

KIC 010960993

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})
010960993-01	OBS	1284.01	1.558544	131.567892	8990.7	3.114	2983.7	1579.3	2.05	6338	34.76	6870.92
010960993-02	OBS	No	390.895029	376.506177	502.9	3.515	11.4	9.0	2.05	6338	5.34	4.34
010960993-03	OBS	No	313.431627	134.362740	313.2	6.739	8.6	5.8	2.05	6338	4.21	5.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010960993-01	OBS	FP	0.00	0	1	0	1	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—CENT_SATURATED—EPHEM_MATCH
010960993-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010960993-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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 010960993-01

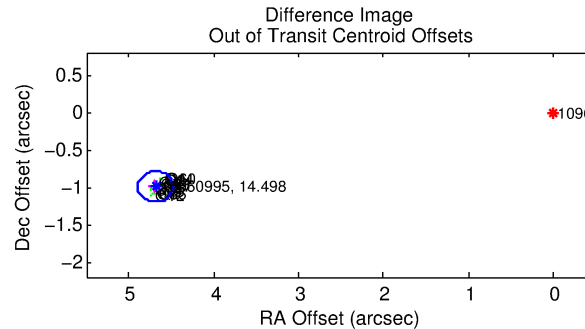
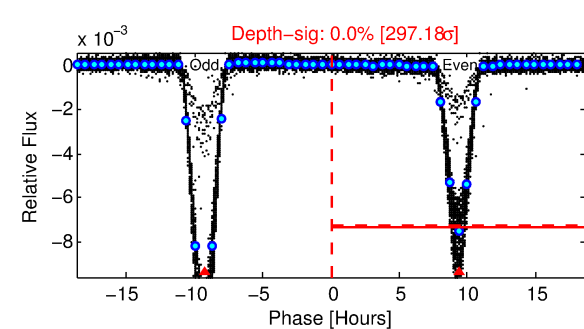
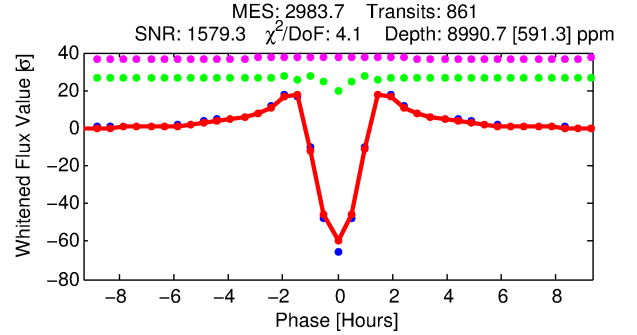
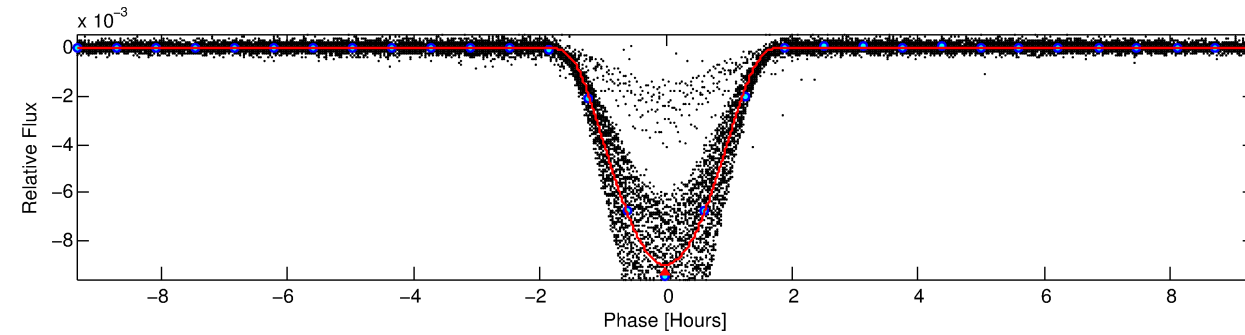
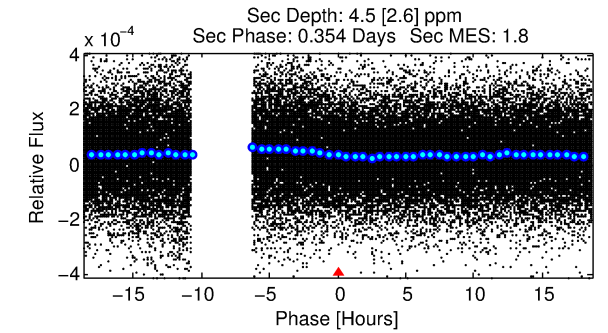
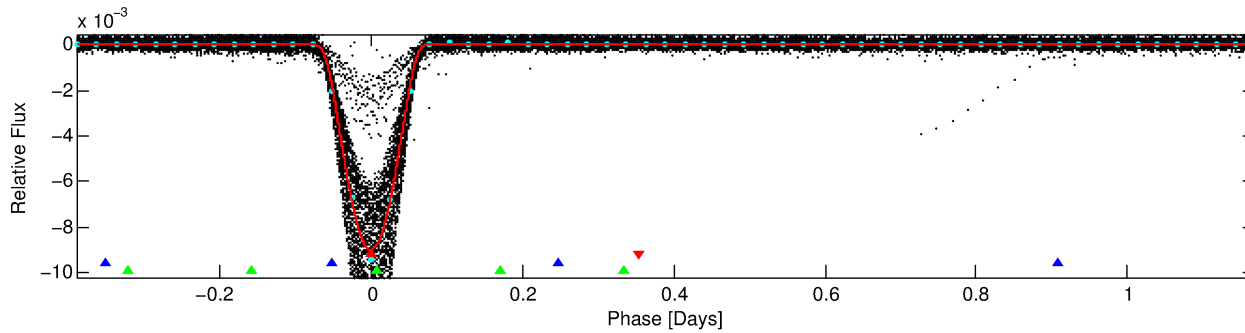
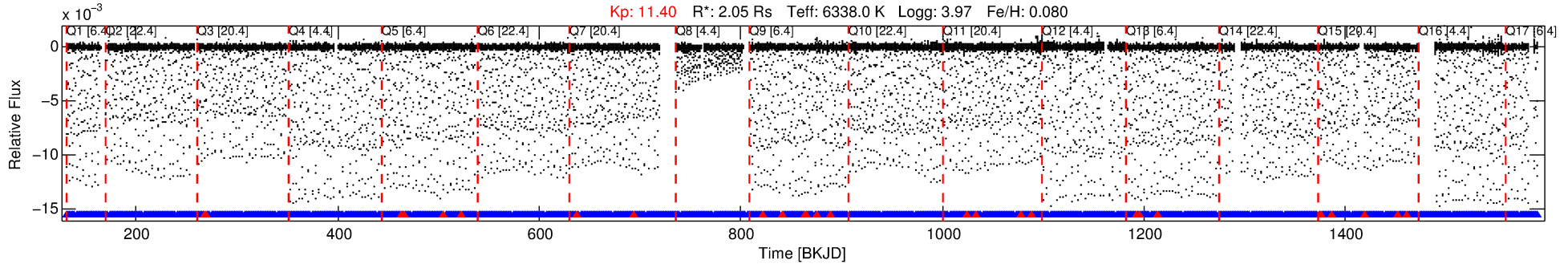
TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (μ)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
010960993-01	10960993	3564.01	10960995	1:1	4.8	-1	0	14.50	11.40	25.64	Direct-PRF	0	0.03	0.02

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10960993 Candidate: 1 of 3 Period: 1.559 d
KOI: K01284 Corr: No Ephemeris Match

Kp: 11.40 R*: 2.05 Rs Teff: 6338.0 K Logg: 3.97 Fe/H: 0.080



DV Fit Results:

Period = 1.55854 [0.00000] d
Epoch = 131.5679 [0.0000] BKJD
Rp/R* = 0.1557 [0.0048]
a/R* = 2.45 [0.01]
b = 1.00 [0.00]
Seff = 6870.92 [4171.52]
Teq = 2322 [352] K
Rp = 34.76 [13.97] Re
a = 0.0297 [0.0111] AU
Ag = 0.00 [0.00] [-662.91σ]
Teff = 740 [112] K [-4.28σ]

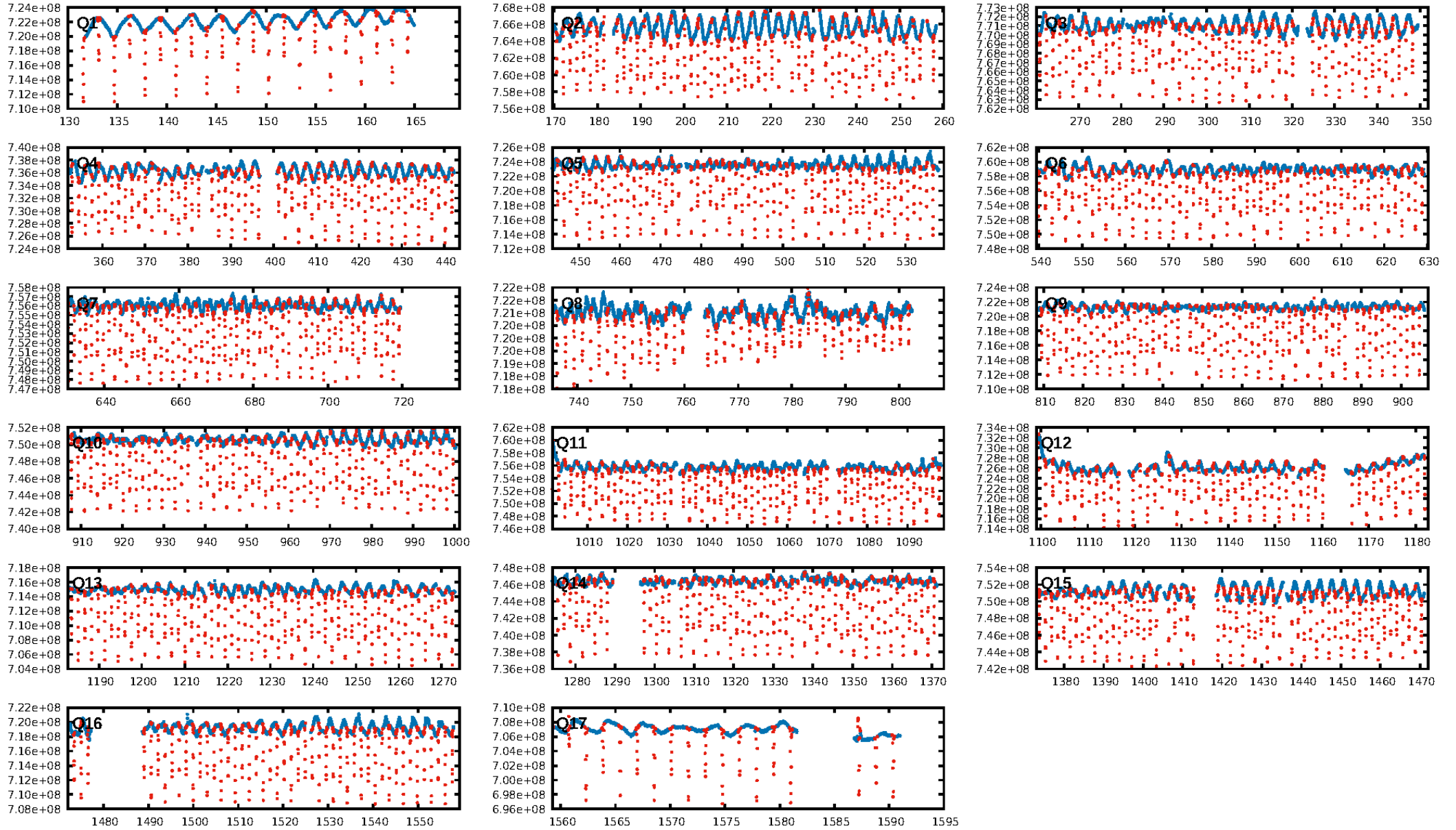
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1008.28σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.97 [795/821]
GhostDiagnostic-chr: 0.8639
Centroid-sig: N/A
Centroid-so: 4.961 arcsec [1186.48σ]
OotOffset-rm: 4.791 arcsec [69.99σ]
KicOffset-rm: 4.842 arcsec [72.17σ]
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]

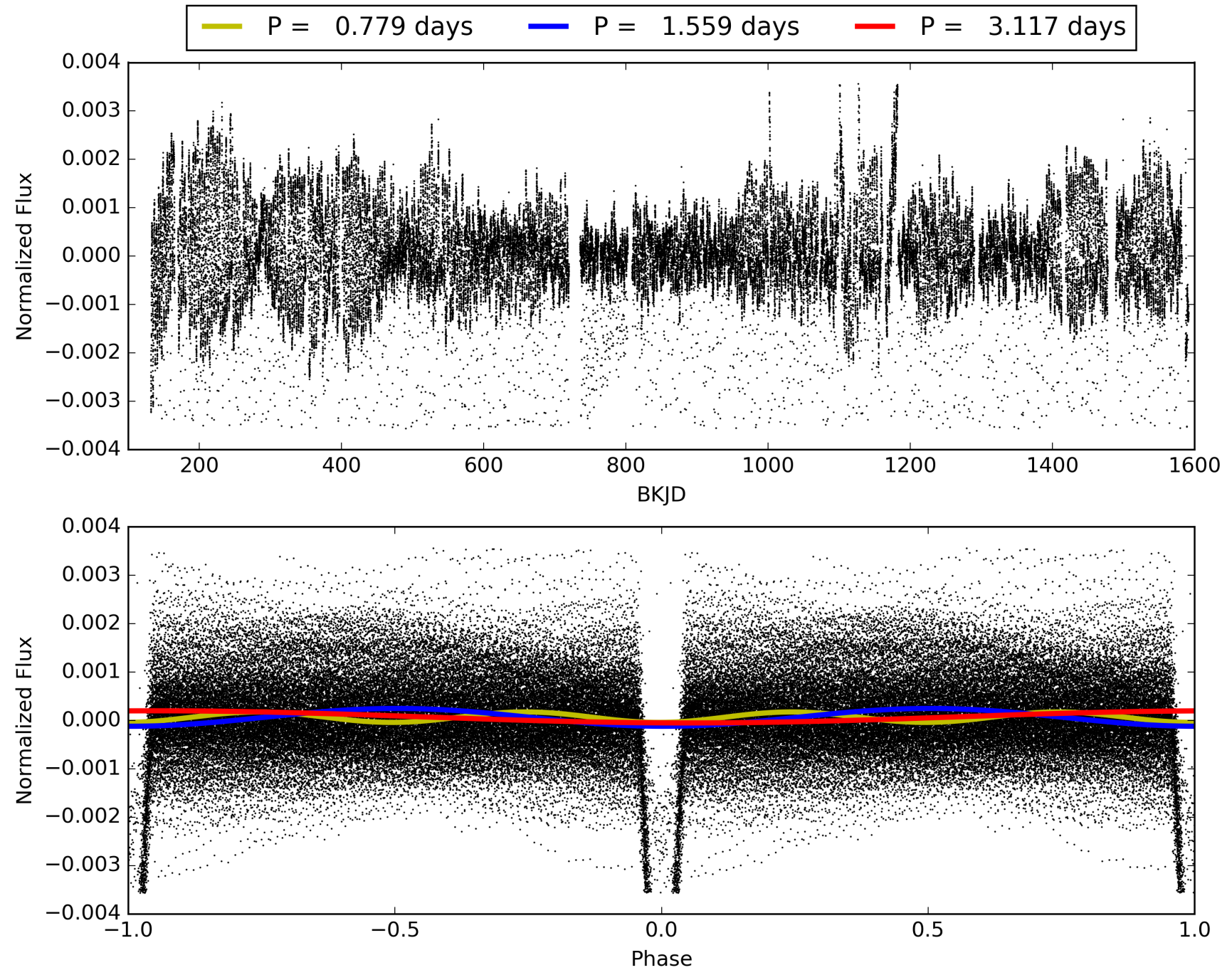
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010960993-01, PDC Light Curves

