

KIC 009640921

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})
009640921-01	OBS	7210.01	80.706018	139.437441	11791.0	6.875	247.0	243.3	0.95	6053	15.09	7.97
009640921-02	OBS	No	80.705985	189.271409	10642.0	6.243	234.0	228.4	0.95	6053	11.44	7.97
009640921-03	OBS	7210.02	2.178131	132.031302	111.2	2.412	12.7	11.4	0.95	6053	1.18	985.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009640921-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009640921-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009640921-03	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH

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

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

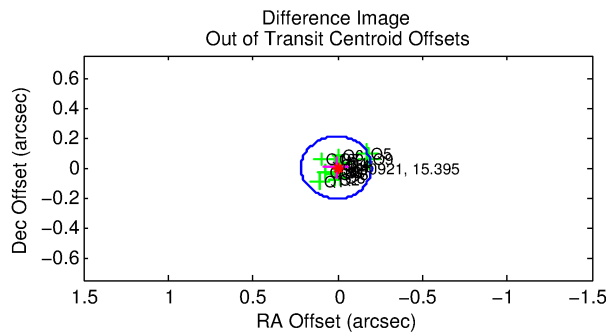
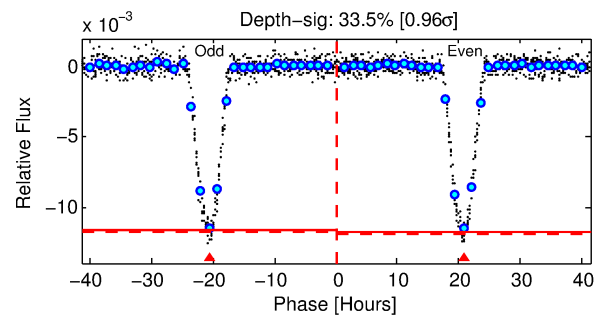
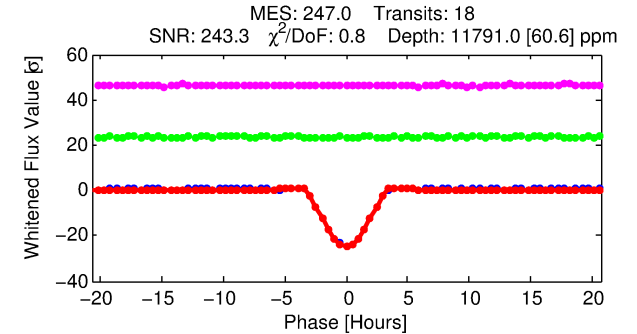
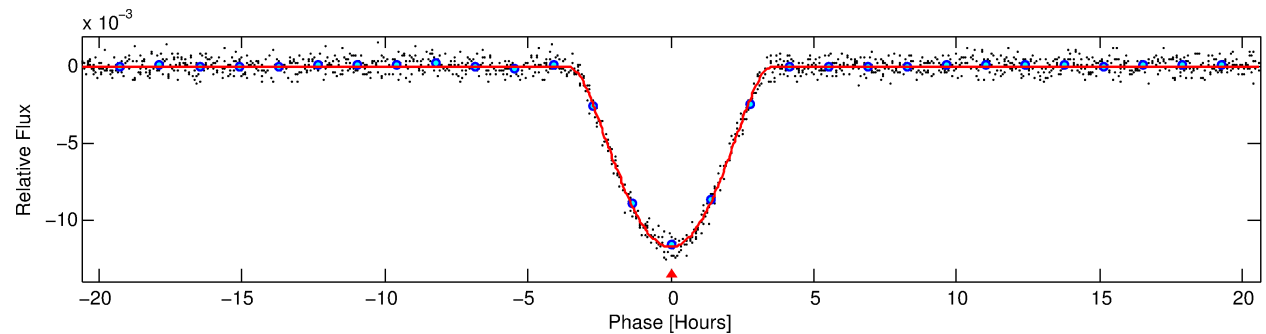
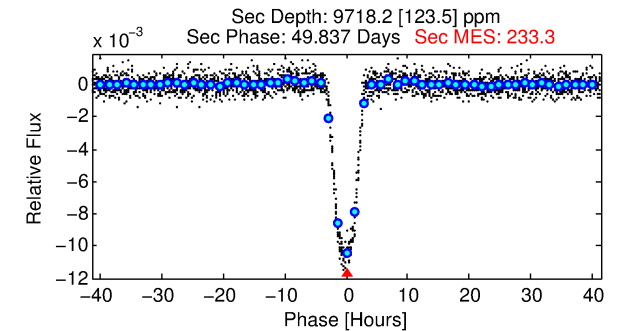
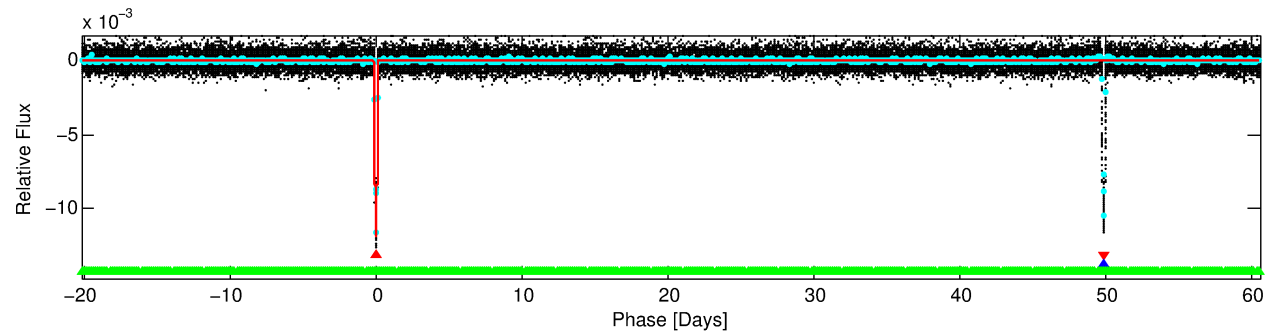
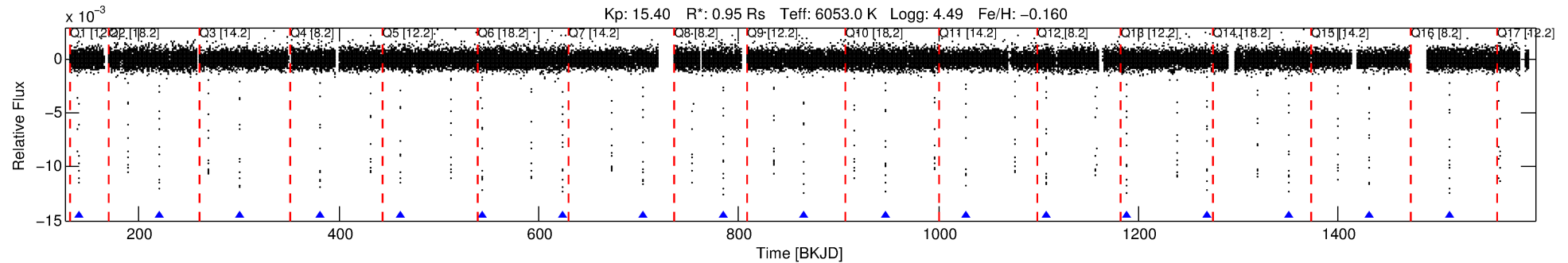
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009640921-01

No Significant Match Found

DV One-Page Summary

KIC: 9640921 Candidate: 1 of 3 Period: 80.706 d
KOI: K07210.01 Corr: 0.995



DV Fit Results:

Period = 80.70602 [0.00006] d
Epoch = 139.4374 [0.0006] BKJD
Rp/R* = 0.1457 [0.0135]
a/R* = 57.21 [1.27]
b = 0.95 [0.02]
Seff = 7.98 [3.20]
Teq = 429 [43] K
Rp = 15.09 [4.83] Re
a = 0.3685 [0.0956] AU
Ag = 3189.24 [1346.09] [2.37 σ]
Teffp = 4979 [283] K [15.92 σ]

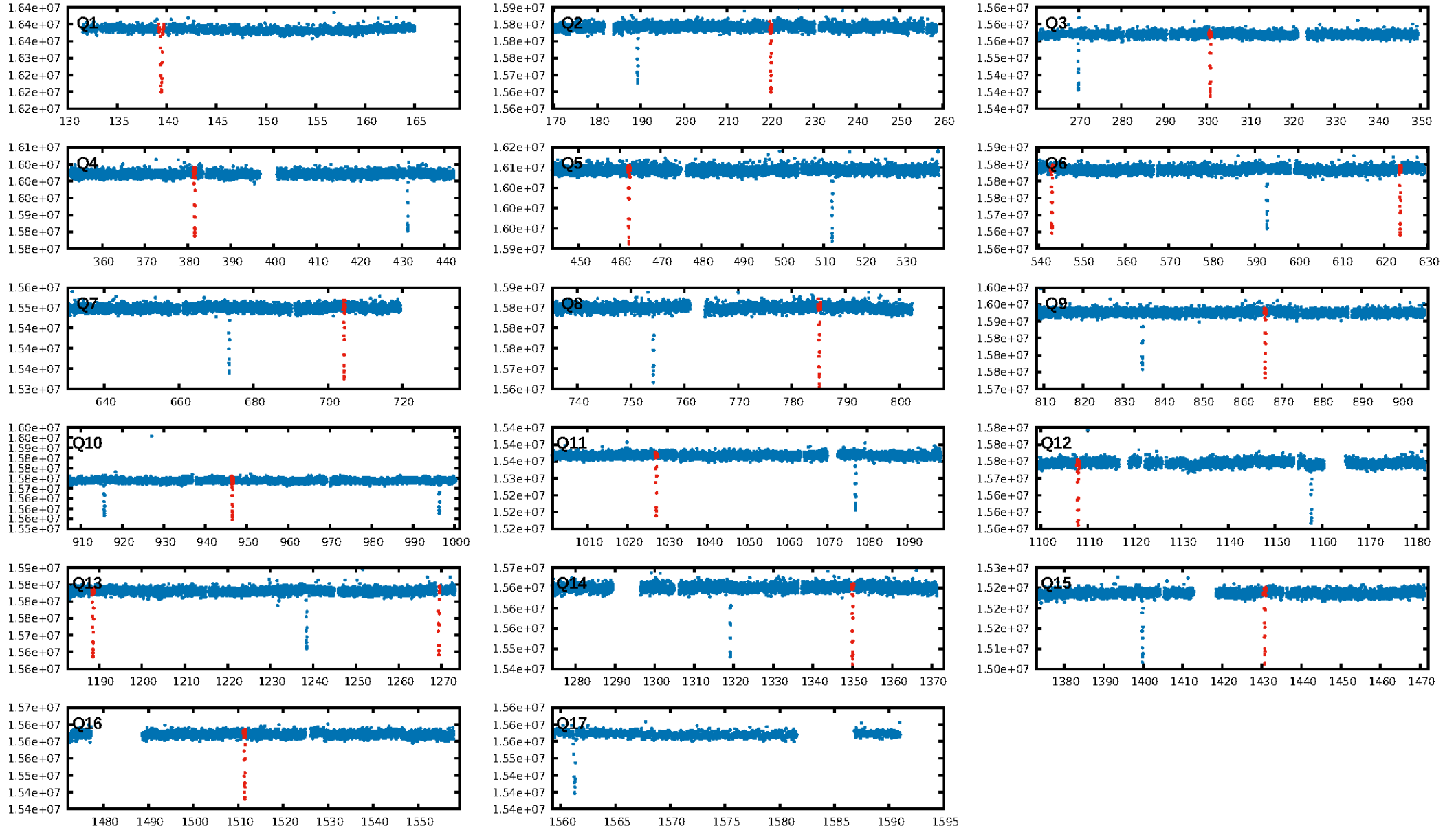
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 49.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: 6.783
Centroid-sig: 9.9%
Centroid-so: 0.075 arcsec [1.22 σ]
OotOffset-rm: 0.009 arcsec [0.13 σ]
KicOffset-rm: 0.013 arcsec [0.18 σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 0.47 [7/15]

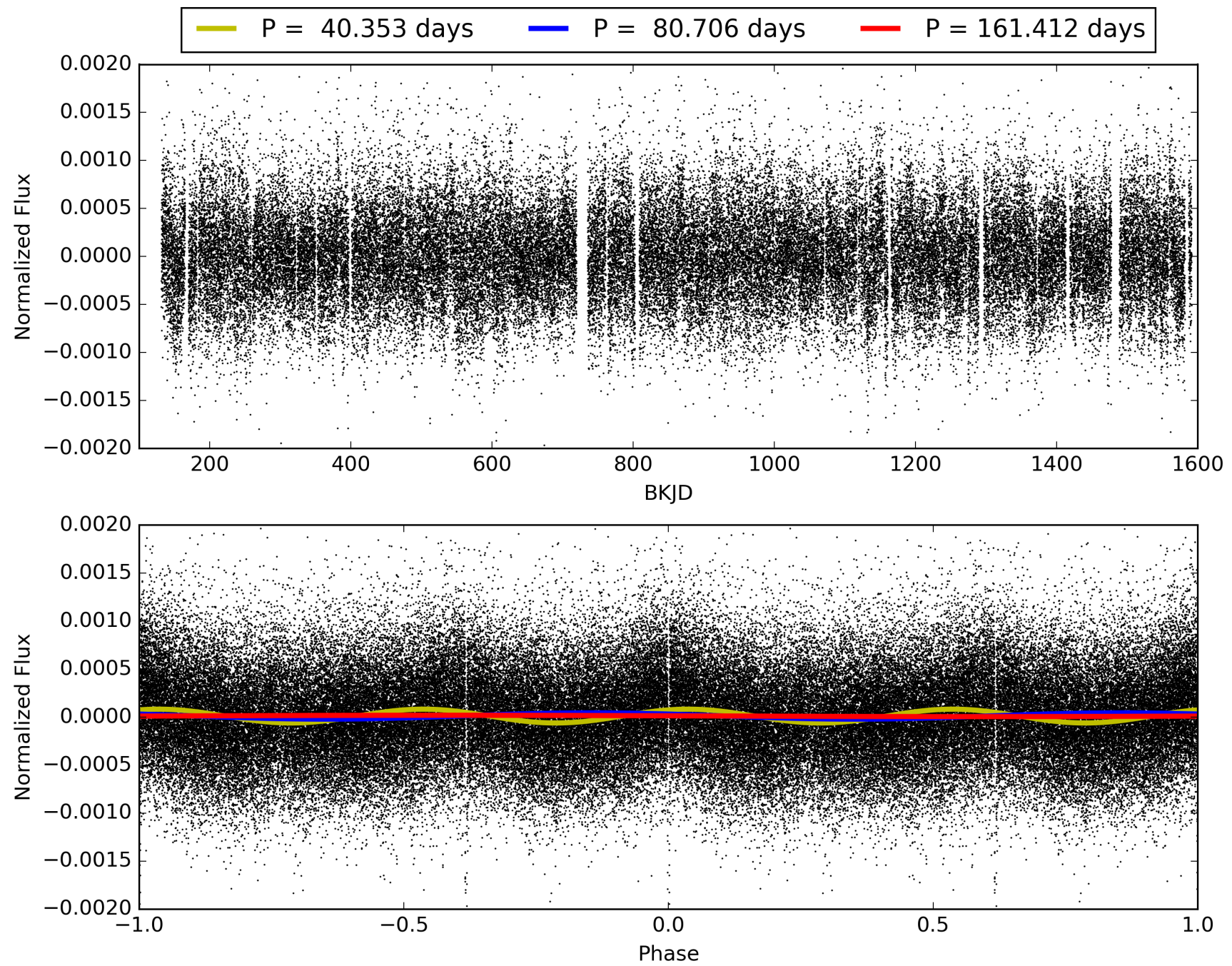
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:23:19 Z

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

TCE 009640921-01, PDC Light Curves

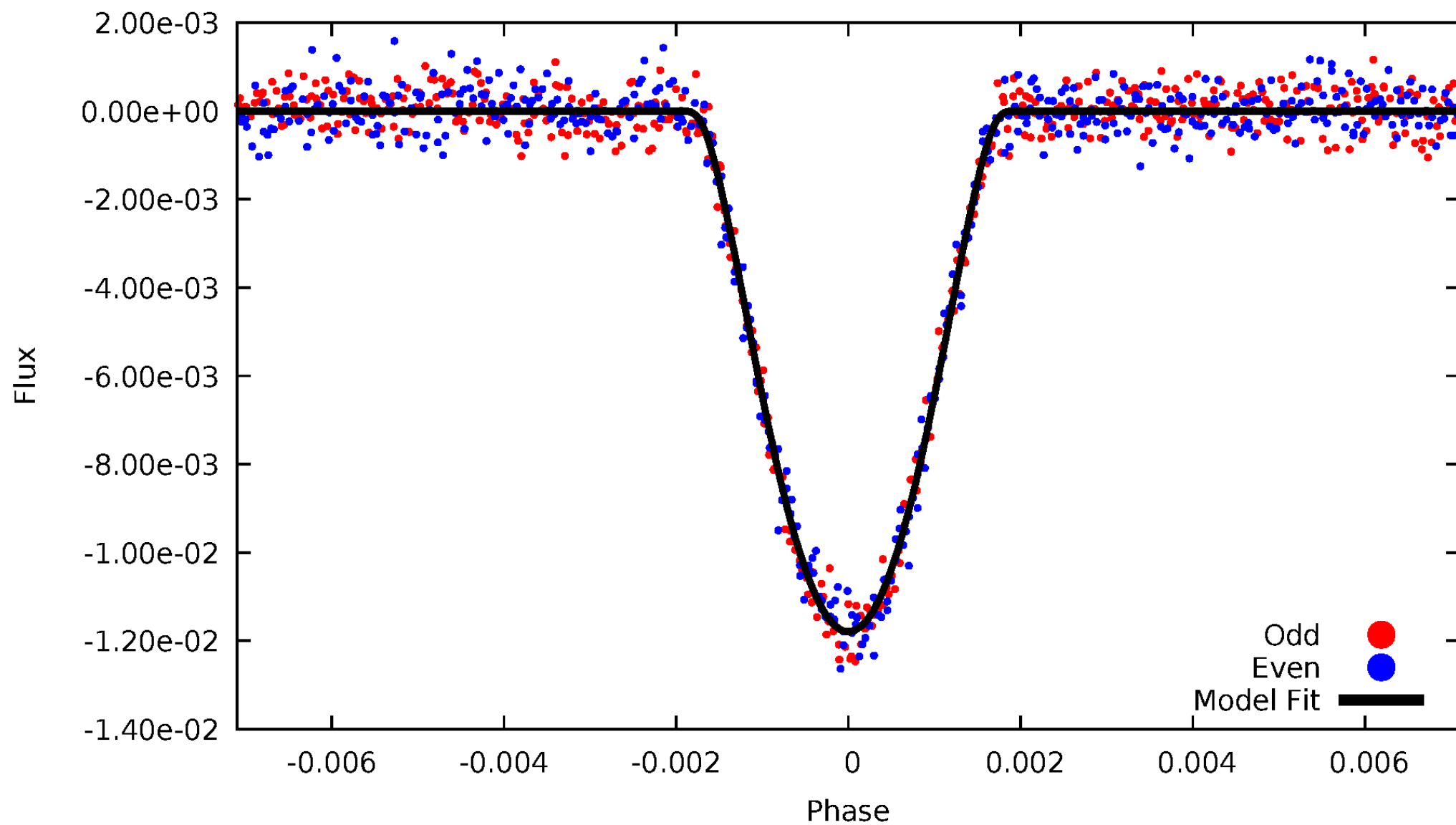


TCE 009640921-01



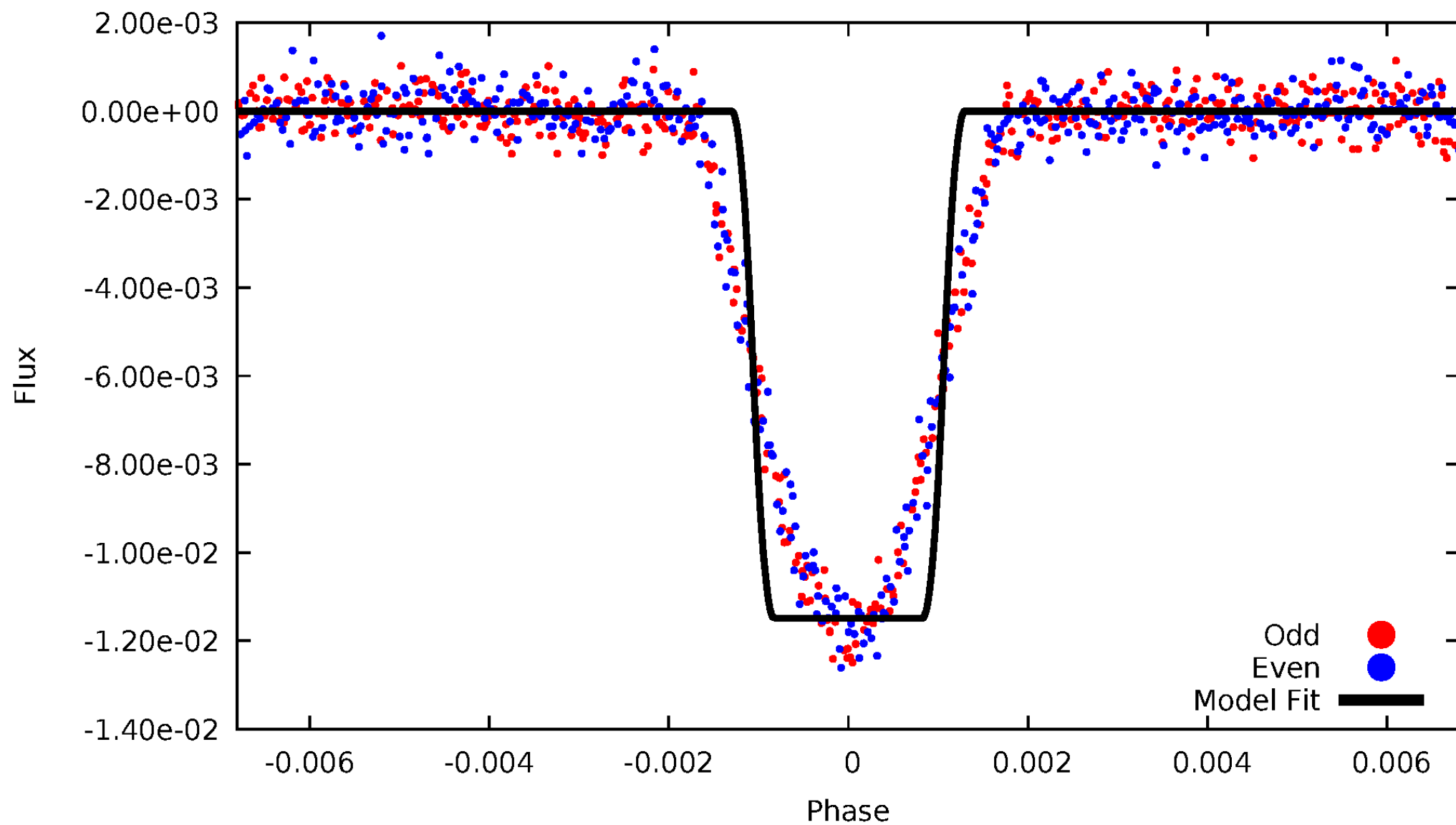
DV Odd/Even

TCE 009640921-01



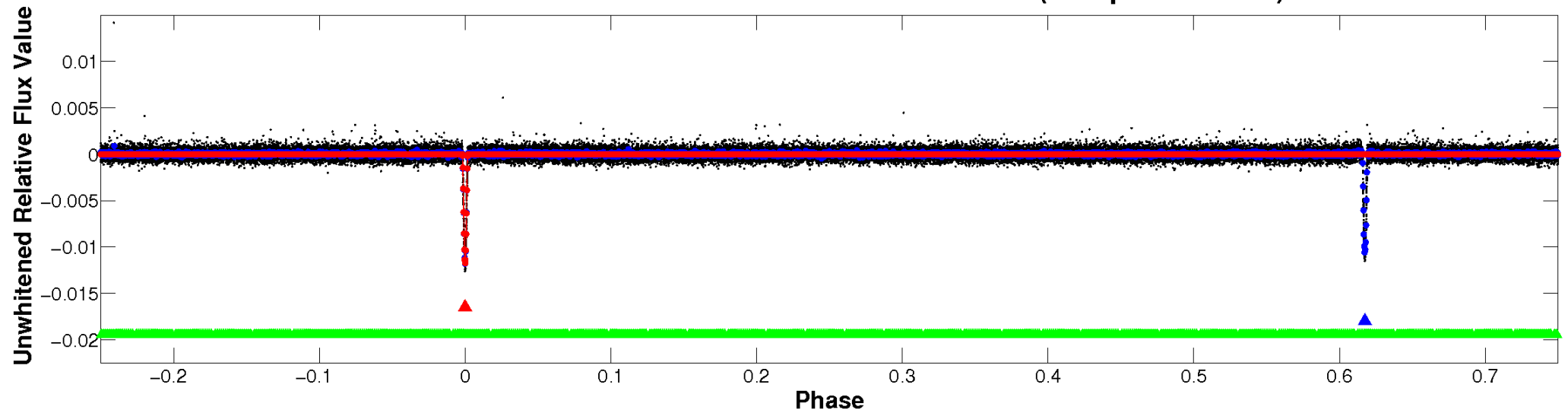
ALT Odd/Even

TCE 009640921-01

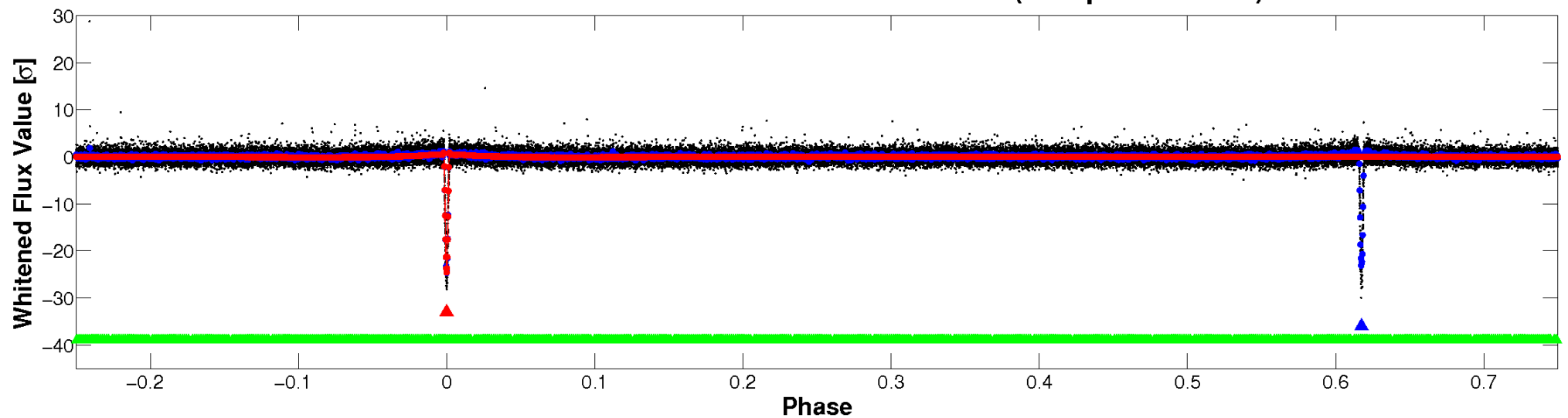


Non-Whitened Vs. Whitened Light Curve

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

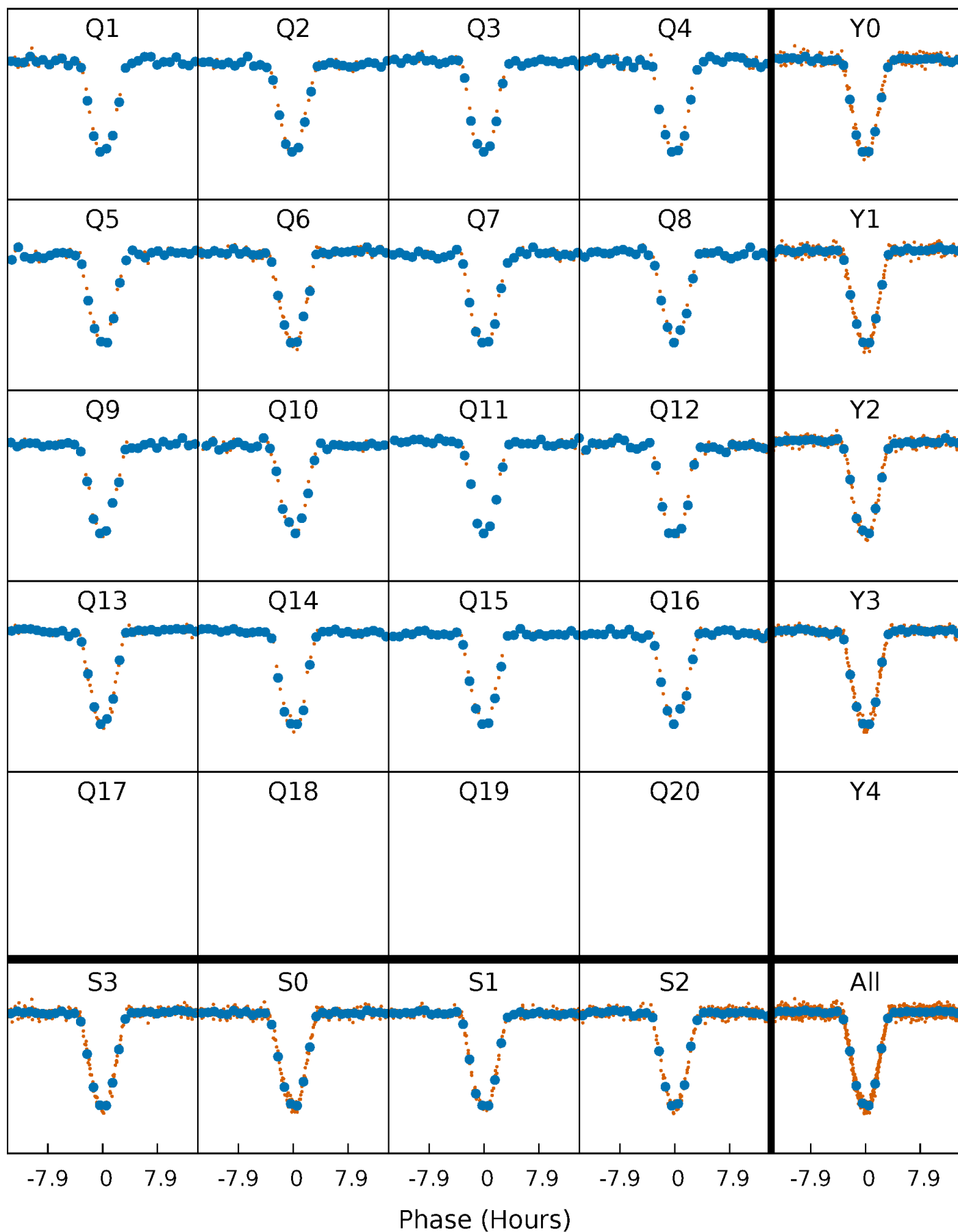


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



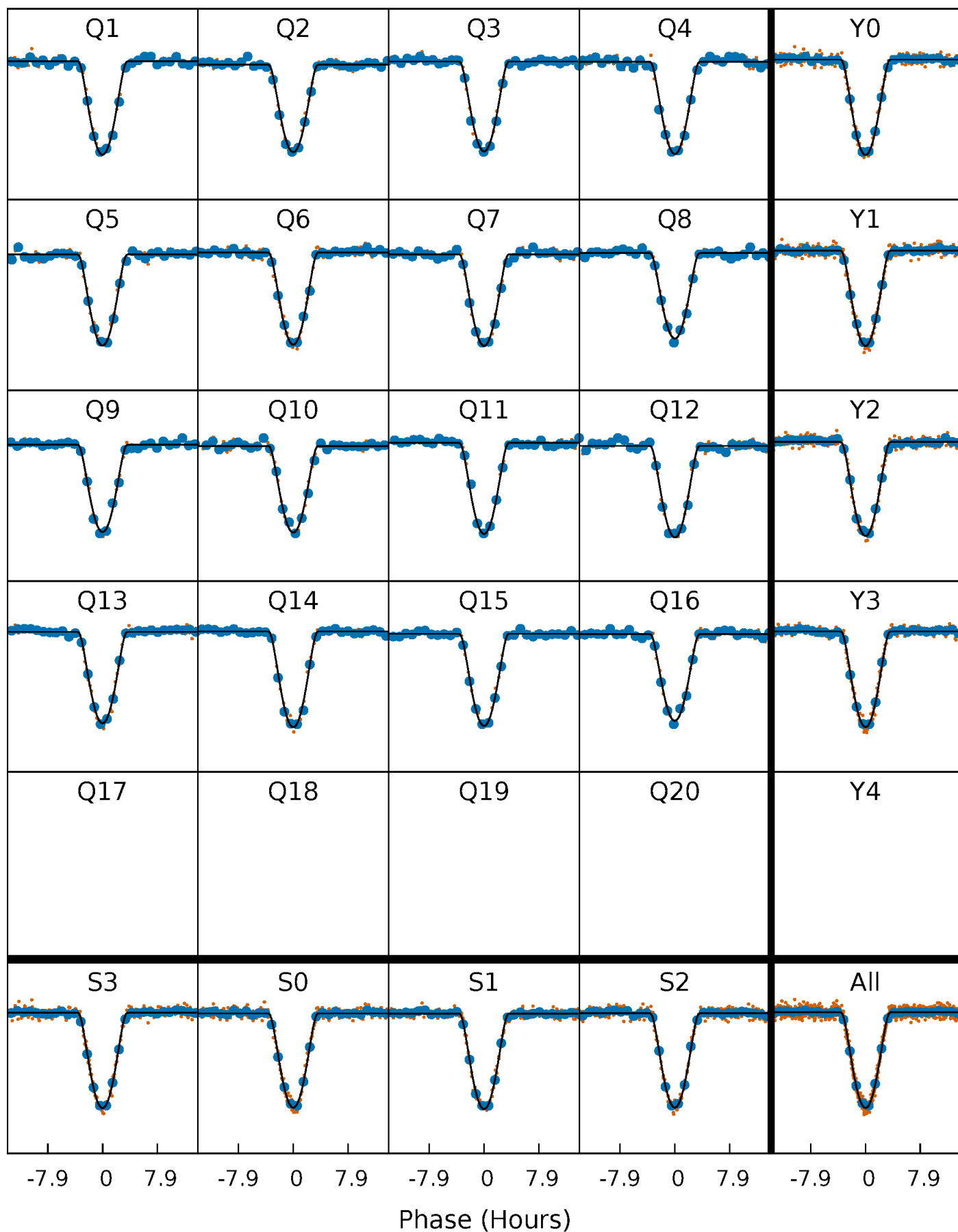
PDC Quarter-Phased Transit Curves

TCE 009640921-01 P= 80.706018 Days $T_0=139.437441$ (BKJD)



