

KIC 010905239

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})
010905239-01	OBS	0046.01	3.487685	132.568255	1292.4	3.949	320.4	324.1	1.59	5576	6.15	1033.43
010905239-02	OBS	0046.02	6.029738	132.480858	48.0	4.046	8.9	8.9	1.59	5576	1.31	498.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010905239-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010905239-02	OBS	PC	0.92	0	0	0	0	NO_COMMENT

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

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

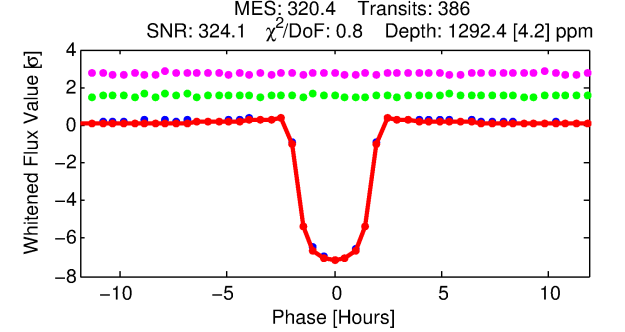
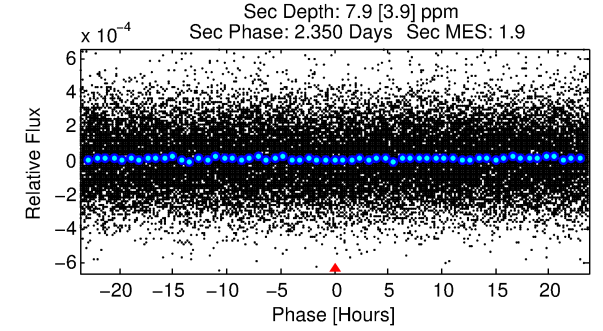
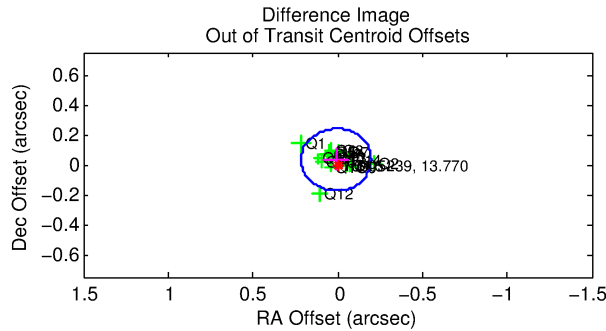
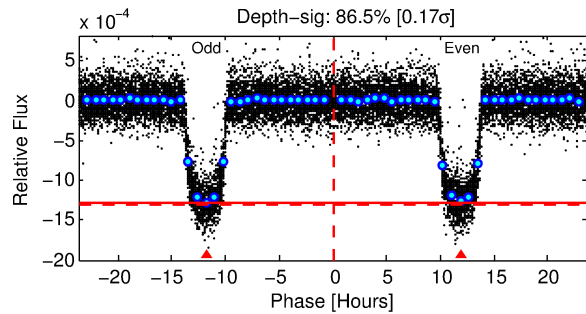
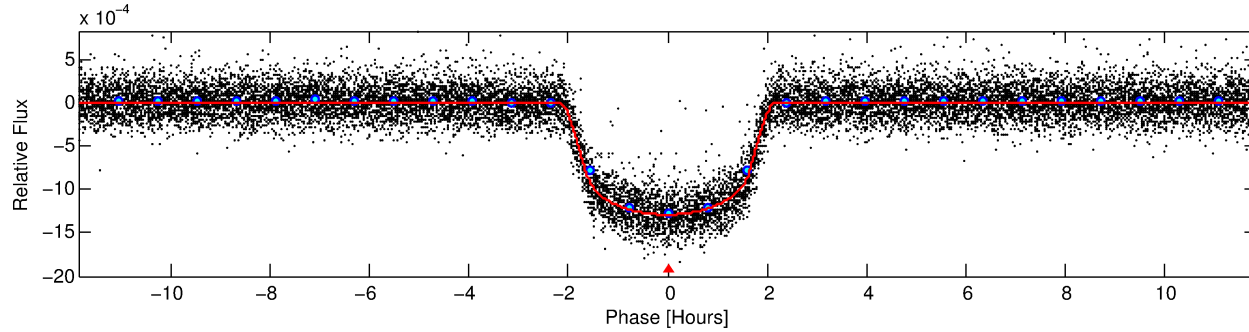
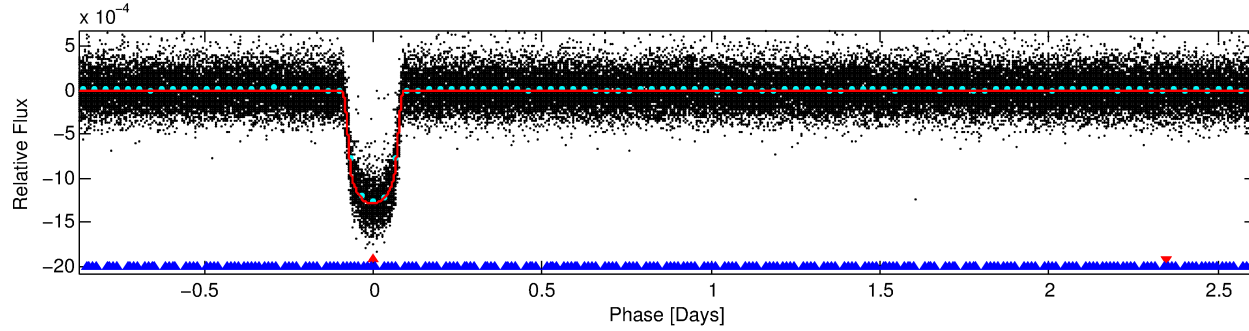
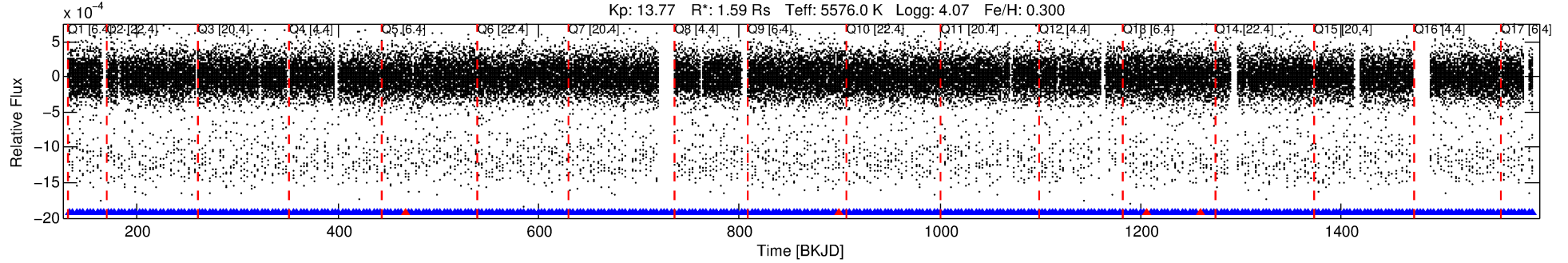
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010905239-01

No Significant Match Found

DV One-Page Summary

KIC: 10905239 Candidate: 1 of 2 Period: 3.488 d
KOI: K00046.01 Name: Kepler-101b Corr: 0.987



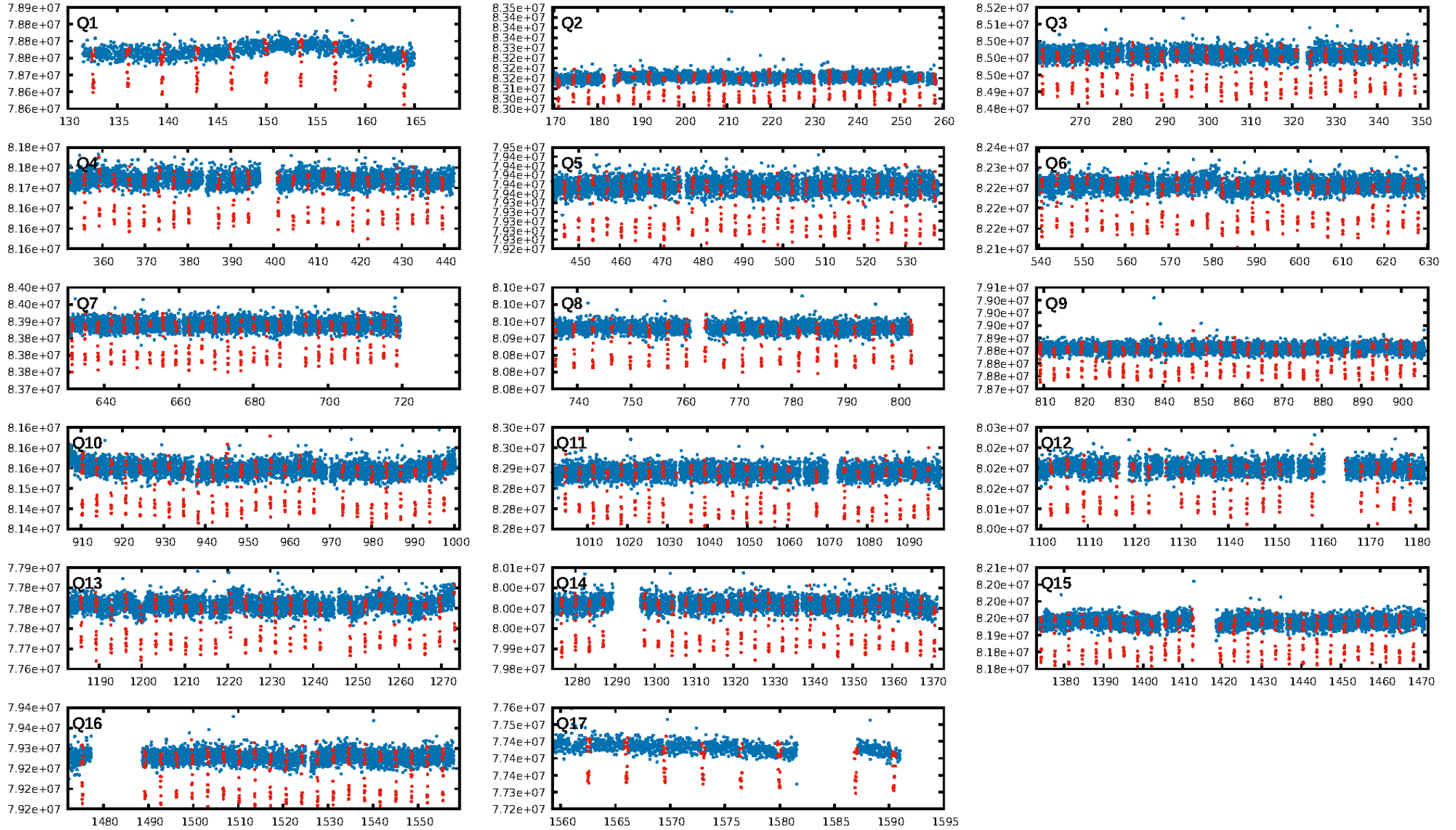
DV Fit Results:

Period = 3.48769 [0.00000] d
Epoch = 132.5683 [0.0002] BKJD
Rp/R* = 0.0354 [0.0008]
a/R* = 5.10 [0.46]
b = 0.72 [0.07]
Seff = 1033.43 [361.75]
Teq = 1446 [127] K
Rp = 6.15 [1.48] Re
a = 0.0461 [0.0101] AU
Ag = 0.24 [0.15] [-5.13 σ]
Teffp = 1570 [200] K [0.52 σ]

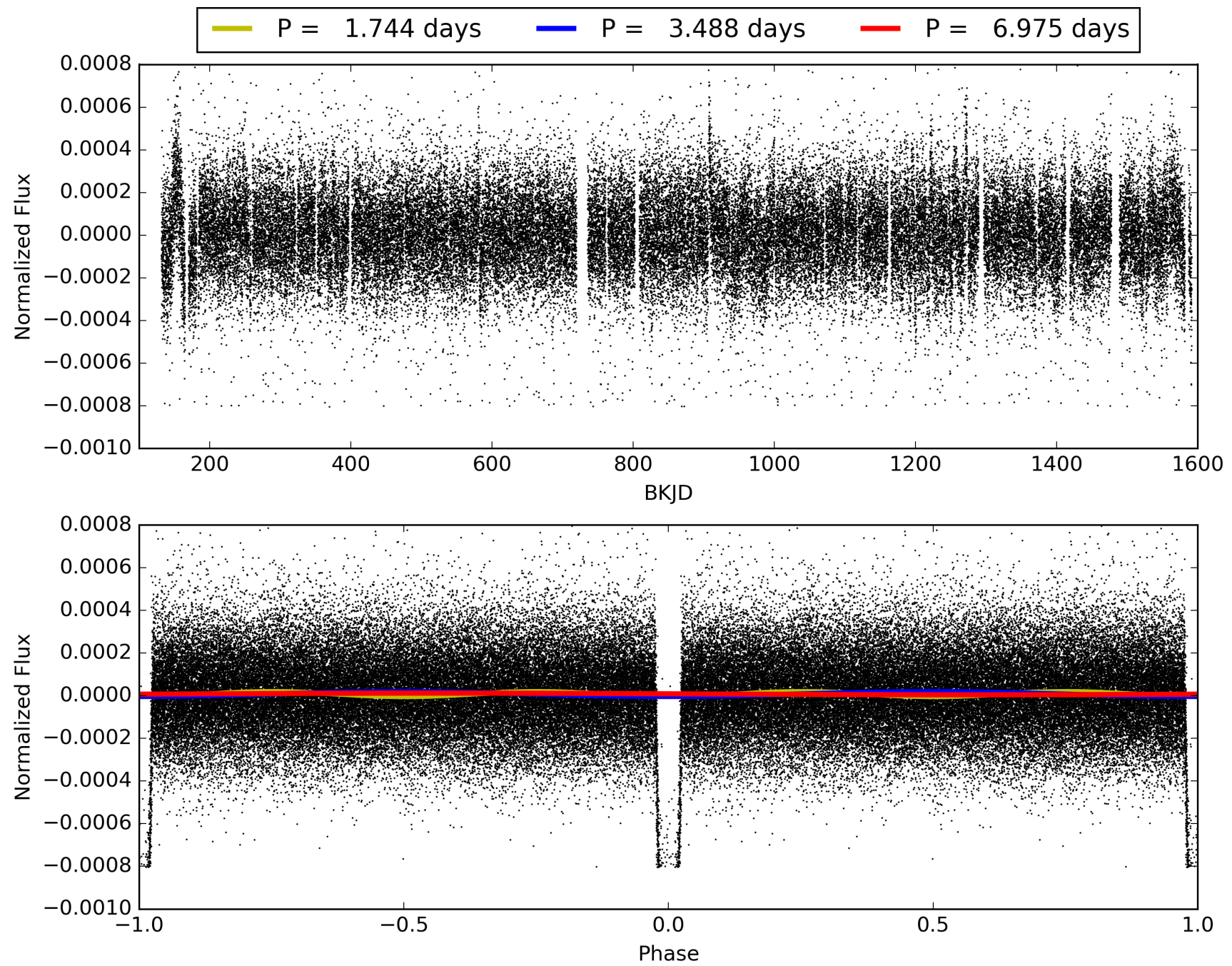
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [10.79 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.99 [364/368]
GhostDiagnostic-chr: 11.7
Centroid-sig: 0.5%
Centroid-so: 0.201 arcsec [4.69 σ]
OotOffset-rm: 0.034 arcsec [0.49 σ]
KicOffset-rm: 0.132 arcsec [1.87 σ]
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 010905239-01, PDC Light Curves

