

KIC 011774991

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})
011774991-01	OBS	2173.01	37.815588	141.102834	249.2	4.589	19.4	21.1	0.70	4856	1.27	6.10
011774991-02	OBS	2173.02	53.578415	171.183080	289.8	5.273	18.6	19.9	0.70	4856	1.20	3.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011774991-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
011774991-02	OBS	FP	0.00	0	0	1	0	CENT_KIC_POS—HALO_GHOST

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

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

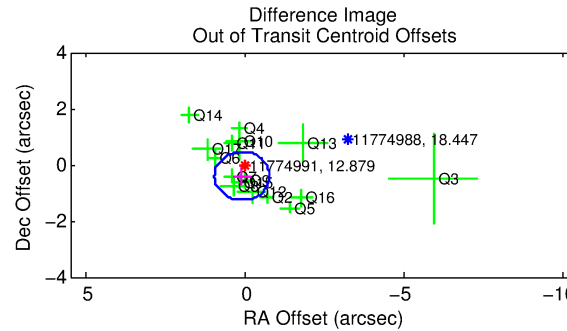
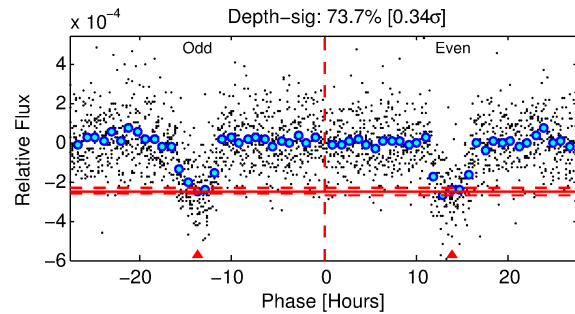
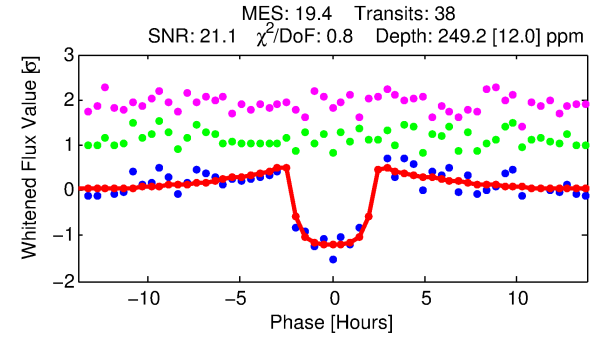
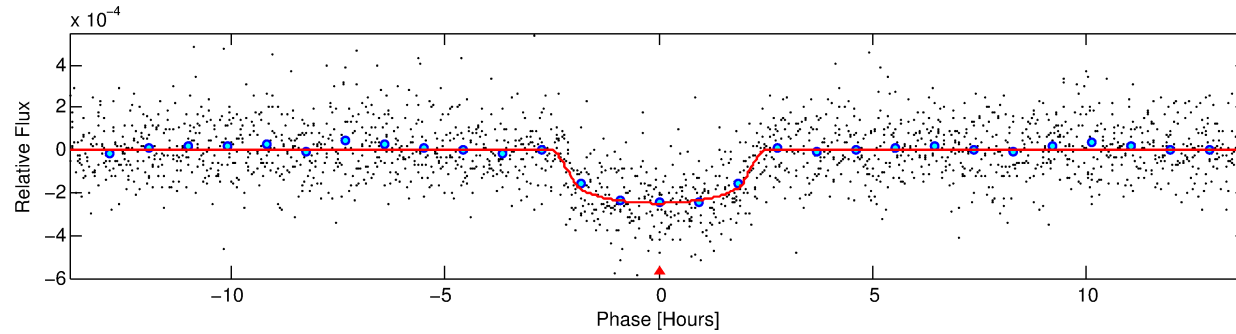
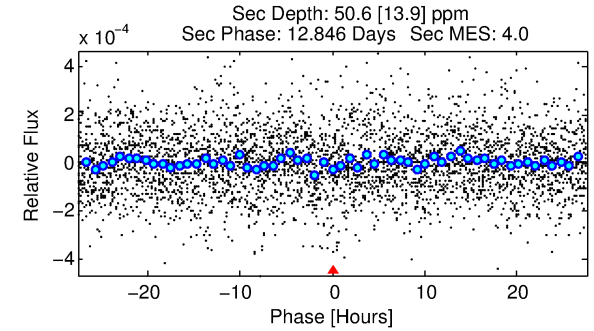
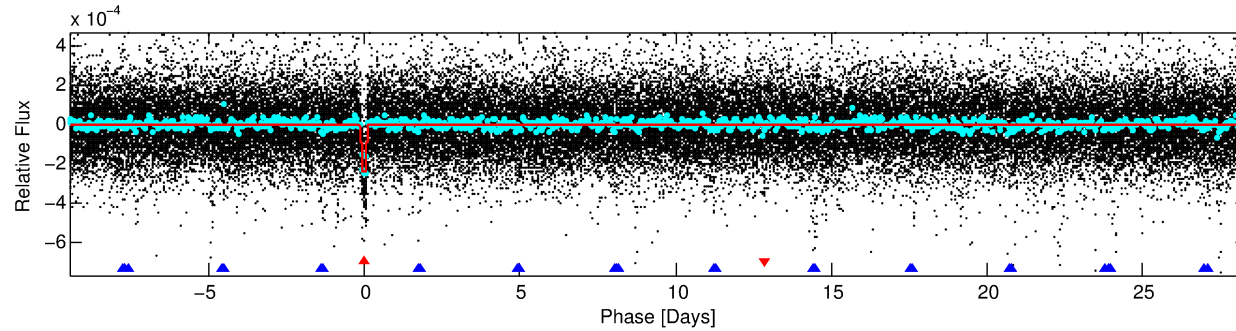
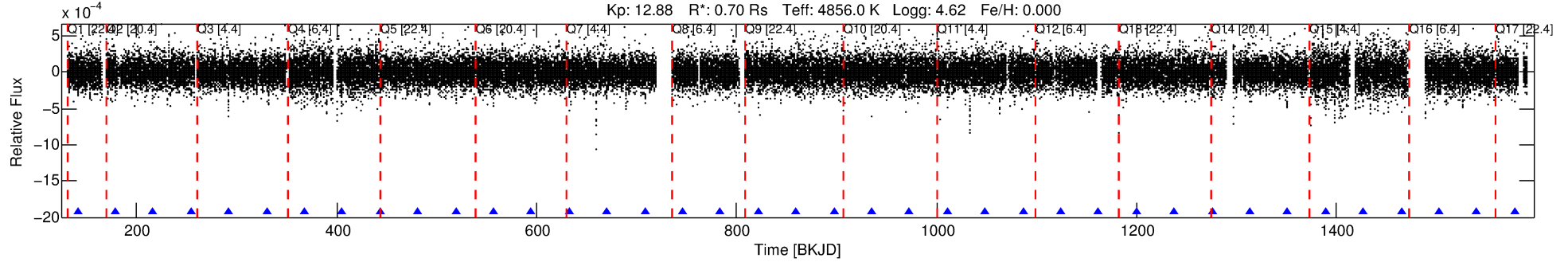
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011774991-01

No Significant Match Found

DV One-Page Summary

KIC: 11774991 Candidate: 1 of 2 Period: 37.816 d
KOI: K02173.01 Name: Kepler-367b Corr: 0.986



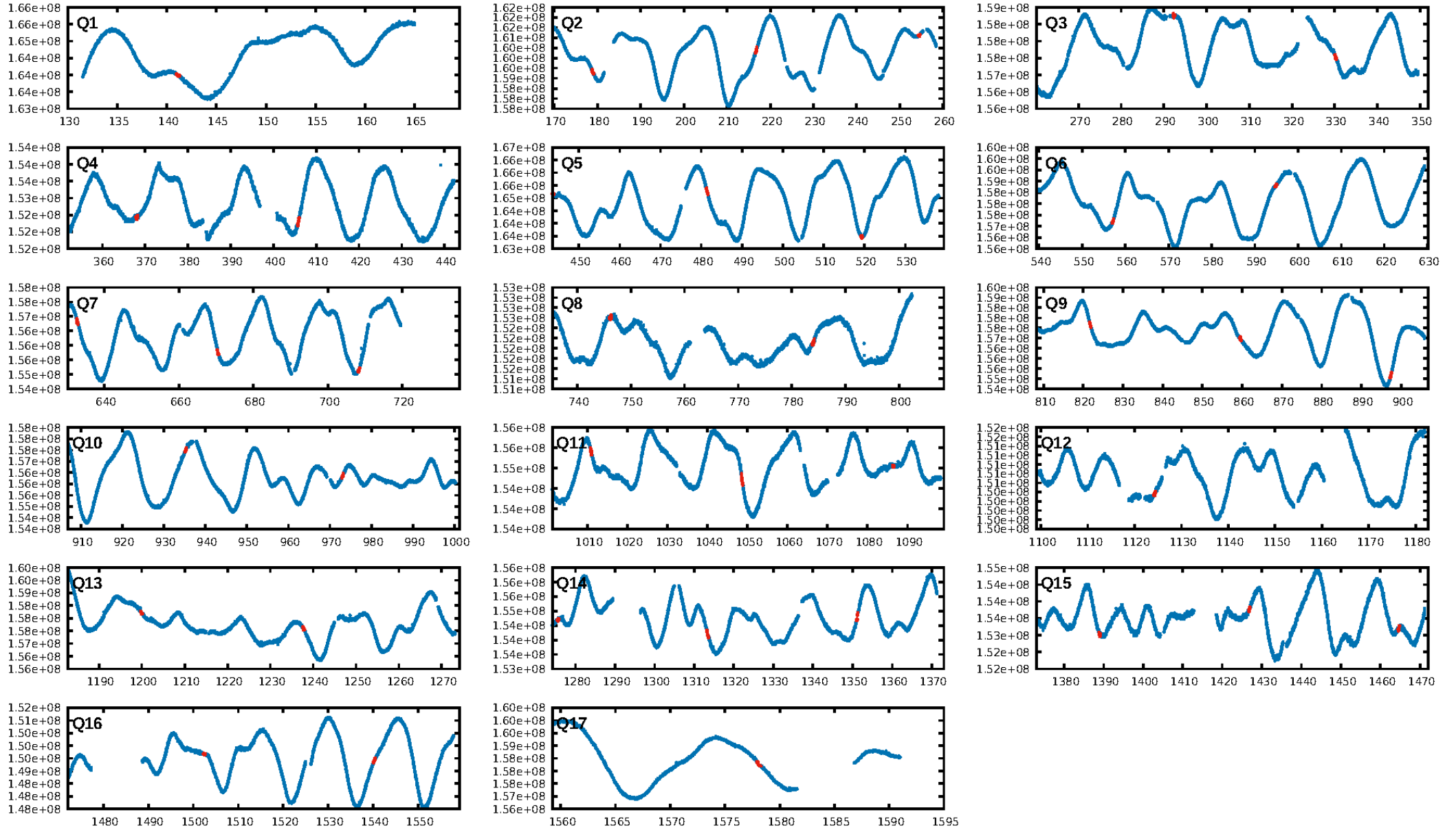
DV Fit Results:

Period = 37.81559 [0.00016] d
Epoch = 141.1028 [0.0033] BKJD
Rp/R* = 0.0165 [0.0045]
a/R* = 37.59 [36.51]
b = 0.82 [0.39]
Seff = 6.10 [0.75]
Teq = 401 [12] K
Rp = 1.27 [0.35] Re
a = 0.2015 [0.0119] AU
Ag = 702.93 [431.14] [1.63σ]
Teffp = 3190 [489] K [5.70σ]

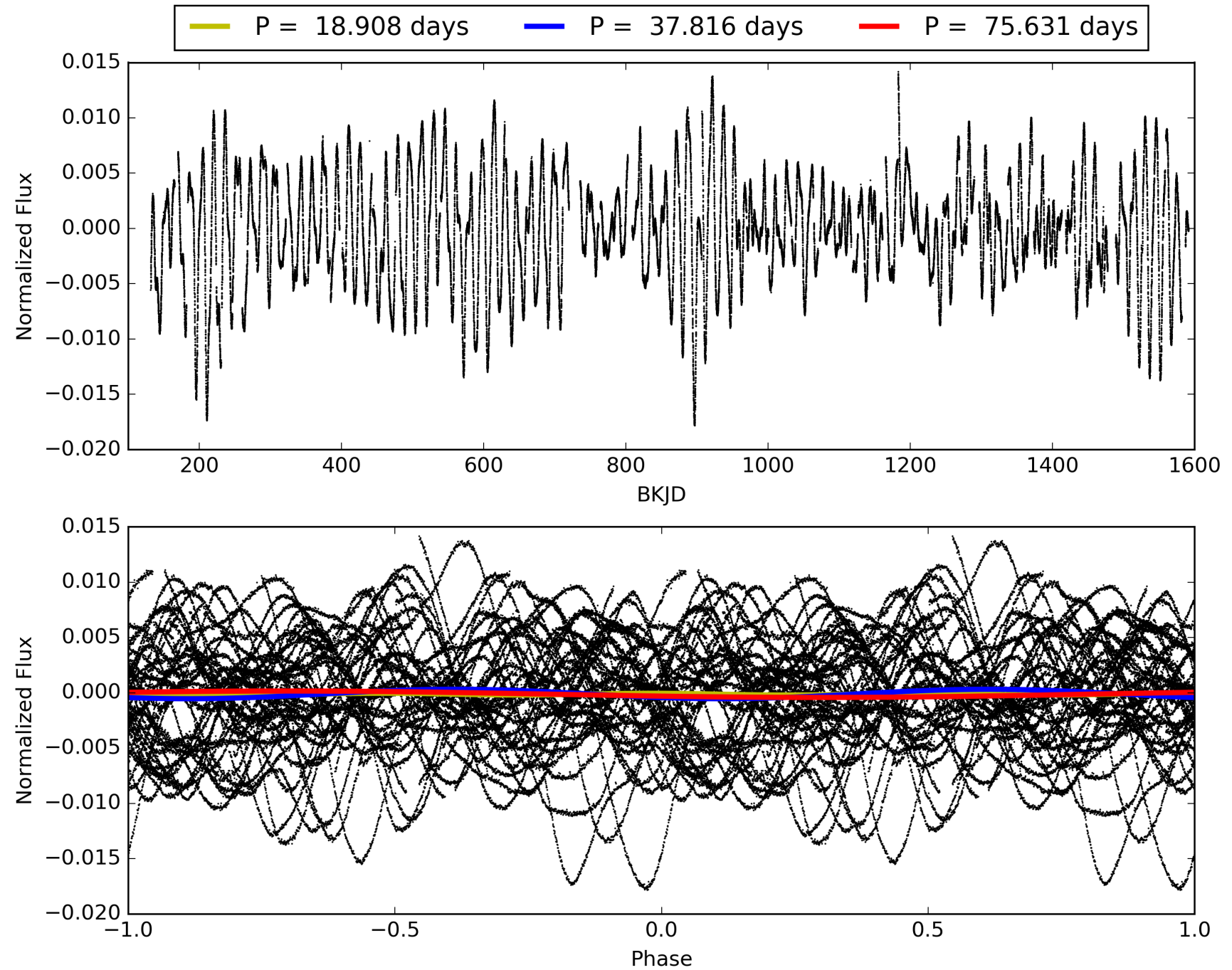
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [54.12σ]
ModelChiSquare2-sig: 95.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.03e-46
RollingBand-fgt: 1.00 [36/36]
GhostDiagnostic-chr: 0.428
Centroid-sig: 57.2%
Centroid-so: 0.571 arcsec [1.10σ]
OotOffset-rm: 0.417 arcsec [1.45σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.351 arcsec [0.76σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011774991-01, PDC Light Curves

