

KIC 008760040

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})
008760040-01	OBS	2963.01	18.220622	141.373592	194.6	5.435	15.3	16.5	1.26	5951	2.04	90.62
008760040-02	OBS	2963.02	7.351125	133.626548	110.8	2.830	10.0	11.4	1.26	5951	1.54	303.96

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760040-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008760040-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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 008760040-01

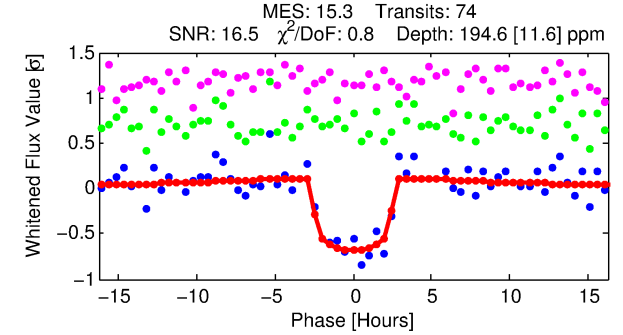
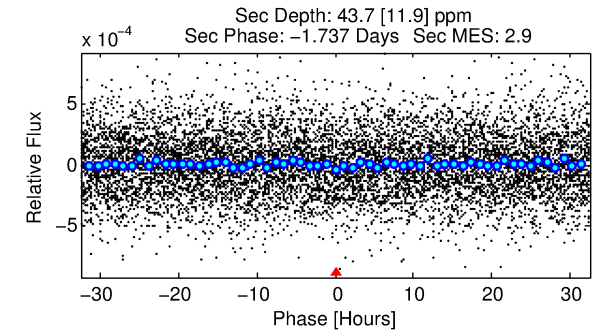
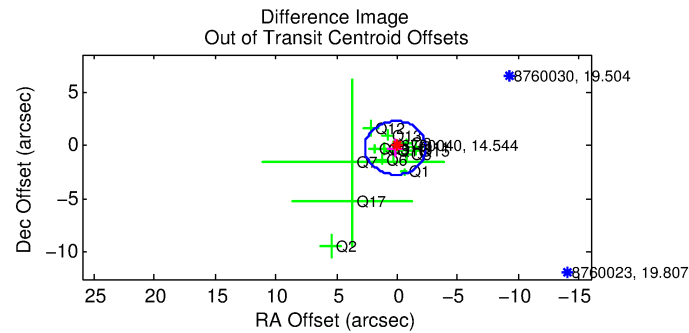
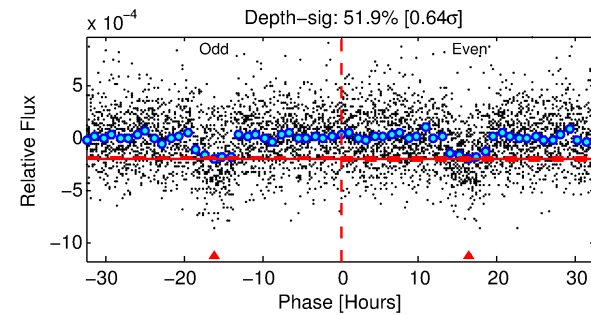
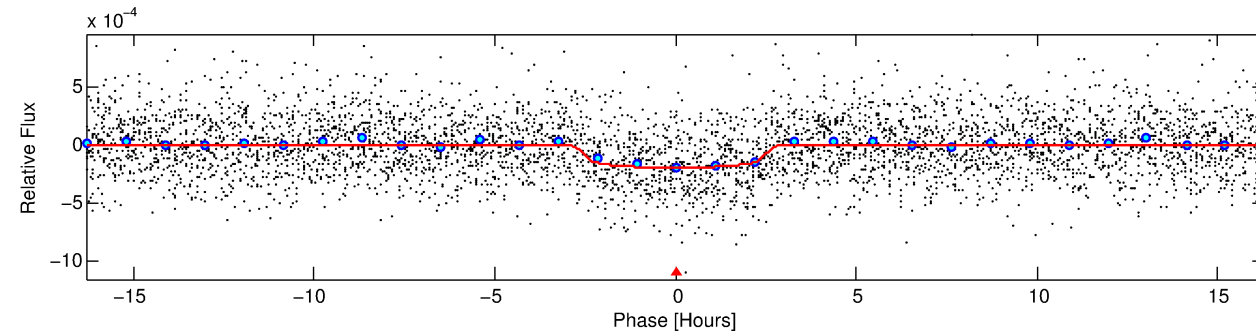
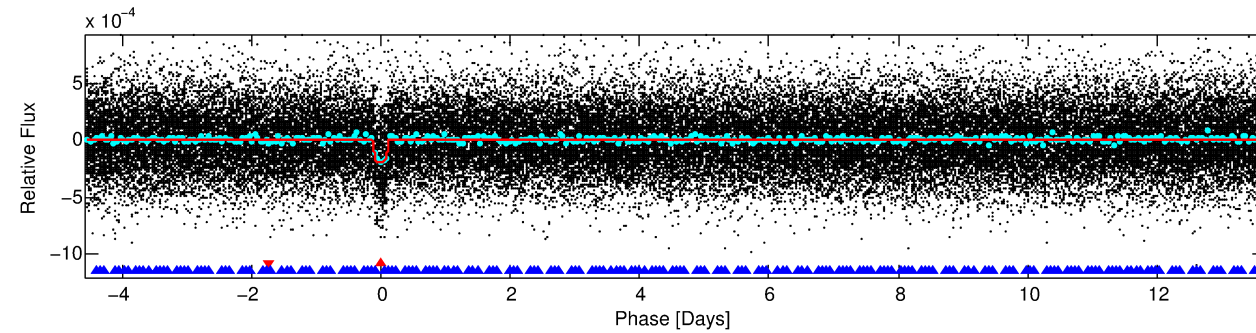
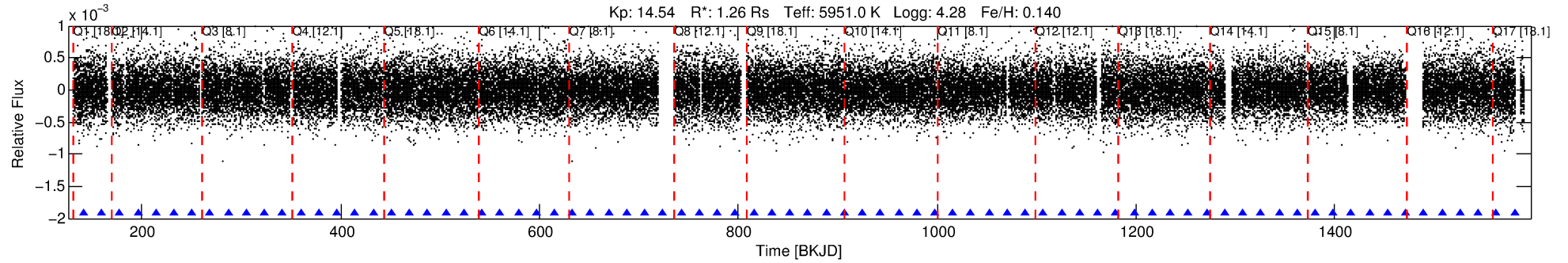
No Significant Match Found

DV One-Page Summary

KIC: 8760040 Candidate: 1 of 2 Period: 18.221 d

KOI: K02963.01 Corr: 0.989

Kp: 14.54 R*: 1.26 Rs Teff: 5951.0 K Logg: 4.28 Fe/H: 0.140



DV Fit Results:

Period = 18.22062 [0.00013] d
Epoch = 141.3736 [0.0059] BKJD
Rp/R* = 0.0148 [0.0036]
a/R* = 13.28 [15.39]
b = 0.87 [0.32]
Seff = 90.62 [20.05]
Teq = 787 [44] K
Rp = 2.04 [0.60] Re
a = 0.1405 [0.0202] AU
Ag = 114.13 [68.11] [1.66σ]
Teffp = 3976 [556] K [5.72σ]

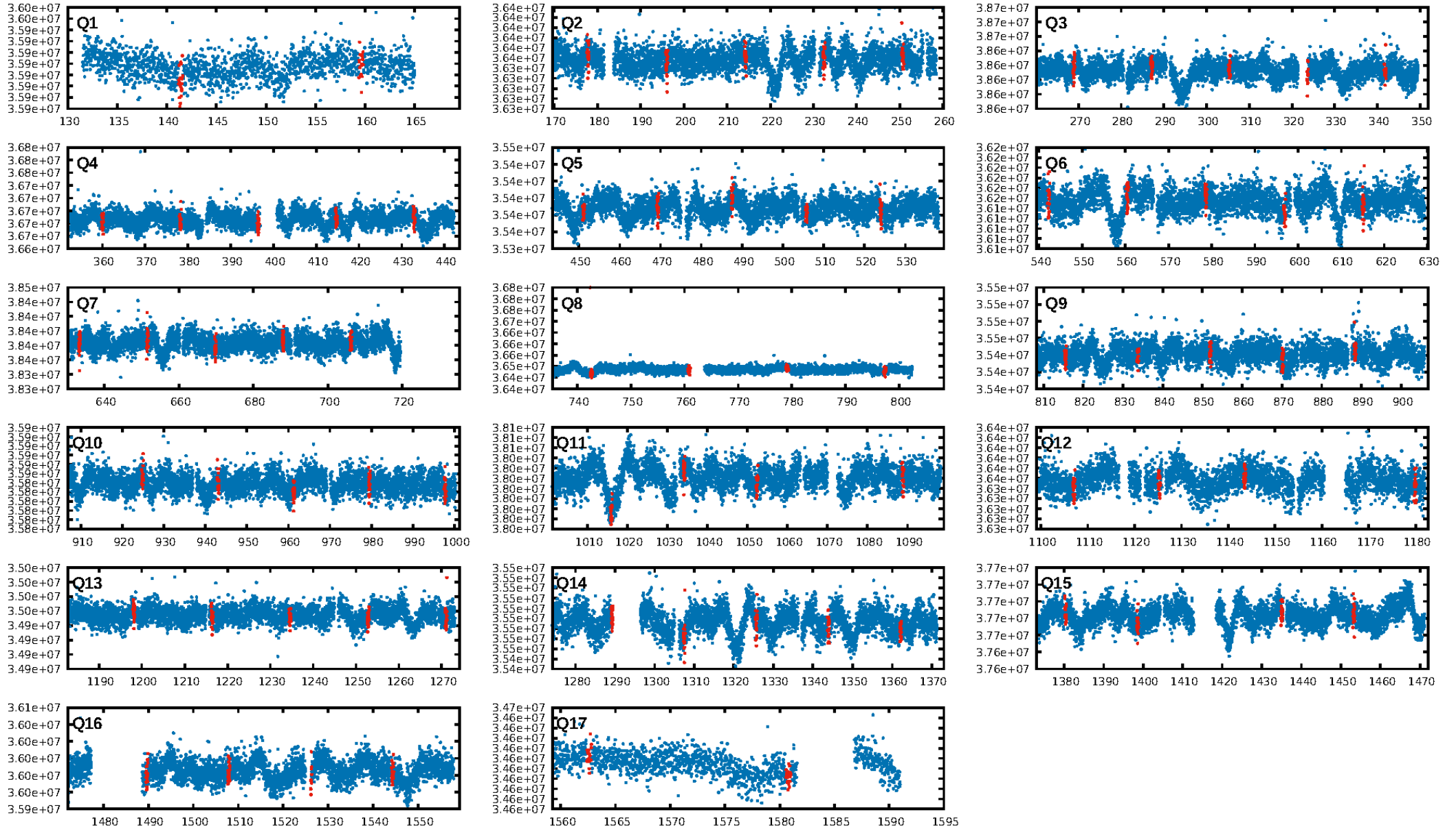
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.57σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.02e-51
RollingBand-fgt: 1.00 [70/70]
GhostDiagnostic-chr: 35.86
Centroid-sig: 0.0%
Centroid-so: 1.701 arcsec [2.08σ]
OotOffset-rm: 0.293 arcsec [0.35σ]
KicOffset-rm: 0.367 arcsec [0.50σ]
OotOffset-st: 3/4/2/5 [14]
KicOffset-st: 3/4/2/5 [14]
DiffImageQuality-fgm: 0.79 [11/14]
DiffImageOverlap-fno: 0.94 [16/17]

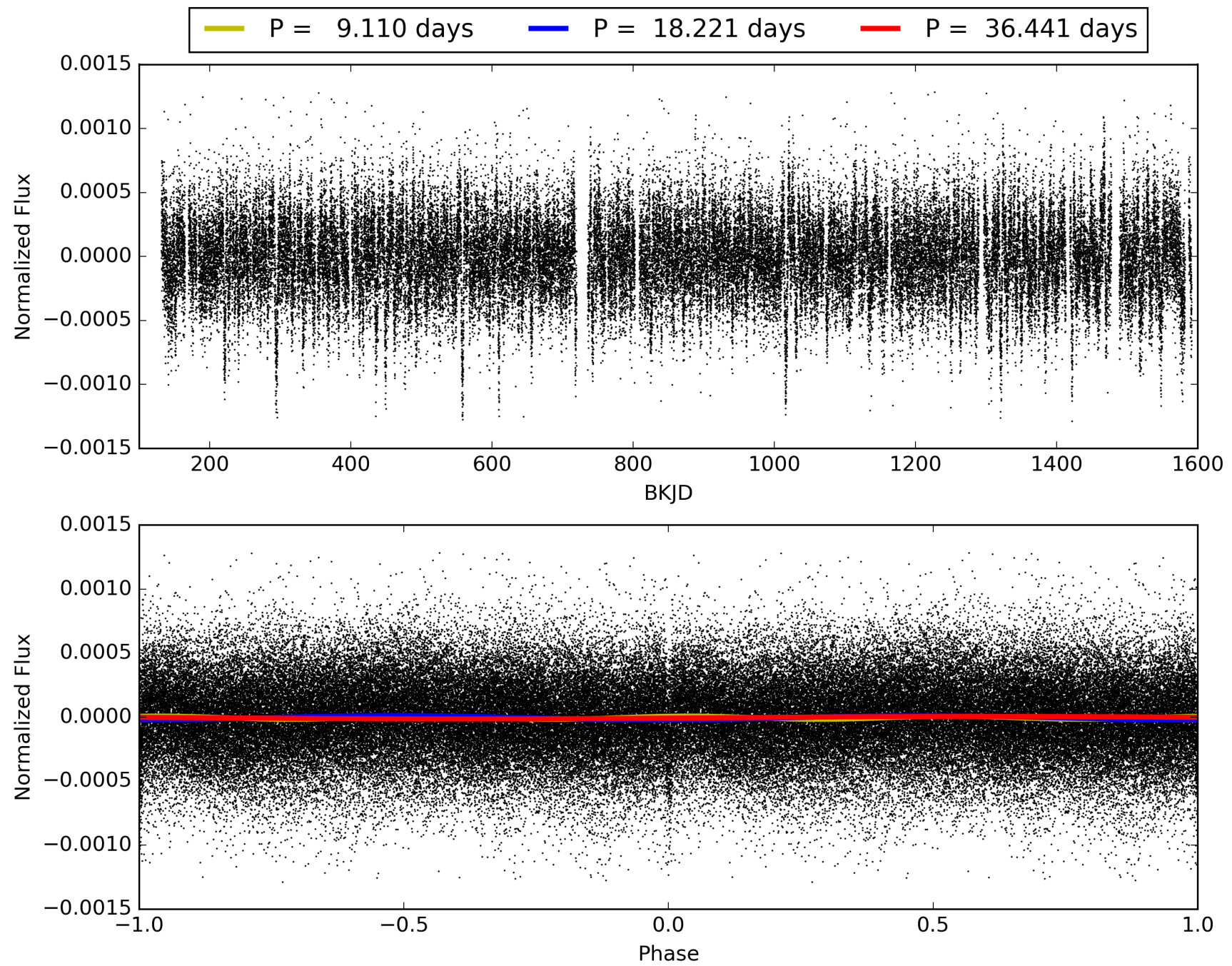
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:52:47 Z

