

KIC 009366994

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})
009366994-01	OBS	No	1.249499	131.825981	123.6	5.890	9.4	8.6	1.35	6626	2.04	5888.41
009366994-02	OBS	No	5.541403	133.123467	296.4	5.963	9.2	8.1	1.35	6626	2.67	808.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009366994-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009366994-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

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

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

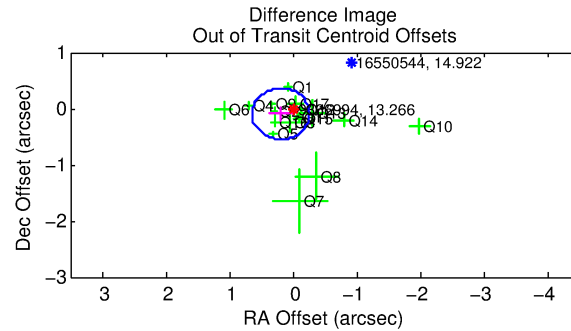
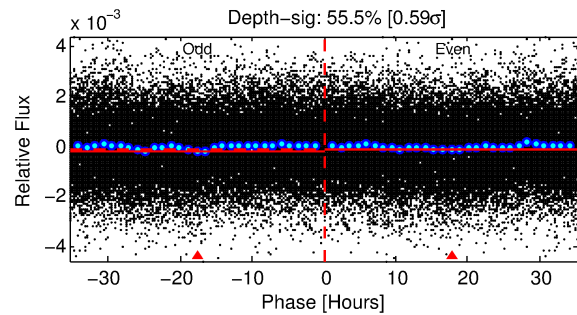
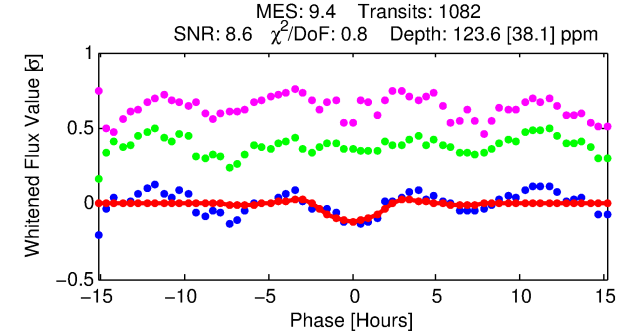
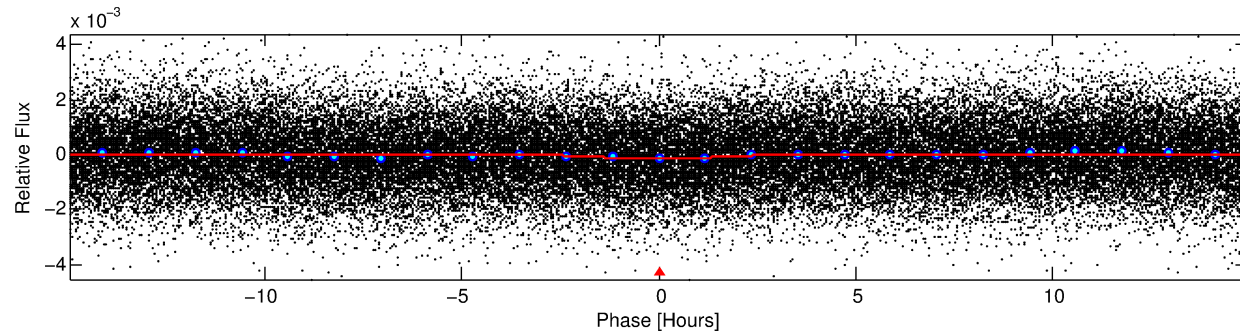
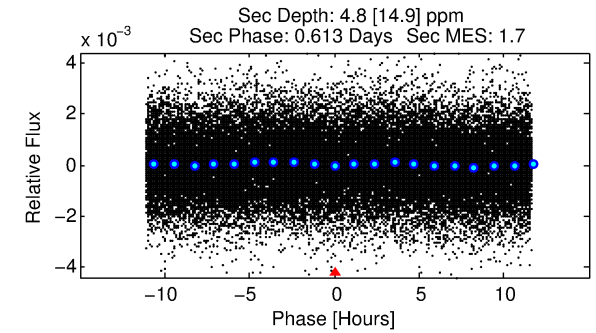
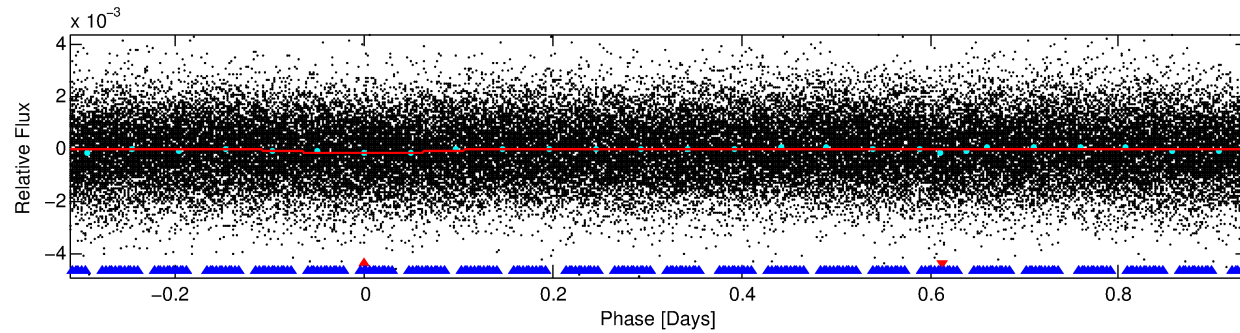
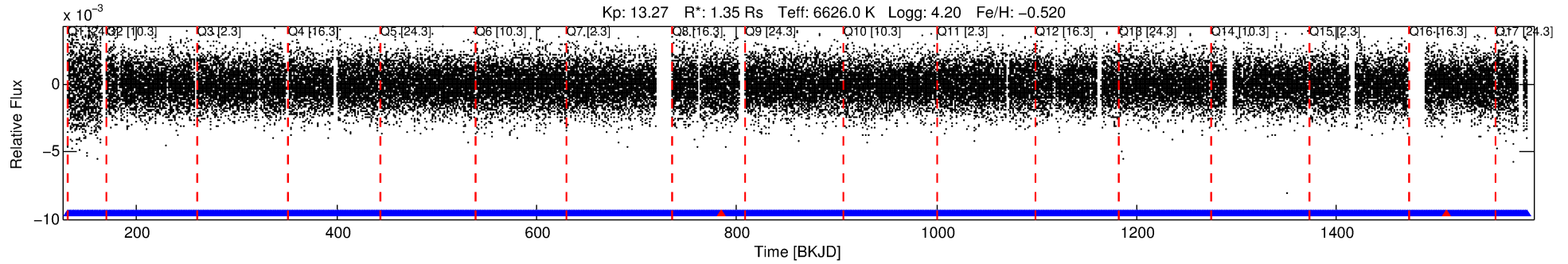
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009366994-01

No Significant Match Found

DV One-Page Summary

KIC: 9366994 Candidate: 1 of 2 Period: 1.249 d



DV Fit Results:

Period = 1.24950 [0.00002] d
Epoch = 131.8260 [0.0091] BKJD
Rp/R* = 0.0138 [0.0030]
a/R* = 1.07 [0.04]
b = 0.99 [0.01]
Seff = 5888.41 [2139.84]
Teff = 2234 [203] K
Rp = 2.04 [0.72] Re
a = 0.0232 [0.0054] AU
Ag = 0.34 [1.07] [-0.61σ]
Teffp = 2642 [2061] K [0.20σ]

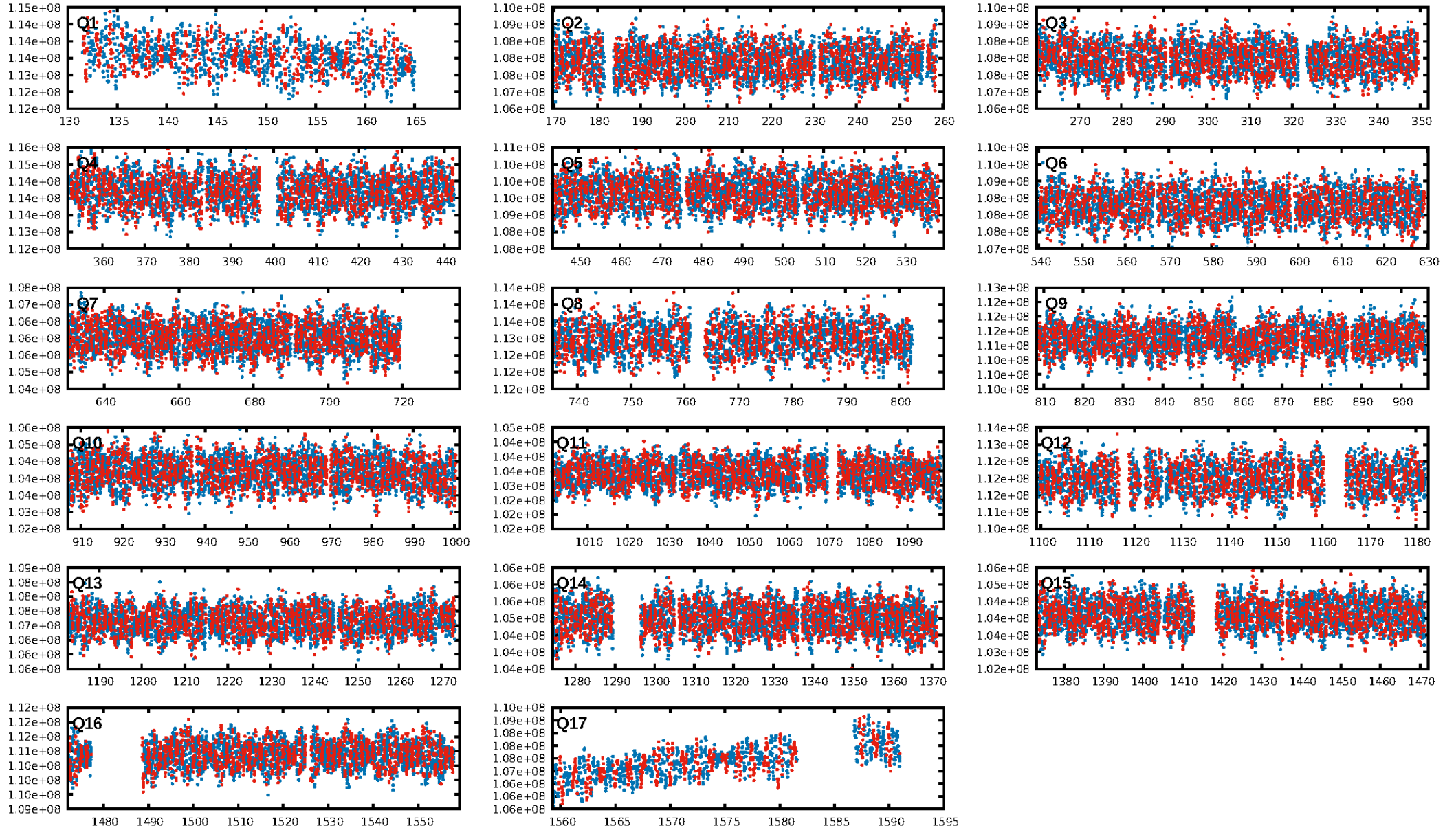
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [12.29σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.18e-16
RollingBand-fgt: 1.00 [1032/1034]
GhostDiagnostic-chr: 1.463
Centroid-sig: 0.0%
Centroid-so: 1.301 arcsec [4.56σ]
OotOffset-rm: 0.212 arcsec [1.40σ]
KicOffset-rm: 0.539 arcsec [3.47σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 1.00 [17/17]

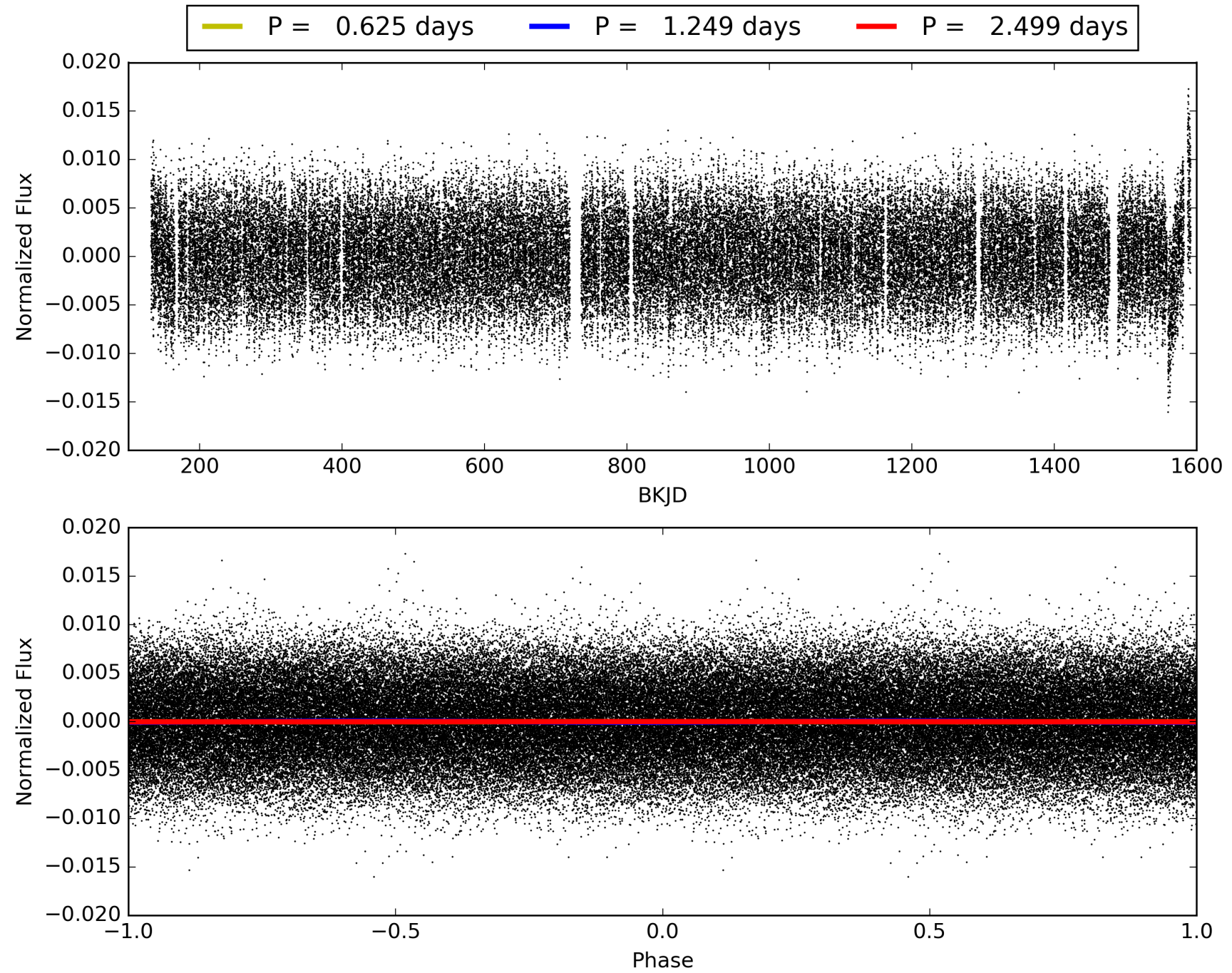
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:39:50 Z

