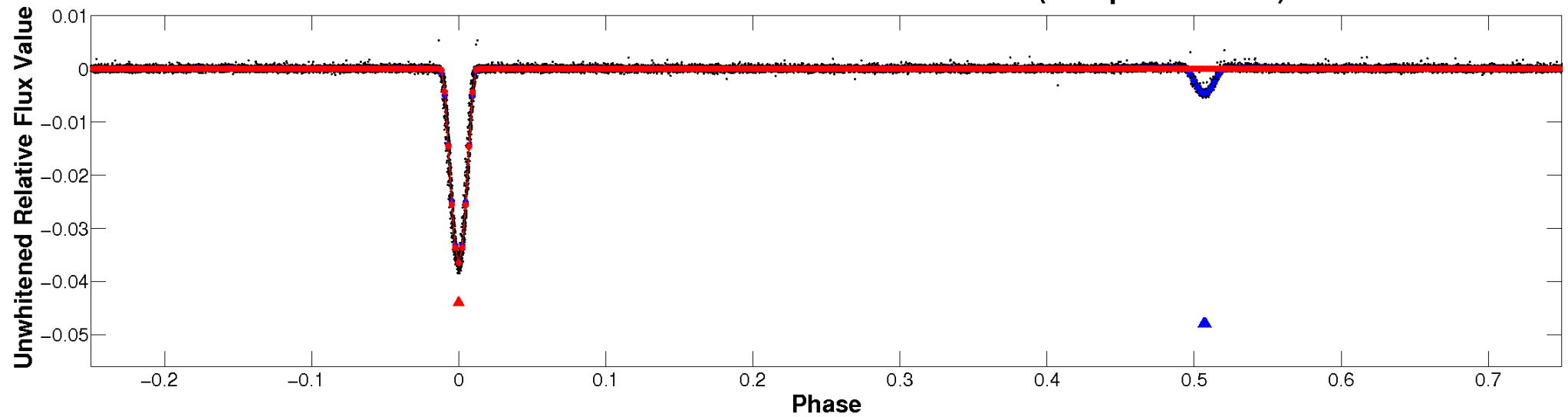
ALT Odd/Even

TCE 012367310-01

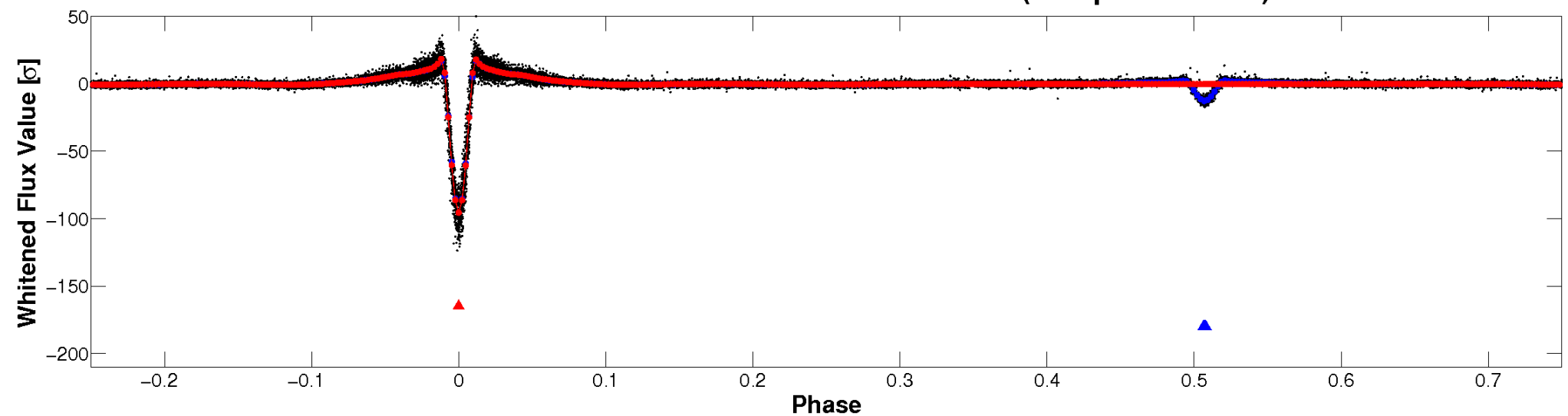


Non-Whitened Vs. Whitened Light Curve

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

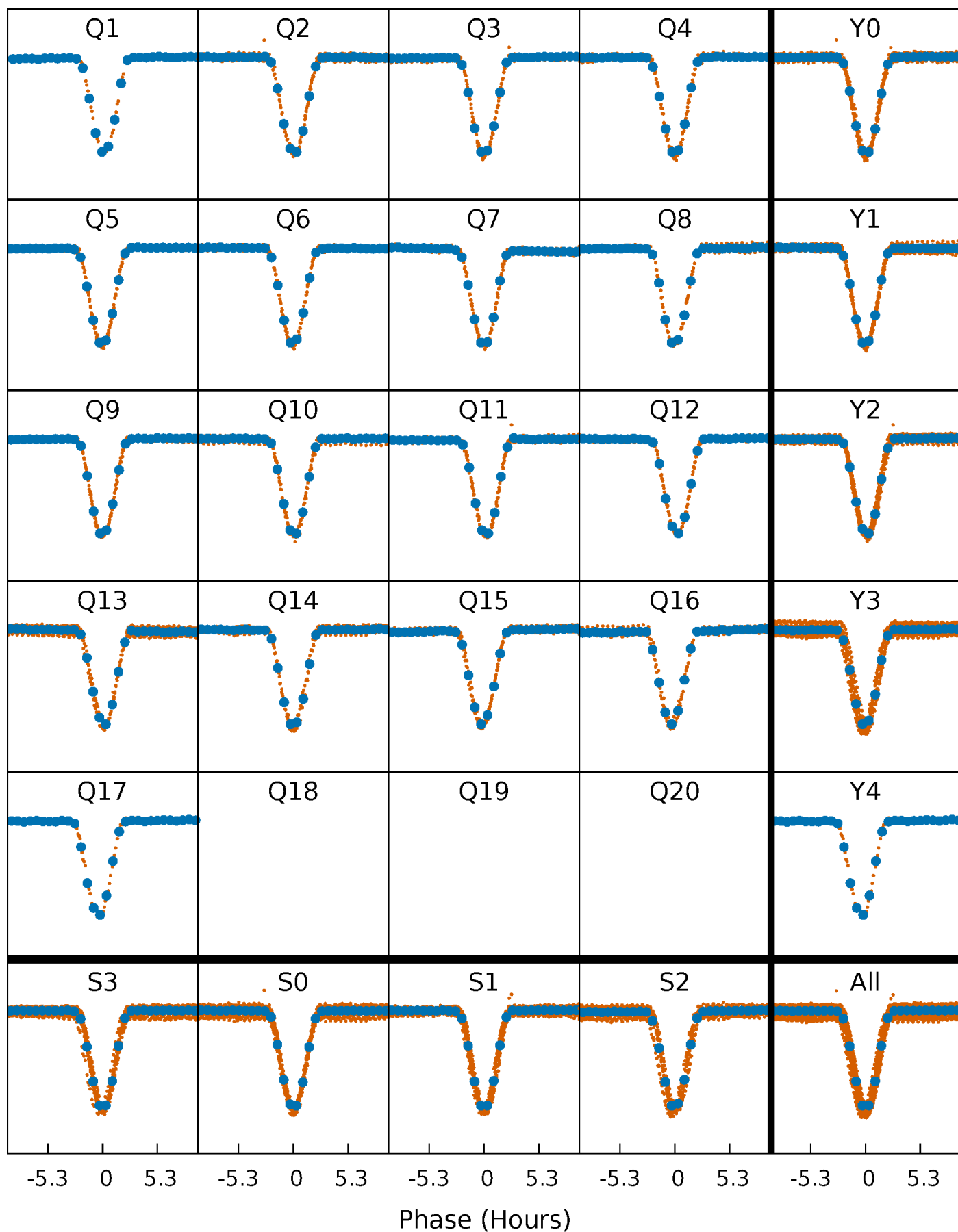


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



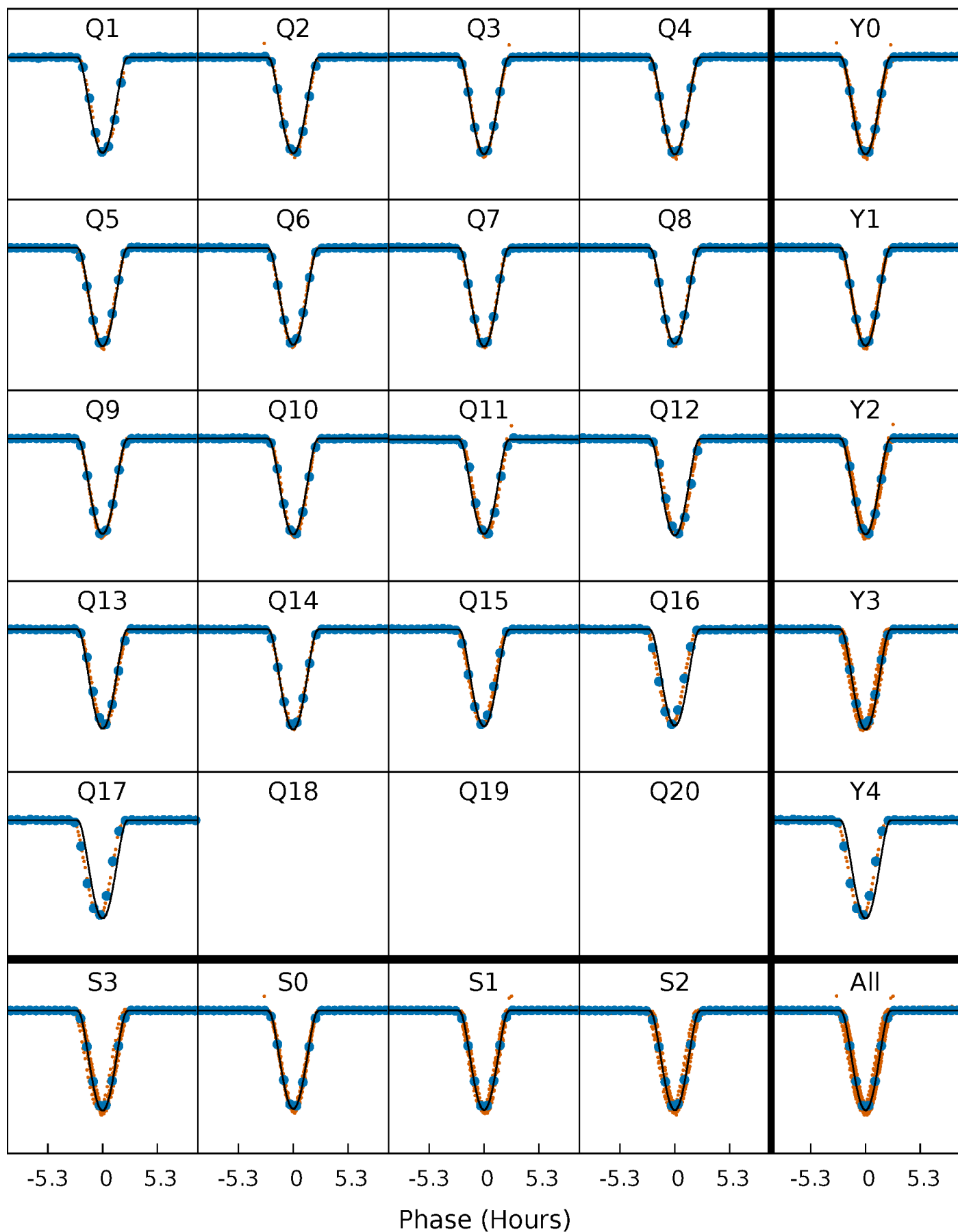
PDC Quarter-Phased Transit Curves

TCE 012367310-01 P= 8.627494 Days $T_0=139.989375$ (BKJD)



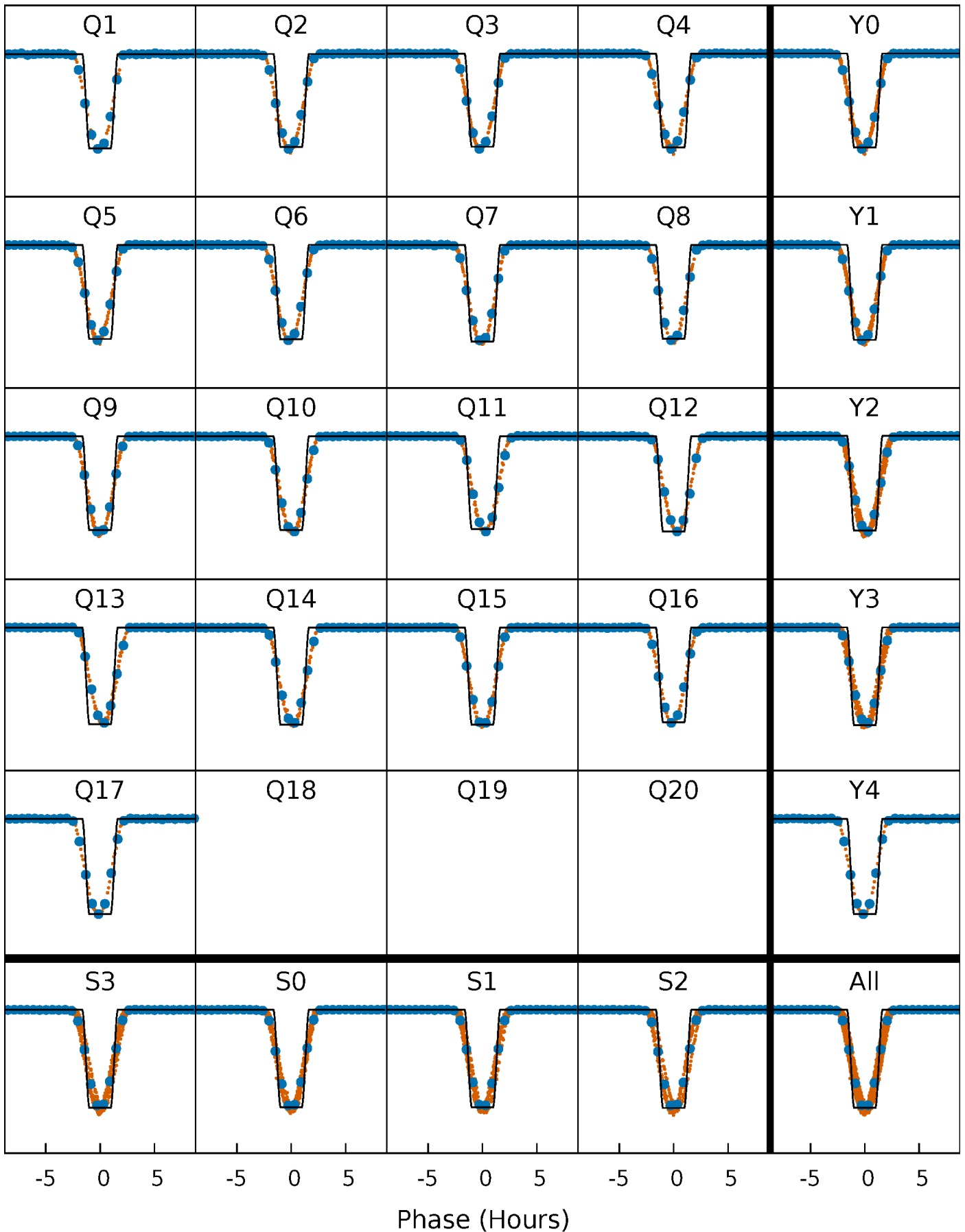
DV Quarter-Phased Transit Curves

TCE 012367310-01 P= 8.627494 Days $T_0=139.989375$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