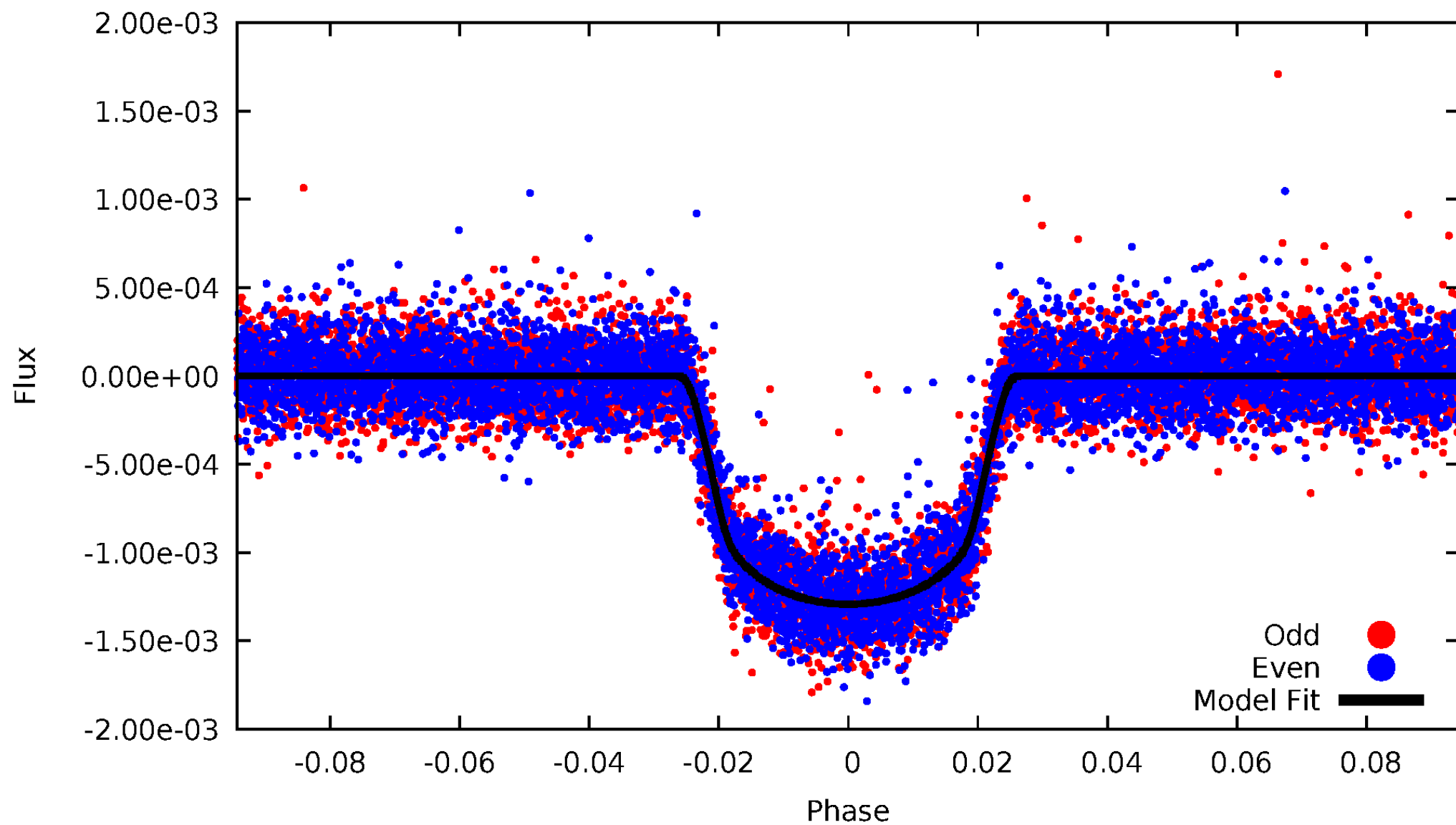


TCE 010905239-01



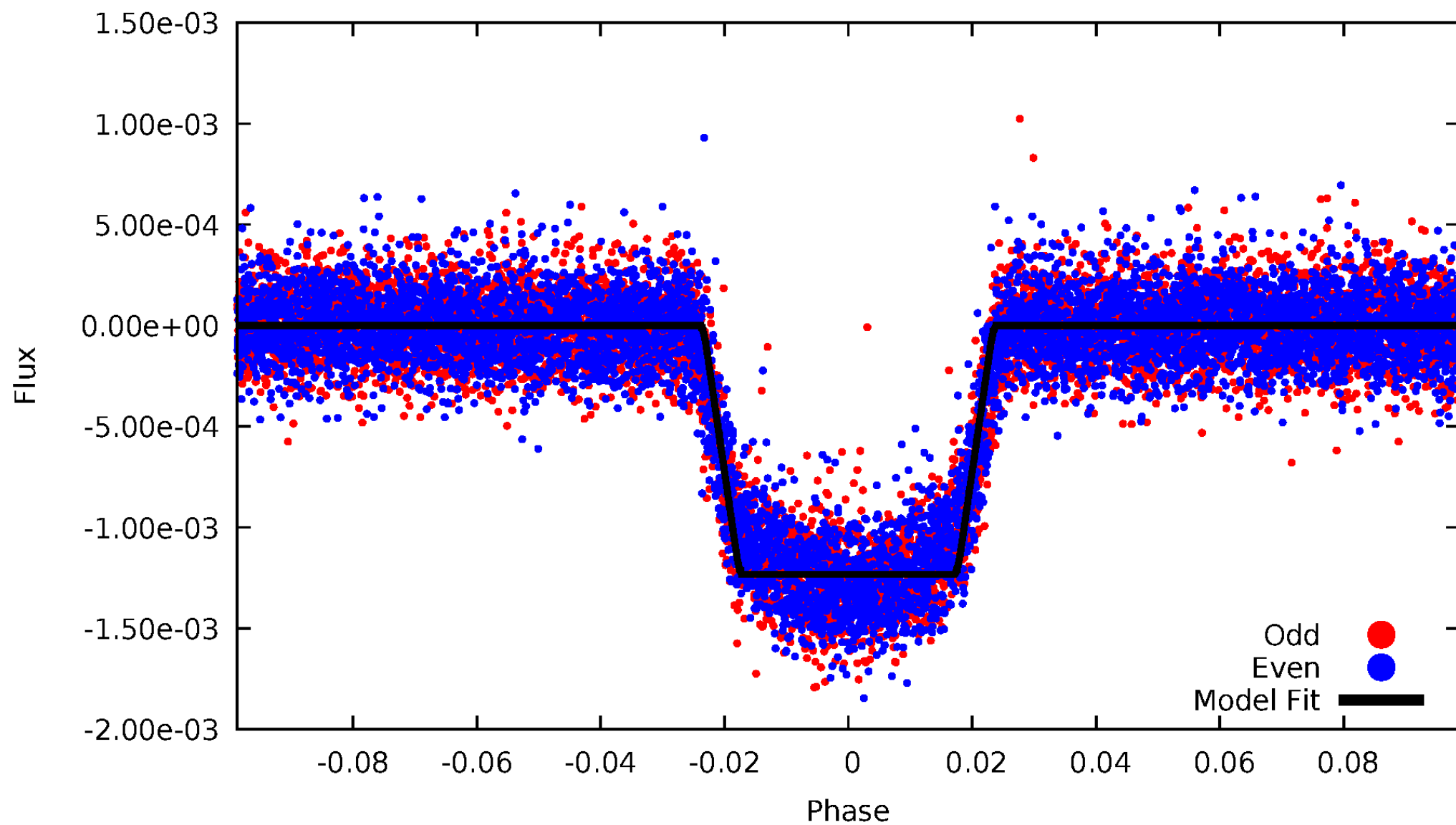
DV Odd/Even

TCE 010905239-01



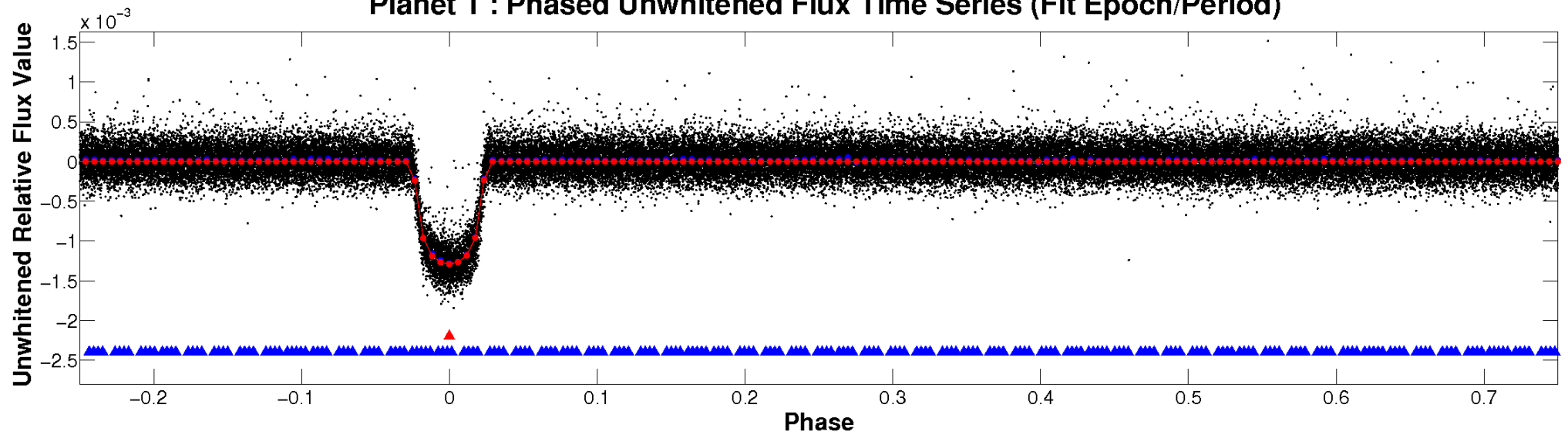
ALT Odd/Even

TCE 010905239-01

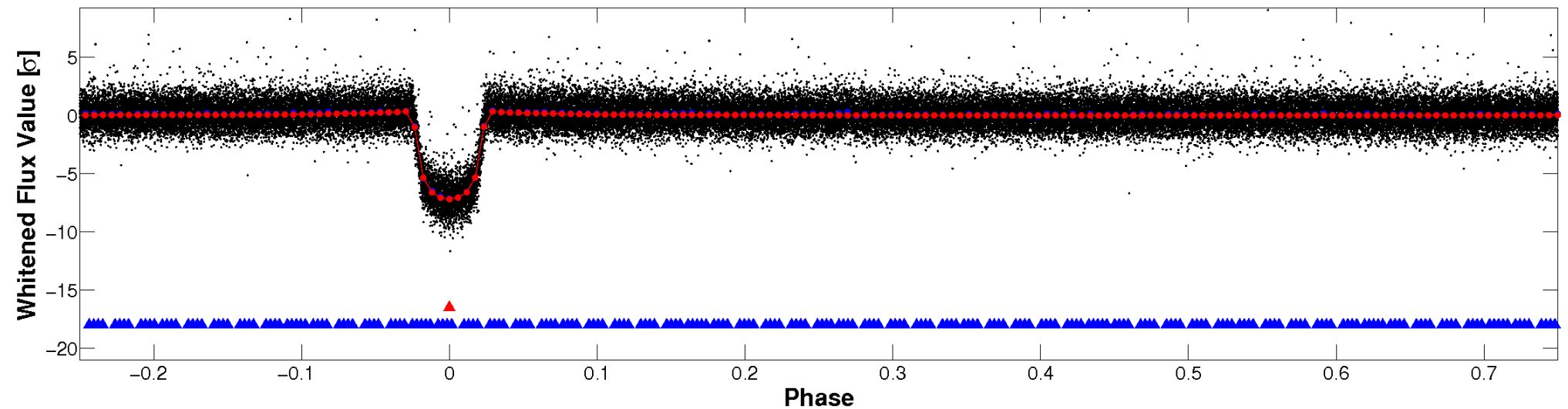


Non-Whitened Vs. Whitened Light Curve

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

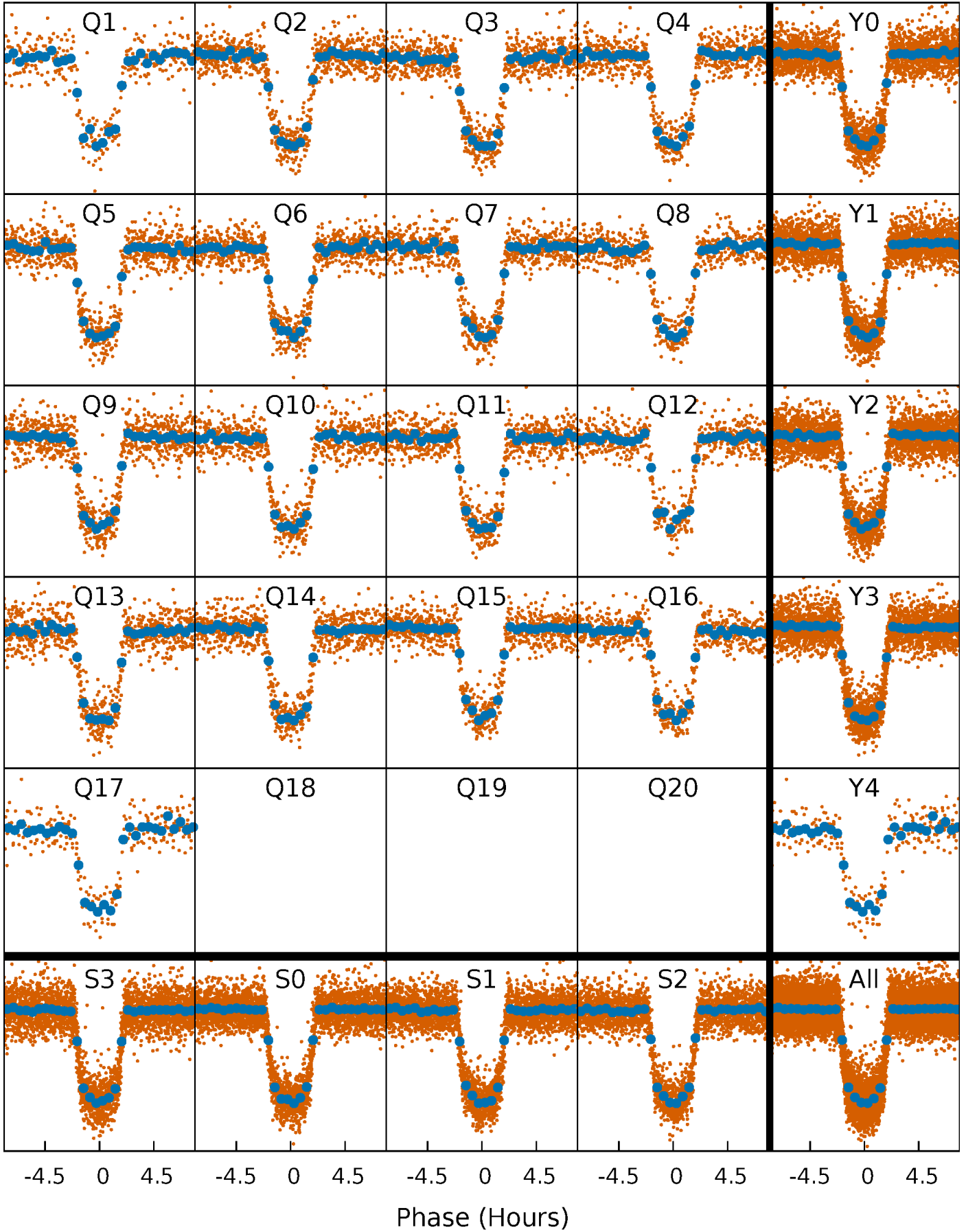


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



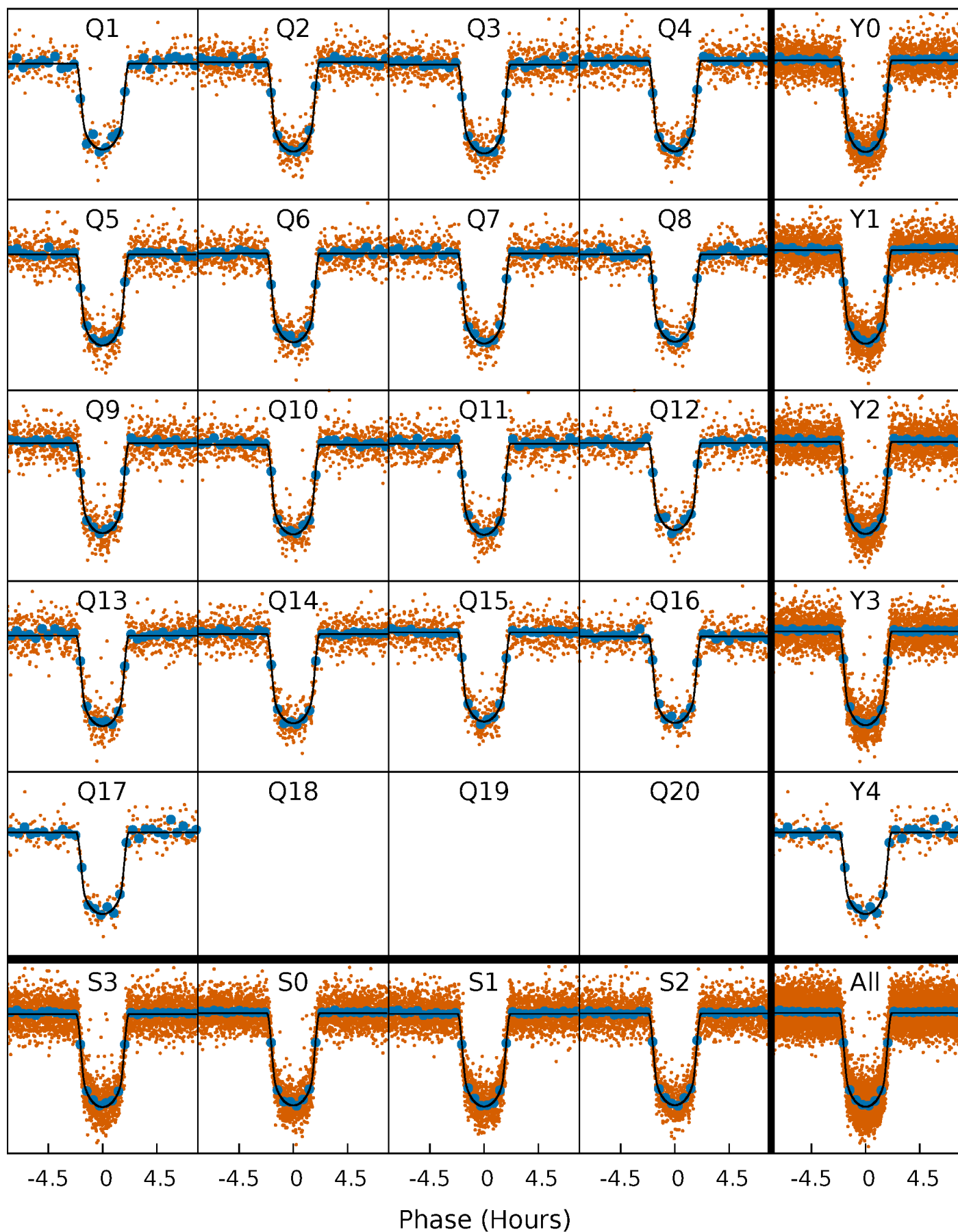
PDC Quarter-Phased Transit Curves

TCE 010905239-01 P= 3.487685 Days $T_0=132.568254$ (BKJD)



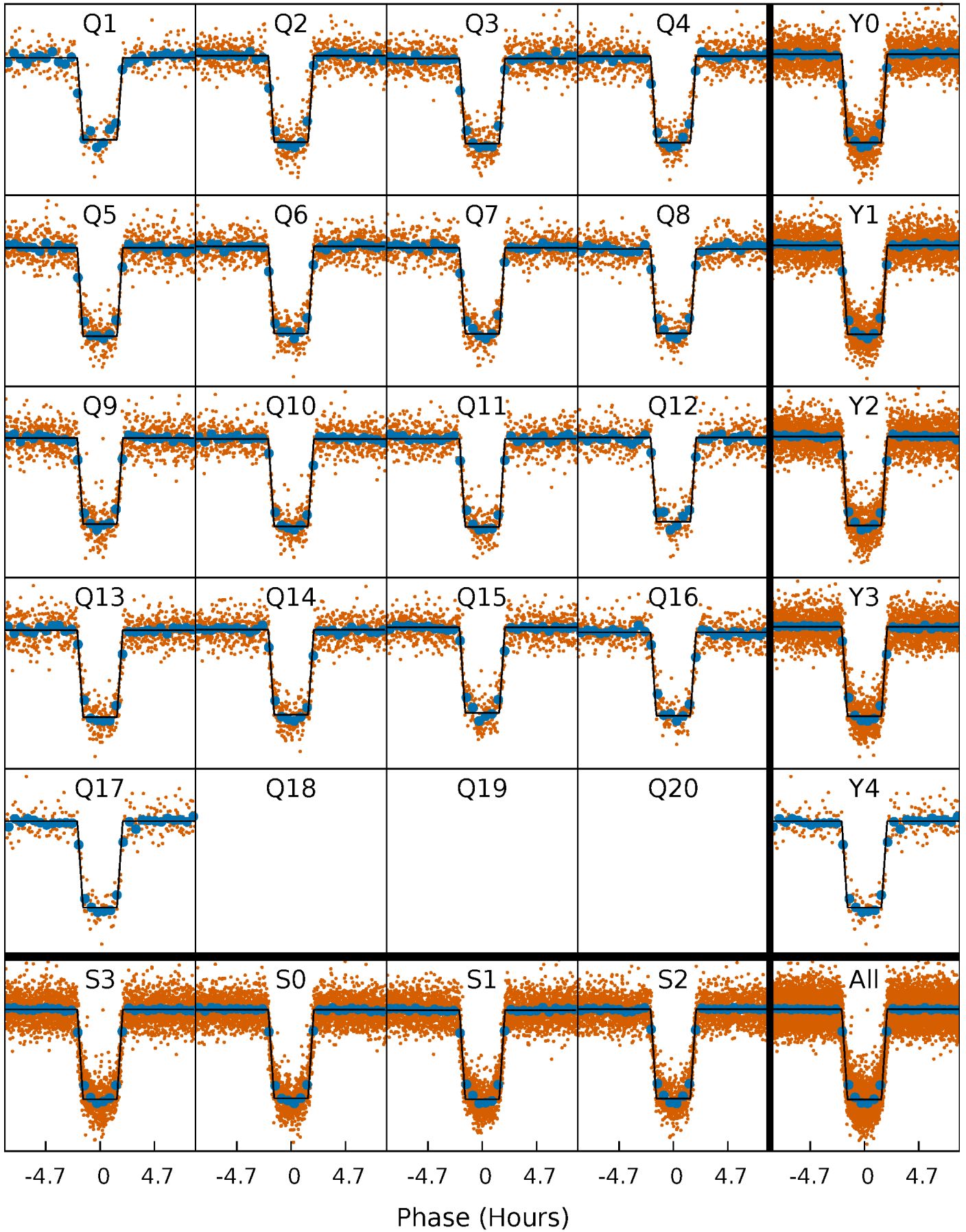
DV Quarter-Phased Transit Curves

TCE 010905239-01 P= 3.487685 Days $T_0=132.568254$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

