

KIC 008971432

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})
008971432-01	OBS	No	1.248766	131.799704	32321.7	1.421	1218.2	1143.7	0.62	5211	11.40	678.05
008971432-02	OBS	1384.01	0.624388	131.792244	45070.8	1.500	1920.9	-1.0	0.62	5211	13.12	1708.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008971432-01	OBS	FP	0.00	1	0	0	0	LPP_ALT
008971432-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SAME_NTL_PERIOD—CENT_NOFITS

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.

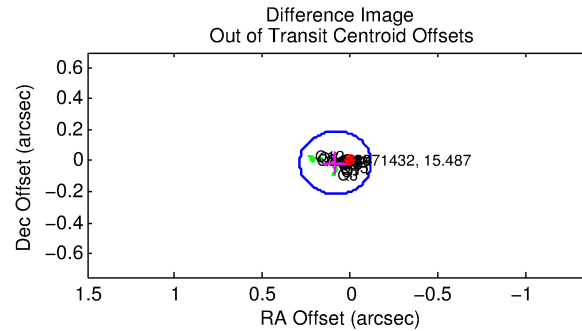
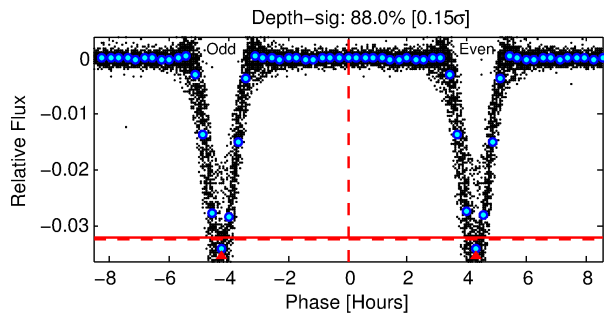
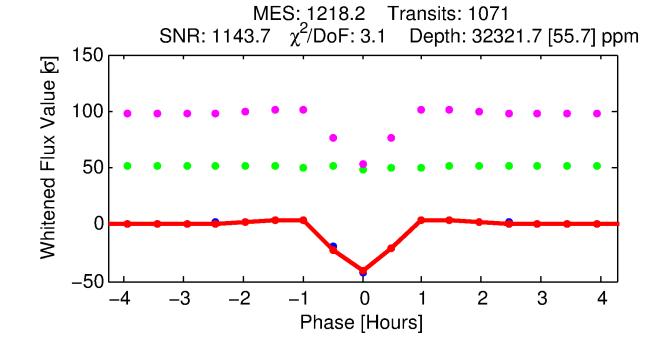
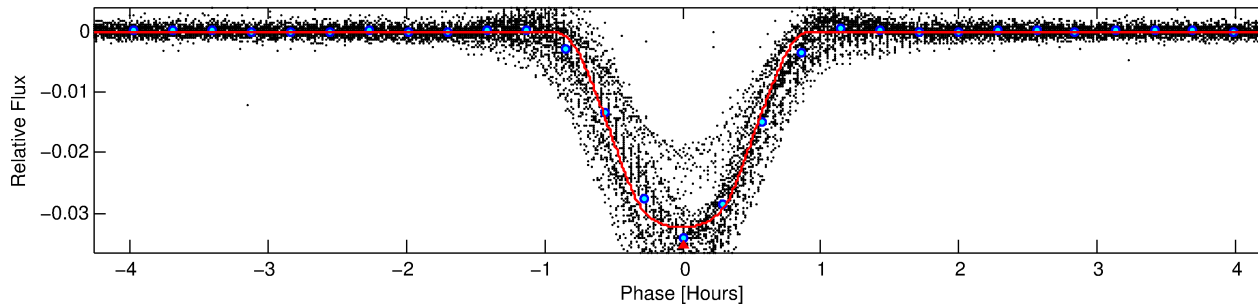
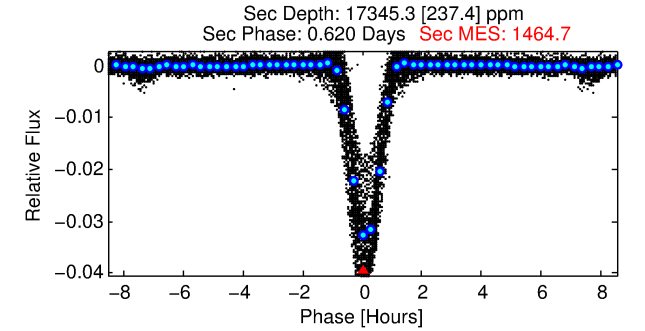
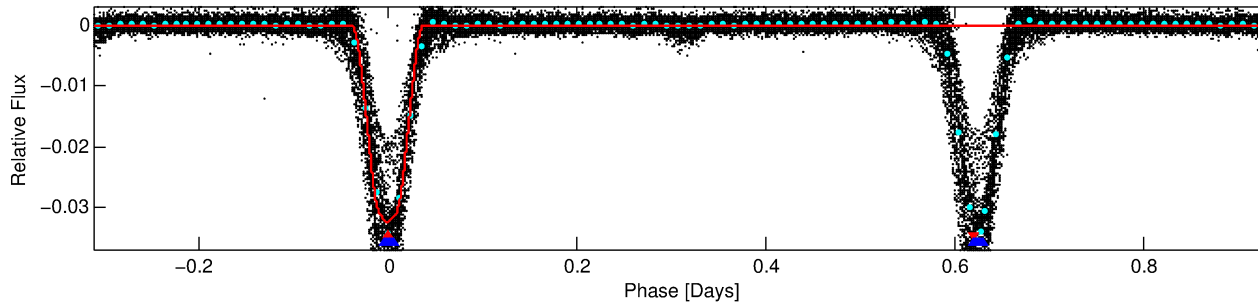
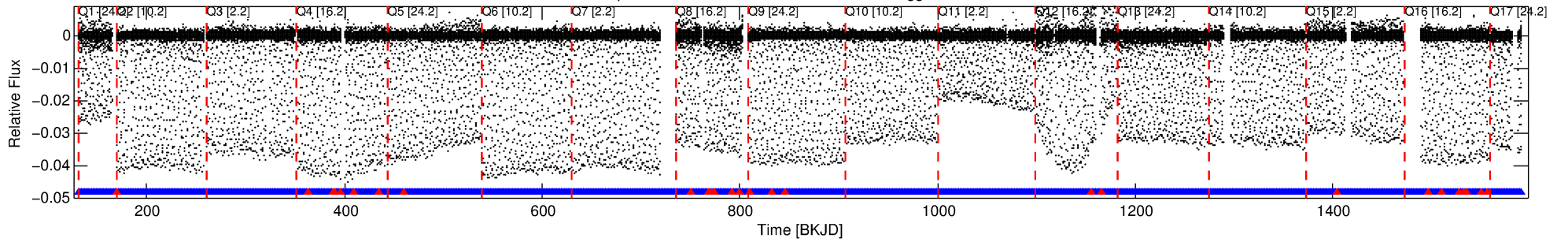
Ephemeris Match Information For 008971432-01

No Significant Match Found

DV One-Page Summary

KIC: 8971432 Candidate: 1 of 2 Period: 1.249 d
KOI: K01384 Corr: No Ephemeris Match

Kp: 15.49 R*: 0.62 Rs Teff: 5211.0 K Logg: 4.64 Fe/H: -1.100



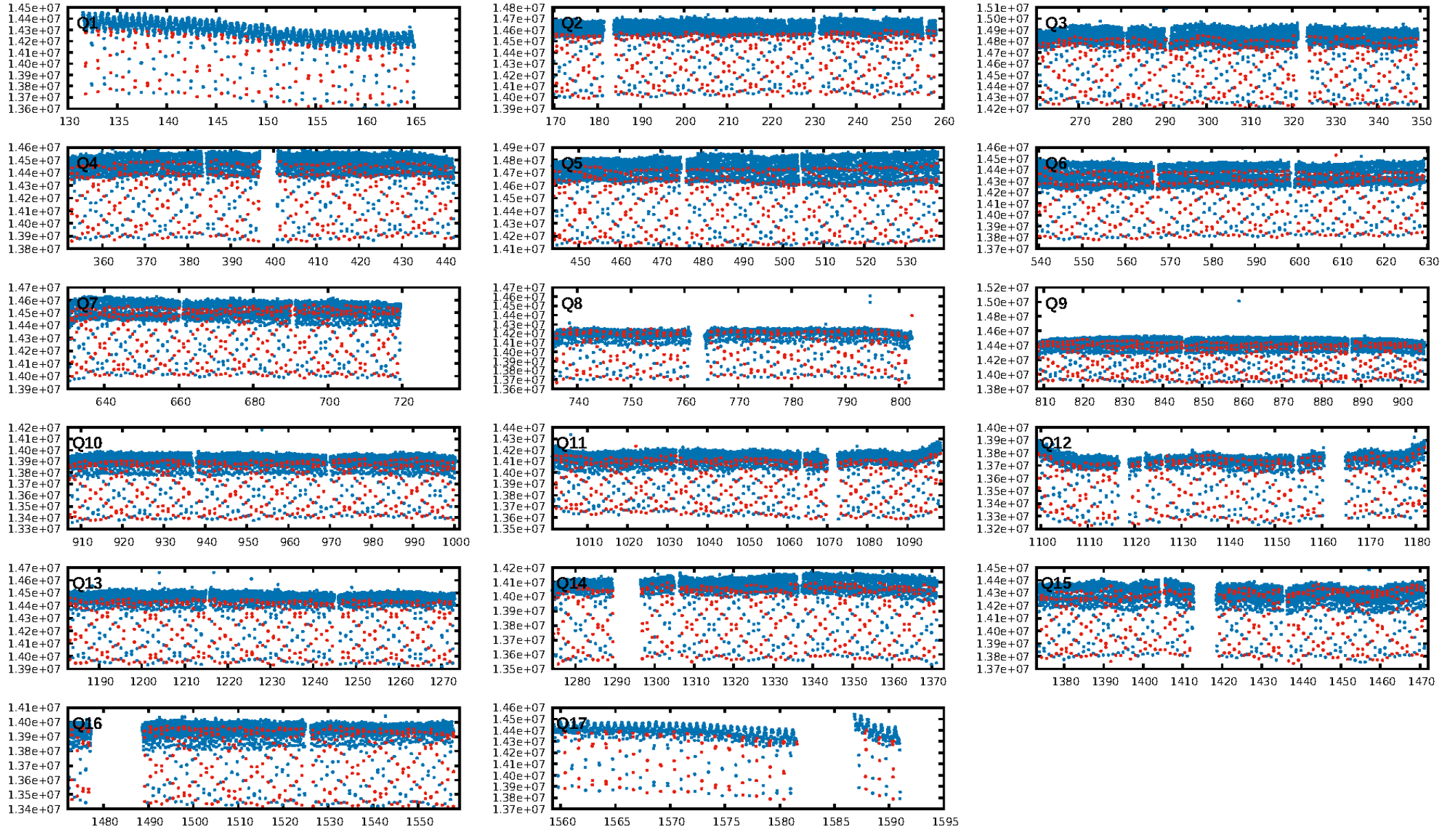
DV Fit Results:

Period = 1.24877 [0.00000] d
Epoch = 131.7997 [0.0000] BKJD
Rp/R* = 0.1691 [0.0007]
a/R* = 7.26 [0.11]
b = 0.46 [0.03]
Seff = 678.05 [117.14]
Teq = 1301 [56] K
Rp = 11.40 [0.79] Re
a = 0.0193 [0.0013] AU
Ag = 27.32 [3.08] [8.56σ]
Teffp = 4599 [153] K [20.24σ]

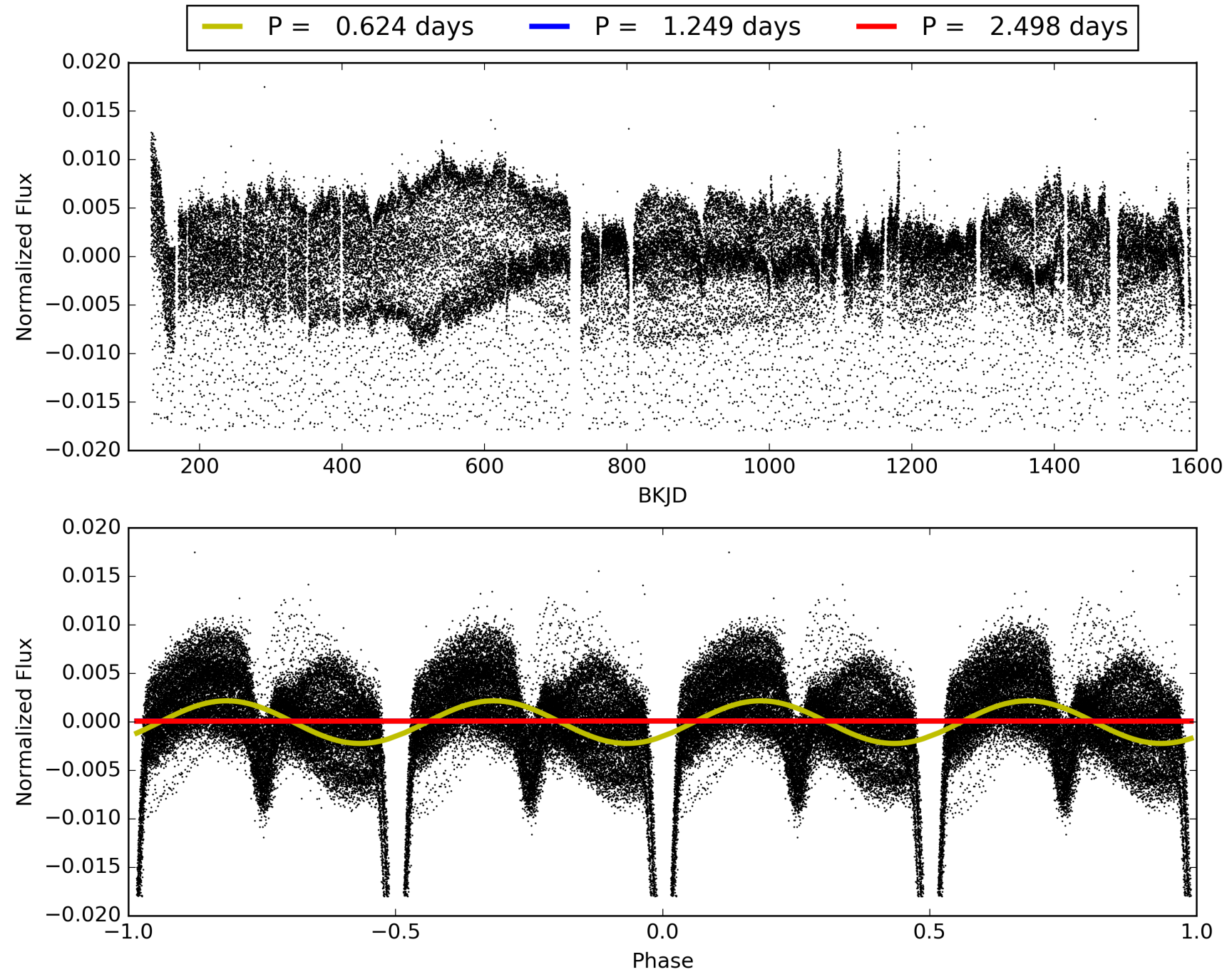
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.25σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [996/1023]
GhostDiagnostic-chr: 2.009
Centroid-sig: 0.0%
Centroid-so: 0.625 arcsec [72.86σ]
OotOffset-rm: 0.085 arcsec [1.26σ]
KicOffset-rm: 0.091 arcsec [1.33σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 008971432-01, PDC Light Curves

