

KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
010959320-02	OBS	No	2.447377	133.469000	22.0	8.729	18.4	6.0	3.77	9824	2.04	45999.28
010959320-03	OBS	No	2.447485	132.771615	0.3	8.724	17.5	0.1	3.77	9824	0.22	45996.57
010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
010959320-05	OBS	No	68.249561	135.116136	629.2	4.531	11.7	11.6	3.77	9824	12.17	543.94
010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

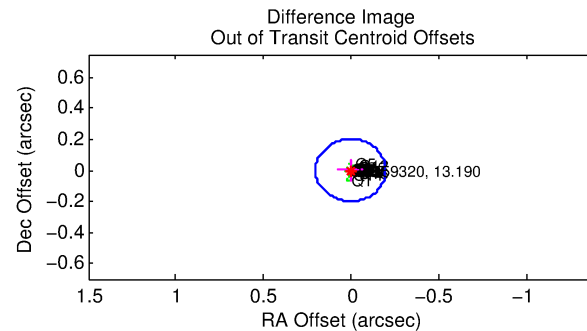
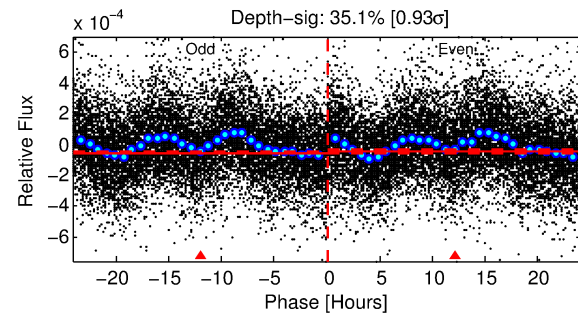
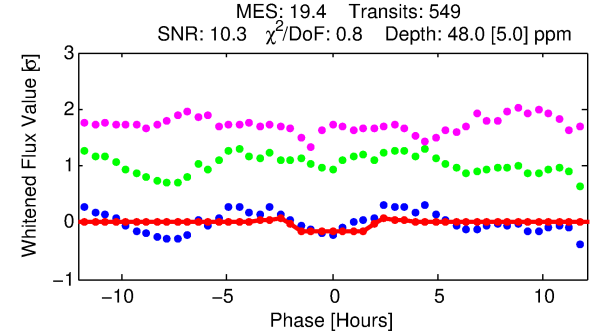
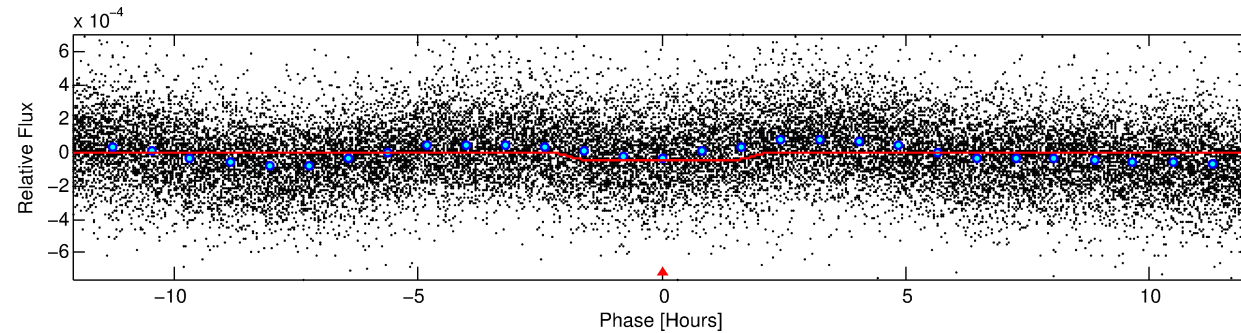
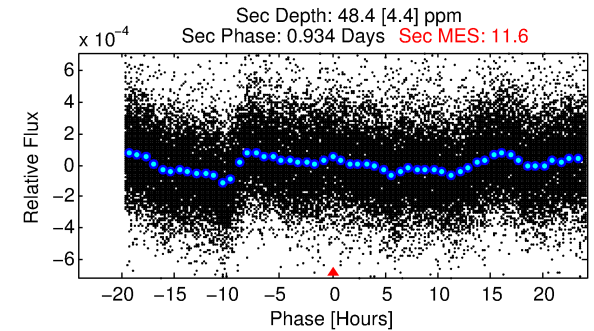
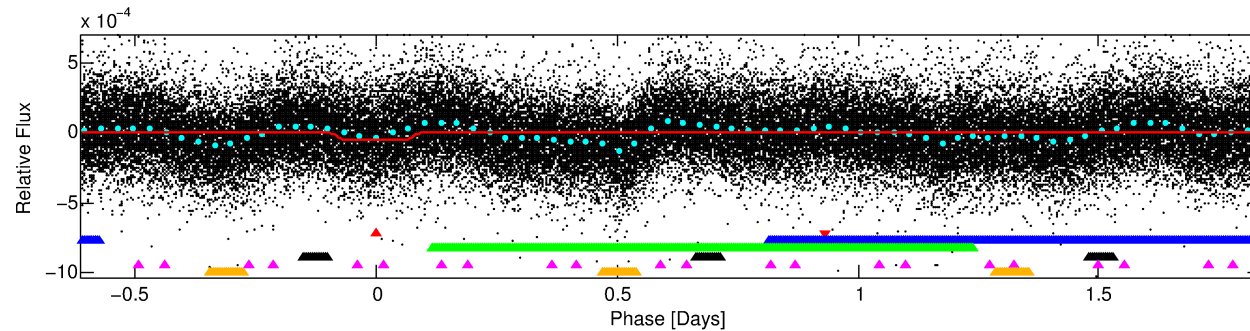
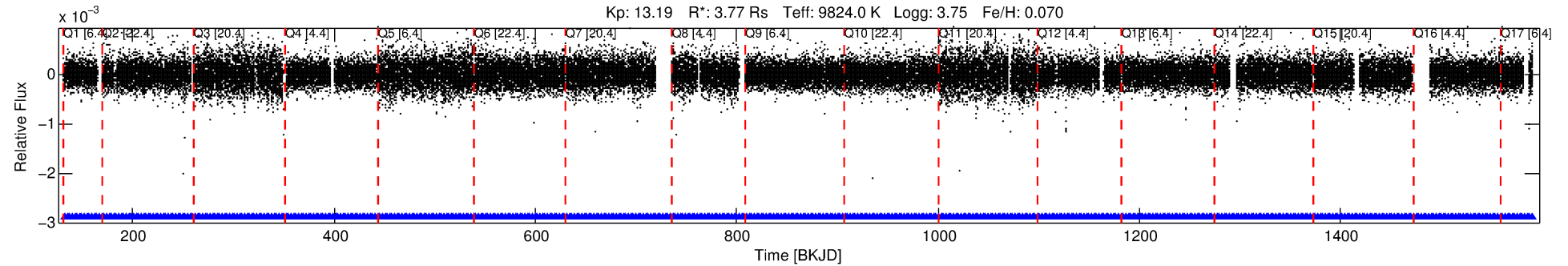
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-01

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 1 of 6 Period: 2.446 d



DV Fit Results:

Period = 2.44560 [0.00001] d
Epoch = 132.6552 [0.0029] BKJD
Rp/R* = 0.0073 [0.0014]
a/R* = 2.29 [2.67]
b = 0.90 [0.30]
Seff = 46043.91 [26654.46]
Teq = 3735 [541] K
Rp = 3.00 [1.27] Re
a = 0.0508 [0.0179] AU
Ag = 7.60 [5.18] [1.28σ]
Teffp = 9590 [1028] K [5.04σ]

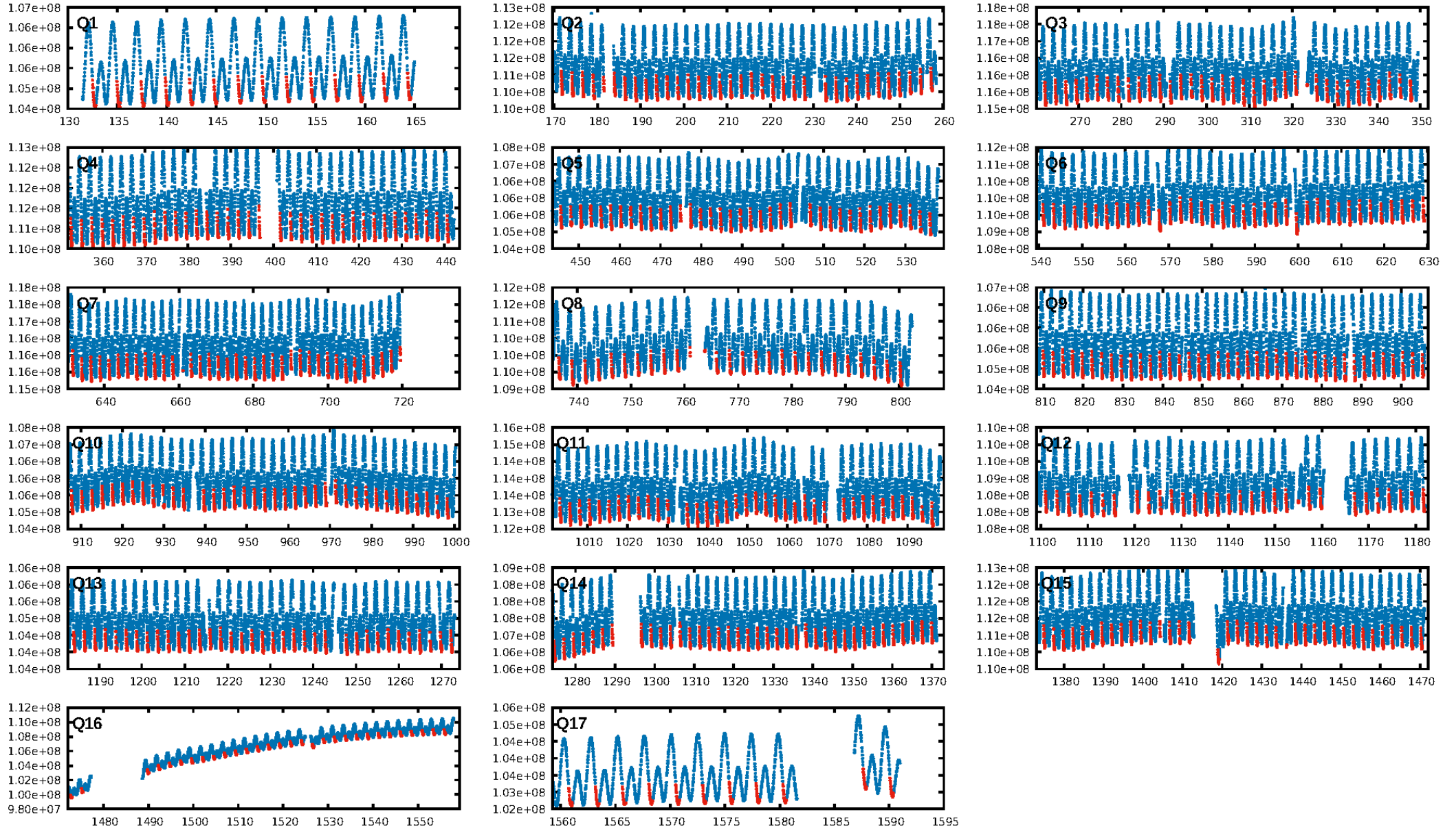
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.10σ]
LongPeriod-sig: 0.4% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [524/524]
GhostDiagnostic-chr: 1.194
Centroid-sig: 1.8%
Centroid-so: 1.864 arcsec [2.21σ]
OotOffset-rm: 0.006 arcsec [0.09σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.166 arcsec [2.45σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

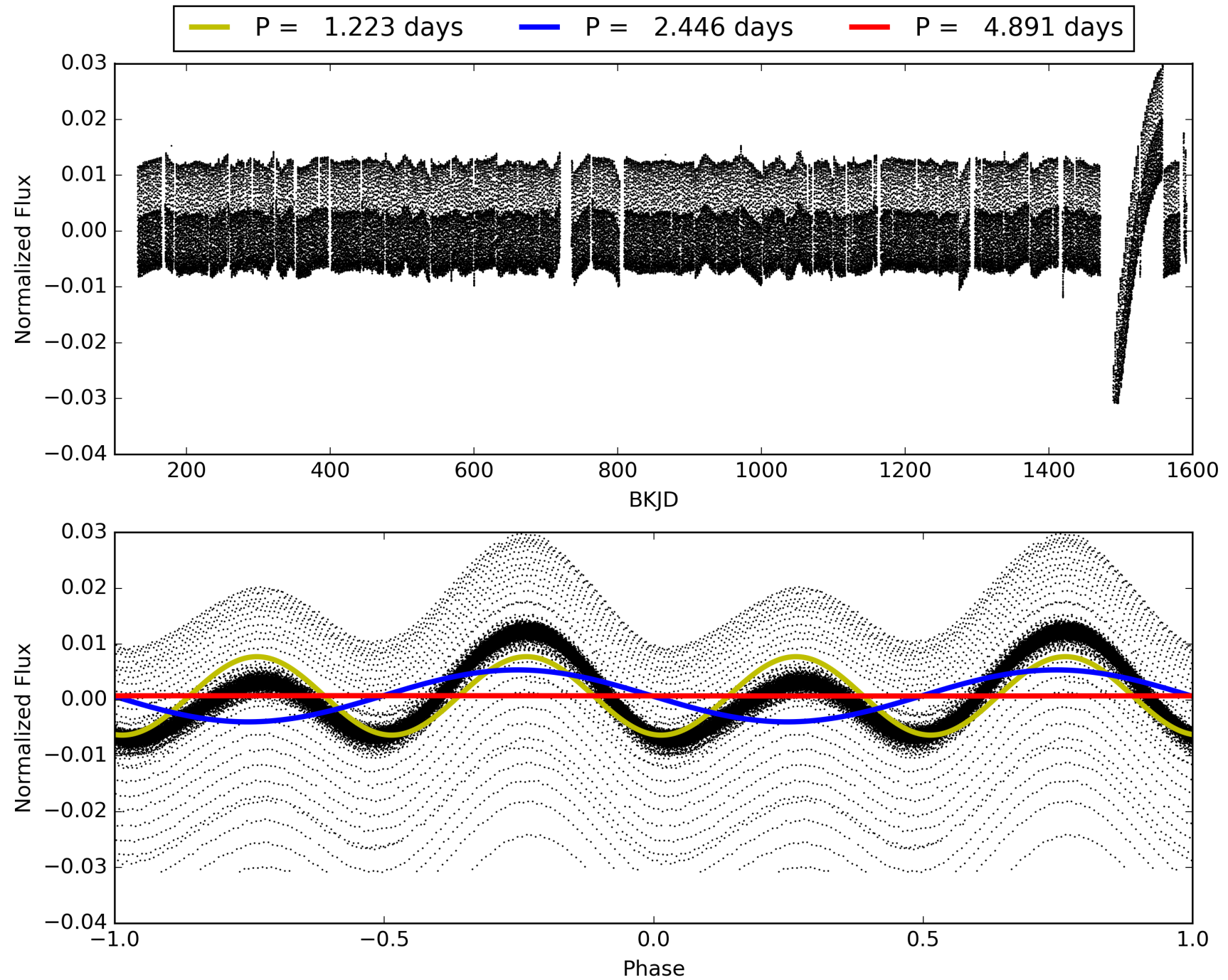
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:06 Z

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

TCE 010959320-01, PDC Light Curves

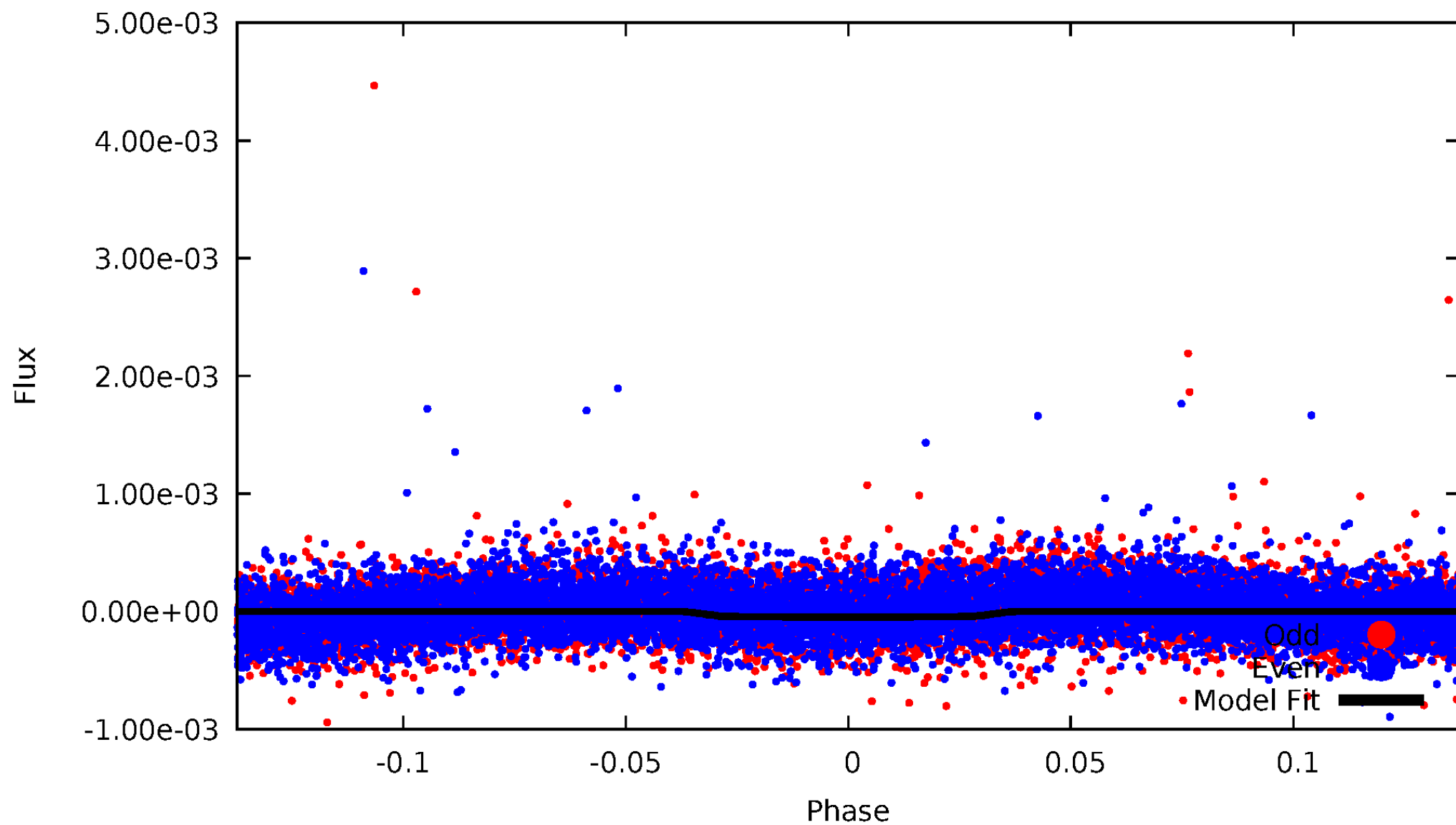


TCE 010959320-01



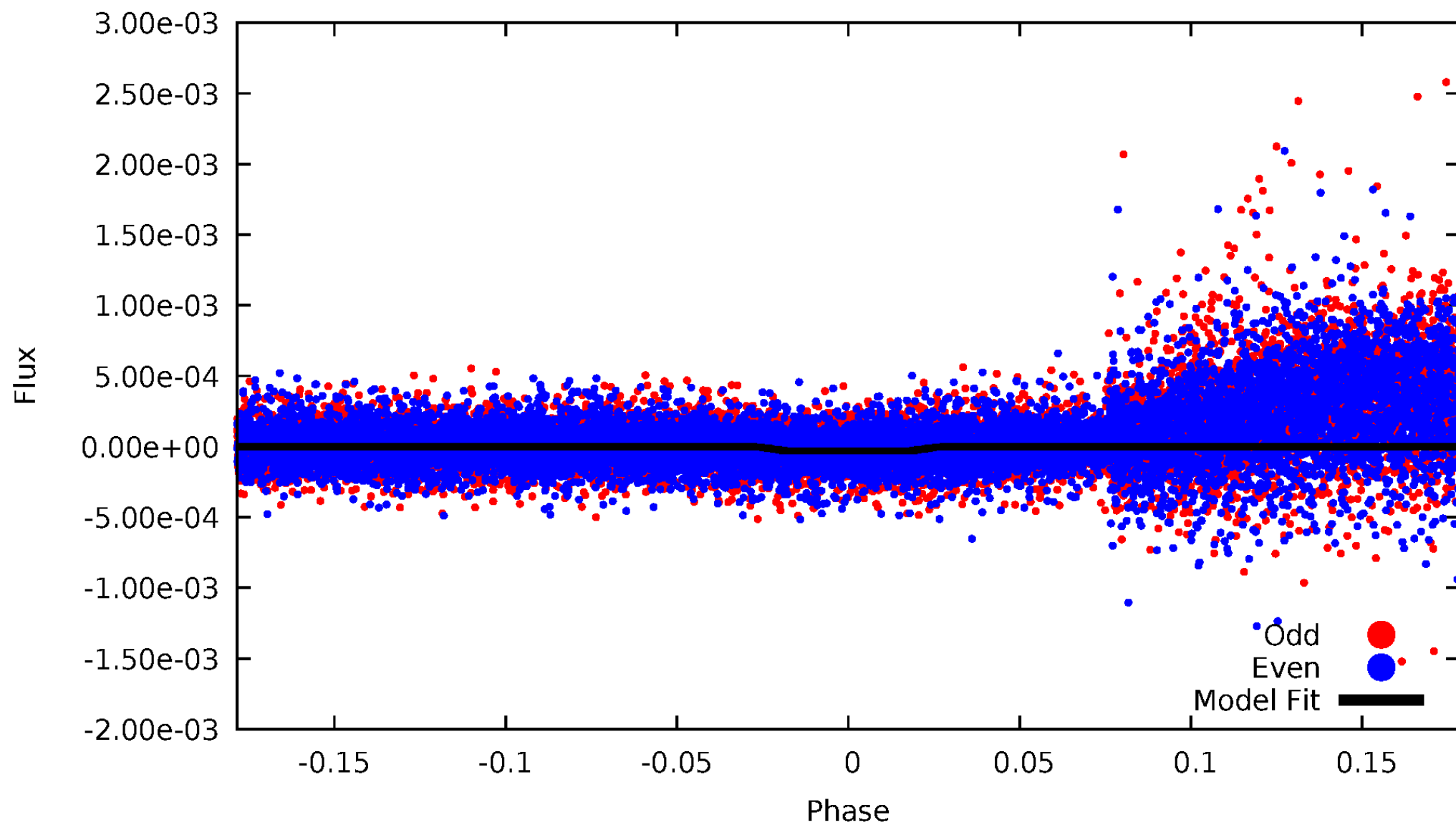
DV Odd/Even

TCE 010959320-01



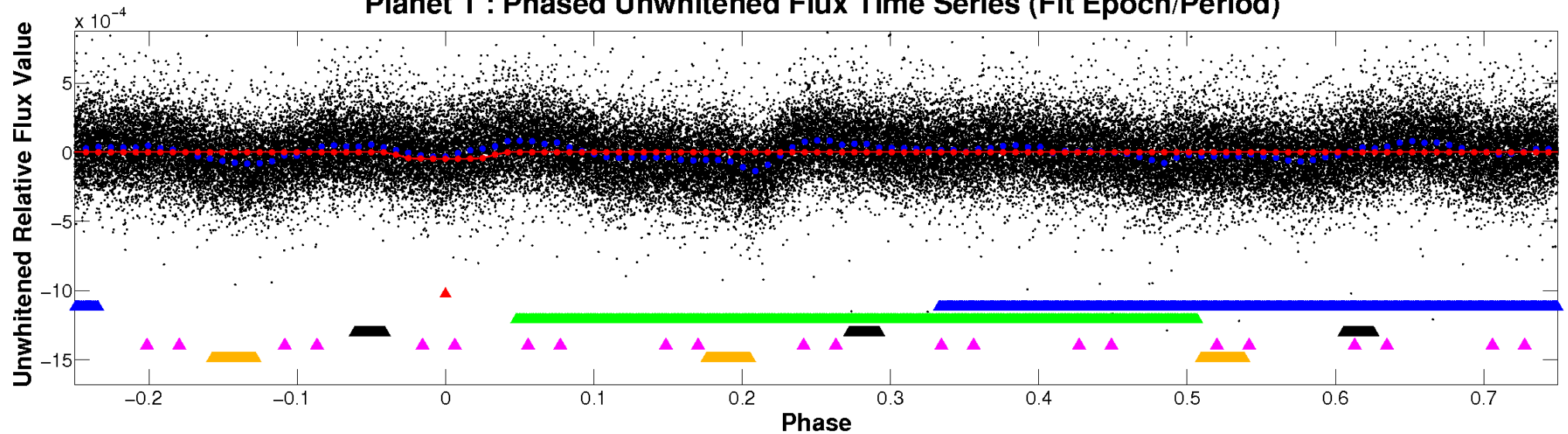
ALT Odd/Even

TCE 010959320-01

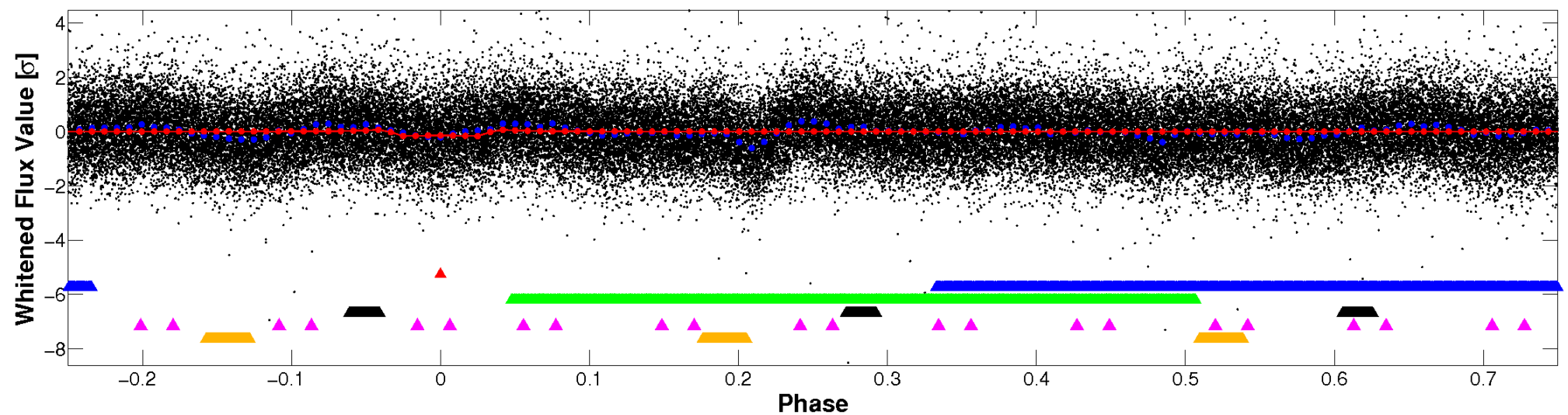


Non-Whitened Vs. Whitened Light Curve

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

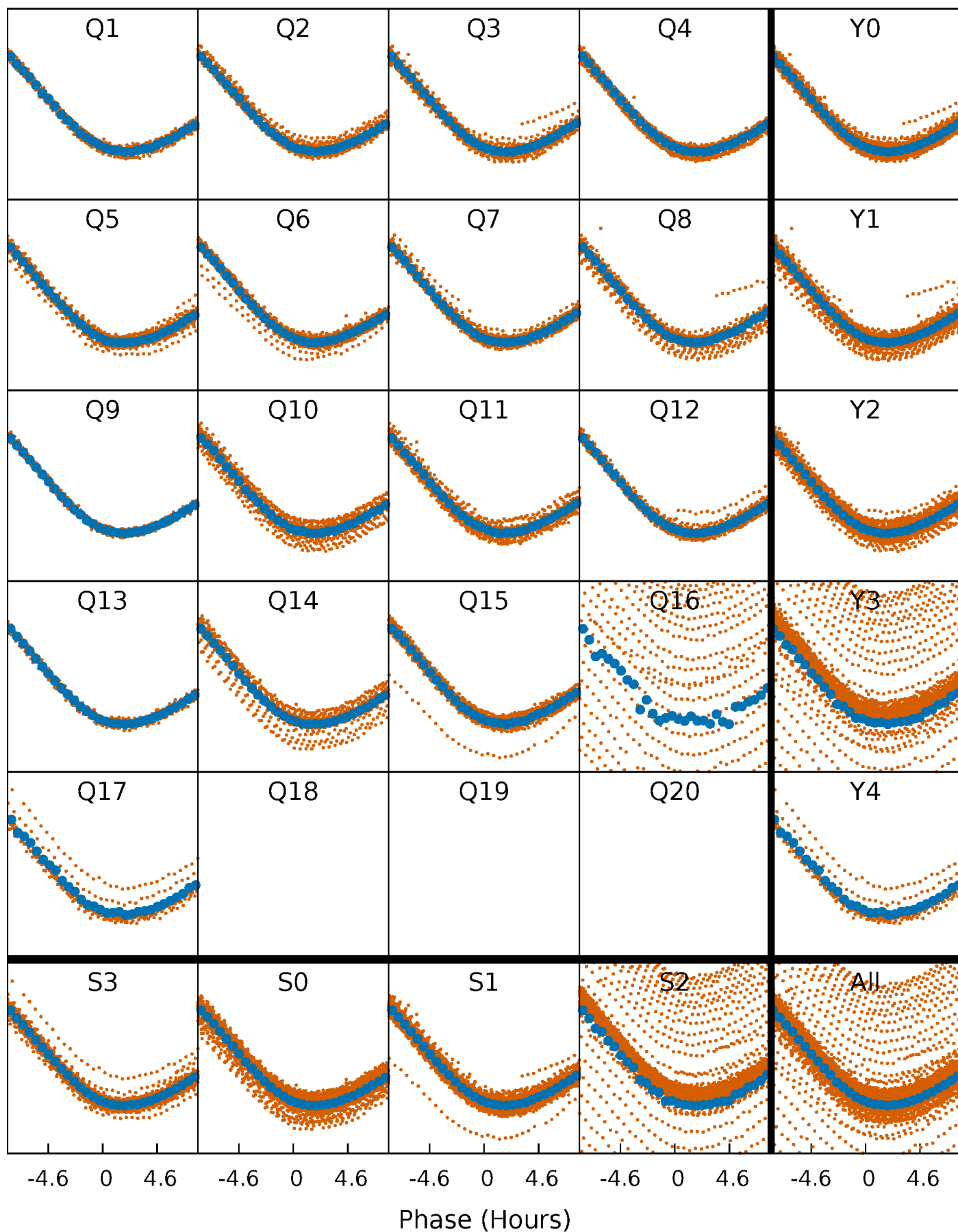


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



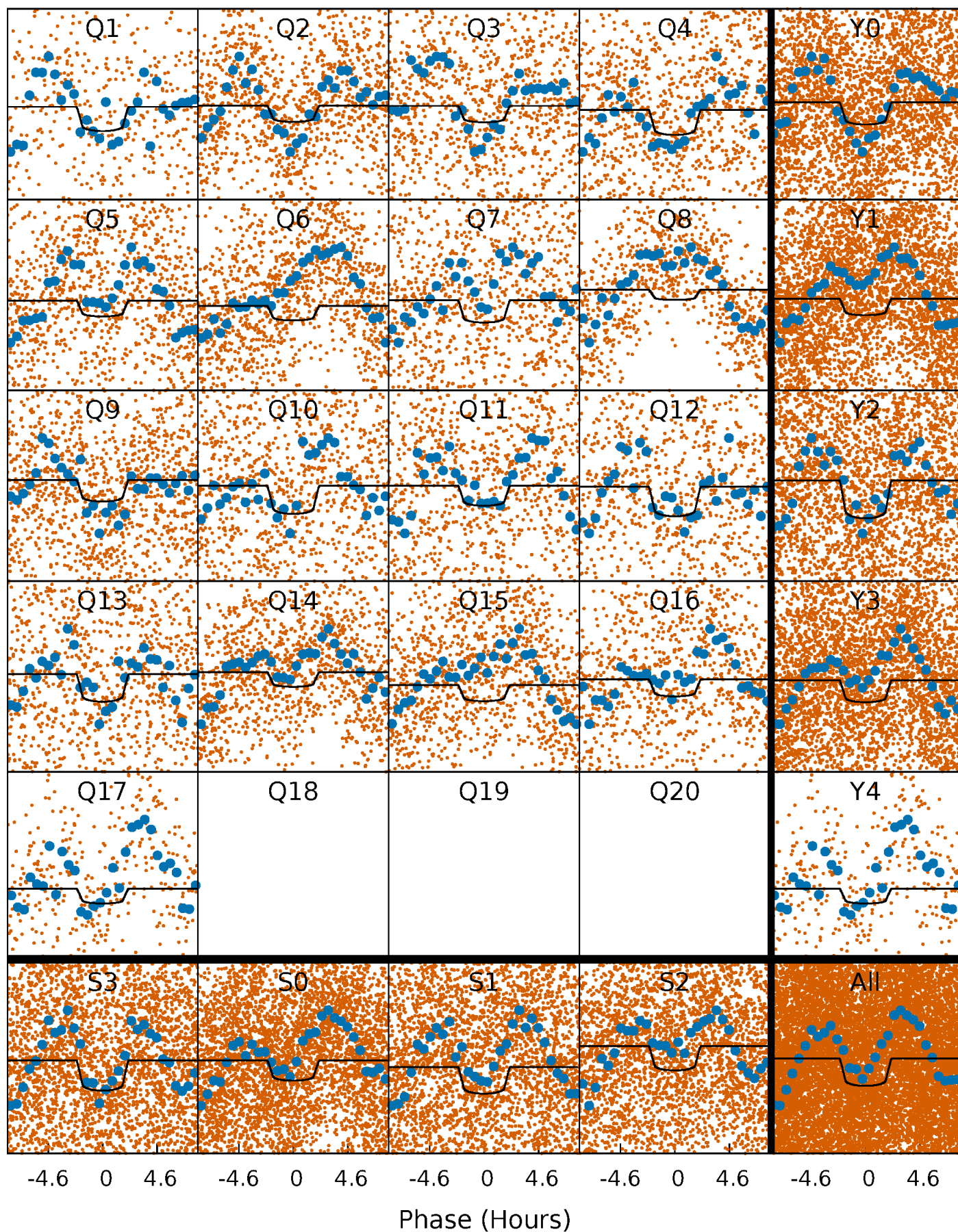
PDC Quarter-Phased Transit Curves

TCE 010959320-01 P= 2.445597 Days $T_0=132.655181$ (BKJD)



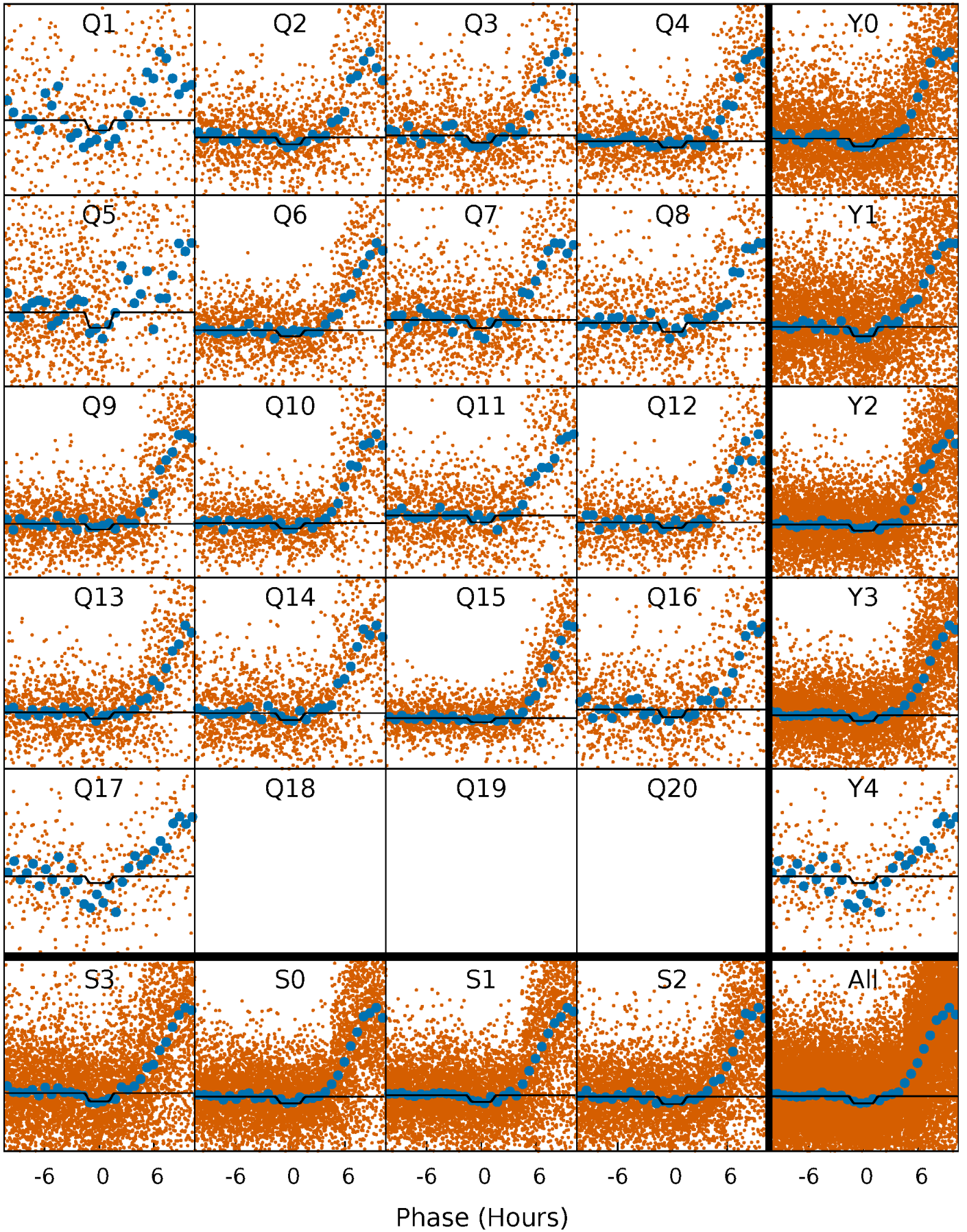
DV Quarter-Phased Transit Curves

TCE 010959320-01 P= 2.445597 Days $T_0=132.655181$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

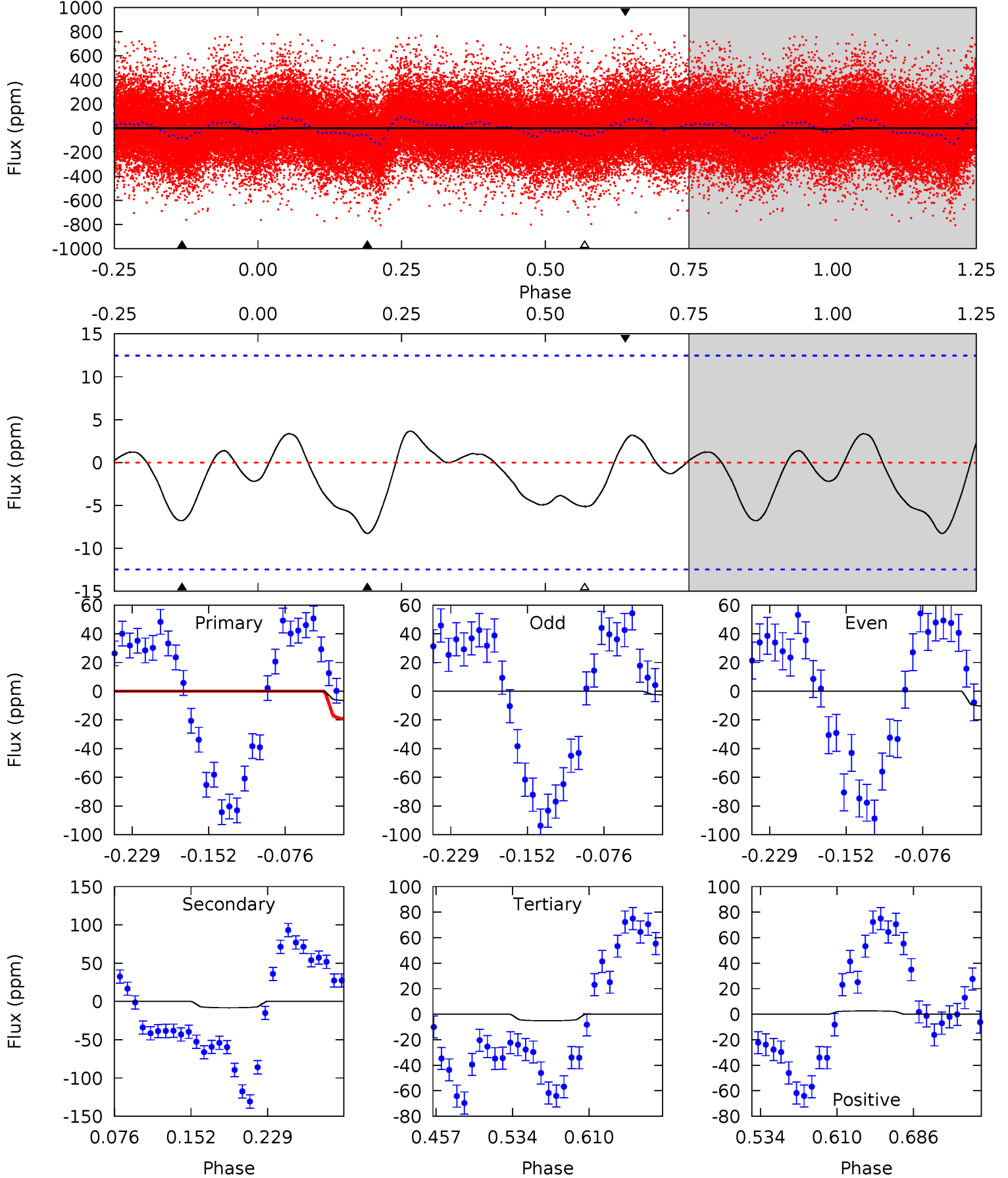
TCE 010959320-01 P= 2.445599 Days $T_0=132.645389$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-01, P = 2.445597 Days, E = 130.209584 Days

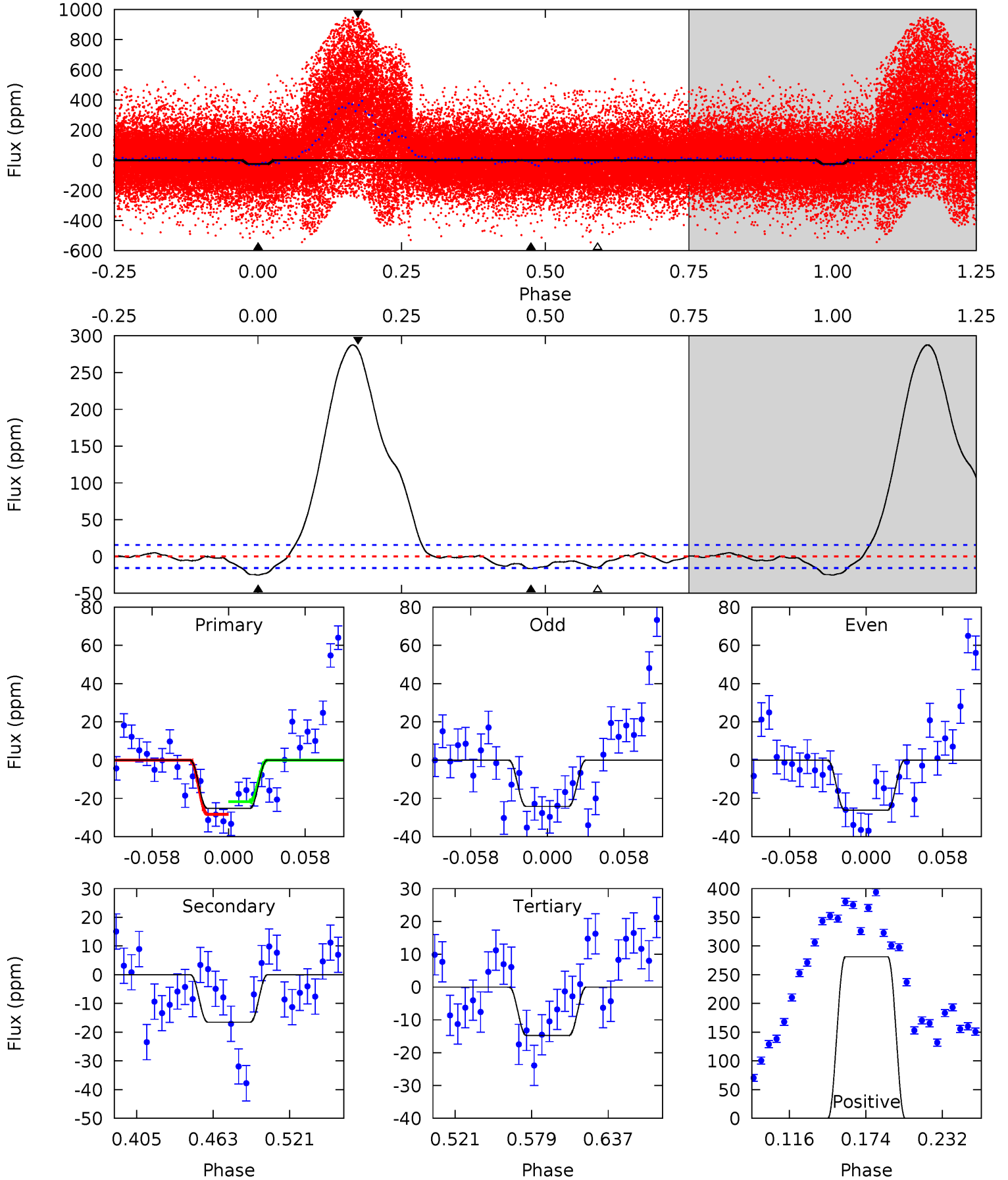
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.51	3.06	1.90	0.95	4.62	1.77	0.92	0.61	1.56	1.16	2.12	1.53	0.32	0.31	2.61



Alt Model-Shift Uniqueness Test

010959320-01, P = 2.445599 Days, E = 130.199790 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.56	4.96	4.43	84.4	4.68	1.90	24.9	3.13	-76.9	0.54	-79.5	0.30	1.31	0.92	0.93



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-8 ± 3	$2.90^{+0.76}_{-0.78}$	5154^{+369}_{-512}	5340^{+864}_{-833}	$1.360^{+1.353}_{-0.640}$
Alt.	-17 ± 3	$2.13^{+0.74}_{-0.62}$	5156^{+347}_{-465}	7794^{+2018}_{-1154}	$4.841^{+5.377}_{-2.097}$

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 $A_{obs} \gg 1.0$

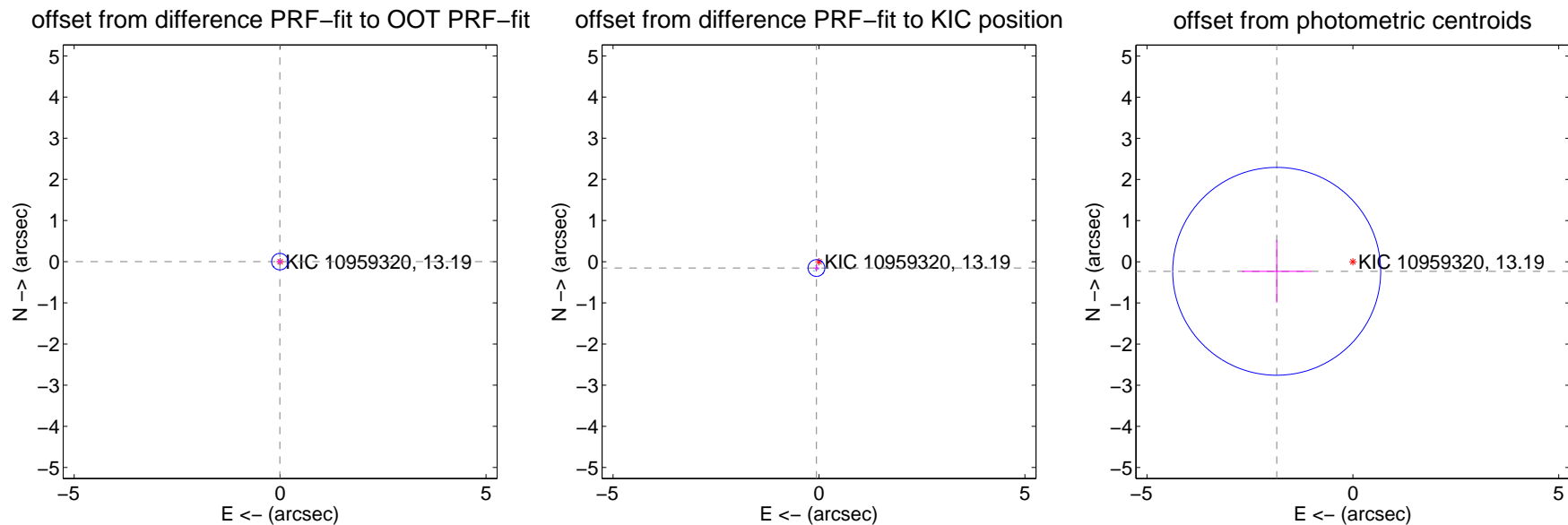
DV Centroid Data

Supplemental centroid analysis for 010959320-01. Kepler magnitude: 13.19. Transit SNR 10.33

There are 17 quarters with good PRF difference image offsets

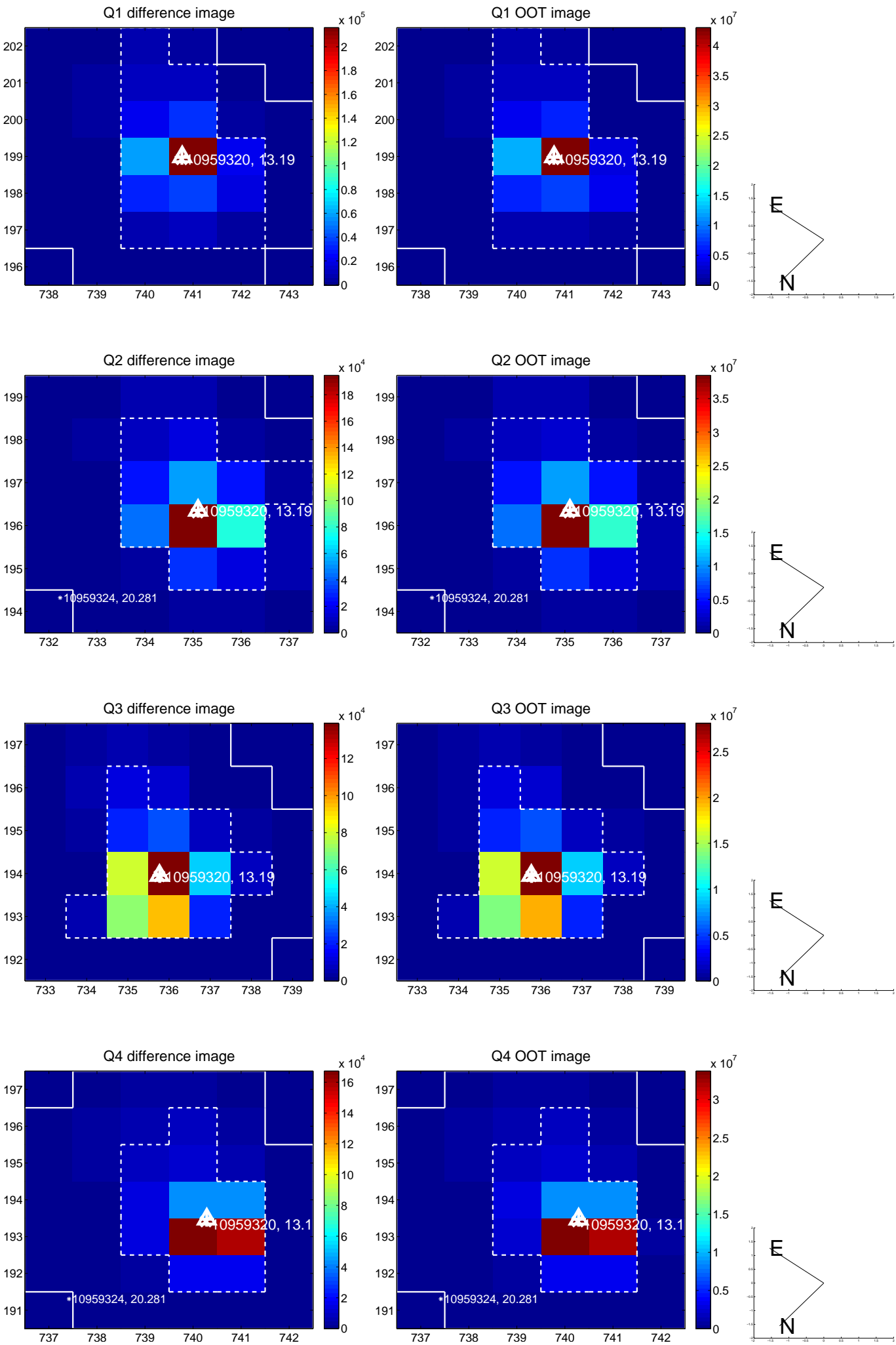
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.006 ± 0.067	0.09	0.005 ± 0.067	0.002 ± 0.067
PRF-fit source offset from KIC position	0.166 ± 0.068	2.45	0.061 ± 0.067	-0.154 ± 0.068
photometric centroid source offset	1.86 ± 0.84	2.21	1.85 ± 0.84	-0.23 ± 0.76

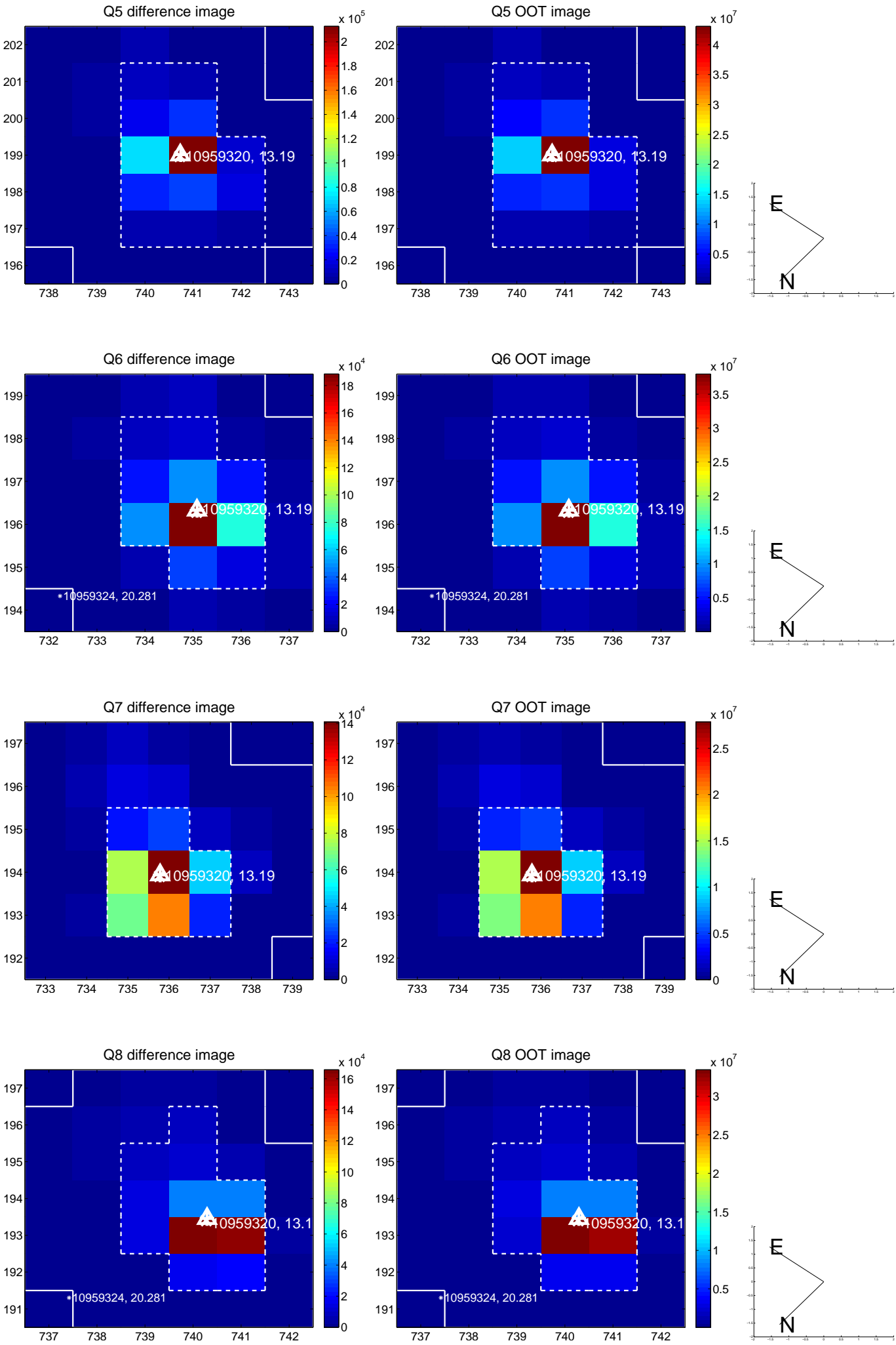


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

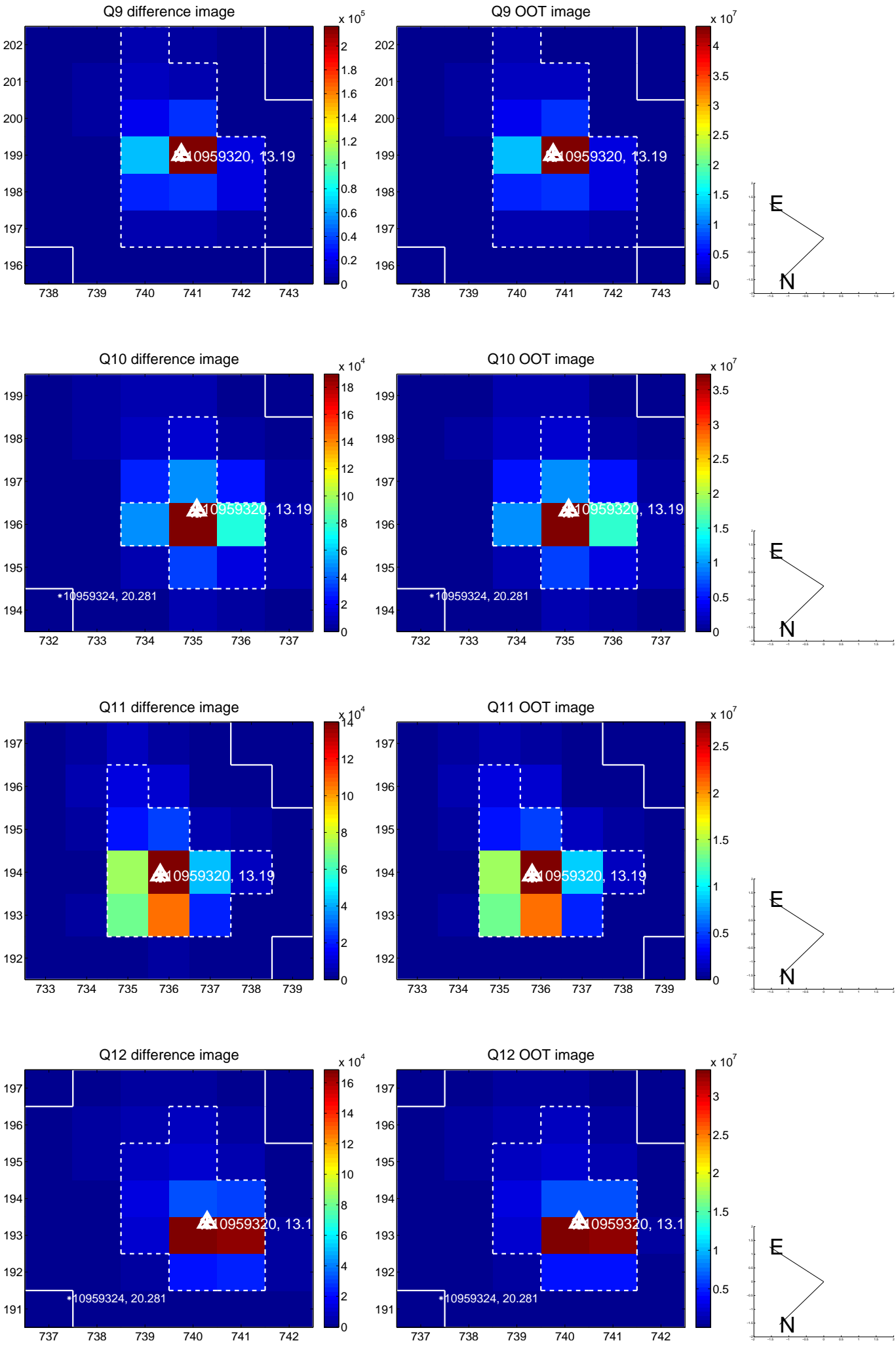
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