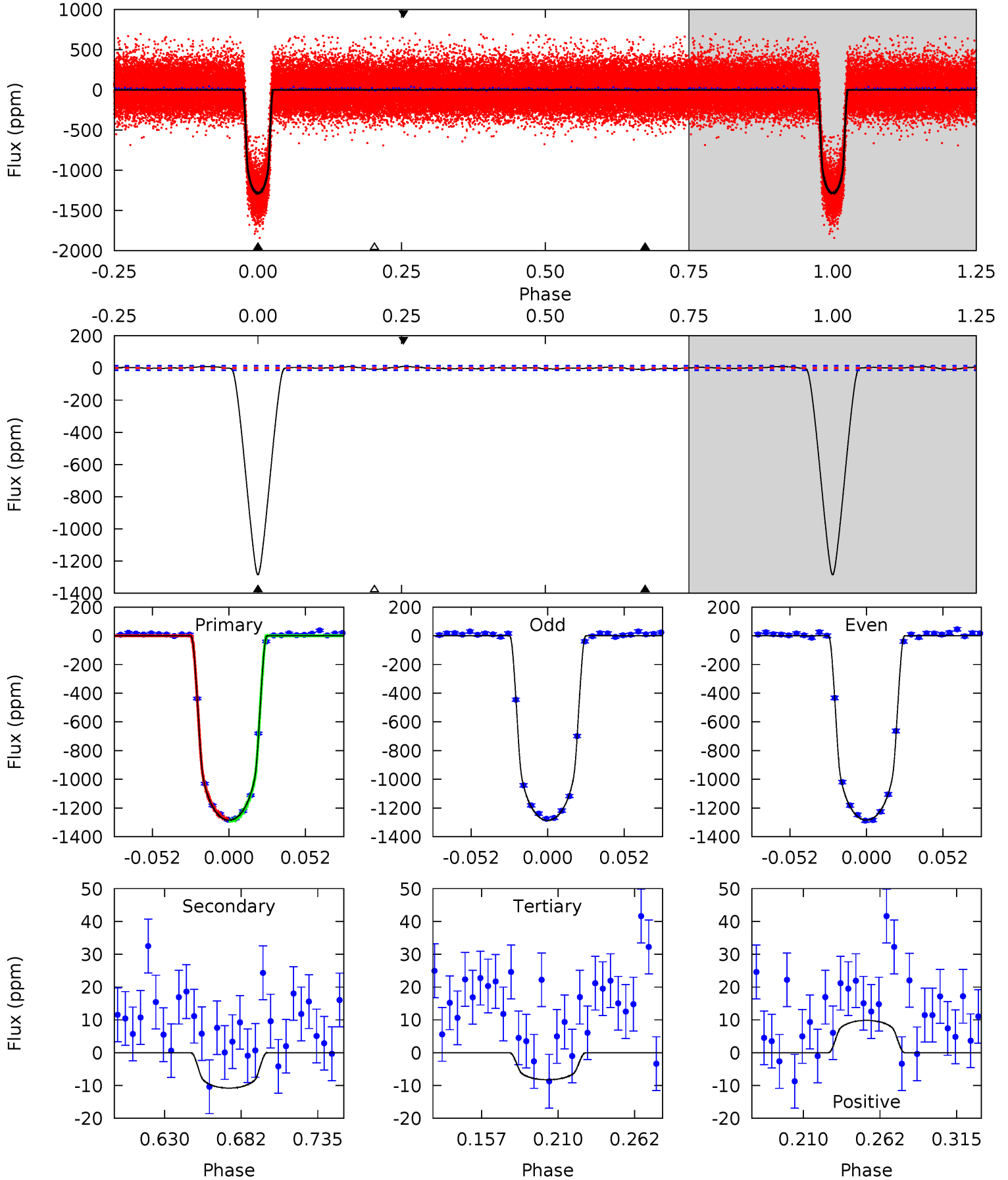
TCE 010905239-01 P= 3.487669 Days $T_0=132.571697$ (BKJD)



DV Model-Shift Uniqueness Test

010905239-01, P = 3.487685 Days, E = 129.080569 Days

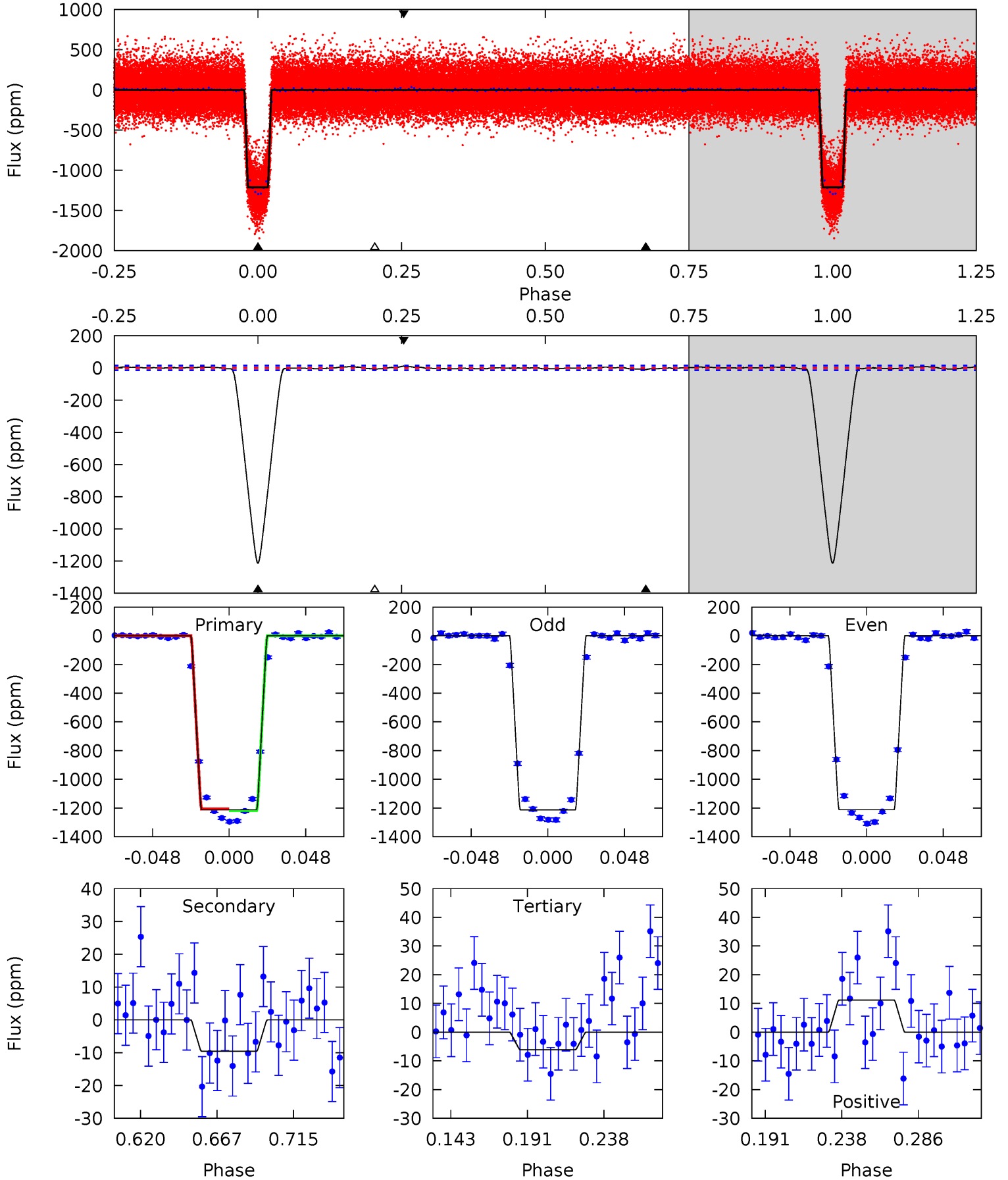
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
440.2	3.70	2.83	3.37	4.70	1.94	1.30	437.4	436.9	0.87	0.33	0.38	0.99	0.01	2.36



Alt Model-Shift Uniqueness Test

010905239-01, P = 3.487669 Days, E = 129.084028 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
398.6	3.14	2.01	3.68	4.72	1.98	1.16	396.6	395.0	1.13	-0.53	0.02	1.00	0.01	1.75



Stellar Parameters For KIC 010905239

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5576^{+112}_{-101}	$4.065^{+0.196}_{-0.084}$	$0.300^{+0.150}_{-0.150}$	$1.593^{+0.235}_{-0.382}$	$1.074^{+0.108}_{-0.097}$	$0.374^{+0.401}_{-0.099}$
	+2%/-2%	+5%/-2%	+50%/-50%	+15%/-24%	+10%/-9%	+107%/-27%
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 010905239-01 / KOI 0046.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11 ± 3	$6.11^{+0.56}_{-0.75}$	2010^{+92}_{-125}	2027^{+285}_{-4122}	$0.347^{+0.139}_{-0.104}$
Alt.	-10 ± 3	$6.03^{+0.54}_{-0.74}$	2005^{+86}_{-126}	1813^{+453}_{-3990}	$0.317^{+0.128}_{-0.100}$

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 $A_{obs} \gg 1.0$

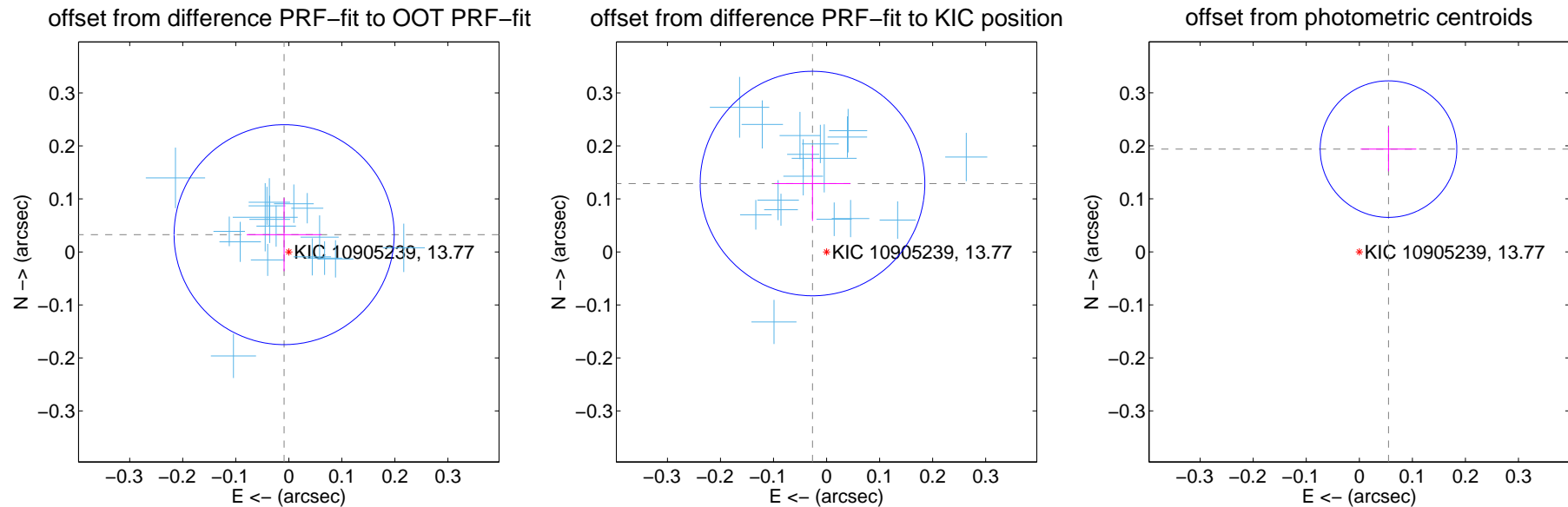
DV Centroid Data

Supplemental centroid analysis for 010905239-01. Kepler magnitude: 13.77. Transit SNR 324.12

There are 17 quarters with good PRF difference image offsets

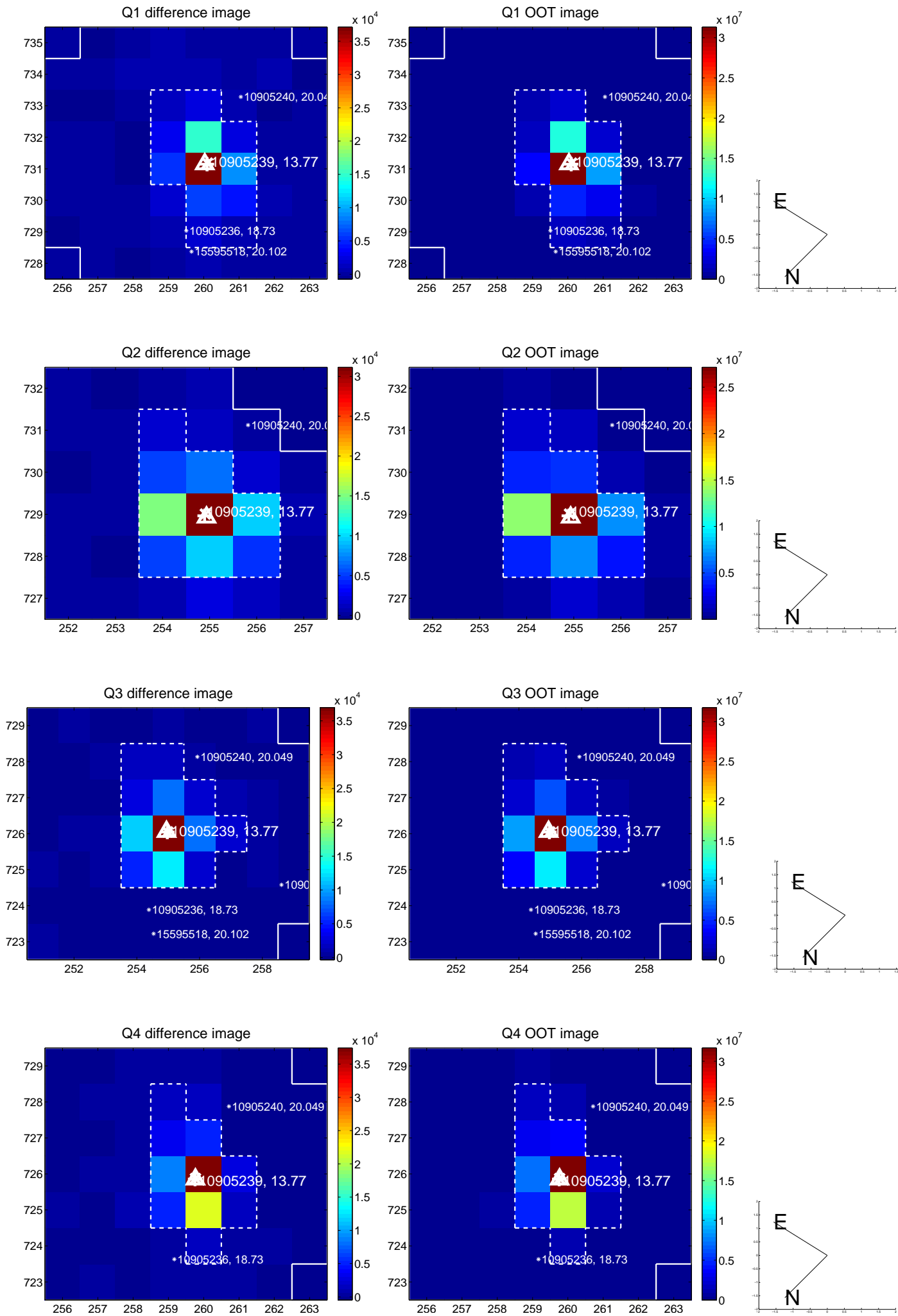
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.034 ± 0.069	0.49	0.009 ± 0.071	0.033 ± 0.069
PRF-fit source offset from KIC position	0.132 ± 0.071	1.87	0.027 ± 0.071	0.129 ± 0.071
photometric centroid source offset	0.20 ± 0.04	4.69	-0.05 ± 0.05	0.19 ± 0.04

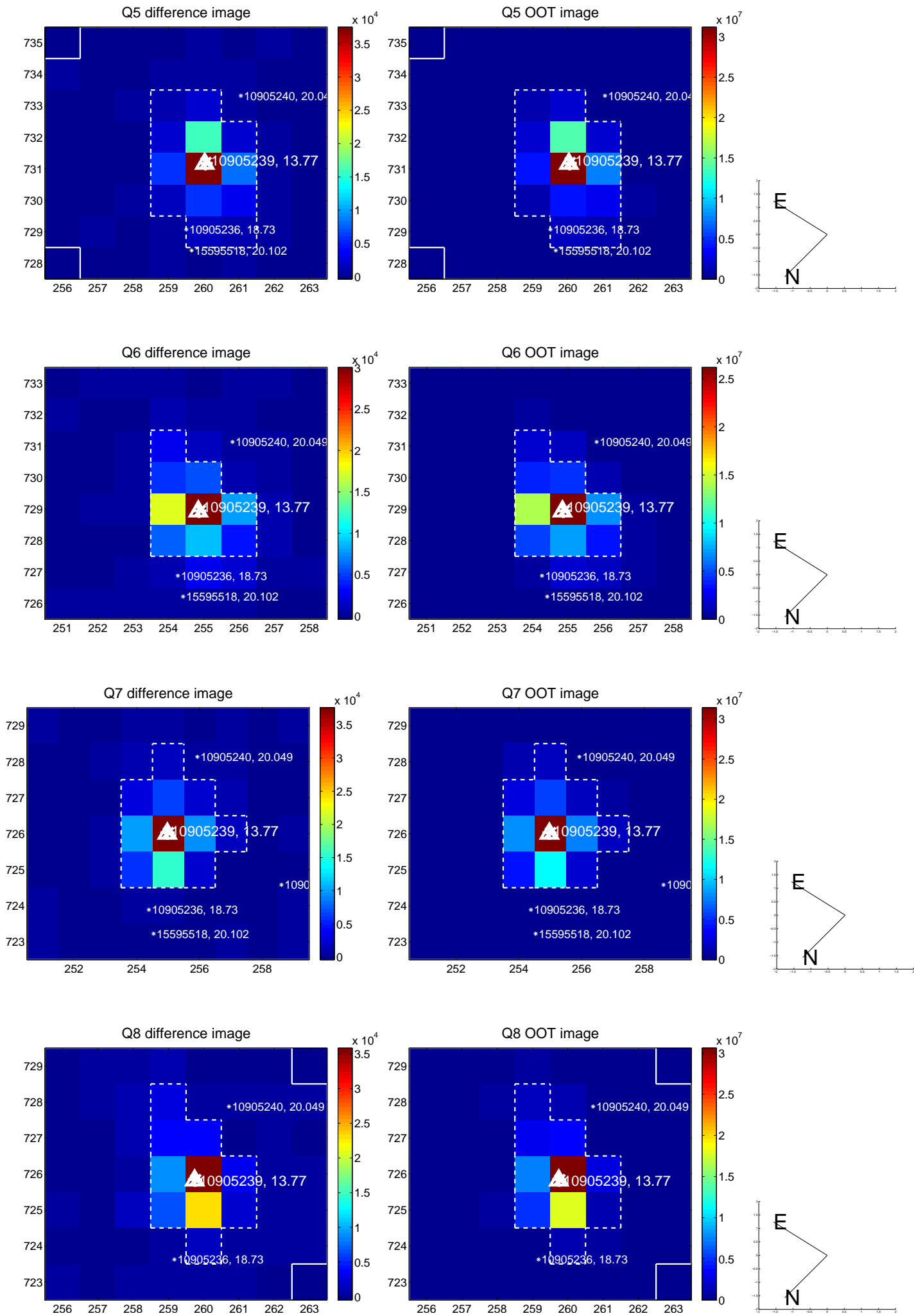


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

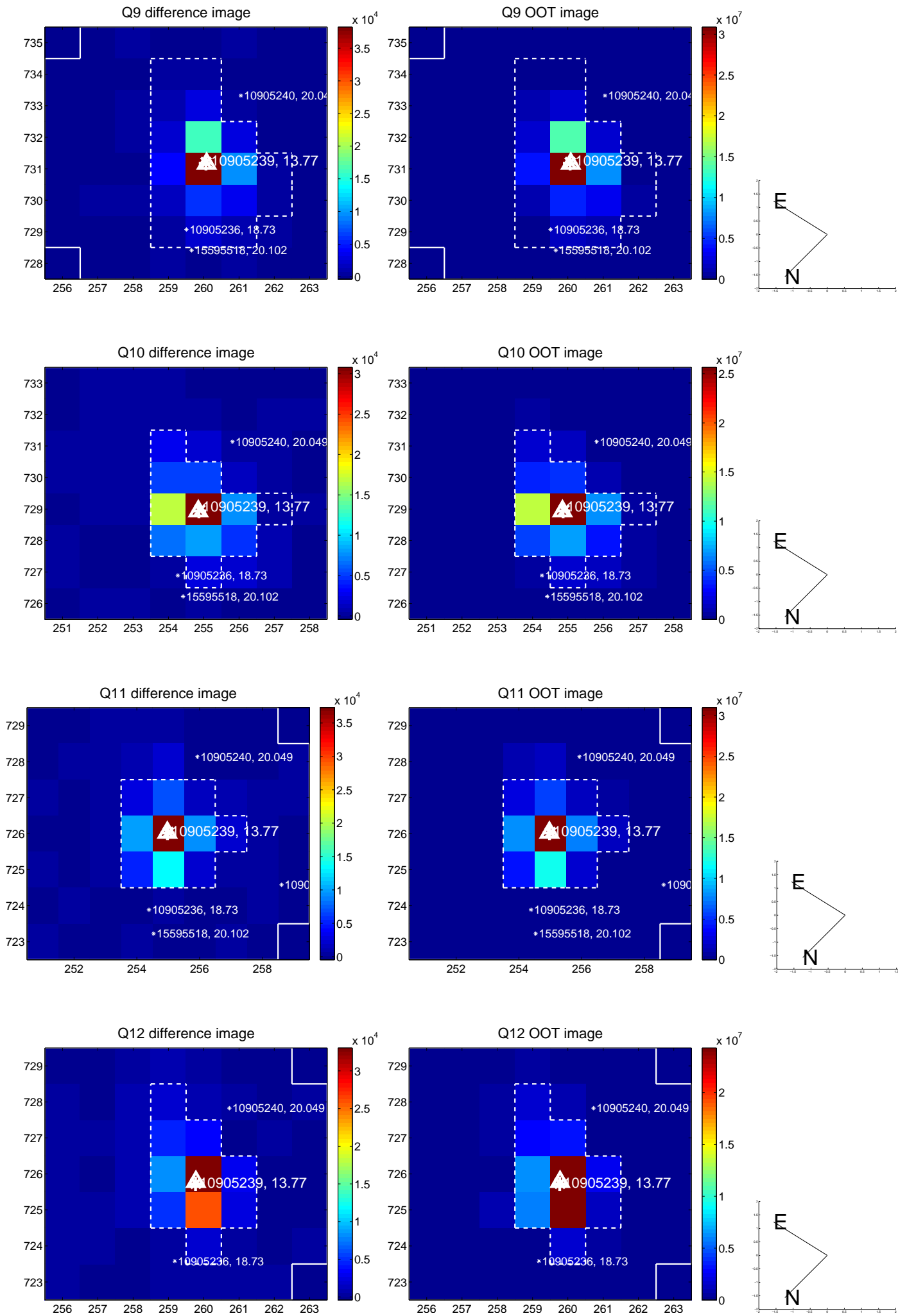
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



