

KIC 009714209

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})
009714209-01	OBS	No	1.302949	132.433163	246.6	2.016	8.2	7.7	1.67	7055	3.05	8826.26
009714209-02	OBS	No	0.556342	131.887694	510.7	0.735	7.6	10.0	1.67	7055	3.97	27450.98
009714209-03	OBS	No	0.556344	131.516939	499.5	1.024	7.6	11.2	1.67	7055	4.38	27450.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714209-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009714209-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009714209-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

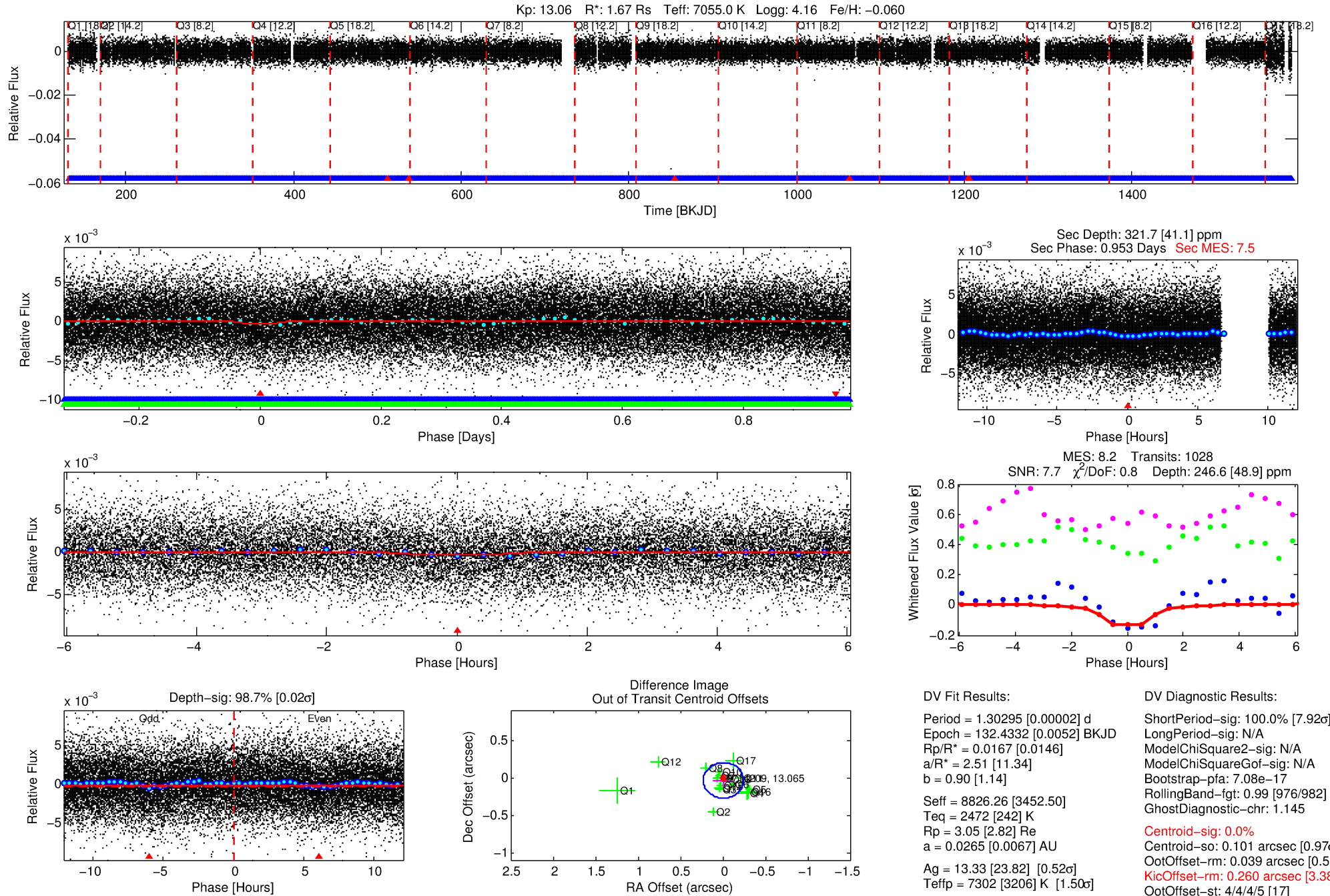
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009714209-01

No Significant Match Found

DV One-Page Summary

KIC: 9714209 Candidate: 1 of 3 Period: 1.303 d



DV Fit Results:

Period = 1.30295 [0.00002] d
Epoch = 132.4332 [0.0052] BKJD
Rp/R* = 0.0167 [0.0146]
a/R* = 2.51 [11.34]
b = 0.90 [1.14]
Seff = 8826.26 [3452.50]
Teq = 2472 [242] K
Rp = 3.05 [2.82] Re
a = 0.0265 [0.0067] AU
Ag = 13.33 [23.82] [0.52 σ]
Teffp = 7302 [3206] K [1.50 σ]

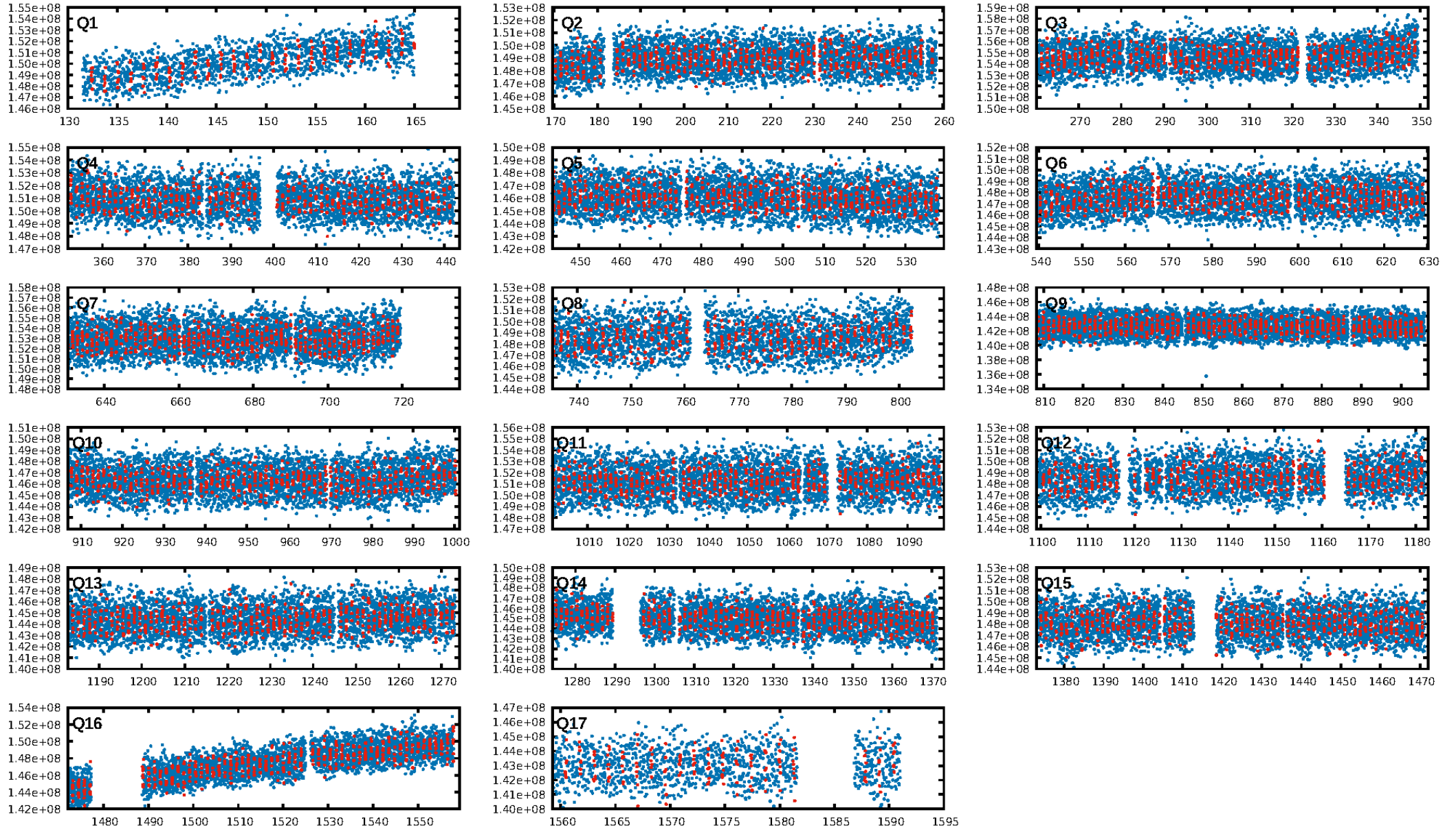
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.92 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.08e-17
RollingBand-fgt: 0.99 [976/982]
GhostDiagnostic-chr: 1.145
Centroid-sig: 0.0%
Centroid-so: 0.101 arcsec [0.97 σ]
OotOffset-rm: 0.039 arcsec [0.50 σ]
KicOffset-rm: 0.260 arcsec [3.38 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

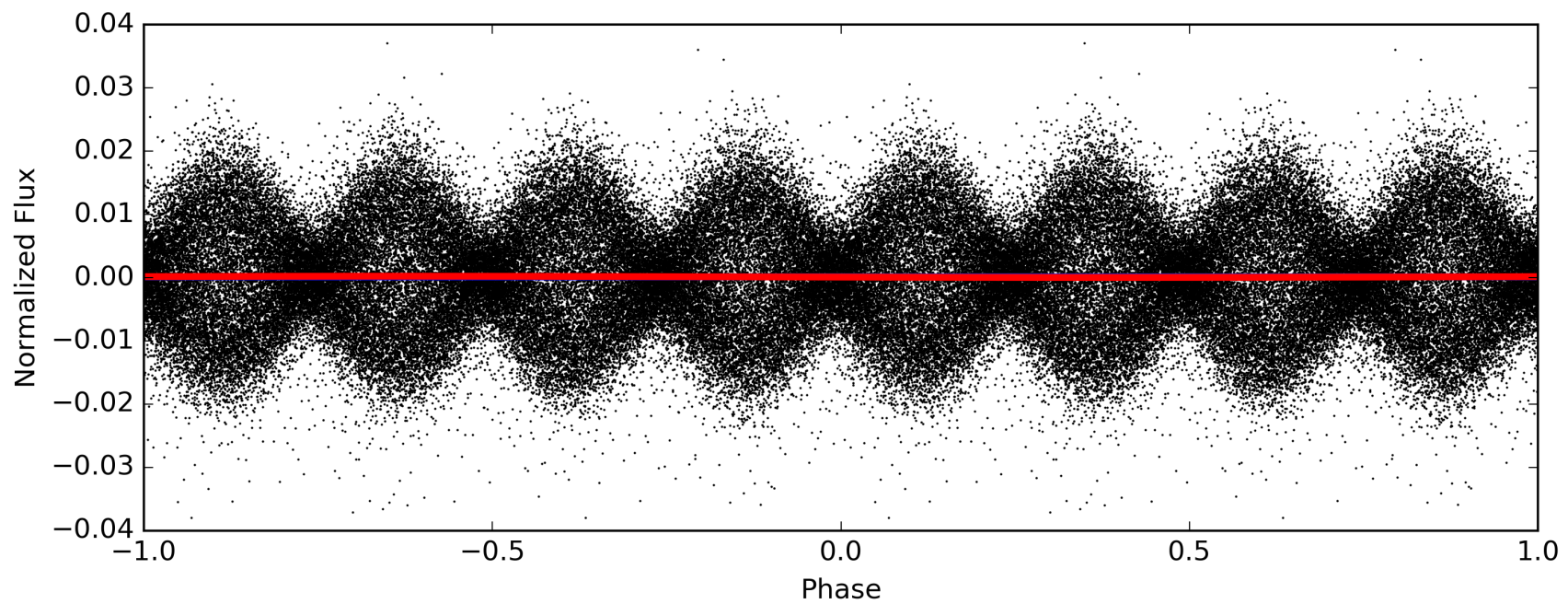
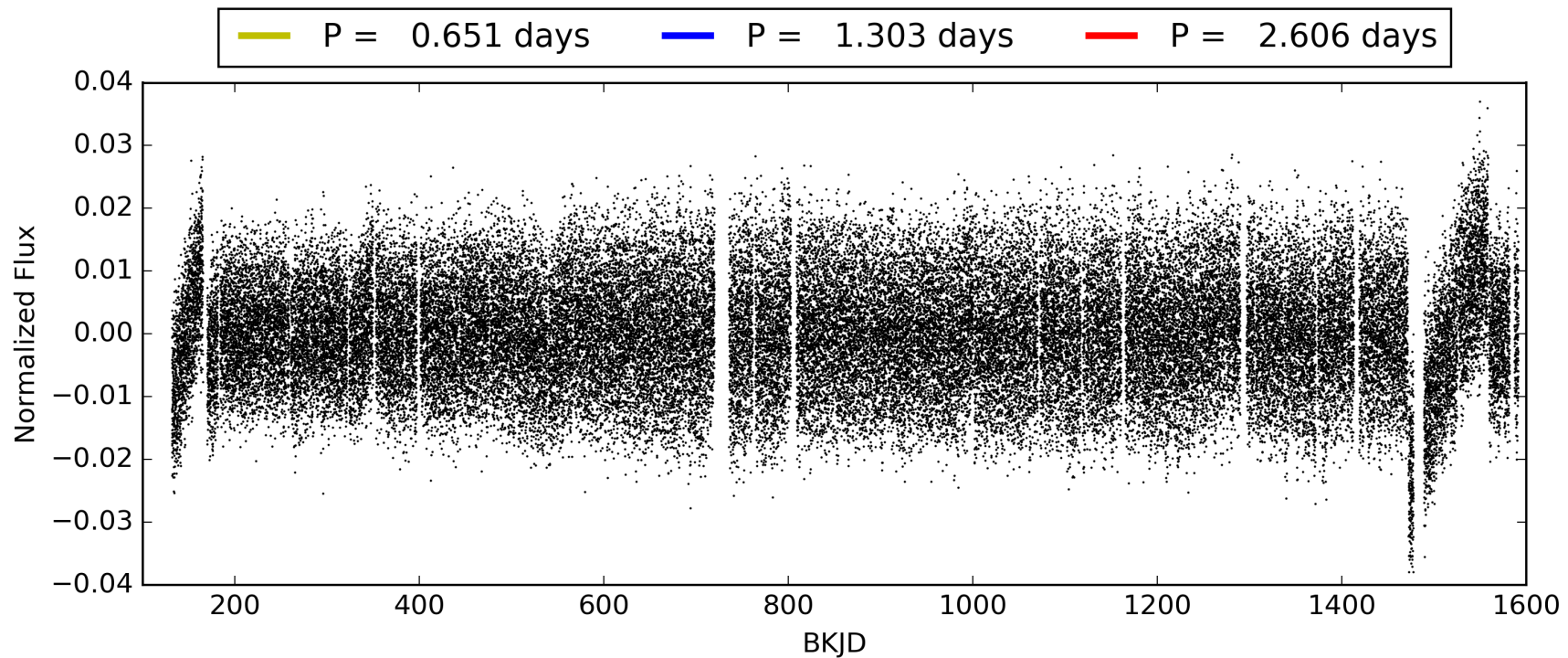
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:05:02 Z

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

TCE 009714209-01, PDC Light Curves

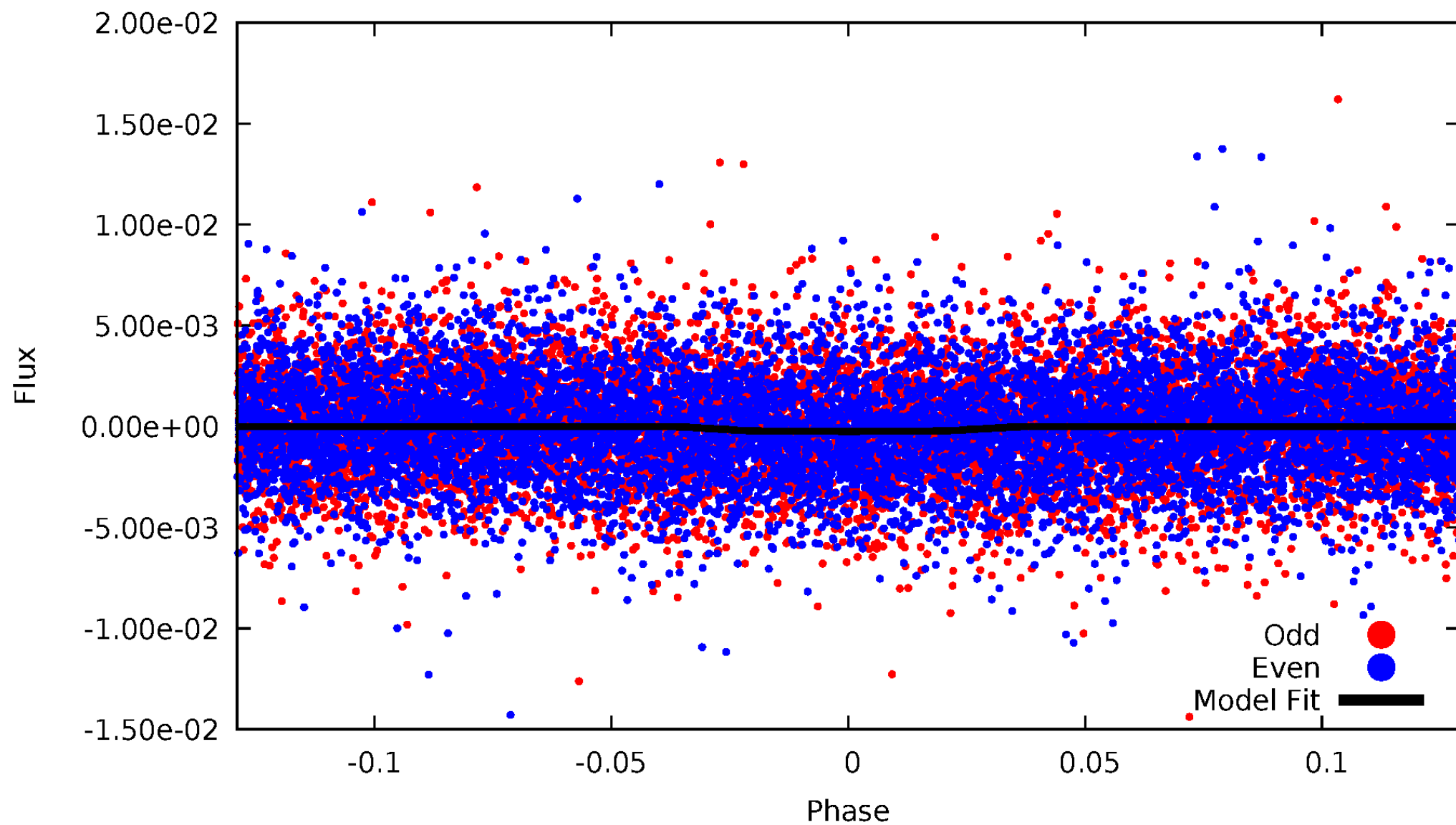


TCE 009714209-01



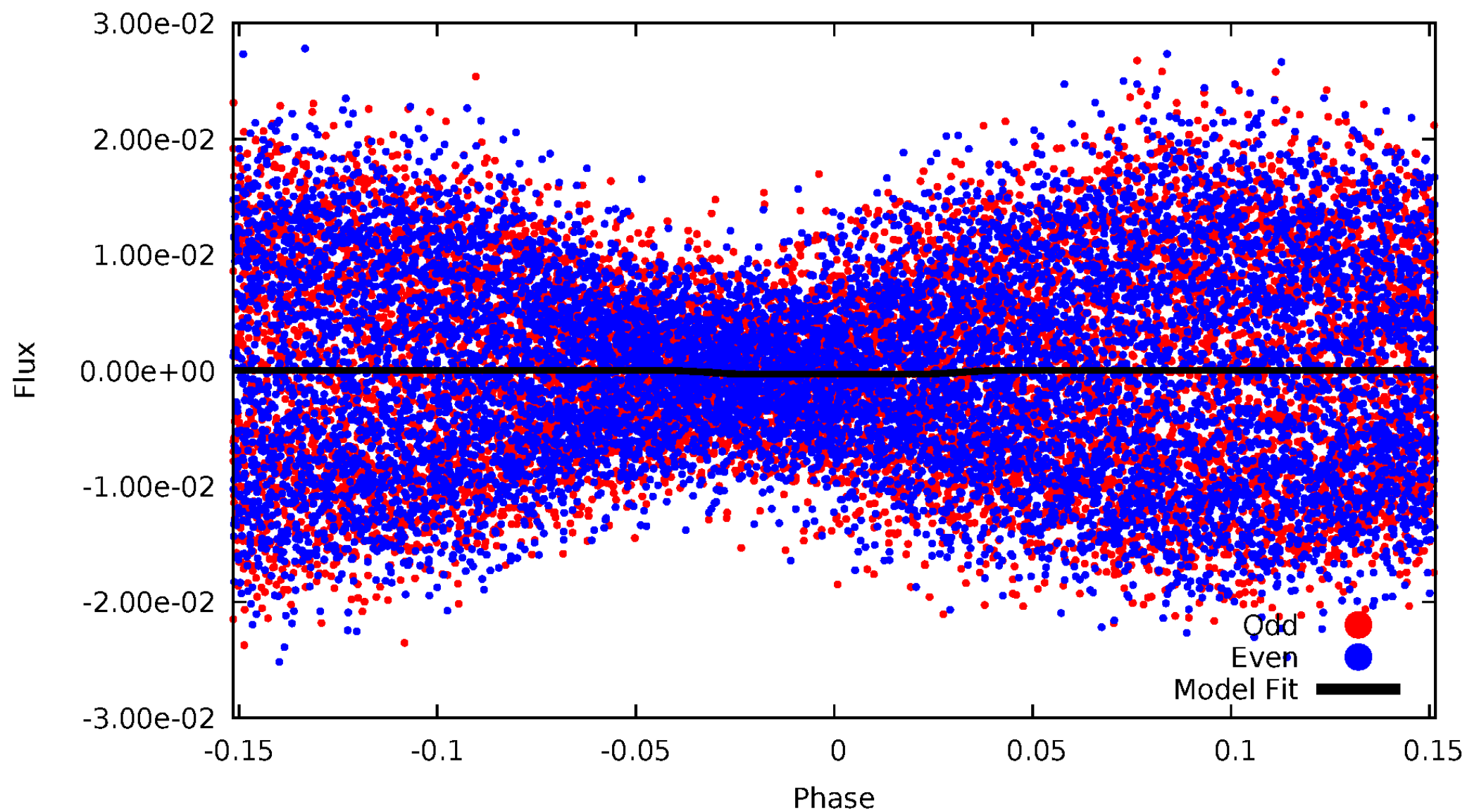
DV Odd/Even

TCE 009714209-01



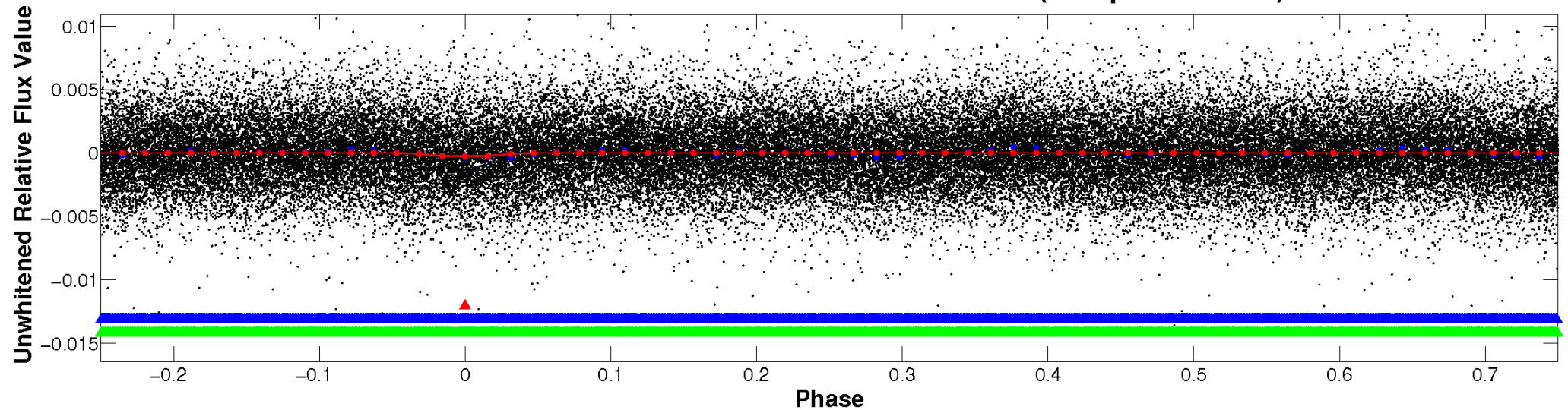
ALT Odd/Even

TCE 009714209-01

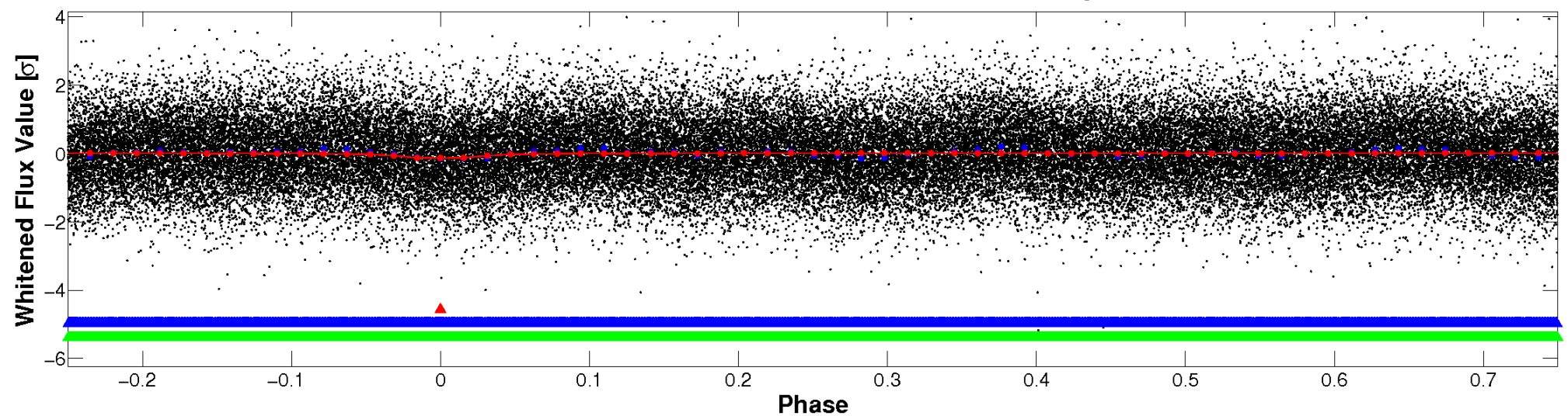


Non-Whitened Vs. Whitened Light Curve

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

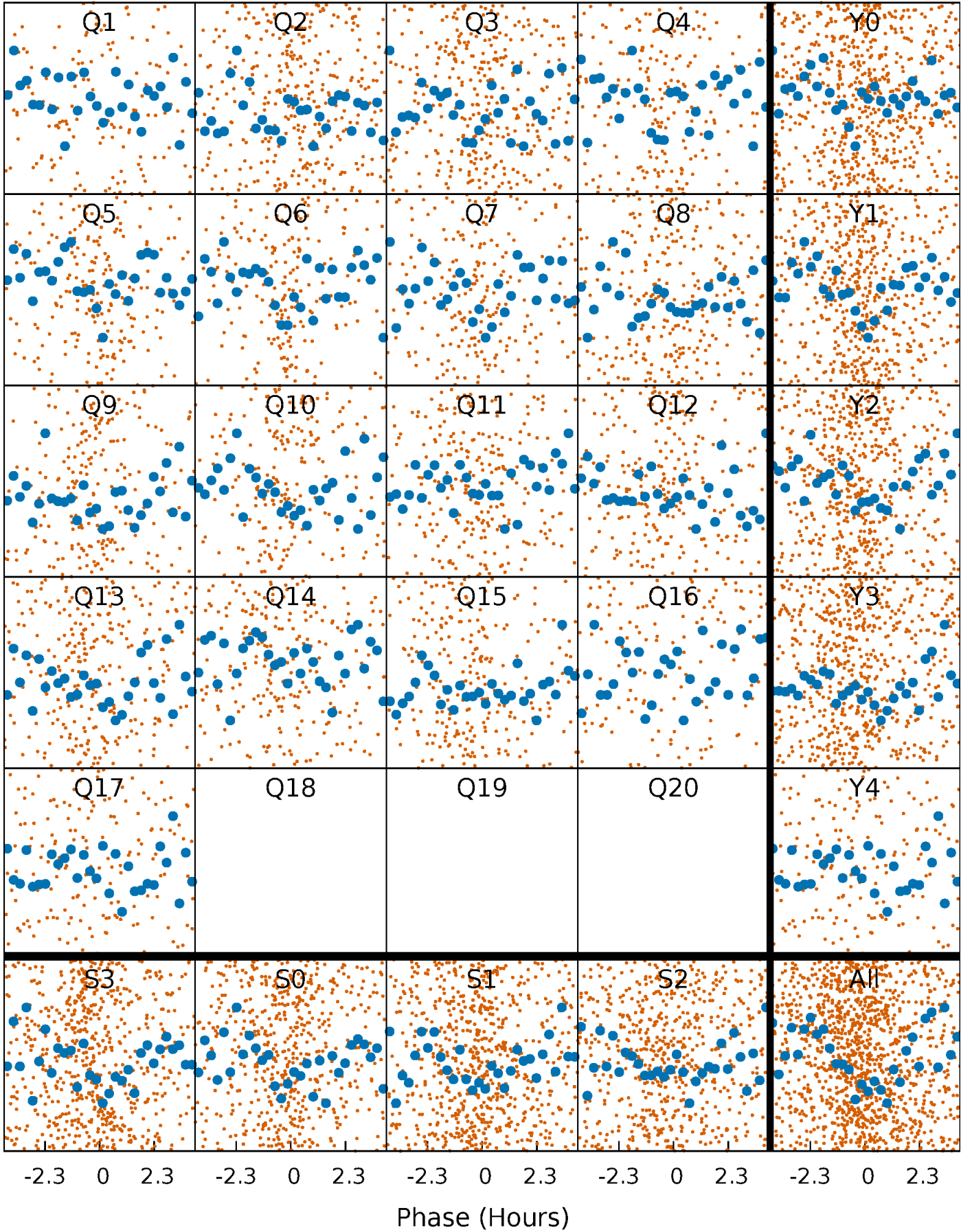


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



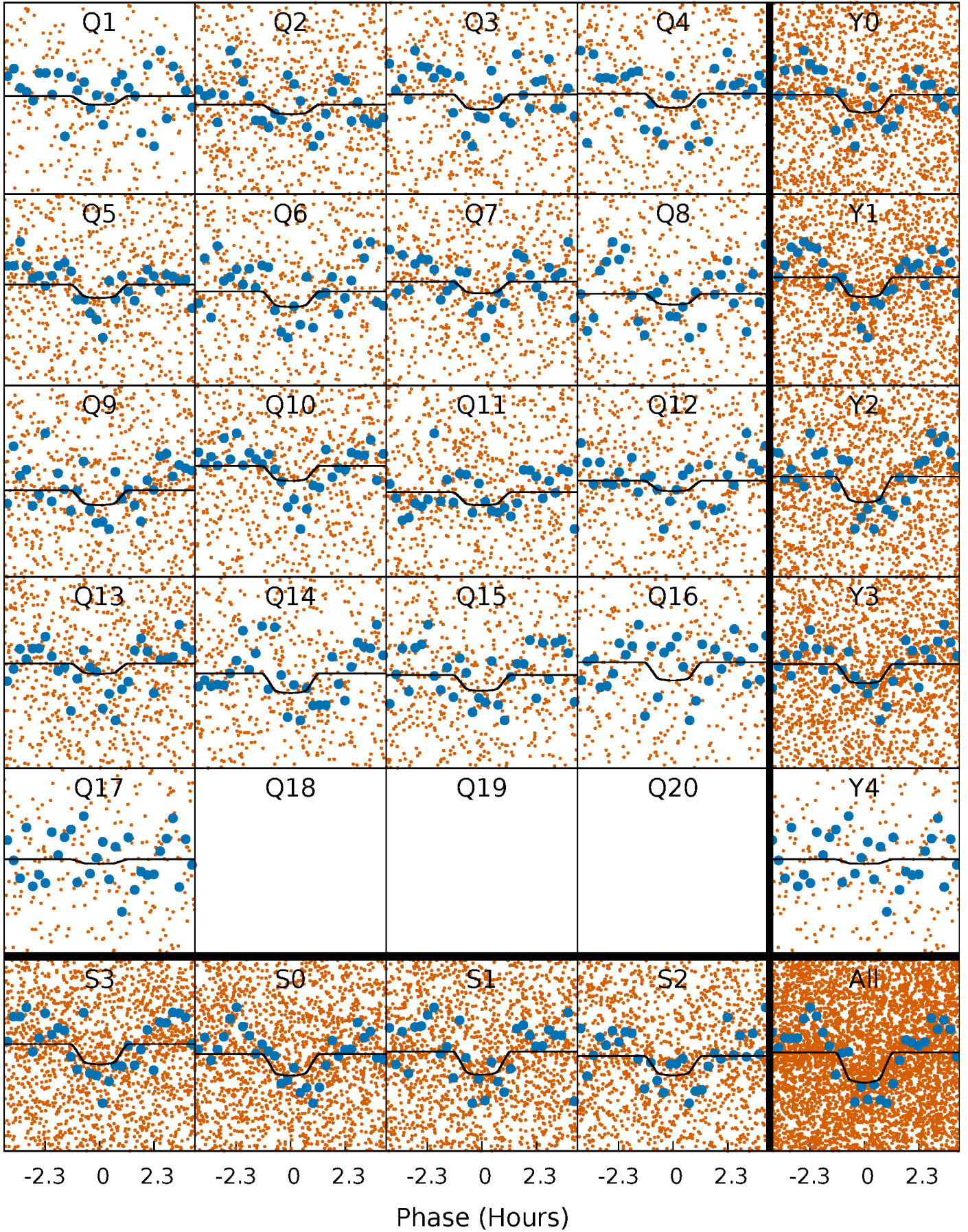
PDC Quarter-Phased Transit Curves

TCE 009714209-01 P= 1.302949 Days $T_0=132.433163$ (BKJD)



