

KIC 011502218

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})
011502218-01	OBS	0970.01	3.988595	135.120471	272.8	2.222	52.6	55.9	13.65	4813	35.57	0.00
011502218-02	OBS	No	3.988778	133.137636	55.6	1.662	24.9	15.3	13.65	4813	12.46	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011502218-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_SEC_ALT—HAS_SEC_TCE—CENT_SATURATED
011502218-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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.

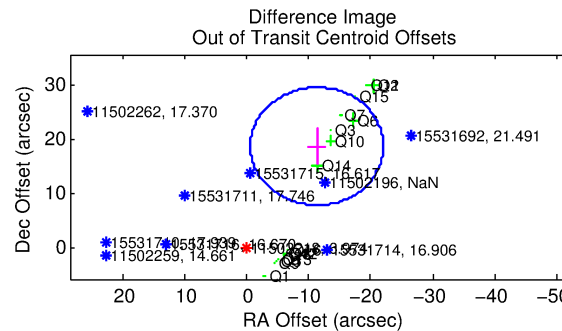
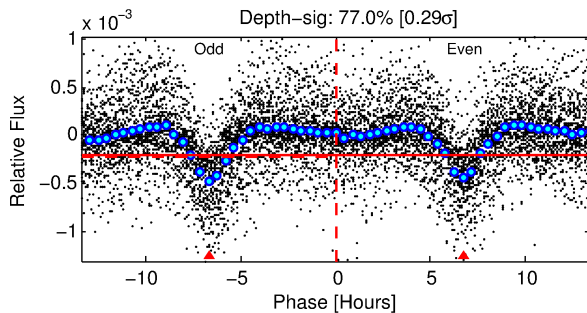
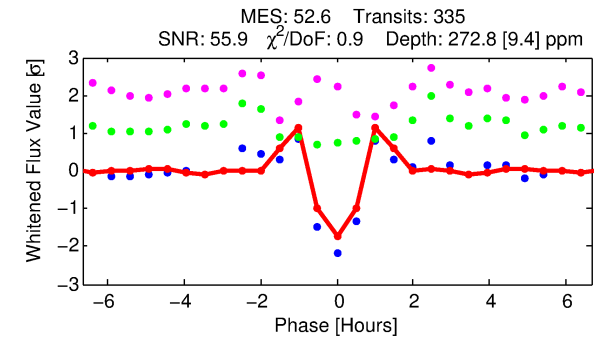
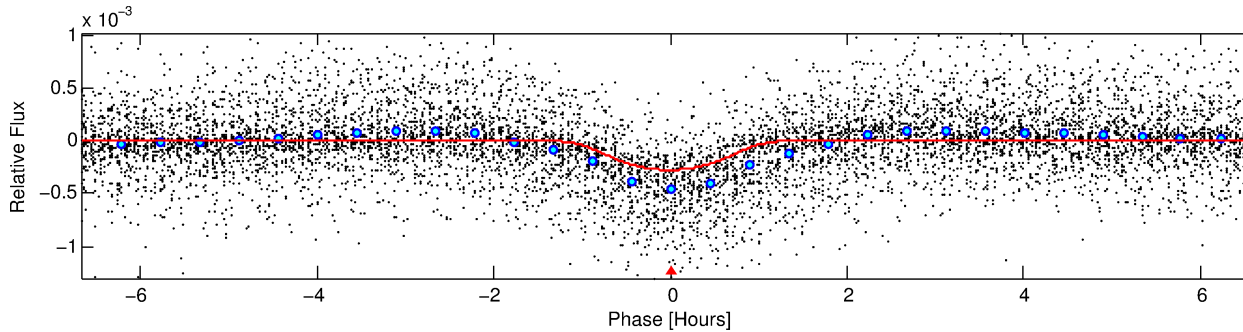
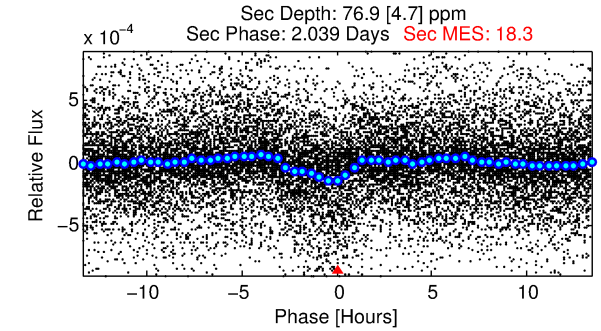
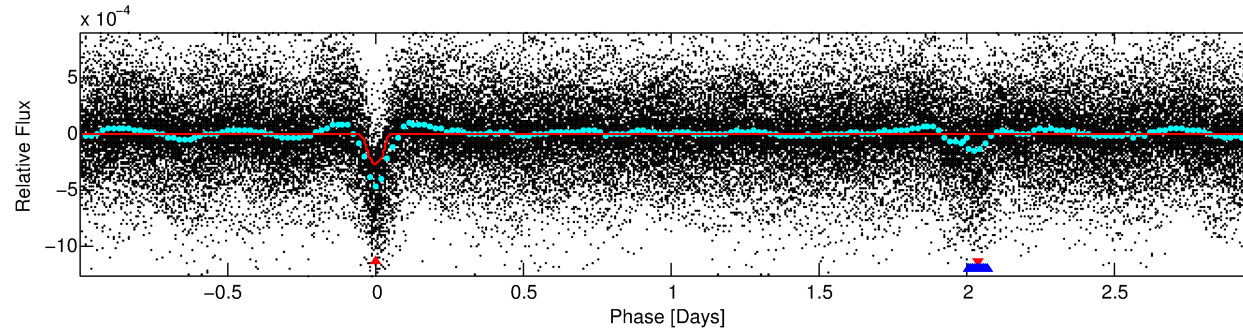
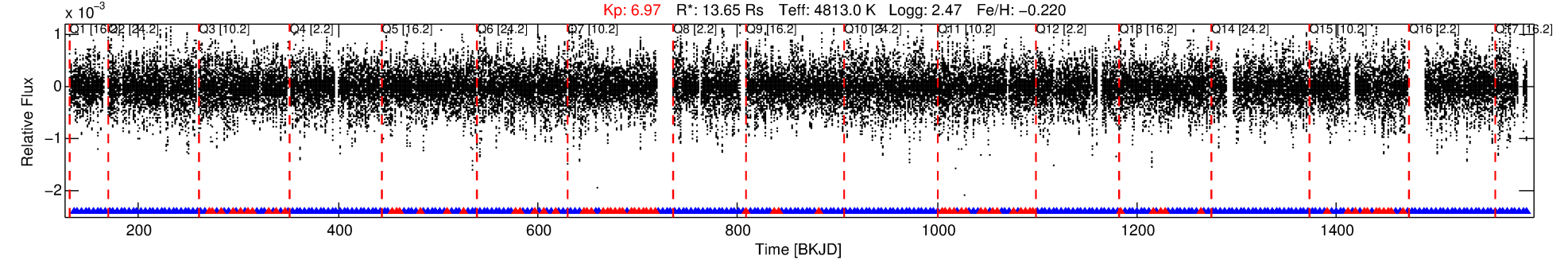
Ephemeris Match Information For 011502218-01

No Significant Match Found

DV One-Page Summary

KIC: 11502218 Candidate: 1 of 2 Period: 3.989 d
KOI: K00970.01 Corr: 0.902

Kp: 6.97 R*: 13.65 Rs Teff: 4813.0 K Logg: 2.47 Fe/H: -0.220



DV Fit Results:

Period = 3.98860 [0.00000] d
Epoch = 135.1205 [0.0003] BKJD
Rp/R* = 0.0239 [0.0013]
a/R* = 3.99 [0.11]
b = 0.98 [0.00]
Seff = N/A
Teq = N/A
Rp = 35.57 [11.52] Re
a = N/A
Ag = N/A
Teffp = N/A

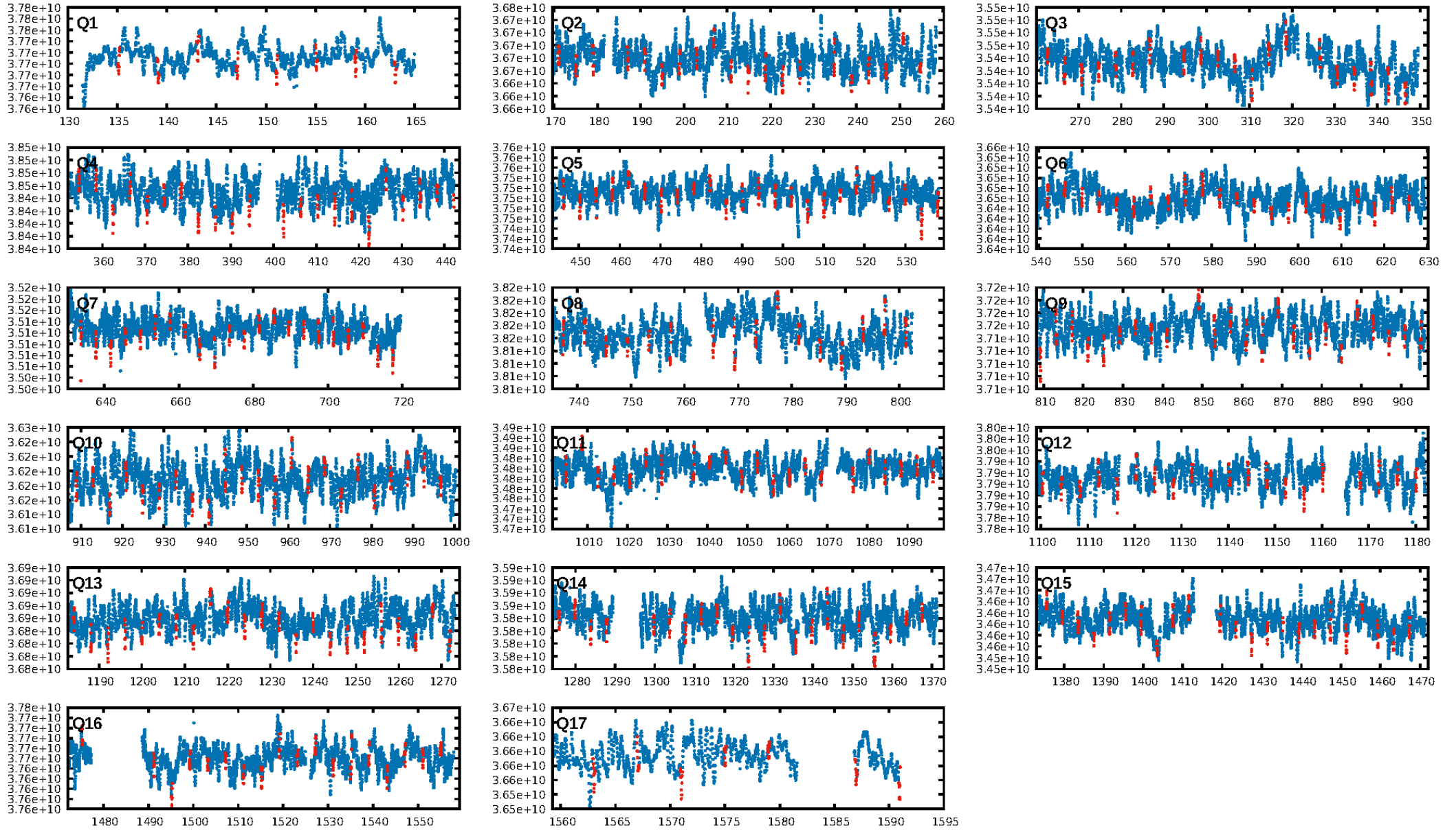
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.78 [248/320]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 11.950 arcsec [13.53σ]
OotOffset-rm: 21.869 arcsec [6.11σ]
KicOffset-rm: 38.761 arcsec [5.64σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

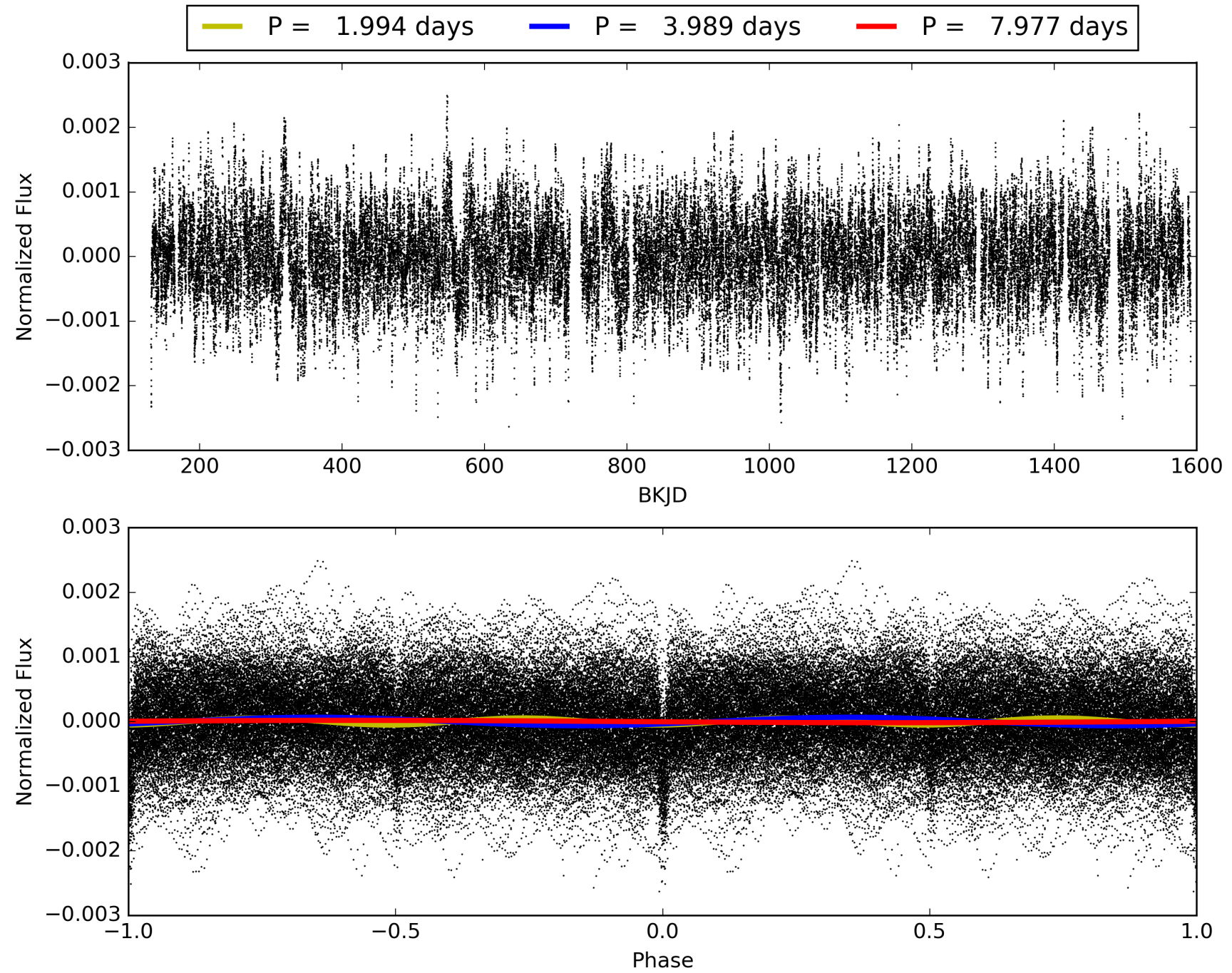
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 011502218-01, PDC Light Curves