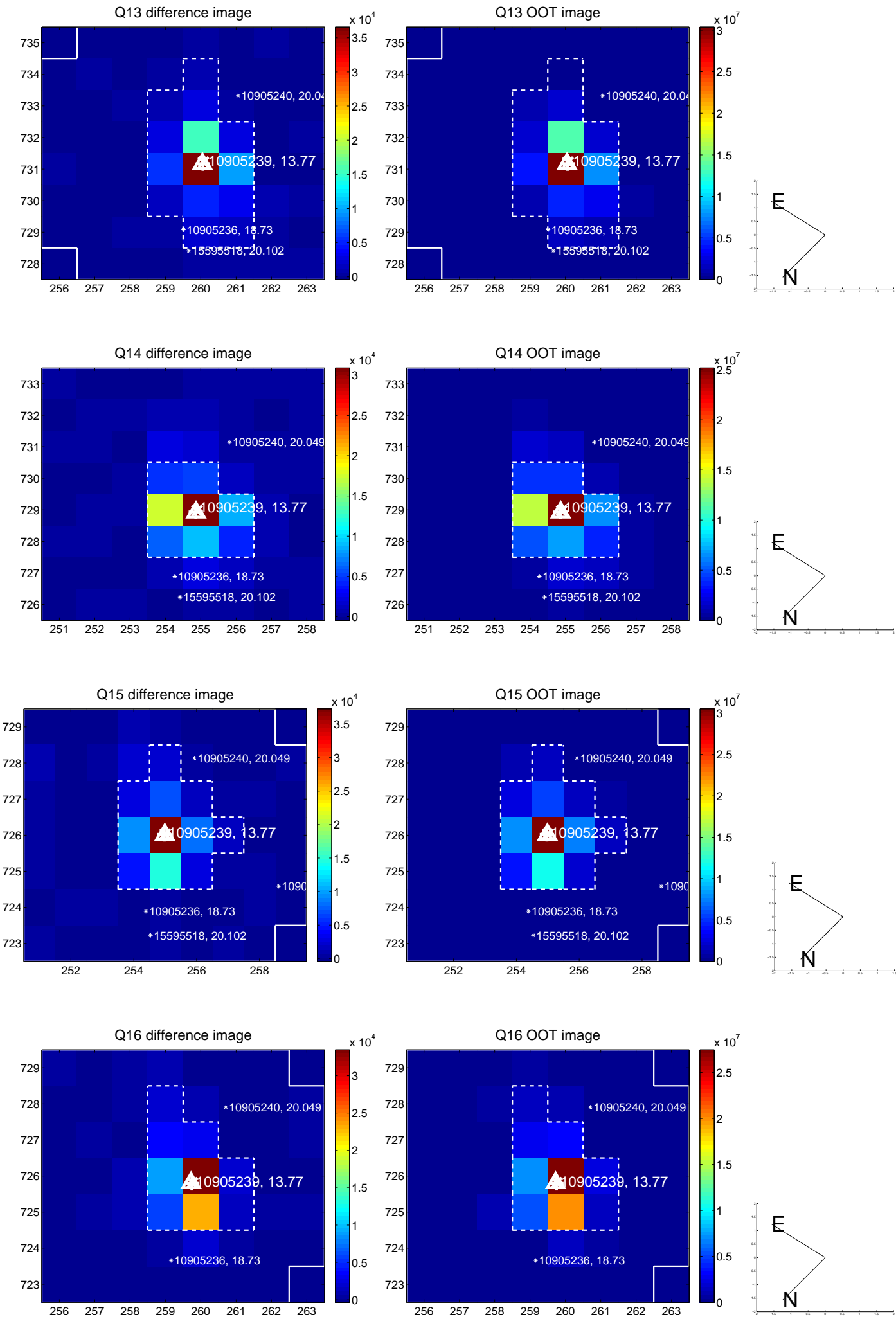
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



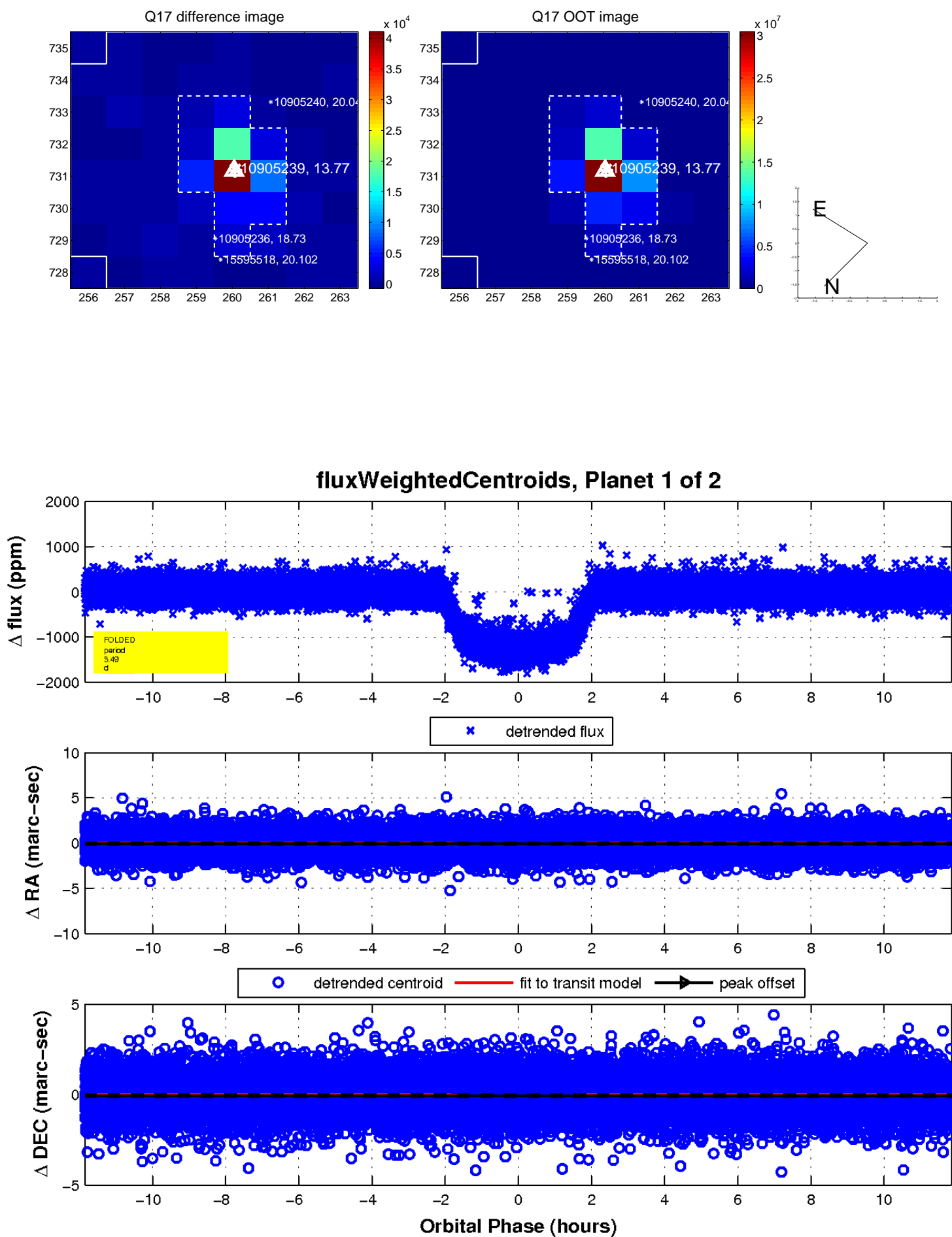
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

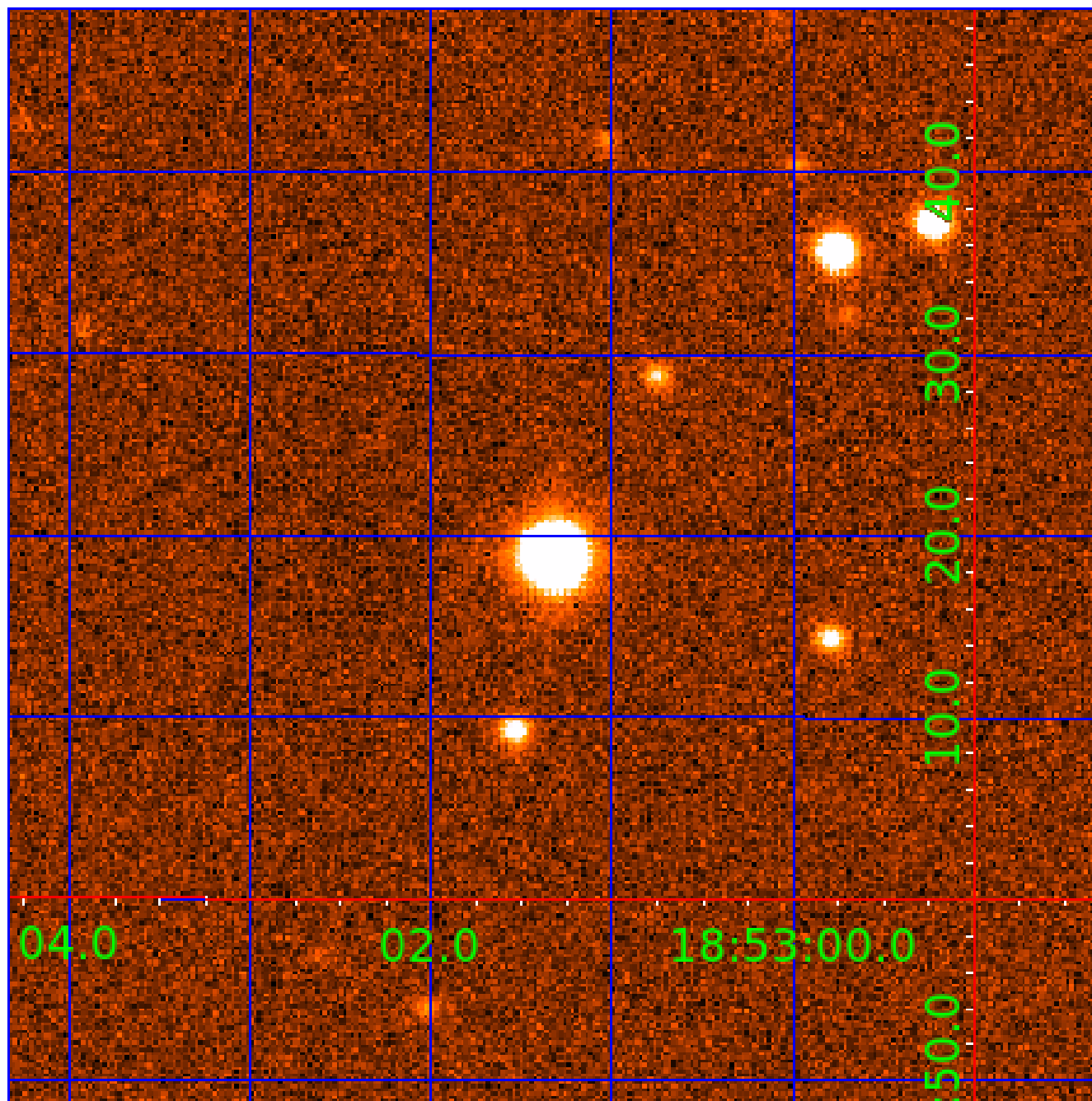


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010905239

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})
010905239-01	OBS	0046.01	3.487685	132.568255	1292.4	3.949	320.4	324.1	1.59	5576	6.15	1033.43
010905239-02	OBS	0046.02	6.029738	132.480858	48.0	4.046	8.9	8.9	1.59	5576	1.31	498.04

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010905239-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010905239-02	OBS	PC	0.92	0	0	0	0	NO_COMMENT

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

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

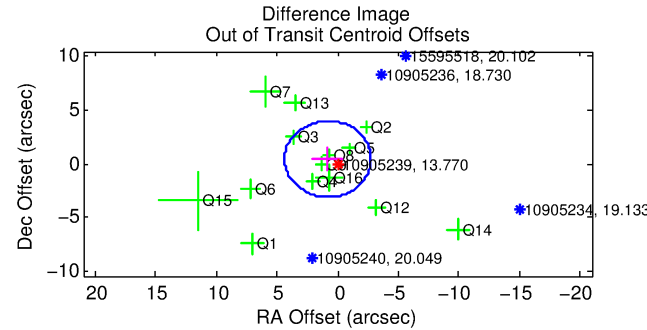
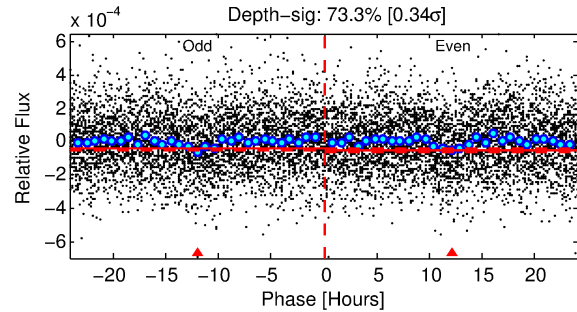
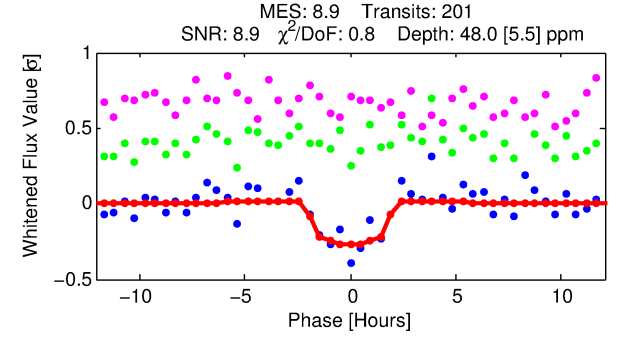
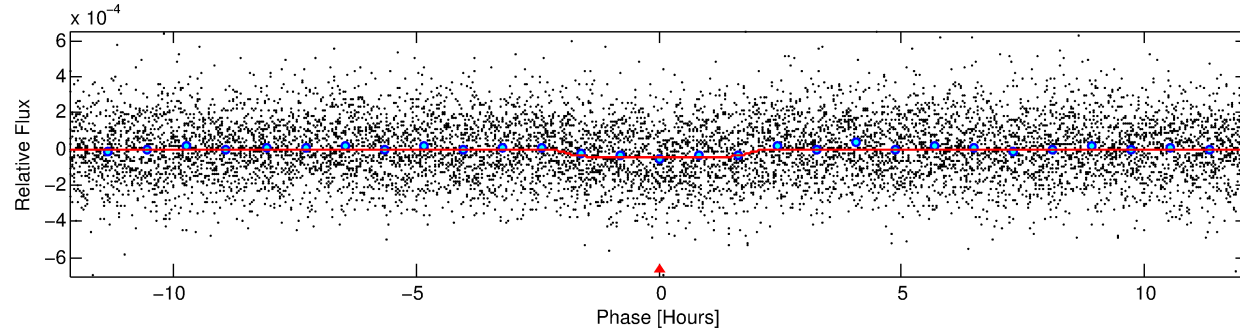
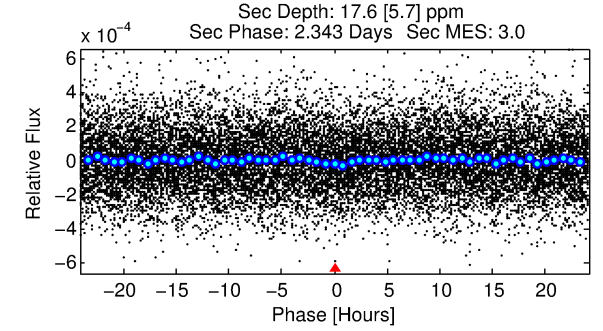
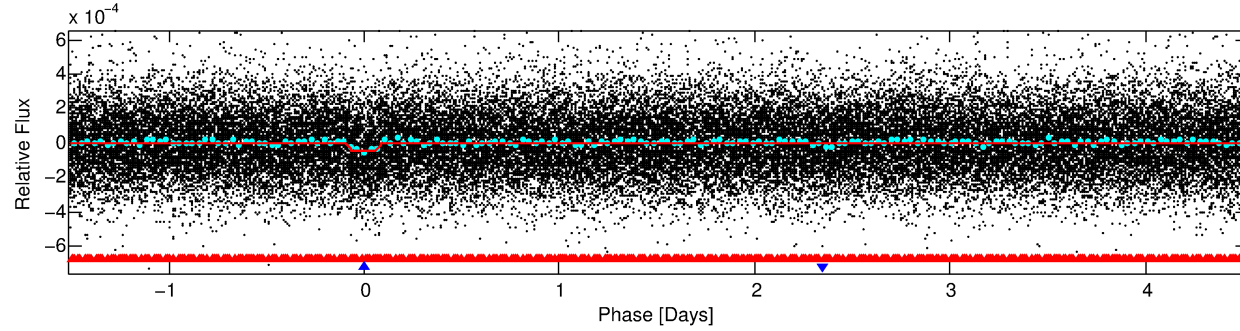
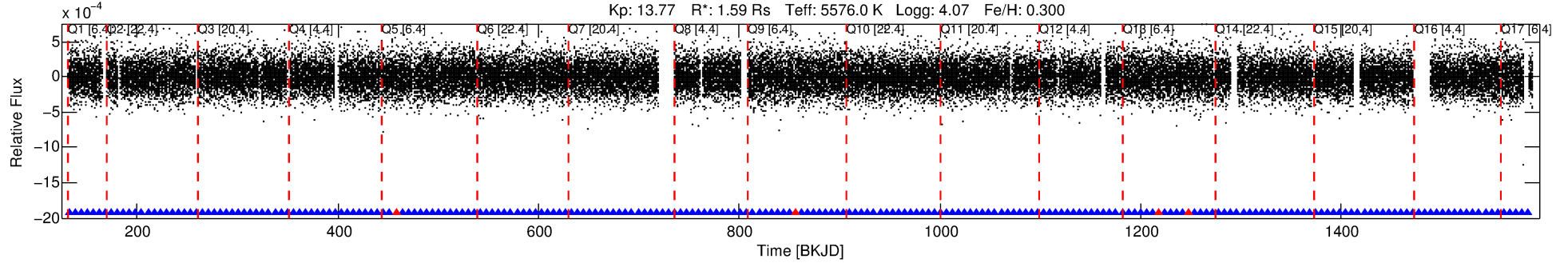
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010905239-02