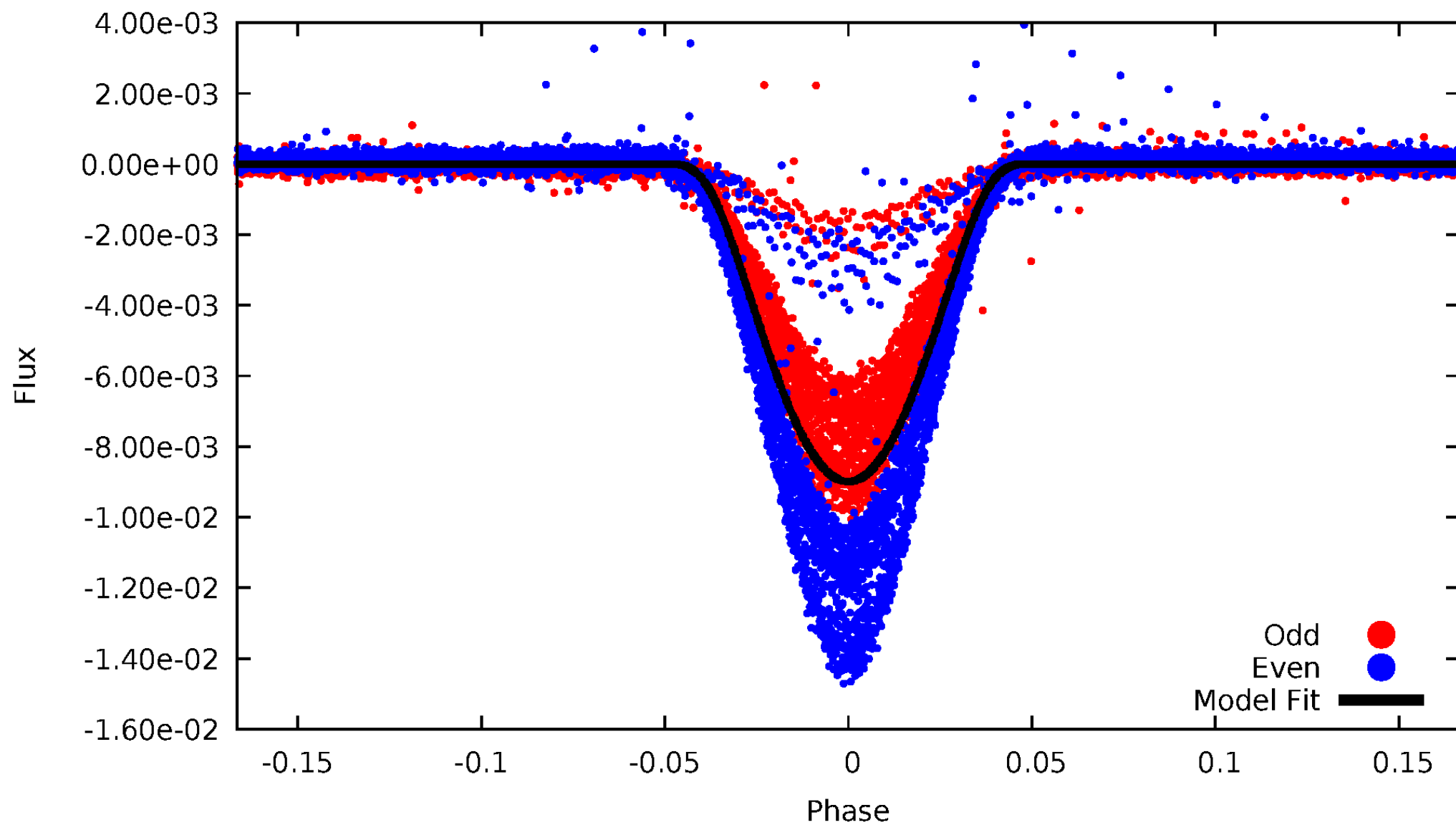


TCE 010960993-01



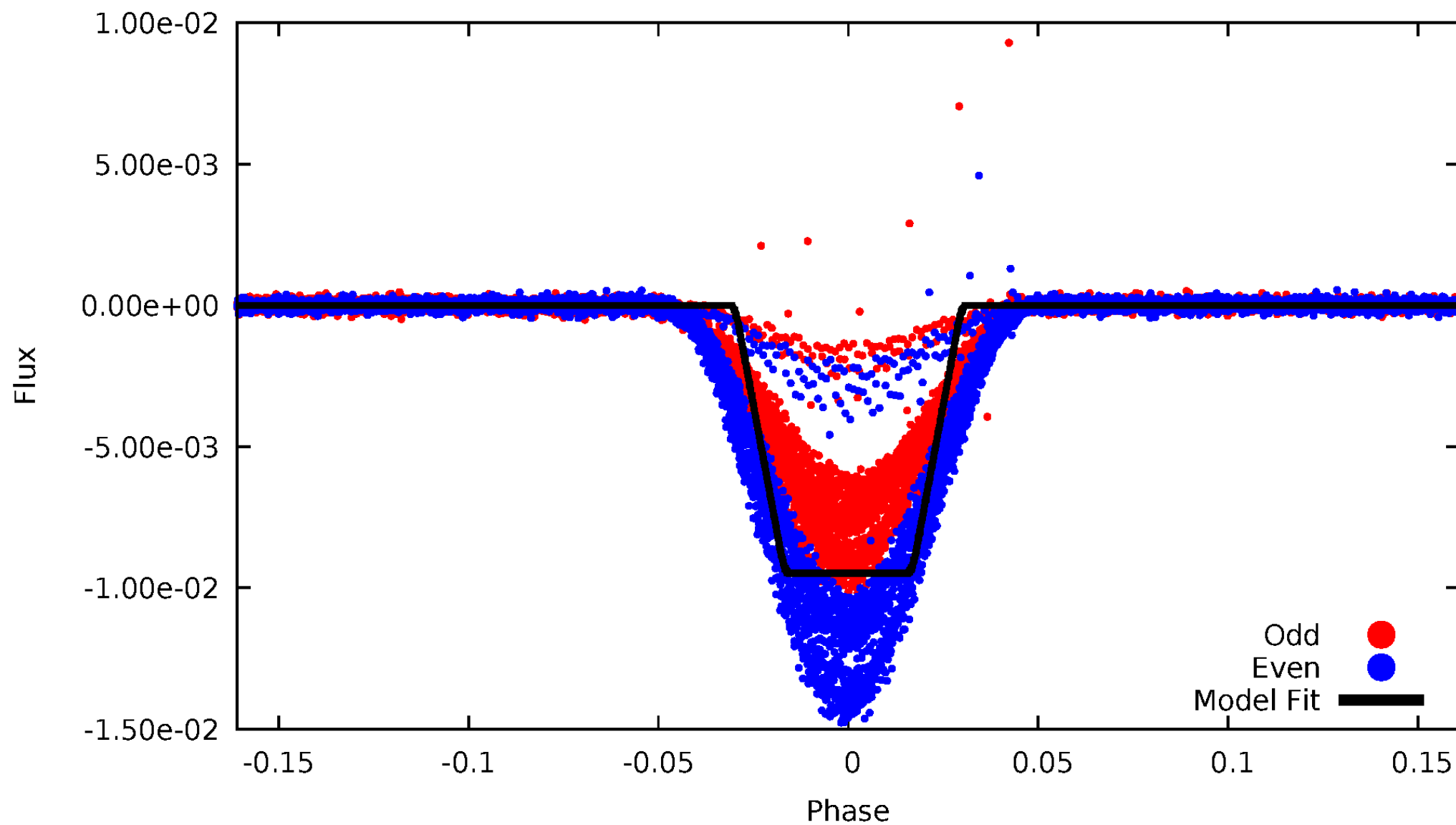
DV Odd/Even

TCE 010960993-01



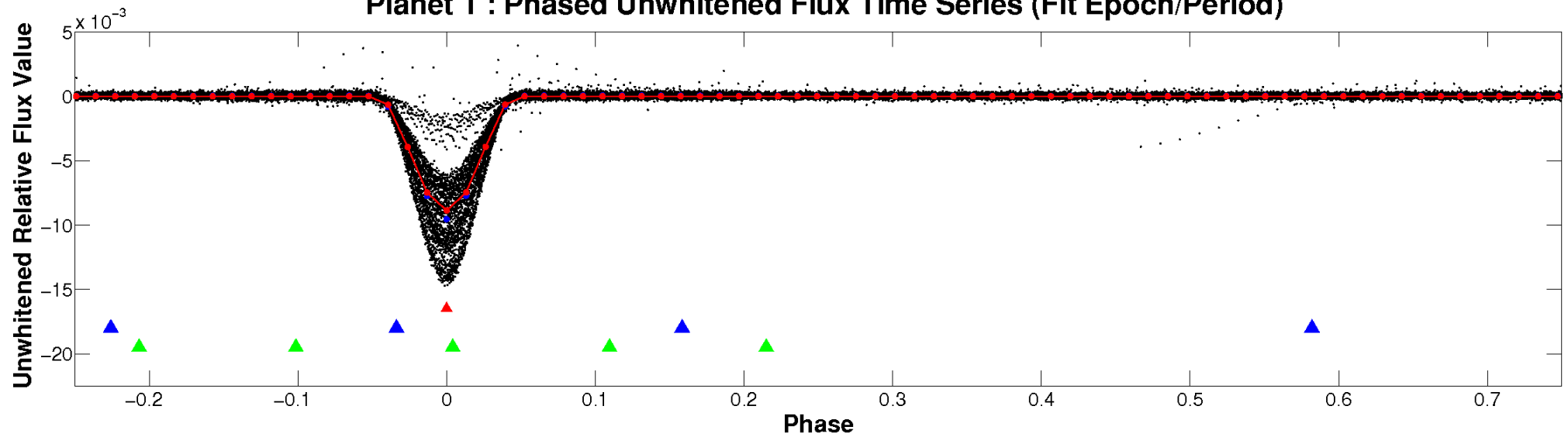
ALT Odd/Even

TCE 010960993-01

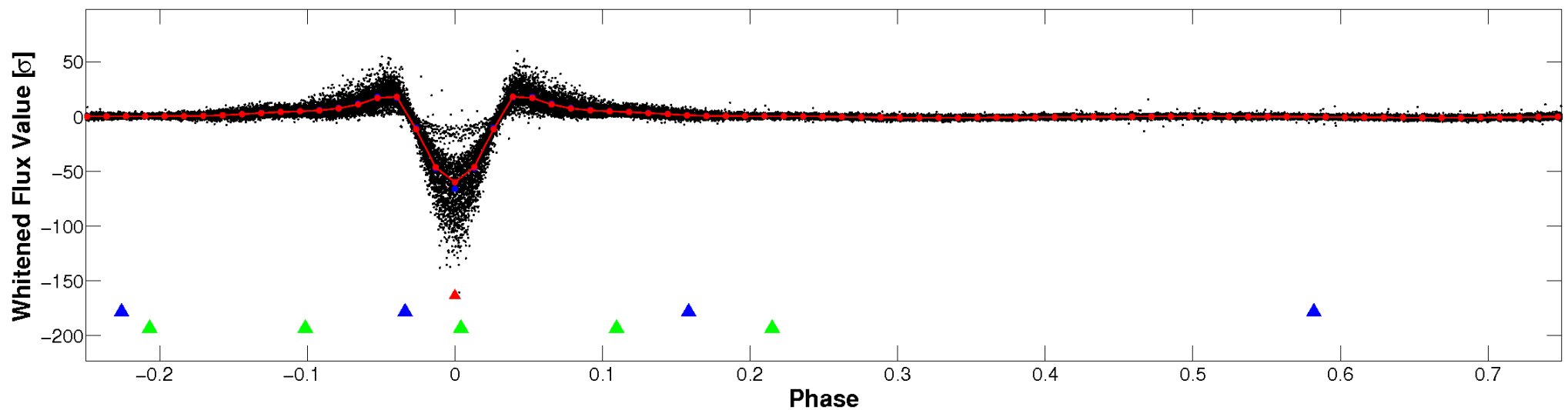


Non-Whitened Vs. Whitened Light Curve

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

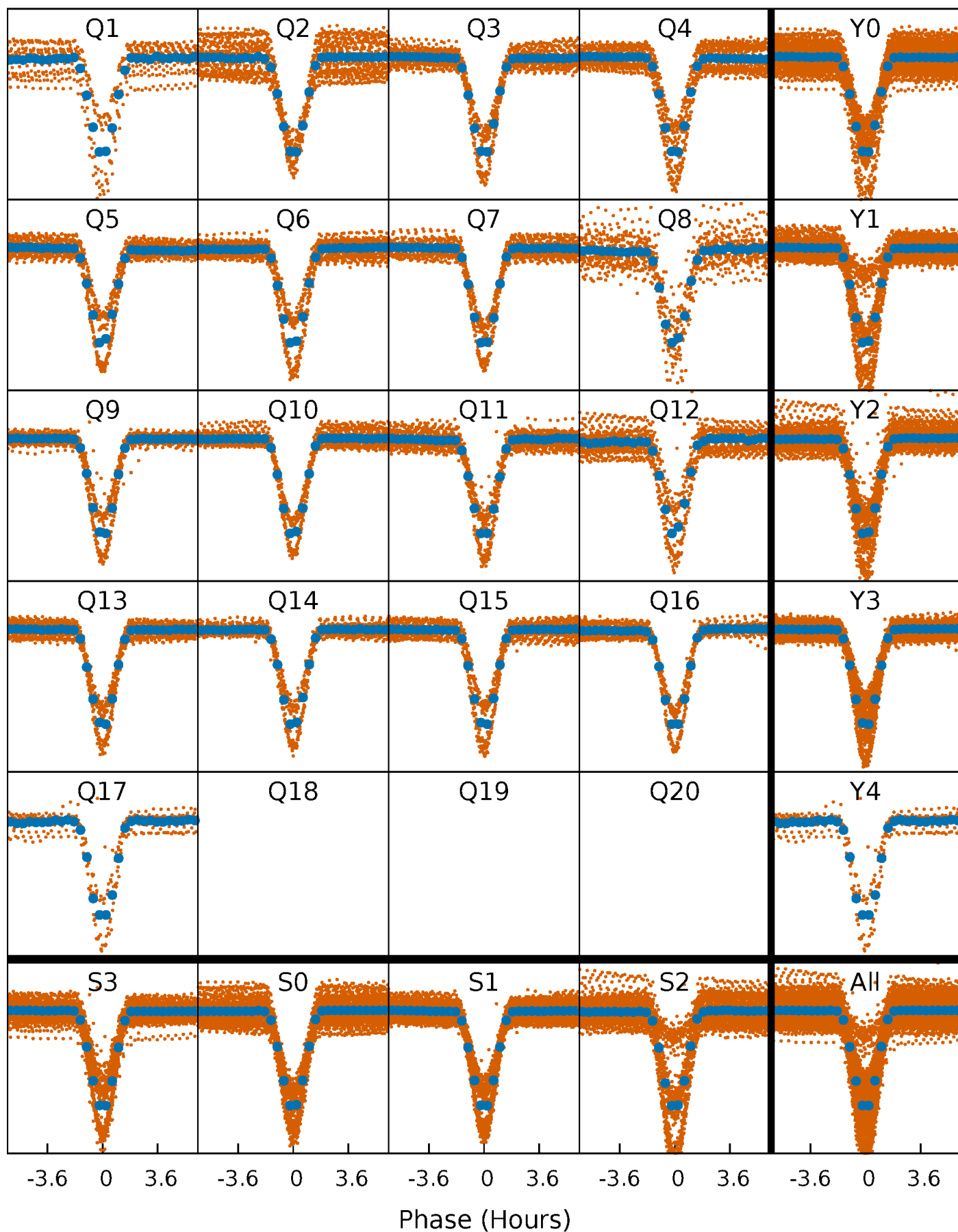


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



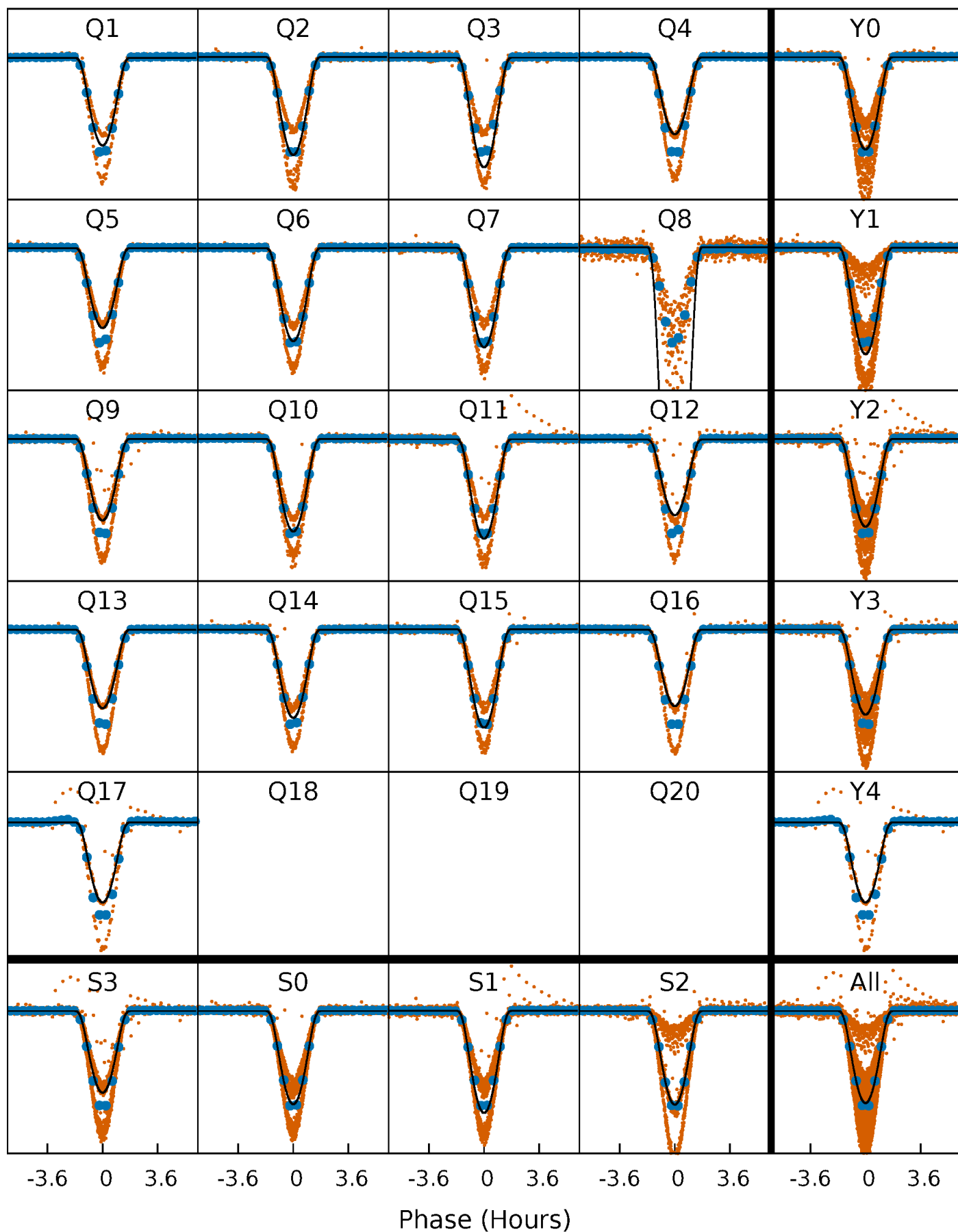
PDC Quarter-Phased Transit Curves

TCE 010960993-01 P= 1.558544 Days $T_0=131.567892$ (BKJD)



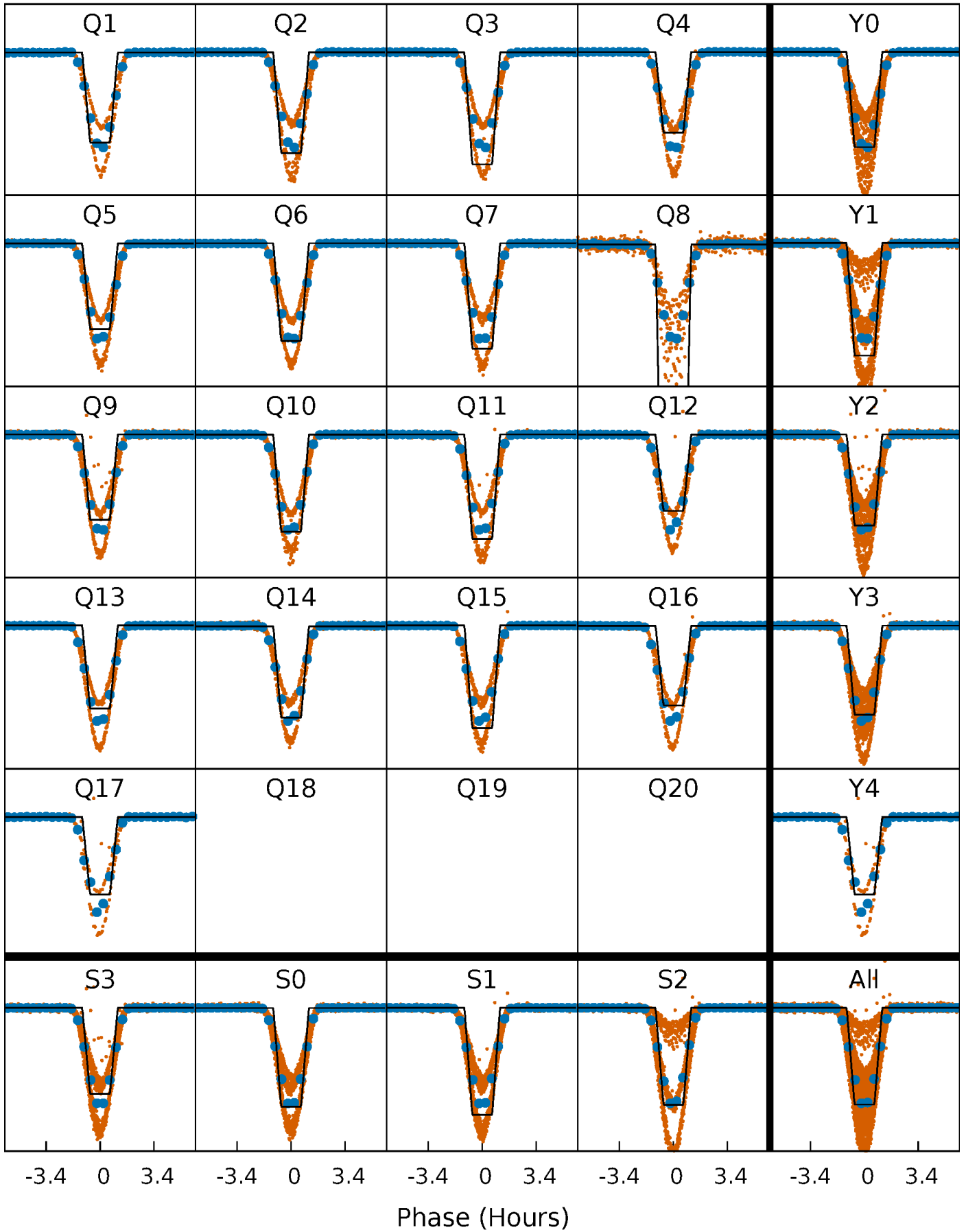
DV Quarter-Phased Transit Curves

TCE 010960993-01 P= 1.558544 Days $T_0=131.567892$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

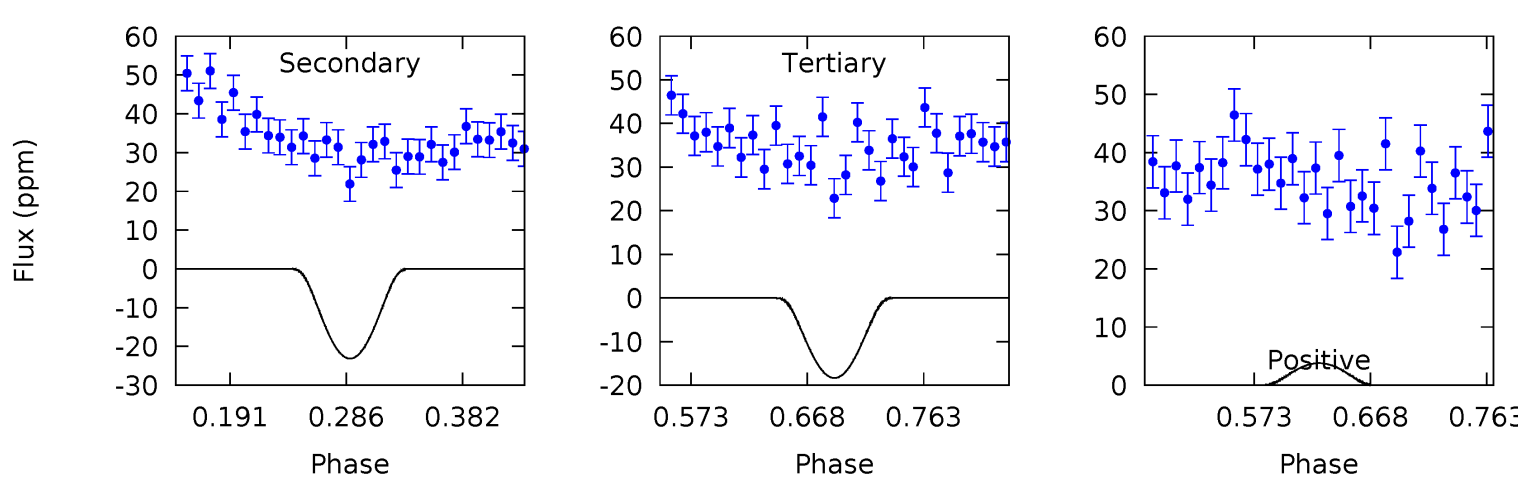
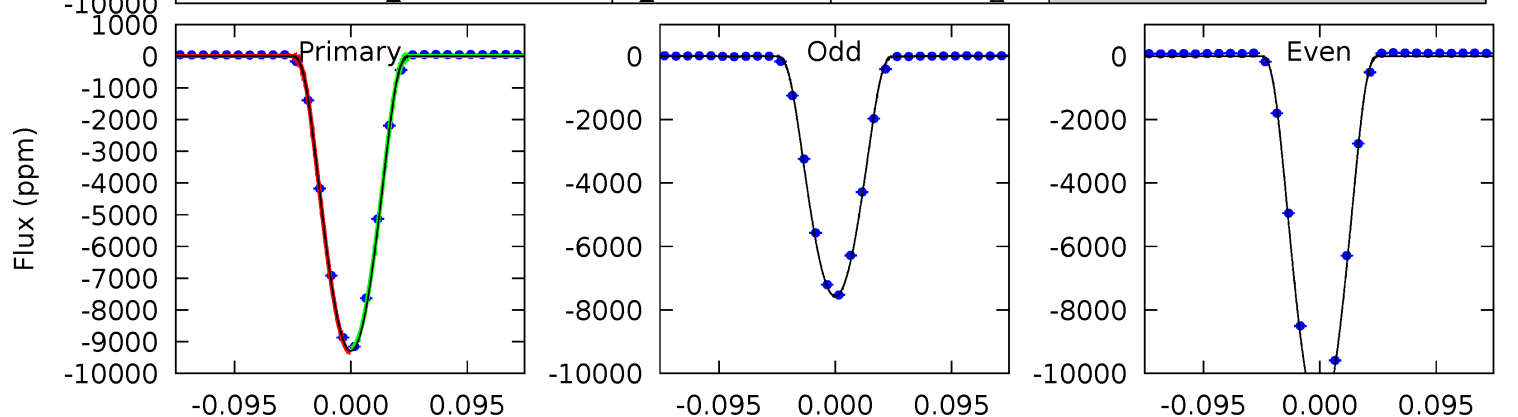
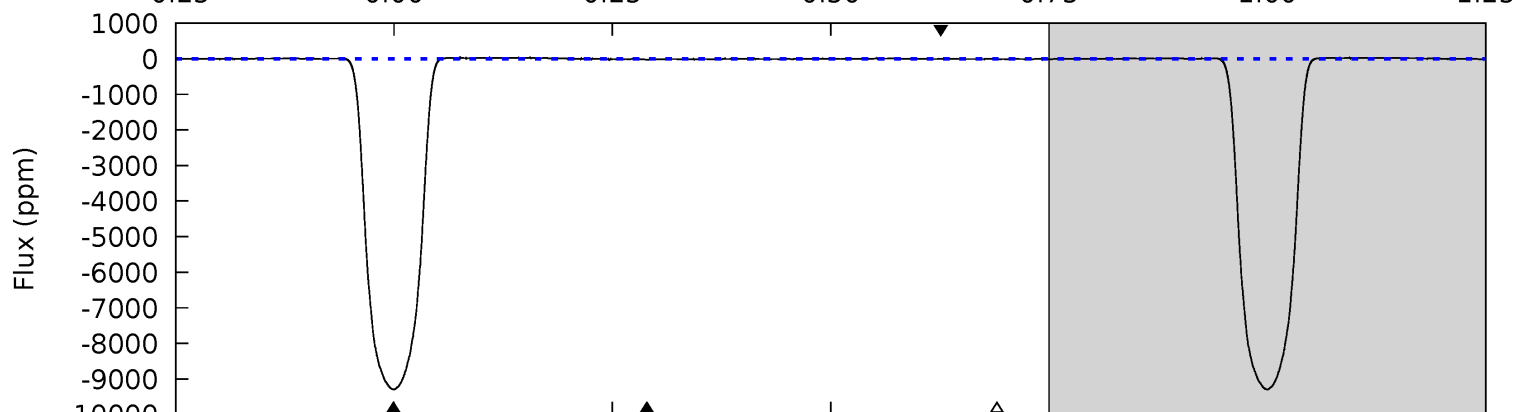
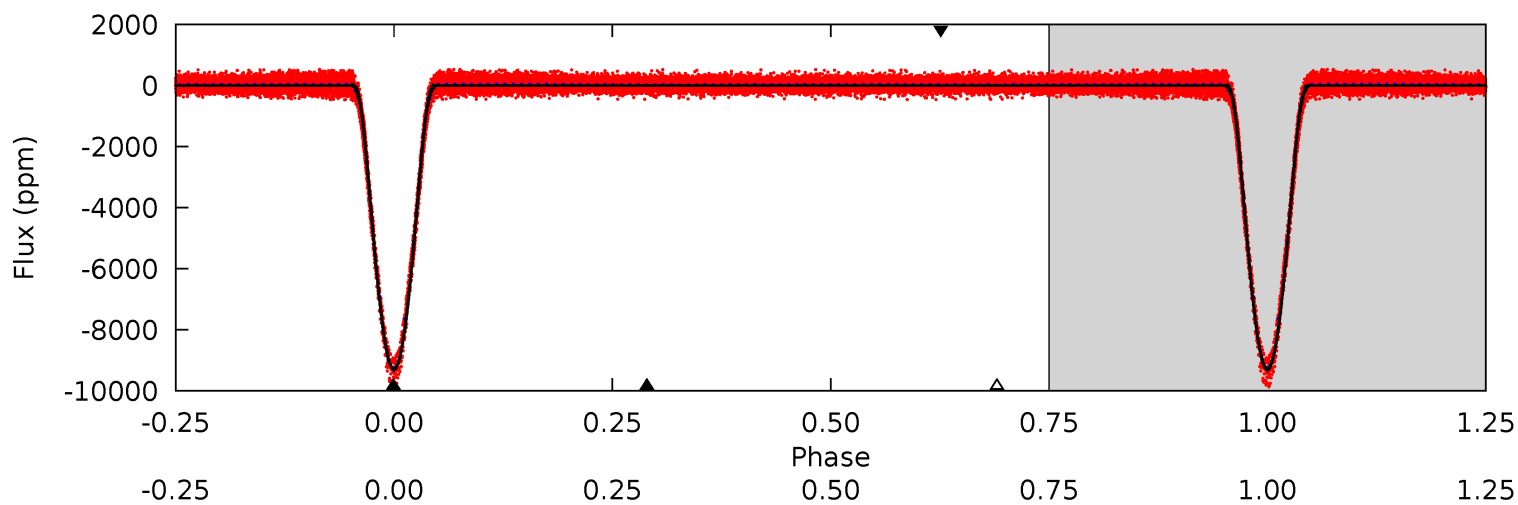
TCE 010960993-01 P= 1.558550 Days $T_0=131.564864$ (BKJD)



DV Model-Shift Uniqueness Test

010960993-01, P = 1.558544 Days, E = 130.009348 Days

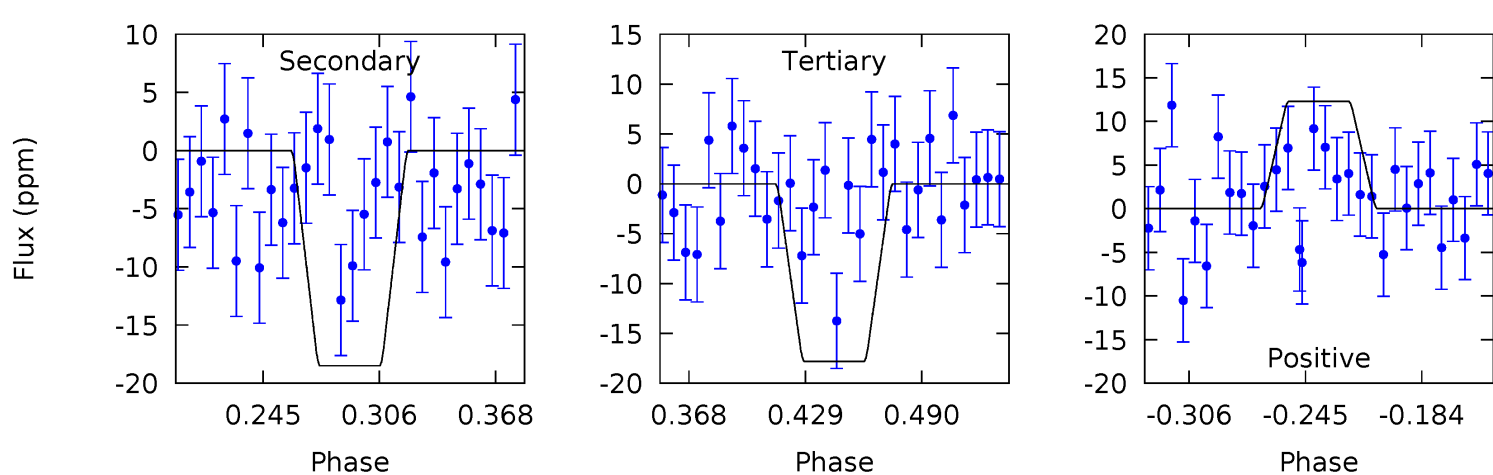
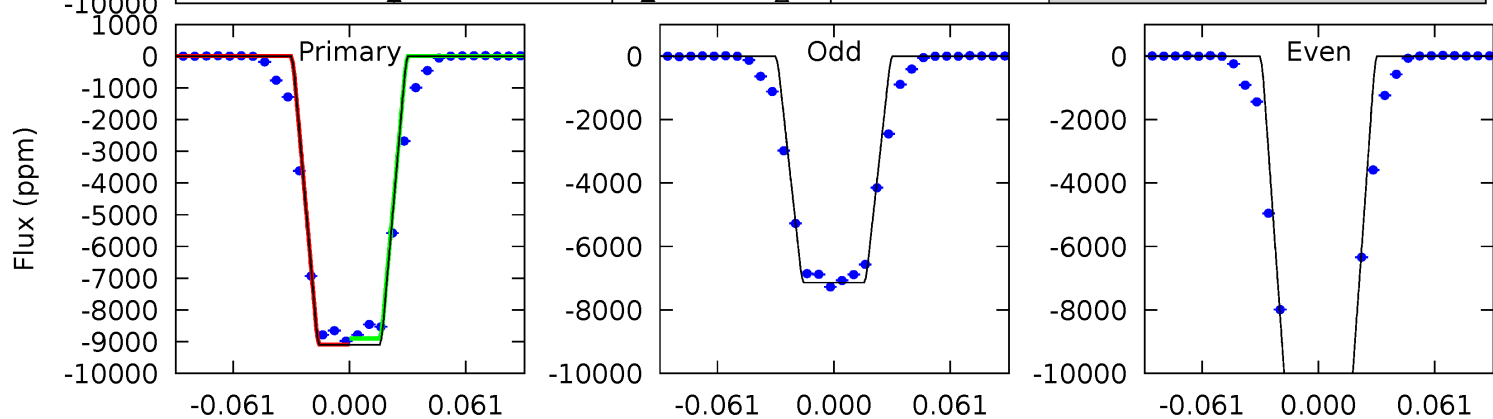
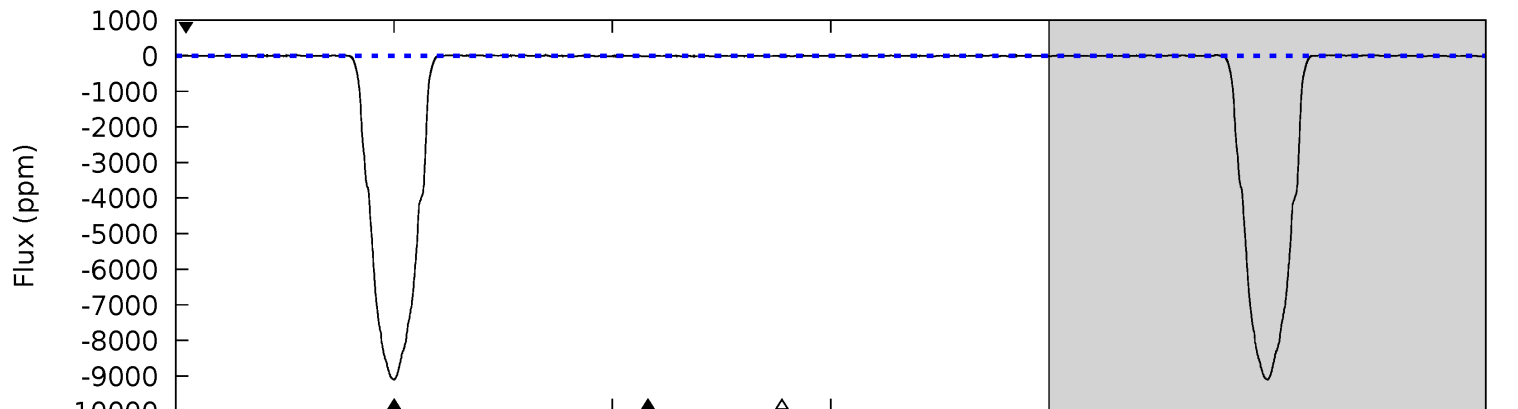
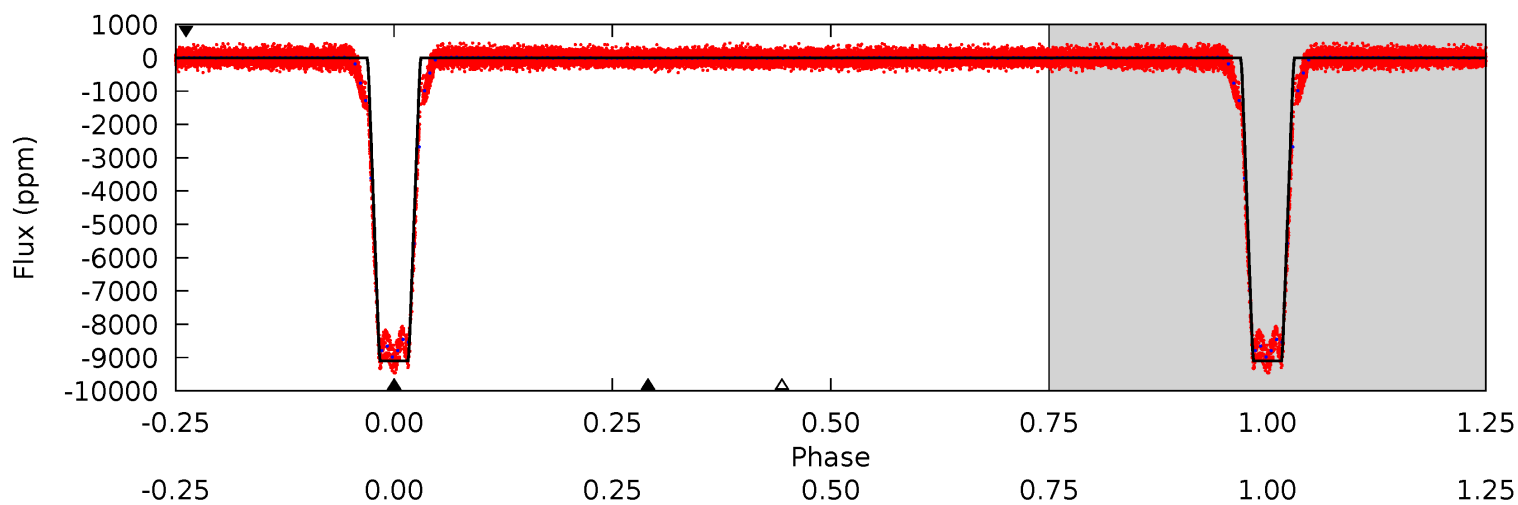
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3854	9.60	7.61	1.57	4.57	1.67	4.23	3846	3852	1.99	8.02	925.3	1.02	0.00	0



