

KIC 009532644

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})
009532644-01	OBS	No	0.542873	131.696791	81.3	2.251	11.0	11.9	4.18	7523	4.38	0.00
009532644-02	OBS	No	7.558805	137.806885	305.4	3.367	9.4	8.2	4.18	7523	8.57	5033.07
009532644-03	OBS	No	12.658635	134.069580	518.4	3.459	8.3	8.9	4.18	7523	17.63	2530.78
009532644-04	OBS	No	173.651202	139.091643	1478.3	3.188	8.2	7.9	4.18	7523	29.76	77.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532644-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009532644-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009532644-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009532644-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

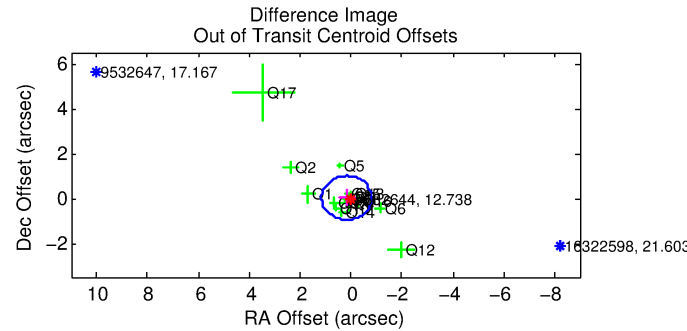
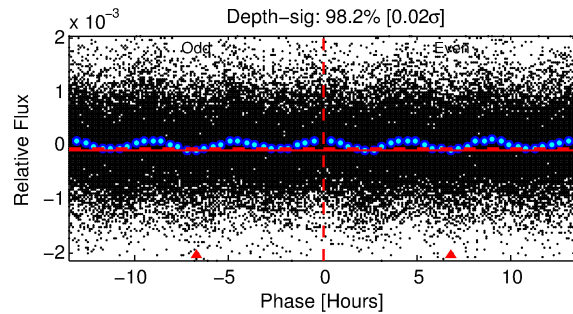
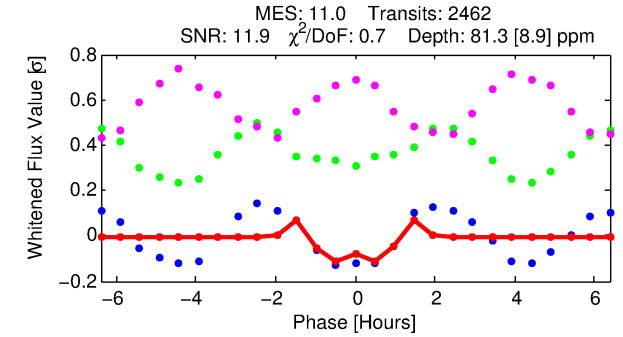
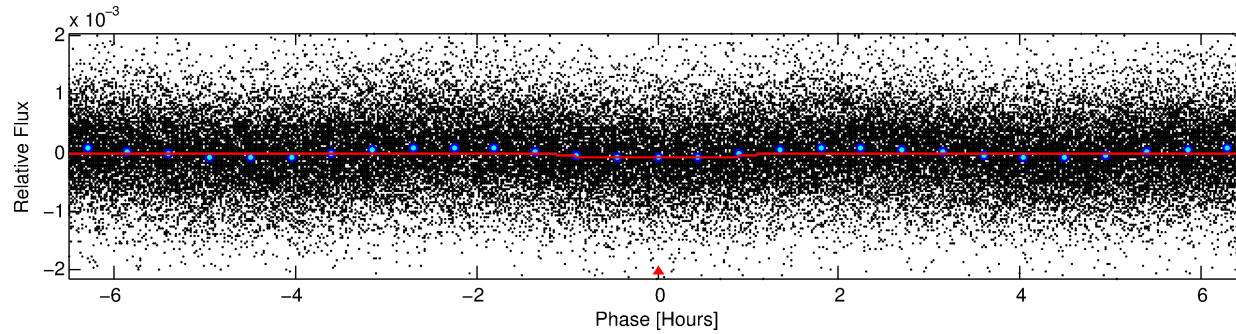
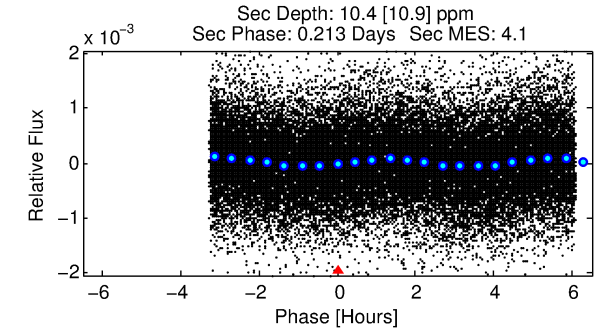
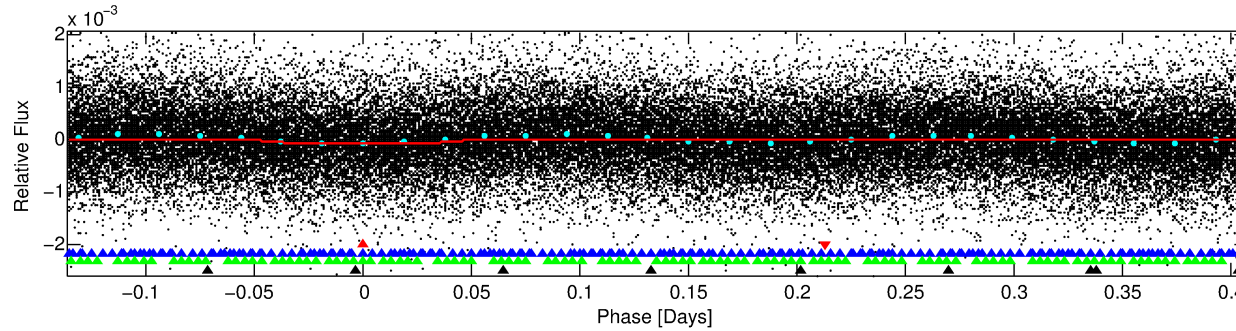
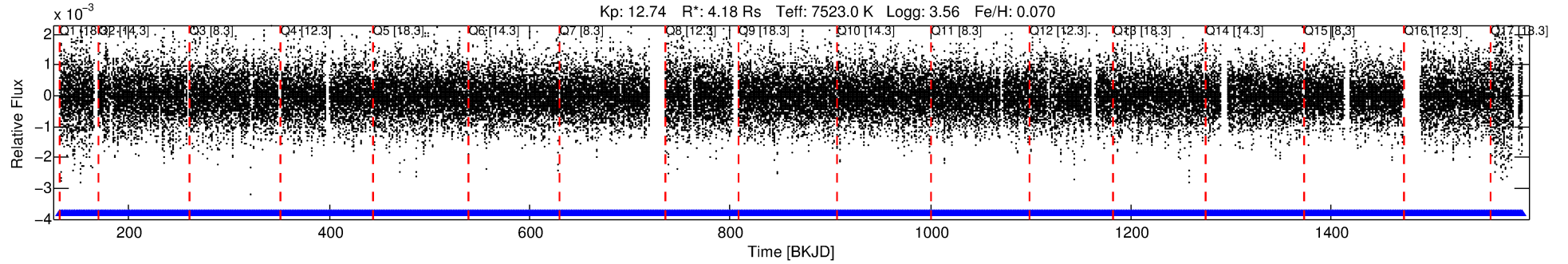
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009532644-01

No Significant Match Found

DV One-Page Summary

KIC: 9532644 Candidate: 1 of 4 Period: 0.543 d



DV Fit Results:

Period = 0.54287 [0.00001] d
Epoch = 131.6968 [0.0010] BKJD
Rp/R* = 0.0096 [0.0019]
a/R* = 1.26 [0.56]
b = 0.90 [0.26]
Seff = N/A
Teq = N/A
Rp = 4.38 [2.46] Re
a = N/A
Ag = N/A
Teffp = N/A

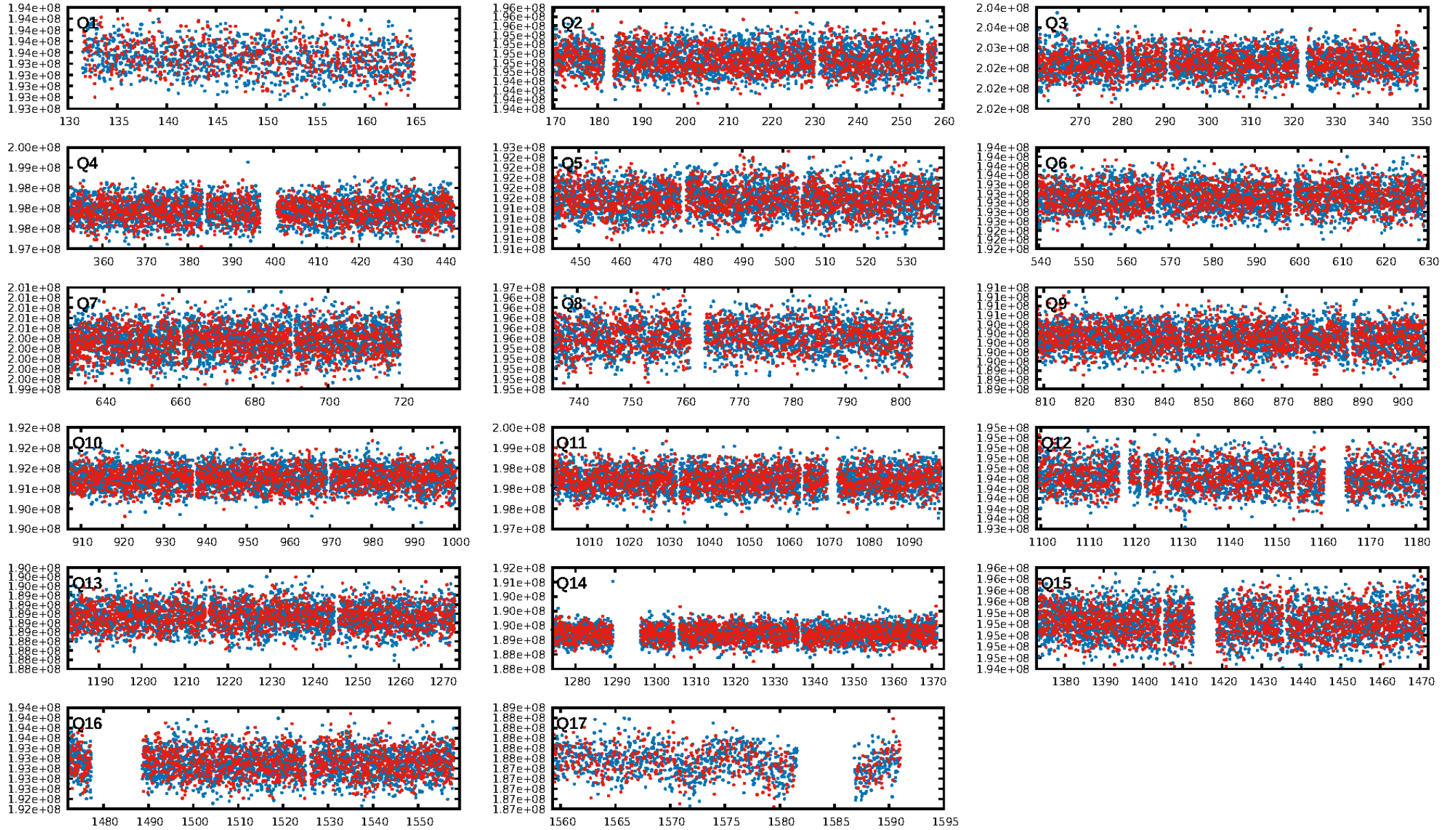
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [41.57σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.50e-18
RollingBand-fgt: 1.00 [2351/2351]
GhostDiagnostic-chr: 4.238
Centroid-sig: 1.4%
Centroid-so: 0.134 arcsec [0.85σ]
OotOffset-rm: 0.179 arcsec [0.55σ]
KicOffset-rm: 0.331 arcsec [2.01σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 1.00 [17/17]

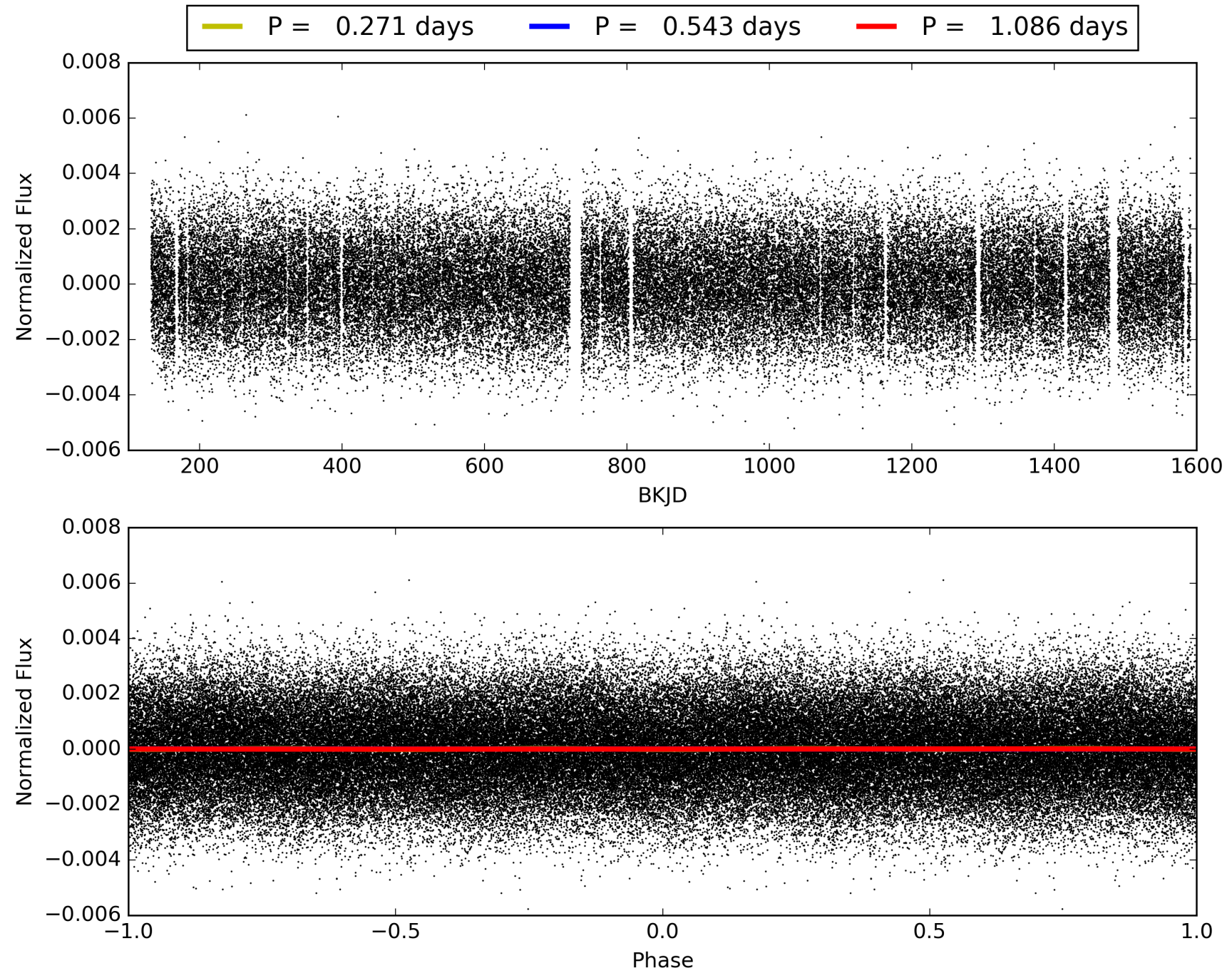
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:12:12 Z

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

TCE 009532644-01, PDC Light Curves

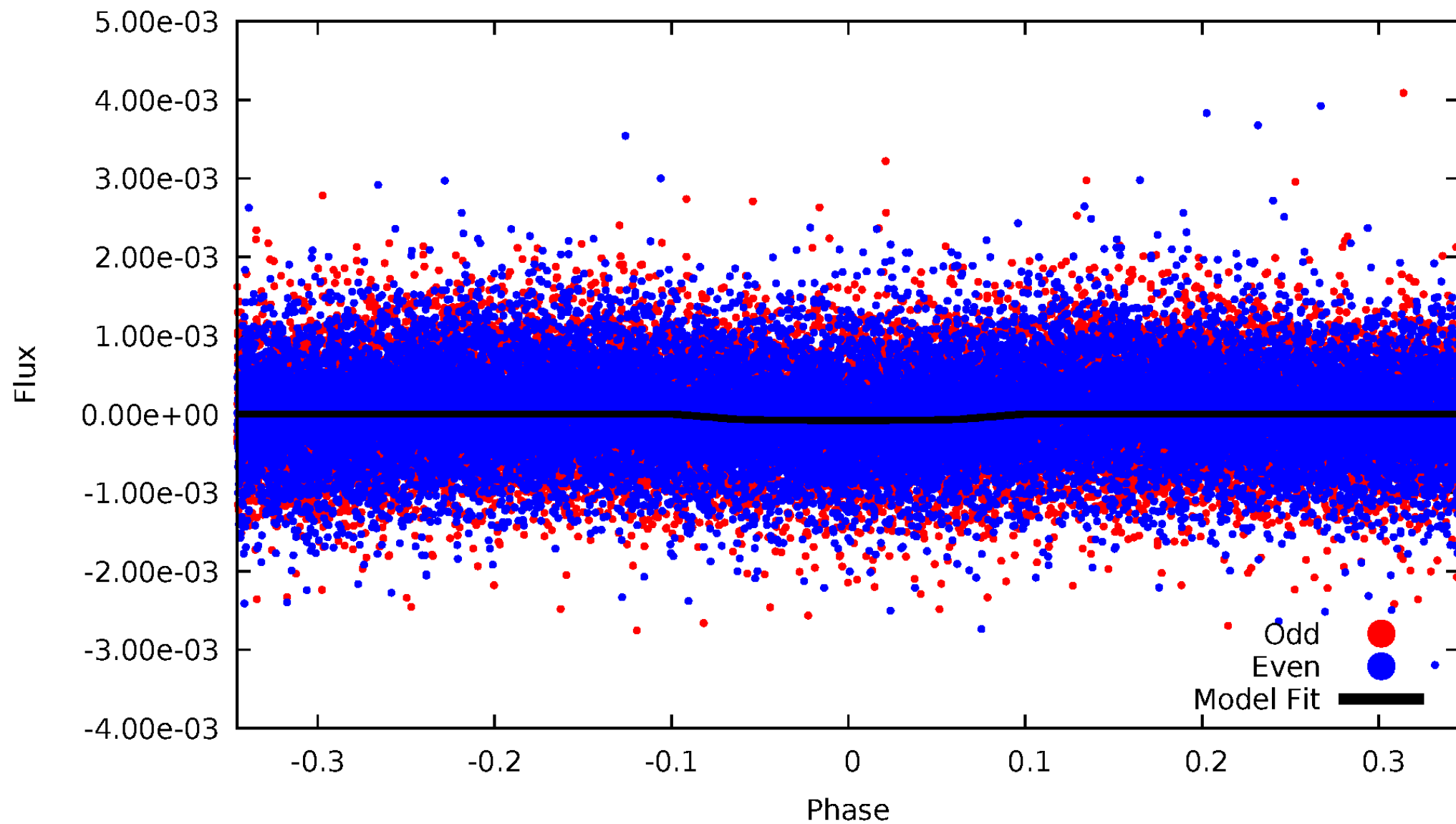


TCE 009532644-01



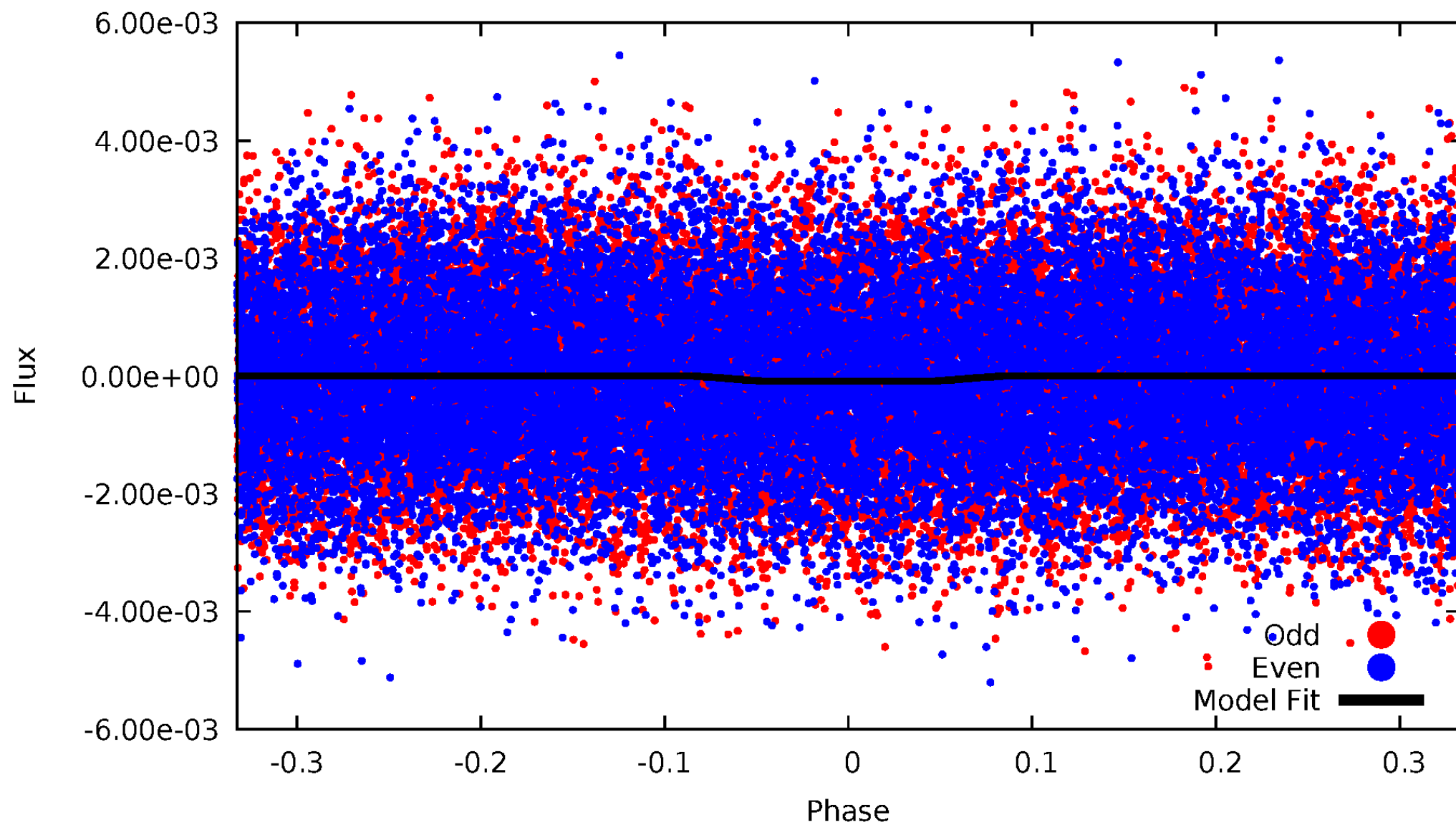
DV Odd/Even

TCE 009532644-01

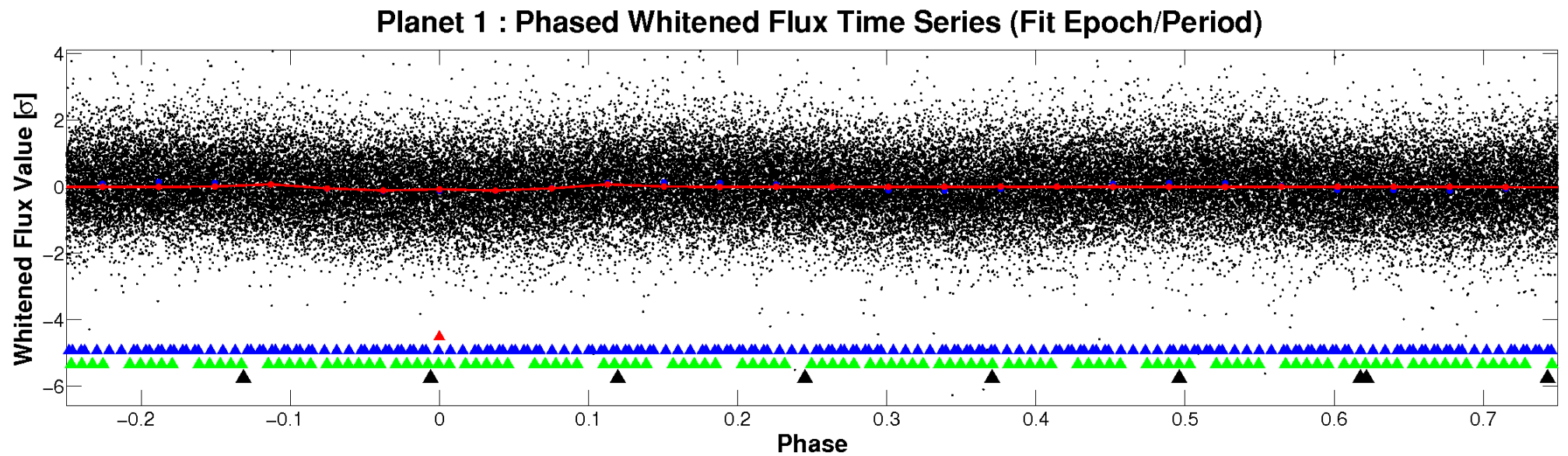
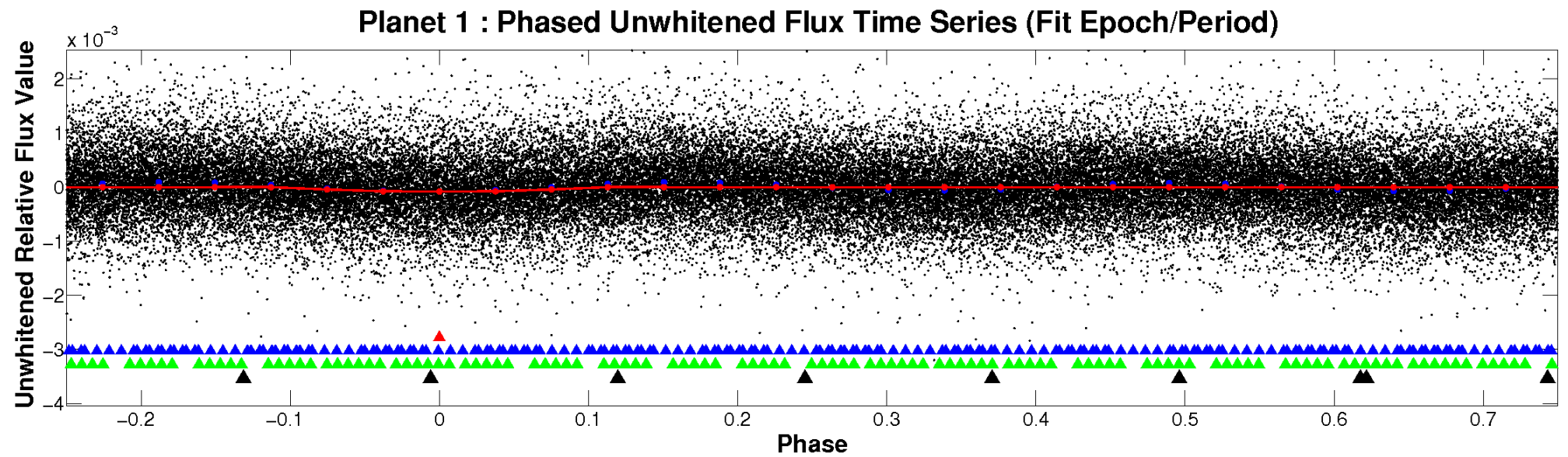


ALT Odd/Even

TCE 009532644-01

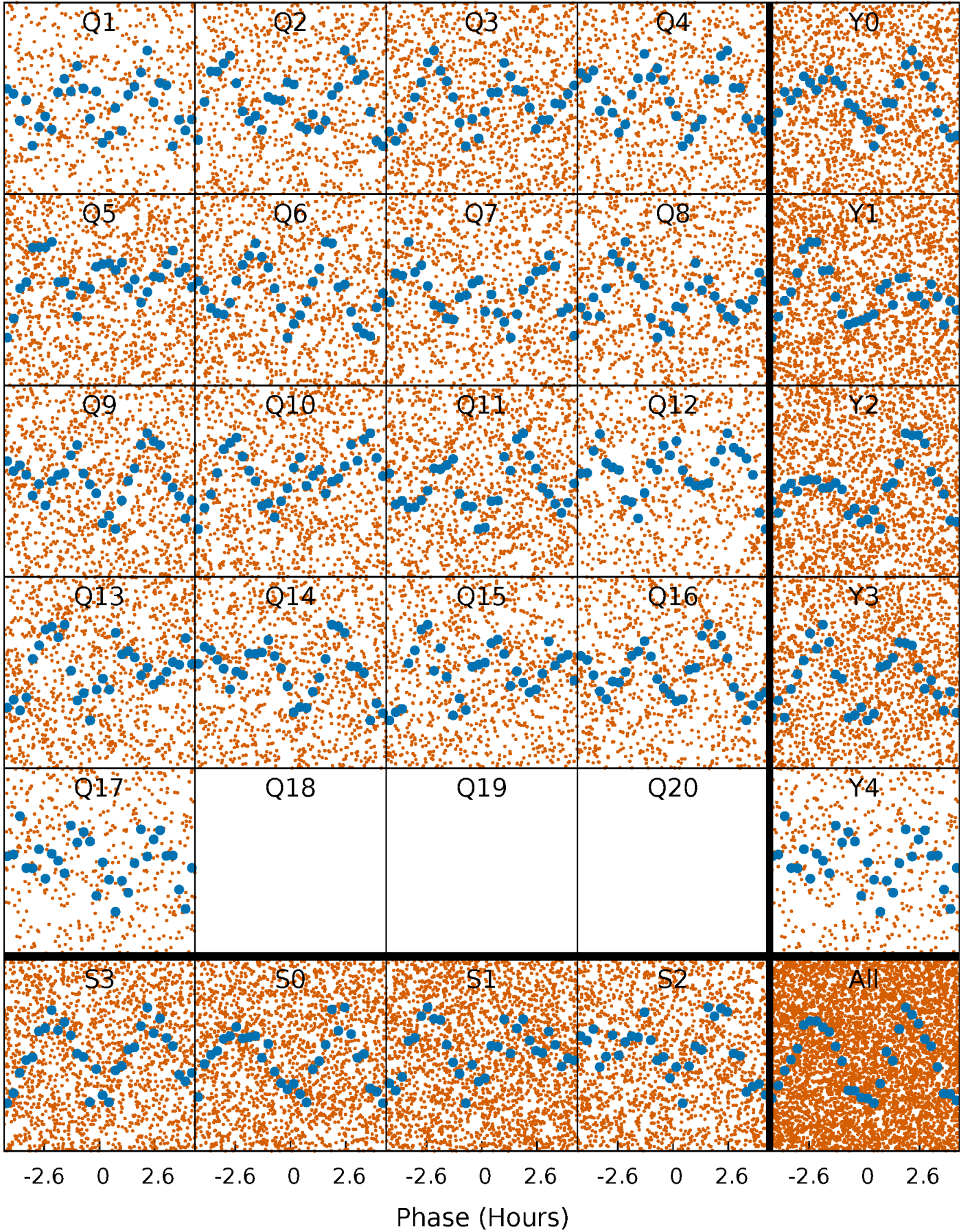


Non-Whitened Vs. Whitened Light Curve



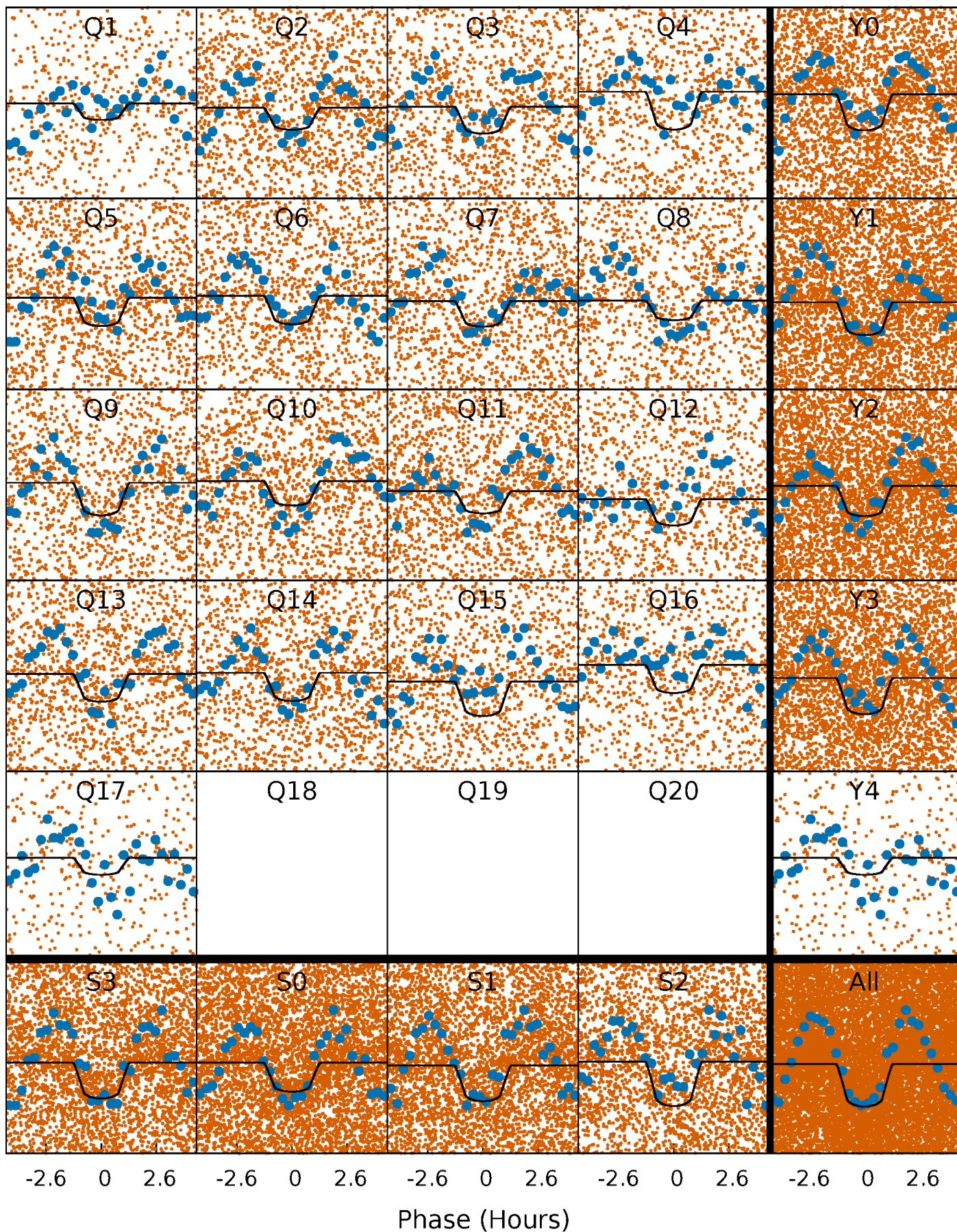
PDC Quarter-Phased Transit Curves

TCE 009532644-01 P= 0.542873 Days $T_0=131.696791$ (BKJD)



