

KIC 009469775

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})
009469775-01	OBS	No	0.580157	131.909267	19.0	2.777	11.8	3.6	2.63	6732	1.16	47308.54
009469775-02	OBS	No	6.381551	132.772406	239.0	6.859	9.1	9.9	2.63	6732	4.84	1933.89
009469775-03	OBS	No	2.552120	132.281871	280.2	3.518	8.7	12.7	2.63	6732	5.13	6563.45
009469775-04	OBS	No	59.195396	155.183508	244.8	2.435	7.6	2.4	2.63	6732	4.61	99.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009469775-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009469775-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009469775-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009469775-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

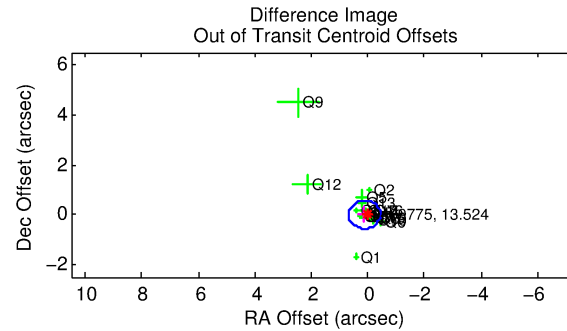
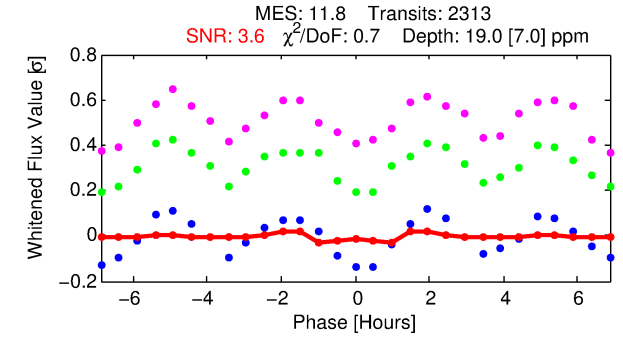
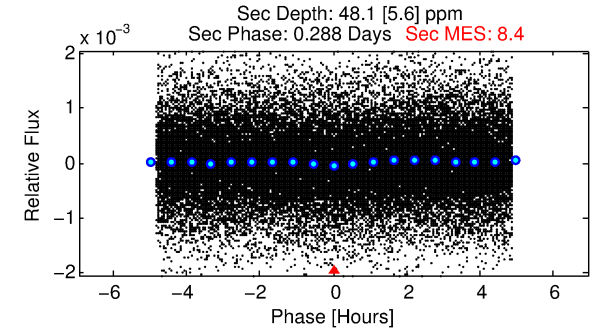
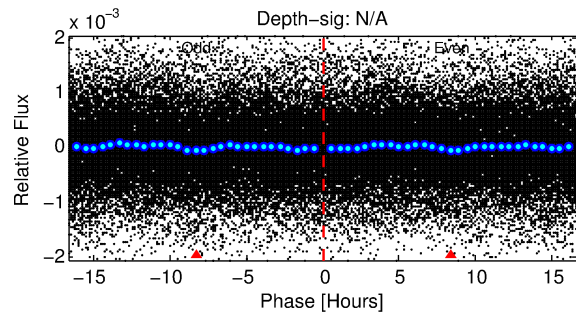
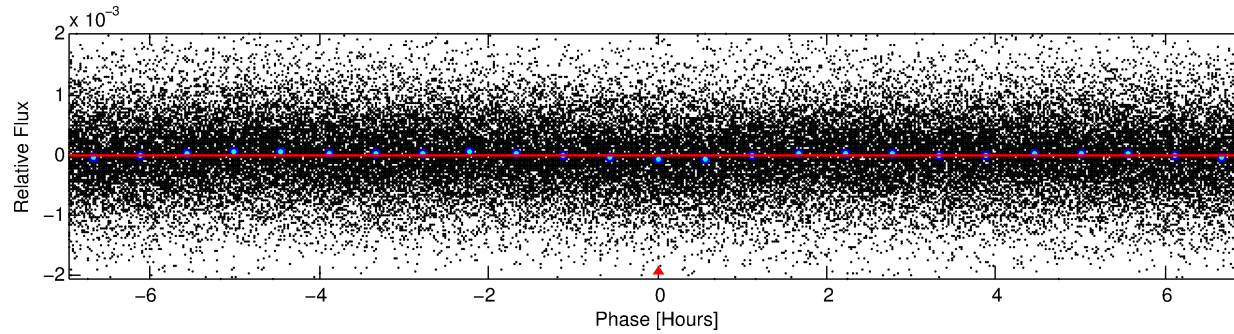
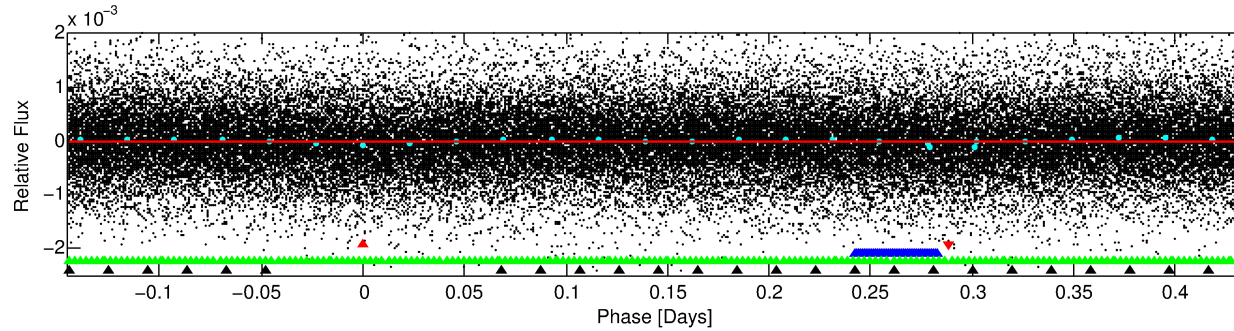
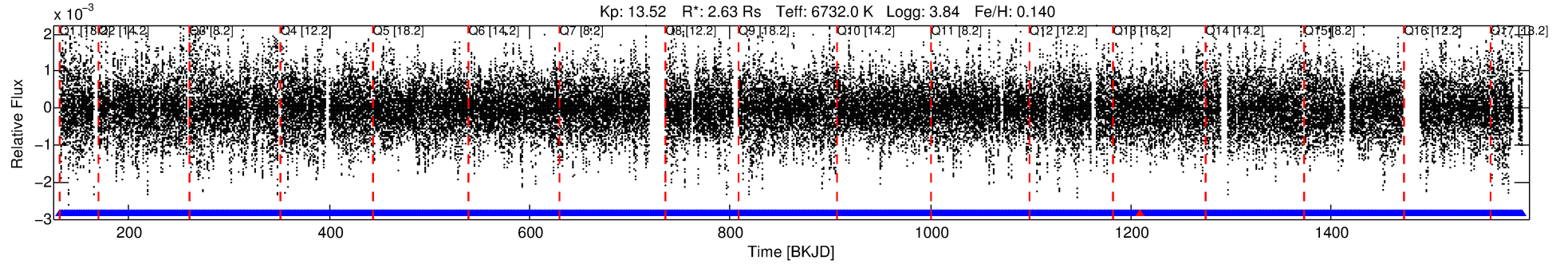
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009469775-01

No Significant Match Found

DV One-Page Summary

KIC: 9469775 Candidate: 1 of 4 Period: 0.580 d



DV Fit Results:

Period = 0.58016 [0.00003] d
Epoch = 131.9093 [0.0034] BKJD
Rp/R* = 0.0040 [0.0042]
a/R* = 1.70 [6.42]
b = 0.17 [33.86]
Seff = 47308.54 [31861.62]
Teq = 3761 [633] K
Rp = 1.16 [1.31] Re
a = 0.0164 [0.0067] AU
Ag = 5.30 [11.65] [0.37σ]
Teffp = 8824 [4641] K [1.08σ]

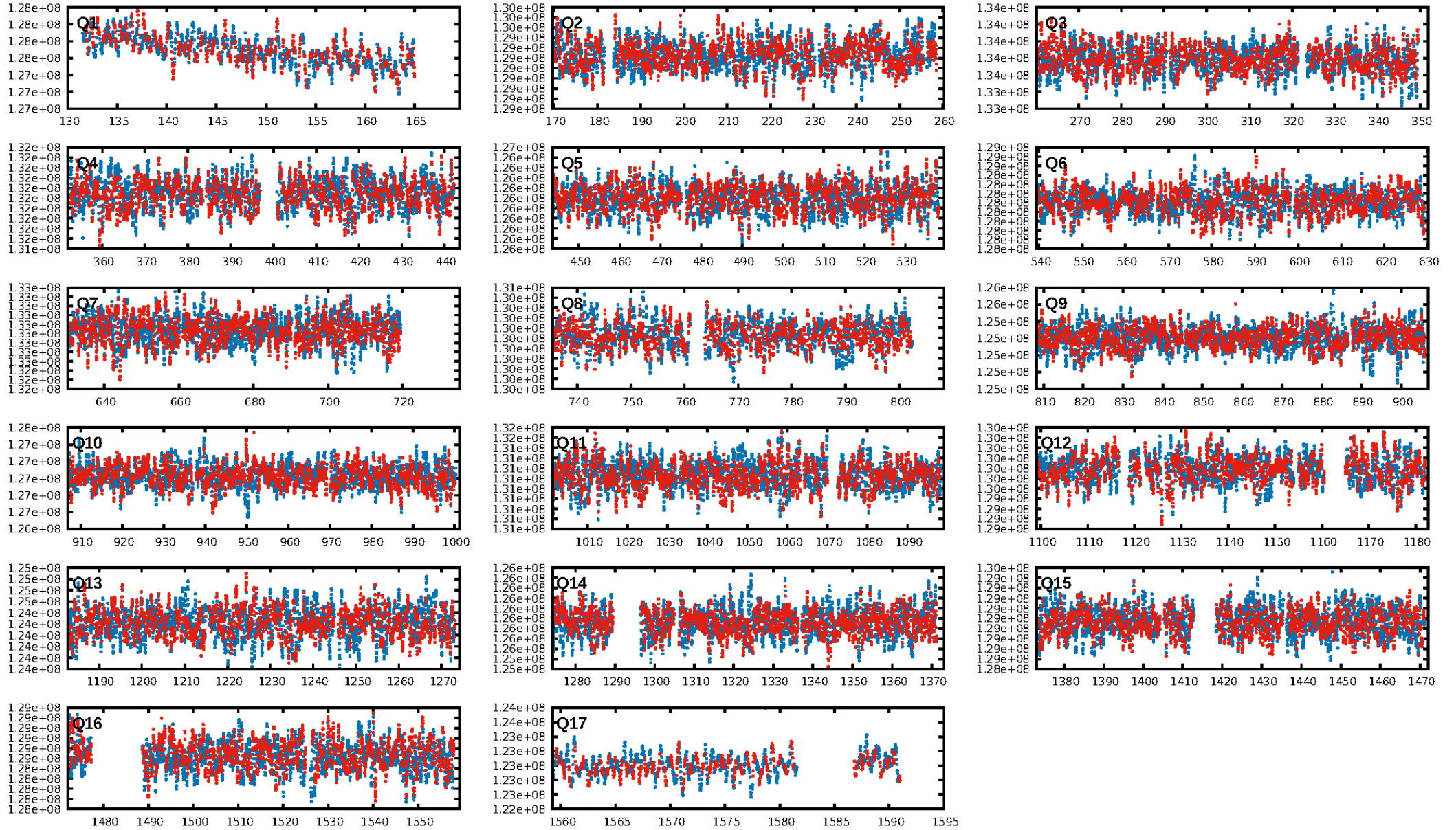
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [10.56σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.68e-39
RollingBand-fgt: 1.00 [2208/2209]
GhostDiagnostic-chr: 0.9043
Centroid-sig: 44.6%
Centroid-so: 0.449 arcsec [0.51σ]
OotOffset-rm: 0.122 arcsec [0.64σ]
KicOffset-rm: 0.156 arcsec [0.96σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

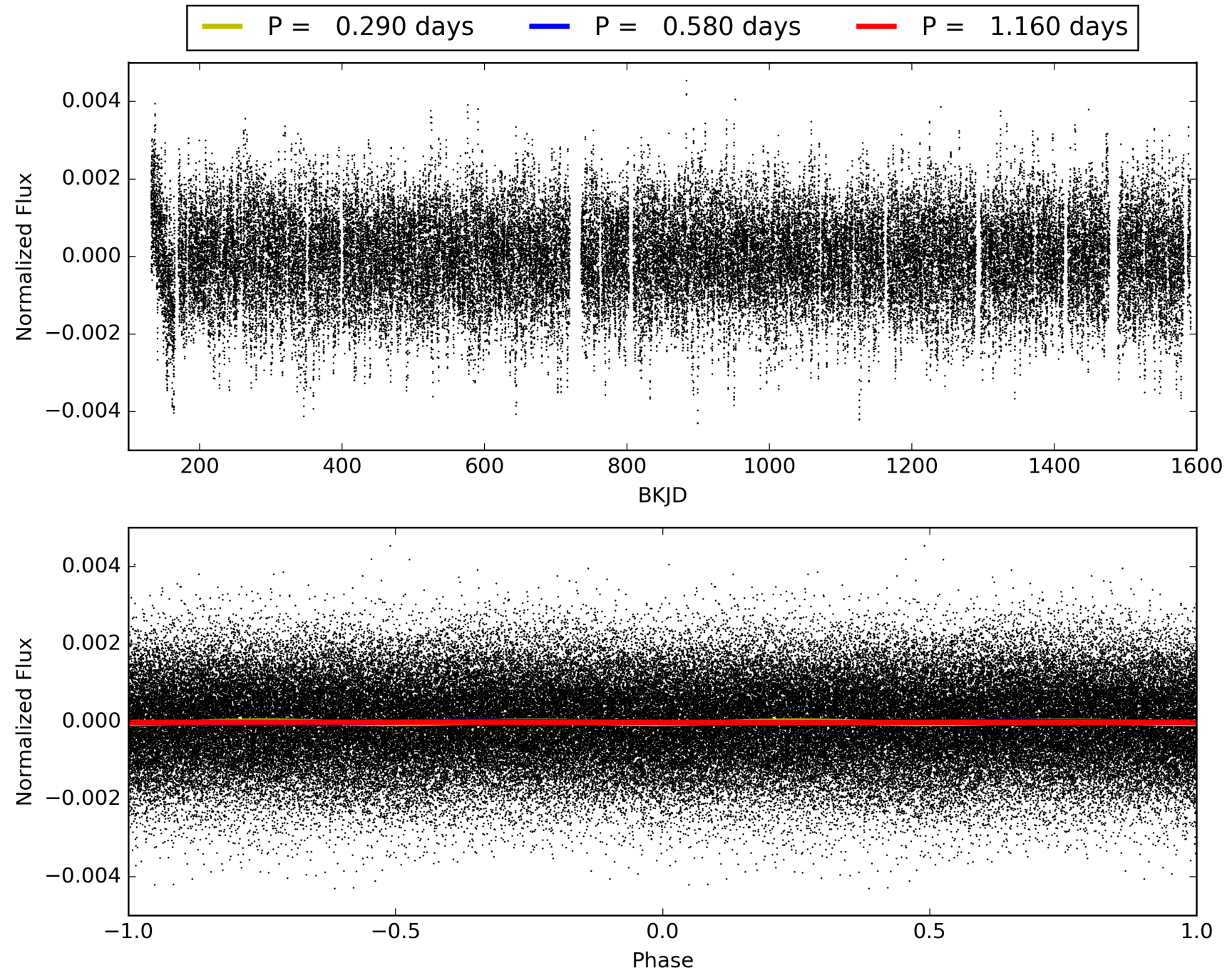
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:48:10 Z

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

TCE 009469775-01, PDC Light Curves

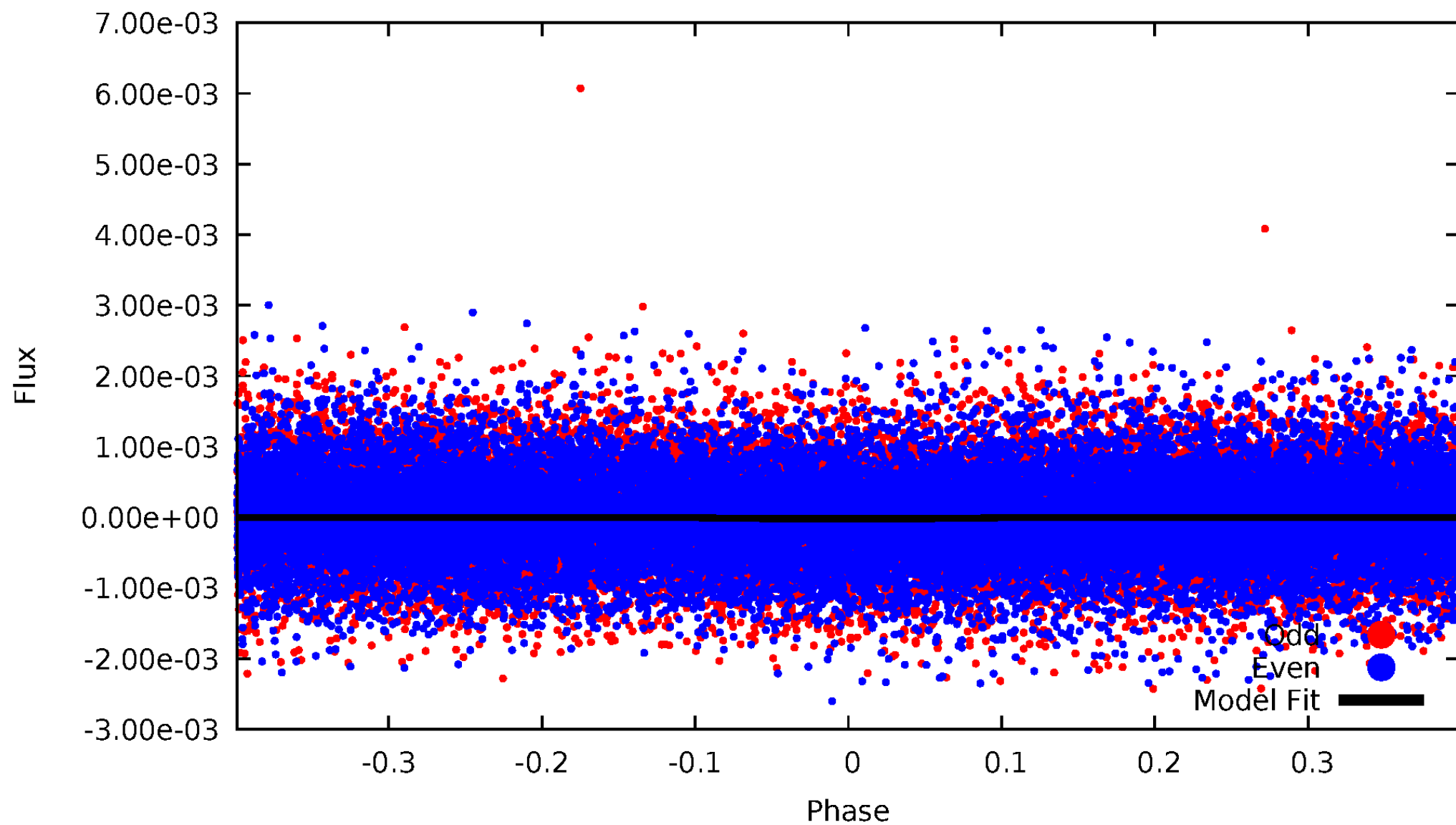


TCE 009469775-01



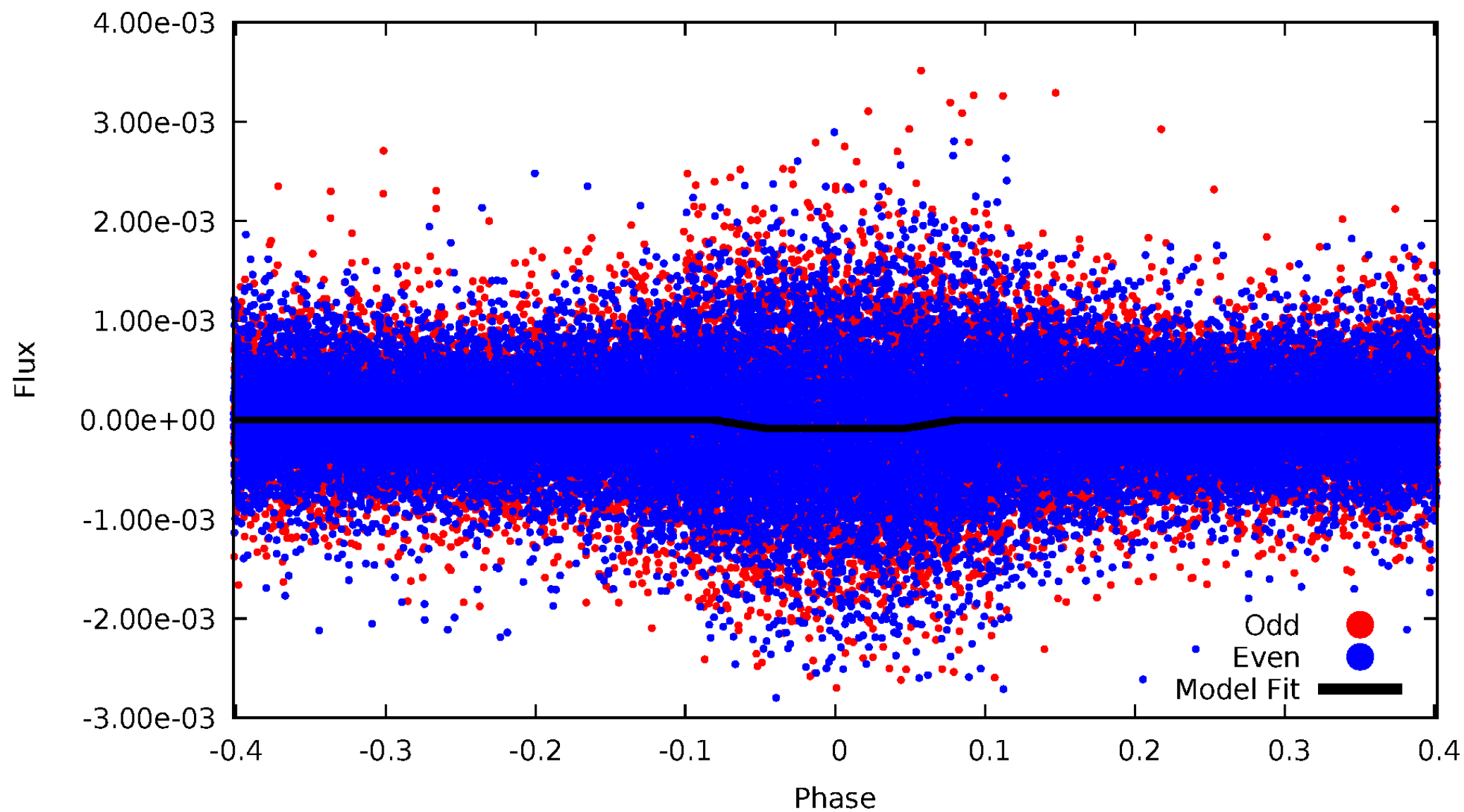
DV Odd/Even

TCE 009469775-01



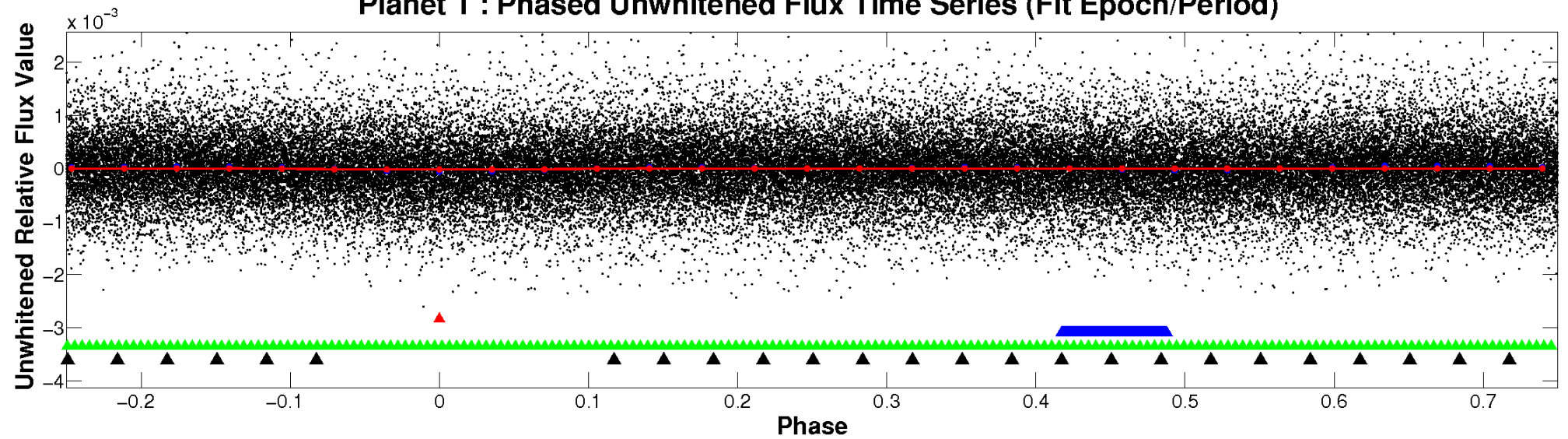
ALT Odd/Even

TCE 009469775-01

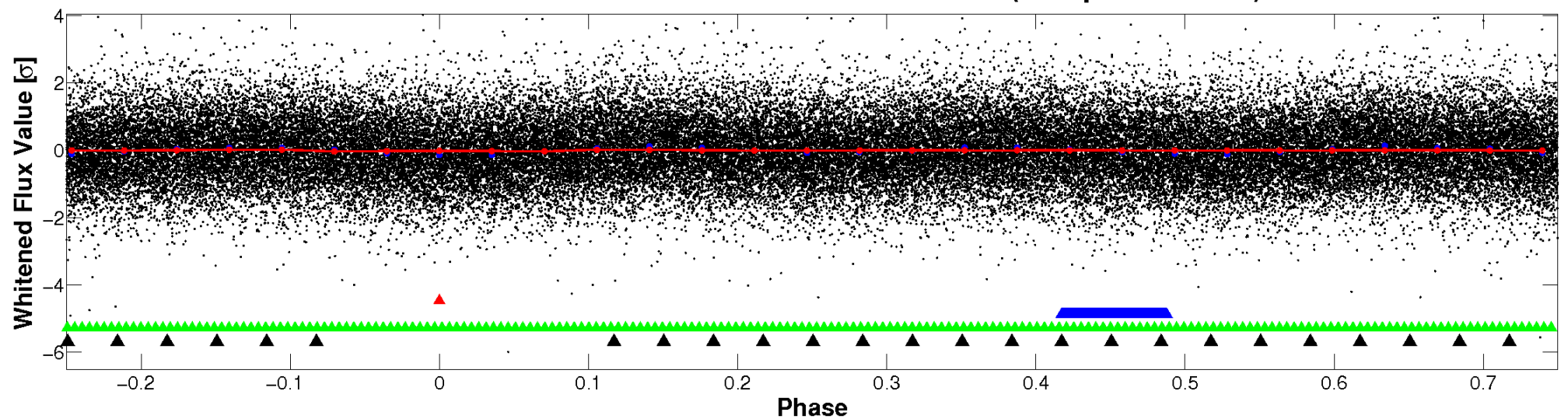


Non-Whitened Vs. Whitened Light Curve

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

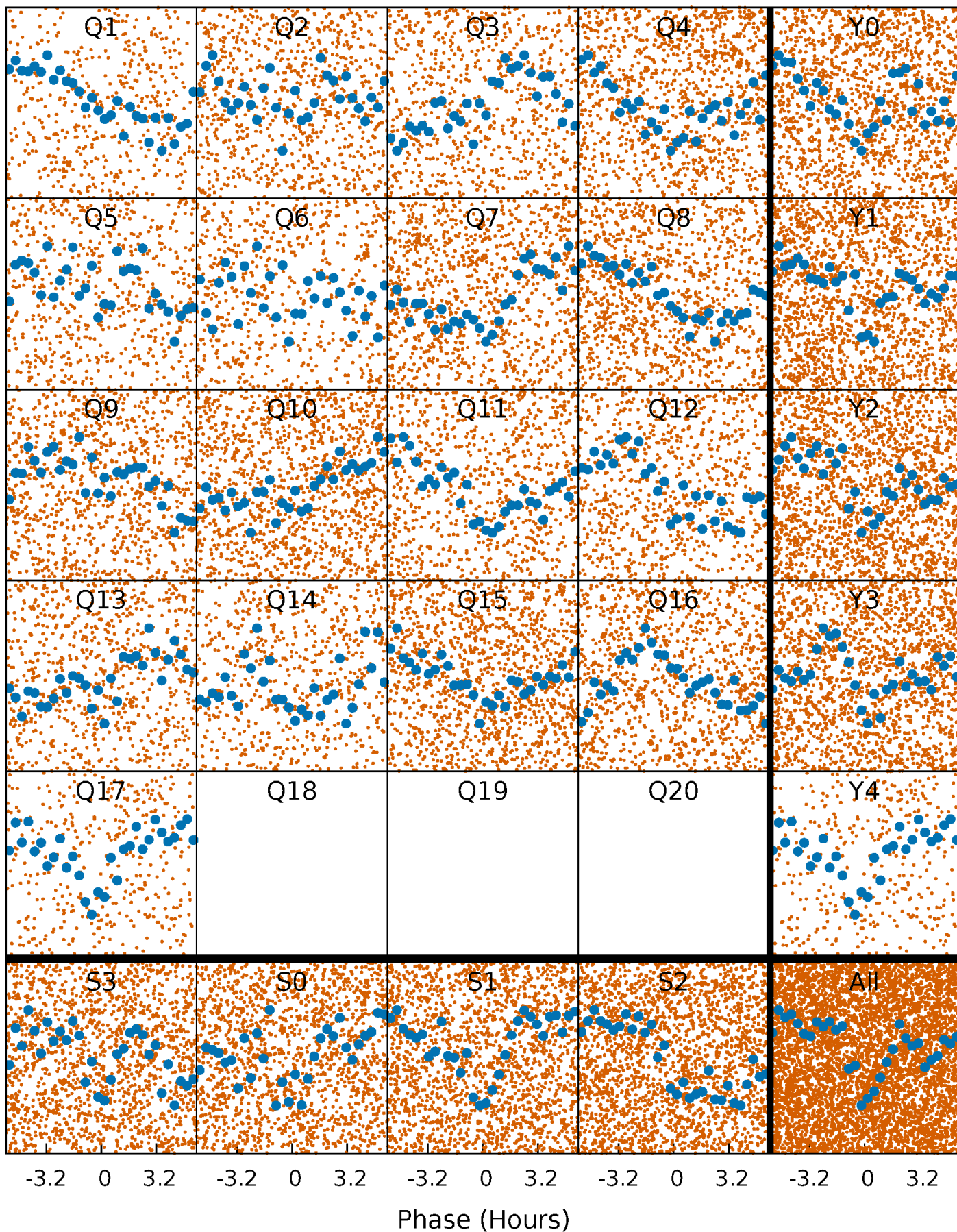


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



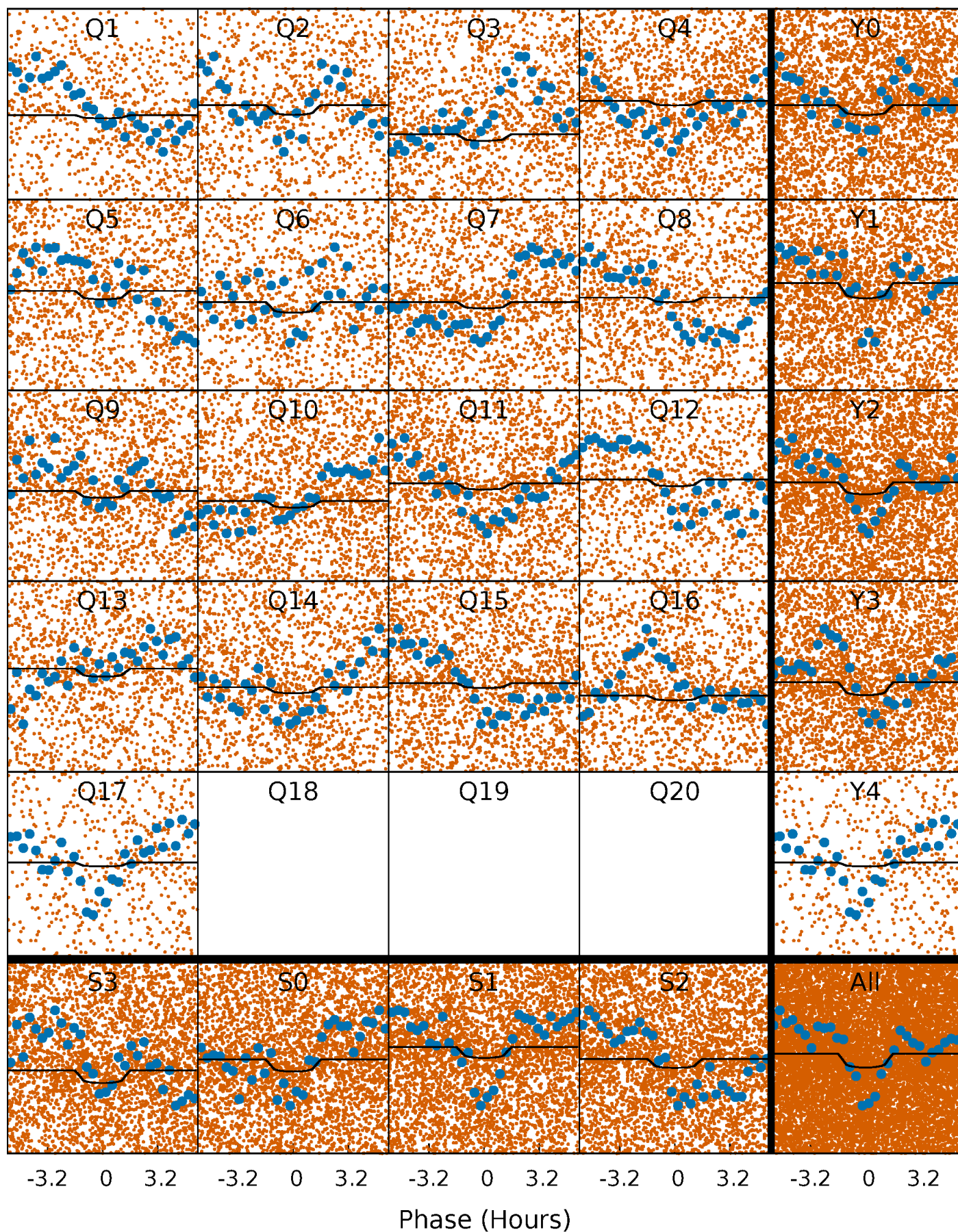
PDC Quarter-Phased Transit Curves

TCE 009469775-01 P= 0.580157 Days $T_0=131.909267$ (BKJD)



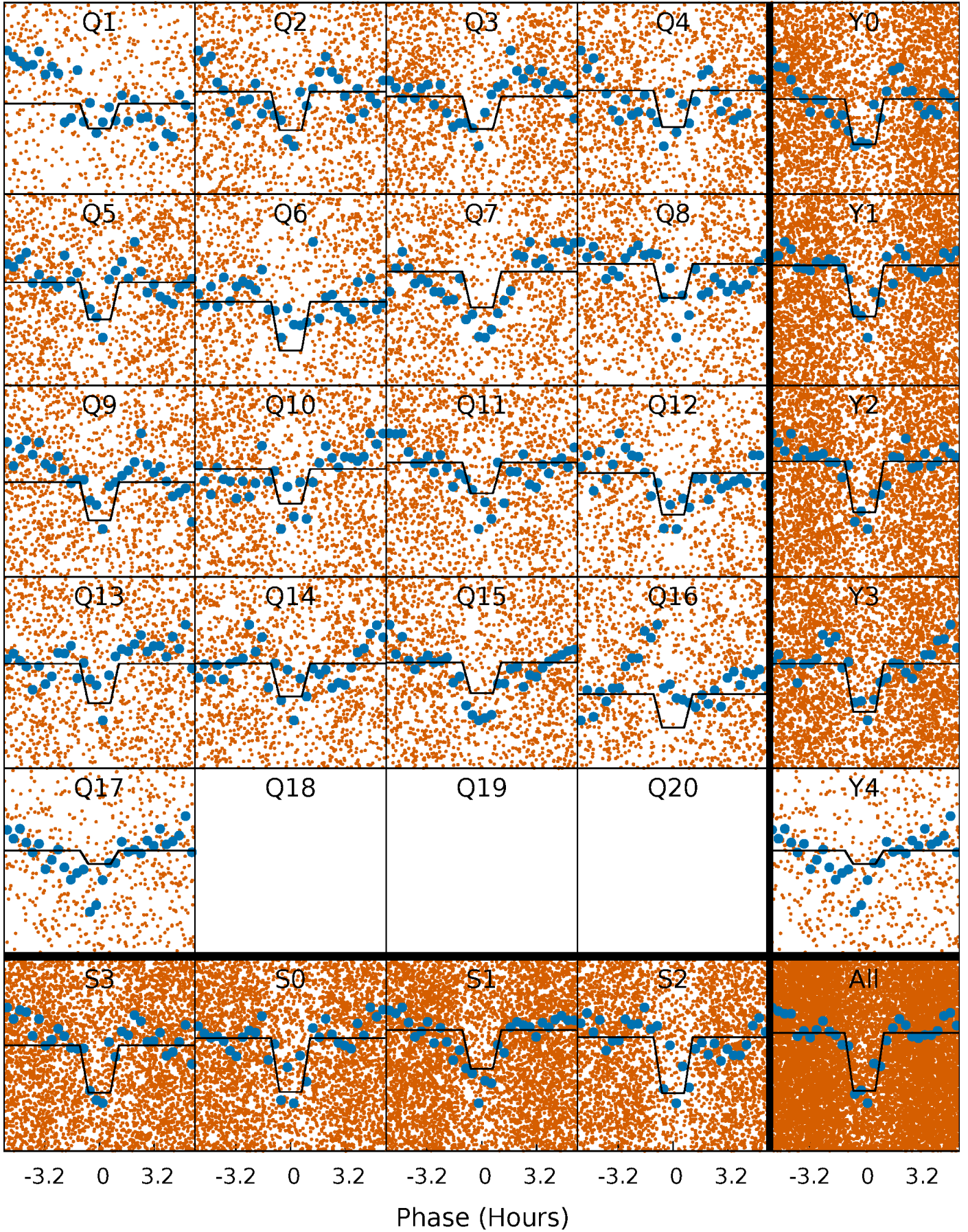
DV Quarter-Phased Transit Curves

TCE 009469775-01 P= 0.580157 Days $T_0=131.909267$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

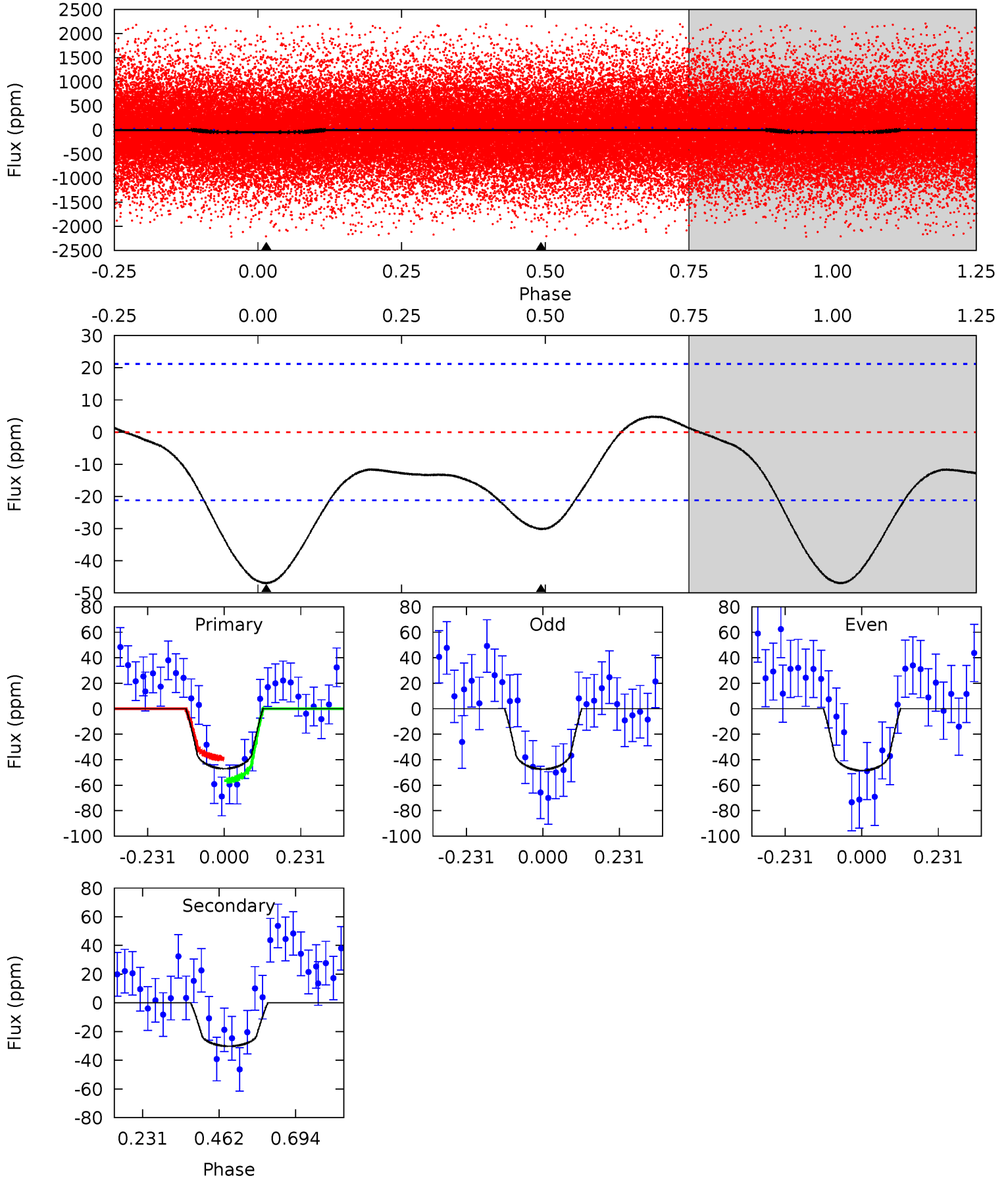
TCE 009469775-01 P= 0.580157 Days $T_0=131.915936$ (BKJD)