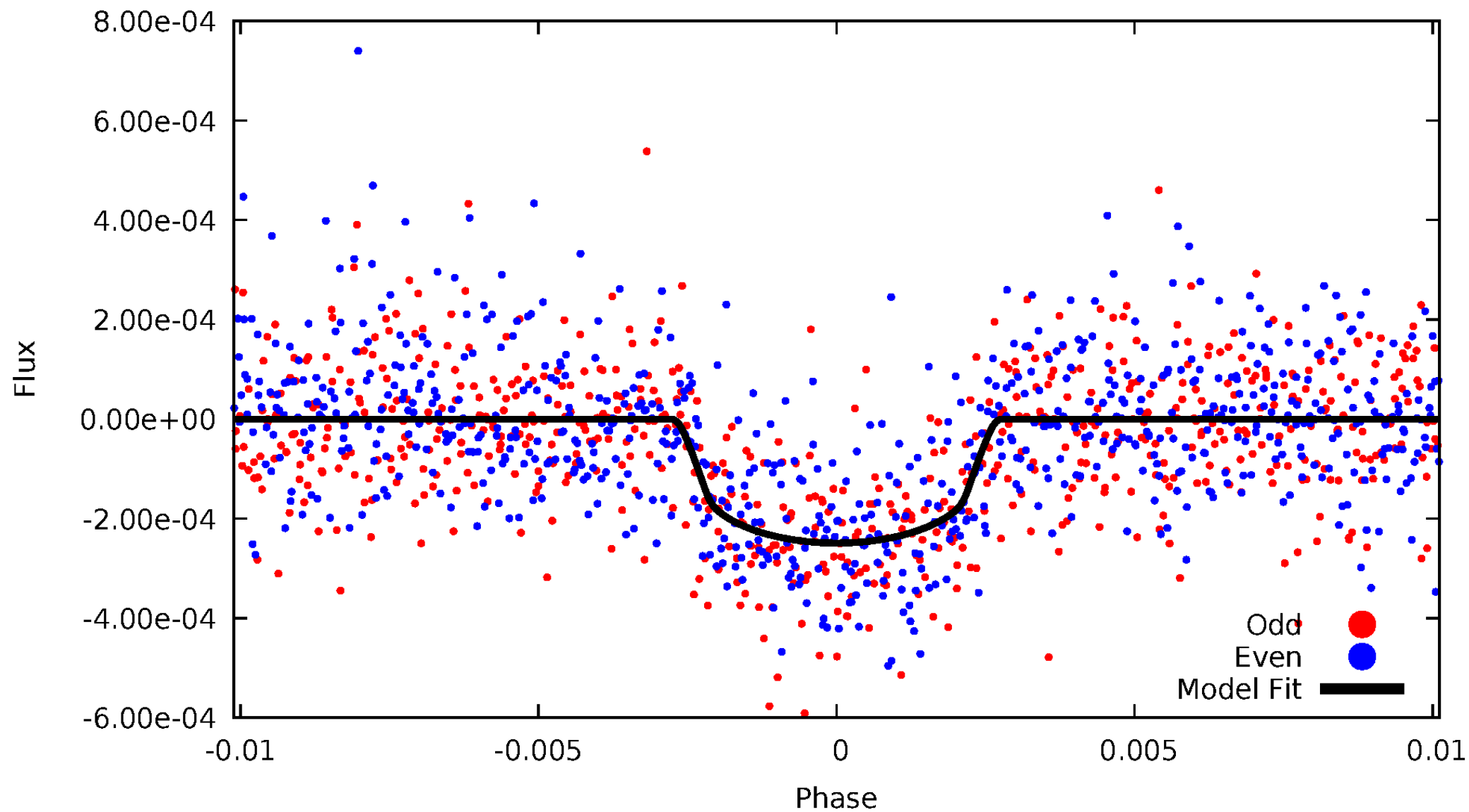


TCE 011774991-01



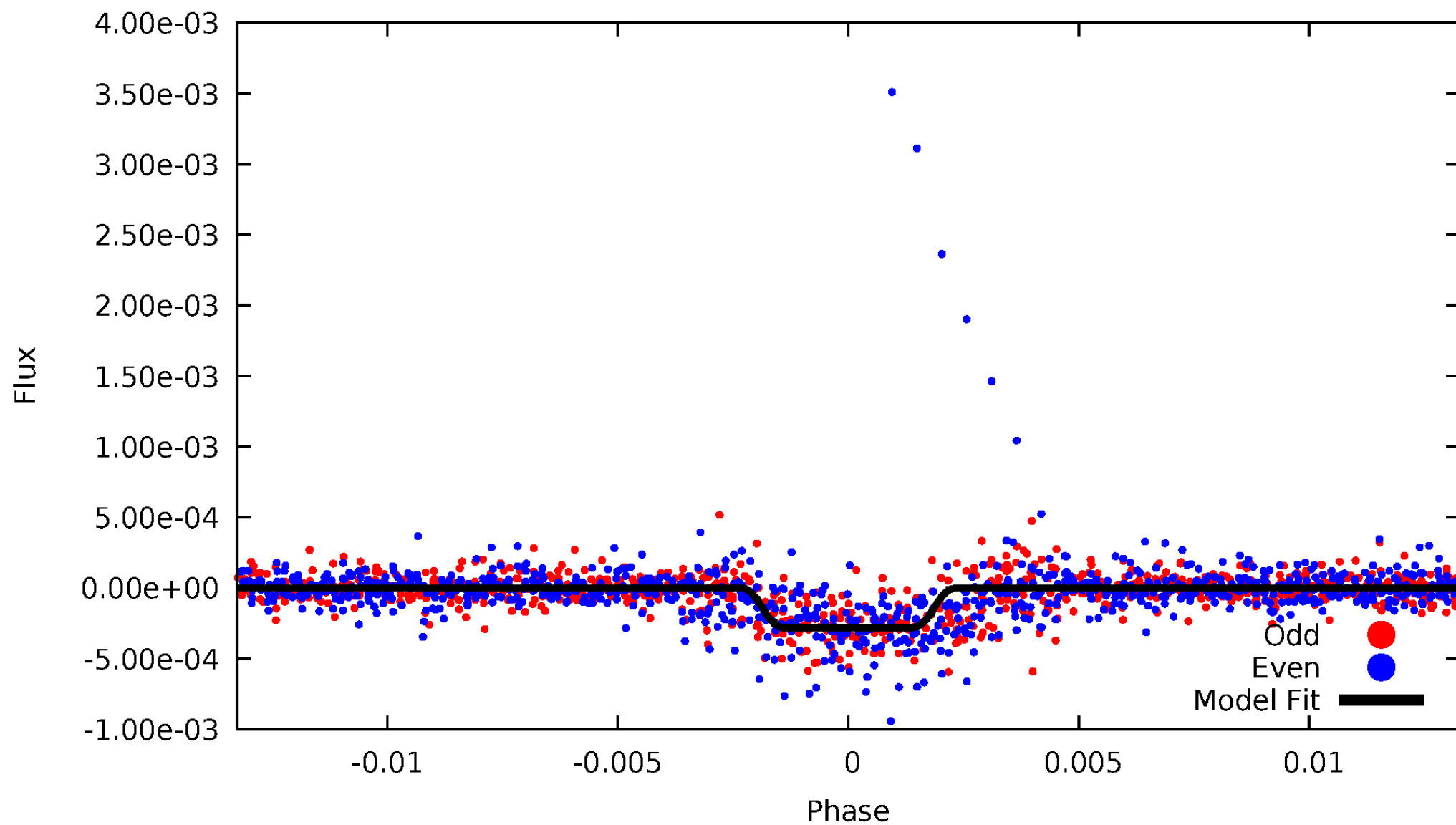
DV Odd/Even

TCE 011774991-01



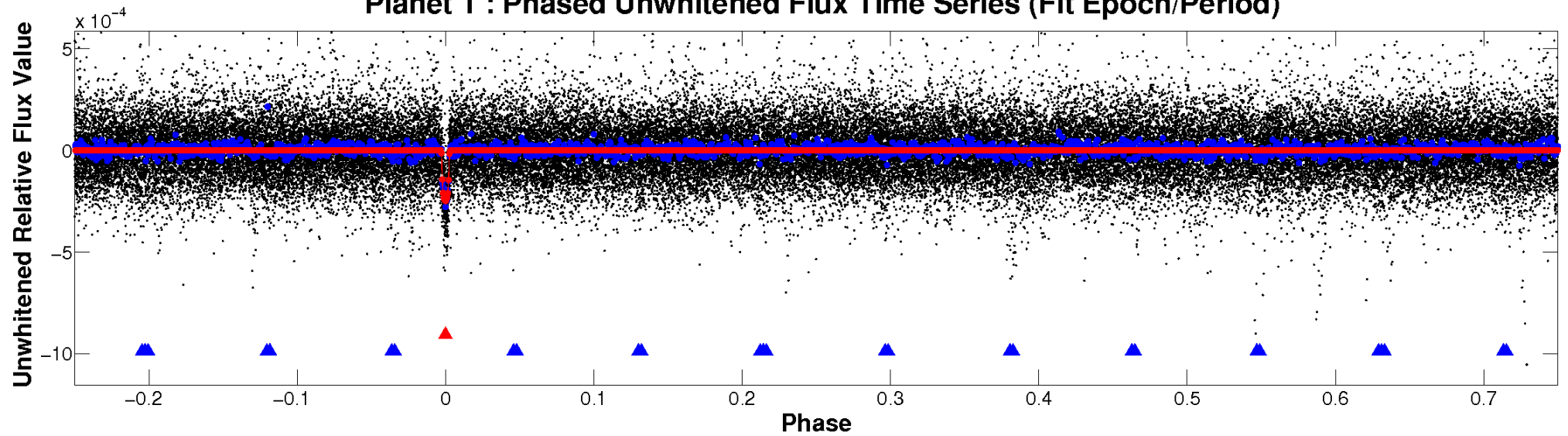
ALT Odd/Even

TCE 011774991-01

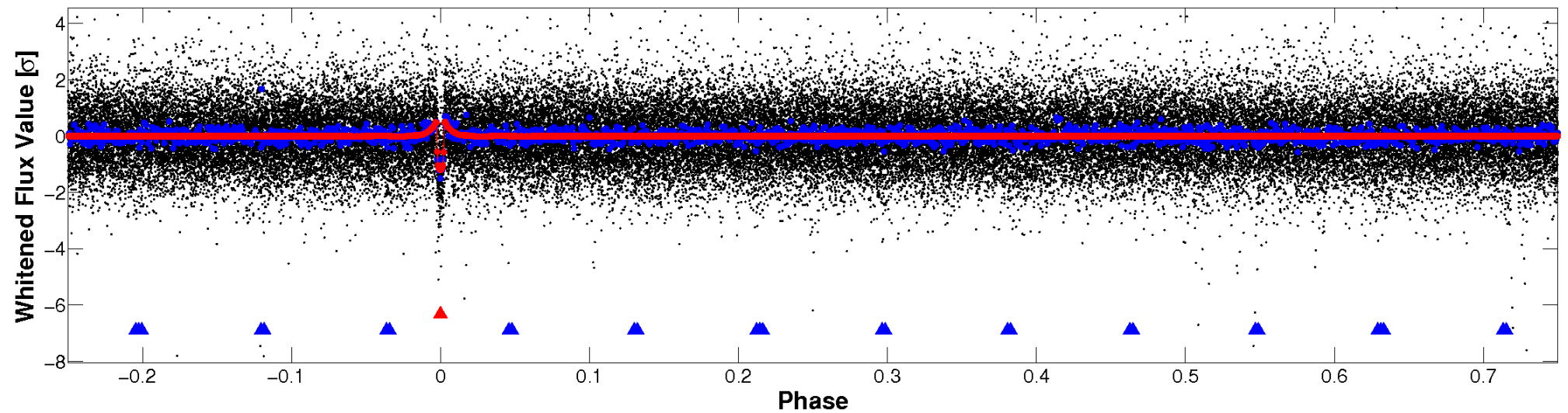


Non-Whitened Vs. Whitened Light Curve

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

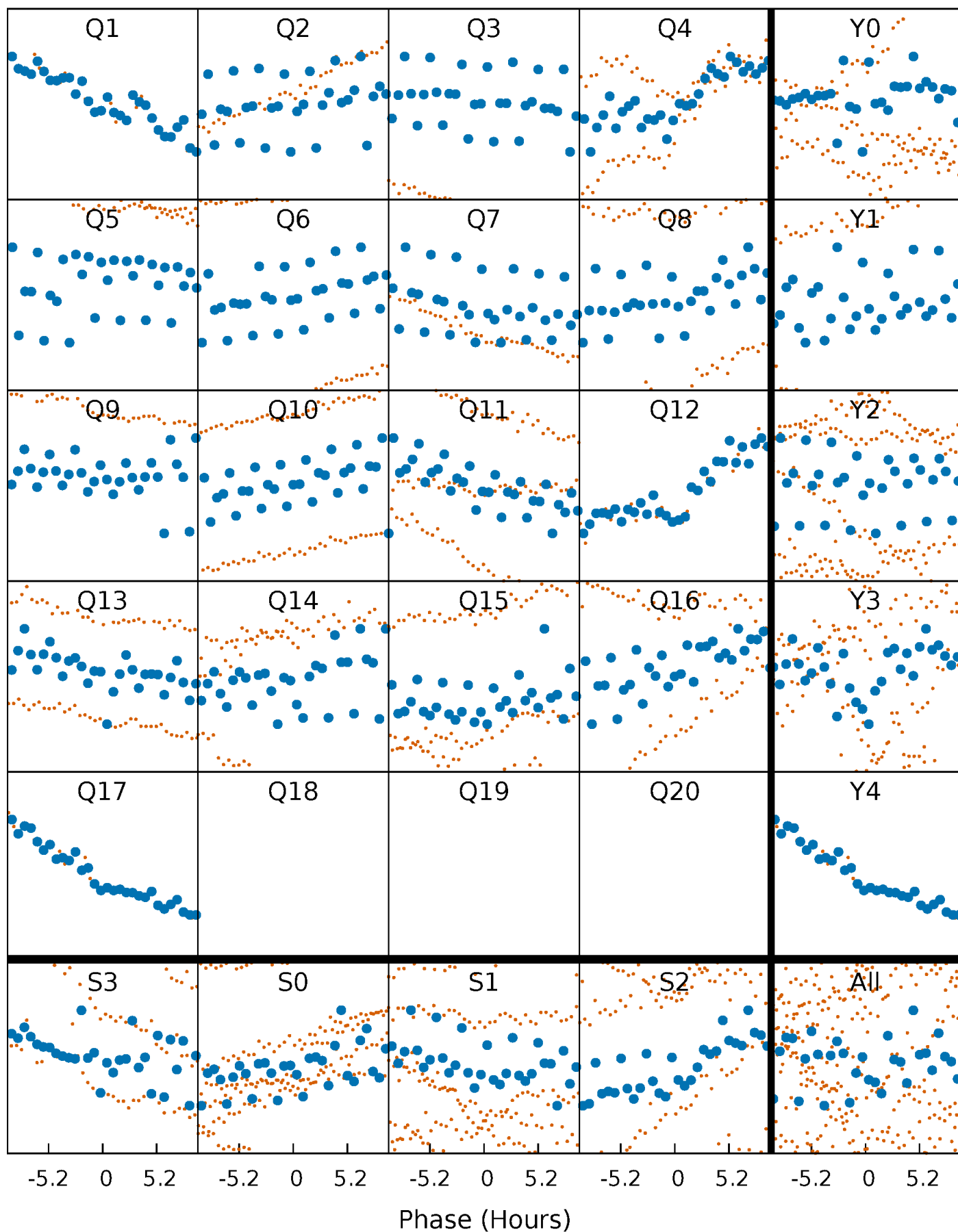


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



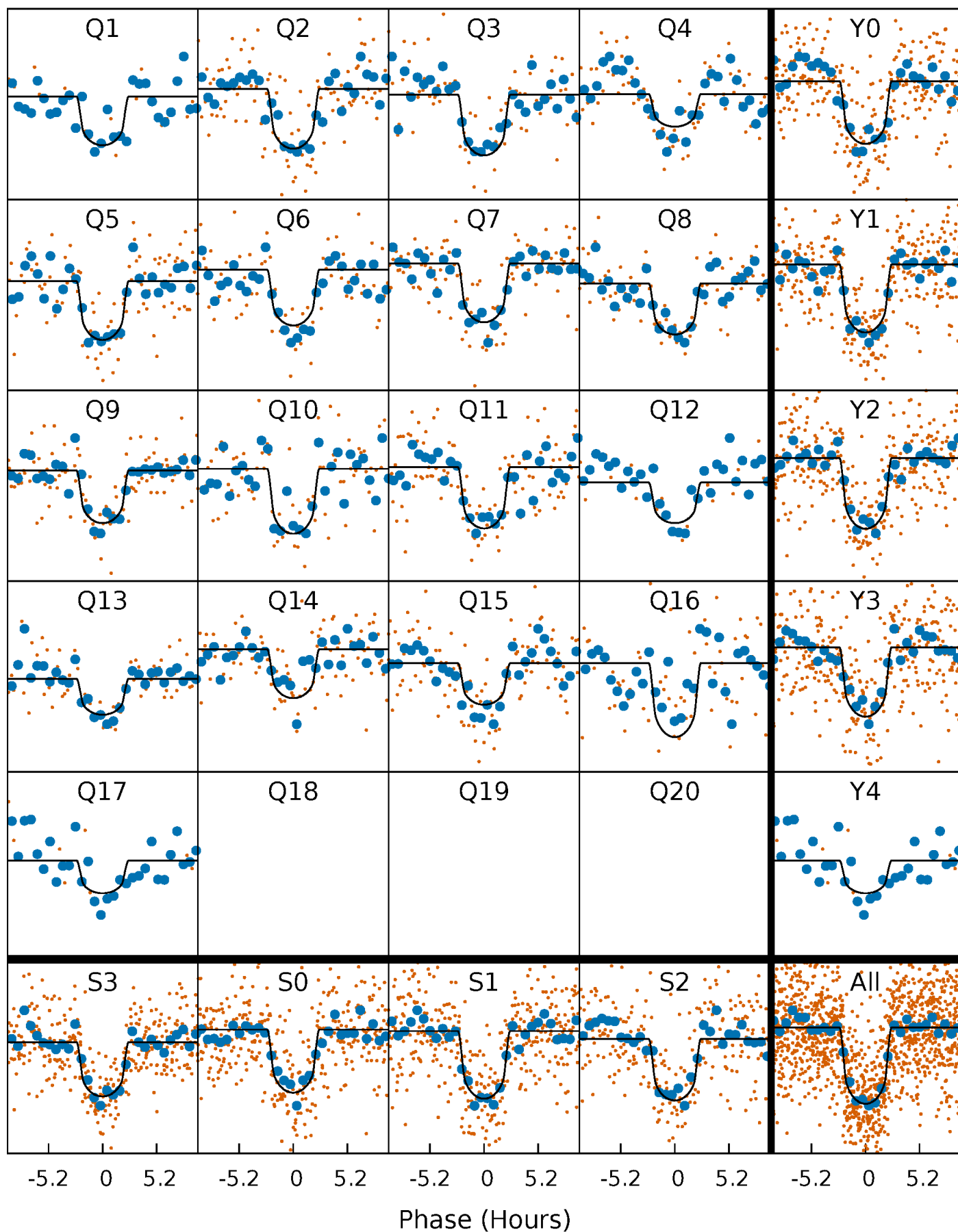
PDC Quarter-Phased Transit Curves

TCE 011774991-01 P= 37.815588 Days $T_0=141.102834$ (BKJD)