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

TCE 009366994-01, PDC Light Curves

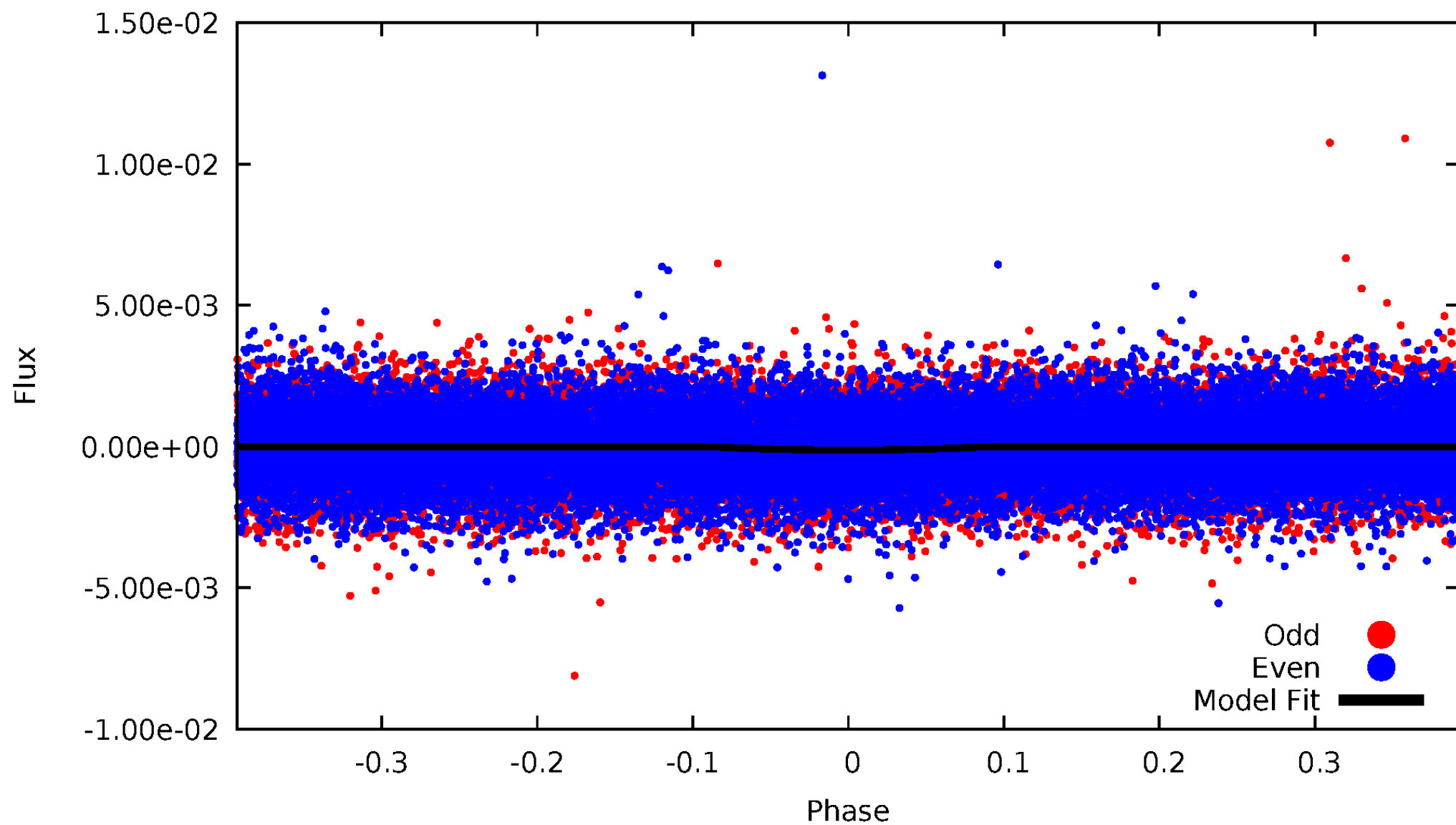


TCE 009366994-01



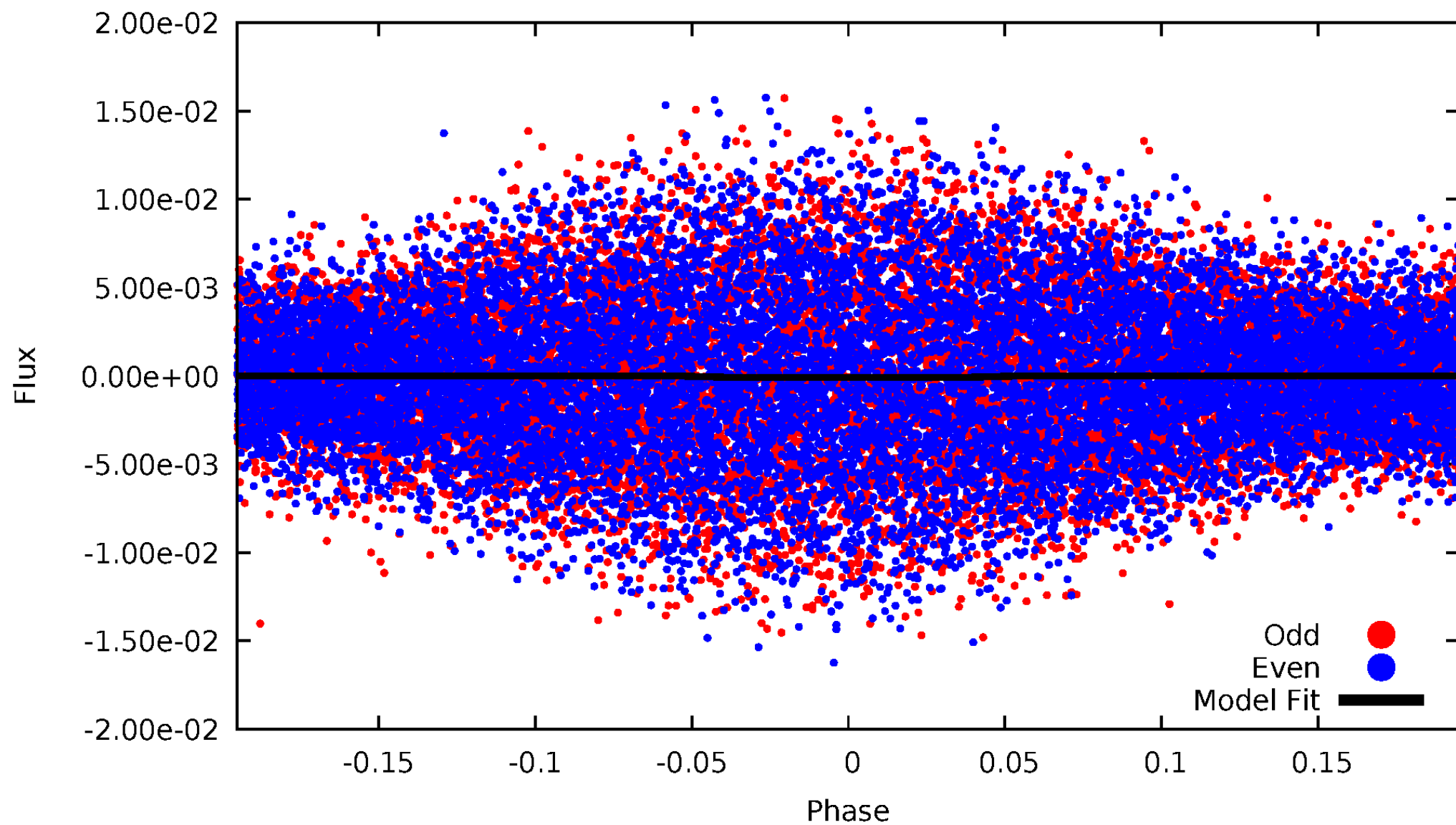
DV Odd/Even

TCE 009366994-01

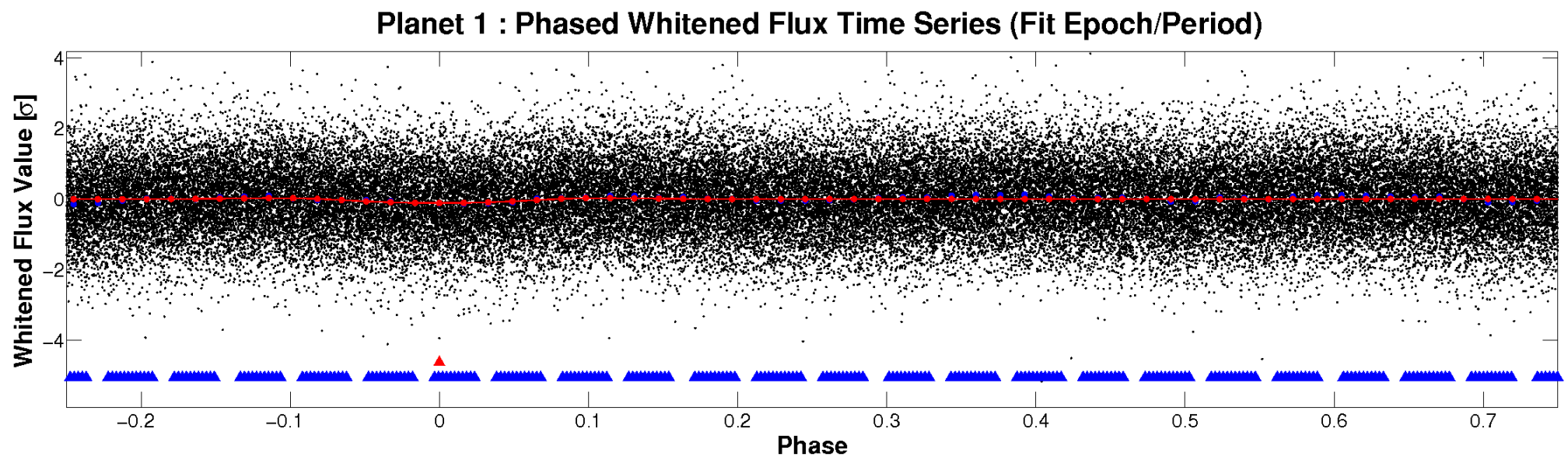
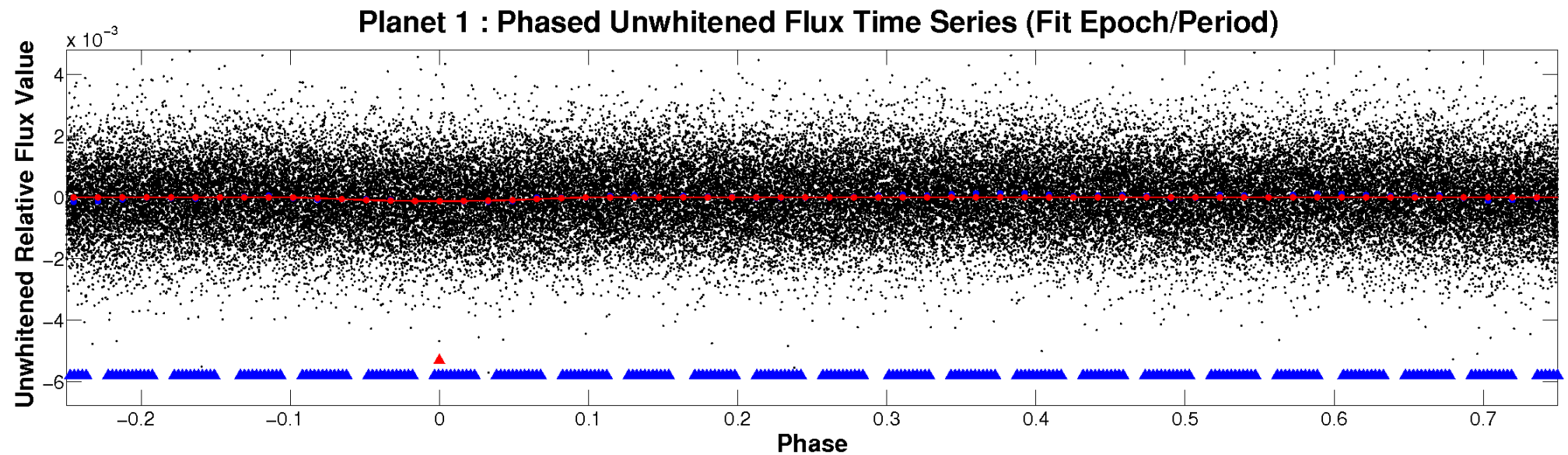


ALT Odd/Even

TCE 009366994-01

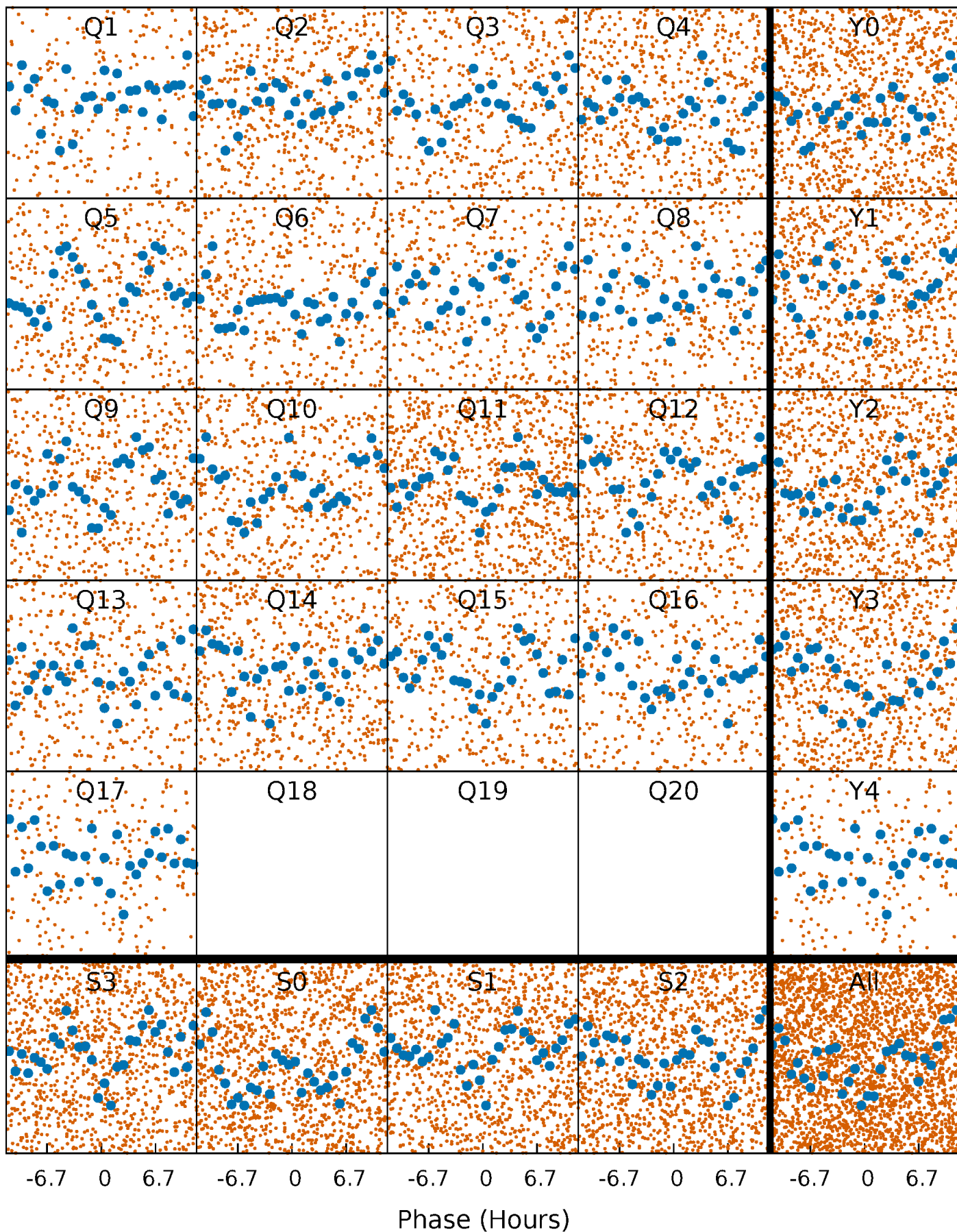


Non-Whitened Vs. Whitened Light Curve



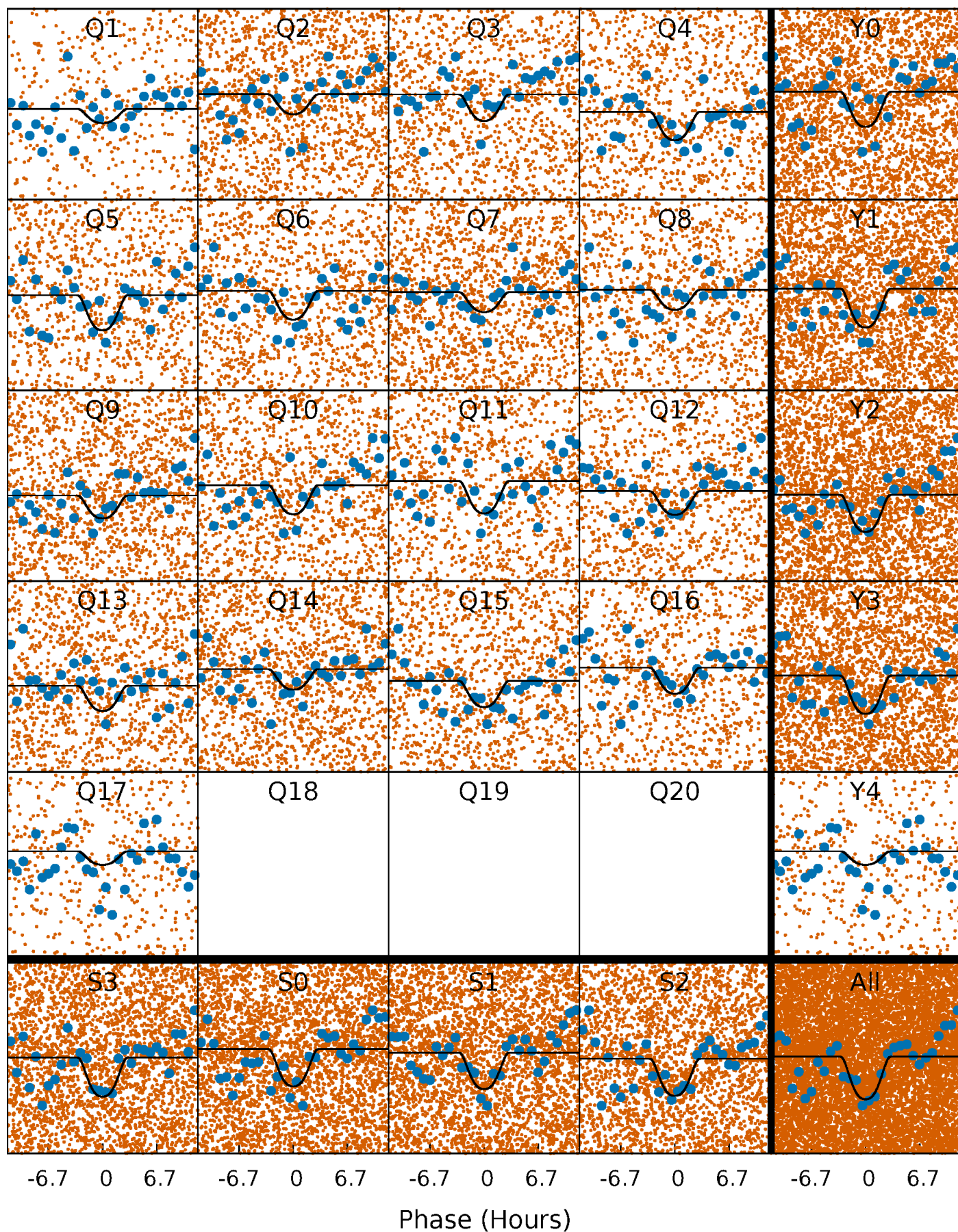
PDC Quarter-Phased Transit Curves

TCE 009366994-01 P= 1.249499 Days $T_0=131.825982$ (BKJD)



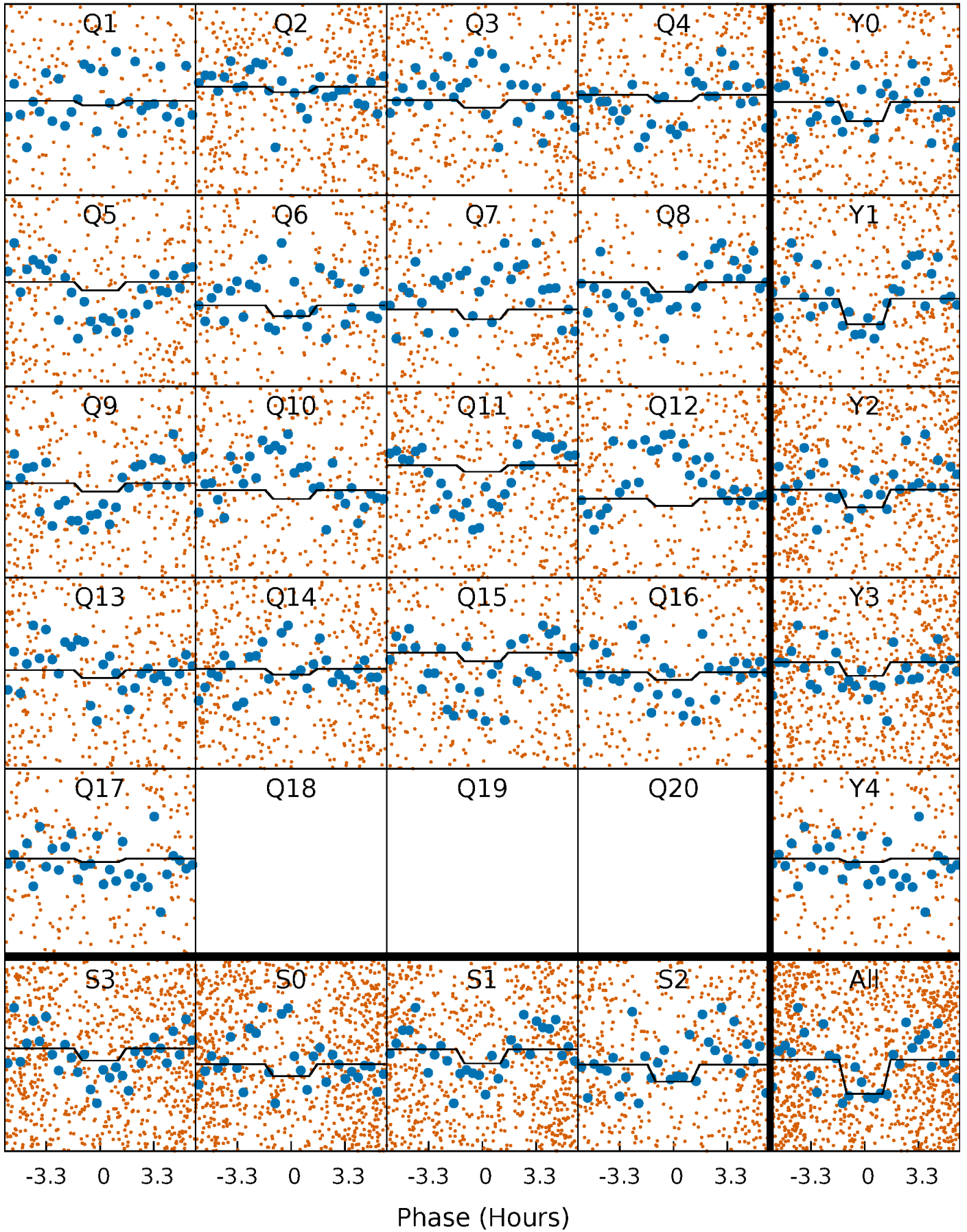
DV Quarter-Phased Transit Curves

TCE 009366994-01 P= 1.249499 Days $T_0=131.825982$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

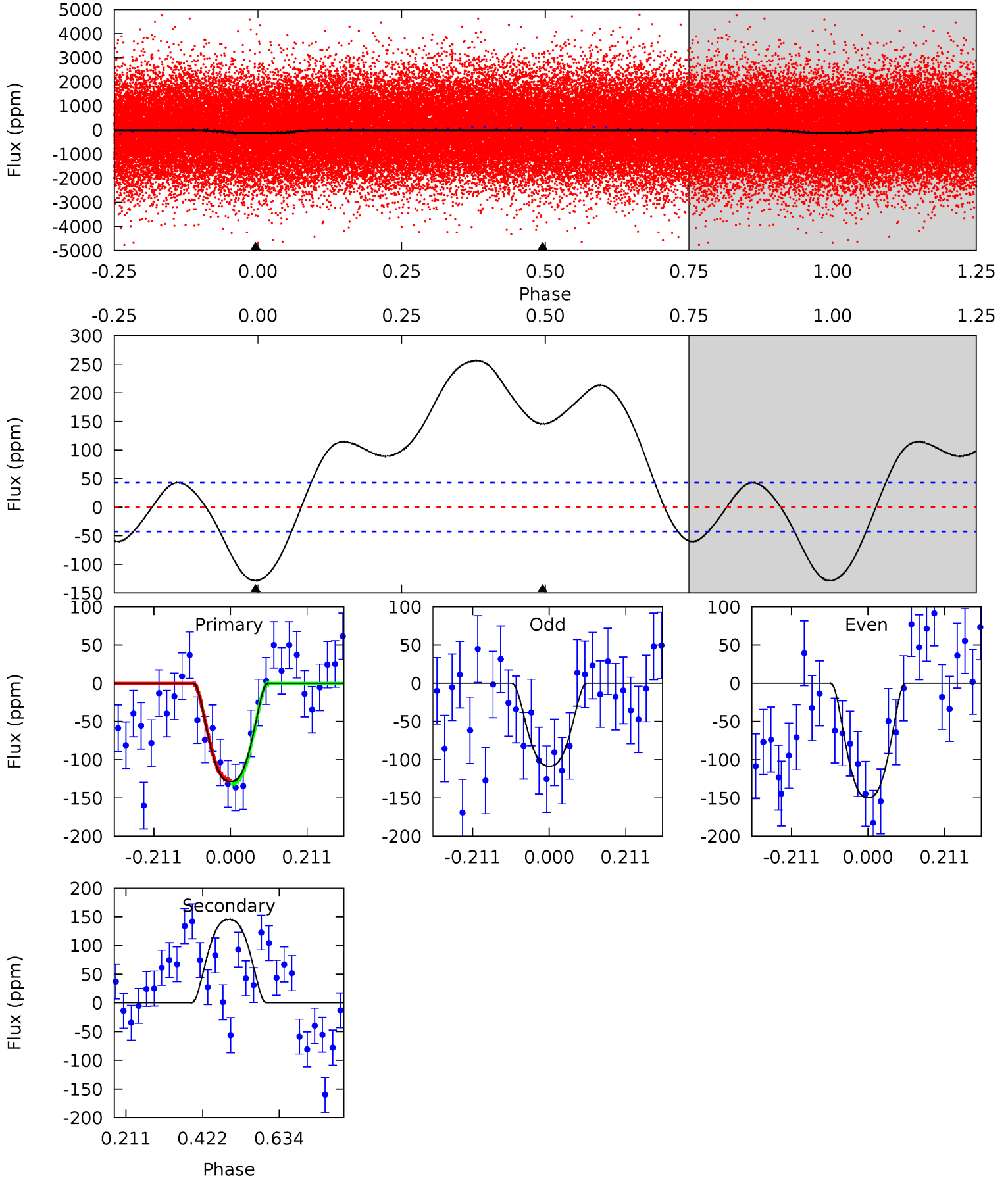
TCE 009366994-01 P= 1.249489 Days $T_0=131.850763$ (BKJD)