Alt Model-Shift Uniqueness Test

010960993-01, P = 1.558550 Days, E = 130.006314 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2088	4.24	4.08	2.82	4.67	1.87	1.43	2084	2085	0.16	1.42	586.5	1.01	0.00	0



Stellar Parameters For KIC 010960993

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6338^{+179}_{-224}	$3.973^{+0.343}_{-0.147}$	$0.080^{+0.250}_{-0.300}$	$2.046^{+0.547}_{-0.820}$	$1.434^{+0.182}_{-0.313}$	$0.236^{+0.621}_{-0.099}$
	+3%/-4%	+9%/-4%	+312%/-375%	+27%/-40%	+13%/-22%	+264%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010960993-01 / KOI 1284.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-23 ± 2	$33.89^{+5.12}_{-6.76}$	3196^{+244}_{-339}	-3194^{+209}_{-150}	$0.010^{+0.005}_{-0.003}$
Alt.	-18 ± 4	$21.15^{+3.52}_{-4.22}$	3177^{+260}_{-306}	-3169^{+198}_{-157}	$0.020^{+0.011}_{-0.007}$

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

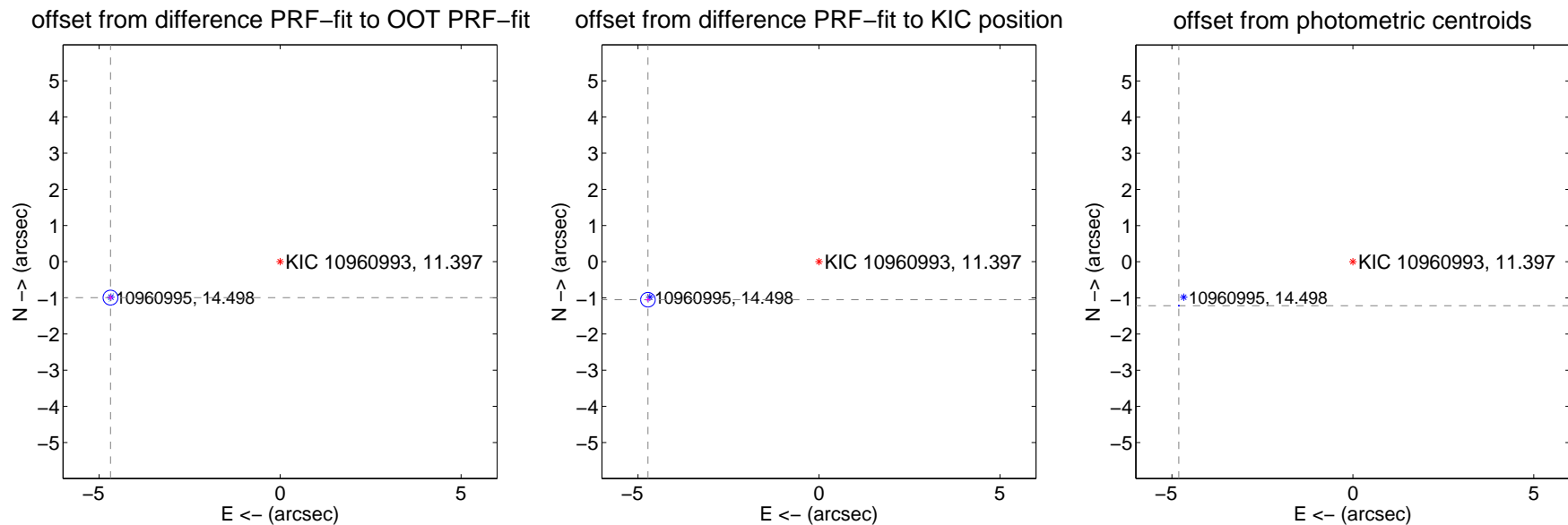
DV Centroid Data

Supplemental centroid analysis for 010960993-01. **Kepler magnitude: 11.40.** Transit SNR 1579.34

There are 17 quarters with good PRF difference image offsets

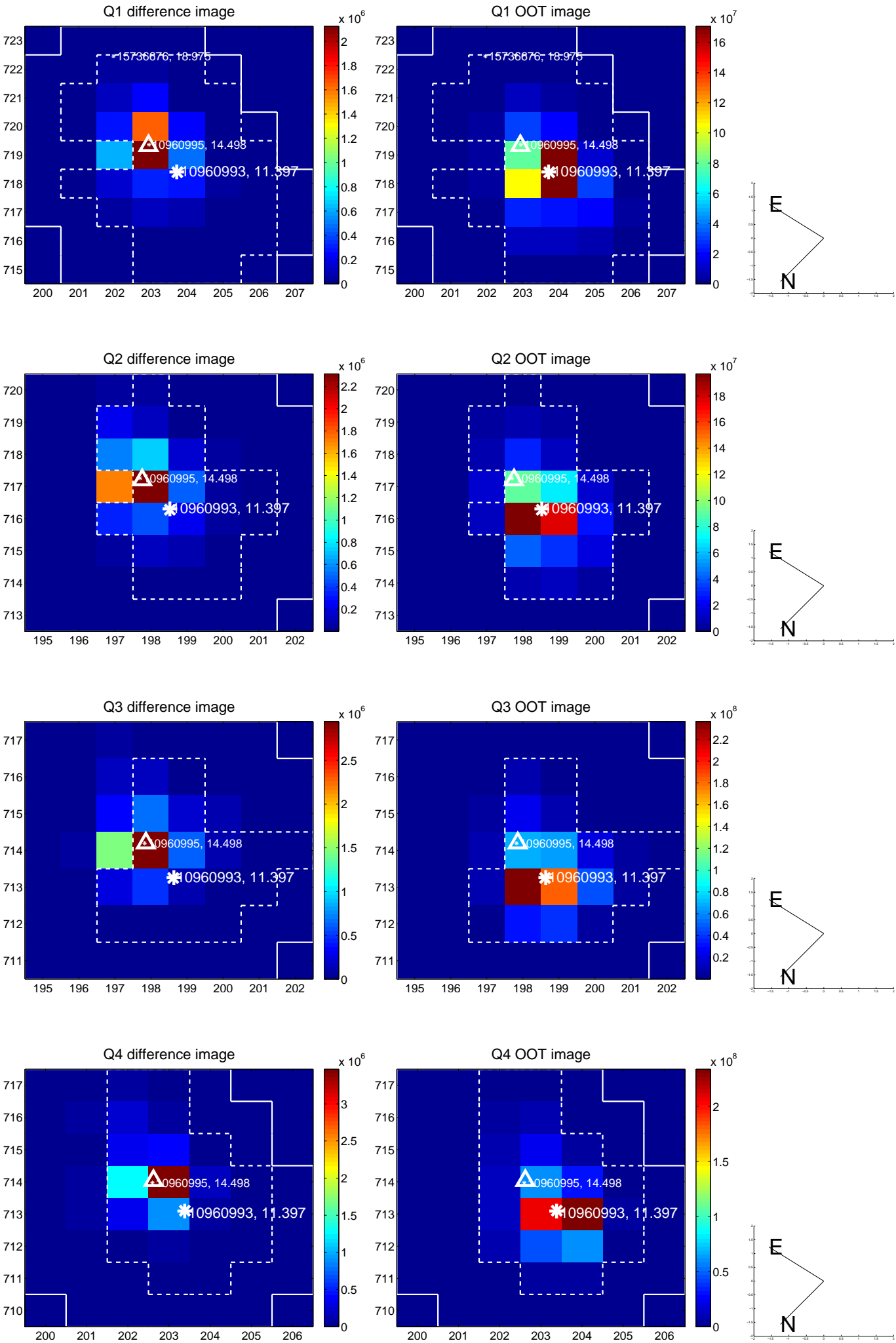
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.791 \pm 0.068	69.99	4.687 \pm 0.068	-0.994 \pm 0.069
PRF-fit source offset from KIC position	4.842 \pm 0.067	72.17	4.727 \pm 0.067	-1.052 \pm 0.068
photometric centroid source offset	4.96 \pm 0.00	1186.48	4.81 \pm 0.00	-1.22 \pm 0.00

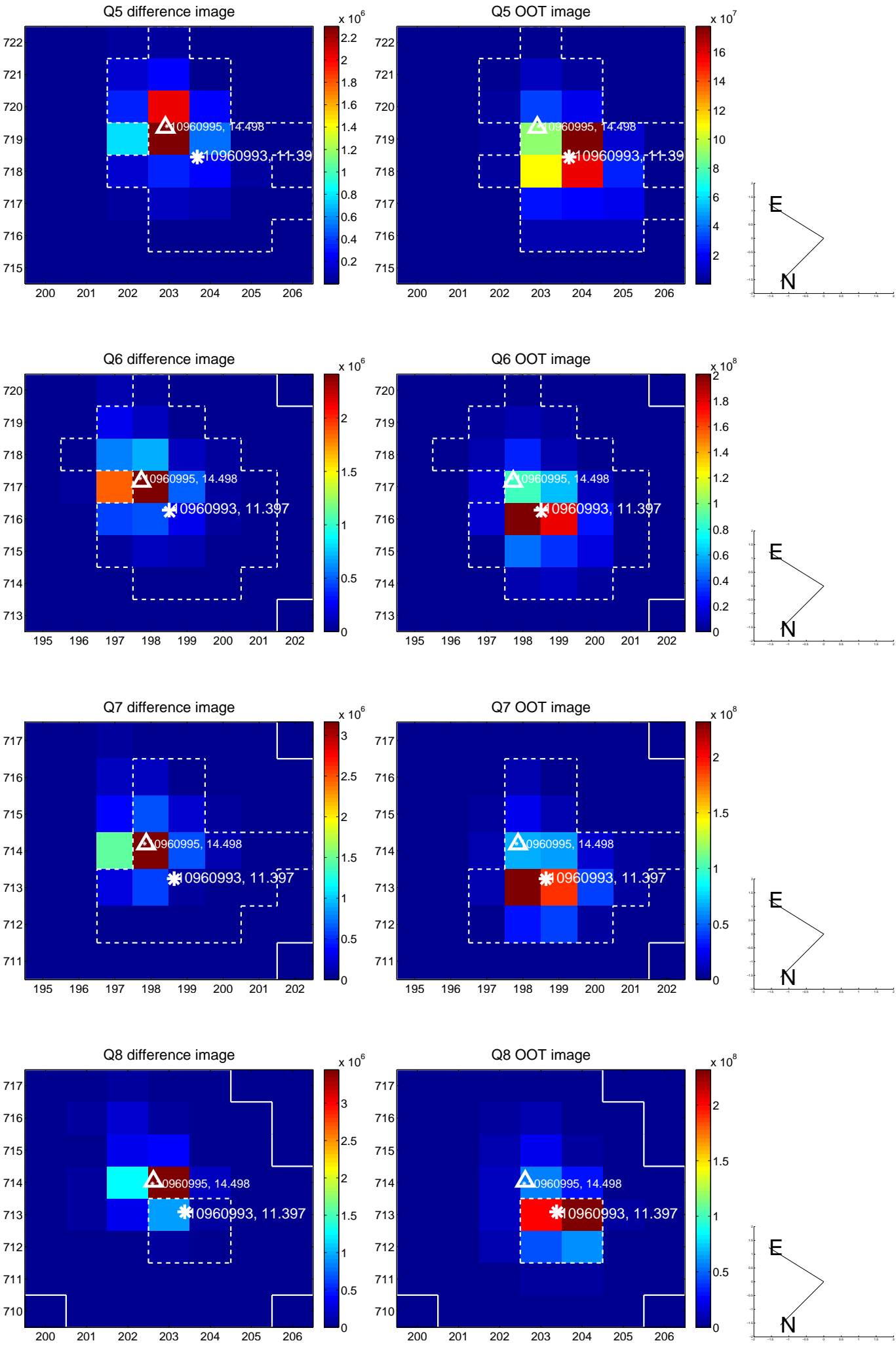


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

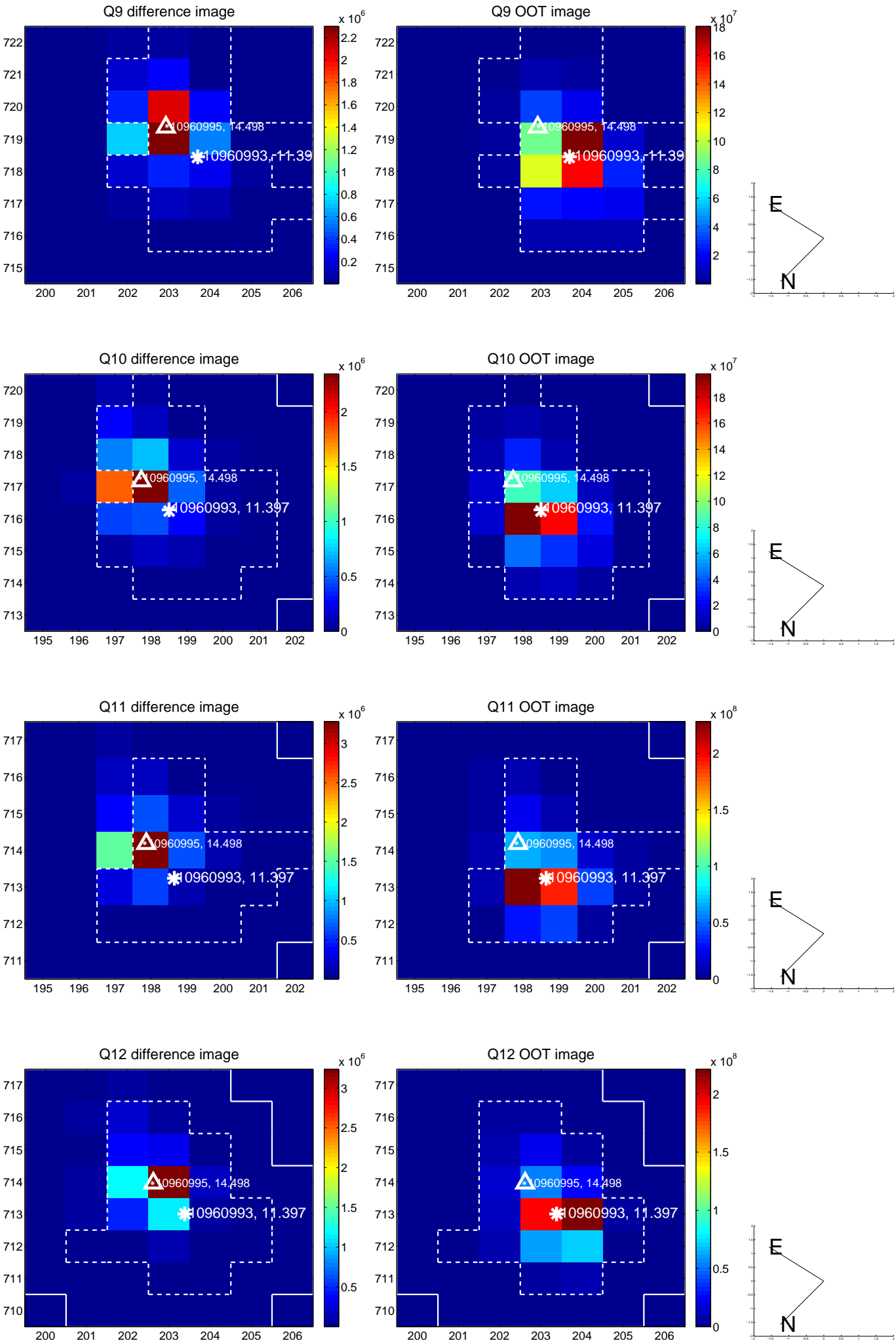
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



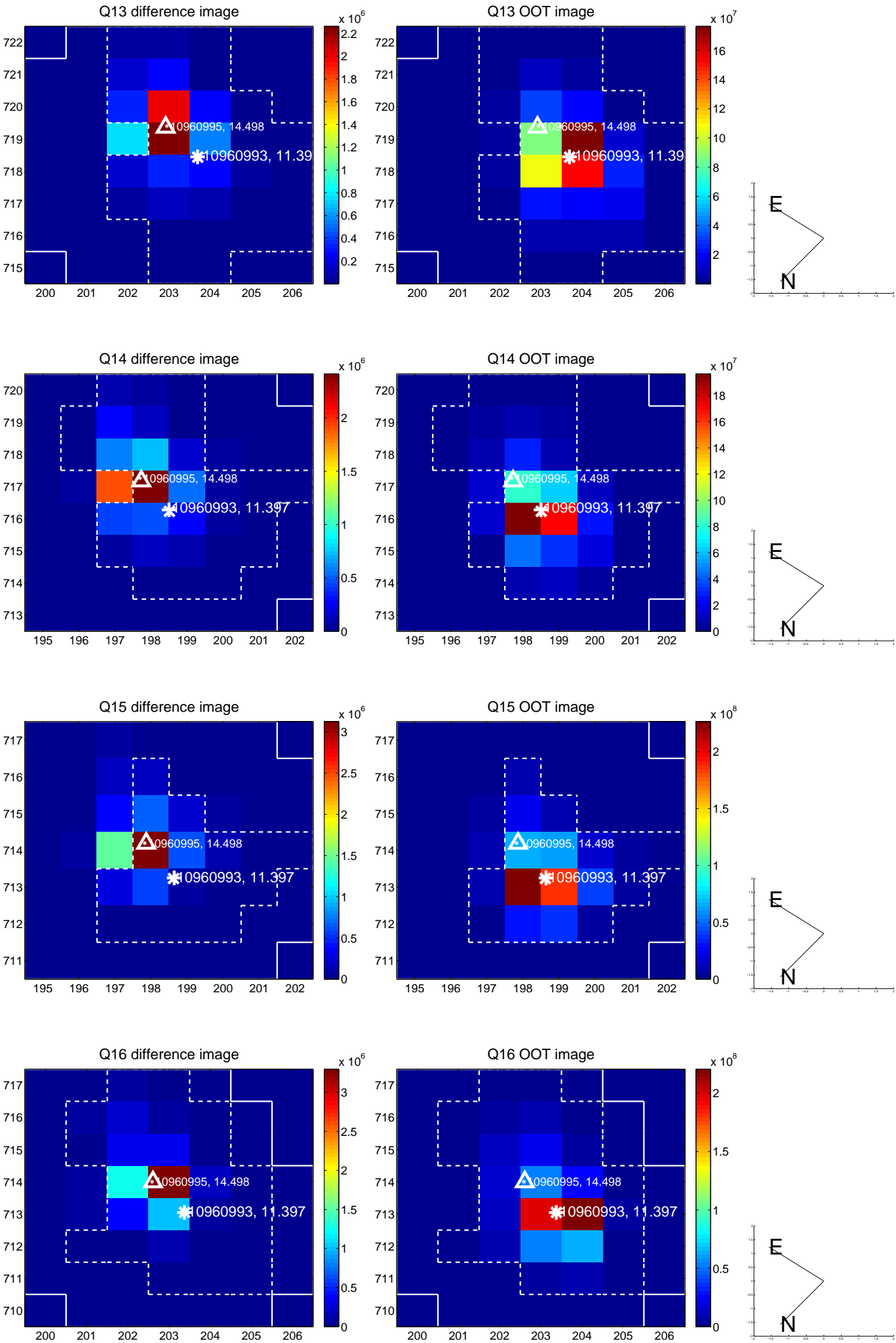
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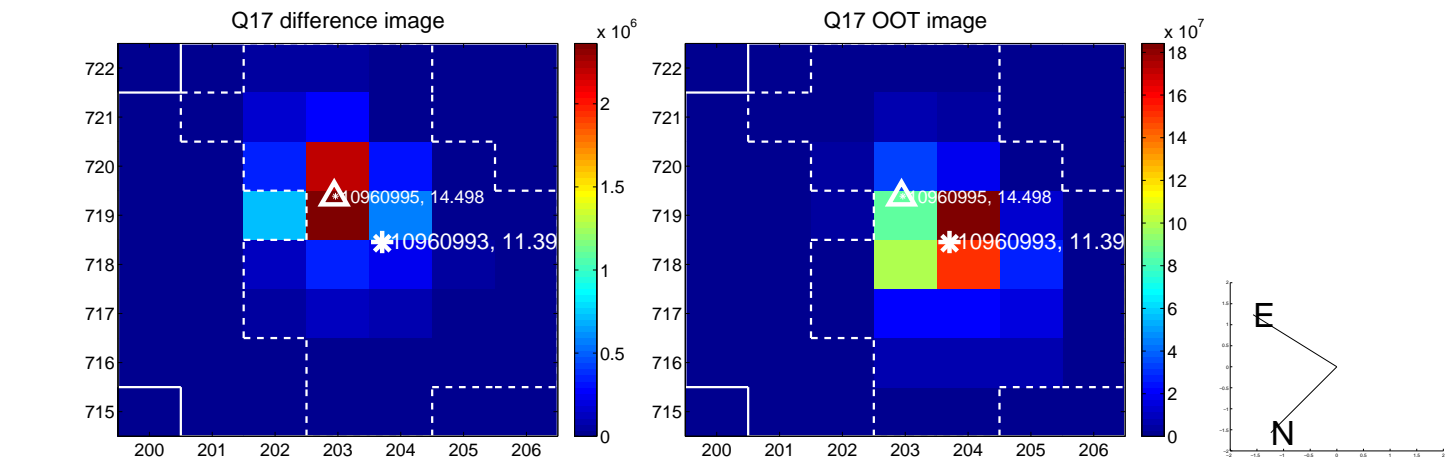
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



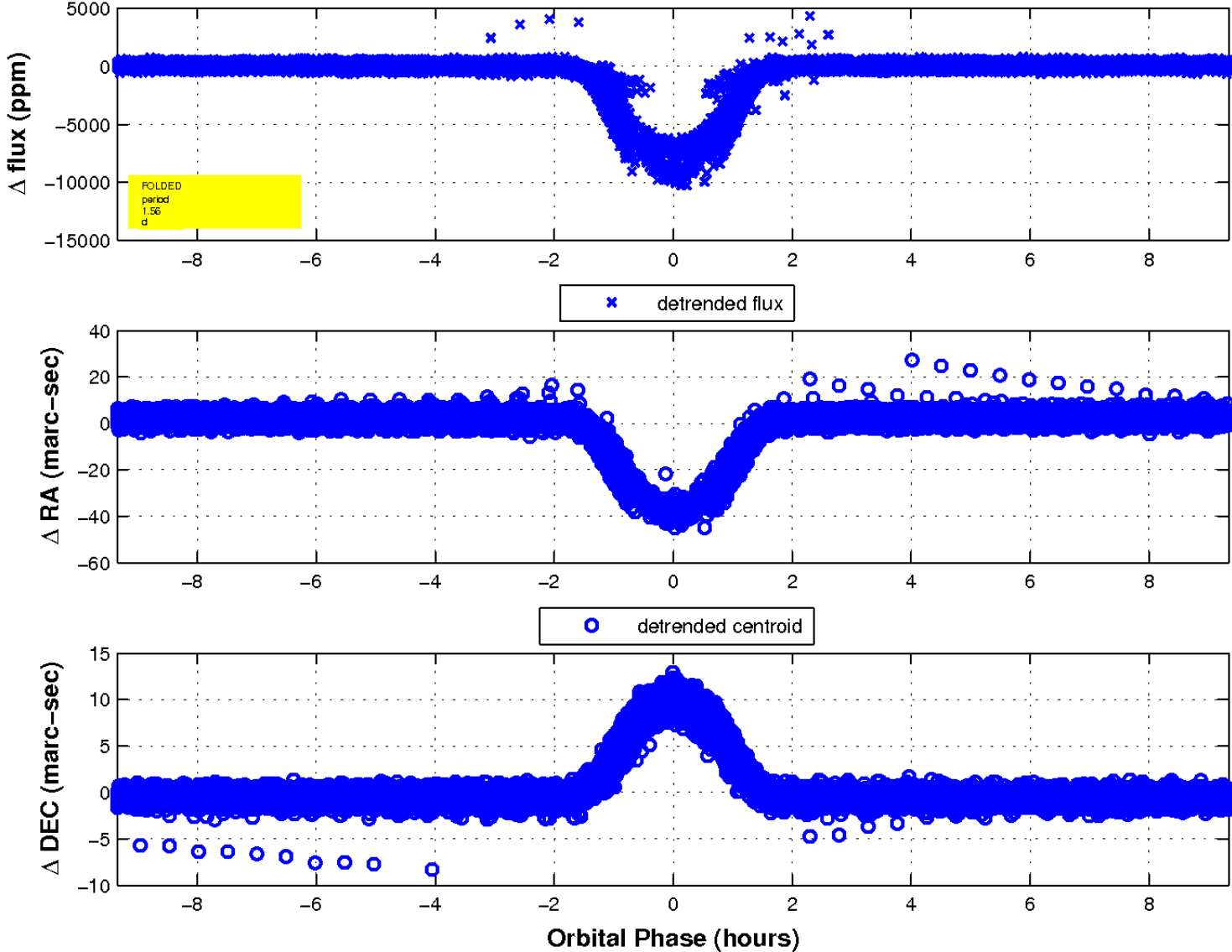
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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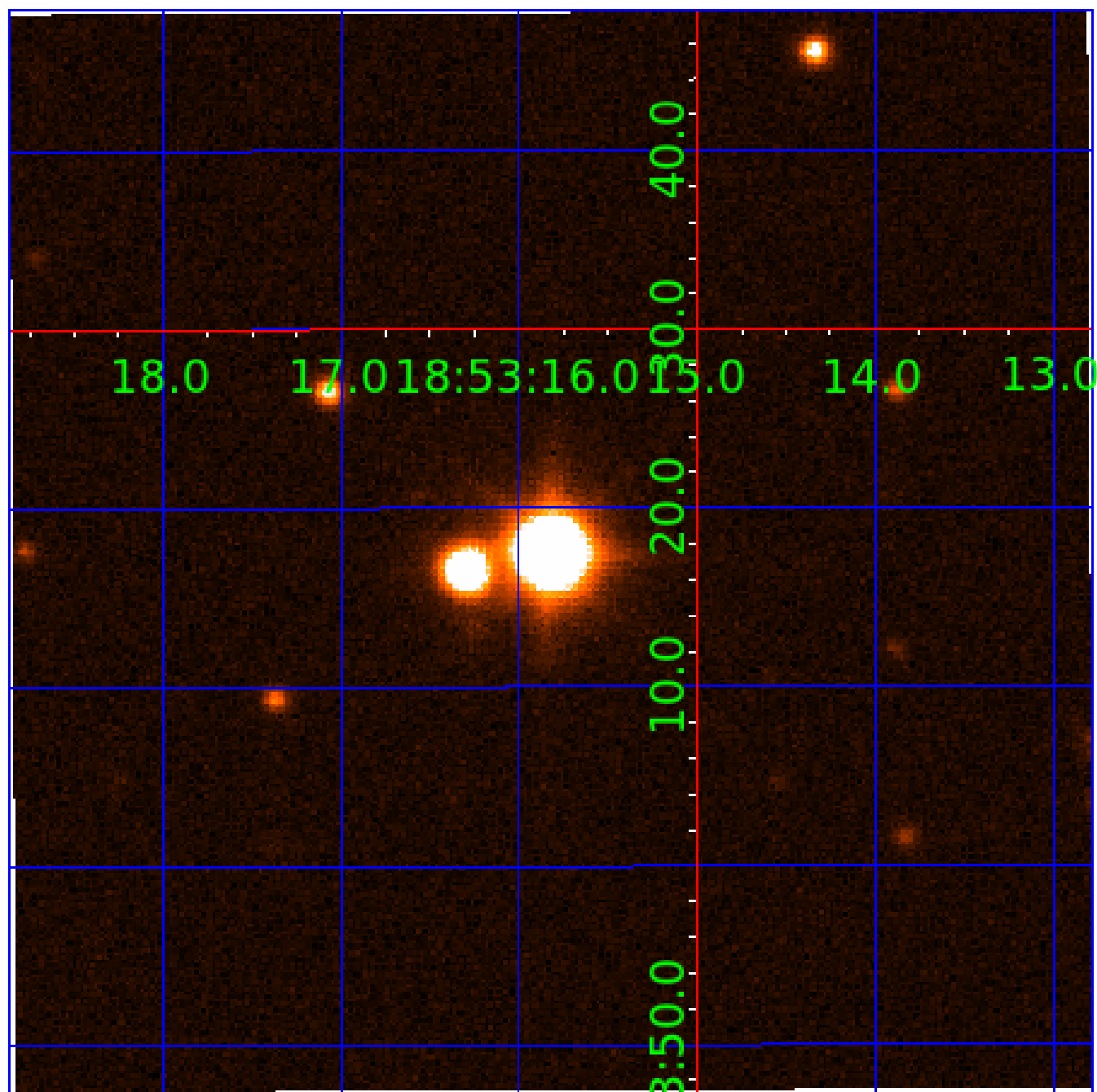