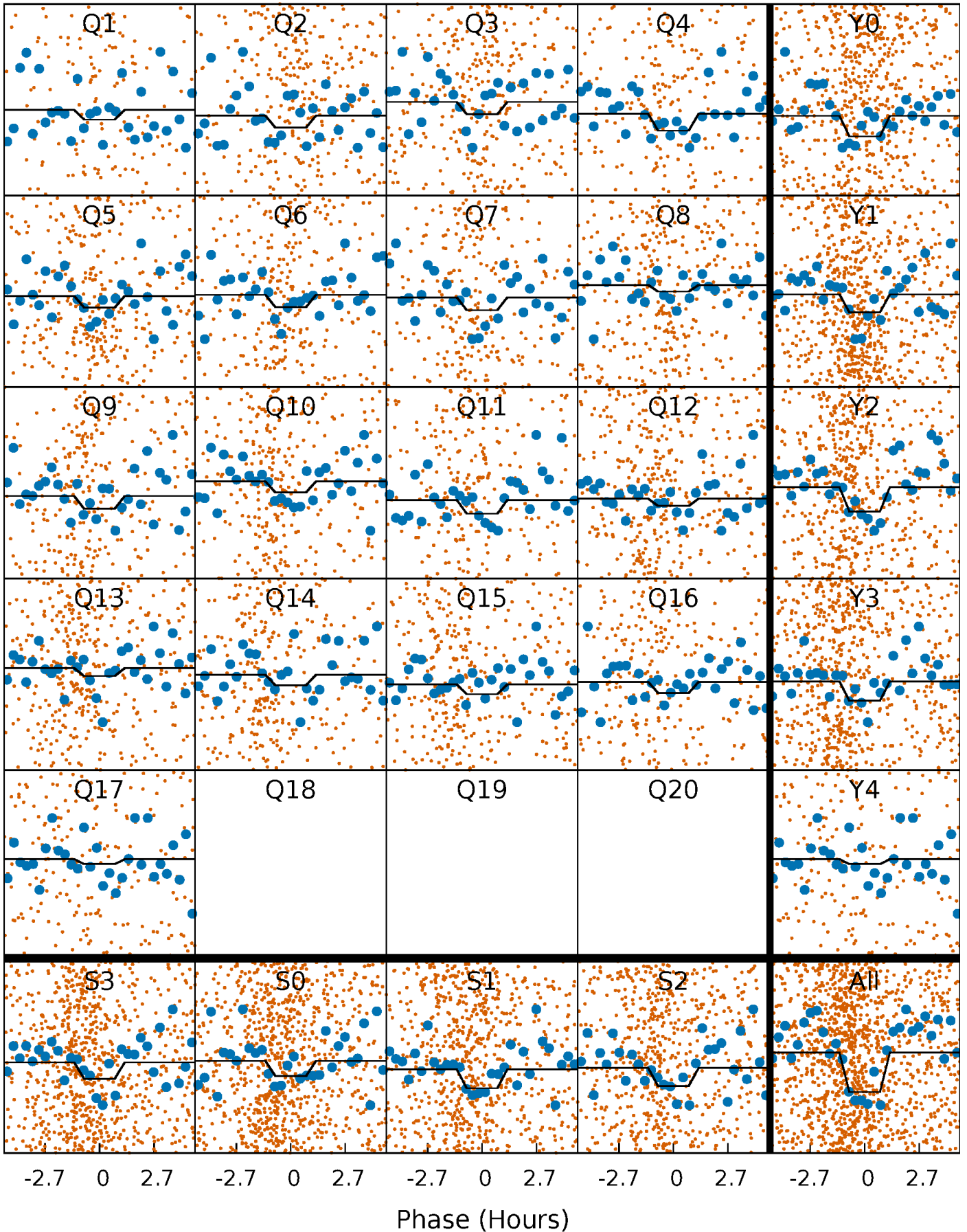
DV Quarter-Phased Transit Curves

TCE 009714209-01 P= 1.302949 Days $T_0=132.433163$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

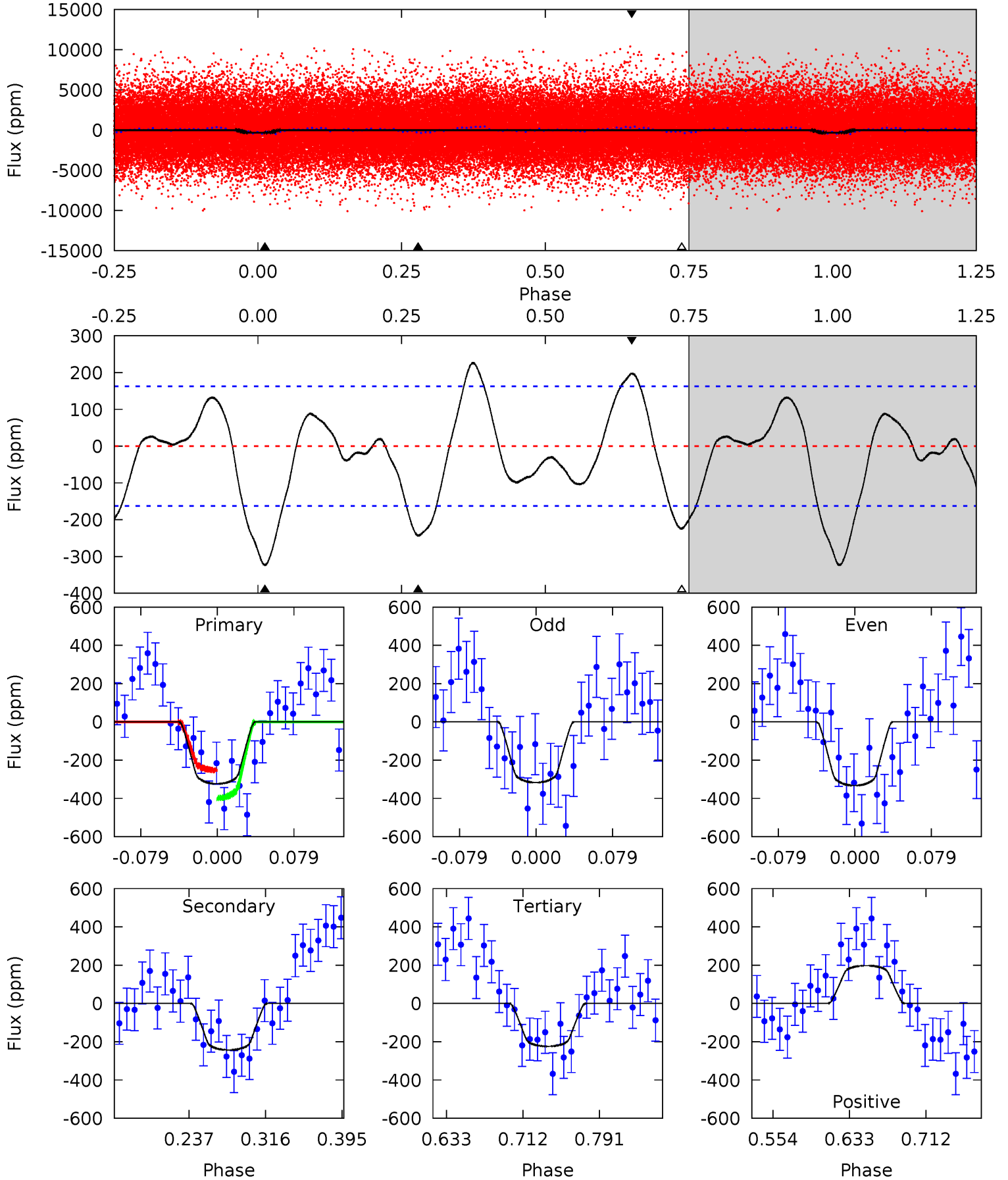
TCE 009714209-01 P= 1.302980 Days $T_0=132.433607$ (BKJD)



DV Model-Shift Uniqueness Test

009714209-01, P = 1.302949 Days, E = 131.130214 Days

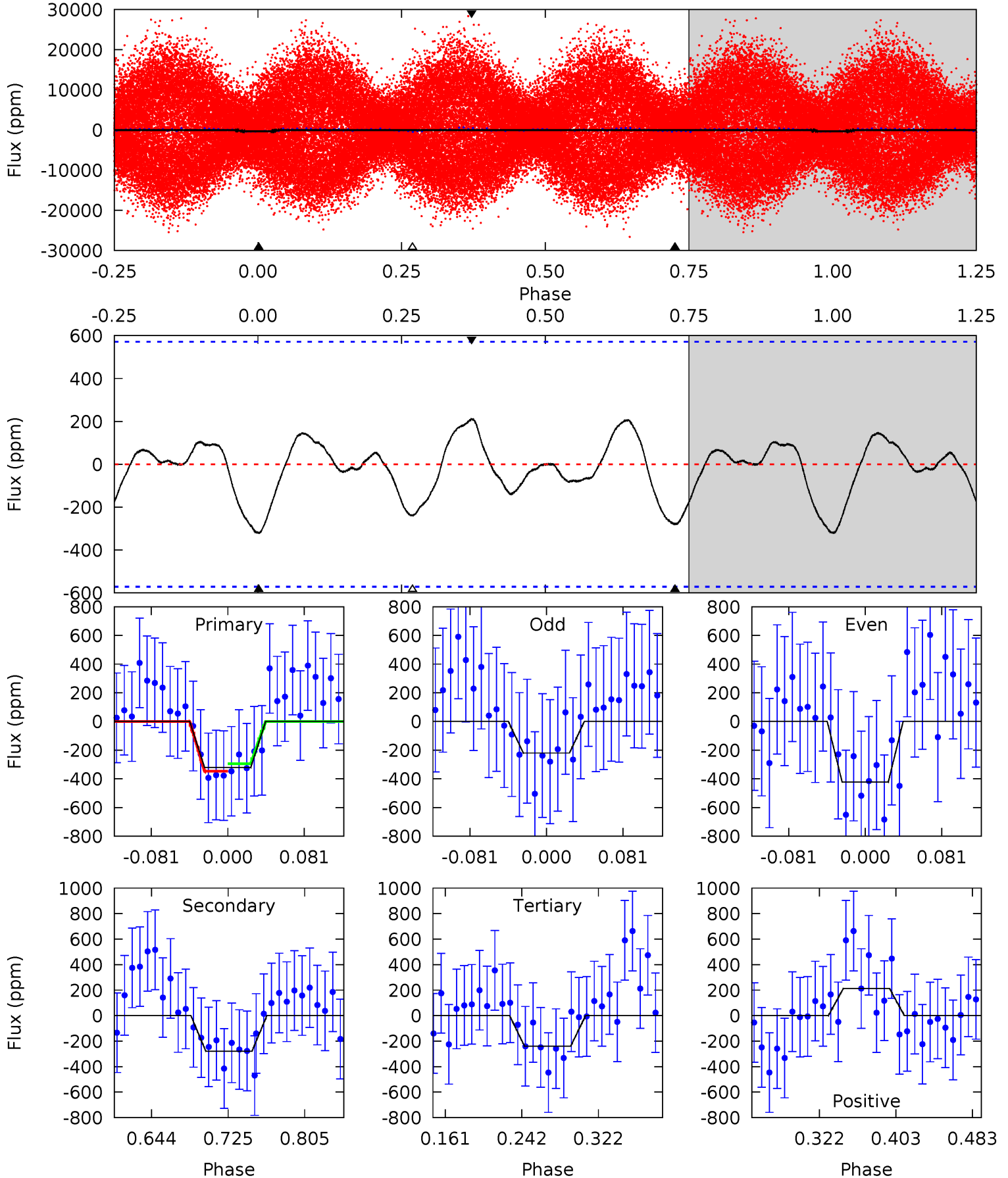
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.18	6.90	6.37	5.60	4.61	1.76	2.97	2.81	3.57	0.53	1.29	0.22	1.02	0.41	2.06



Alt Model-Shift Uniqueness Test

009714209-01, P = 1.302980 Days, E = 131.130627 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.58	2.25	1.93	1.72	4.61	1.75	0.83	0.65	0.87	0.32	0.54	0.81	1.60	0.40	0.21



Stellar Parameters For KIC 009714209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7055^{+197}_{-271}	$4.156^{+0.128}_{-0.192}$	$-0.060^{+0.250}_{-0.350}$	$1.668^{+0.516}_{-0.344}$	$1.457^{+0.220}_{-0.242}$	$0.442^{+0.284}_{-0.234}$
	+3%/-4%	+3%/-5%	+417%/-583%	+31%/-21%	+15%/-17%	+64%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009714209-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-243 ± 35	$3.48^{+2.77}_{-2.02}$	3480^{+282}_{-224}	6260^{+4774}_{-1556}	$7.431^{+38.356}_{-5.088}$
Alt.	-279 ± 124	$3.77^{+2.45}_{-2.21}$	3473^{+284}_{-204}	6166^{+4791}_{-1481}	$7.384^{+34.061}_{-5.210}$

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 $A_{obs} \gg 1.0$

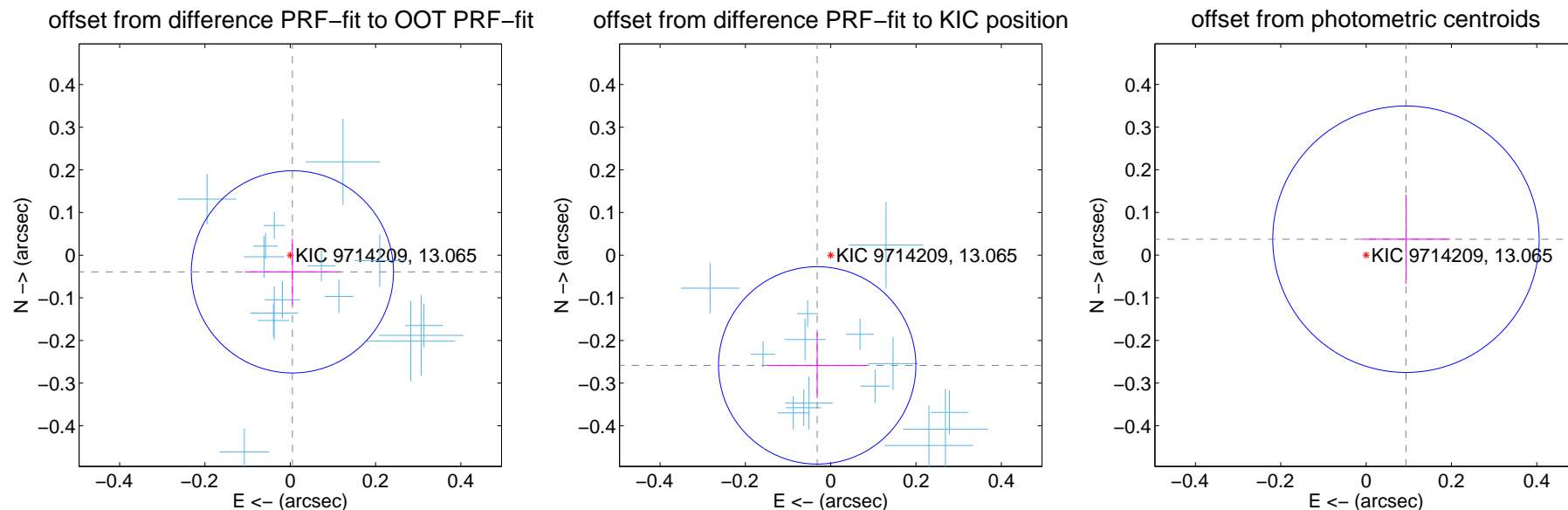
DV Centroid Data

Supplemental centroid analysis for 009714209-01. Kepler magnitude: 13.06. Transit SNR 7.73

There are 17 quarters with good PRF difference image offsets

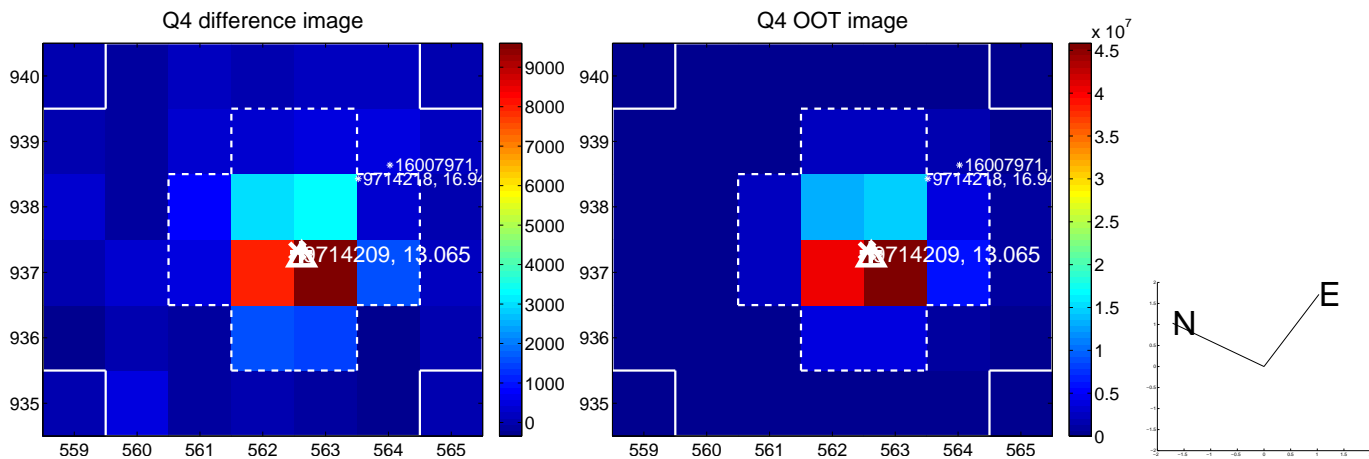
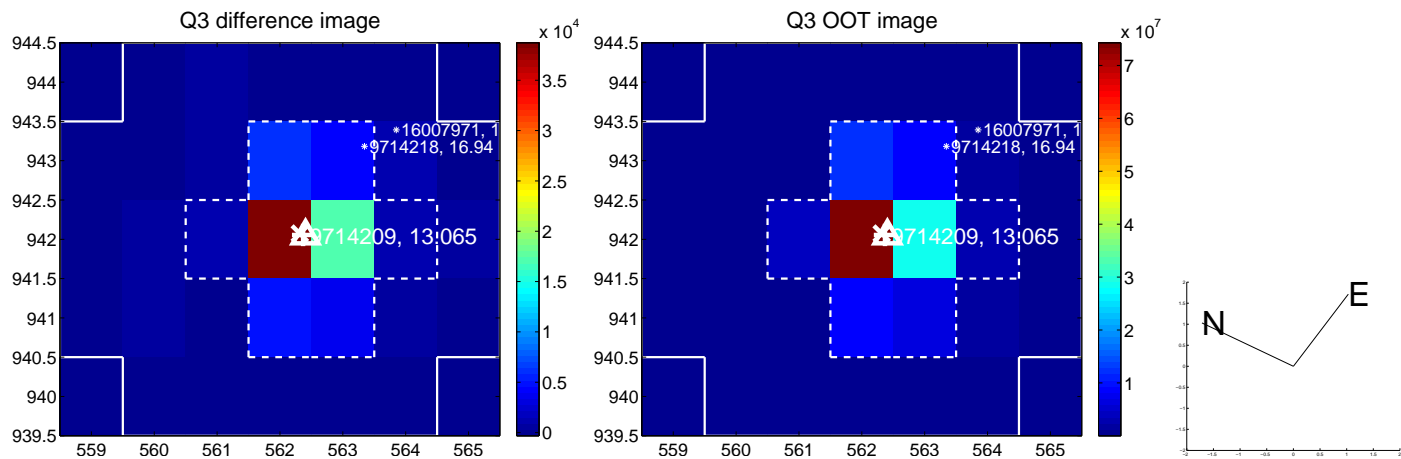
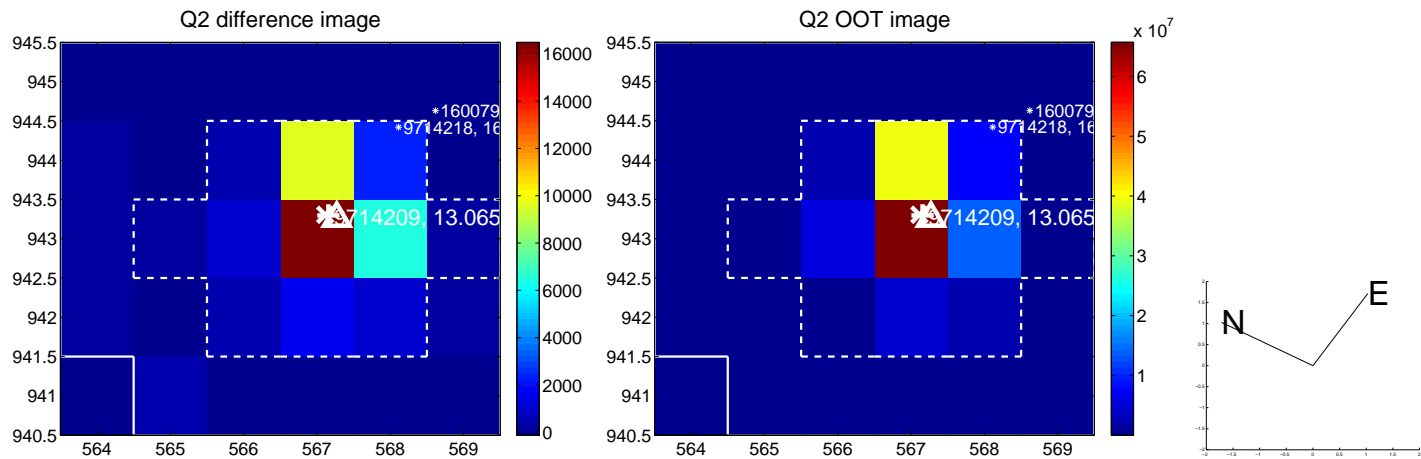
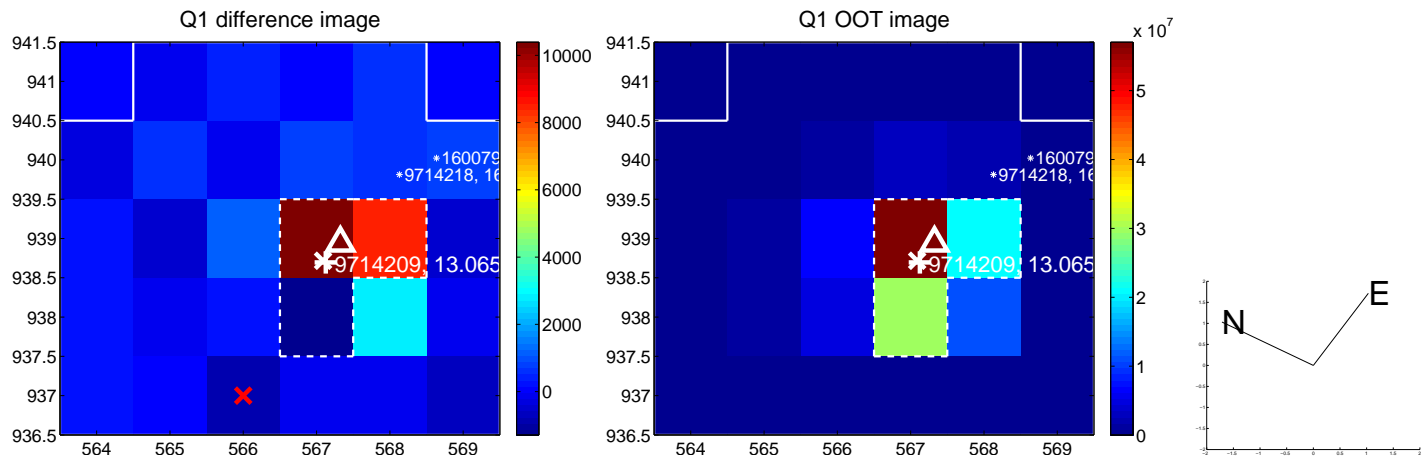
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.039 ± 0.079	0.50	-0.005 ± 0.112	-0.039 ± 0.078
PRF-fit source offset from KIC position	0.260 ± 0.077	3.38	0.032 ± 0.117	-0.258 ± 0.077
photometric centroid source offset	0.10 ± 0.10	0.97	-0.09 ± 0.10	0.04 ± 0.10

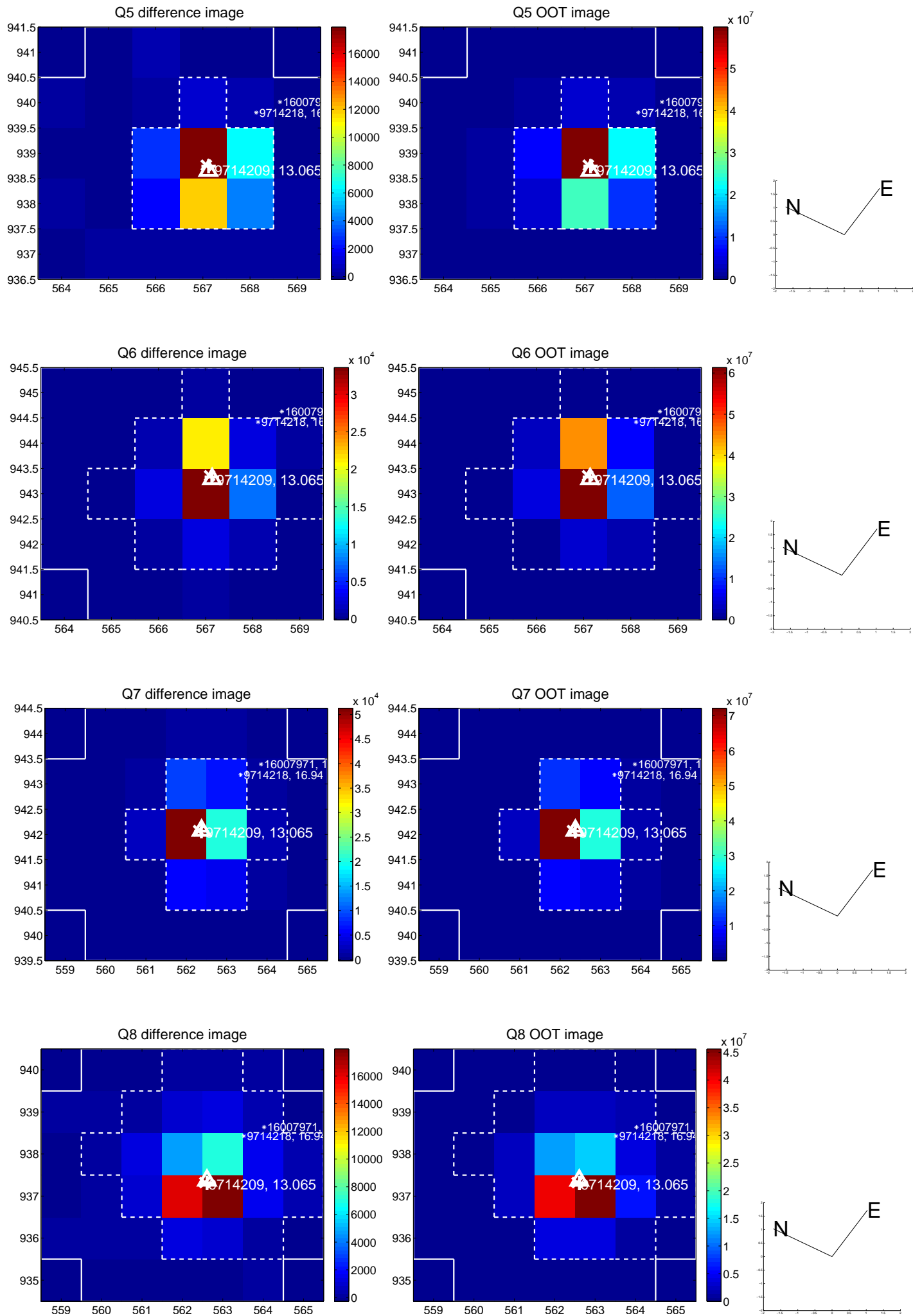


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

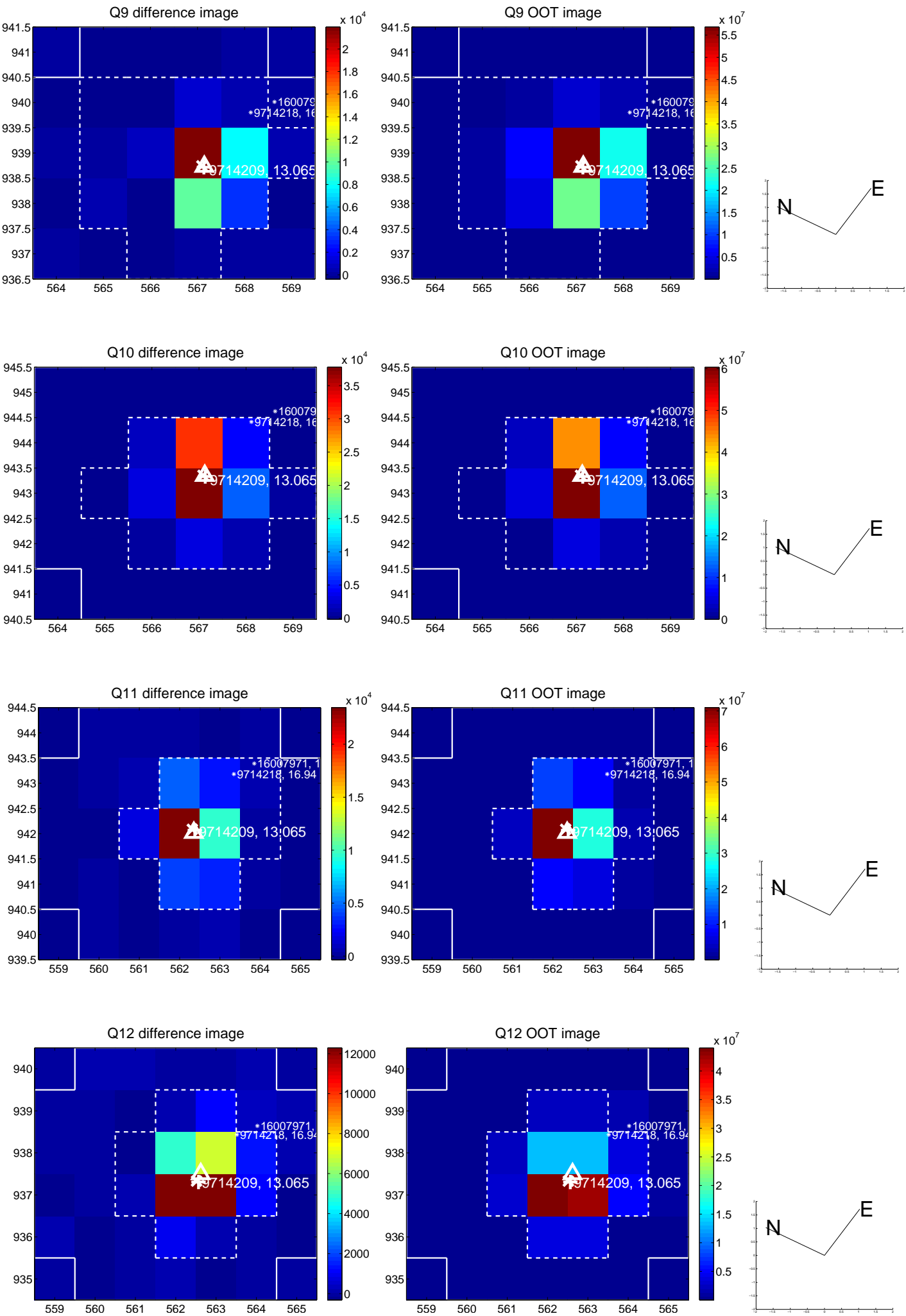
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