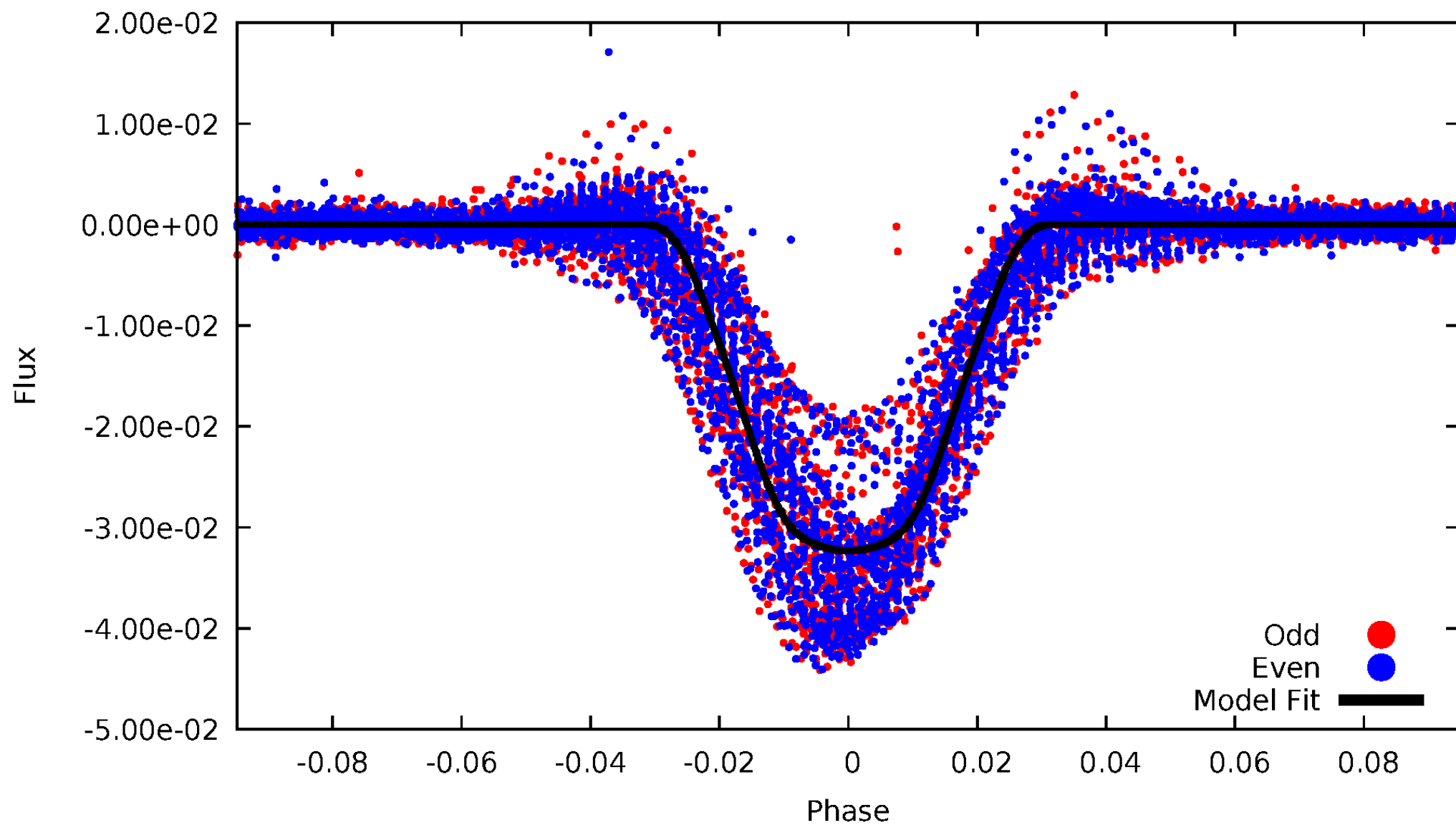


TCE 008971432-01



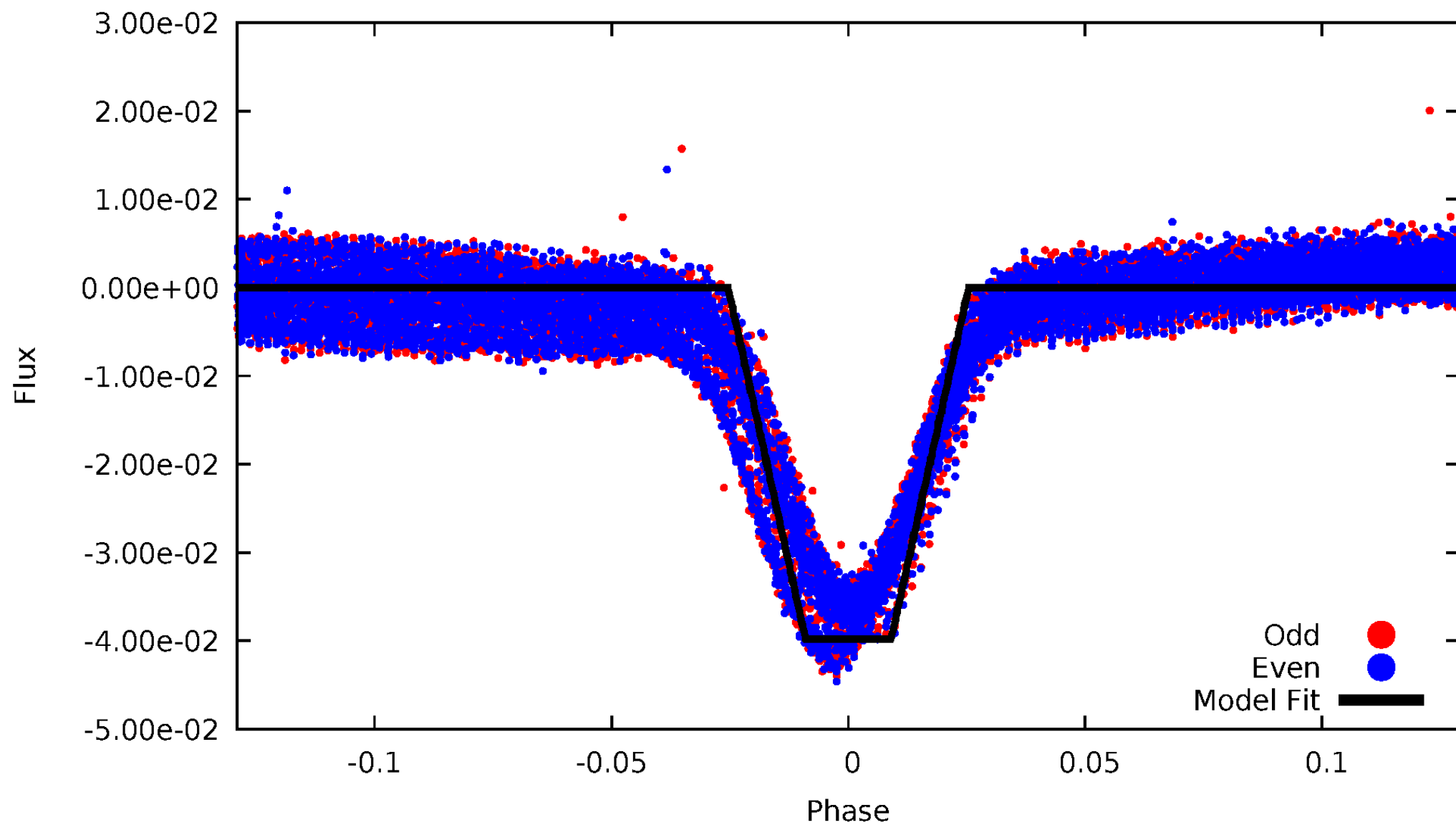
DV Odd/Even

TCE 008971432-01



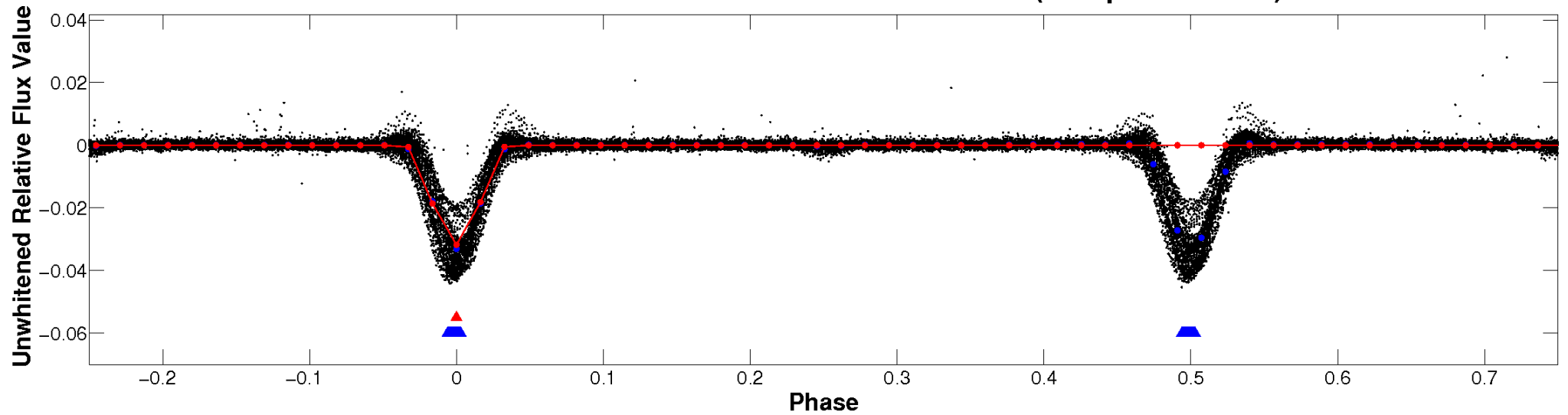
ALT Odd/Even

TCE 008971432-01

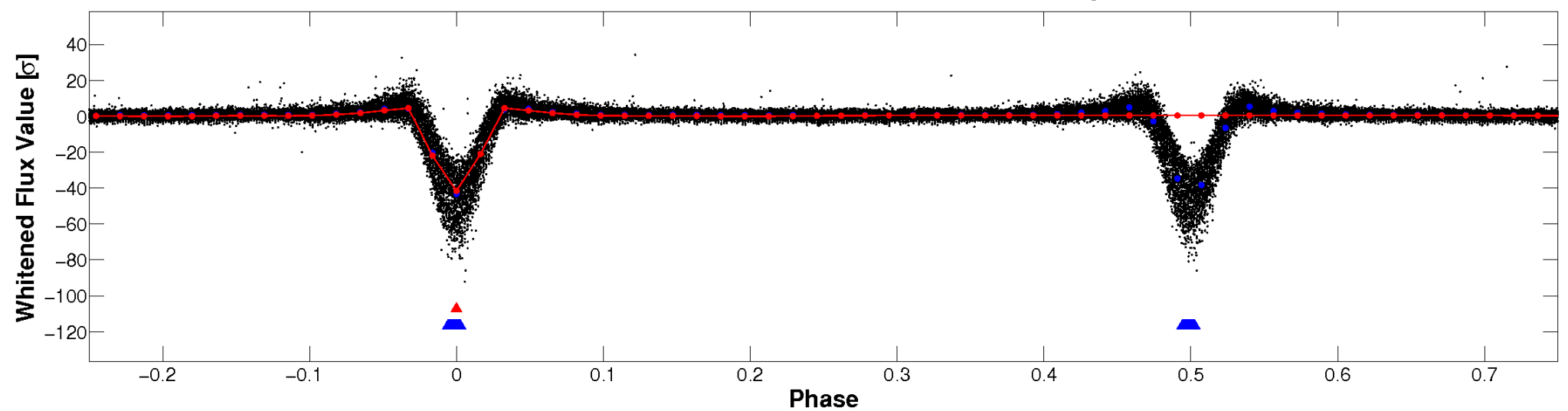


Non-Whitened Vs. Whitened Light Curve

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

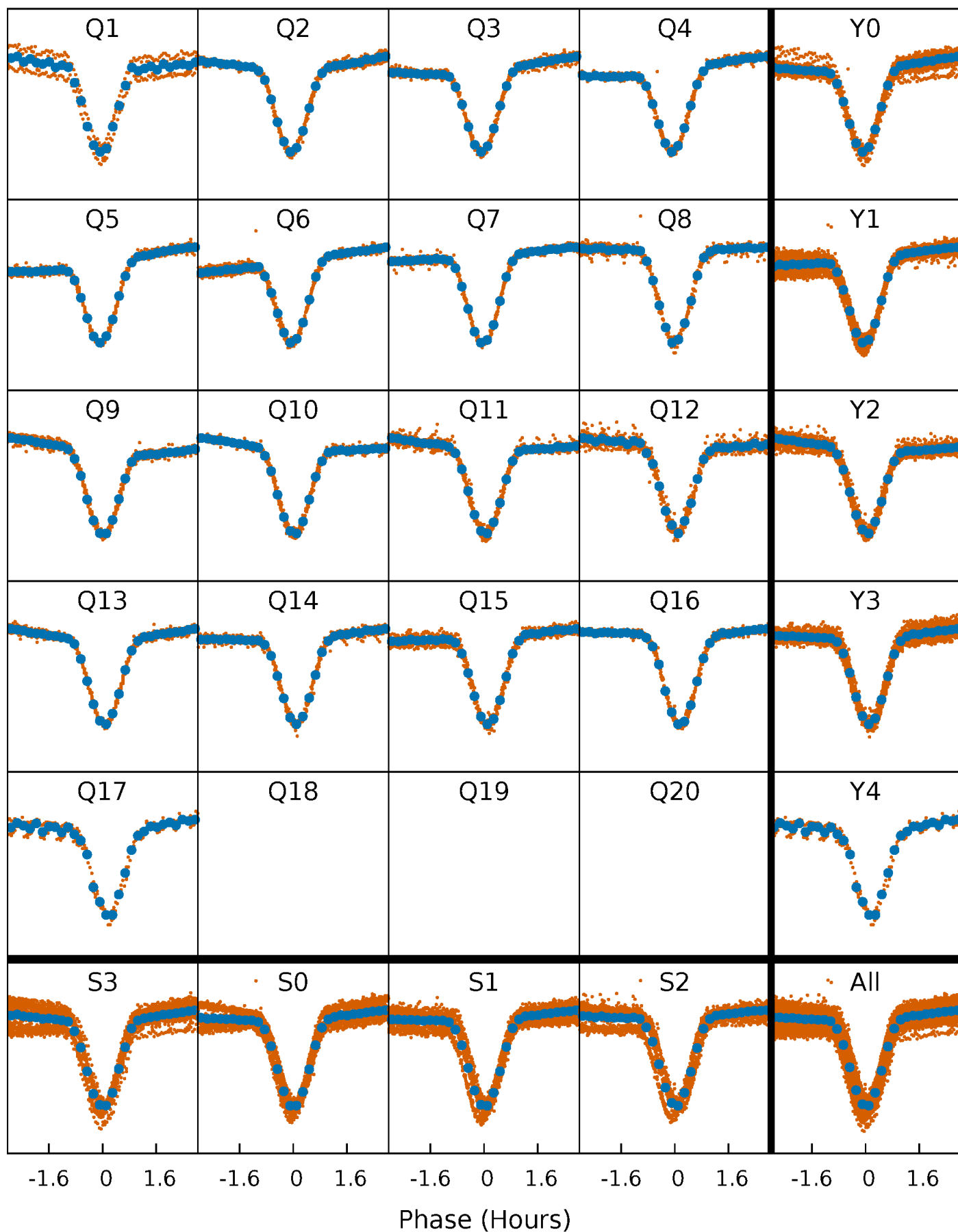


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



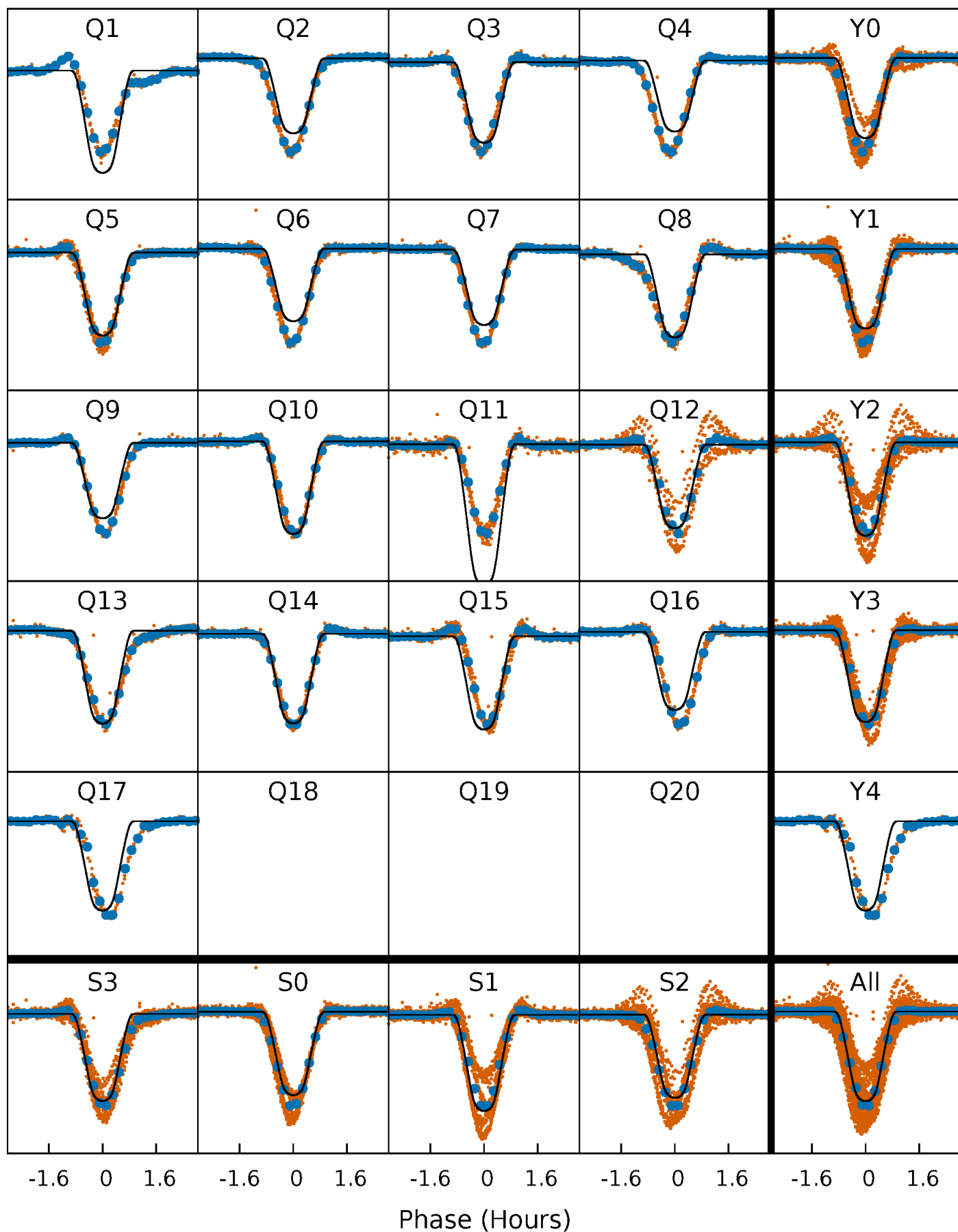
PDC Quarter-Phased Transit Curves

TCE 008971432-01 P= 1.248766 Days $T_0=131.799704$ (BKJD)



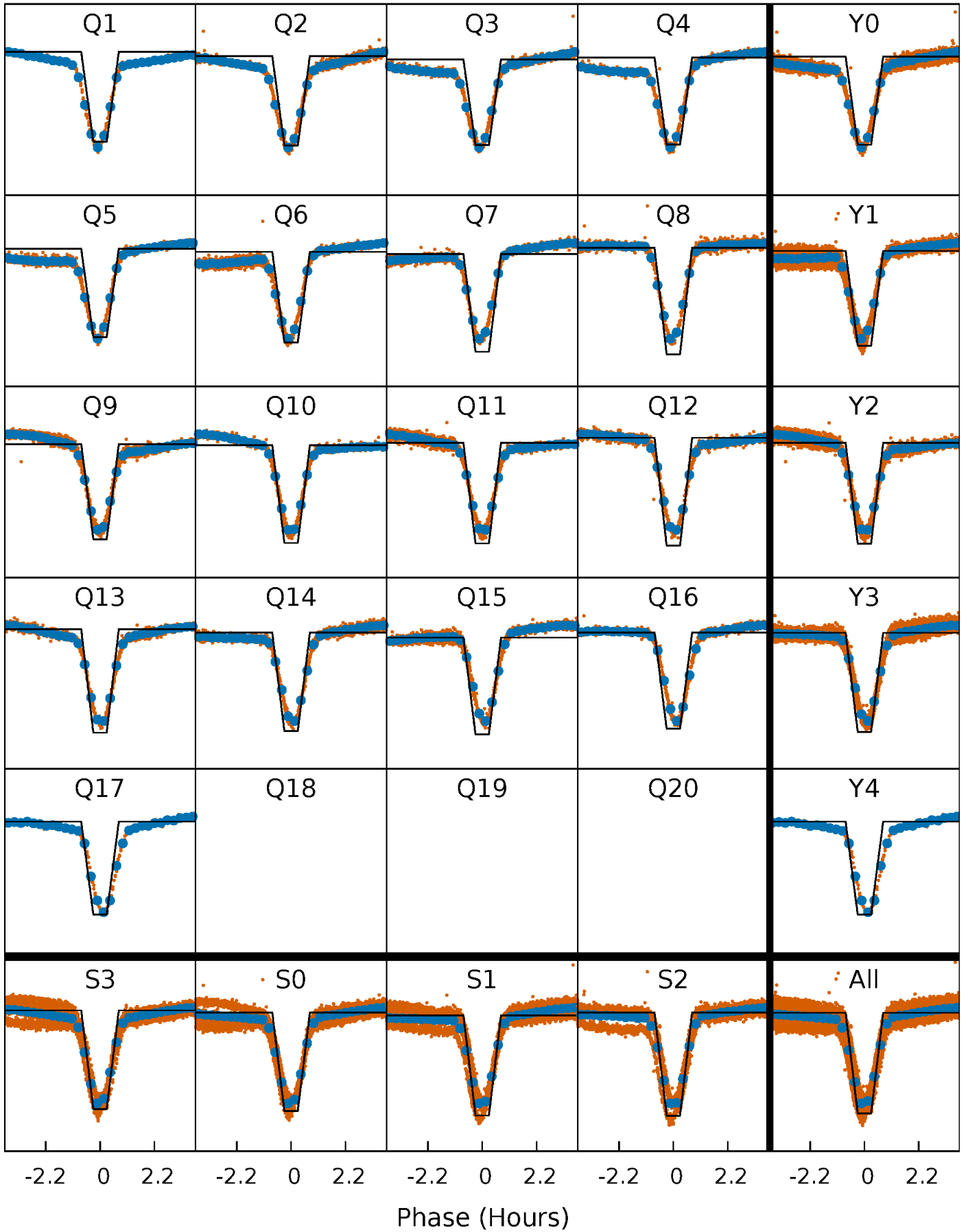
DV Quarter-Phased Transit Curves

TCE 008971432-01 P= 1.248766 Days $T_0=131.799704$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