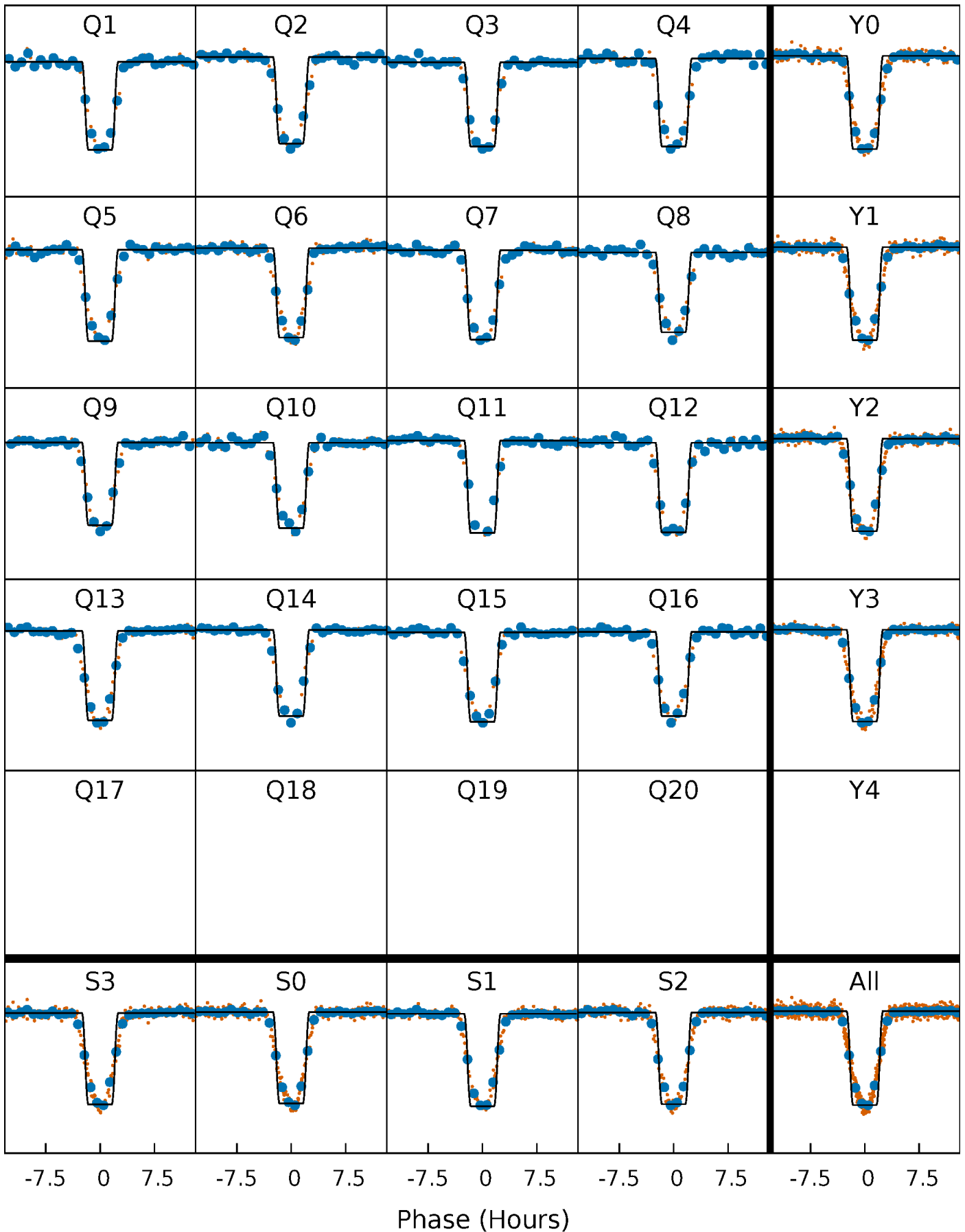
DV Quarter-Phased Transit Curves

TCE 009640921-01 P= 80.706018 Days $T_0=139.437441$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

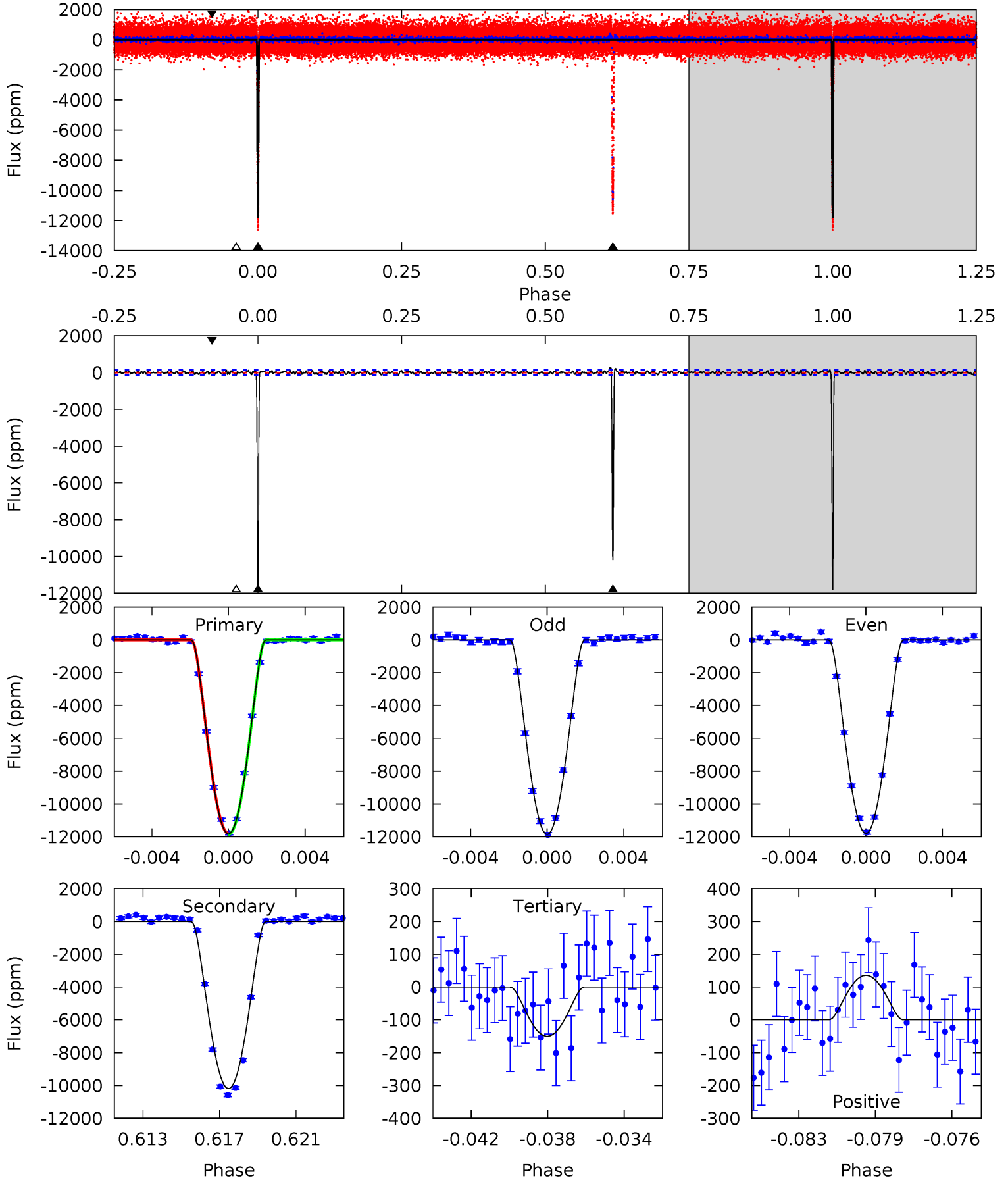
TCE 009640921-01 P= 80.706677 Days $T_0=139.431600$ (BKJD)



DV Model-Shift Uniqueness Test

009640921-01, P = 80.706018 Days, E = 58.731423 Days

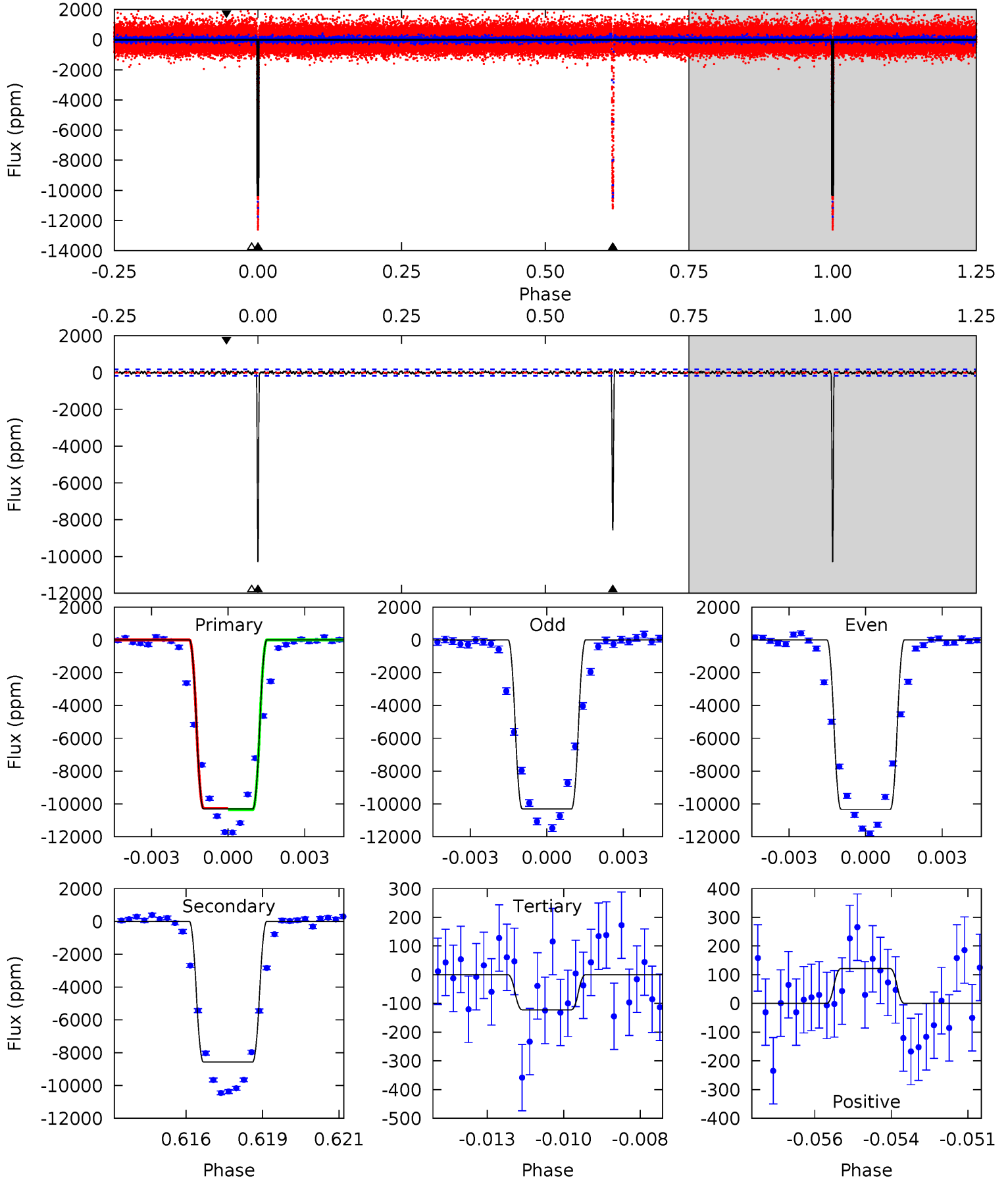
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
425.2	366.2	5.39	4.88	5.21	2.90	1.66	419.9	420.4	360.8	361.3	1.02	1.00	0.02	1.18



Alt Model-Shift Uniqueness Test

009640921-01, P = 80.706677 Days, E = 58.724923 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
305.0	253.7	3.62	3.60	5.28	3.02	1.14	301.4	301.4	250.1	250.1	0.45	1.00	0.02	1.31



Stellar Parameters For KIC 009640921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6053^{+162}_{-198}	$4.494^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.949^{+0.291}_{-0.097}$	$1.025^{+0.130}_{-0.143}$	$1.691^{+0.368}_{-0.891}$
	+3%/-3%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-14%	+22%/-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 009640921-01 / KOI 7210.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-10188 ± 28	$15.69^{+2.84}_{-1.93}$	612^{+46}_{-30}	5113^{+271}_{-237}	3024^{+893}_{-748}
Alt.	-8571 ± 34	$11.44^{+2.26}_{-1.76}$	612^{+45}_{-28}	5675^{+415}_{-344}	4750^{+1938}_{-1408}

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 $A_{obs} \gg 1.0$

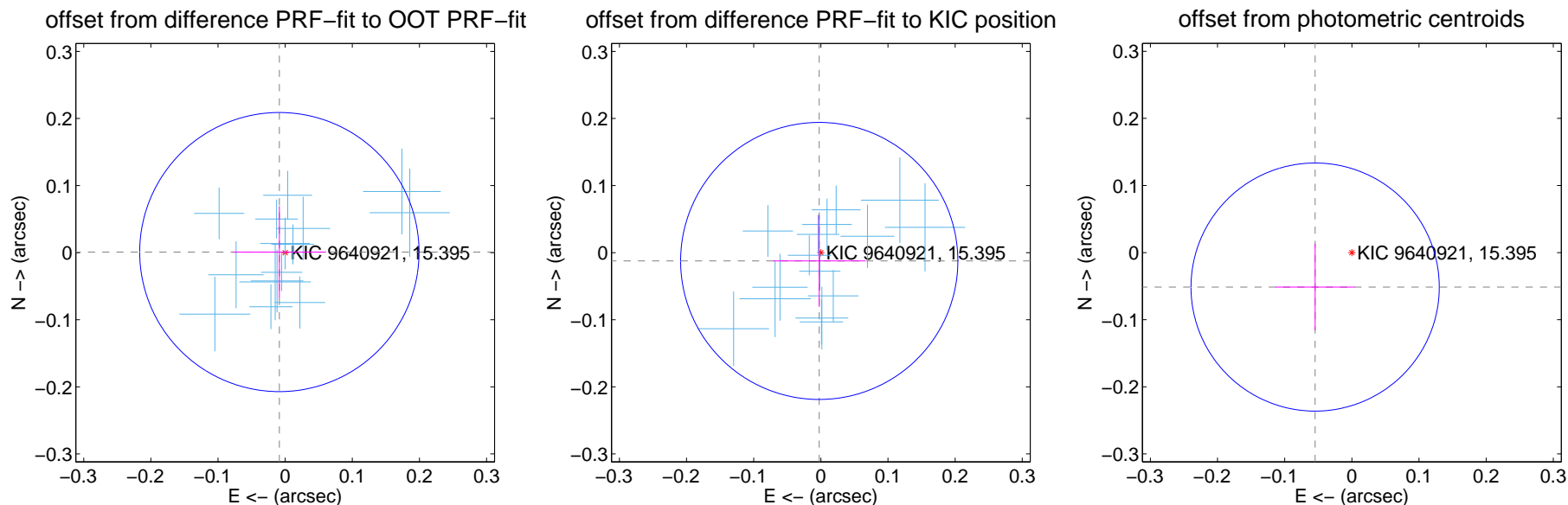
DV Centroid Data

Supplemental centroid analysis for 009640921-01. Kepler magnitude: 15.39. Transit SNR 243.25

There are 15 quarters with good PRF difference image offsets

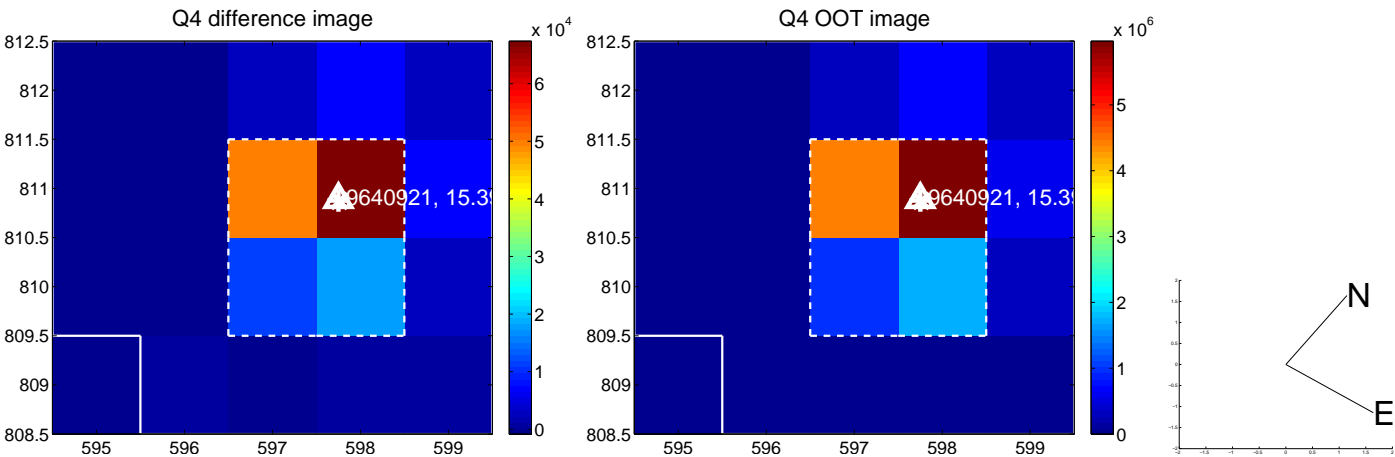
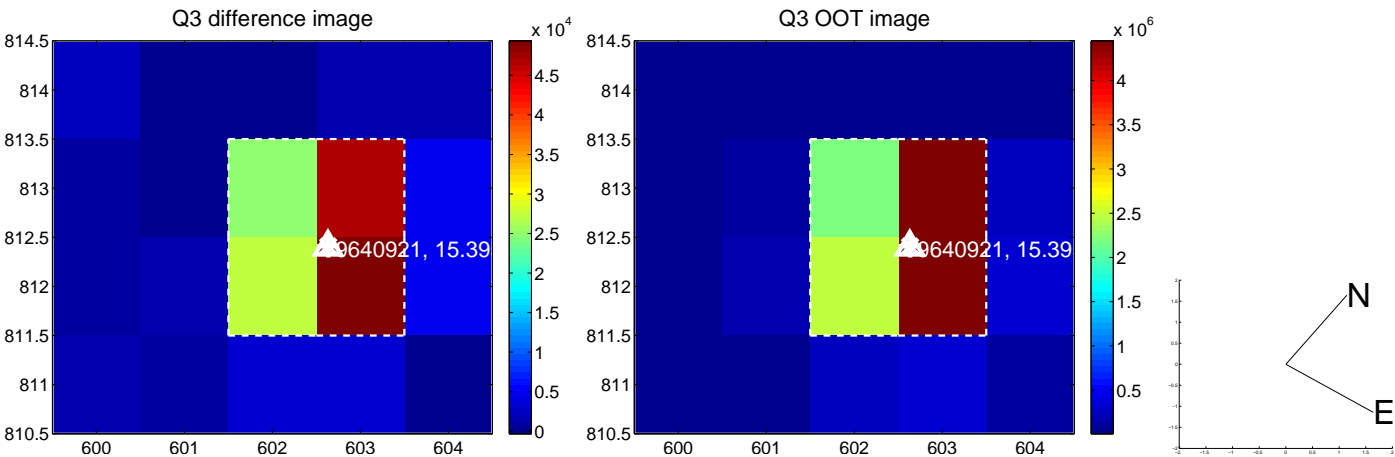
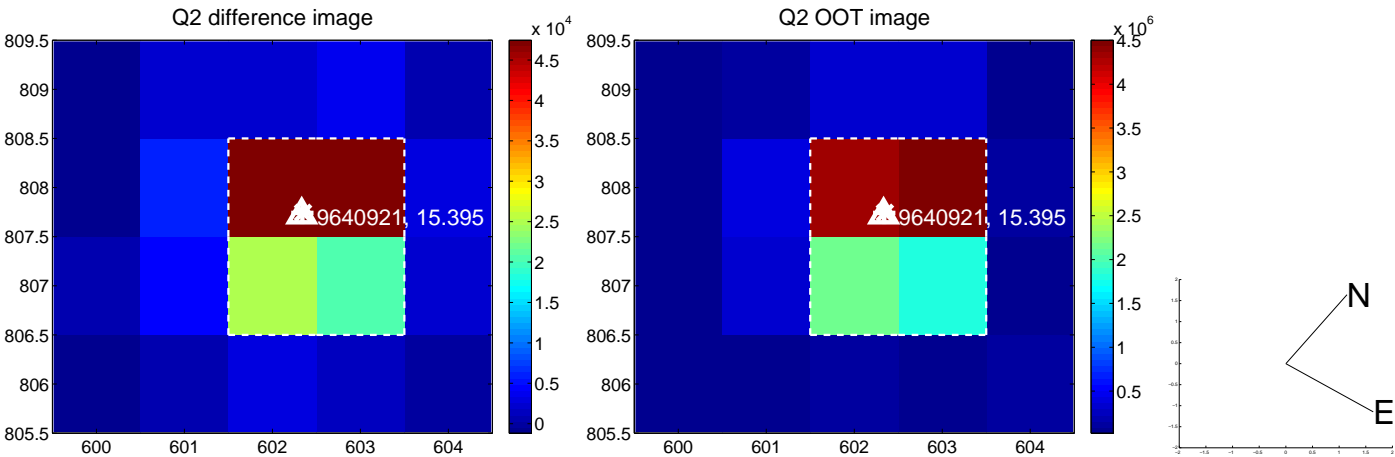
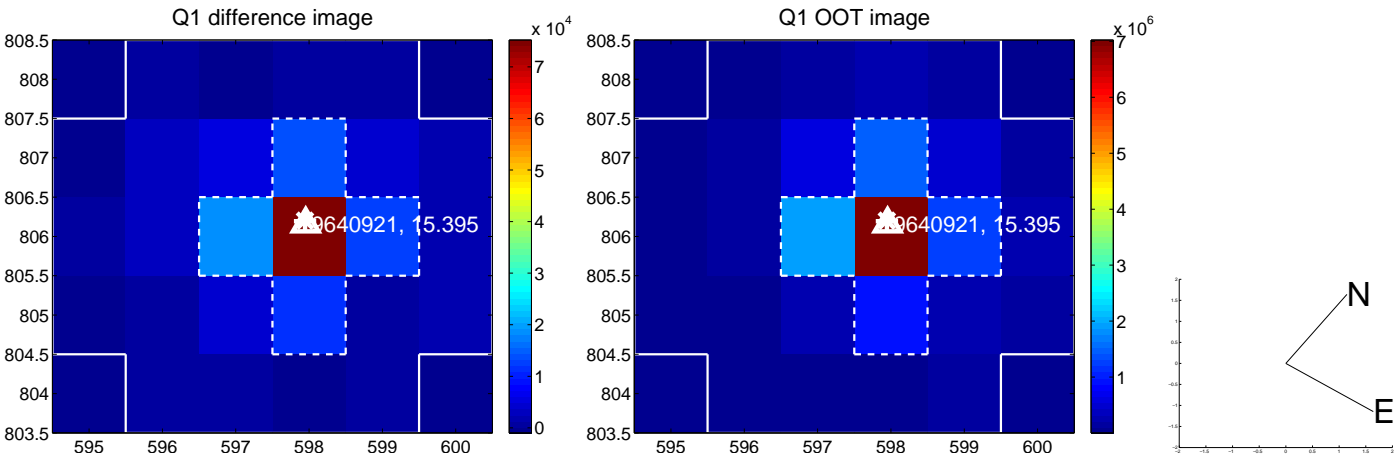
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.009 ± 0.069	0.13	0.009 ± 0.070	0.001 ± 0.069
PRF-fit source offset from KIC position	0.013 ± 0.069	0.18	0.002 ± 0.069	-0.012 ± 0.068
photometric centroid source offset	0.08 ± 0.06	1.22	0.05 ± 0.06	-0.05 ± 0.06

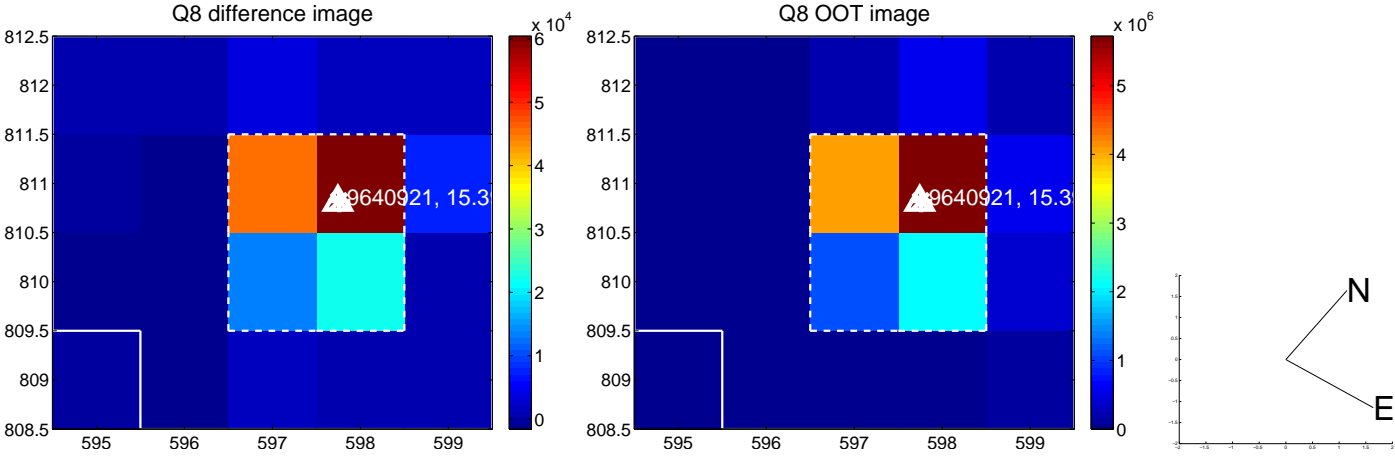
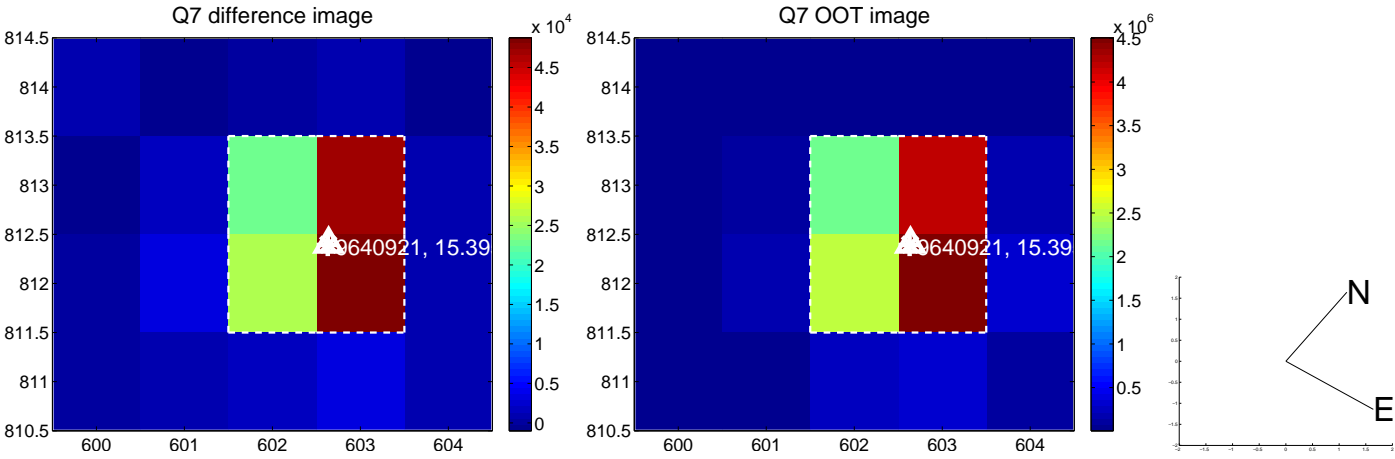
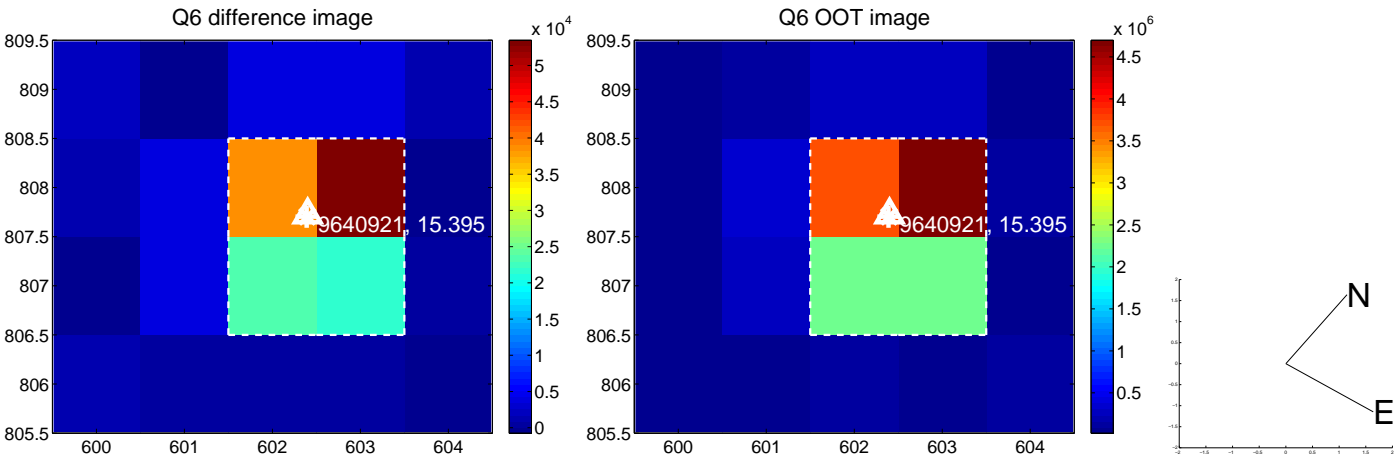
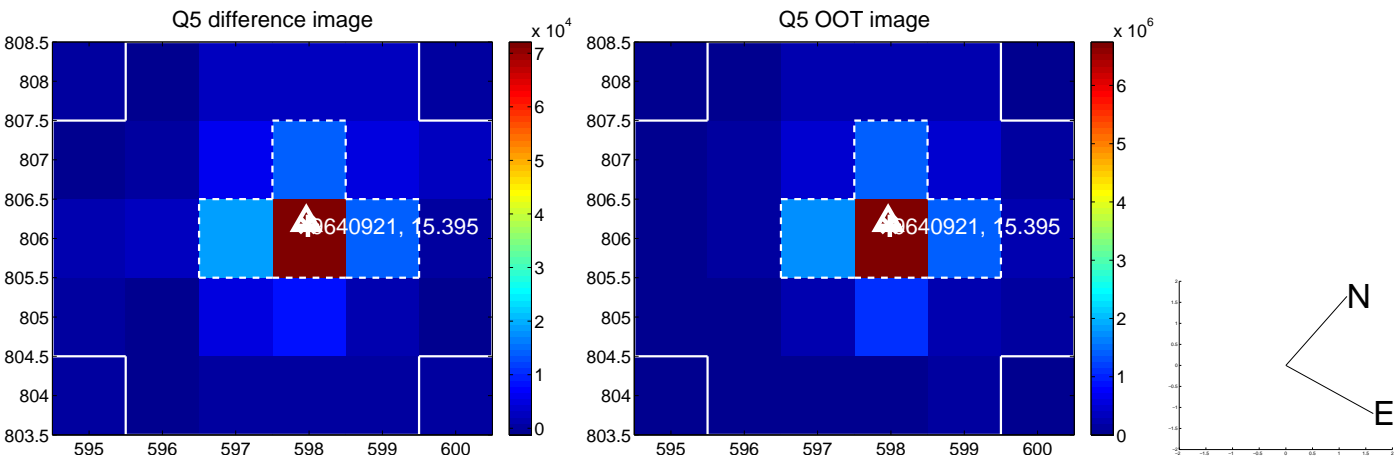


