

KIC 010345921

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})
010345921-01	OBS	No	1.618493	132.078999	48.9	6.786	8.5	9.0	0.93	5841	0.66	1204.10
010345921-02	OBS	No	256.835240	229.307493	470.3	11.626	9.5	7.2	0.93	5841	2.22	1.40
010345921-03	OBS	No	1.268481	132.006042	63.1	5.766	8.7	9.4	0.93	5841	0.88	1666.34
010345921-04	OBS	No	38.600397	146.407812	418.8	6.096	7.7	8.7	0.93	5841	2.20	17.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010345921-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010345921-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010345921-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
010345921-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

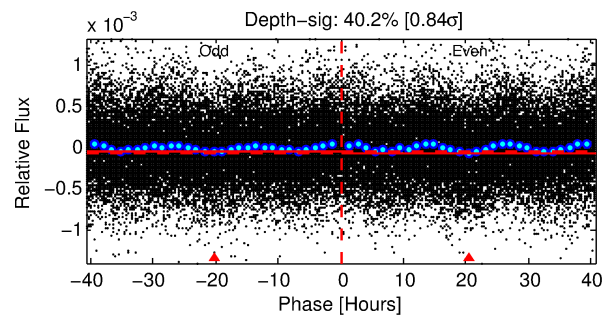
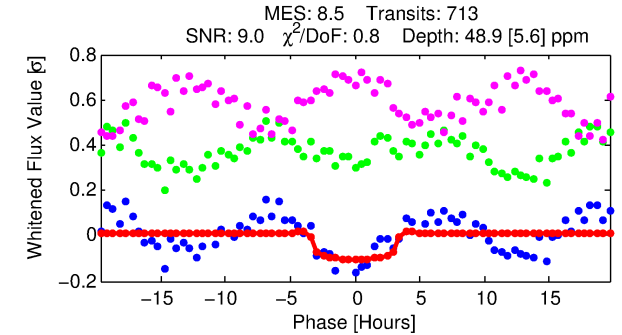
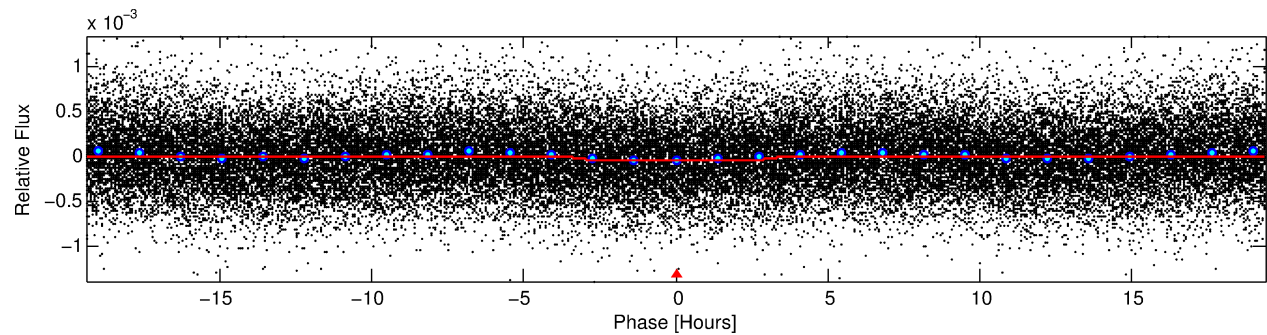
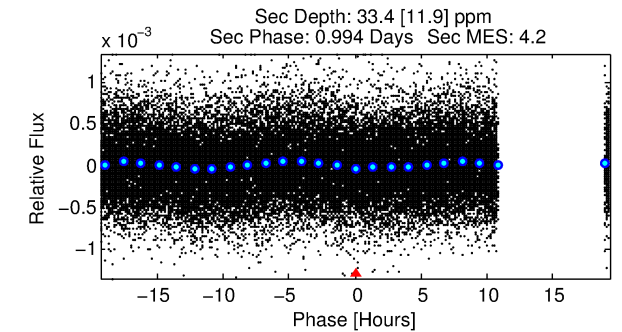
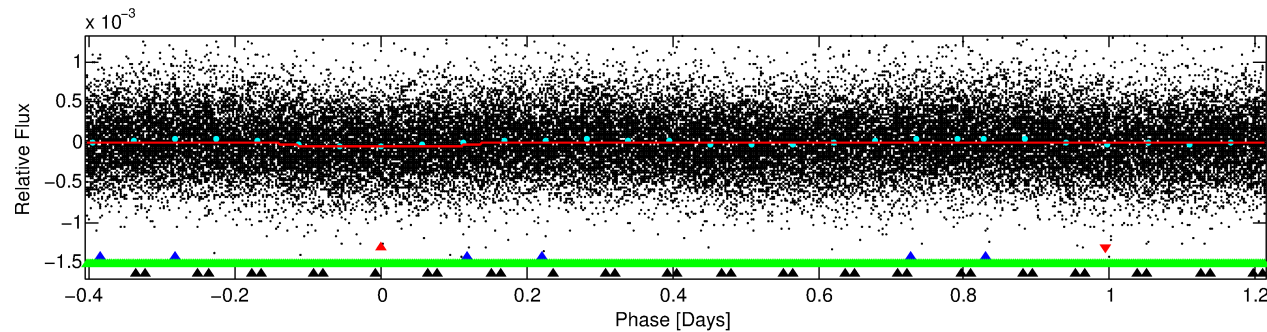
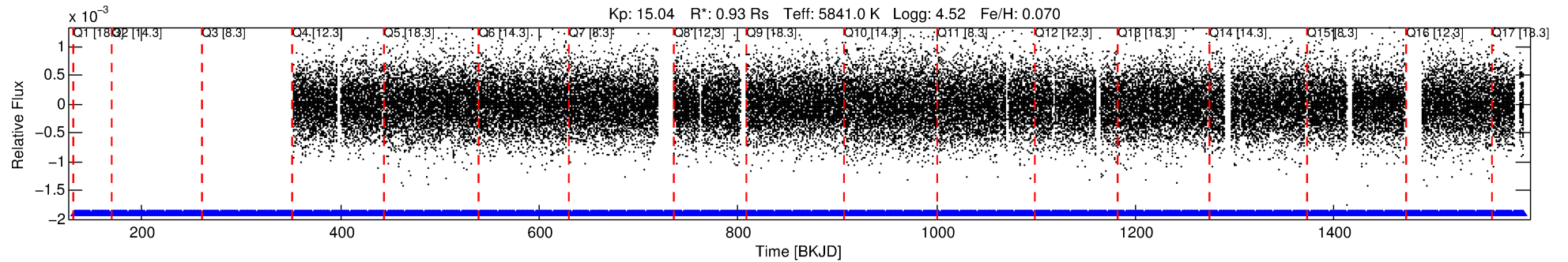
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010345921-01

No Significant Match Found

DV One-Page Summary

KIC: 10345921 Candidate: 1 of 4 Period: 1.618 d



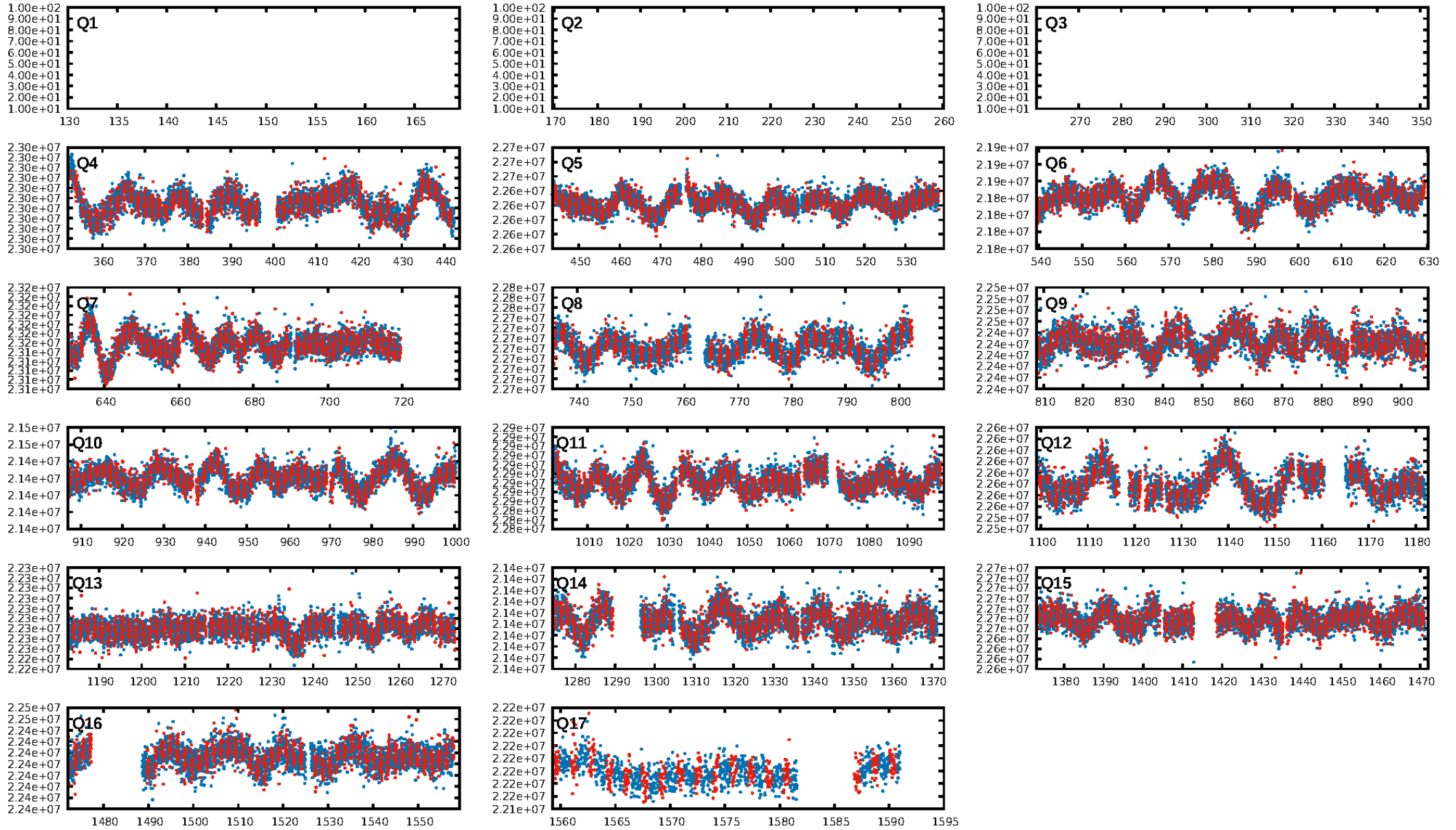
DV Fit Results:

Period = 1.61849 [0.00002] d
Epoch = 132.0790 [0.0070] BKJD
Rp/R* = 0.0065 [0.0066]
a/R* = 1.78 [5.44]
b = 0.46 [7.73]
Seff = 1204.10 [458.04]
Teq = 1502 [143] K
Rp = 0.66 [0.70] Re
a = 0.0274 [0.0066] AU
Ag = 31.49 [65.91] [0.46σ]
Teffp = 5501 [2844] K [1.40σ]

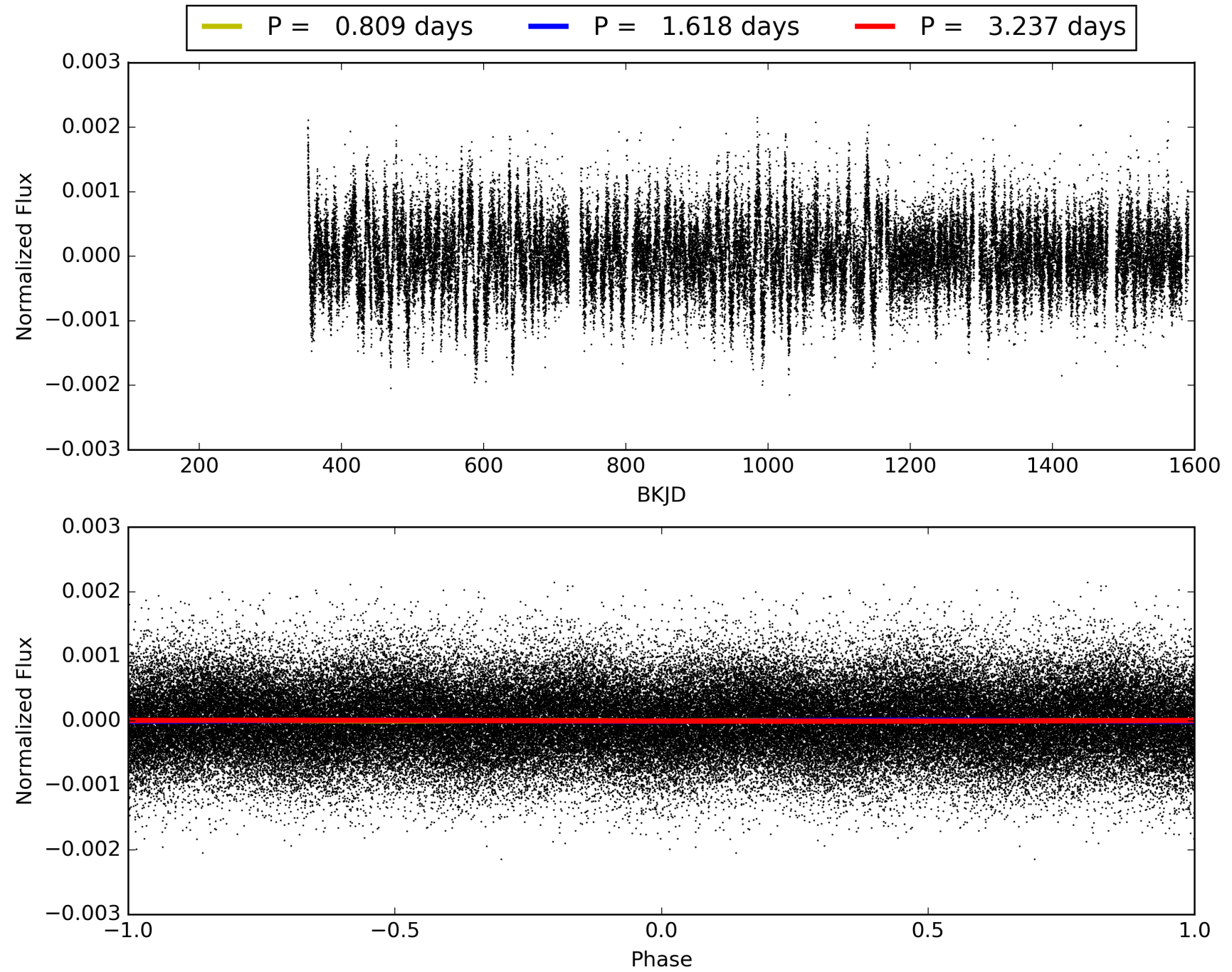
DV Diagnostic Results:

ShortPeriod-sig: 65.5% [0.94σ]
LongPeriod-sig: 100.0% [97.30σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.92e-18
RollingBand-fgt: 1.00 [696/696]
GhostDiagnostic-chr: -1.096
Centroid-sig: 0.0%
Centroid-so: 8.945 arcsec [1.83σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 0.00 [0/14]

TCE 010345921-01, PDC Light Curves

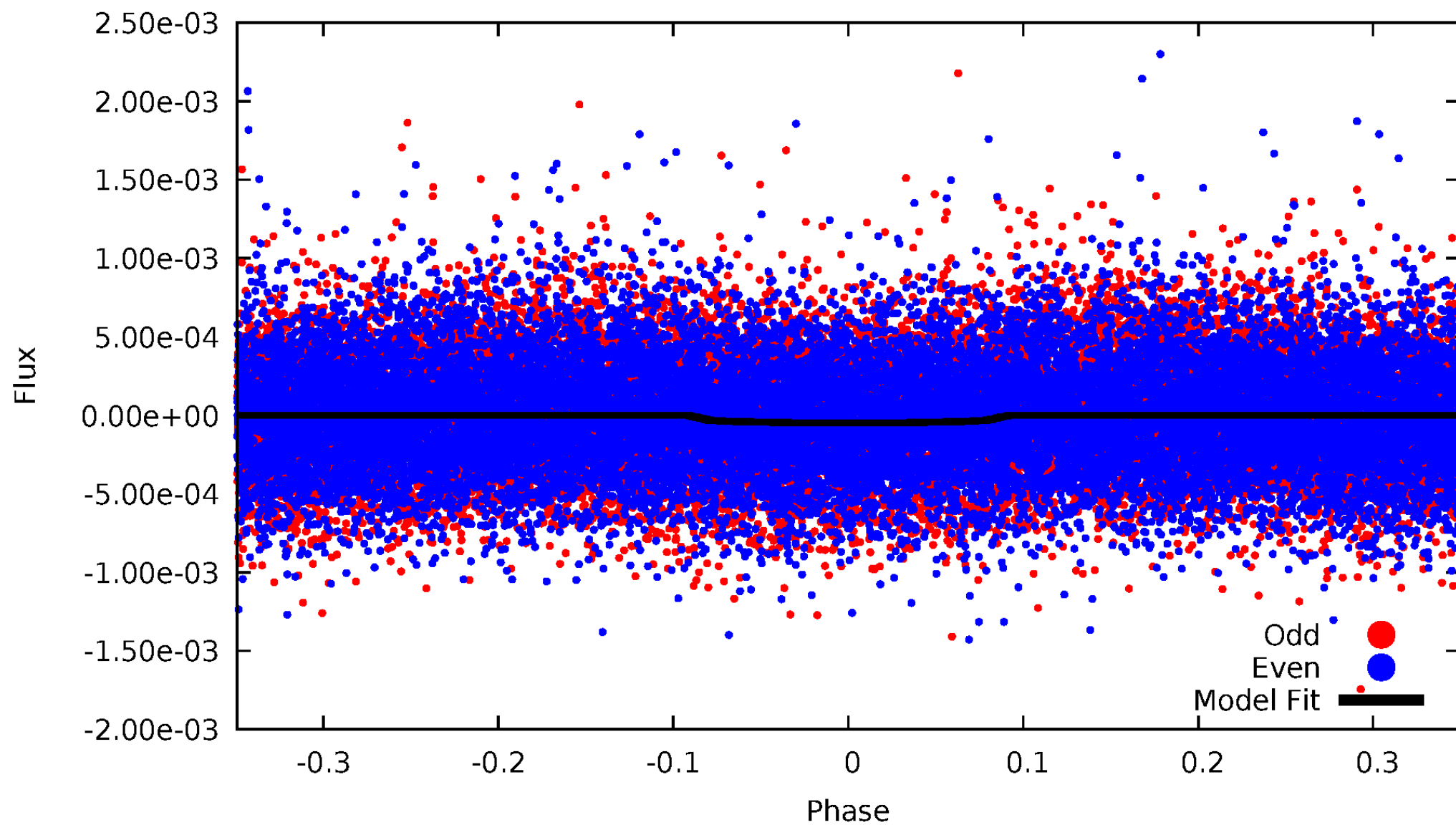


TCE 010345921-01



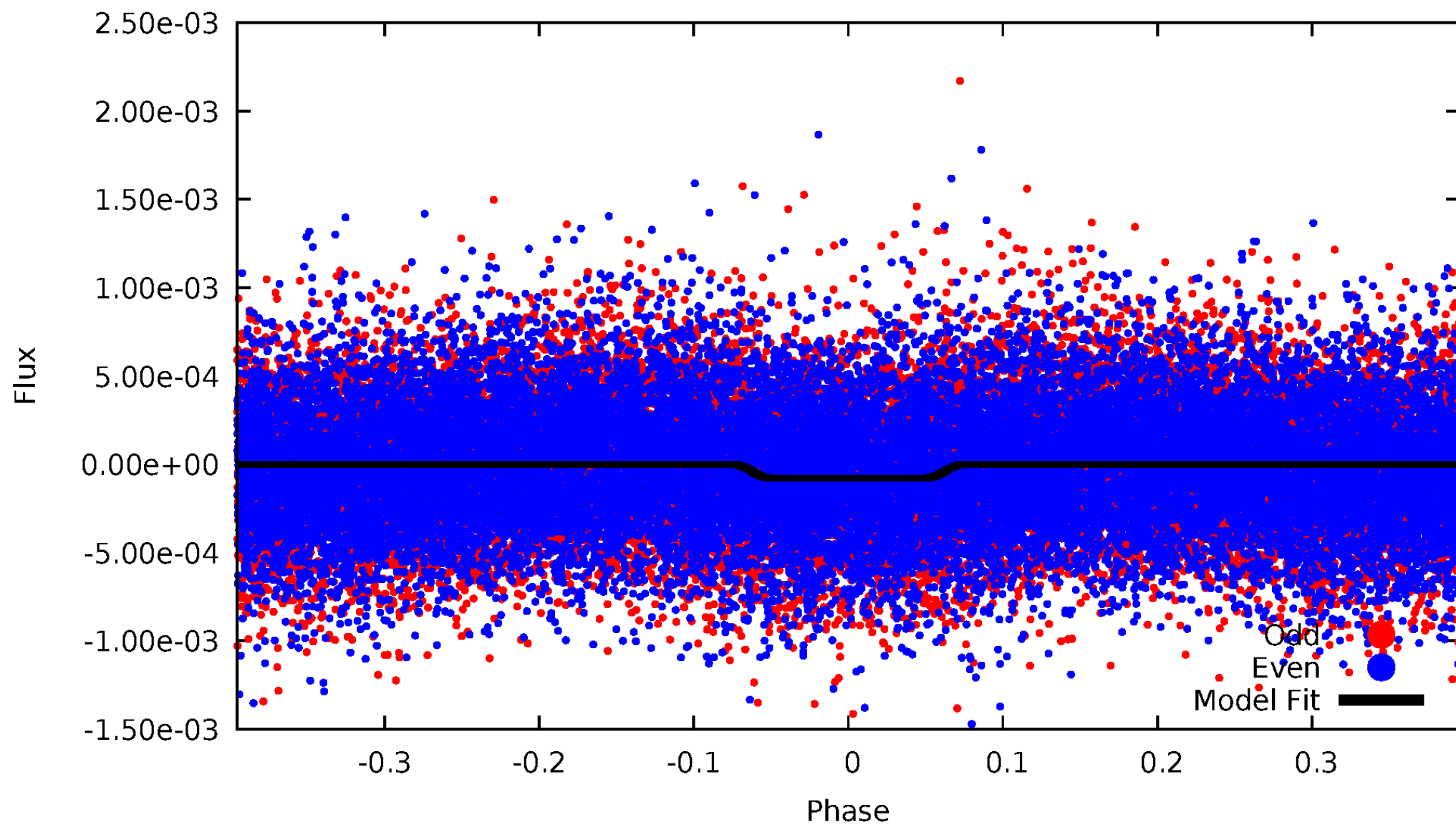
DV Odd/Even

TCE 010345921-01

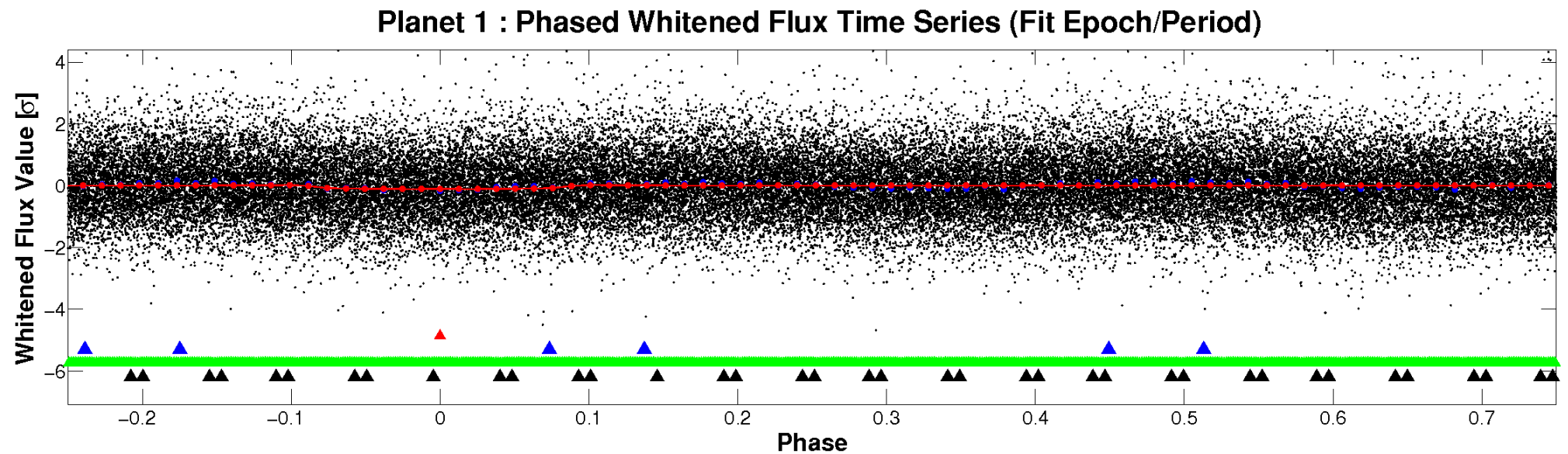
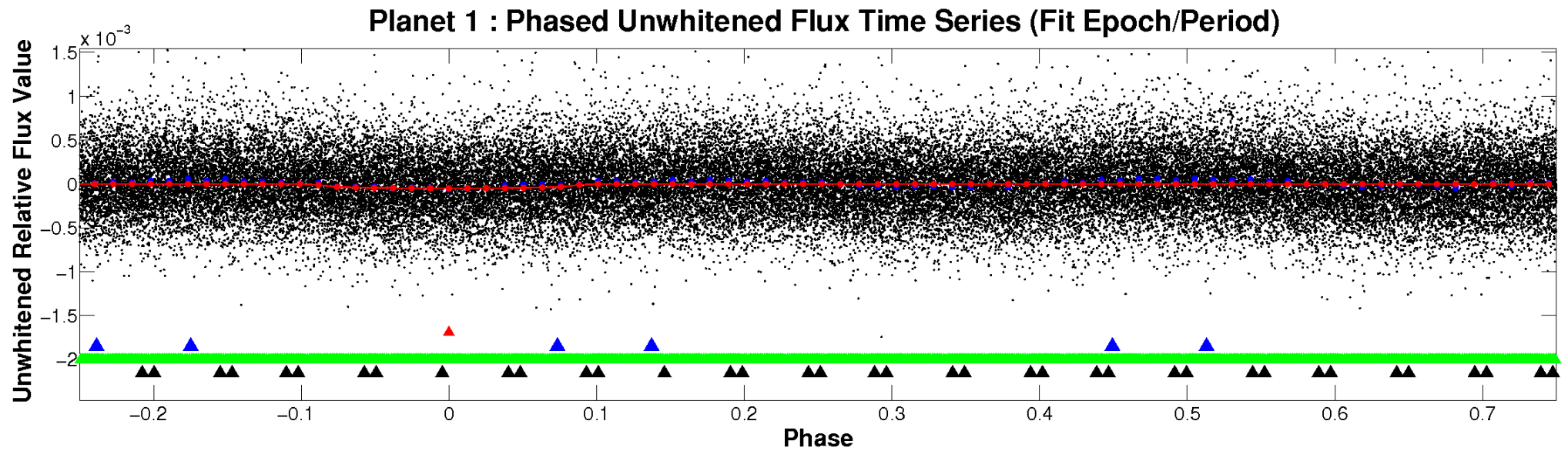


ALT Odd/Even

TCE 010345921-01

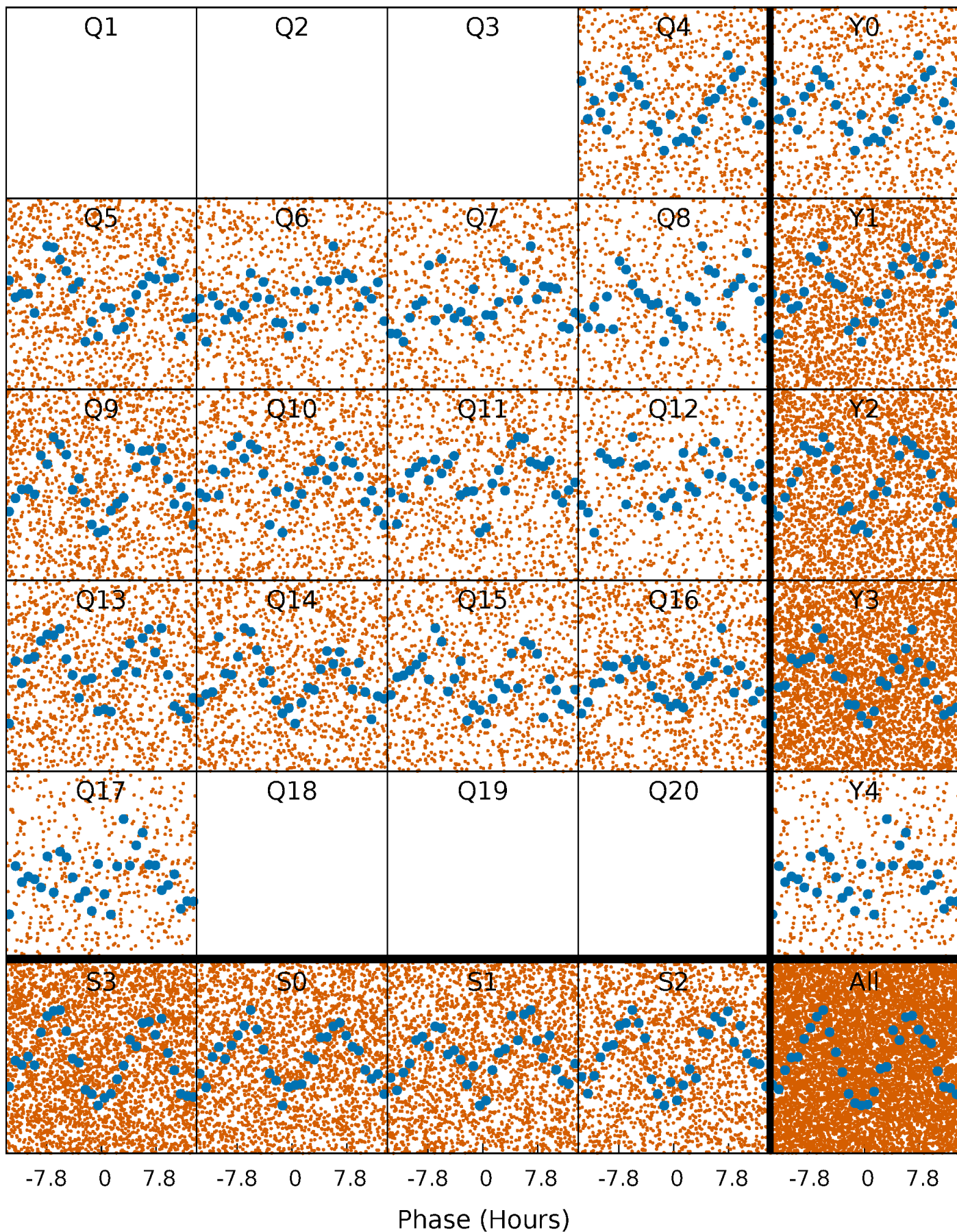


Non-Whitened Vs. Whitened Light Curve



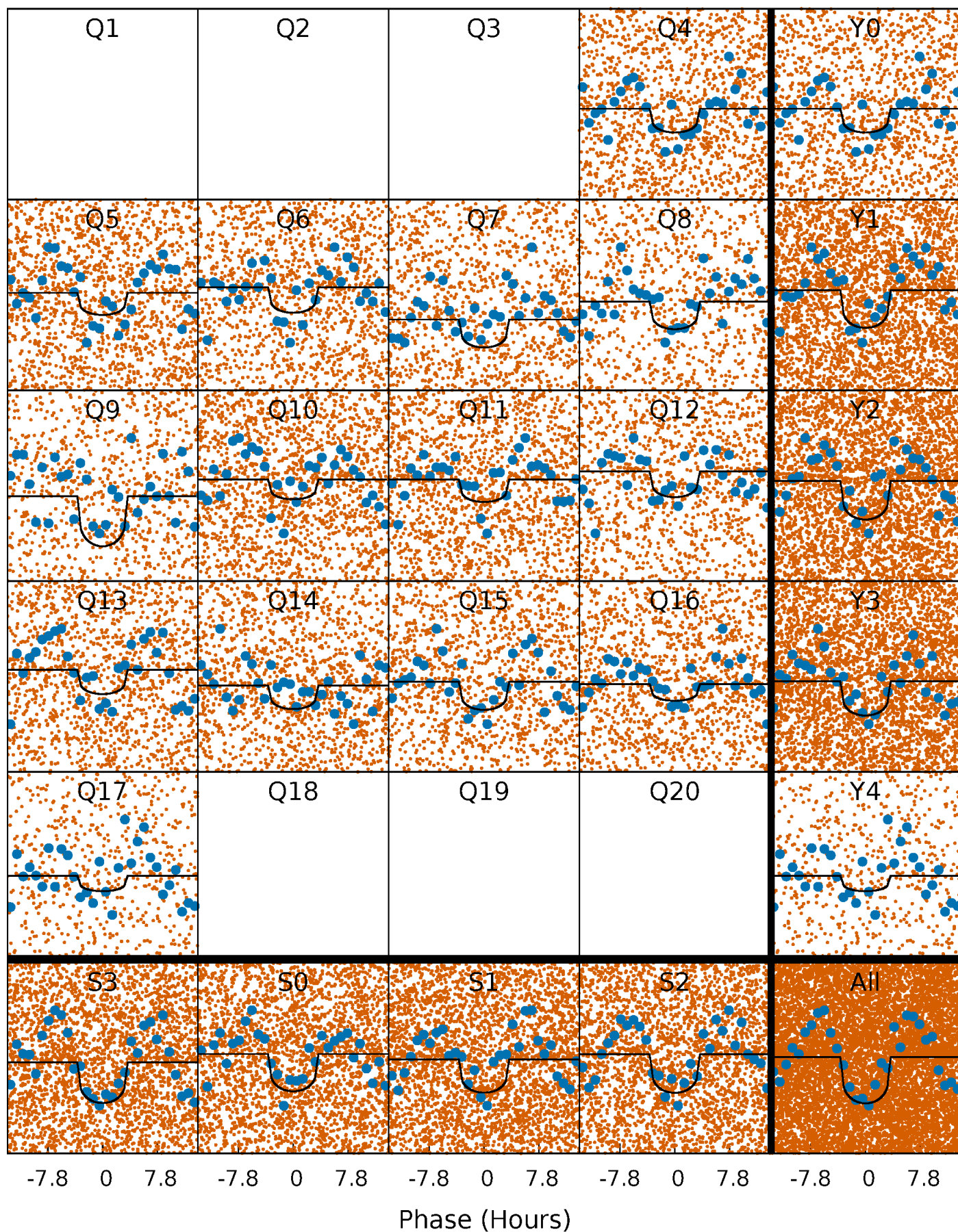
PDC Quarter-Phased Transit Curves

TCE 010345921-01 P= 1.618493 Days $T_0=132.078999$ (BKJD)



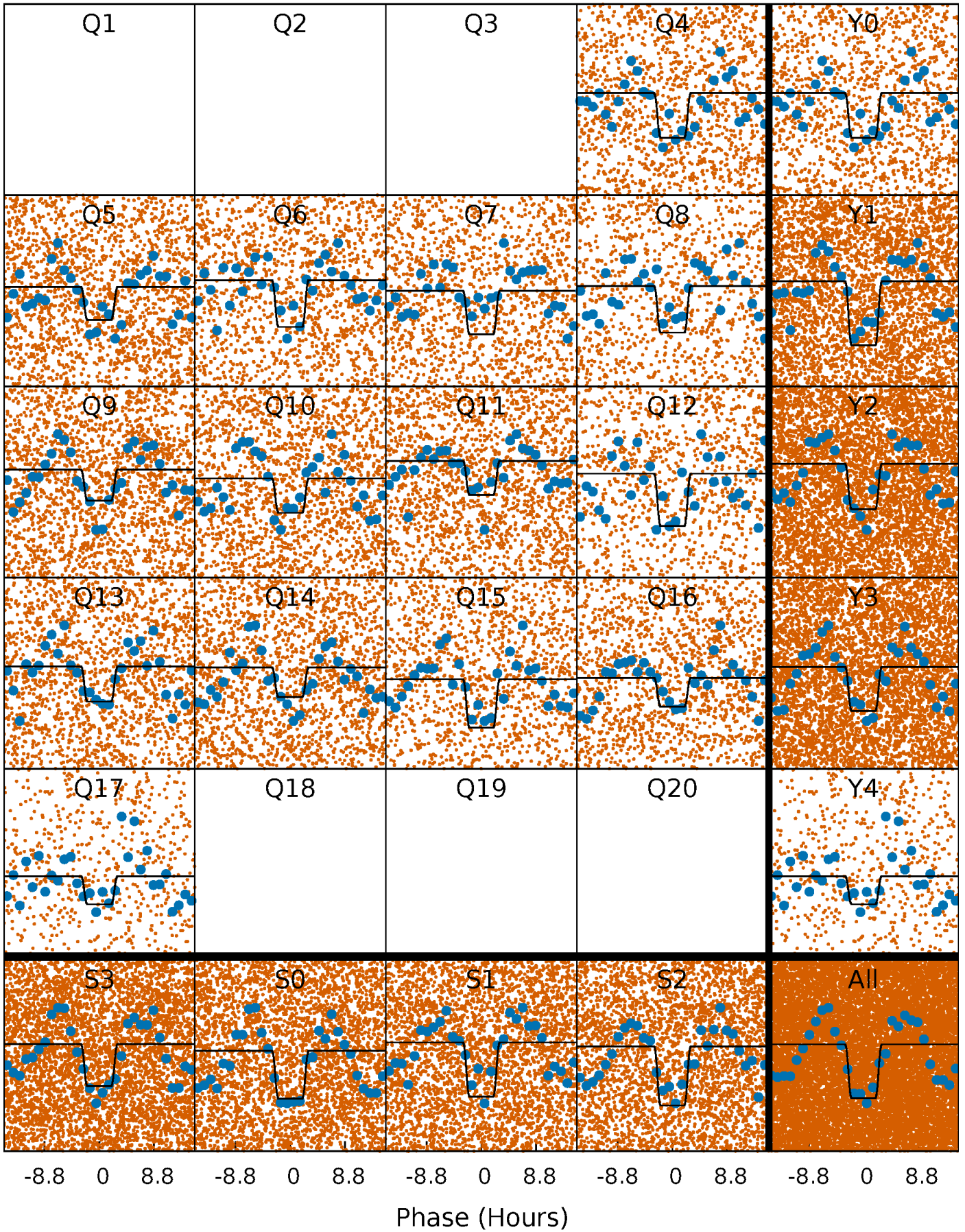
DV Quarter-Phased Transit Curves

TCE 010345921-01 P= 1.618493 Days $T_0=132.078999$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

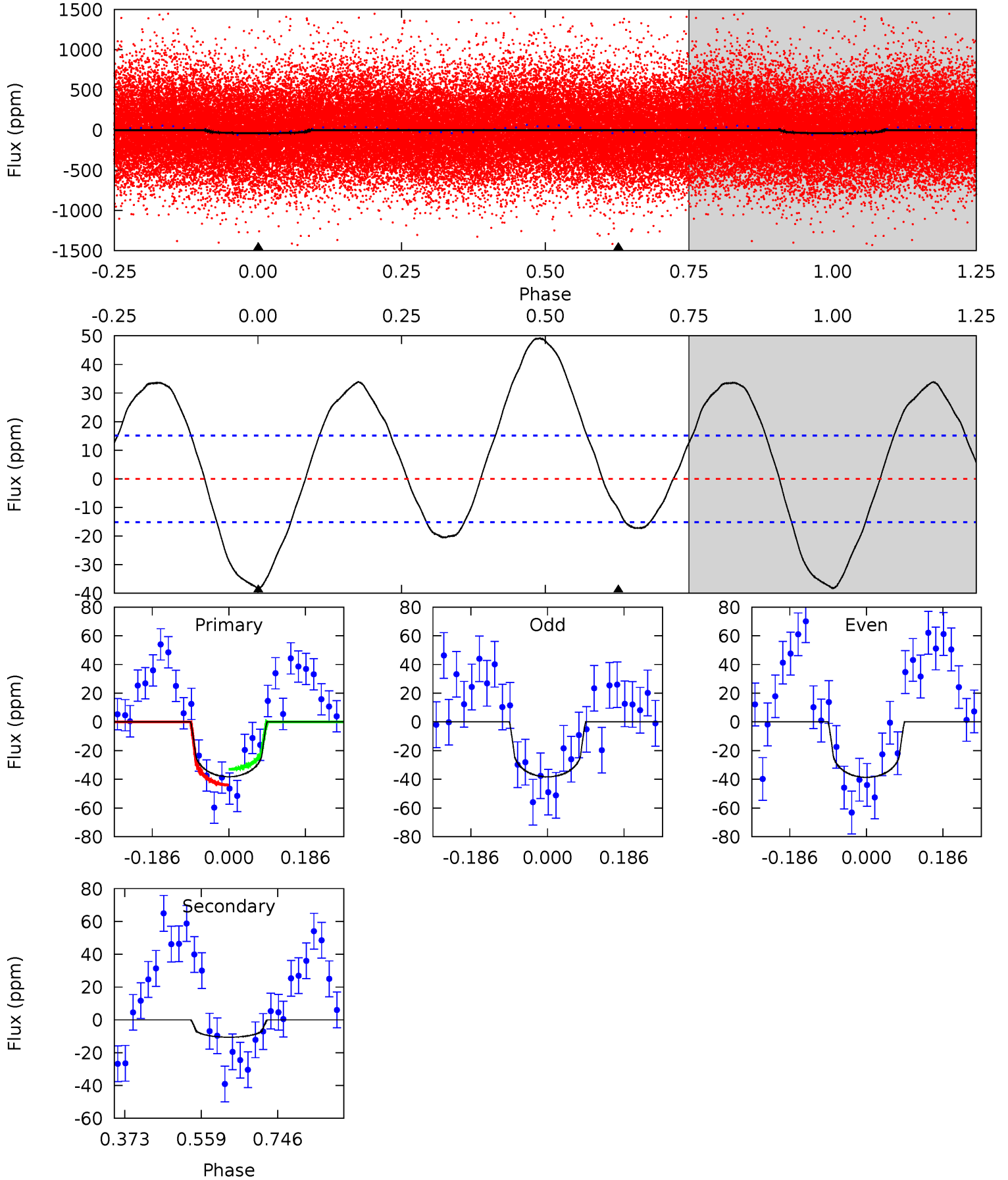
TCE 010345921-01 P= 1.618476 Days $T_0=132.075159$ (BKJD)