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

TCE 008760040-01, PDC Light Curves

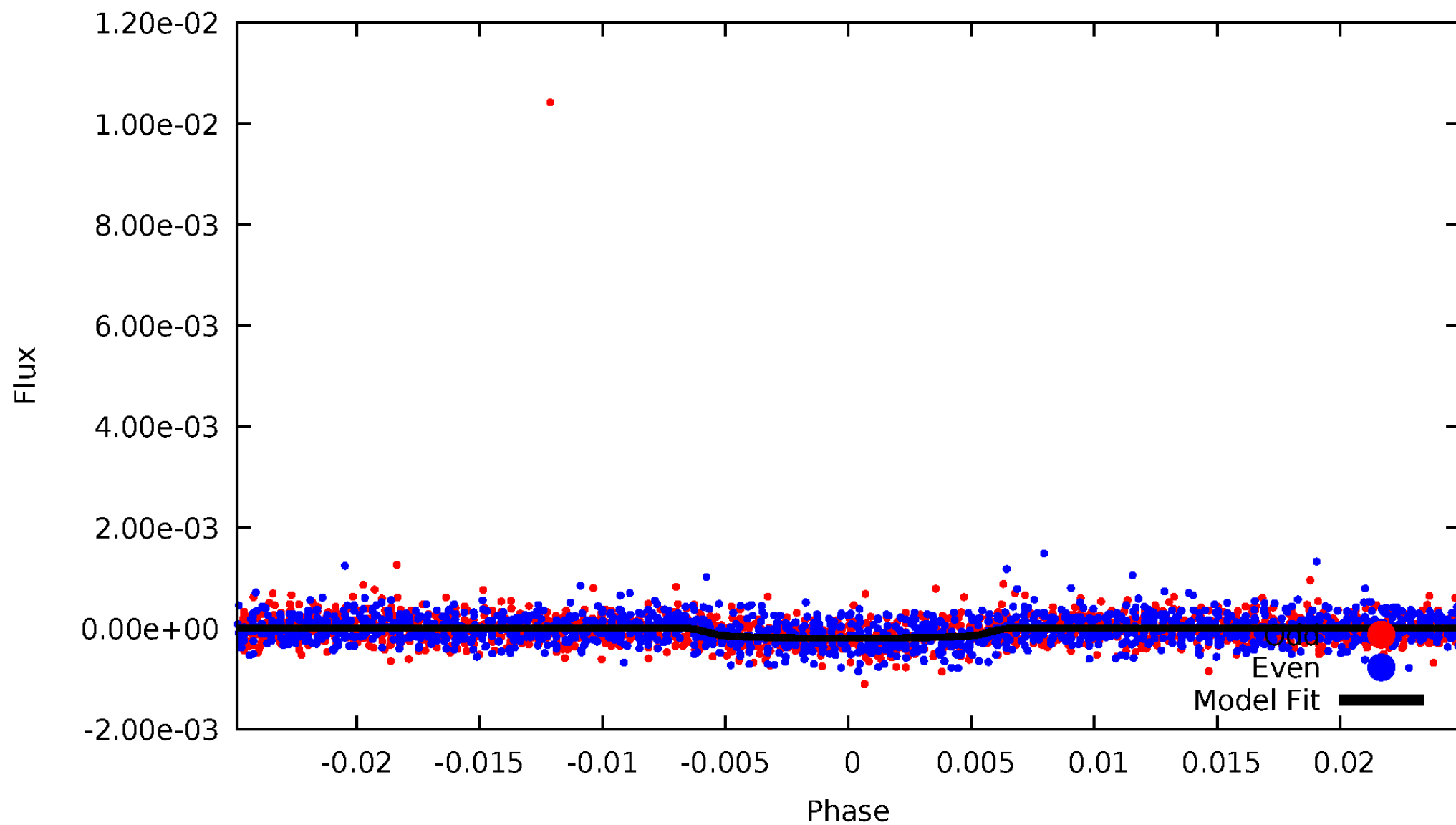


TCE 008760040-01



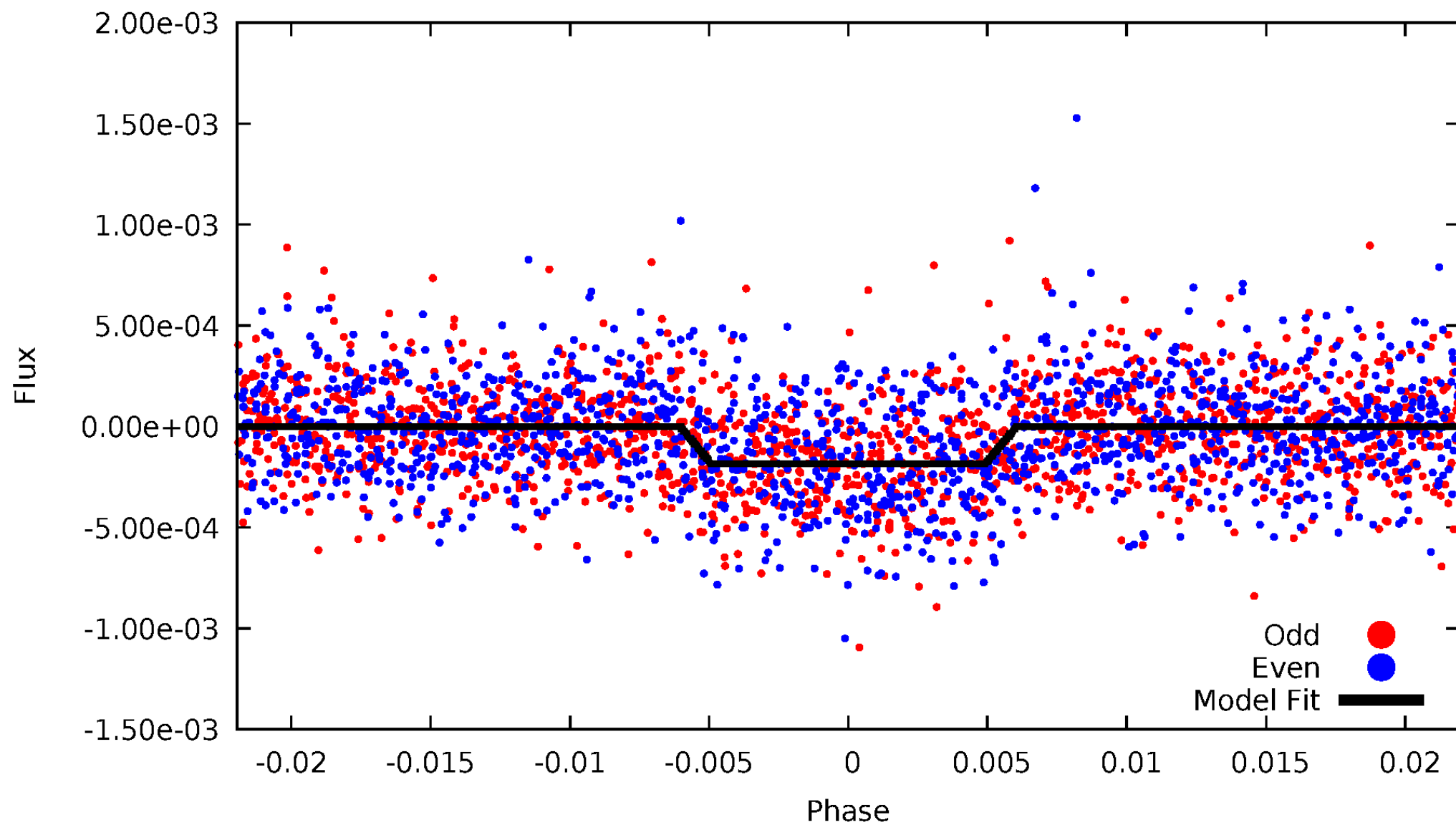
DV Odd/Even

TCE 008760040-01



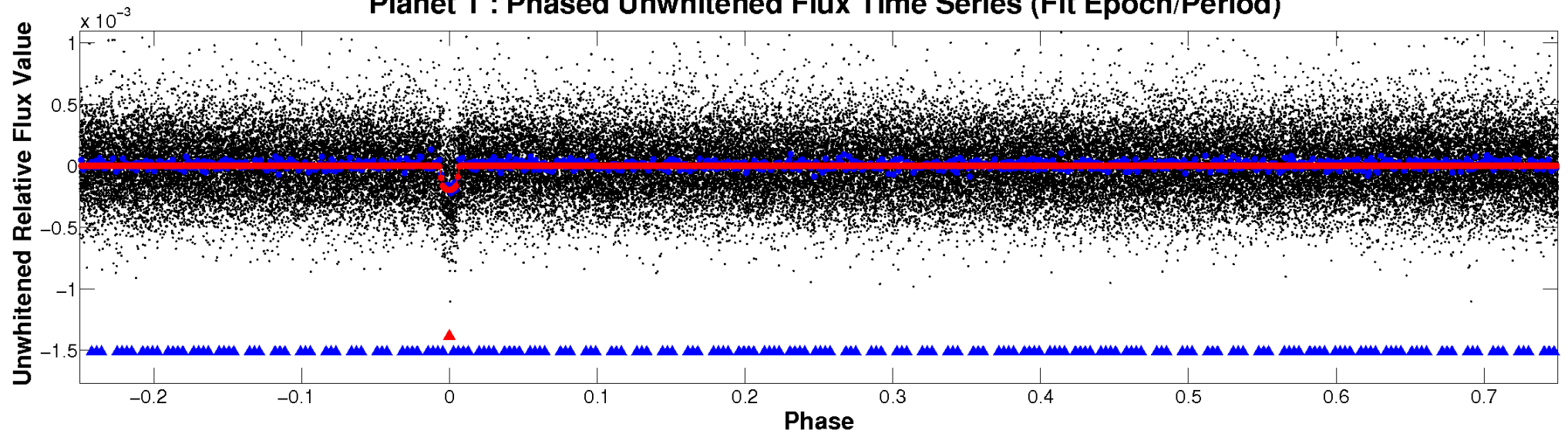
ALT Odd/Even

TCE 008760040-01

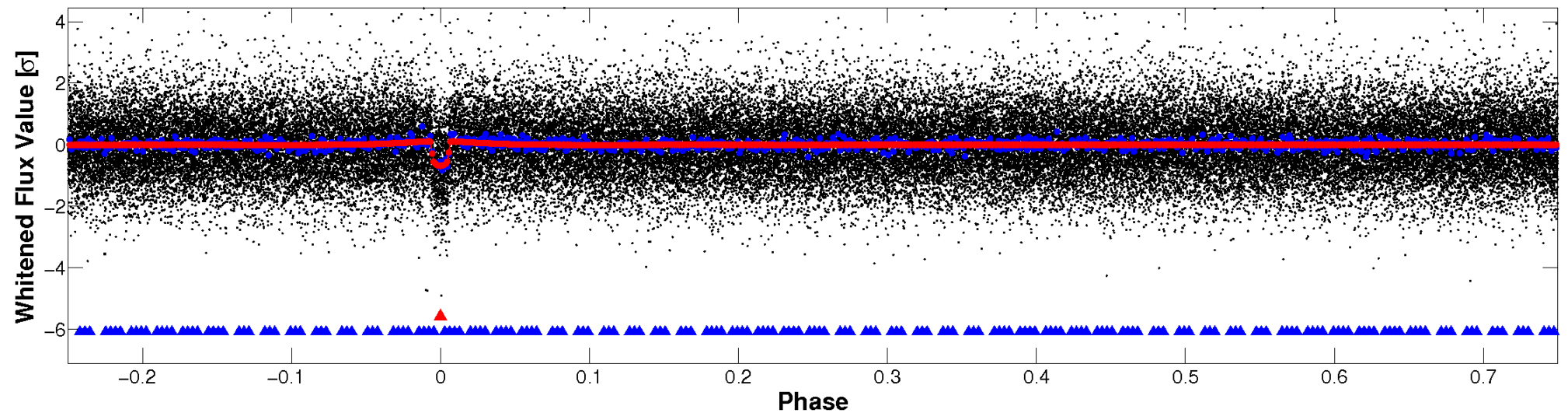


Non-Whitened Vs. Whitened Light Curve

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

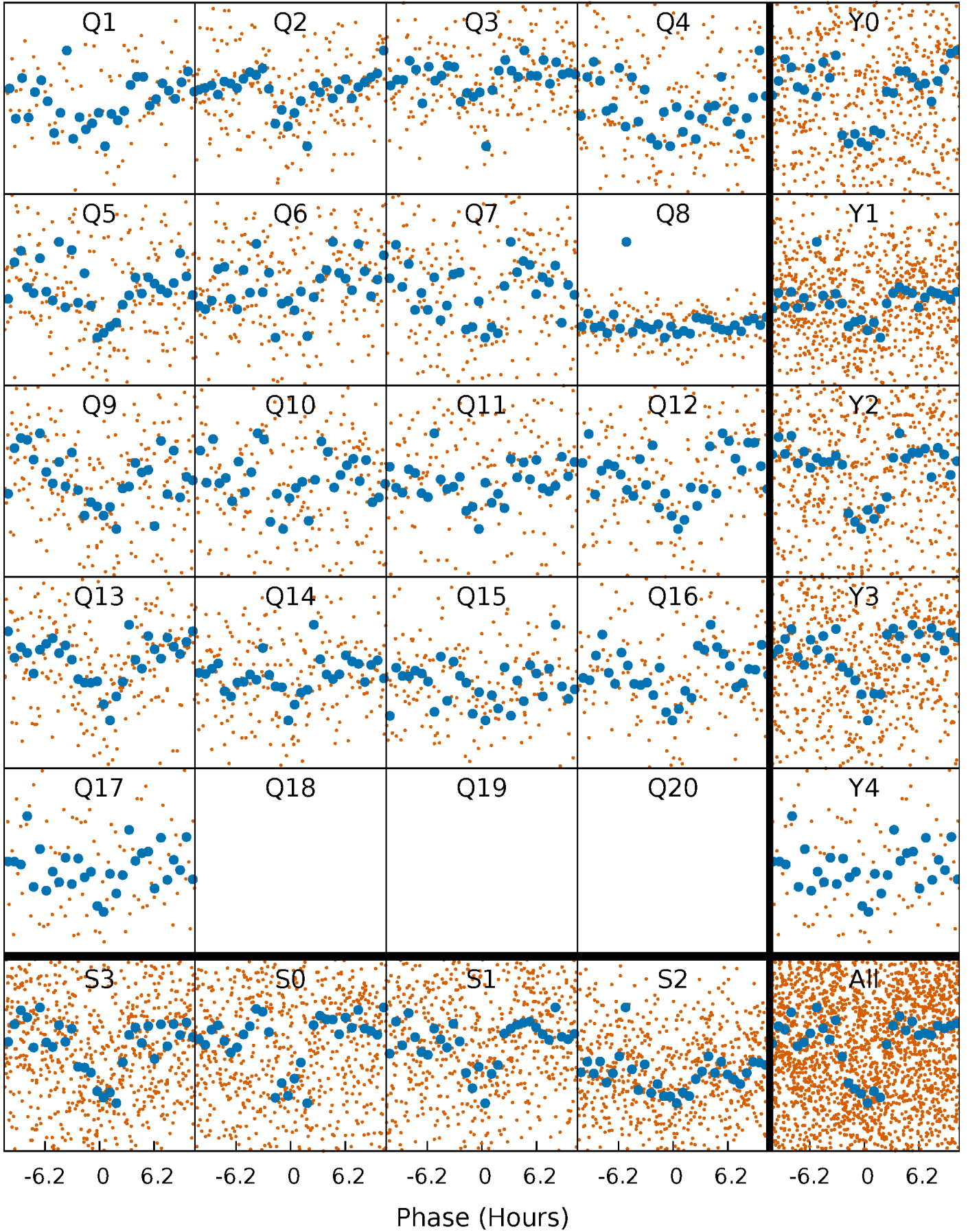


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



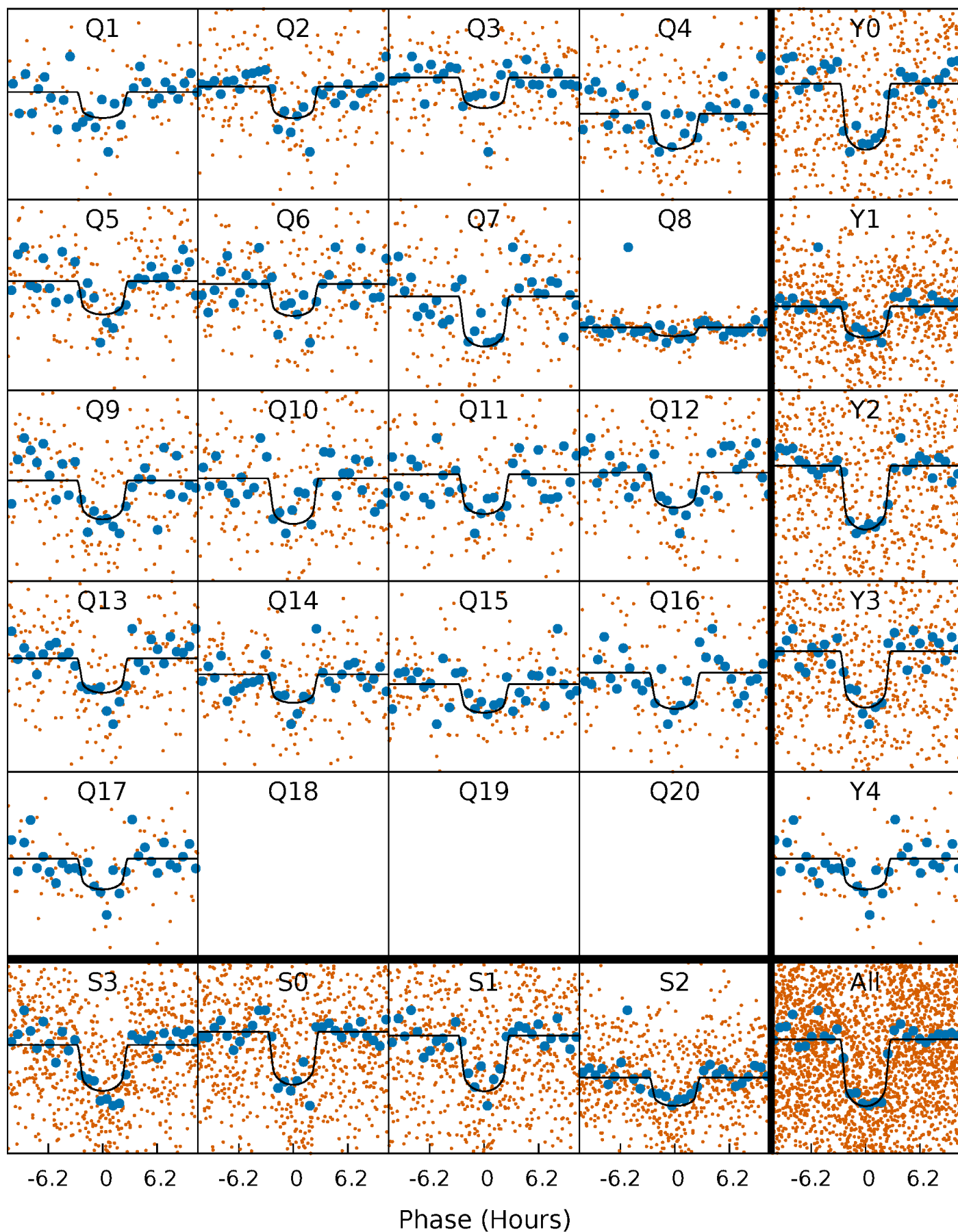
PDC Quarter-Phased Transit Curves

TCE 008760040-01 P= 18.220622 Days $T_0=141.373592$ (BKJD)



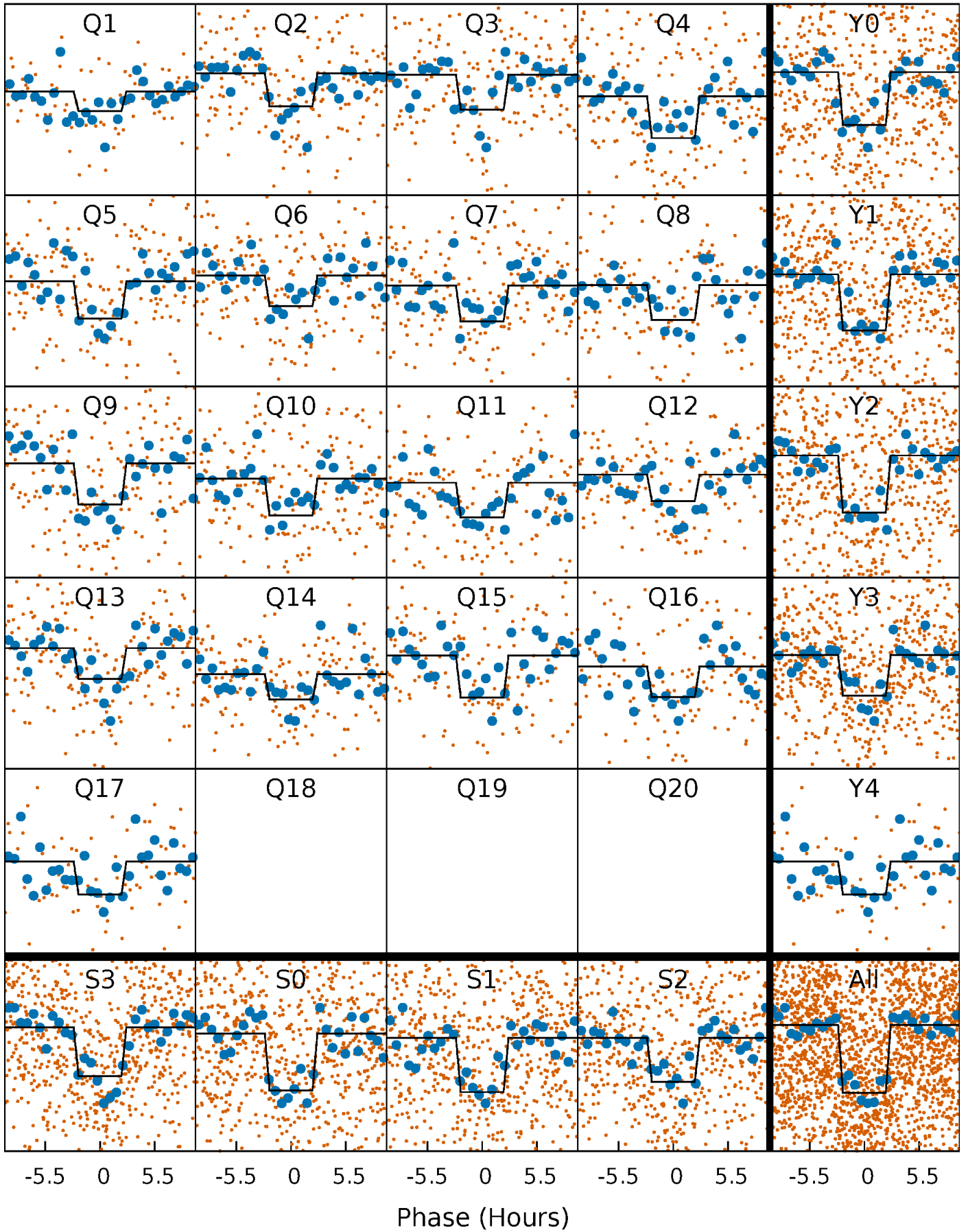
DV Quarter-Phased Transit Curves

TCE 008760040-01 P= 18.220622 Days $T_0=141.373592$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

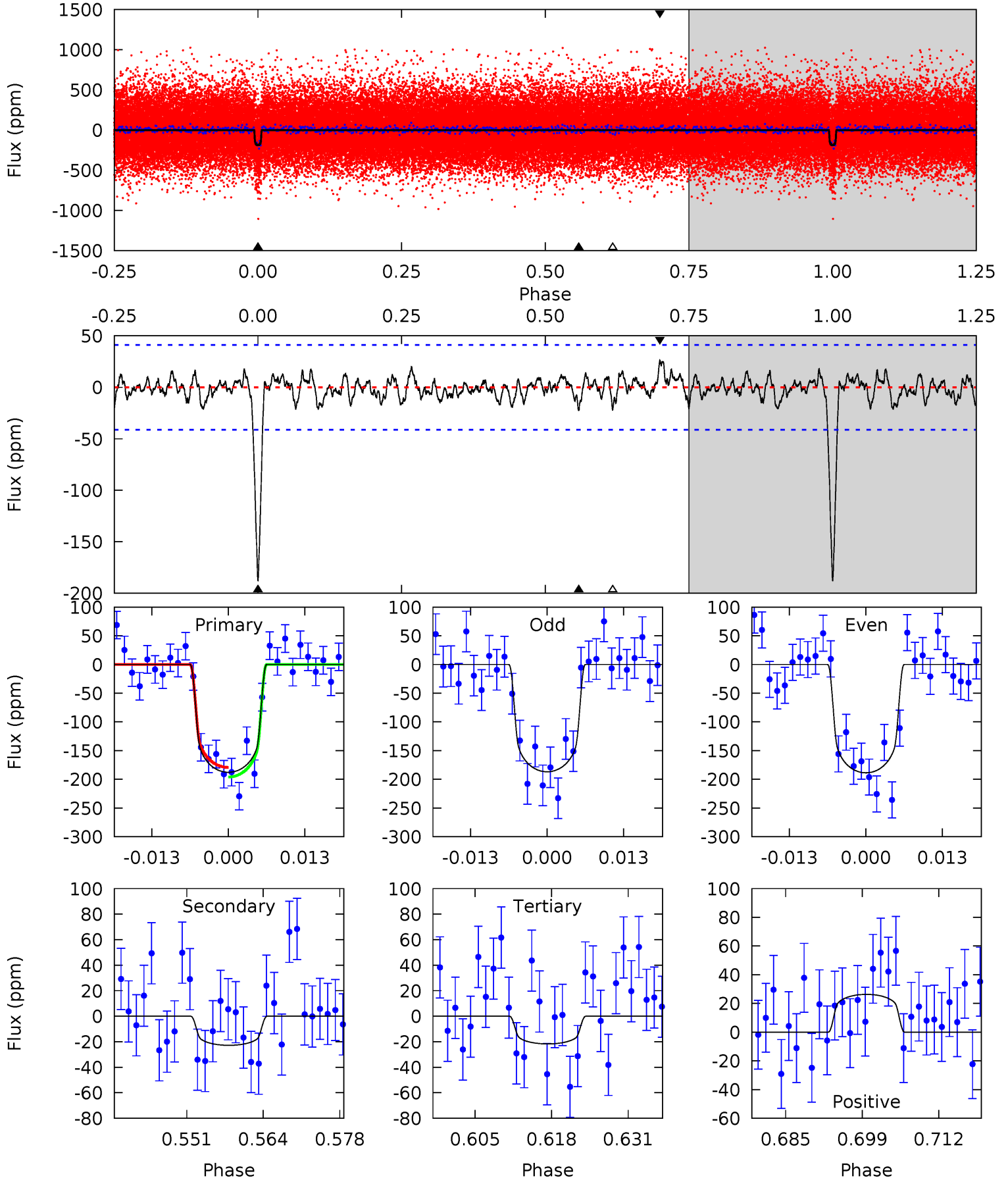
TCE 008760040-01 P= 18.220351 Days $T_0=141.385838$ (BKJD)