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

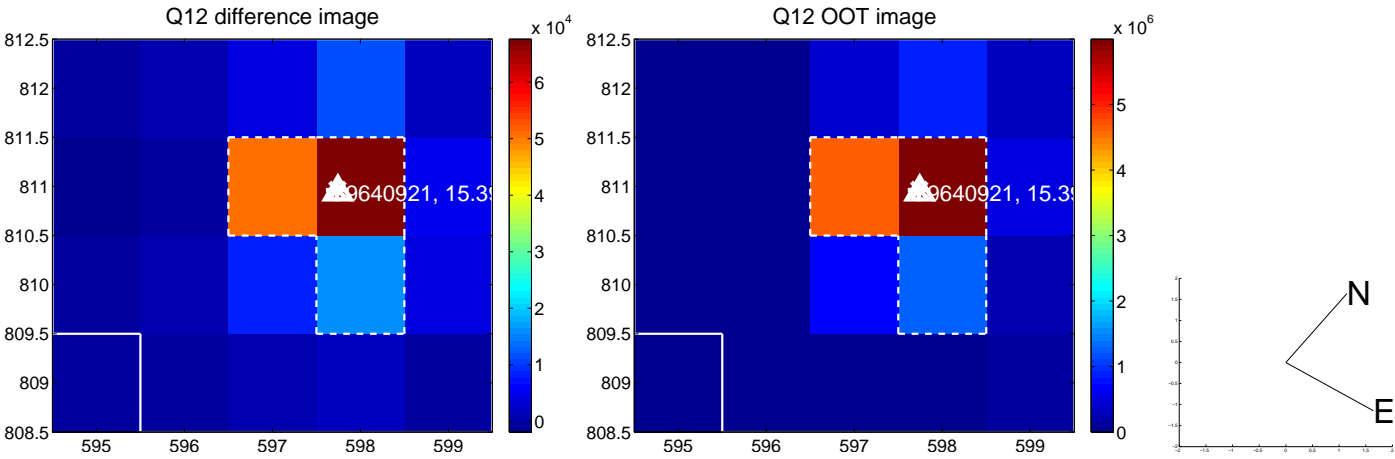
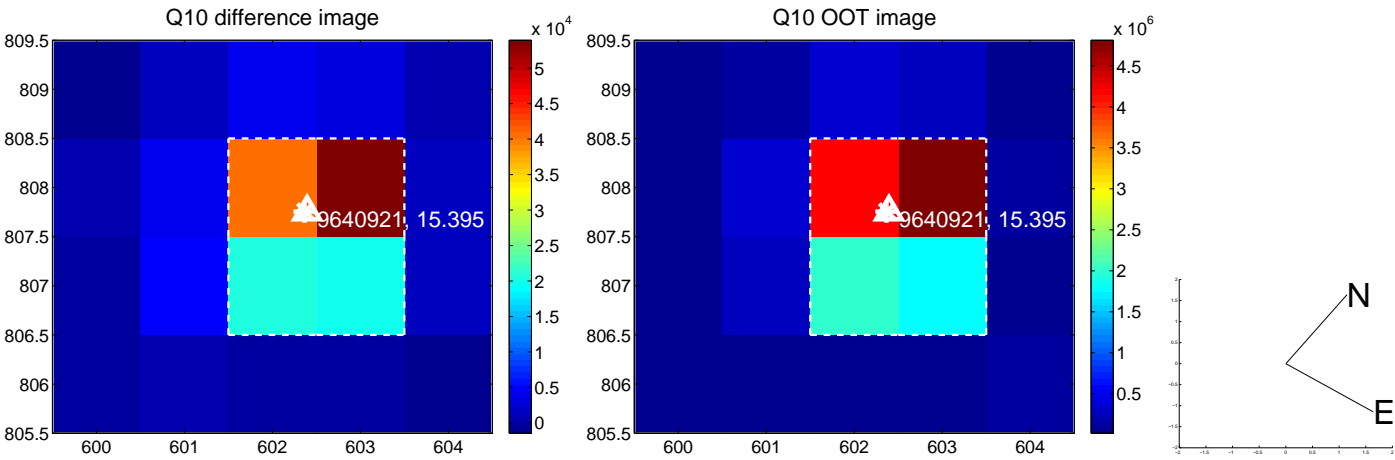
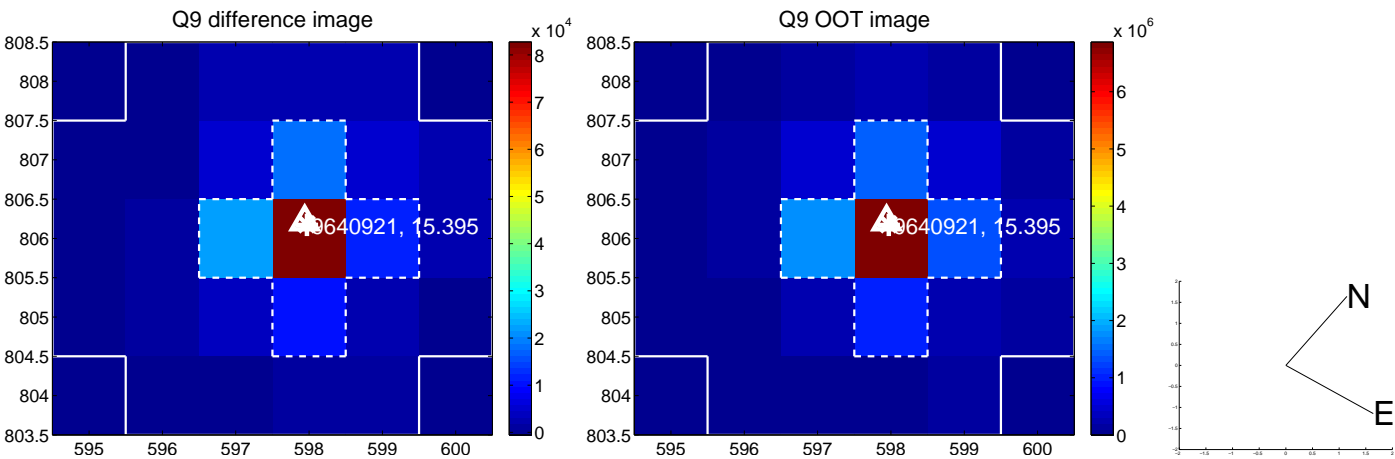
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



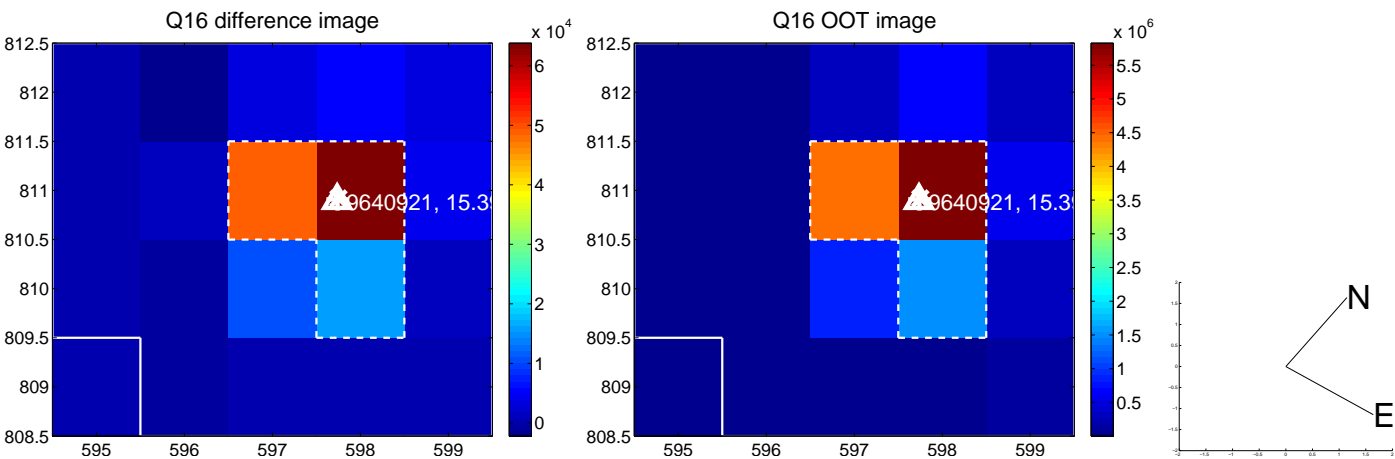
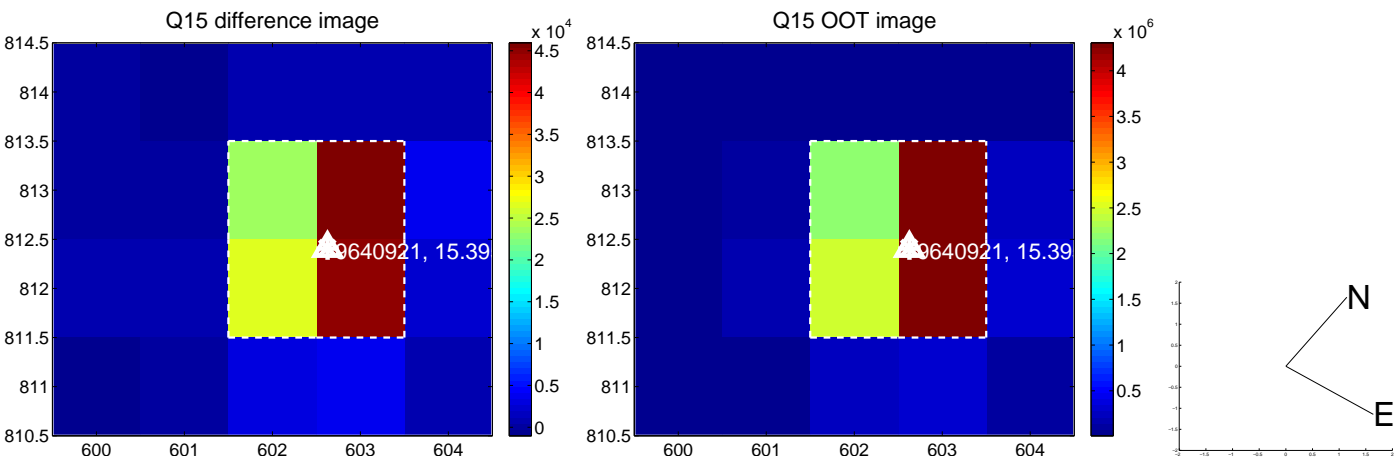
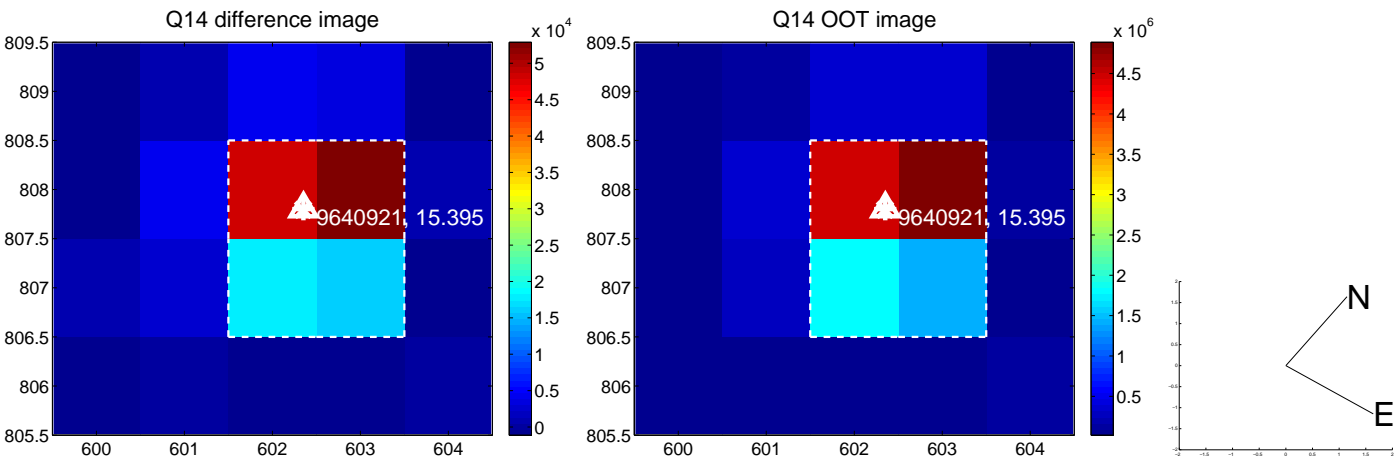
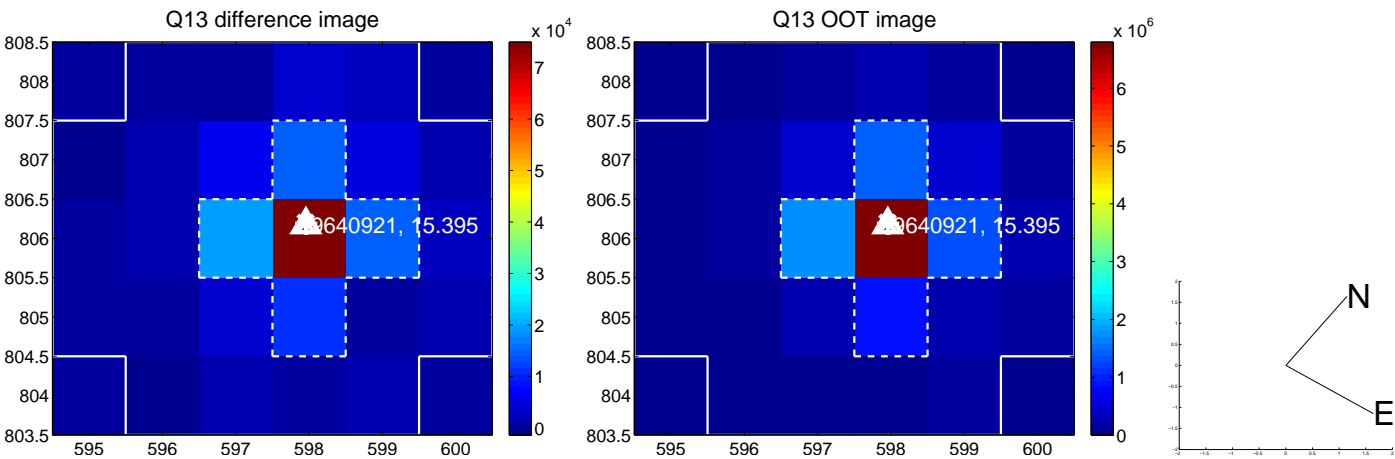
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

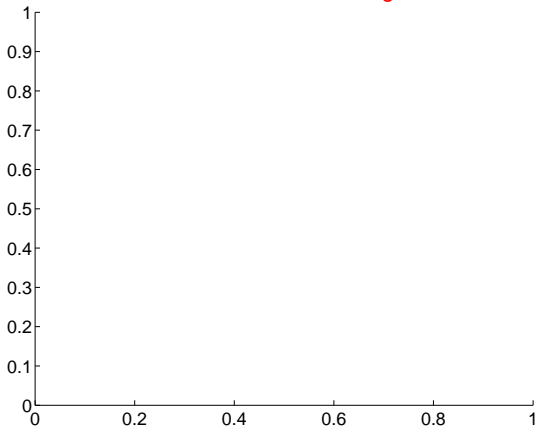


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

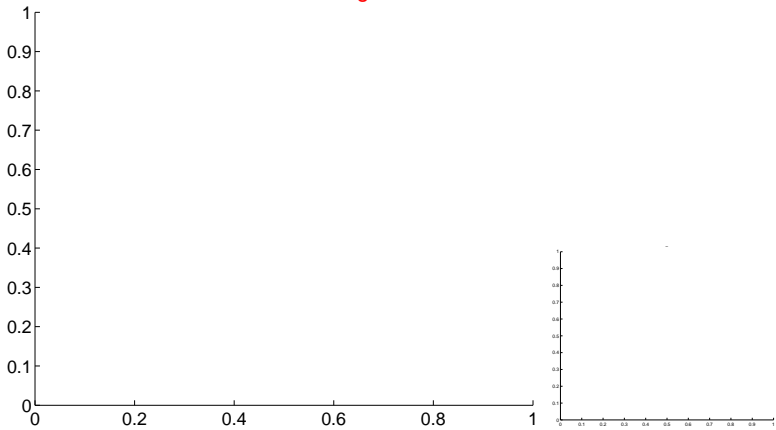


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

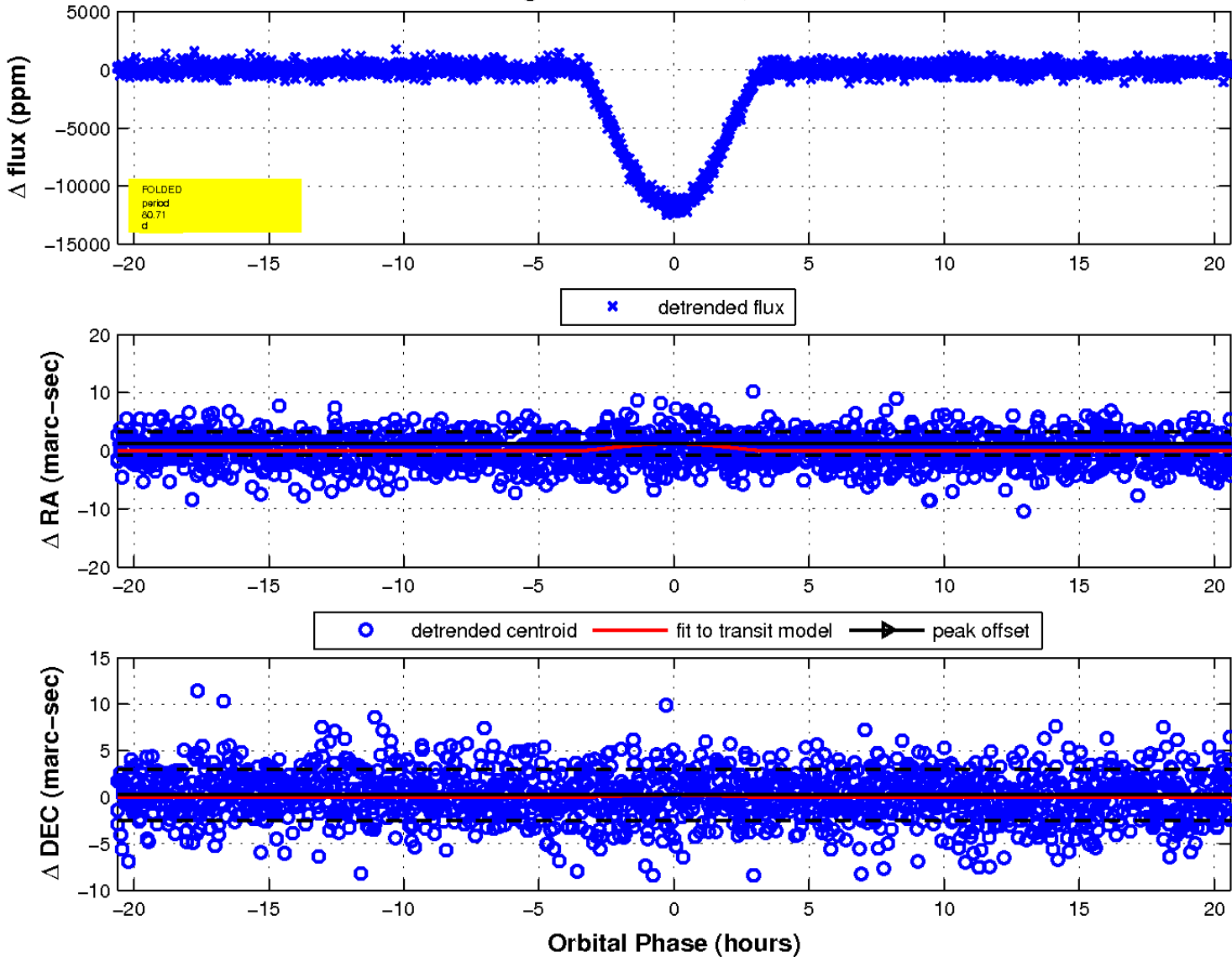
Q17 no difference image



Q17 no OOT image

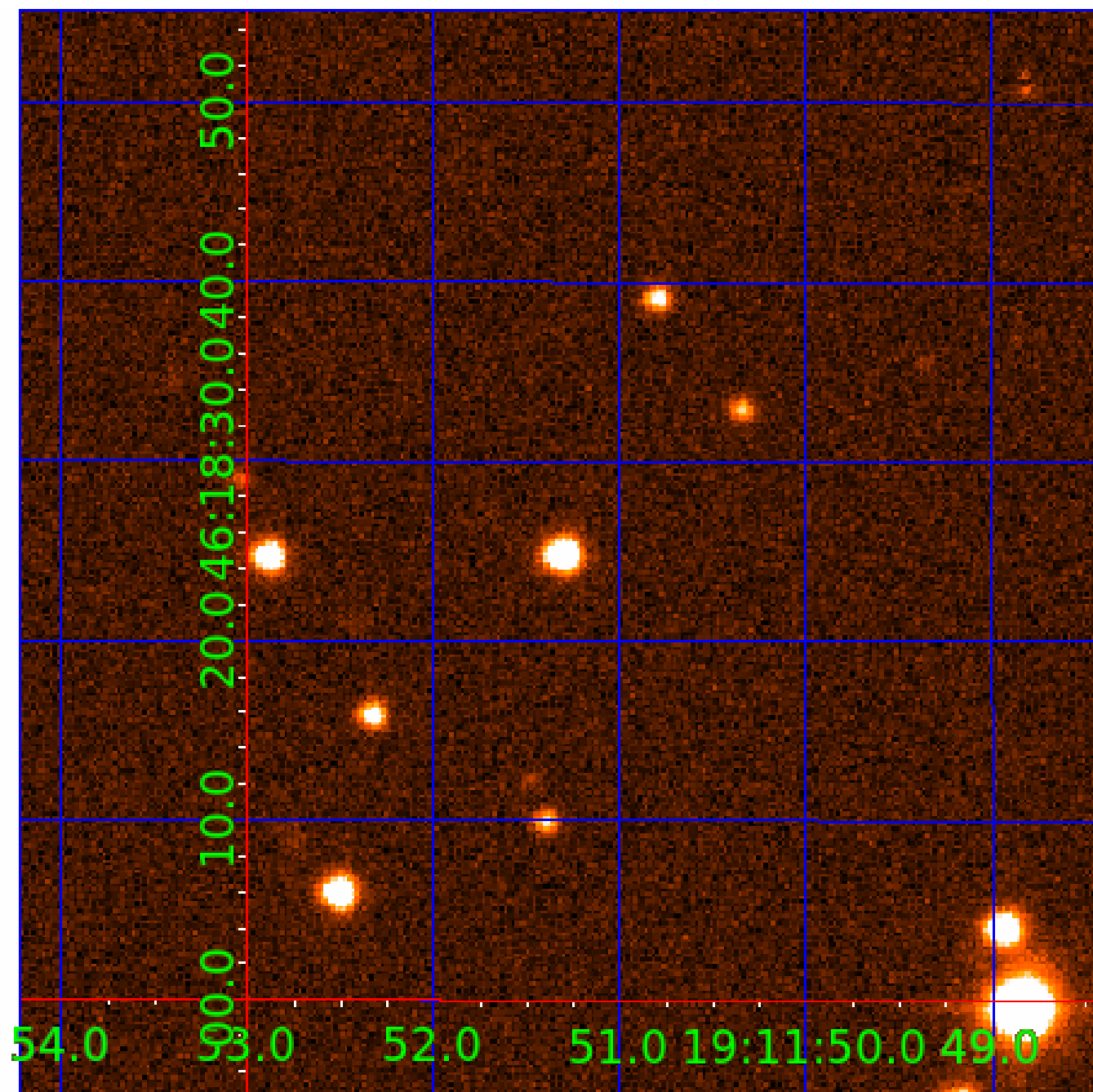


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 009640921

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})
009640921-01	OBS	7210.01	80.706018	139.437441	11791.0	6.875	247.0	243.3	0.95	6053	15.09	7.97
009640921-02	OBS	No	80.705985	189.271409	10642.0	6.243	234.0	228.4	0.95	6053	11.44	7.97
009640921-03	OBS	7210.02	2.178131	132.031302	111.2	2.412	12.7	11.4	0.95	6053	1.18	985.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009640921-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009640921-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009640921-03	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH

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.

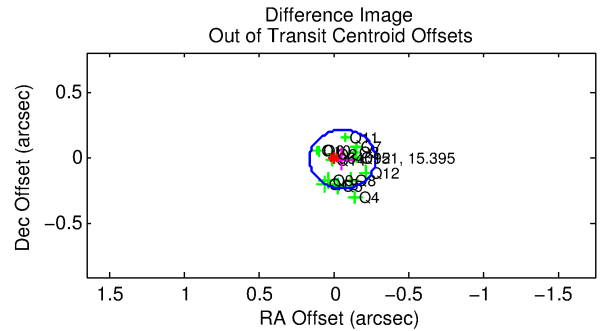
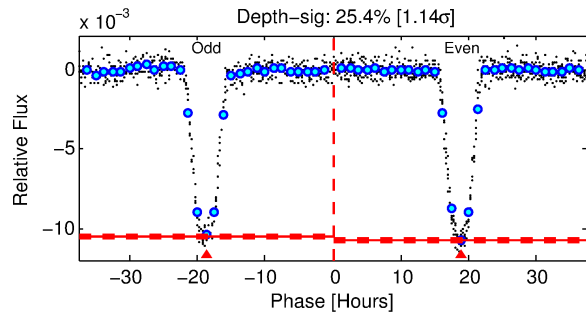
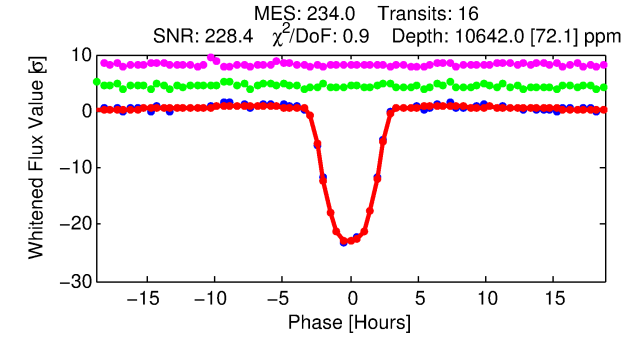
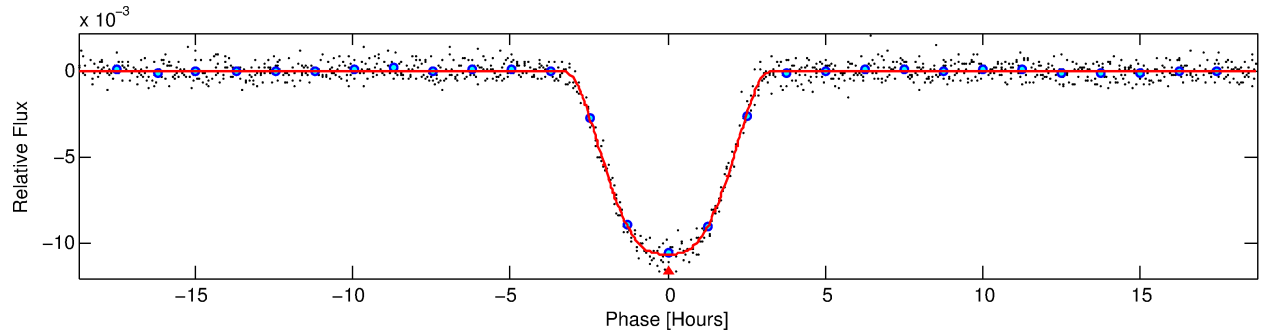
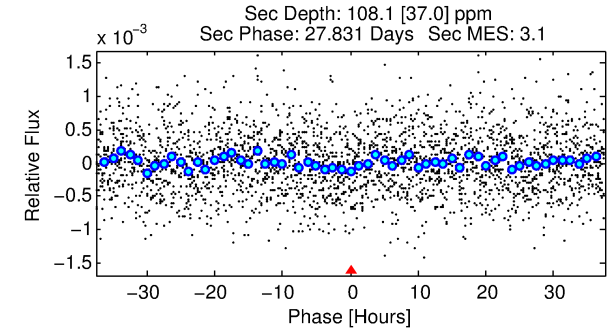
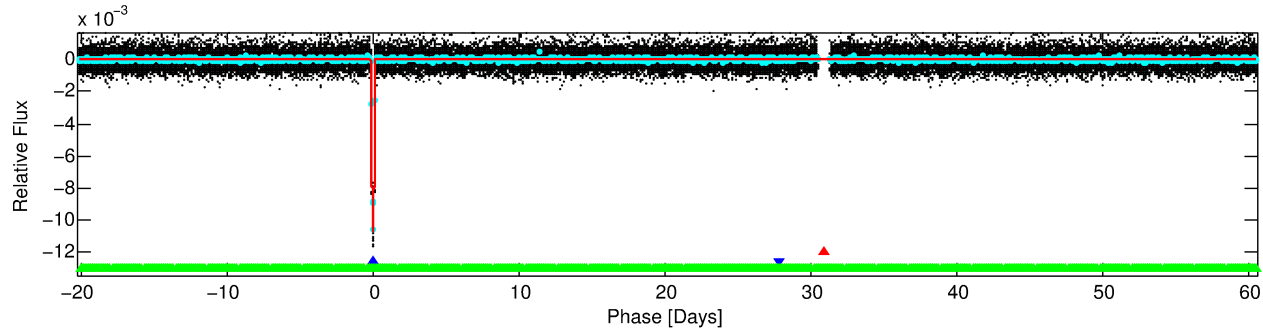
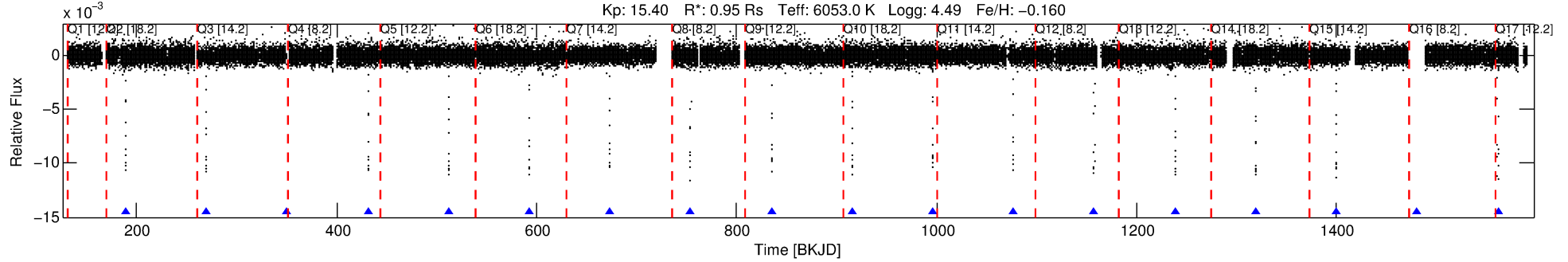
Ephemeris Match Information For 009640921-02

No Significant Match Found

DV One-Page Summary

KIC: 9640921 Candidate: 2 of 3 Period: 80.706 d
KOI: K07210 Corr: No Ephemeris Match

Kp: 15.40 R*: 0.95 Rs Teff: 6053.0 K Logg: 4.49 Fe/H: -0.160



DV Fit Results:

Period = 80.70598 [0.00007] d
Epoch = 189.2714 [0.0007] BKJD
Rp/R* = 0.1104 [0.0006]
a/R* = 67.29 [0.69]
b = 0.88 [0.00]
Seff = 7.98 [3.20]
Teq = 429 [43] K
Rp = 11.44 [3.51] Re
a = 0.3685 [0.0956] AU
Ag = 61.78 [31.56] [1.93σ]
Teffp = 1857 [170] K [8.14σ]

