

KIC 009111056

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})
009111056-01	OBS	No	1.395259	132.882028	486.5	1.746	11.0	10.8	3.29	7154	8.52	28108.54
009111056-02	OBS	No	1.395309	132.714284	512.2	1.556	8.8	9.8	3.29	7154	8.56	28107.19
009111056-03	OBS	No	1.395281	131.634405	471.4	1.569	9.4	9.8	3.29	7154	8.48	28107.95
009111056-04	OBS	No	1.395280	131.779744	78.4	1.500	8.7	-1.0	3.29	7154	2.93	28107.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009111056-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009111056-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—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.

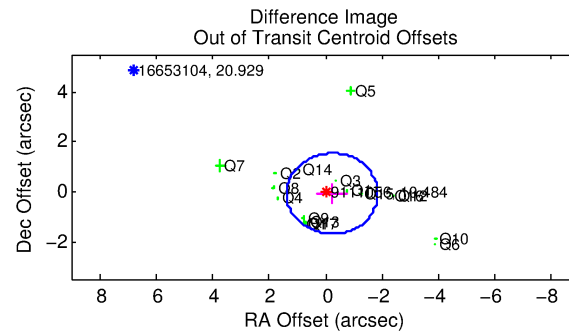
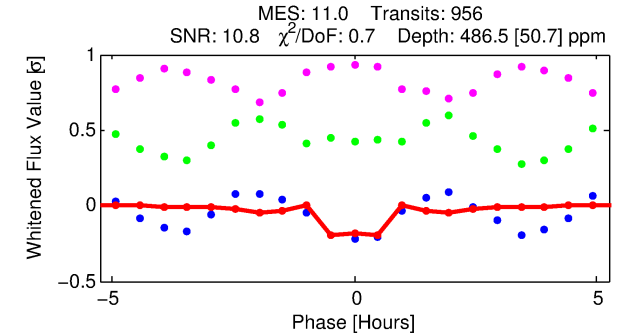
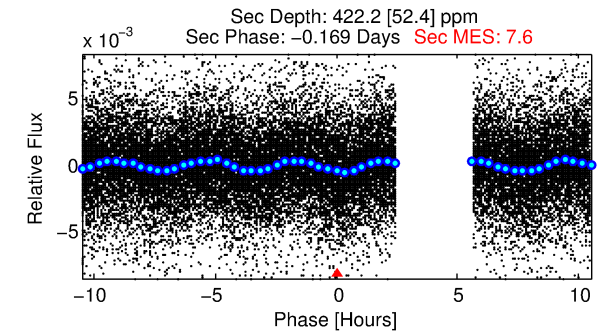
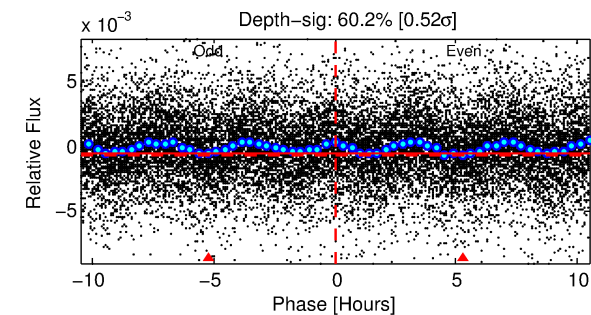
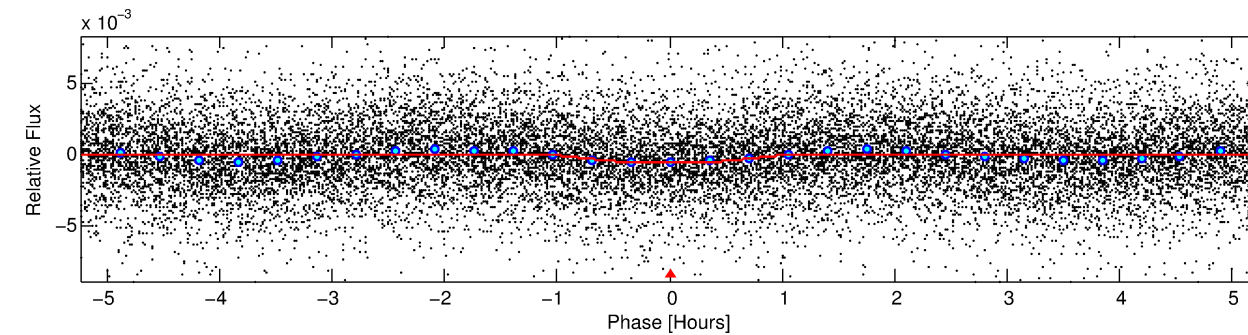
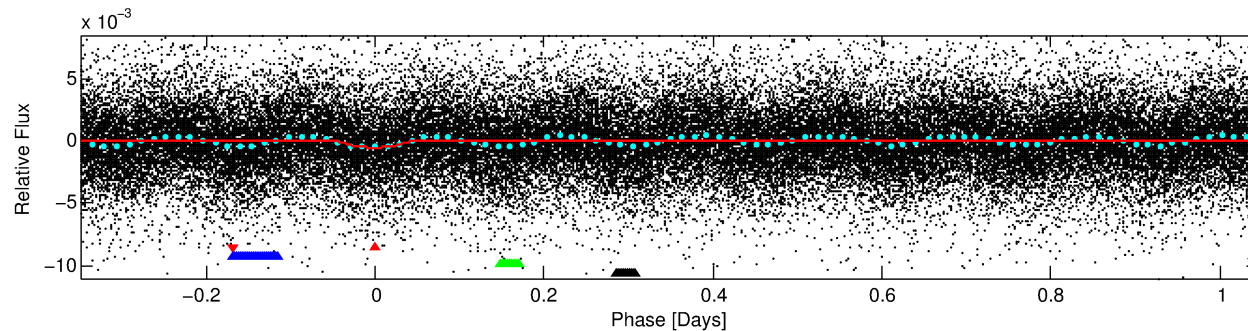
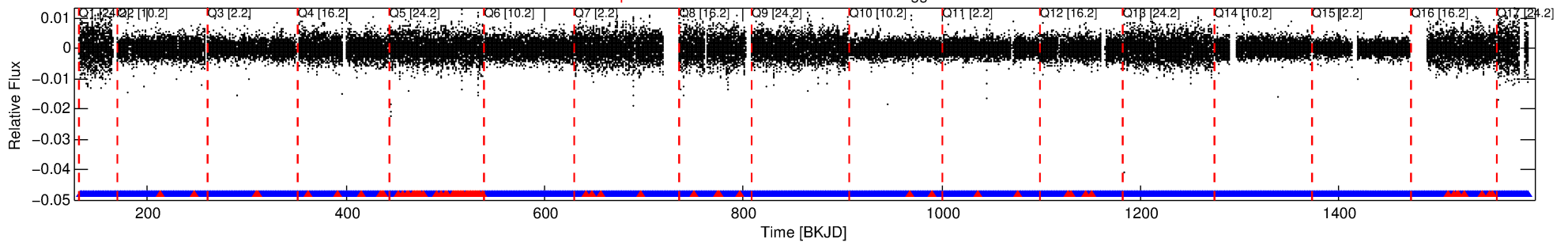
Ephemeris Match Information For 009111056-01

No Significant Match Found

DV One-Page Summary

KIC: 9111056 Candidate: 1 of 4 Period: 1.395 d

Kp: 10.48 R*: 3.29 Rs Teff: 7154.0 K Logg: 3.67 Fe/H: -0.180



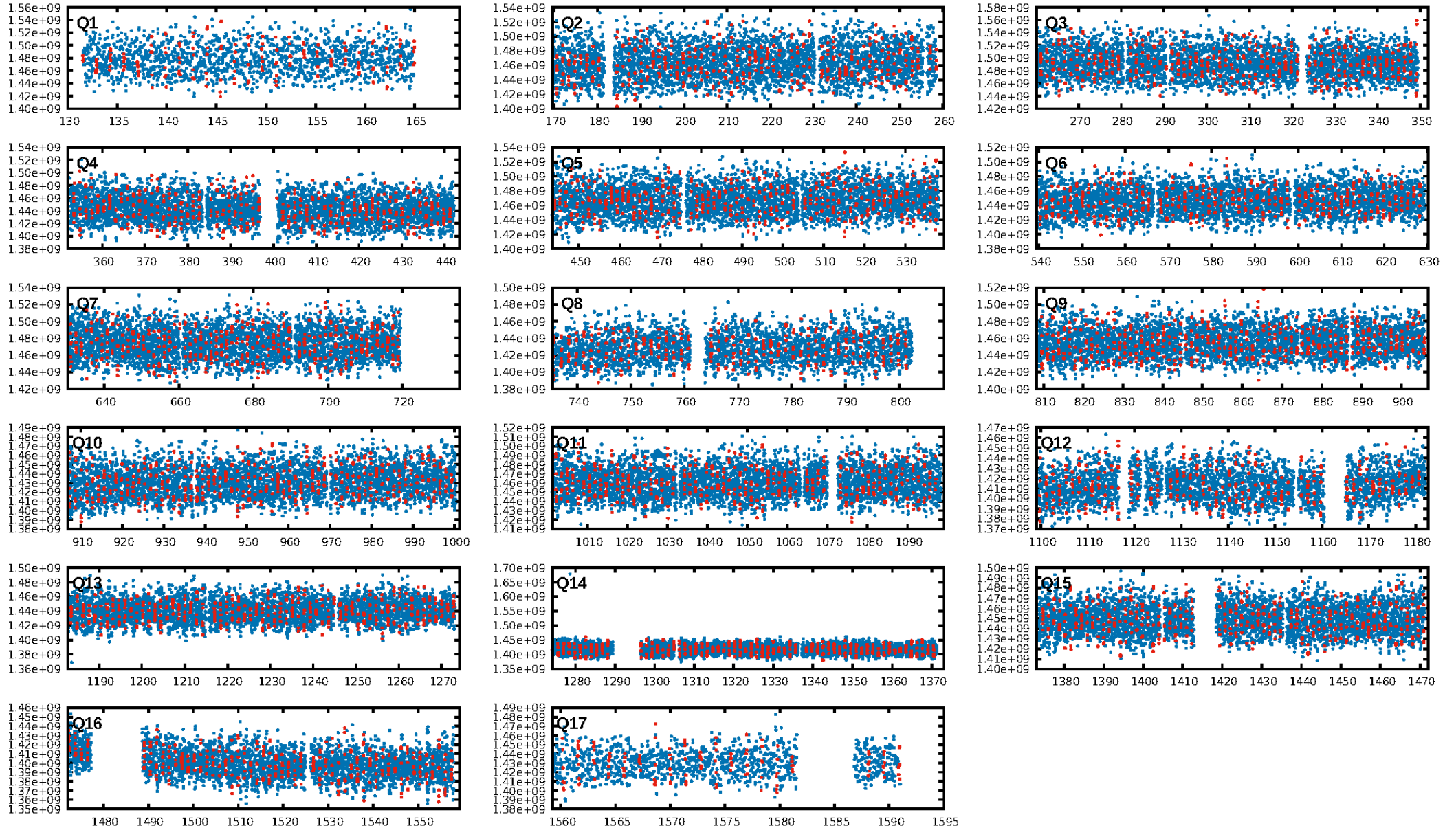
DV Fit Results:

Period = 1.39526 [0.00001] d
Epoch = 132.8820 [0.0015] BKJD
Rp/R* = 0.0237 [0.0049]
a/R* = 3.15 [3.05]
b = 0.90 [0.24]
Seff = 28108.55 [22892.83]
Teff = 3302 [672] K
Rp = 8.52 [4.59] Re
a = 0.0300 [0.0148] AU
Ag = 2.89 [2.63] [0.72σ]
Teffp = 6656 [753] K [3.32σ]

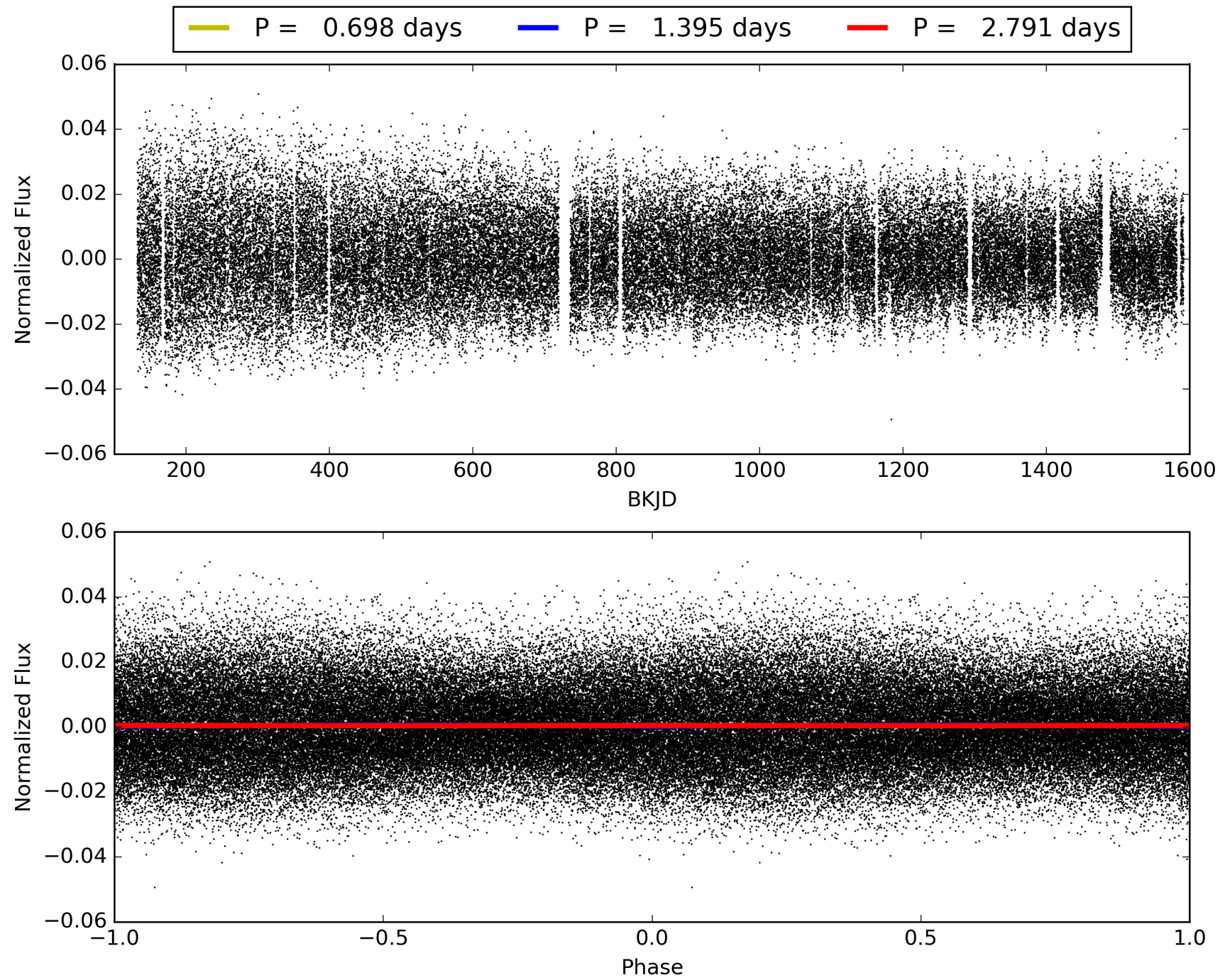
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.92 [842/912]
GhostDiagnostic-chr: 1.62
Centroid-sig: 6.2%
Centroid-so: 0.541 arcsec [3.44σ]
OotOffset-rm: 0.244 arcsec [0.45σ]
KicOffset-rm: 0.657 arcsec [1.44σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.59 [10/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009111056-01, PDC Light Curves

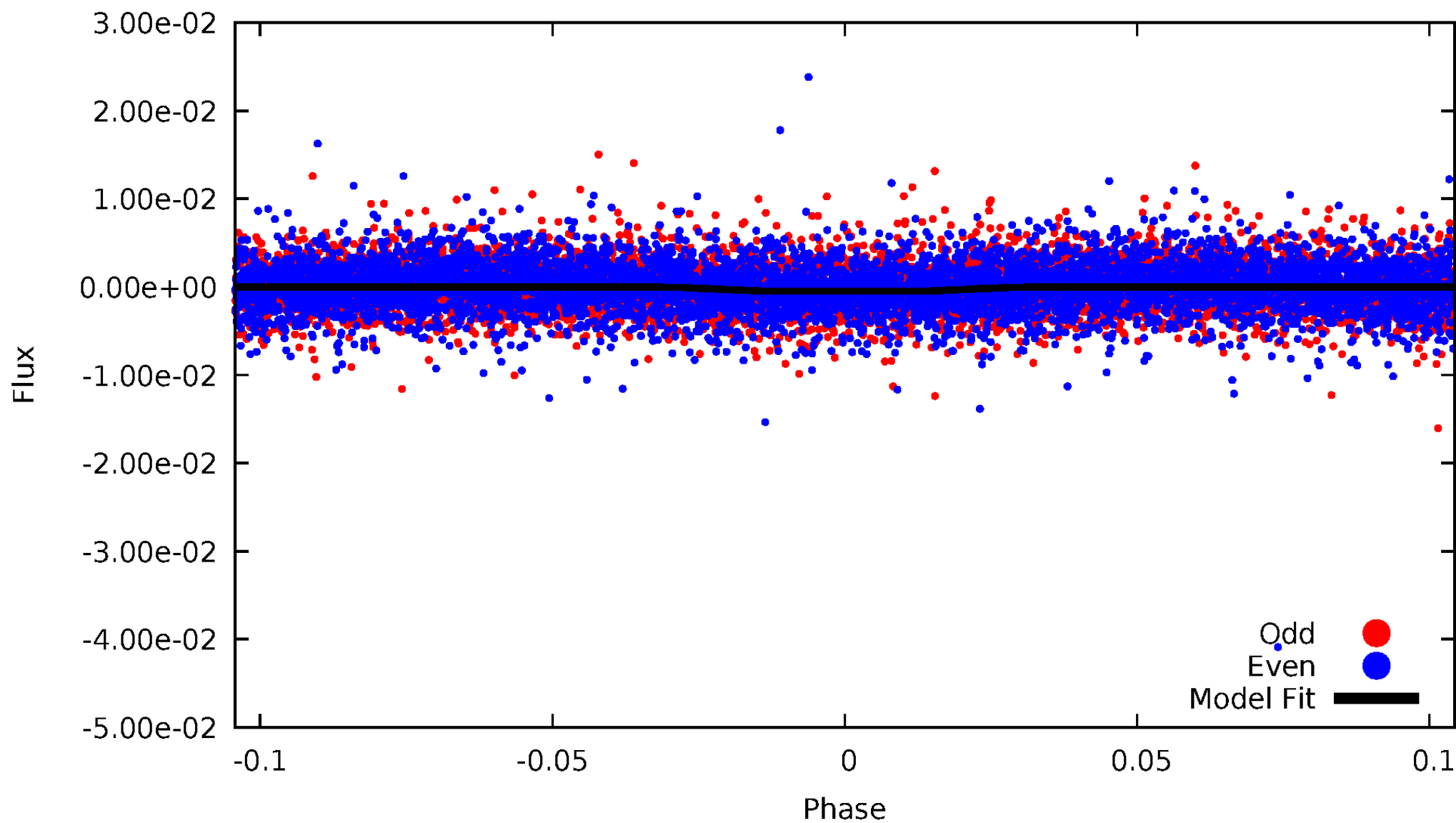


TCE 009111056-01



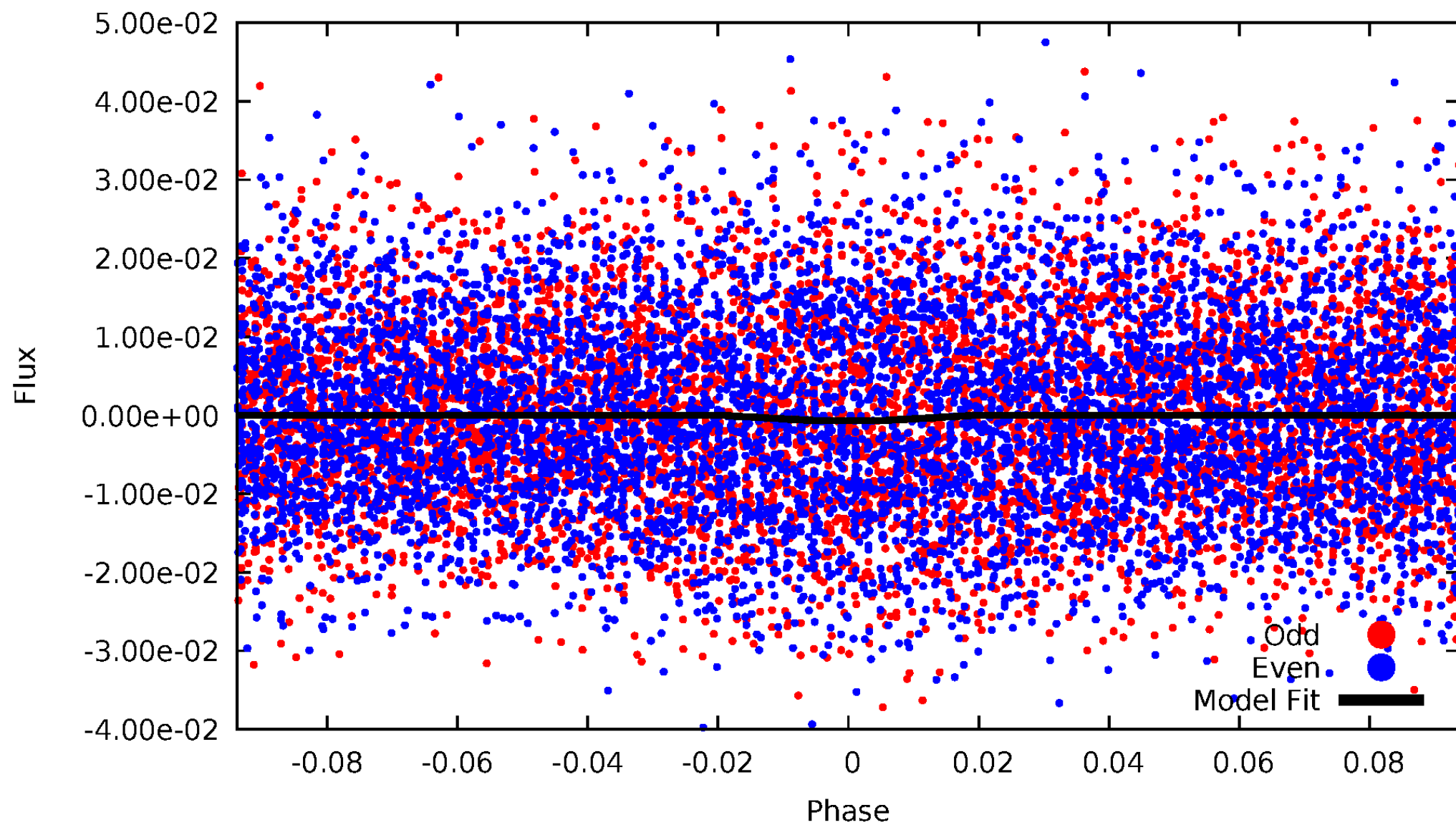
DV Odd/Even

TCE 009111056-01



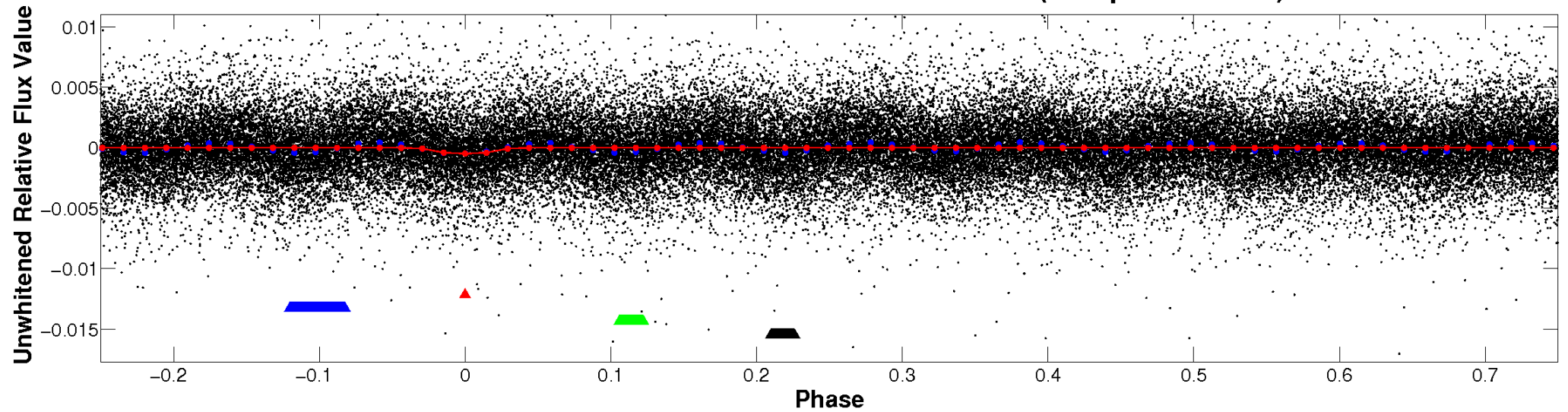
ALT Odd/Even

TCE 009111056-01

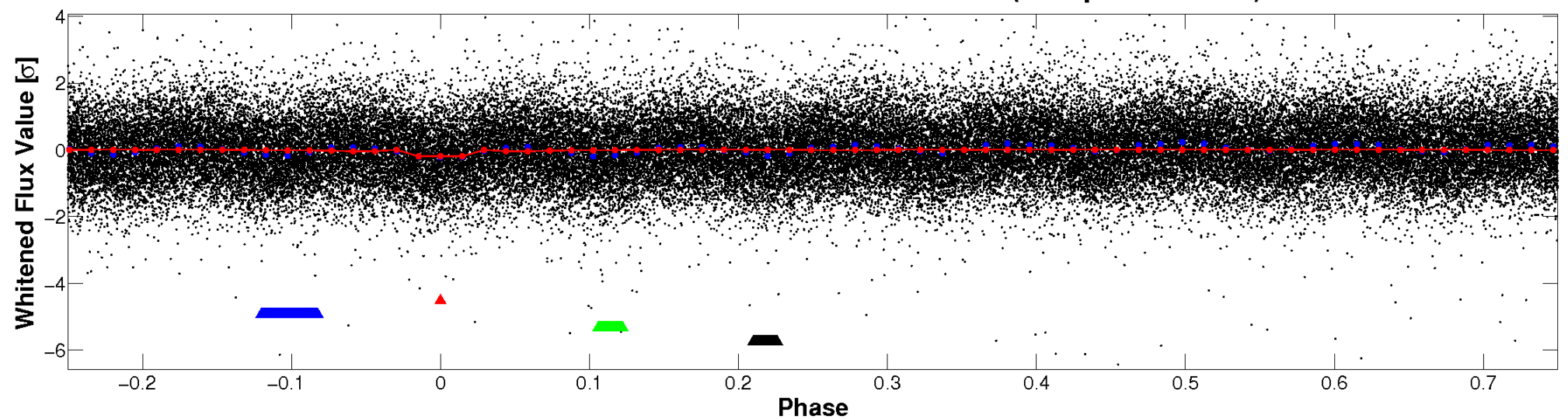


Non-Whitened Vs. Whitened Light Curve

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

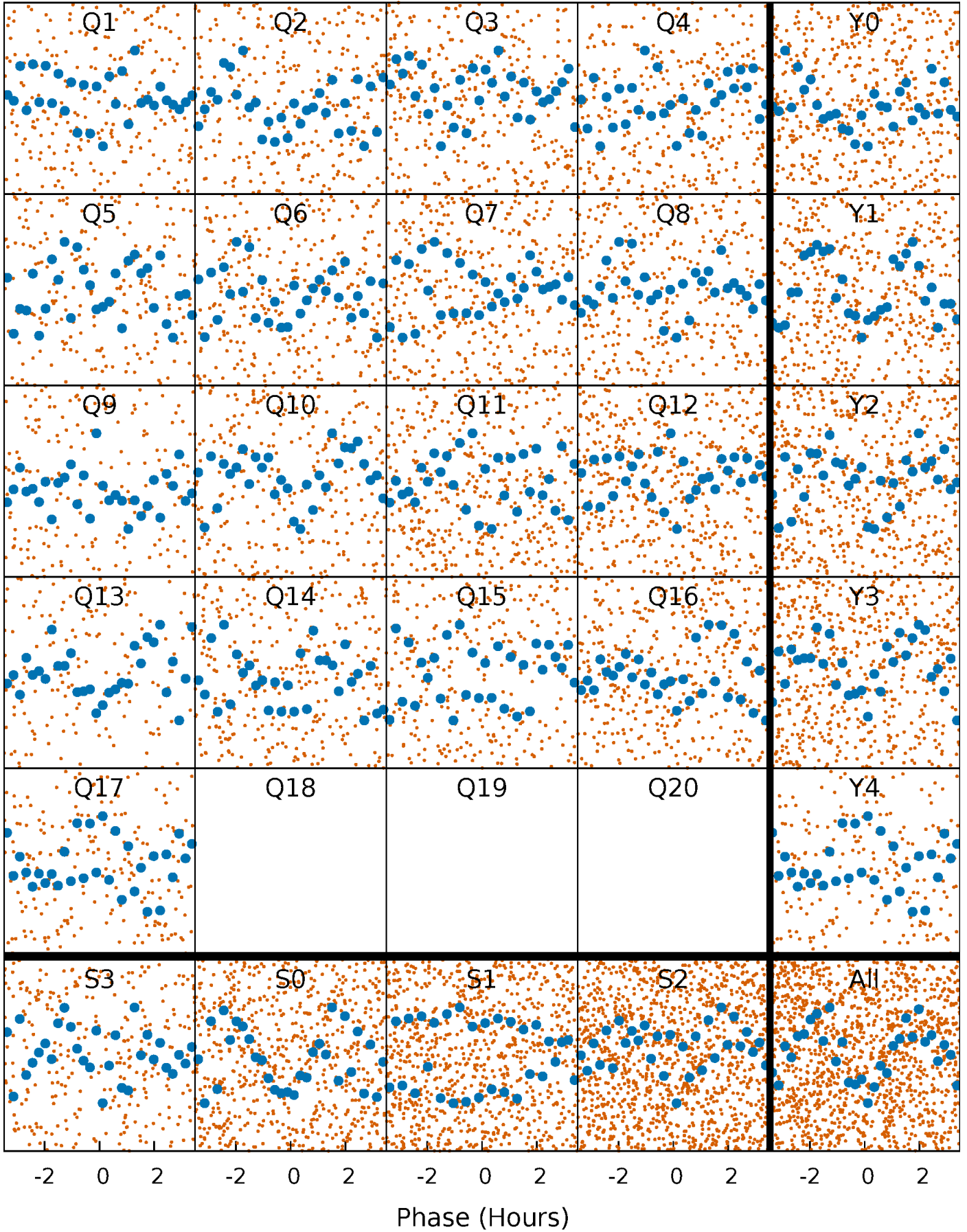


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



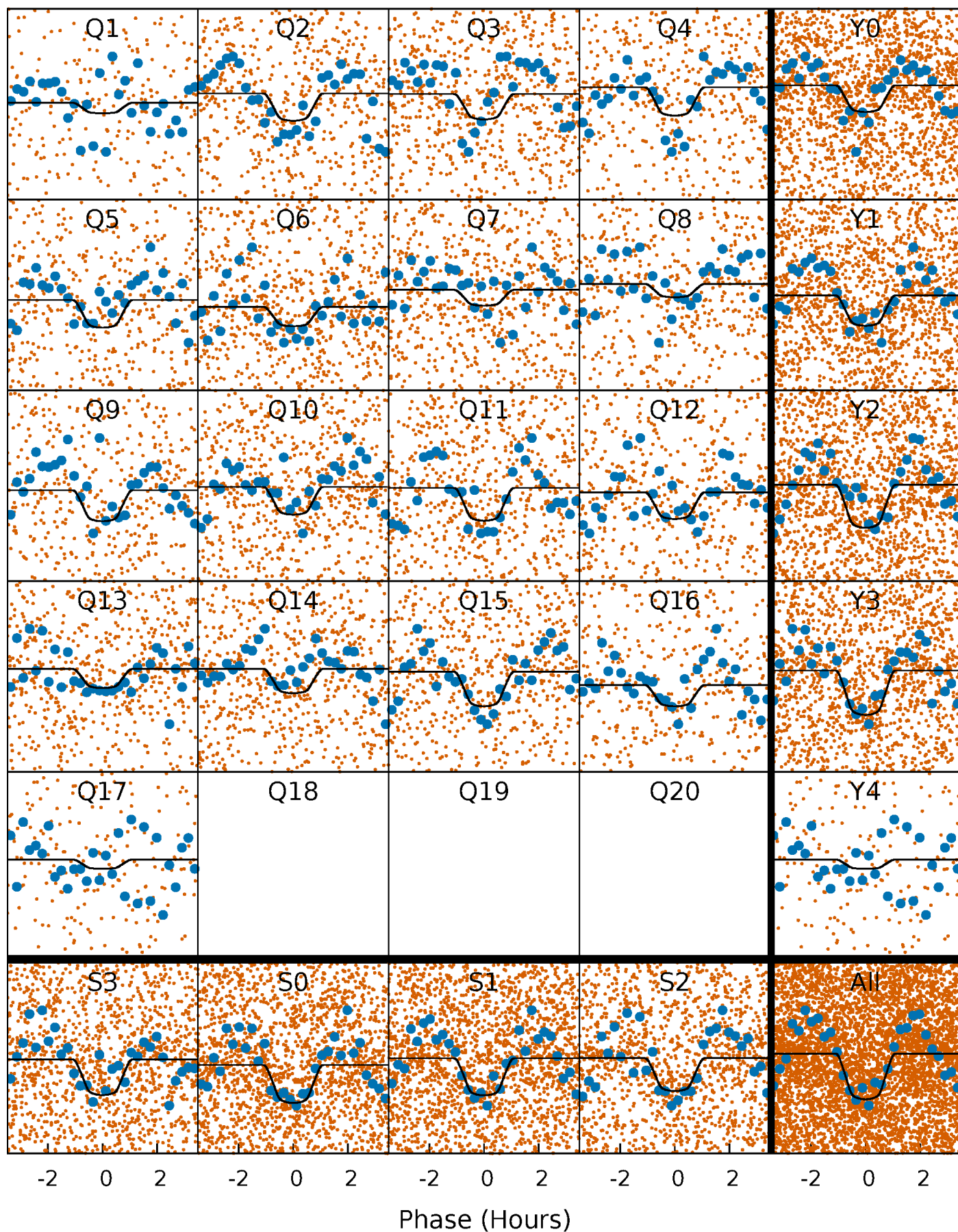
PDC Quarter-Phased Transit Curves

TCE 009111056-01 P= 1.395259 Days $T_0=132.882028$ (BKJD)



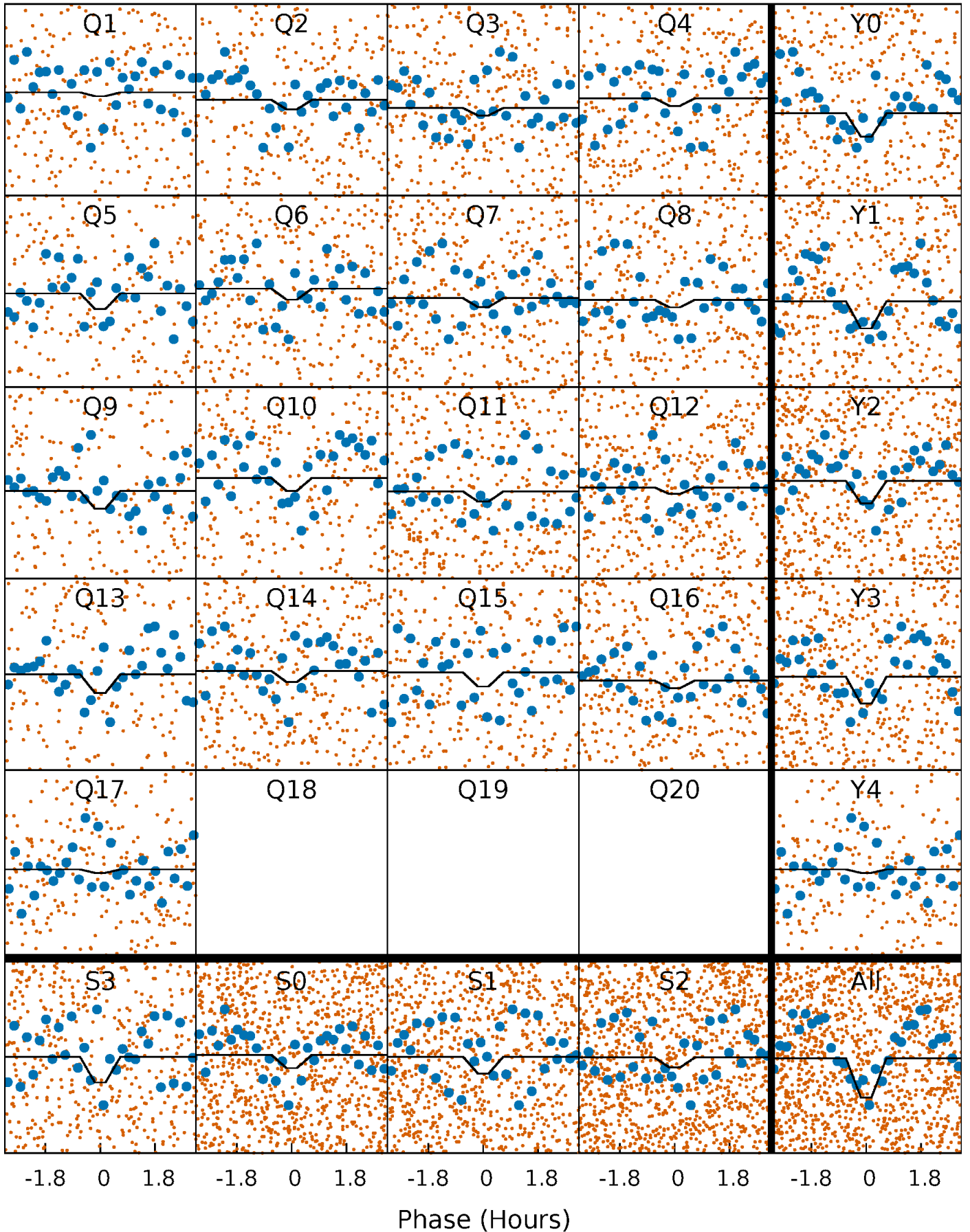
DV Quarter-Phased Transit Curves

TCE 009111056-01 P= 1.395259 Days $T_0=132.882028$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