No Significant Match Found

DV One-Page Summary

KIC: 10905239 Candidate: 2 of 2 Period: 6.030 d
KOI: K00046.02 Name: Kepler-101c Corr: 0.952



DV Fit Results:

Period = 6.02974 [0.00006] d
Epoch = 132.4809 [0.0081] BKJD
Rp/R* = 0.0075 [0.0051]
a/R* = 5.51 [15.98]
b = 0.89 [0.73]
Seff = 498.04 [174.34]
Teq = 1205 [105] K
Rp = 1.31 [0.93] Re
a = 0.0664 [0.0146] AU
Ag = 24.95 [35.56] [0.67σ]
Teffp = 4163 [1442] K [2.05σ]

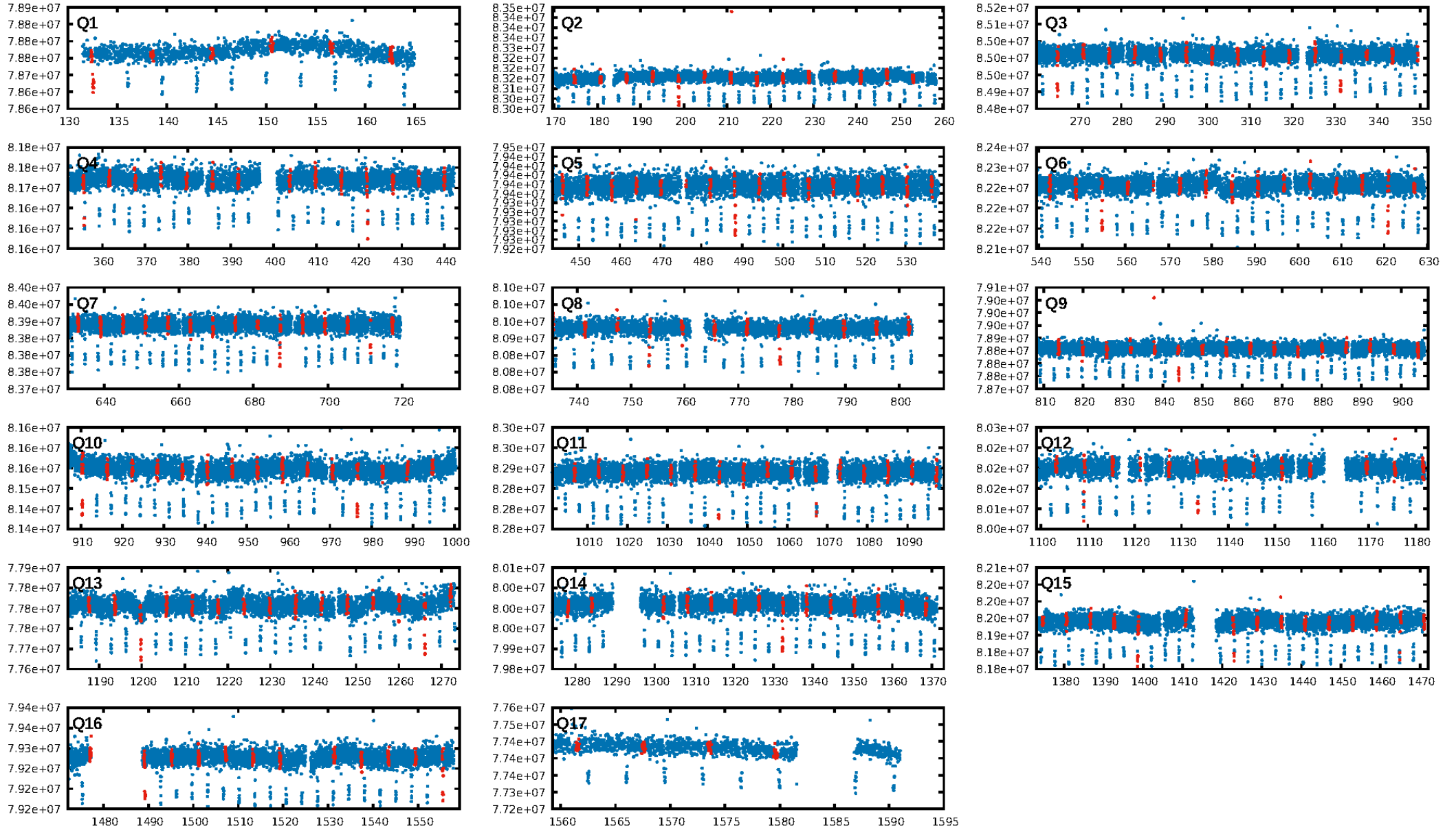
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.79σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.61e-19
RollingBand-fgt: 0.98 [188/192]
GhostDiagnostic-chr: 6.645
Centroid-sig: 57.0%
Centroid-so: 1.286 arcsec [0.74σ]
OotOffset-rm: 0.919 arcsec [0.78σ]
KicOffset-rm: 0.959 arcsec [0.67σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 1.00 [17/17]

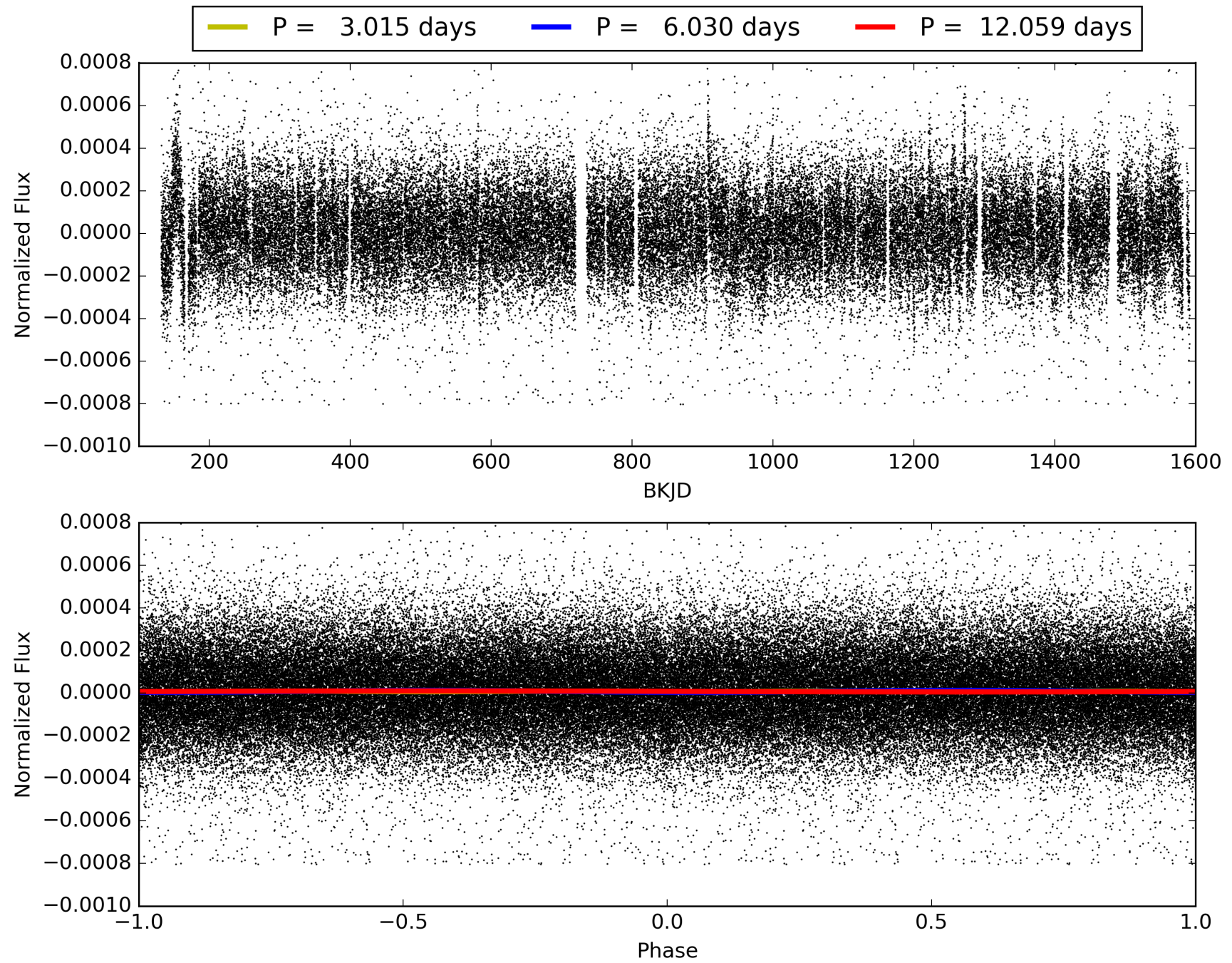
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:50:31 Z