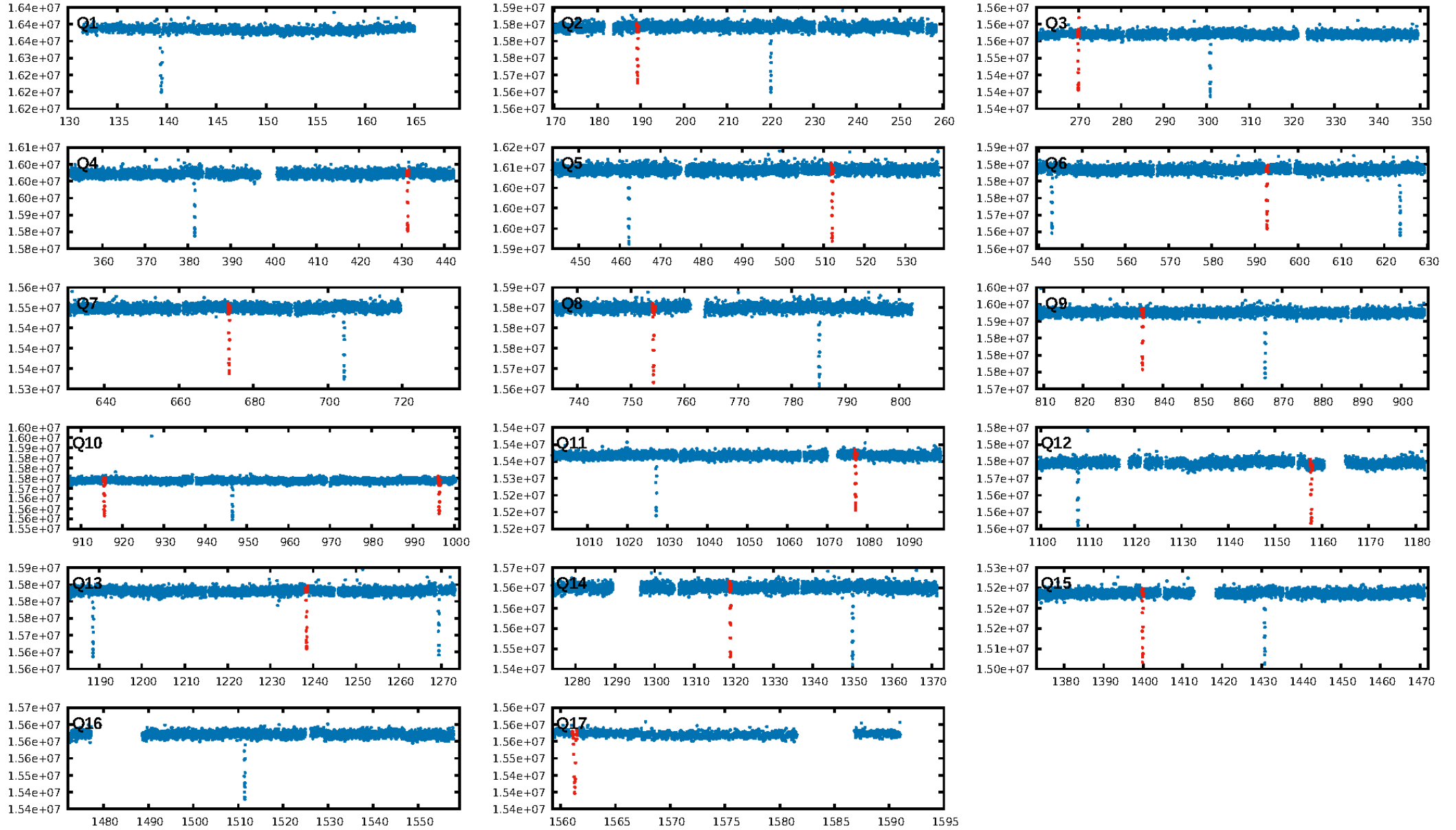
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [281.59σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 62.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: 5.87
Centroid-sig: 7.1%
Centroid-so: 0.151 arcsec [2.12σ]
OotOffset-rm: 0.061 arcsec [0.83σ]
KicOffset-rm: 0.064 arcsec [0.86σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
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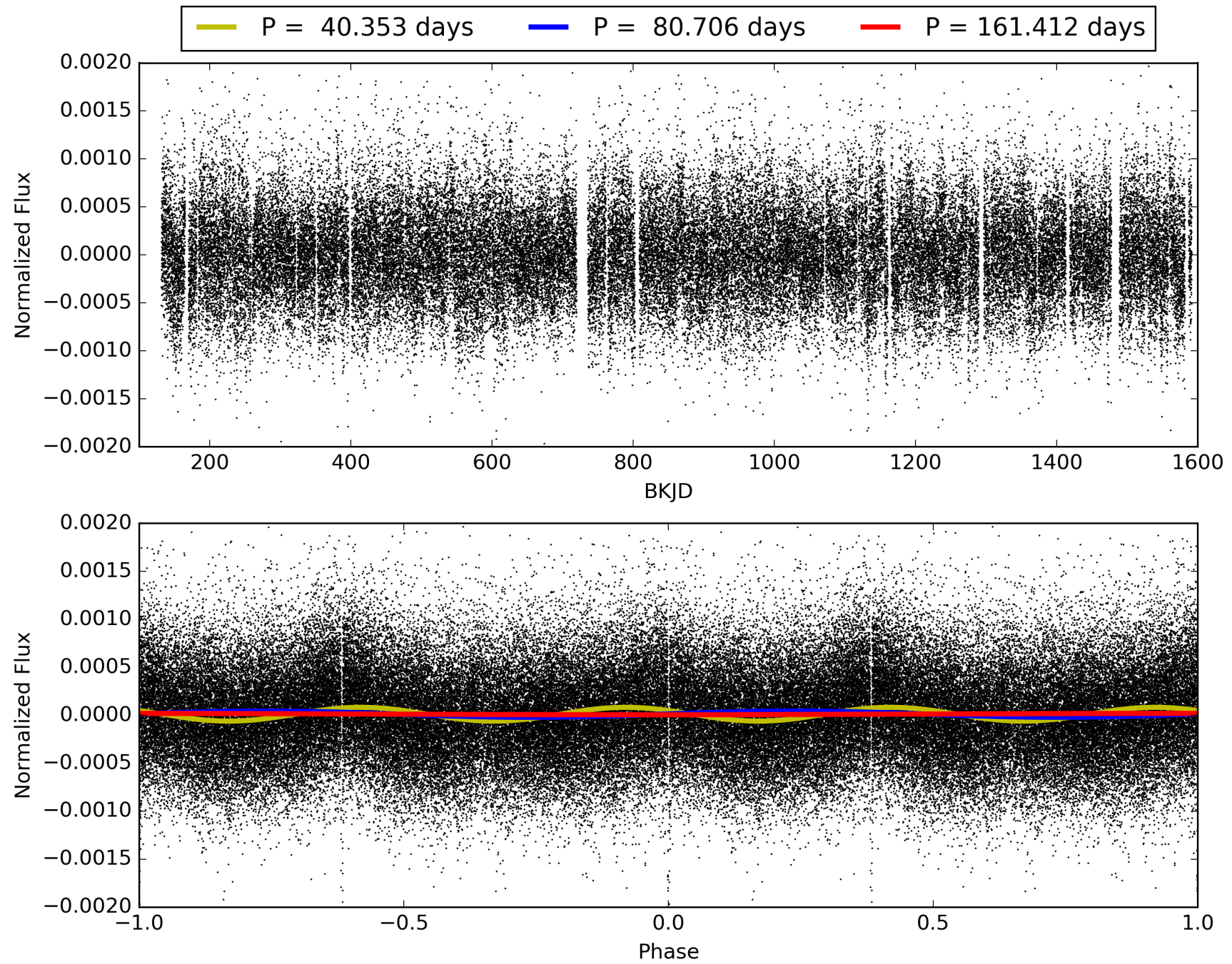
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:23:31 Z

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

TCE 009640921-02, PDC Light Curves

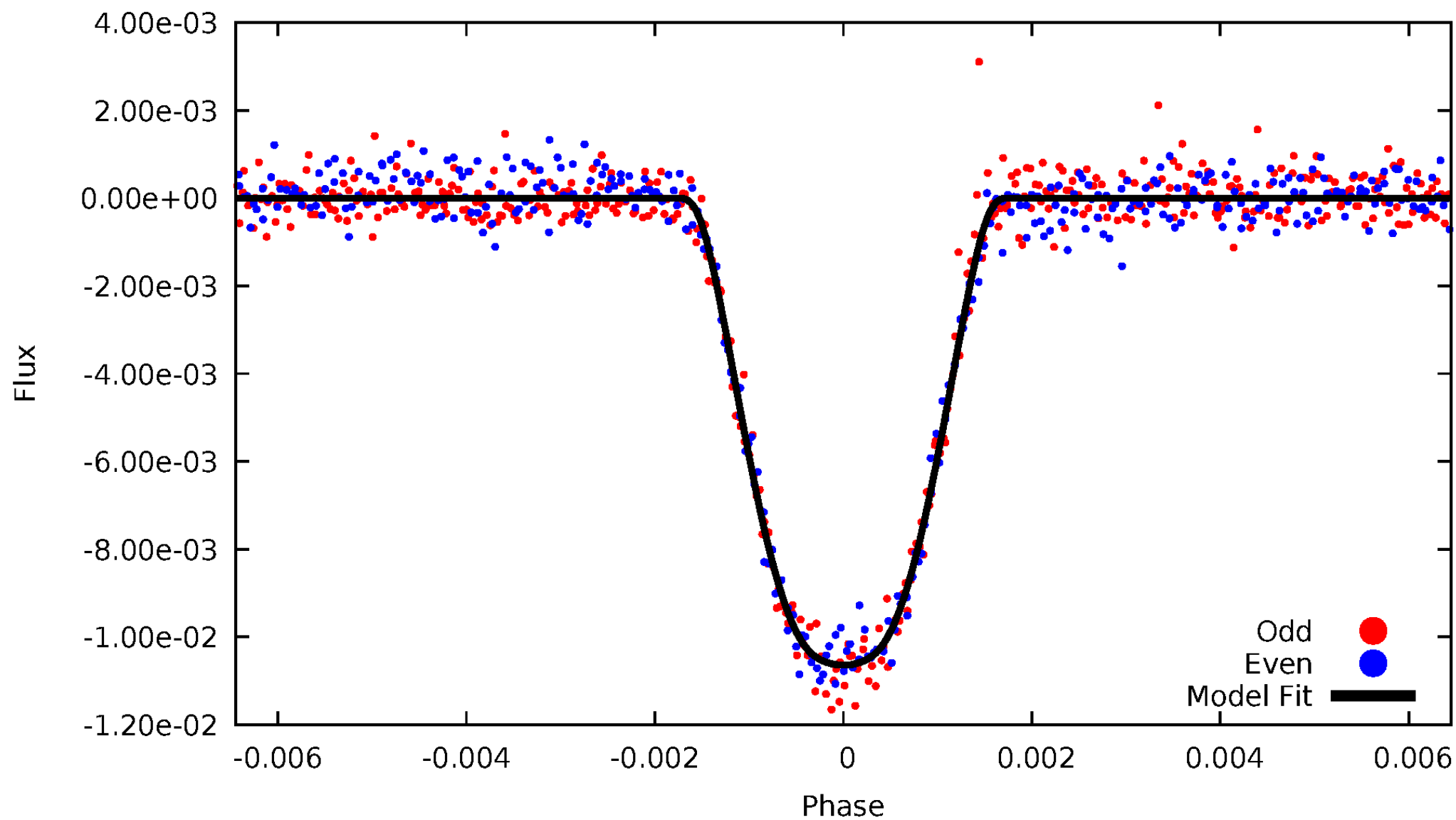


TCE 009640921-02



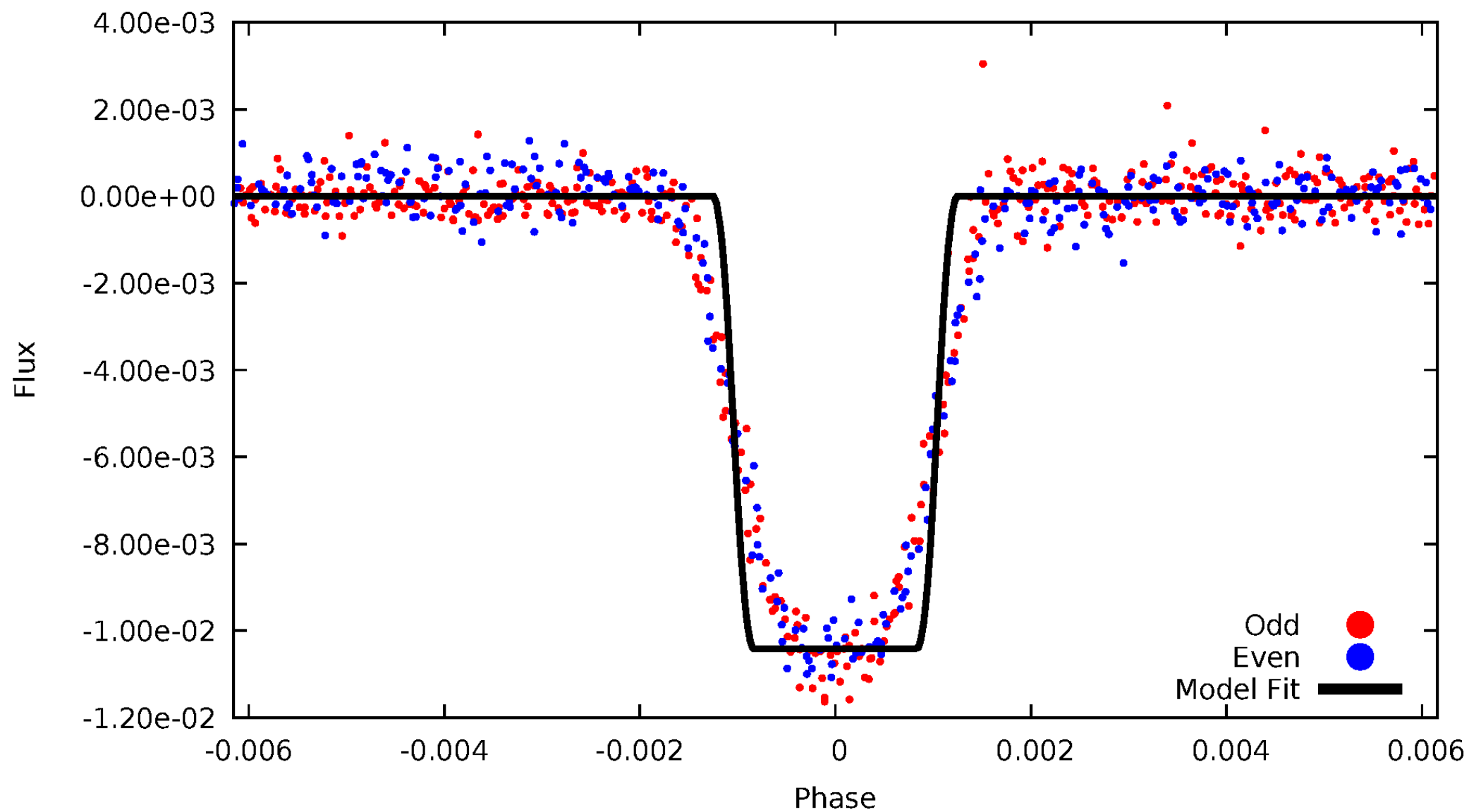
DV Odd/Even

TCE 009640921-02



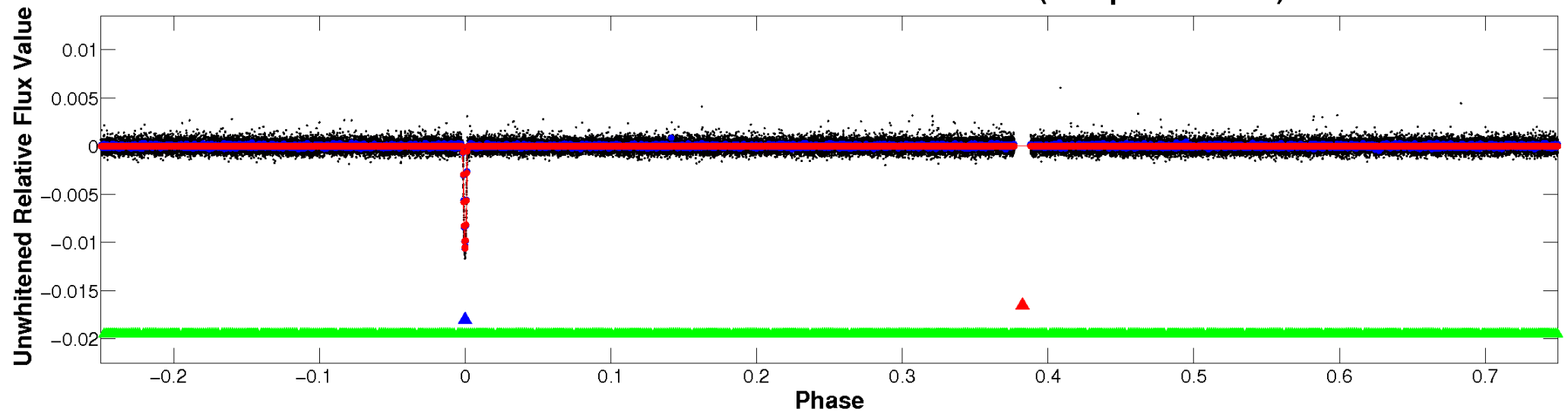
ALT Odd/Even

TCE 009640921-02

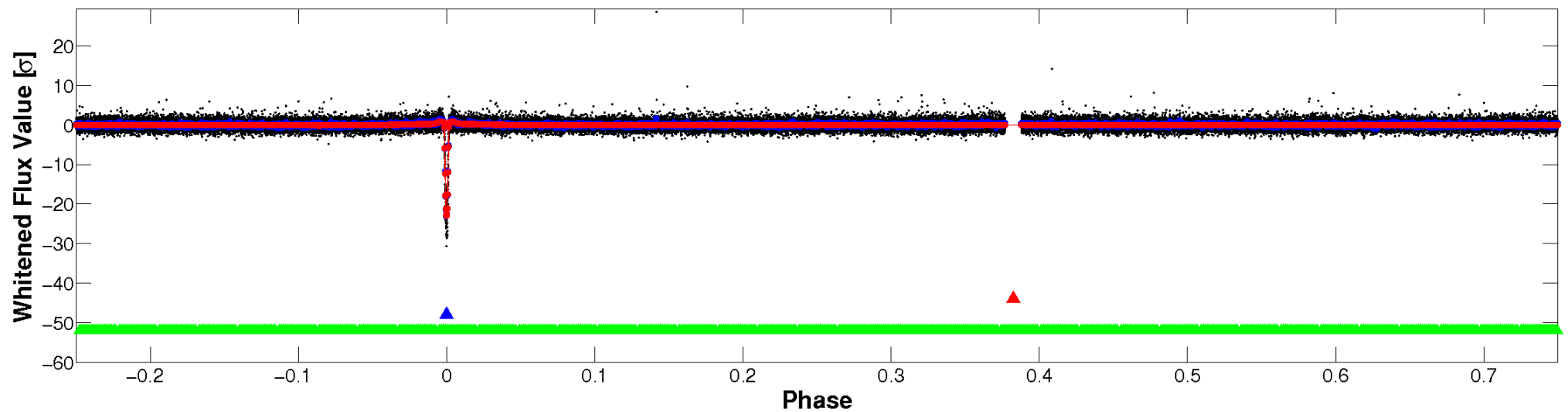


Non-Whitened Vs. Whitened Light Curve

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

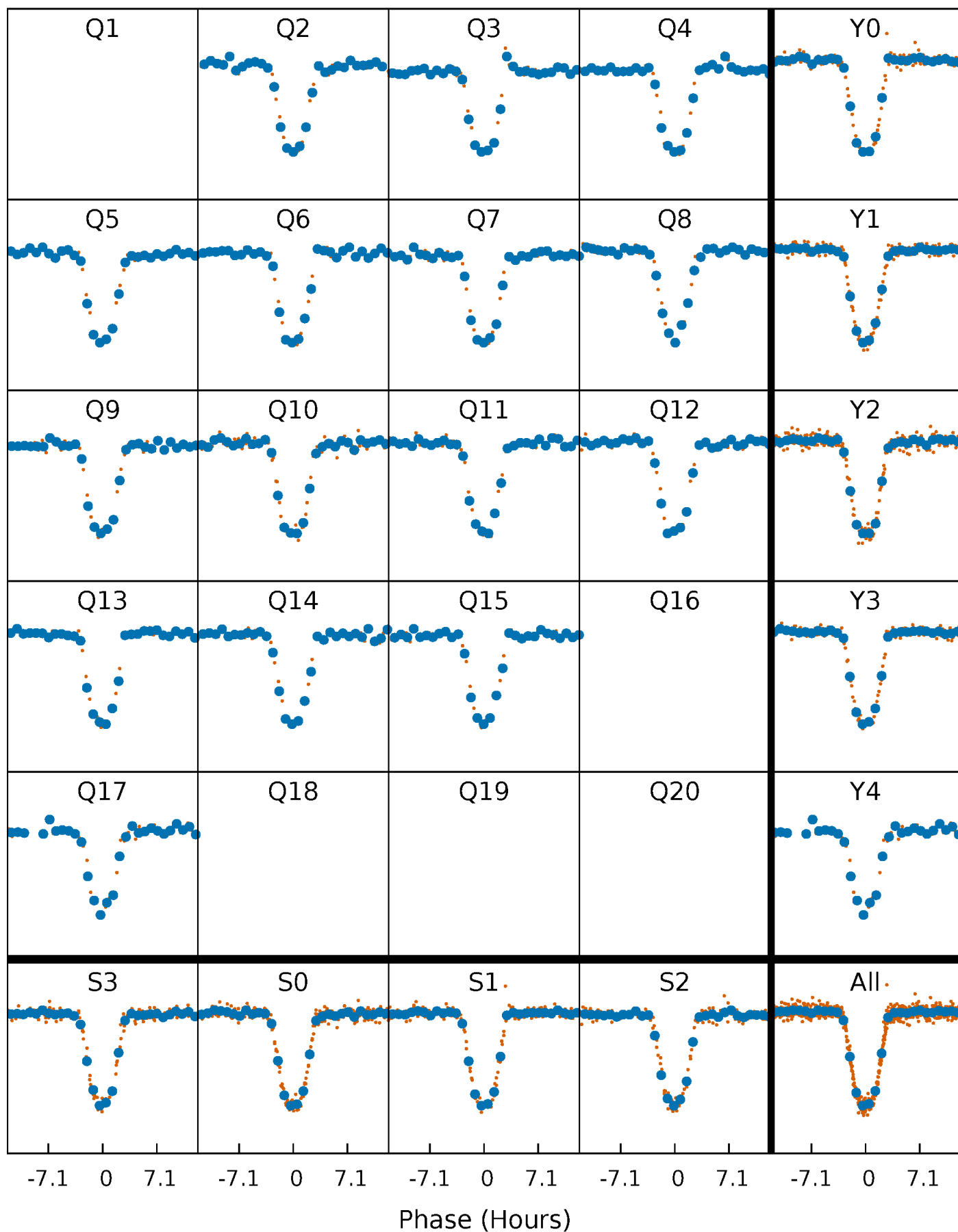


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



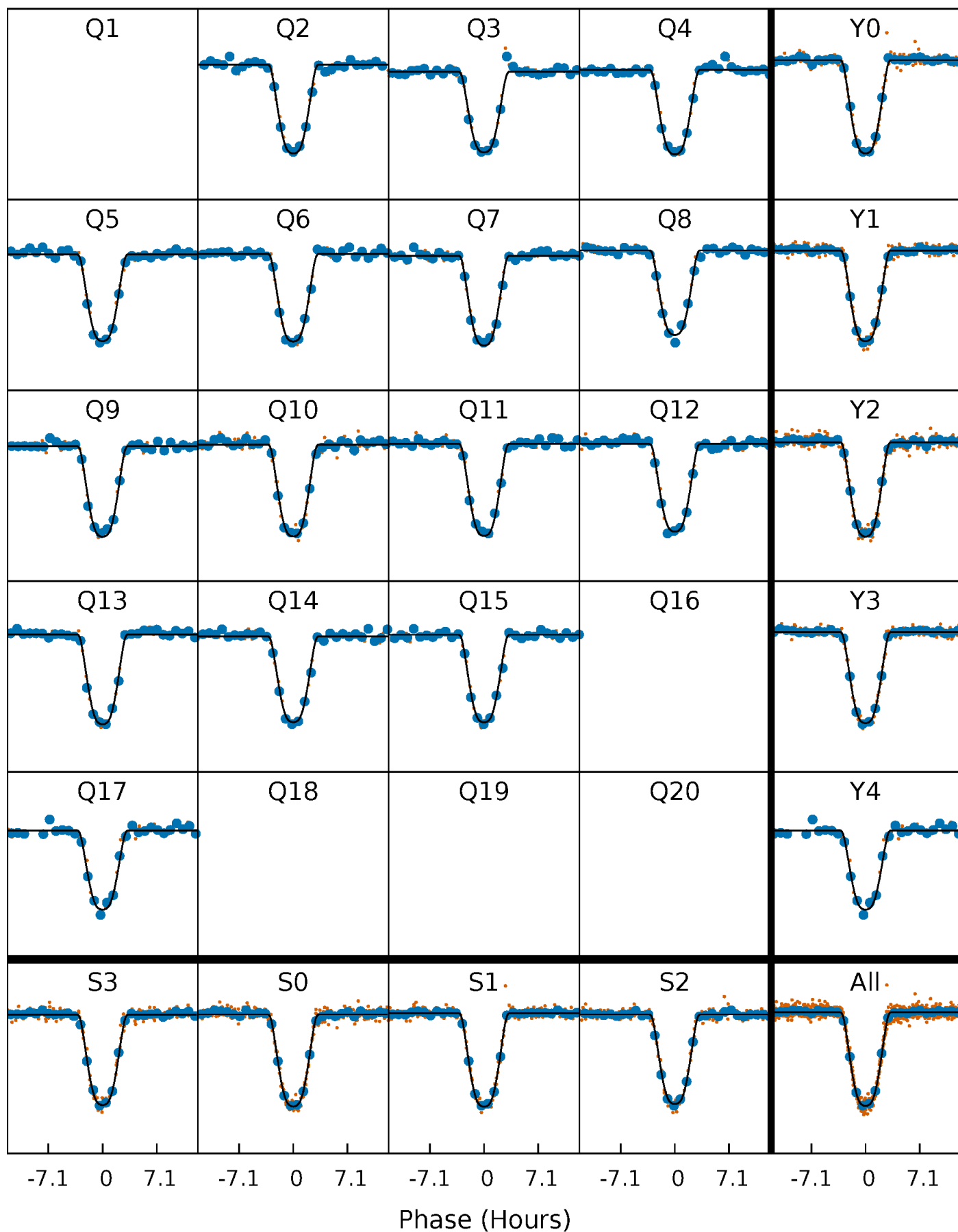
PDC Quarter-Phased Transit Curves

TCE 009640921-02 P= 80.705985 Days $T_0=189.271409$ (BKJD)



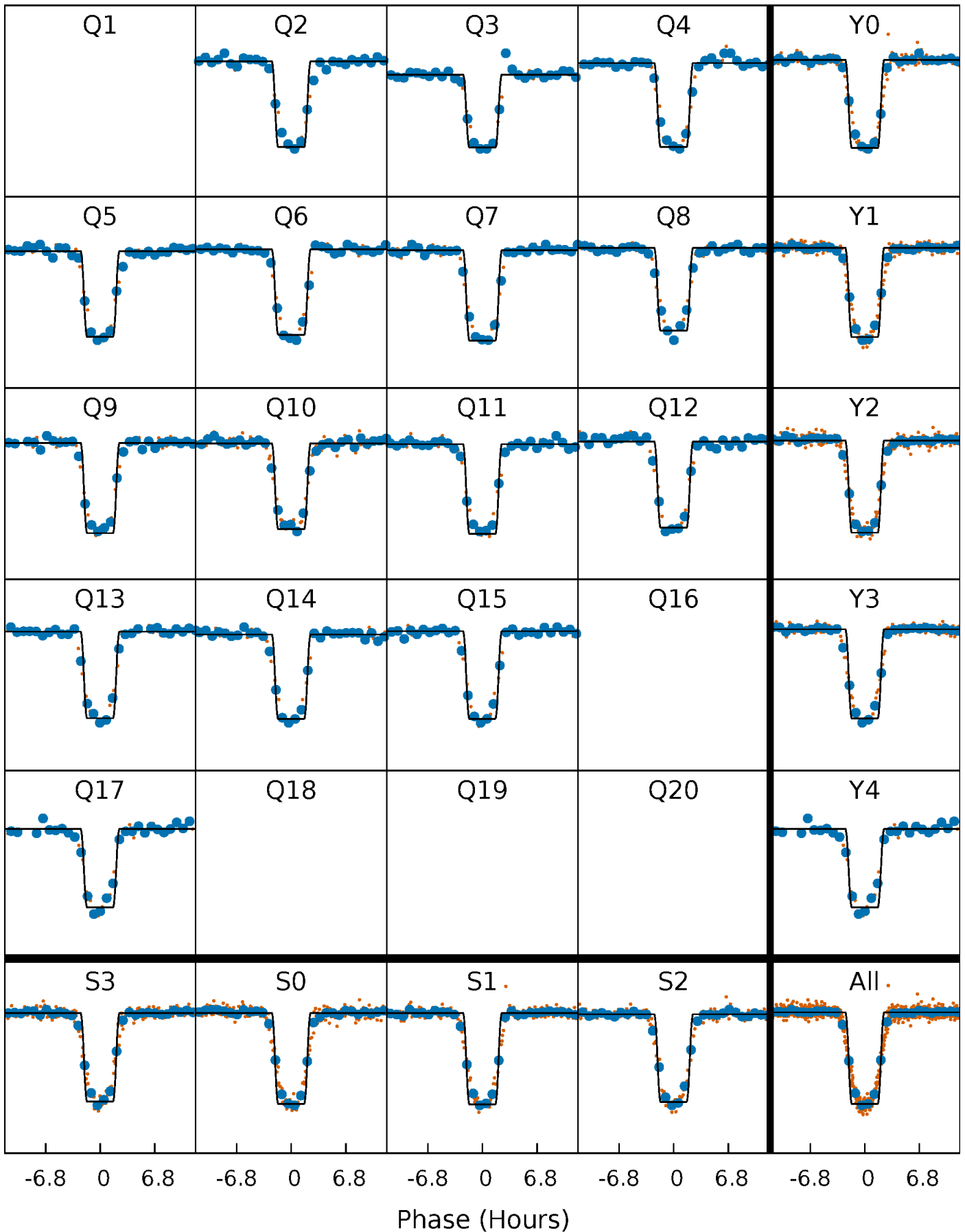
DV Quarter-Phased Transit Curves

TCE 009640921-02 P= 80.705985 Days $T_0=189.271409$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

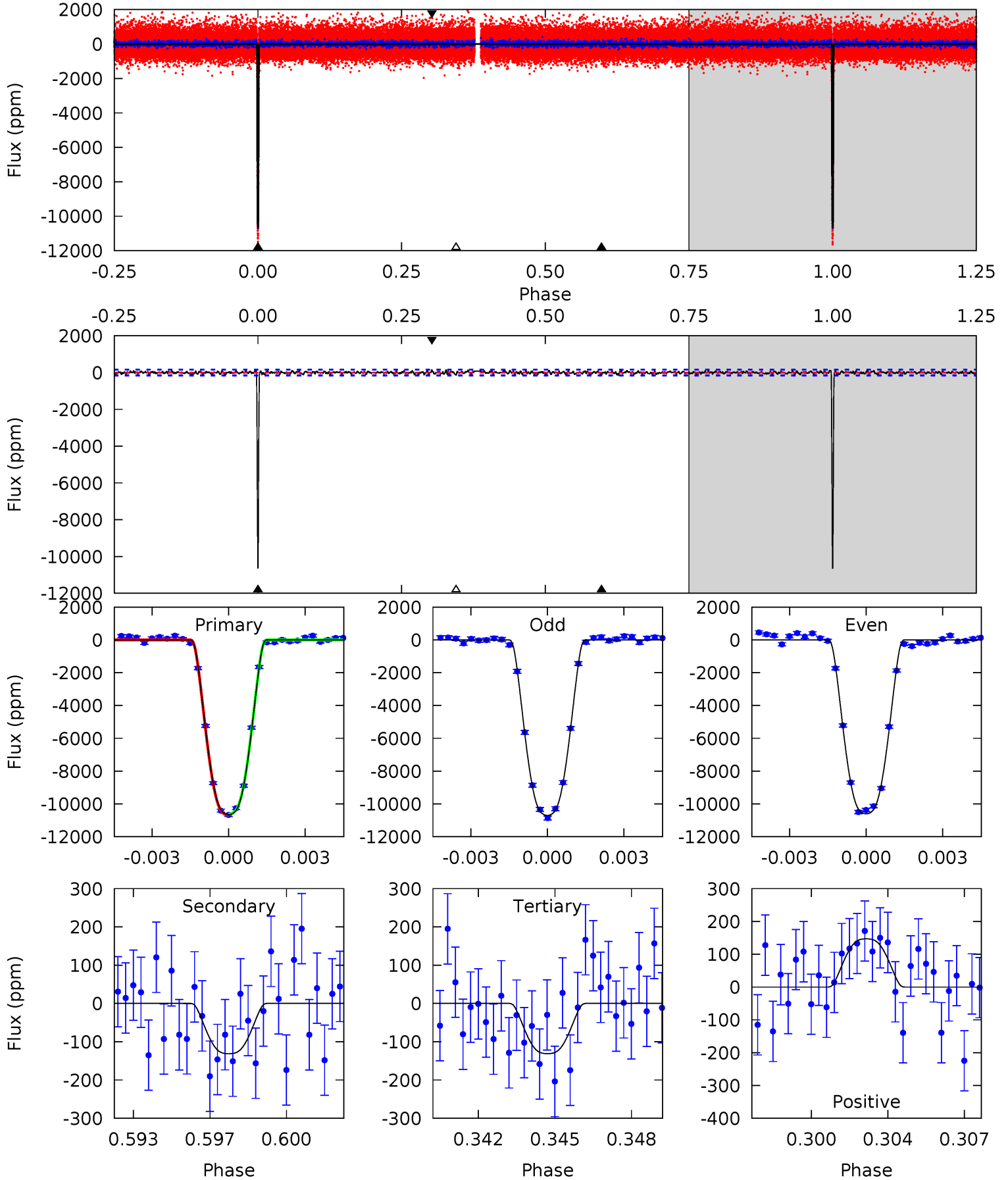
TCE 009640921-02 P= 80.706677 Days $T_0=189.265129$ (BKJD)