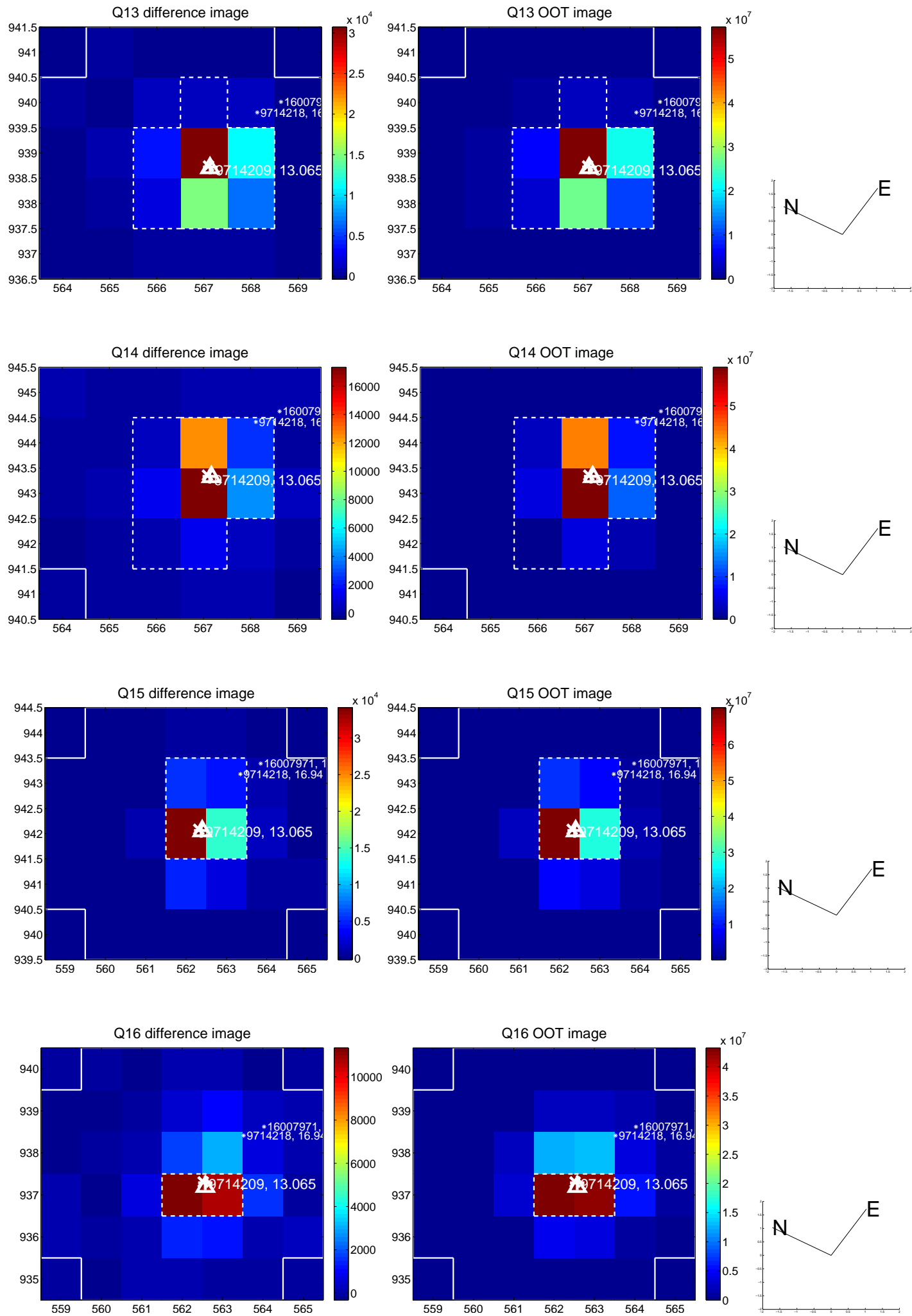
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



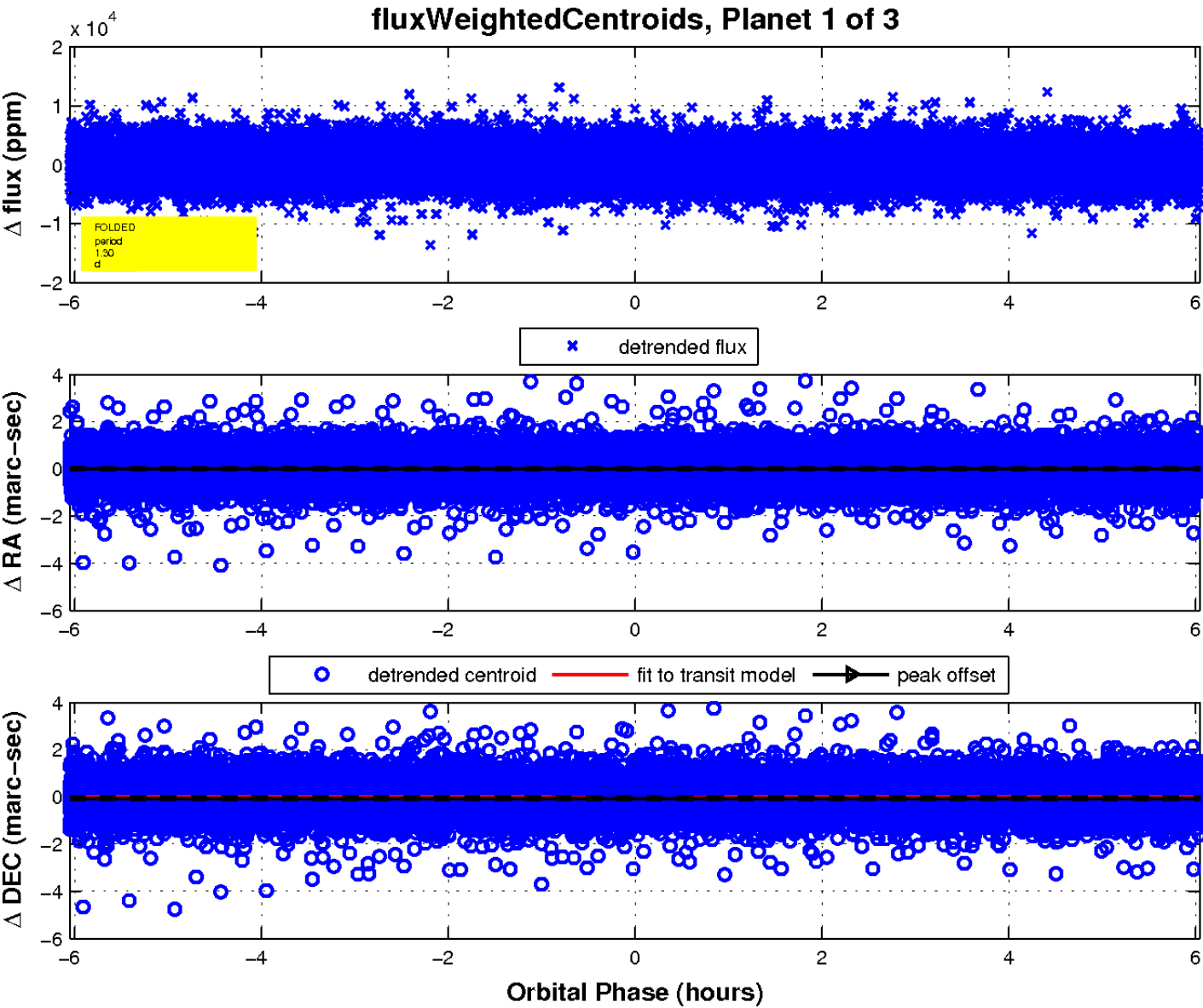
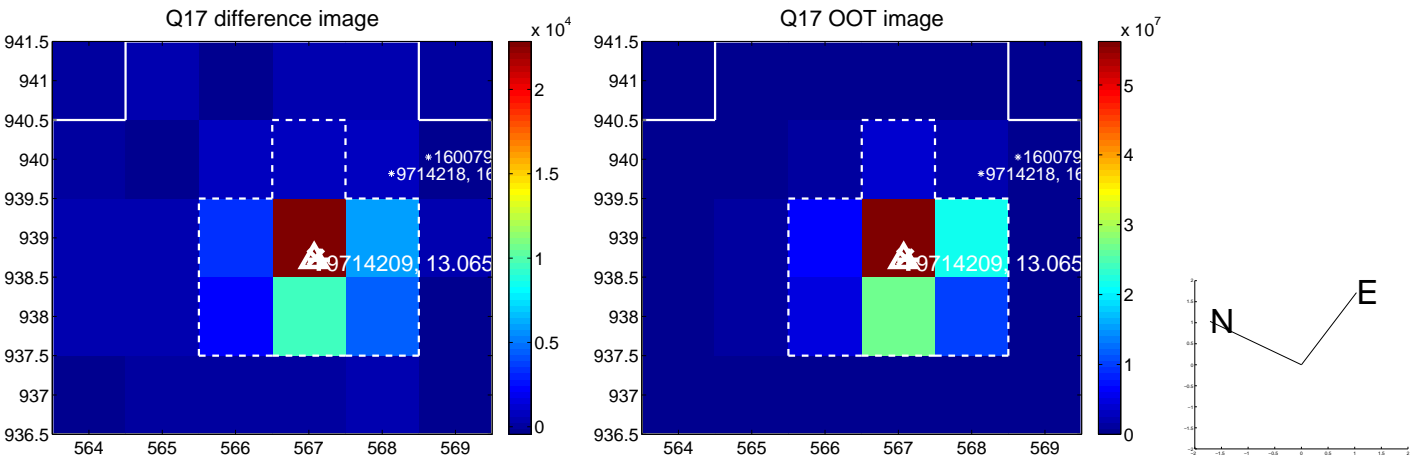
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



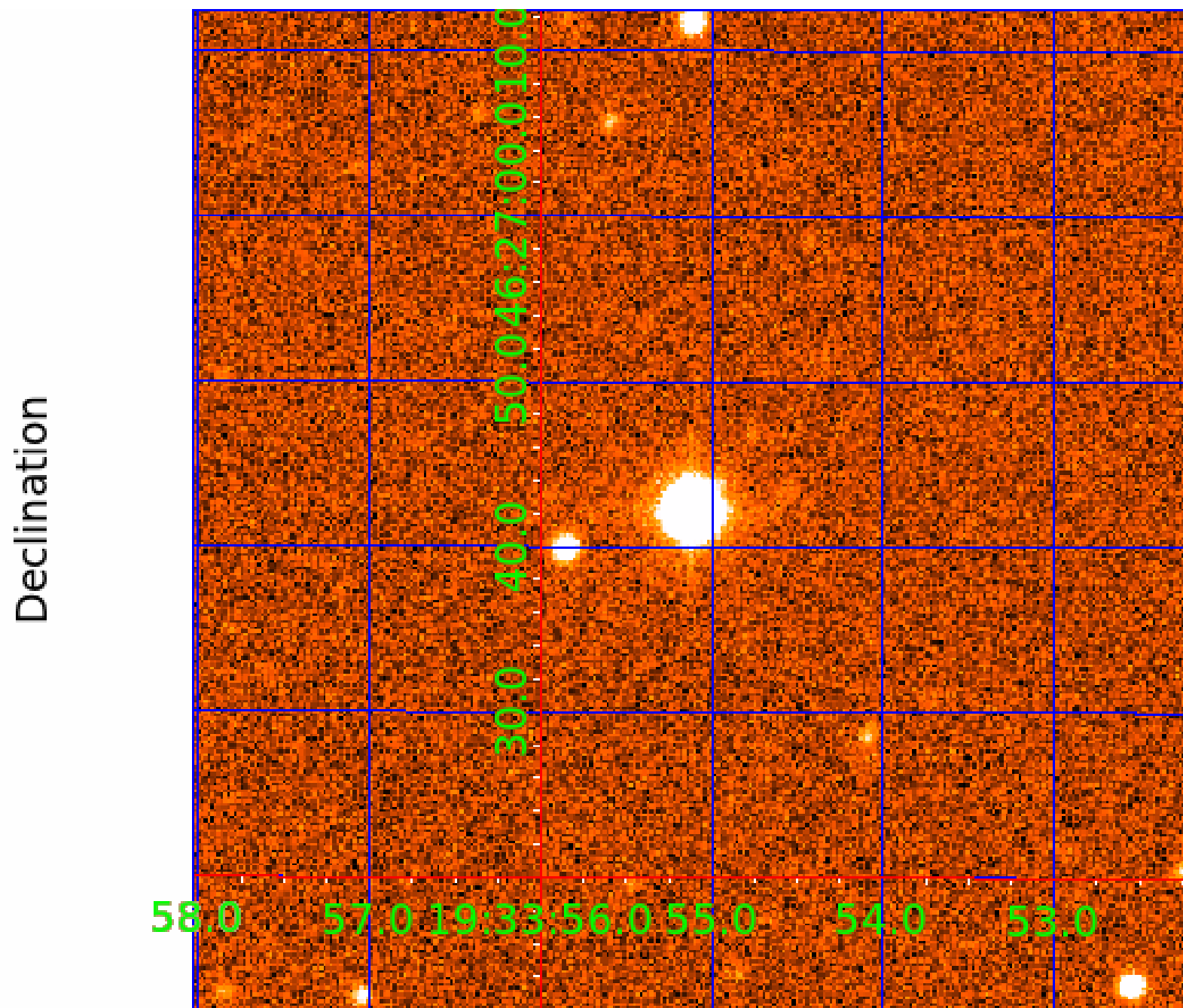
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009714209

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})
009714209-01	OBS	No	1.302949	132.433163	246.6	2.016	8.2	7.7	1.67	7055	3.05	8826.26
009714209-02	OBS	No	0.556342	131.887694	510.7	0.735	7.6	10.0	1.67	7055	3.97	27450.98
009714209-03	OBS	No	0.556344	131.516939	499.5	1.024	7.6	11.2	1.67	7055	4.38	27450.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714209-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009714209-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009714209-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

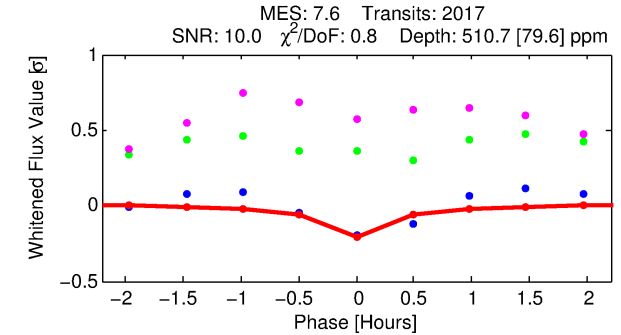
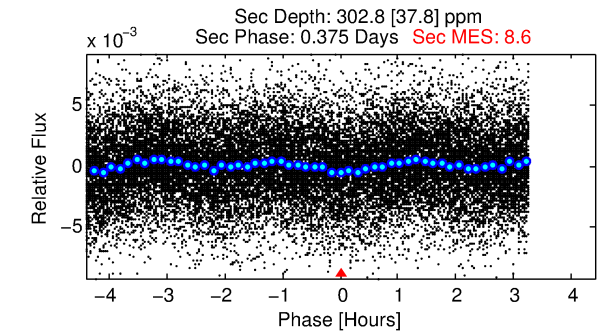
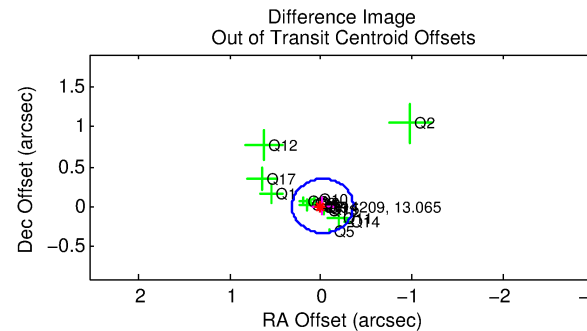
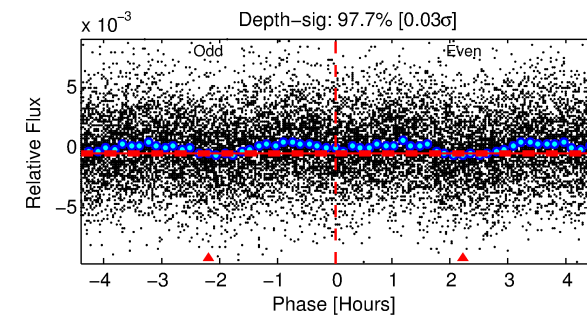
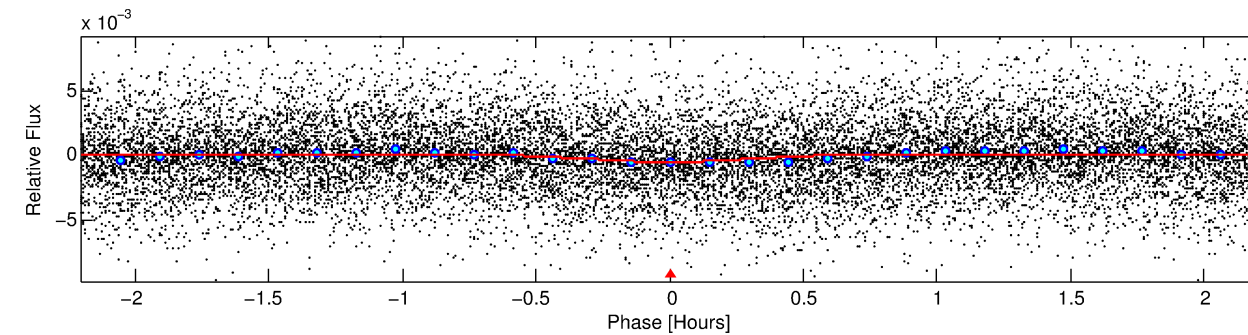
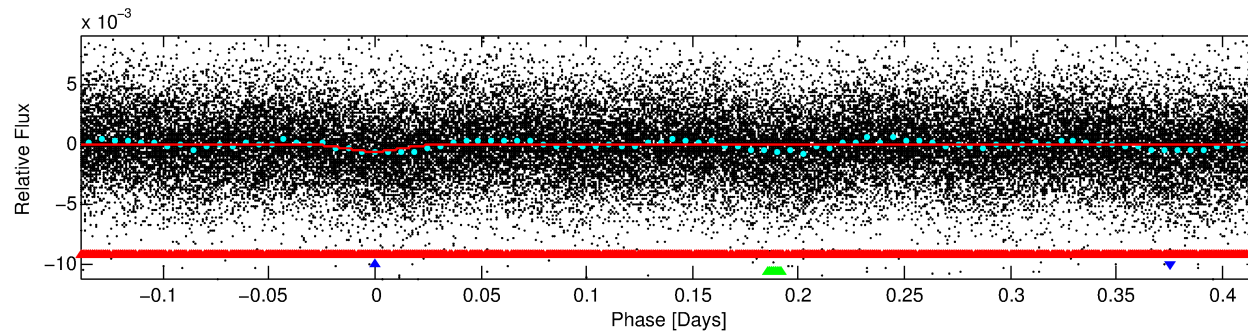
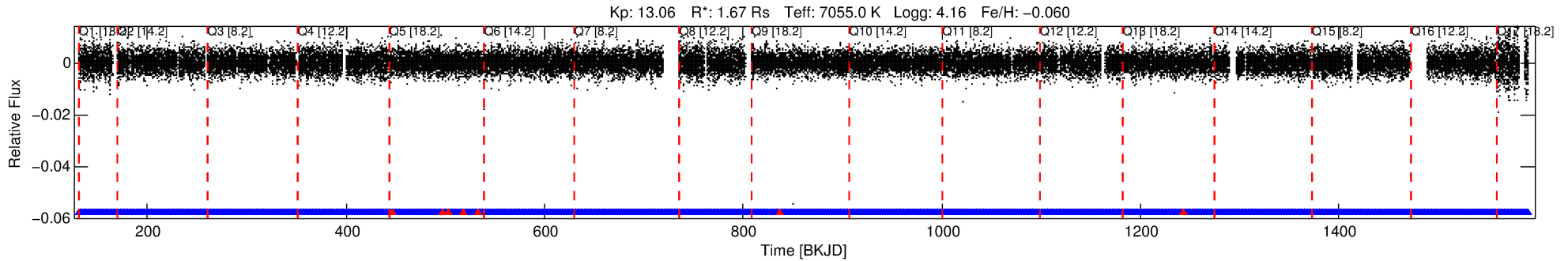
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009714209-02

No Significant Match Found

DV One-Page Summary

KIC: 9714209 Candidate: 2 of 3 Period: 0.556 d



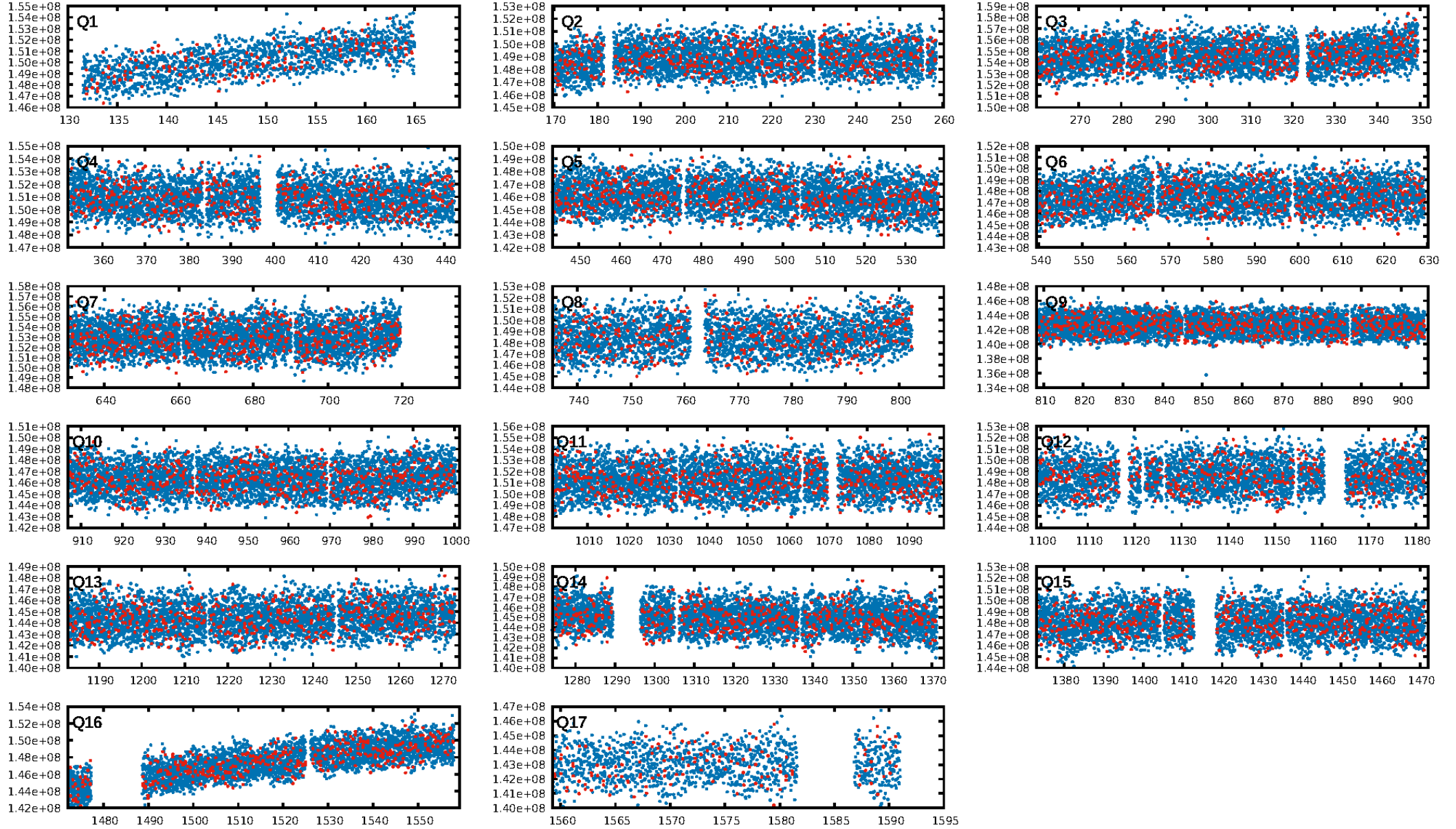
DV Fit Results:

Period = 0.55634 [0.00001] d
Epoch = 131.8877 [0.0015] BKJD
Rp/R* = 0.0218 [0.0124]
a/R* = 5.20 [16.48]
b = 0.50 [4.95]
Seff = 27450.98 [10737.77]
Teq = 3282 [321] K
Rp = 3.97 [2.57] Re
a = 0.0150 [0.0038] AU
Ag = 2.38 [2.85] [0.48 σ]
Teffp = 6303 [1819] K [1.64 σ]

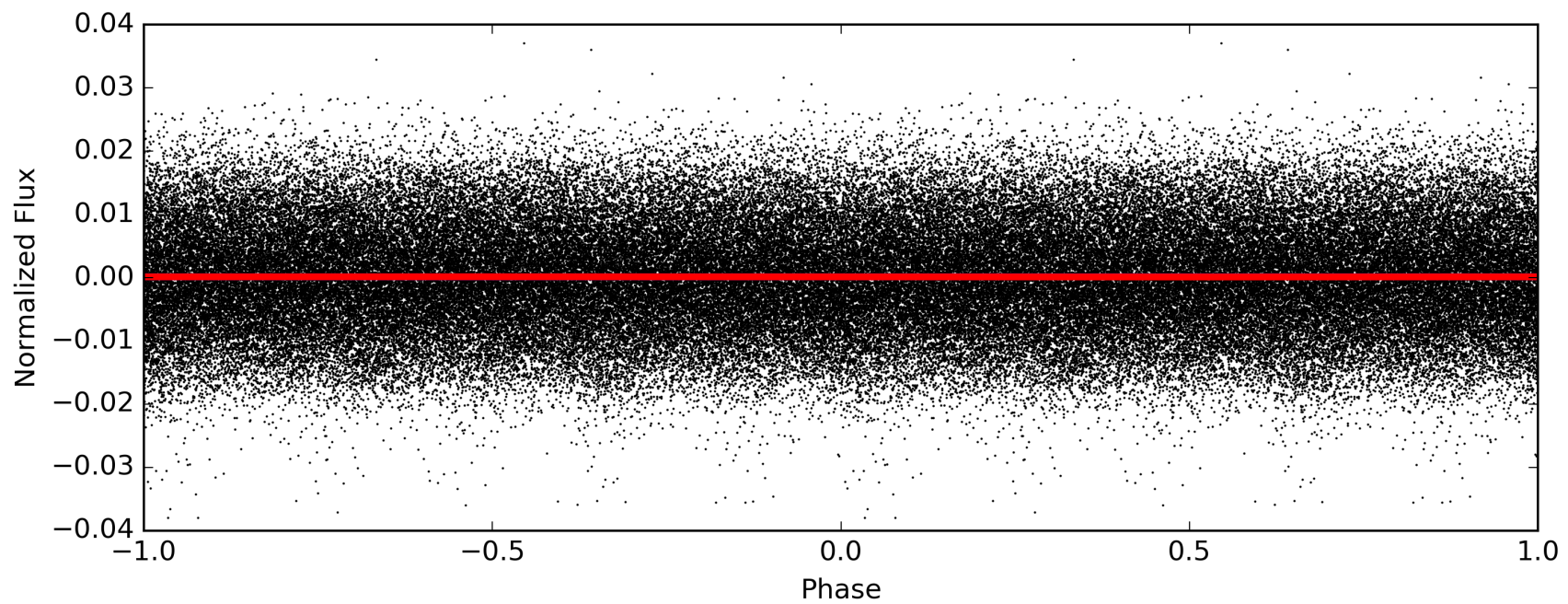
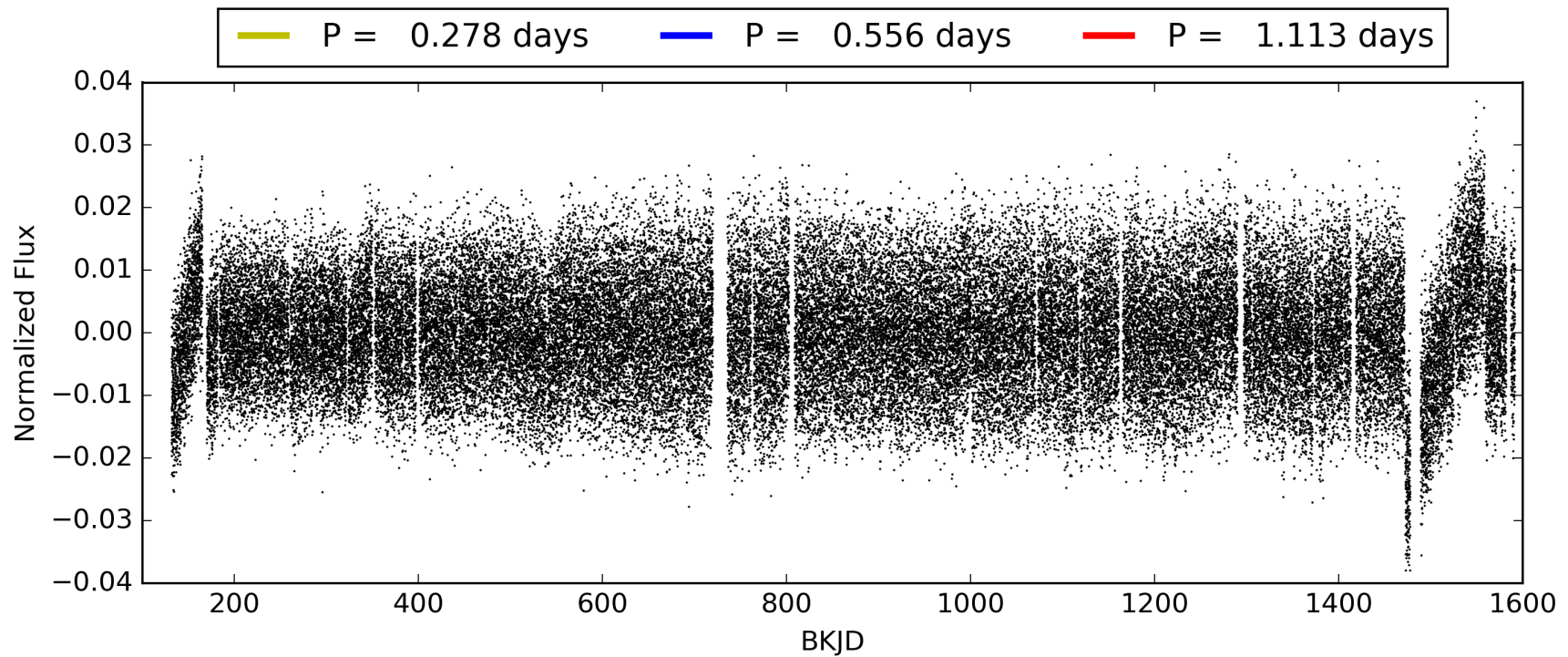
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.46e-14
RollingBand-fgt: 1.00 [1921/1928]
GhostDiagnostic-chr: 0.9937
Centroid-sig: 9.8%
Centroid-so: 0.214 arcsec [3.89 σ]
OotOffset-rm: 0.021 arcsec [0.19 σ]
KicOffset-rm: 0.202 arcsec [1.94 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009714209-02, PDC Light Curves