DV Model-Shift Uniqueness Test

008760040-01, $P = 18.220622$ Days, $E = 123.152970$ Days

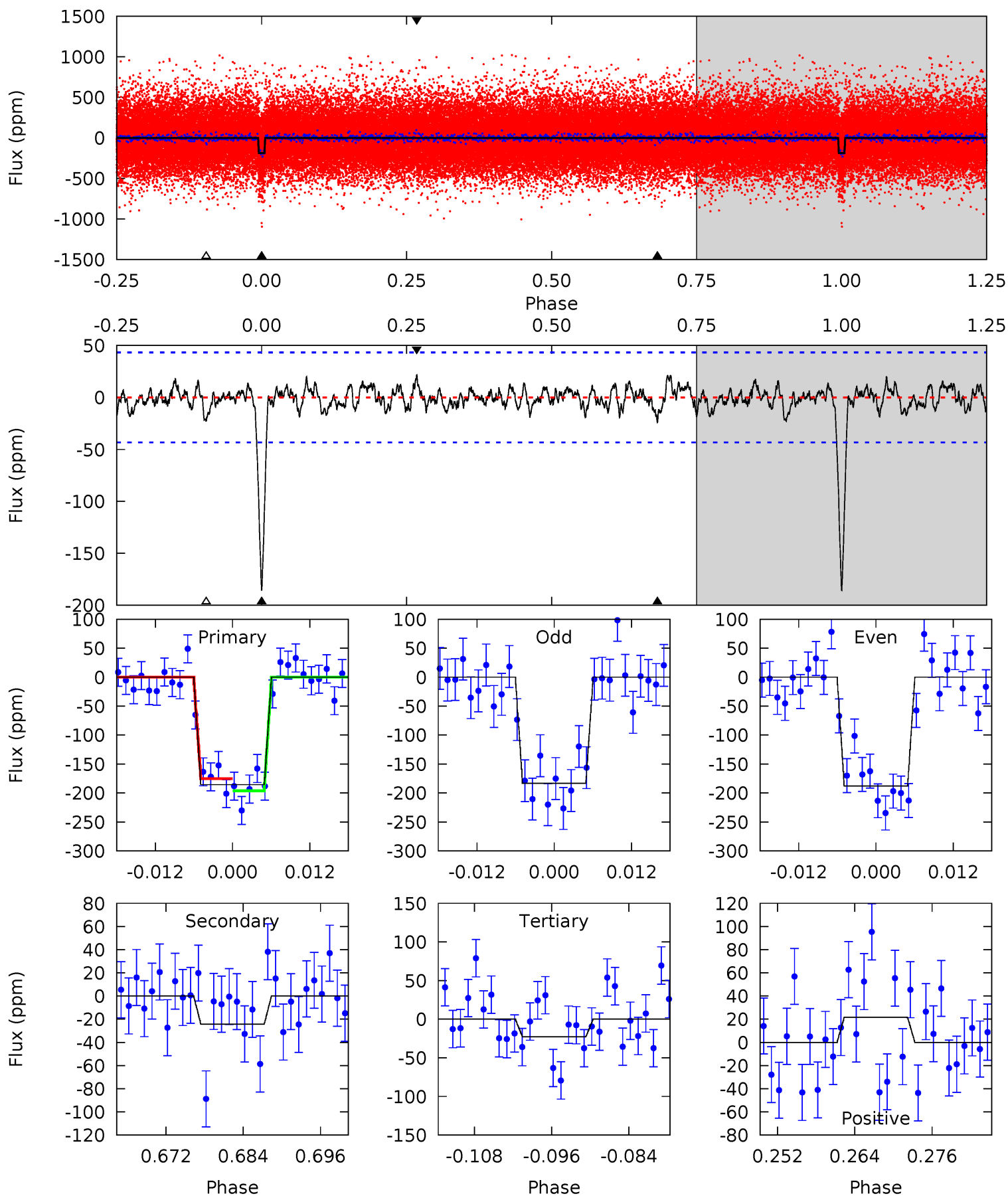
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.7	2.75	2.62	3.18	4.97	2.47	0.99	20.0	19.5	0.14	-0.42	0.11	0.97	0.12	1.01



Alt Model-Shift Uniqueness Test

008760040-01, P = 18.220351 Days, E = 123.165487 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.4	2.81	2.64	2.49	4.99	2.51	0.90	18.8	18.9	0.16	0.31	0.26	1.06	0.10	1.21



Stellar Parameters For KIC 008760040

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5951^{+71}_{-79}	$4.283^{+0.120}_{-0.120}$	$0.140^{+0.150}_{-0.150}$	$1.262^{+0.209}_{-0.168}$	$1.117^{+0.077}_{-0.077}$	$0.782^{+0.416}_{-0.272}$
	+1%/-1%	+3%/-3%	+107%/-107%	+17%/-13%	+7%/-7%	+53%/-35%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008760040-01 / KOI 2963.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-23 ± 8	$2.04^{+0.57}_{-0.53}$	1098^{+50}_{-45}	3754^{+426}_{-370}	58^{+53}_{-29}
Alt.	-24 ± 9	$1.86^{+0.52}_{-0.54}$	1101^{+45}_{-48}	3928^{+574}_{-402}	76^{+88}_{-38}

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

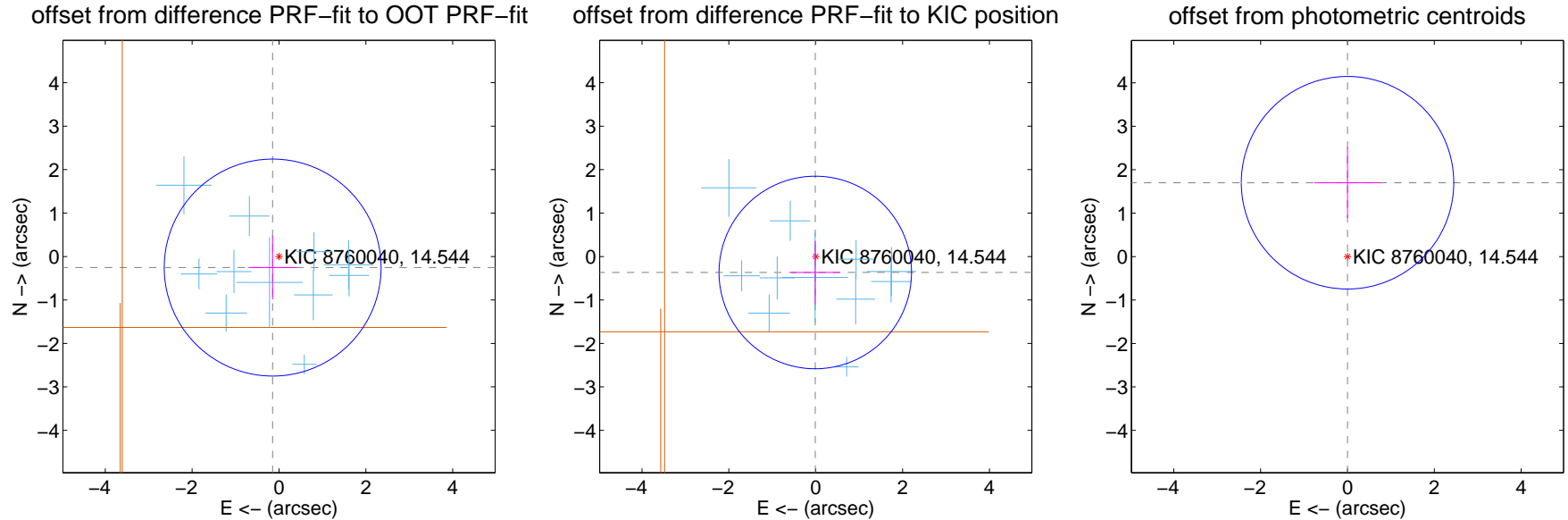
DV Centroid Data

Supplemental centroid analysis for 008760040-01. Kepler magnitude: 14.54. Transit SNR 16.49

There are 11 quarters with good PRF difference image offsets

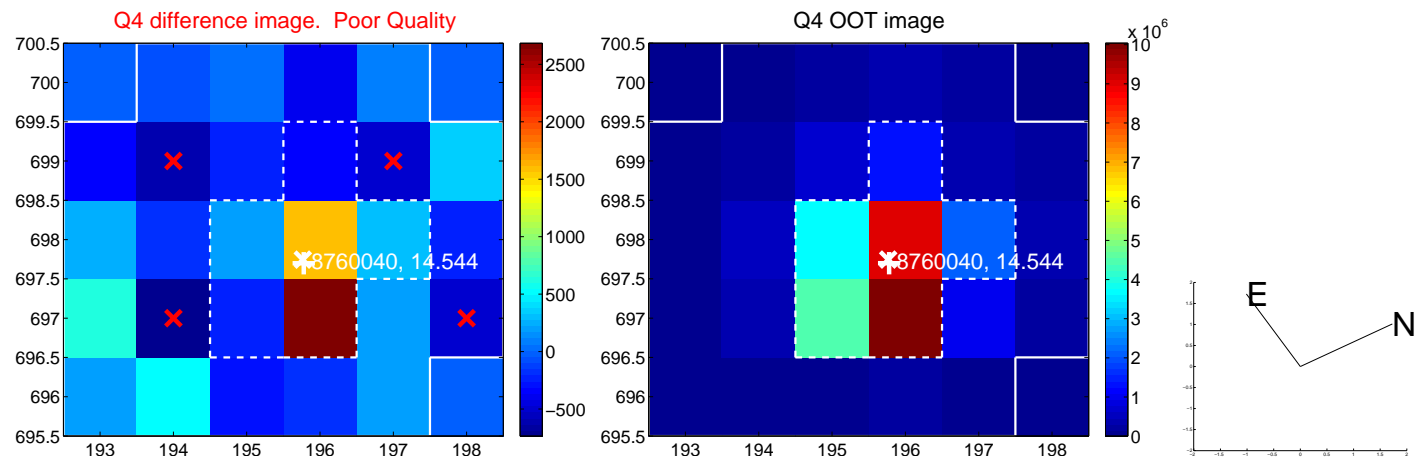
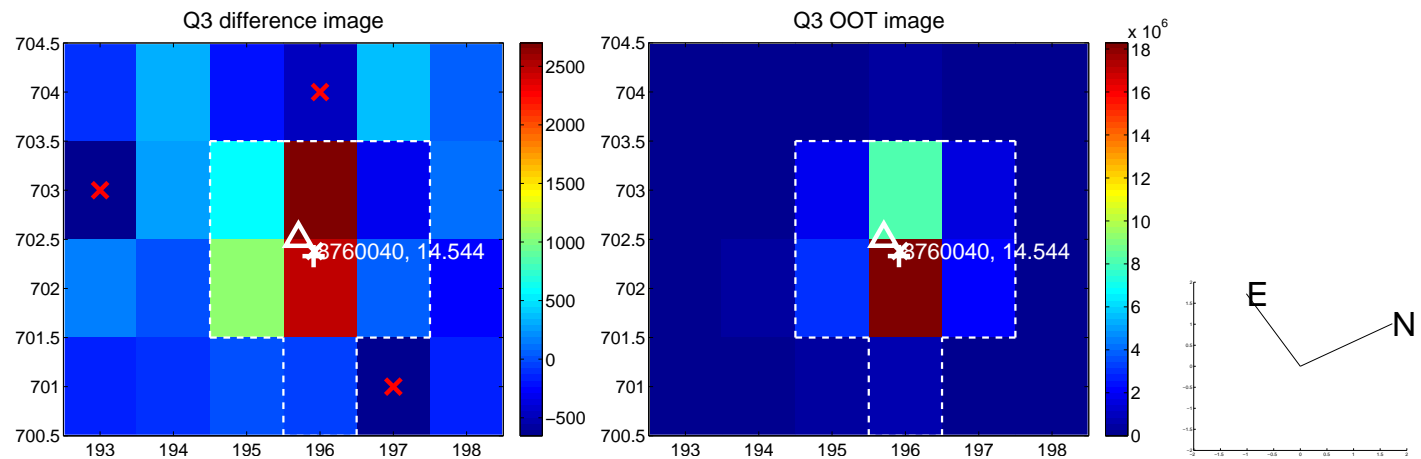
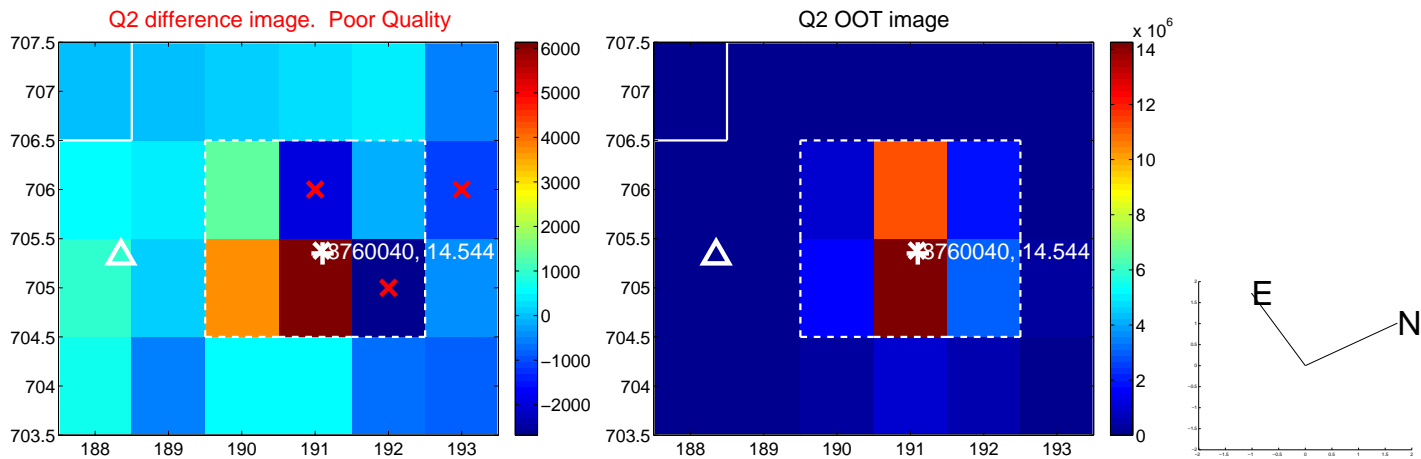
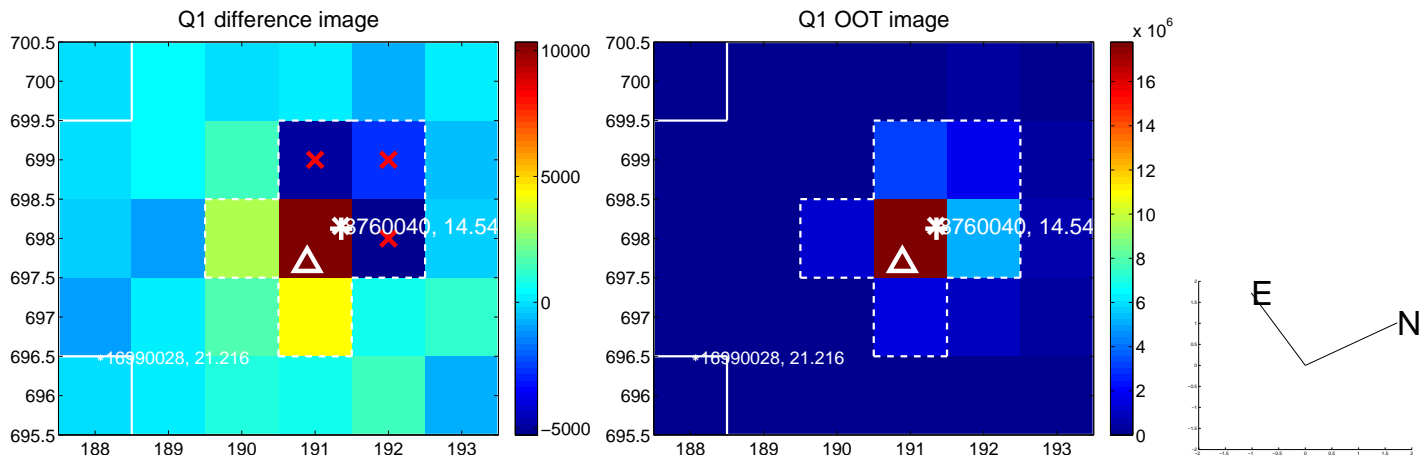
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.293 ± 0.832	0.35	0.146 ± 0.556	-0.254 ± 0.731
PRF-fit source offset from KIC position	0.367 ± 0.739	0.50	0.010 ± 0.565	-0.367 ± 0.729
photometric centroid source offset	1.70 ± 0.82	2.08	-0.00 ± 0.77	1.70 ± 0.82

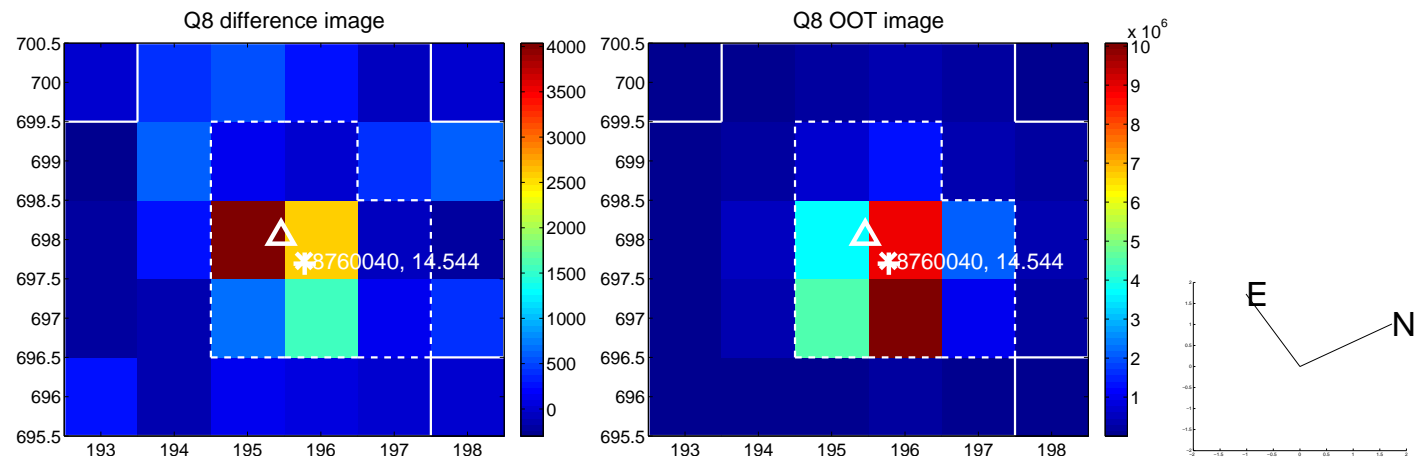
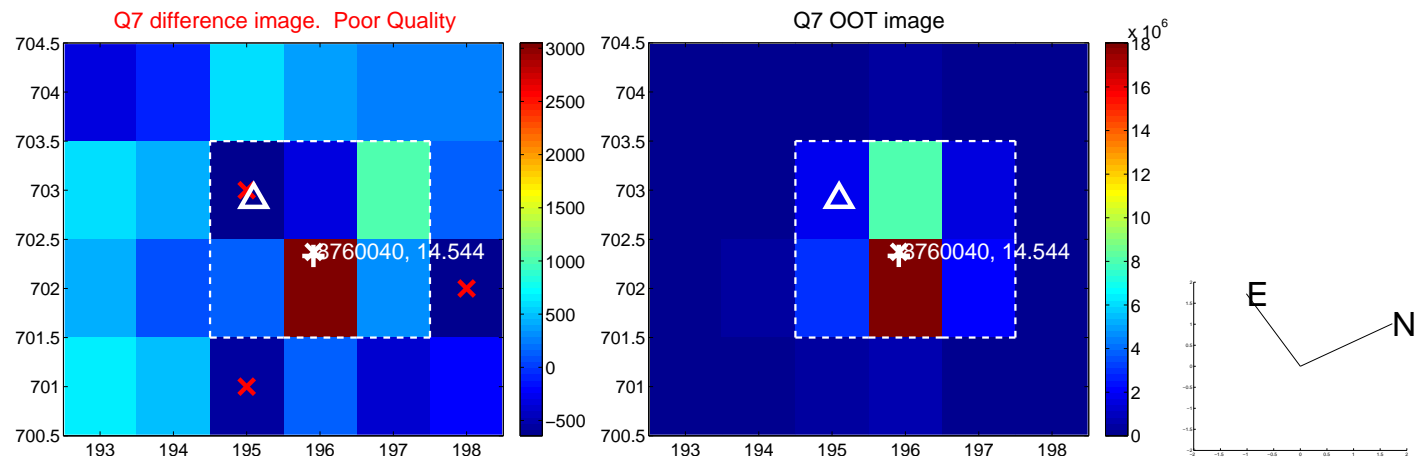
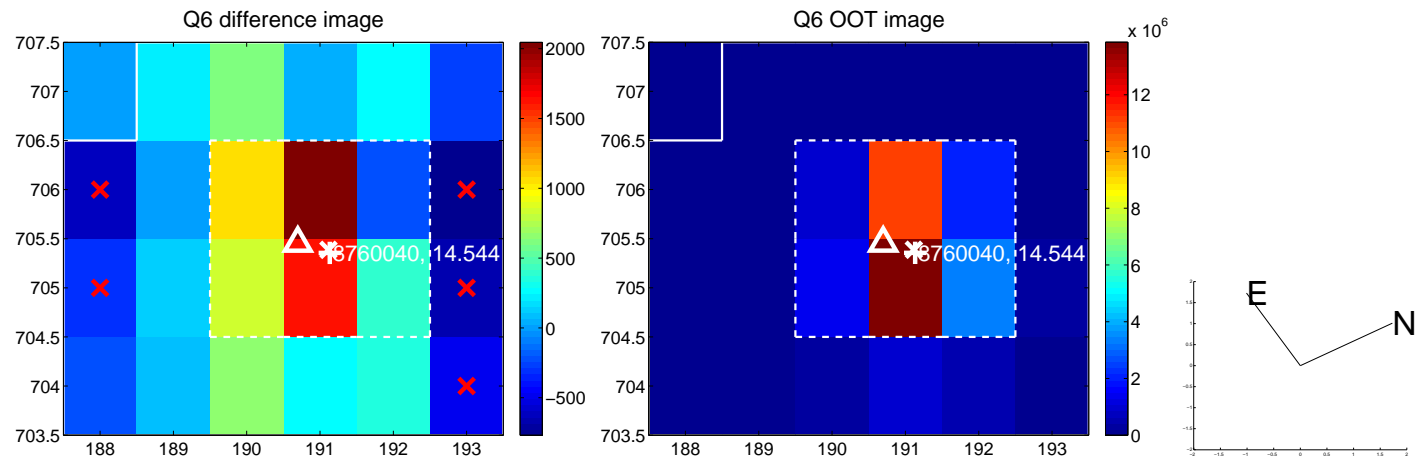
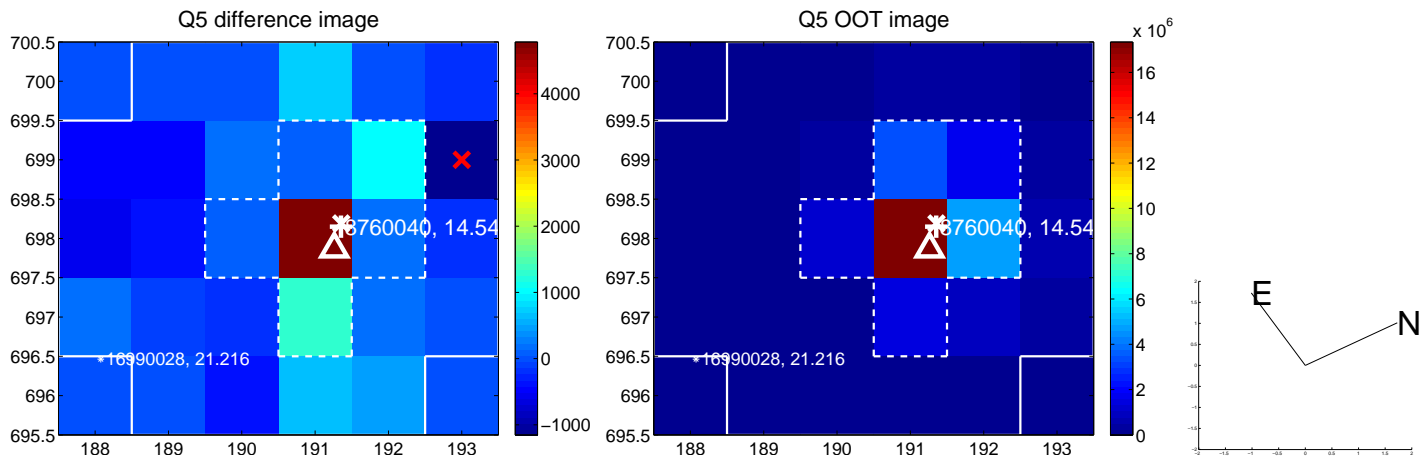