DV Model-Shift Uniqueness Test

009640921-02, $P = 80.705985$ Days, $E = 108.565424$ Days

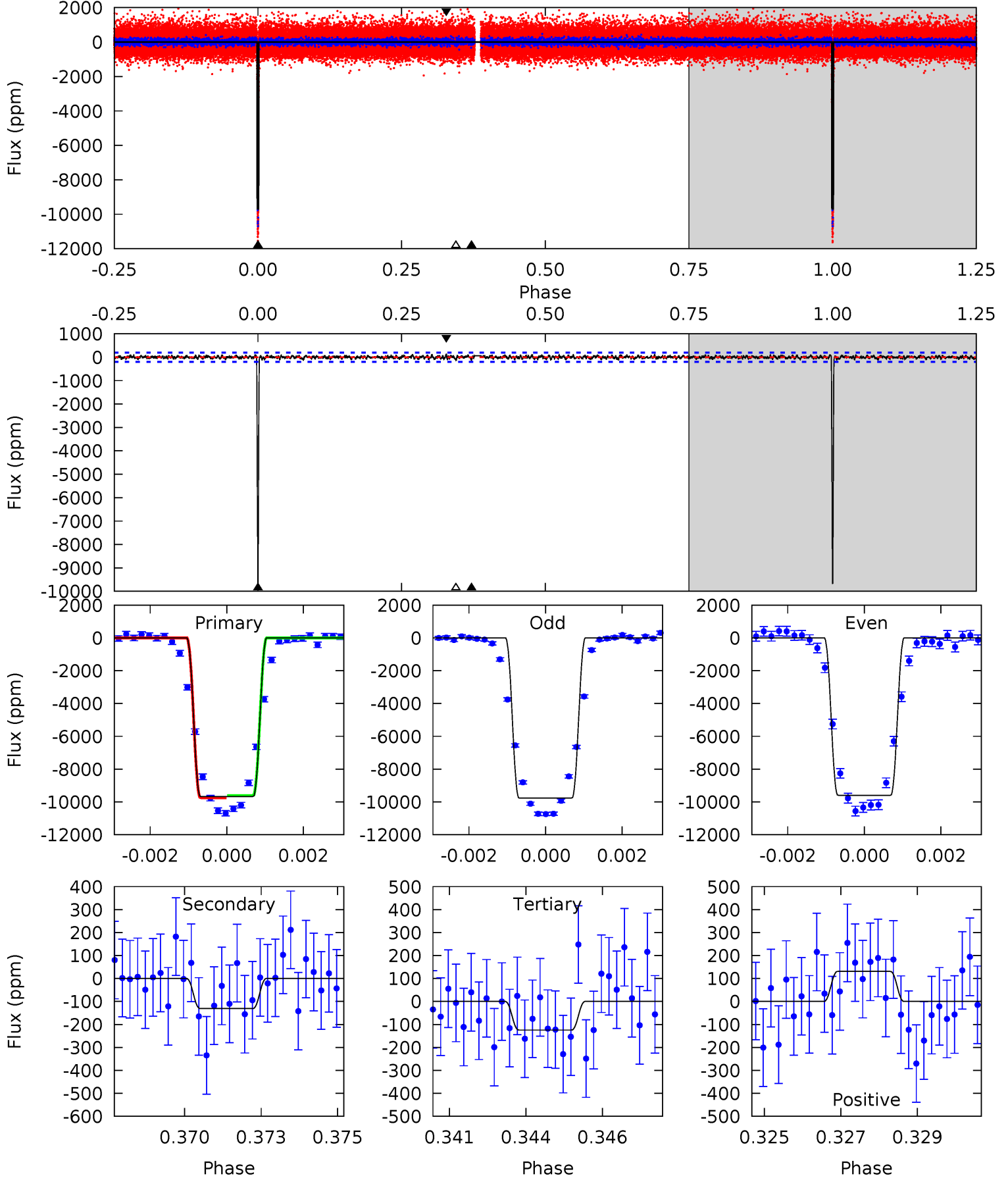
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
348.1	4.29	4.28	4.80	5.23	2.92	1.43	343.8	343.3	0.01	-0.51	1.55	0.99	0.01	1.13



Alt Model-Shift Uniqueness Test

009640921-02, P = 80.706677 Days, E = 108.558452 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
262.6	3.56	3.38	3.55	5.29	3.04	1.07	259.2	259.0	0.18	0.00	2.34	1.00	0.01	1.84



Stellar Parameters For KIC 009640921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6053^{+162}_{-198}	$4.494^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.949^{+0.291}_{-0.097}$	$1.025^{+0.130}_{-0.143}$	$1.691^{+0.368}_{-0.891}$
	+3%/-3%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-14%	+22%/-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 009640921-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-131 ± 31	$11.76^{+1.99}_{-0.96}$	612^{+44}_{-30}	2721^{+95}_{-106}	67^{+21}_{-20}
Alt.	-131 ± 37	$10.75^{+1.88}_{-0.79}$	611^{+44}_{-31}	2768^{+112}_{-122}	76^{+32}_{-25}

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 $A_{obs} \gg 1.0$

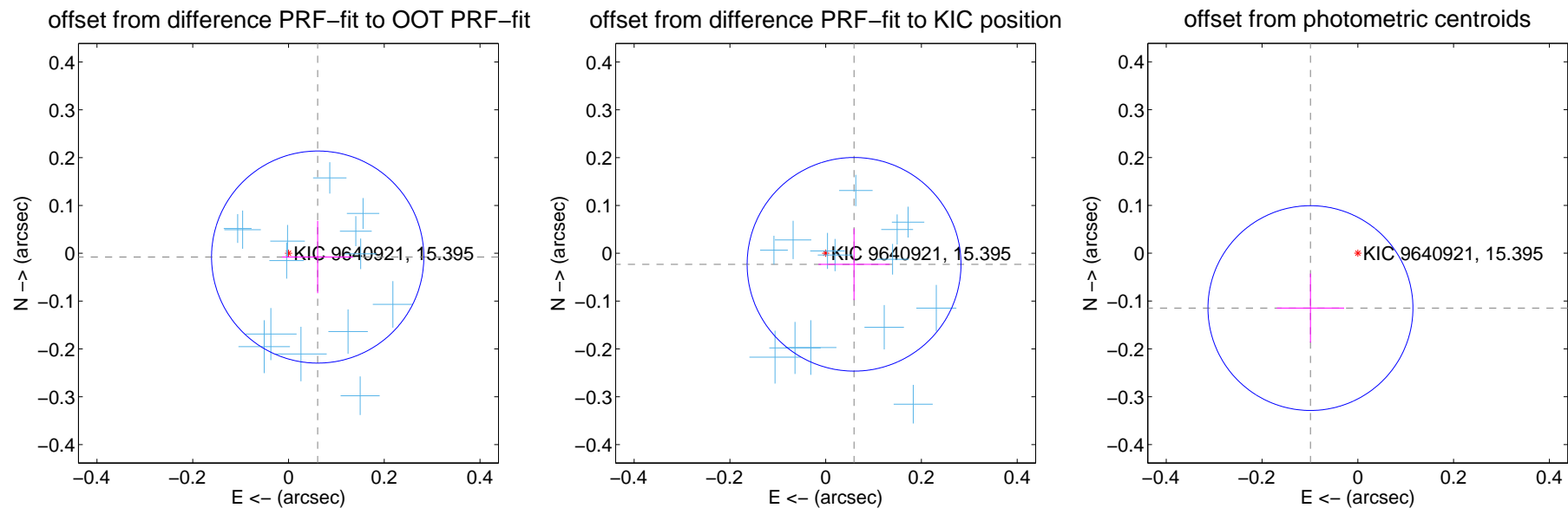
DV Centroid Data

Supplemental centroid analysis for 009640921-02. Kepler magnitude: 15.39. Transit SNR 228.41

There are 14 quarters with good PRF difference image offsets

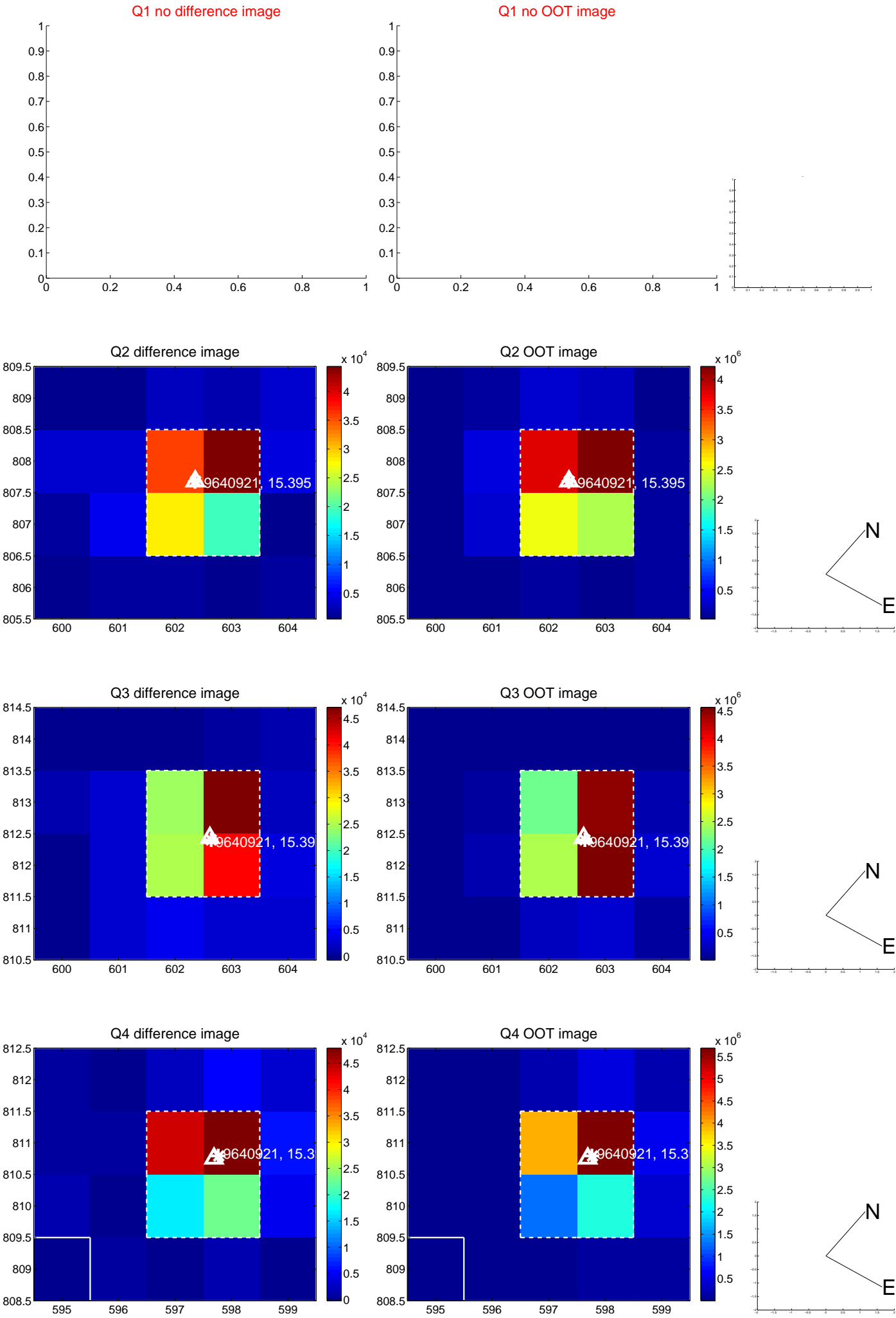
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.061 ± 0.074	0.83	-0.061 ± 0.074	-0.008 ± 0.076
PRF-fit source offset from KIC position	0.064 ± 0.074	0.86	-0.059 ± 0.074	-0.023 ± 0.075
photometric centroid source offset	0.15 ± 0.07	2.12	0.10 ± 0.07	-0.11 ± 0.07

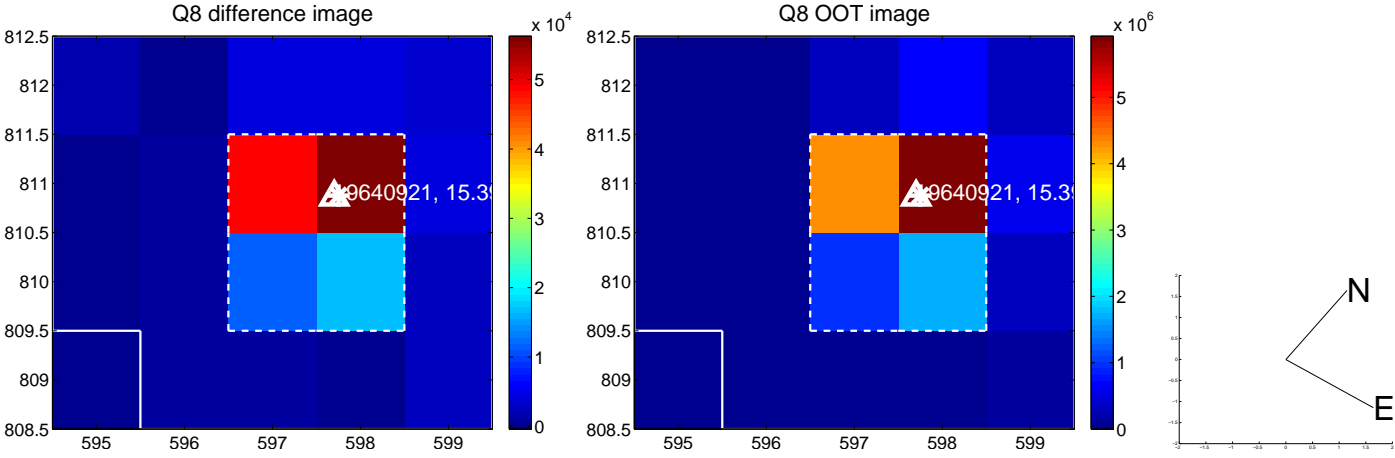
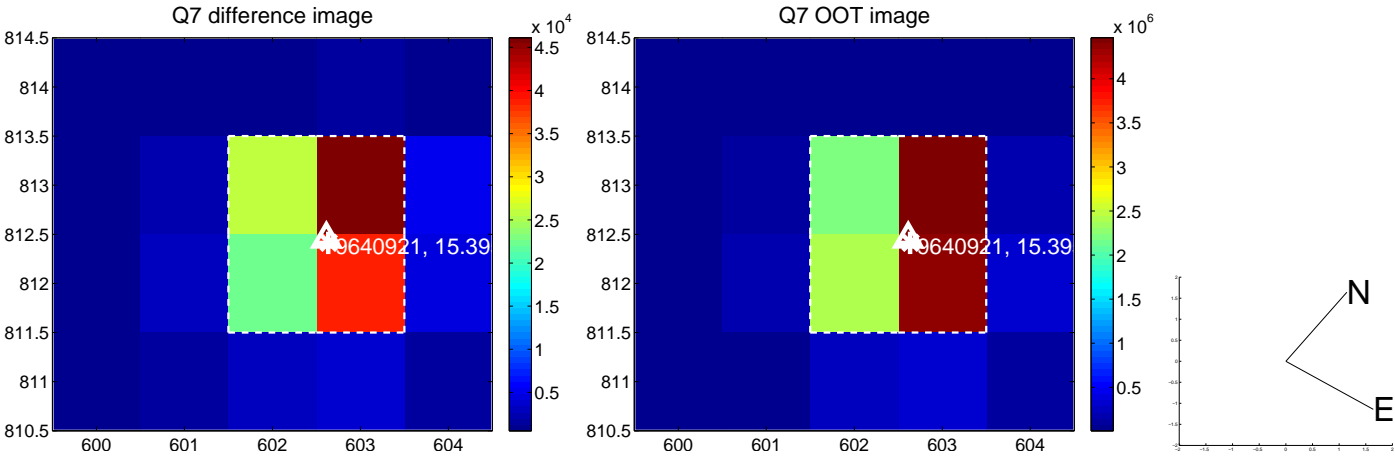
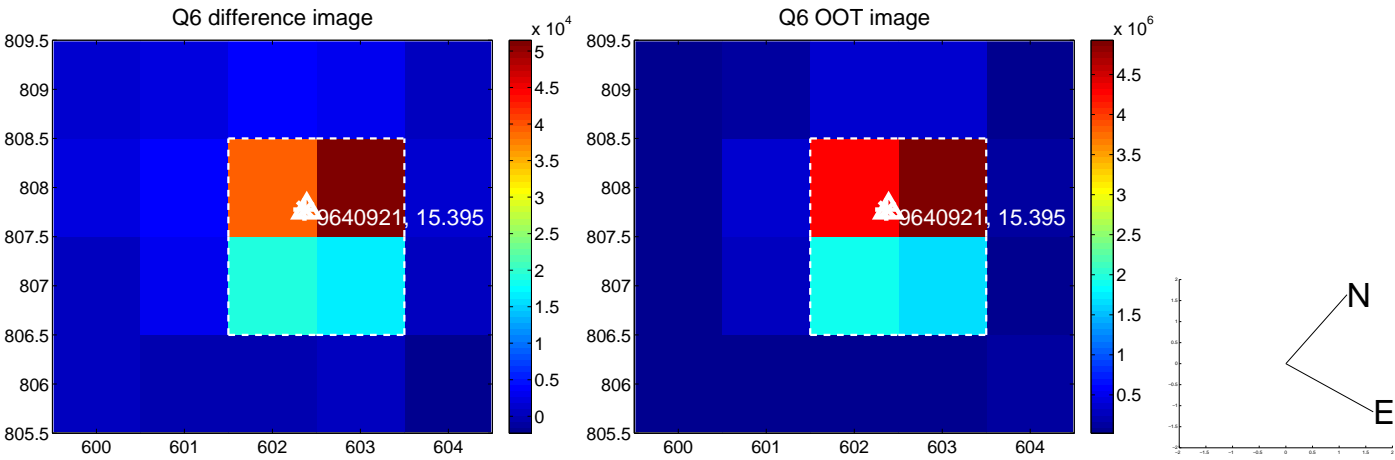
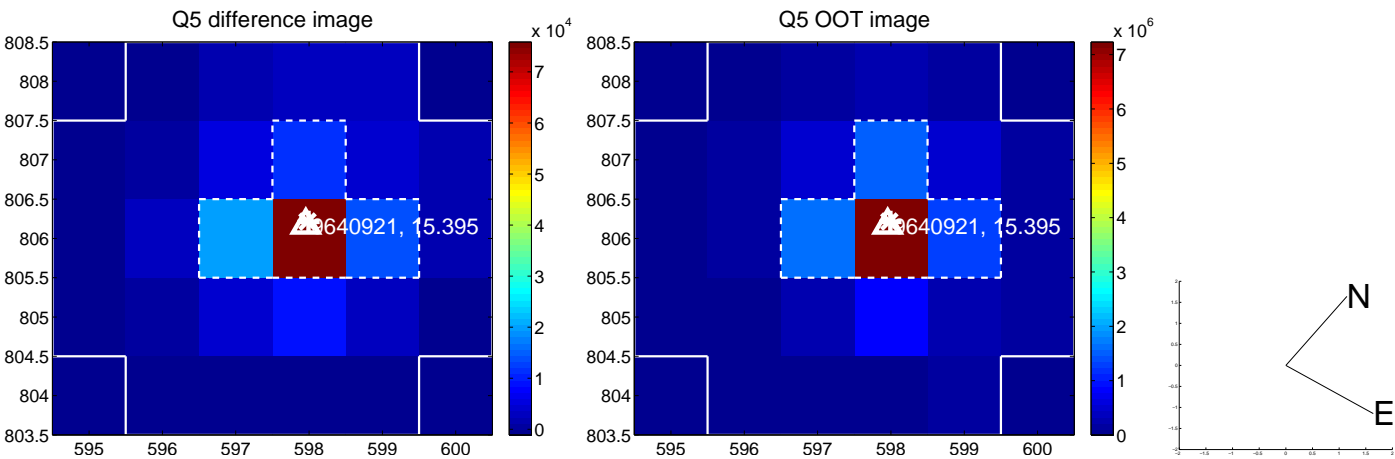


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

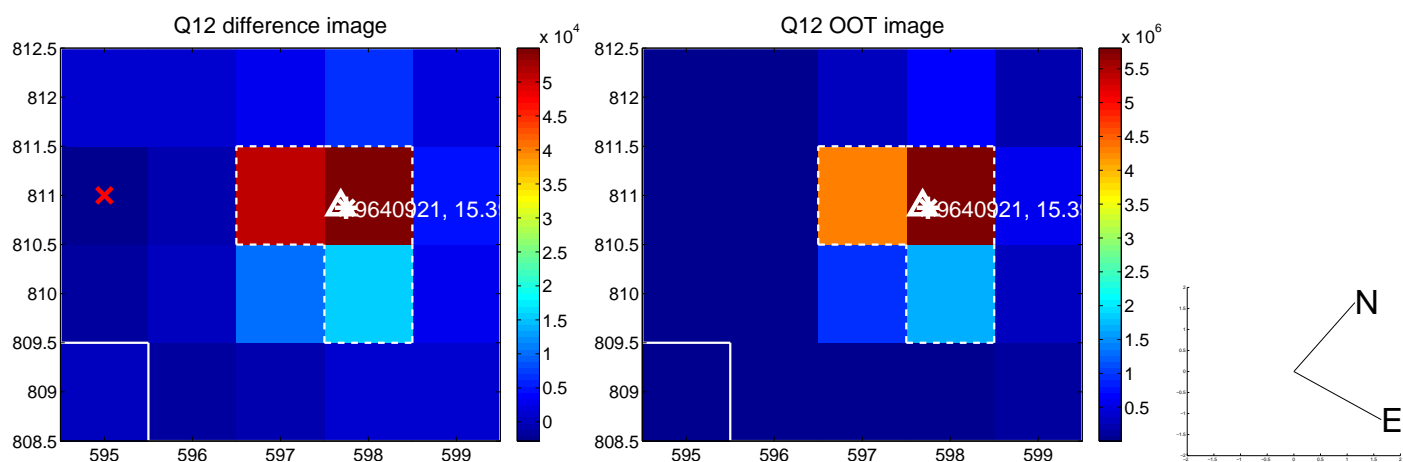
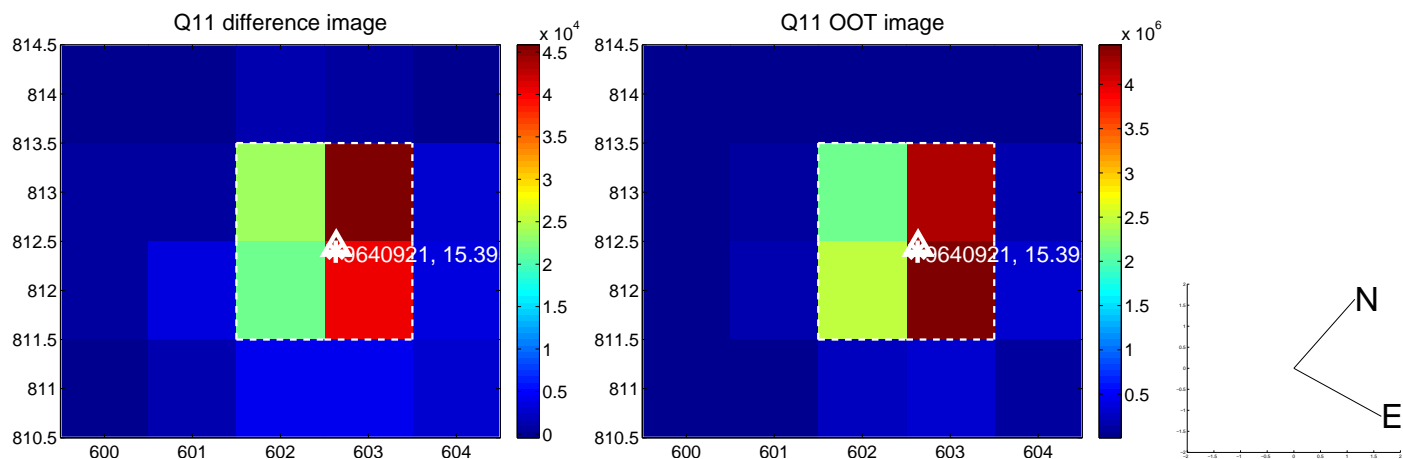
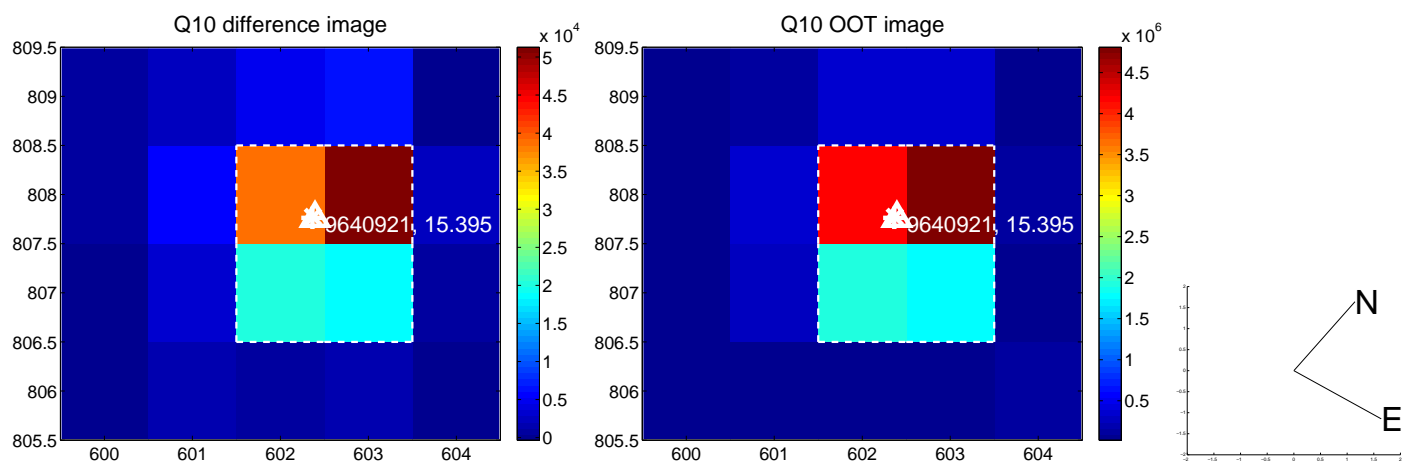
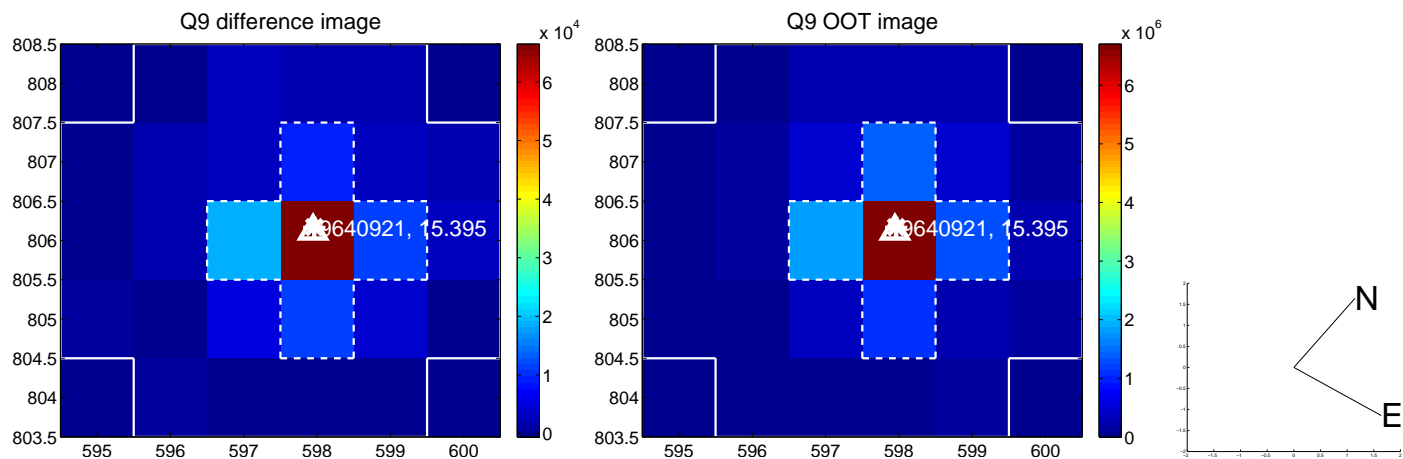
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



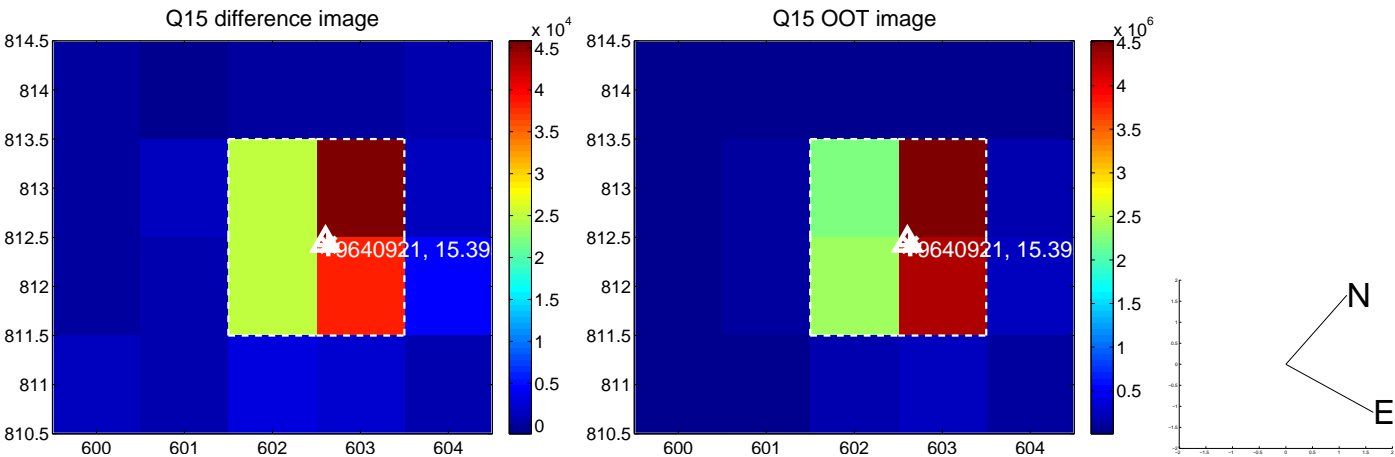
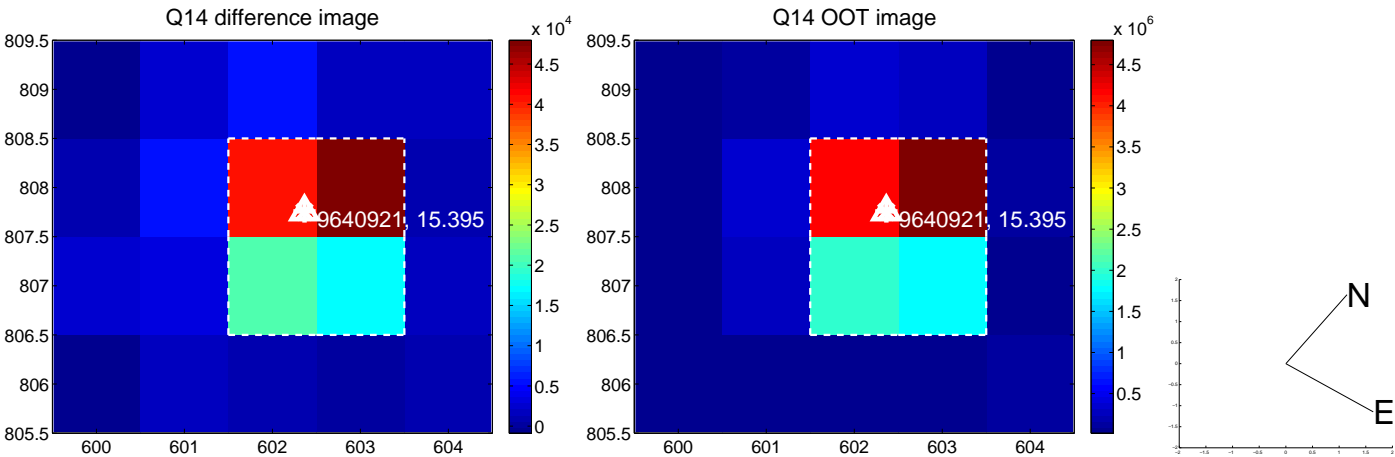
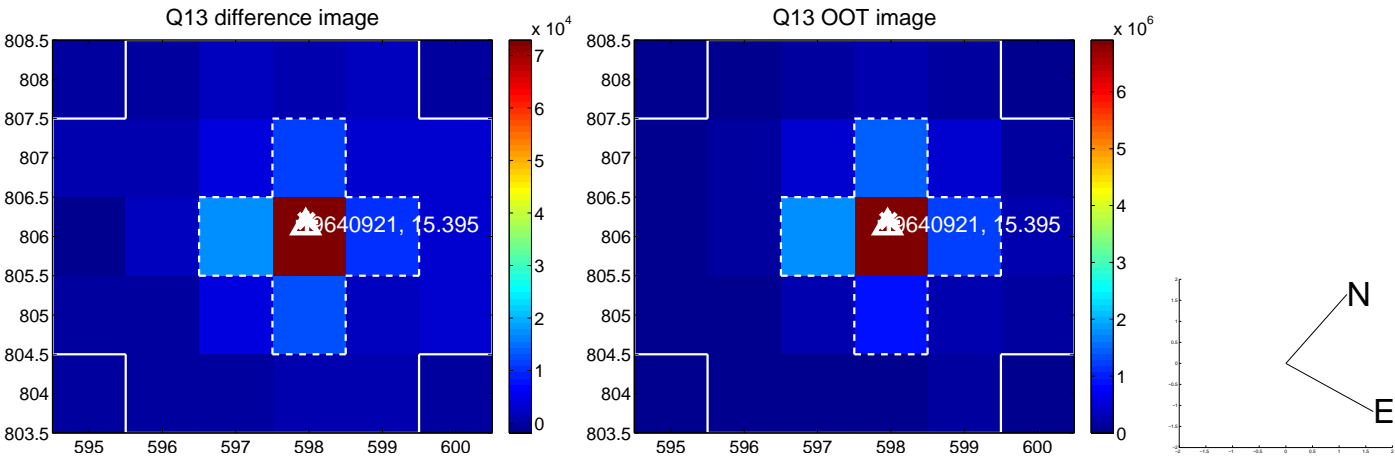
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