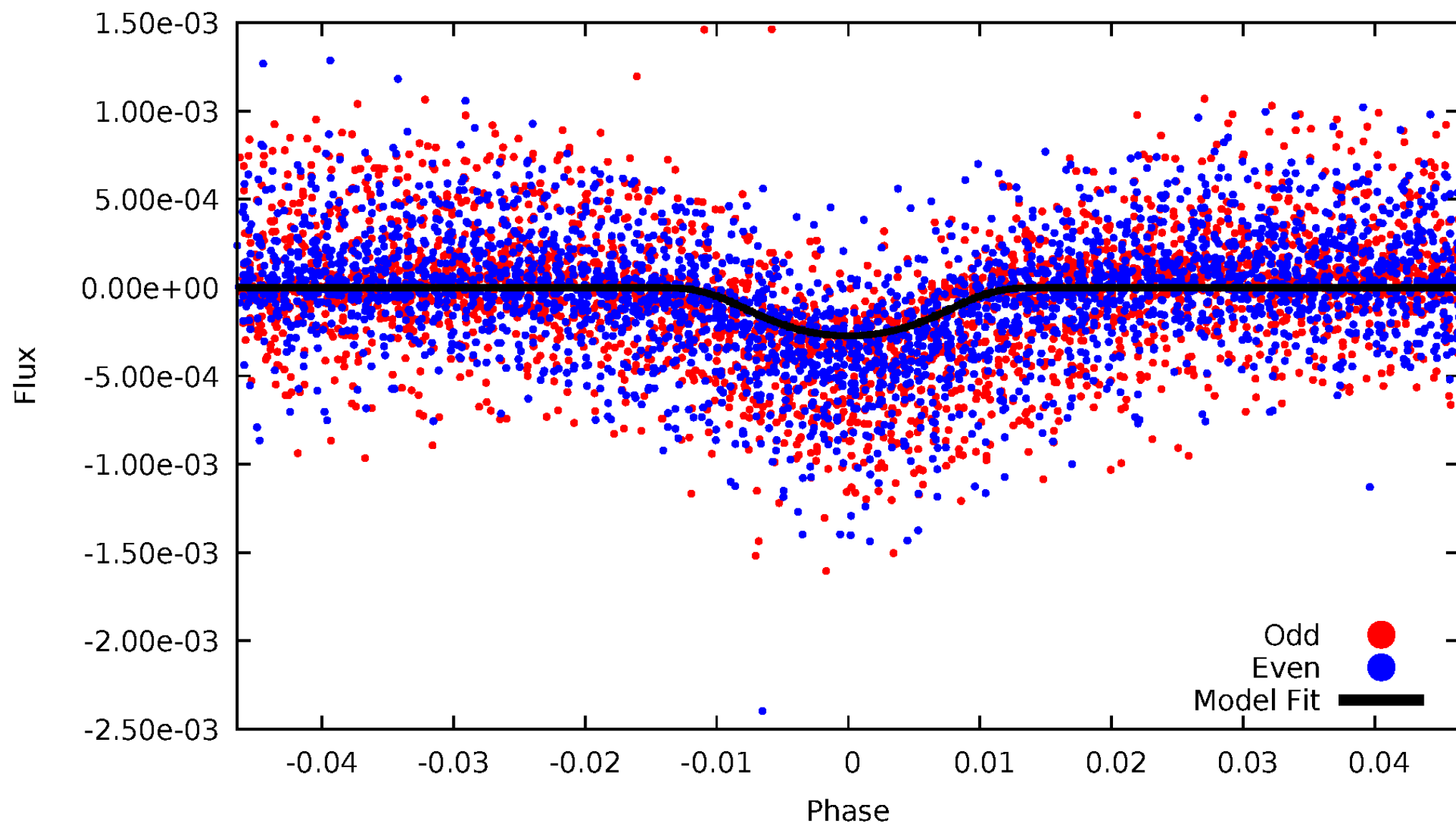


TCE 011502218-01



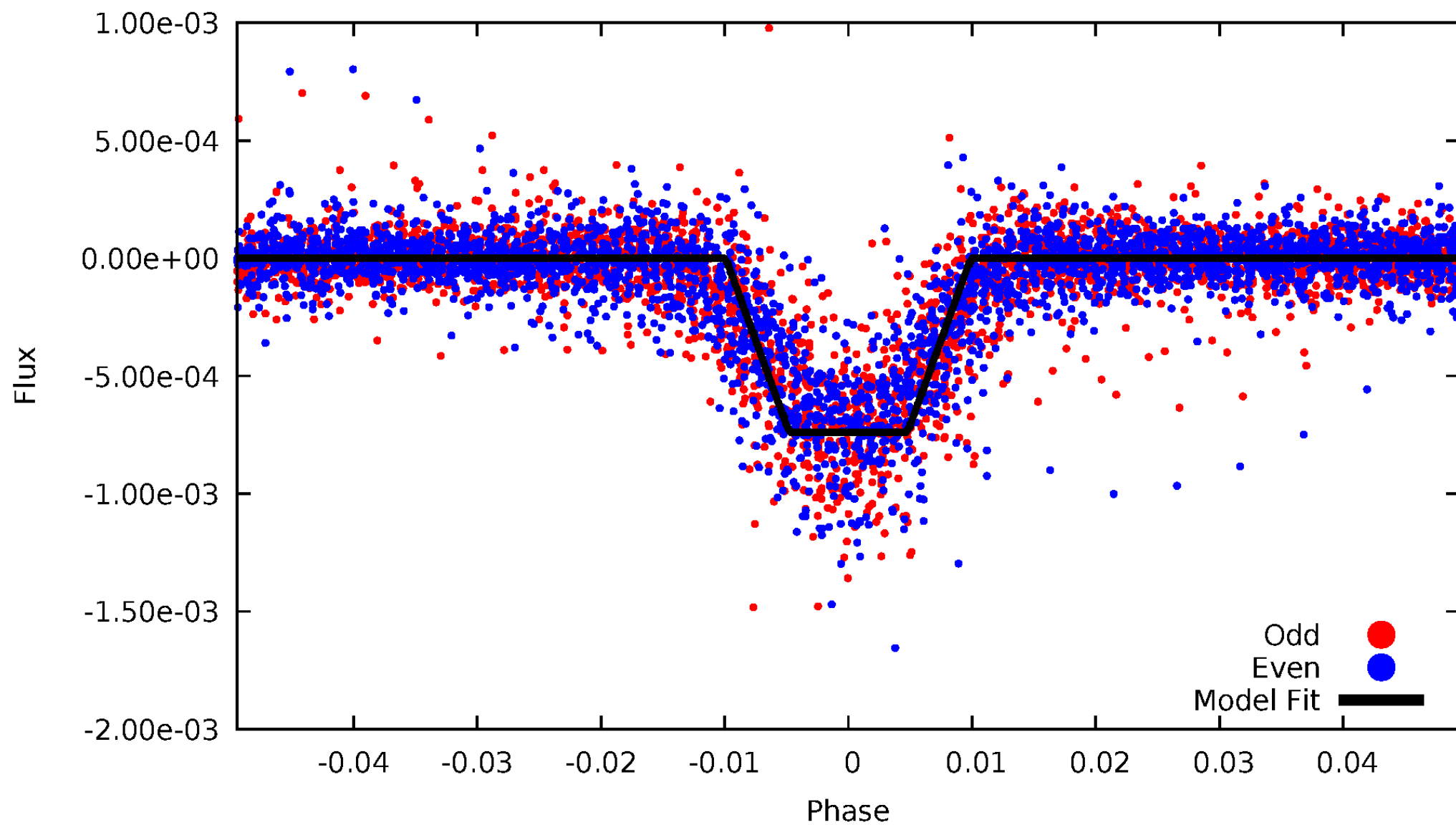
DV Odd/Even

TCE 011502218-01



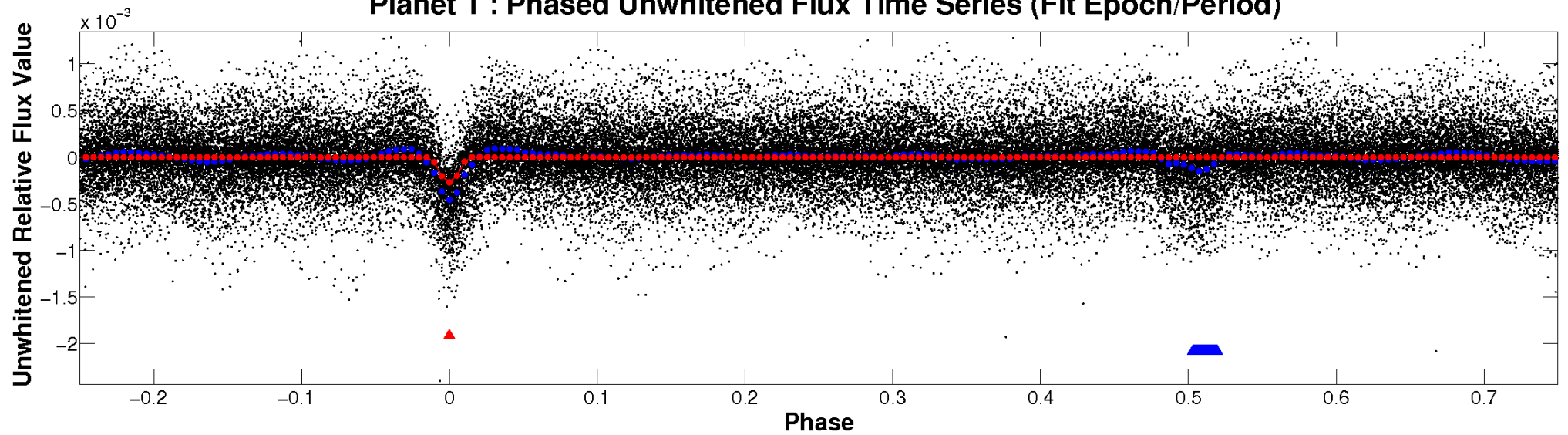
ALT Odd/Even

TCE 011502218-01

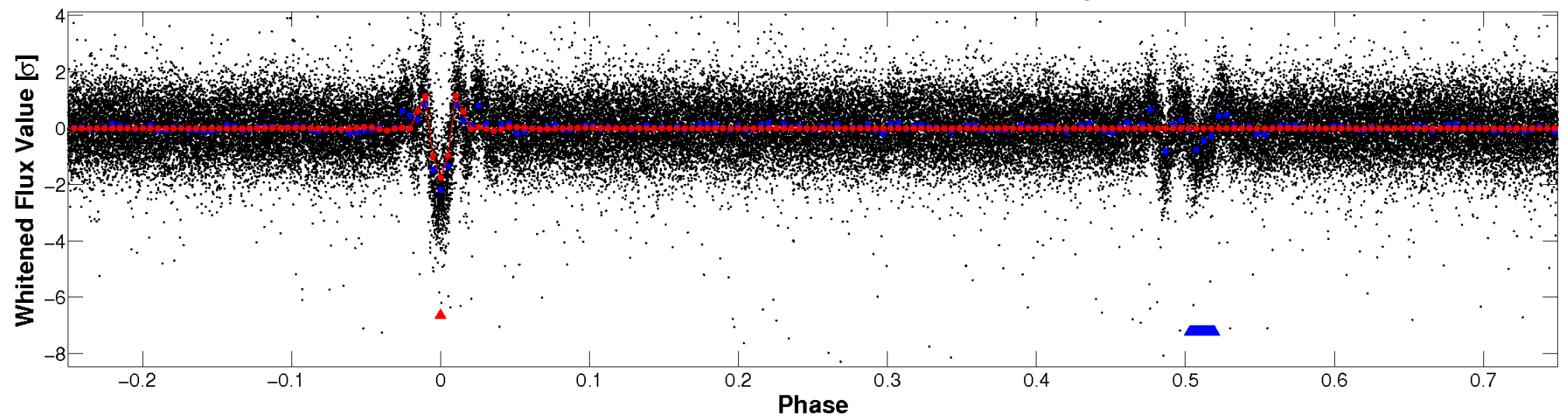


Non-Whitened Vs. Whitened Light Curve

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

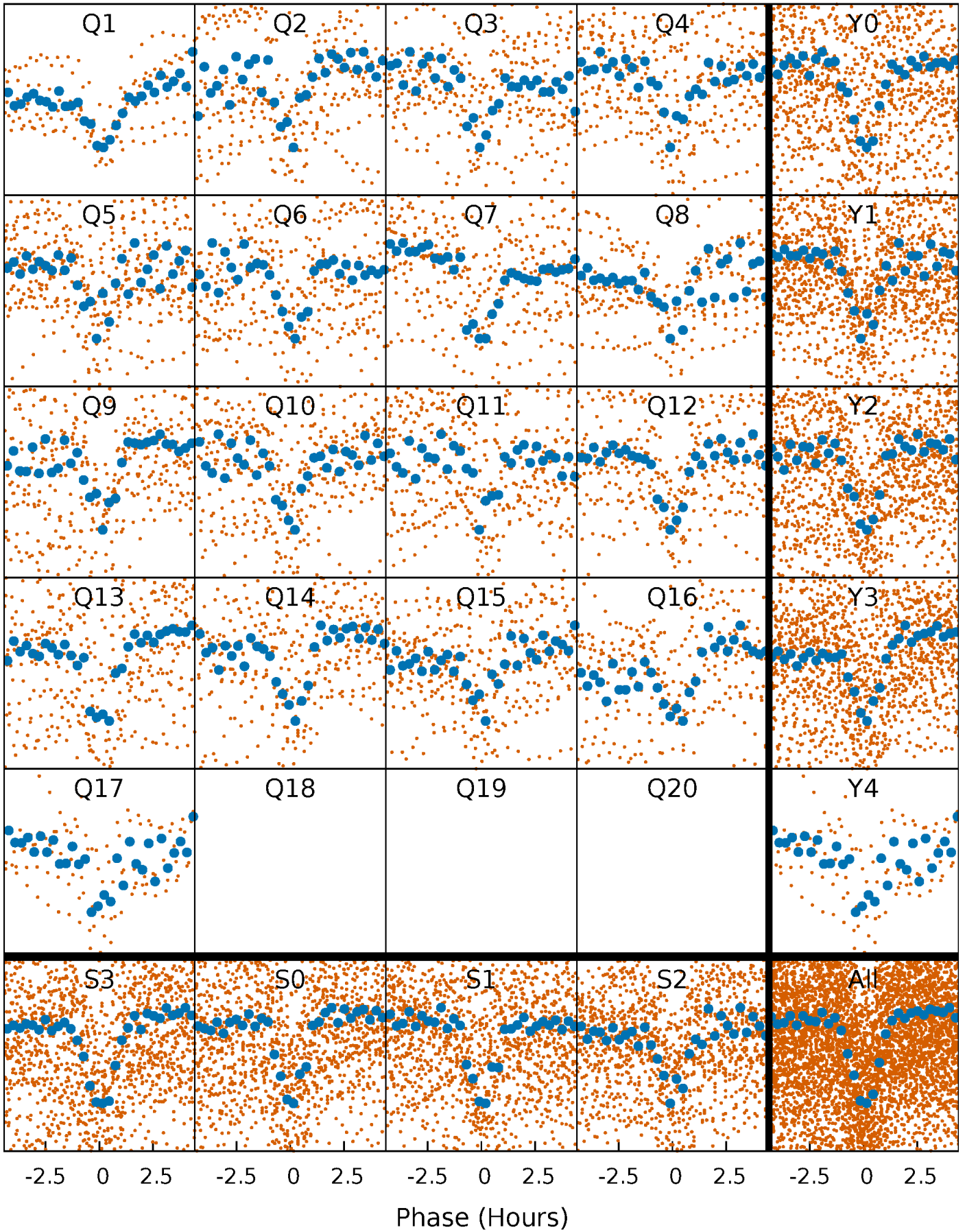


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



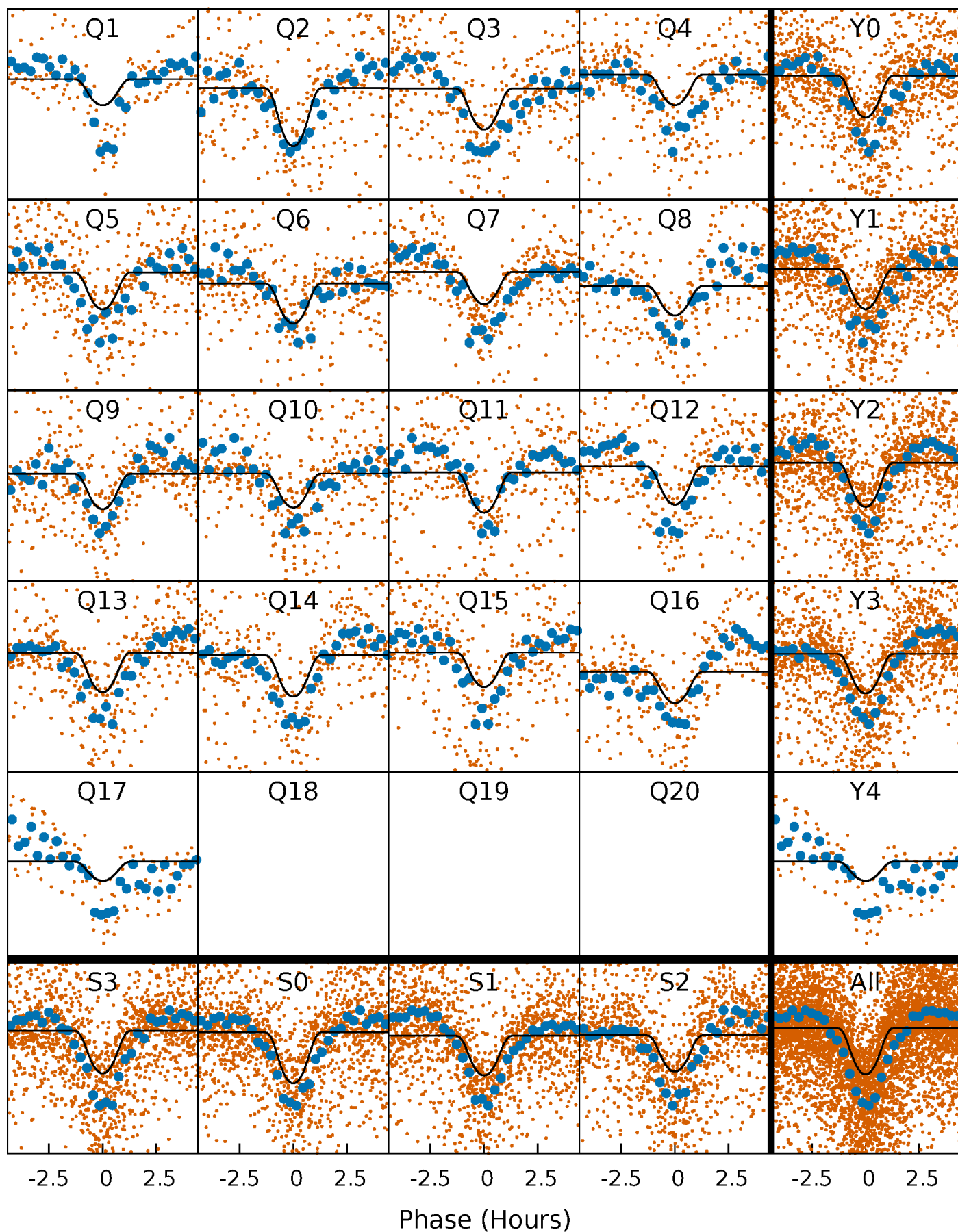
PDC Quarter-Phased Transit Curves

TCE 011502218-01 P= 3.988595 Days $T_0=135.120471$ (BKJD)



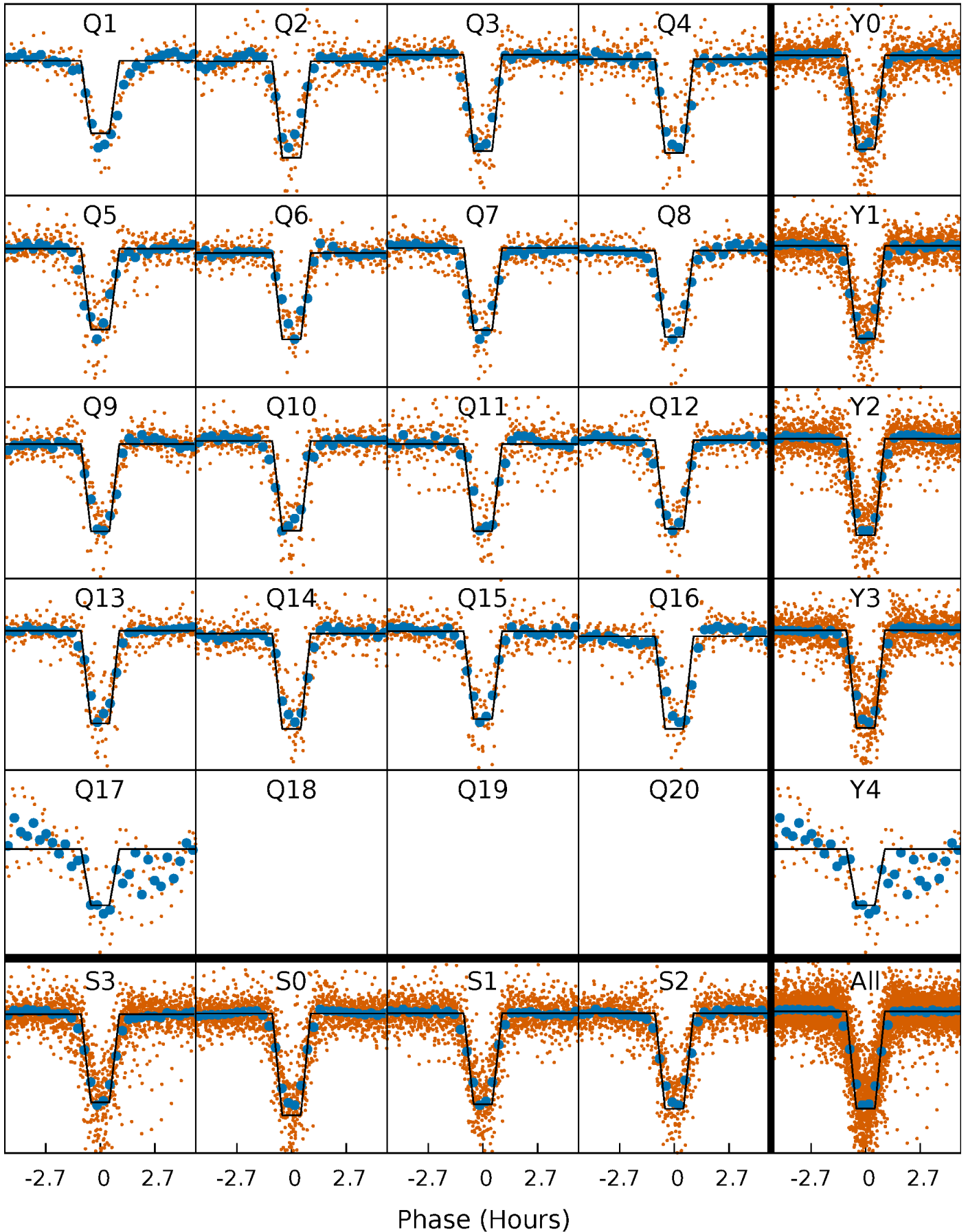
DV Quarter-Phased Transit Curves

TCE 011502218-01 P= 3.988595 Days $T_0=135.120471$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