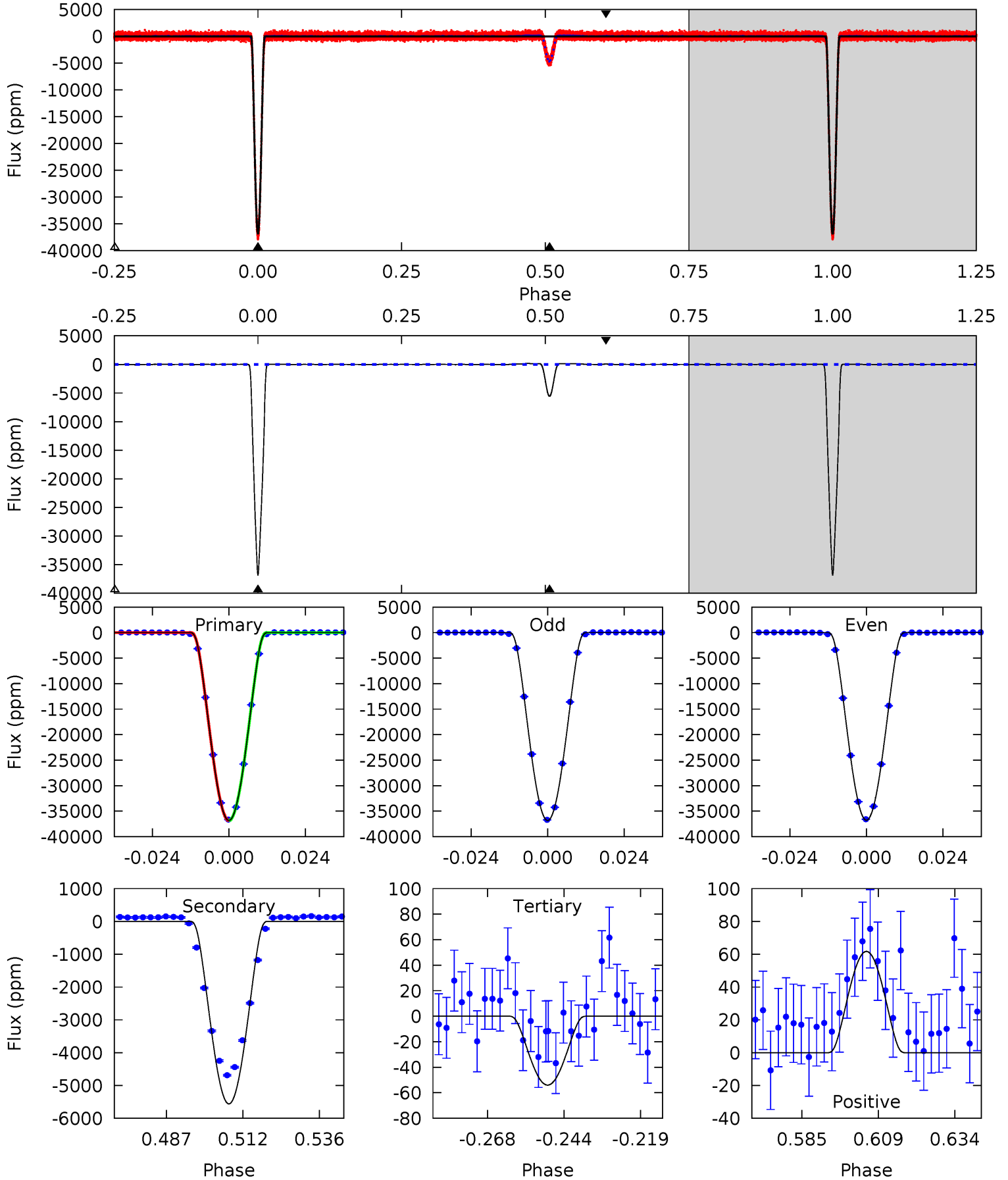
TCE 012367310-01 P= 8.627381 Days $T_0=139.998931$ (BKJD)



DV Model-Shift Uniqueness Test

012367310-01, P = 8.627494 Days, E = 131.361881 Days

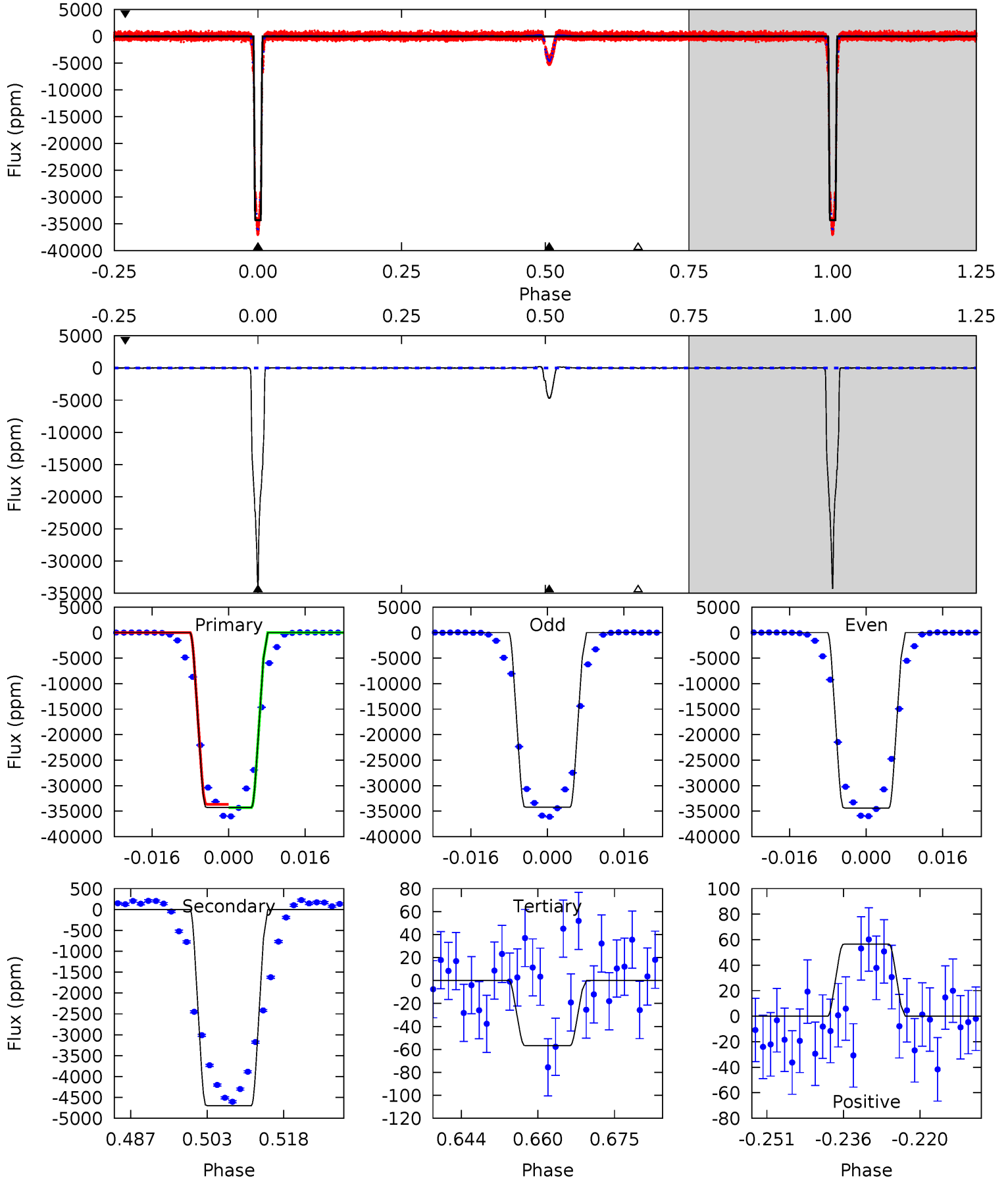
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4168	629.6	6.11	6.99	4.85	2.25	4.25	4162	4161	623.5	622.6	2.69	1.00	0.00	1.12



Alt Model-Shift Uniqueness Test

012367310-01, P = 8.627381 Days, E = 131.371550 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2342	320.9	3.87	3.86	4.94	2.42	2.14	2338	2338	317.0	317.0	5.13	1.00	0.01	0



Stellar Parameters For KIC 012367310

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5146^{+183}_{-203}	$3.475^{+0.872}_{-0.218}$	$0.280^{+0.150}_{-0.350}$	$4.063^{+1.200}_{-2.999}$	$1.795^{+0.215}_{-0.861}$	$0.038^{+1.002}_{-0.016}$
	+4%/-4%	+25%/-6%	+54%/-125%	+30%/-74%	+12%/-48%	+2658%/-42%
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 012367310-01 / KOI 7530.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5561 ± 9	$119.35^{+21.50}_{-47.16}$	1993^{+216}_{-385}	3175^{+84}_{-87}	$2.193^{+2.974}_{-0.646}$
Alt.	-4698 ± 15	$81.12^{+17.37}_{-31.88}$	1966^{+228}_{-358}	3488^{+95}_{-112}	$3.909^{+5.165}_{-1.207}$

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 $A_{obs} \gg 1.0$

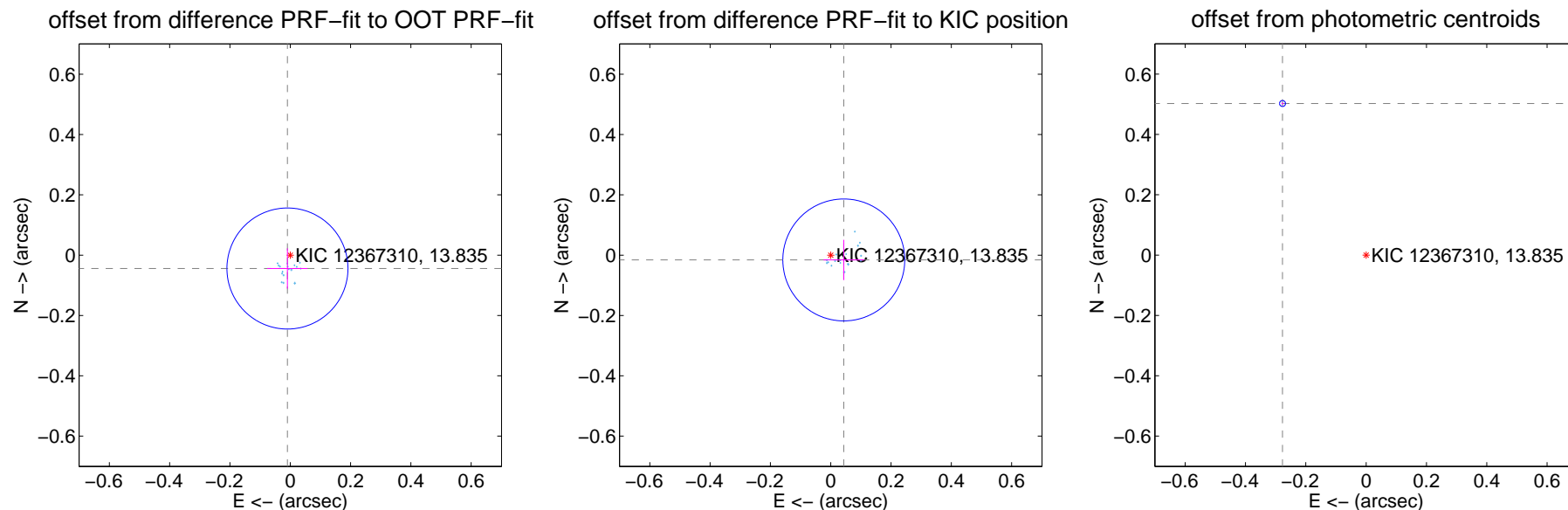
DV Centroid Data

Supplemental centroid analysis for 012367310-01. Kepler magnitude: 13.84. Transit SNR 1713.53

There are 17 quarters with good PRF difference image offsets

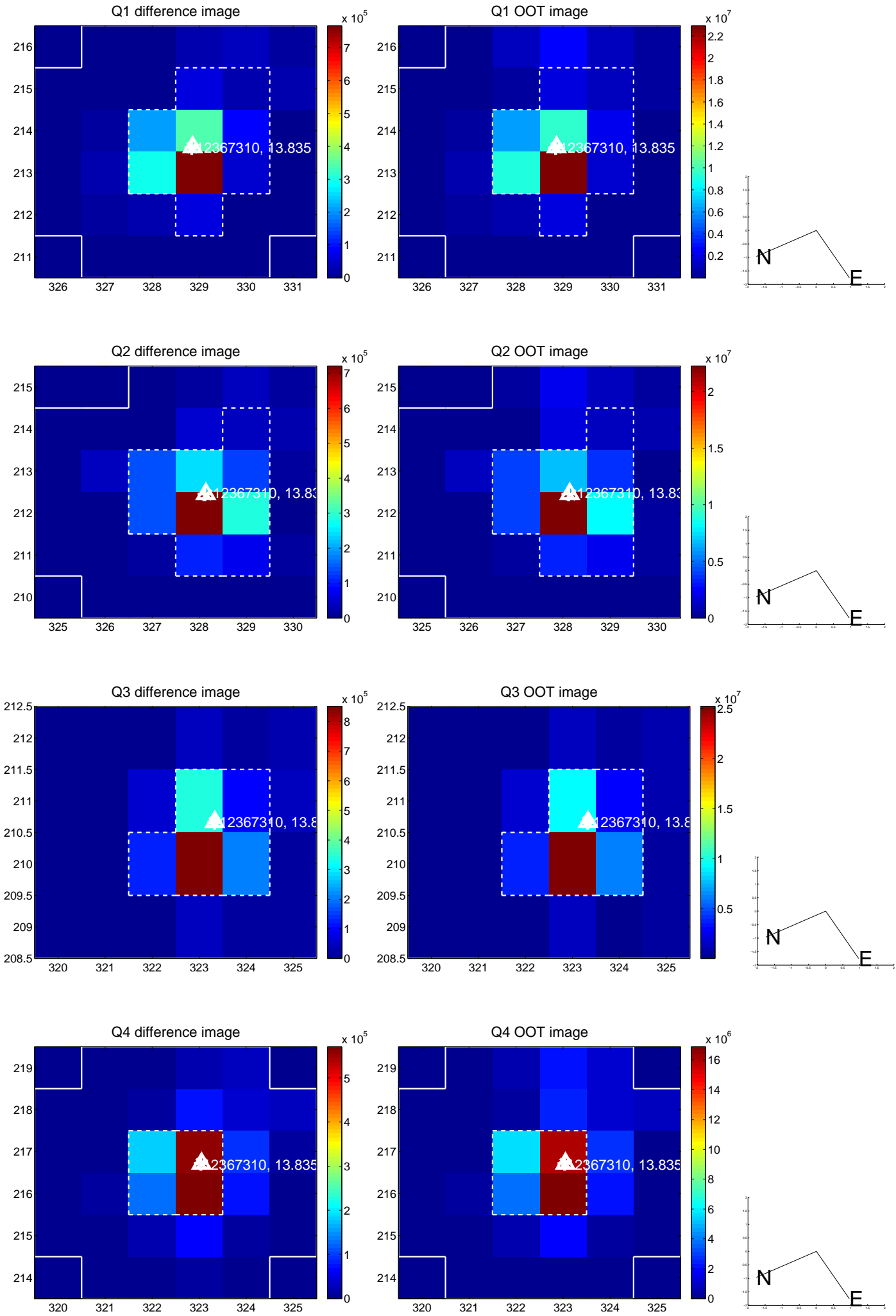
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.045 ± 0.067	0.68	0.009 ± 0.067	-0.044 ± 0.067
PRF-fit source offset from KIC position	0.046 ± 0.067	0.68	-0.043 ± 0.067	-0.016 ± 0.067
photometric centroid source offset	0.57 ± 0.00	174.01	0.28 ± 0.00	0.50 ± 0.00