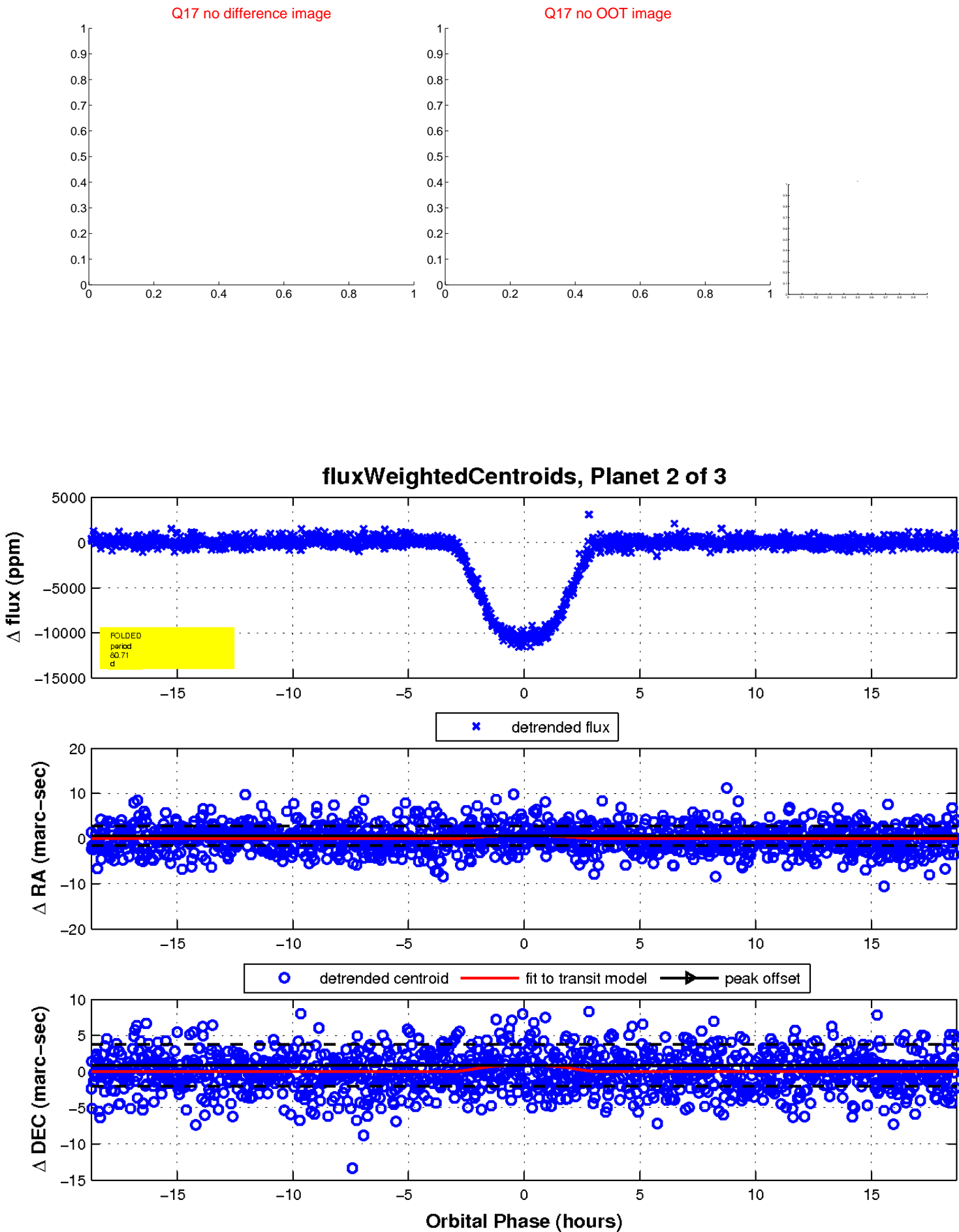
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

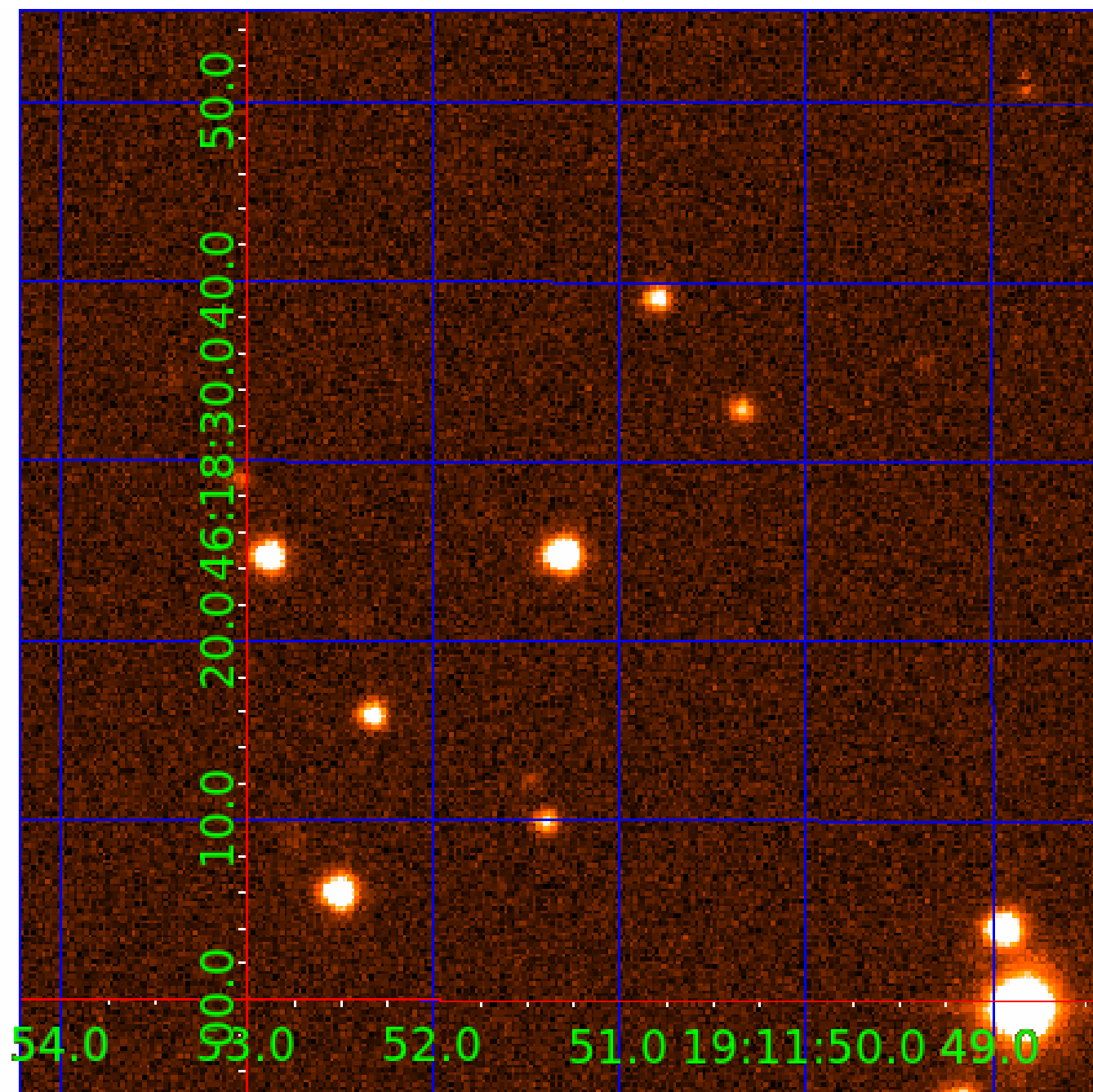


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009640921

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})
009640921-01	OBS	7210.01	80.706018	139.437441	11791.0	6.875	247.0	243.3	0.95	6053	15.09	7.97
009640921-02	OBS	No	80.705985	189.271409	10642.0	6.243	234.0	228.4	0.95	6053	11.44	7.97
009640921-03	OBS	7210.02	2.178131	132.031302	111.2	2.412	12.7	11.4	0.95	6053	1.18	985.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009640921-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
009640921-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009640921-03	OBS	FP	0.00	0	0	1	1	HALO_GHOST—EPHEM_MATCH

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.

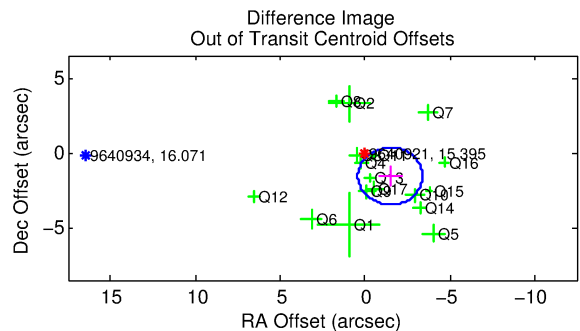
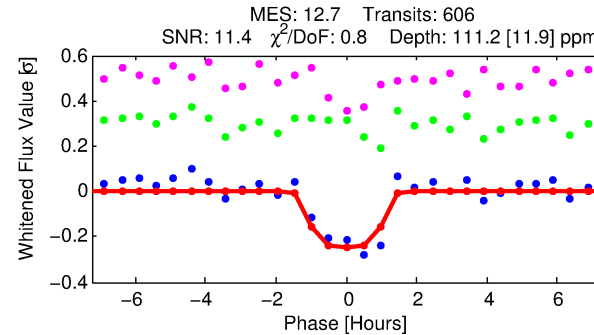
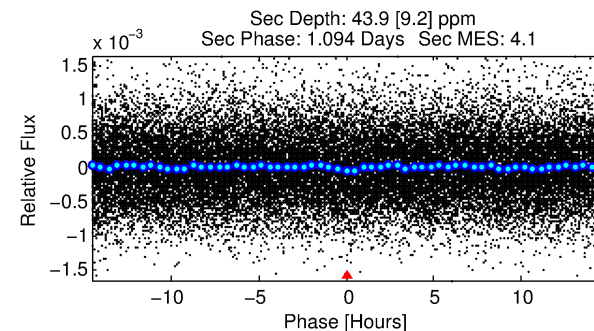
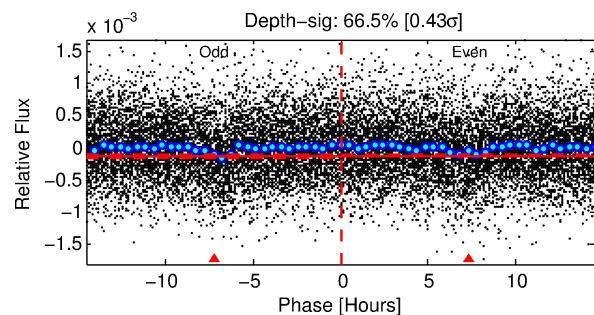
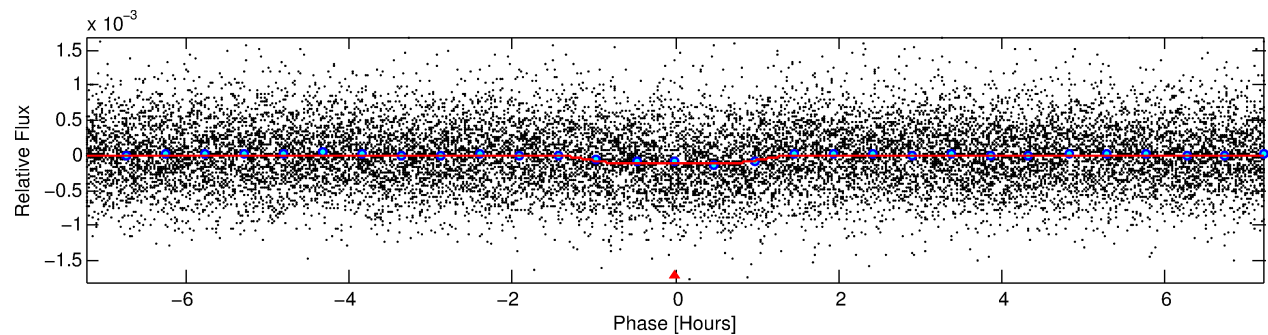
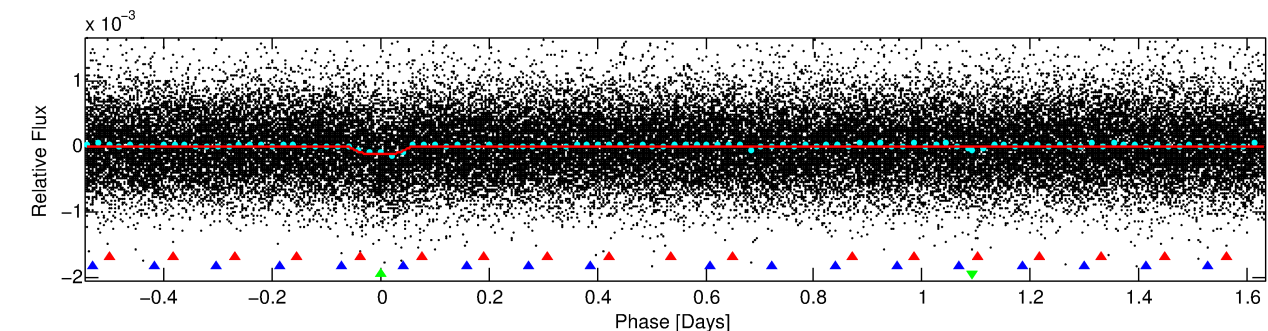
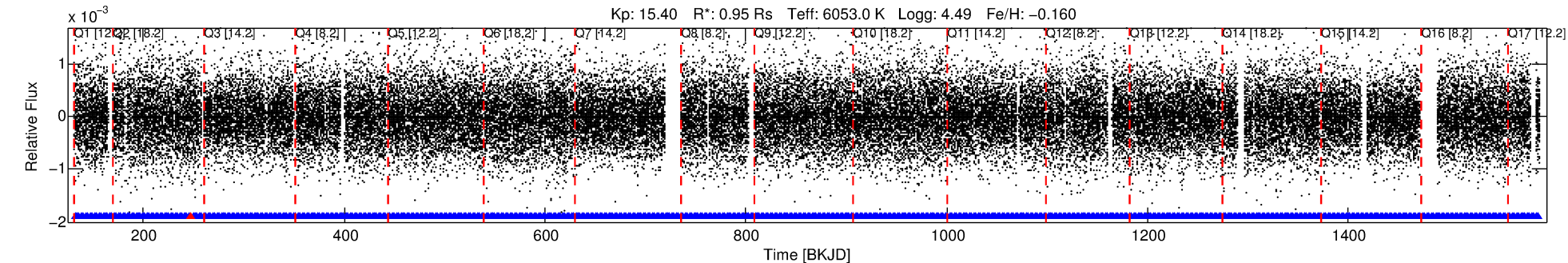
Ephemeris Match Information For 009640921-03

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
009640921-03	9640921	FL-Lyr-pri	9641031	1:1	153.6	8	-38	9.18	15.40	3919.50	Direct-PRF	0	0.73	0.50

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9640921 Candidate: 3 of 3 Period: 2.178 d
KOI: K07210.02 Corr: 0.975



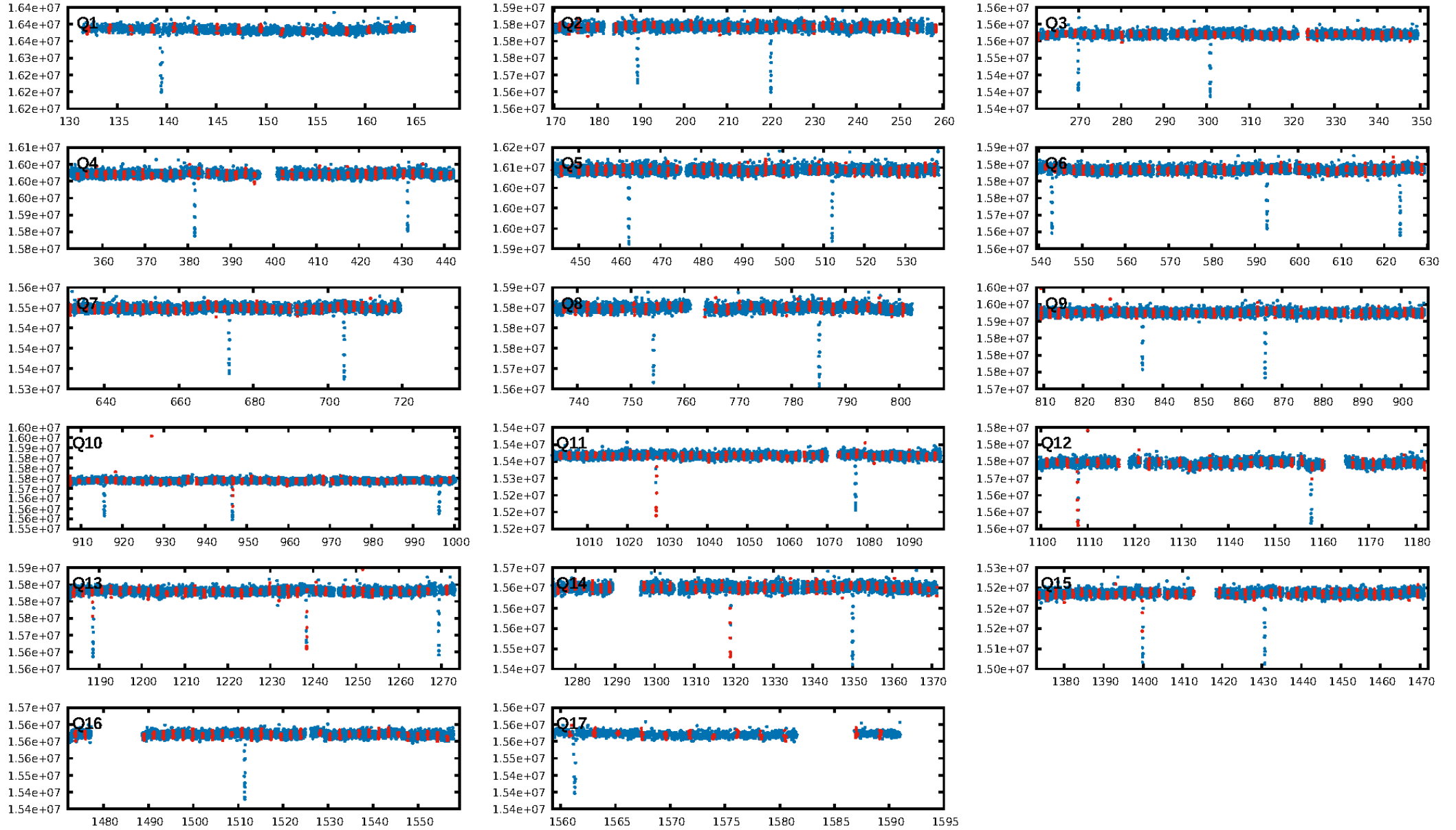
DV Fit Results:

Period = 2.17813 [0.00001] d
Epoch = 132.0313 [0.0034] BKJD
Rp/R* = 0.0114 [0.0070]
a/R* = 3.32 [9.68]
b = 0.90 [0.69]
Seff = 985.17 [395.12]
Teq = 1429 [143] K
Rp = 1.18 [0.81] Re
a = 0.0332 [0.0086] AU
Ag = 19.09 [24.74] [0.73 σ]
Teffp = 4617 [1438] K [2.21 σ]

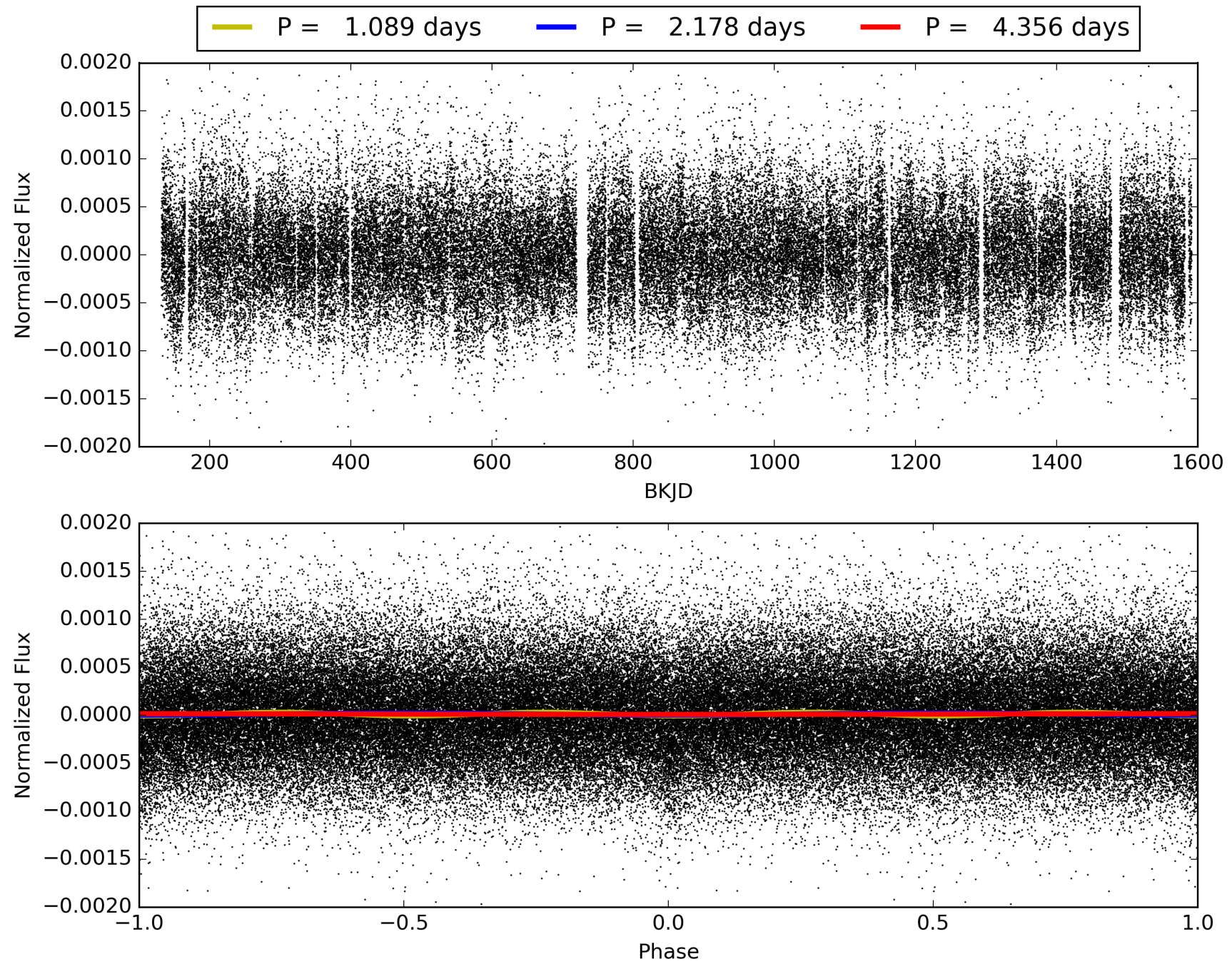
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [281.59 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.56e-36
RollingBand-fgt: 1.00 [577/578]
GhostDiagnostic-chr: -0.03014
Centroid-sig: 0.0%
Centroid-so: 3.537 arcsec [2.48 σ]
OotOffset-rm: 2.162 arcsec [3.41 σ]
KicOffset-rm: 2.175 arcsec [3.04 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009640921-03, PDC Light Curves