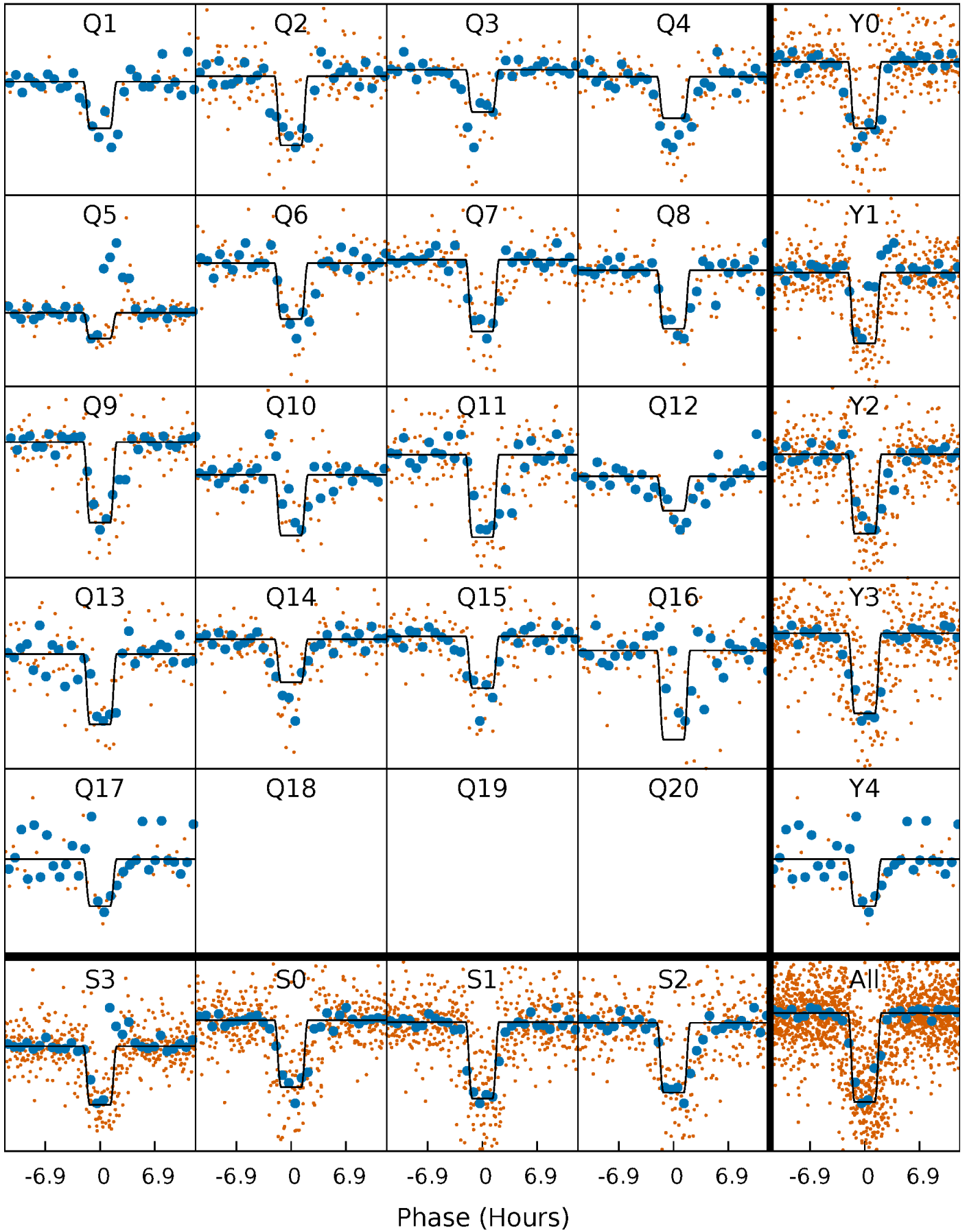
DV Quarter-Phased Transit Curves

TCE 011774991-01 P= 37.815588 Days $T_0=141.102834$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

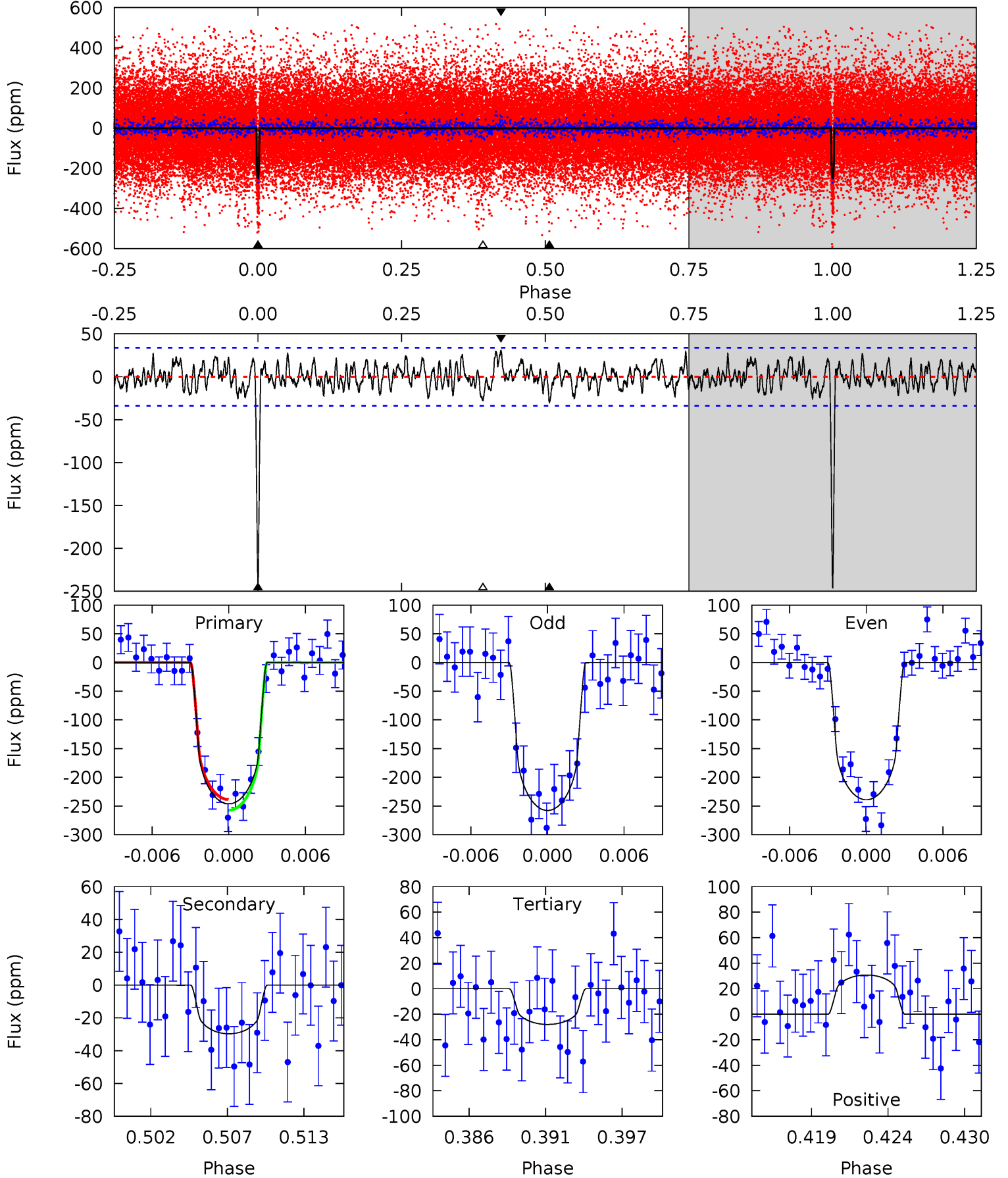
TCE 011774991-01 P= 37.815135 Days $T_0=141.096639$ (BKJD)



DV Model-Shift Uniqueness Test

011774991-01, P = 37.815588 Days, E = 103.287246 Days

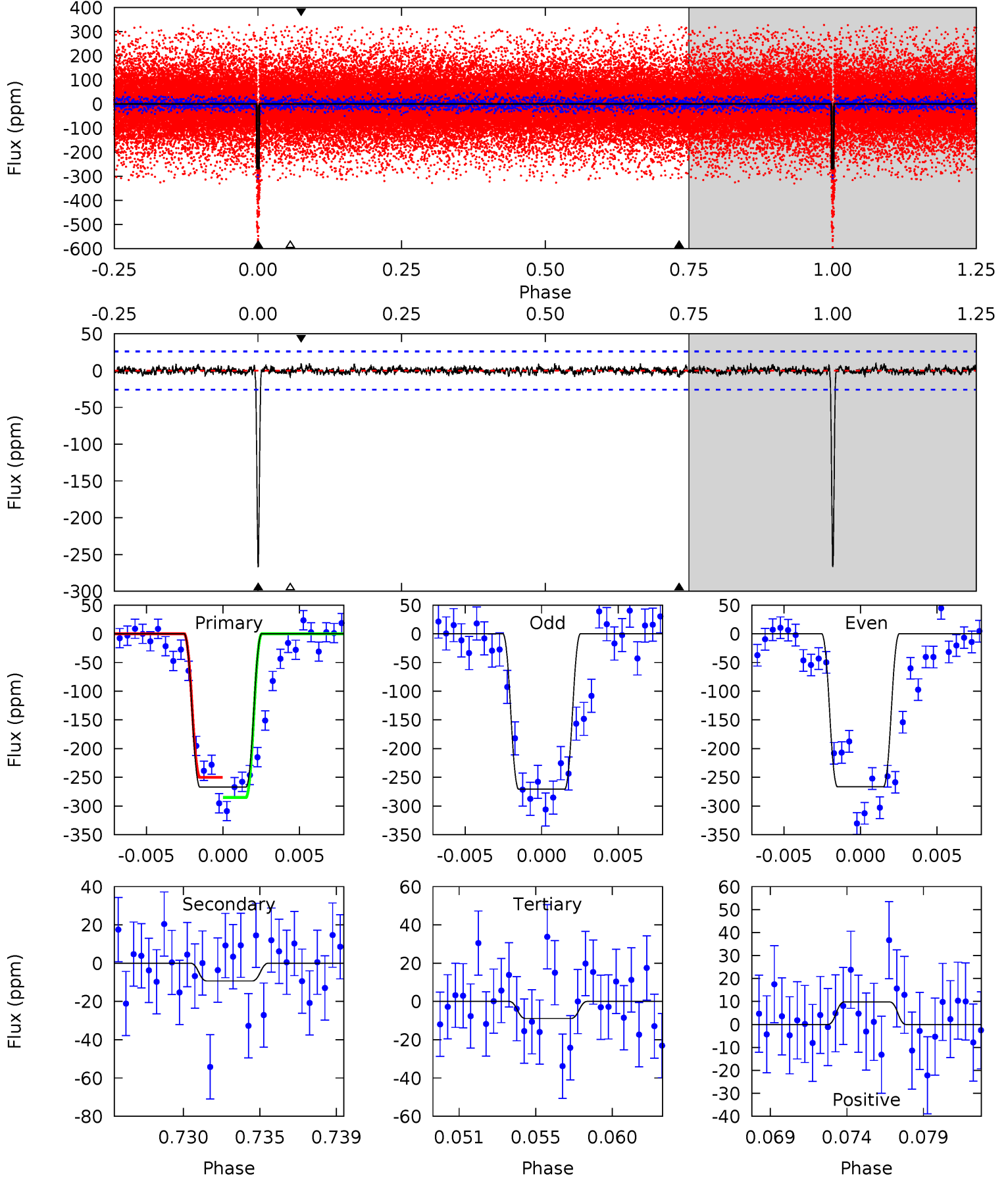
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.5	4.52	4.26	4.68	5.14	2.78	1.65	33.2	32.8	0.26	-0.16	1.42	0.98	0.11	1.42



Alt Model-Shift Uniqueness Test

011774991-01, $P = 37.815135$ Days, $E = 103.281504$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.2	1.85	1.77	1.94	5.17	2.83	0.54	51.4	51.2	0.08	-0.10	0.44	0.69	0.04	3.47



Stellar Parameters For KIC 011774991

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4856^{+86}_{-106}	$4.624^{+0.012}_{-0.048}$	$0.000^{+0.150}_{-0.150}$	$0.705^{+0.049}_{-0.025}$	$0.790^{+0.028}_{-0.056}$	$3.177^{+0.166}_{-0.619}$
	+2%/-2%	+0%/-1%	+inf%/-inf%	+7%/-4%	+4%/-7%	+5%/-19%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 011774991-01 / KOI 2173.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-30 ± 7	$1.31^{+0.34}_{-0.37}$	565^{+13}_{-14}	3280^{+377}_{-252}	394^{+384}_{-168}
Alt.	-9 ± 5	$1.33^{+0.34}_{-0.37}$	564^{+12}_{-13}	2785^{+275}_{-285}	125^{+124}_{-71}

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

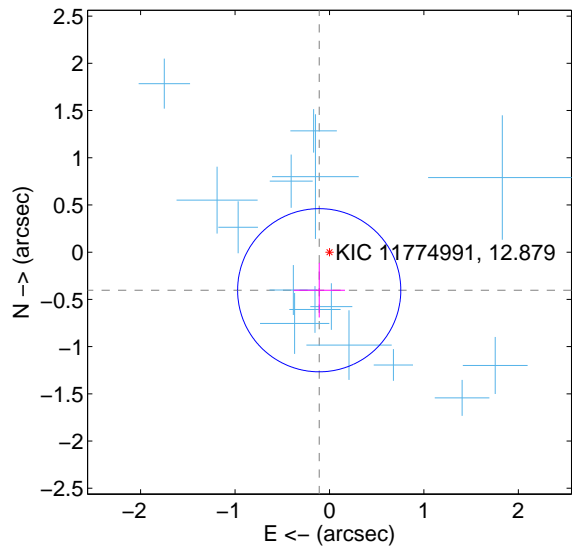
Supplemental centroid analysis for 011774991-01. Kepler magnitude: 12.88. Transit SNR 21.07

There are 15 quarters with good PRF difference image offsets

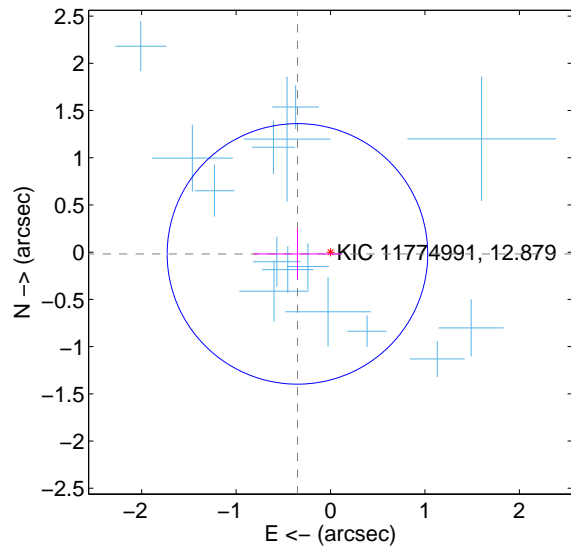
The direct PRF centroid is offset from the target star catalog position by about 0.52 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.417 ± 0.288	1.45	0.109 ± 0.272	-0.403 ± 0.289
PRF-fit source offset from KIC position	0.351 ± 0.460	0.76	0.350 ± 0.466	-0.018 ± 0.269
photometric centroid source offset	0.57 ± 0.52	1.10	0.36 ± 0.51	0.44 ± 0.53

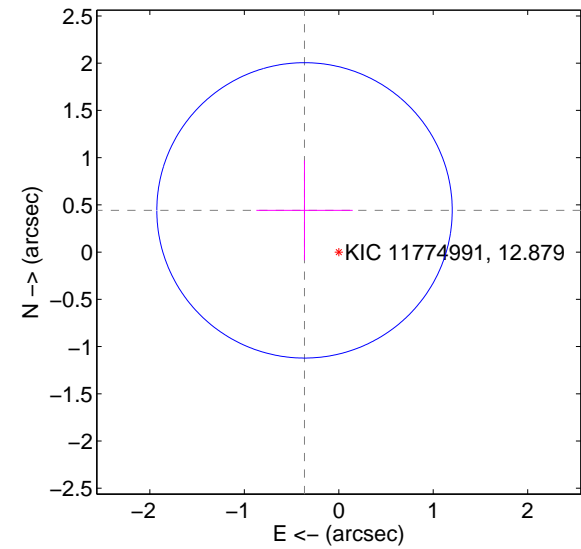
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