DV Model-Shift Uniqueness Test

009366994-01, P = 1.249499 Days, E = 130.576483 Days

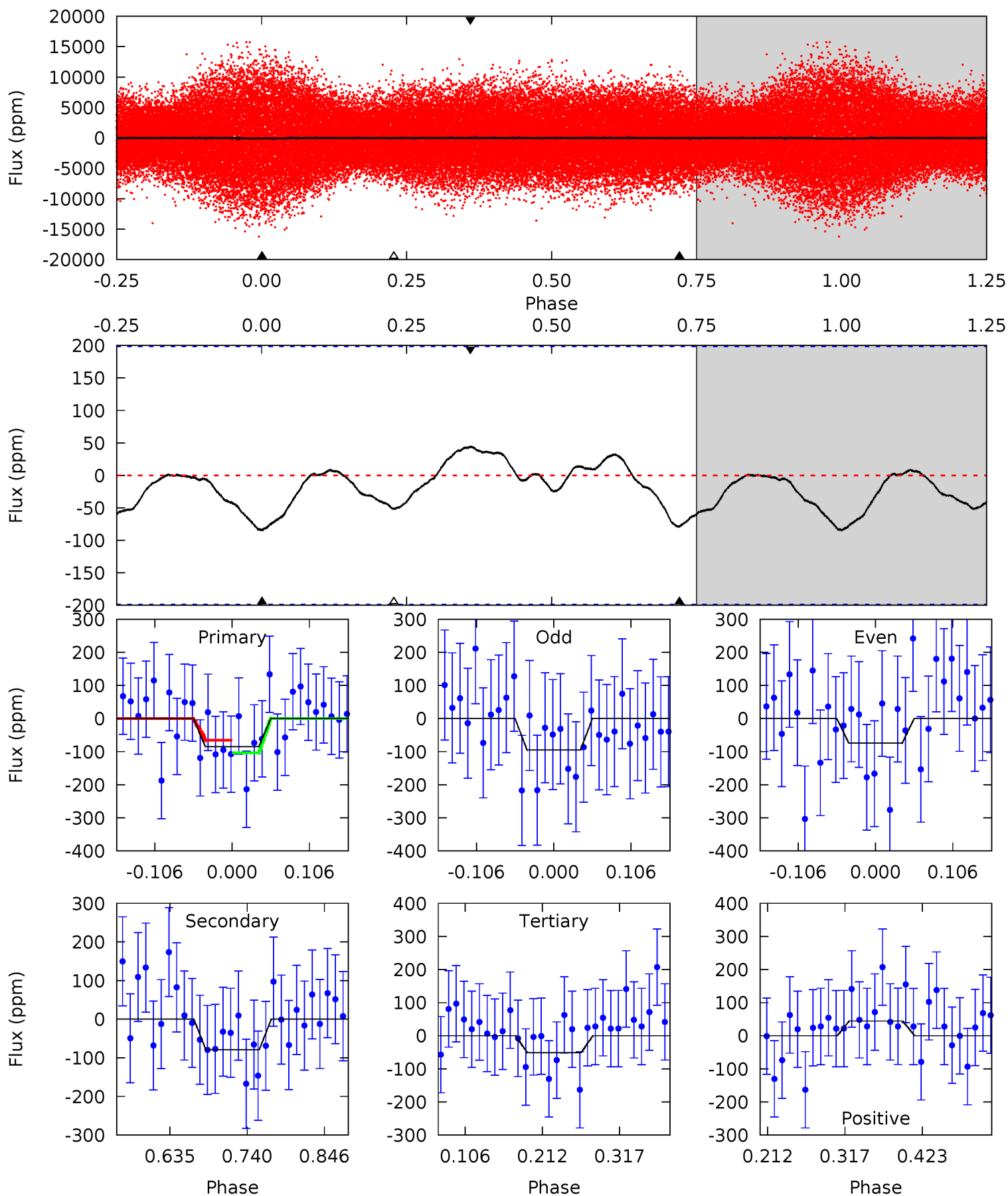
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	-15.0	0	0	4.41	1.25	7.73	13.3	13.3	-15.0	-15.0	2.13	1.09	0.67	0.24



Alt Model-Shift Uniqueness Test

009366994-01, P = 1.249489 Days, E = 130.601274 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.94	1.81	1.18	1.01	4.55	1.62	0.57	0.75	0.92	0.62	0.79	0.24	2.49	0.34	0.44



Stellar Parameters For KIC 009366994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6626^{+178}_{-218}	$4.202^{+0.185}_{-0.167}$	$-0.520^{+0.250}_{-0.300}$	$1.354^{+0.375}_{-0.306}$	$1.063^{+0.163}_{-0.119}$	$0.604^{+0.650}_{-0.271}$
	+3%/-3%	+4%/-4%	+48%/-58%	+28%/-23%	+15%/-11%	+108%/-45%
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 009366994-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	146 ± 10	$2.03^{+0.57}_{-0.53}$	3115^{+217}_{-219}	-6226^{+593}_{-849}	$-10.521^{+4.142}_{-8.307}$
Alt.	-79 ± 44	$1.34^{+0.49}_{-0.42}$	3115^{+223}_{-223}	6322^{+1888}_{-1334}	12^{+18}_{-8}

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 $A_{obs} \gg 1.0$

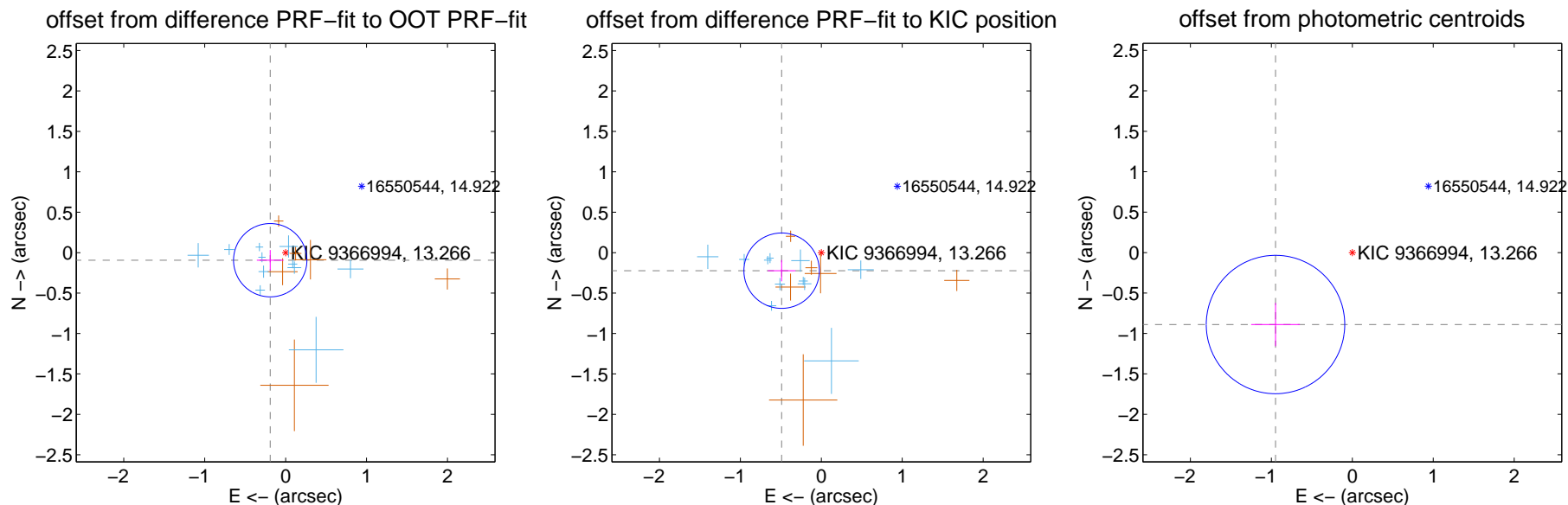
DV Centroid Data

Supplemental centroid analysis for 009366994-01. Kepler magnitude: 13.27. Transit SNR 8.55

There are 11 quarters with good PRF difference image offsets

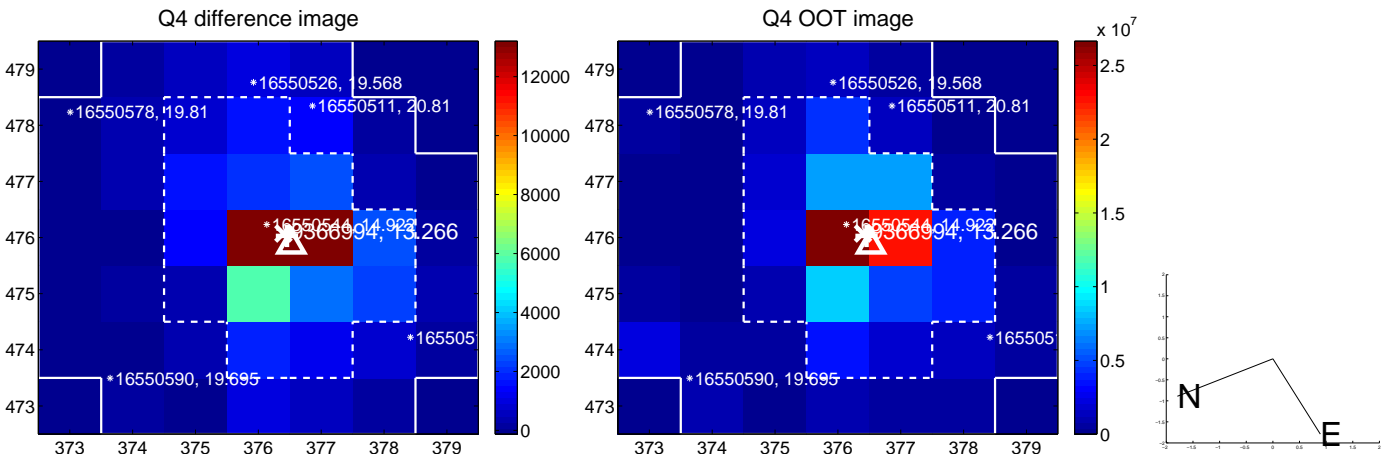
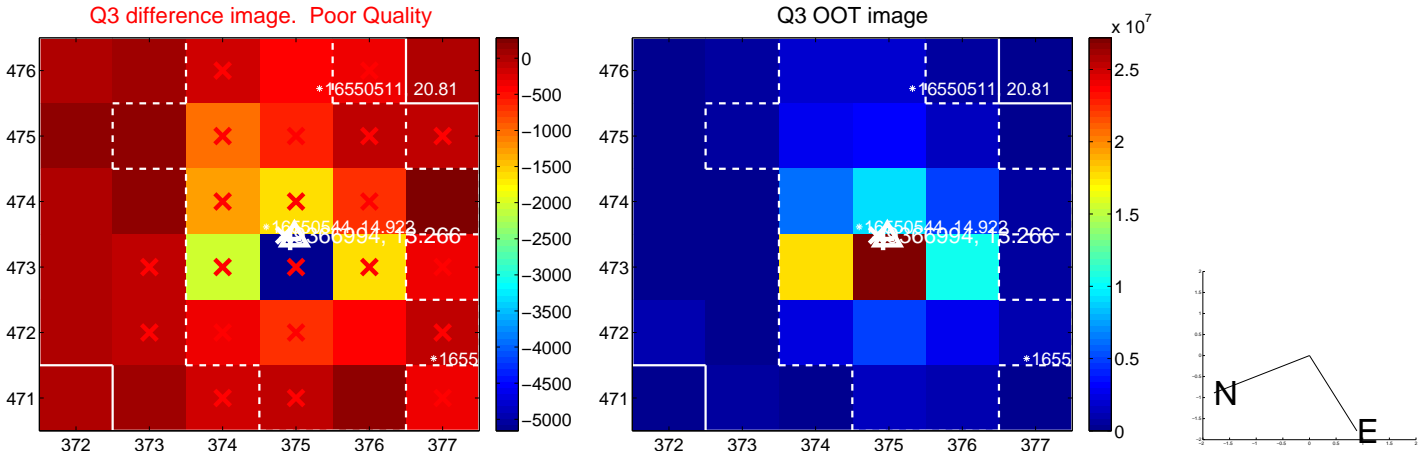
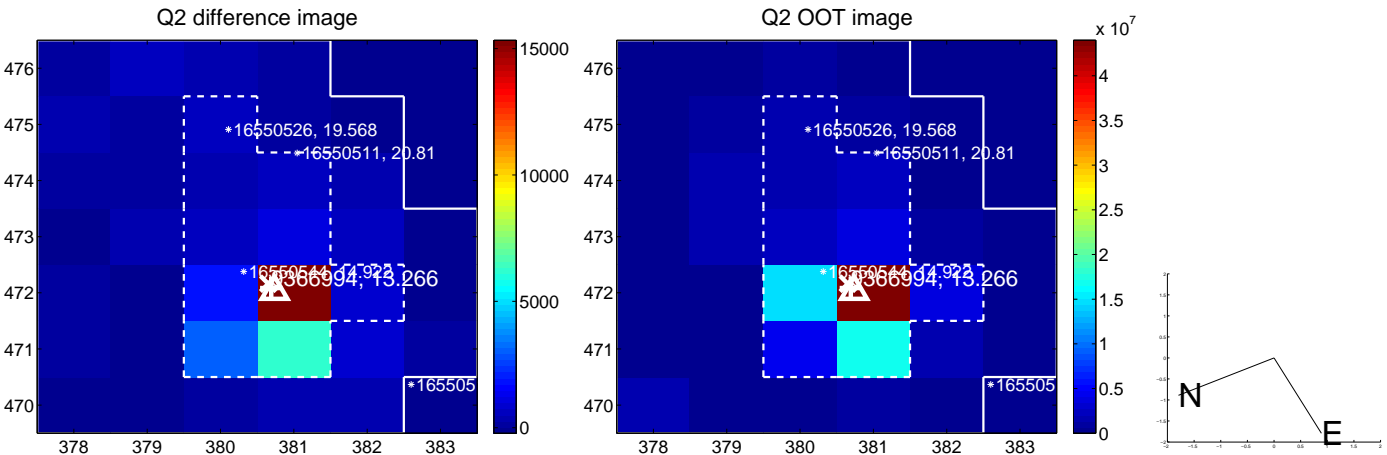
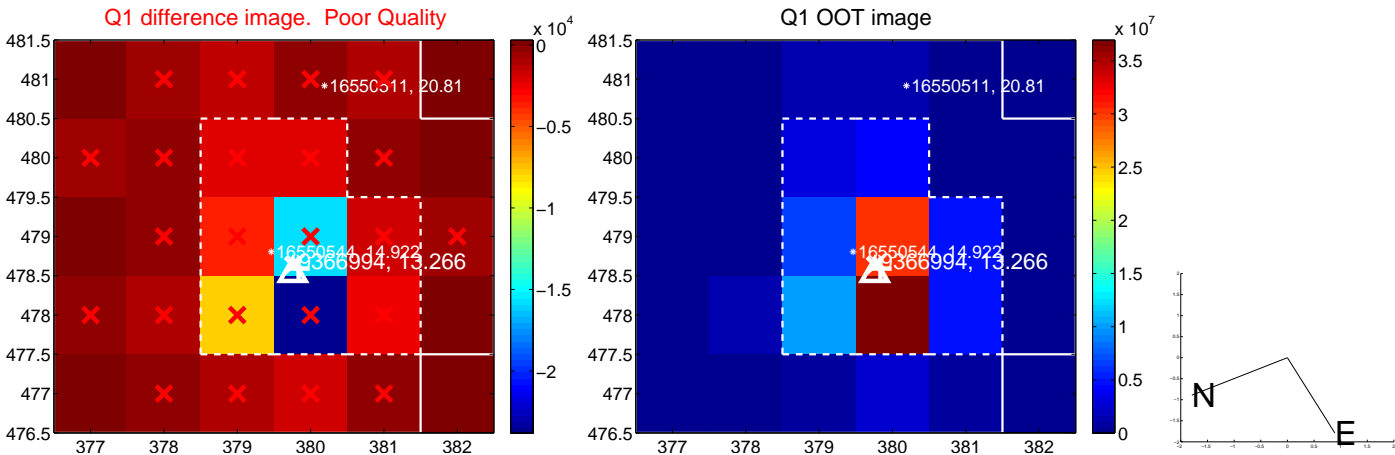
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.212 ± 0.151	1.40	0.190 ± 0.165	-0.094 ± 0.126
PRF-fit source offset from KIC position	0.539 ± 0.155	3.47	0.490 ± 0.172	-0.223 ± 0.132
photometric centroid source offset	1.30 ± 0.29	4.56	0.95 ± 0.30	-0.89 ± 0.27