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

TCE 010905239-02, PDC Light Curves

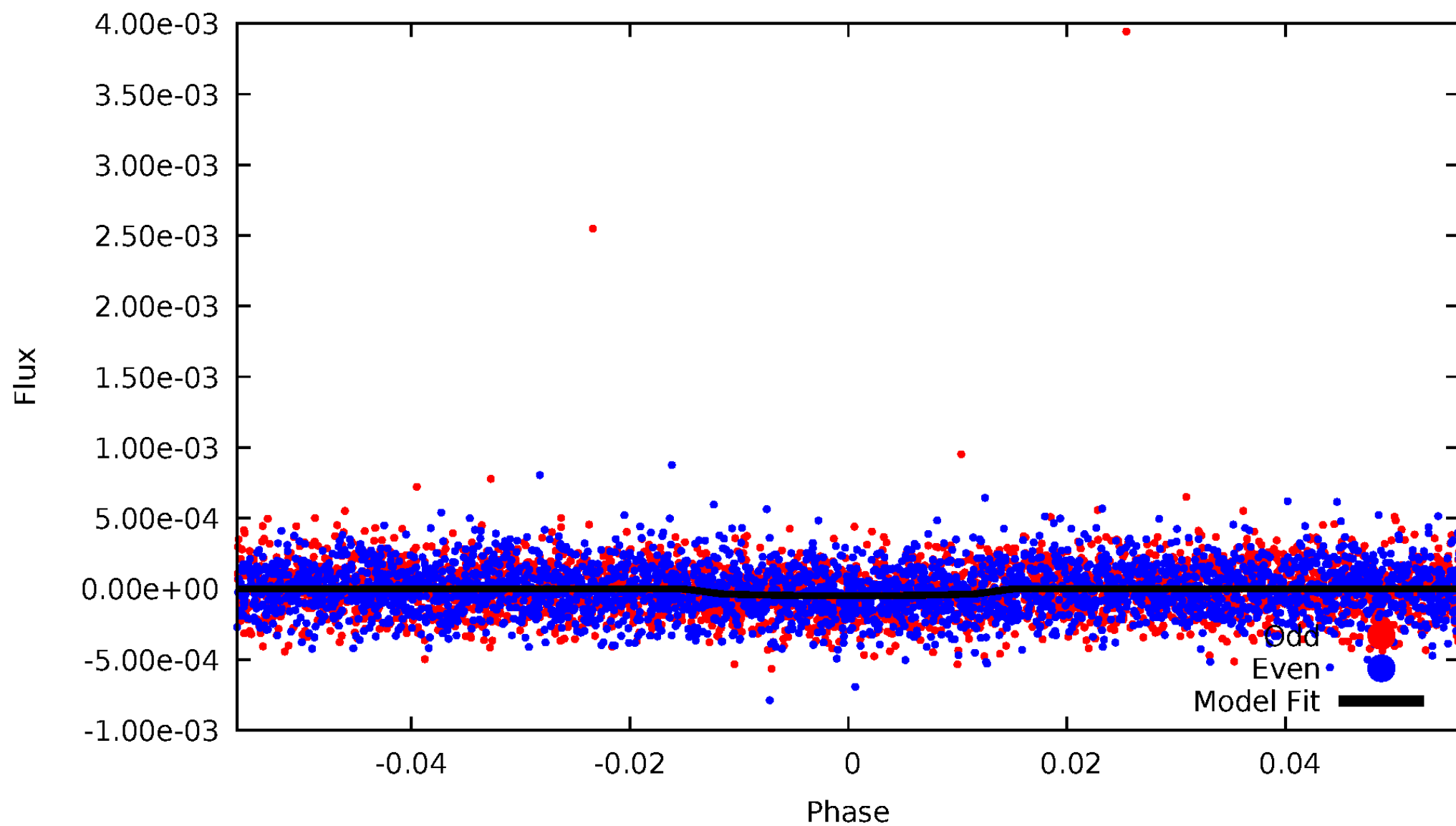


TCE 010905239-02



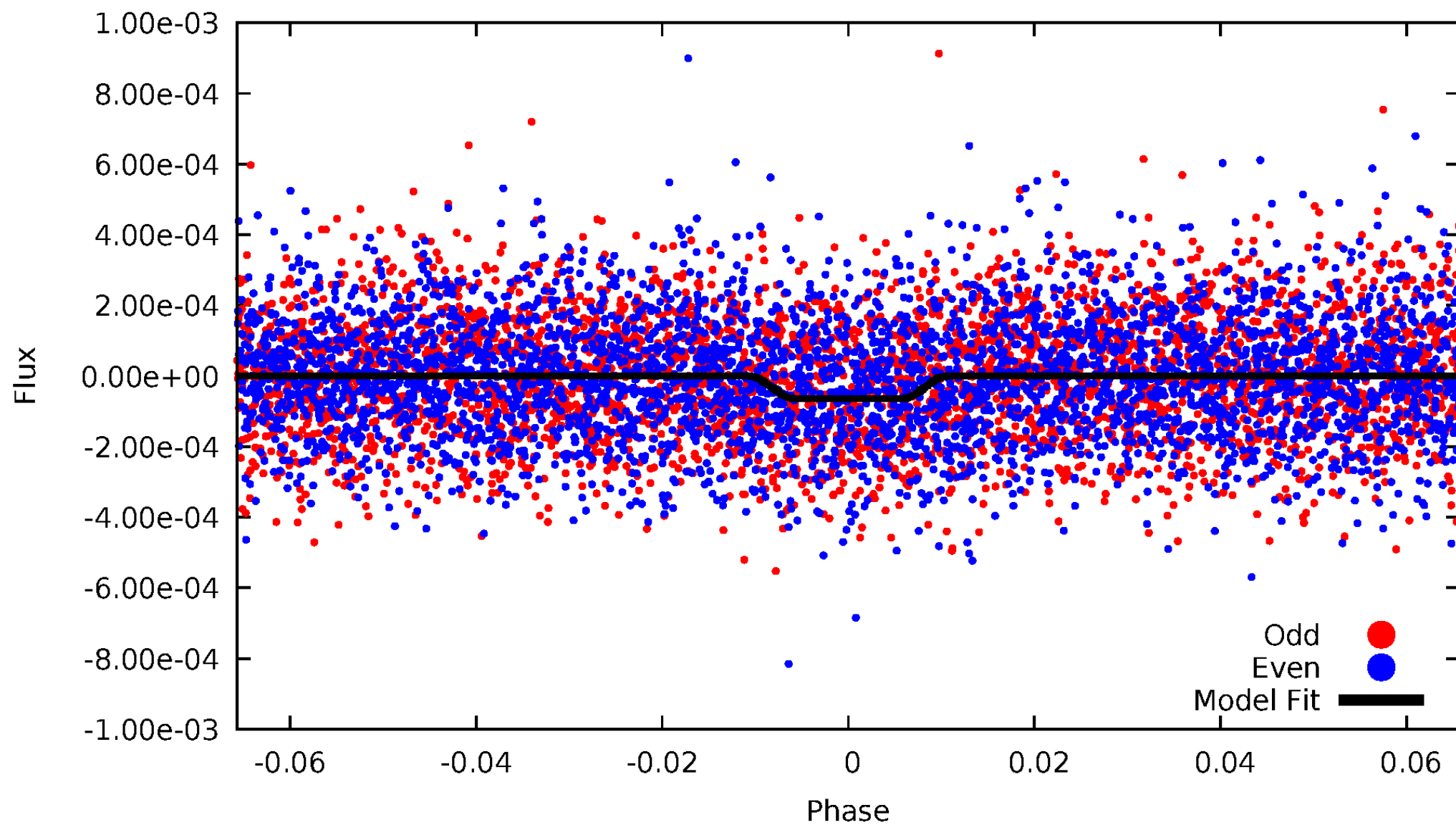
DV Odd/Even

TCE 010905239-02



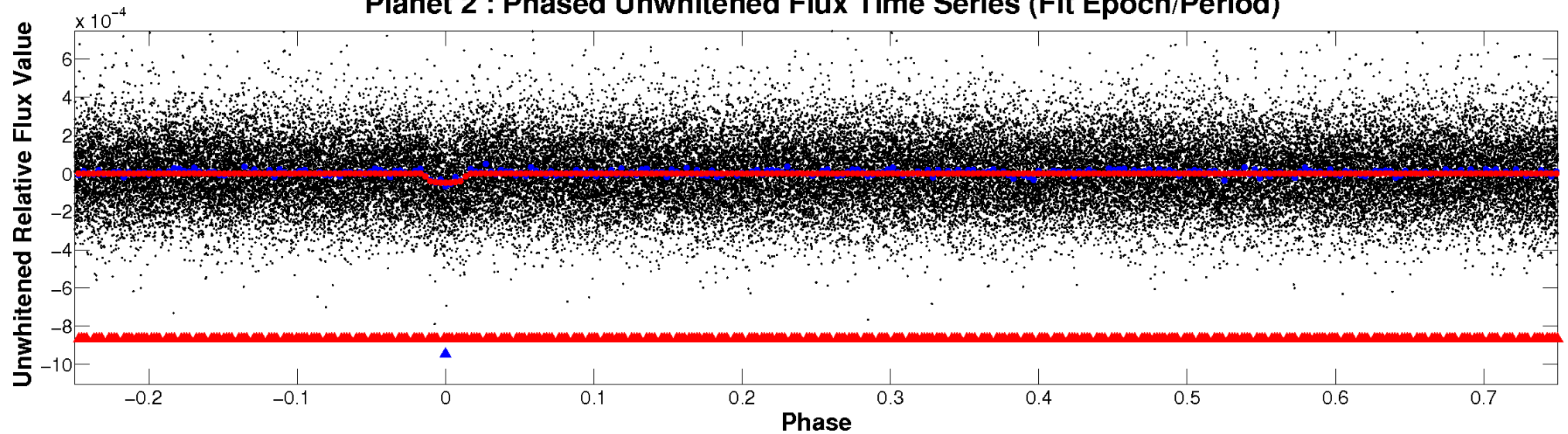
ALT Odd/Even

TCE 010905239-02

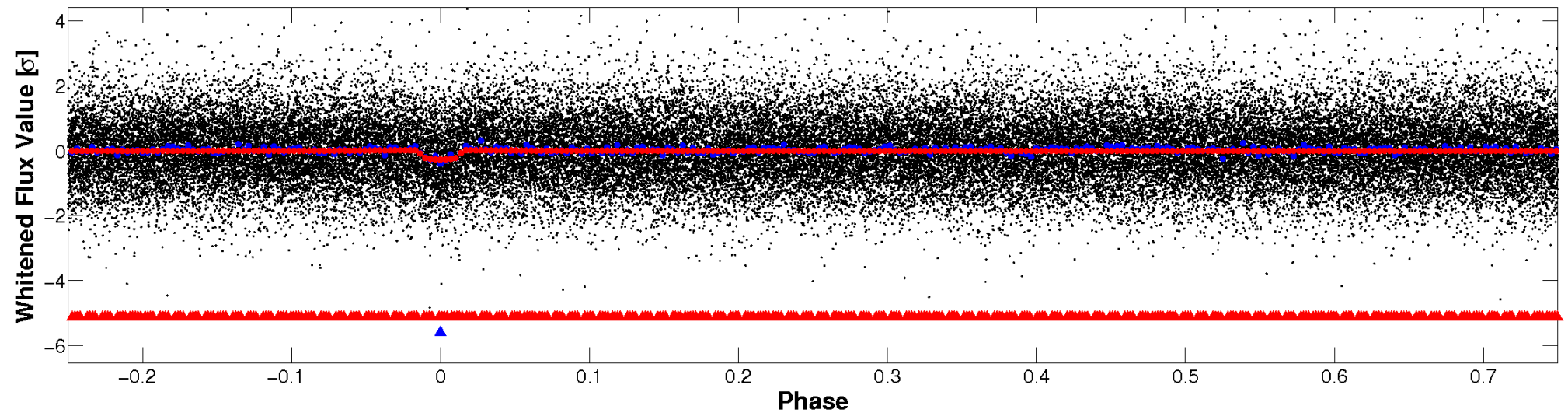


Non-Whitened Vs. Whitened Light Curve

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

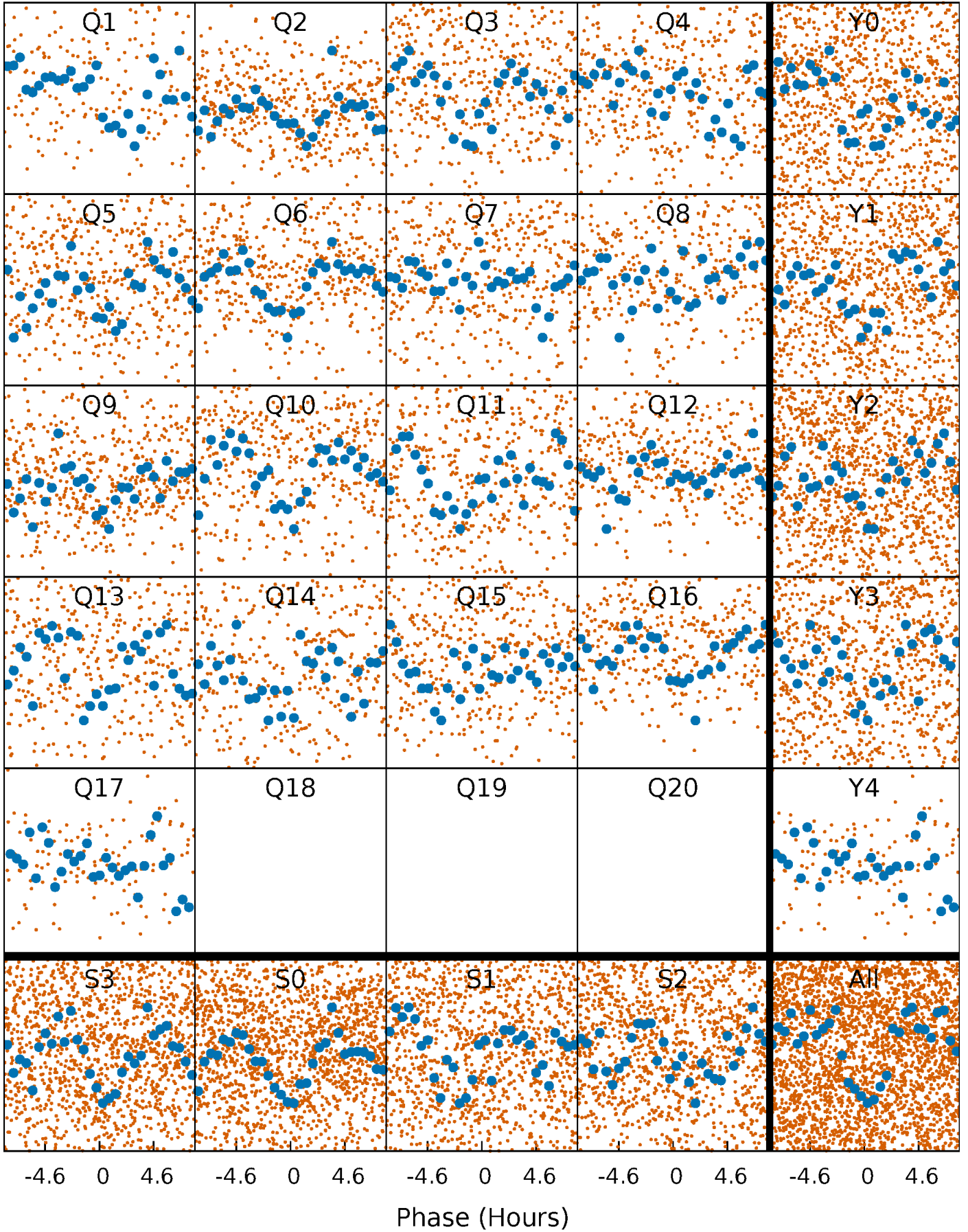


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



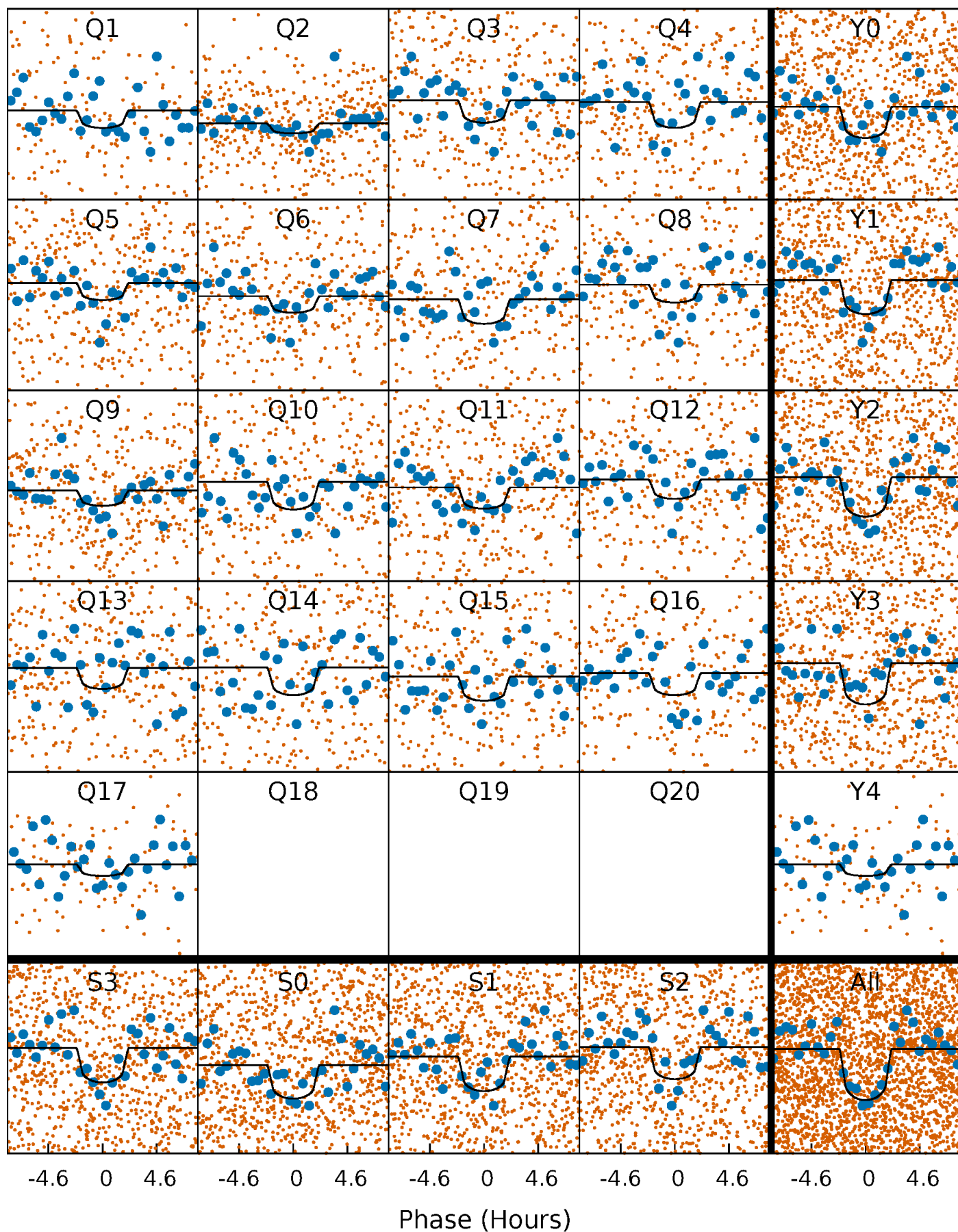
PDC Quarter-Phased Transit Curves

TCE 010905239-02 P= 6.029738 Days $T_0=132.480859$ (BKJD)



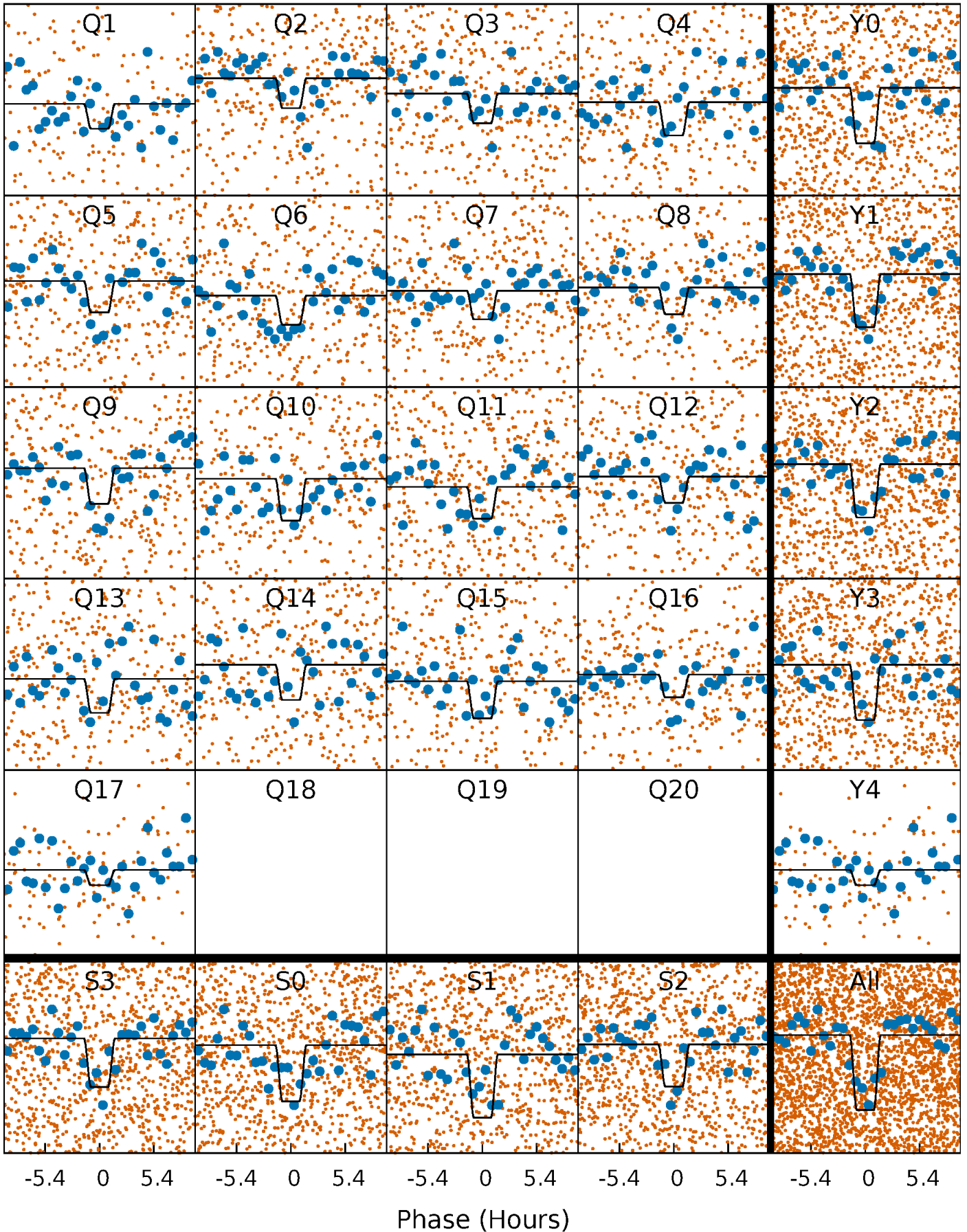
DV Quarter-Phased Transit Curves

TCE 010905239-02 P= 6.029738 Days $T_0=132.480859$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

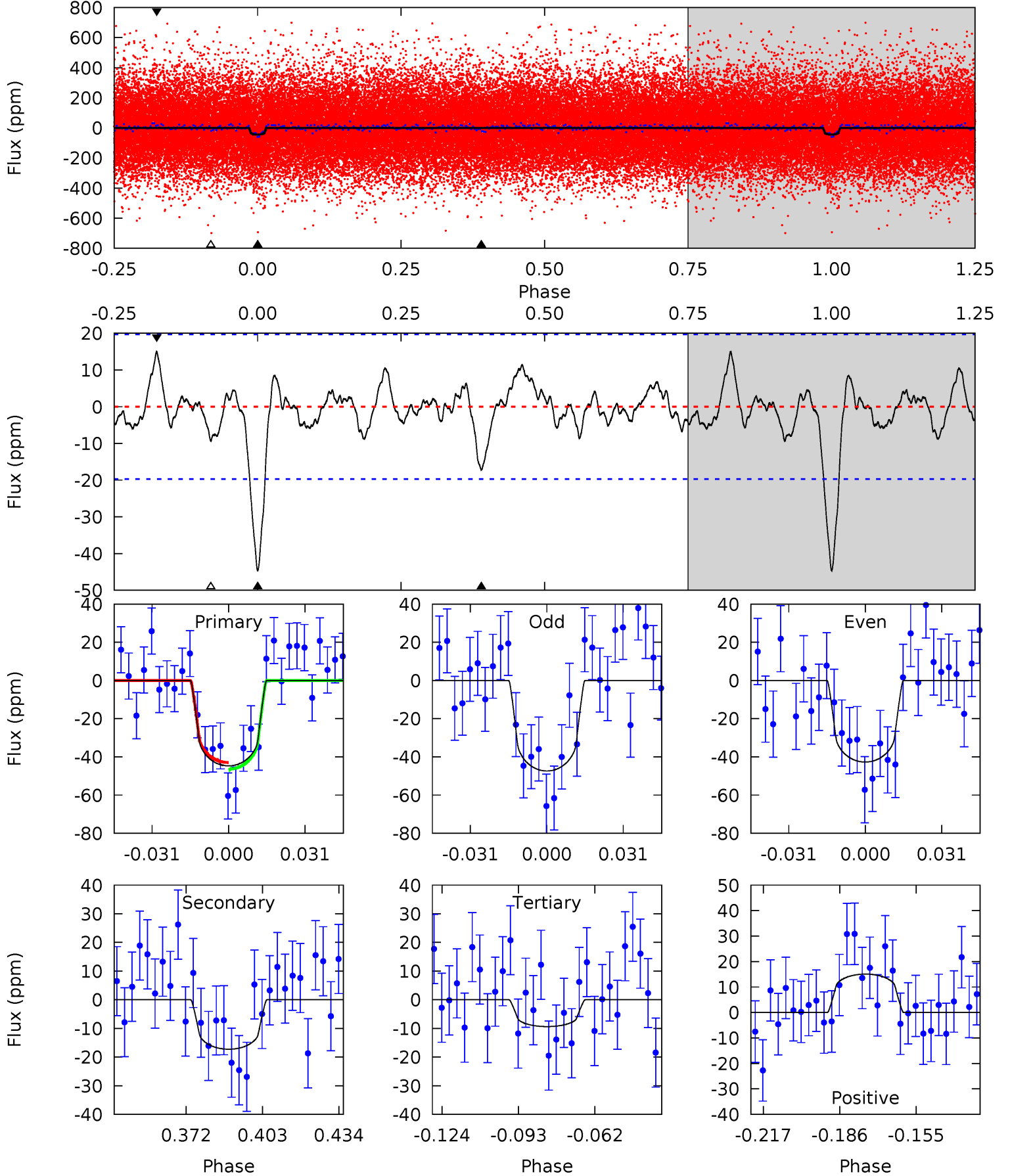
TCE 010905239-02 $P = 6.029805$ Days $T_0 = 132.472659$ (BKJD)



DV Model-Shift Uniqueness Test

010905239-02, P = 6.029738 Days, E = 126.451121 Days

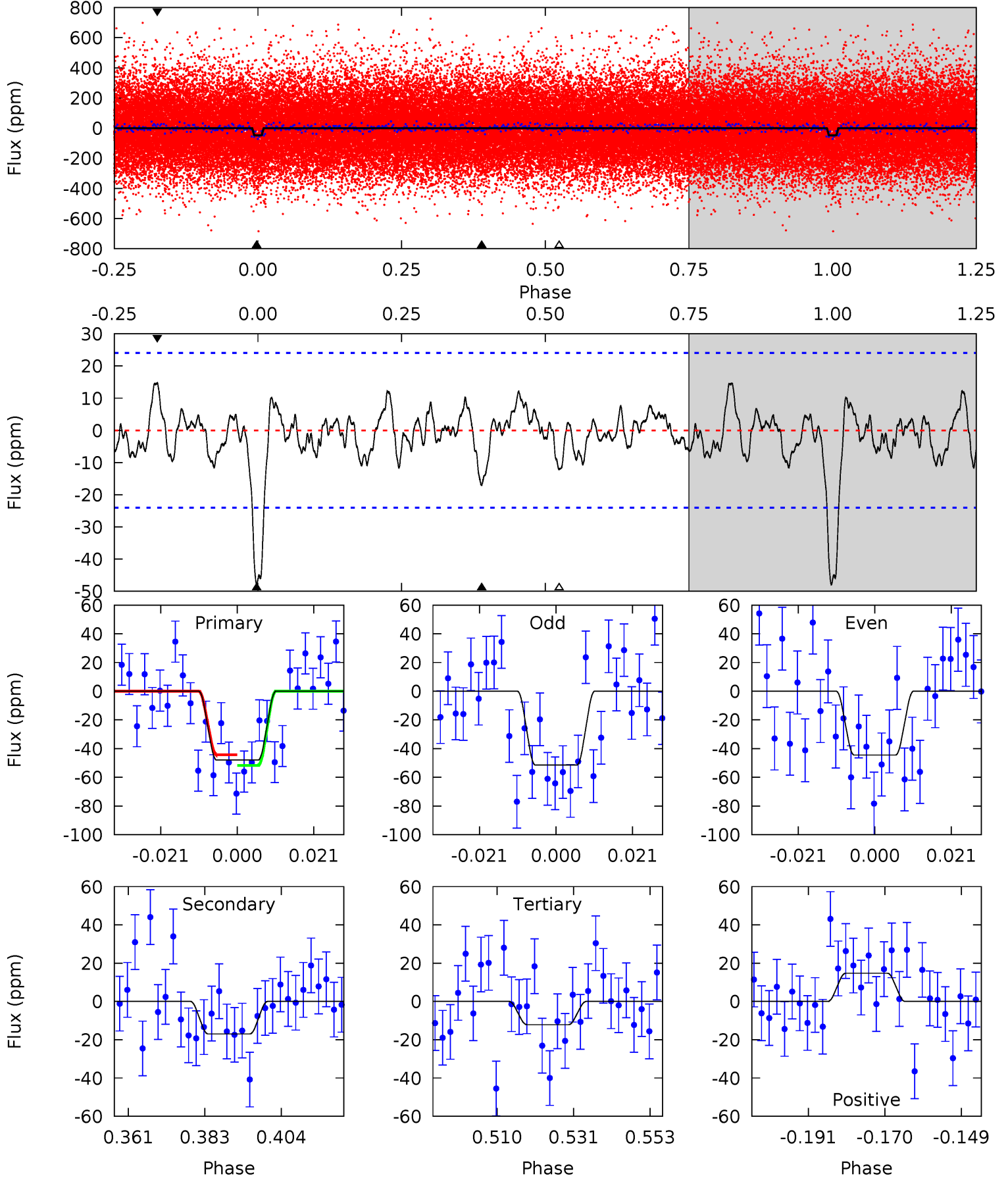
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	4.21	2.28	3.67	4.80	2.16	1.07	8.61	7.22	1.92	0.54	0.57	0.93	0.25	0.43