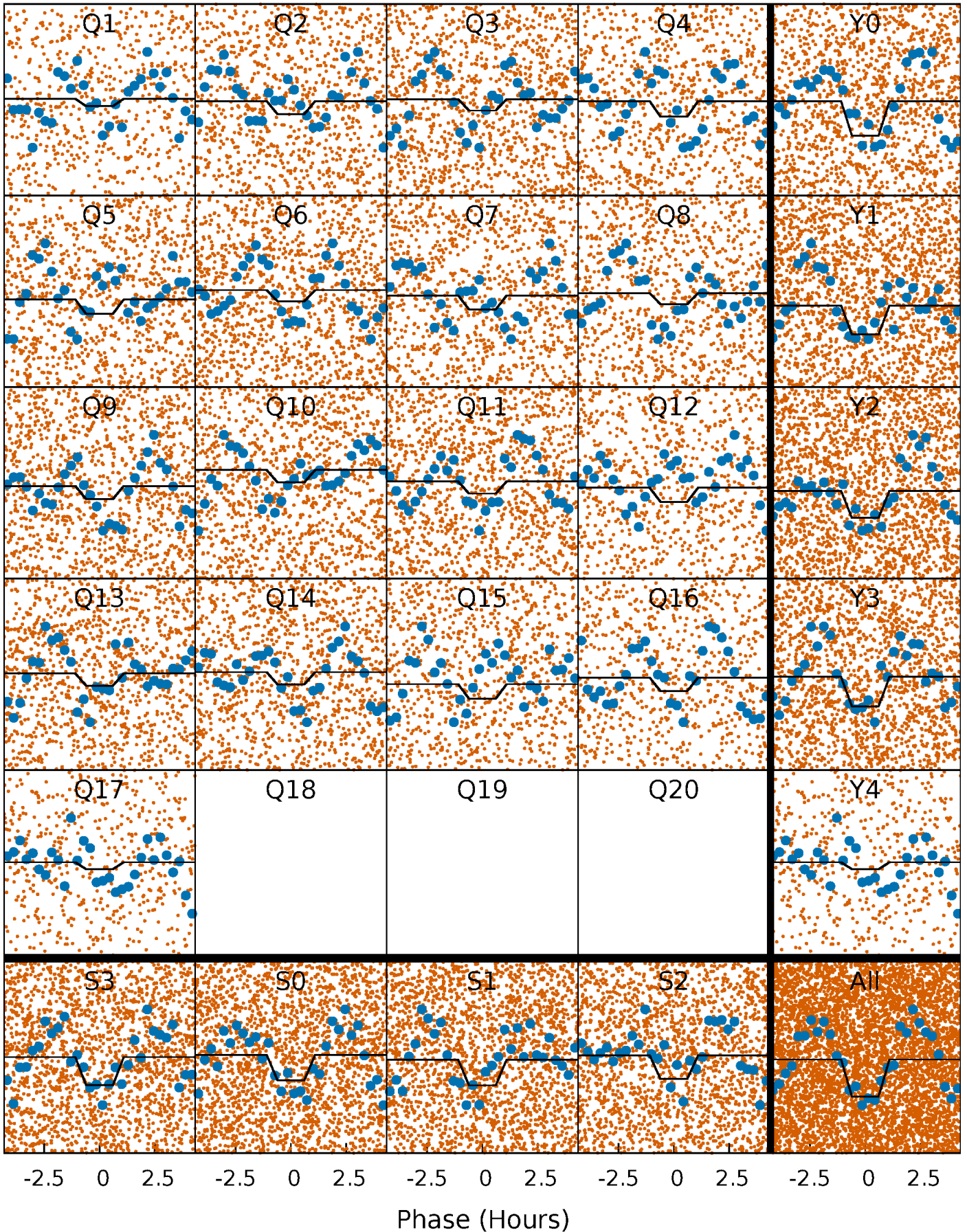
DV Quarter-Phased Transit Curves

TCE 009532644-01 P= 0.542873 Days $T_0=131.696791$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

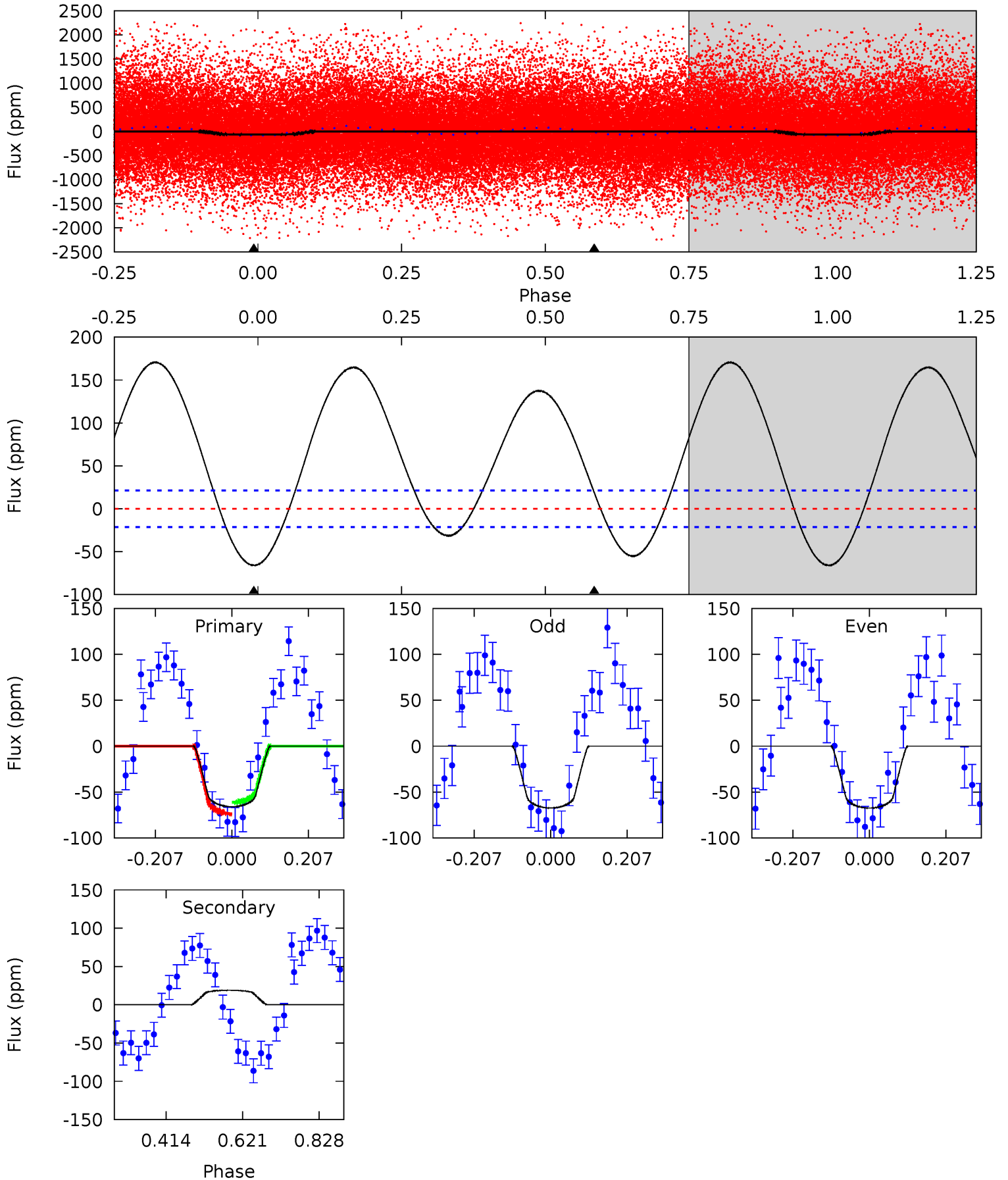
TCE 009532644-01 P= 0.542873 Days $T_0=131.695935$ (BKJD)



DV Model-Shift Uniqueness Test

009532644-01, P = 0.542873 Days, E = 131.153918 Days

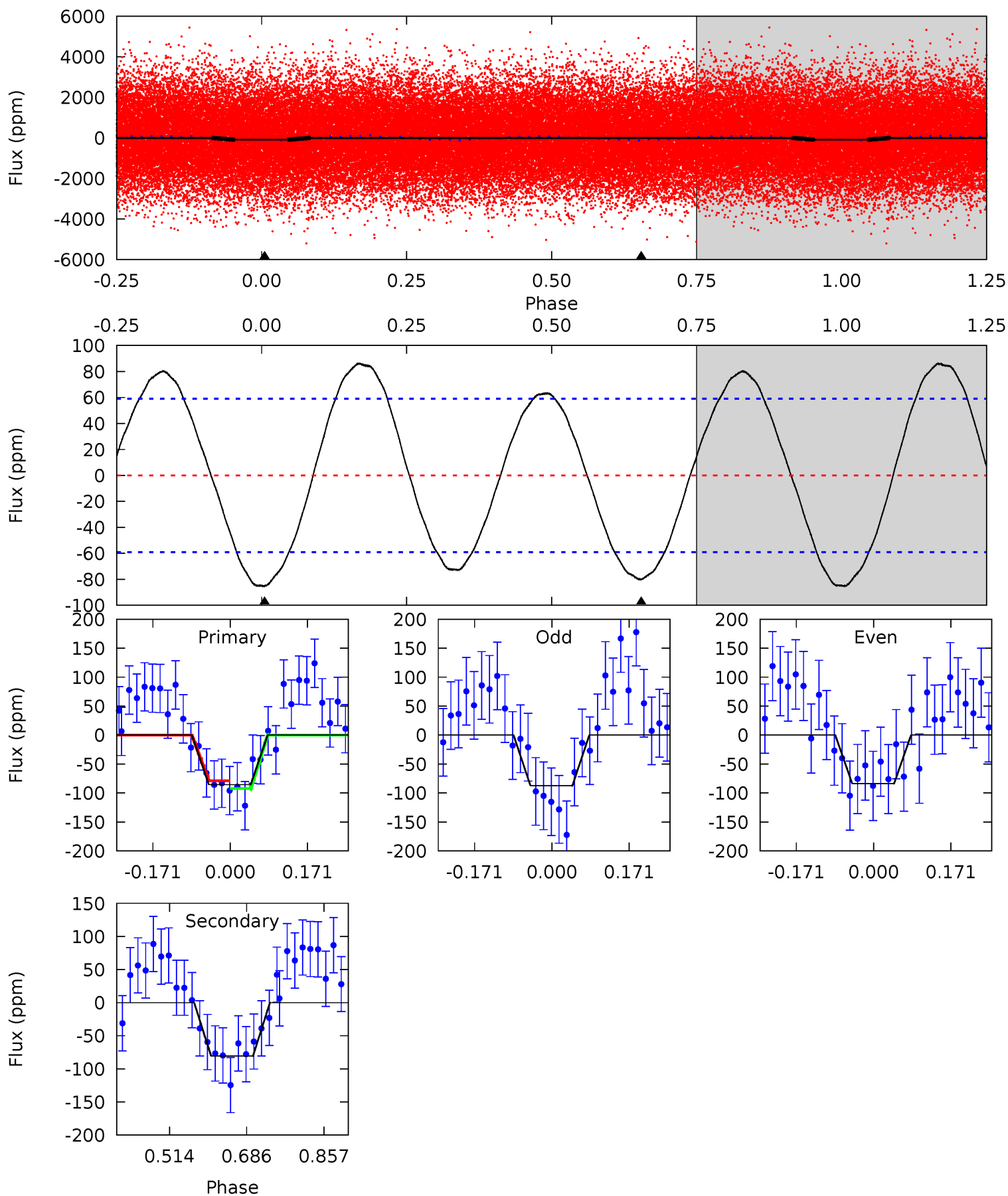
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	-3.91	0	0	4.41	1.26	11.4	13.6	13.6	-3.91	-3.91	0.01	0.90	0.72	1.26



Alt Model-Shift Uniqueness Test

009532644-01, P = 0.542873 Days, E = 131.153062 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.45	6.07	0	0	4.45	1.37	3.99	6.45	6.45	6.07	6.07	0.14	0.95	0.50	0.49



Stellar Parameters For KIC 009532644

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7523^{+207}_{-337}	$3.561^{+0.522}_{-0.058}$	$0.070^{+0.200}_{-0.300}$	$4.178^{+0.549}_{-2.195}$	$2.318^{+0.183}_{-0.731}$	$0.045^{+0.279}_{-0.009}$
	+3%/-4%	+15%/-2%	+286%/-429%	+13%/-53%	+8%/-32%	+624%/-20%
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 009532644-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	19 ± 5	$3.83^{+1.20}_{-1.08}$	6853^{+541}_{-820}	-6285^{+496}_{-511}	$-0.206^{+0.093}_{-0.195}$
Alt.	-81 ± 13	$3.69^{+1.12}_{-1.19}$	6841^{+493}_{-961}	6561^{+1408}_{-1142}	$0.965^{+1.045}_{-0.417}$

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 $A_{obs} \gg 1.0$

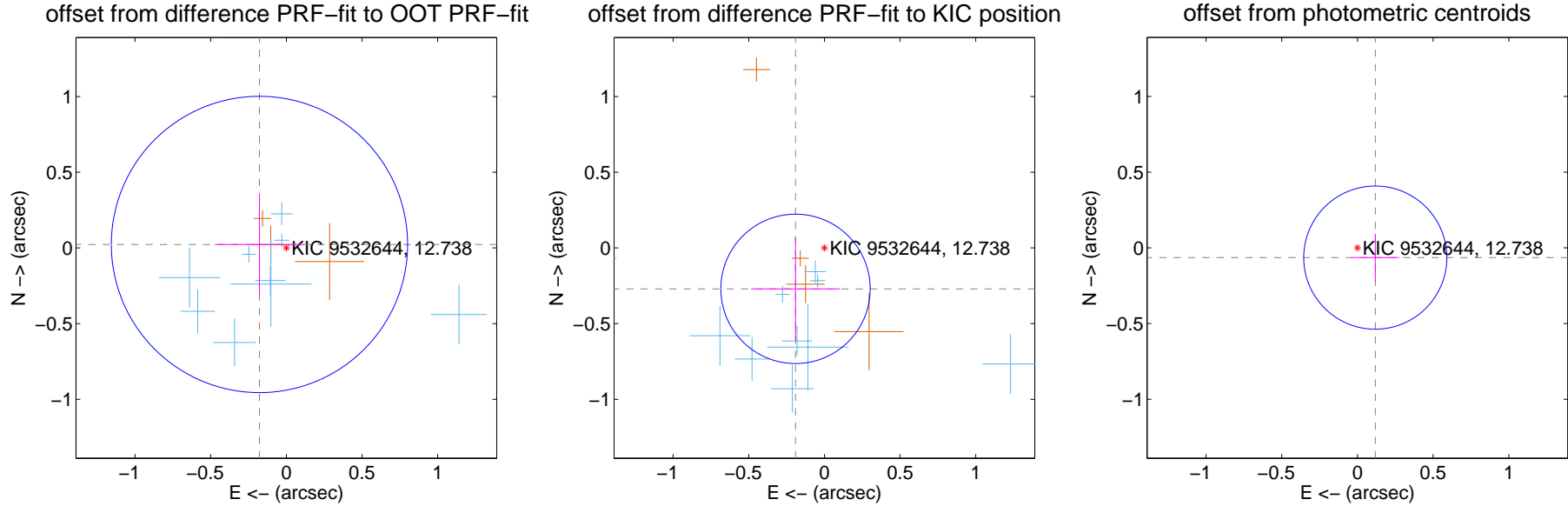
DV Centroid Data

Supplemental centroid analysis for 009532644-01. Kepler magnitude: 12.74. Transit SNR 11.95

There are 11 quarters with good PRF difference image offsets

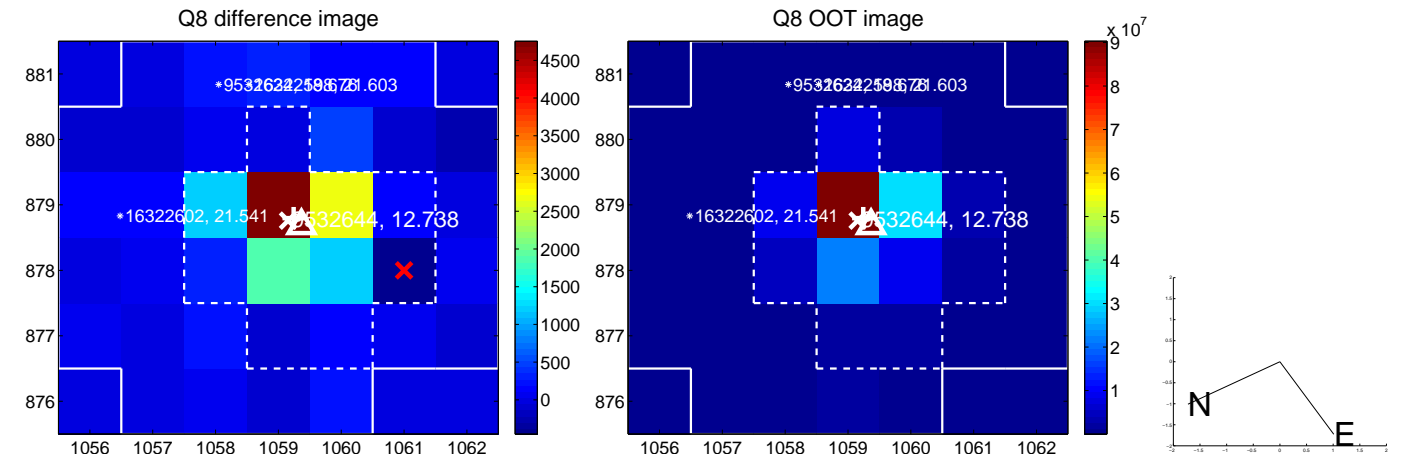
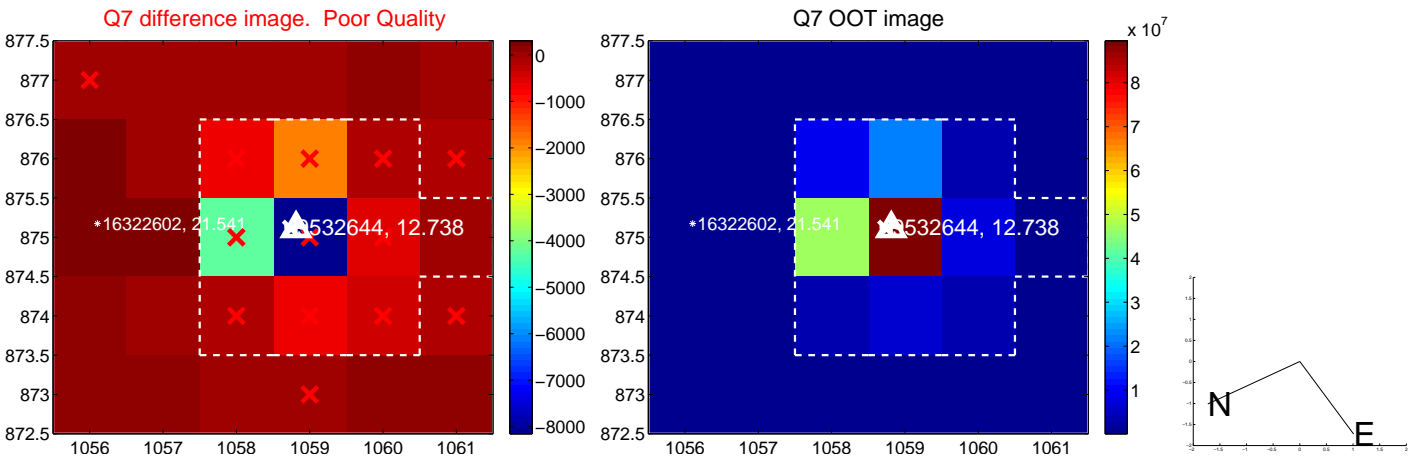
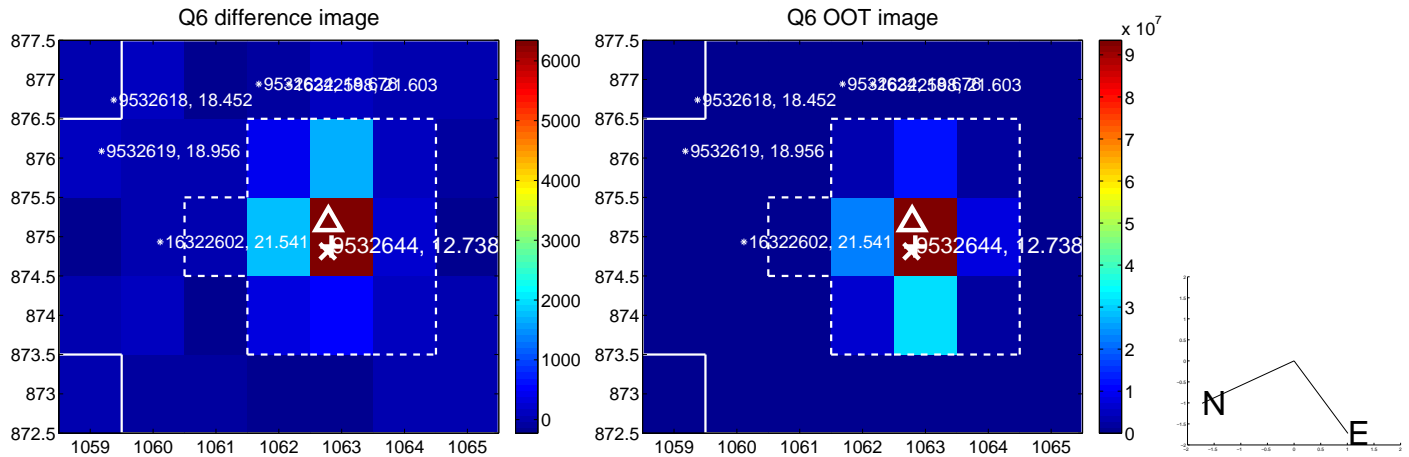
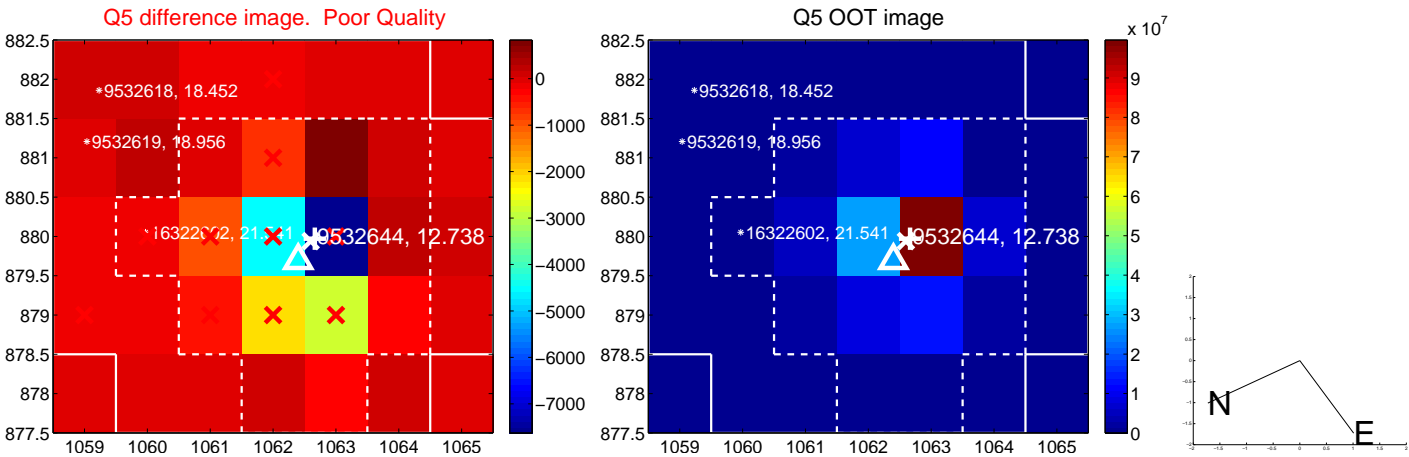
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.179 ± 0.326	0.55	0.178 ± 0.295	0.023 ± 0.332
PRF-fit source offset from KIC position	0.331 ± 0.165	2.01	0.191 ± 0.294	-0.270 ± 0.339
photometric centroid source offset	0.13 ± 0.16	0.85	-0.12 ± 0.16	-0.06 ± 0.16