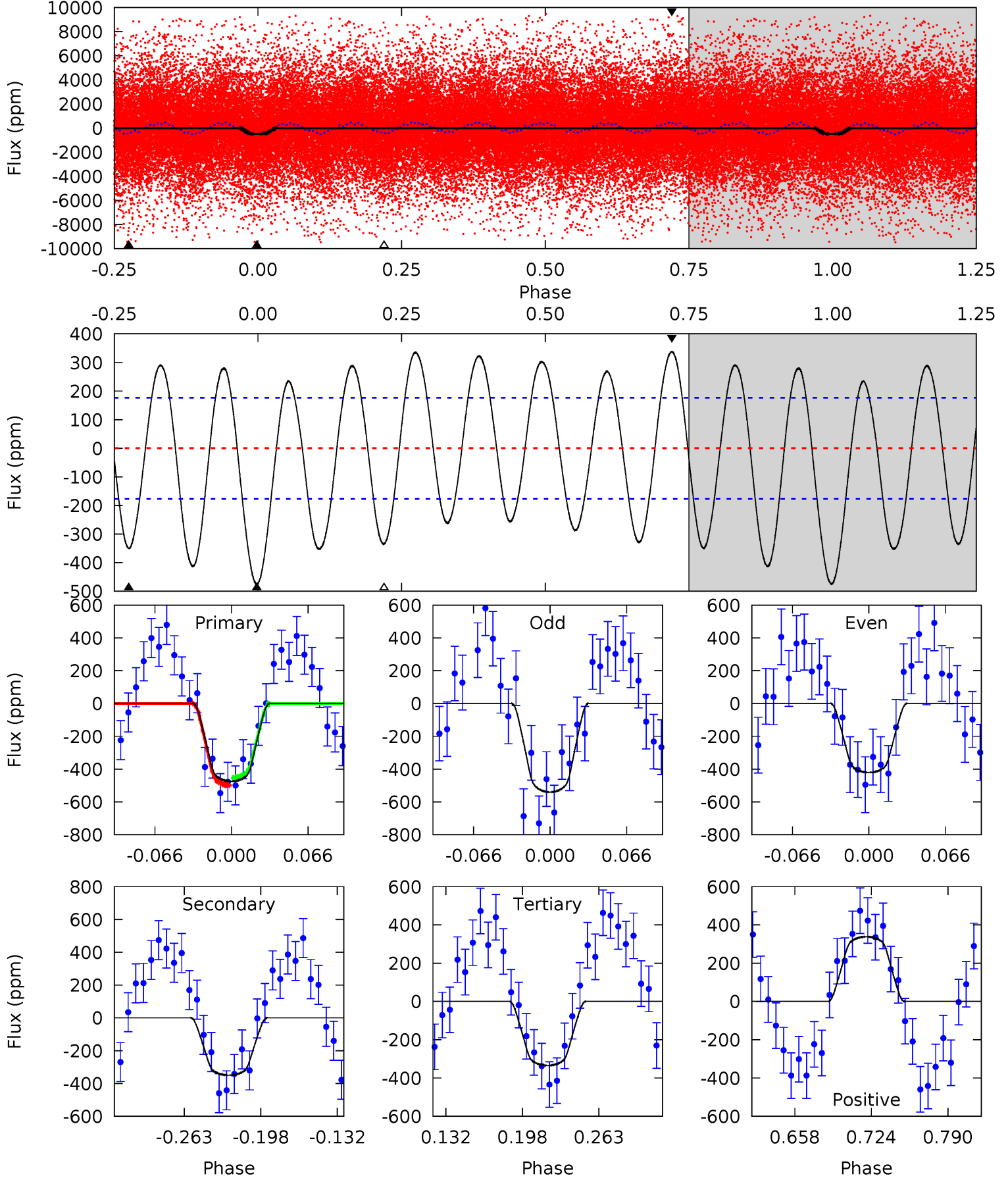
TCE 009111056-01 P= 1.395268 Days $T_0=132.880853$ (BKJD)



DV Model-Shift Uniqueness Test

009111056-01, P = 1.395259 Days, E = 131.486769 Days

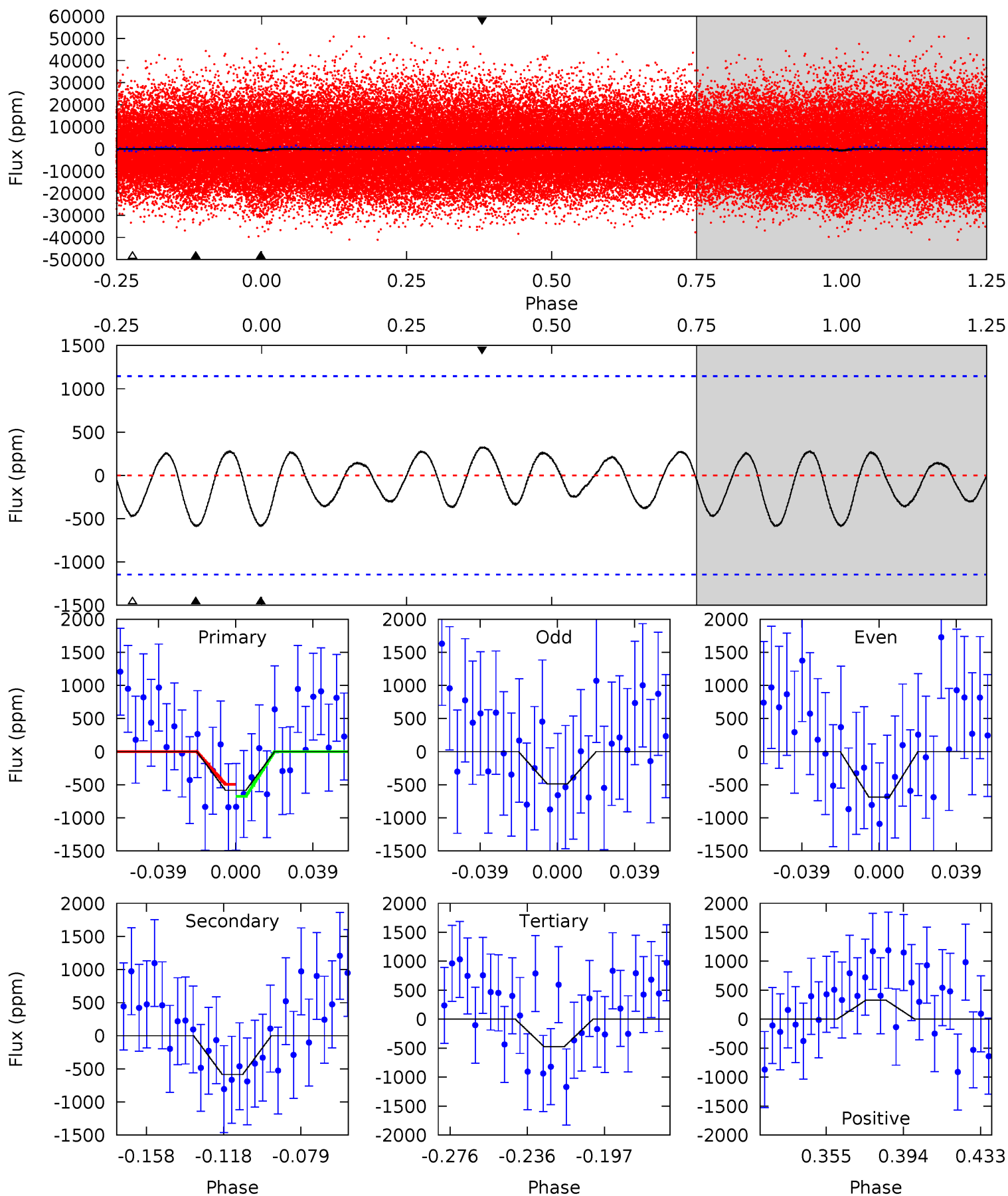
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	9.19	8.80	8.89	4.65	1.84	5.81	3.68	3.59	0.40	0.30	1.58	0.95	0.42	0.57



Alt Model-Shift Uniqueness Test

009111056-01, P = 1.395268 Days, E = 131.485585 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.43	2.43	1.97	1.36	4.76	2.06	0.91	0.47	1.07	0.47	1.07	0.42	0.33	0.36	0.38



Stellar Parameters For KIC 009111056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7154^{+199}_{-249}	$3.673^{+0.476}_{-0.084}$	$-0.180^{+0.250}_{-0.300}$	$3.288^{+0.409}_{-1.636}$	$1.859^{+0.171}_{-0.548}$	$0.074^{+0.396}_{-0.013}$
	+3%/-3%	+13%/-2%	+139%/-167%	+12%/-50%	+9%/-29%	+538%/-18%
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 009111056-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-350 ± 38	$7.77^{+2.18}_{-2.35}$	4464^{+293}_{-564}	6063^{+785}_{-618}	$2.895^{+2.590}_{-1.181}$
Alt.	-586 ± 241	$8.41^{+2.38}_{-2.43}$	4474^{+302}_{-585}	6657^{+1246}_{-1051}	$4.067^{+4.077}_{-2.069}$

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 $A_{obs} \gg 1.0$

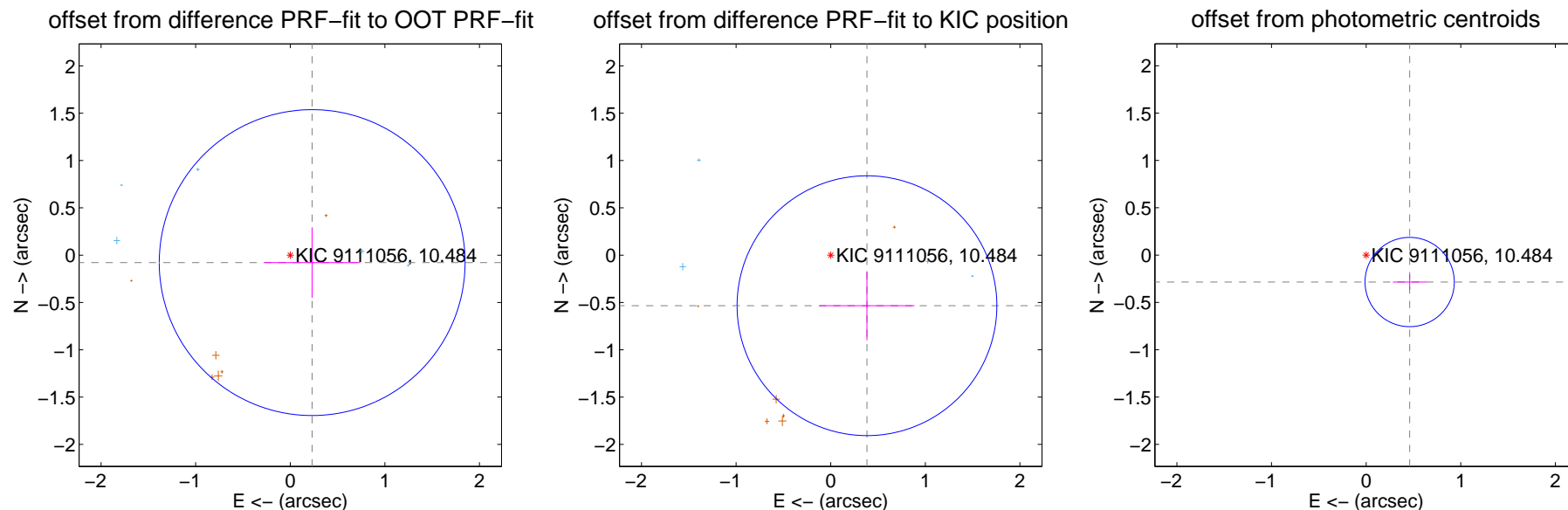
DV Centroid Data

Supplemental centroid analysis for 009111056-01. **Kepler magnitude: 10.48.** Transit SNR 10.83

There are 10 quarters with good PRF difference image offsets

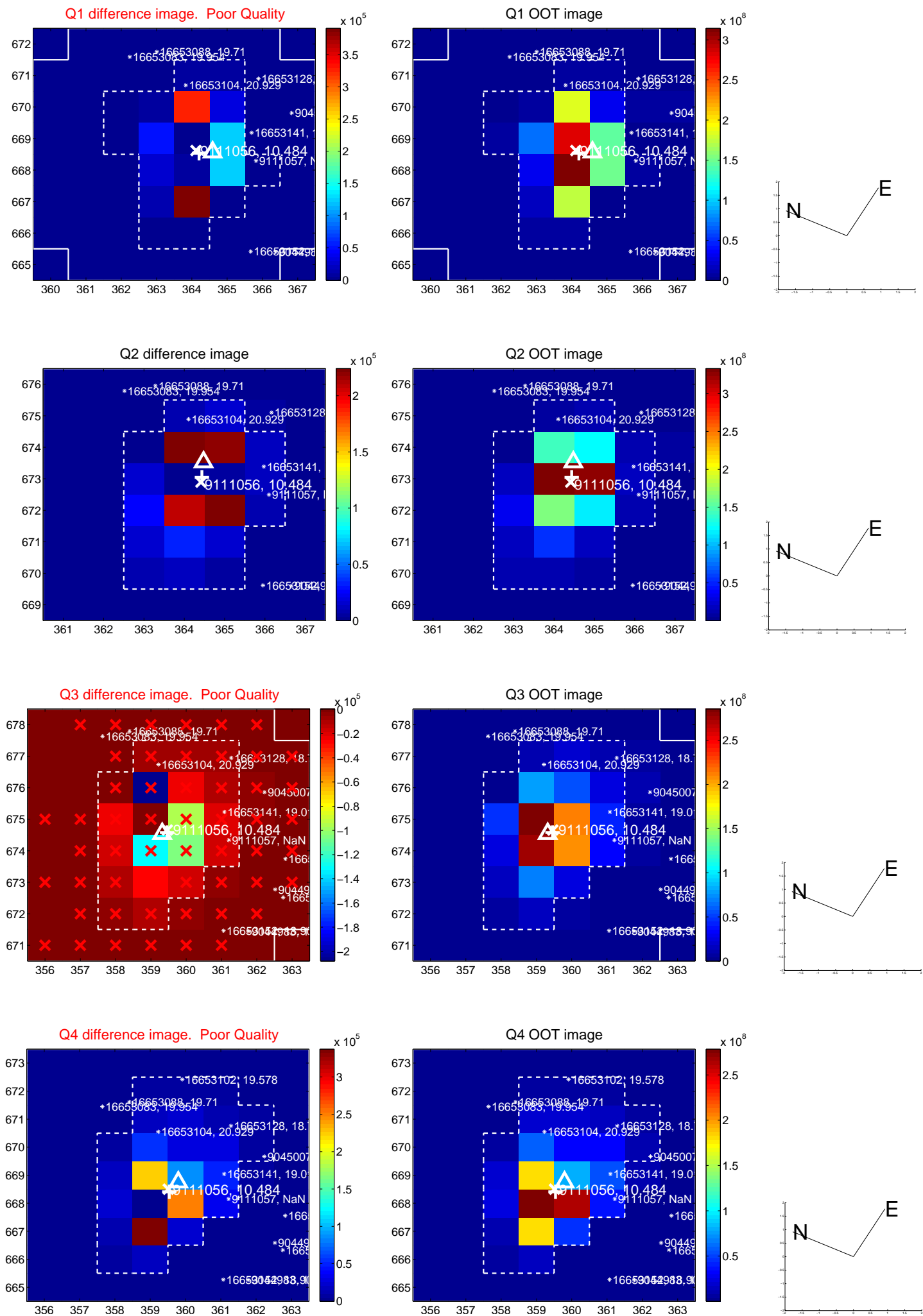
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.244 ± 0.539	0.45	-0.231 ± 0.509	-0.079 ± 0.372
PRF-fit source offset from KIC position	0.657 ± 0.458	1.44	-0.383 ± 0.503	-0.534 ± 0.365
photometric centroid source offset	0.54 ± 0.16	3.44	-0.46 ± 0.18	-0.28 ± 0.08

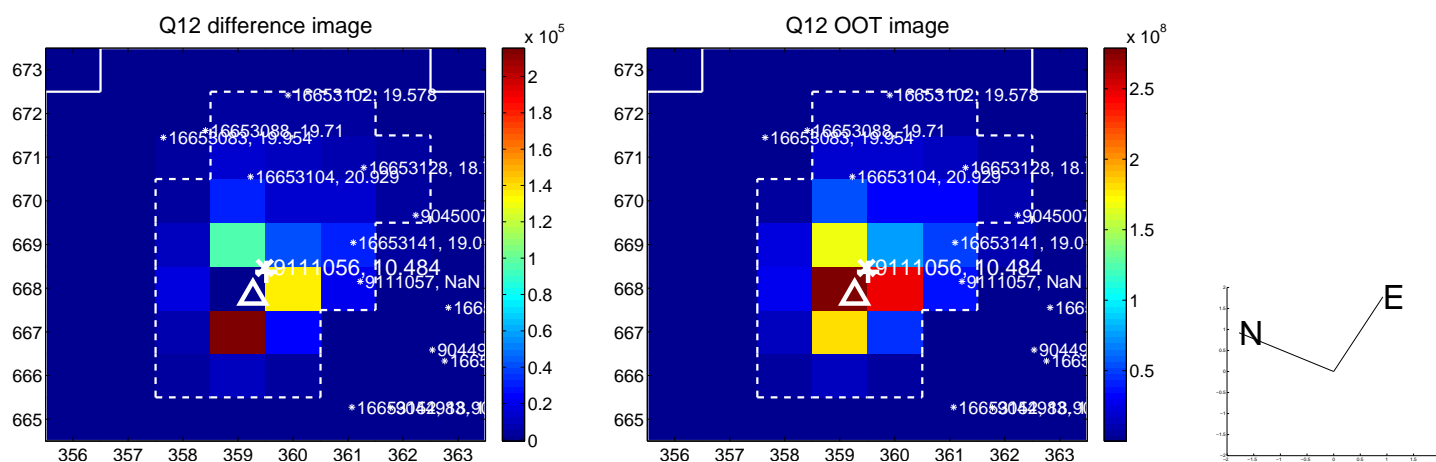
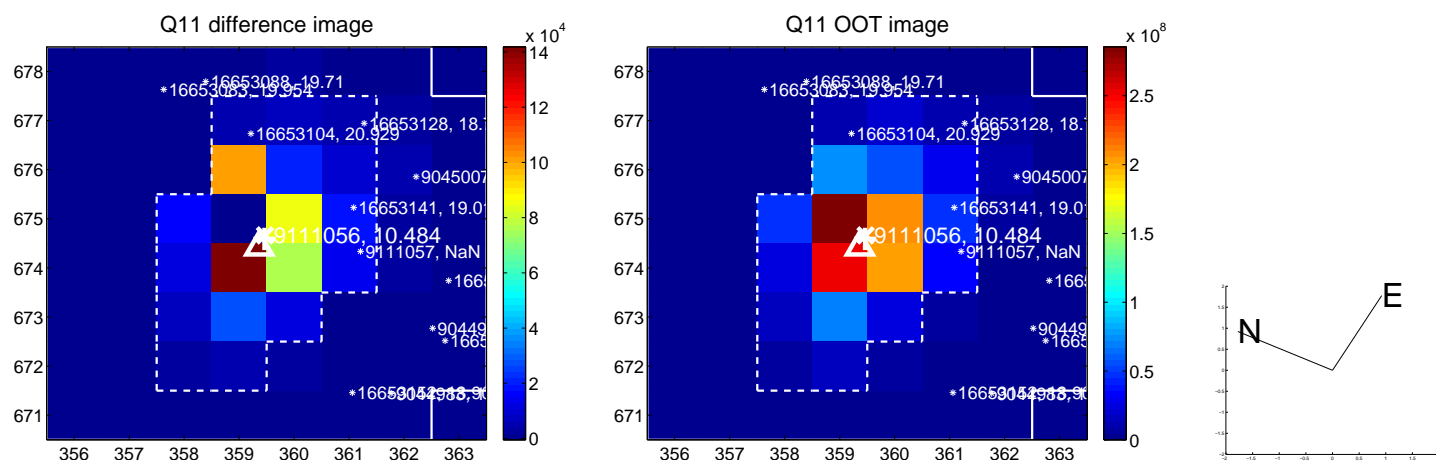
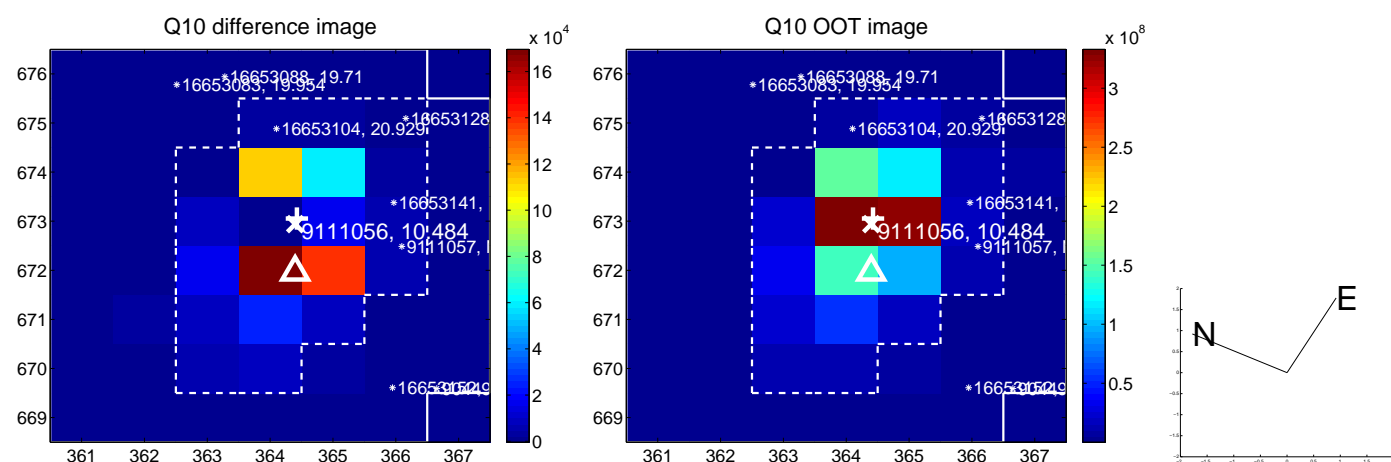
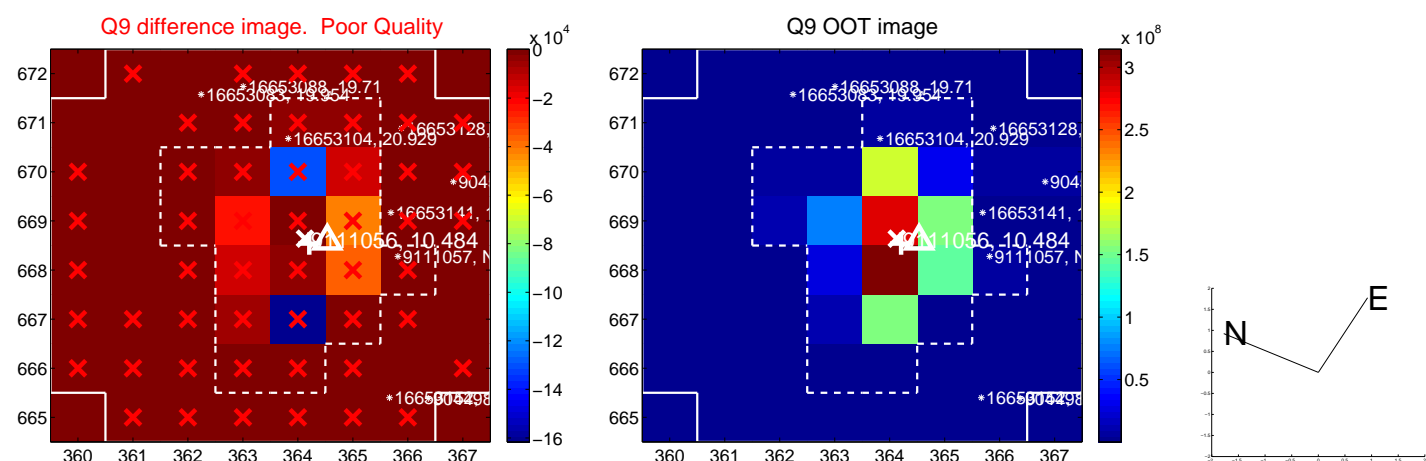


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

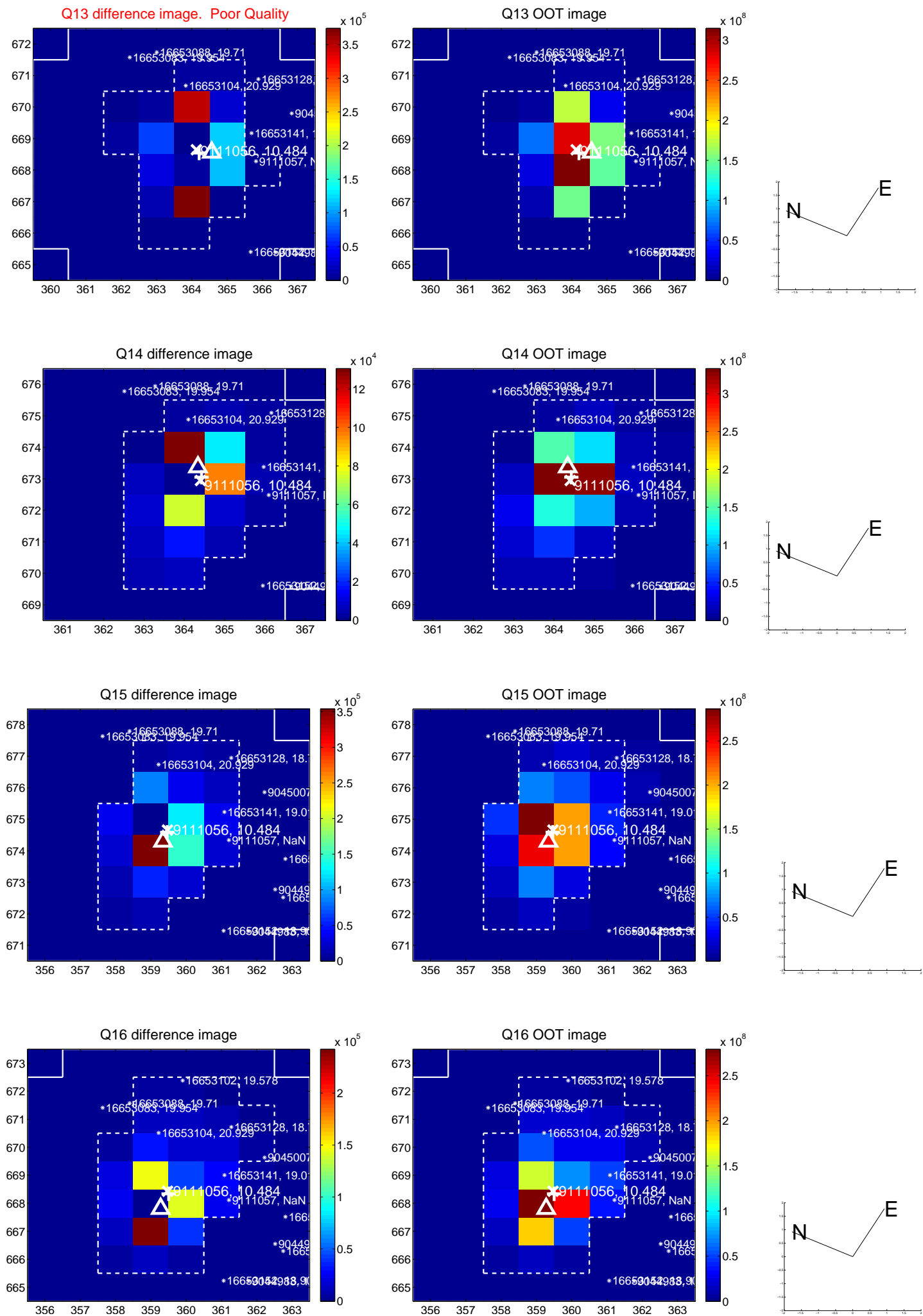
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



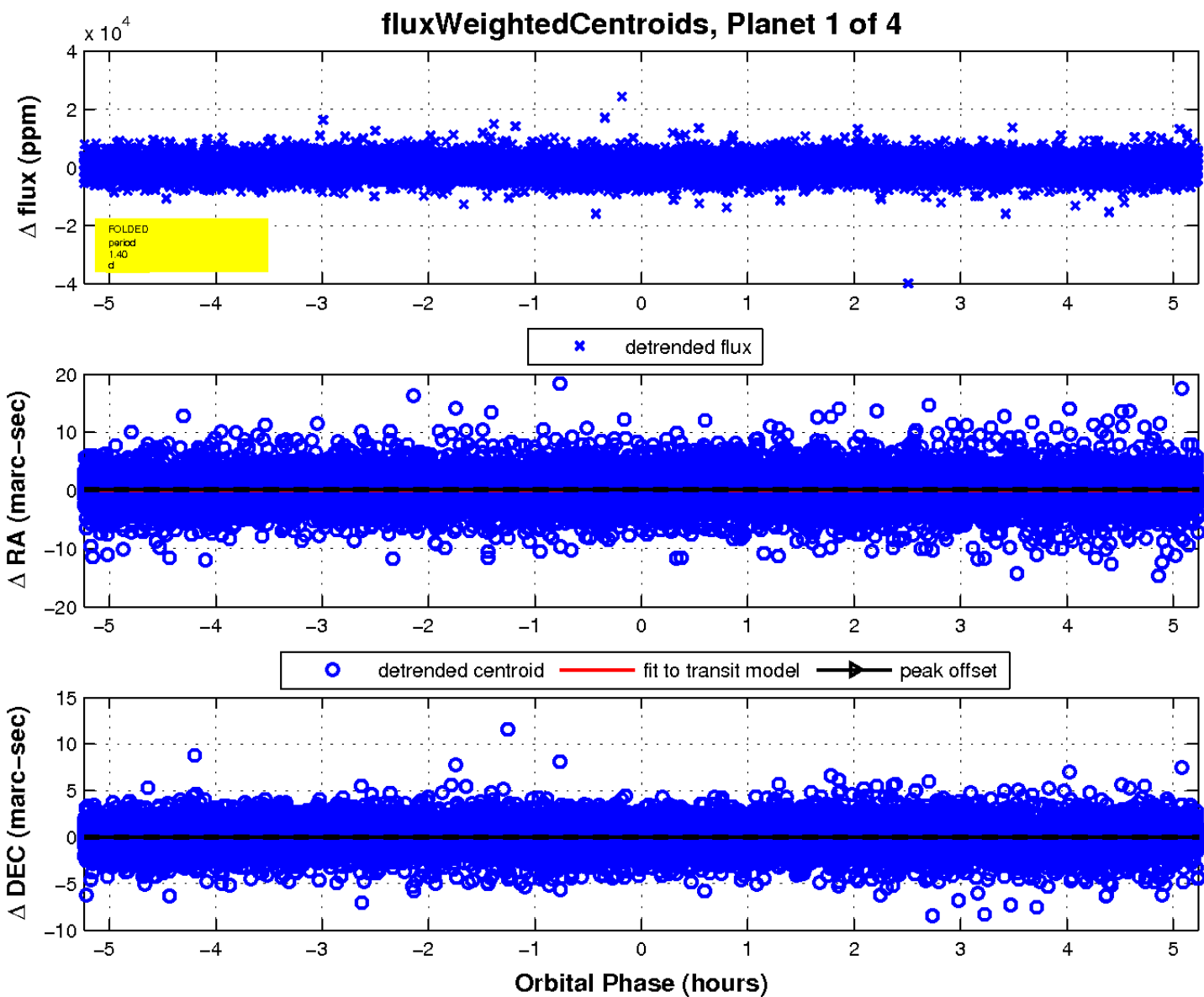
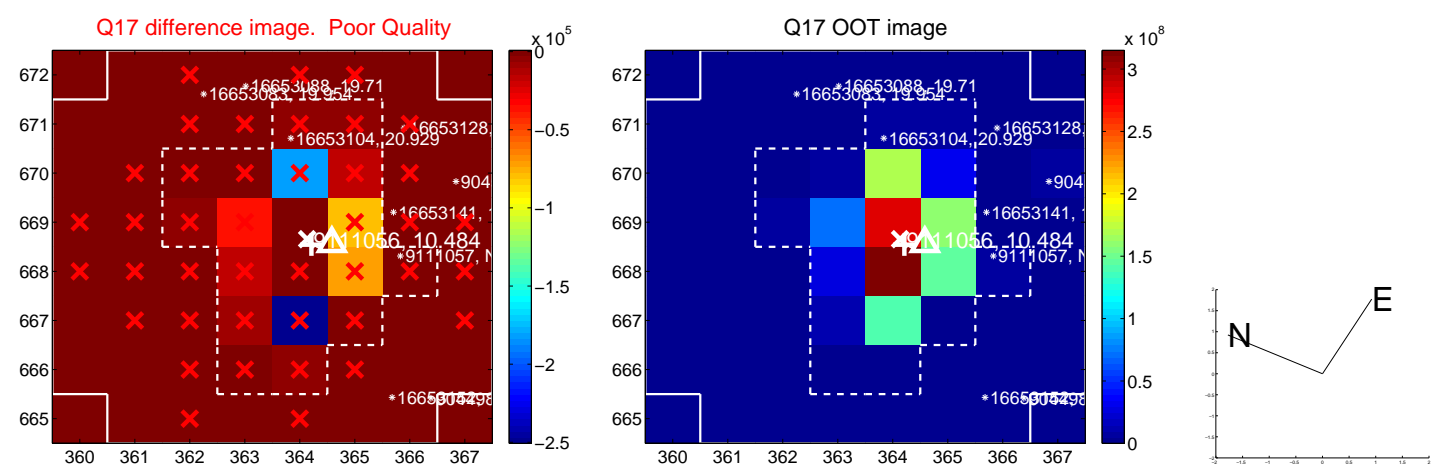
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

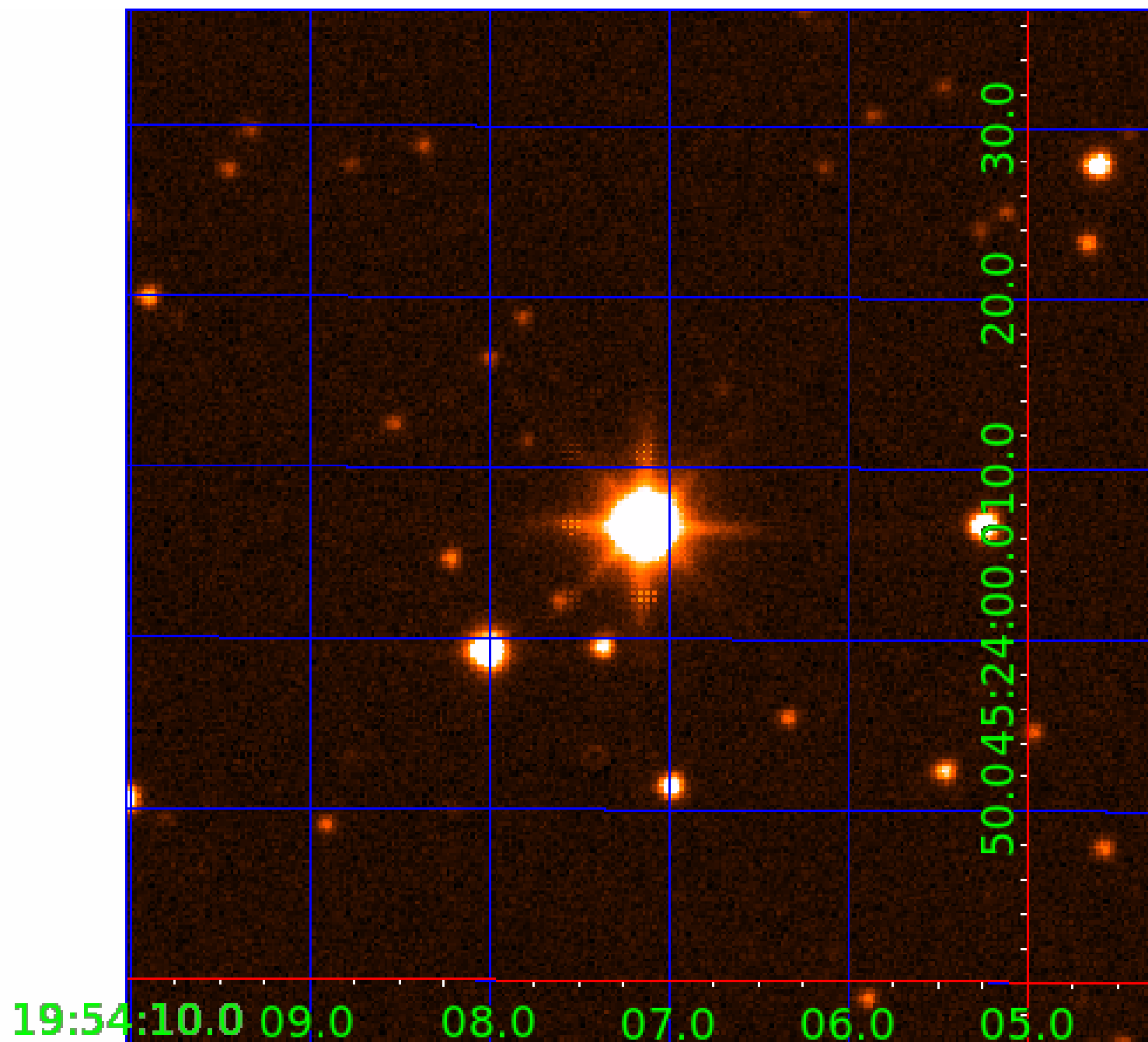


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009111056

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})
009111056-01	OBS	No	1.395259	132.882028	486.5	1.746	11.0	10.8	3.29	7154	8.52	28108.54
009111056-02	OBS	No	1.395309	132.714284	512.2	1.556	8.8	9.8	3.29	7154	8.56	28107.19
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009111056-04	OBS	No	1.395280	131.779744	78.4	1.500	8.7	-1.0	3.29	7154	2.93	28107.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009111056-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009111056-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