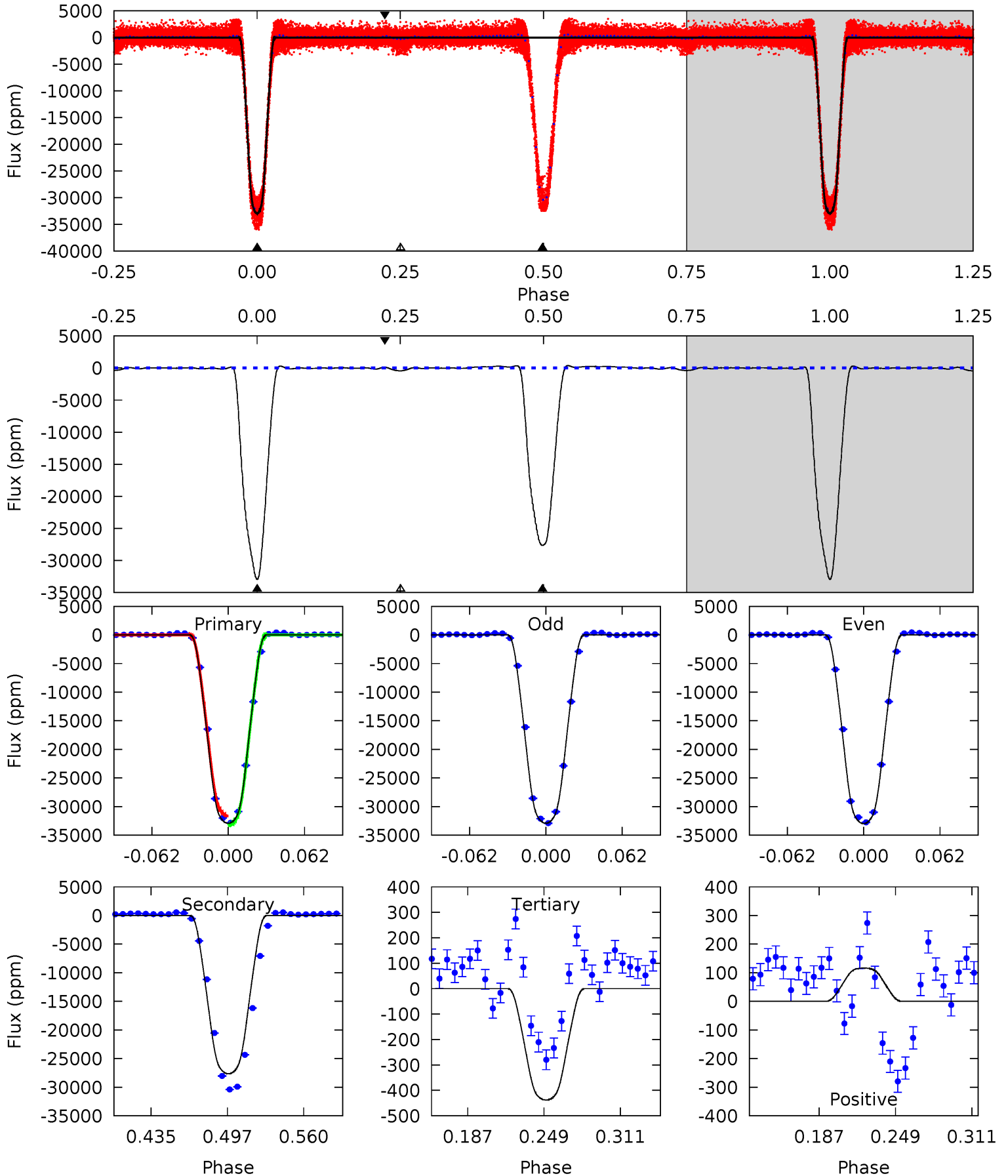
TCE 008971432-01 $P = 1.248766$ Days $T_0 = 131.801036$ (BKJD)



DV Model-Shift Uniqueness Test

008971432-01, P = 1.248766 Days, E = 130.550938 Days

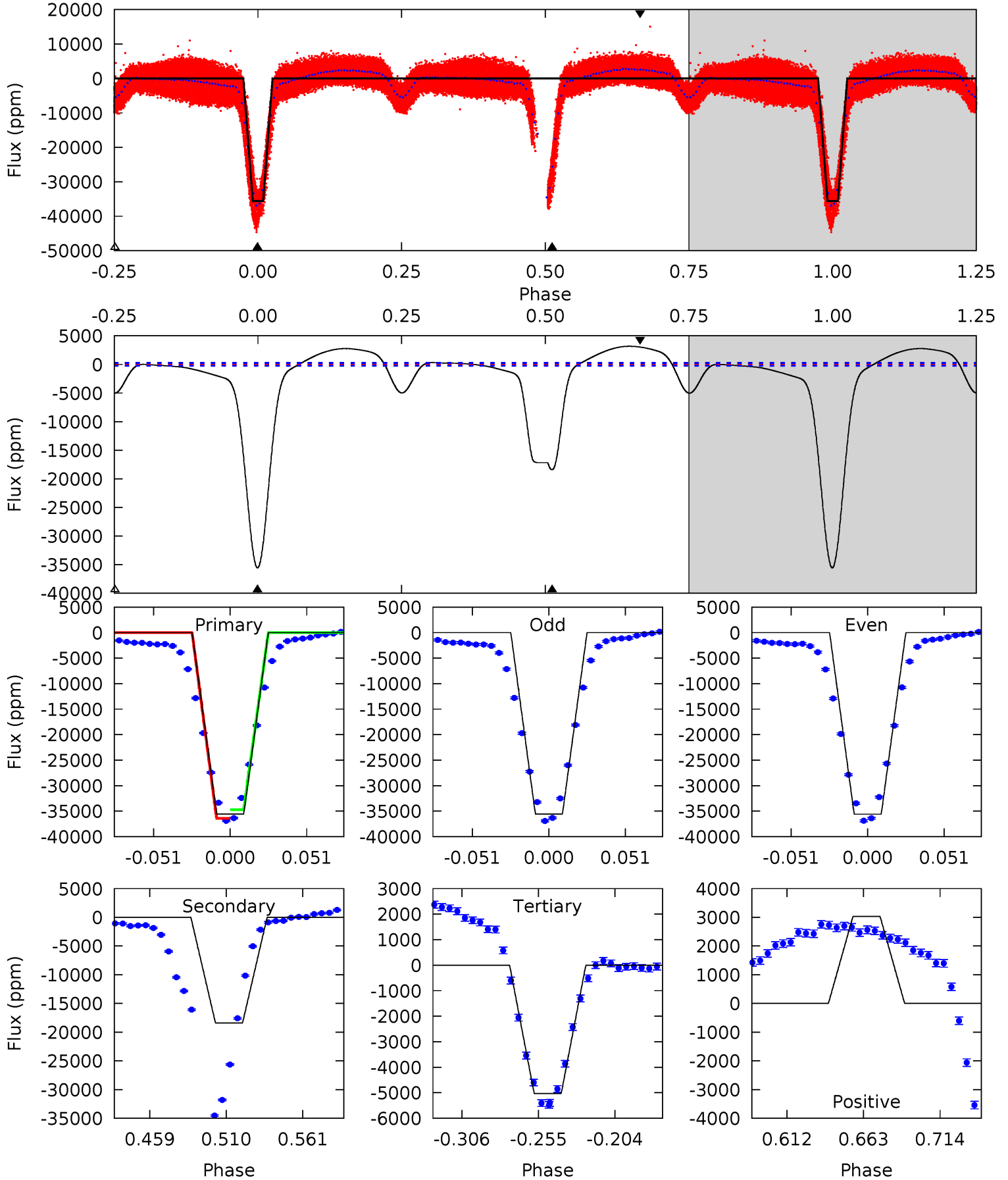
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2020	1696	26.9	7.15	4.66	1.87	8.83	1993	2012	1669	1689	1.81	0.99	0.01	47.8



Alt Model-Shift Uniqueness Test

008971432-01, P = 1.248766 Days, E = 130.552270 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
672.7	347.9	95.0	57.3	4.70	1.95	39.1	577.7	615.4	252.9	290.6	0.43	1.01	0.08	16.0



Stellar Parameters For KIC 008971432

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5211^{+156}_{-172}	$4.644^{+0.066}_{-0.039}$	$-1.100^{+0.300}_{-0.300}$	$0.618^{+0.043}_{-0.043}$	$0.612^{+0.053}_{-0.023}$	$3.661^{+0.904}_{-0.501}$
	+3%/-3%	+1%/-1%	+27%/-27%	+7%/-7%	+9%/-4%	+25%/-14%
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 008971432-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-27648 ± 16	$11.37^{+0.46}_{-0.49}$	1802^{+72}_{-69}	5185^{+186}_{-204}	46^{+4}_{-3}
Alt.	-18398 ± 53	$13.42^{+0.52}_{-0.54}$	1811^{+63}_{-67}	4451^{+121}_{-120}	22^{+2}_{-1}

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

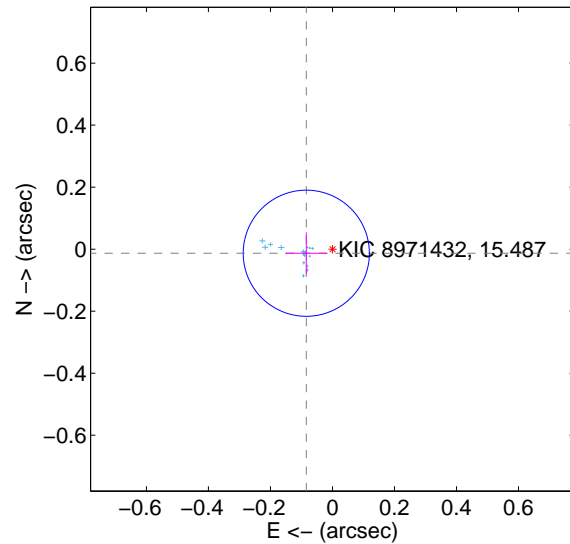
Supplemental centroid analysis for 008971432-01. Kepler magnitude: 15.49. Transit SNR 1143.69

There are 17 quarters with good PRF difference image offsets

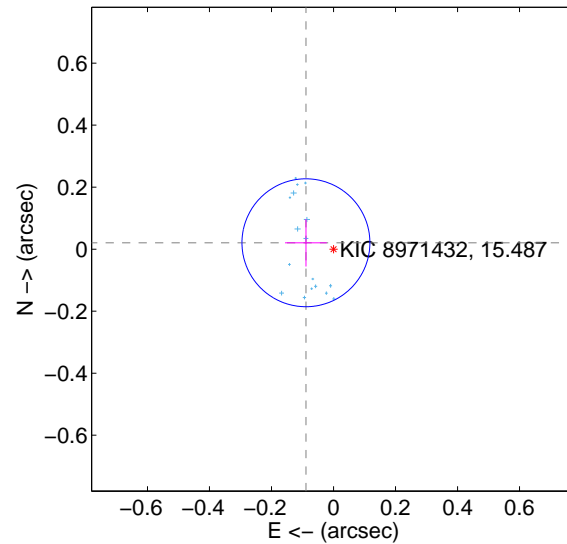
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.085 ± 0.068	1.26	0.084 ± 0.068	-0.013 ± 0.067
PRF-fit source offset from KIC position	0.091 ± 0.069	1.33	0.089 ± 0.068	0.021 ± 0.077
photometric centroid source offset	0.62 ± 0.01	72.86	-0.62 ± 0.01	-0.06 ± 0.01

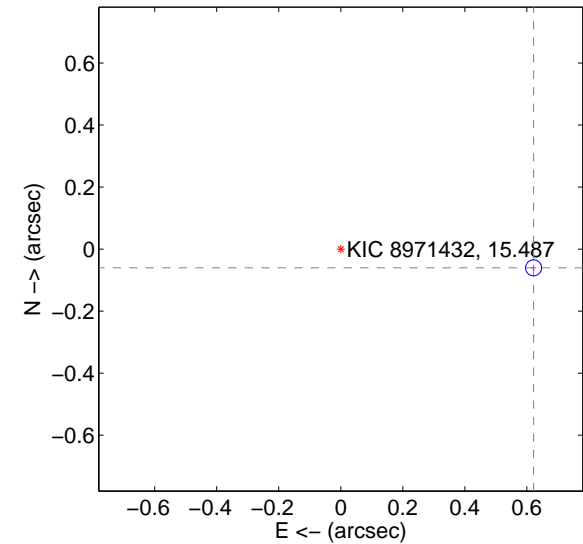
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