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 010960993

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})
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010960993-02	OBS	No	390.895029	376.506177	502.9	3.515	11.4	9.0	2.05	6338	5.34	4.34
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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010960993-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010960993-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

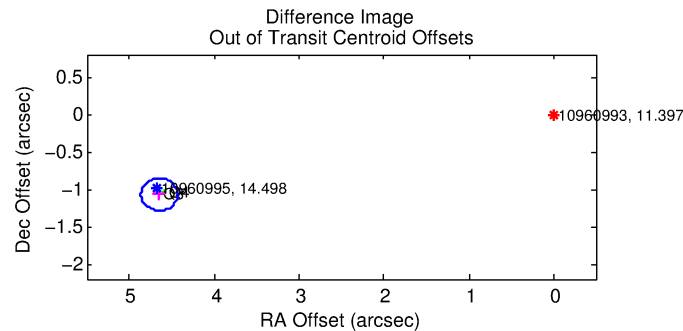
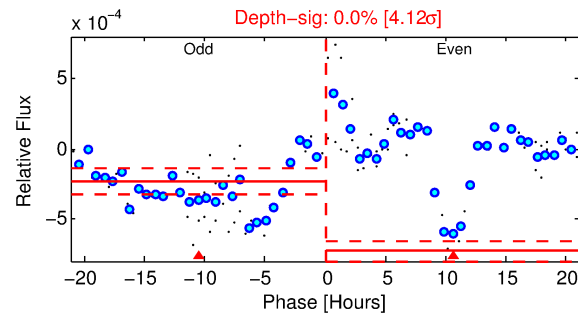
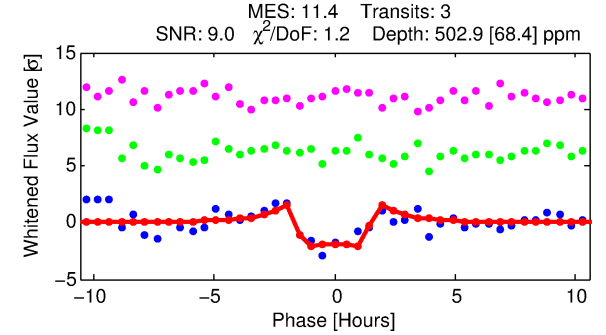
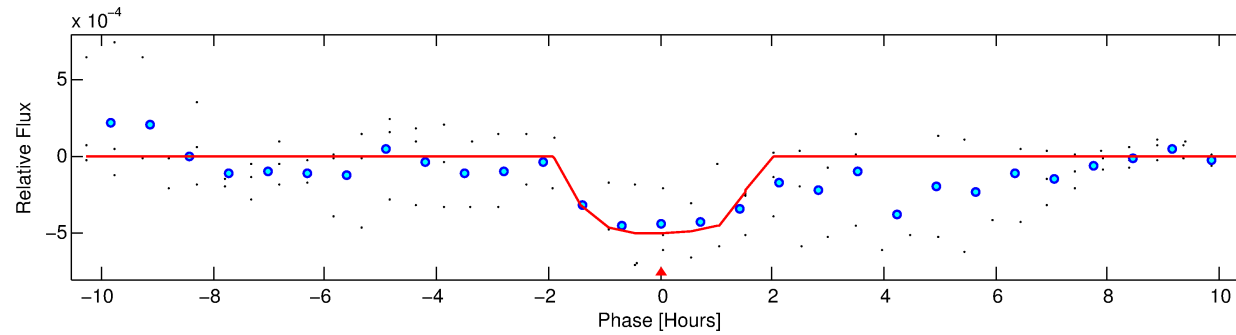
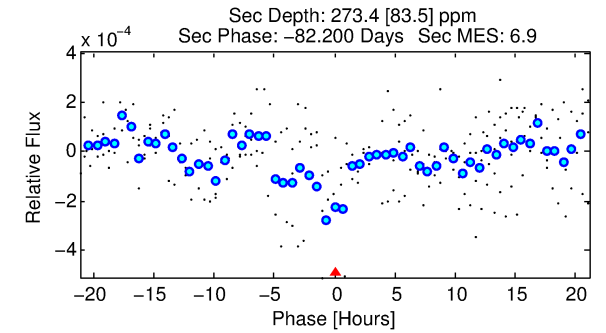
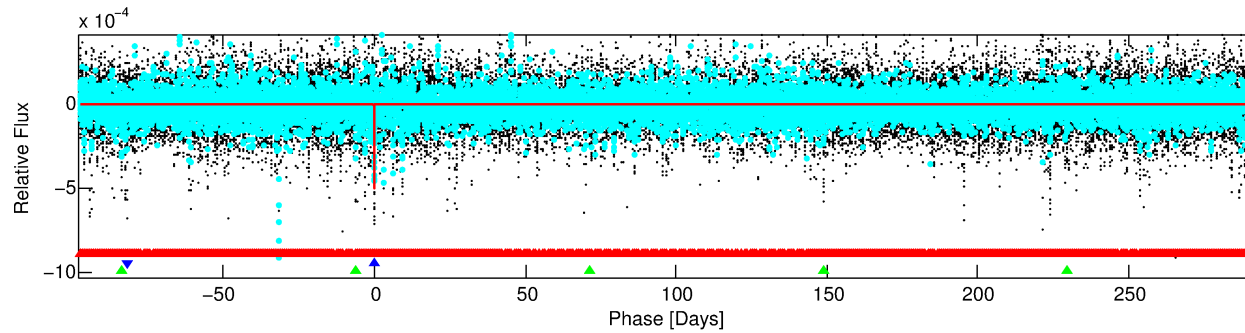
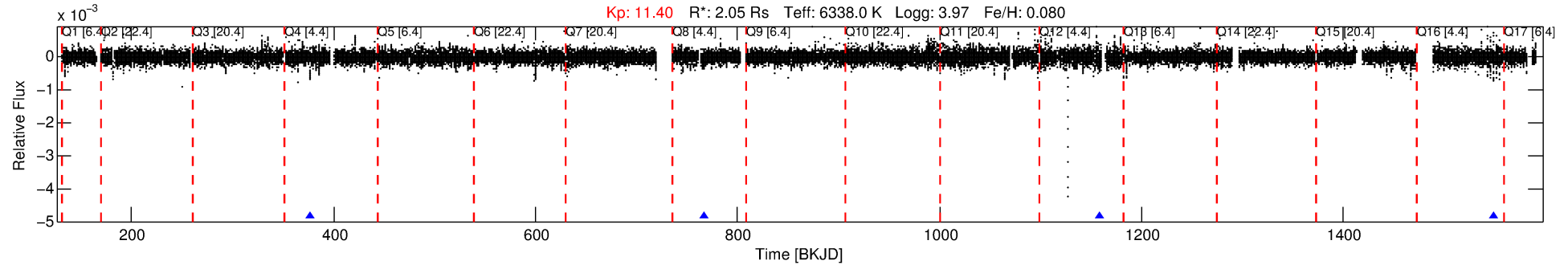
Ephemeris Match Information For 010960993-02

No Significant Match Found

DV One-Page Summary

KIC: 10960993 Candidate: 2 of 3 Period: 390.895 d
KOI: K01284 Corr: No Ephemeris Match

Kp: 11.40 R*: 2.05 Rs Teff: 6338.0 K Logg: 3.97 Fe/H: 0.080



DV Fit Results:

Period = 390.89503 [0.00268] d
Epoch = 376.5062 [0.0073] BKJD
Rp/R* = 0.0239 [0.0099]
a/R* = 430.97 [931.98]
b = 0.89 [0.51]
Seff = 4.34 [2.64]
Teq = 368 [56] K
Rp = 5.34 [3.07] Re
a = 1.1803 [0.4427] AU
Ag = 7349.55 [7790.16] [0.94σ]
Teffp = 5270 [1175] K [4.17σ]

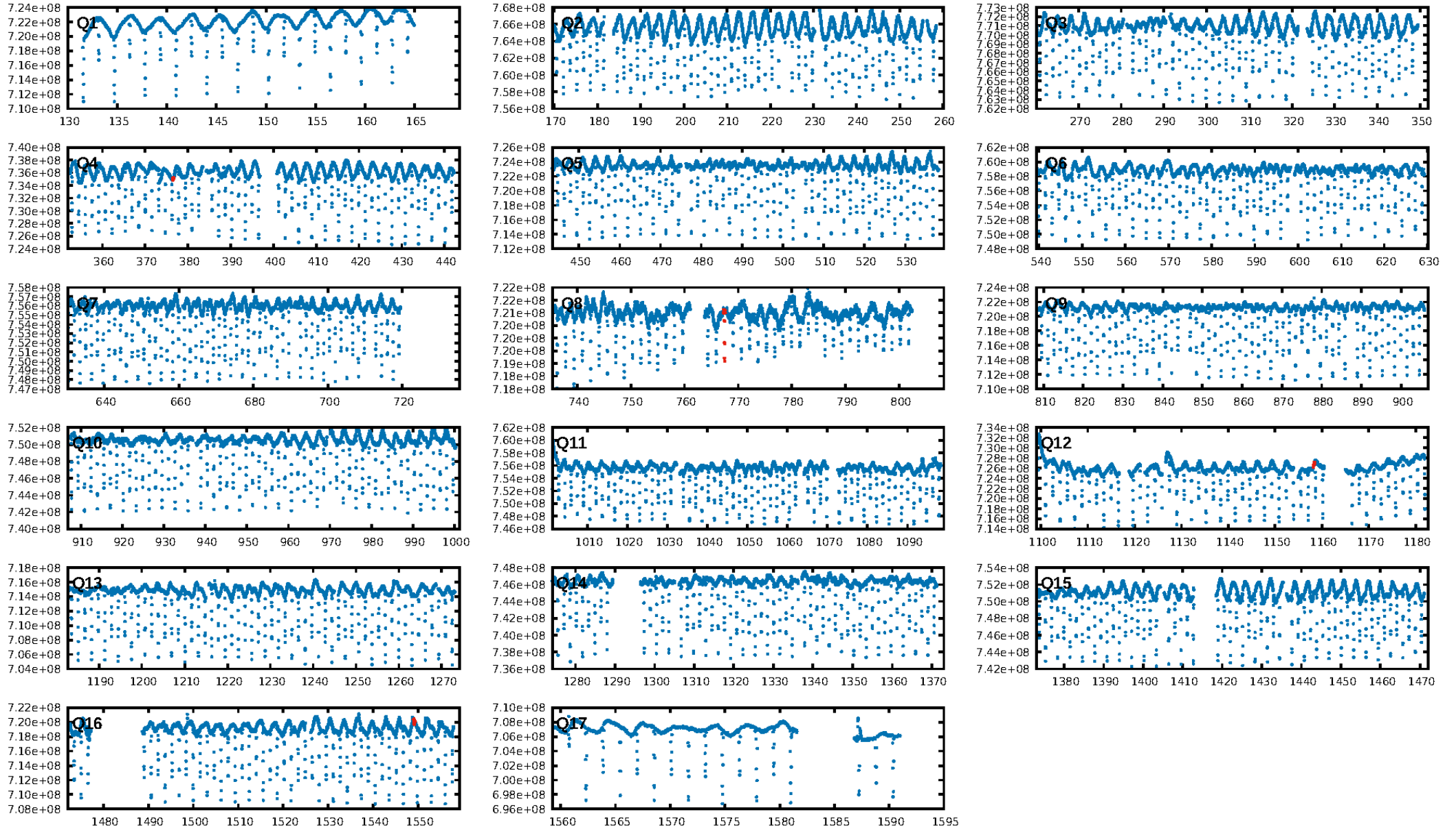
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [244.61σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 61.1%
Bootstrap-pfa: 4.20e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.024
Centroid-sig: N/A
Centroid-so: 0.883 arcsec [0.85σ]
OotOffset-rm: 4.769 arcsec [66.05σ]
KicOffset-rm: 4.838 arcsec [47.91σ]
OotOffset-st: 0/0/2/0 [2]
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DiffImageOverlap-fno: 0.00 [0/3]

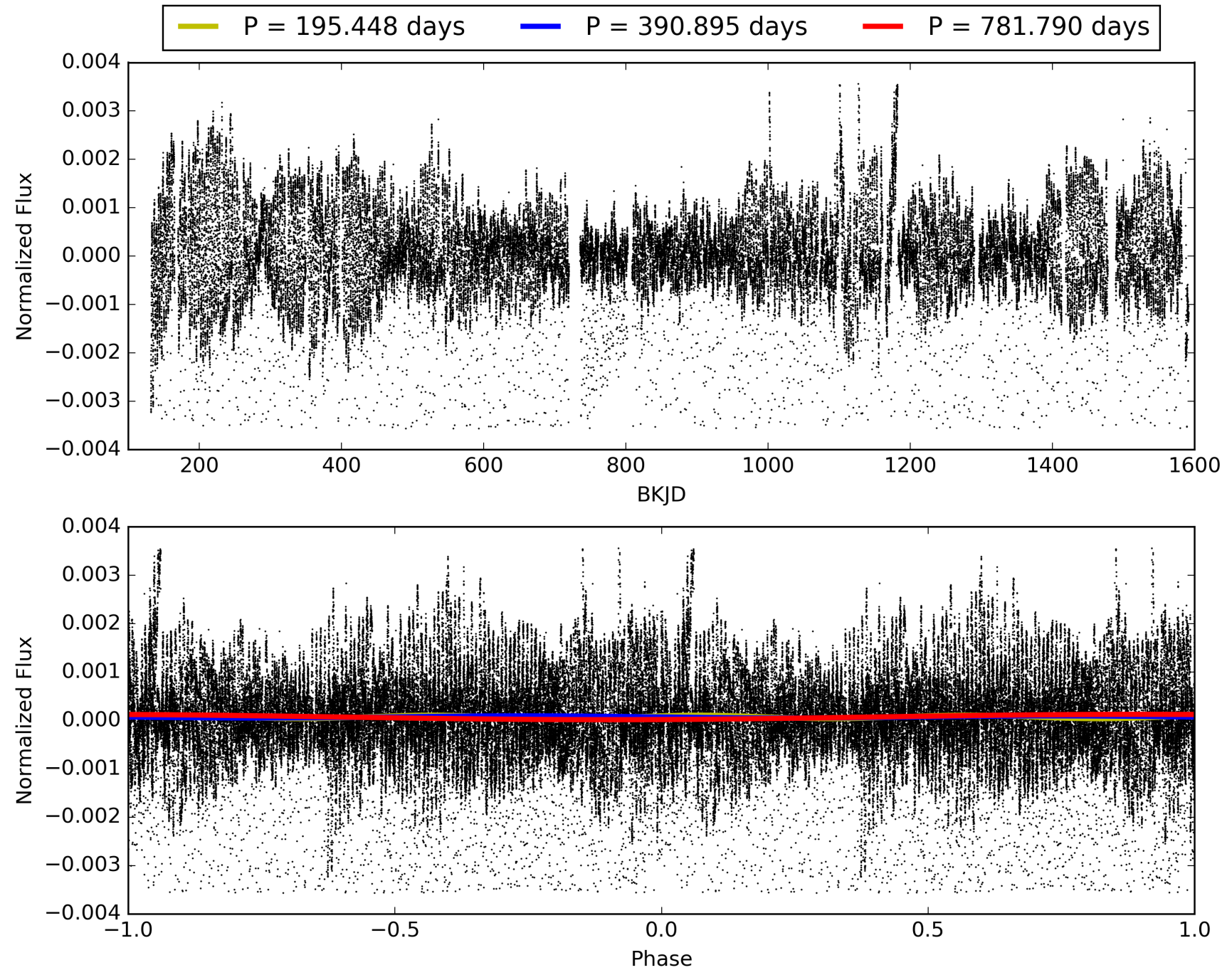
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:36:18 Z

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TCE 010960993-02, PDC Light Curves

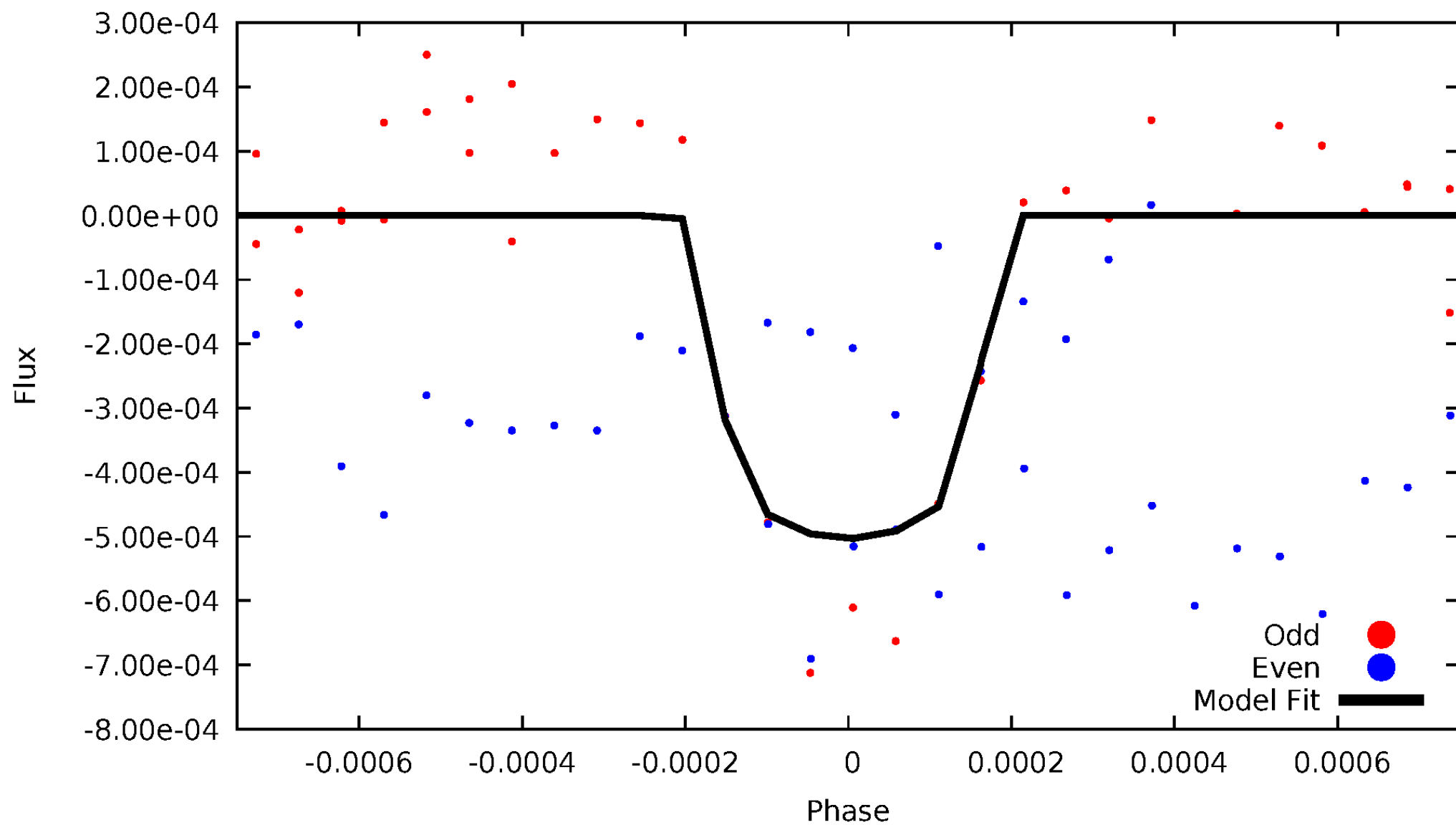


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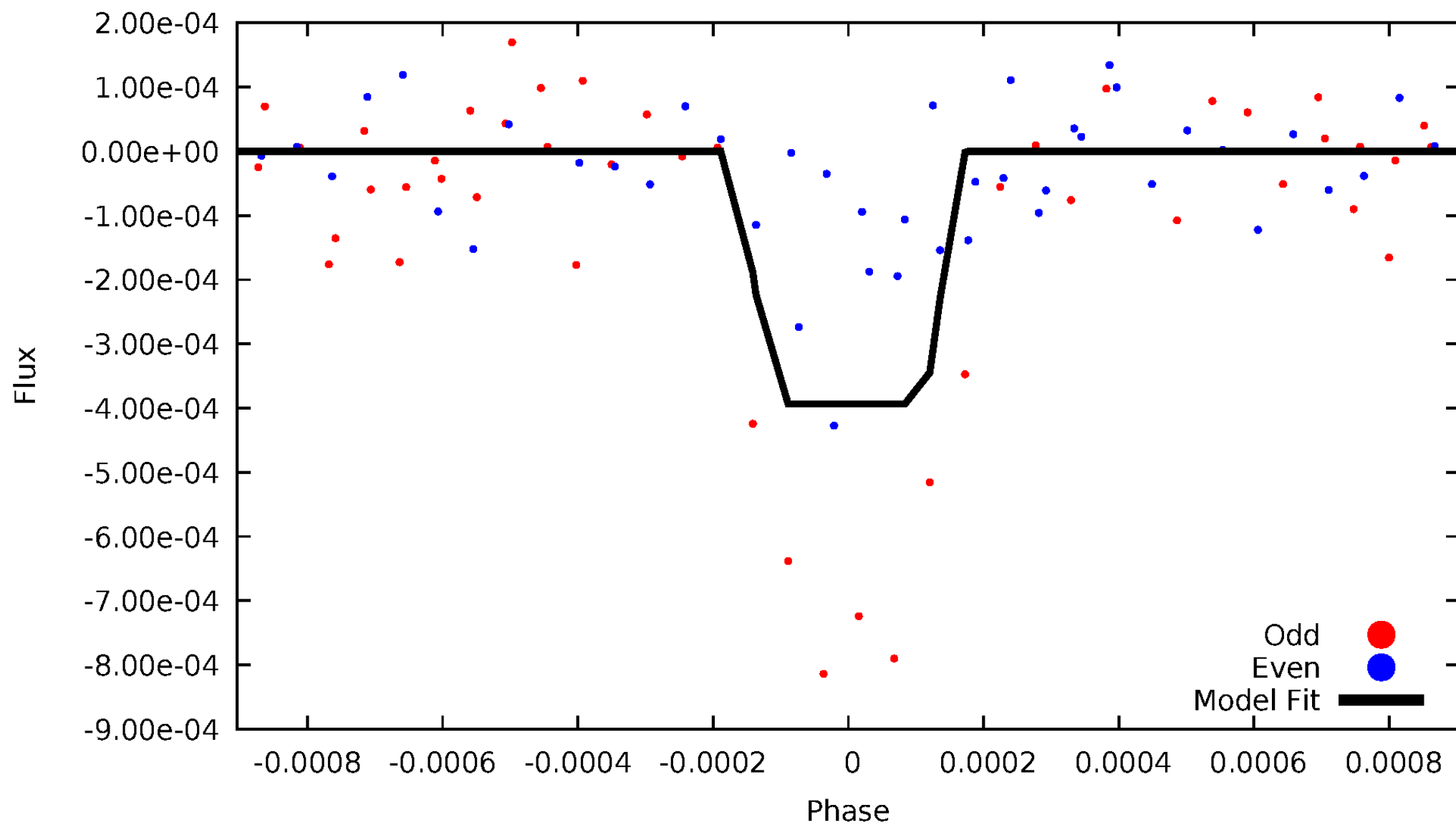
DV Odd/Even

TCE 010960993-02



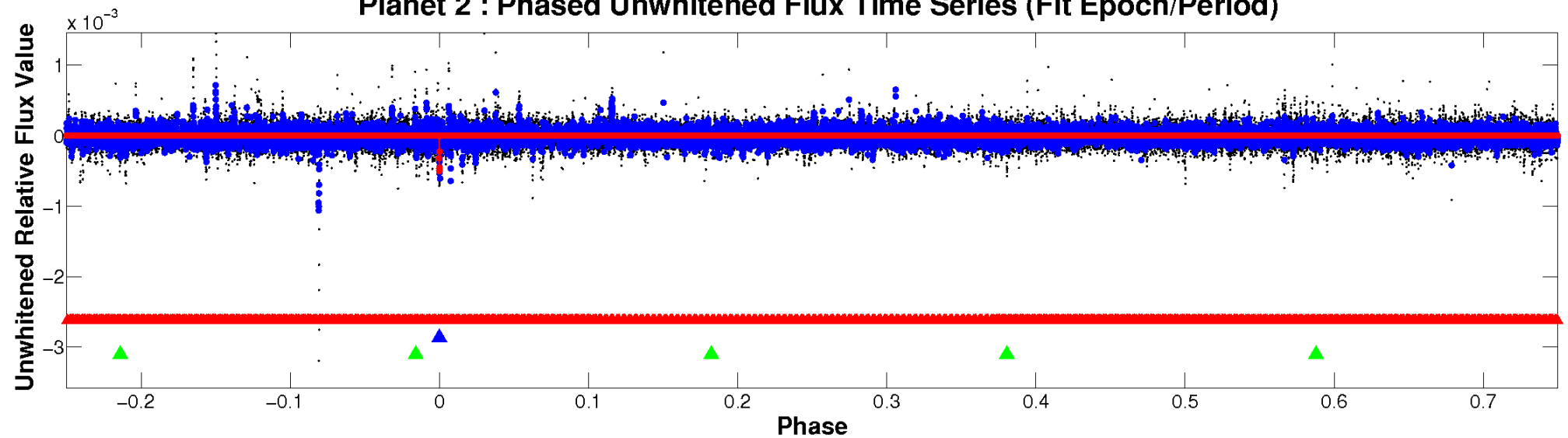
ALT Odd/Even

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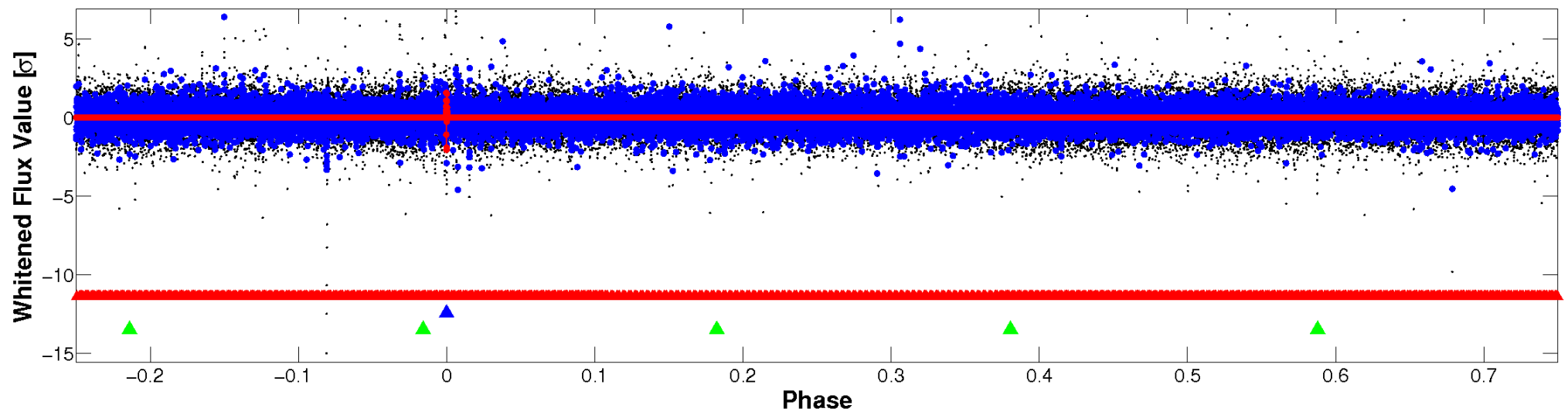