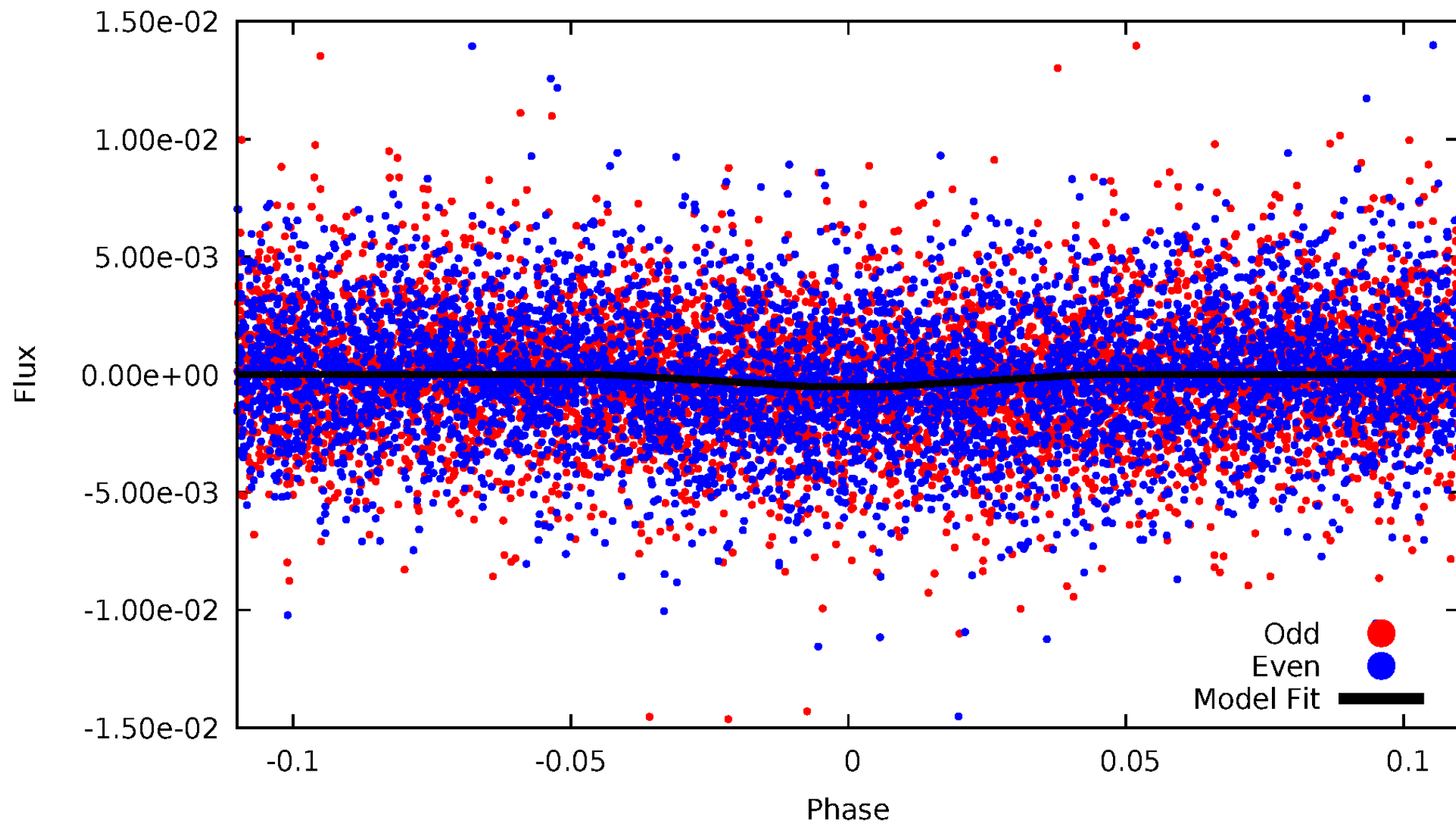


TCE 009714209-02



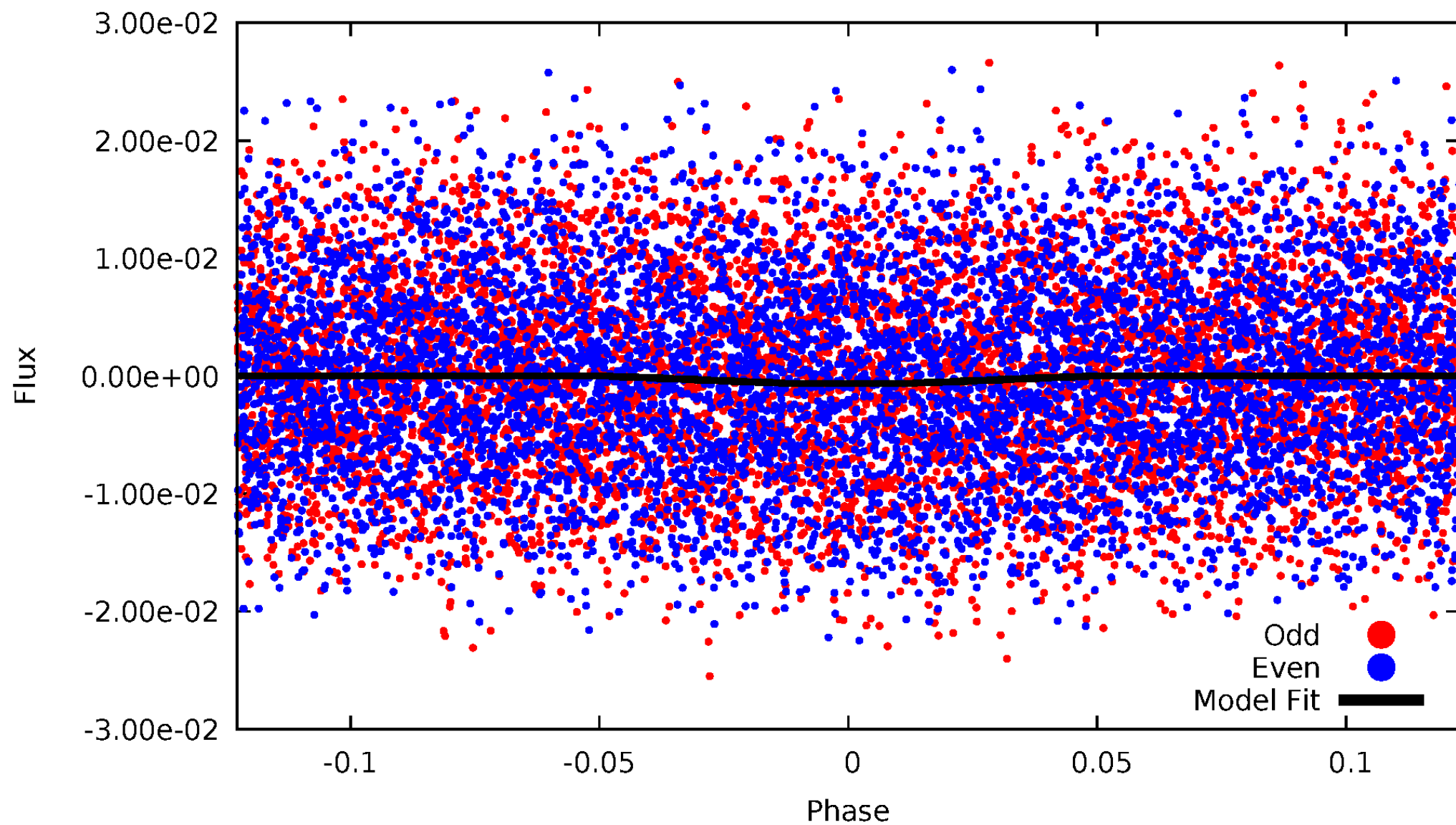
DV Odd/Even

TCE 009714209-02



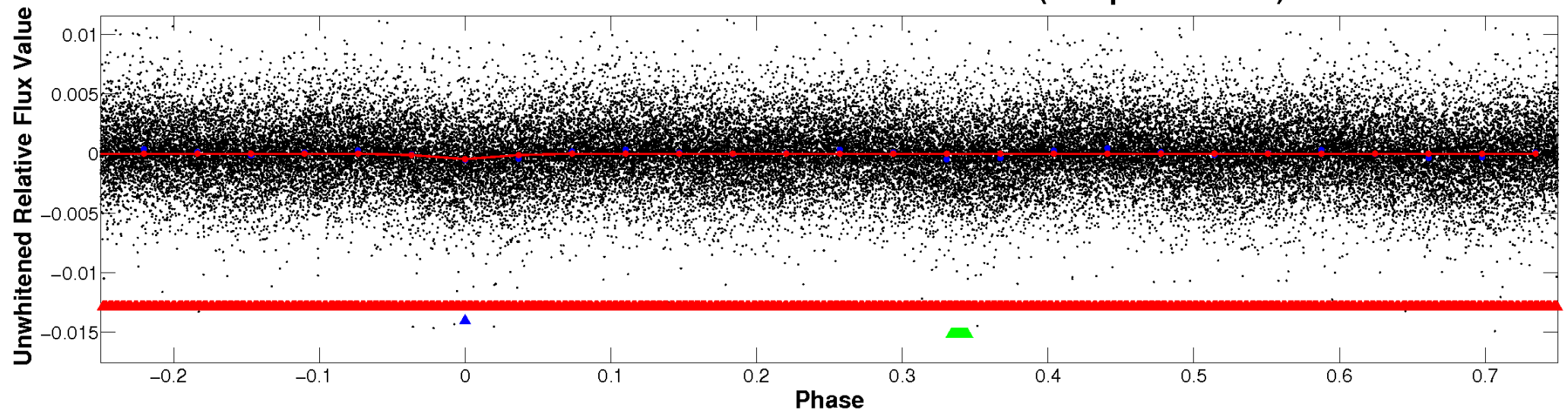
ALT Odd/Even

TCE 009714209-02

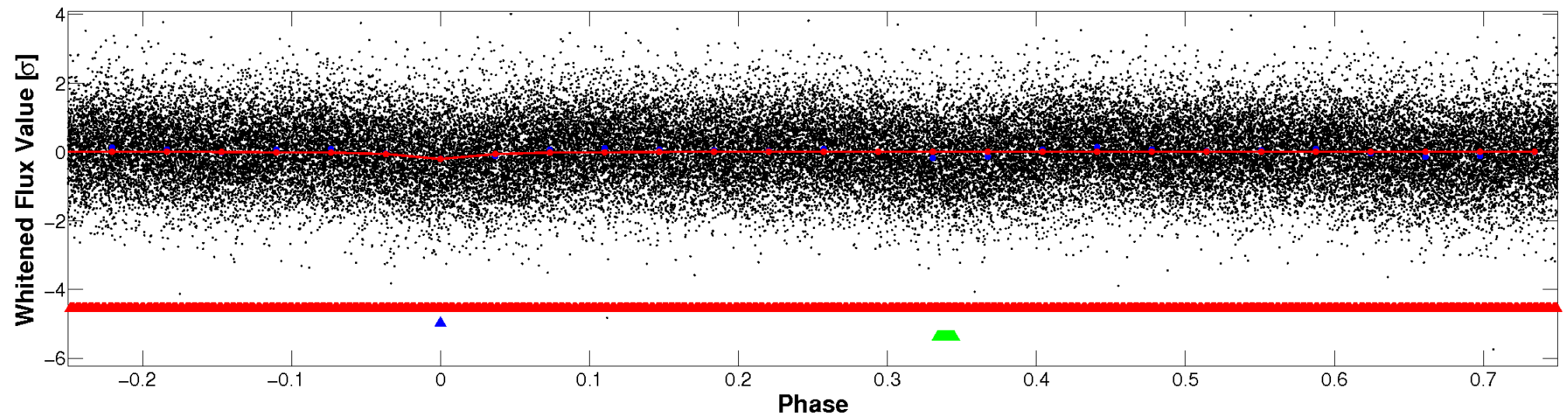


Non-Whitened Vs. Whitened Light Curve

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

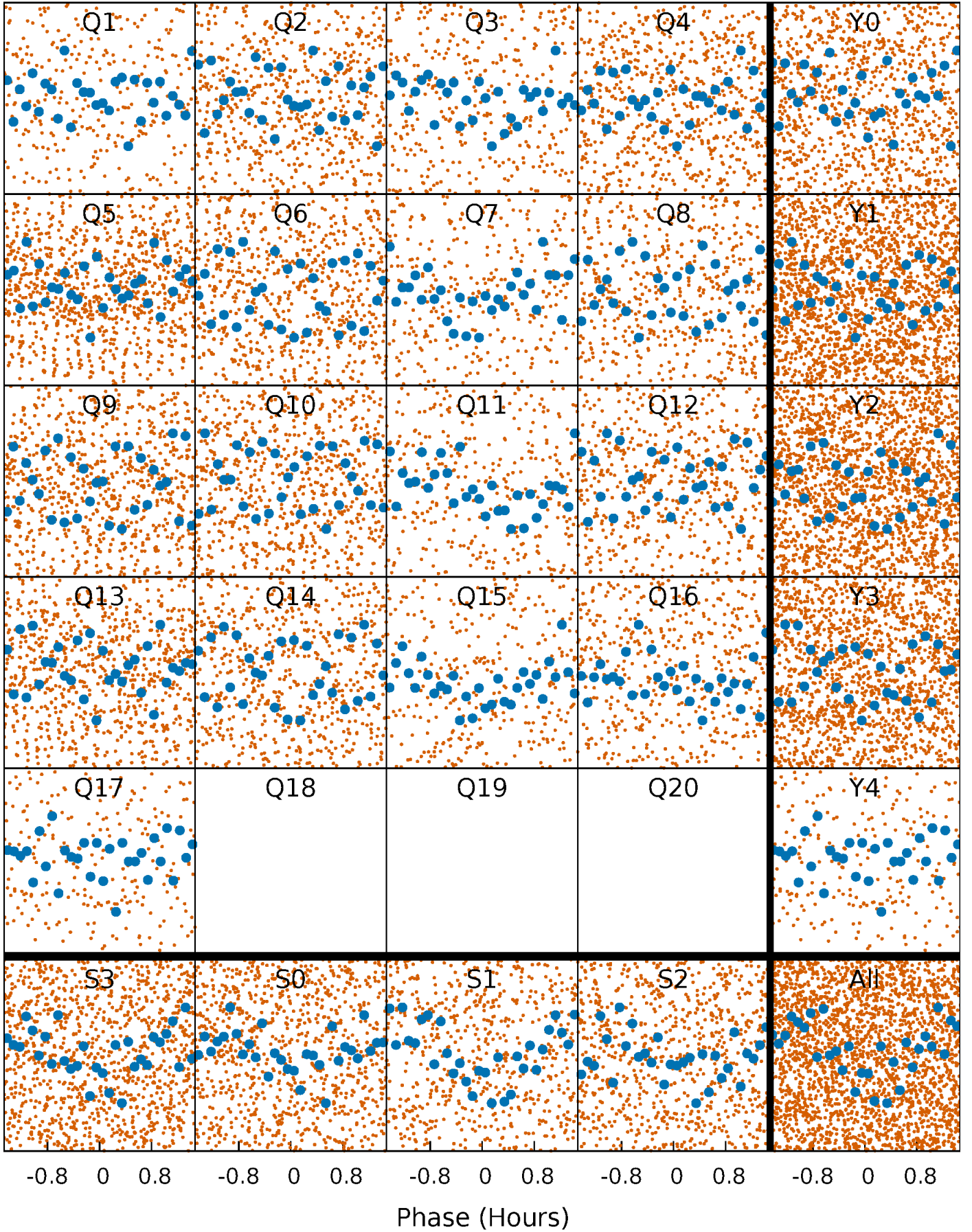


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



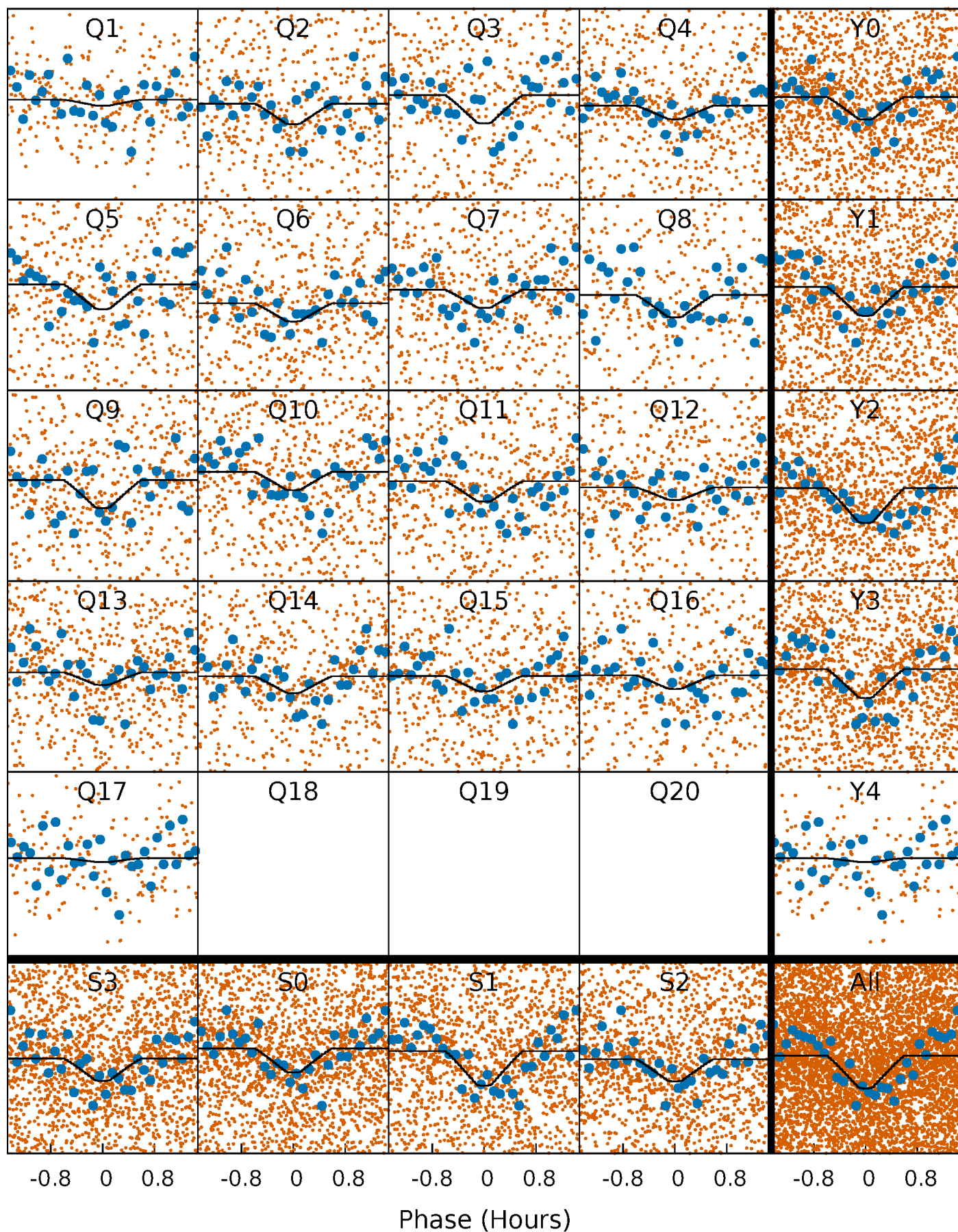
PDC Quarter-Phased Transit Curves

TCE 009714209-02 P= 0.556342 Days $T_0=131.887695$ (BKJD)



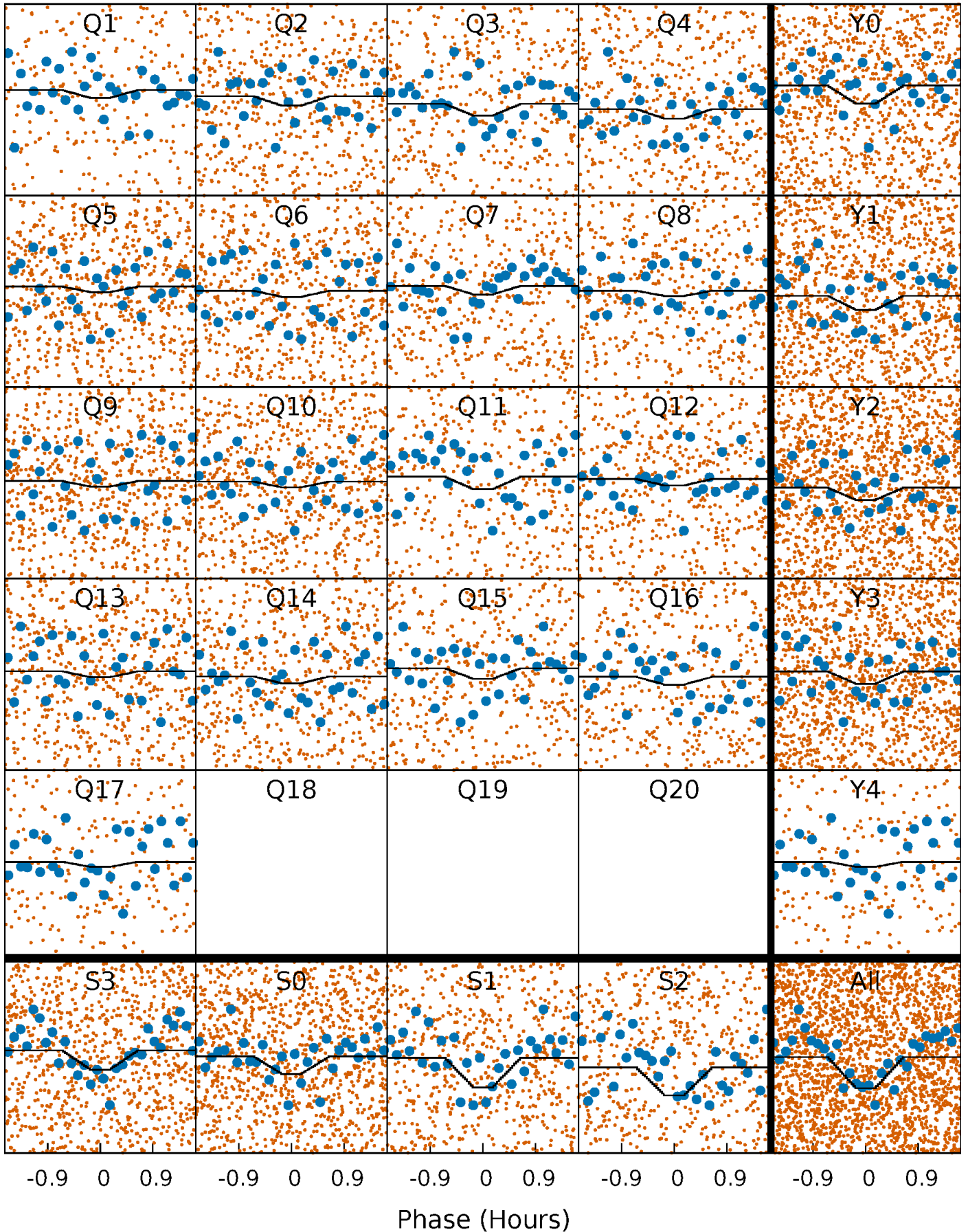
DV Quarter-Phased Transit Curves

TCE 009714209-02 P= 0.556342 Days $T_0=131.887695$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

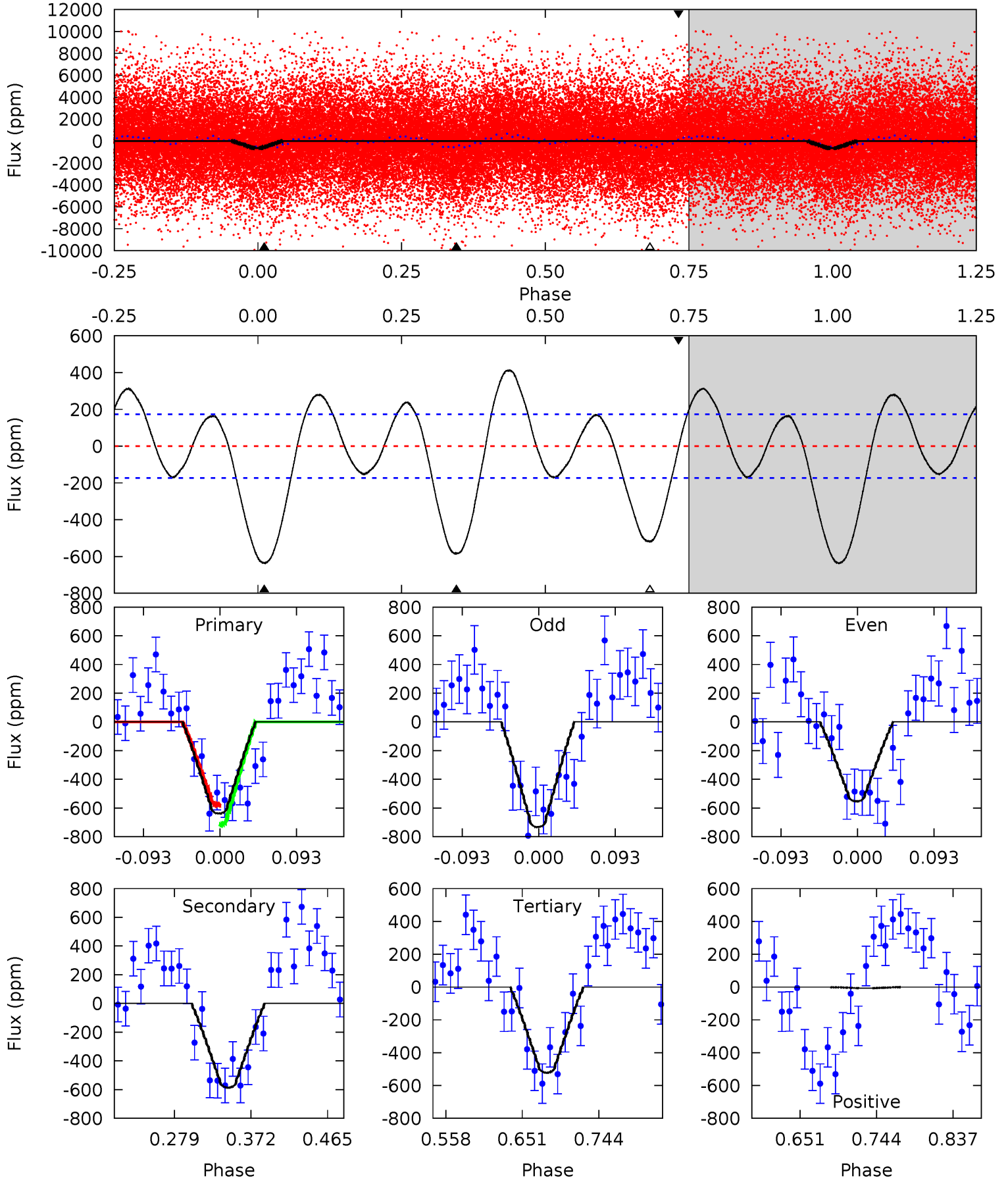
TCE 009714209-02 $P = 0.556345$ Days $T_0 = 131.887704$ (BKJD)