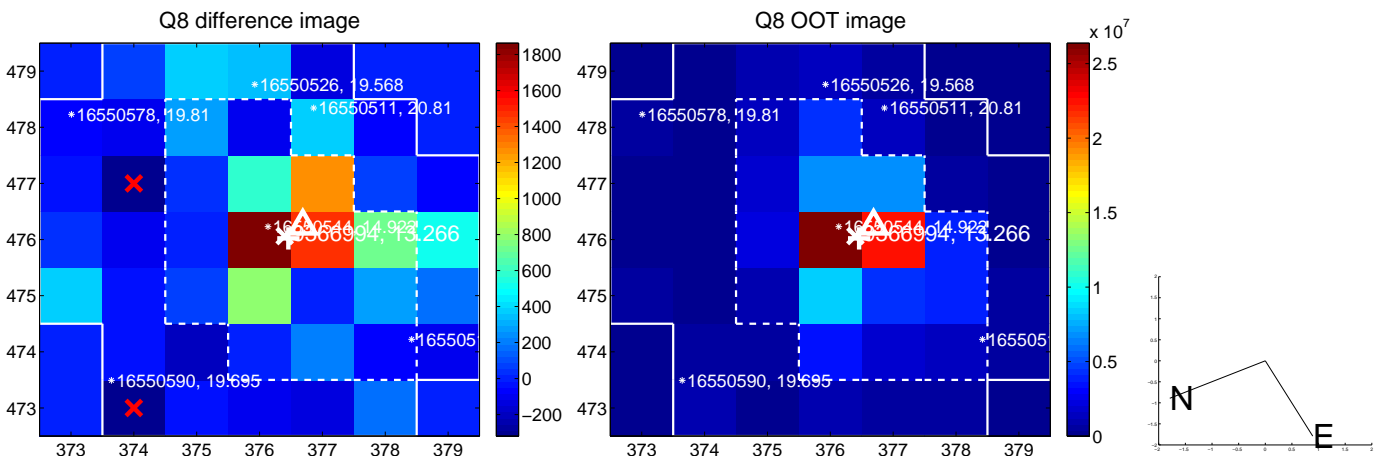
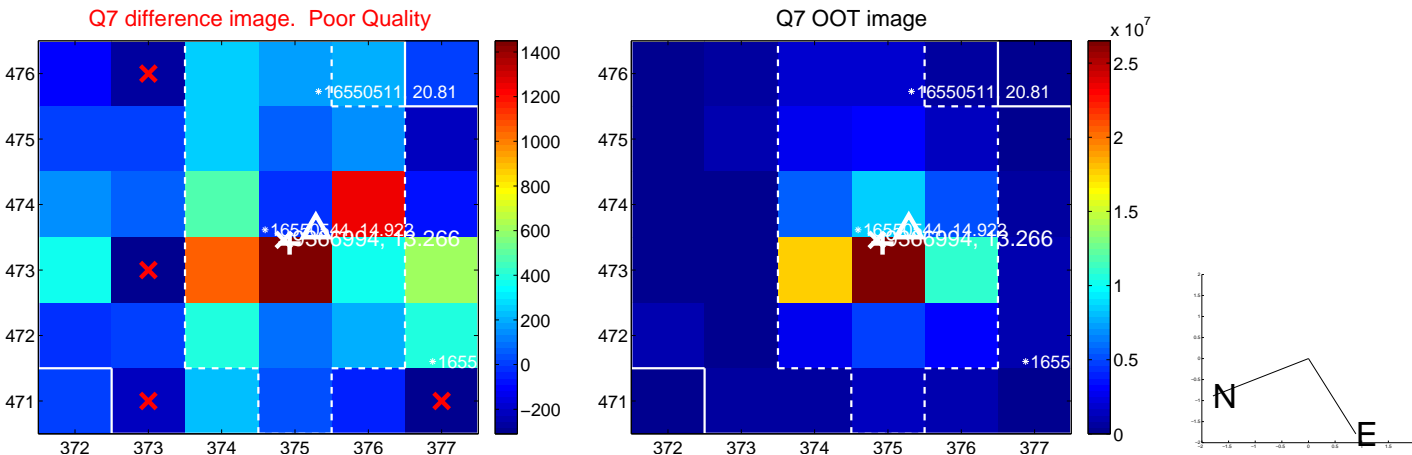
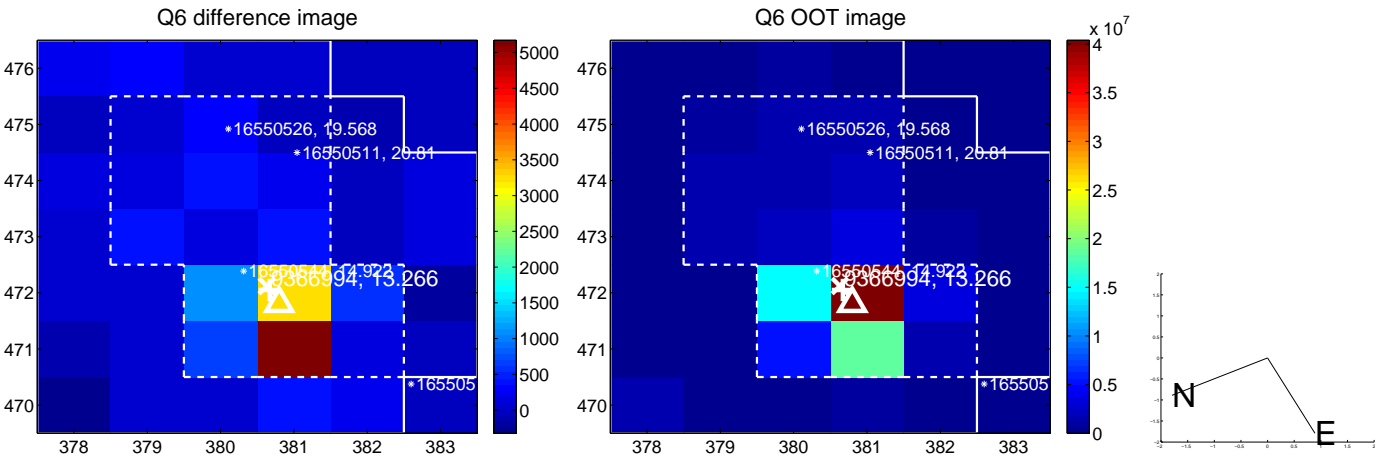
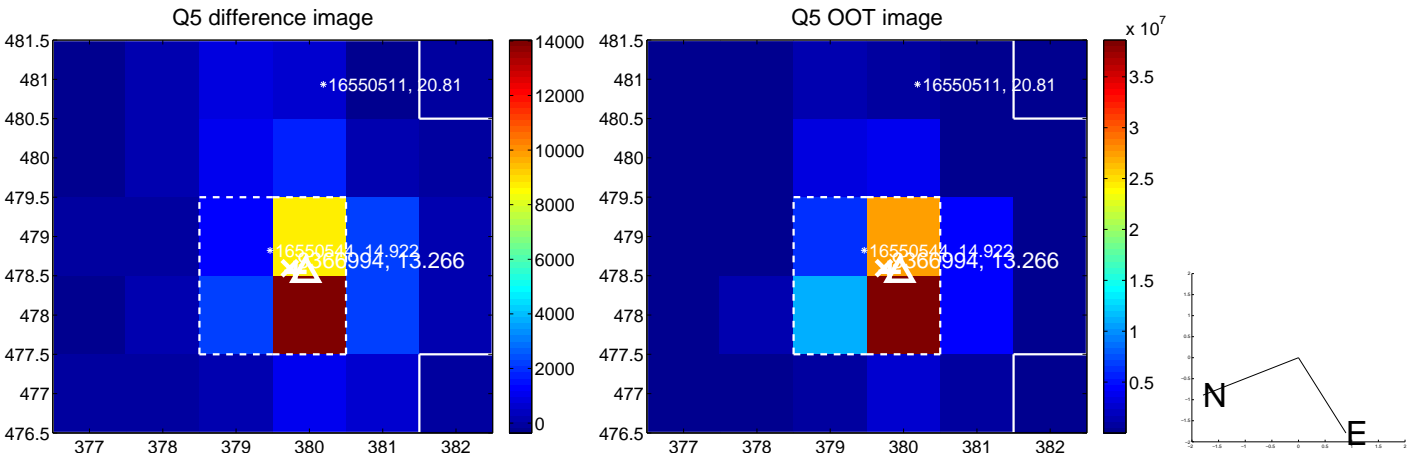


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

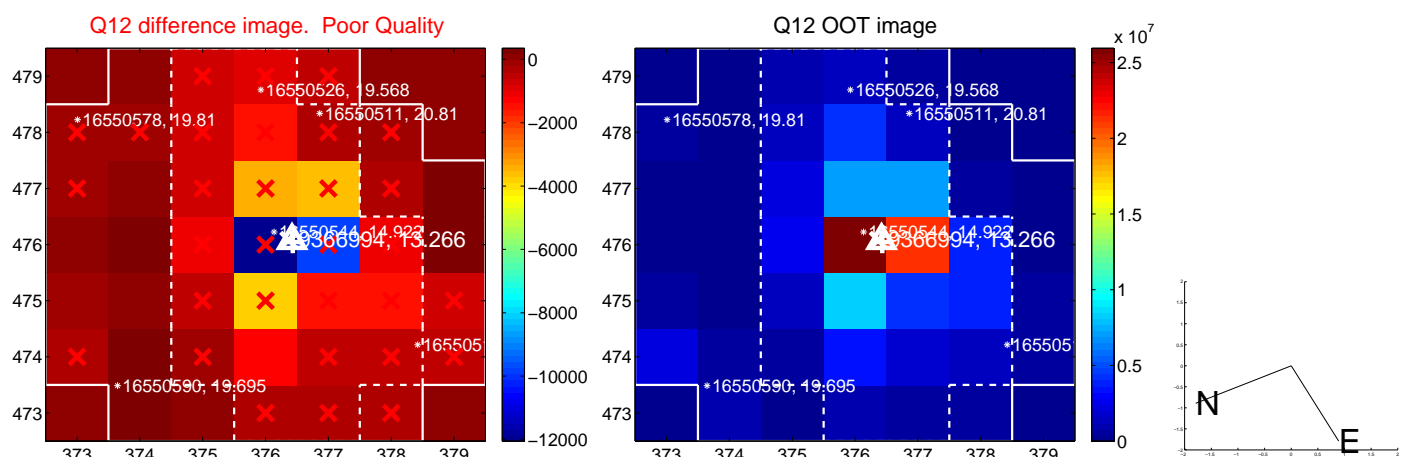
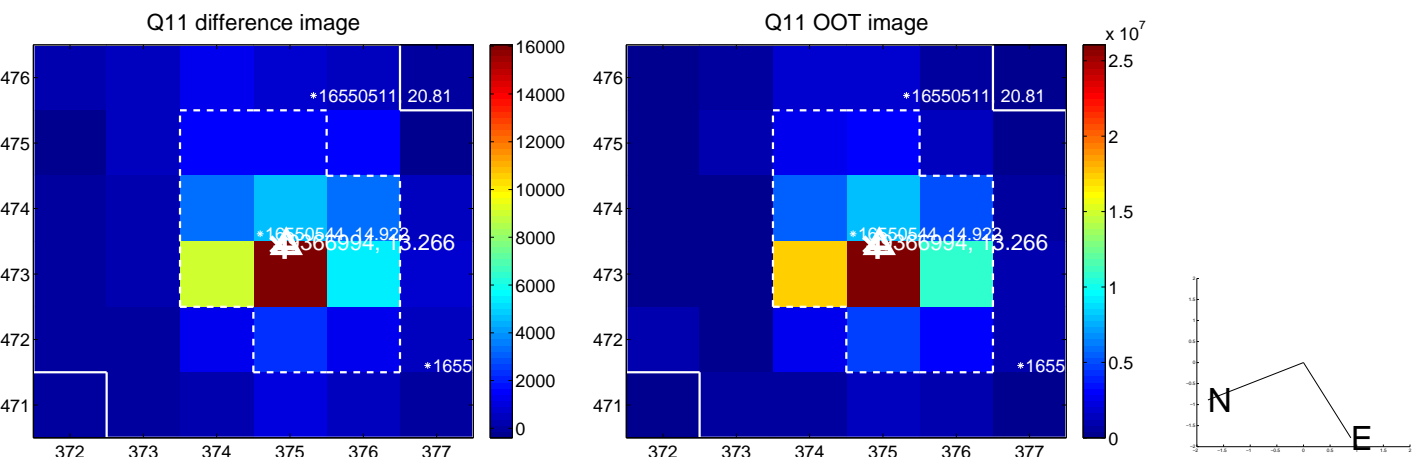
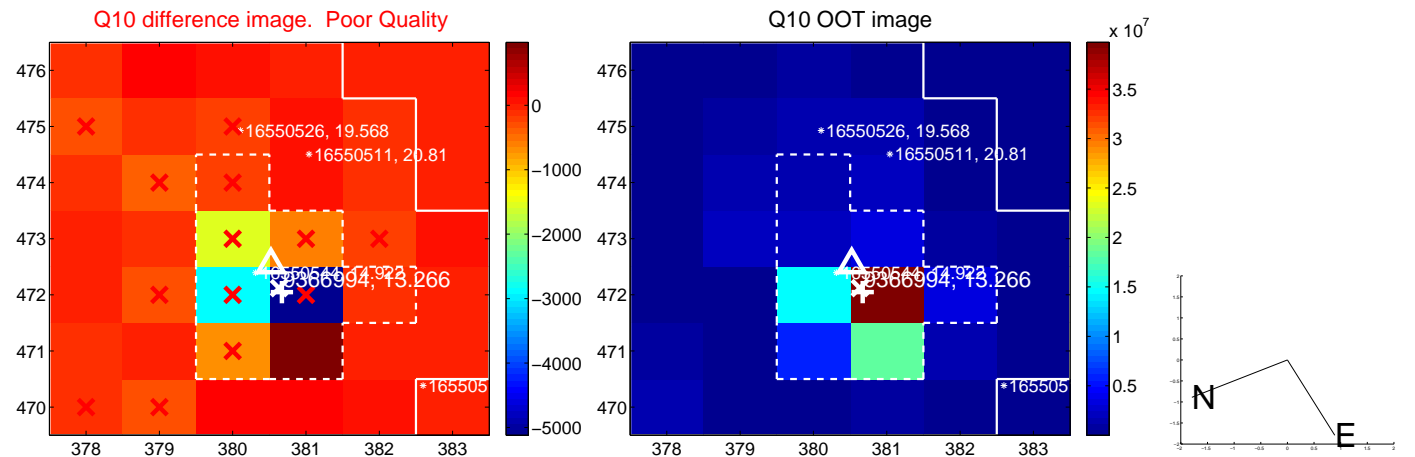
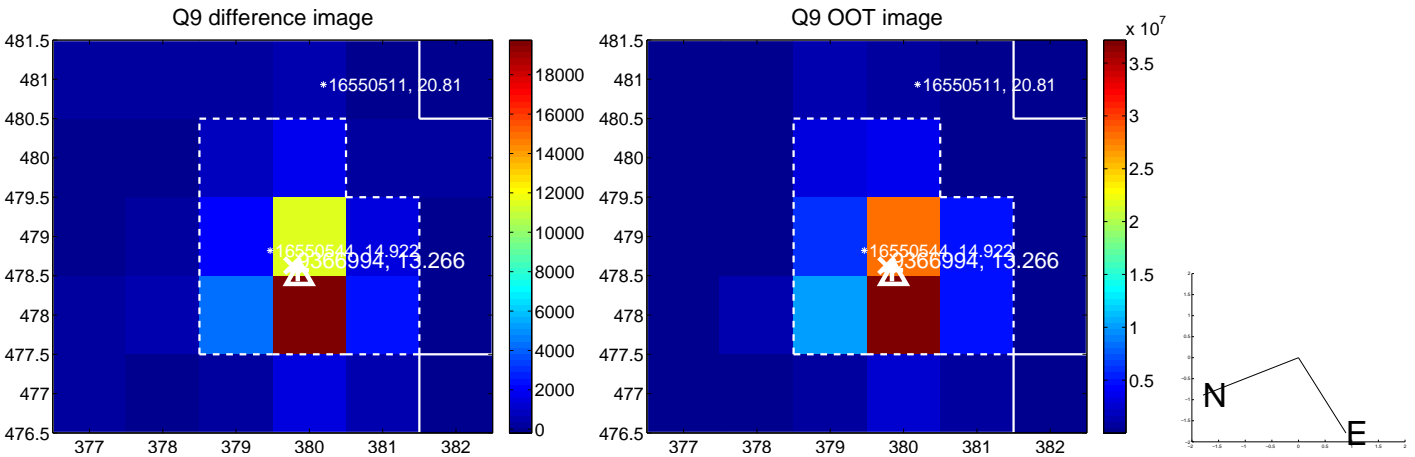
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



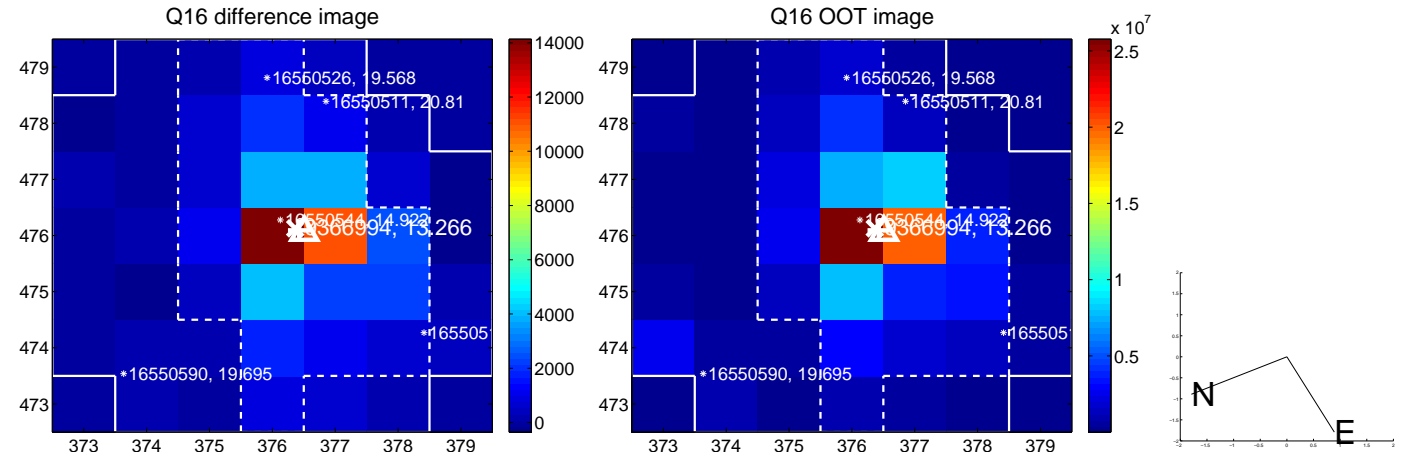
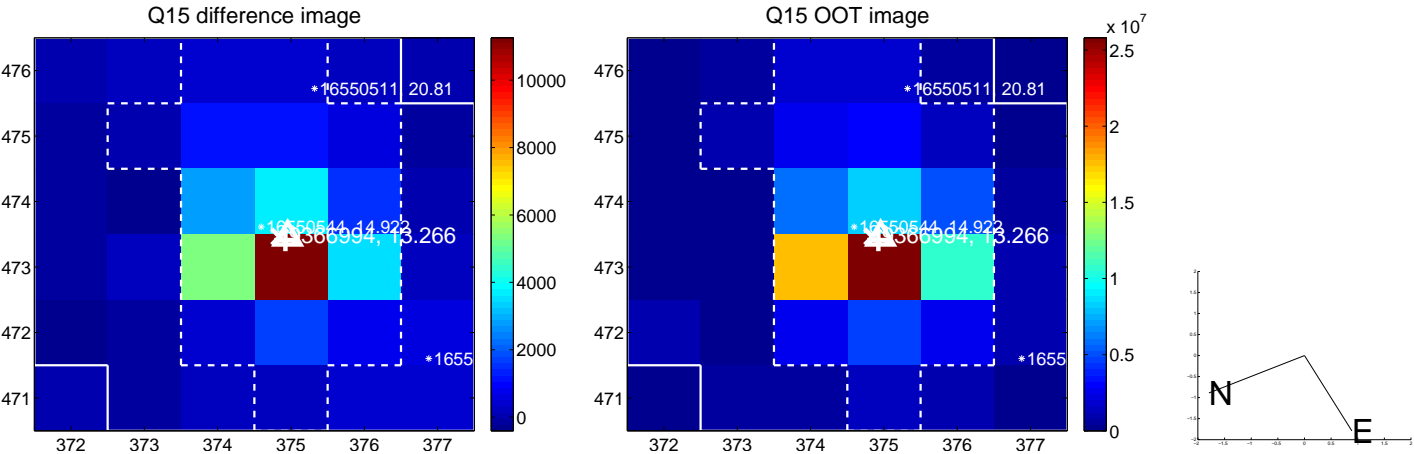
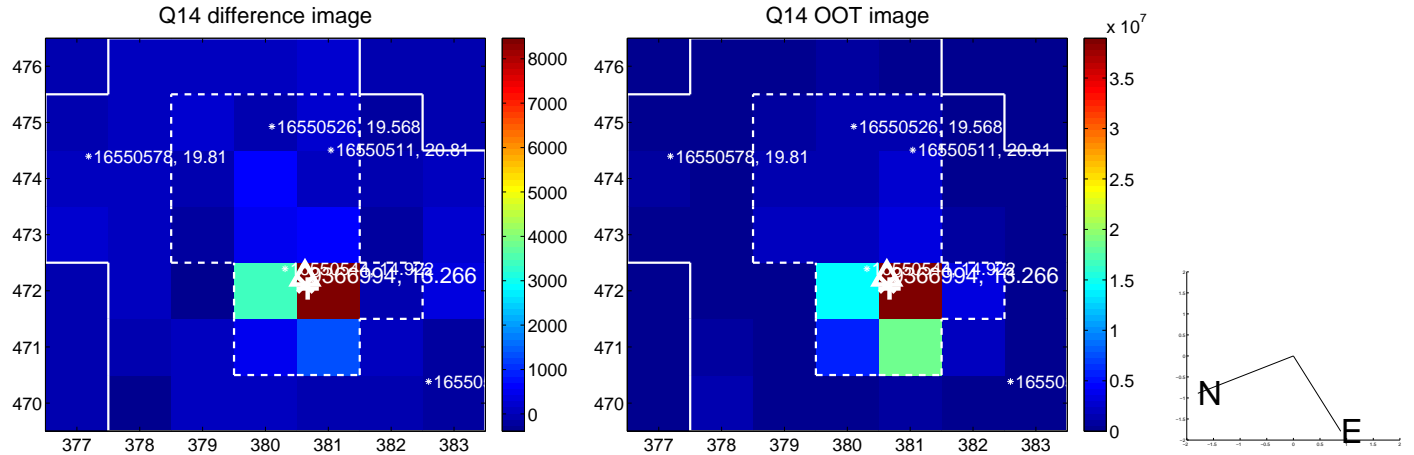
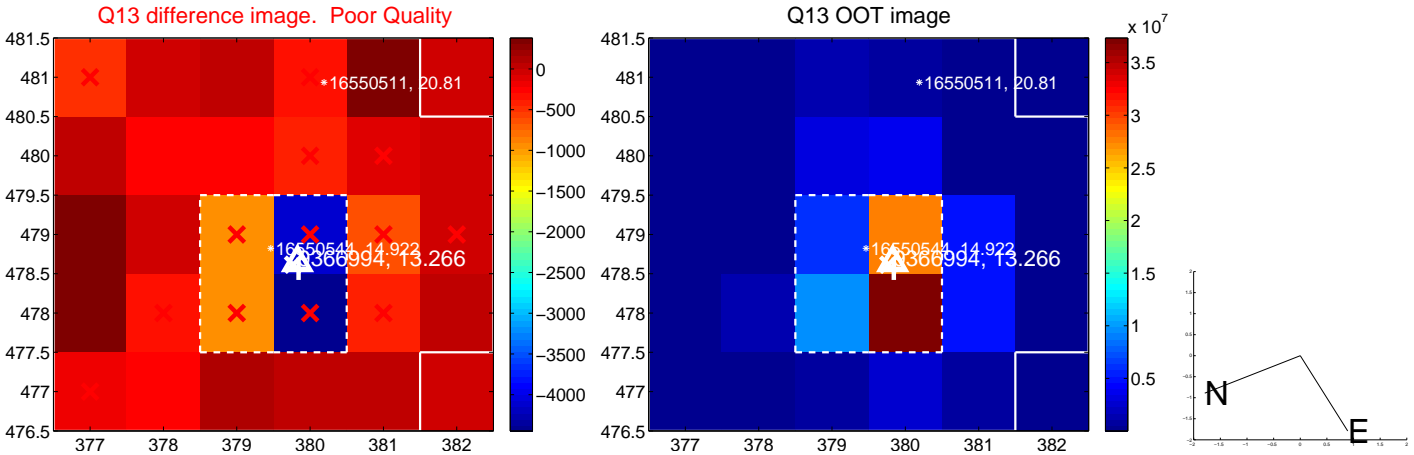
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