DV Model-Shift Uniqueness Test

009469775-01, P = 0.580157 Days, E = 131.329110 Days

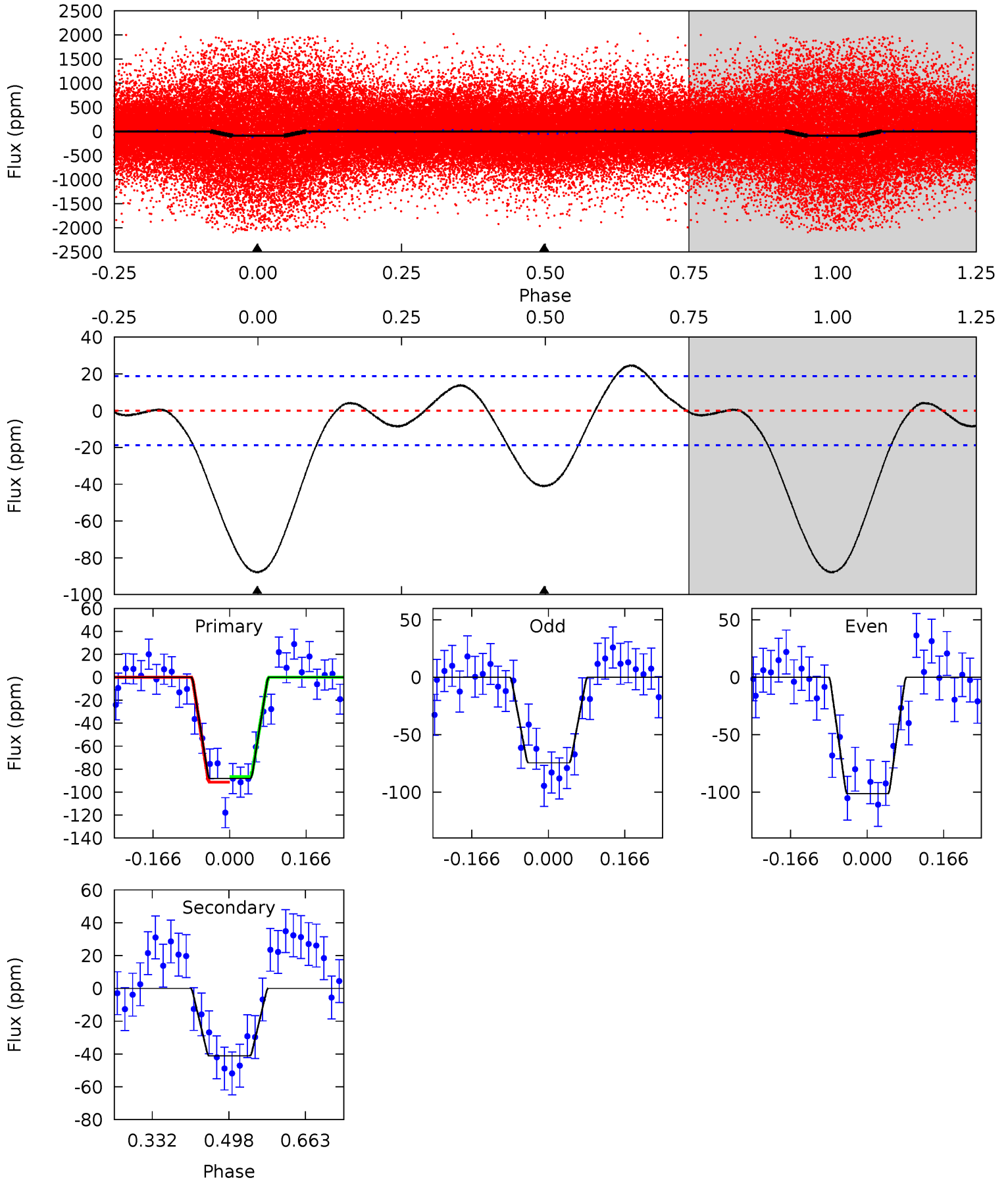
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.72	6.24	0	0	4.39	1.20	1.33	9.72	9.72	6.24	6.24	0.11	1.08	0.09	1.86



Alt Model-Shift Uniqueness Test

009469775-01, P = 0.580157 Days, E = 131.335779 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	9.77	0	0	4.46	1.39	1.75	20.9	20.9	9.77	9.77	3.18	0.96	0.22	0.58



Stellar Parameters For KIC 009469775

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6732^{+185}_{-278}	$3.840^{+0.382}_{-0.127}$	$0.140^{+0.200}_{-0.350}$	$2.626^{+0.609}_{-1.131}$	$1.739^{+0.188}_{-0.438}$	$0.135^{+0.433}_{-0.051}$
	+3%/-4%	+10%/-3%	+143%/-250%	+23%/-43%	+11%/-25%	+320%/-38%
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 009469775-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-30 ± 5	$1.24^{+1.05}_{-0.84}$	5110^{+418}_{-534}	6995^{+9667}_{-2184}	$2.818^{+25.593}_{-2.015}$
Alt.	-41 ± 4	$2.37^{+1.39}_{-1.07}$	5084^{+410}_{-562}	5100^{+2238}_{-1358}	$1.026^{+2.400}_{-0.605}$

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

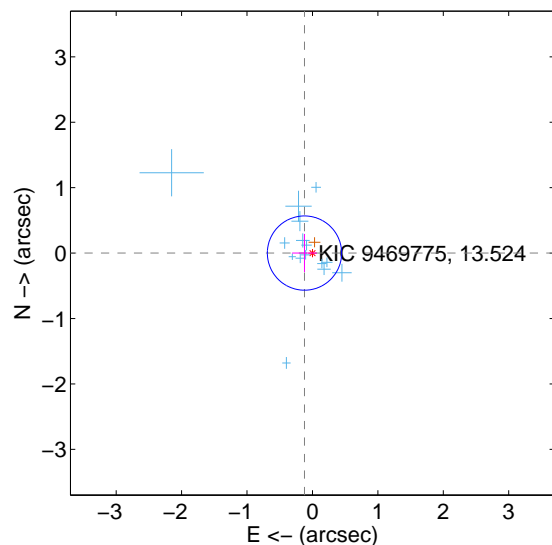
Supplemental centroid analysis for 009469775-01. Kepler magnitude: 13.52. Transit SNR 3.59

There are 15 quarters with good PRF difference image offsets

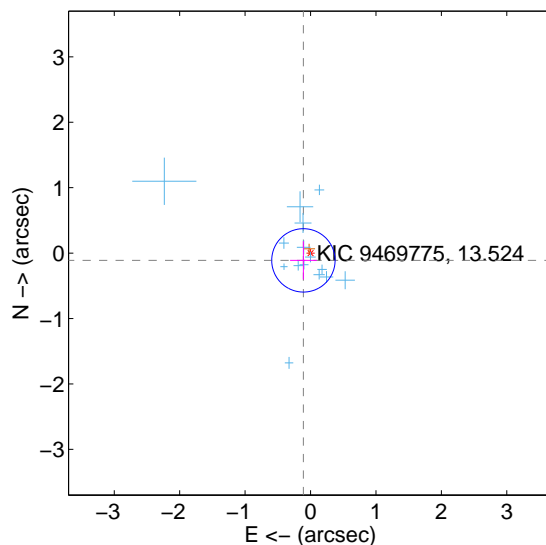
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.122 ± 0.189	0.64	0.122 ± 0.188	0.000 ± 0.293
PRF-fit source offset from KIC position	0.156 ± 0.161	0.96	0.109 ± 0.204	-0.111 ± 0.292
photometric centroid source offset	0.45 ± 0.88	0.51	-0.06 ± 0.86	0.45 ± 0.88

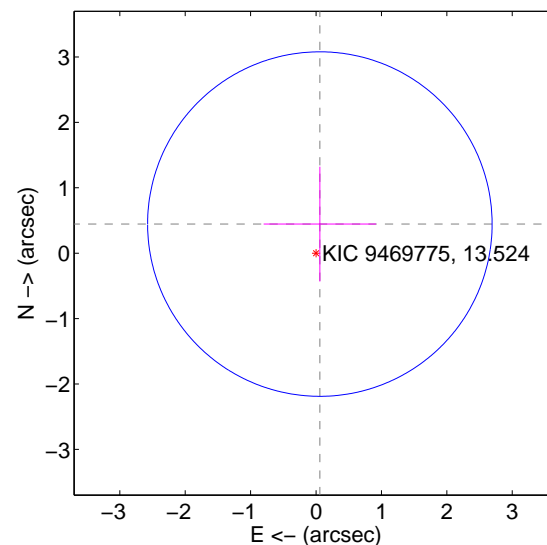
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

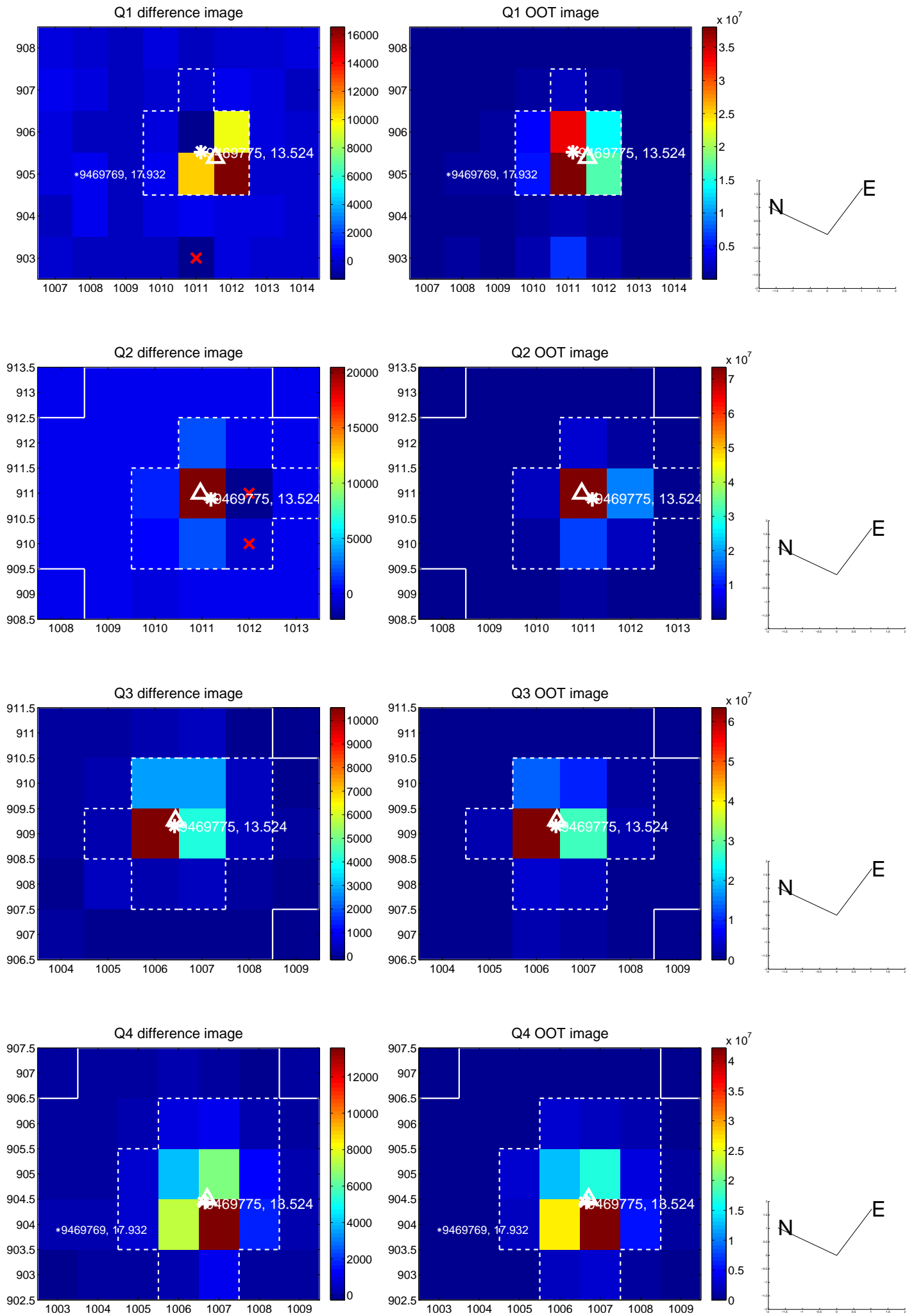


offset from photometric centroids

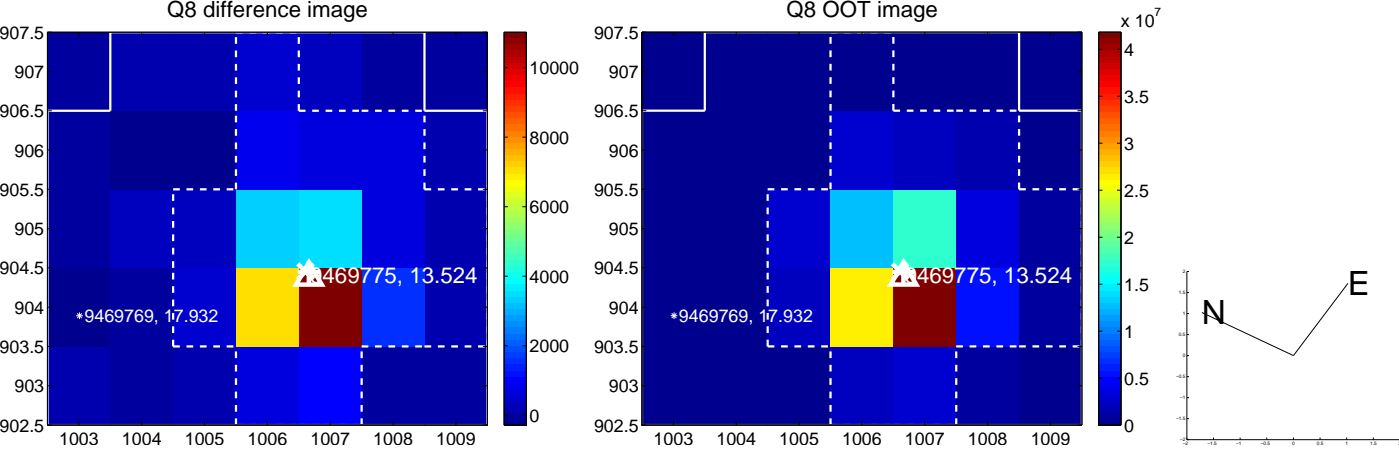
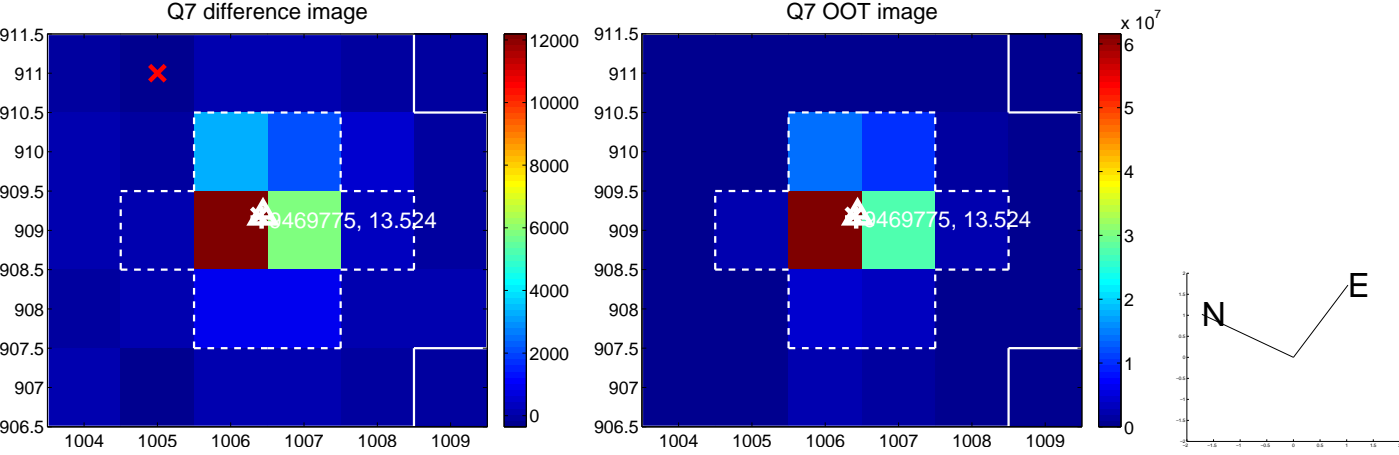
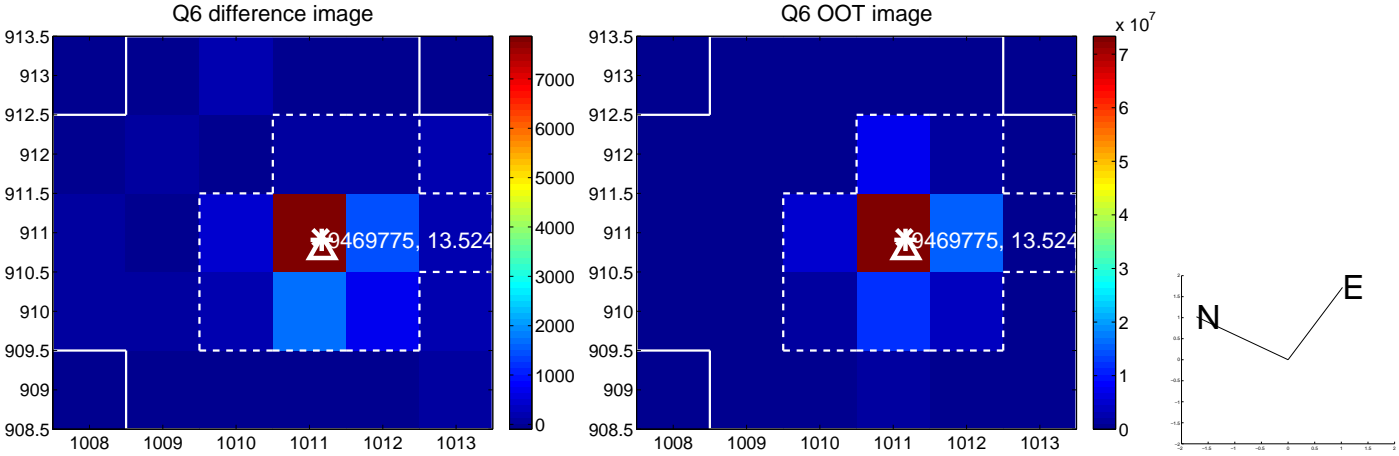
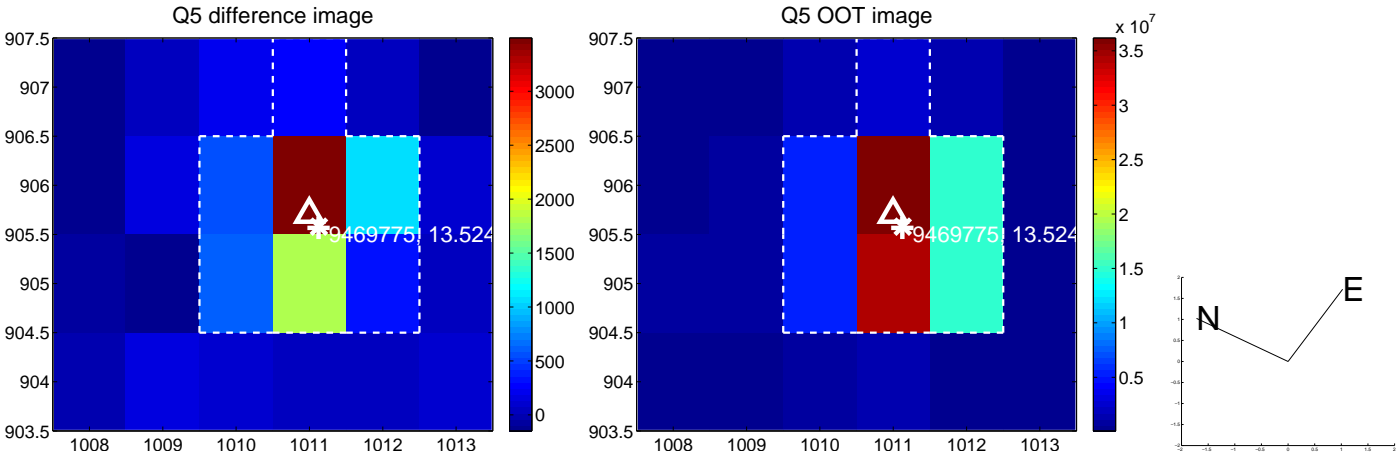


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

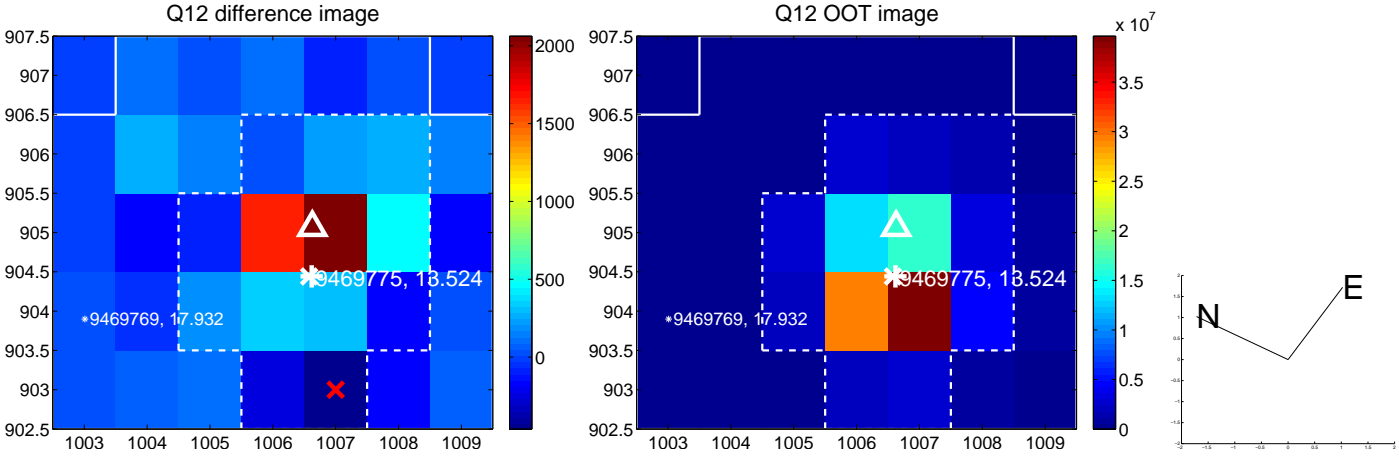
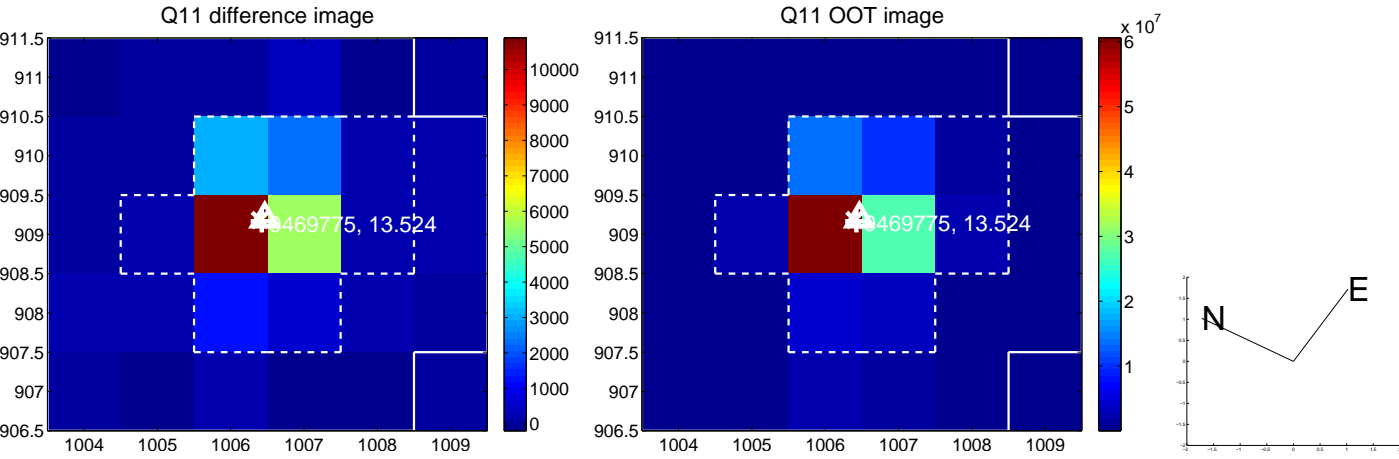
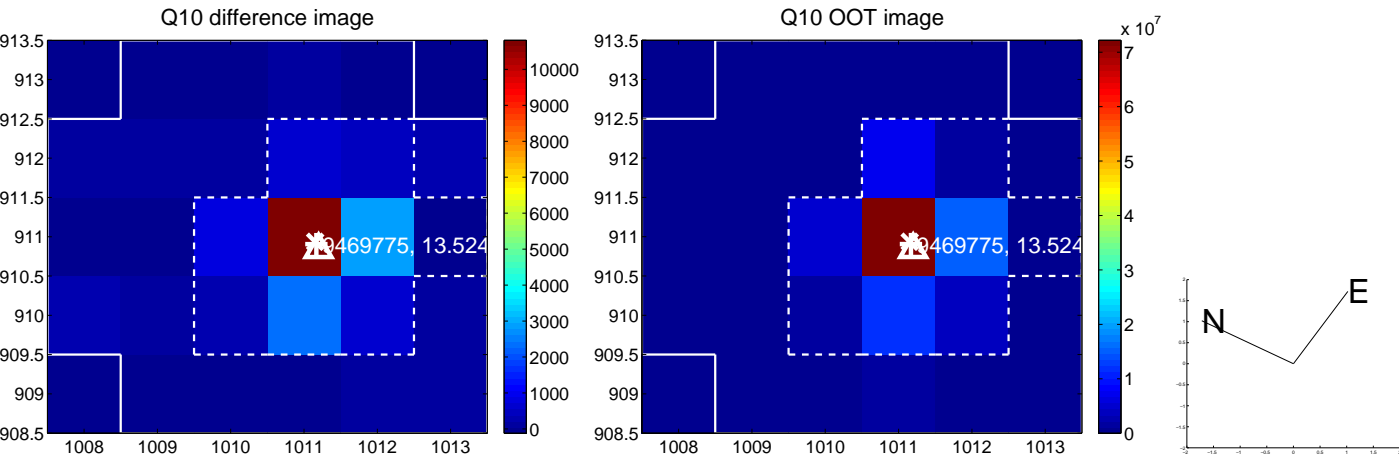
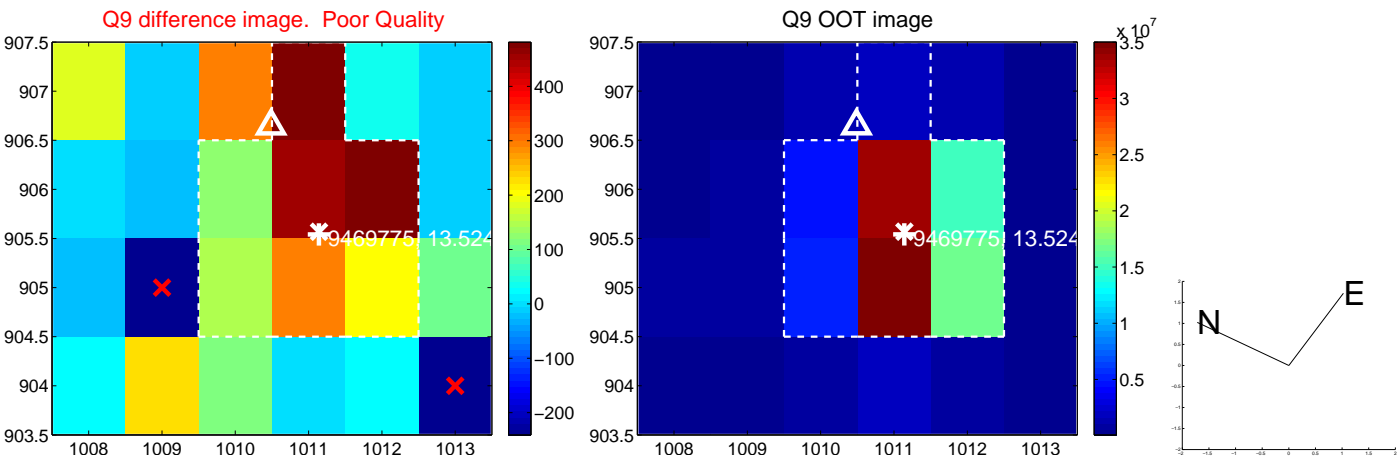
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



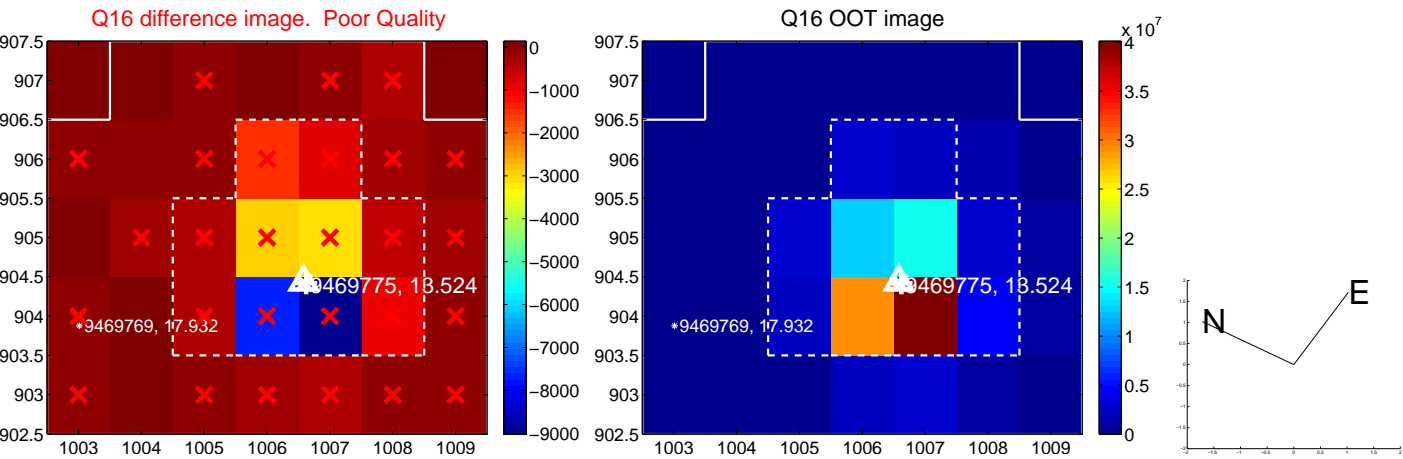
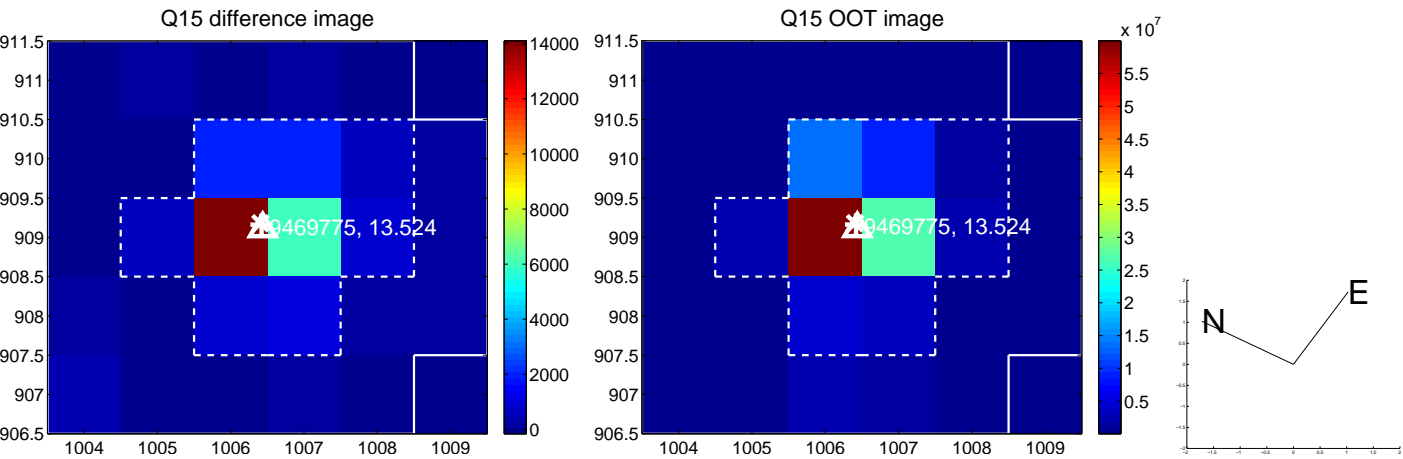
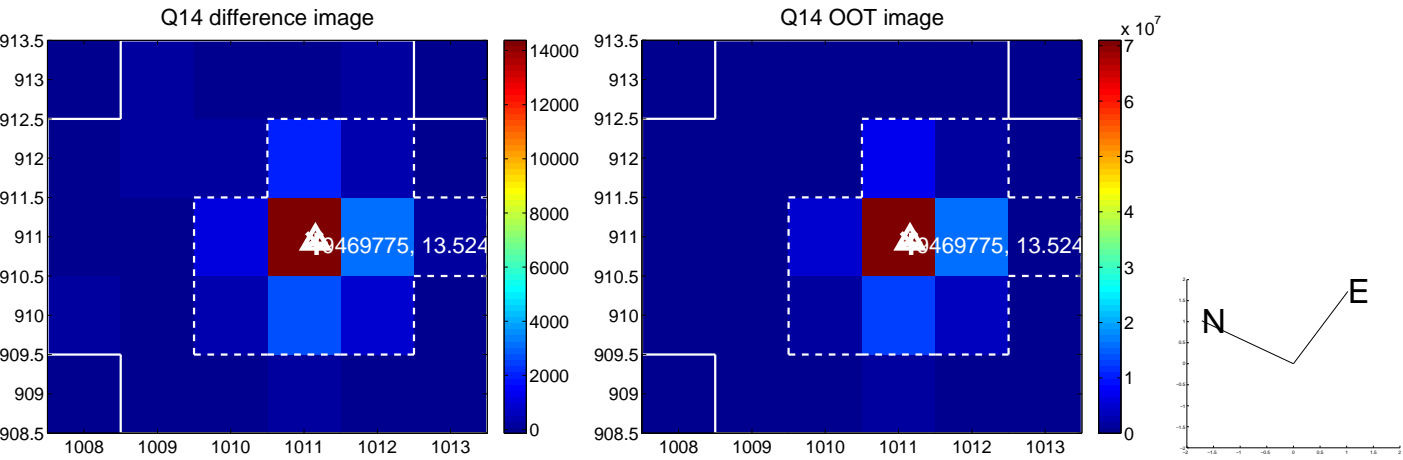
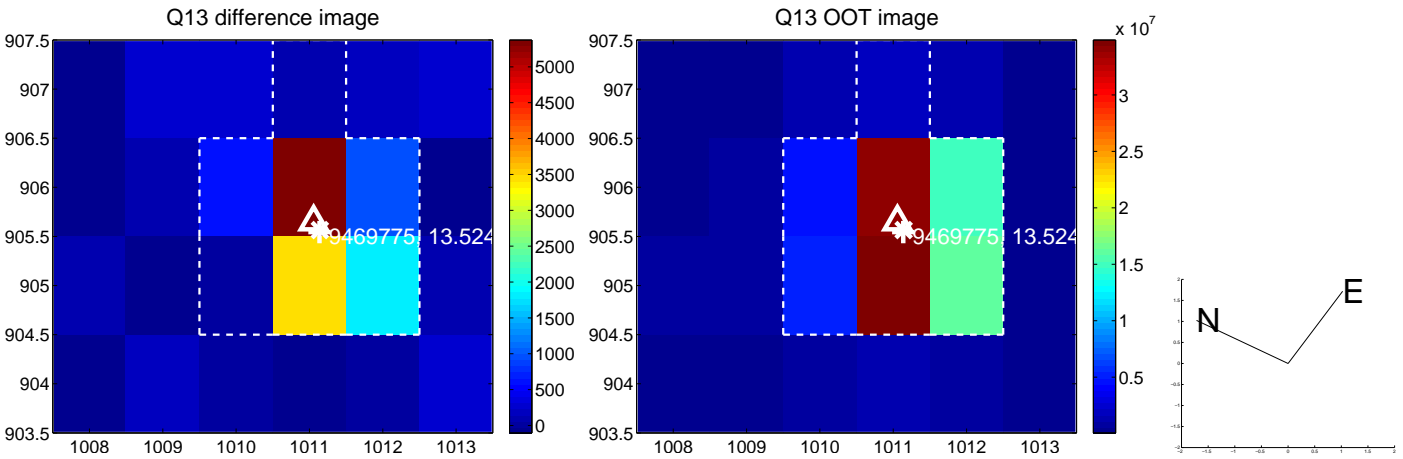
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