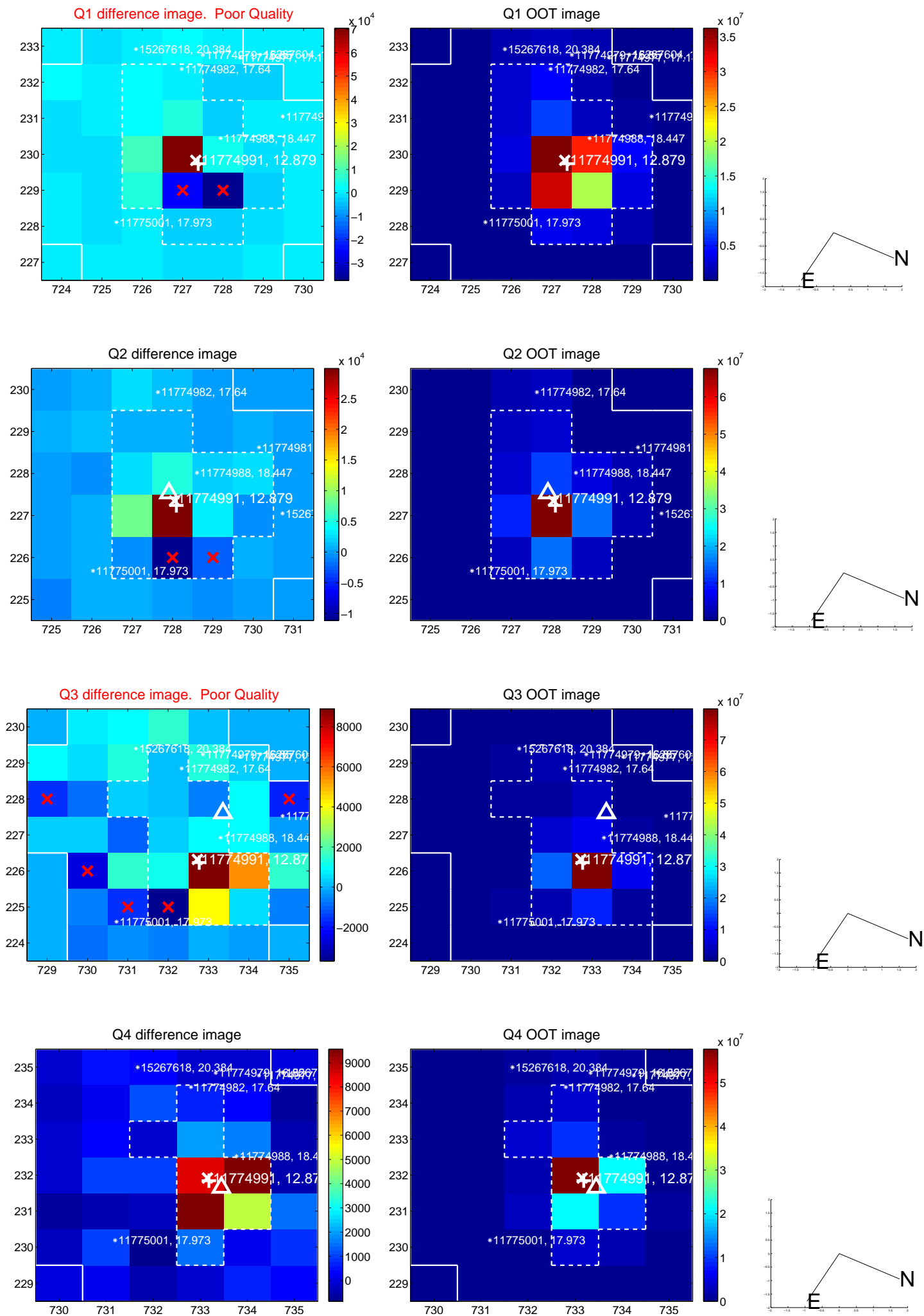


offset from photometric centroids

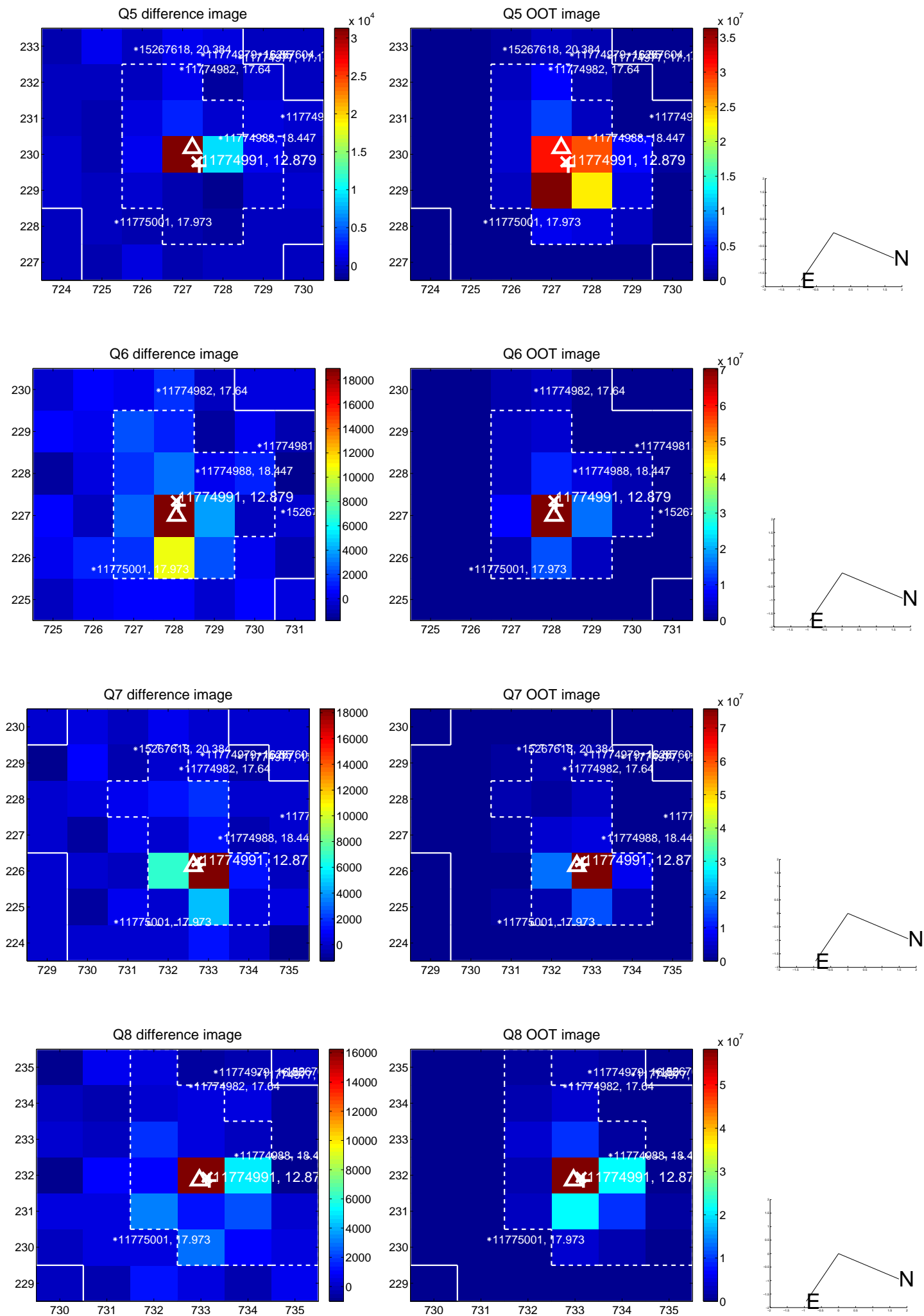


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

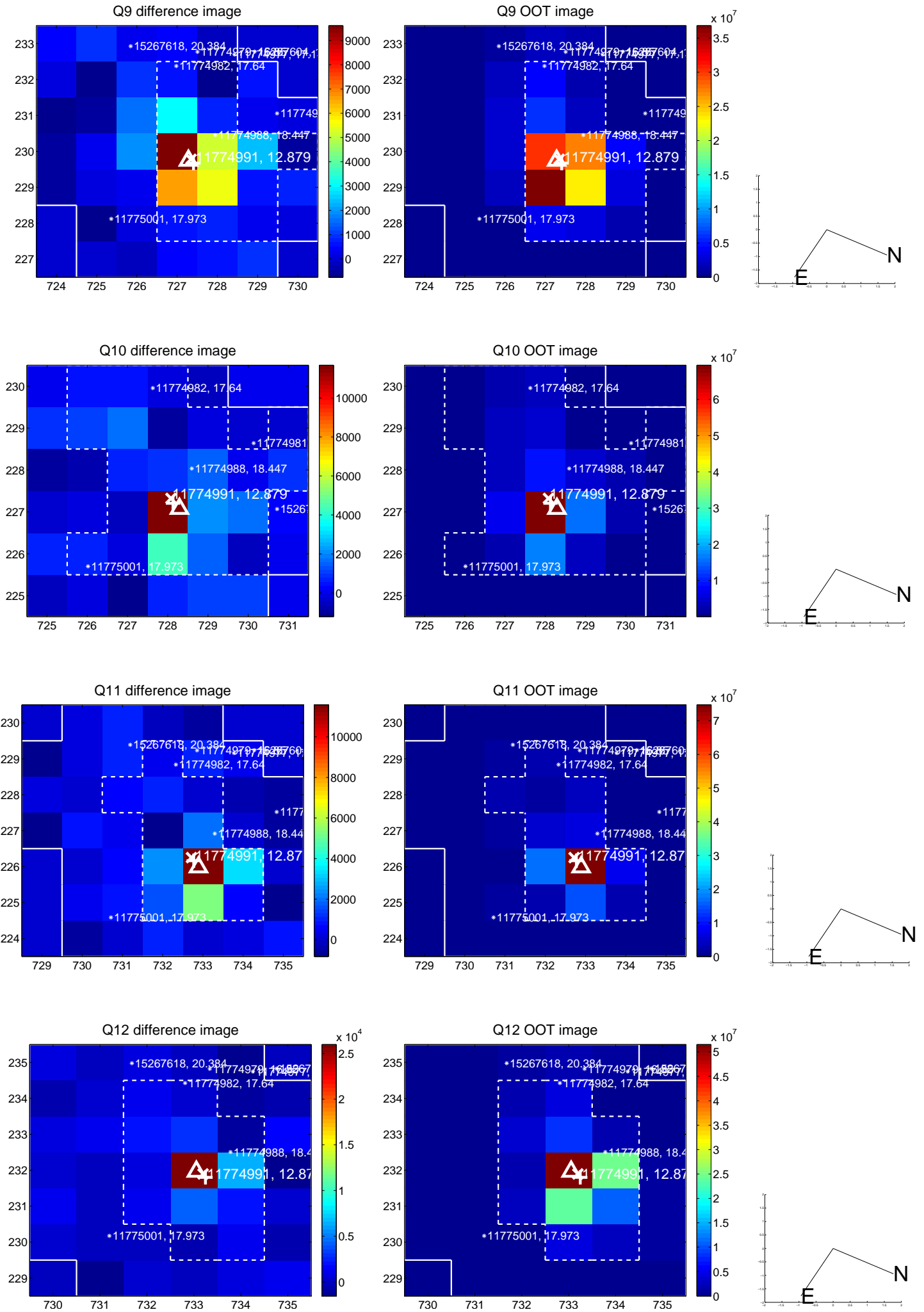
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



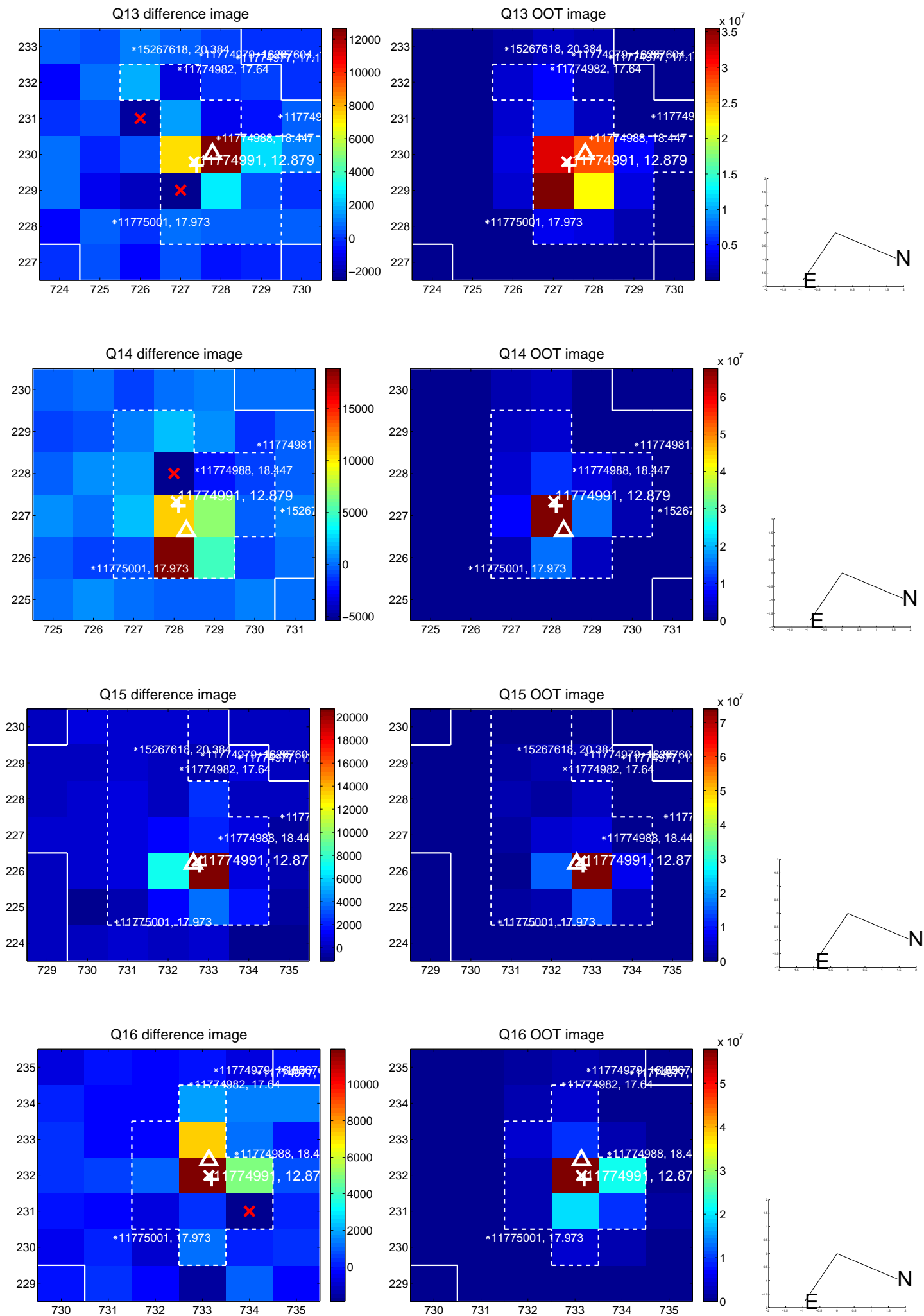
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



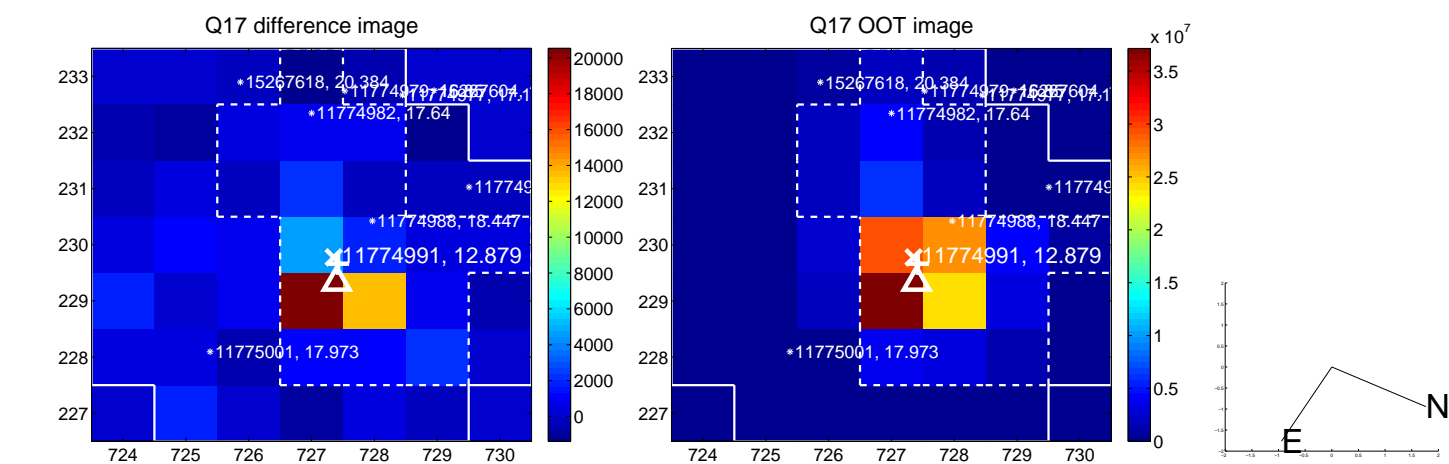
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



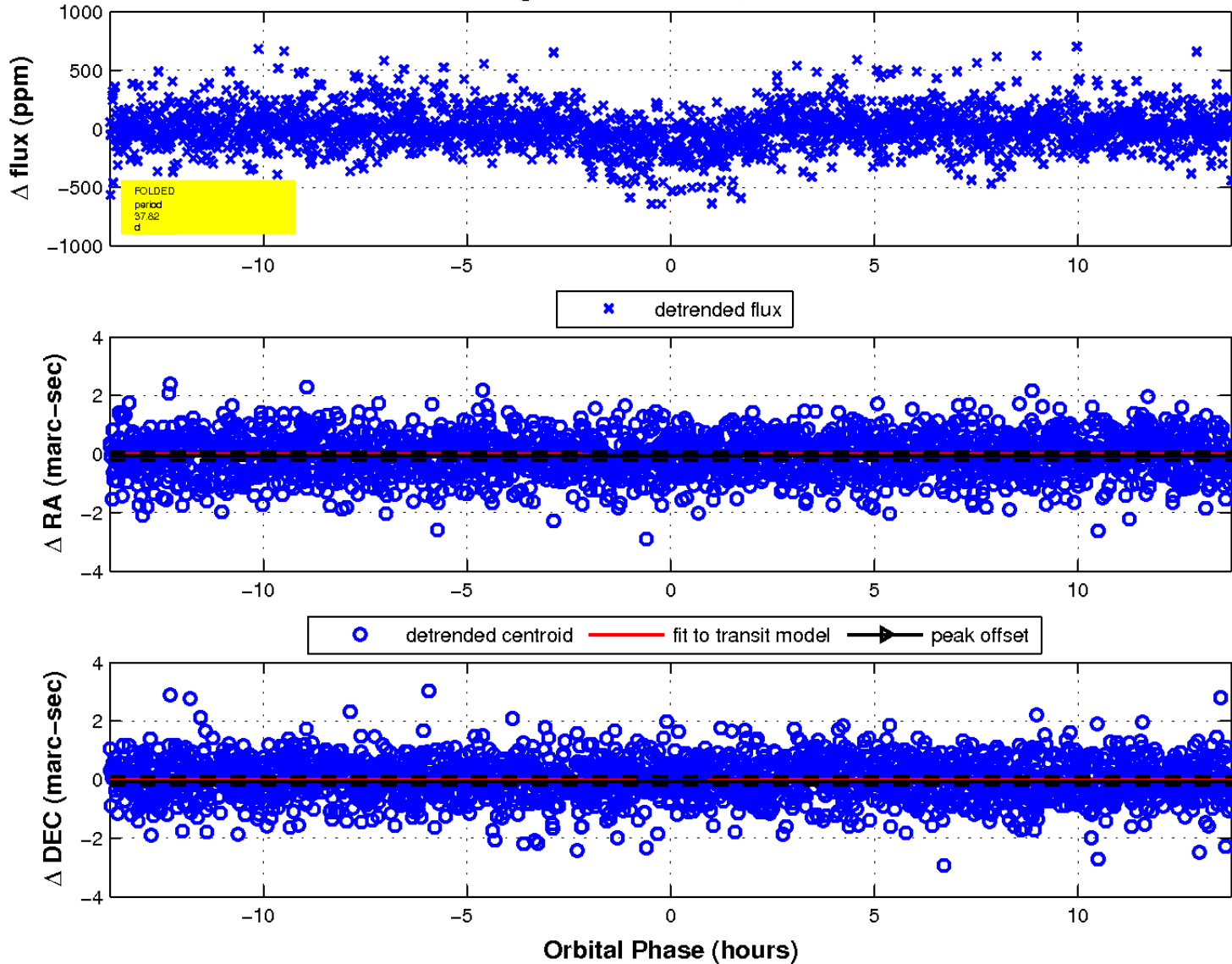
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