DV Model-Shift Uniqueness Test

009714209-02, P = 0.556342 Days, E = 131.331353 Days

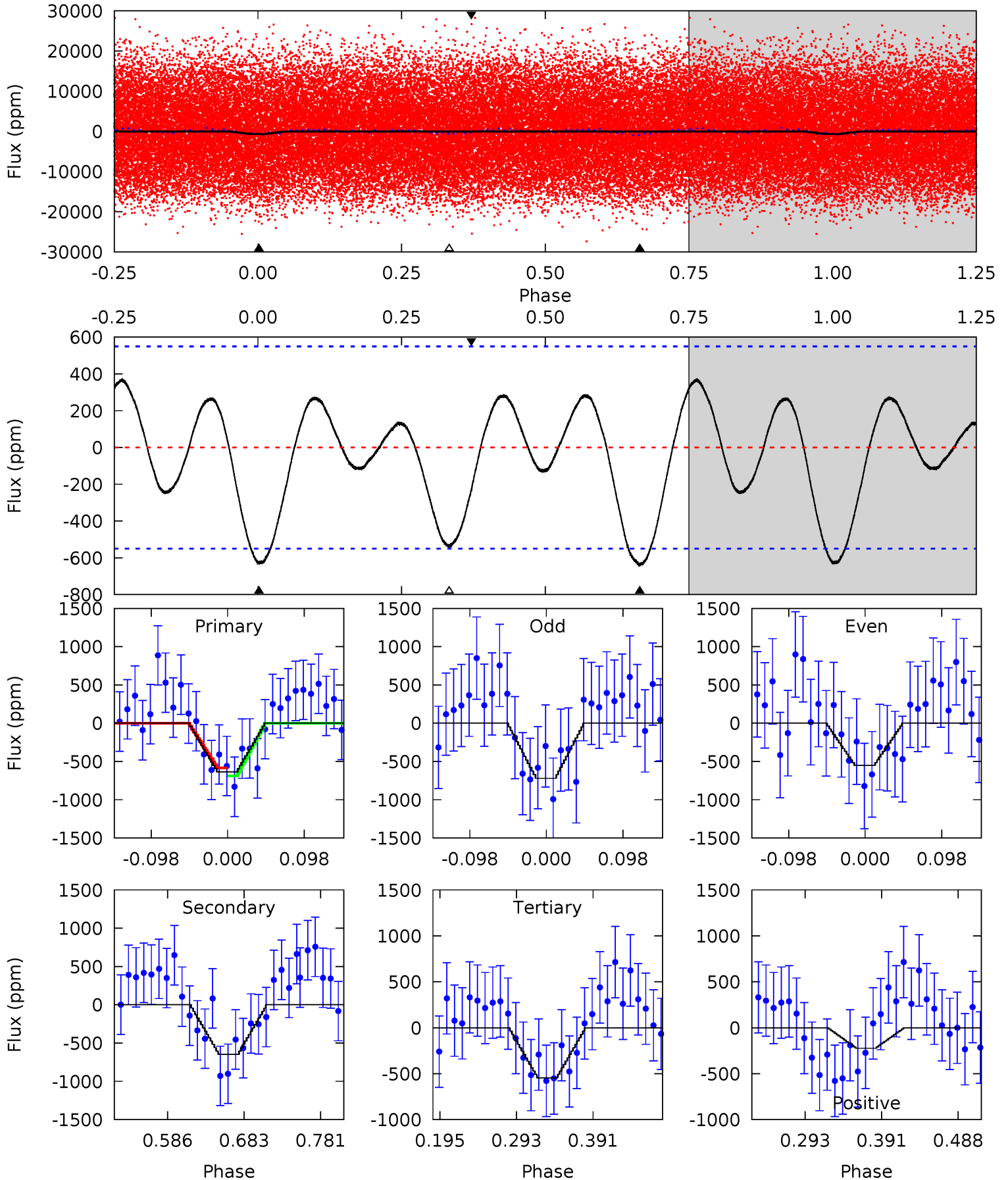
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	15.5	13.8	-0.18	4.58	1.68	5.61	3.08	17.1	1.70	15.7	2.39	1.06	0.39	1.86



Alt Model-Shift Uniqueness Test

009714209-02, P = 0.556345 Days, E = 131.331359 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.29	5.38	4.52	-1.86	4.57	1.66	1.78	0.76	7.14	0.85	7.23	0.70	0.88	0.37	0.44



Stellar Parameters For KIC 009714209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7055^{+197}_{-271}	$4.156^{+0.128}_{-0.192}$	$-0.060^{+0.250}_{-0.350}$	$1.668^{+0.516}_{-0.344}$	$1.457^{+0.220}_{-0.242}$	$0.442^{+0.284}_{-0.234}$
	+3%/-4%	+3%/-5%	+417%/-583%	+31%/-21%	+15%/-17%	+64%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009714209-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-587 ± 38	$4.13^{+2.43}_{-2.01}$	4595^{+343}_{-291}	7120^{+3967}_{-1511}	$4.284^{+11.179}_{-2.586}$
Alt.	-647 ± 120	$4.81^{+2.33}_{-2.33}$	4613^{+382}_{-282}	6801^{+3724}_{-1453}	$3.345^{+10.152}_{-1.852}$

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 $A_{obs} \gg 1.0$

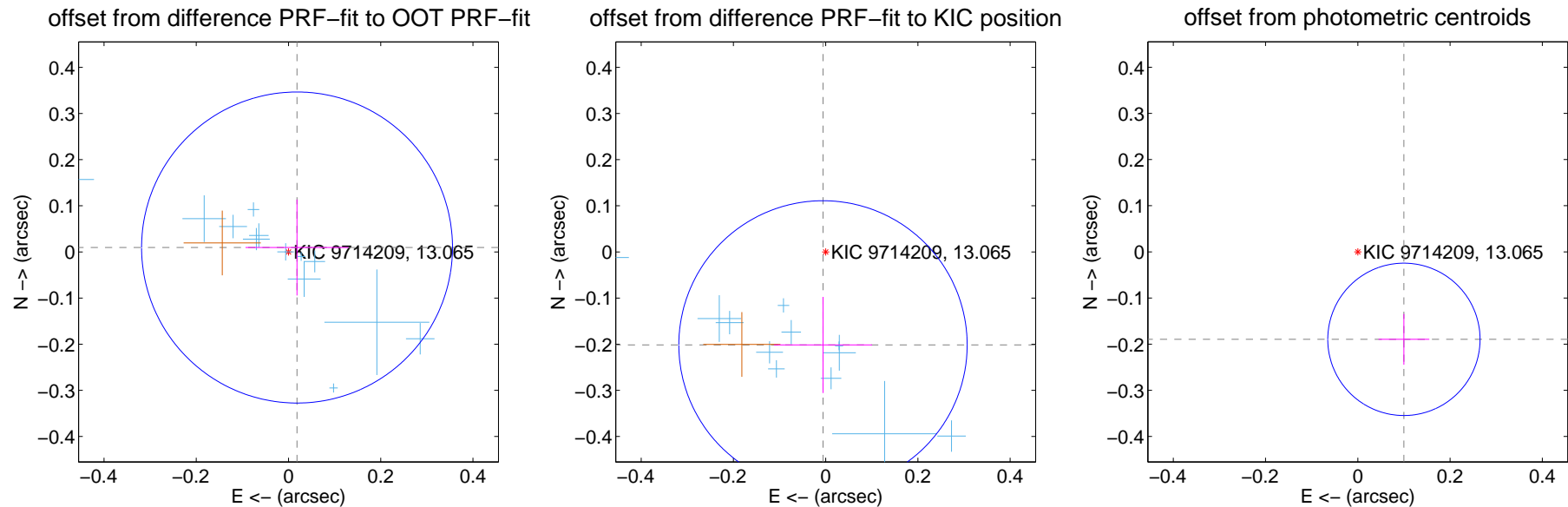
DV Centroid Data

Supplemental centroid analysis for 009714209-02. Kepler magnitude: 13.06. Transit SNR 10.03

There are 16 quarters with good PRF difference image offsets

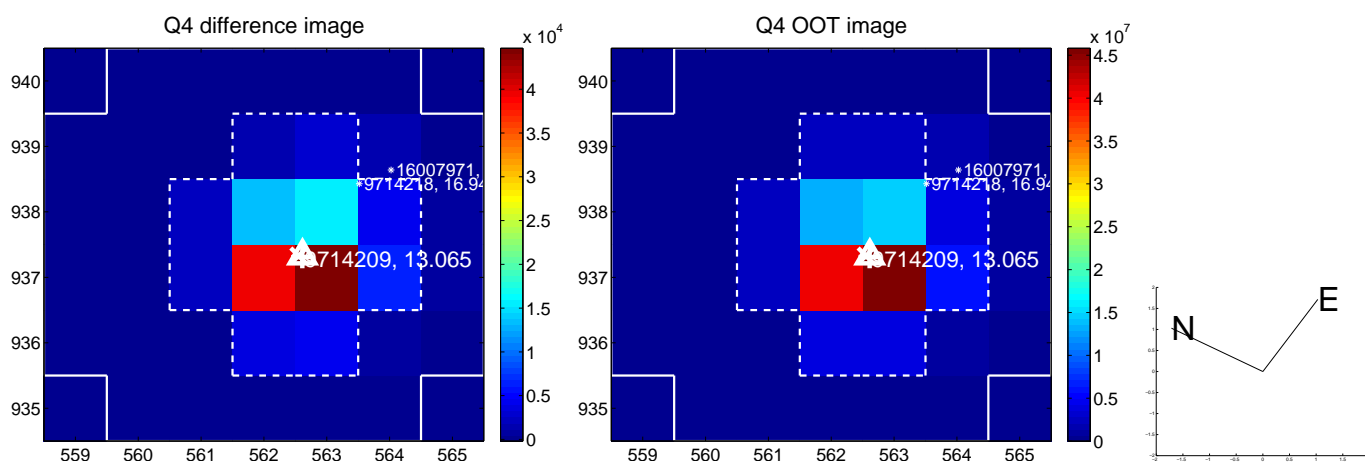
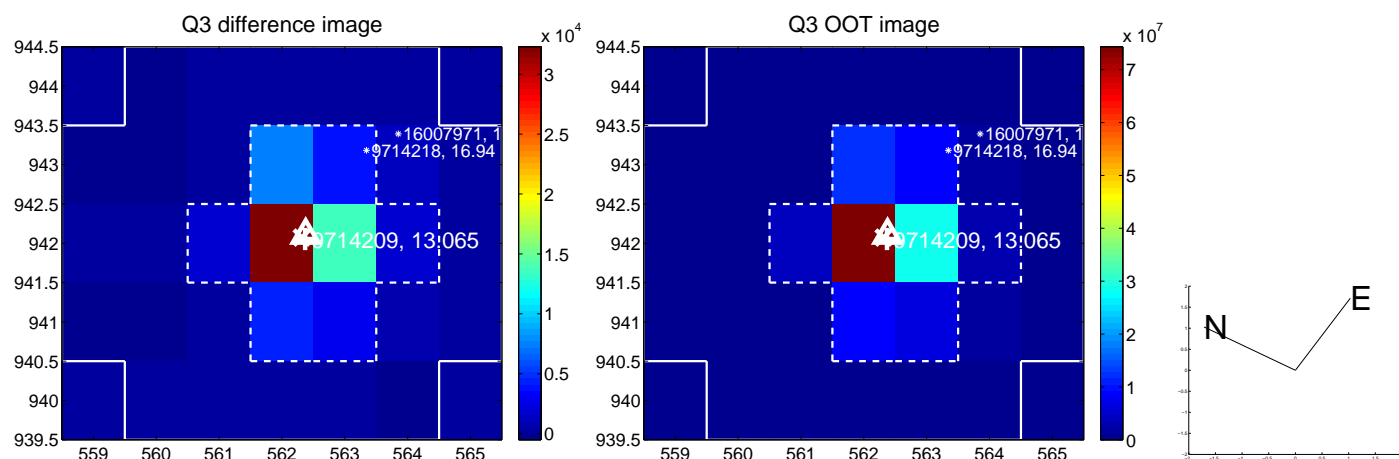
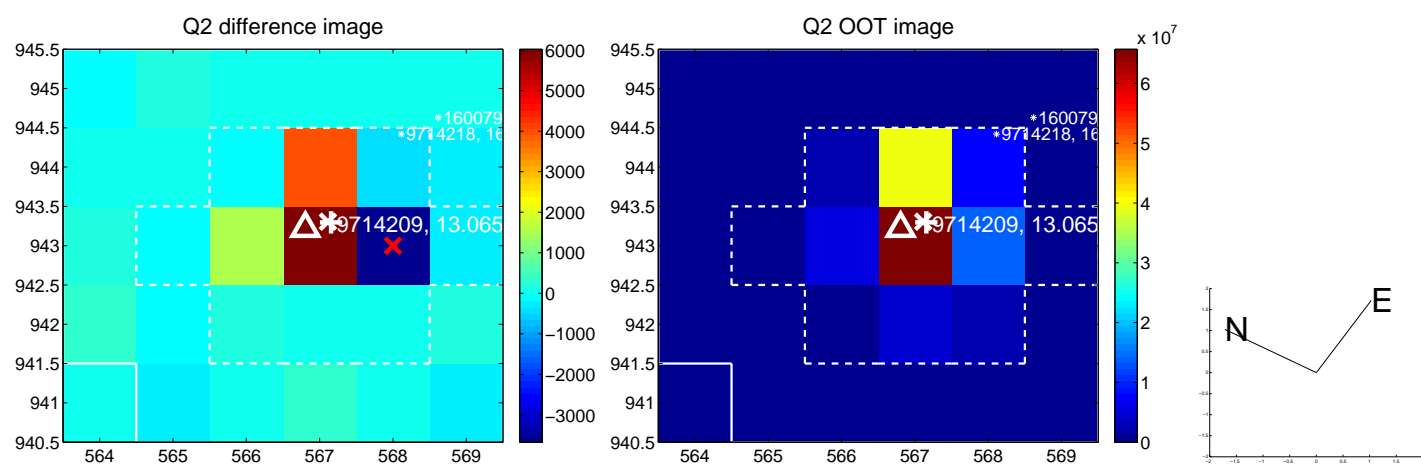
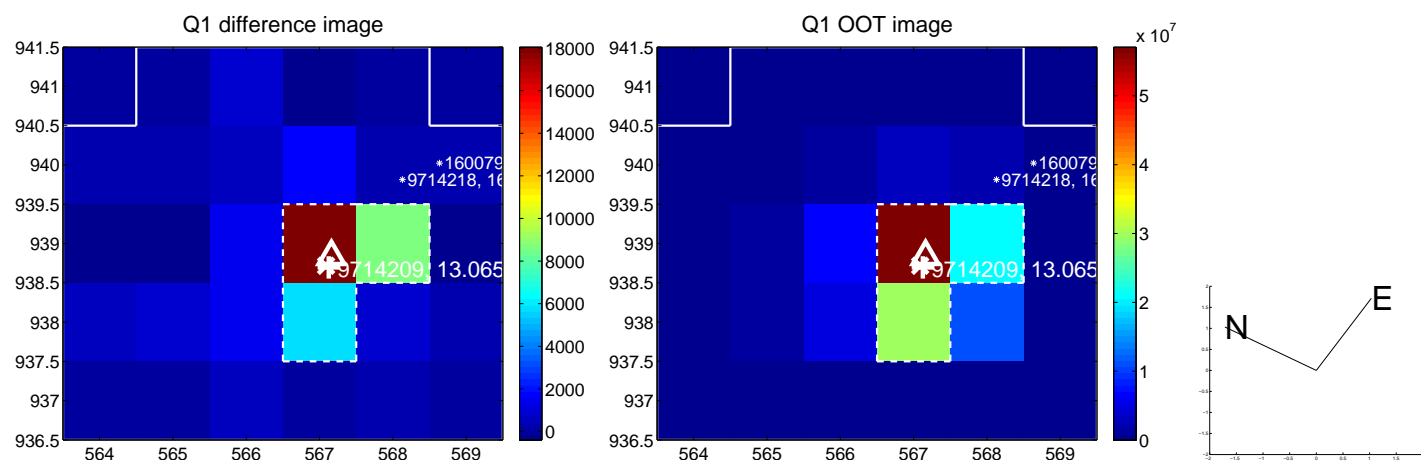
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.021 ± 0.112	0.19	-0.019 ± 0.112	0.010 ± 0.104
PRF-fit source offset from KIC position	0.202 ± 0.104	1.94	0.006 ± 0.106	-0.202 ± 0.104
photometric centroid source offset	0.21 ± 0.06	3.89	-0.10 ± 0.06	-0.19 ± 0.06

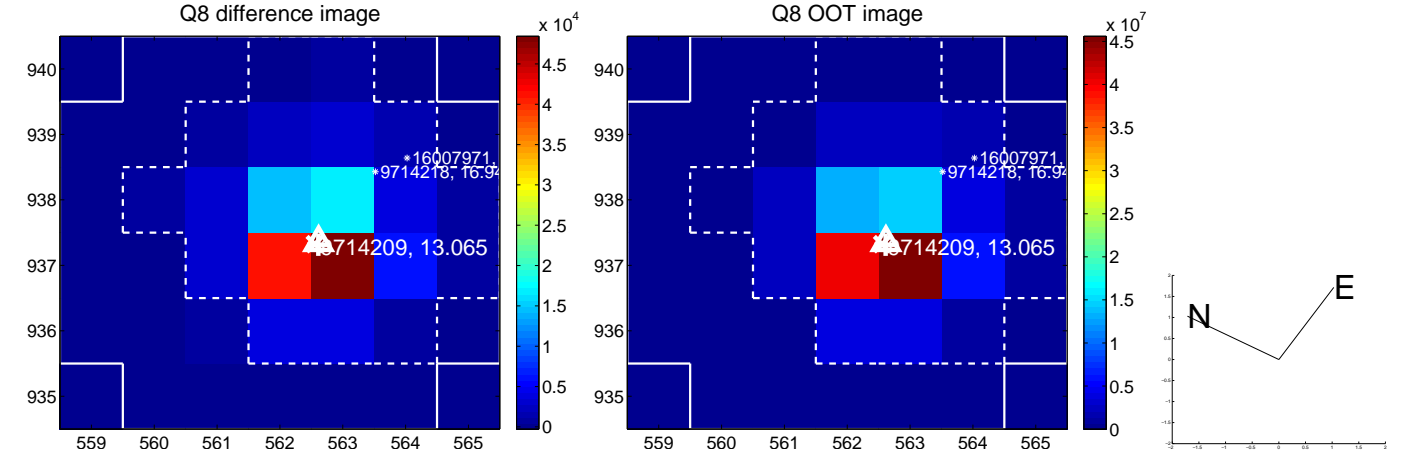
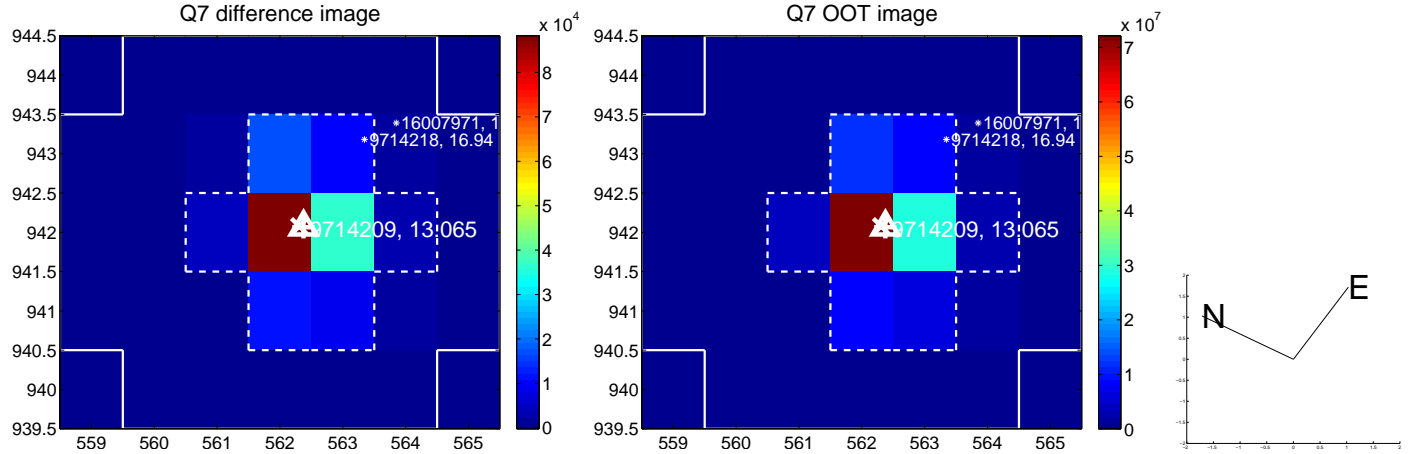
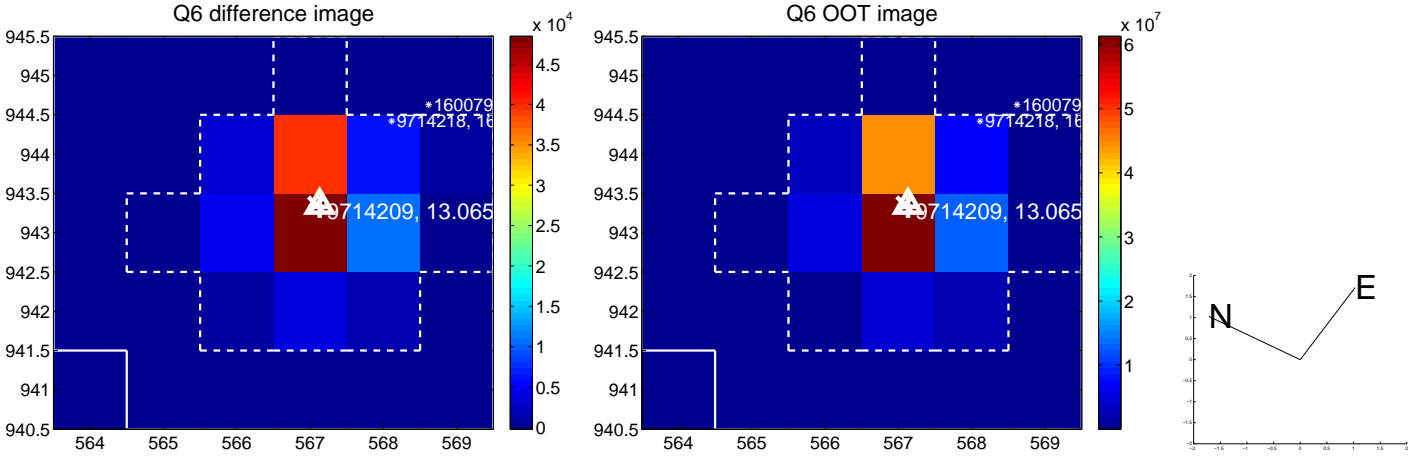
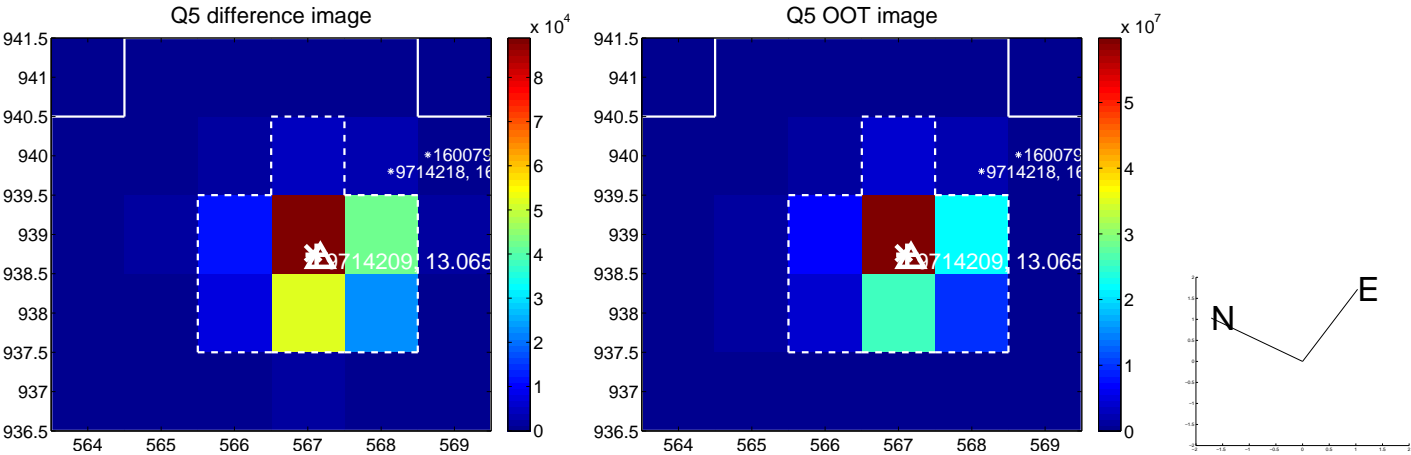


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

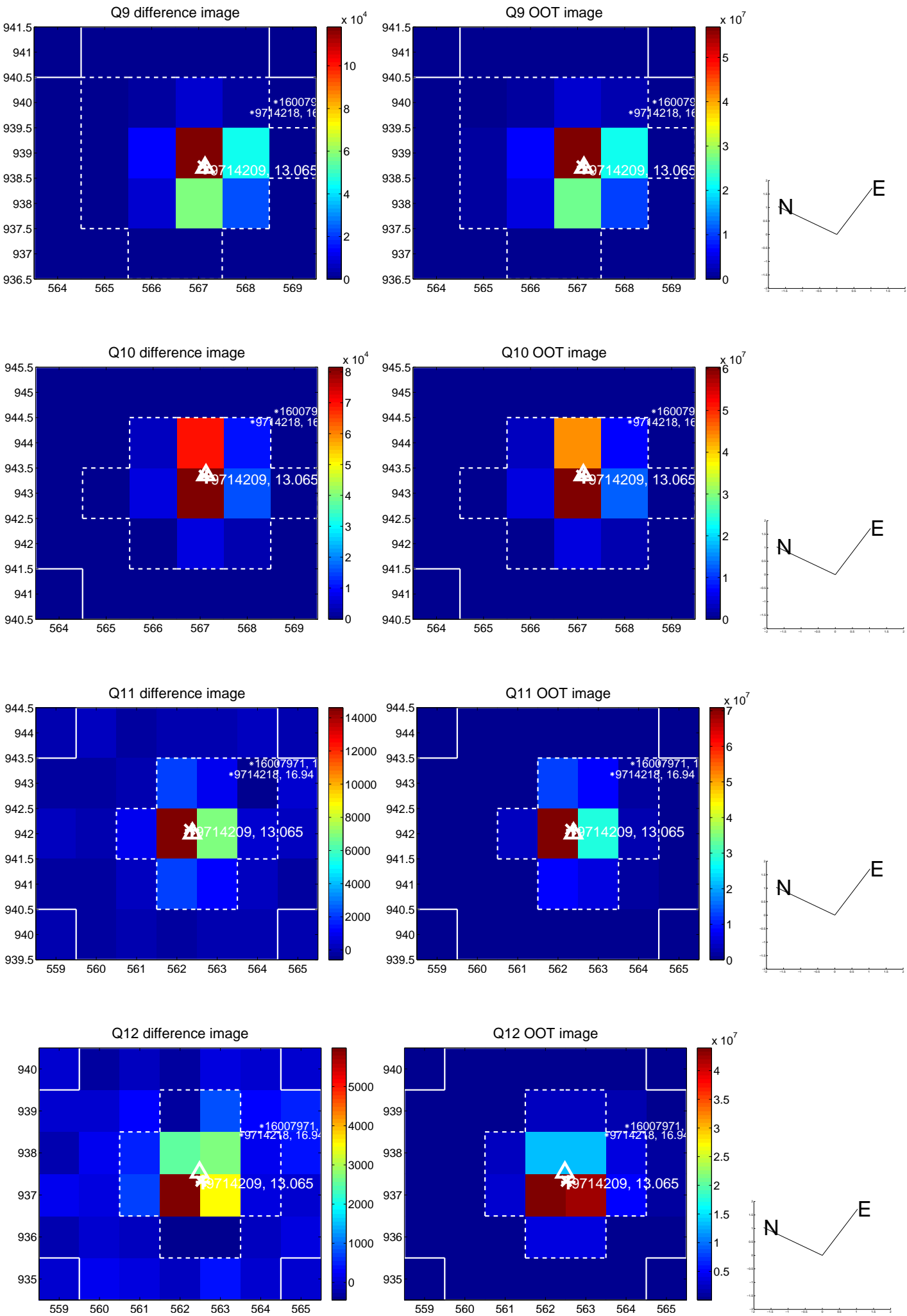
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



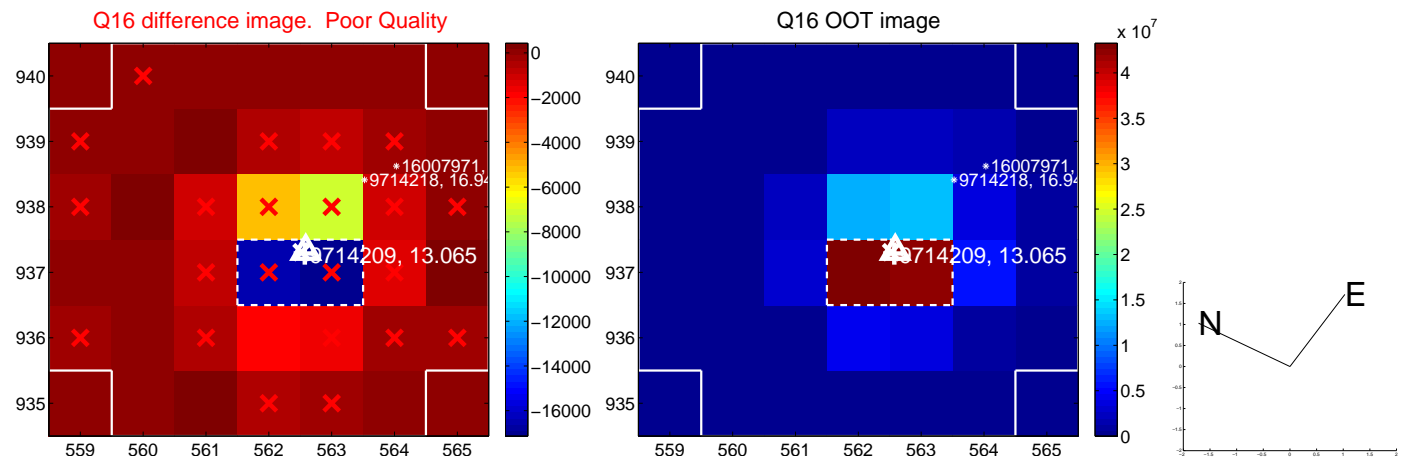
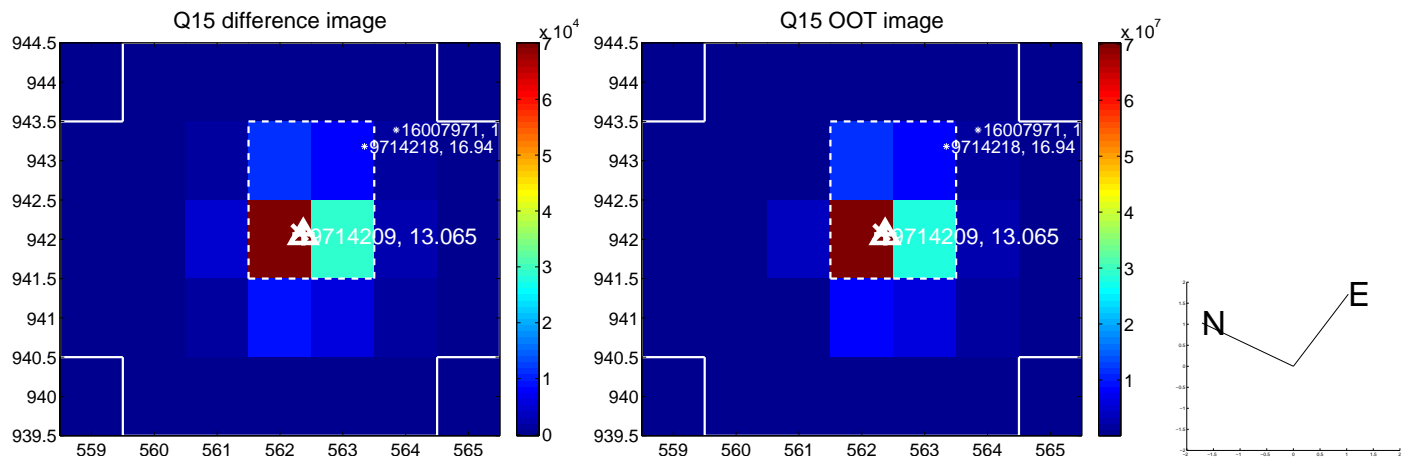
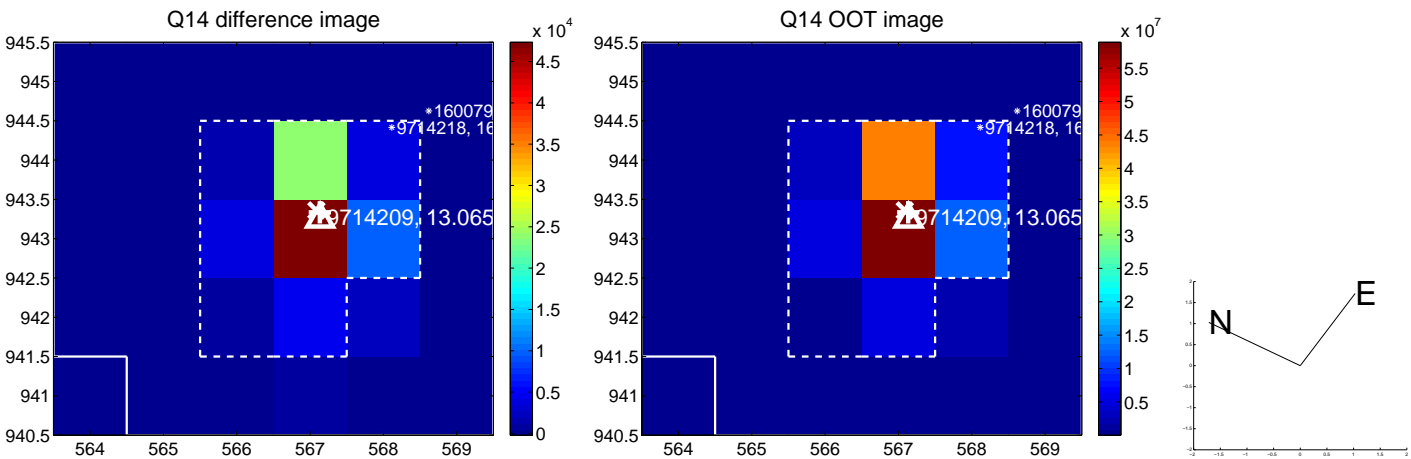
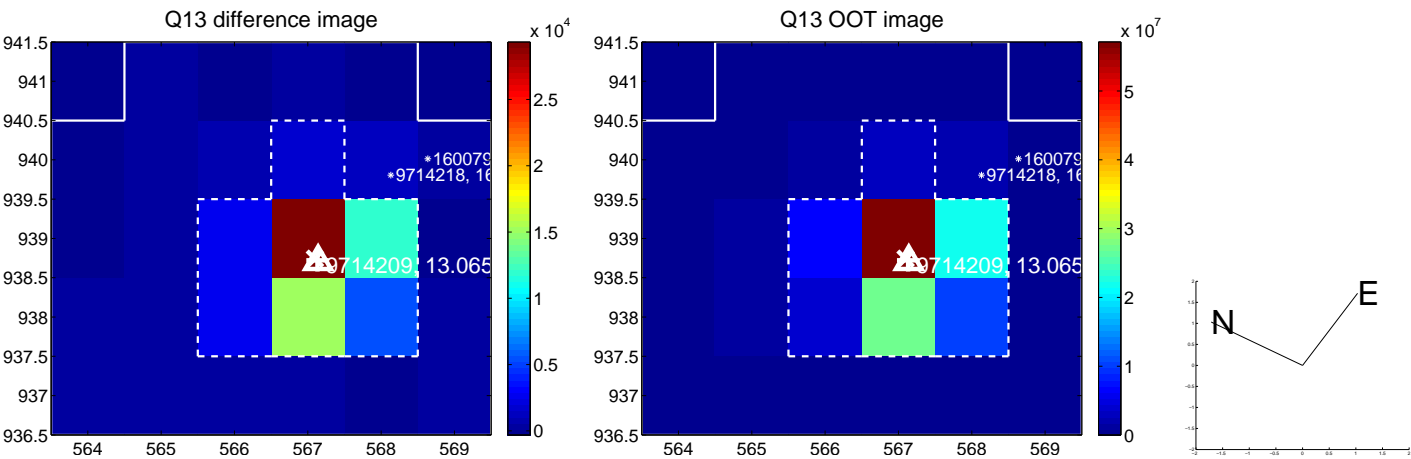
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