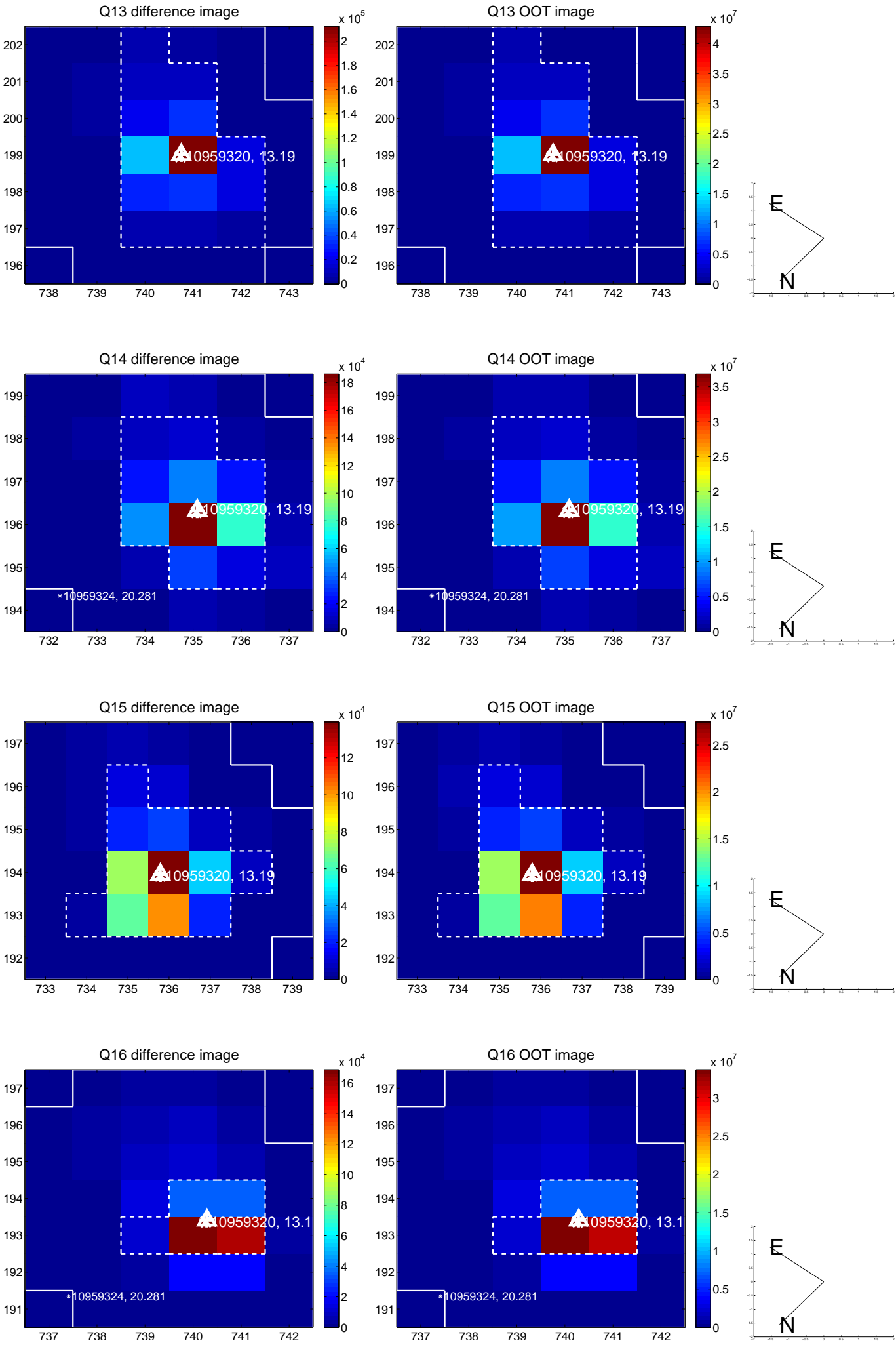
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



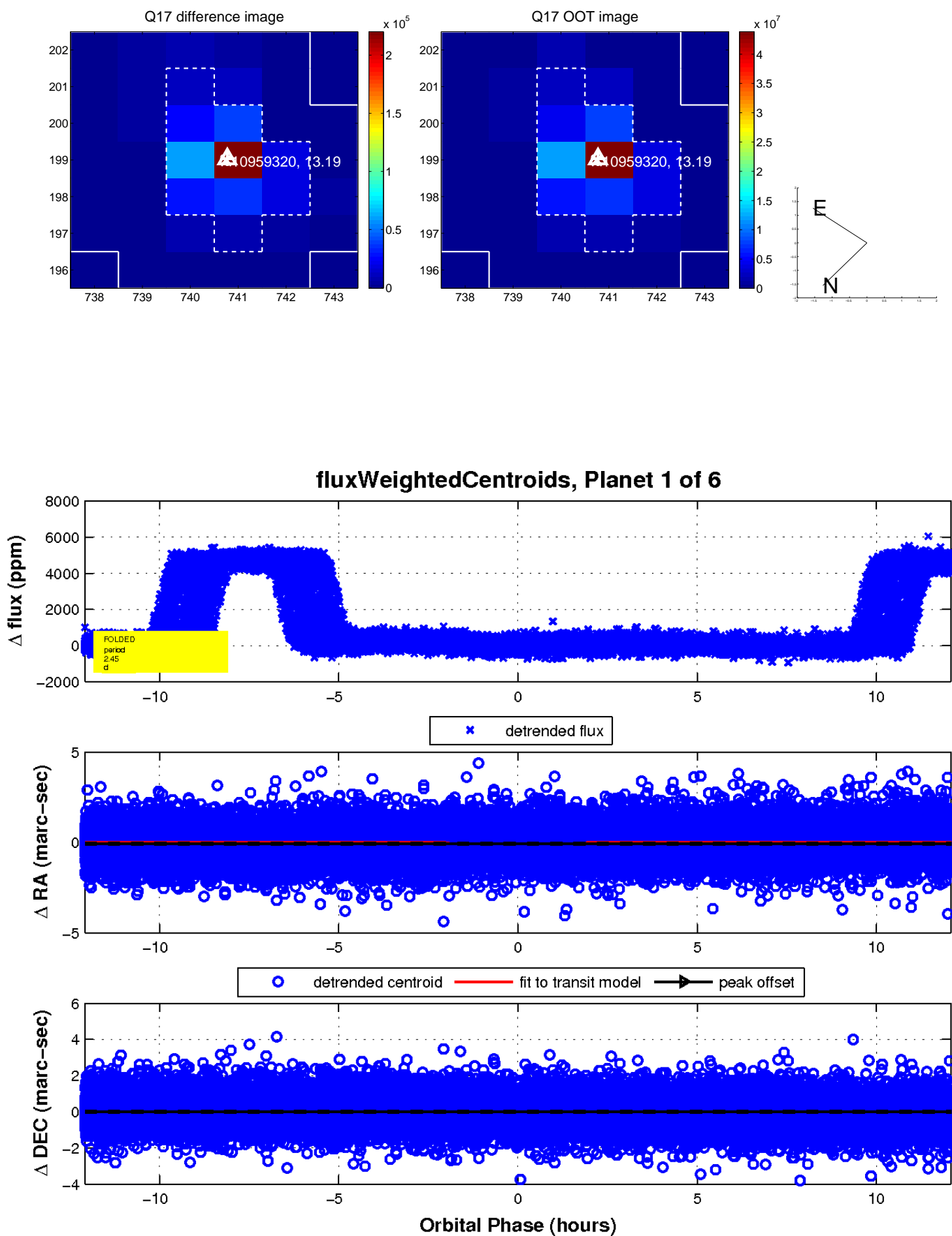
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

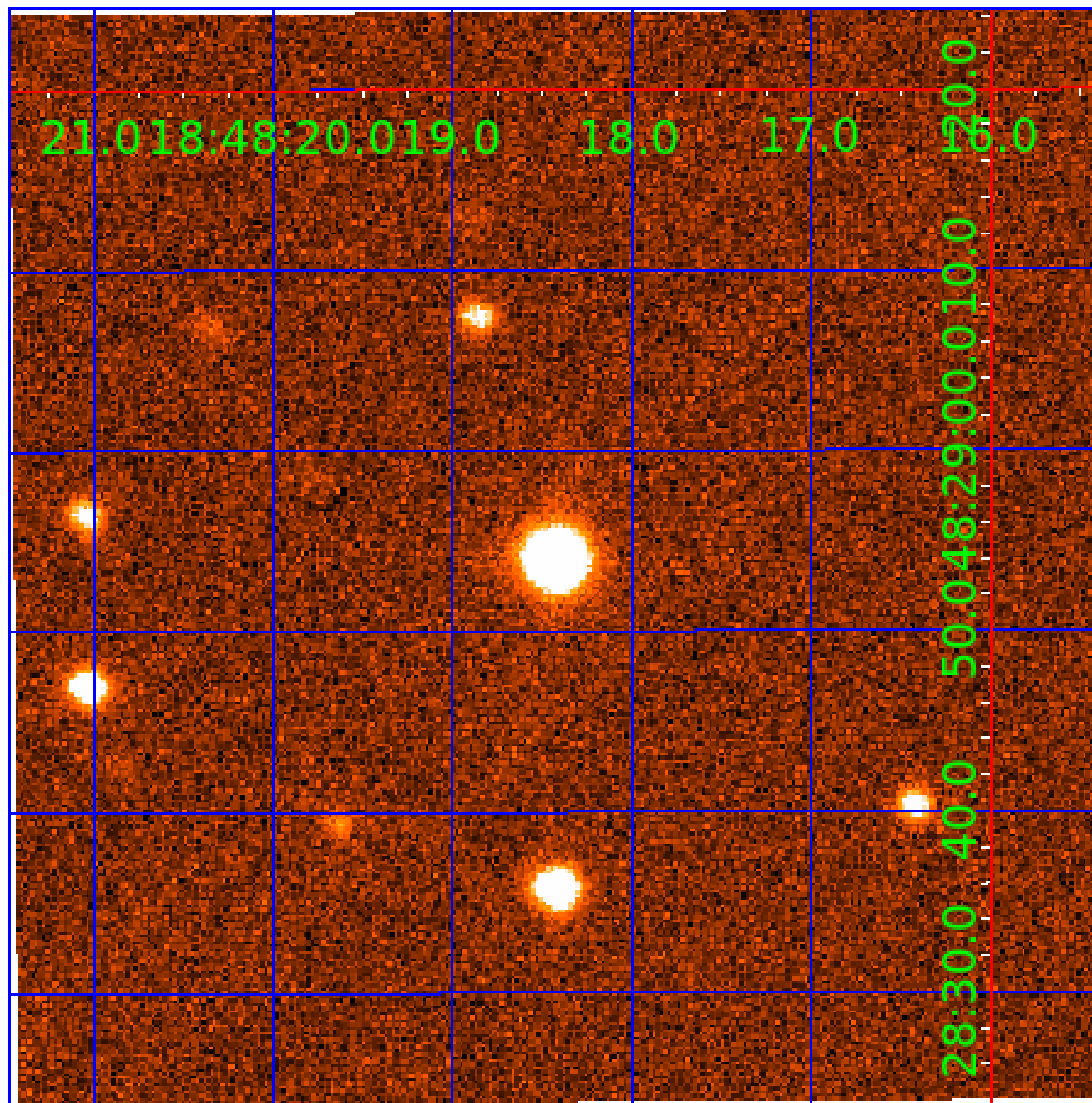


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
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010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
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010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

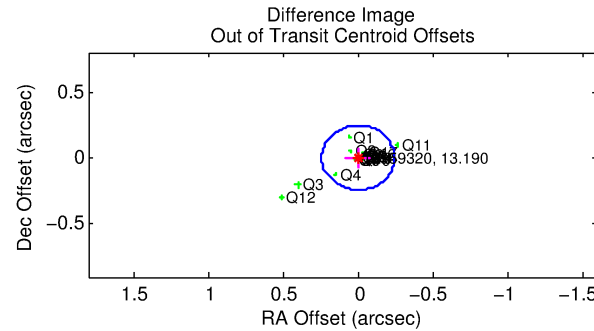
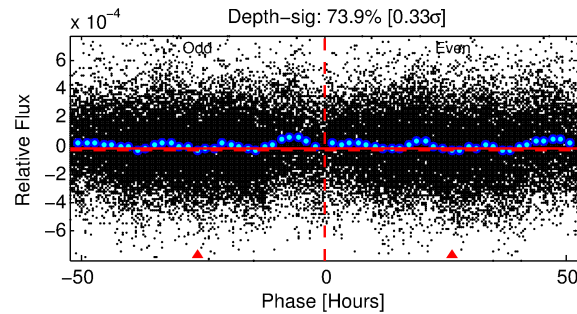
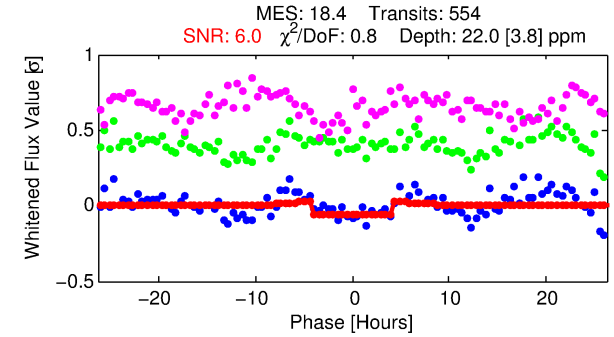
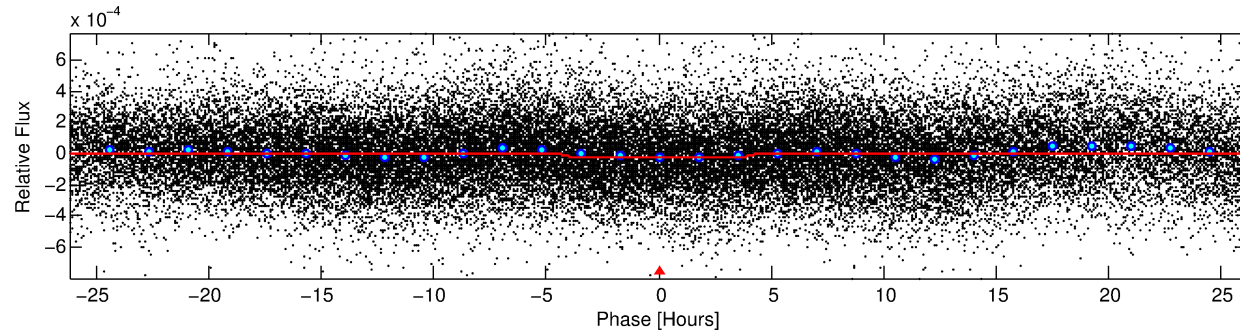
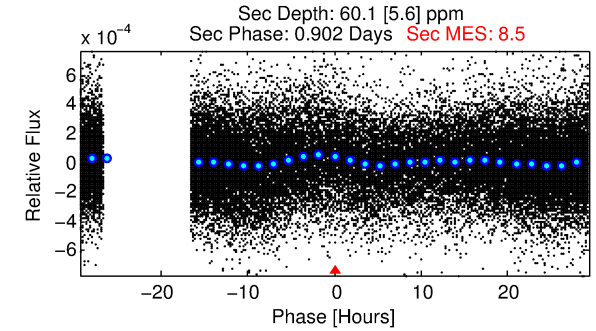
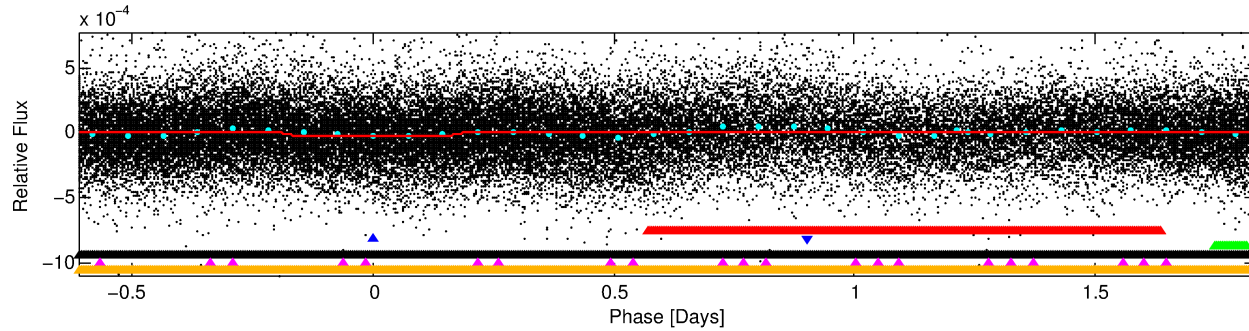
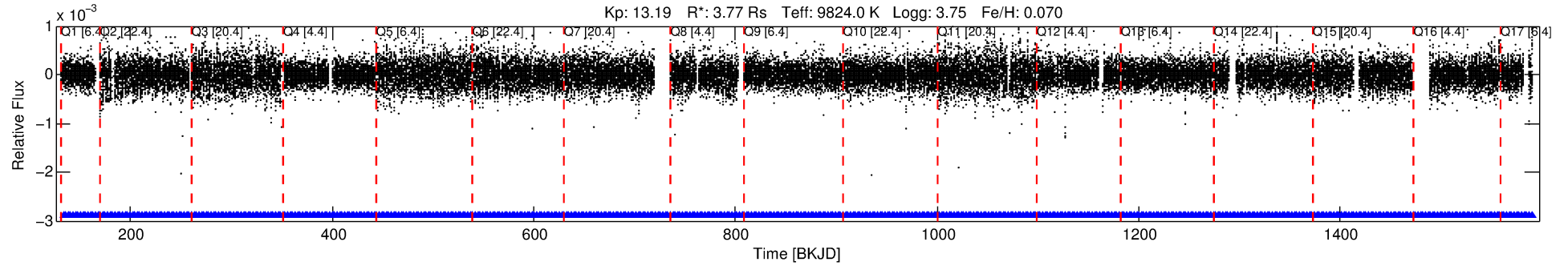
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-02

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 2 of 6 Period: 2.447 d



DV Fit Results:

Period = 2.44738 [0.00003] d
Epoch = 133.4690 [0.0068] BKJD
Rp/R* = 0.0050 [0.0009]
a/R* = 1.31 [0.65]
b = 0.91 [0.22]
Seff = 45999.28 [26628.62]
Teq = 3734 [540] K
Rp = 2.04 [0.85] Re
a = 0.0508 [0.0179] AU
Ag = 20.44 [13.56] [1.43σ]
Teffp = 12277 [1229] K [6.36σ]

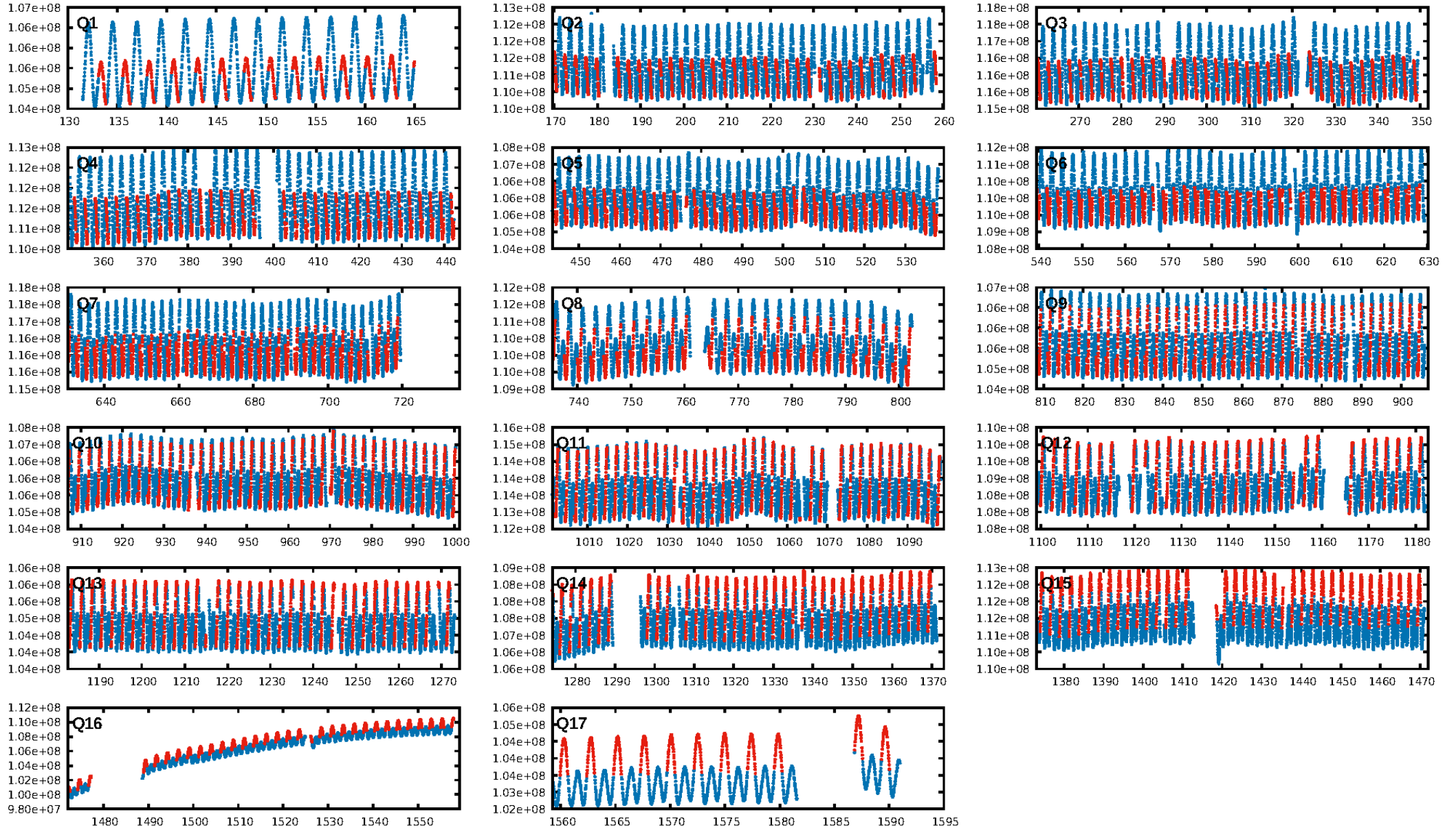
DV Diagnostic Results:

ShortPeriod-sig: 0.4% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [530/530]
GhostDiagnostic-chr: 4.726
Centroid-sig: 11.2%
Centroid-so: 2.498 arcsec [1.80σ]
OotOffset-rm: 0.005 arcsec [0.06σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.166 arcsec [2.20σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 0.00 [0/17]

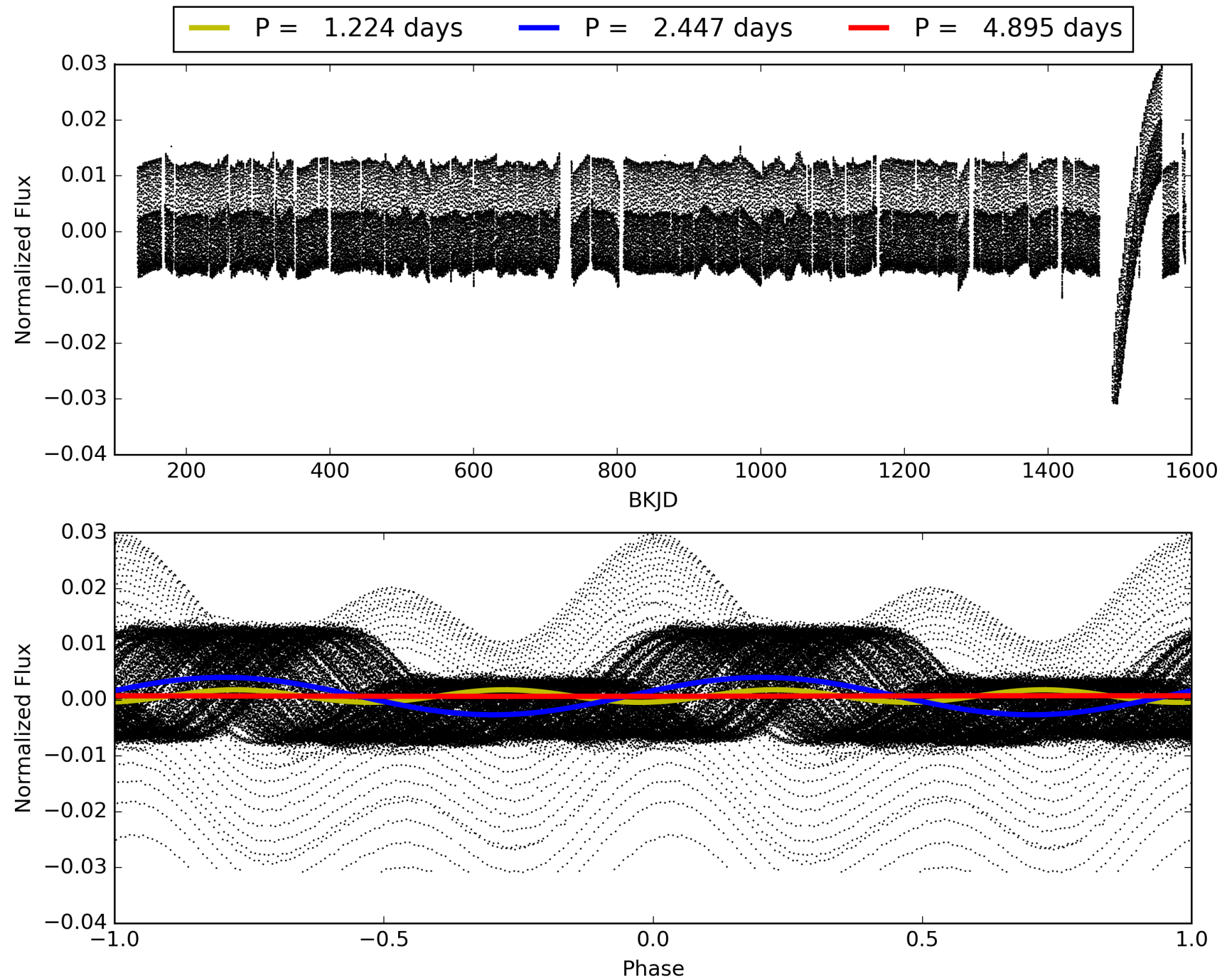
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:17 Z

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

TCE 010959320-02, PDC Light Curves

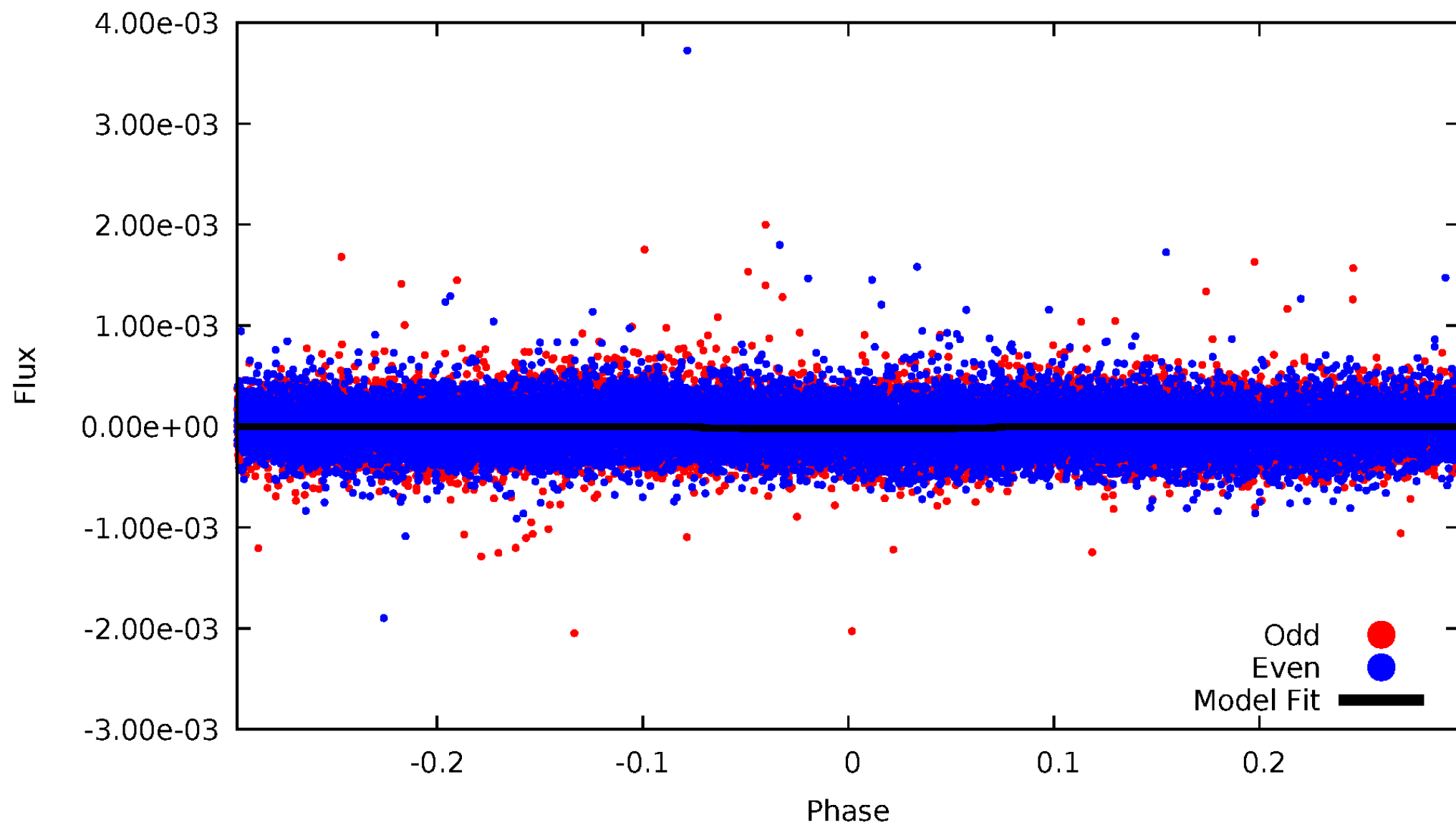


TCE 010959320-02



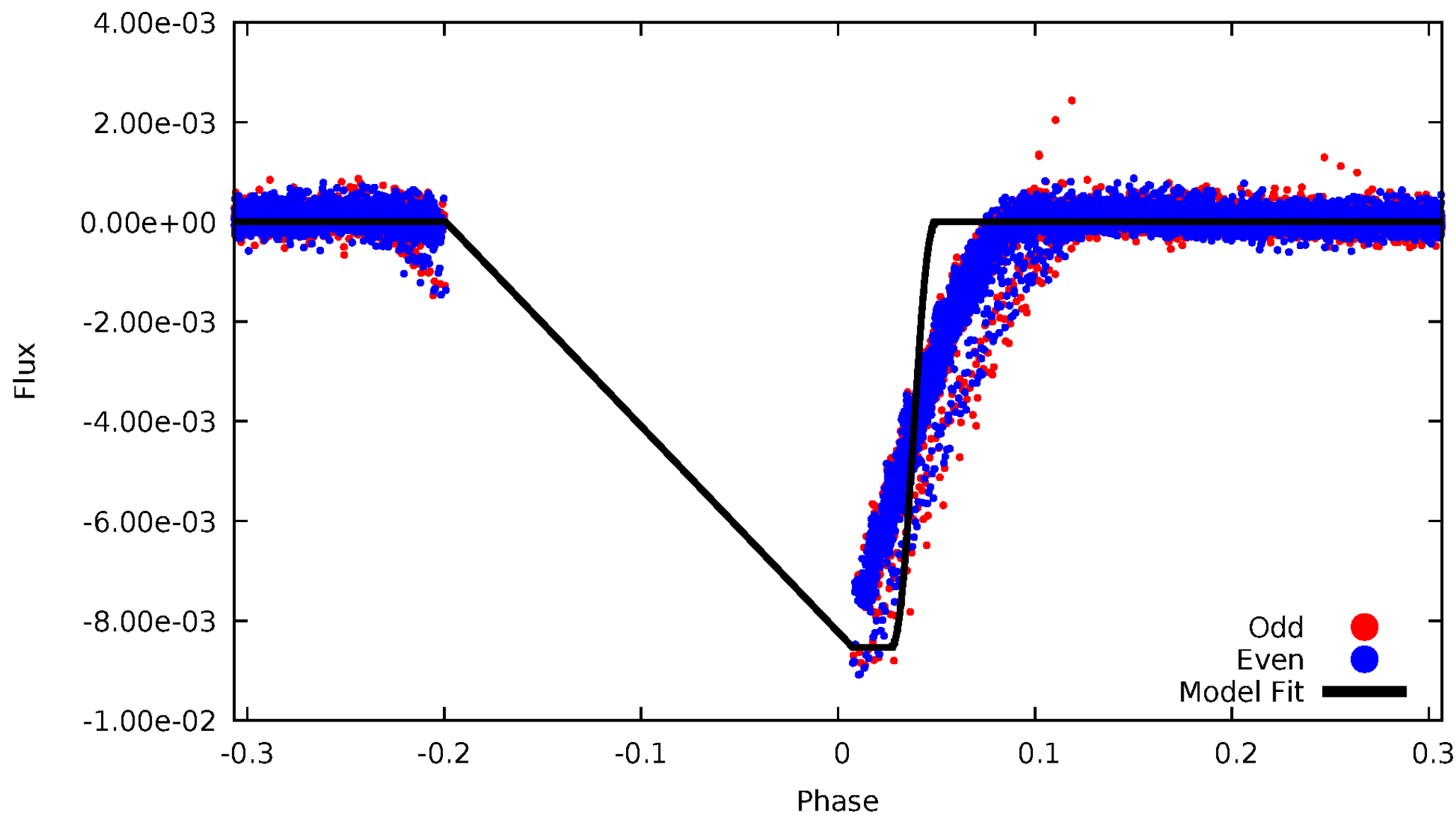
DV Odd/Even

TCE 010959320-02



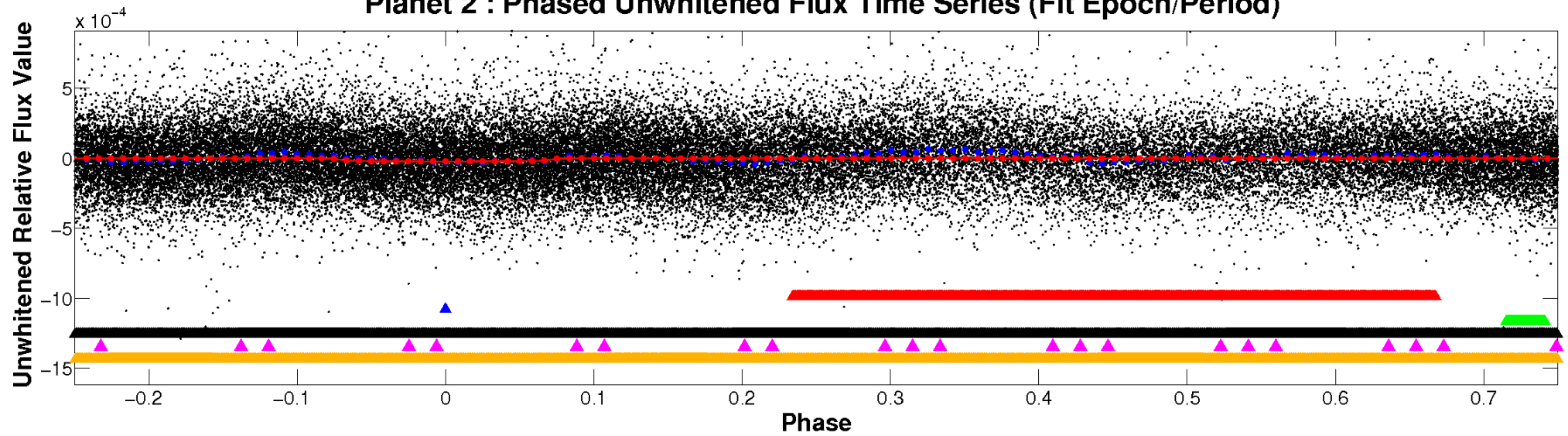
ALT Odd/Even

TCE 010959320-02

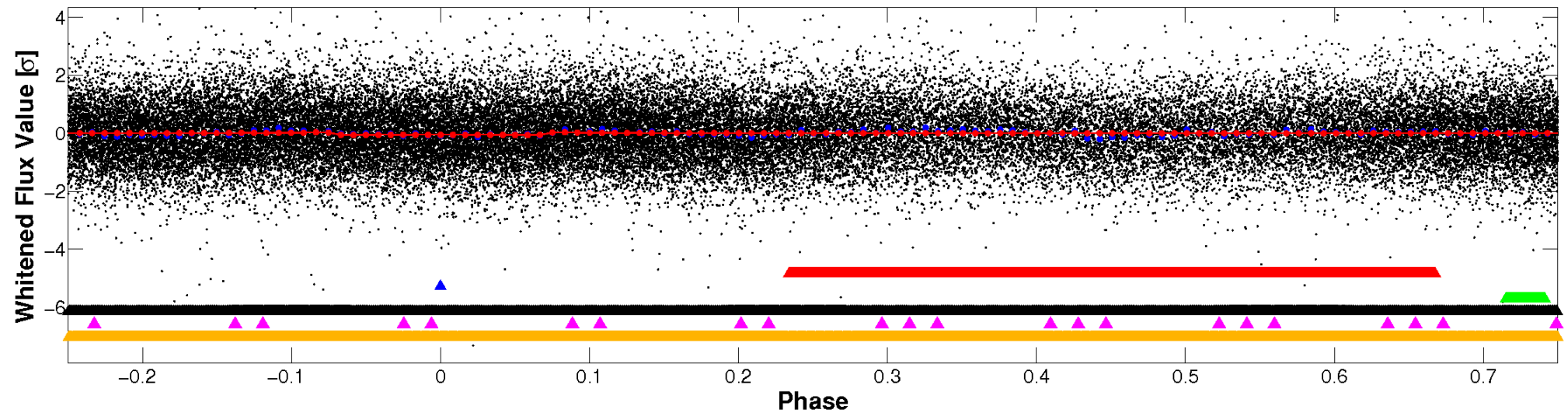


Non-Whitened Vs. Whitened Light Curve

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

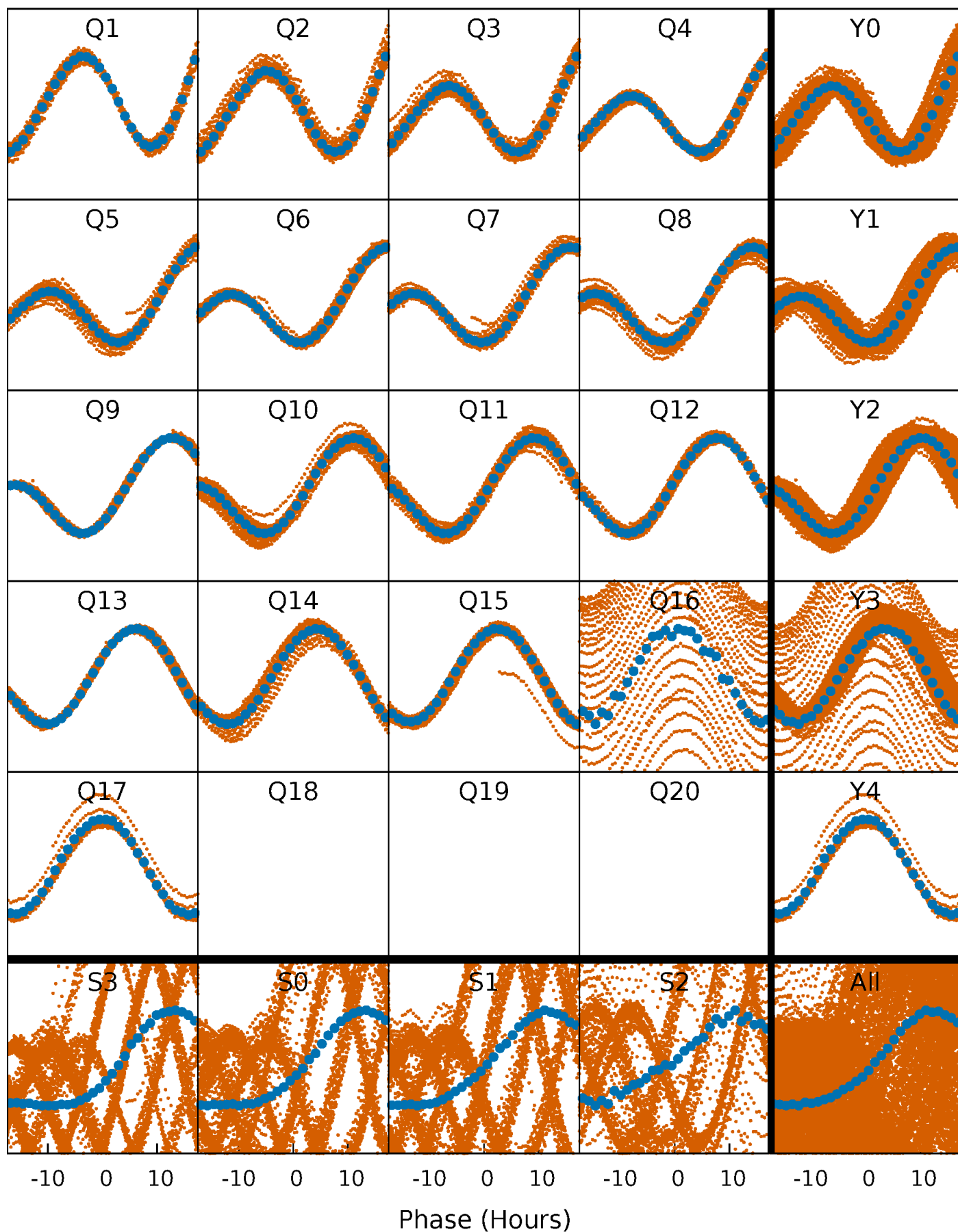


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



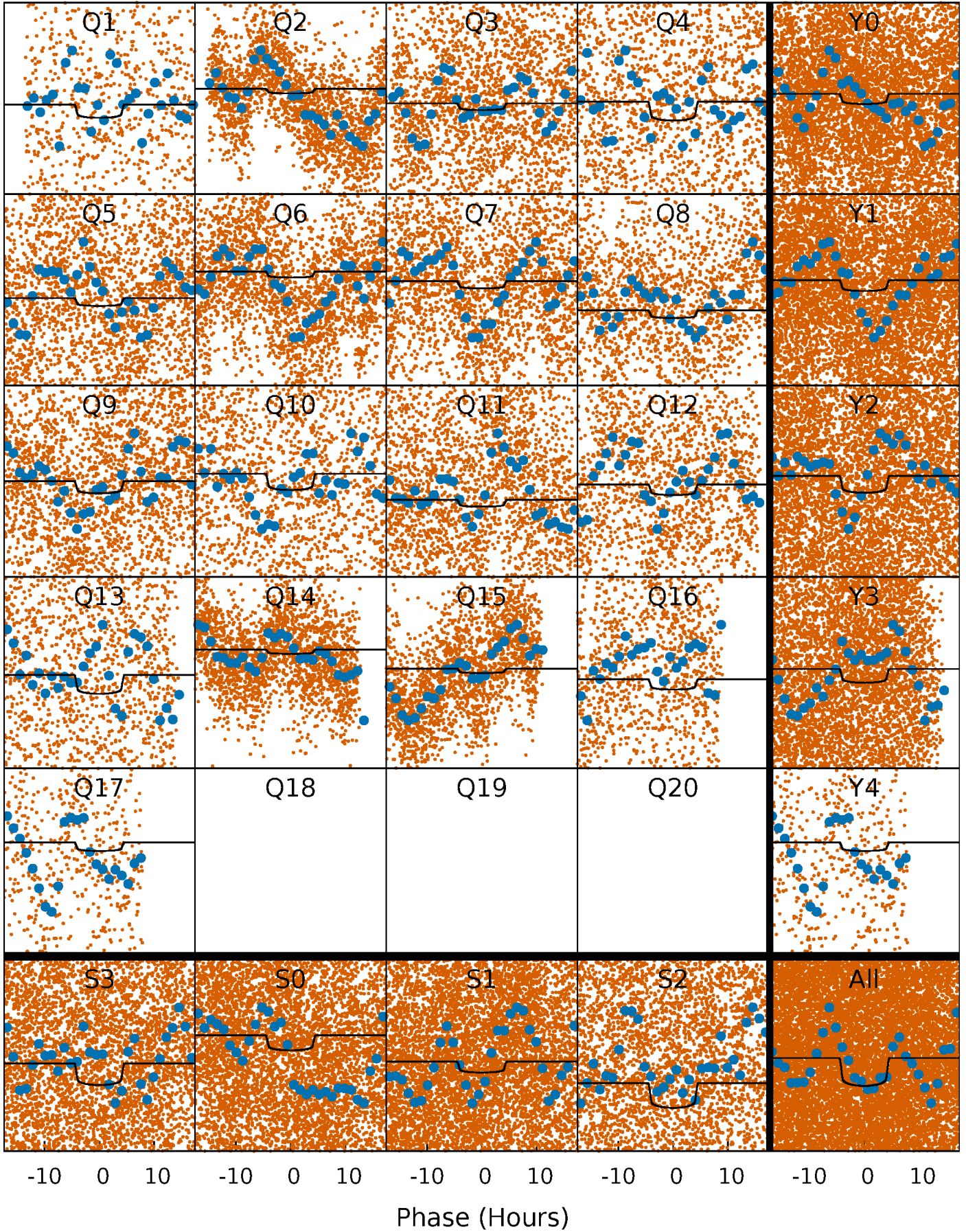
PDC Quarter-Phased Transit Curves

TCE 010959320-02 P= 2.447377 Days $T_0=133.469000$ (BKJD)



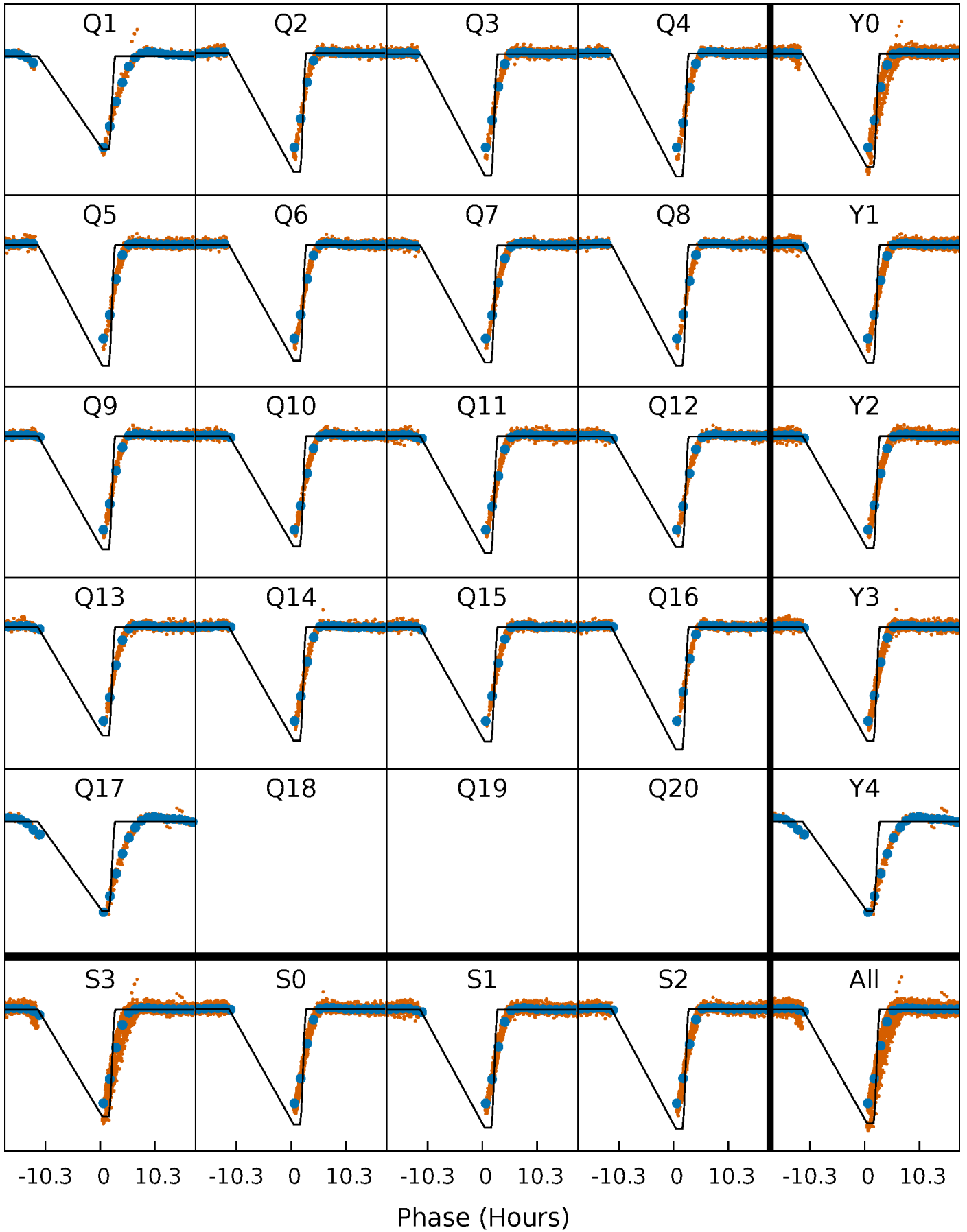
DV Quarter-Phased Transit Curves

TCE 010959320-02 P= 2.447377 Days $T_0=133.469000$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

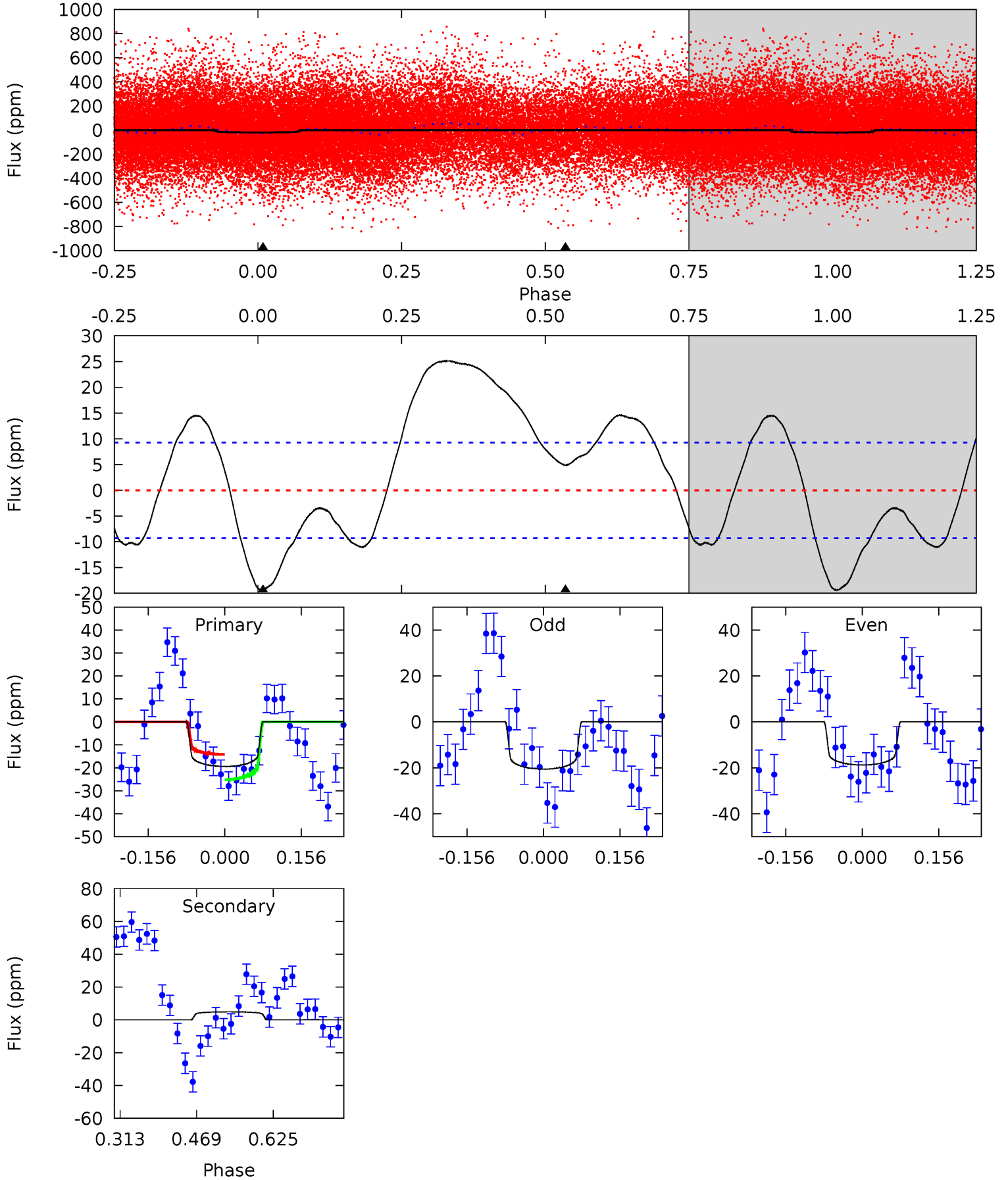
TCE 010959320-02 $P = 2.445562$ Days $T_0 = 132.900927$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-02, P = 2.447377 Days, E = 131.021623 Days

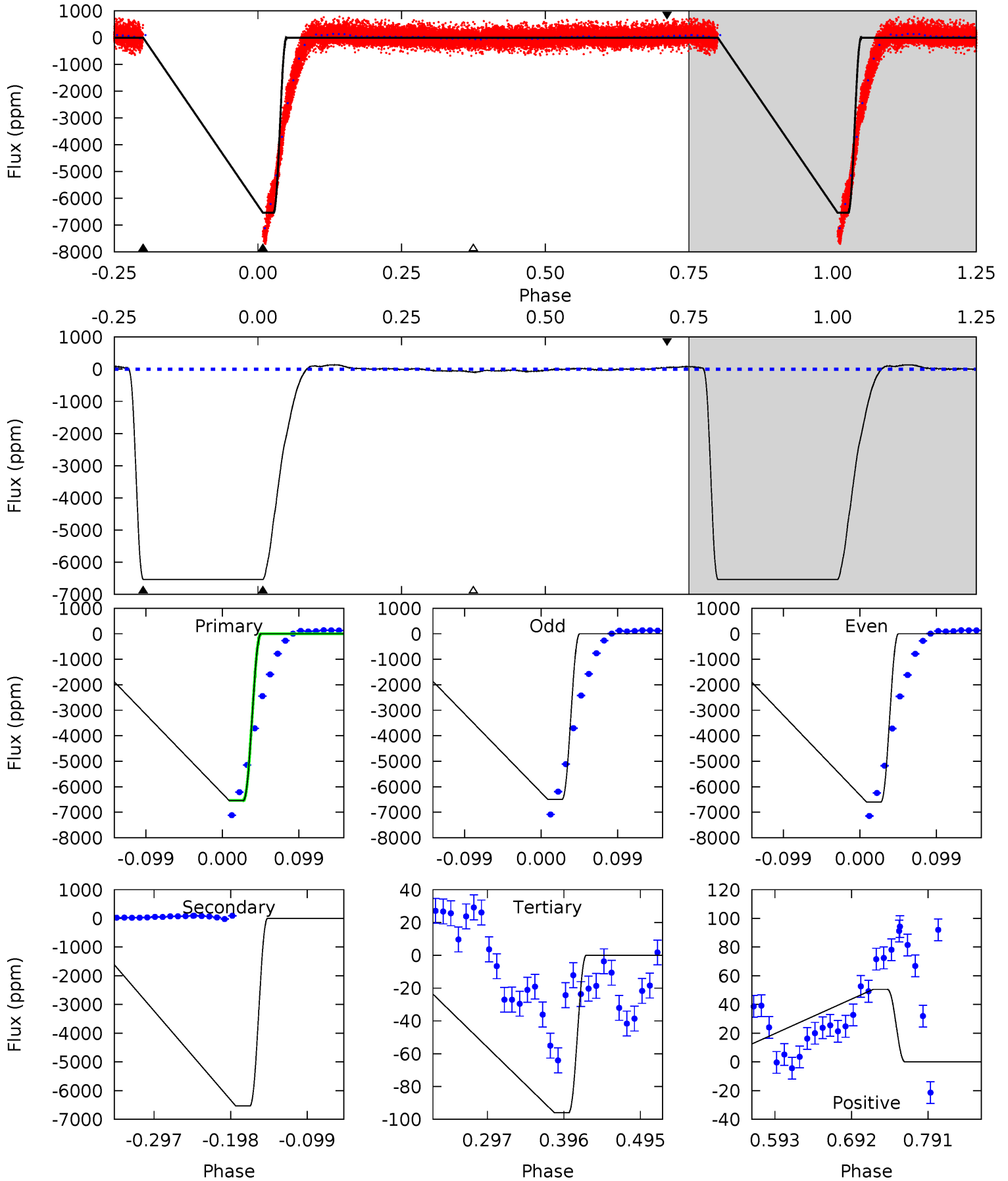
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.34	-2.36	0	0	4.47	1.42	6.07	9.34	9.34	-2.36	-2.36	0.44	1.16	0.56	2.74



Alt Model-Shift Uniqueness Test

010959320-02, P = 2.445562 Days, E = 130.455365 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1564	1563	23.0	12.1	4.57	1.65	11.7	1541	1552	1540	1551	12.4	1.02	0.02	0



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	5 ± 2	$1.95^{+0.46}_{-0.47}$	5111^{+379}_{-497}	-6276^{+728}_{-880}	$-1.789^{+0.864}_{-1.661}$
Alt.	-6531 ± 4	$37.19^{+4.62}_{-7.54}$	5105^{+386}_{-497}	8826^{+262}_{-352}	$6.673^{+3.412}_{-1.343}$

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 $A_{obs} \gg 1.0$

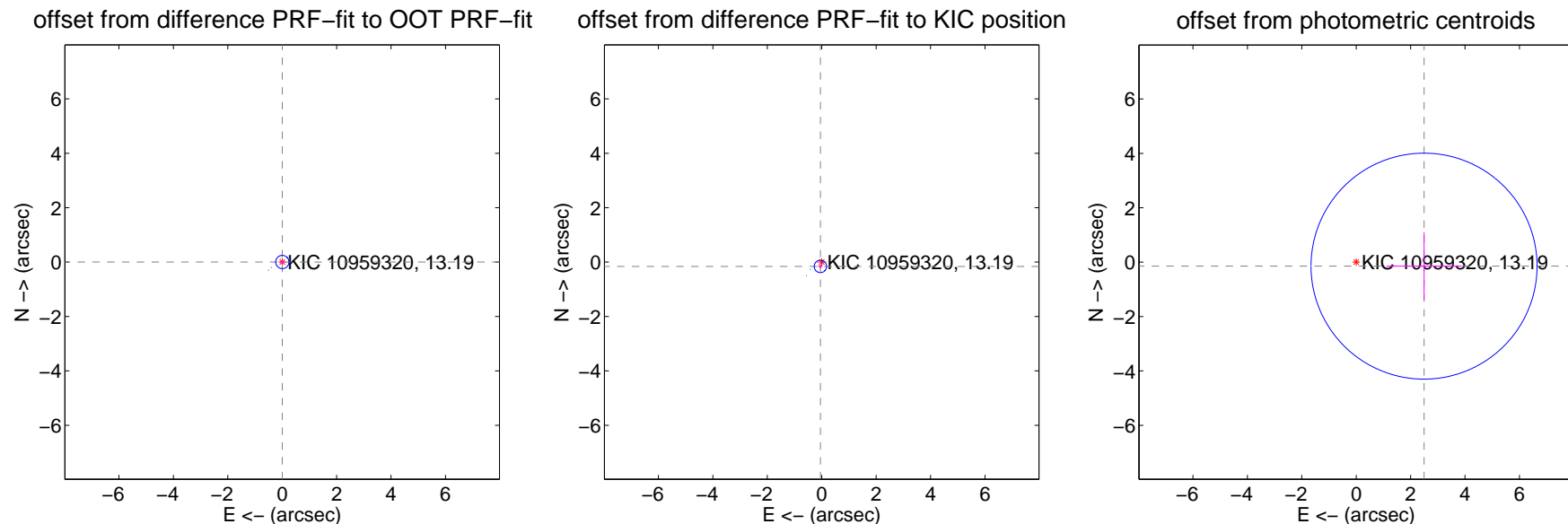
DV Centroid Data

Supplemental centroid analysis for 010959320-02. Kepler magnitude: 13.19. Transit SNR 6.02