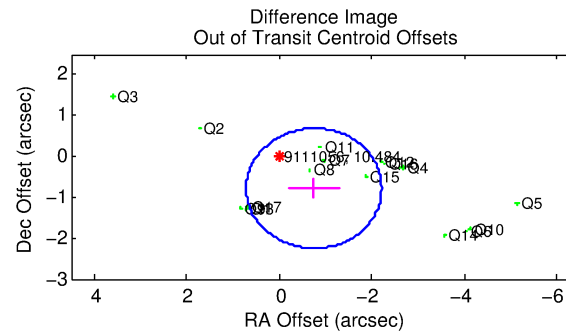
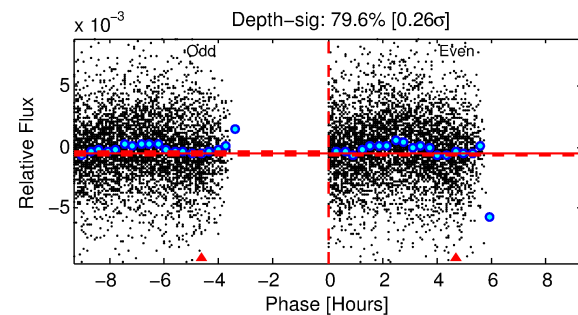
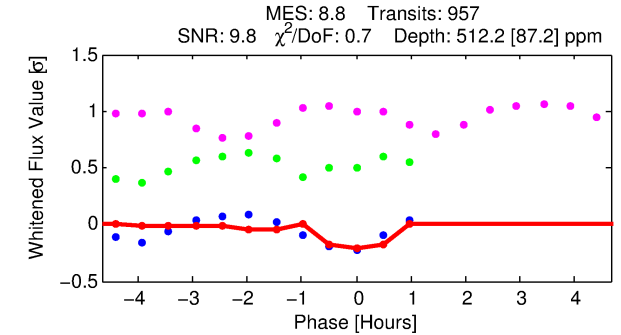
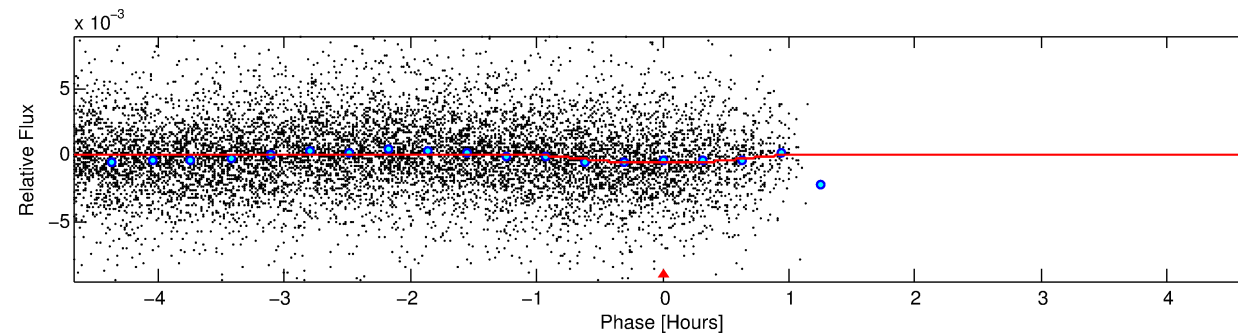
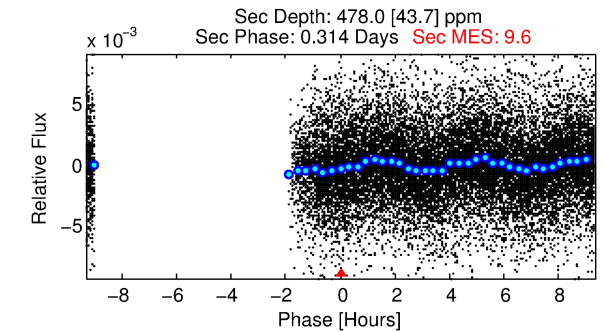
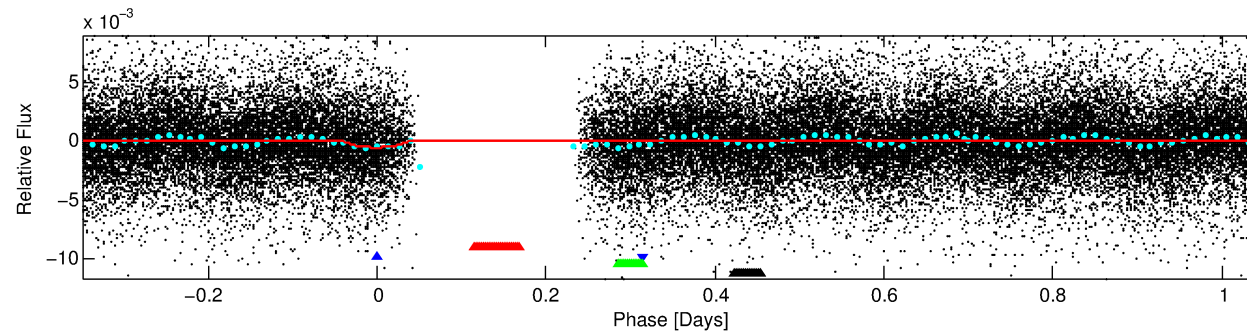
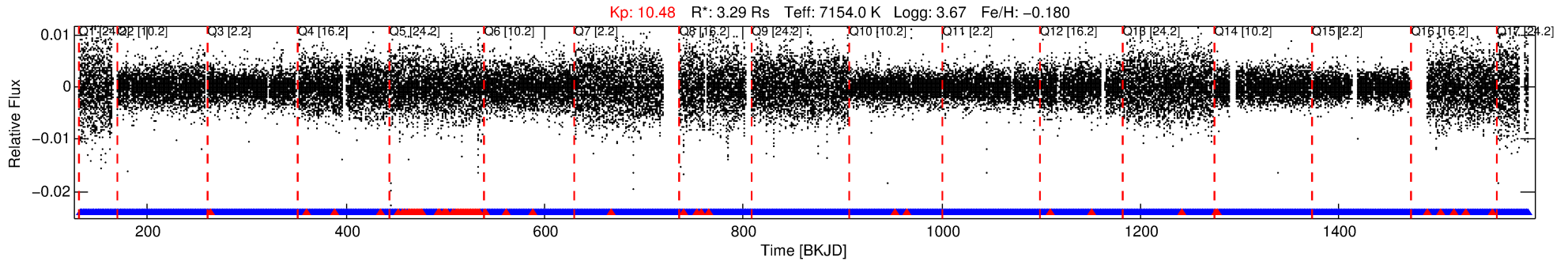
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009111056-02

No Significant Match Found

DV One-Page Summary

KIC: 9111056 Candidate: 2 of 4 Period: 1.395 d



DV Fit Results:

Period = 1.39531 [0.00002] d
Epoch = 132.7143 [0.0026] BKJD
Rp/R* = 0.0239 [0.0099]
a/R* = 3.83 [7.64]
b = 0.87 [0.62]
Seff = 28107.19 [22891.73]
Teff = 3302 [672] K
Rp = 8.56 [5.54] Re
a = 0.0300 [0.0148] AU
Ag = 3.24 [3.74] [0.60σ]
Teffp = 6848 [1442] K [2.23σ]

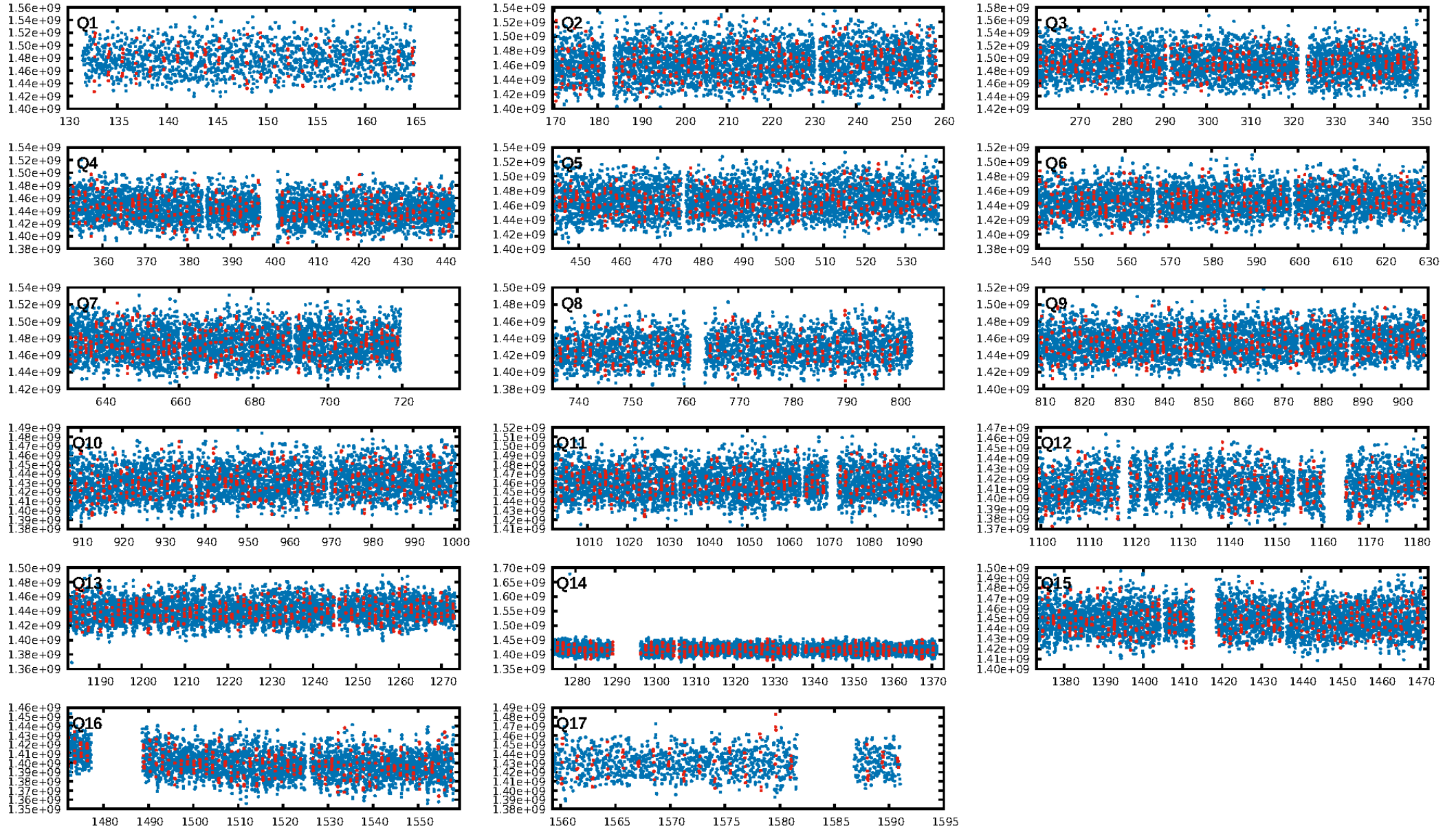
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [854/915]
GhostDiagnostic-chr: 0.9803
Centroid-sig: 14.4%
Centroid-so: 0.379 arcsec [2.37σ]
OotOffset-rm: 1.083 arcsec [2.21σ]
KicOffset-rm: 1.522 arcsec [3.20σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.29 [5/17]
DiffImageOverlap-fno: 0.00 [0/17]

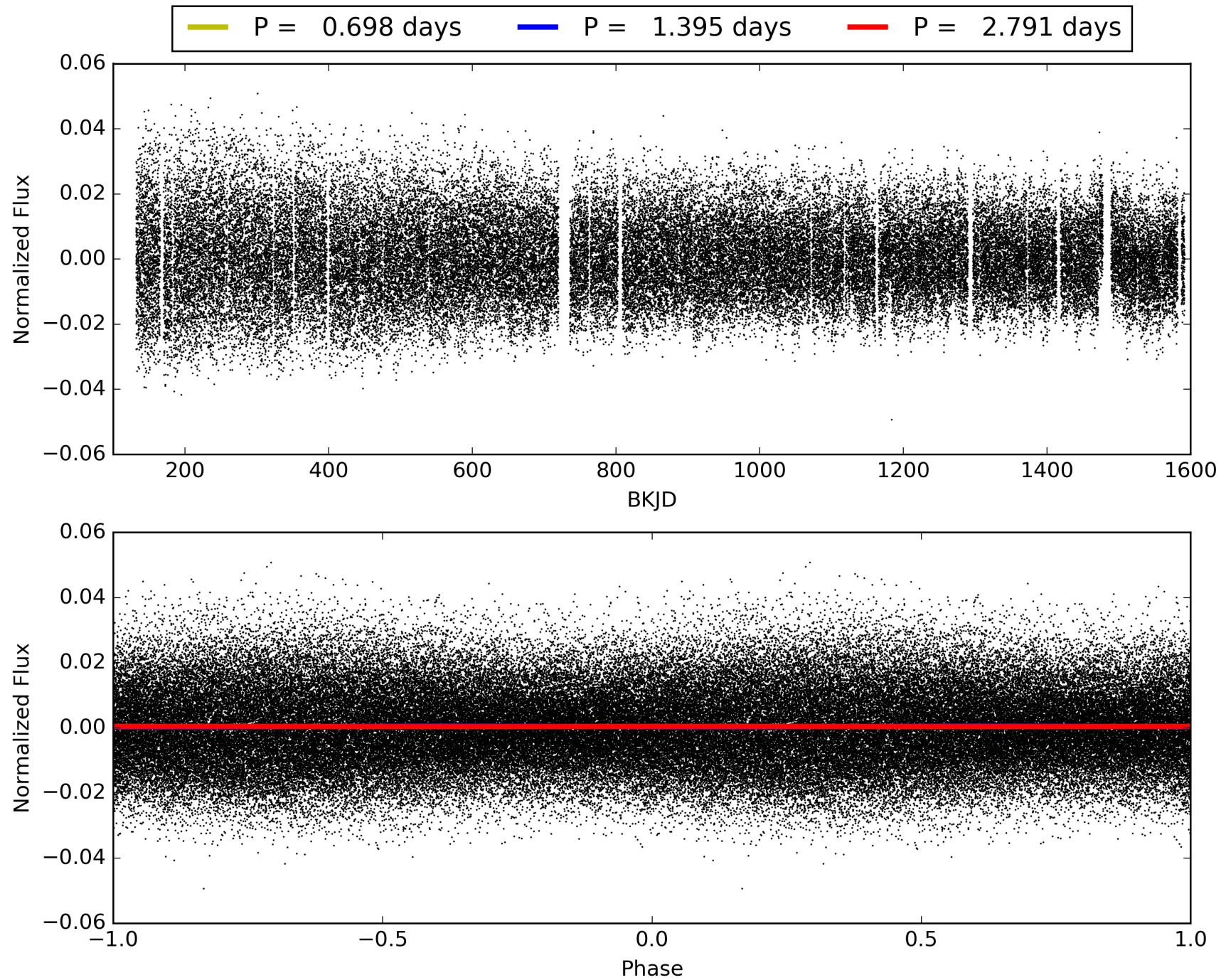
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:11:02 Z

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

TCE 009111056-02, PDC Light Curves

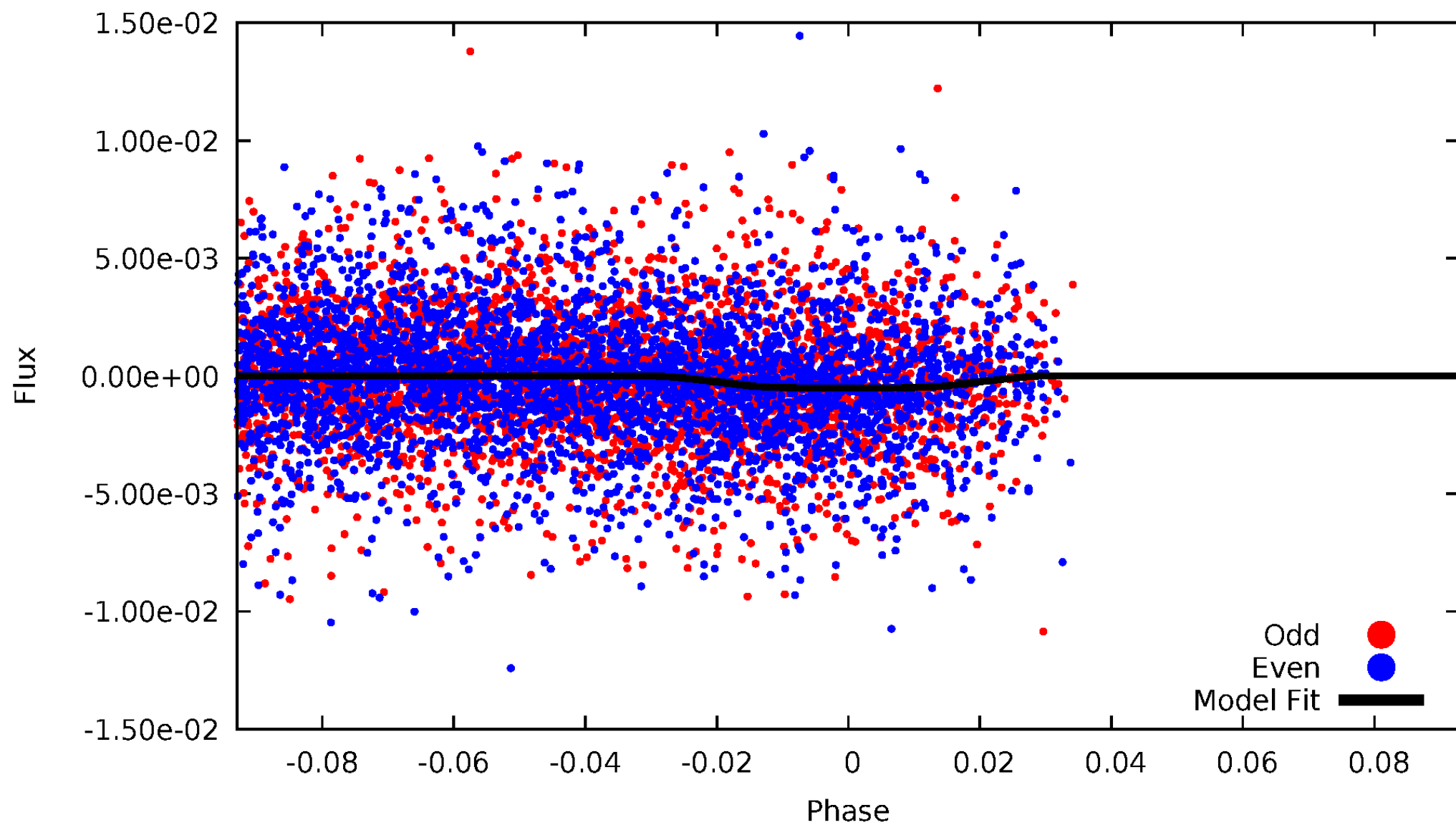


TCE 009111056-02



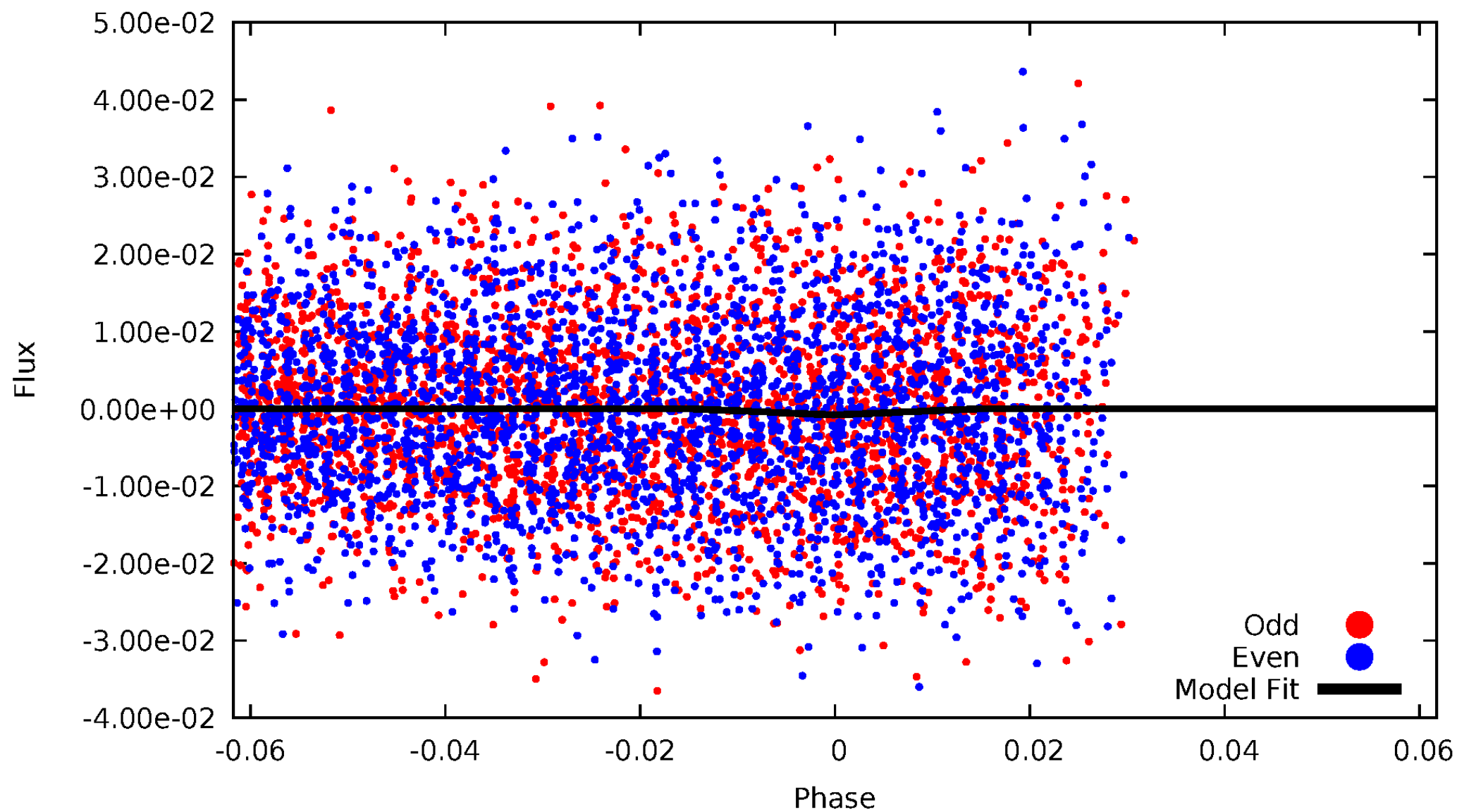
DV Odd/Even

TCE 009111056-02



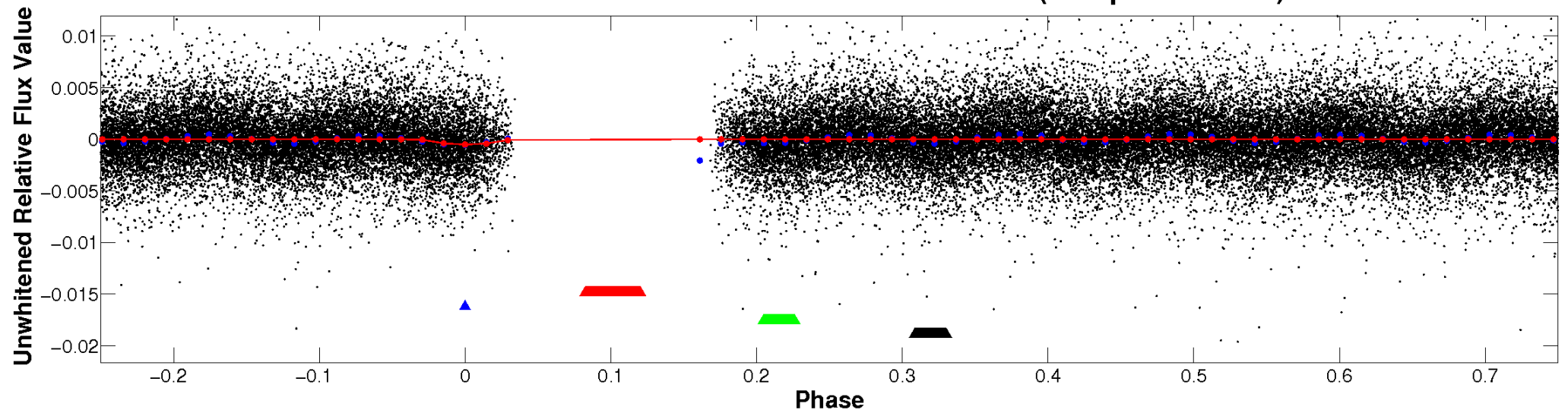
ALT Odd/Even

TCE 009111056-02

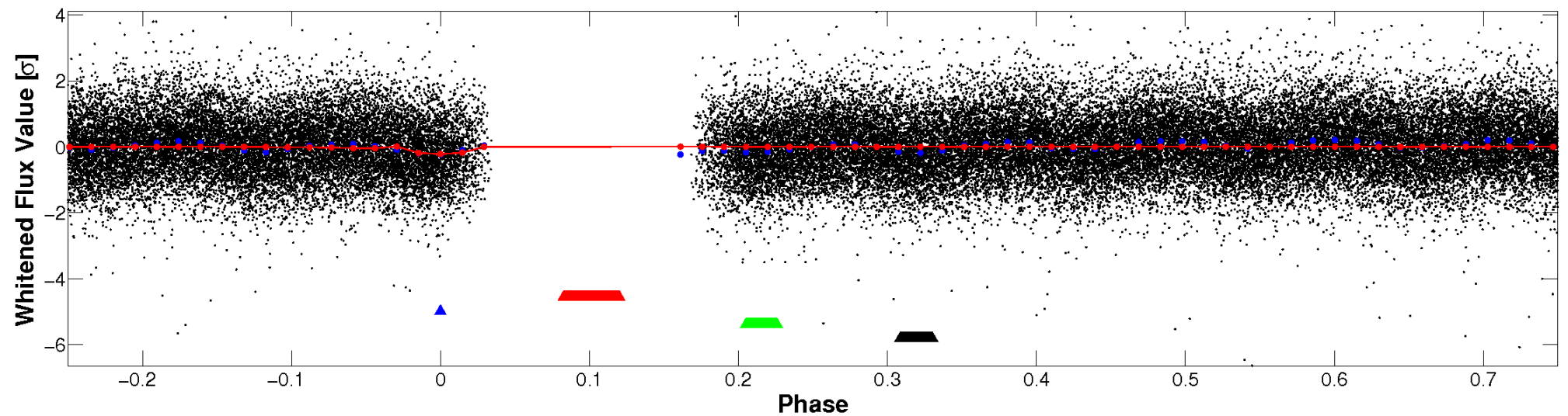


Non-Whitened Vs. Whitened Light Curve

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

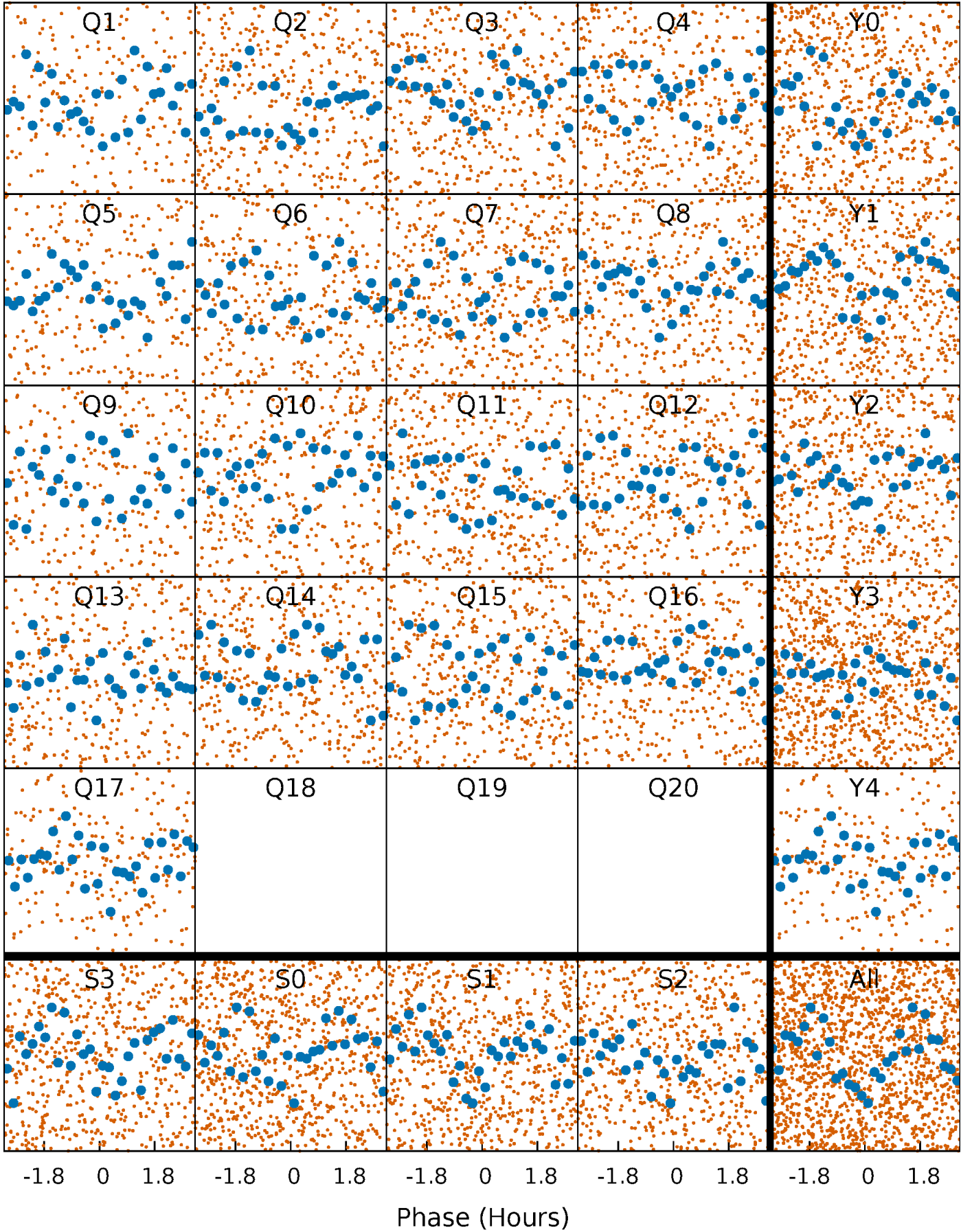


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



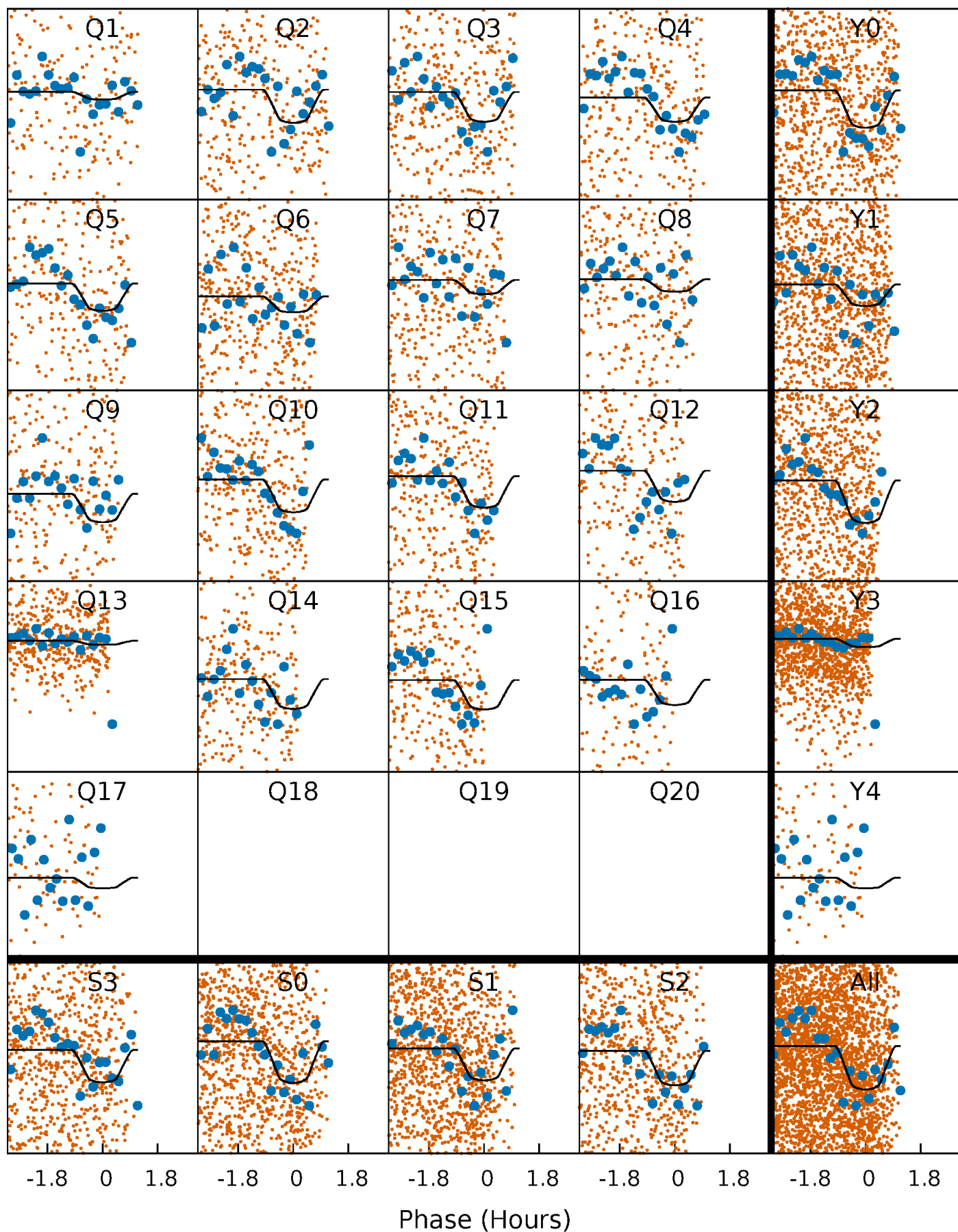
PDC Quarter-Phased Transit Curves

TCE 009111056-02 P= 1.395309 Days $T_0=132.714284$ (BKJD)



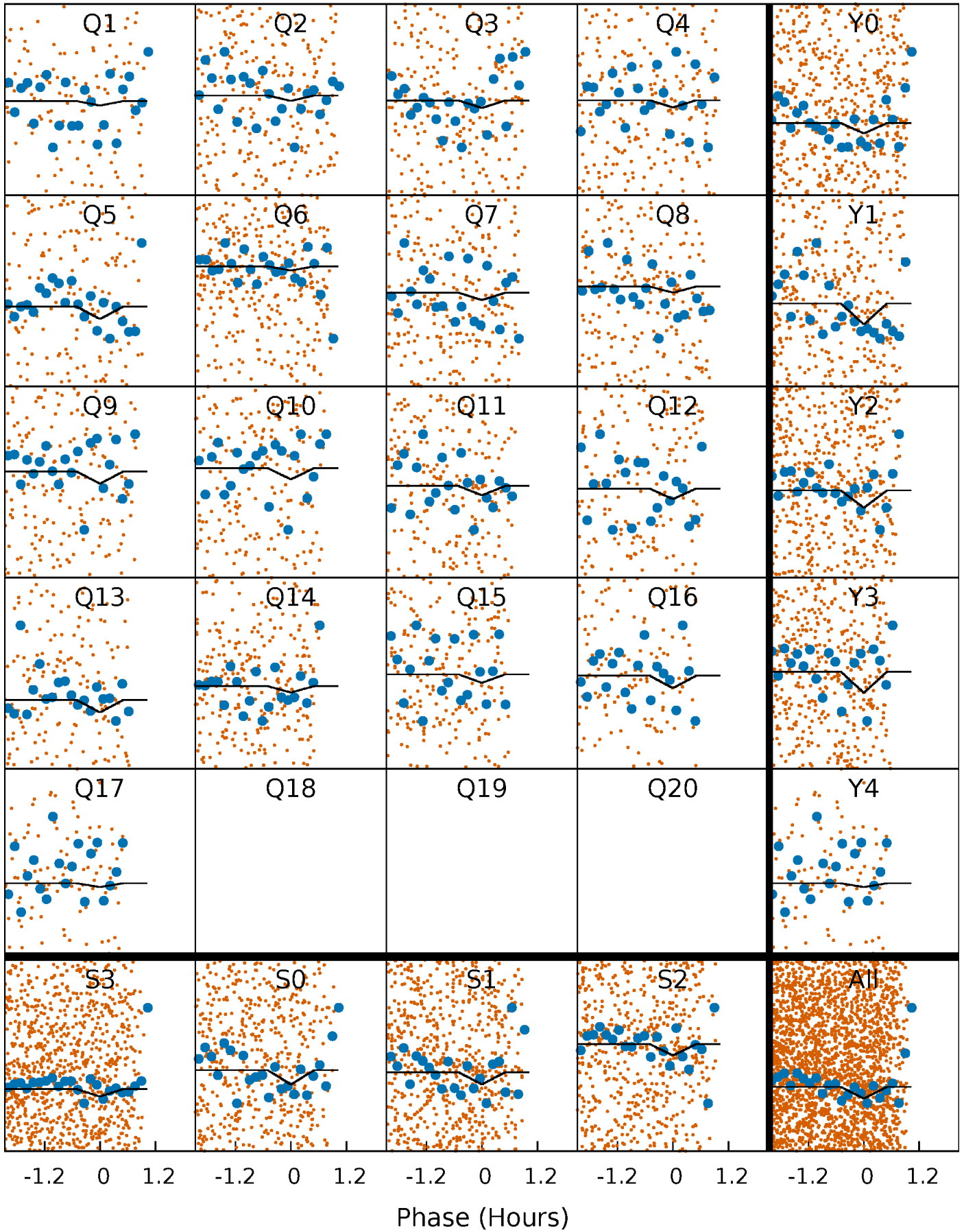
DV Quarter-Phased Transit Curves

TCE 009111056-02 P= 1.395309 Days $T_0=132.714284$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

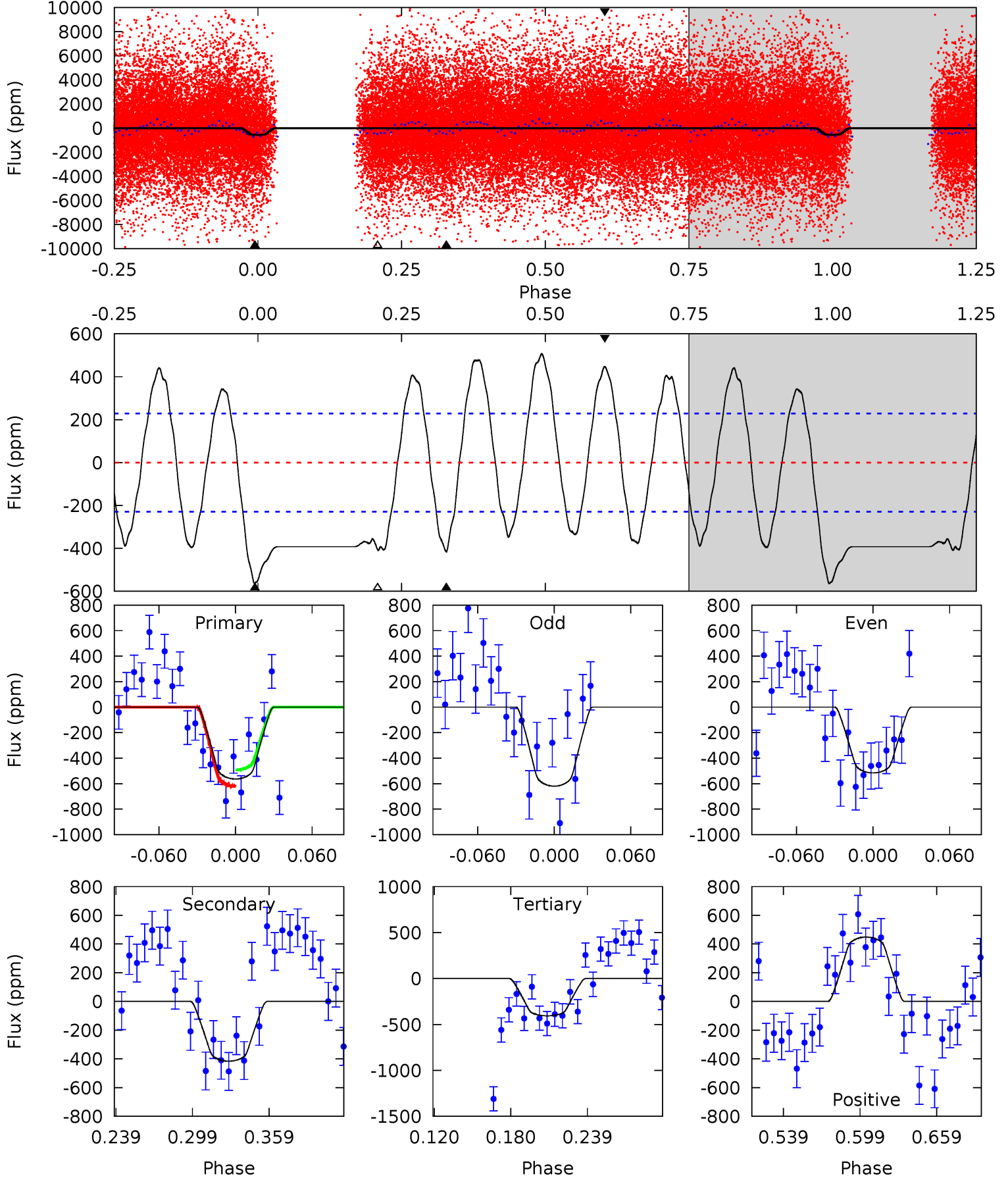
TCE 009111056-02 P= 1.395280 Days $T_0=132.719384$ (BKJD)