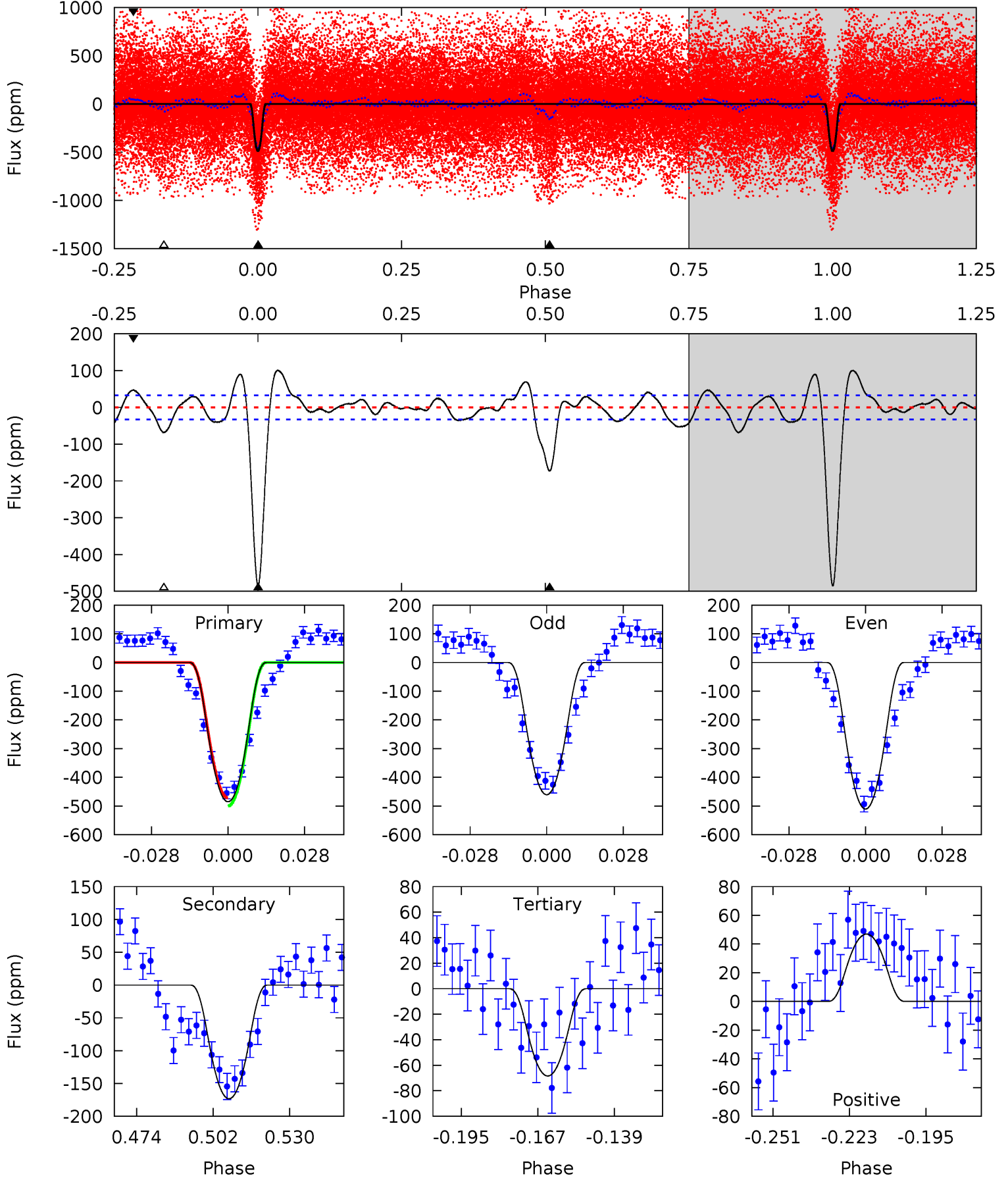
TCE 011502218-01 P= 3.988592 Days $T_0=135.123823$ (BKJD)



DV Model-Shift Uniqueness Test

011502218-01, P = 3.988595 Days, E = 131.131876 Days

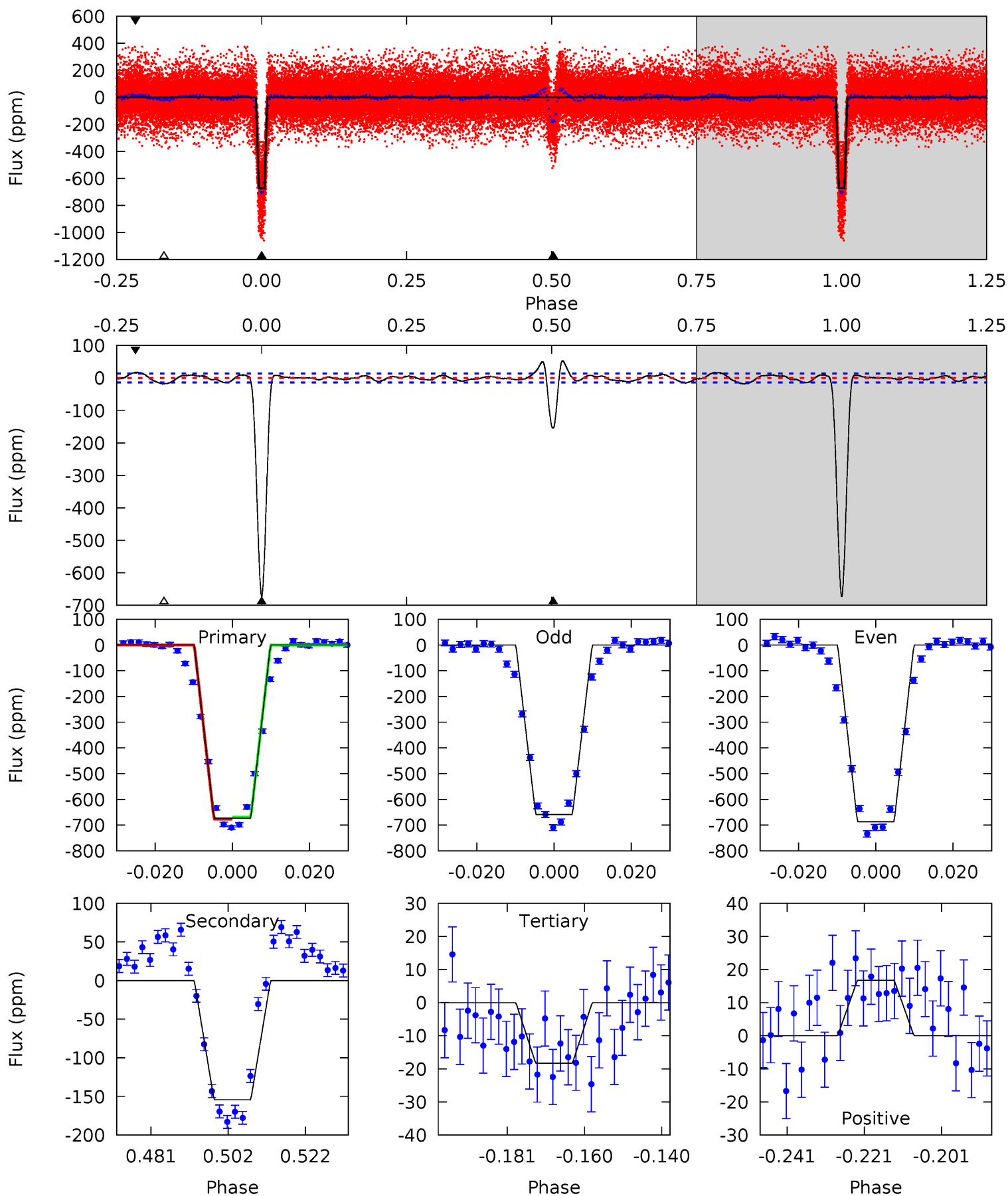
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.3	25.5	10.1	6.90	4.83	2.20	4.58	61.3	64.4	15.4	18.6	3.70	1.12	0.17	2.10



Alt Model-Shift Uniqueness Test

011502218-01, P = 3.988592 Days, E = 131.135231 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
238.5	54.7	6.48	5.94	4.89	2.33	2.95	232.0	232.6	48.2	48.7	4.84	1.03	0.07	1.38



Stellar Parameters For KIC 011502218

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4813^{+50}_{-121}	$2.472^{+0.156}_{-0.117}$	$-0.220^{+0.100}_{-0.150}$	$13.652^{+1.869}_{-4.361}$	$2.016^{+0.769}_{-0.846}$	$0.001^{+0.001}_{-0.000}$
	+1%/-3%	+6%/-5%	+45%/-68%	+14%/-32%	+38%/-42%	+99%/-25%
Source	SPE18	SPE18	SPE18	DSEP		

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

Secondary Eclipse Parameters for KIC 011502218-01 / KOI 0970.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-173 ± 7	$36.38^{+4.61}_{-5.79}$	4353^{+217}_{-243}	-2168^{+5216}_{-916}	$0.295^{+0.086}_{-0.058}$
Alt.	-154 ± 3	$42.06^{+4.73}_{-7.30}$	4359^{+215}_{-223}	-3230^{+414}_{-229}	$0.200^{+0.055}_{-0.035}$

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

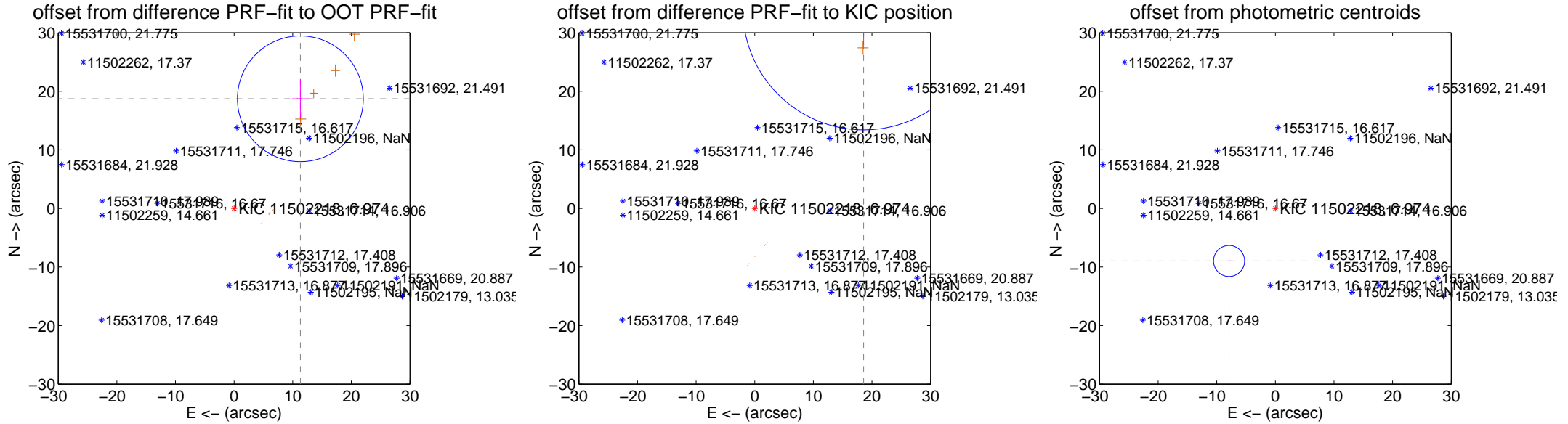
DV Centroid Data

Supplemental centroid analysis for 011502218-01. **Kepler magnitude: 6.97.** Transit SNR 55.86

There are 0 quarters with good PRF difference image offsets

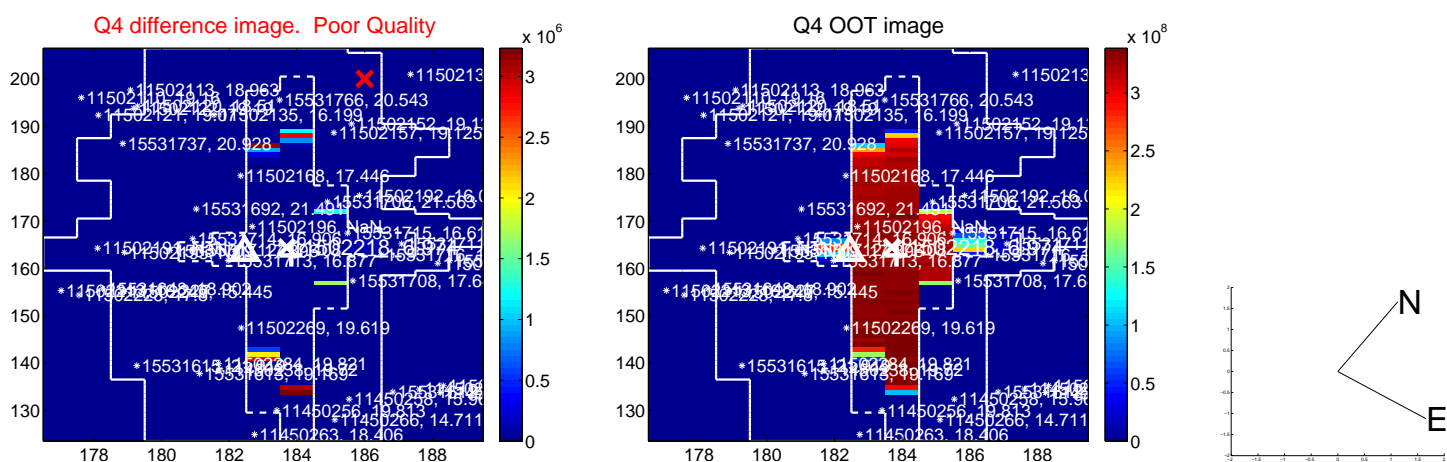
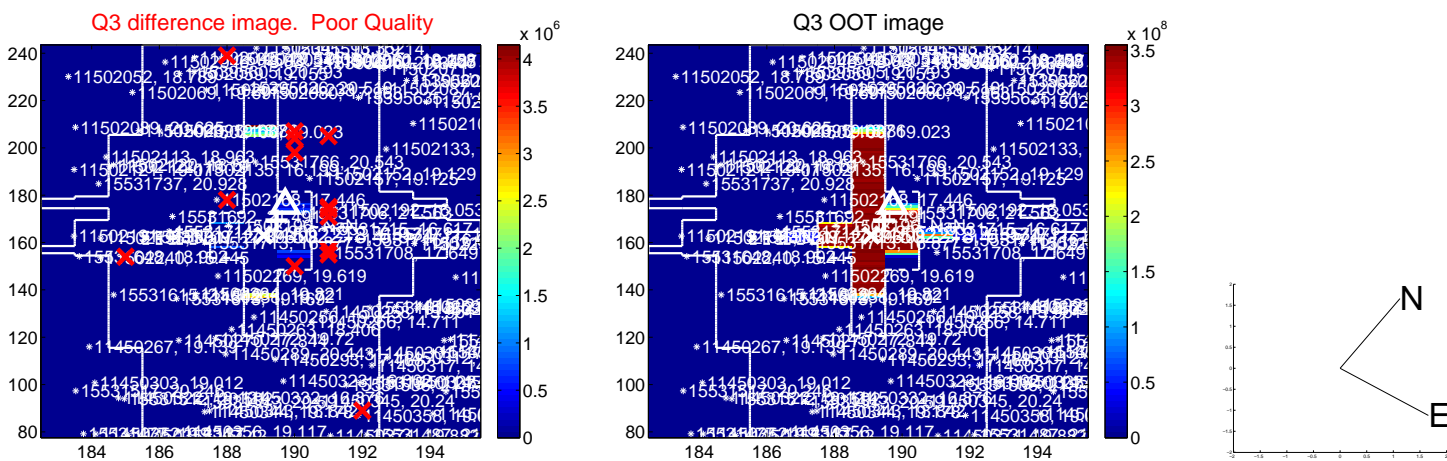
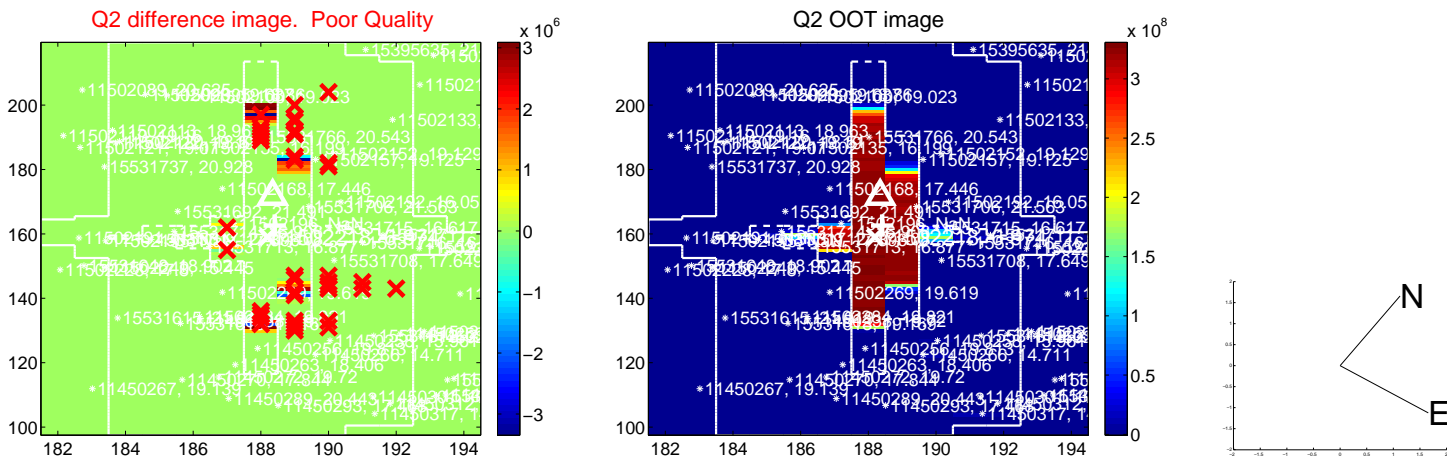
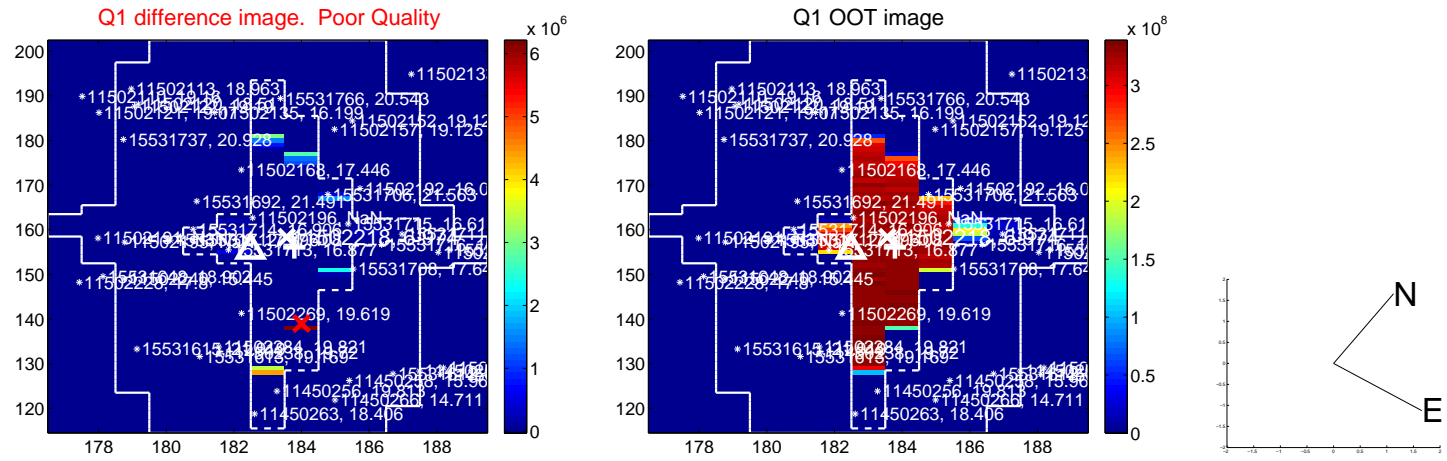
The OOT PRF centroid is offset from the target star catalog position by about 9.29 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	21.869 ± 3.579	6.11	-11.305 ± 1.434	18.721 ± 3.324
PRF-fit source offset from KIC position	38.761 ± 6.867	5.64	-18.582 ± 3.233	34.016 ± 6.061
photometric centroid source offset	11.95 ± 0.88	13.53	7.90 ± 0.63	-8.97 ± 1.04