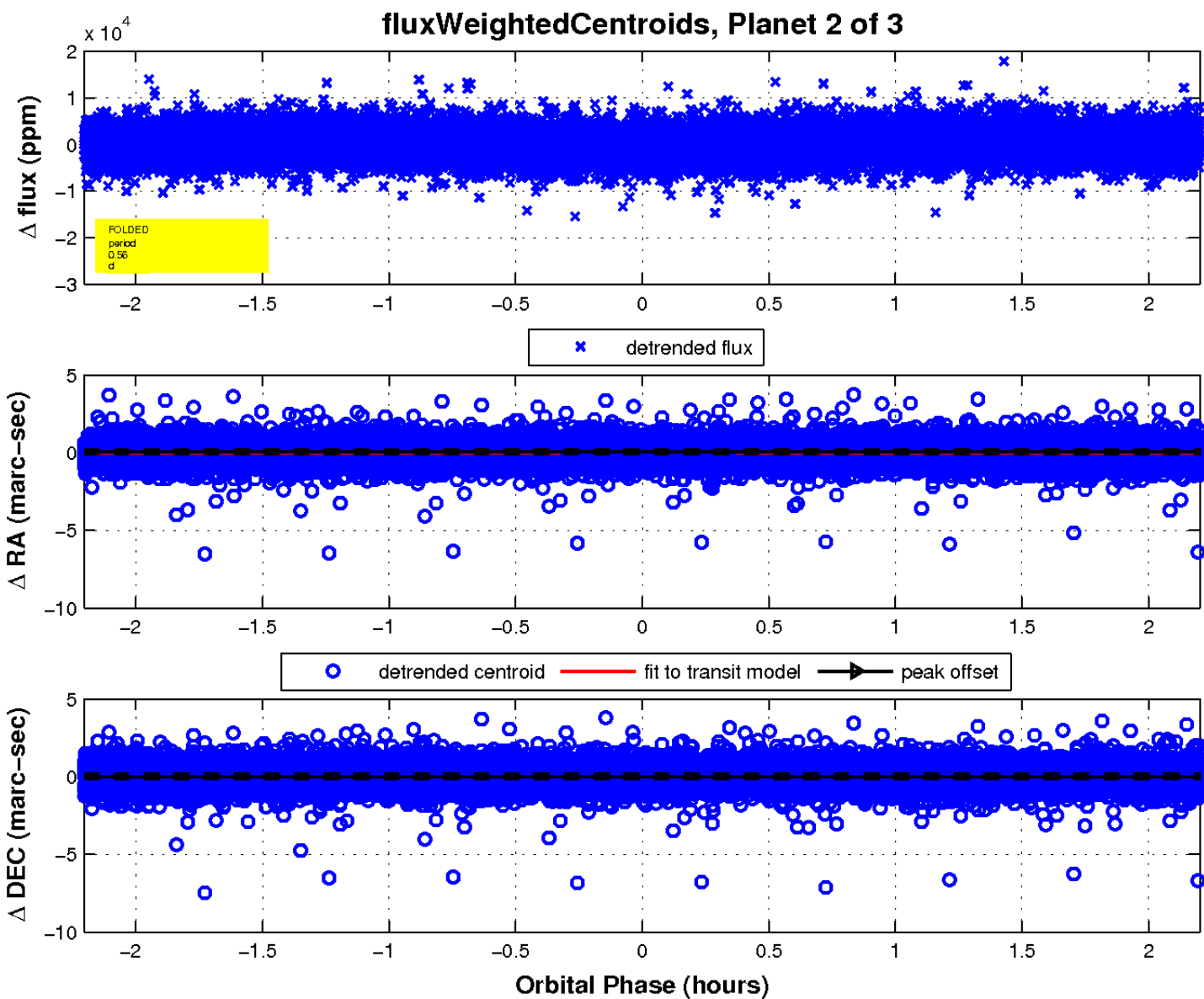
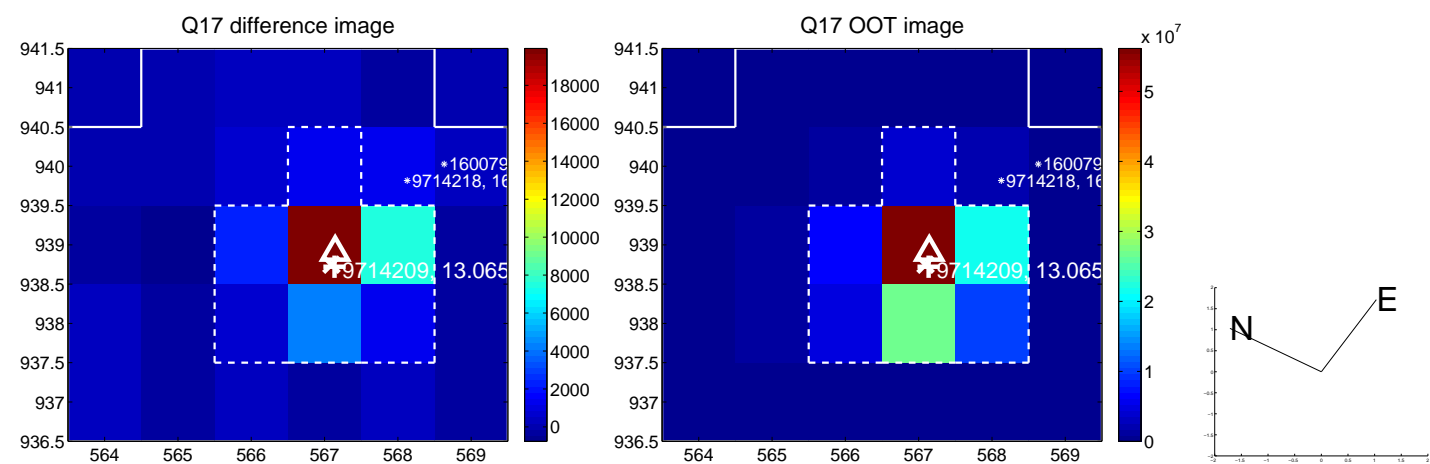
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



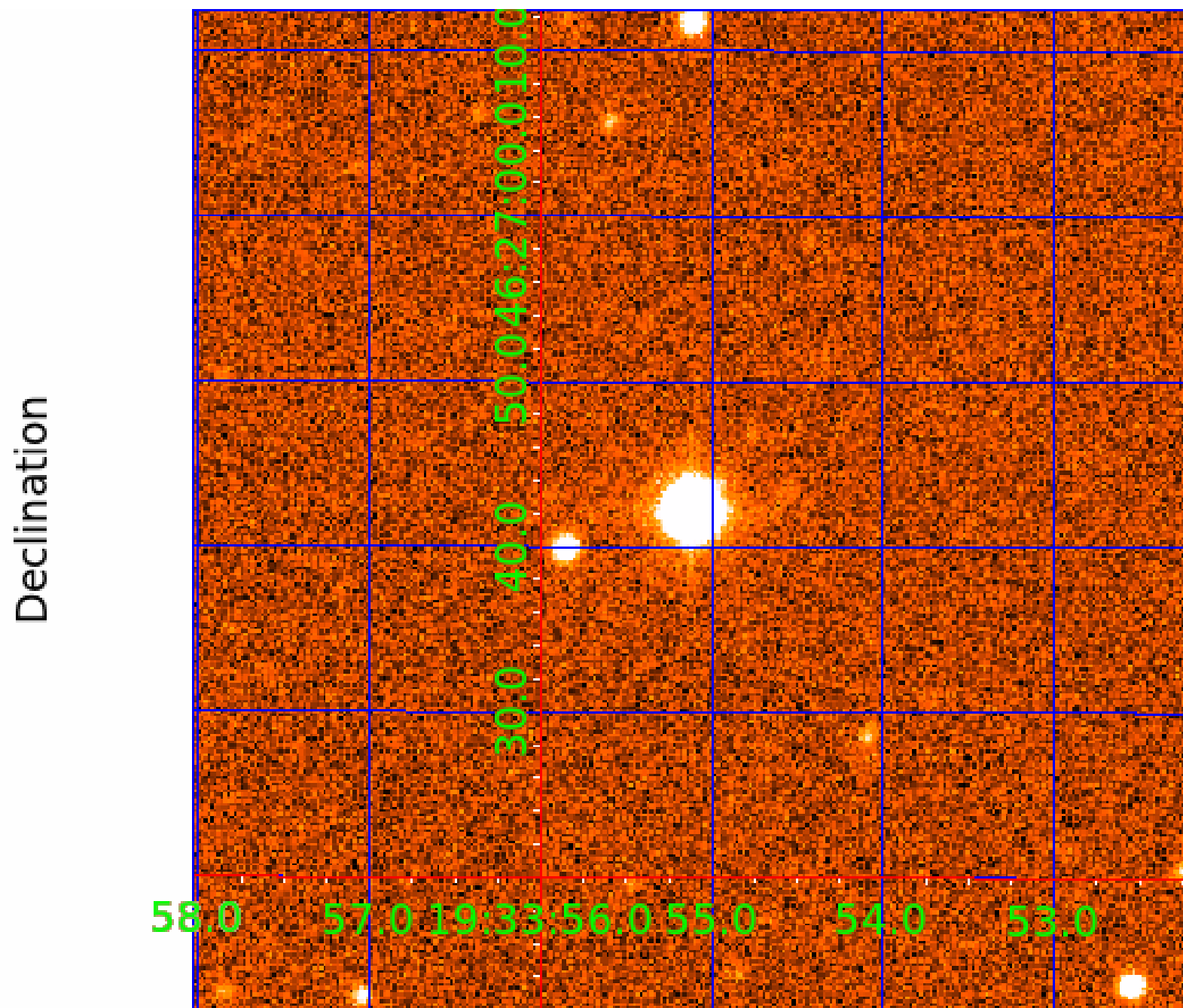
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009714209

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})
009714209-01	OBS	No	1.302949	132.433163	246.6	2.016	8.2	7.7	1.67	7055	3.05	8826.26
009714209-02	OBS	No	0.556342	131.887694	510.7	0.735	7.6	10.0	1.67	7055	3.97	27450.98
009714209-03	OBS	No	0.556344	131.516939	499.5	1.024	7.6	11.2	1.67	7055	4.38	27450.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714209-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
009714209-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009714209-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

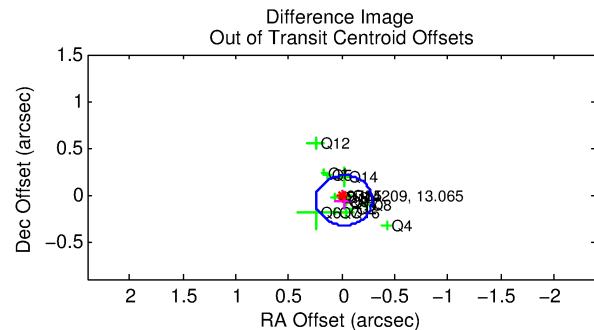
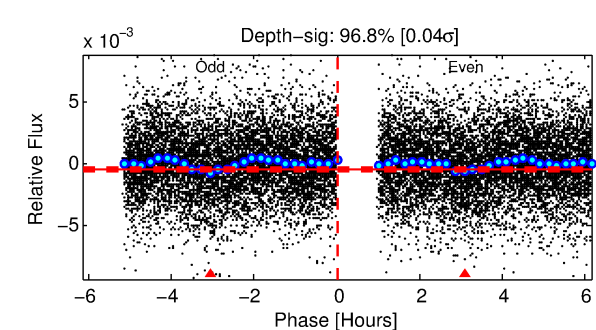
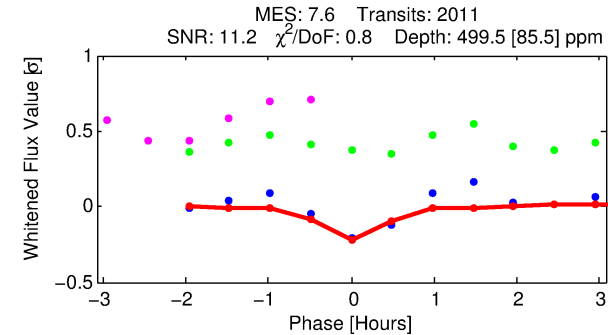
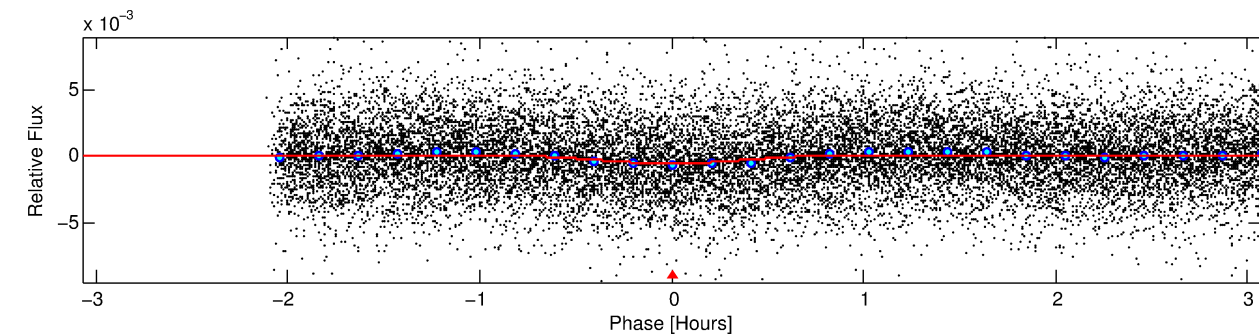
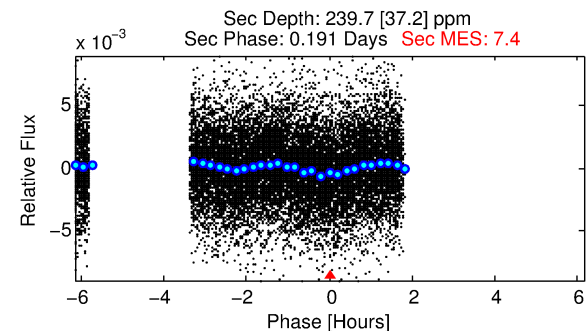
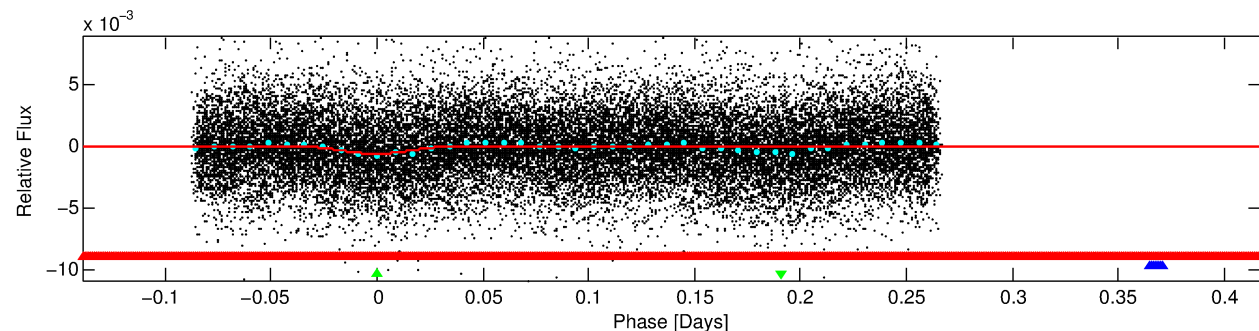
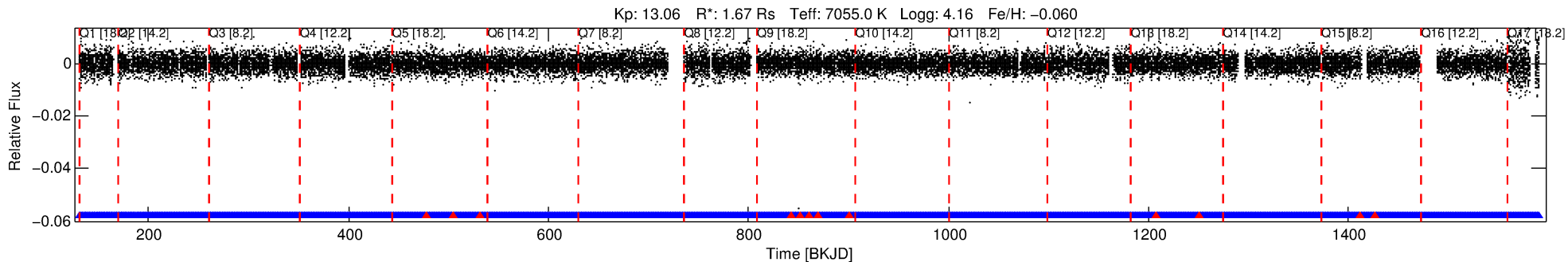
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009714209-03

No Significant Match Found

DV One-Page Summary

KIC: 9714209 Candidate: 3 of 3 Period: 0.556 d



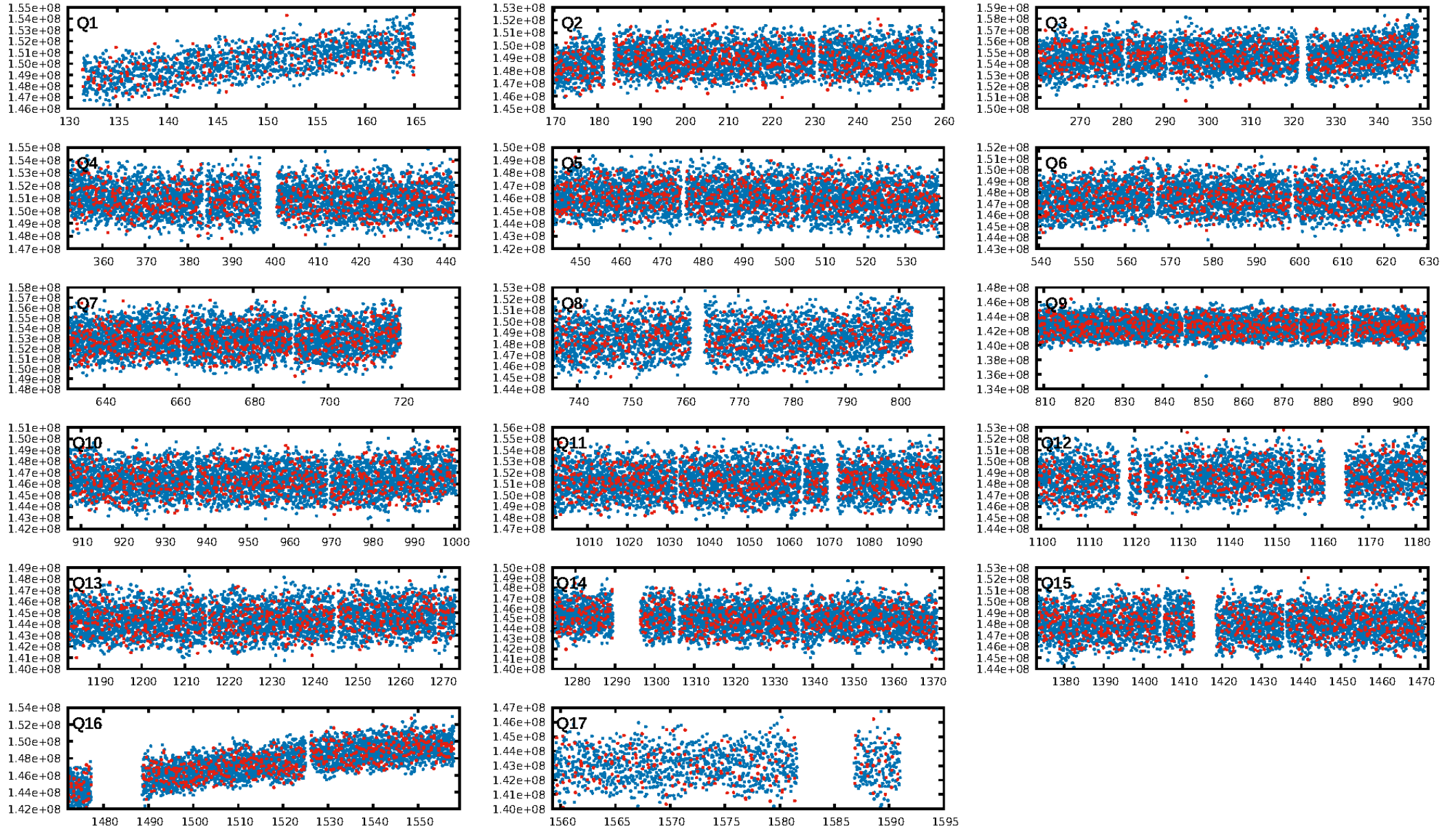
DV Fit Results:

Period = 0.55634 [0.00001] d
Epoch = 131.5169 [0.0017] BKJD
Rp/R* = 0.0241 [0.0129]
a/R* = 2.21 [5.54]
b = 0.90 [0.65]
Seff = 27450.82 [10737.71]
Teq = 3282 [321] K
Rp = 4.38 [2.71] Re
a = 0.0150 [0.0038] AU
Ag = 1.55 [1.77] [0.31σ]
Teffp = 5660 [1552] K [1.50σ]

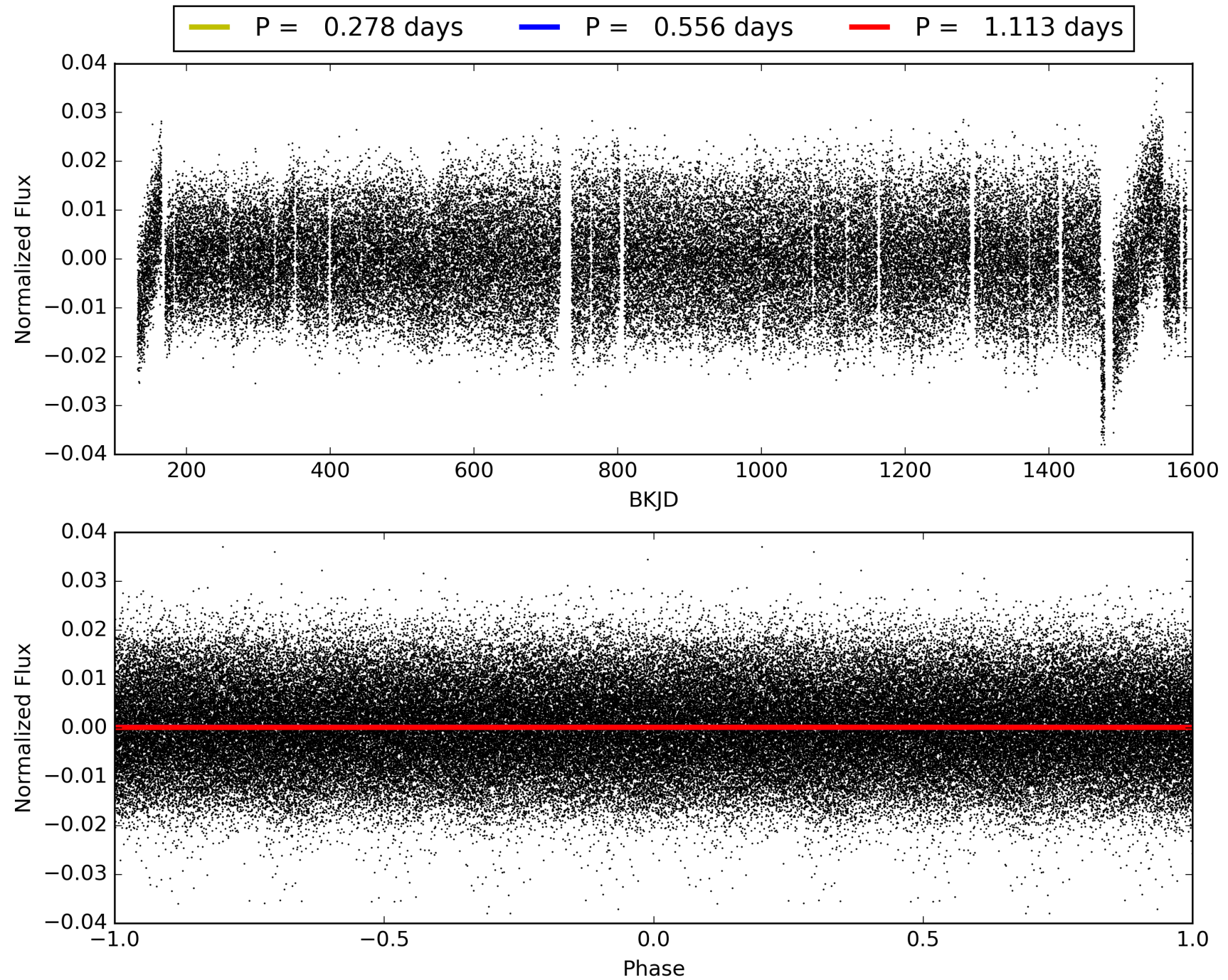
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [7.9σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.16e-14
RollingBand-fgt: 0.99 [1909/1921]
GhostDiagnostic-chr: 1.304
Centroid-sig: 0.0%
Centroid-so: 0.297 arcsec [6.04σ]
OotOffset-rm: 0.065 arcsec [0.73σ]
KicOffset-rm: 0.264 arcsec [3.15σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009714209-03, PDC Light Curves