DV Model-Shift Uniqueness Test

010345921-01, P = 1.618493 Days, E = 132.078999 Days

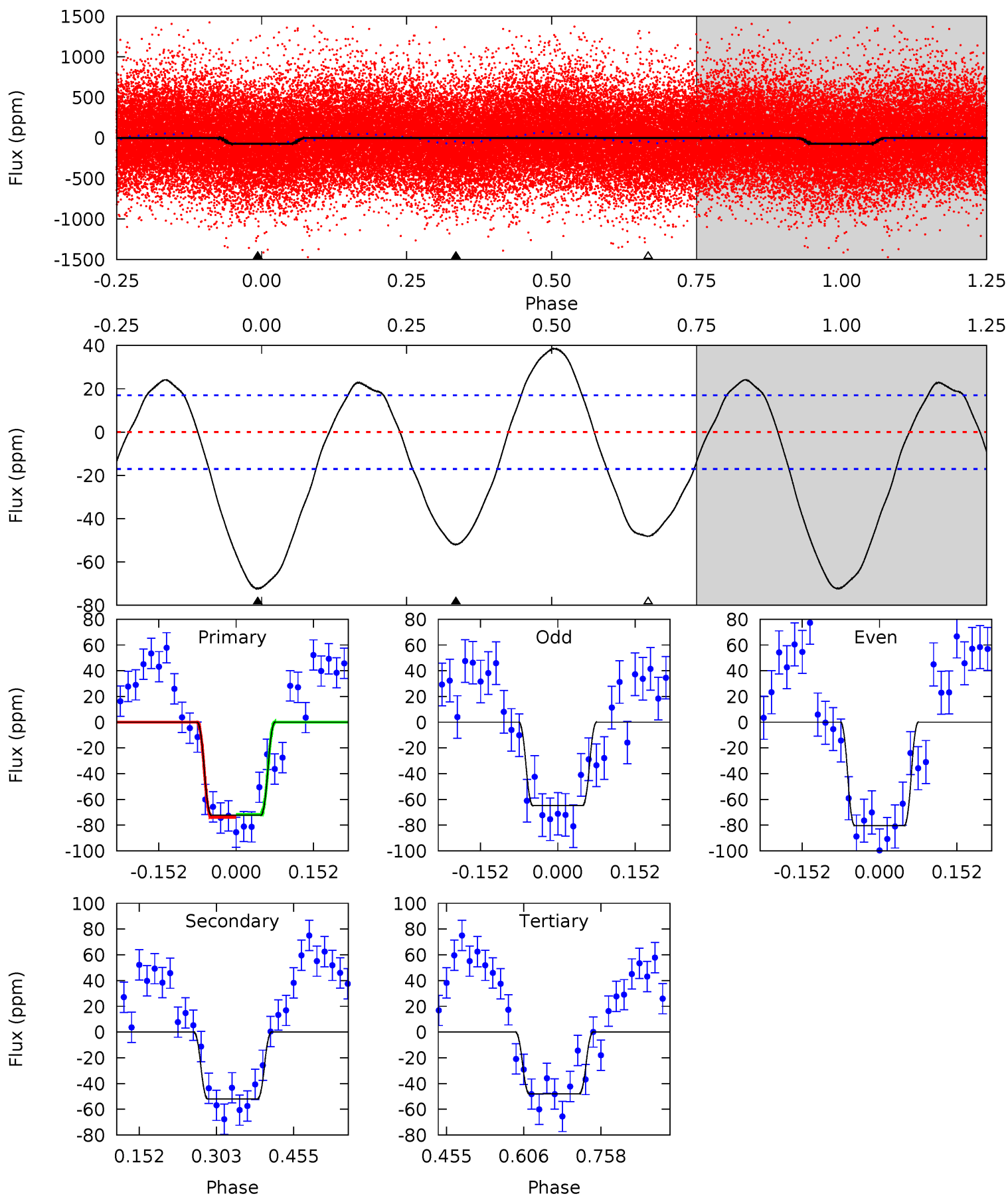
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	3.10	0	0	4.43	1.32	5.07	11.2	11.2	3.10	3.10	0.05	1.05	0.56	1.61



Alt Model-Shift Uniqueness Test

010345921-01, P = 1.618476 Days, E = 132.075159 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	13.7	12.6	0	4.48	1.43	7.61	6.36	19.0	1.02	13.7	2.04	1.02	0.35	0.28



Stellar Parameters For KIC 010345921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5841^{+184}_{-204}	$4.520^{+0.035}_{-0.196}$	$0.070^{+0.250}_{-0.350}$	$0.931^{+0.260}_{-0.087}$	$1.047^{+0.113}_{-0.139}$	$1.828^{+0.426}_{-0.887}$
	+3%/-3%	+1%/-4%	+357%/-500%	+28%/-9%	+11%/-13%	+23%/-49%
Source	KIC0	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 010345921-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-11 ± 3	$0.84^{+0.63}_{-0.53}$	2154^{+141}_{-107}	4005^{+2125}_{-802}	$5.794^{+35.534}_{-4.058}$
Alt.	-52 ± 4	$1.00^{+0.73}_{-0.56}$	2158^{+142}_{-107}	5116^{+2776}_{-1006}	20^{+83}_{-13}

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 010345921-01. Kepler magnitude: 15.04. Transit SNR 9.00

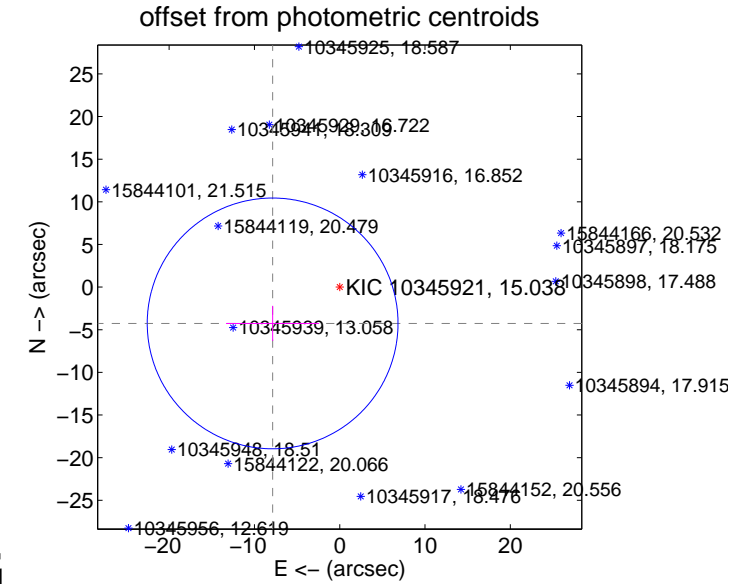
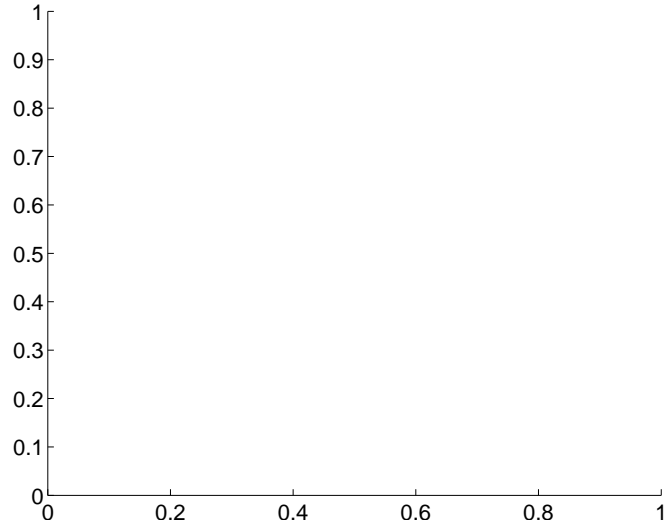
There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	8.95 ± 4.90	1.83	7.87 ± 5.46	-4.26 ± 2.07

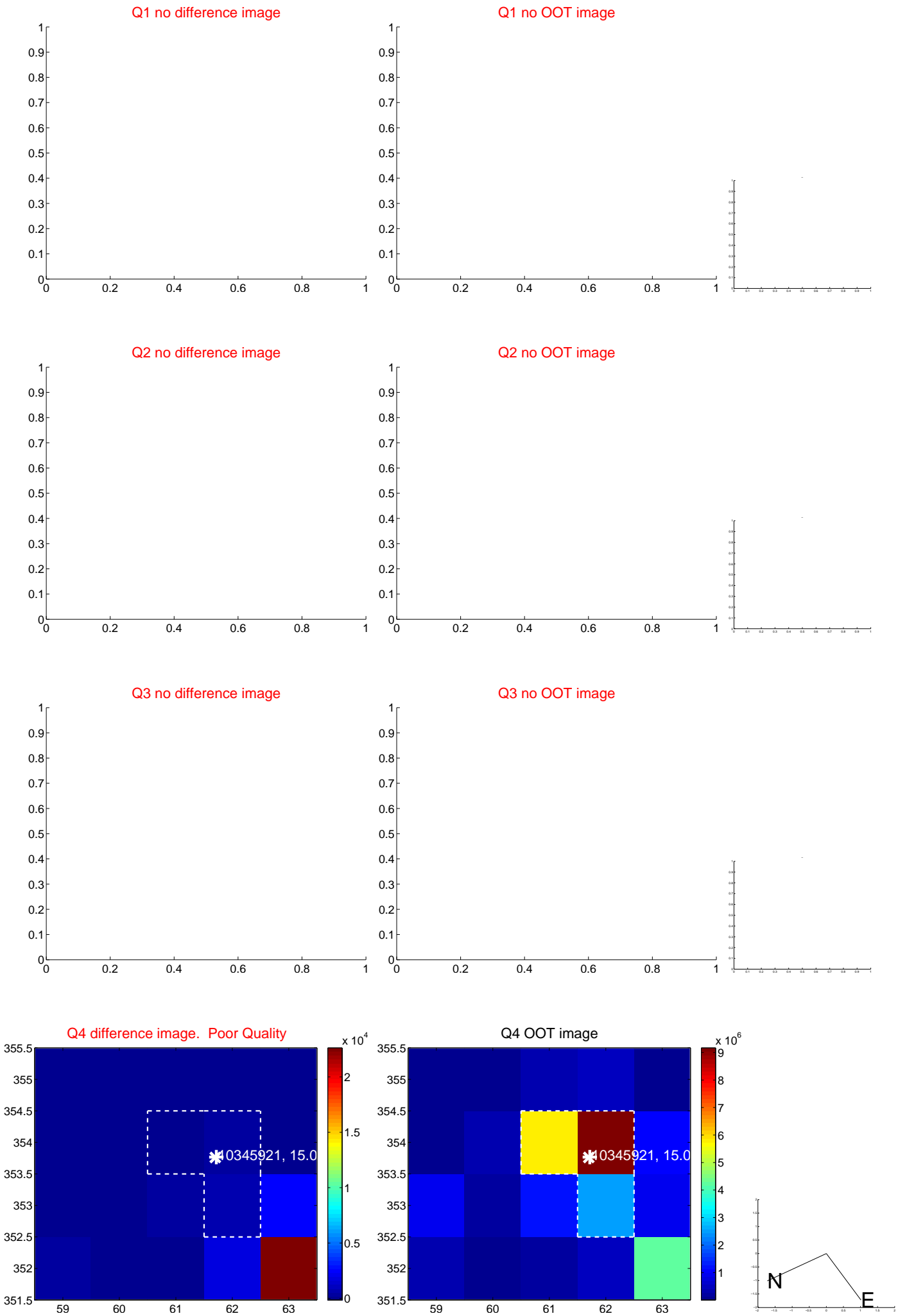
There is no PRF-fit offset from OOT-fit

There is no PRF-fit offset from KIC

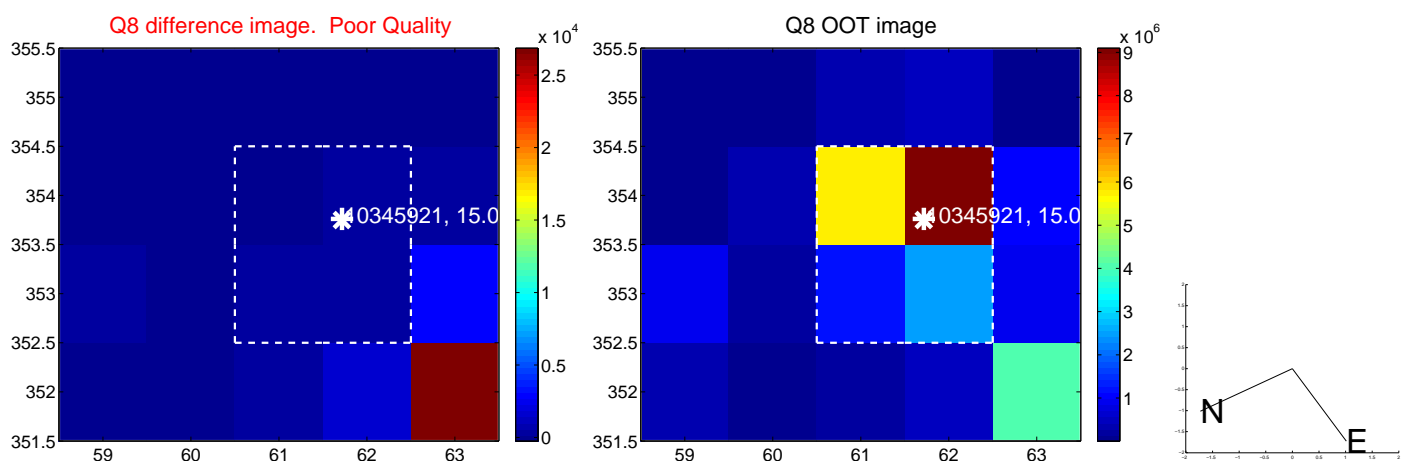
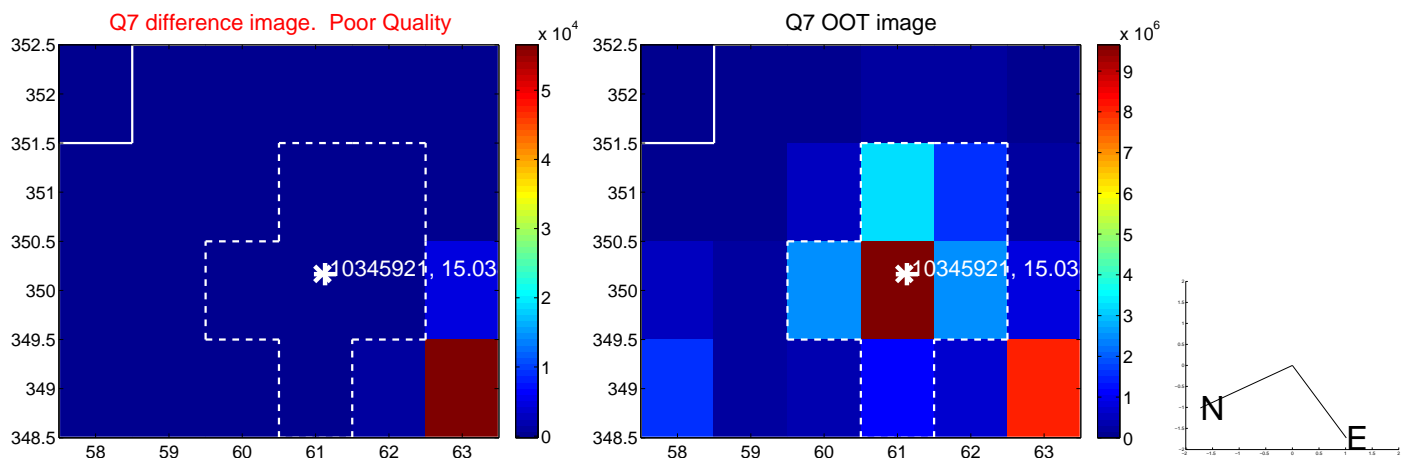
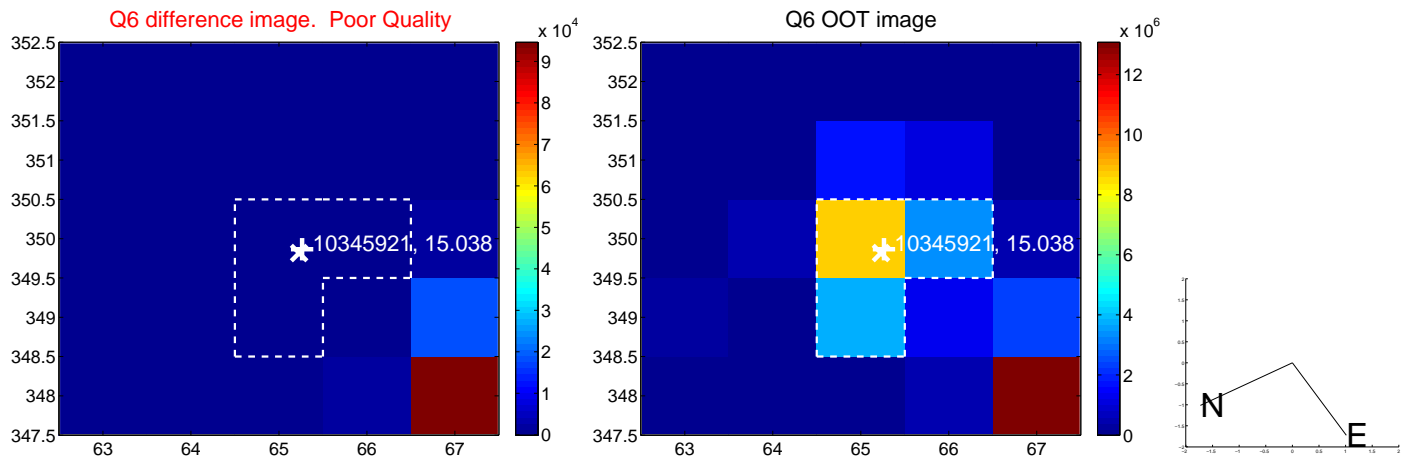
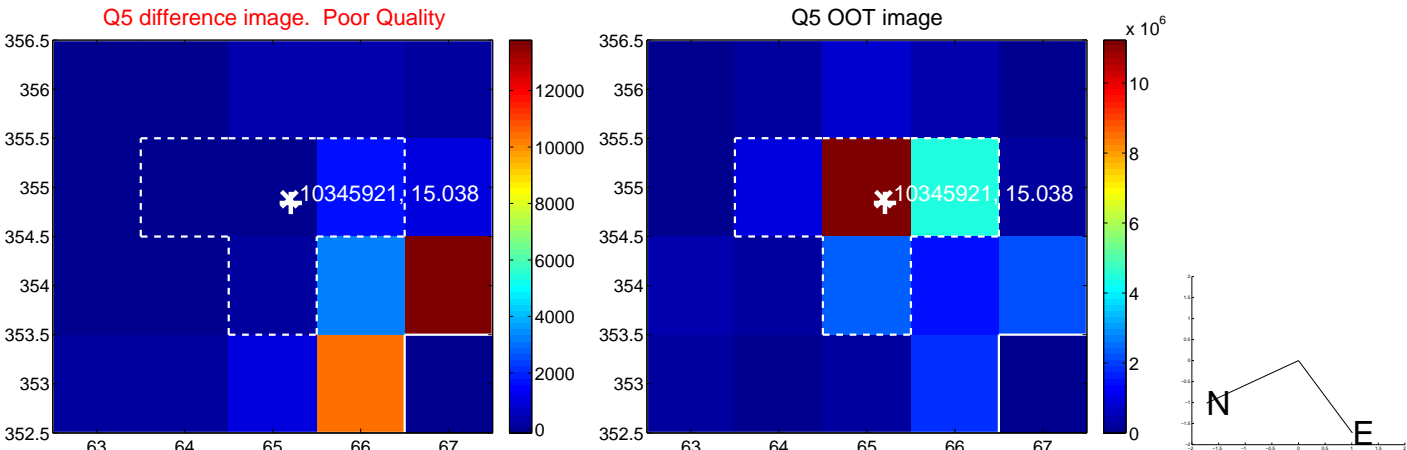


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

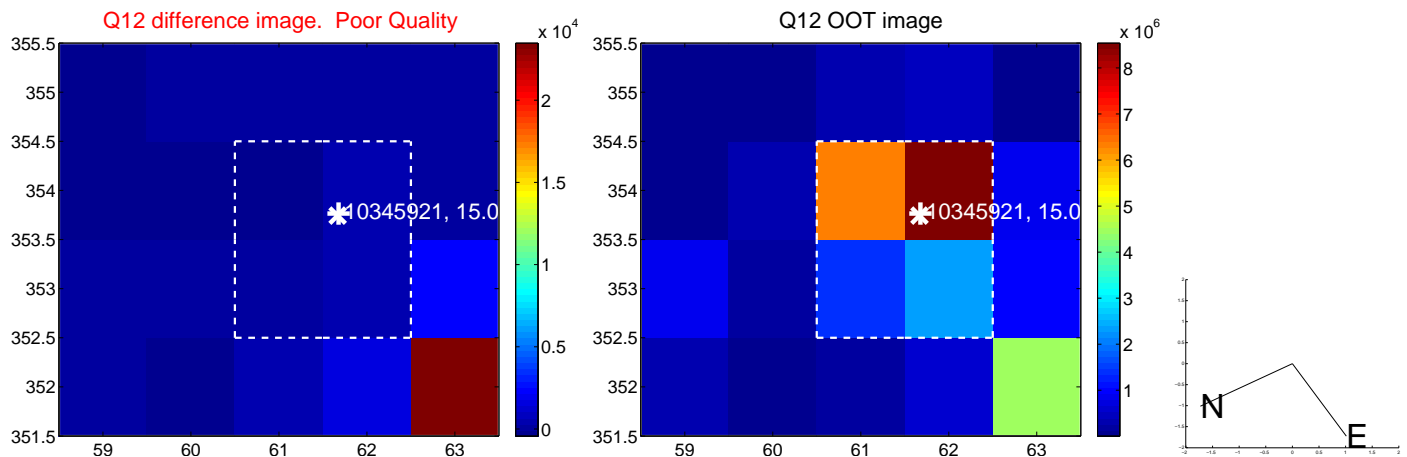
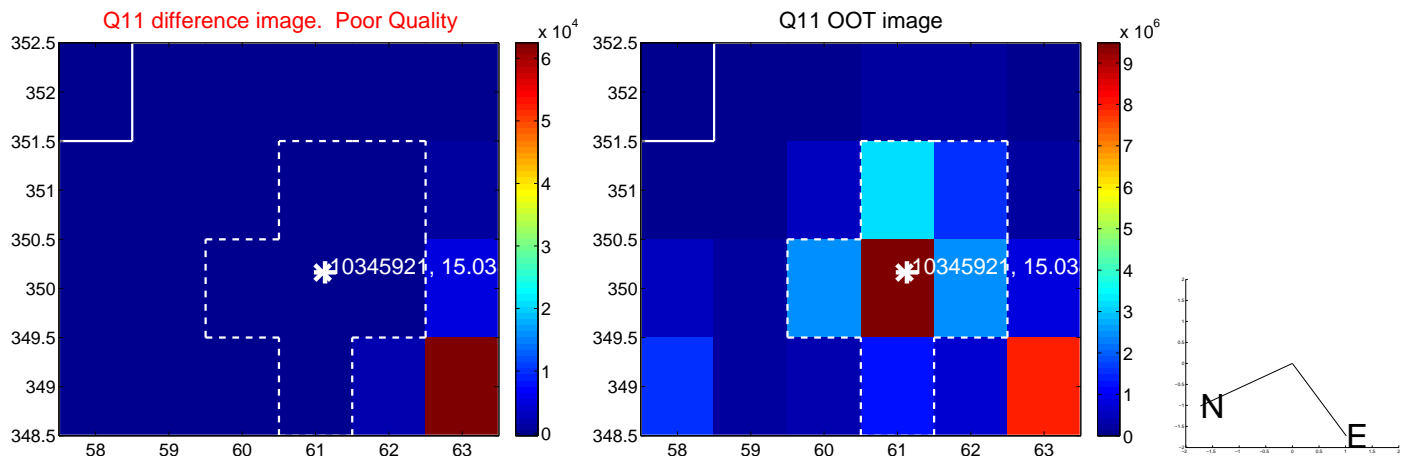
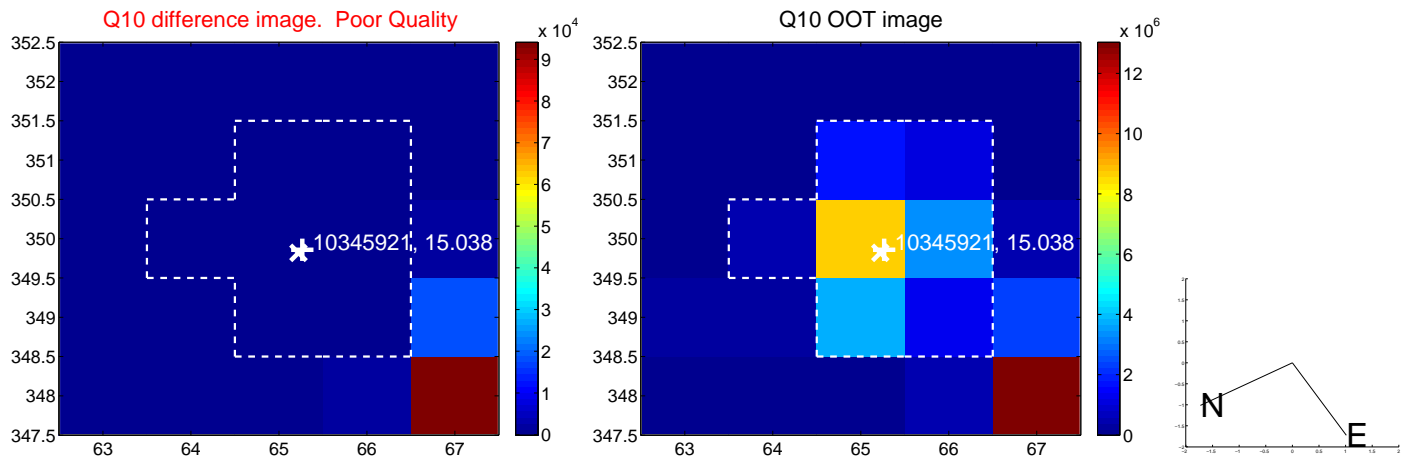
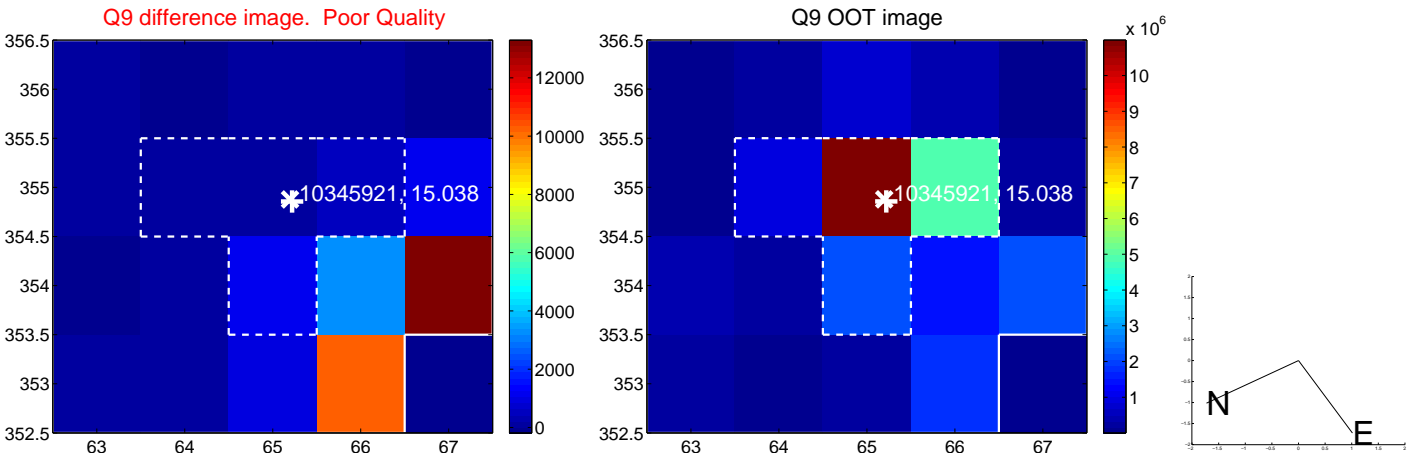
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



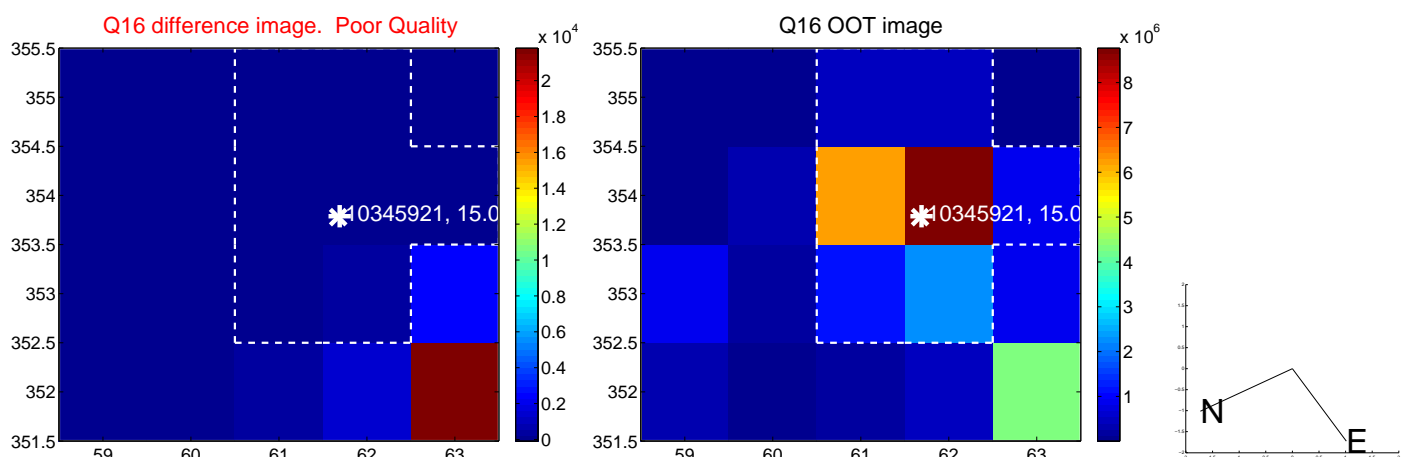
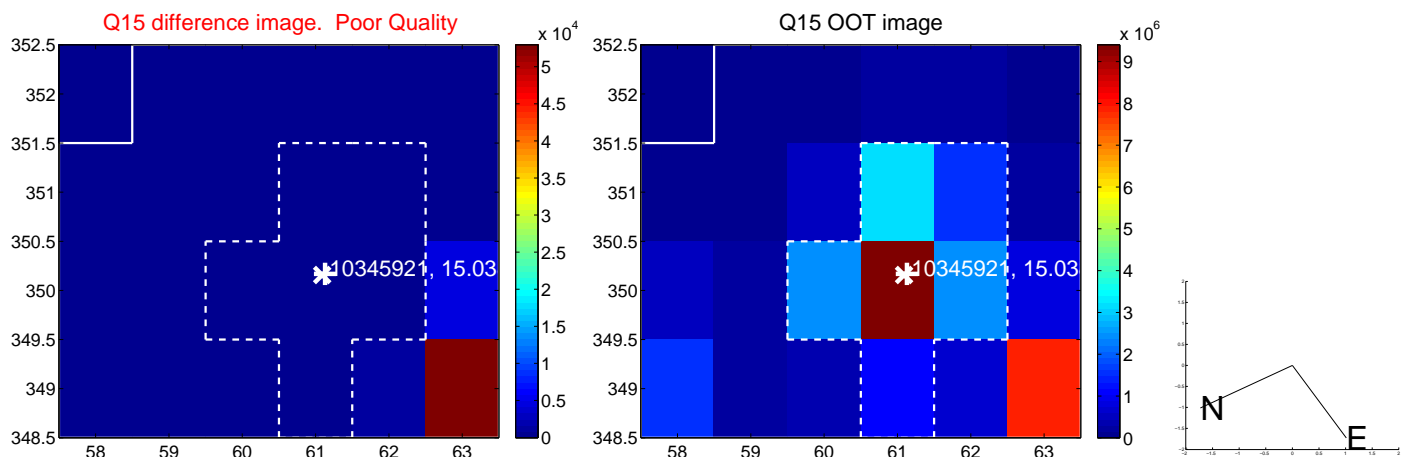
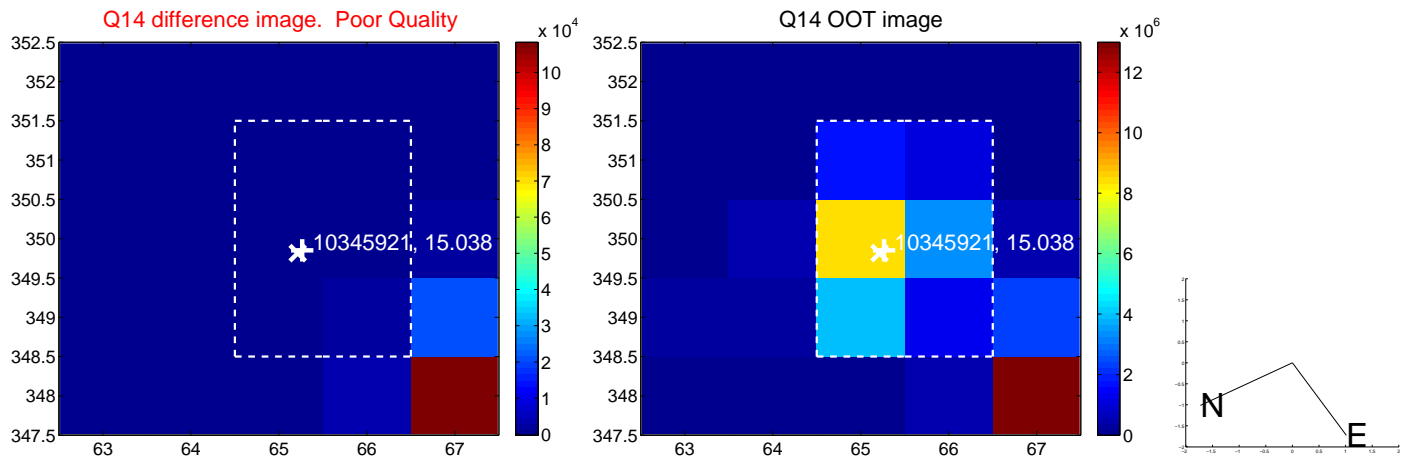
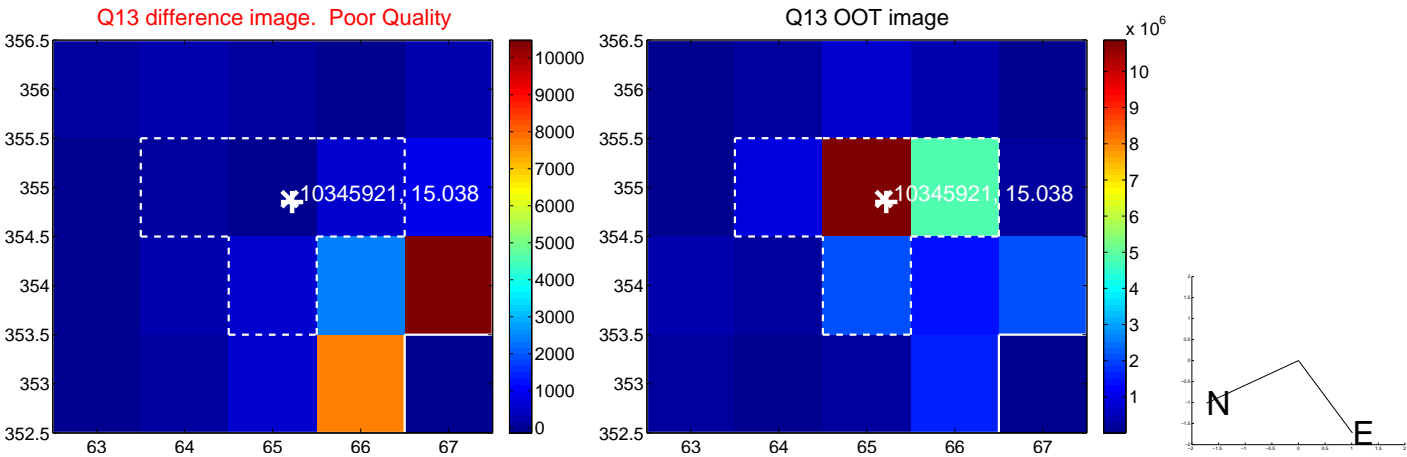
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



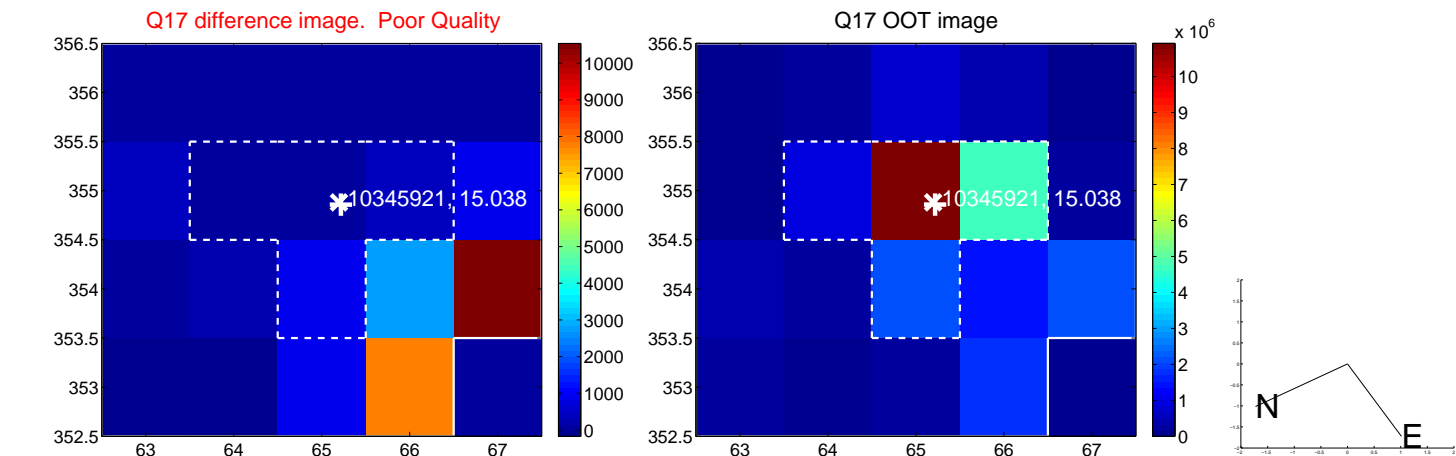
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



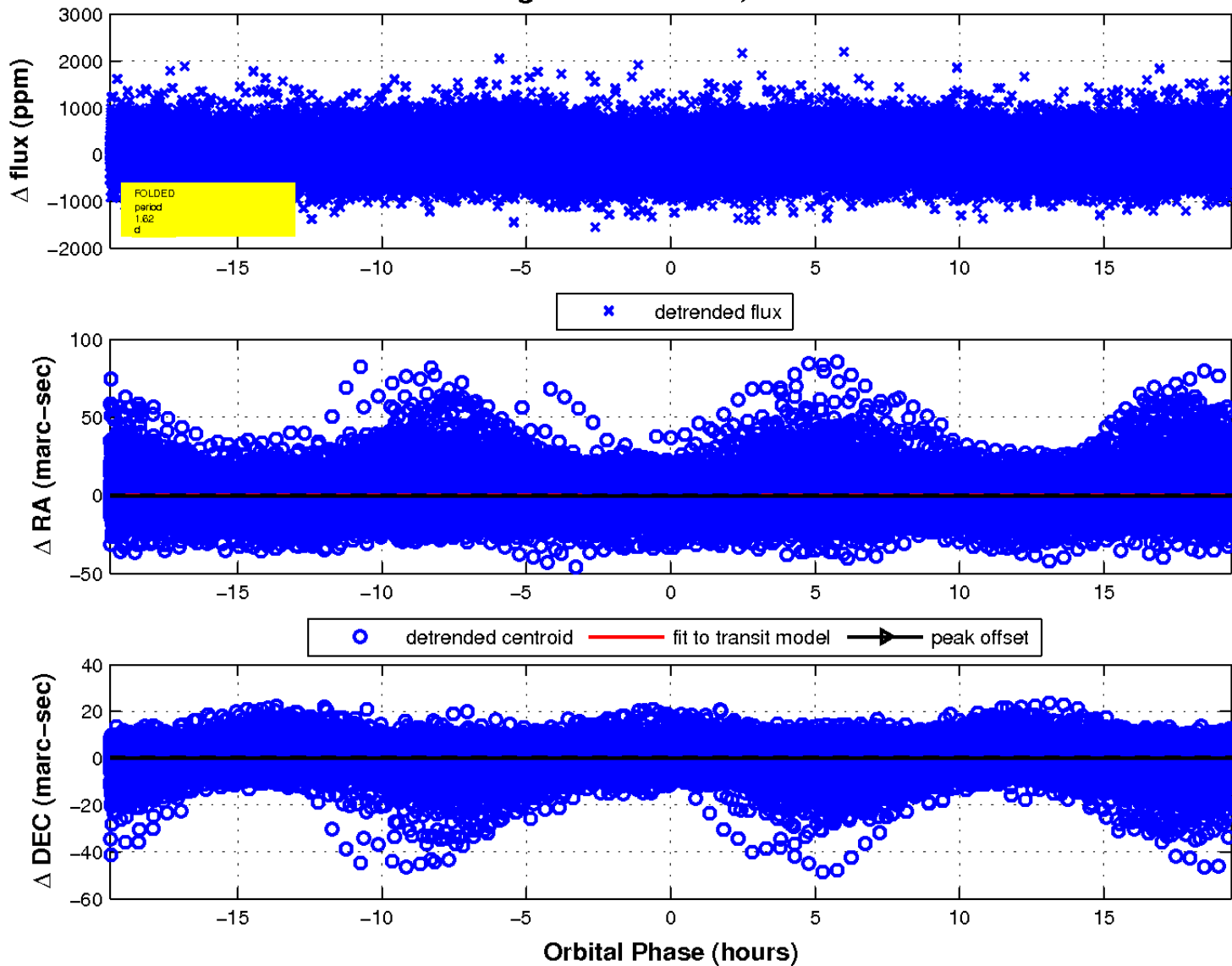
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