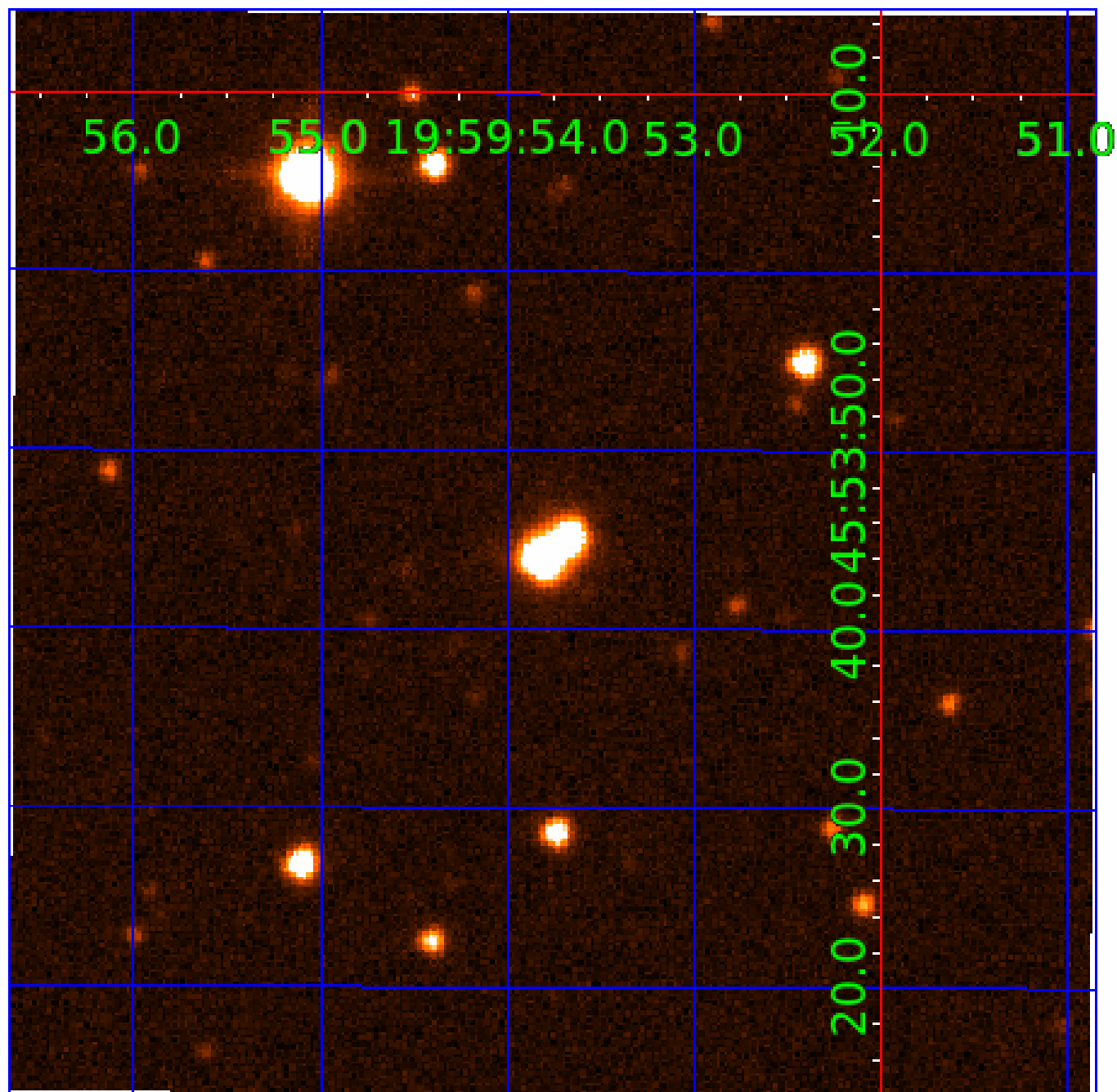


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009366994

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})
009366994-01	OBS	No	1.249499	131.825981	123.6	5.890	9.4	8.6	1.35	6626	2.04	5888.41
009366994-02	OBS	No	5.541403	133.123467	296.4	5.963	9.2	8.1	1.35	6626	2.67	808.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009366994-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009366994-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

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

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

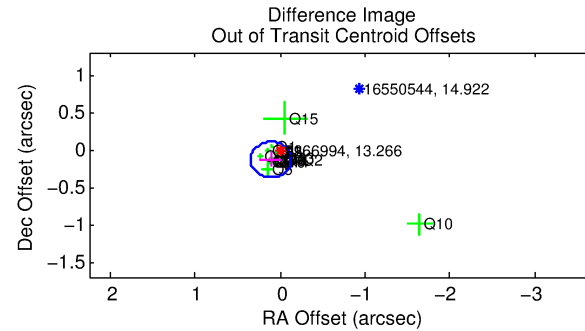
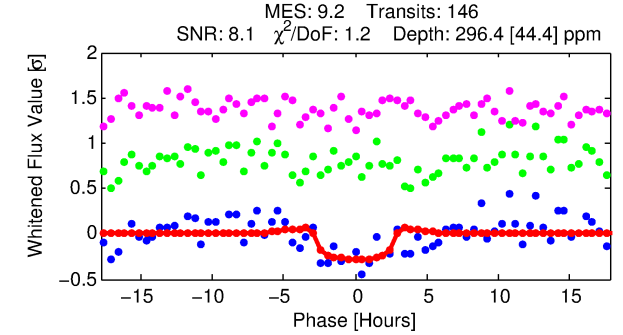
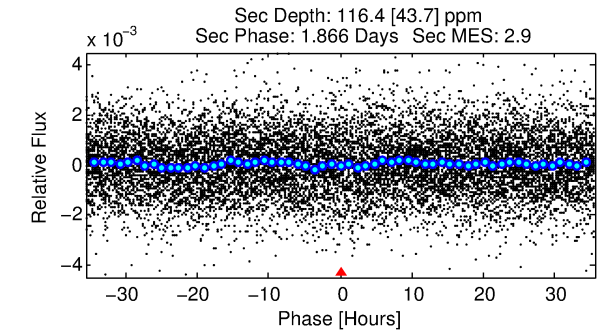
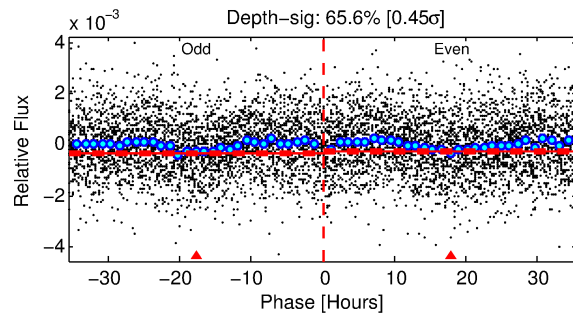
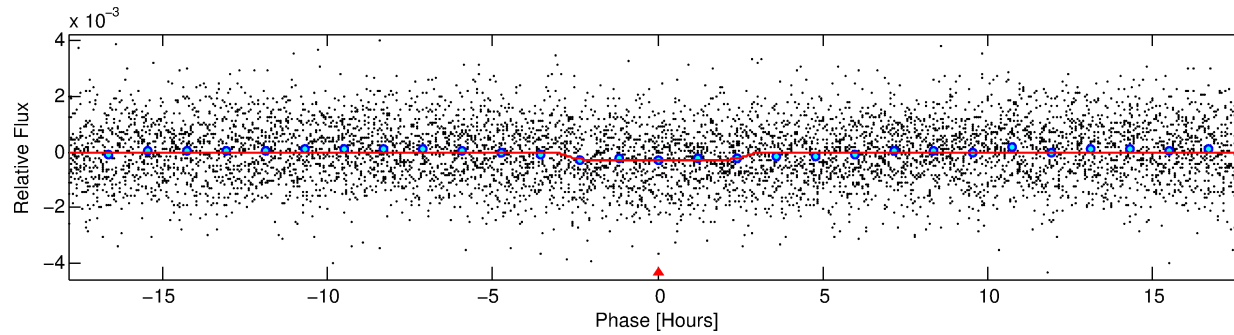
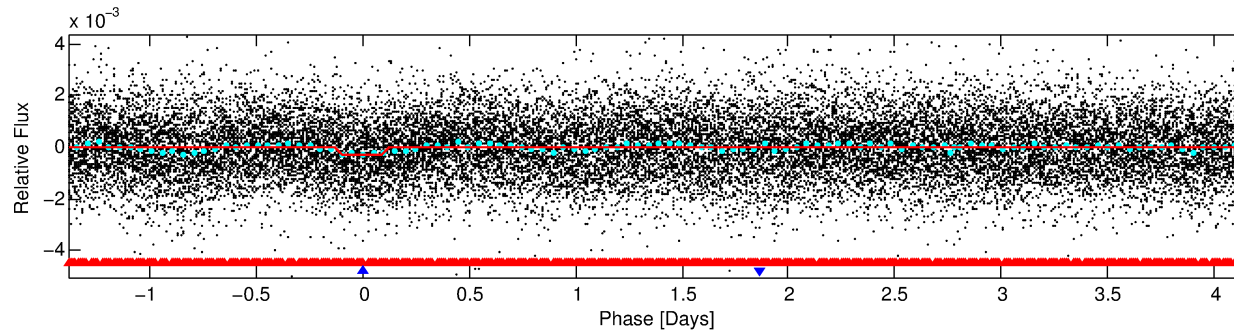
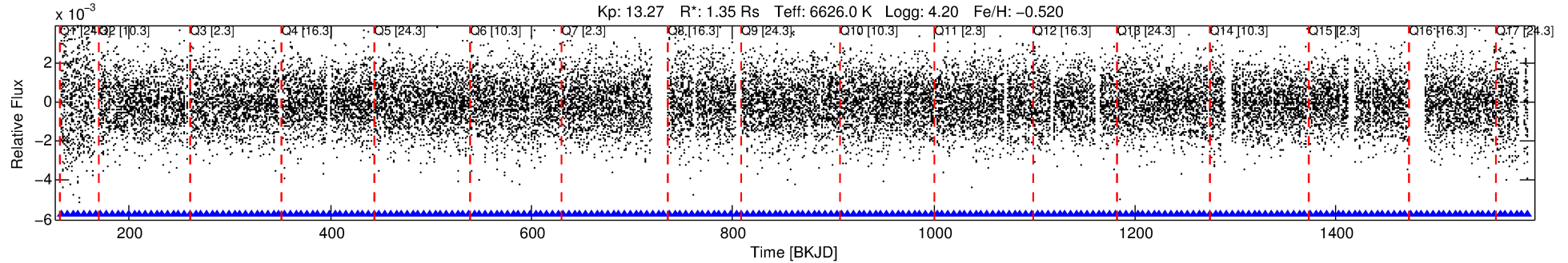
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009366994-02

No Significant Match Found

DV One-Page Summary

KIC: 9366994 Candidate: 2 of 2 Period: 5.541 d



DV Fit Results:

Period = 5.54140 [0.00009] d
Epoch = 133.1235 [0.0124] BKJD
Rp/R* = 0.0181 [0.0061]
a/R* = 3.77 [6.63]
b = 0.88 [0.50]
Seff = 808.14 [293.68]
Teq = 1360 [124] K
Rp = 2.67 [1.16] Re
a = 0.0626 [0.0146] AU
Ag = 35.08 [29.47] [1.16 σ]
Teffp = 5116 [998] K [3.74 σ]

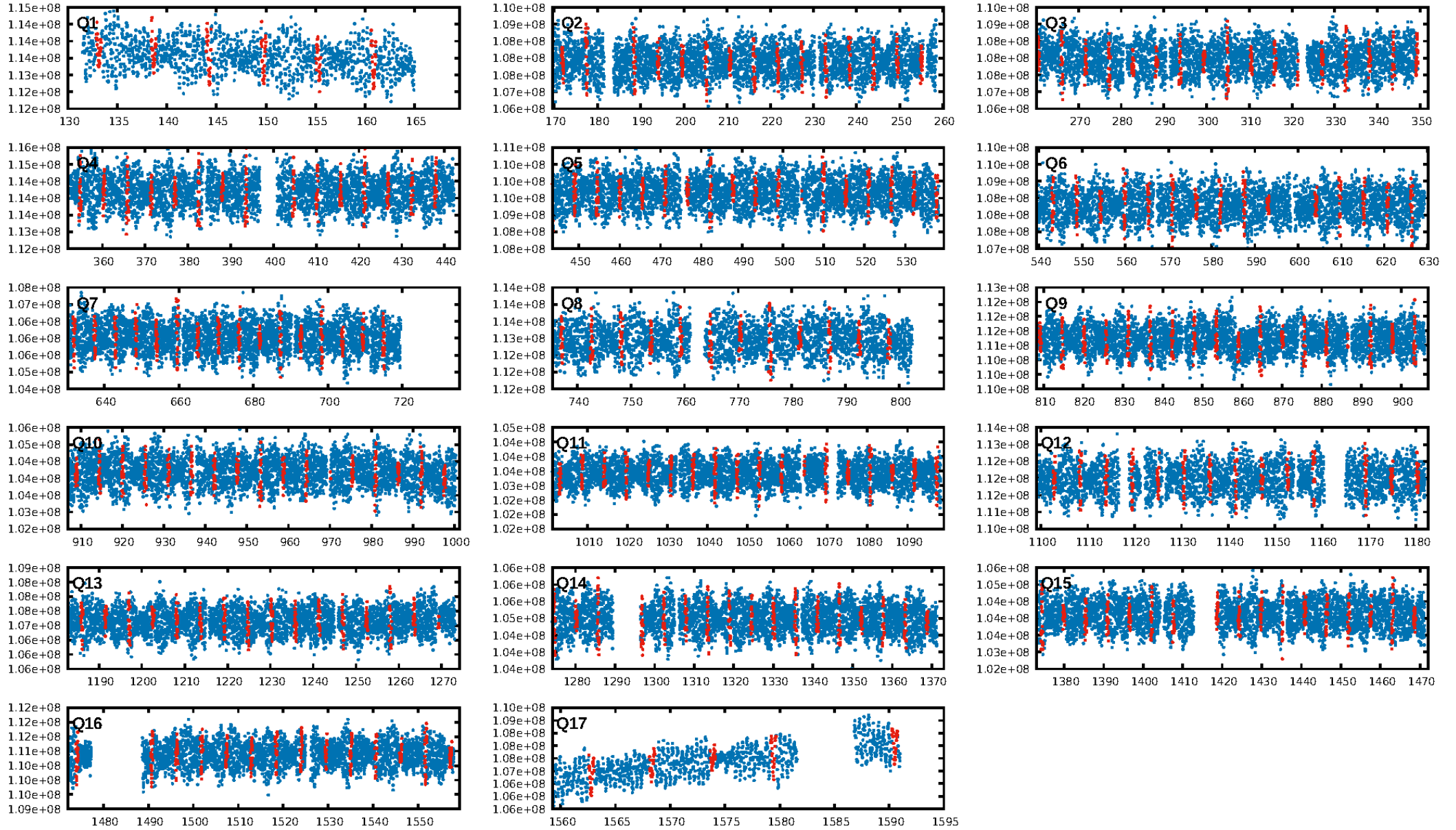
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.29 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 62.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.94e-14
RollingBand-fgt: 1.00 [138/138]
GhostDiagnostic-chr: -1.11
Centroid-sig: 0.5%
Centroid-so: 0.832 arcsec [3.77 σ]
OotOffset-rm: 0.173 arcsec [2.17 σ]
KicOffset-rm: 0.426 arcsec [4.71 σ]
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]

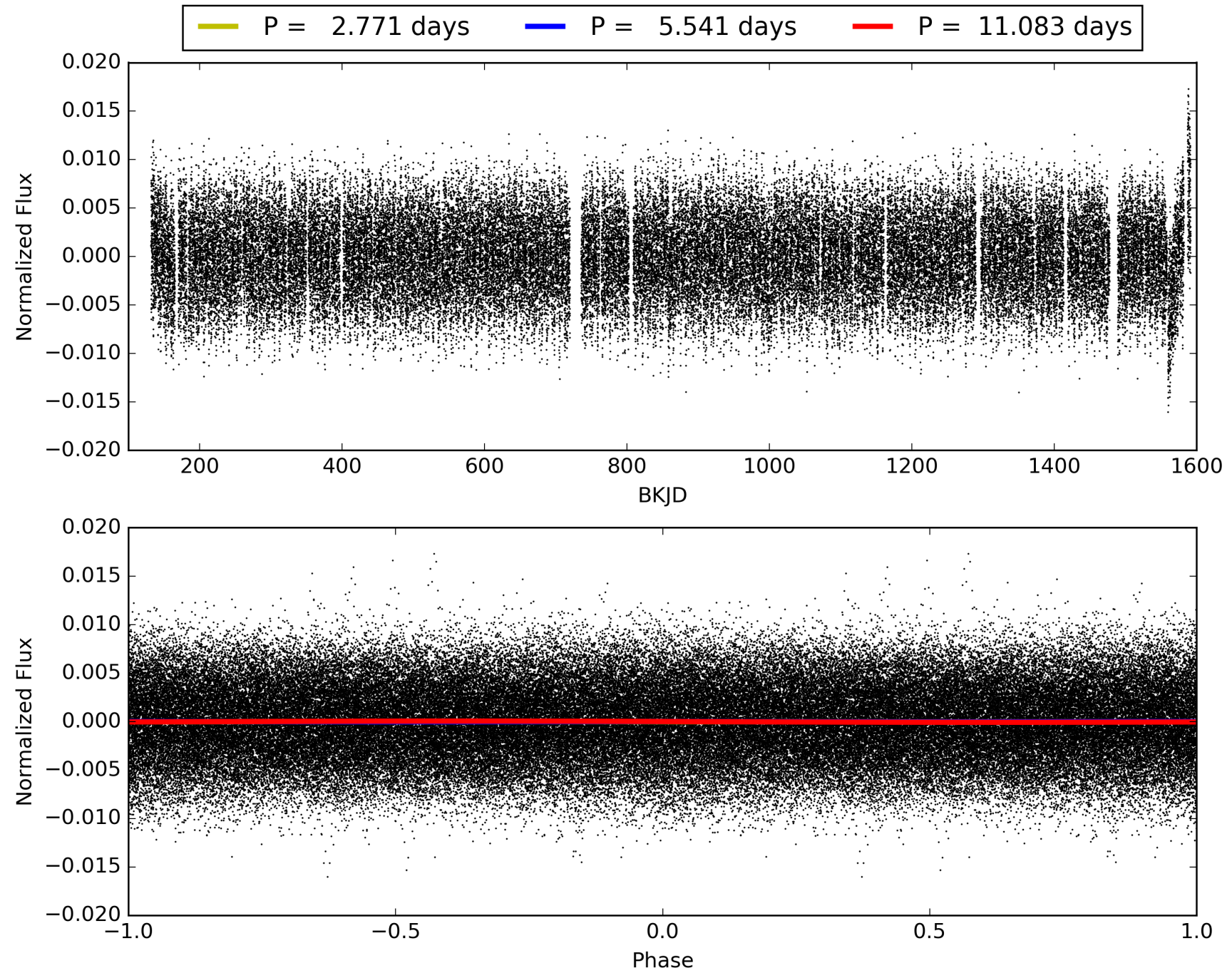
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:40:01 Z