There are 9 quarters with good PRF difference image offsets

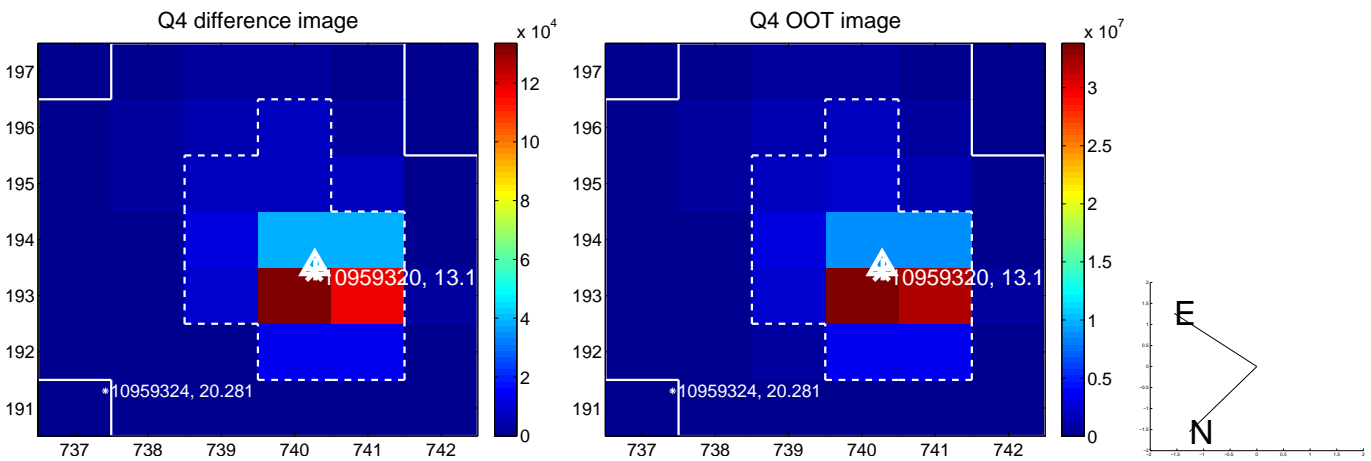
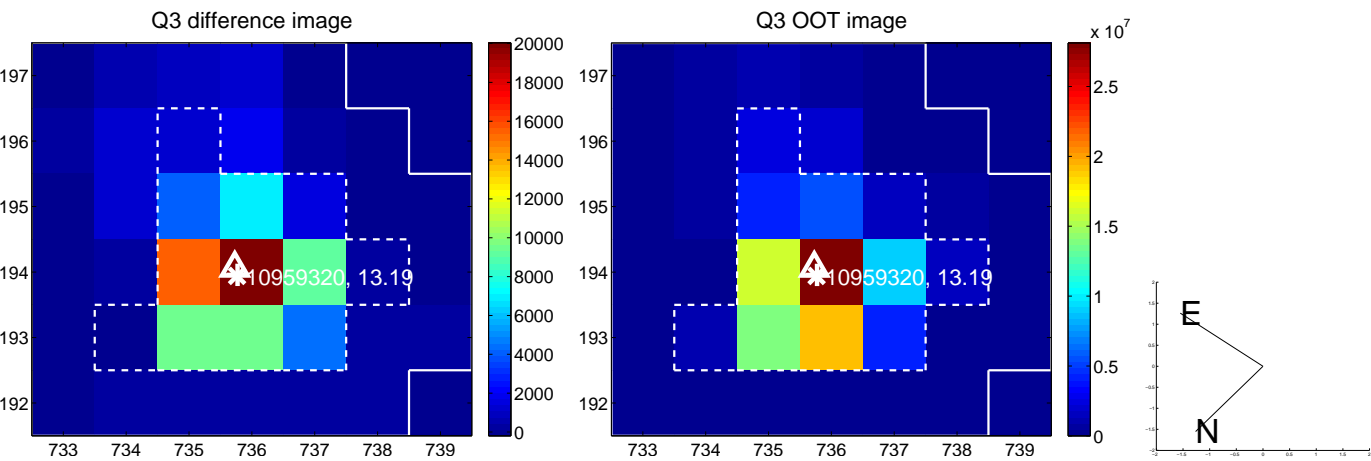
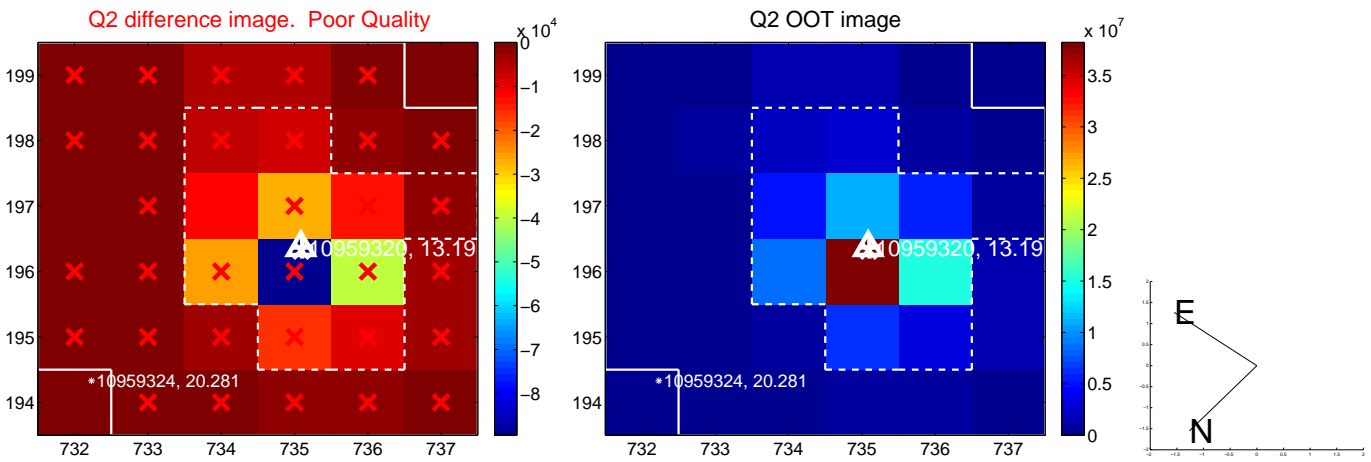
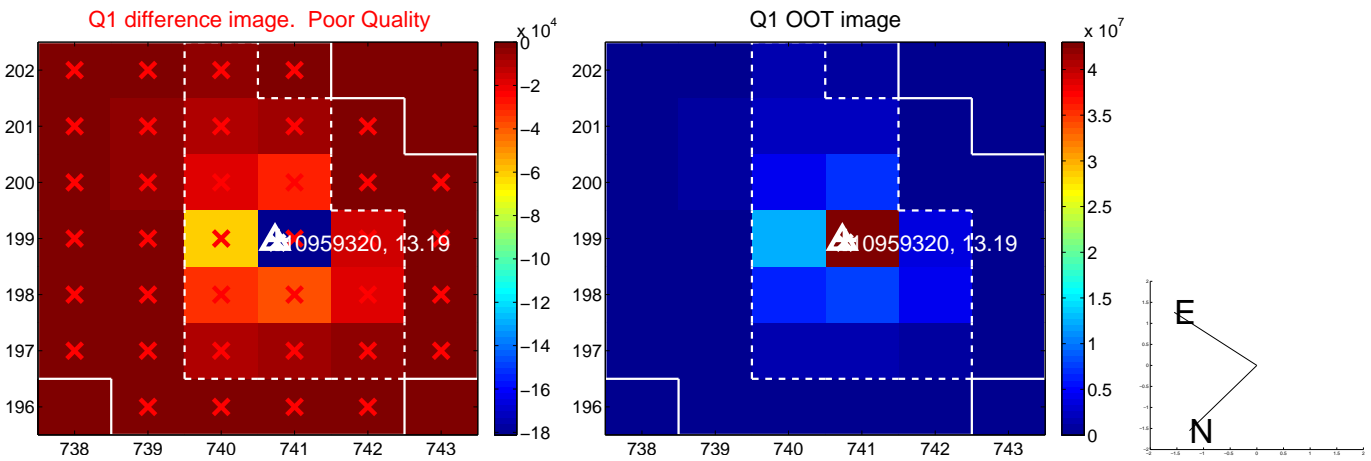
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.005 ± 0.081	0.06	-0.003 ± 0.079	0.003 ± 0.072
PRF-fit source offset from KIC position	0.166 ± 0.076	2.20	0.049 ± 0.078	-0.159 ± 0.072
photometric centroid source offset	2.50 ± 1.38	1.80	-2.49 ± 1.39	-0.15 ± 1.25

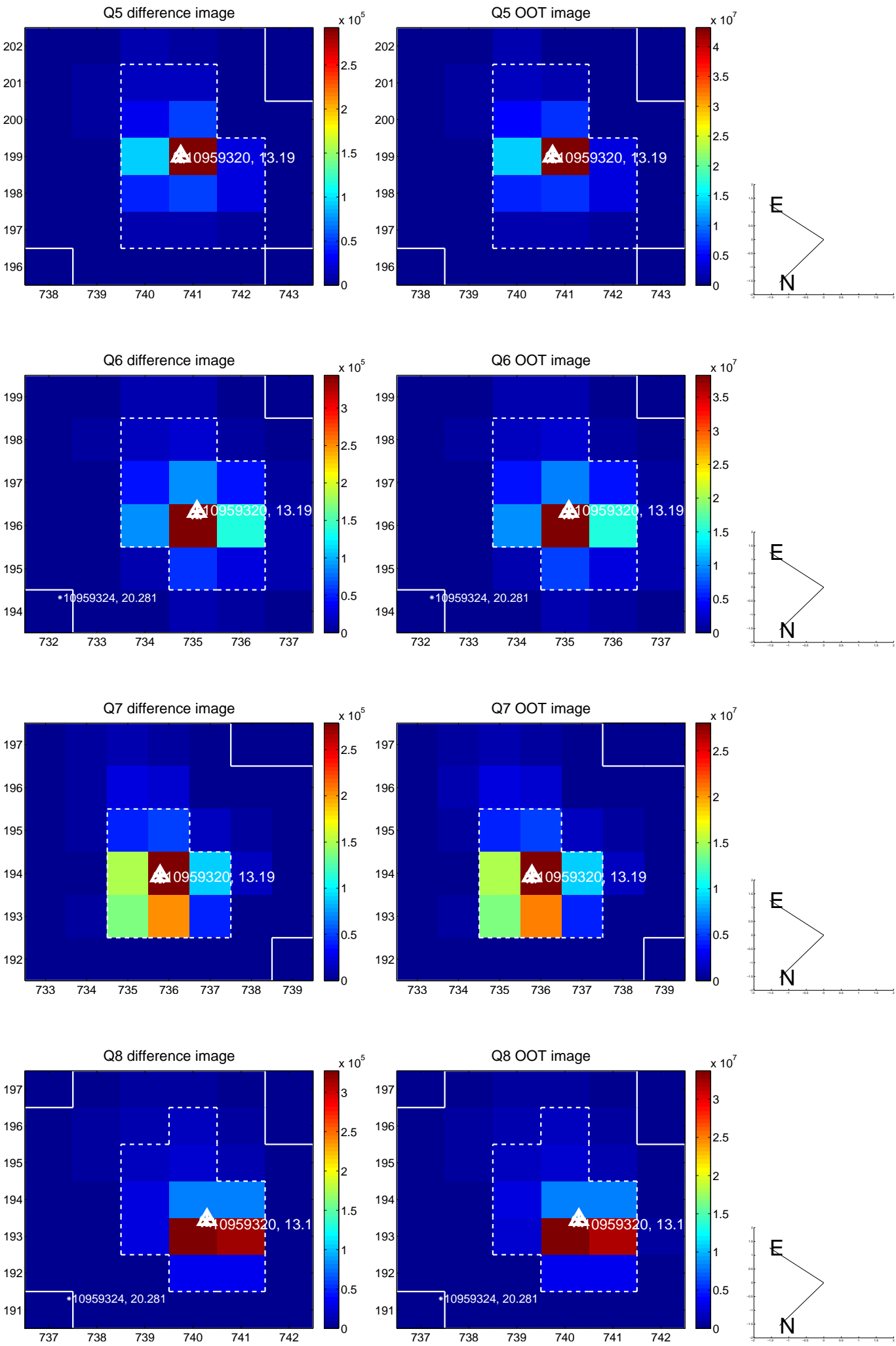


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

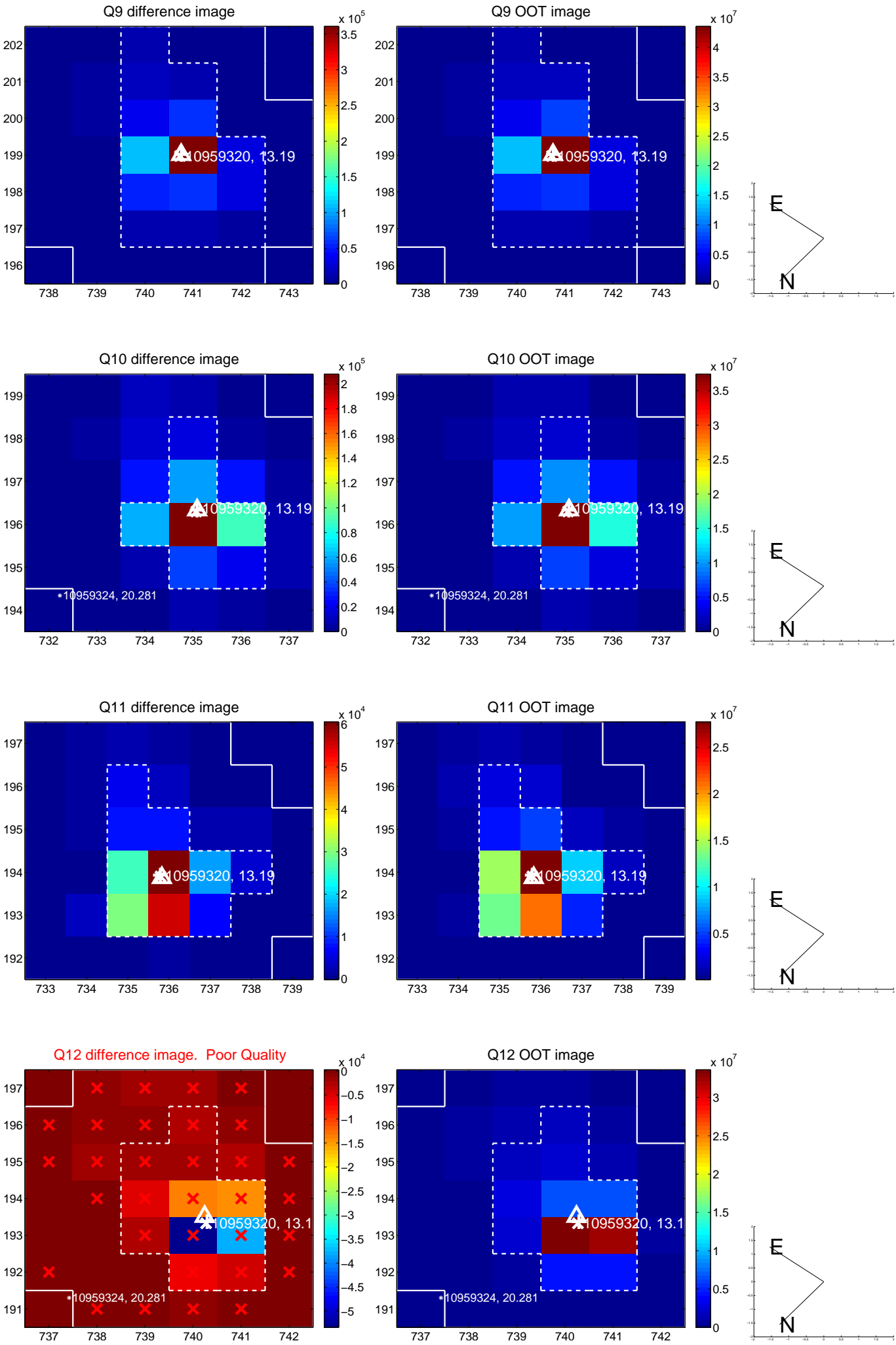
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



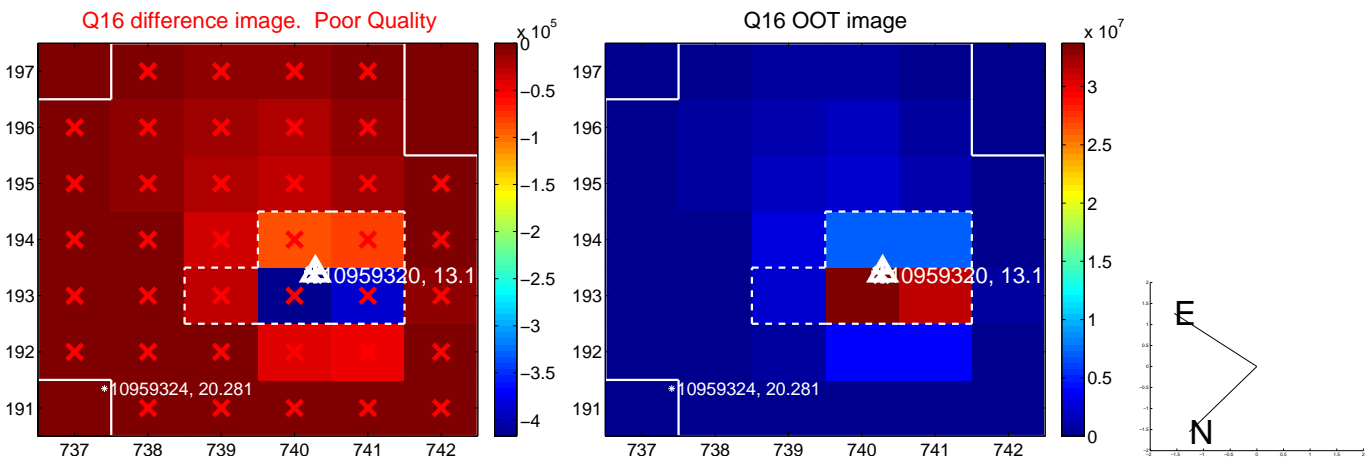
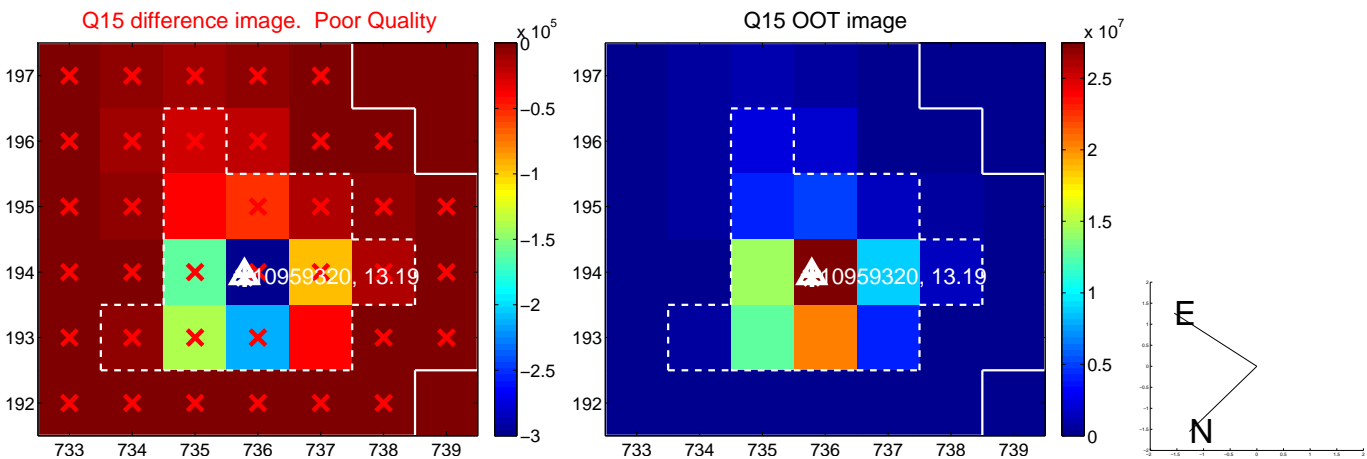
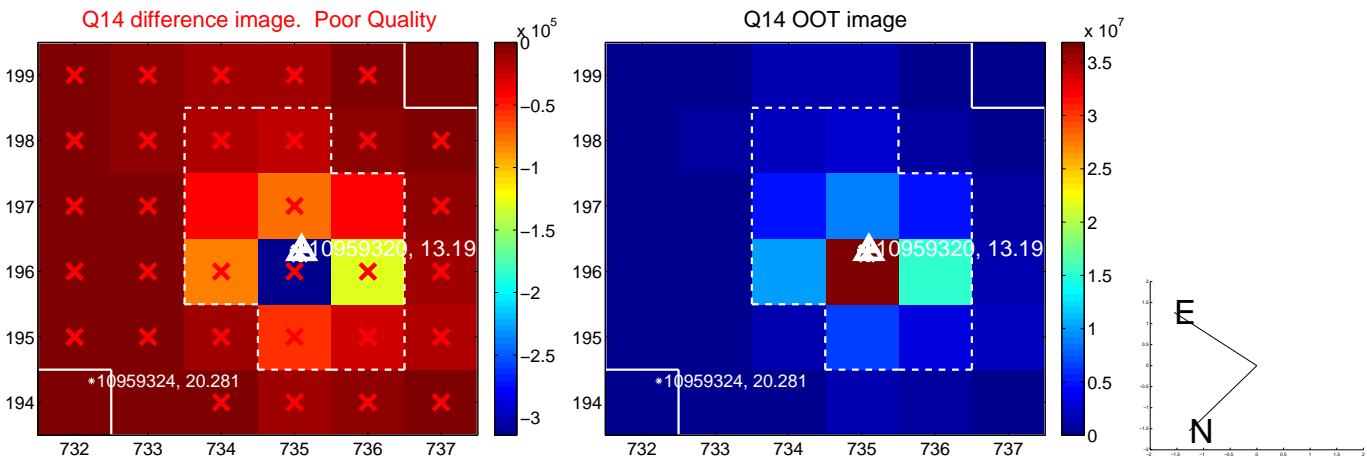
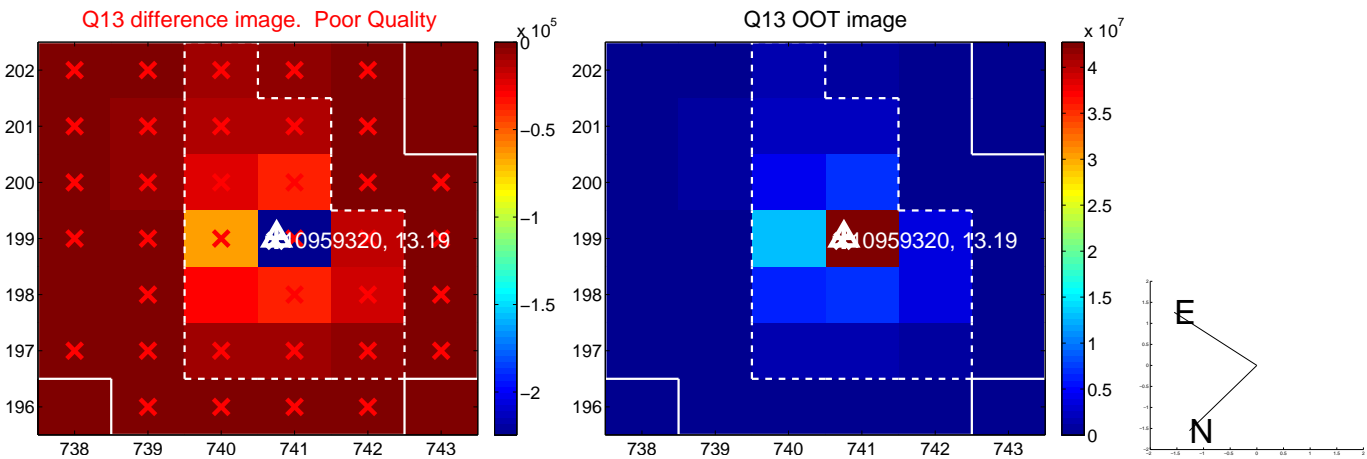
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



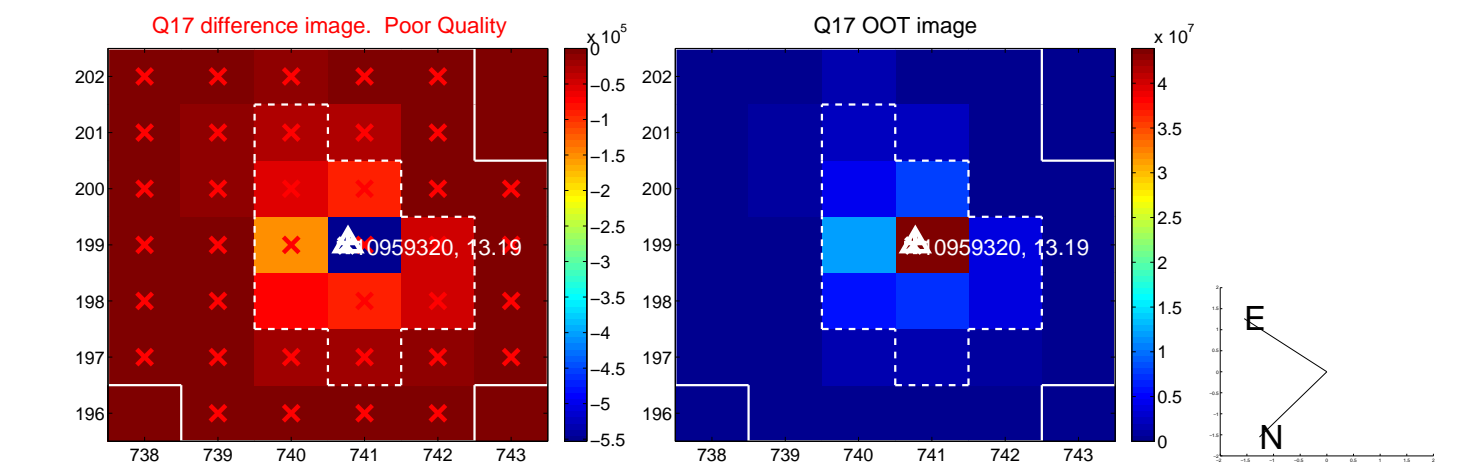
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



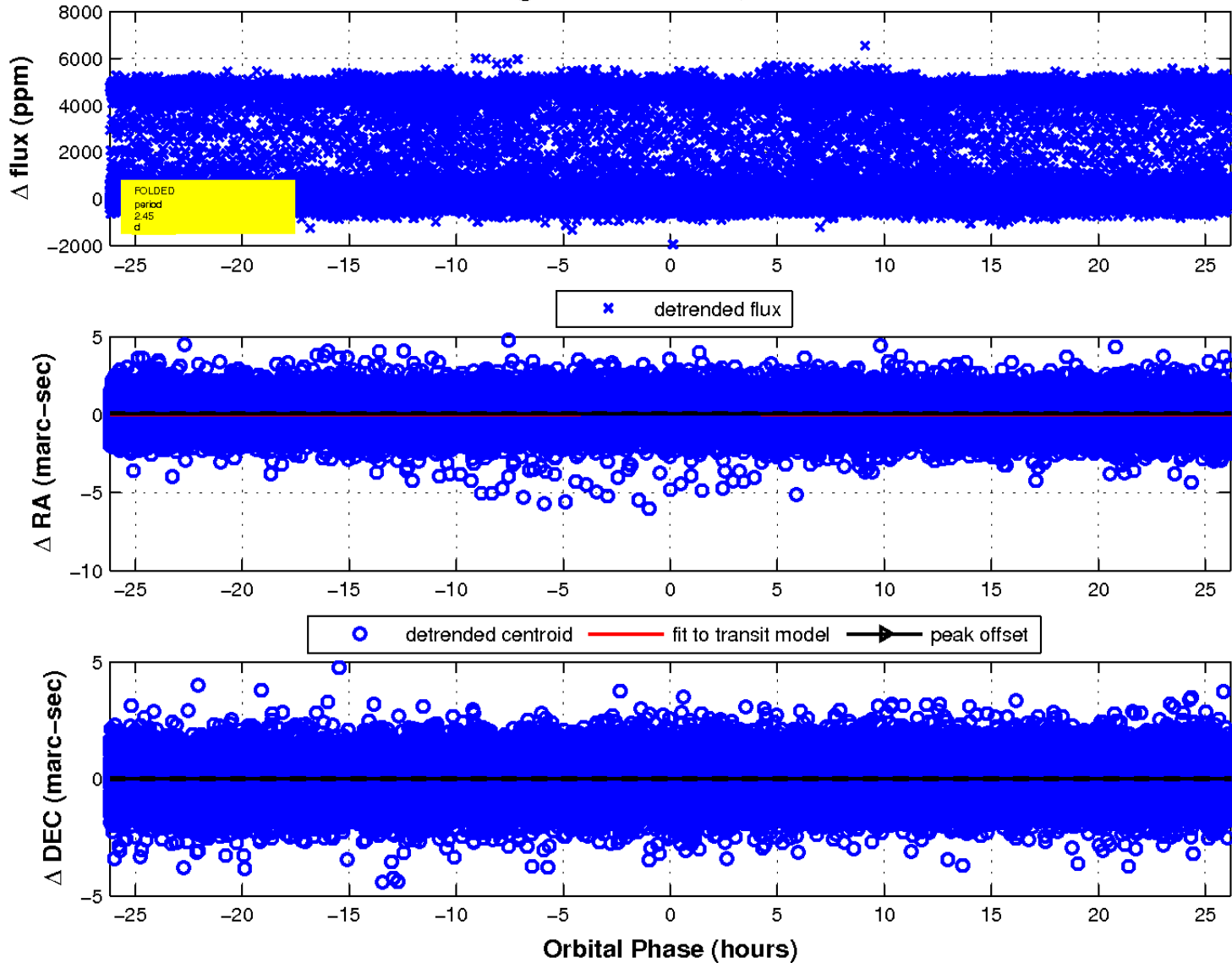
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

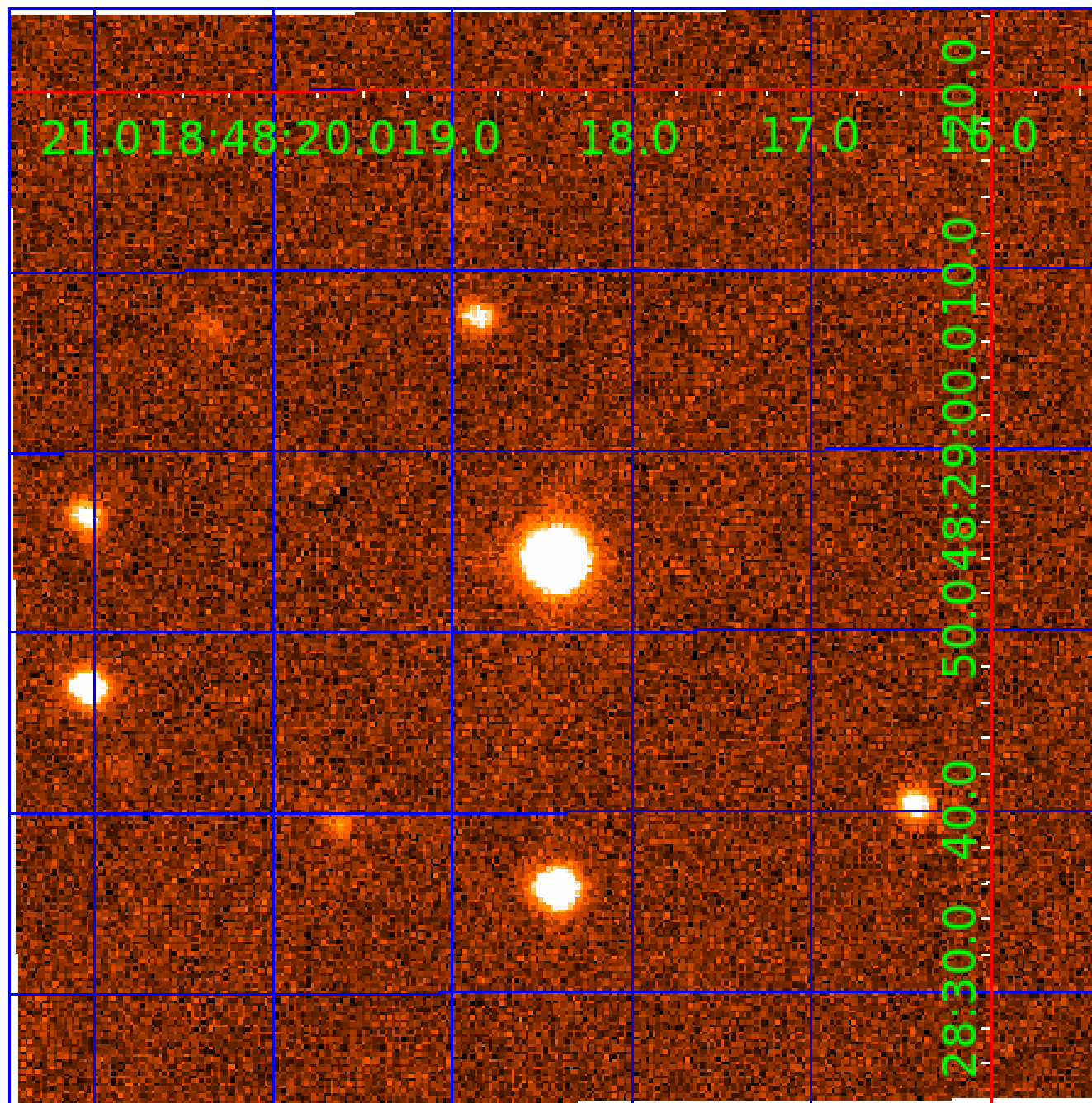


fluxWeightedCentroids, Planet 2 of 6



UKIRT Image

Declination



KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
010959320-02	OBS	No	2.447377	133.469000	22.0	8.729	18.4	6.0	3.77	9824	2.04	45999.28
010959320-03	OBS	No	2.447485	132.771615	0.3	8.724	17.5	0.1	3.77	9824	0.22	45996.57
010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
010959320-05	OBS	No	68.249561	135.116136	629.2	4.531	11.7	11.6	3.77	9824	12.17	543.94
010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

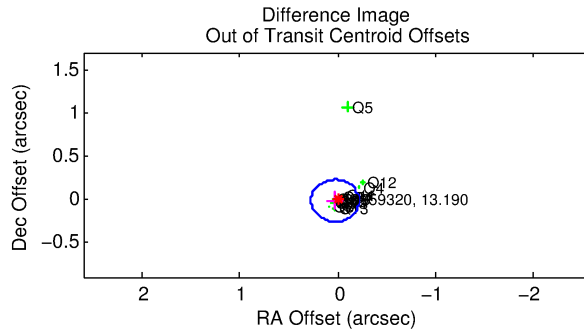
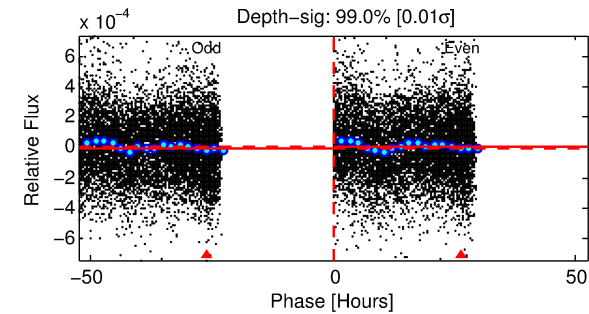
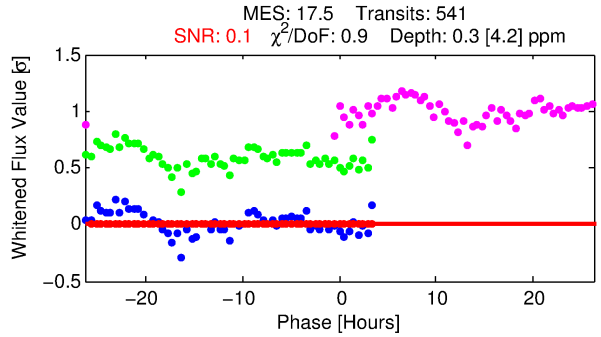
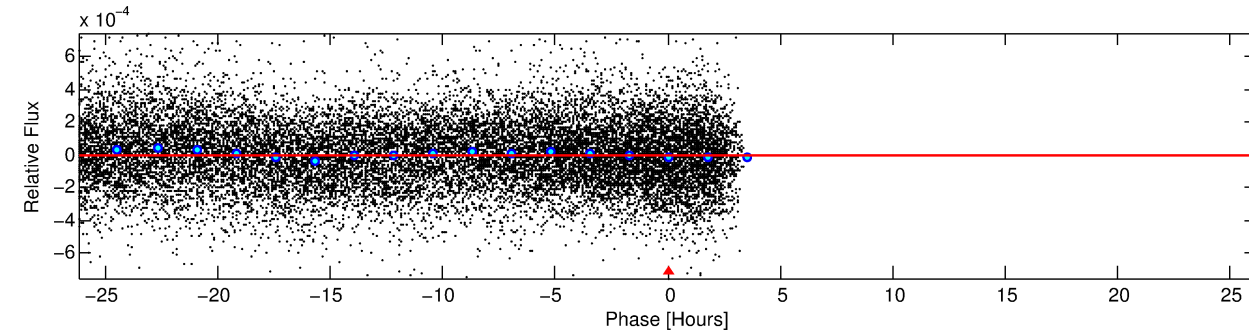
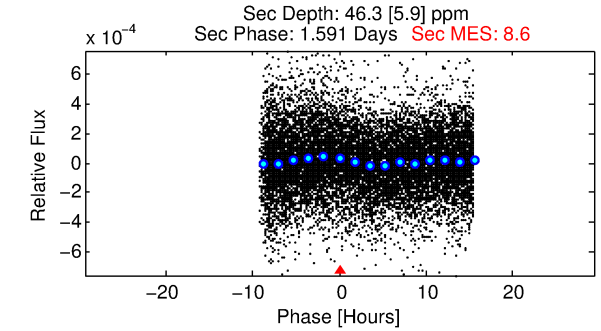
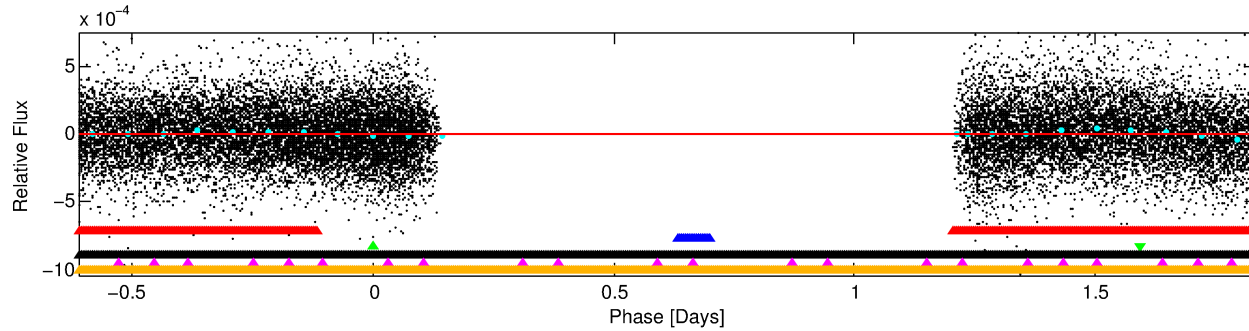
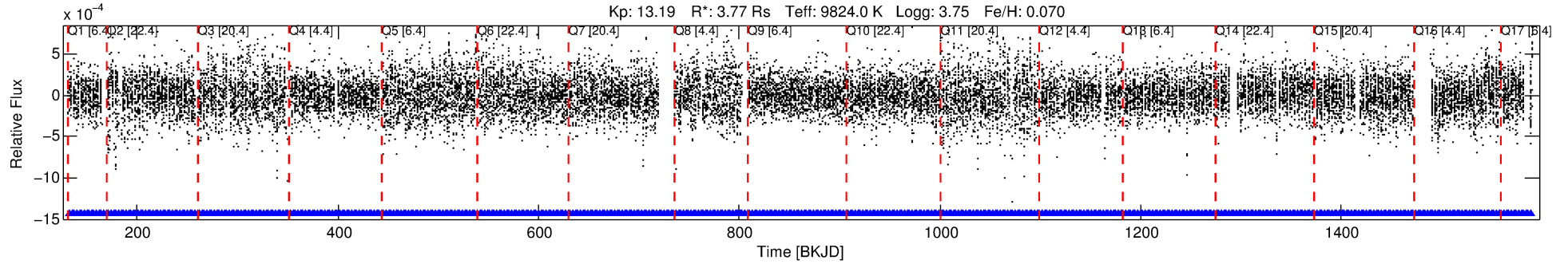
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-03

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 3 of 6 Period: 2.447 d



DV Fit Results:

Period = 2.44748 [0.00347] d
Epoch = 132.7716 [0.9242] BKJD
Rp/R* = 0.0005 [0.0040]
a/R* = 2.14 [40.62]
b = 0.30 [73.70]
Seff = 45996.57 [26627.19]
Teq = 3734 [540] K
Rp = 0.22 [1.66] Re
a = 0.0508 [0.0179] AU
Ag = 1368.52 [20709.26] [0.07σ]
Teffp = 35116 [132775] K [0.24σ]

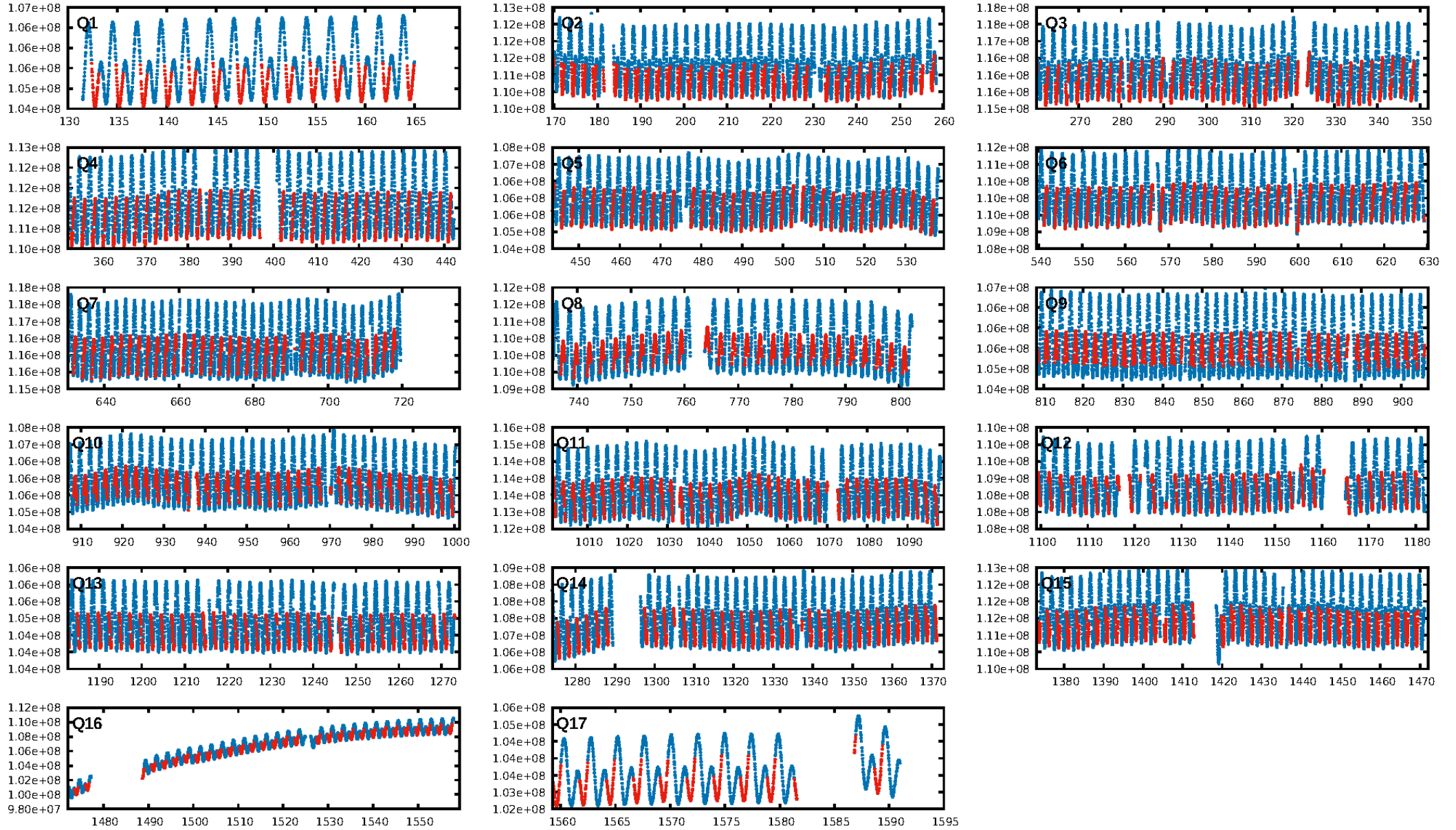
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [160.64σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [524/524]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.032 arcsec [0.40σ]
KicOffset-rm: 0.188 arcsec [2.10σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 0.00 [0/17]

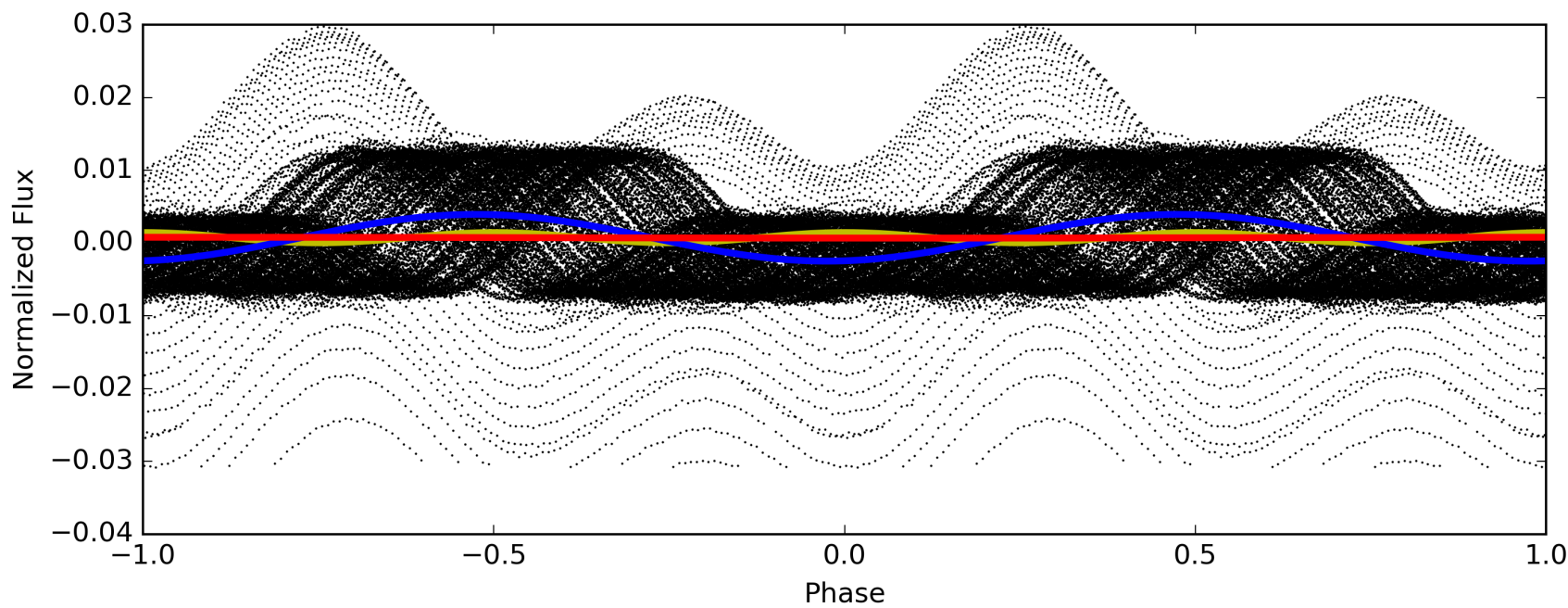
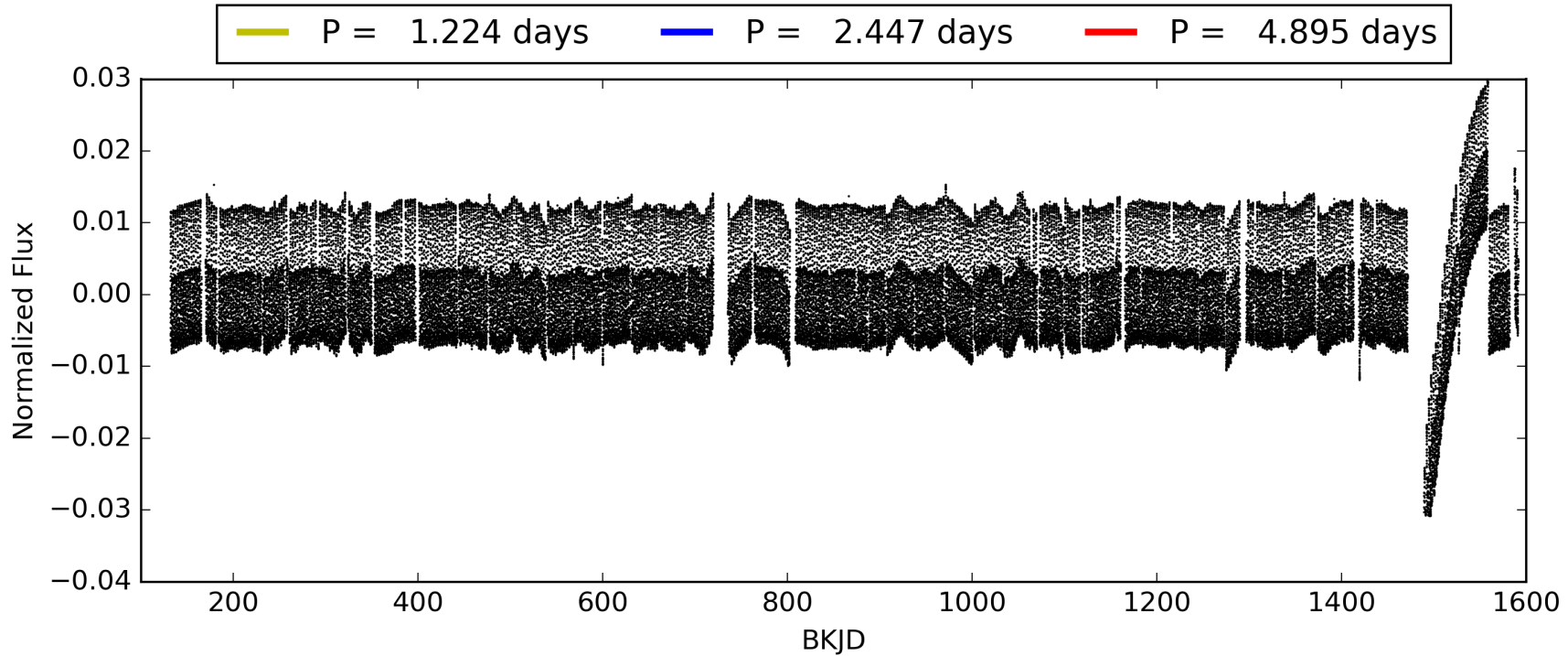
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:28 Z

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

TCE 010959320-03, PDC Light Curves

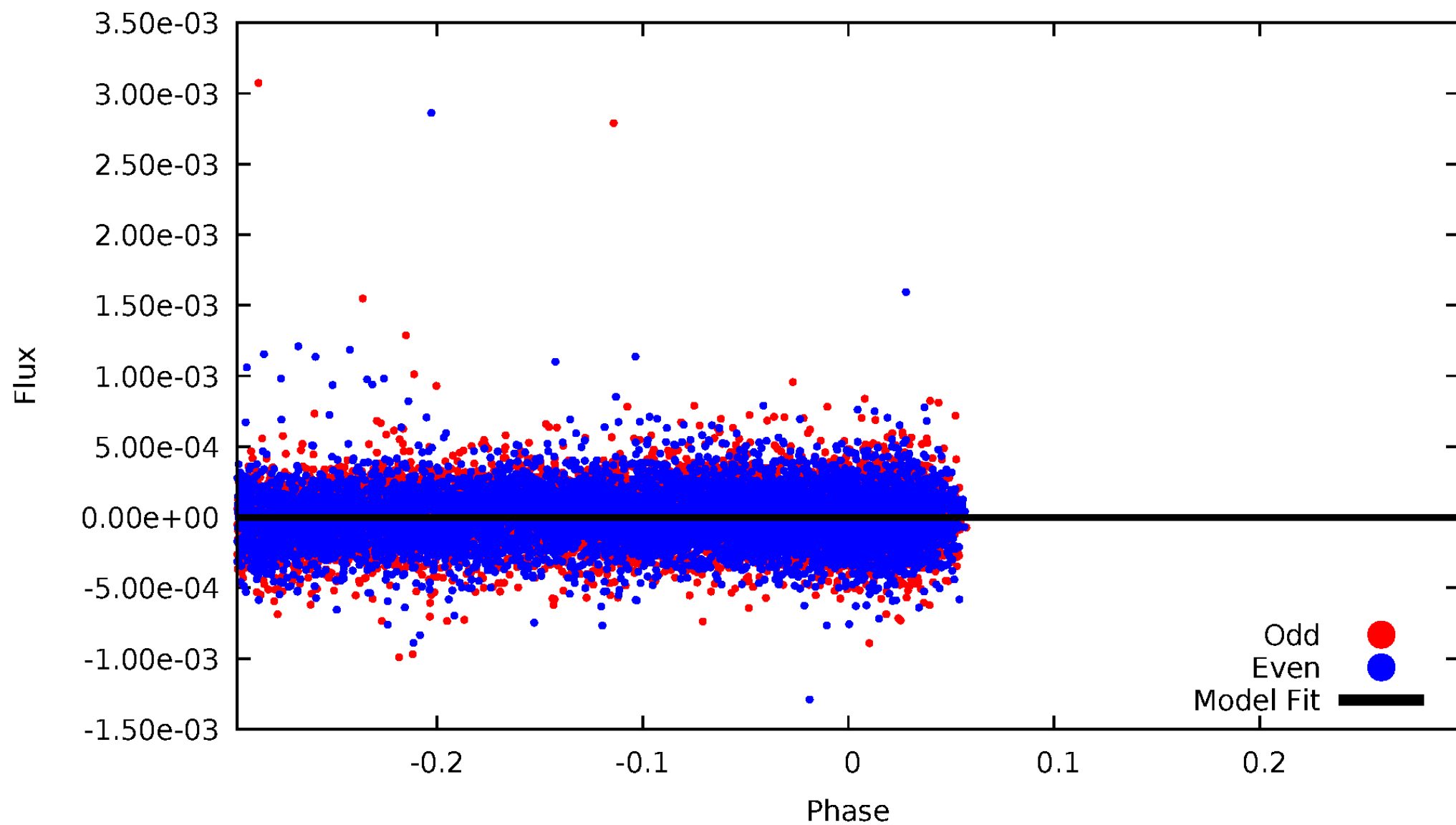


TCE 010959320-03



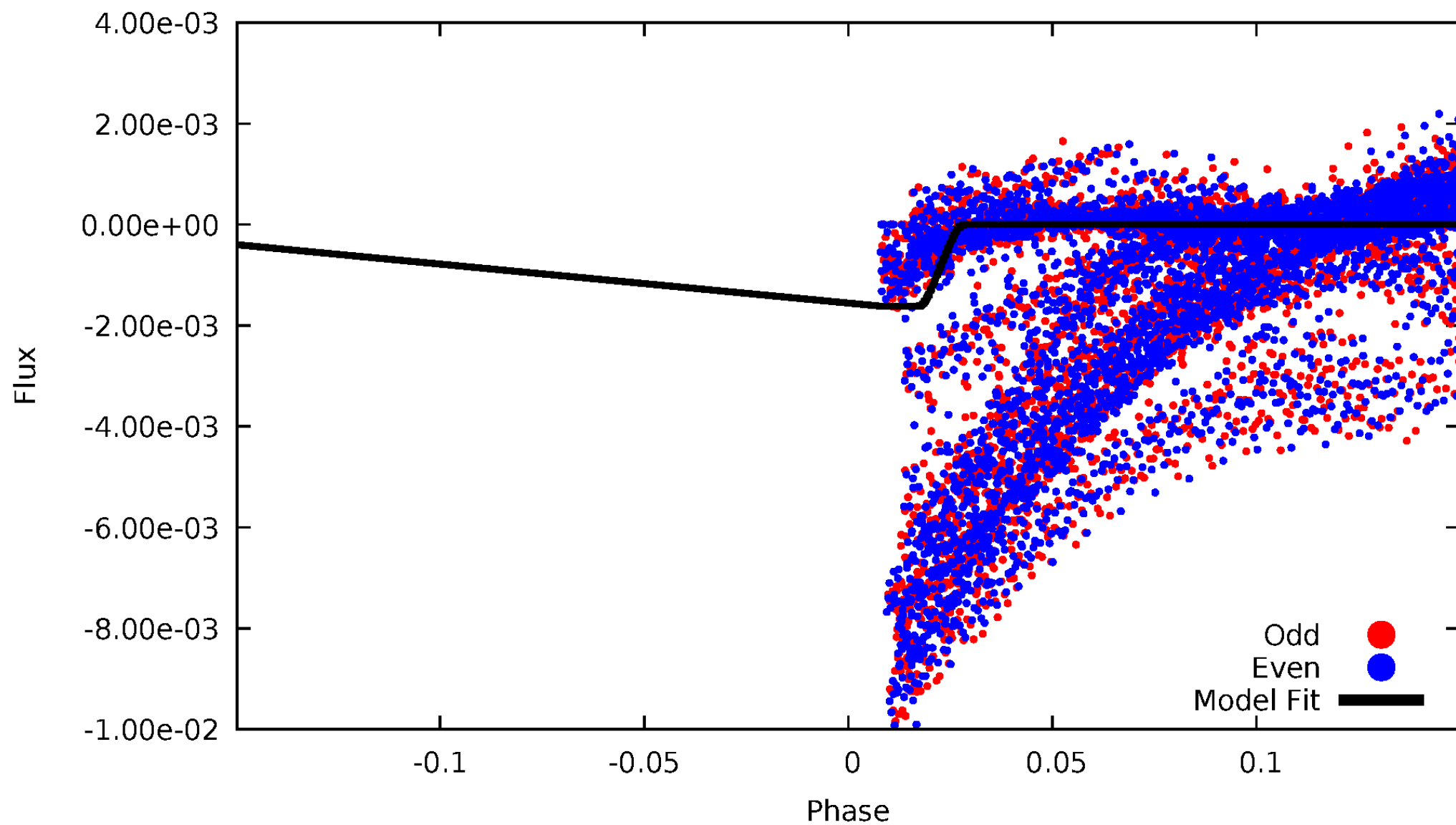
DV Odd/Even

TCE 010959320-03



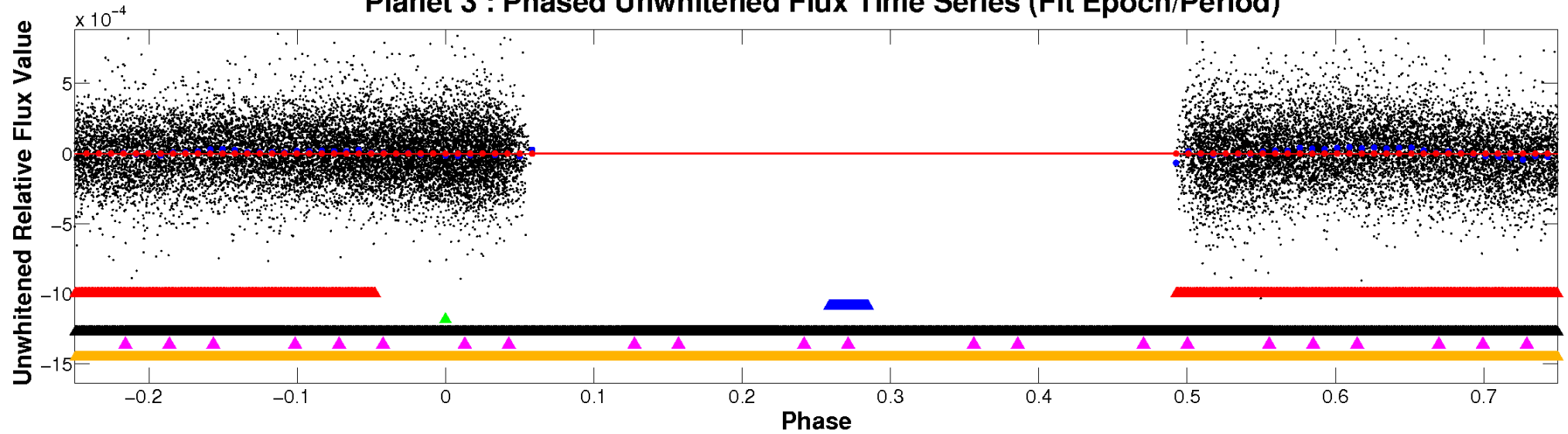
ALT Odd/Even

TCE 010959320-03

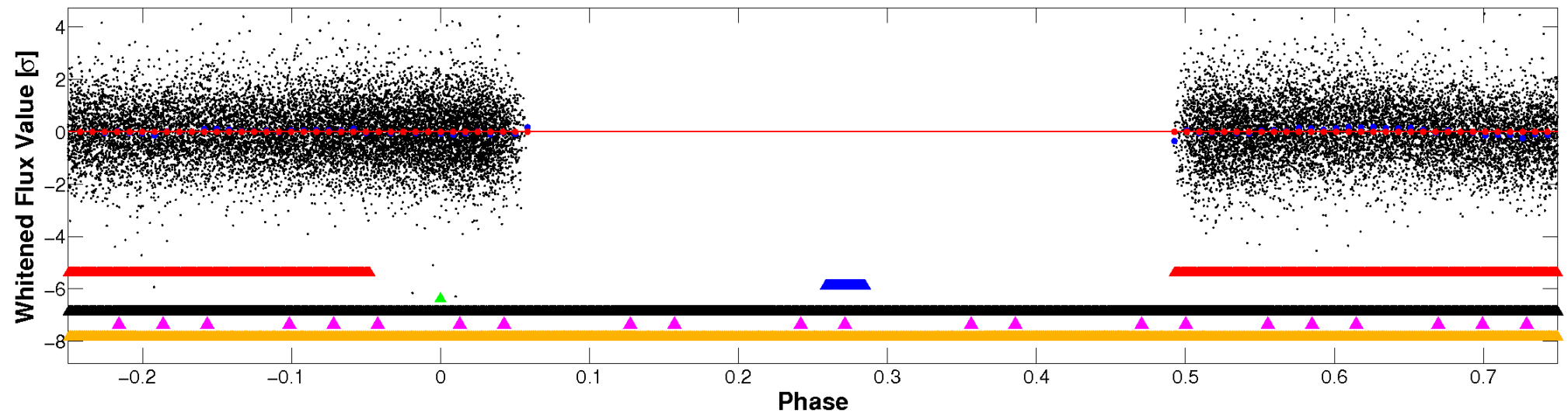


Non-Whitened Vs. Whitened Light Curve

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

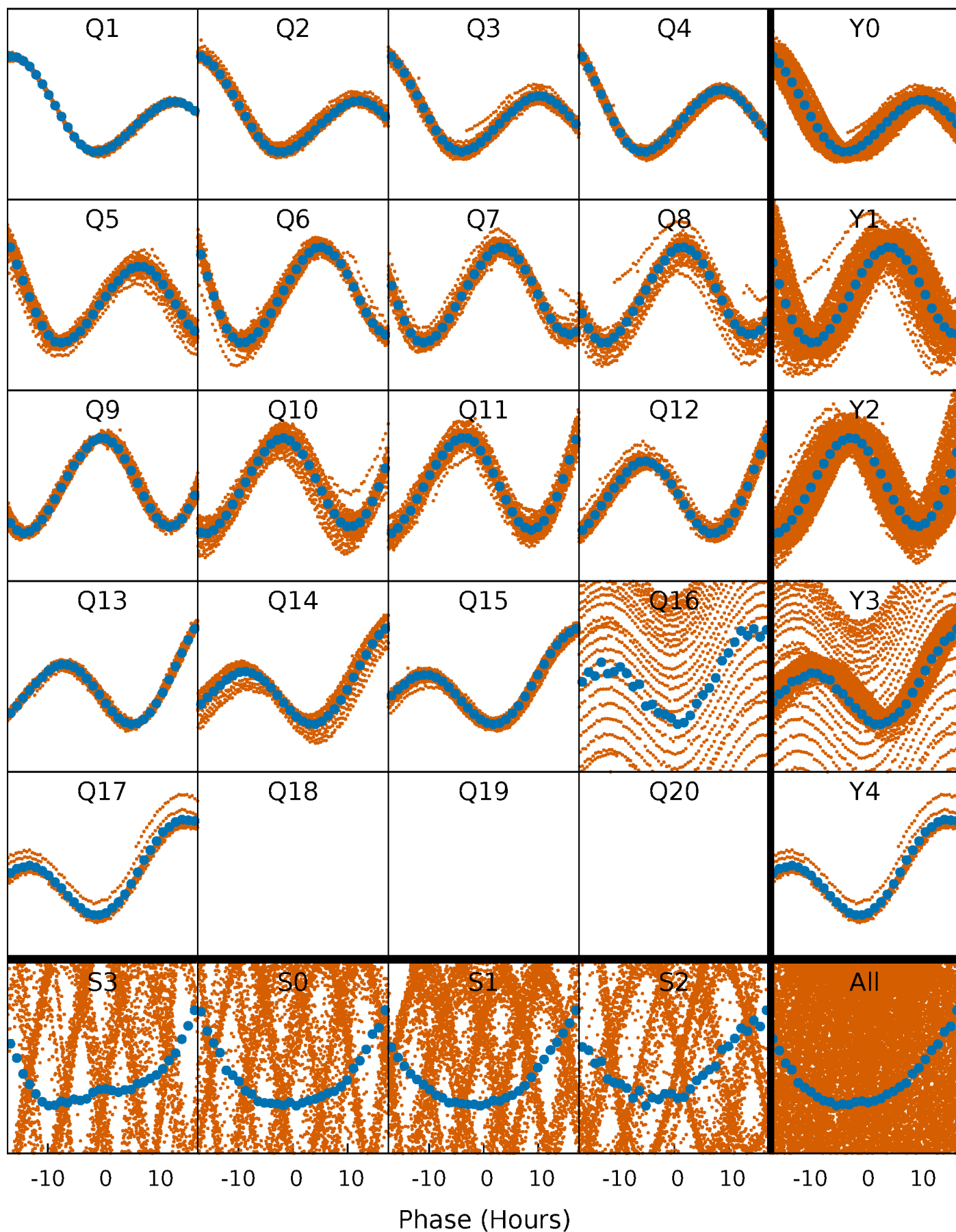


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



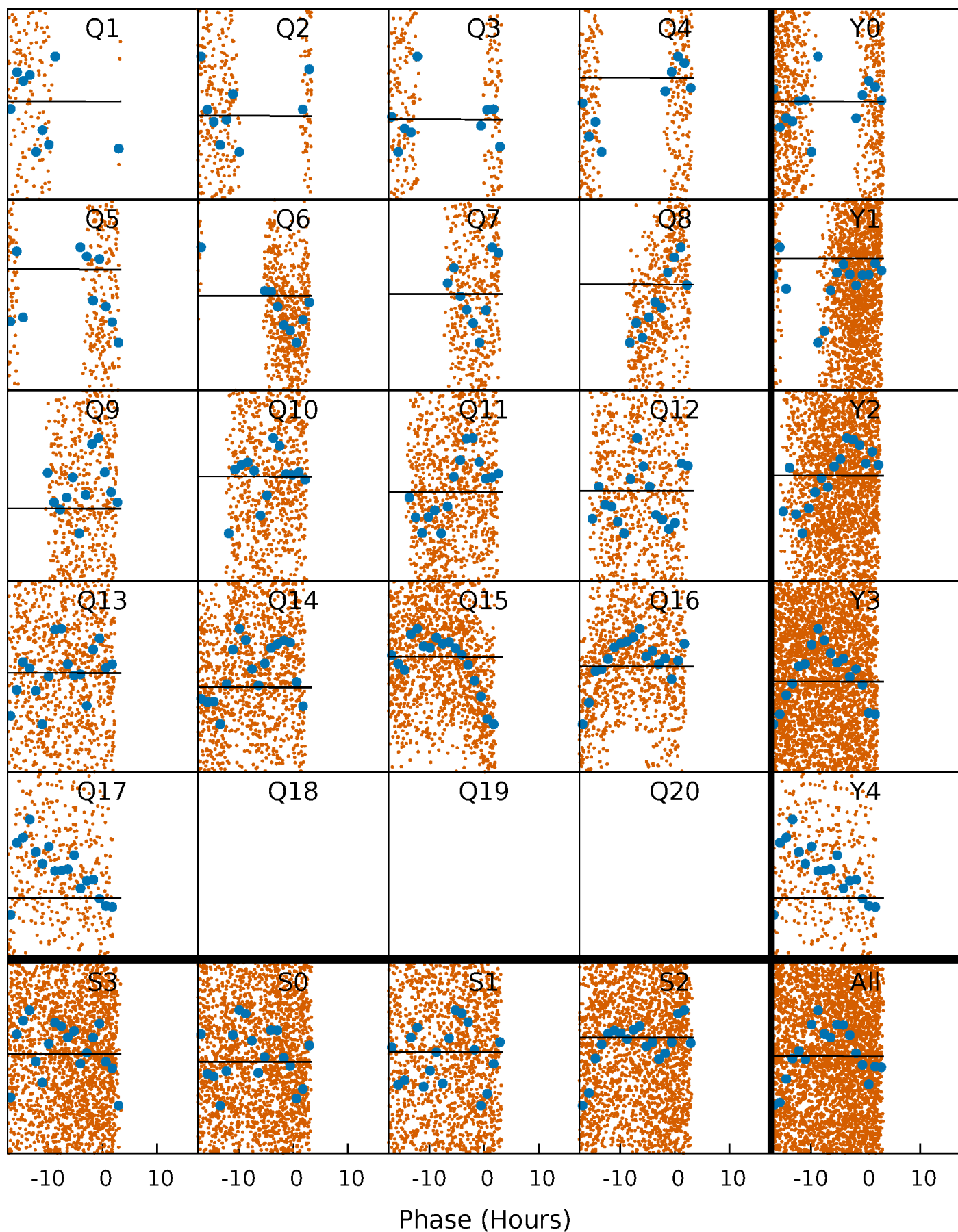
PDC Quarter-Phased Transit Curves

TCE 010959320-03 P= 2.447485 Days $T_0=132.771615$ (BKJD)