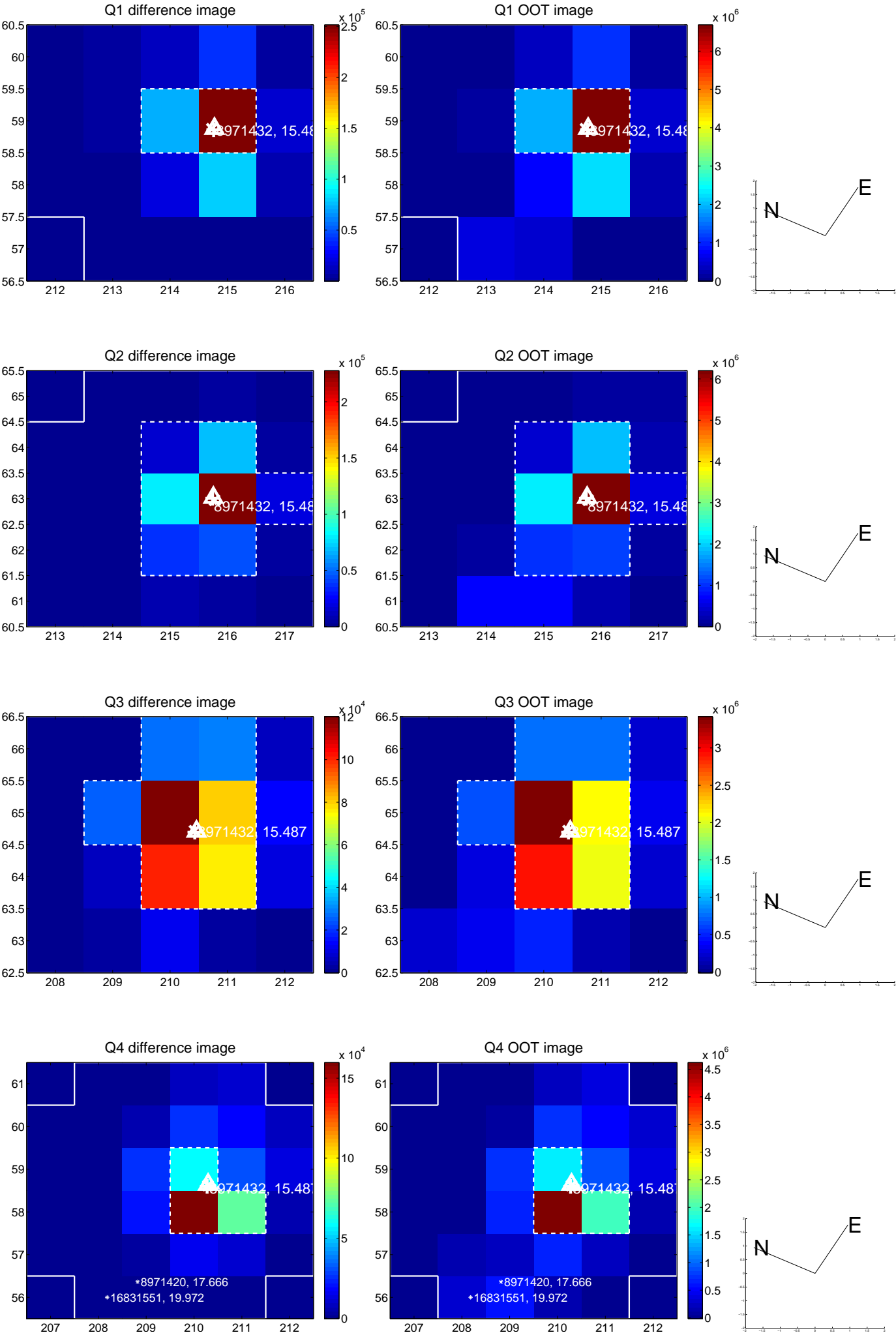


offset from photometric centroids

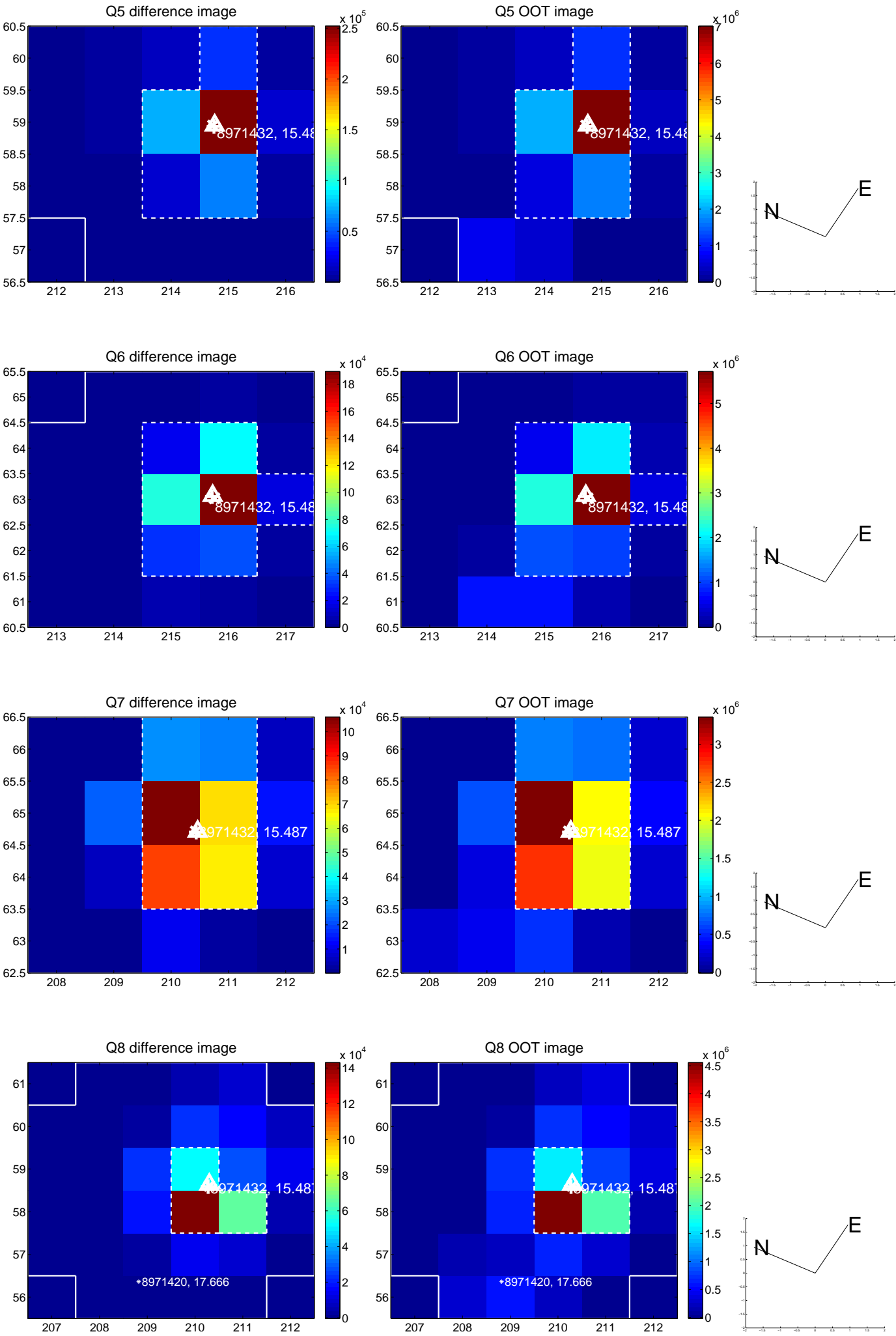


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

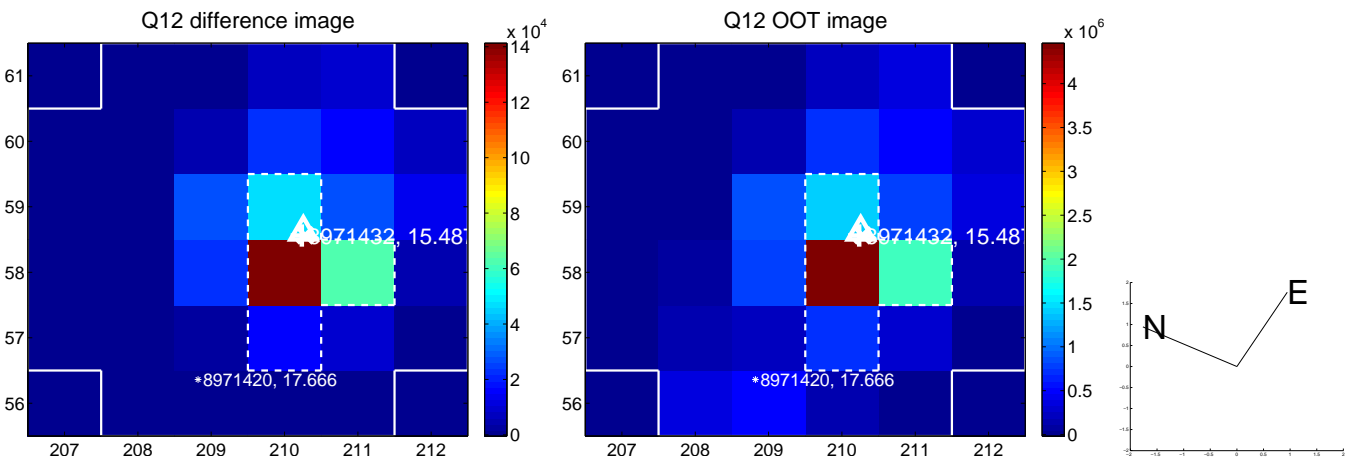
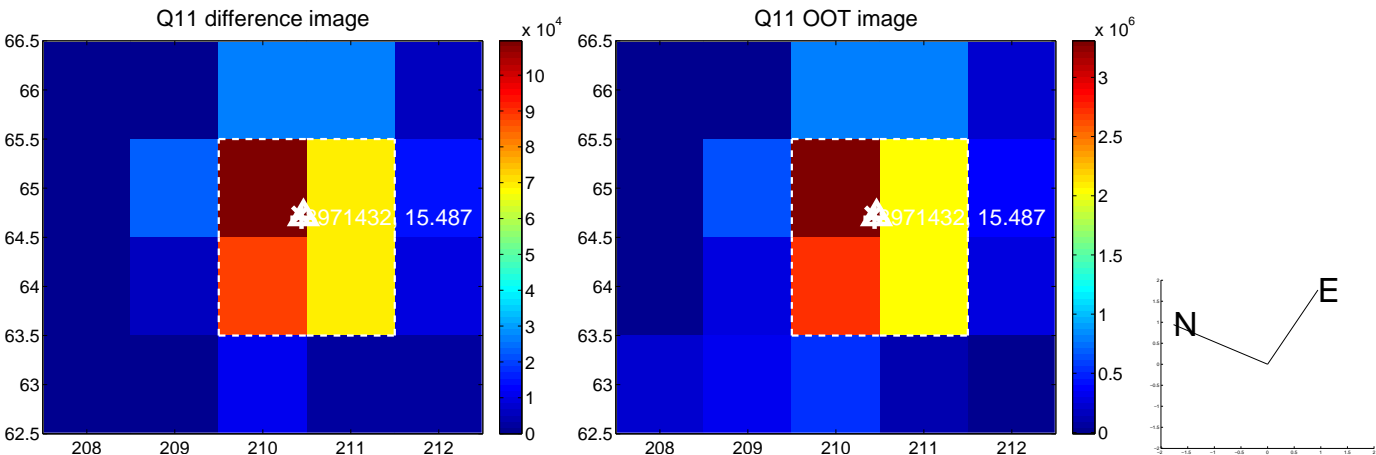
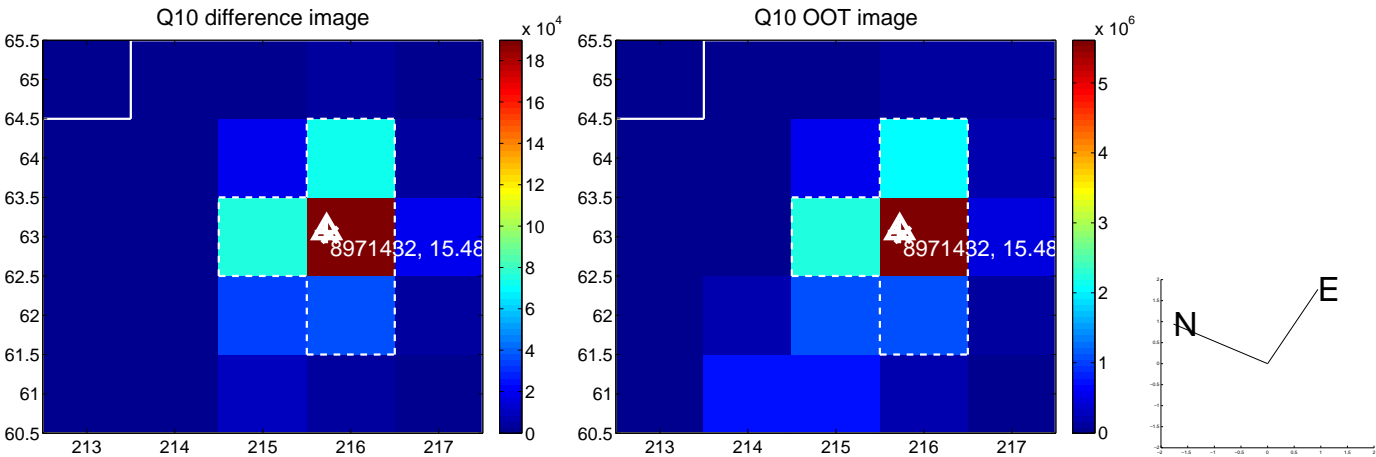
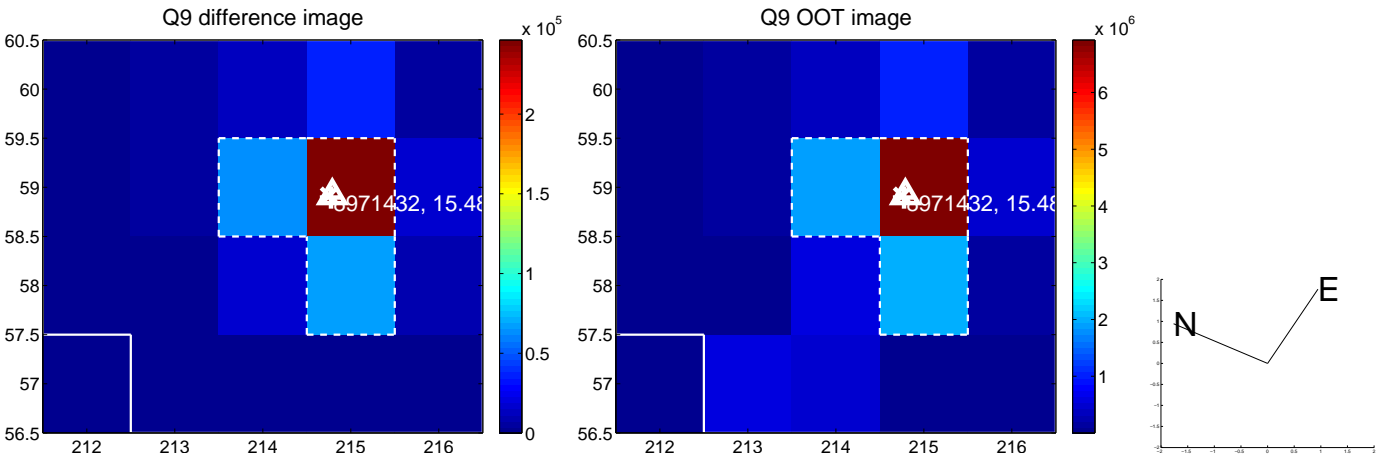
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



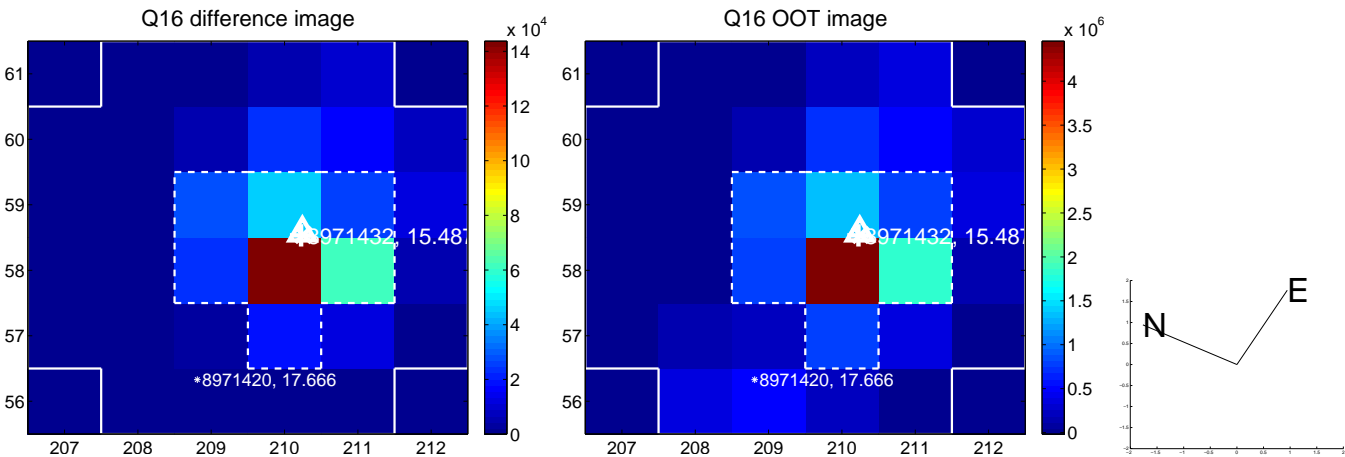
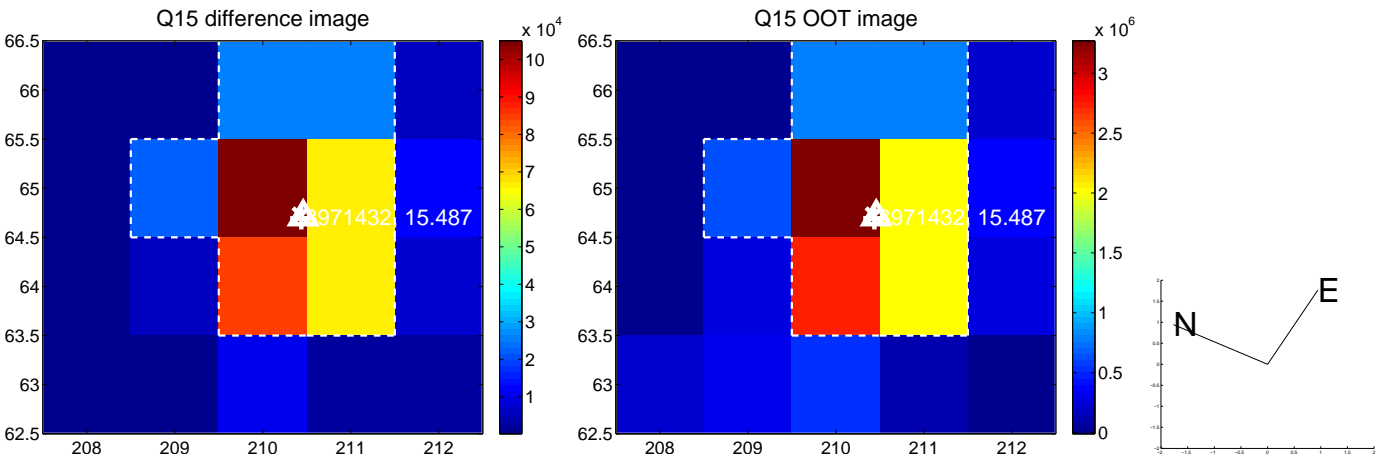
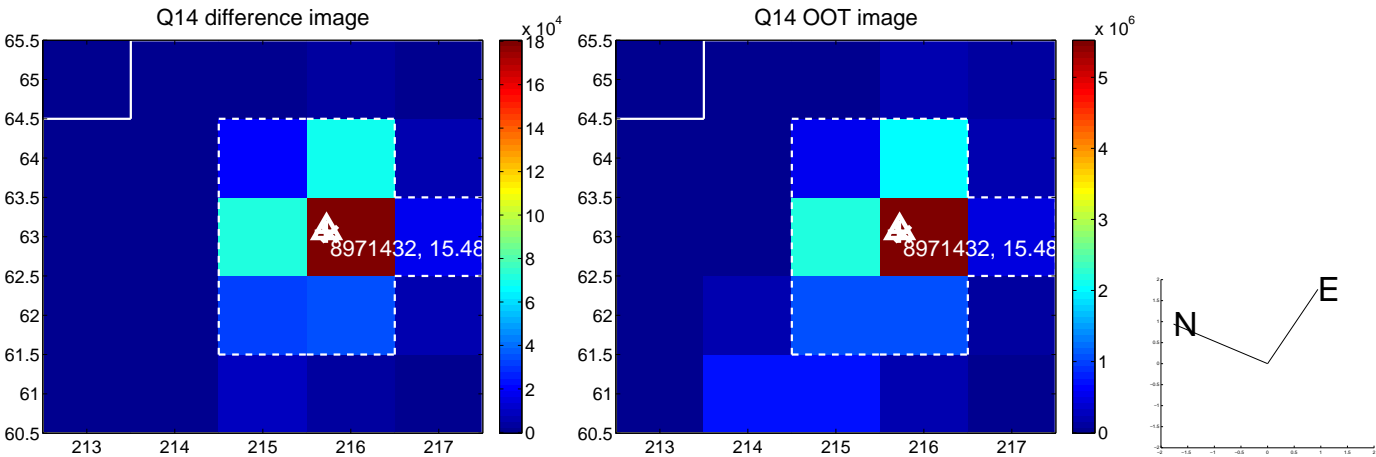
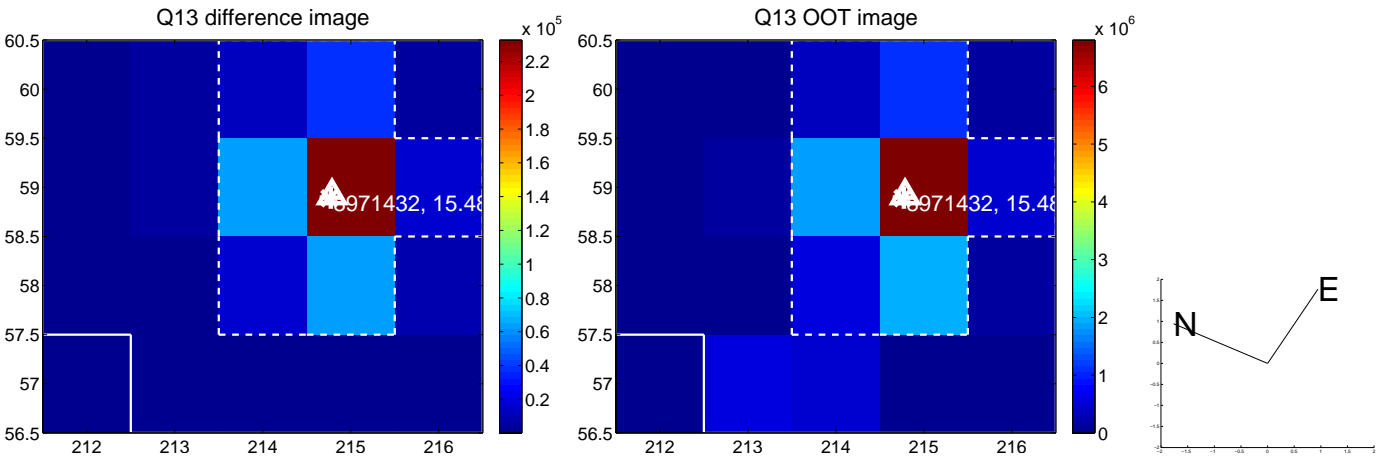
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



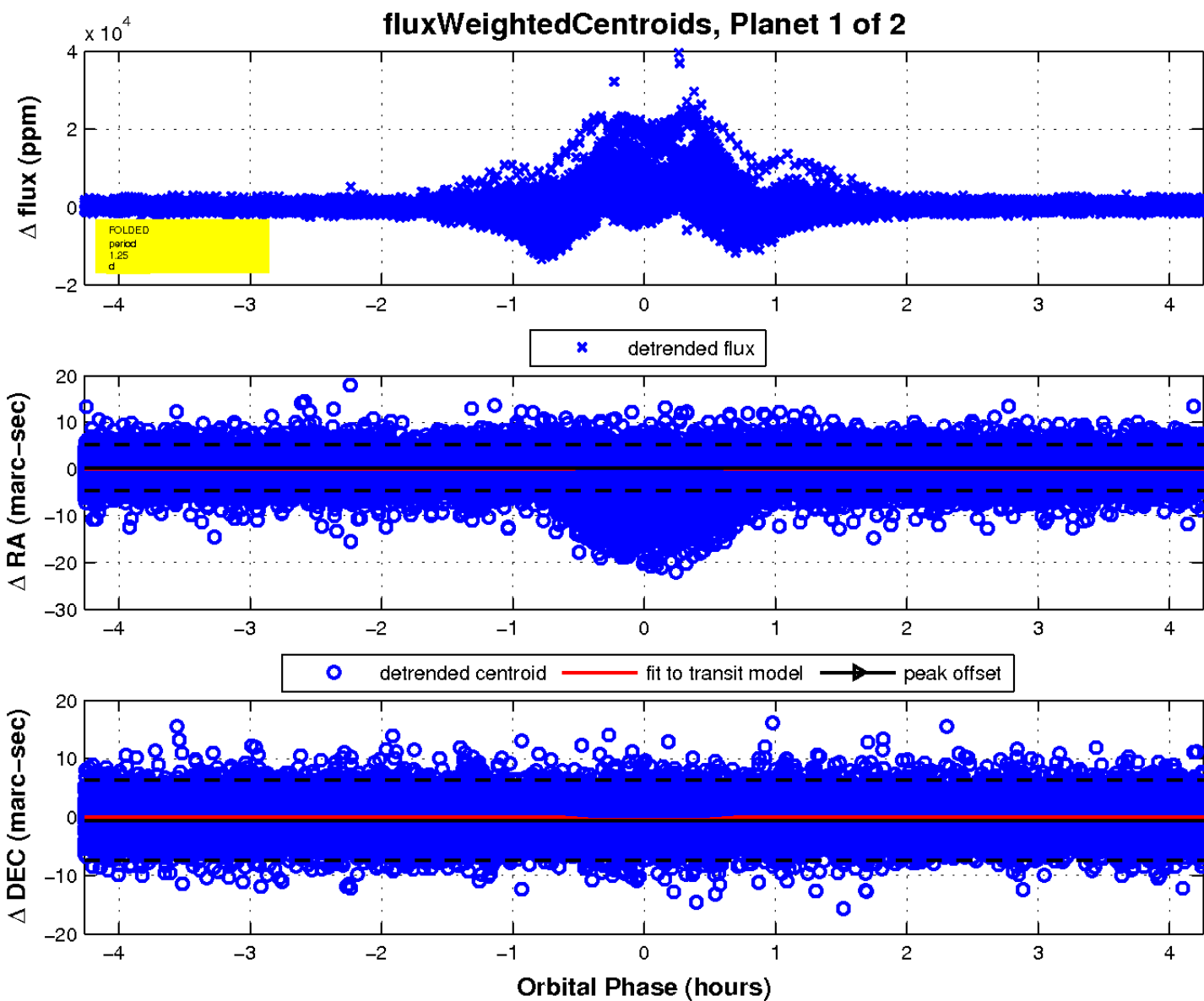
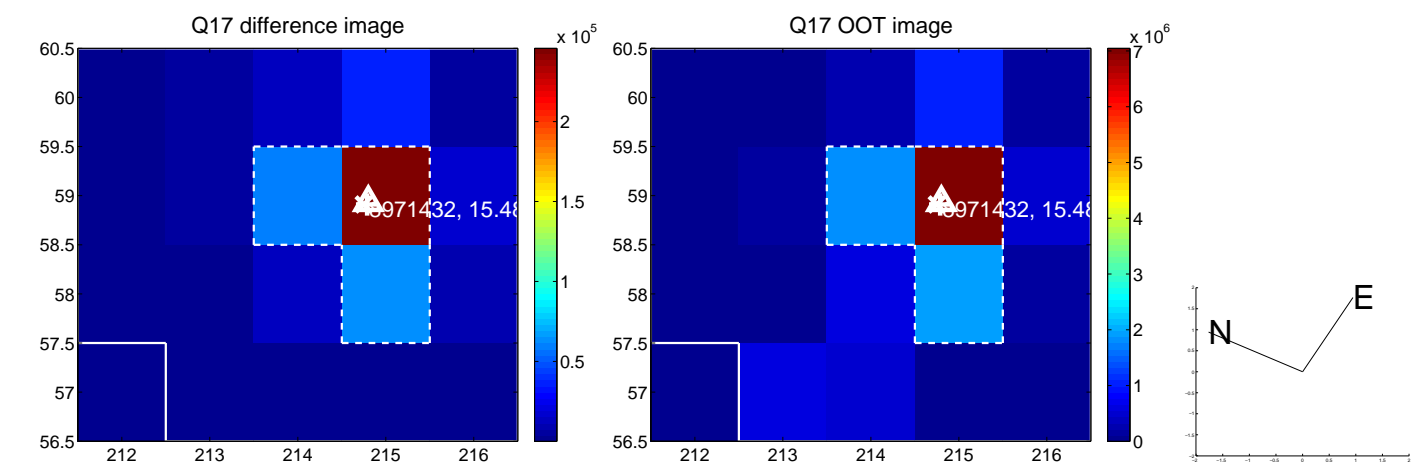
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