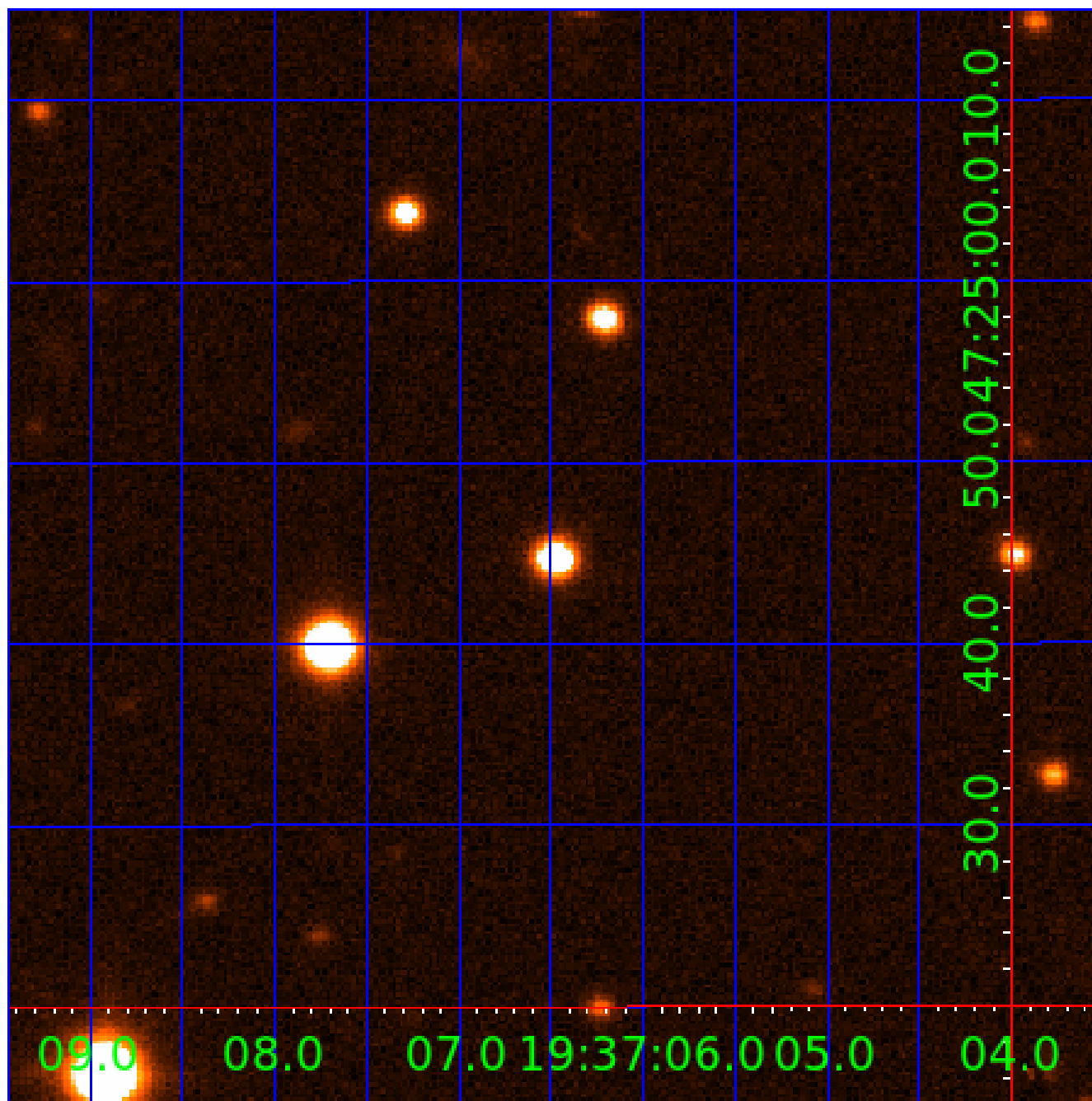


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 010345921

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})
010345921-01	OBS	No	1.618493	132.078999	48.9	6.786	8.5	9.0	0.93	5841	0.66	1204.10
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010345921-03	OBS	No	1.268481	132.006042	63.1	5.766	8.7	9.4	0.93	5841	0.88	1666.34
010345921-04	OBS	No	38.600397	146.407812	418.8	6.096	7.7	8.7	0.93	5841	2.20	17.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010345921-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010345921-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010345921-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
010345921-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

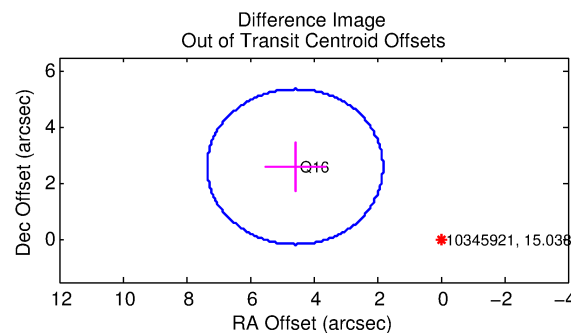
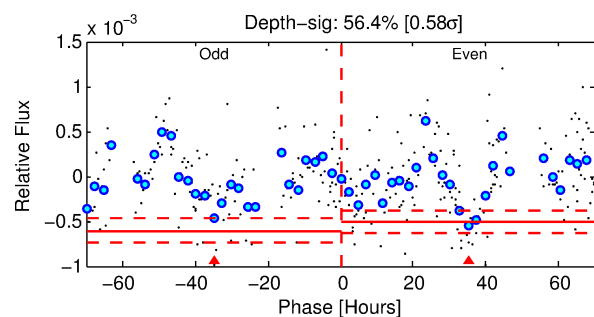
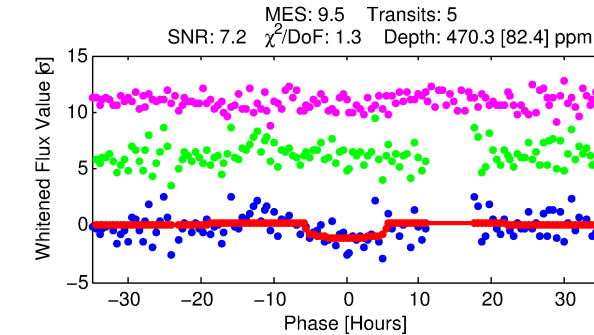
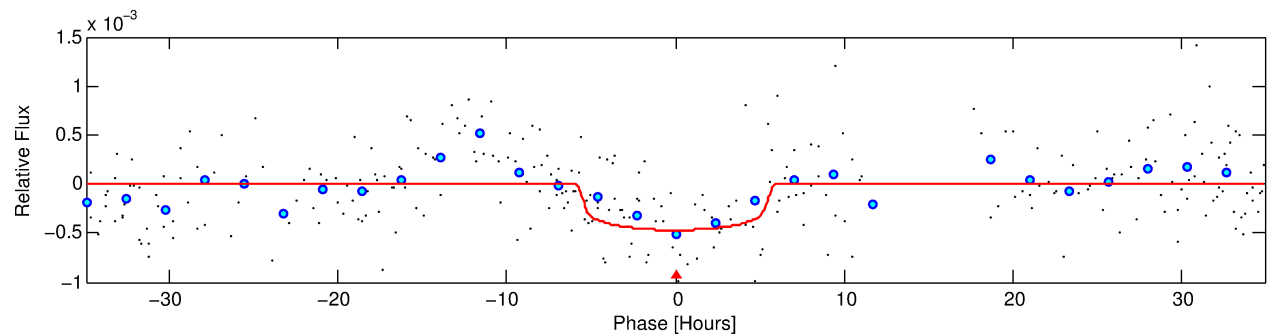
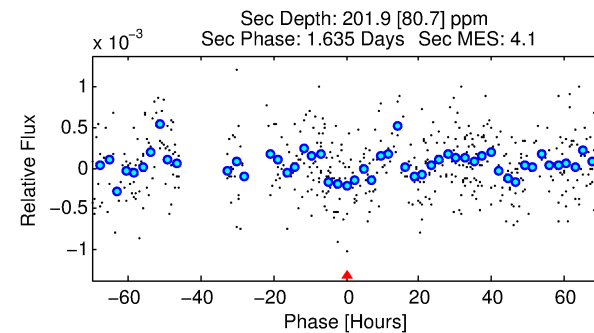
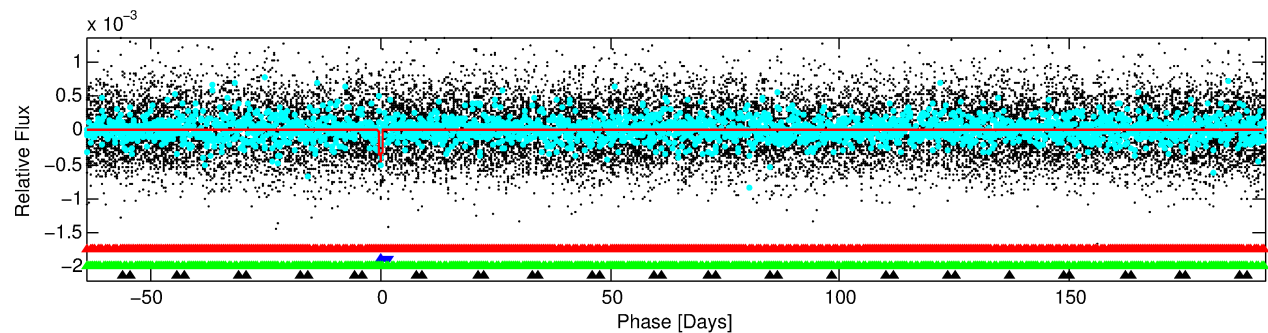
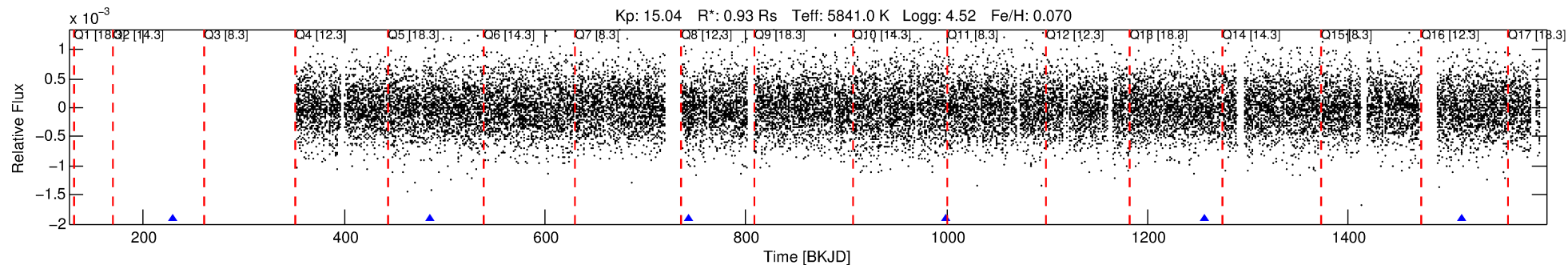
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010345921-02

No Significant Match Found

DV One-Page Summary

KIC: 10345921 Candidate: 2 of 4 Period: 256.835 d



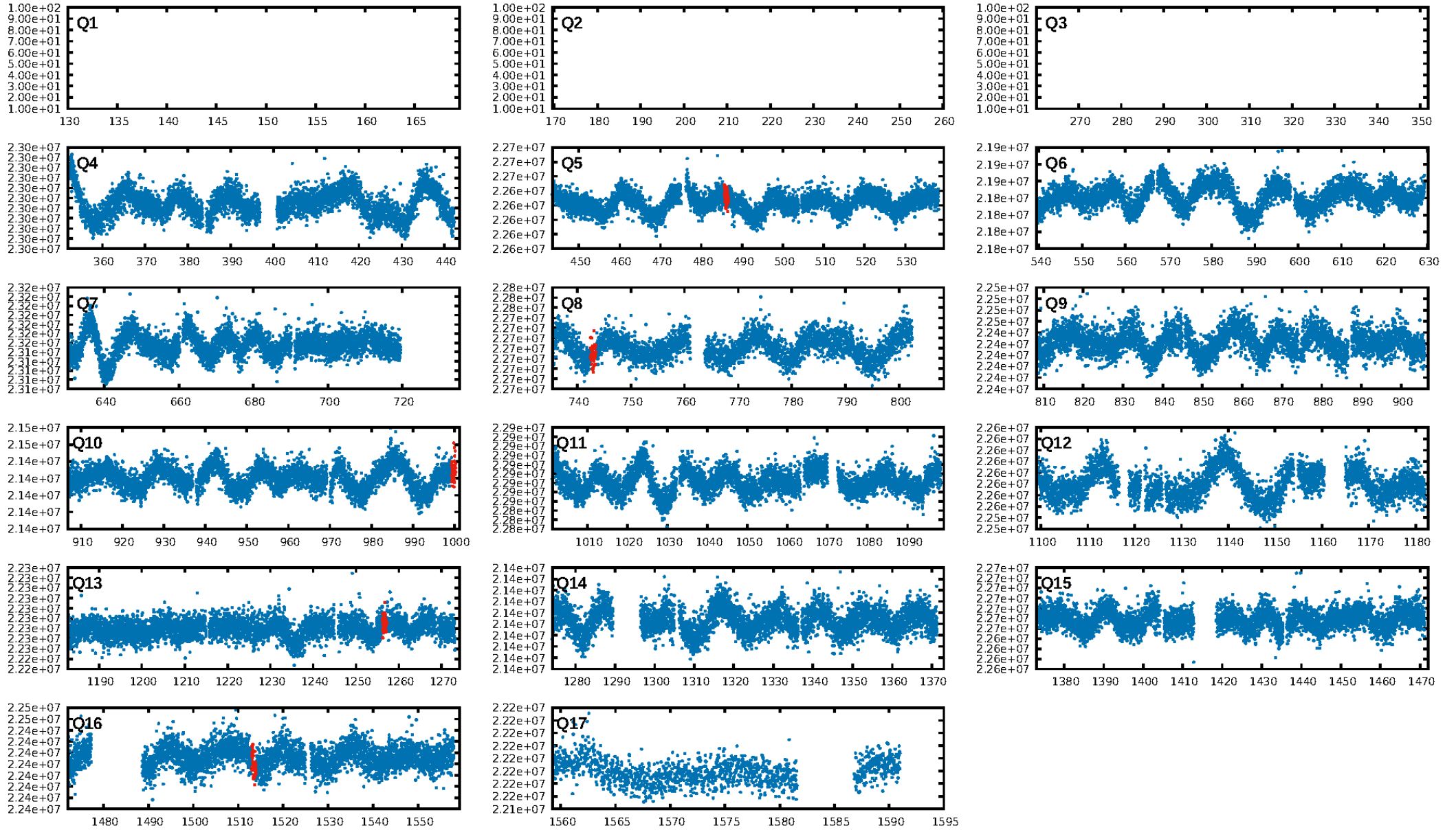
DV Fit Results:

Period = 256.83524 [0.00839] d
Epoch = 229.3075 [0.0288] BKJD
Rp/R* = 0.0218 [0.0089]
a/R* = 111.73 [196.19]
b = 0.78 [0.91]
Seff = 1.40 [0.53]
Teff = 277 [26] K
Rp = 2.22 [1.10] Re
a = 0.8031 [0.1922] AU
Ag = 14559.83 [14182.36] [1.03σ]
Teffp = 4712 [1082] K [4.10σ]

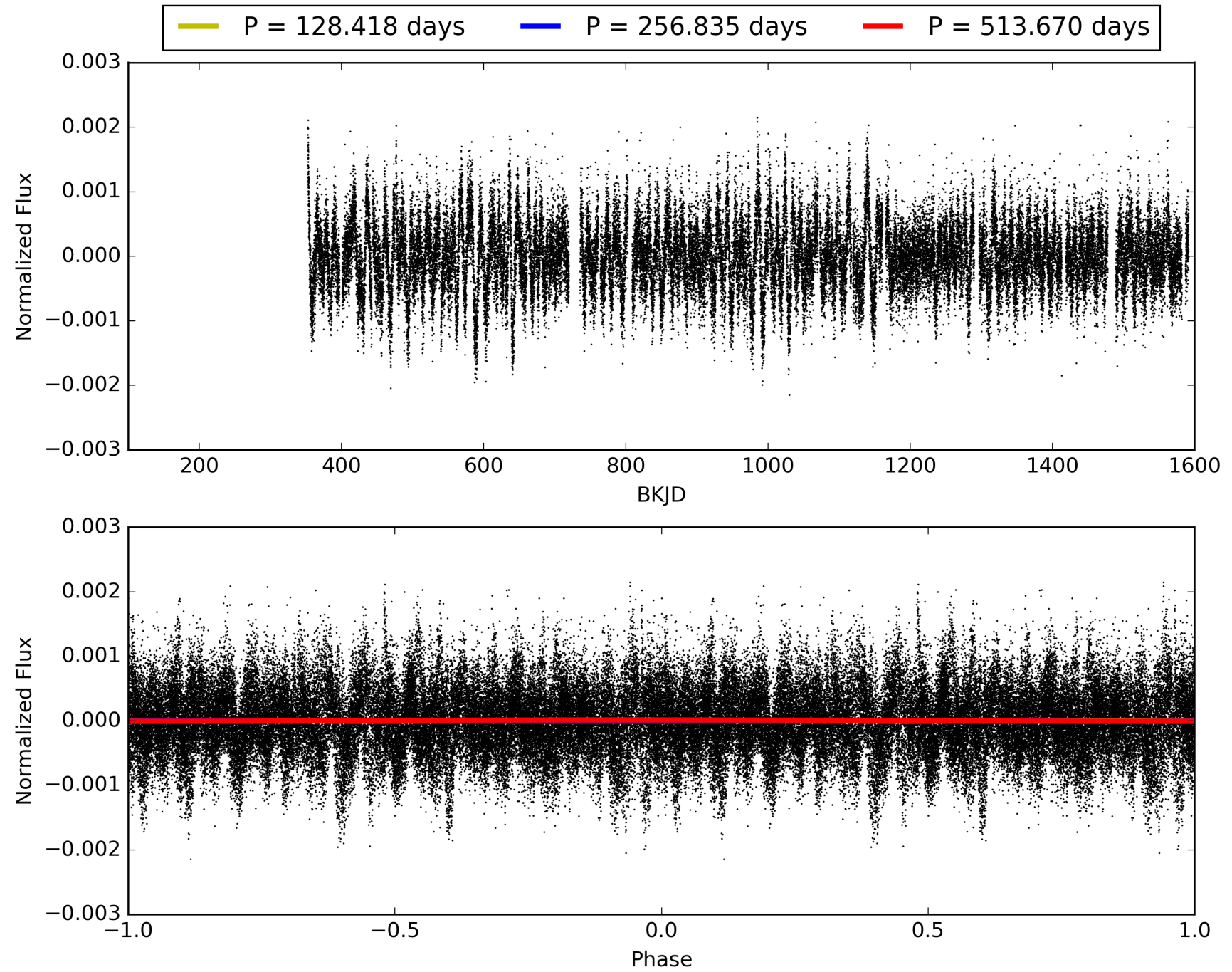
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [398.99σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 25.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.81e-14
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.074
Centroid-sig: 84.8%
Centroid-so: 1.075 arcsec [0.37σ]
OotOffset-rm: 5.266 arcsec [5.71σ]
KicOffset-rm: 5.217 arcsec [5.65σ]
OotOffset-st: 0/0/1/0 [1]
KicOffset-st: 0/0/1/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/4]

TCE 010345921-02, PDC Light Curves

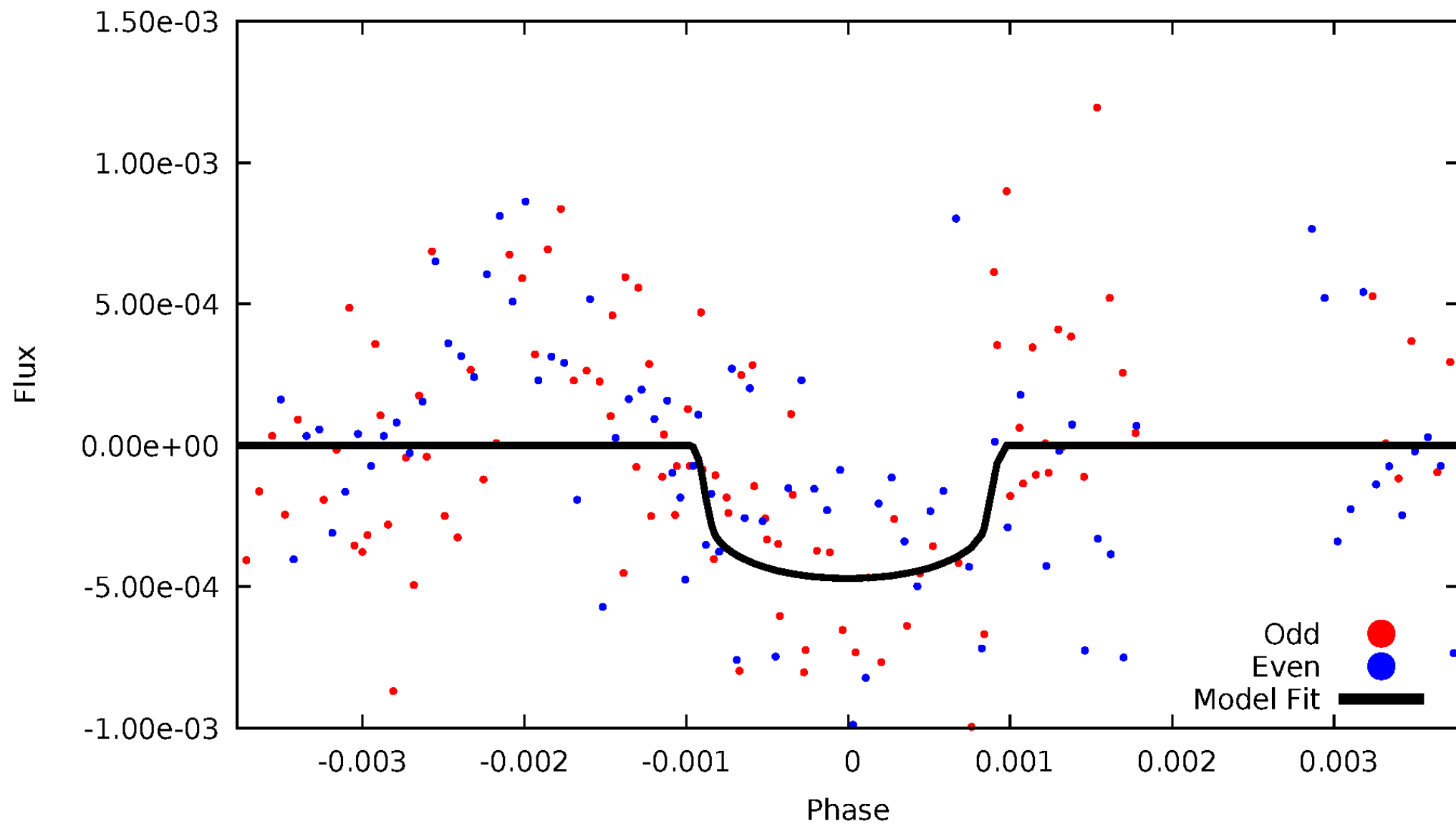


TCE 010345921-02



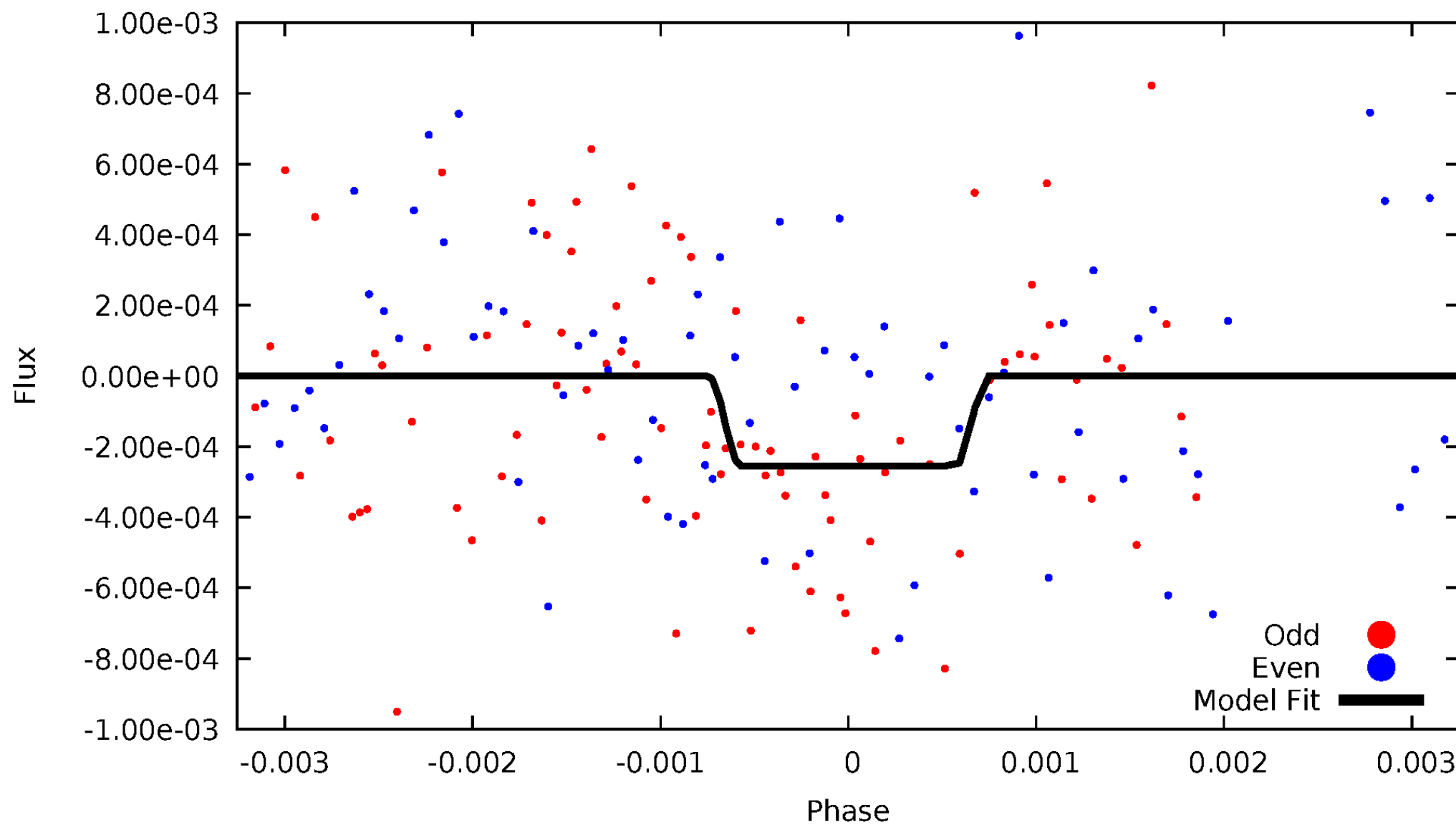
DV Odd/Even

TCE 010345921-02



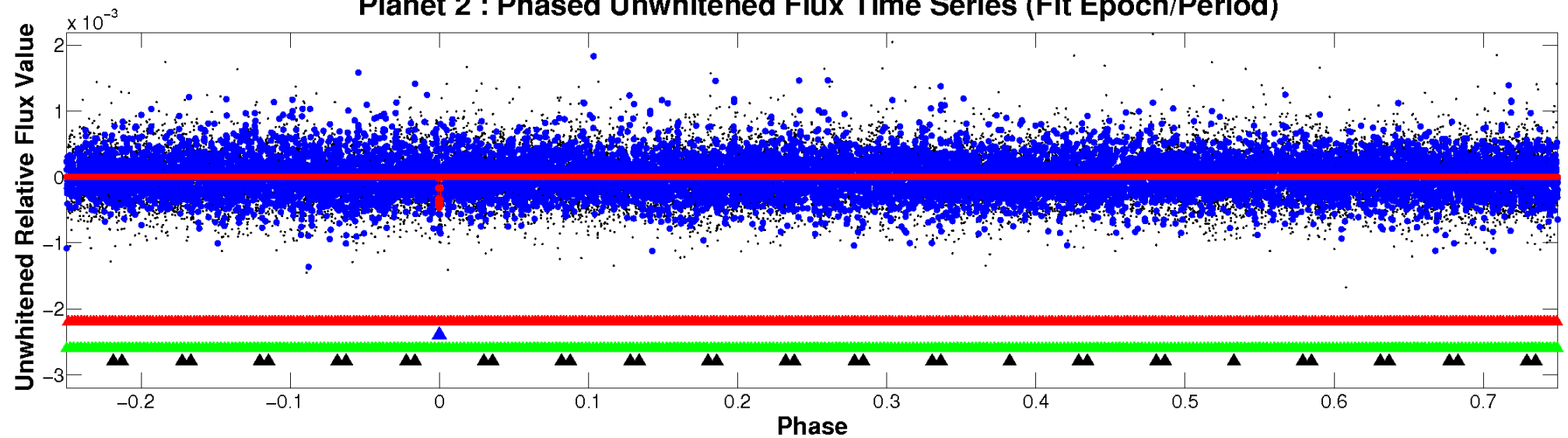
ALT Odd/Even

TCE 010345921-02

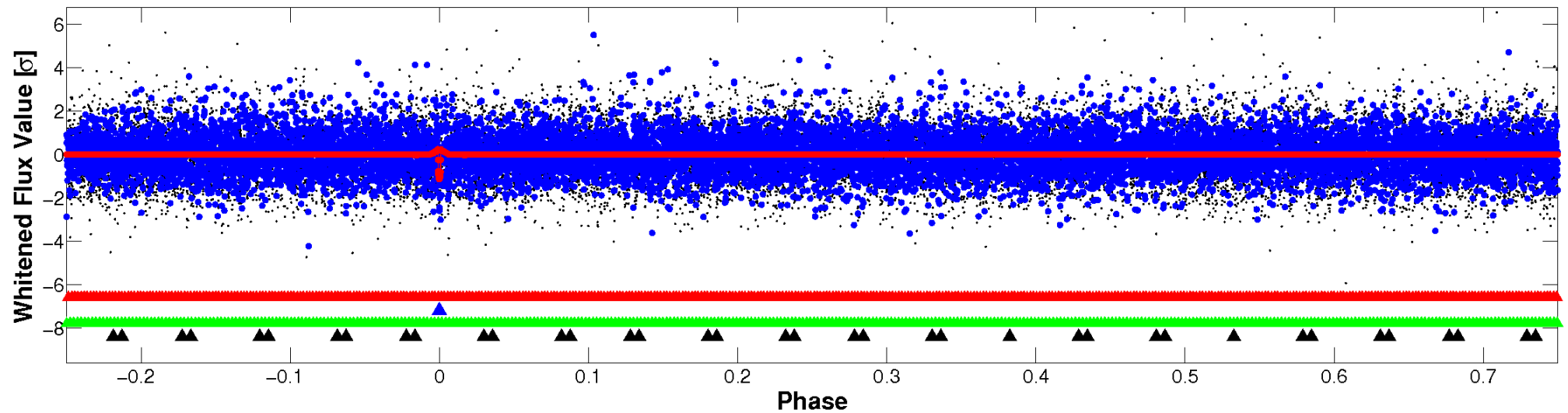


Non-Whitened Vs. Whitened Light Curve

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

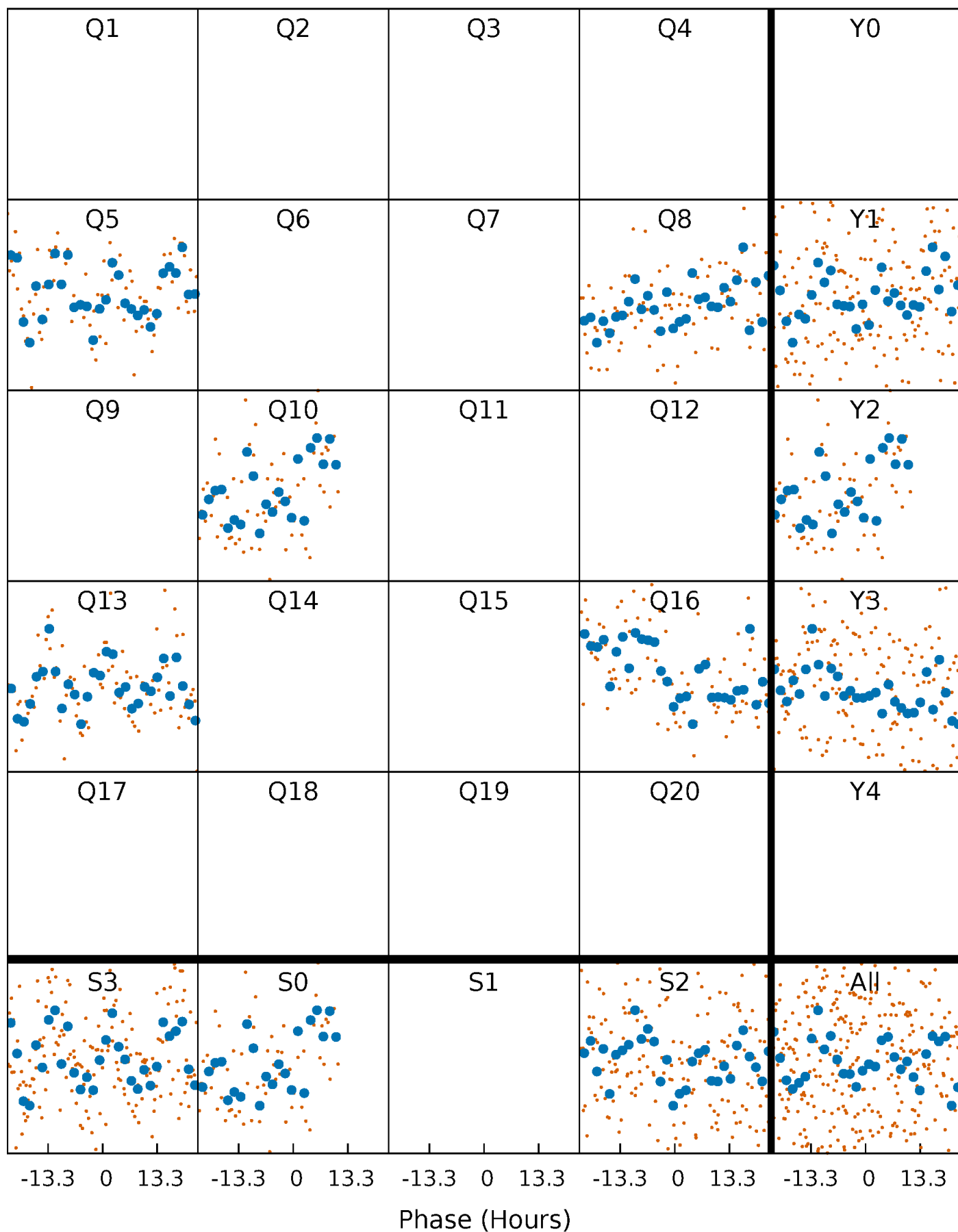


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



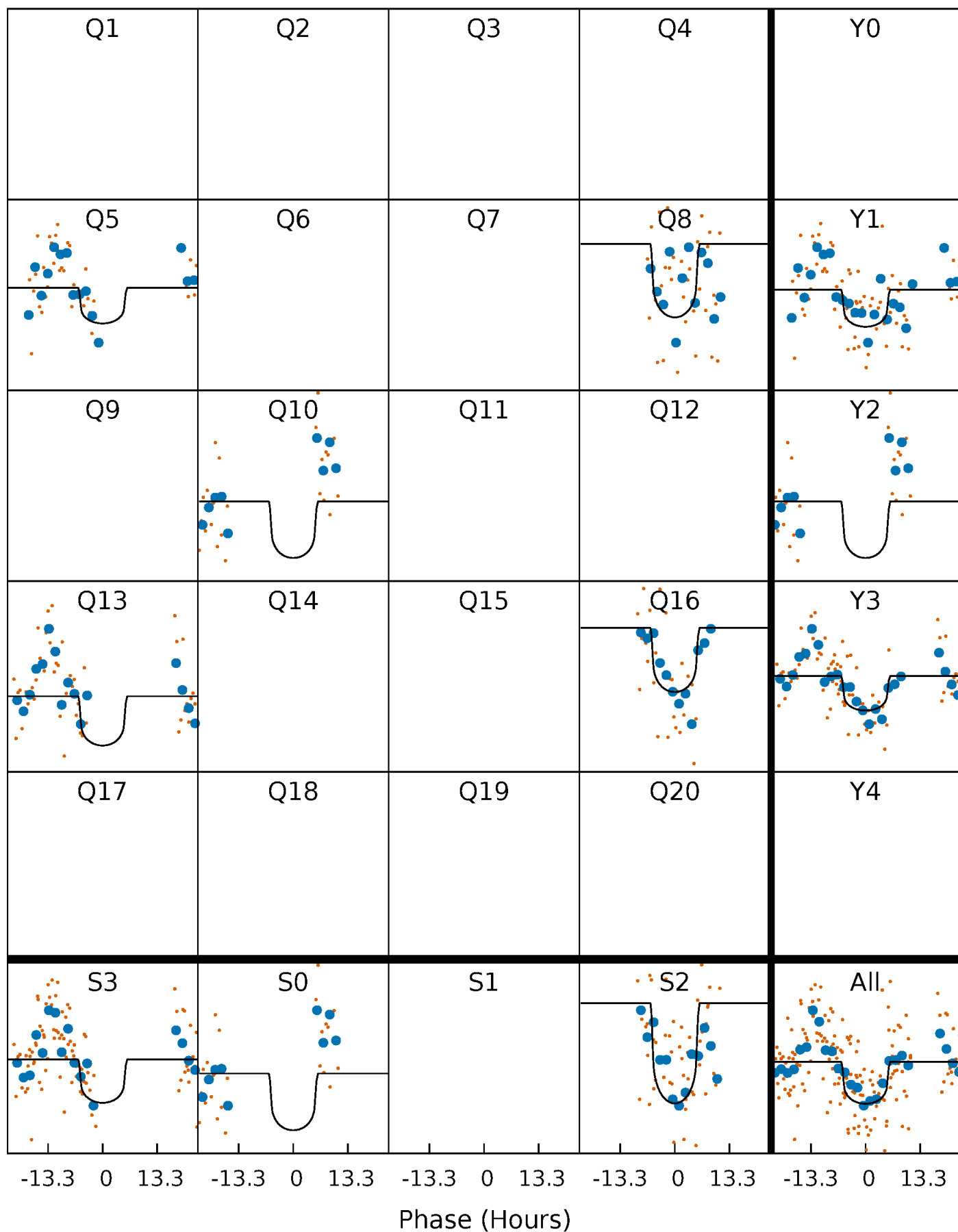
PDC Quarter-Phased Transit Curves

TCE 010345921-02 $P=256.835240$ Days $T_0=229.307493$ (BKJD)



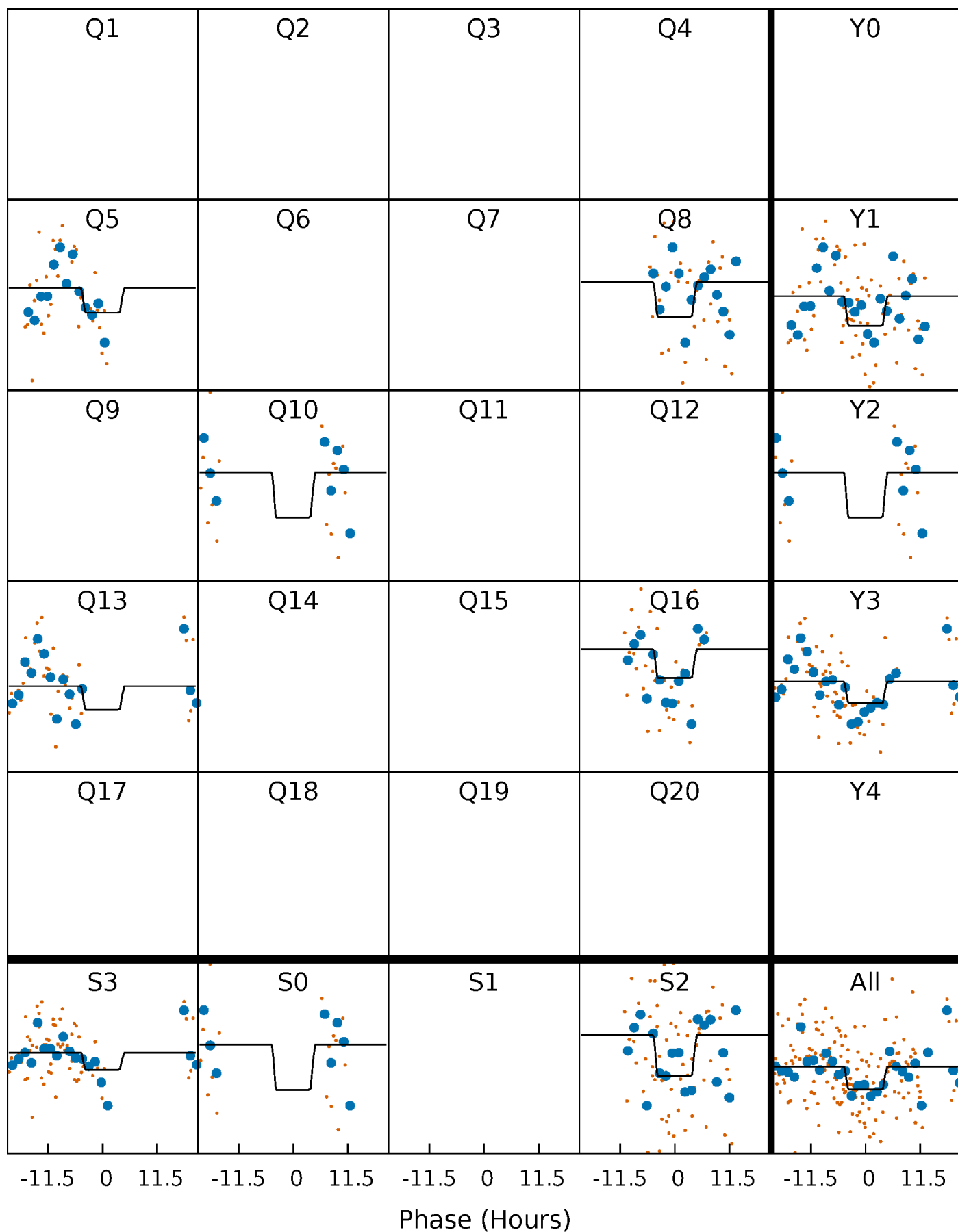
DV Quarter-Phased Transit Curves

TCE 010345921-02 $P=256.835240$ Days $T_0=229.307493$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