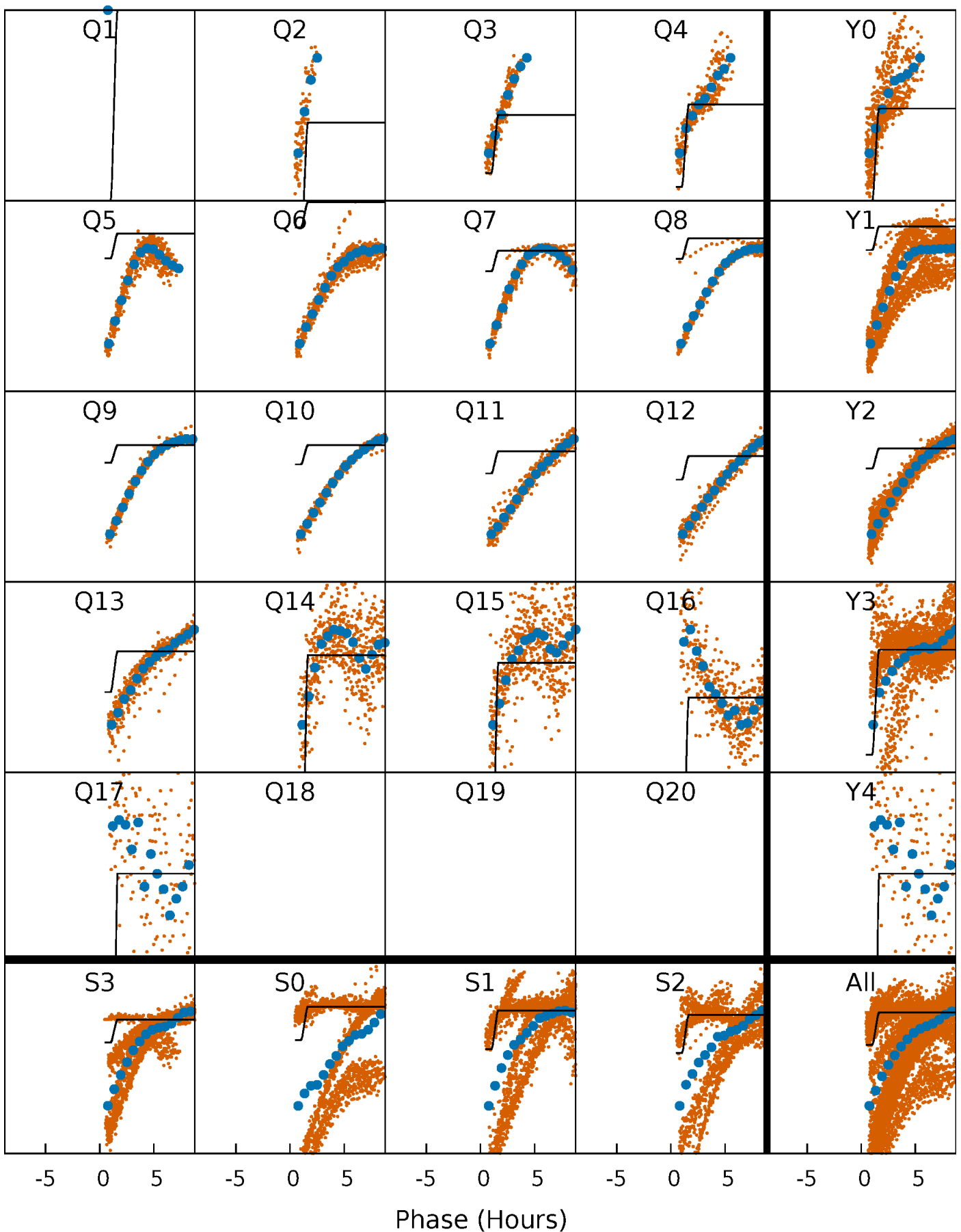
DV Quarter-Phased Transit Curves

TCE 010959320-03 $P = 2.447485$ Days $T_0 = 132.771615$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

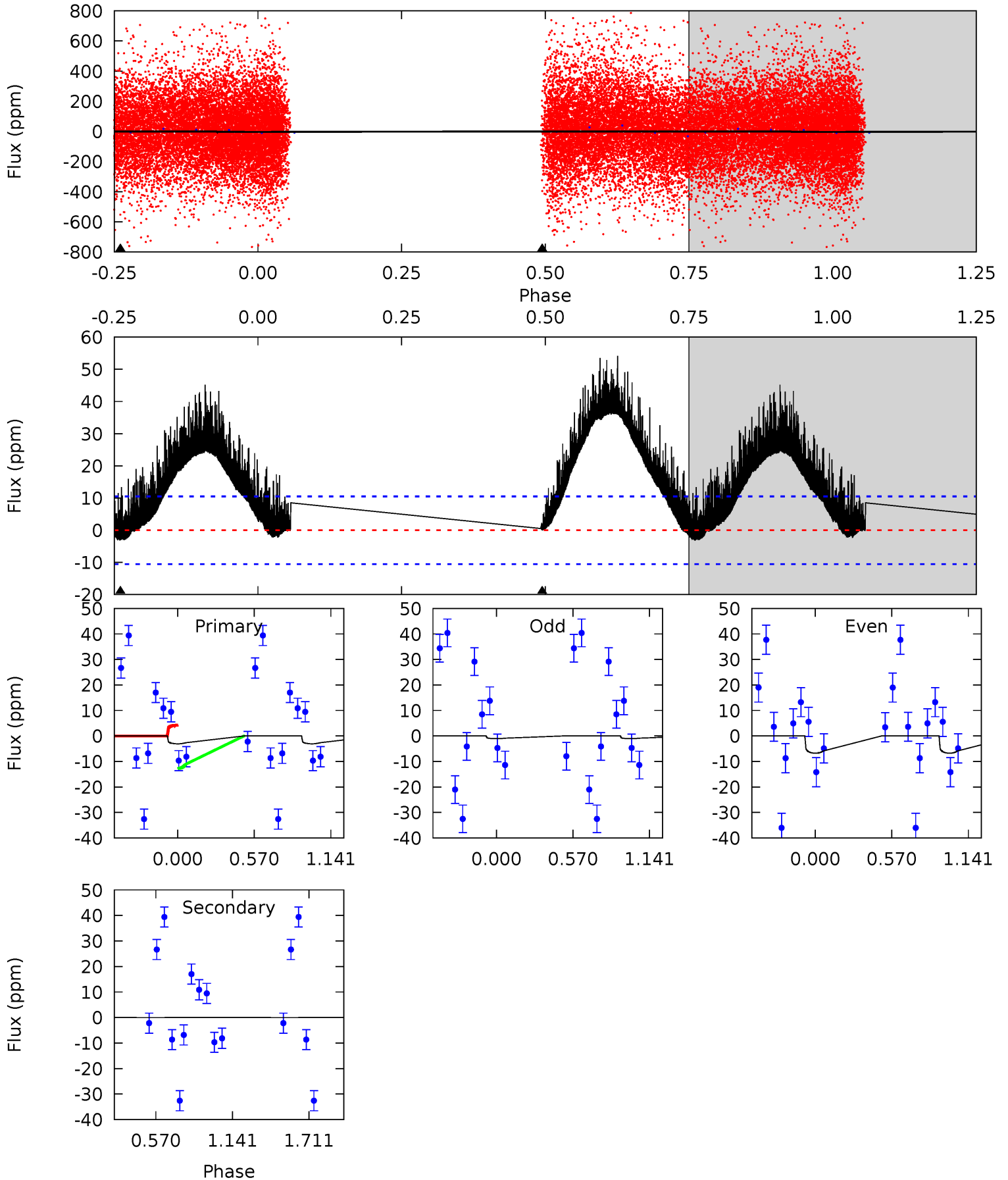
TCE 010959320-03 $P = 2.445563$ Days $T_0 = 132.899527$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-03, P = 2.447485 Days, E = 130.324130 Days

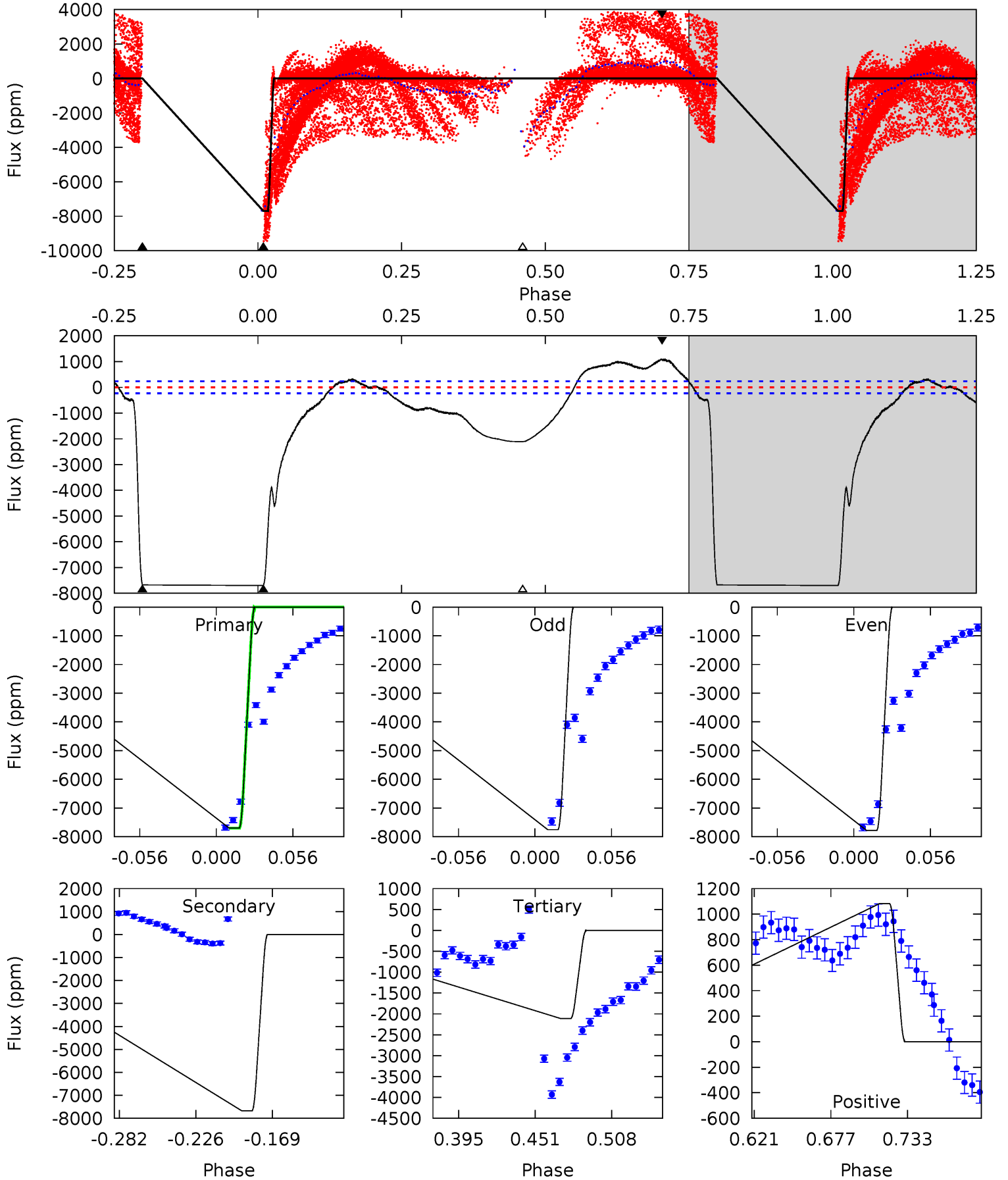
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.22	0	0	0	4.19	0.57	0.97	1.22	1.22	0	0	1.12	-0.20	0.95	1.71



Alt Model-Shift Uniqueness Test

010959320-03, P = 2.445563 Days, E = 130.453964 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
153.7	153.2	42.1	21.6	4.68	1.91	15.5	111.5	132.1	111.1	131.6	0.25	0.77	0.12	0



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-0 ± 3	$1.19^{+1.29}_{-0.81}$	5106^{+399}_{-514}	-4229^{+11548}_{-3644}	$-0.005^{+3.836}_{-5.060}$
Alt.	-7675 ± 50	$16.05^{+2.96}_{-3.16}$	5158^{+362}_{-514}	19783^{+2580}_{-2209}	42^{+21}_{-12}

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 $A_{obs} \gg 1.0$

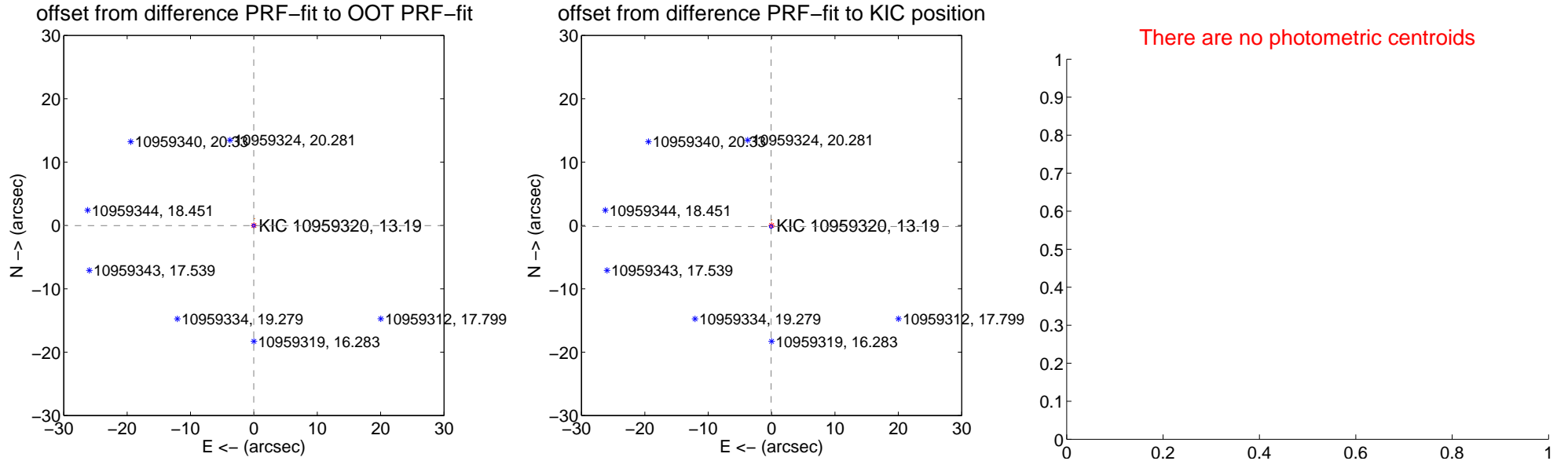
DV Centroid Data

Supplemental centroid analysis for 010959320-03. Kepler magnitude: 13.19. Transit SNR 0.08

There are 9 quarters with good PRF difference image offsets

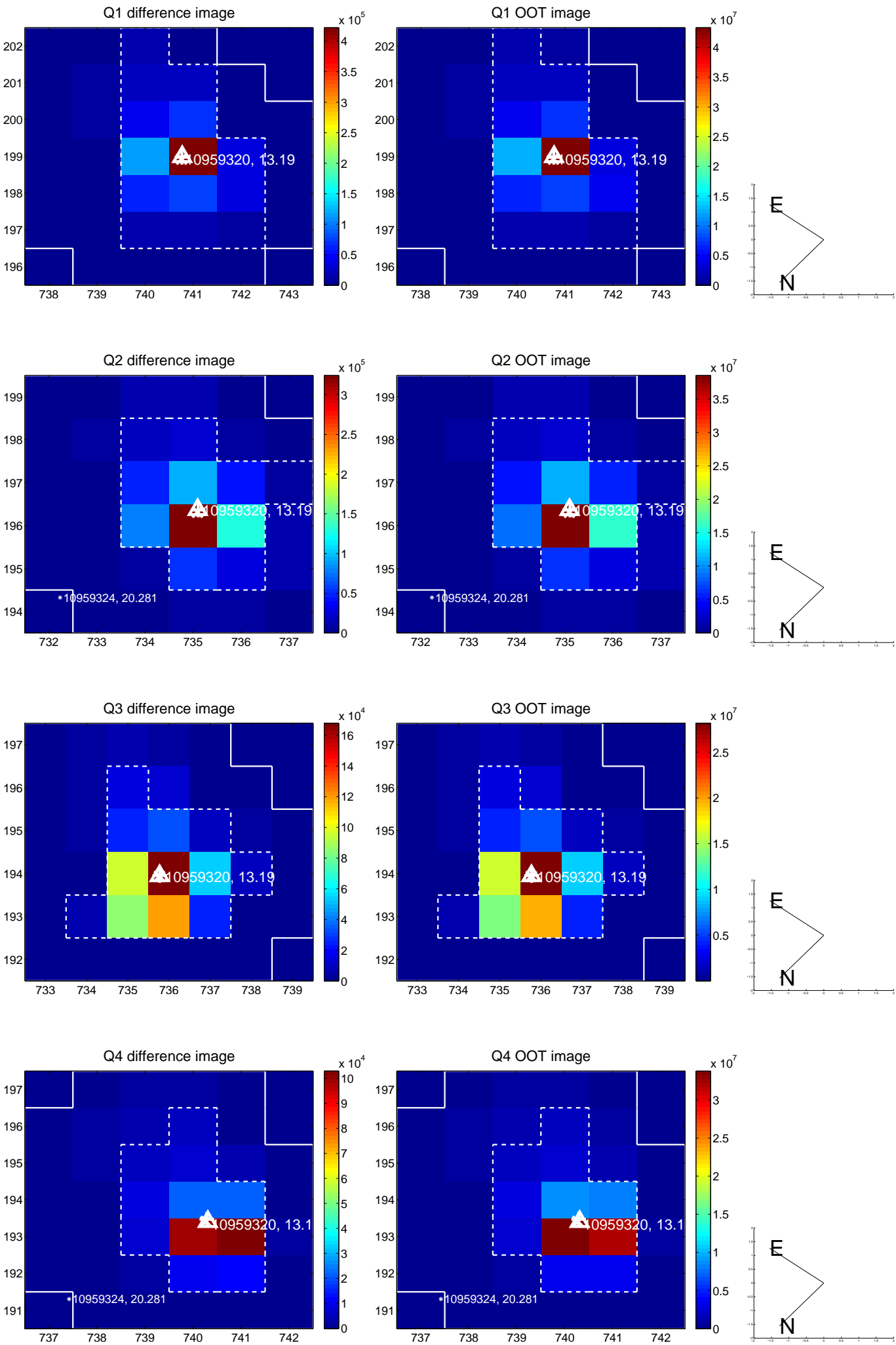
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.032 ± 0.081	0.40	0.028 ± 0.070	-0.016 ± 0.095
PRF-fit source offset from KIC position	0.188 ± 0.089	2.10	0.080 ± 0.070	-0.170 ± 0.090
photometric centroid source offset	—	—	—	—

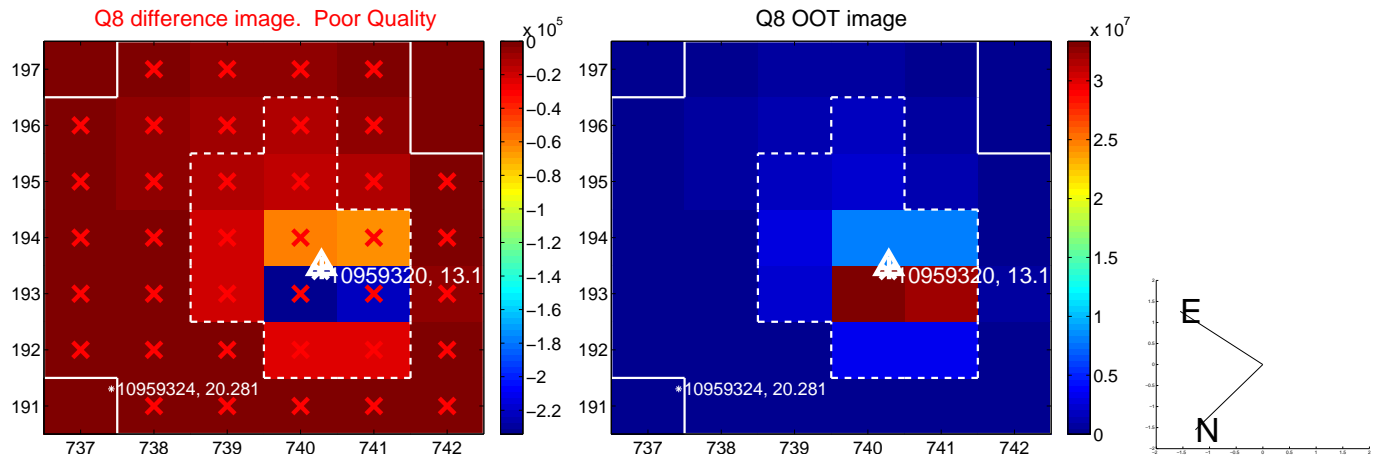
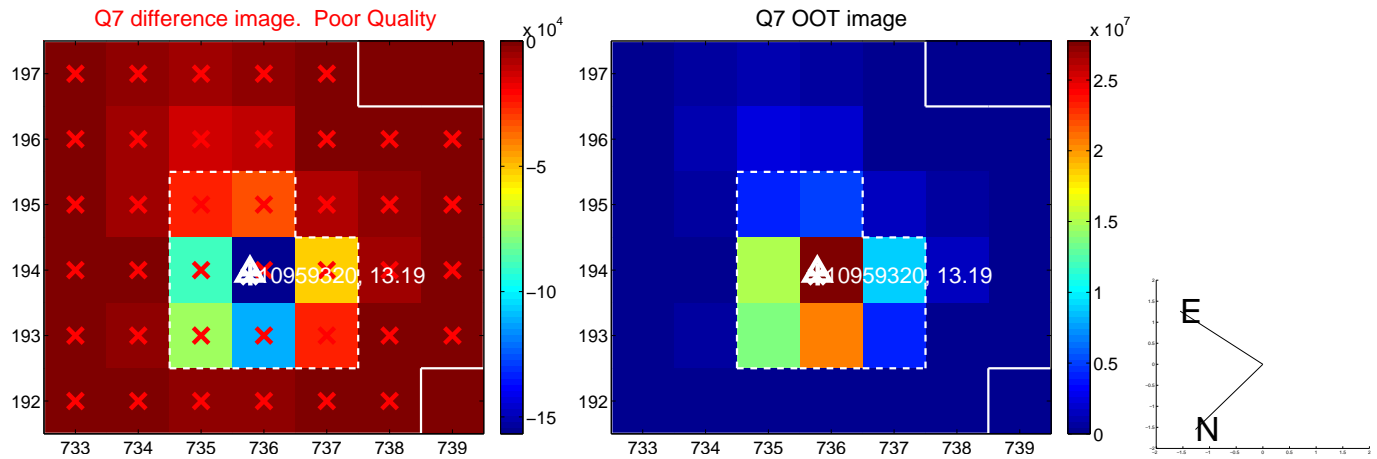
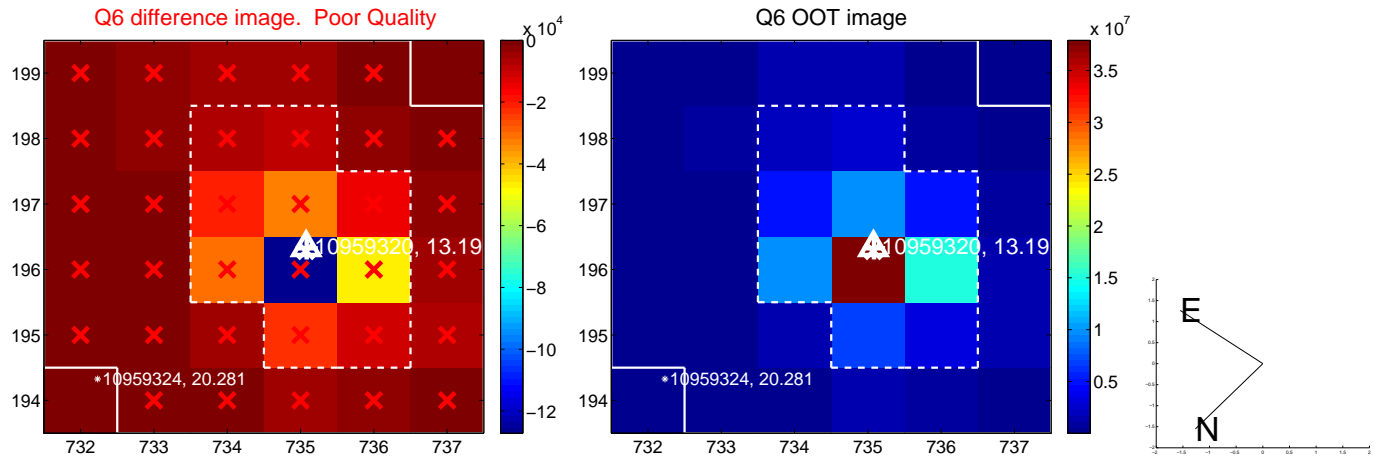
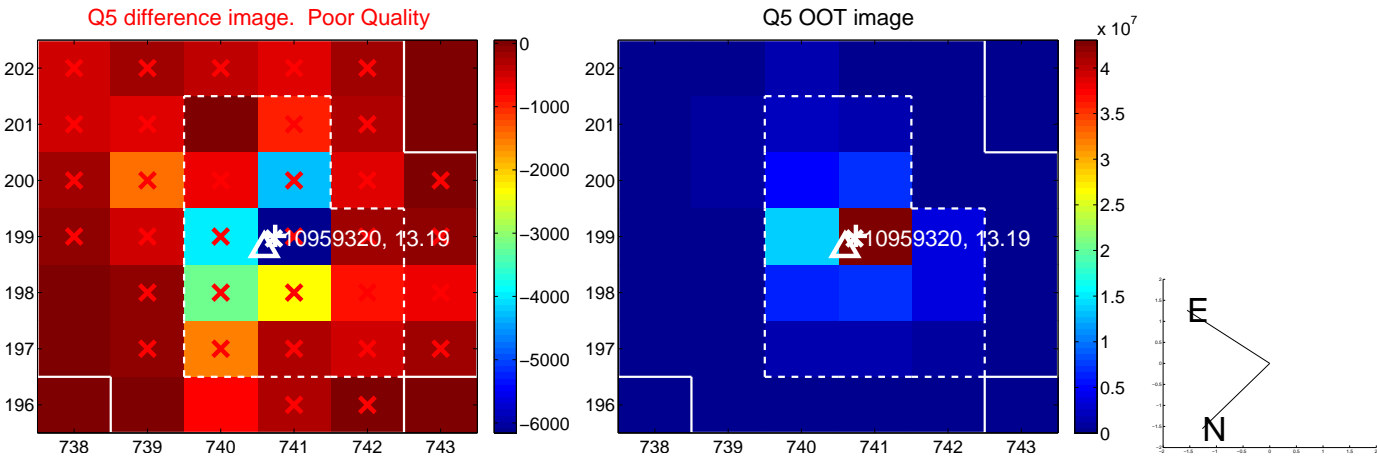


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

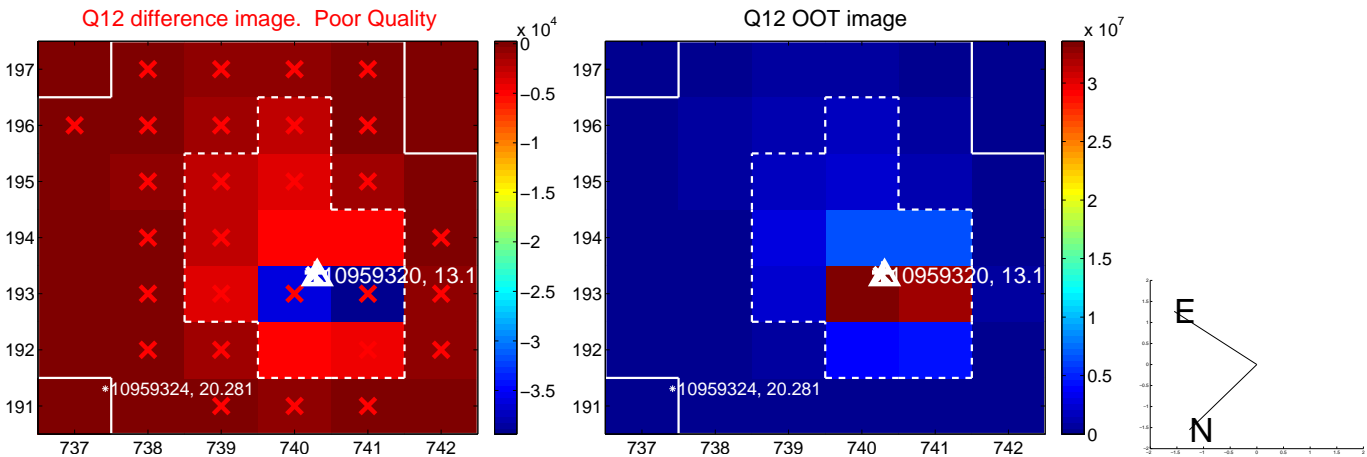
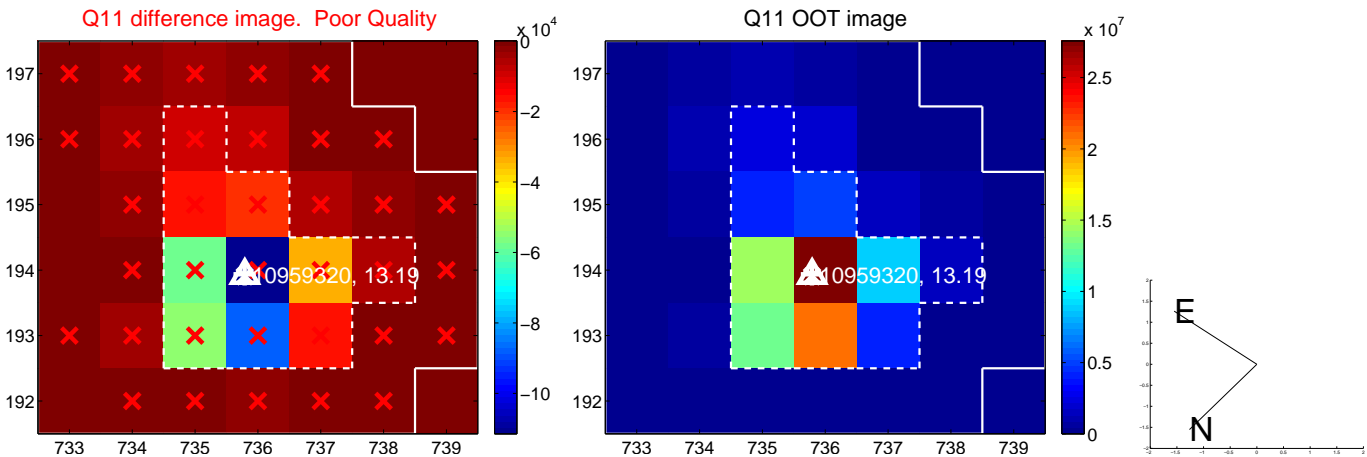
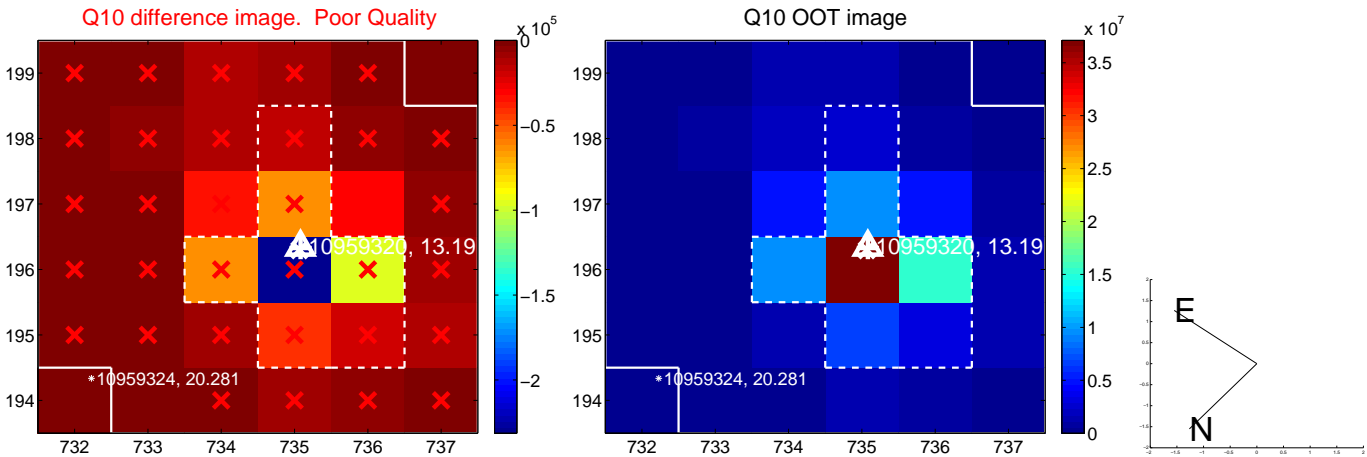
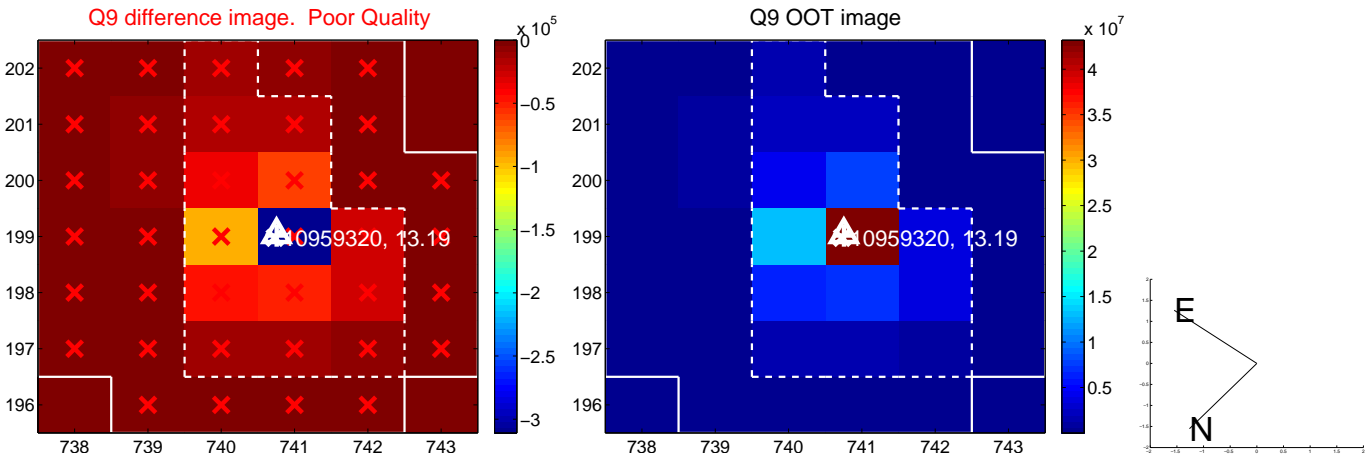
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



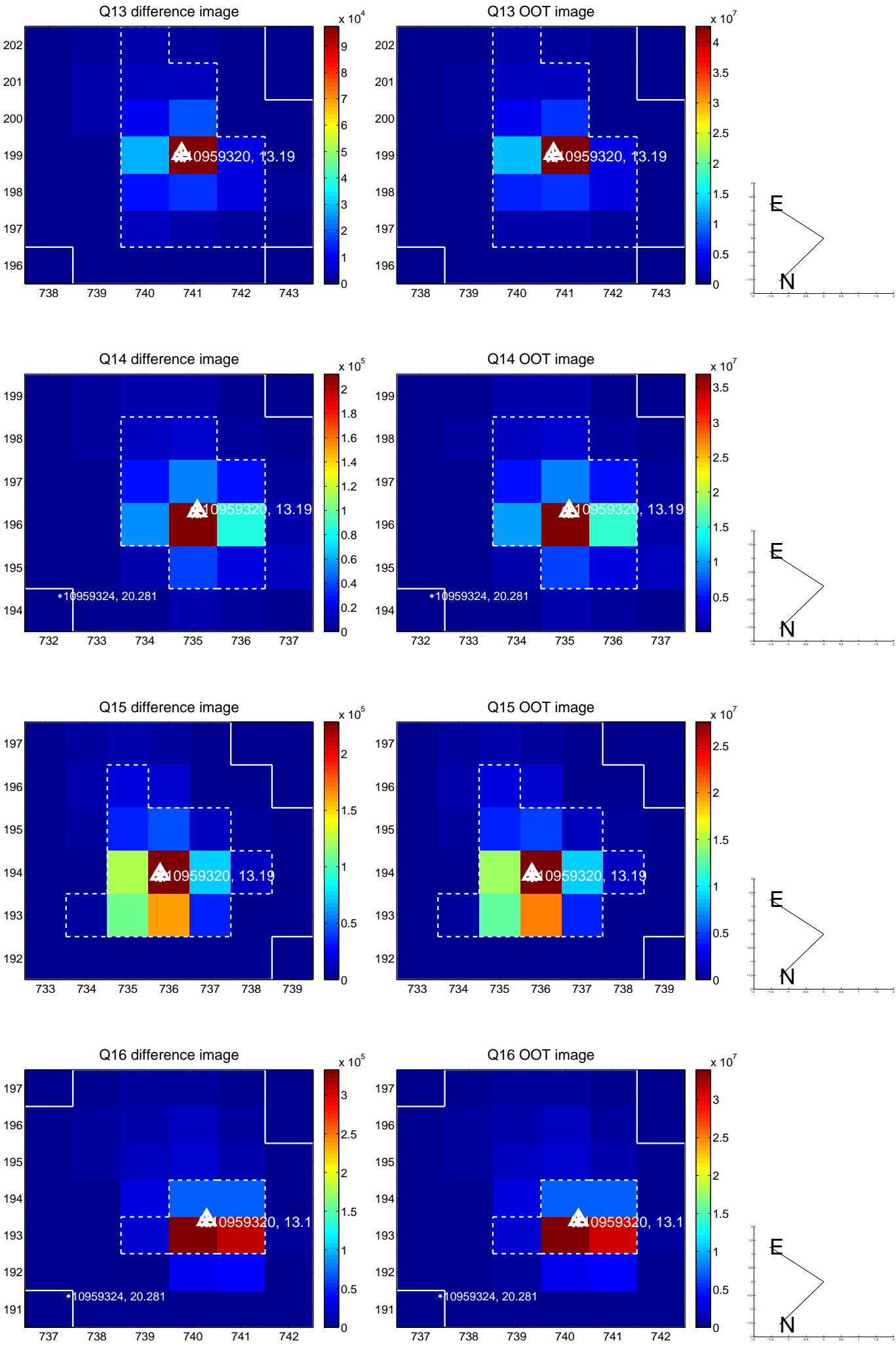
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



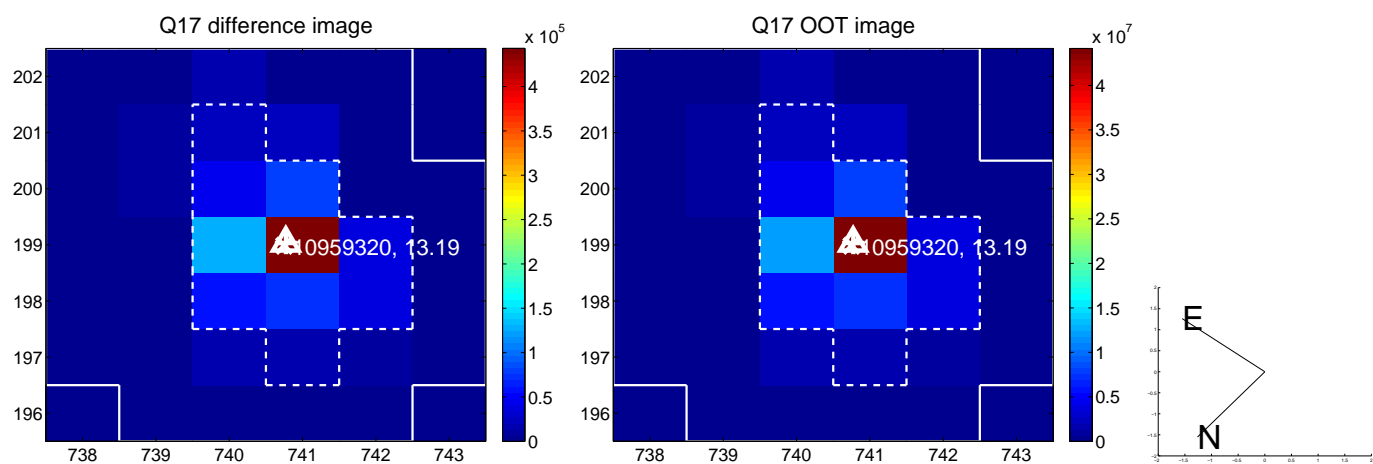
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



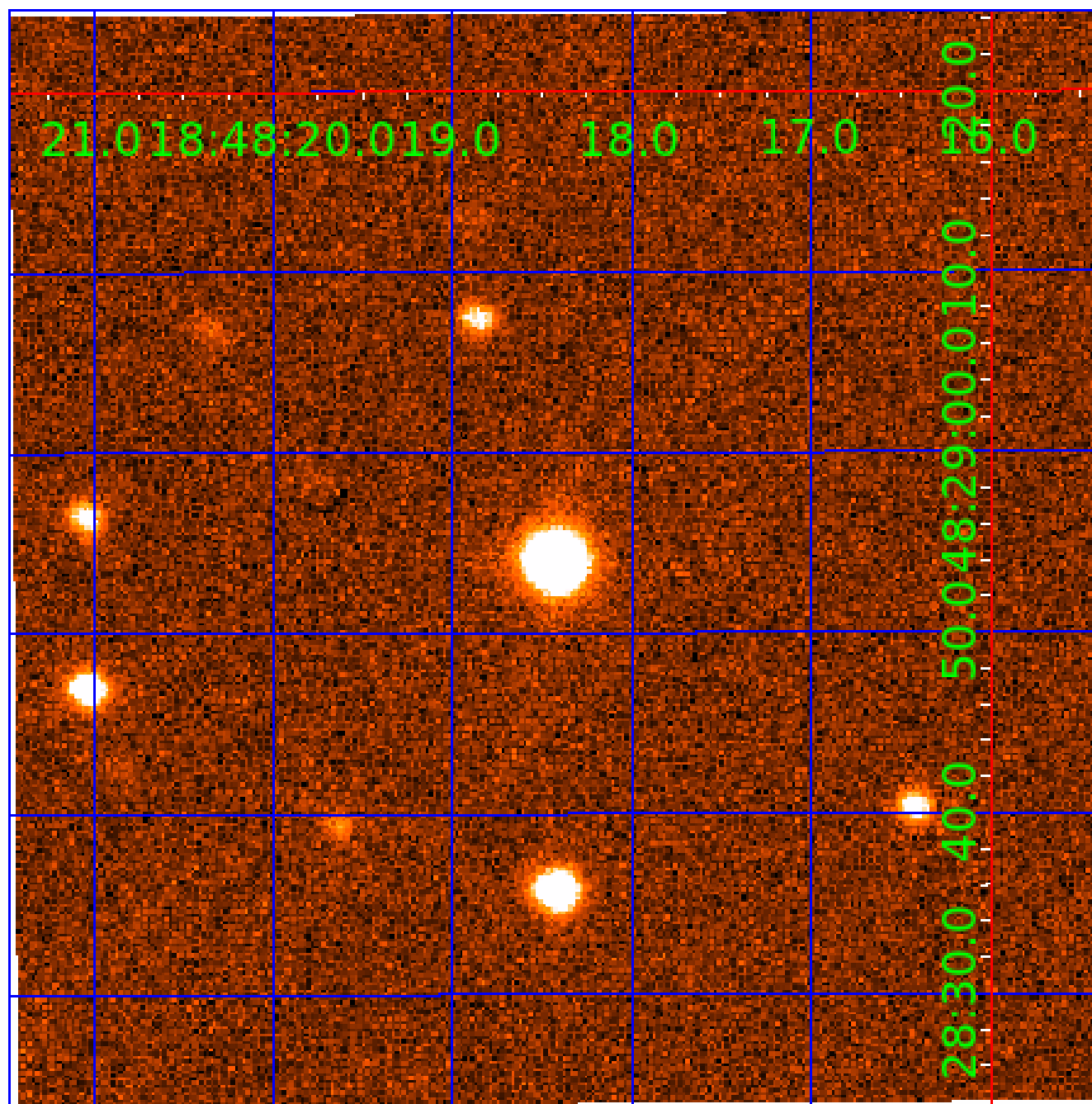
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
010959320-02	OBS	No	2.447377	133.469000	22.0	8.729	18.4	6.0	3.77	9824	2.04	45999.28
010959320-03	OBS	No	2.447485	132.771615	0.3	8.724	17.5	0.1	3.77	9824	0.22	45996.57
010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
010959320-05	OBS	No	68.249561	135.116136	629.2	4.531	11.7	11.6	3.77	9824	12.17	543.94
010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

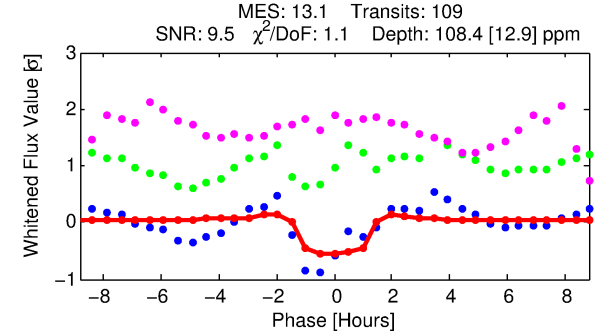
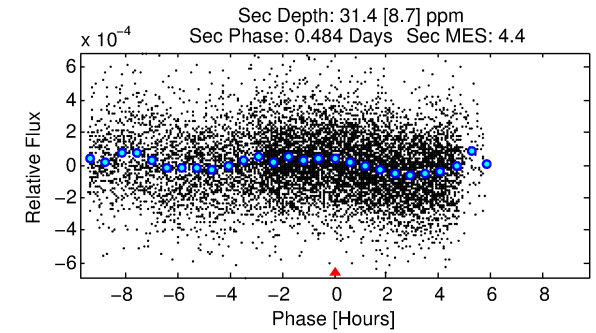
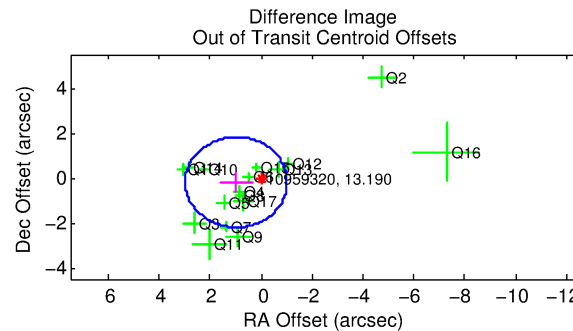
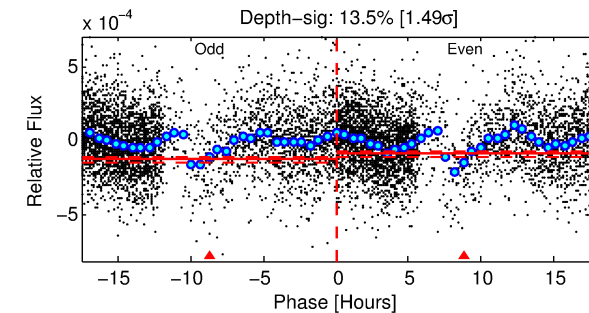
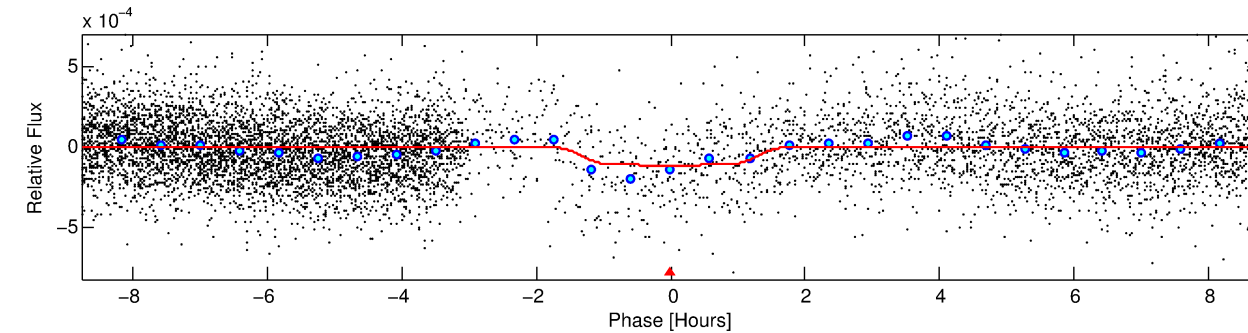
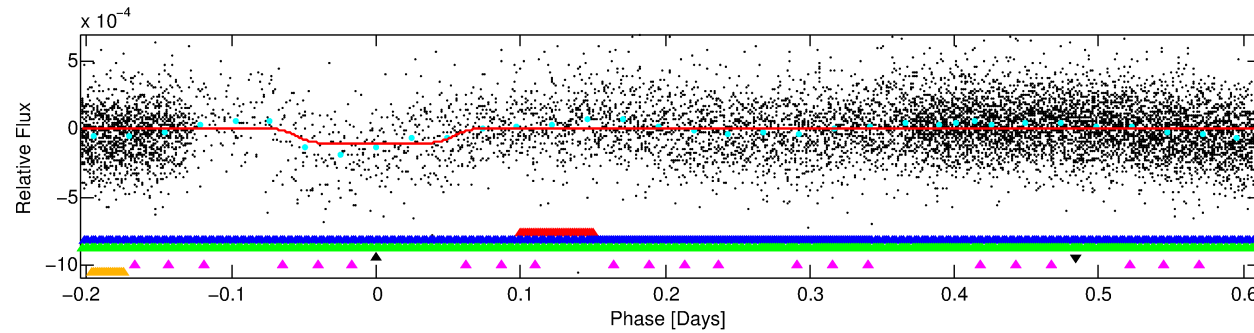
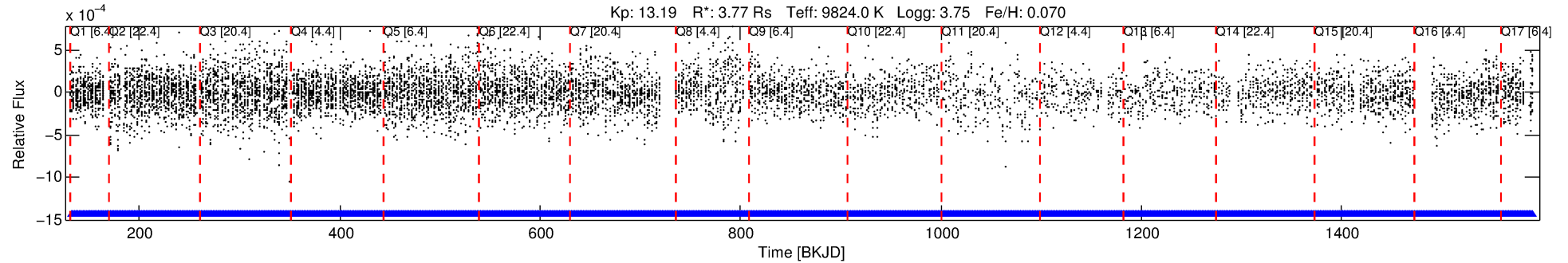
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-04

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 4 of 6 Period: 0.815 d



DV Fit Results:

Period = 0.81523 [0.00003] d
Epoch = 132.5055 [0.0042] BKJD
Rp/R* = 0.0112 [0.0028]
a/R* = 1.27 [0.91]
b = 0.93 [0.26]
Seff = 199211.42 [115321.91]
Teff = 5387 [780] K
Rp = 4.62 [2.08] Re
a = 0.0244 [0.0086] AU
Ag = 0.48 [0.38] [-1.36 σ]
Teffp = 6939 [1018] K [1.21 σ]