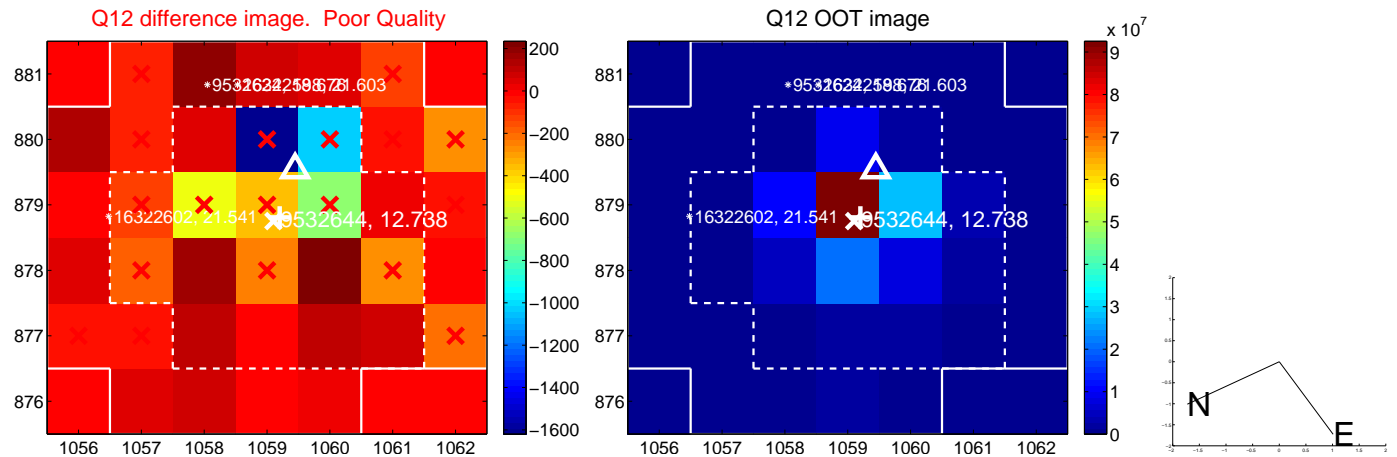
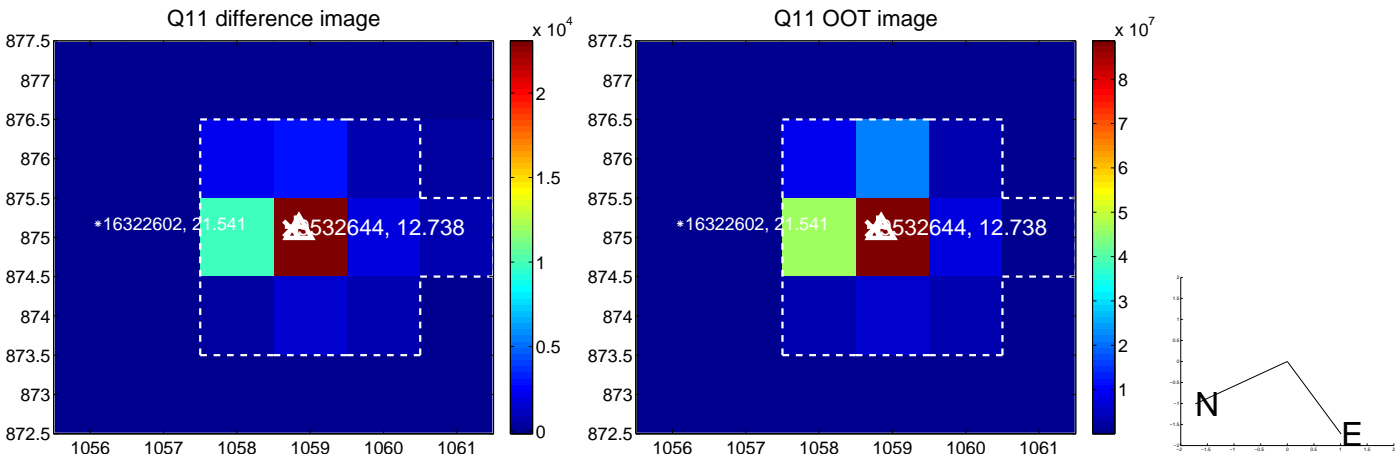
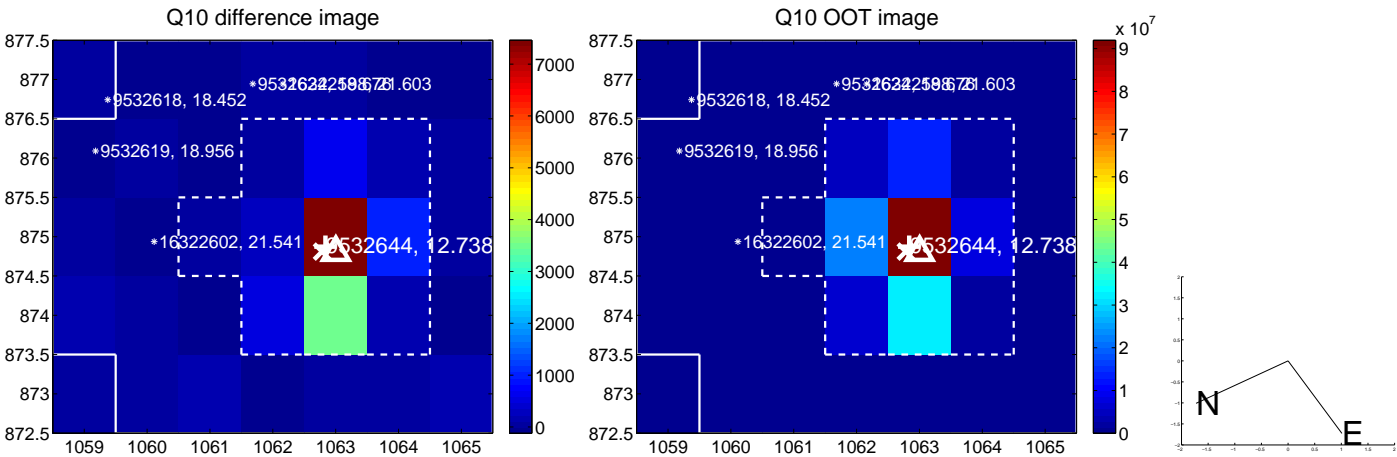
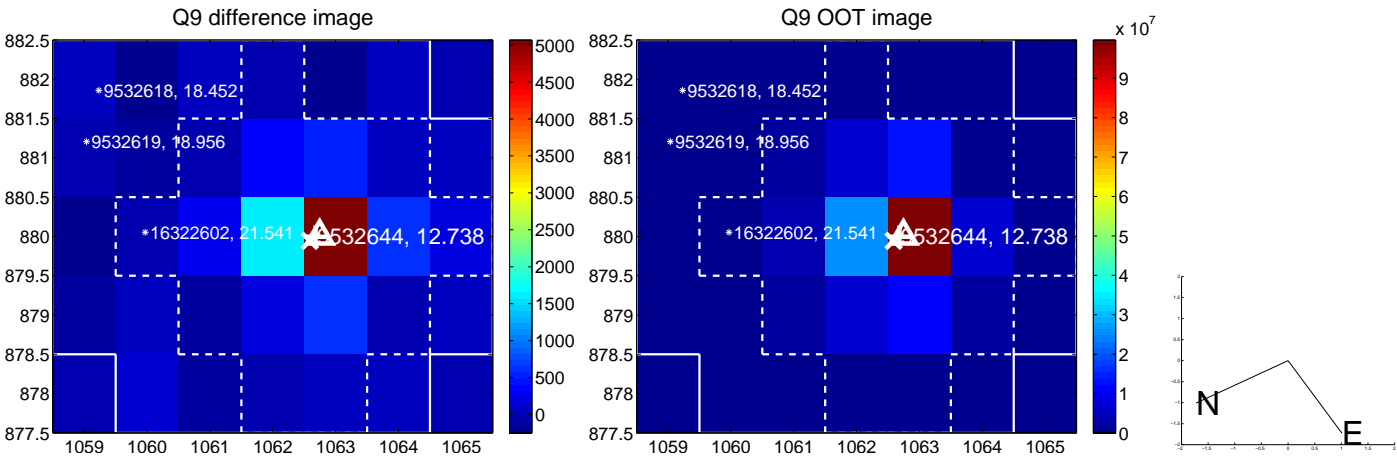


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

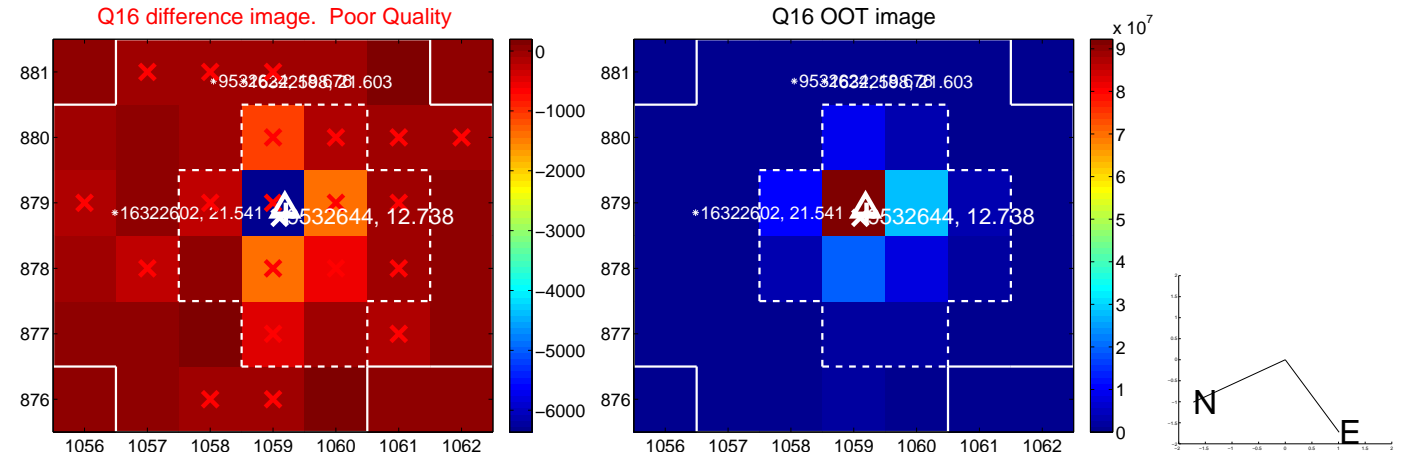
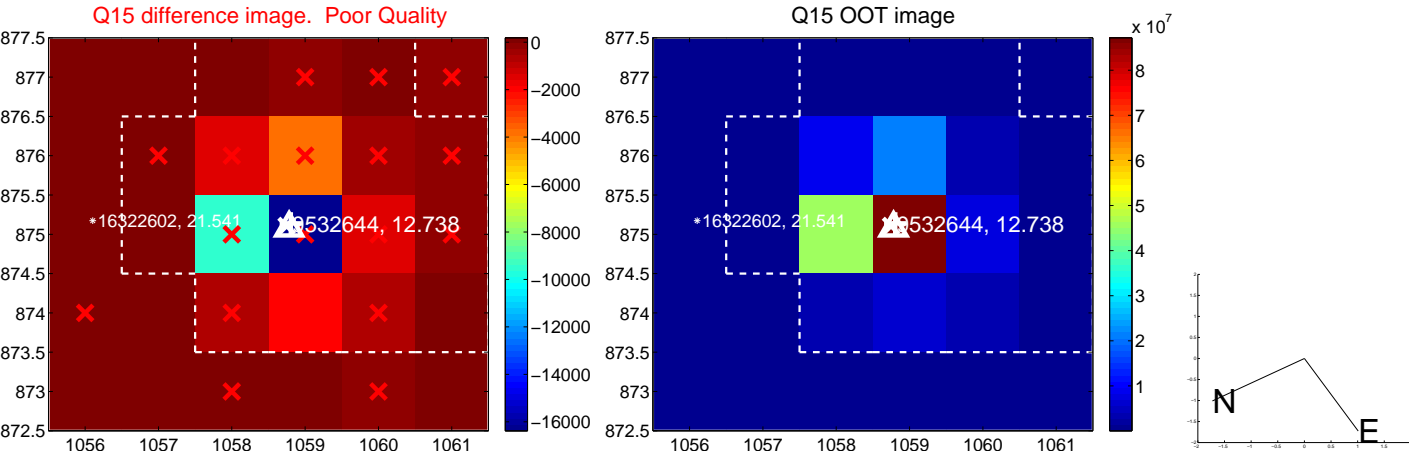
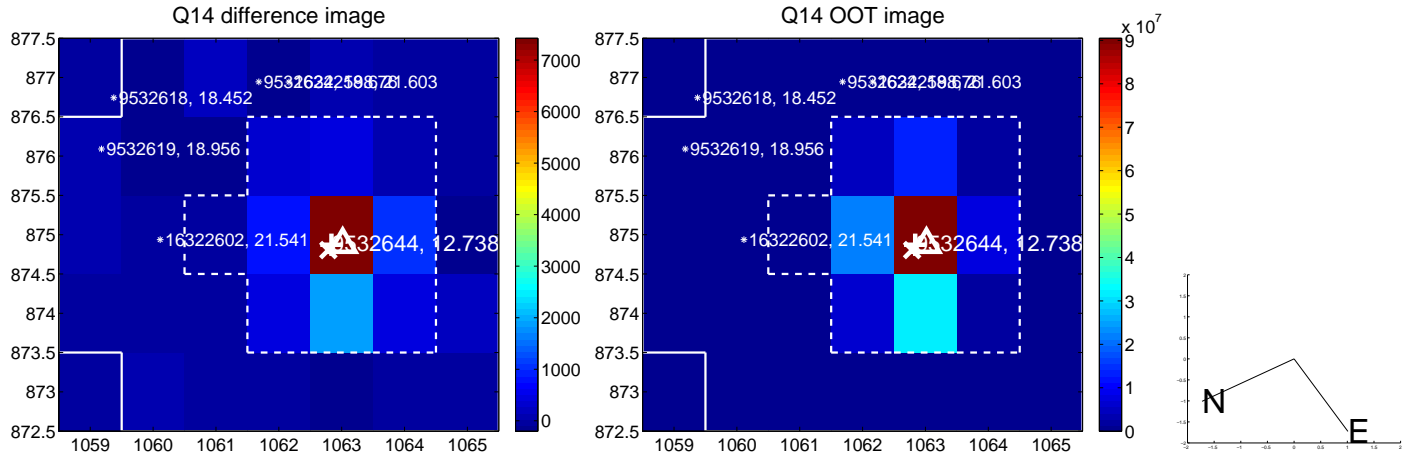
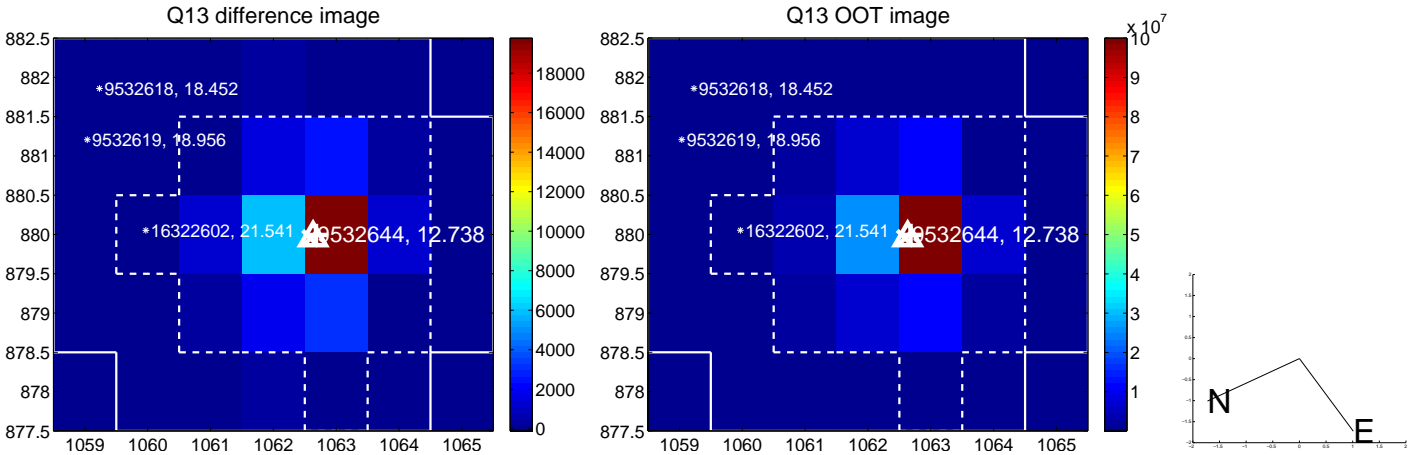
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



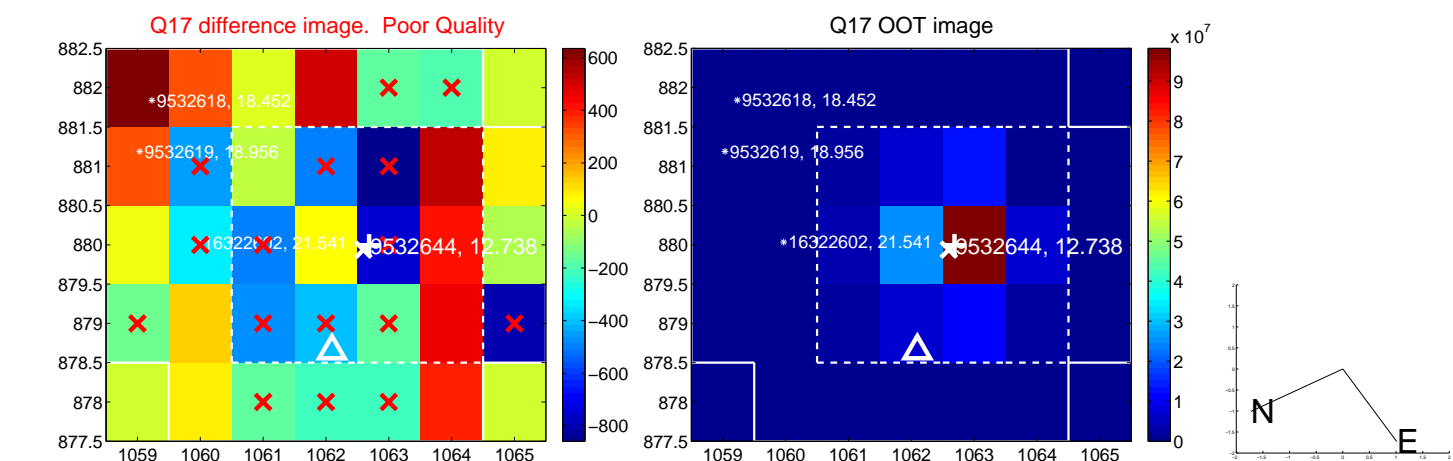
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



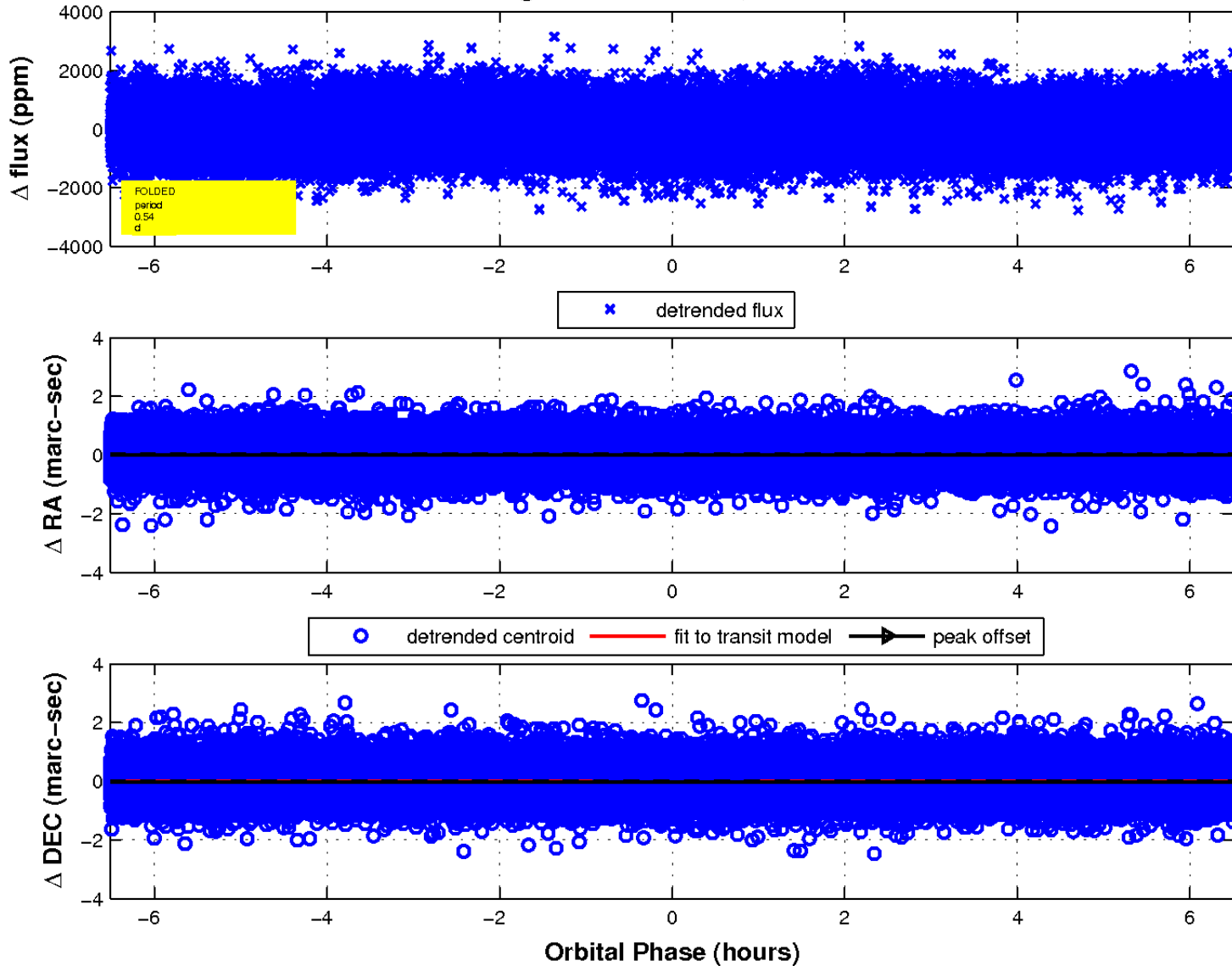
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

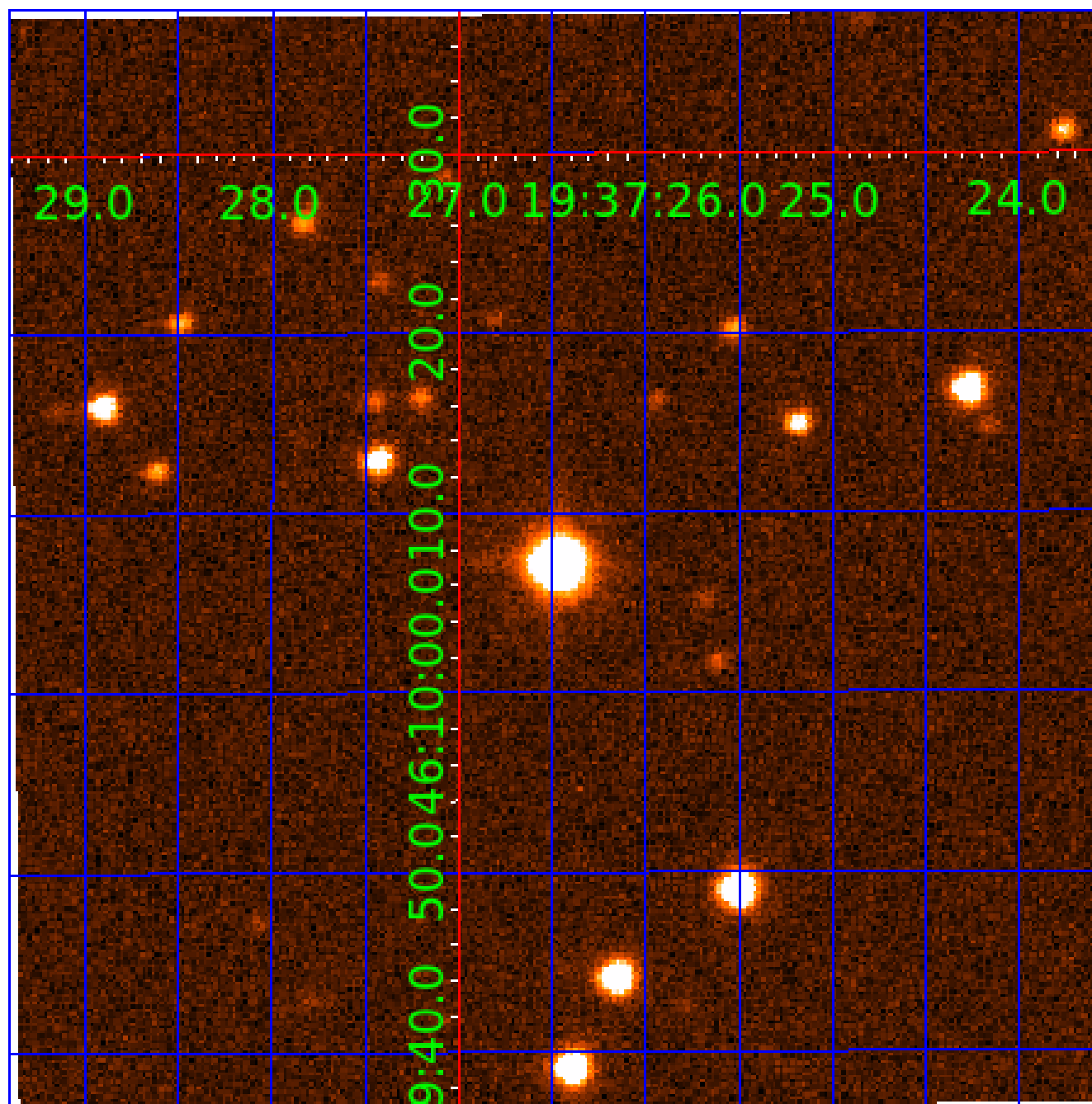


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 009532644

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})
009532644-01	OBS	No	0.542873	131.696791	81.3	2.251	11.0	11.9	4.18	7523	4.38	0.00
009532644-02	OBS	No	7.558805	137.806885	305.4	3.367	9.4	8.2	4.18	7523	8.57	5033.07
009532644-03	OBS	No	12.658635	134.069580	518.4	3.459	8.3	8.9	4.18	7523	17.63	2530.78
009532644-04	OBS	No	173.651202	139.091643	1478.3	3.188	8.2	7.9	4.18	7523	29.76	77.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532644-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009532644-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009532644-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009532644-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

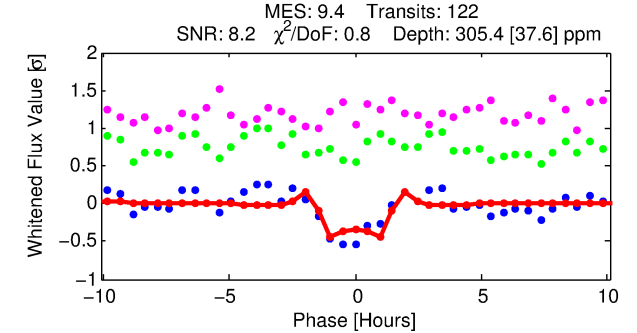
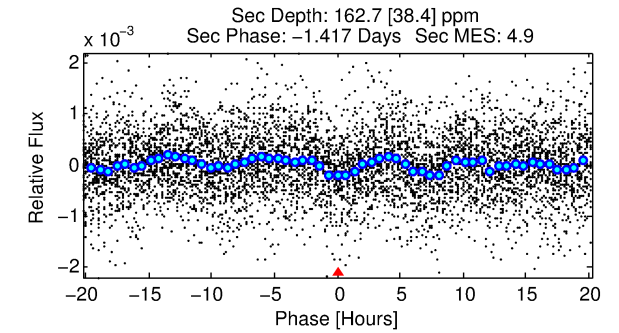
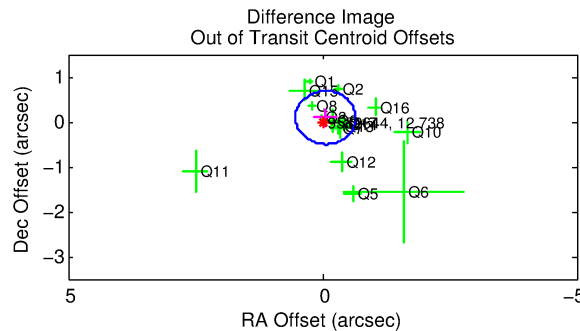
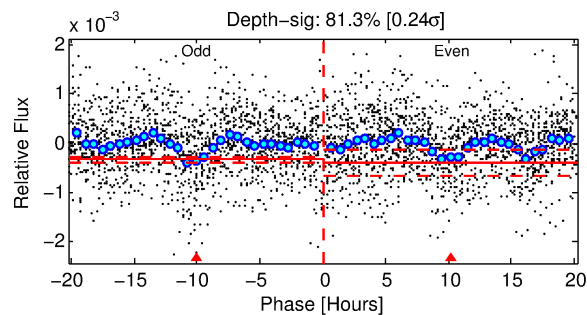
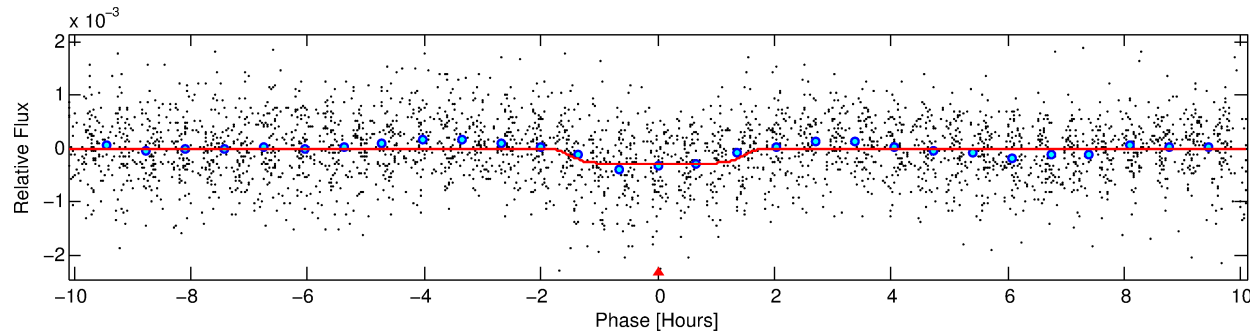
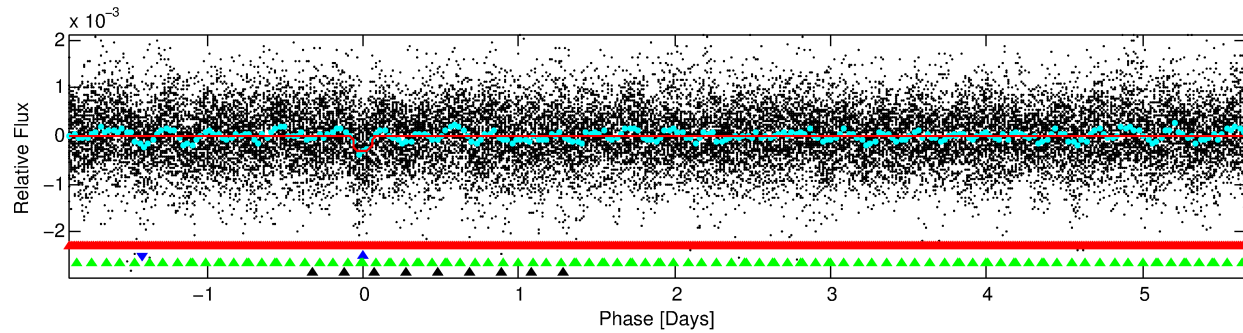
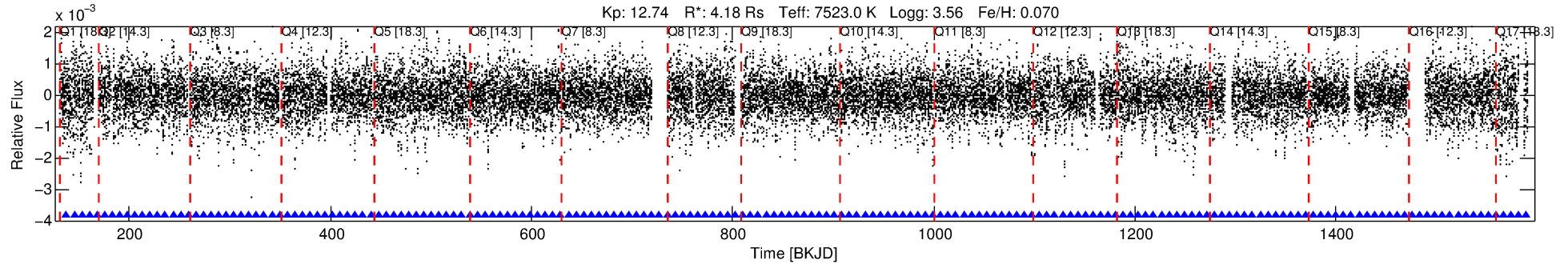
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009532644-02

No Significant Match Found

DV One-Page Summary

KIC: 9532644 Candidate: 2 of 4 Period: 7.559 d



DV Fit Results:

Period = 7.55880 [0.00005] d
Epoch = 137.8069 [0.0048] BKJD
Rp/R* = 0.0188 [0.0036]
a/R* = 7.87 [8.33]
b = 0.91 [0.20]
Seff = 5033.07 [4492.88]
Teq = 2148 [479] K
Rp = 8.57 [4.79] Re
a = 0.0998 [0.0531] AU
Ag = 12.12 [11.90] [0.93 σ]
Teffp = 6196 [745] K [4.57 σ]