DV Model-Shift Uniqueness Test

009111056-02, P = 1.395309 Days, E = 131.318975 Days

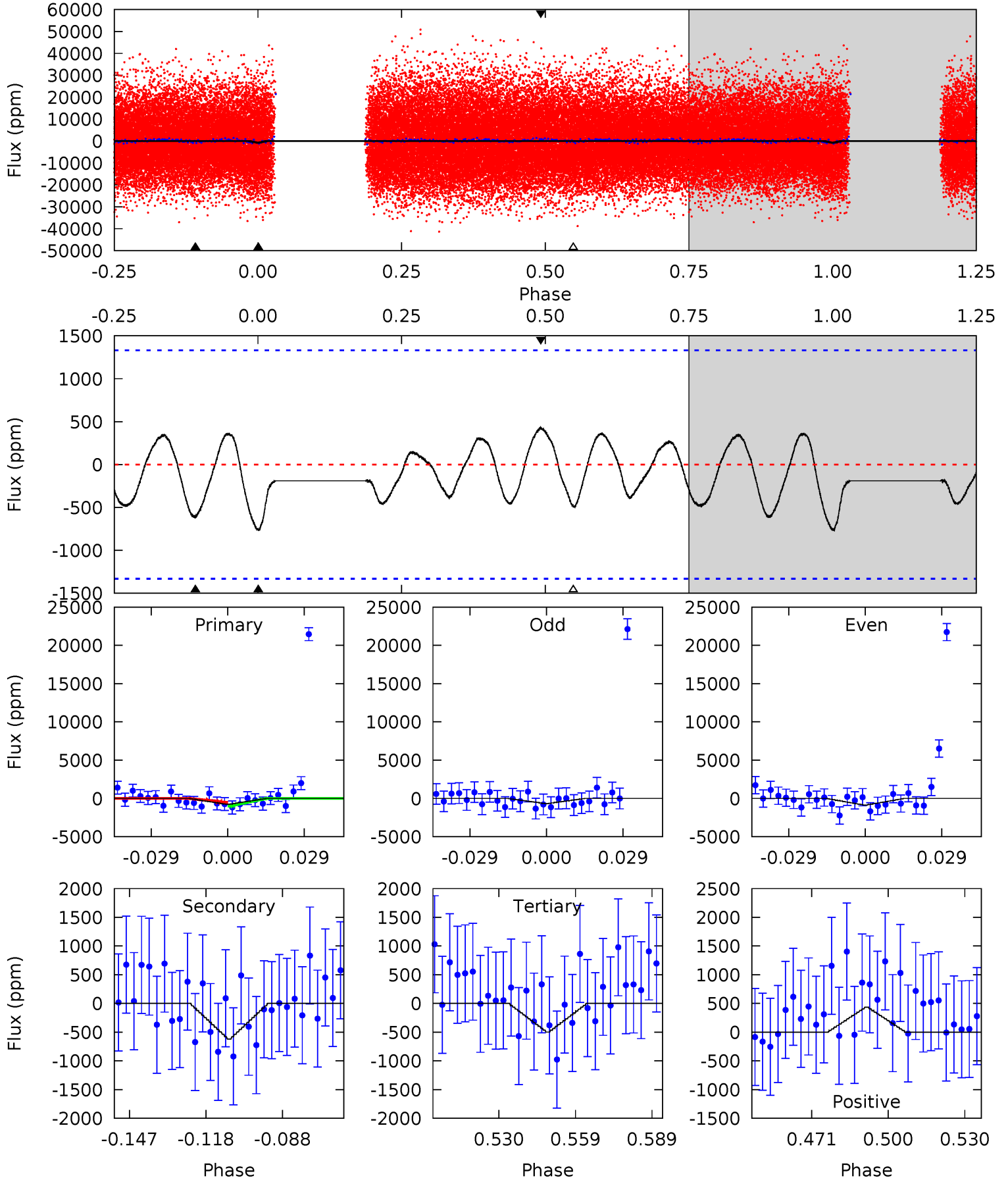
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	8.49	8.30	9.15	4.67	1.88	5.88	3.21	2.35	0.19	-0.66	1.07	0.82	0.47	1.25



Alt Model-Shift Uniqueness Test

009111056-02, P = 1.395280 Days, E = 131.324104 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.79	2.24	1.80	1.57	4.82	2.18	0.96	0.98	1.22	0.44	0.67	0.35	0.61	0.36	0.86



Stellar Parameters For KIC 009111056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7154^{+199}_{-249}	$3.673^{+0.476}_{-0.084}$	$-0.180^{+0.250}_{-0.300}$	$3.288^{+0.409}_{-1.636}$	$1.859^{+0.171}_{-0.548}$	$0.074^{+0.396}_{-0.013}$
	+3%/-3%	+13%/-2%	+139%/-167%	+12%/-50%	+9%/-29%	+538%/-18%
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 009111056-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-416 ± 49	$7.60^{+3.91}_{-3.46}$	4486^{+280}_{-535}	6395^{+2538}_{-1115}	$3.487^{+8.303}_{-1.936}$
Alt.	-620 ± 276	$8.90^{+3.99}_{-3.65}$	4458^{+306}_{-581}	6481^{+2203}_{-1332}	$3.786^{+7.387}_{-2.312}$

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 $A_{obs} \gg 1.0$

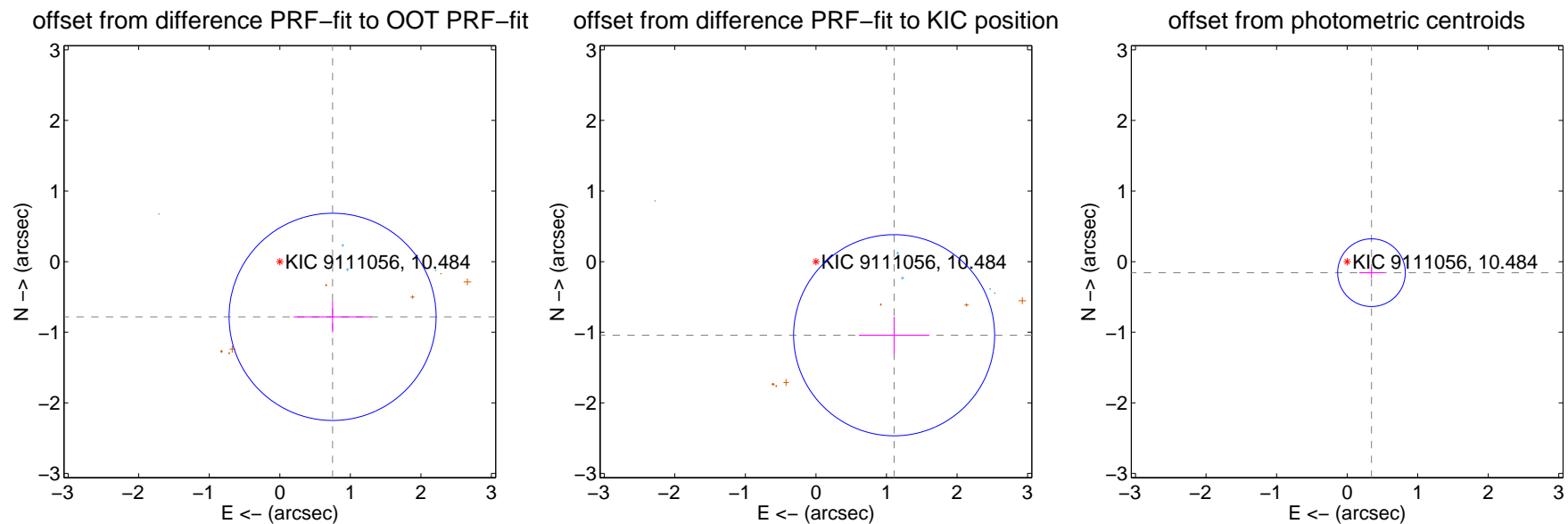
DV Centroid Data

Supplemental centroid analysis for 009111056-02. **Kepler magnitude: 10.48.** Transit SNR 9.77

There are 5 quarters with good PRF difference image offsets

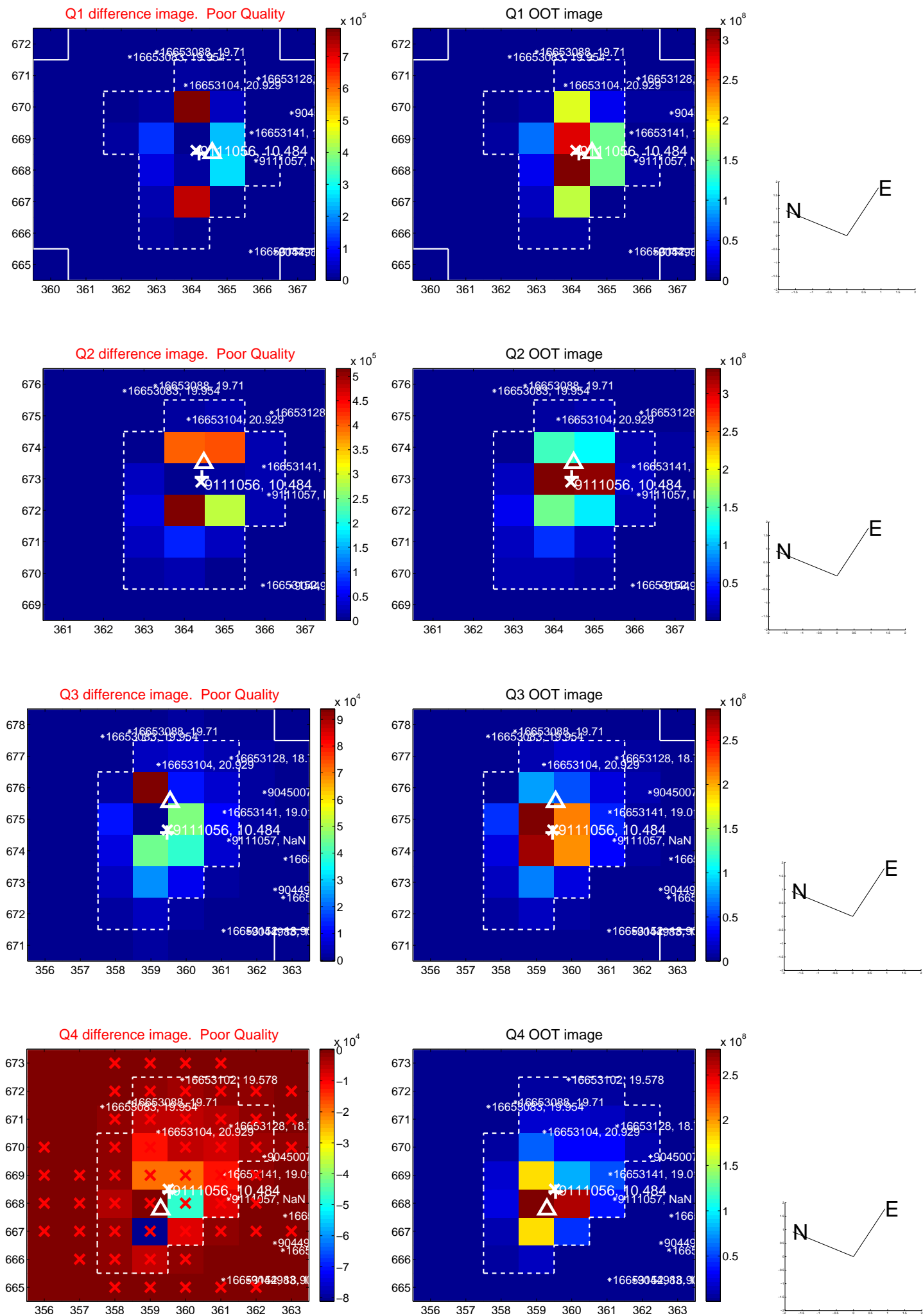
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.083 ± 0.489	2.21	-0.749 ± 0.553	-0.782 ± 0.224
PRF-fit source offset from KIC position	1.522 ± 0.475	3.20	-1.109 ± 0.499	-1.042 ± 0.261
photometric centroid source offset	0.38 ± 0.16	2.37	-0.35 ± 0.17	-0.16 ± 0.08

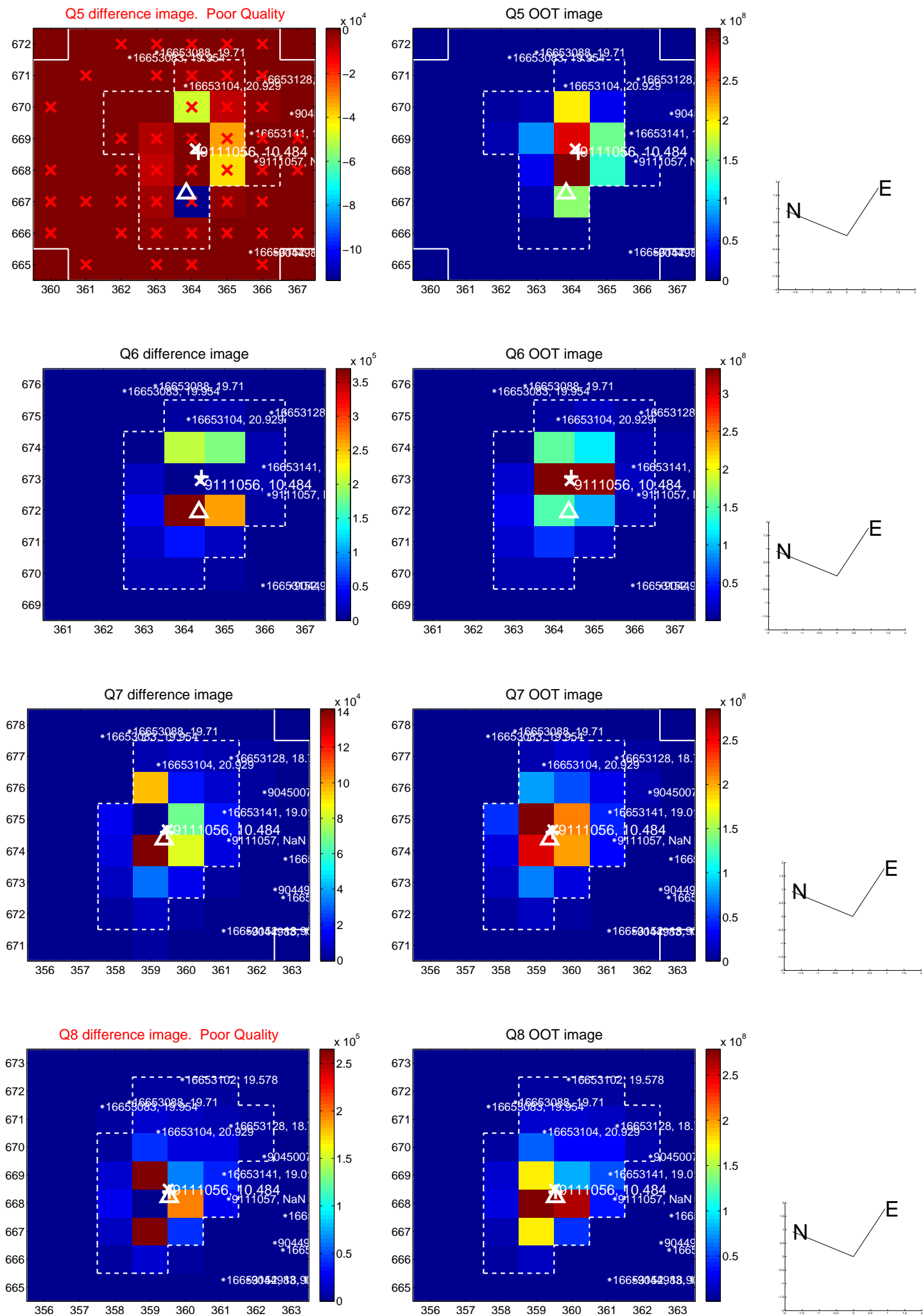


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

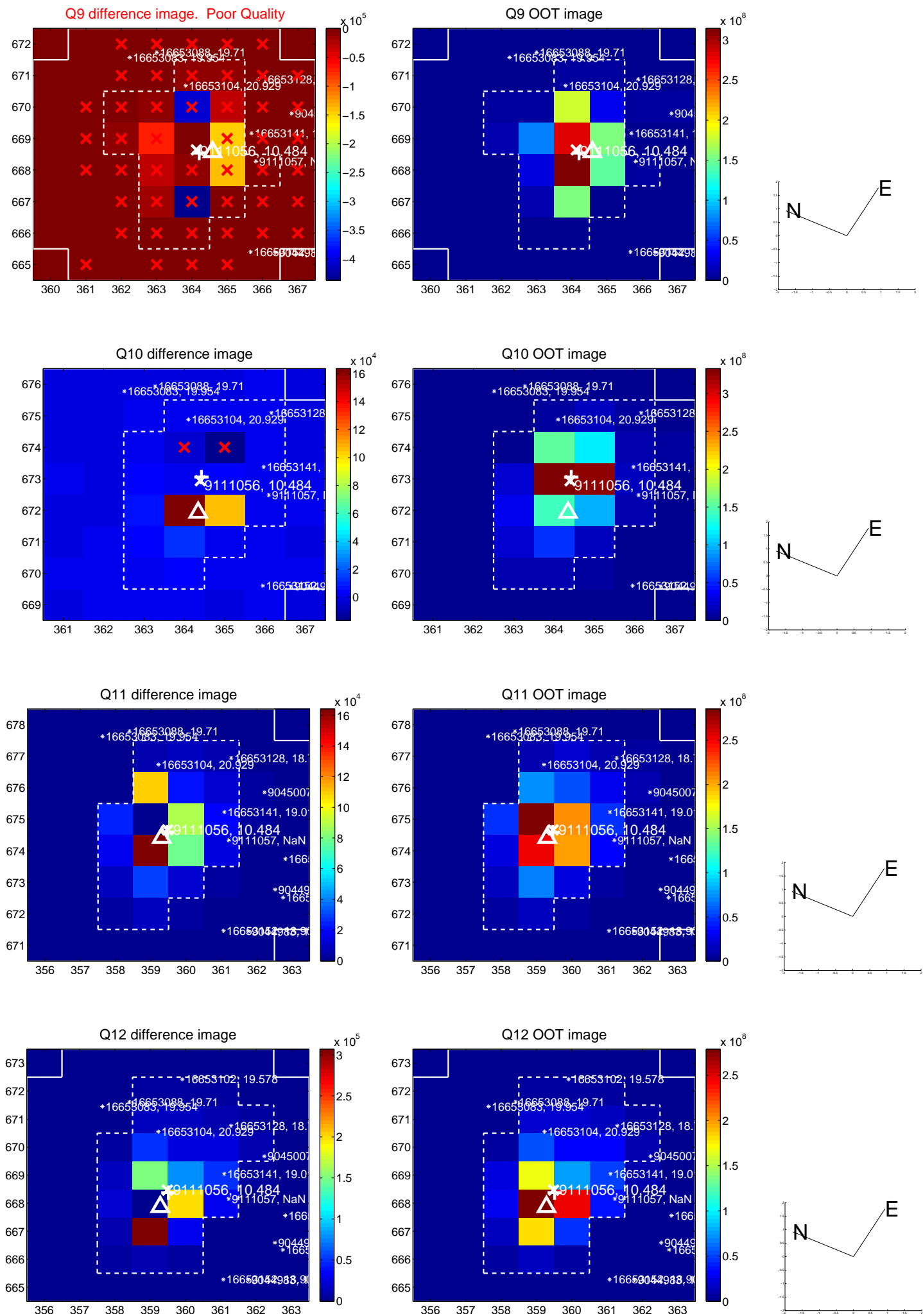
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



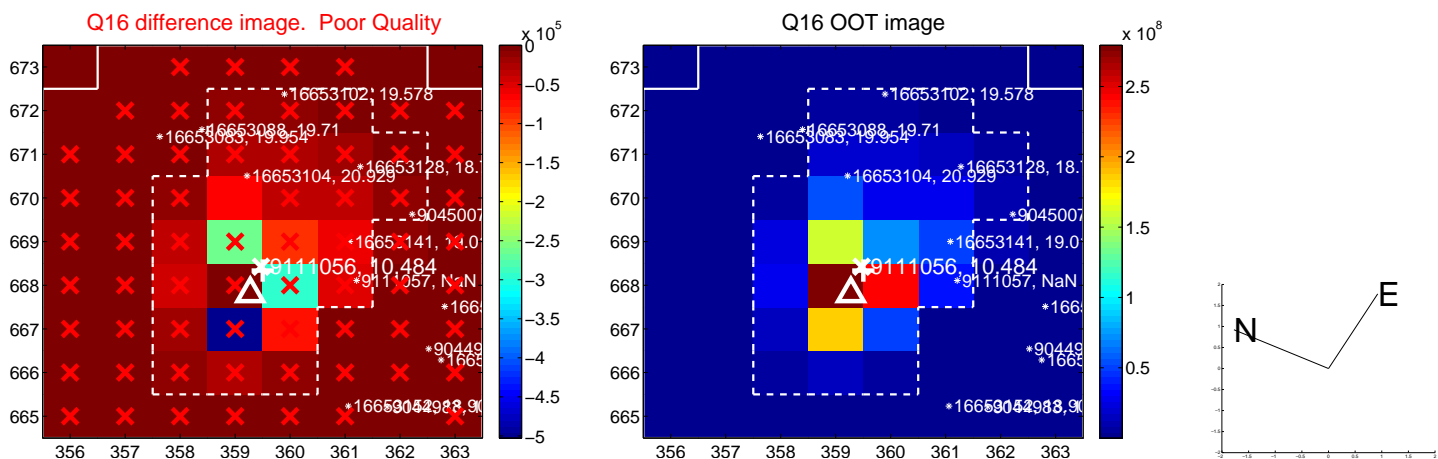
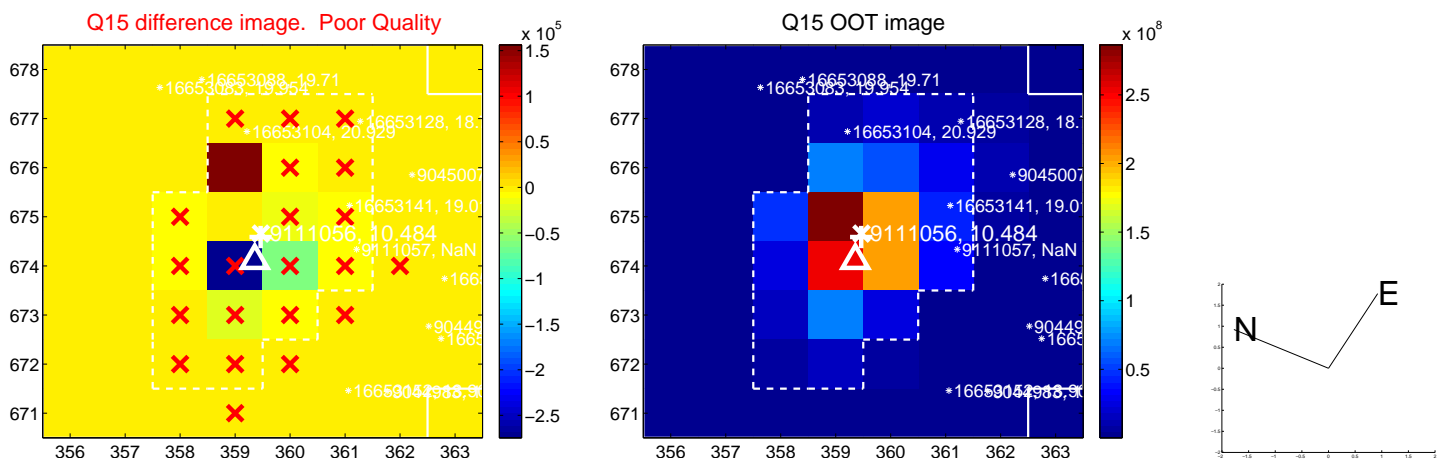
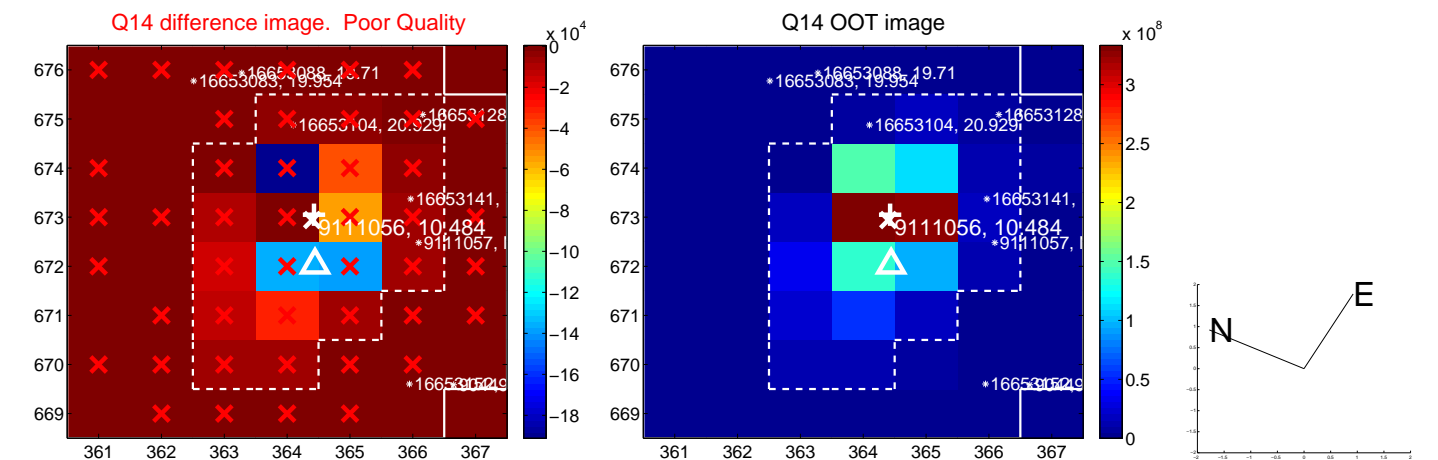
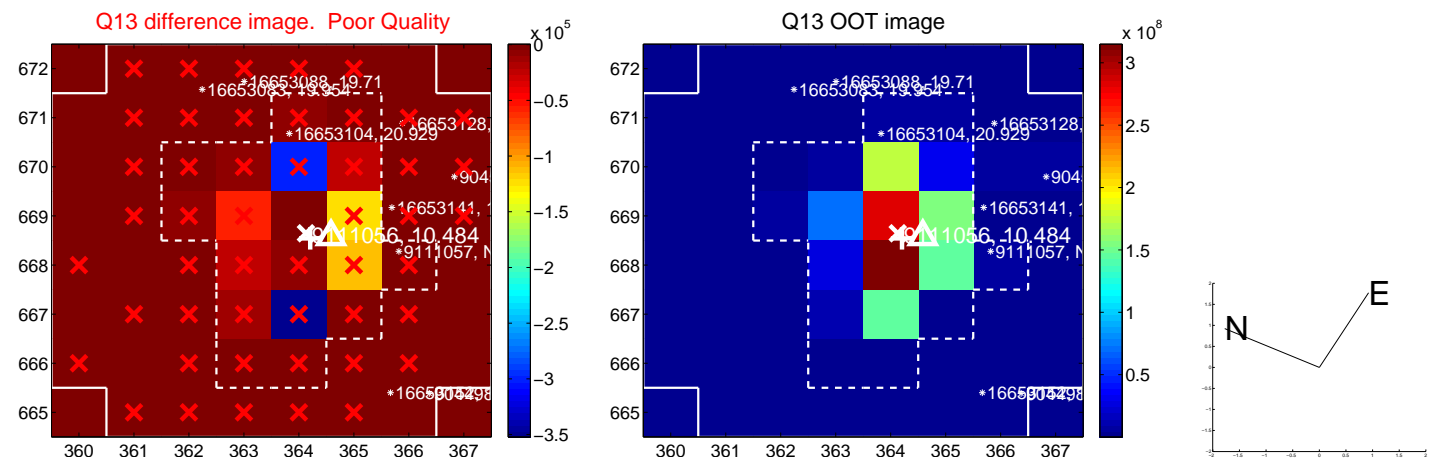
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



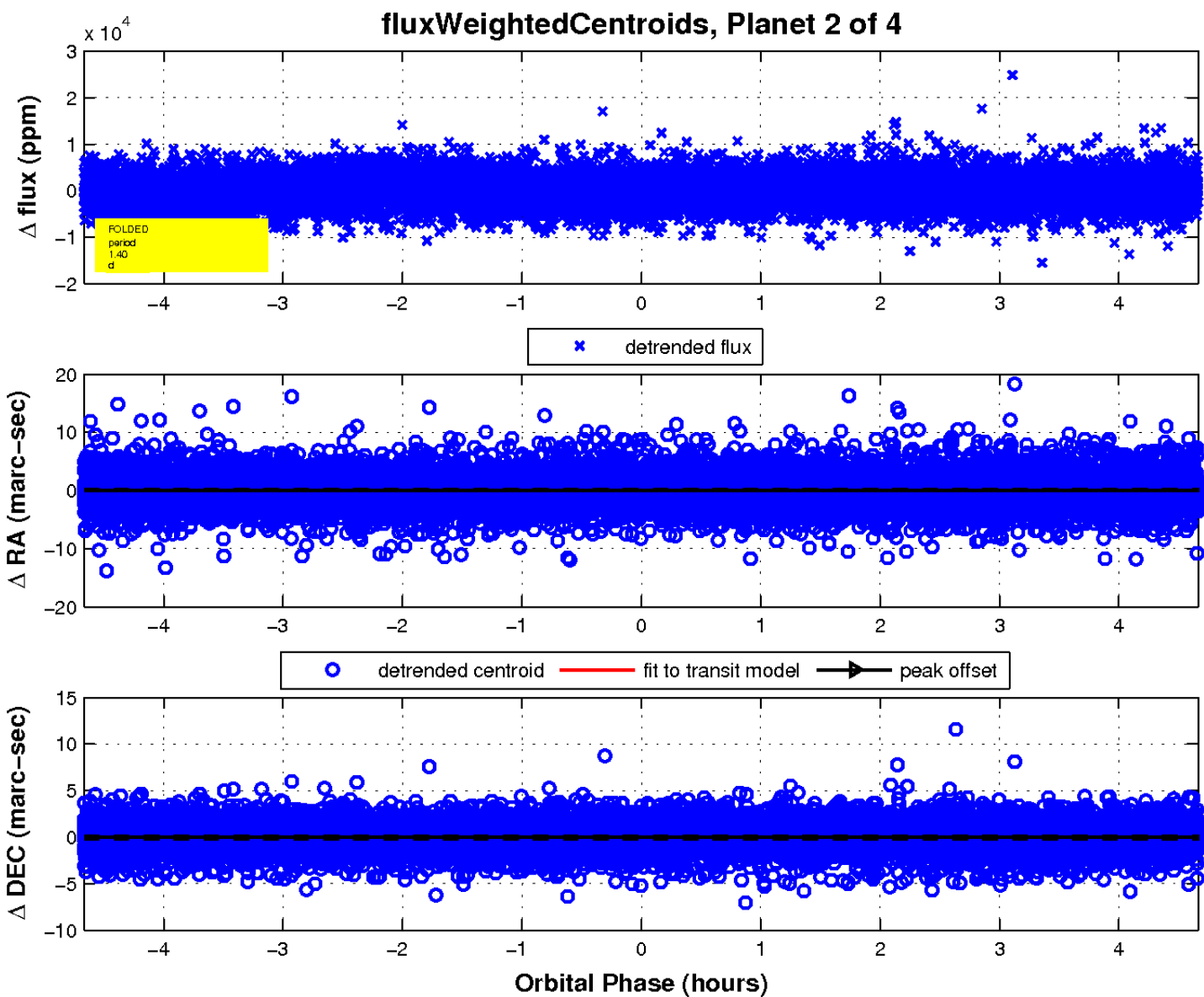
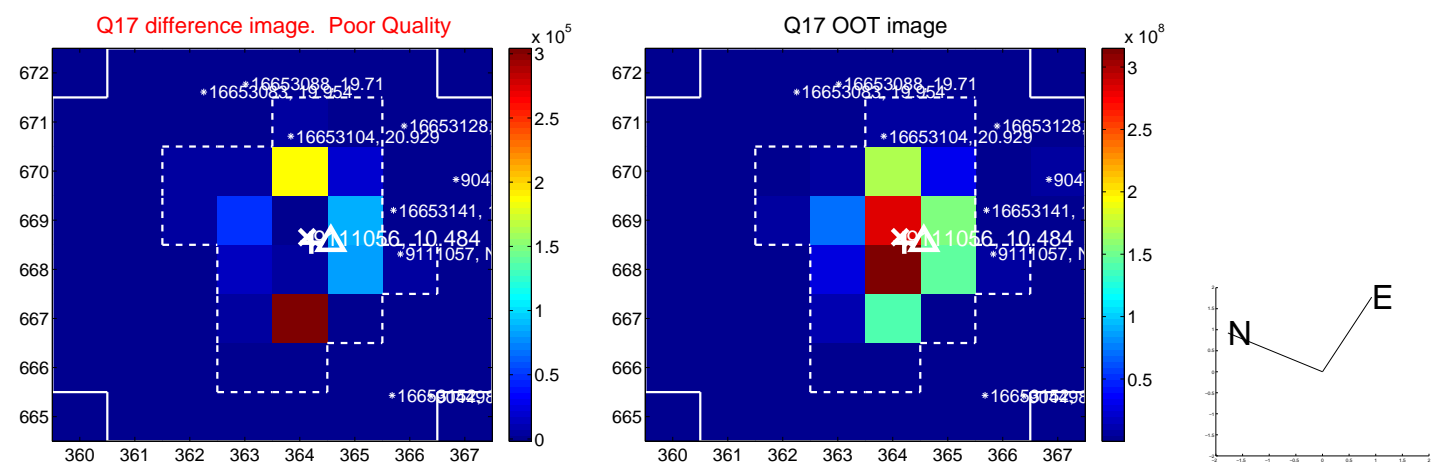
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



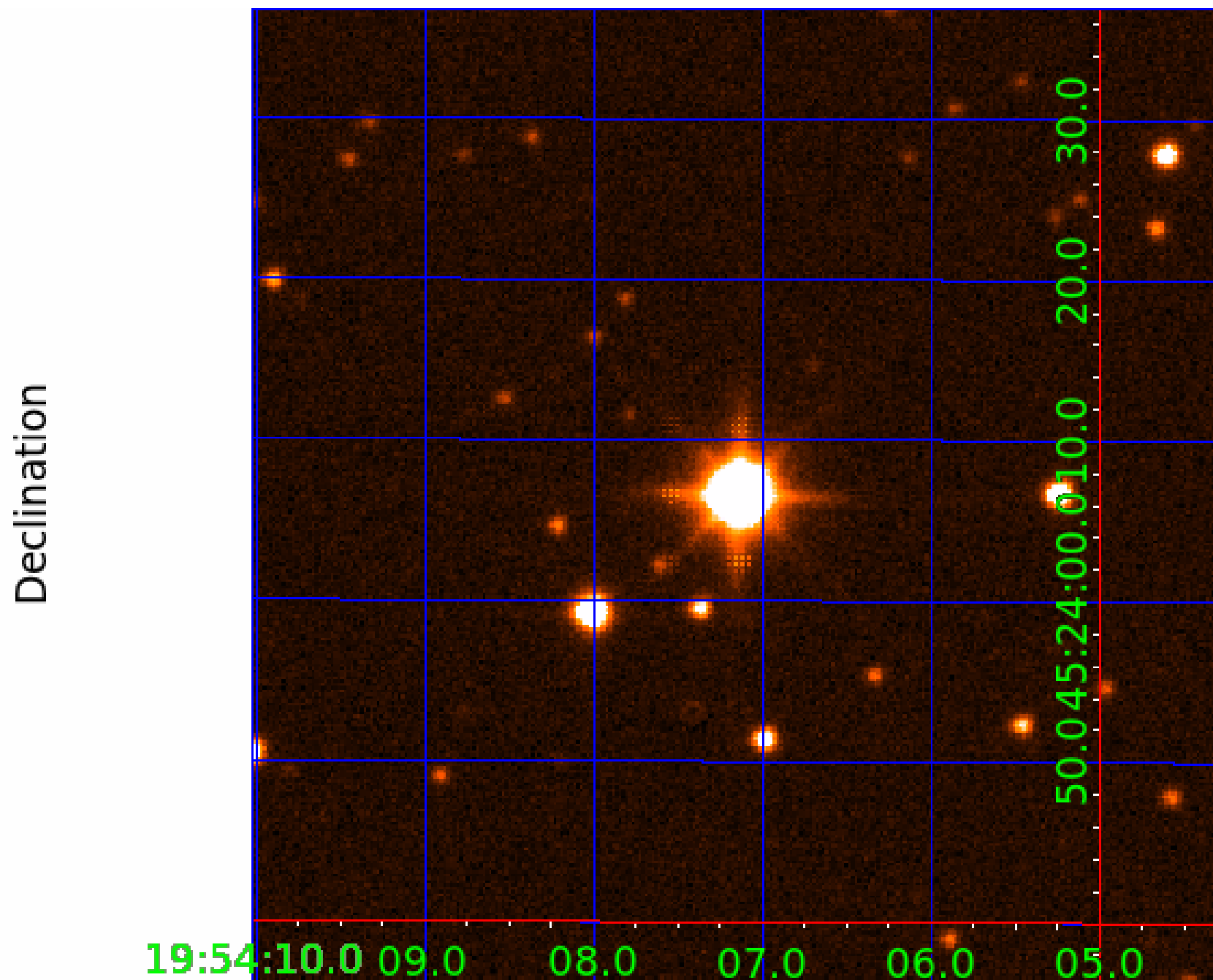
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009111056

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})
009111056-01	OBS	No	1.395259	132.882028	486.5	1.746	11.0	10.8	3.29	7154	8.52	28108.54
009111056-02	OBS	No	1.395309	132.714284	512.2	1.556	8.8	9.8	3.29	7154	8.56	28107.19
009111056-03	OBS	No	1.395281	131.634405	471.4	1.569	9.4	9.8	3.29	7154	8.48	28107.95
009111056-04	OBS	No	1.395280	131.779744	78.4	1.500	8.7	-1.0	3.29	7154	2.93	28107.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009111056-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009111056-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