Non-Whitened Vs. Whitened Light Curve

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

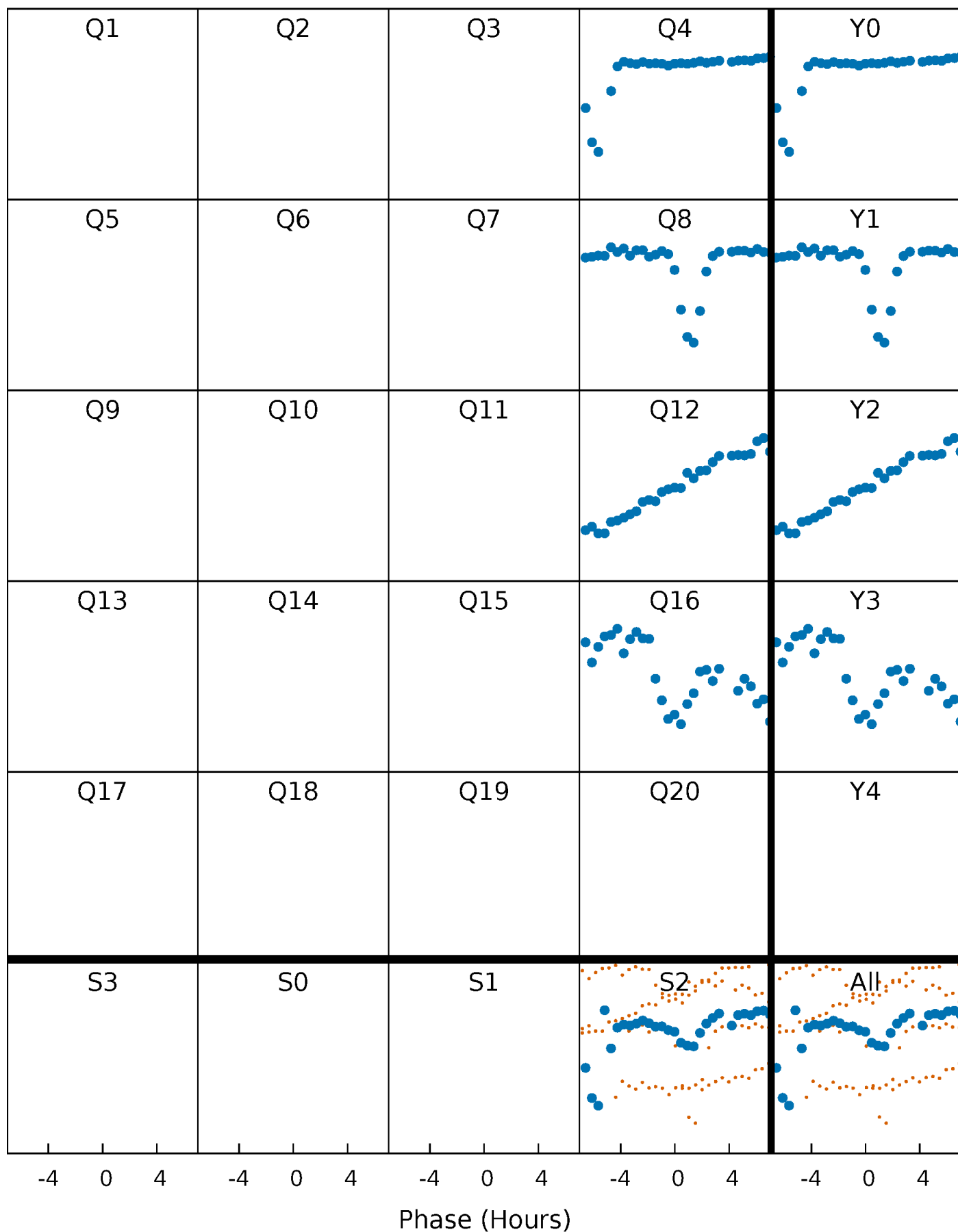


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



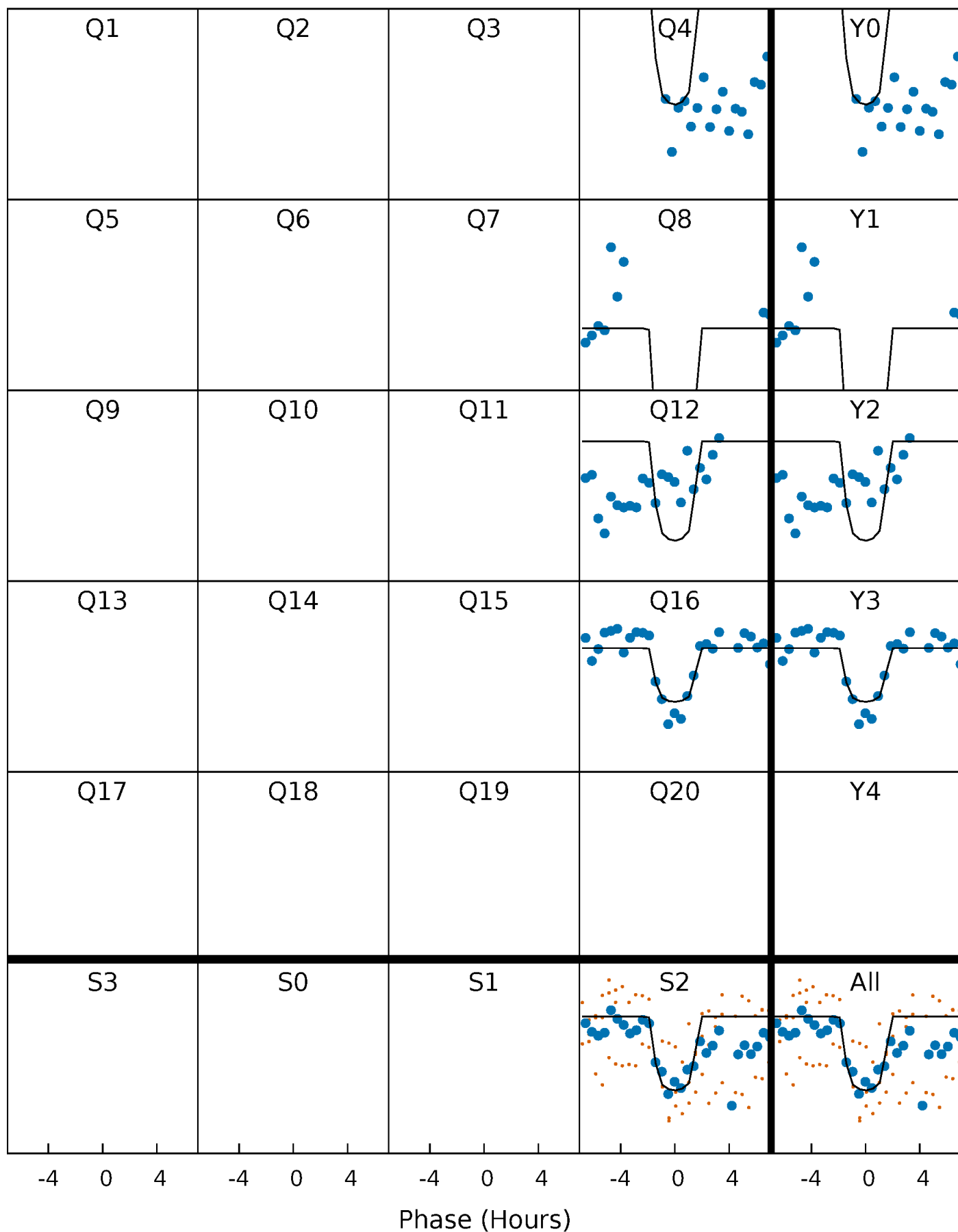
PDC Quarter-Phased Transit Curves

TCE 010960993-02 P=390.895029 Days $T_0=376.506177$ (BKJD)



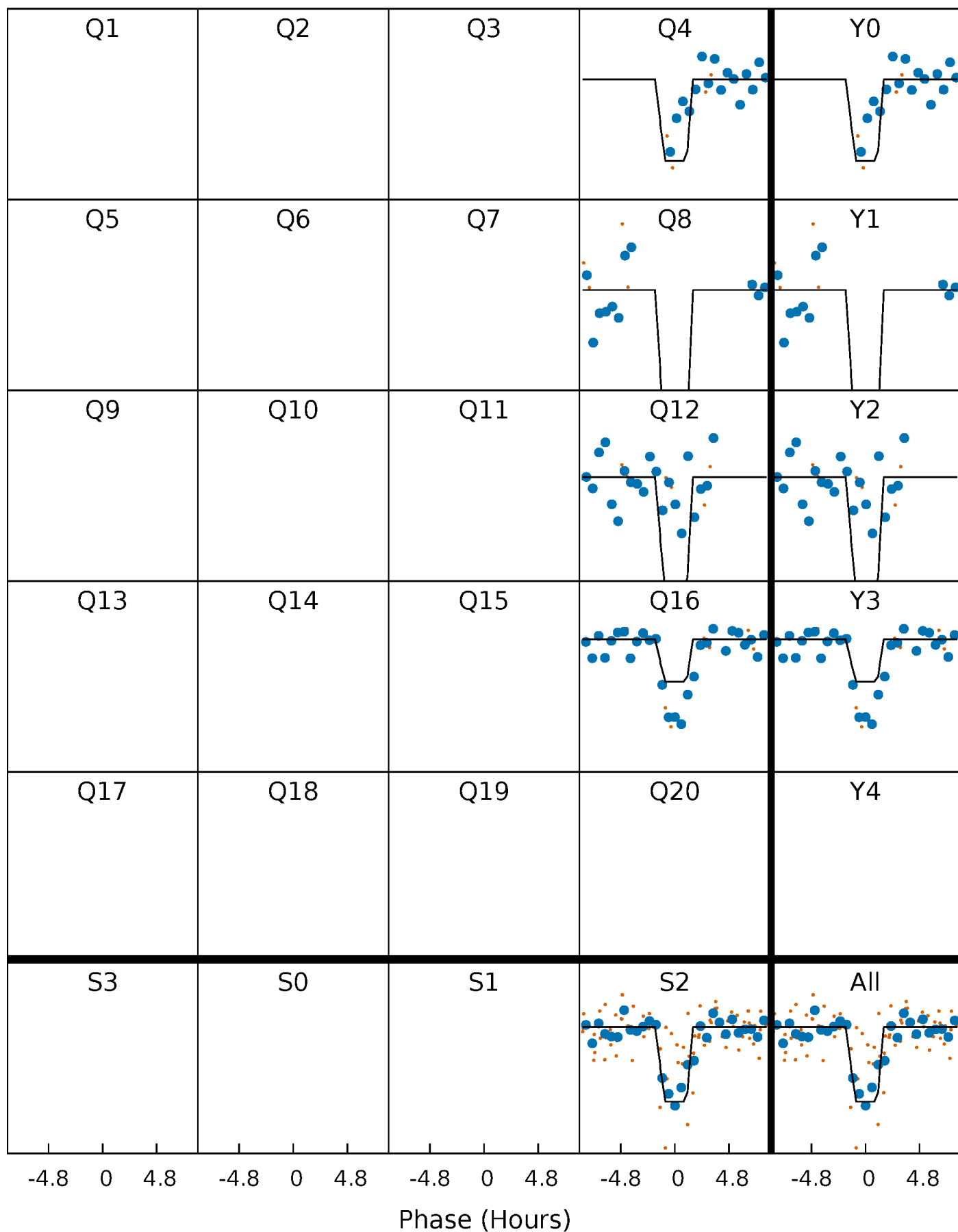
DV Quarter-Phased Transit Curves

TCE 010960993-02 $P=390.895029$ Days $T_0=376.506177$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

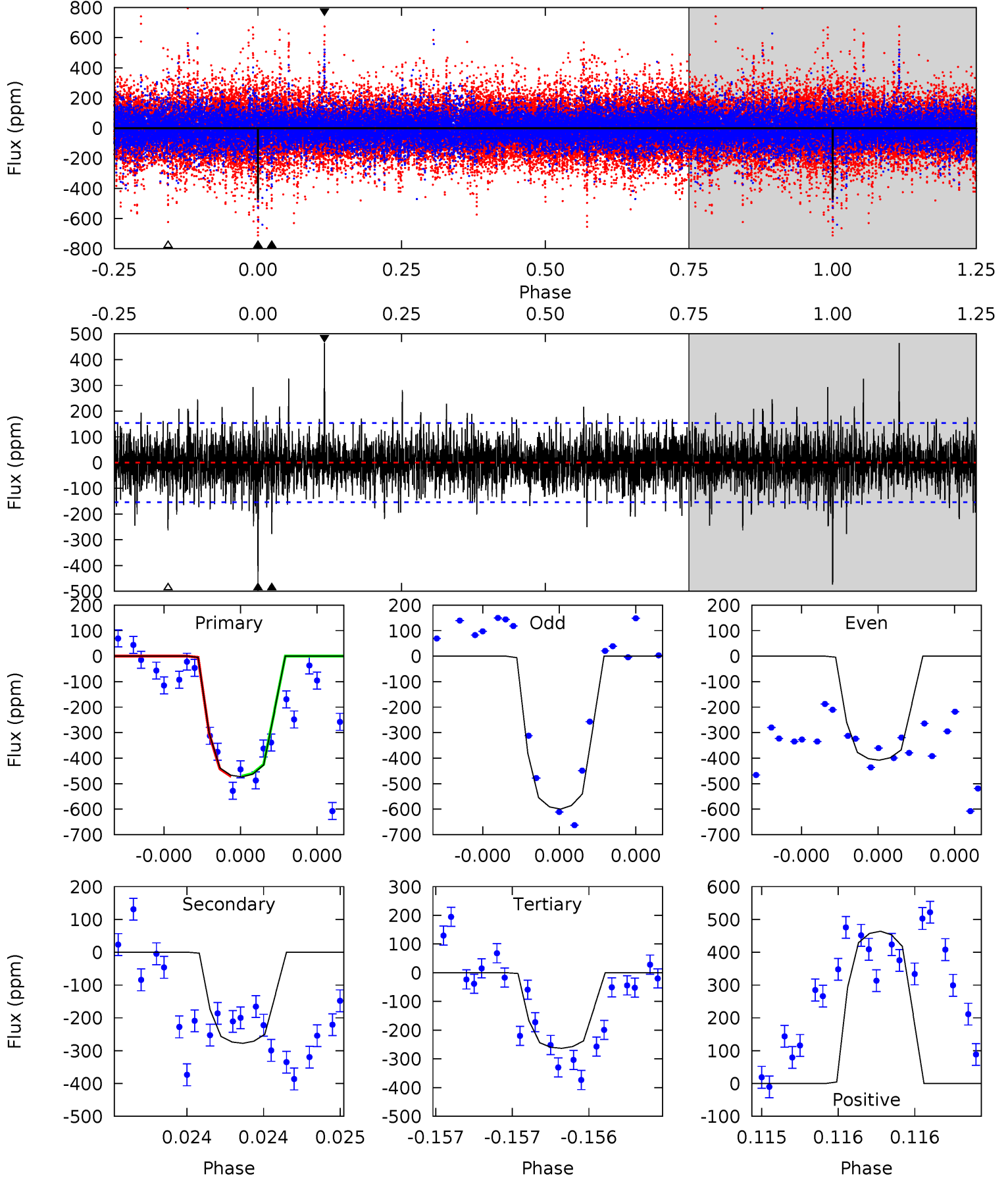
TCE 010960993-02 $P=390.896943$ Days $T_0=376.496543$ (BKJD)



DV Model-Shift Uniqueness Test

010960993-02, P = 390.895029 Days, E = 376.506177 Days

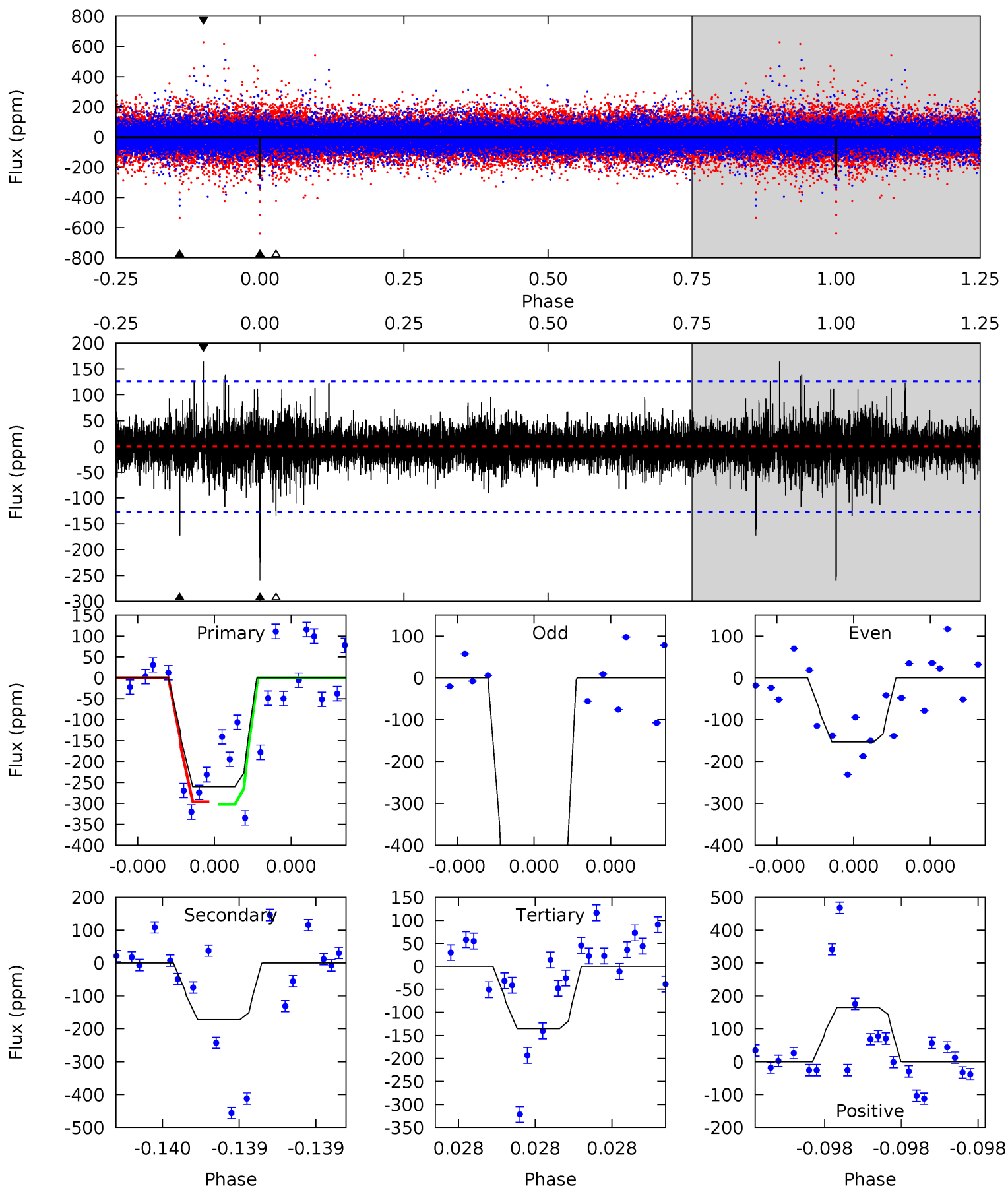
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	10.2	9.63	17.0	5.63	3.56	2.20	7.69	0.35	0.52	-6.82	3.36	0.80	0.49	0.00



Alt Model-Shift Uniqueness Test

010960993-02, P = 390.896943 Days, E = 376.496543 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	7.69	6.06	7.34	5.65	3.60	1.06	5.55	4.27	1.64	0.36	13.5	1.39	0.39	0.14



Stellar Parameters For KIC 010960993

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6338^{+179}_{-224}	$3.973^{+0.343}_{-0.147}$	$0.080^{+0.250}_{-0.300}$	$2.046^{+0.547}_{-0.820}$	$1.434^{+0.182}_{-0.313}$	$0.236^{+0.621}_{-0.099}$
	+3%/-4%	+9%/-4%	+312%/-375%	+27%/-40%	+13%/-22%	+264%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010960993-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-278 ± 27	$4.98^{+2.61}_{-2.15}$	507^{+37}_{-51}	5341^{+1550}_{-761}	8379^{+16796}_{-4701}
Alt.	-172 ± 22	$4.24^{+2.43}_{-2.02}$	507^{+40}_{-47}	5163^{+1800}_{-797}	7287^{+18387}_{-4425}

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

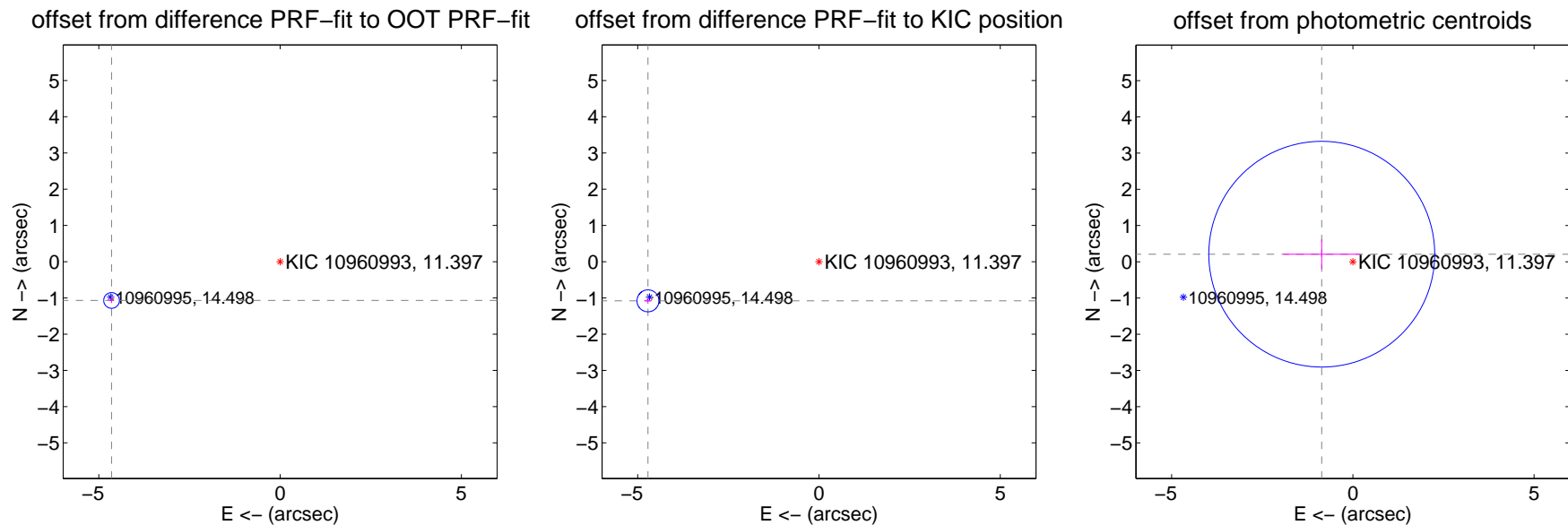
DV Centroid Data

Supplemental centroid analysis for 010960993-02. **Kepler magnitude: 11.40.** Transit SNR 9.01

There are 1 quarters with good PRF difference image offsets

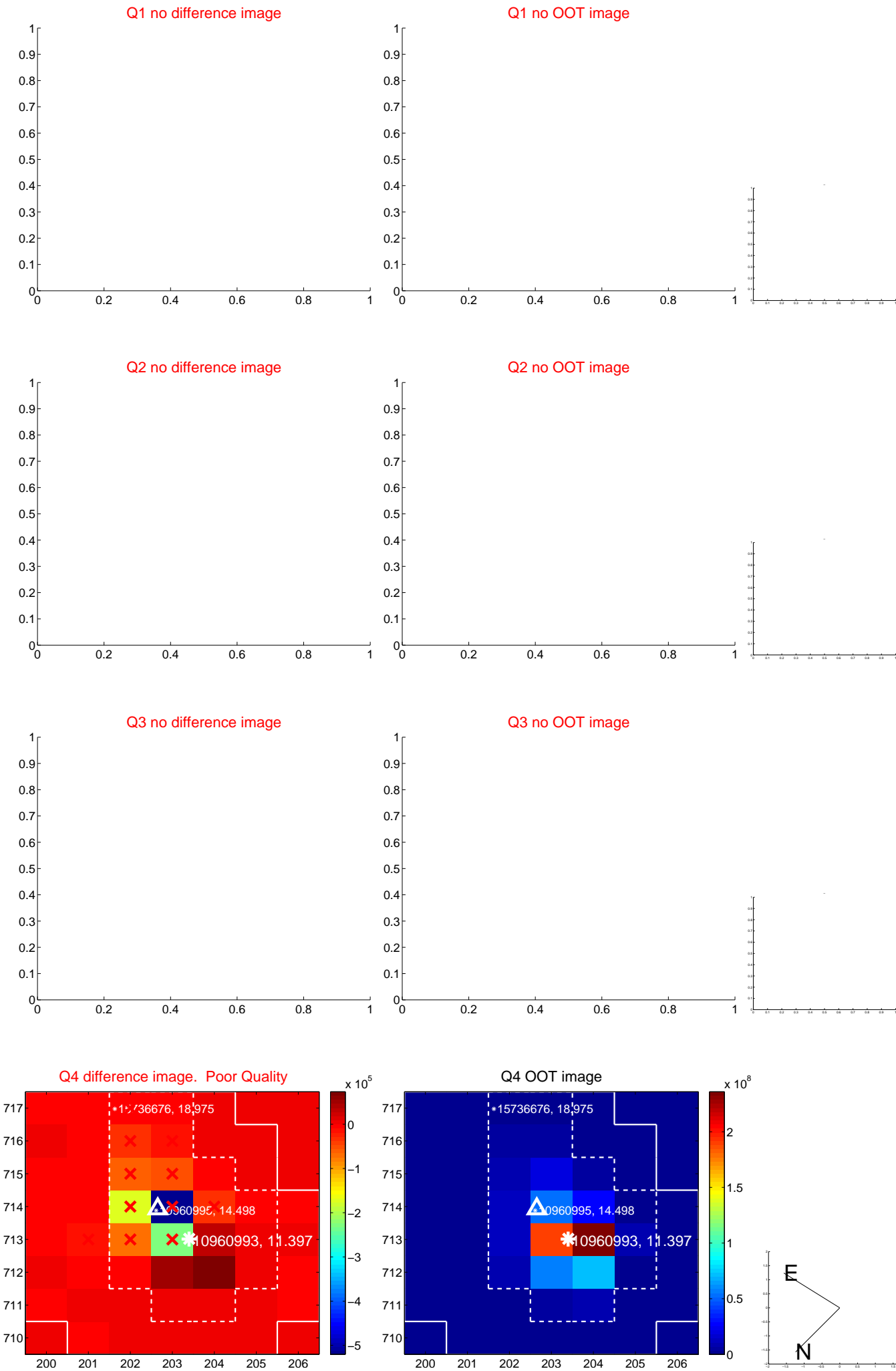
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.769 ± 0.072	66.05	4.648 ± 0.071	-1.069 ± 0.069
PRF-fit source offset from KIC position	4.838 ± 0.101	47.91	4.716 ± 0.095	-1.080 ± 0.079
photometric centroid source offset	0.88 ± 1.04	0.85	0.86 ± 1.06	0.21 ± 0.41