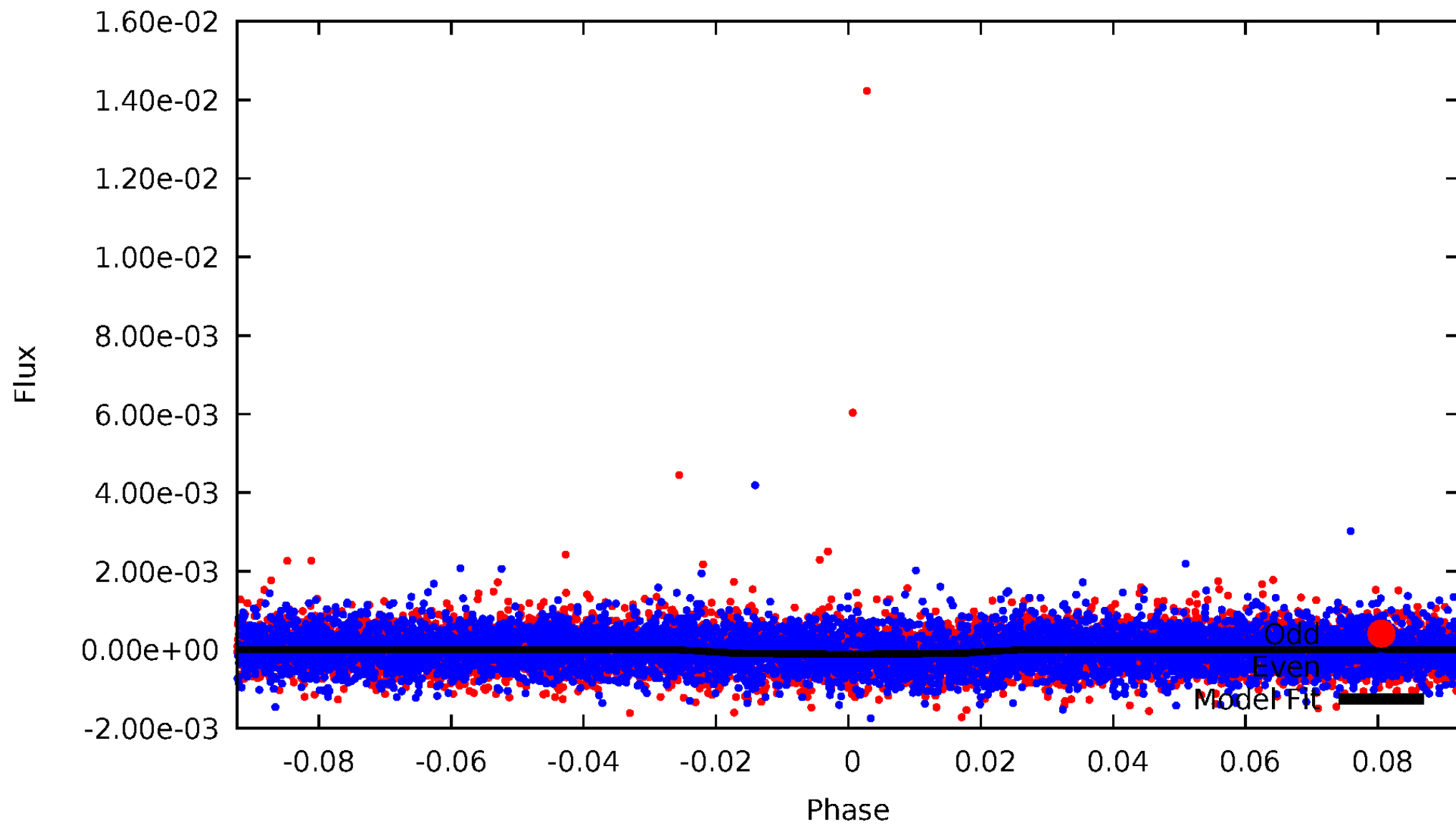


TCE 009640921-03



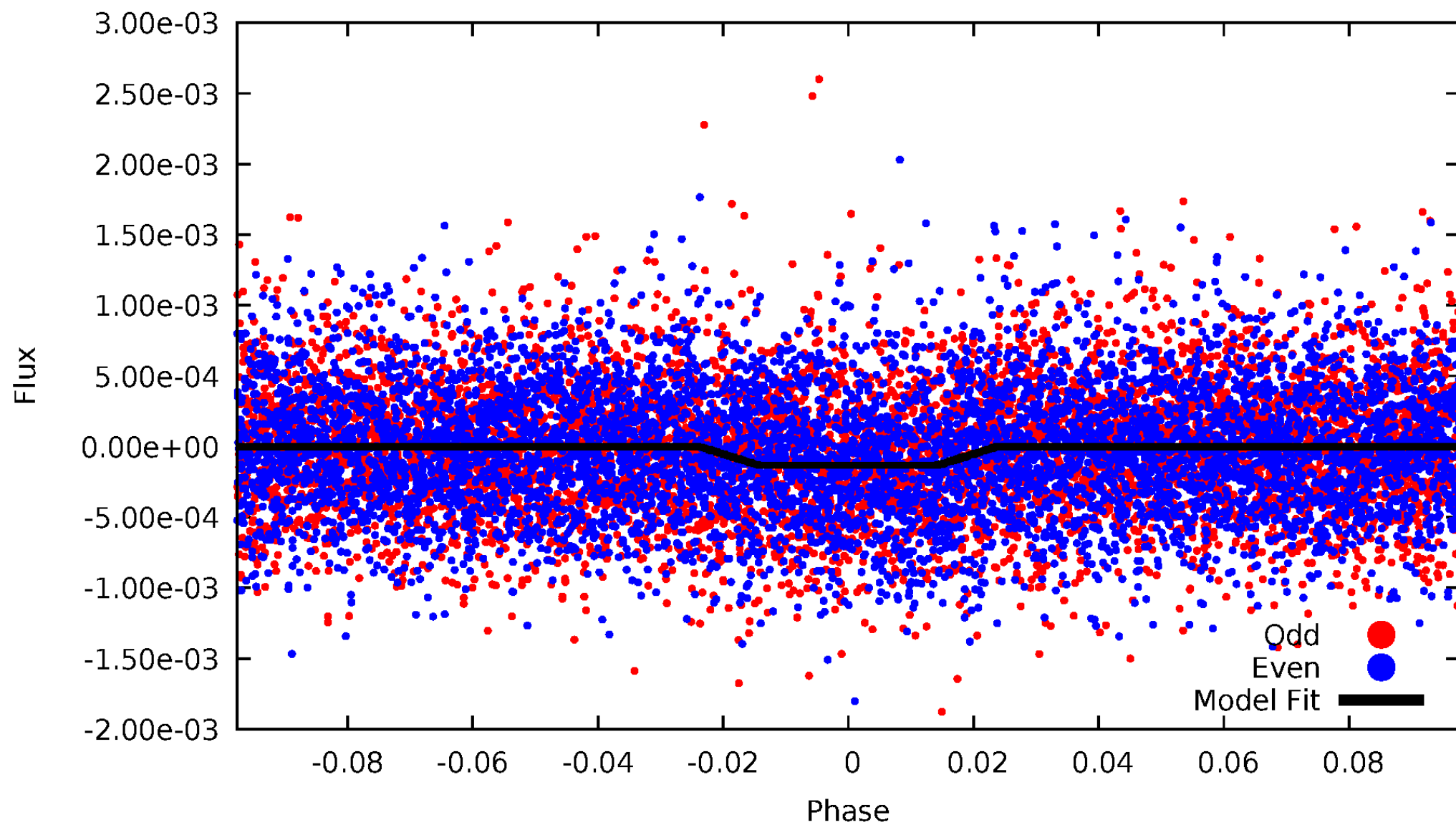
DV Odd/Even

TCE 009640921-03



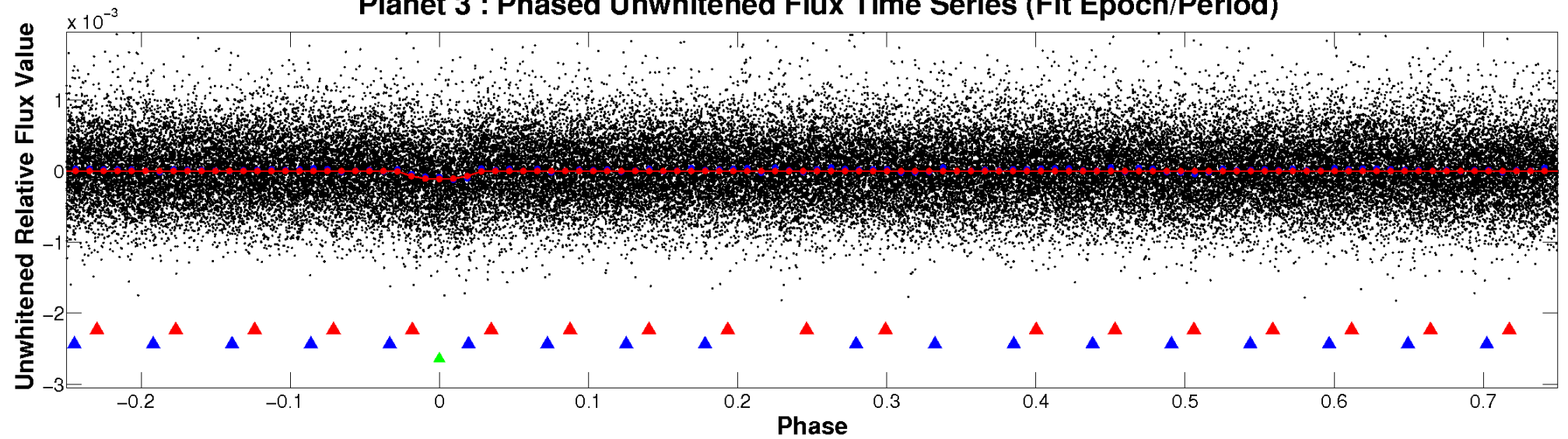
ALT Odd/Even

TCE 009640921-03

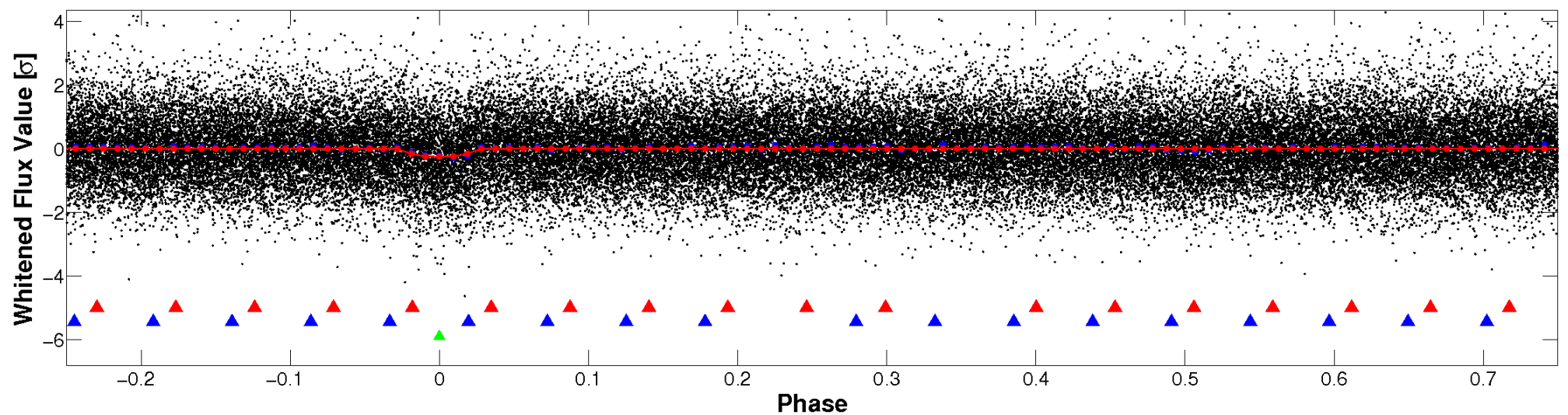


Non-Whitened Vs. Whitened Light Curve

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

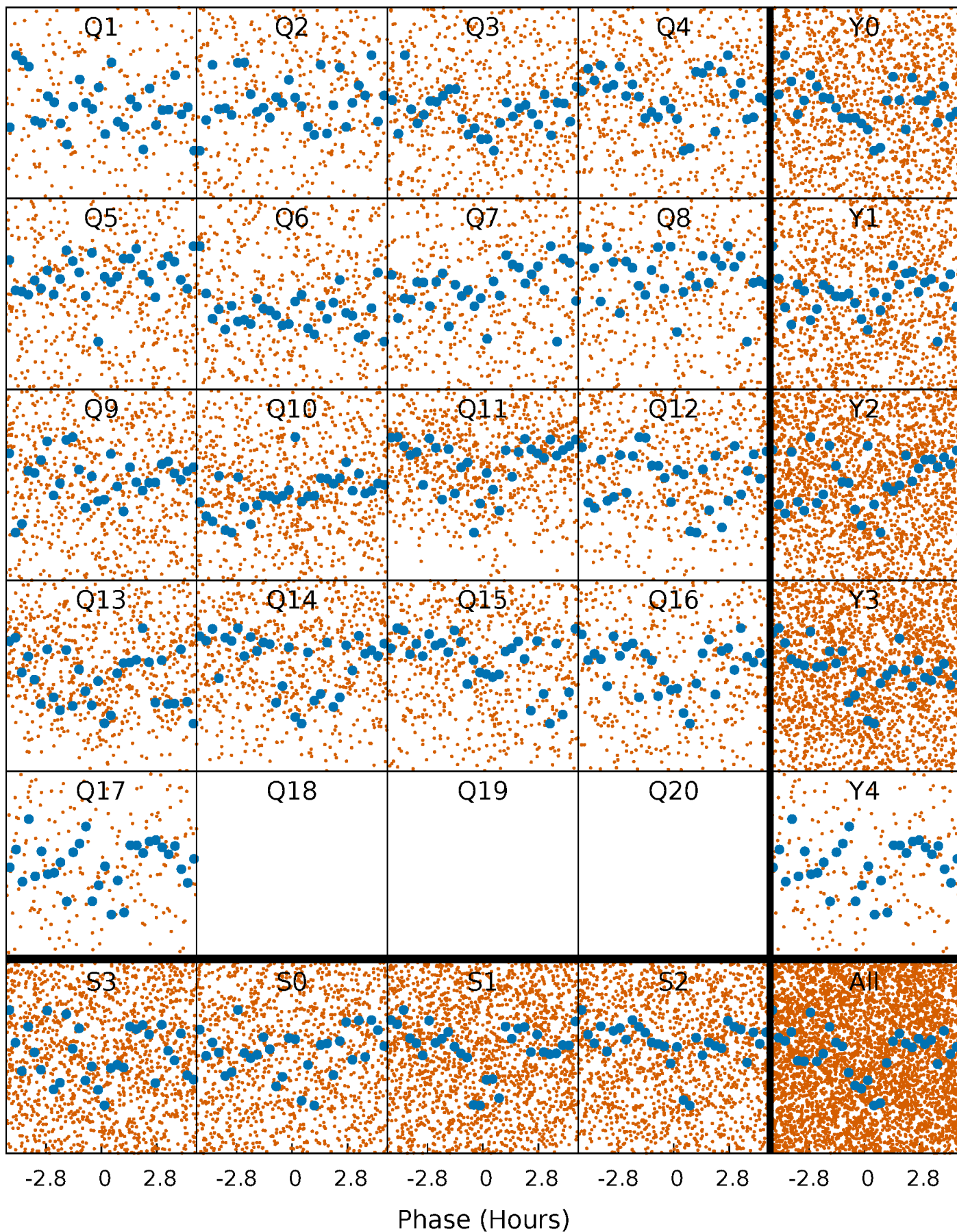


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



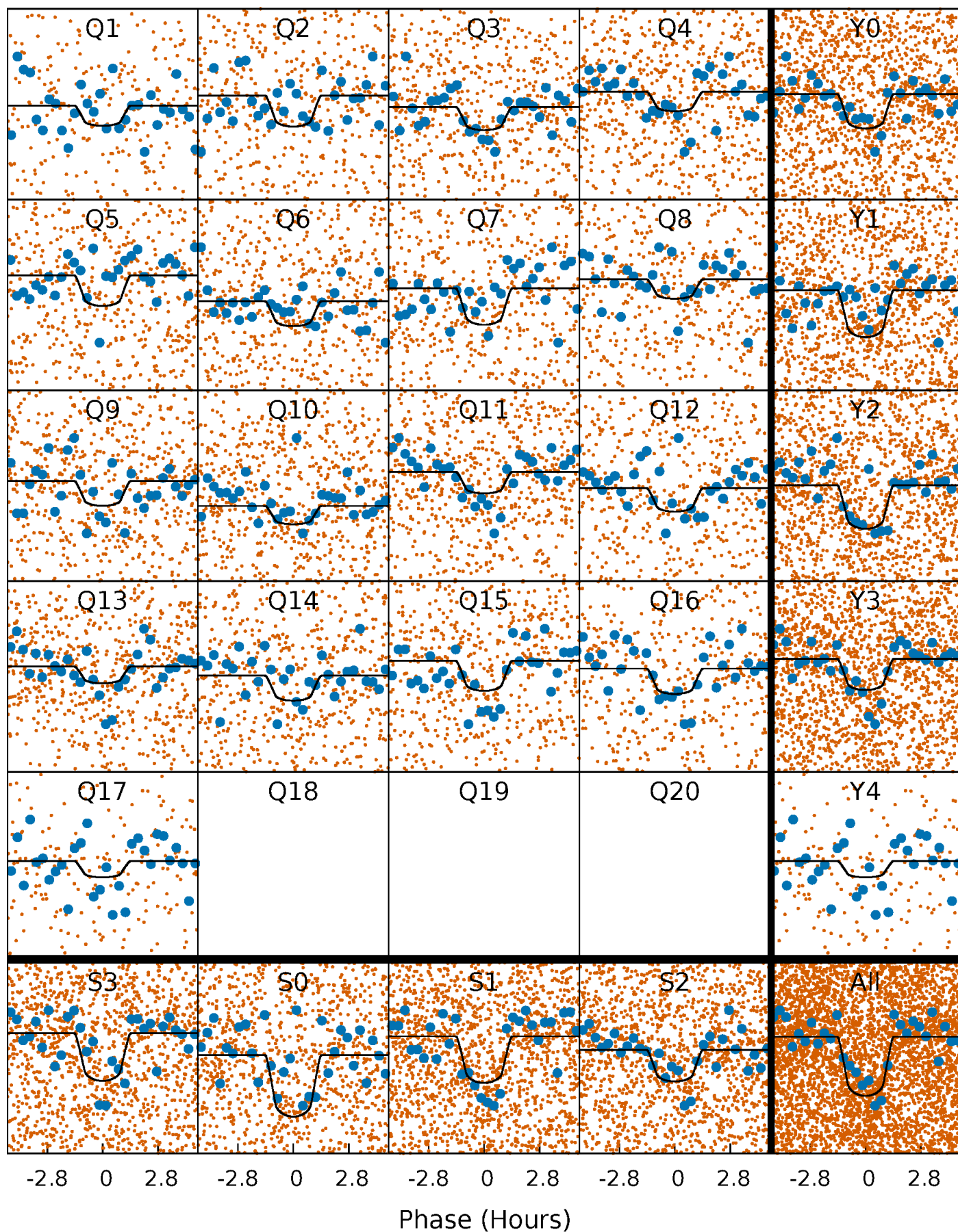
PDC Quarter-Phased Transit Curves

TCE 009640921-03 P= 2.178131 Days $T_0=132.031302$ (BKJD)



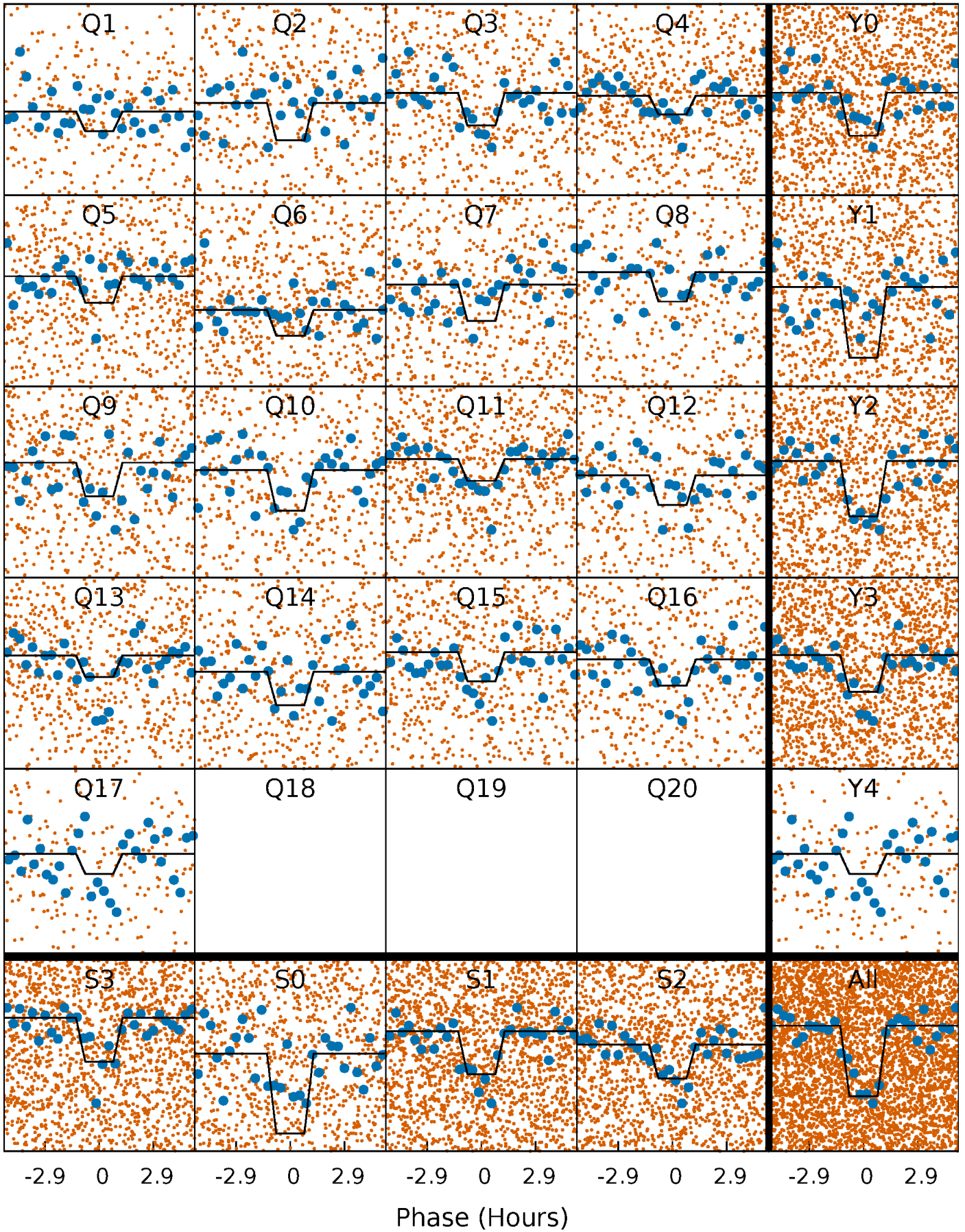
DV Quarter-Phased Transit Curves

TCE 009640921-03 P= 2.178131 Days $T_0=132.031302$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

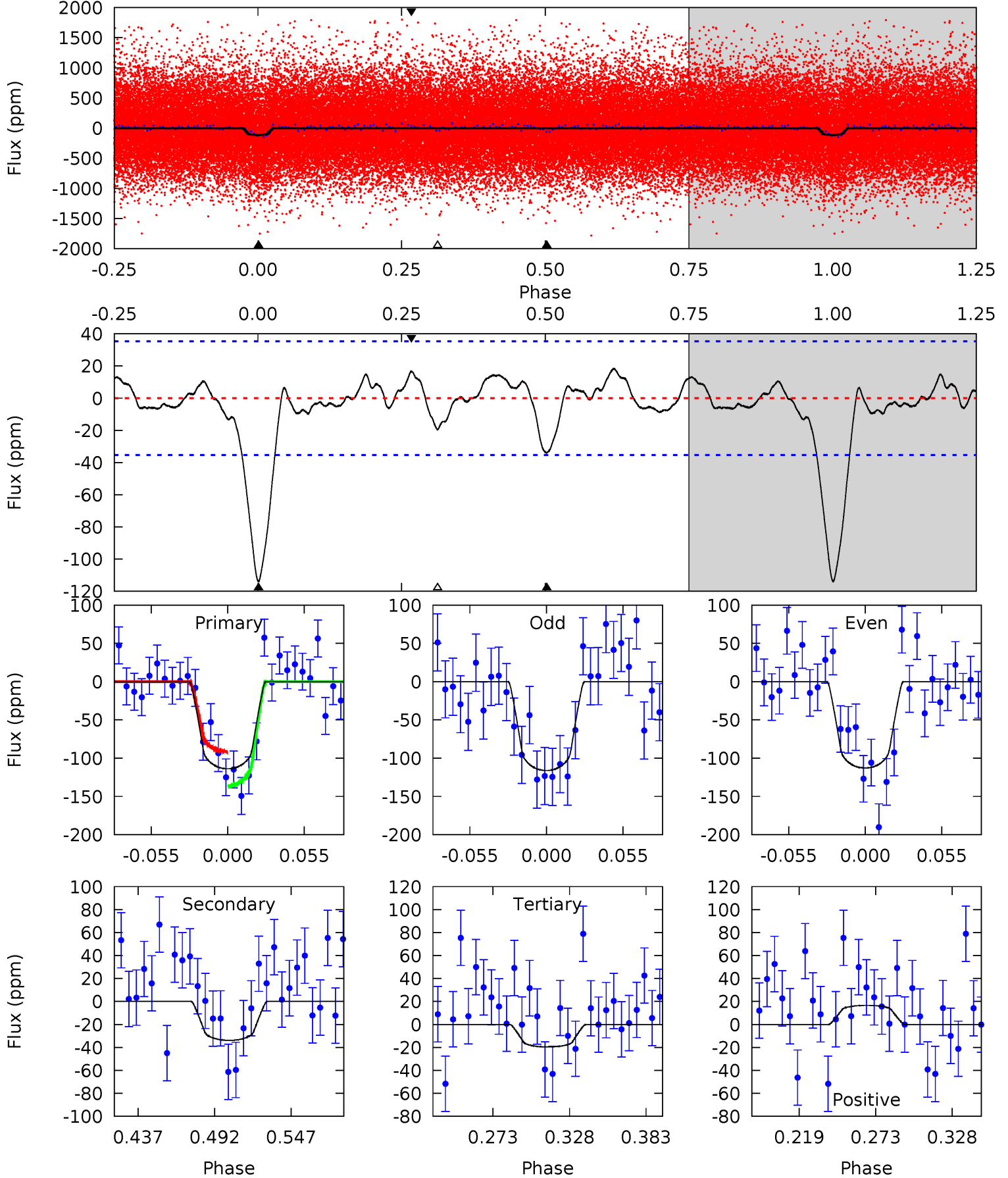
TCE 009640921-03 P= 2.178139 Days $T_0=132.031745$ (BKJD)



DV Model-Shift Uniqueness Test

009640921-03, P = 2.178131 Days, E = 129.853171 Days

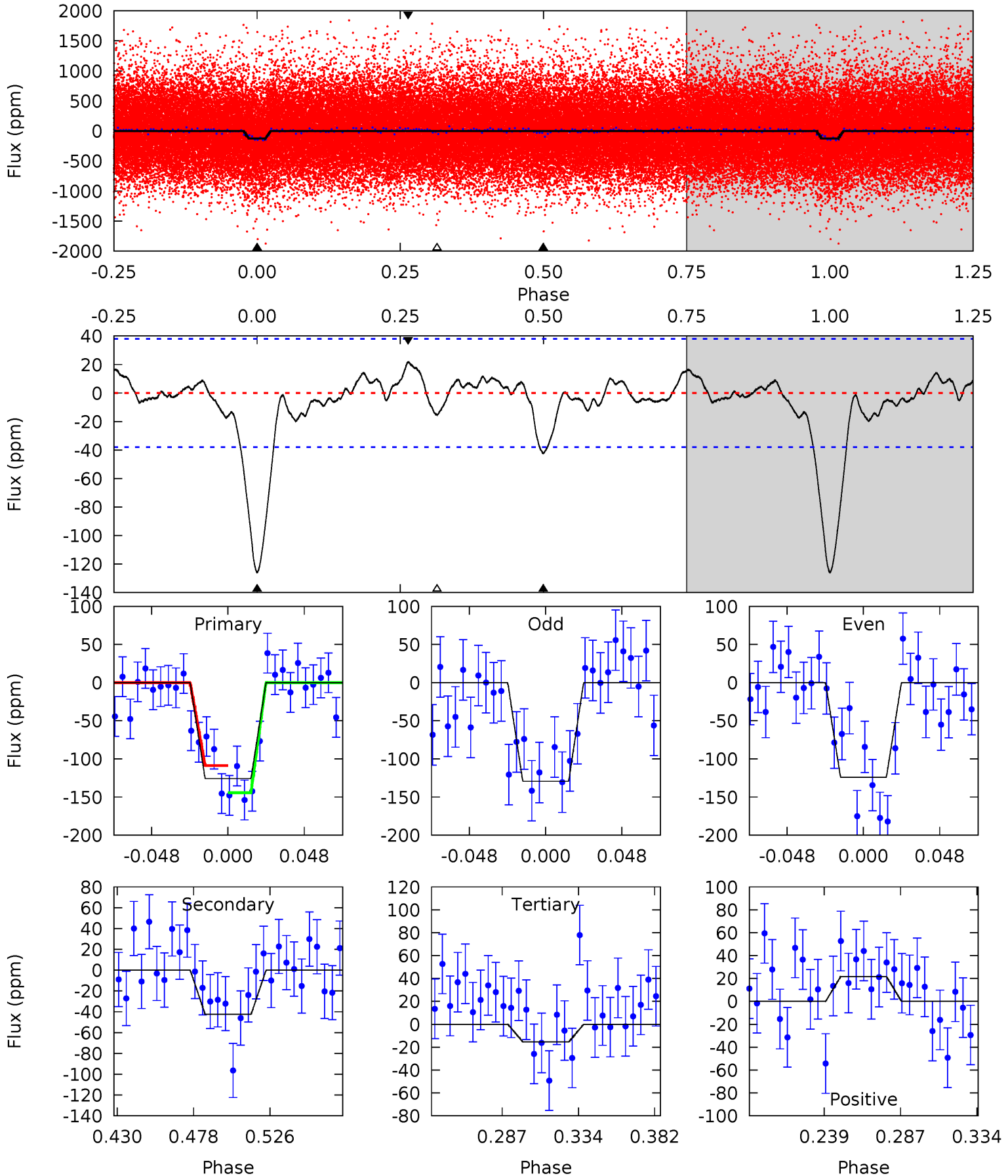
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	4.50	2.60	2.21	4.69	1.92	1.07	12.5	12.9	1.90	2.29	0.22	0.86	0.14	2.97



Alt Model-Shift Uniqueness Test

009640921-03, P = 2.178139 Days, E = 129.853606 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	5.28	1.92	2.69	4.72	1.98	1.06	13.7	13.0	3.36	2.59	0.33	0.85	0.15	2.22



Stellar Parameters For KIC 009640921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6053^{+162}_{-198}	$4.494^{+0.052}_{-0.208}$	$-0.160^{+0.250}_{-0.350}$	$0.949^{+0.291}_{-0.097}$	$1.025^{+0.130}_{-0.143}$	$1.691^{+0.368}_{-0.891}$
	+3%/-3%	+1%/-5%	+156%/-219%	+31%/-10%	+13%/-14%	+22%/-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 009640921-03 / KOI 7210.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-34 ± 8	$1.24^{+0.73}_{-0.67}$	2028^{+137}_{-86}	4439^{+1859}_{-716}	13^{+49}_{-8}
Alt.	-43 ± 8	$1.30^{+0.81}_{-0.67}$	2034^{+151}_{-94}	4577^{+1907}_{-747}	15^{+49}_{-9}

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 $A_{obs} \gg 1.0$

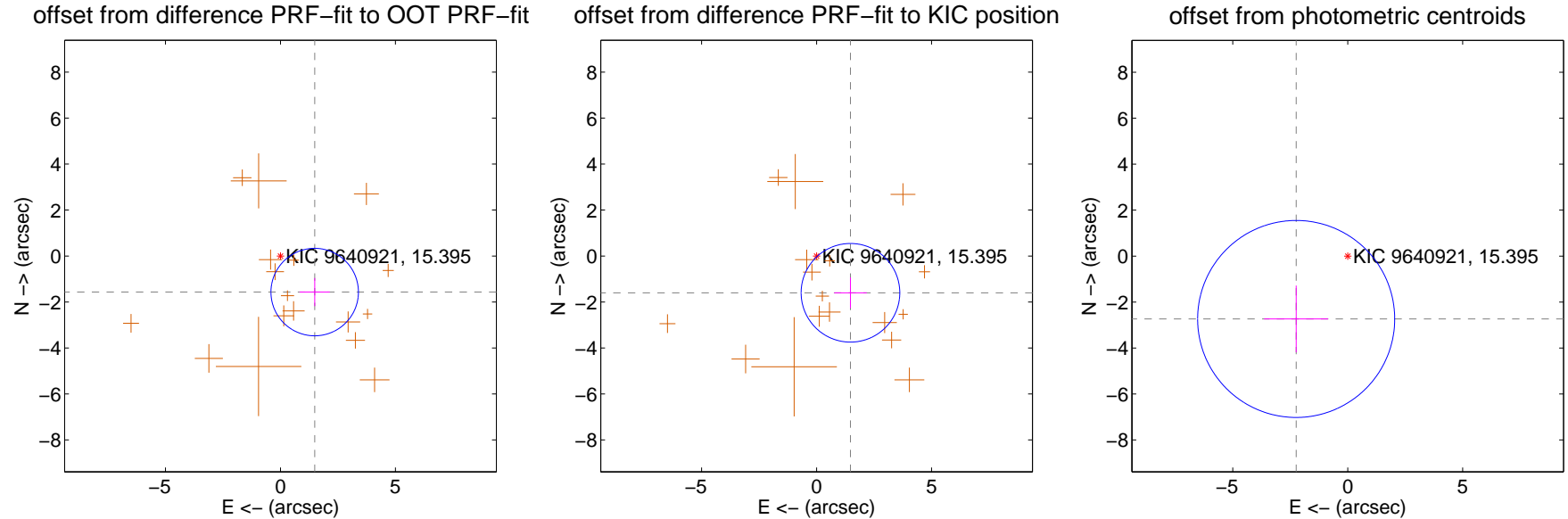
DV Centroid Data

Supplemental centroid analysis for 009640921-03. Kepler magnitude: 15.39. Transit SNR 11.37

There are 0 quarters with good PRF difference image offsets

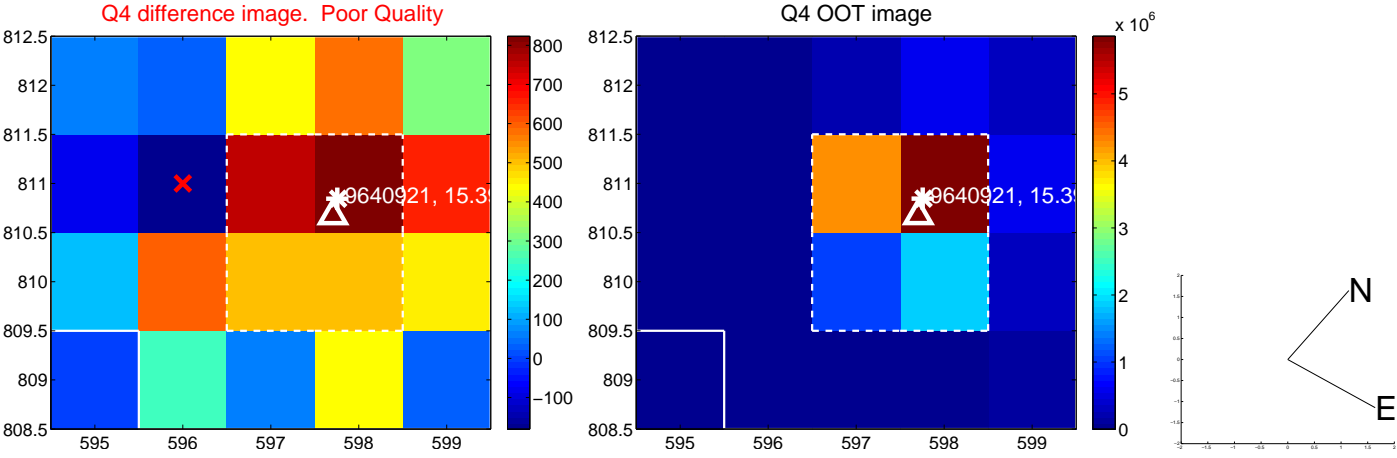
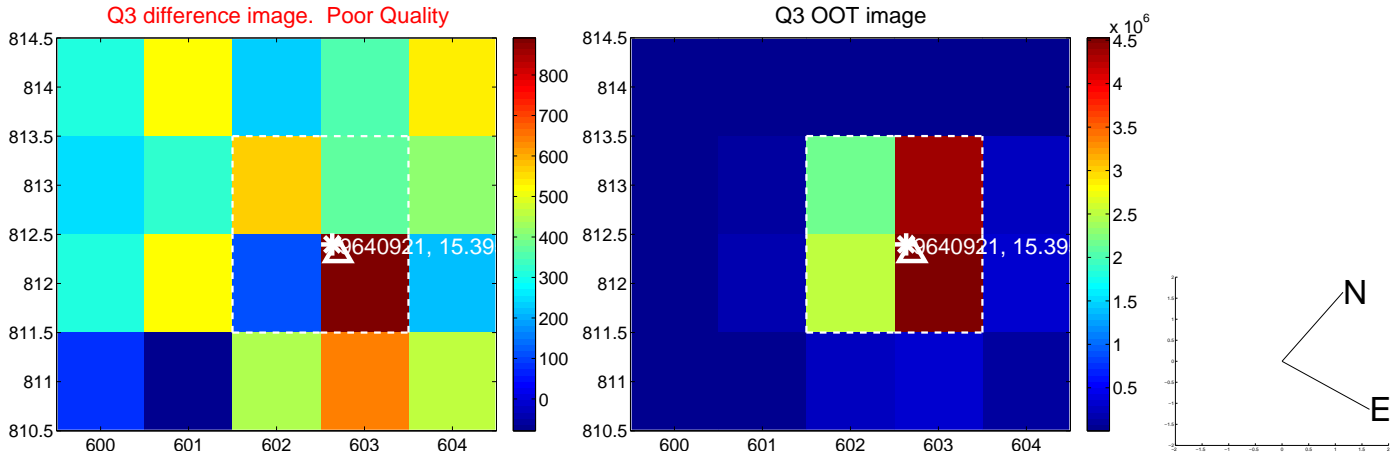
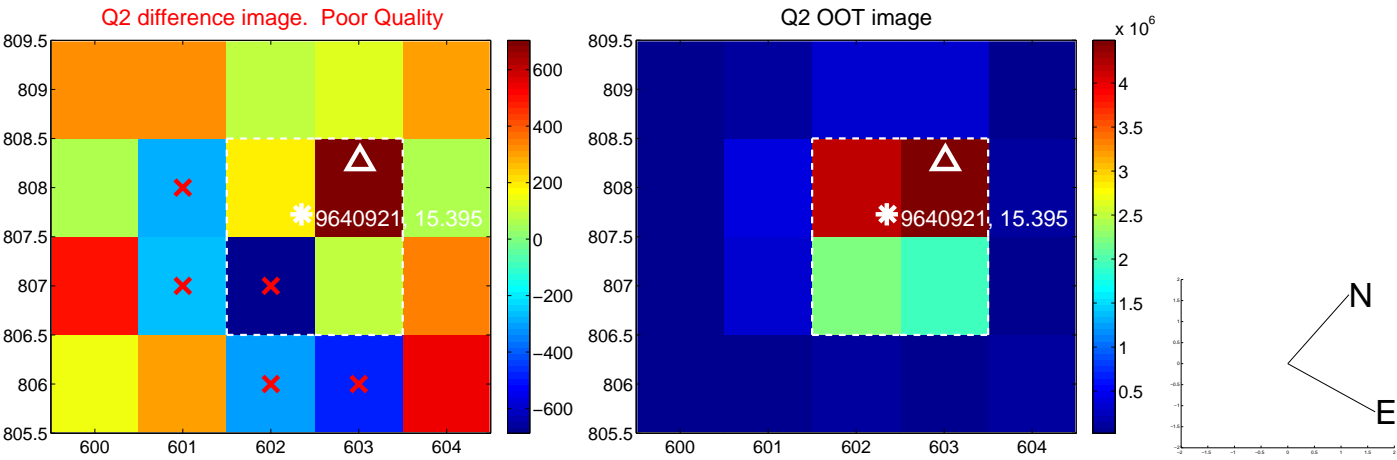
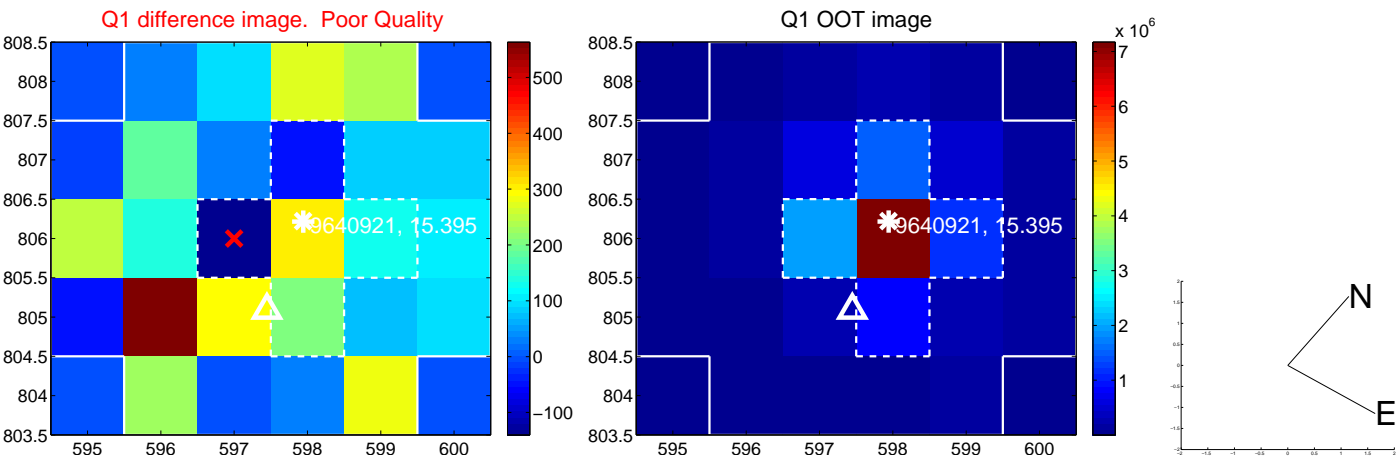
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.162 ± 0.634	3.41	-1.488 ± 0.655	-1.568 ± 0.610
PRF-fit source offset from KIC position	2.175 ± 0.715	3.04	-1.473 ± 0.709	-1.599 ± 0.664
photometric centroid source offset	3.54 ± 1.43	2.48	2.24 ± 1.39	-2.74 ± 1.45