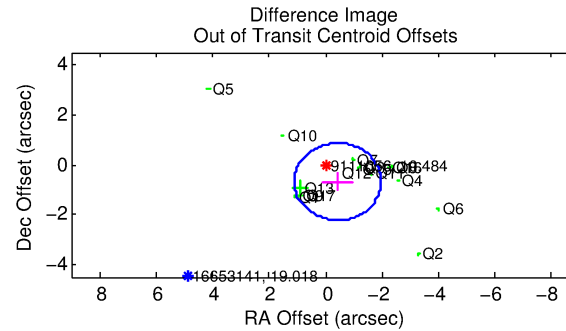
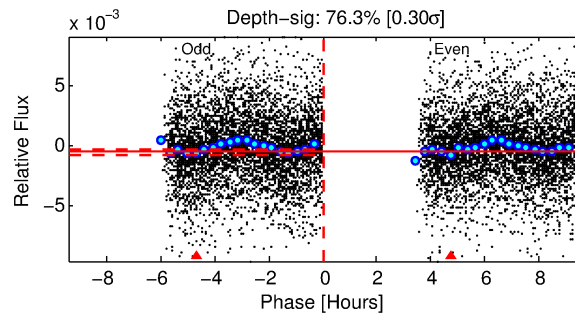
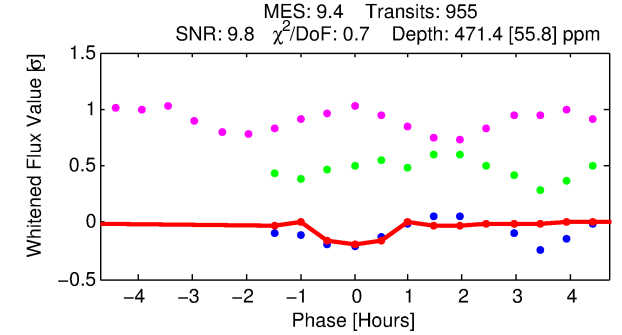
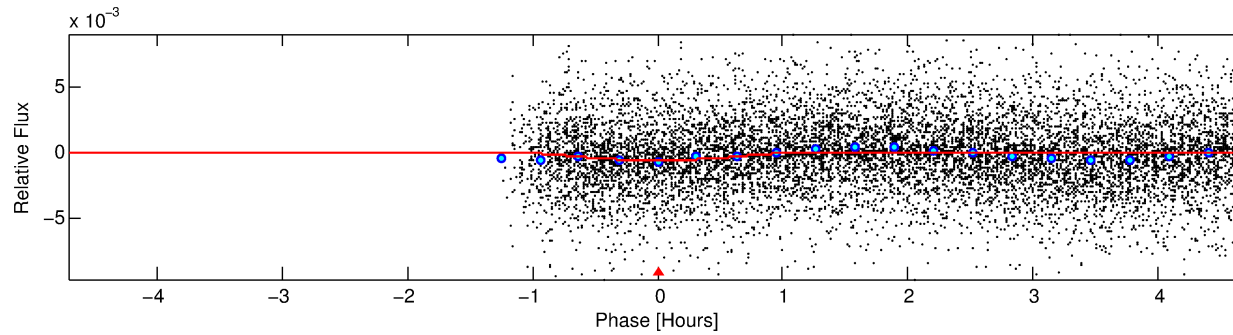
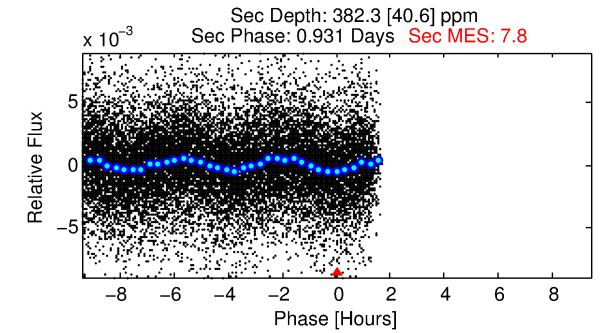
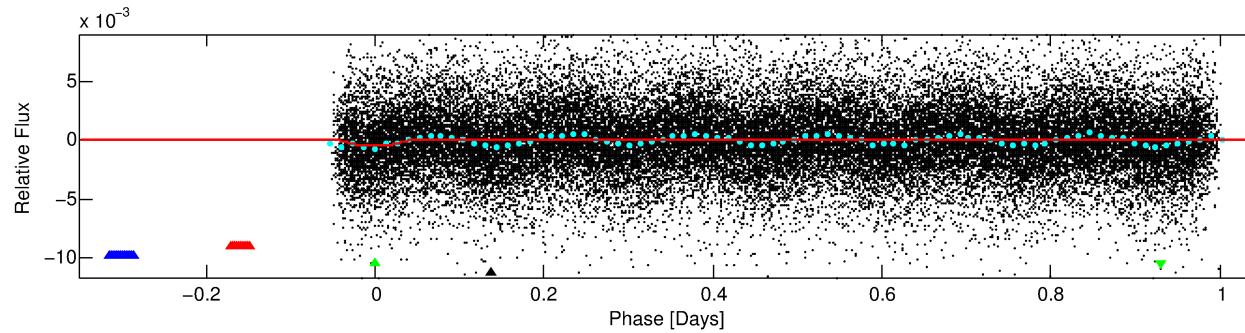
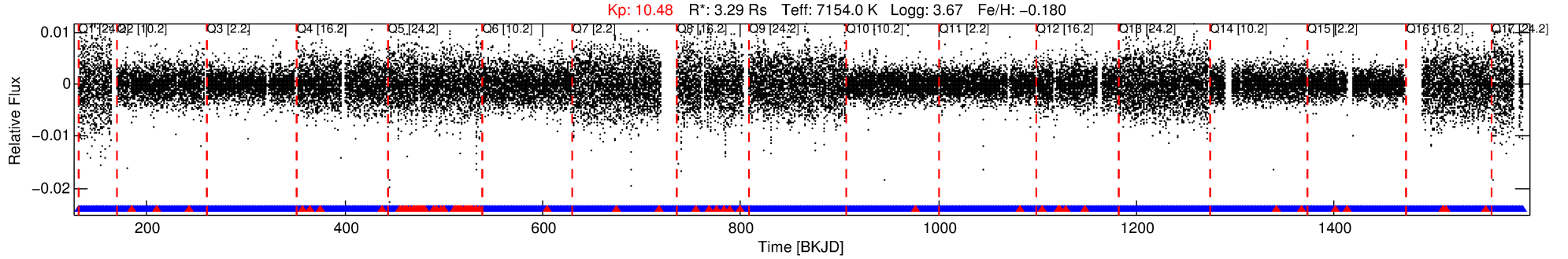
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009111056-03

No Significant Match Found

DV One-Page Summary

KIC: 9111056 Candidate: 3 of 4 Period: 1.395 d



DV Fit Results:

Period = 1.39528 [0.00001] d
Epoch = 131.6344 [0.0018] BKJD
Rp/R* = 0.0236 [0.0063]
a/R* = 3.32 [4.32]
b = 0.91 [0.28]
Seff = 28107.95 [22892.35]
Teff = 3302 [672] K
Rp = 8.48 [4.79] Re
a = 0.0300 [0.0148] AU
Ag = 2.64 [2.56] [0.64σ]
Teffp = 6508 [916] K [2.82σ]

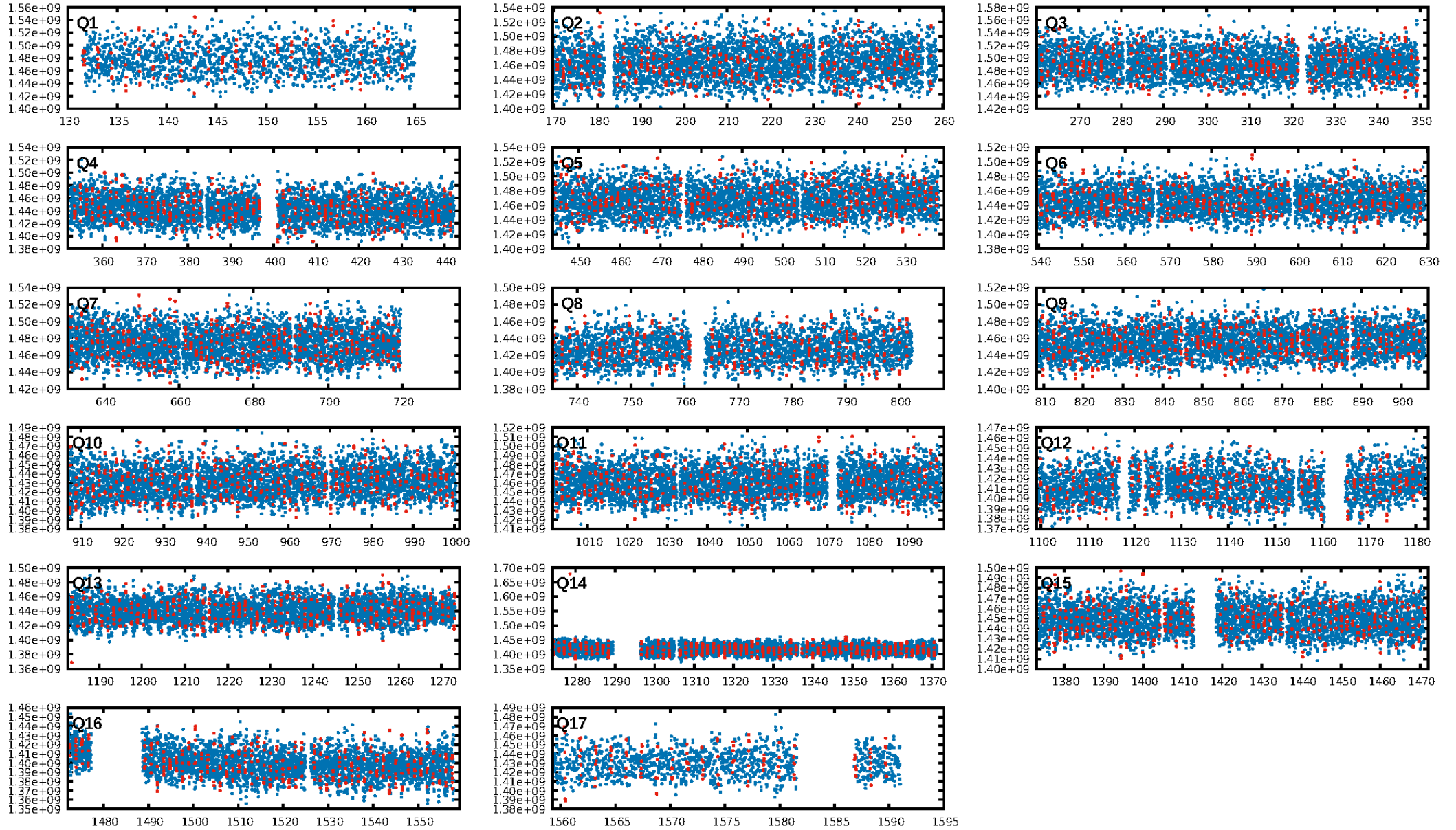
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [846/912]
GhostDiagnostic-chr: 1.149
Centroid-sig: 23.4%
Centroid-so: 0.331 arcsec [3.08σ]
OotOffset-rm: 0.803 arcsec [1.56σ]
KicOffset-rm: 1.174 arcsec [2.34σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/17]

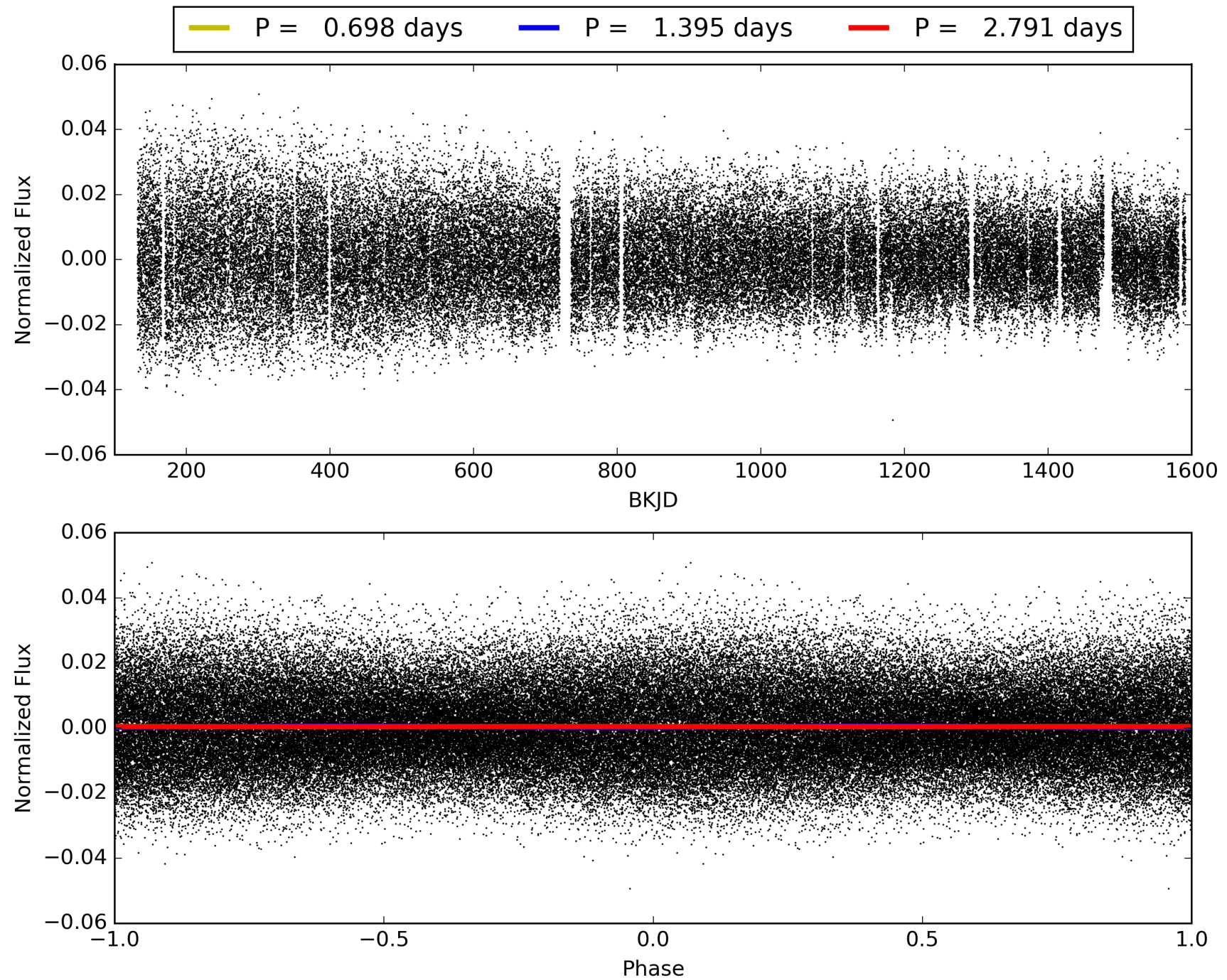
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:11:09 Z

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

TCE 009111056-03, PDC Light Curves

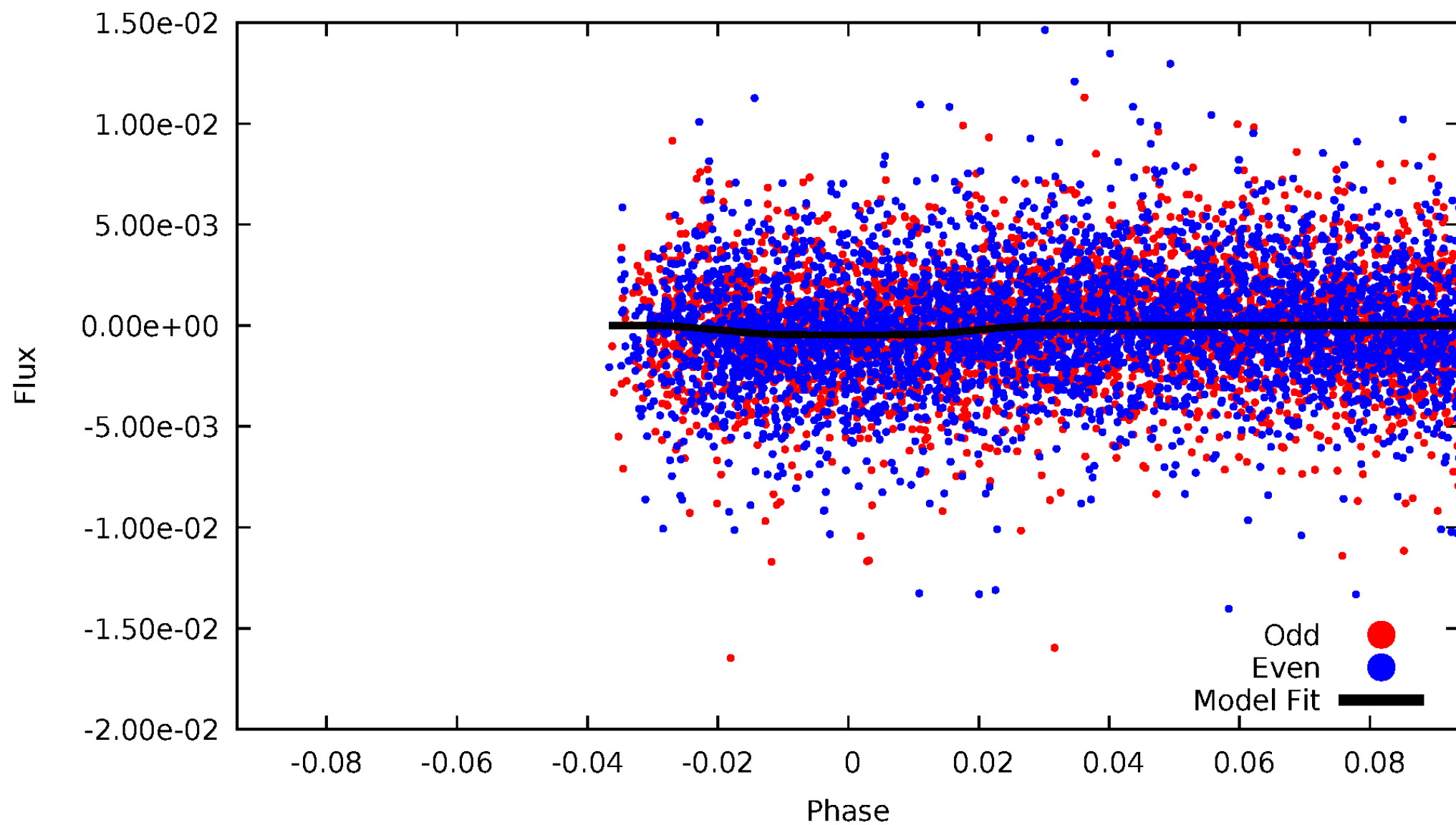


TCE 009111056-03



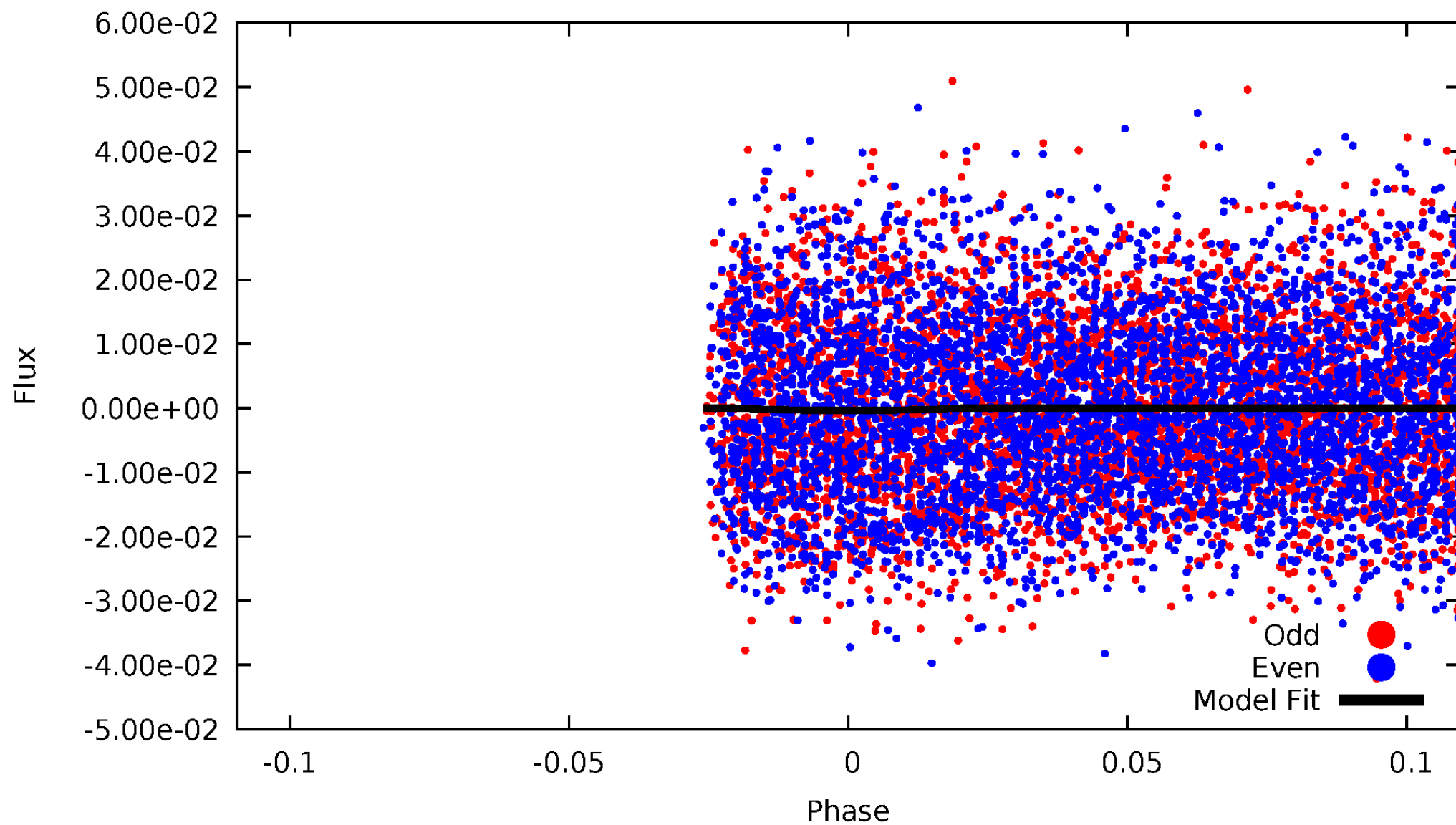
DV Odd/Even

TCE 009111056-03



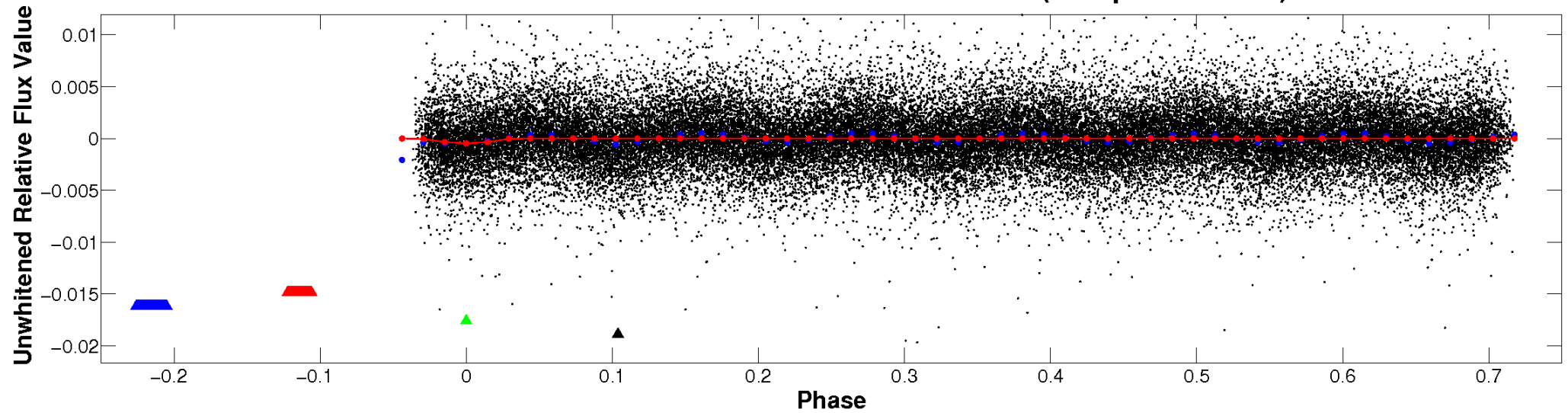
ALT Odd/Even

TCE 009111056-03

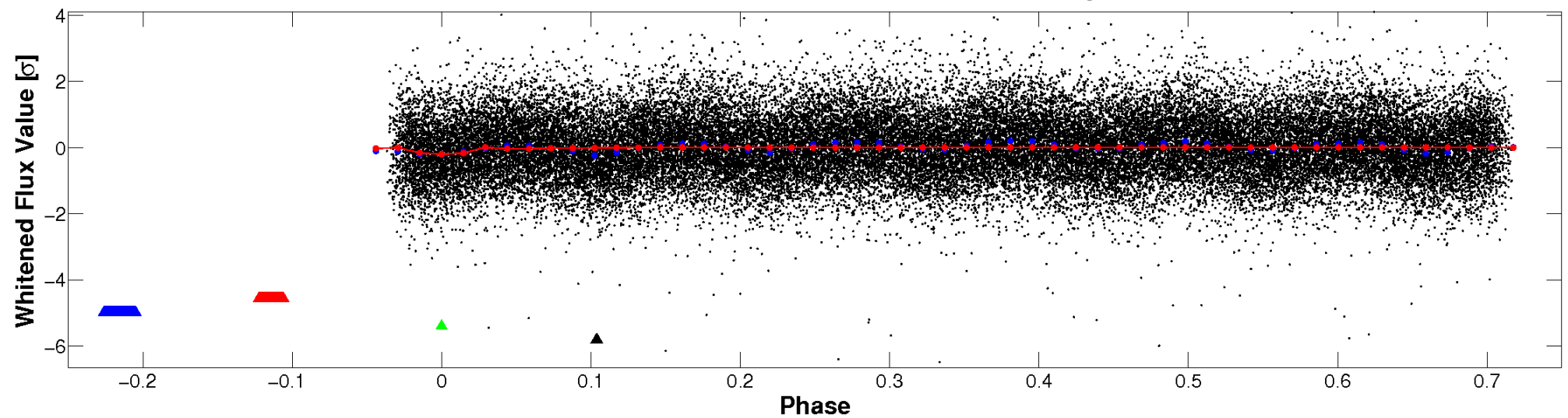


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

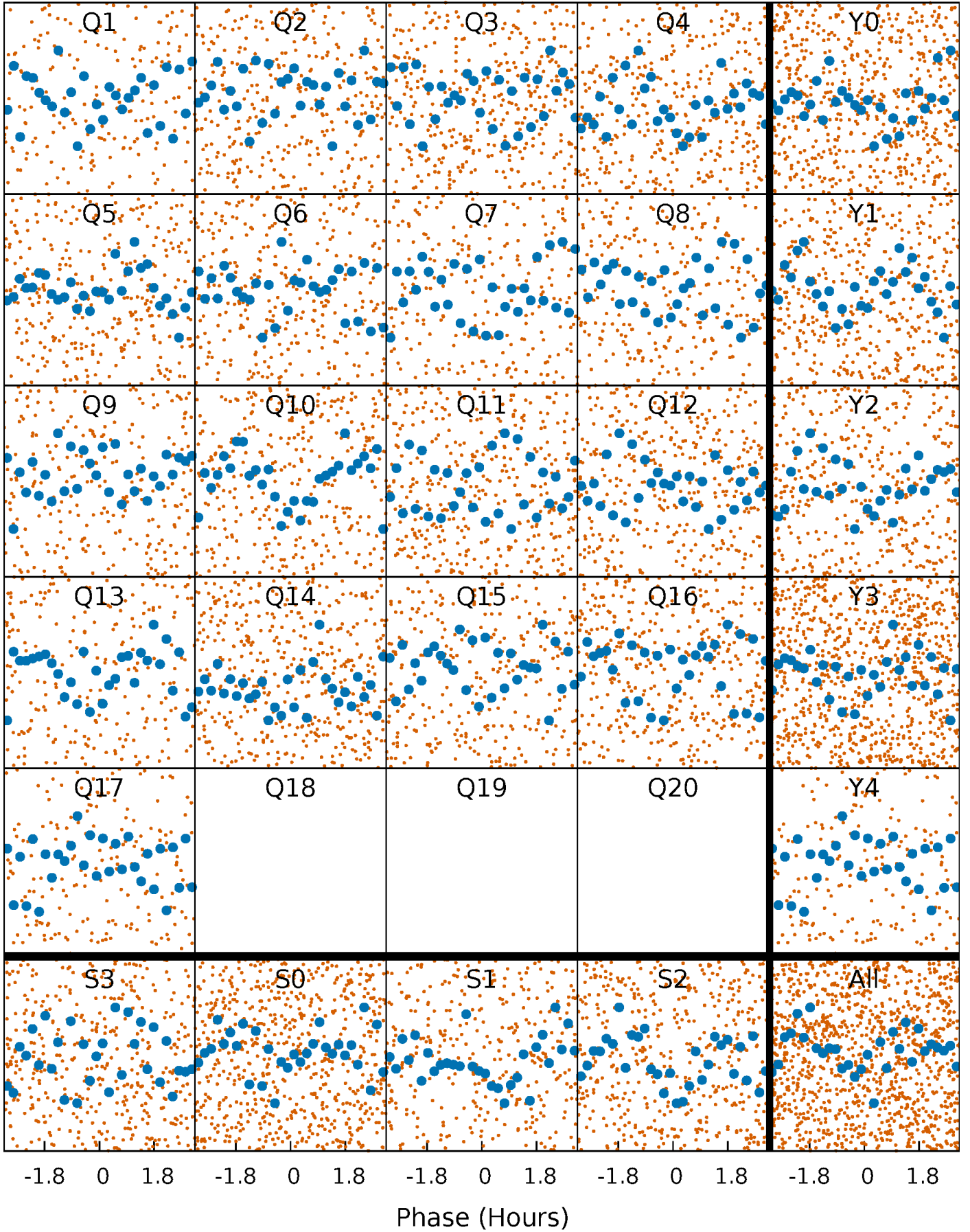


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



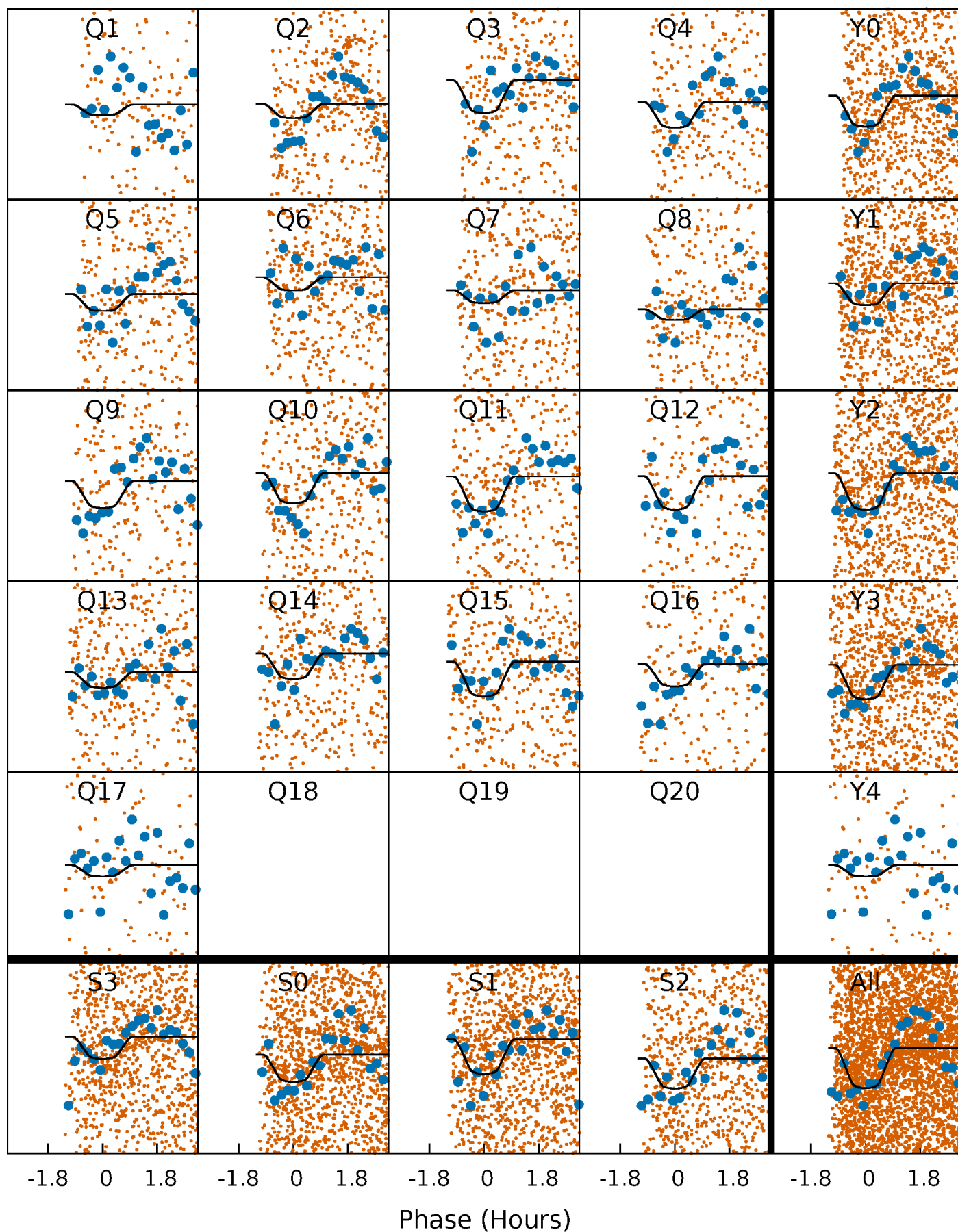
PDC Quarter-Phased Transit Curves

TCE 009111056-03 P= 1.395281 Days $T_0=131.634405$ (BKJD)



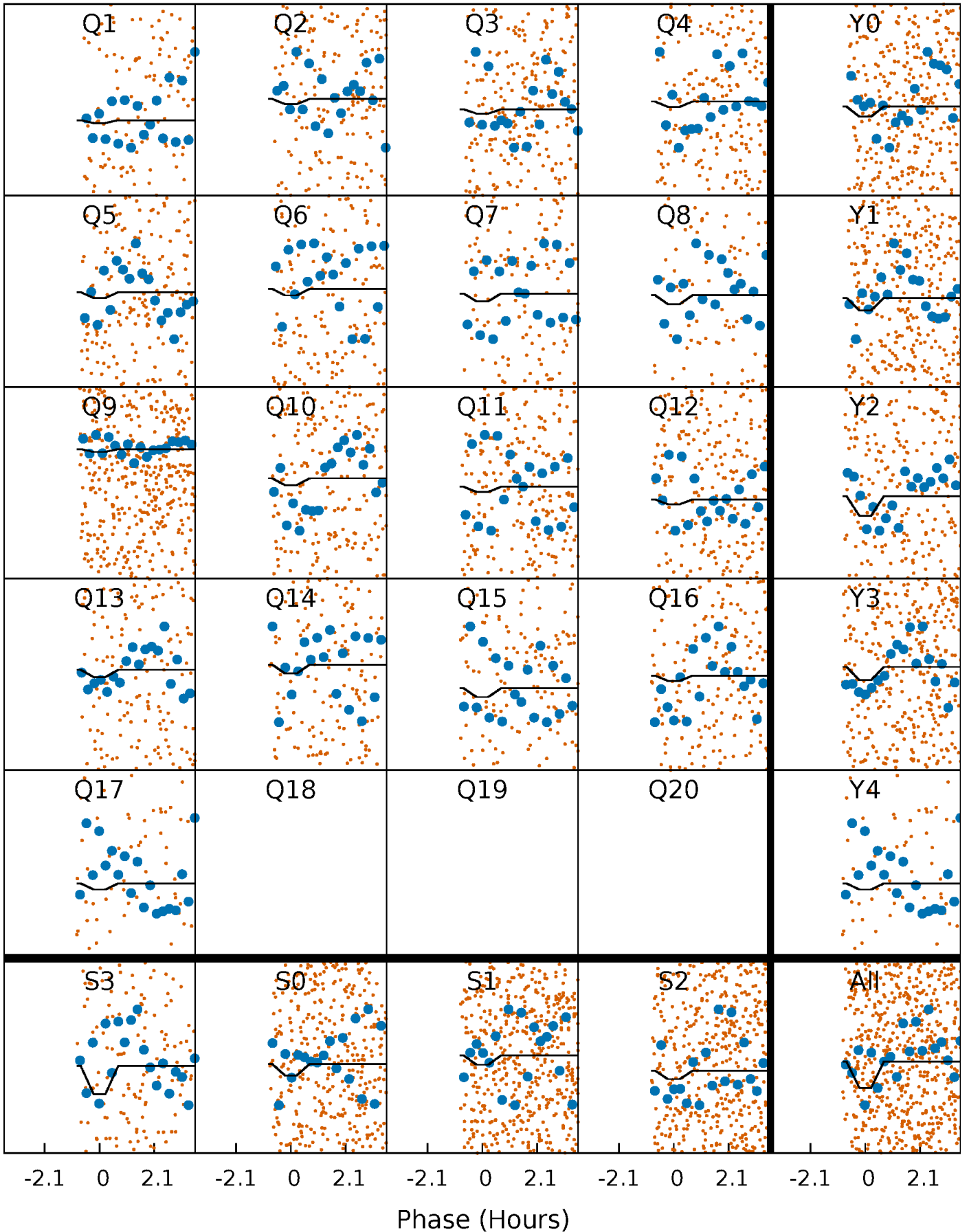
DV Quarter-Phased Transit Curves

TCE 009111056-03 P= 1.395281 Days $T_0=131.634405$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

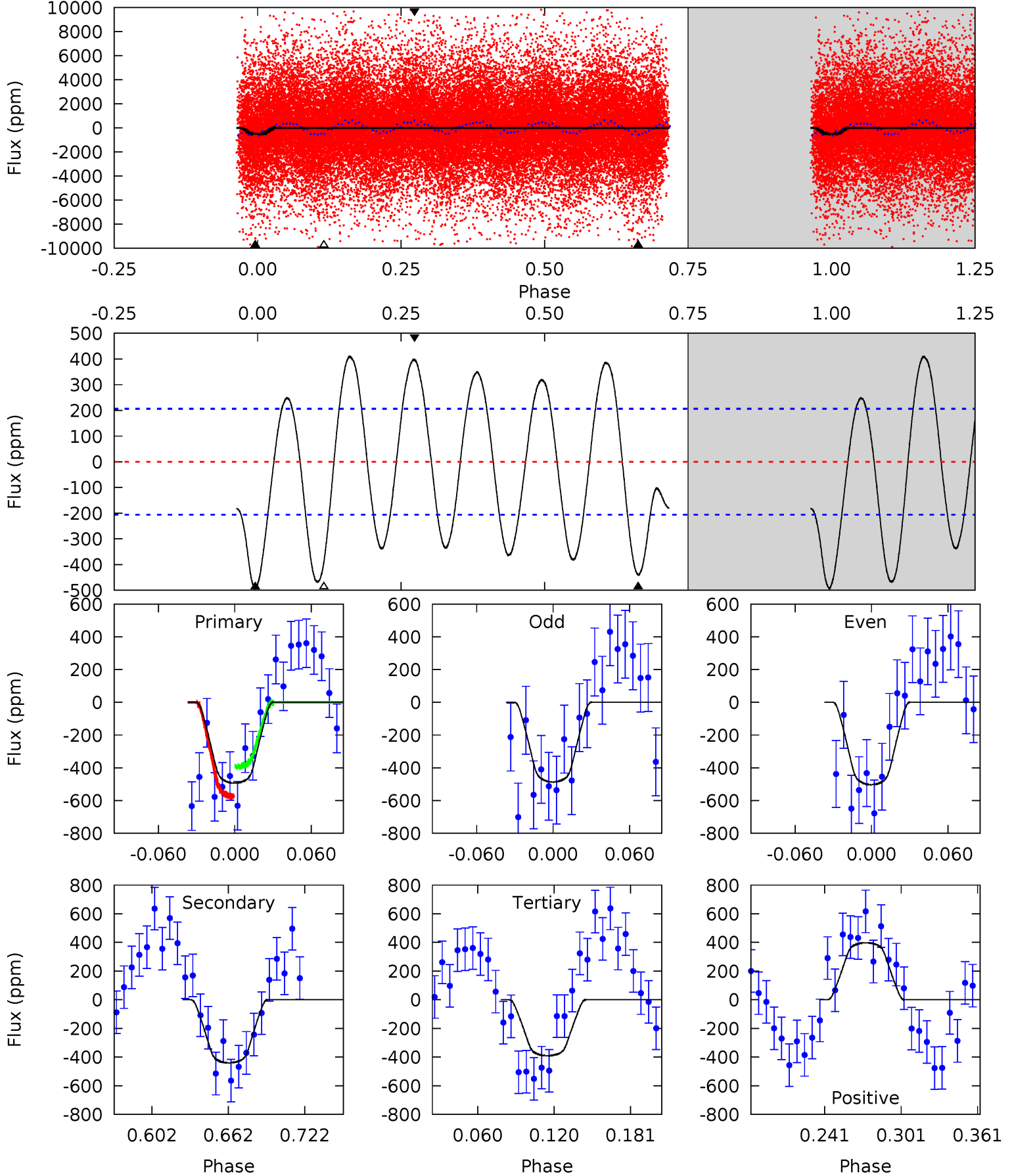
TCE 009111056-03 $P = 1.395268$ Days $T_0 = 131.632520$ (BKJD)