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

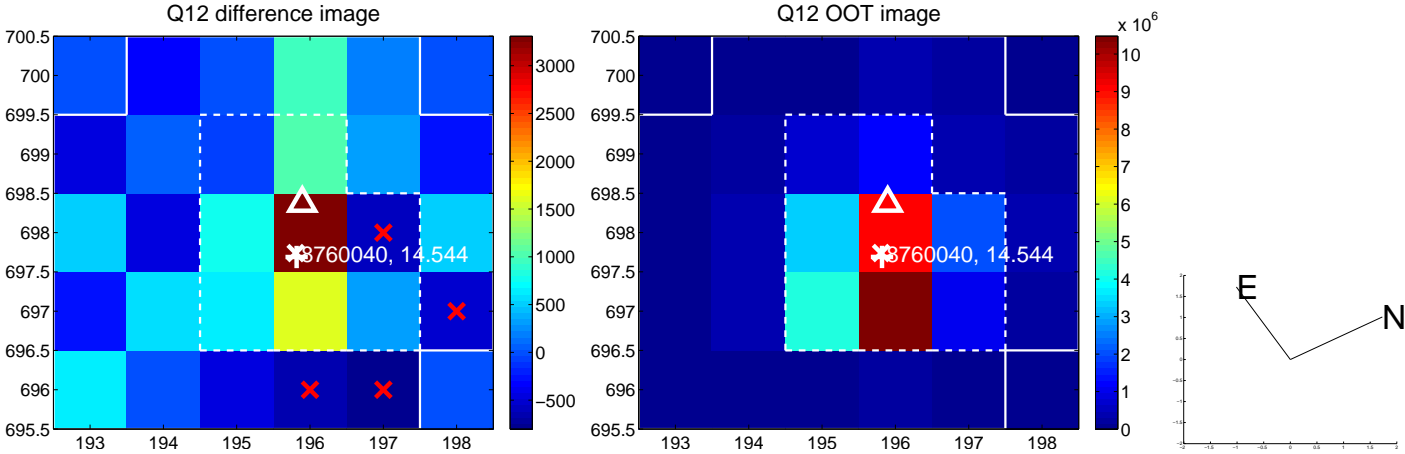
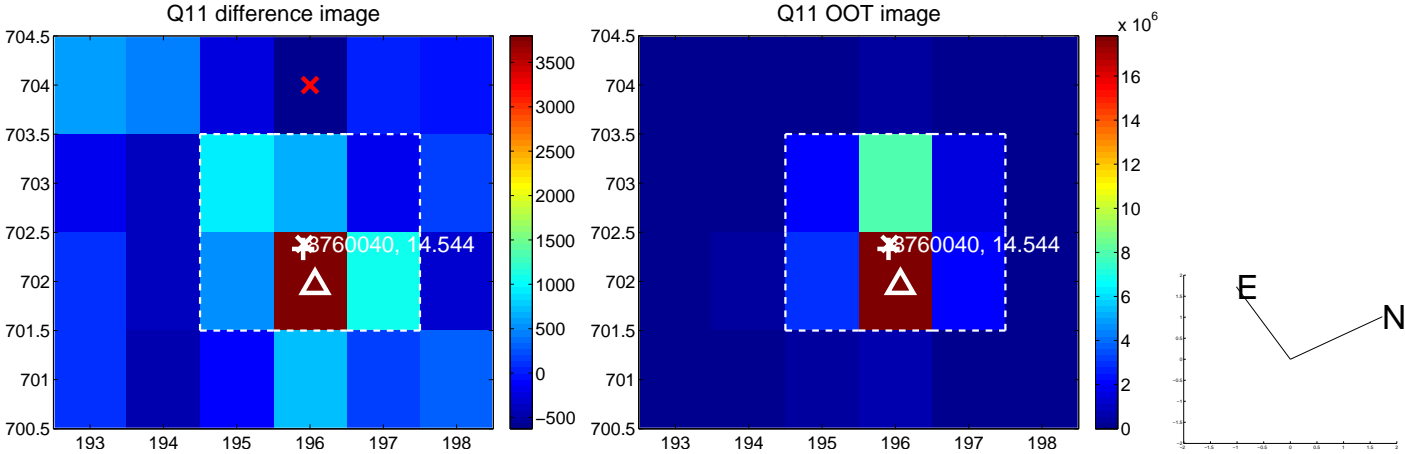
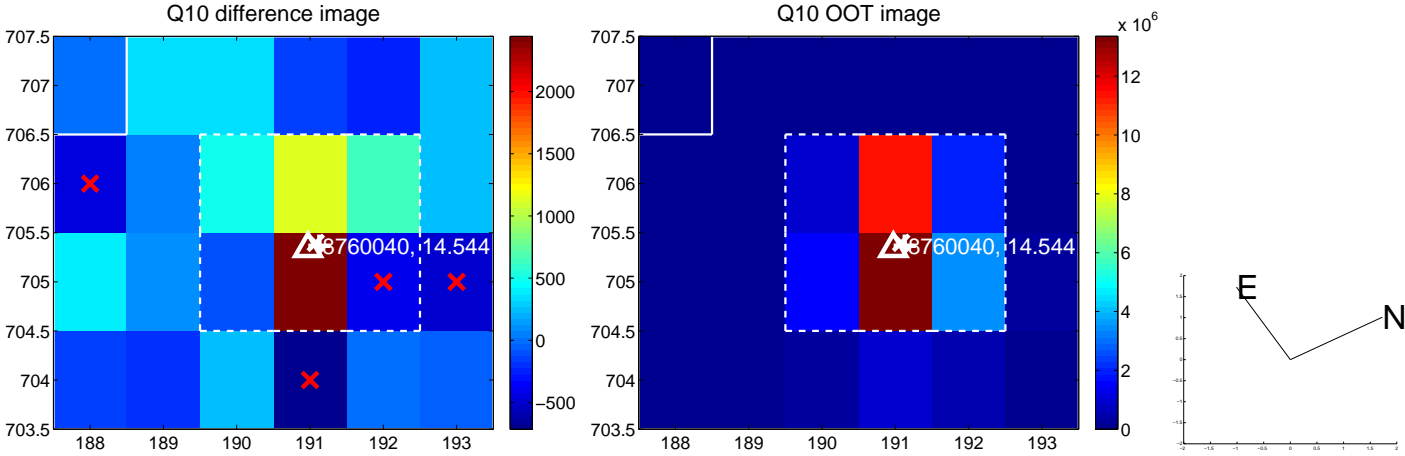
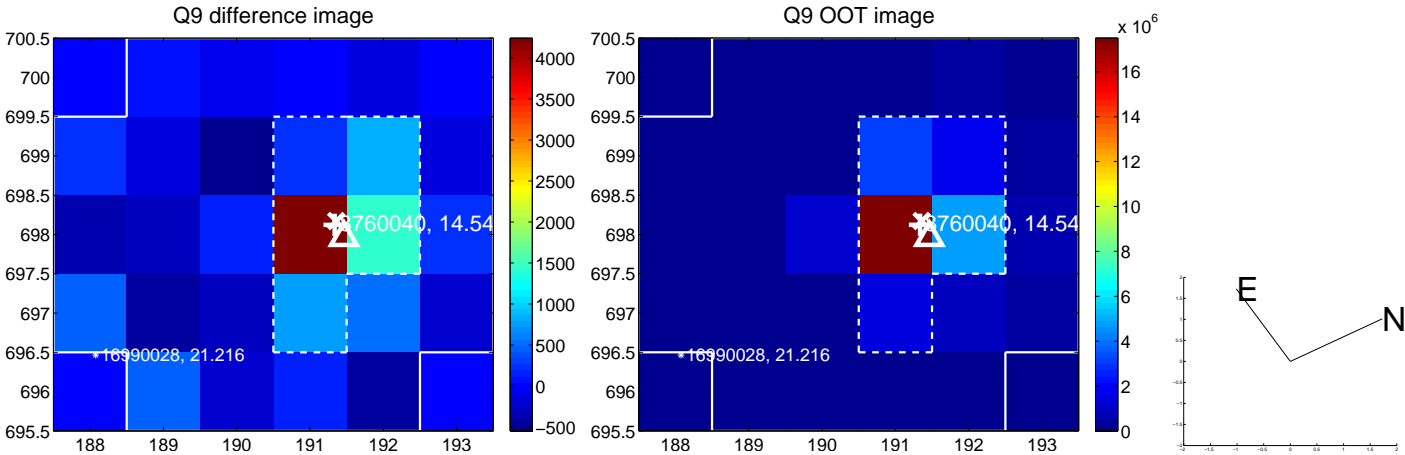
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



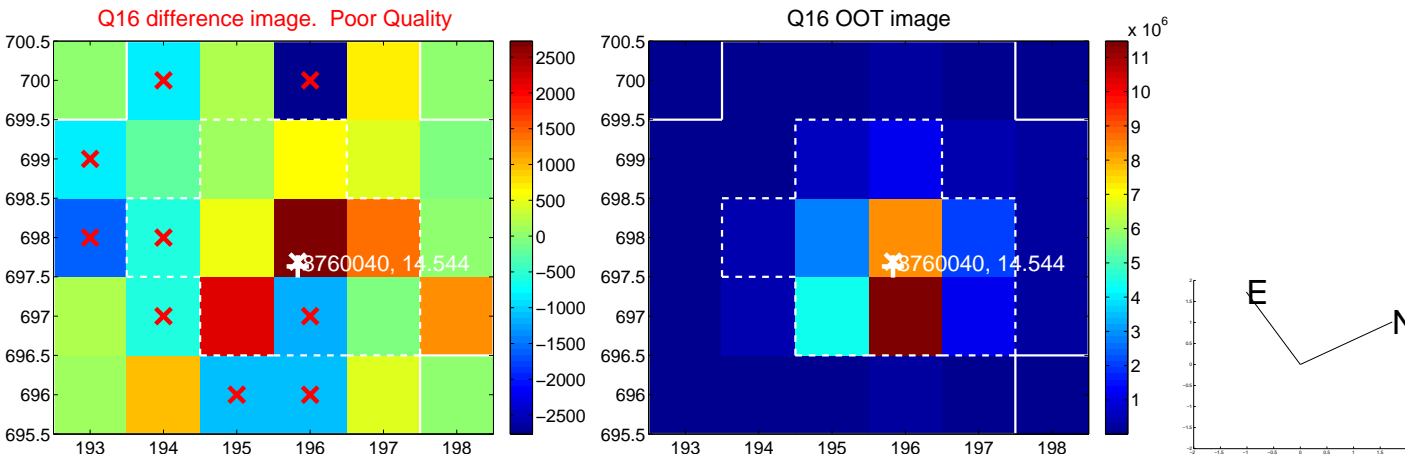
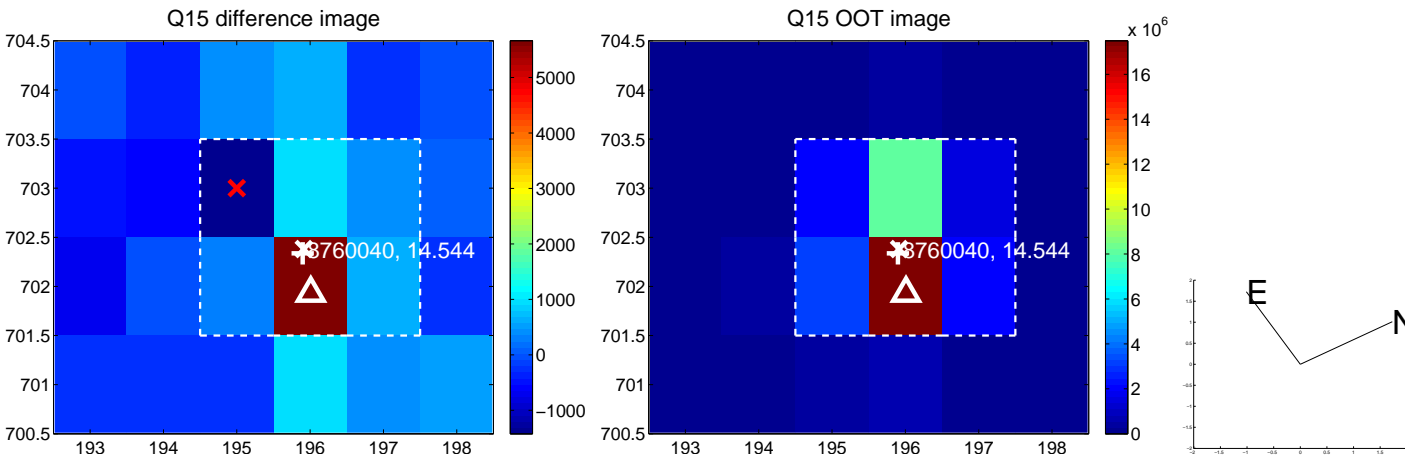
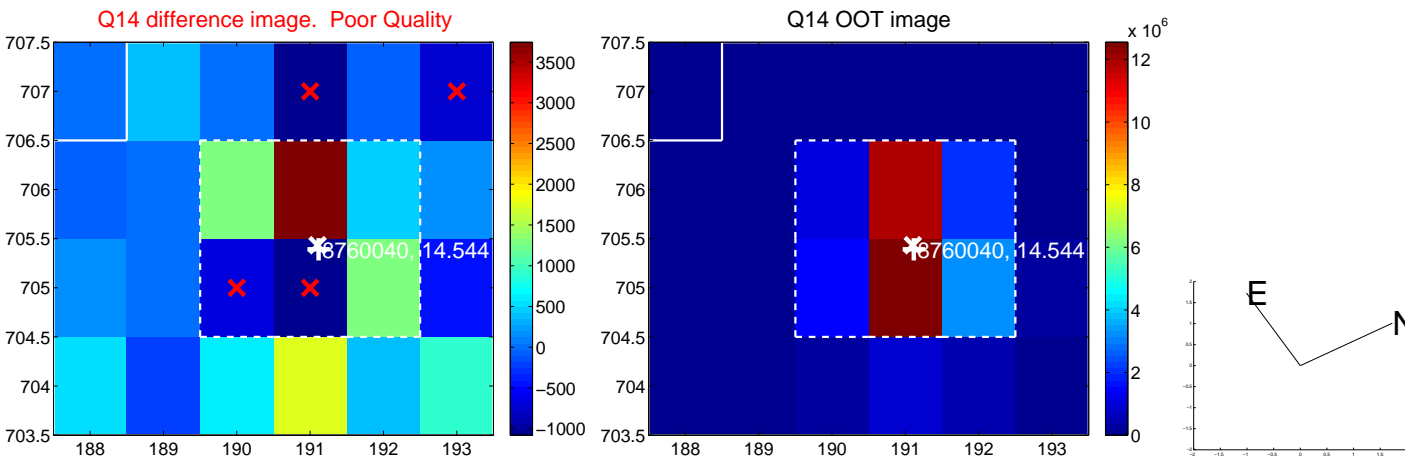
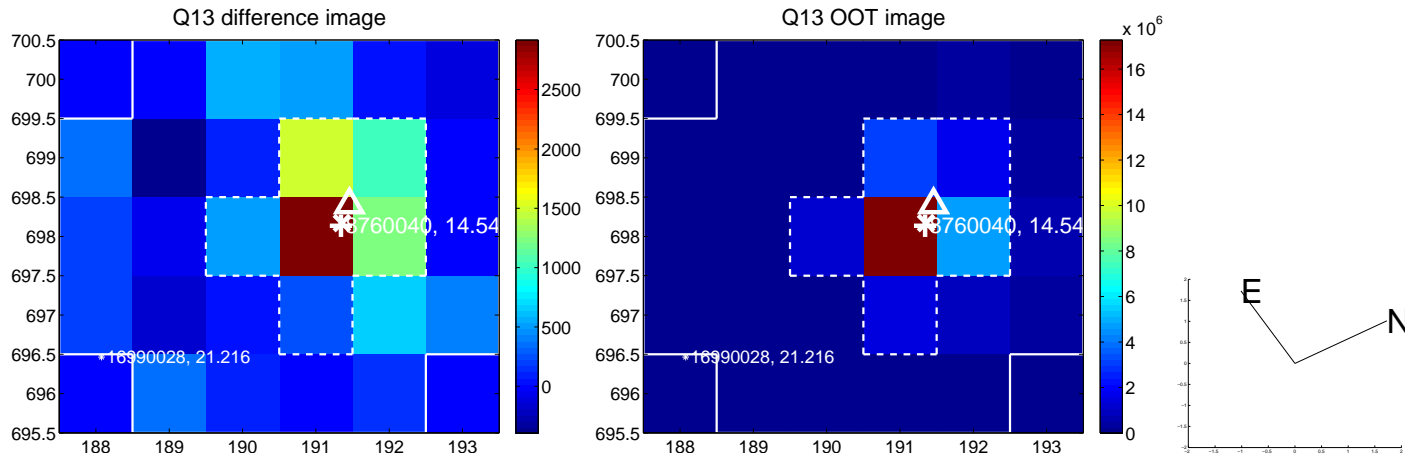
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



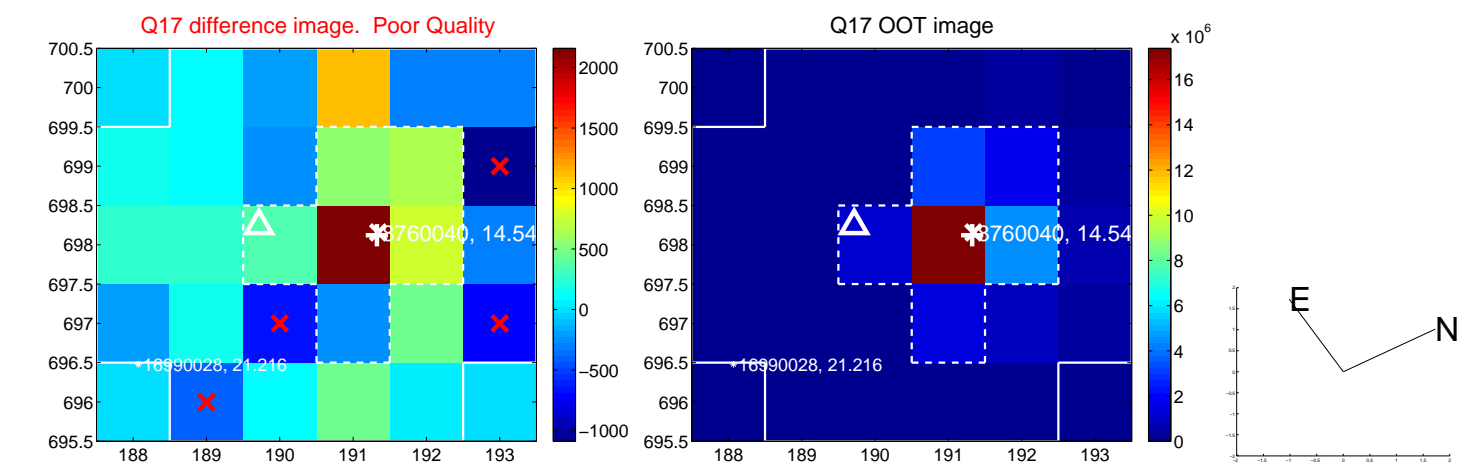
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



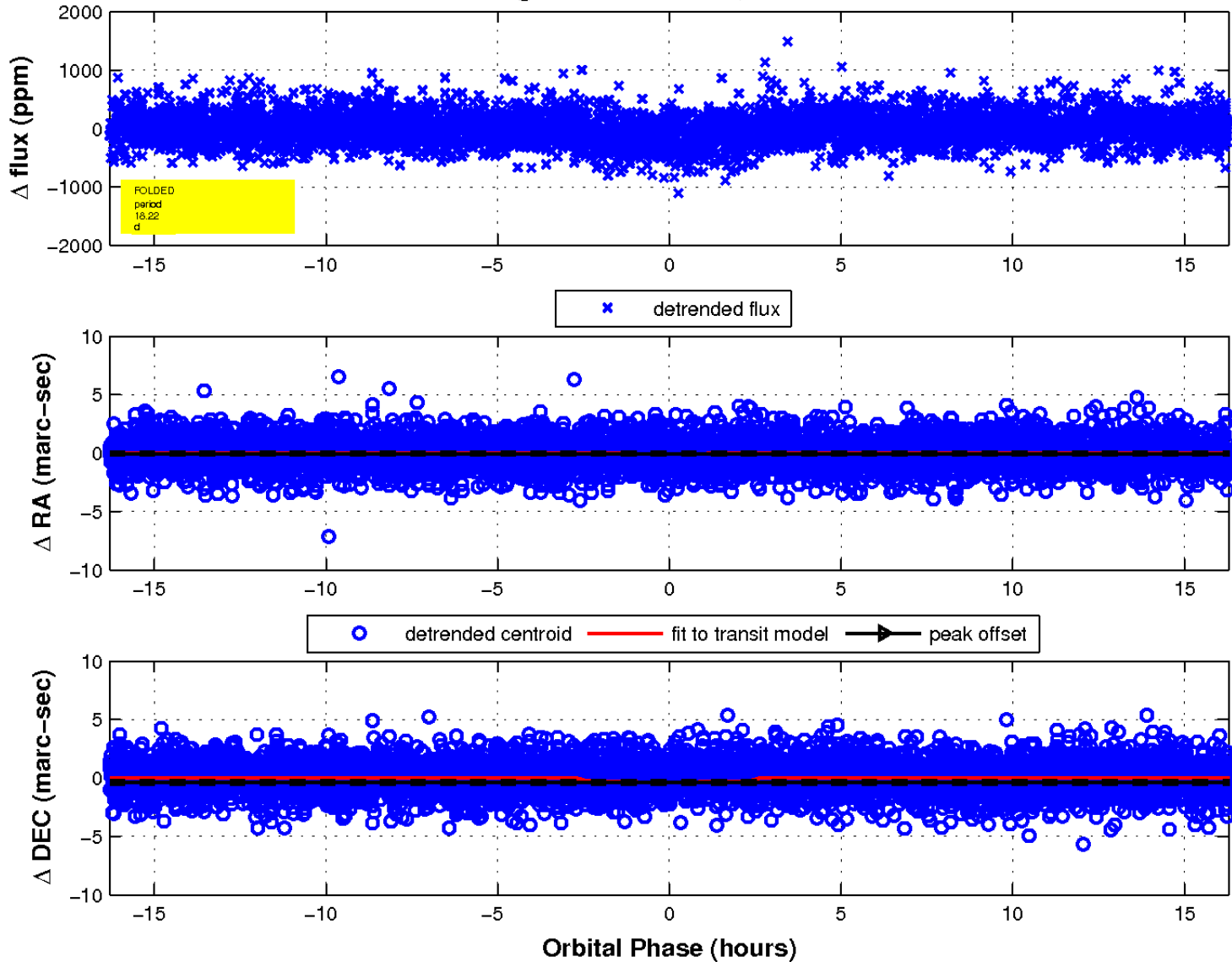
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