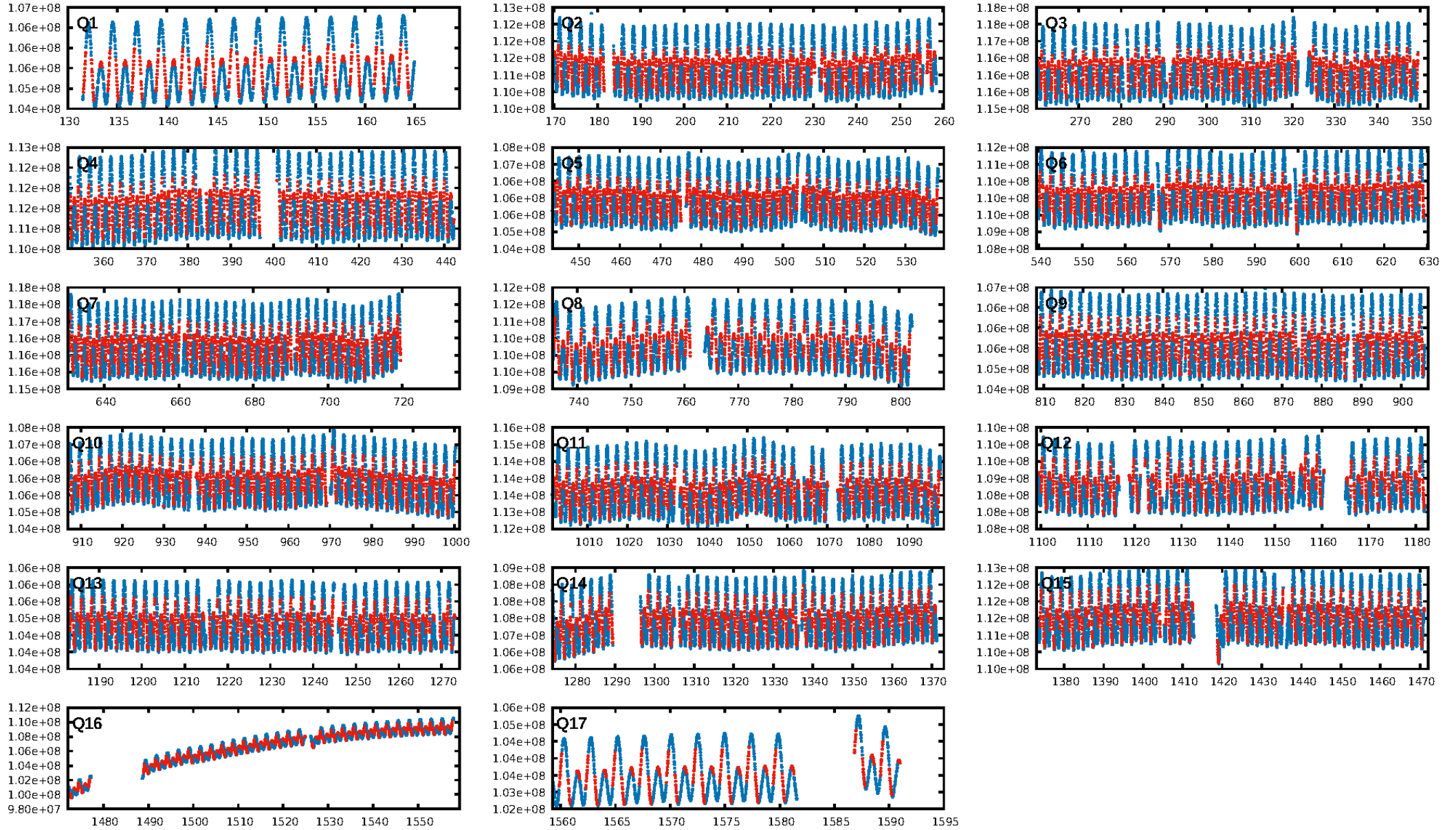
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [84/84]
GhostDiagnostic-chr: -12.9
Centroid-sig: 0.0%
Centroid-so: 1.218 arcsec [4.86 σ]
OotOffset-rm: 1.002 arcsec [1.50 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 1.104 arcsec [1.64 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.12 [2/17]
DiffImageOverlap-fno: 0.00 [0/17]

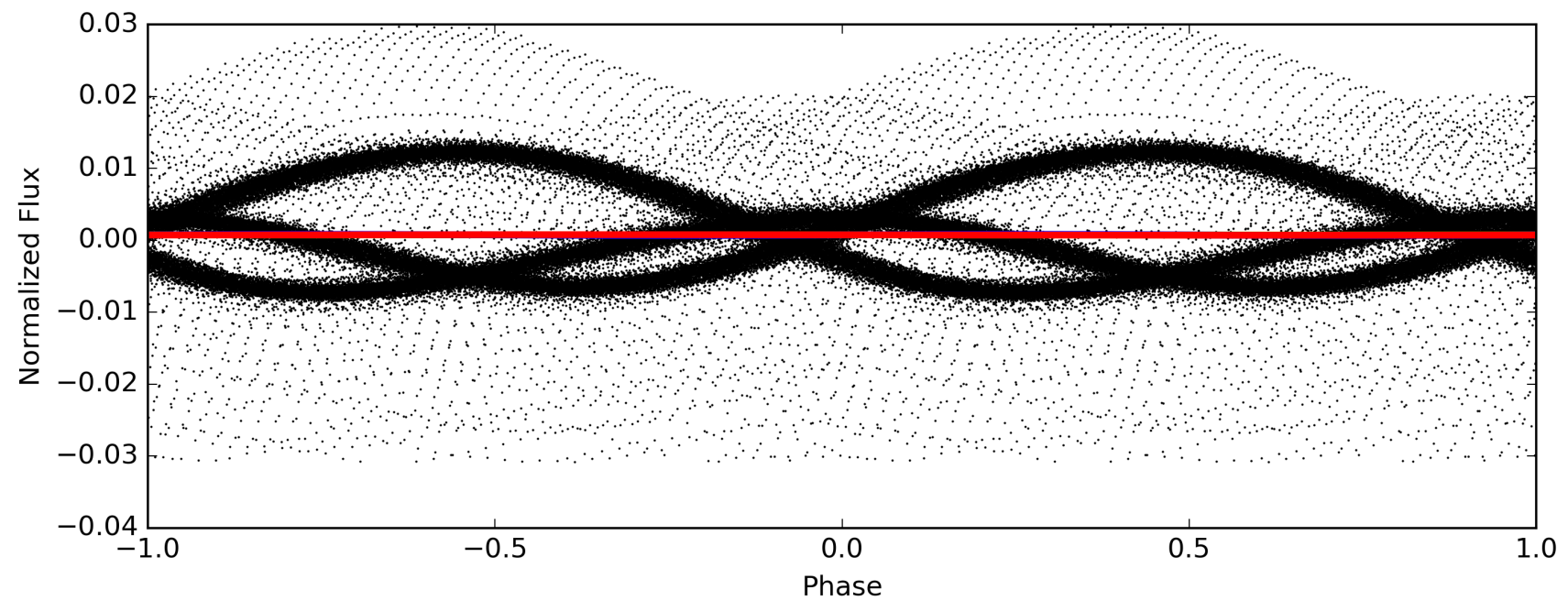
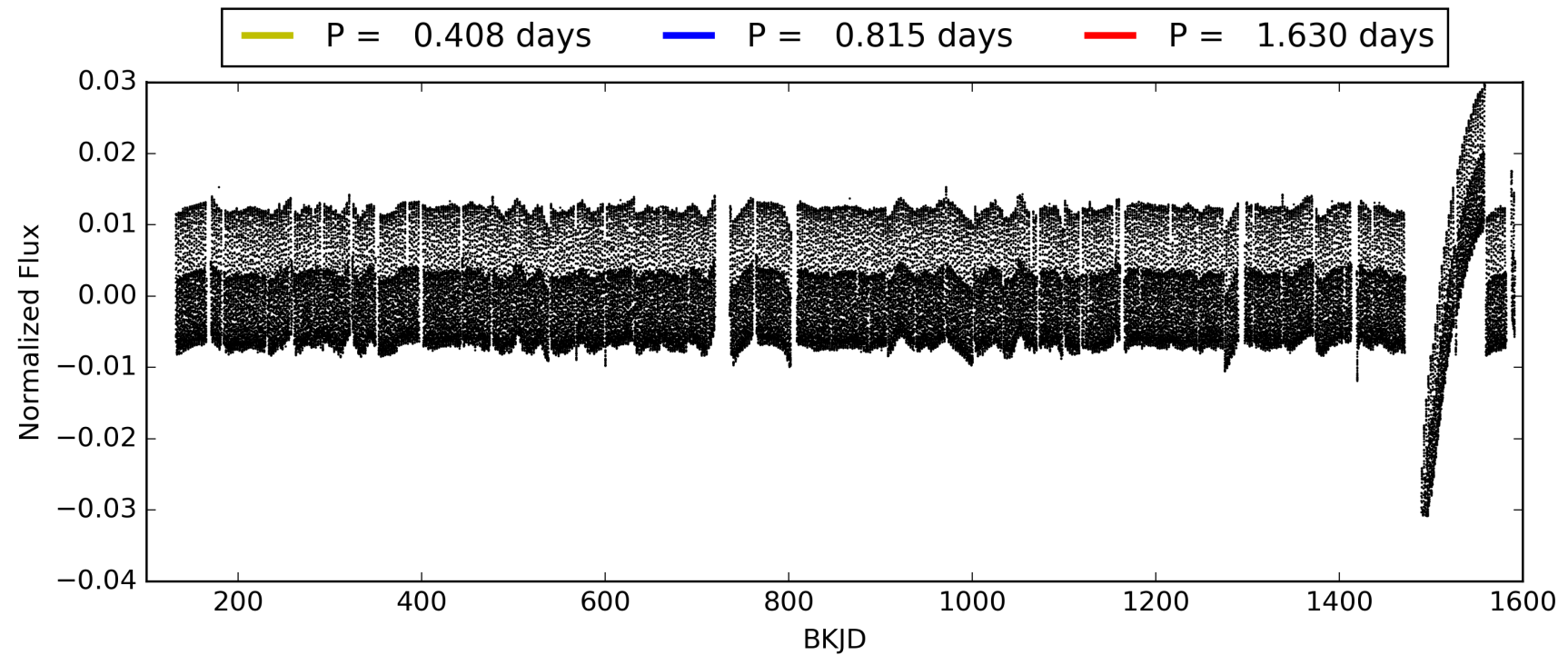
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:35 Z

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

TCE 010959320-04, PDC Light Curves

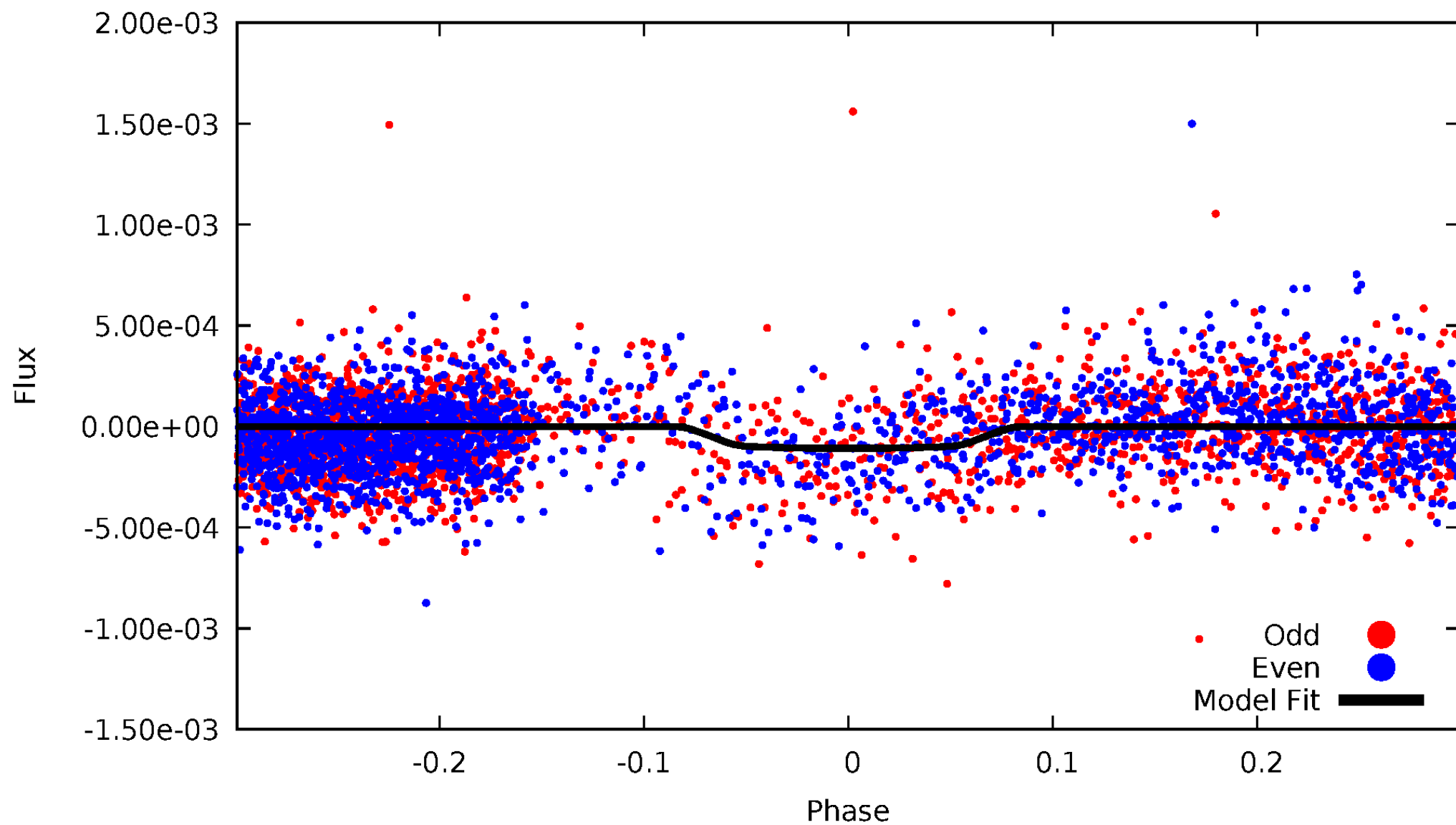


TCE 010959320-04



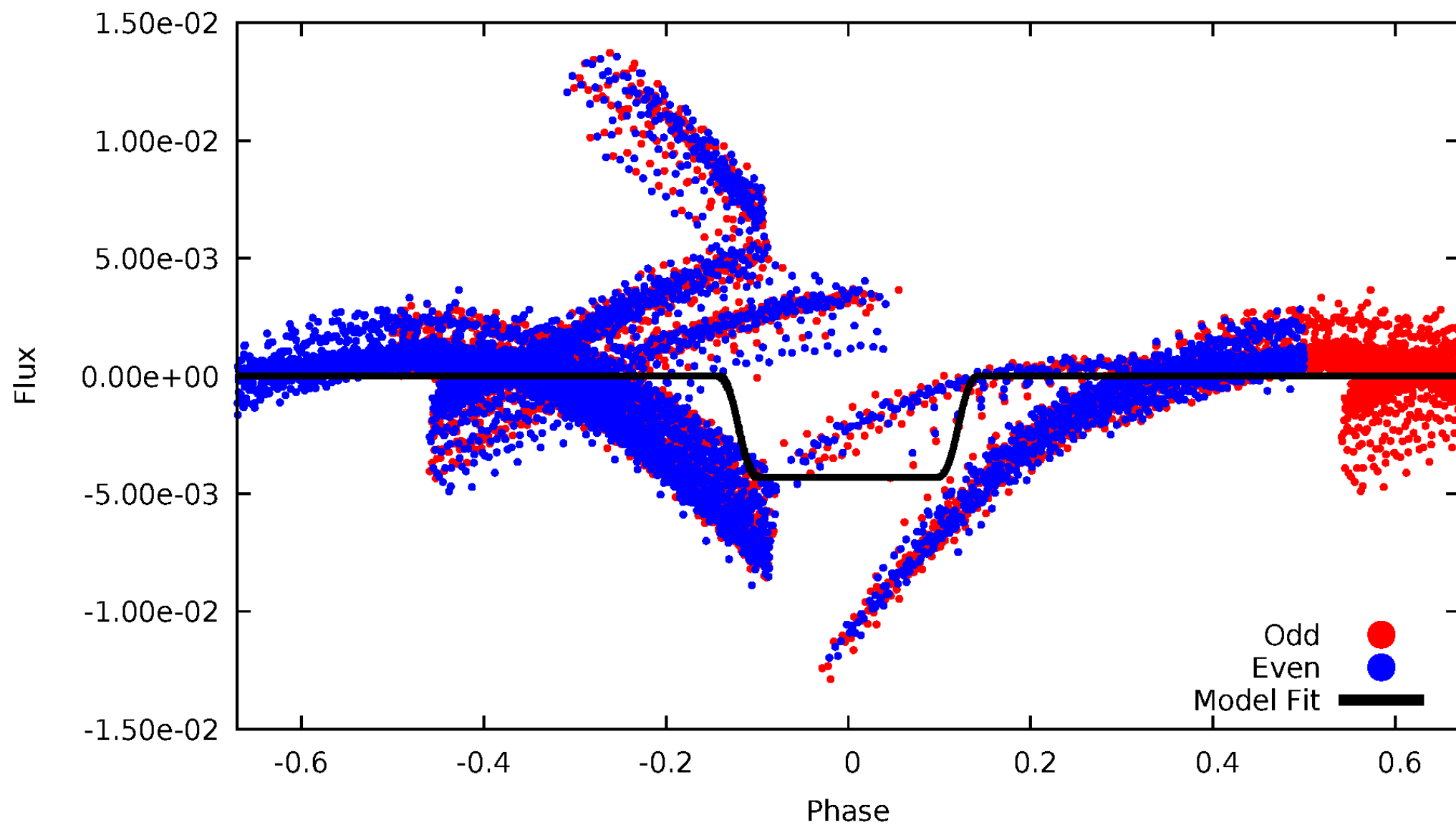
DV Odd/Even

TCE 010959320-04



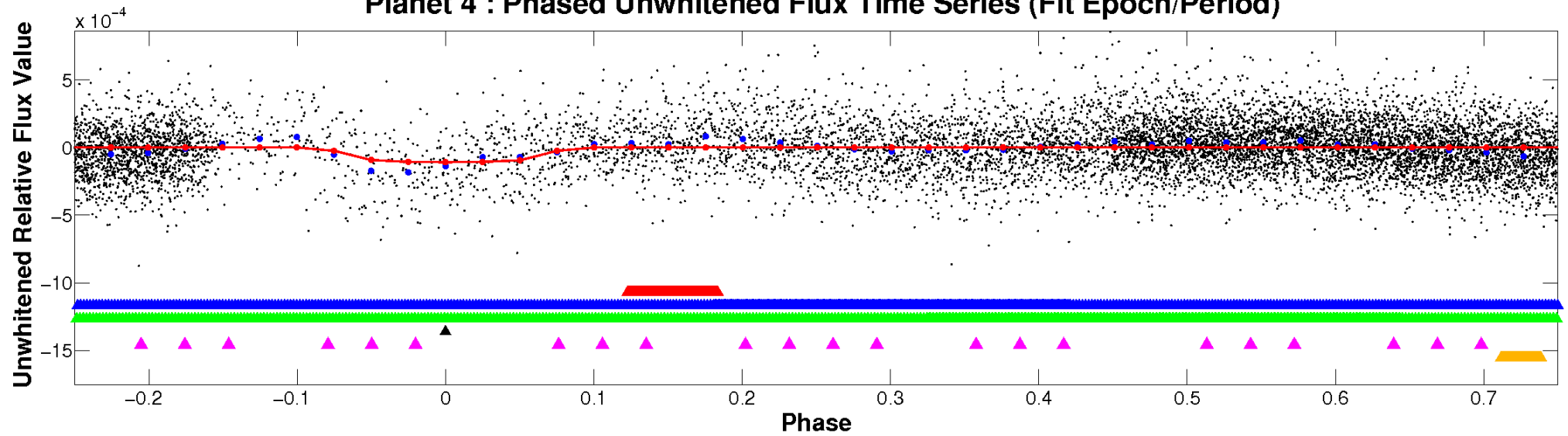
ALT Odd/Even

TCE 010959320-04

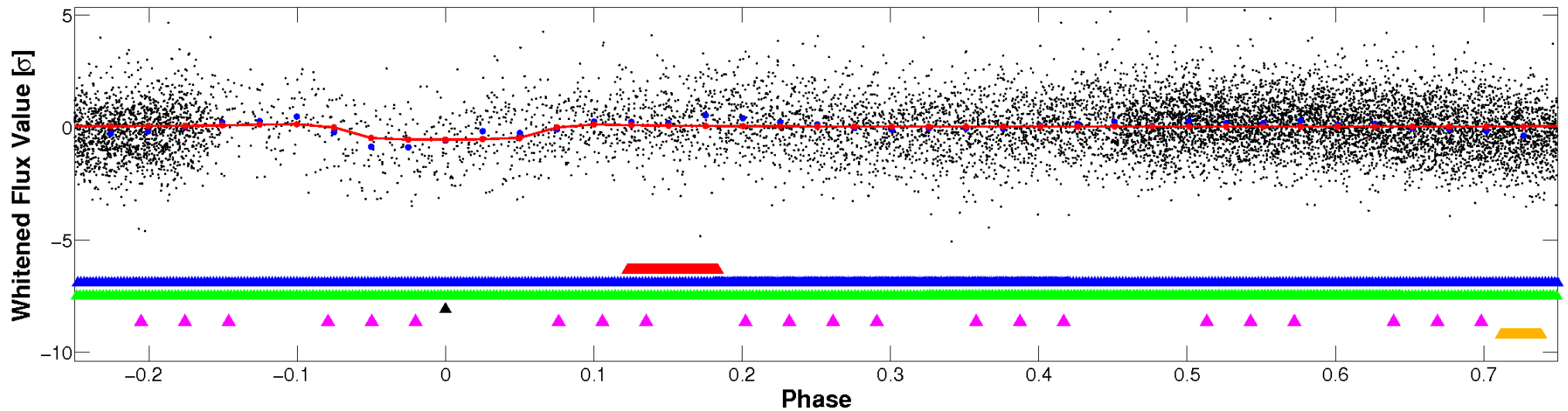


Non-Whitened Vs. Whitened Light Curve

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

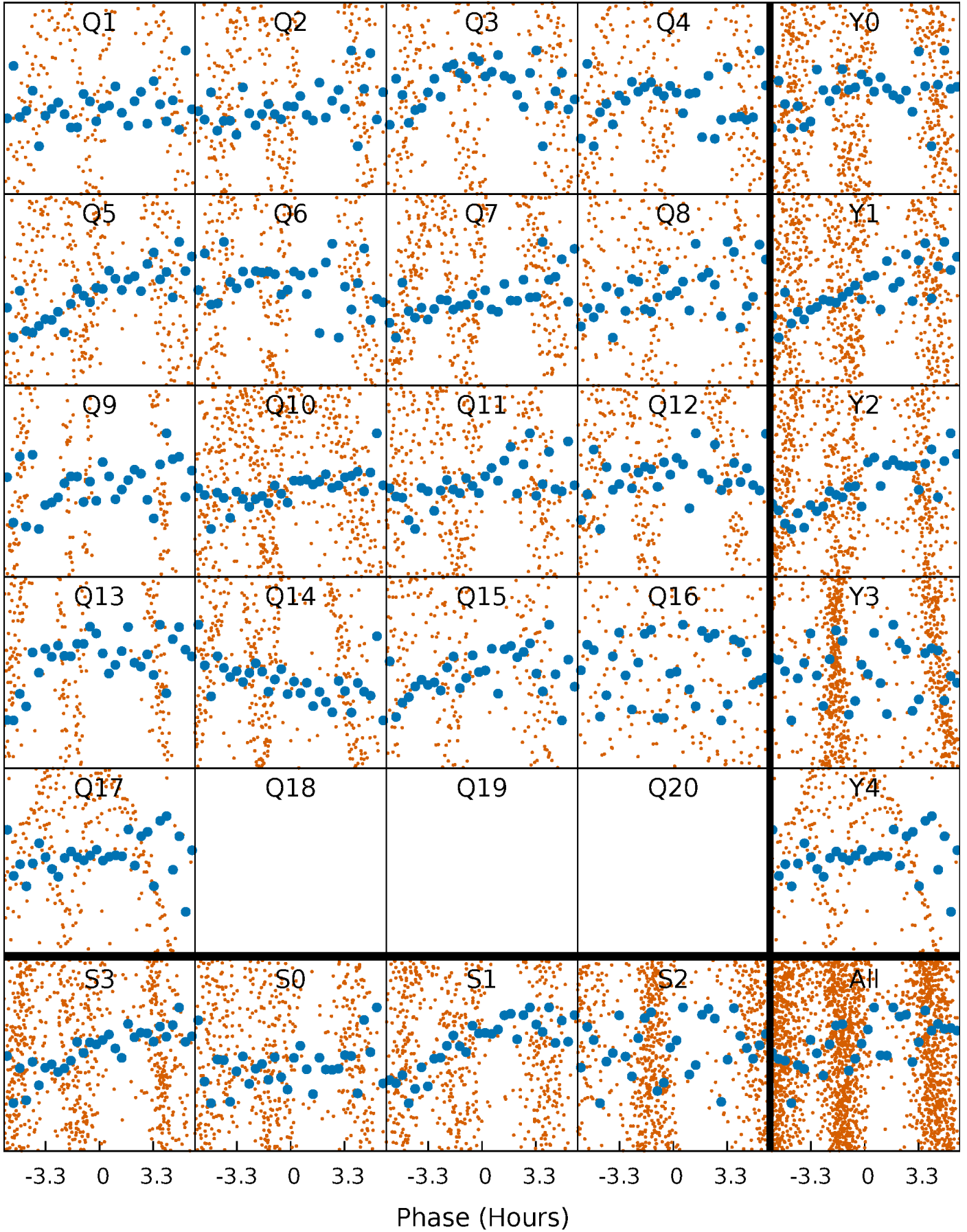


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



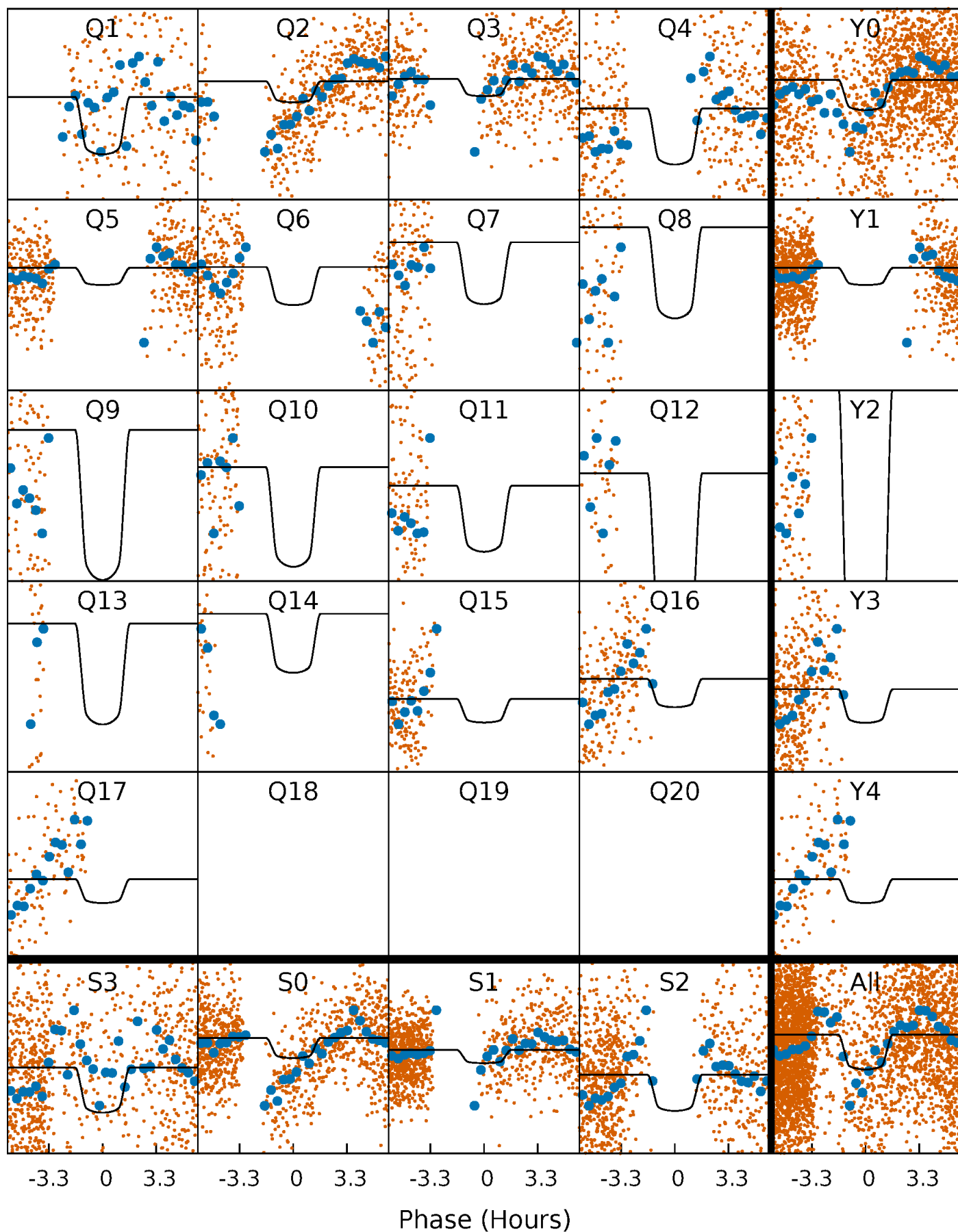
PDC Quarter-Phased Transit Curves

TCE 010959320-04 $P = 0.815227$ Days $T_0 = 132.505541$ (BKJD)



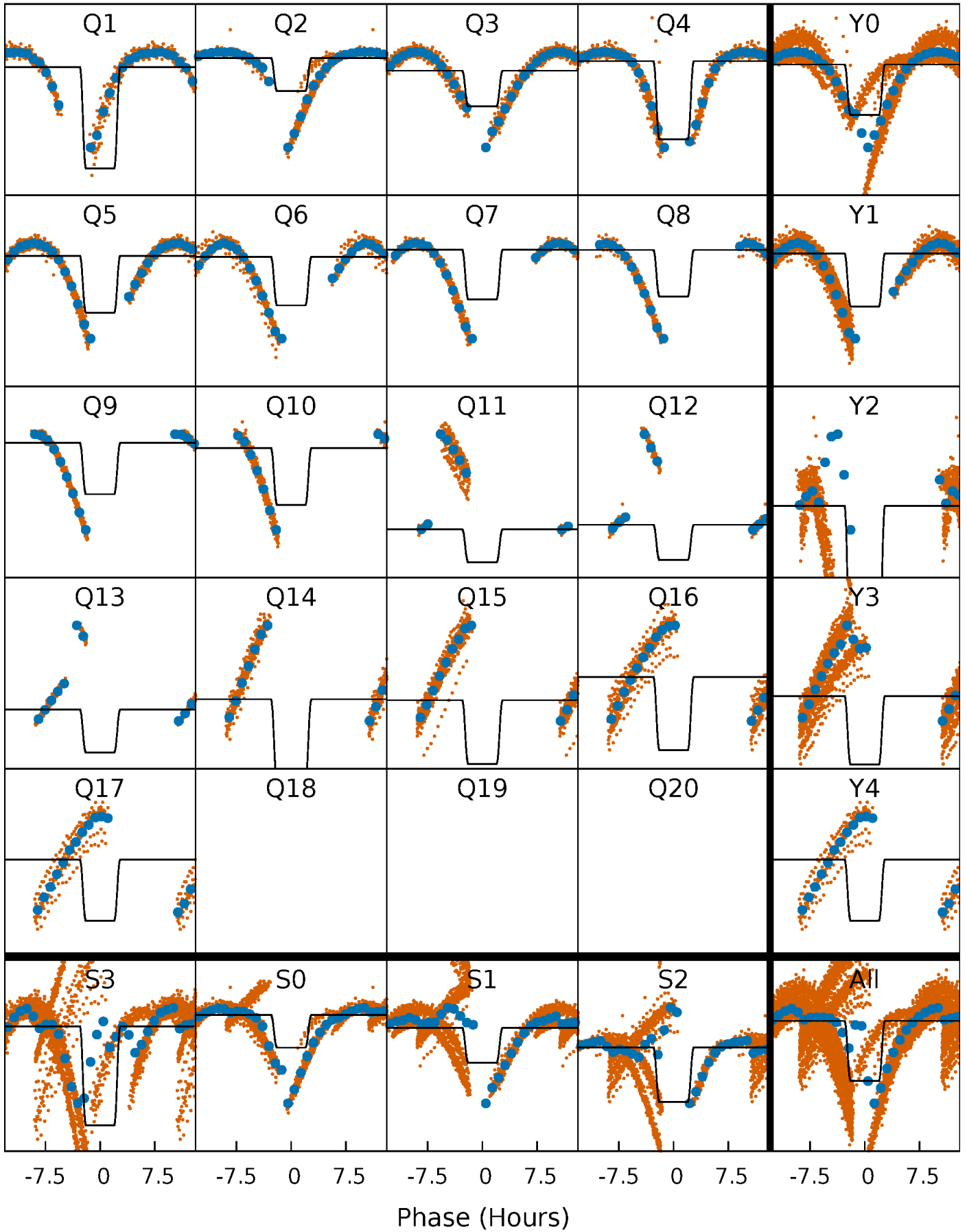
DV Quarter-Phased Transit Curves

TCE 010959320-04 P= 0.815227 Days $T_0=132.505541$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

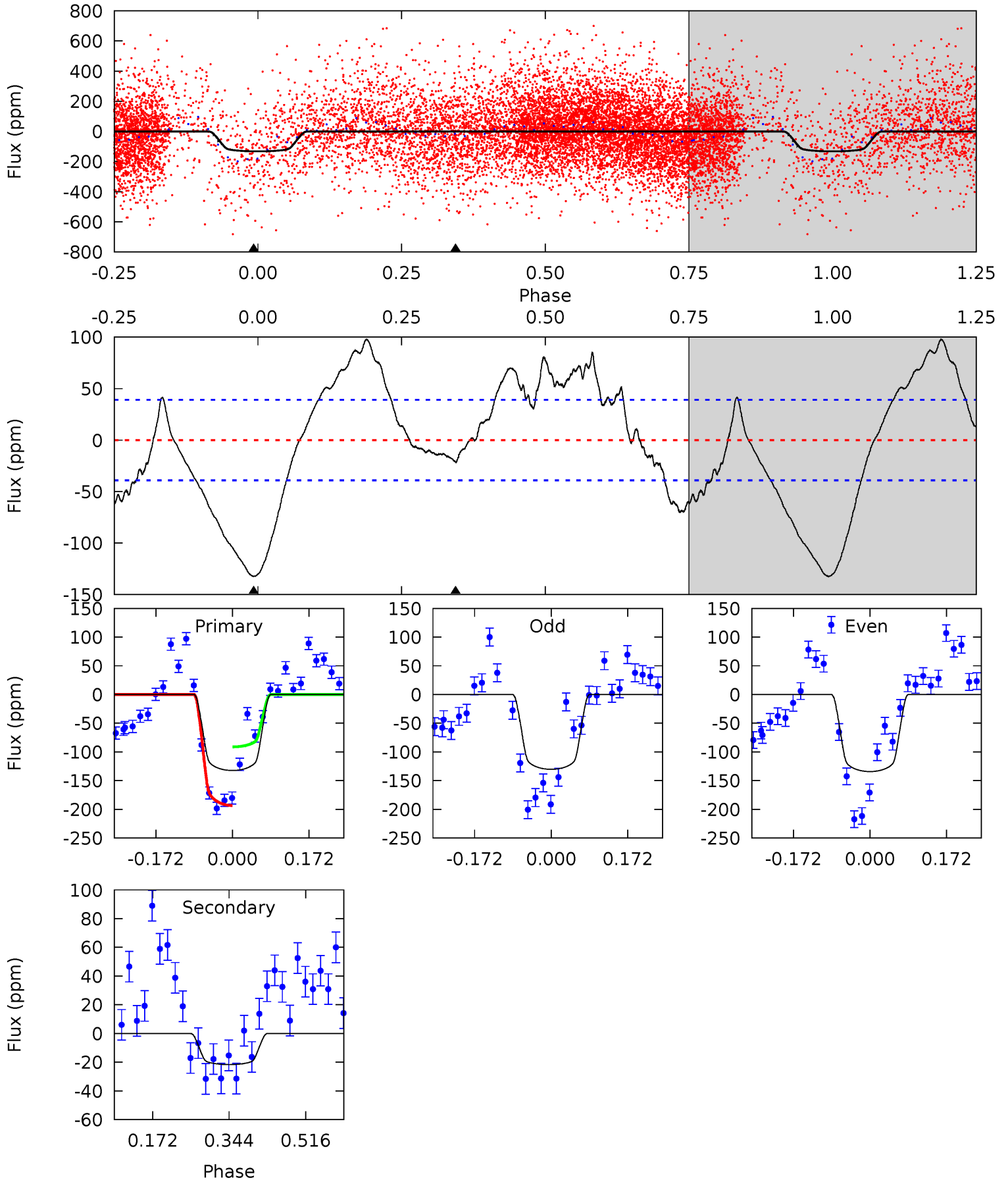
TCE 010959320-04 $P = 0.815213$ Days $T_0 = 132.453156$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-04, P = 0.815227 Days, E = 130.875087 Days

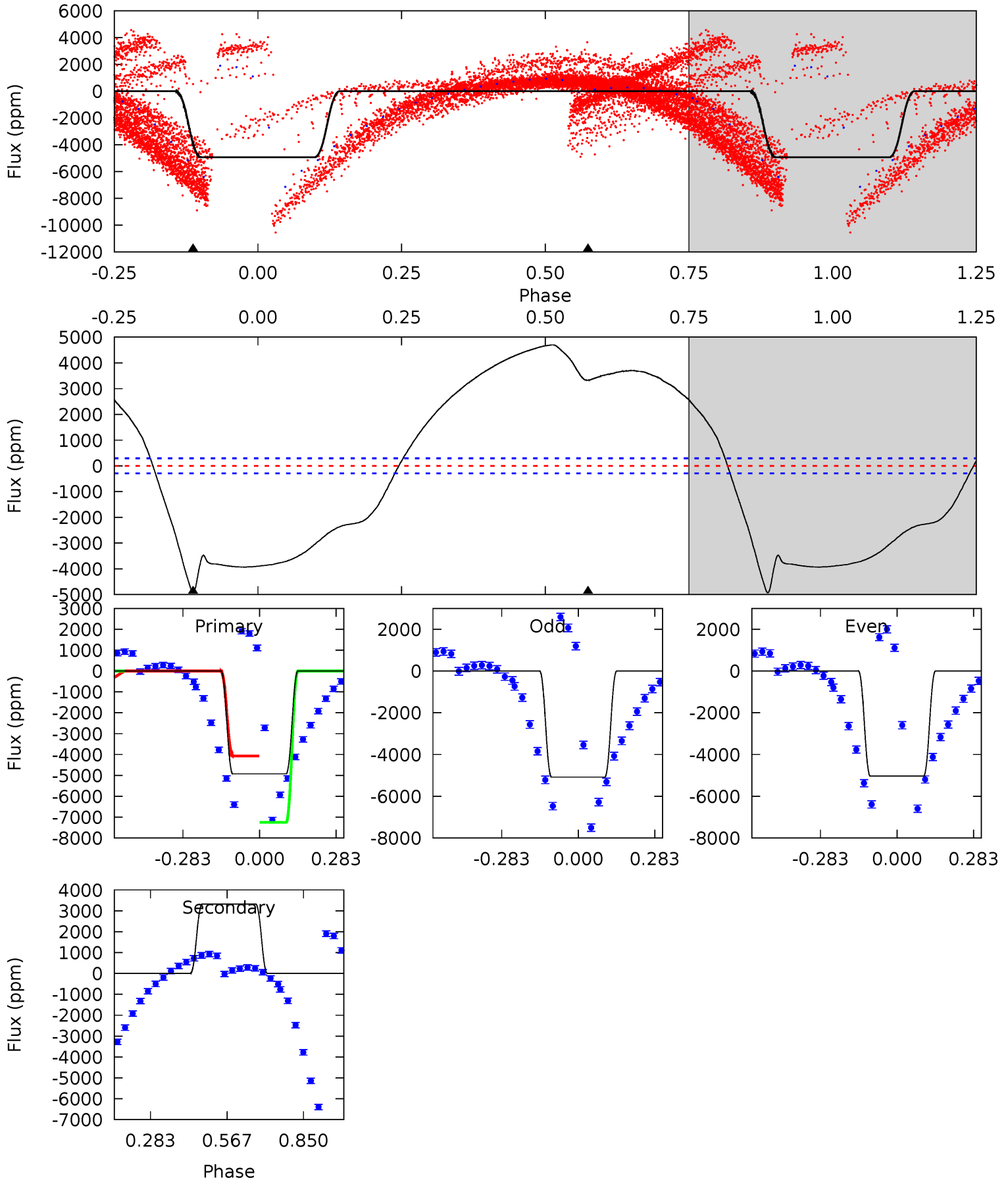
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	2.47	0	0	4.45	1.37	5.49	15.1	15.1	2.47	2.47	0.22	0.77	0.43	5.39



Alt Model-Shift Uniqueness Test

010959320-04, P = 0.815213 Days, E = 130.822730 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
73.5	-49.6	0	0	4.34	1.07	24.2	73.5	73.5	-49.6	-49.6	0.35	0.48	0.49	0



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-22 ± 9	$4.48^{+1.32}_{-1.35}$	7459^{+545}_{-727}	3591^{+2417}_{-8507}	$0.334^{+0.453}_{-0.175}$
Alt.	3326 ± 67	$26.24^{+3.46}_{-5.47}$	7396^{+542}_{-734}	-9501^{+443}_{-425}	$-1.554^{+0.338}_{-0.807}$

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

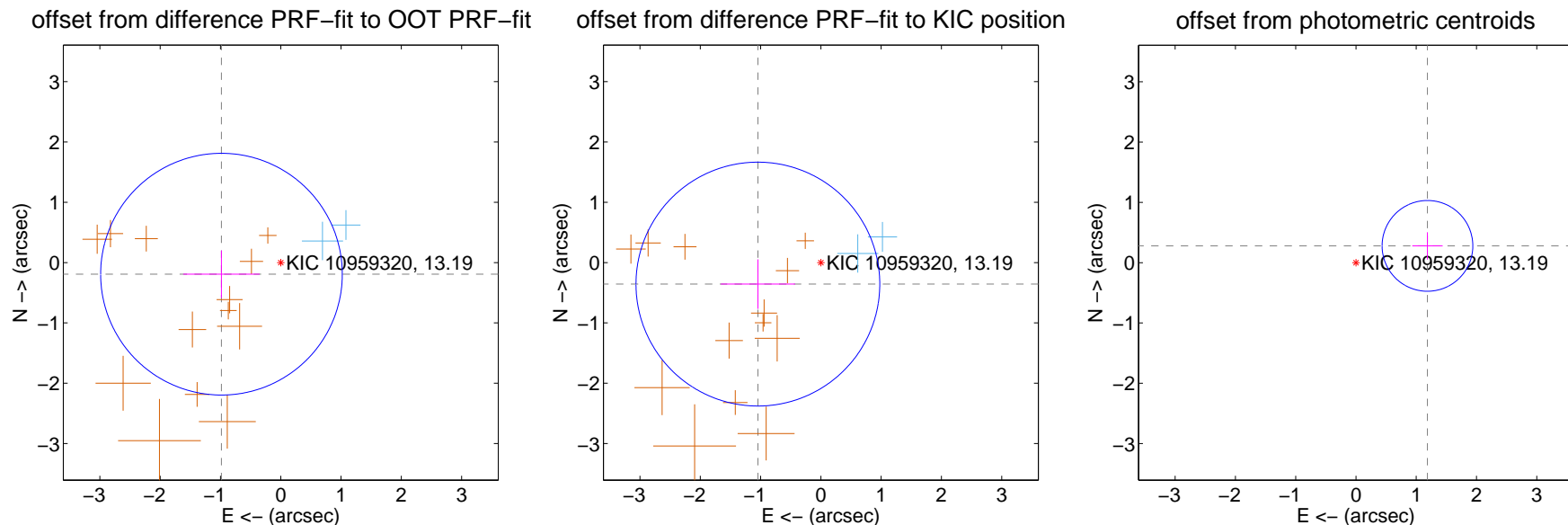
DV Centroid Data

Supplemental centroid analysis for 010959320-04. Kepler magnitude: 13.19. Transit SNR 9.50

There are 2 quarters with good PRF difference image offsets

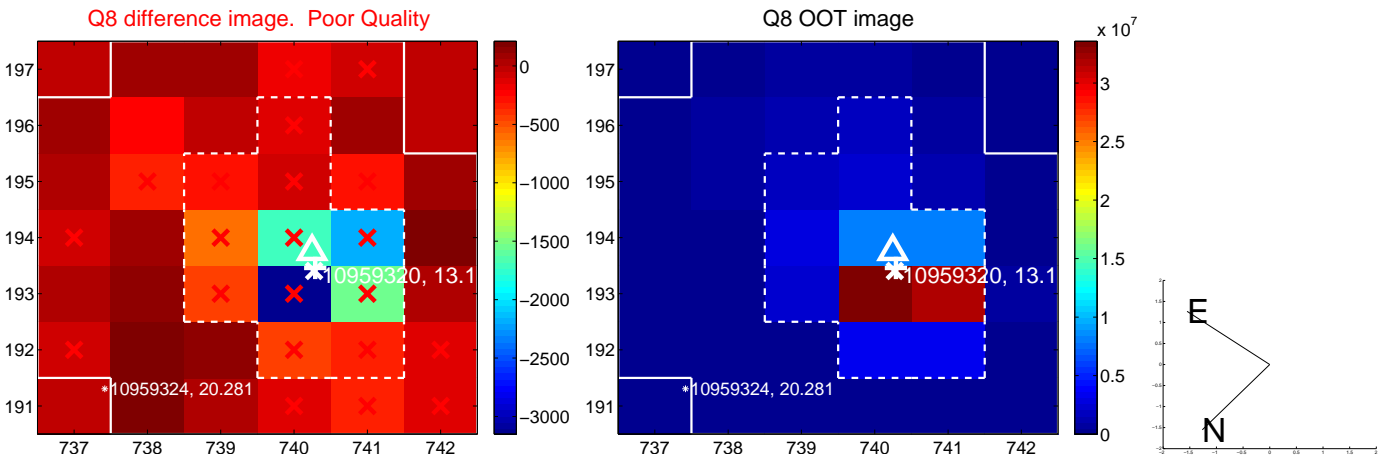
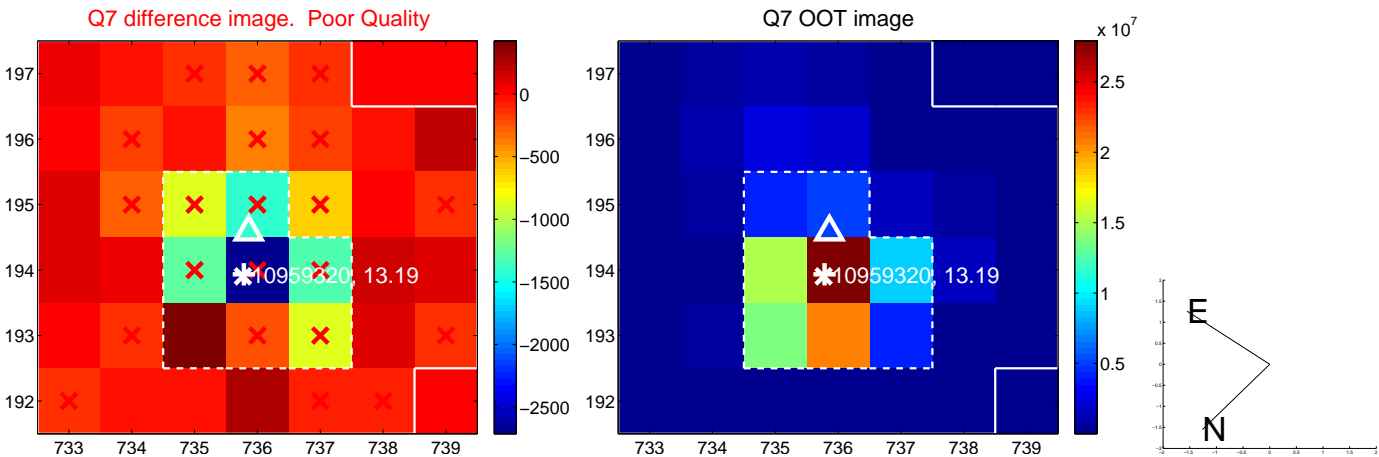
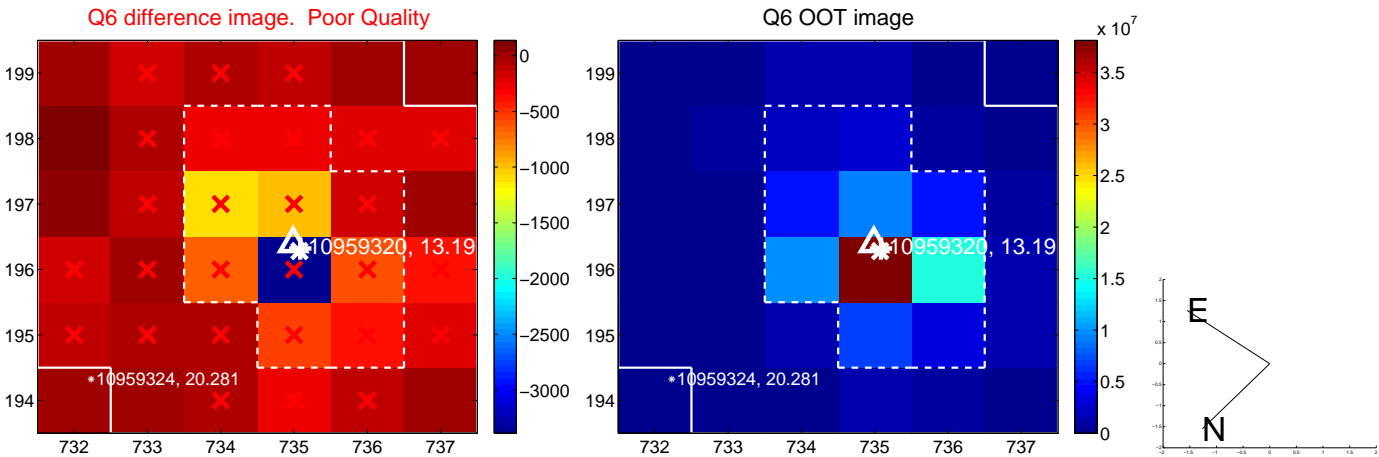
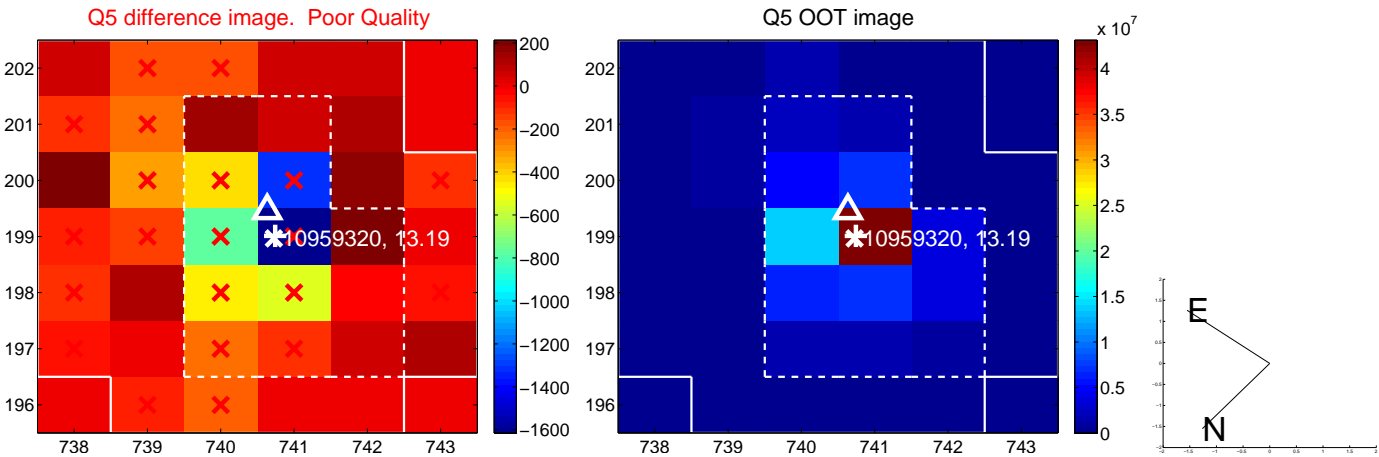
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.002 ± 0.668	1.50	0.983 ± 0.634	-0.192 ± 0.393
PRF-fit source offset from KIC position	1.104 ± 0.674	1.64	1.044 ± 0.616	-0.356 ± 0.411
photometric centroid source offset	1.22 ± 0.25	4.86	-1.19 ± 0.25	0.28 ± 0.23

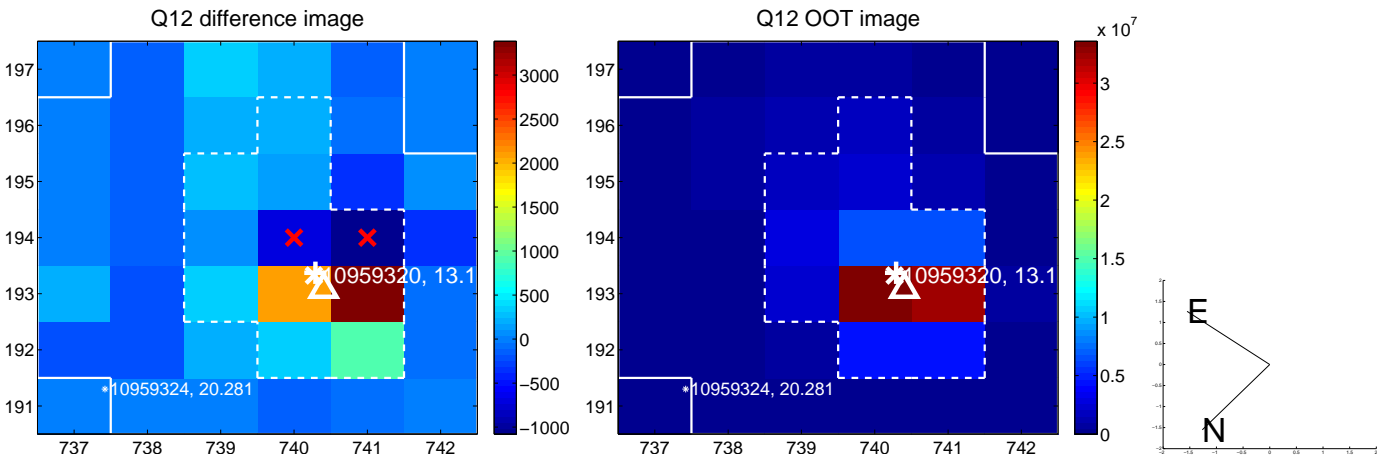
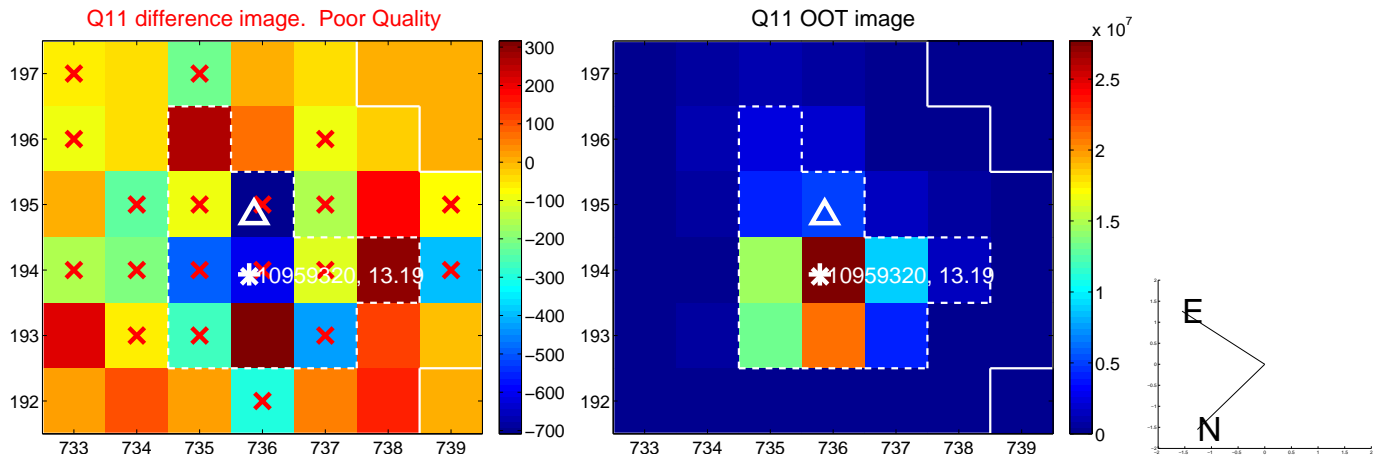
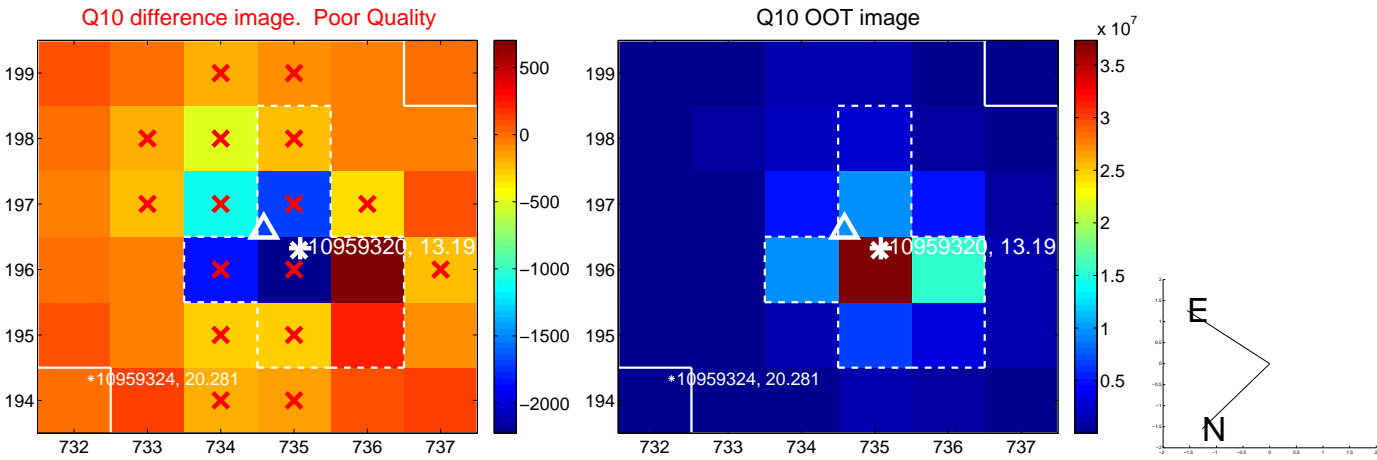
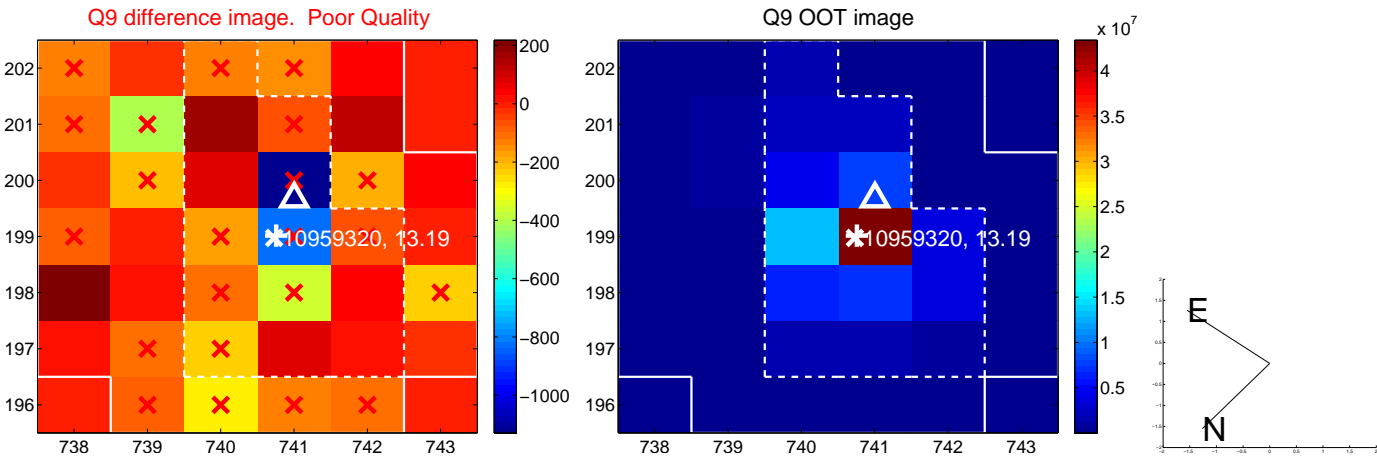