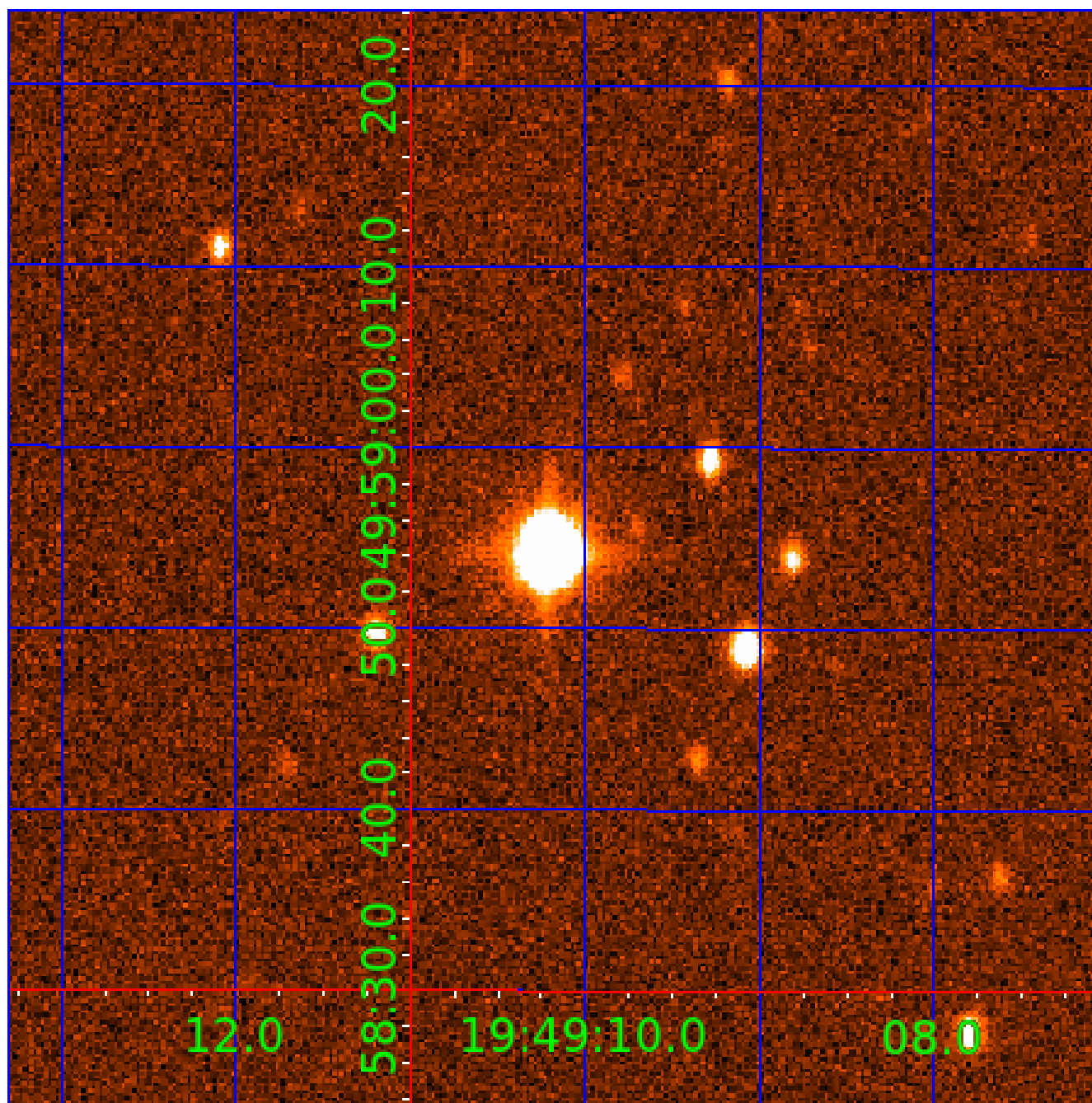


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 011774991

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})
011774991-01	OBS	2173.01	37.815588	141.102834	249.2	4.589	19.4	21.1	0.70	4856	1.27	6.10
011774991-02	OBS	2173.02	53.578415	171.183080	289.8	5.273	18.6	19.9	0.70	4856	1.20	3.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011774991-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
011774991-02	OBS	FP	0.00	0	0	1	0	CENT_KIC_POS—HALO_GHOST

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

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

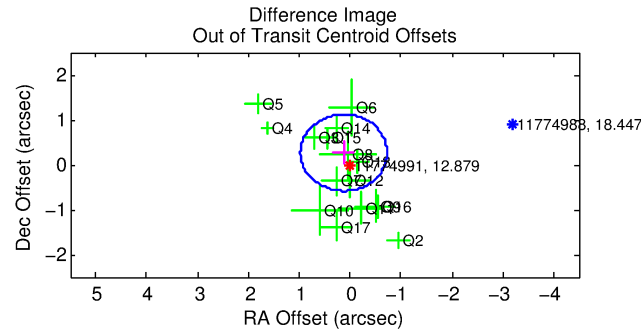
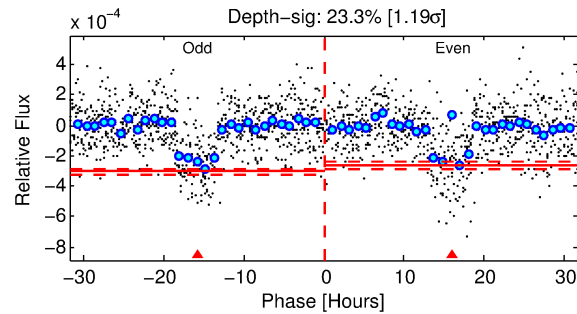
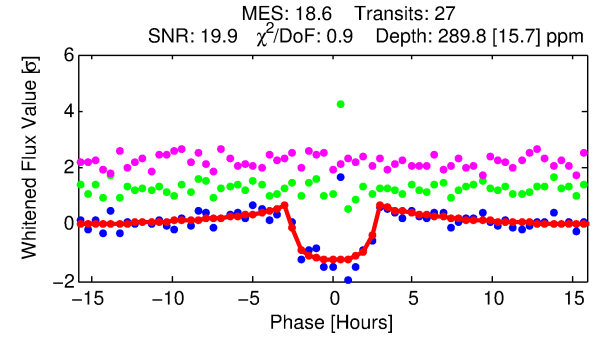
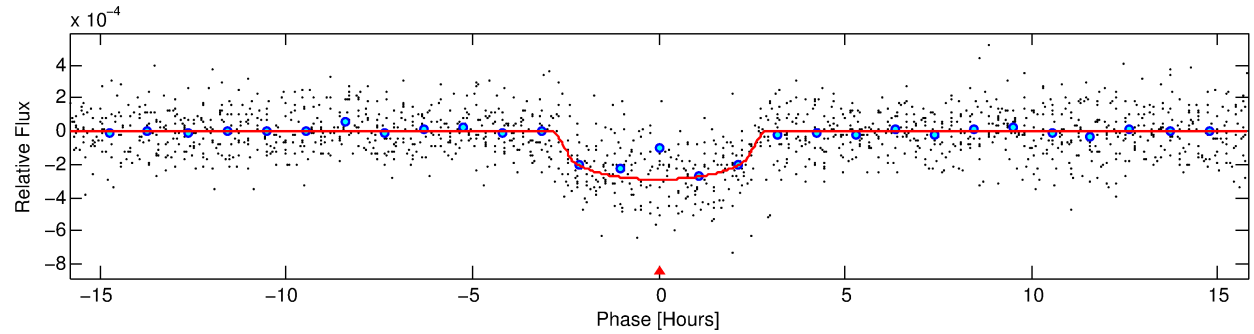
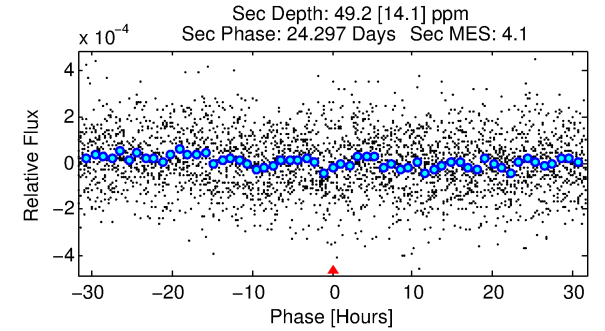
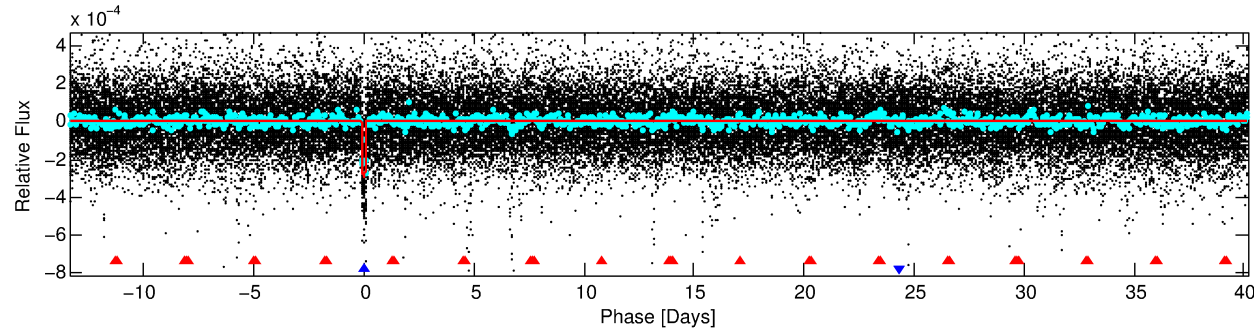
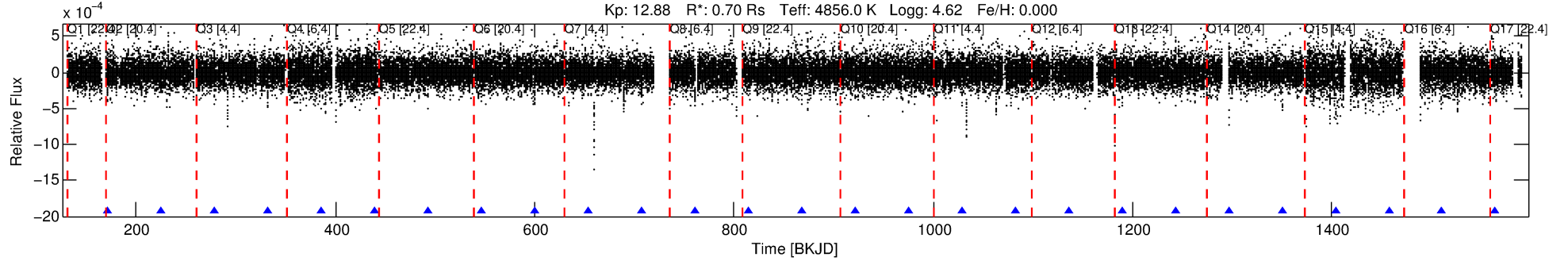
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011774991-02

No Significant Match Found

DV One-Page Summary

KIC: 11774991 Candidate: 2 of 2 Period: 53.578 d
KOI: K02173.02 Name: Kepler-367c Corr: 0.978



DV Fit Results:

Period = 53.57842 [0.00026] d
Epoch = 171.1831 [0.0039] BKJD
Rp/R* = 0.0156 [0.0073]
a/R* = 69.75 [106.87]
b = 0.47 [2.56]
Seff = 3.83 [0.47]
Teq = 357 [11] K
Rp = 1.20 [0.57] Re
a = 0.2542 [0.0150] AU
Ag = 1212.06 [1196.37] [1.01σ]
Teffp = 3255 [803] K [3.61σ]

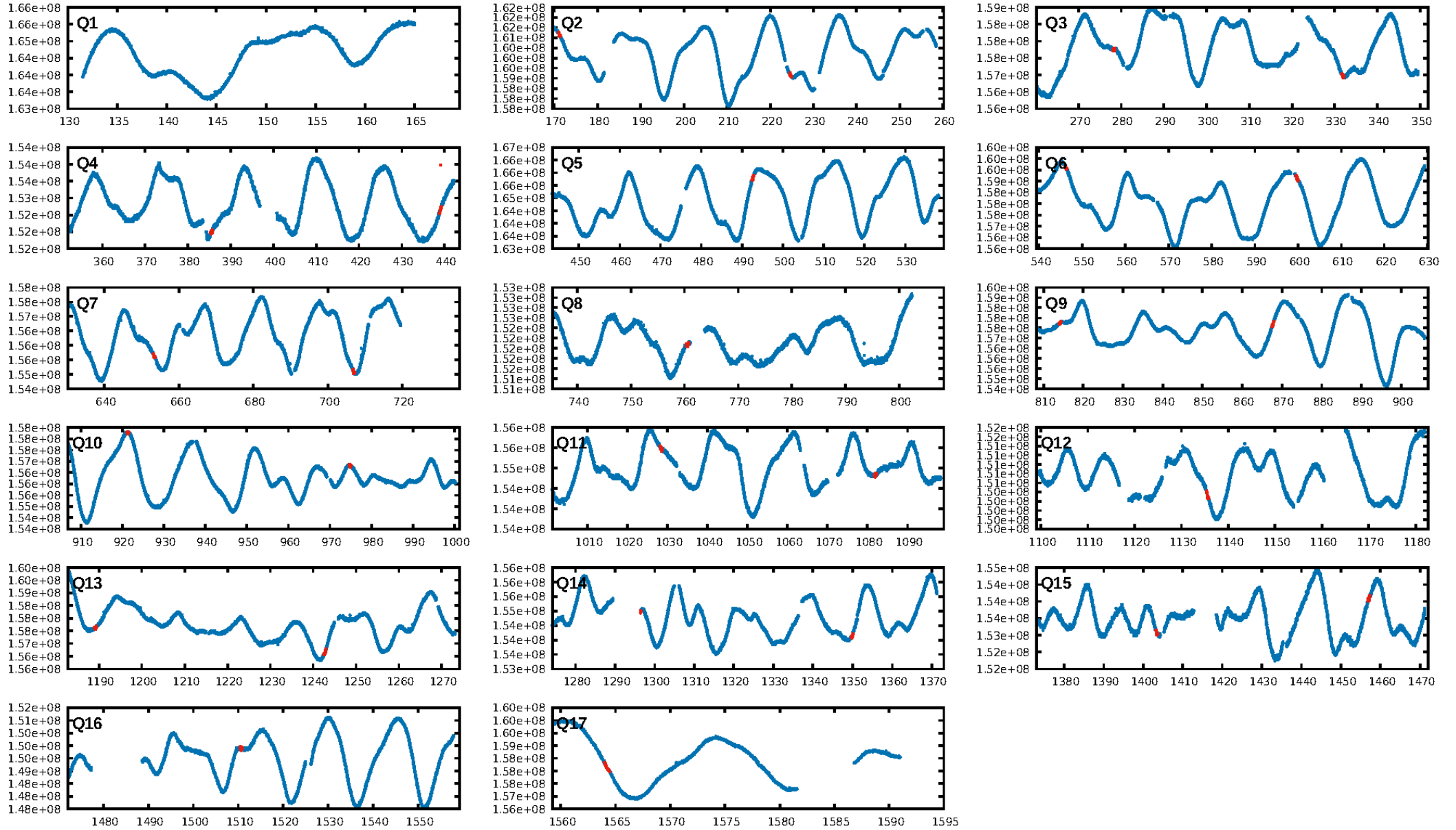
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [54.12σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.85e-37
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 0.07149
Centroid-sig: 0.0%
Centroid-so: 1.179 arcsec [2.30σ]
OotOffset-rm: 0.296 arcsec [1.04σ]
KicOffset-rm: 0.723 arcsec [2.50σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [16/16]

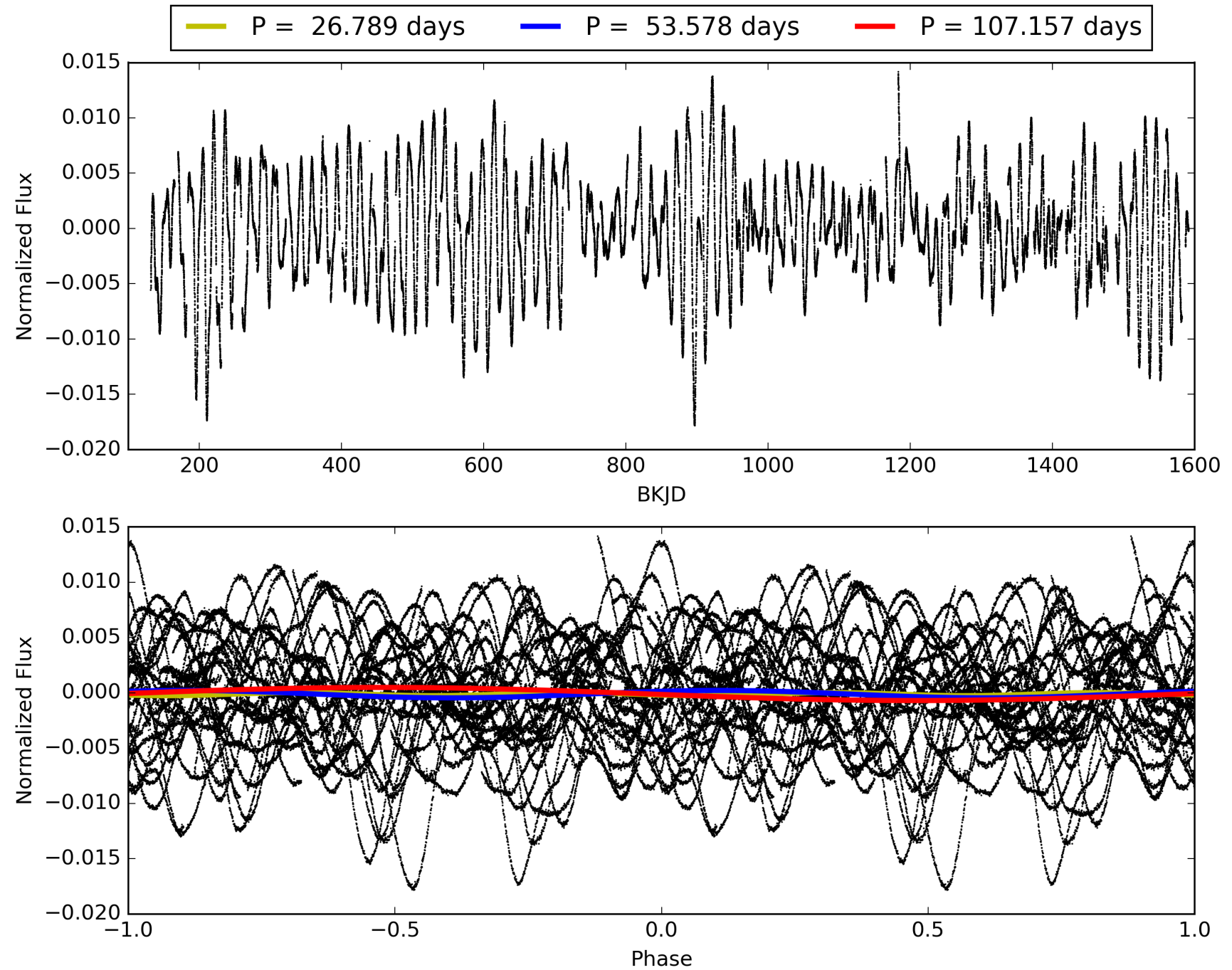
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:05:32 Z