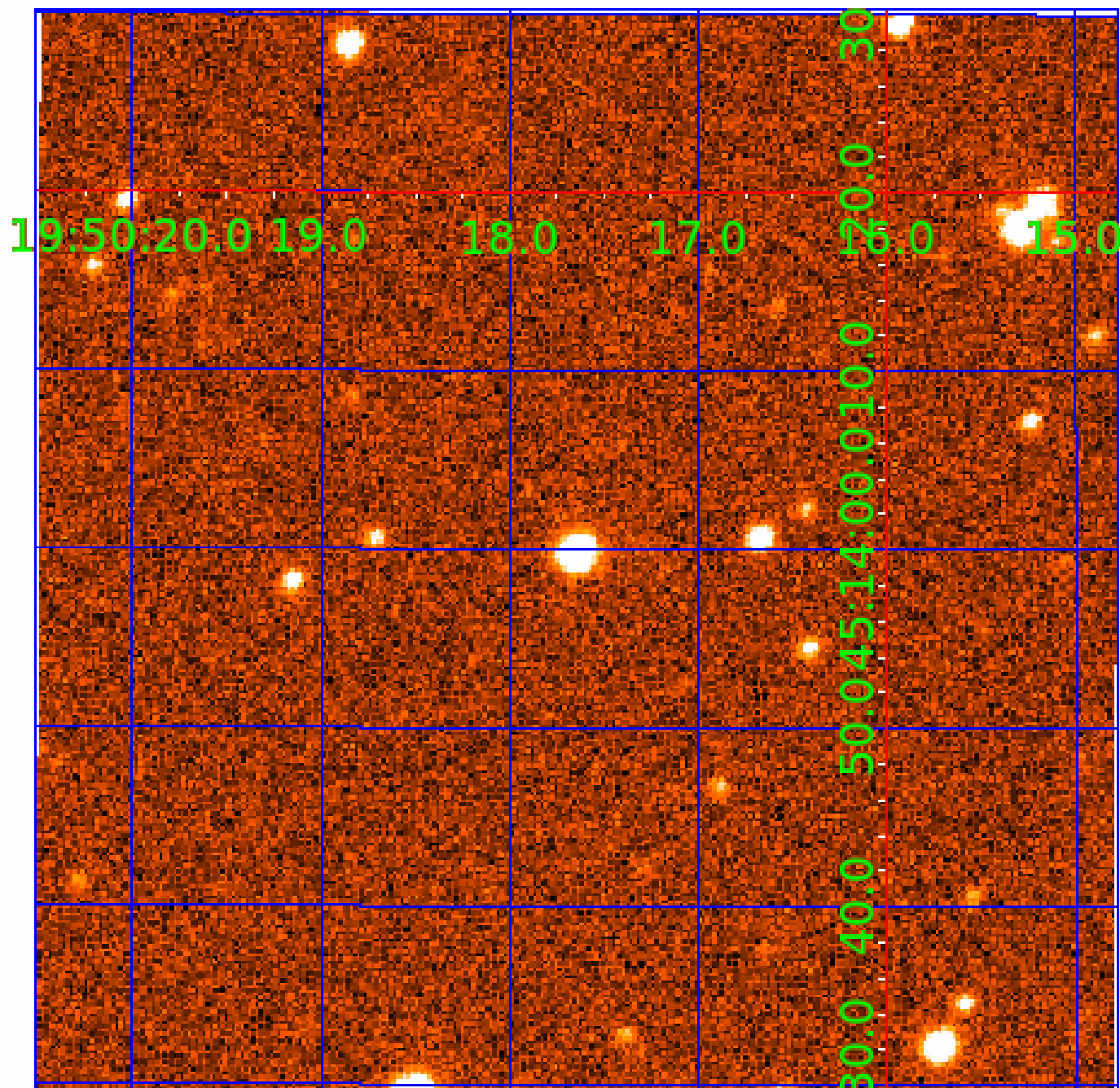


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008971432

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})
008971432-01	OBS	No	1.248766	131.799704	32321.7	1.421	1218.2	1143.7	0.62	5211	11.40	678.05
008971432-02	OBS	1384.01	0.624388	131.792244	45070.8	1.500	1920.9	-1.0	0.62	5211	13.12	1708.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008971432-01	OBS	FP	0.00	1	0	0	0	LPP_ALT
008971432-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SAME_NTL_PERIOD—CENT_NOFITS

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.

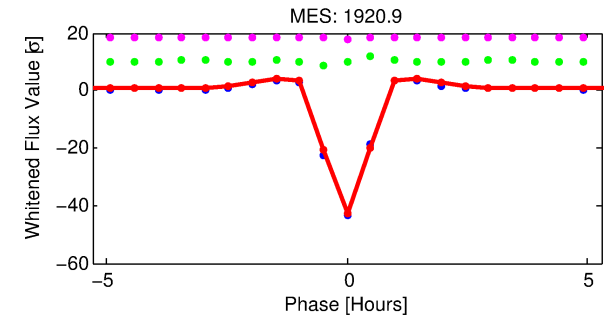
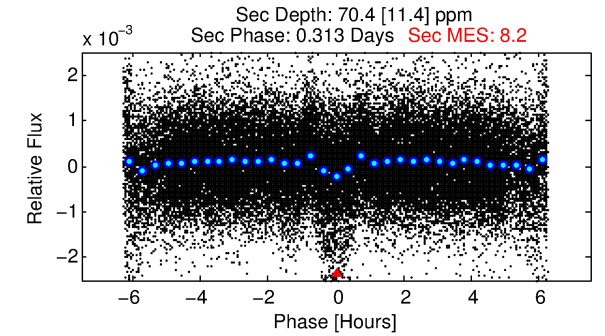
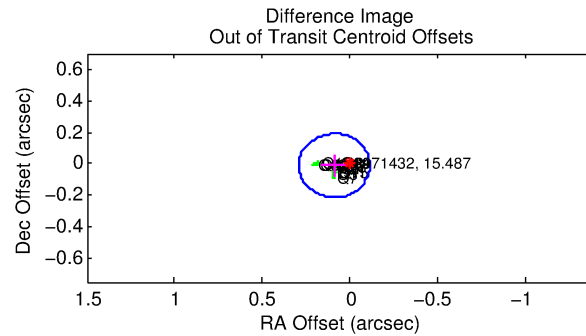
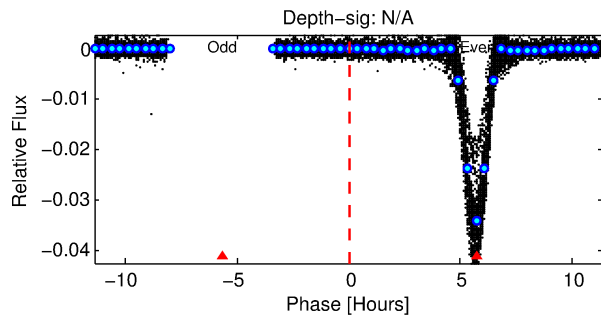
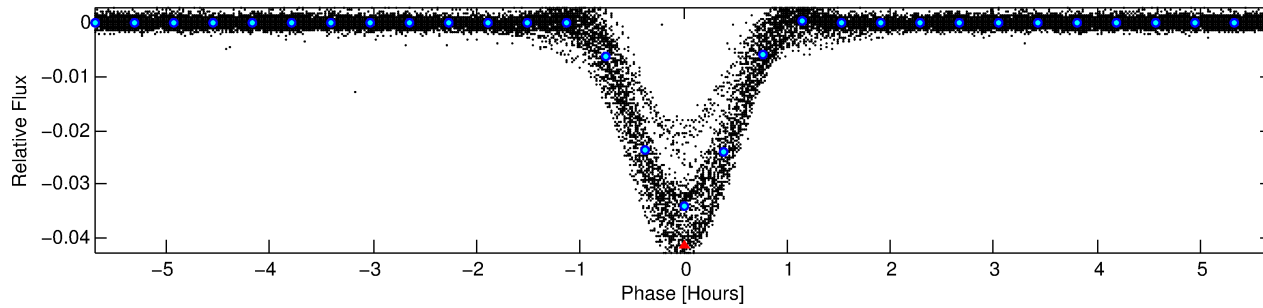
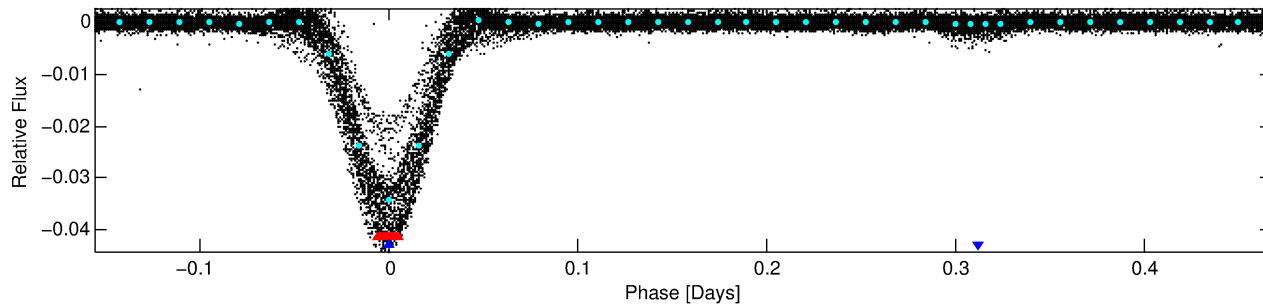
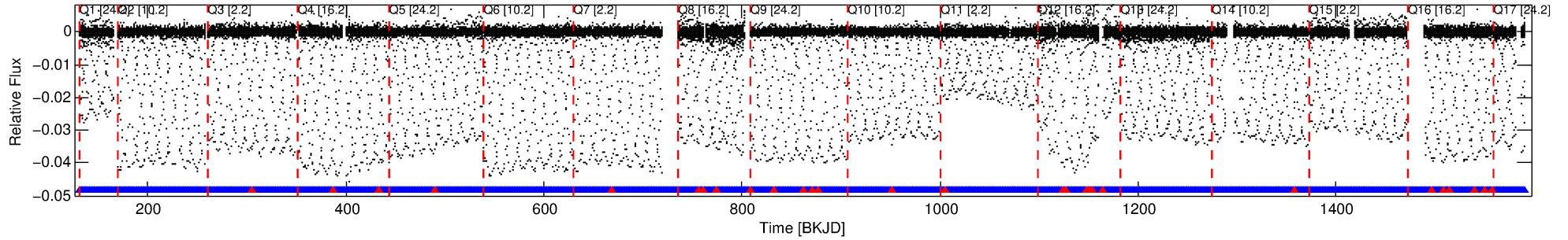
Ephemeris Match Information For 008971432-02

No Significant Match Found

DV One-Page Summary

KIC: 8971432 Candidate: 2 of 2 Period: 0.624 d
KOI: K01384.01 Corr: 0.878

Kp: 15.49 R*: 0.62 Rs Teff: 5211.0 K Logg: 4.64 Fe/H: -1.100



TPS TCE Results:

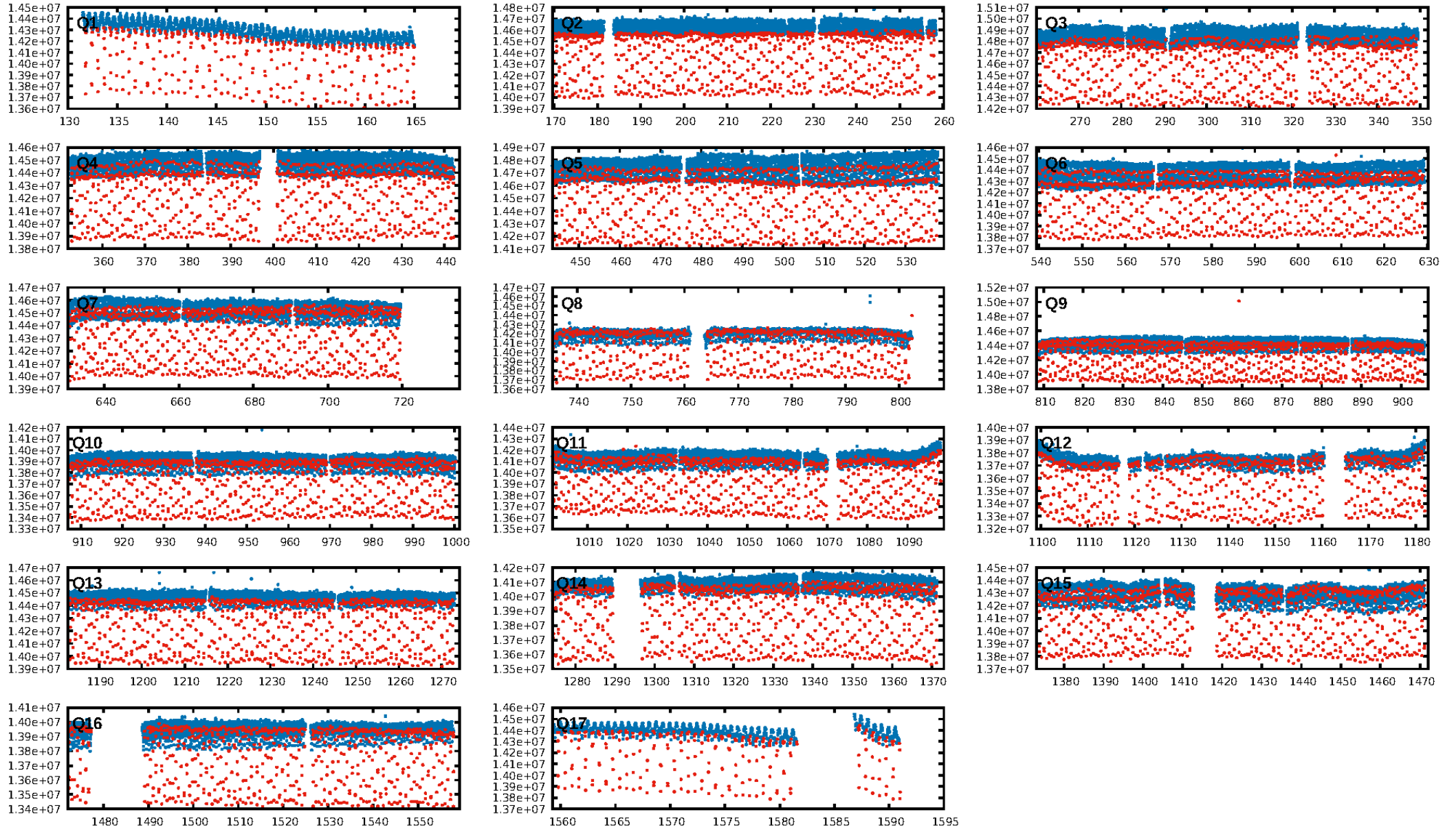
Period = 0.62439 d
Epoch = 131.7922 BKJD

DV fit results are unavailable

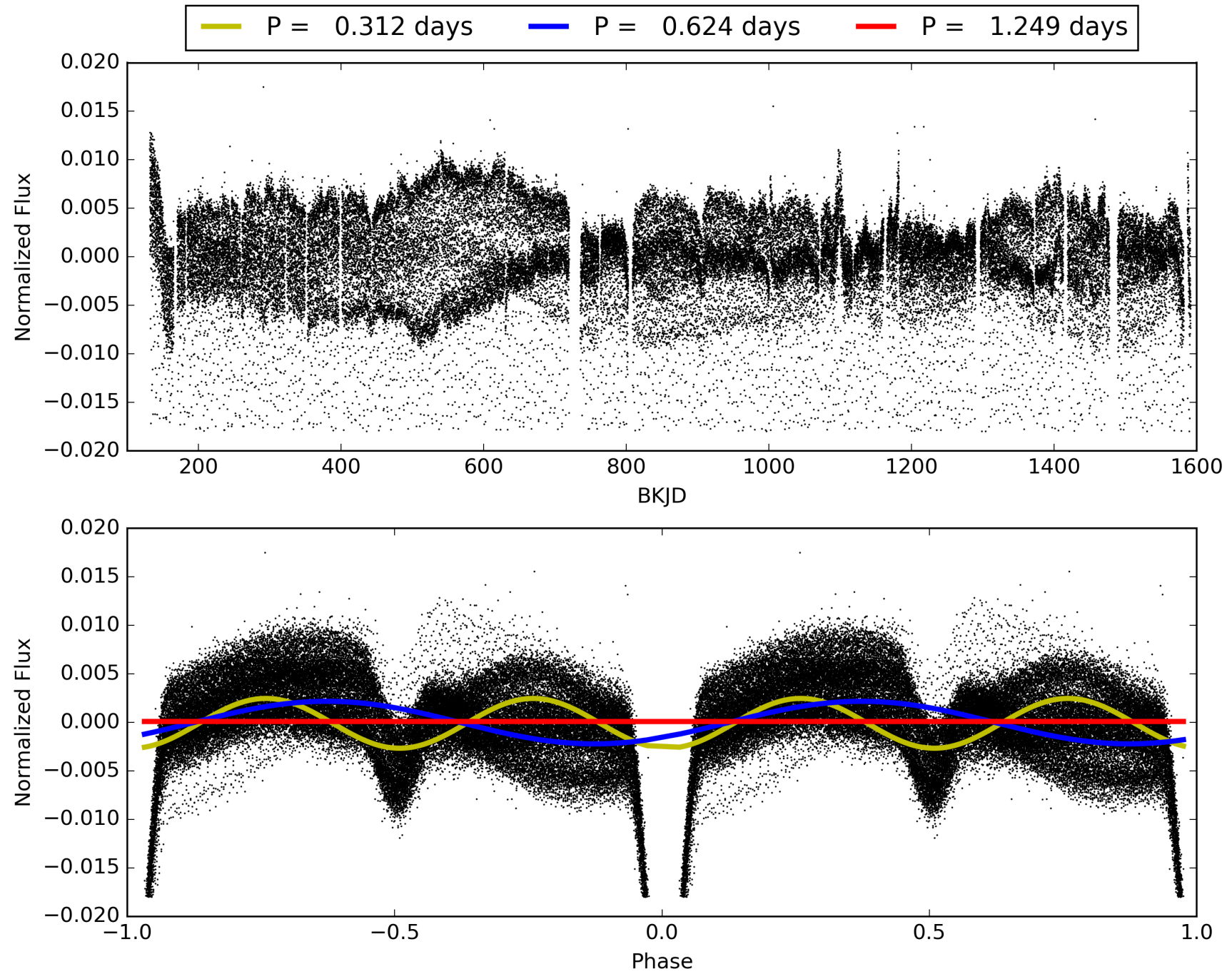
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [7.25σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [992/1020]
GhostDiagnostic-chr: 3.675
Centroid-sig: 0.0%
Centroid-so: 0.550 arcsec [111.33σ]
OotOffset-rm: 0.091 arcsec [1.35σ]
KicOffset-rm: 0.095 arcsec [1.39σ]
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 008971432-02, PDC Light Curves