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

TCE 009366994-02, PDC Light Curves

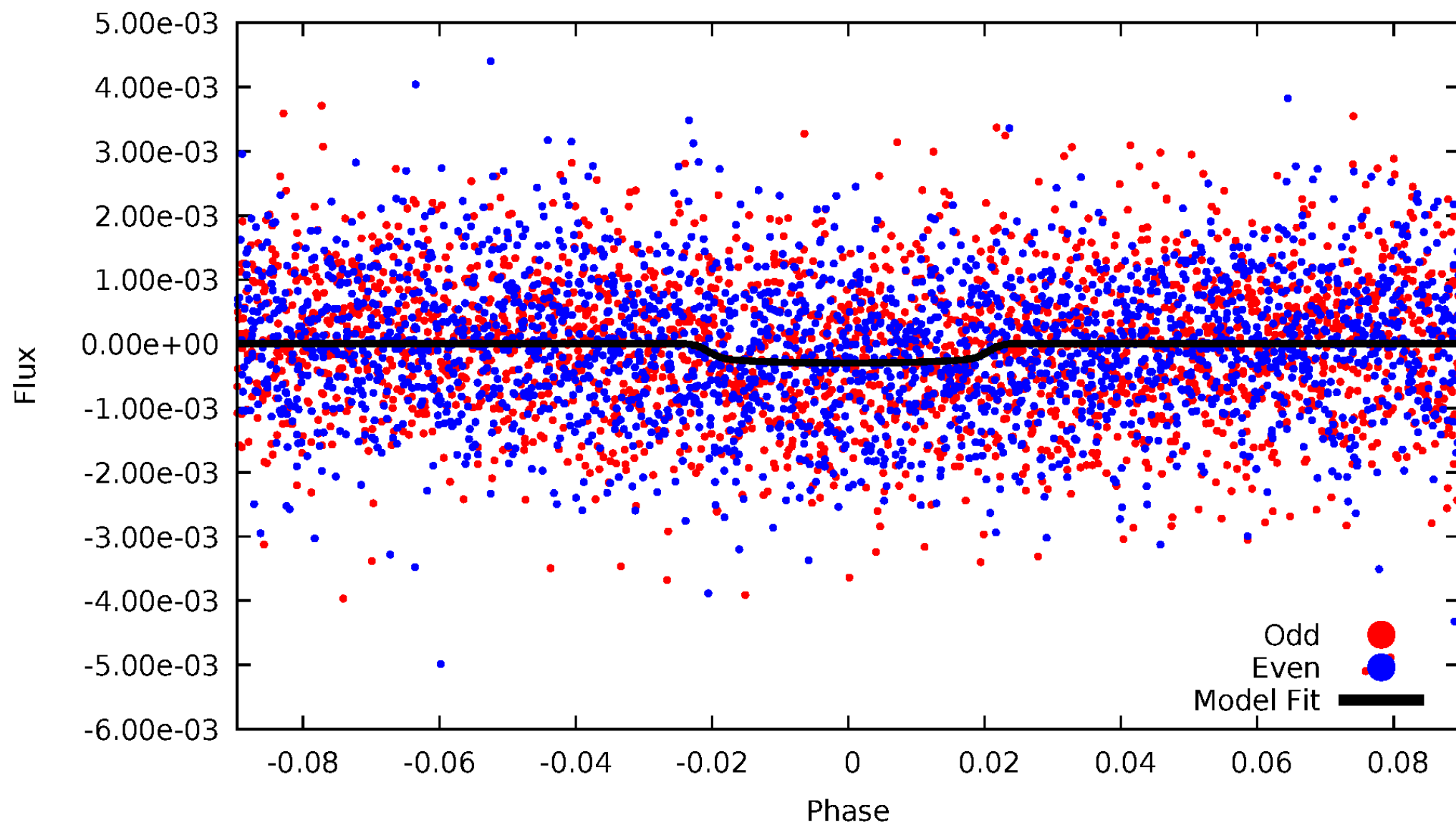


TCE 009366994-02



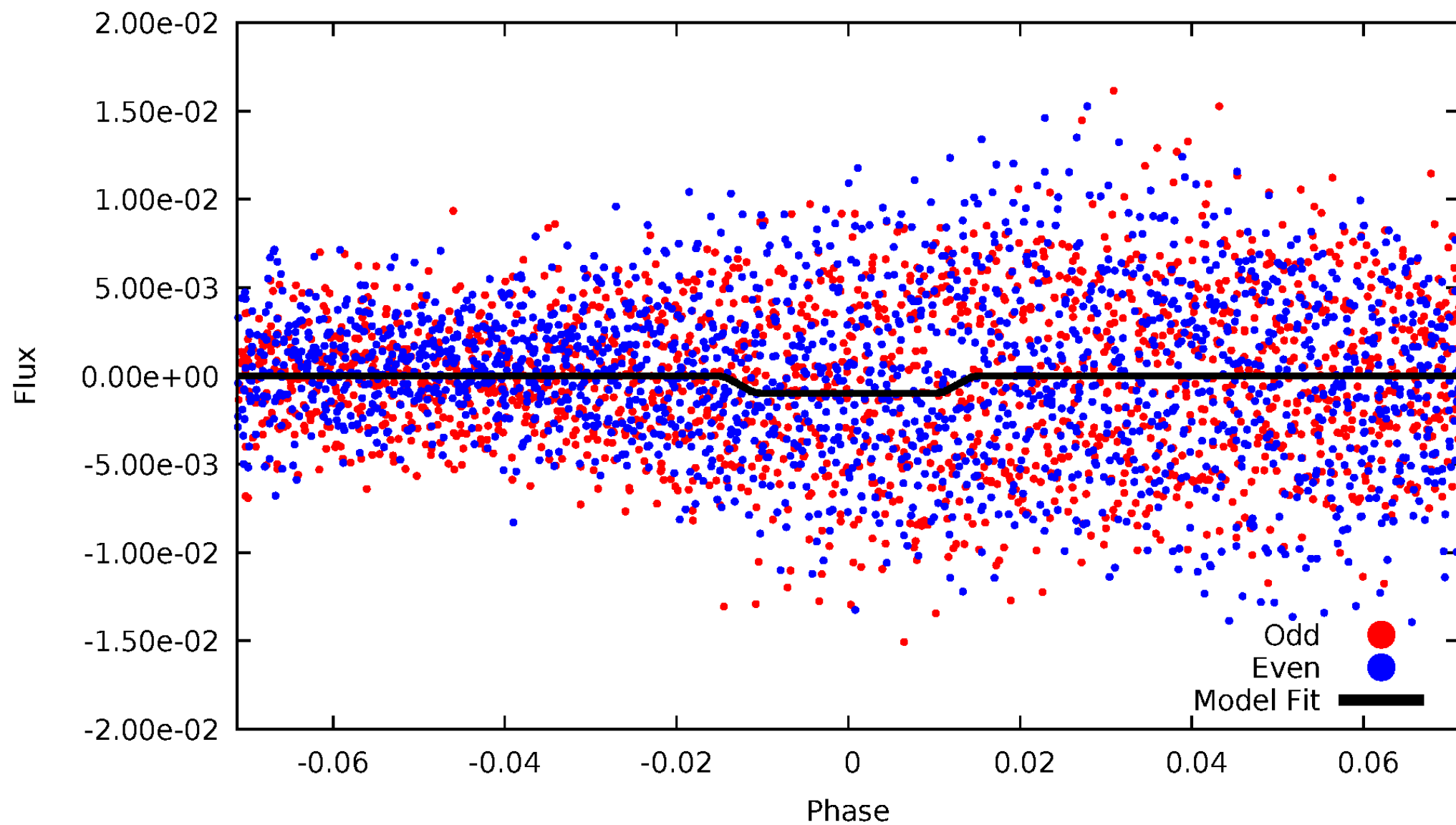
DV Odd/Even

TCE 009366994-02



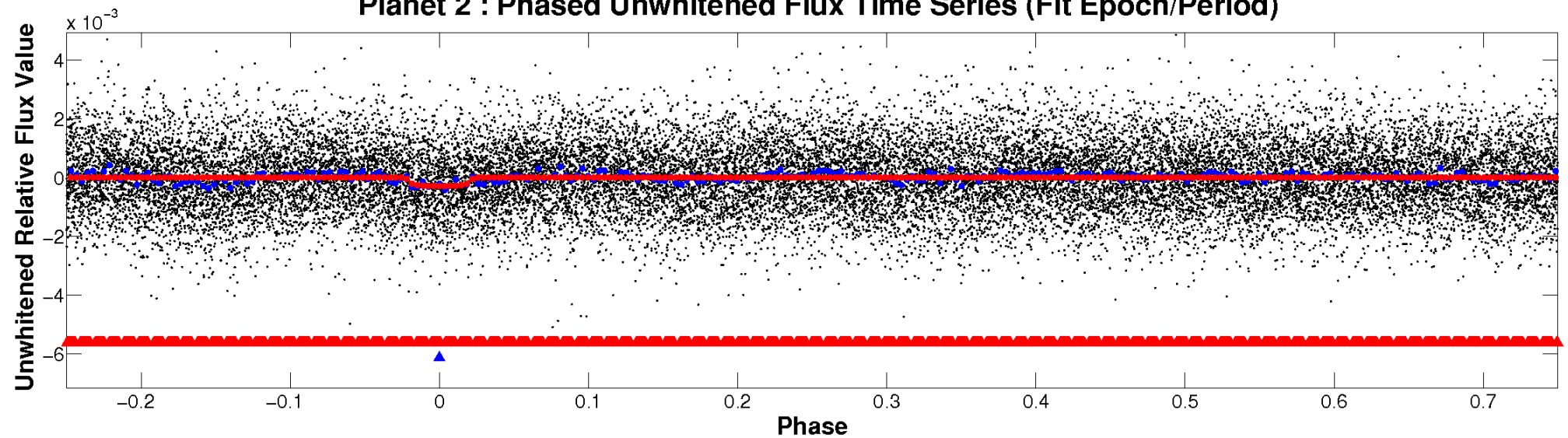
ALT Odd/Even

TCE 009366994-02

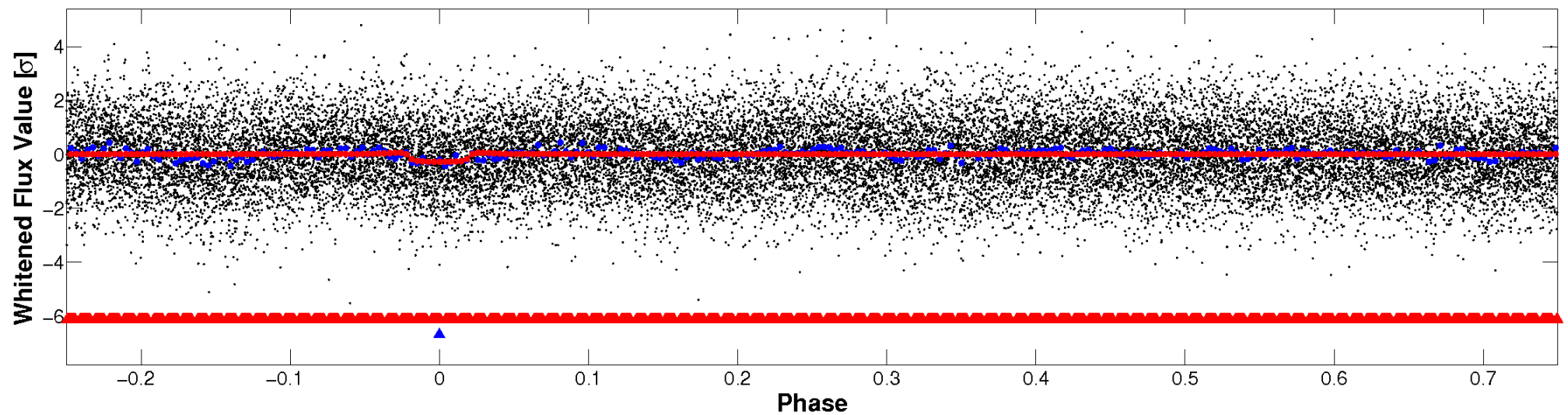


Non-Whitened Vs. Whitened Light Curve

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

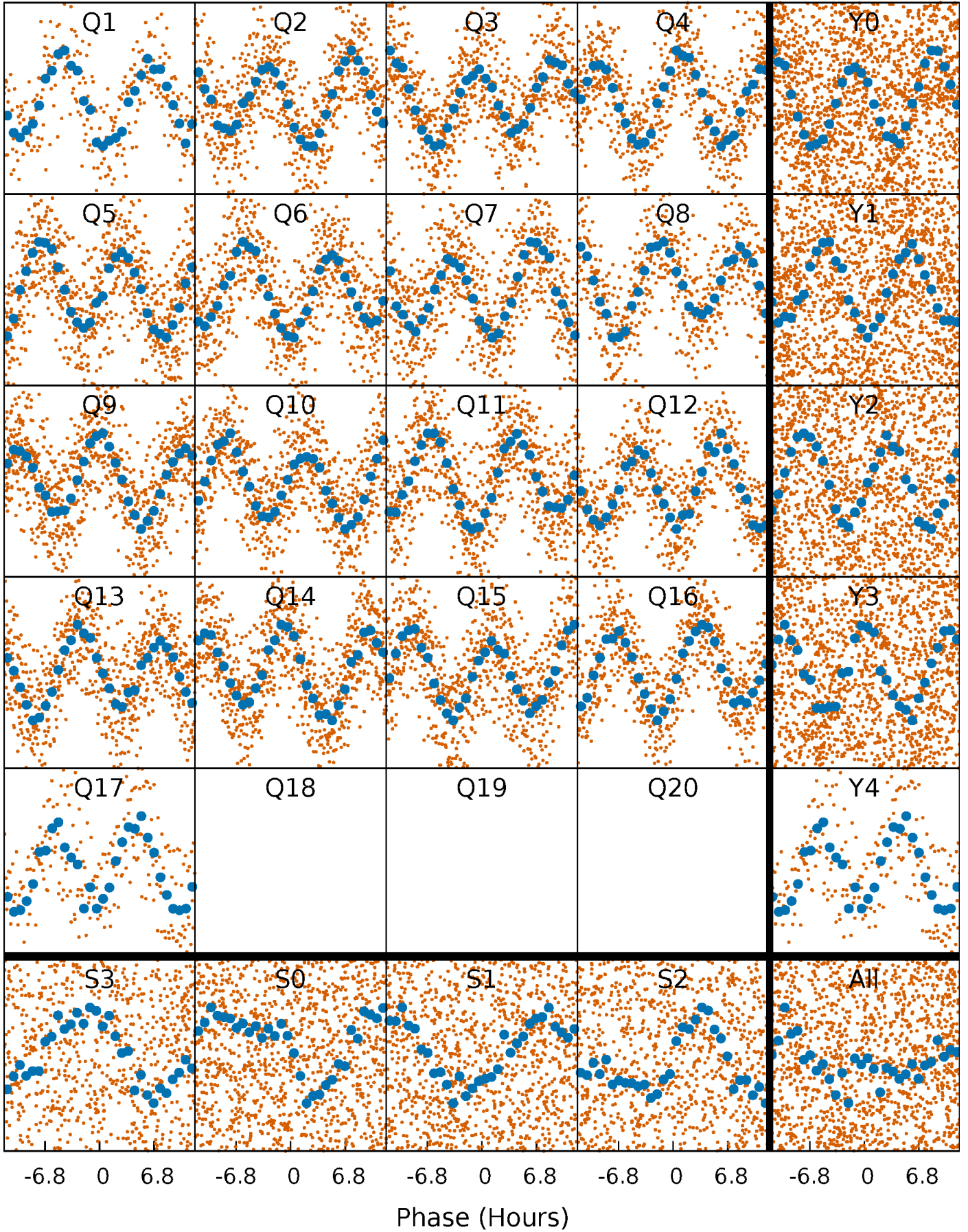


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



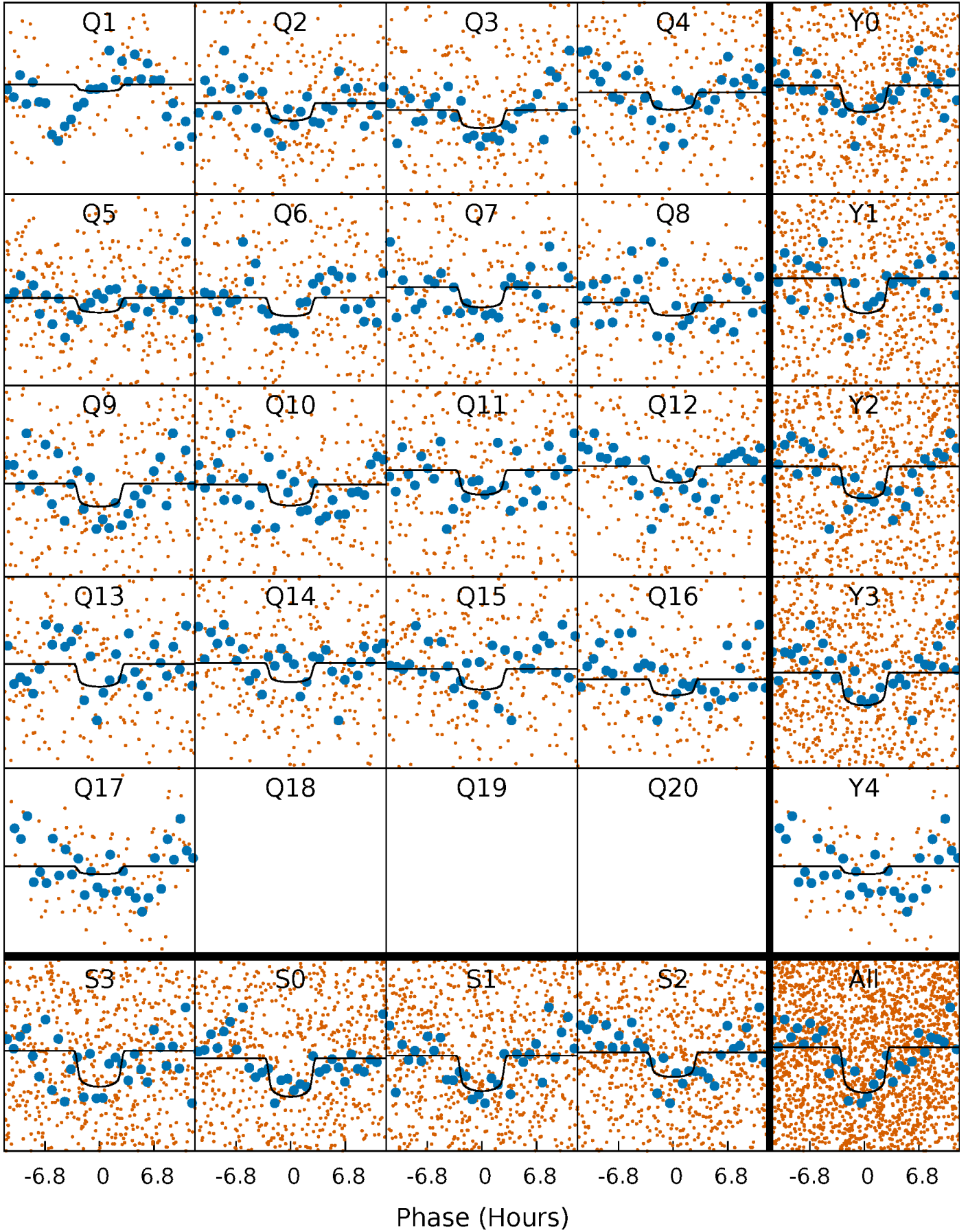
PDC Quarter-Phased Transit Curves

TCE 009366994-02 P= 5.541403 Days $T_0=133.123467$ (BKJD)



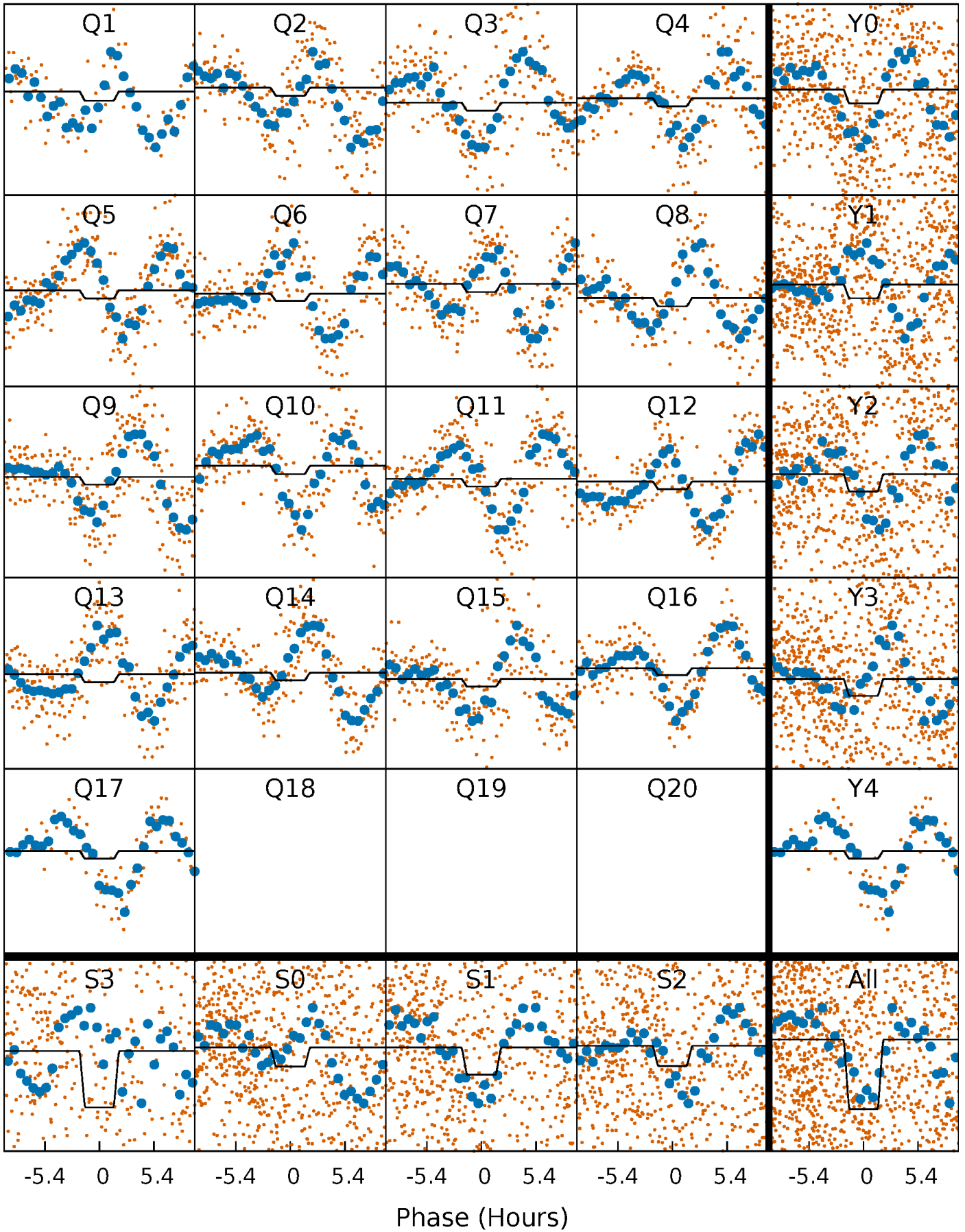
DV Quarter-Phased Transit Curves

TCE 009366994-02 P= 5.541403 Days $T_0=133.123467$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