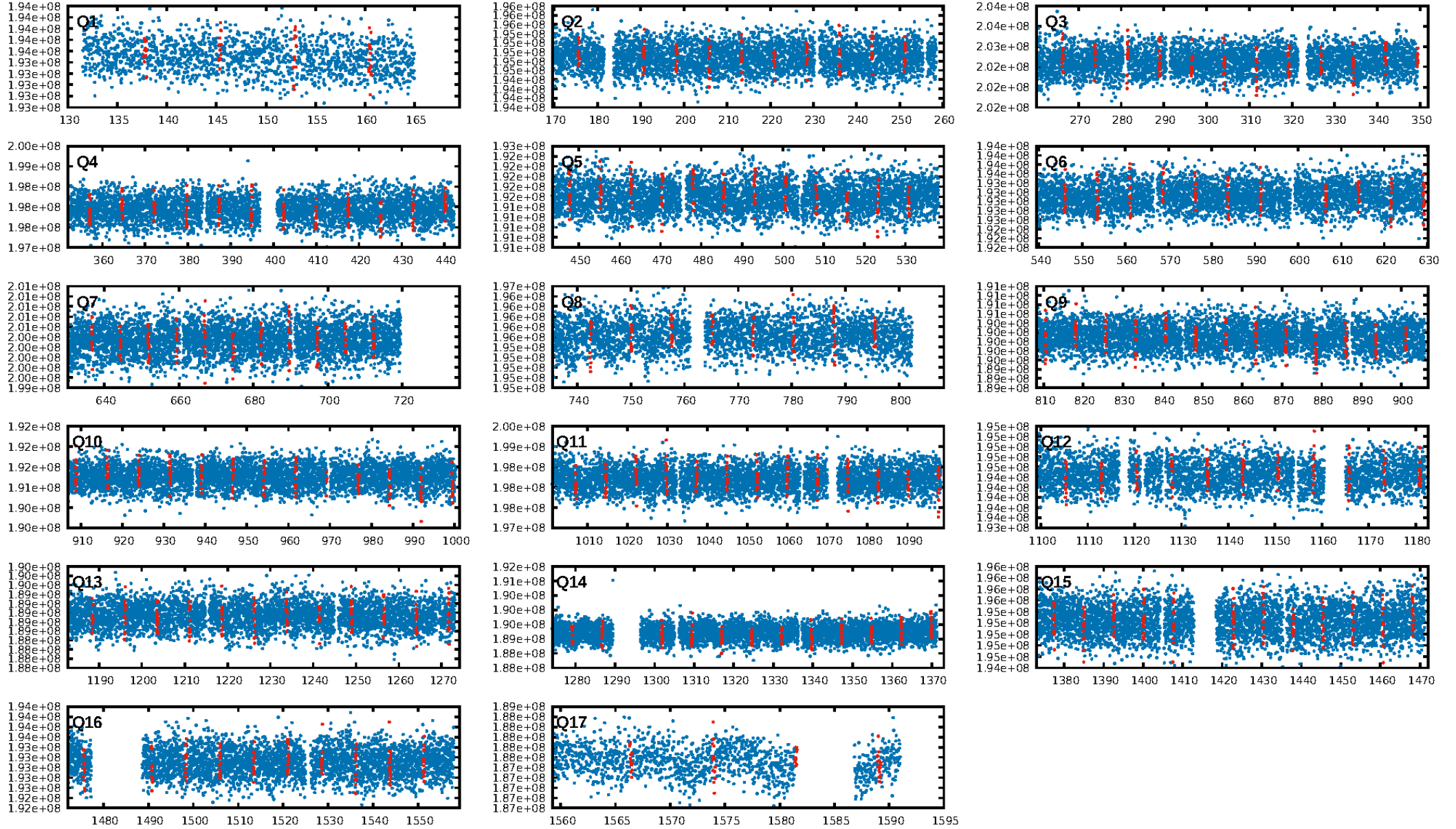
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.57 σ]
LongPeriod-sig: 100.0% [25.35 σ]
ModelChiSquare2-sig: 23.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.35e-13
RollingBand-fgt: 1.00 [116/116]
GhostDiagnostic-chr: -0.807
Centroid-sig: 3.0%
Centroid-so: 0.303 arcsec [2.25 σ]
OotOffset-rm: 0.106 arcsec [0.54 σ]
KicOffset-rm: 0.208 arcsec [0.94 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 0.00 [0/17]

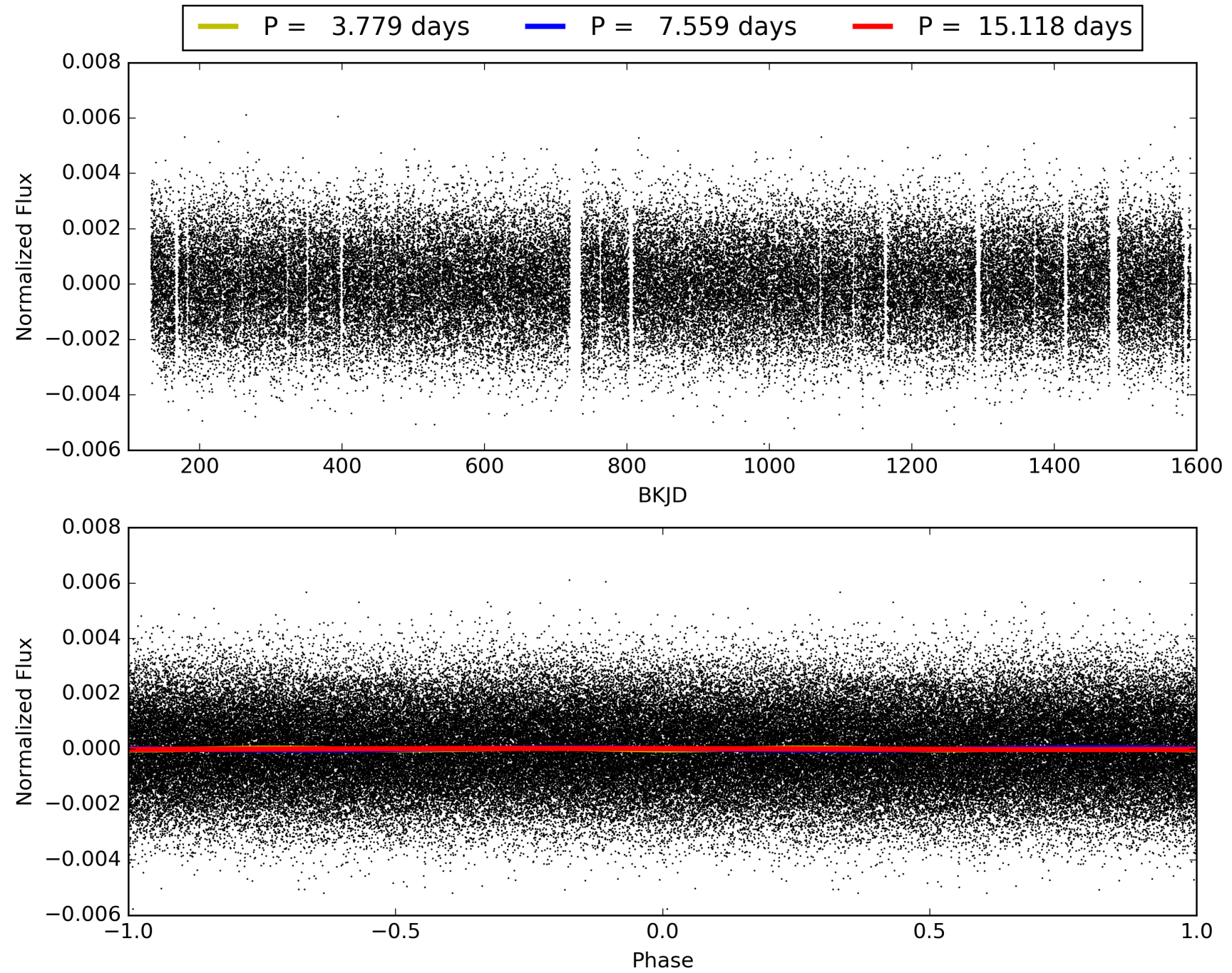
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:12:23 Z

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

TCE 009532644-02, PDC Light Curves

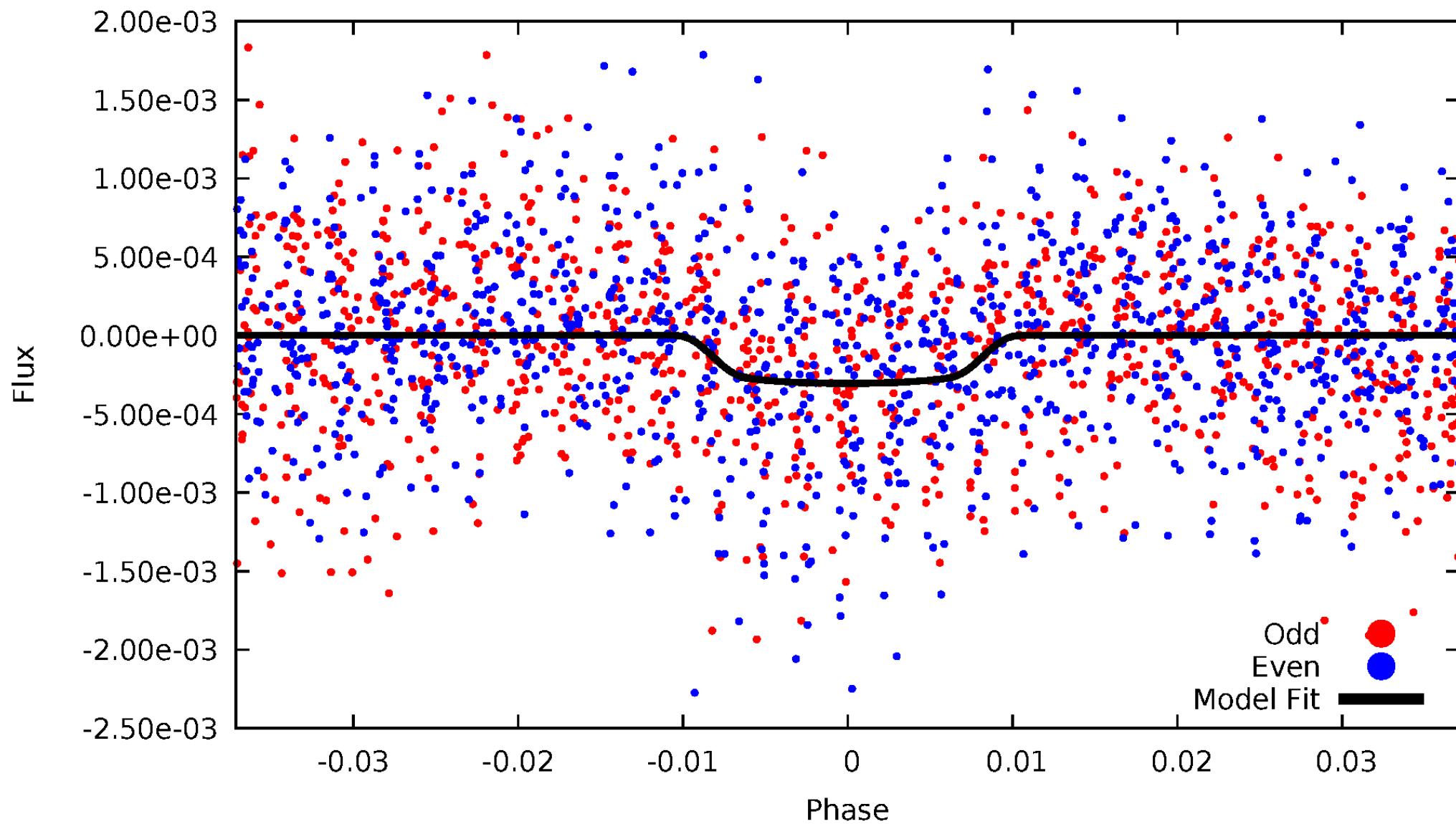


TCE 009532644-02



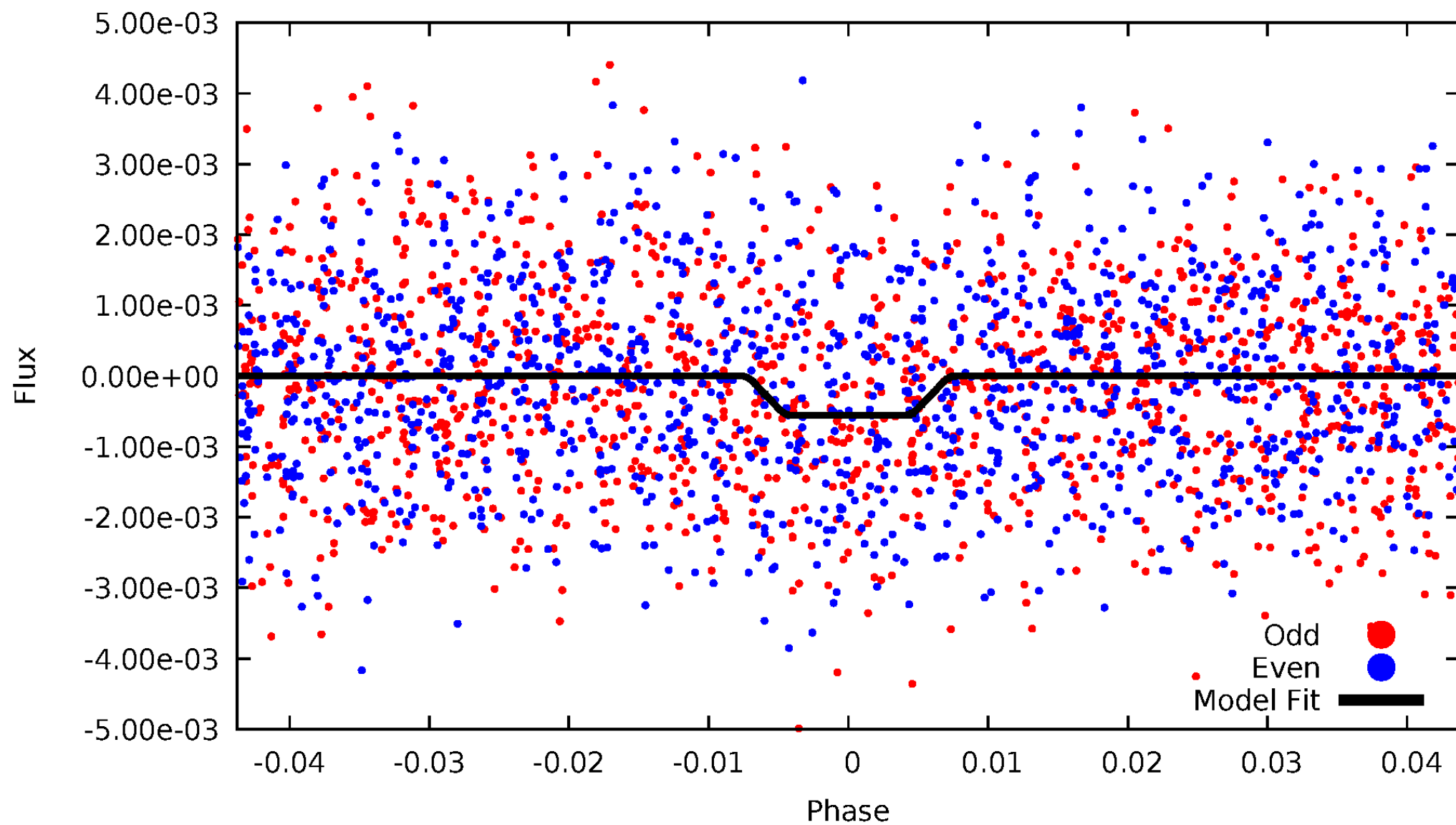
DV Odd/Even

TCE 009532644-02



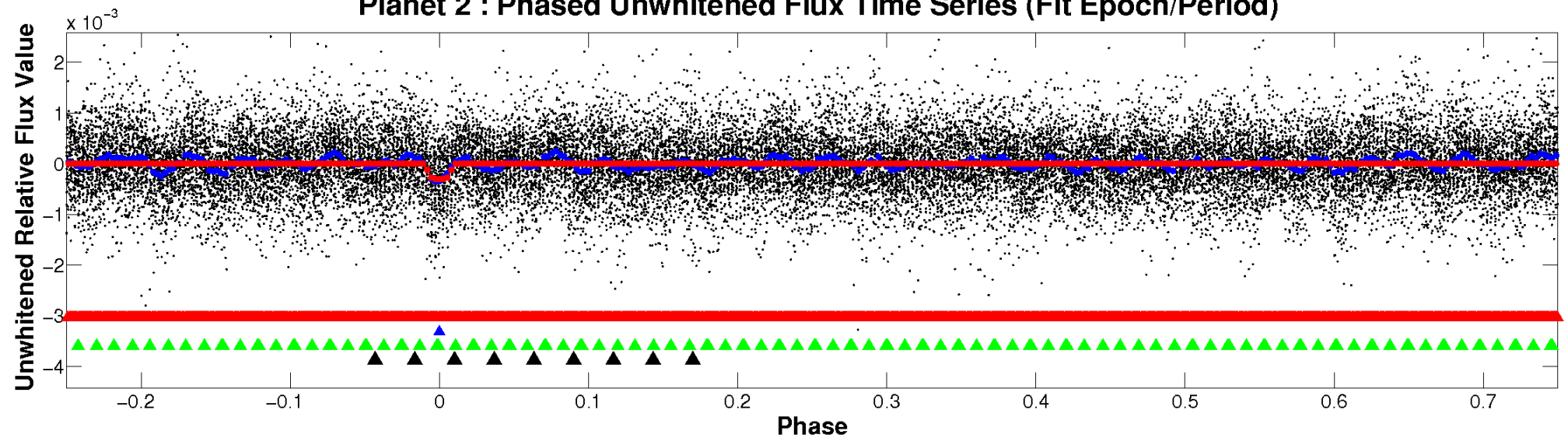
ALT Odd/Even

TCE 009532644-02

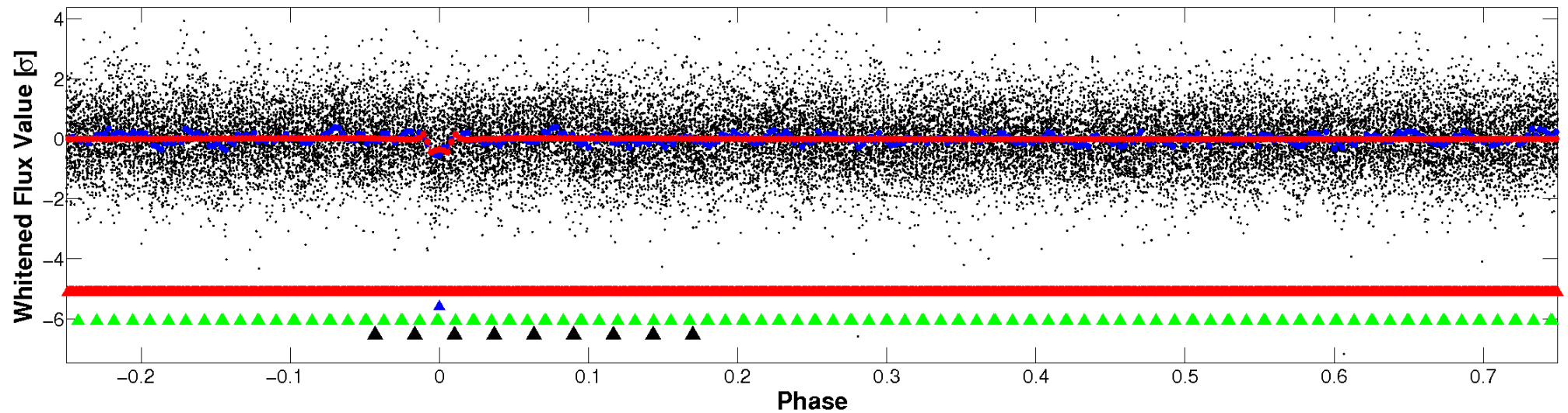


Non-Whitened Vs. Whitened Light Curve

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

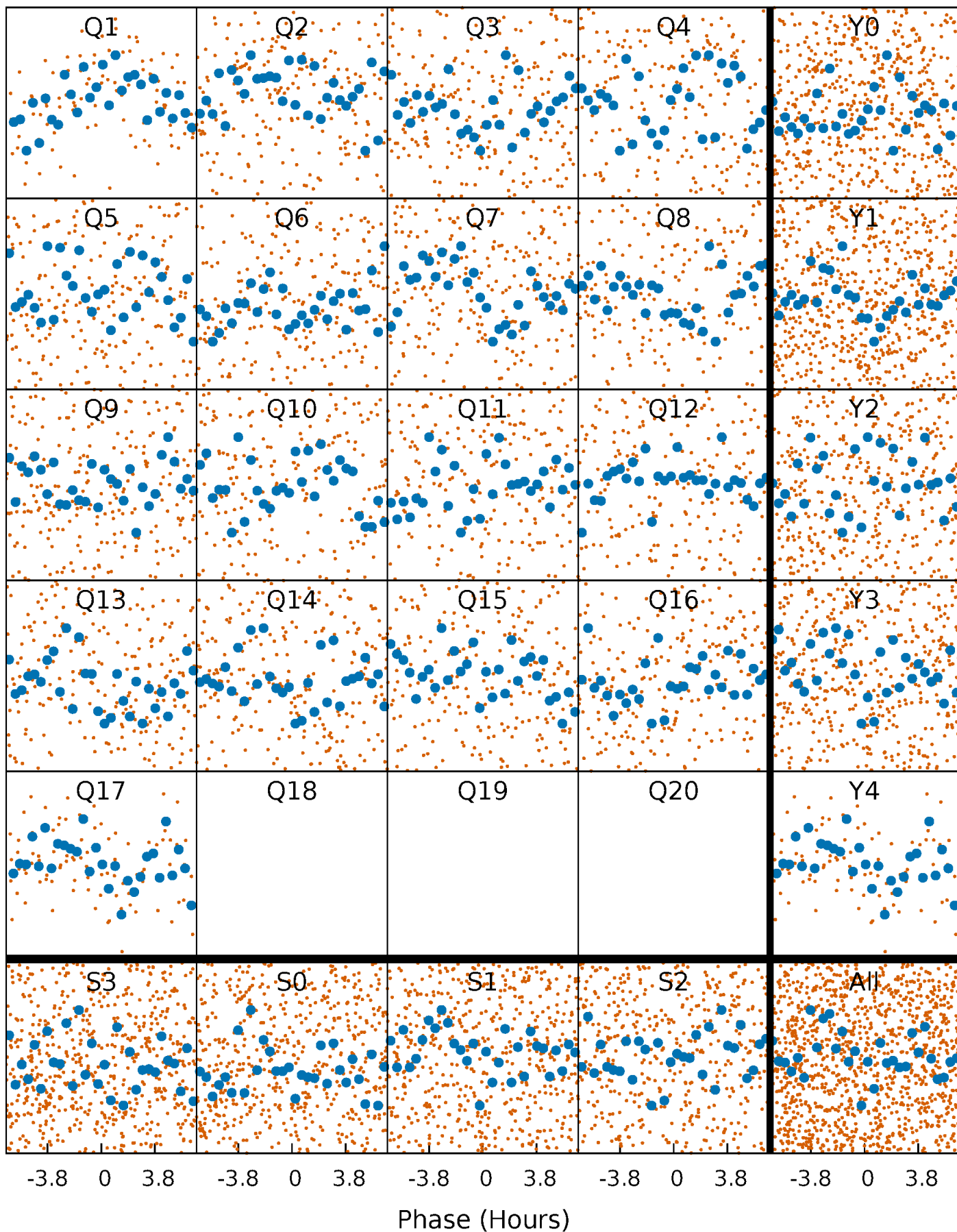


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



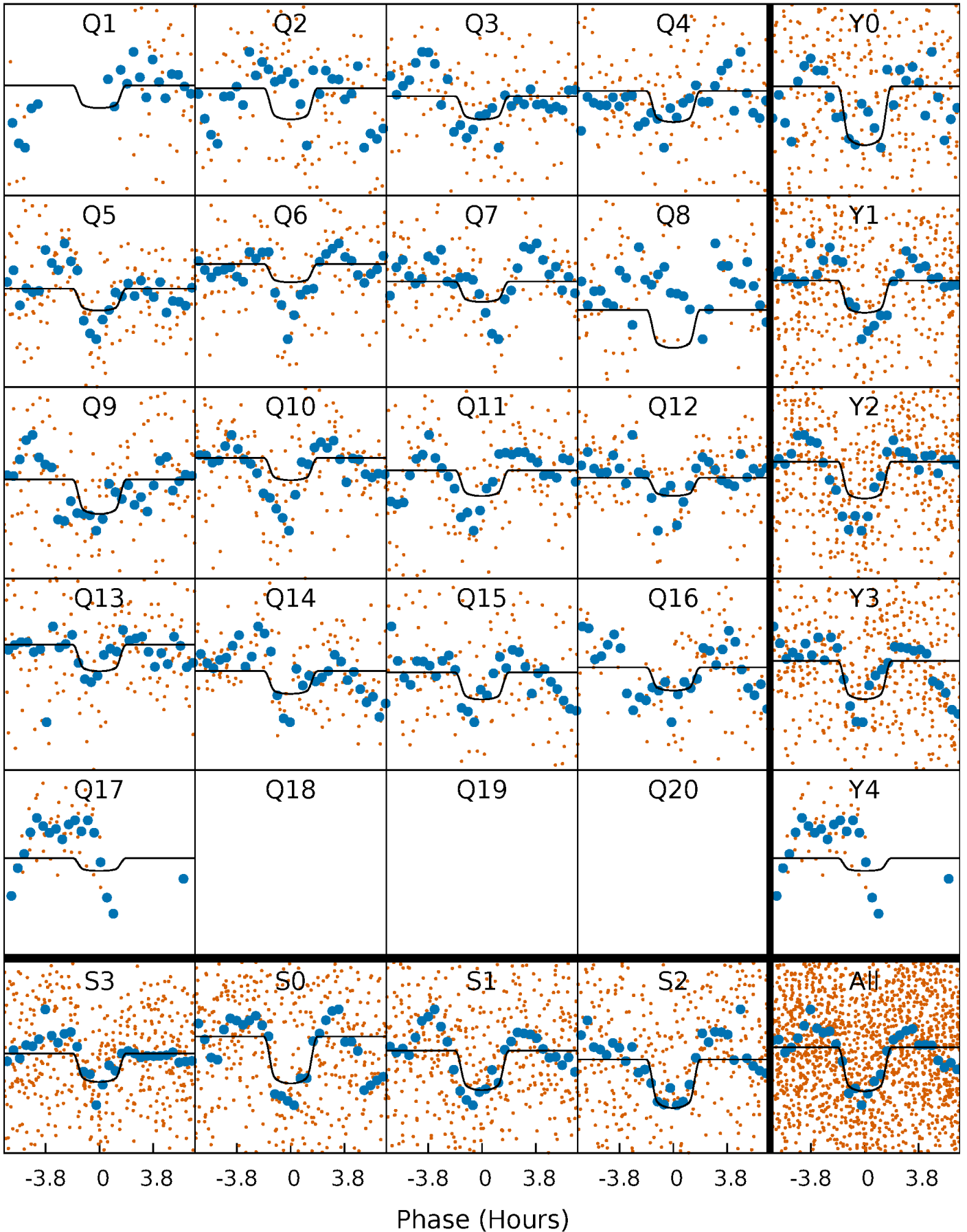
PDC Quarter-Phased Transit Curves

TCE 009532644-02 P= 7.558805 Days $T_0=137.806885$ (BKJD)



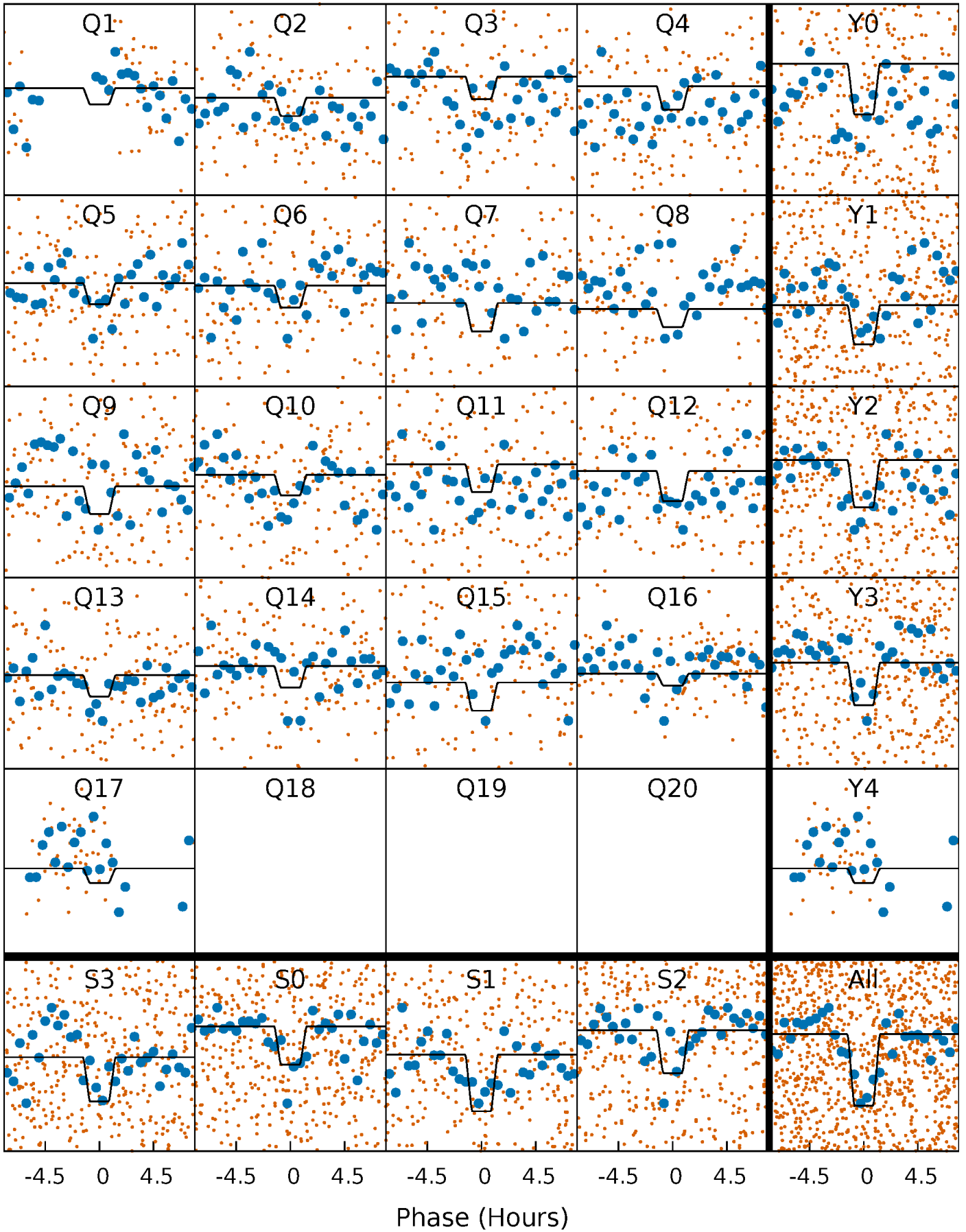
DV Quarter-Phased Transit Curves

TCE 009532644-02 P= 7.558805 Days $T_0=137.806885$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