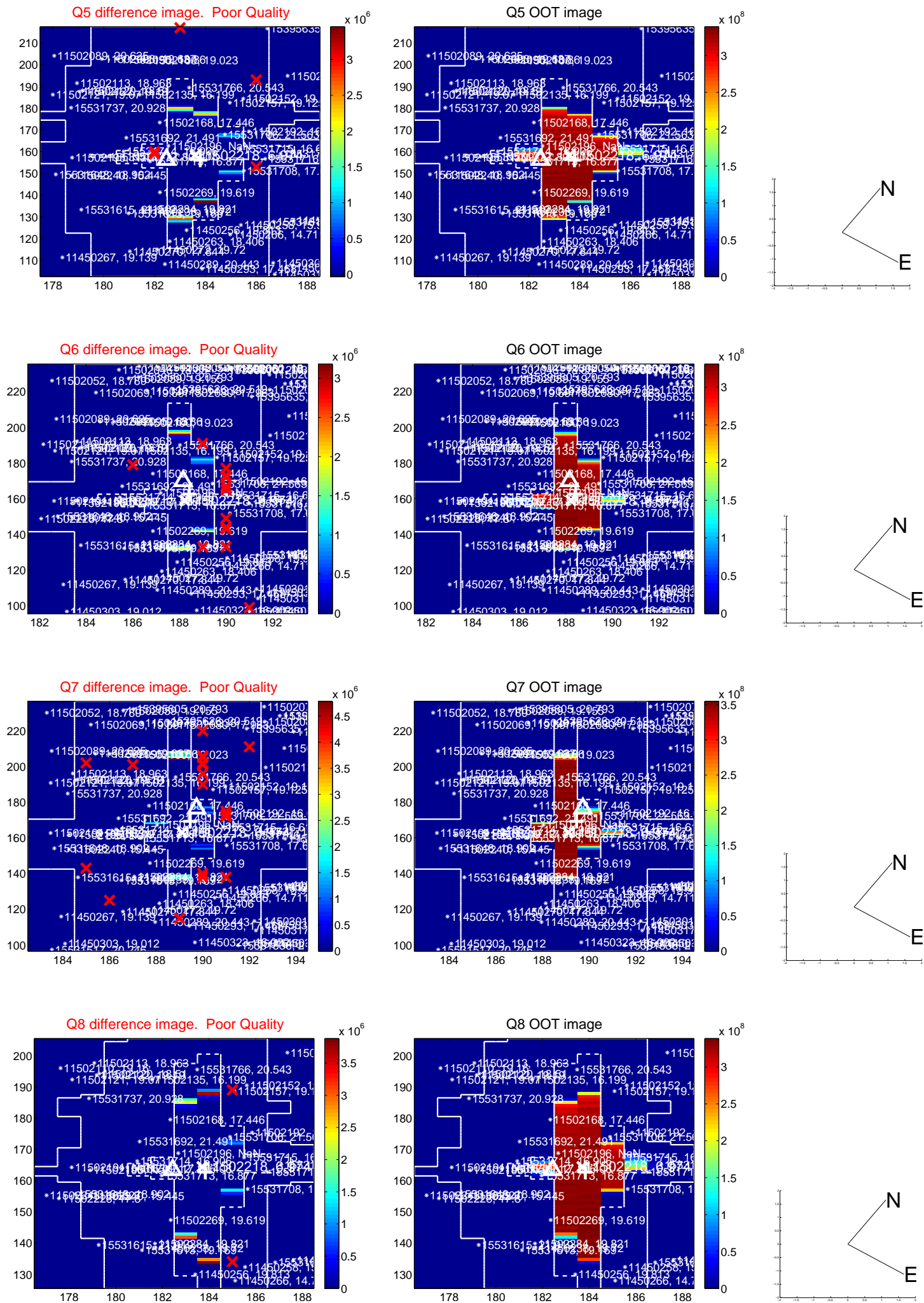


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

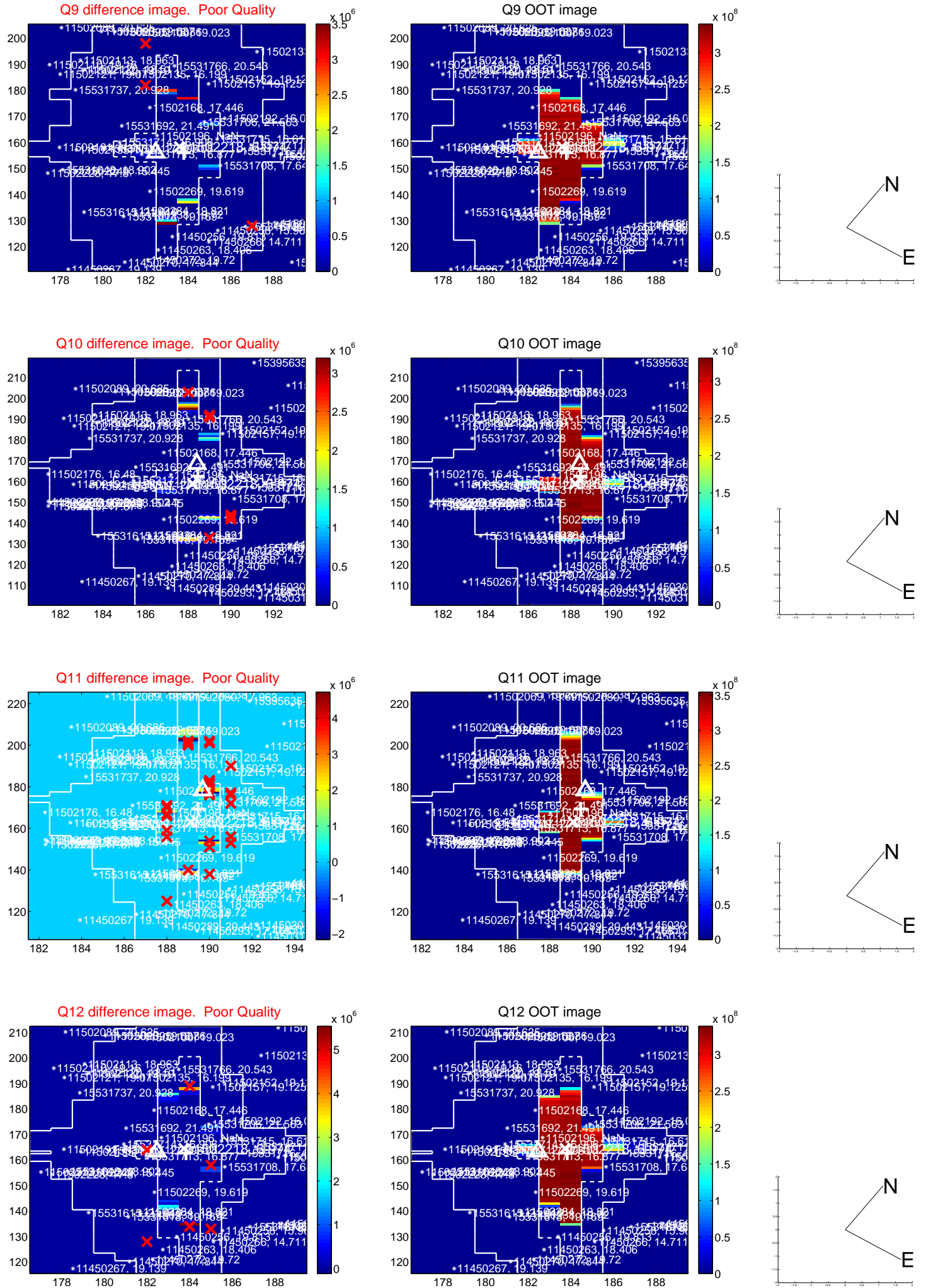
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



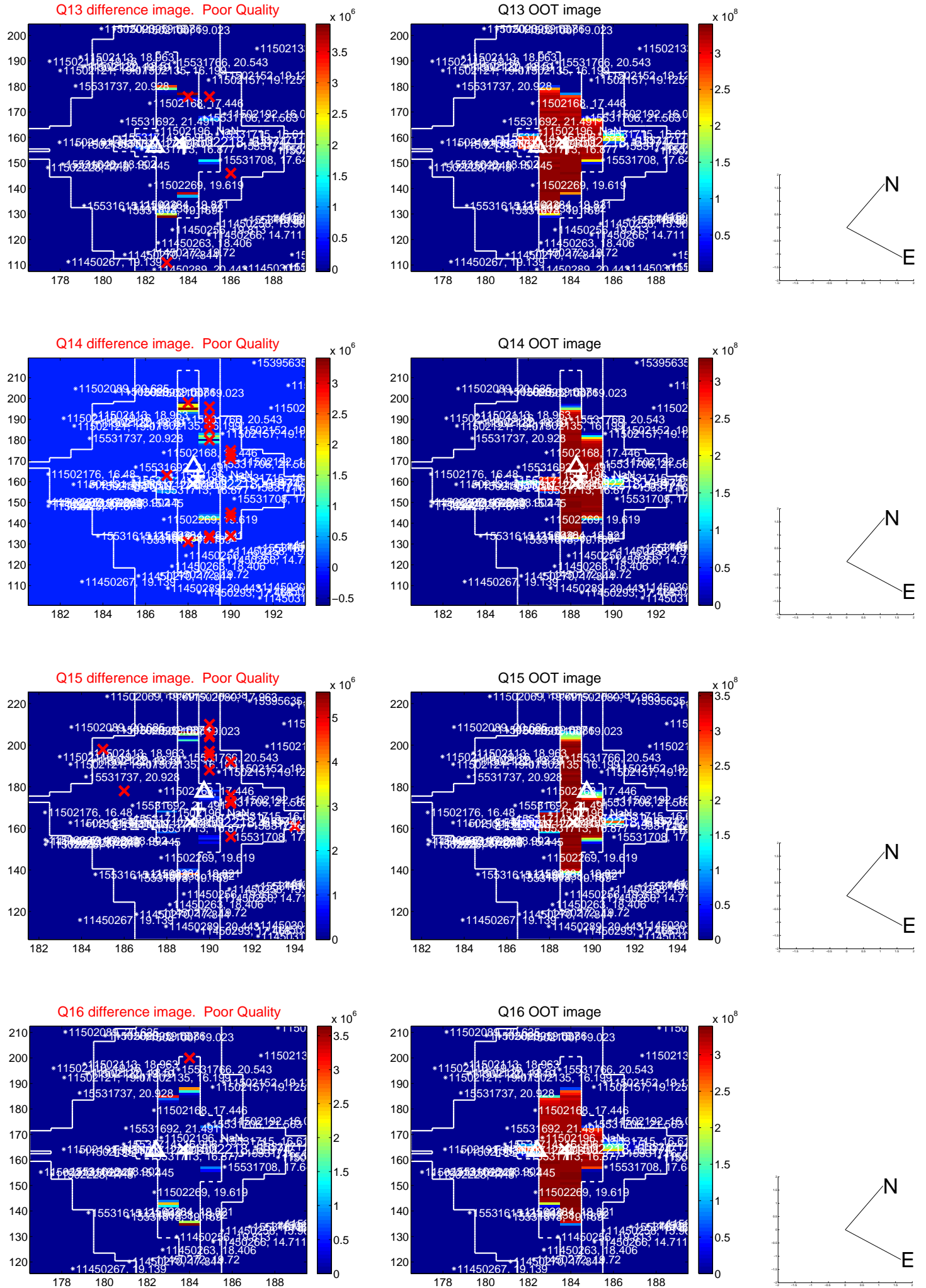
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



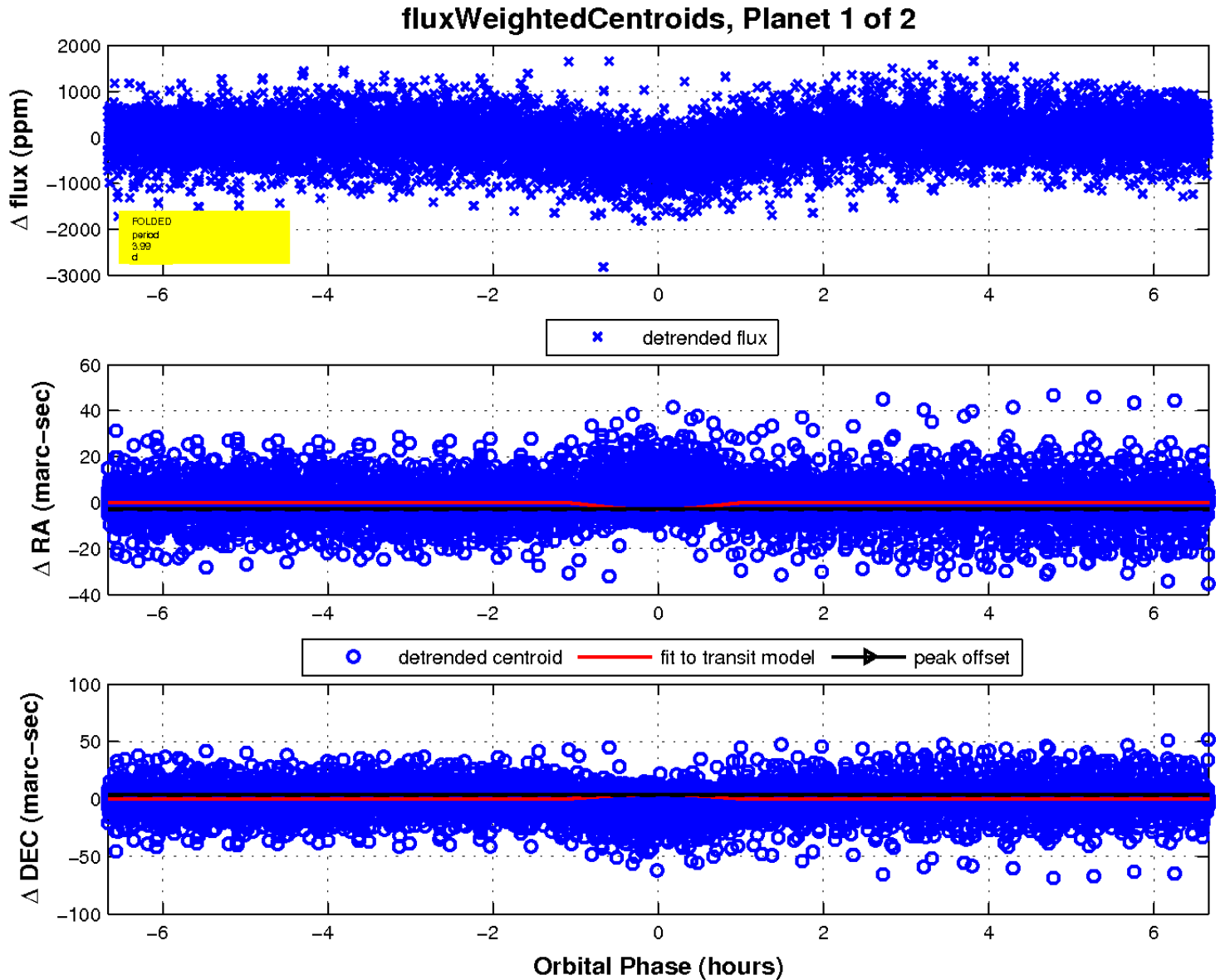
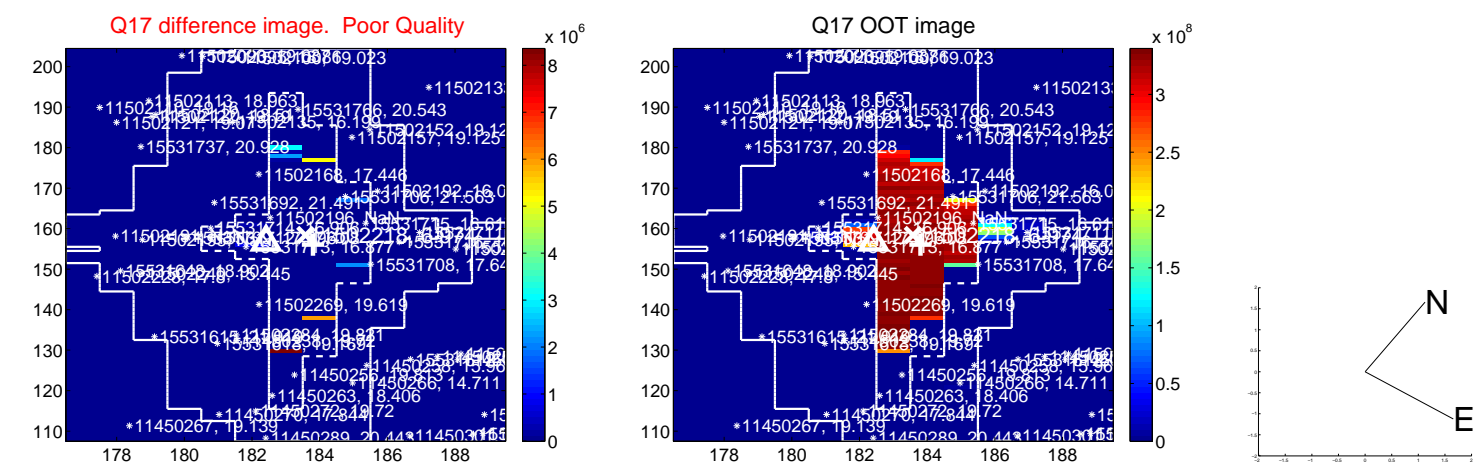
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