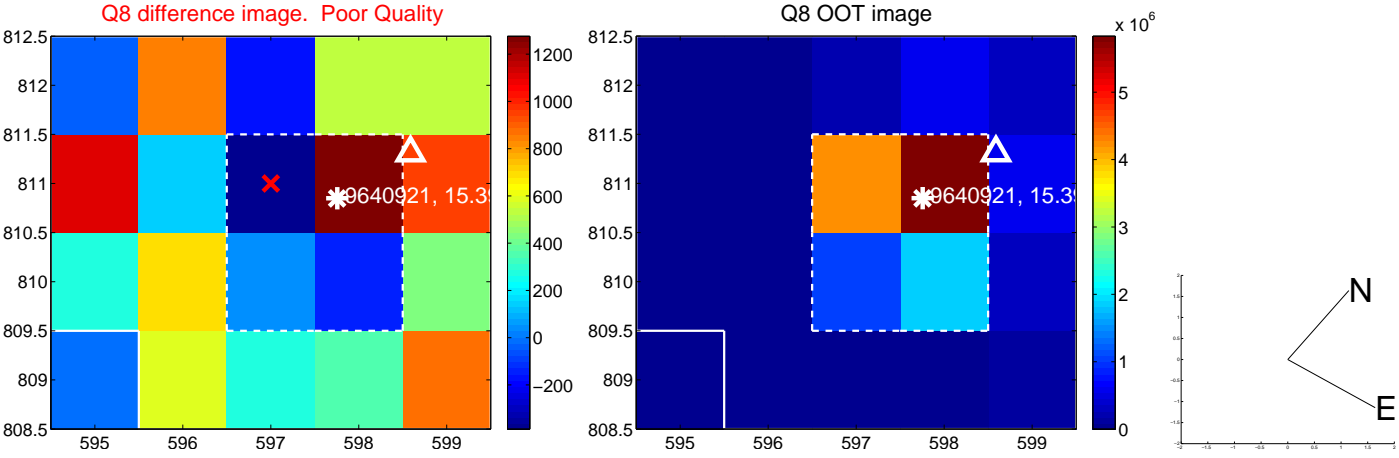
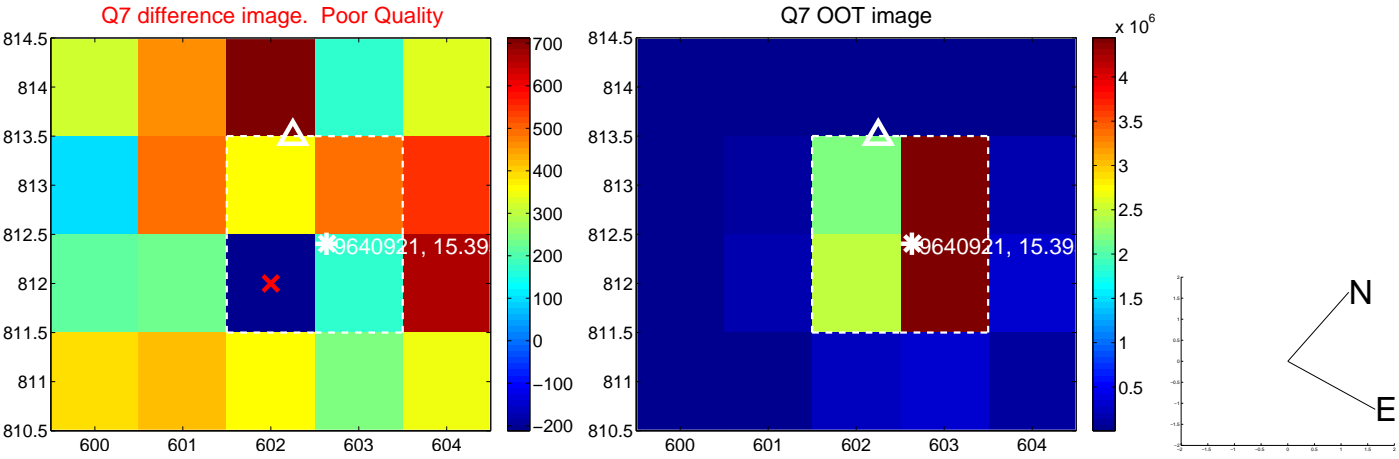
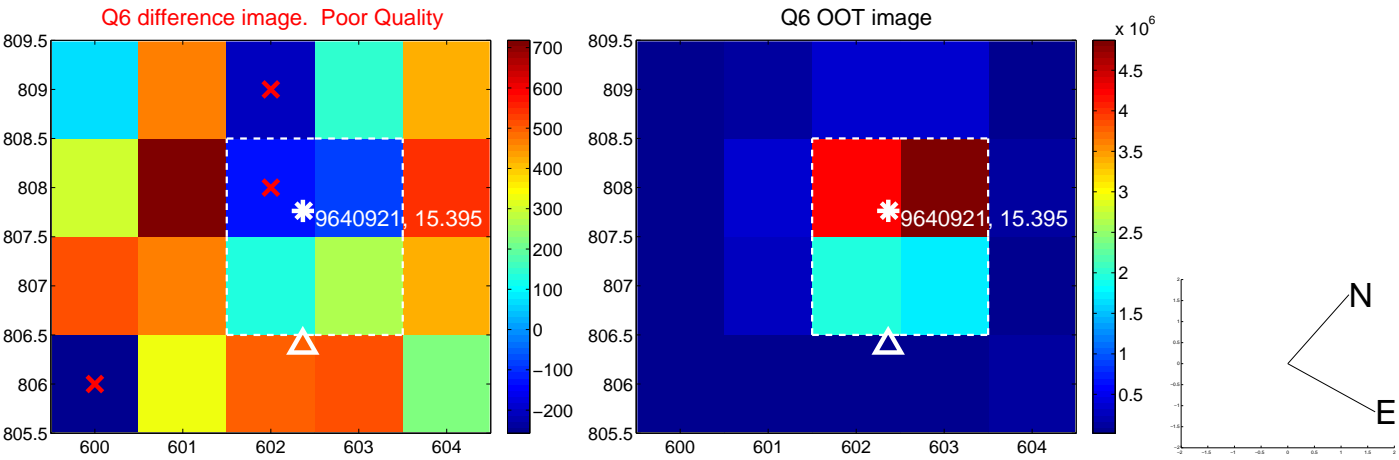
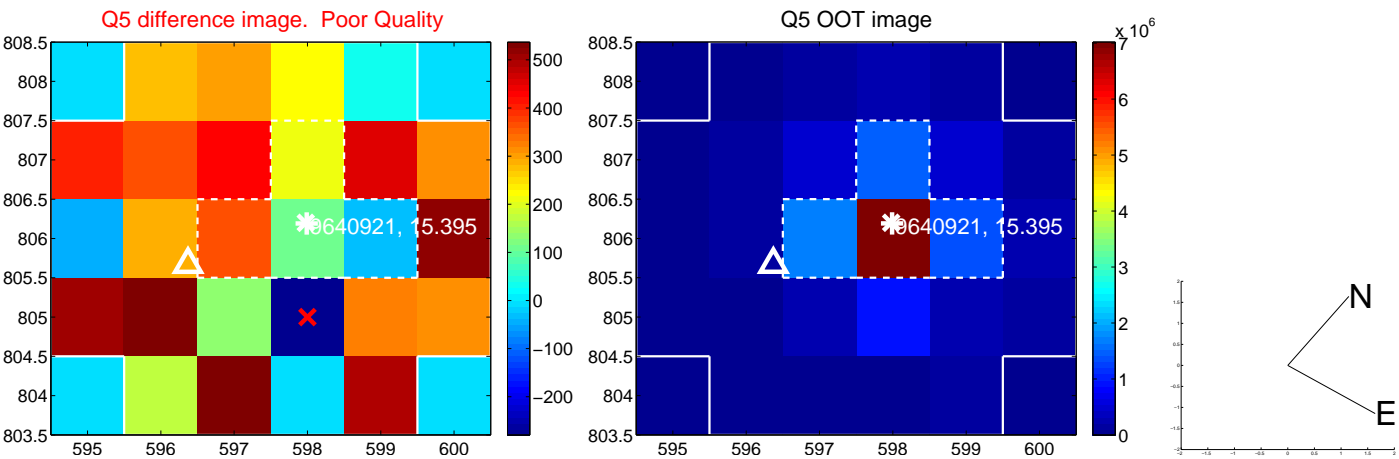


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

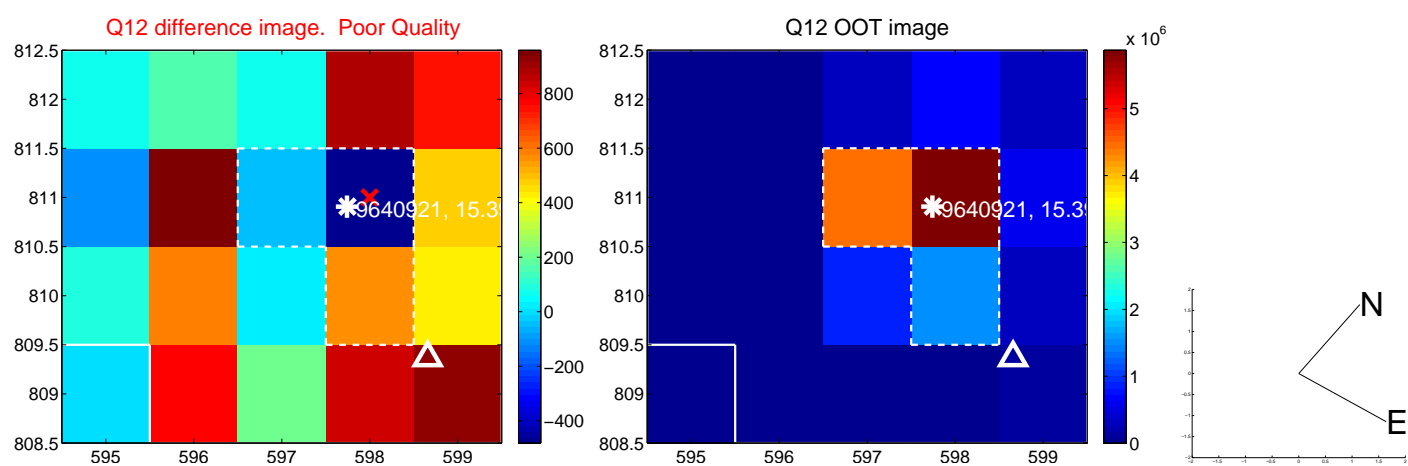
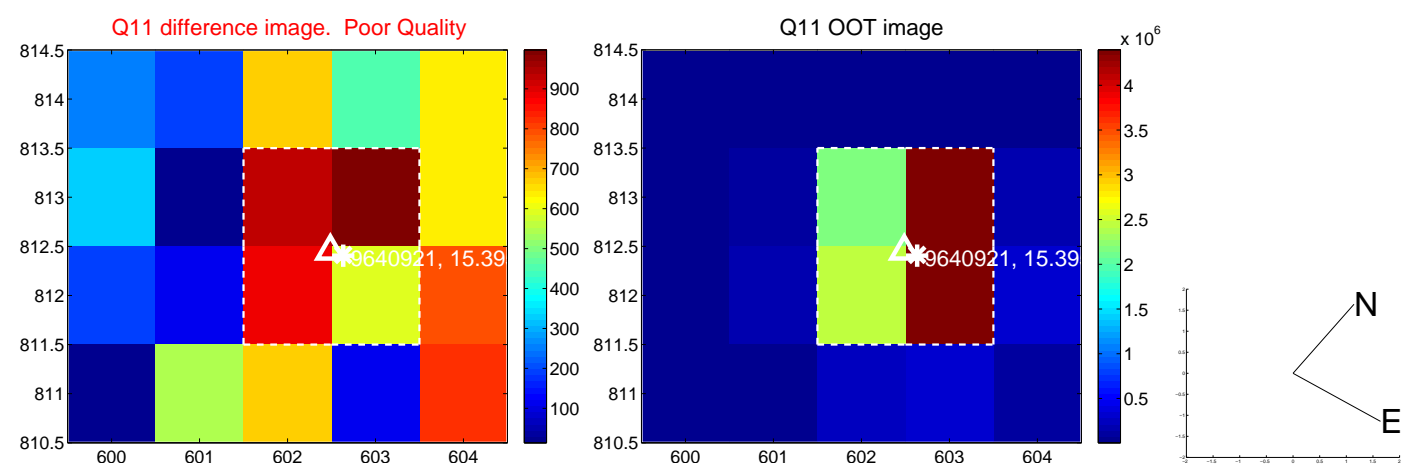
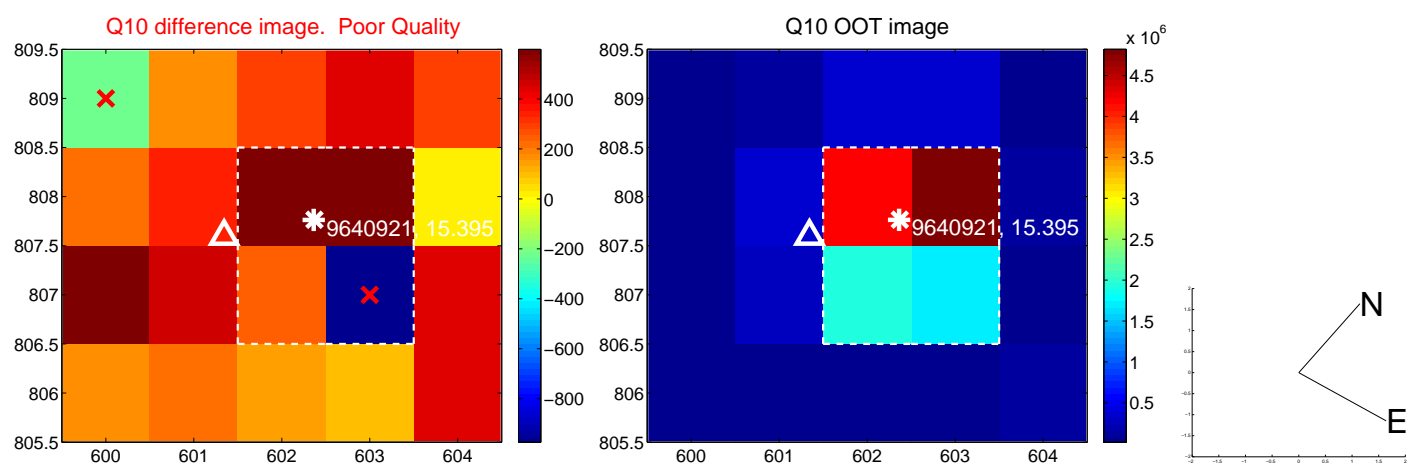
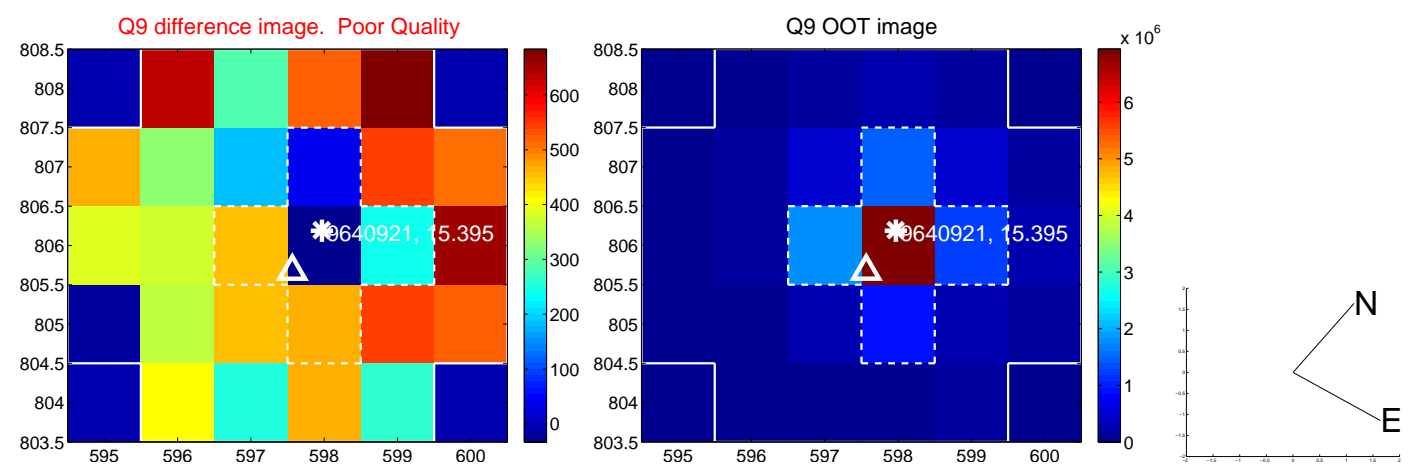
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



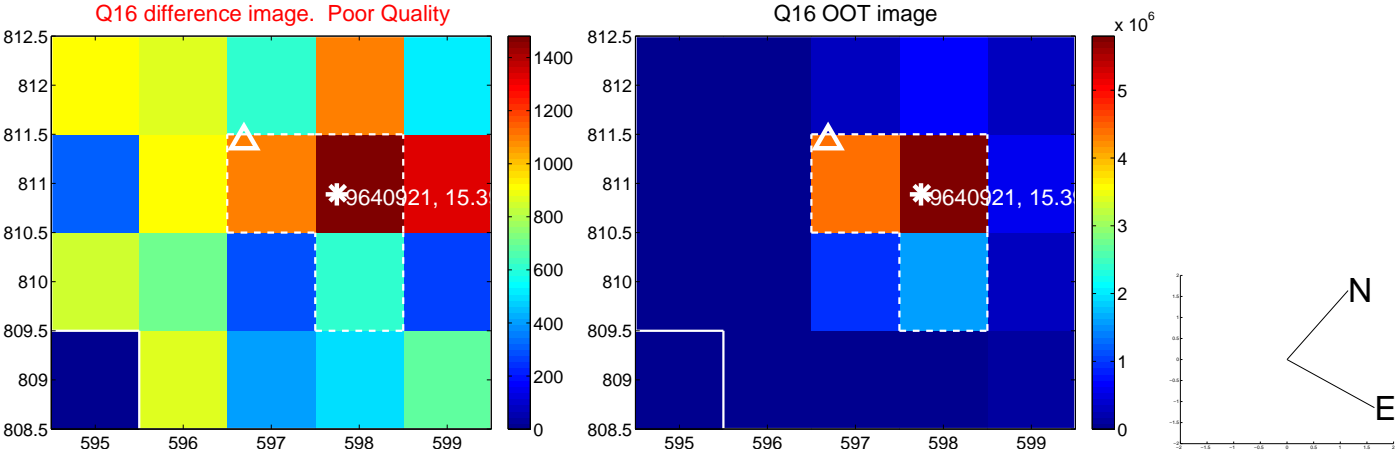
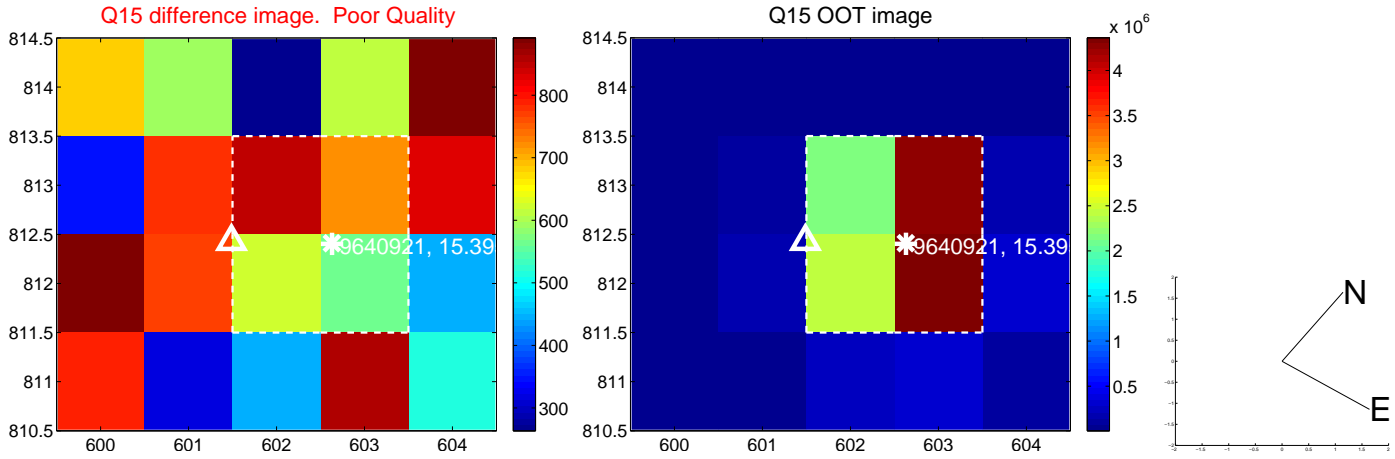
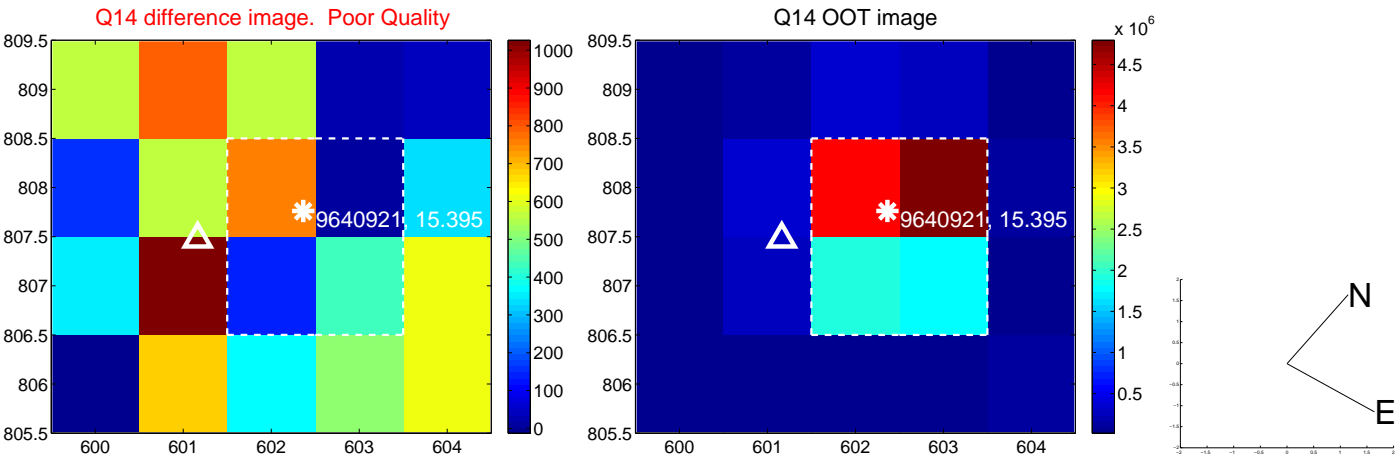
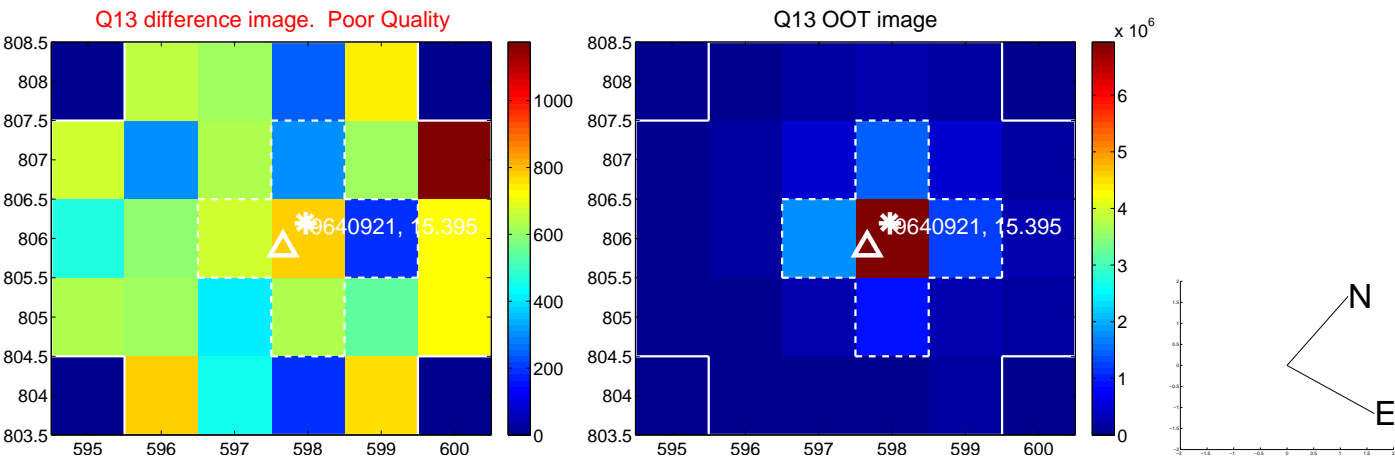
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



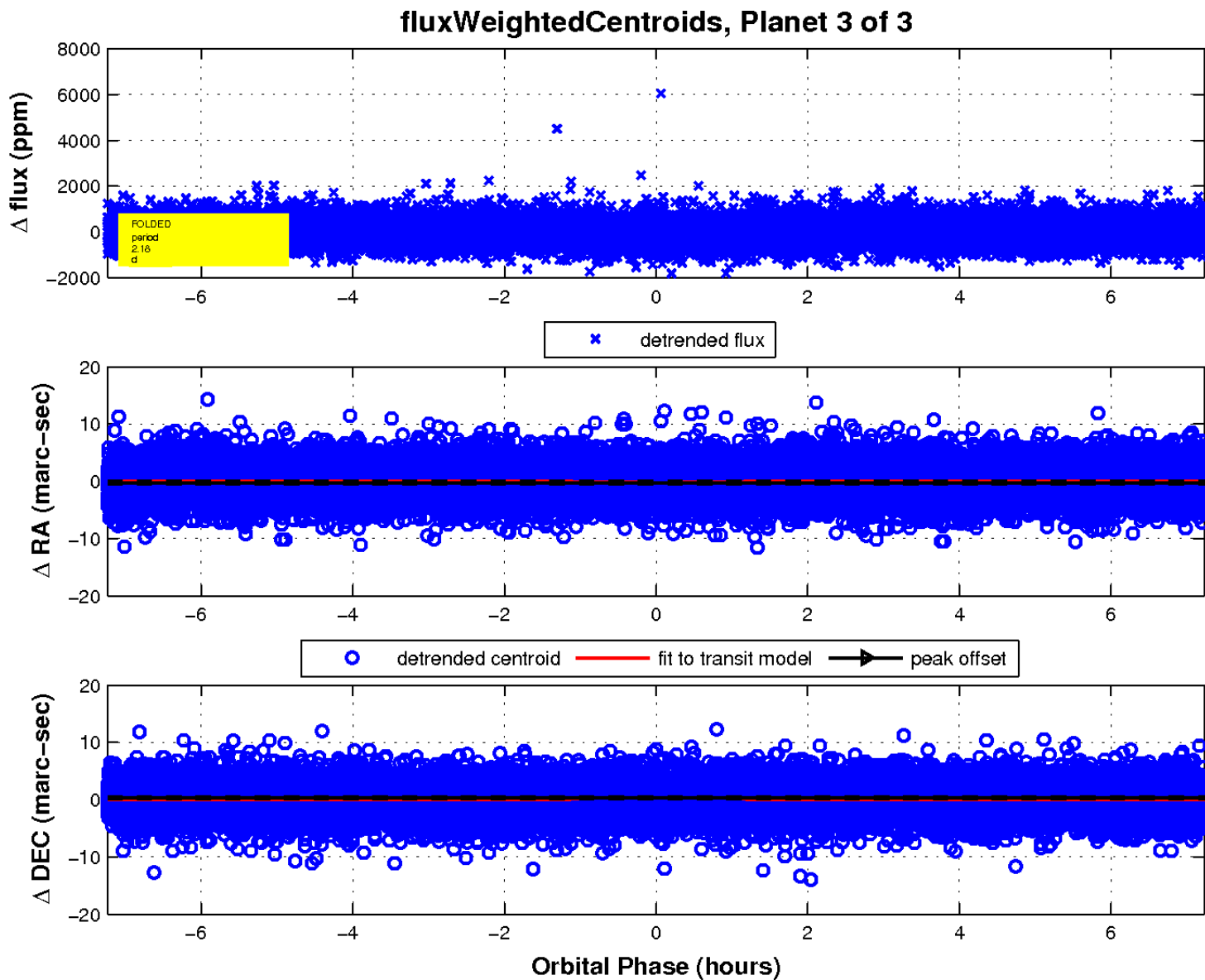
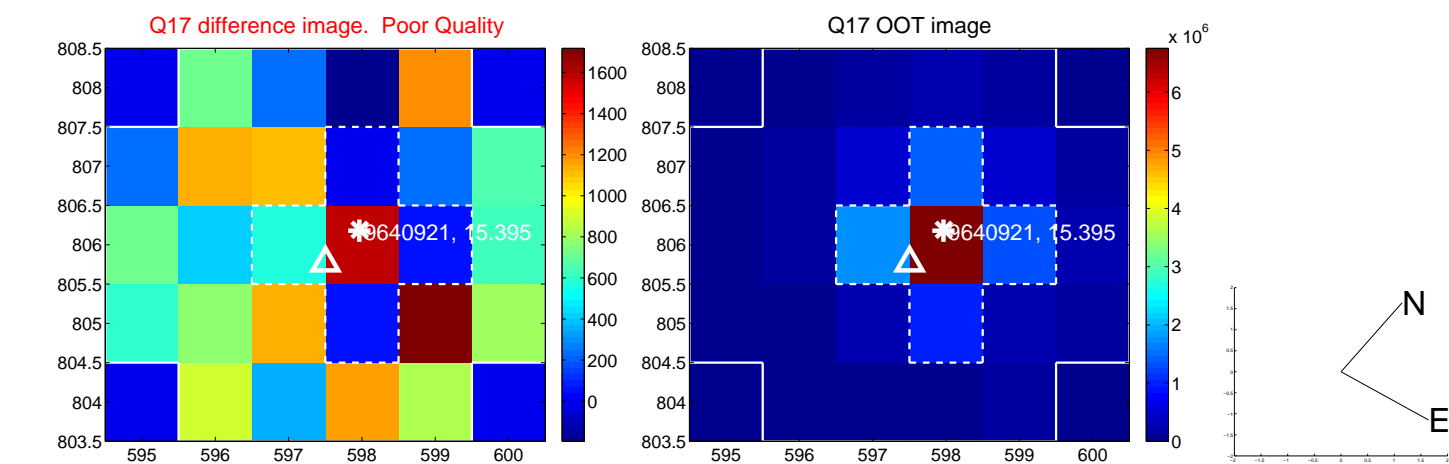
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