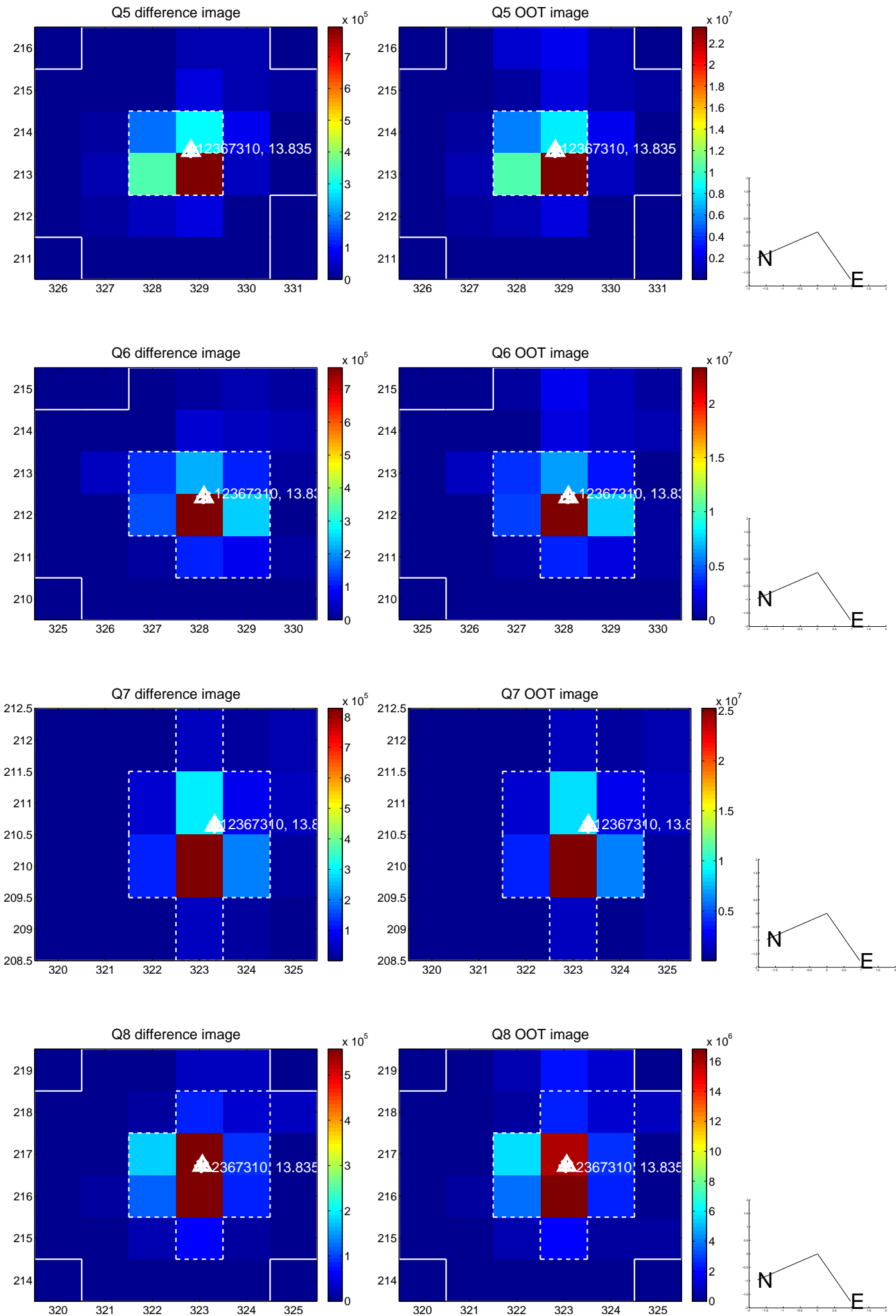


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

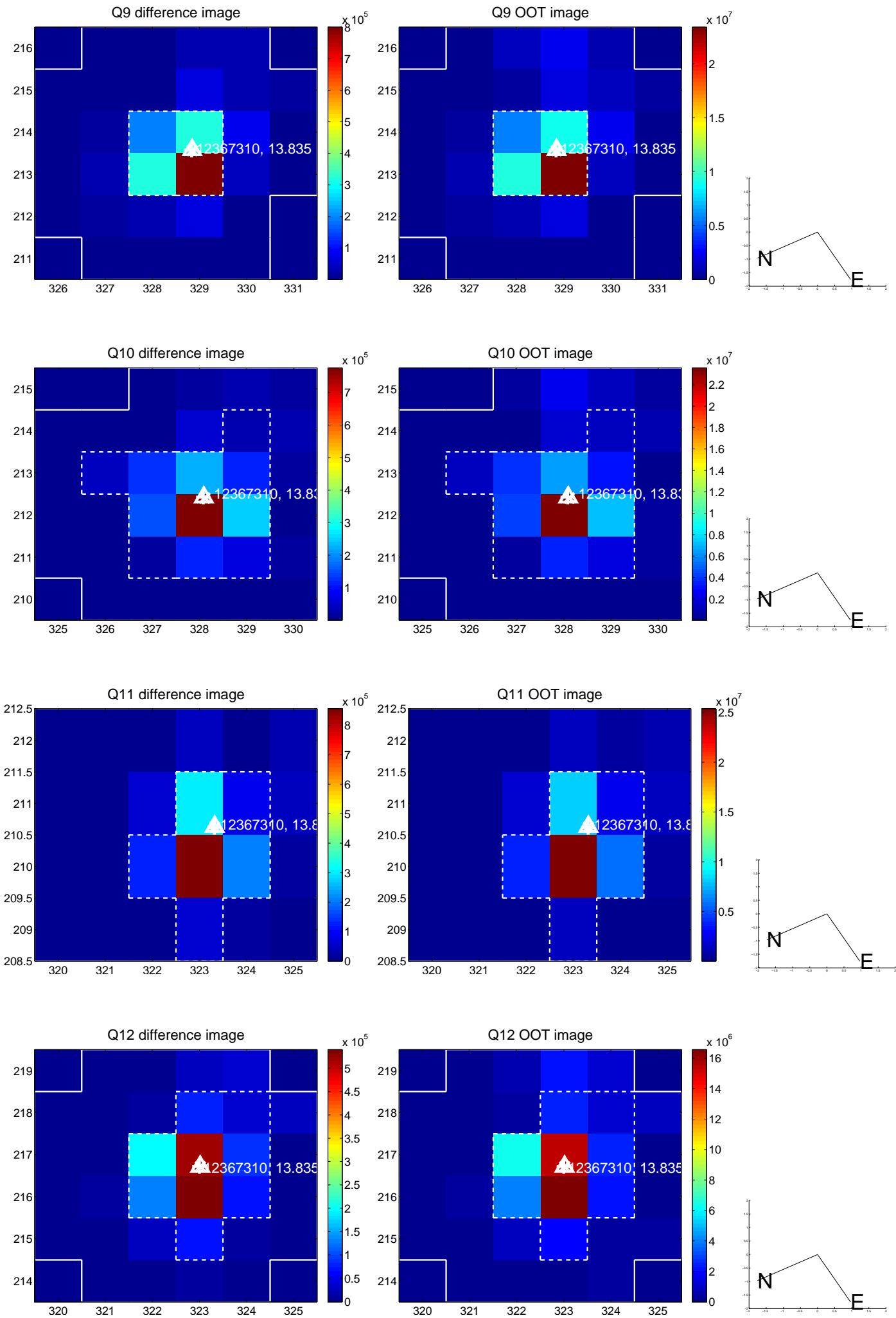
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



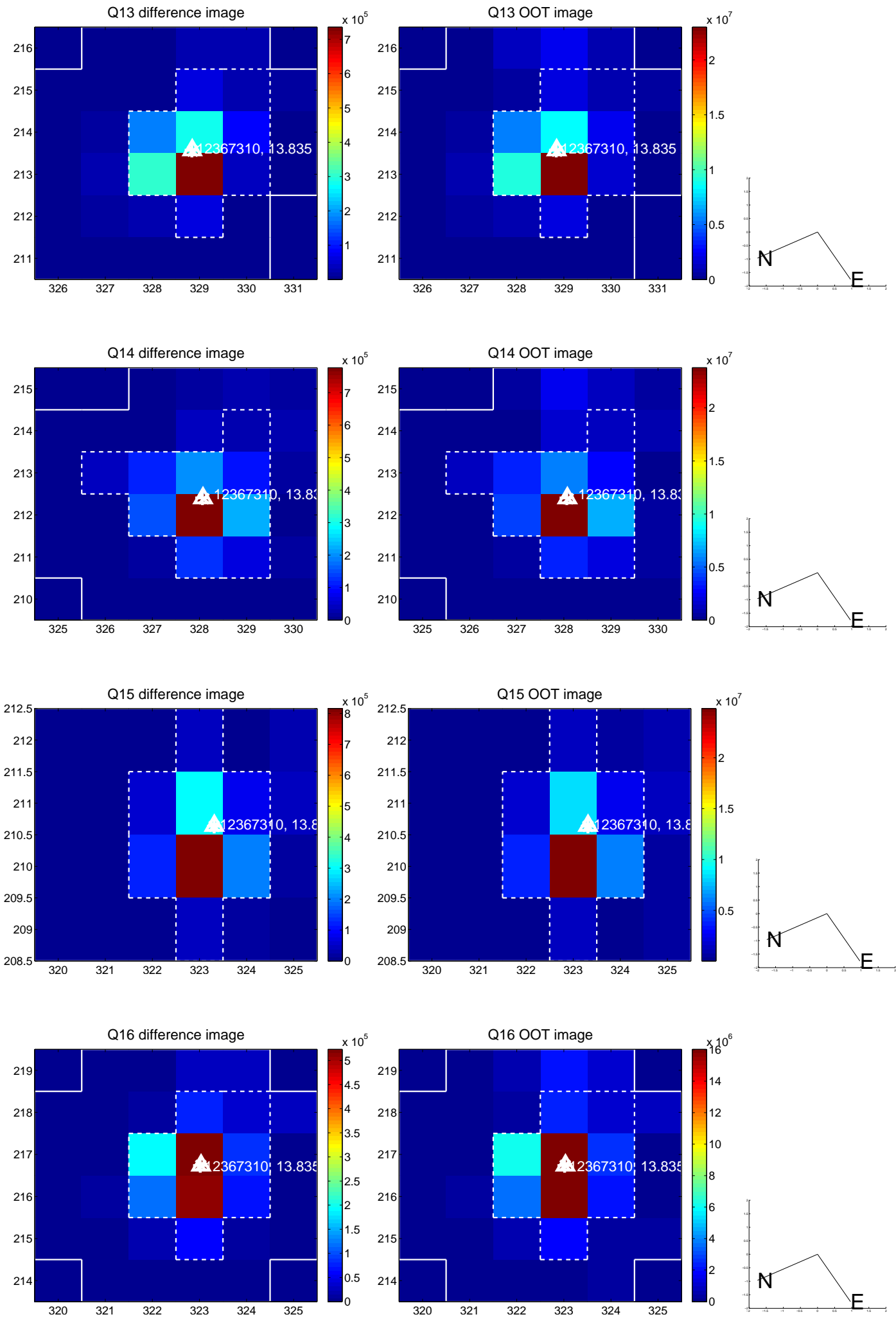
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



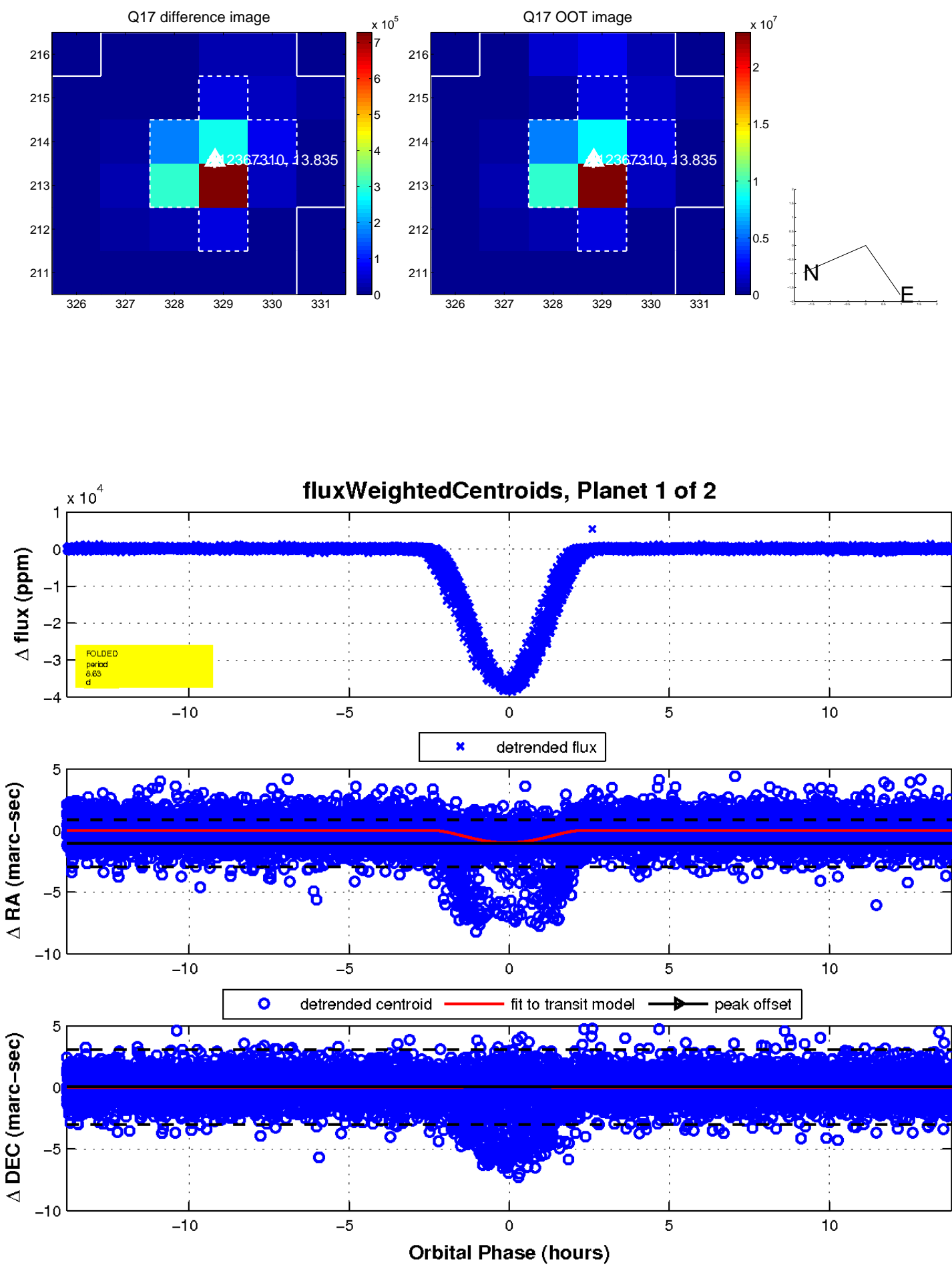
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