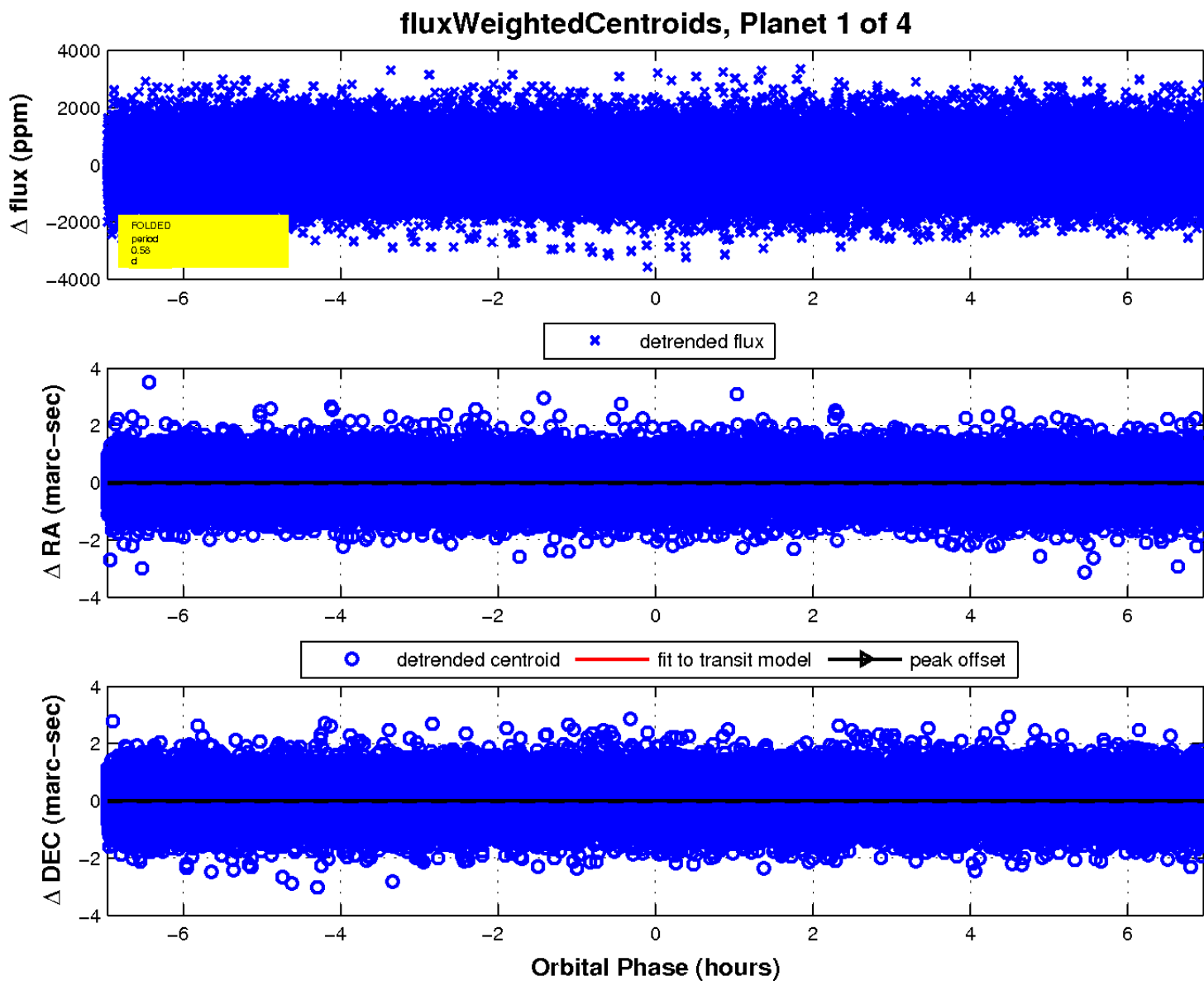
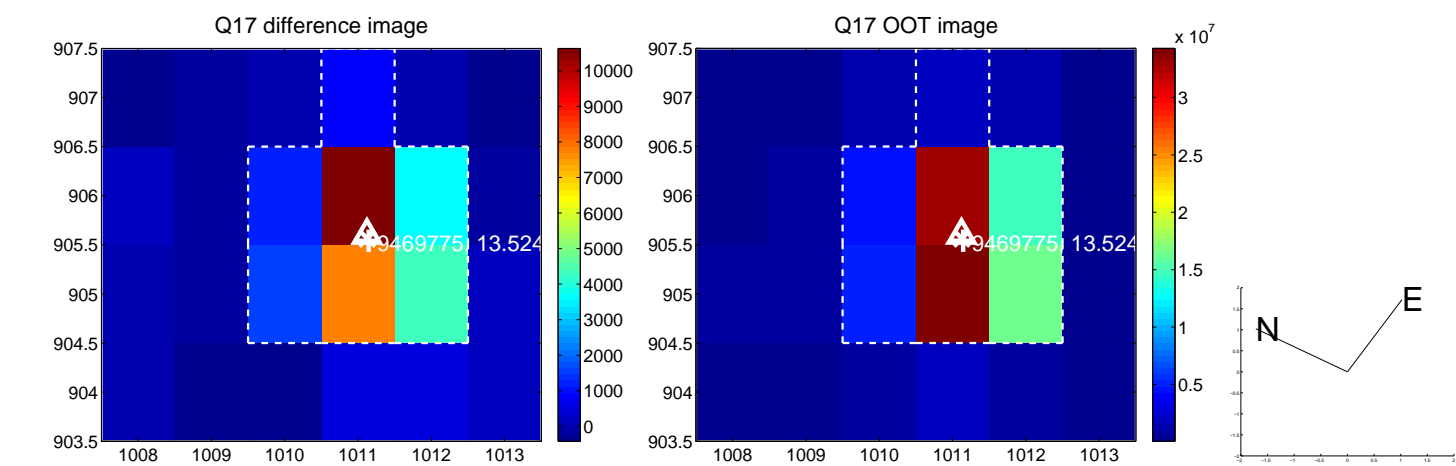
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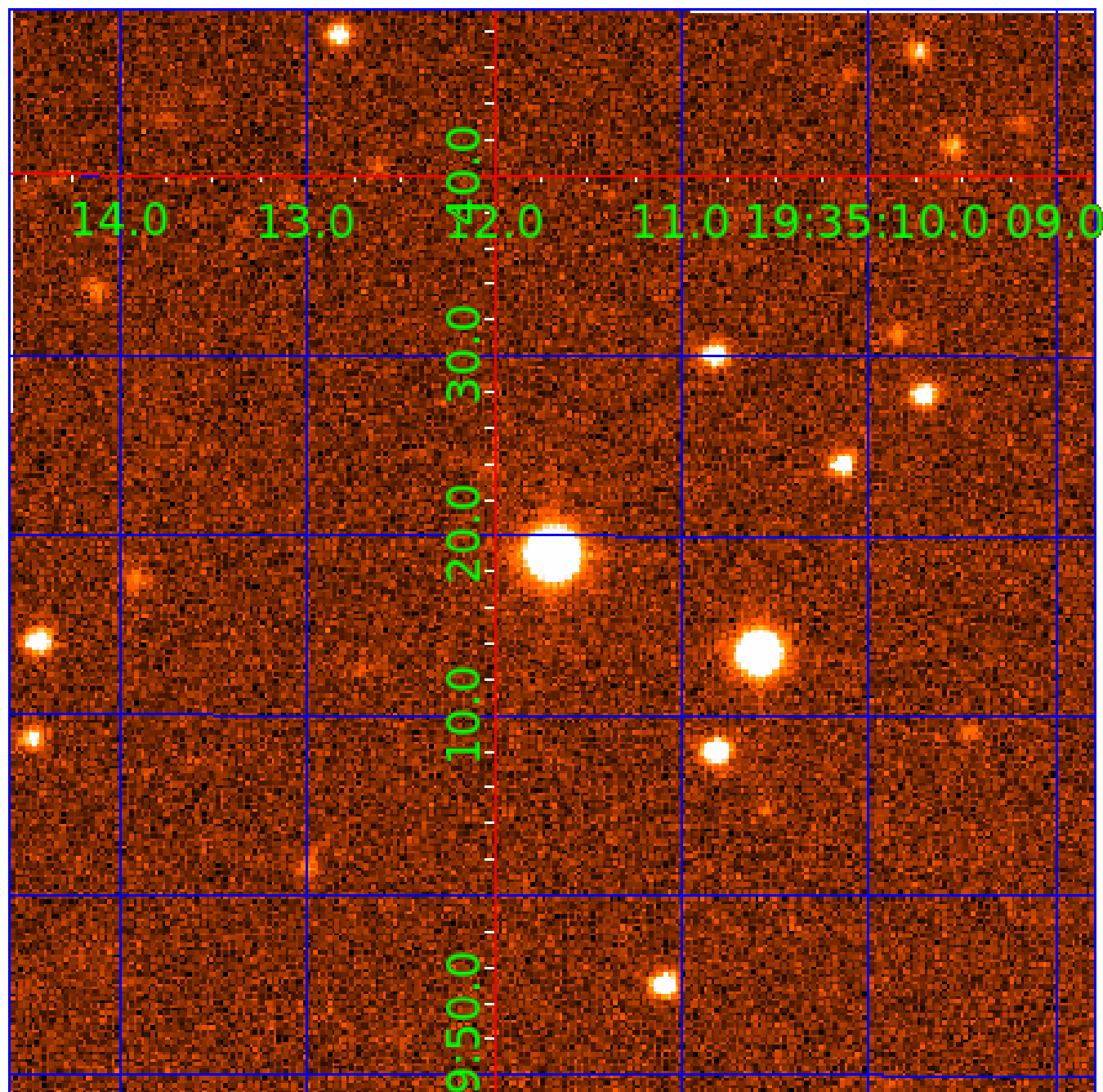


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009469775

Q1-17 DR25 TCE Parameters

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009469775-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009469775-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

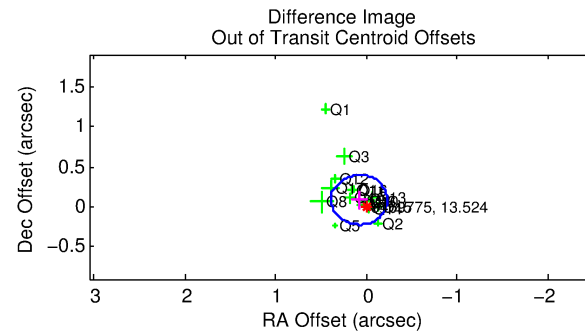
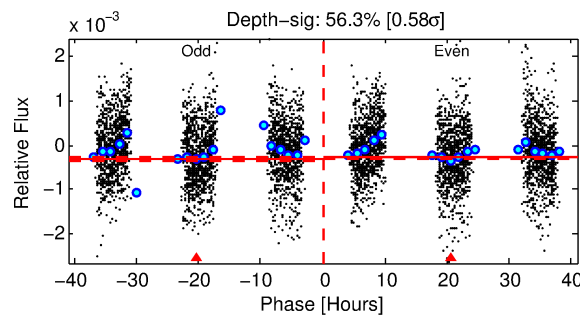
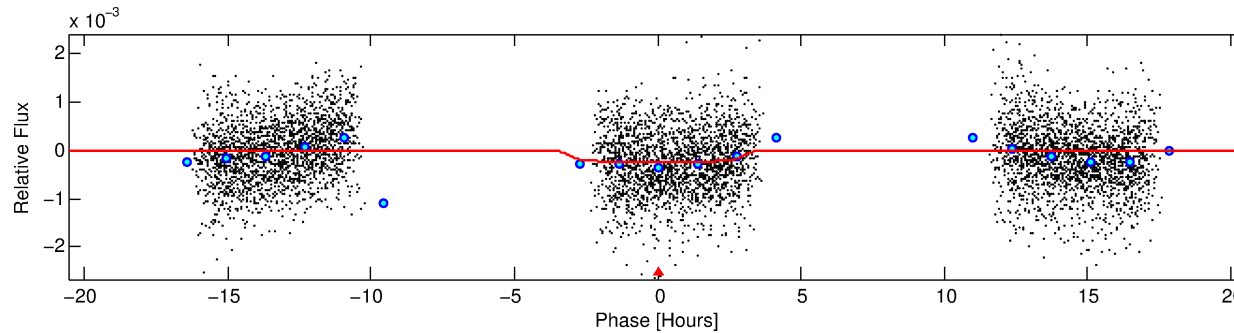
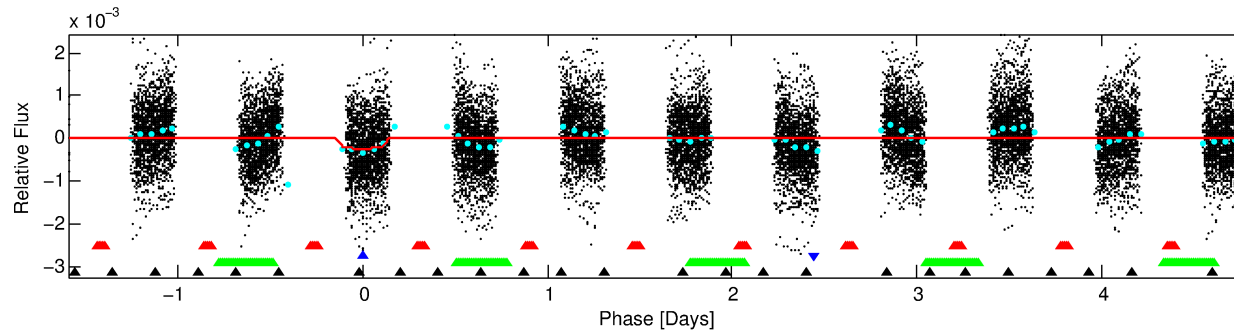
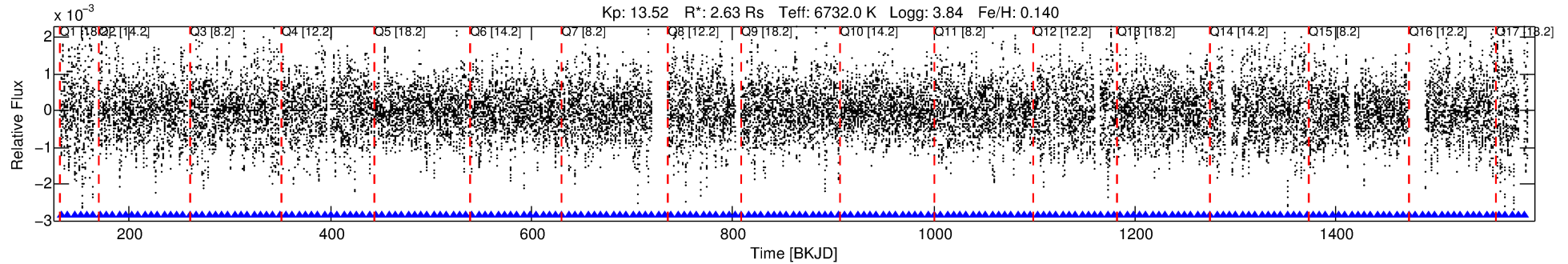
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009469775-02

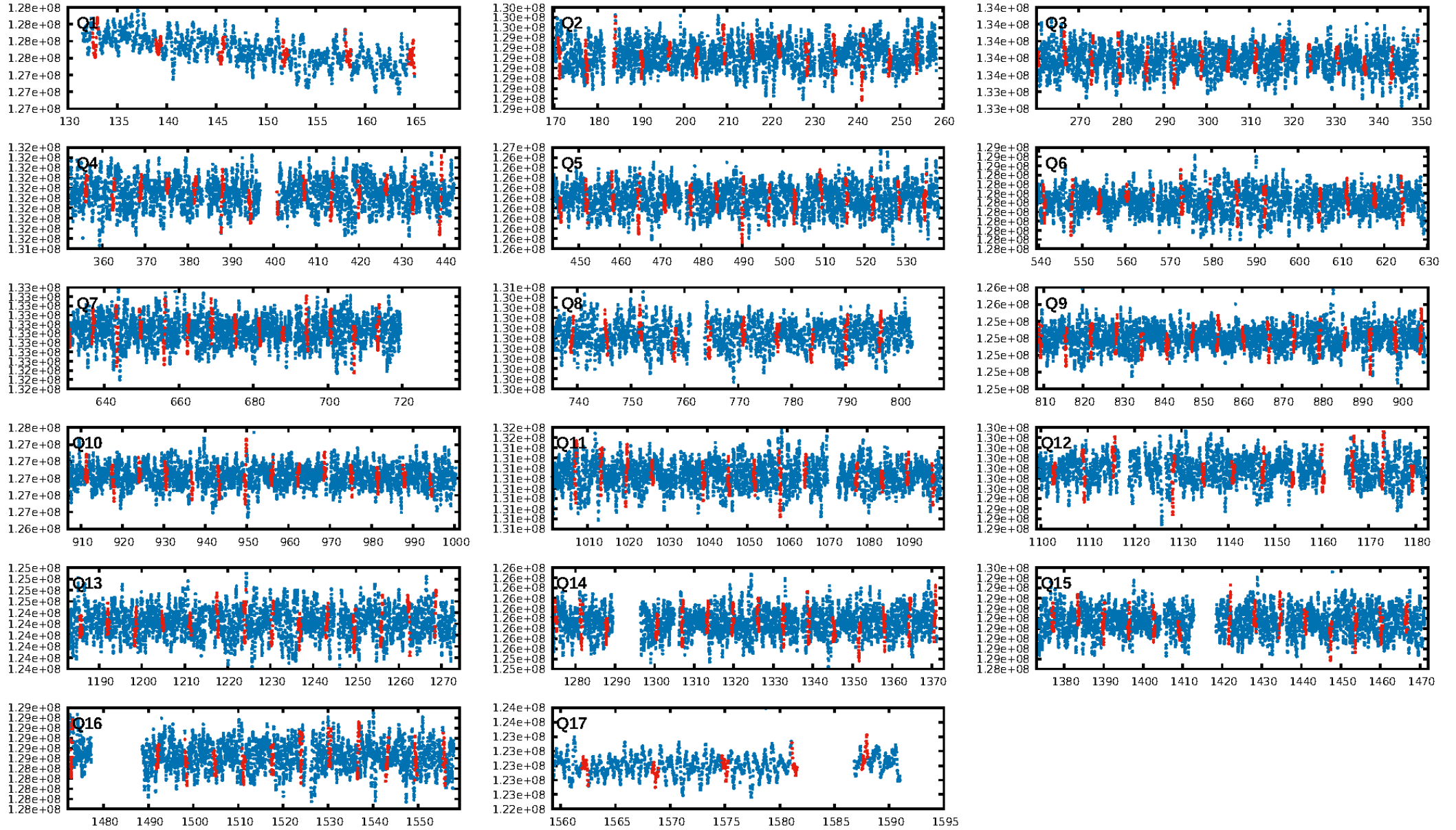
No Significant Match Found

DV One-Page Summary

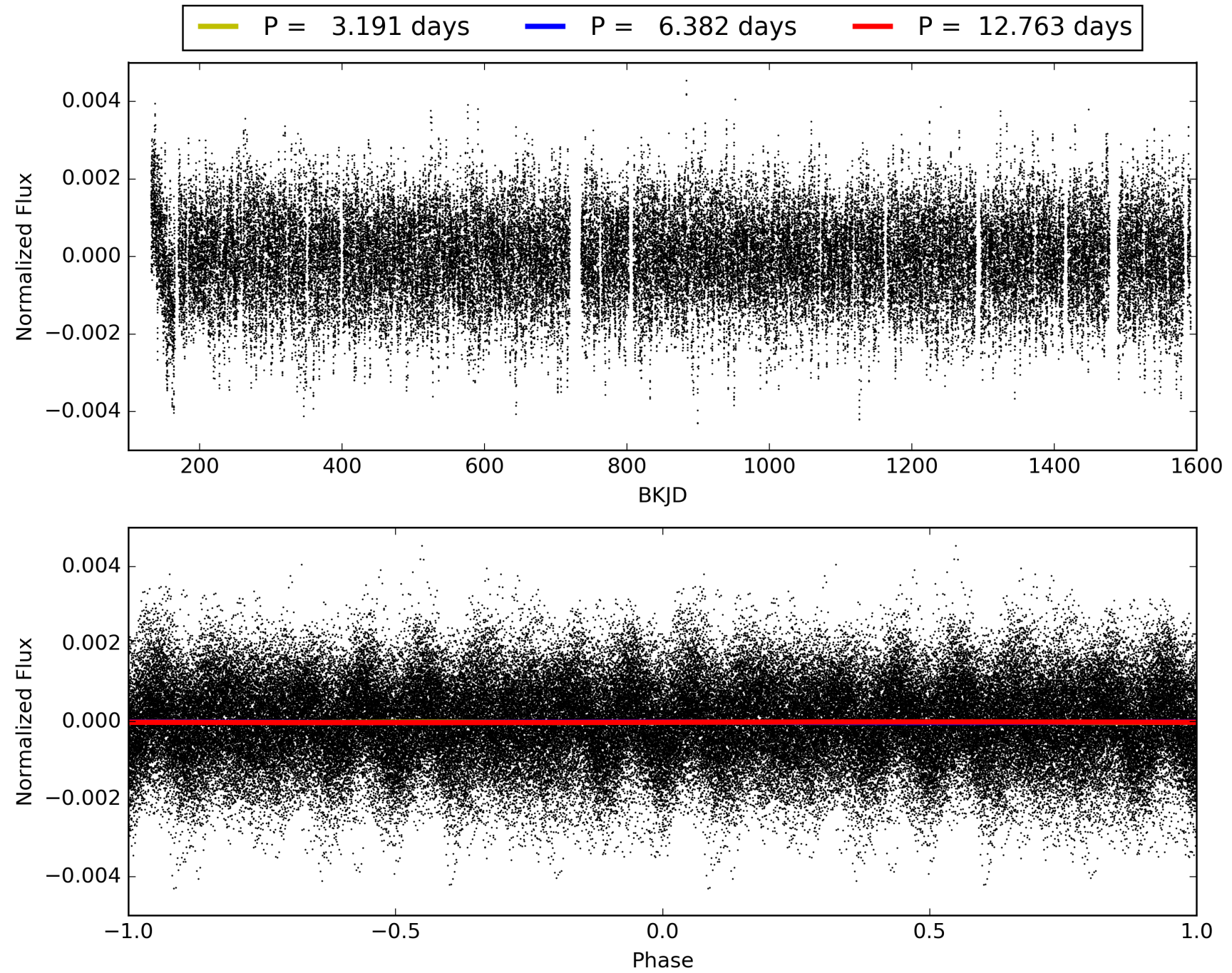
KIC: 9469775 Candidate: 2 of 4 Period: 6.382 d



TCE 009469775-02, PDC Light Curves

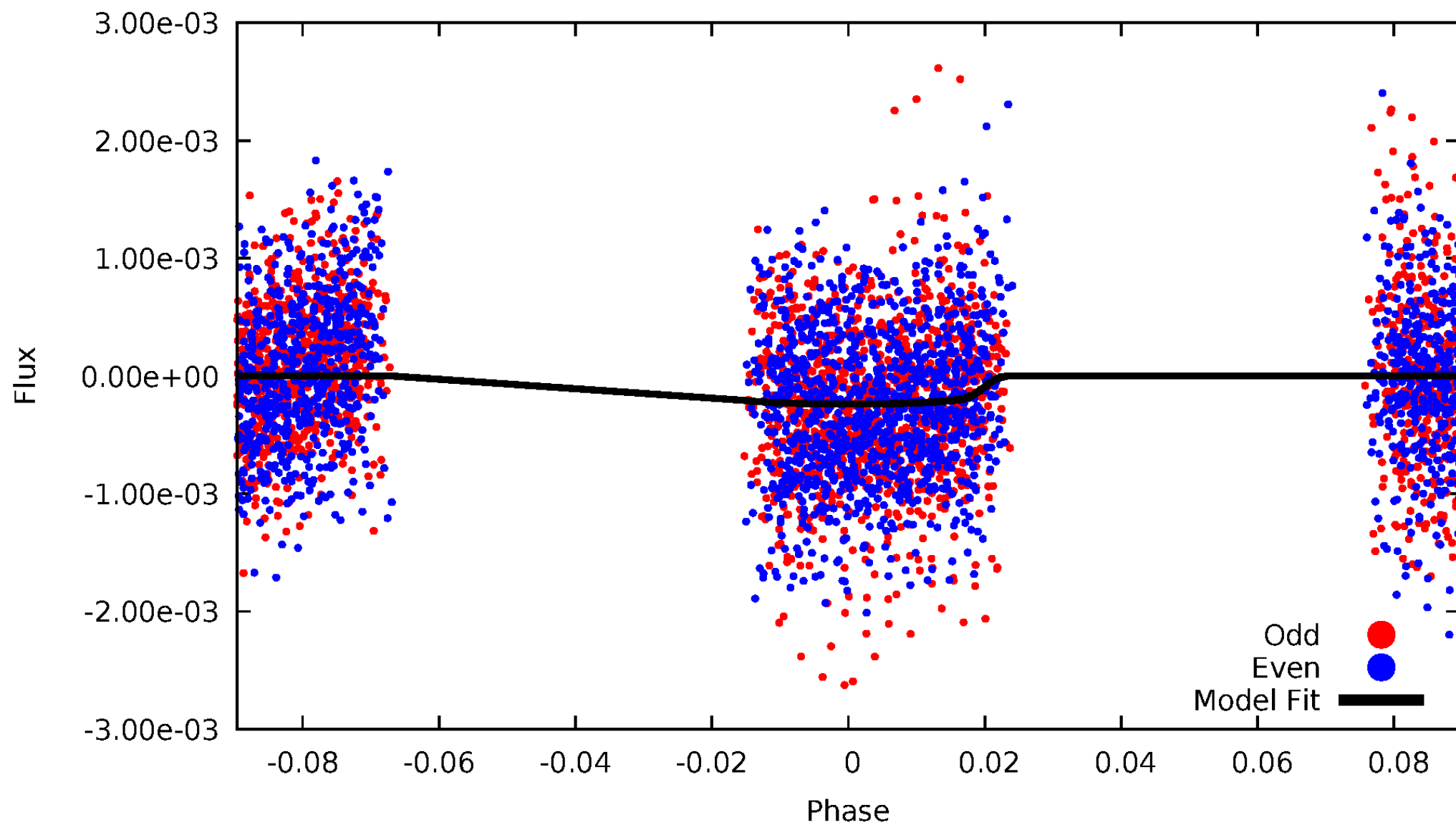


TCE 009469775-02



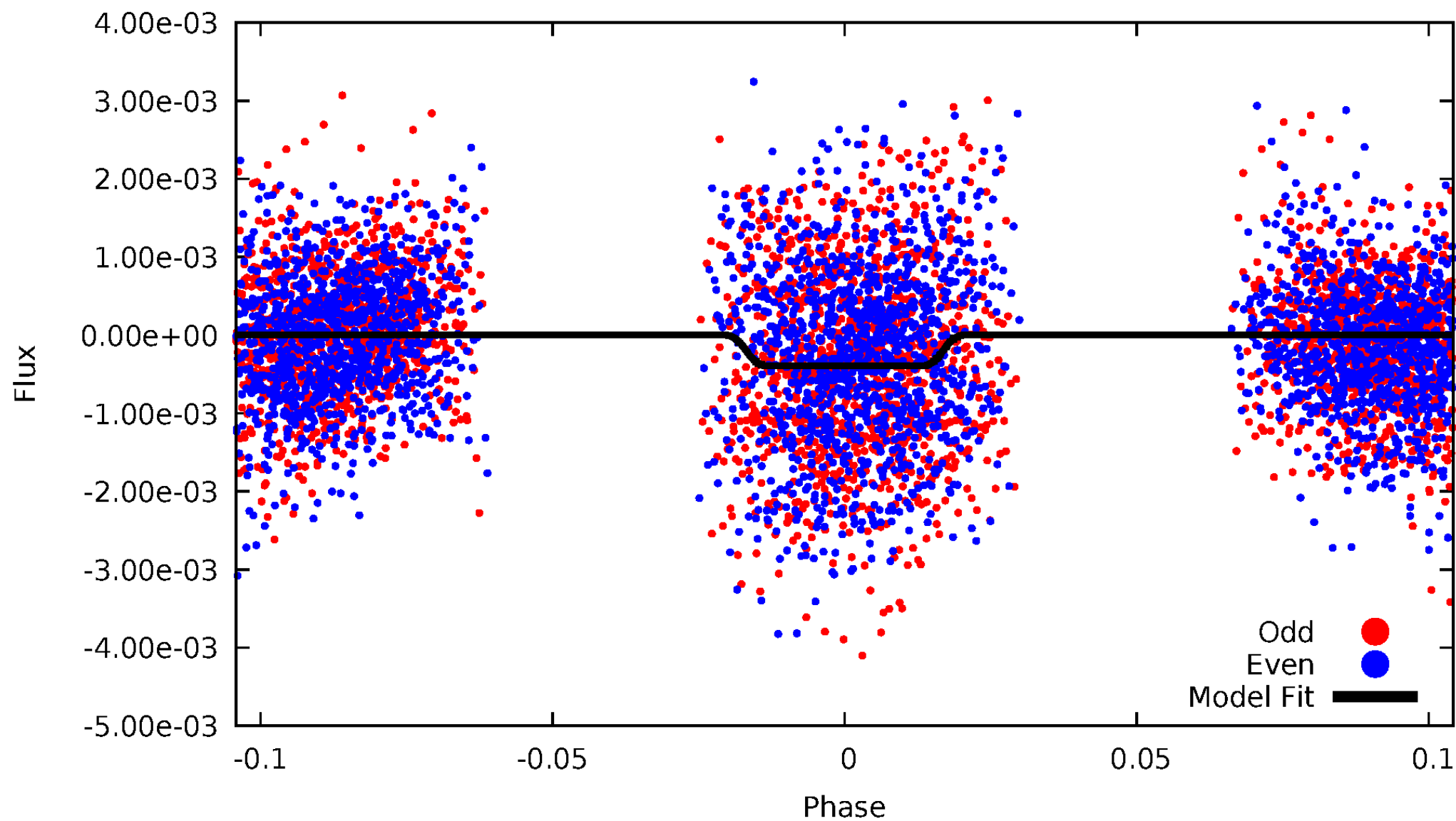
DV Odd/Even

TCE 009469775-02



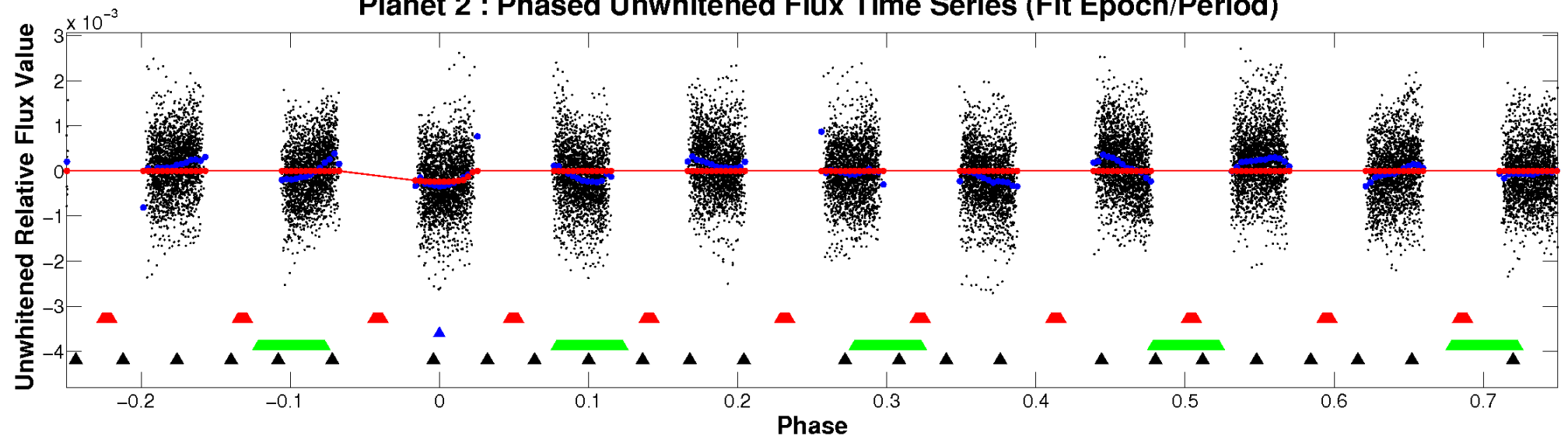
ALT Odd/Even

TCE 009469775-02

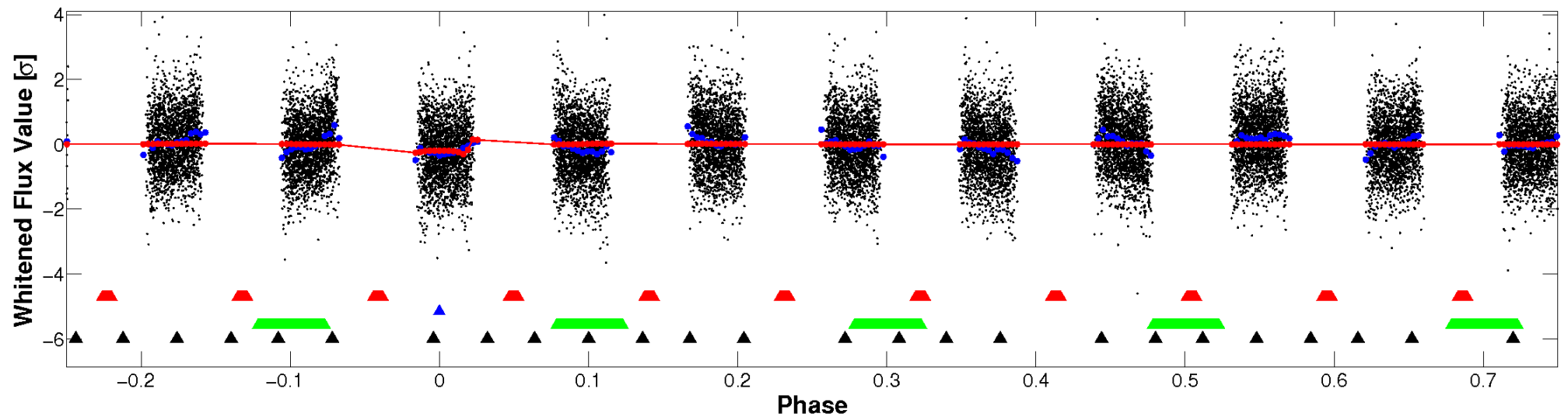


Non-Whitened Vs. Whitened Light Curve

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

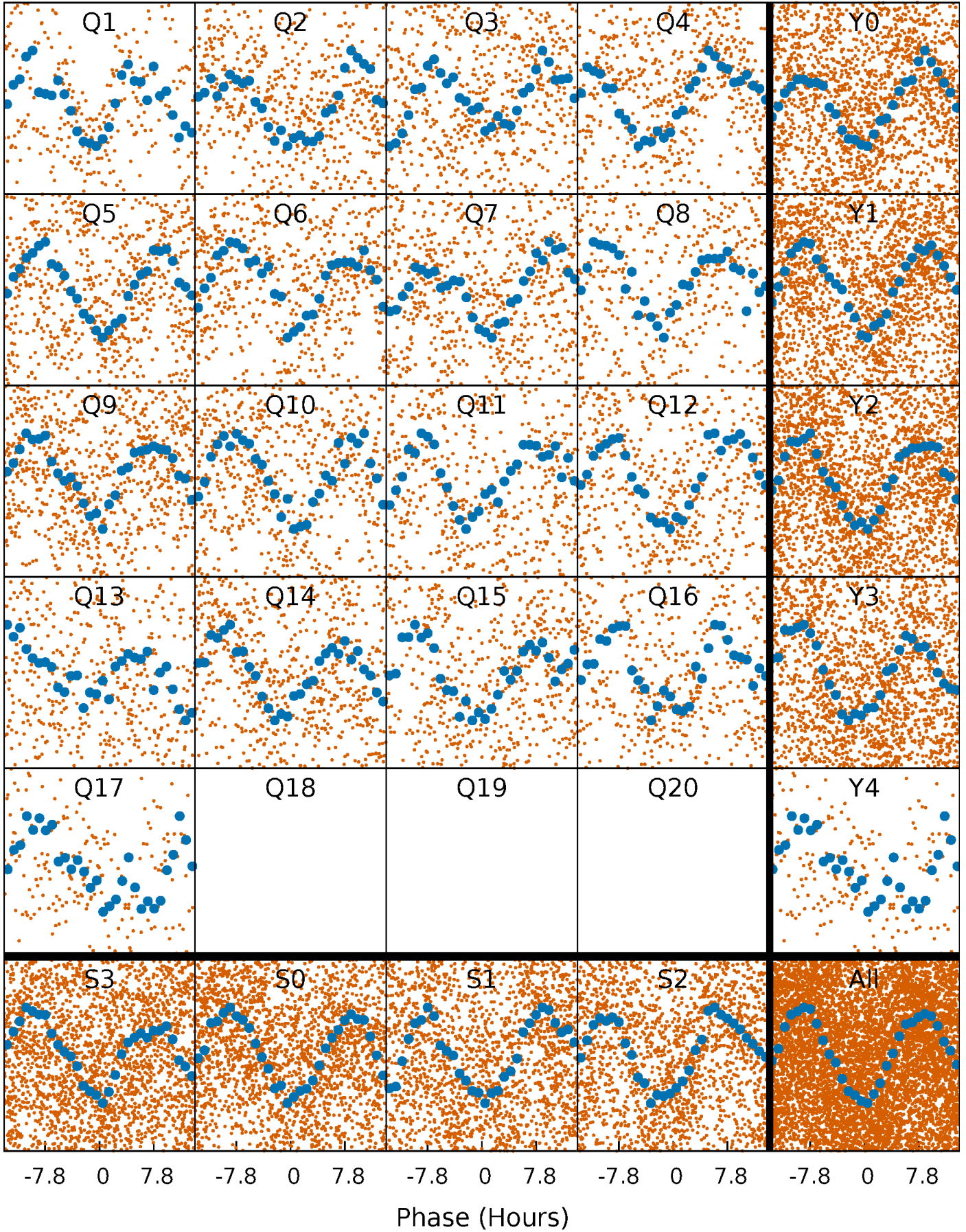


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



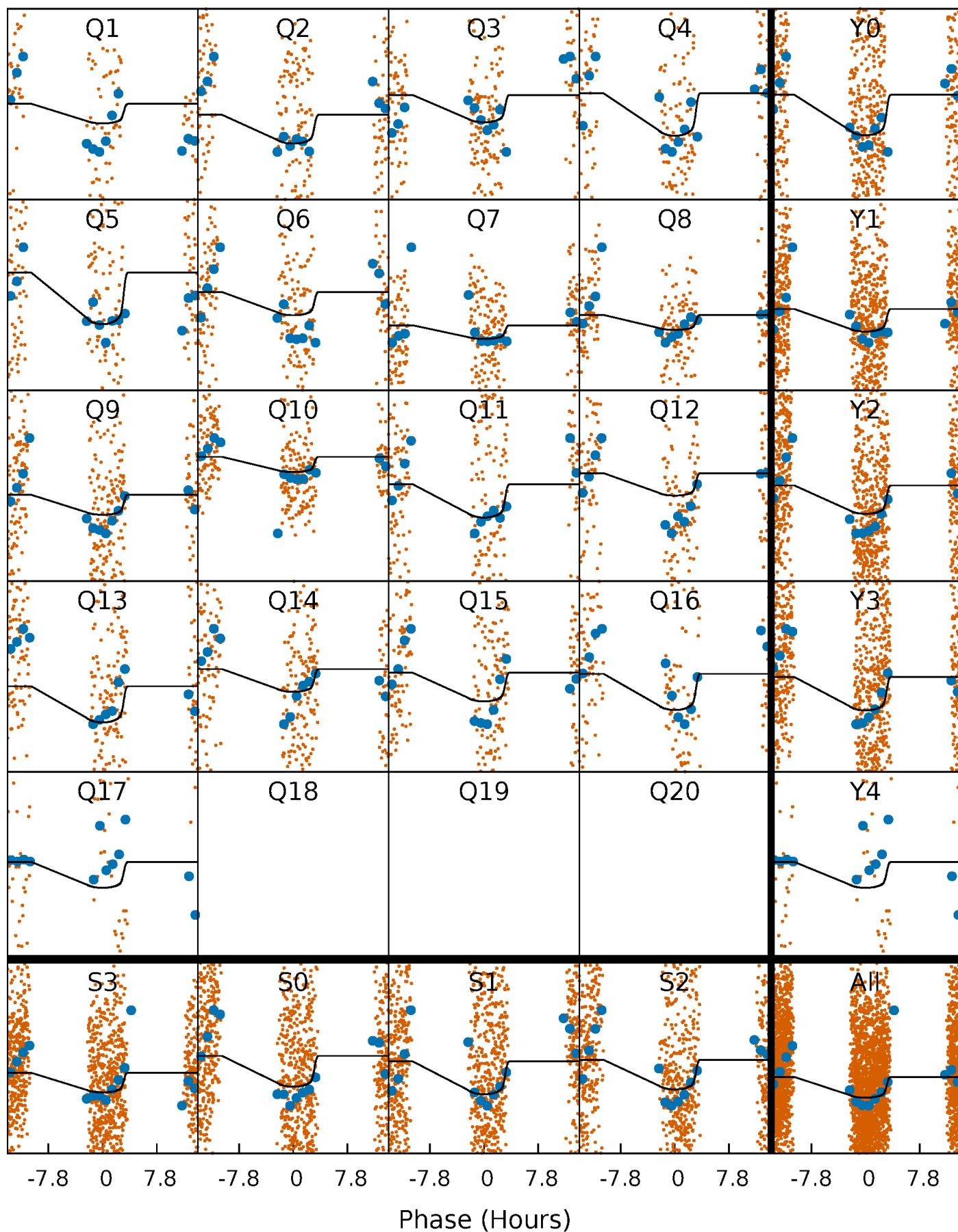
PDC Quarter-Phased Transit Curves

TCE 009469775-02 P= 6.381551 Days $T_0=132.772406$ (BKJD)



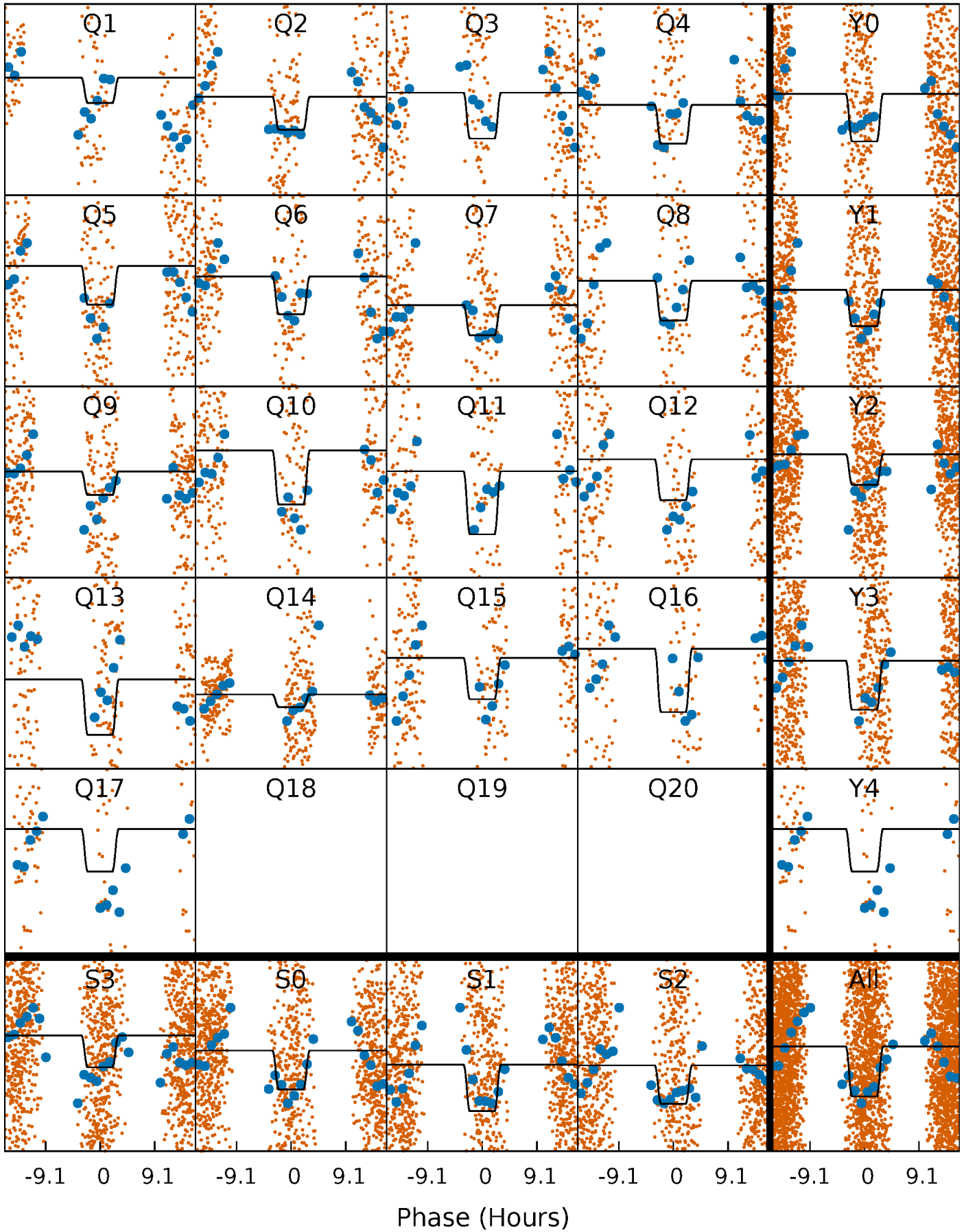
DV Quarter-Phased Transit Curves

TCE 009469775-02 P= 6.381551 Days $T_0=132.772406$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