DV Model-Shift Uniqueness Test

009111056-03, P = 1.395281 Days, E = 130.239124 Days

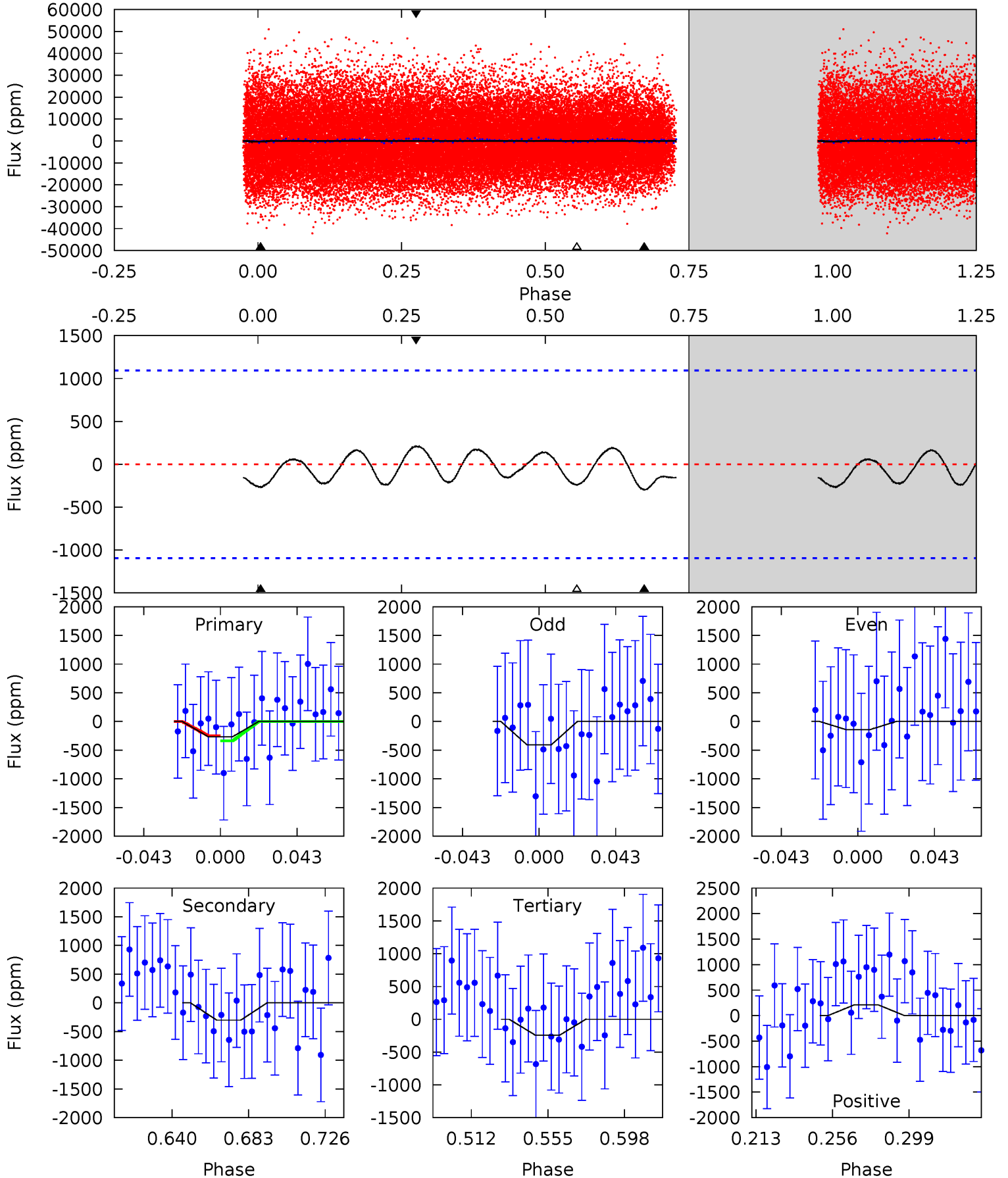
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	9.98	8.85	9.01	4.67	1.88	5.95	2.33	2.17	1.13	0.97	0.19	0.96	0.45	2.08



Alt Model-Shift Uniqueness Test

009111056-03, P = 1.395268 Days, E = 130.237252 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.16	1.30	1.06	0.91	4.74	2.03	0.59	0.10	0.25	0.25	0.39	0.59	0.25	0.41	0.20



Stellar Parameters For KIC 009111056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7154^{+199}_{-249}	$3.673^{+0.476}_{-0.084}$	$-0.180^{+0.250}_{-0.300}$	$3.288^{+0.409}_{-1.636}$	$1.859^{+0.171}_{-0.548}$	$0.074^{+0.396}_{-0.013}$
	+3%/-3%	+13%/-2%	+139%/-167%	+12%/-50%	+9%/-29%	+538%/-18%
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 009111056-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-440 ± 44	$7.48^{+2.78}_{-2.58}$	4445^{+320}_{-582}	6504^{+1472}_{-836}	$3.849^{+4.772}_{-1.762}$
Alt.	-301 ± 231	$6.11^{+2.64}_{-2.28}$	4492^{+297}_{-552}	6340^{+2529}_{-2192}	$3.294^{+7.256}_{-2.561}$

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 $A_{obs} \gg 1.0$

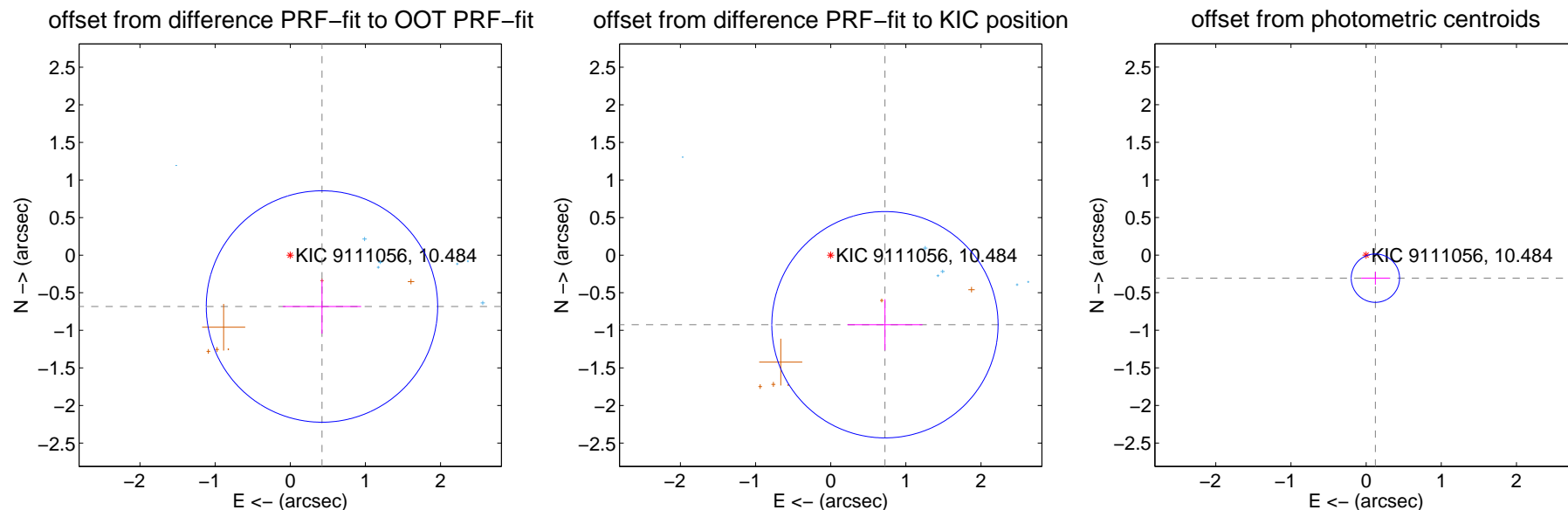
DV Centroid Data

Supplemental centroid analysis for 009111056-03. **Kepler magnitude: 10.48.** Transit SNR 9.83

There are 8 quarters with good PRF difference image offsets

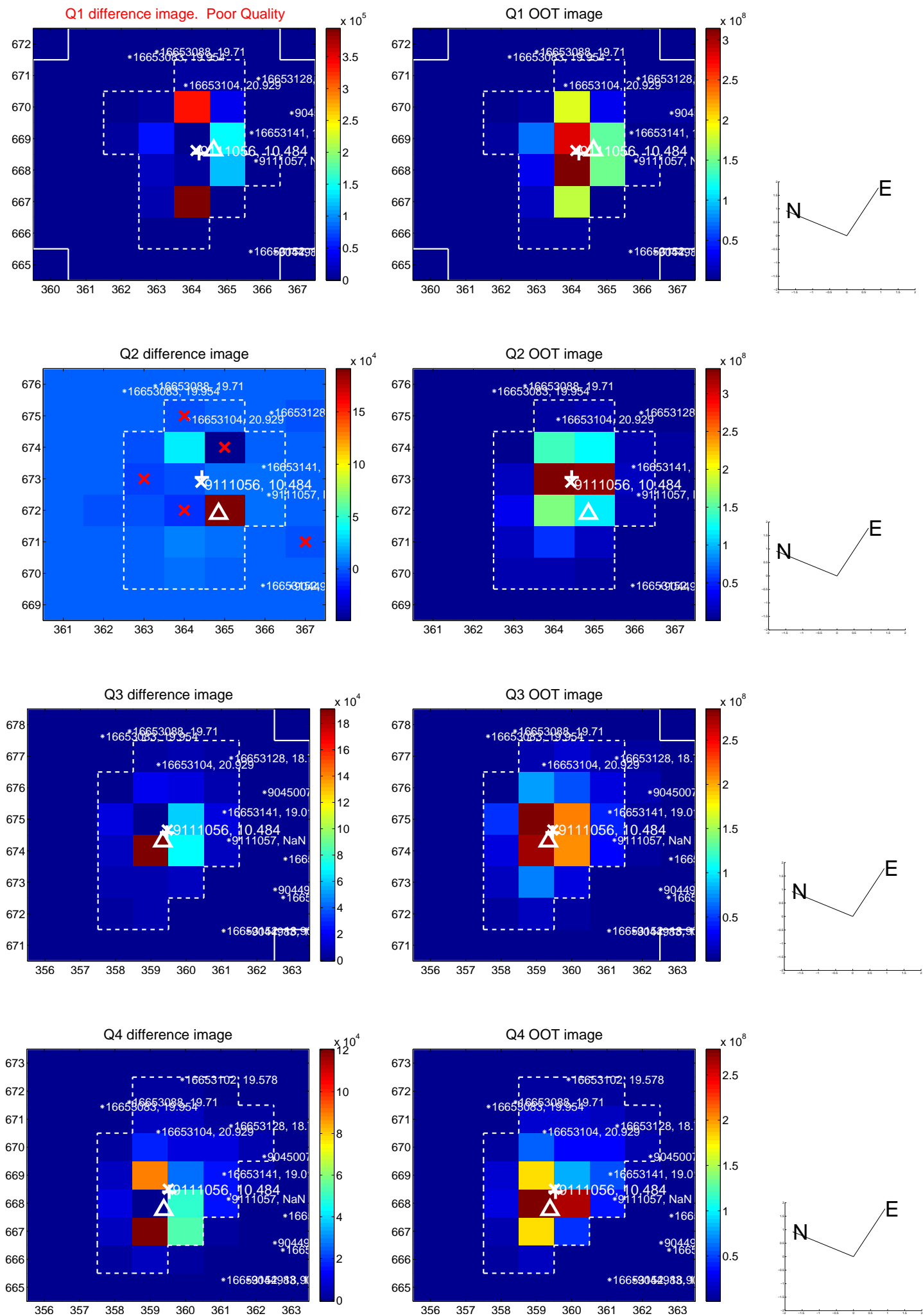
The direct PRF centroid is offset from the target star catalog position by about 0.54 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.803 ± 0.513	1.56	-0.422 ± 0.521	-0.683 ± 0.360
PRF-fit source offset from KIC position	1.174 ± 0.502	2.34	-0.722 ± 0.499	-0.926 ± 0.340
photometric centroid source offset	0.33 ± 0.11	3.08	-0.12 ± 0.19	-0.31 ± 0.09

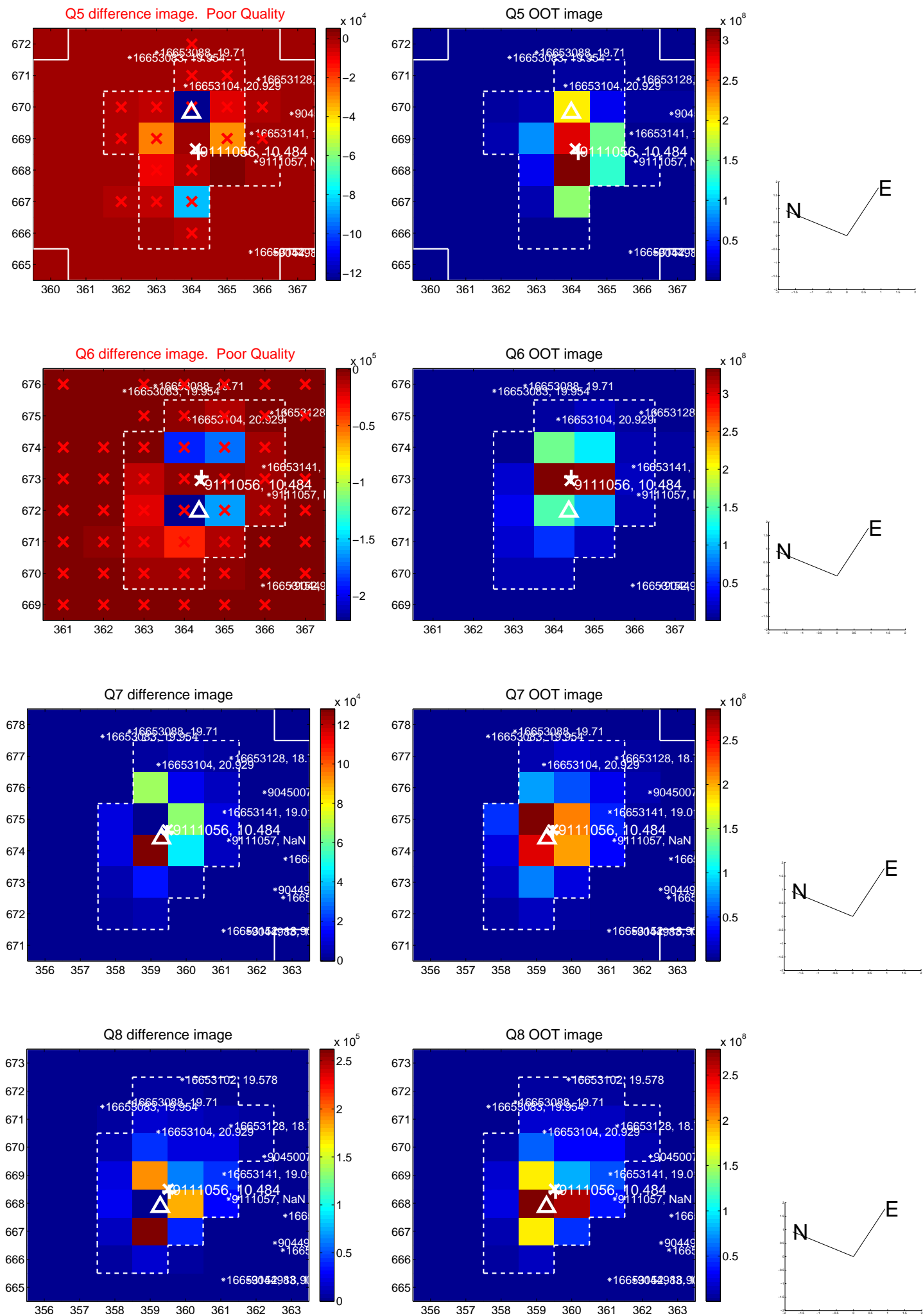


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

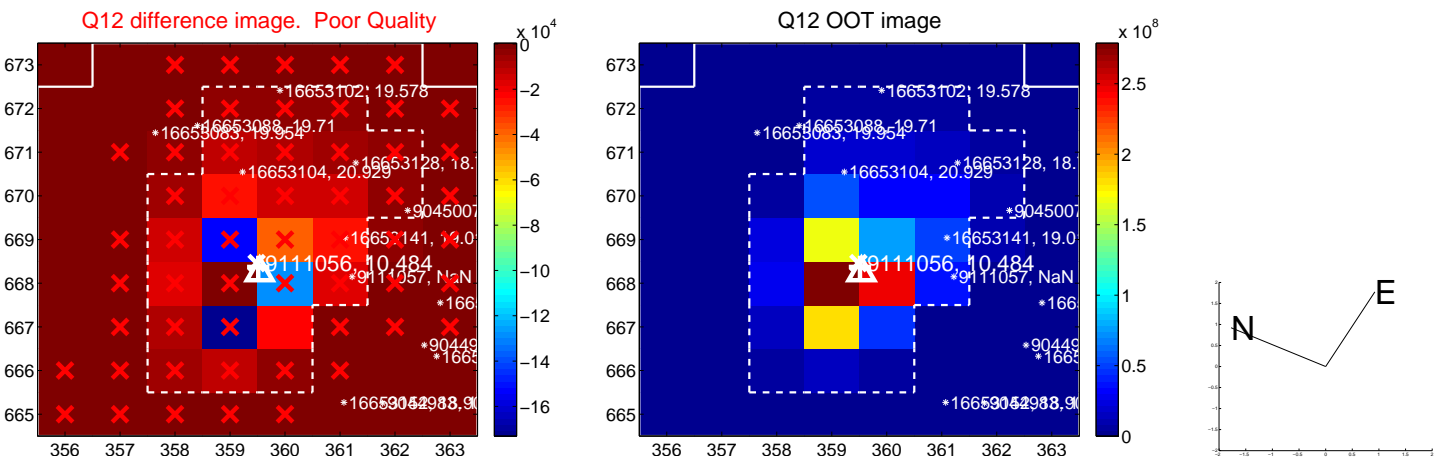
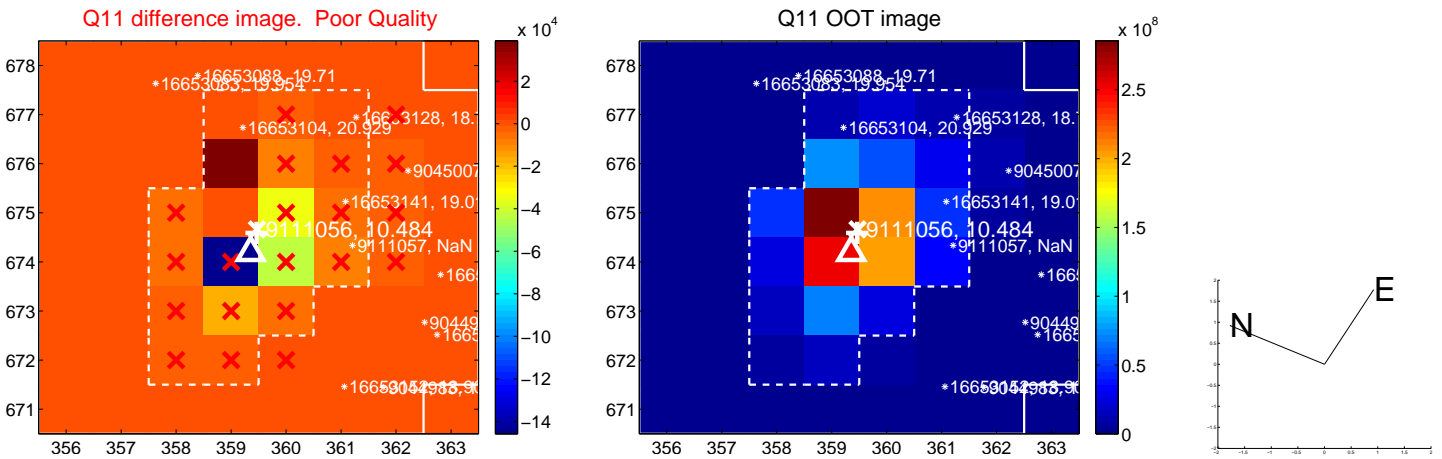
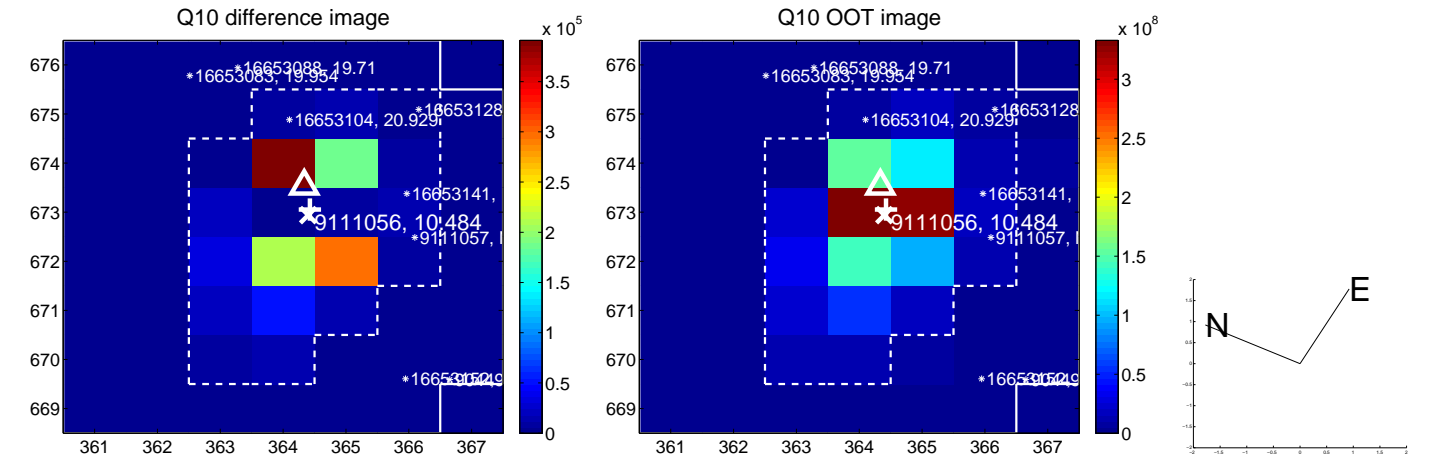
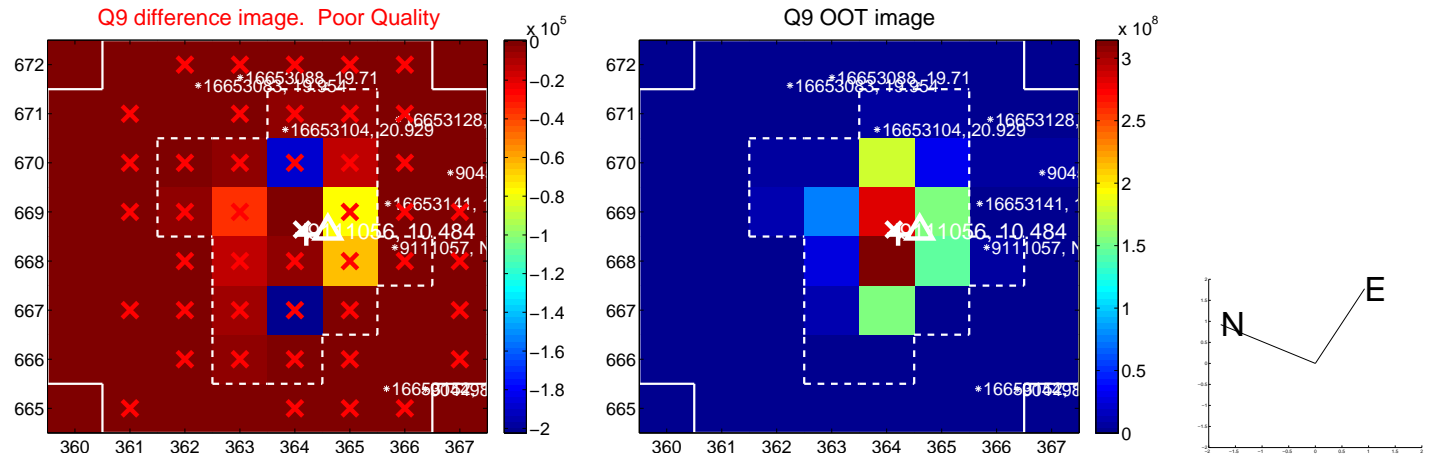
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



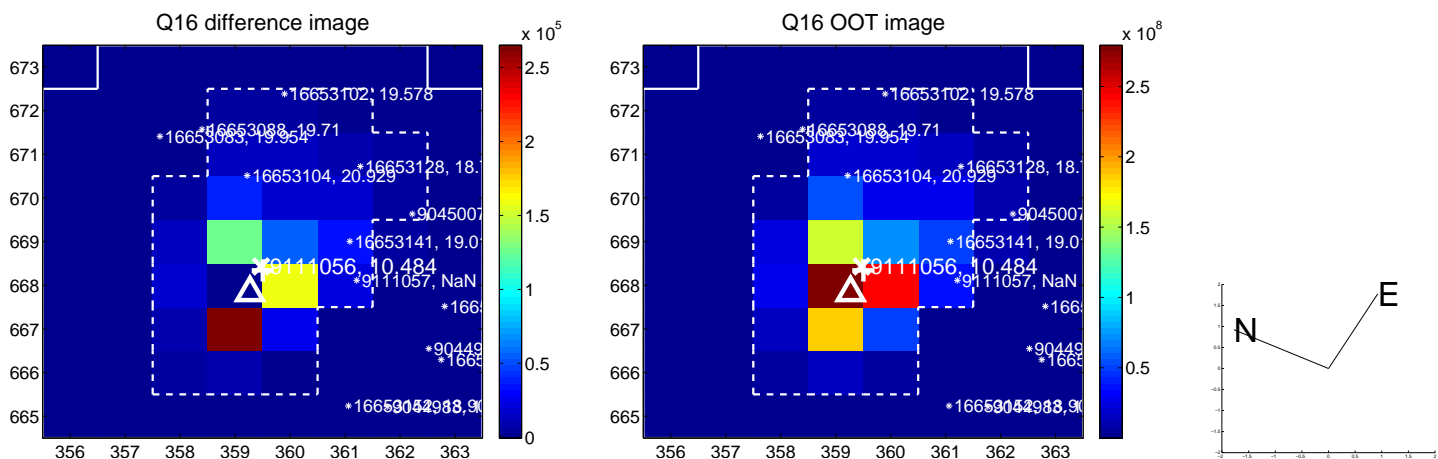
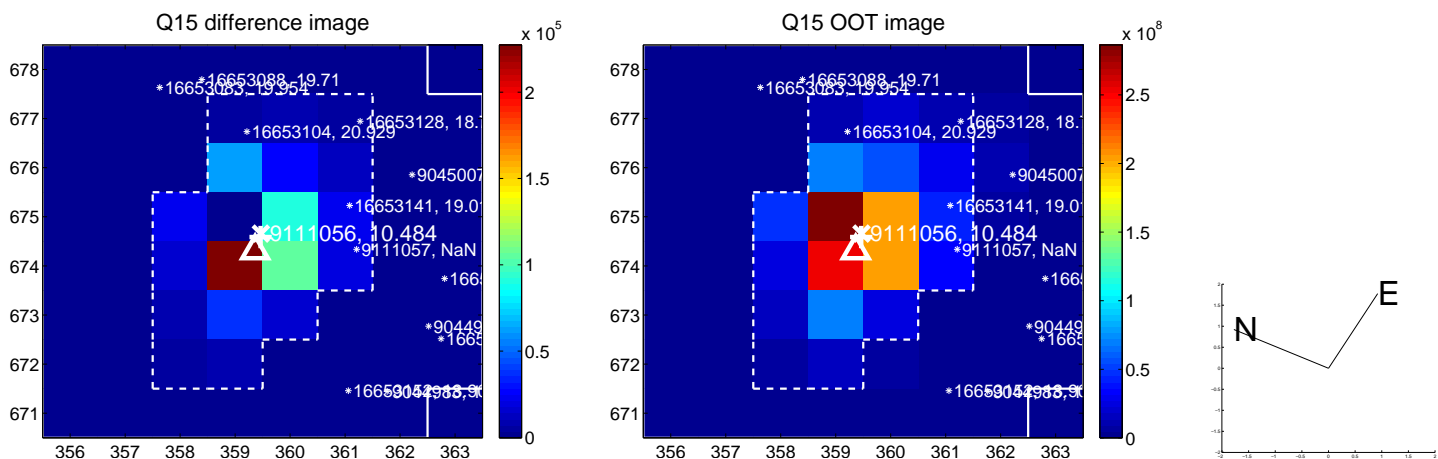
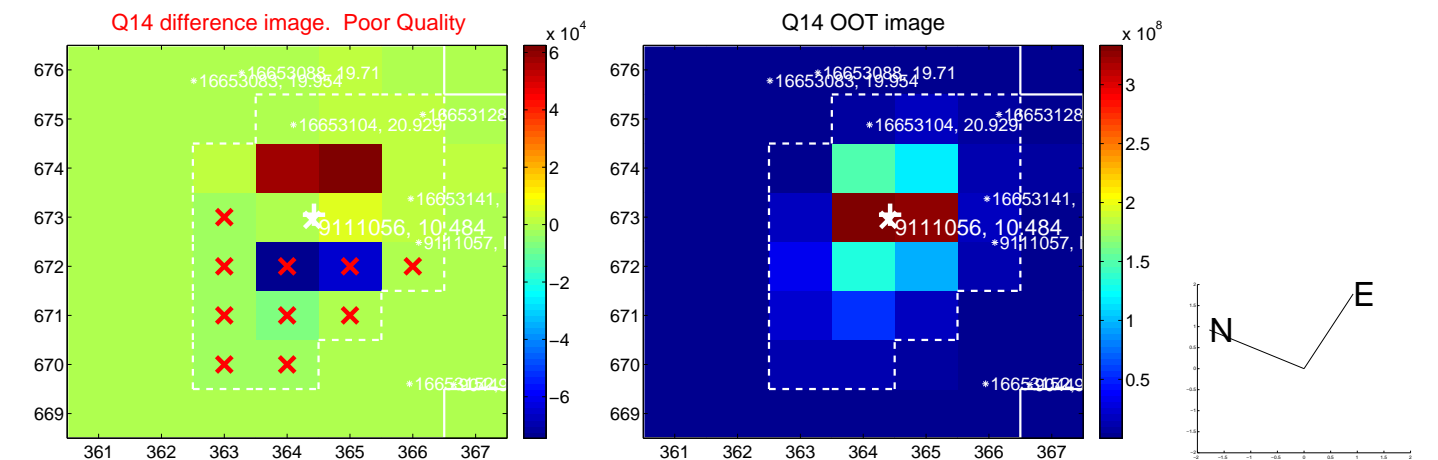
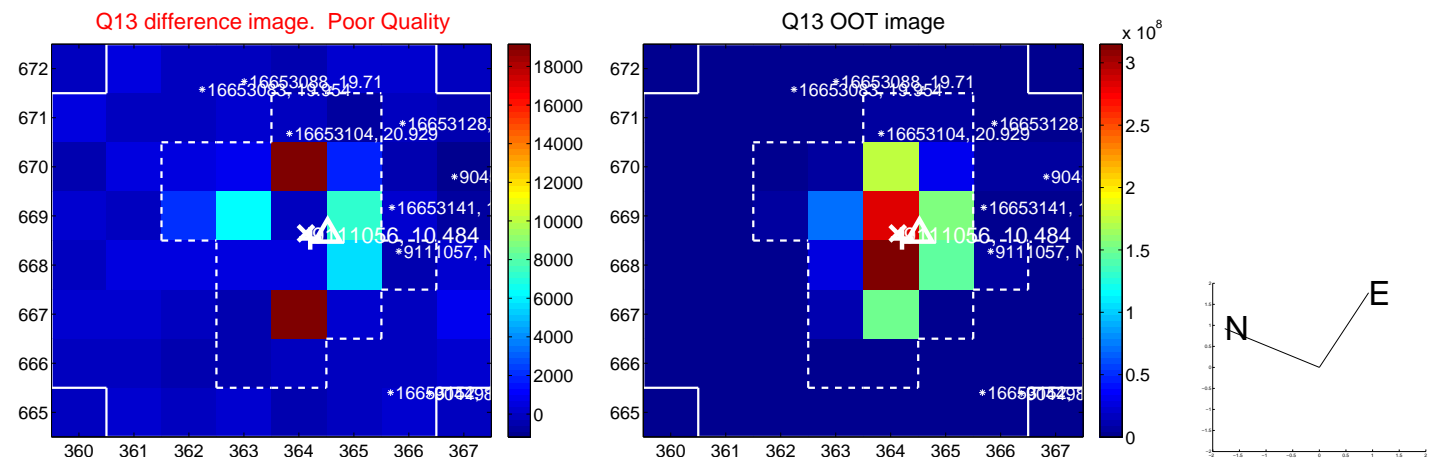
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



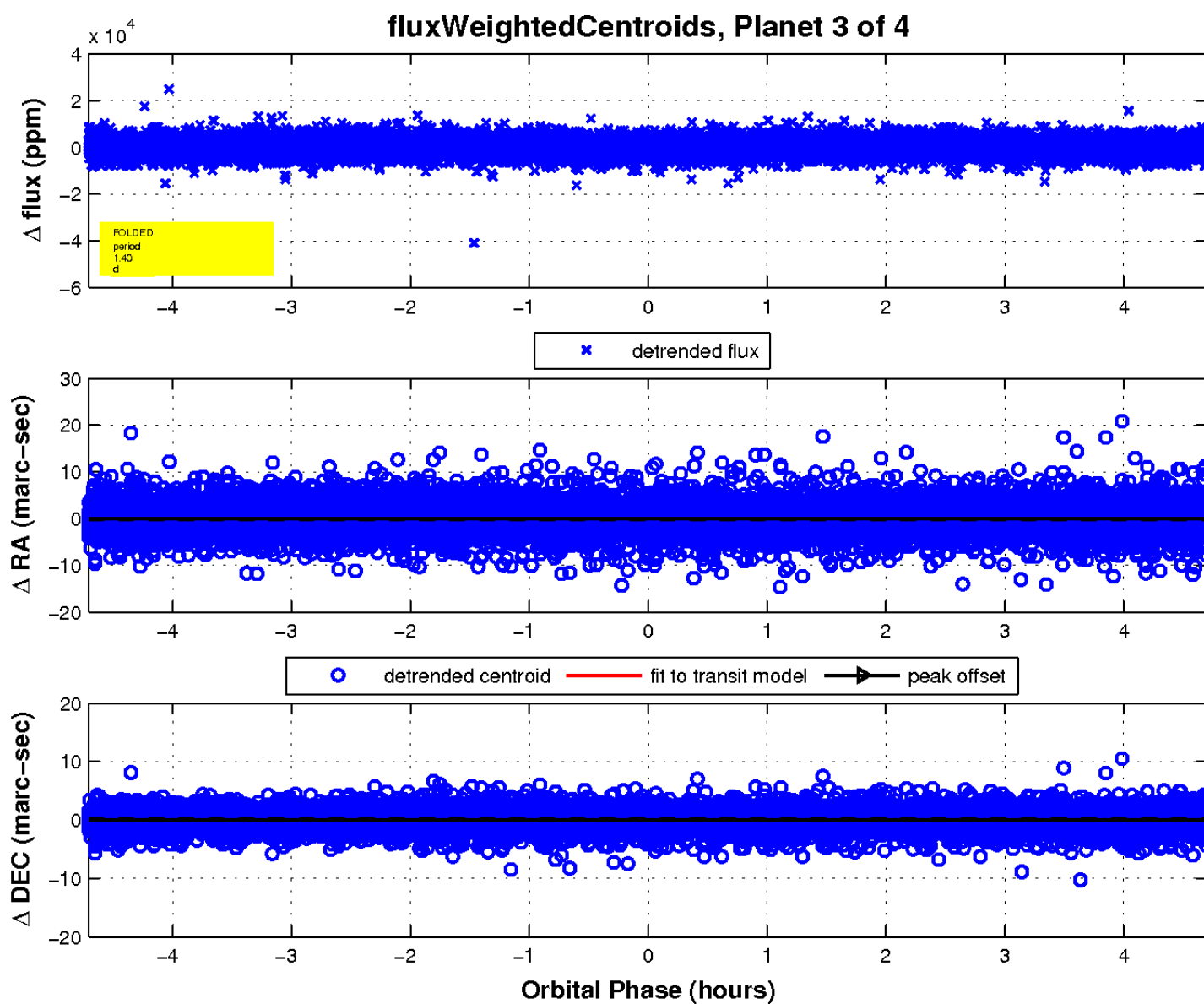
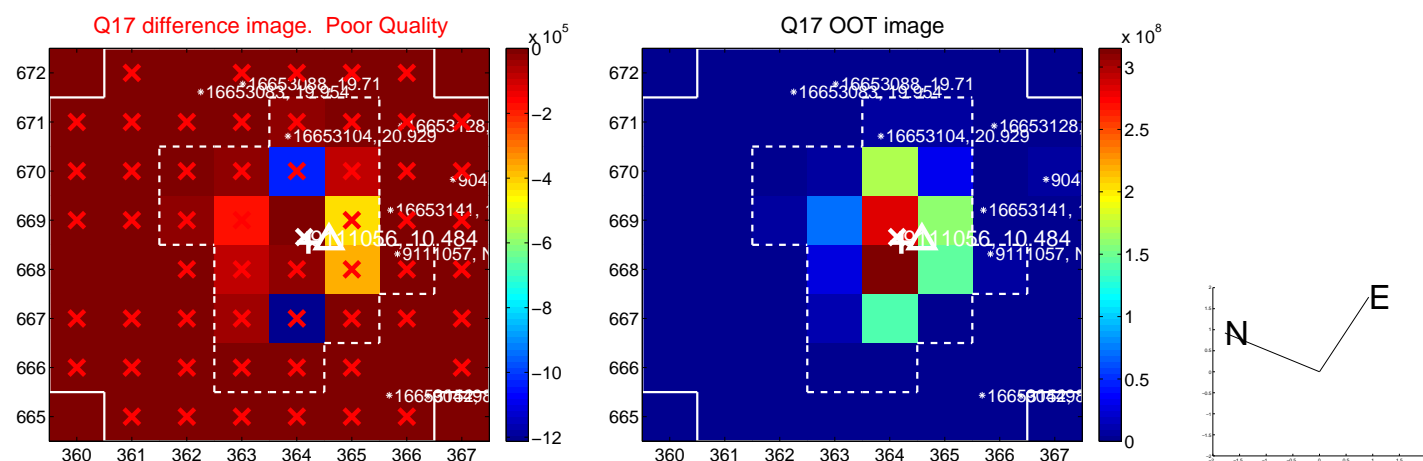
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