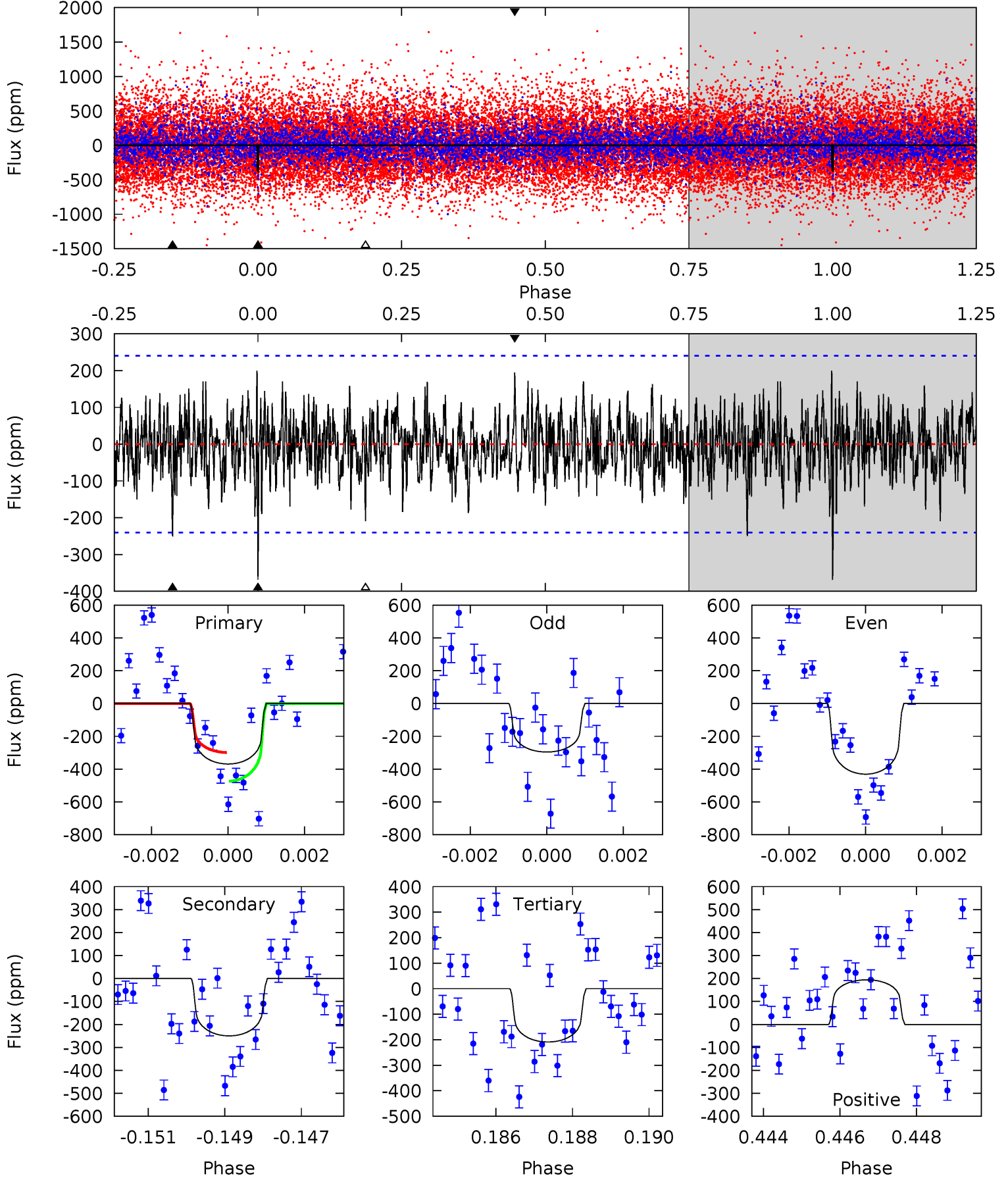
TCE 010345921-02 $P=256.877094$ Days $T_0=229.161337$ (BKJD)



DV Model-Shift Uniqueness Test

010345921-02, P = 256.835240 Days, E = 229.307493 Days

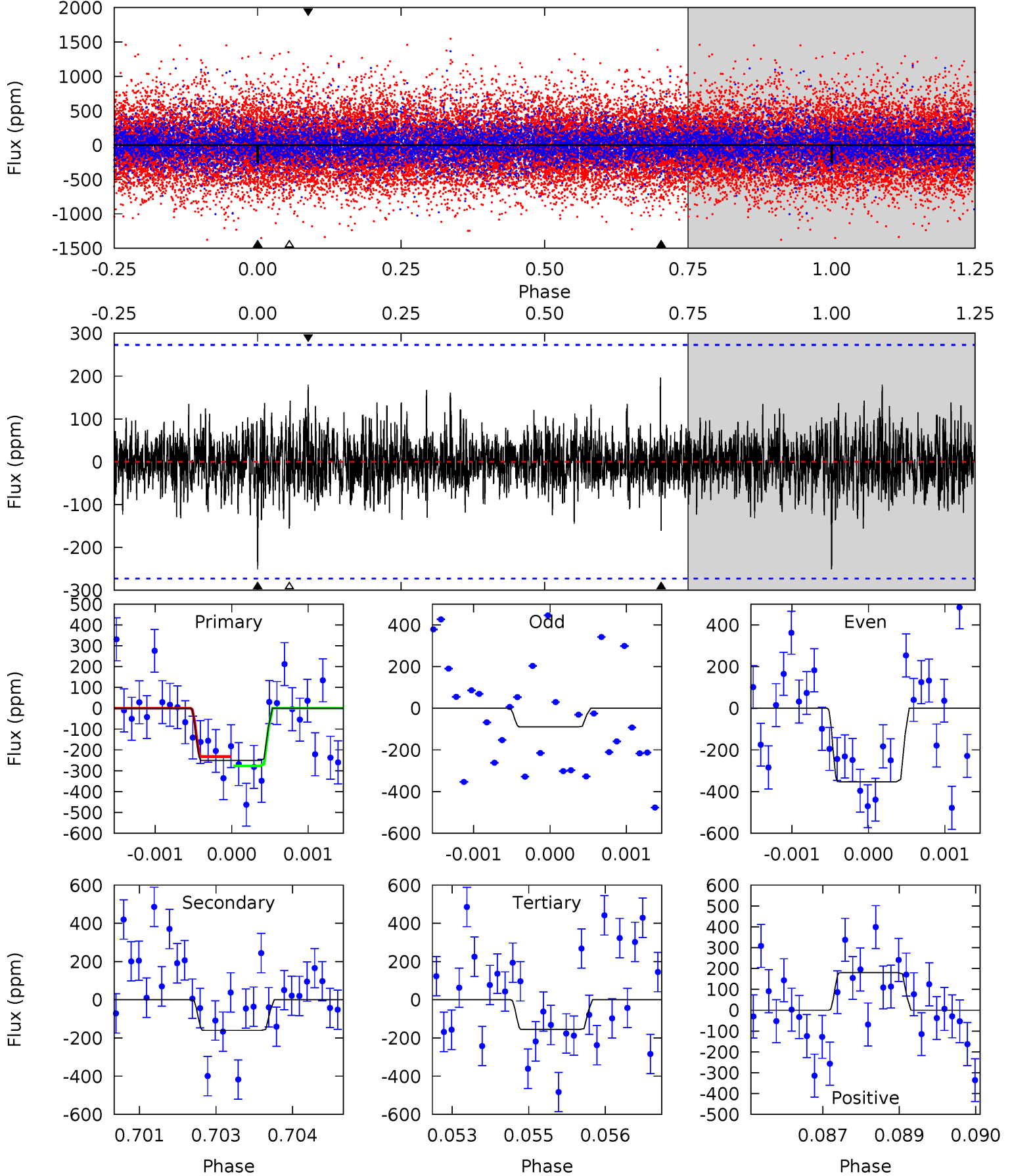
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.18	5.54	4.63	4.31	5.33	3.10	1.42	3.55	3.87	0.91	1.23	1.50	-0.68	0.35	1.89



Alt Model-Shift Uniqueness Test

010345921-02, P = 256.877094 Days, E = 229.161337 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.96	3.17	3.08	3.56	5.39	3.19	0.87	1.88	1.40	0.09	-0.39	2.58	0.83	0.44	0.43



Stellar Parameters For KIC 010345921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5841^{+184}_{-204}	$4.520^{+0.035}_{-0.196}$	$0.070^{+0.250}_{-0.350}$	$0.931^{+0.260}_{-0.087}$	$1.047^{+0.113}_{-0.139}$	$1.828^{+0.426}_{-0.887}$
	+3%/-3%	+1%/-4%	+357%/-500%	+28%/-9%	+11%/-13%	+23%/-49%
Source	KIC0	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 010345921-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-250 ± 45	$2.40^{+0.99}_{-0.97}$	398^{+27}_{-19}	4948^{+1391}_{-614}	14830^{+26660}_{-7616}
Alt.	-160 ± 51	$1.76^{+0.99}_{-0.94}$	397^{+25}_{-19}	5162^{+2216}_{-851}	17837^{+57546}_{-10666}

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

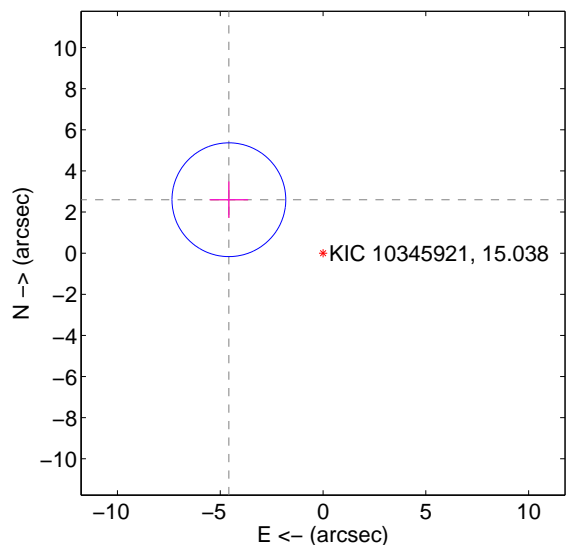
Supplemental centroid analysis for 010345921-02. Kepler magnitude: 15.04. Transit SNR 7.23

There are 0 quarters with good PRF difference image offsets

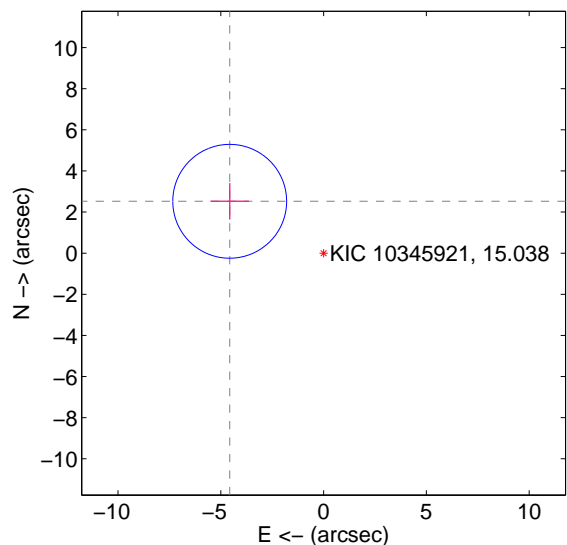
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.266 ± 0.922	5.71	4.580 ± 0.935	2.600 ± 0.882
PRF-fit source offset from KIC position	5.217 ± 0.923	5.65	4.566 ± 0.935	2.523 ± 0.882
photometric centroid source offset	1.08 ± 2.91	0.37	-0.43 ± 6.12	-0.98 ± 1.70

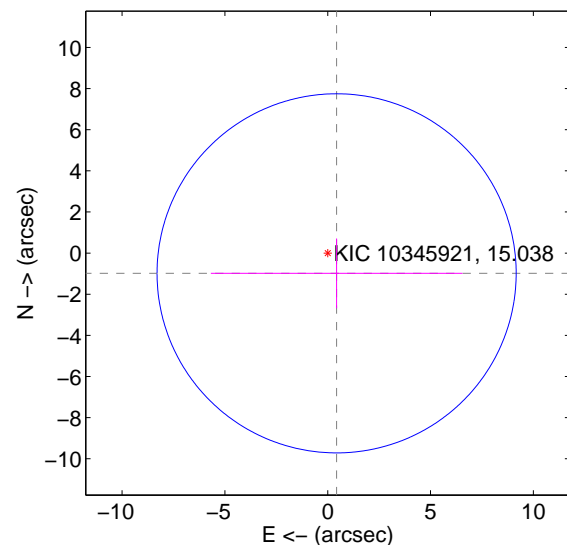
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

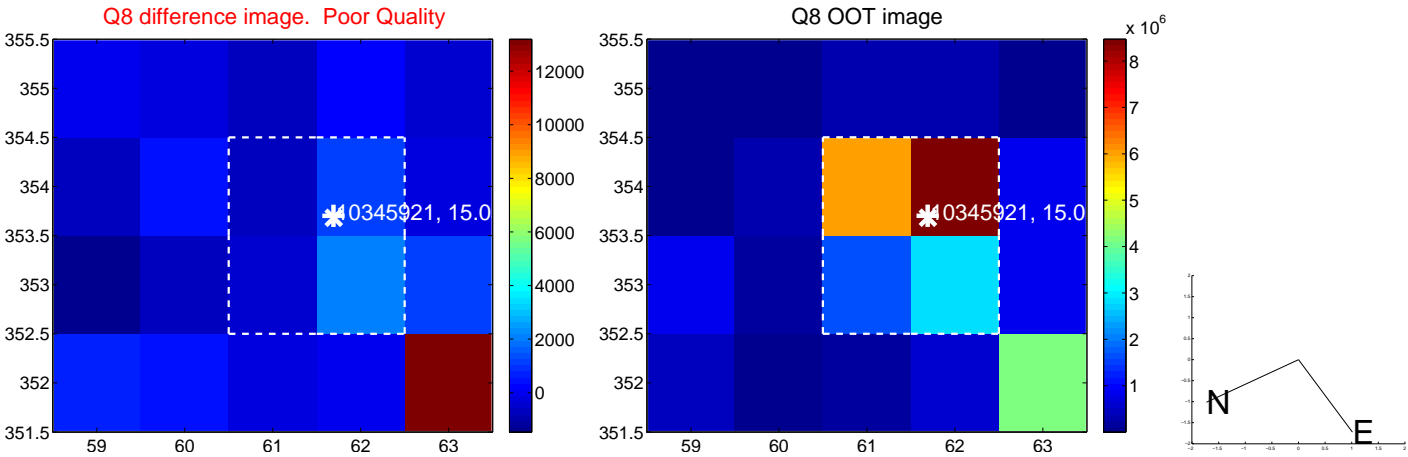
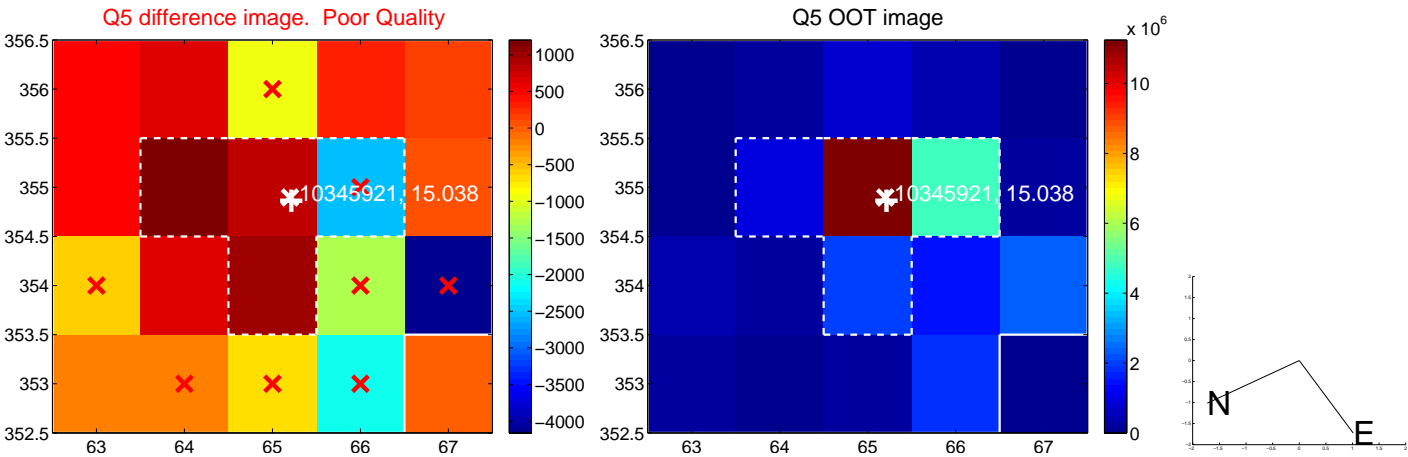


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



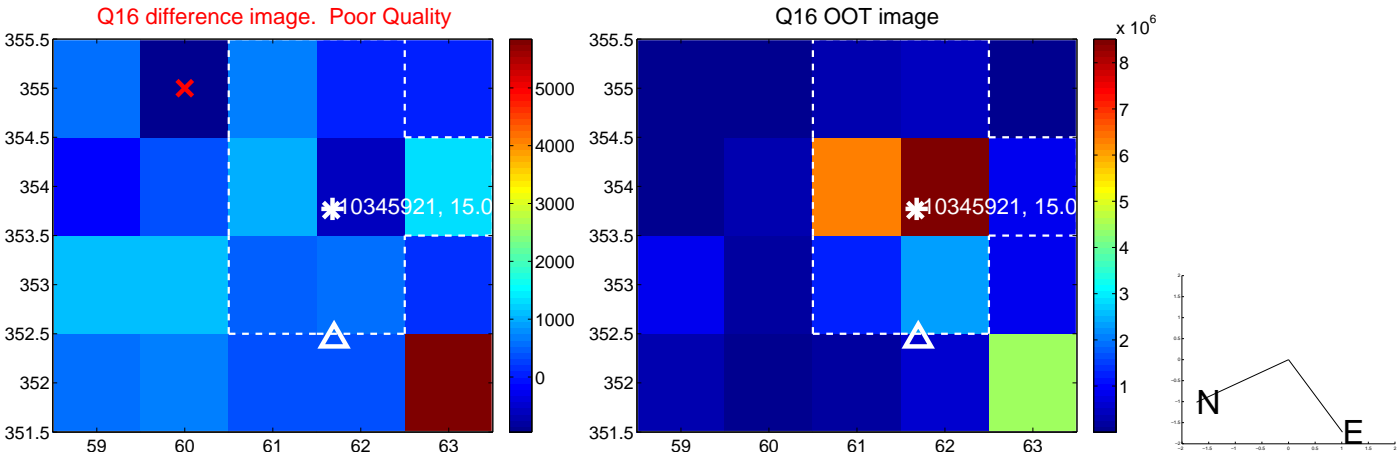
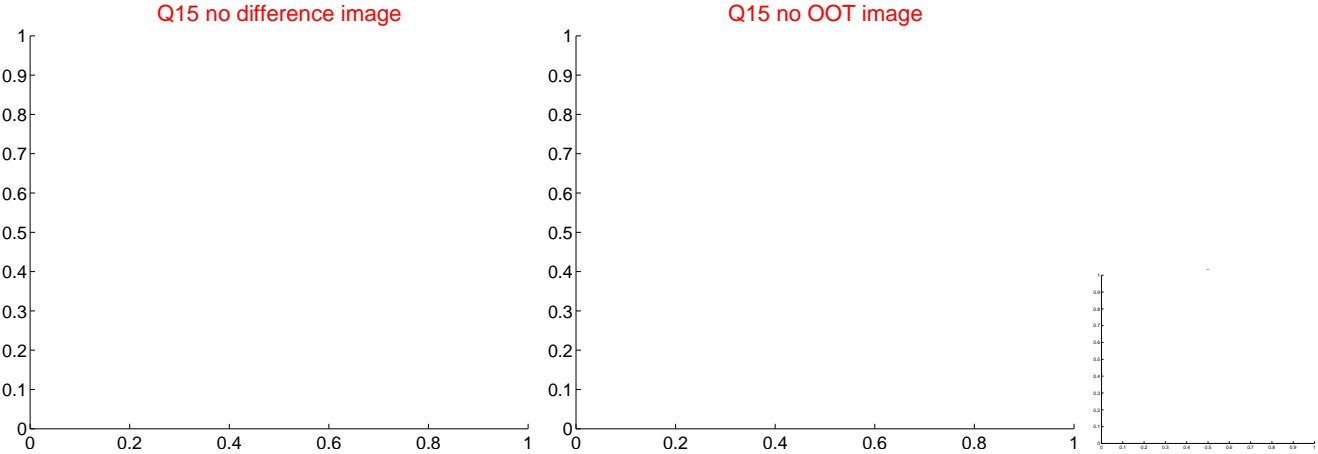
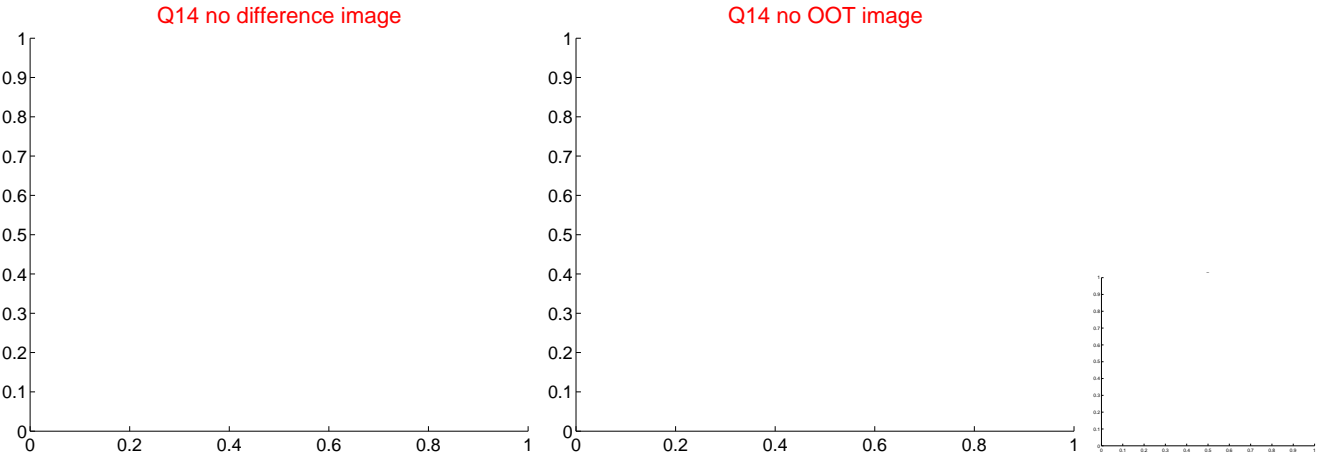
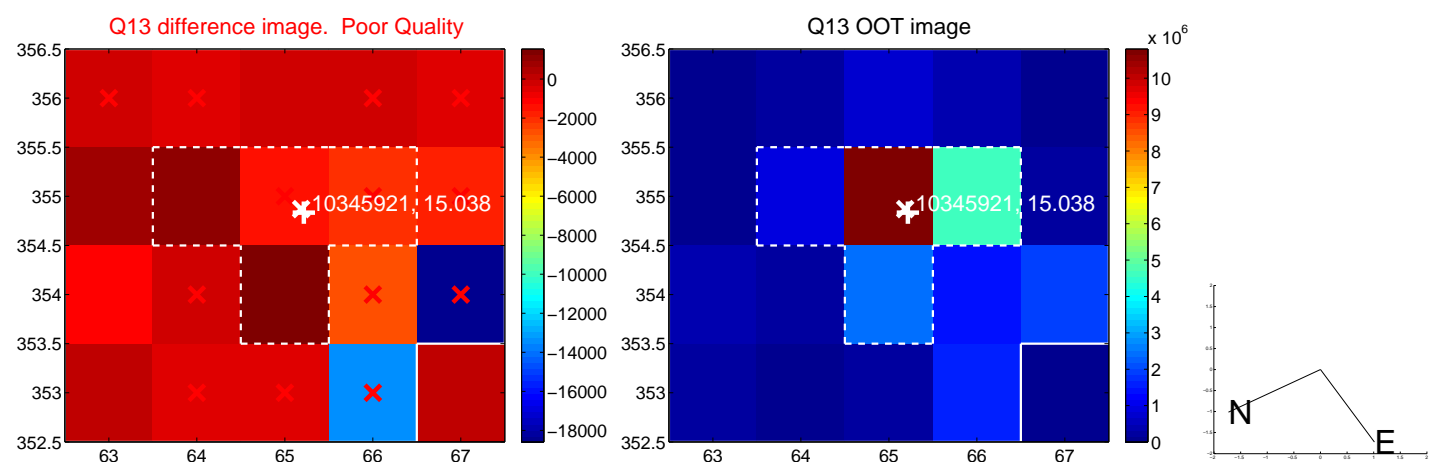
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



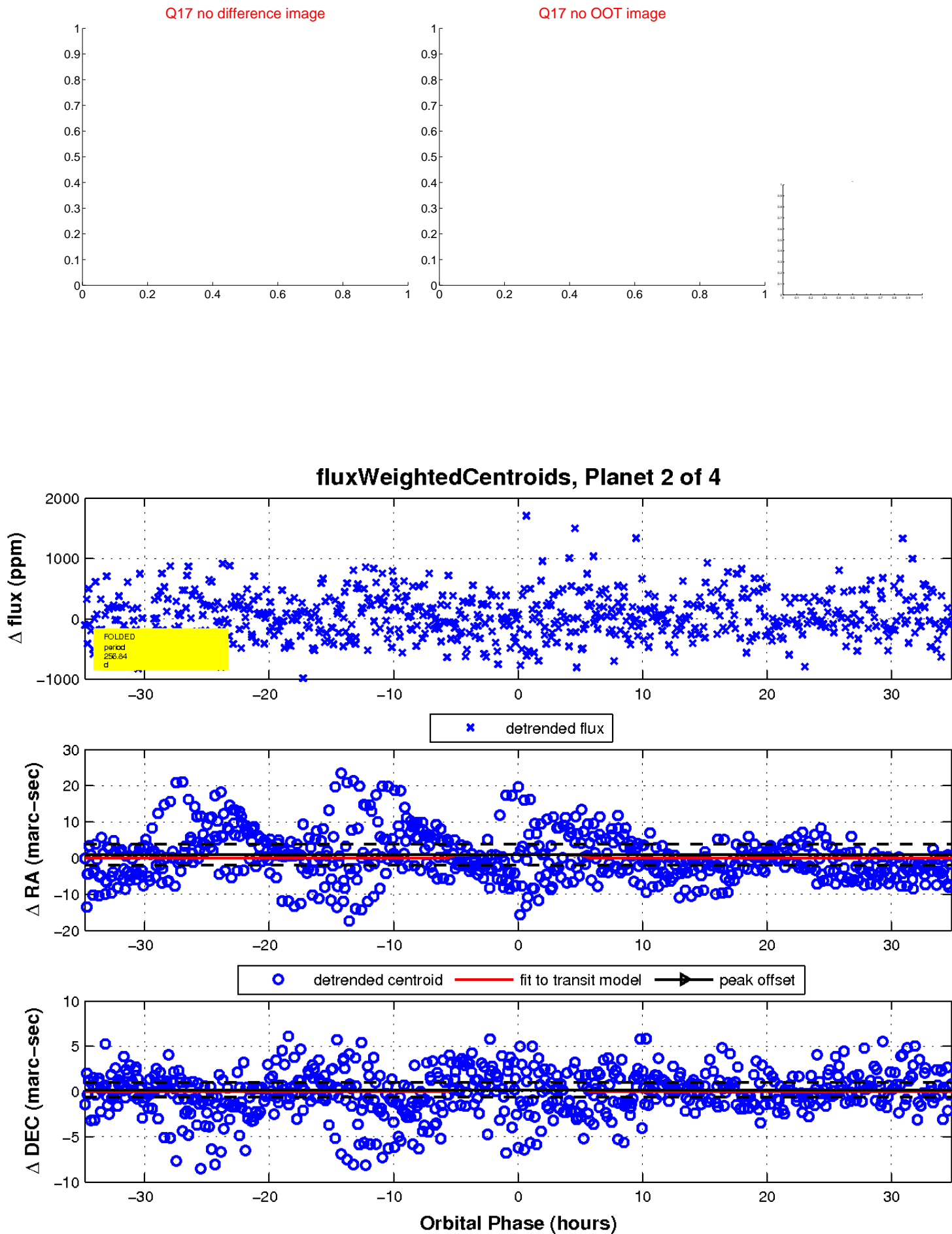
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

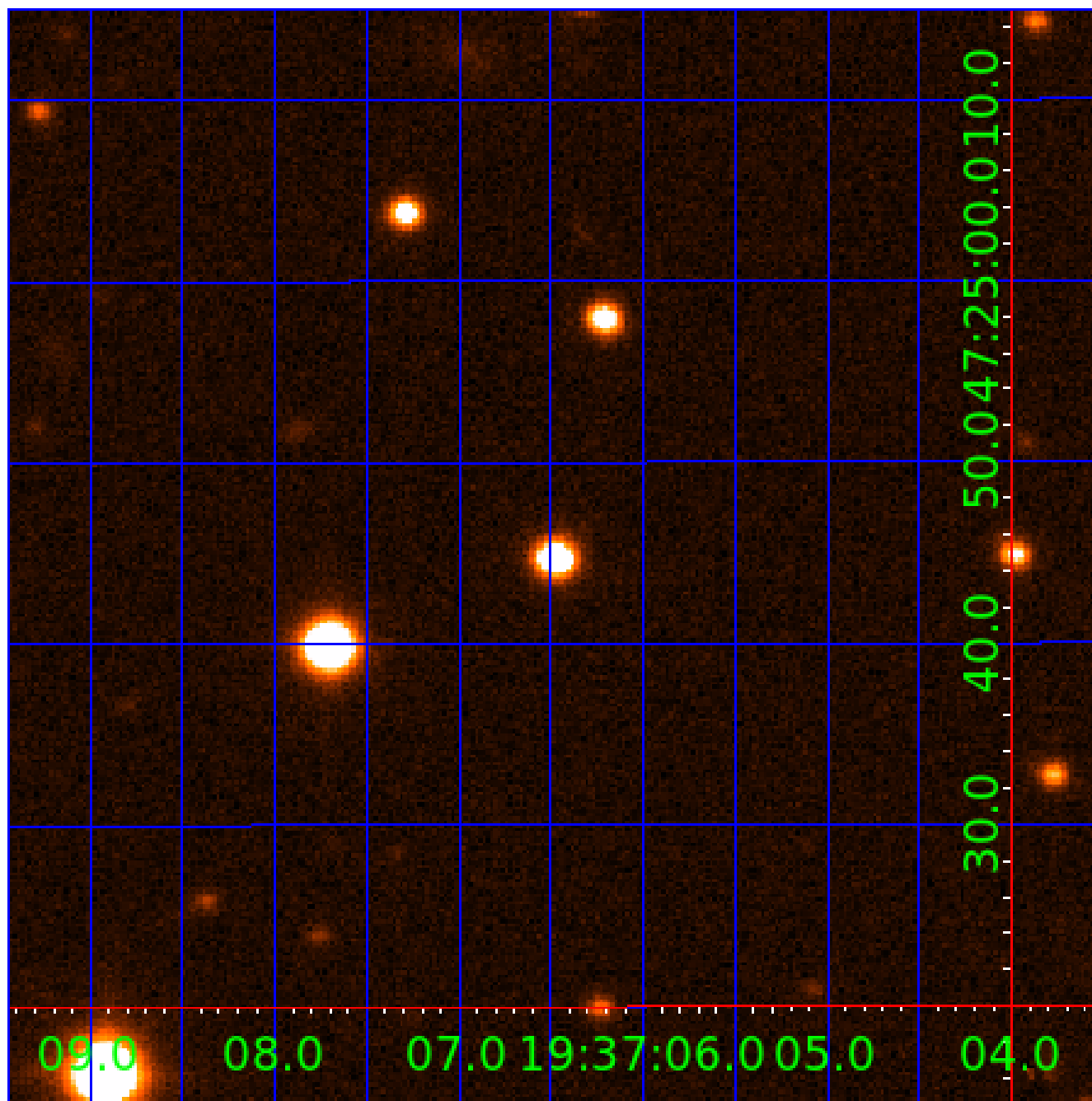


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010345921

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})
010345921-01	OBS	No	1.618493	132.078999	48.9	6.786	8.5	9.0	0.93	5841	0.66	1204.10
010345921-02	OBS	No	256.835240	229.307493	470.3	11.626	9.5	7.2	0.93	5841	2.22	1.40
010345921-03	OBS	No	1.268481	132.006042	63.1	5.766	8.7	9.4	0.93	5841	0.88	1666.34
010345921-04	OBS	No	38.600397	146.407812	418.8	6.096	7.7	8.7	0.93	5841	2.20	17.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010345921-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010345921-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010345921-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
010345921-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

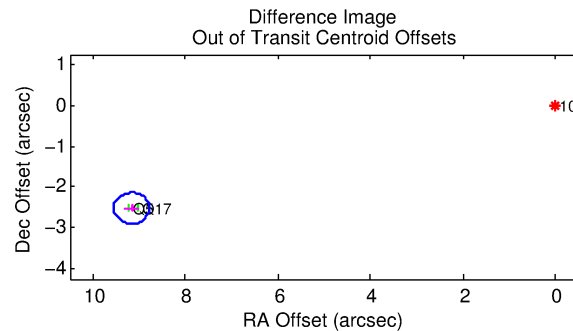
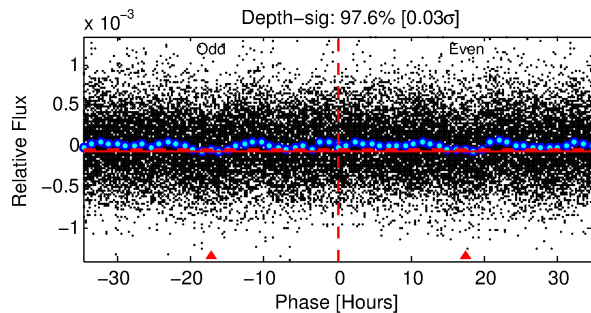
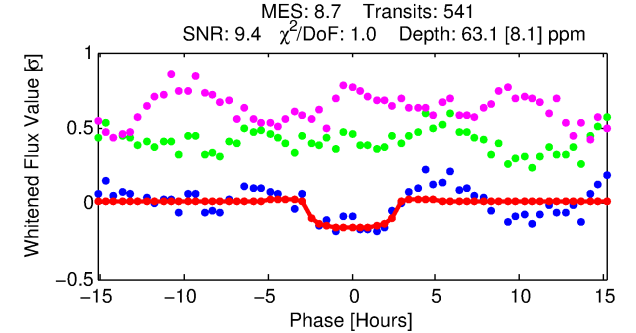
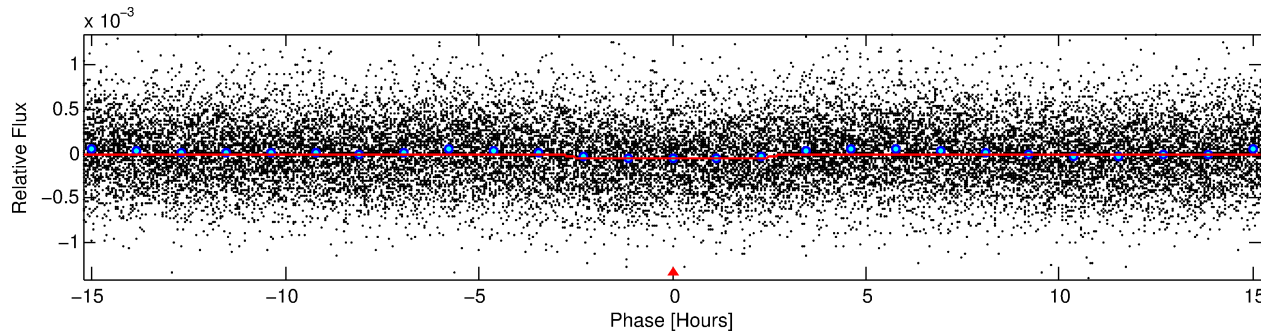
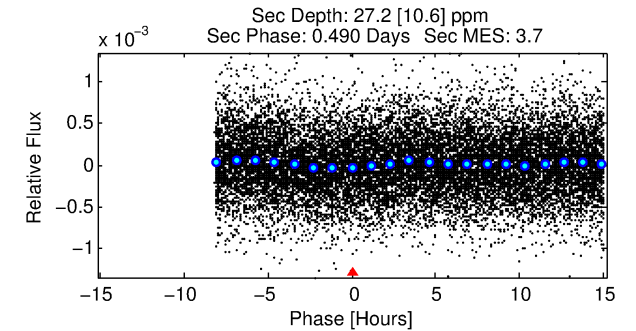
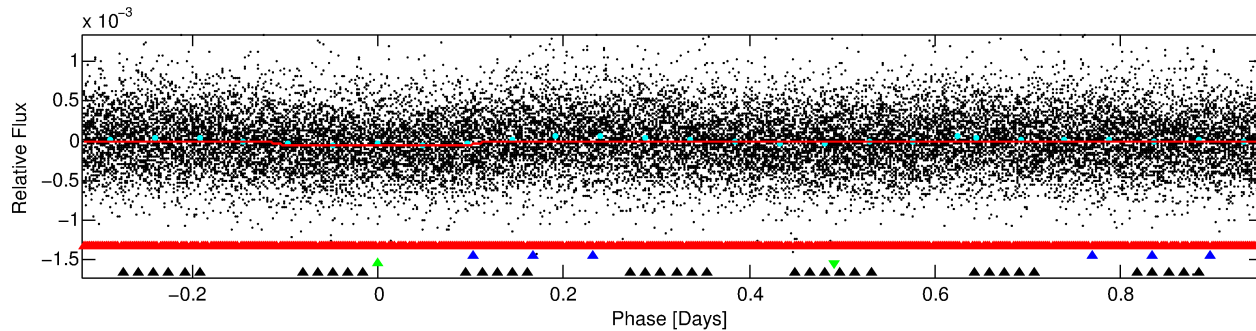
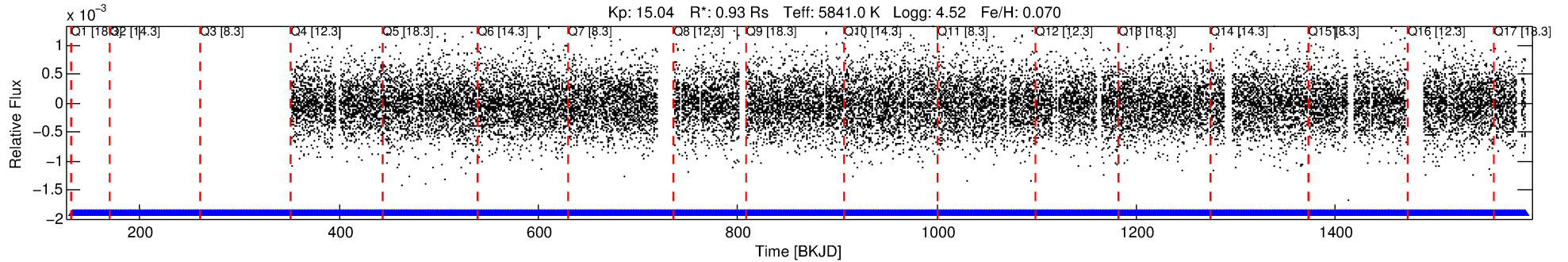
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010345921-03

No Significant Match Found

DV One-Page Summary

KIC: 10345921 Candidate: 3 of 4 Period: 1.268 d



DV Fit Results:

Period = 1.26848 [0.00002] d
Epoch = 132.0060 [0.0066] BKJD
Rp/R* = 0.0087 [0.0043]
a/R* = 1.21 [0.92]
b = 0.90 [0.51]
Seff = 1666.34 [633.87]
Teq = 1629 [155] K
Rp = 0.88 [0.51] Re
a = 0.0233 [0.0056] AU
Ag = 10.45 [11.83] [0.80σ]
Teffp = 4529 [1227] K [2.34σ]