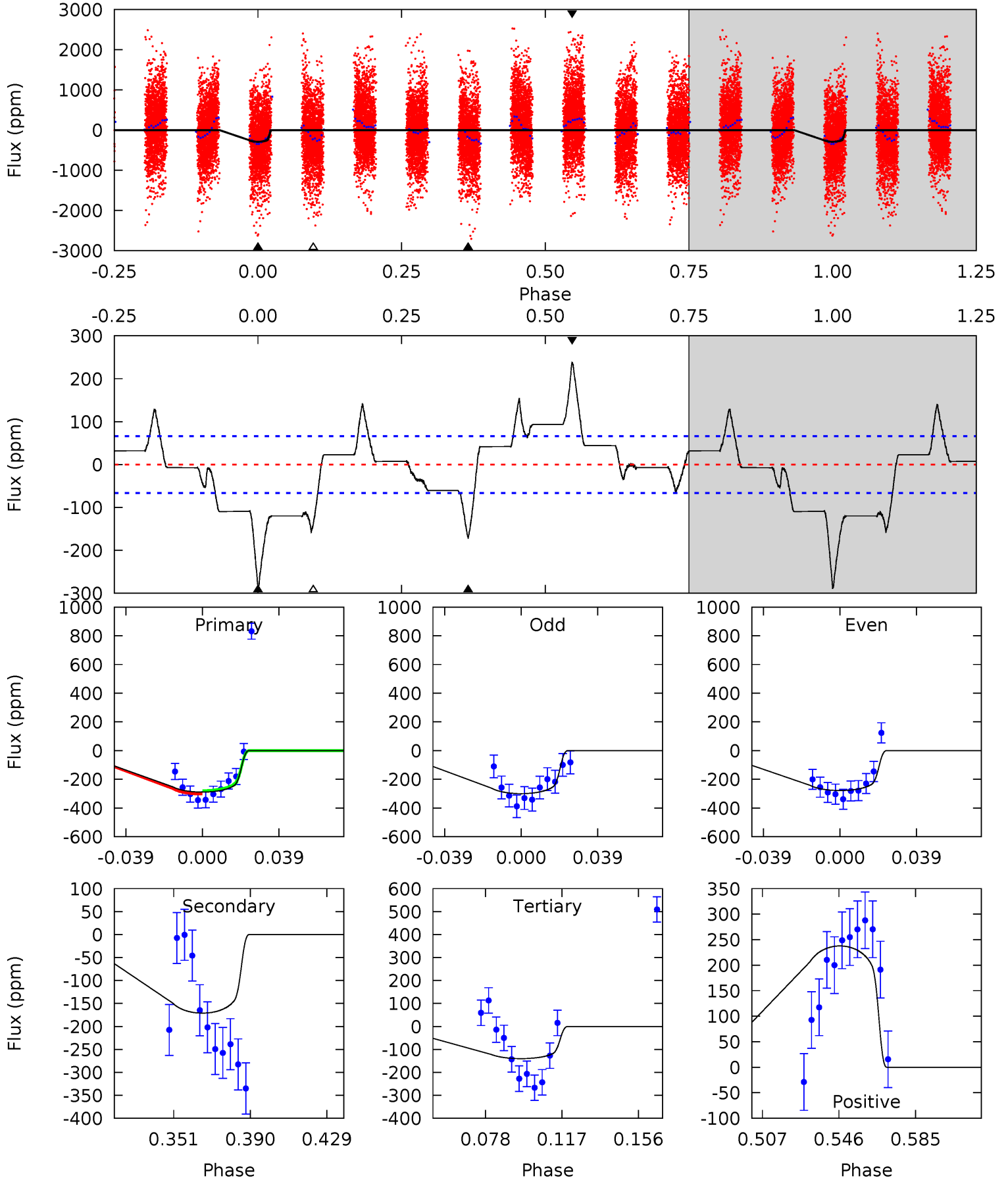
TCE 009469775-02 P= 6.381100 Days $T_0=132.835589$ (BKJD)



DV Model-Shift Uniqueness Test

009469775-02, P = 6.381551 Days, E = 126.390855 Days

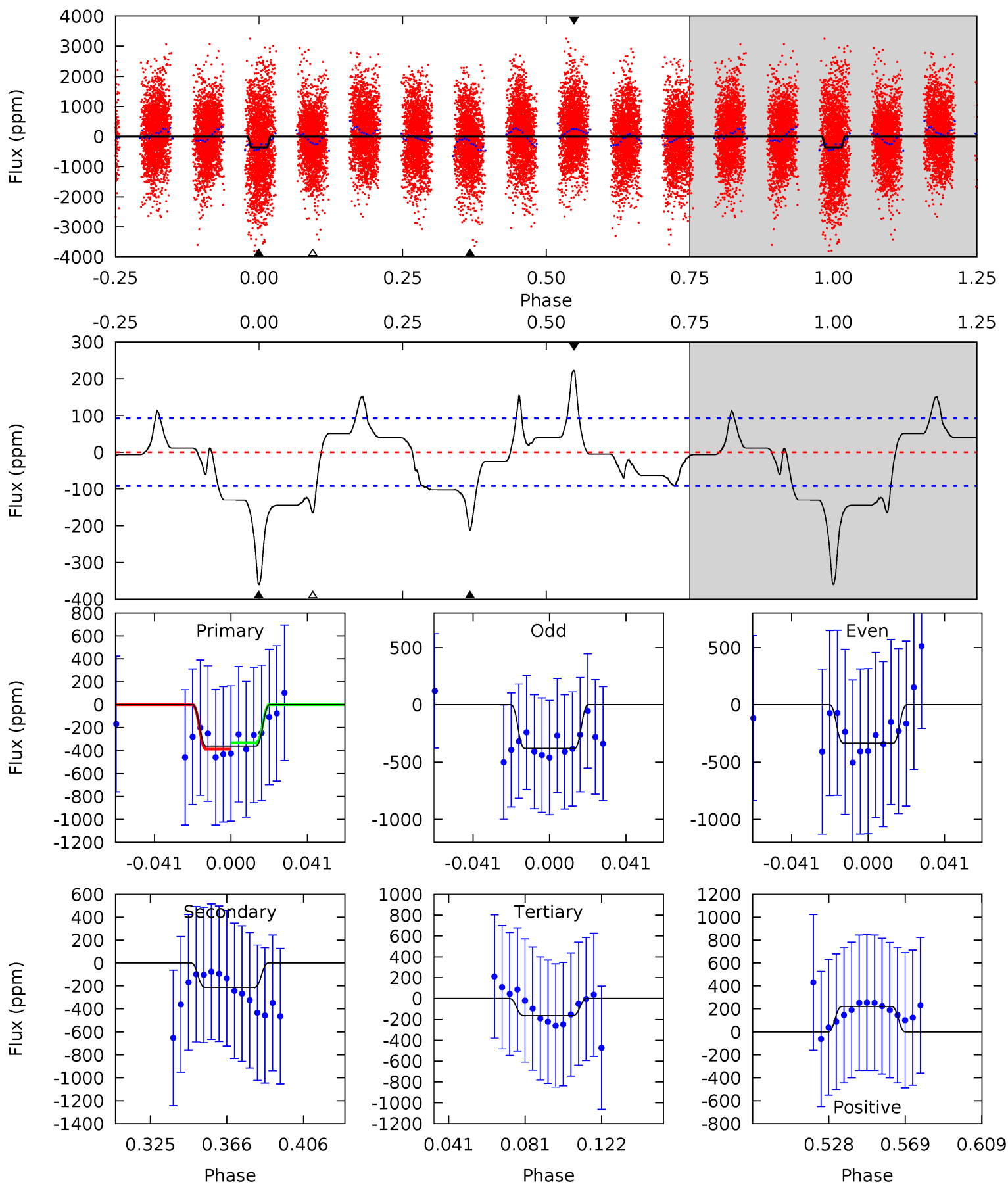
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	12.3	10.1	17.1	4.76	2.06	5.96	10.7	3.71	2.22	-4.78	0.78	1.04	0.45	0.82



Alt Model-Shift Uniqueness Test

009469775-02, P = 6.381100 Days, E = 126.454489 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.6	11.0	8.50	11.5	4.75	2.05	4.50	10.1	7.11	2.50	-0.49	1.22	1.15	0.38	1.43



Stellar Parameters For KIC 009469775

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6732^{+185}_{-278}	$3.840^{+0.382}_{-0.127}$	$0.140^{+0.200}_{-0.350}$	$2.626^{+0.609}_{-1.131}$	$1.739^{+0.188}_{-0.438}$	$0.135^{+0.433}_{-0.051}$
	+3%/-4%	+10%/-3%	+143%/-250%	+23%/-43%	+11%/-25%	+320%/-38%
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 009469775-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-171 ± 14	$4.64^{+0.84}_{-1.05}$	2310^{+182}_{-238}	5862^{+379}_{-306}	29^{+18}_{-8}
Alt.	-213 ± 19	$5.43^{+1.10}_{-1.28}$	2299^{+188}_{-254}	5703^{+322}_{-261}	25^{+16}_{-7}

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

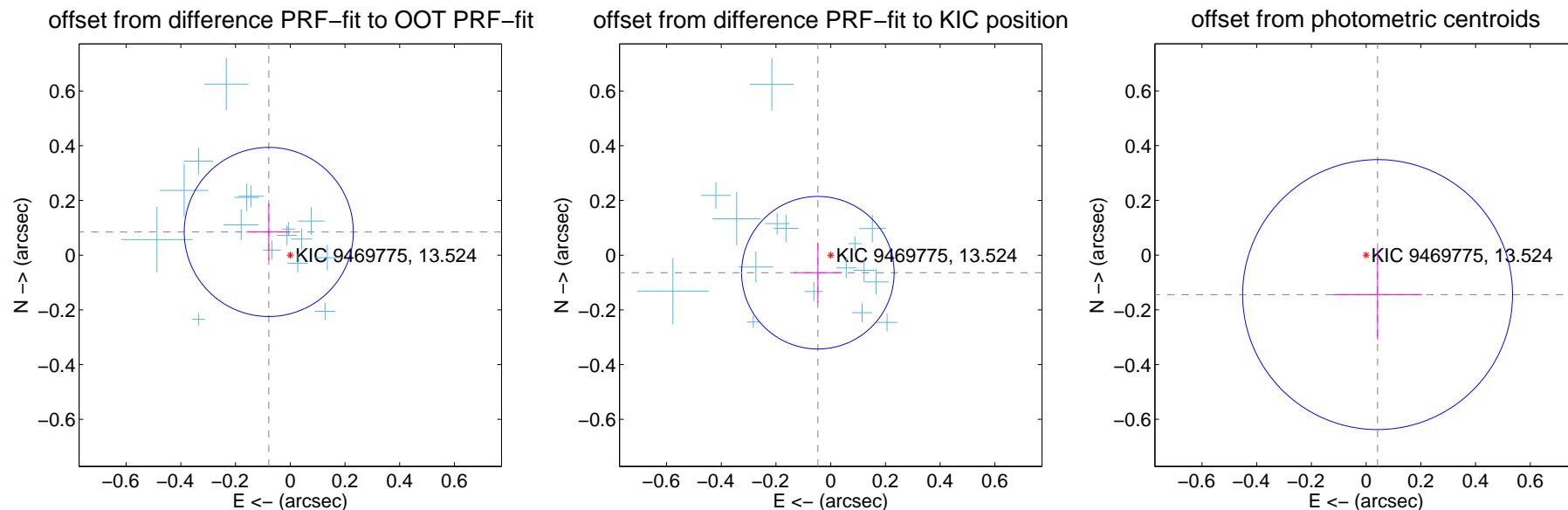
DV Centroid Data

Supplemental centroid analysis for 009469775-02. Kepler magnitude: 13.52. Transit SNR 9.93

There are 17 quarters with good PRF difference image offsets

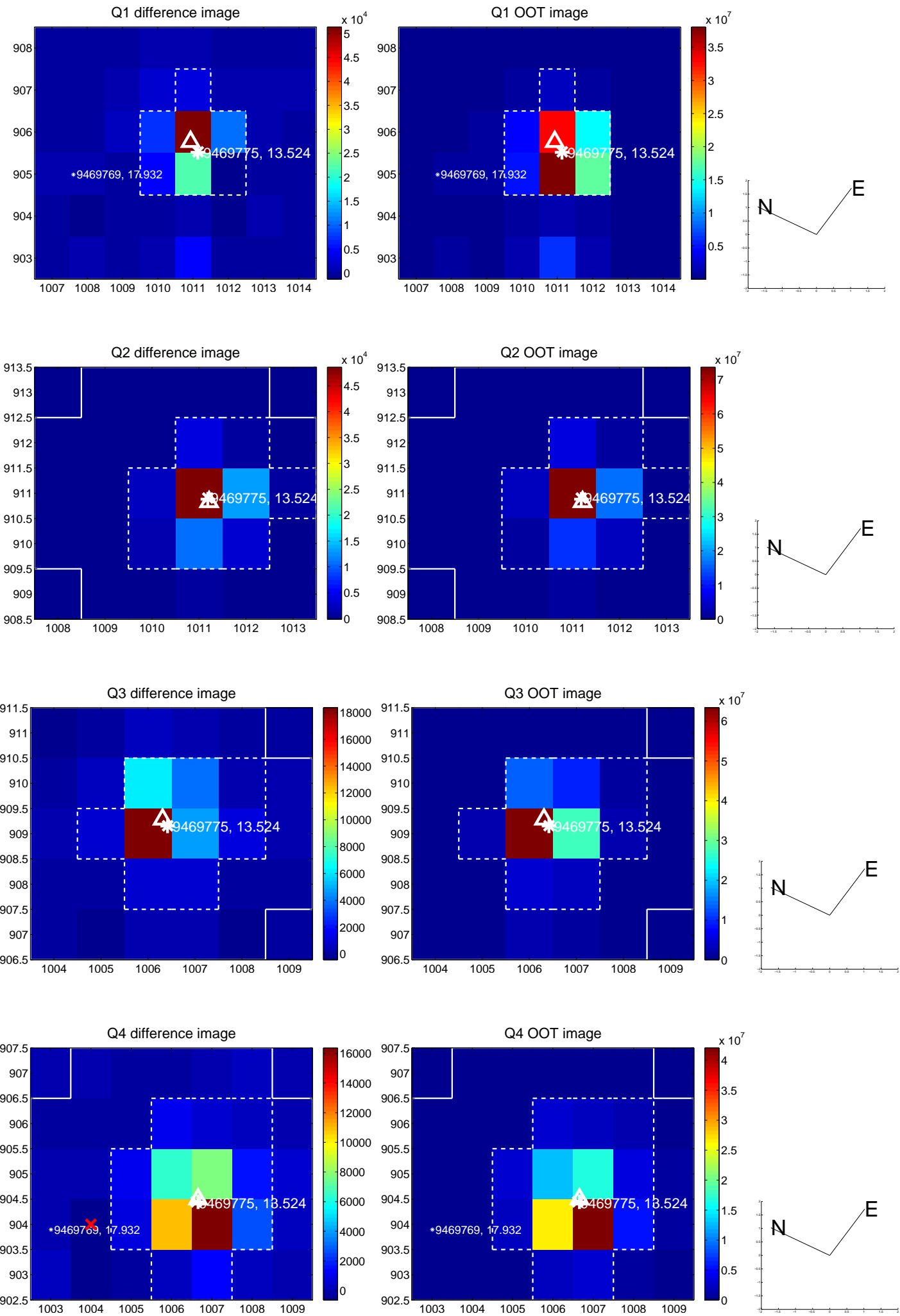
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.116 ± 0.103	1.12	0.079 ± 0.082	0.085 ± 0.103
PRF-fit source offset from KIC position	0.080 ± 0.093	0.86	0.047 ± 0.088	-0.064 ± 0.110
photometric centroid source offset	0.15 ± 0.16	0.91	-0.04 ± 0.16	-0.14 ± 0.16

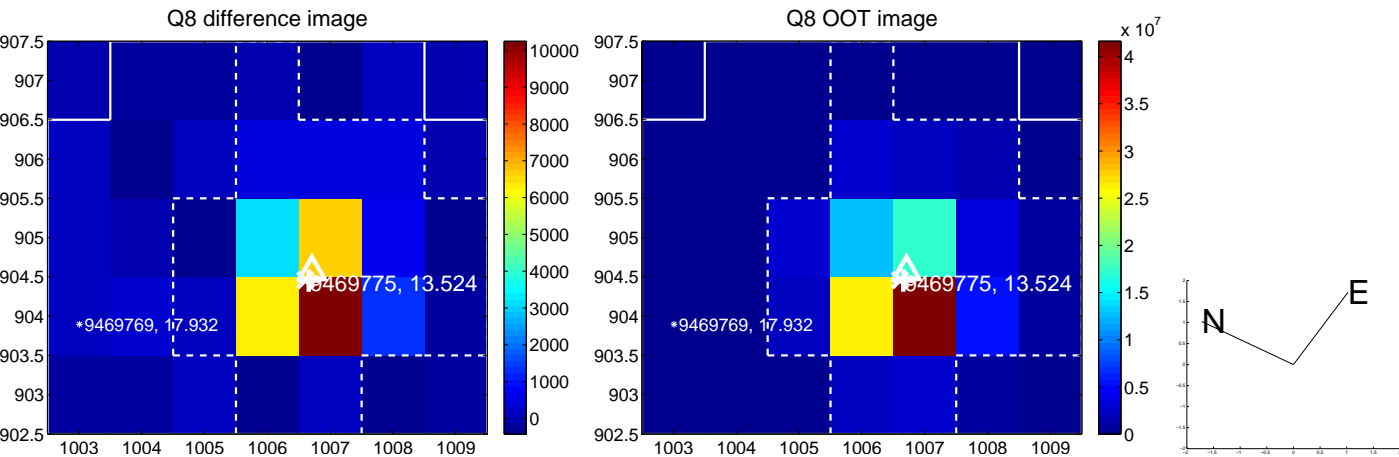
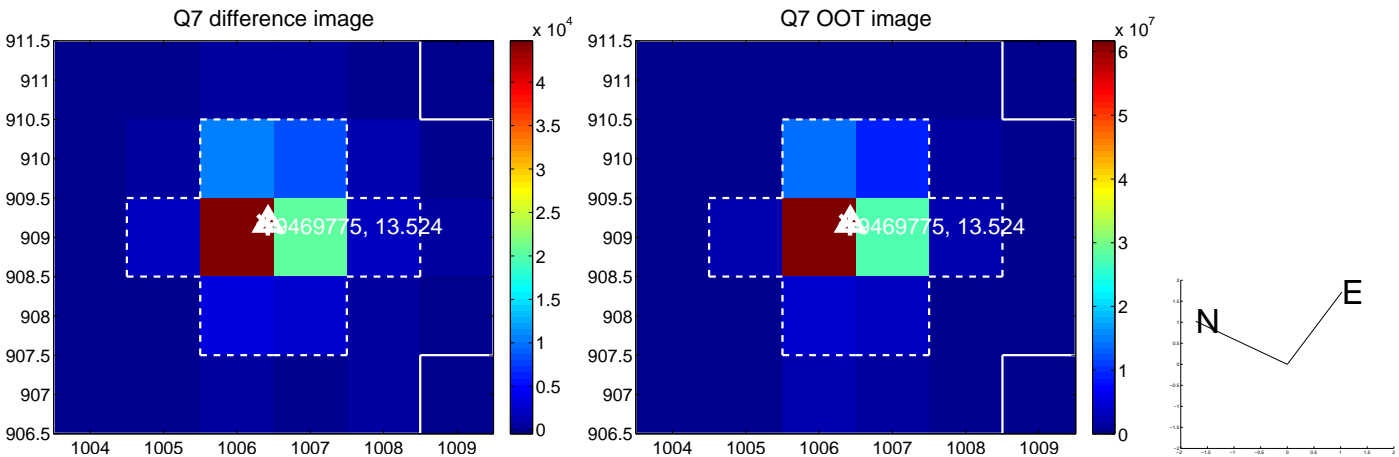
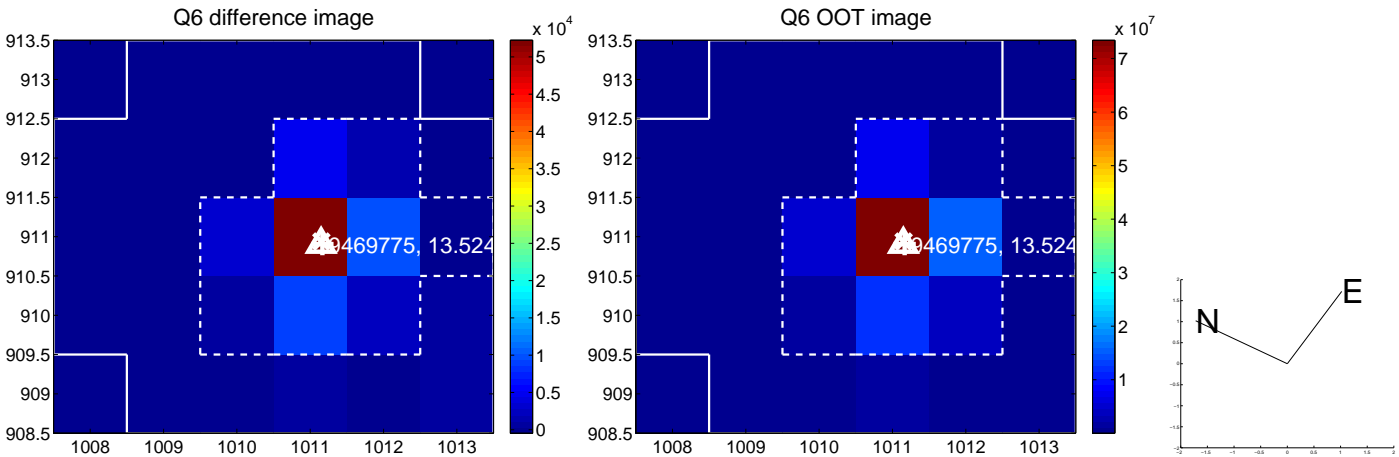
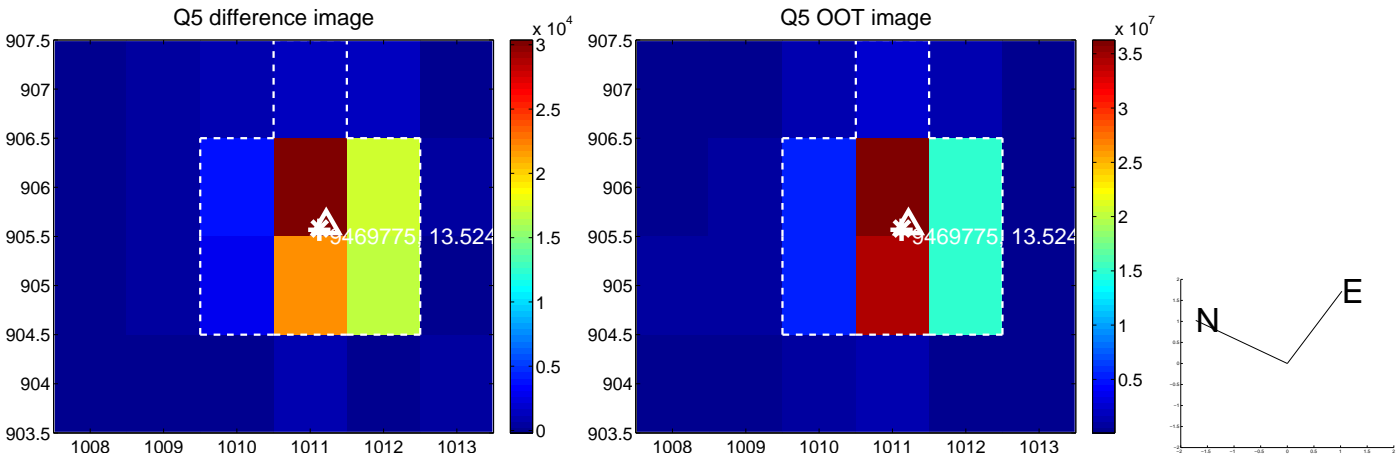


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

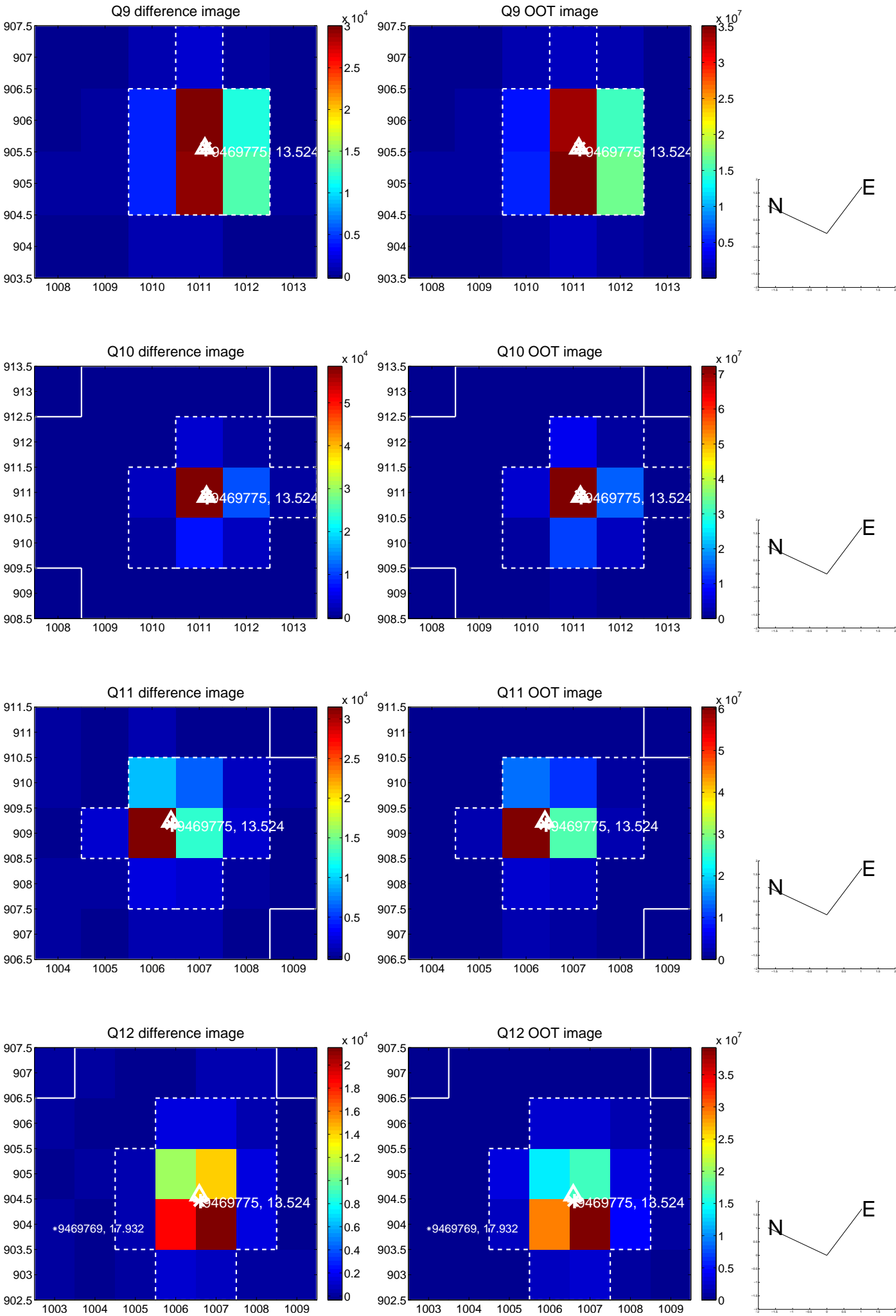
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



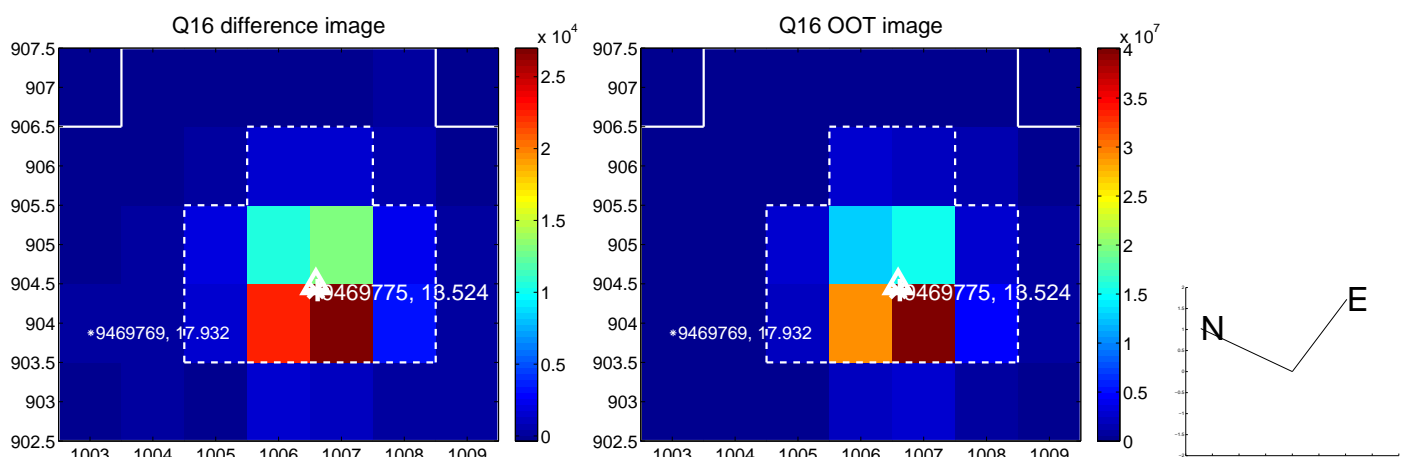
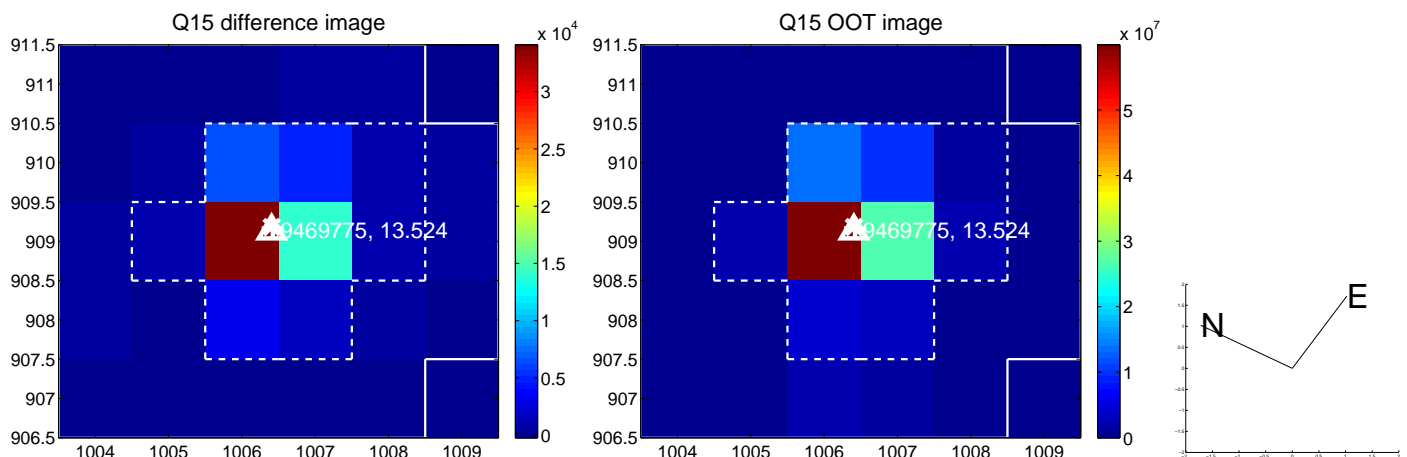
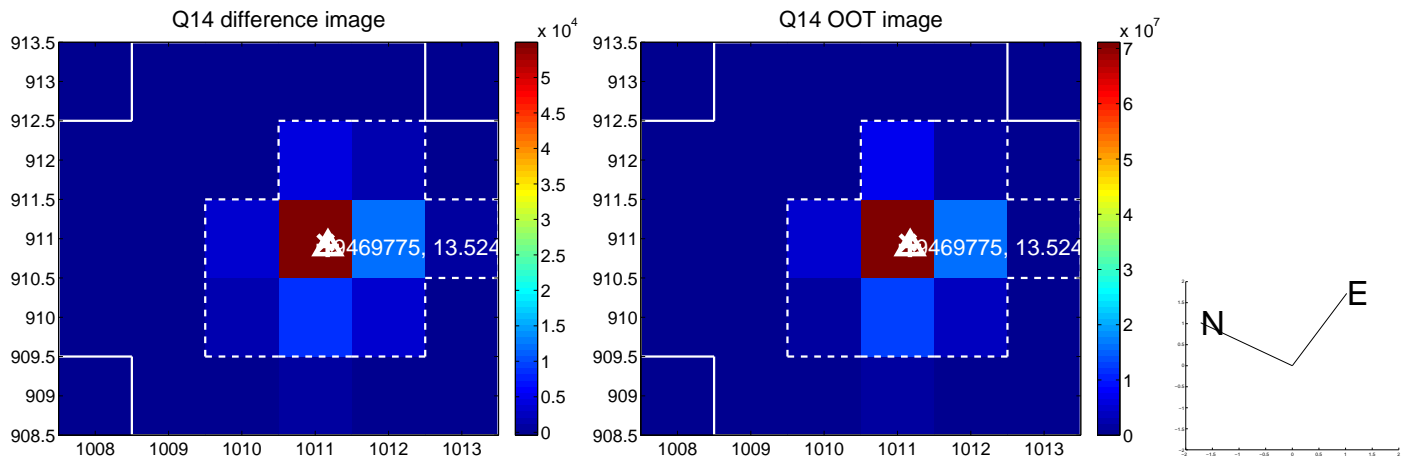
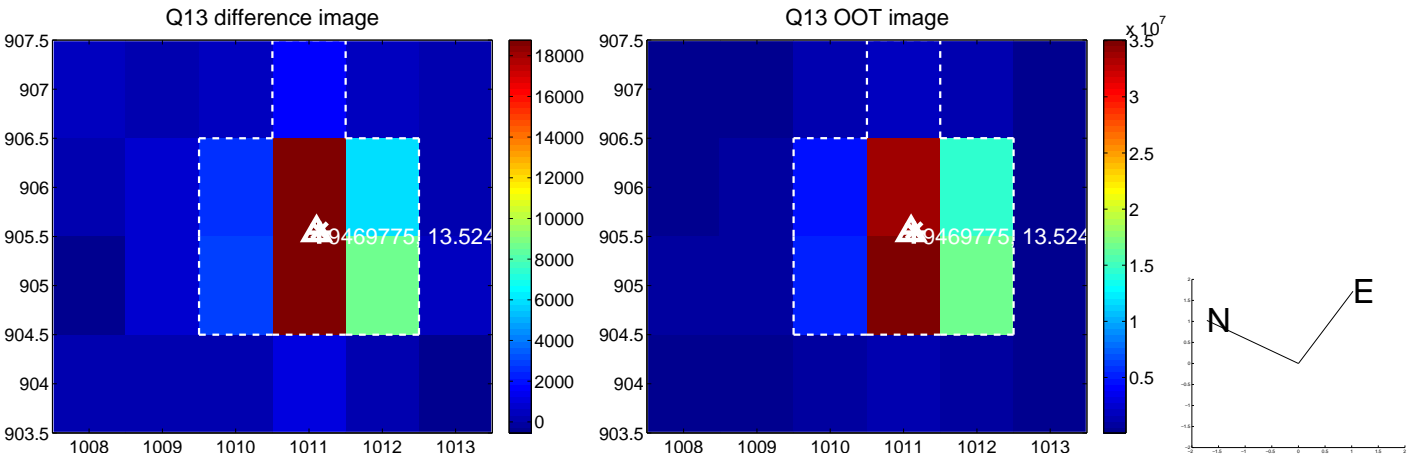
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



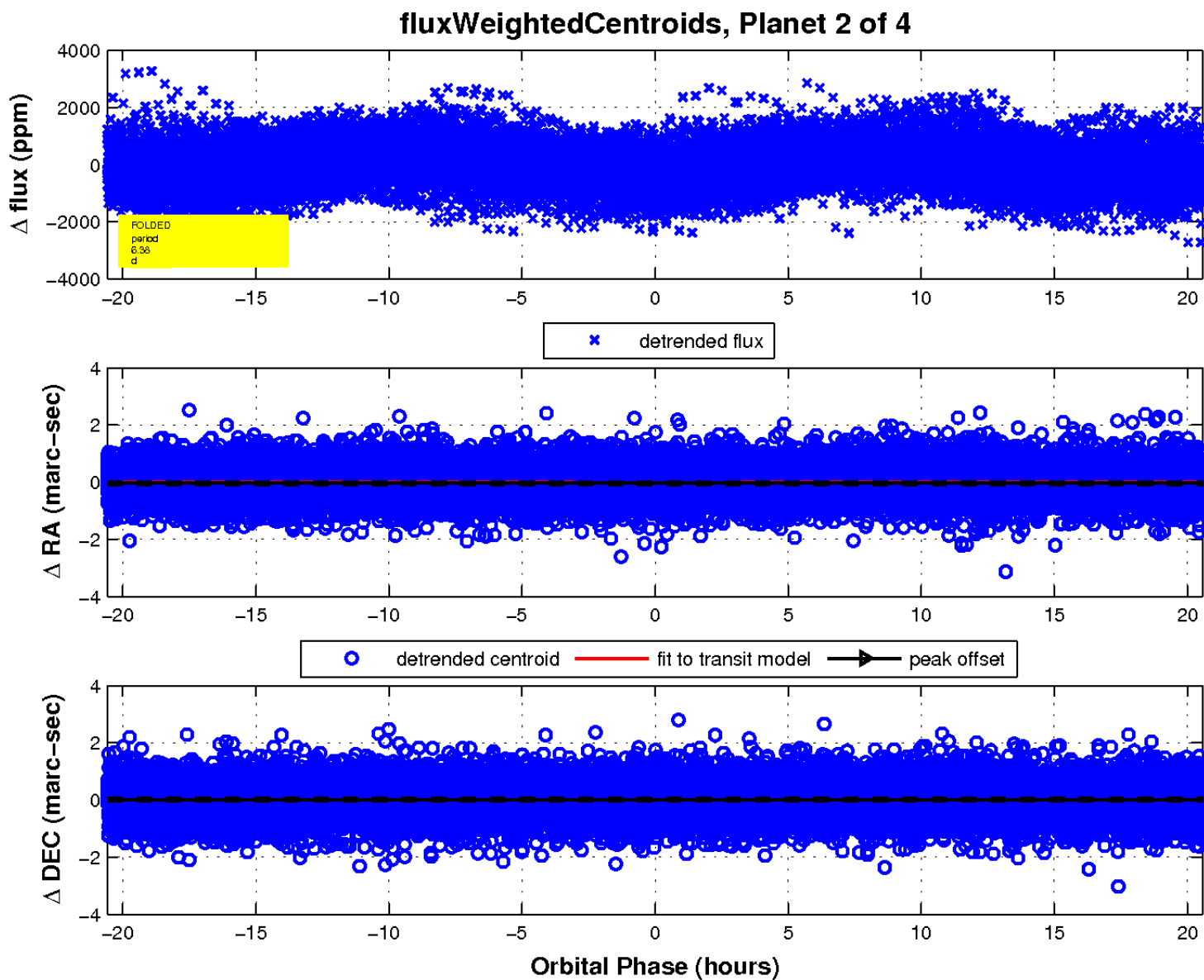
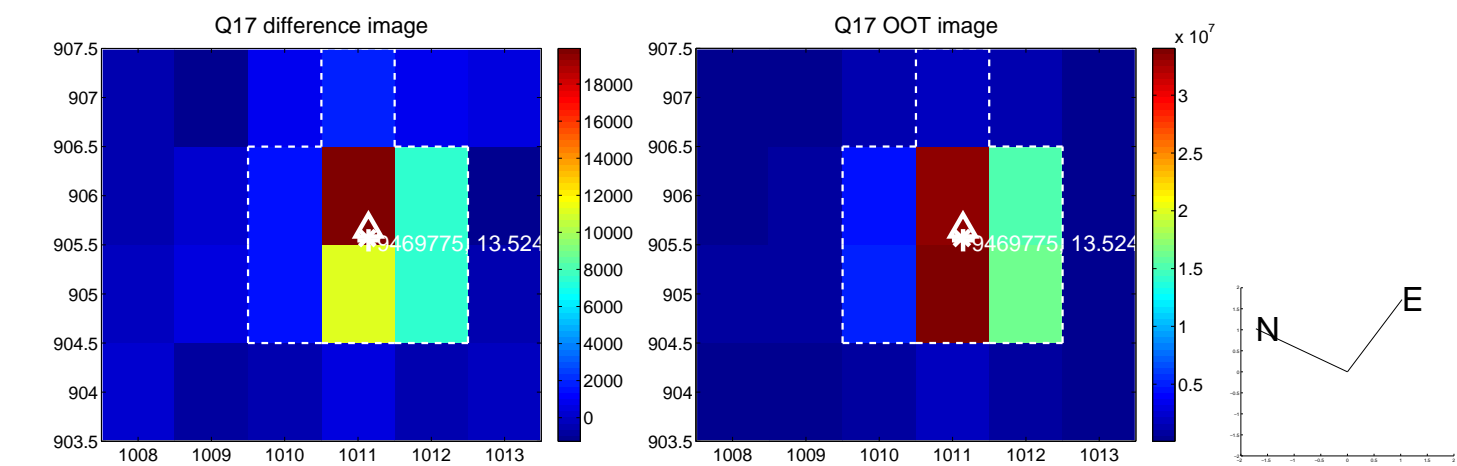
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