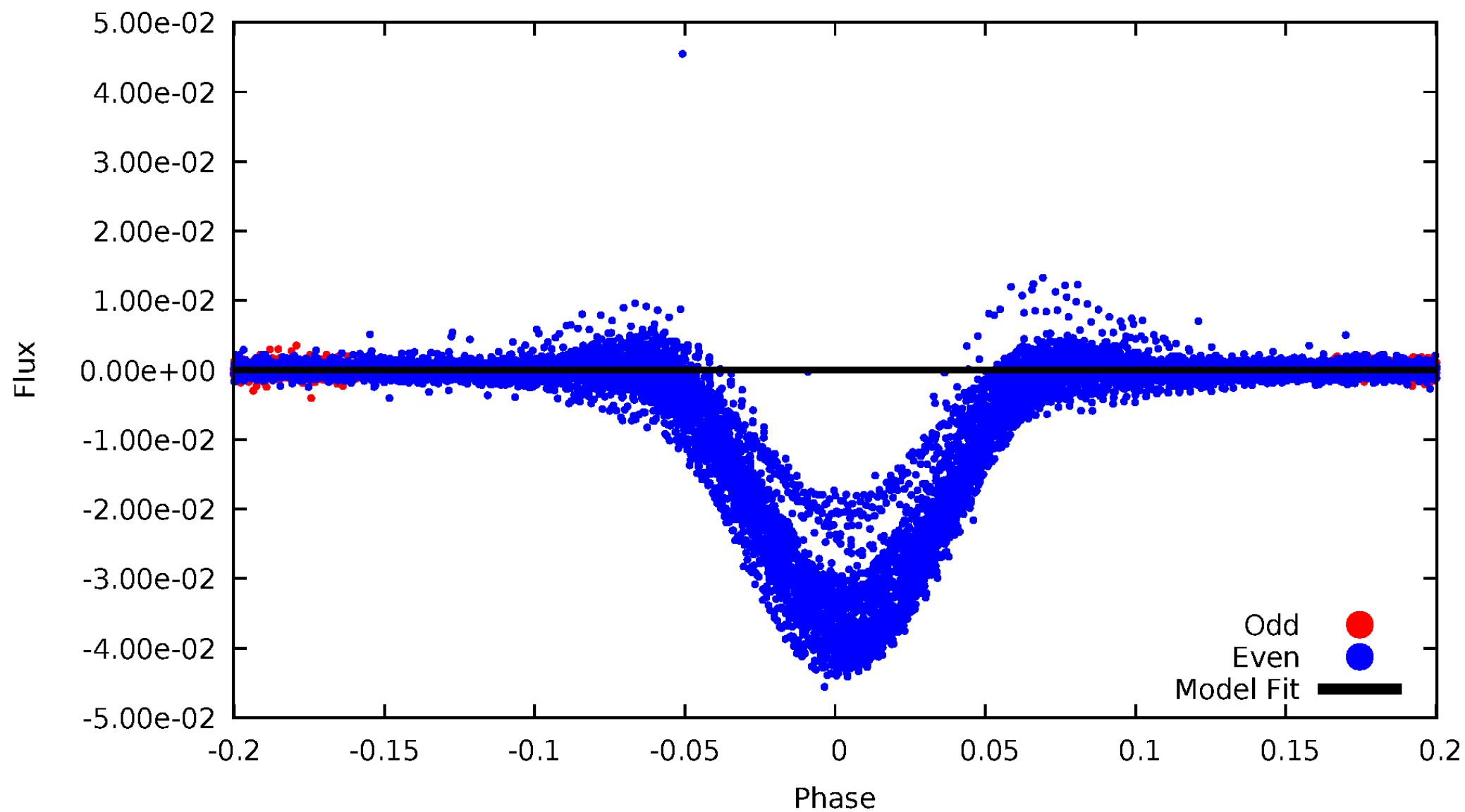


TCE 008971432-02



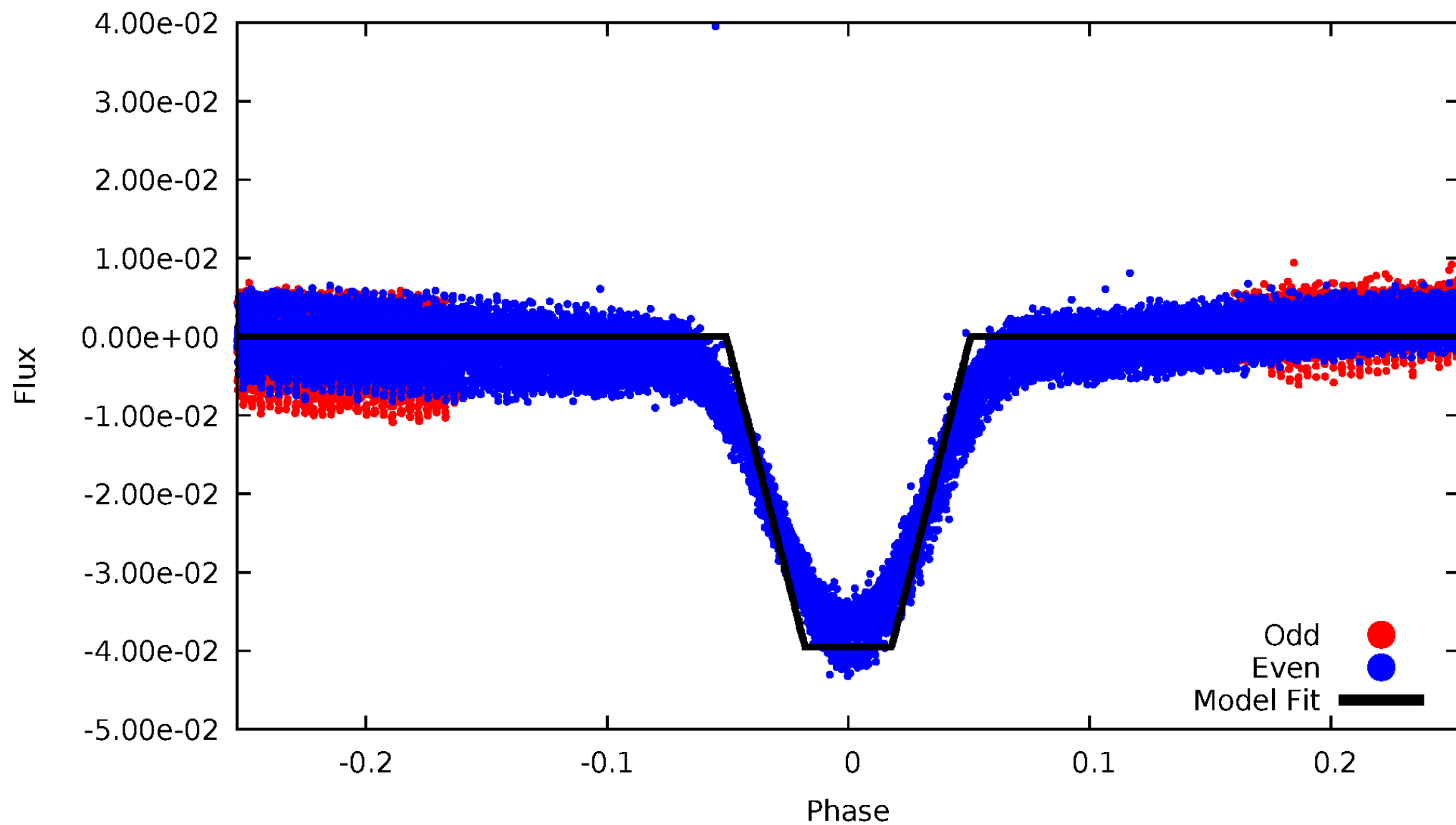
DV Odd/Even

TCE 008971432-02



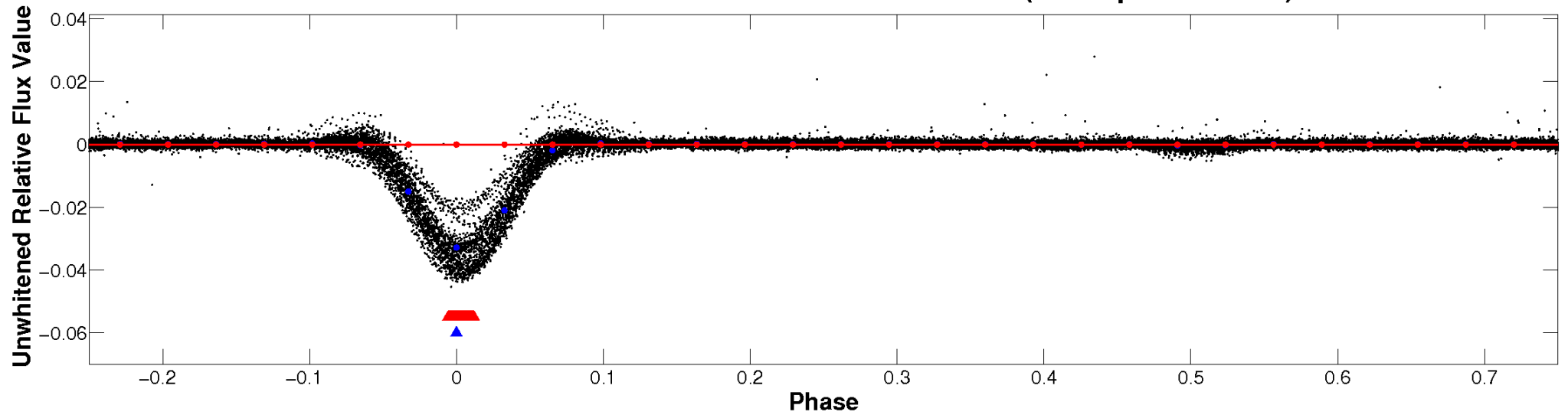
ALT Odd/Even

TCE 008971432-02

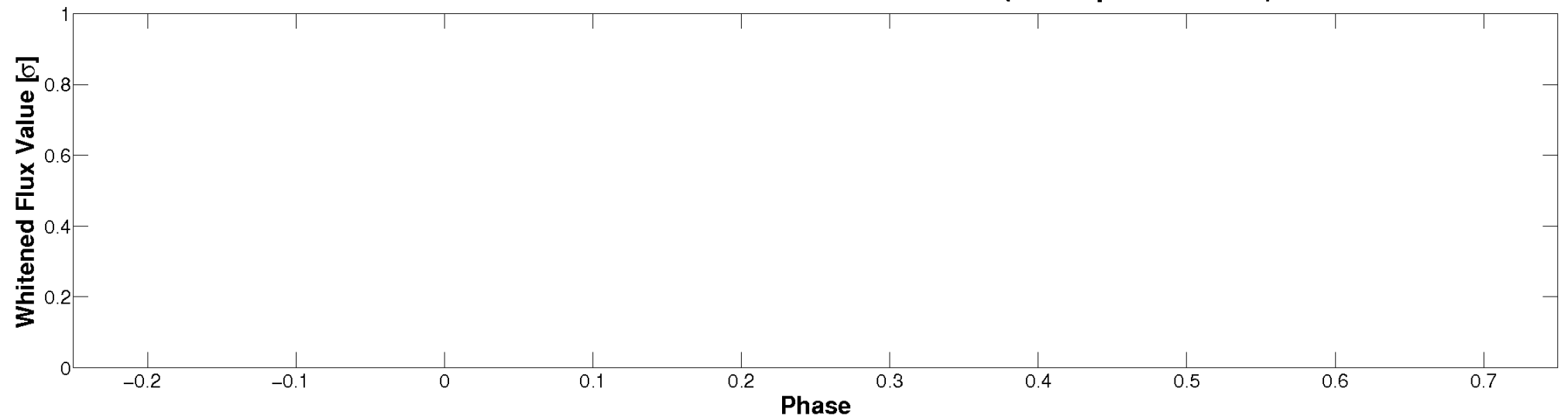


Non-Whitened Vs. Whitened Light Curve

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

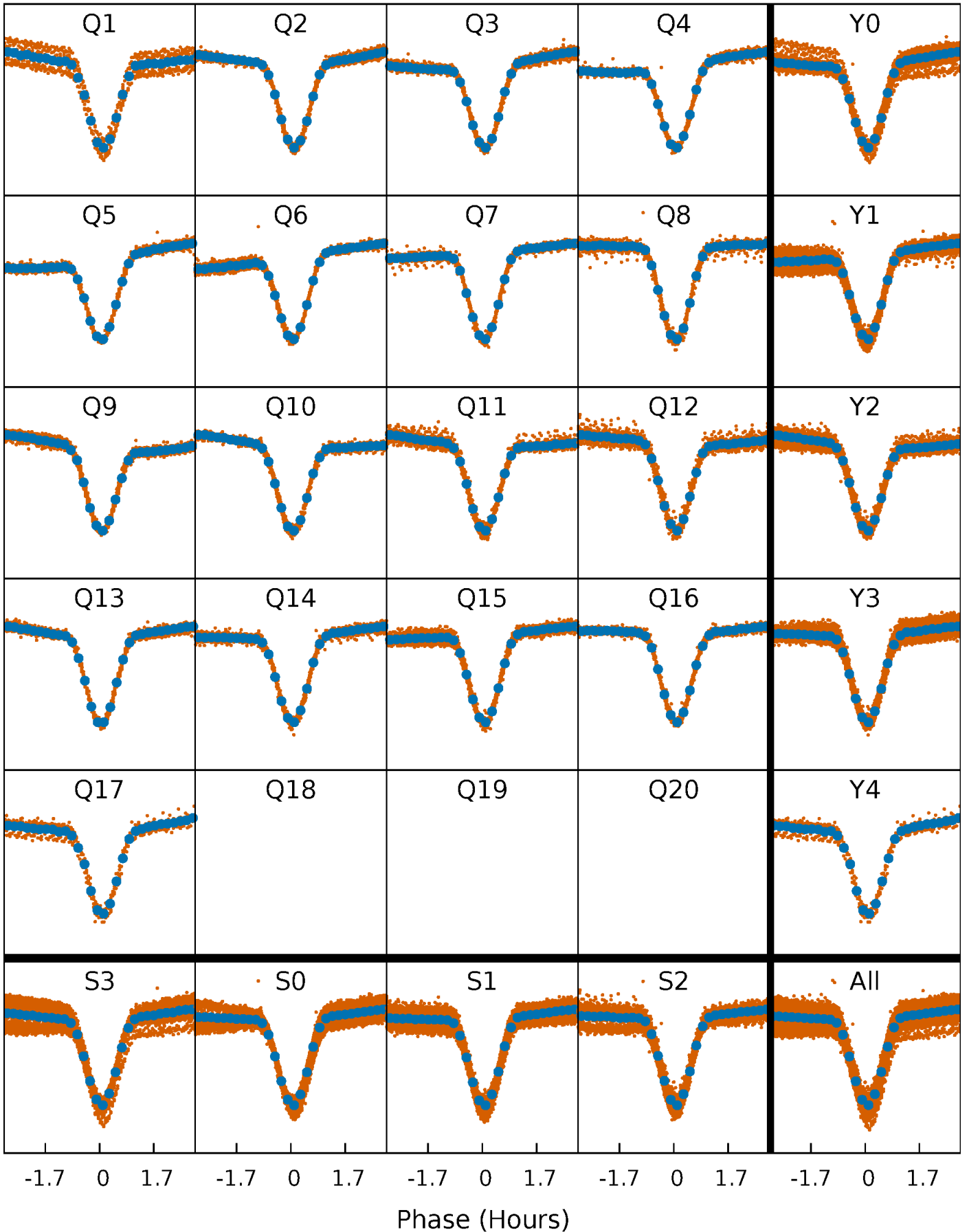


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



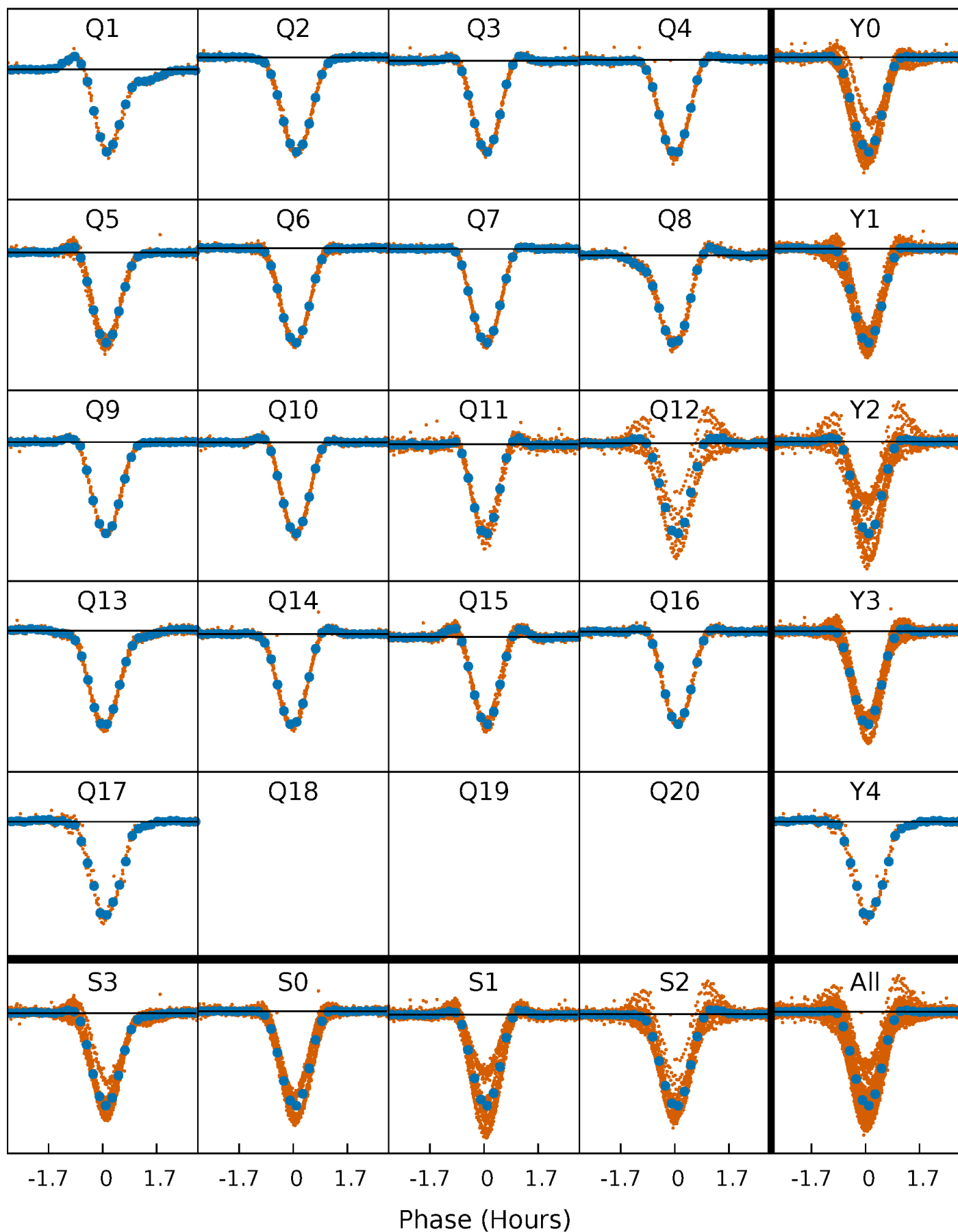
PDC Quarter-Phased Transit Curves

TCE 008971432-02 P= 0.624388 Days $T_0=131.792244$ (BKJD)