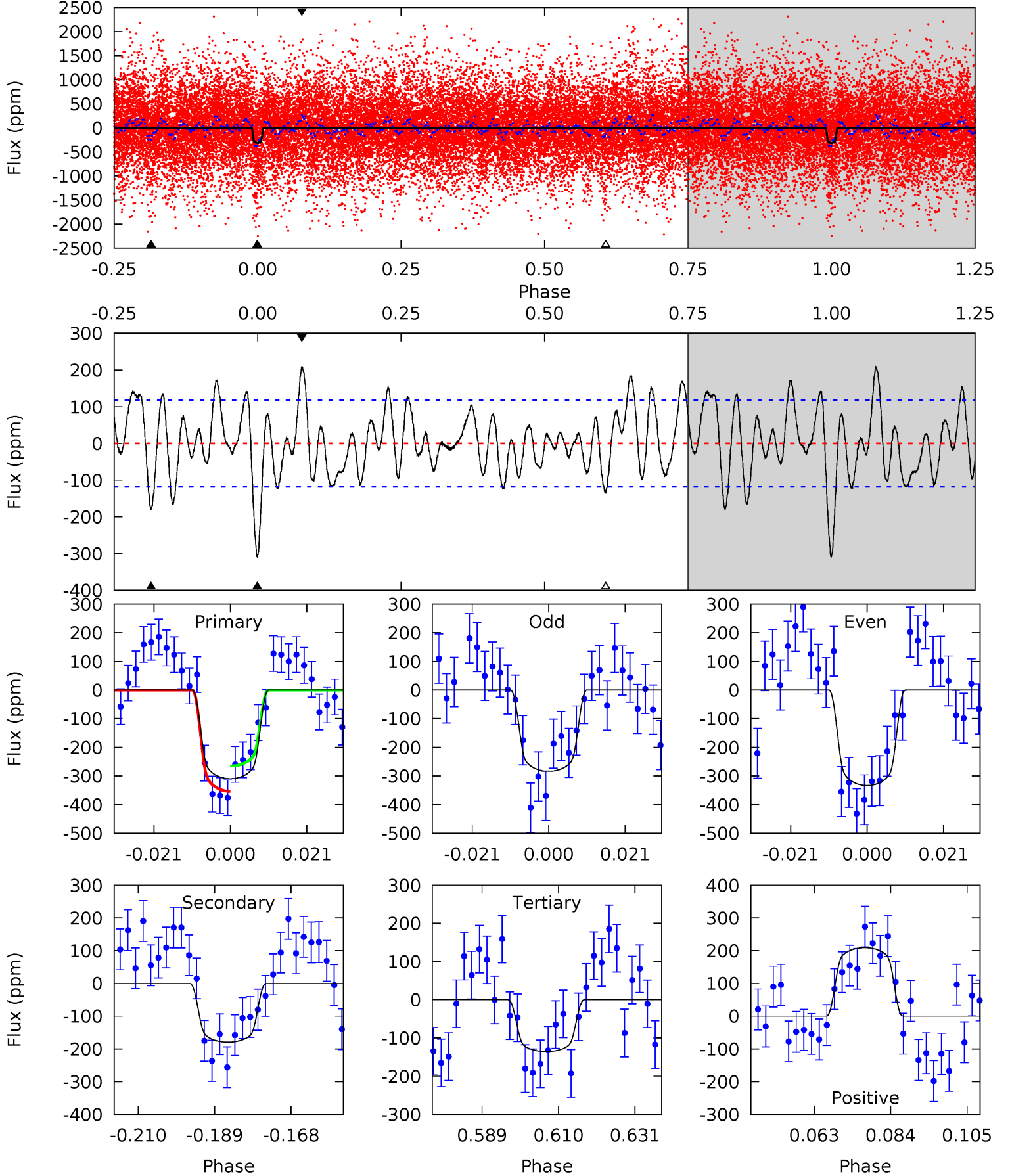
TCE 009532644-02 P= 7.558455 Days $T_0=137.836331$ (BKJD)



DV Model-Shift Uniqueness Test

009532644-02, P = 7.558805 Days, E = 130.248080 Days

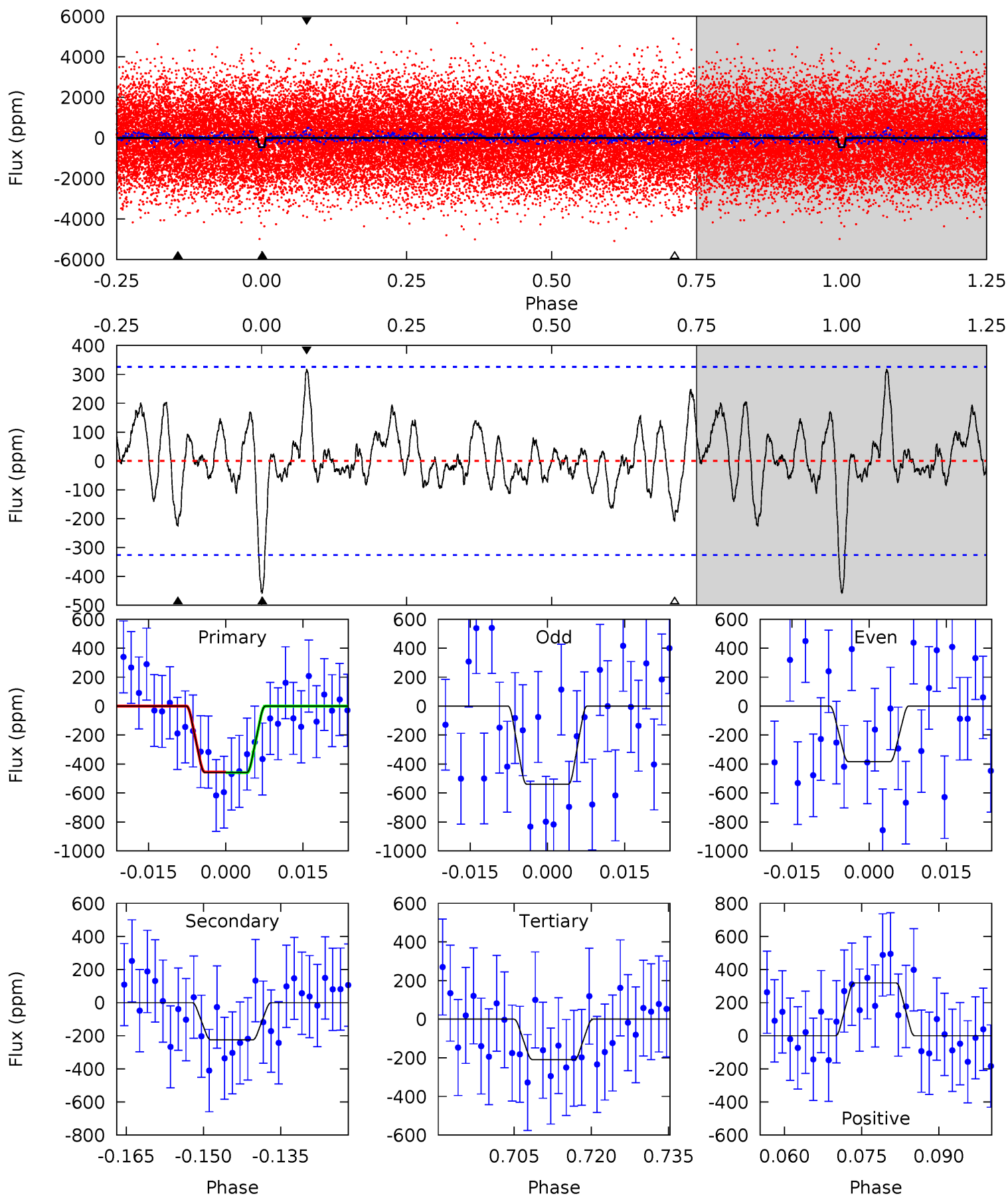
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	7.42	5.60	8.64	4.88	2.31	3.02	7.19	4.16	1.82	-1.22	1.03	1.02	0.40	1.82



Alt Model-Shift Uniqueness Test

009532644-02, P = 7.558455 Days, E = 130.277876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.95	3.41	3.18	4.84	4.95	2.43	1.28	3.77	2.10	0.23	-1.43	1.18	0.82	0.41	0.04



Stellar Parameters For KIC 009532644

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7523^{+207}_{-337}	$3.561^{+0.522}_{-0.058}$	$0.070^{+0.200}_{-0.300}$	$4.178^{+0.549}_{-2.195}$	$2.318^{+0.183}_{-0.731}$	$0.045^{+0.279}_{-0.009}$
	+3%/-4%	+15%/-2%	+286%/-429%	+13%/-53%	+8%/-32%	+624%/-20%
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 009532644-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-180 ± 24	$7.31^{+2.50}_{-2.14}$	2835^{+224}_{-401}	6211^{+845}_{-614}	18^{+18}_{-8}
Alt.	-225 ± 66	$9.71^{+2.52}_{-2.84}$	2880^{+196}_{-376}	5812^{+694}_{-590}	12^{+12}_{-5}

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 $A_{obs} \gg 1.0$

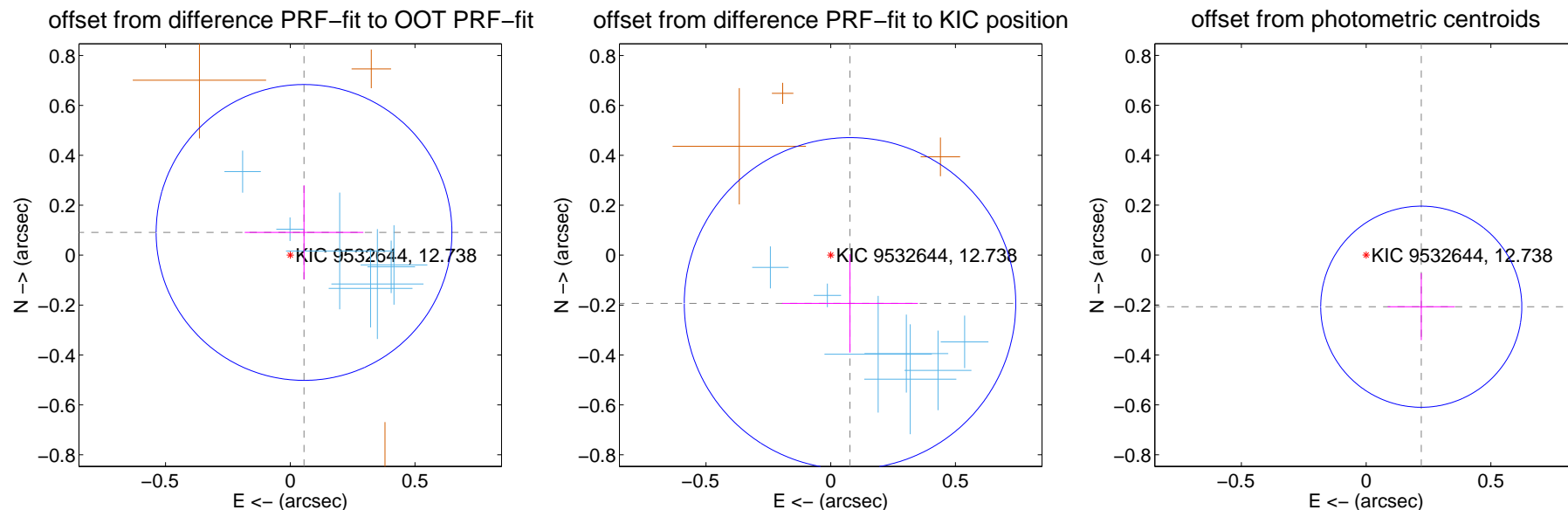
DV Centroid Data

Supplemental centroid analysis for 009532644-02. Kepler magnitude: 12.74. Transit SNR 8.16

There are 10 quarters with good PRF difference image offsets

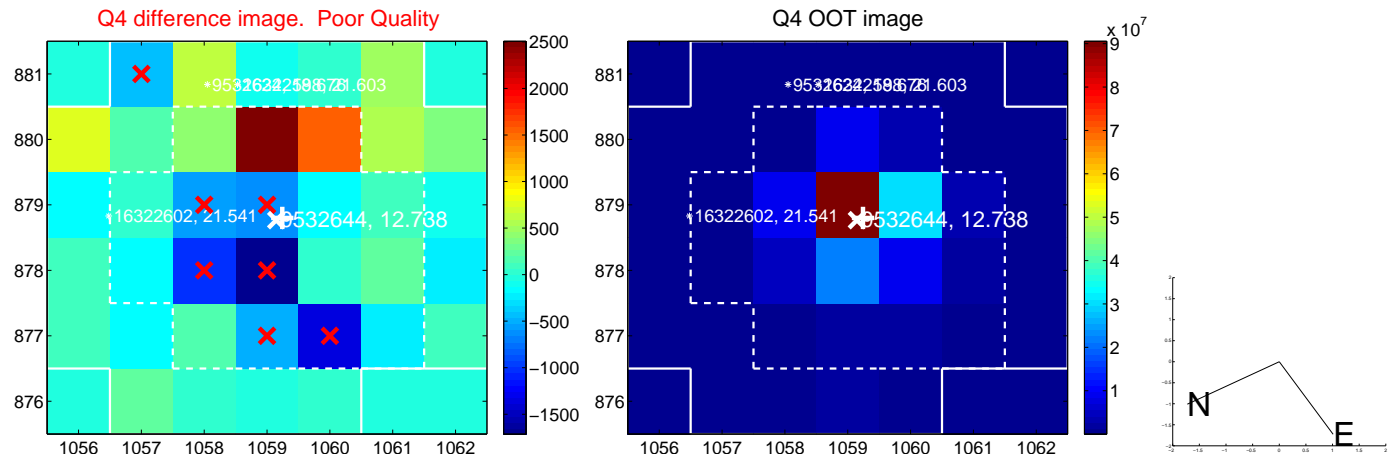
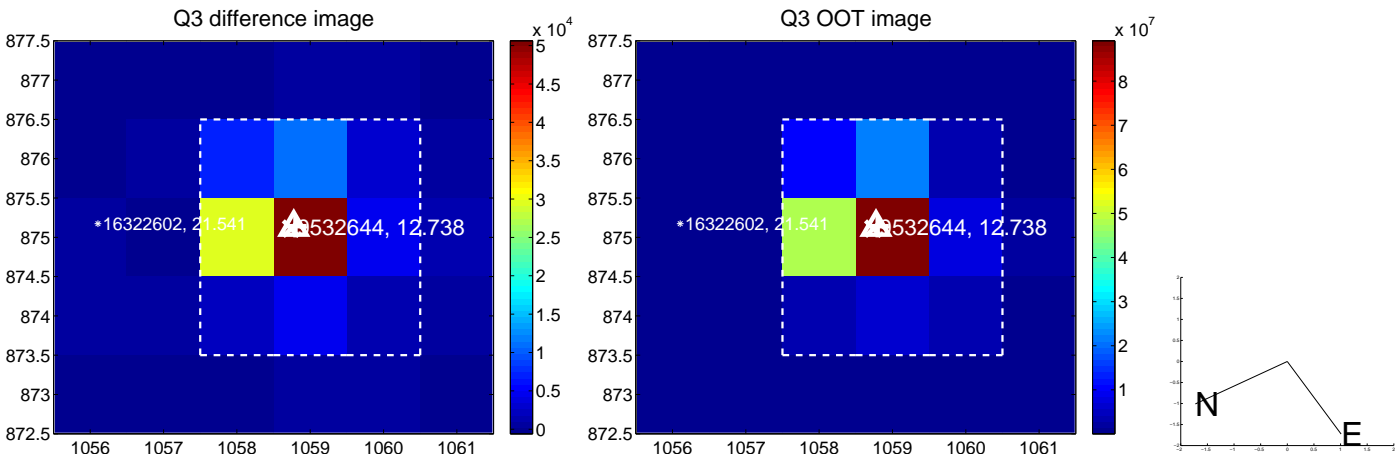
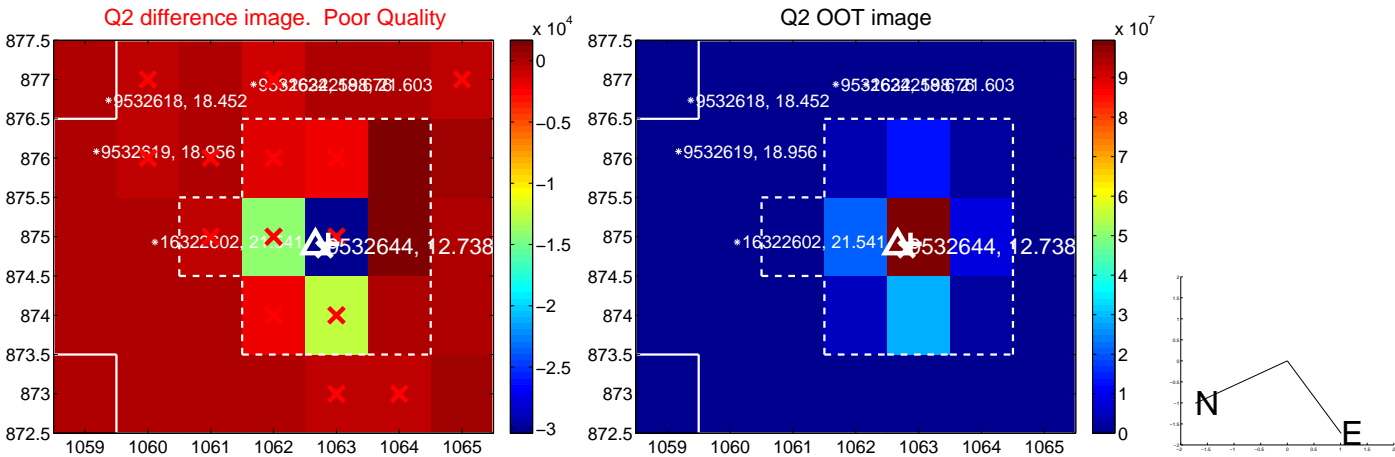
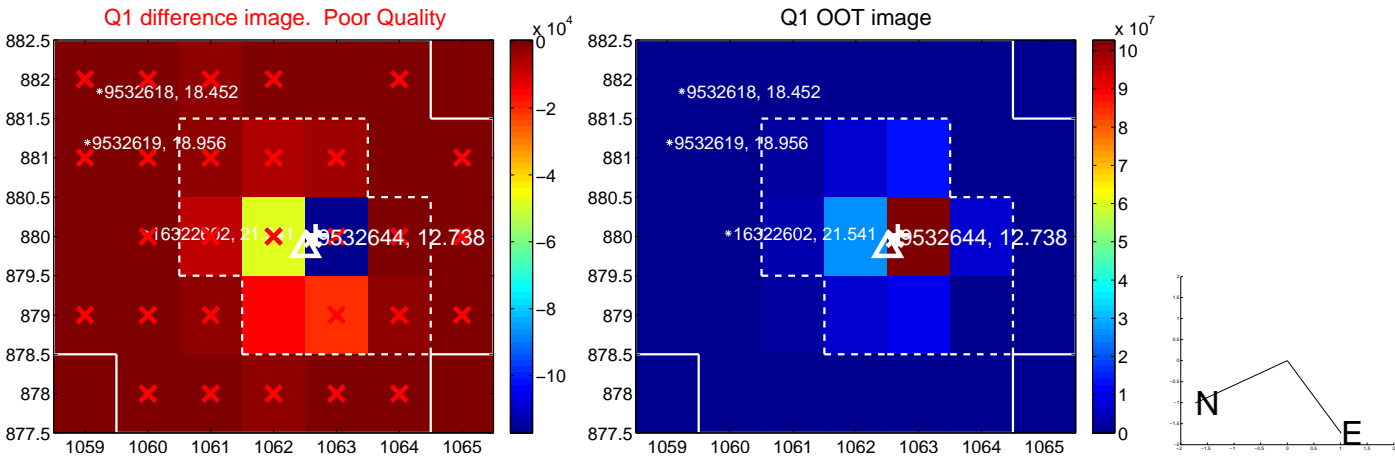
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.106 ± 0.198	0.54	-0.055 ± 0.238	0.091 ± 0.189
PRF-fit source offset from KIC position	0.208 ± 0.221	0.94	-0.077 ± 0.272	-0.193 ± 0.197
photometric centroid source offset	0.30 ± 0.13	2.25	-0.22 ± 0.13	-0.21 ± 0.13

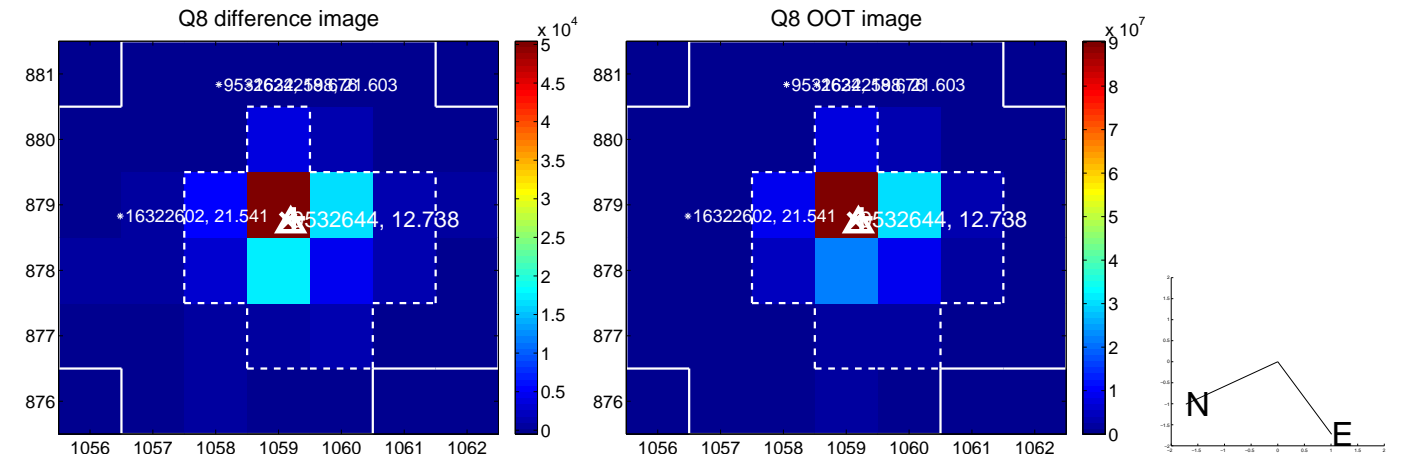
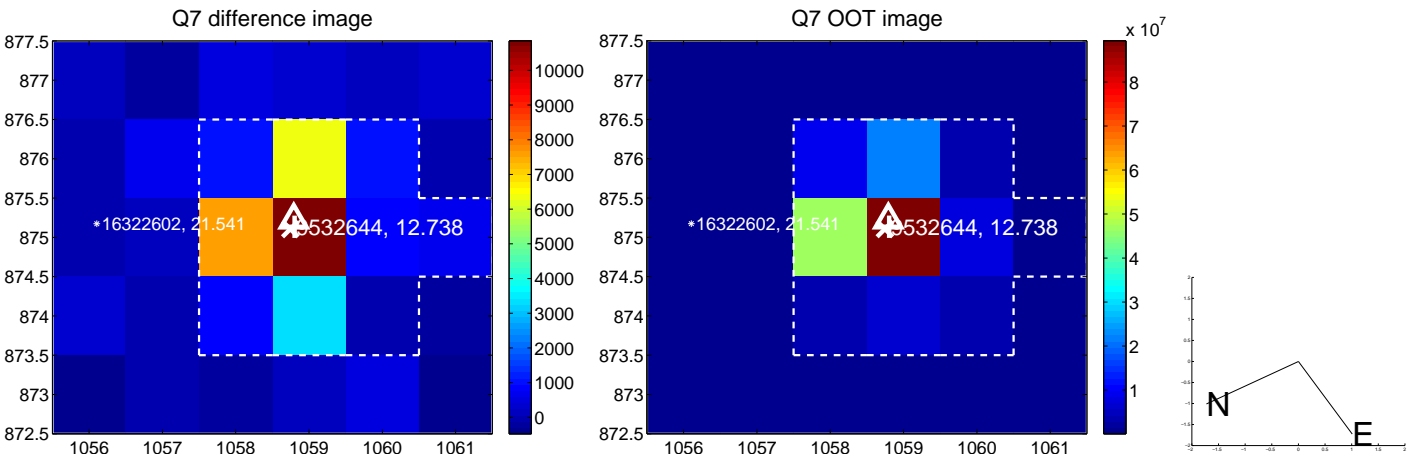
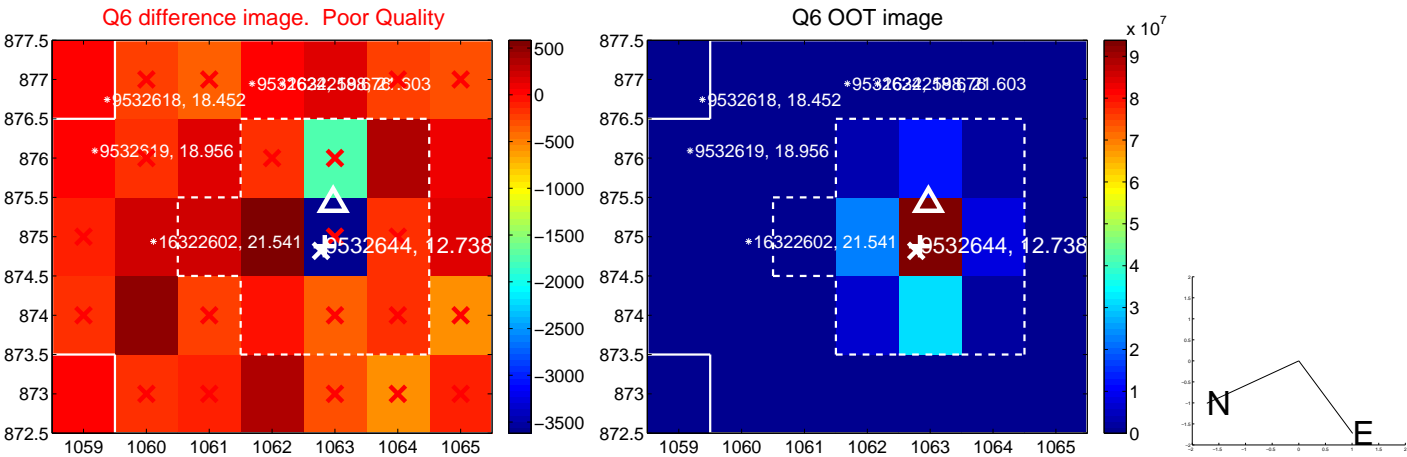
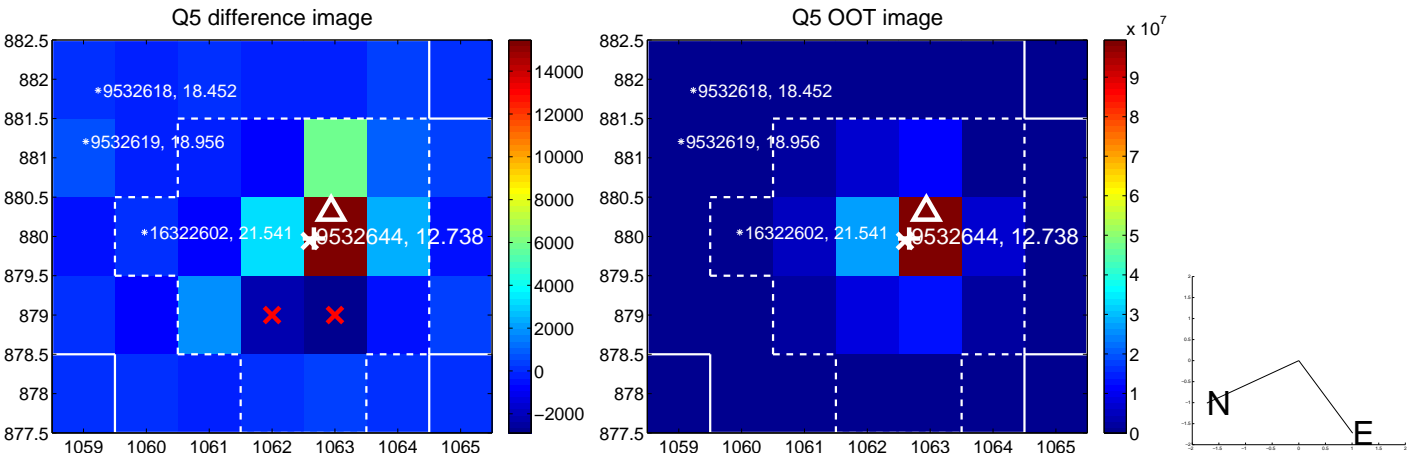


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

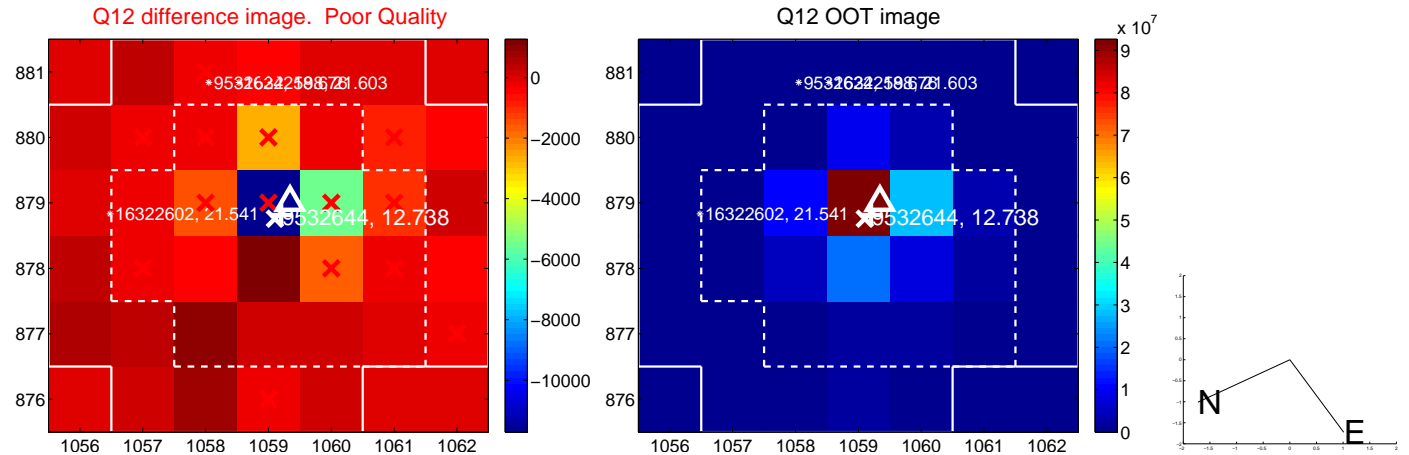
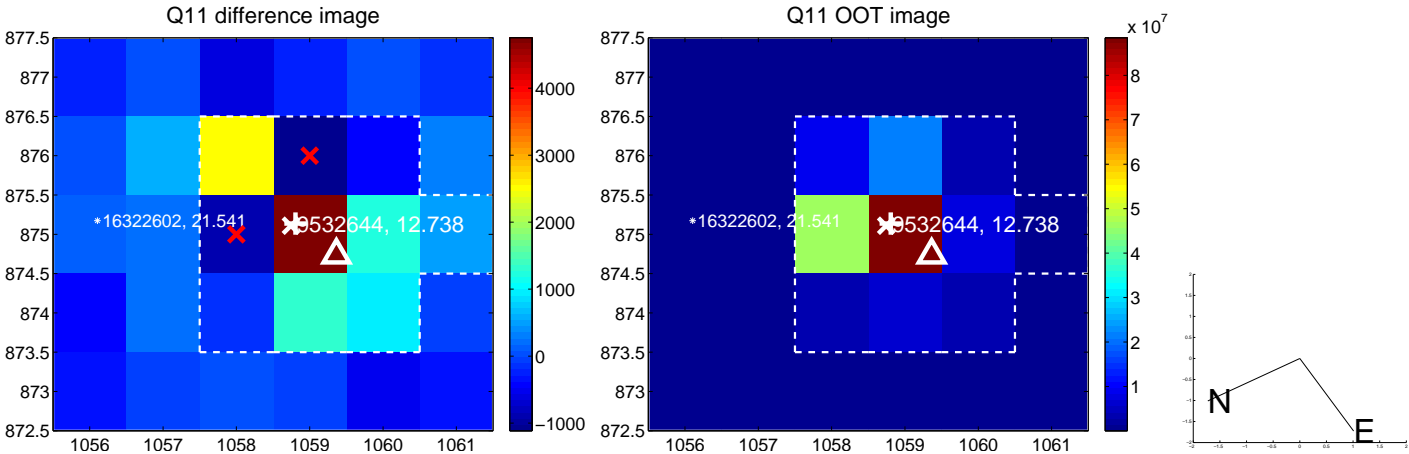
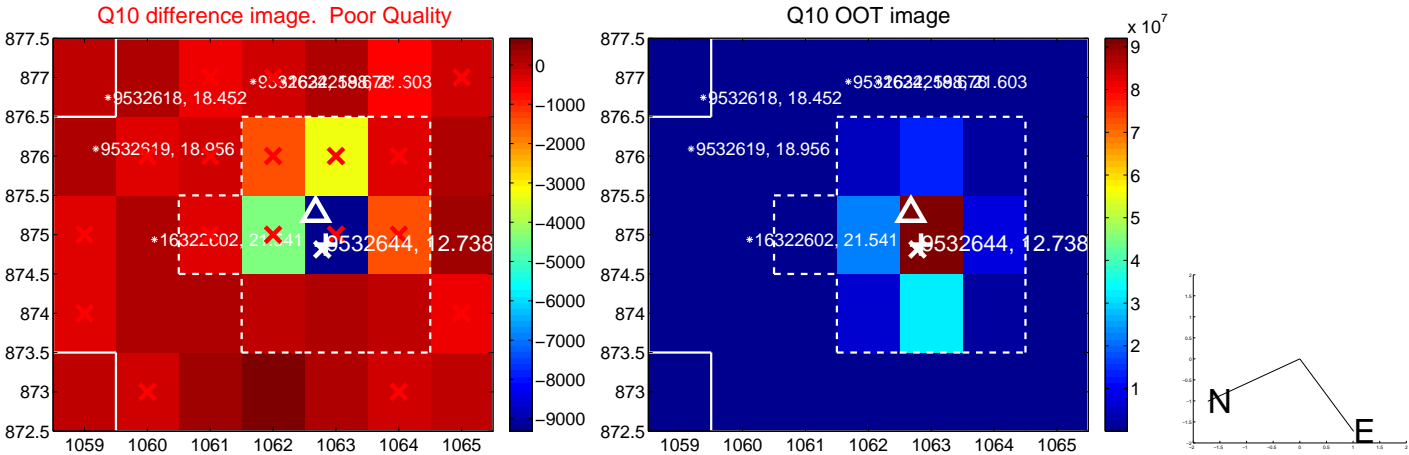
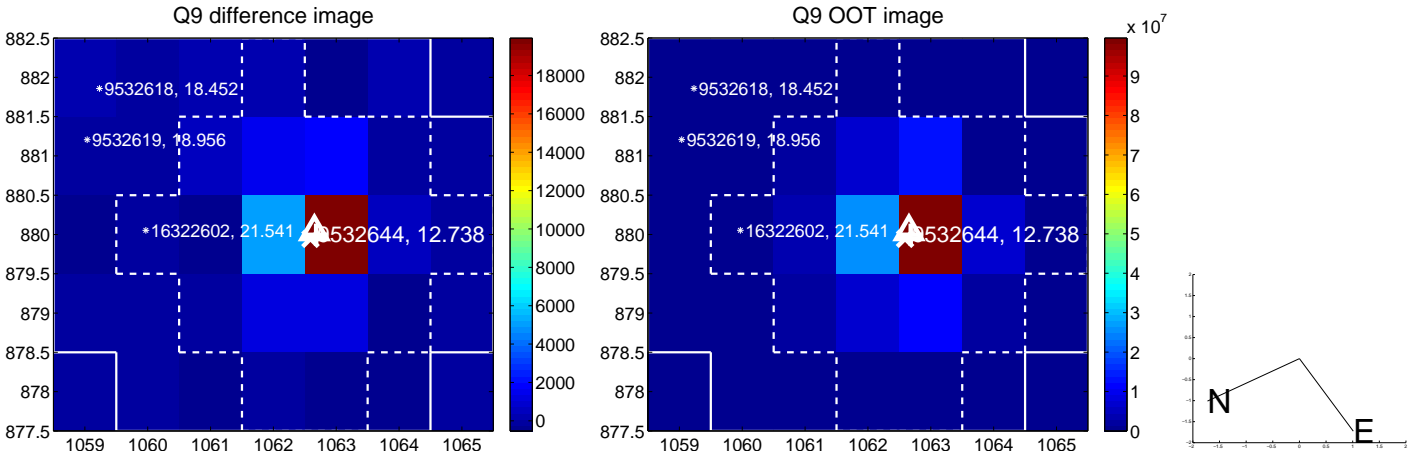
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