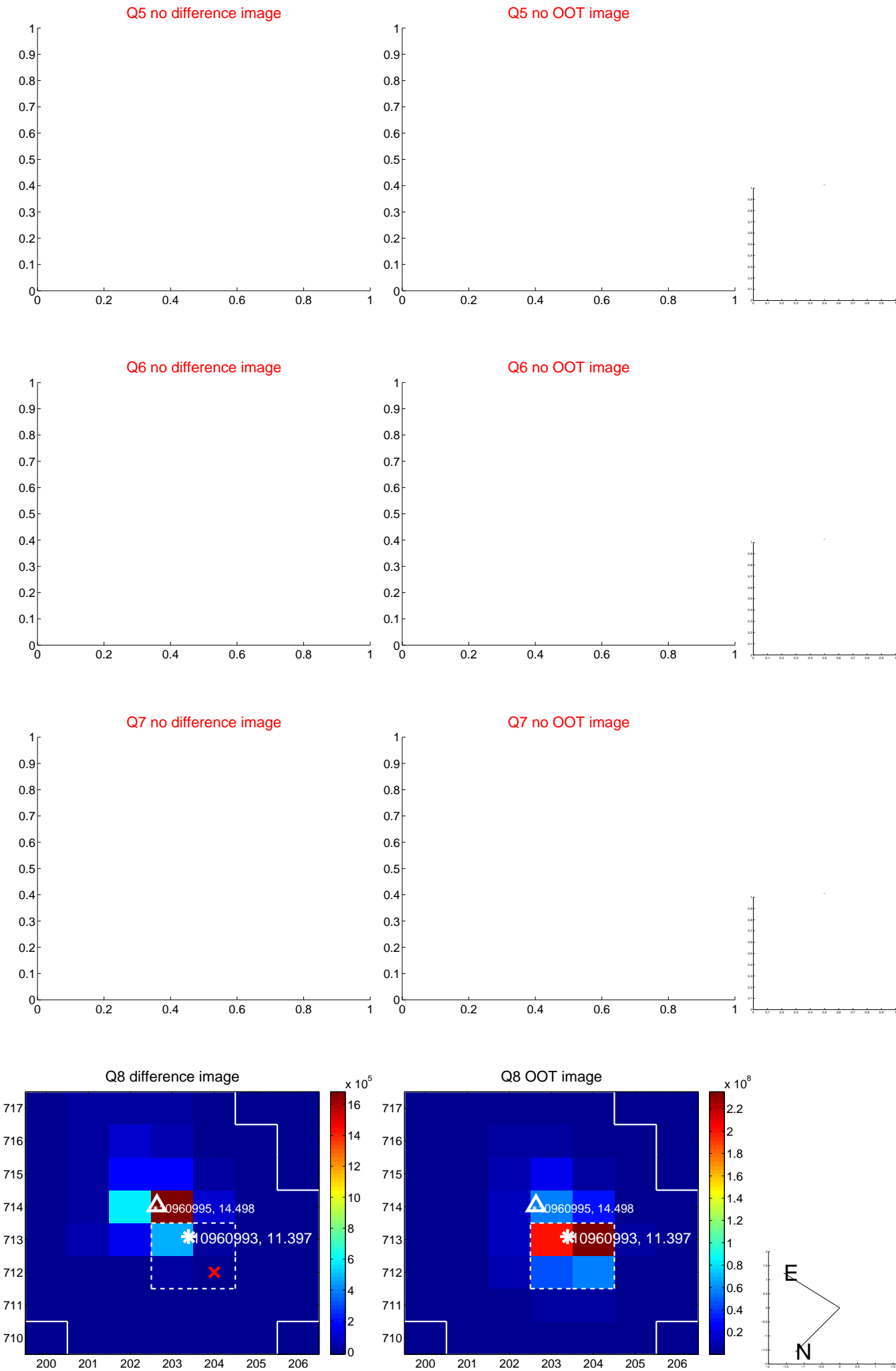


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

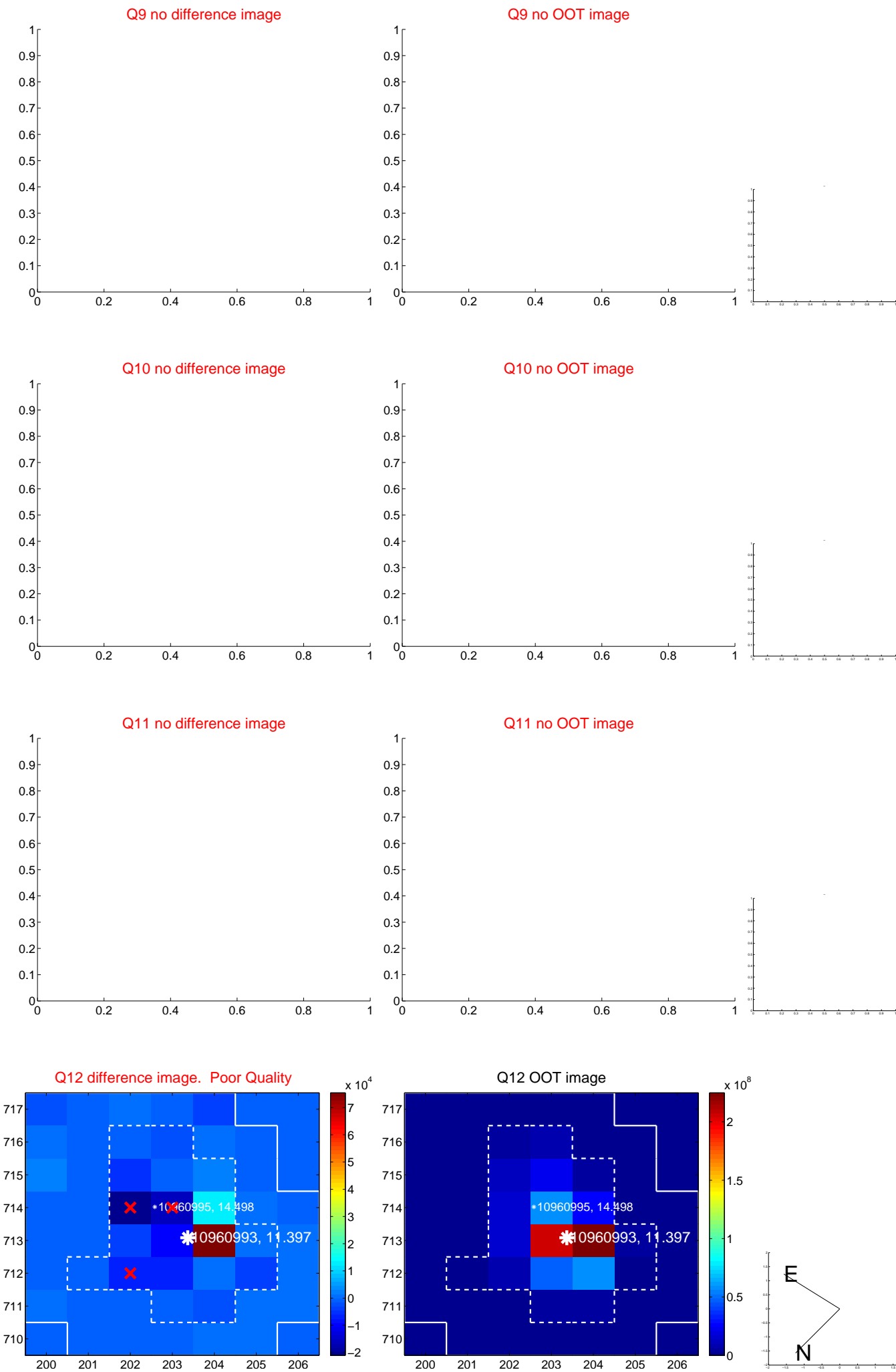
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



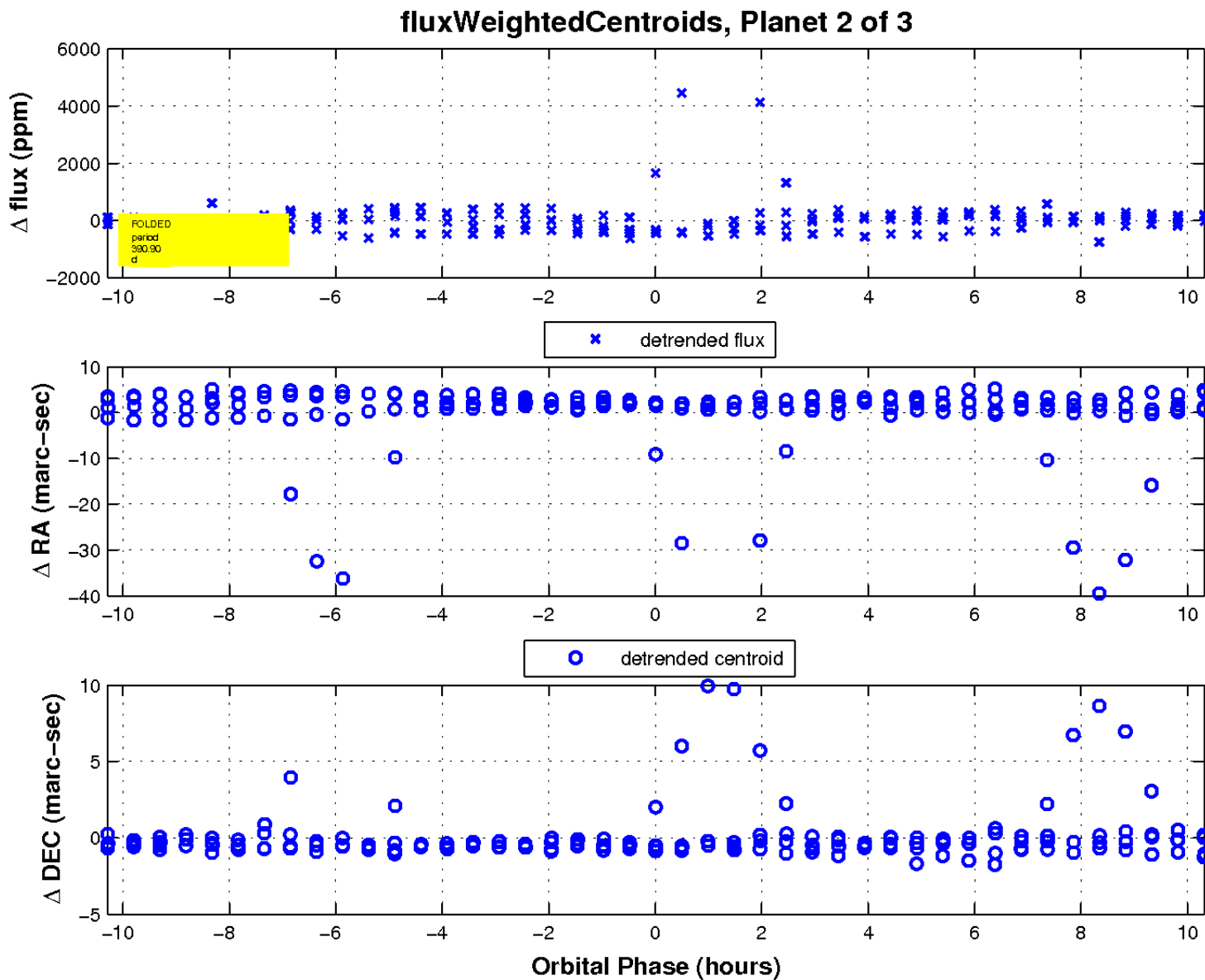
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

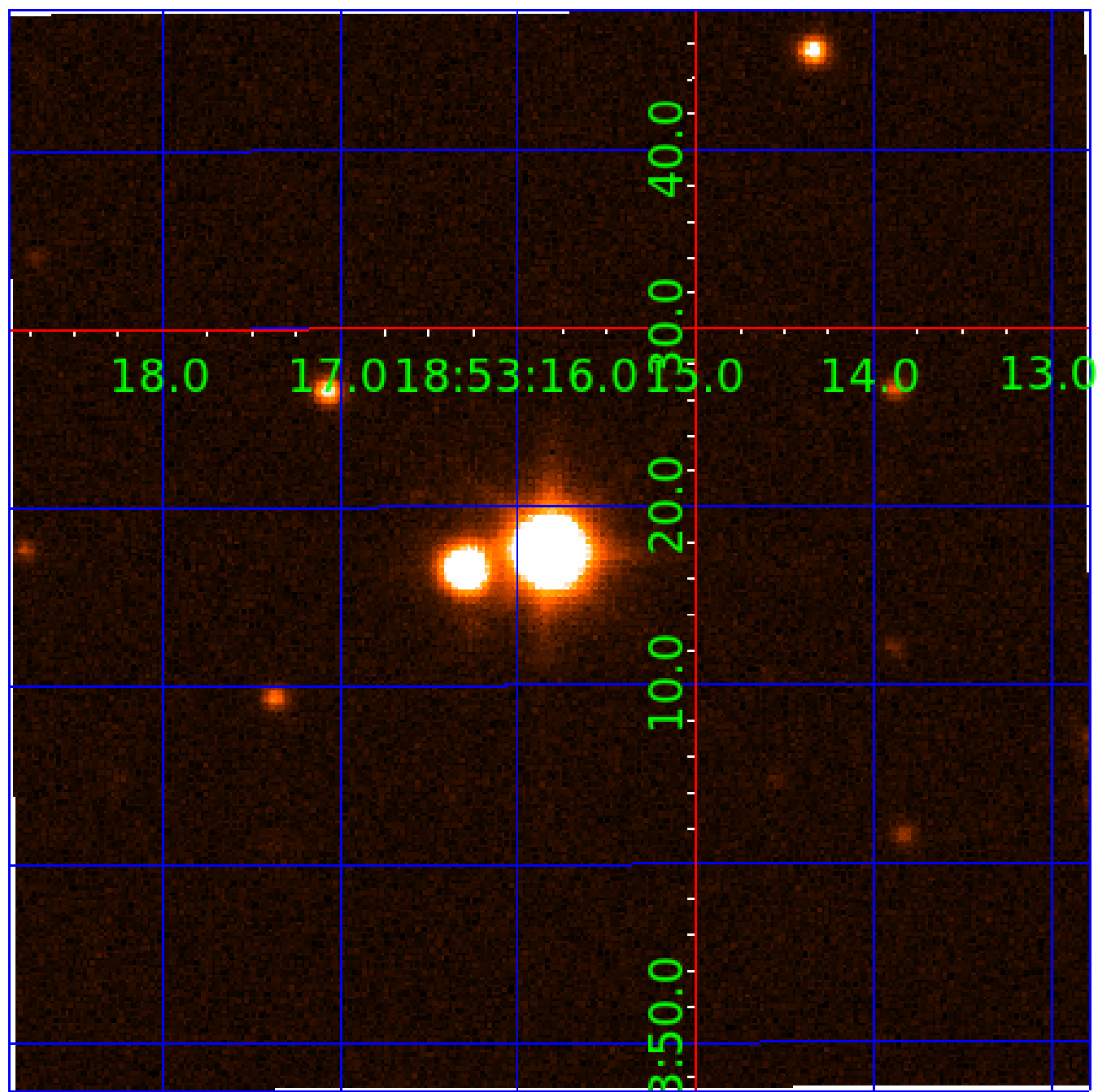


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010960993

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})
010960993-01	OBS	1284.01	1.558544	131.567892	8990.7	3.114	2983.7	1579.3	2.05	6338	34.76	6870.92
010960993-02	OBS	No	390.895029	376.506177	502.9	3.515	11.4	9.0	2.05	6338	5.34	4.34
010960993-03	OBS	No	313.431627	134.362740	313.2	6.739	8.6	5.8	2.05	6338	4.21	5.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010960993-01	OBS	FP	0.00	0	1	0	1	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—CENT_SATURATED—EPHEM_MATCH
010960993-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010960993-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

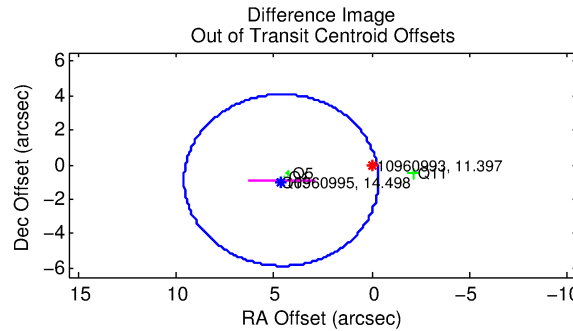
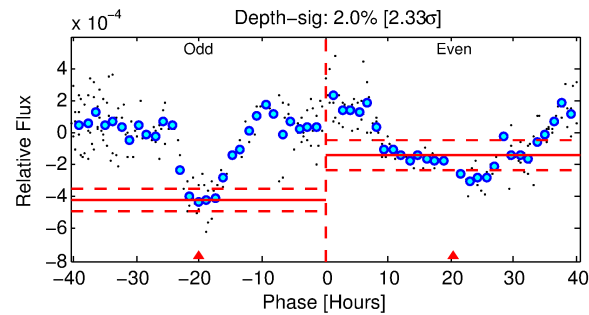
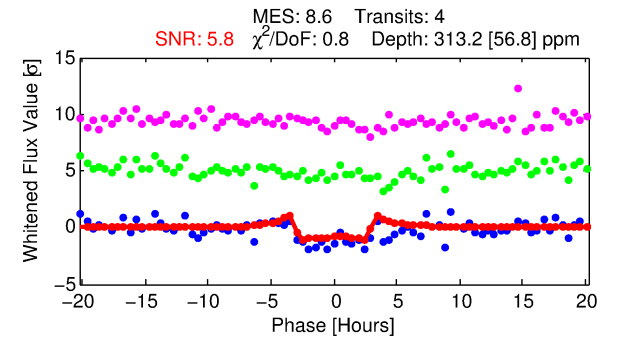
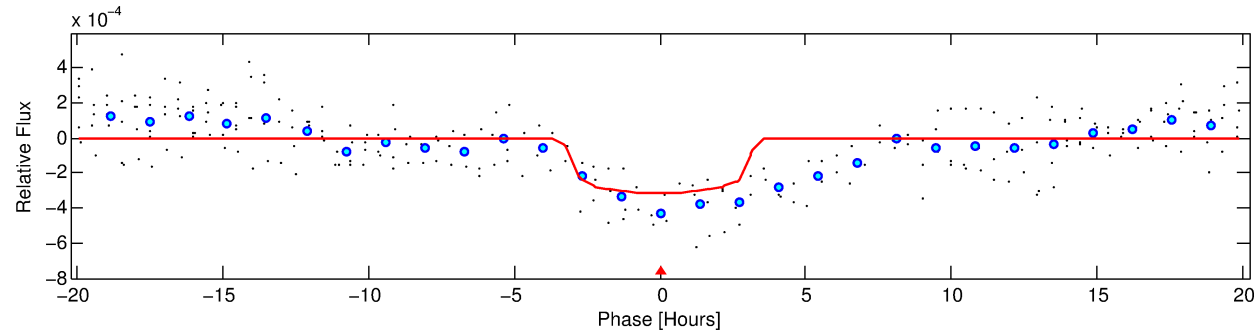
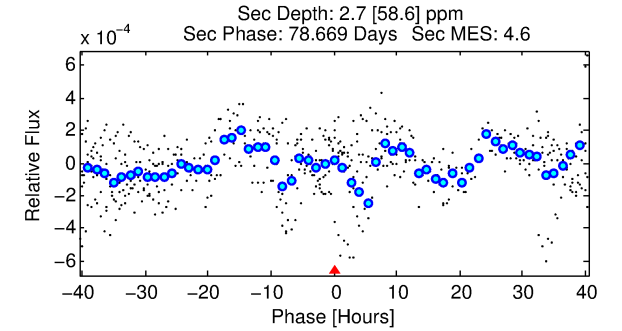
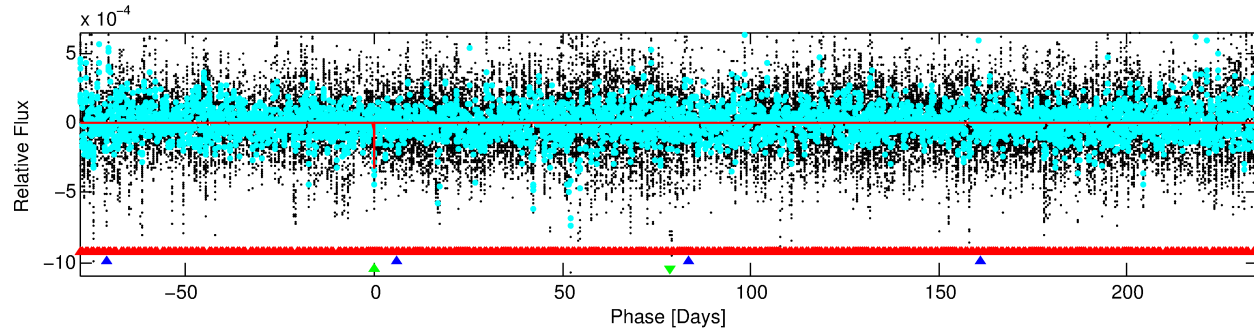
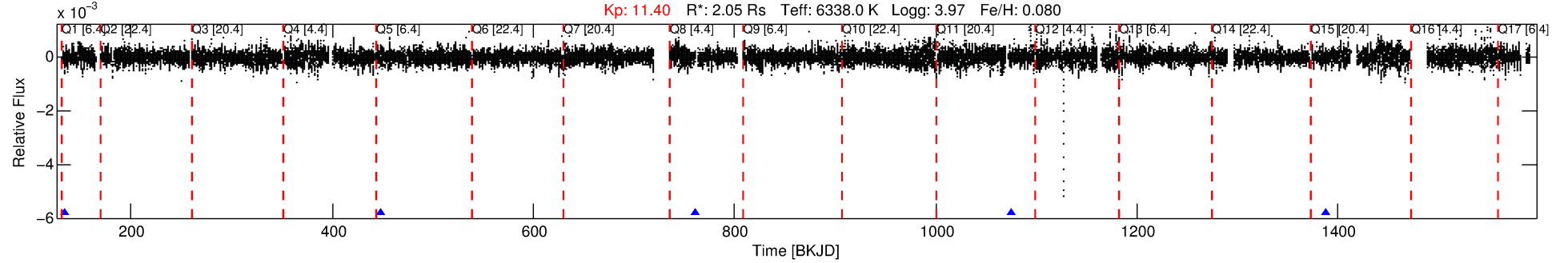
Ephemeris Match Information For 010960993-03

No Significant Match Found

DV One-Page Summary

KIC: 10960993 Candidate: 3 of 3 Period: 313.432 d
KOI: K01284 Corr: No Ephemeris Match

Kp: 11.40 R*: 2.05 Rs Teff: 6338.0 K Logg: 3.97 Fe/H: 0.080



DV Fit Results:

Period = 313.43163 [0.00562] d
Epoch = 134.3627 [0.0131] BKJD
Rp/R* = 0.0189 [0.0033]
a/R* = 176.41 [119.69]
b = 0.89 [0.16]
Seff = 5.83 [3.54]
Teq = 396 [60] K
Rp = 4.21 [1.84] Re
a = 1.0187 [0.3821] AU
Ag = 86.29 [1887.72] [0.05σ]
Teffp = 1867 [10209] K [0.14σ]

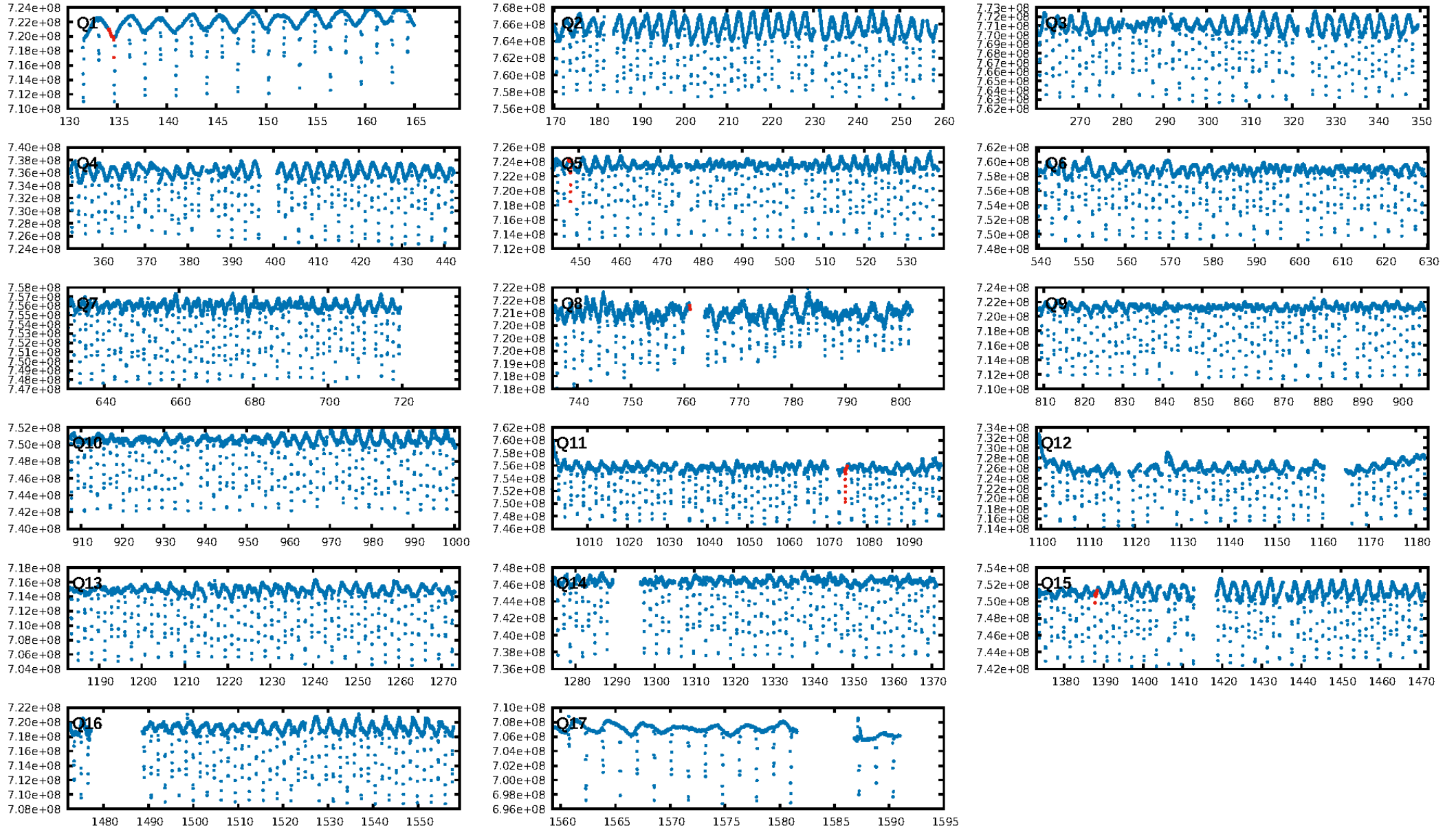
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1008.28σ]
LongPeriod-sig: 100.0% [244.61σ]
ModelChiSquare2-sig: 76.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.82e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -13.03
Centroid-sig: N/A
Centroid-so: 3.576 arcsec [1.85σ]
OotOffset-rm: 4.711 arcsec [2.85σ]
KicOffset-rm: 4.751 arcsec [3.77σ]
OotOffset-st: 0/2/0/2 [4]
KicOffset-st: 0/2/0/2 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.00 [0/4]