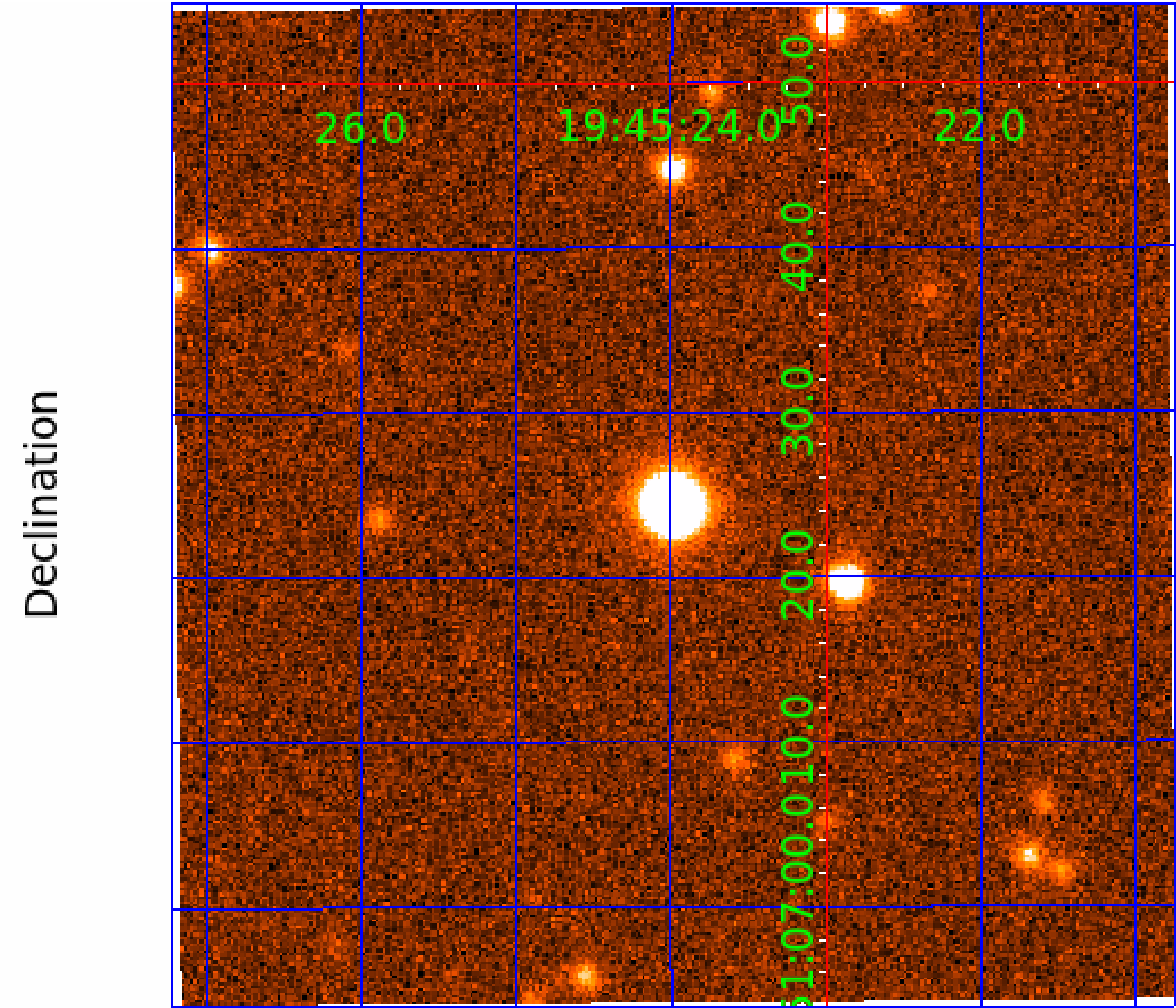
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 012367310

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})
012367310-01	OBS	7530.01	8.627494	139.989375	36786.6	4.608	2277.7	1713.5	4.06	5146	120.08	1034.72
012367310-02	OBS	No	8.627424	135.743496	4797.6	5.220	311.4	308.5	4.06	5146	53.58	1034.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012367310-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
012367310-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

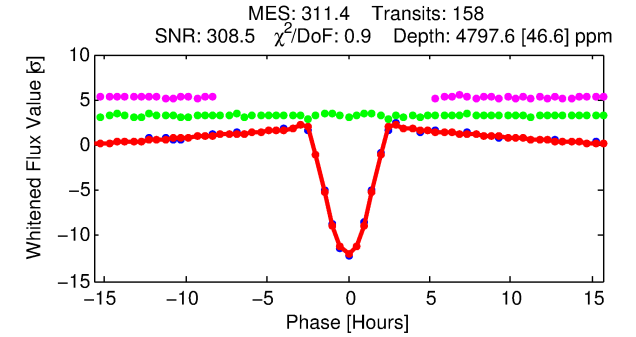
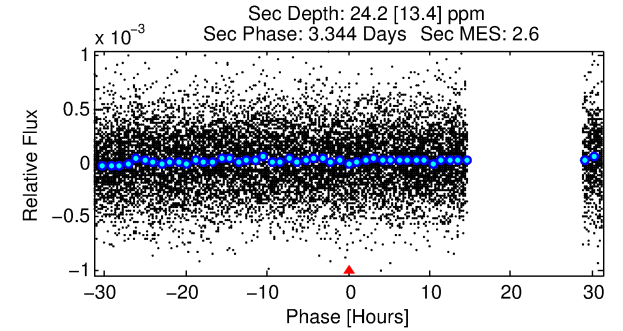
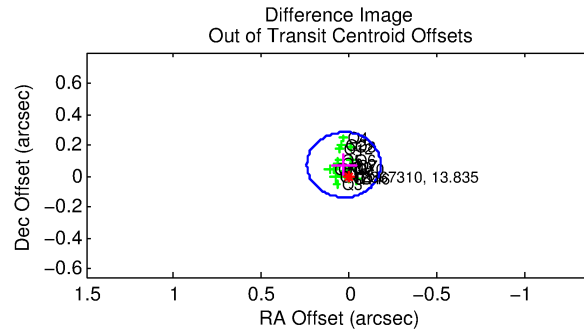
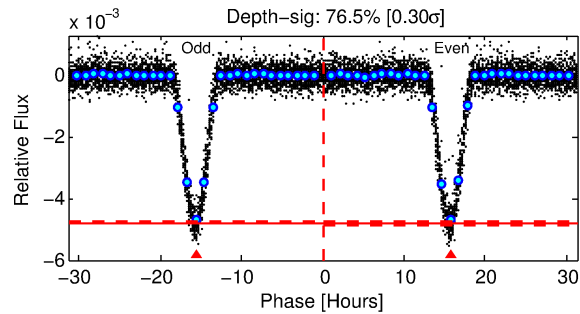
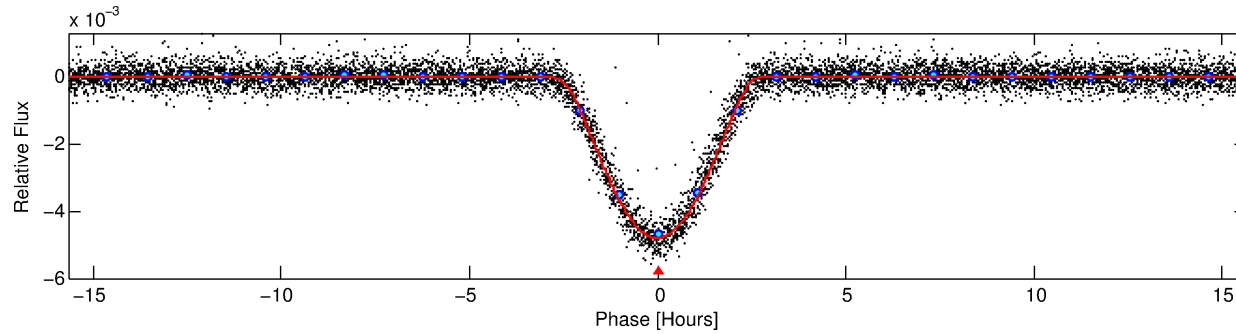
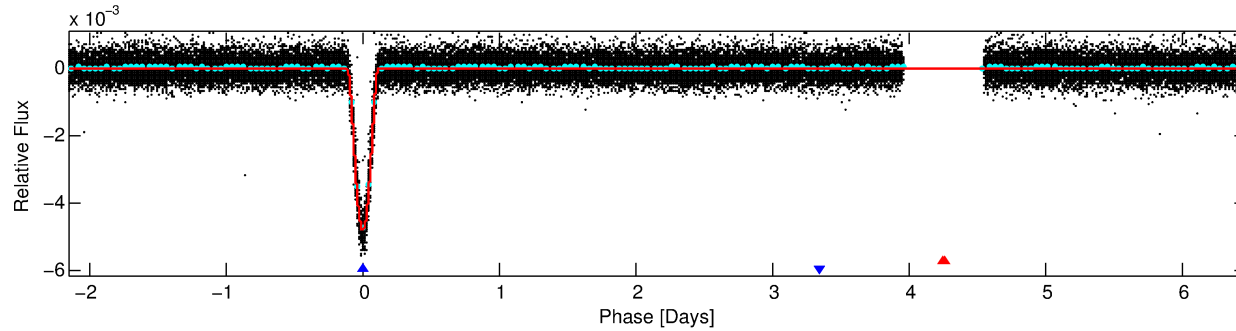
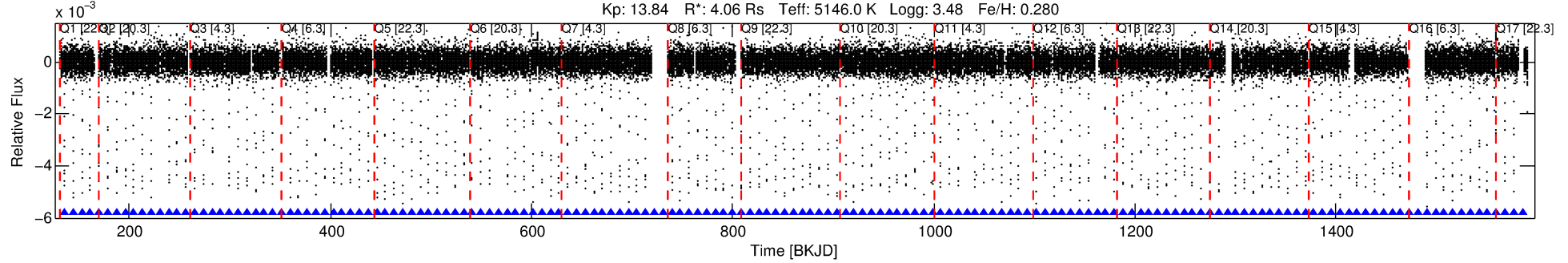
Ephemeris Match Information For 012367310-02

No Significant Match Found

DV One-Page Summary

KIC: 12367310 Candidate: 2 of 2 Period: 8.627 d
KOI: K07530 Corr: No Ephemeris Match

Kp: 13.84 R*: 4.06 Rs Teff: 5146.0 K Logg: 3.48 Fe/H: 0.280



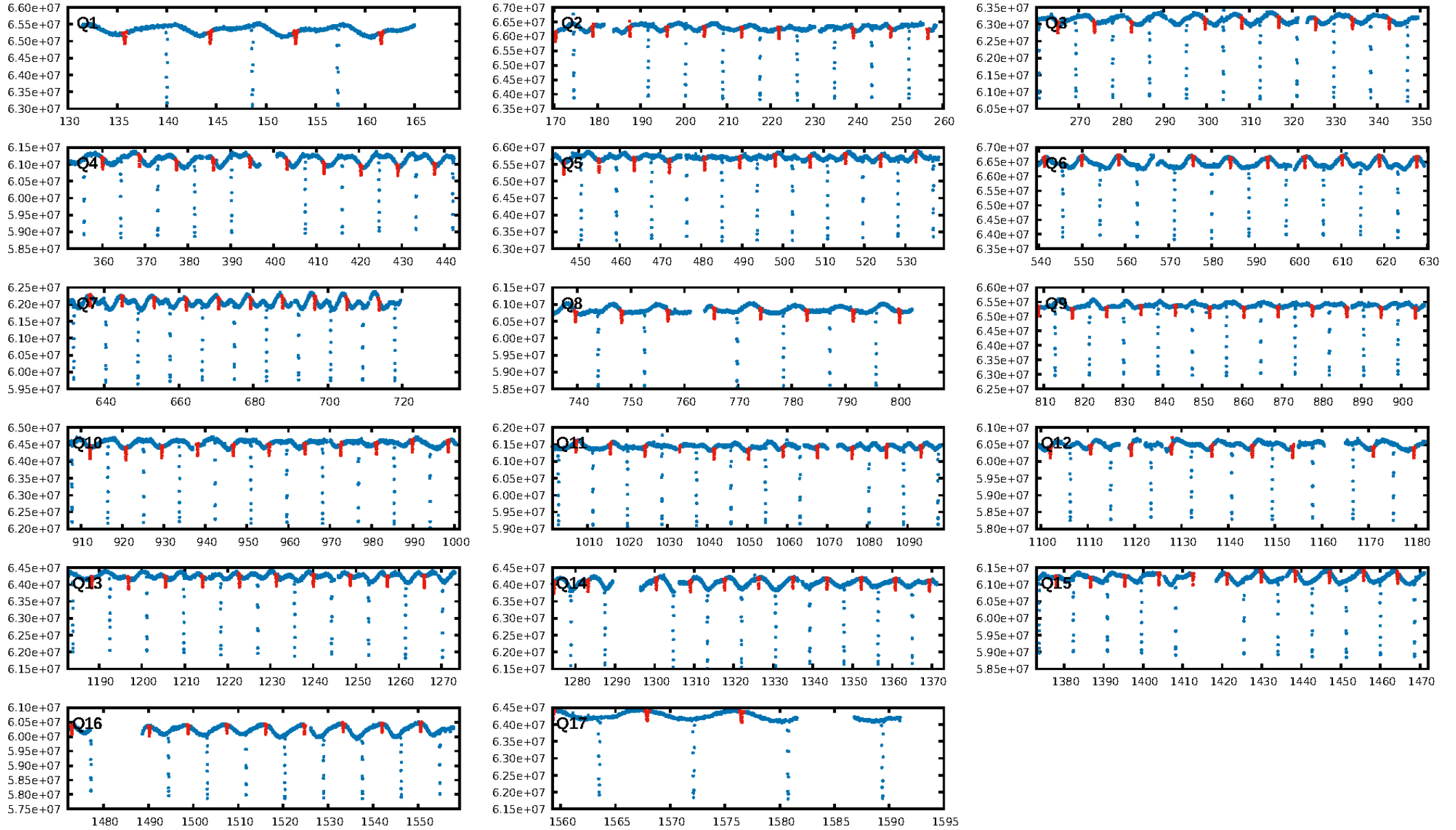
DV Fit Results:

Period = 8.62742 [0.00000] d
Epoch = 135.7435 [0.0003] BKJD
Rp/R* = 0.1208 [0.0145]
a/R* = 6.49 [0.13]
b = 1.00 [0.02]
Seff = 1034.74 [1484.70]
Teq = 1446 [519] K
Rp = 53.58 [40.07] Re
a = 0.1001 [0.0832] AU
Ag = 0.05 [0.07] [-13.25σ]
Teffp = 1038 [162] K [-0.75σ]

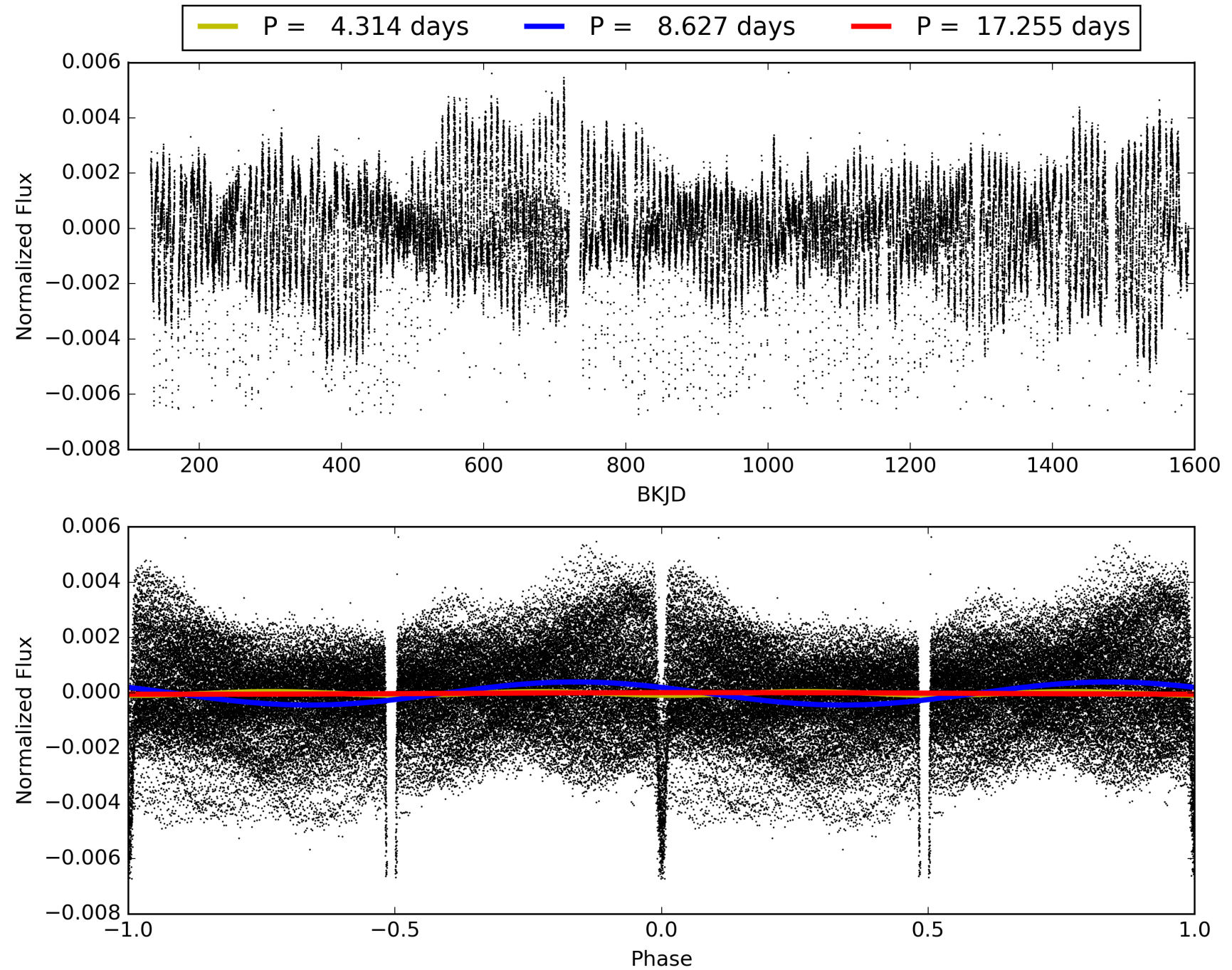
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 90.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [151/151]
GhostDiagnostic-chr: 2.876
Centroid-sig: 0.0%
Centroid-so: 0.671 arcsec [28.44σ]
OotOffset-rm: 0.080 arcsec [1.15σ]
KicOffset-rm: 0.117 arcsec [1.60σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 012367310-02, PDC Light Curves