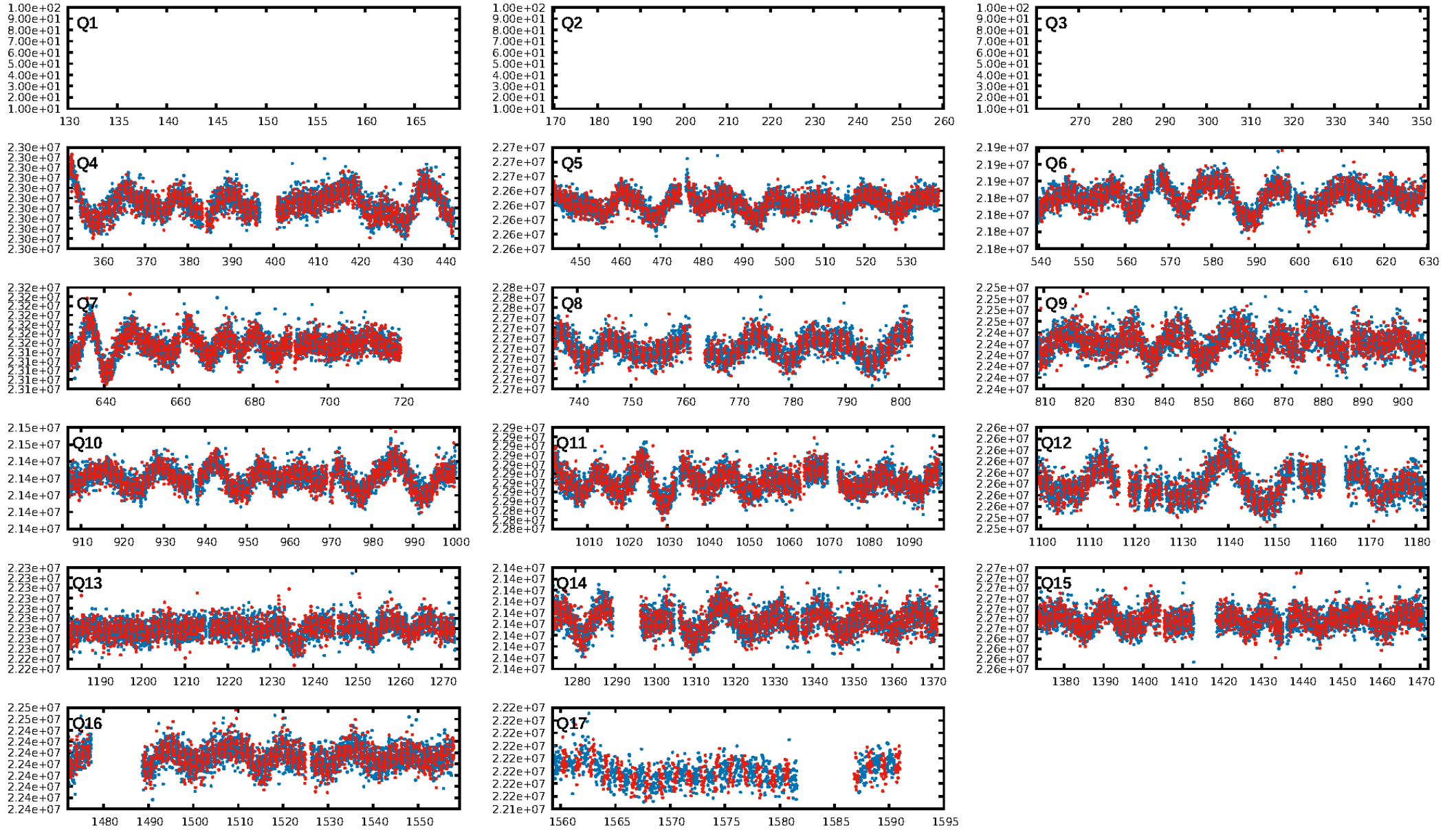
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 65.5% [0.94σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.64e-19
RollingBand-fgt: 1.00 [527/527]
GhostDiagnostic-chr: -0.09705
Centroid-sig: 0.0%
Centroid-so: 5.510 arcsec [2.27σ]
OotOffset-rm: 9.503 arcsec [74.40σ]
KicOffset-rm: 9.646 arcsec [66.73σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [14/14]

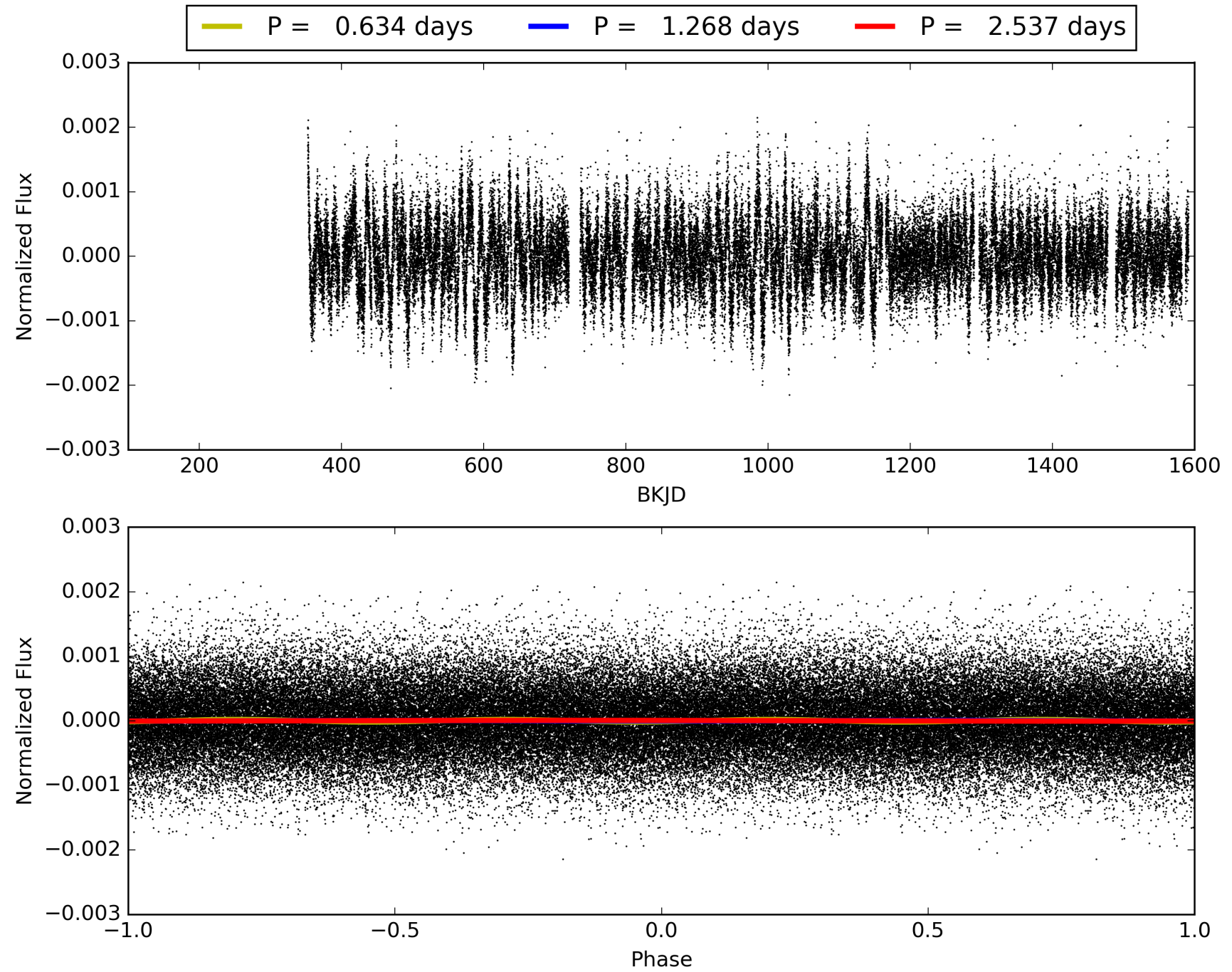
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:05:48 Z

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

TCE 010345921-03, PDC Light Curves

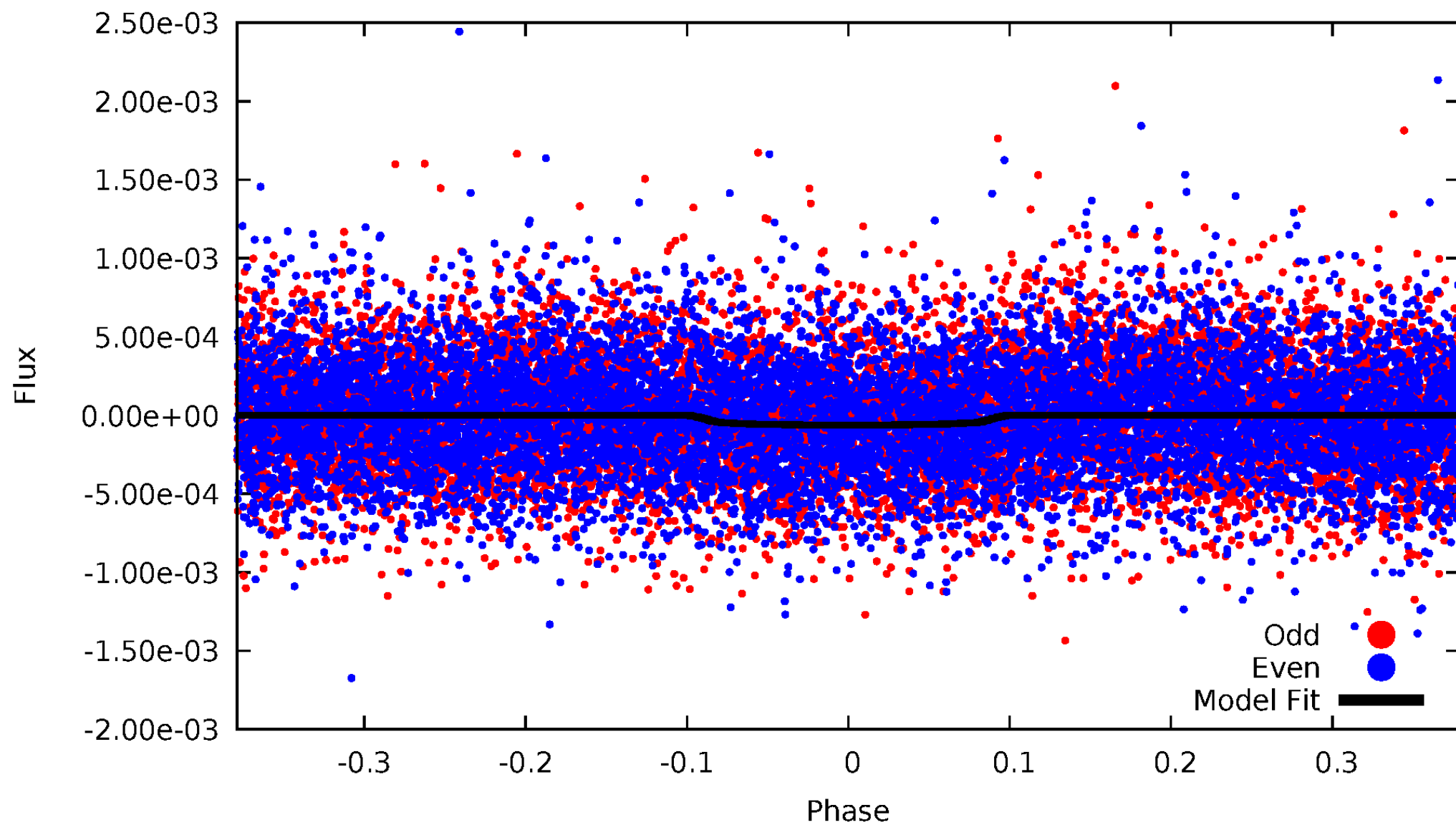


TCE 010345921-03



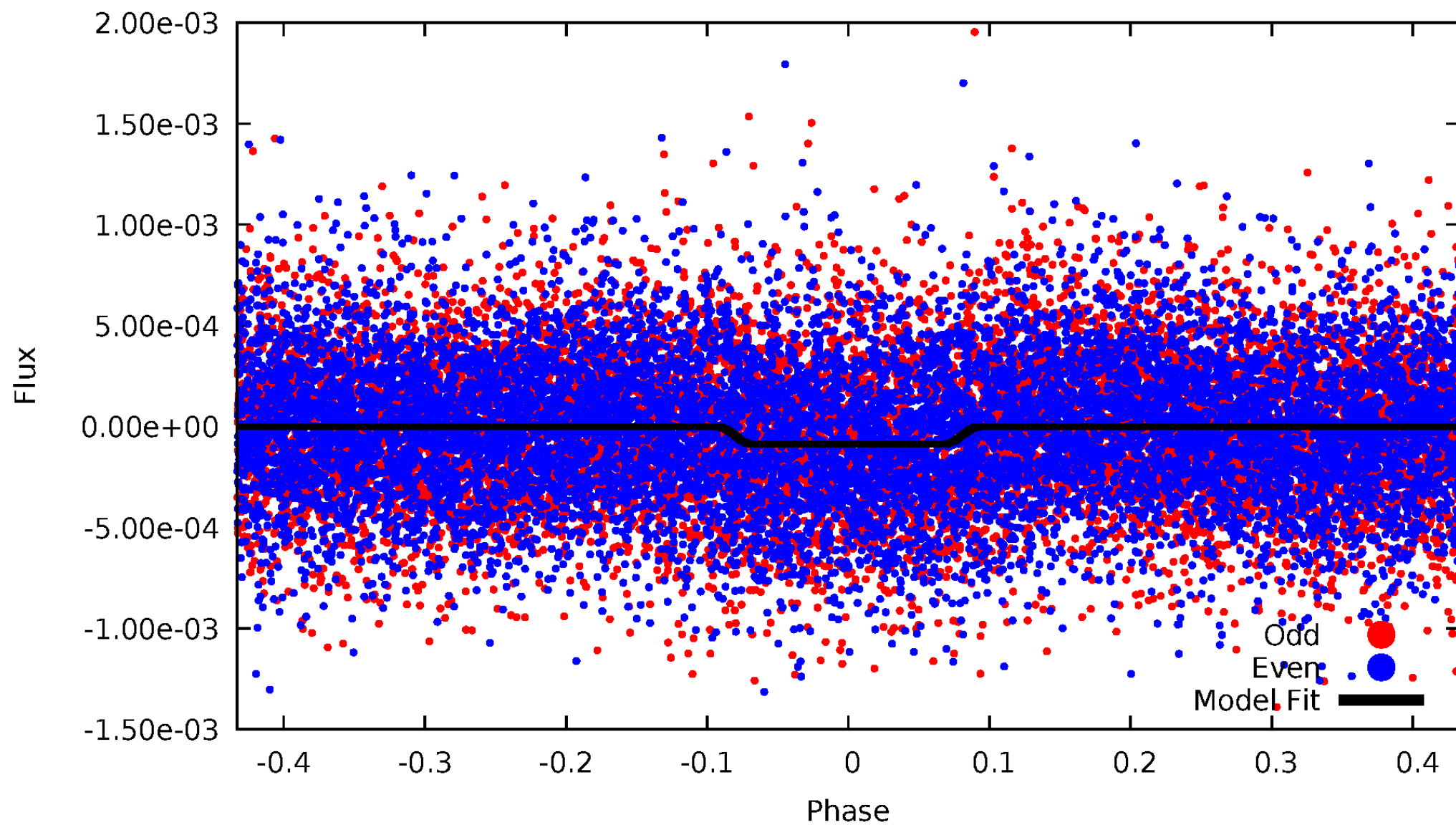
DV Odd/Even

TCE 010345921-03



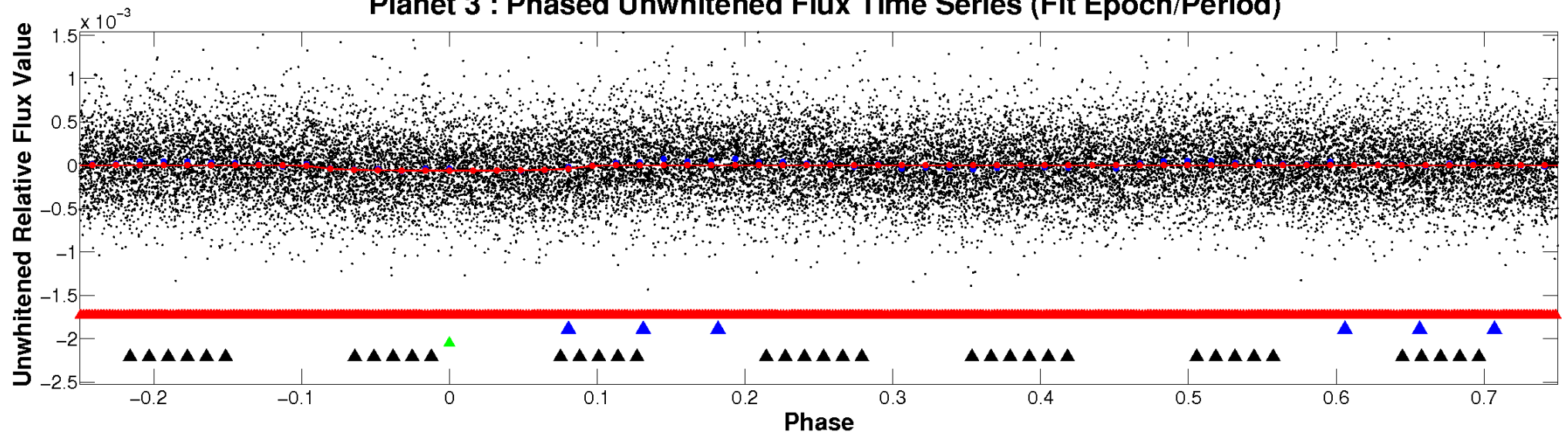
ALT Odd/Even

TCE 010345921-03

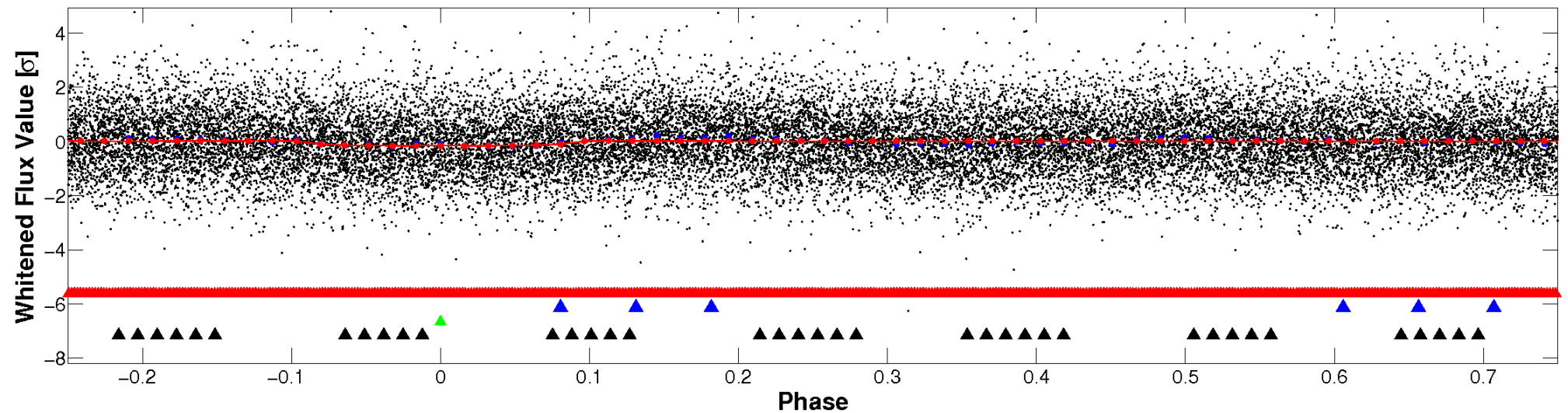


Non-Whitened Vs. Whitened Light Curve

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

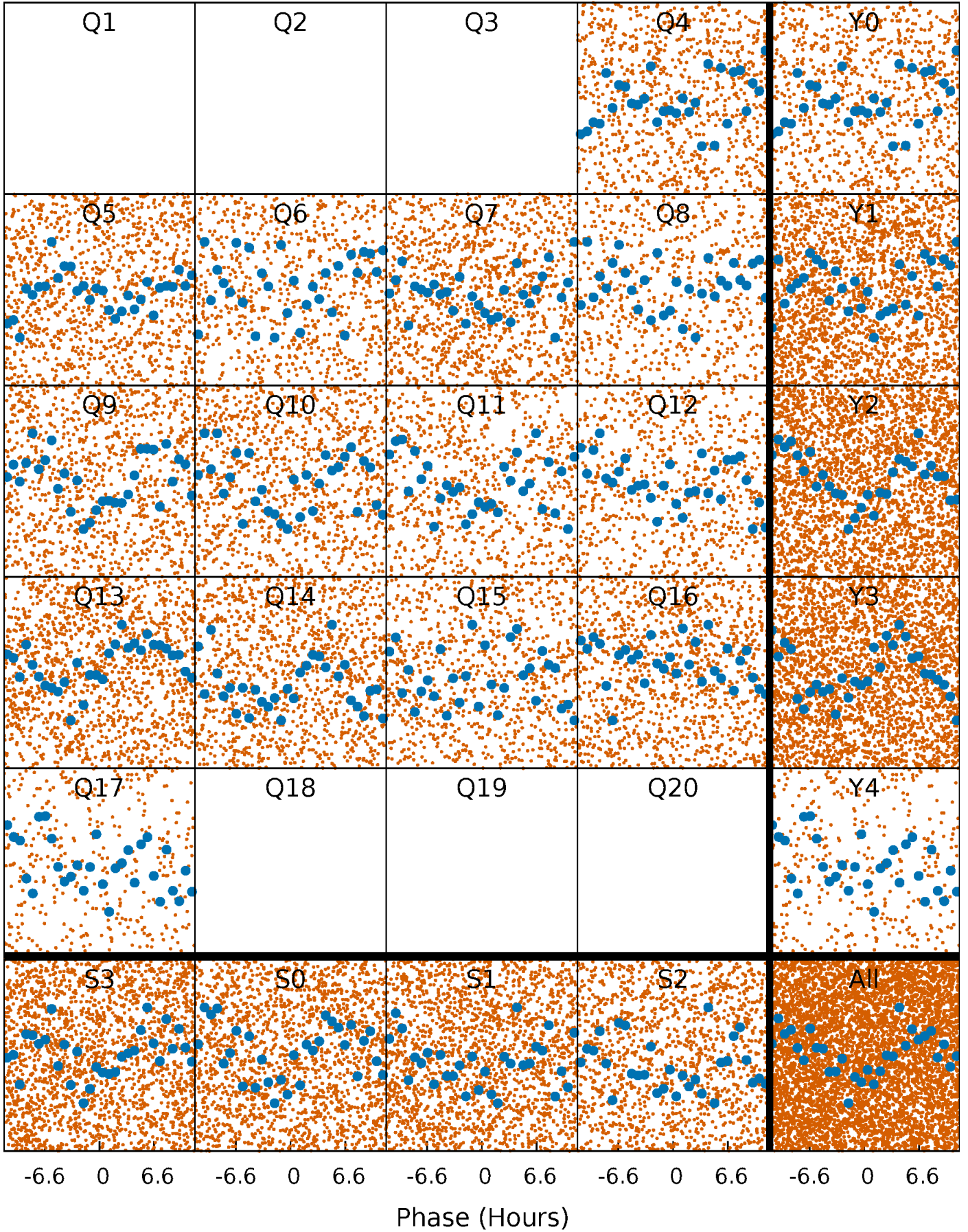


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



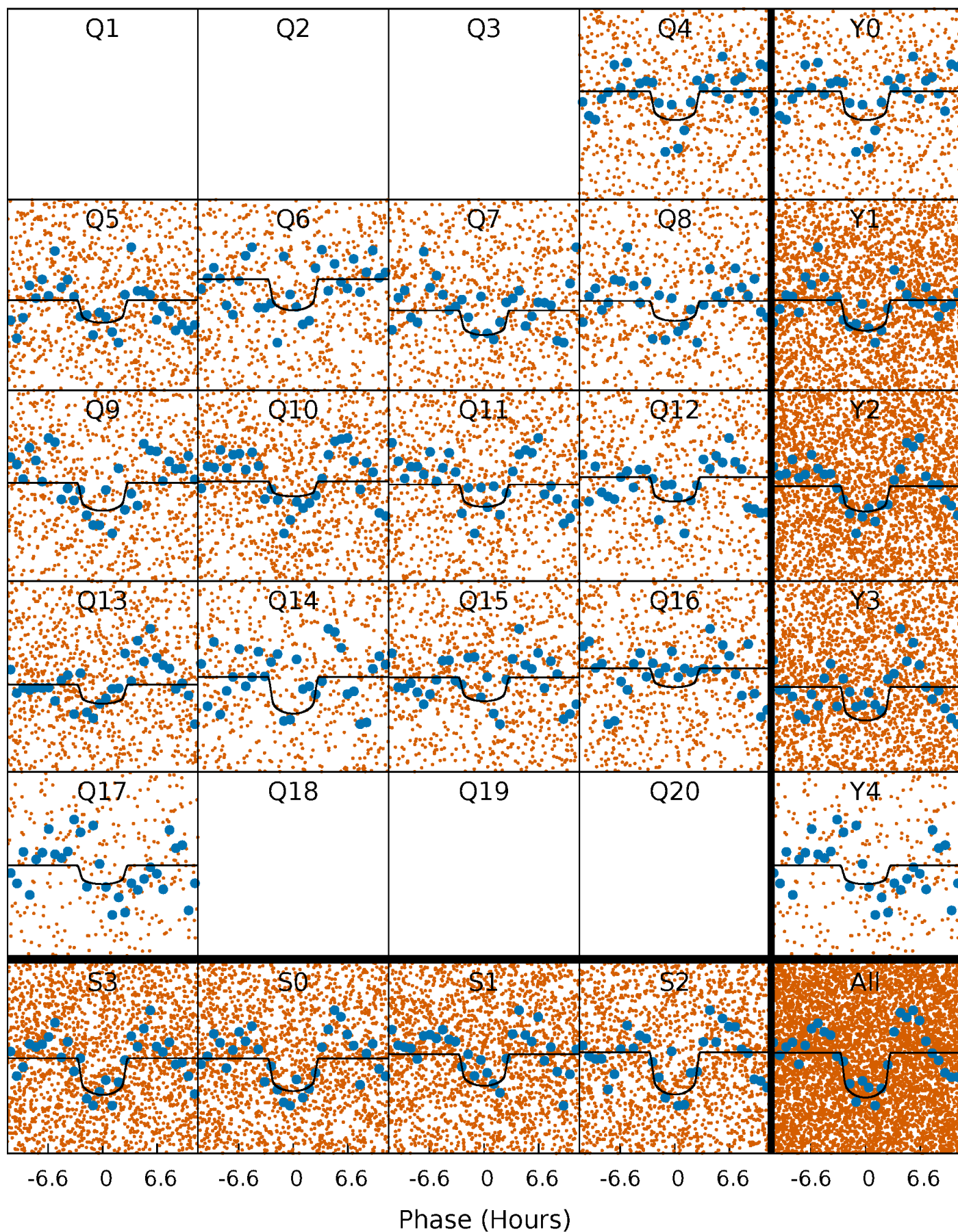
PDC Quarter-Phased Transit Curves

TCE 010345921-03 P= 1.268481 Days $T_0=132.006042$ (BKJD)



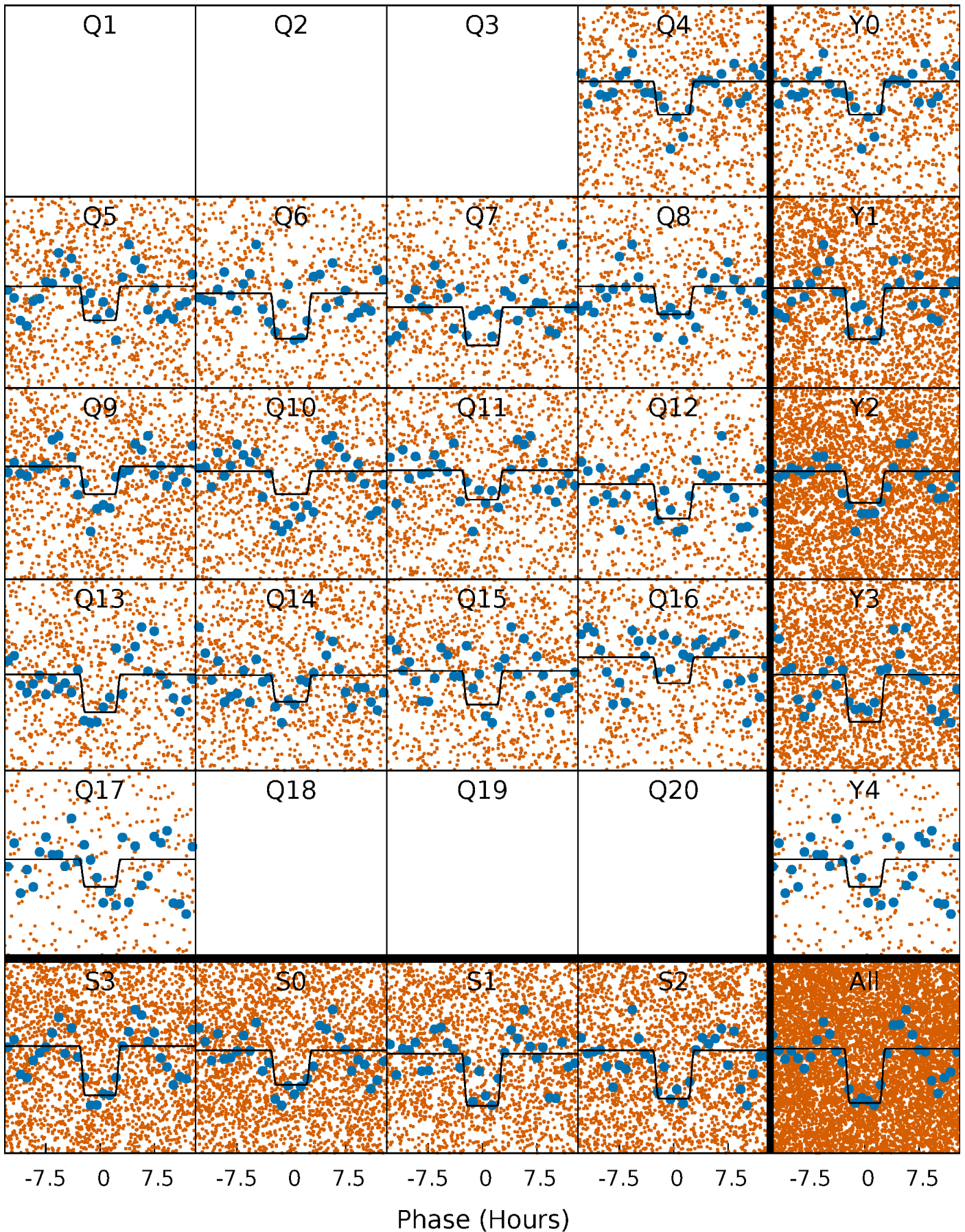
DV Quarter-Phased Transit Curves

TCE 010345921-03 P= 1.268481 Days $T_0=132.006042$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

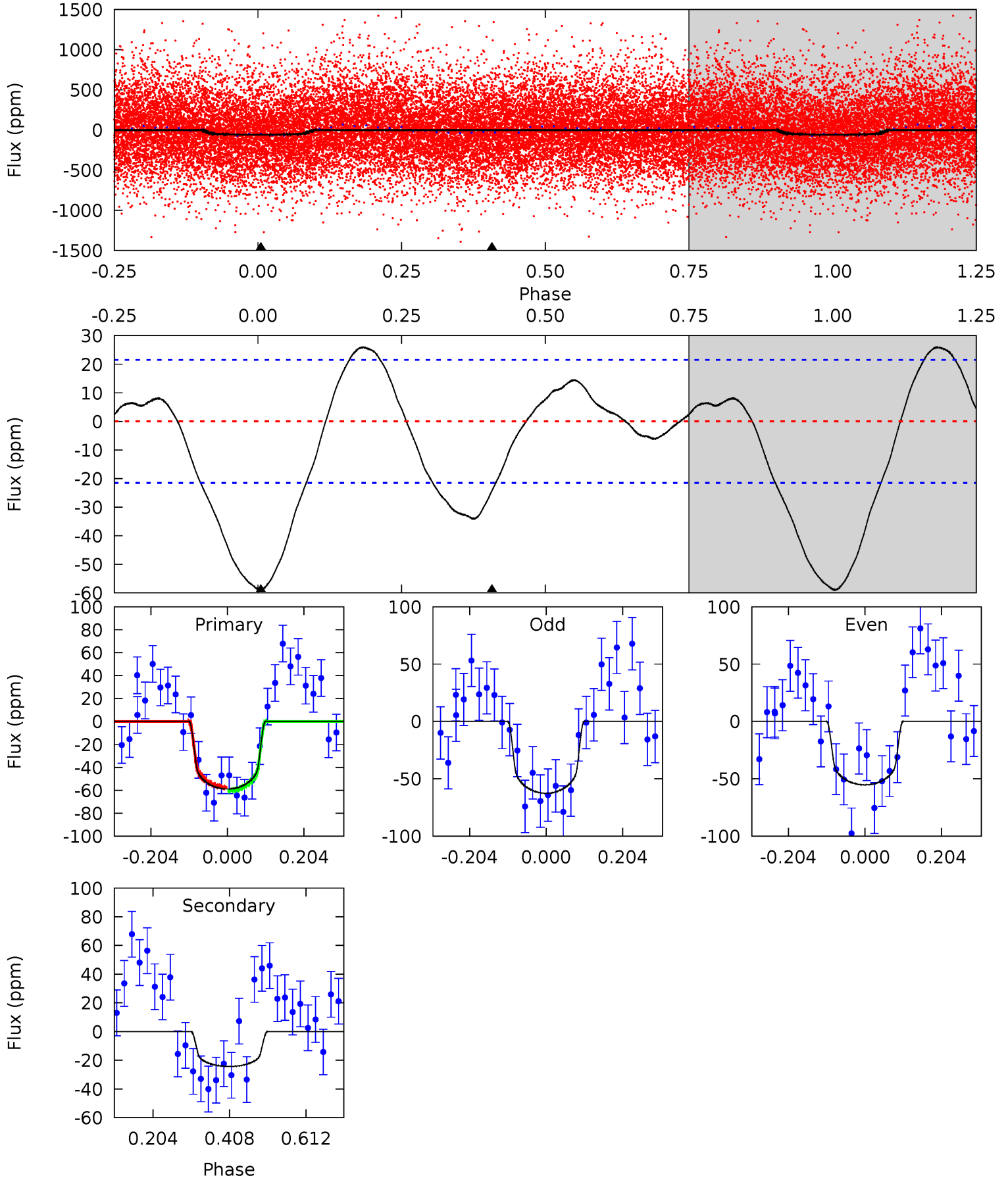
TCE 010345921-03 $P = 1.268533$ Days $T_0 = 131.972729$ (BKJD)



DV Model-Shift Uniqueness Test

010345921-03, P = 1.268481 Days, E = 132.006042 Days

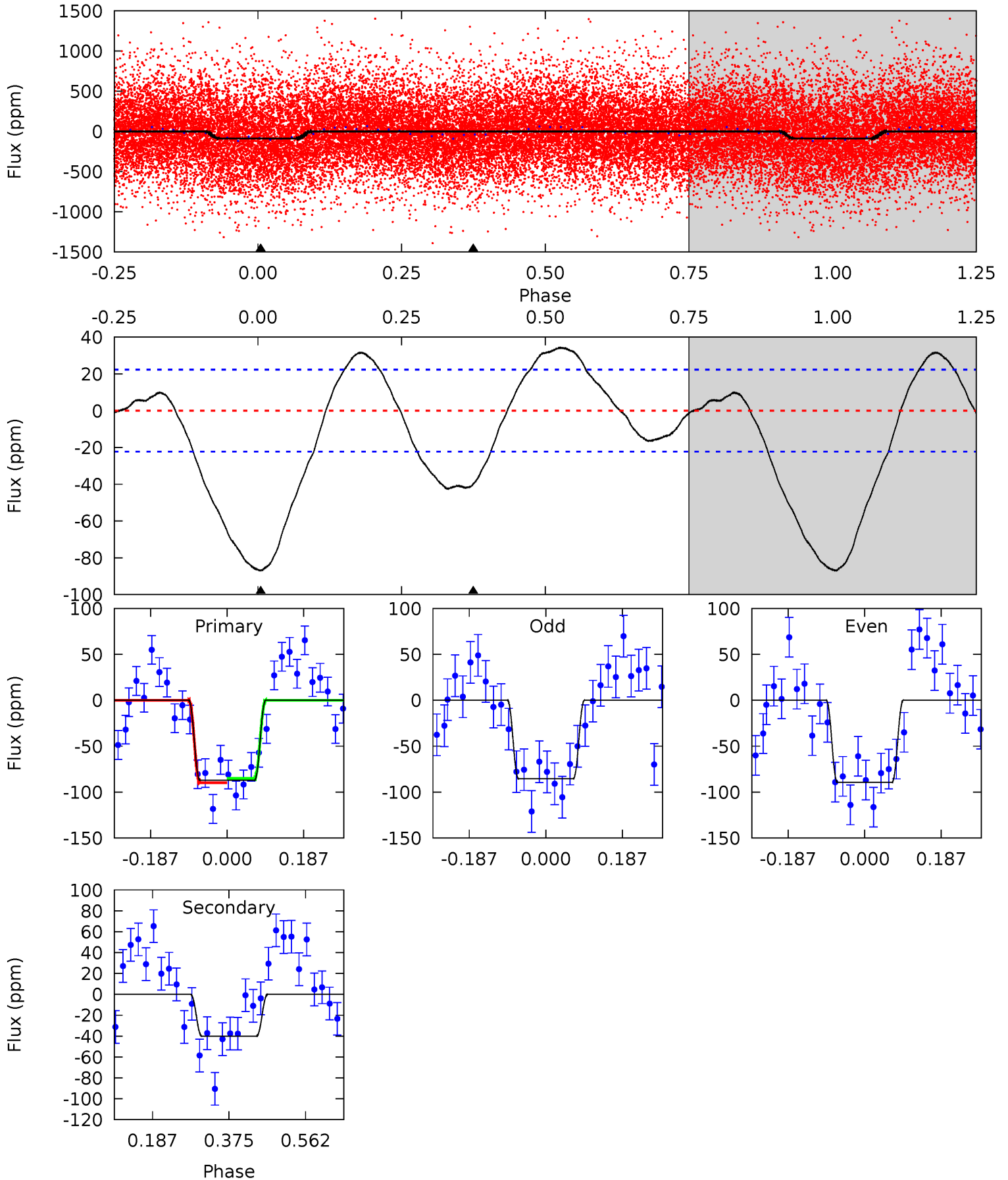
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	4.99	0	0	4.41	1.27	0.86	12.1	12.1	4.99	4.99	0.75	0.82	0.31	0.29



Alt Model-Shift Uniqueness Test

010345921-03, P = 1.268533 Days, E = 131.972729 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	7.96	0	0	4.43	1.32	2.26	17.3	17.3	7.96	7.96	0.38	1.15	0.28	0.47



Stellar Parameters For KIC 010345921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5841^{+184}_{-204}	$4.520^{+0.035}_{-0.196}$	$0.070^{+0.250}_{-0.350}$	$0.931^{+0.260}_{-0.087}$	$1.047^{+0.113}_{-0.139}$	$1.828^{+0.426}_{-0.887}$
	+3%/-3%	+1%/-4%	+357%/-500%	+28%/-9%	+11%/-13%	+23%/-49%
Source	KIC0	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 010345921-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-24 ± 5	$0.93^{+0.50}_{-0.44}$	2331^{+148}_{-108}	4495^{+1503}_{-702}	$8.214^{+21.972}_{-4.942}$
Alt.	-40 ± 5	$1.02^{+0.48}_{-0.48}$	2335^{+159}_{-107}	4791^{+1559}_{-689}	11^{+26}_{-6}

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

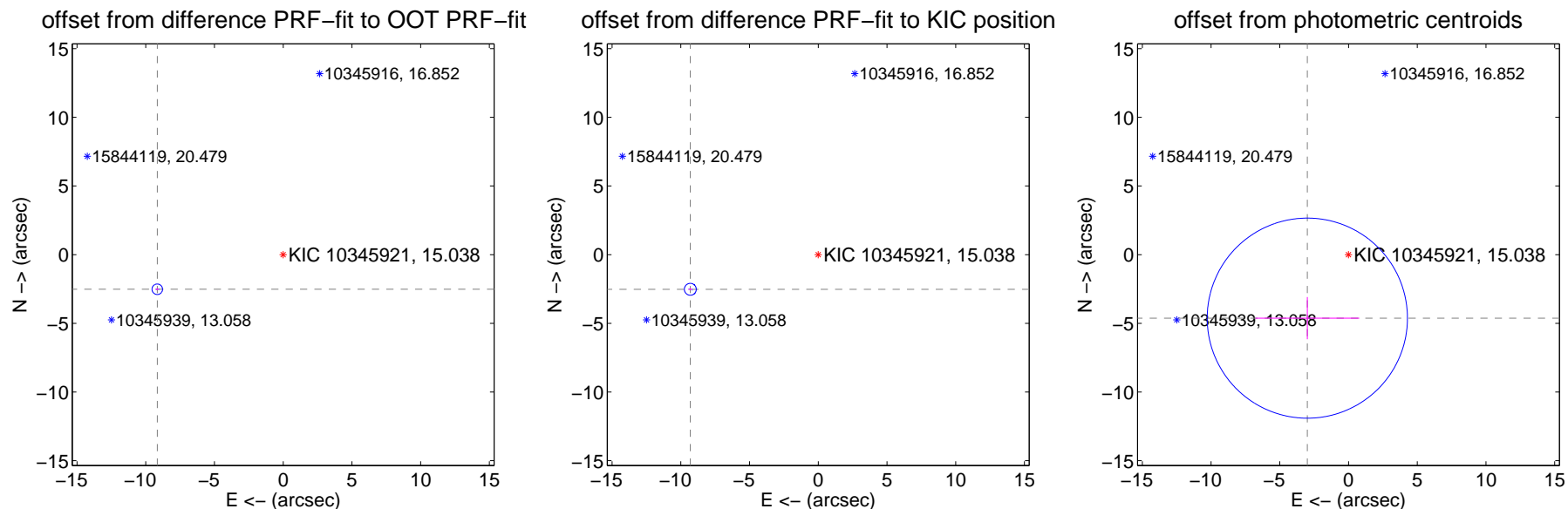
DV Centroid Data

Supplemental centroid analysis for 010345921-03. Kepler magnitude: 15.04. Transit SNR 9.38