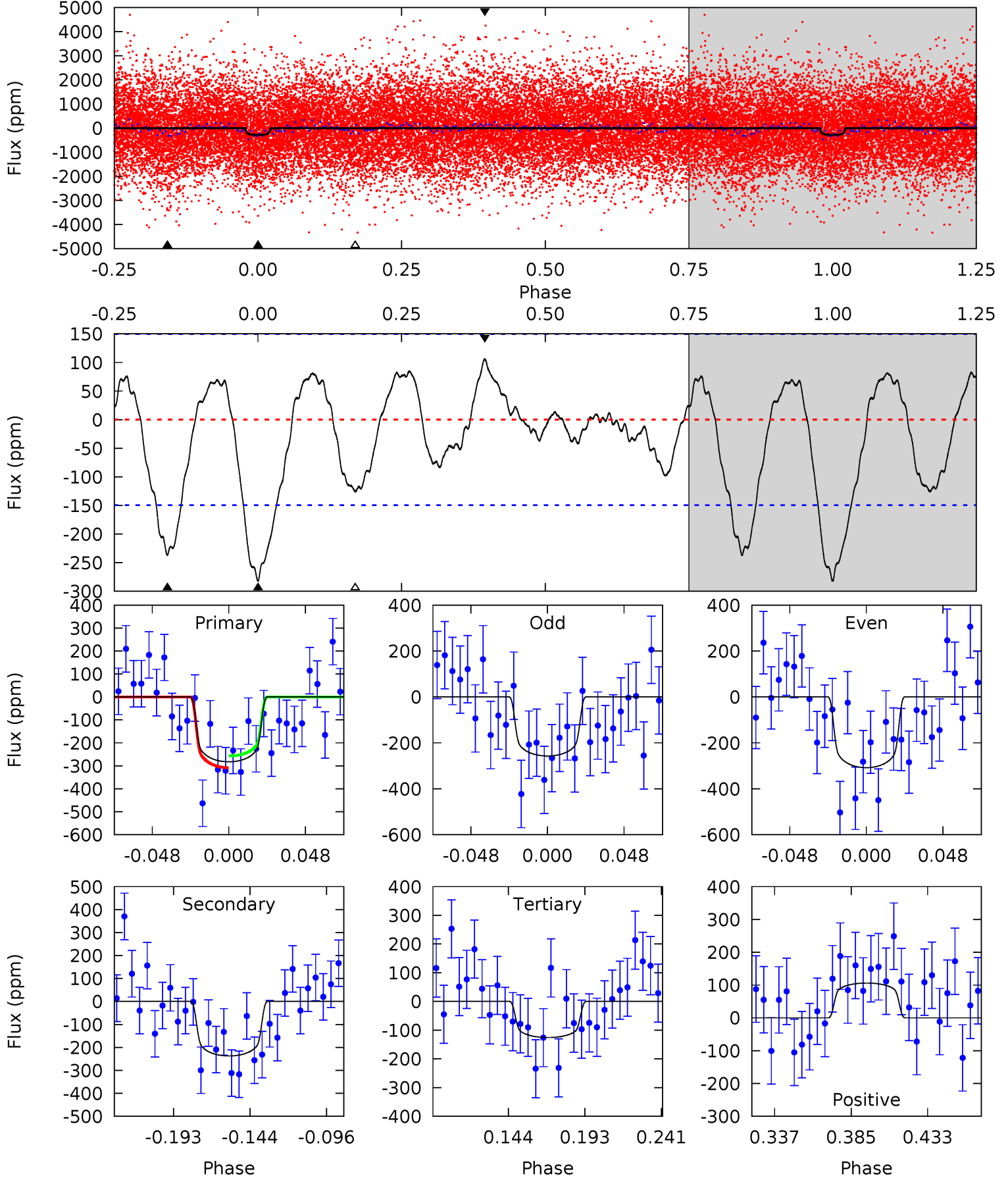
TCE 009366994-02 $P = 5.541977$ Days $T_0 = 132.898829$ (BKJD)



DV Model-Shift Uniqueness Test

009366994-02, P = 5.541403 Days, E = 127.582064 Days

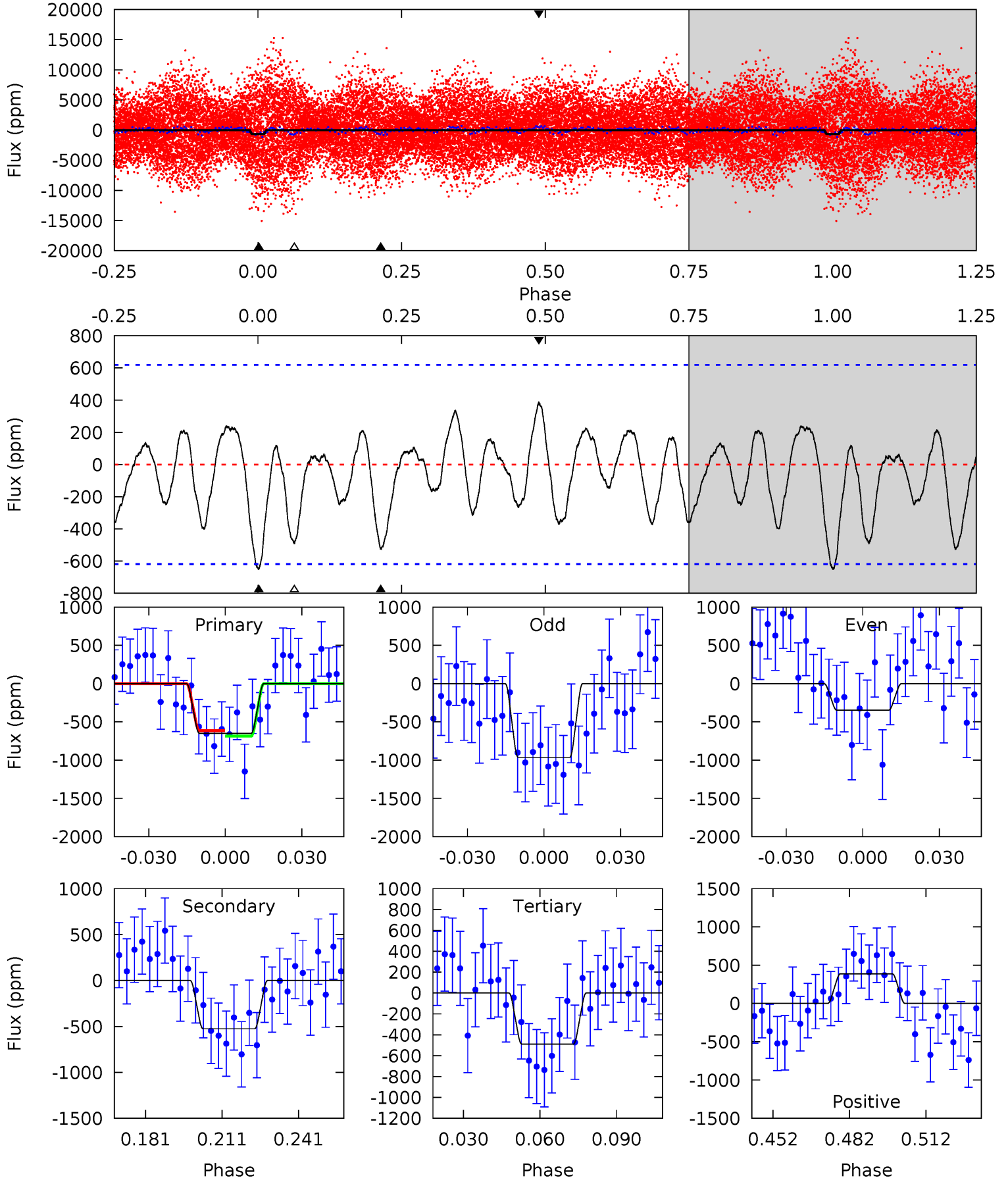
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.91	7.48	3.96	3.35	4.72	1.98	1.72	4.94	5.56	3.52	4.14	0.81	0.93	0.27	0.80



Alt Model-Shift Uniqueness Test

009366994-02, P = 5.541977 Days, E = 127.356852 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.06	4.08	3.80	3.01	4.81	2.17	1.45	1.25	2.04	0.28	1.07	2.37	1.57	0.37	0.27



Stellar Parameters For KIC 009366994

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6626^{+178}_{-218}	$4.202^{+0.185}_{-0.167}$	$-0.520^{+0.250}_{-0.300}$	$1.354^{+0.375}_{-0.306}$	$1.063^{+0.163}_{-0.119}$	$0.604^{+0.650}_{-0.271}$
	+3%/-3%	+4%/-4%	+48%/-58%	+28%/-23%	+15%/-11%	+108%/-45%
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 009366994-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-237 ± 32	$2.60^{+1.03}_{-0.88}$	1893^{+135}_{-126}	6132^{+1516}_{-799}	74^{+98}_{-34}
Alt.	-526 ± 129	$4.63^{+1.12}_{-1.09}$	1898^{+135}_{-128}	5665^{+760}_{-539}	53^{+43}_{-22}

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 $A_{obs} \gg 1.0$

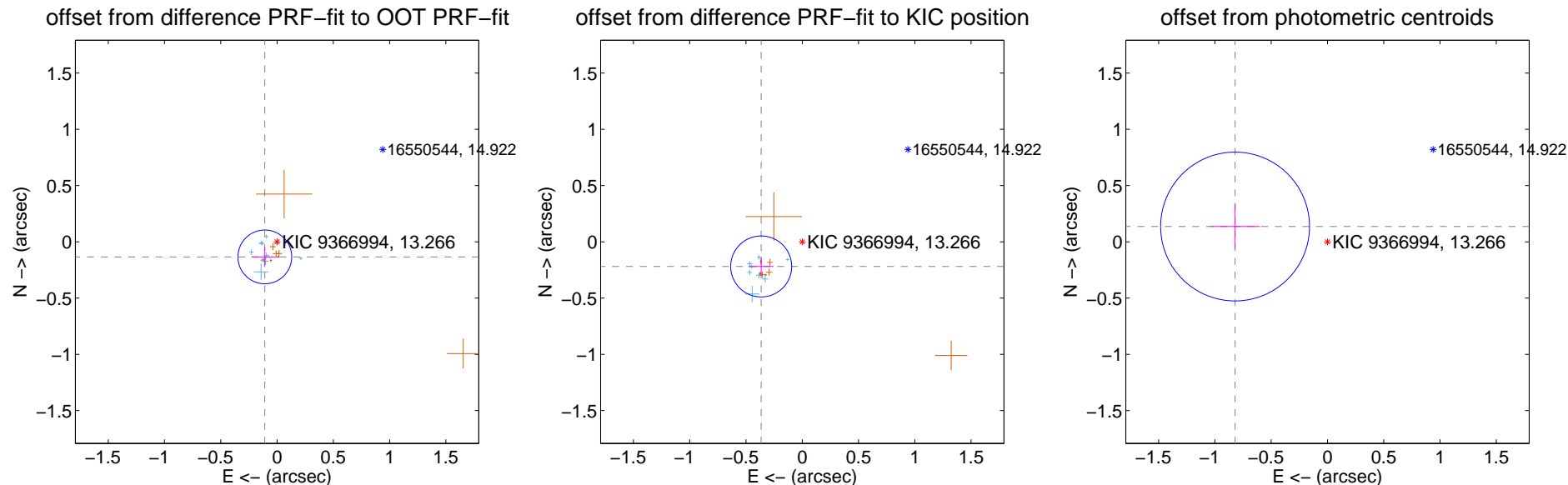
DV Centroid Data

Supplemental centroid analysis for 009366994-02. Kepler magnitude: 13.27. Transit SNR 8.14

There are 9 quarters with good PRF difference image offsets

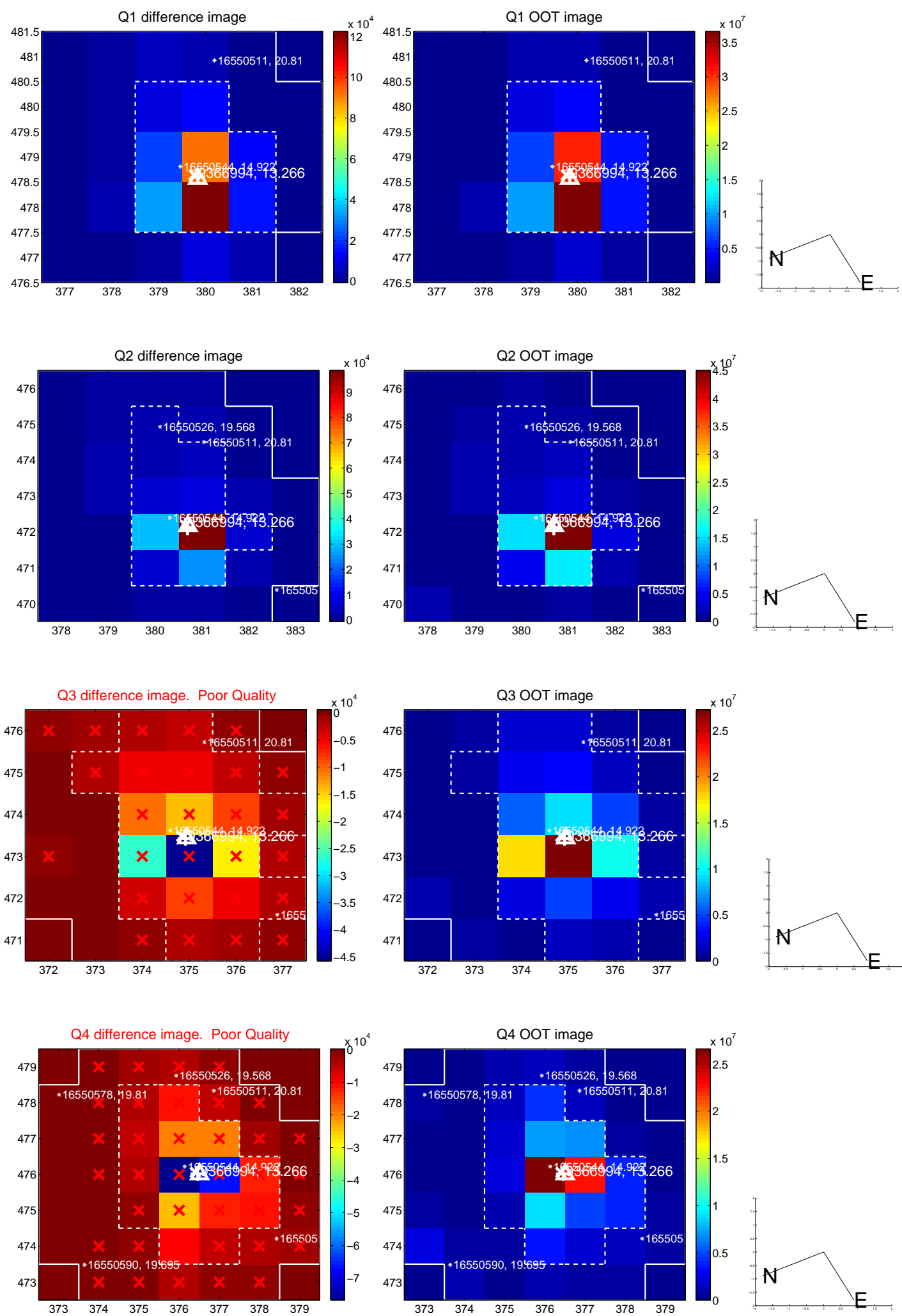
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.173 ± 0.080	2.17	0.109 ± 0.119	-0.134 ± 0.090
PRF-fit source offset from KIC position	0.426 ± 0.090	4.71	0.365 ± 0.111	-0.219 ± 0.084
photometric centroid source offset	0.83 ± 0.22	3.77	0.82 ± 0.22	0.14 ± 0.20