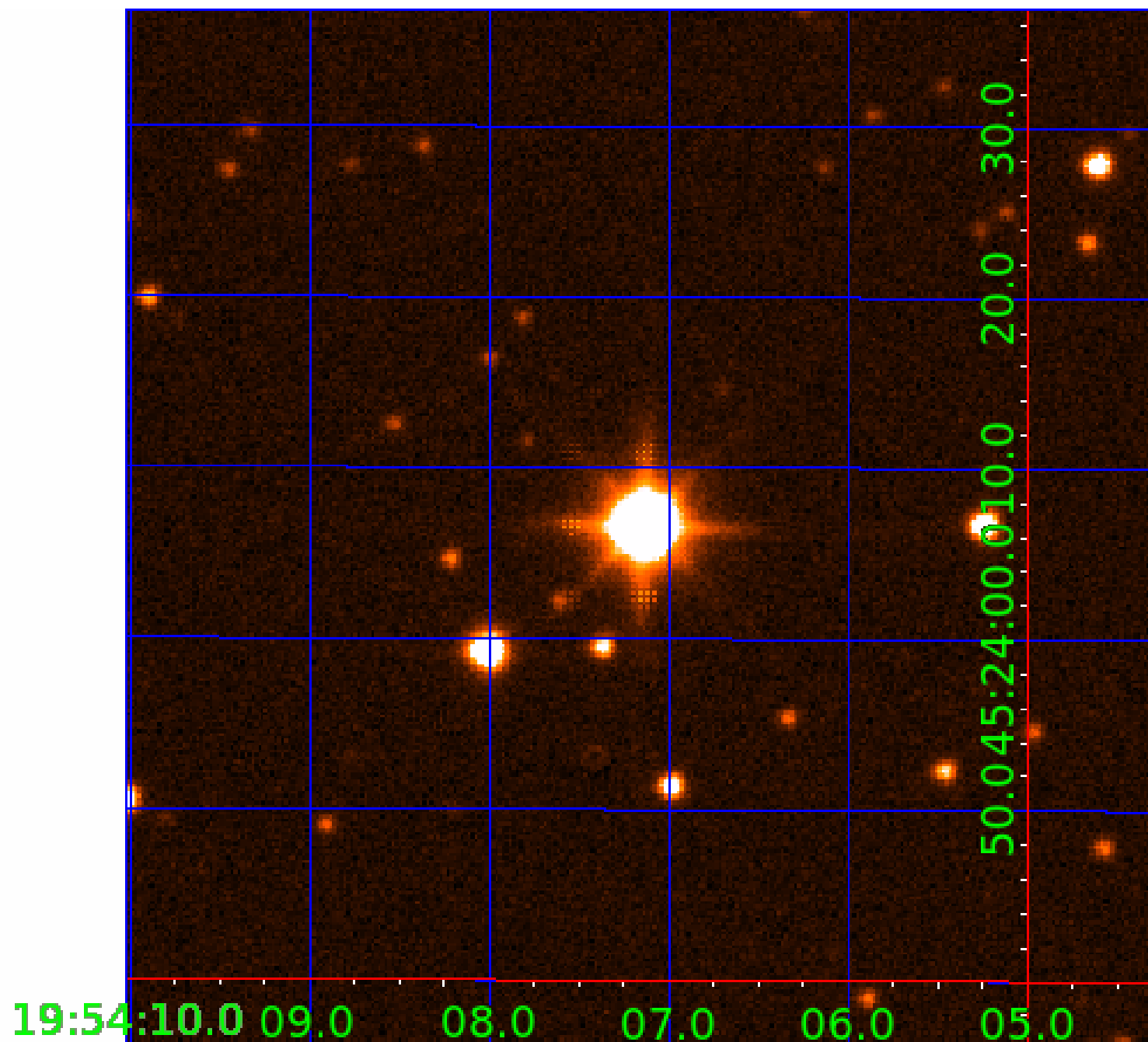


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009111056

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})
009111056-01	OBS	No	1.395259	132.882028	486.5	1.746	11.0	10.8	3.29	7154	8.52	28108.54
009111056-02	OBS	No	1.395309	132.714284	512.2	1.556	8.8	9.8	3.29	7154	8.56	28107.19
009111056-03	OBS	No	1.395281	131.634405	471.4	1.569	9.4	9.8	3.29	7154	8.48	28107.95
009111056-04	OBS	No	1.395280	131.779744	78.4	1.500	8.7	-1.0	3.29	7154	2.93	28107.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009111056-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
009111056-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009111056-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

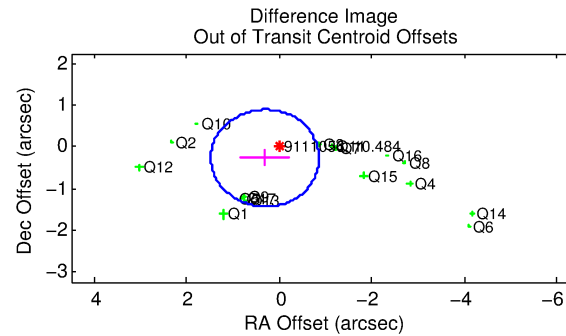
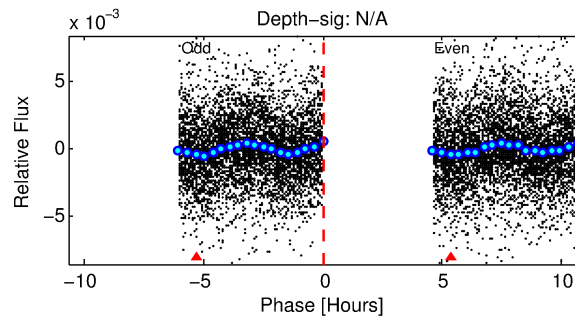
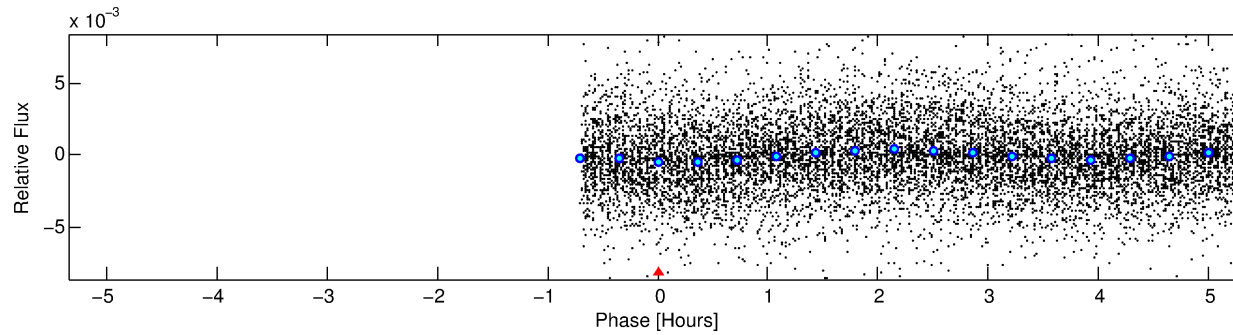
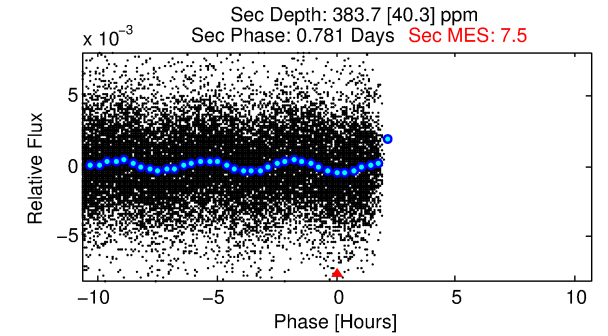
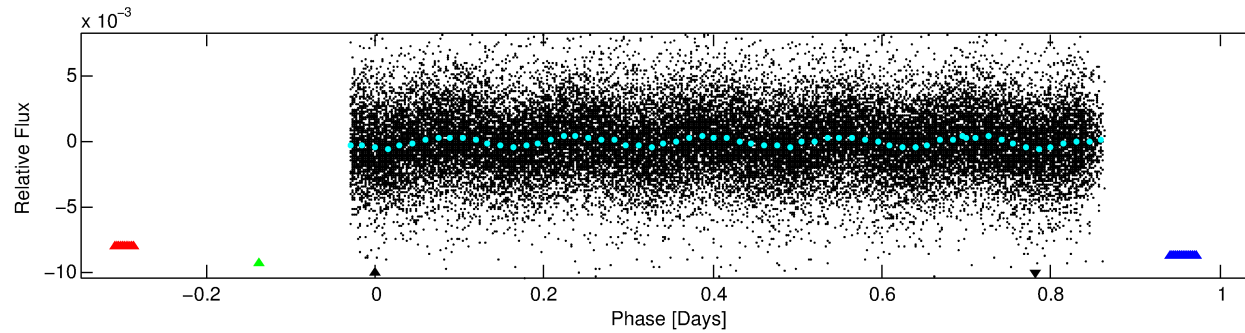
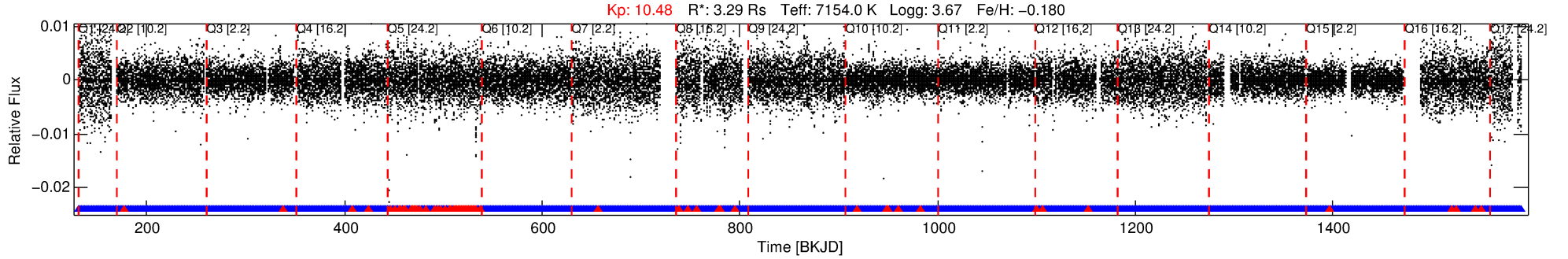
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009111056-04

No Significant Match Found

DV One-Page Summary

KIC: 9111056 Candidate: 4 of 4 Period: 1.395 d



TPS TCE Results:

Period = 1.39528 d
Epoch = 131.7797 BKJD

DV fit results are unavailable

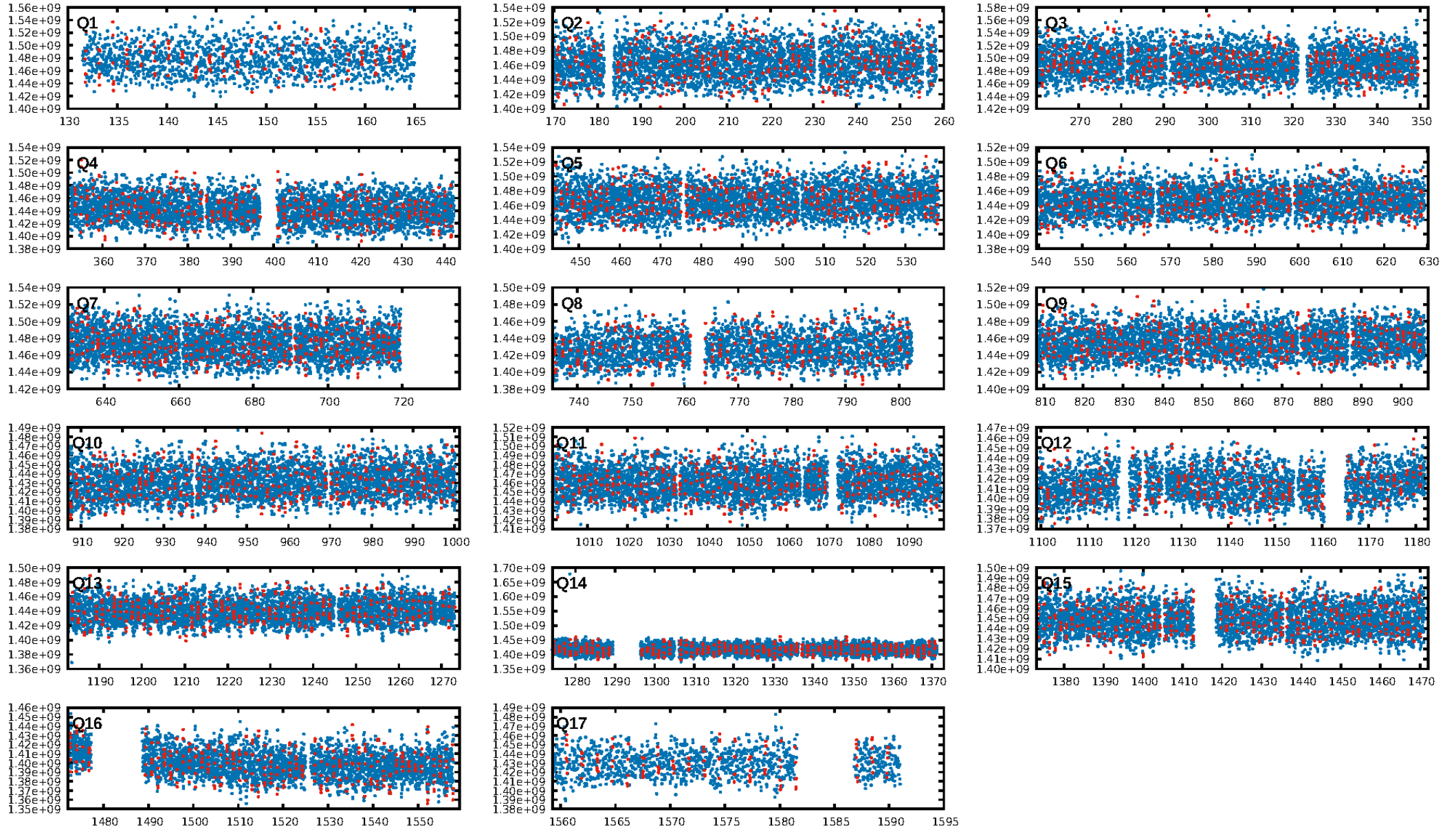
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.93 [853/915]
GhostDiagnostic-chr: 0.6674
Centroid-sig: 3.2%
Centroid-so: 0.912 arcsec [1.68σ]
OotOffset-rm: 0.410 arcsec [1.05σ]
KicOffset-rm: 0.660 arcsec [2.70σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.29 [5/17]
DiffImageOverlap-fno: 0.00 [0/17]

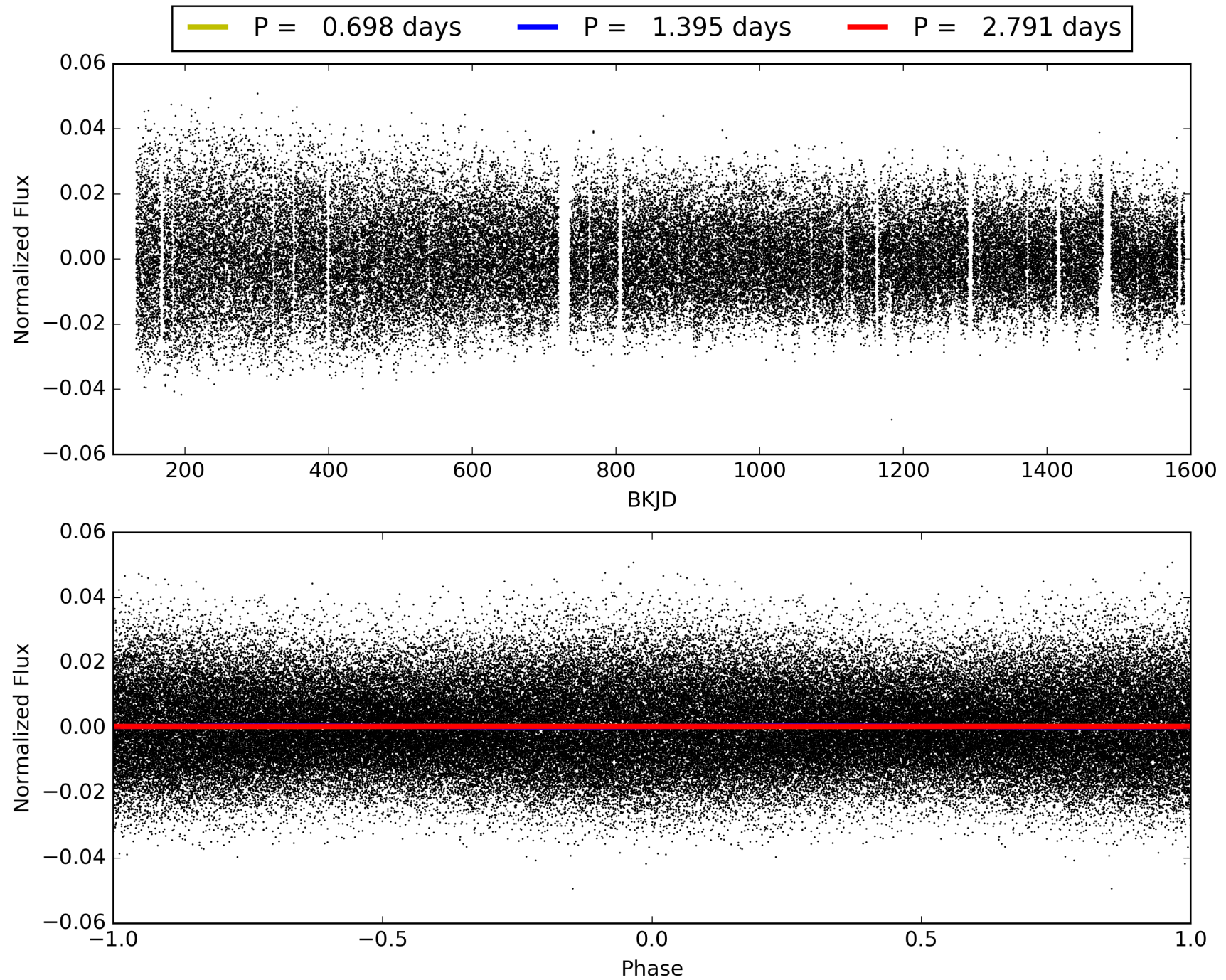
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:11:16 Z

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

TCE 009111056-04, PDC Light Curves

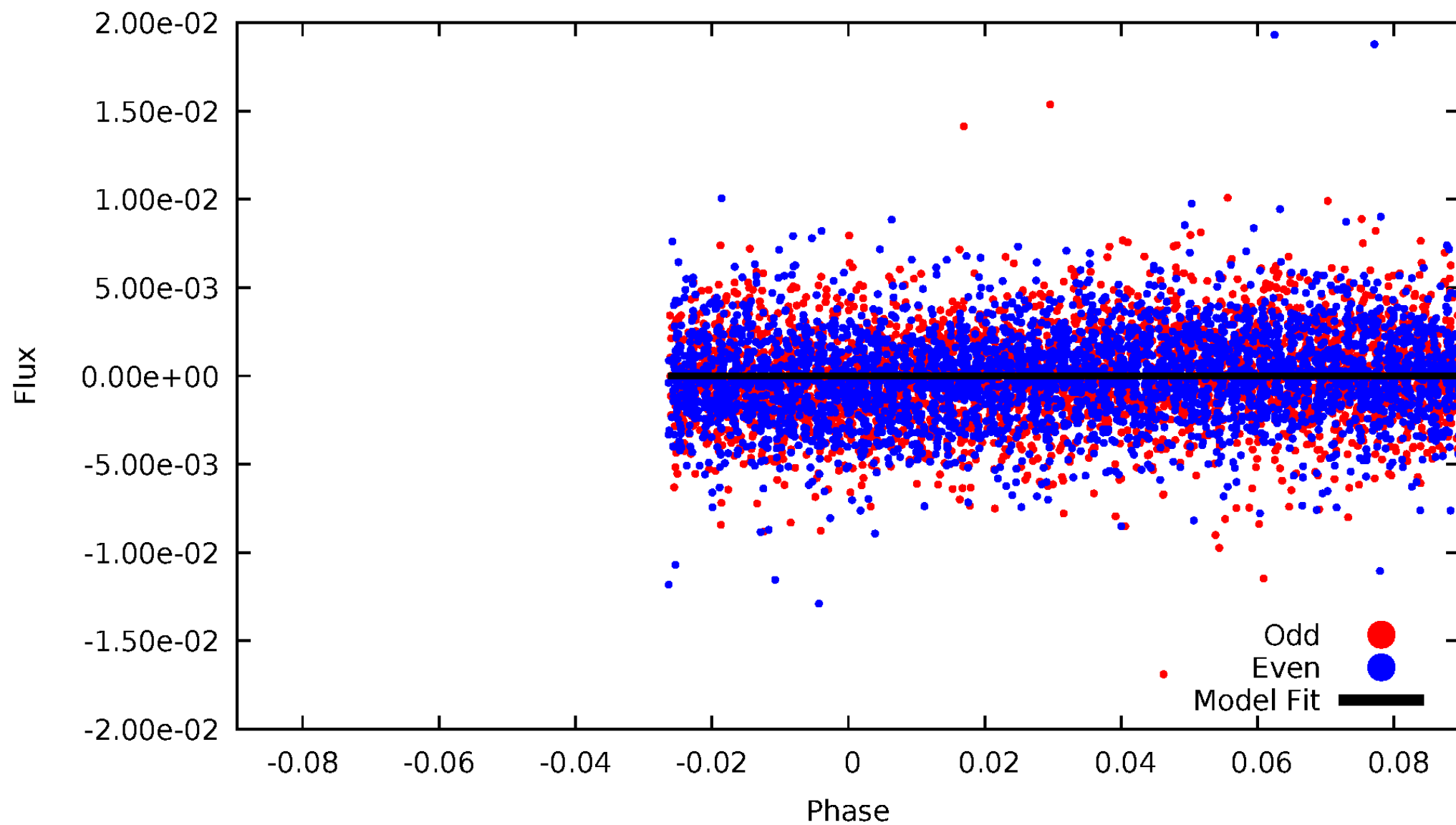


TCE 009111056-04



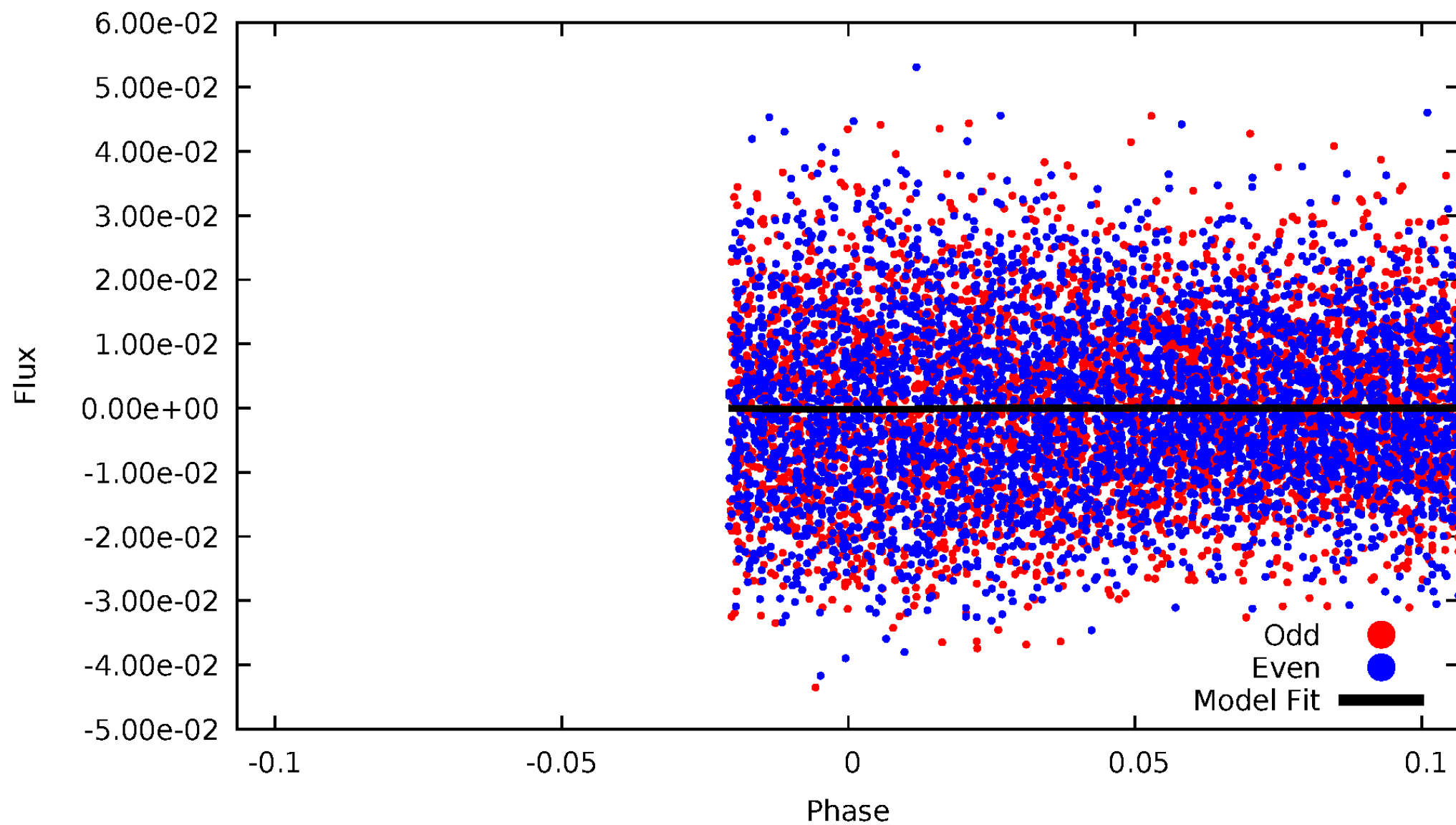
DV Odd/Even

TCE 009111056-04



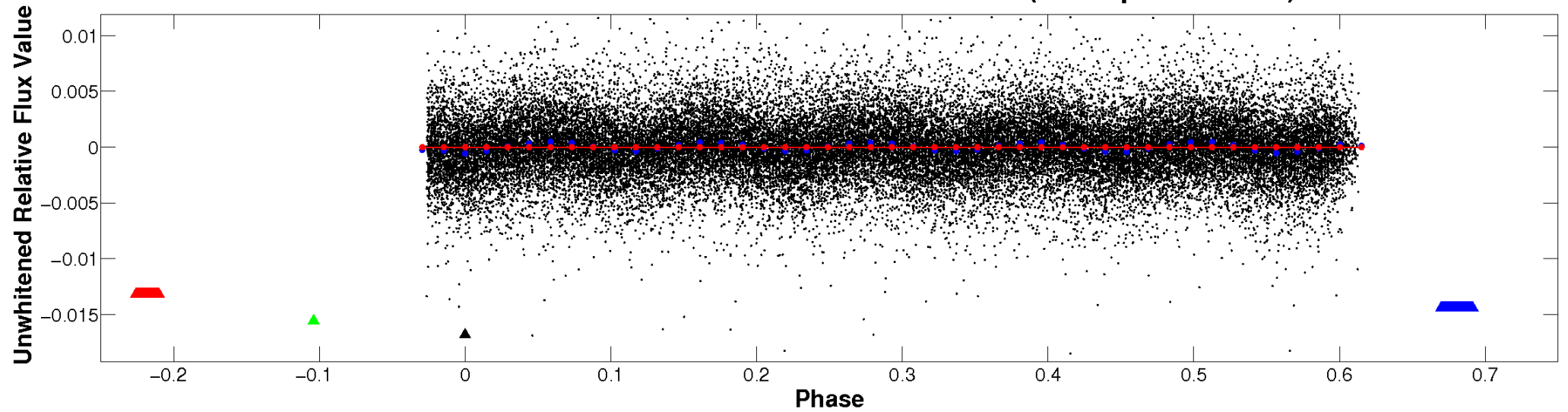
ALT Odd/Even

TCE 009111056-04



Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

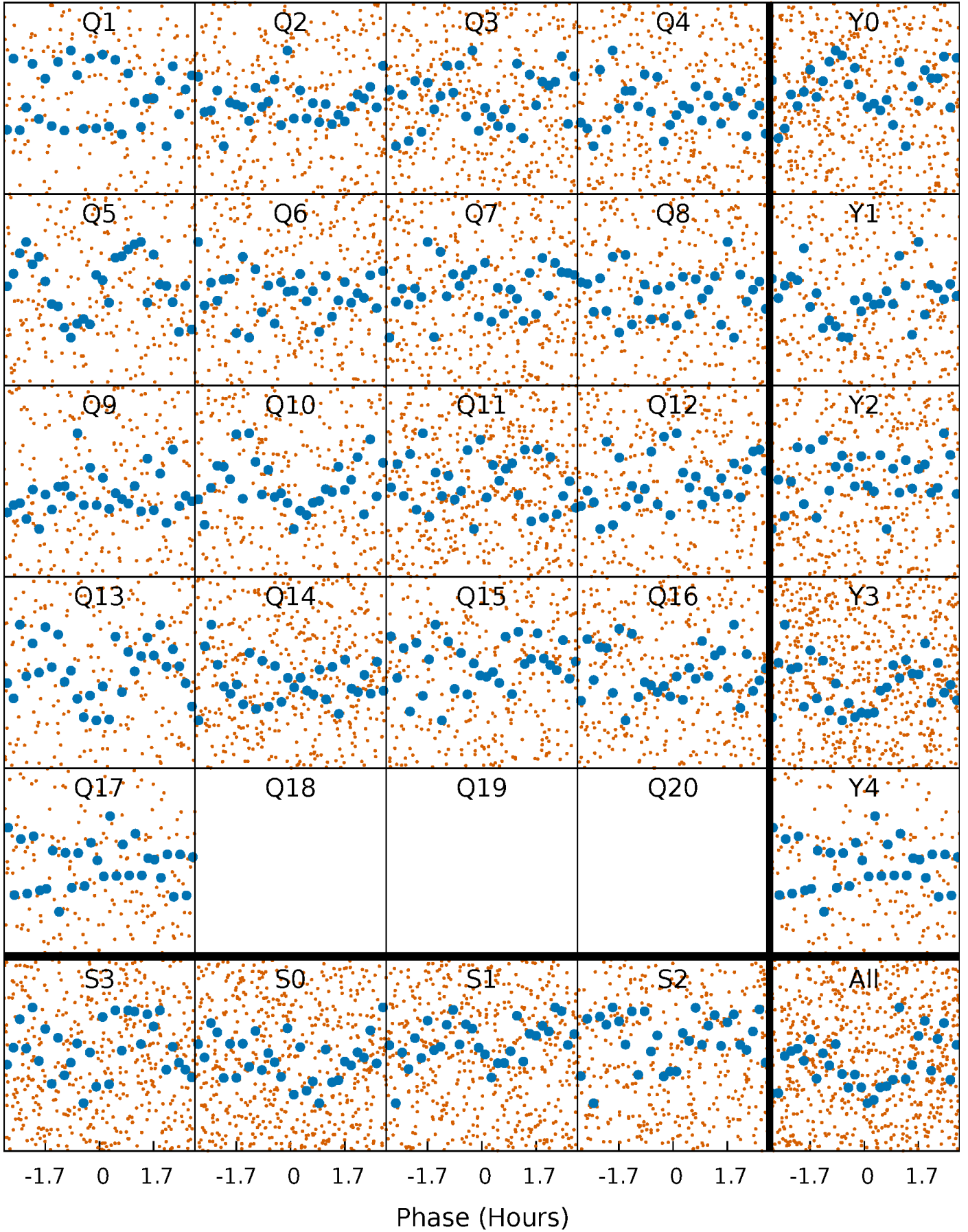


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



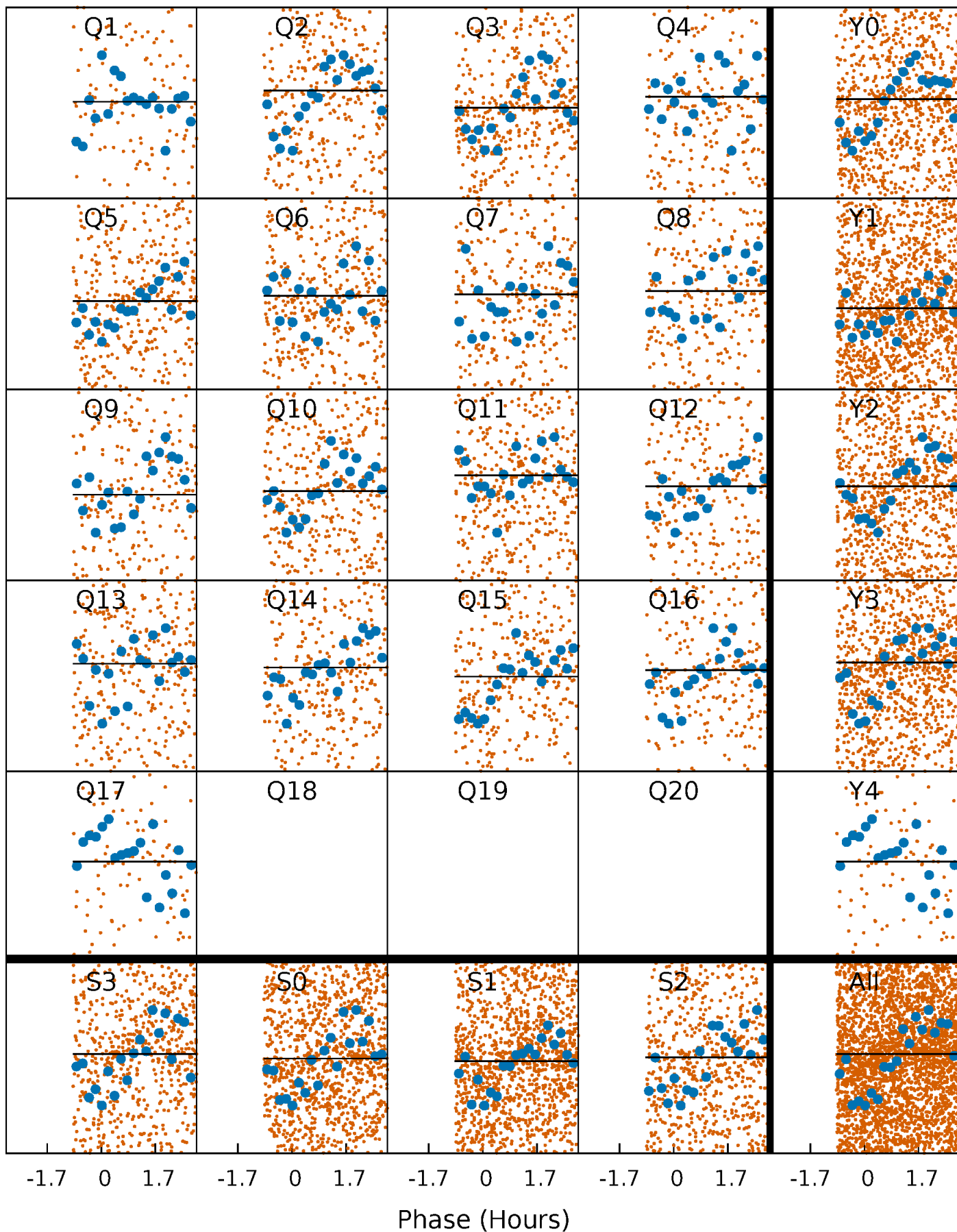
PDC Quarter-Phased Transit Curves

TCE 009111056-04 P= 1.395280 Days $T_0=131.779744$ (BKJD)



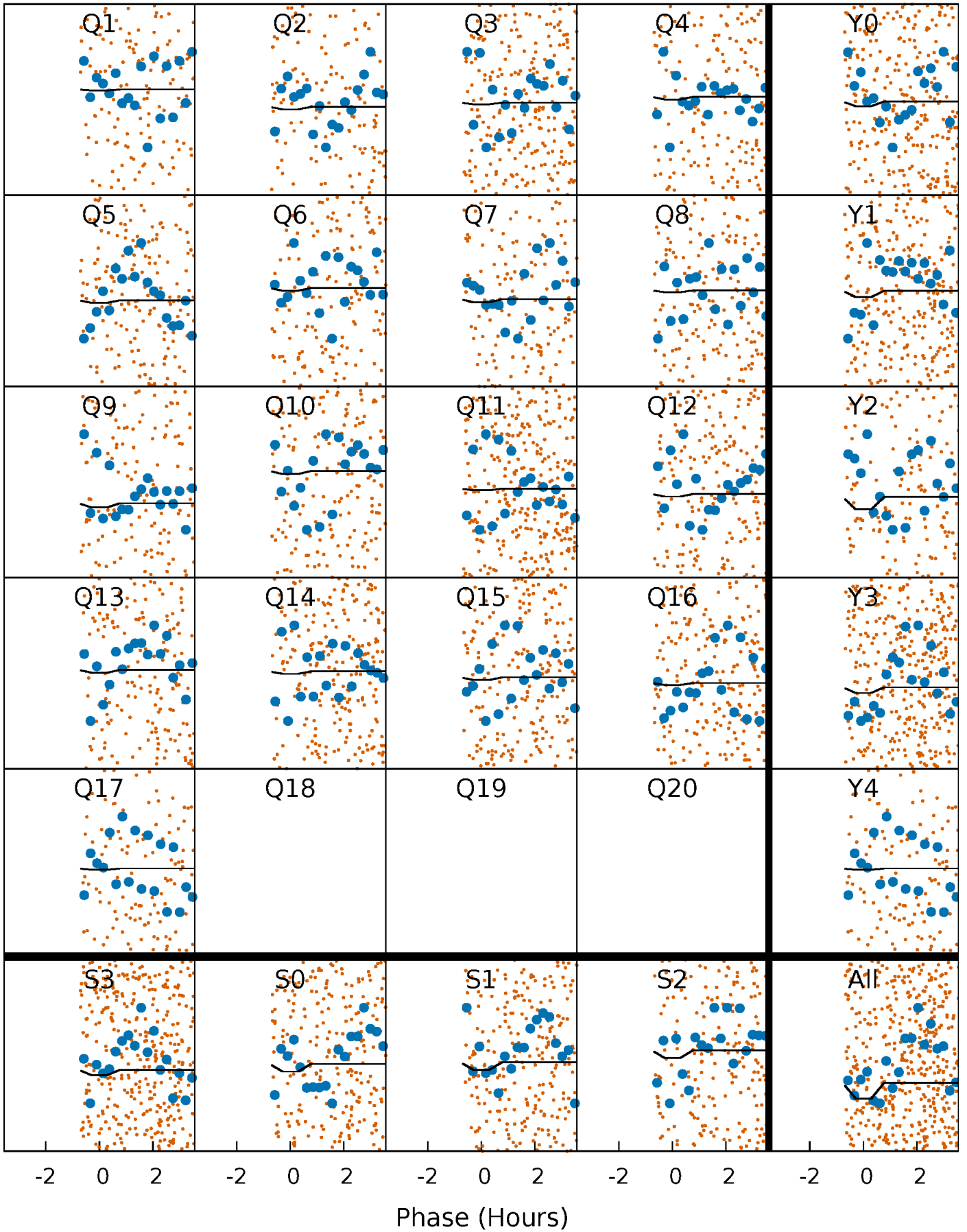
DV Quarter-Phased Transit Curves

TCE 009111056-04 $P = 1.395280$ Days $T_0 = 131.779744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

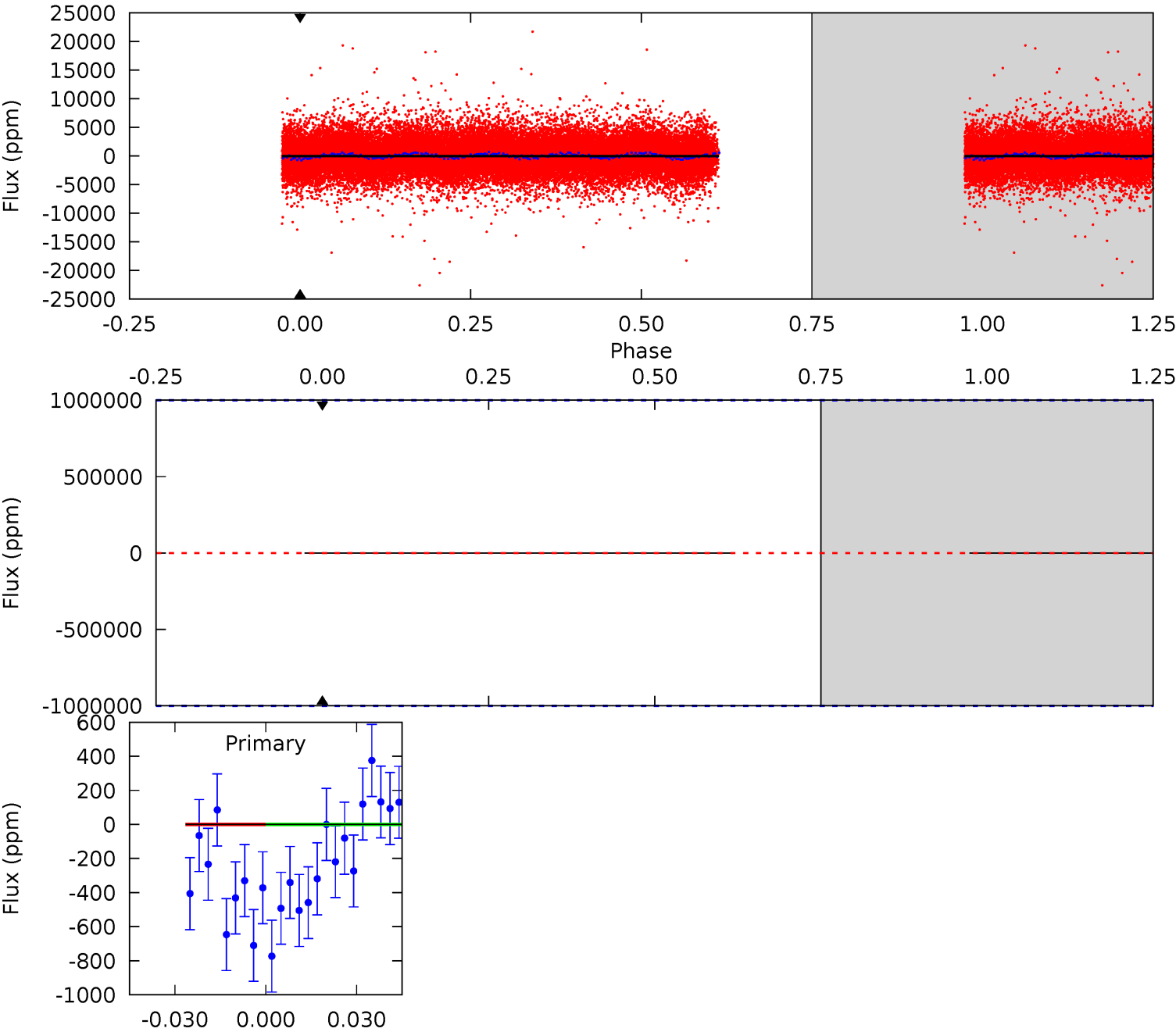
TCE 009111056-04 P= 1.395280 Days $T_0=131.772001$ (BKJD)