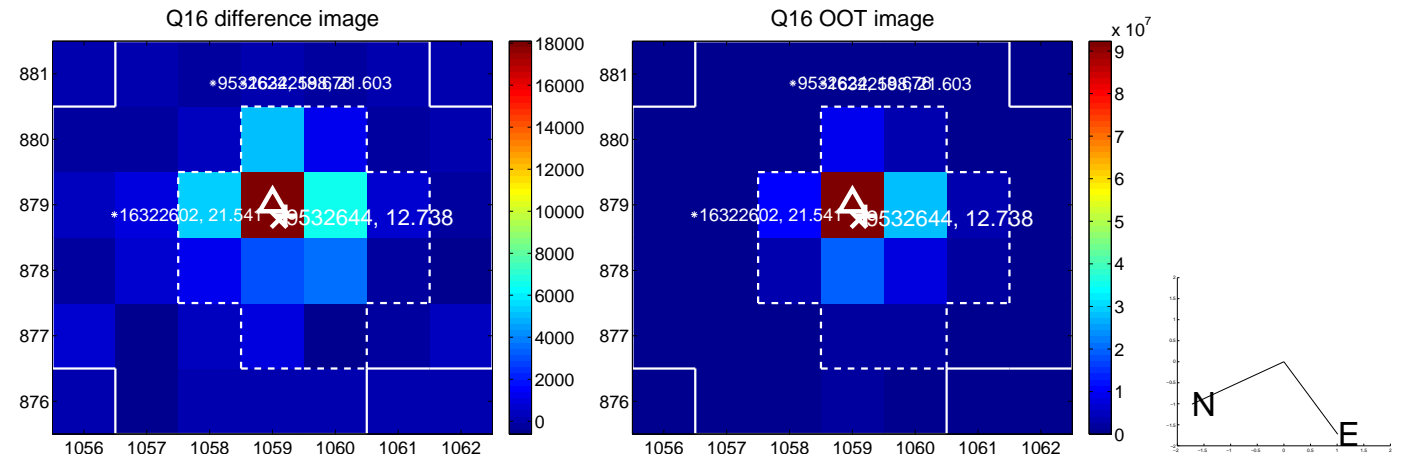
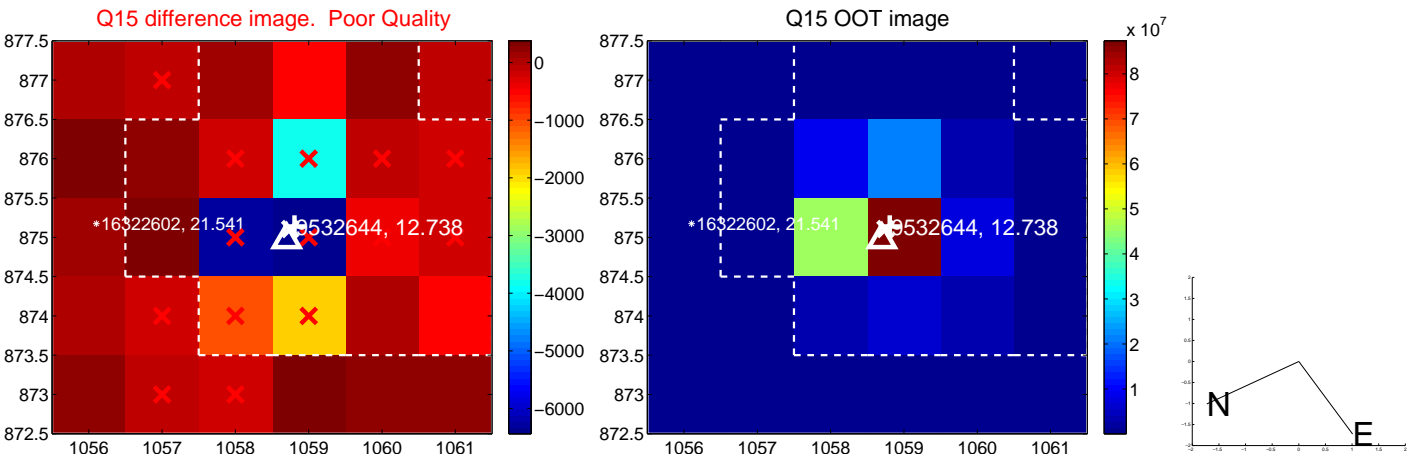
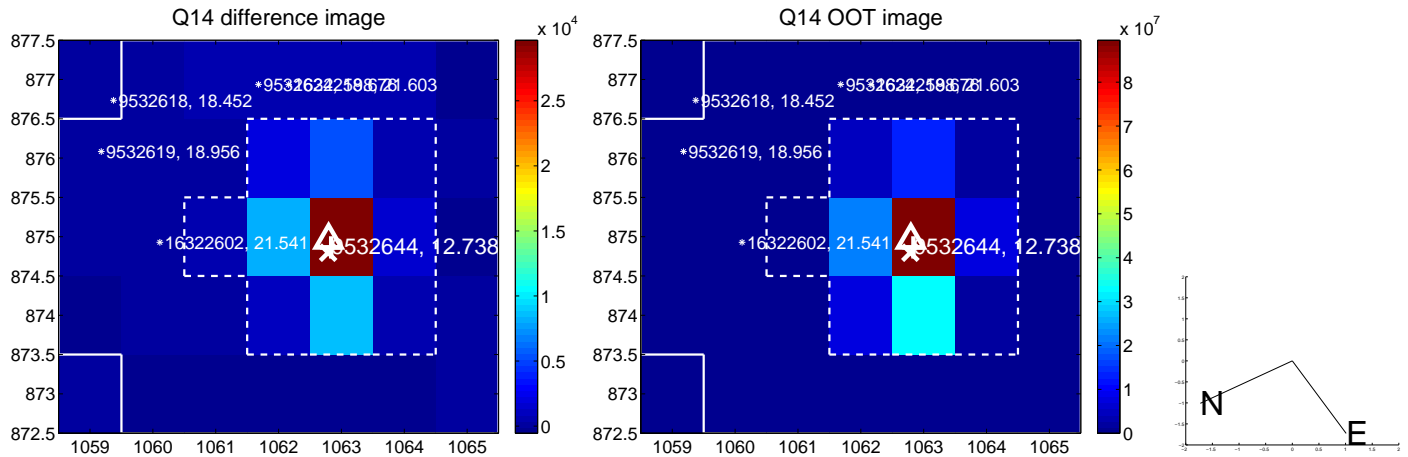
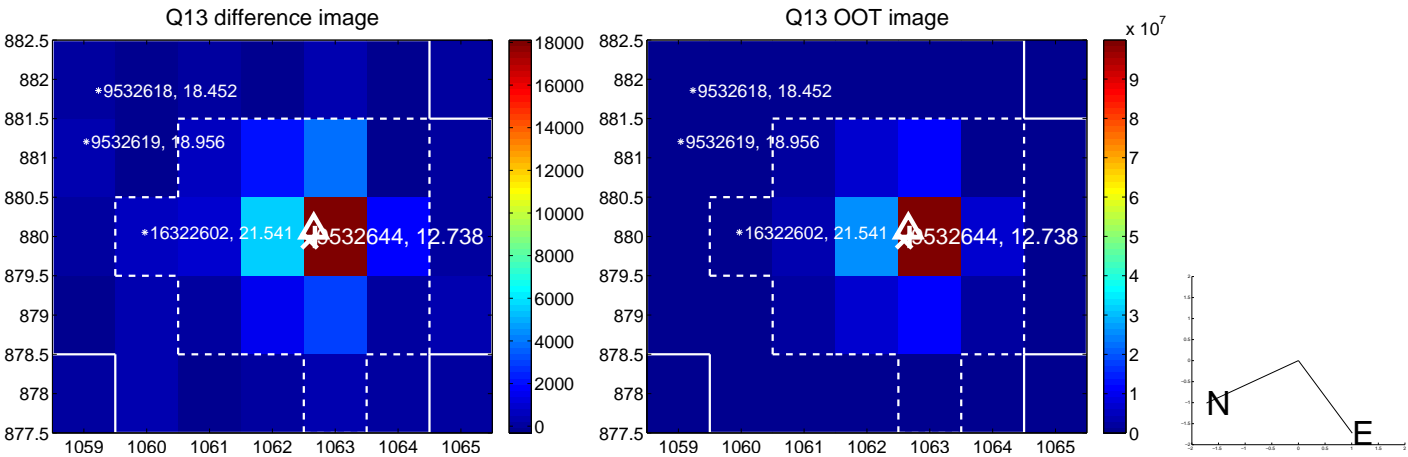
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



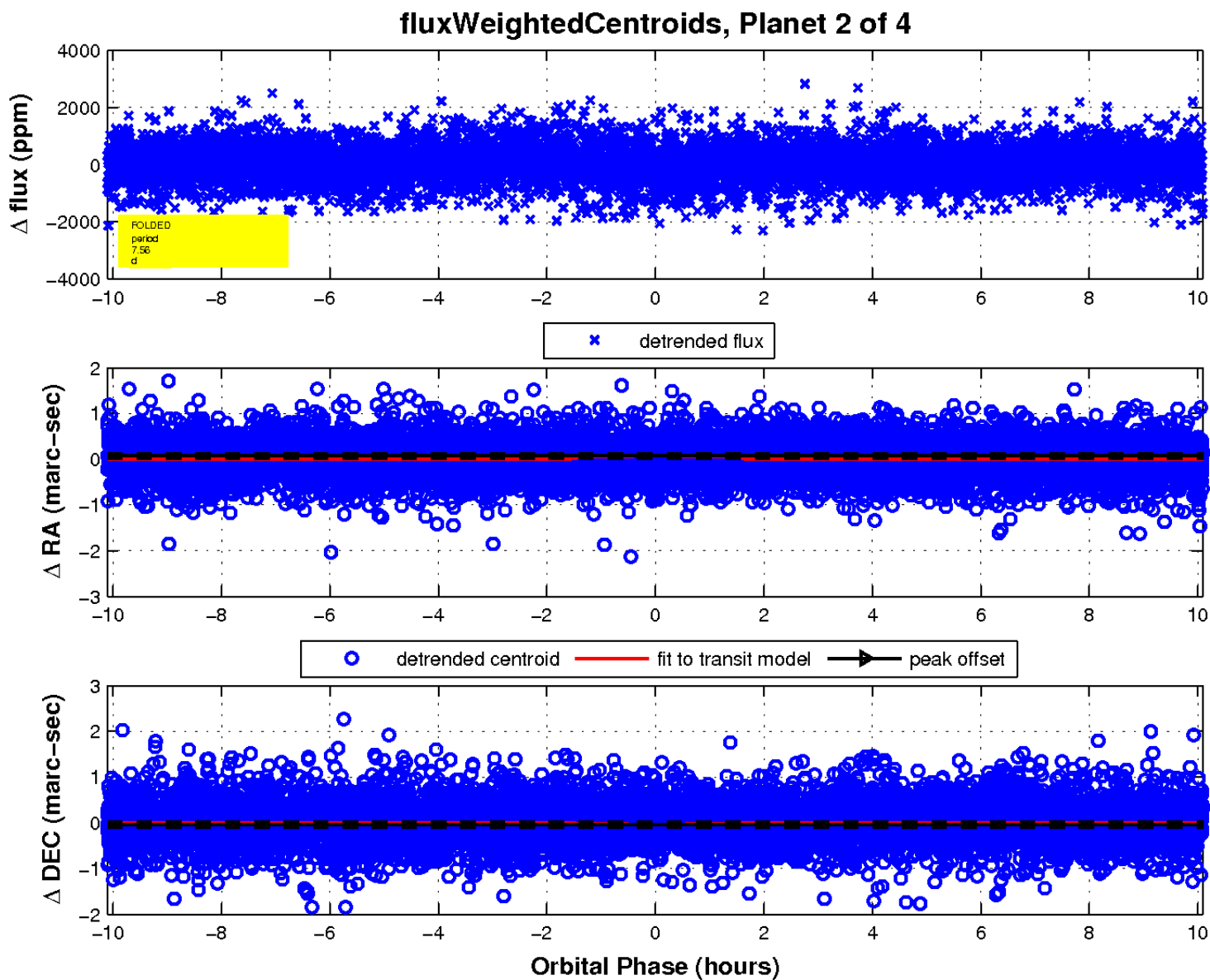
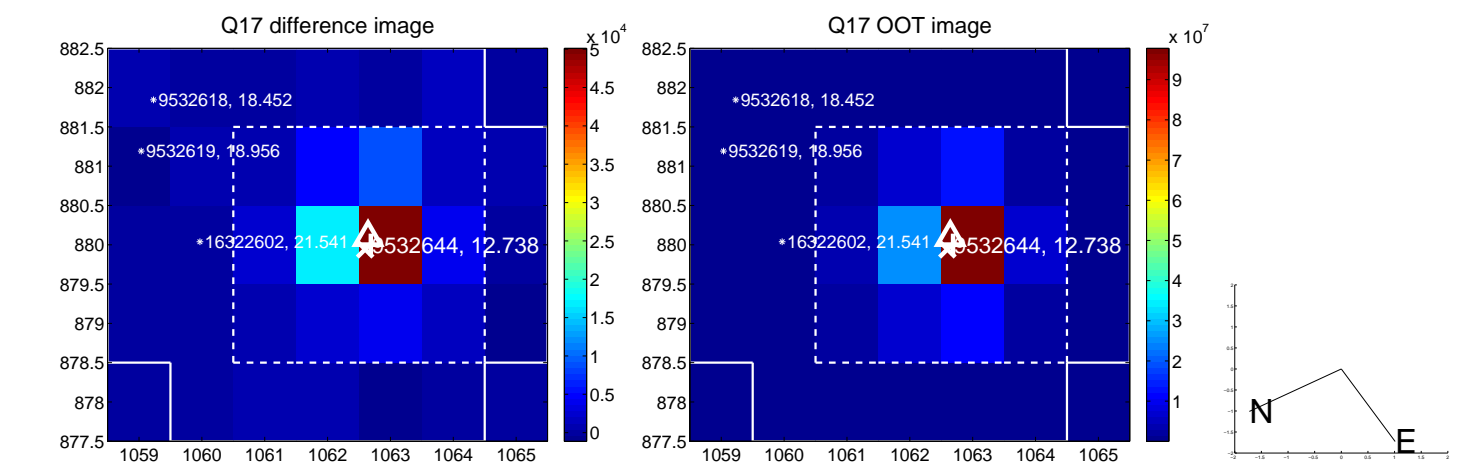
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

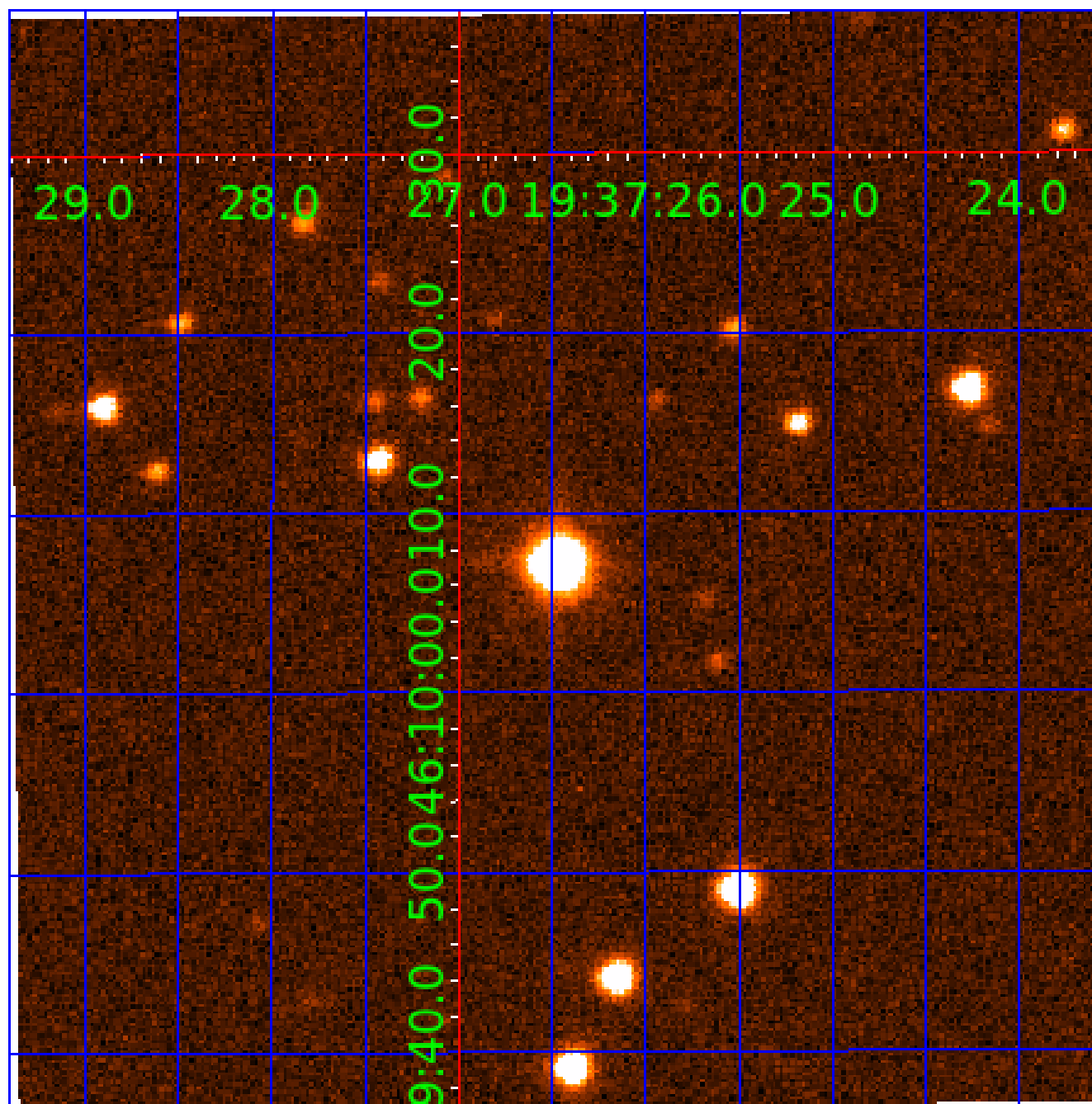


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009532644

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})
009532644-01	OBS	No	0.542873	131.696791	81.3	2.251	11.0	11.9	4.18	7523	4.38	0.00
009532644-02	OBS	No	7.558805	137.806885	305.4	3.367	9.4	8.2	4.18	7523	8.57	5033.07
009532644-03	OBS	No	12.658635	134.069580	518.4	3.459	8.3	8.9	4.18	7523	17.63	2530.78
009532644-04	OBS	No	173.651202	139.091643	1478.3	3.188	8.2	7.9	4.18	7523	29.76	77.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532644-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009532644-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009532644-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009532644-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

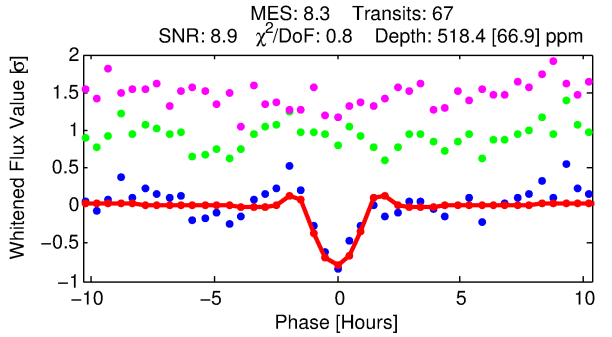
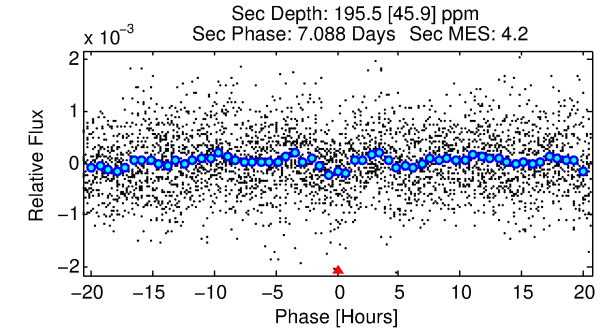
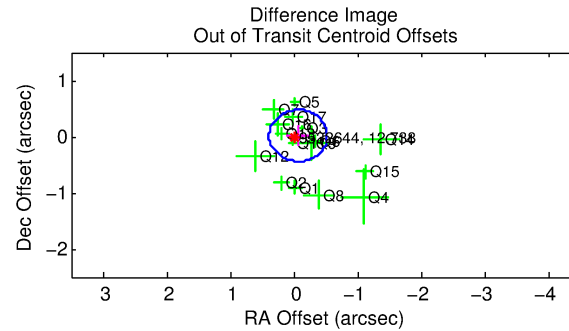
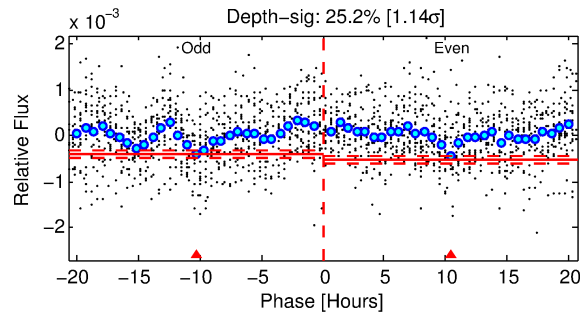
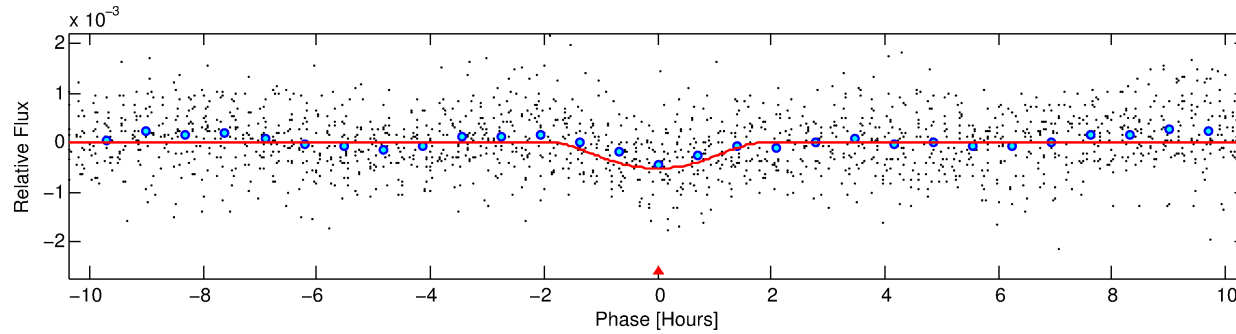
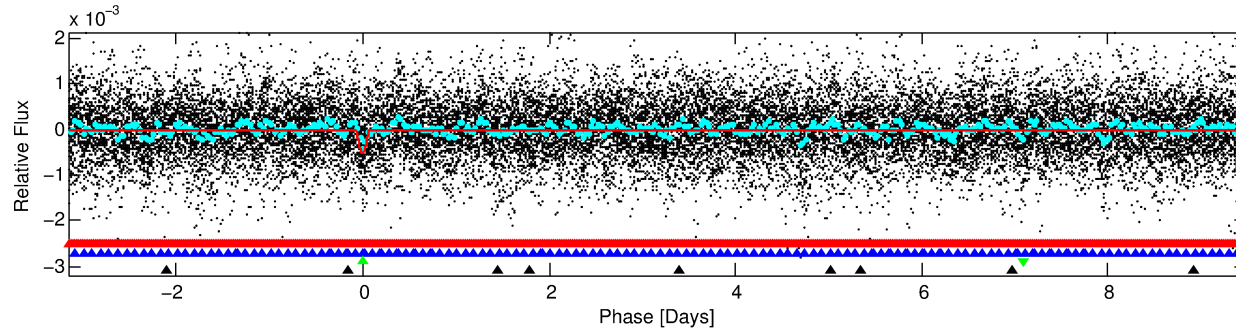
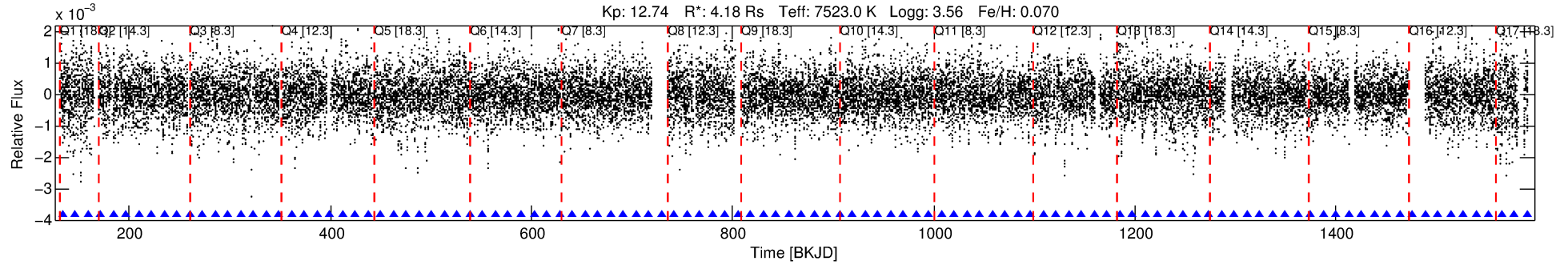
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009532644-03

No Significant Match Found

DV One-Page Summary

KIC: 9532644 Candidate: 3 of 4 Period: 12.659 d



DV Fit Results:

Period = 12.65863 [0.00011] d
Epoch = 134.0696 [0.0069] BKJD
Rp/R* = 0.0387 [0.0711]
a/R* = 8.07 [3.93]
b = 1.00 [0.11]
Seff = 2530.78 [2259.16]
Teq = 1809 [404] K
Rp = 17.63 [33.73] Re
a = 0.1407 [0.0749] AU
Ag = 6.85 [25.96] [0.23 σ]
Teffp = 4524 [4174] K [0.65 σ]

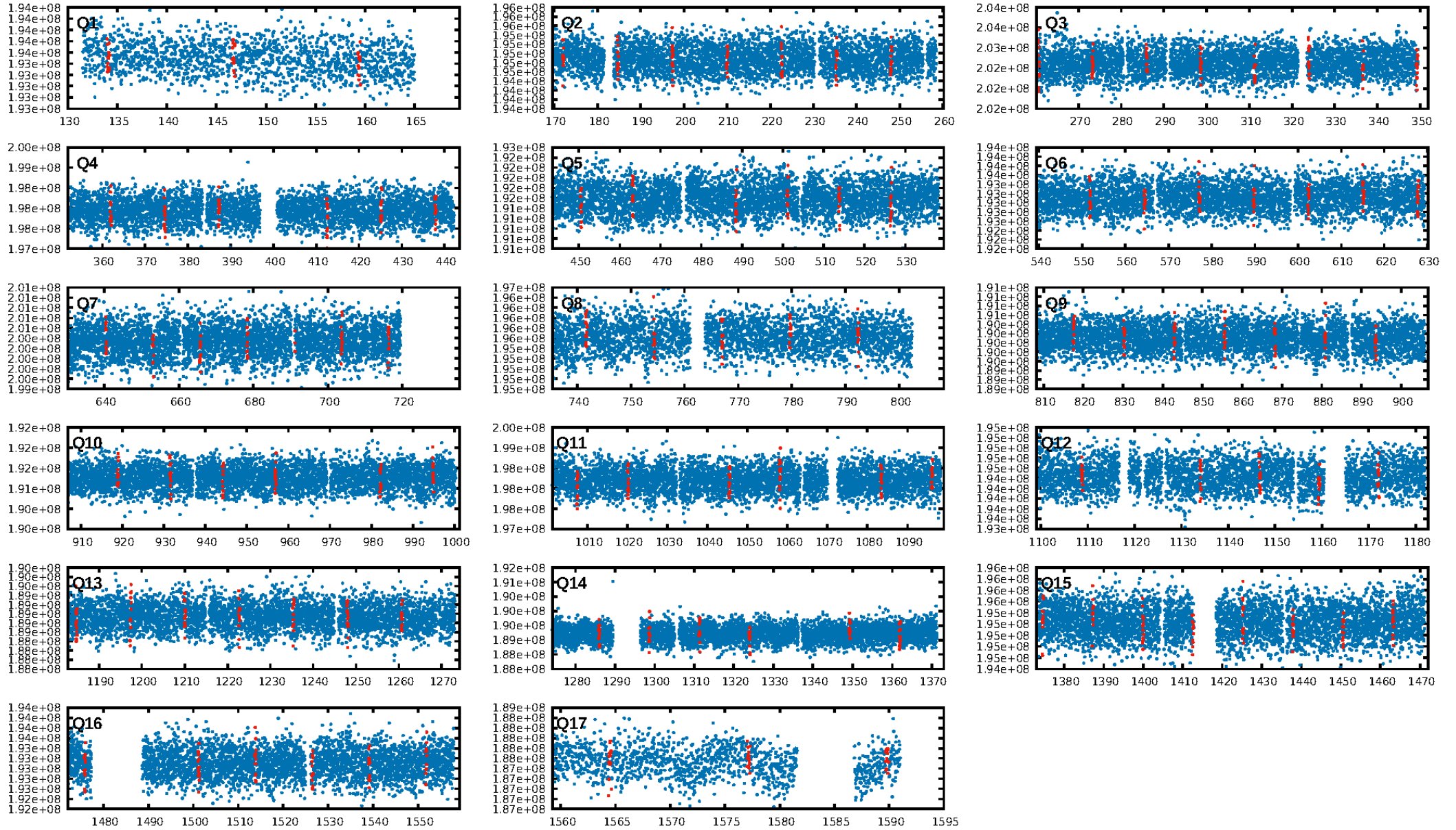
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [25.35 σ]
LongPeriod-sig: 100.0% [821.37 σ]
ModelChiSquare2-sig: 76.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.12e-11
RollingBand-fgt: 1.00 [63/63]
GhostDiagnostic-chr: 3.059
Centroid-sig: 5.8%
Centroid-so: 0.399 arcsec [3.08 σ]
OotOffset-rm: 0.070 arcsec [0.46 σ]
KicOffset-rm: 0.305 arcsec [1.88 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 0.00 [0/17]