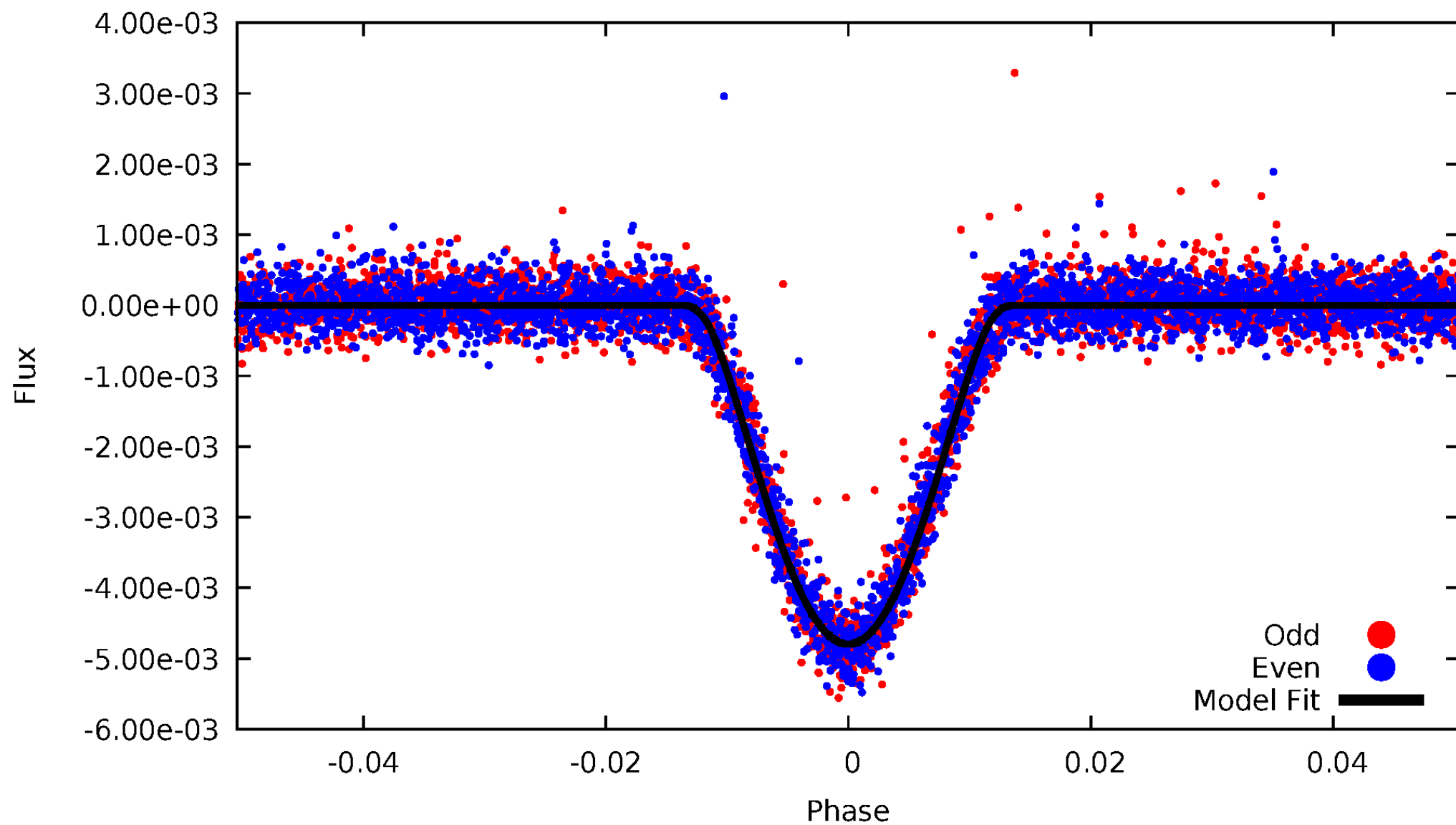


TCE 012367310-02



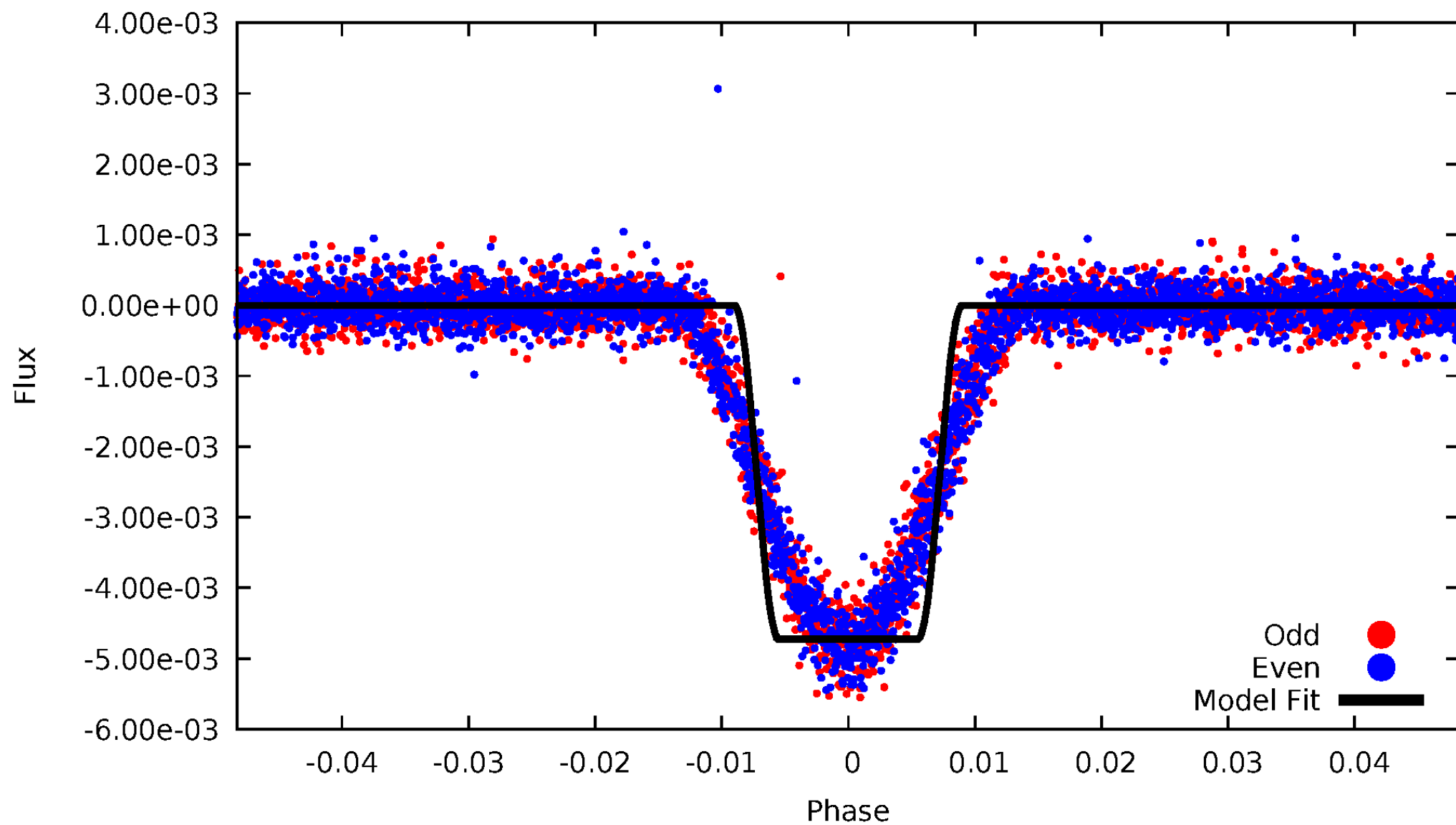
DV Odd/Even

TCE 012367310-02



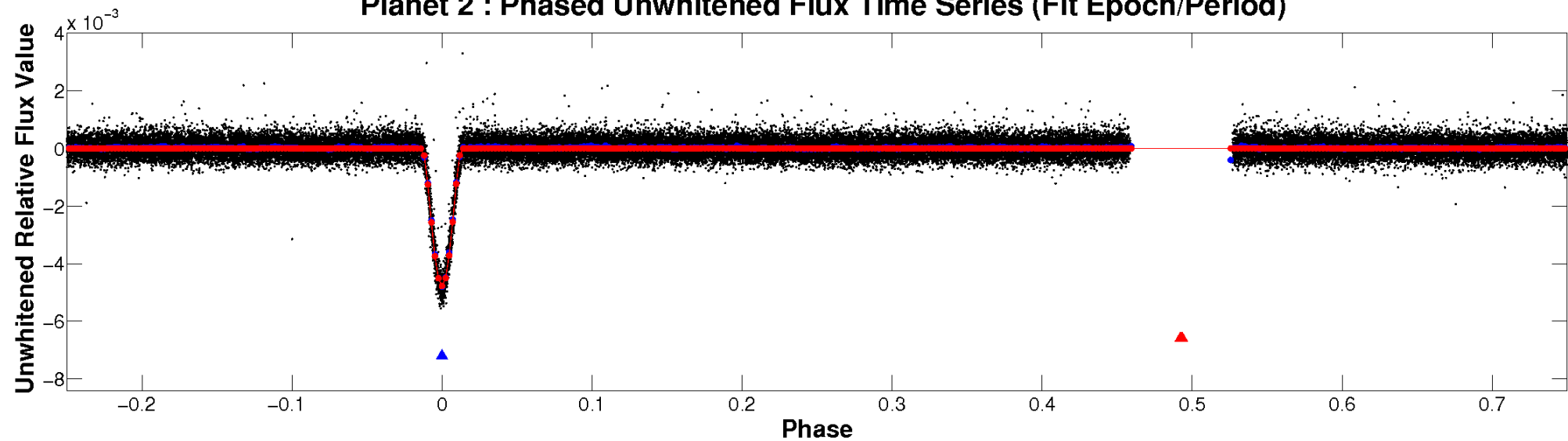
ALT Odd/Even

TCE 012367310-02

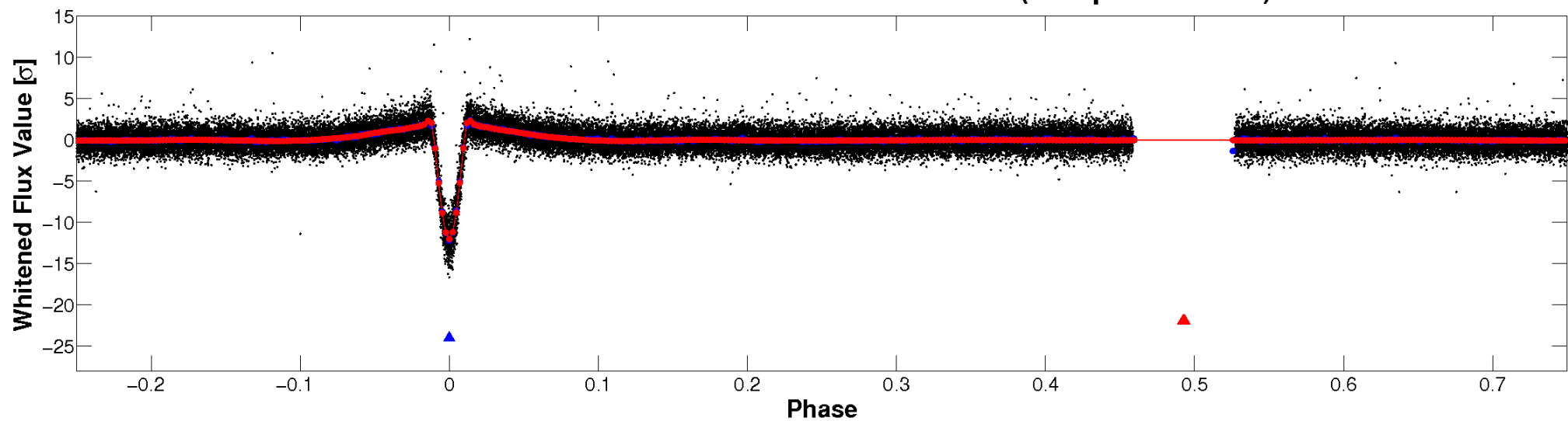


Non-Whitened Vs. Whitened Light Curve

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

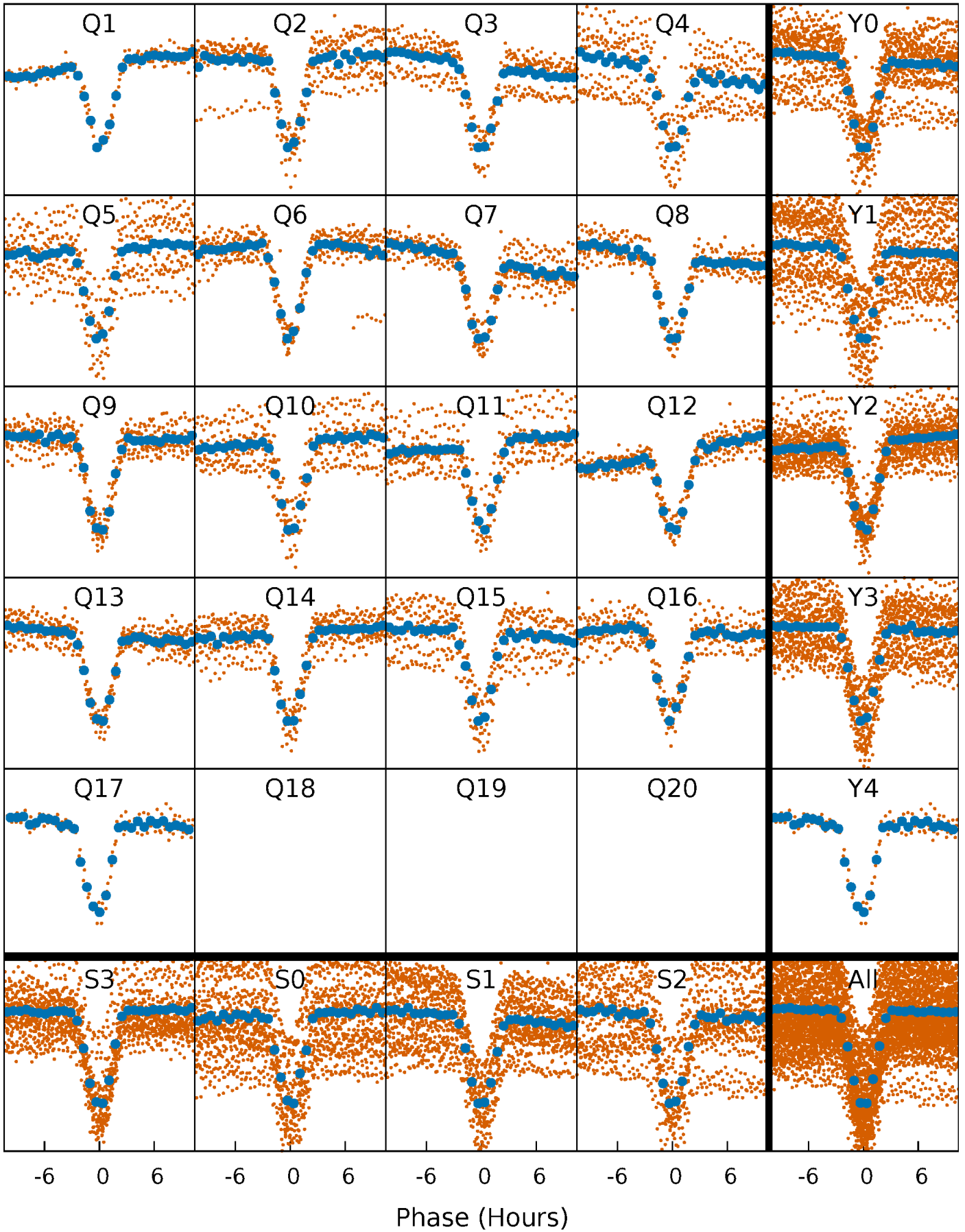


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



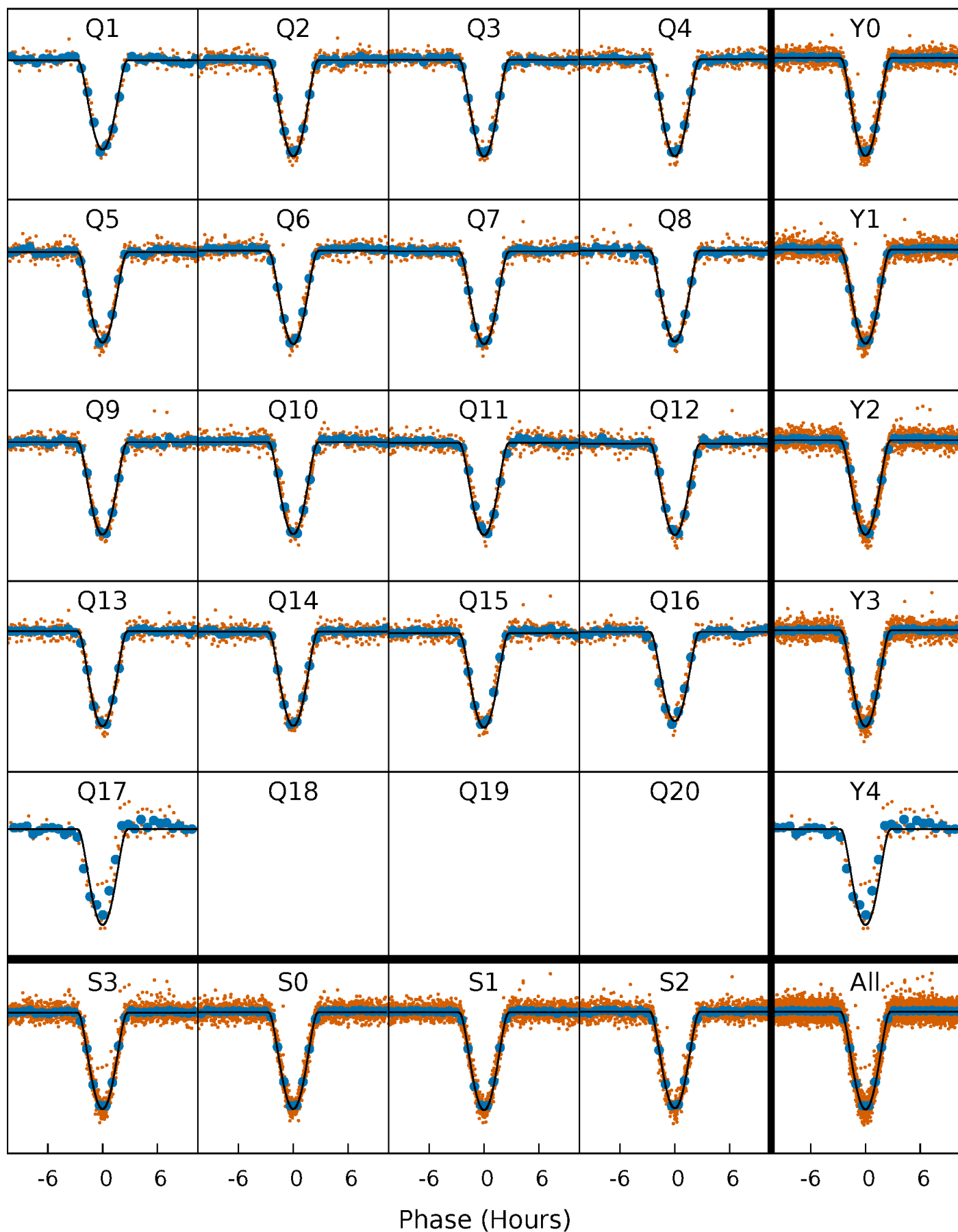
PDC Quarter-Phased Transit Curves

TCE 012367310-02 $P = 8.627424$ Days $T_0 = 135.743496$ (BKJD)



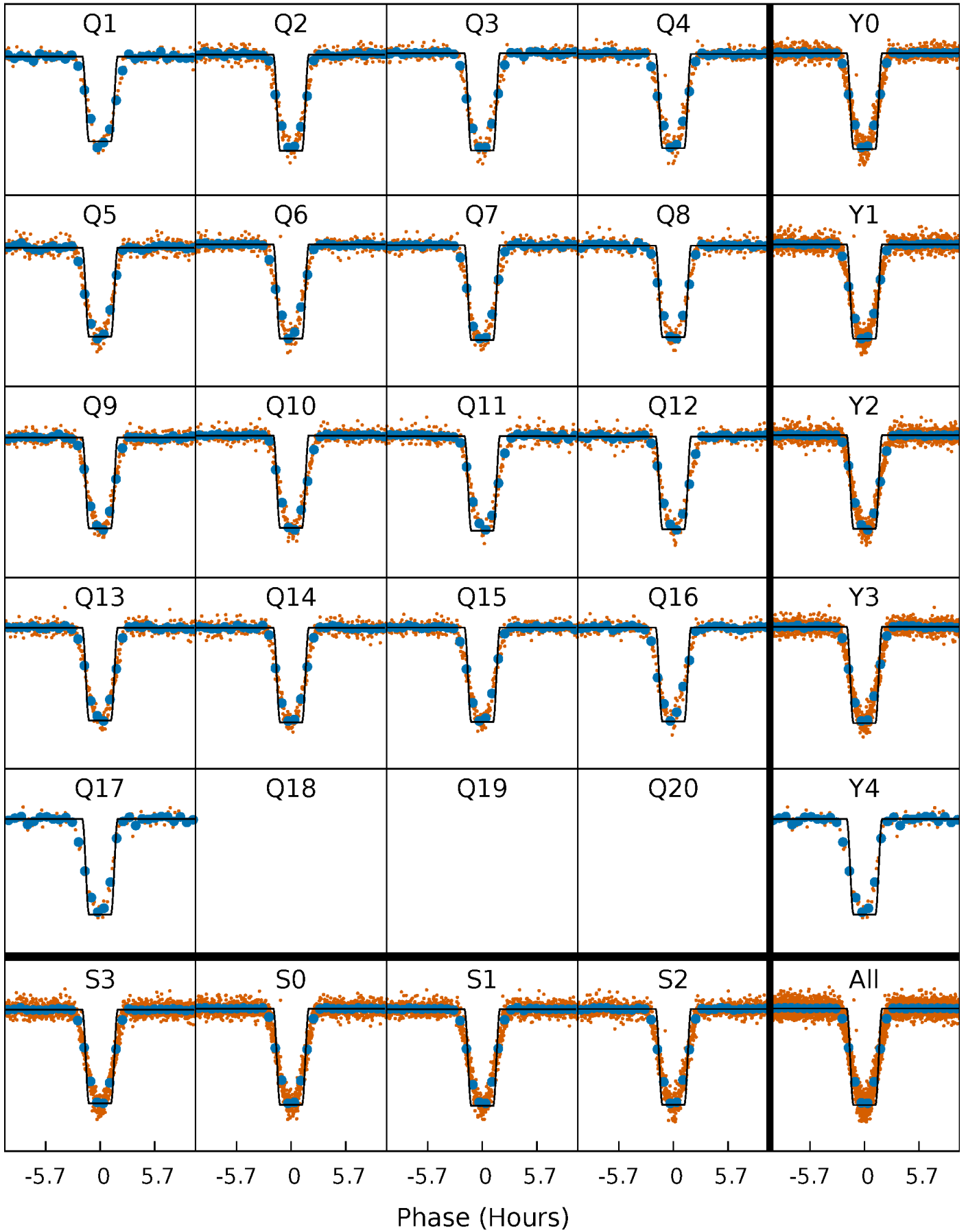
DV Quarter-Phased Transit Curves

TCE 012367310-02 P= 8.627424 Days $T_0=135.743496$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