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

TCE 011774991-02, PDC Light Curves

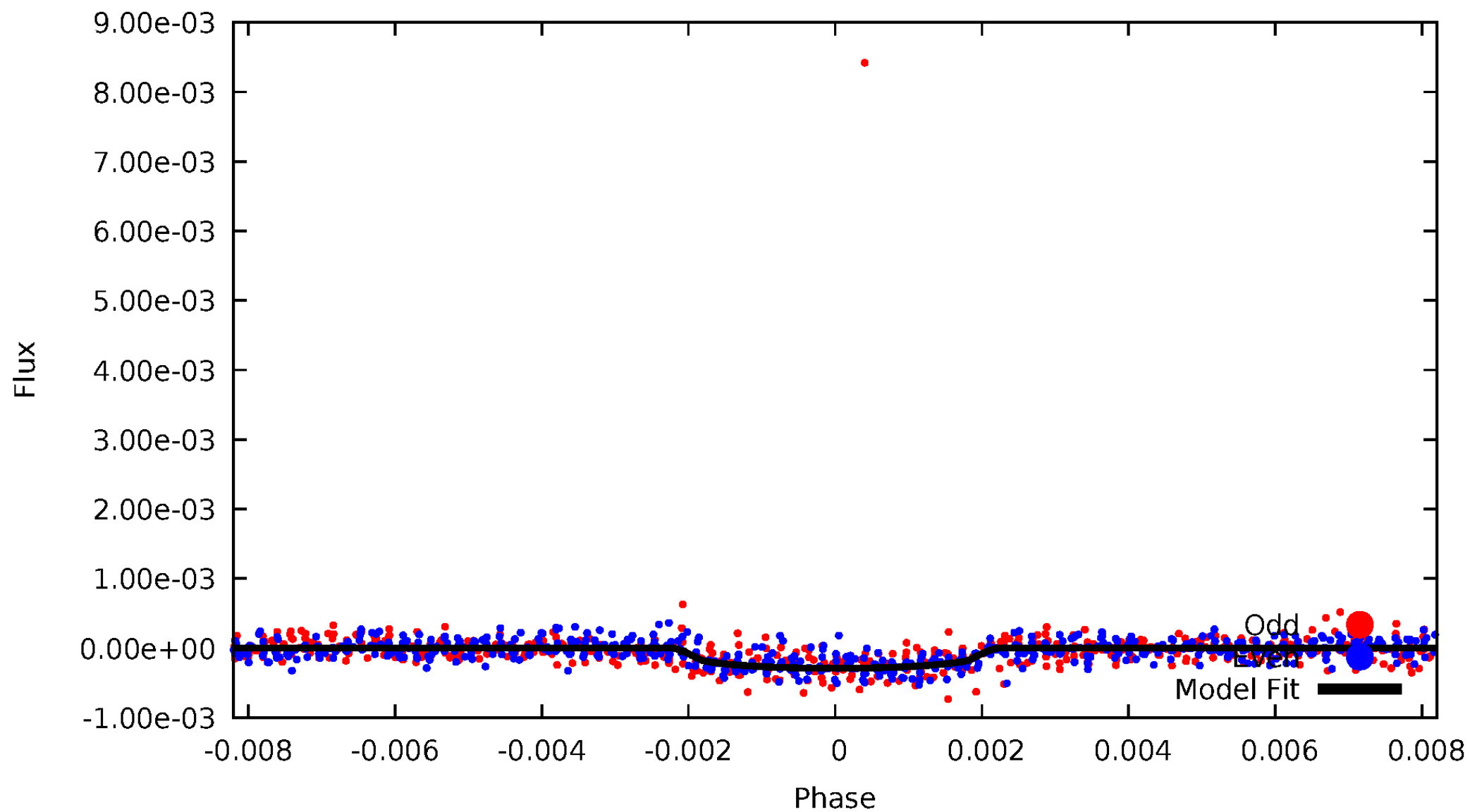


TCE 011774991-02



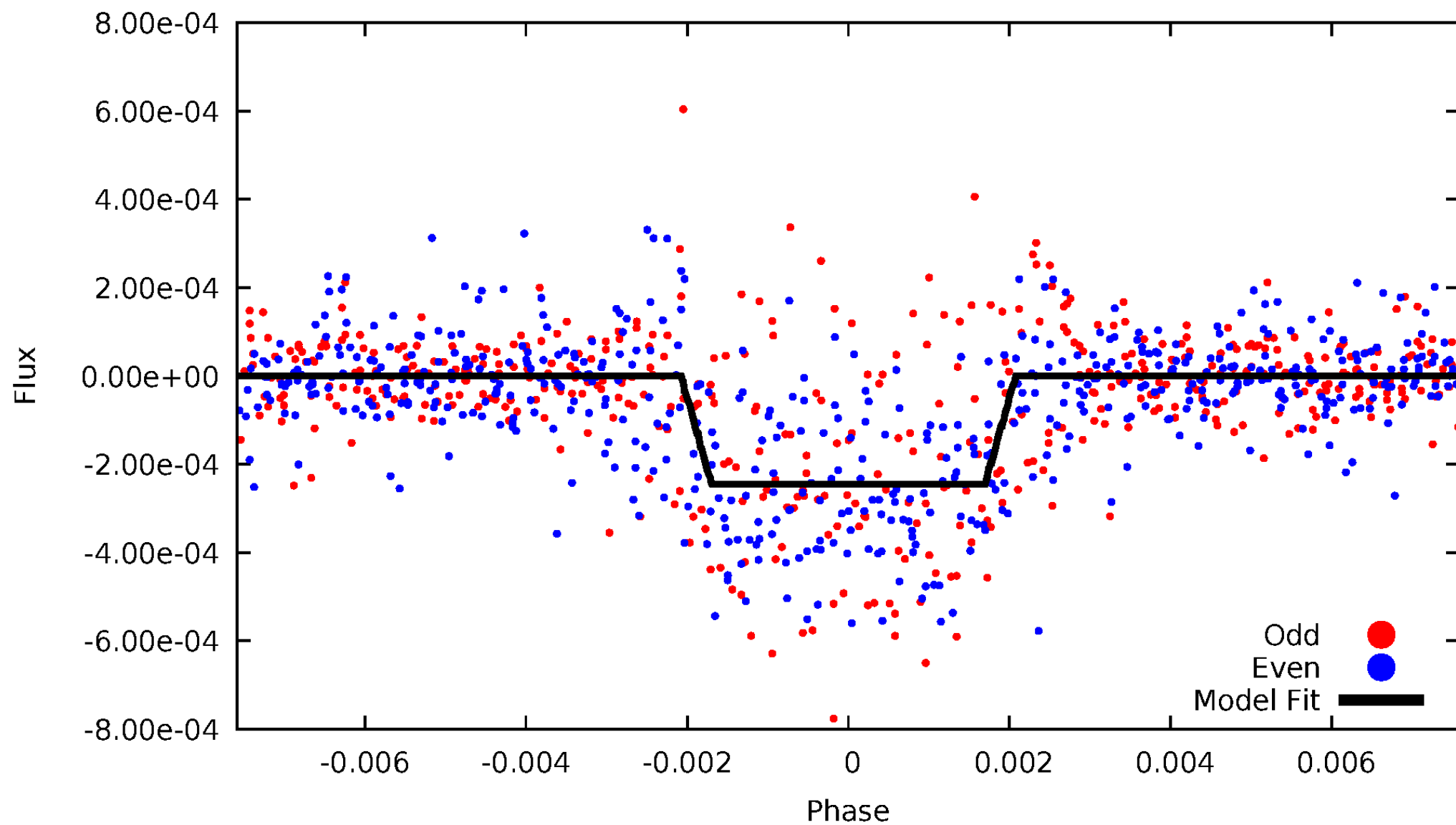
DV Odd/Even

TCE 011774991-02



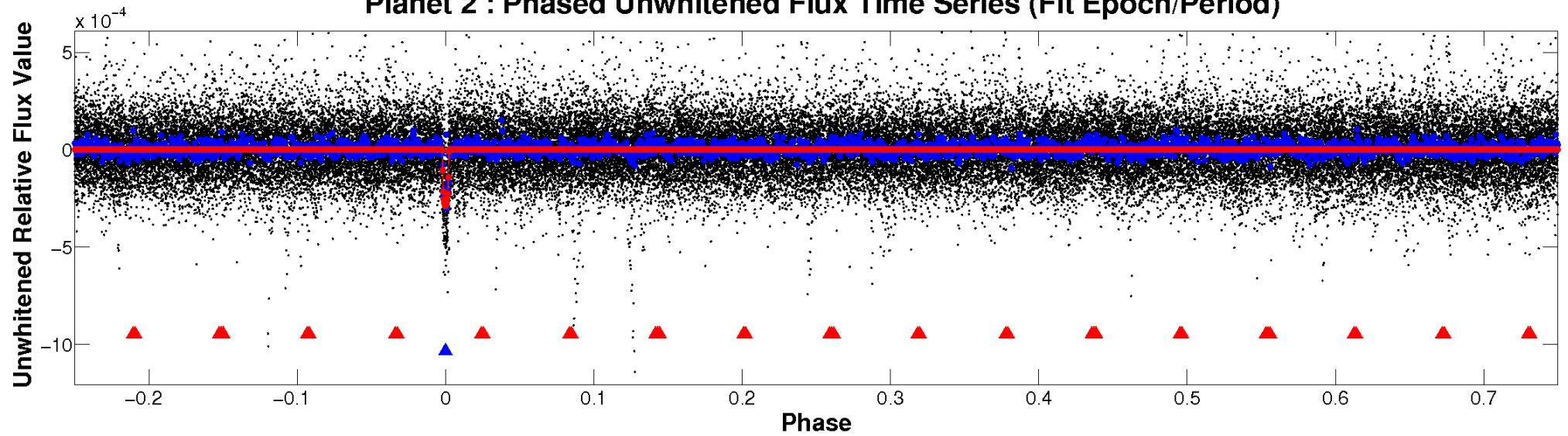
ALT Odd/Even

TCE 011774991-02

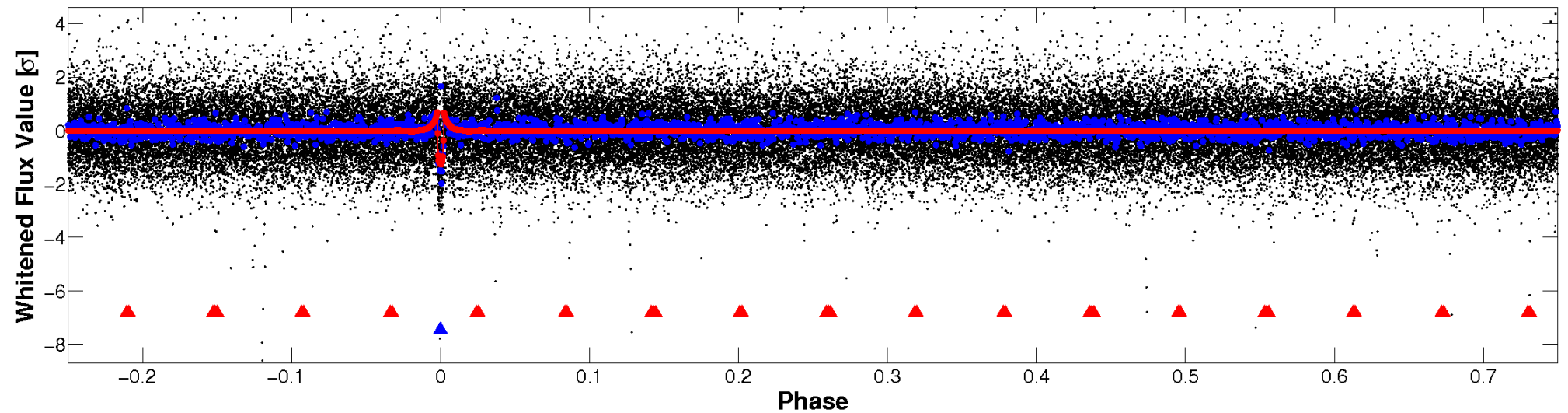


Non-Whitened Vs. Whitened Light Curve

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

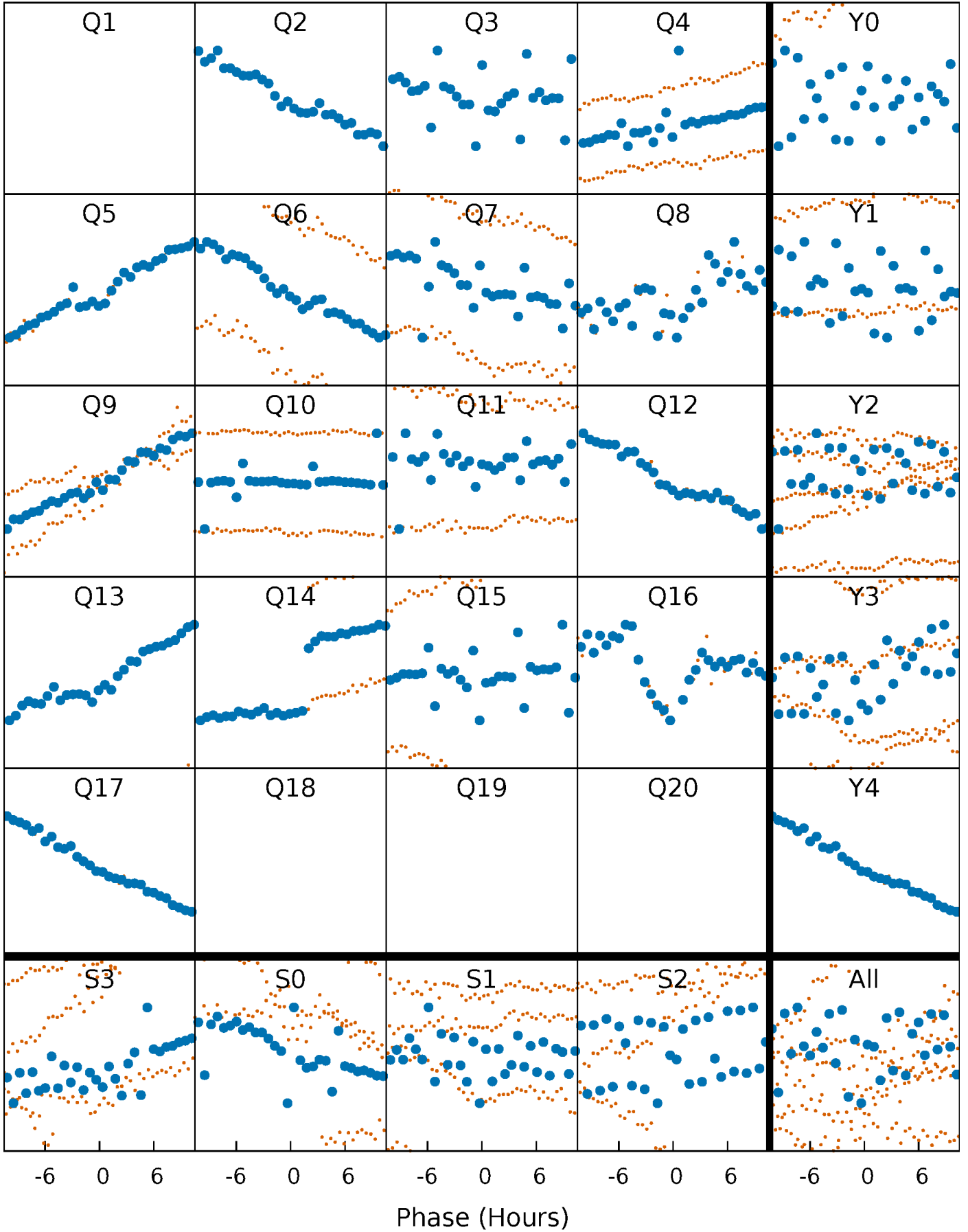


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



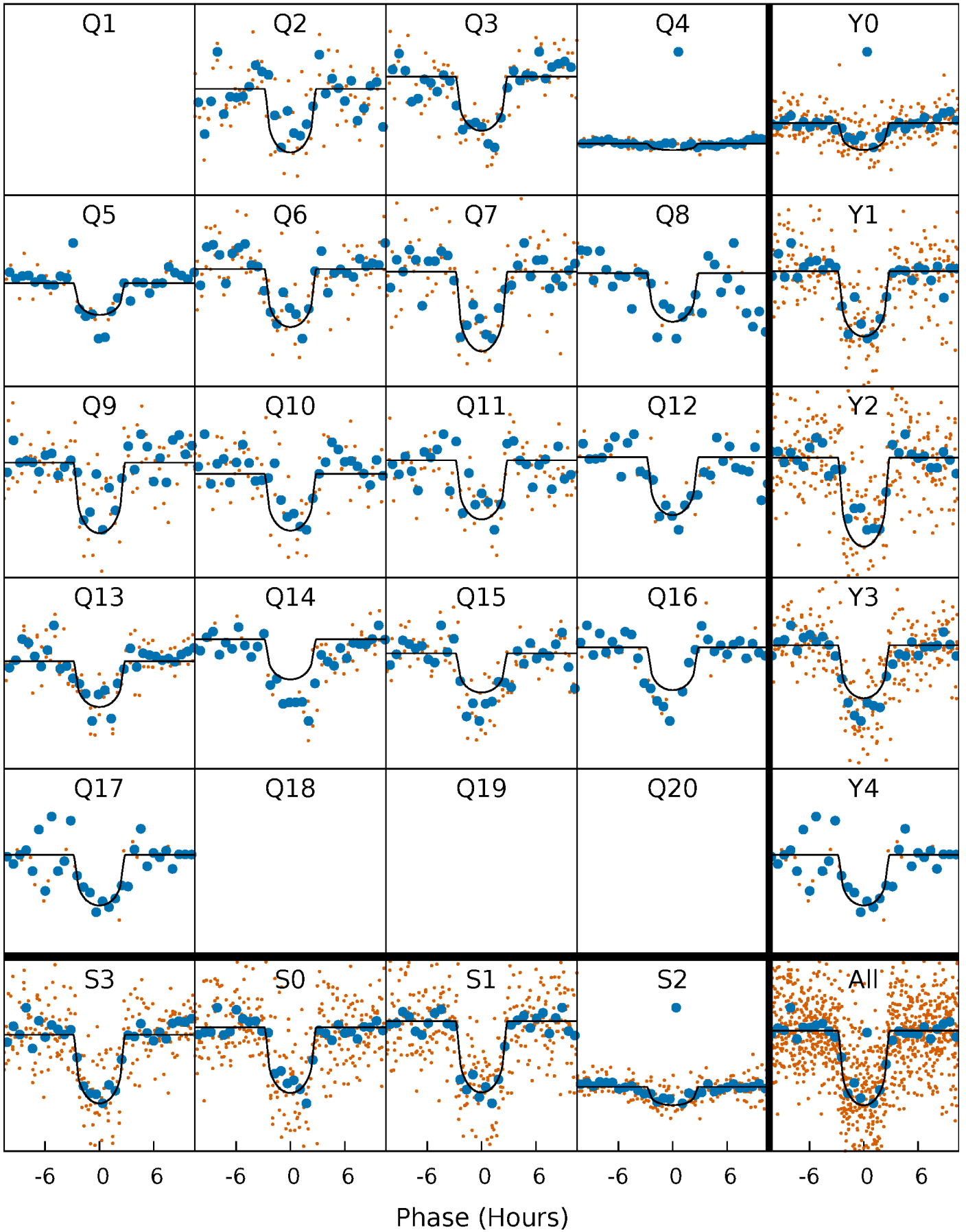
PDC Quarter-Phased Transit Curves

TCE 011774991-02 P= 53.578415 Days $T_0=171.183080$ (BKJD)