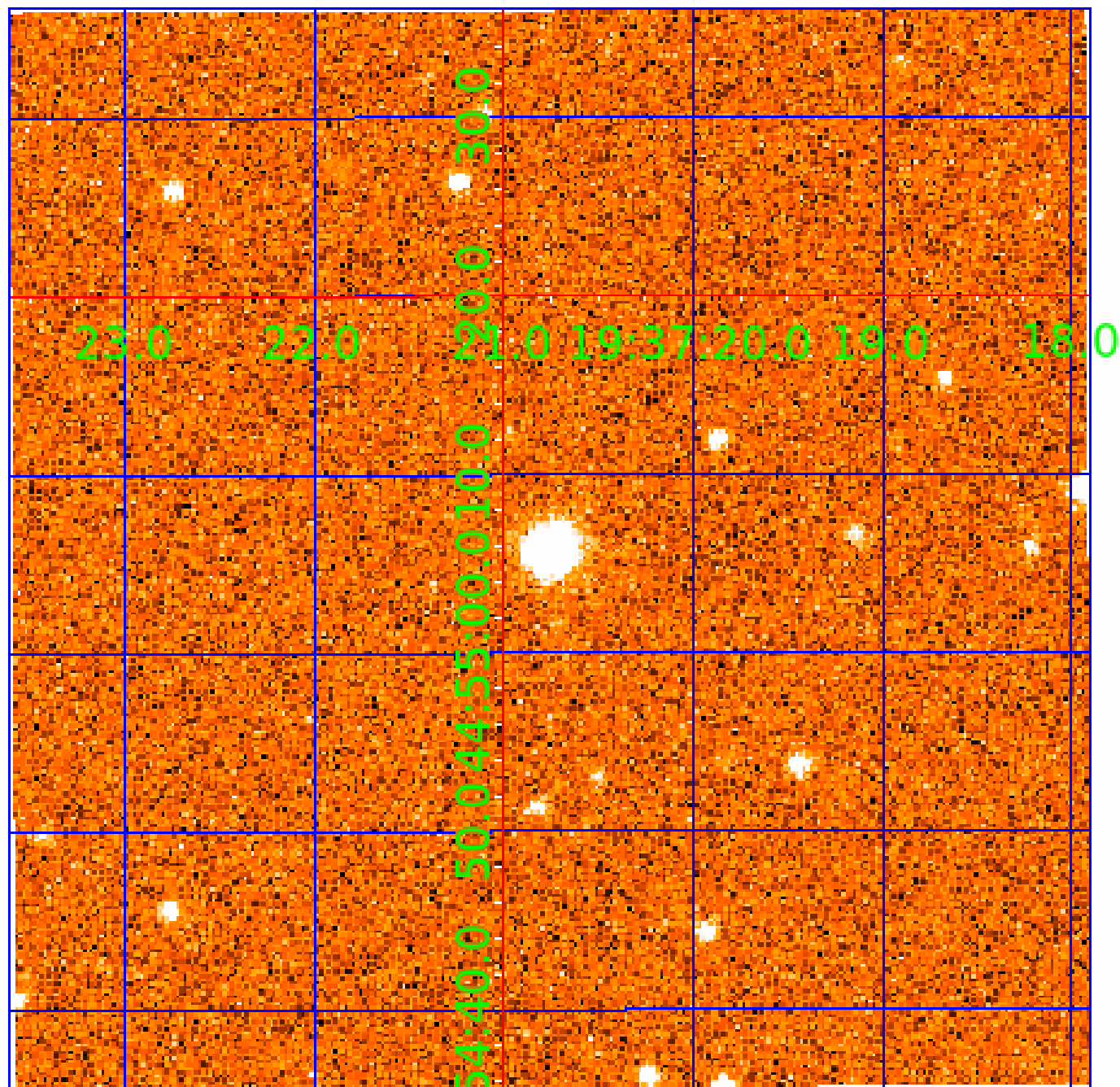


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008760040

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})
008760040-01	OBS	2963.01	18.220622	141.373592	194.6	5.435	15.3	16.5	1.26	5951	2.04	90.62
008760040-02	OBS	2963.02	7.351125	133.626548	110.8	2.830	10.0	11.4	1.26	5951	1.54	303.96

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760040-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008760040-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

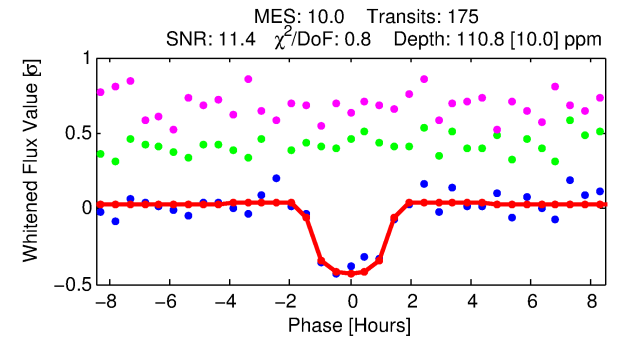
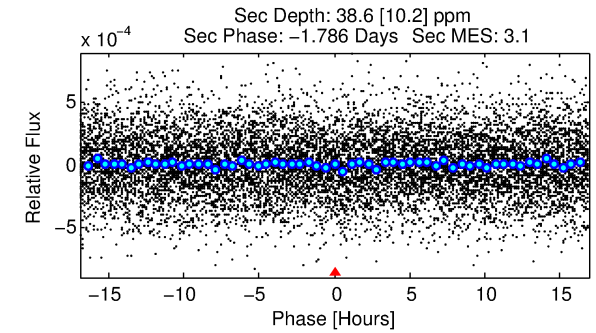
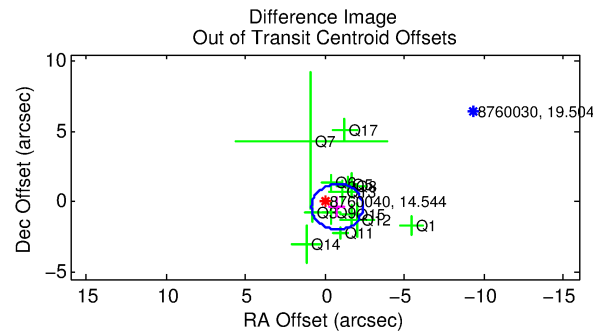
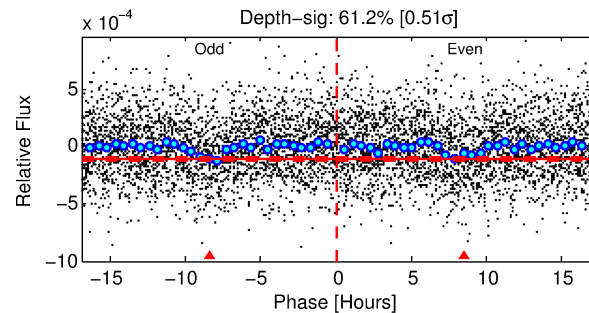
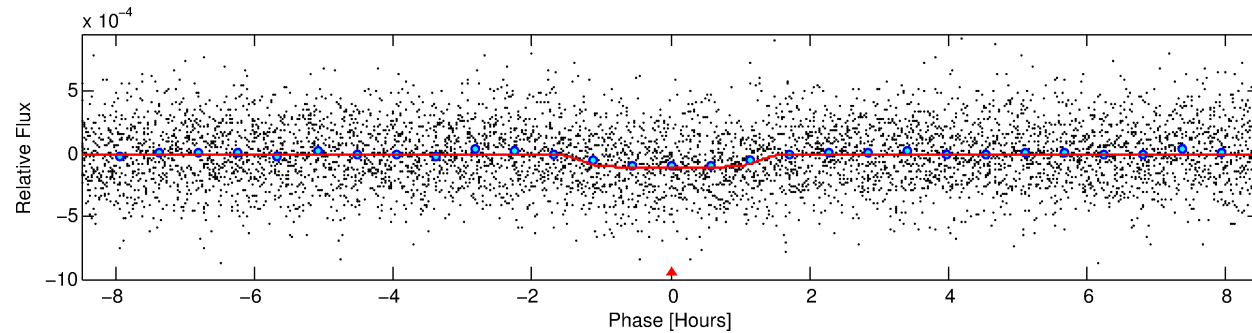
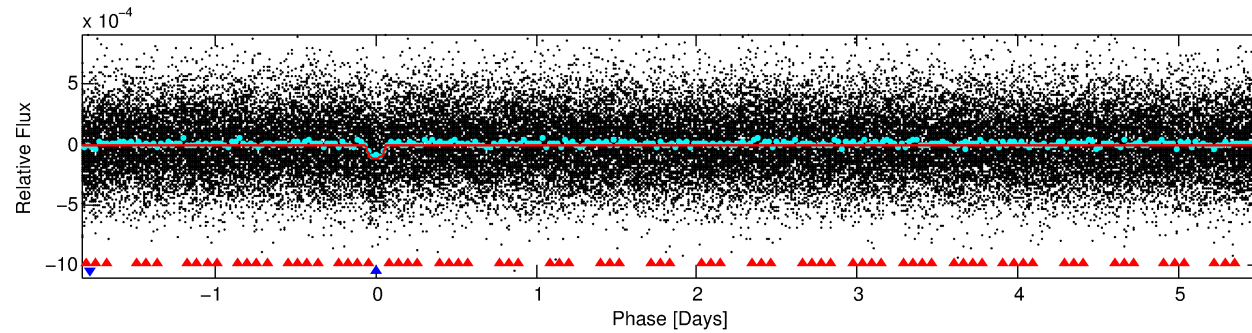
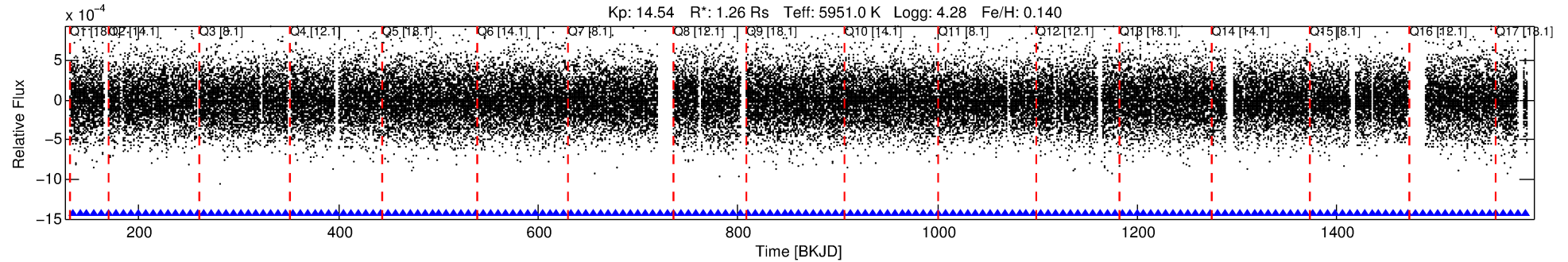
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008760040-02

No Significant Match Found

DV One-Page Summary

KIC: 8760040 Candidate: 2 of 2 Period: 7.351 d
KOI: K02963.02 Corr: 0.940



DV Fit Results:

Period = 7.35112 [0.00005] d
Epoch = 133.6265 [0.0051] BKJD
Rp/R* = 0.0112 [0.0065]
a/R* = 10.04 [28.24]
b = 0.88 [0.76]
Seff = 303.96 [67.25]
Teq = 1065 [59] K
Rp = 1.54 [0.94] Re
a = 0.0767 [0.0110] AU
Ag = 52.40 [63.77] [0.81σ]
Teffp = 4429 [1328] K [2.53σ]

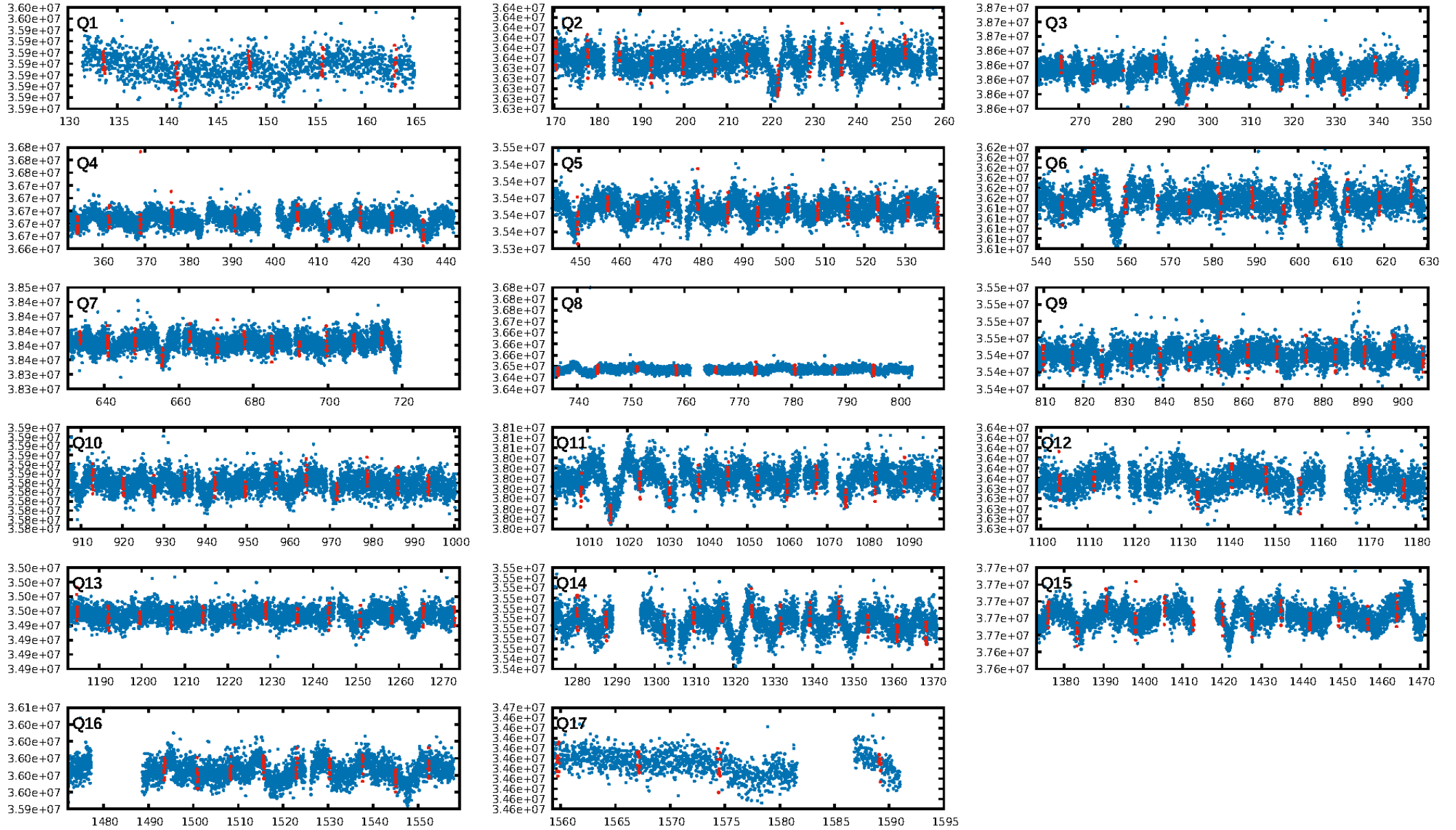
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [42.57σ]
ModelChiSquare2-sig: 99.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.14e-23
RollingBand-fgt: 1.00 [166/166]
GhostDiagnostic-chr: 1.58
Centroid-sig: 29.9%
Centroid-so: 1.145 arcsec [0.96σ]
OotOffset-rm: 0.863 arcsec [1.60σ]
KicOffset-rm: 1.017 arcsec [1.85σ]
OotOffset-st: 2/4/2/5 [13]
KicOffset-st: 2/4/2/5 [13]
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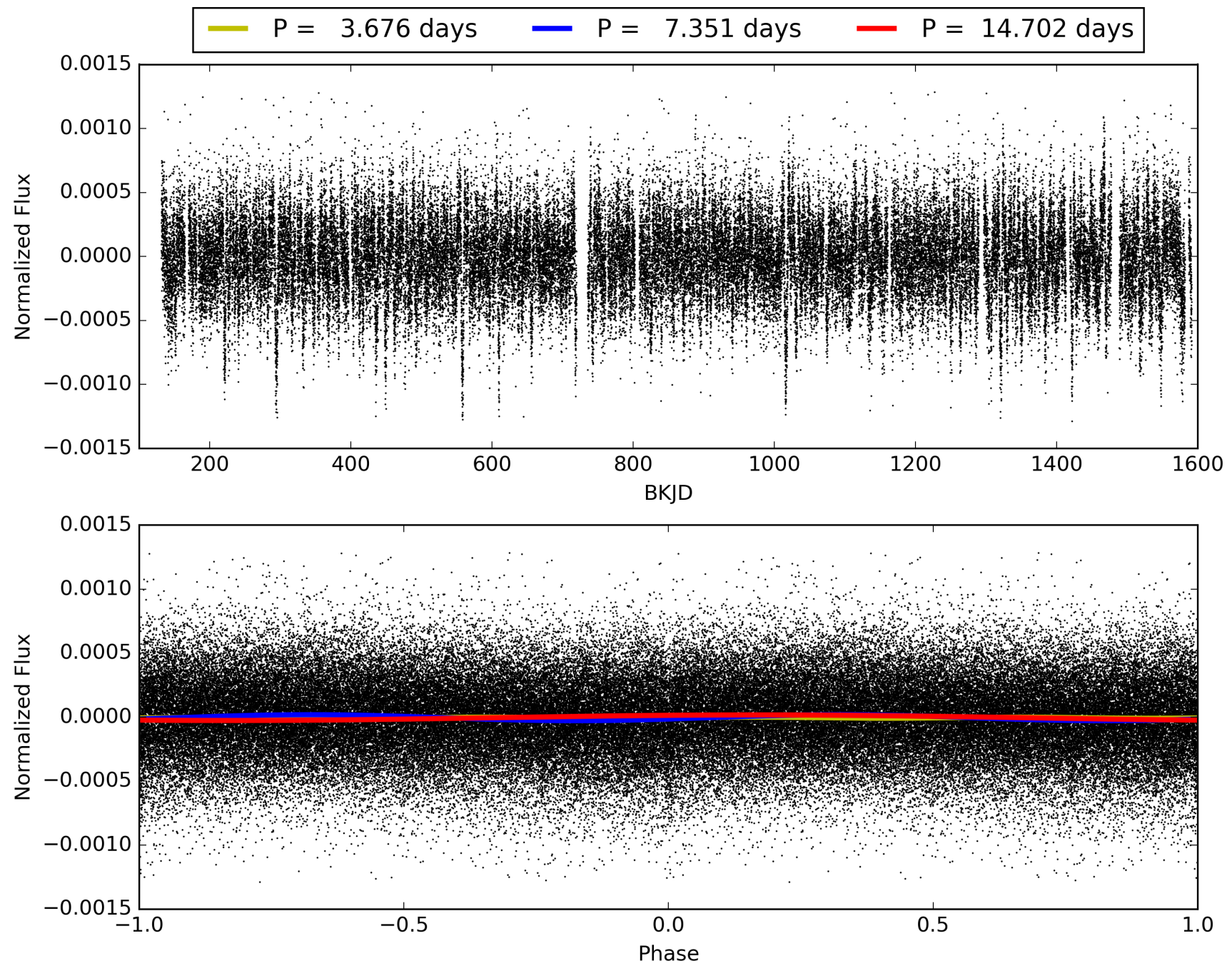
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:52:53 Z