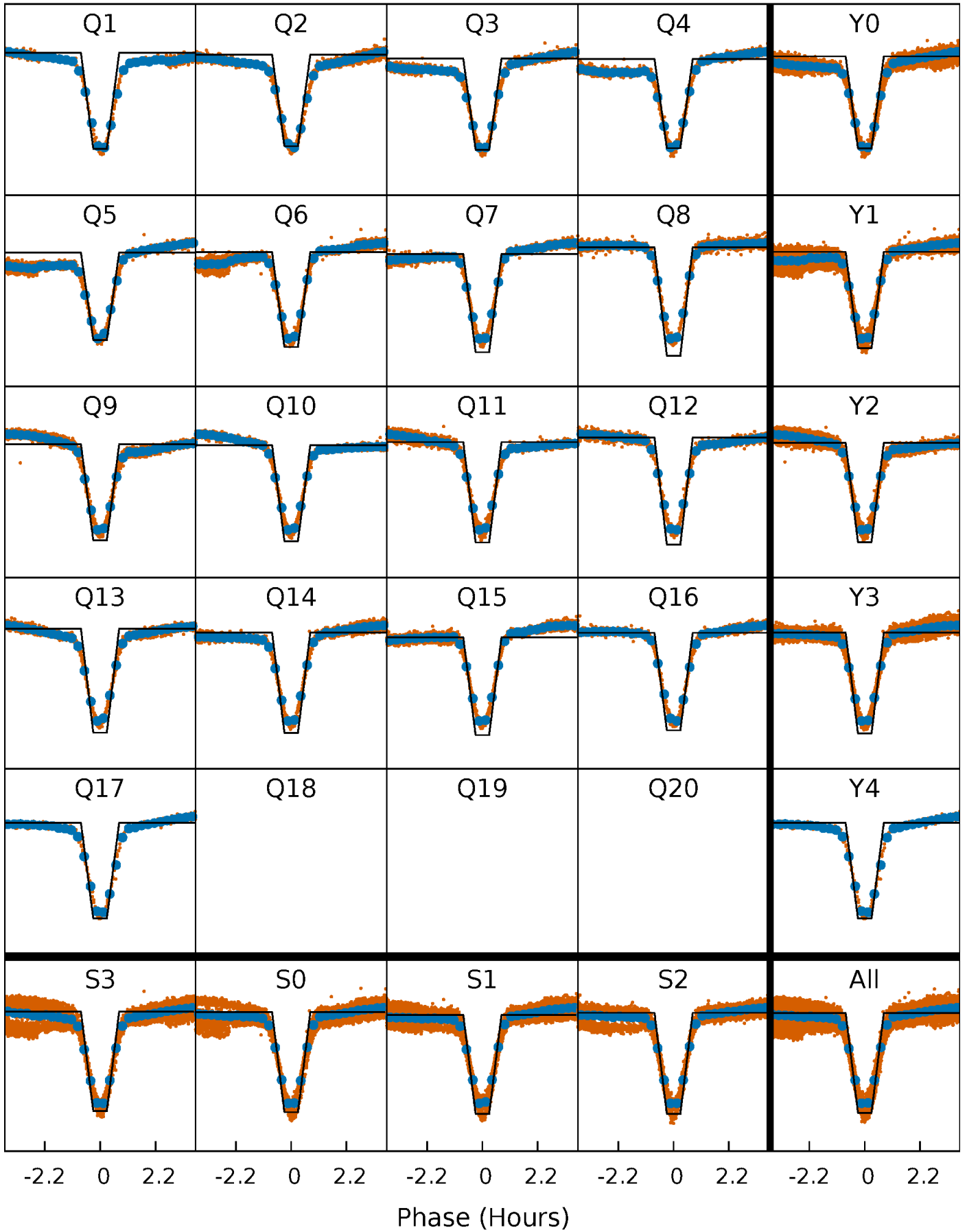
DV Quarter-Phased Transit Curves

TCE 008971432-02 P= 0.624388 Days $T_0=131.792244$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

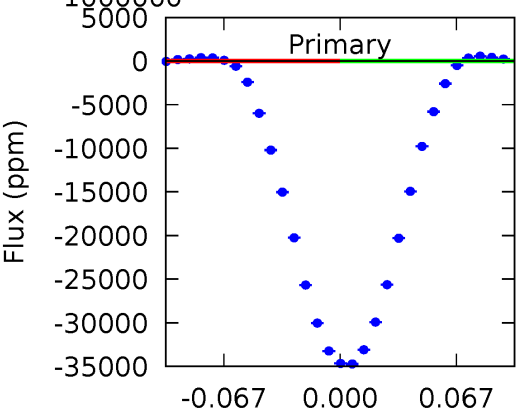
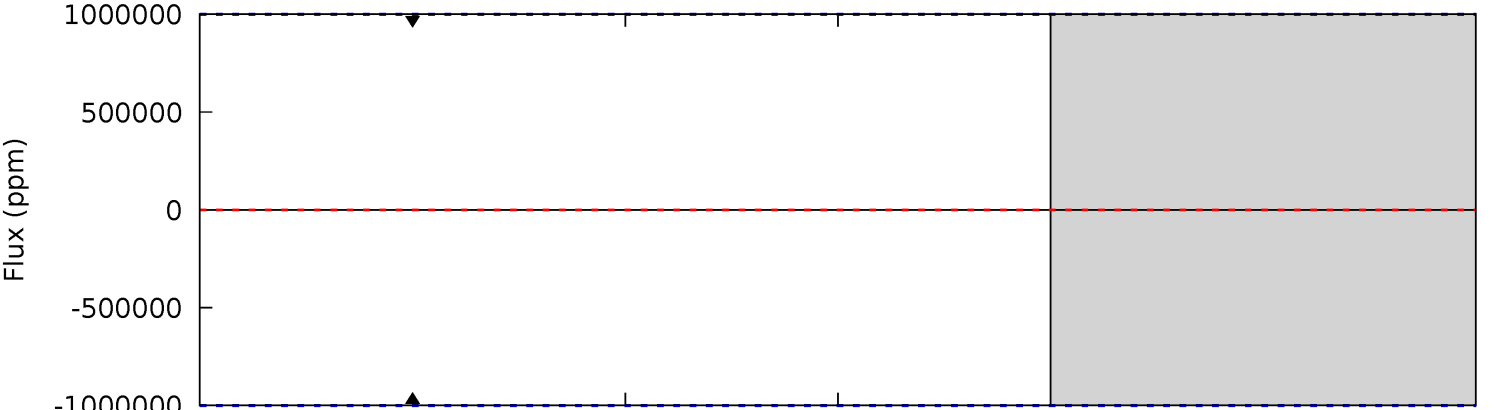
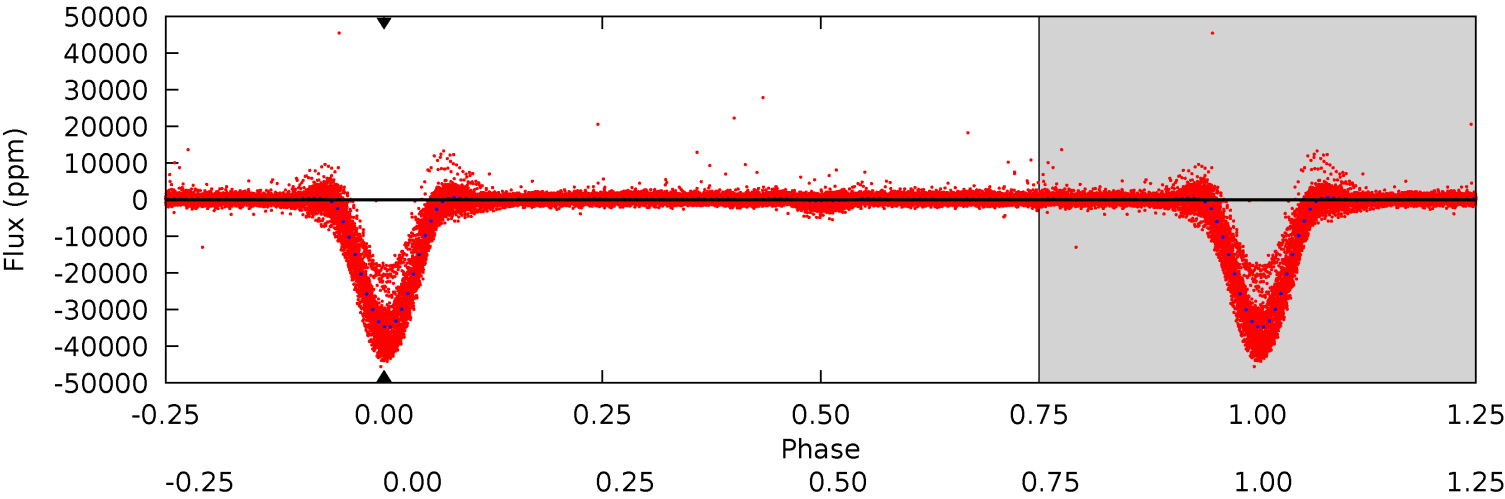
TCE 008971432-02 $P = 0.624388$ Days $T_0 = 131.794909$ (BKJD)



DV Model-Shift Uniqueness Test

008971432-02, P = 0.624388 Days, E = 131.167856 Days

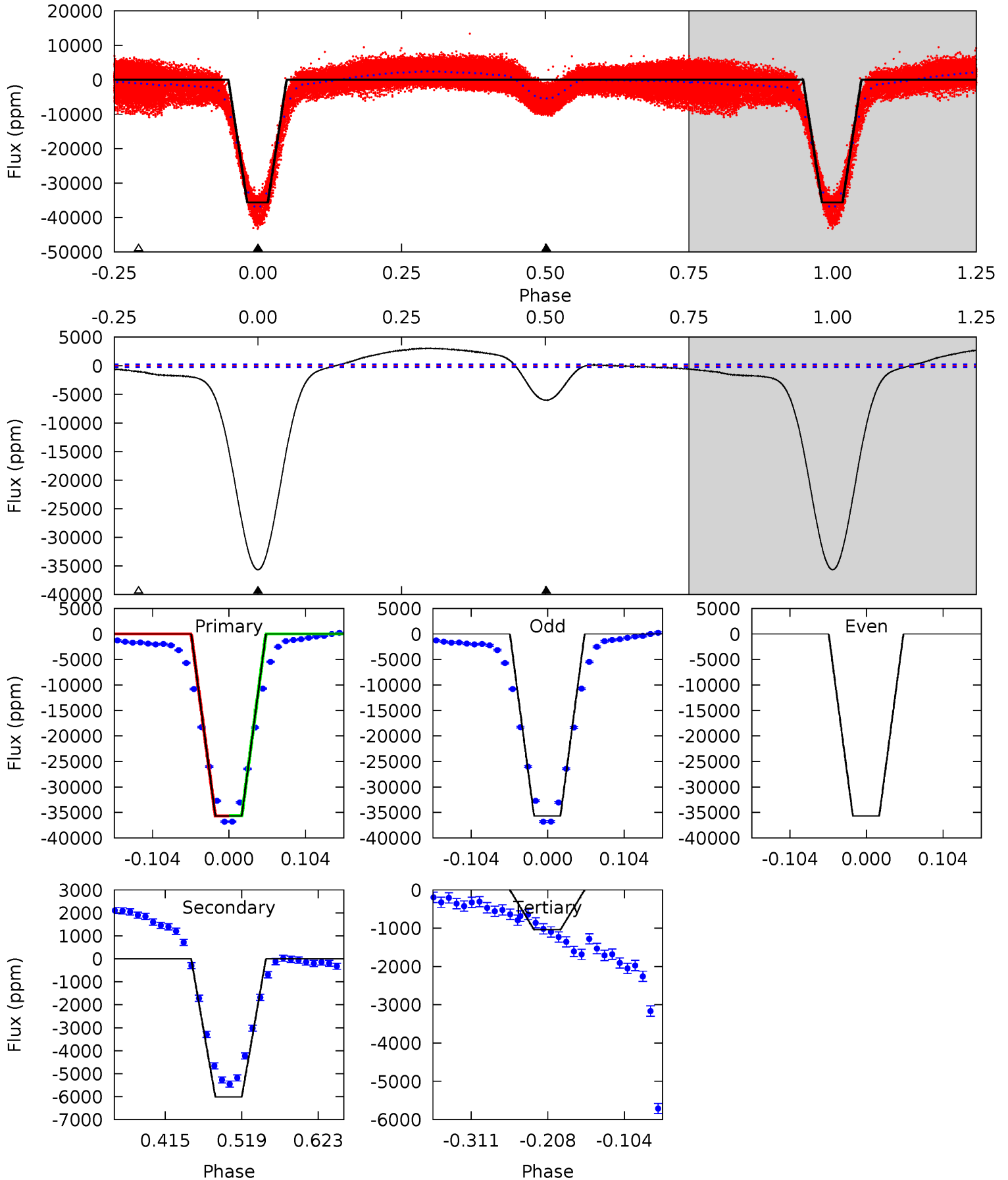
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

008971432-02, P = 0.624388 Days, E = 131.170521 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
692.5	116.8	20.2	0	4.56	1.63	32.0	672.3	692.5	96.6	116.8	0	1.01	0.08	0.51



Stellar Parameters For KIC 008971432

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5211^{+156}_{-172}	$4.644^{+0.066}_{-0.039}$	$-1.100^{+0.300}_{-0.300}$	$0.618^{+0.043}_{-0.043}$	$0.612^{+0.053}_{-0.023}$	$3.661^{+0.904}_{-0.501}$
	+3%/-3%	+1%/-1%	+27%/-27%	+7%/-7%	+9%/-4%	+25%/-14%
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 008971432-02 / KOI 1384.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$13.08^{+6.61}_{-6.22}$	2274^{+82}_{-88}	2664^{+4525}_{-9521}	$0.666^{+69.620}_{-55.317}$
Alt.	-6014 ± 51	$13.34^{+6.86}_{-6.11}$	2278^{+81}_{-86}	3588^{+924}_{-509}	$2.750^{+6.753}_{-1.530}$

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

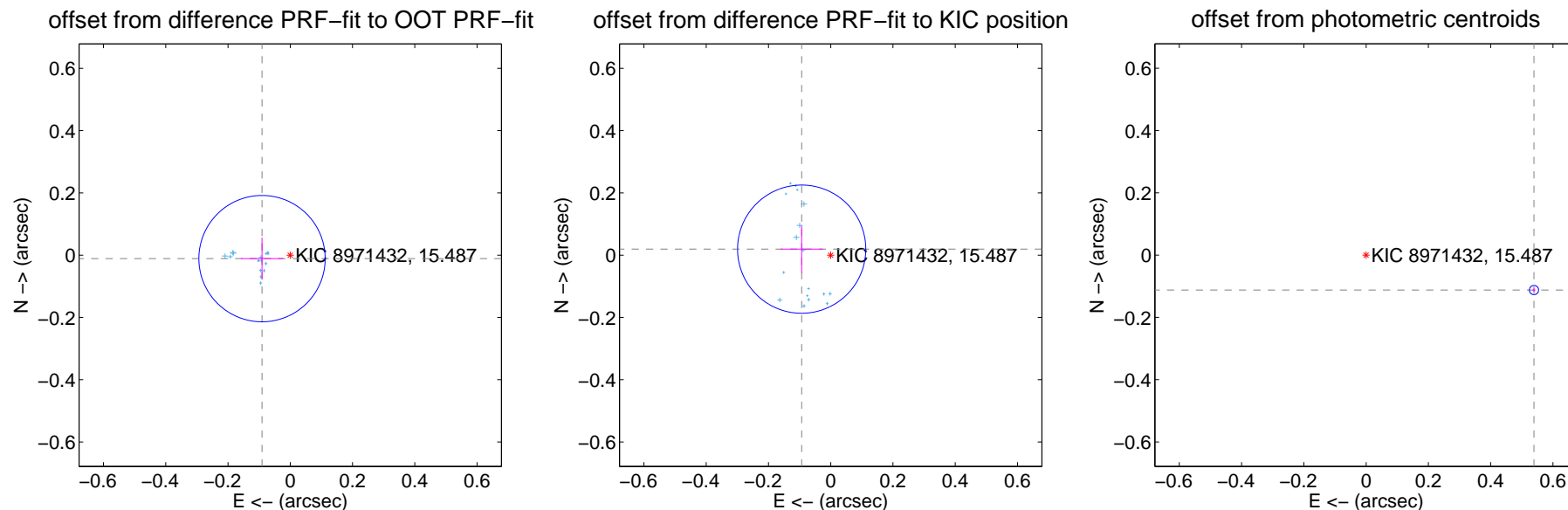
DV Centroid Data

Supplemental centroid analysis for 008971432-02. Kepler magnitude: 15.49. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