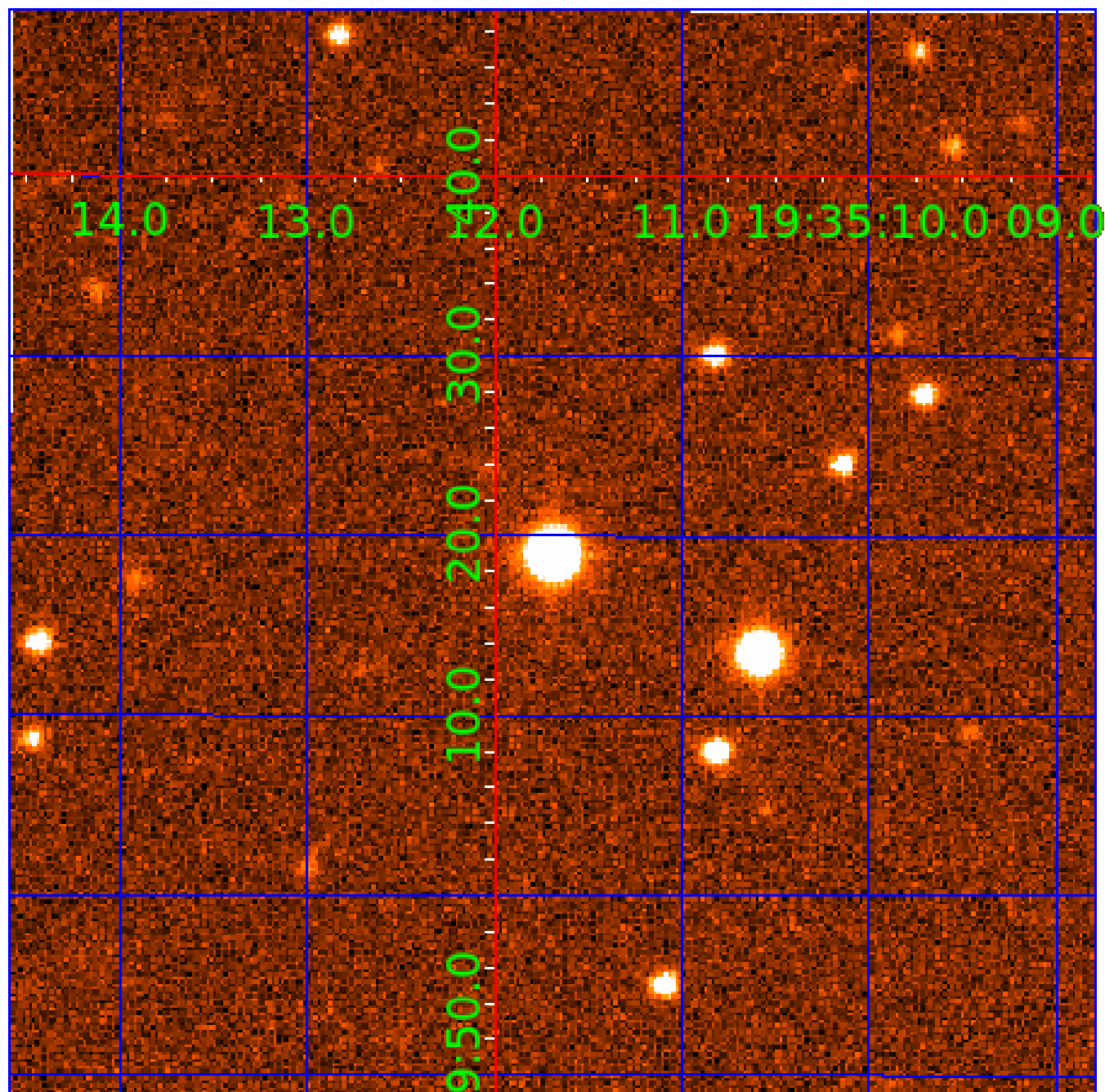


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009469775

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})
009469775-01	OBS	No	0.580157	131.909267	19.0	2.777	11.8	3.6	2.63	6732	1.16	47308.54
009469775-02	OBS	No	6.381551	132.772406	239.0	6.859	9.1	9.9	2.63	6732	4.84	1933.89
009469775-03	OBS	No	2.552120	132.281871	280.2	3.518	8.7	12.7	2.63	6732	5.13	6563.45
009469775-04	OBS	No	59.195396	155.183508	244.8	2.435	7.6	2.4	2.63	6732	4.61	99.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009469775-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009469775-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009469775-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009469775-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

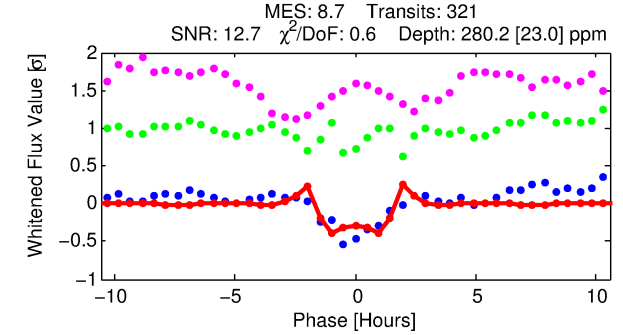
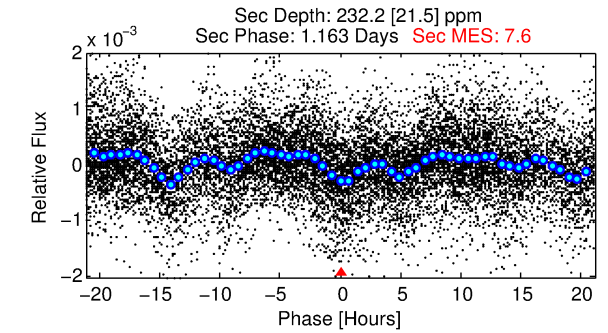
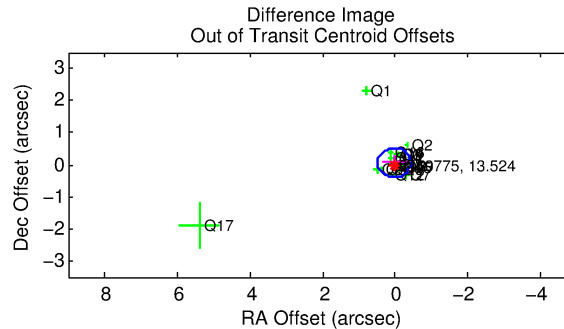
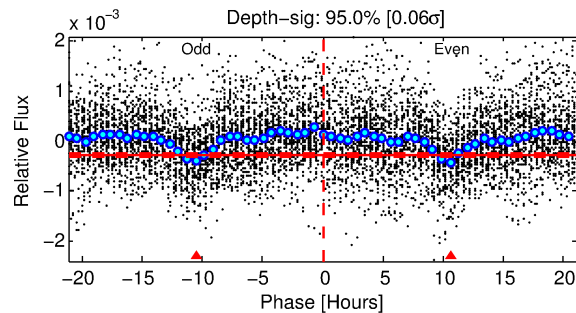
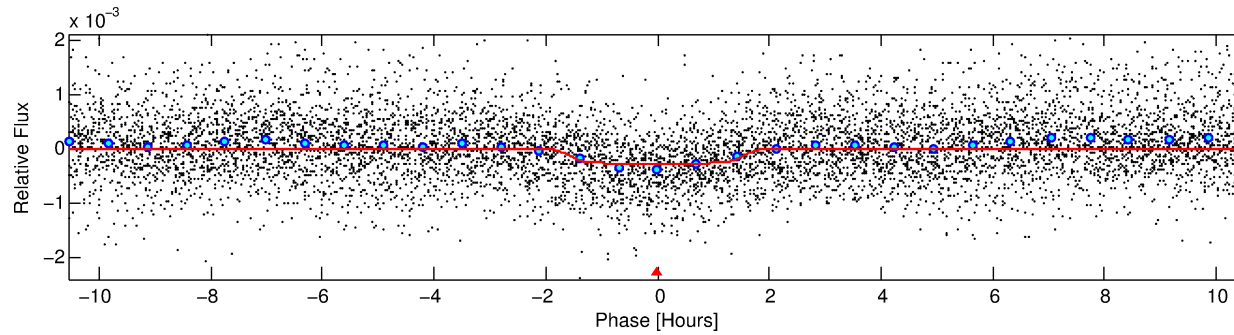
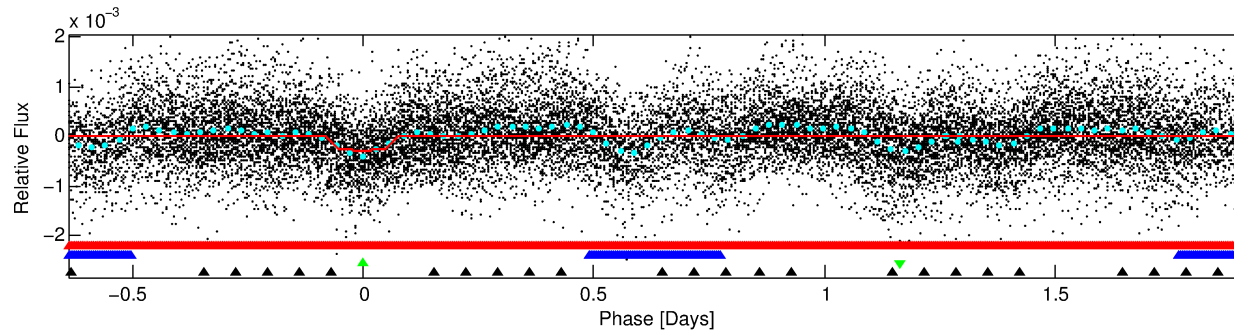
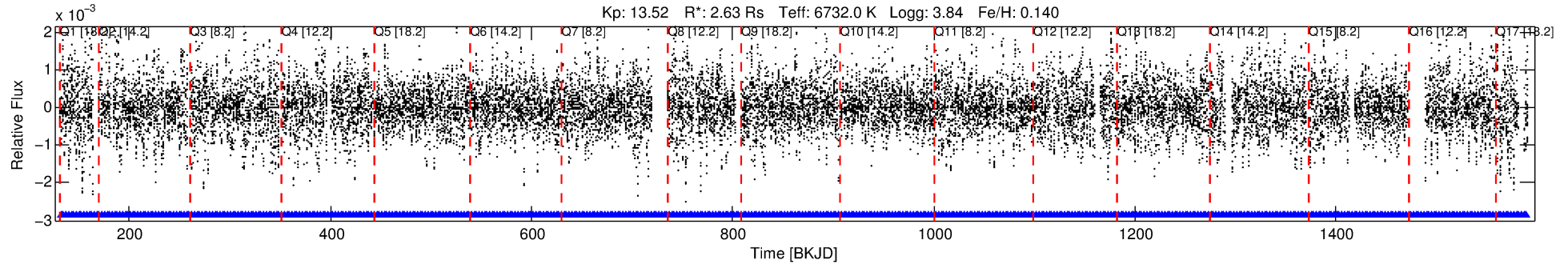
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009469775-03

No Significant Match Found

DV One-Page Summary

KIC: 9469775 Candidate: 3 of 4 Period: 2.552 d



DV Fit Results:

Period = 2.55212 [0.00001] d
Epoch = 132.2819 [0.0014] BKJD
Rp/R* = 0.0179 [0.0017]
a/R* = 2.80 [1.17]
b = 0.90 [0.10]
Seff = 6563.45 [4420.39]
Teq = 2295 [386] K
Rp = 5.13 [2.26] Re
a = 0.0440 [0.0180] AU
Ag = 9.39 [6.46] [1.30 σ]
Teffp = 6213 [422] K [6.84 σ]

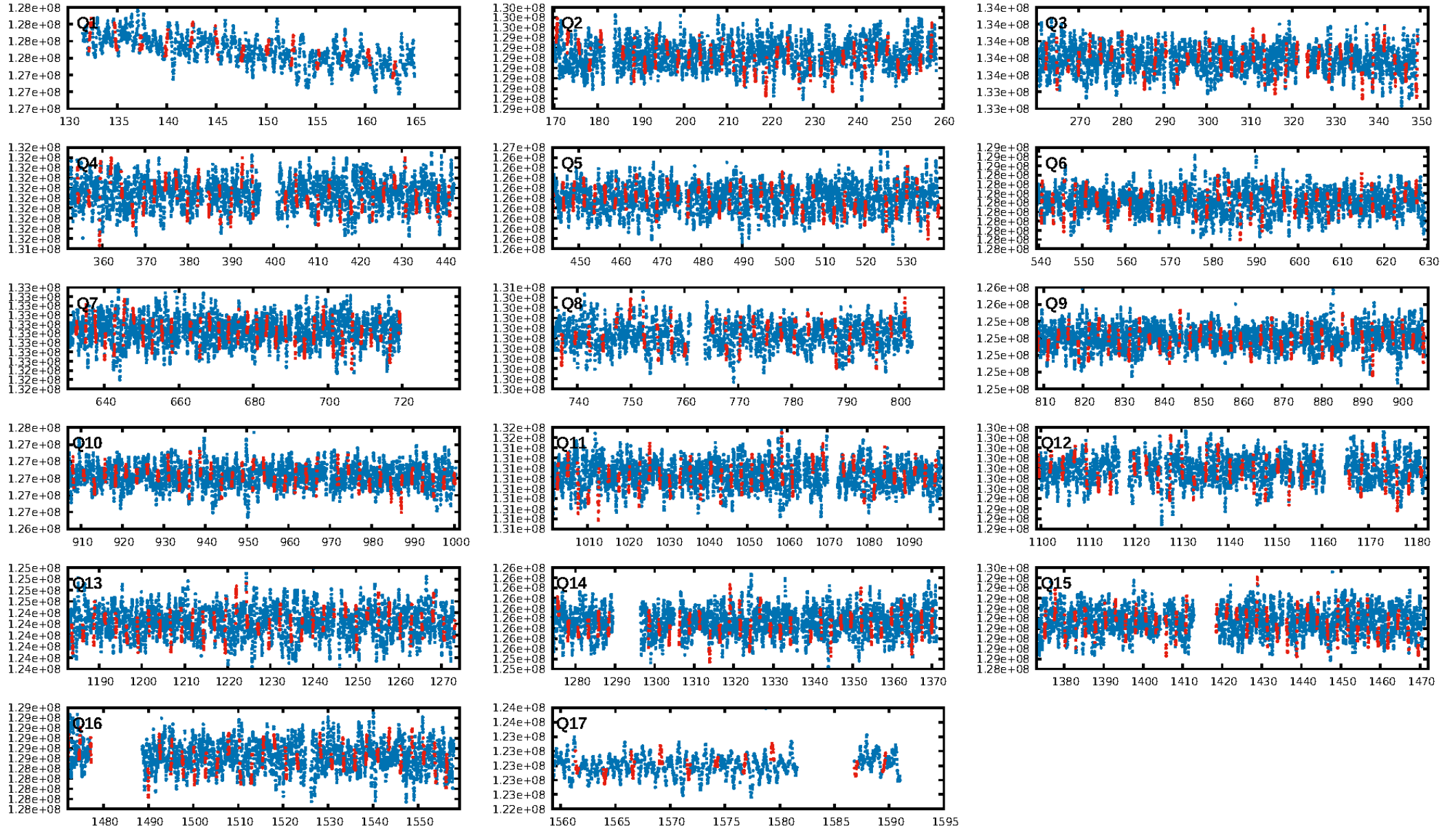
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.56 σ]
LongPeriod-sig: 100.0% [11.92 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.25e-17
RollingBand-fgt: 1.00 [308/308]
GhostDiagnostic-chr: 1.178
Centroid-sig: 85.6%
Centroid-so: 0.236 arcsec [2.05 σ]
OotOffset-rm: 0.067 arcsec [0.44 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.021 arcsec [0.12 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:48:26 Z

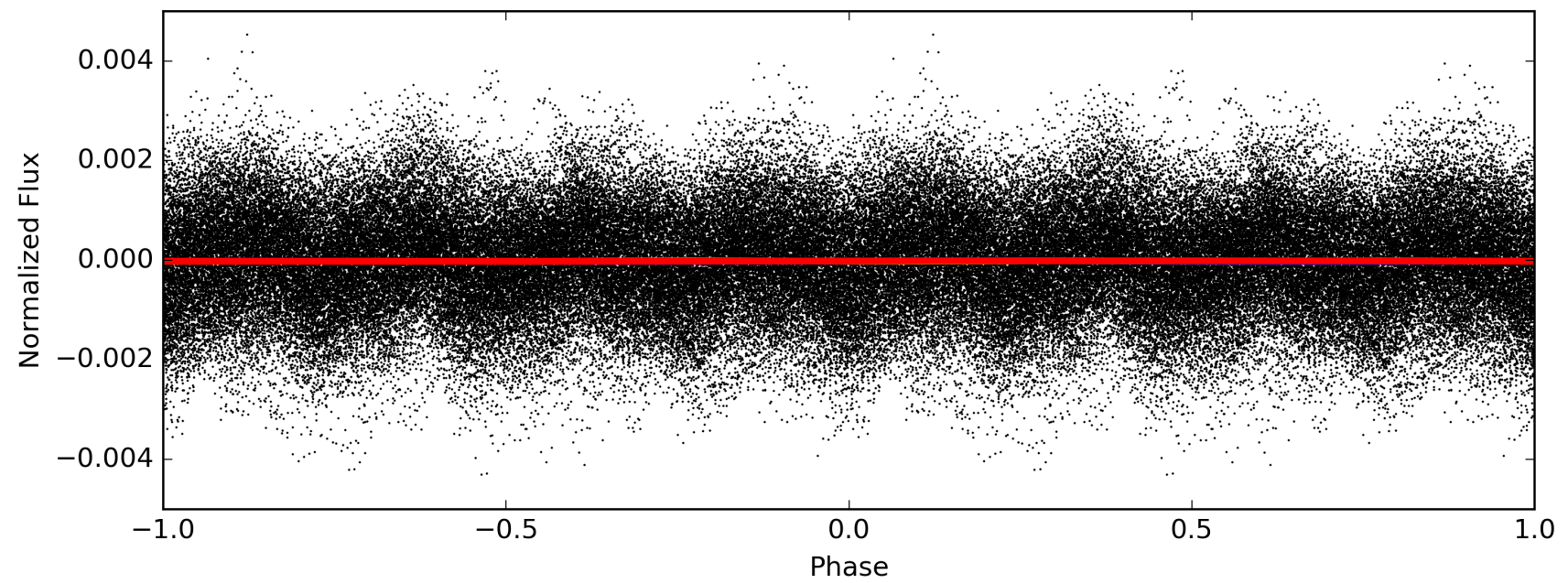
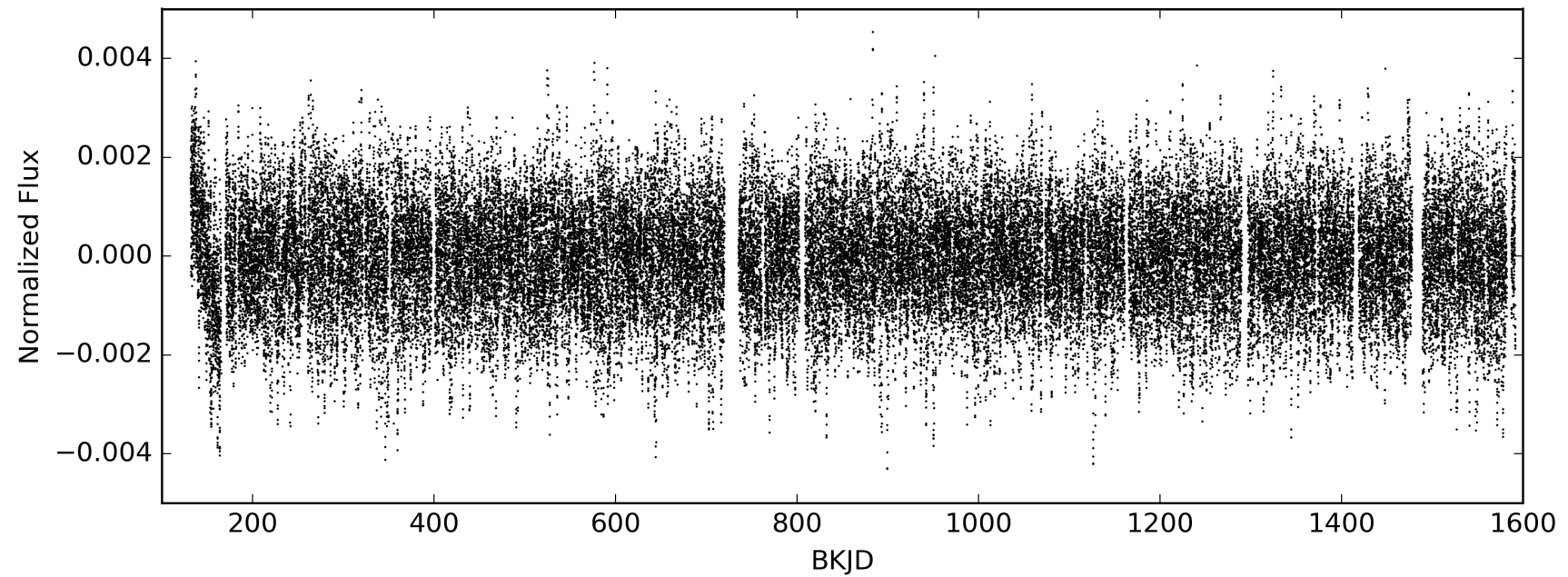
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009469775-03, PDC Light Curves



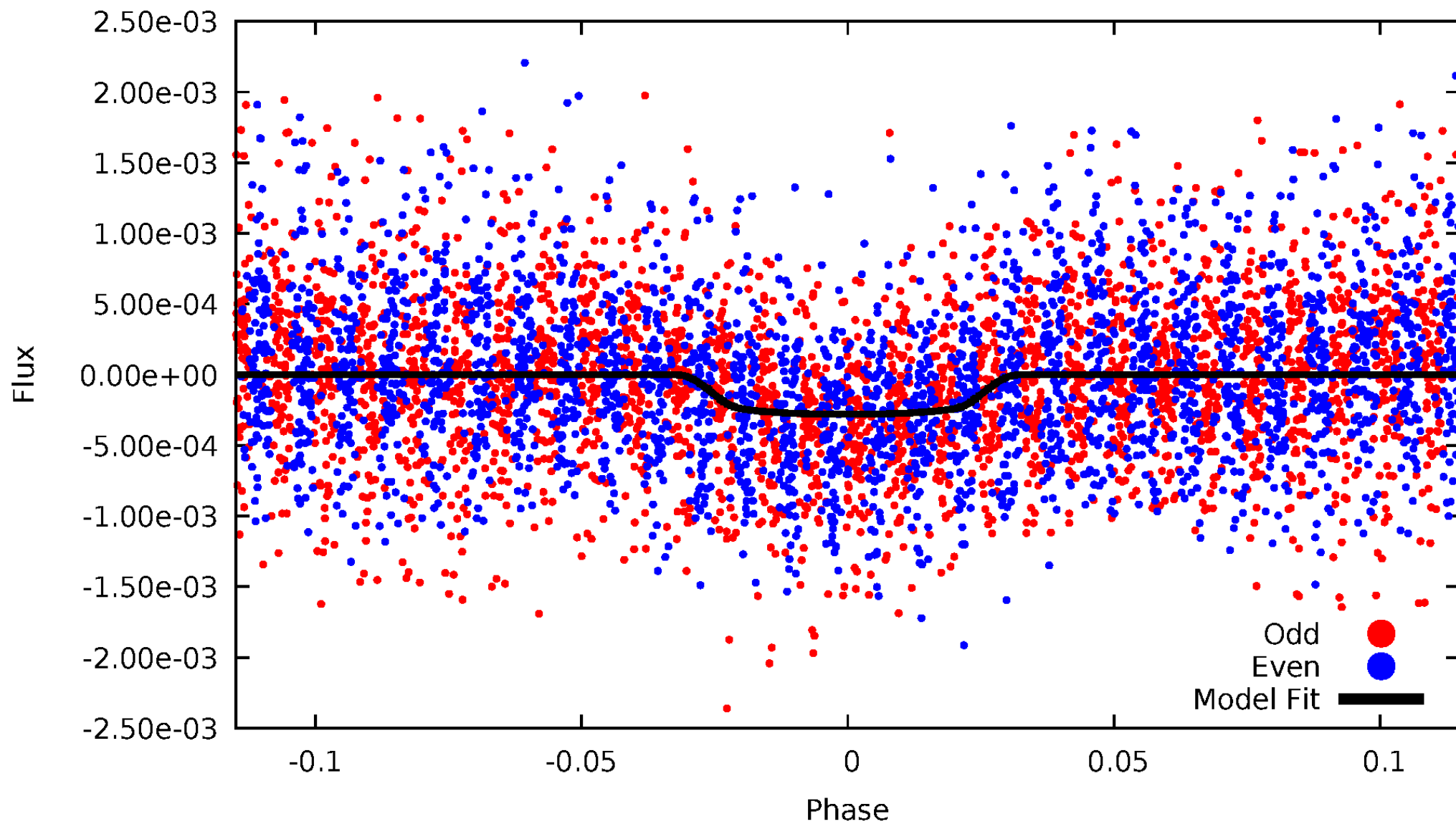
TCE 009469775-03

— P = 1.276 days — P = 2.552 days — P = 5.104 days



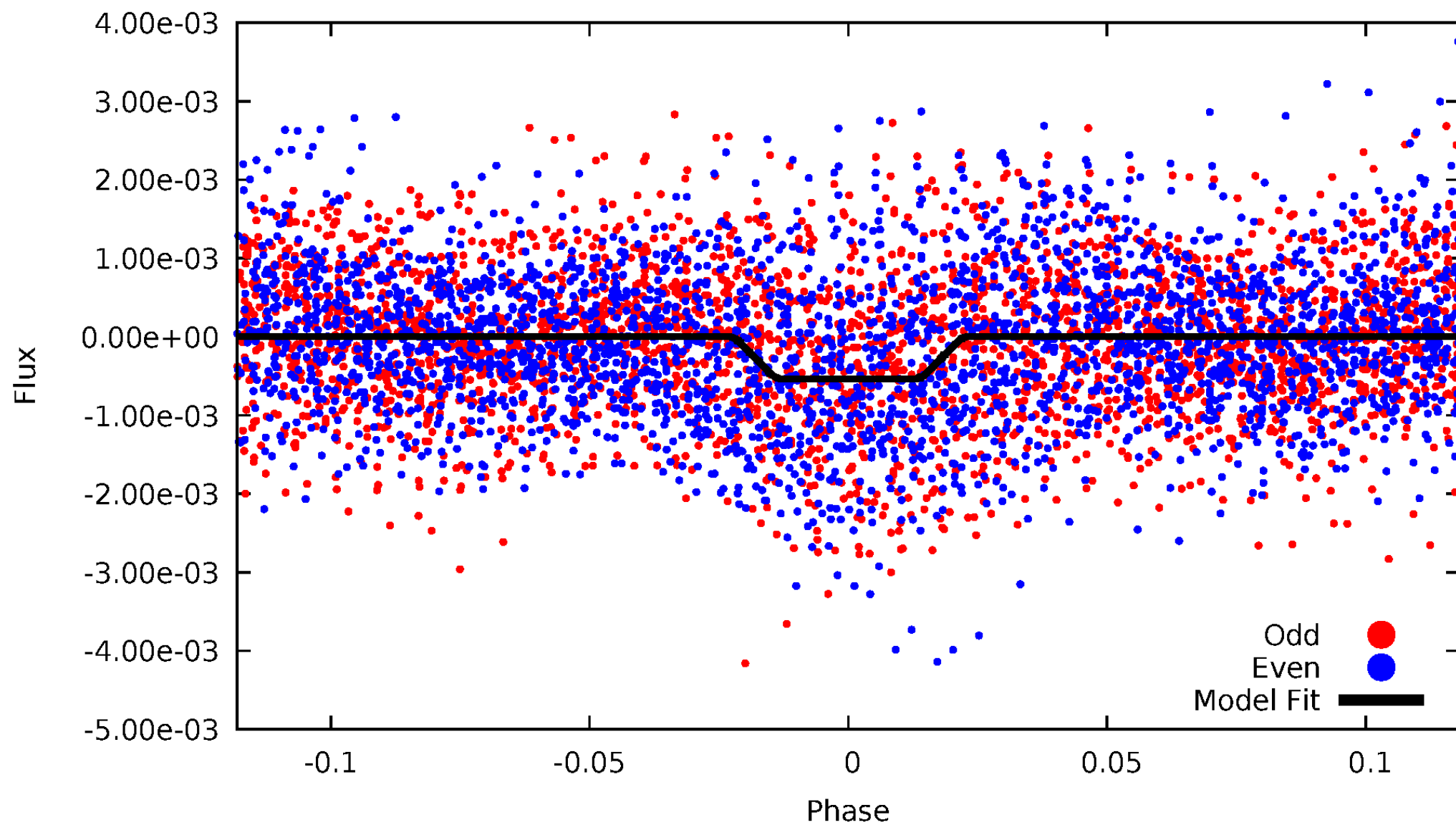
DV Odd/Even

TCE 009469775-03

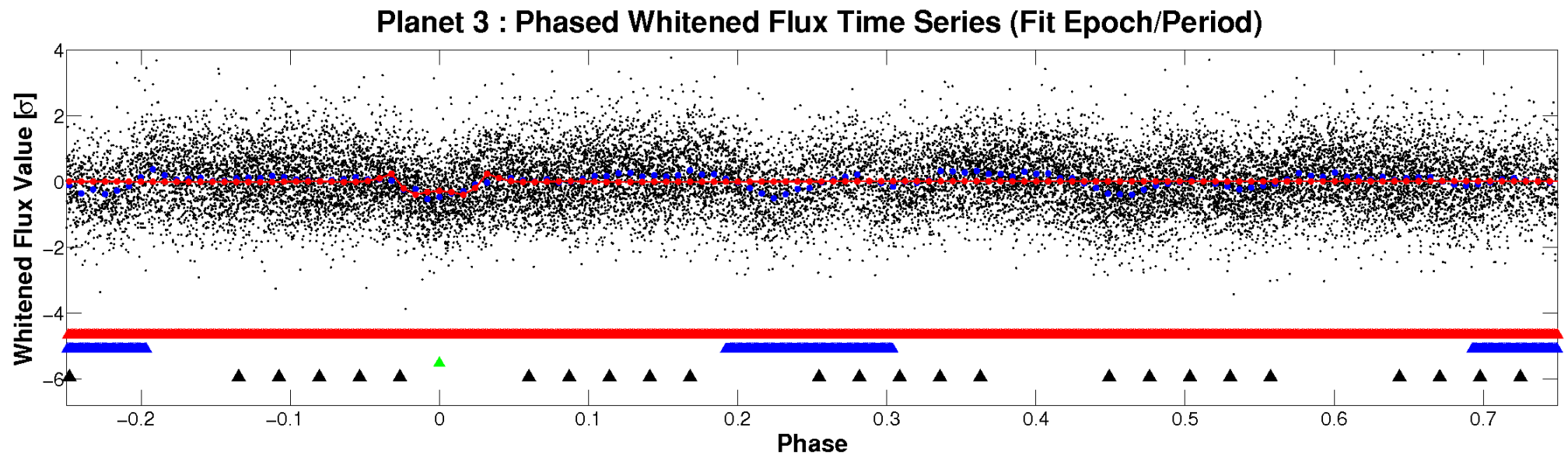
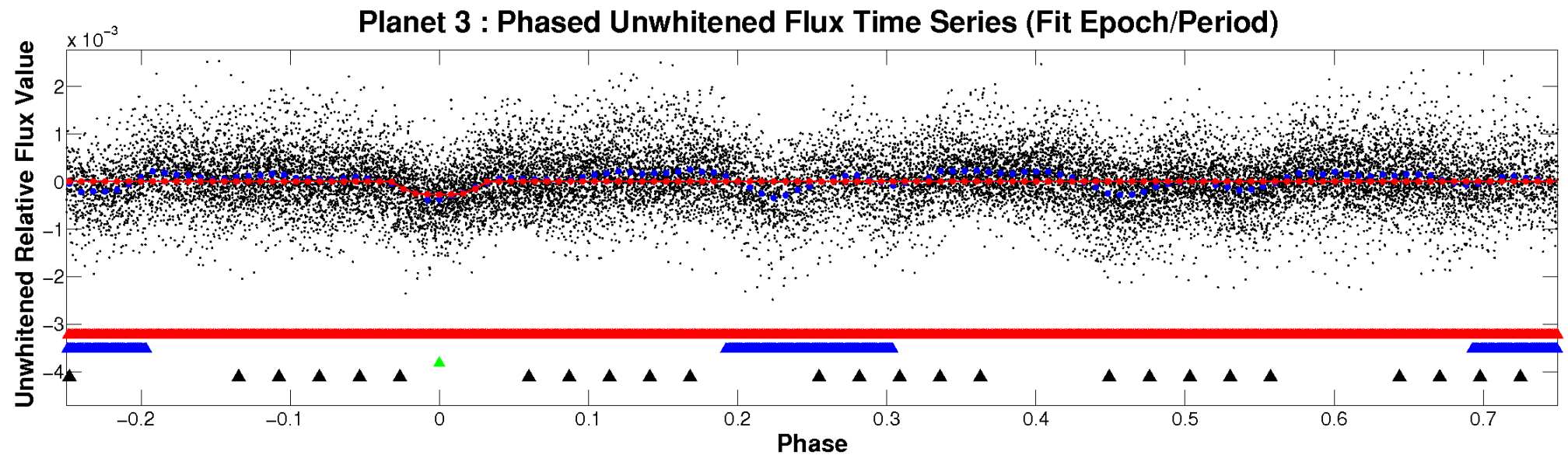


ALT Odd/Even

TCE 009469775-03

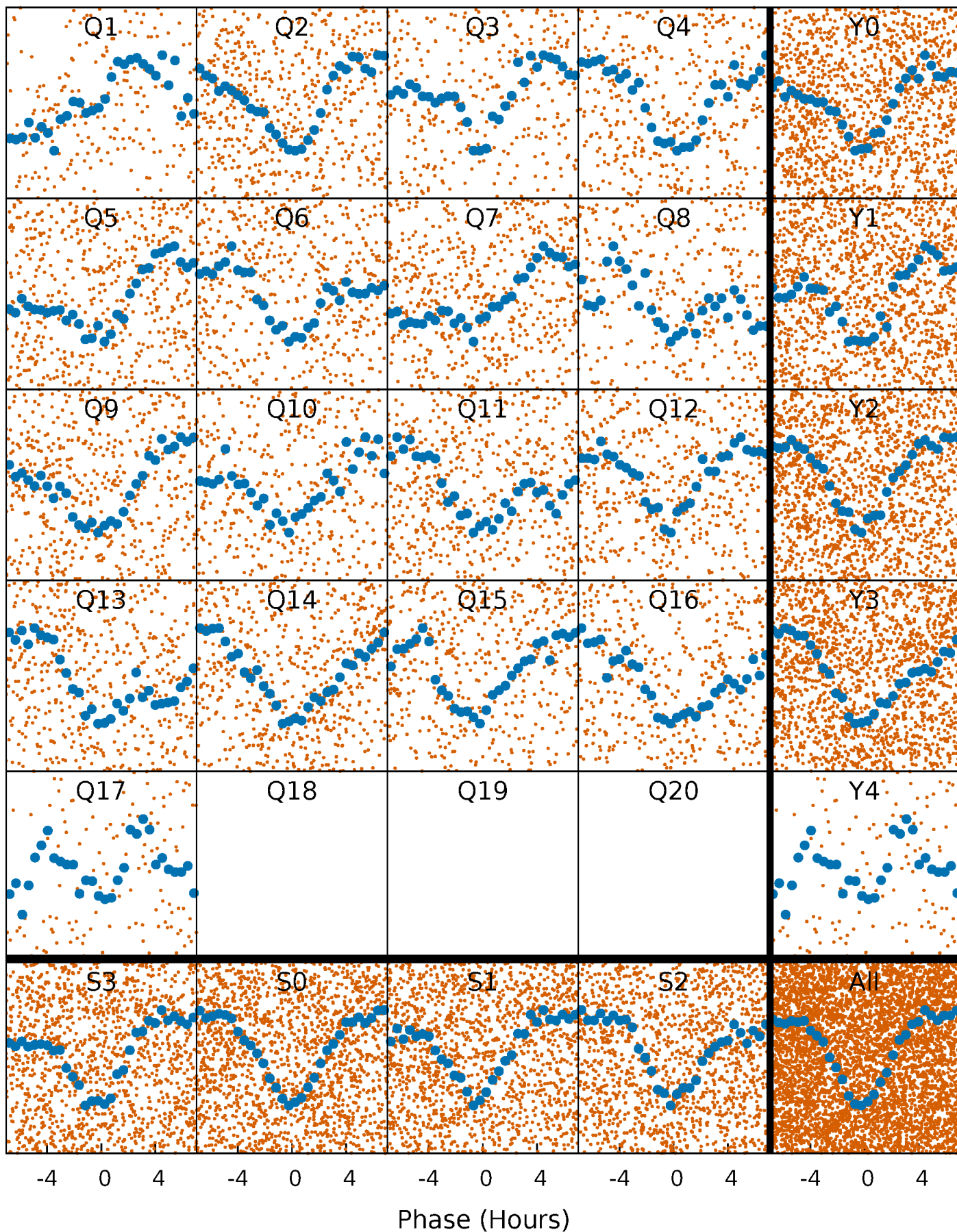


Non-Whitened Vs. Whitened Light Curve



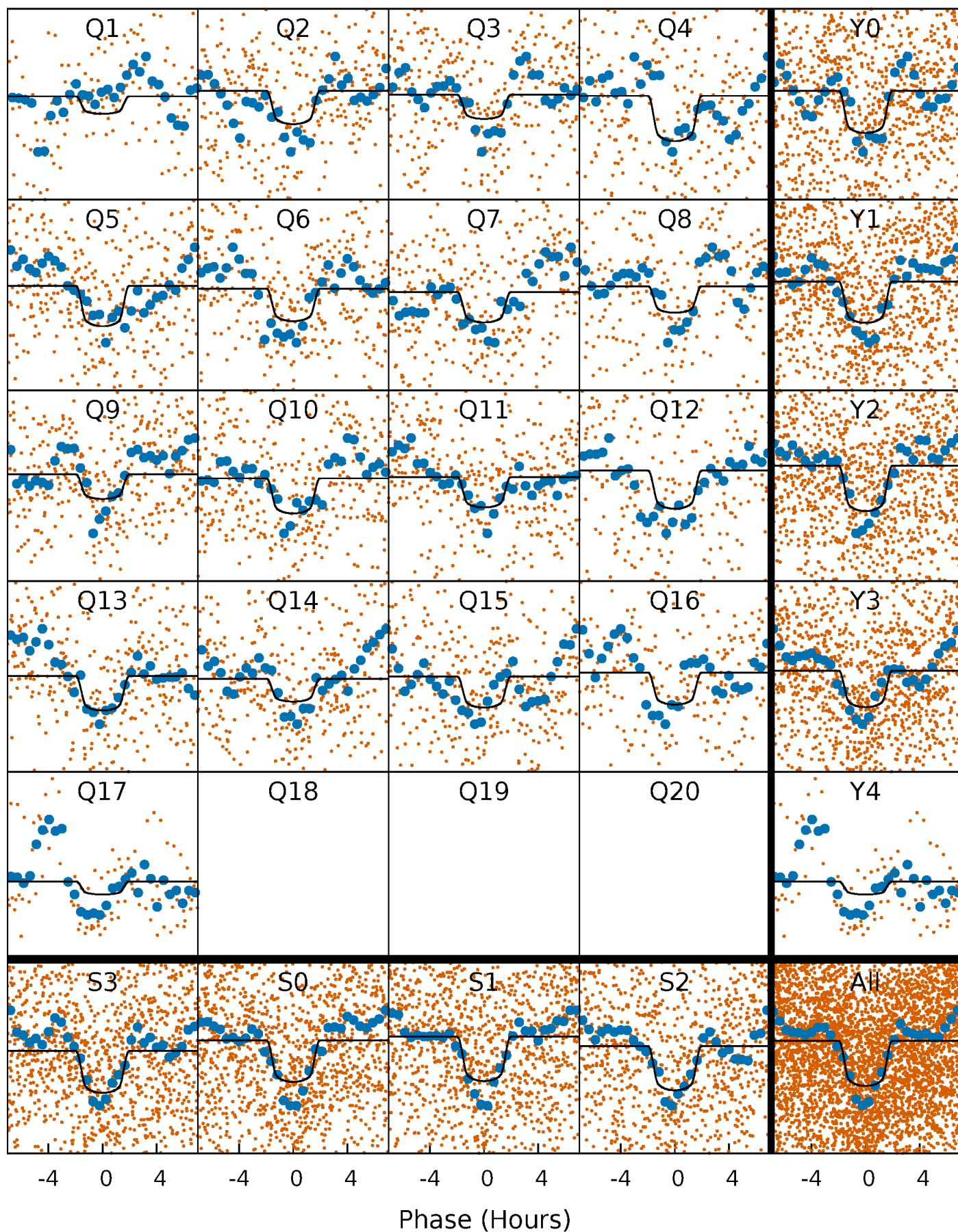
PDC Quarter-Phased Transit Curves

TCE 009469775-03 P= 2.552120 Days $T_0=132.281871$ (BKJD)