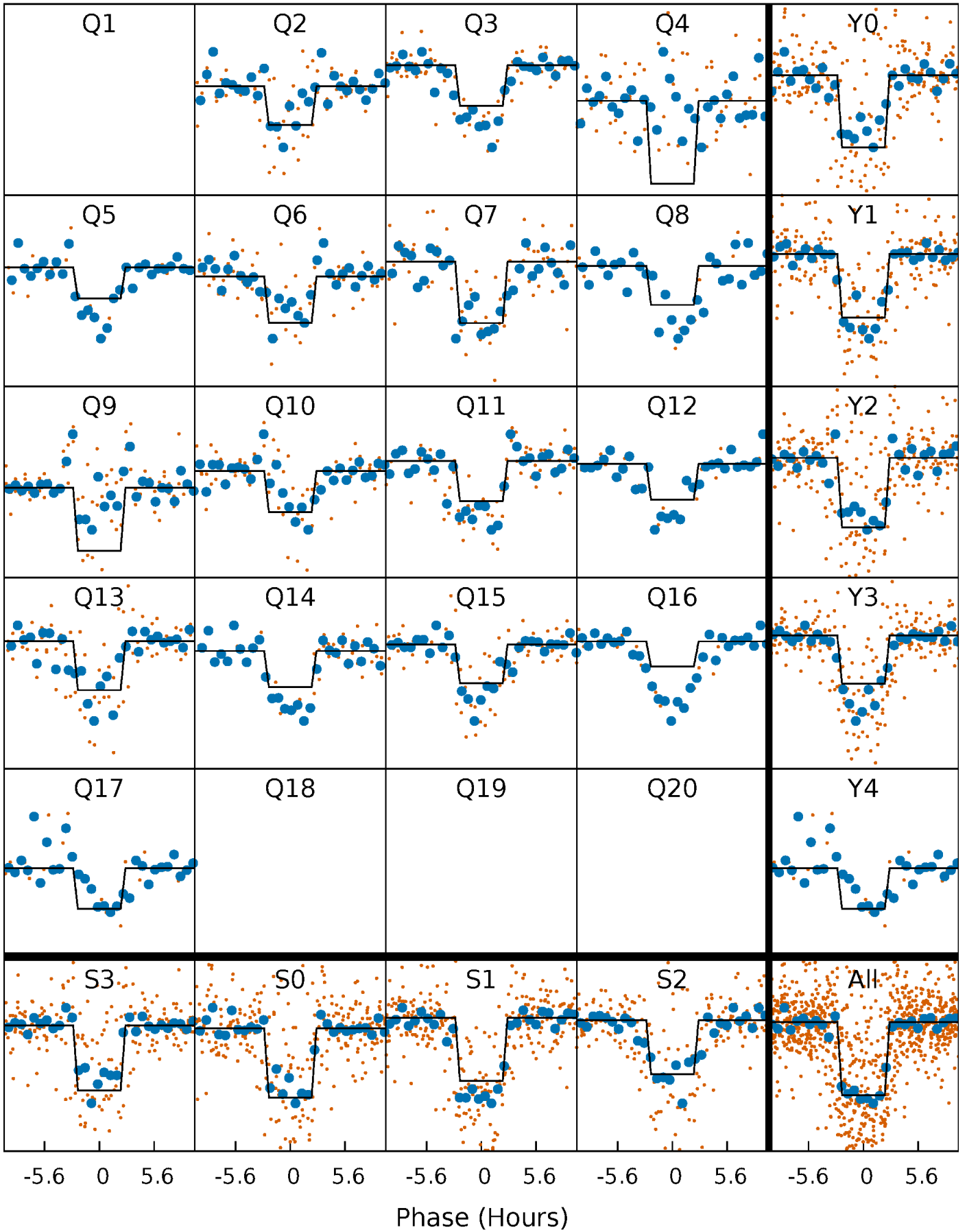
DV Quarter-Phased Transit Curves

TCE 011774991-02 P= 53.578415 Days $T_0=171.183080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

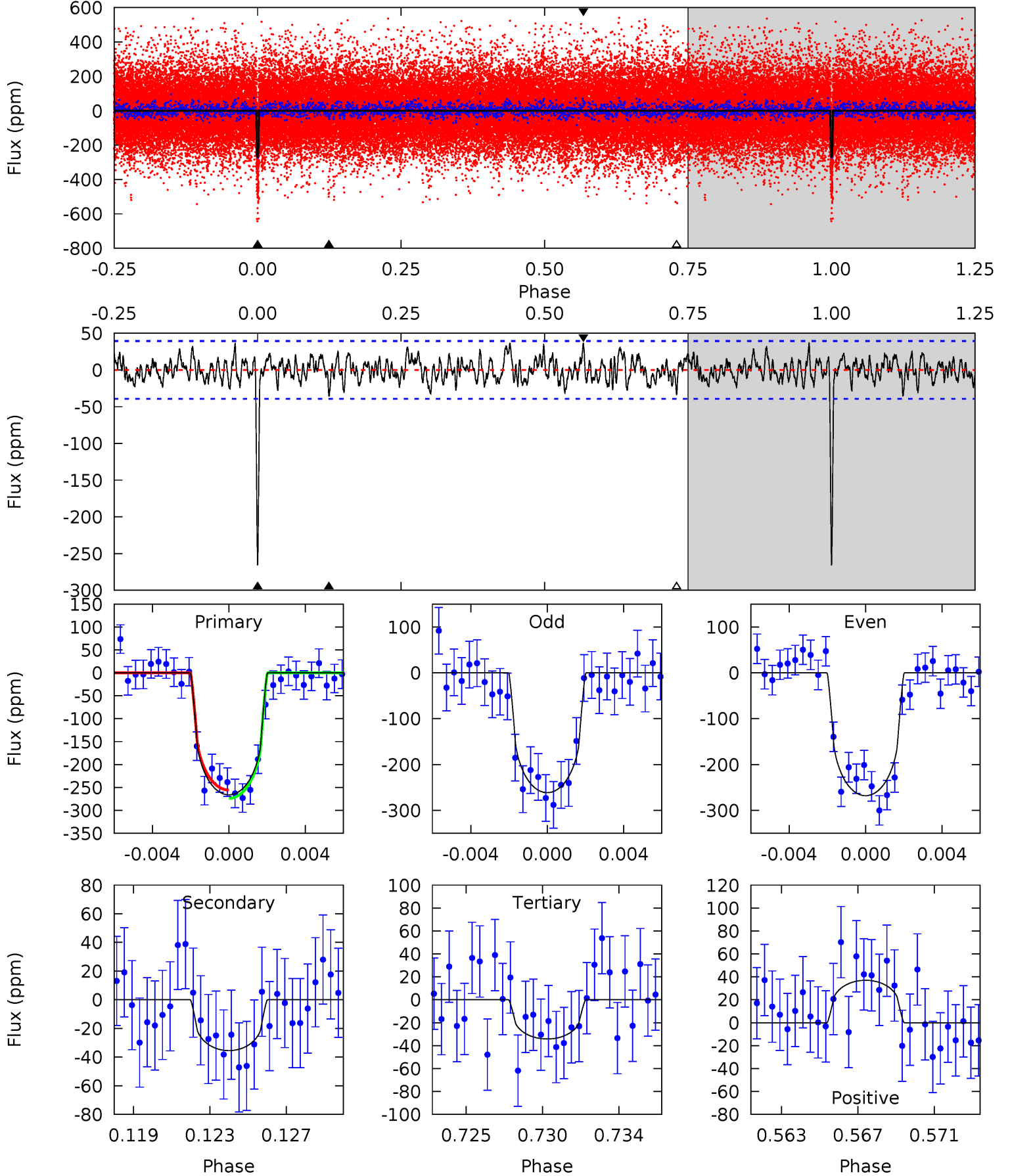
TCE 011774991-02 P= 53.578515 Days $T_0=171.181472$ (BKJD)



DV Model-Shift Uniqueness Test

011774991-02, P = 53.578415 Days, E = 117.604665 Days

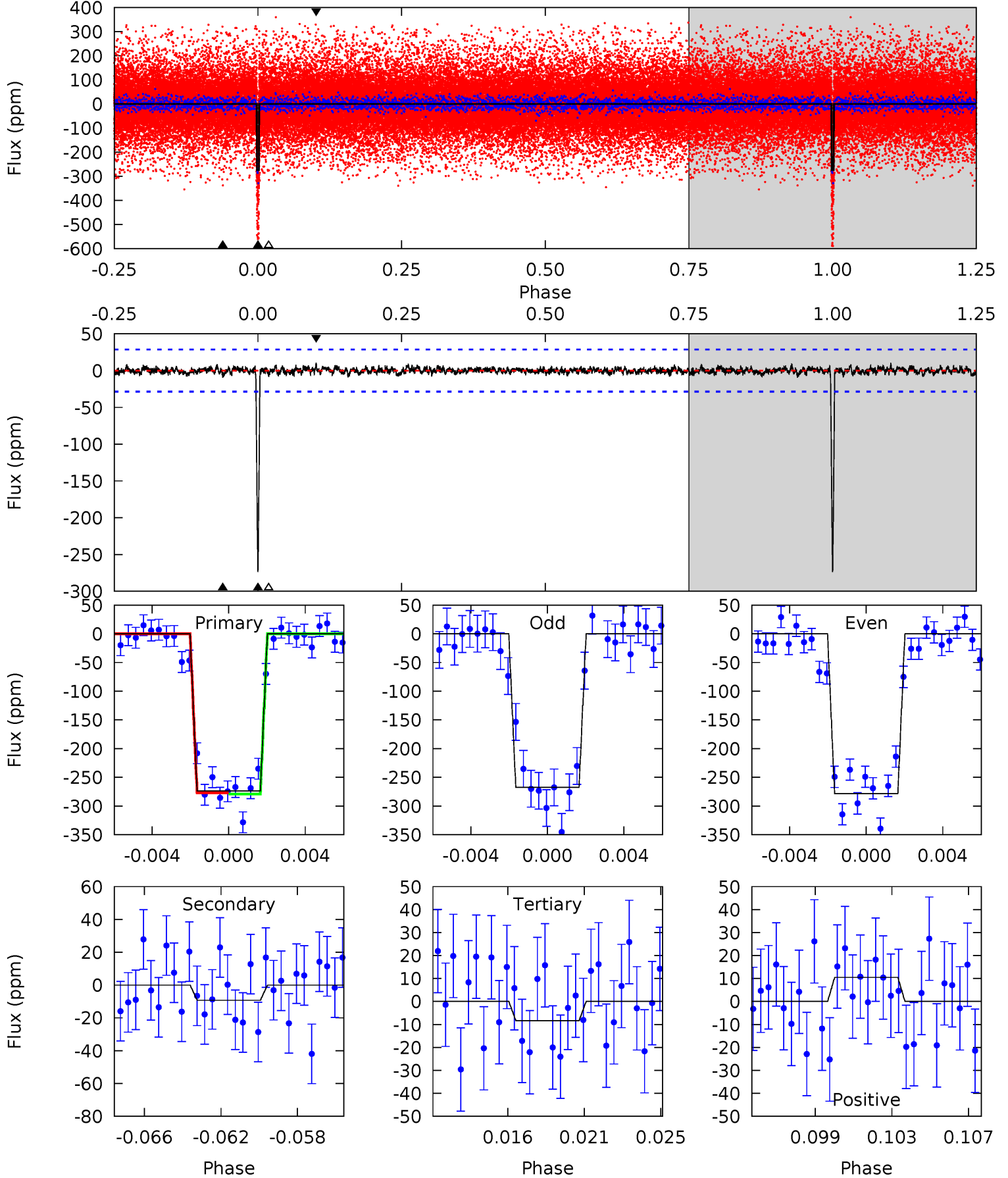
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.0	4.67	4.49	4.86	5.18	2.85	1.69	30.5	30.1	0.17	-0.20	0.44	0.90	0.12	1.20



Alt Model-Shift Uniqueness Test

011774991-02, $P = 53.578515$ Days, $E = 117.602957$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.7	1.69	1.52	1.90	5.19	2.87	0.49	48.2	47.8	0.17	-0.21	0.96	0.84	0.04	0.21



Stellar Parameters For KIC 011774991

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4856^{+86}_{-106}	$4.624^{+0.012}_{-0.048}$	$0.000^{+0.150}_{-0.150}$	$0.705^{+0.049}_{-0.025}$	$0.790^{+0.028}_{-0.056}$	$3.177^{+0.166}_{-0.619}$
	+2%/-2%	+0%/-1%	+inf%/-inf%	+7%/-4%	+4%/-7%	+5%/-19%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 011774991-02 / KOI 2173.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-35 ± 8	$1.23^{+0.59}_{-0.56}$	503^{+12}_{-12}	3419^{+812}_{-394}	828^{+2010}_{-469}
Alt.	-9 ± 6	$1.26^{+0.57}_{-0.54}$	502^{+12}_{-11}	2768^{+526}_{-381}	190^{+450}_{-135}

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

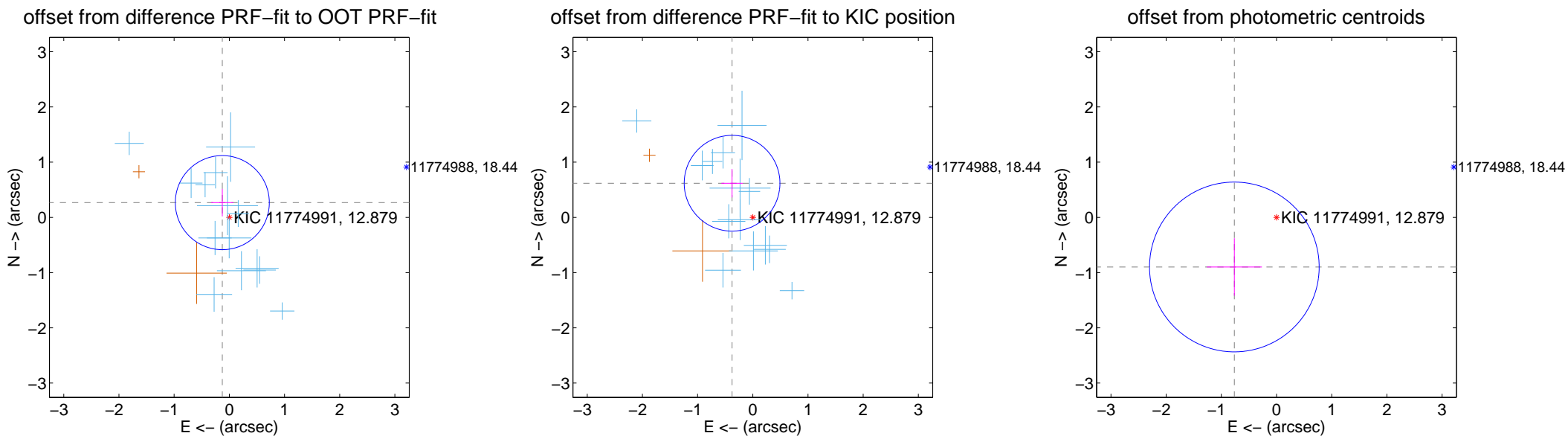
DV Centroid Data

Supplemental centroid analysis for 011774991-02. Kepler magnitude: 12.88. Transit SNR 19.89

There are 14 quarters with good PRF difference image offsets

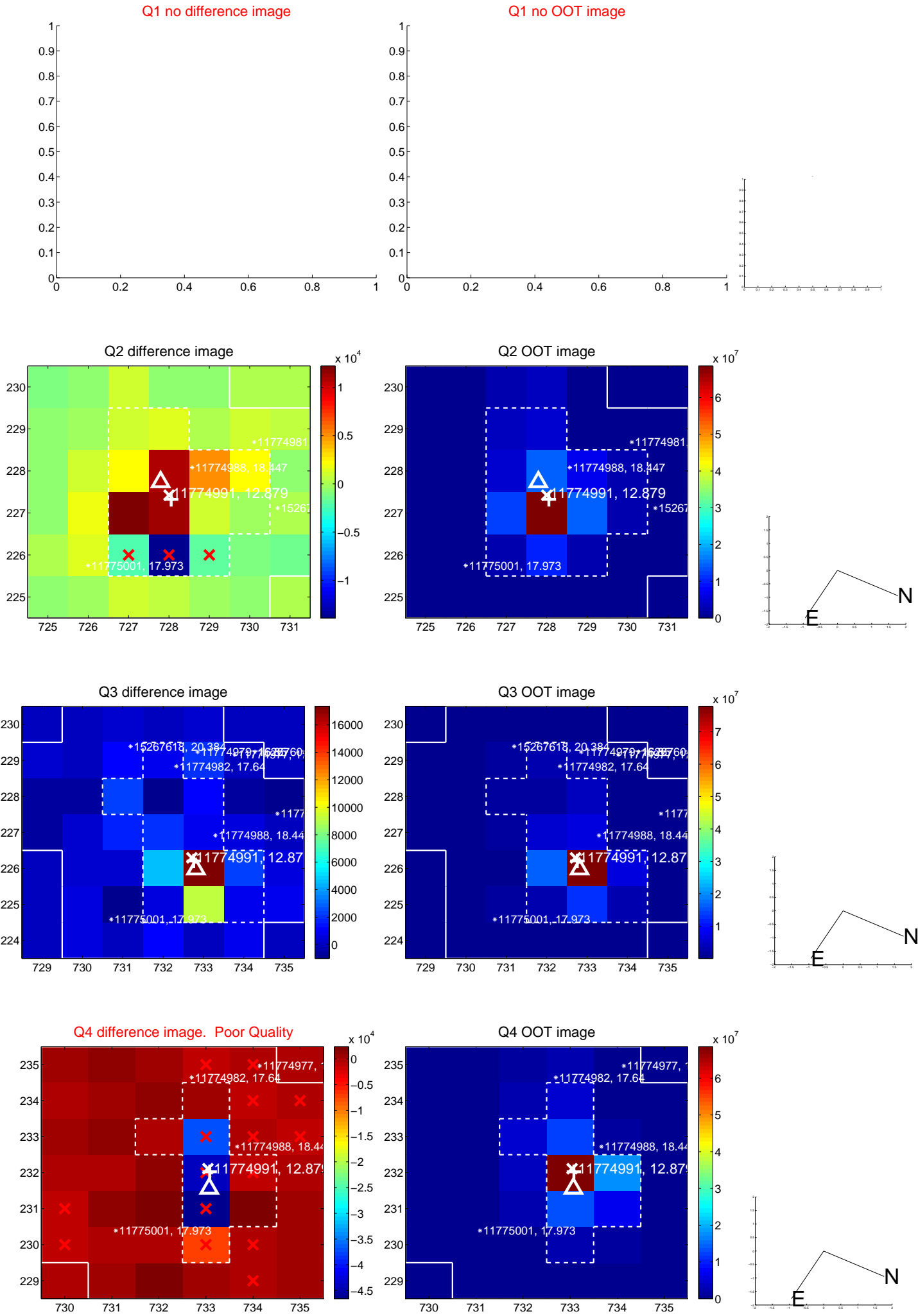
The direct PRF centroid is offset from the target star catalog position by about 0.51 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.296 ± 0.284	1.04	0.127 ± 0.201	0.267 ± 0.249
PRF-fit source offset from KIC position	0.723 ± 0.289	2.50	0.375 ± 0.194	0.618 ± 0.257
photometric centroid source offset	1.18 ± 0.51	2.30	0.76 ± 0.50	-0.90 ± 0.52