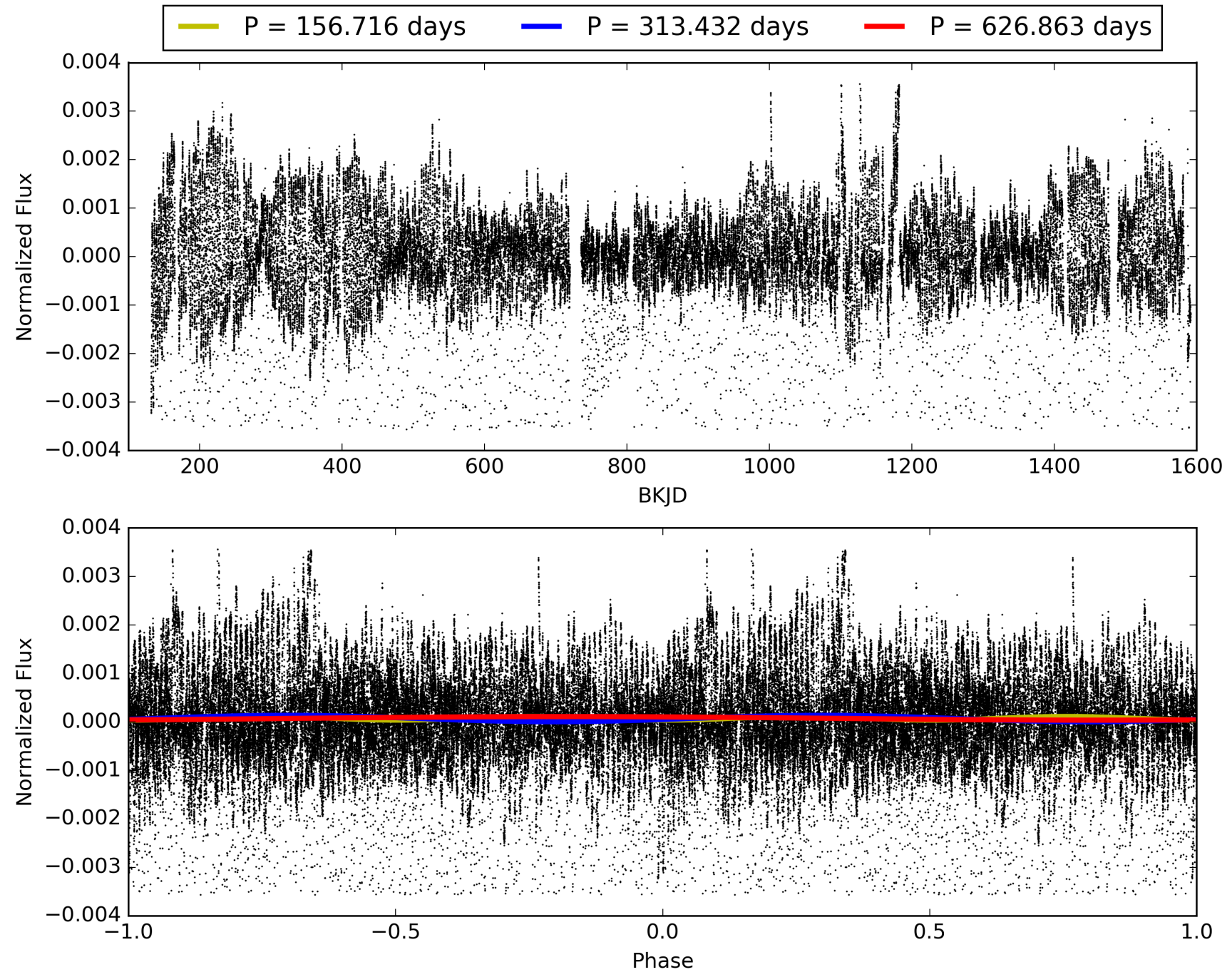
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 09:36:27 Z

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

TCE 010960993-03, PDC Light Curves

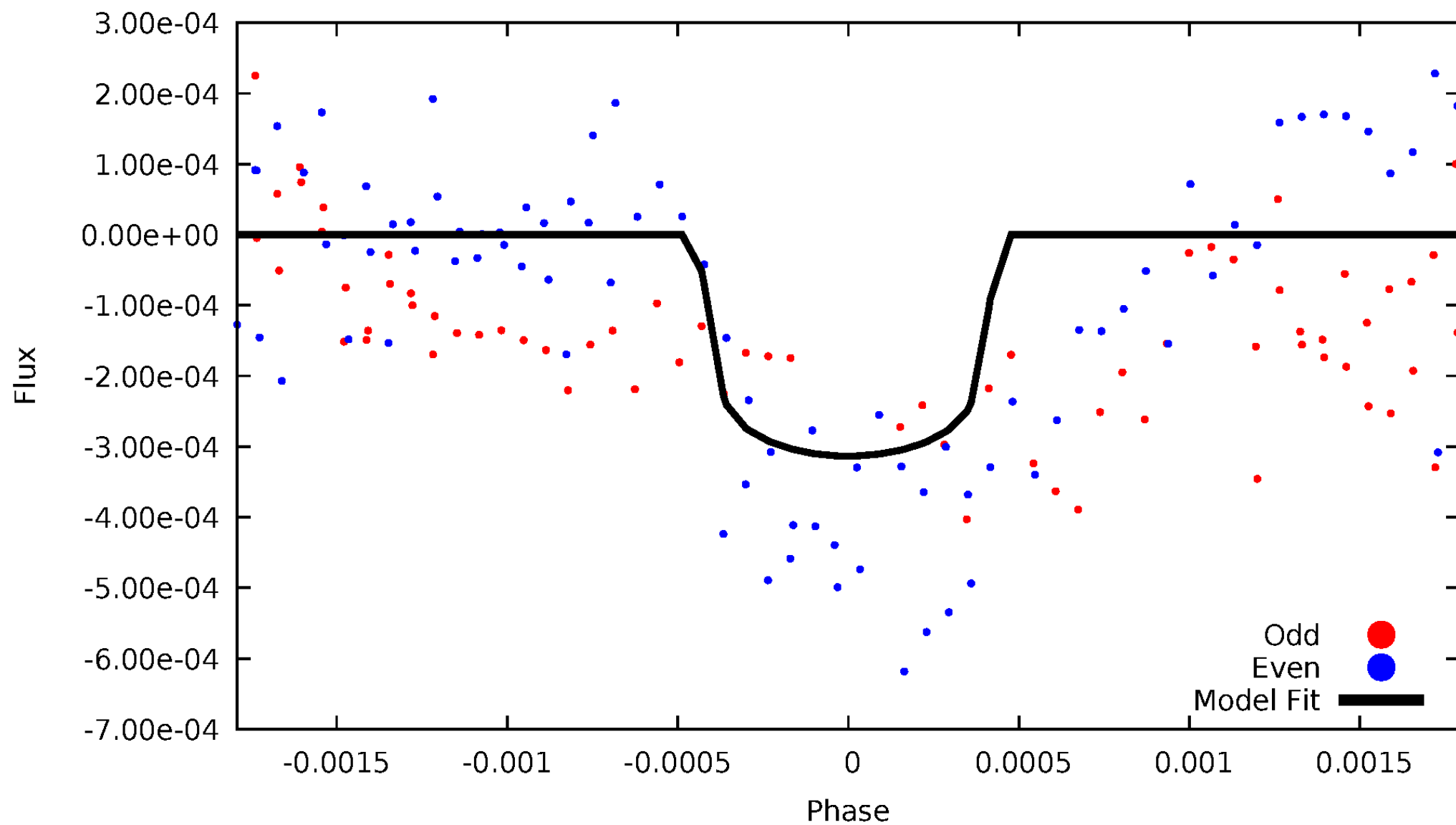


TCE 010960993-03



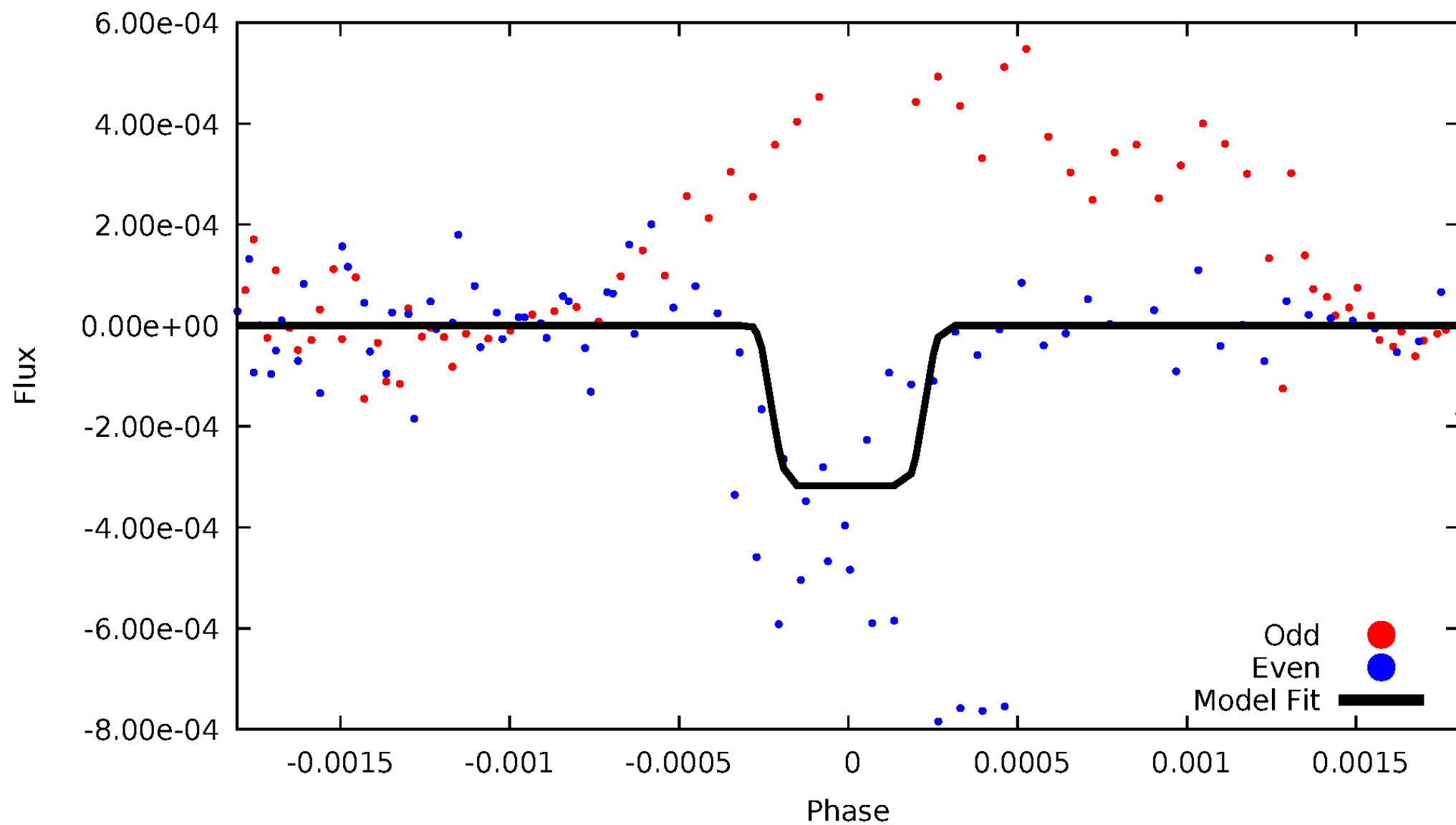
DV Odd/Even

TCE 010960993-03



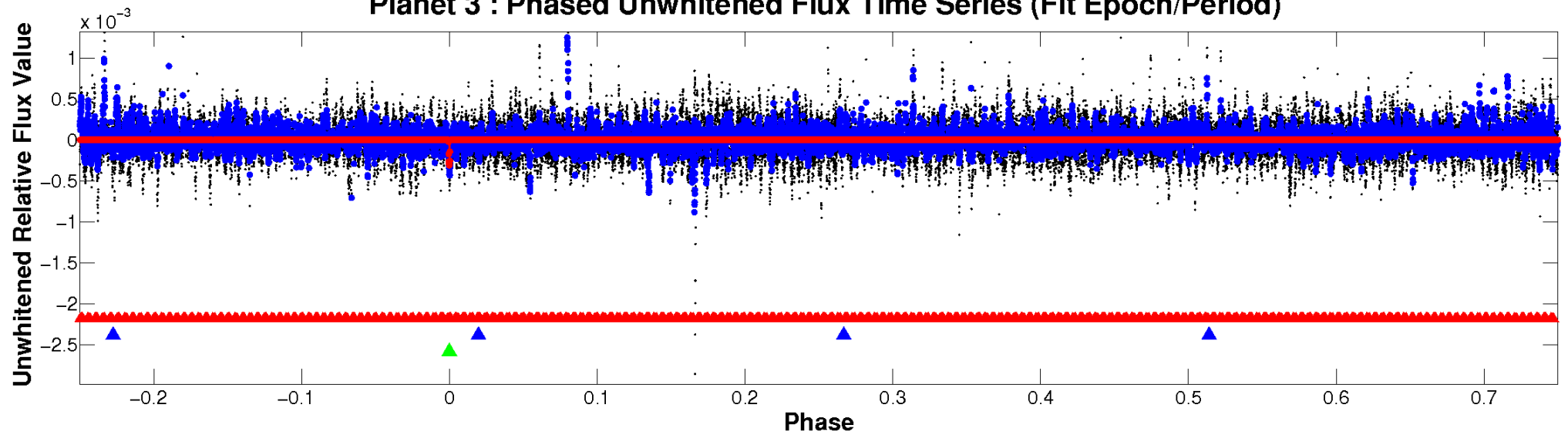
ALT Odd/Even

TCE 010960993-03

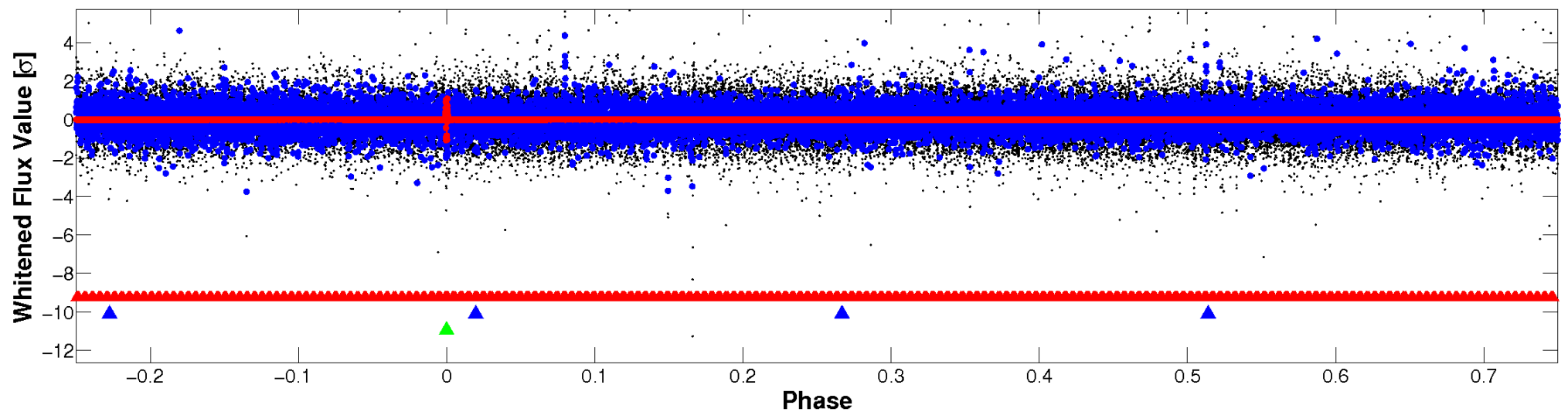


Non-Whitened Vs. Whitened Light Curve

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

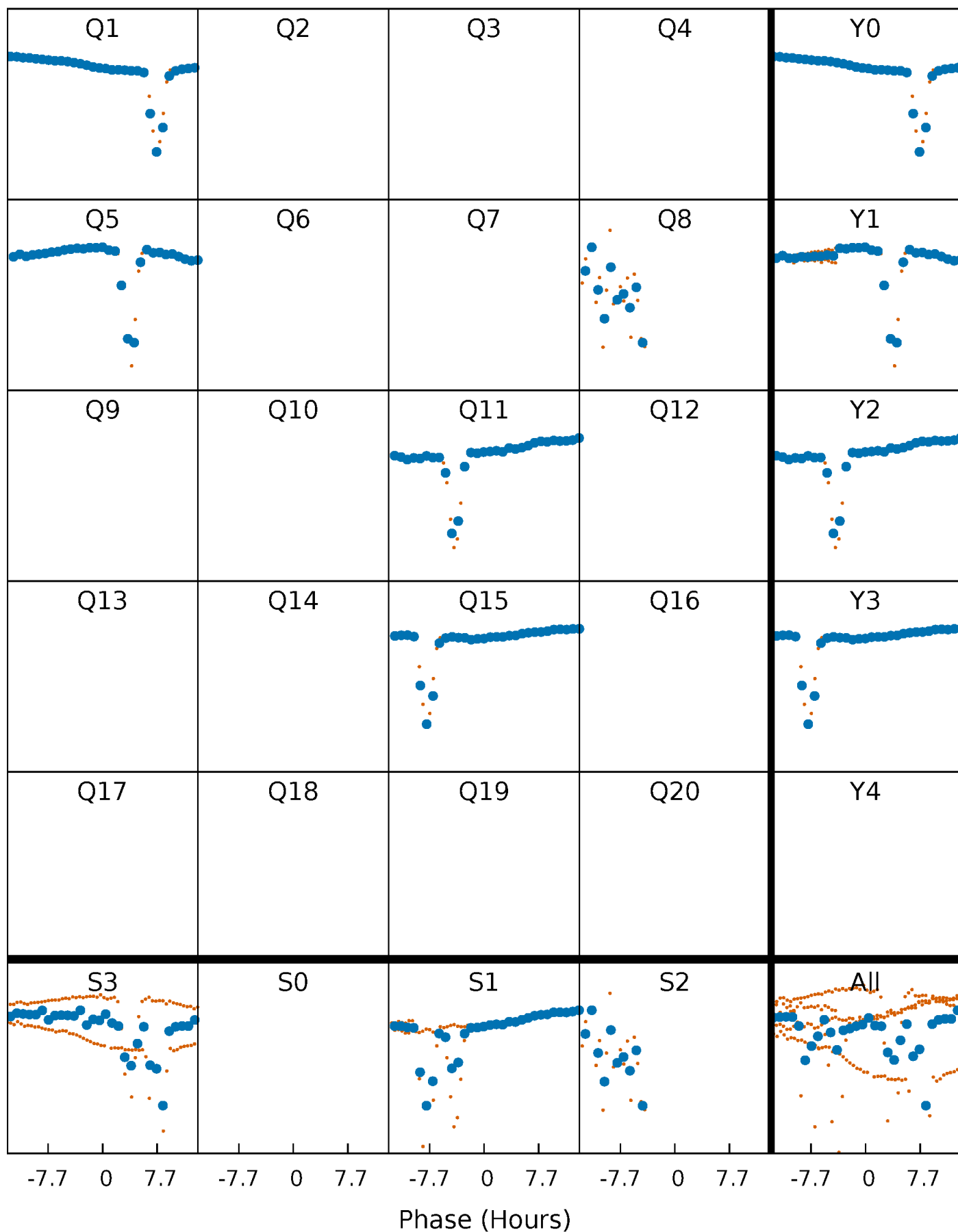


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



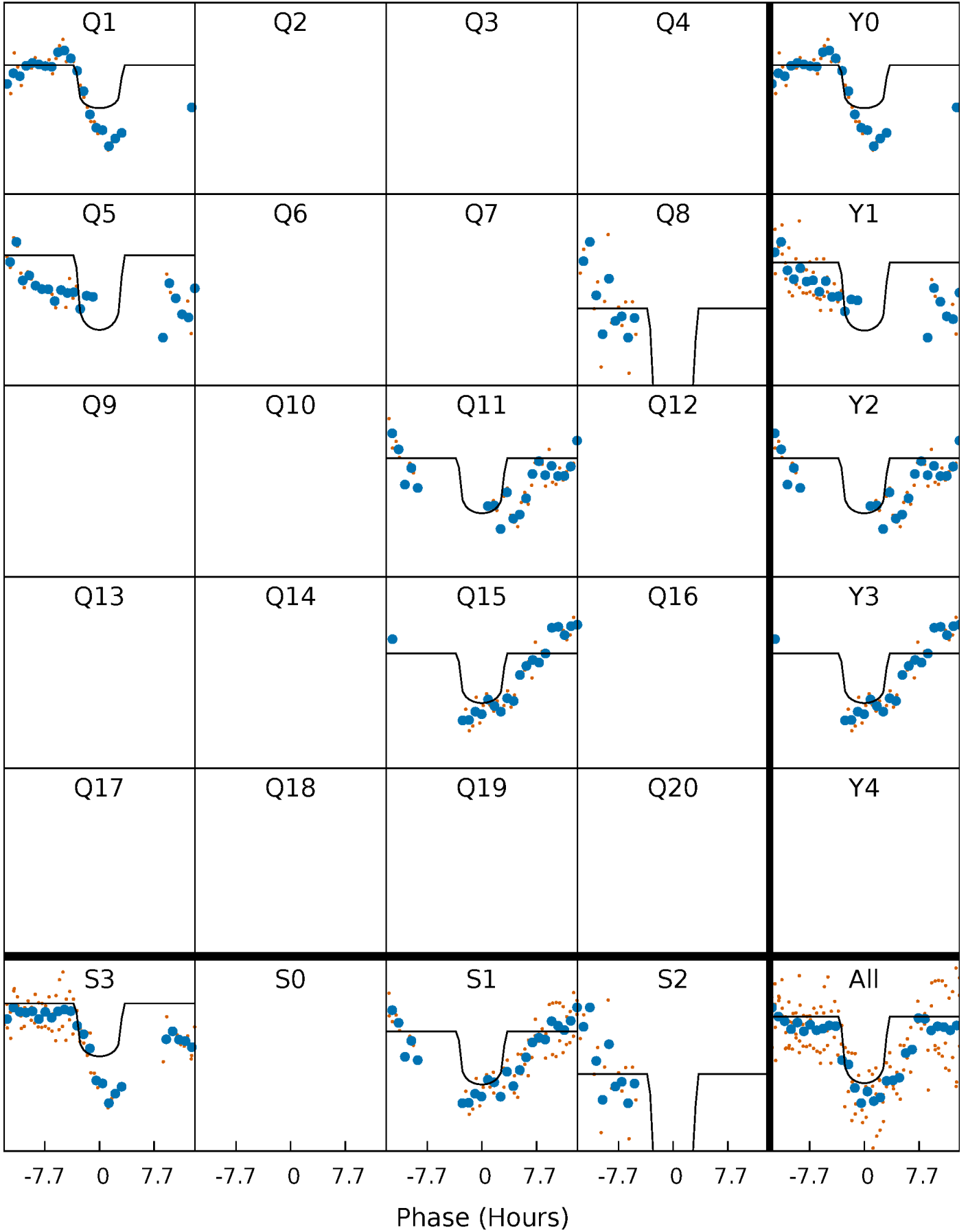
PDC Quarter-Phased Transit Curves

TCE 010960993-03 P=313.431627 Days $T_0=134.362740$ (BKJD)



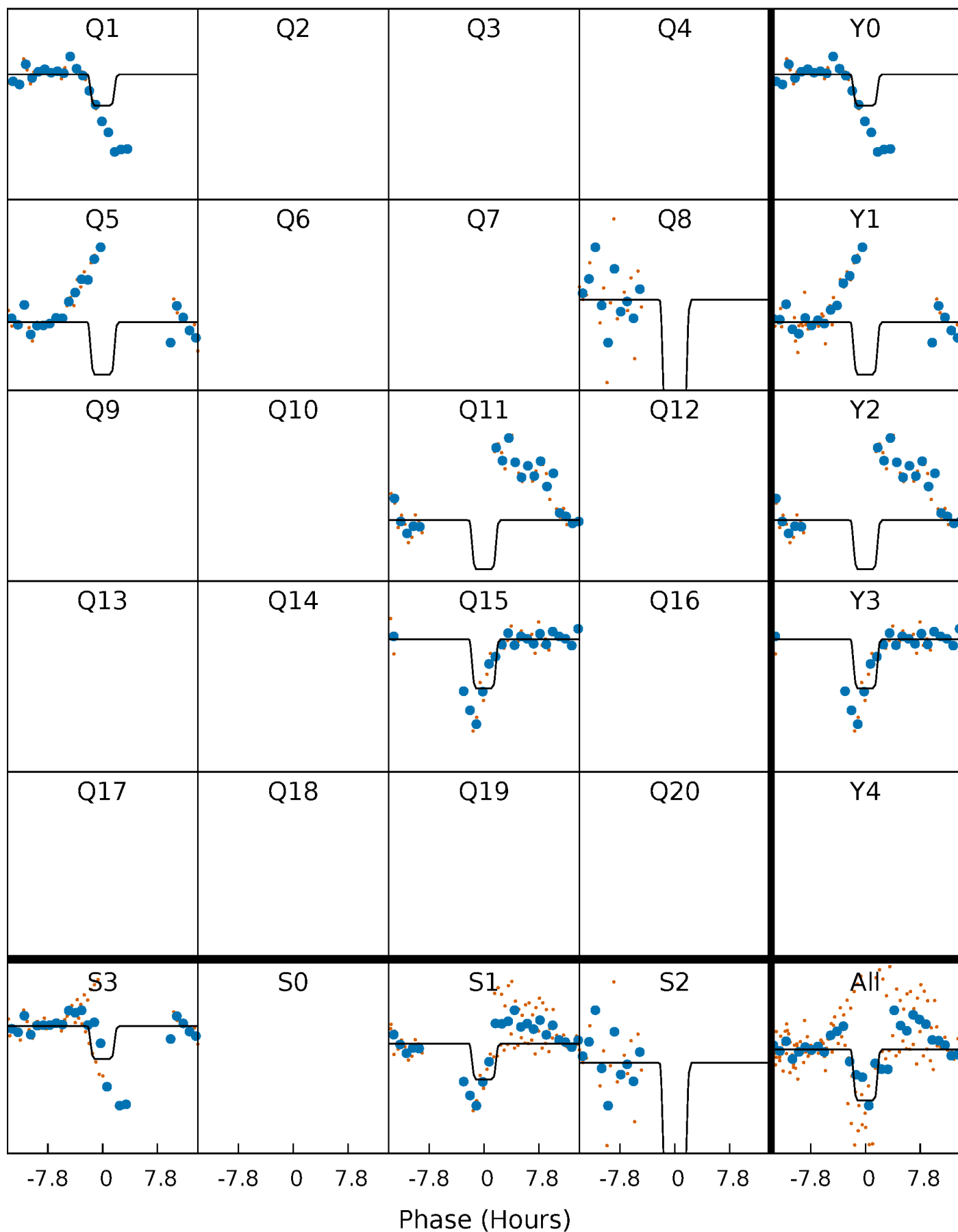
DV Quarter-Phased Transit Curves

TCE 010960993-03 $P=313.431627$ Days $T_0=134.362740$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

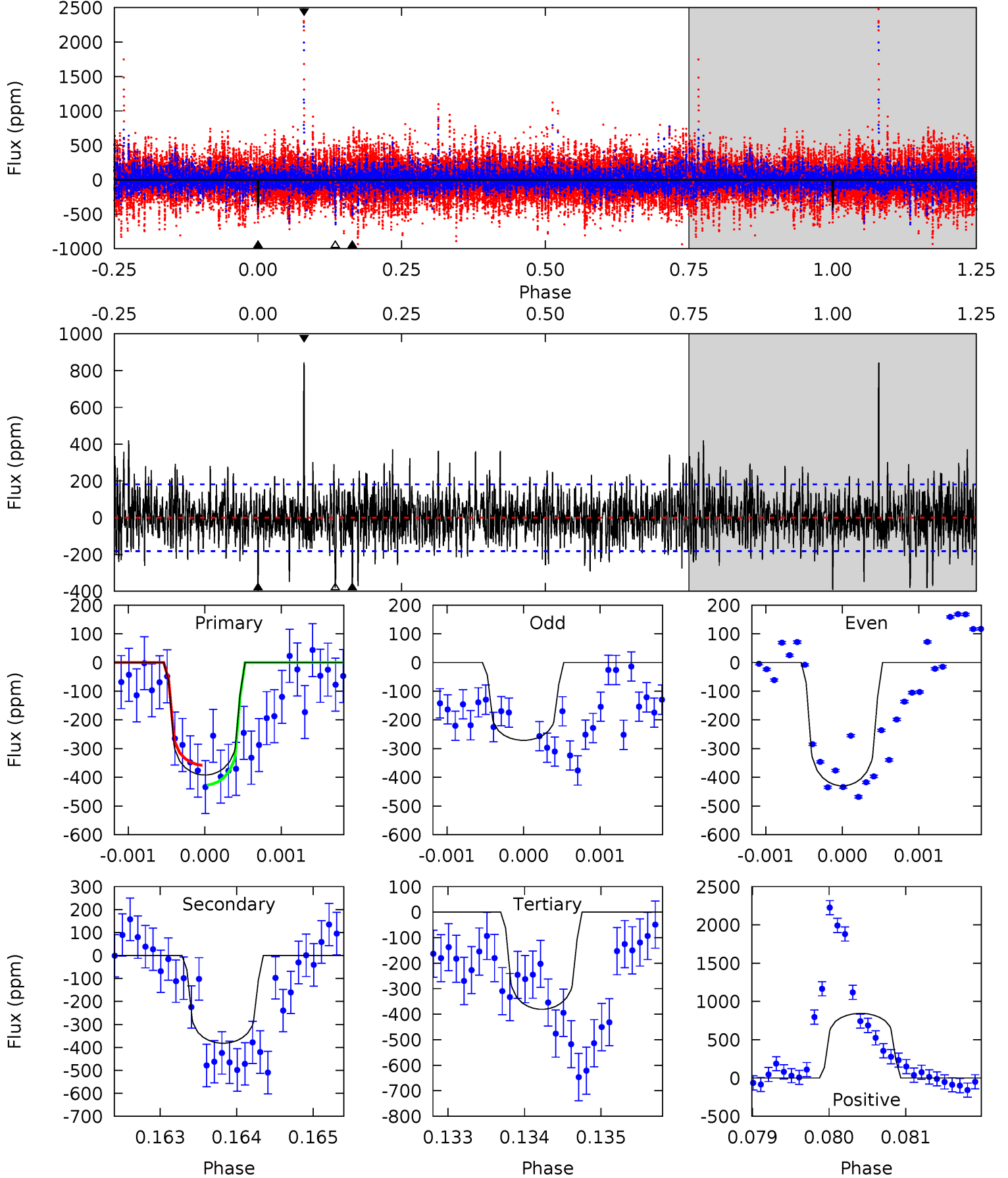
TCE 010960993-03 P=313.437188 Days $T_0=134.330984$ (BKJD)