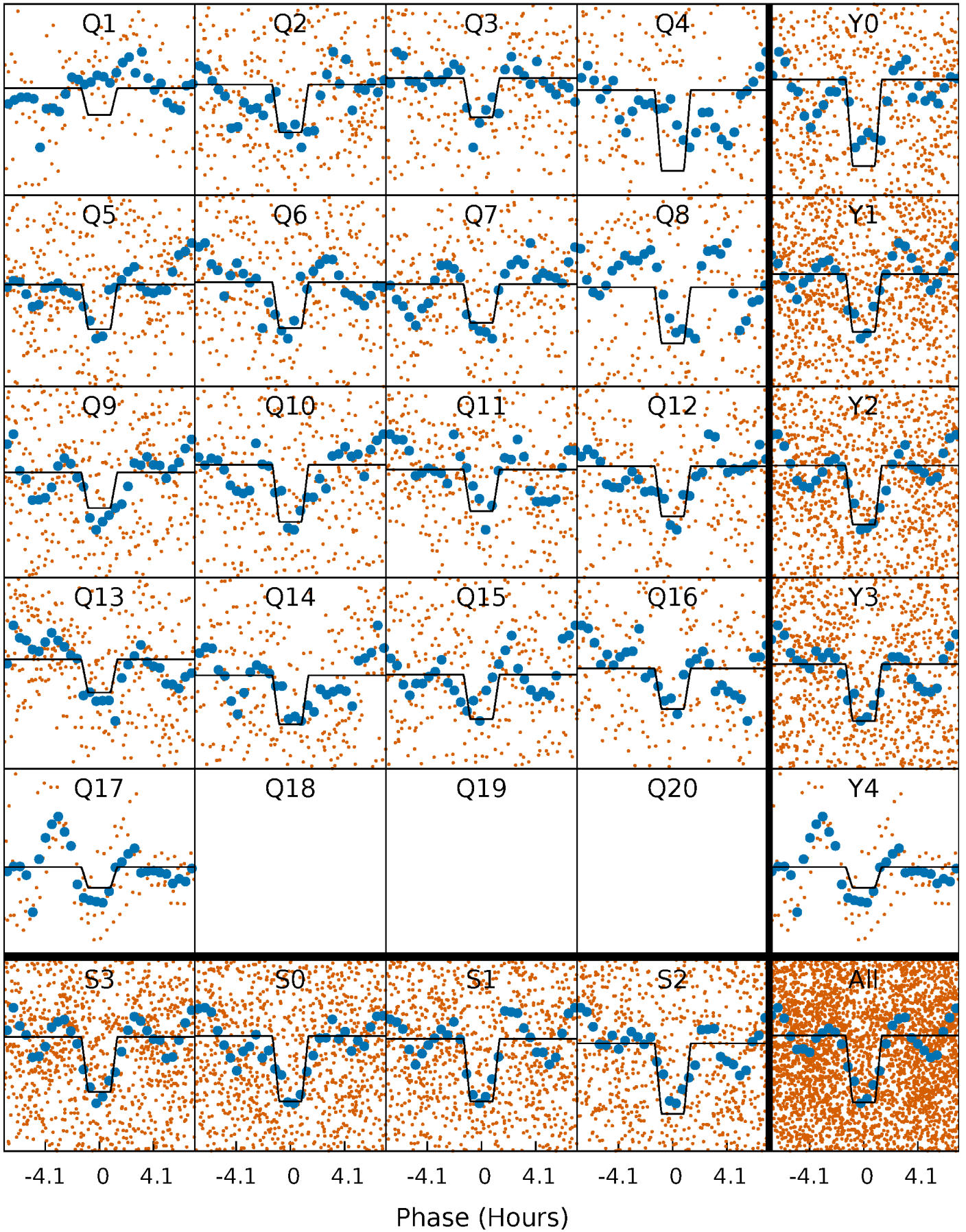
DV Quarter-Phased Transit Curves

TCE 009469775-03 P= 2.552120 Days $T_0=132.281871$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

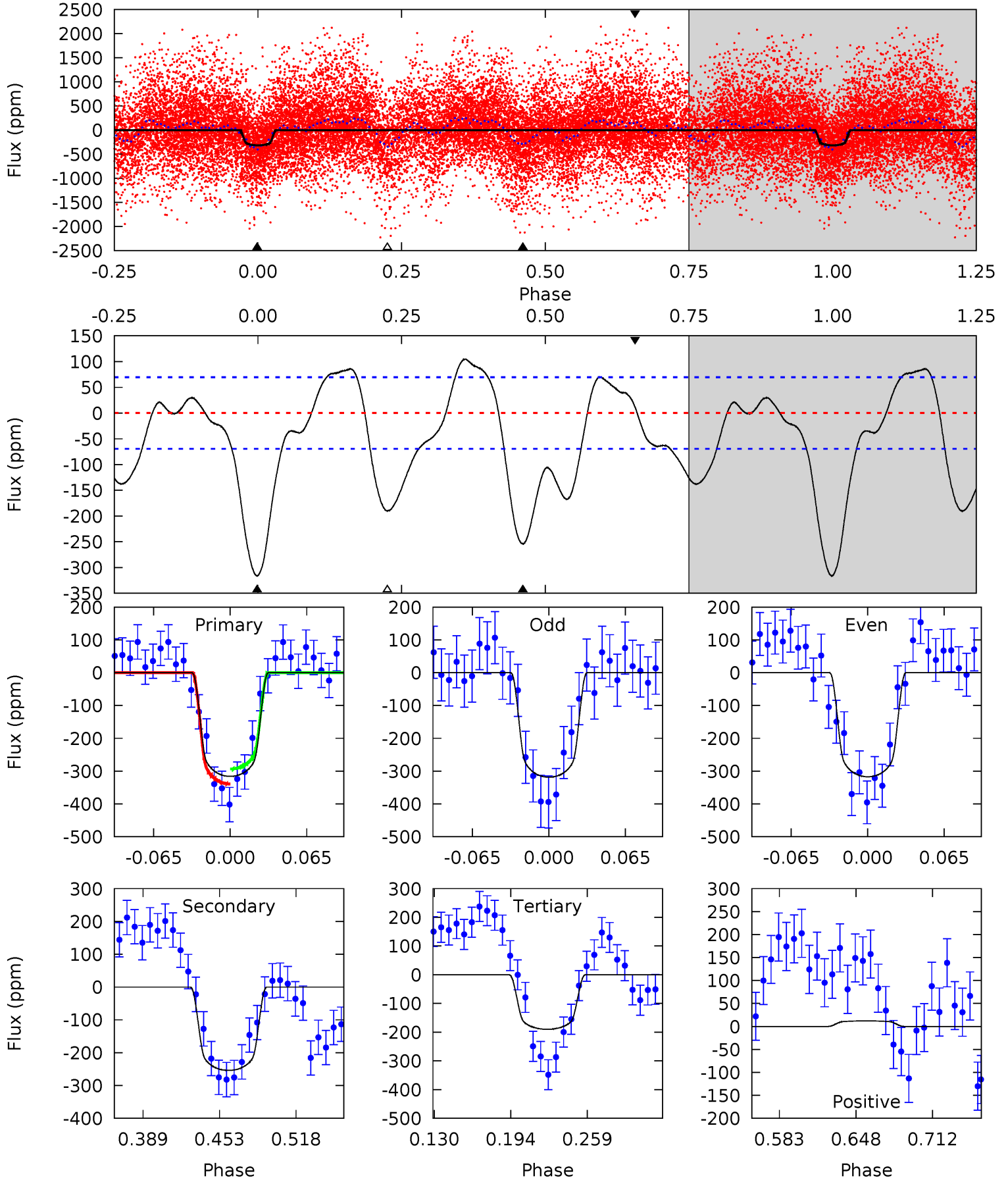
TCE 009469775-03 P= 2.552089 Days $T_0=132.281881$ (BKJD)



DV Model-Shift Uniqueness Test

009469775-03, P = 2.552120 Days, E = 129.729751 Days

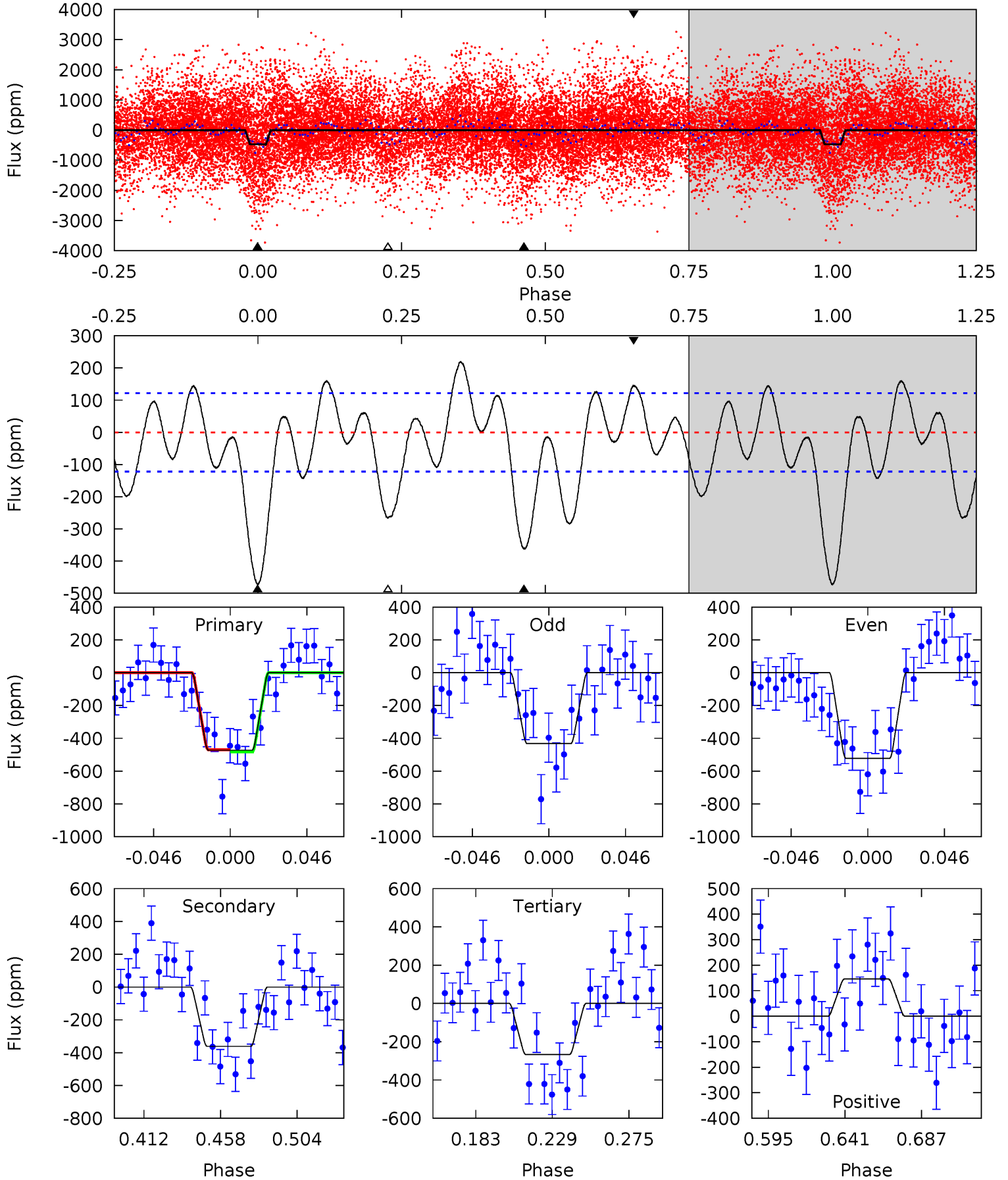
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	17.0	12.7	0.80	4.66	1.85	5.18	8.44	20.4	4.30	16.2	0.05	0.97	0.25	1.52



Alt Model-Shift Uniqueness Test

009469775-03, P = 2.552089 Days, E = 129.729792 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	14.0	10.3	5.67	4.73	2.00	4.24	7.99	12.7	3.68	8.35	1.73	0.97	0.32	0.26



Stellar Parameters For KIC 009469775

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6732^{+185}_{-278}	$3.840^{+0.382}_{-0.127}$	$0.140^{+0.200}_{-0.350}$	$2.626^{+0.609}_{-1.131}$	$1.739^{+0.188}_{-0.438}$	$0.135^{+0.433}_{-0.051}$
	+3%/-4%	+10%/-3%	+143%/-250%	+23%/-43%	+11%/-25%	+320%/-38%
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 009469775-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-254 ± 15	$4.85^{+1.03}_{-1.26}$	3115^{+233}_{-368}	6270^{+383}_{-393}	12^{+8}_{-3}
Alt.	-361 ± 26	$6.26^{+1.17}_{-1.41}$	3099^{+265}_{-314}	6004^{+348}_{-314}	$9.816^{+5.646}_{-2.737}$

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

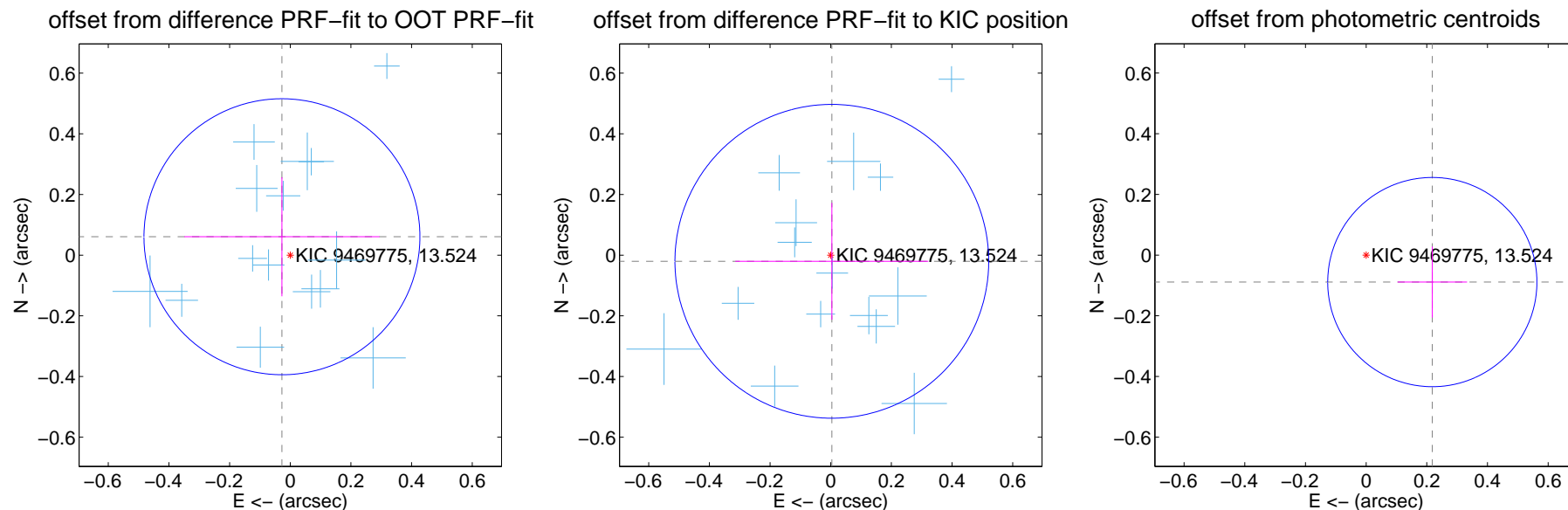
DV Centroid Data

Supplemental centroid analysis for 009469775-03. Kepler magnitude: 13.52. Transit SNR 12.71

There are 15 quarters with good PRF difference image offsets

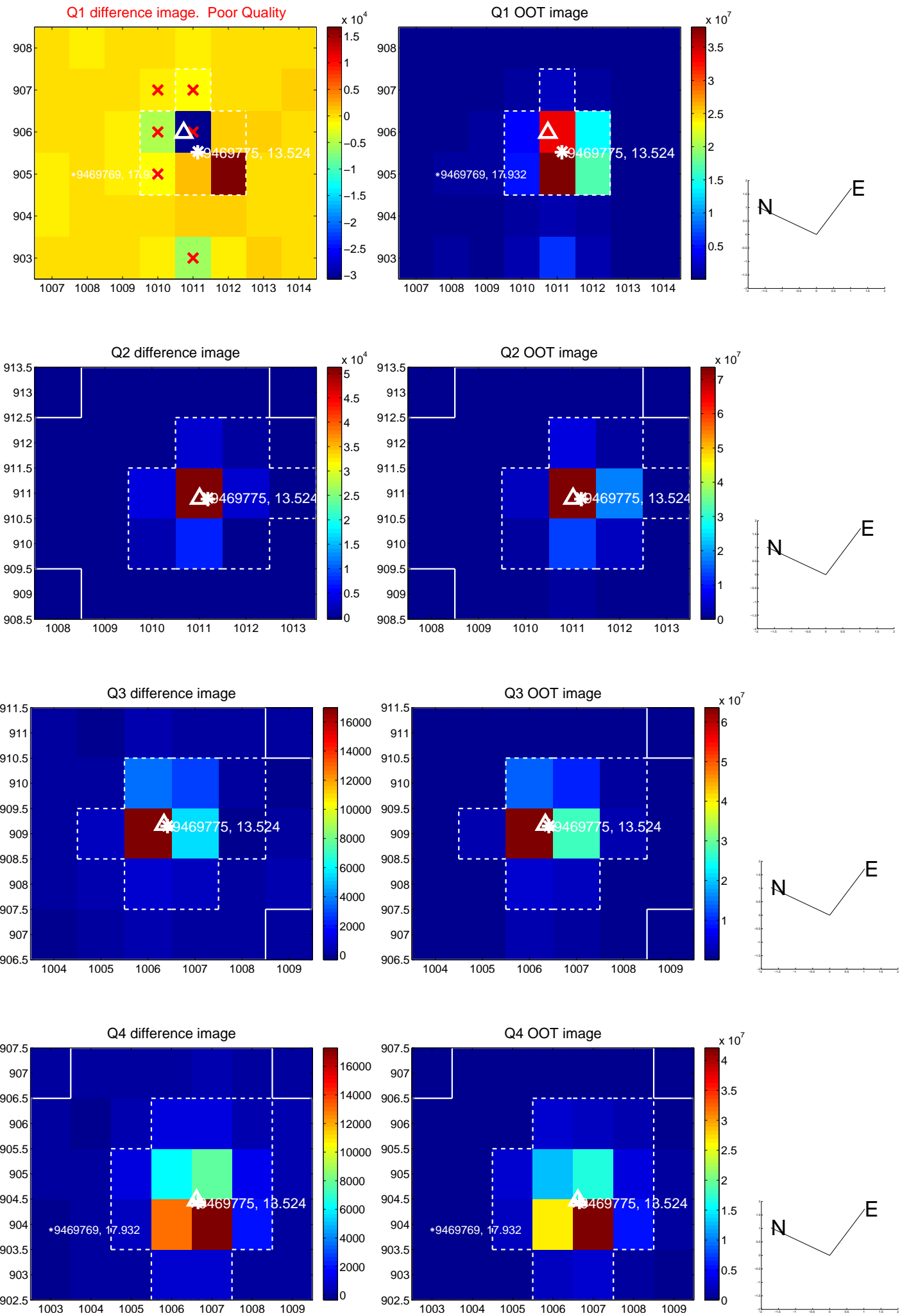
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.067 ± 0.152	0.44	0.027 ± 0.322	0.061 ± 0.196
PRF-fit source offset from KIC position	0.021 ± 0.172	0.12	-0.004 ± 0.318	-0.020 ± 0.193
photometric centroid source offset	0.24 ± 0.11	2.05	-0.22 ± 0.11	-0.09 ± 0.12

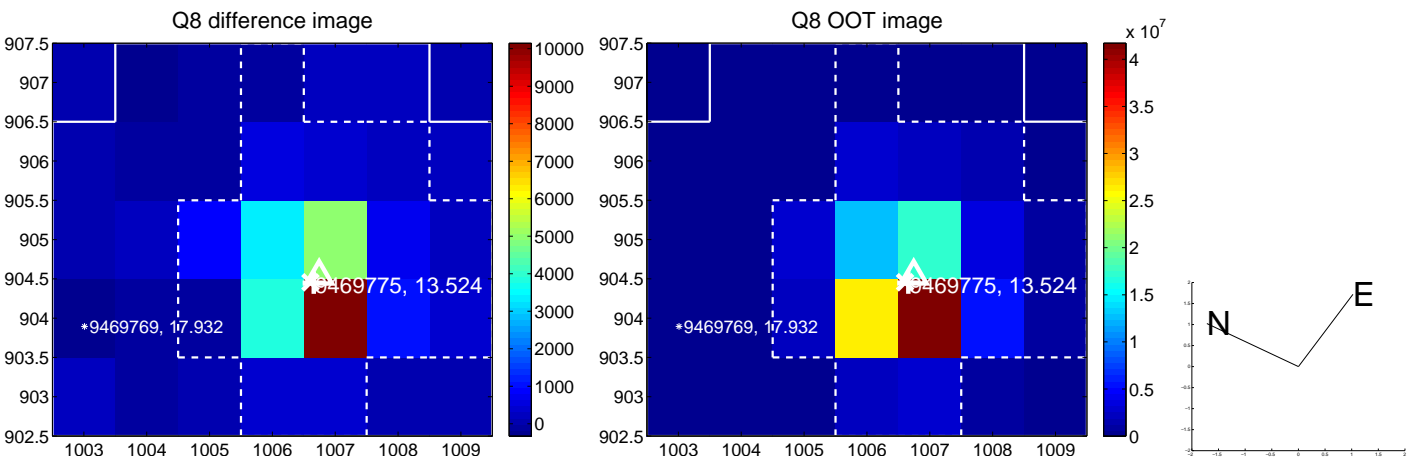
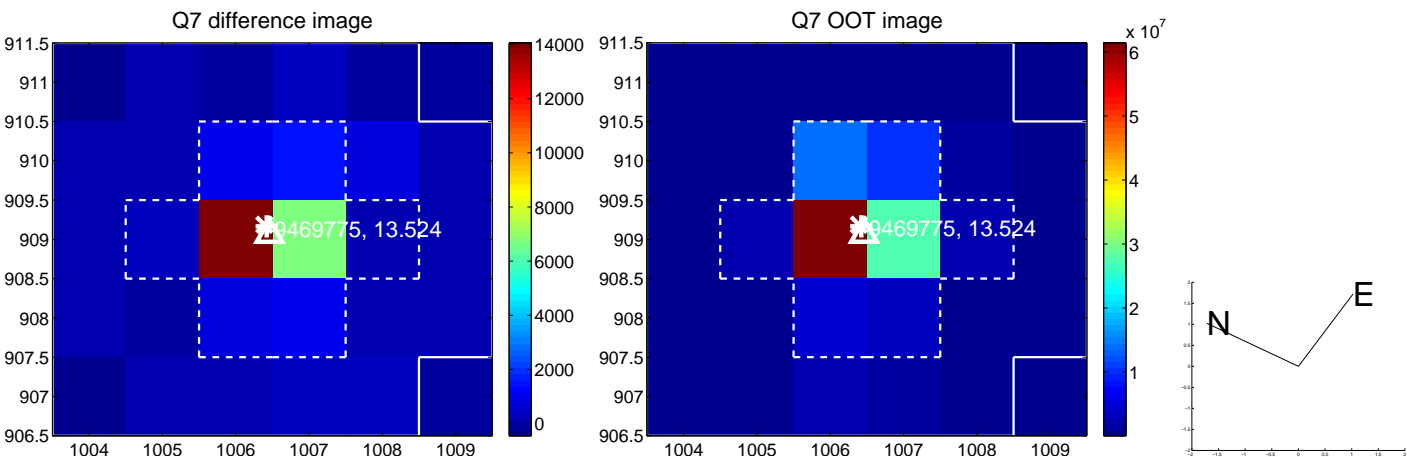
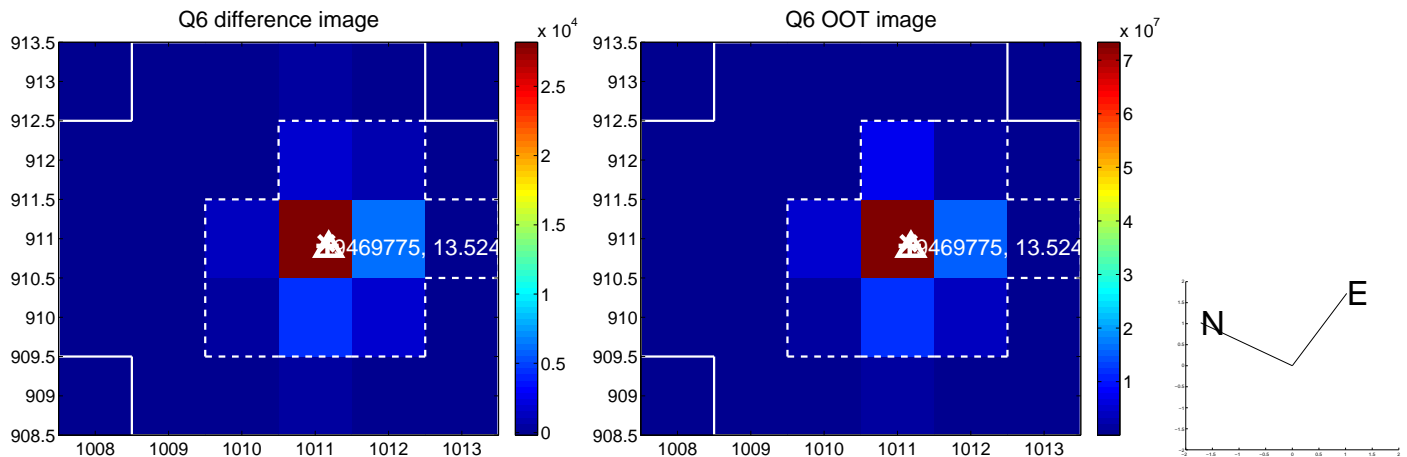
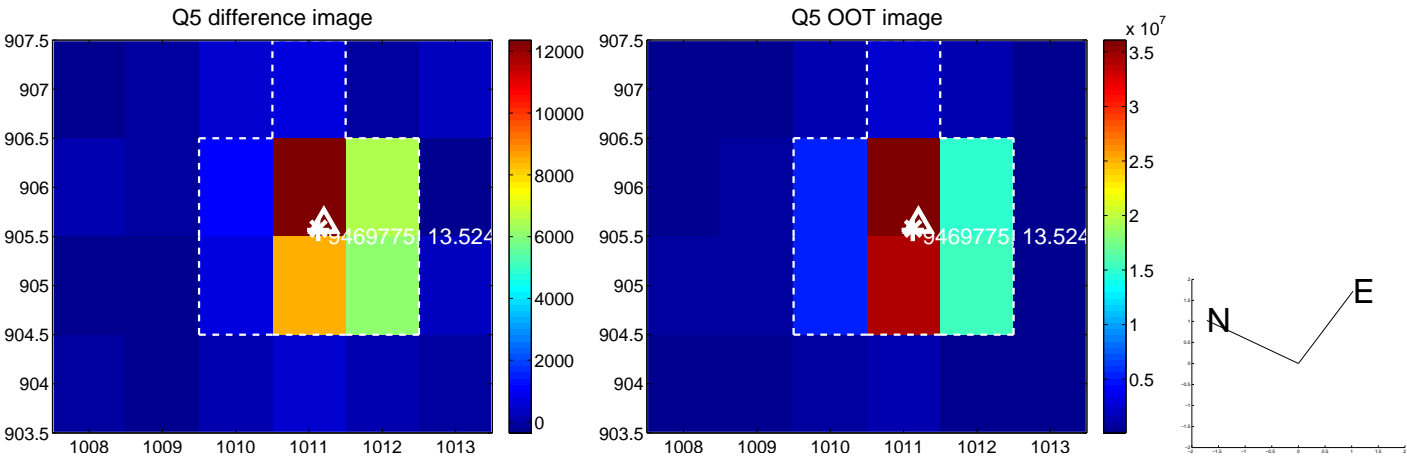


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

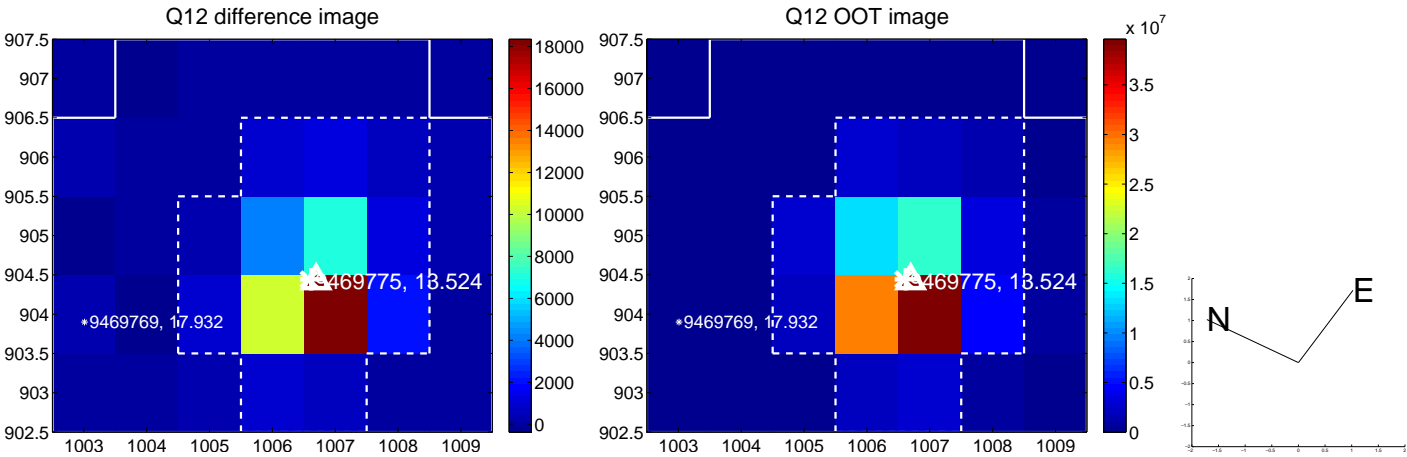
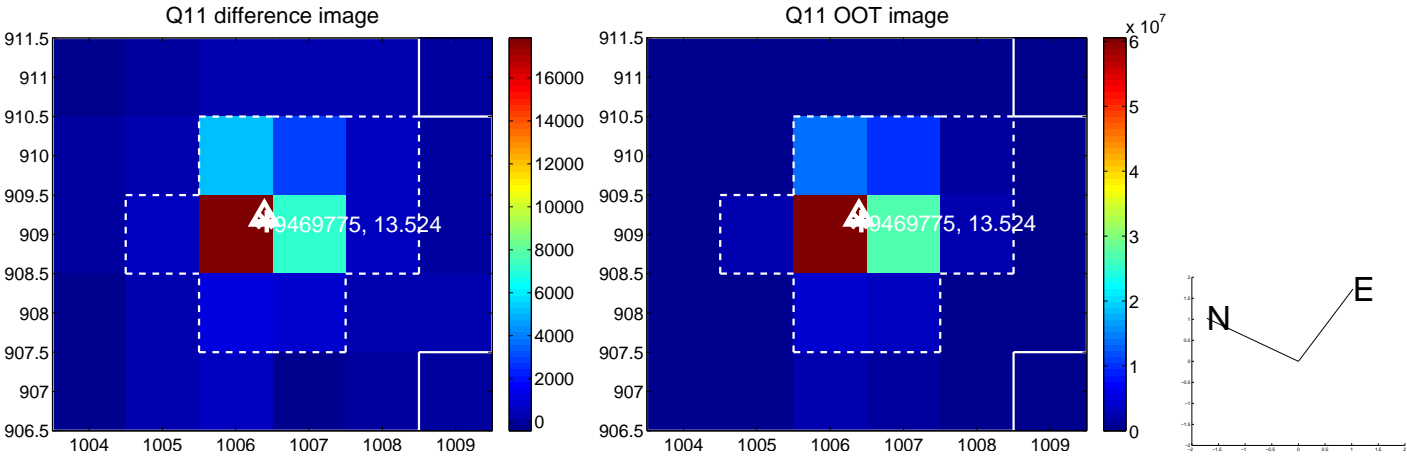
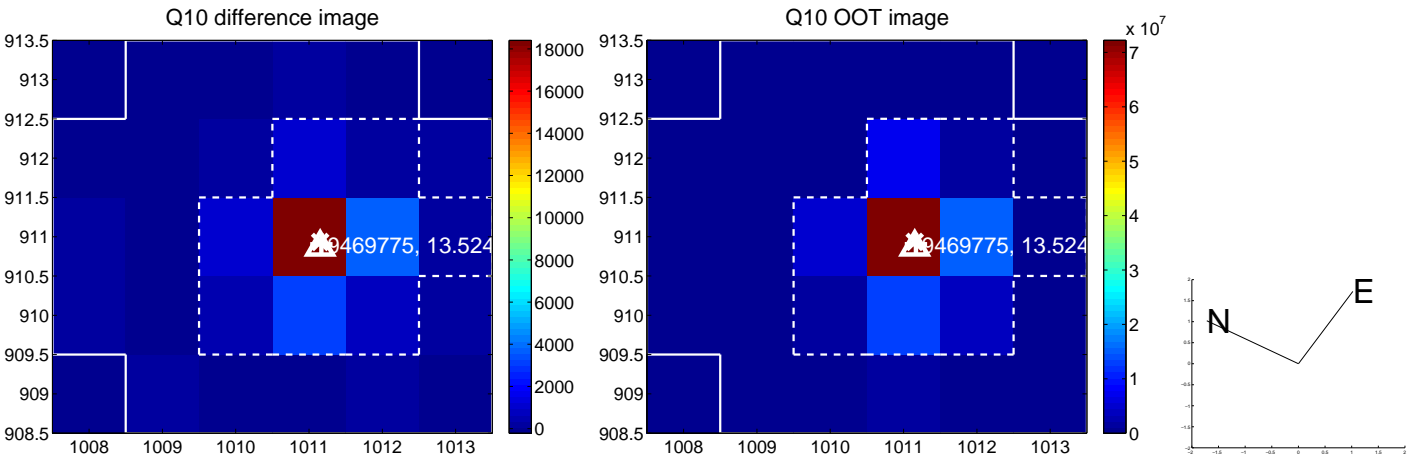
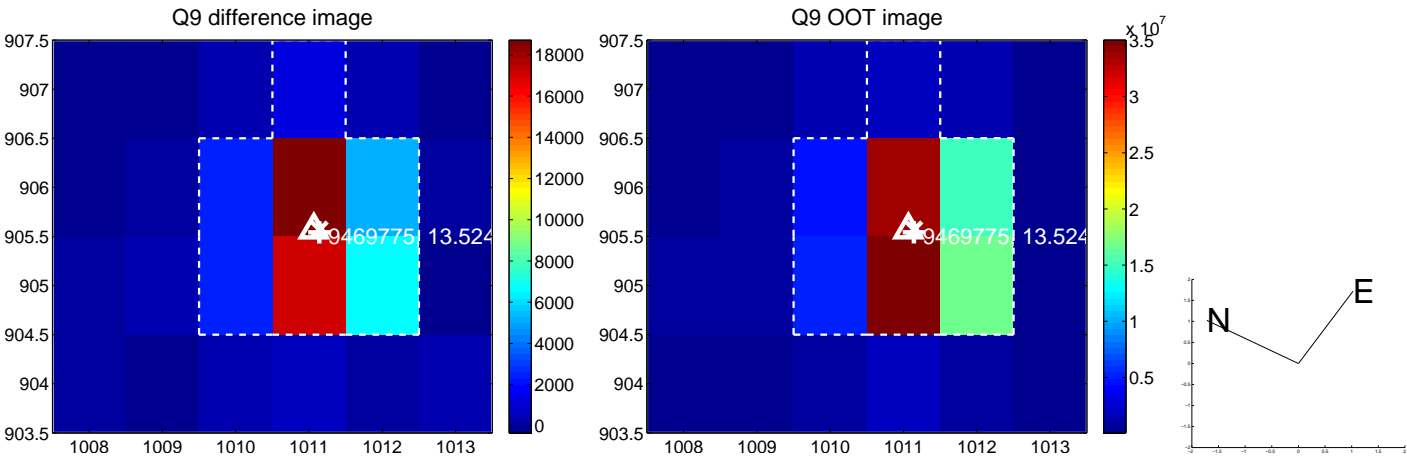
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



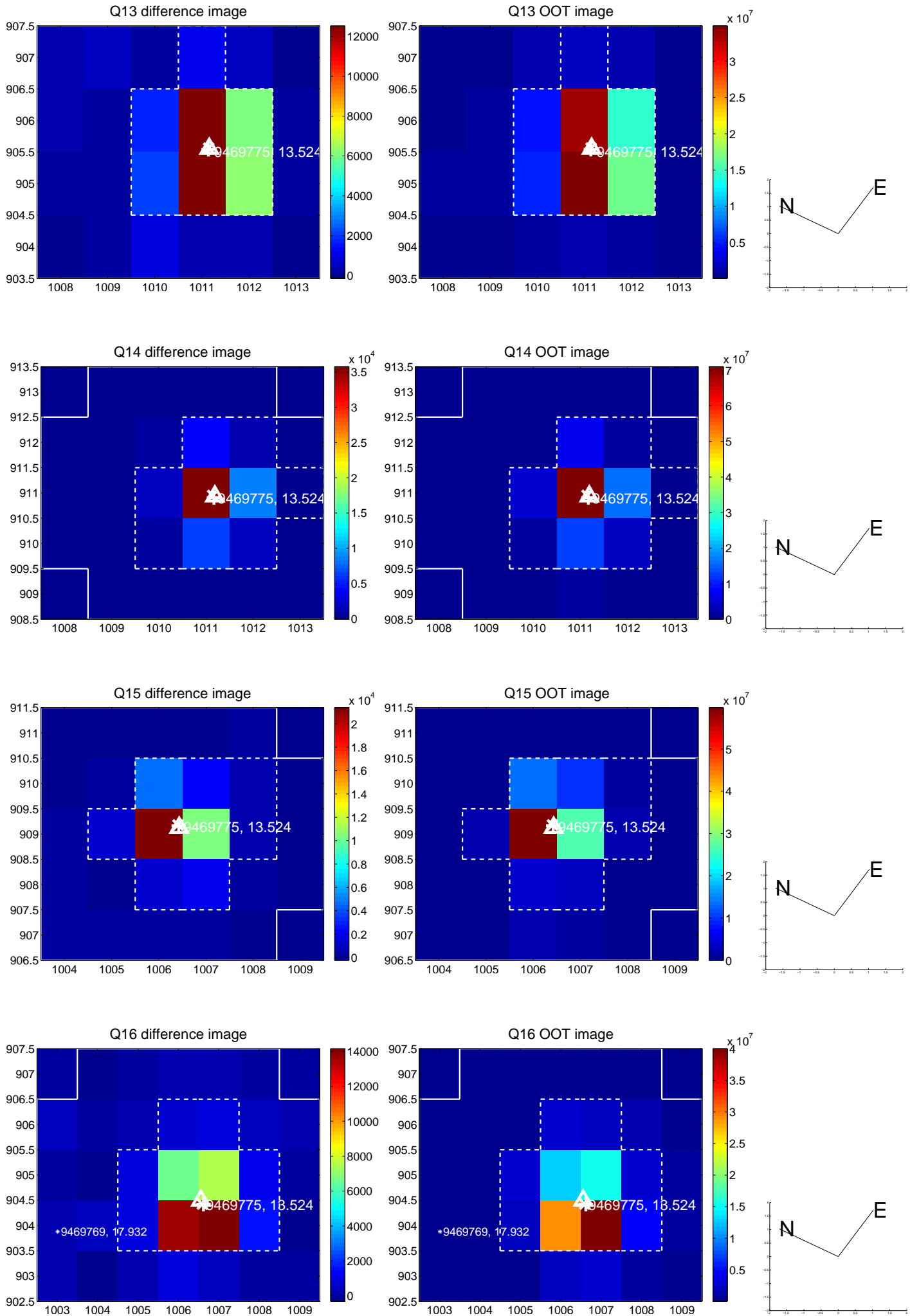
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