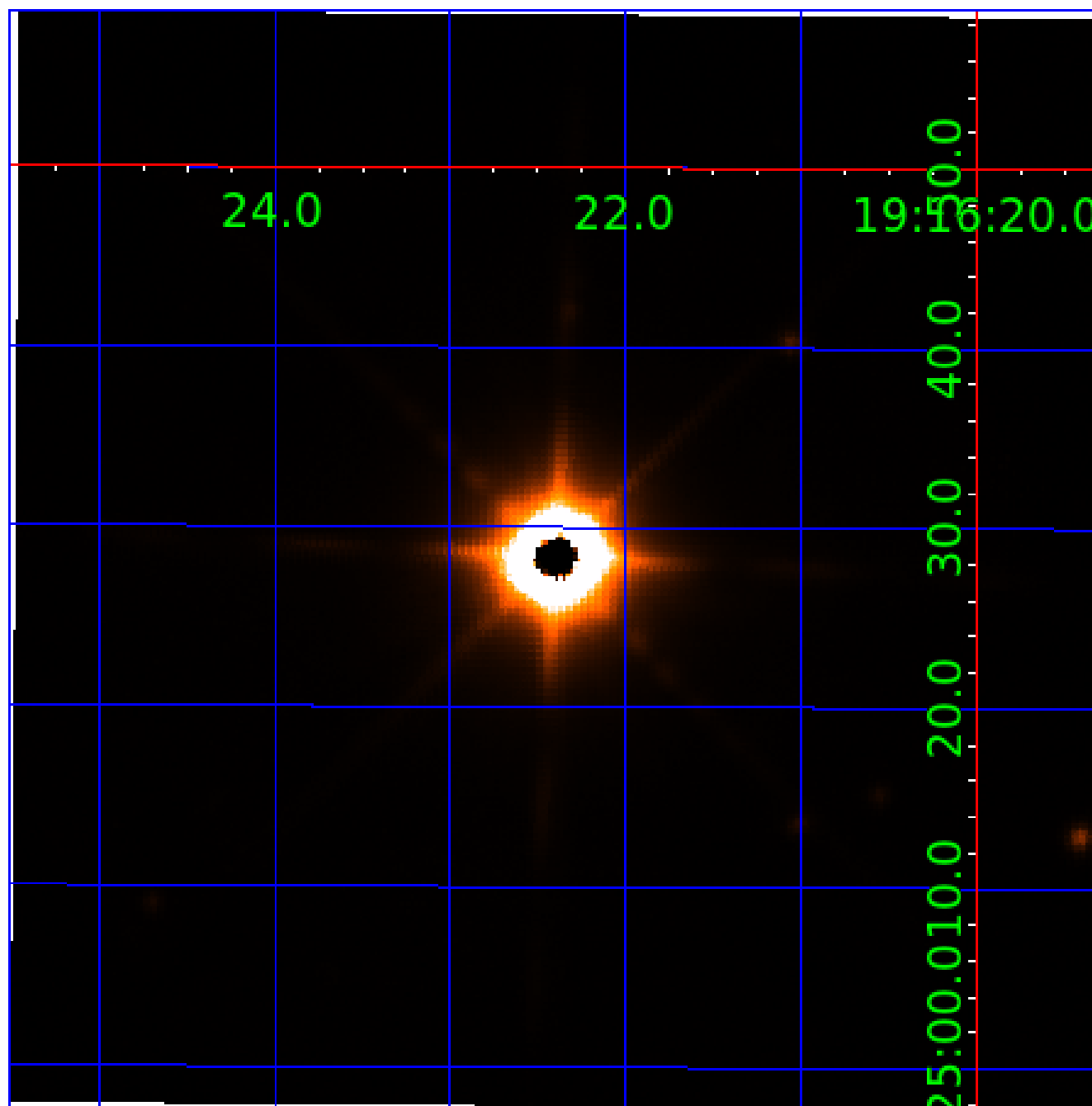


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011502218

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})
011502218-01	OBS	0970.01	3.988595	135.120471	272.8	2.222	52.6	55.9	13.65	4813	35.57	0.00
011502218-02	OBS	No	3.988778	133.137636	55.6	1.662	24.9	15.3	13.65	4813	12.46	0.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011502218-01	OBS	FP	0.00	0	1	0	0	PLANET_IN_STAR—MOD_SEC_ALT—HAS_SEC_TCE—CENT_SATURATED
011502218-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED

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 011502218-02

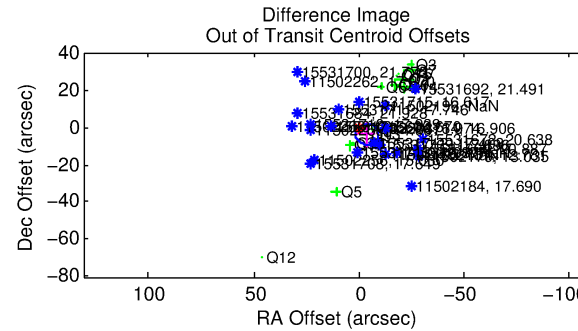
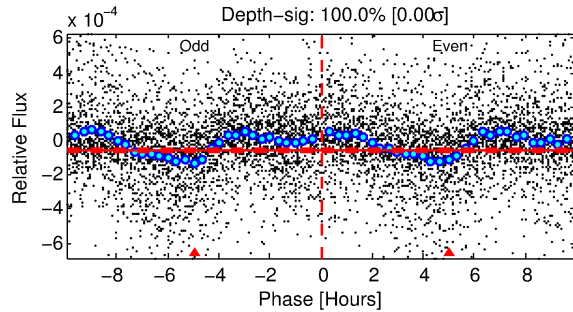
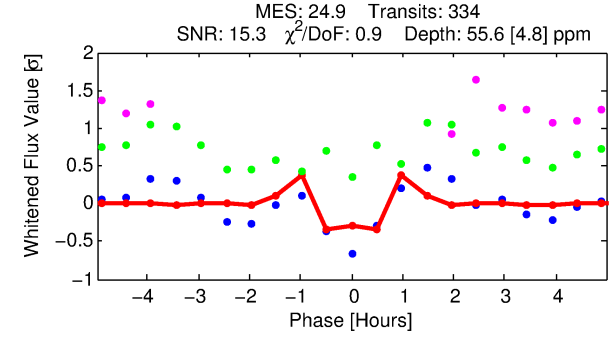
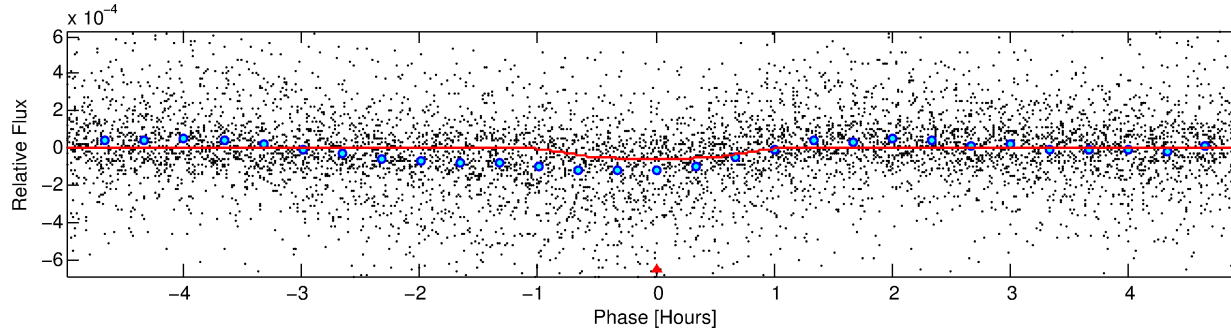
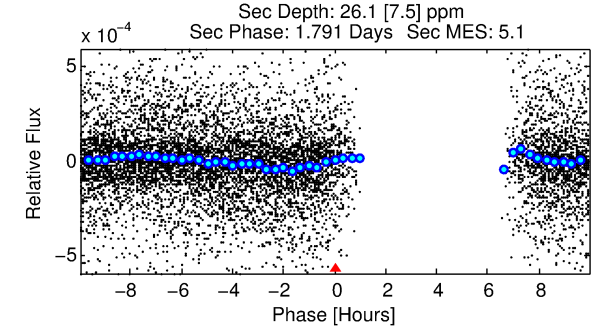
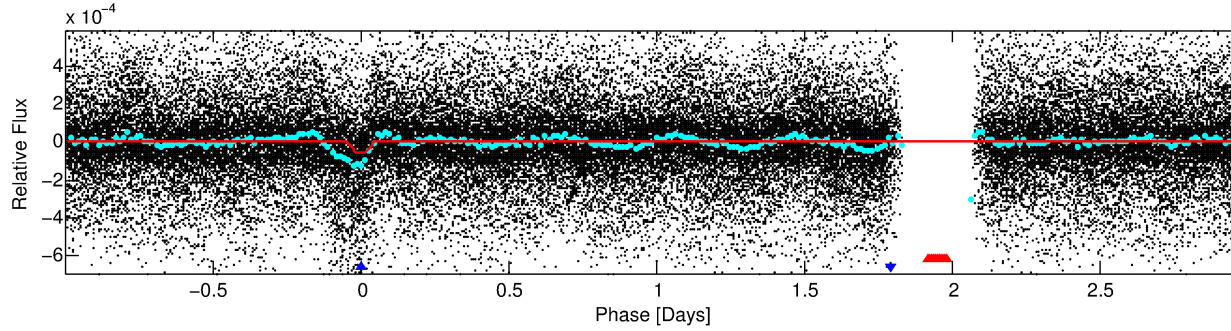
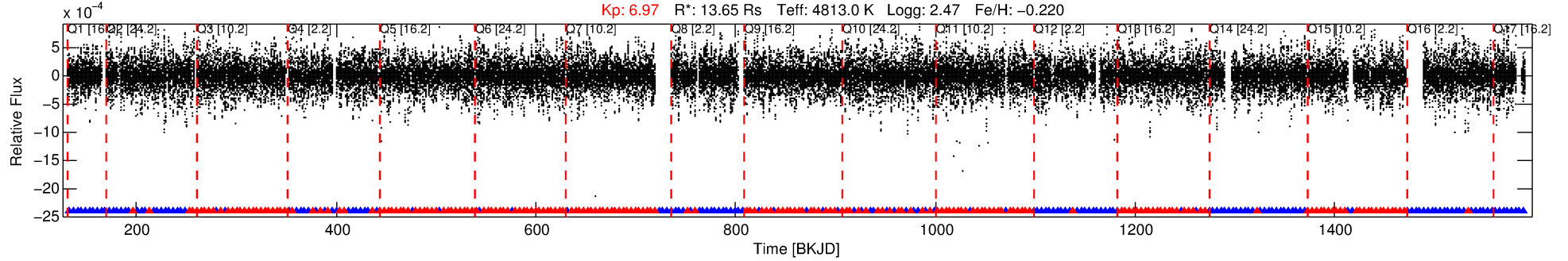
No Significant Match Found

DV One-Page Summary

KIC: 11502218 Candidate: 2 of 2 Period: 3.989 d

KOI: K00970 Corr: No Ephemeris Match

Kp: 6.97 R*: 13.65 Rs Teff: 4813.0 K Logg: 2.47 Fe/H: -0.220



DV Fit Results:

Period = 3.98878 [0.00001] d
Epoch = 133.1376 [0.0008] BKJD
Rp/R* = 0.0084 [0.0015]
a/R* = 8.39 [5.89]
b = 0.90 [0.16]
Seff = N/A
Teq = N/A
Rp = 12.46 [4.57] Re
a = N/A
Ag = N/A
Teffp = N/A

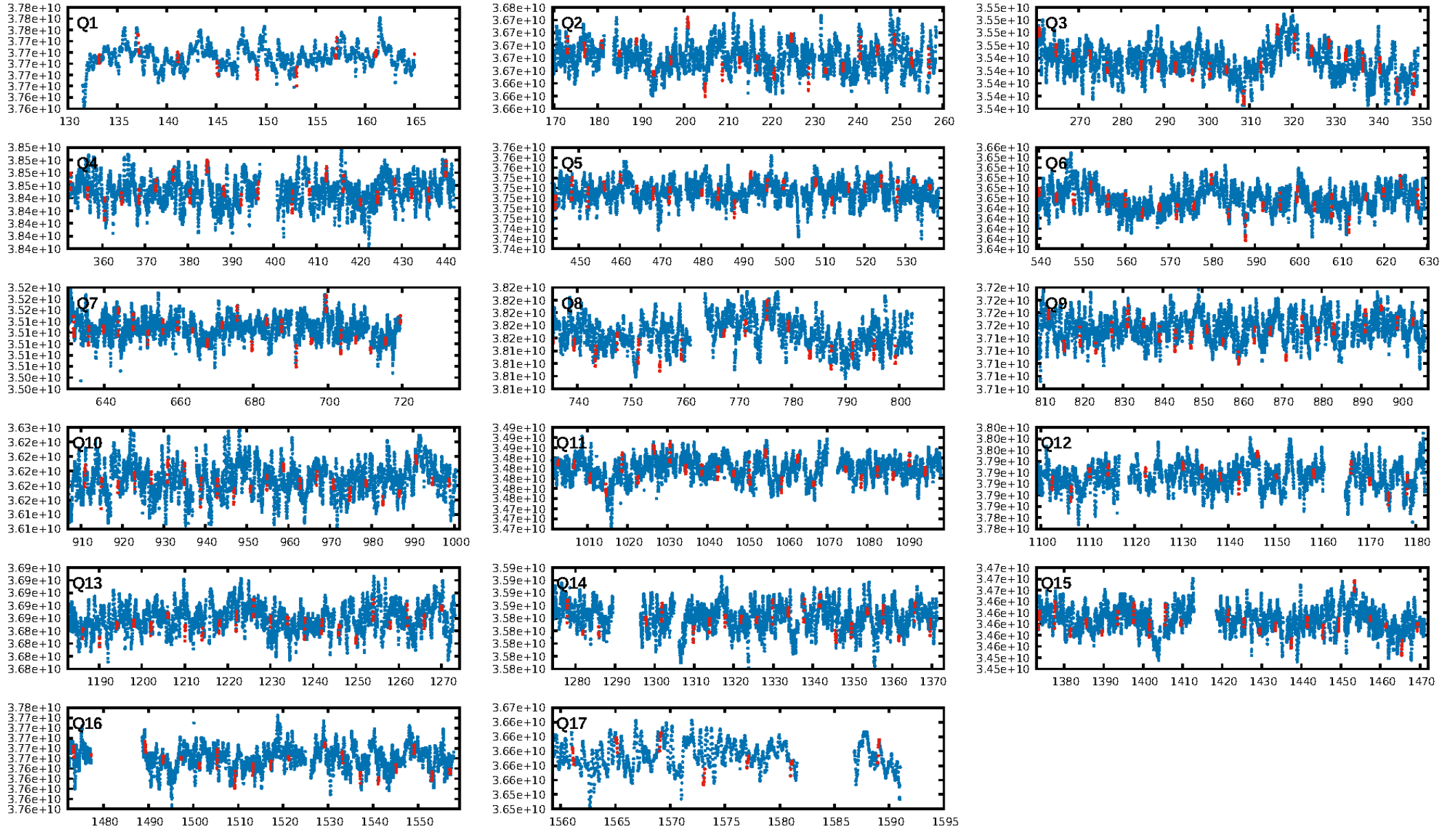
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.20e-251
RollingBand-figt: 0.38 [120/319]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 17.088 arcsec [3.92σ]
OotOffset-rm: 5.152 arcsec [2.75σ]
KicOffset-rm: 10.858 arcsec [1.38σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

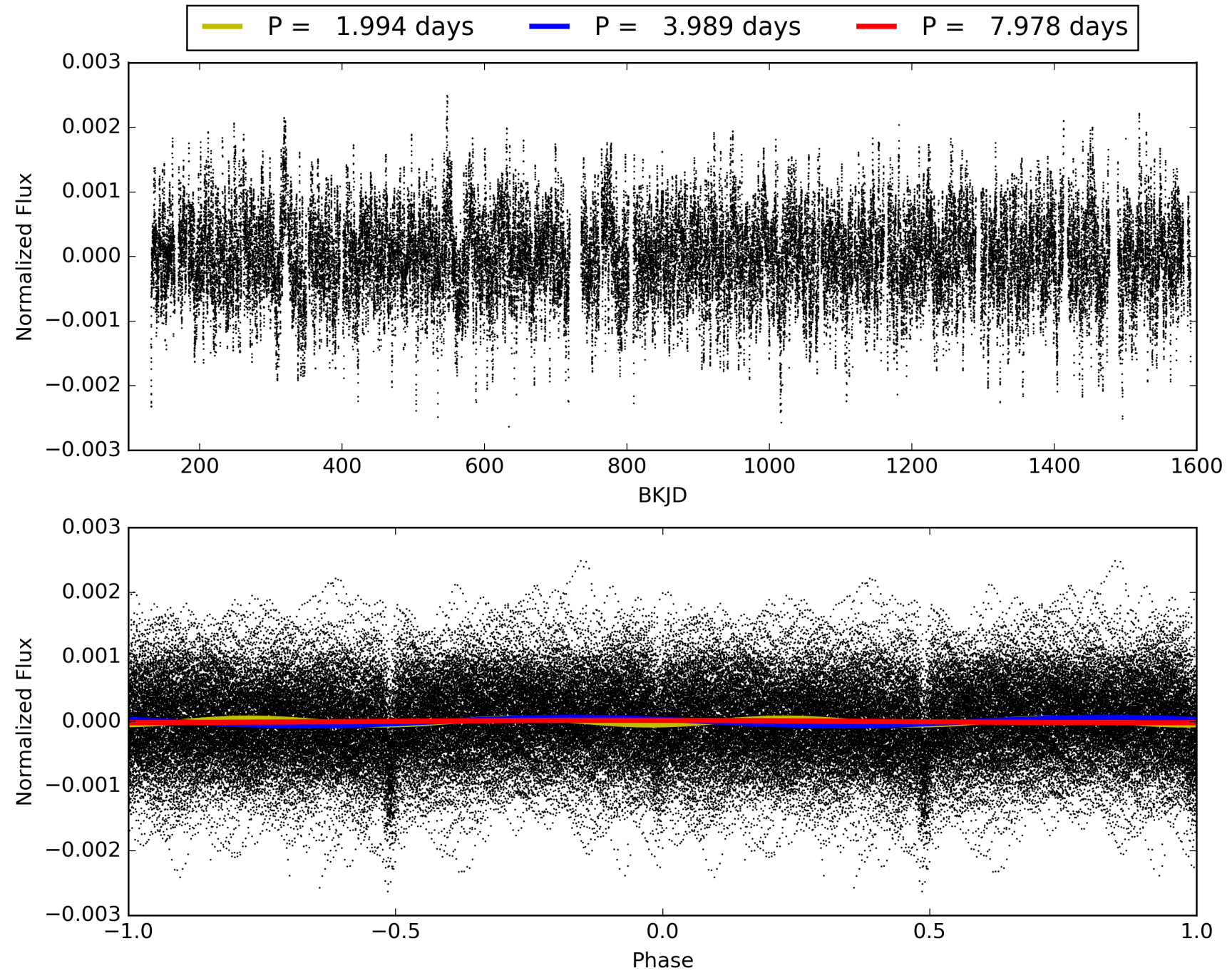
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 011502218-02, PDC Light Curves