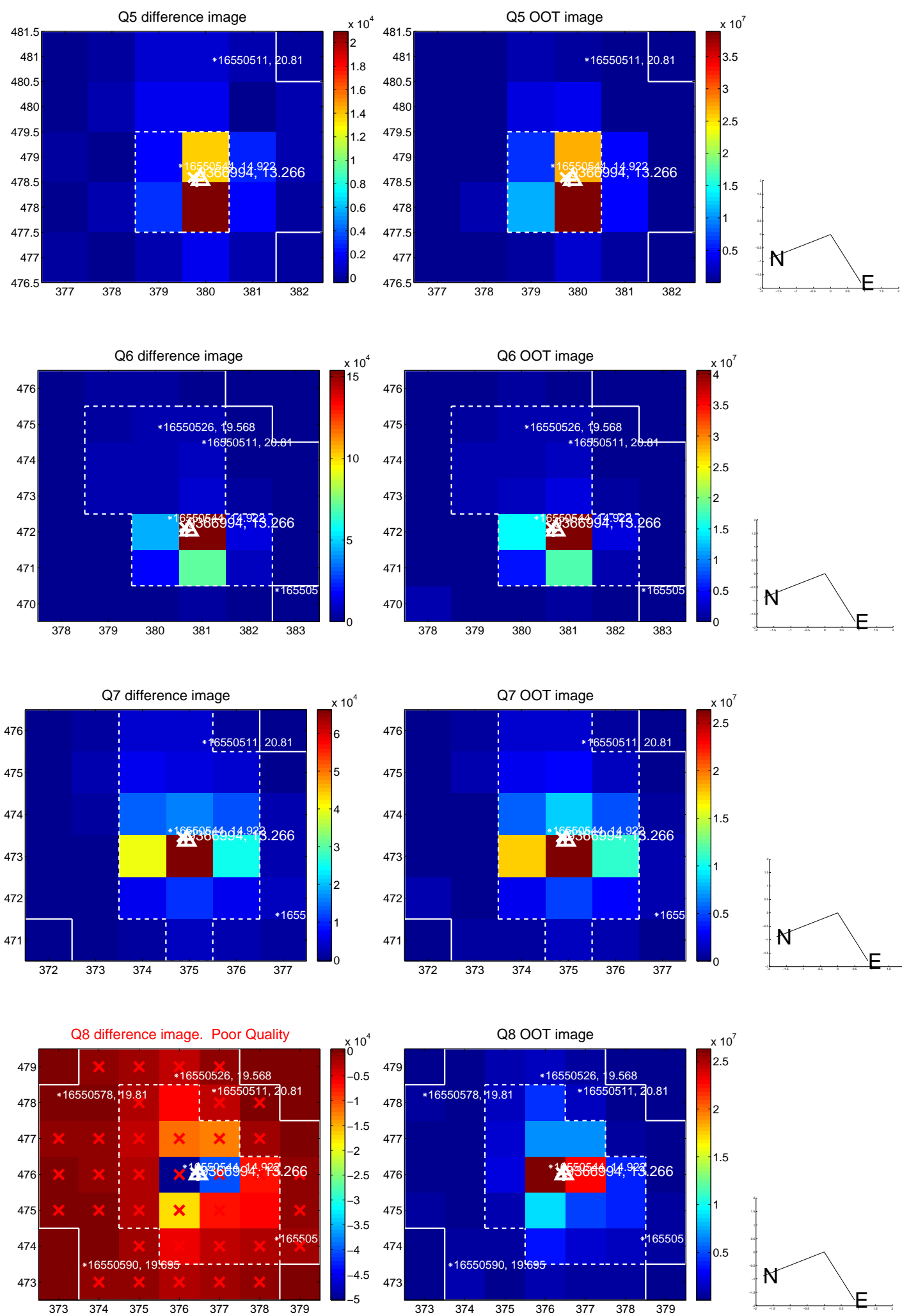


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

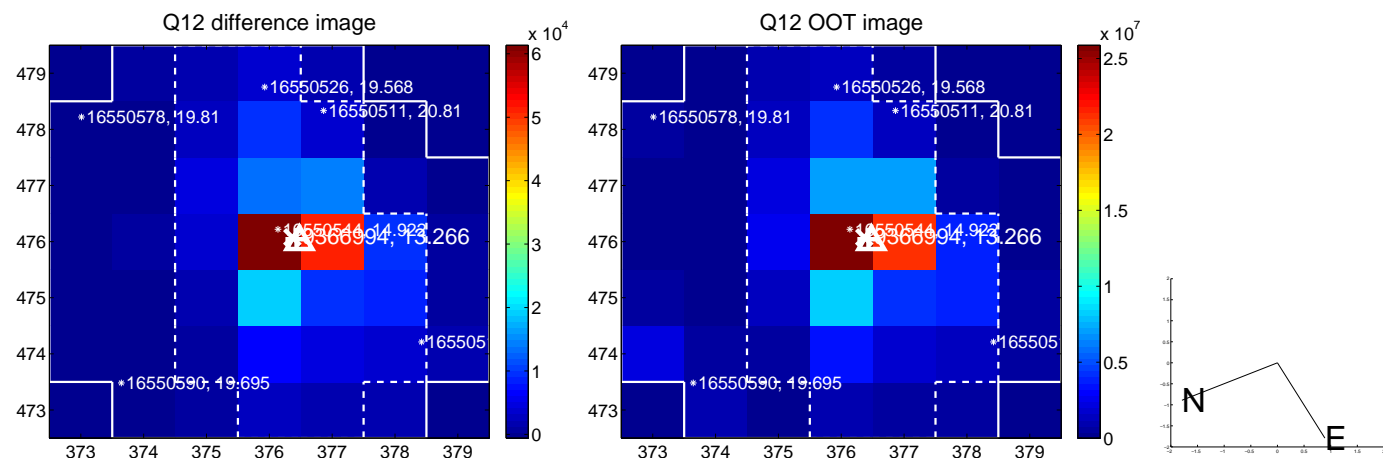
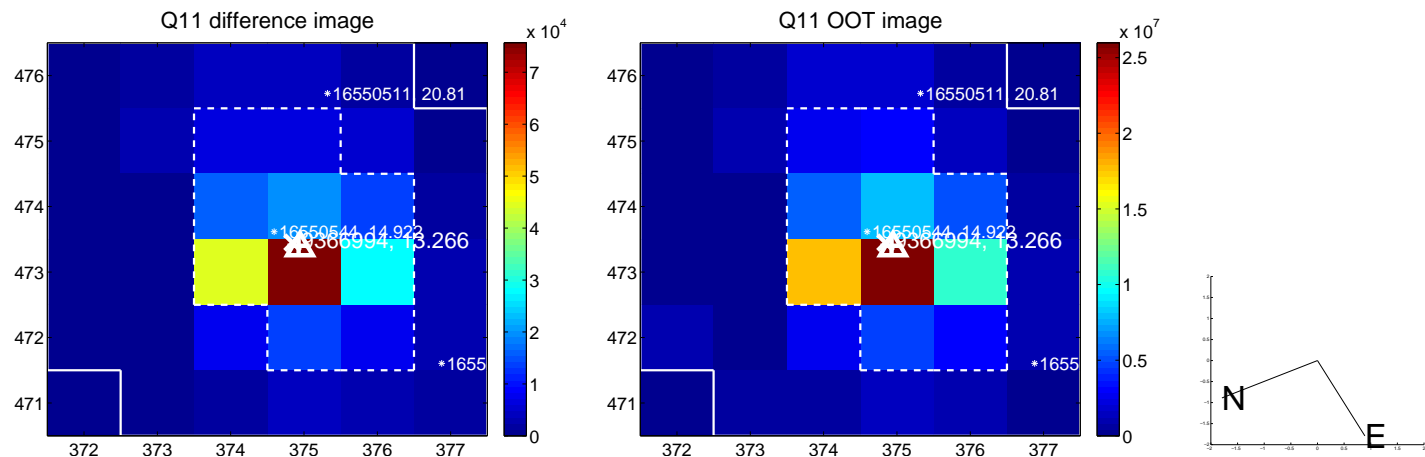
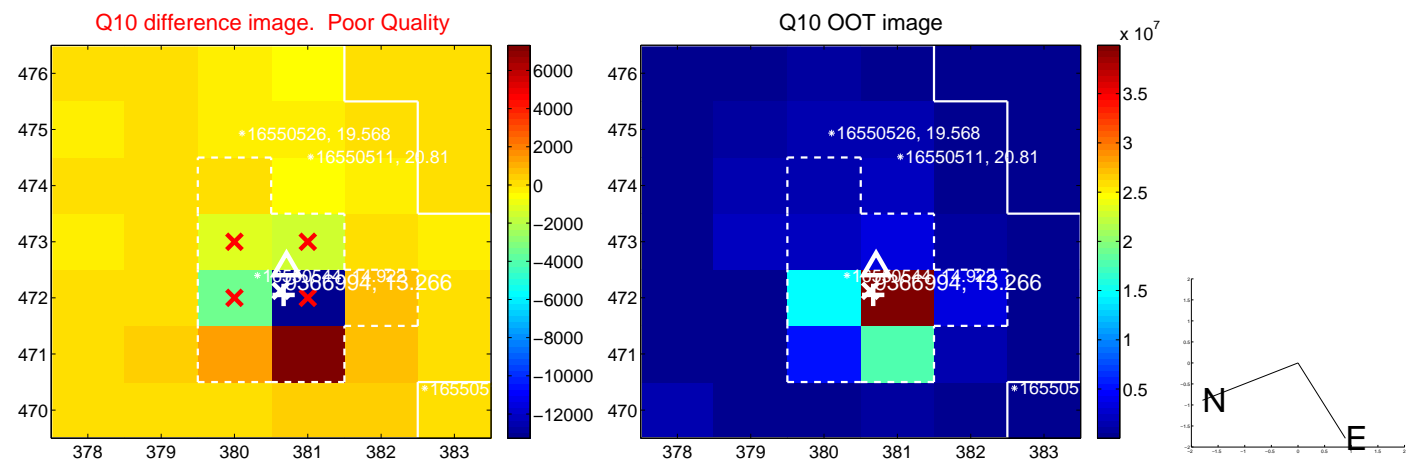
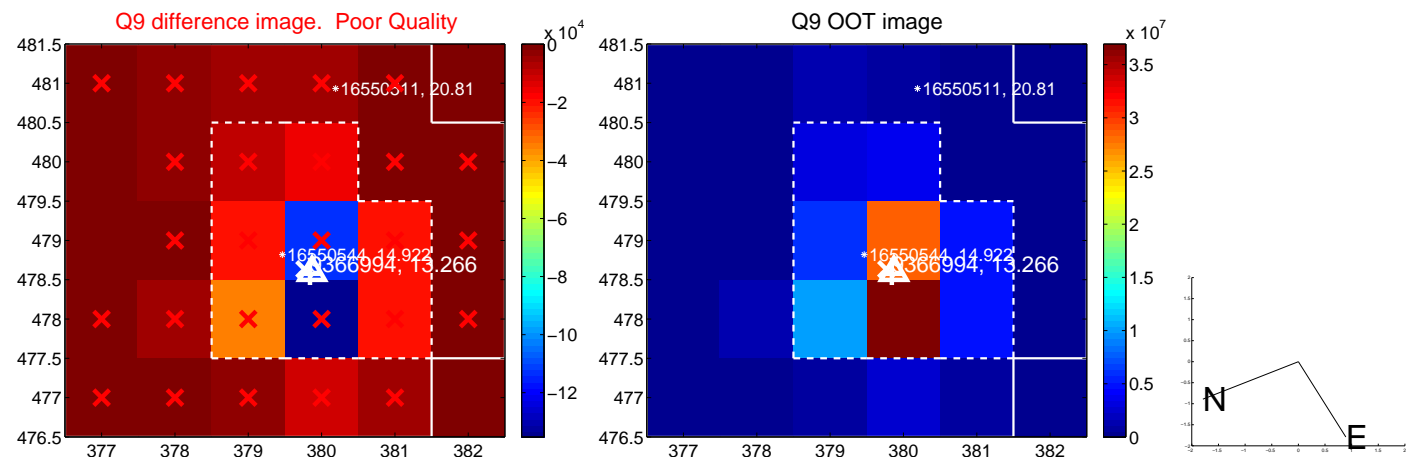
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



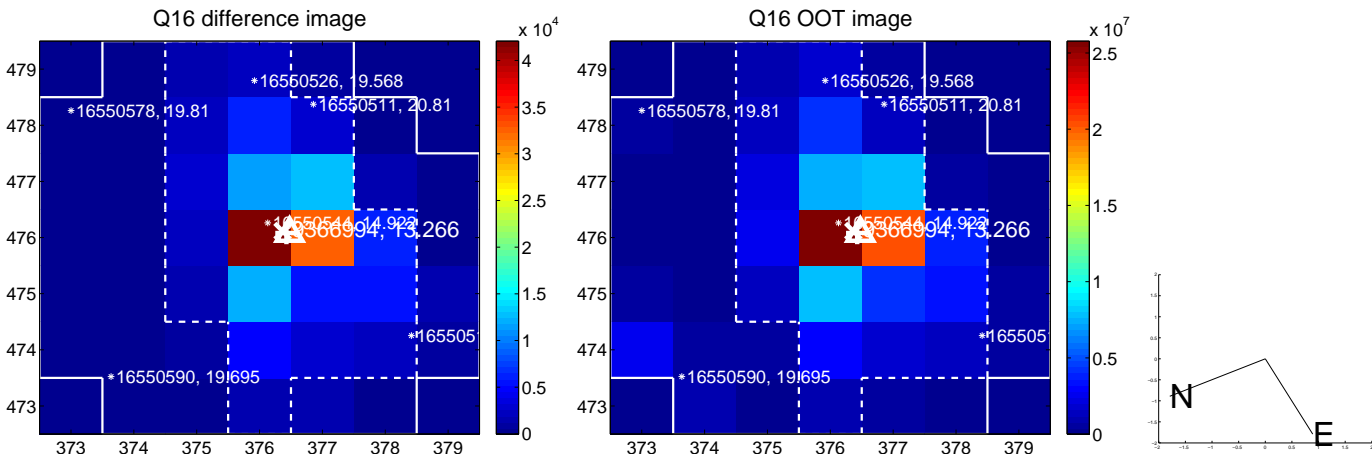
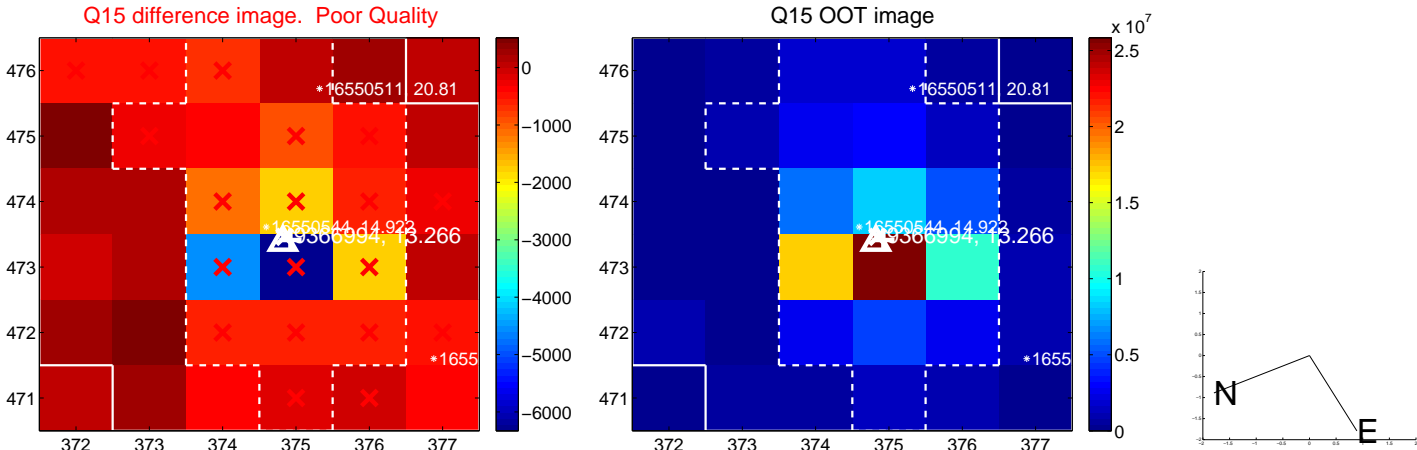
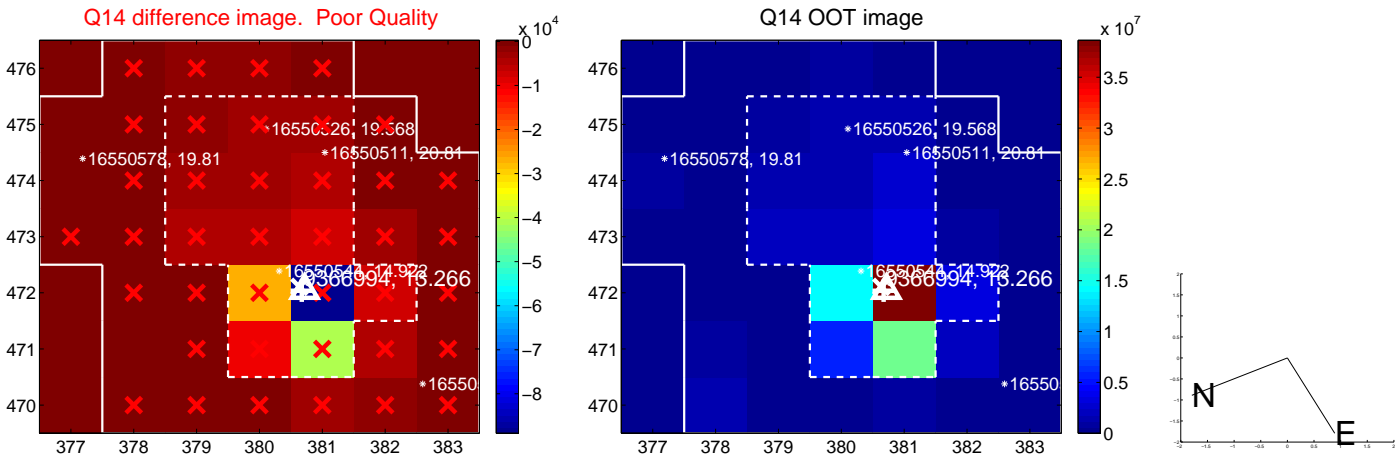
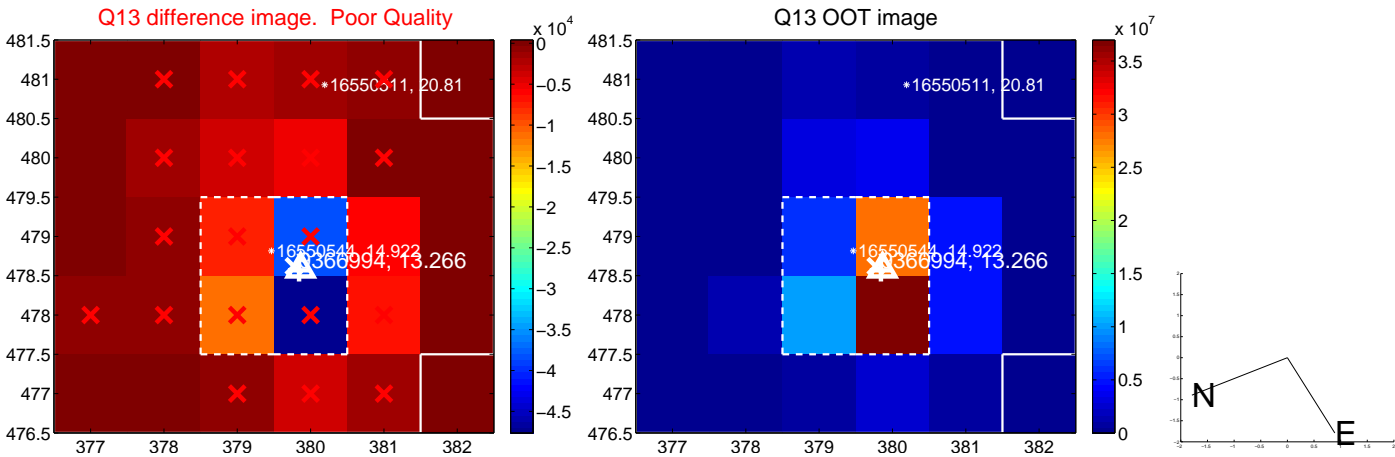
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



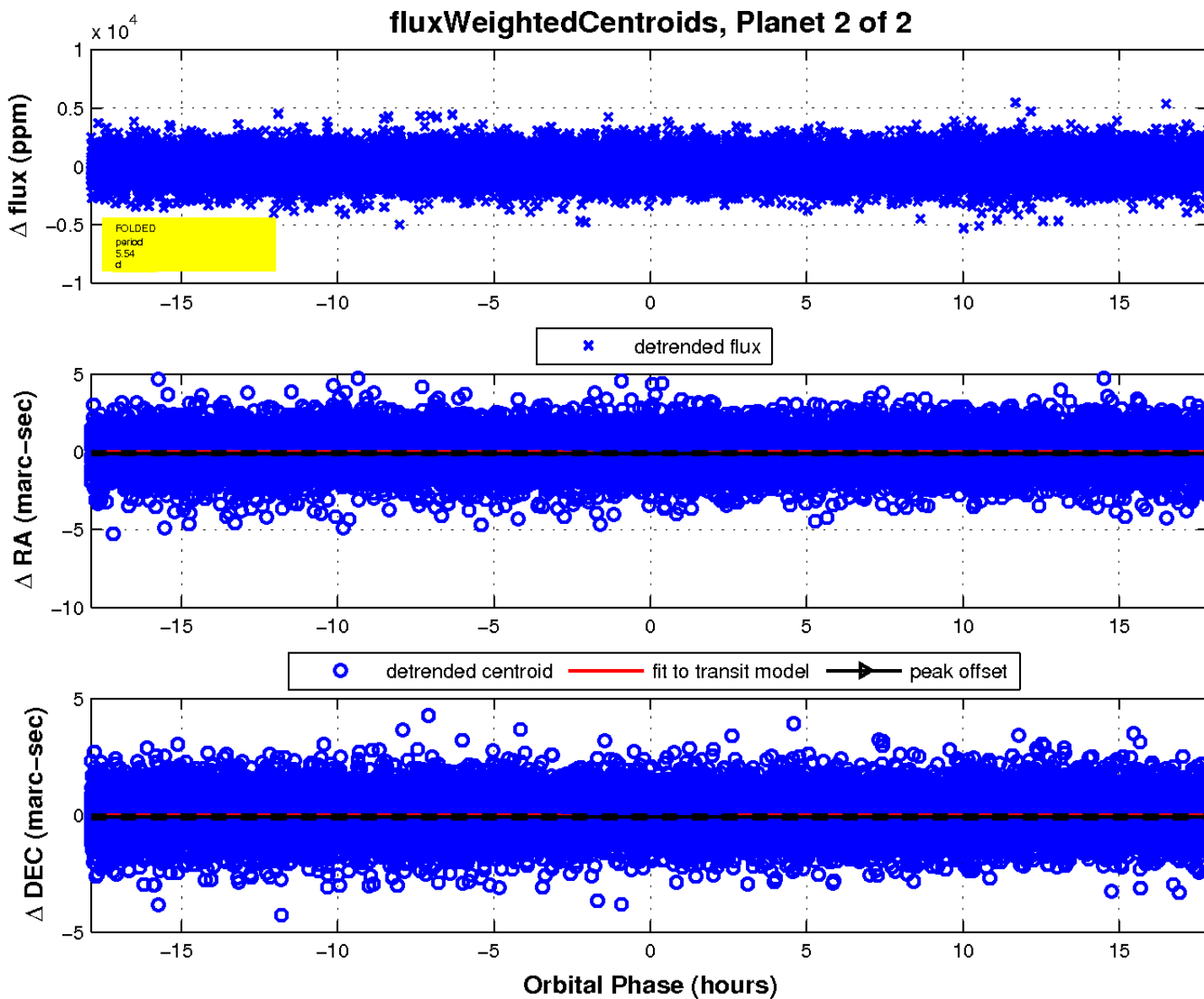
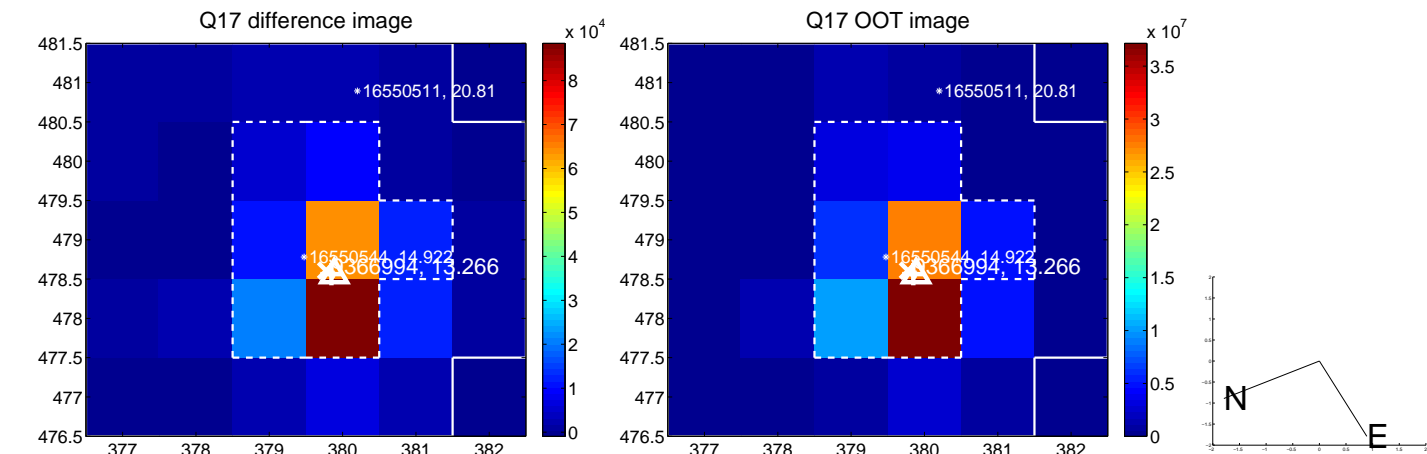
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