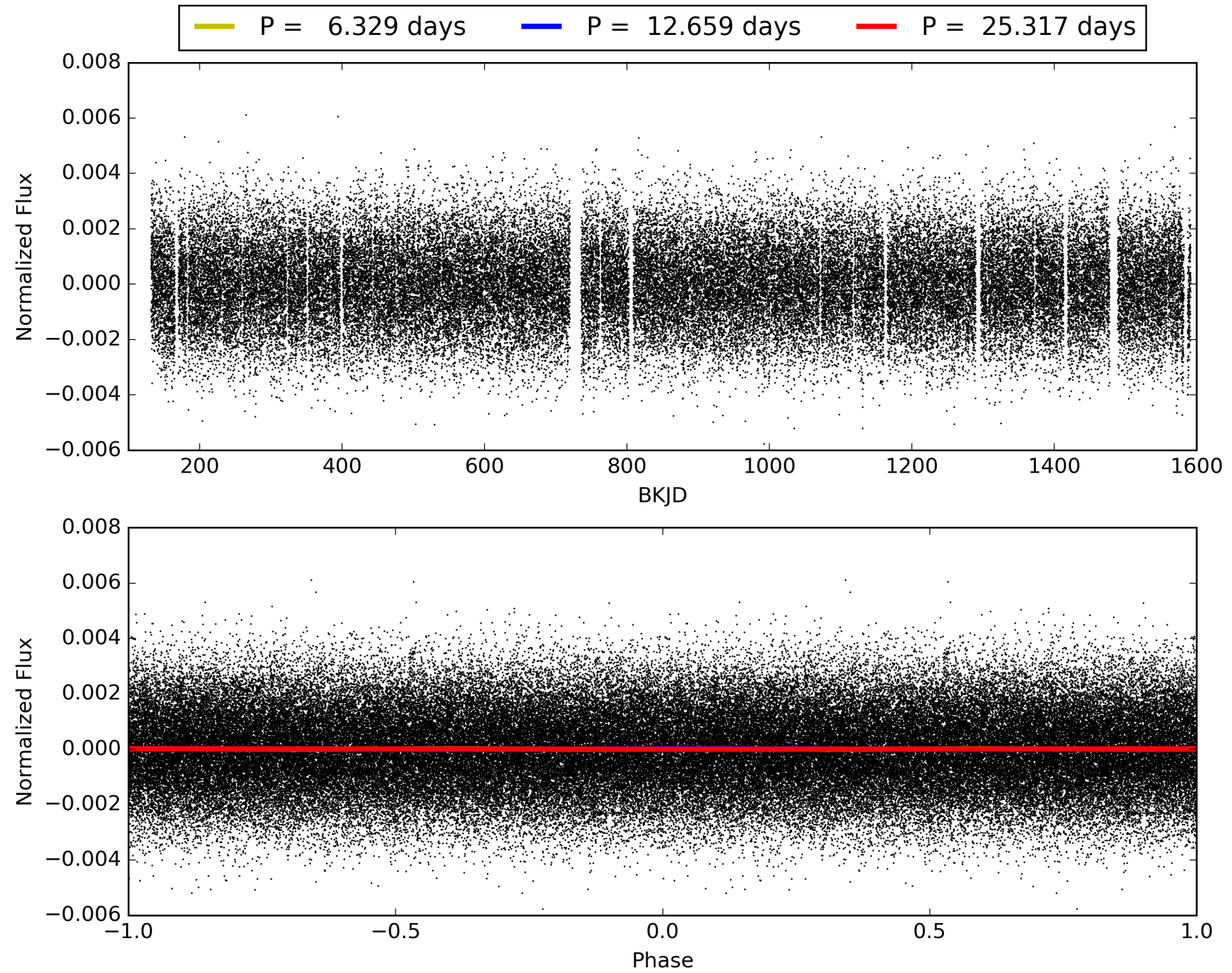
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:12:28 Z

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

TCE 009532644-03, PDC Light Curves

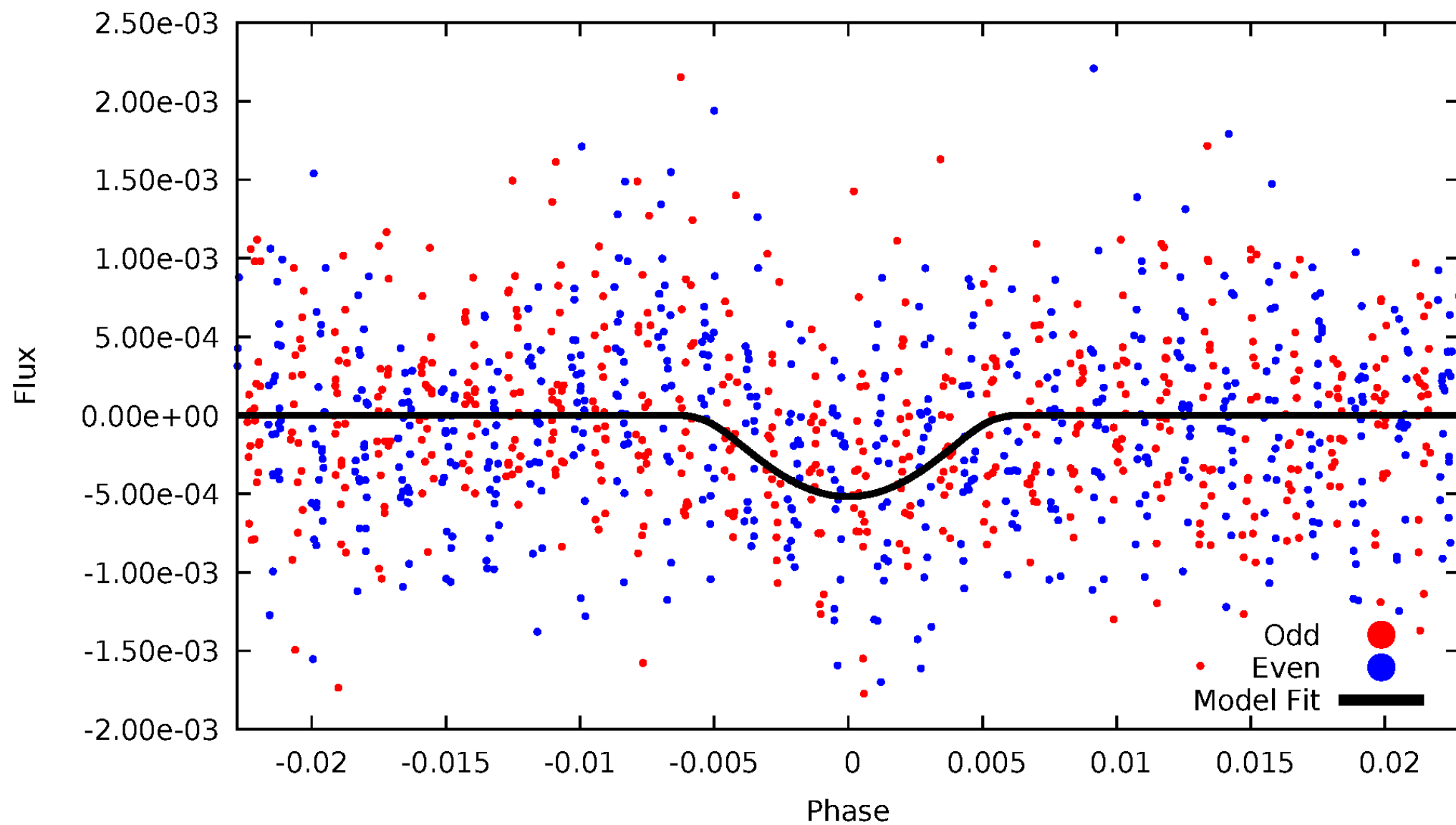


TCE 009532644-03



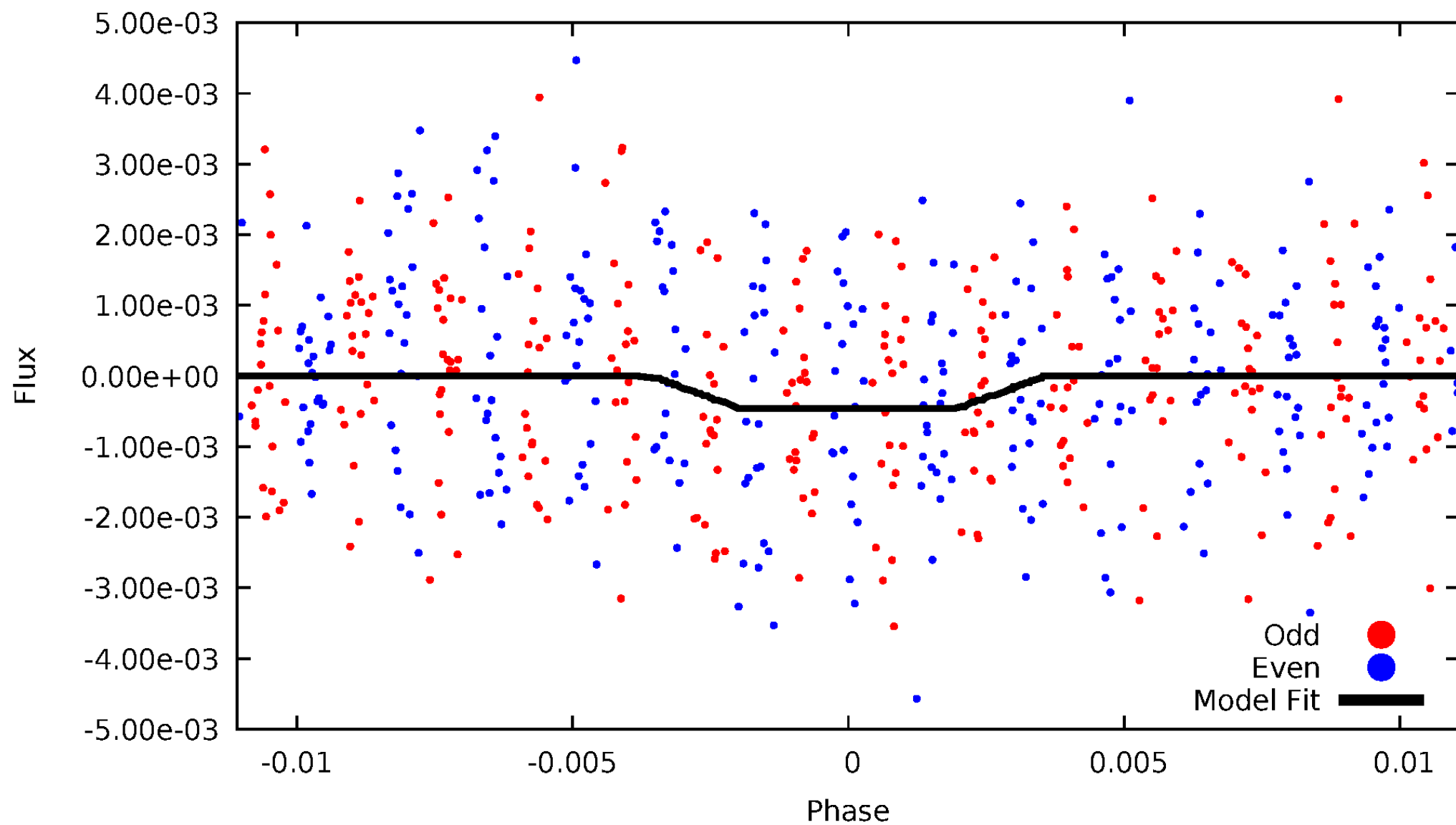
DV Odd/Even

TCE 009532644-03



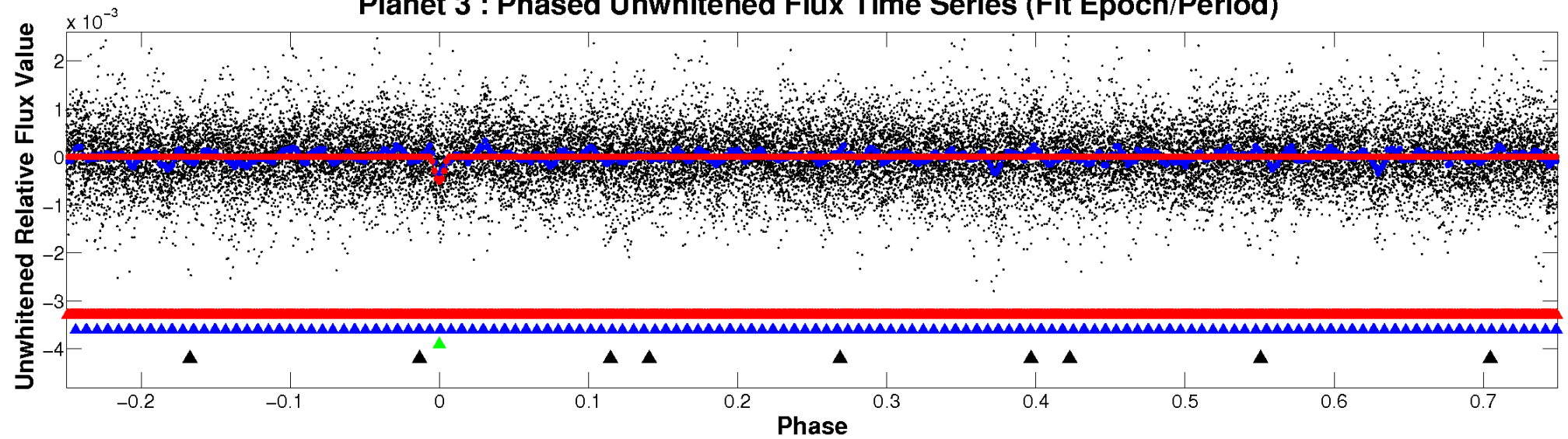
ALT Odd/Even

TCE 009532644-03

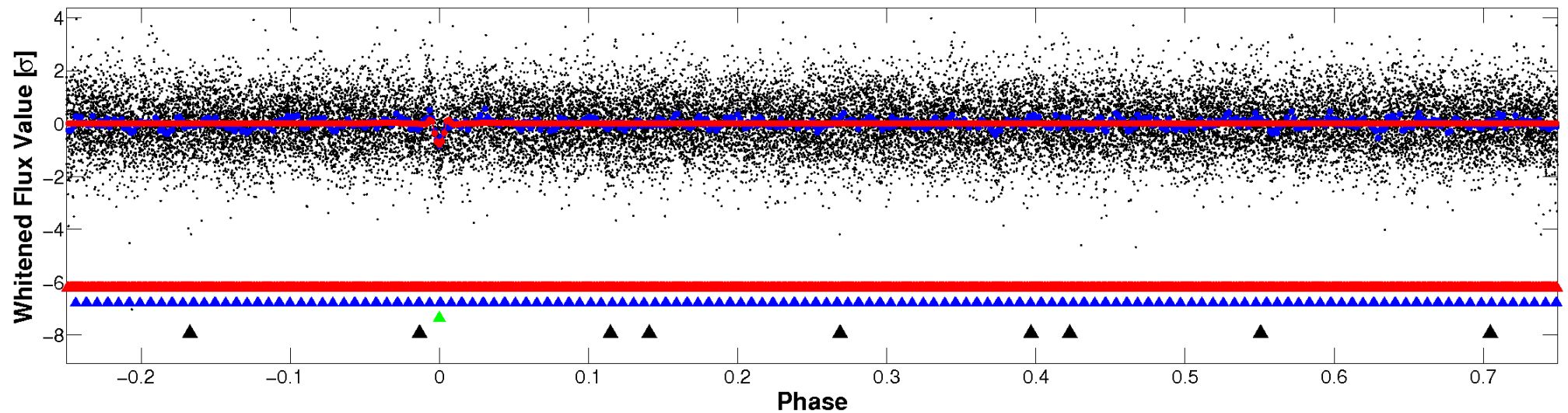


Non-Whitened Vs. Whitened Light Curve

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

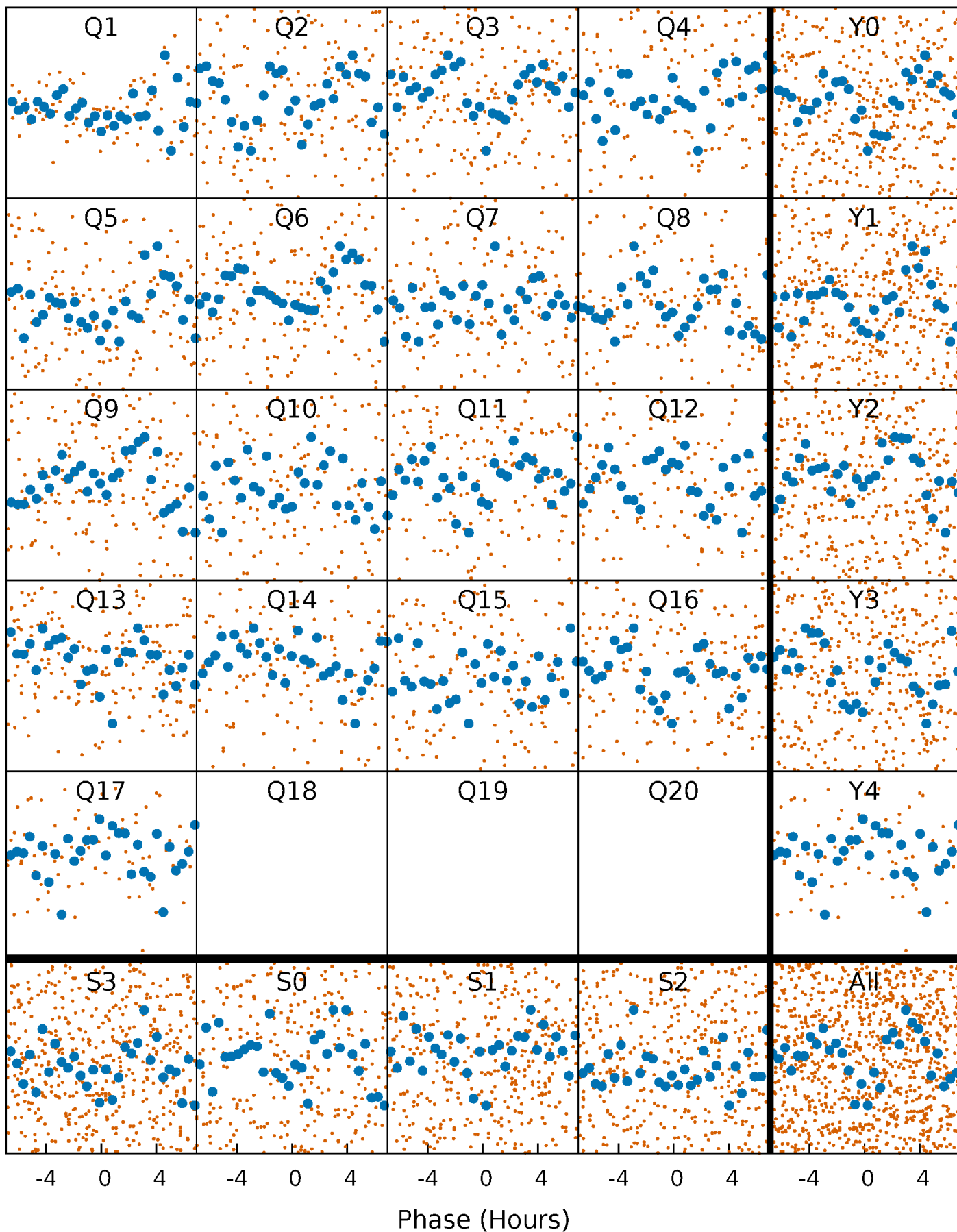


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



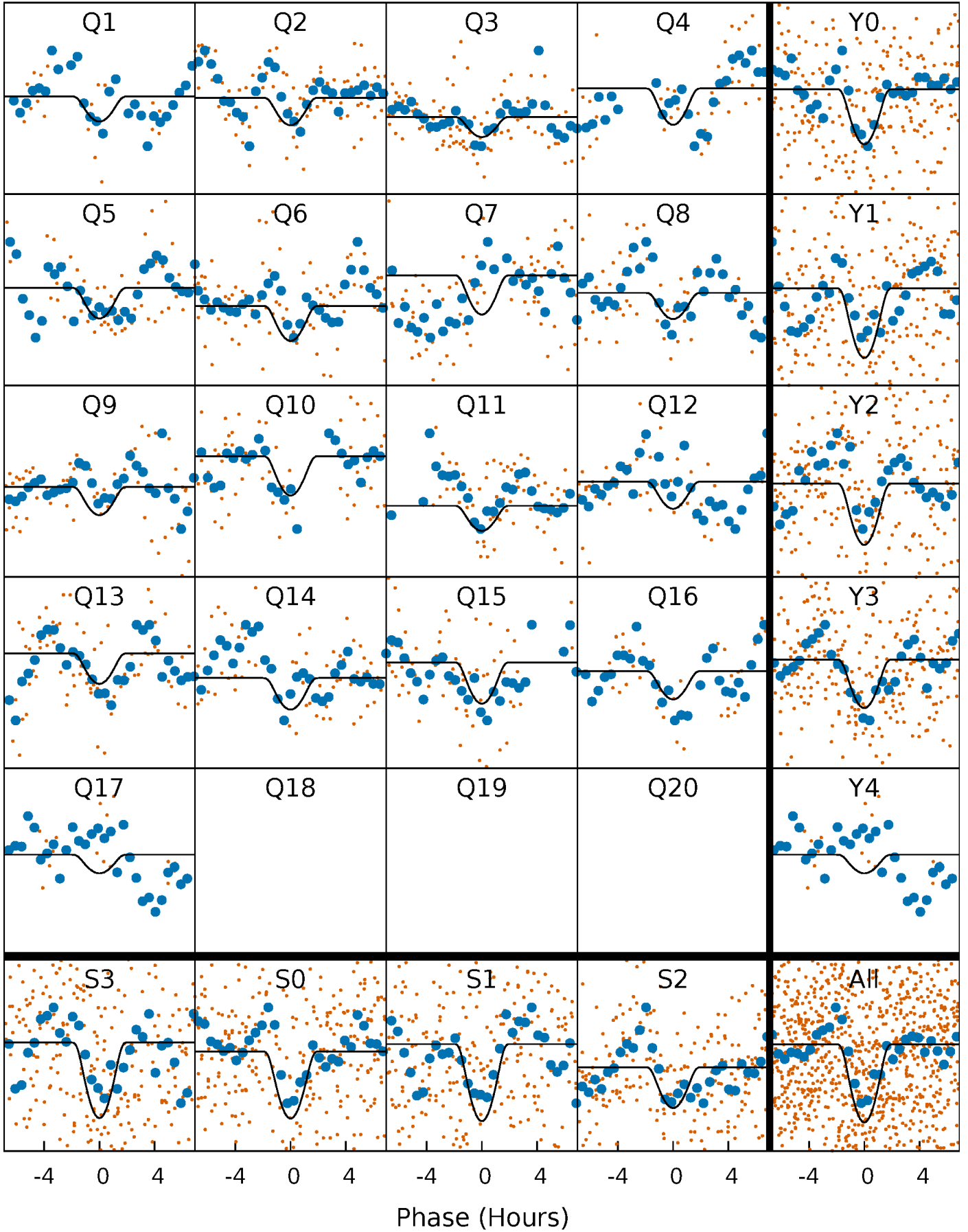
PDC Quarter-Phased Transit Curves

TCE 009532644-03 P= 12.658635 Days $T_0=134.069580$ (BKJD)



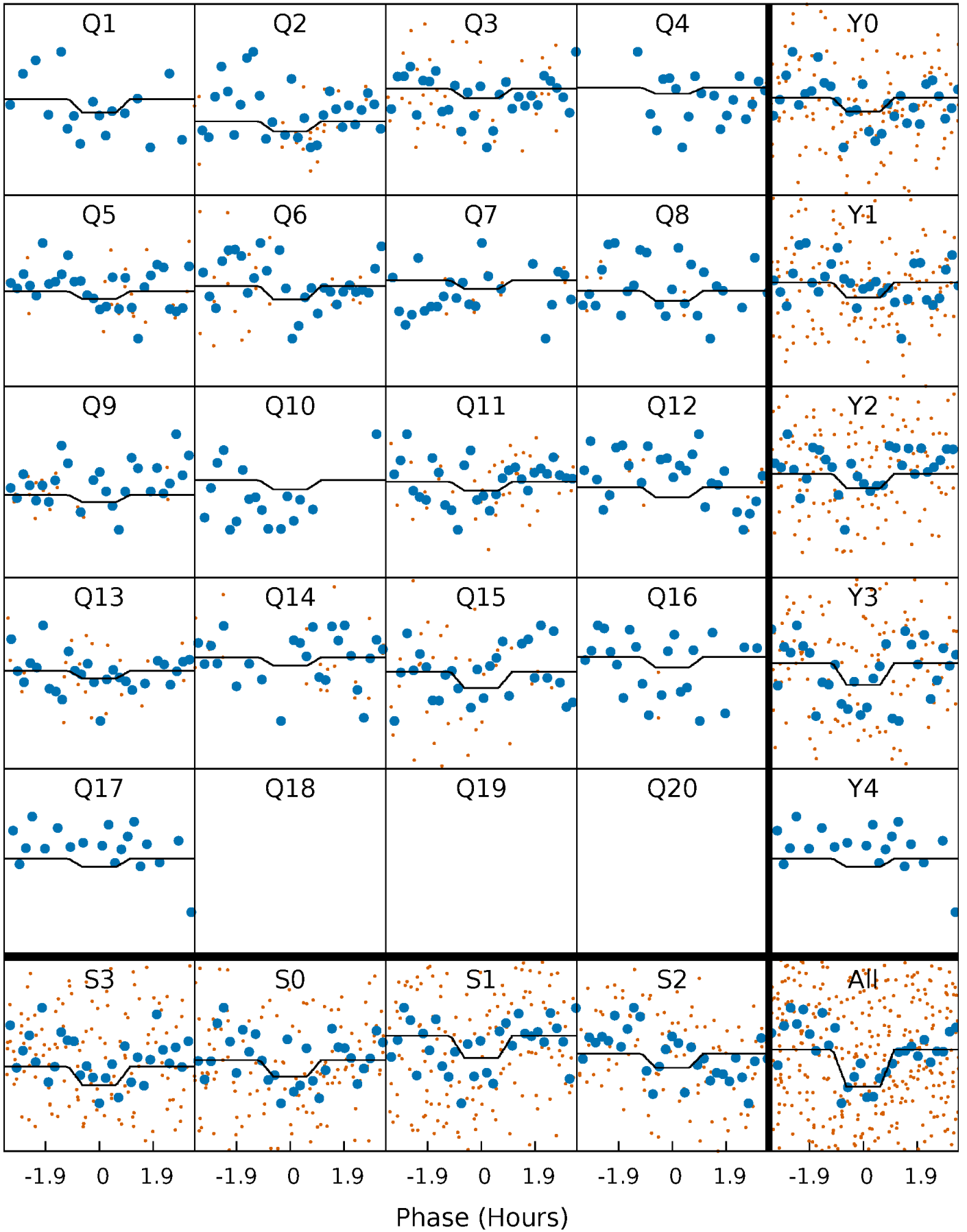
DV Quarter-Phased Transit Curves

TCE 009532644-03 P= 12.658635 Days $T_0=134.069580$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

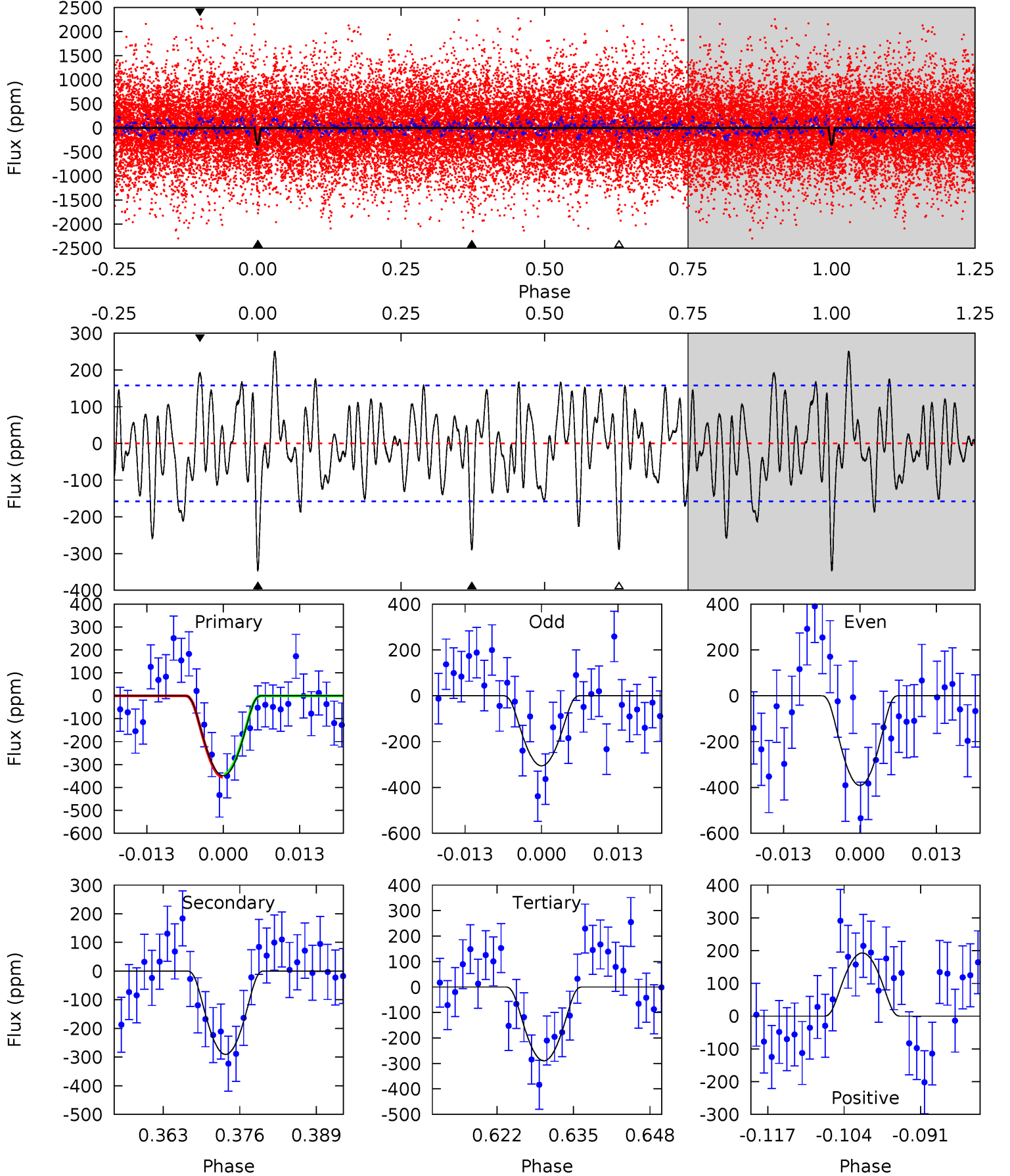
TCE 009532644-03 P= 12.658562 Days $T_0=134.069523$ (BKJD)