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

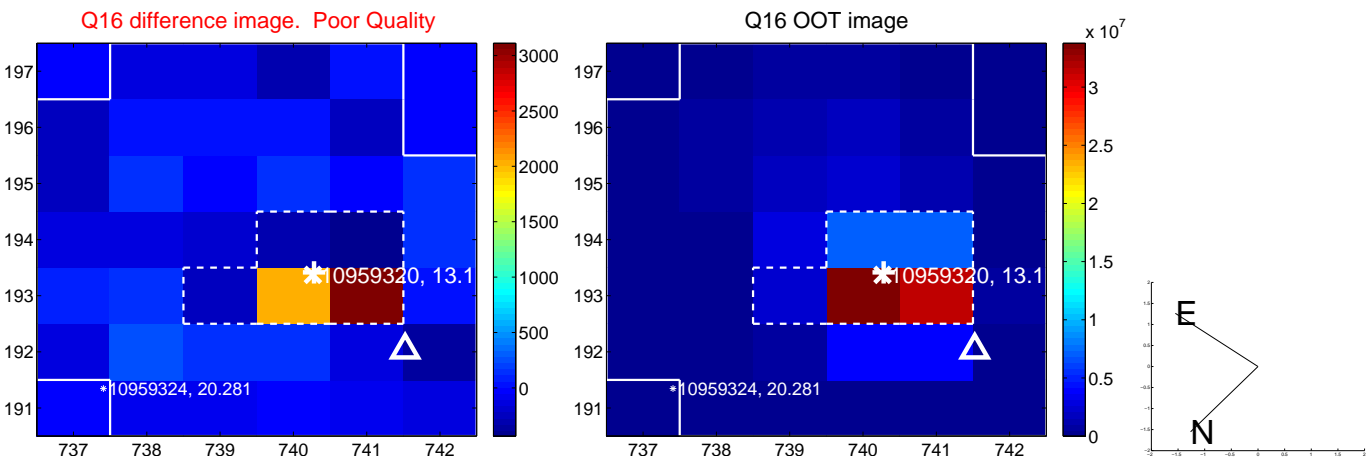
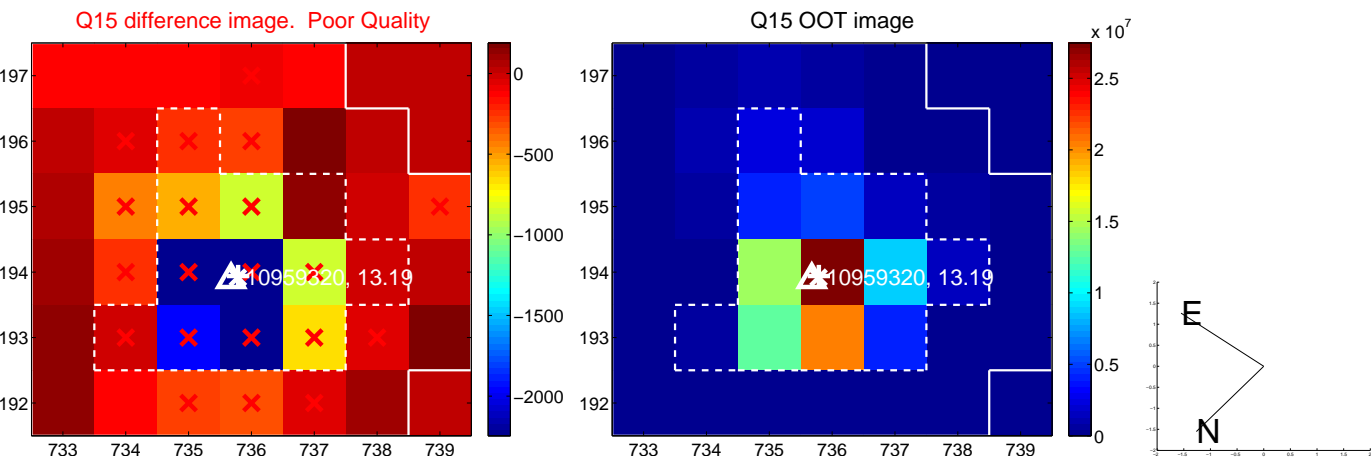
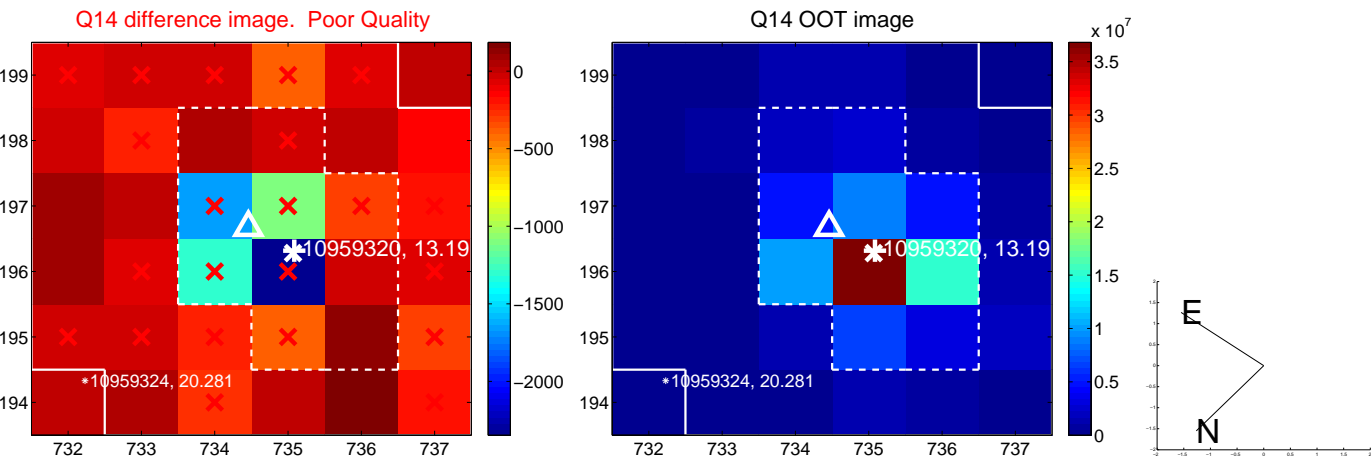
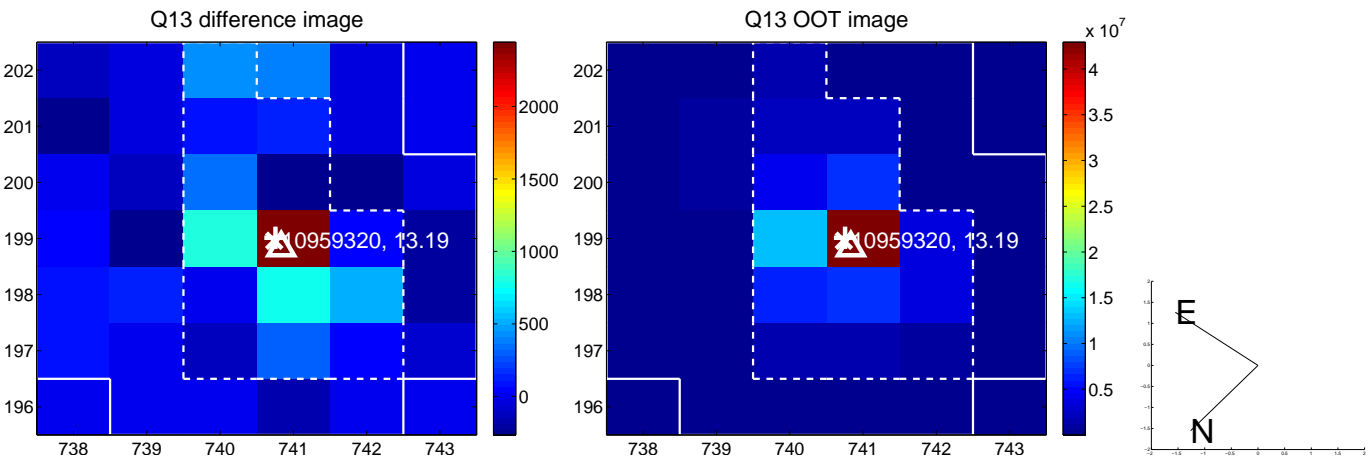
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



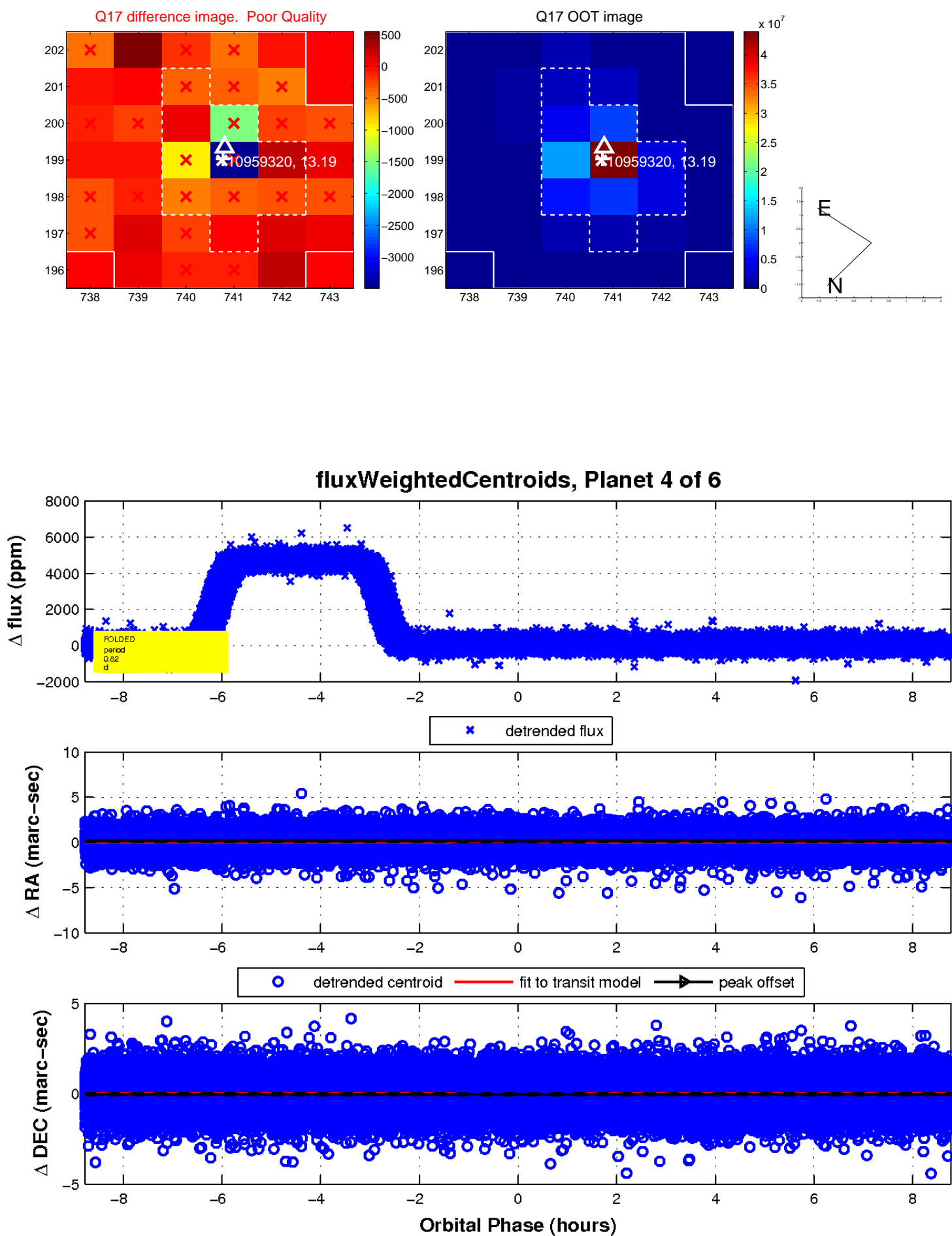
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

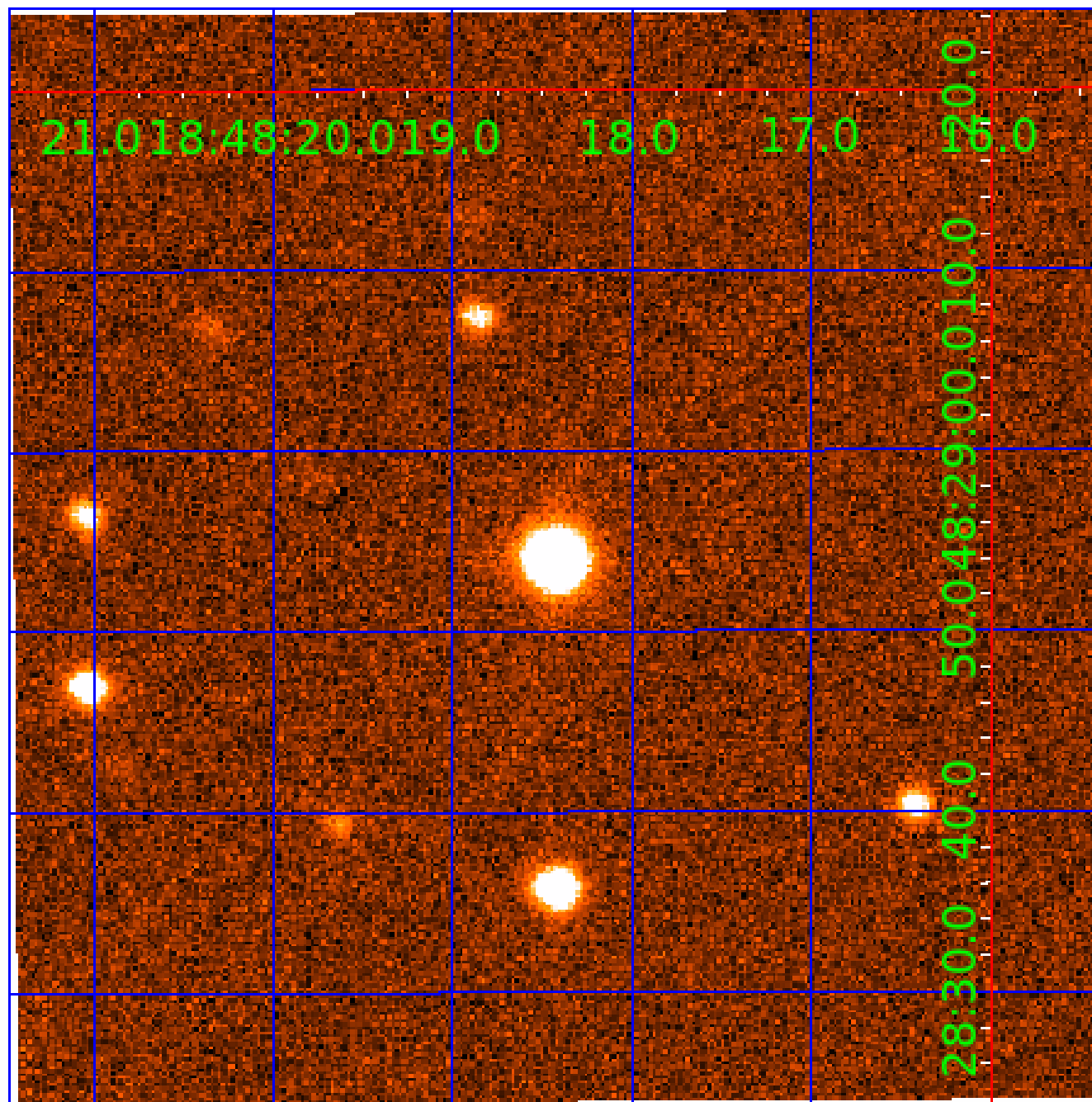


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
010959320-02	OBS	No	2.447377	133.469000	22.0	8.729	18.4	6.0	3.77	9824	2.04	45999.28
010959320-03	OBS	No	2.447485	132.771615	0.3	8.724	17.5	0.1	3.77	9824	0.22	45996.57
010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
010959320-05	OBS	No	68.249561	135.116136	629.2	4.531	11.7	11.6	3.77	9824	12.17	543.94
010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

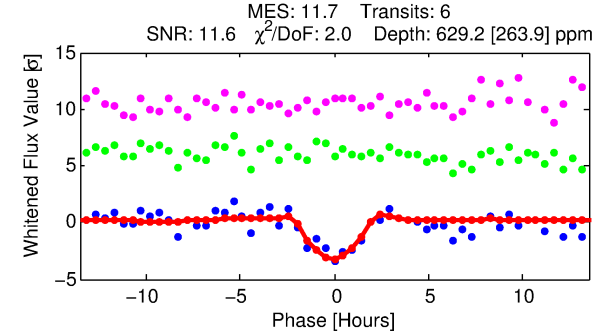
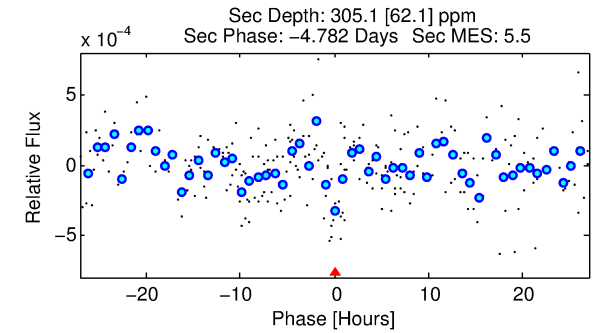
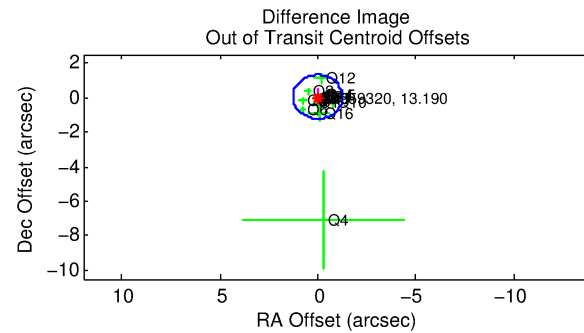
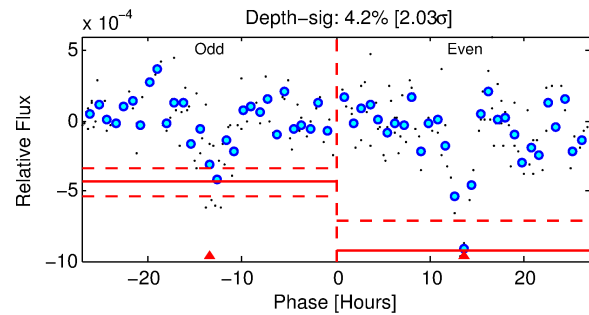
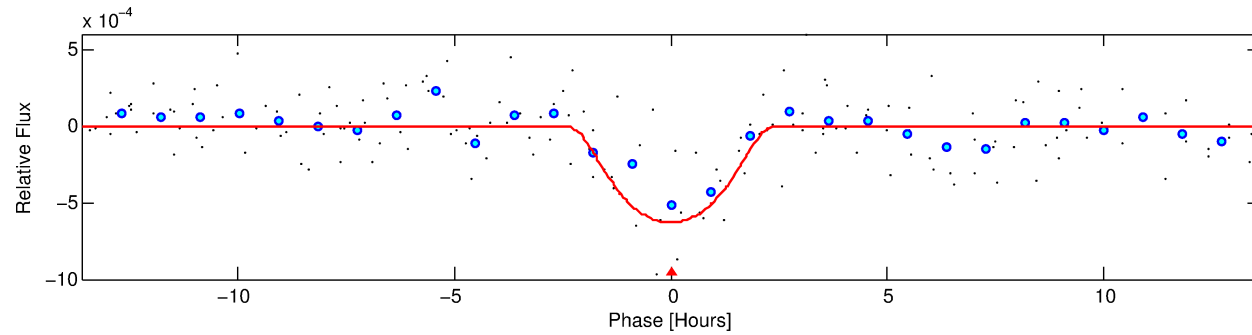
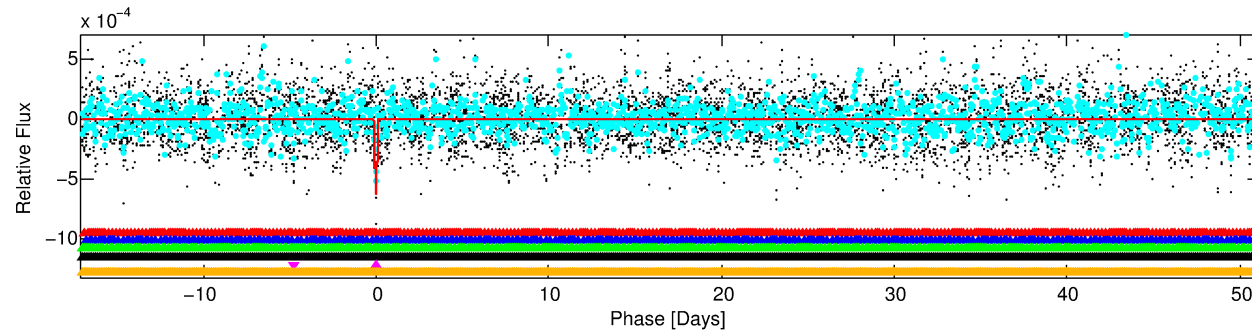
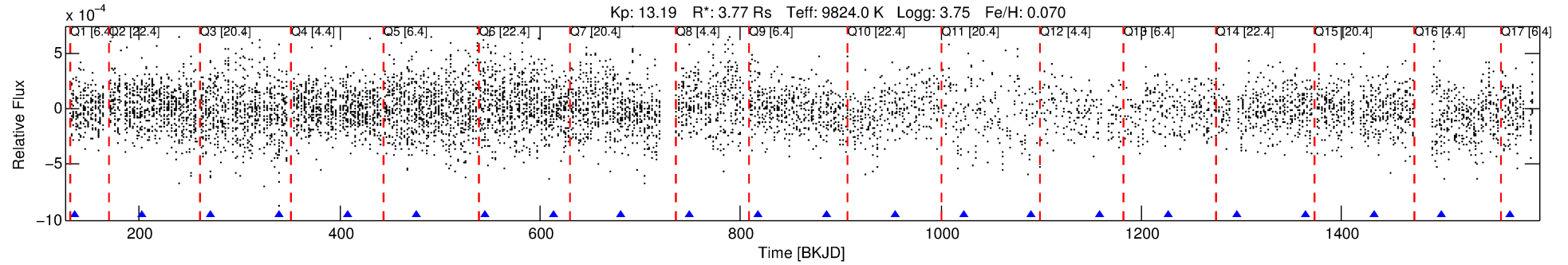
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-05

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 5 of 6 Period: 68.250 d



DV Fit Results:

Period = 68.24956 [0.00079] d
Epoch = 135.1161 [0.0093] BKJD
Rp/R* = 0.0296 [0.0141]
a/R* = 37.71 [13.75]
b = 0.98 [0.04]
Seff = 543.94 [314.88]
Teff = 1231 [178] K
Rp = 12.17 [7.40] Re
a = 0.4671 [0.1647] AU
Ag = 247.28 [277.69] [0.89σ]
Teffp = 7550 [1870] K [3.36σ]

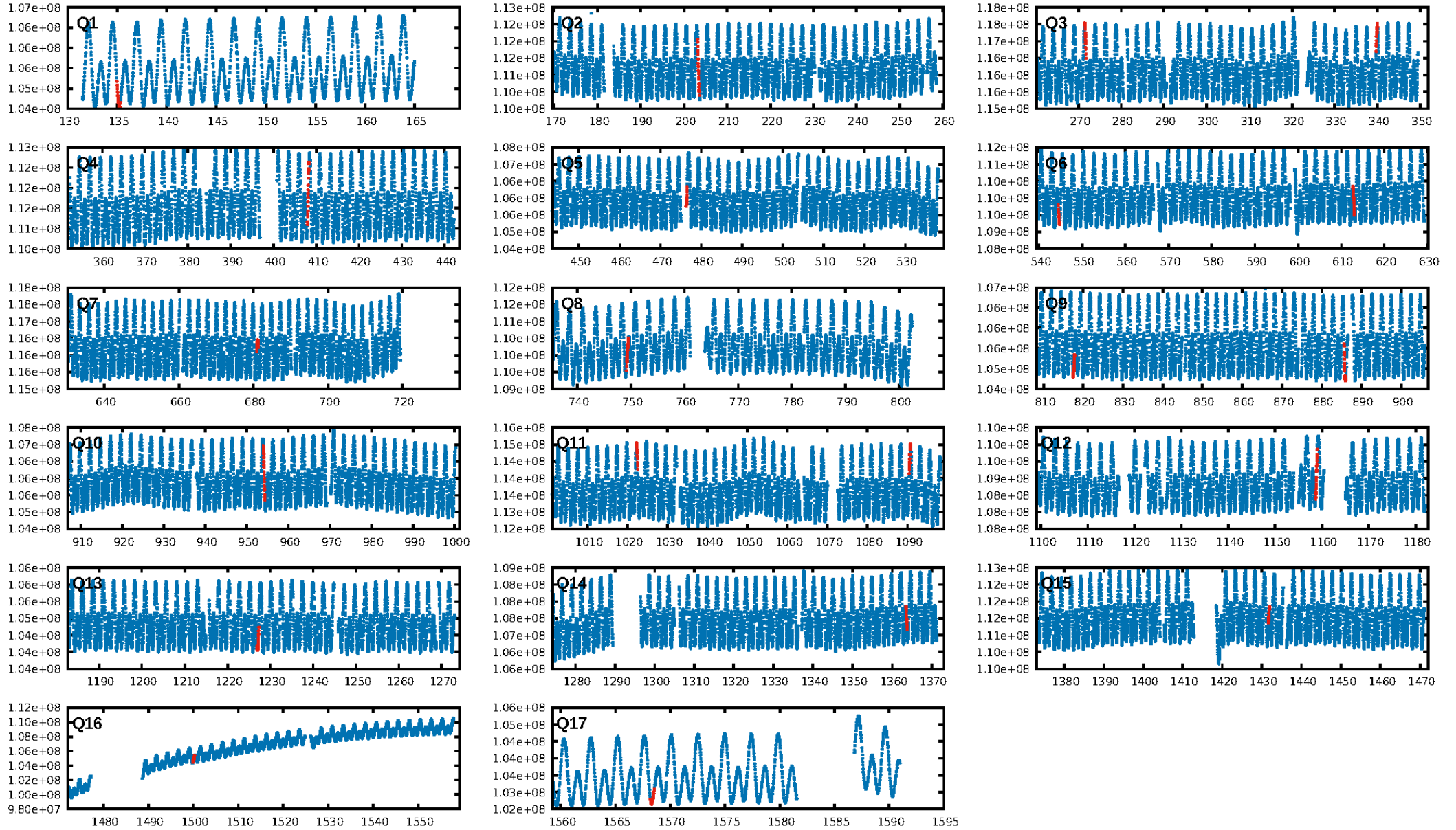
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [160.64σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 91.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 0.3381
Centroid-sig: 39.2%
Centroid-so: 0.347 arcsec [0.89σ]
OotOffset-rm: 0.052 arcsec [0.12σ]
KicOffset-rm: 0.134 arcsec [0.39σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/16]

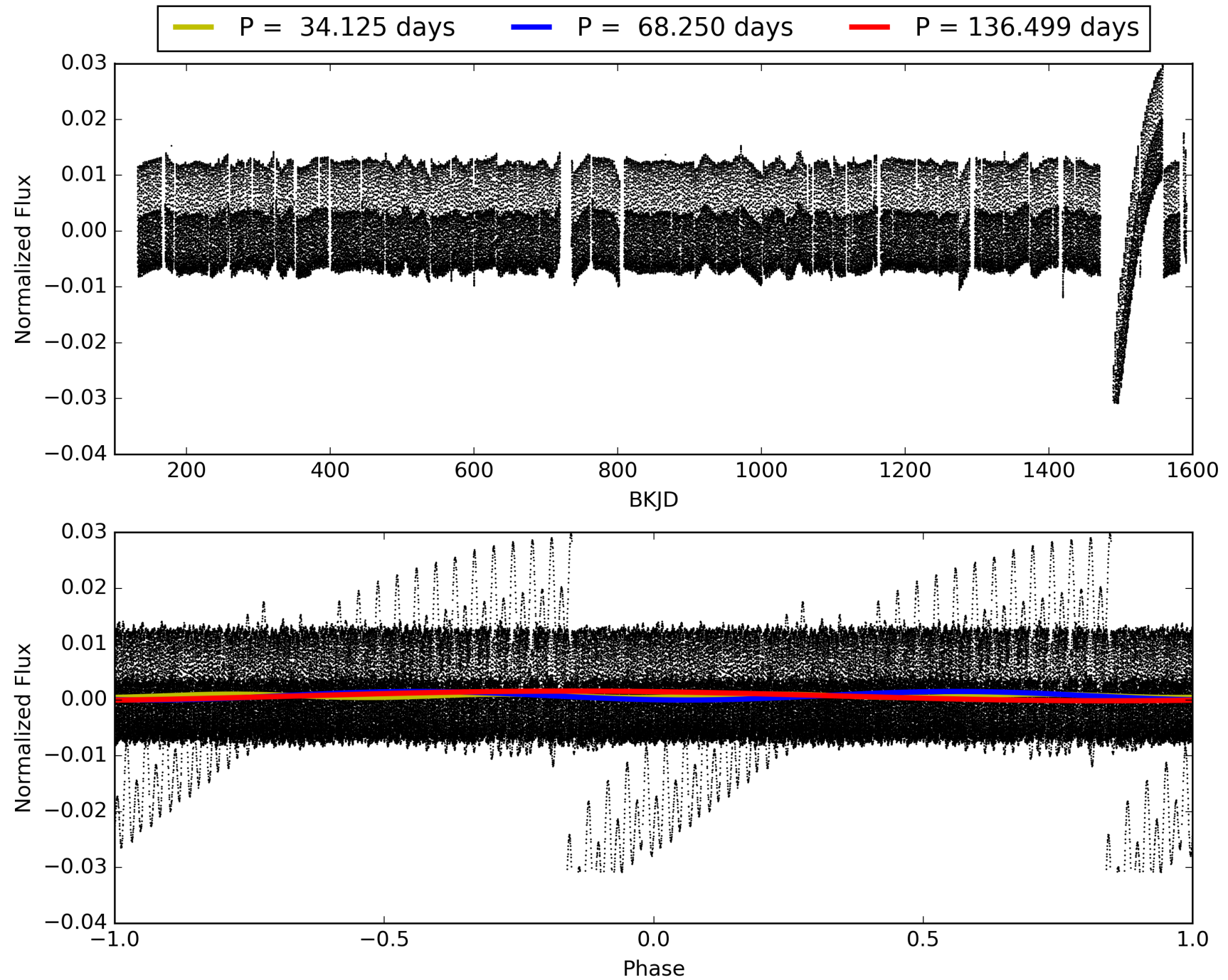
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:40 Z

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

TCE 010959320-05, PDC Light Curves

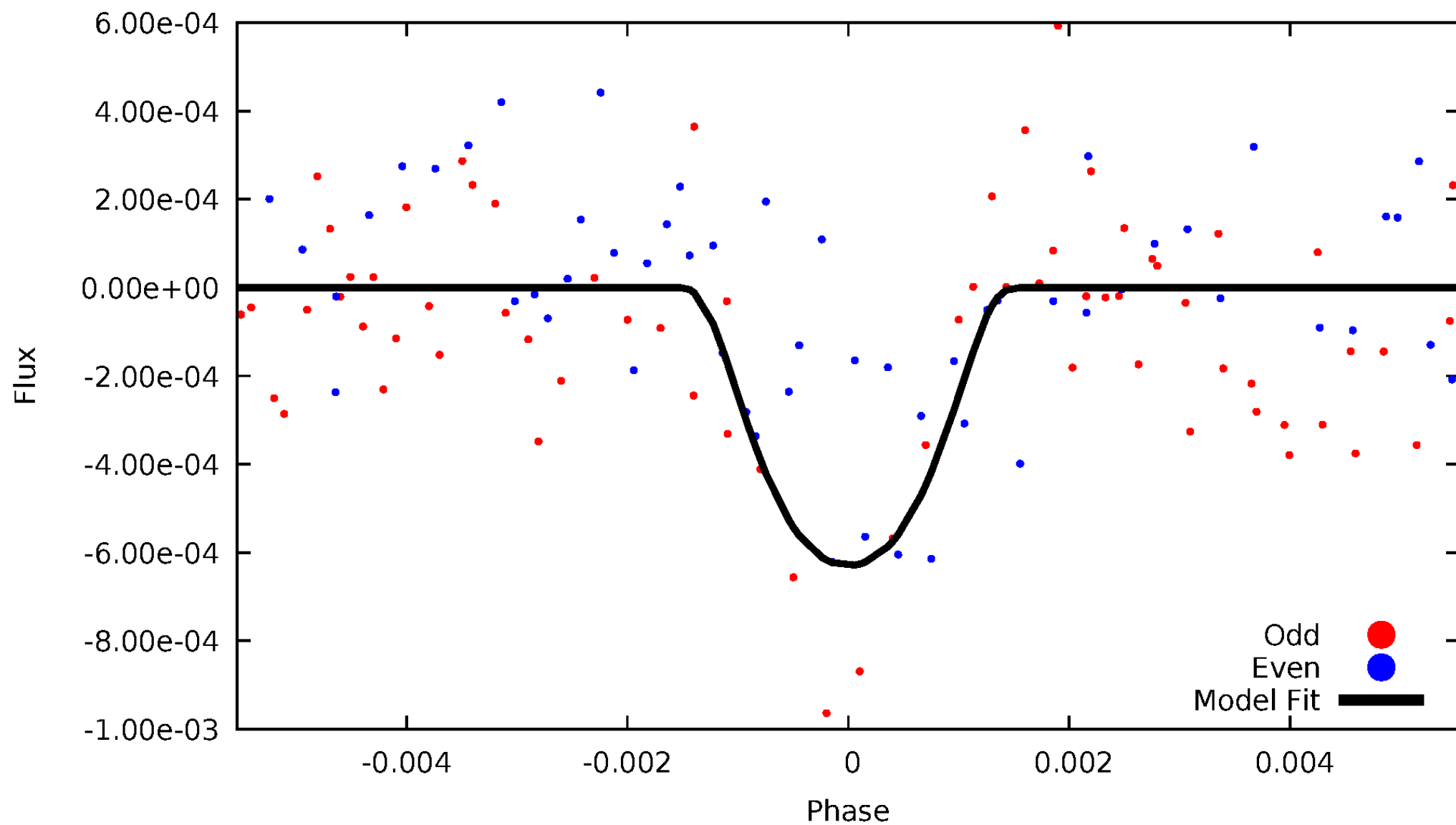


TCE 010959320-05



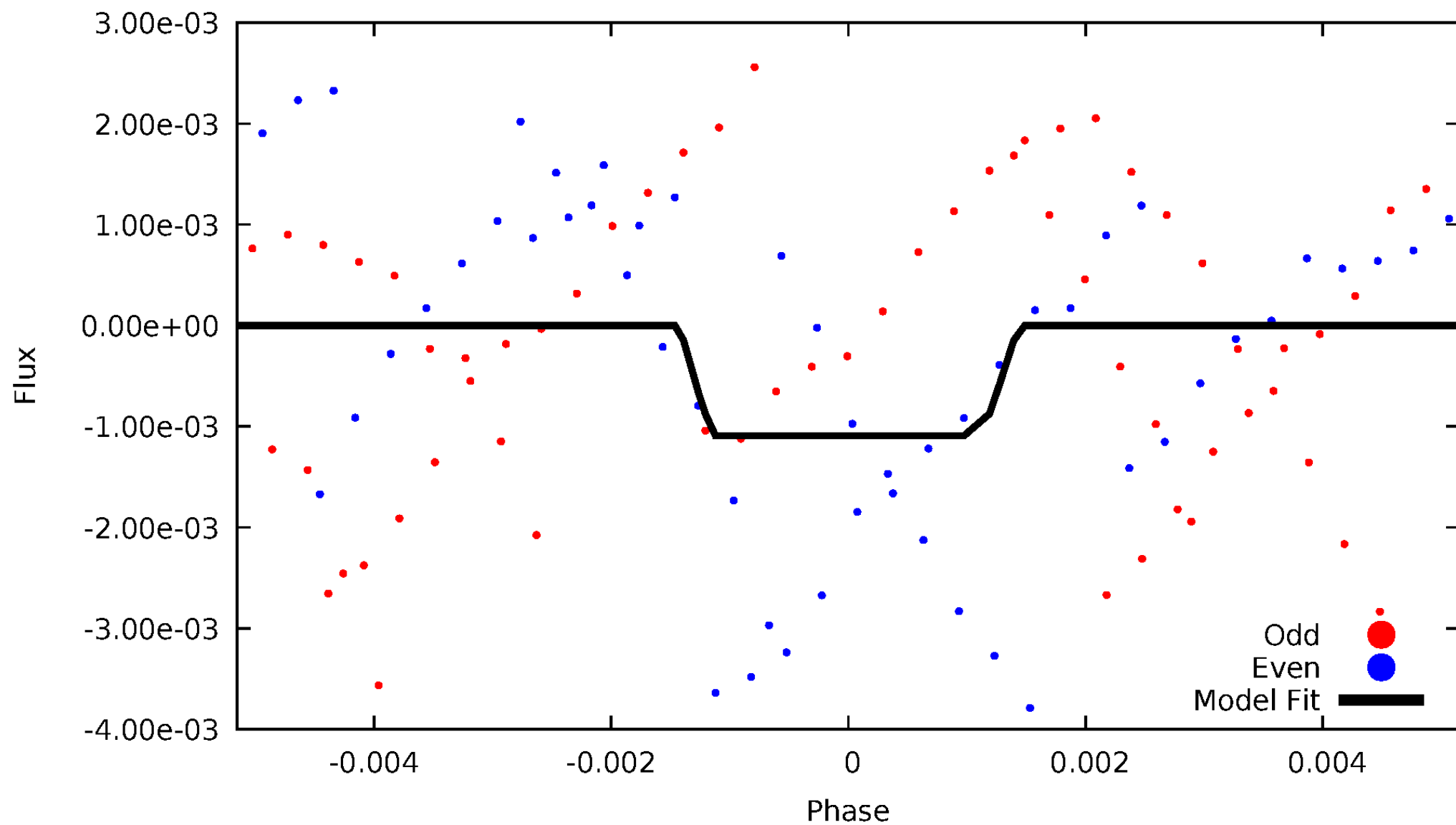
DV Odd/Even

TCE 010959320-05

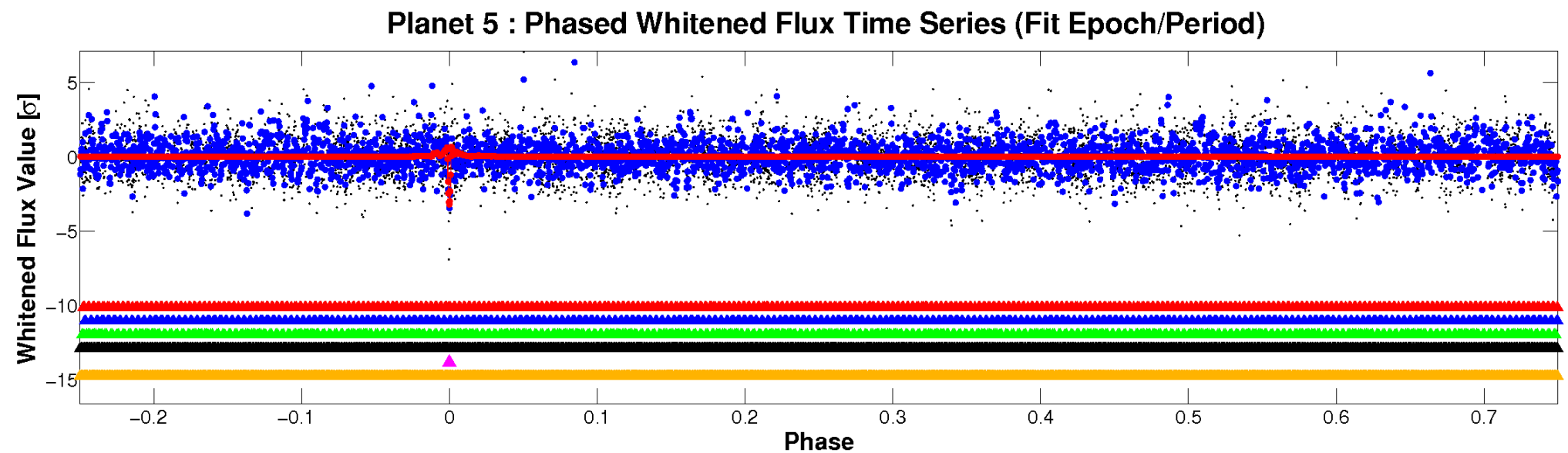
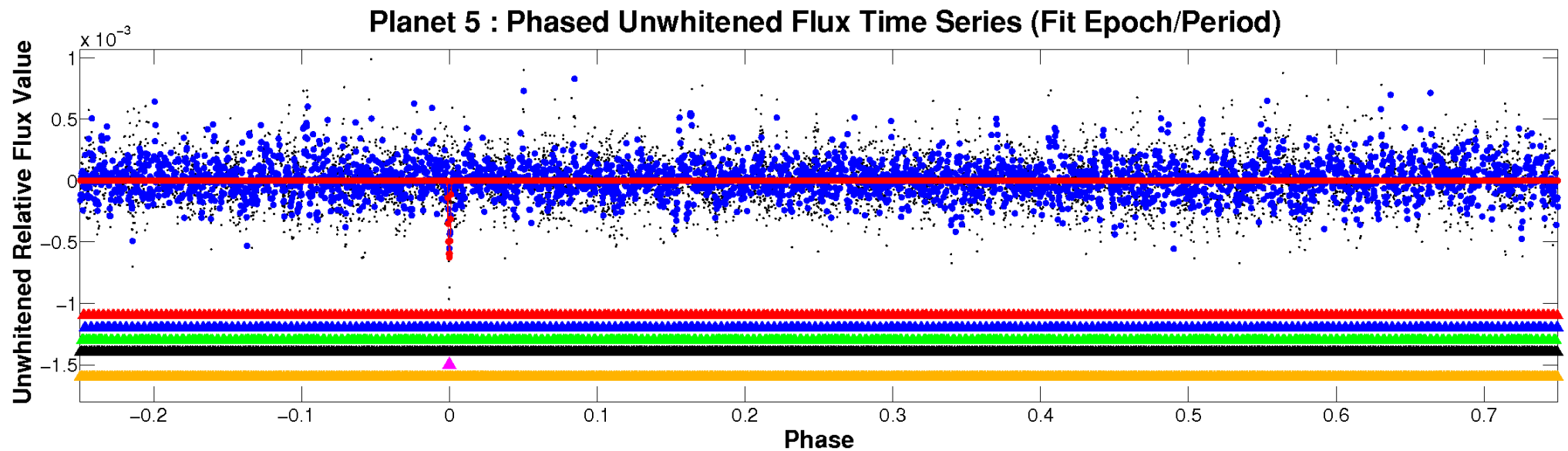


ALT Odd/Even

TCE 010959320-05

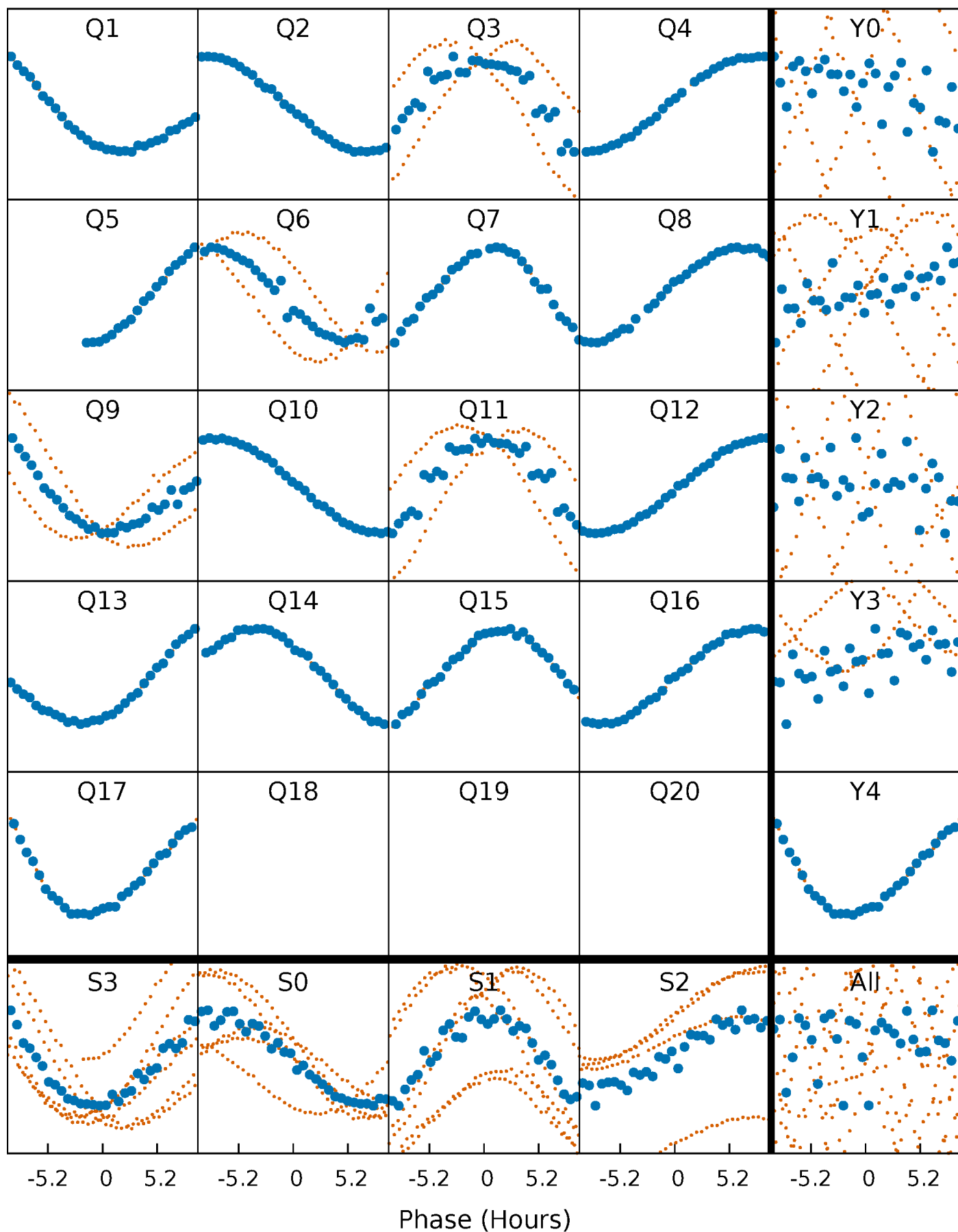


Non-Whitened Vs. Whitened Light Curve



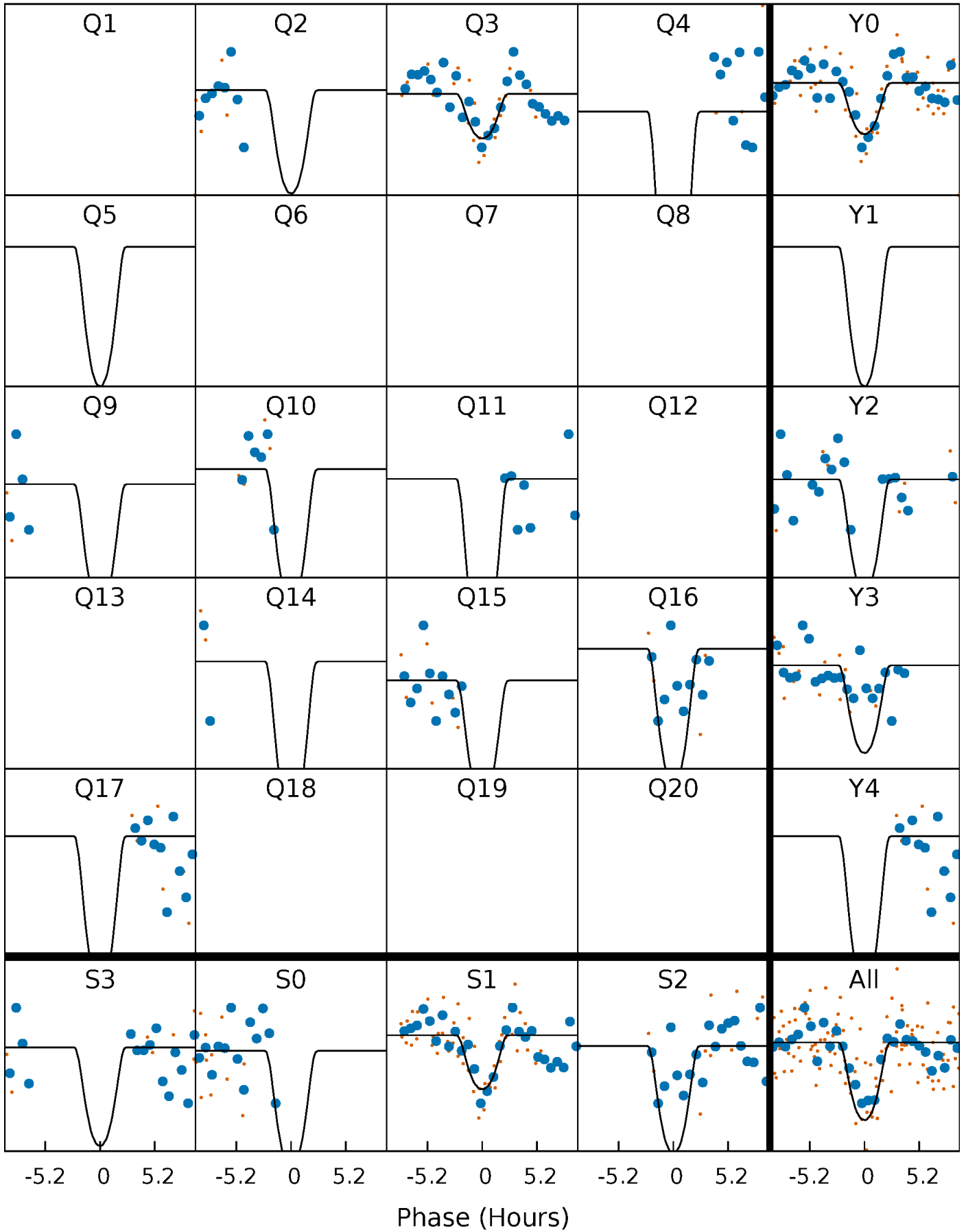
PDC Quarter-Phased Transit Curves

TCE 010959320-05 $P = 68.249561$ Days $T_0 = 135.116136$ (BKJD)



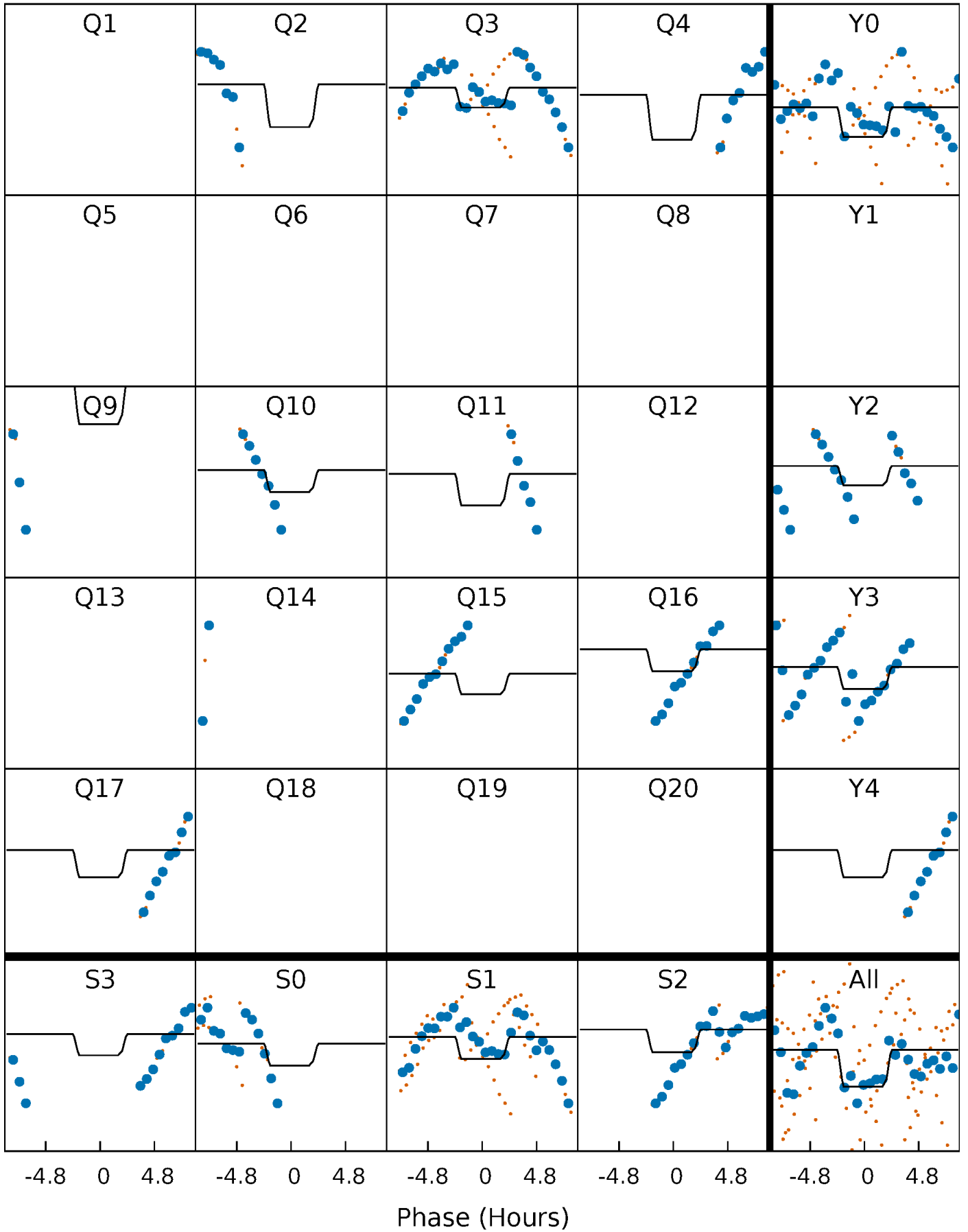
DV Quarter-Phased Transit Curves

TCE 010959320-05 $P = 68.249561$ Days $T_0 = 135.116136$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

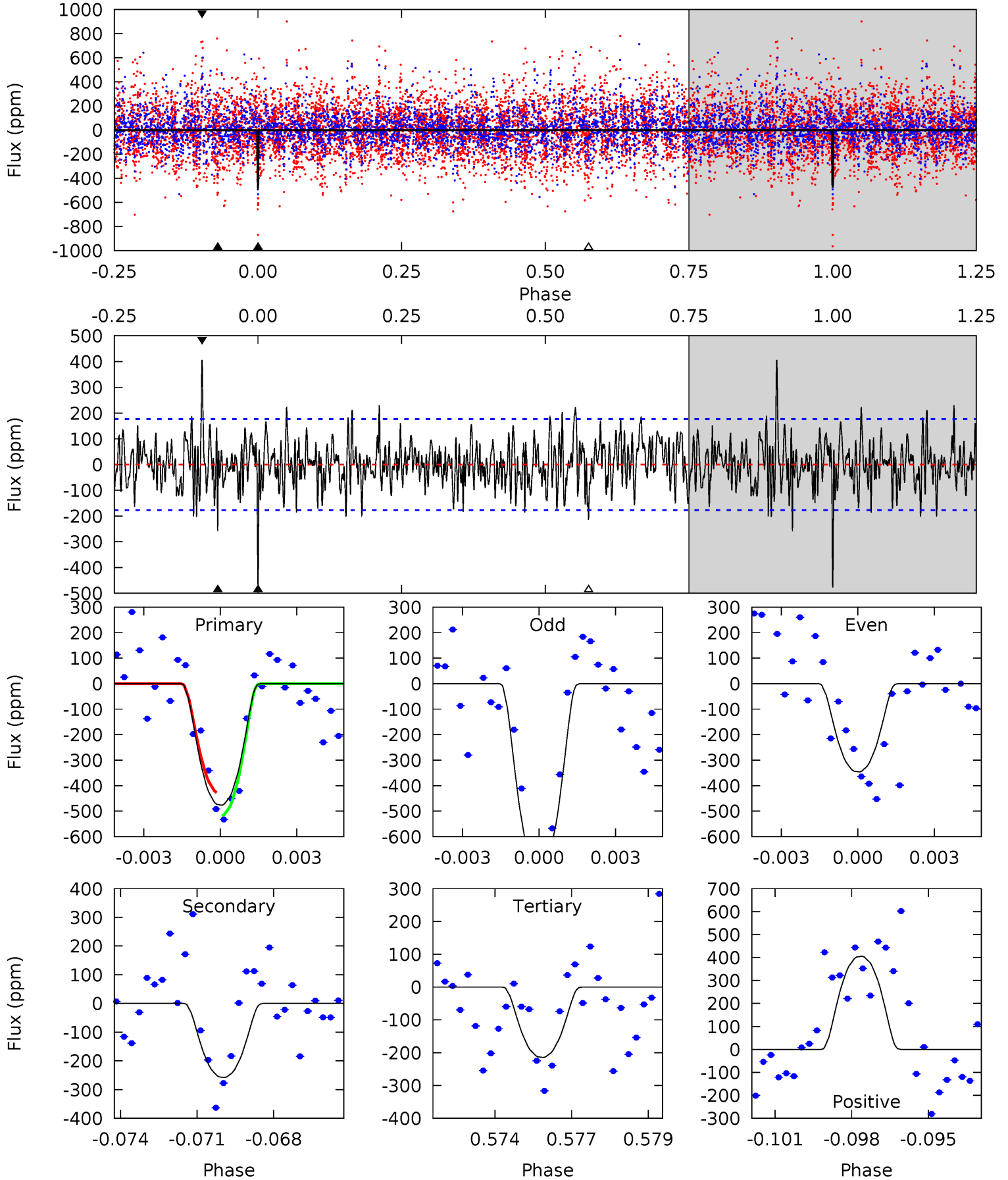
TCE 010959320-05 $P = 68.249046$ Days $T_0 = 135.104796$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-05, P = 68.249561 Days, E = 66.866575 Days

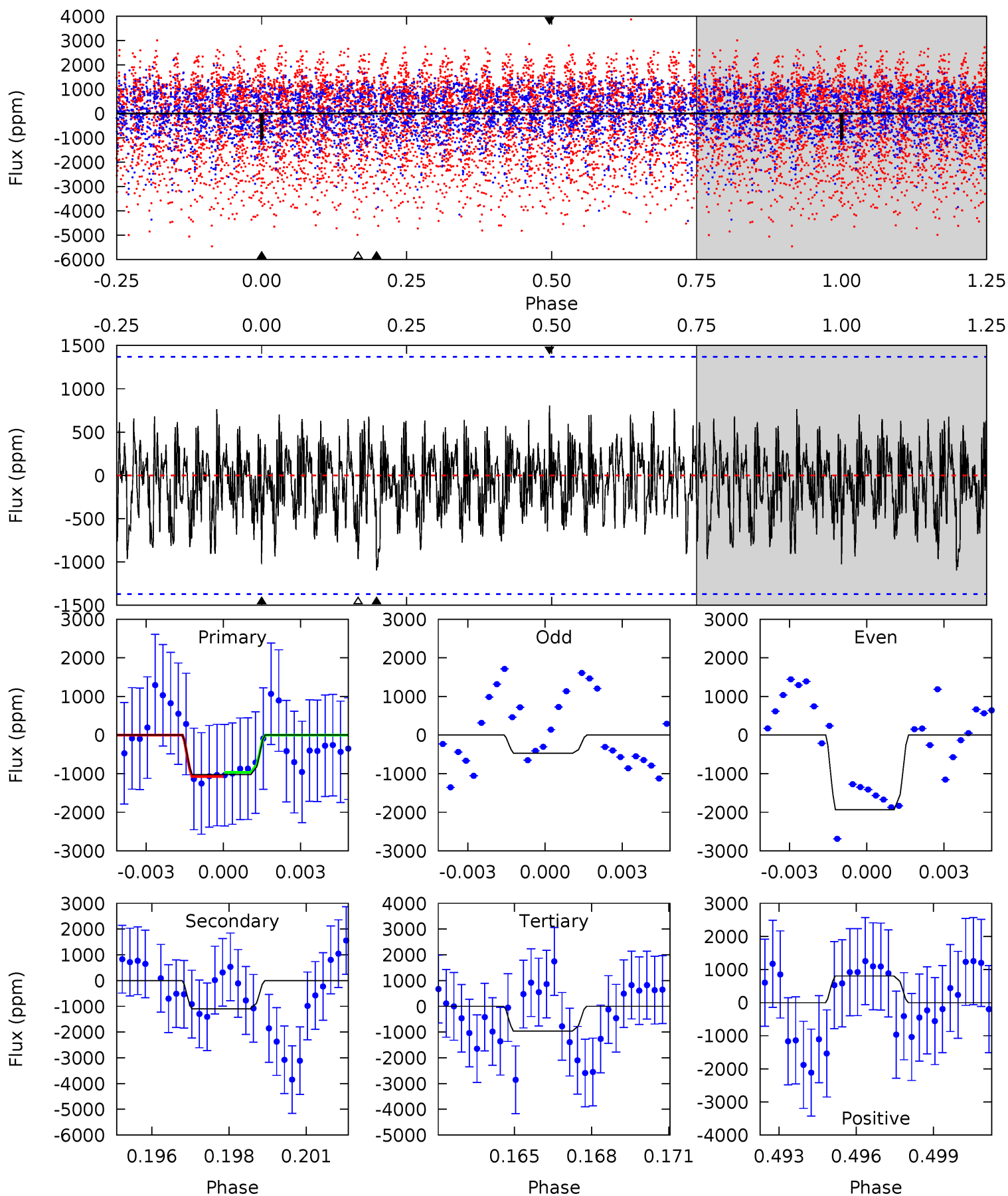
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	7.66	6.37	12.0	5.26	2.97	2.23	7.78	2.10	1.29	-4.39	5.64	1.02	0.46	1.34



Alt Model-Shift Uniqueness Test

010959320-05, P = 68.249046 Days, E = 66.855750 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.94	4.21	3.72	3.10	5.27	2.99	1.20	0.23	0.84	0.50	1.12	2.73	0.51	0.42	0.20



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-258 ± 34	$12.04^{+5.66}_{-5.70}$	1695^{+127}_{-169}	6520^{+2747}_{-1066}	202^{+516}_{-108}
Alt.	-1096 ± 260	$12.35^{+6.83}_{-5.39}$	1690^{+128}_{-169}	9830^{+5926}_{-2242}	826^{+1851}_{-487}