There are 2 quarters with good PRF difference image offsets

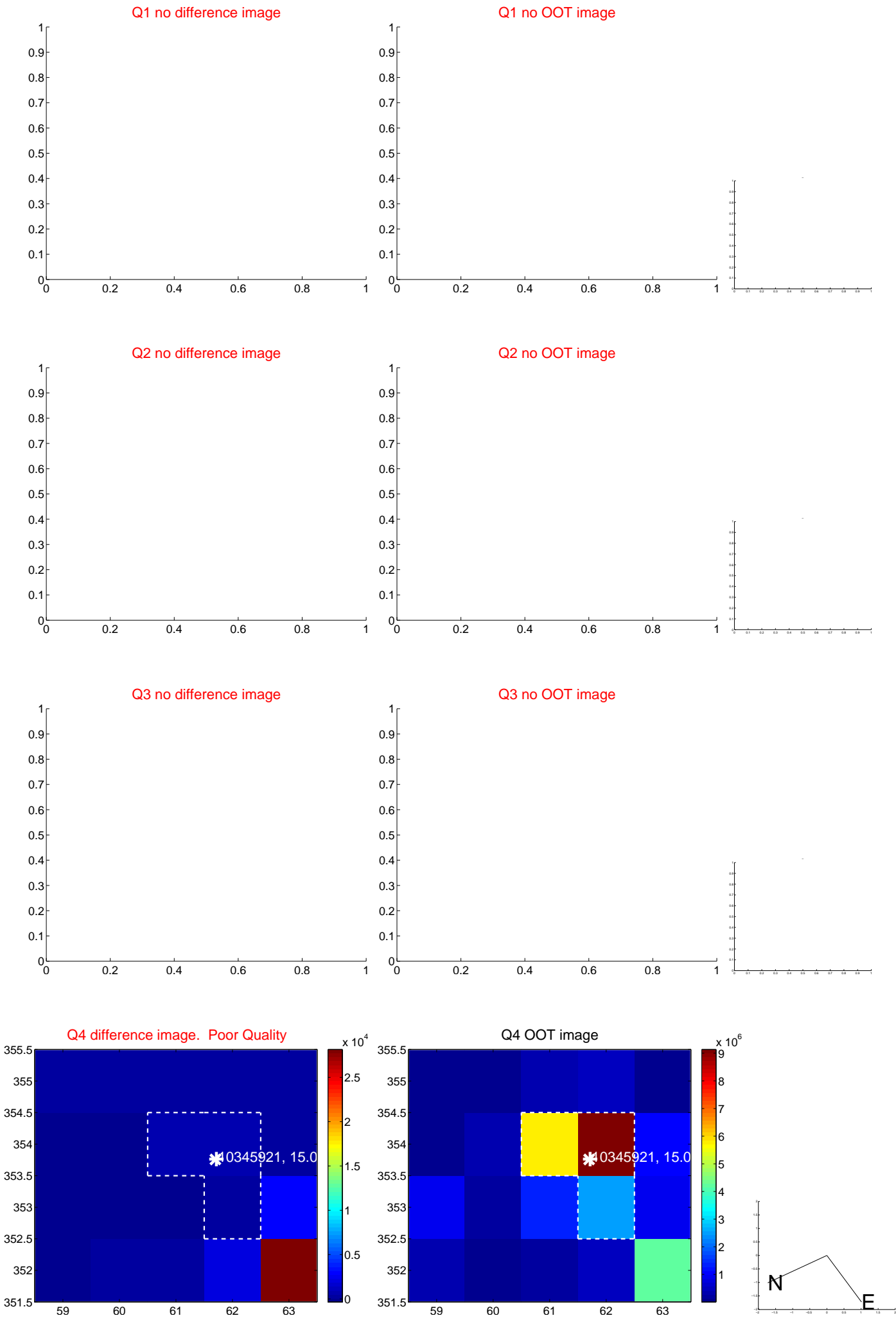
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.503 ± 0.128	74.40	9.163 ± 0.131	-2.519 ± 0.067
PRF-fit source offset from KIC position	9.646 ± 0.145	66.73	9.310 ± 0.149	-2.523 ± 0.072
photometric centroid source offset	5.51 ± 2.43	2.27	3.00 ± 3.78	-4.62 ± 1.54

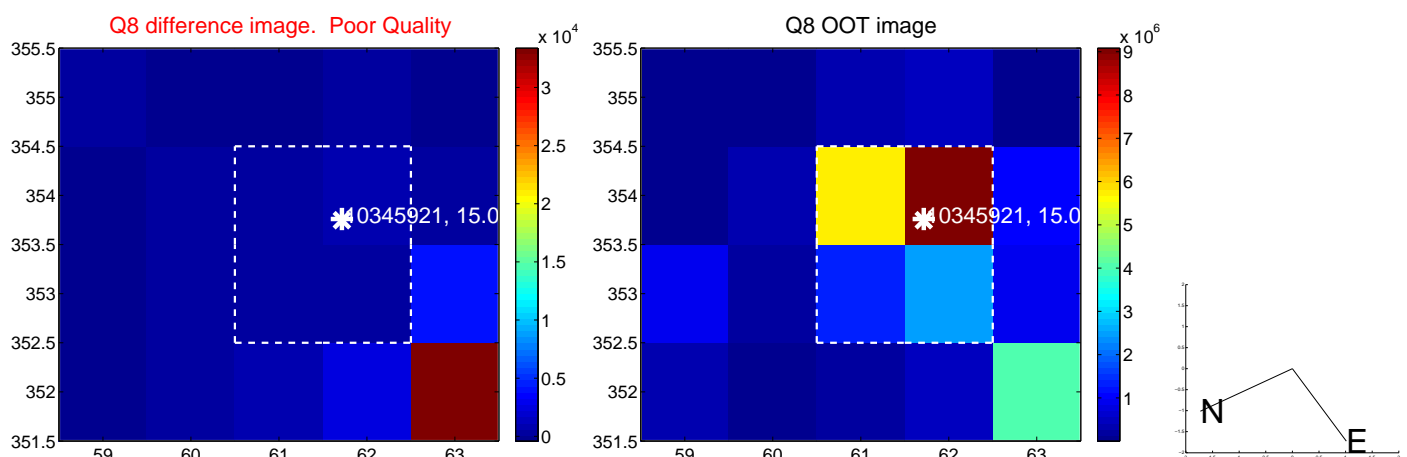
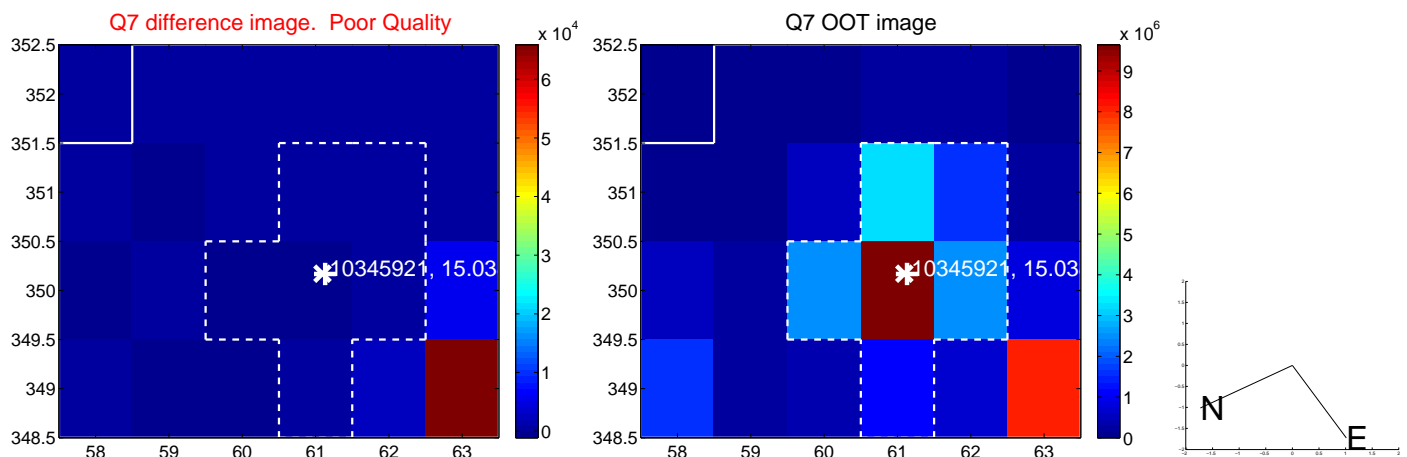
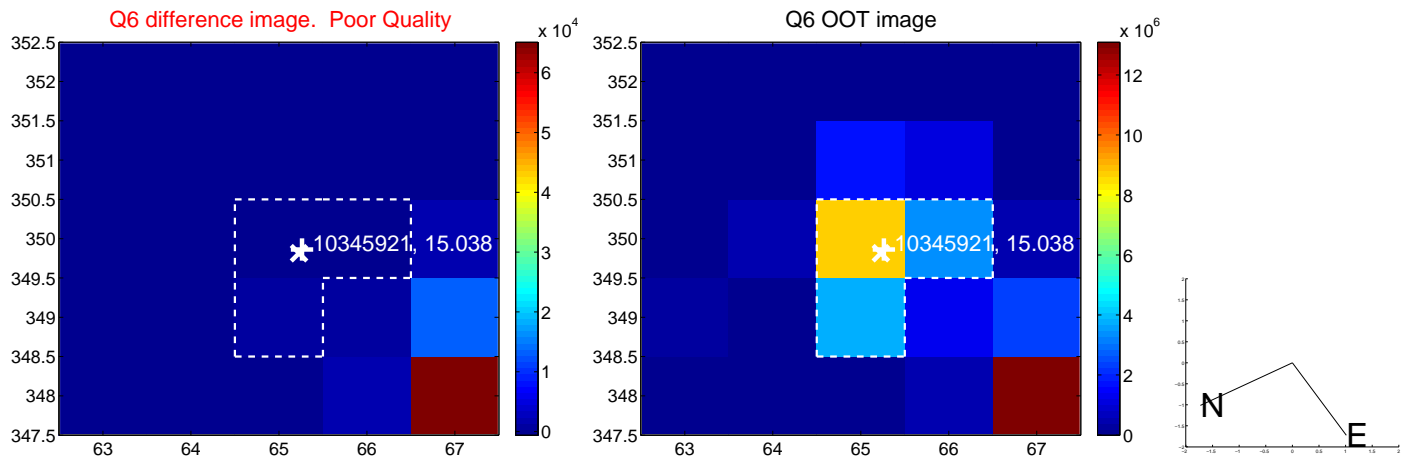
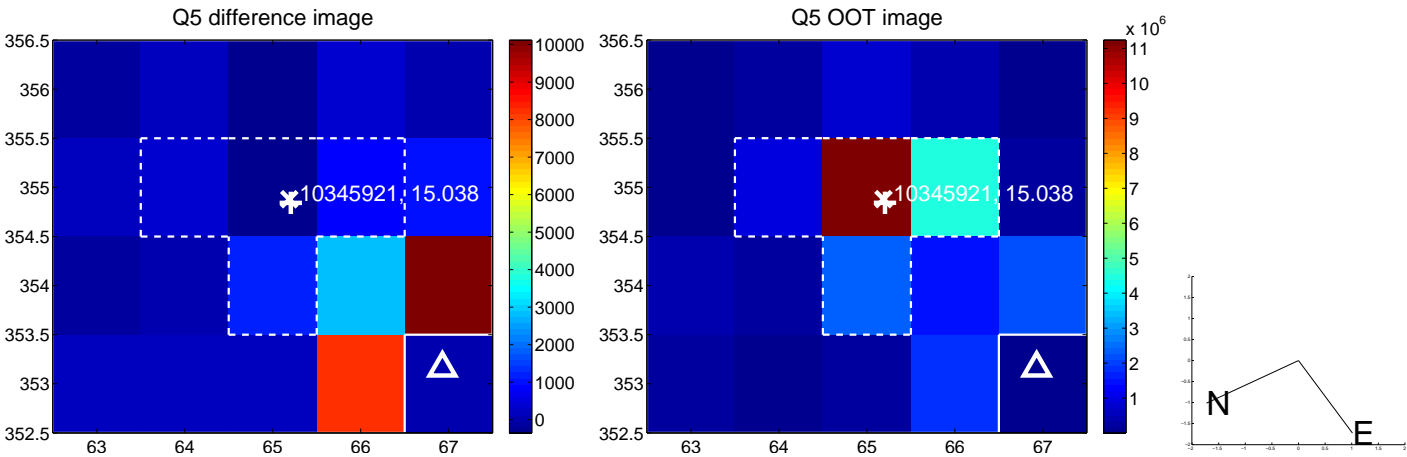


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

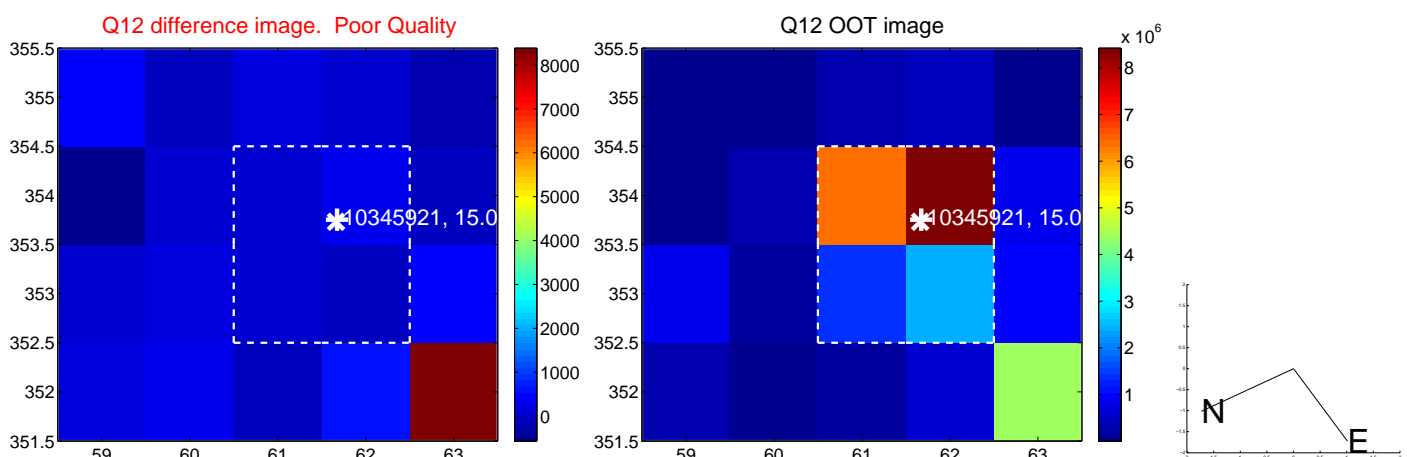
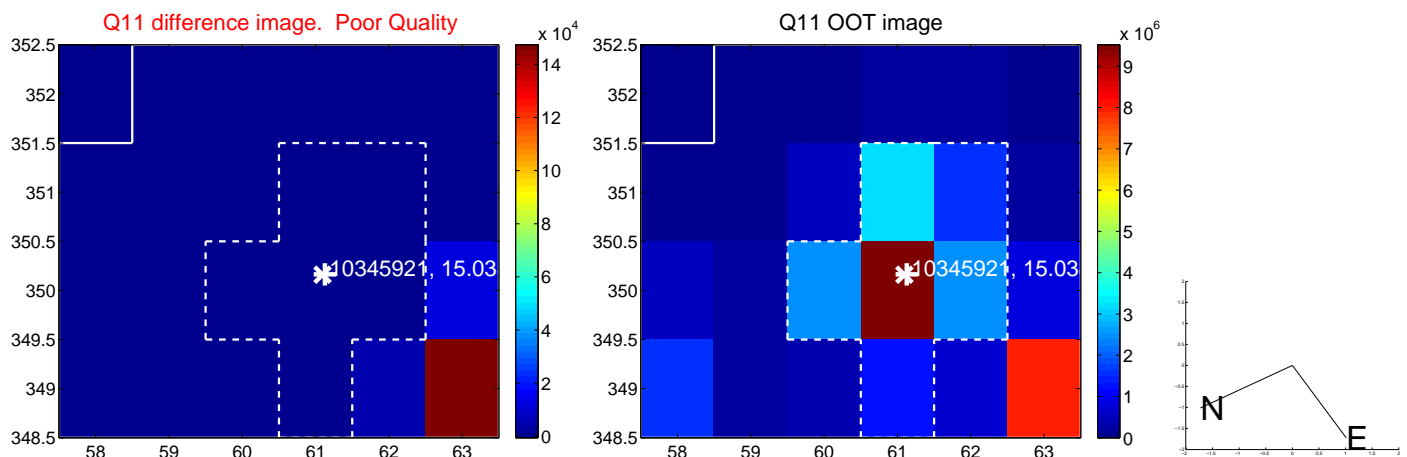
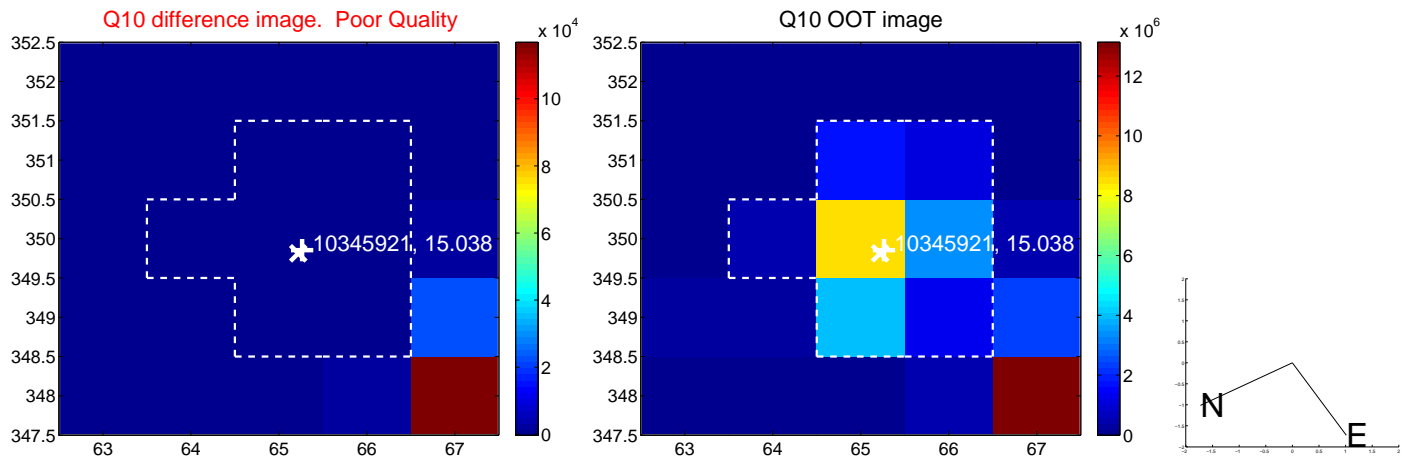
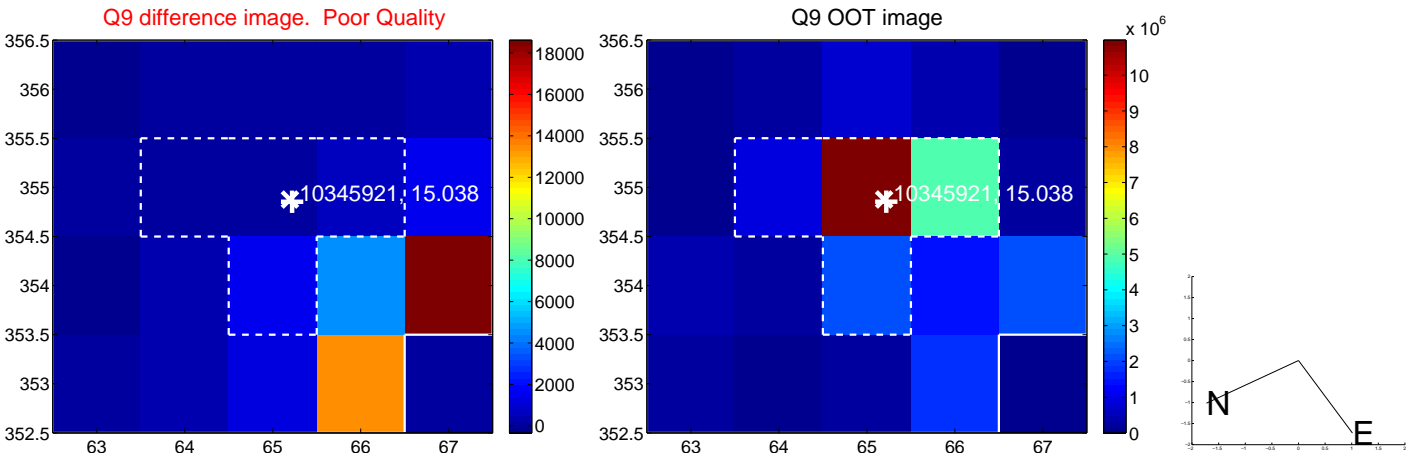
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



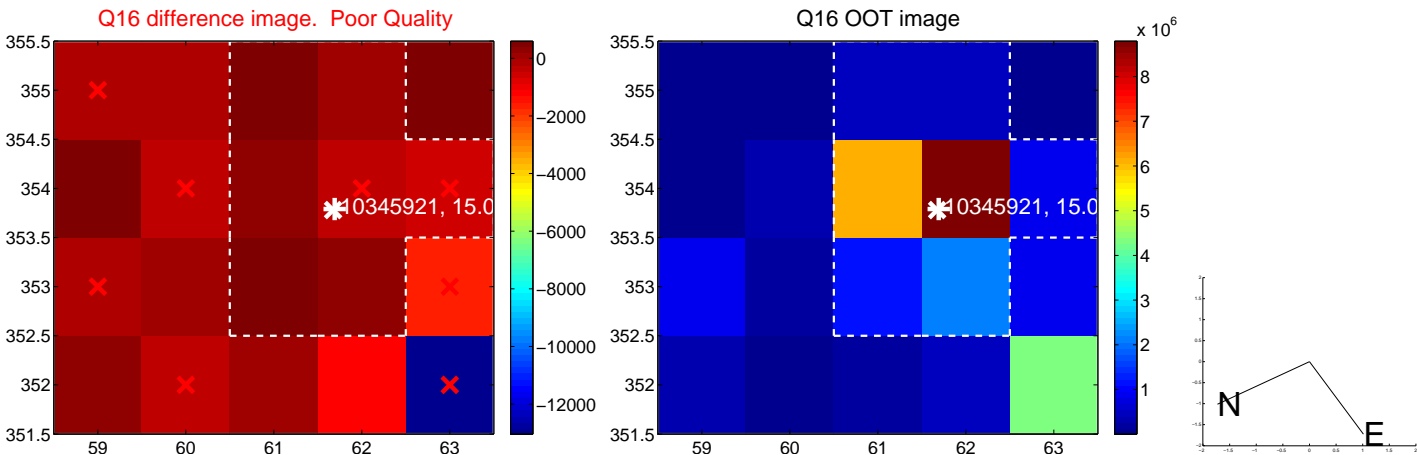
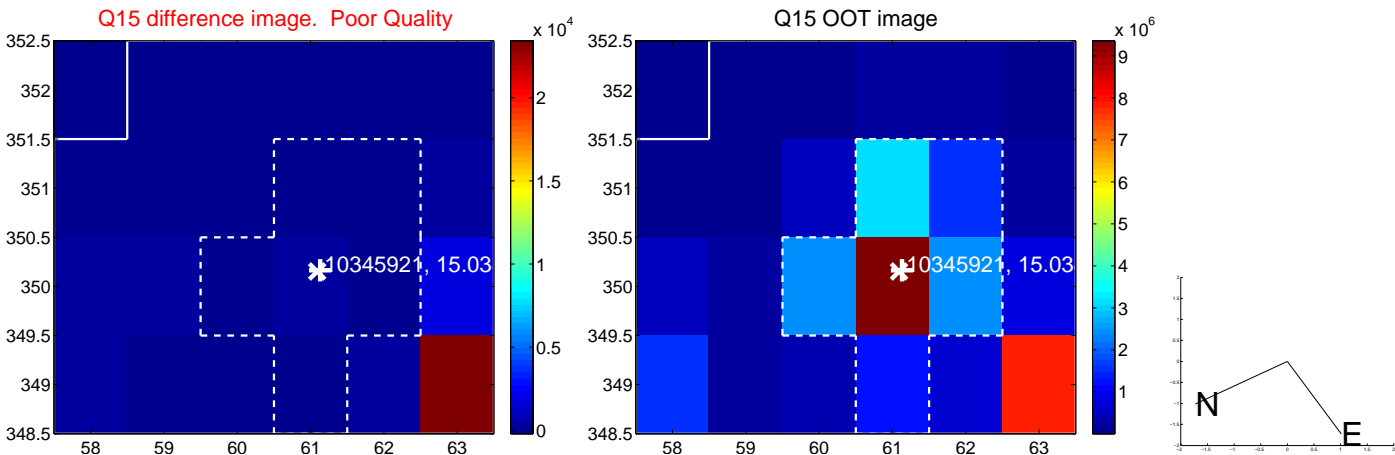
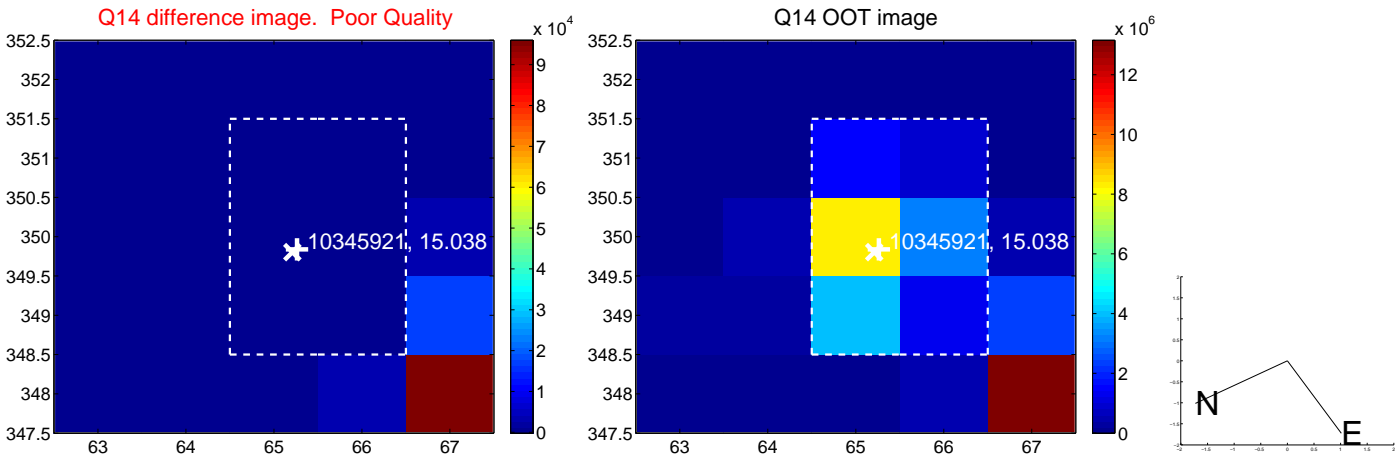
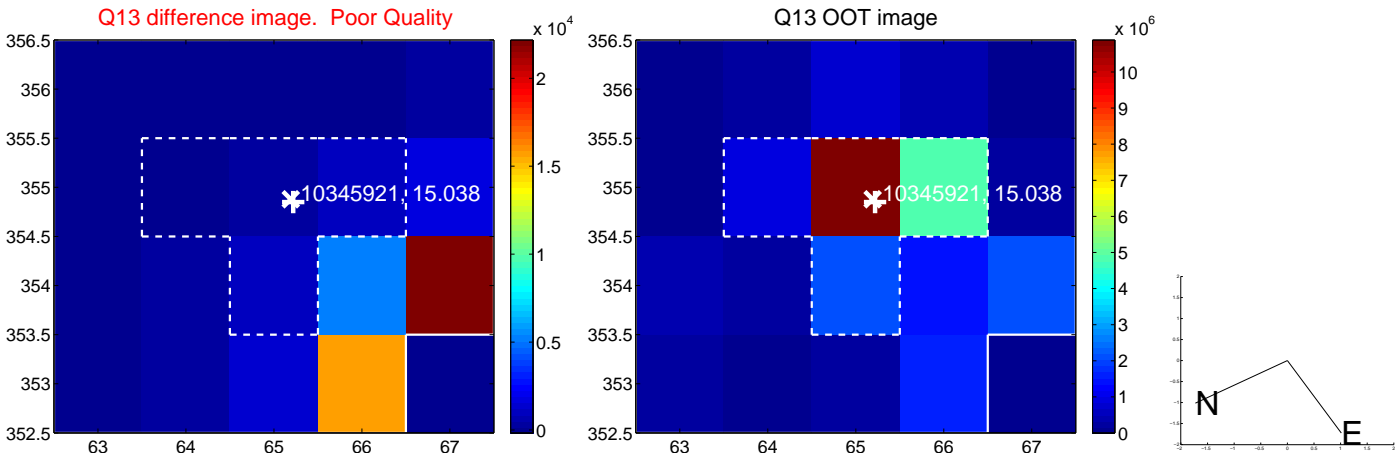
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



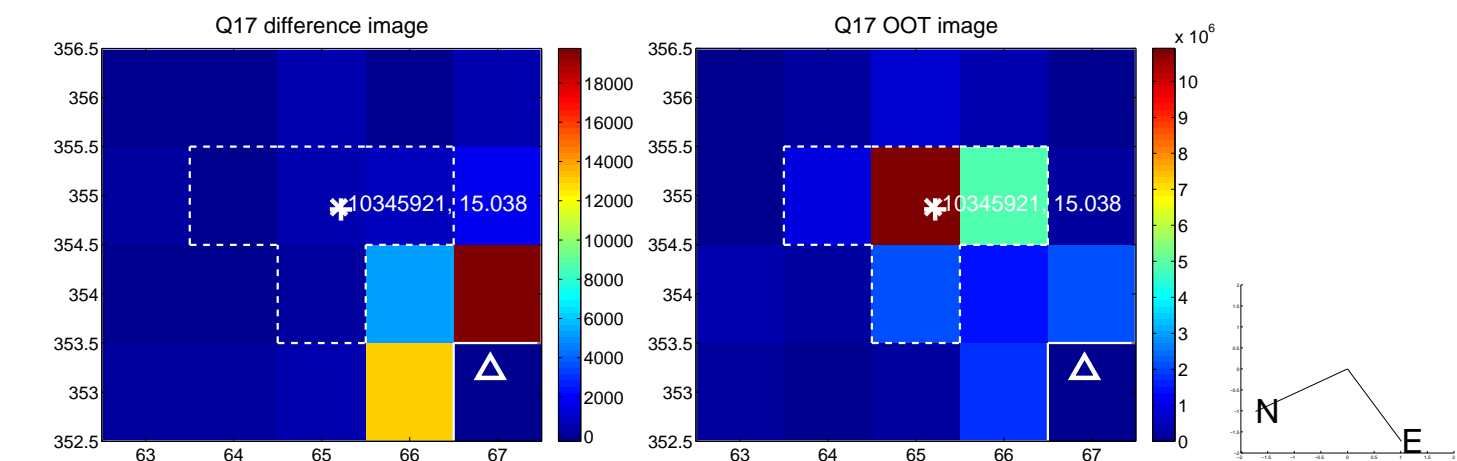
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



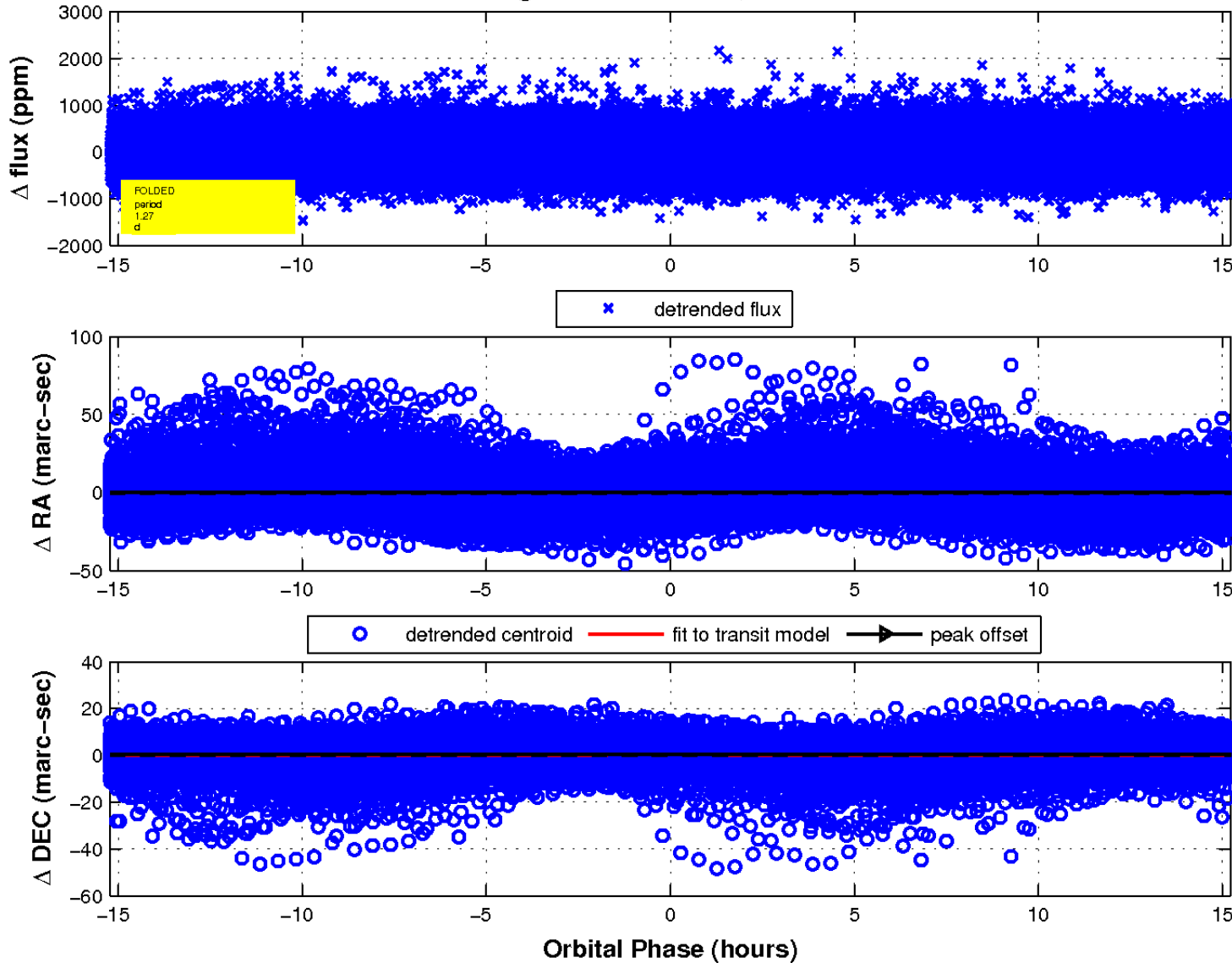
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

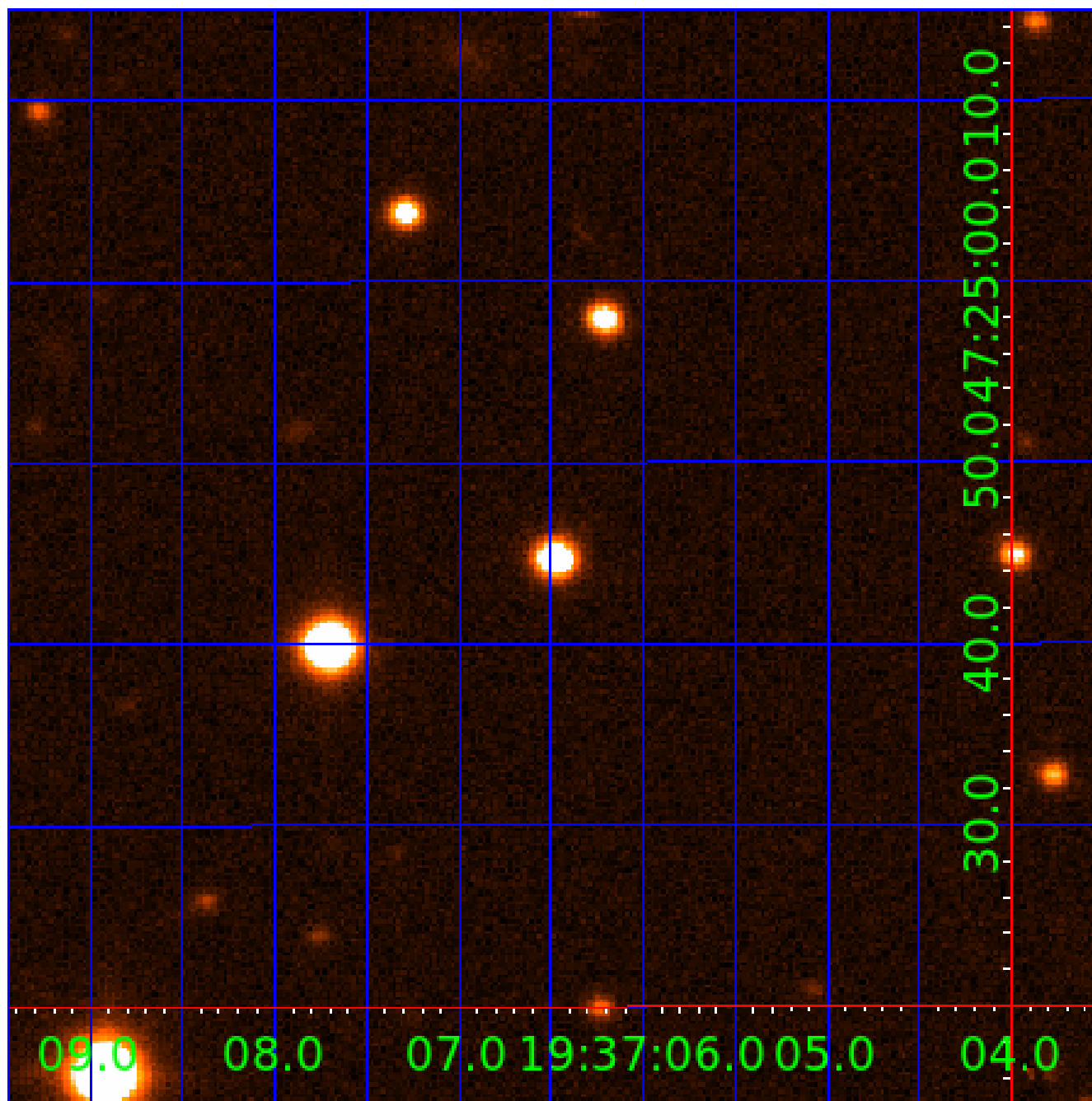


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 010345921

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})
010345921-01	OBS	No	1.618493	132.078999	48.9	6.786	8.5	9.0	0.93	5841	0.66	1204.10
010345921-02	OBS	No	256.835240	229.307493	470.3	11.626	9.5	7.2	0.93	5841	2.22	1.40
010345921-03	OBS	No	1.268481	132.006042	63.1	5.766	8.7	9.4	0.93	5841	0.88	1666.34
010345921-04	OBS	No	38.600397	146.407812	418.8	6.096	7.7	8.7	0.93	5841	2.20	17.54

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010345921-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010345921-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
010345921-03	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
010345921-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST