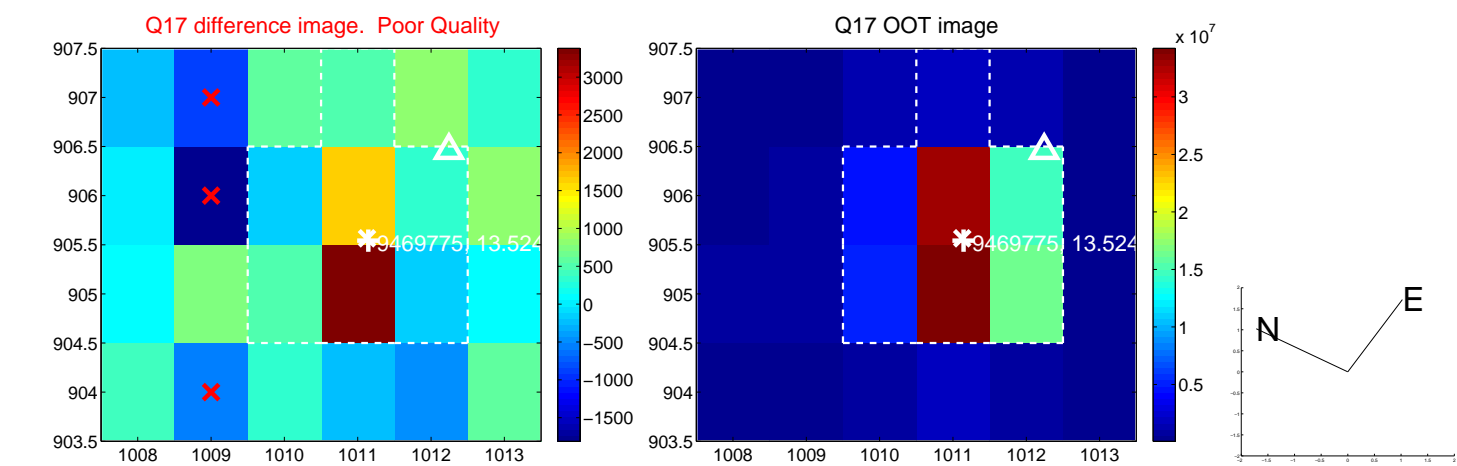
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



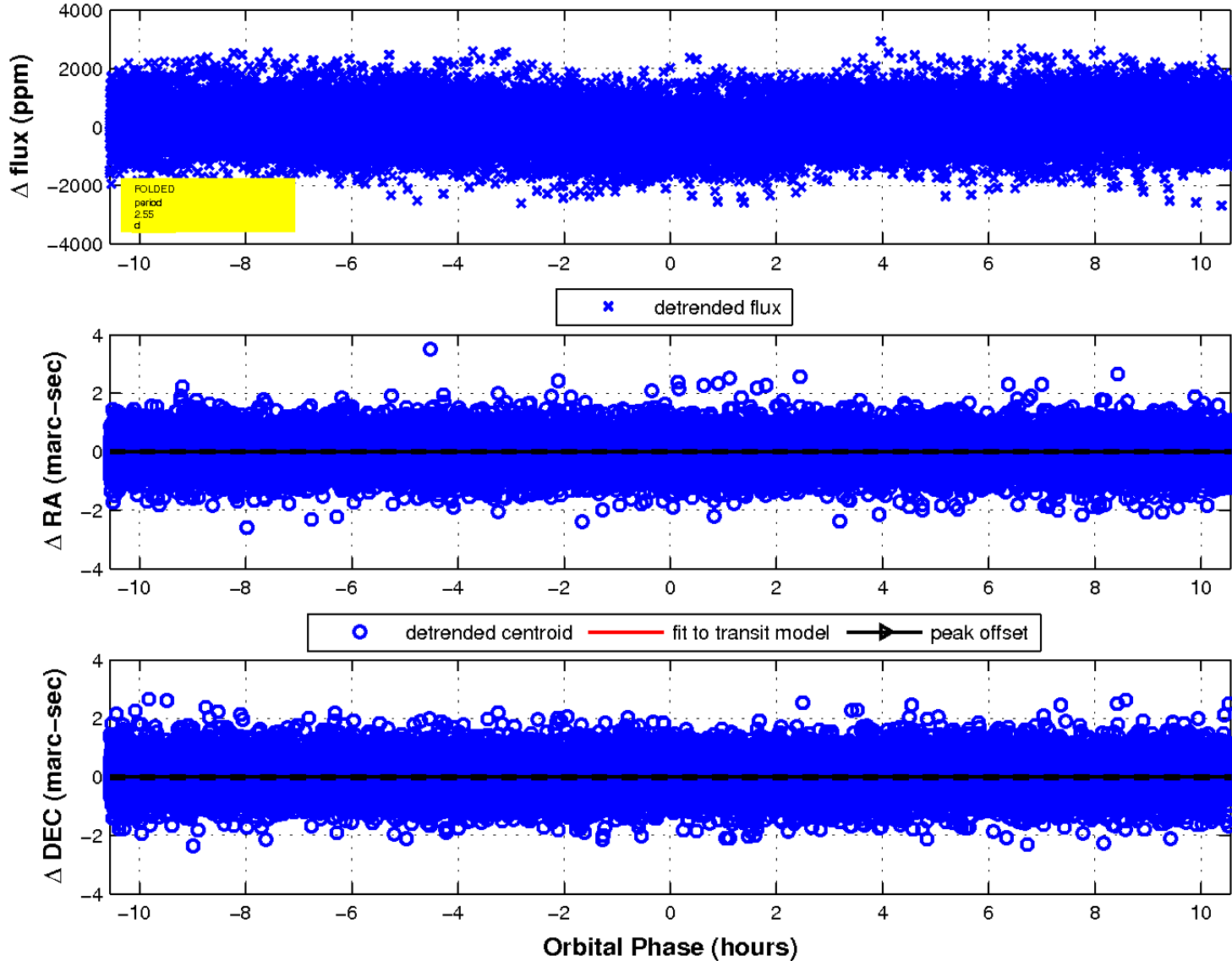
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

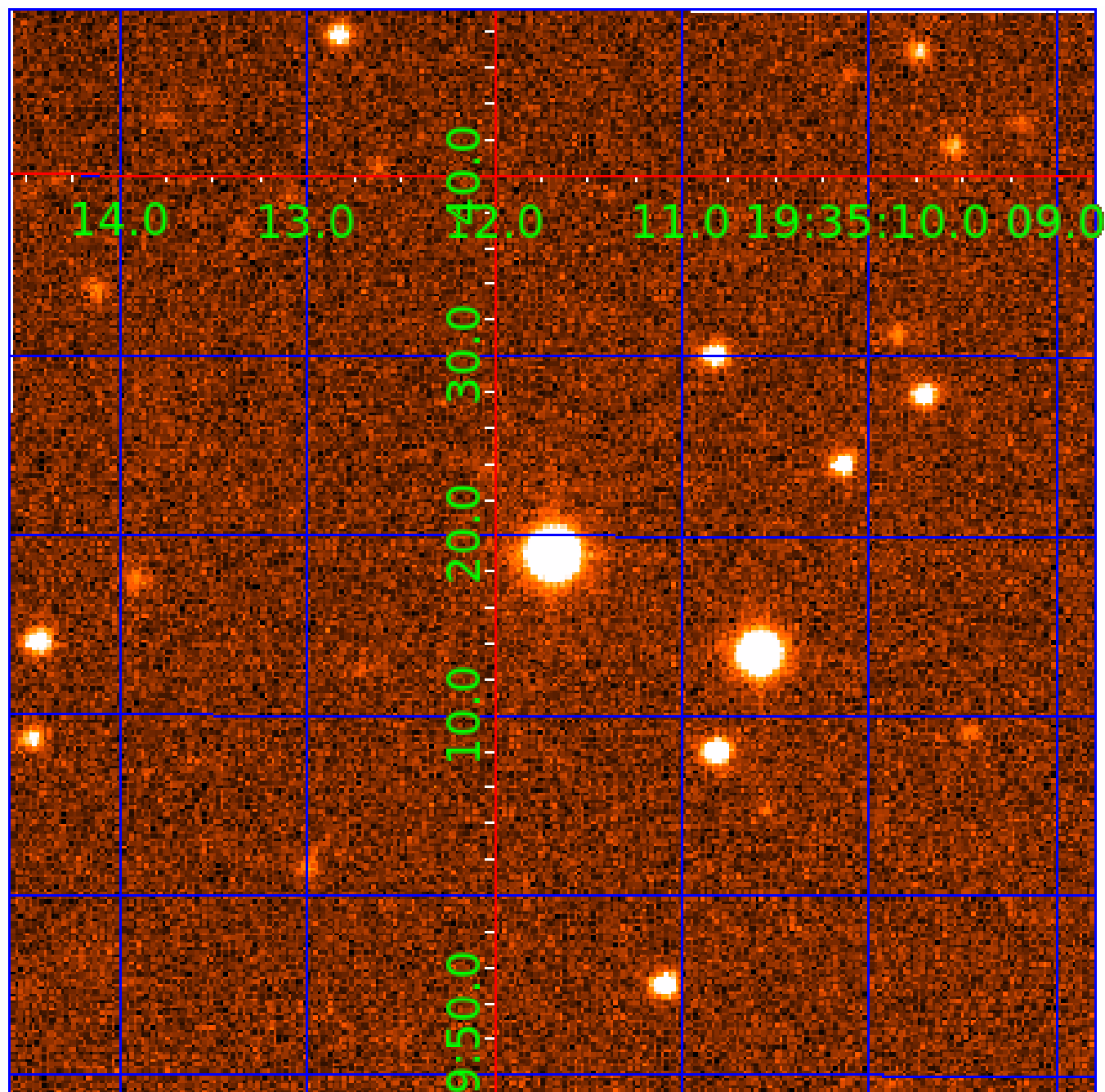


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 009469775

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})
009469775-01	OBS	No	0.580157	131.909267	19.0	2.777	11.8	3.6	2.63	6732	1.16	47308.54
009469775-02	OBS	No	6.381551	132.772406	239.0	6.859	9.1	9.9	2.63	6732	4.84	1933.89
009469775-03	OBS	No	2.552120	132.281871	280.2	3.518	8.7	12.7	2.63	6732	5.13	6563.45
009469775-04	OBS	No	59.195396	155.183508	244.8	2.435	7.6	2.4	2.63	6732	4.61	99.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009469775-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009469775-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009469775-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT
009469775-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

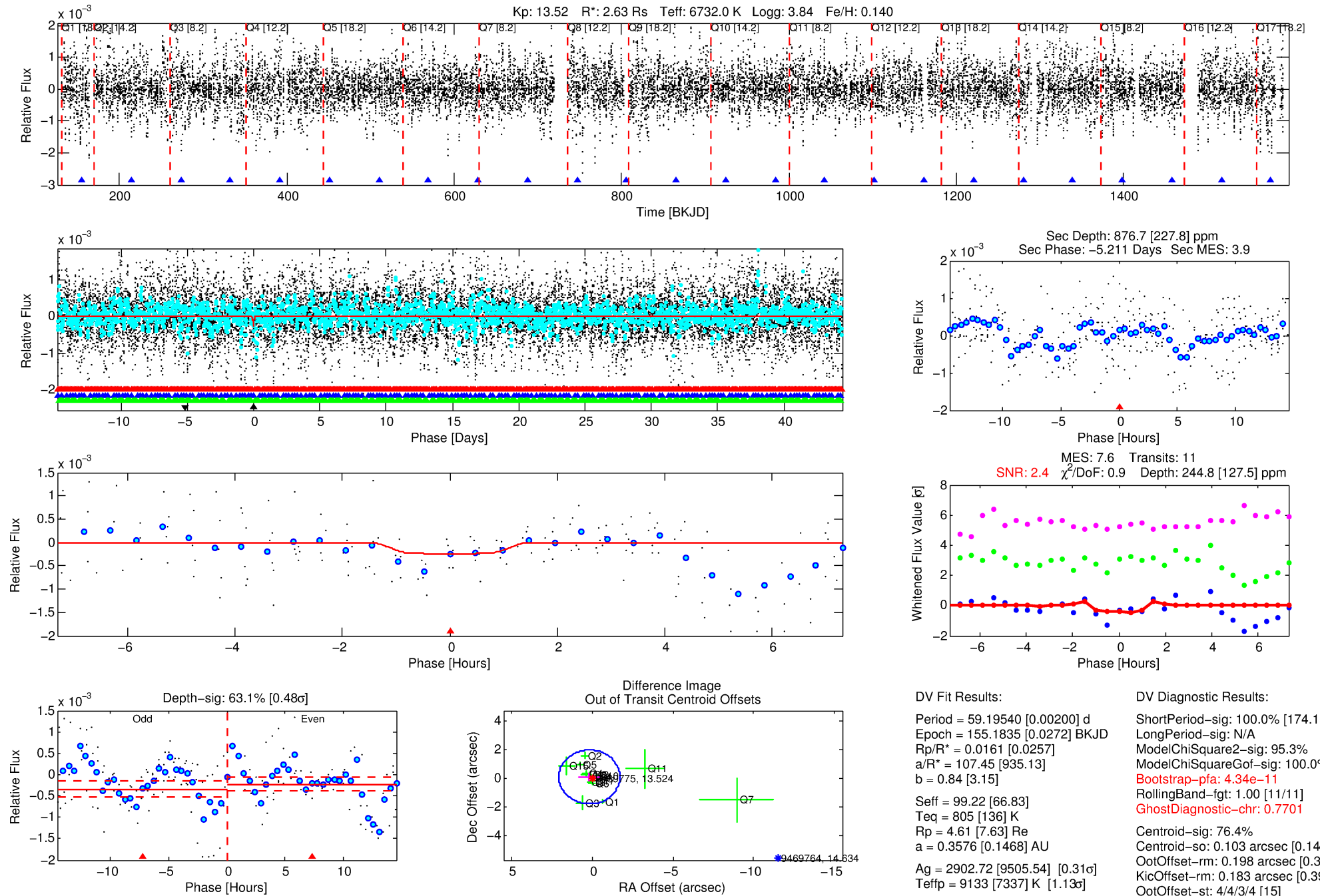
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009469775-04

No Significant Match Found

DV One-Page Summary

KIC: 9469775 Candidate: 4 of 4 Period: 59.195 d



DV Fit Results:

Period = 59.19540 [0.00200] d
Epoch = 155.1835 [0.0272] BKJD
Rp/R* = 0.0161 [0.0257]
a/R* = 107.45 [935.13]
b = 0.84 [3.15]
Seff = 99.22 [66.83]
Teff = 805 [136] K
Rp = 4.61 [7.63] Re
a = 0.3576 [0.1468] AU
Ag = 2902.72 [9505.54] [0.31 σ]
Teffp = 9133 [7337] K [1.13 σ]

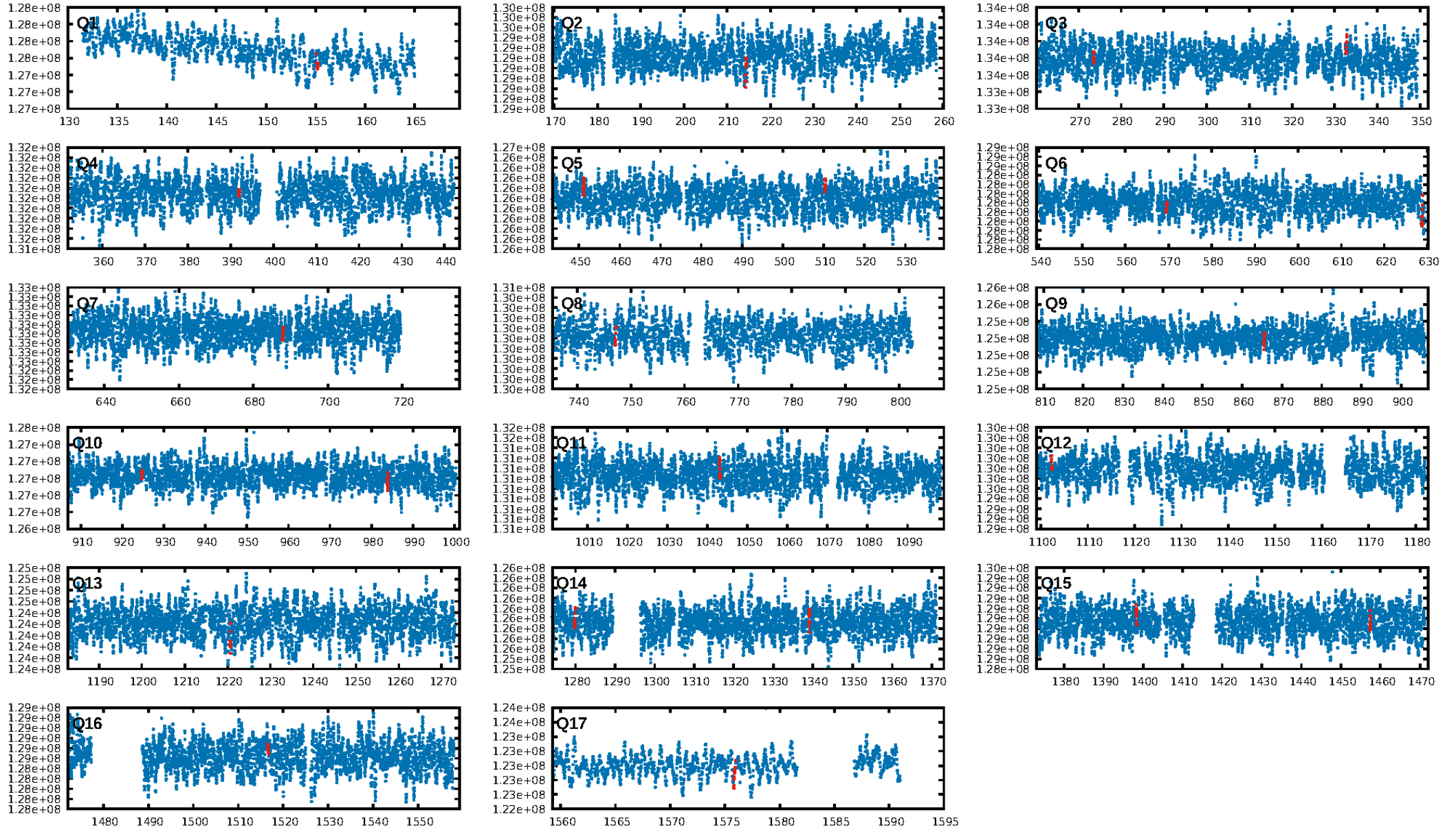
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [174.15 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.34e-11
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 0.7701
Centroid-sig: 76.4%
Centroid-so: 0.103 arcsec [0.14 σ]
OotOffset-rm: 0.198 arcsec [0.31 σ]
KicOffset-rm: 0.183 arcsec [0.39 σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.53 [8/15]
DiffImageOverlap-fno: 0.00 [0/16]

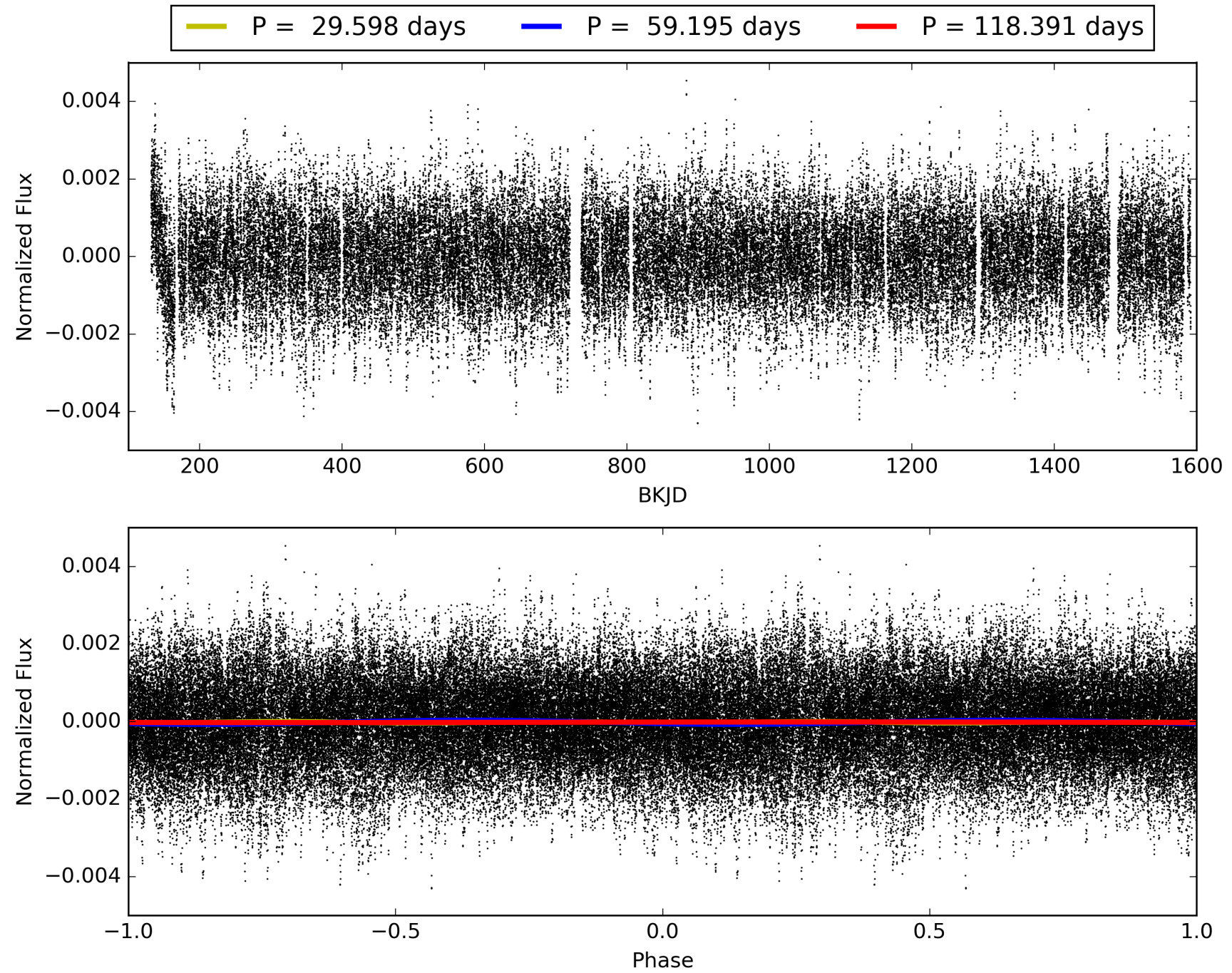
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:48:31 Z

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

TCE 009469775-04, PDC Light Curves

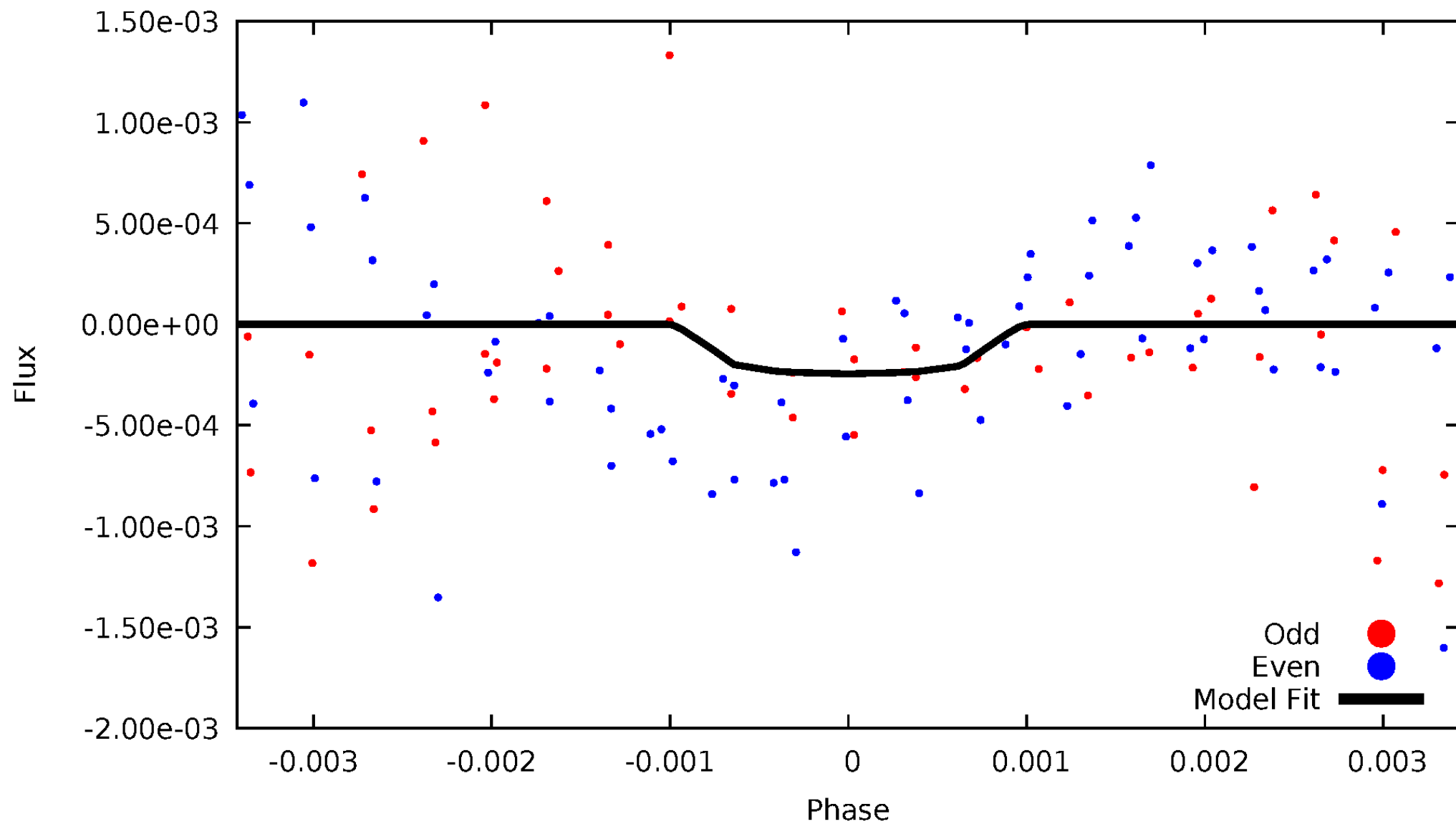


TCE 009469775-04



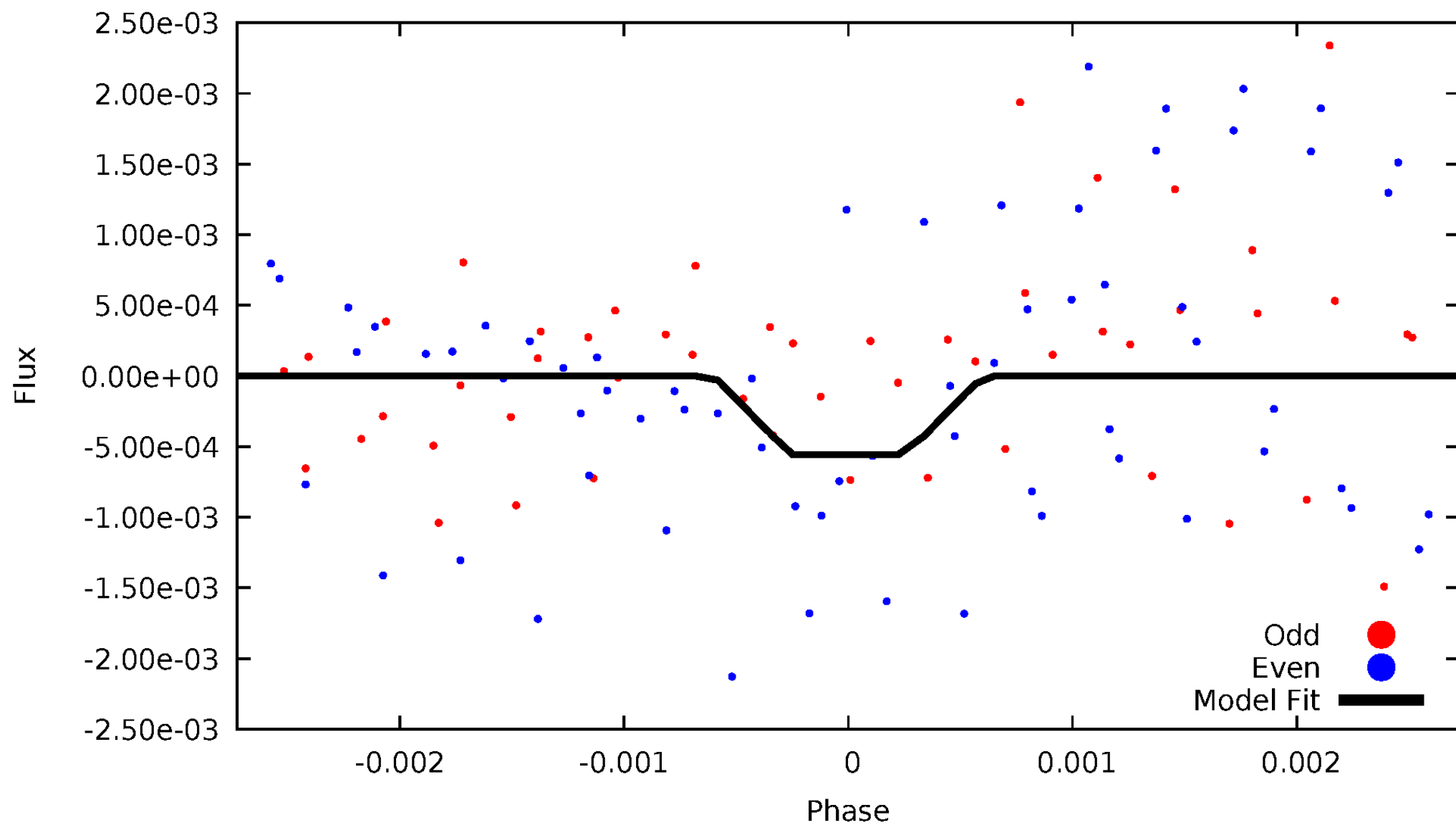
DV Odd/Even

TCE 009469775-04



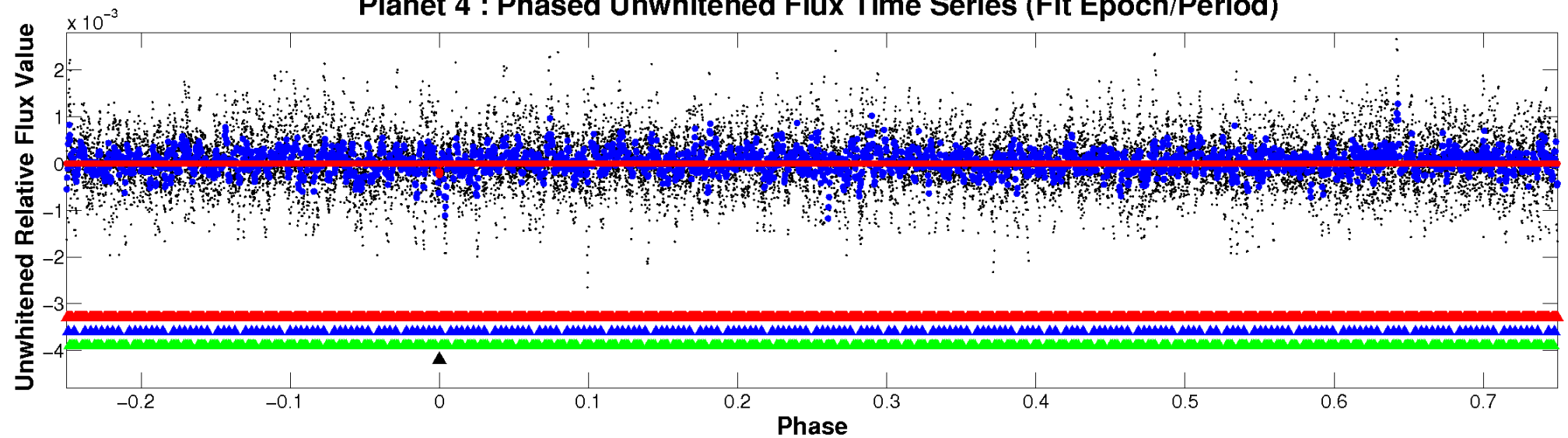
ALT Odd/Even

TCE 009469775-04

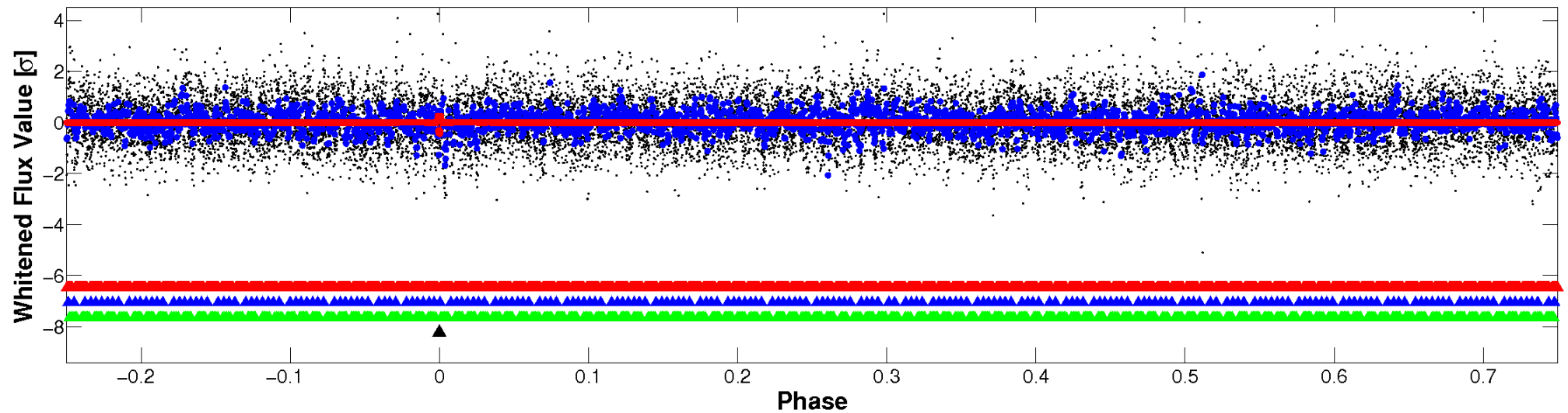


Non-Whitened Vs. Whitened Light Curve

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

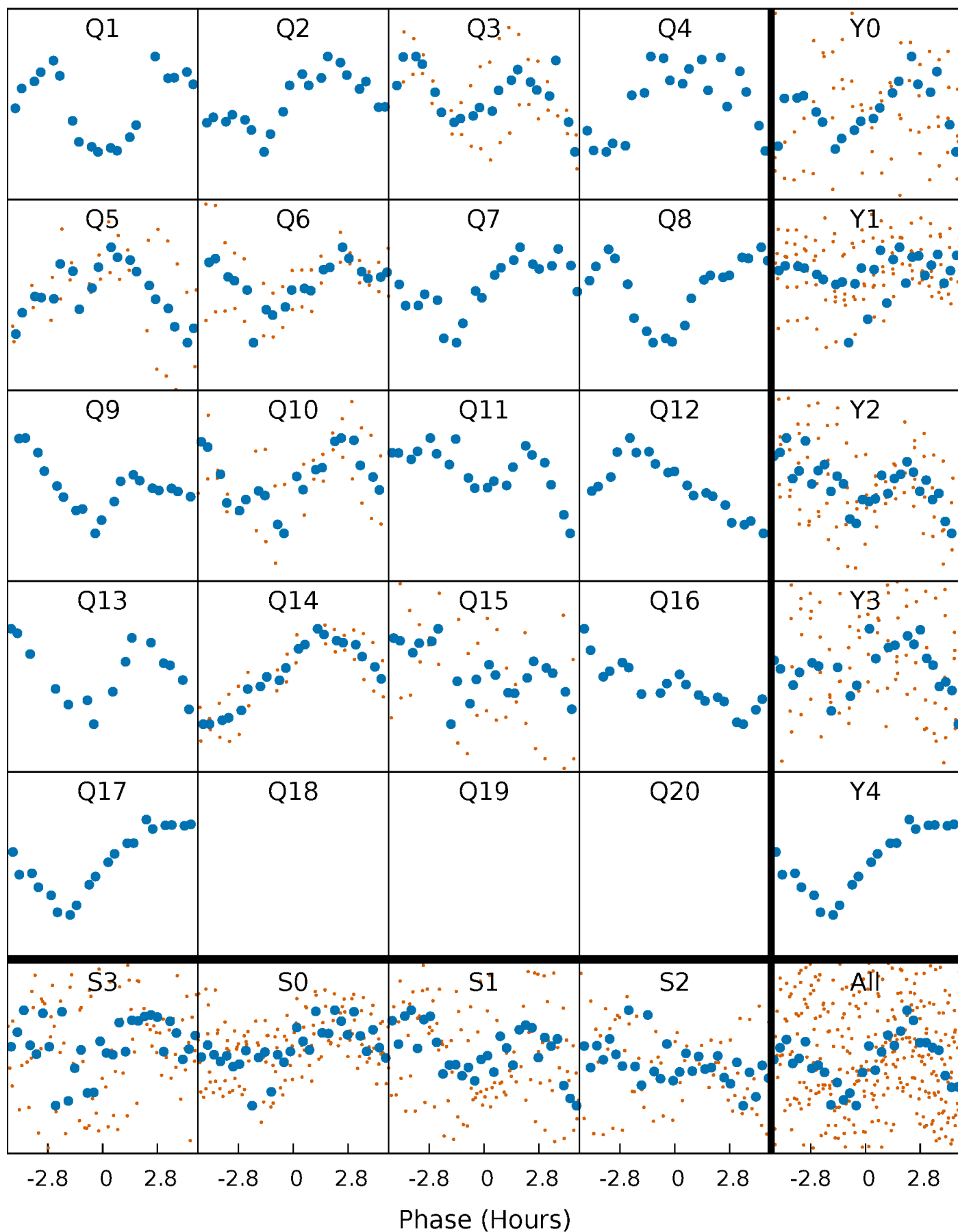


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



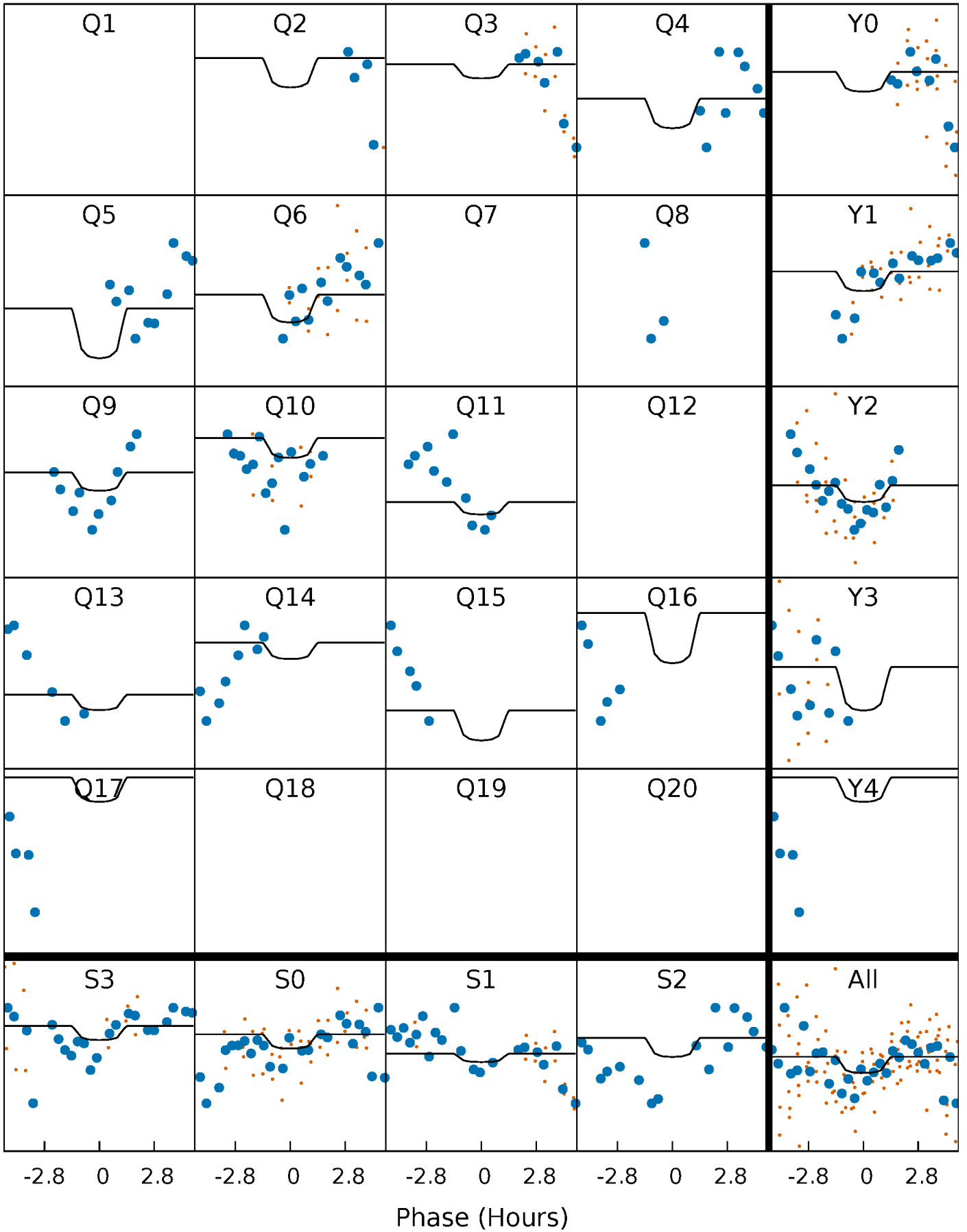
PDC Quarter-Phased Transit Curves

TCE 009469775-04 P= 59.195396 Days $T_0=155.183508$ (BKJD)