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

TCE 008760040-02, PDC Light Curves

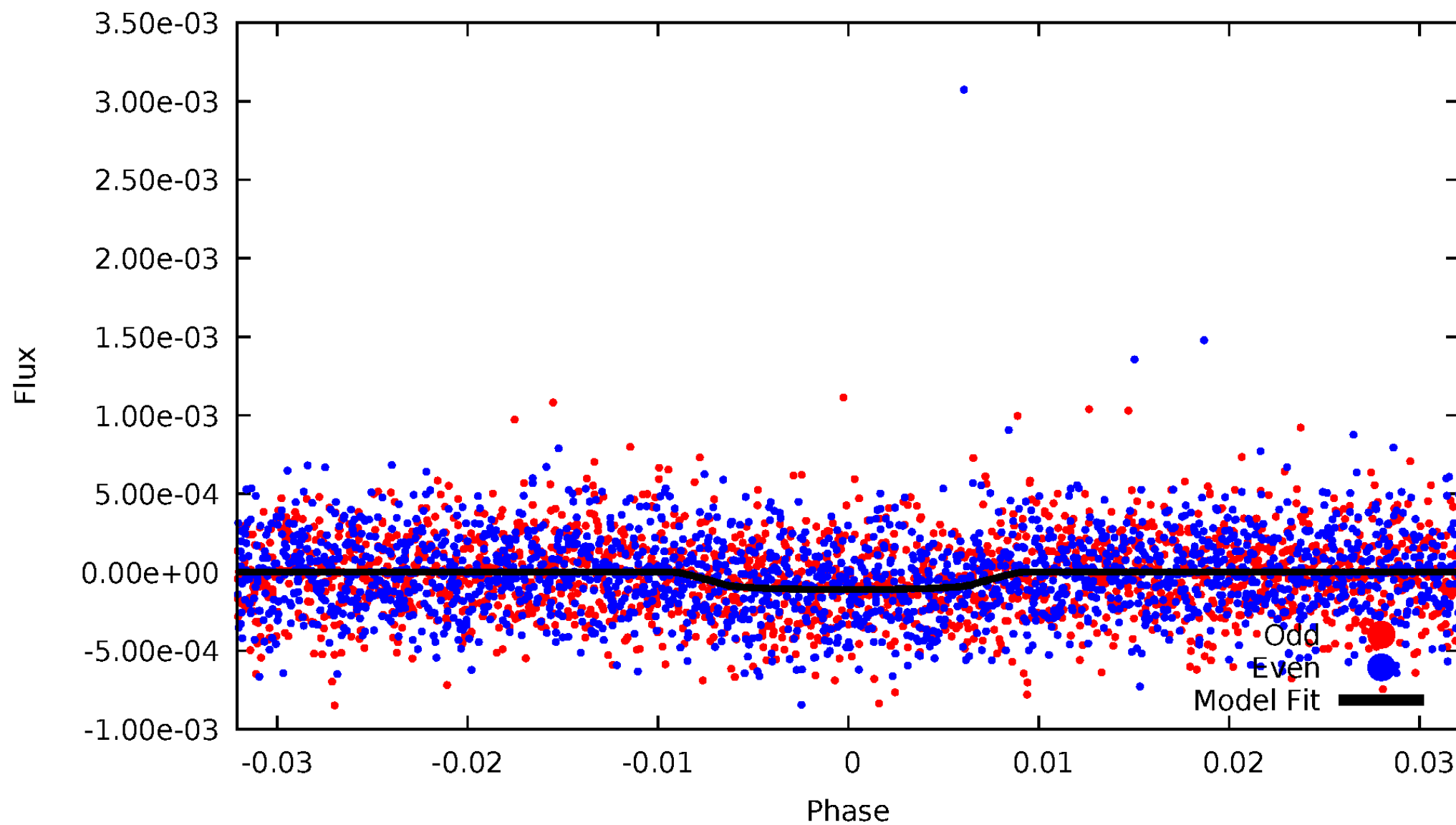


TCE 008760040-02



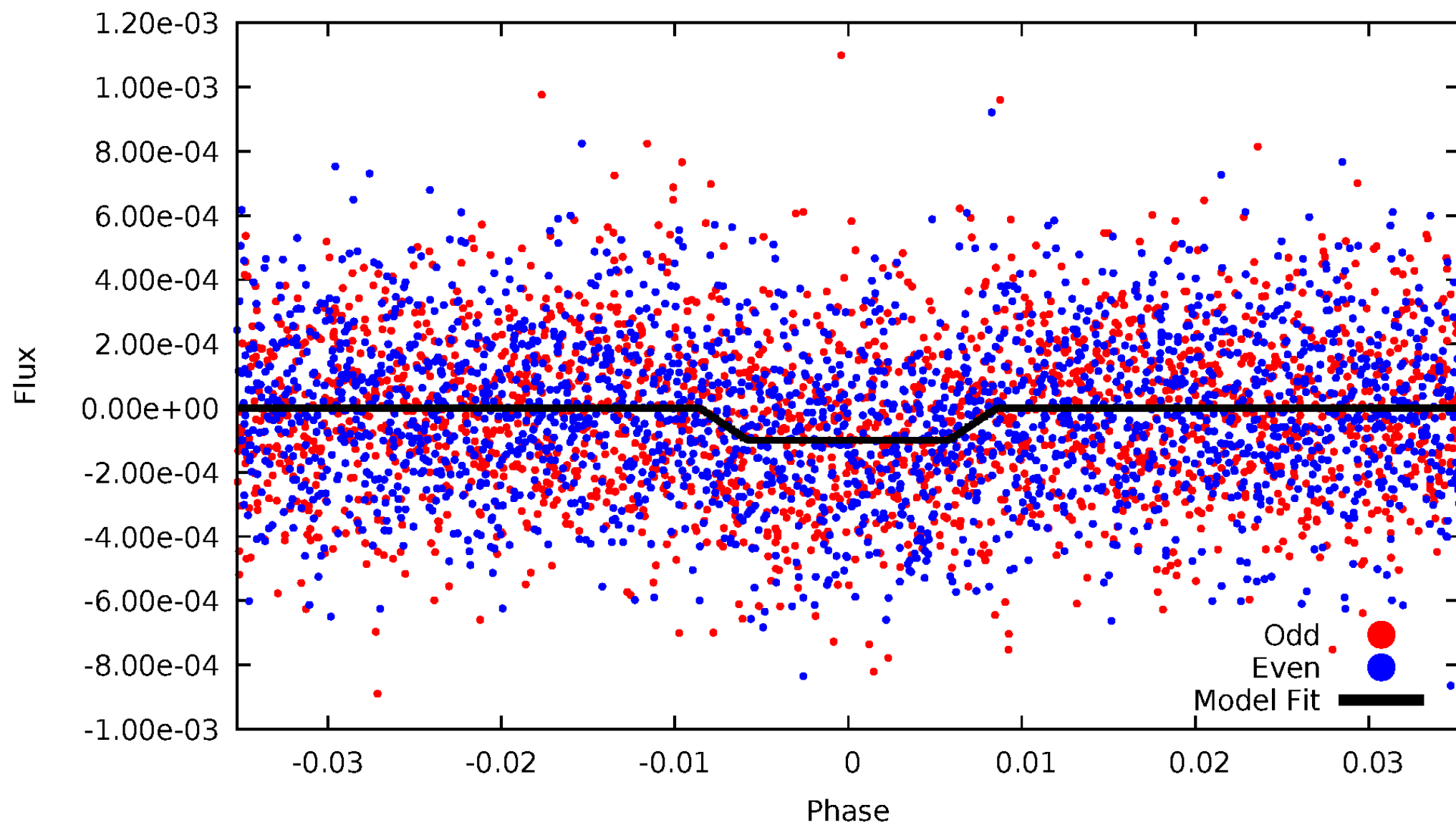
DV Odd/Even

TCE 008760040-02



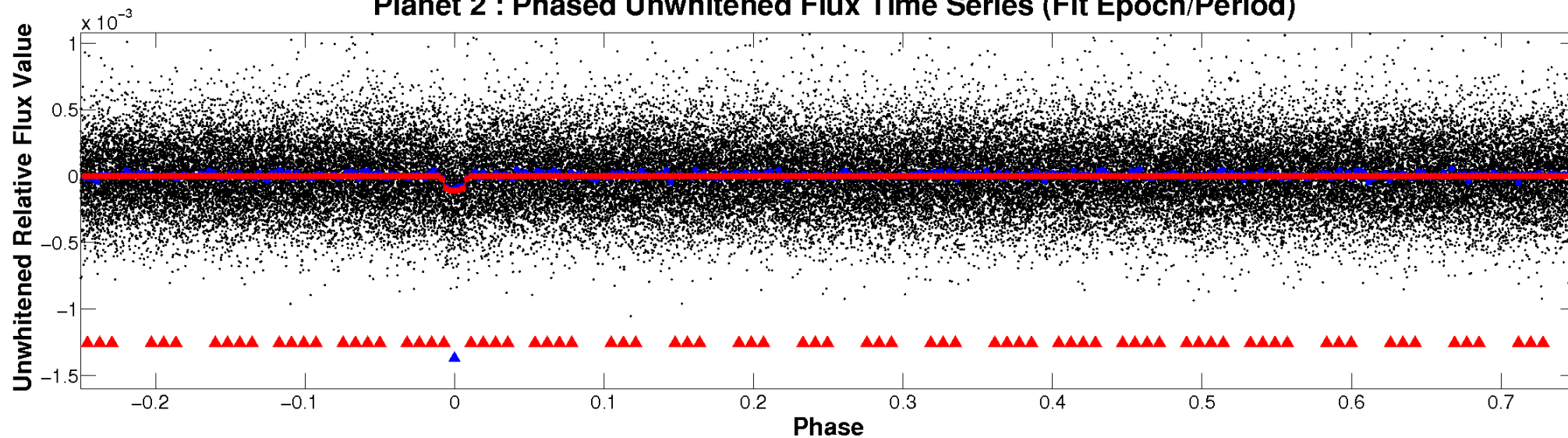
ALT Odd/Even

TCE 008760040-02

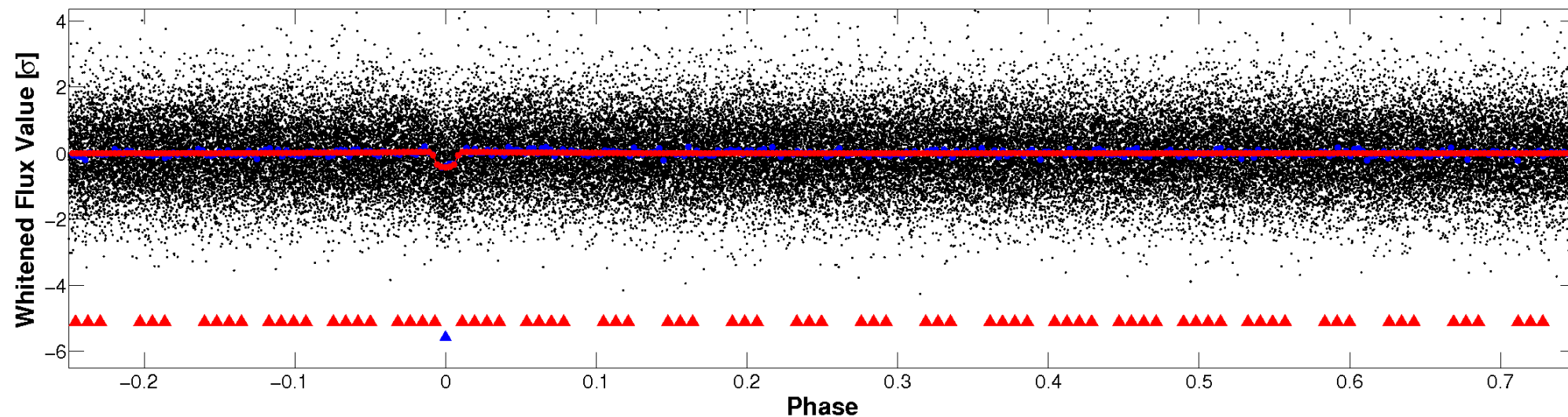


Non-Whitened Vs. Whitened Light Curve

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

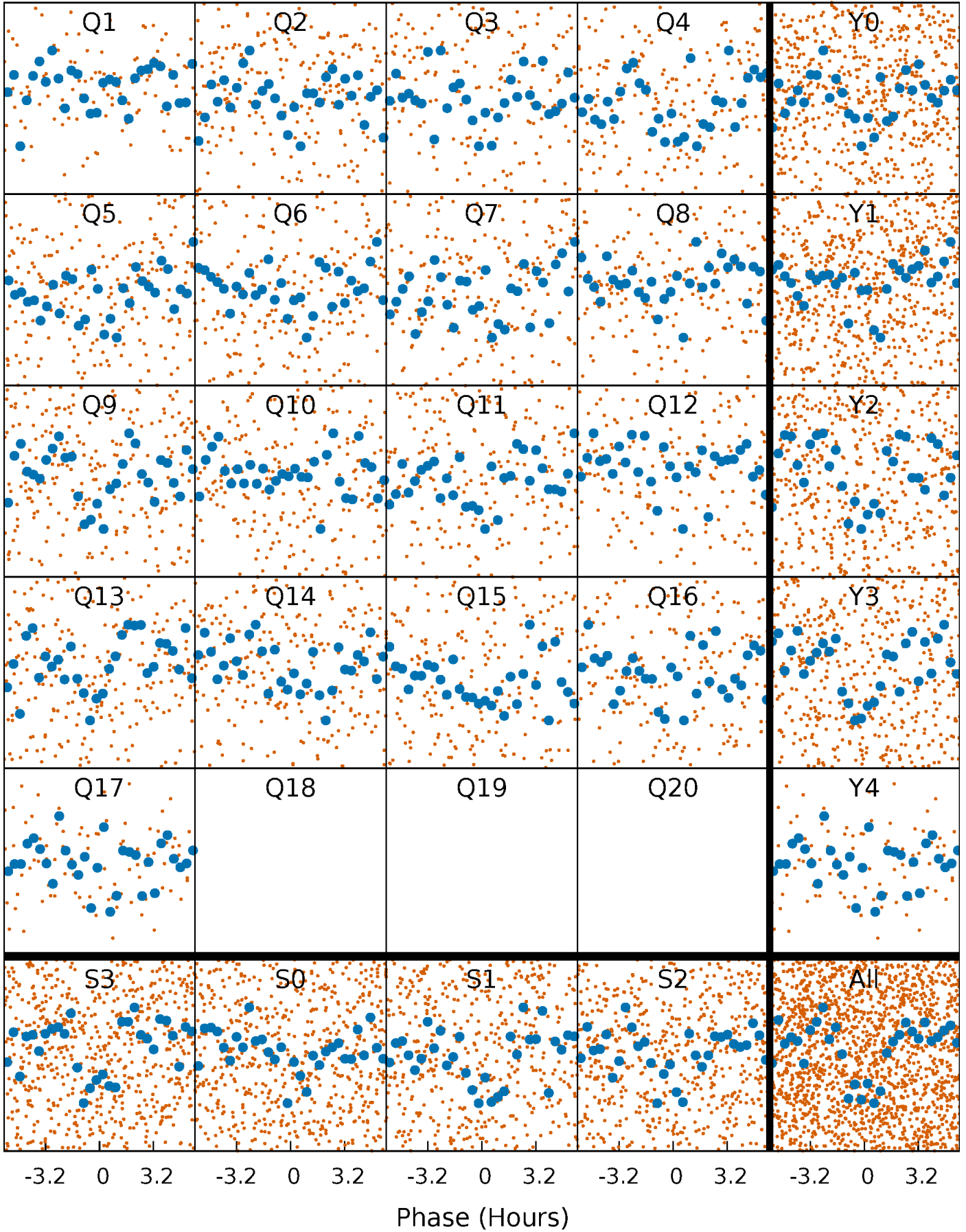


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



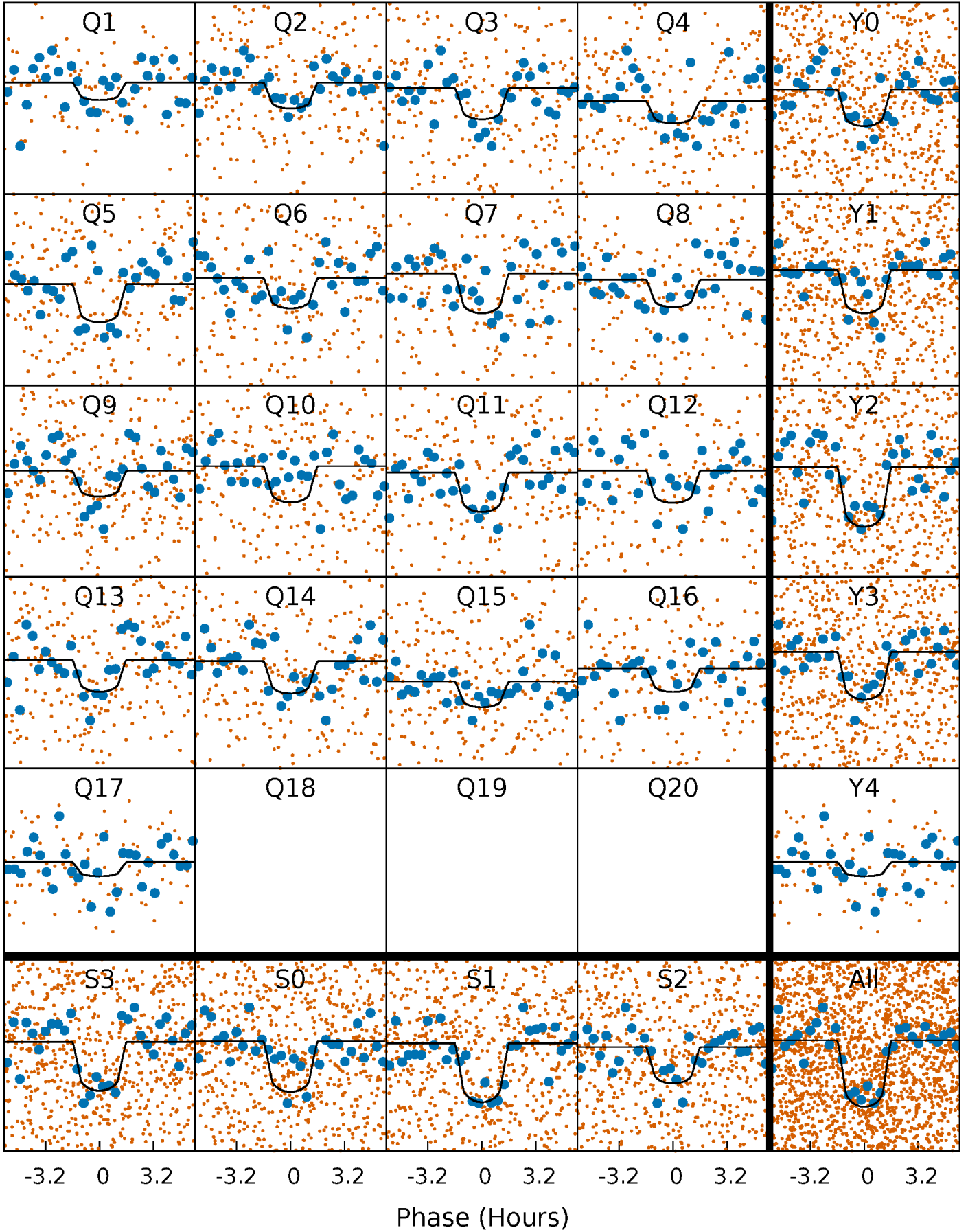
PDC Quarter-Phased Transit Curves

TCE 008760040-02 P= 7.351125 Days $T_0=133.626547$ (BKJD)



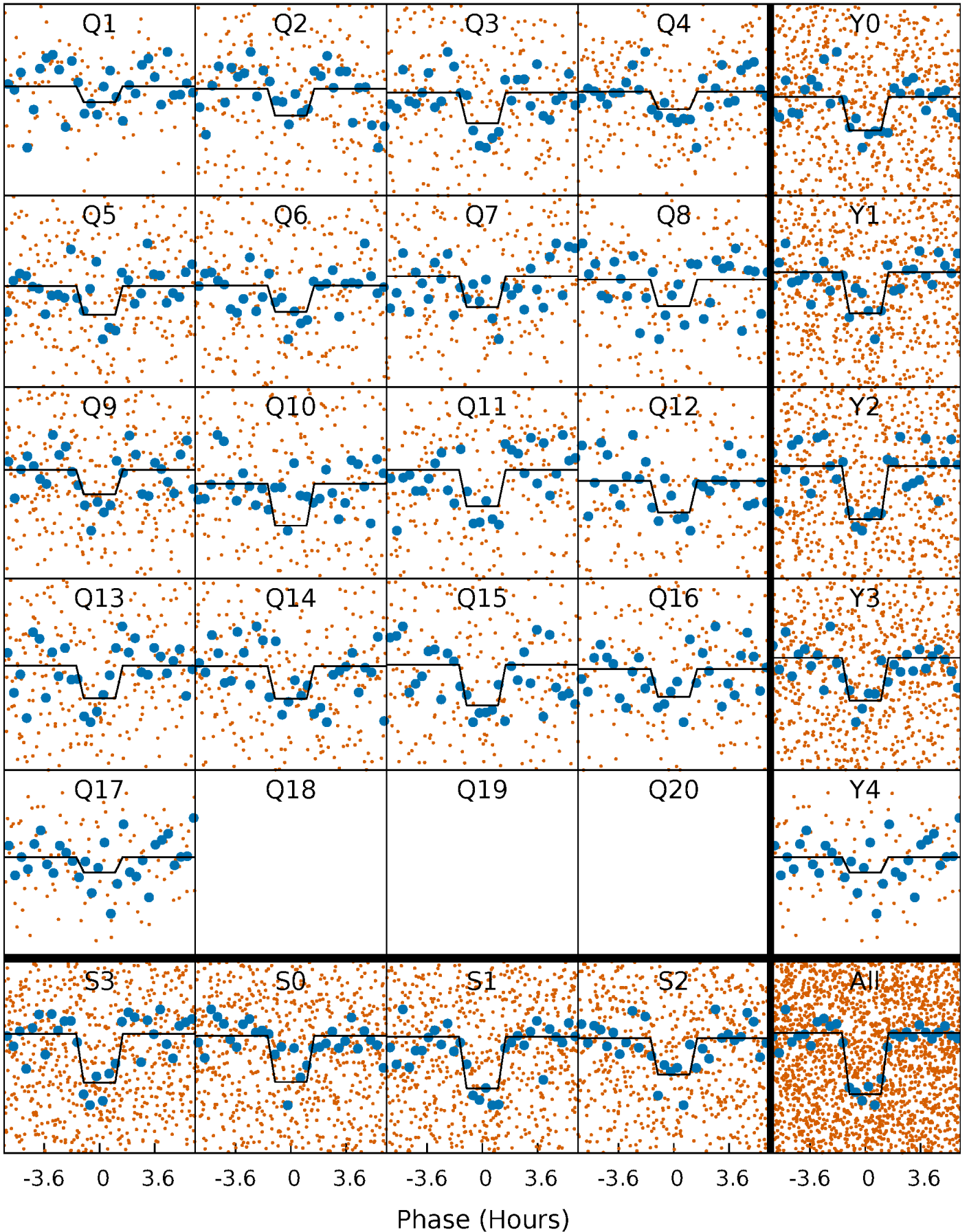
DV Quarter-Phased Transit Curves

TCE 008760040-02 P= 7.351125 Days $T_0=133.626547$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