Alt Model-Shift Uniqueness Test

010905239-02, P = 6.029805 Days, E = 126.442854 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.73	3.45	2.46	3.00	4.88	2.30	1.07	7.27	6.73	0.99	0.45	0.71	1.10	0.24	0.76



Stellar Parameters For KIC 010905239

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5576^{+112}_{-101}	$4.065^{+0.196}_{-0.084}$	$0.300^{+0.150}_{-0.150}$	$1.593^{+0.235}_{-0.382}$	$1.074^{+0.108}_{-0.097}$	$0.374^{+0.401}_{-0.099}$
	+2%/-2%	+5%/-2%	+50%/-50%	+15%/-24%	+10%/-9%	+107%/-27%
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 010905239-02 / KOI 0046.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-17 ± 4	$1.30^{+0.84}_{-0.70}$	1668^{+85}_{-101}	4281^{+1602}_{-693}	25^{+89}_{-16}
Alt.	-17 ± 5	$1.37^{+0.87}_{-0.78}$	1671^{+73}_{-98}	4183^{+1773}_{-676}	21^{+90}_{-14}

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

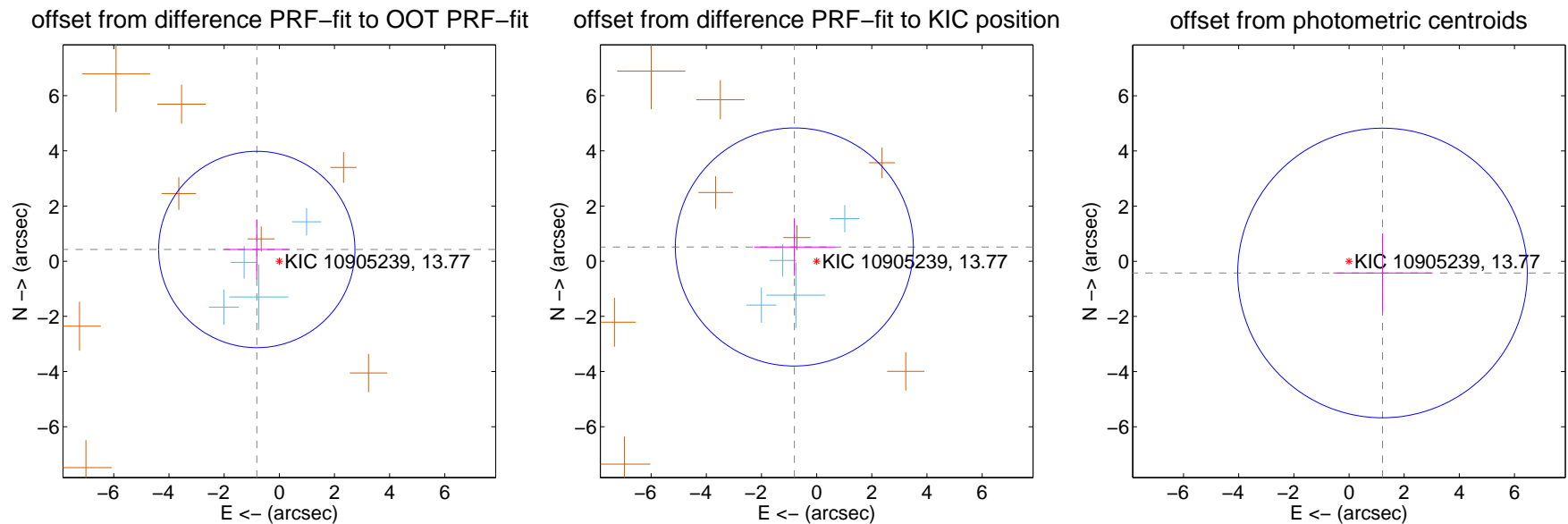
DV Centroid Data

Supplemental centroid analysis for 010905239-02. Kepler magnitude: 13.77. Transit SNR 8.92

There are 4 quarters with good PRF difference image offsets

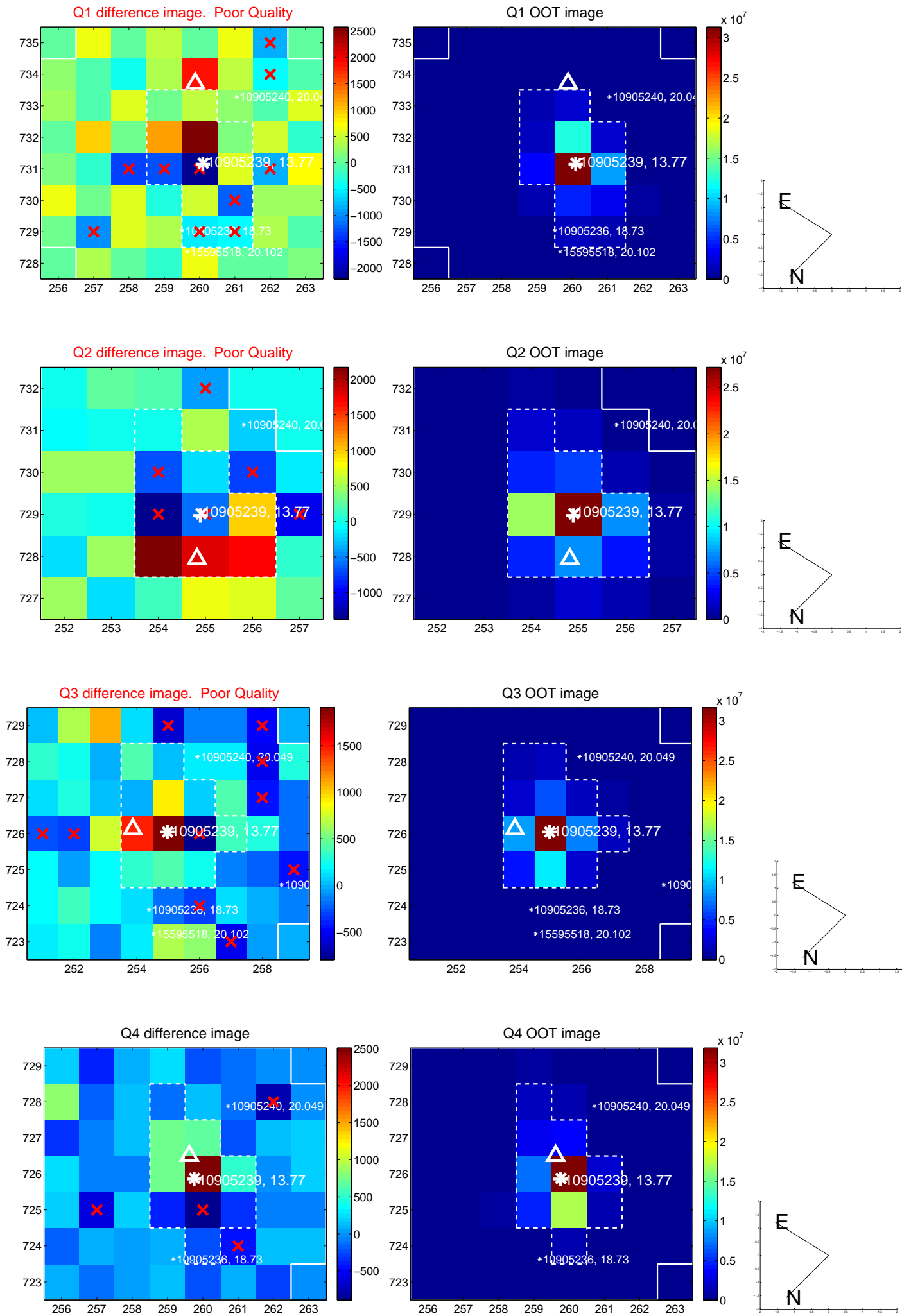
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.919 ± 1.186	0.78	0.816 ± 1.194	0.424 ± 1.081
PRF-fit source offset from KIC position	0.959 ± 1.438	0.67	0.809 ± 1.458	0.515 ± 1.043
photometric centroid source offset	1.29 ± 1.75	0.74	-1.21 ± 1.78	-0.42 ± 1.43

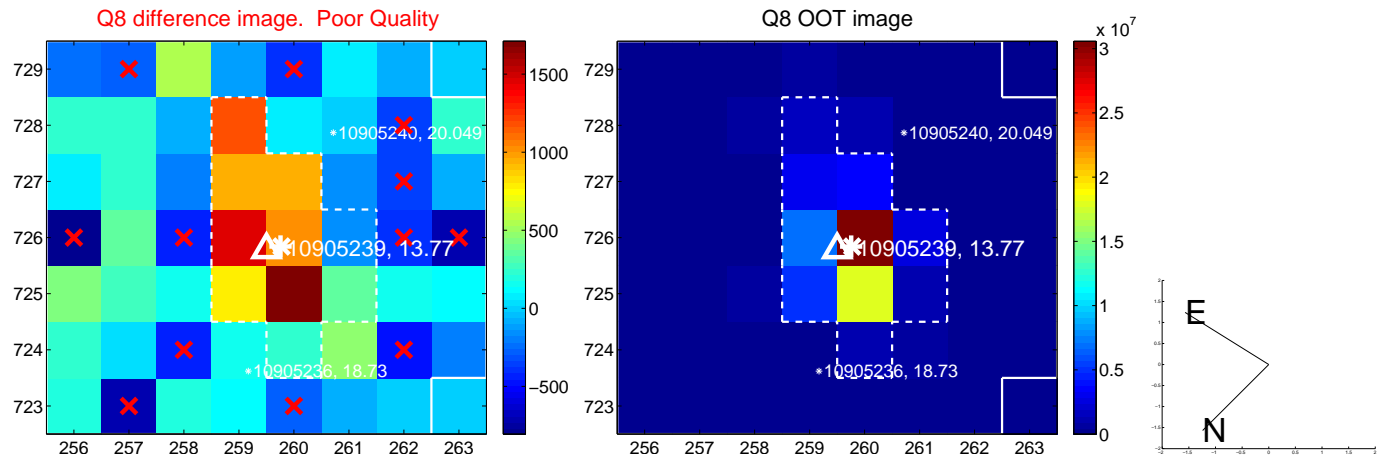
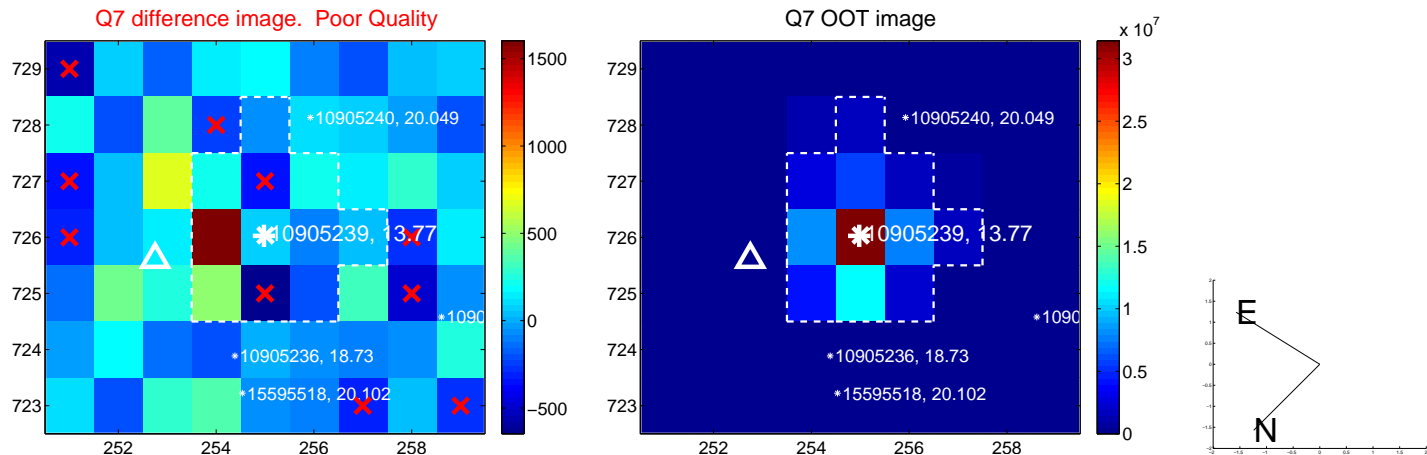
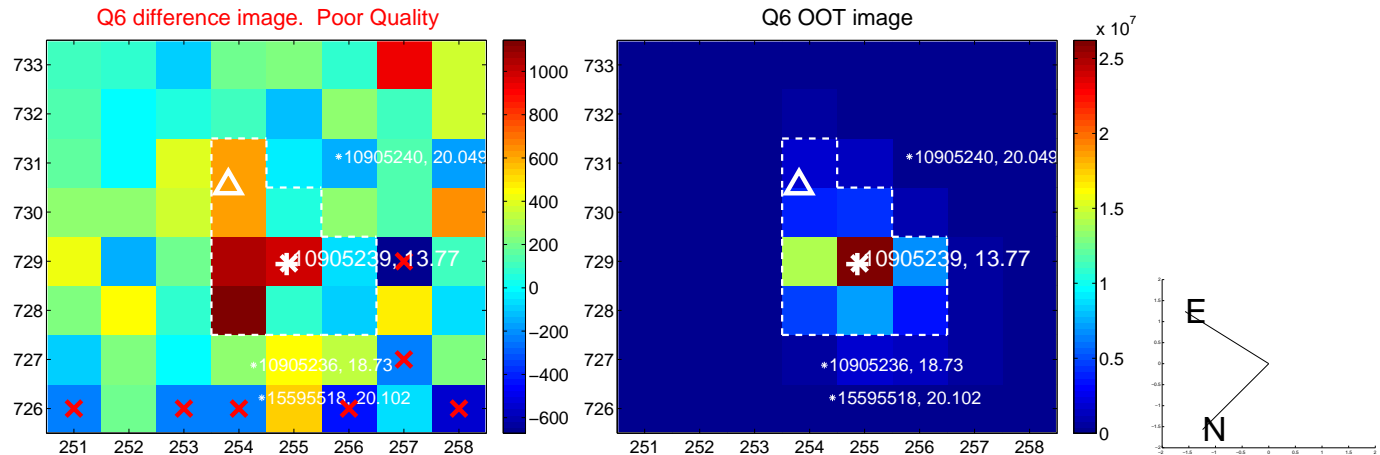
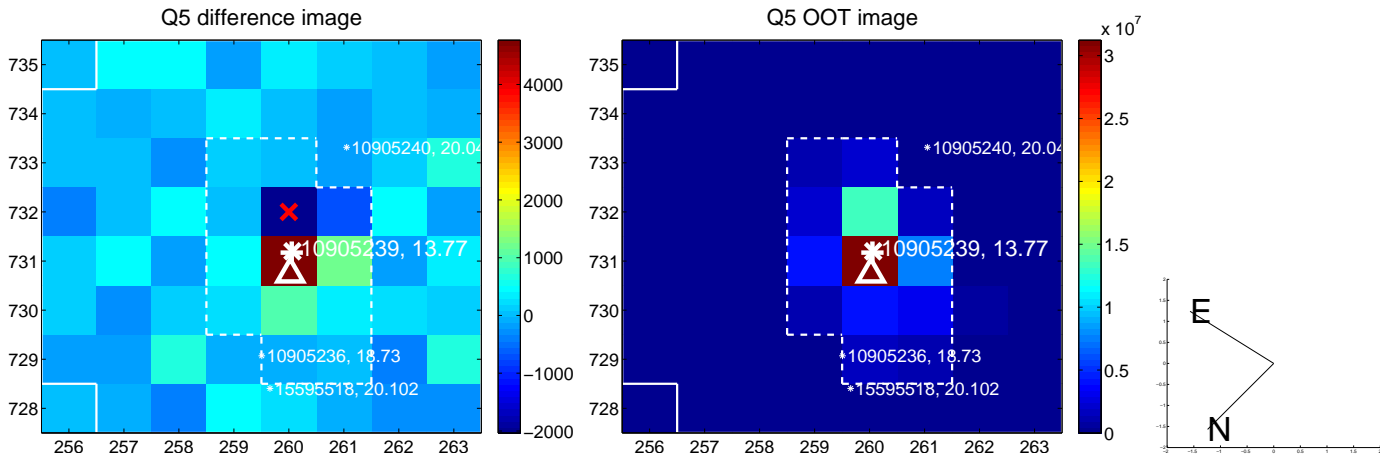