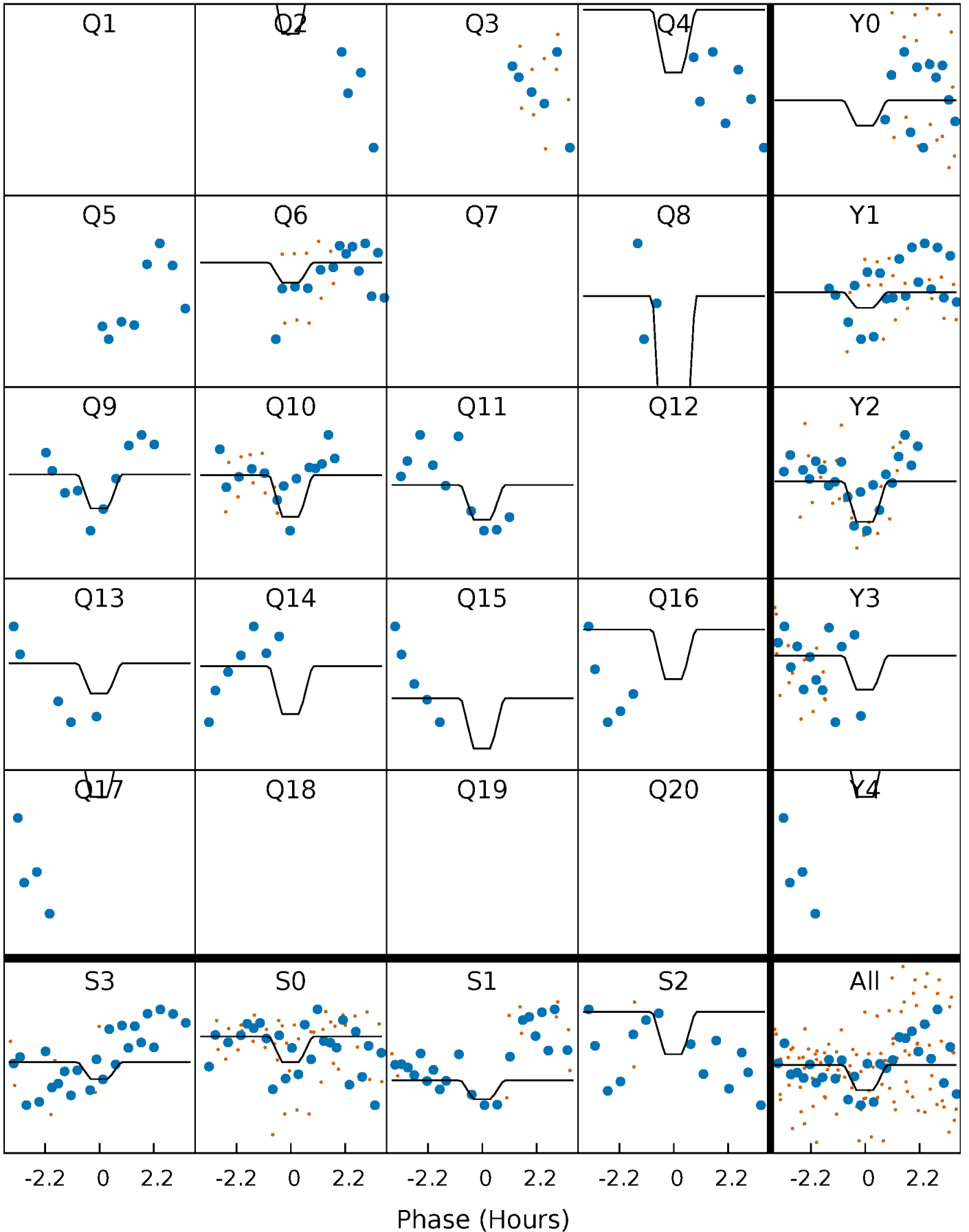
DV Quarter-Phased Transit Curves

TCE 009469775-04 P= 59.195396 Days $T_0=155.183508$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

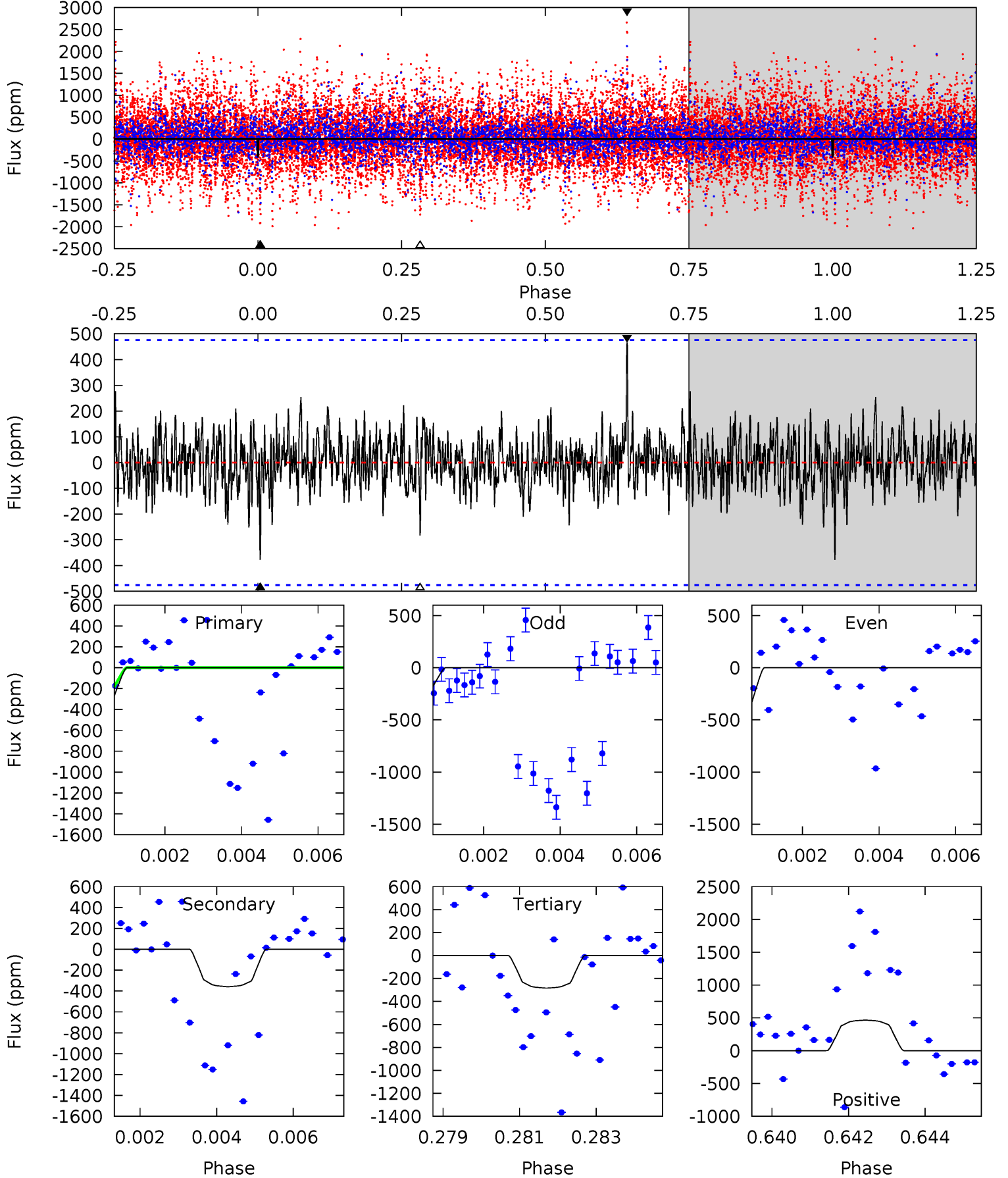
TCE 009469775-04 P= 59.191472 Days $T_0=155.223384$ (BKJD)



DV Model-Shift Uniqueness Test

009469775-04, P = 59.195396 Days, E = 95.988112 Days

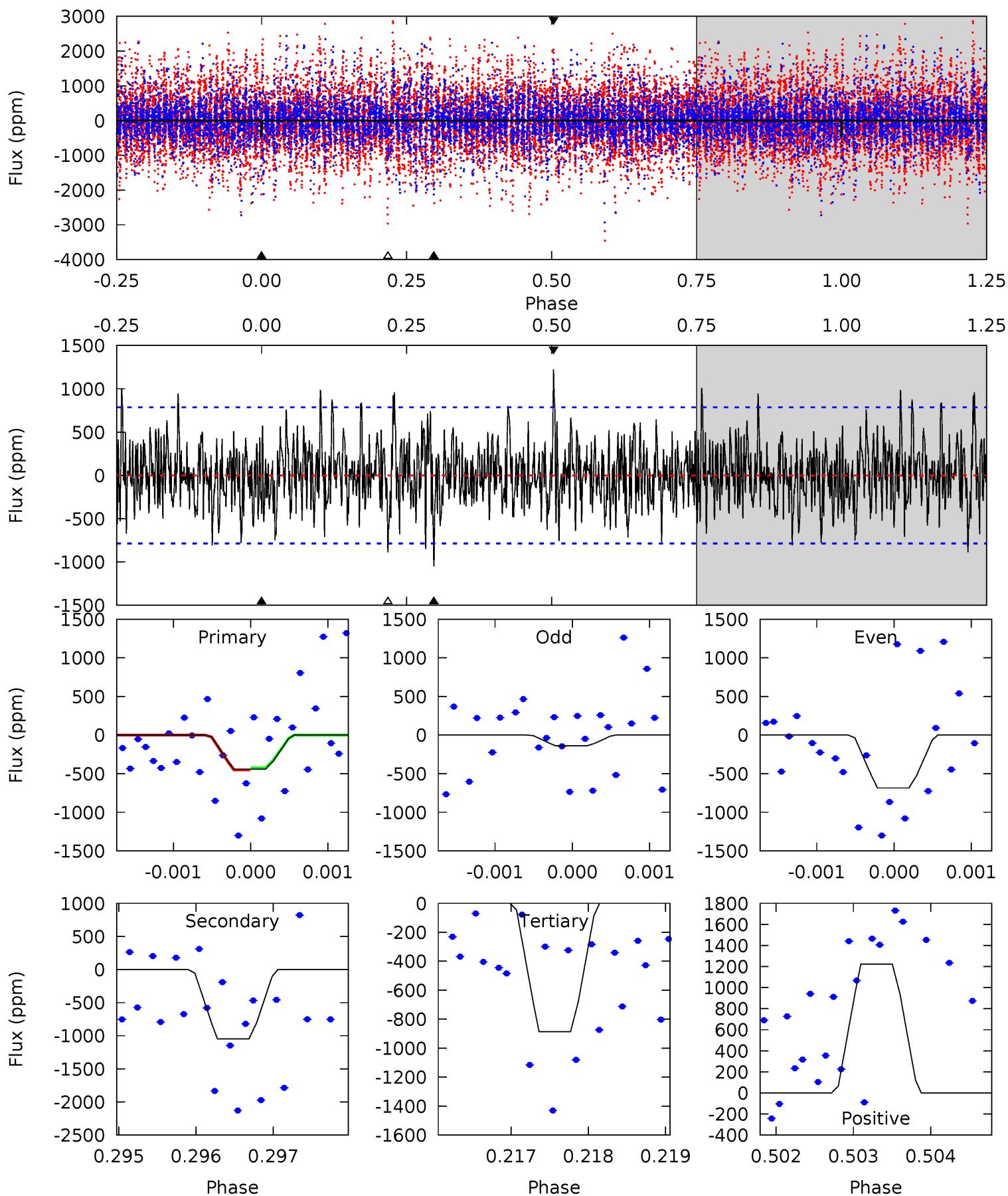
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.22	4.01	3.17	5.20	5.32	3.09	0.92	1.05	-0.98	0.84	-1.19	1.19	1.43	0.55	1.36



Alt Model-Shift Uniqueness Test

009469775-04, P = 59.191472 Days, E = 96.031912 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.04	7.24	6.12	8.44	5.43	3.25	1.85	-3.07	-5.40	1.13	-1.20	1.86	0.56	0.54	0.09



Stellar Parameters For KIC 009469775

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6732^{+185}_{-278}	$3.840^{+0.382}_{-0.127}$	$0.140^{+0.200}_{-0.350}$	$2.626^{+0.609}_{-1.131}$	$1.739^{+0.188}_{-0.438}$	$0.135^{+0.433}_{-0.051}$
	+3%/-4%	+10%/-3%	+143%/-250%	+23%/-43%	+11%/-25%	+320%/-38%
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 009469775-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-358 ± 89	$6.72^{+5.93}_{-4.15}$	1101^{+84}_{-117}	5749^{+4706}_{-1357}	546^{+3488}_{-405}
Alt.	-1049 ± 145	$7.73^{+6.66}_{-5.07}$	1091^{+90}_{-122}	6866^{+8388}_{-1644}	1153^{+8907}_{-811}

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

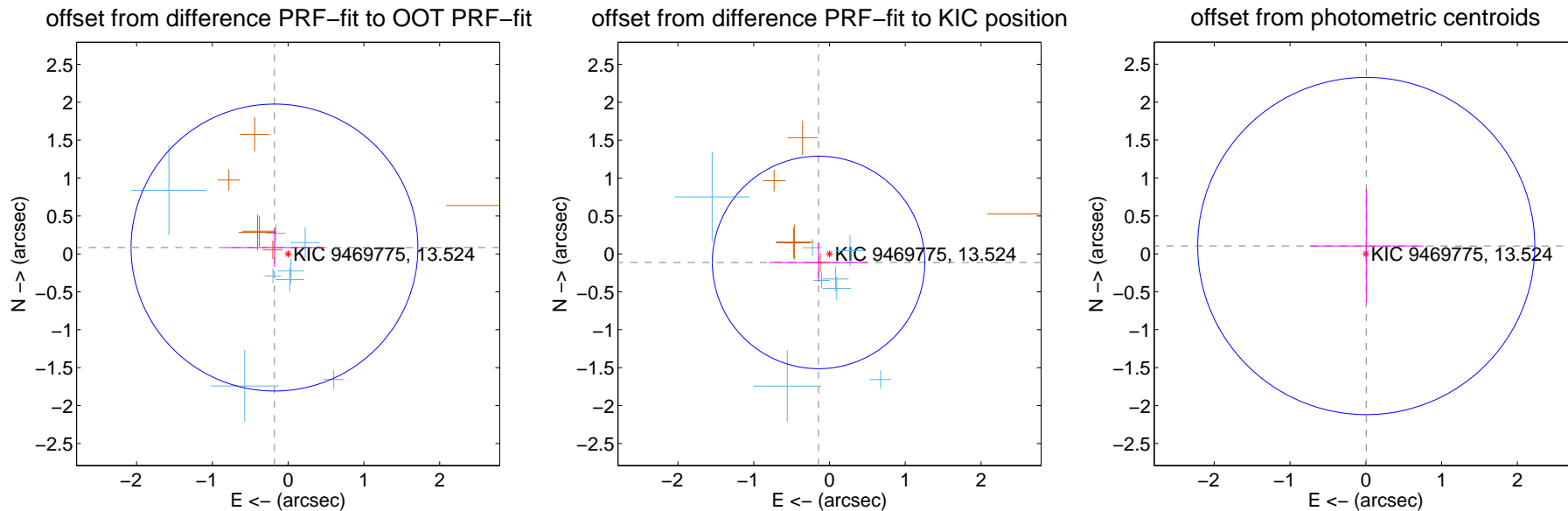
DV Centroid Data

Supplemental centroid analysis for 009469775-04. Kepler magnitude: 13.52. Transit SNR 2.35

There are 8 quarters with good PRF difference image offsets

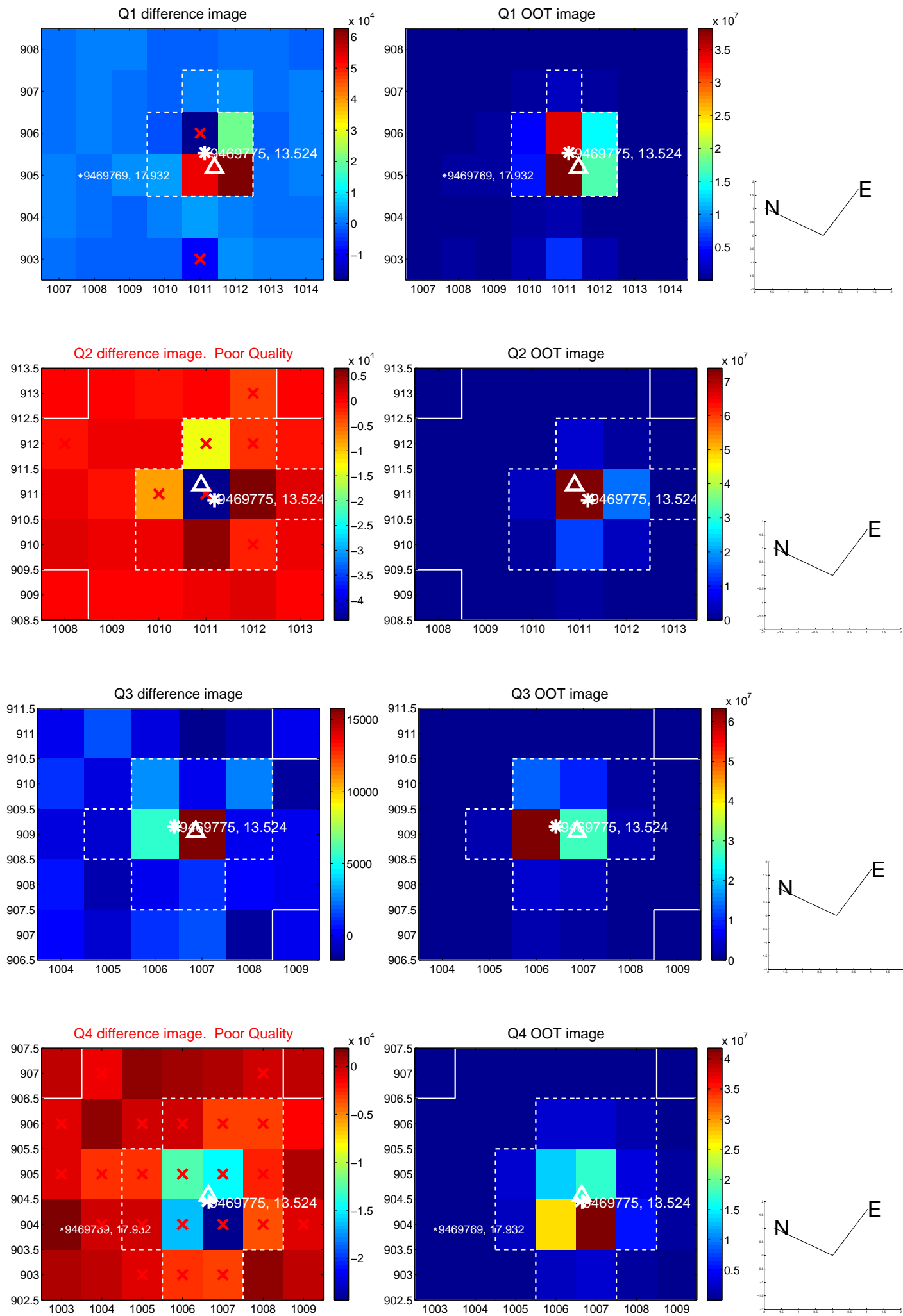
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.198 ± 0.631	0.31	0.180 ± 0.647	0.084 ± 0.257
PRF-fit source offset from KIC position	0.183 ± 0.467	0.39	0.144 ± 0.650	-0.113 ± 0.257
photometric centroid source offset	0.10 ± 0.74	0.14	-0.01 ± 0.74	0.10 ± 0.74

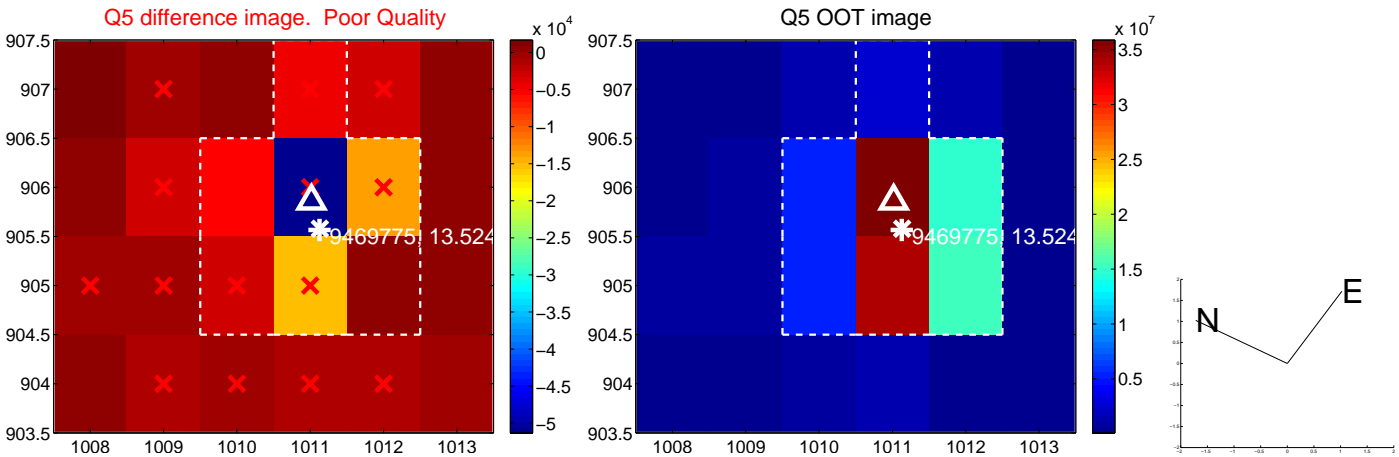


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

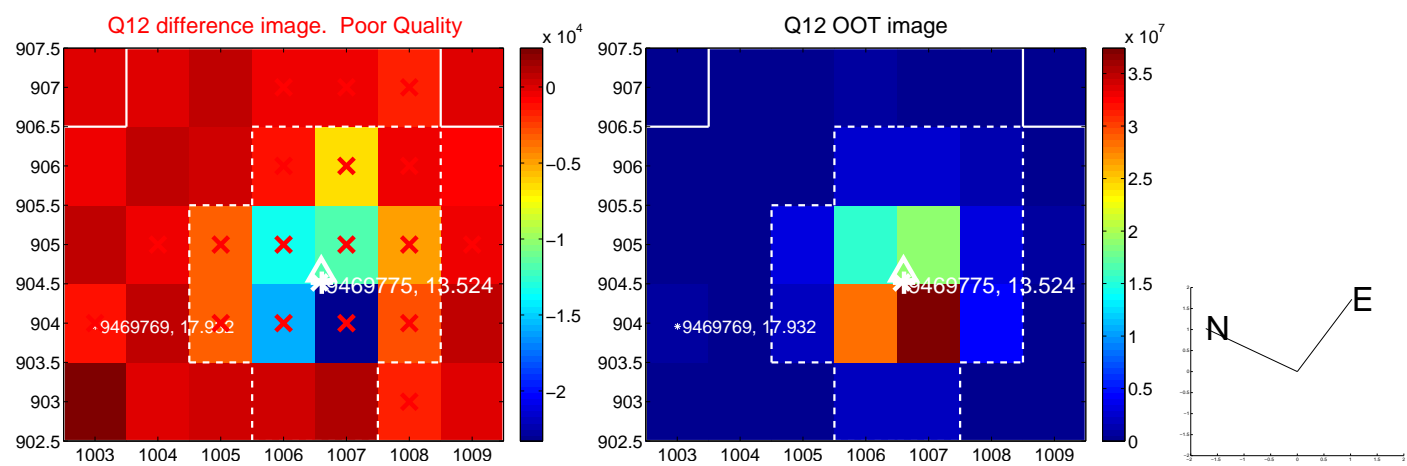
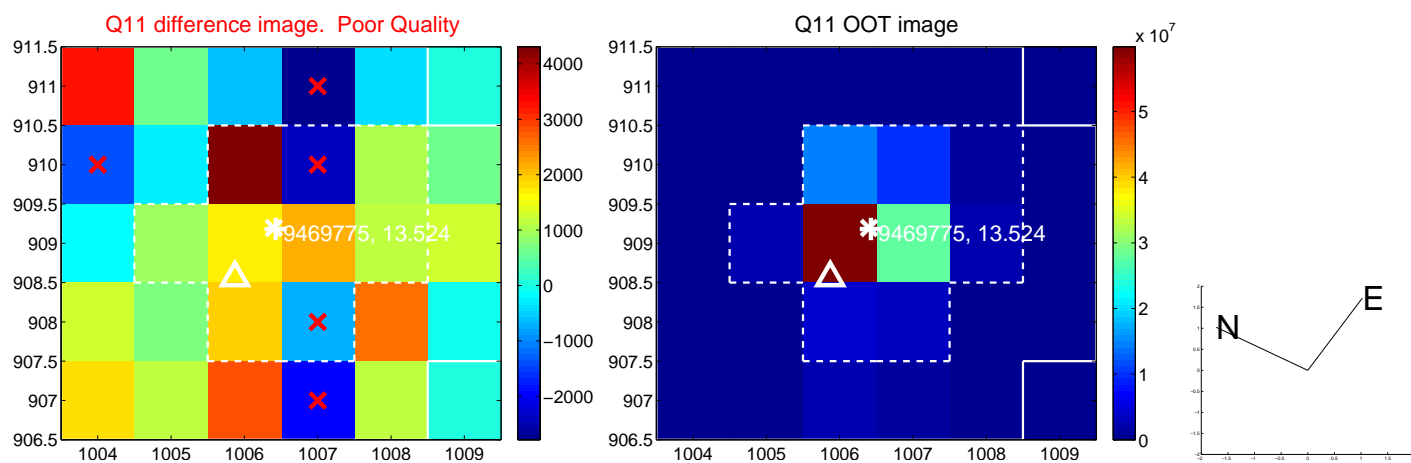
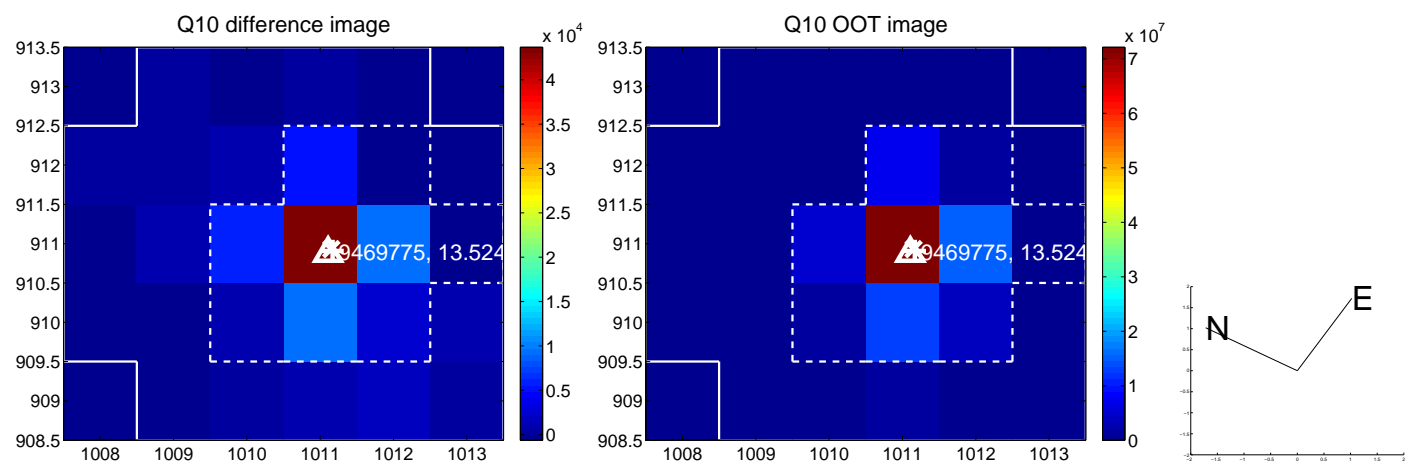
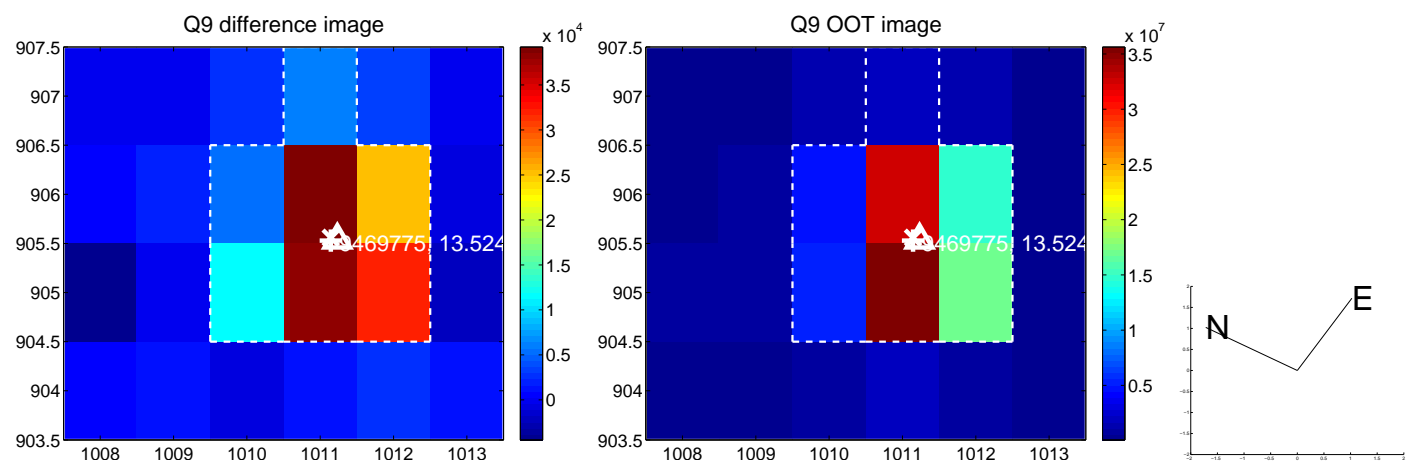
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



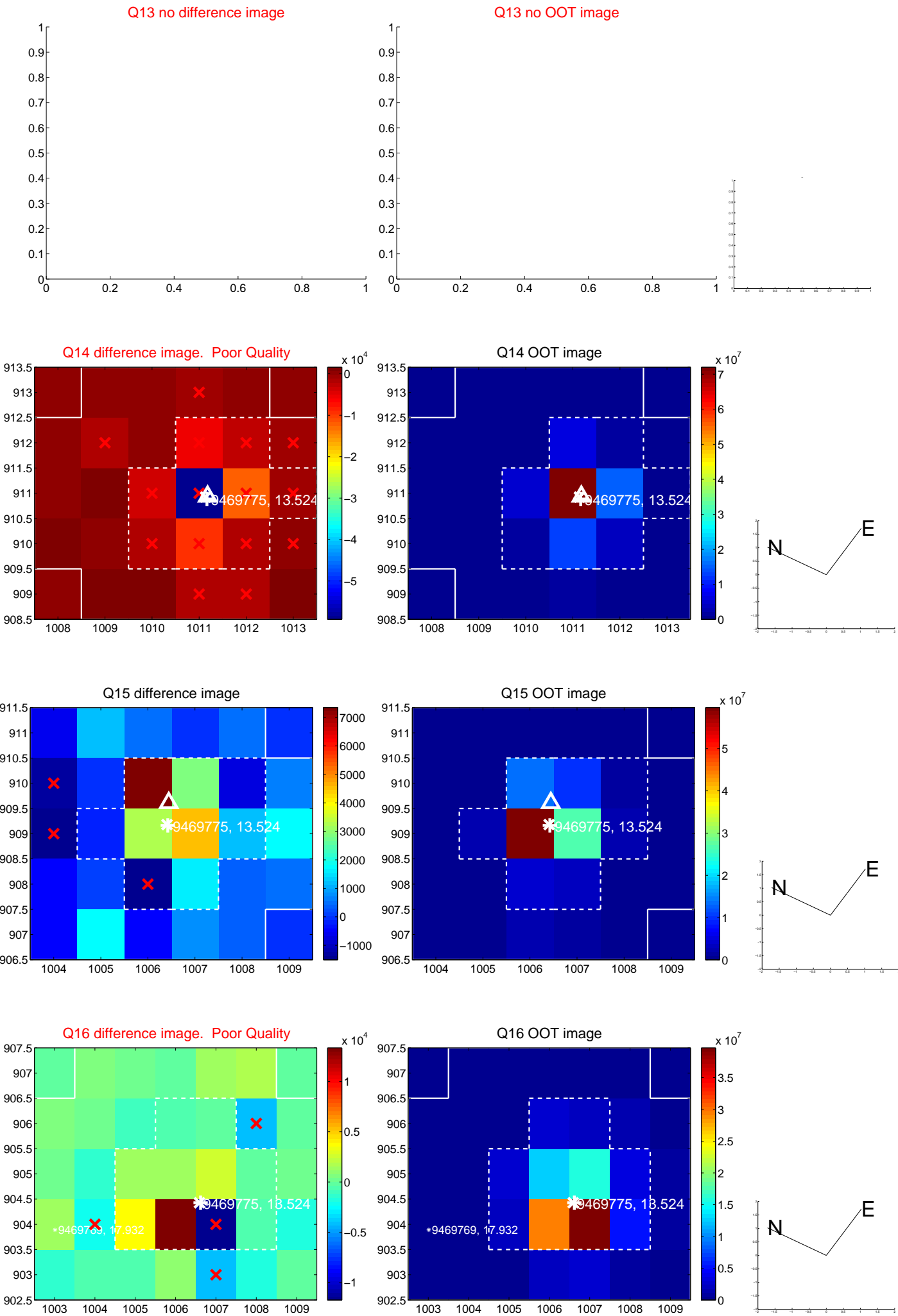
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



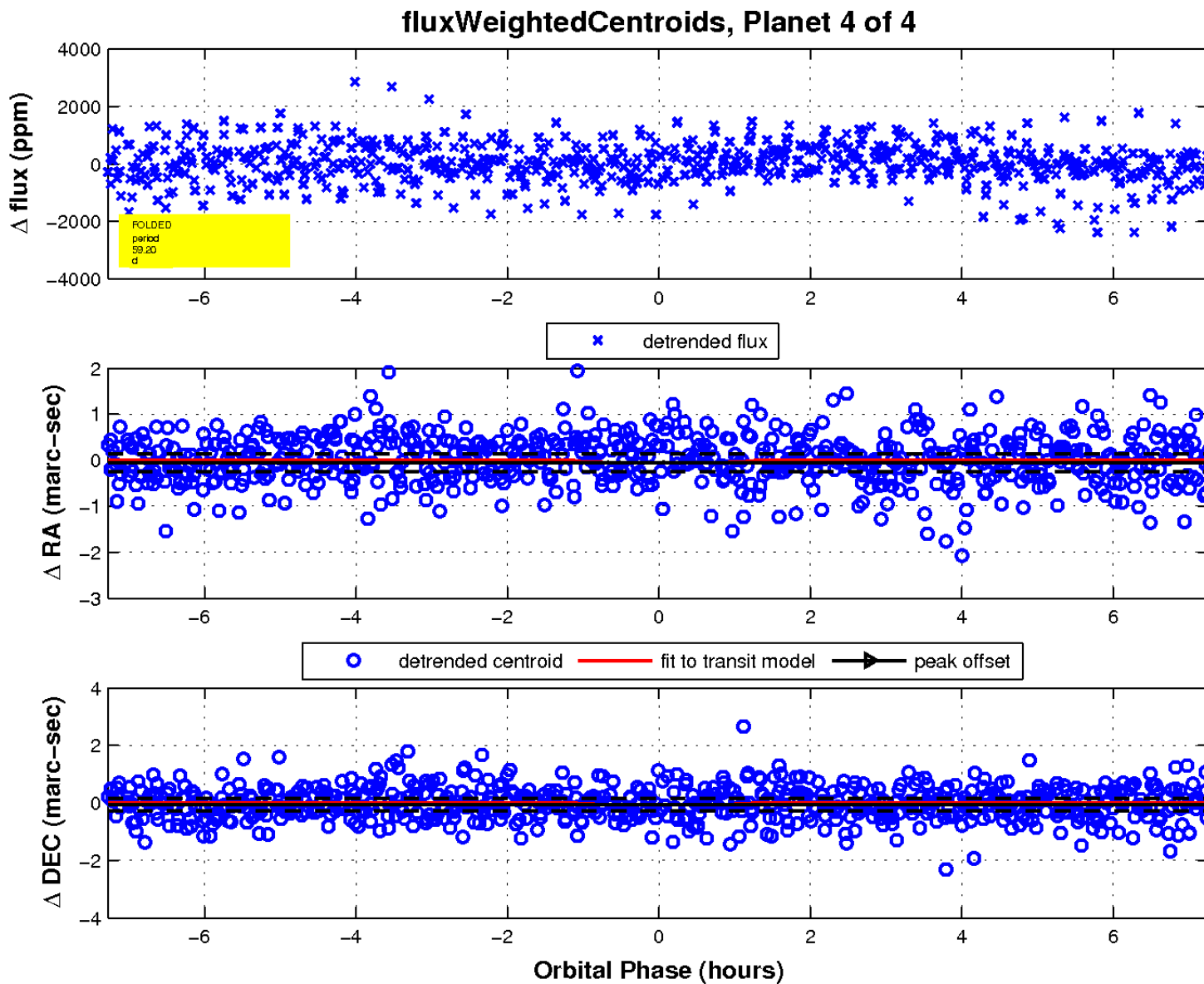
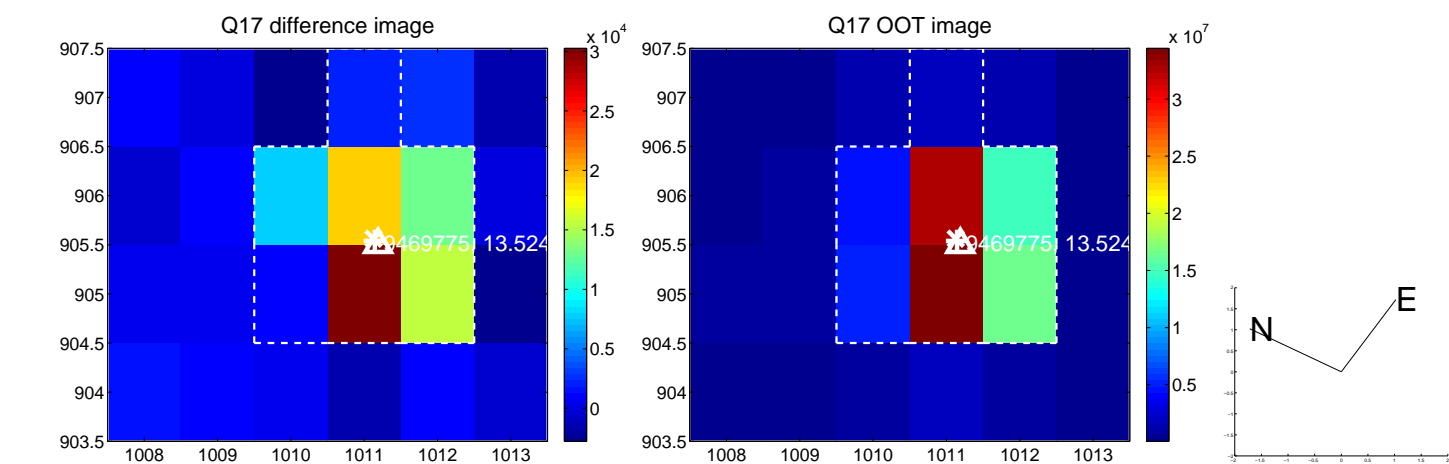
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