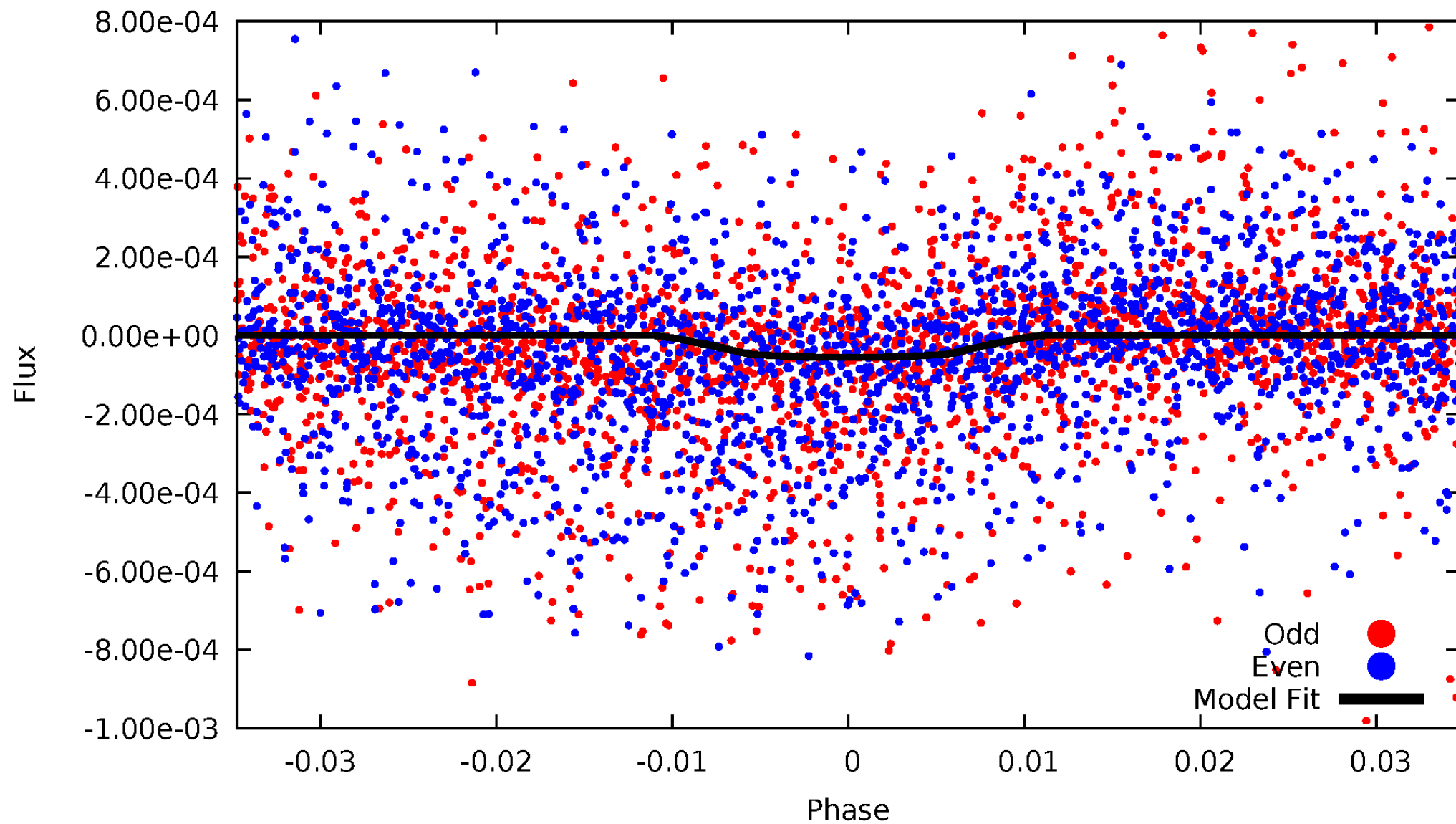


TCE 011502218-02



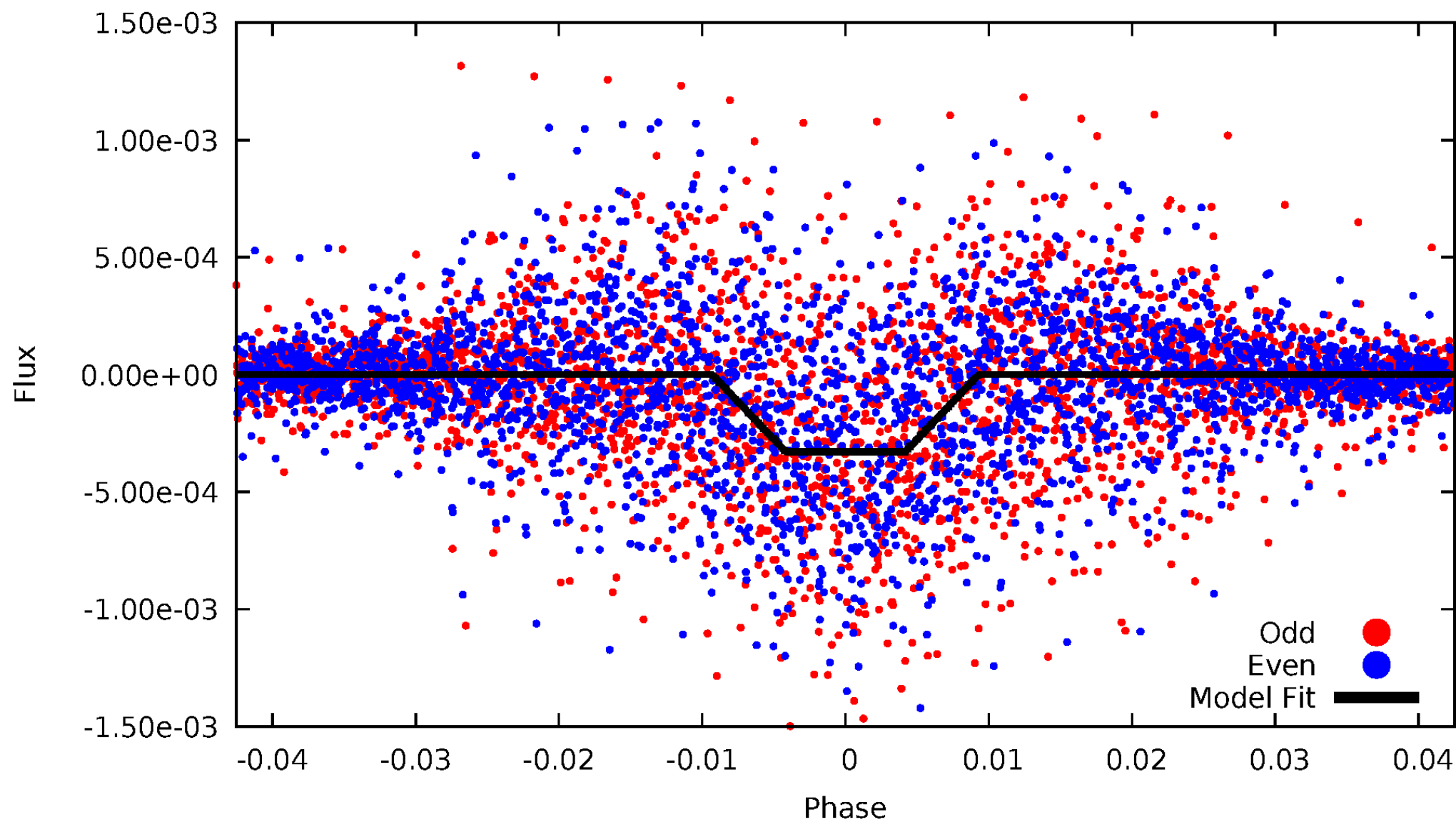
DV Odd/Even

TCE 011502218-02



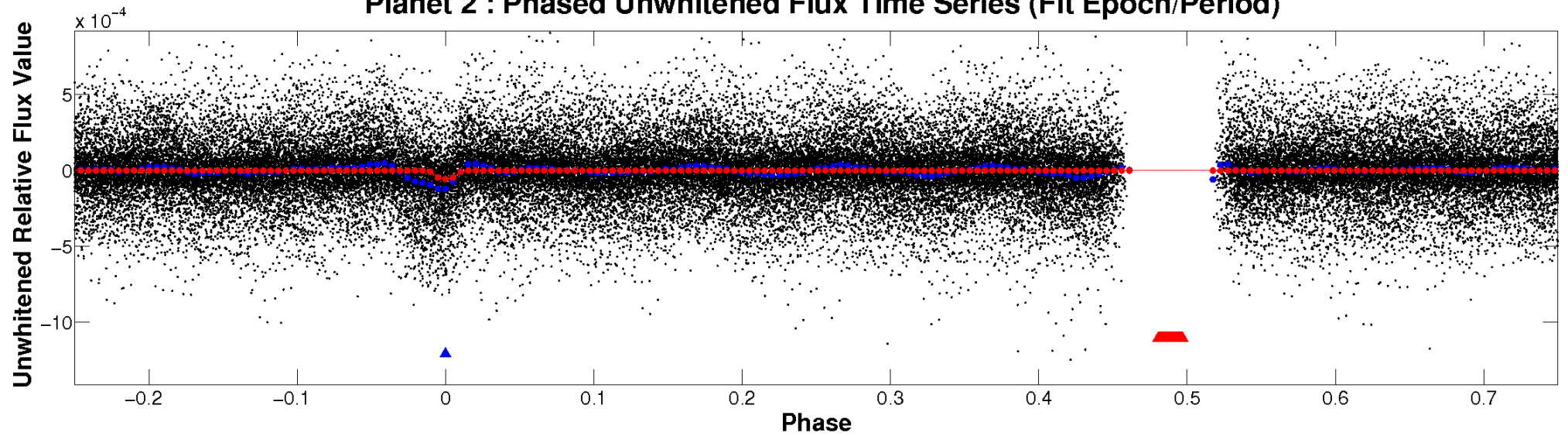
ALT Odd/Even

TCE 011502218-02

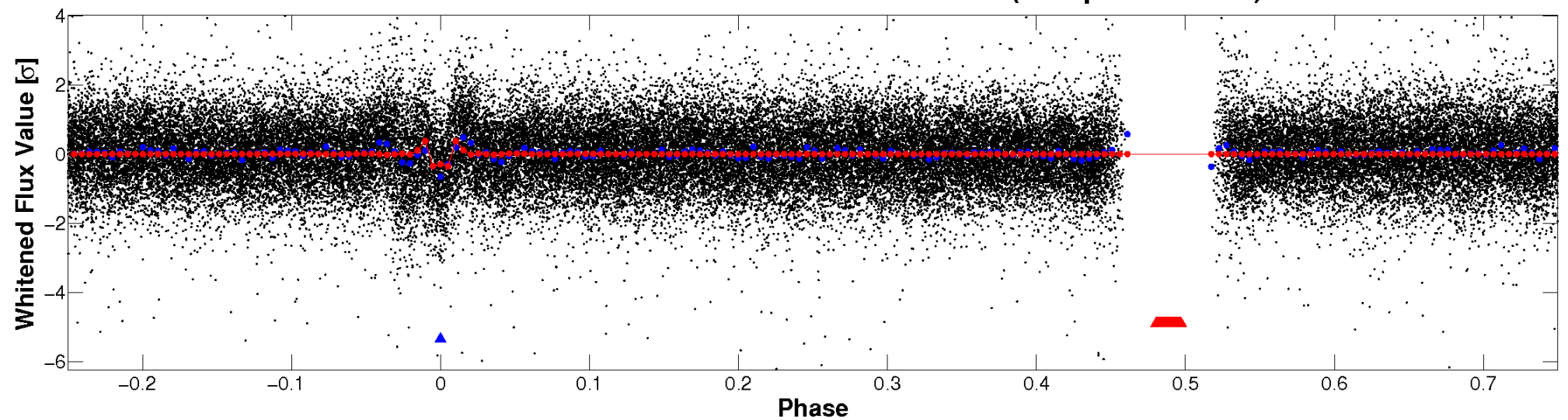


Non-Whitened Vs. Whitened Light Curve

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

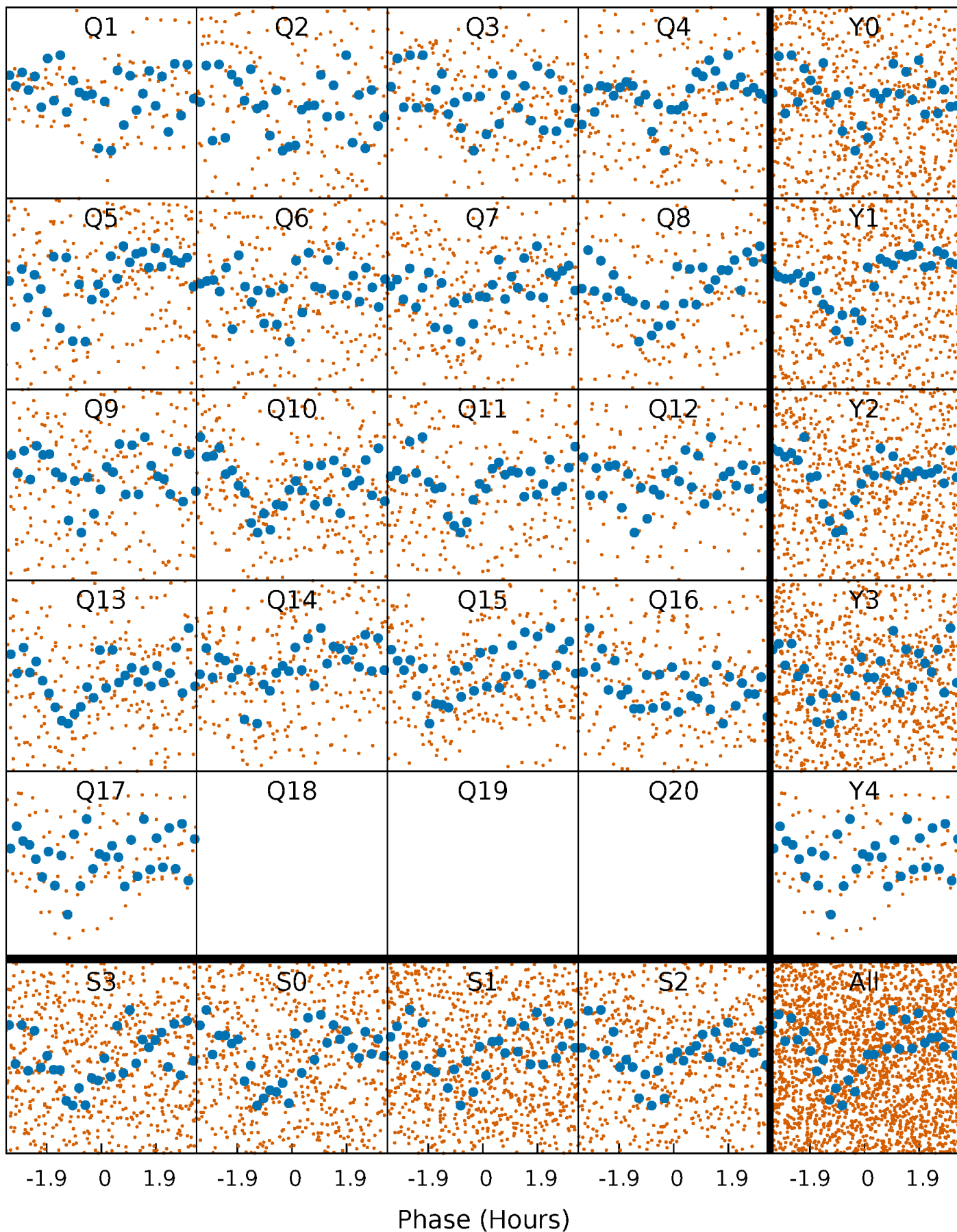


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



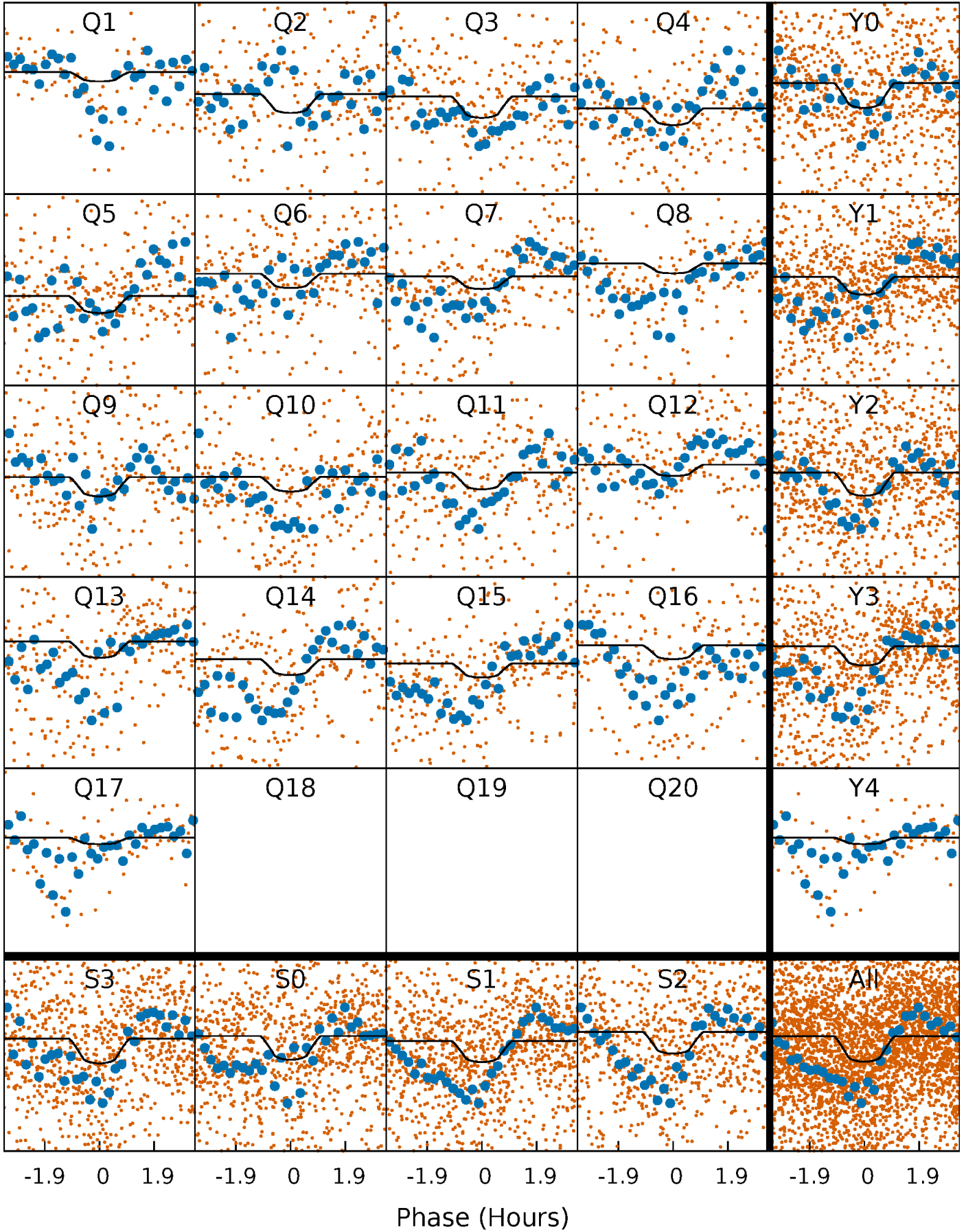
PDC Quarter-Phased Transit Curves

TCE 011502218-02 P= 3.988778 Days $T_0=133.137636$ (BKJD)