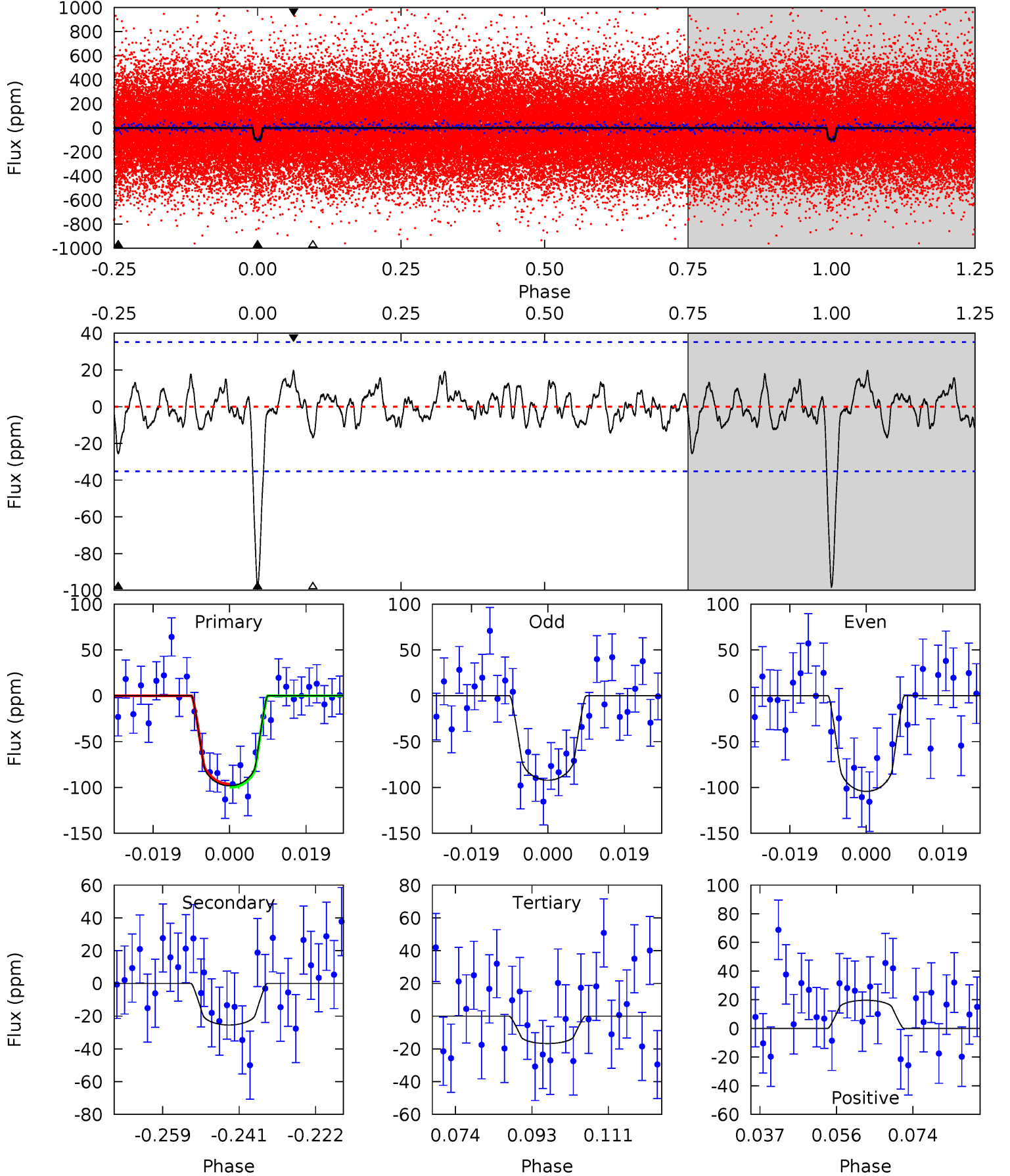
TCE 008760040-02 P= 7.351123 Days $T_0=133.627732$ (BKJD)



DV Model-Shift Uniqueness Test

008760040-02, P = 7.351125 Days, E = 126.275422 Days

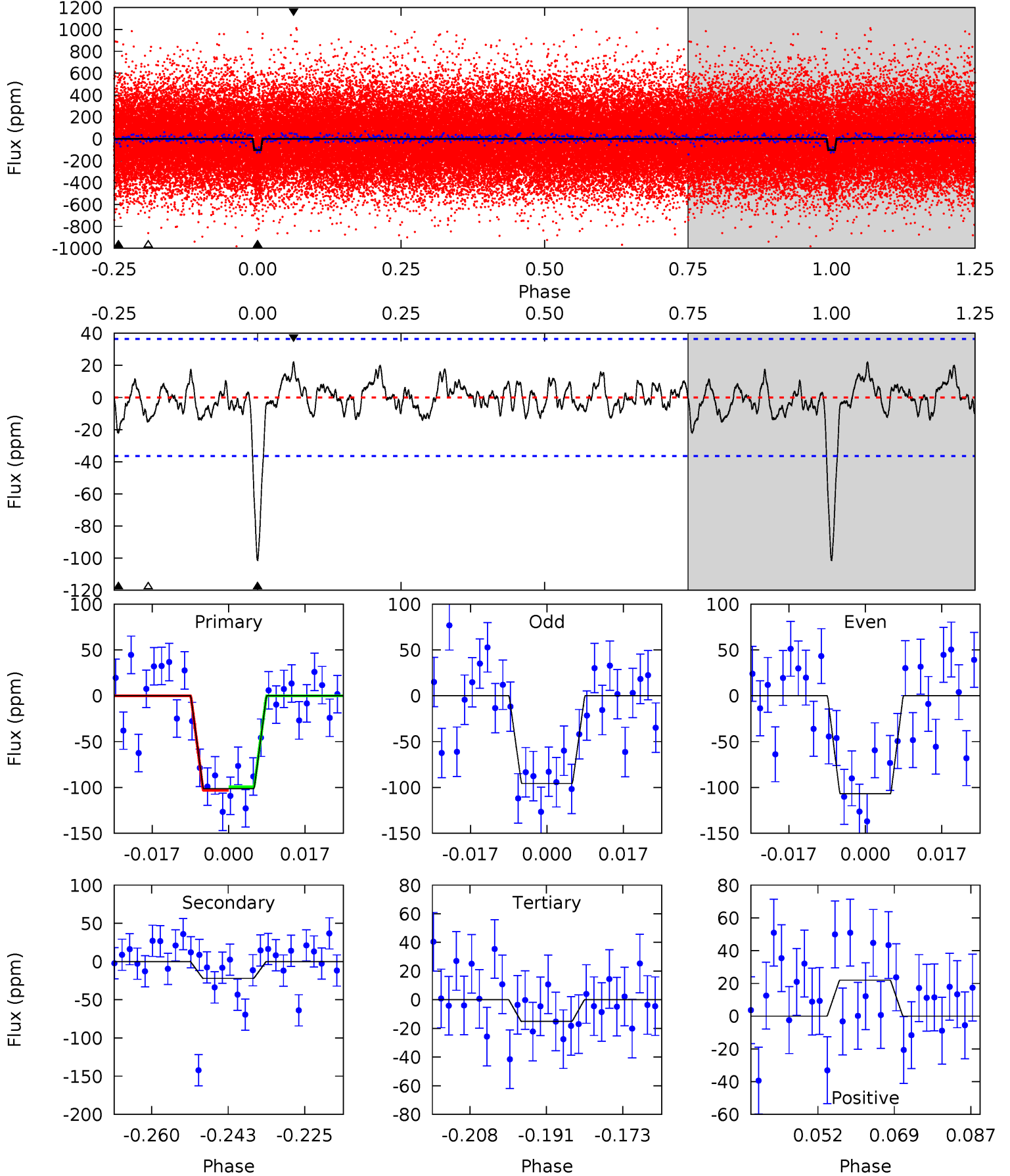
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	3.55	2.34	2.74	4.91	2.36	0.99	11.4	11.0	1.21	0.81	0.85	0.99	0.17	0.25



Alt Model-Shift Uniqueness Test

008760040-02, P = 7.351123 Days, E = 126.276609 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	2.98	2.03	2.96	4.92	2.38	0.98	11.7	10.7	0.94	0.01	0.76	0.95	0.18	0.25



Stellar Parameters For KIC 008760040

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5951^{+71}_{-79}	$4.283^{+0.120}_{-0.120}$	$0.140^{+0.150}_{-0.150}$	$1.262^{+0.209}_{-0.168}$	$1.117^{+0.077}_{-0.077}$	$0.782^{+0.416}_{-0.272}$
	+1%/-1%	+3%/-3%	+107%/-107%	+17%/-13%	+7%/-7%	+53%/-35%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 008760040-02 / KOI 2963.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25 ± 7	$1.54^{+0.91}_{-0.83}$	1487^{+67}_{-59}	4221^{+1673}_{-646}	35^{+137}_{-21}
Alt.	-22 ± 7	$1.46^{+0.82}_{-0.78}$	1488^{+68}_{-61}	4209^{+1526}_{-656}	32^{+117}_{-20}

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

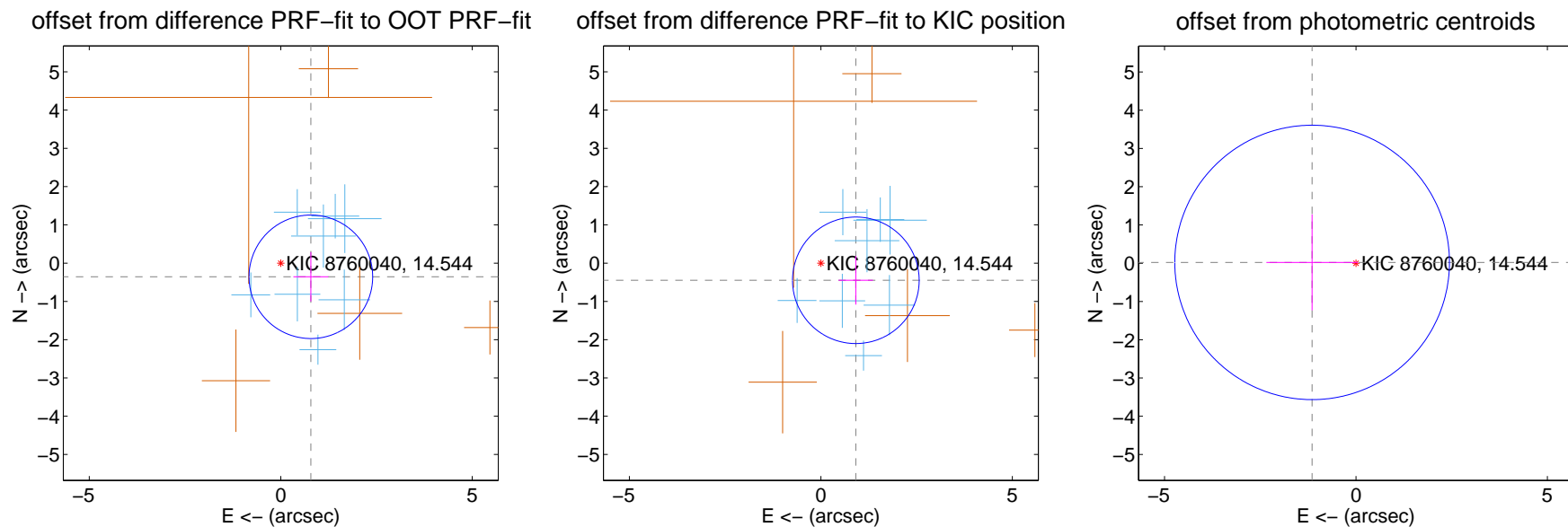
DV Centroid Data

Supplemental centroid analysis for 008760040-02. Kepler magnitude: 14.54. Transit SNR 11.40

There are 8 quarters with good PRF difference image offsets

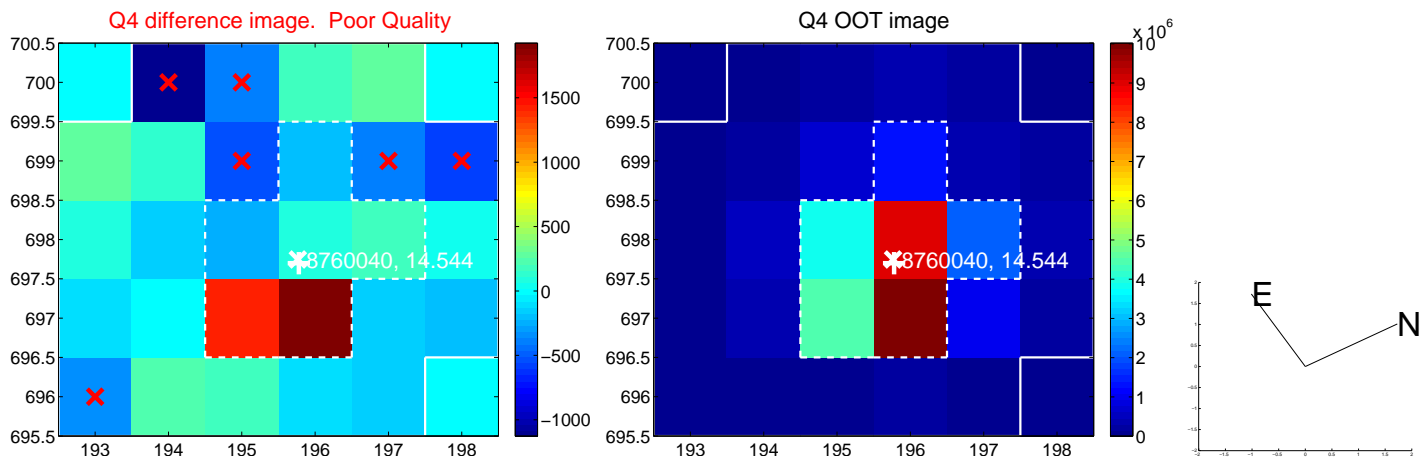
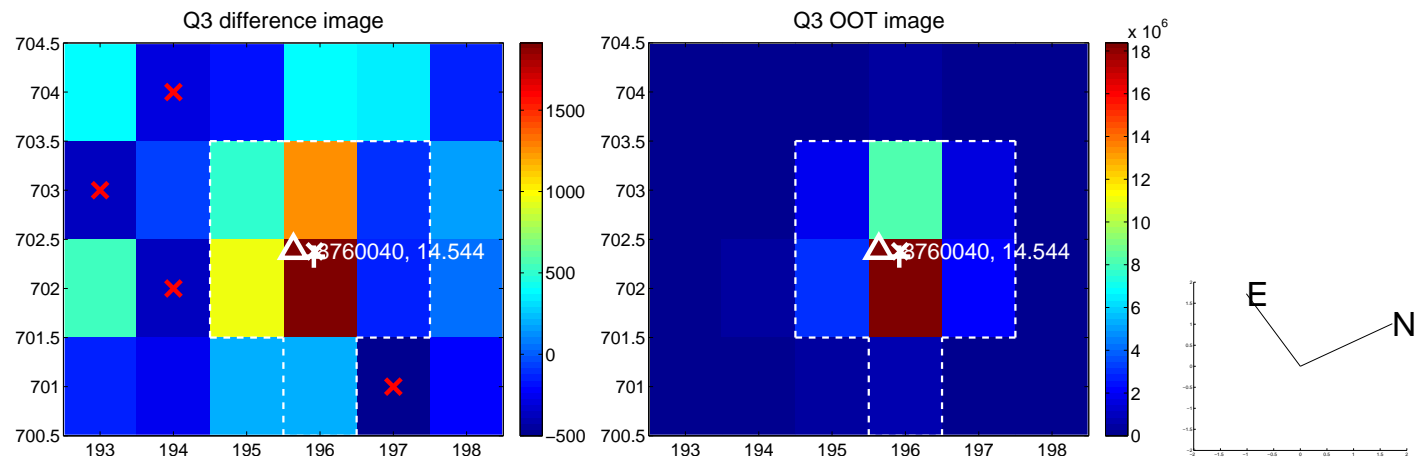
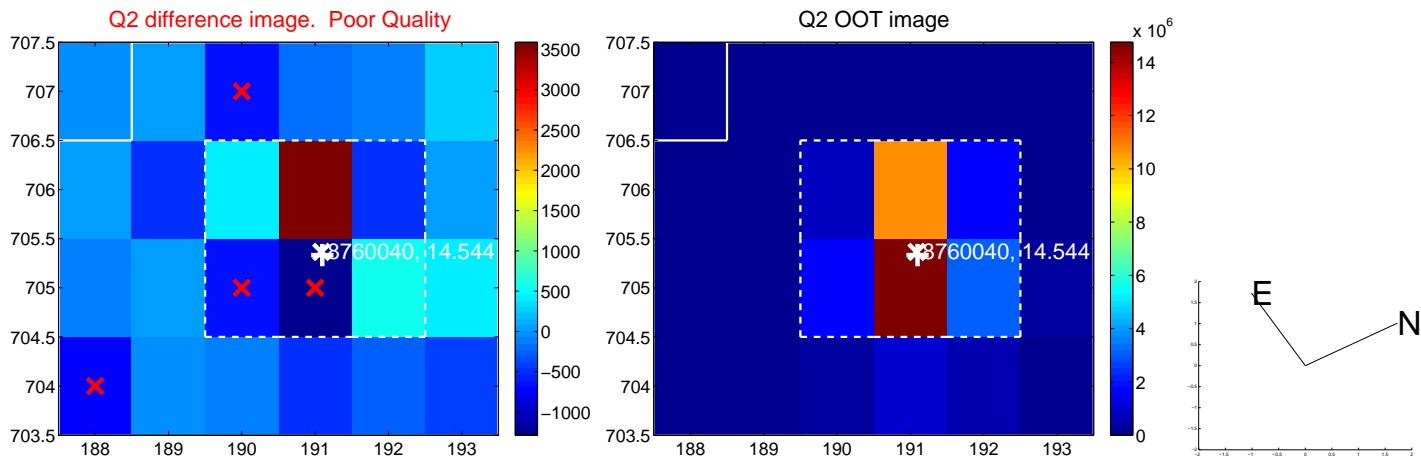
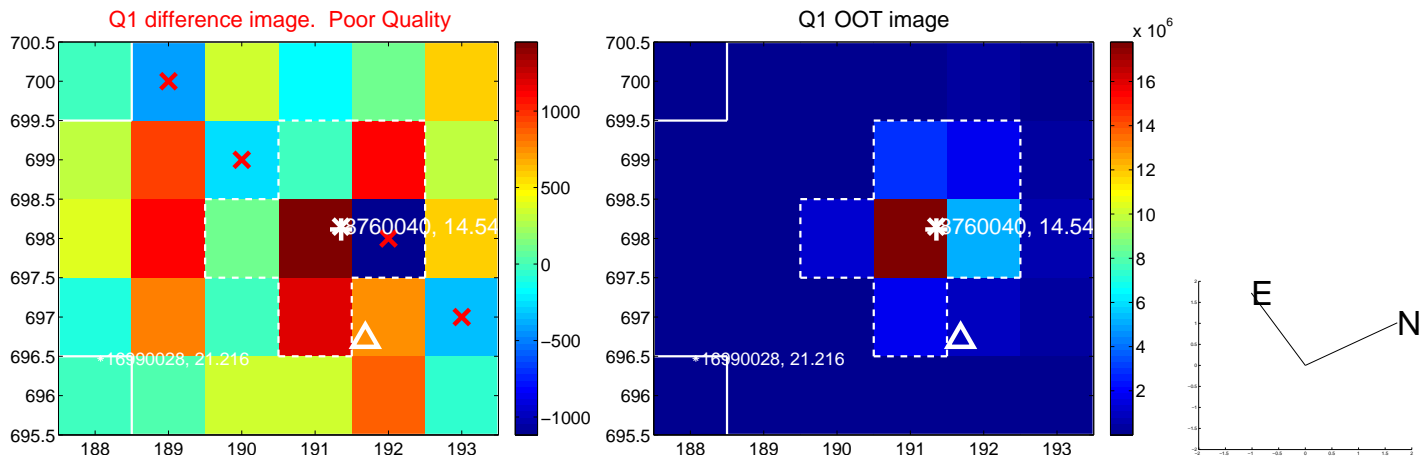
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.863 ± 0.538	1.60	-0.786 ± 0.456	-0.357 ± 0.644
PRF-fit source offset from KIC position	1.017 ± 0.551	1.85	-0.913 ± 0.449	-0.448 ± 0.635
photometric centroid source offset	1.14 ± 1.20	0.96	1.14 ± 1.20	0.02 ± 1.25