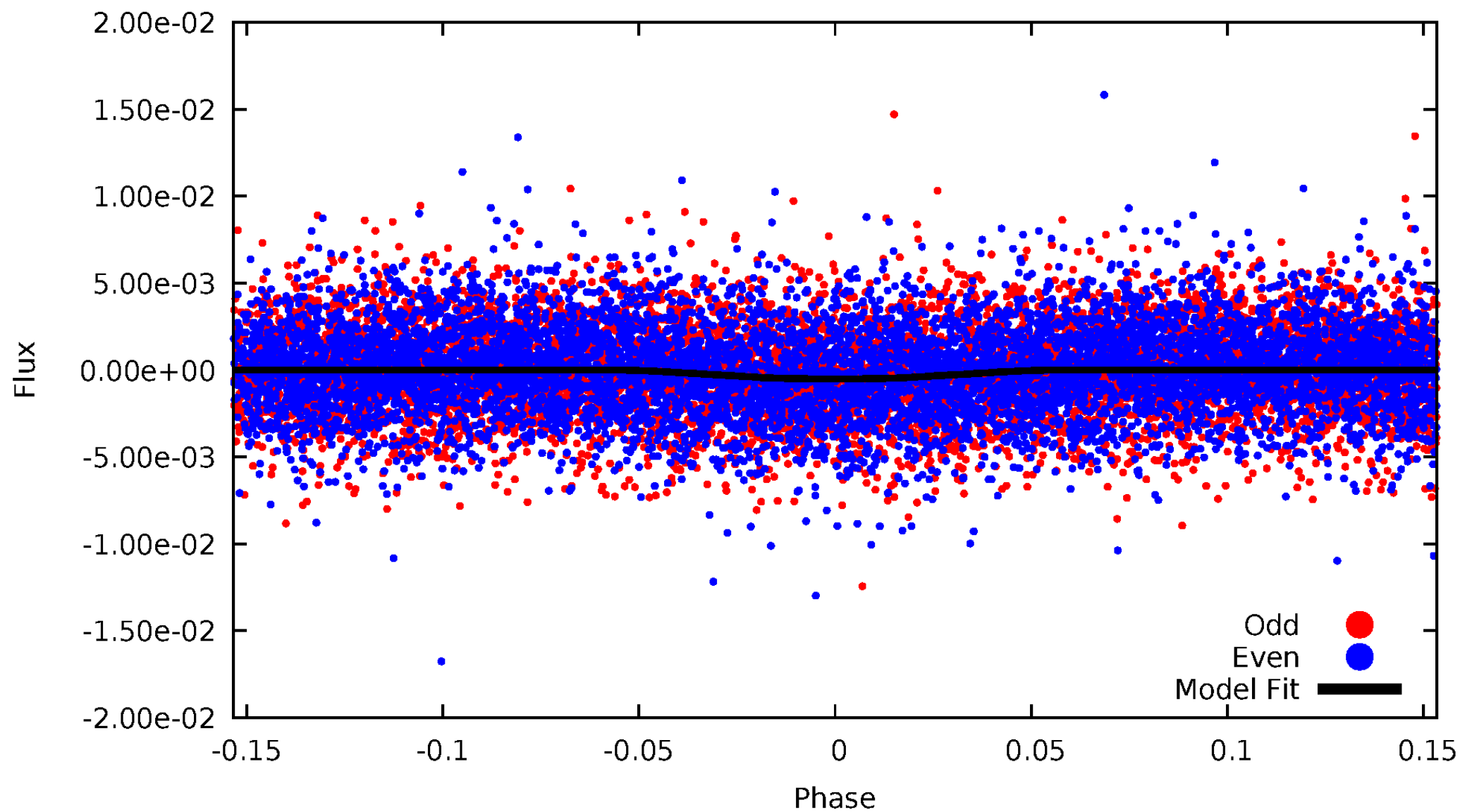


TCE 009714209-03



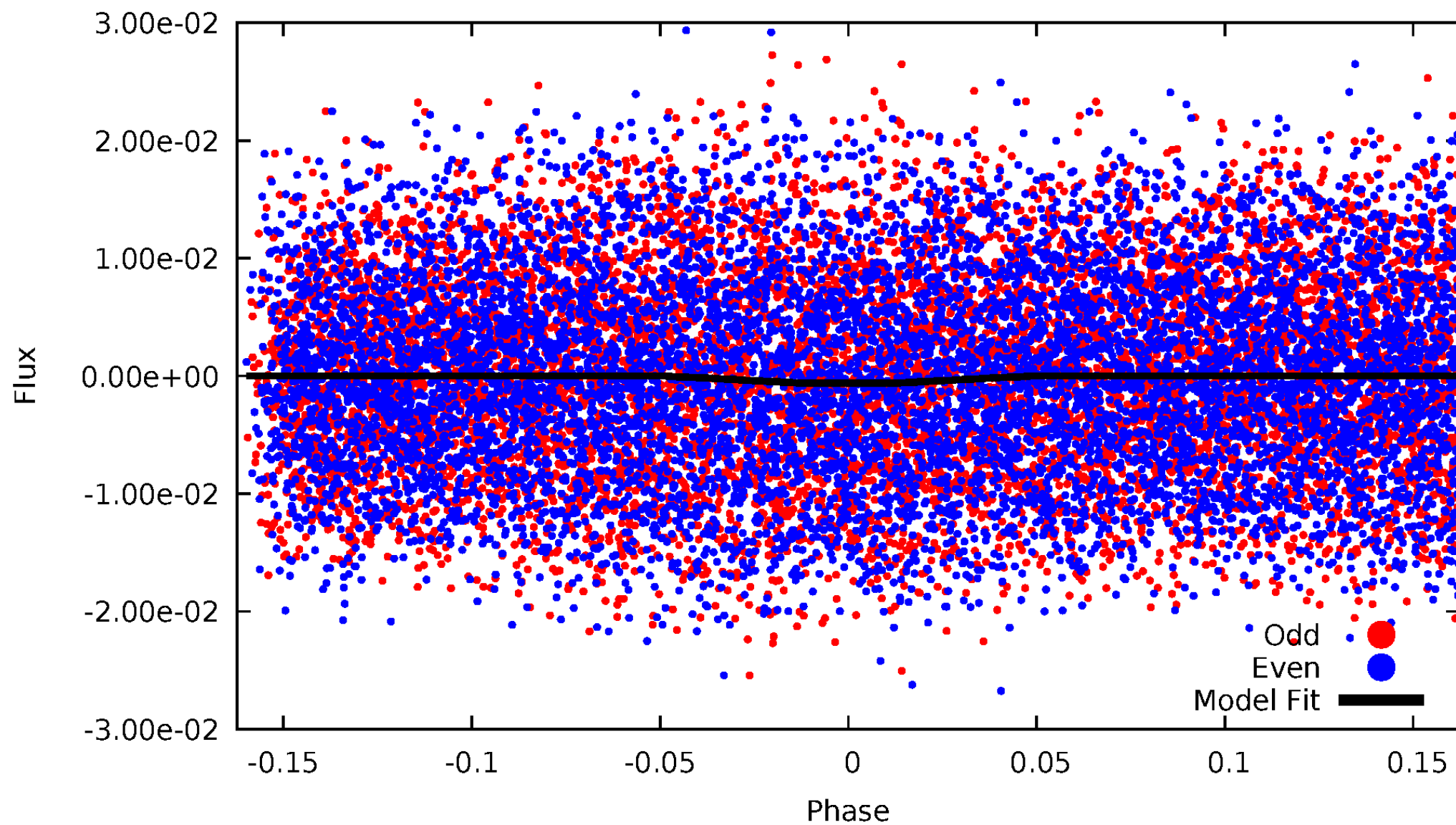
DV Odd/Even

TCE 009714209-03



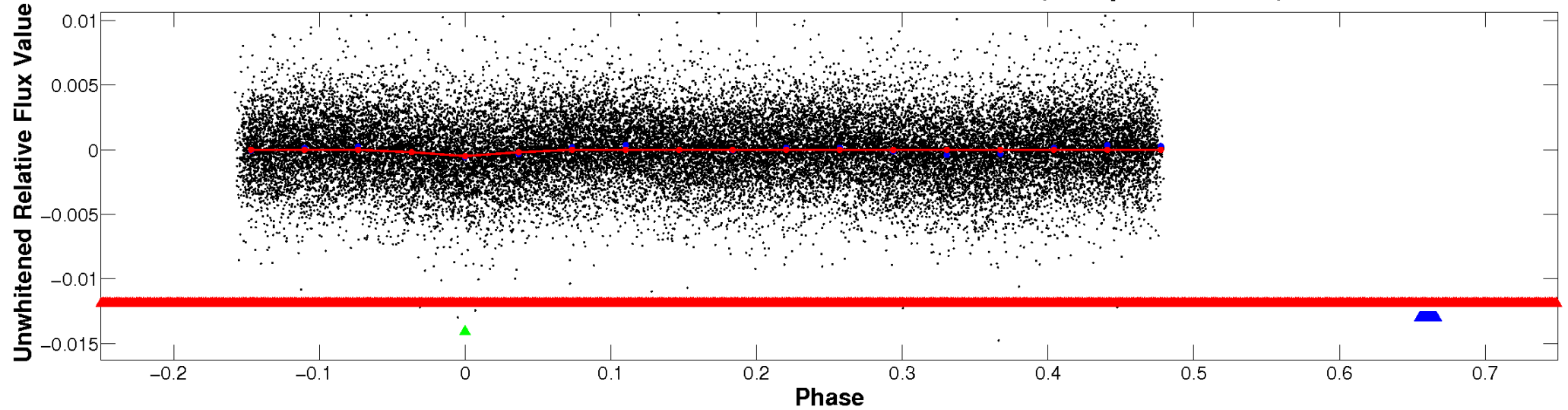
ALT Odd/Even

TCE 009714209-03

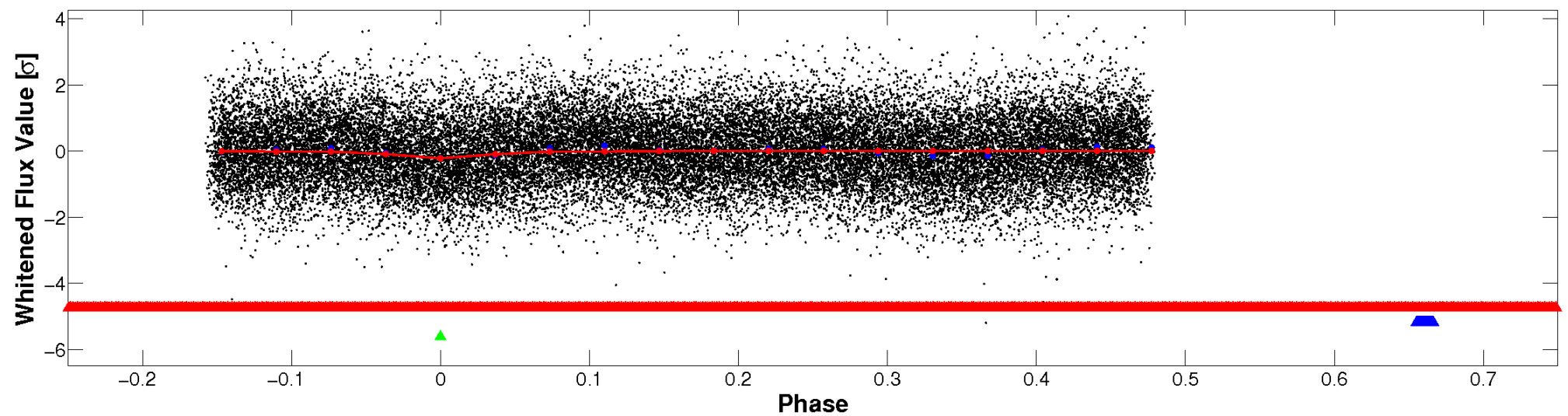


Non-Whitened Vs. Whitened Light Curve

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

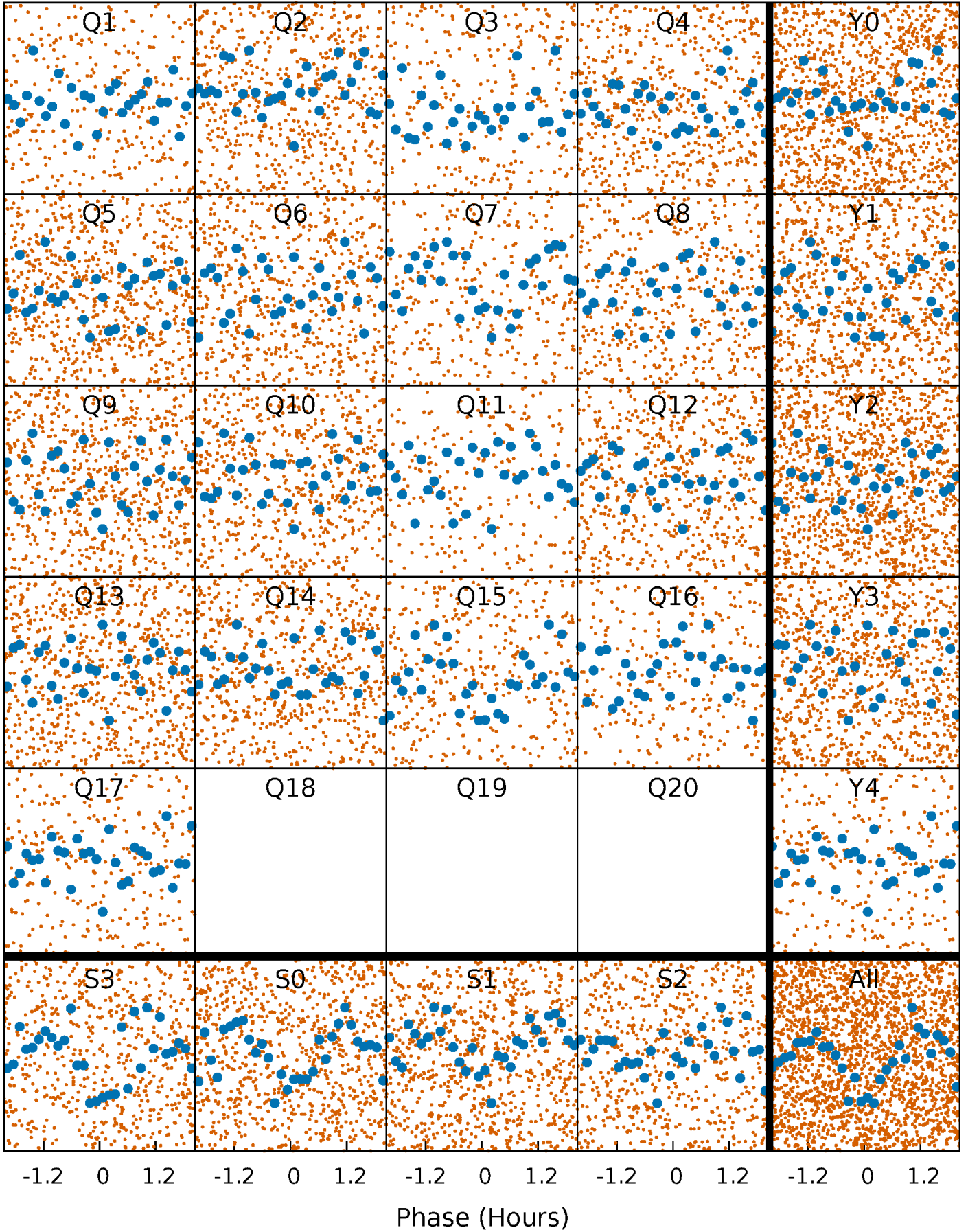


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



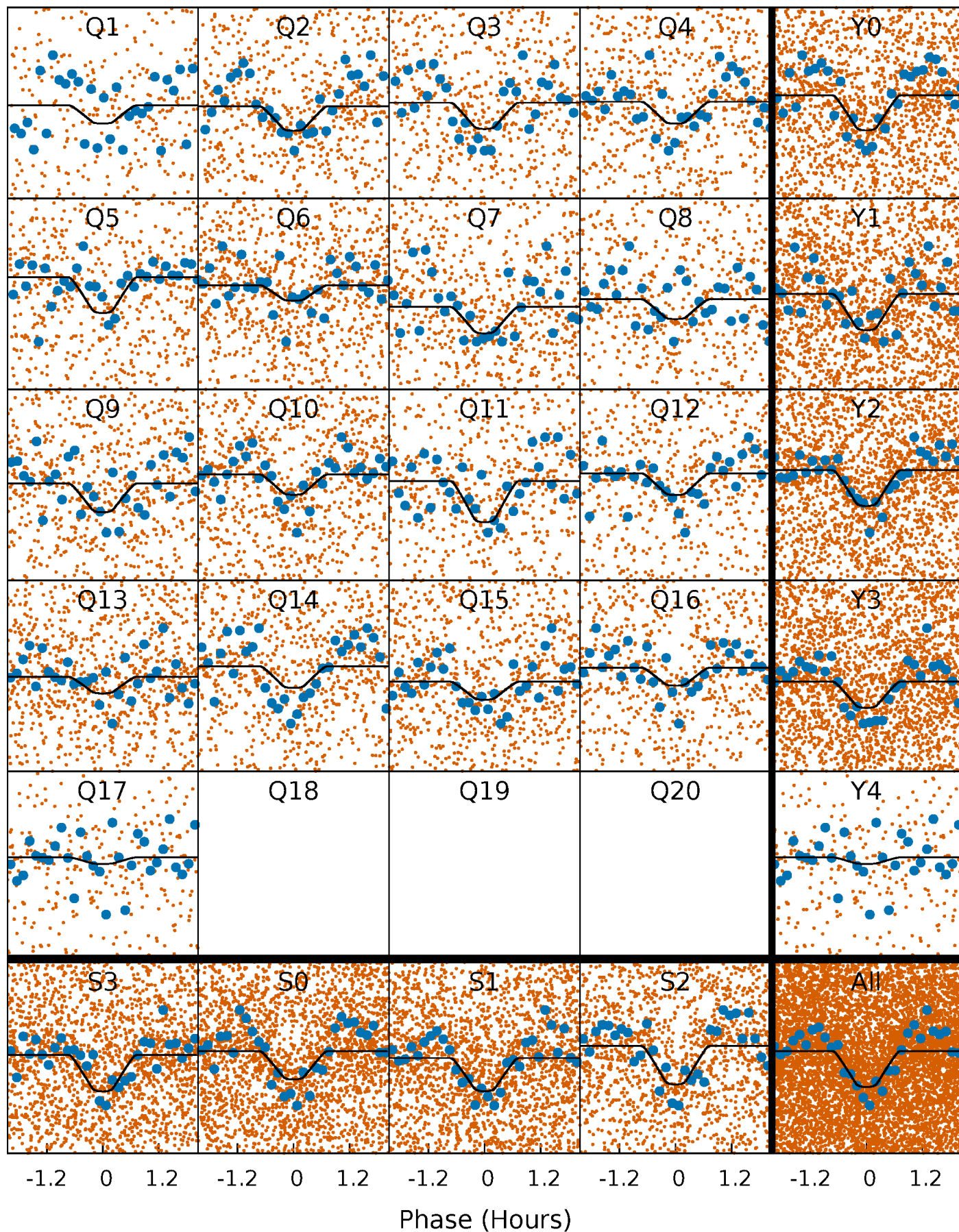
PDC Quarter-Phased Transit Curves

TCE 009714209-03 P= 0.556344 Days $T_0=131.516939$ (BKJD)



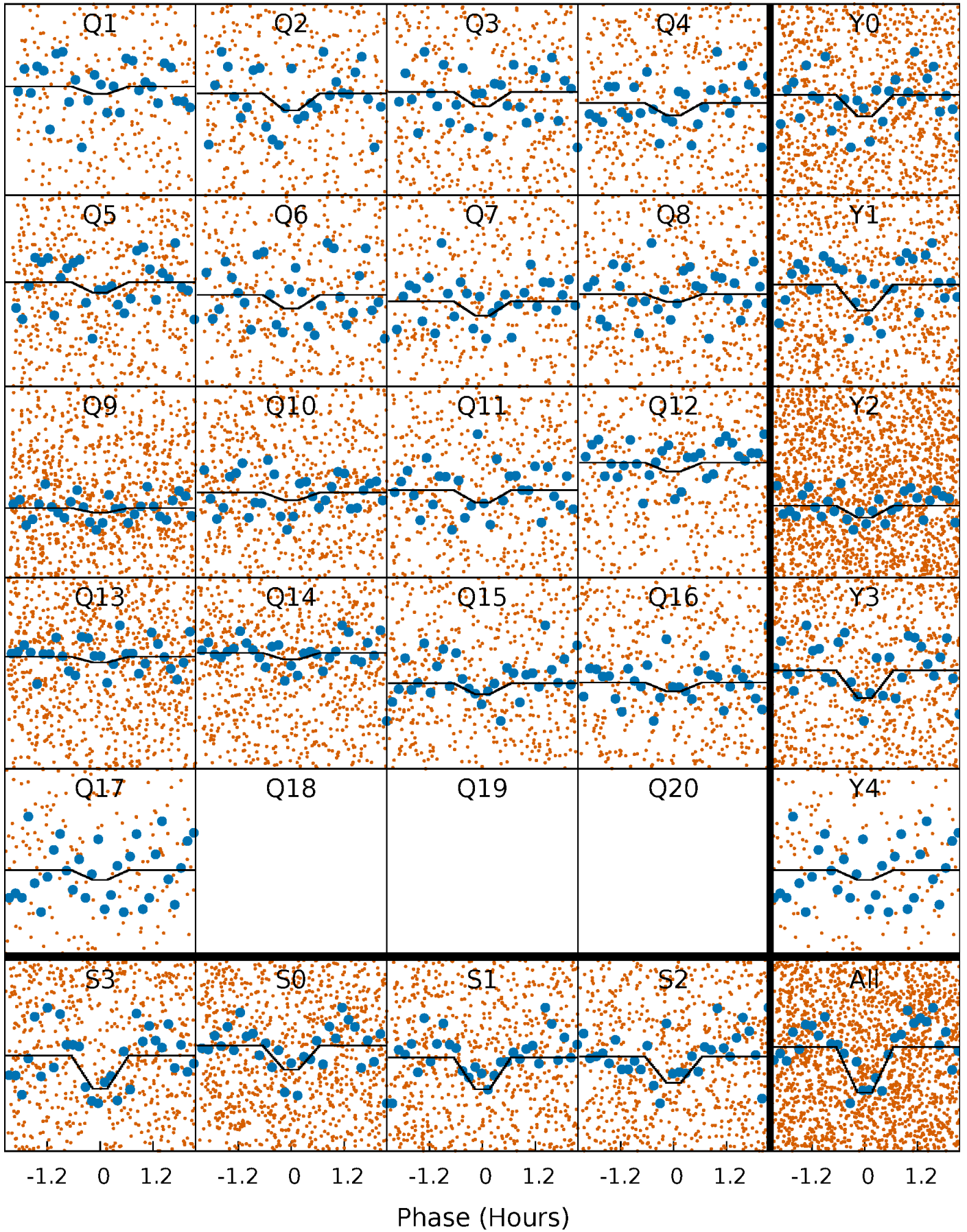
DV Quarter-Phased Transit Curves

TCE 009714209-03 P= 0.556344 Days $T_0=131.516939$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

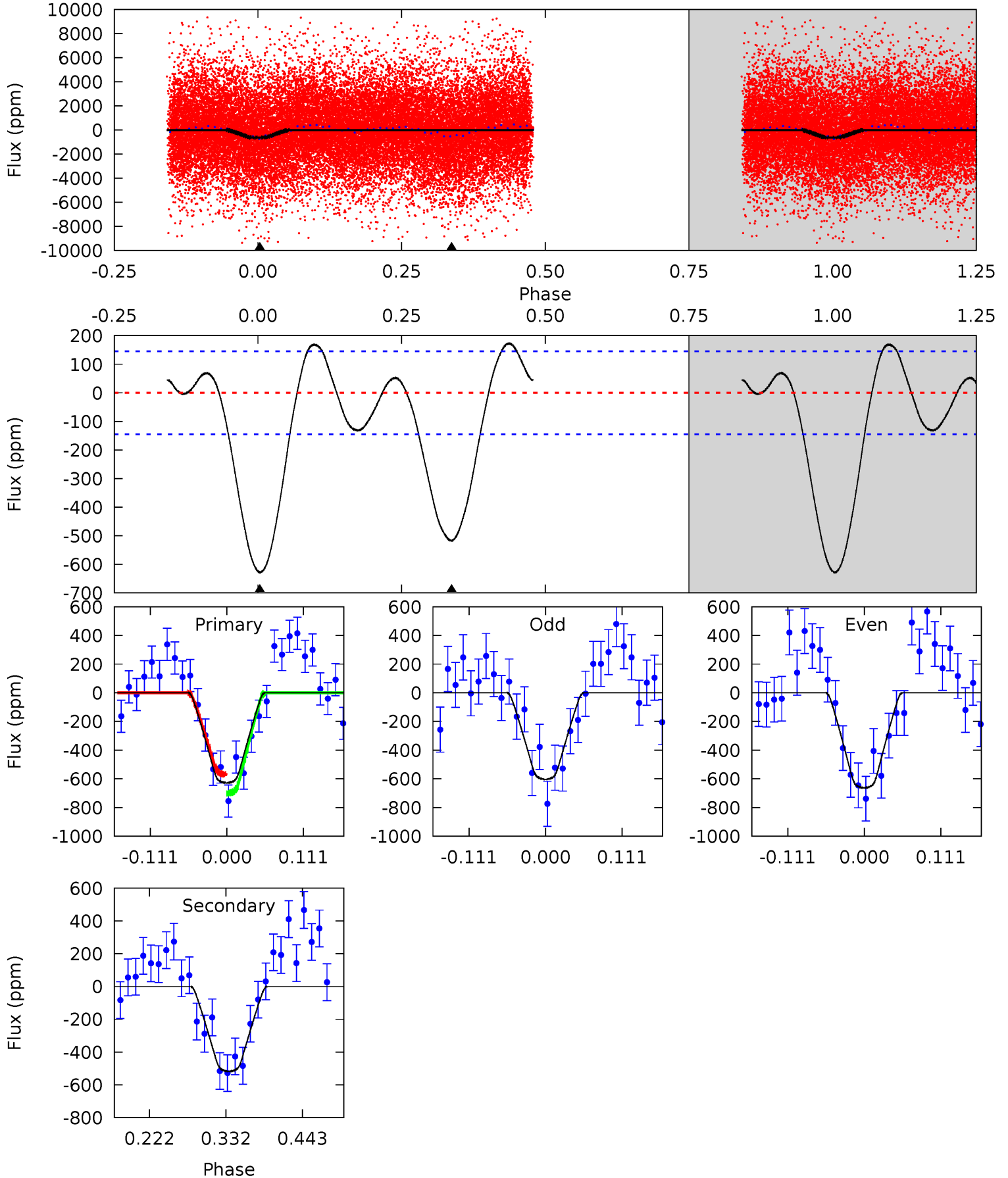
TCE 009714209-03 P= 0.556345 Days $T_0=131.515936$ (BKJD)



DV Model-Shift Uniqueness Test

009714209-03, P = 0.556344 Days, E = 130.960595 Days

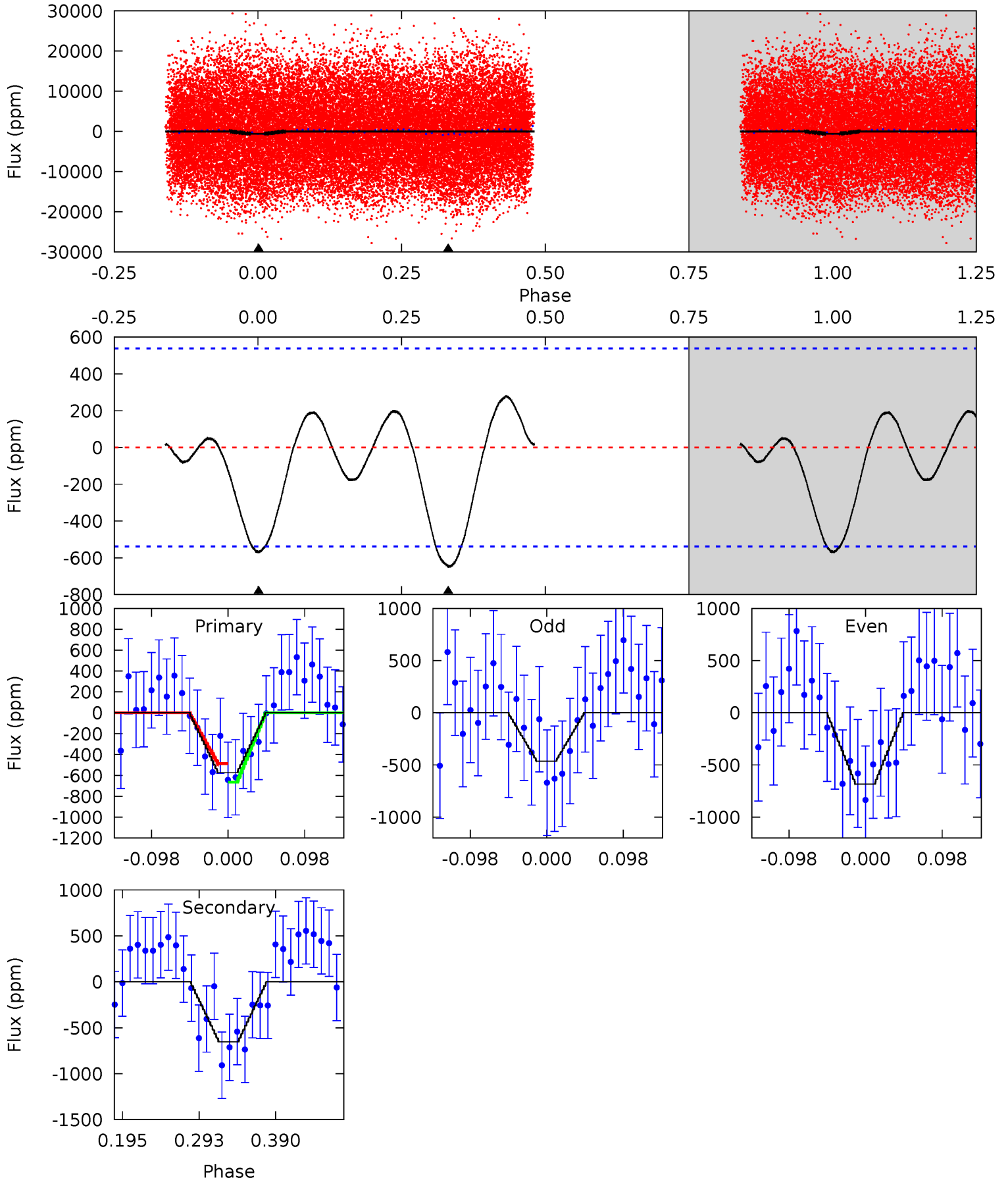
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	16.2	0	0	4.54	1.59	2.47	19.7	19.7	16.2	16.2	0.94	1.02	0.22	2.03



Alt Model-Shift Uniqueness Test

009714209-03, P = 0.556345 Days, E = 130.959591 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.87	5.56	0	0	4.57	1.66	1.09	4.87	4.87	5.56	5.56	0.93	0.89	0.30	0.78



Stellar Parameters For KIC 009714209

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7055^{+197}_{-271}	$4.156^{+0.128}_{-0.192}$	$-0.060^{+0.250}_{-0.350}$	$1.668^{+0.516}_{-0.344}$	$1.457^{+0.220}_{-0.242}$	$0.442^{+0.284}_{-0.234}$
	+3%/-4%	+3%/-5%	+417%/-583%	+31%/-21%	+15%/-17%	+64%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009714209-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-518 ± 32	$4.64^{+2.45}_{-2.35}$	4596^{+382}_{-278}	6466^{+3975}_{-1285}	$2.944^{+9.485}_{-1.676}$
Alt.	-654 ± 118	$4.70^{+2.52}_{-2.27}$	4629^{+350}_{-316}	6948^{+3810}_{-1592}	$3.756^{+9.765}_{-2.284}$

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 $A_{obs} \gg 1.0$

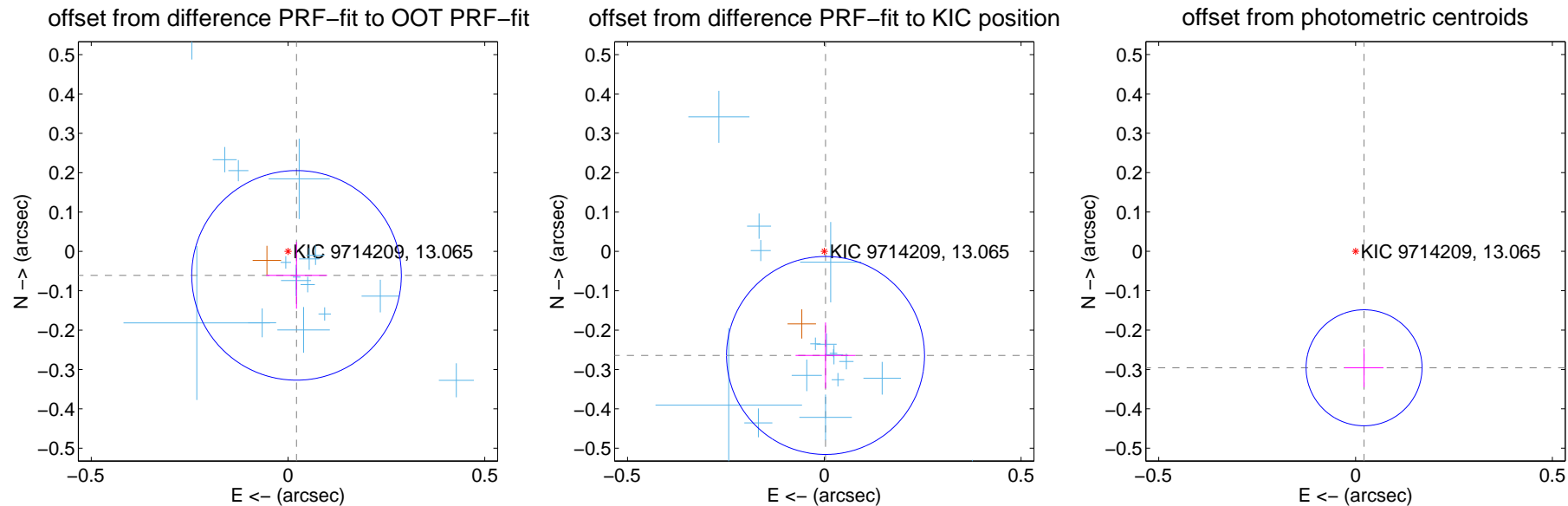
DV Centroid Data

Supplemental centroid analysis for 009714209-03. Kepler magnitude: 13.06. Transit SNR 11.18