DV Model-Shift Uniqueness Test

010960993-03, P = 313.431627 Days, E = 134.362740 Days

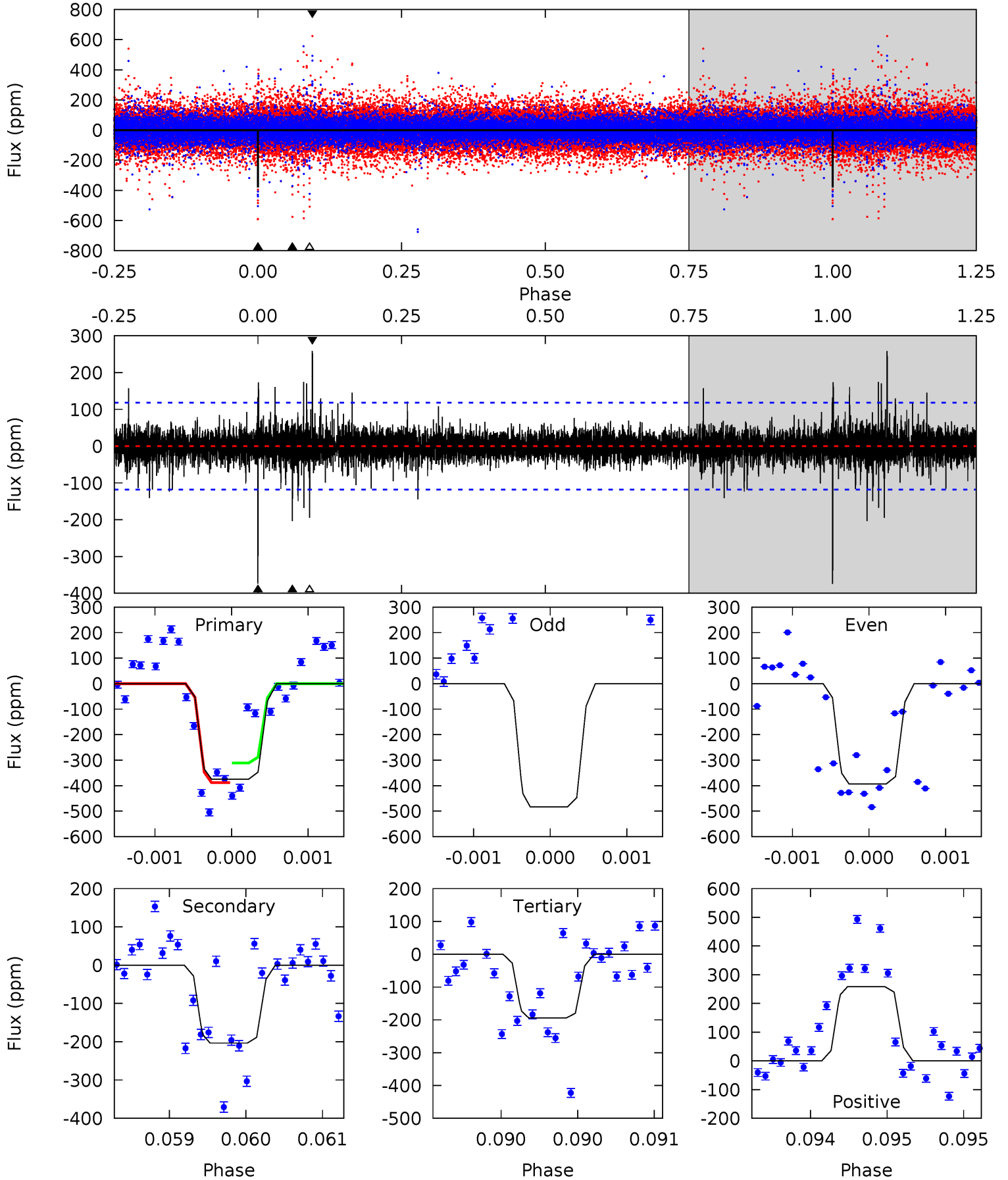
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	11.5	11.5	25.4	5.47	3.32	2.94	0.34	-13.6	0.04	-13.9	2.01	0.96	0.68	1.04



Alt Model-Shift Uniqueness Test

010960993-03, P = 313.437188 Days, E = 134.330984 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	9.57	9.14	12.2	5.56	3.46	1.16	8.48	5.46	0.44	-2.59	2.06	0.94	0.41	1.74



Stellar Parameters For KIC 010960993

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6338^{+179}_{-224}	$3.973^{+0.343}_{-0.147}$	$0.080^{+0.250}_{-0.300}$	$2.046^{+0.547}_{-0.820}$	$1.434^{+0.182}_{-0.313}$	$0.236^{+0.621}_{-0.099}$
	+3%/-4%	+9%/-4%	+312%/-375%	+27%/-40%	+13%/-22%	+264%/-42%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 010960993-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-382 ± 33	$4.03^{+0.99}_{-1.01}$	547^{+40}_{-63}	6451^{+671}_{-595}	13459^{+9607}_{-5009}
Alt.	-204 ± 21	$3.73^{+1.03}_{-0.96}$	543^{+45}_{-55}	5670^{+651}_{-468}	8160^{+6364}_{-3071}

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

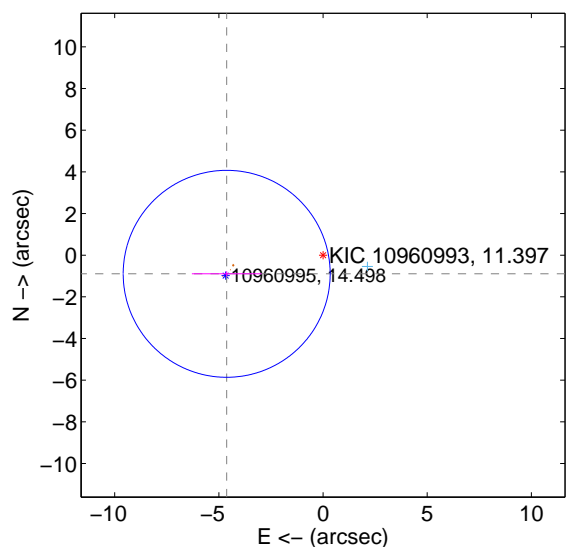
Supplemental centroid analysis for 010960993-03. **Kepler magnitude: 11.40.** Transit SNR 5.79

There are 1 quarters with good PRF difference image offsets

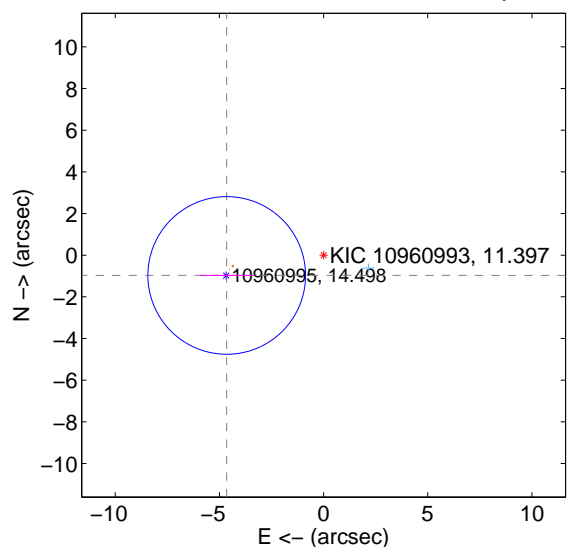
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.711 ± 1.656	2.85	4.625 ± 1.674	-0.895 ± 0.125
PRF-fit source offset from KIC position	4.751 ± 1.261	3.77	4.650 ± 1.284	-0.973 ± 0.118
photometric centroid source offset	3.58 ± 1.93	1.85	3.57 ± 1.93	-0.27 ± 0.69

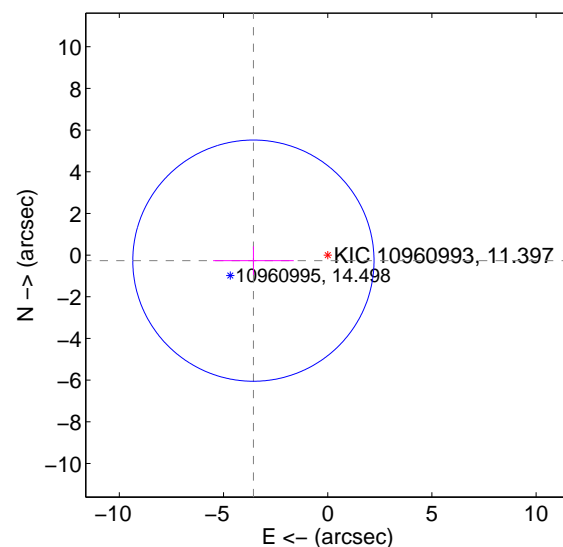
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

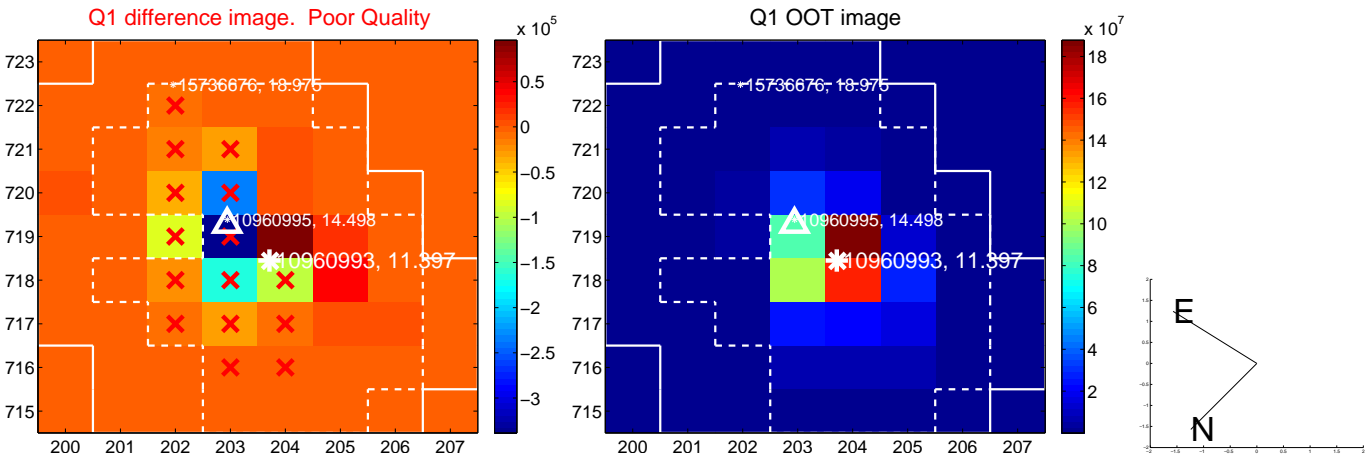


offset from photometric centroids

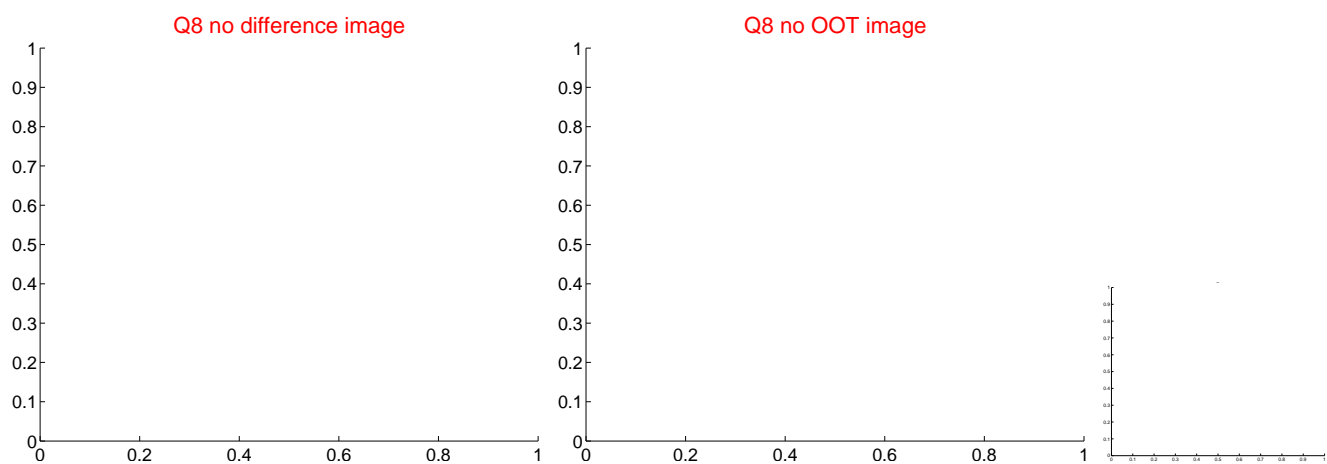
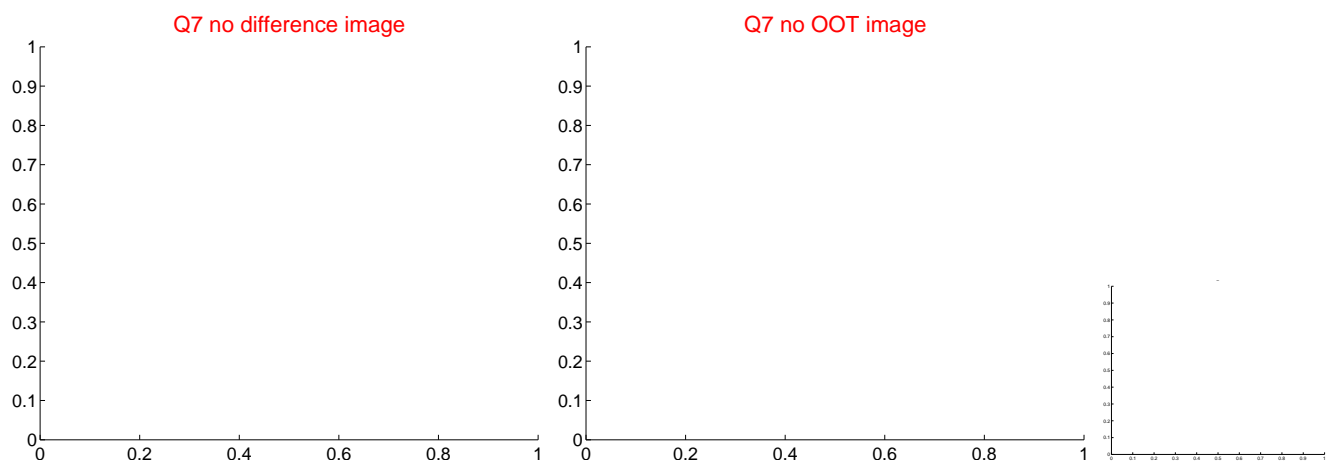
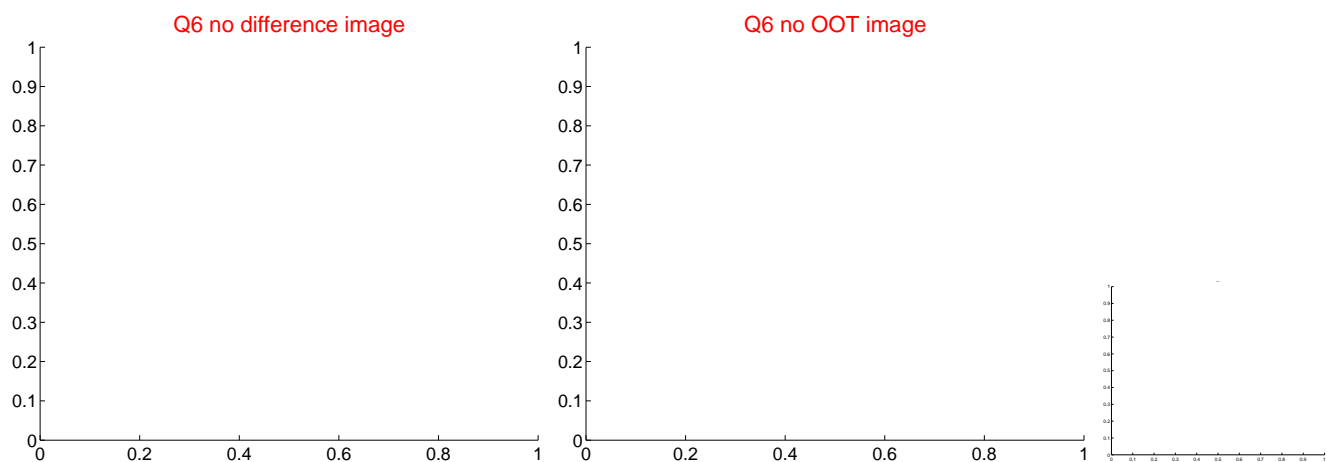
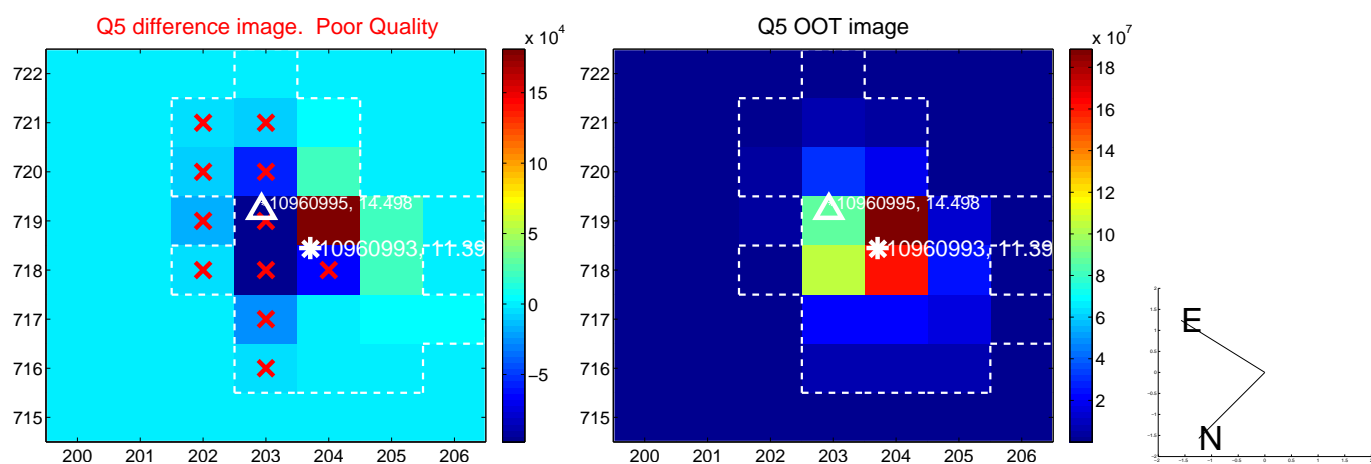


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

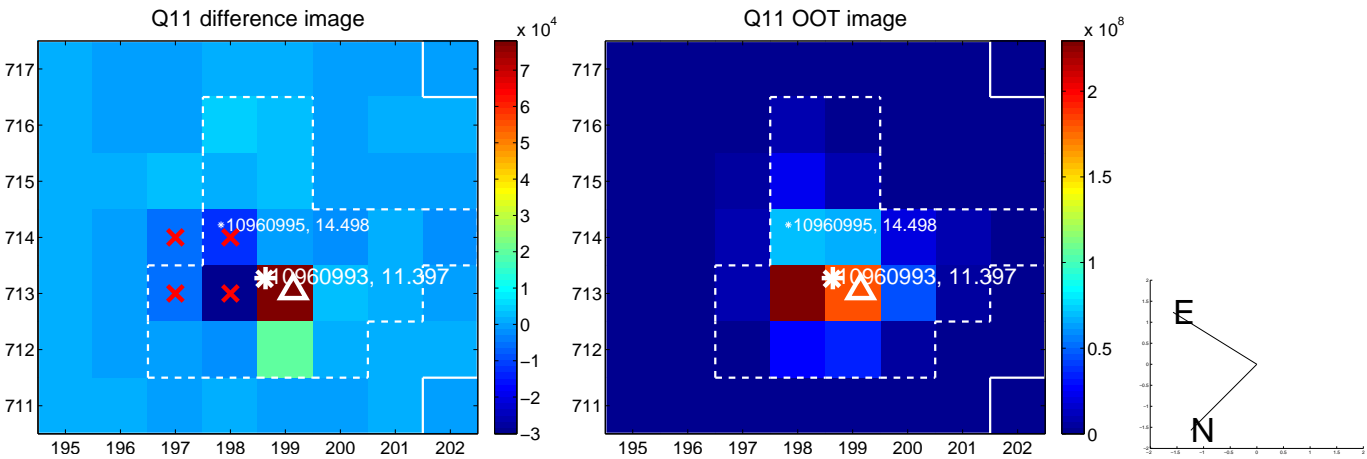
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



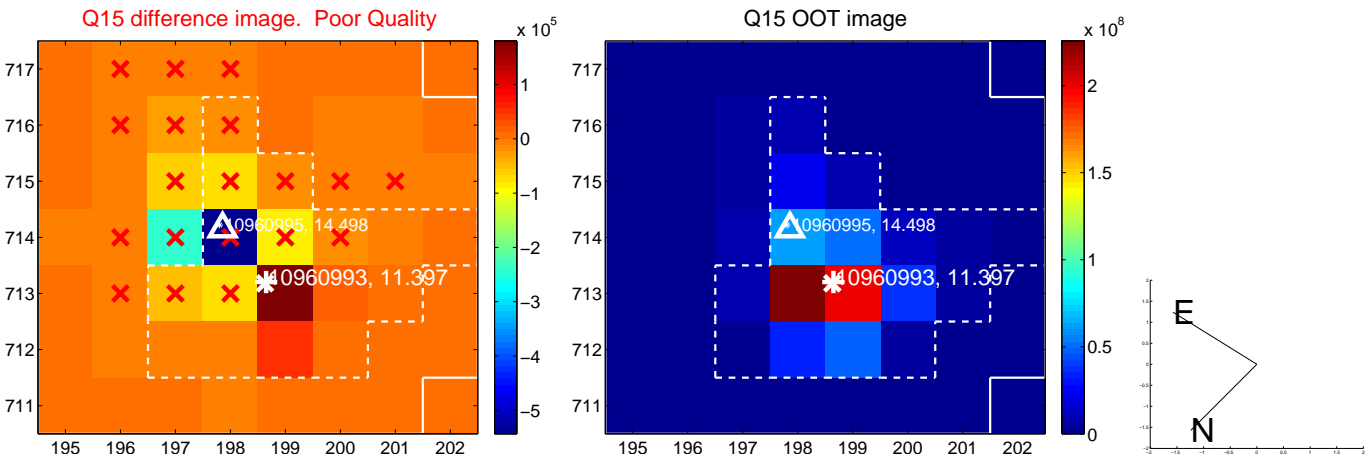
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



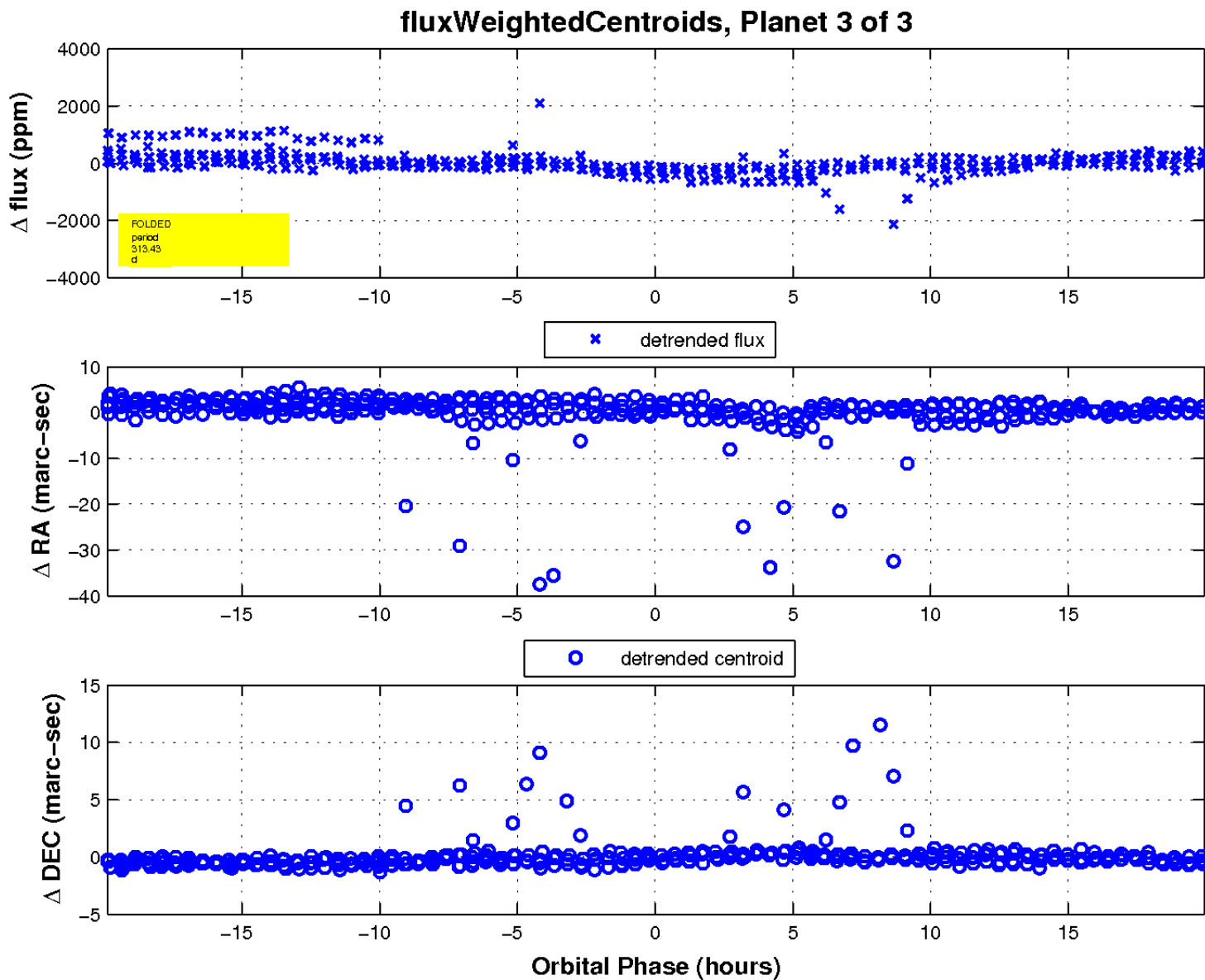
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