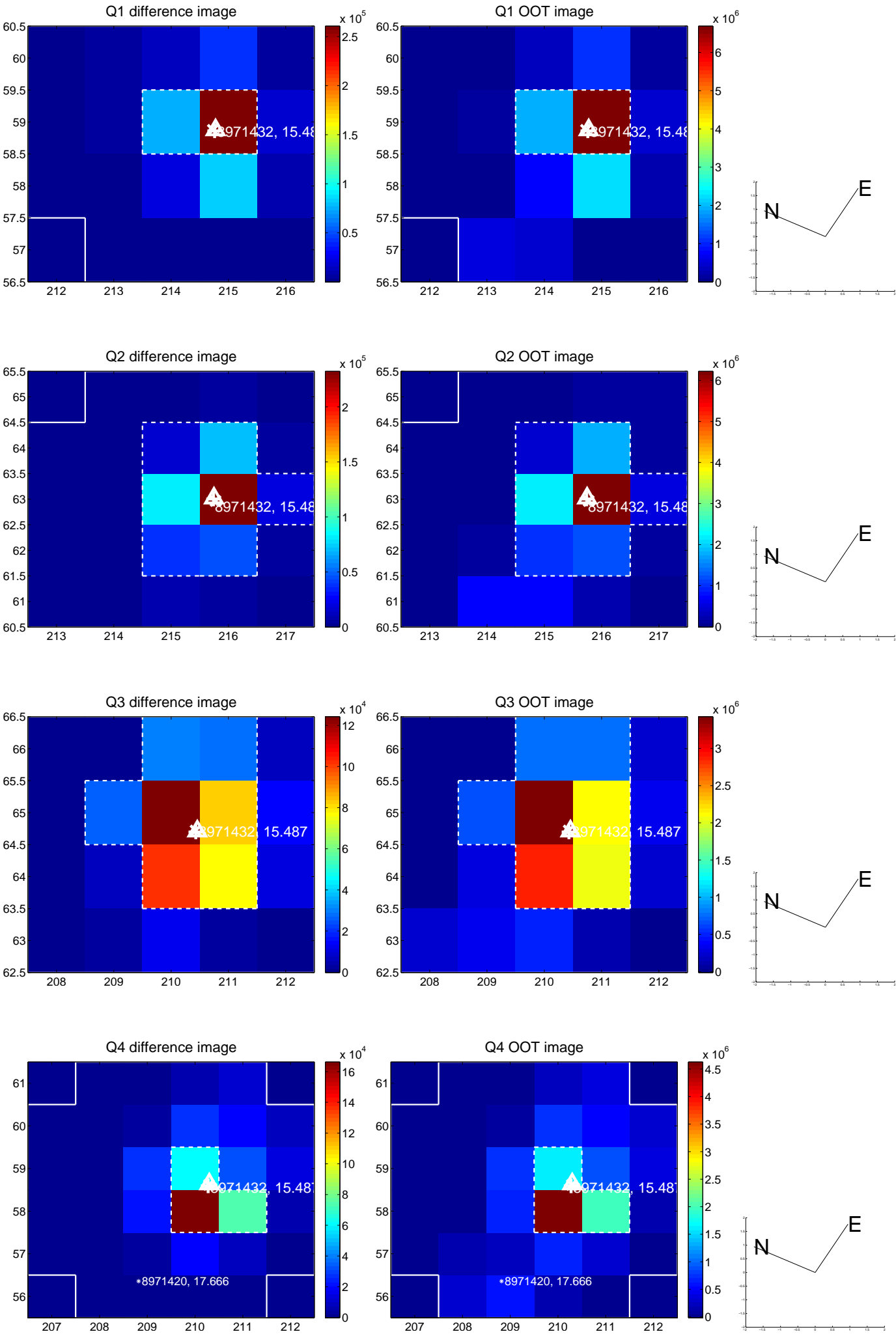
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.091 ± 0.068	1.35	0.091 ± 0.068	-0.011 ± 0.067
PRF-fit source offset from KIC position	0.095 ± 0.069	1.39	0.093 ± 0.068	0.019 ± 0.076
photometric centroid source offset	0.55 ± 0.00	111.33	-0.54 ± 0.00	-0.11 ± 0.01

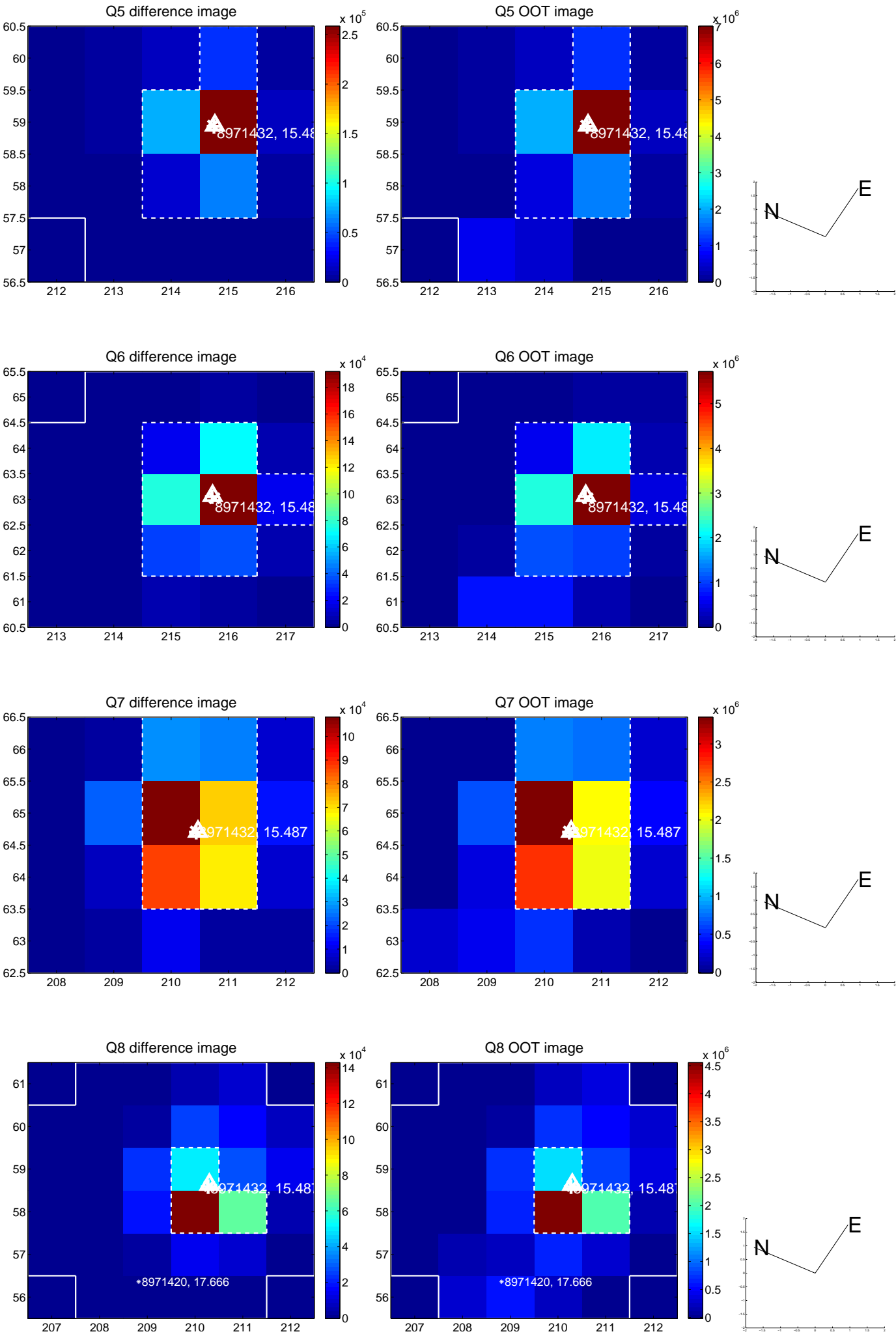


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

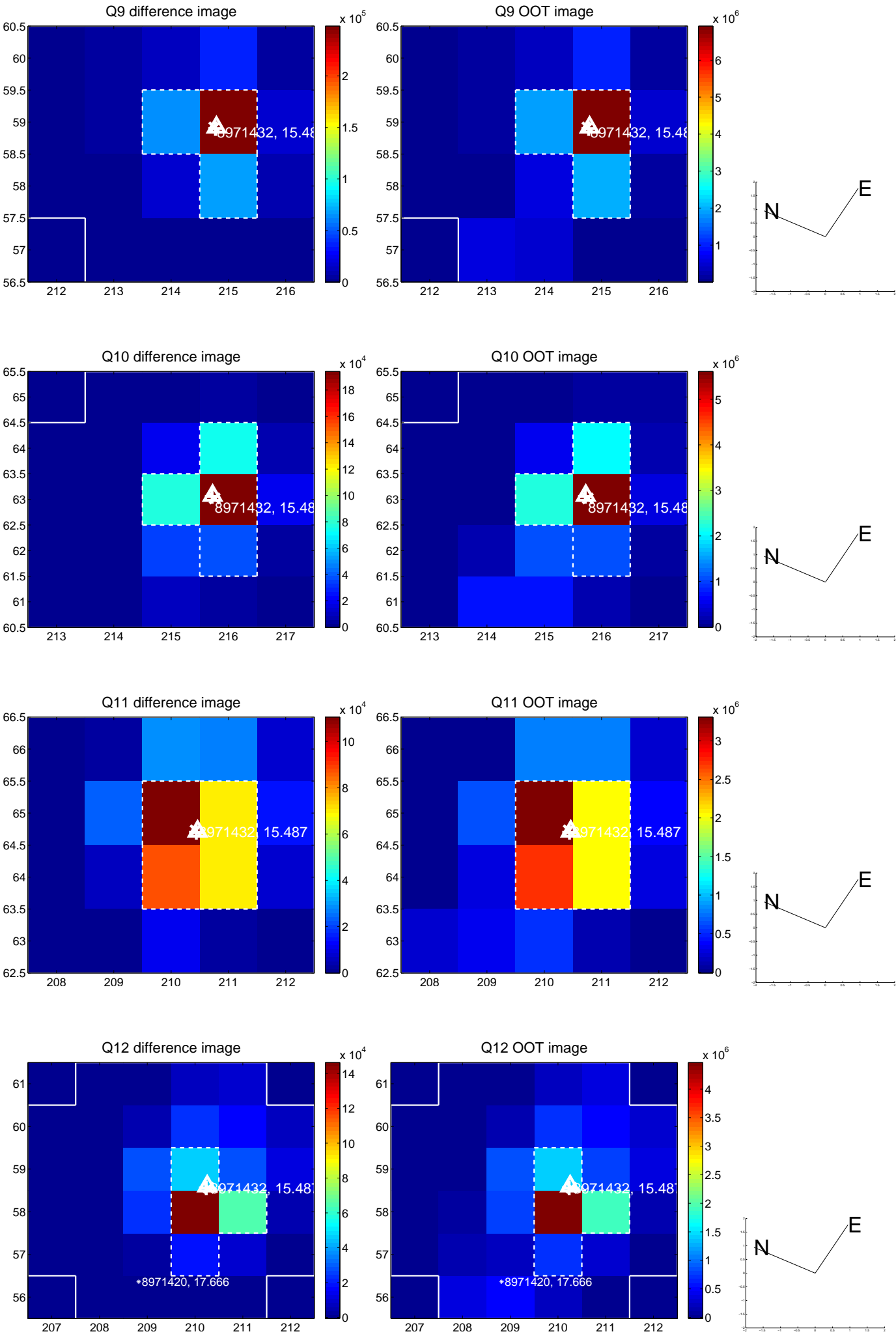
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



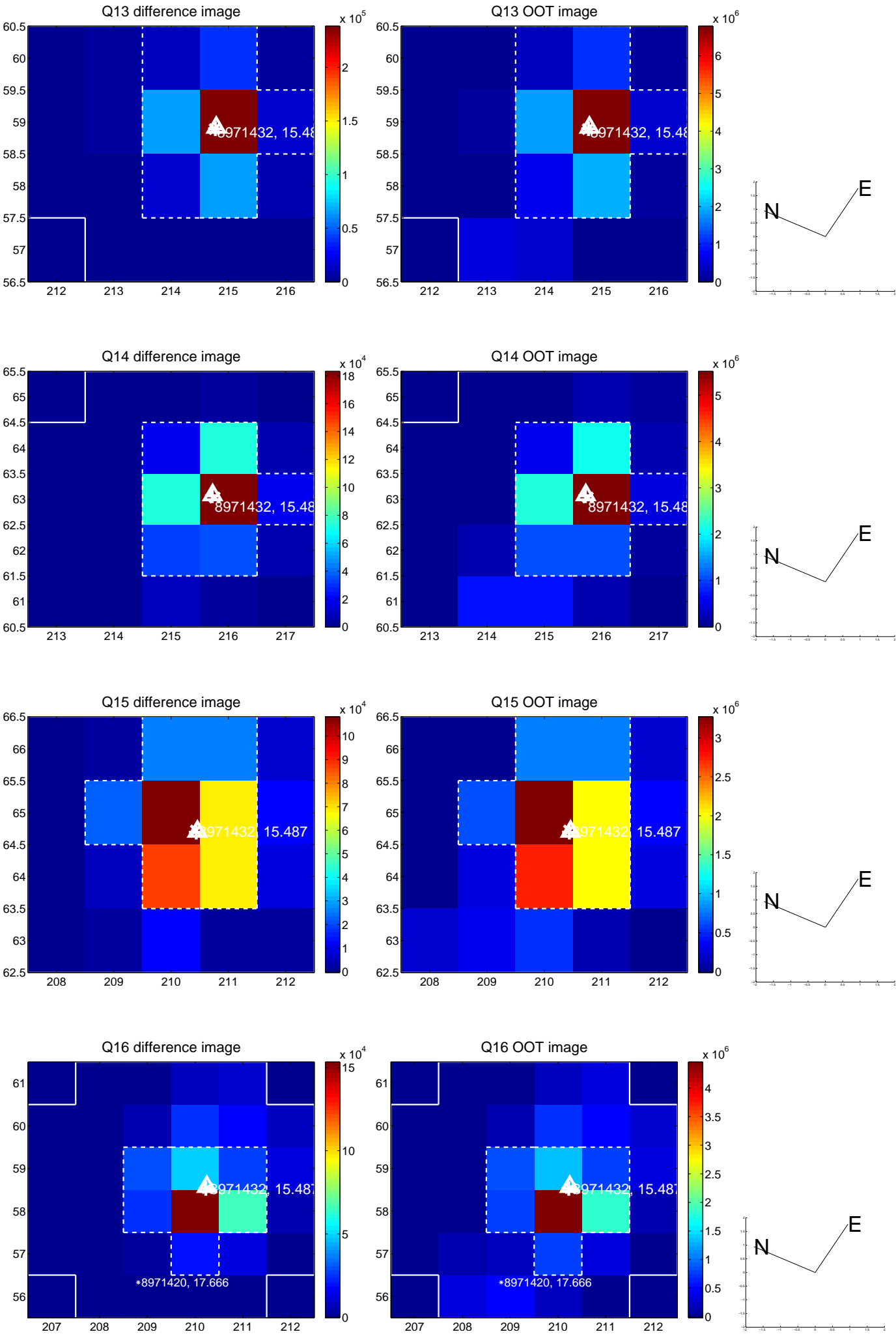
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



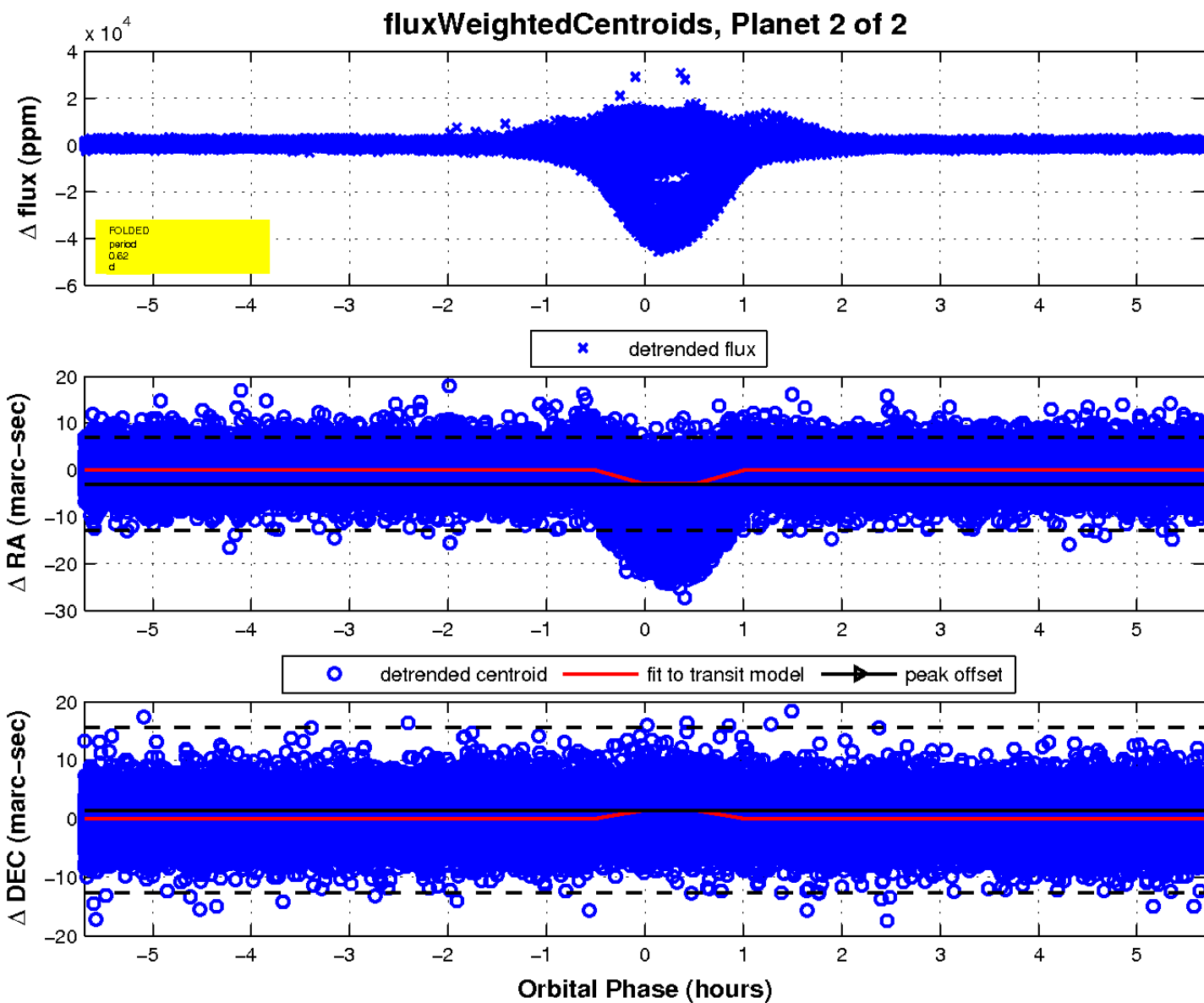
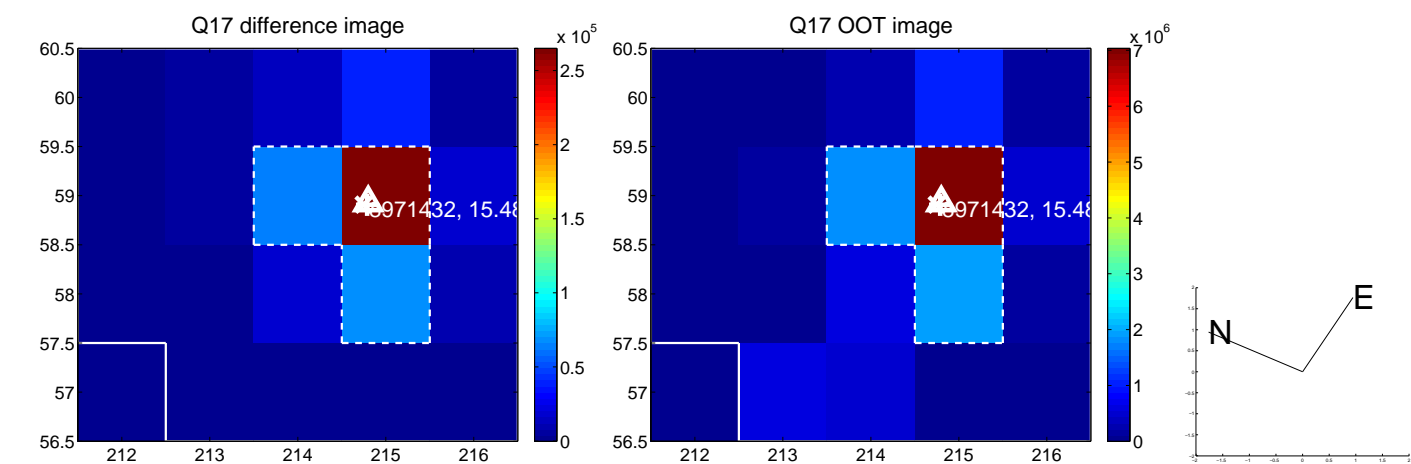
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