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 $A_{obs} \gg 1.0$

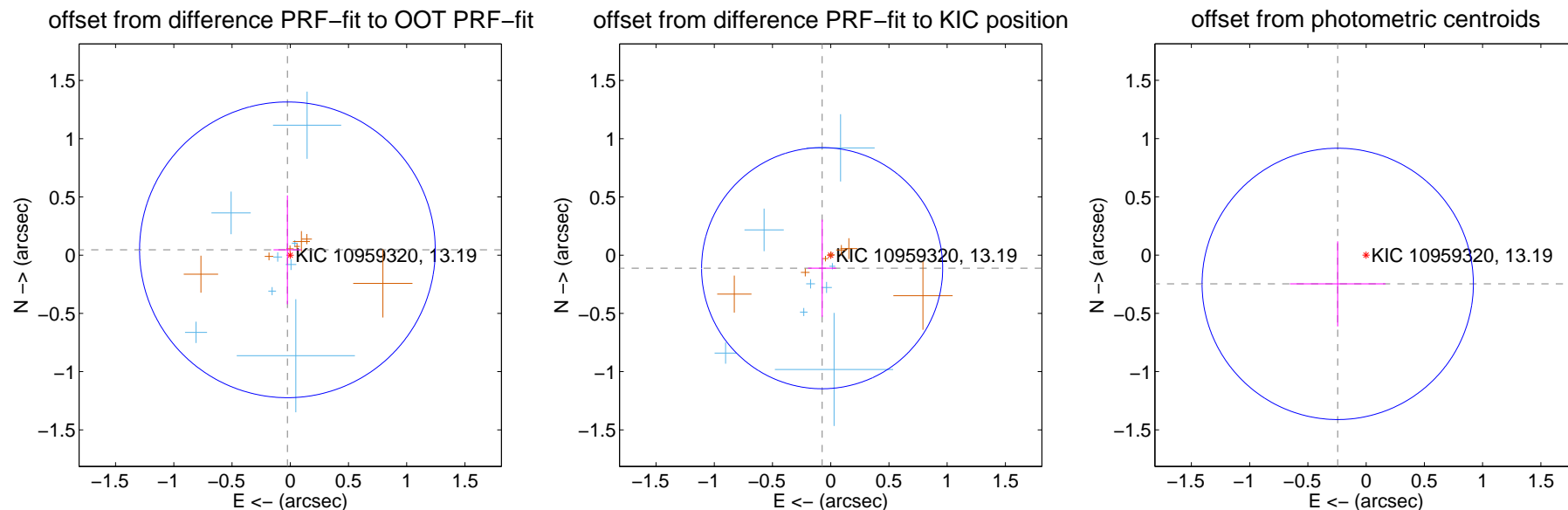
DV Centroid Data

Supplemental centroid analysis for 010959320-05. Kepler magnitude: 13.19. Transit SNR 11.57

There are 8 quarters with good PRF difference image offsets

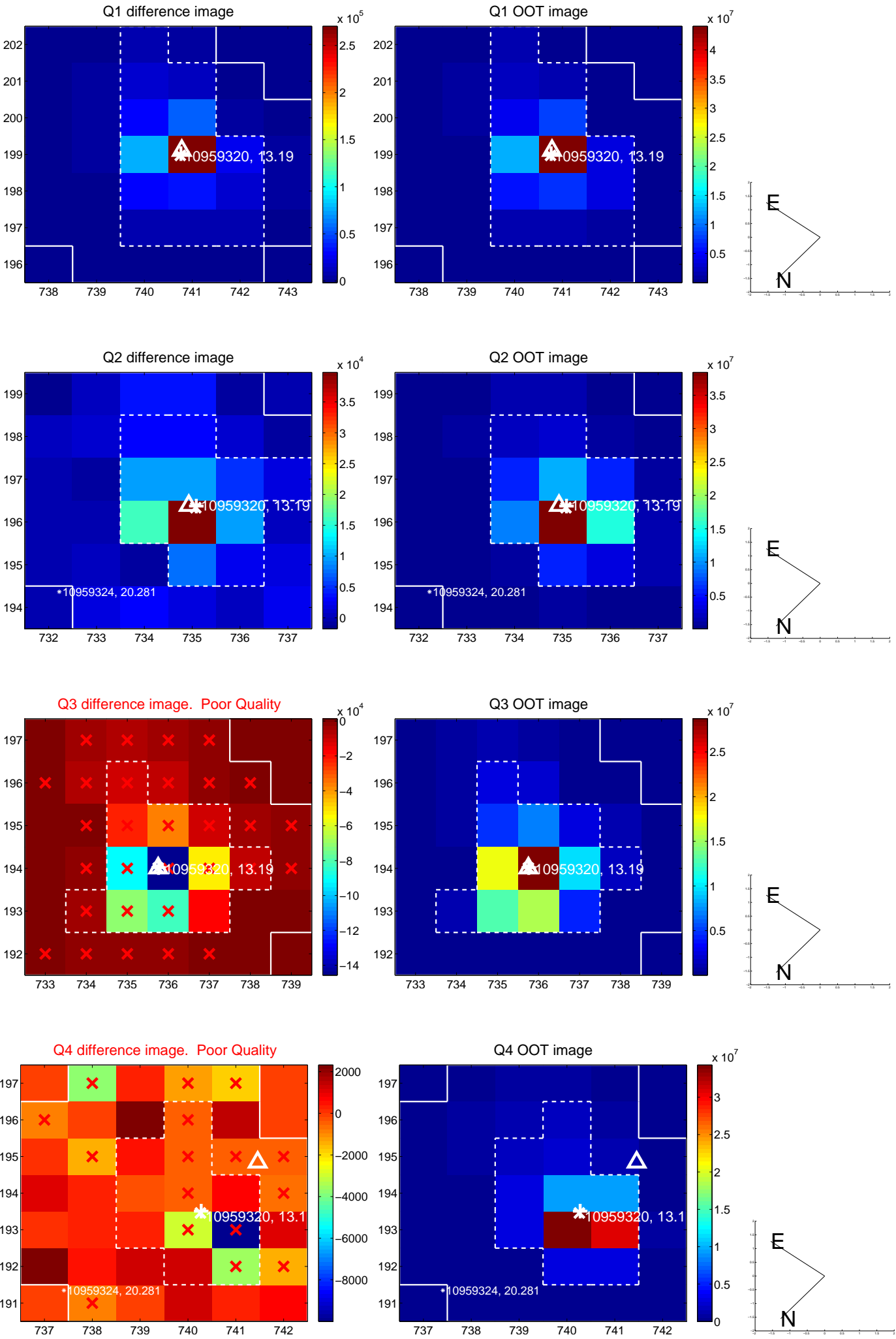
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.052 ± 0.423	0.12	0.024 ± 0.119	0.046 ± 0.467
PRF-fit source offset from KIC position	0.134 ± 0.345	0.39	0.074 ± 0.121	-0.112 ± 0.417
photometric centroid source offset	0.35 ± 0.39	0.89	0.24 ± 0.41	-0.25 ± 0.37

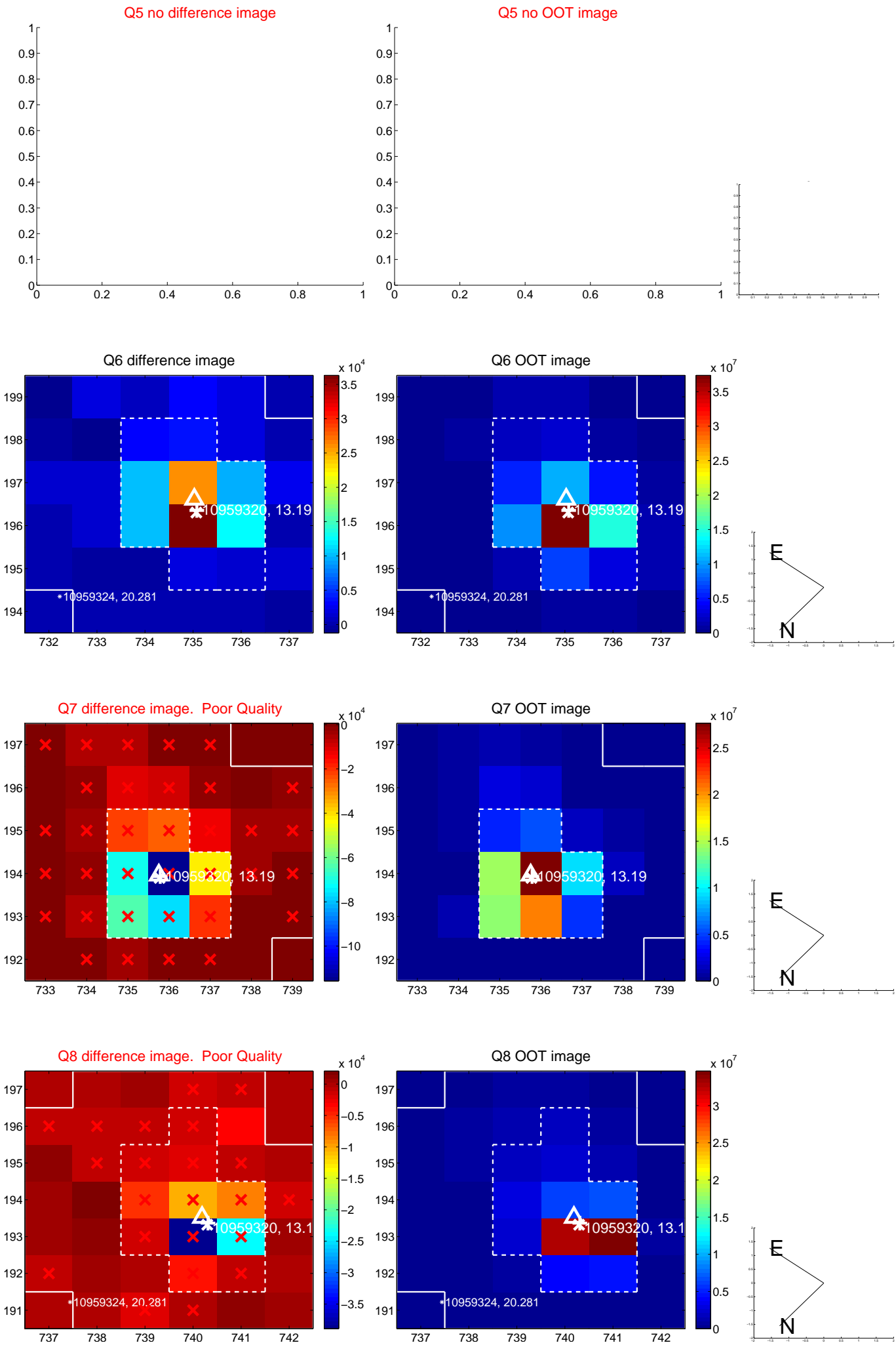


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

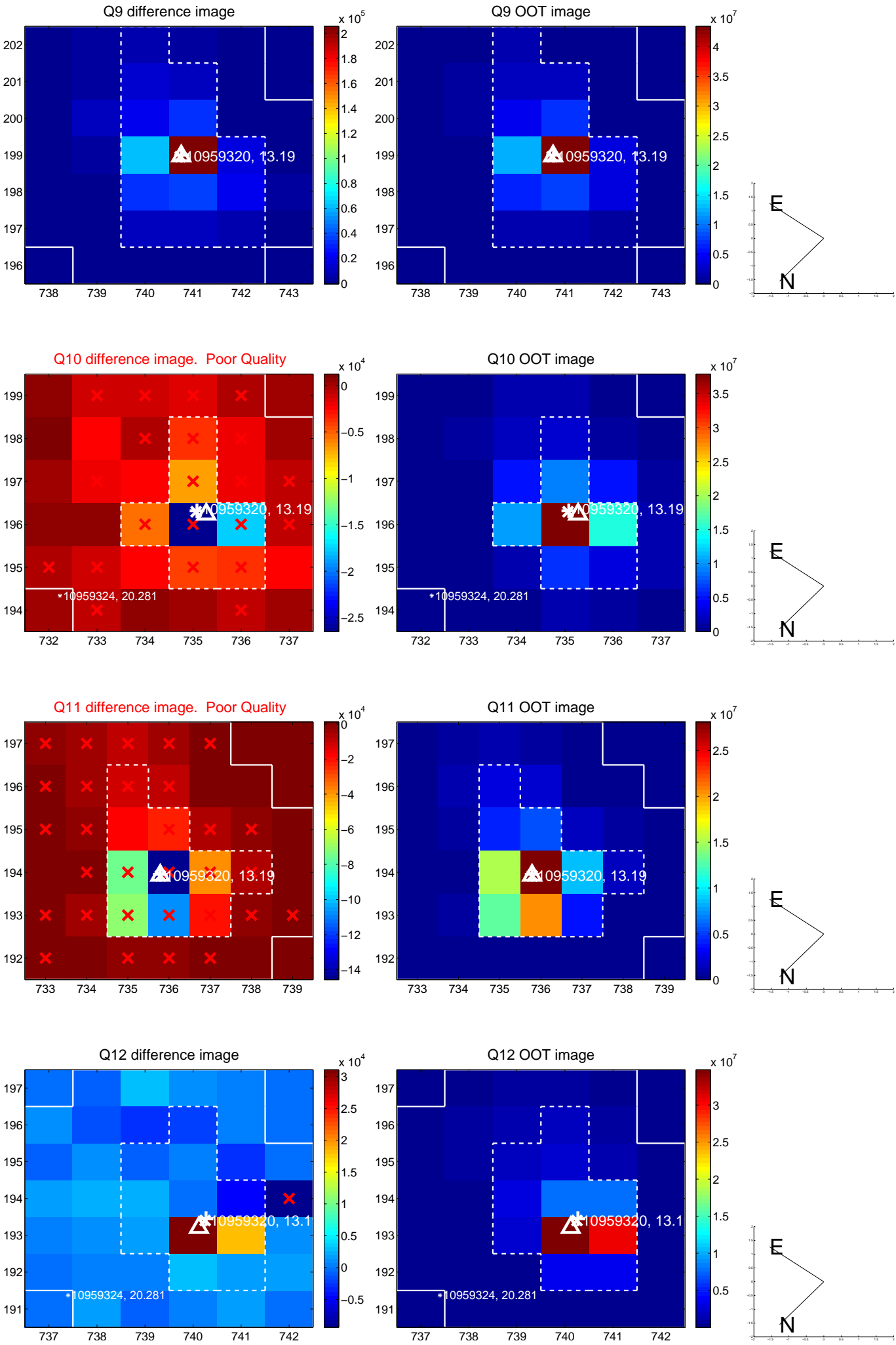
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



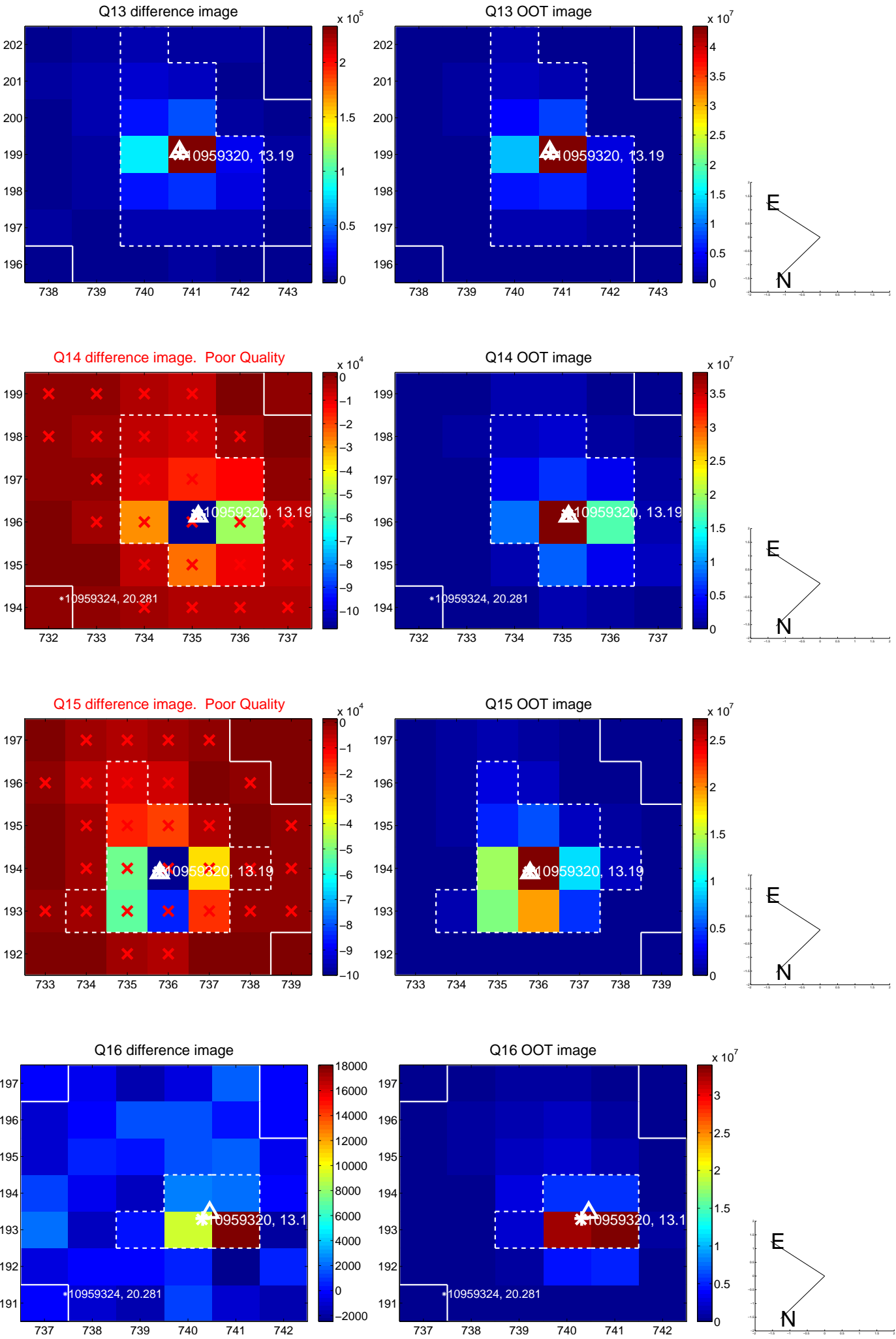
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



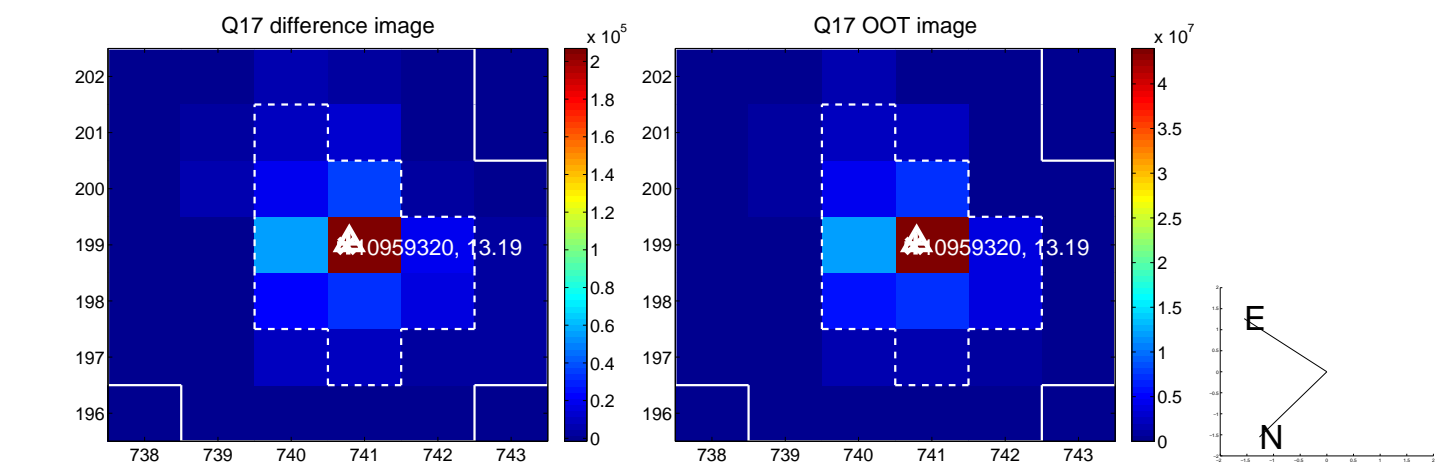
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



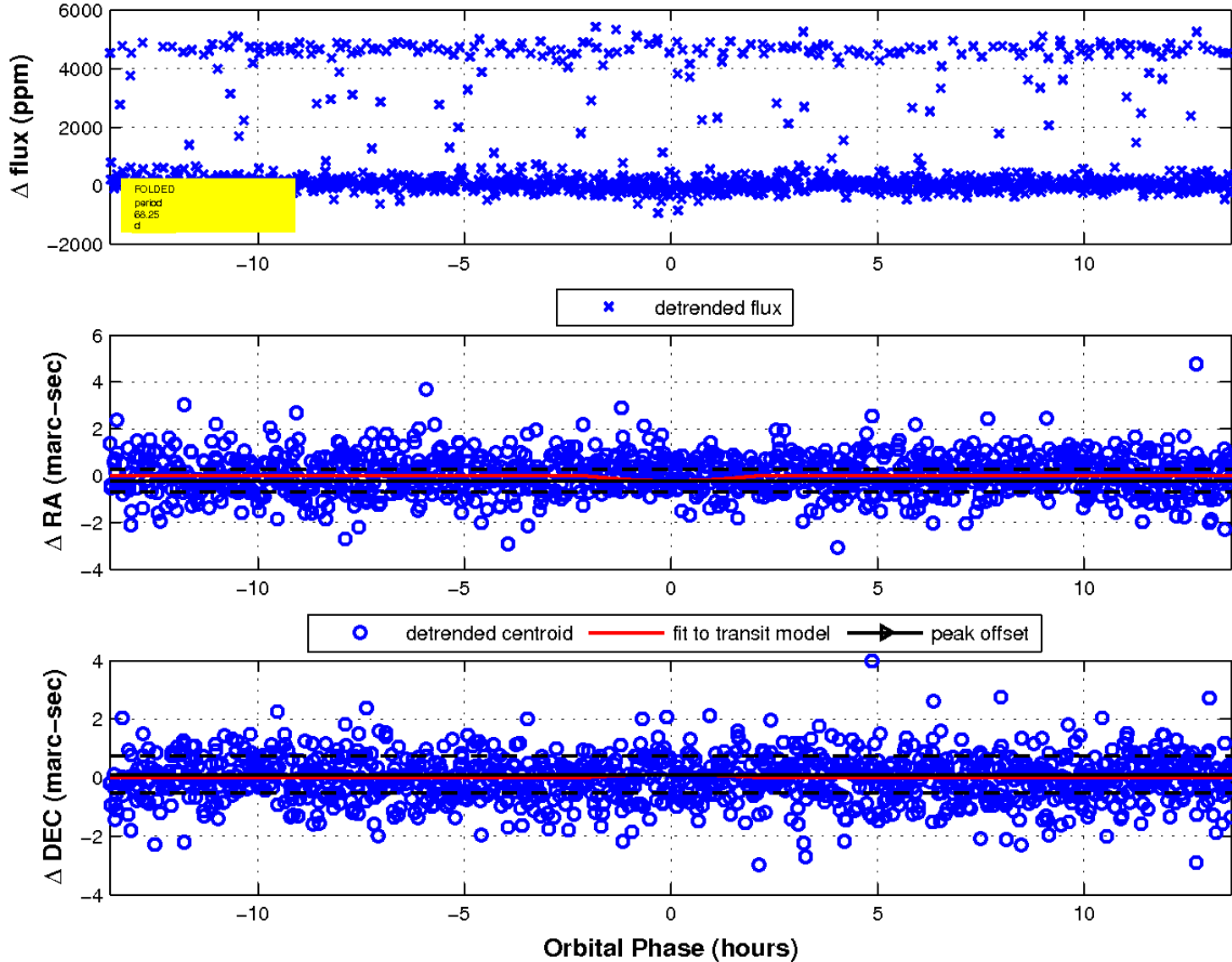
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

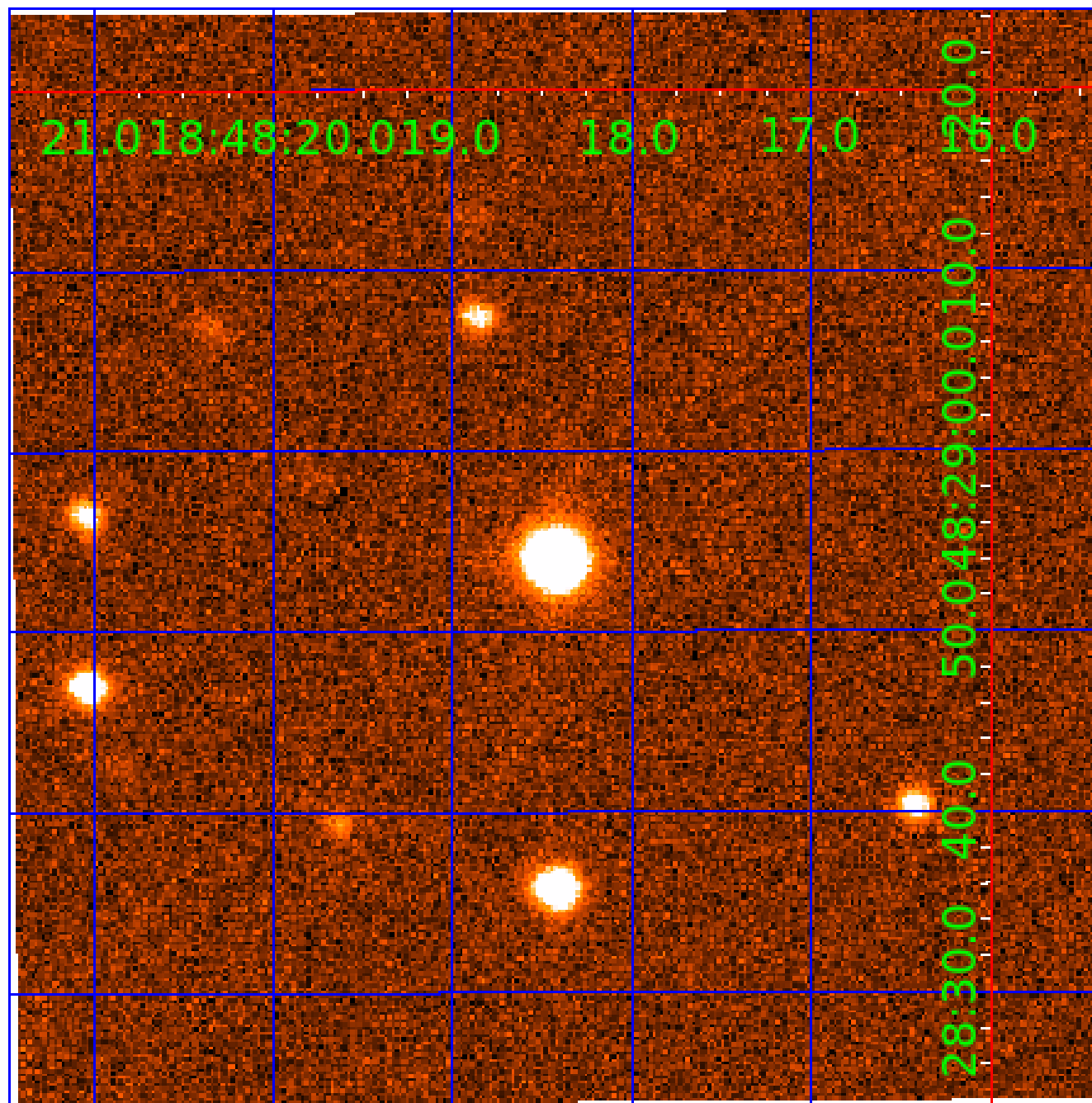


fluxWeightedCentroids, Planet 5 of 6



UKIRT Image

Declination



KIC 010959320

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})
010959320-01	OBS	No	2.445597	132.655181	48.0	4.029	19.4	10.3	3.77	9824	3.00	46043.92
010959320-02	OBS	No	2.447377	133.469000	22.0	8.729	18.4	6.0	3.77	9824	2.04	45999.28
010959320-03	OBS	No	2.447485	132.771615	0.3	8.724	17.5	0.1	3.77	9824	0.22	45996.57
010959320-04	OBS	No	0.815227	132.505541	108.4	2.925	13.1	9.5	3.77	9824	4.62	199211.42
010959320-05	OBS	No	68.249561	135.116136	629.2	4.531	11.7	11.6	3.77	9824	12.17	543.94
010959320-06	OBS	No	0.815239	132.270369	341.6	1.500	10.2	-1.0	3.77	9824	7.16	199207.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010959320-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
010959320-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
010959320-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD
010959320-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
010959320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010959320-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

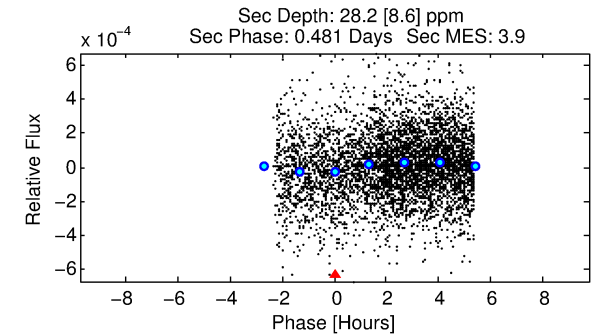
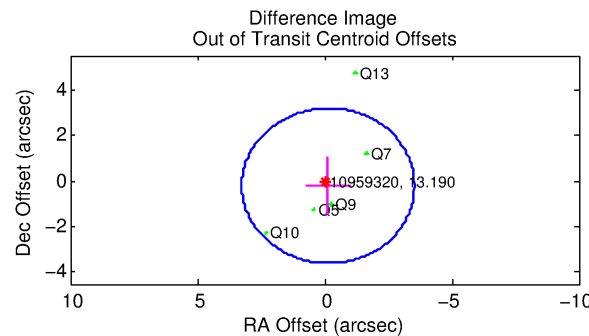
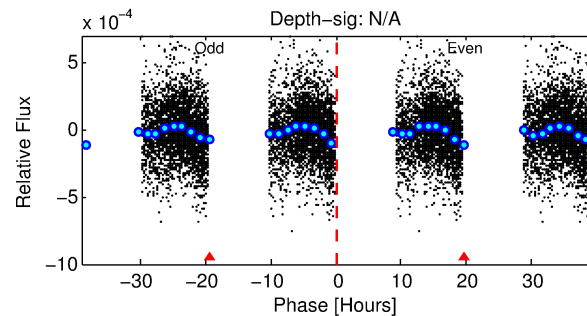
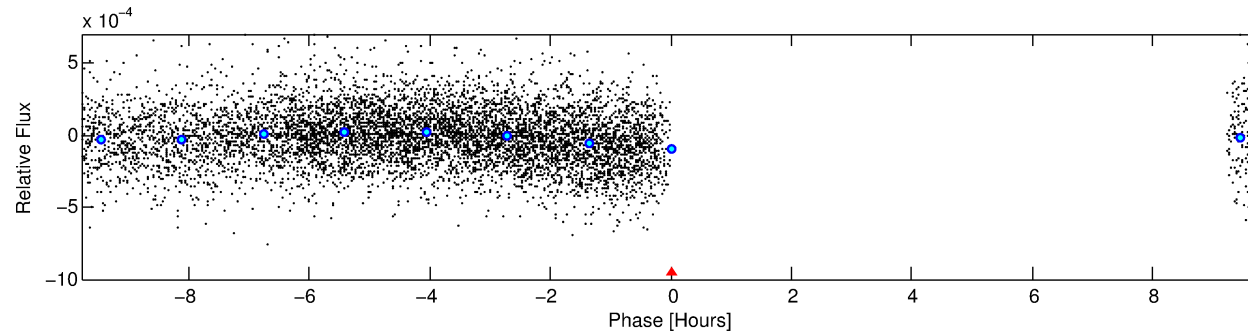
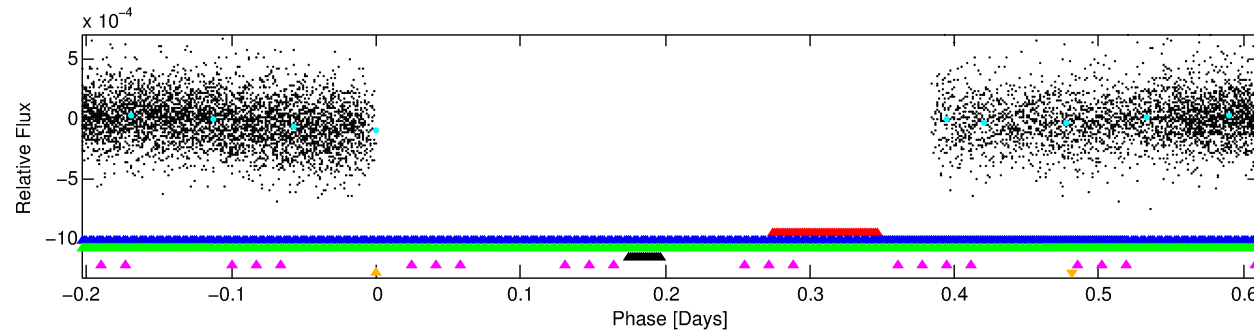
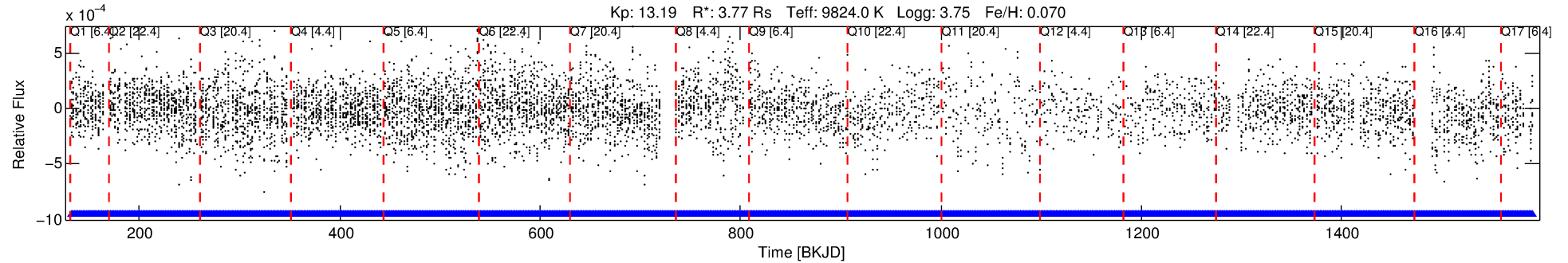
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010959320-06

No Significant Match Found

DV One-Page Summary

KIC: 10959320 Candidate: 6 of 6 Period: 0.815 d



TPS TCE Results:

Period = 0.81524 d
Epoch = 132.2704 BKJD

DV fit results are unavailable

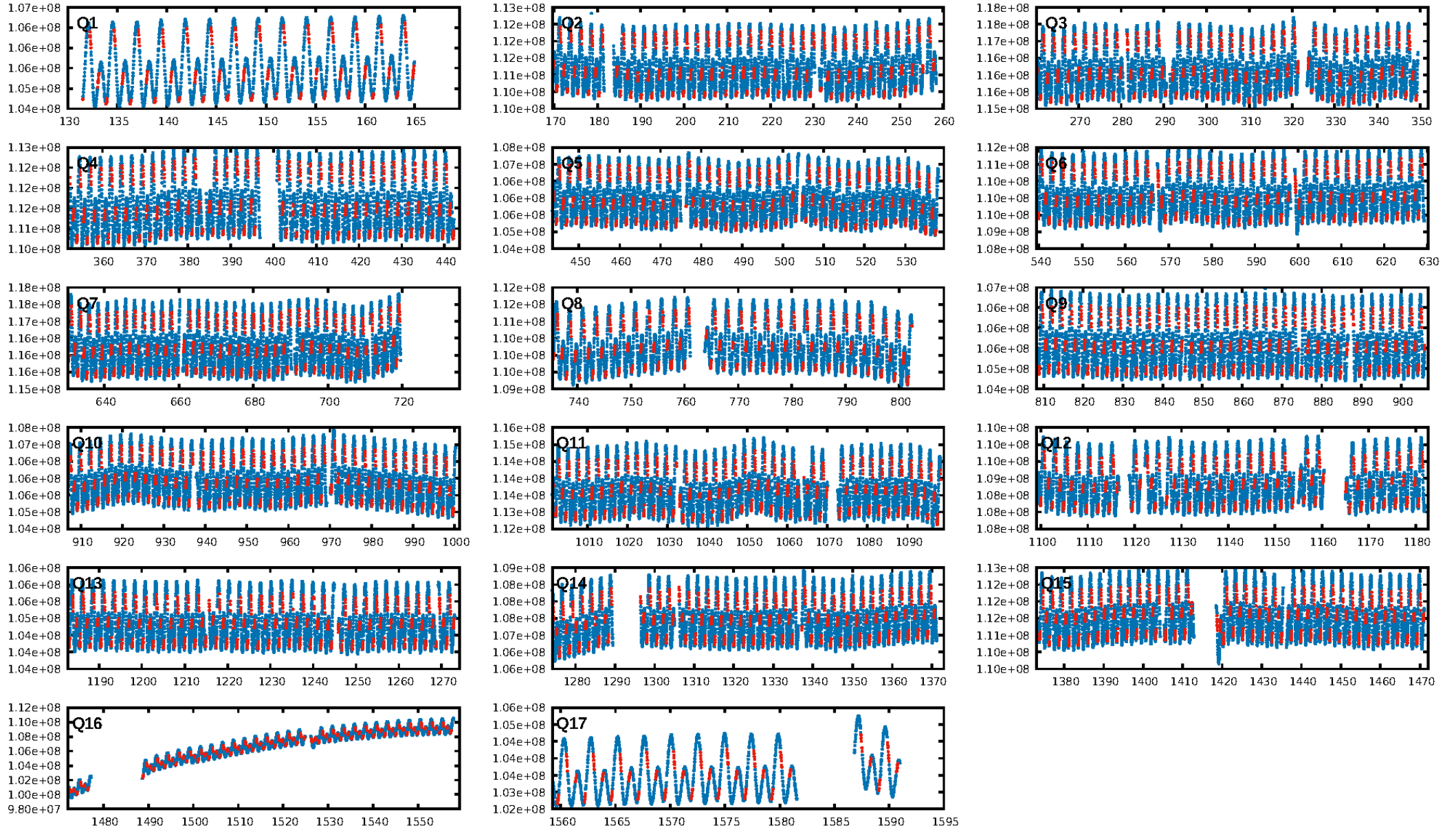
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [9.10 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [512/512]
GhostDiagnostic-chr: -25.21
Centroid-sig: 0.0%
Centroid-so: 0.144 arcsec [29.62 σ]
OotOffset-rm: 0.243 arcsec [0.21 σ]
KicOffset-rm: 0.446 arcsec [0.40 σ]
OotOffset-st: 1/1/0/3 [5]
KicOffset-st: 1/1/0/3 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.00 [0/17]

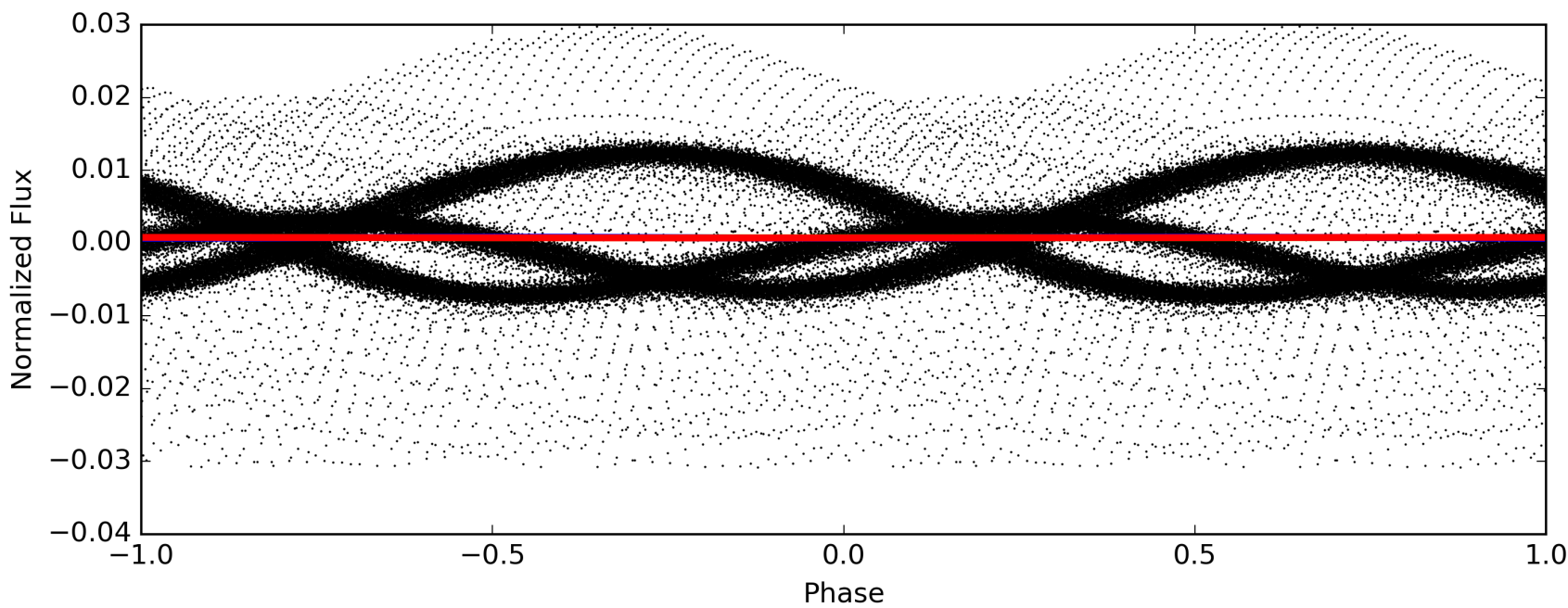
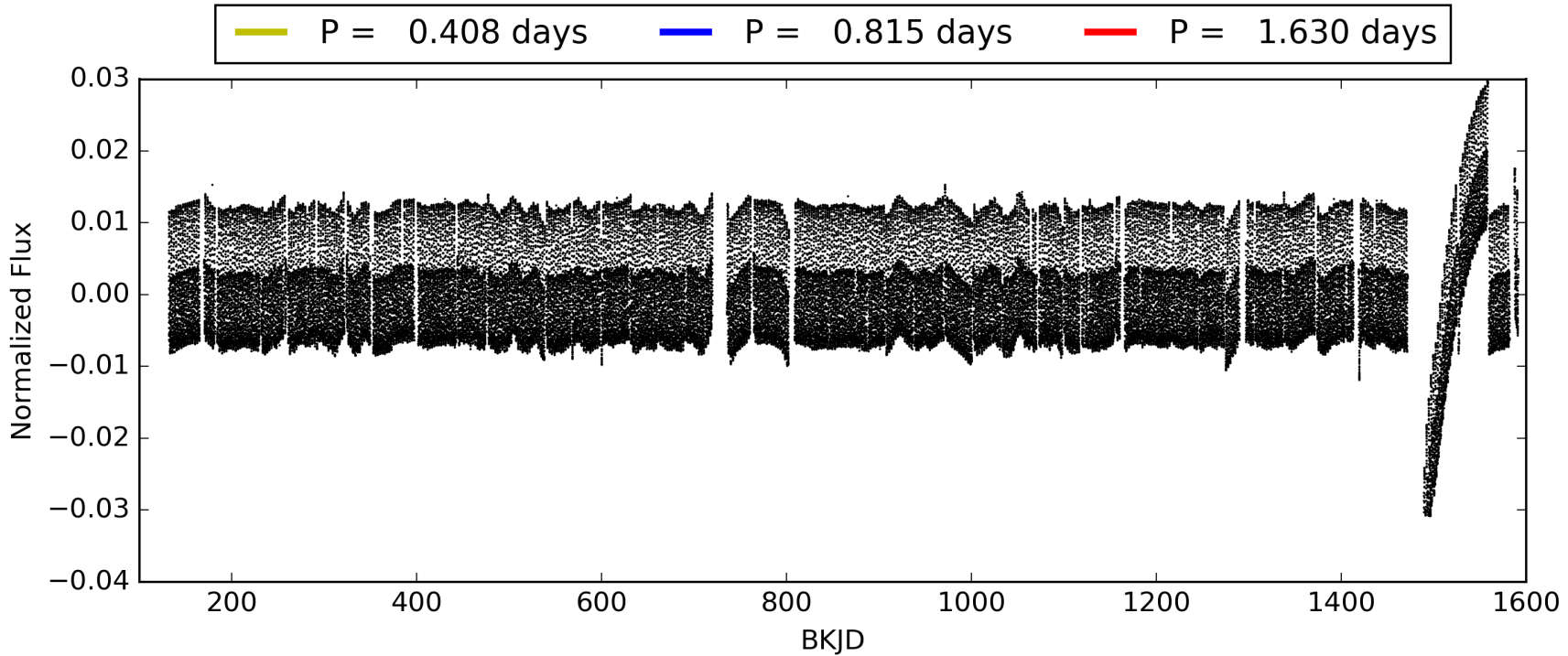
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 10:00:46 Z

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

TCE 010959320-06, PDC Light Curves

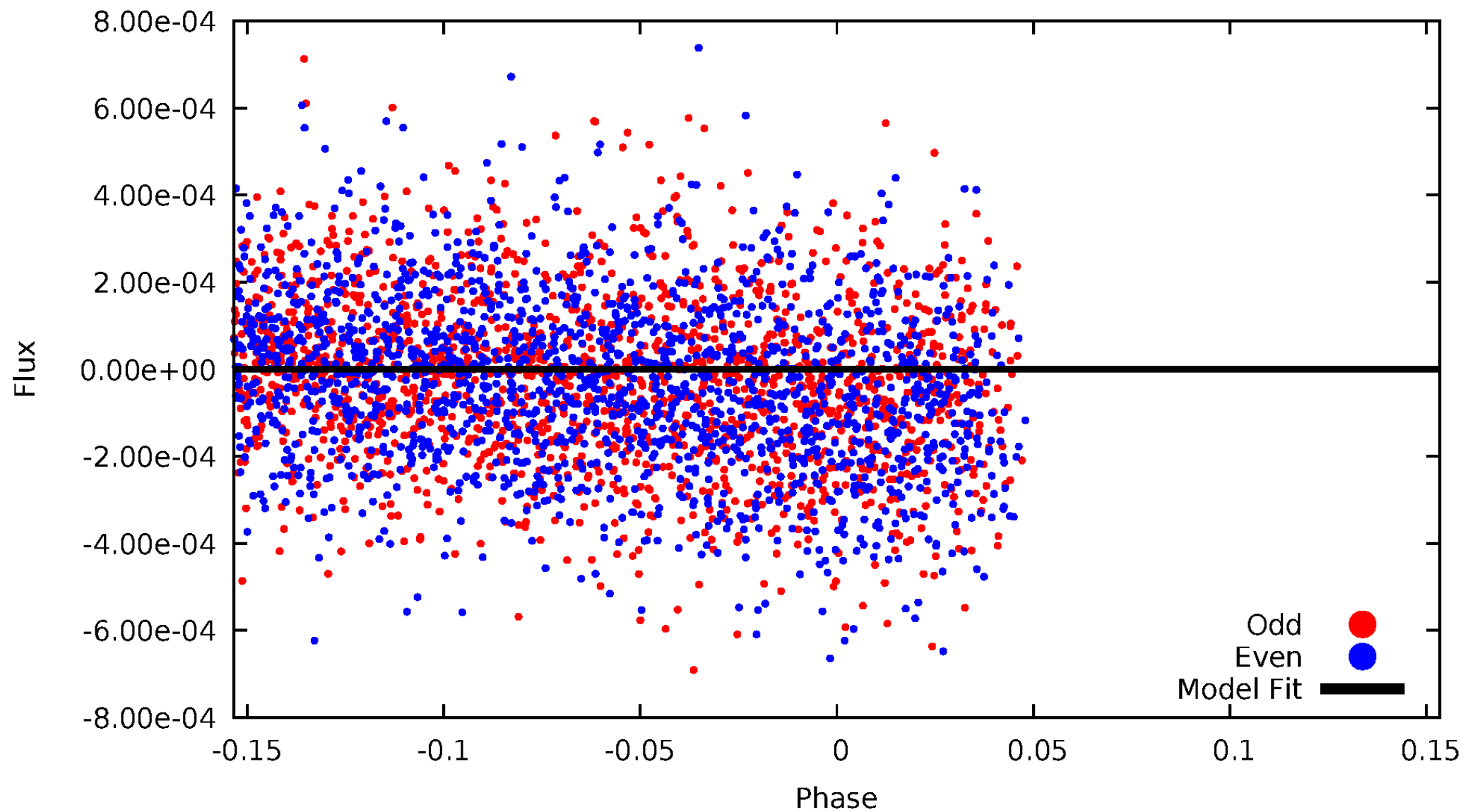


TCE 010959320-06



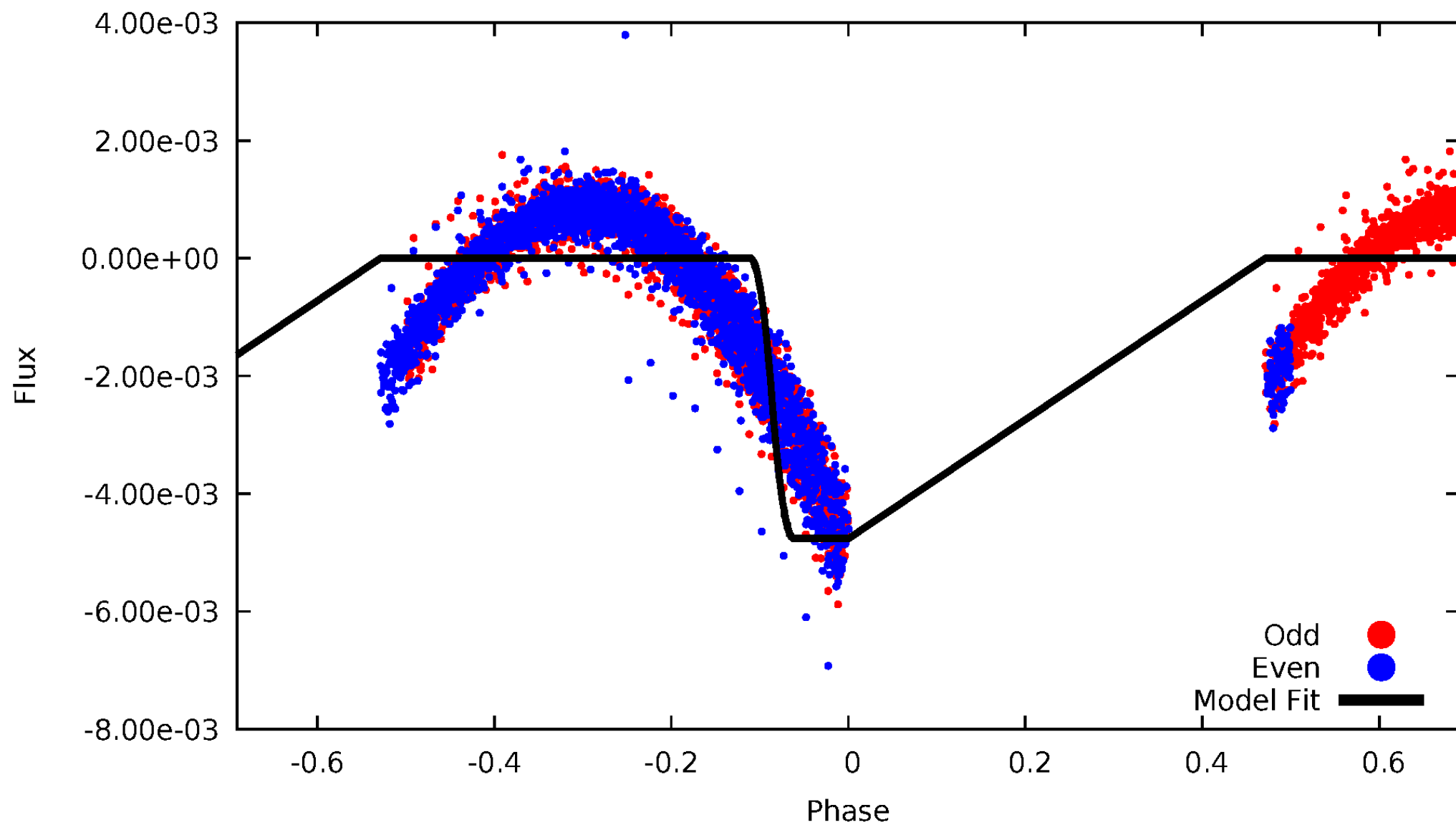
DV Odd/Even

TCE 010959320-06



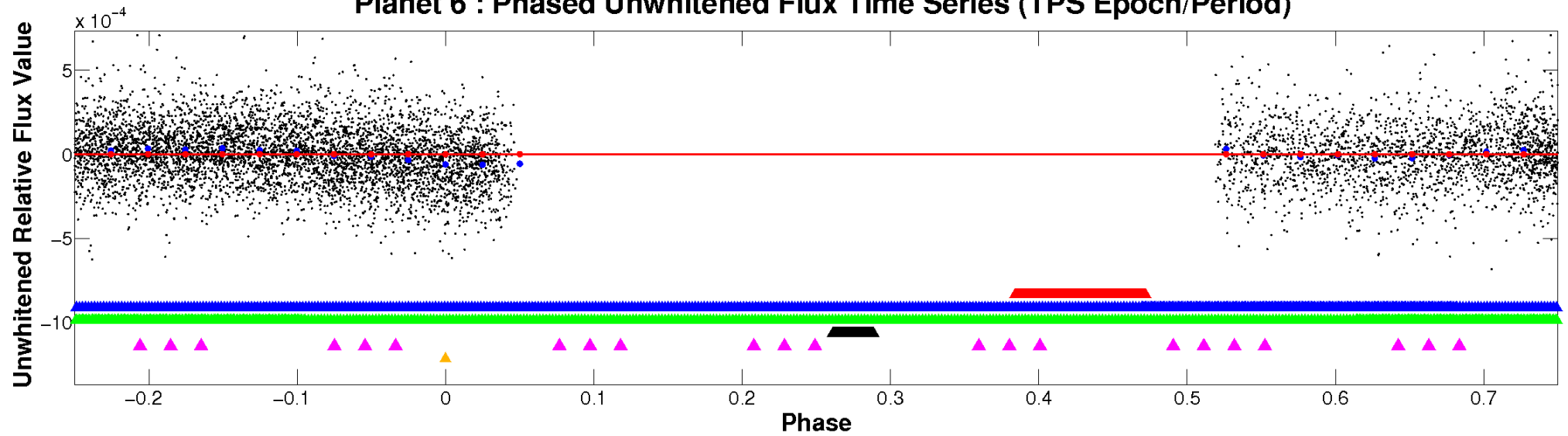
ALT Odd/Even

TCE 010959320-06

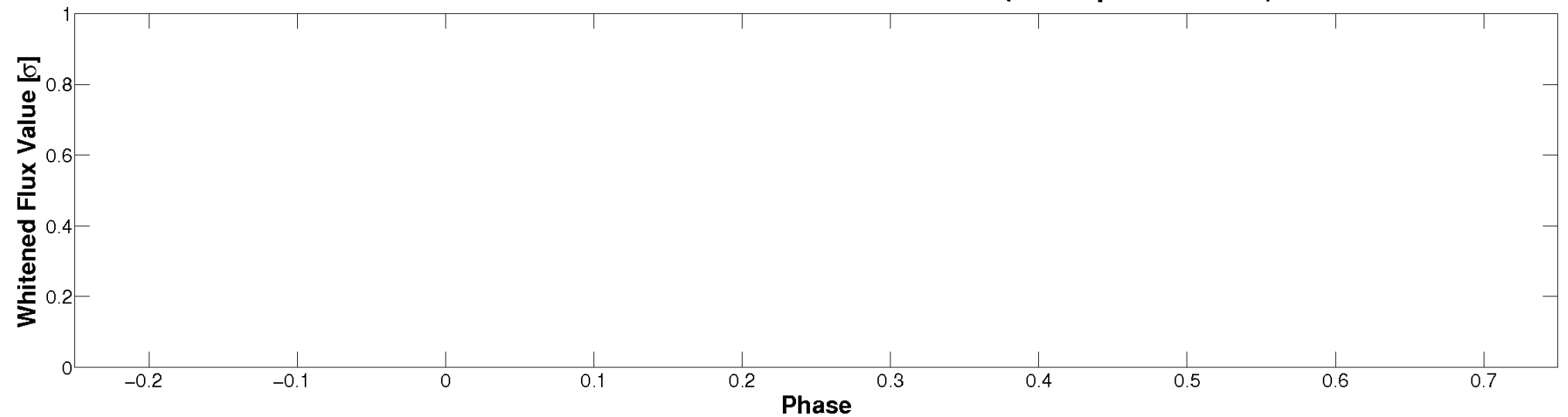


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

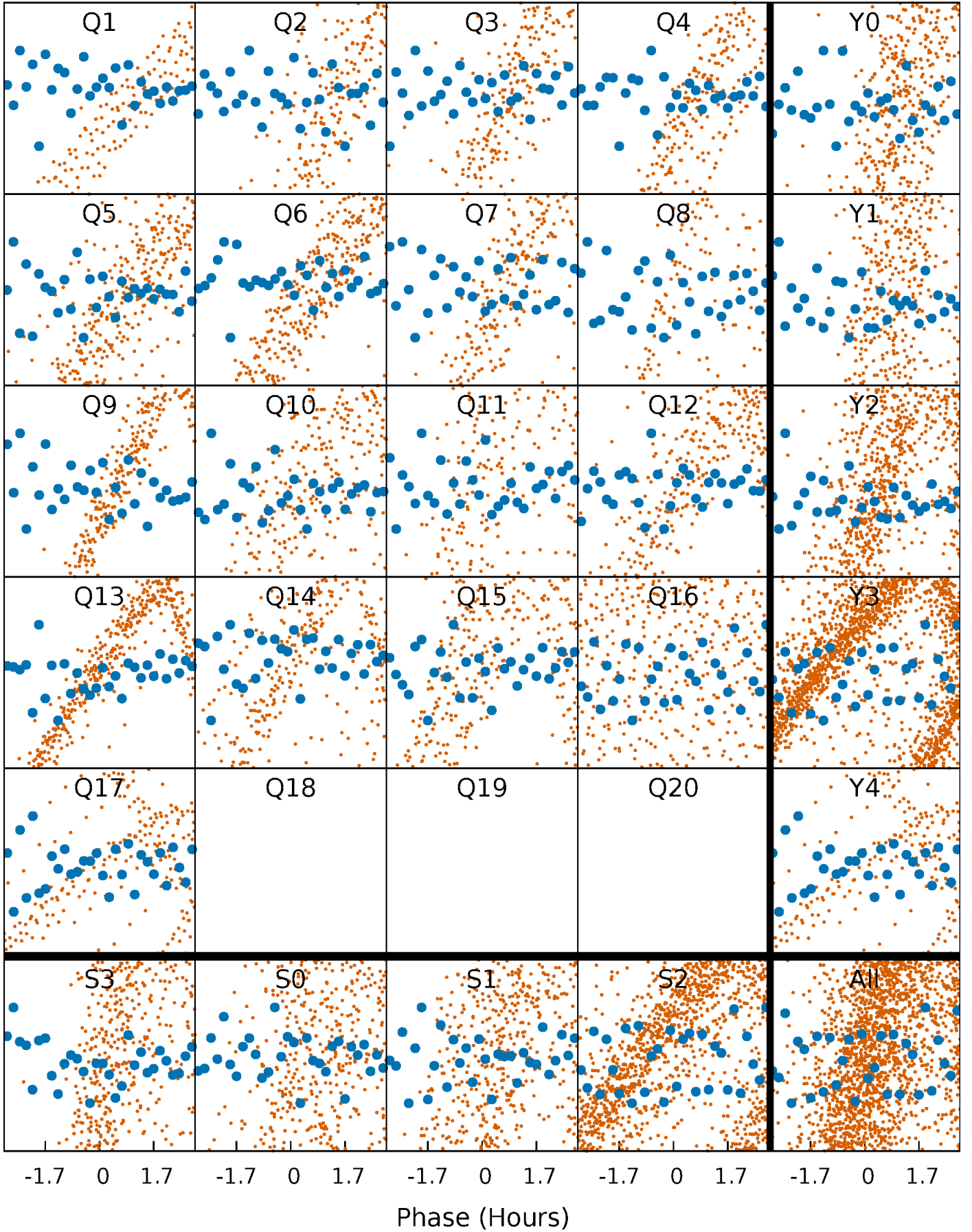


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



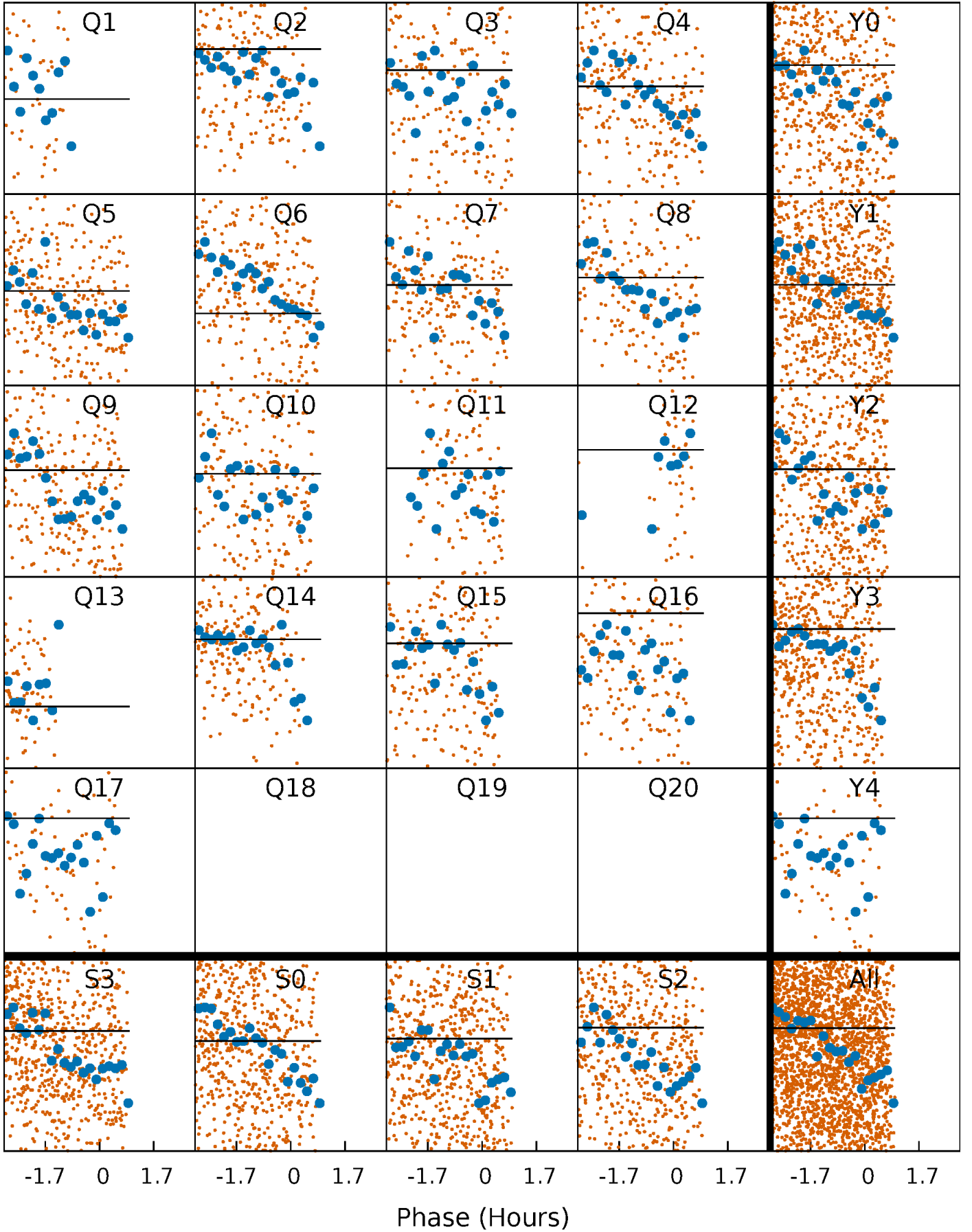
PDC Quarter-Phased Transit Curves

TCE 010959320-06 $P = 0.815239$ Days $T_0 = 132.270369$ (BKJD)