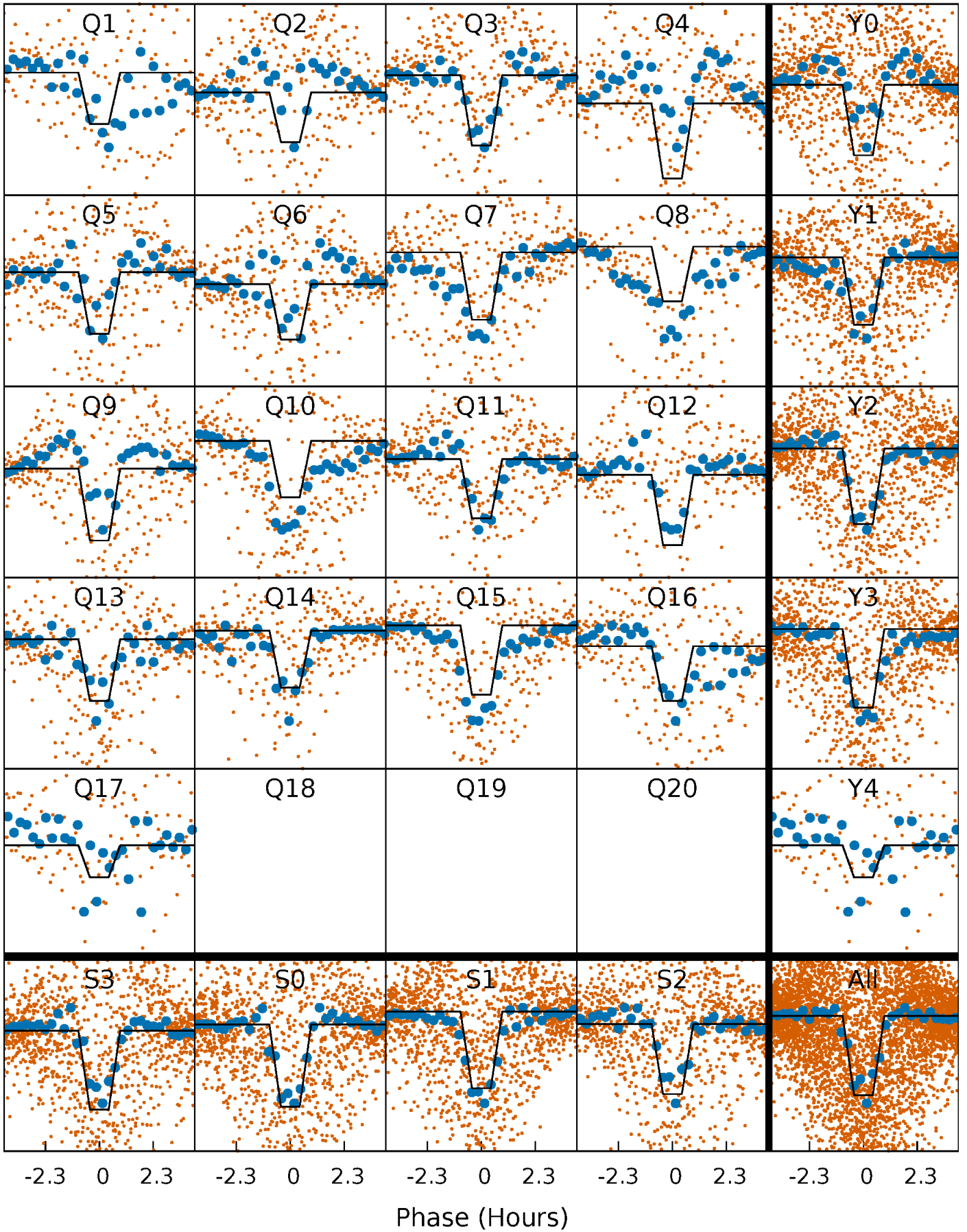
DV Quarter-Phased Transit Curves

TCE 011502218-02 P= 3.988778 Days $T_0=133.137636$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

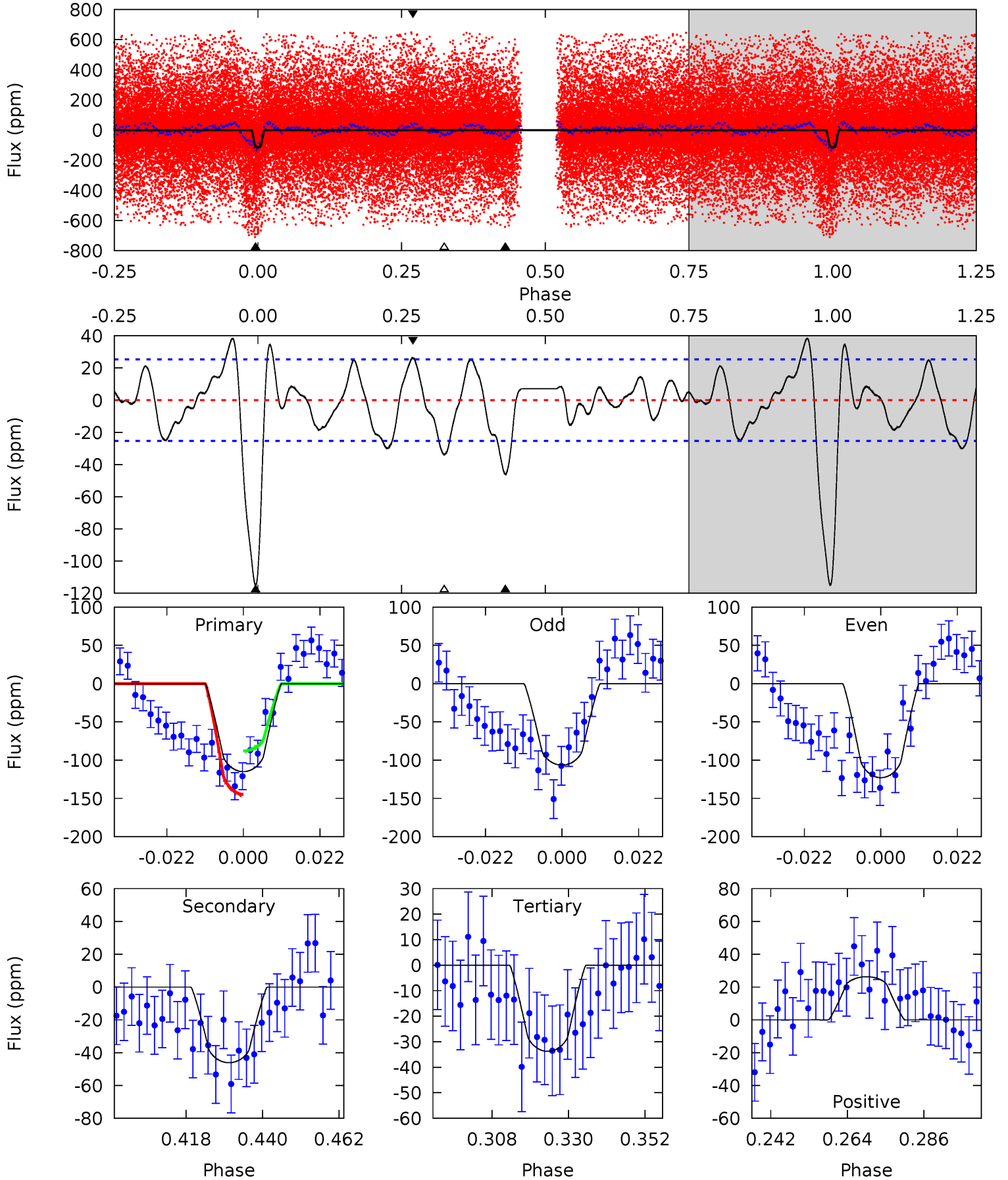
TCE 011502218-02 P= 3.988631 Days $T_0=133.128559$ (BKJD)



DV Model-Shift Uniqueness Test

011502218-02, P = 3.988778 Days, E = 129.148858 Days

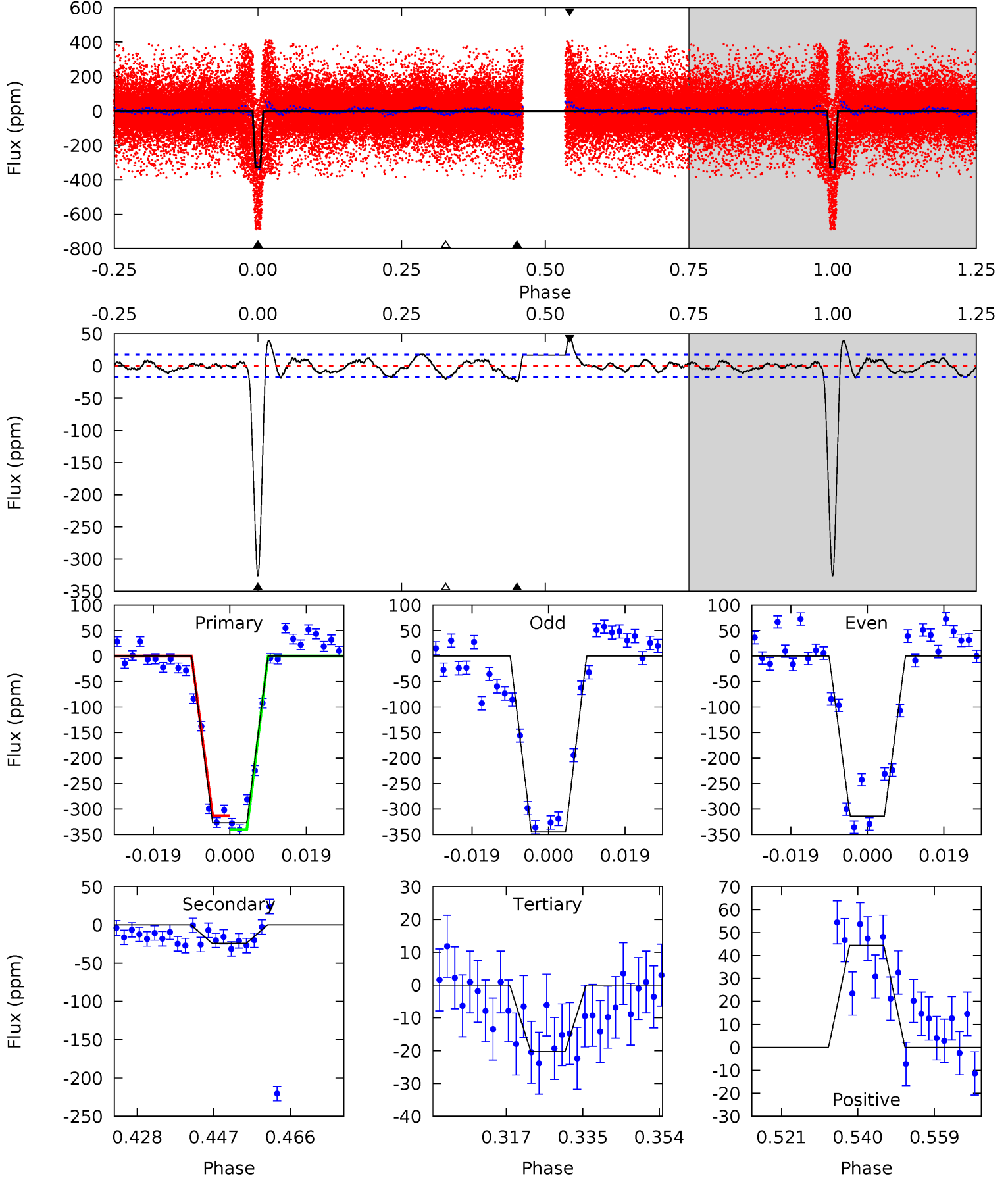
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	8.87	6.49	5.06	4.87	2.29	2.83	15.6	17.1	2.37	3.81	1.59	1.45	0.25	5.52



Alt Model-Shift Uniqueness Test

011502218-02, P = 3.988631 Days, E = 129.139928 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
91.1	6.71	5.65	12.4	4.91	2.35	2.54	85.4	78.7	1.06	-5.67	4.32	0.95	0.12	3.73



Stellar Parameters For KIC 011502218

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4813^{+50}_{-121}	$2.472^{+0.156}_{-0.117}$	$-0.220^{+0.100}_{-0.150}$	$13.652^{+1.869}_{-4.361}$	$2.016^{+0.769}_{-0.846}$	$0.001^{+0.001}_{-0.000}$
	+1%/-3%	+6%/-5%	+45%/-68%	+14%/-32%	+38%/-42%	+99%/-25%
Source	SPE18	SPE18	SPE18	DSEP		

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

Secondary Eclipse Parameters for KIC 011502218-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 5	$12.59^{+2.83}_{-2.97}$	4359^{+216}_{-249}	3919^{+509}_{-545}	$0.649^{+0.378}_{-0.224}$
Alt.	-24 ± 4	$27.76^{+4.16}_{-4.60}$	4369^{+201}_{-252}	-3675^{+191}_{-152}	$0.070^{+0.025}_{-0.018}$

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

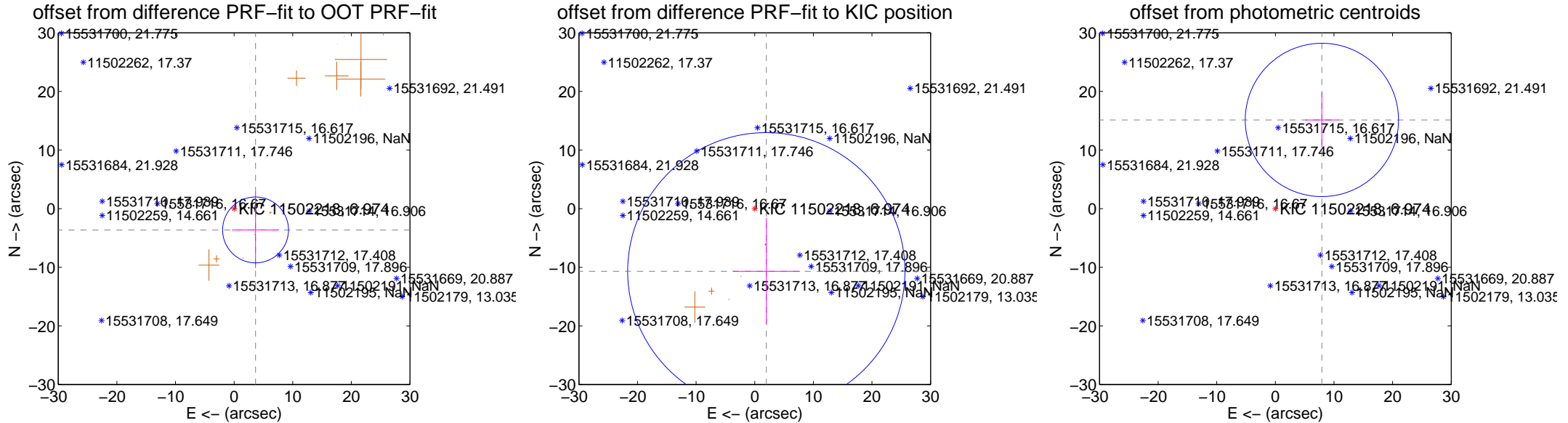
DV Centroid Data

Supplemental centroid analysis for 011502218-02. **Kepler magnitude: 6.97.** Transit SNR 15.27

There are 0 quarters with good PRF difference image offsets

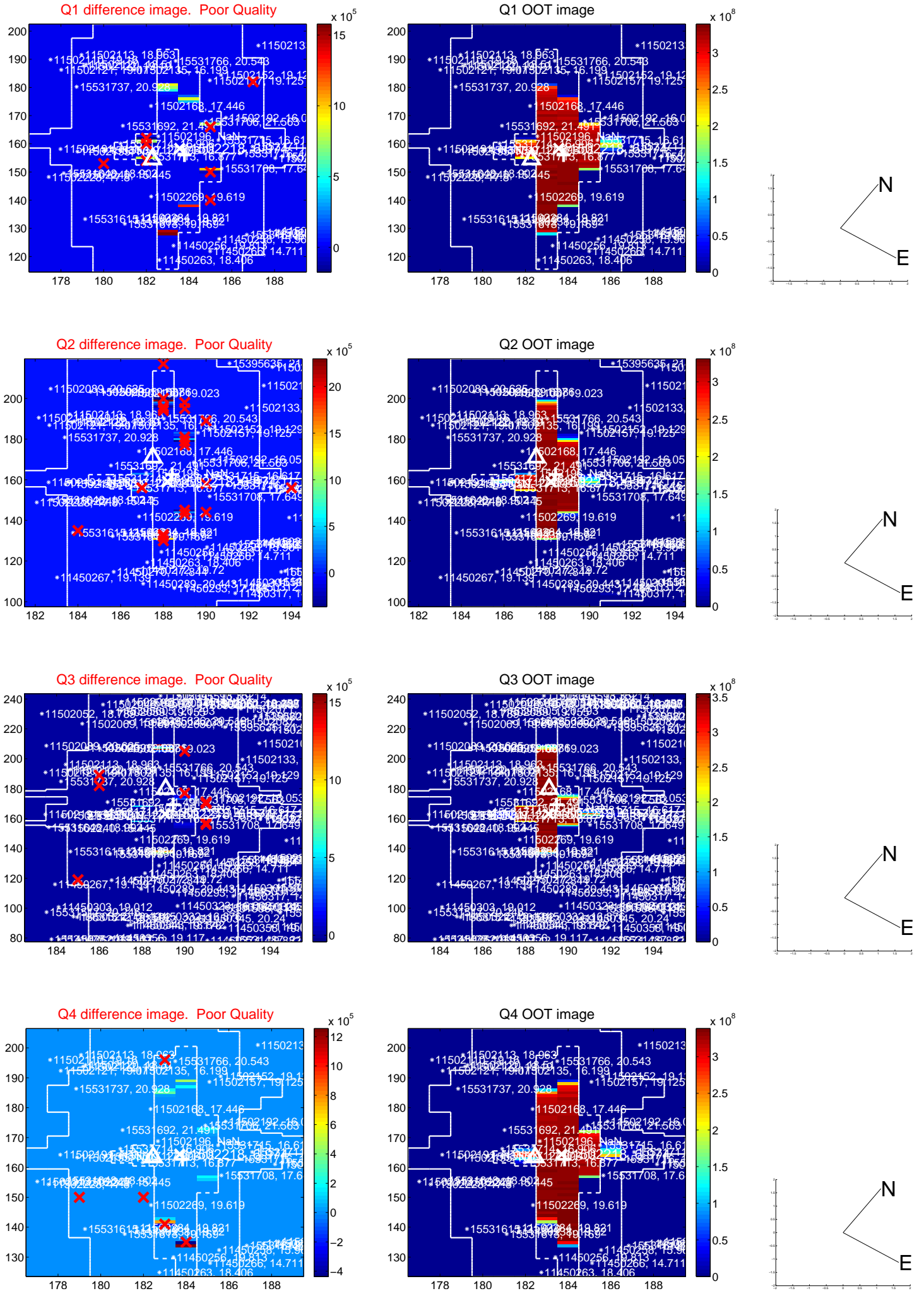
The OOT PRF centroid is offset from the target star catalog position by about 9.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.152 ± 1.873	2.75	-3.660 ± 4.027	-3.626 ± 6.511
PRF-fit source offset from KIC position	10.858 ± 7.883	1.38	-1.974 ± 5.740	-10.677 ± 9.064
photometric centroid source offset	17.09 ± 4.36	3.92	-7.93 ± 2.84	15.13 ± 4.69