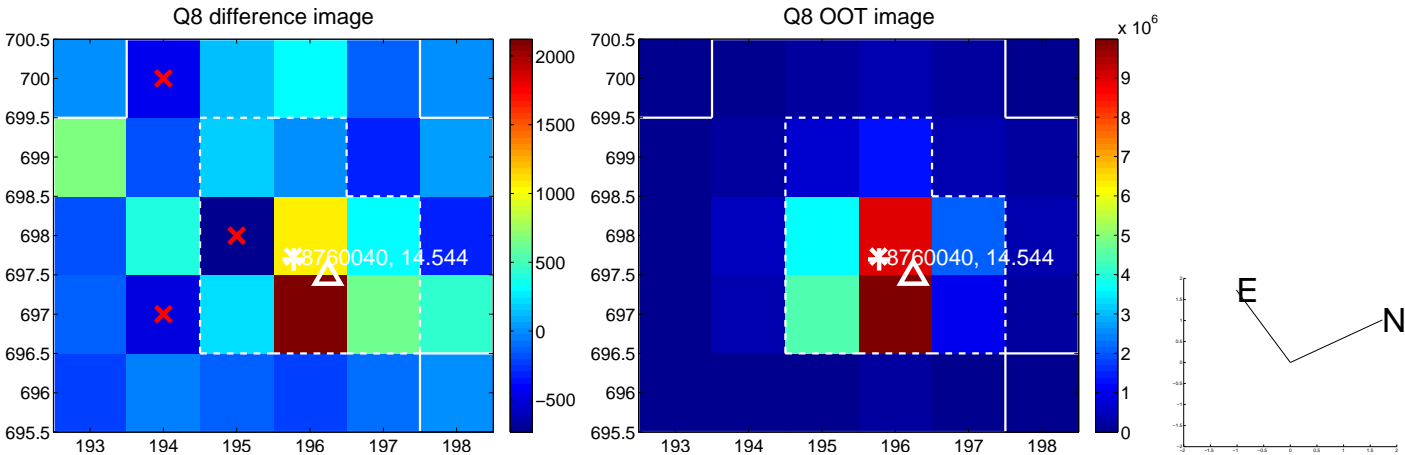
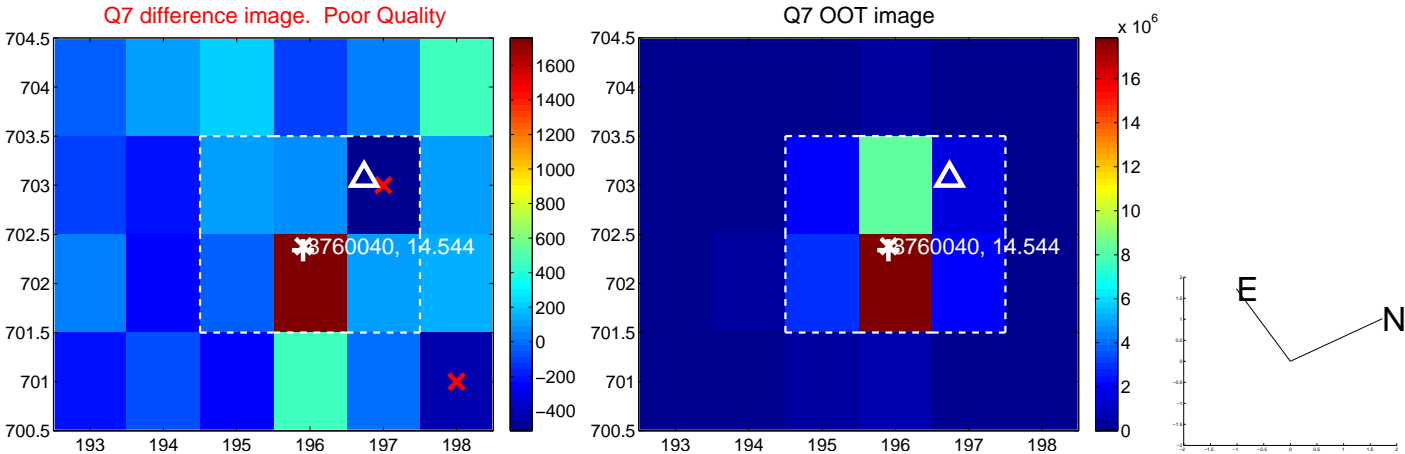
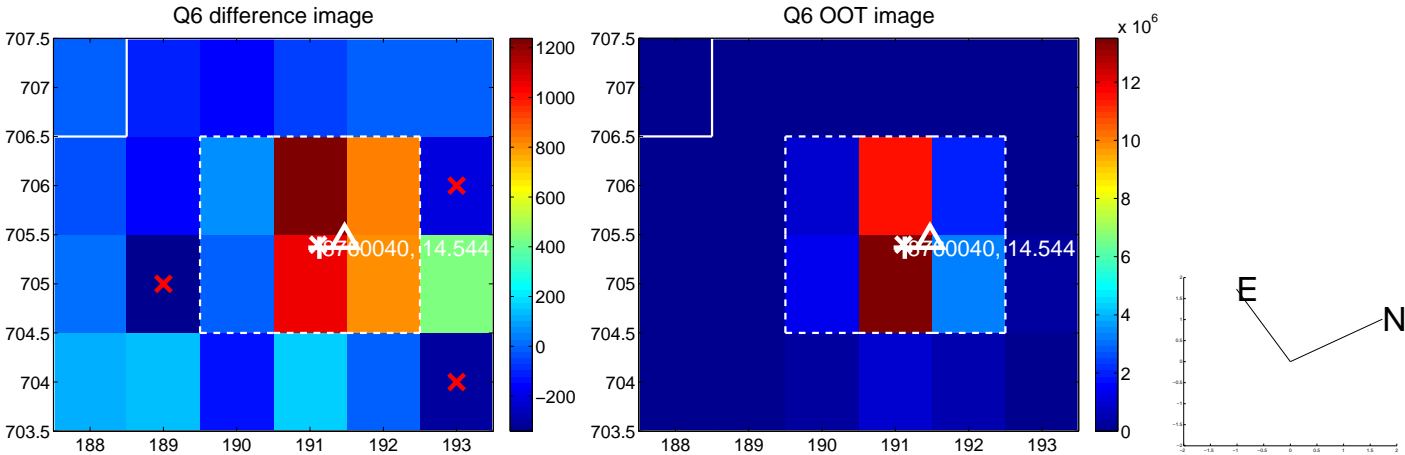
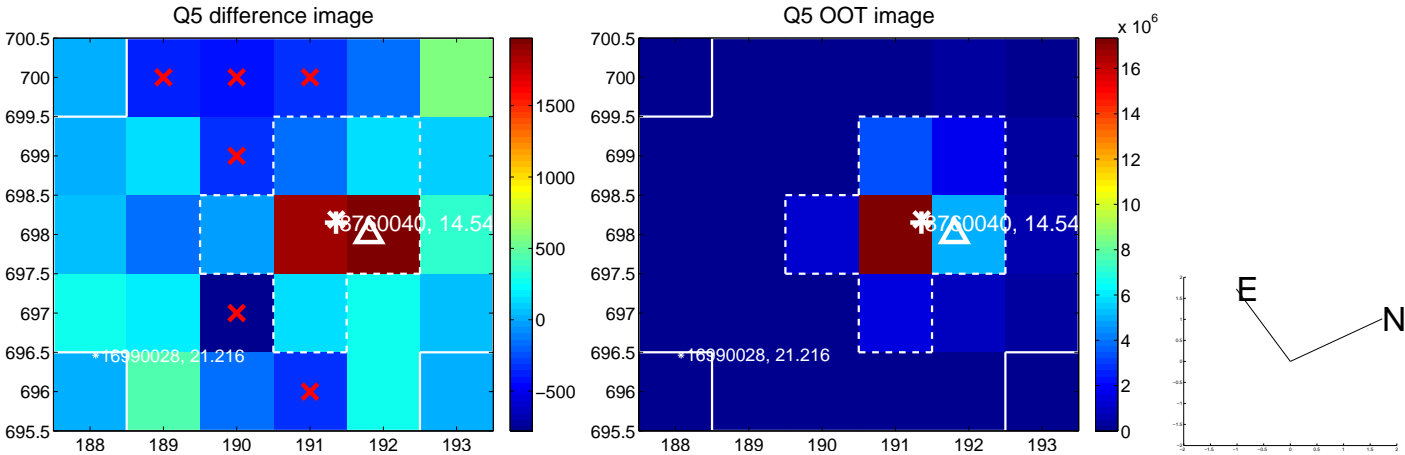


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

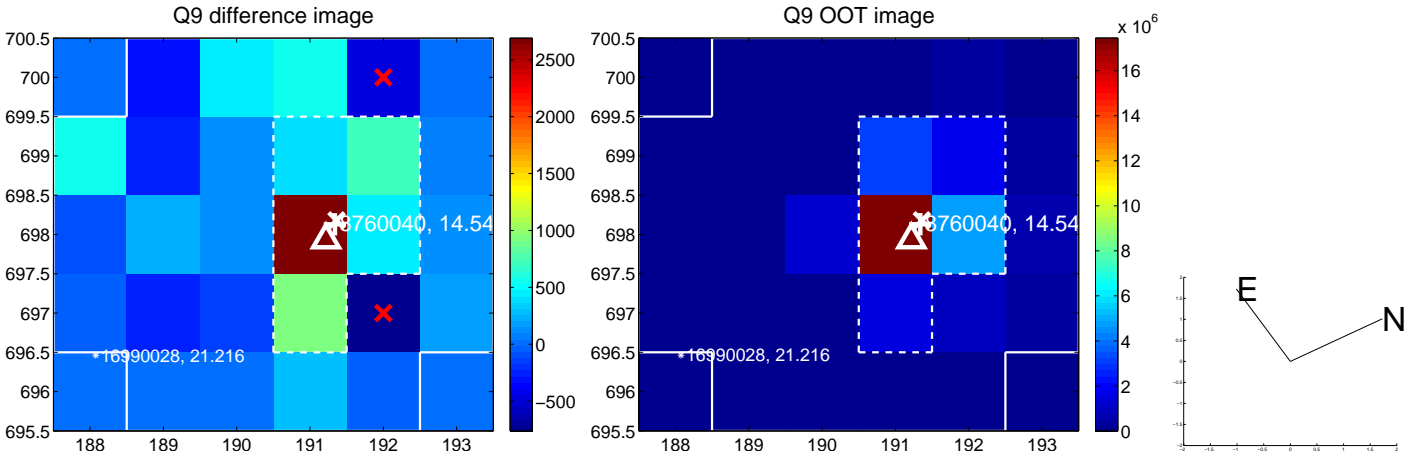
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



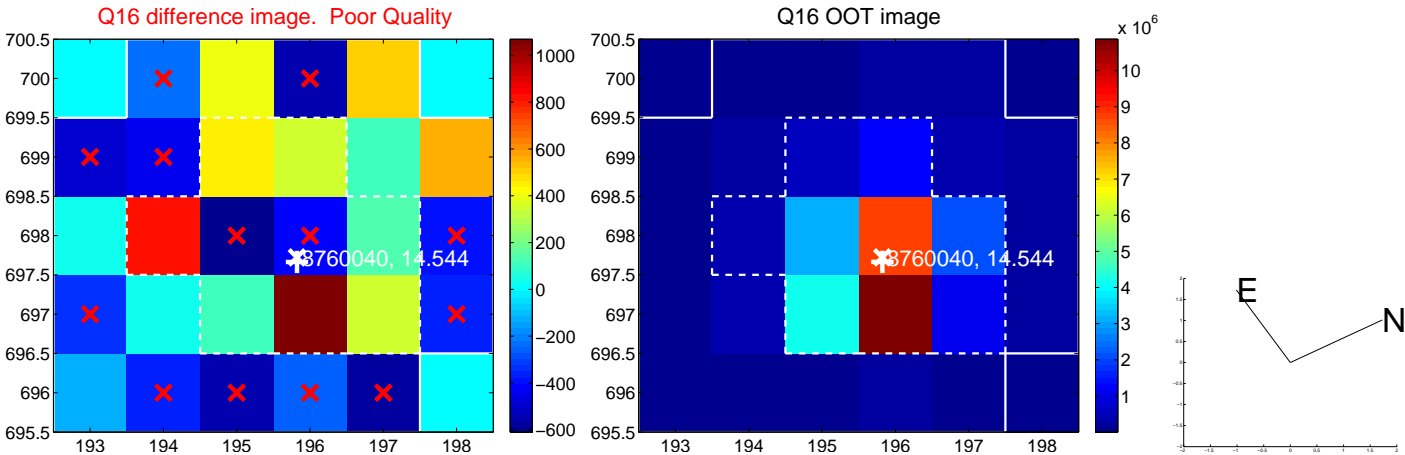
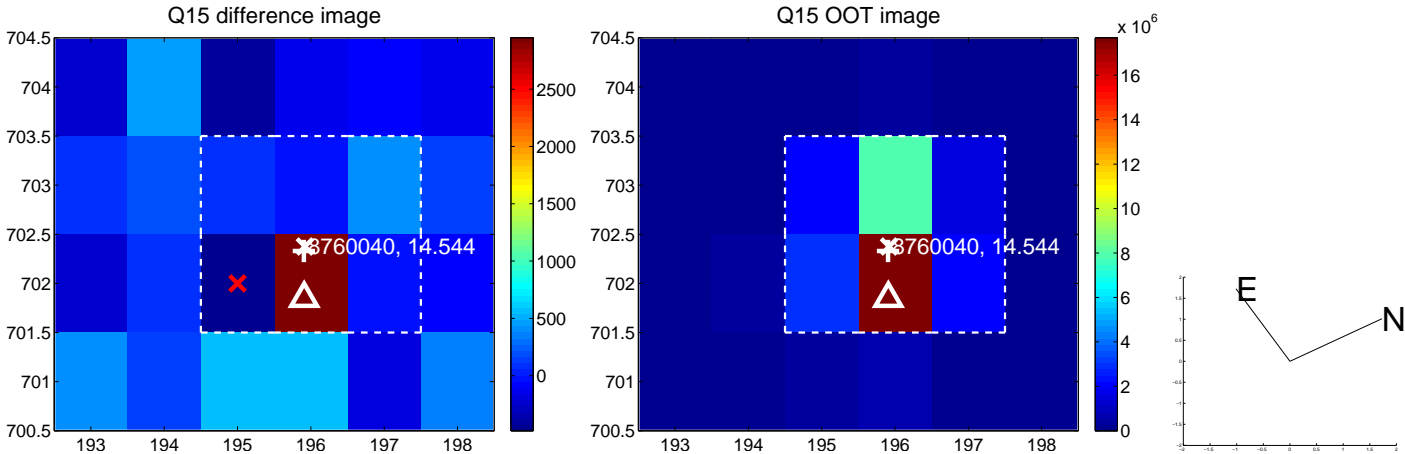
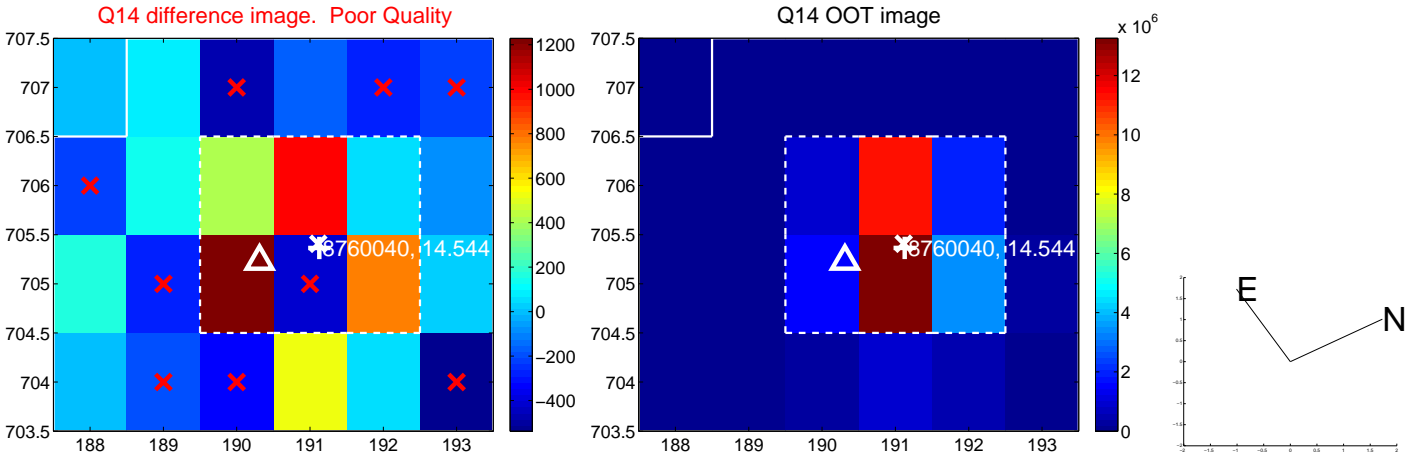
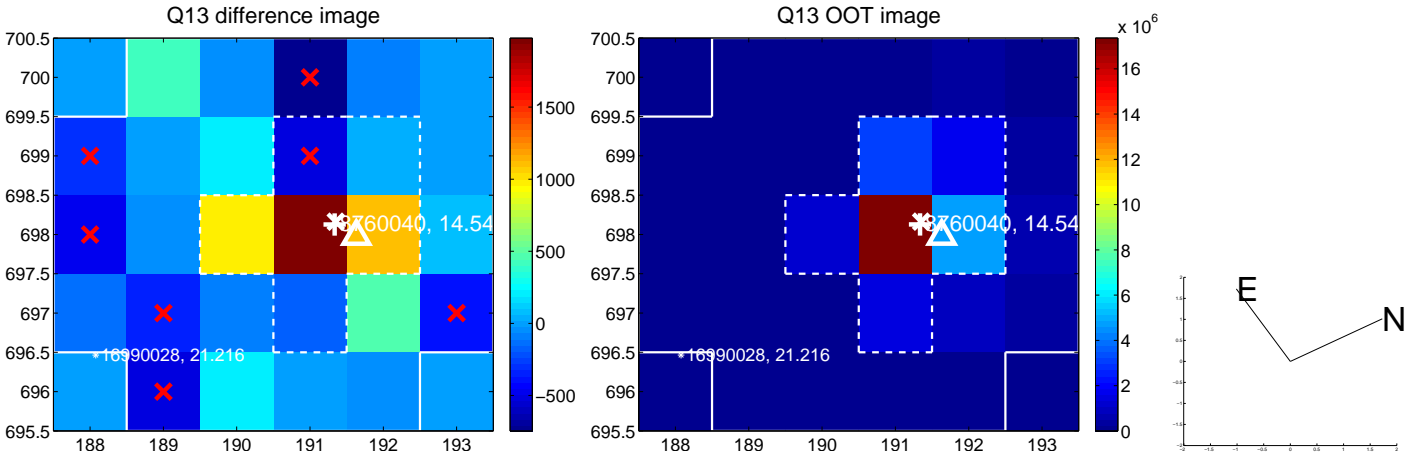
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



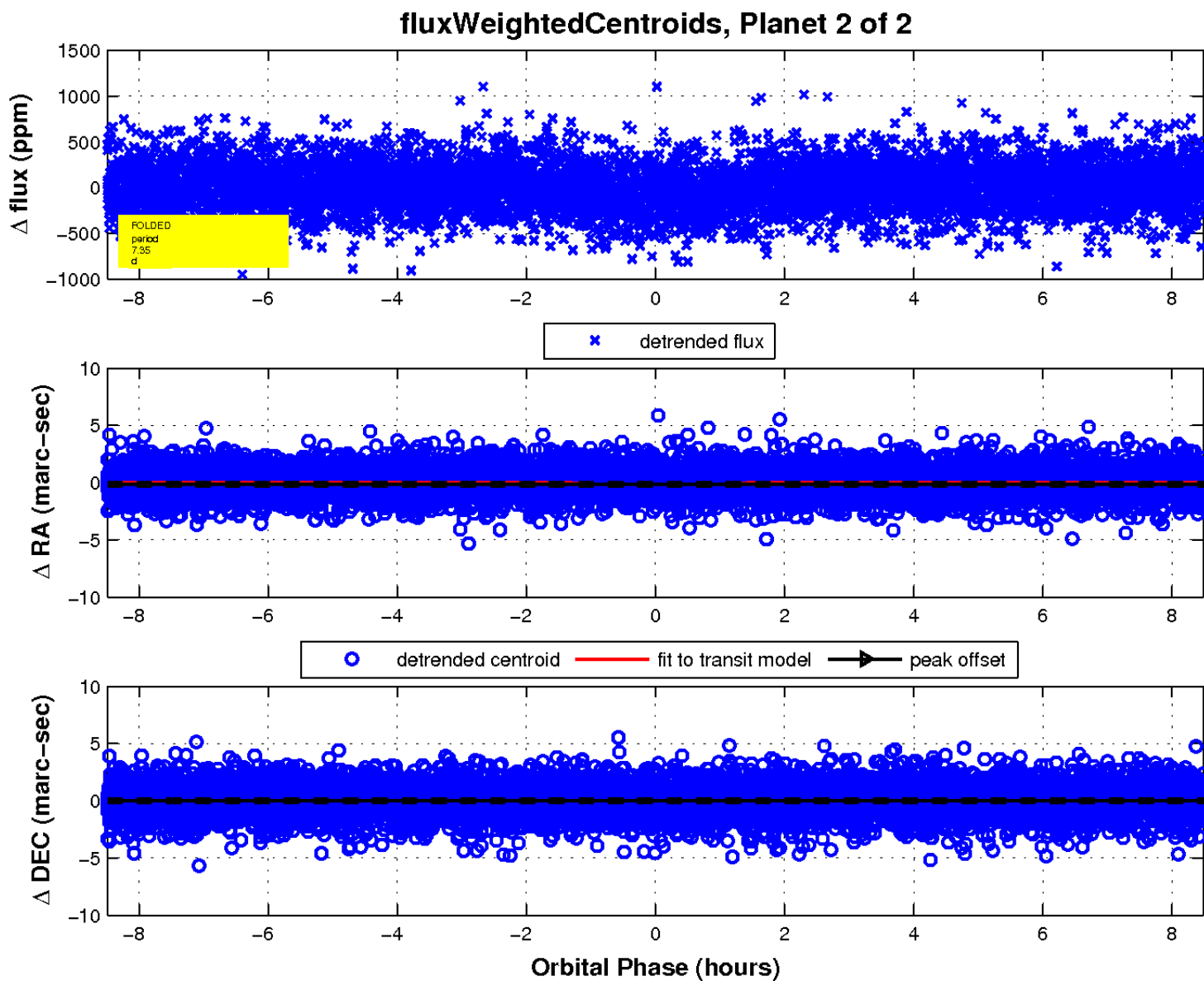
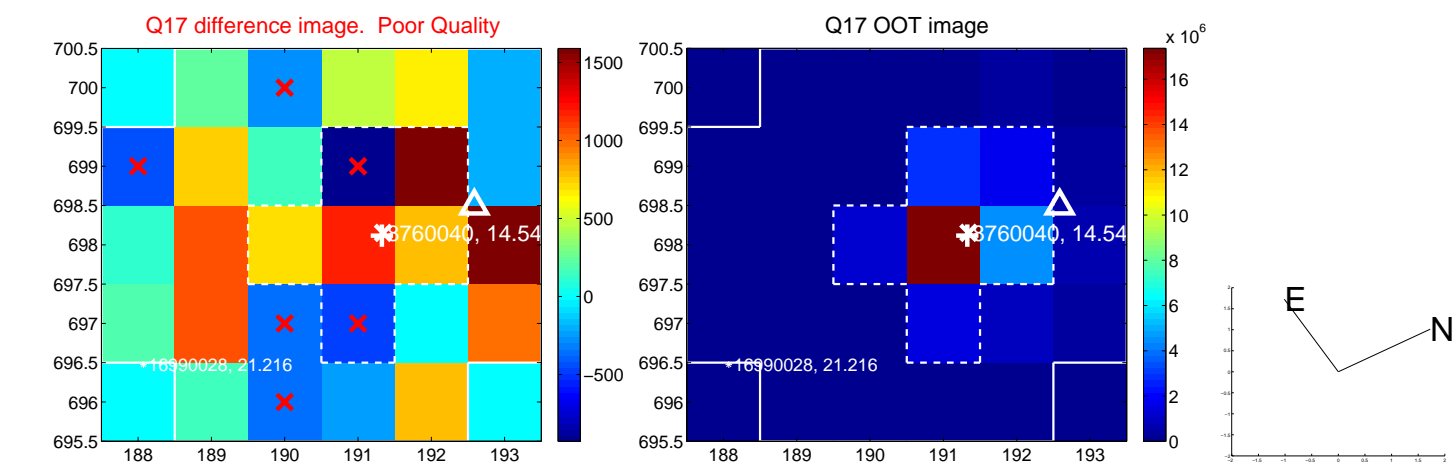
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