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

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

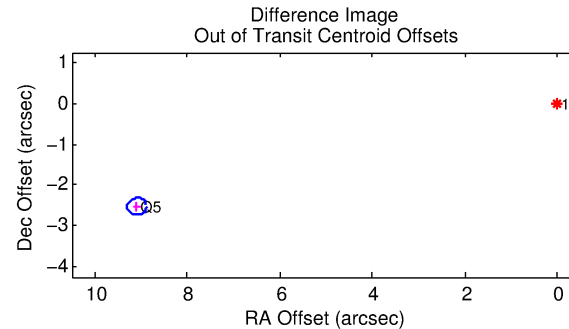
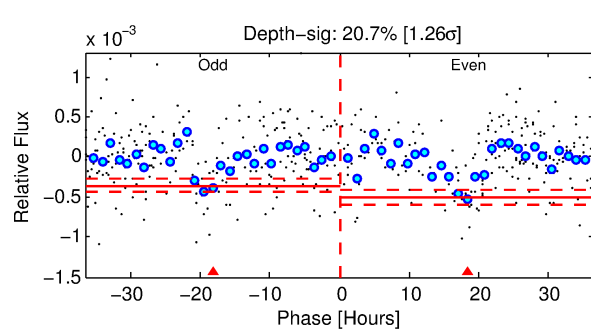
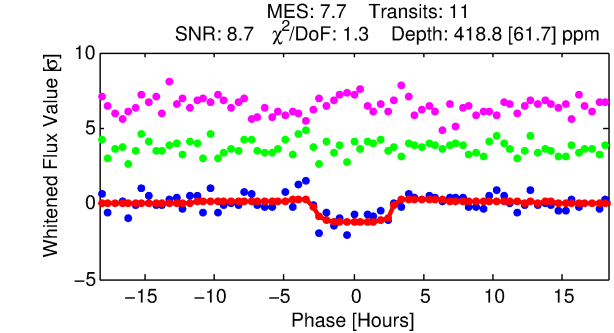
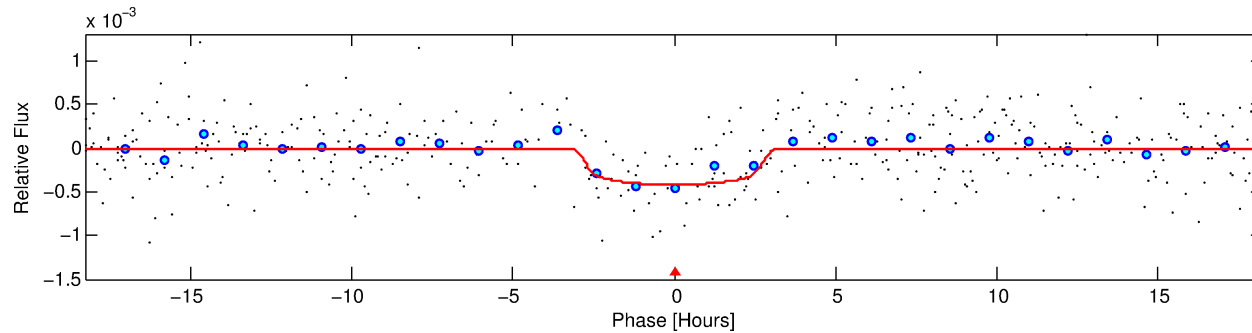
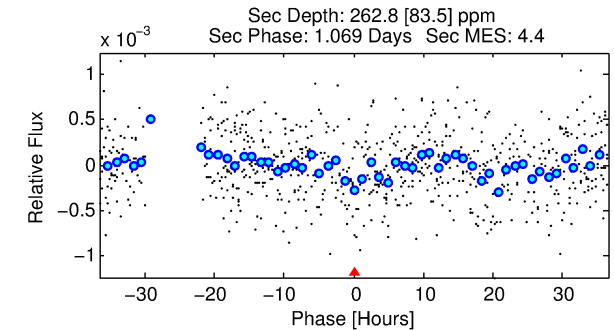
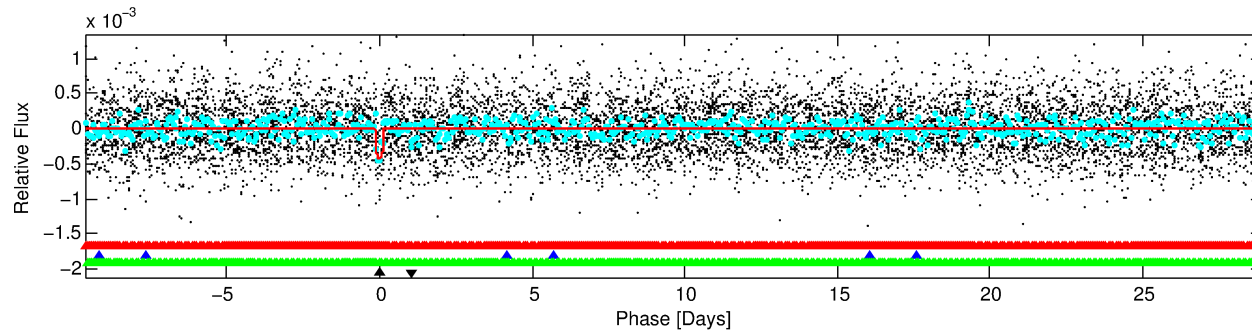
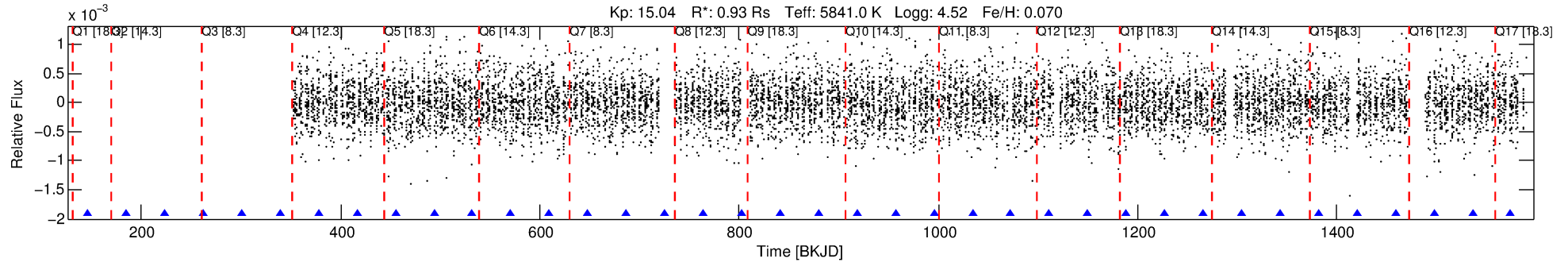
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010345921-04

No Significant Match Found

DV One-Page Summary

KIC: 10345921 Candidate: 4 of 4 Period: 38.600 d



DV Fit Results:

Period = 38.60040 [0.00078] d
Epoch = 146.4078 [0.0182] BKJD
Rp/R* = 0.0216 [0.0090]
a/R* = 26.25 [49.92]
b = 0.87 [0.55]
Seff = 17.54 [6.67]
Teq = 522 [50] K
Rp = 2.20 [1.10] Re
a = 0.2270 [0.0543] AU
Ag = 1540.90 [1475.33] [1.04σ]
Teffp = 5055 [1138] K [3.98σ]

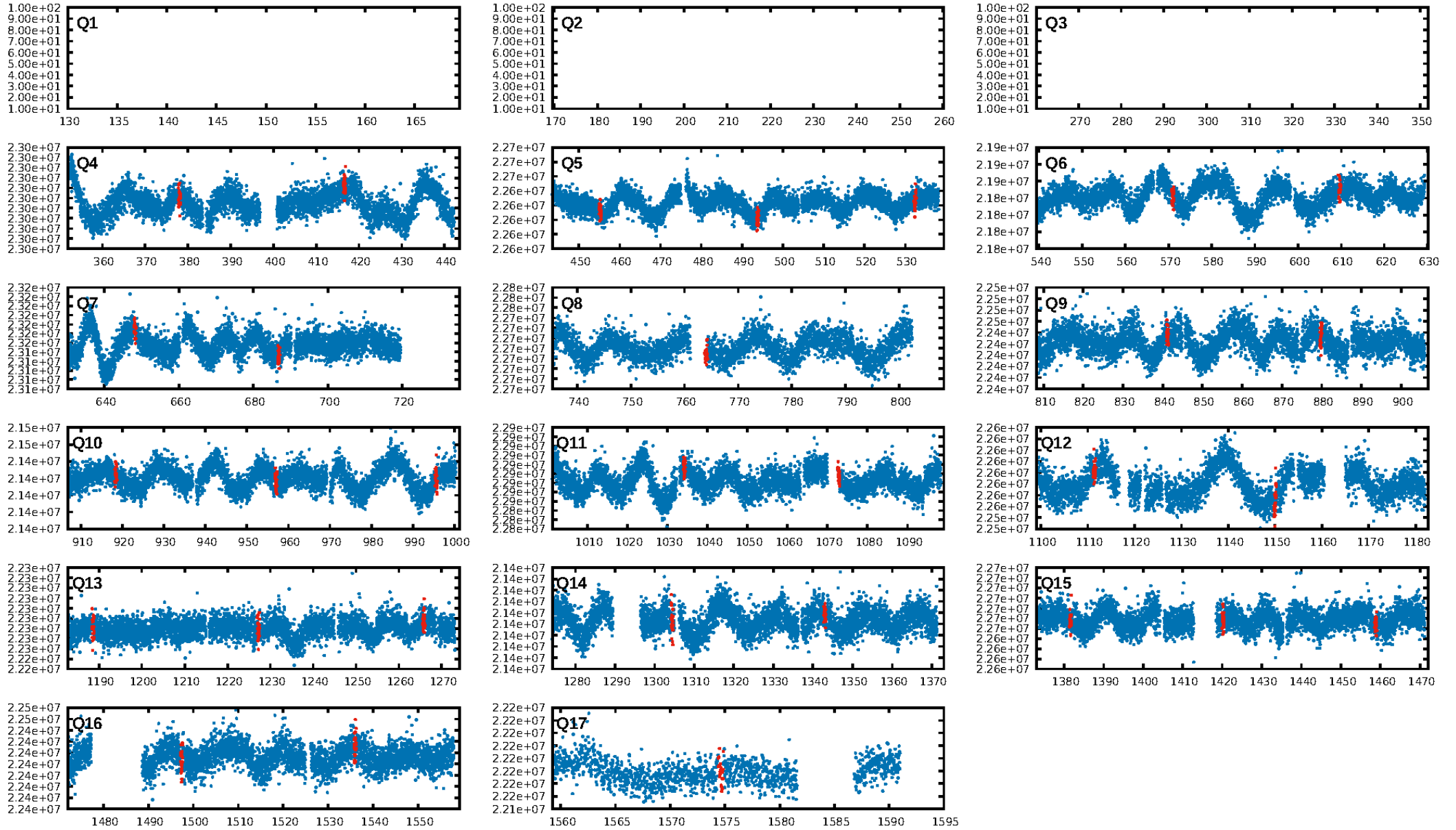
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [97.30σ]
LongPeriod-sig: 100.0% [398.99σ]
ModelChiSquare2-sig: 32.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.34e-10
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -0.2392
Centroid-sig: 0.2%
Centroid-so: 4.286 arcsec [1.85σ]
OotOffset-rm: 9.432 arcsec [136.54σ]
KicOffset-rm: 9.593 arcsec [139.10σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.00 [0/12]

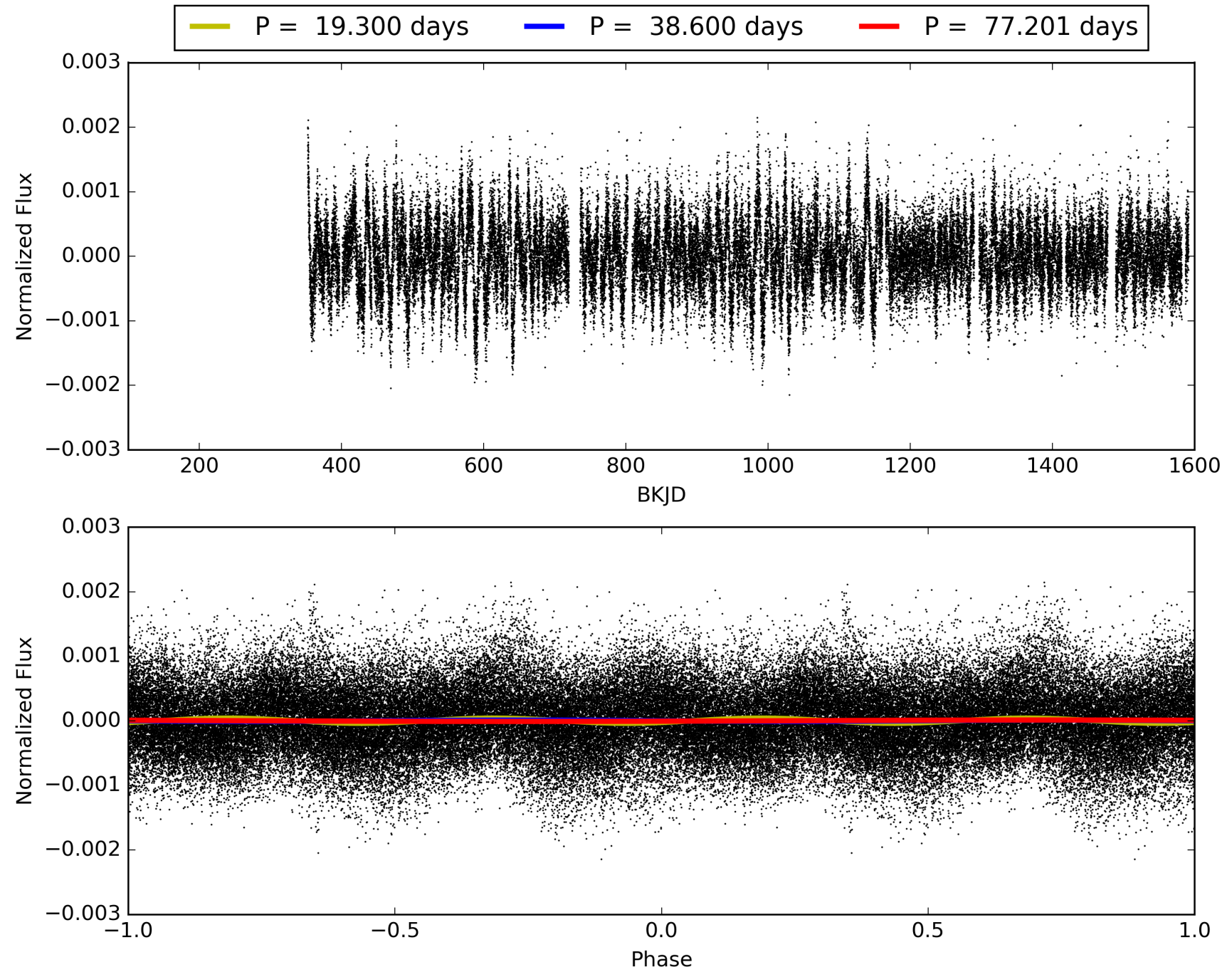
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:05:55 Z

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

TCE 010345921-04, PDC Light Curves

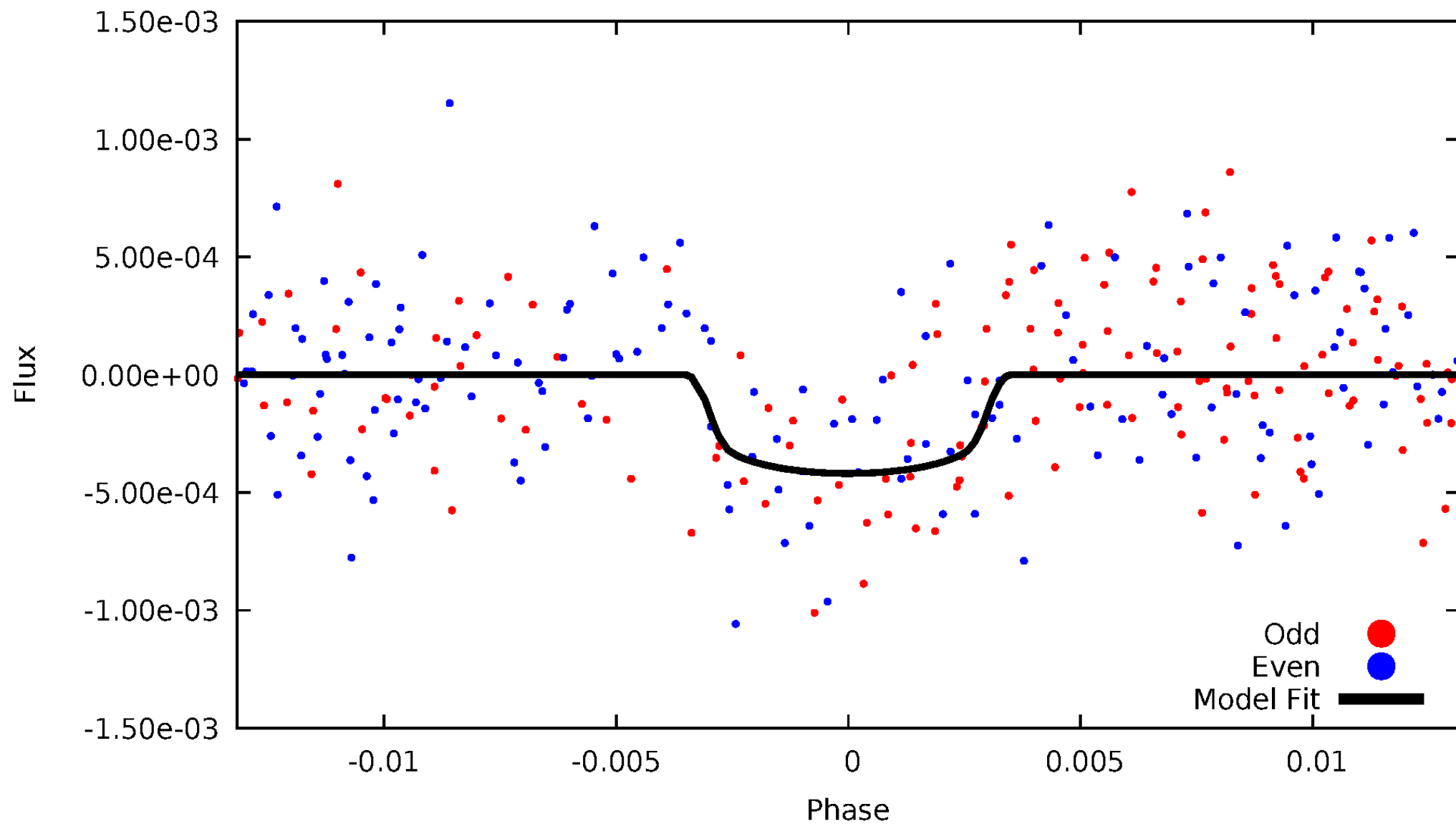


TCE 010345921-04



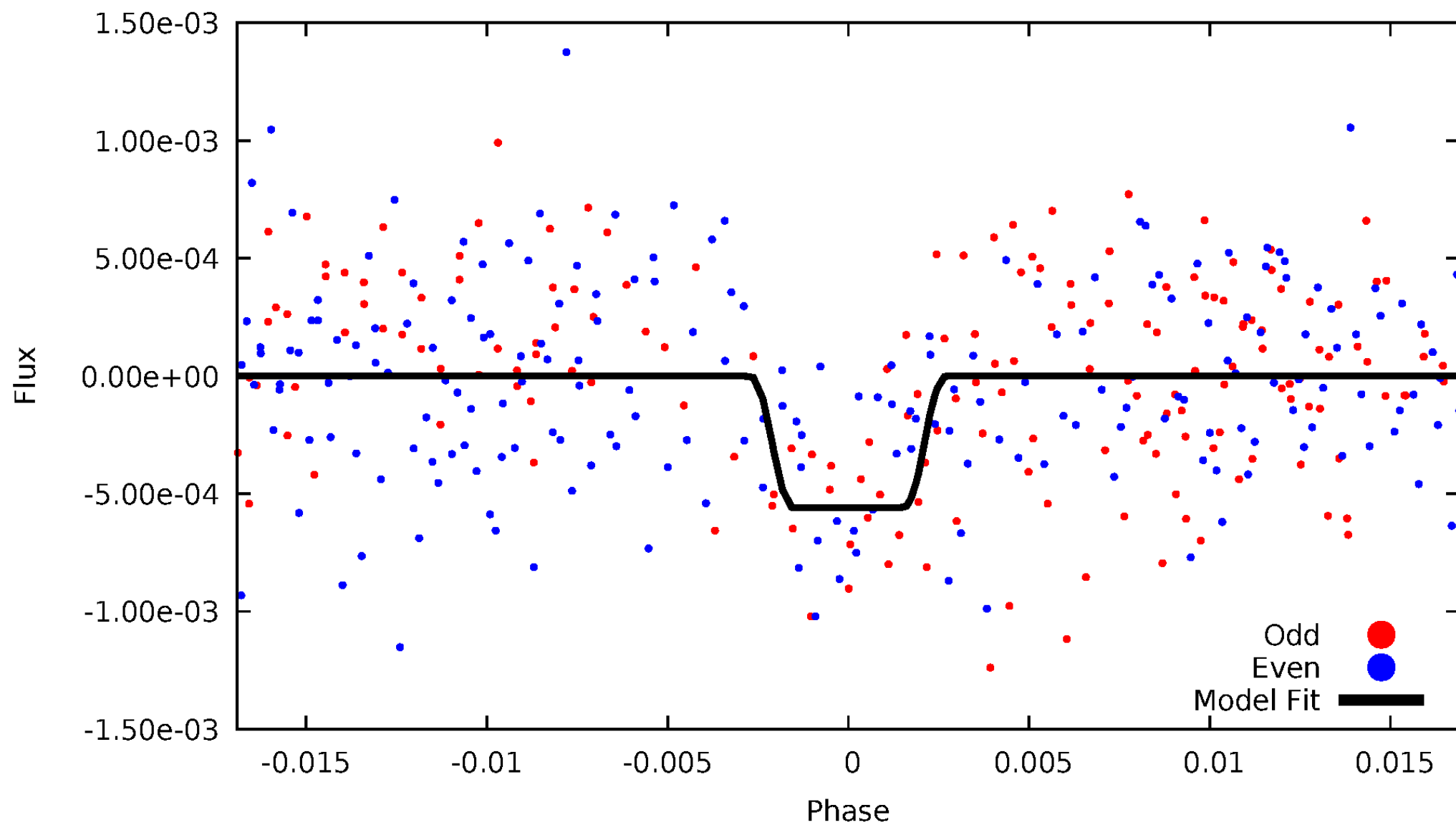
DV Odd/Even

TCE 010345921-04



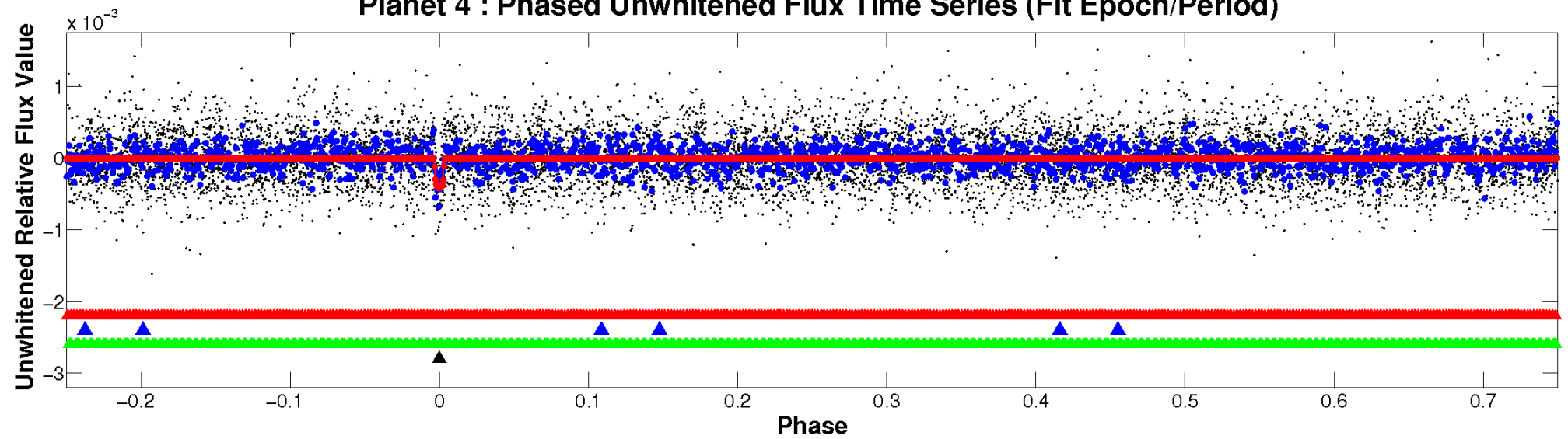
ALT Odd/Even

TCE 010345921-04

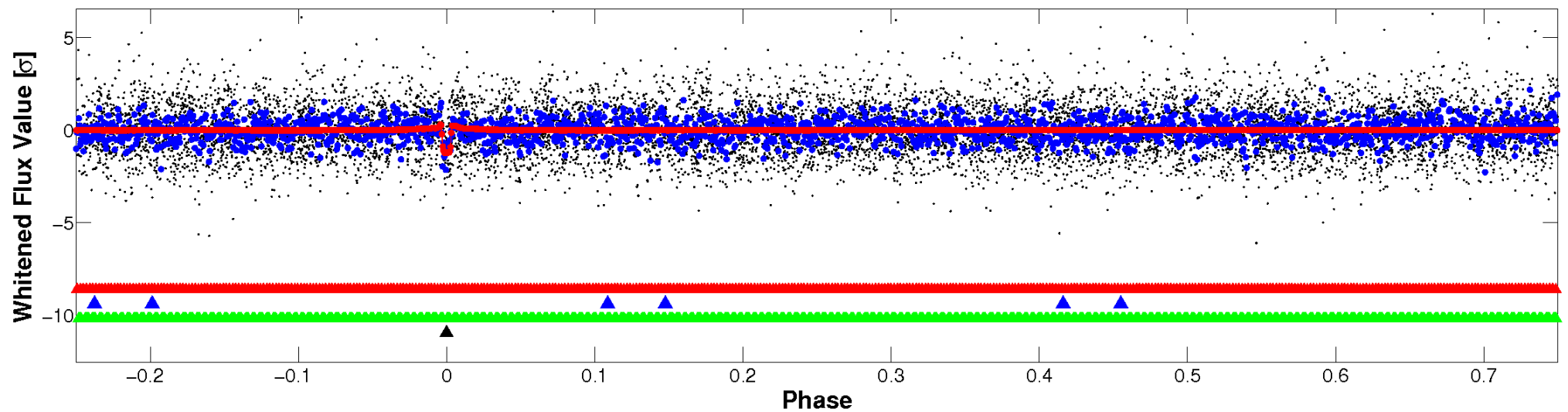


Non-Whitened Vs. Whitened Light Curve

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

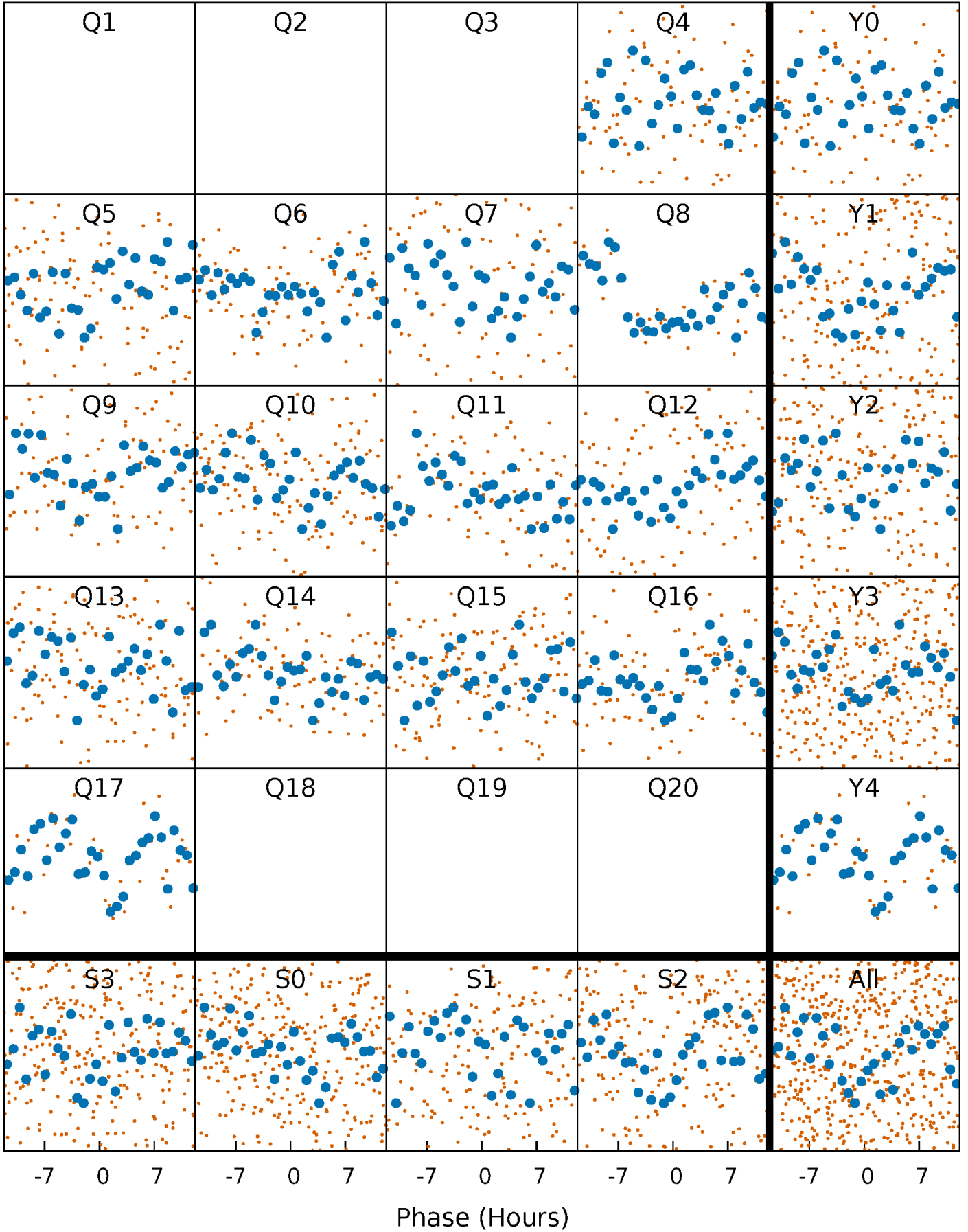


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



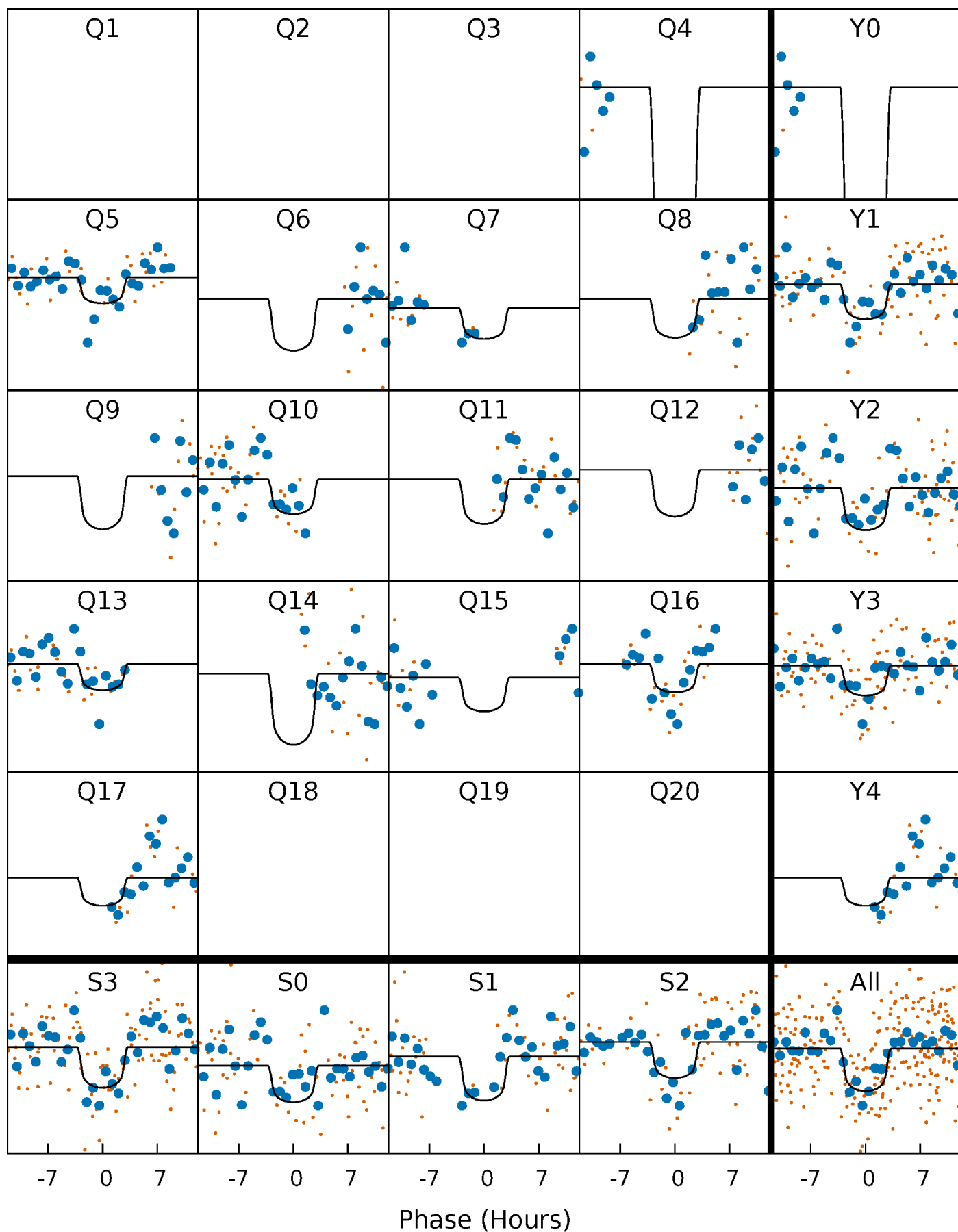
PDC Quarter-Phased Transit Curves

TCE 010345921-04 P= 38.600397 Days $T_0=146.407812$ (BKJD)



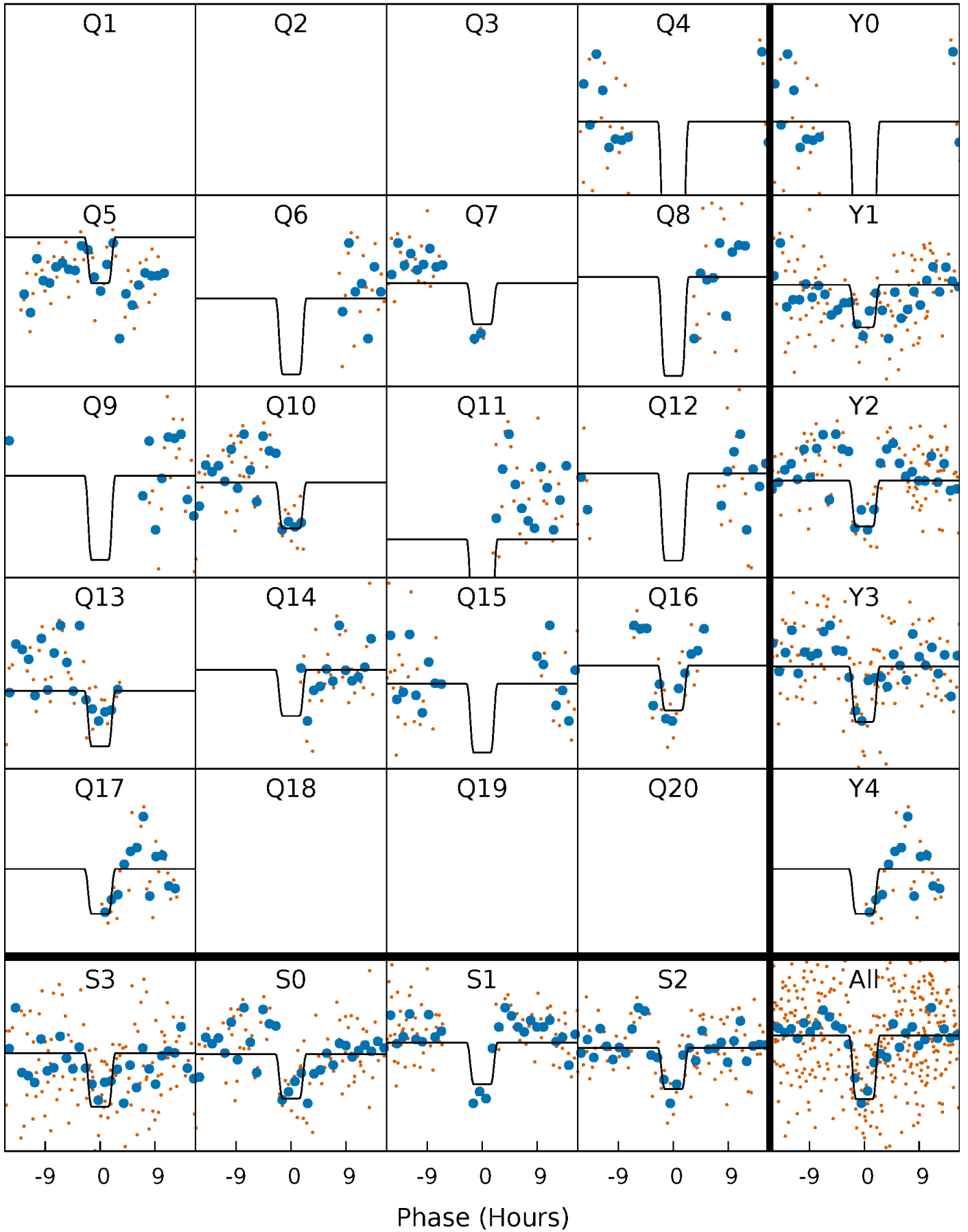
DV Quarter-Phased Transit Curves

TCE 010345921-04 $P = 38.600397$ Days $T_0 = 146.407812$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

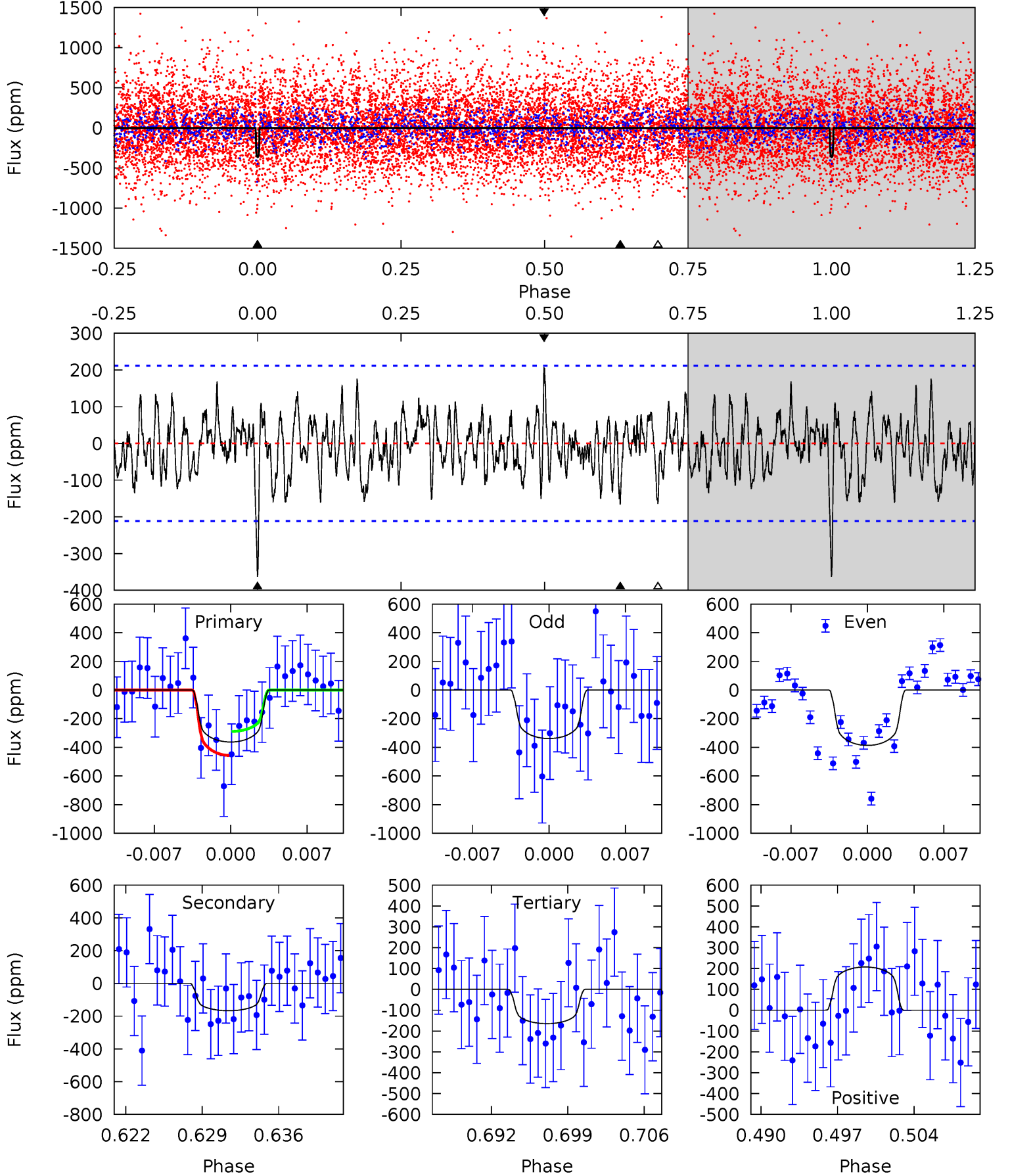
TCE 010345921-04 P= 38.603231 Days $T_0=146.320747$ (BKJD)



DV Model-Shift Uniqueness Test

010345921-04, P = 38.600397 Days, E = 146.407812 Days

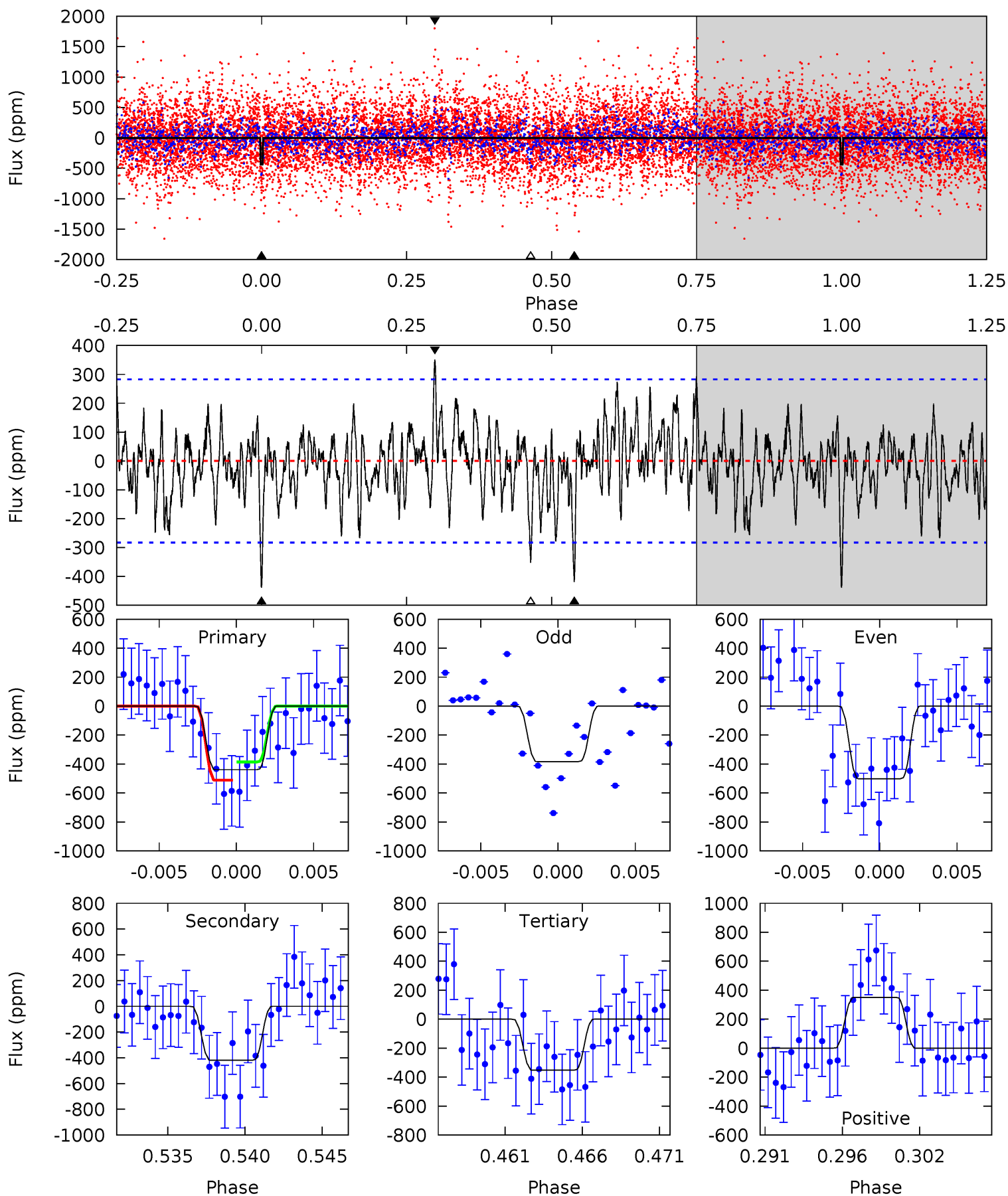
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.74	4.01	3.96	4.99	5.09	2.70	1.54	4.78	3.75	0.05	-0.97	0.58	0.69	0.36	1.99