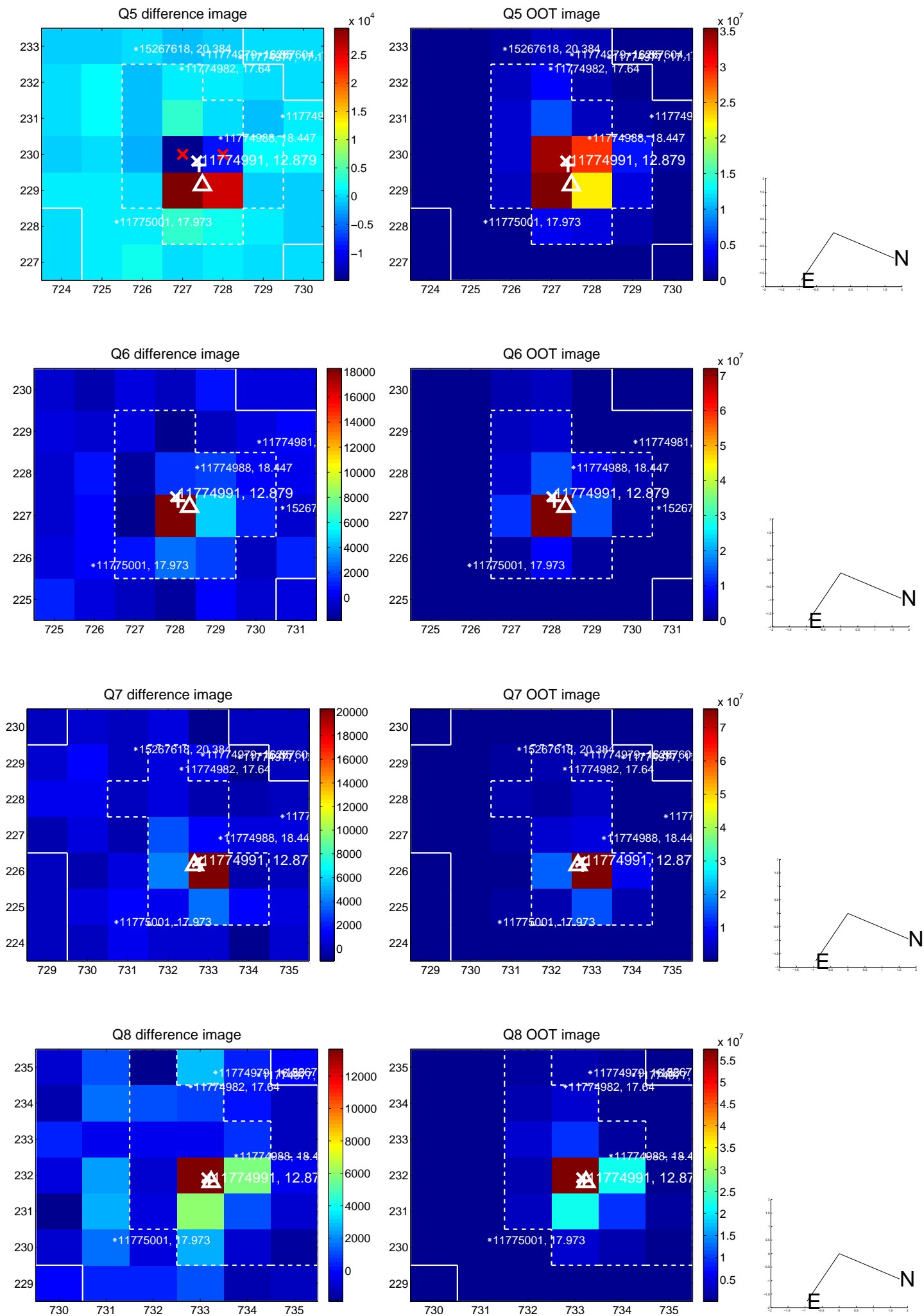


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

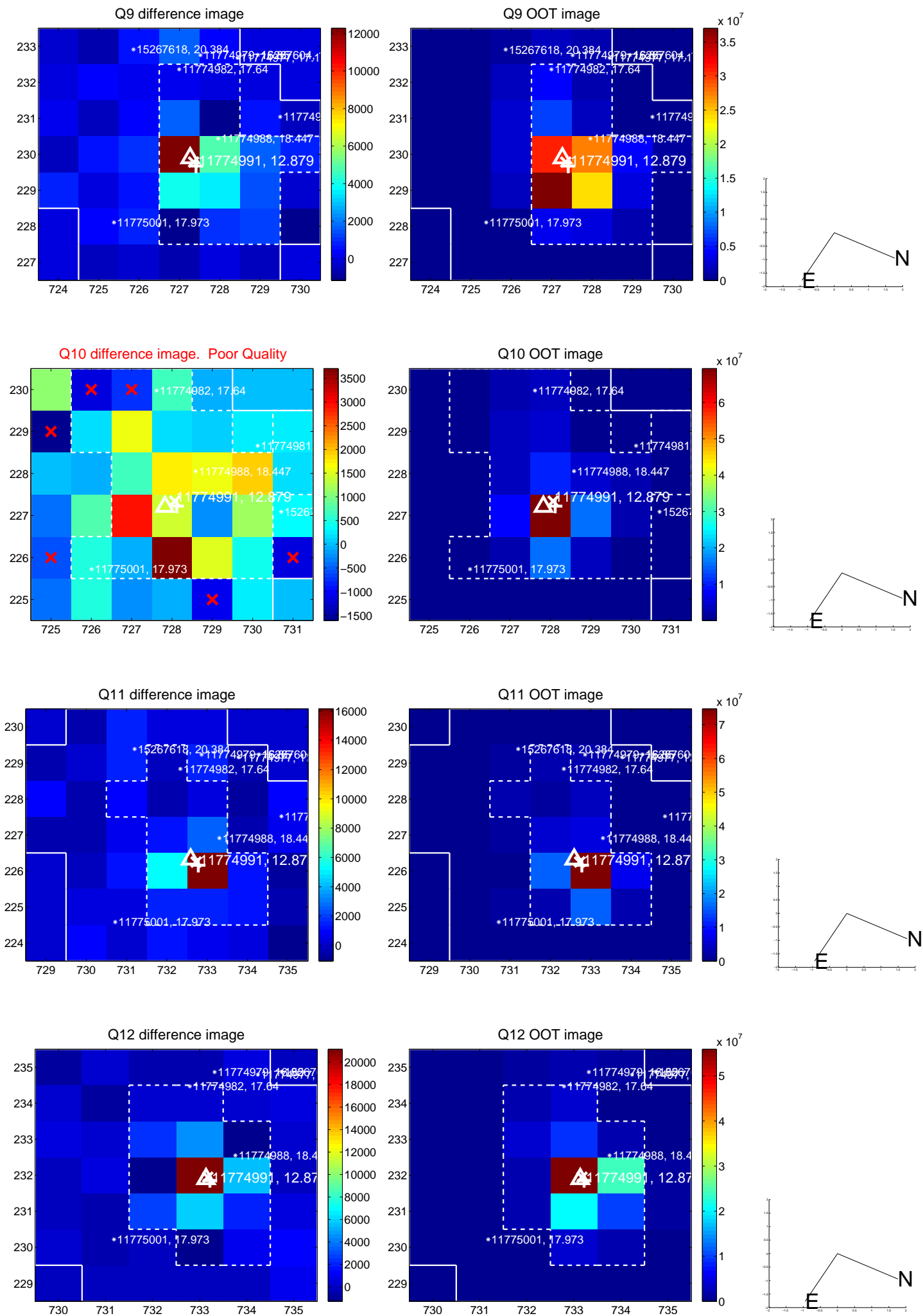
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



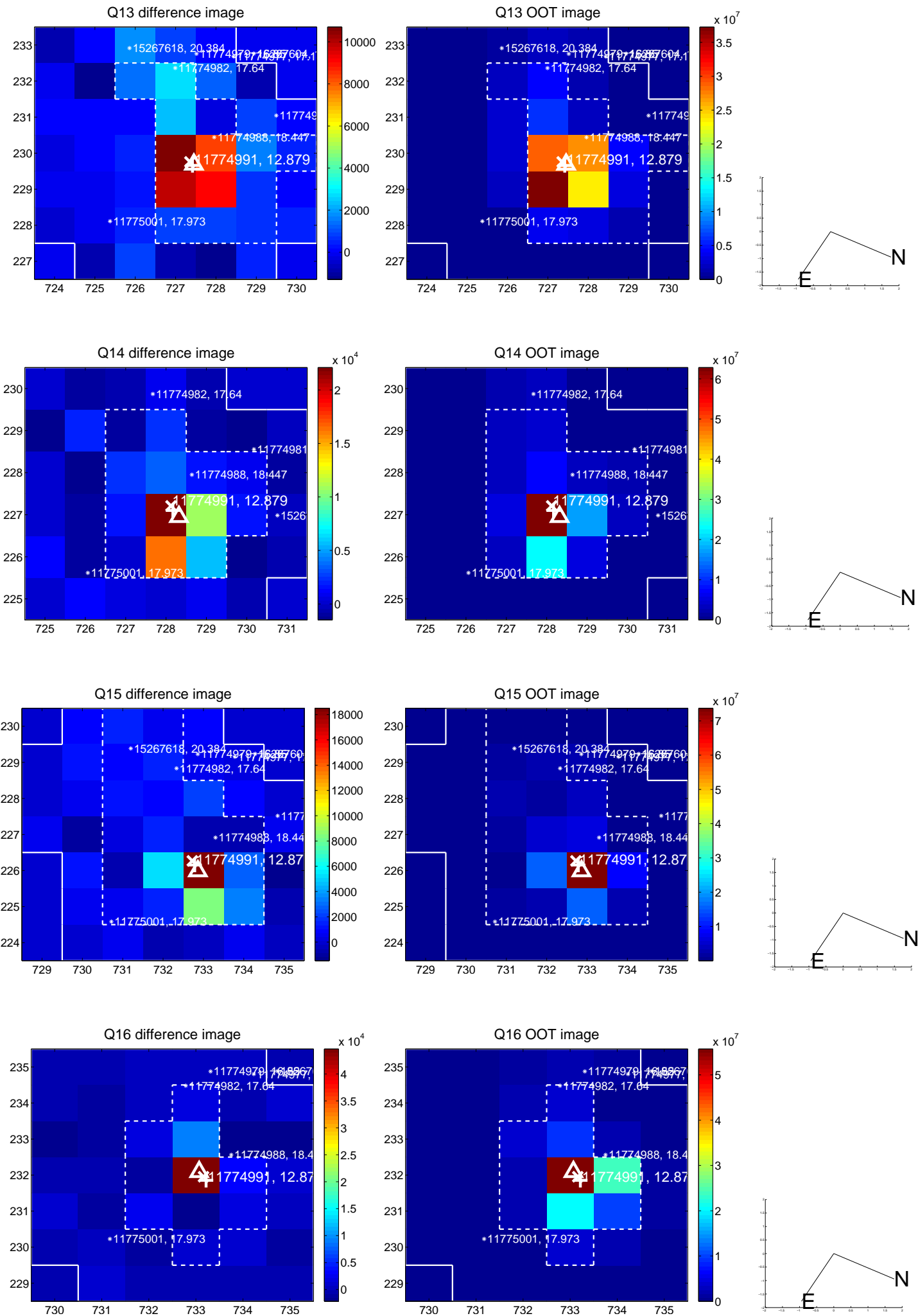
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



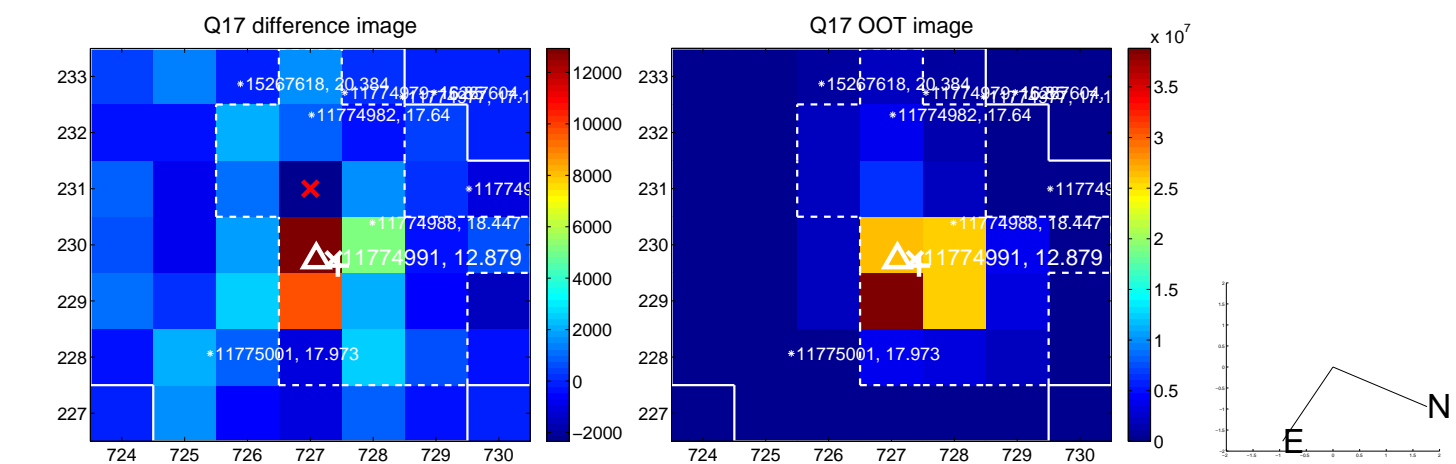
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



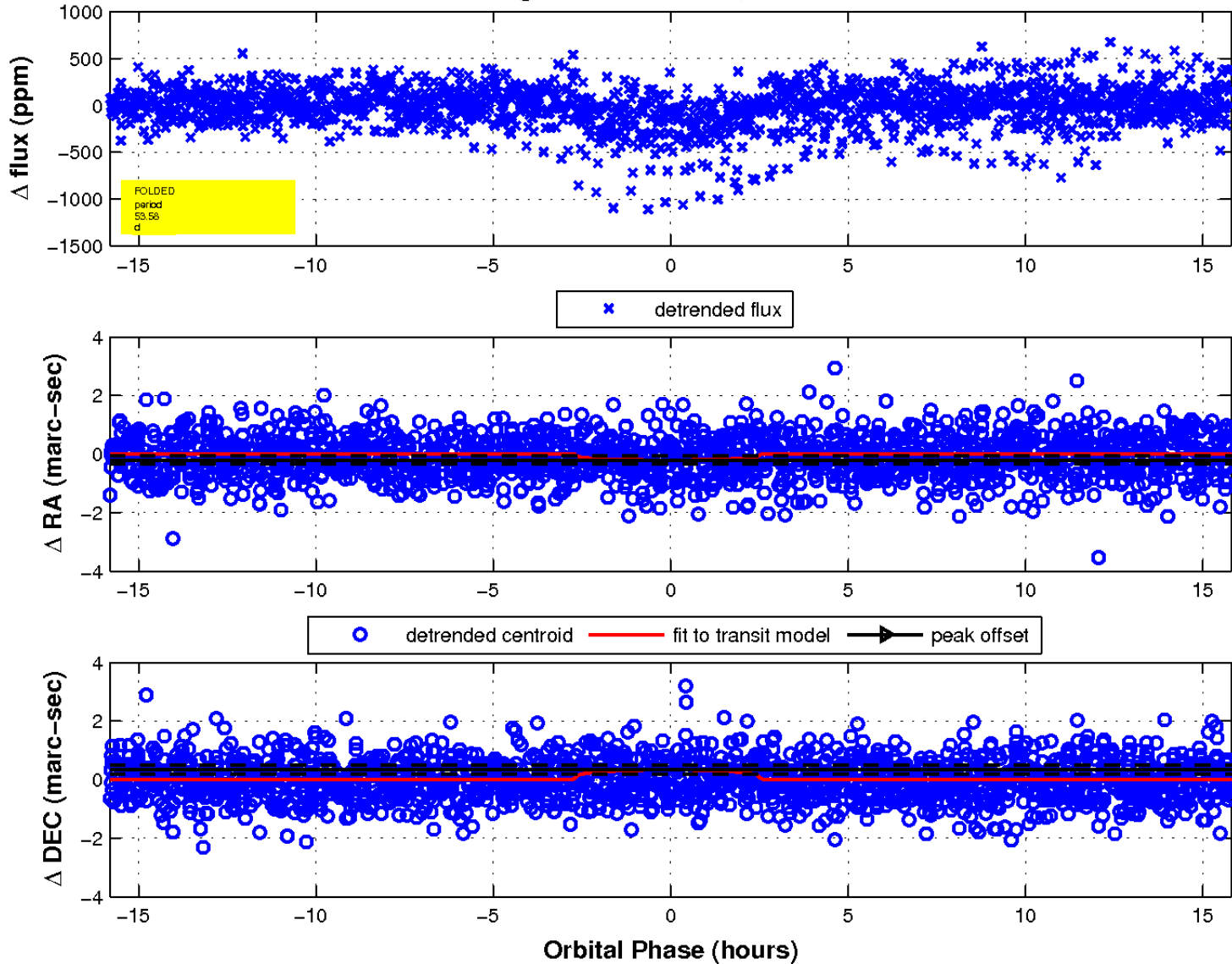
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