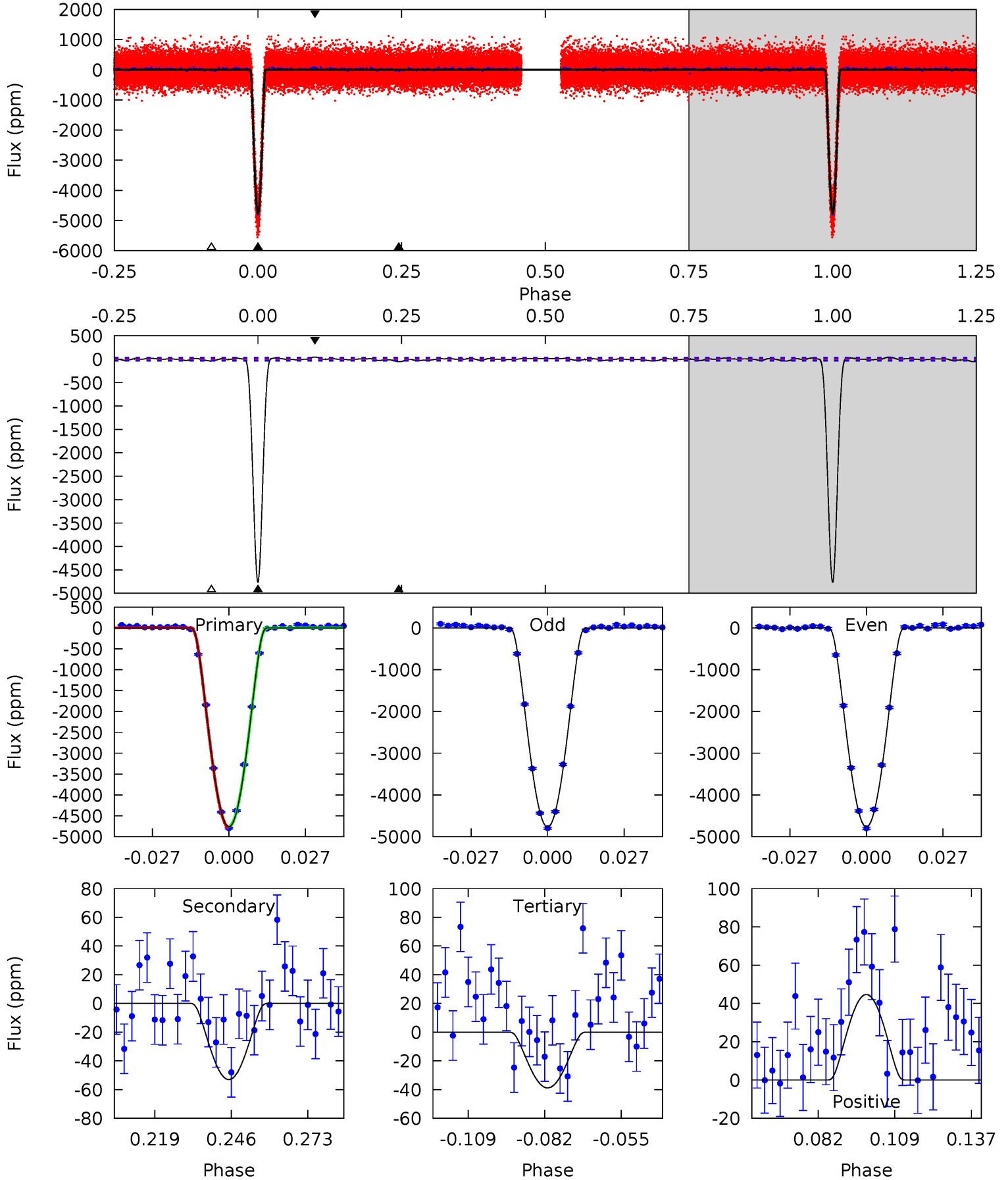
TCE 012367310-02 P= 8.627411 Days $T_0=135.744041$ (BKJD)



DV Model-Shift Uniqueness Test

012367310-02, P = 8.627424 Days, E = 127.116072 Days

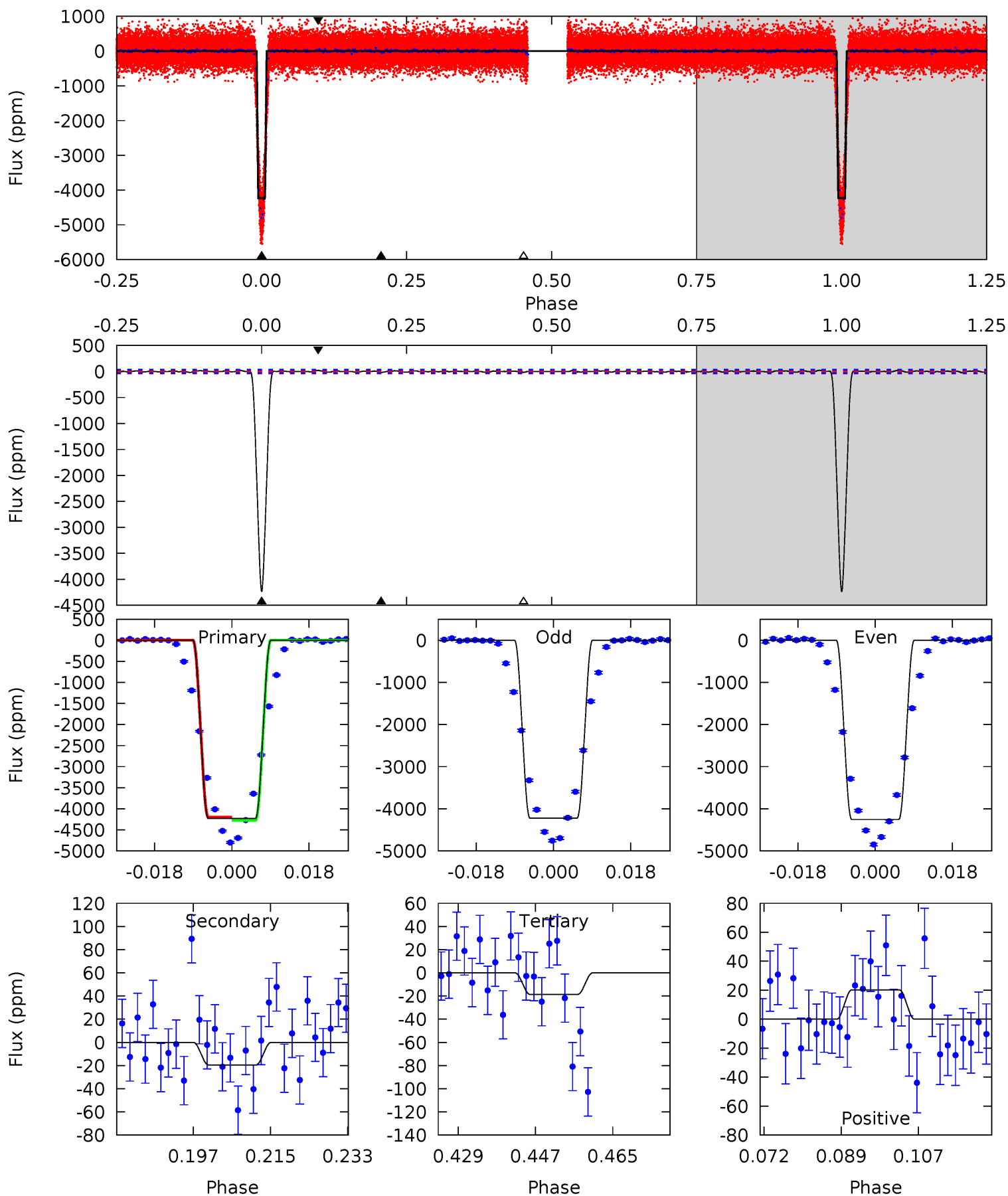
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
731.8	8.14	5.96	6.86	4.83	2.21	2.23	725.8	724.9	2.18	1.28	0.28	0.99	0.01	2.21



Alt Model-Shift Uniqueness Test

012367310-02, P = 8.627411 Days, E = 127.116630 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
601.8	2.77	2.66	2.89	4.91	2.37	1.00	599.2	598.9	0.11	-0.12	2.39	1.00	0.01	5.04



Stellar Parameters For KIC 012367310

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5146^{+183}_{-203}	$3.475^{+0.872}_{-0.218}$	$0.280^{+0.150}_{-0.350}$	$4.063^{+1.200}_{-2.999}$	$1.795^{+0.215}_{-0.861}$	$0.038^{+1.002}_{-0.016}$
	+4%/-4%	+25%/-6%	+54%/-125%	+30%/-74%	+12%/-48%	+2658%/-42%
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 012367310-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-53 ± 7	$50.27^{+14.63}_{-18.81}$	1986^{+214}_{-359}	-2338^{+512}_{-167}	$0.112^{+0.149}_{-0.043}$
Alt.	-19 ± 7	$27.18^{+9.97}_{-11.50}$	1956^{+236}_{-404}	-2274^{+4194}_{-208}	$0.136^{+0.237}_{-0.074}$

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

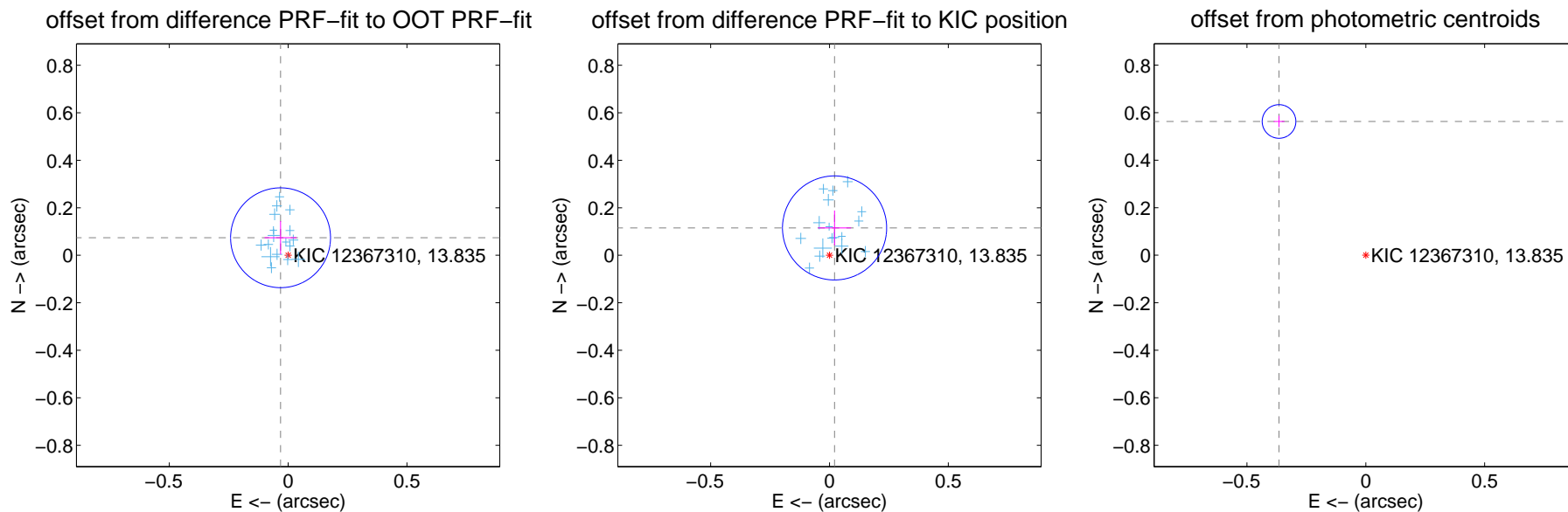
DV Centroid Data

Supplemental centroid analysis for 012367310-02. Kepler magnitude: 13.84. Transit SNR 308.55

There are 17 quarters with good PRF difference image offsets

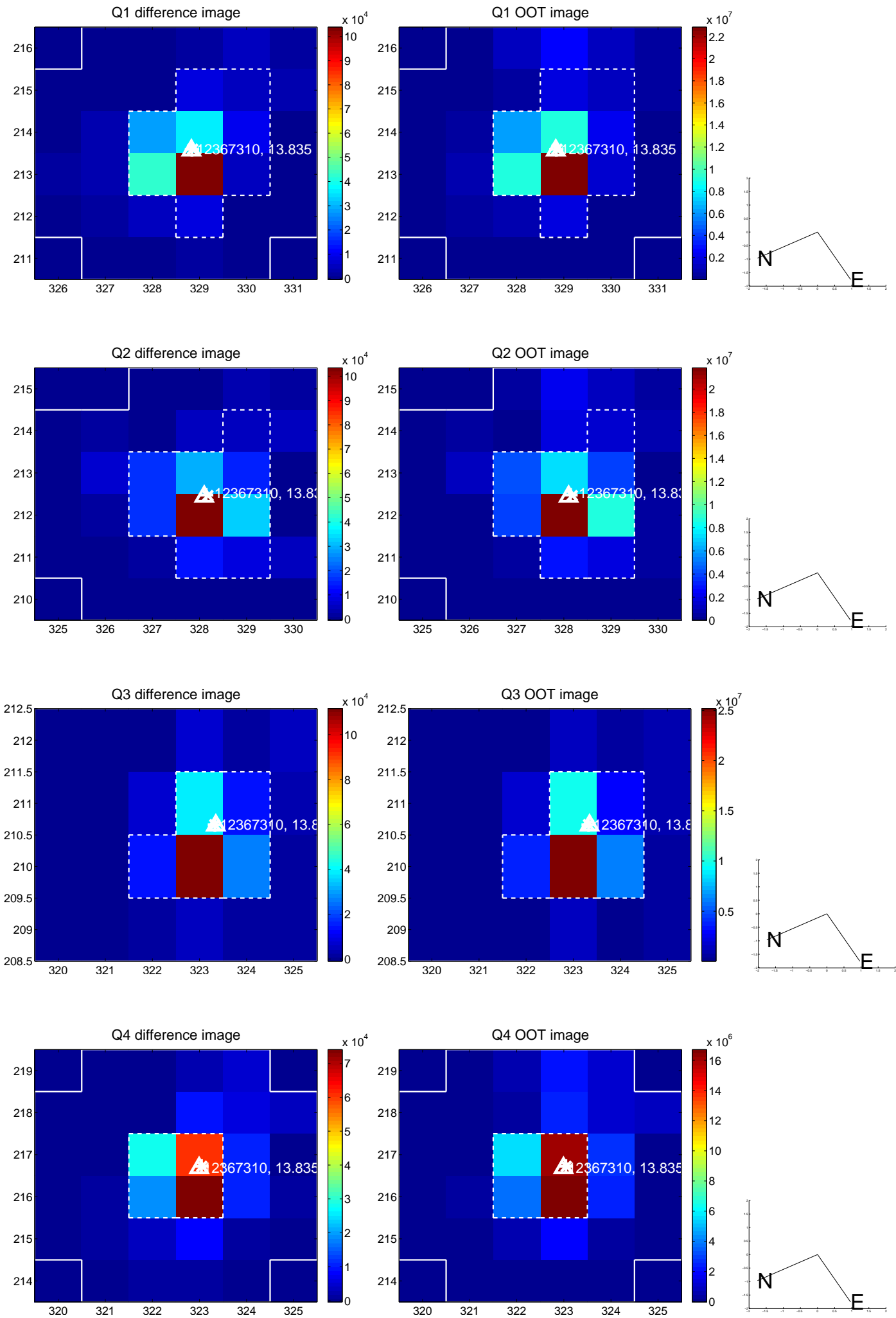
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.070	1.15	0.032 ± 0.068	0.074 ± 0.071
PRF-fit source offset from KIC position	0.117 ± 0.073	1.60	-0.021 ± 0.070	0.115 ± 0.073
photometric centroid source offset	0.67 ± 0.02	28.44	0.36 ± 0.02	0.56 ± 0.02