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

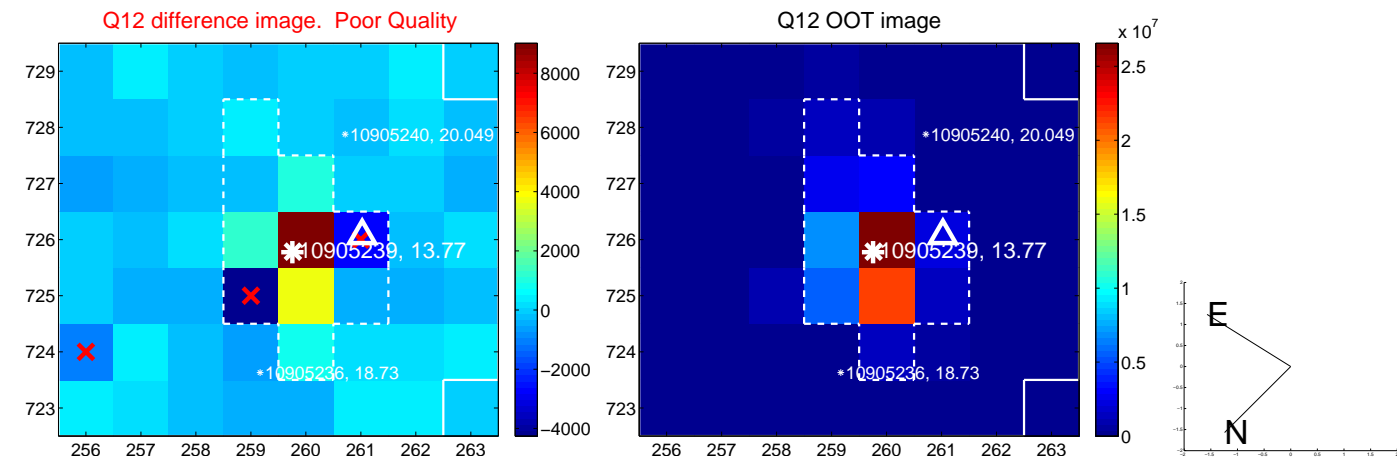
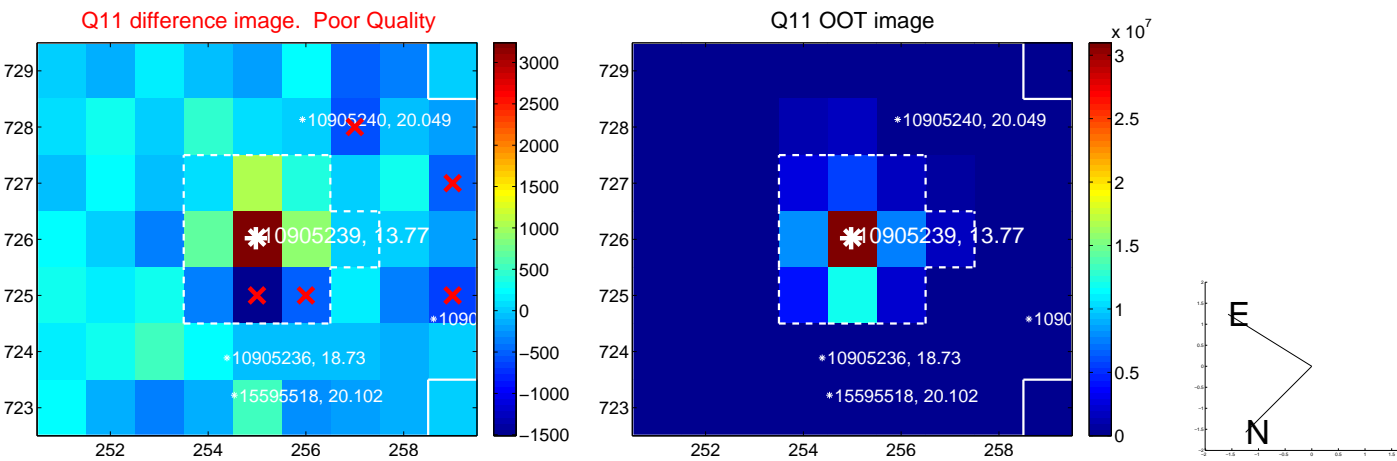
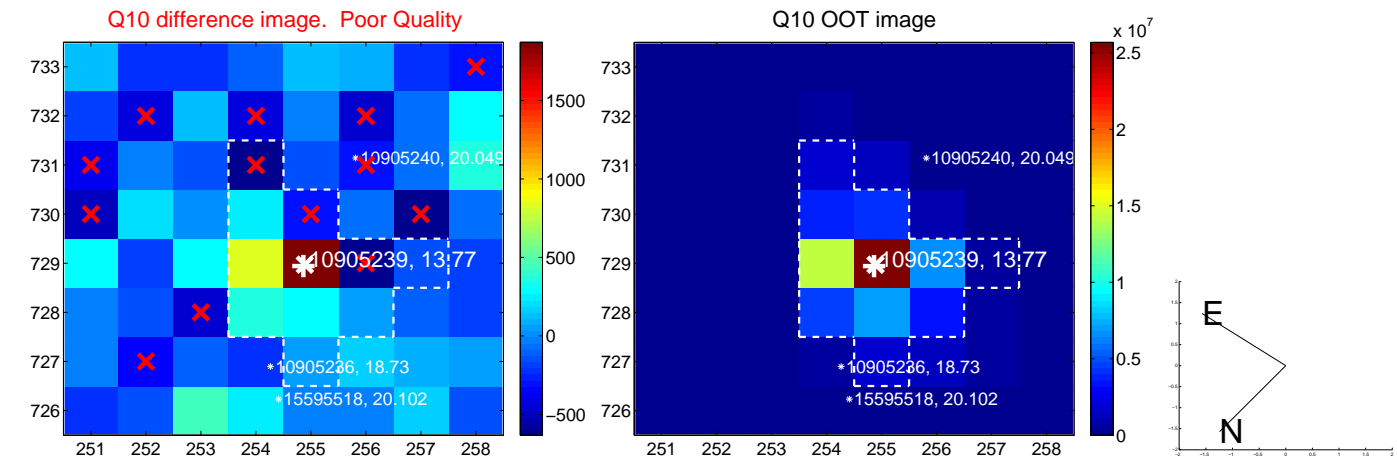
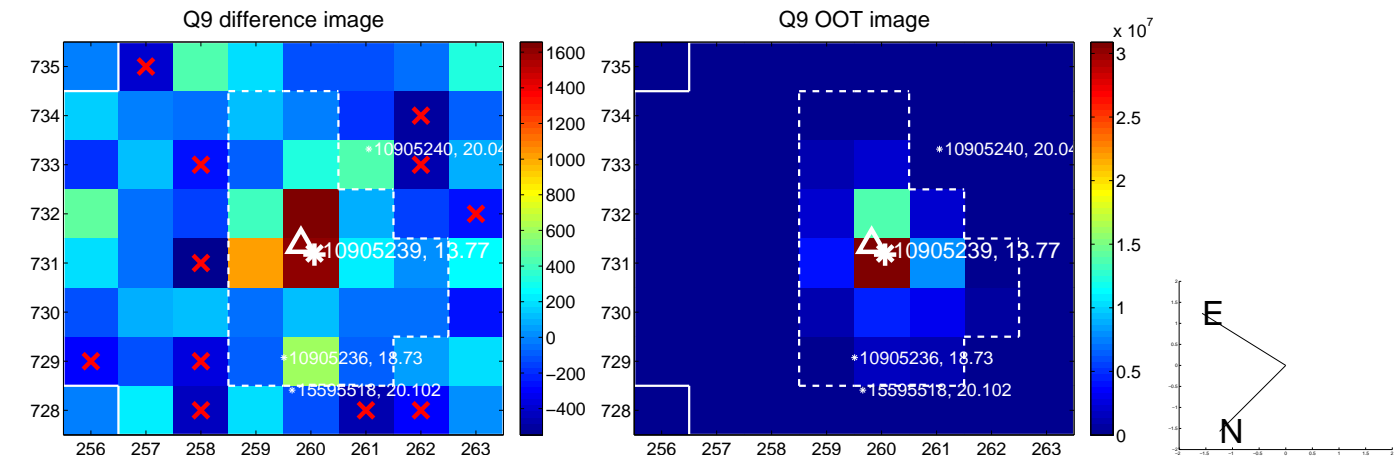
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



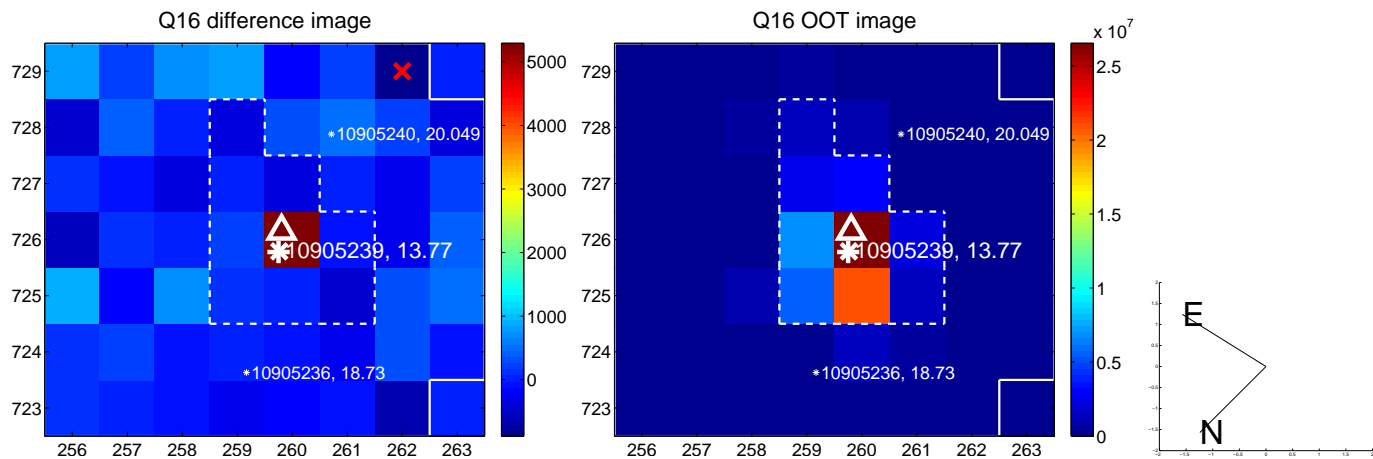
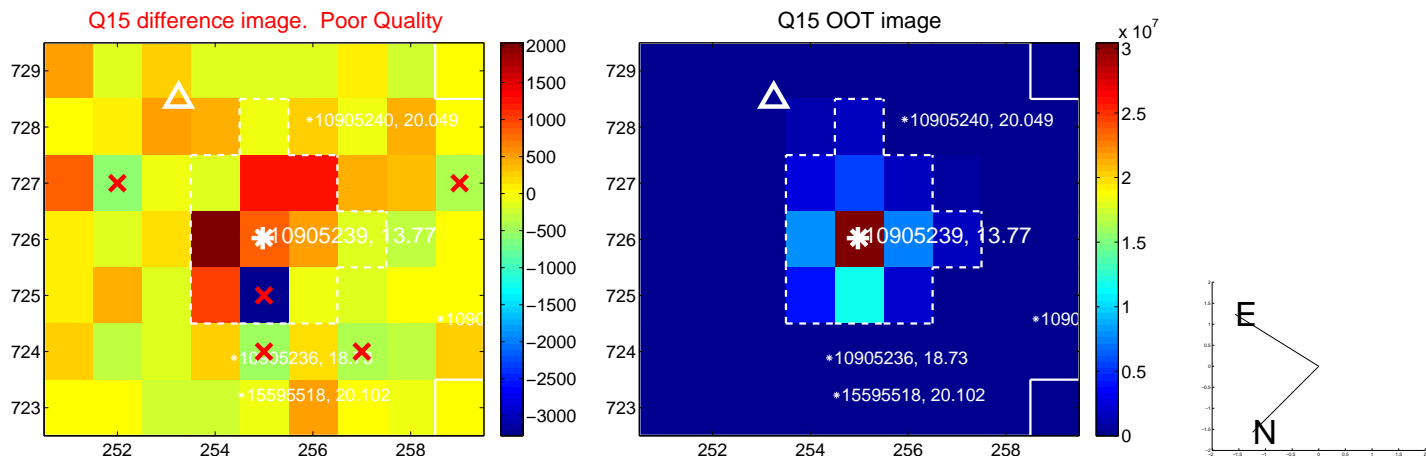
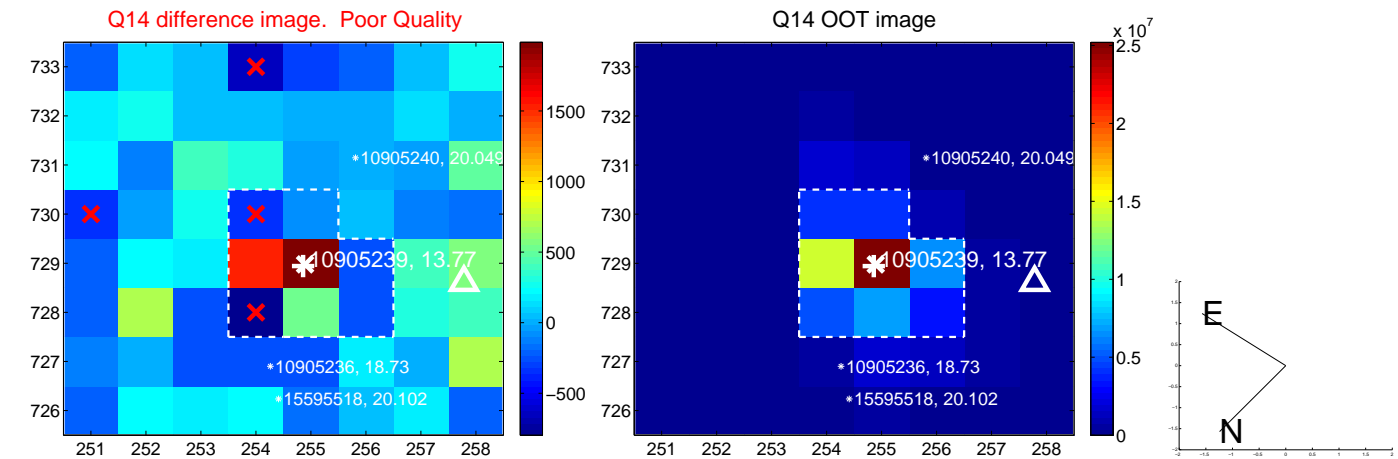
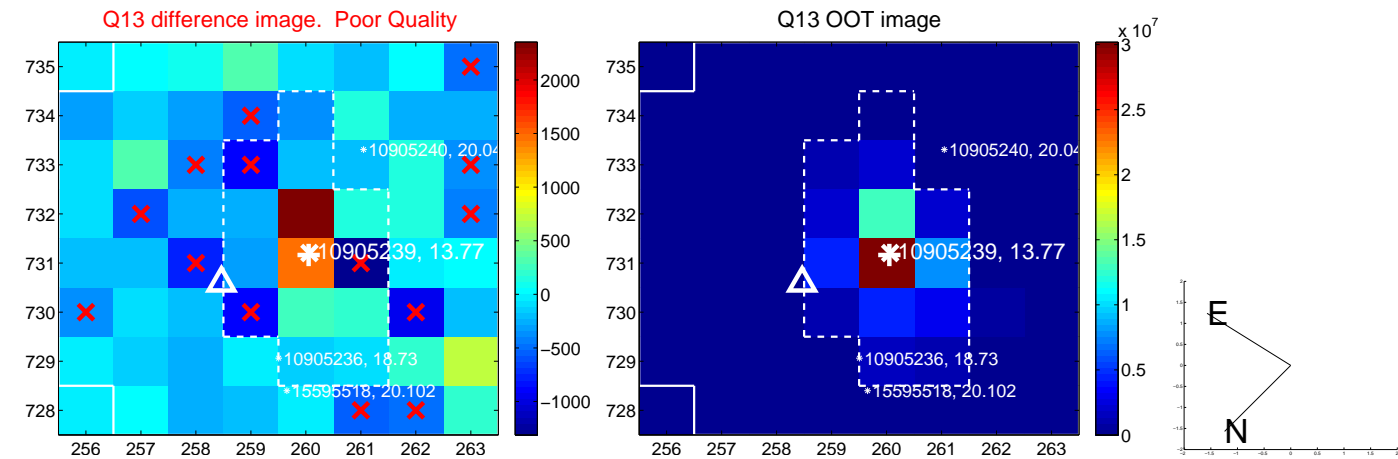
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



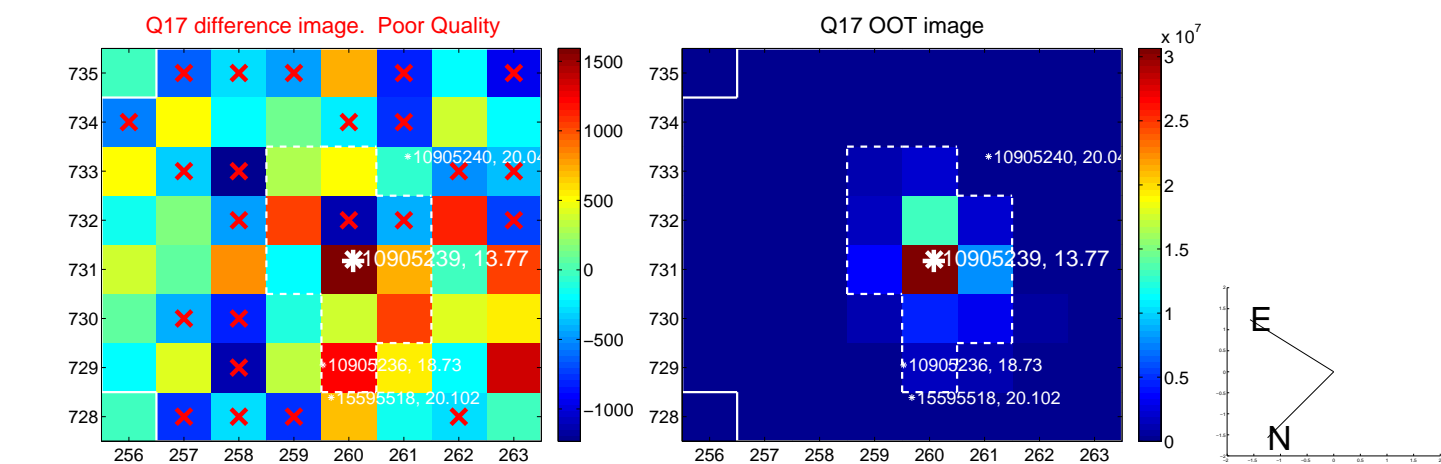
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



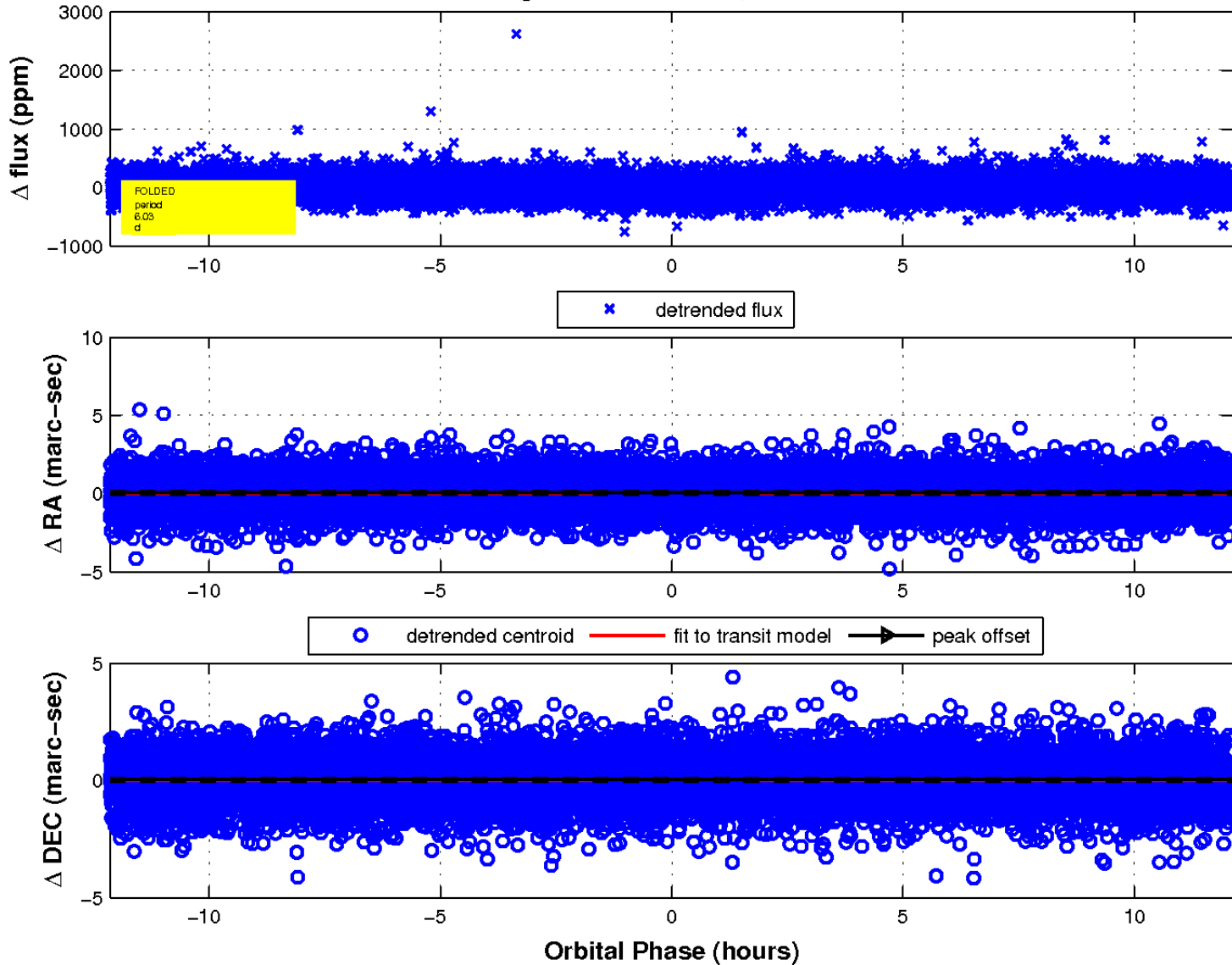
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