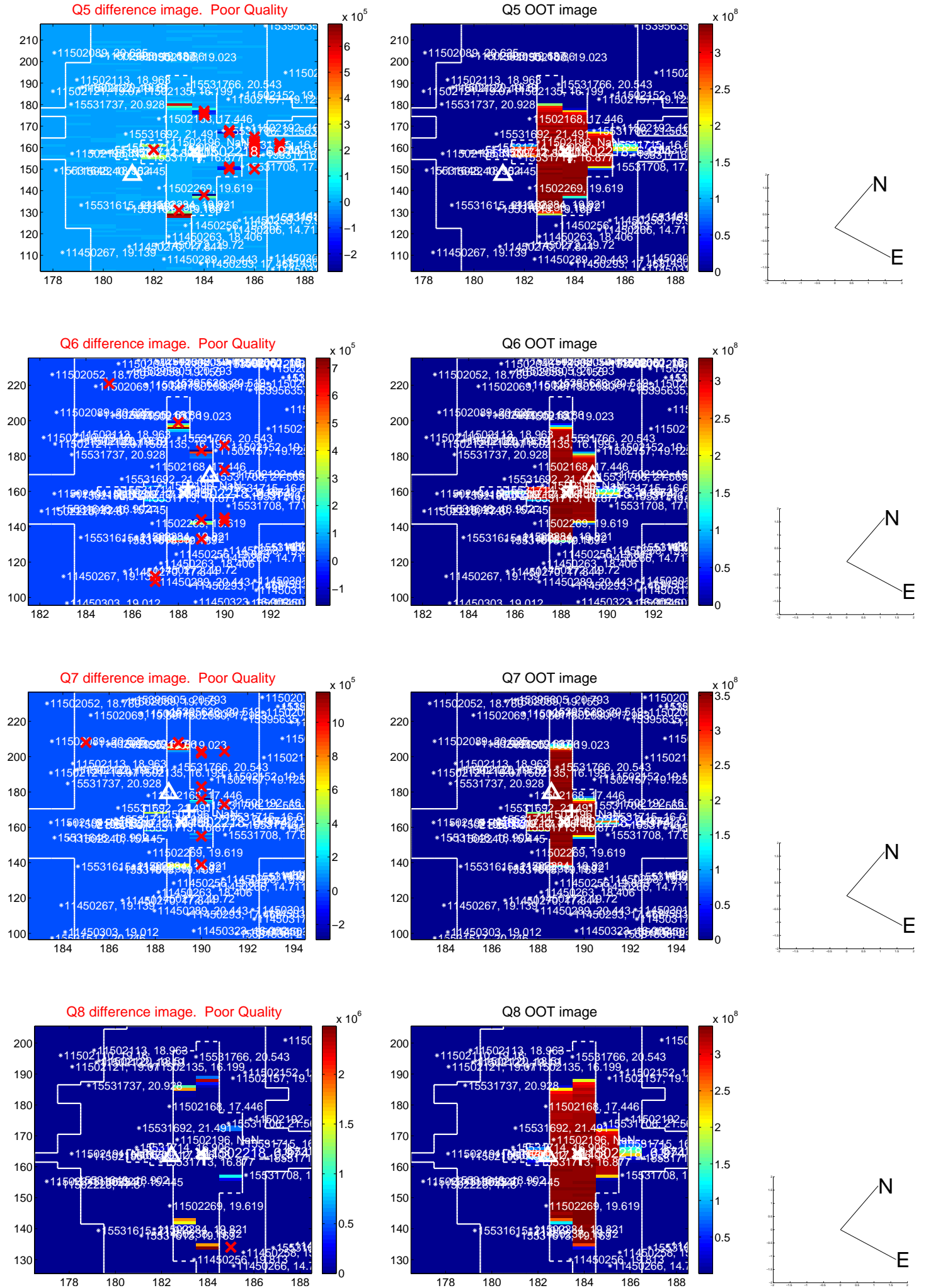


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

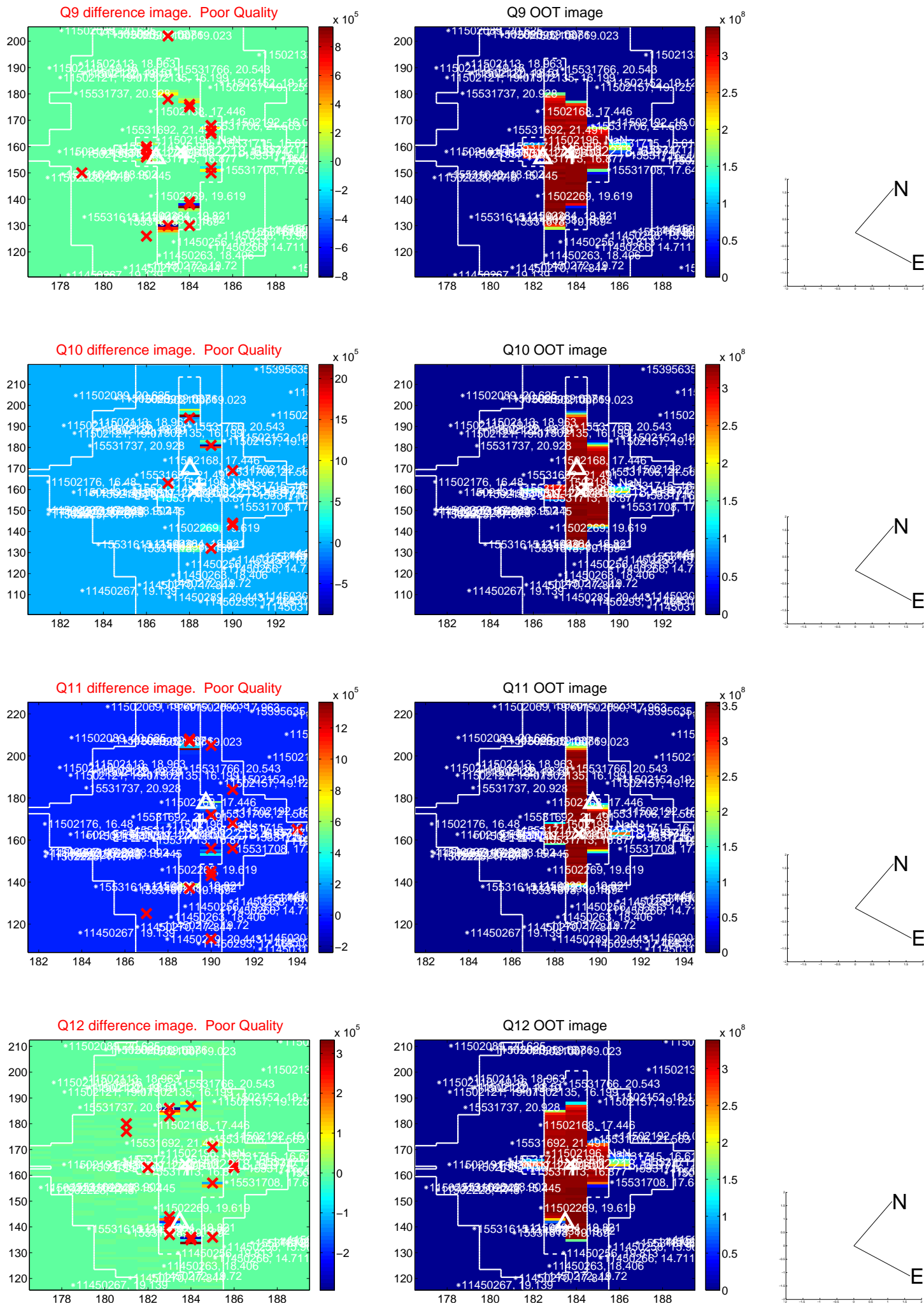
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



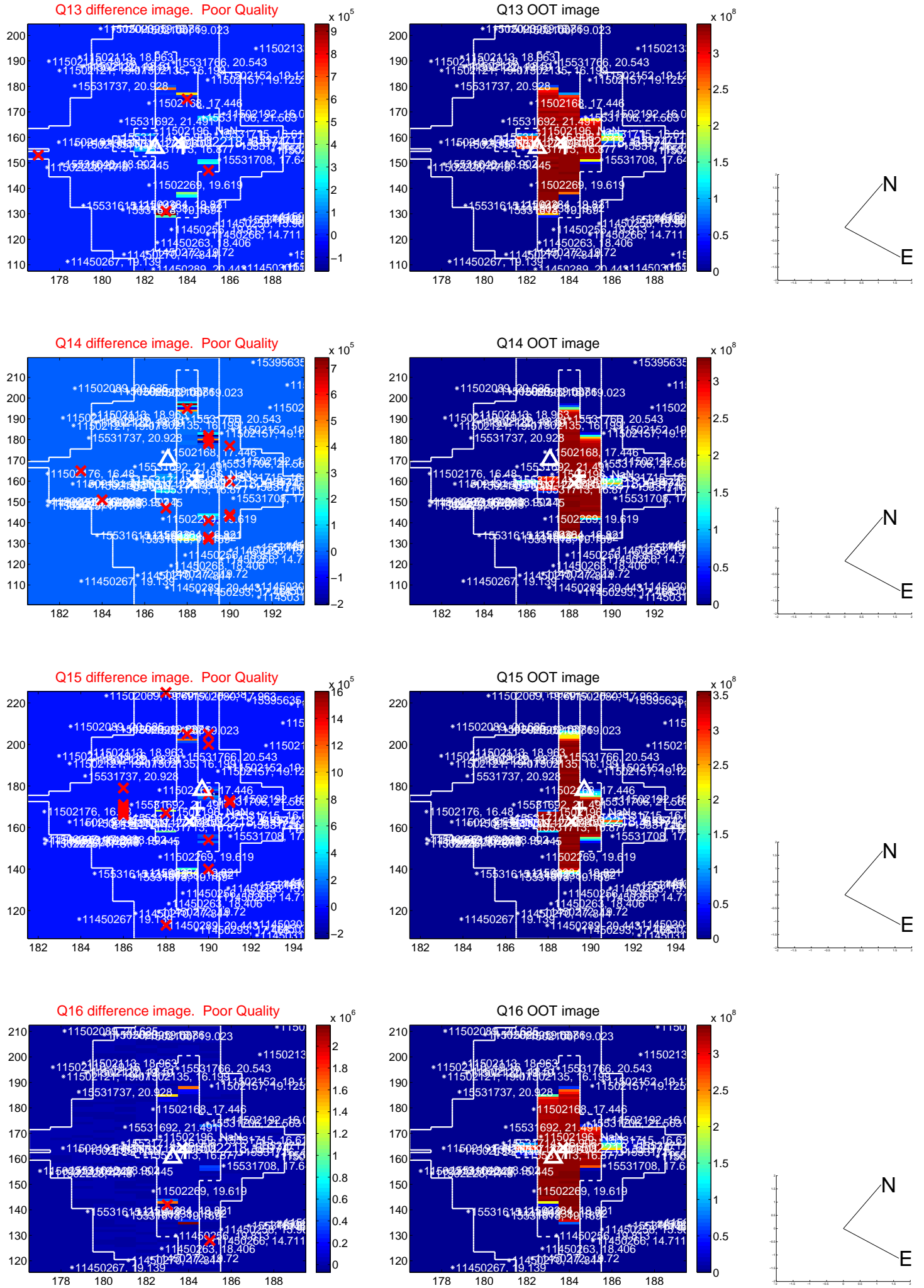
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



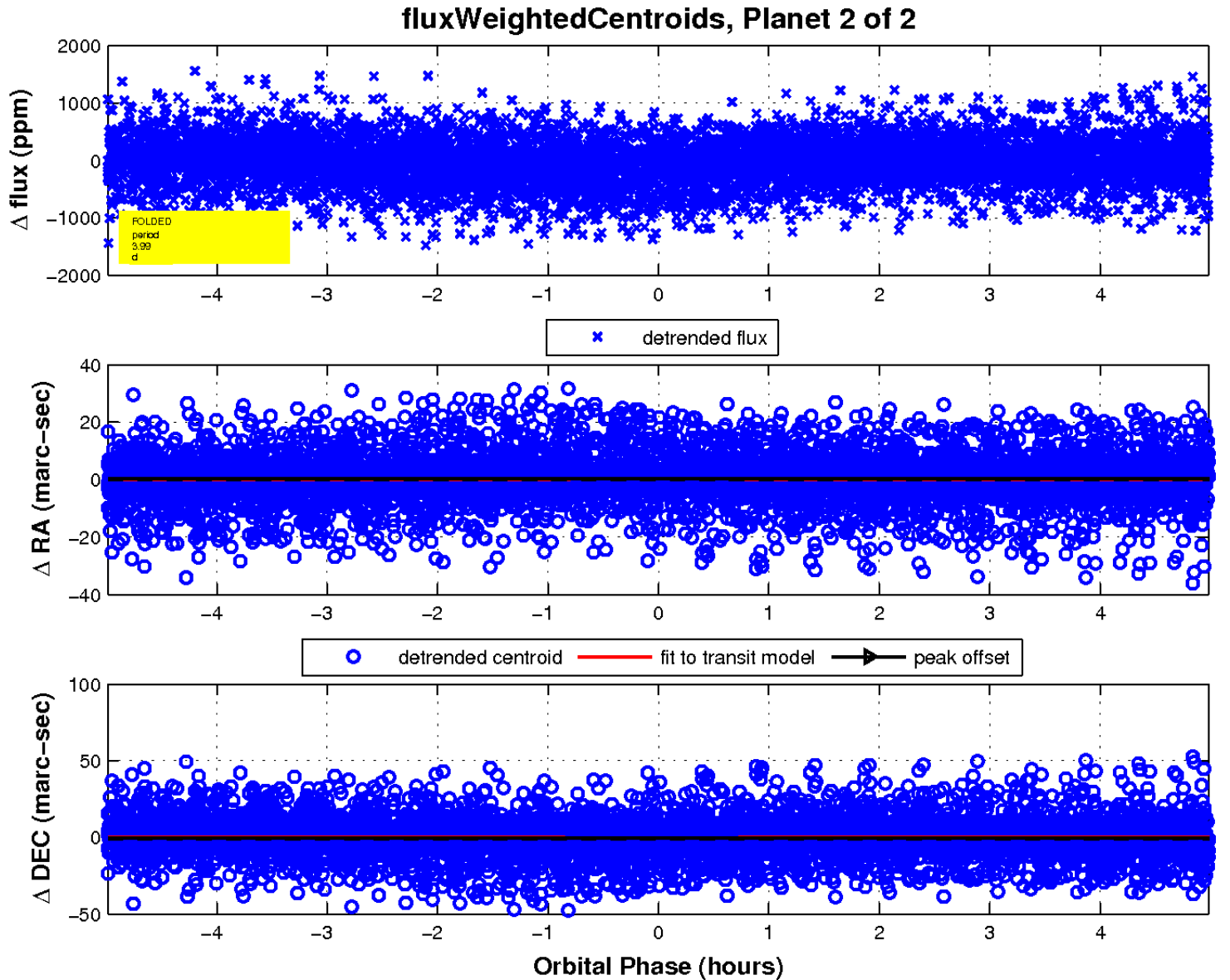
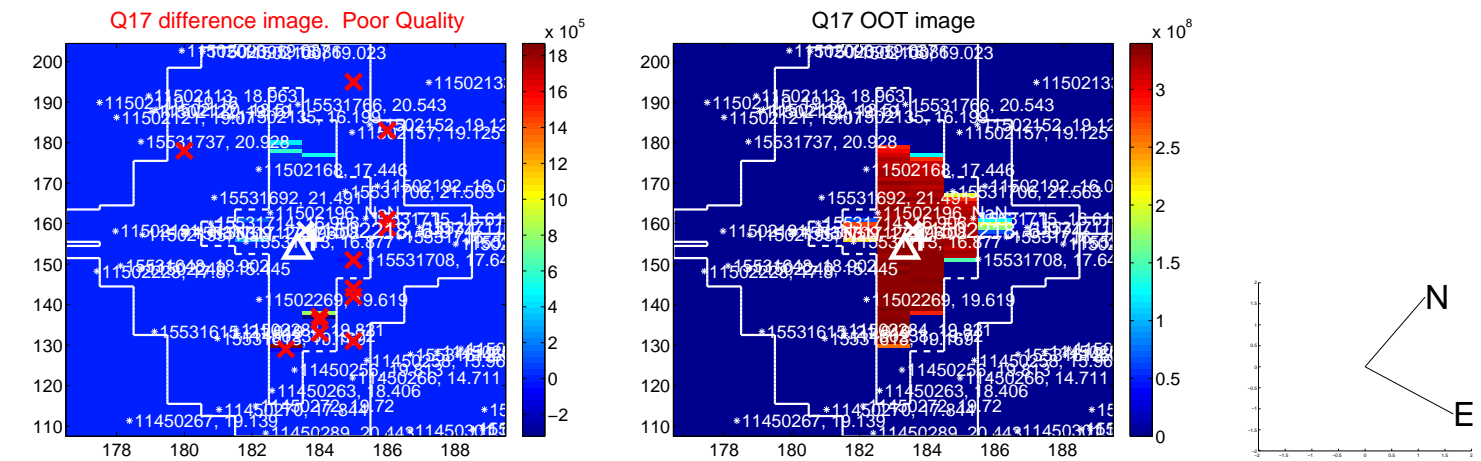
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