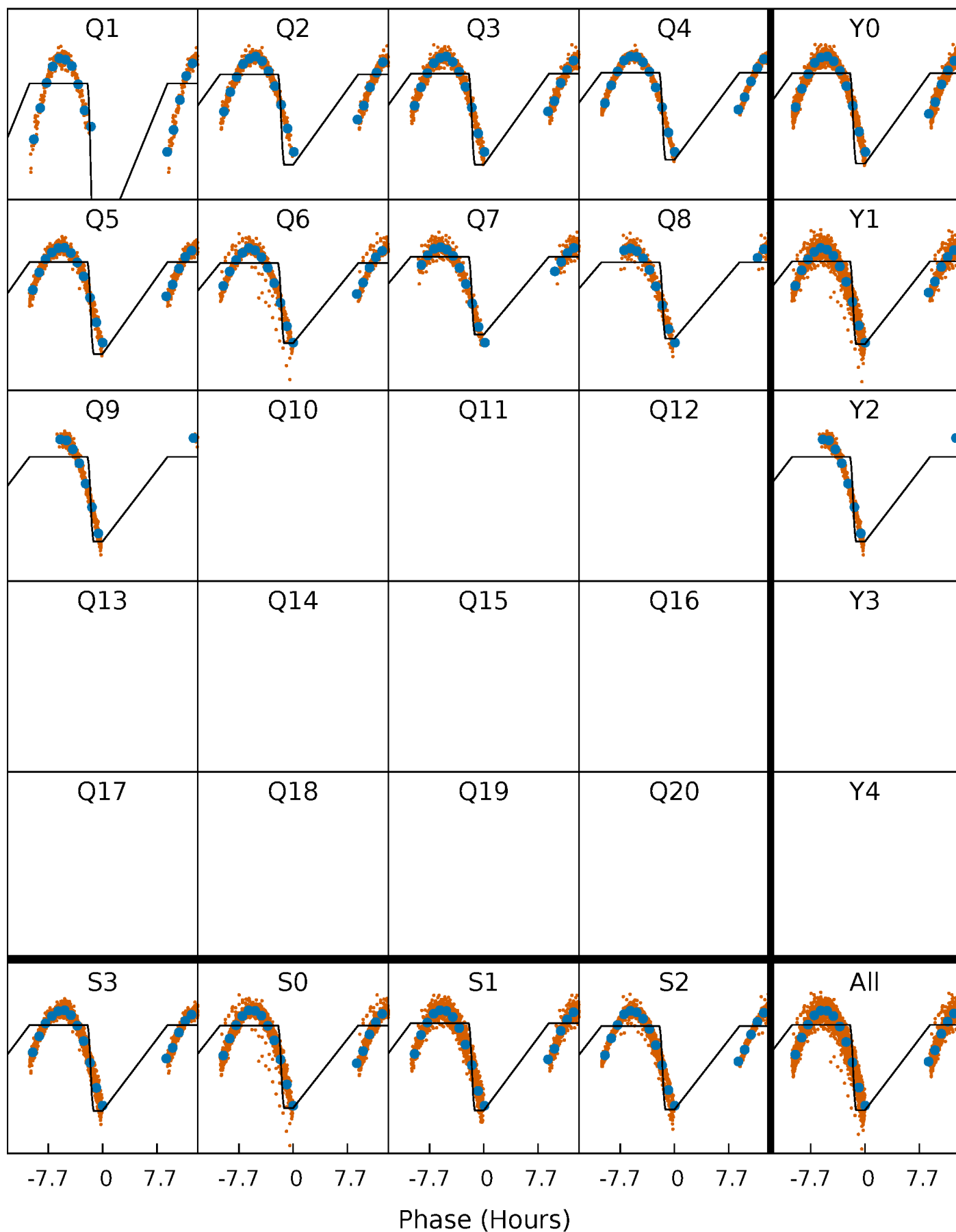
DV Quarter-Phased Transit Curves

TCE 010959320-06 $P = 0.815239$ Days $T_0 = 132.270369$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

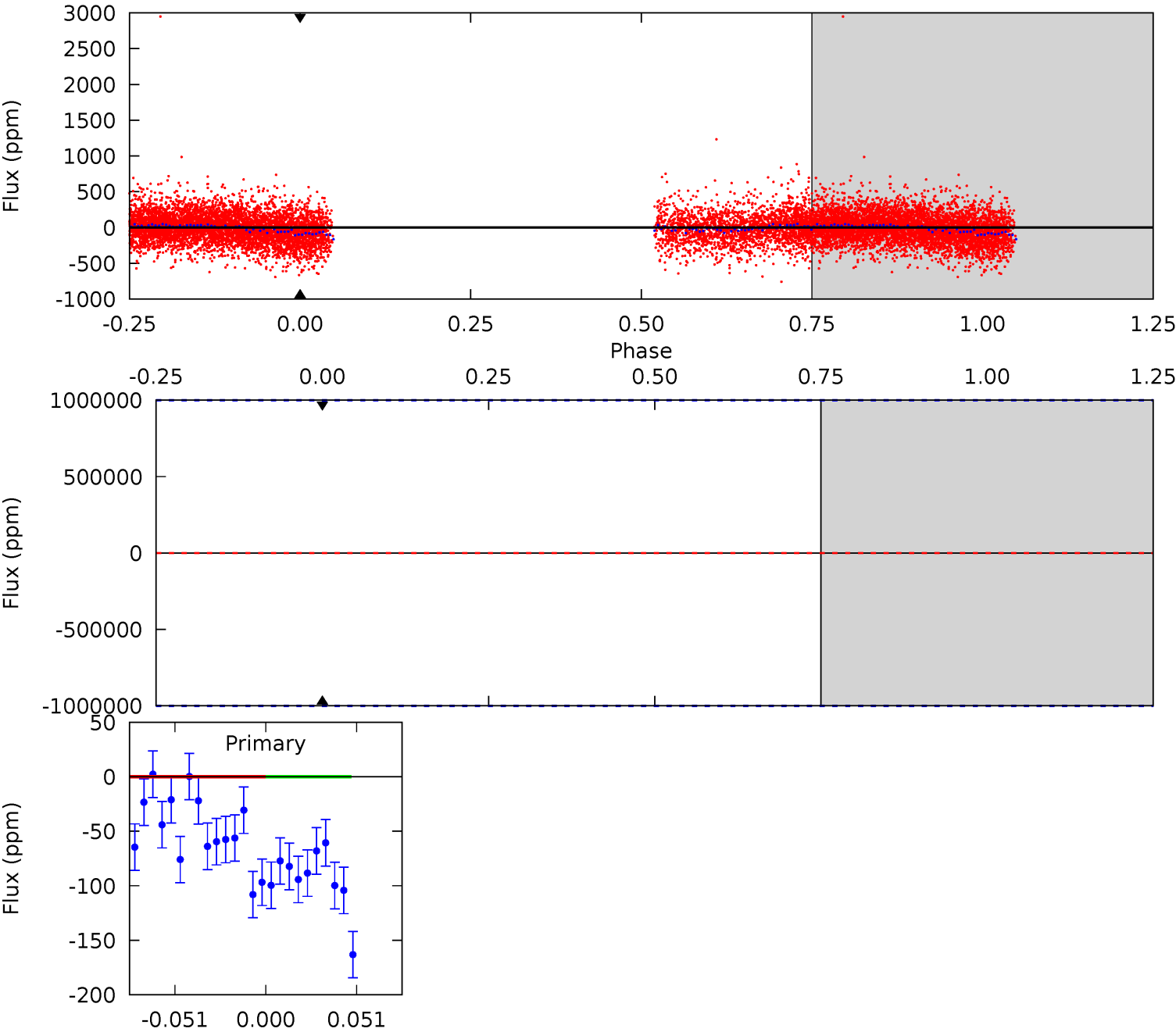
TCE 010959320-06 $P = 0.815239$ Days $T_0 = 132.308993$ (BKJD)



DV Model-Shift Uniqueness Test

010959320-06, P = 0.815239 Days, E = 131.455130 Days

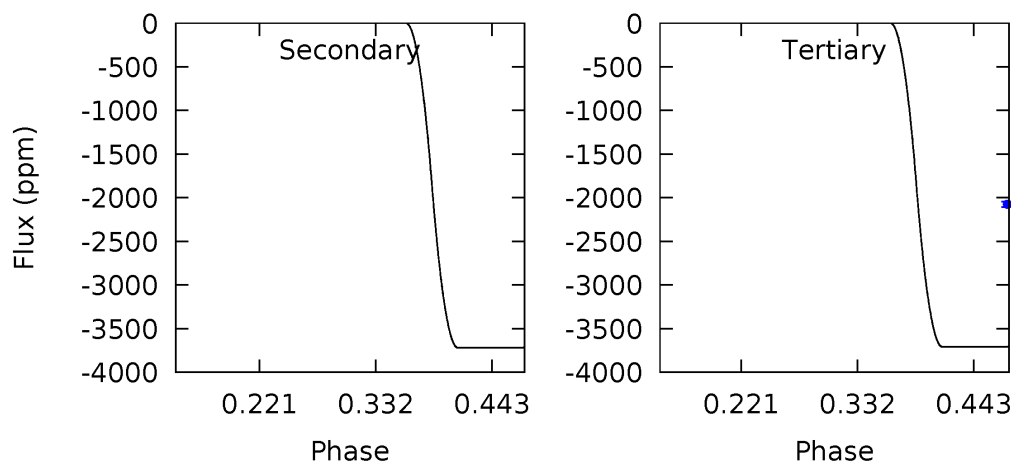
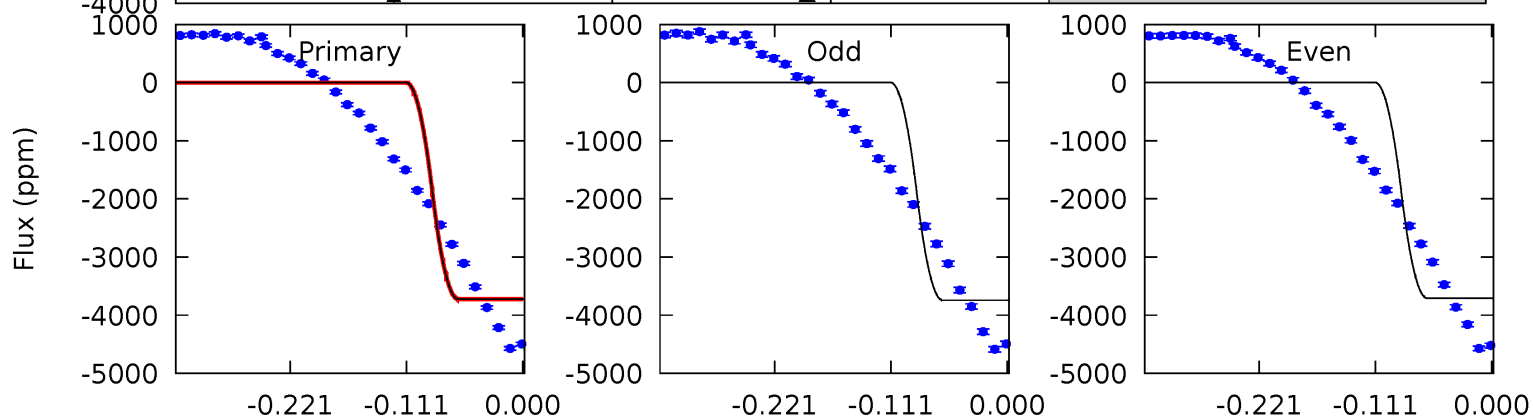
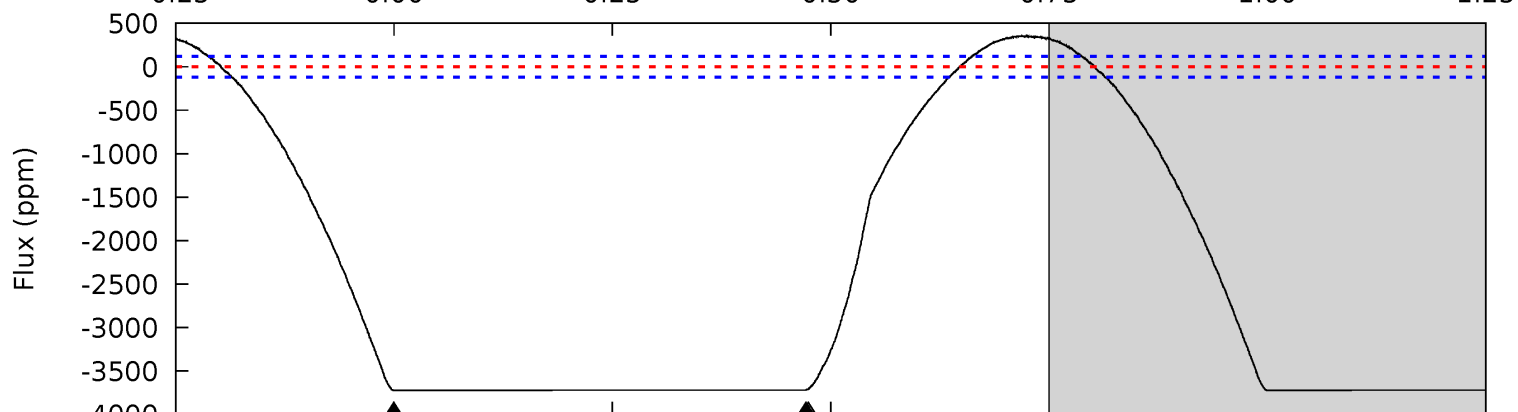
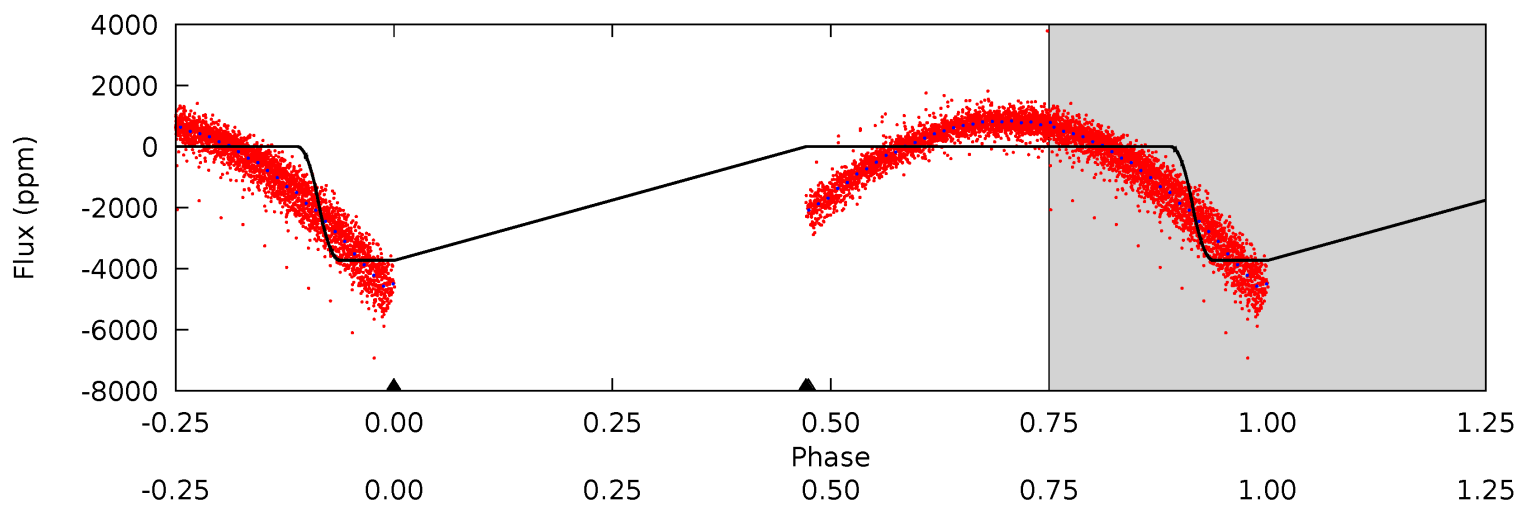
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010959320-06, P = 0.815239 Days, E = 131.493754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
141.6	141.4	141.0	0	4.54	1.60	45.3	0.60	141.6	0.43	141.4	0.69	0	0.09	27.3



Stellar Parameters For KIC 010959320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9824^{+272}_{-408}	$3.750^{+0.322}_{-0.138}$	$0.070^{+0.200}_{-0.600}$	$3.771^{+0.766}_{-1.422}$	$2.915^{+0.241}_{-0.523}$	$0.077^{+0.190}_{-0.029}$
	+3%/-4%	+9%/-4%	+286%/-857%	+20%/-38%	+8%/-18%	+249%/-38%
Source	KIC0	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 010959320-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$29.18^{+30.13}_{-19.75}$	7471^{+524}_{-771}	-7176^{+76092}_{-75203}	$-0.465^{+58.905}_{-69.608}$
Alt.	-3719 ± 26	$38.42^{+37.02}_{-24.03}$	7423^{+558}_{-731}	6262^{+8206}_{-10643}	$0.825^{+4.954}_{-0.609}$

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 $A_{obs} \gg 1.0$

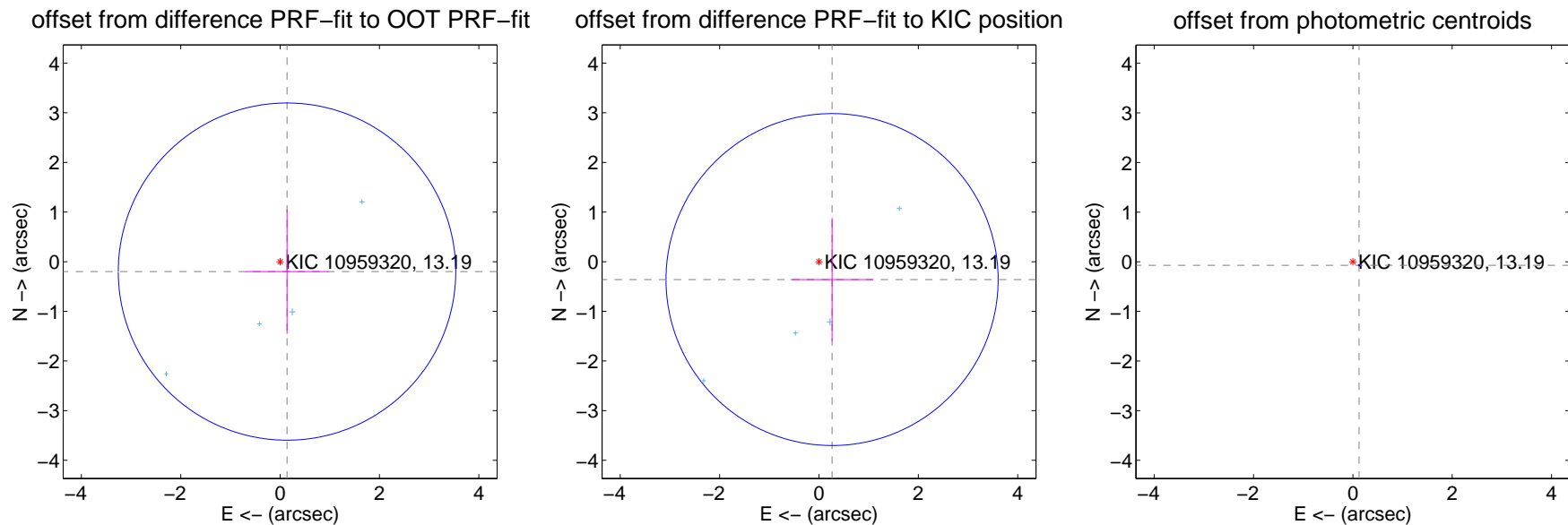
DV Centroid Data

Supplemental centroid analysis for 010959320-06. Kepler magnitude: 13.19. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

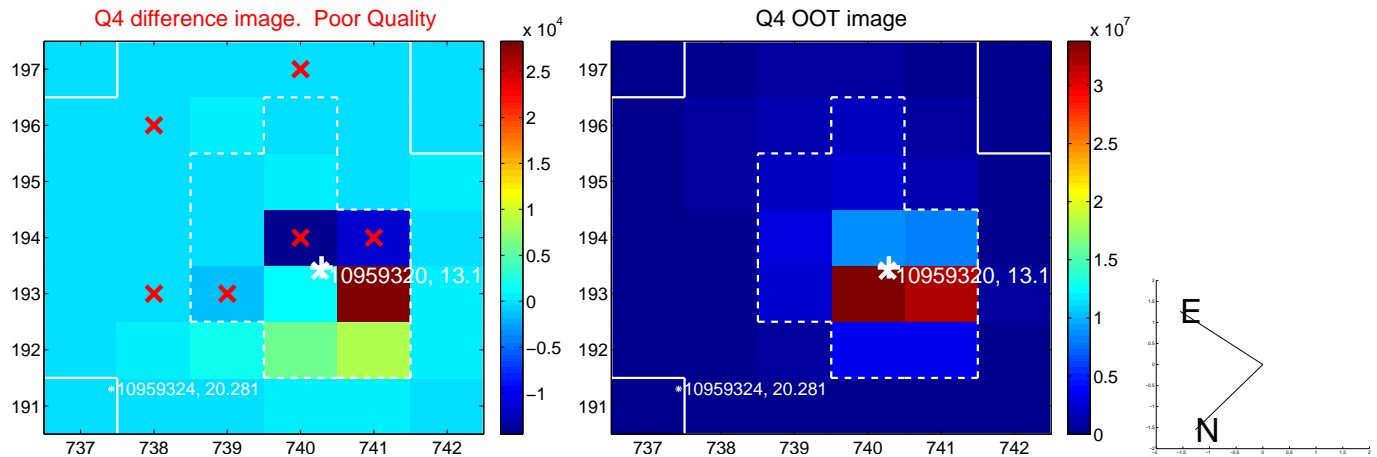
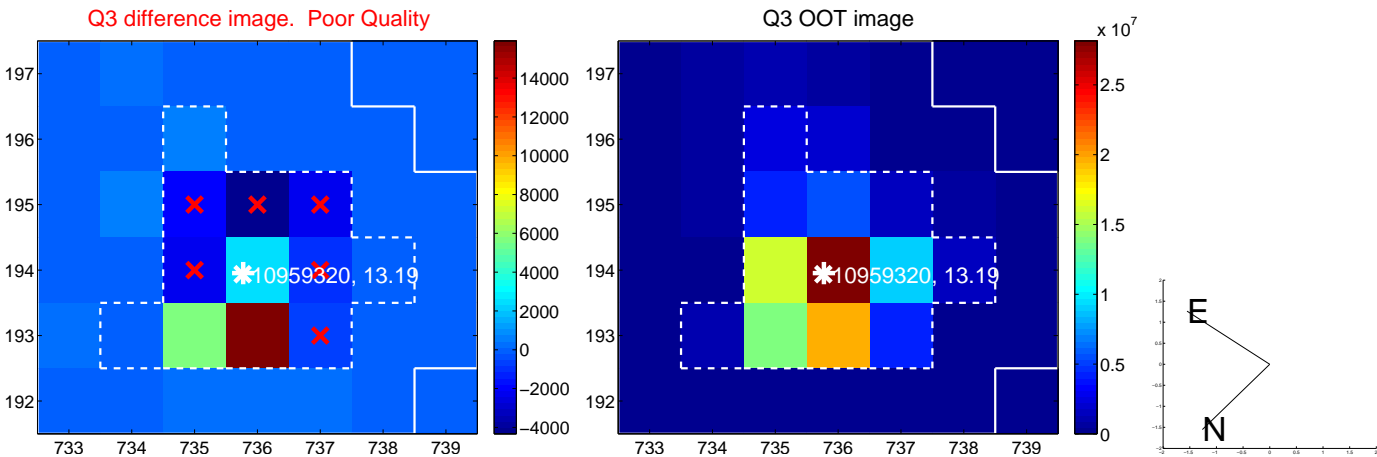
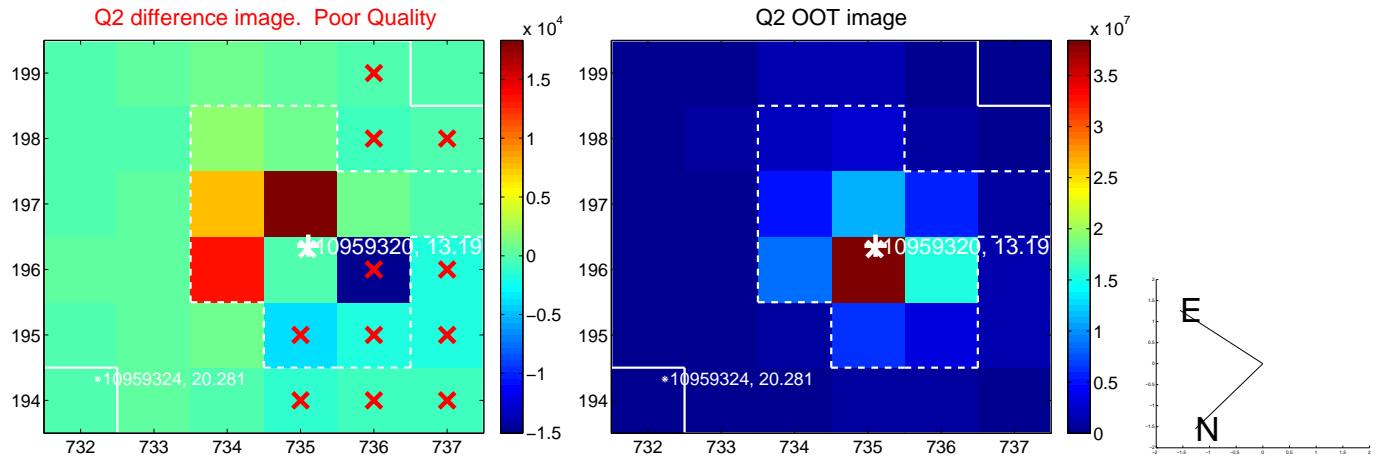
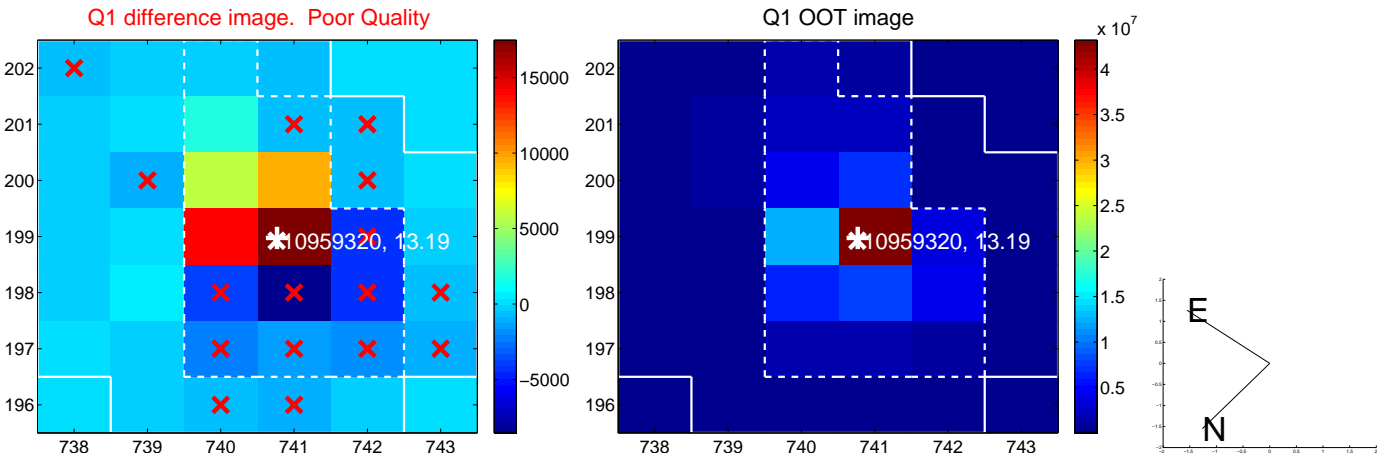
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.243 ± 1.132	0.21	-0.139 ± 0.838	-0.200 ± 1.250
PRF-fit source offset from KIC position	0.446 ± 1.114	0.40	-0.263 ± 0.828	-0.360 ± 1.241
photometric centroid source offset	0.14 ± 0.00	29.62	-0.13 ± 0.00	-0.07 ± 0.00

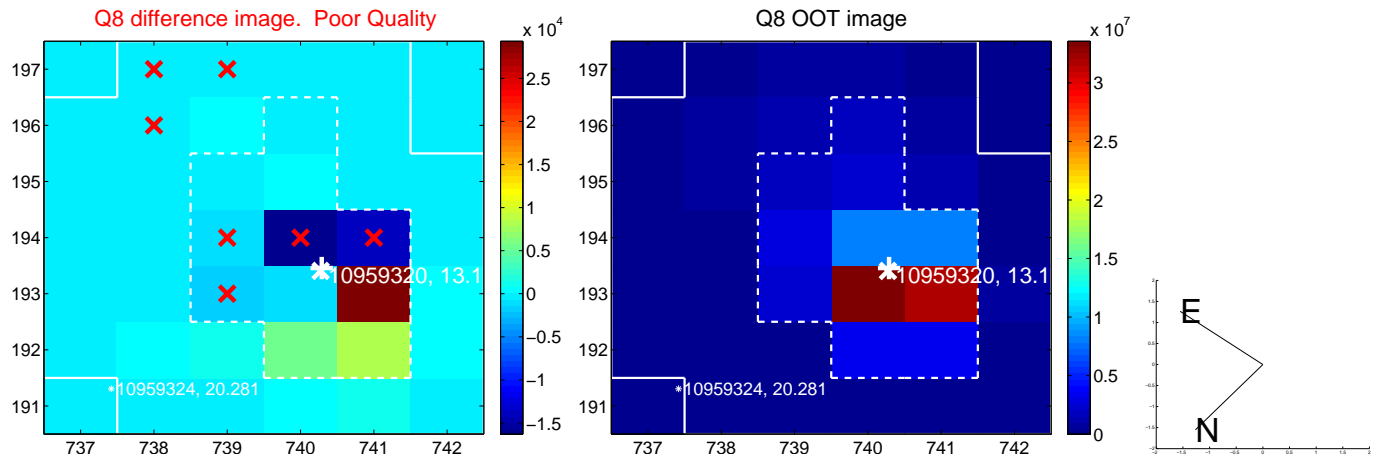
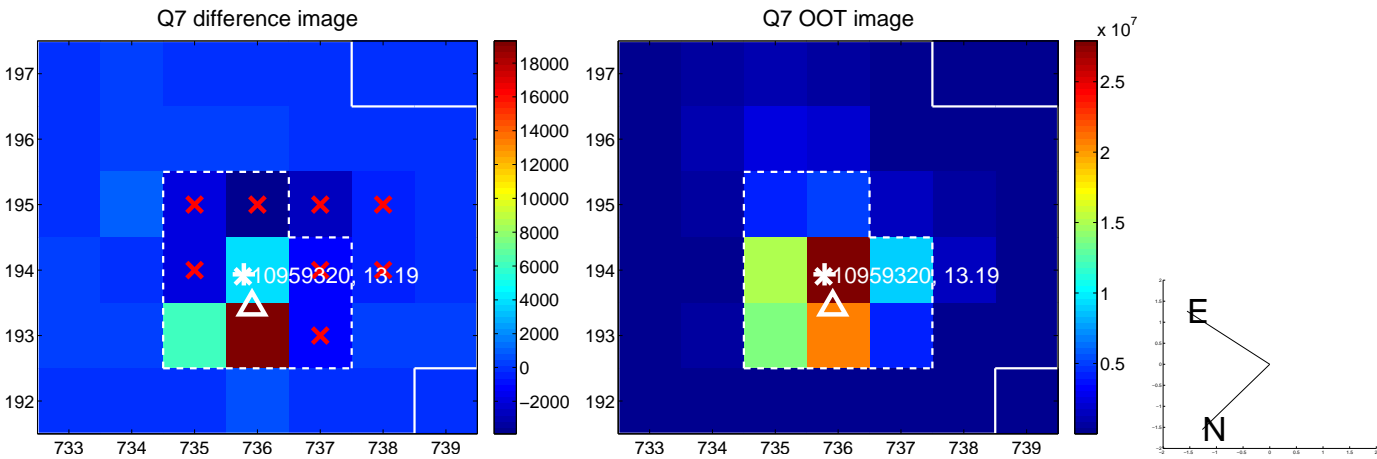
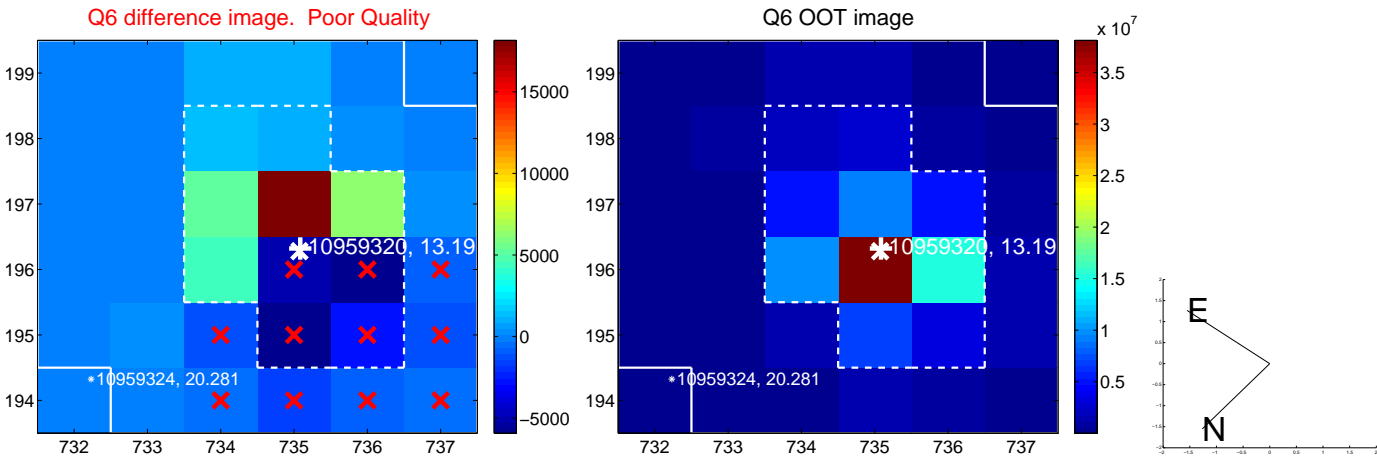
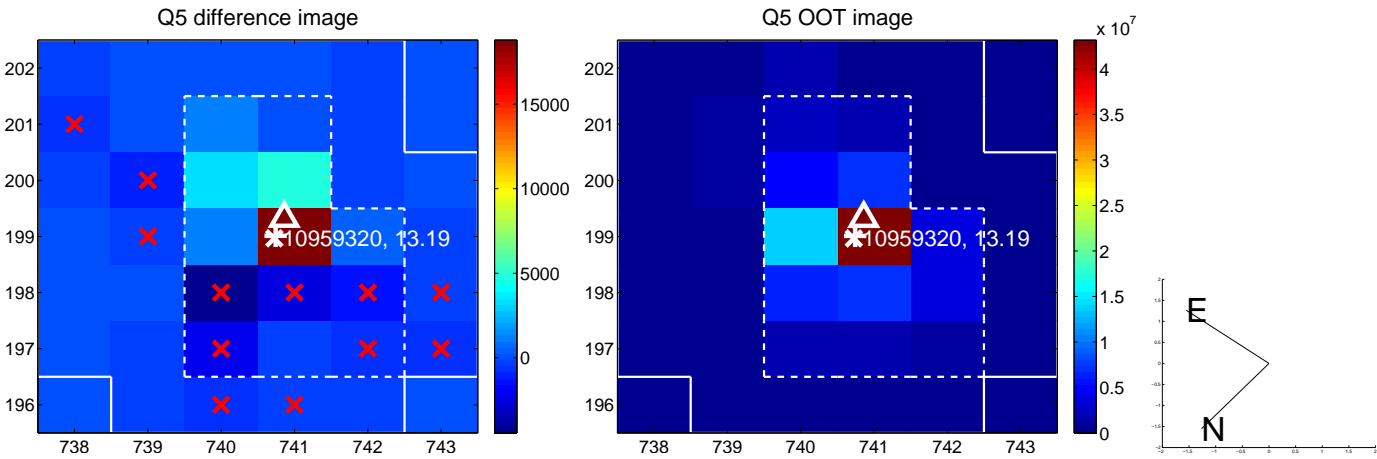


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

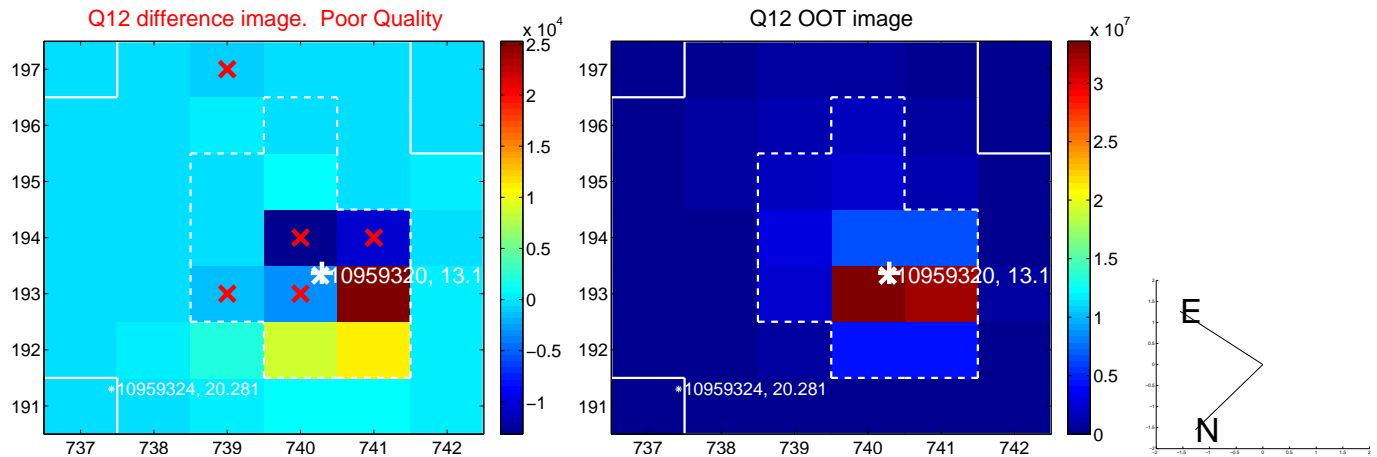
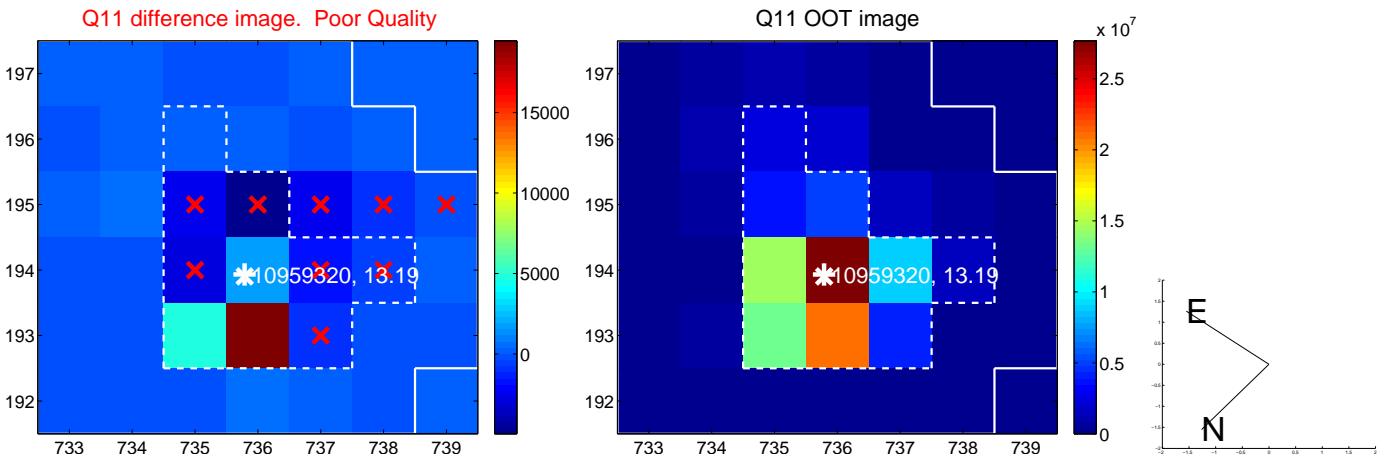
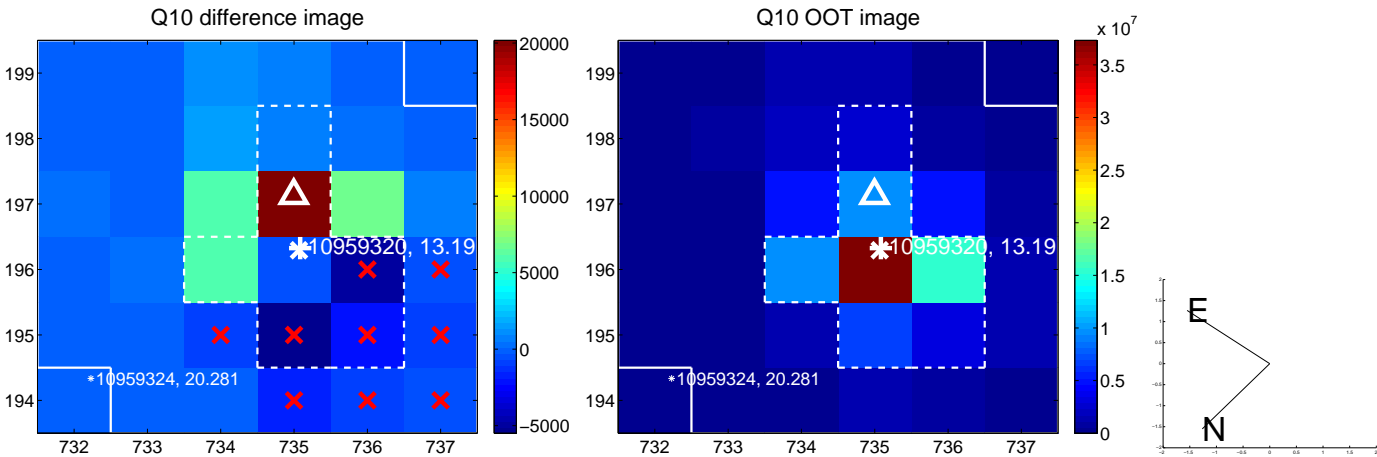
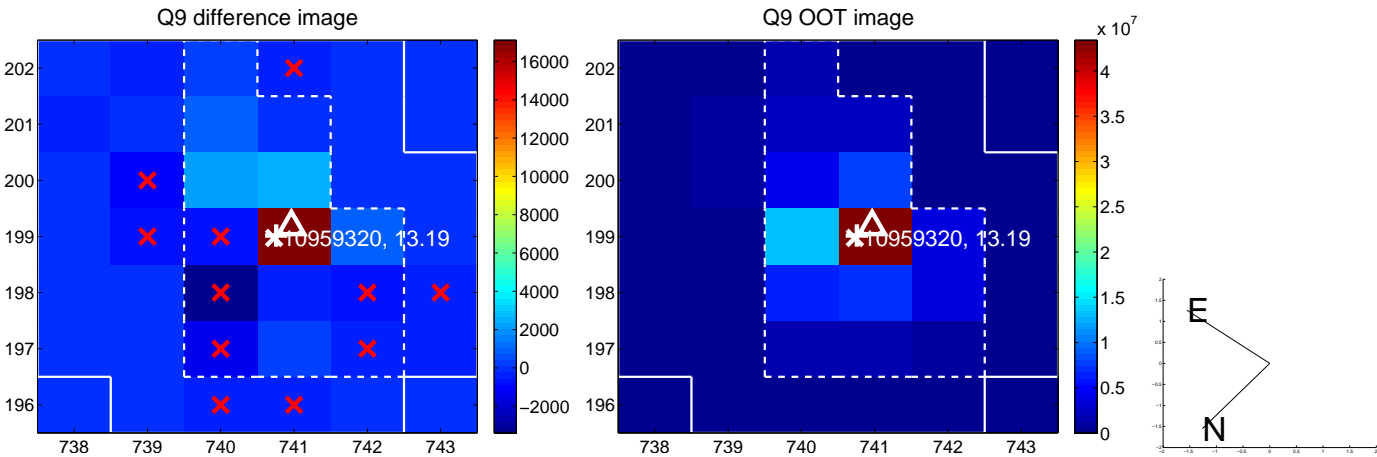
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



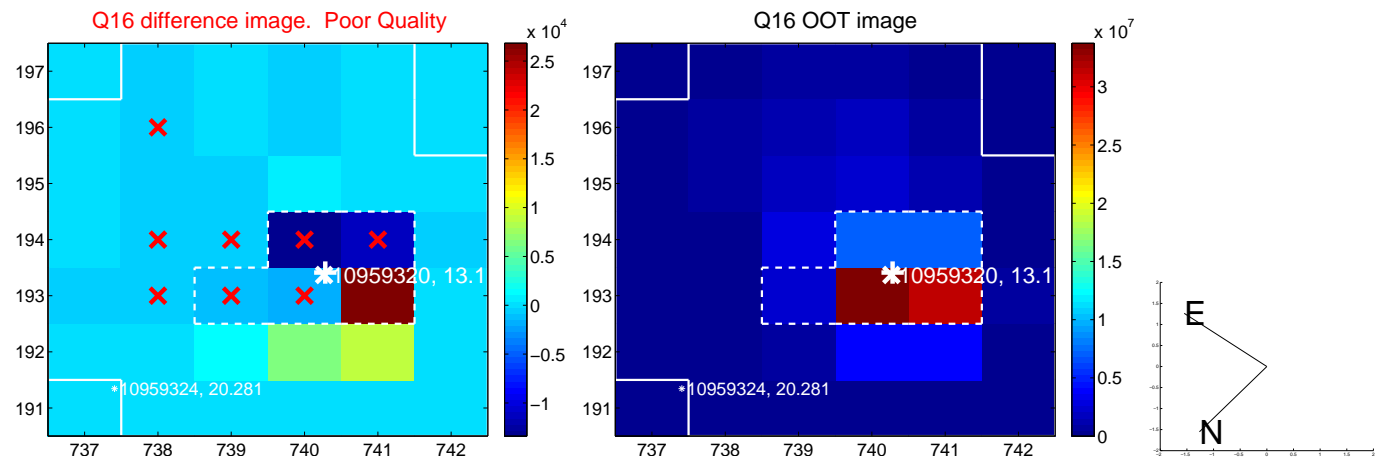
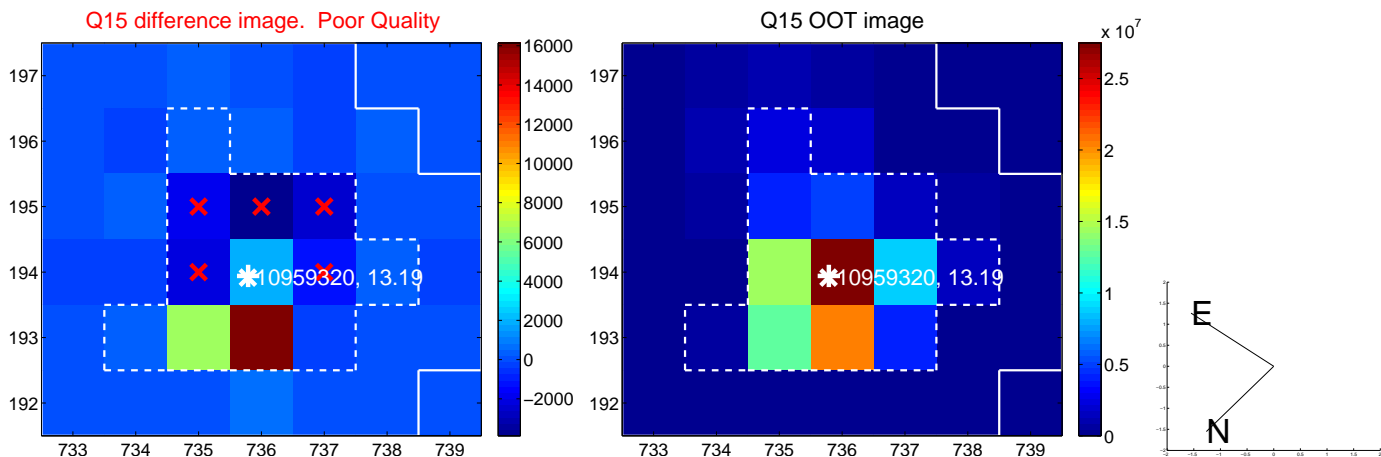
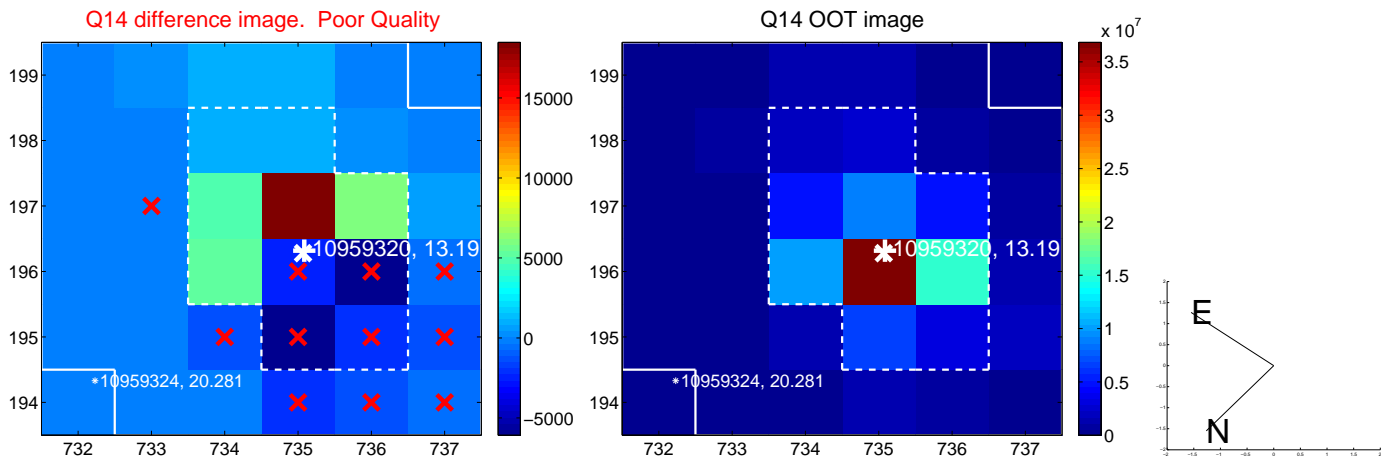
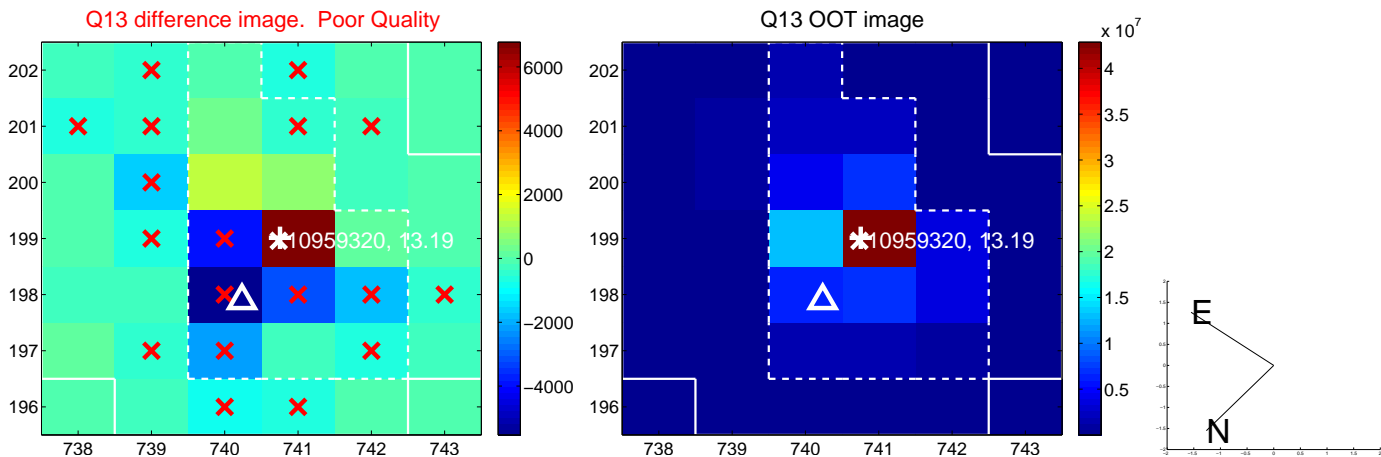
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



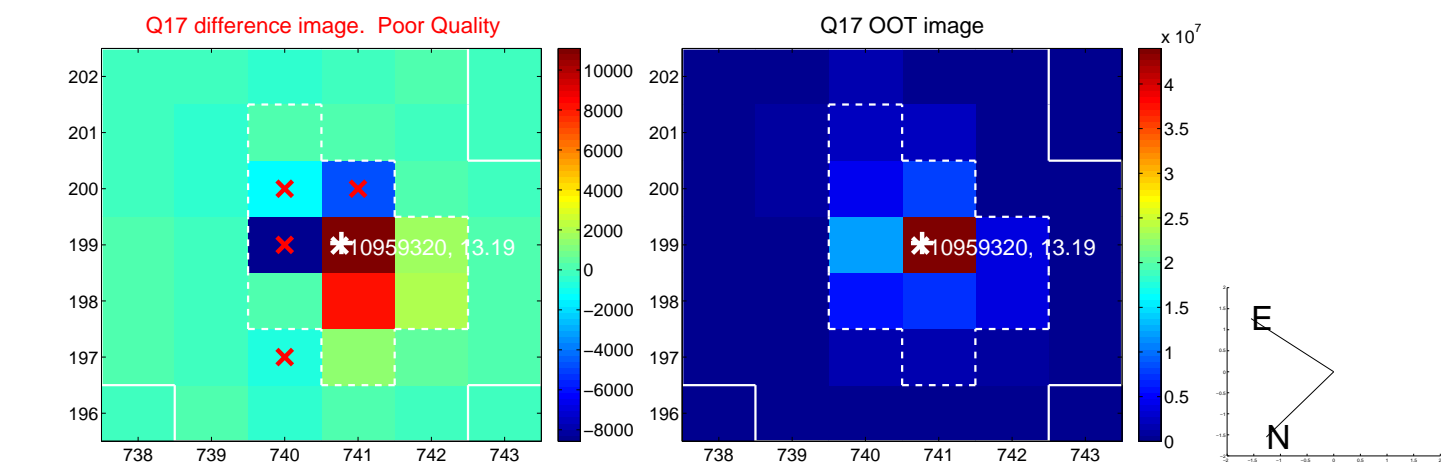
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



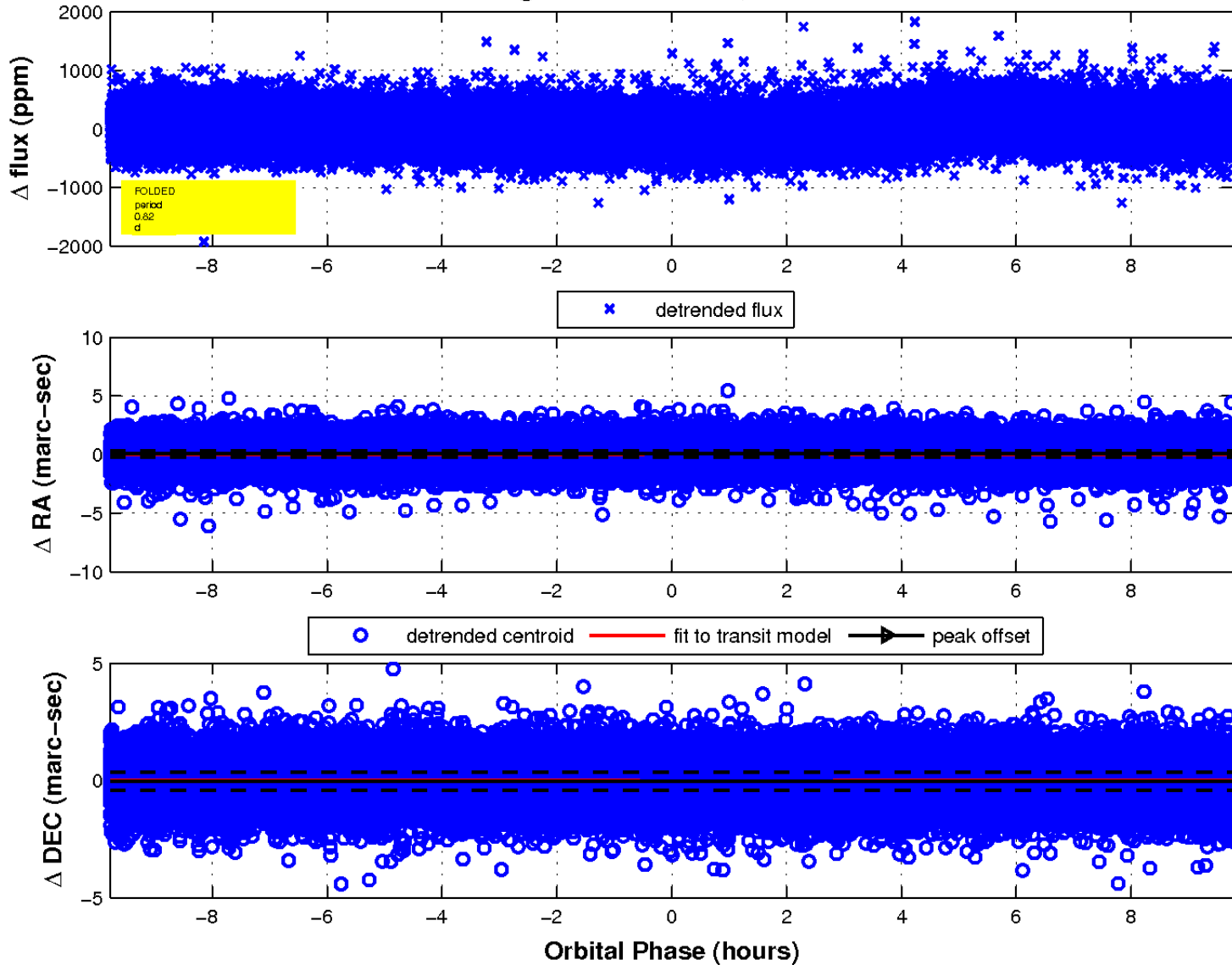
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