There are 16 quarters with good PRF difference image offsets

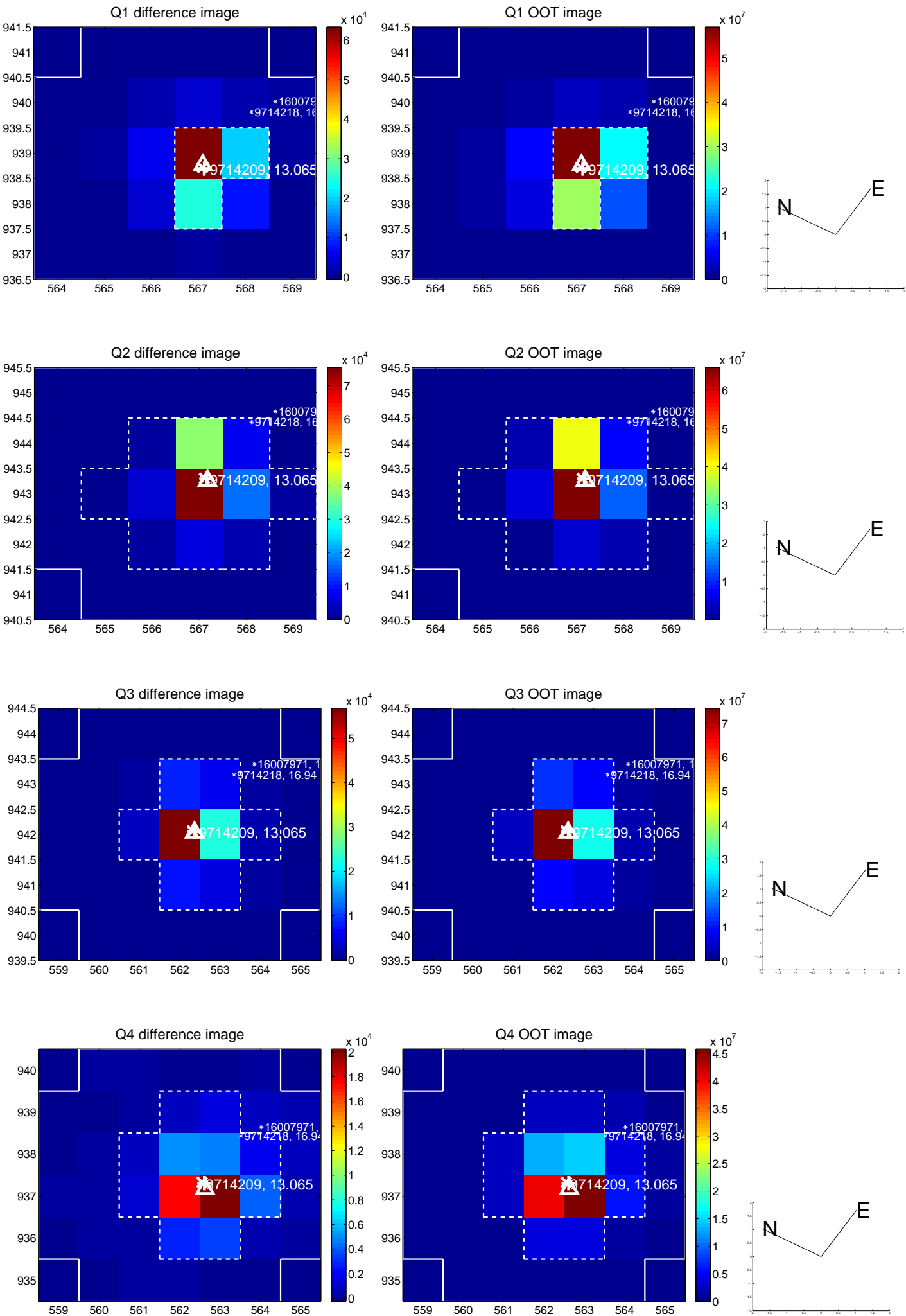
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.065 ± 0.089	0.73	-0.022 ± 0.078	-0.061 ± 0.085
PRF-fit source offset from KIC position	0.264 ± 0.084	3.15	-0.003 ± 0.076	-0.264 ± 0.084
photometric centroid source offset	0.30 ± 0.05	6.04	-0.02 ± 0.05	-0.30 ± 0.05

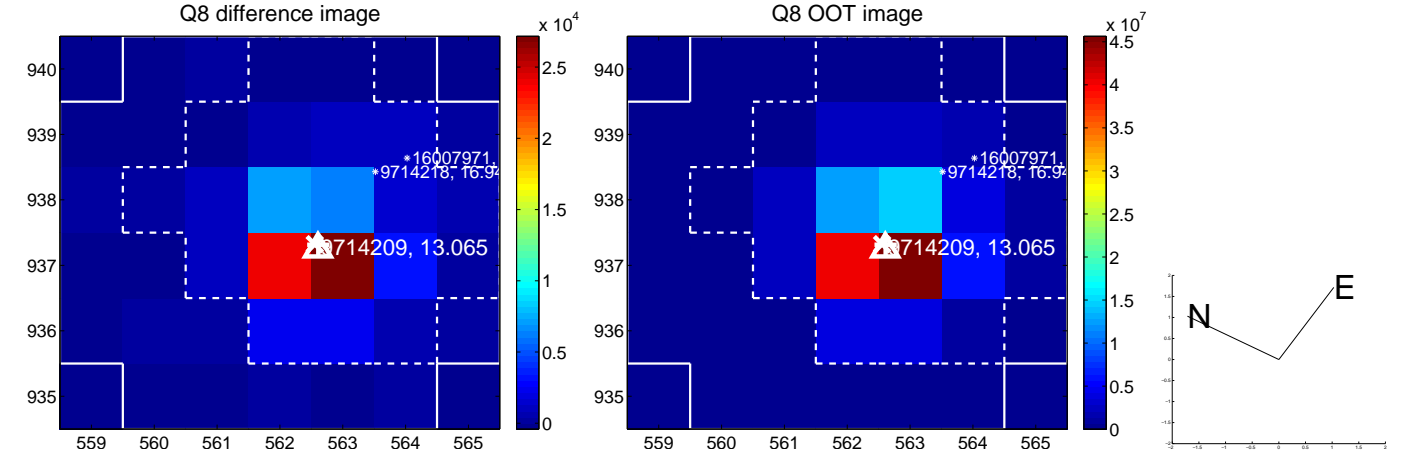
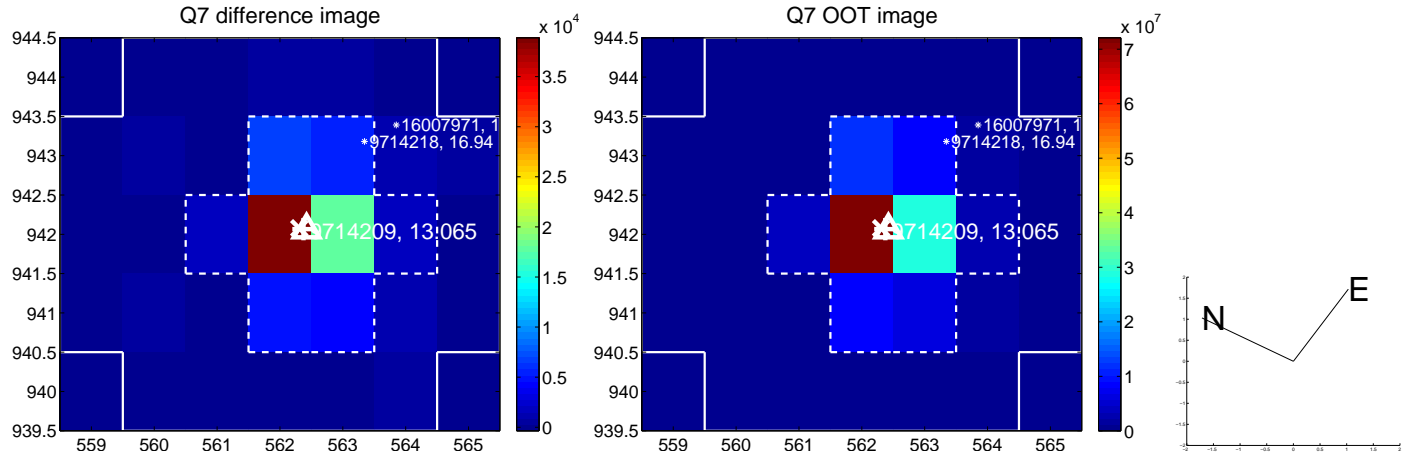
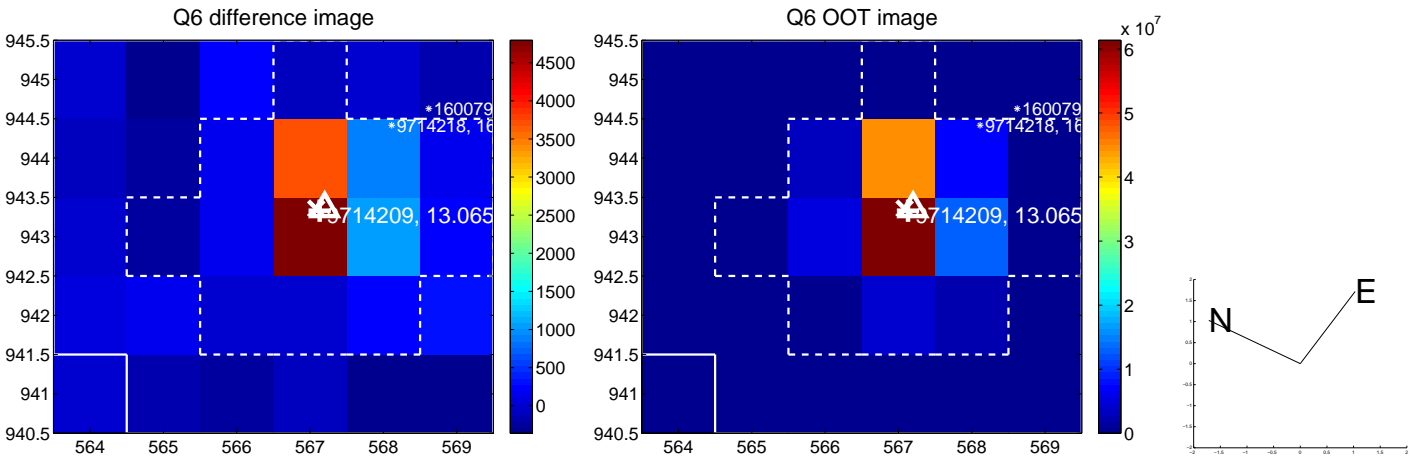
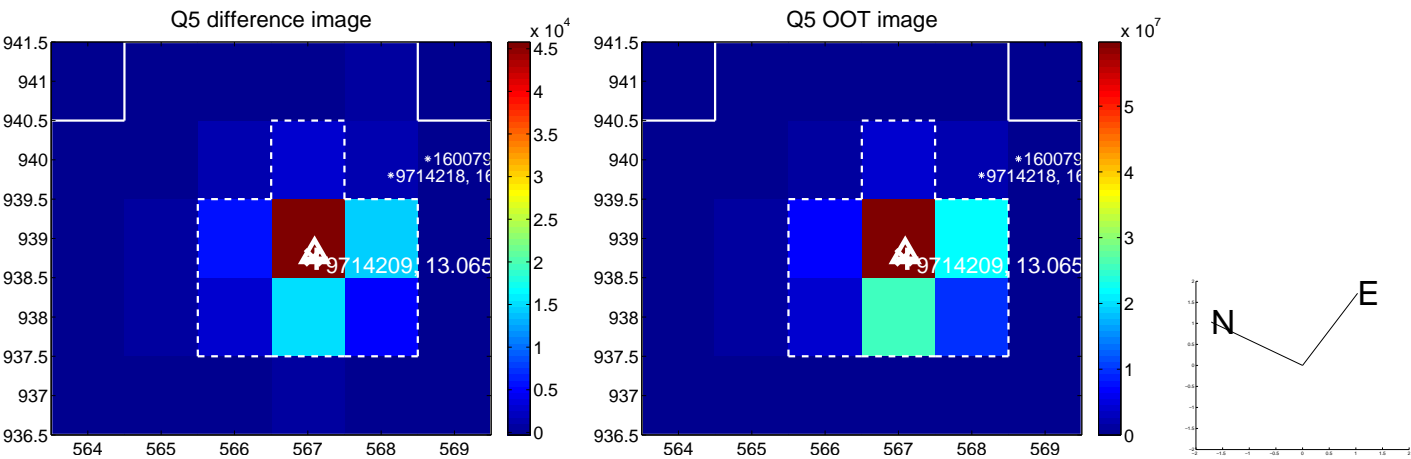


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

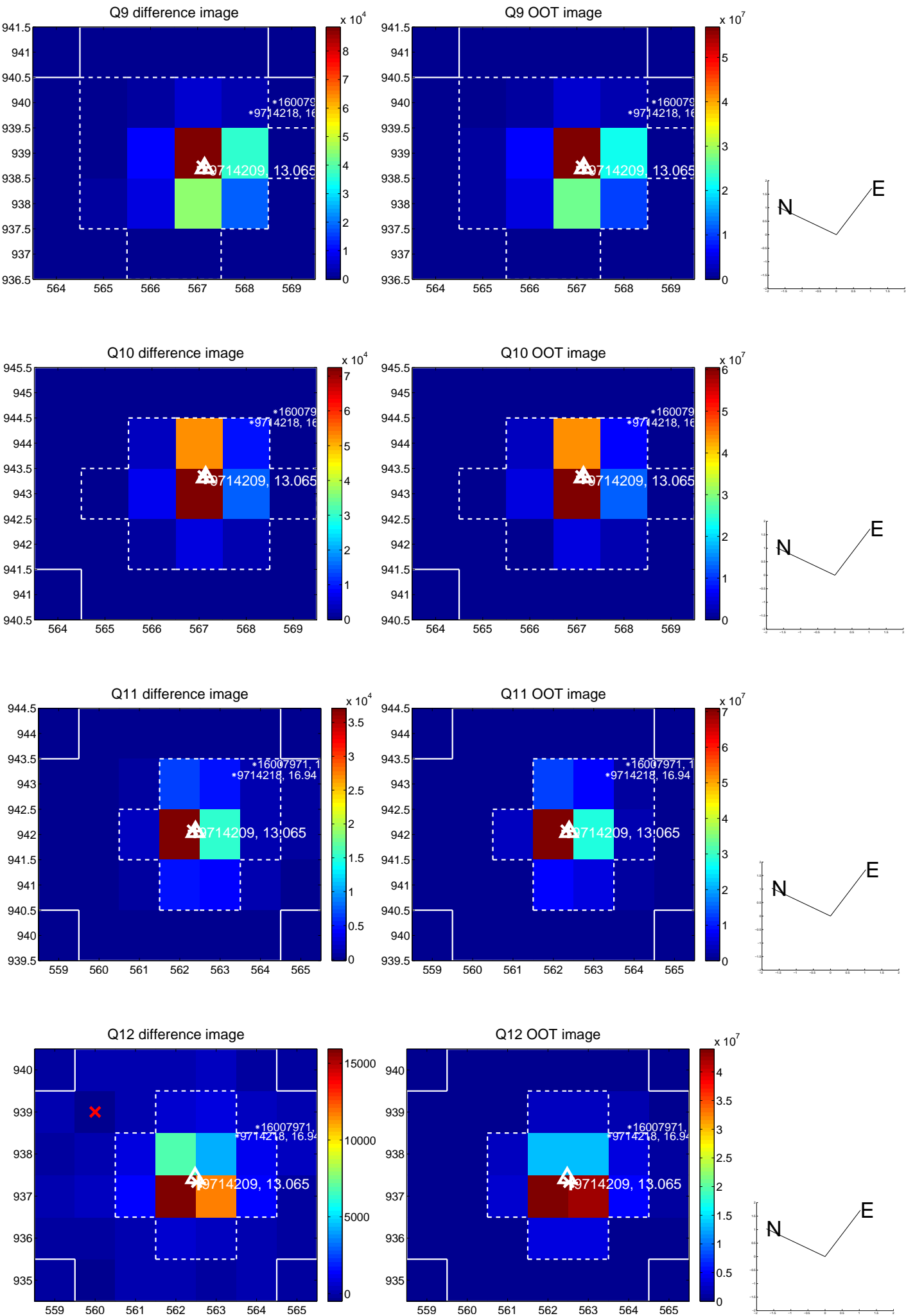
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



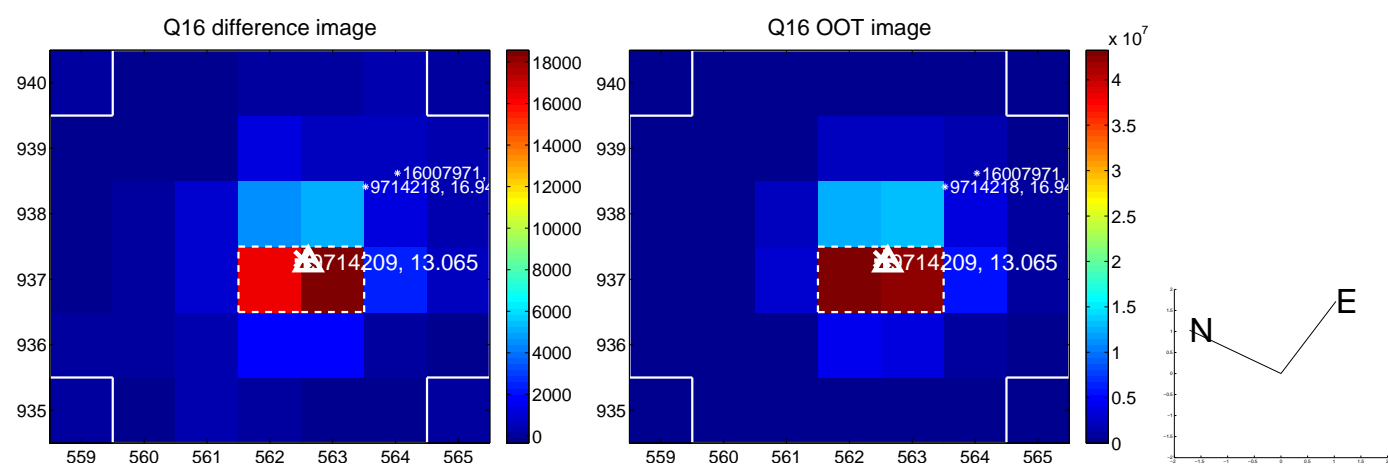
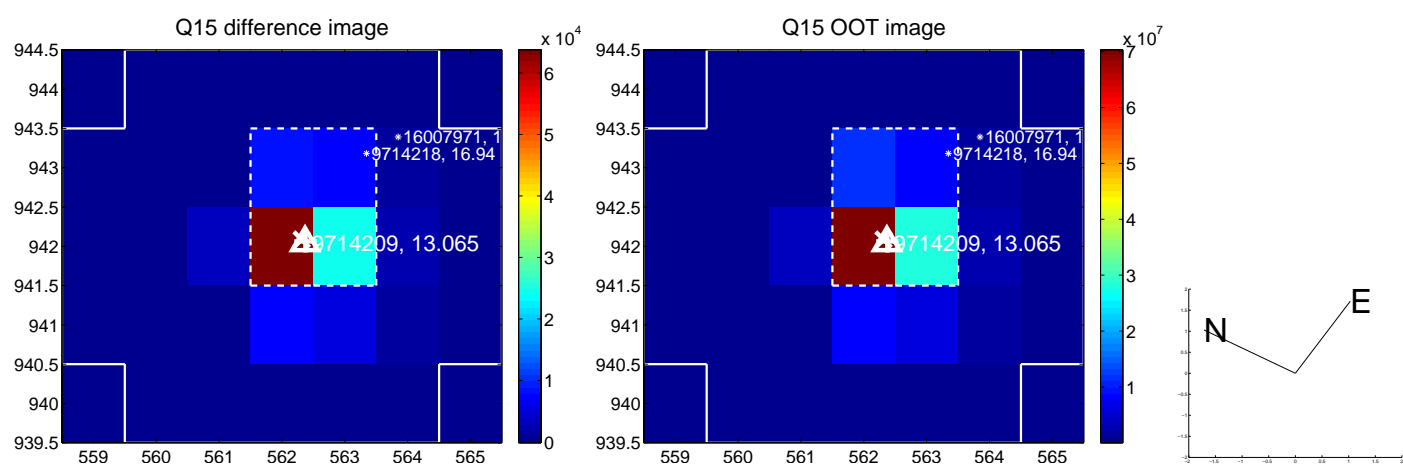
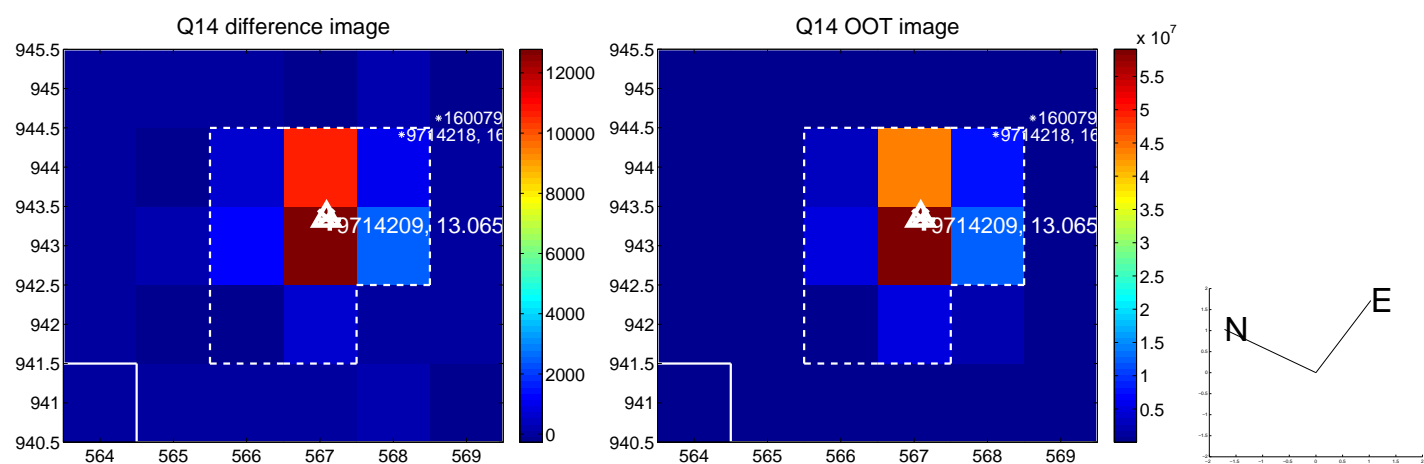
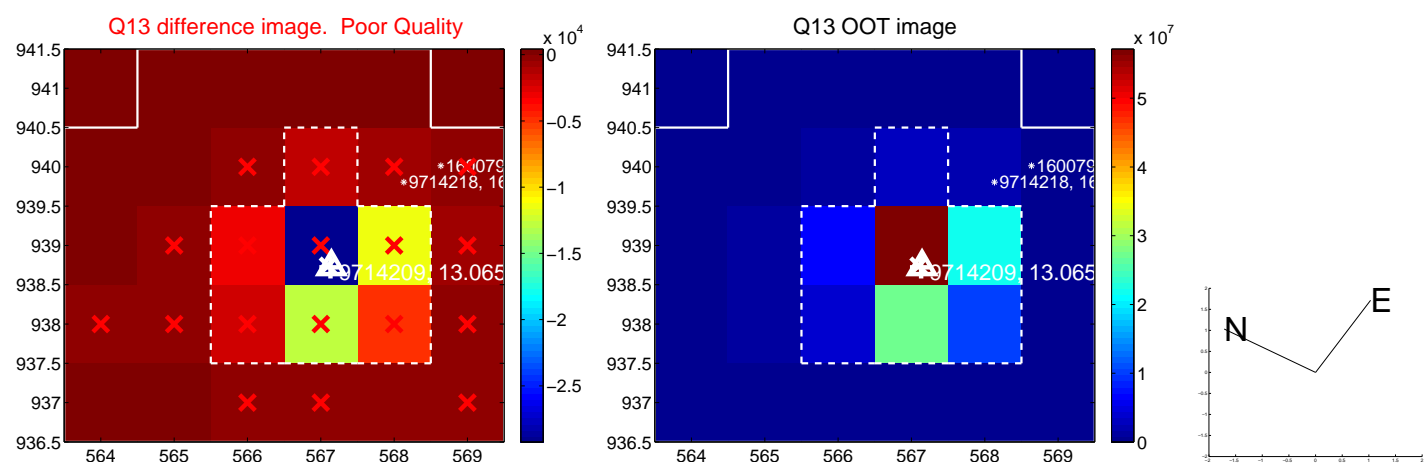
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



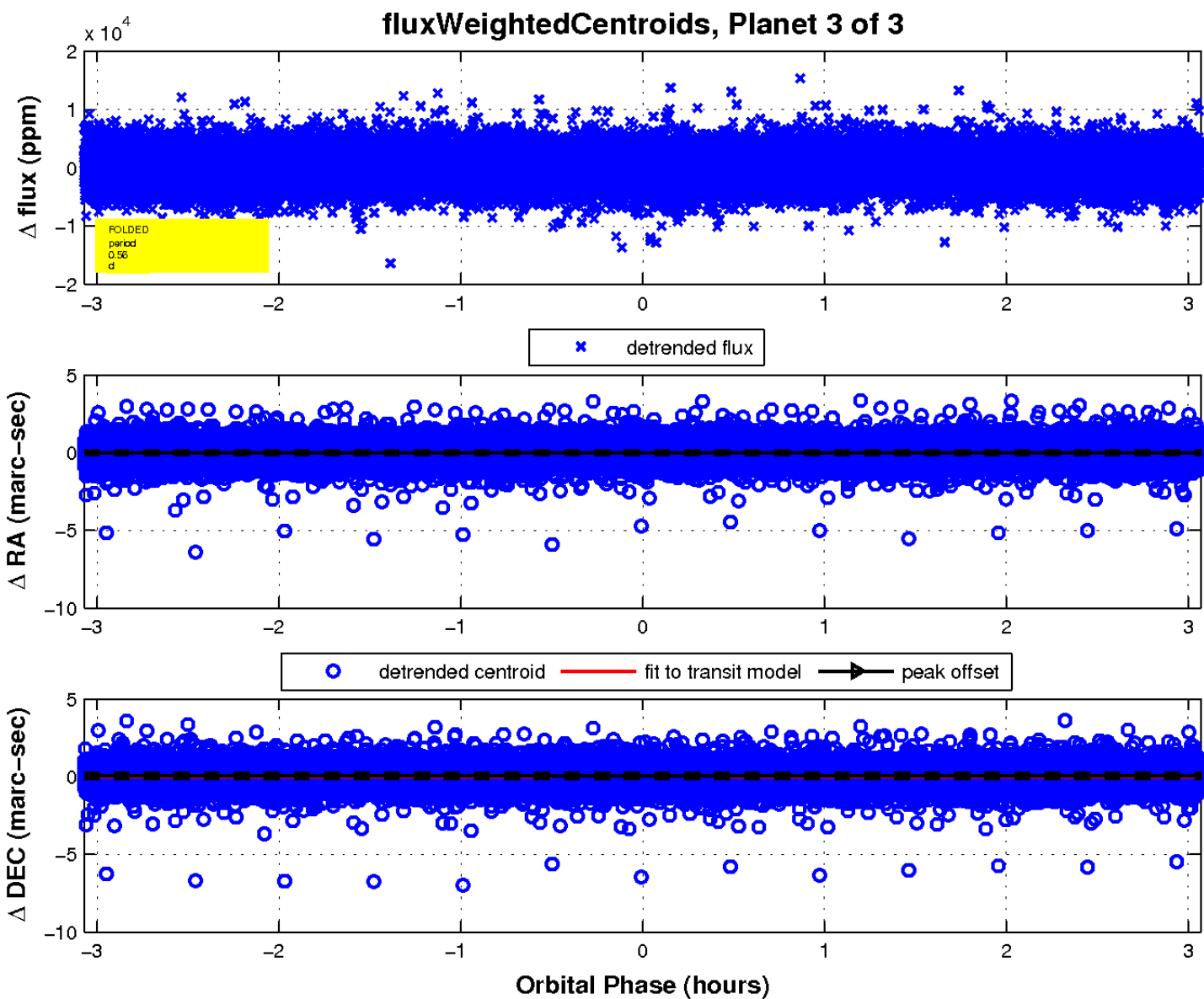
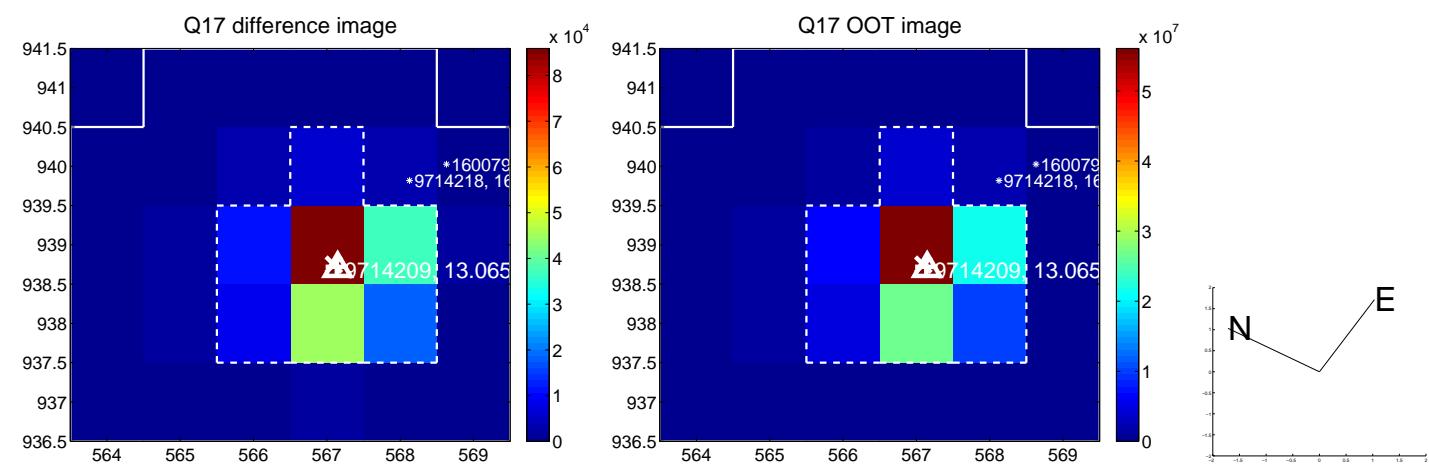
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