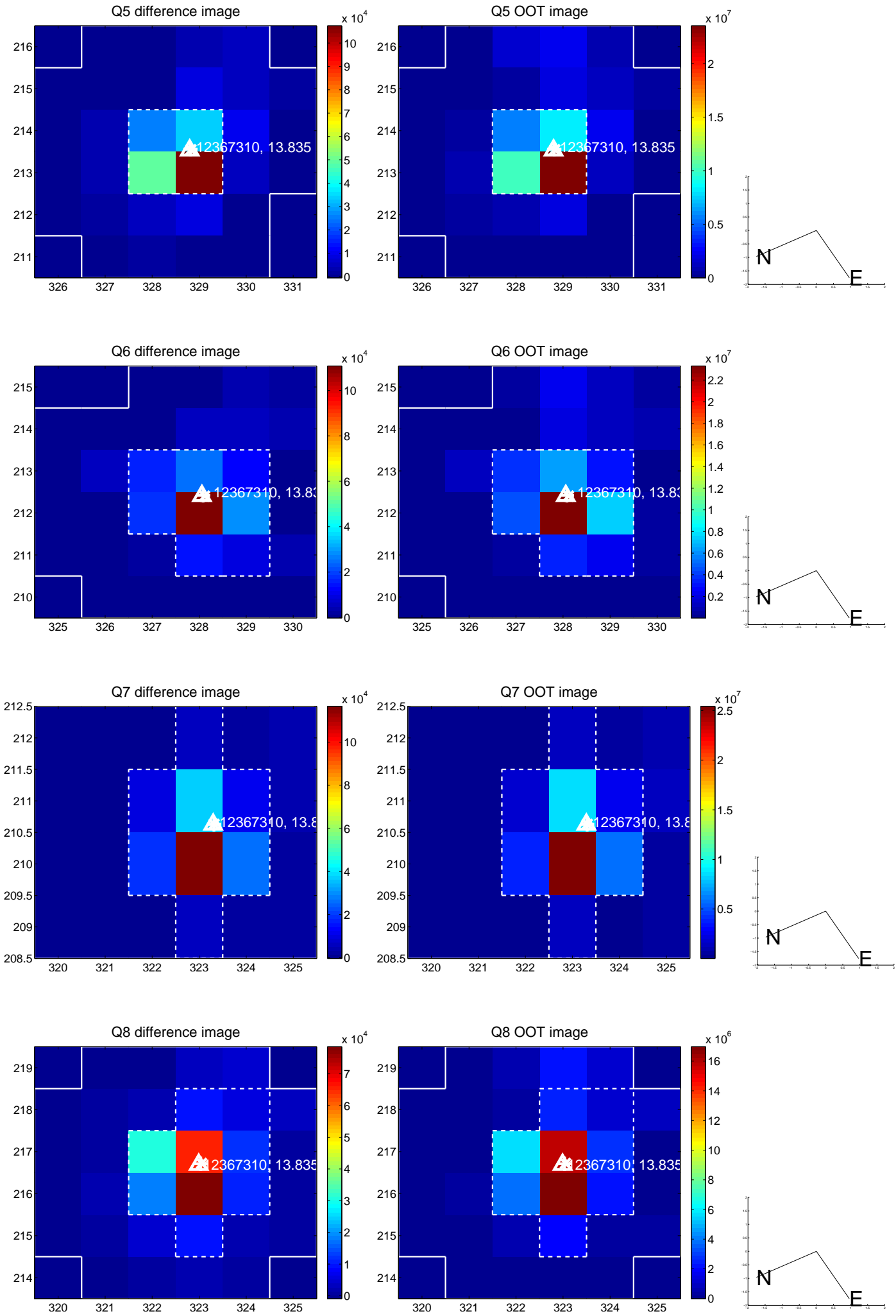


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

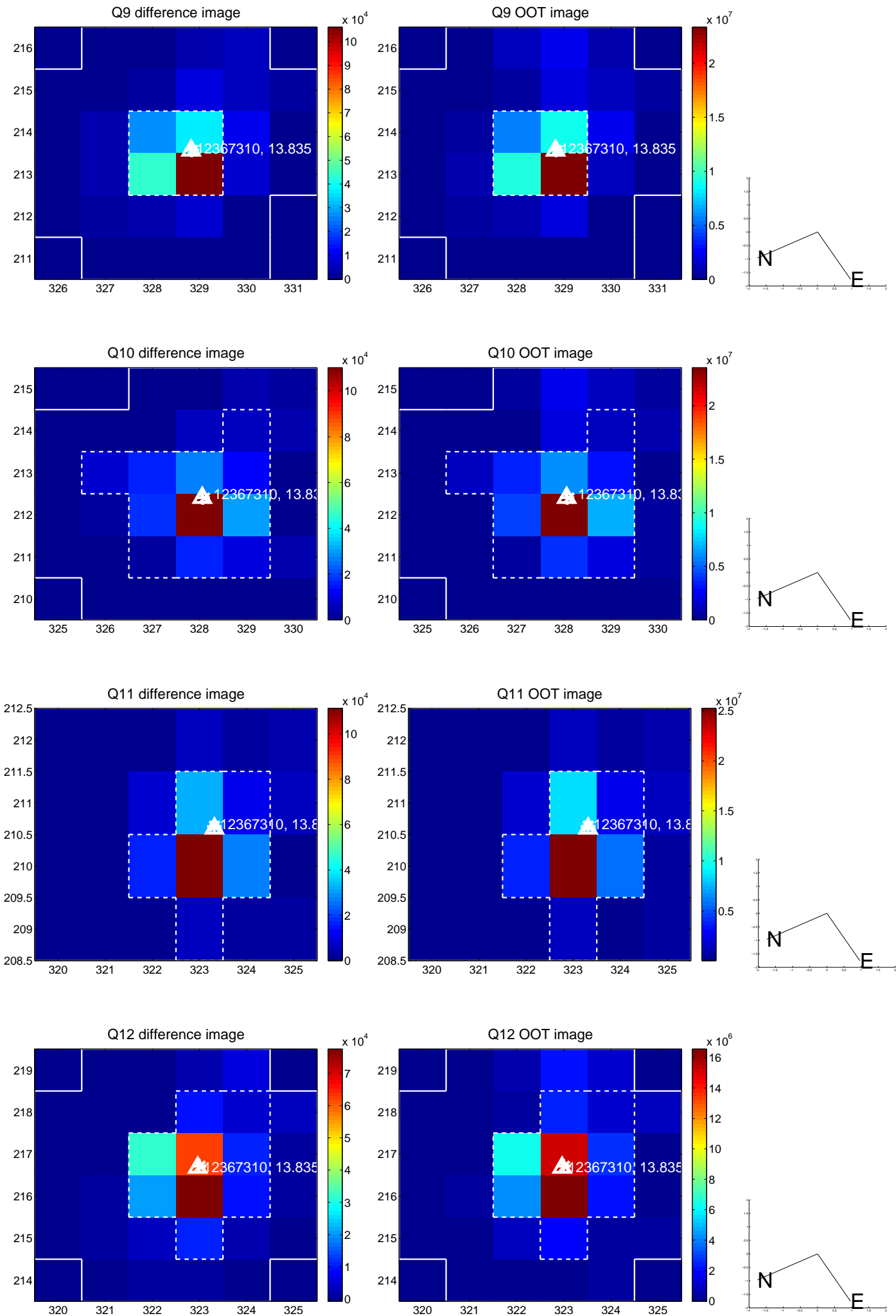
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



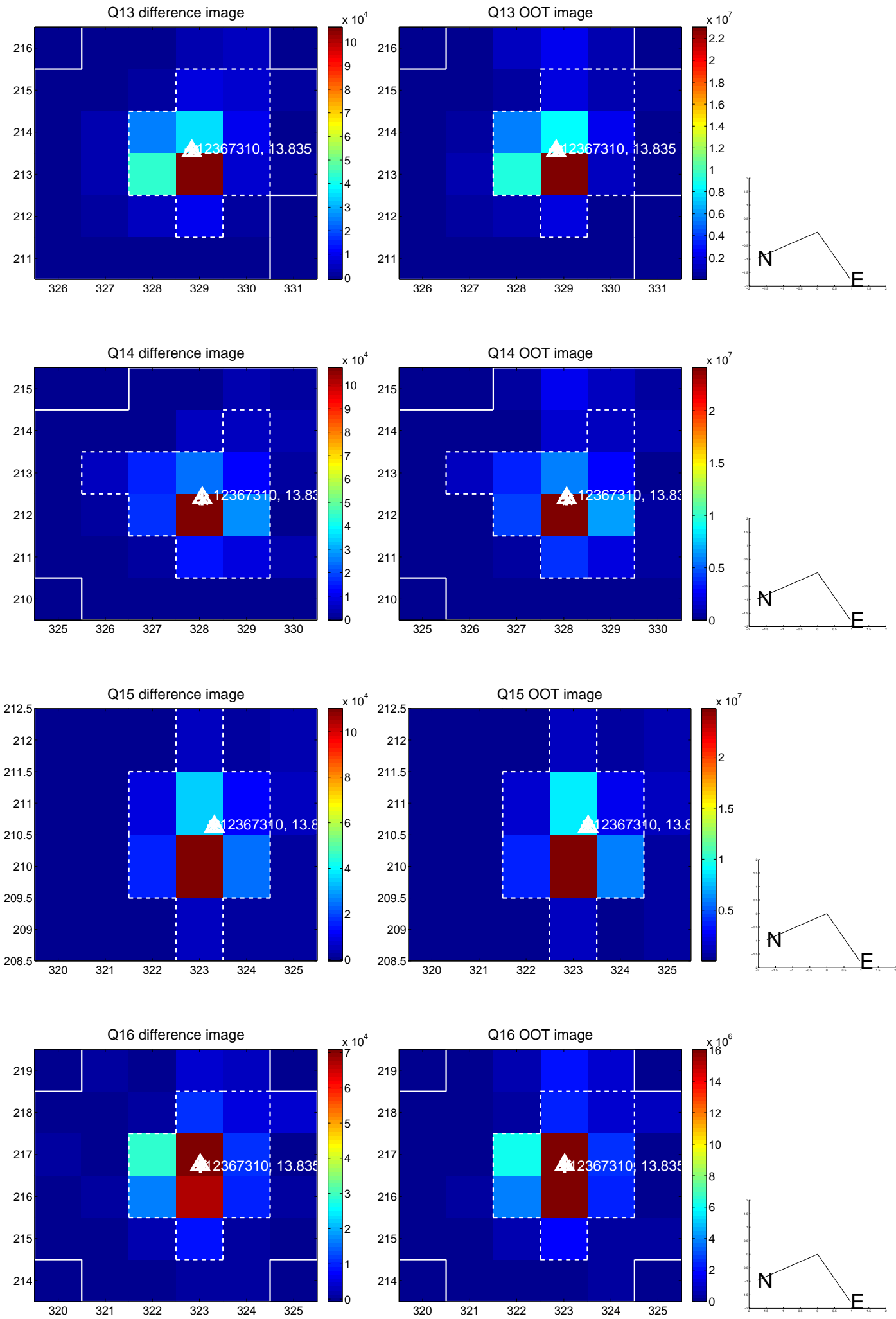
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



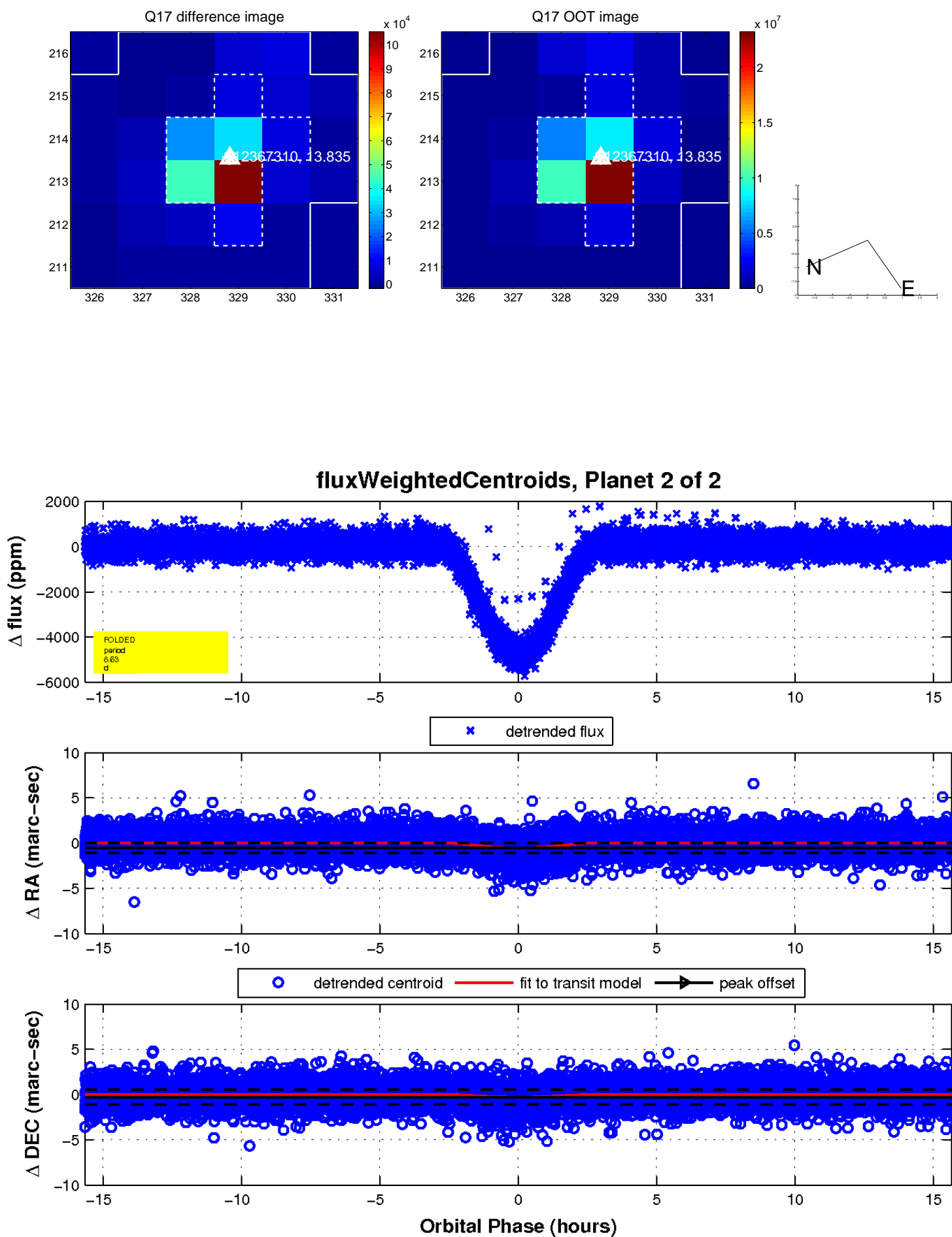
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