Alt Model-Shift Uniqueness Test

010345921-04, P = 38.603231 Days, E = 146.320747 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.00	7.63	6.41	6.40	5.15	2.79	1.81	1.59	1.60	1.21	1.23	1.08	0.77	0.44	1.13



Stellar Parameters For KIC 010345921

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5841^{+184}_{-204}	$4.520^{+0.035}_{-0.196}$	$0.070^{+0.250}_{-0.350}$	$0.931^{+0.260}_{-0.087}$	$1.047^{+0.113}_{-0.139}$	$1.828^{+0.426}_{-0.887}$
	+3%/-3%	+1%/-4%	+357%/-500%	+28%/-9%	+11%/-13%	+23%/-49%
Source	KIC0	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 010345921-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-167 ± 42	$2.33^{+1.01}_{-0.99}$	749^{+45}_{-38}	4662^{+1155}_{-665}	849^{+1545}_{-459}
Alt.	-419 ± 55	$2.54^{+1.13}_{-0.98}$	747^{+51}_{-34}	5409^{+1566}_{-736}	1788^{+2949}_{-903}

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 $A_{obs} \gg 1.0$

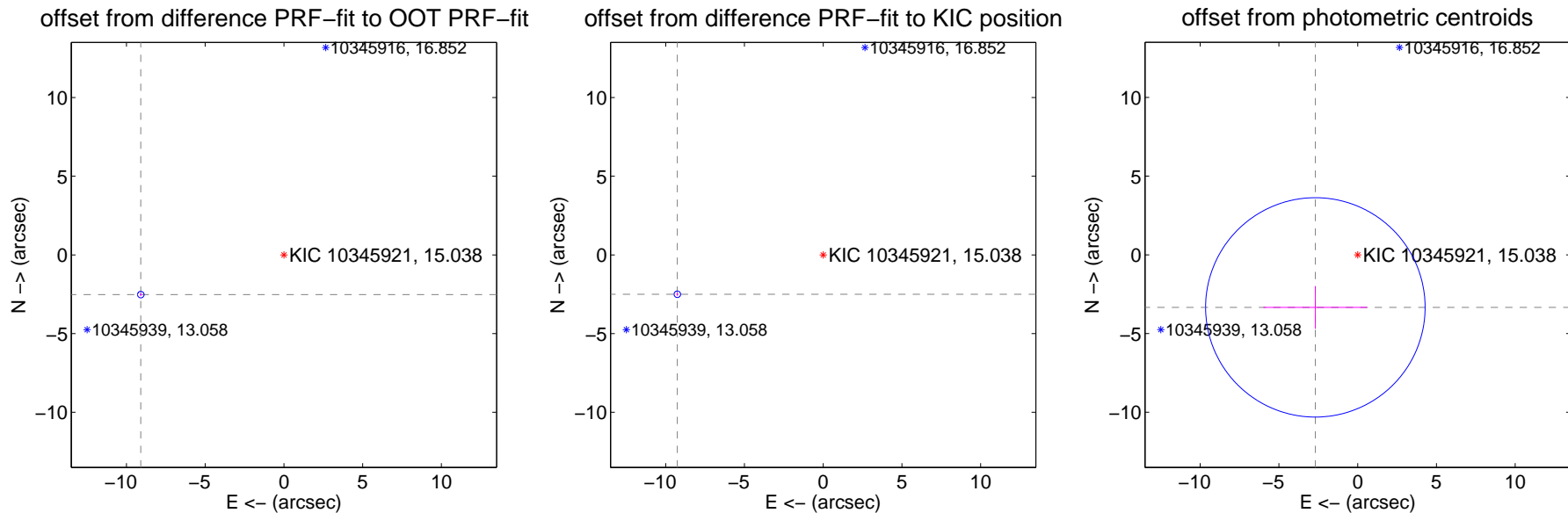
DV Centroid Data

Supplemental centroid analysis for 010345921-04. Kepler magnitude: 15.04. Transit SNR 8.67

There are 1 quarters with good PRF difference image offsets

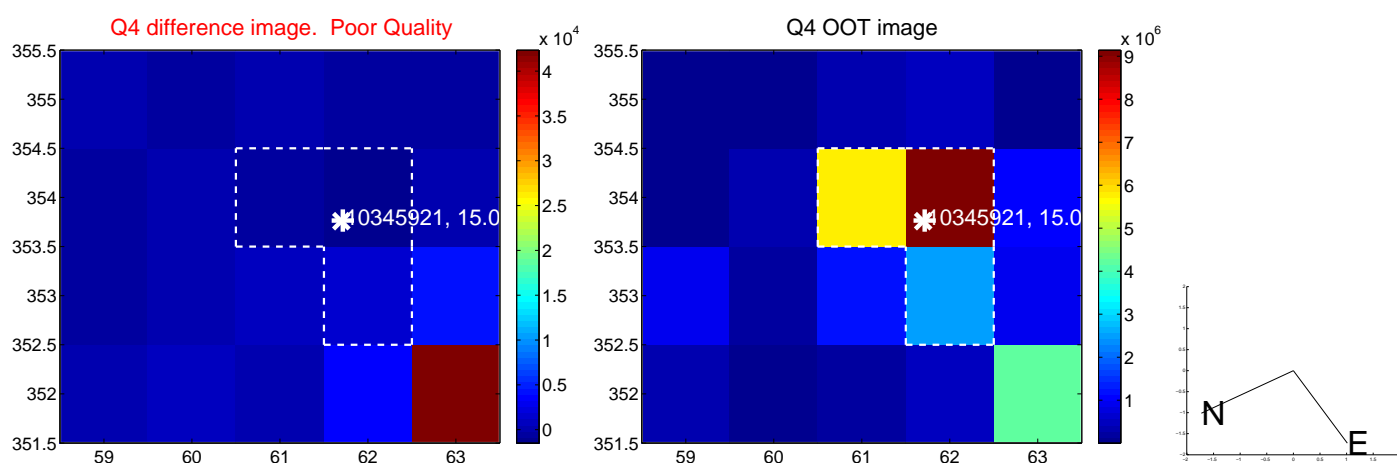
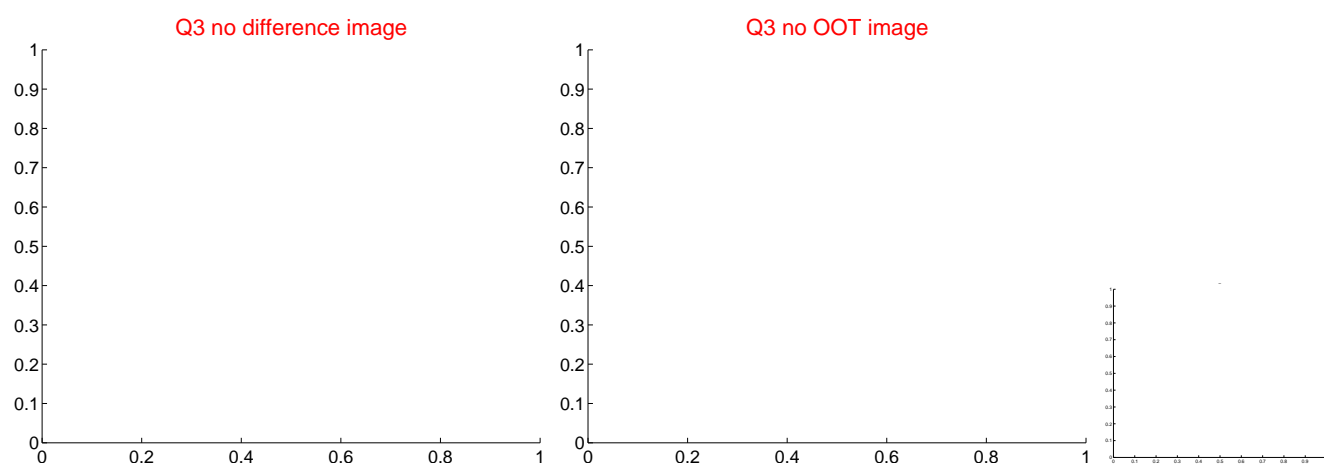
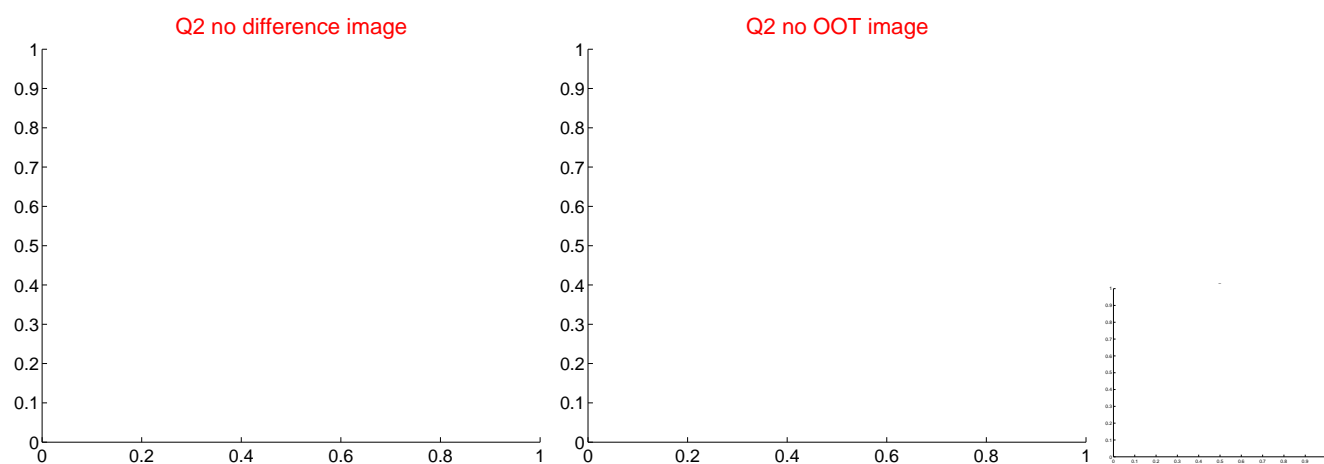
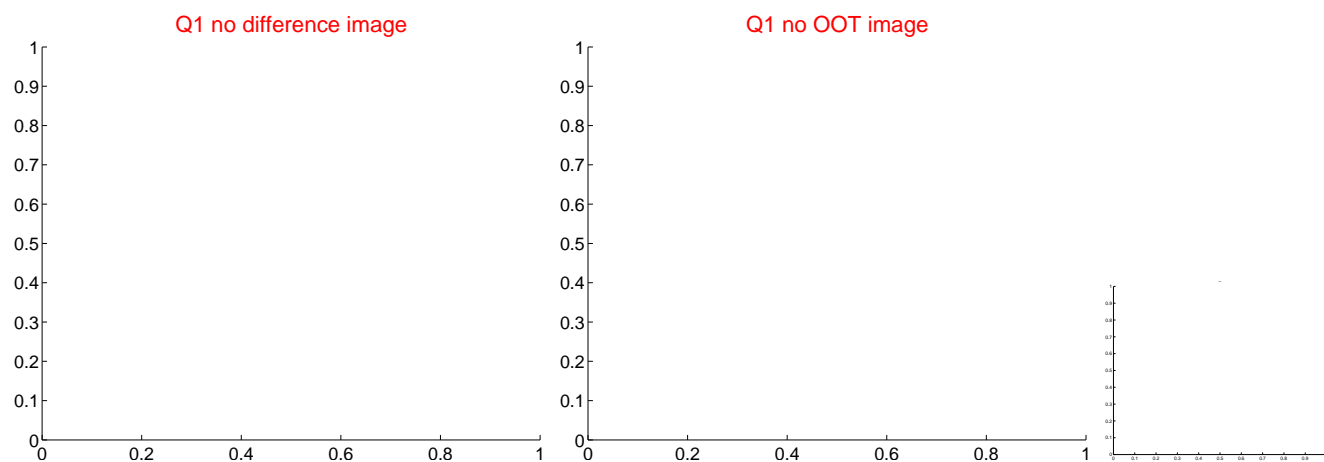
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.432 ± 0.069	136.54	9.088 ± 0.067	-2.523 ± 0.092
PRF-fit source offset from KIC position	9.593 ± 0.069	139.10	9.261 ± 0.067	-2.502 ± 0.092
photometric centroid source offset	4.29 ± 2.32	1.85	2.69 ± 3.30	-3.34 ± 1.36

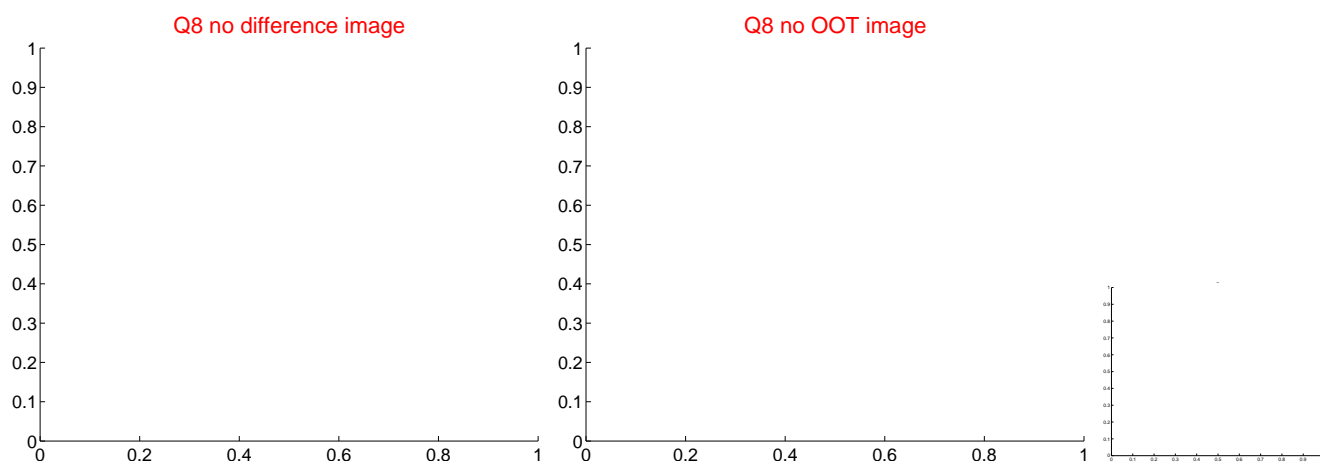
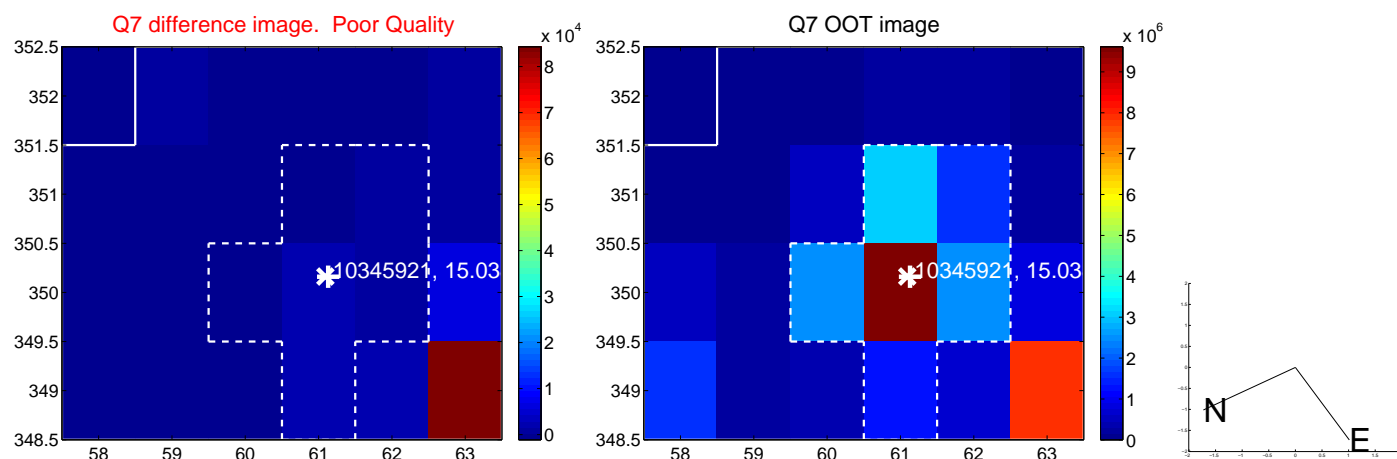
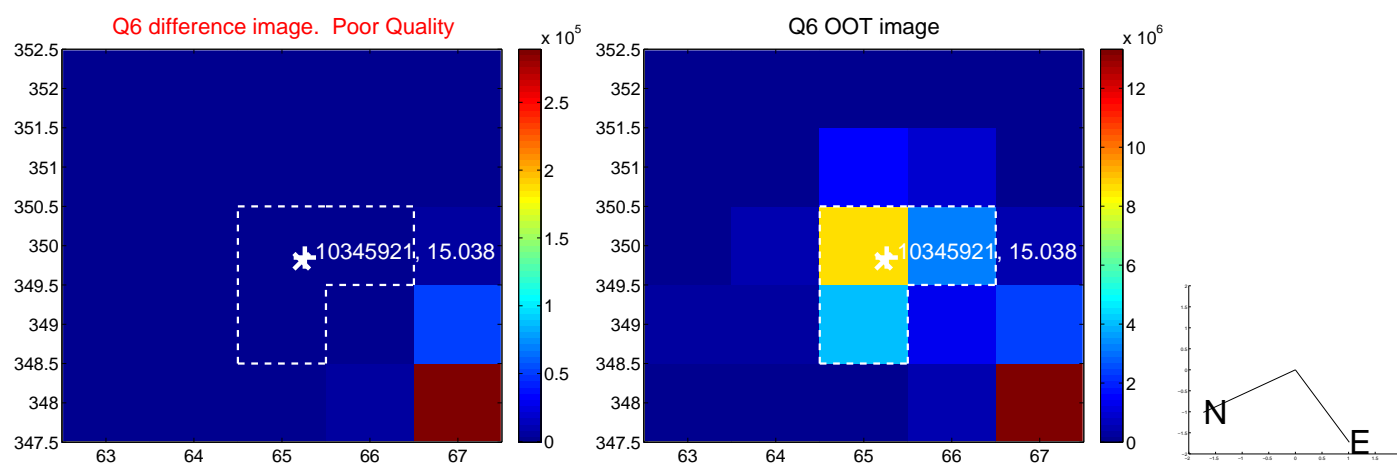
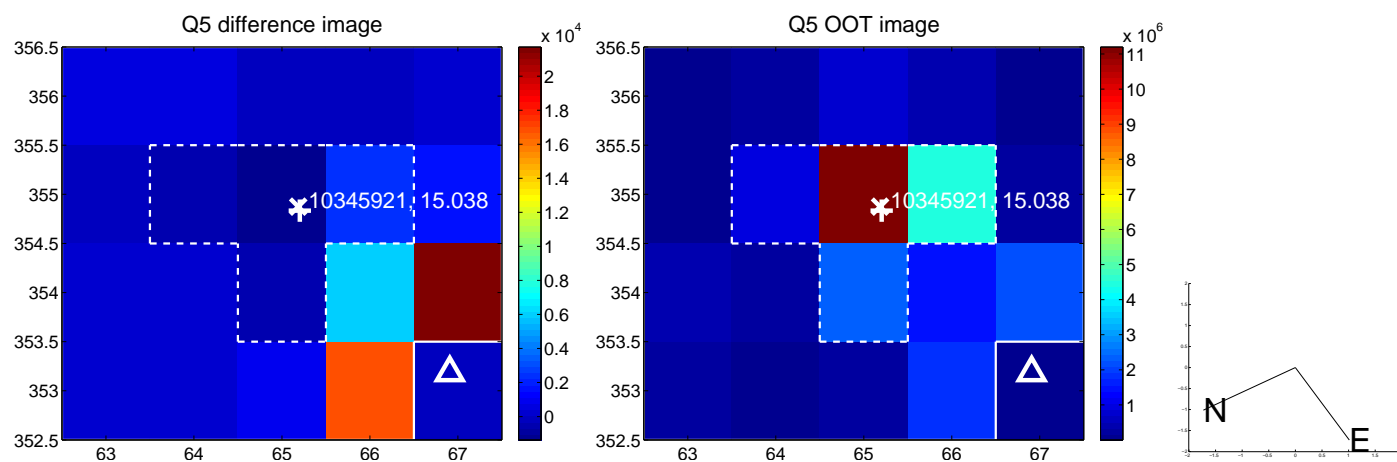


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

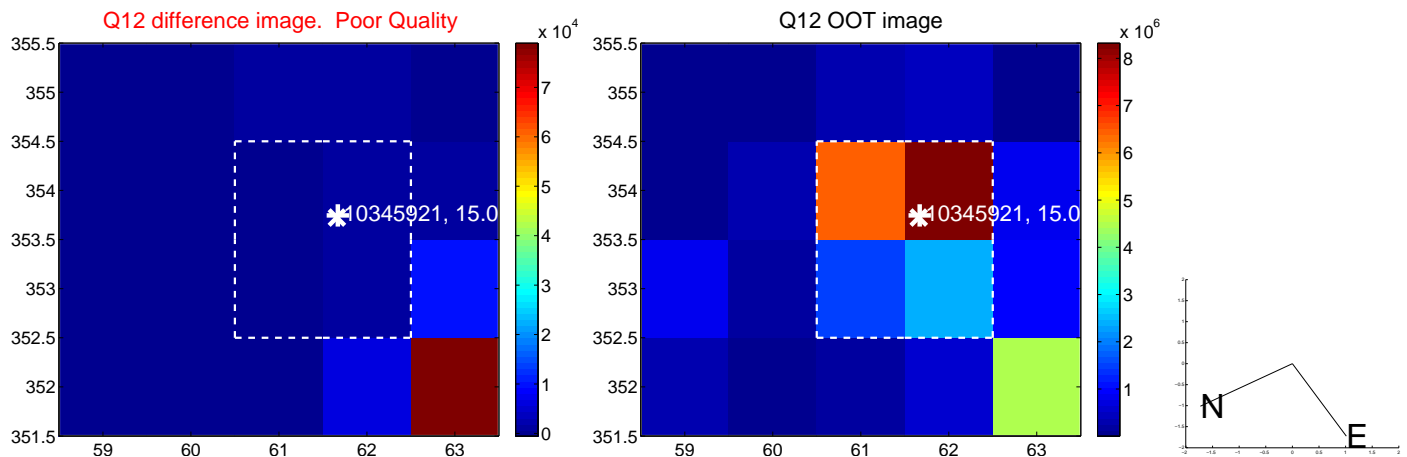
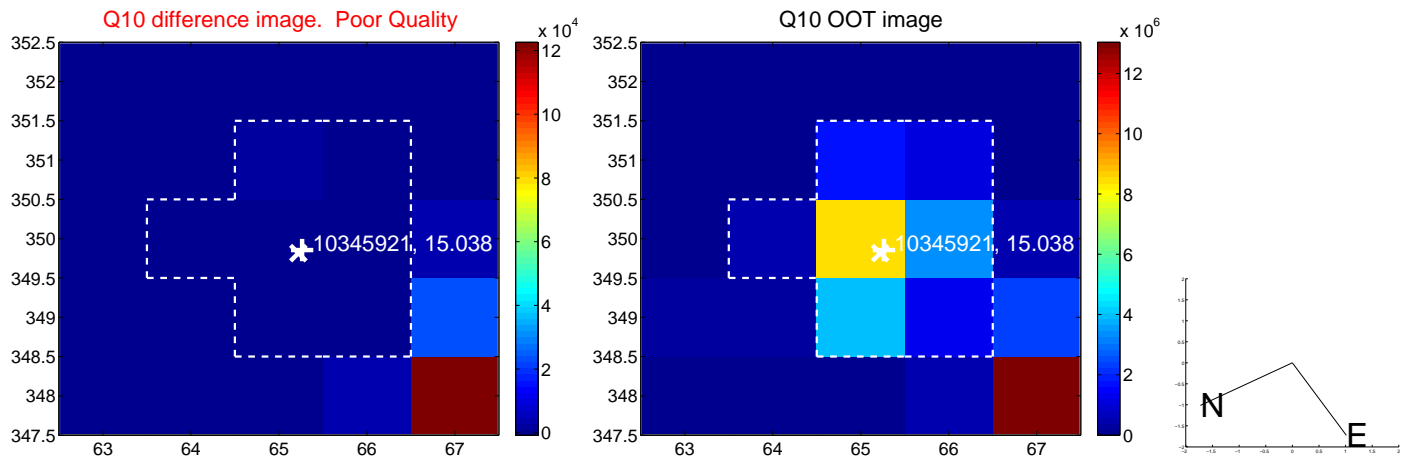
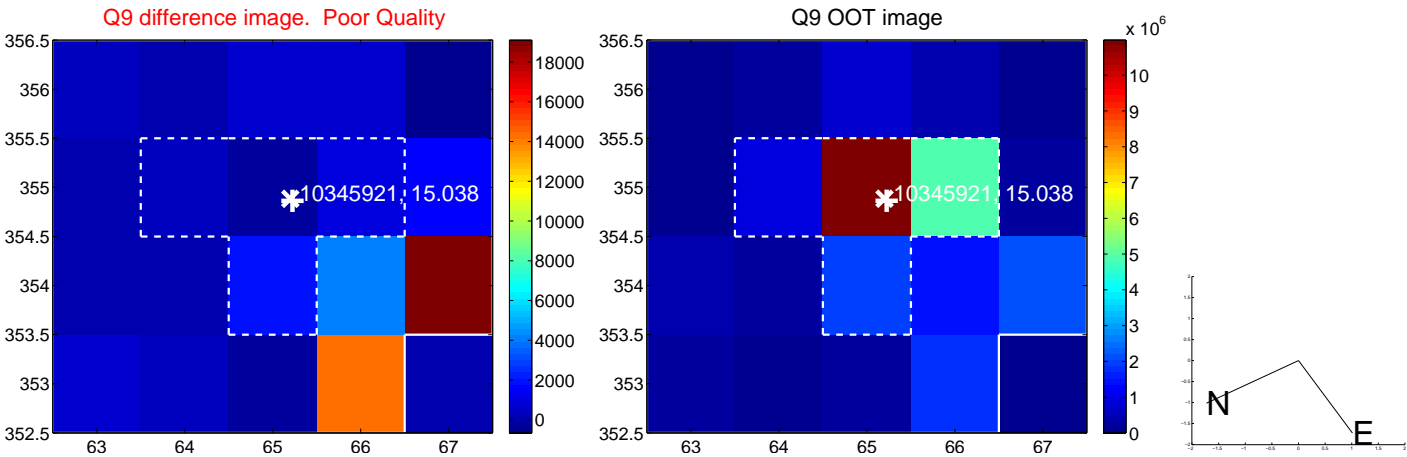
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



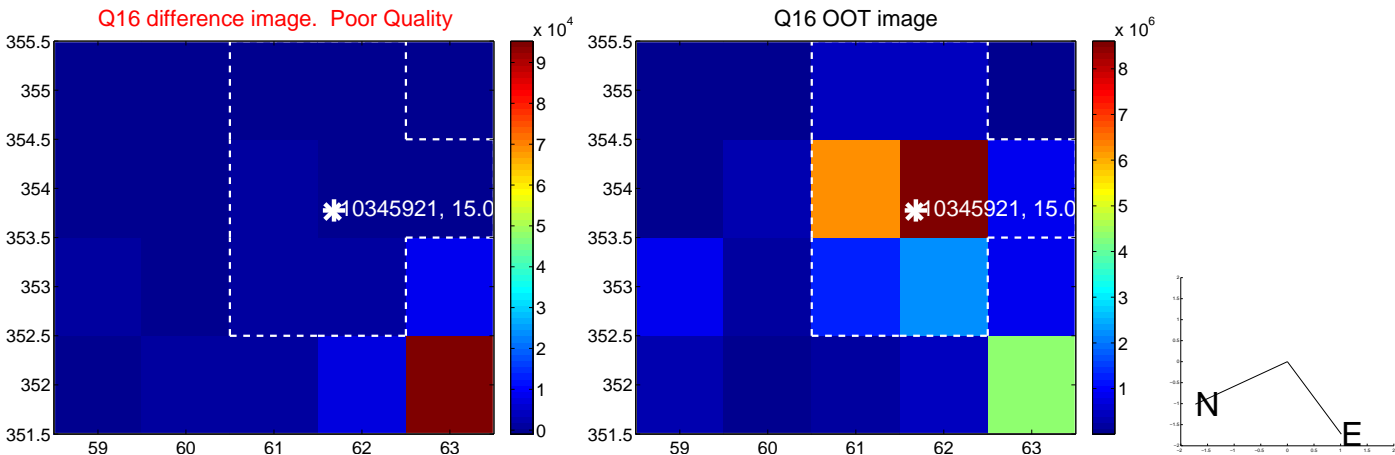
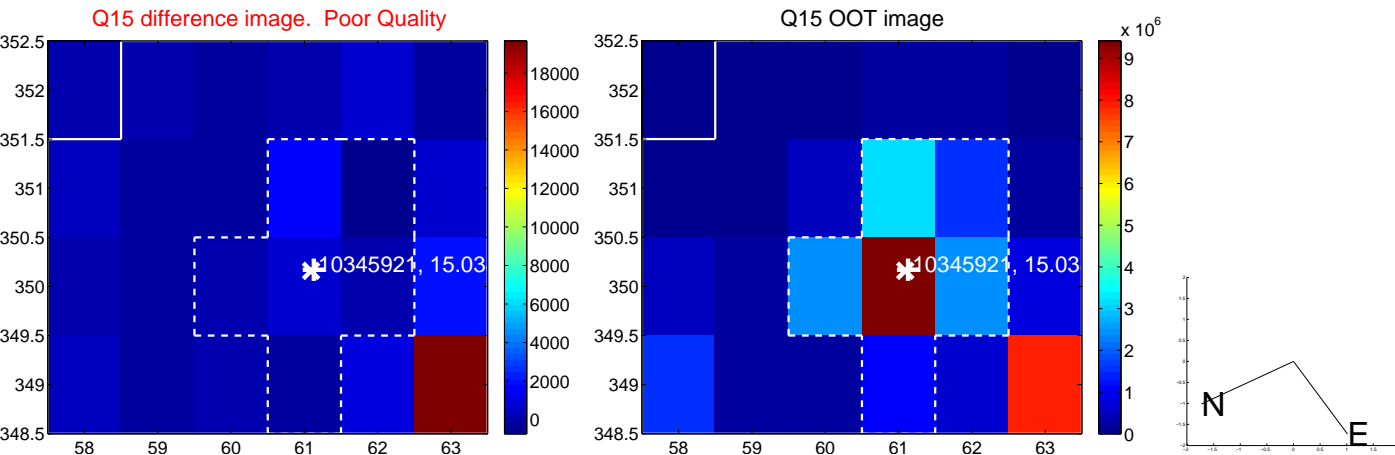
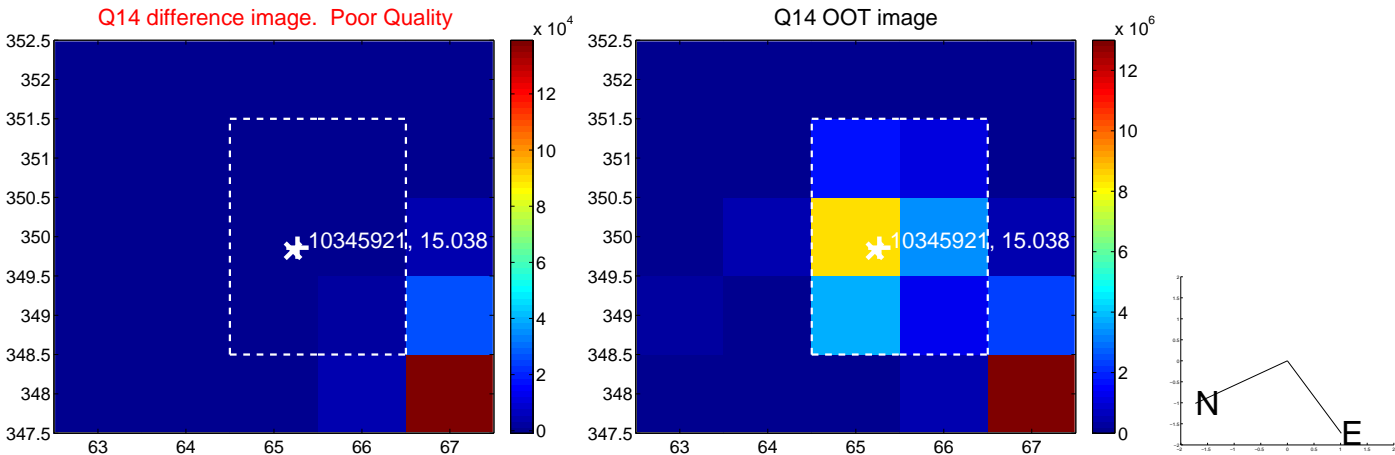
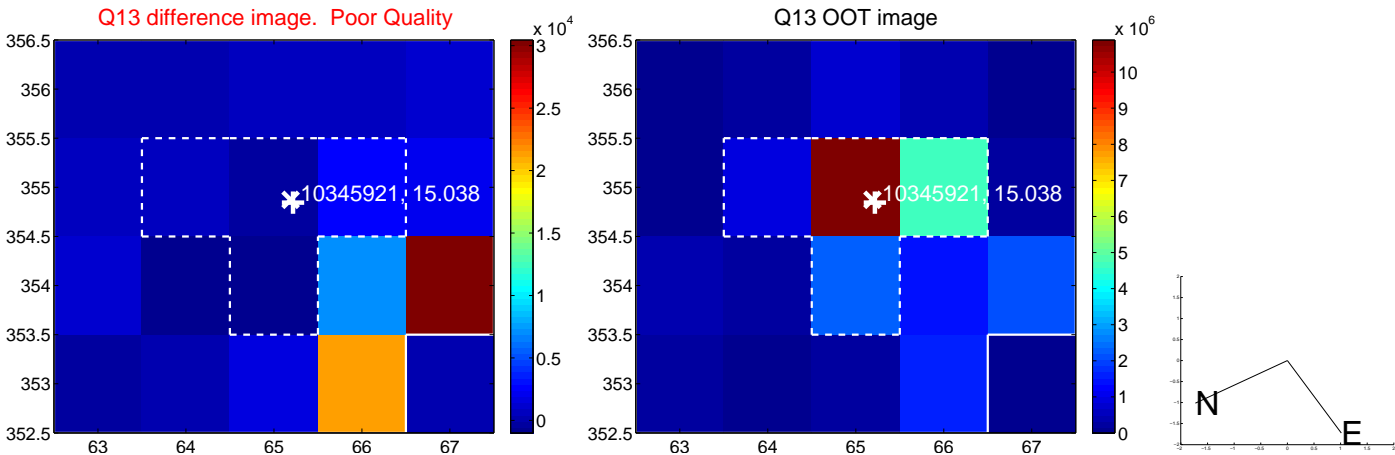
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



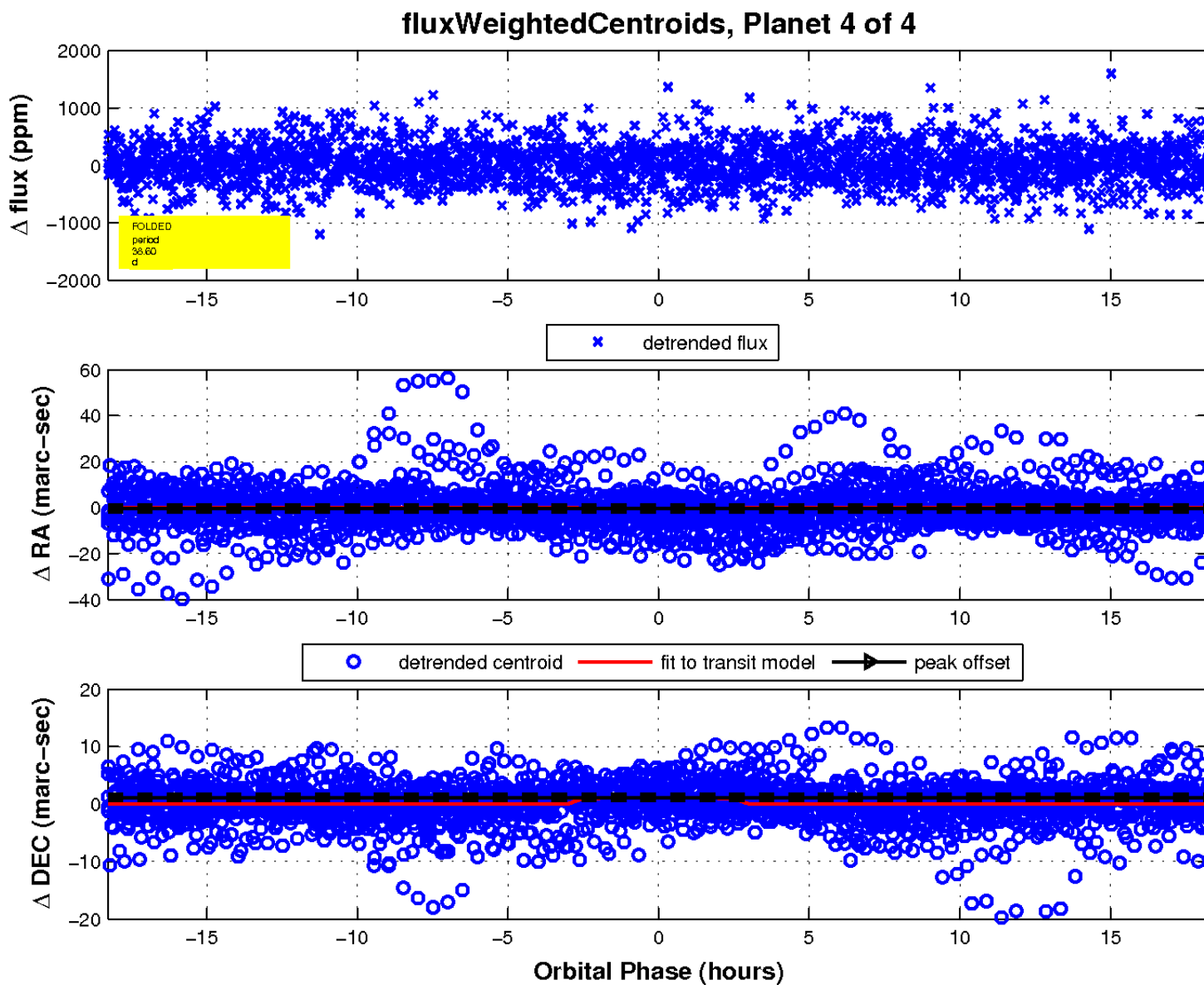
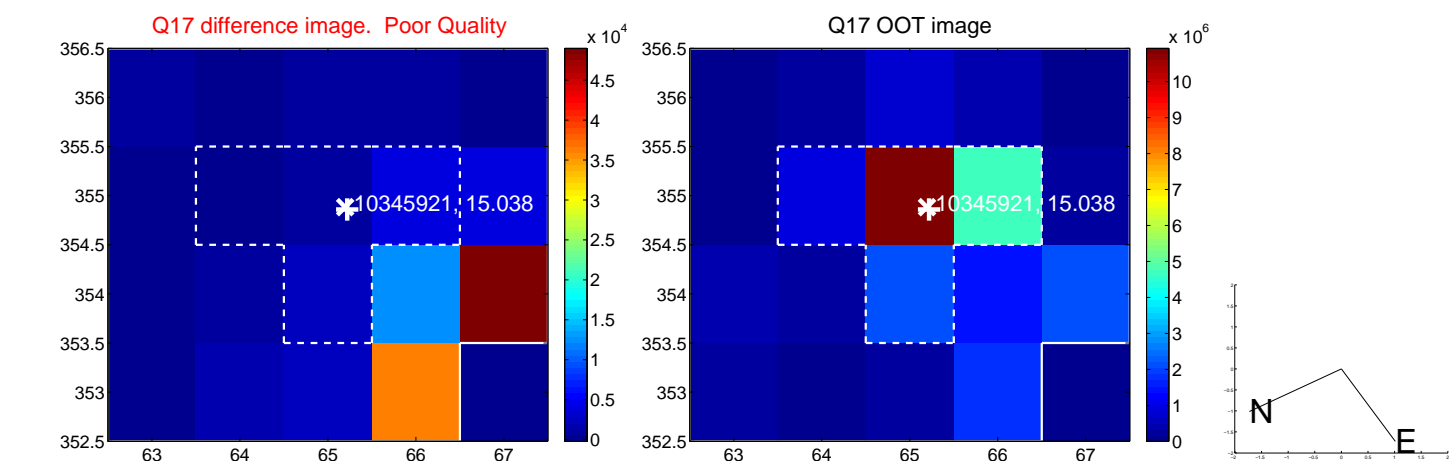
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ✖: KIC target position; +: OOT centroid; △: difference centroid. red ✖: large negative pixel value.



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



UKIRT Image

Declination