DV Model-Shift Uniqueness Test

009111056-04, P = 1.395280 Days, E = 130.384464 Days

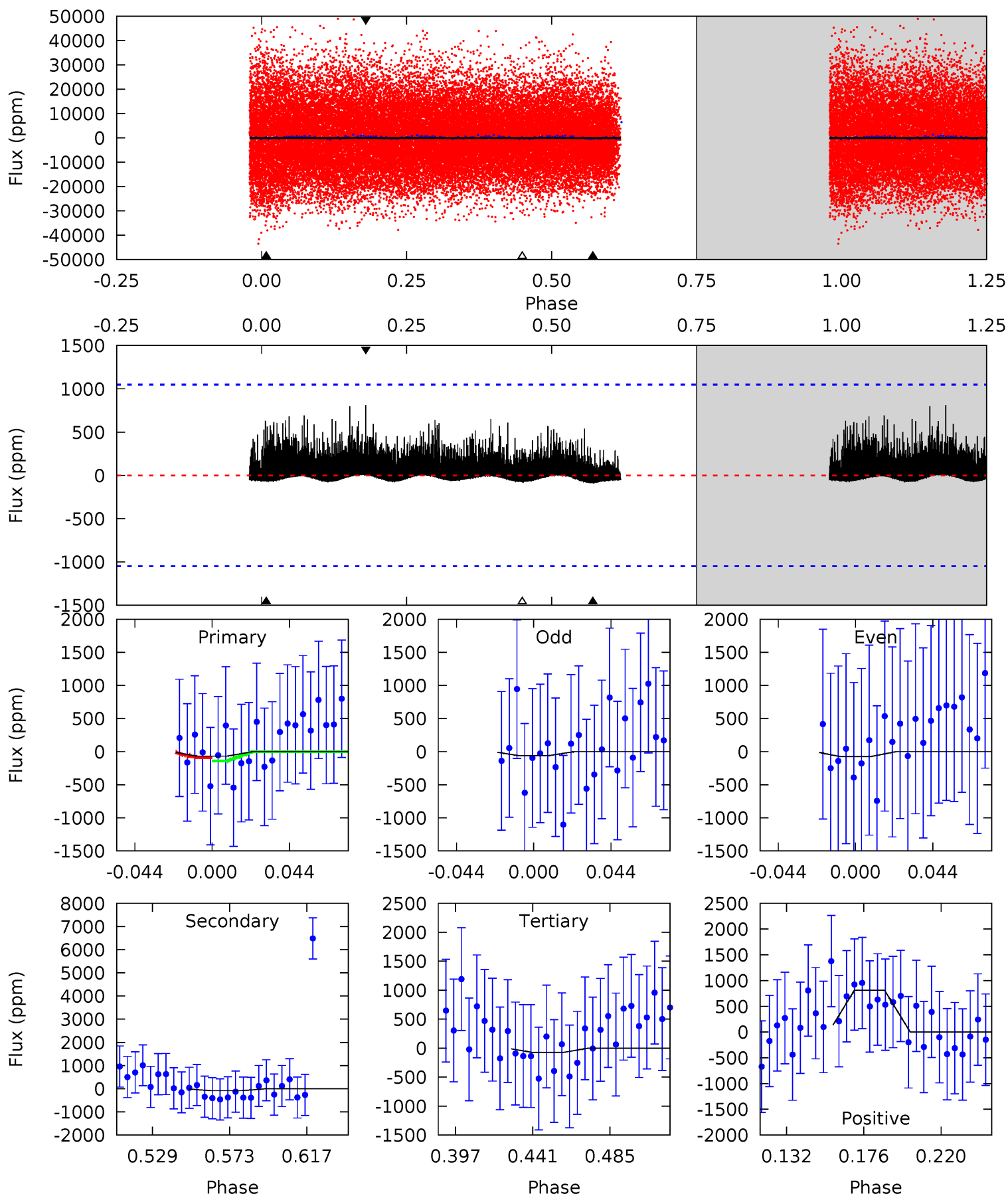
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009111056-04, P = 1.395280 Days, E = 130.376721 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.31	0.39	0.34	3.66	4.73	2.01	0.33	-0.03	-3.35	0.05	-3.27	0.03	0.24	0.90	0.11



Stellar Parameters For KIC 009111056

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7154^{+199}_{-249}	$3.673^{+0.476}_{-0.084}$	$-0.180^{+0.250}_{-0.300}$	$3.288^{+0.409}_{-1.636}$	$1.859^{+0.171}_{-0.548}$	$0.074^{+0.396}_{-0.013}$
	+3%/-3%	+13%/-2%	+139%/-167%	+12%/-50%	+9%/-29%	+538%/-18%
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 009111056-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$23.34^{+27.33}_{-16.25}$	4499^{+279}_{-549}	-6559^{+41359}_{-30854}	$-2.654^{+146.395}_{-177.827}$
Alt.	-86 ± 221	$22.81^{+24.75}_{-16.26}$	4481^{+304}_{-535}	-3780^{+7971}_{-490}	$0.044^{+0.791}_{-0.178}$

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 $A_{obs} \gg 1.0$

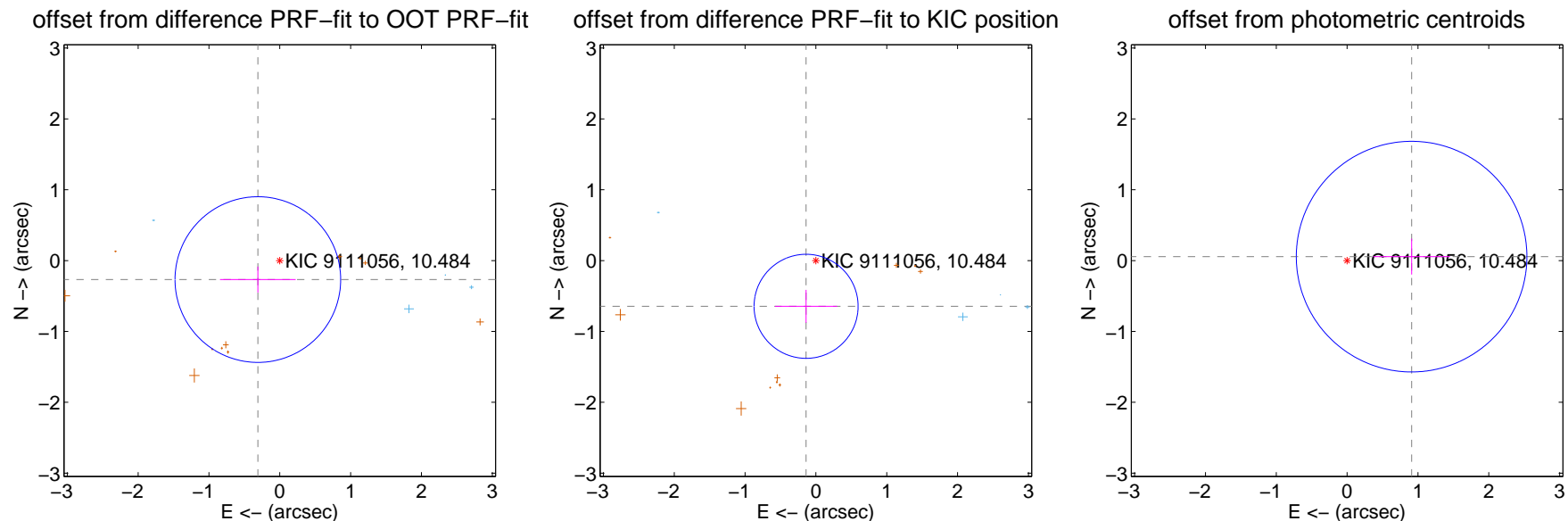
DV Centroid Data

Supplemental centroid analysis for 009111056-04. **Kepler magnitude: 10.48.** Transit SNR -1.00

There are 5 quarters with good PRF difference image offsets

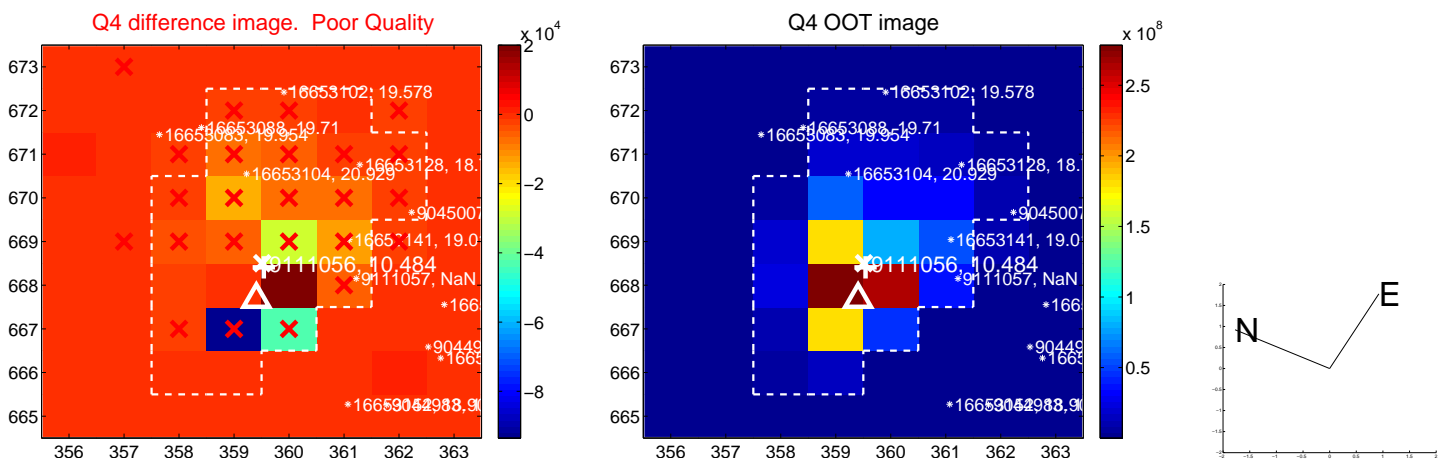
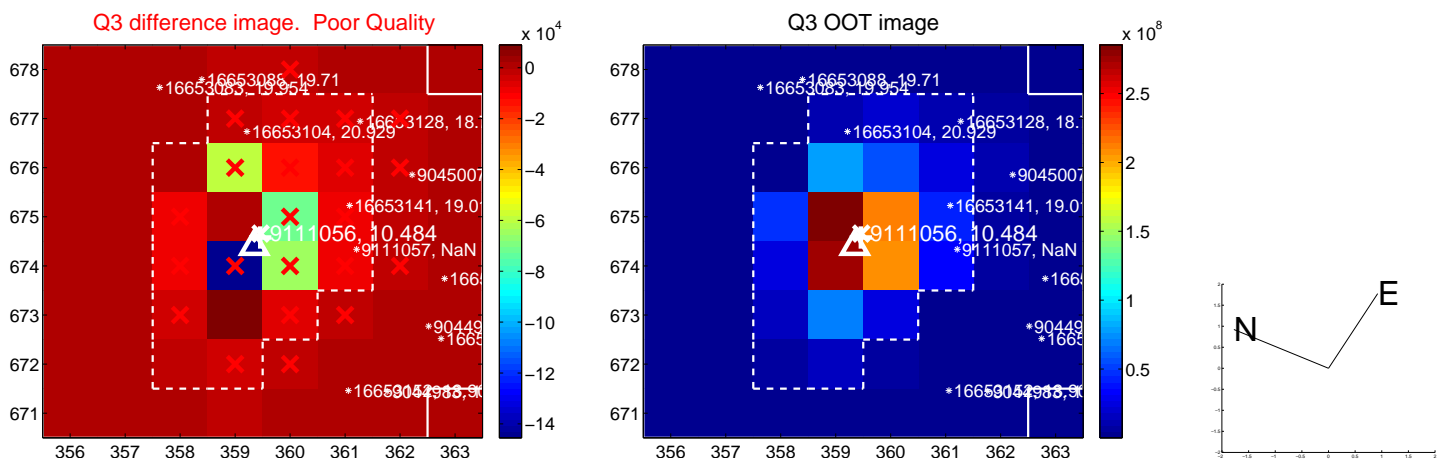
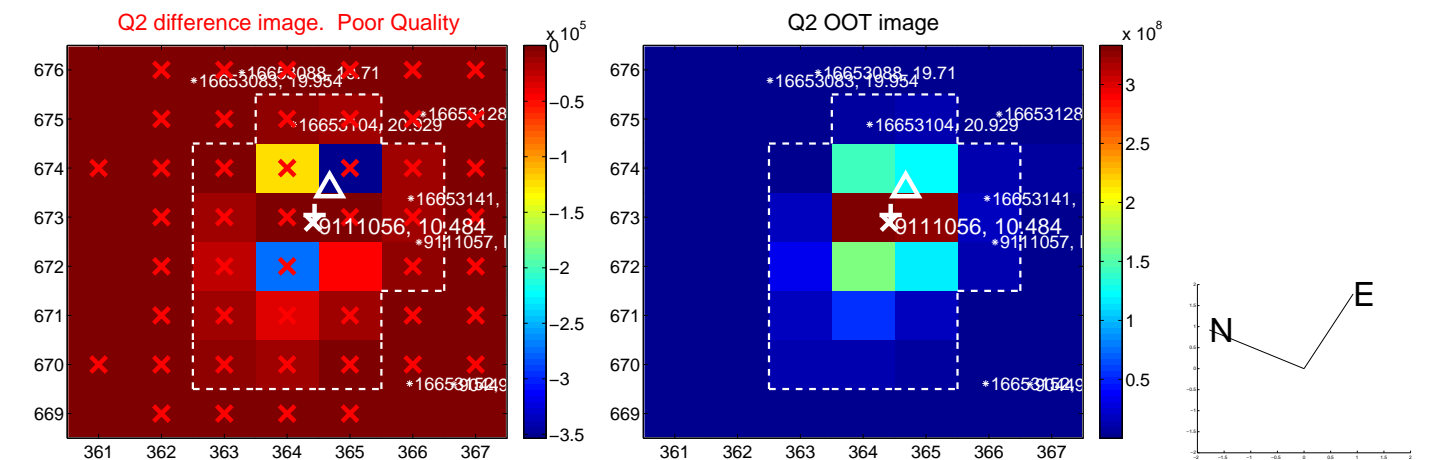
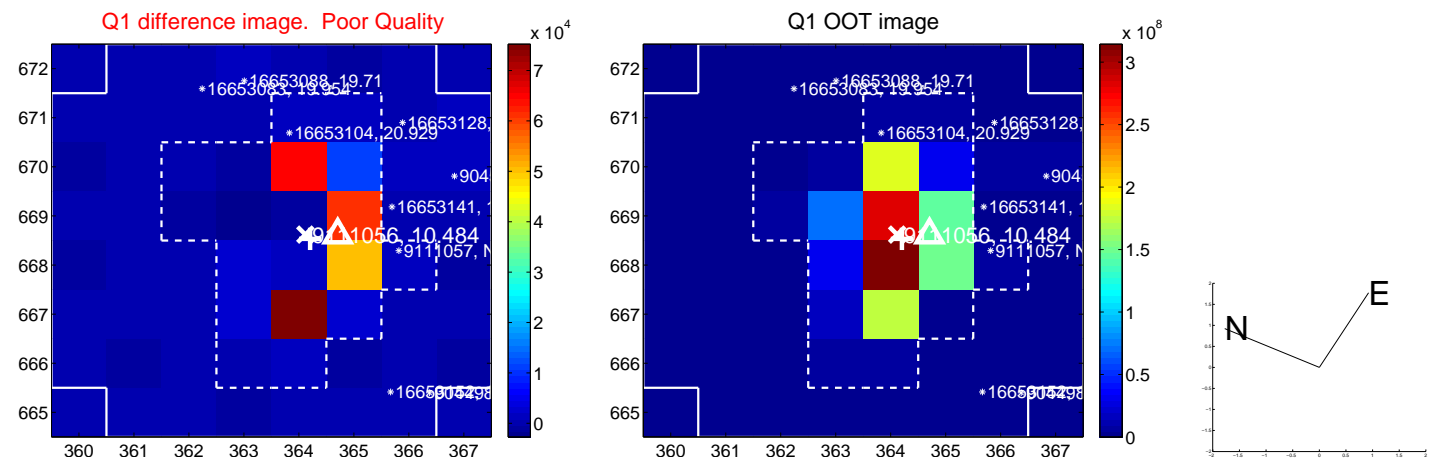
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.410 ± 0.390	1.05	0.310 ± 0.534	-0.268 ± 0.183
PRF-fit source offset from KIC position	0.660 ± 0.245	2.70	0.139 ± 0.439	-0.645 ± 0.232
photometric centroid source offset	0.91 ± 0.54	1.68	-0.91 ± 0.54	0.06 ± 0.25

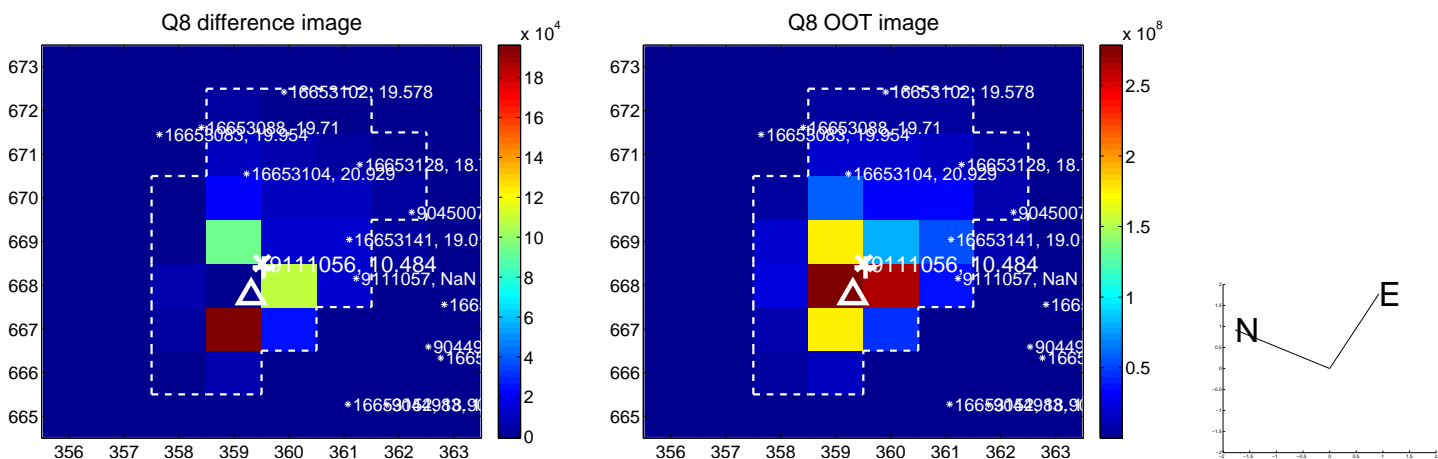
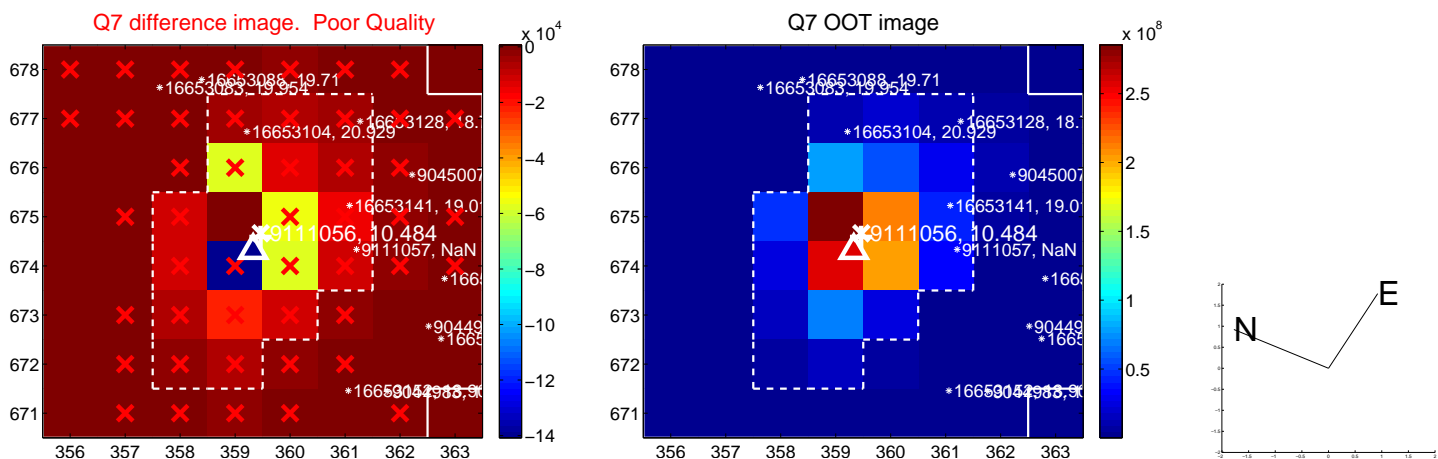
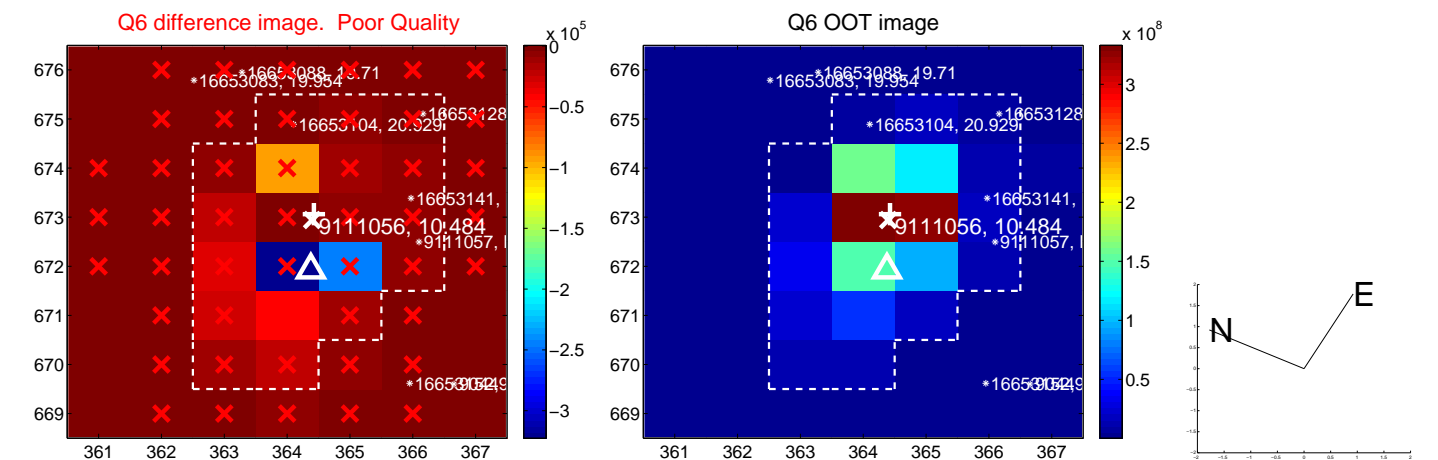
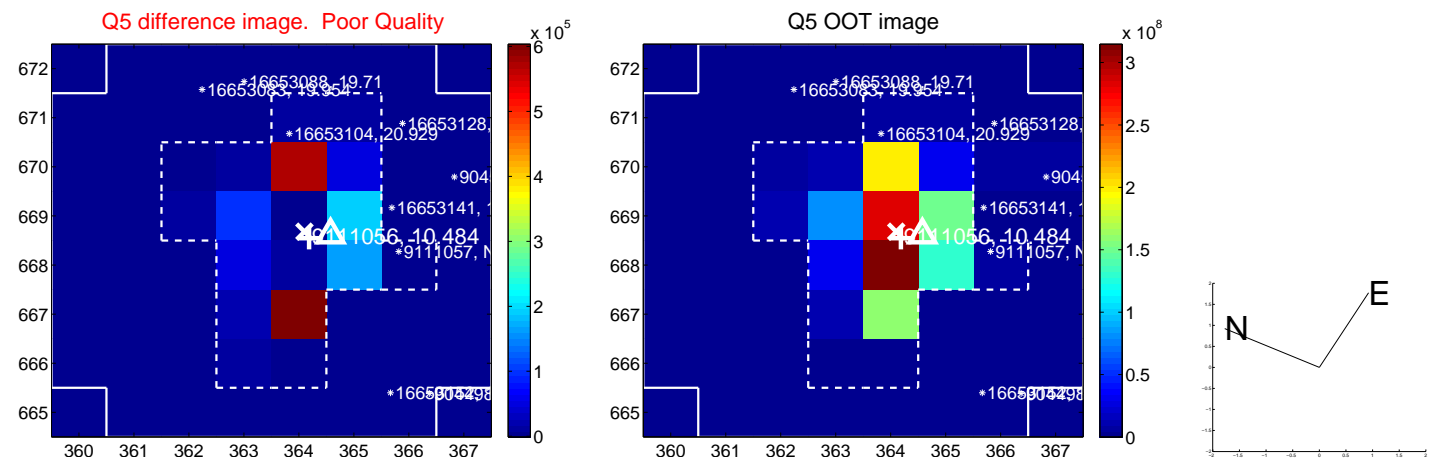


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

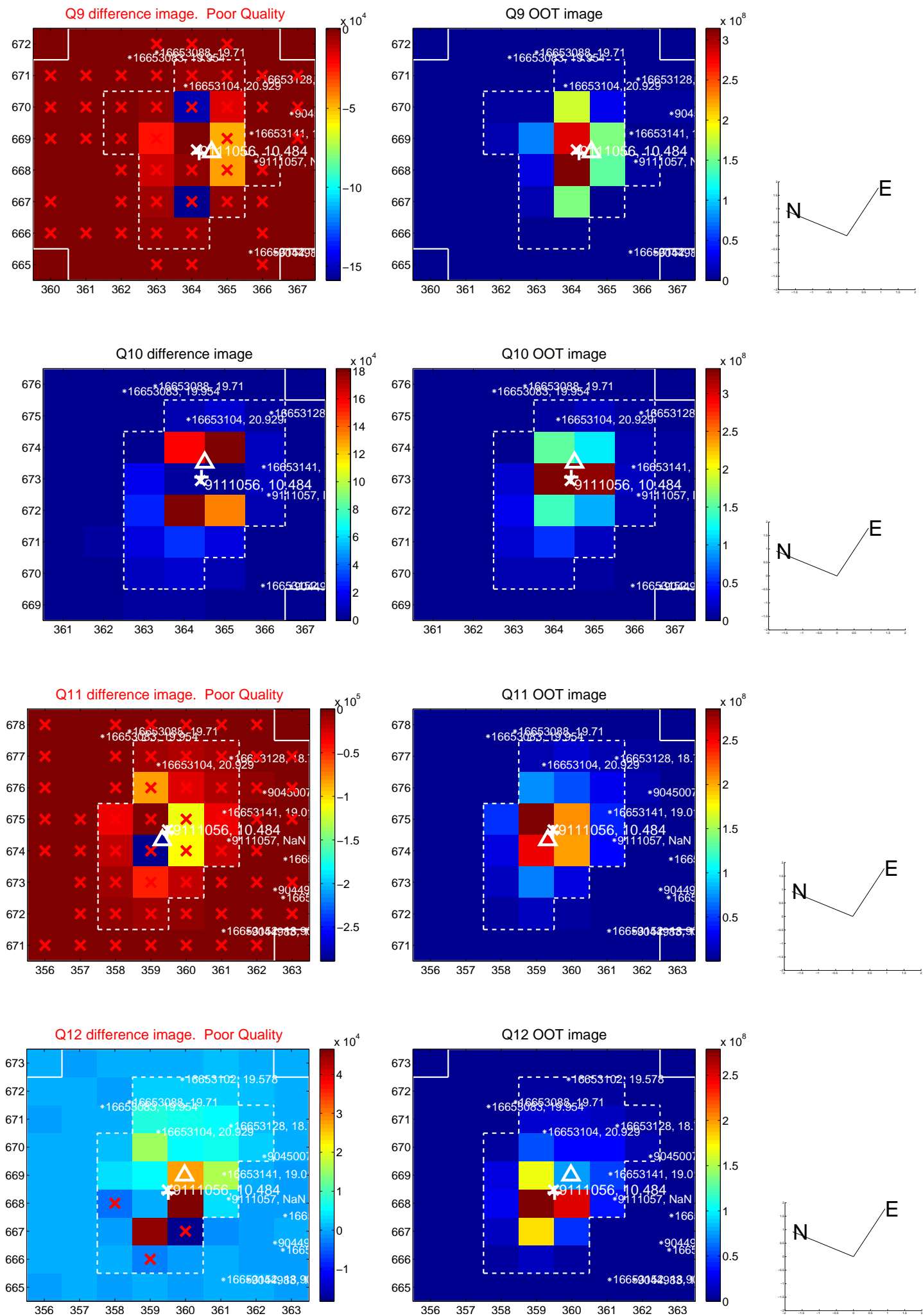
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



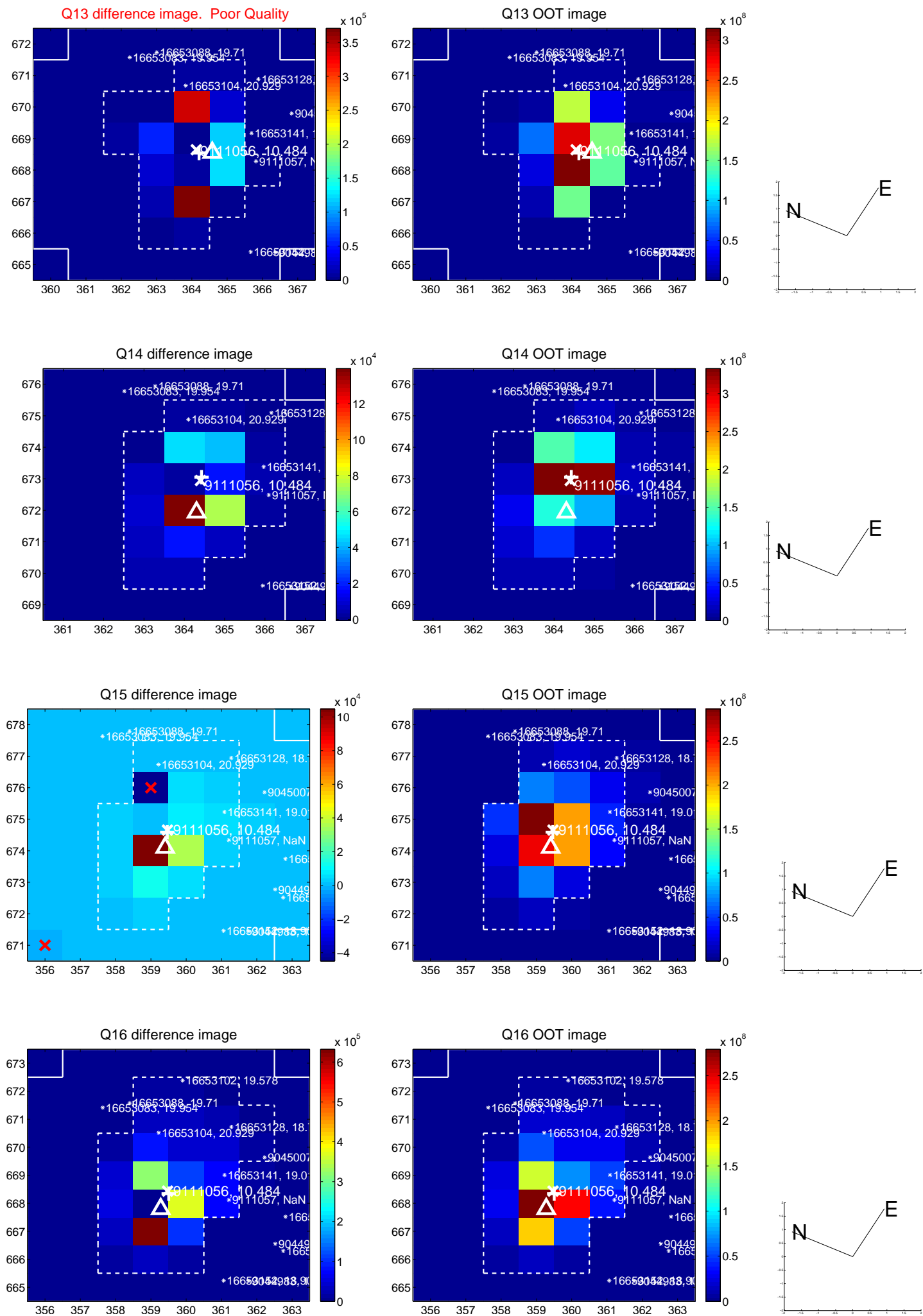
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



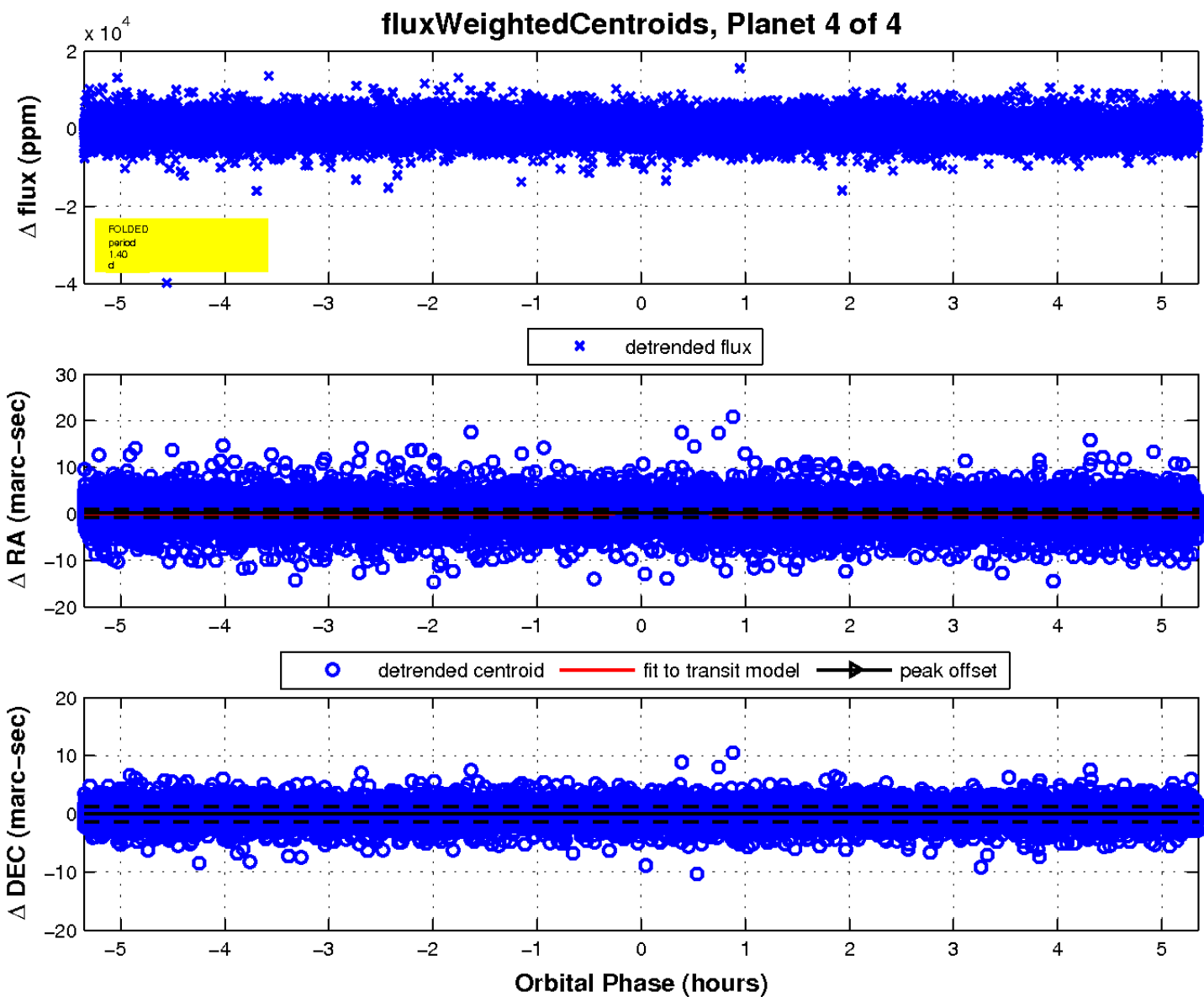
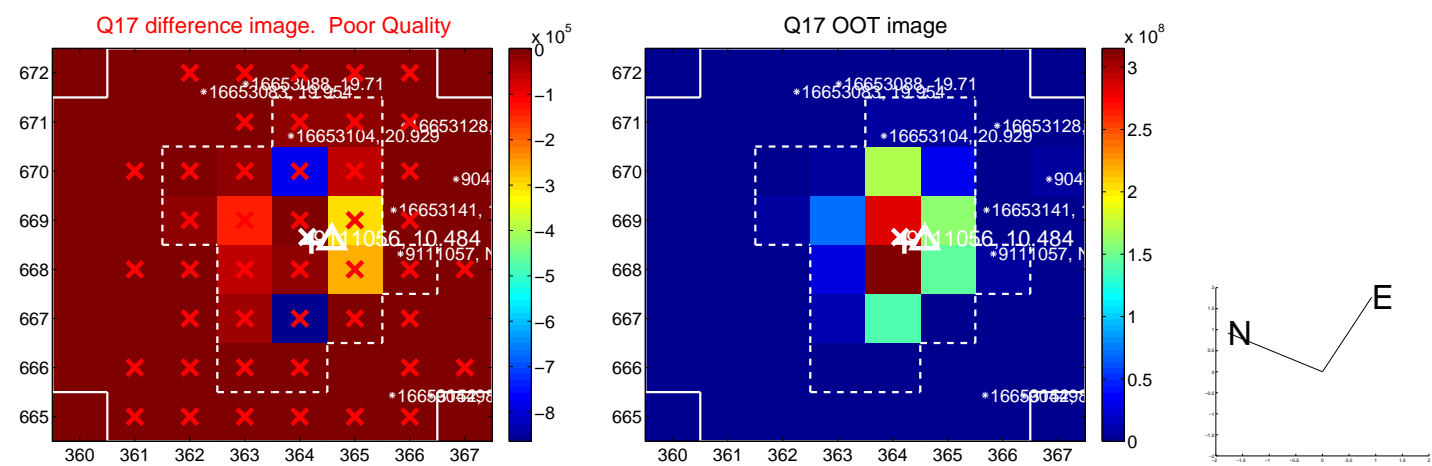
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