DV Model-Shift Uniqueness Test

009532644-03, P = 12.658635 Days, E = 121.410945 Days

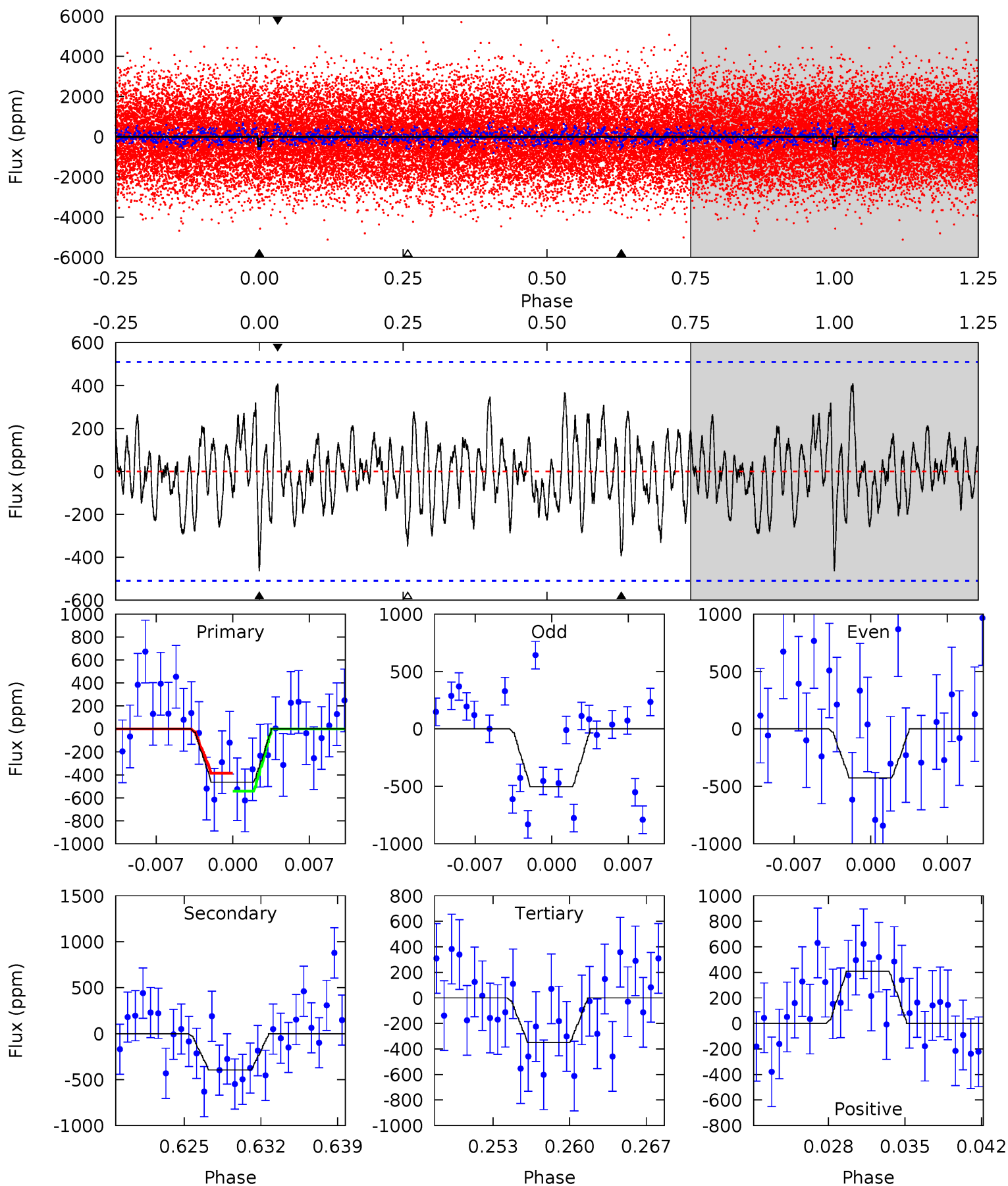
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	9.17	9.14	6.09	4.98	2.49	2.83	1.88	4.93	0.04	3.09	1.35	1.04	0.42	0.19



Alt Model-Shift Uniqueness Test

009532644-03, P = 12.658562 Days, E = 121.410961 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.64	3.95	3.48	4.07	5.09	2.70	1.36	1.15	0.56	0.47	-0.13	0.38	1.31	0.47	0.78



Stellar Parameters For KIC 009532644

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7523^{+207}_{-337}	$3.561^{+0.522}_{-0.058}$	$0.070^{+0.200}_{-0.300}$	$4.178^{+0.549}_{-2.195}$	$2.318^{+0.183}_{-0.731}$	$0.045^{+0.279}_{-0.009}$
	+3%/-4%	+15%/-2%	+286%/-429%	+13%/-53%	+8%/-32%	+624%/-20%
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 009532644-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-290 ± 32	$25.15^{+24.40}_{-17.10}$	2394^{+193}_{-357}	3959^{+2318}_{-777}	$4.741^{+39.051}_{-3.448}$
Alt.	-395 ± 100	$21.11^{+23.68}_{-14.62}$	2406^{+181}_{-294}	4589^{+3574}_{-1156}	$9.398^{+83.521}_{-7.381}$

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

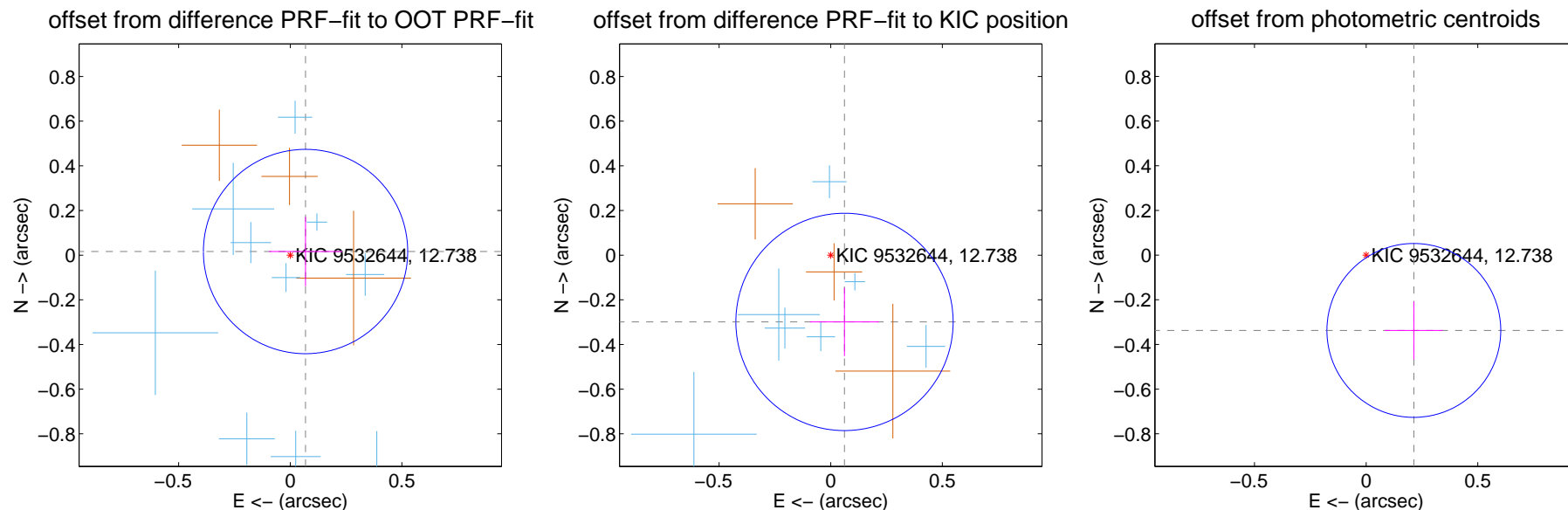
DV Centroid Data

Supplemental centroid analysis for 009532644-03. Kepler magnitude: 12.74. Transit SNR 8.88

There are 11 quarters with good PRF difference image offsets

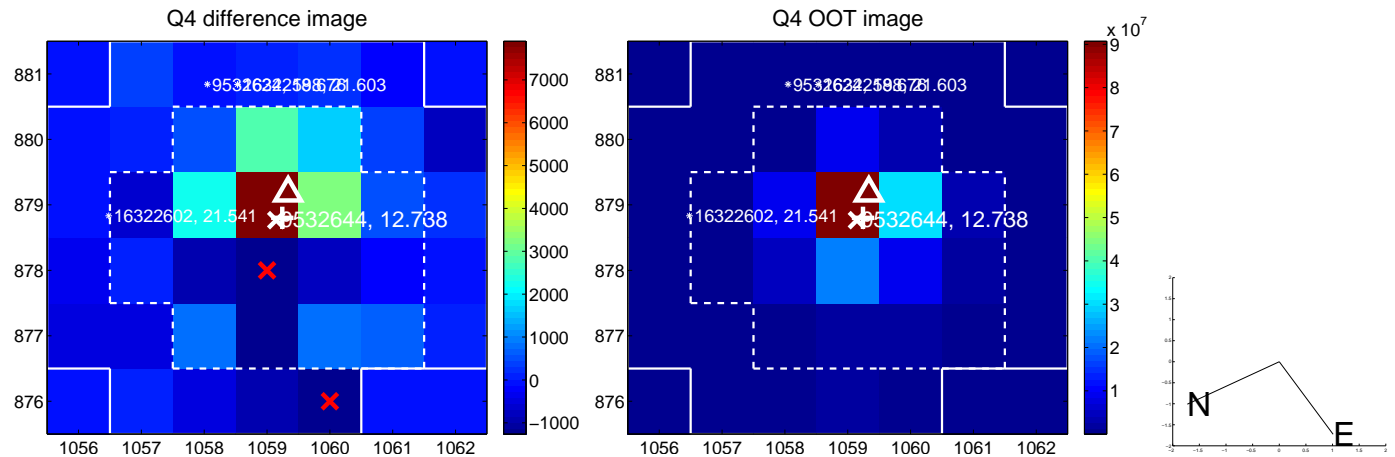
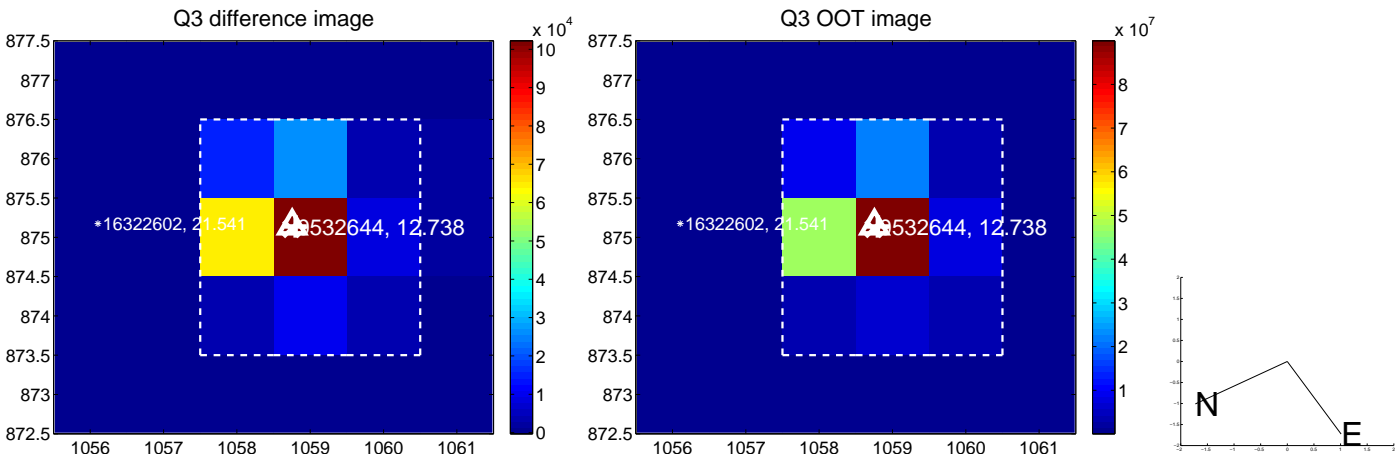
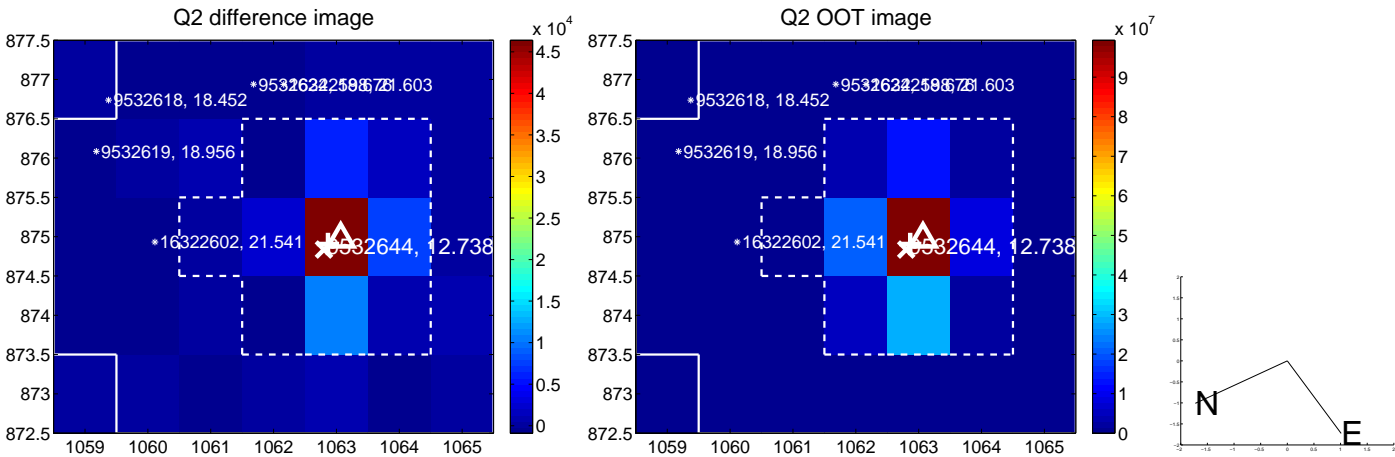
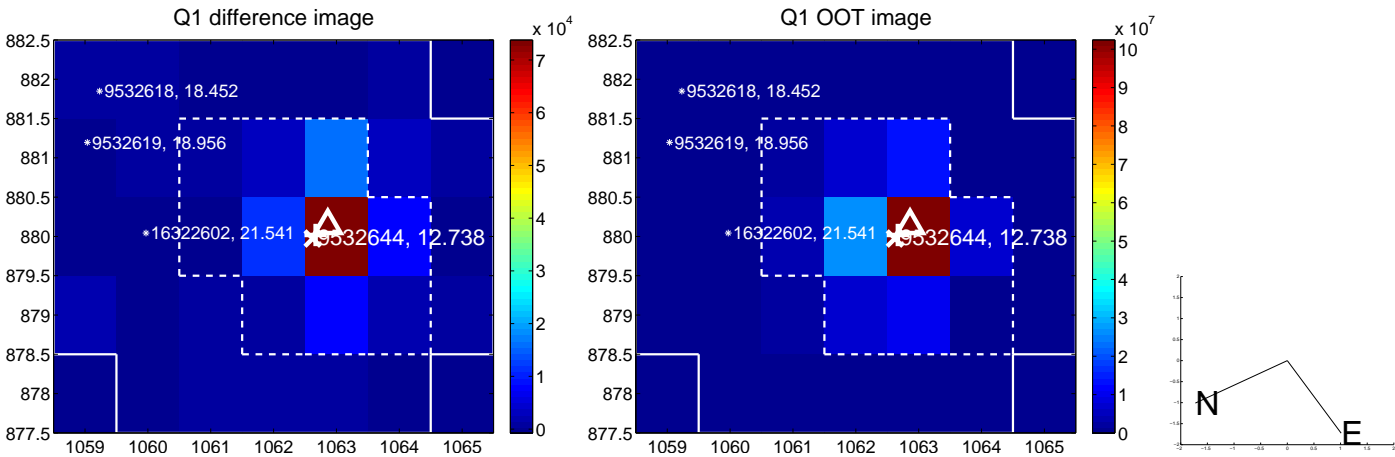
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.070 ± 0.152	0.46	-0.068 ± 0.163	0.016 ± 0.155
PRF-fit source offset from KIC position	0.305 ± 0.162	1.88	-0.062 ± 0.155	-0.299 ± 0.153
photometric centroid source offset	0.40 ± 0.13	3.08	-0.21 ± 0.13	-0.34 ± 0.13

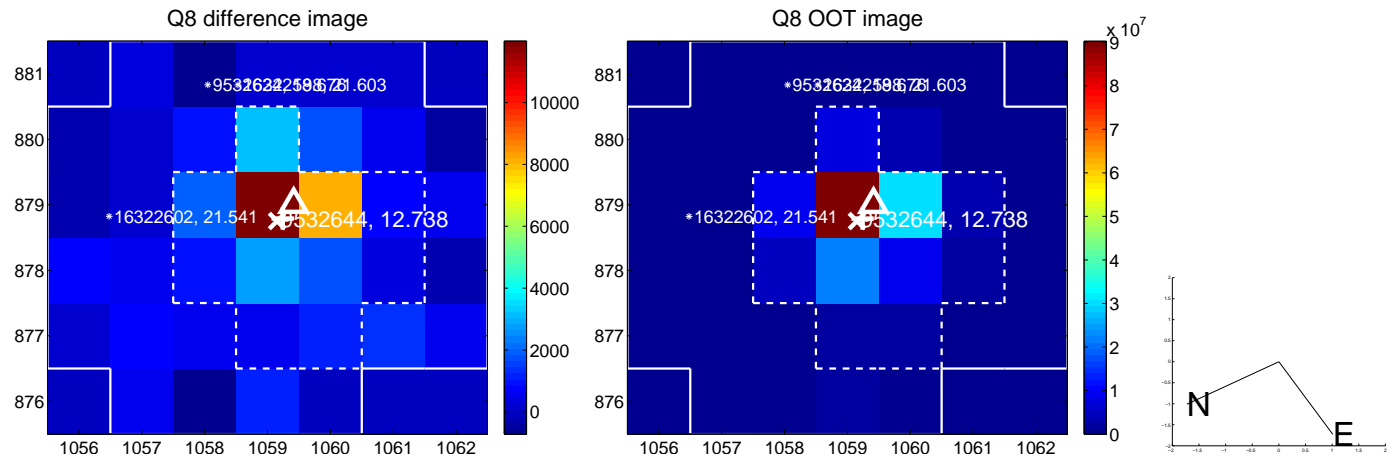
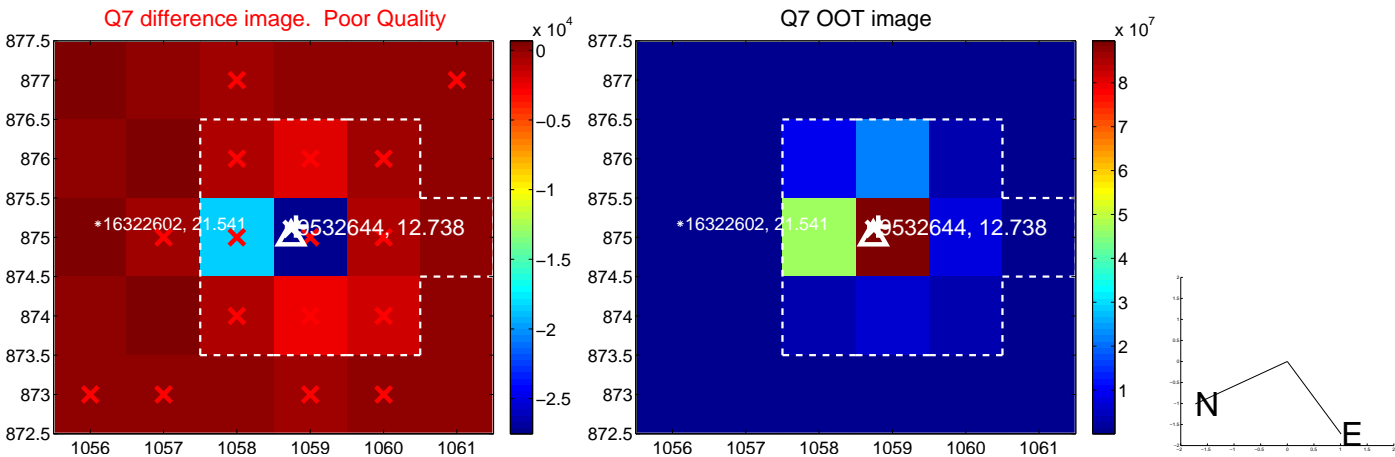
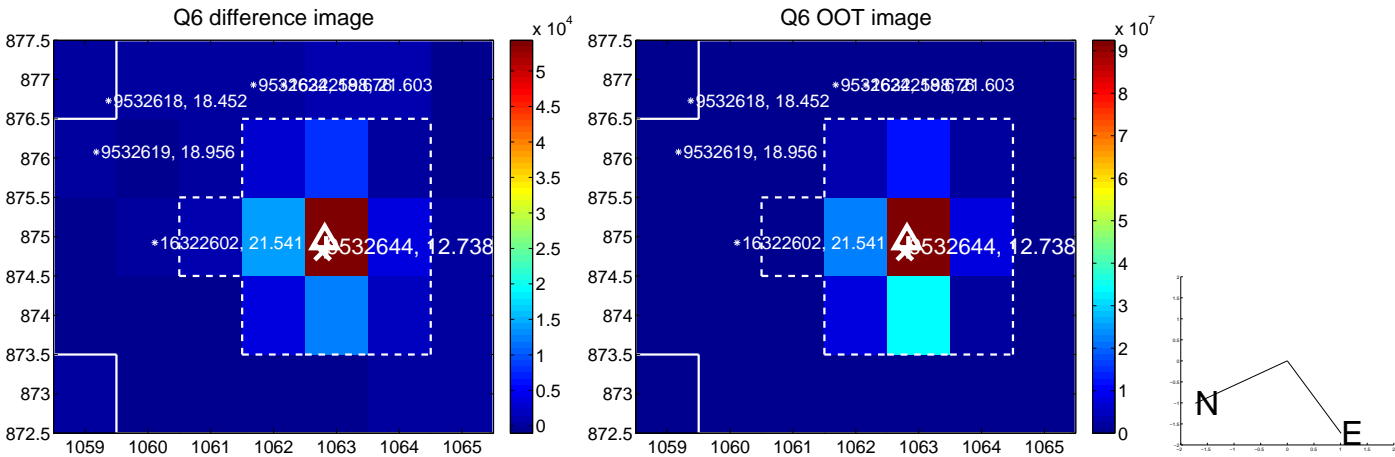
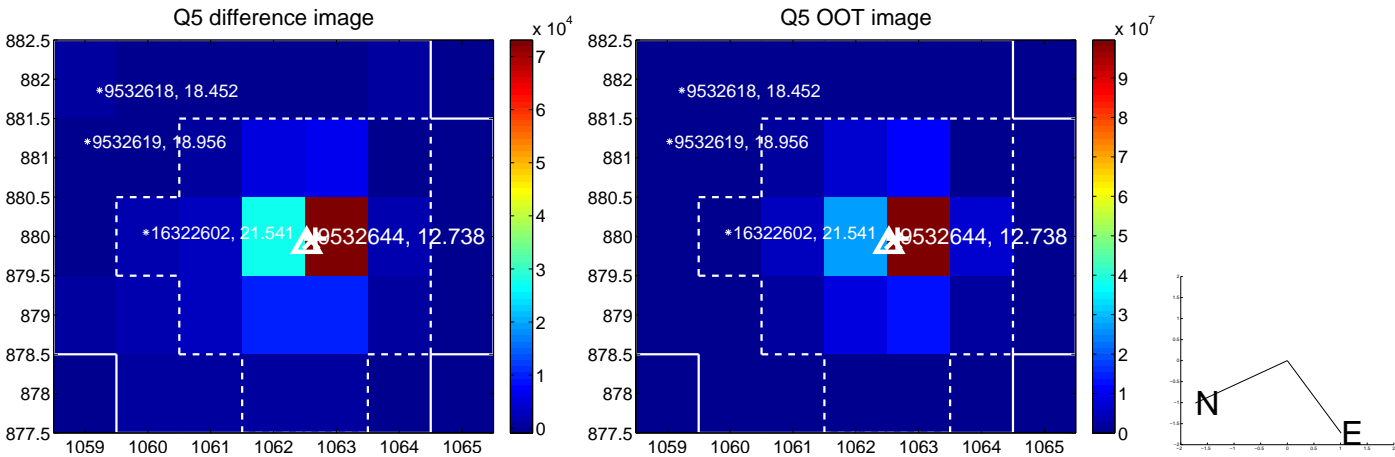


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

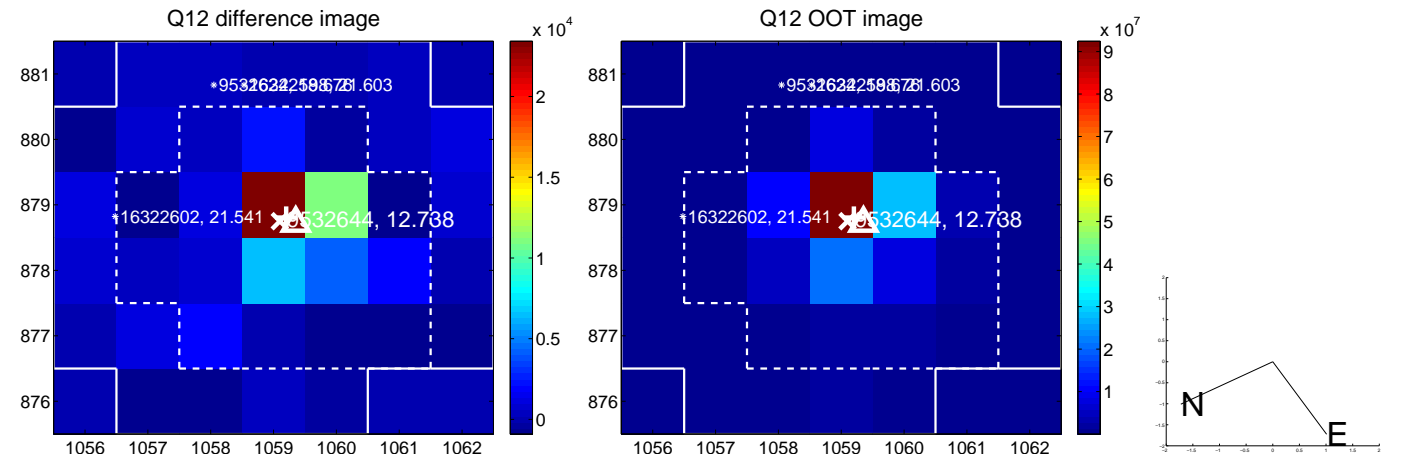
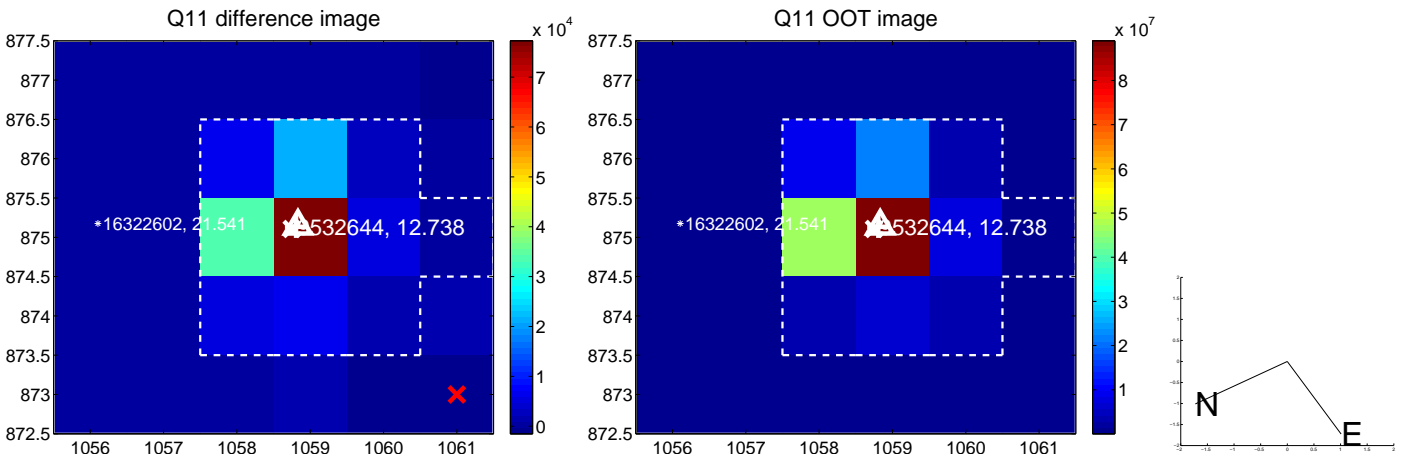
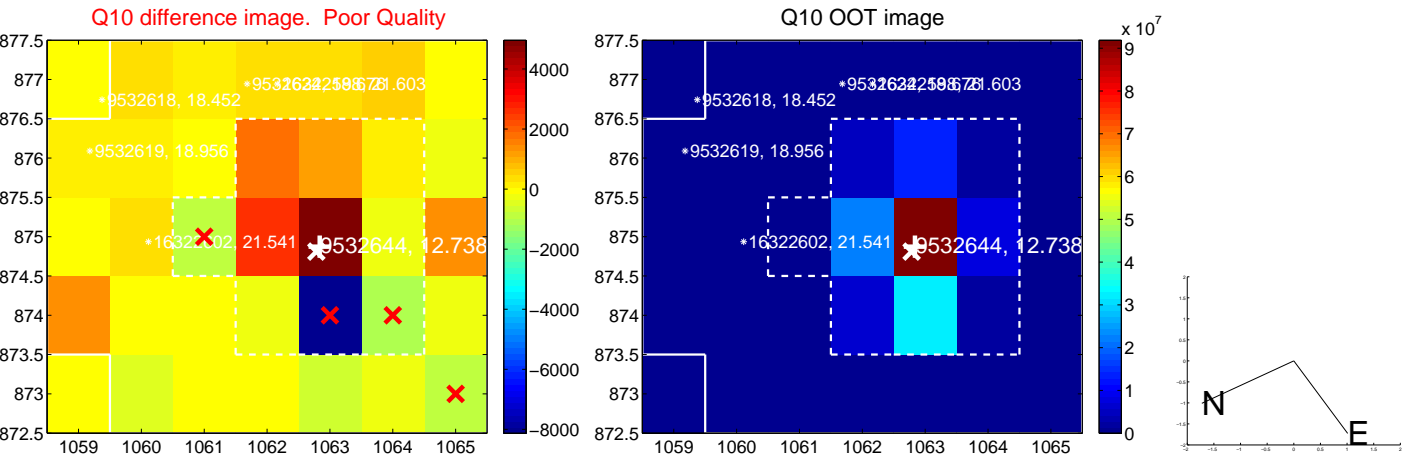
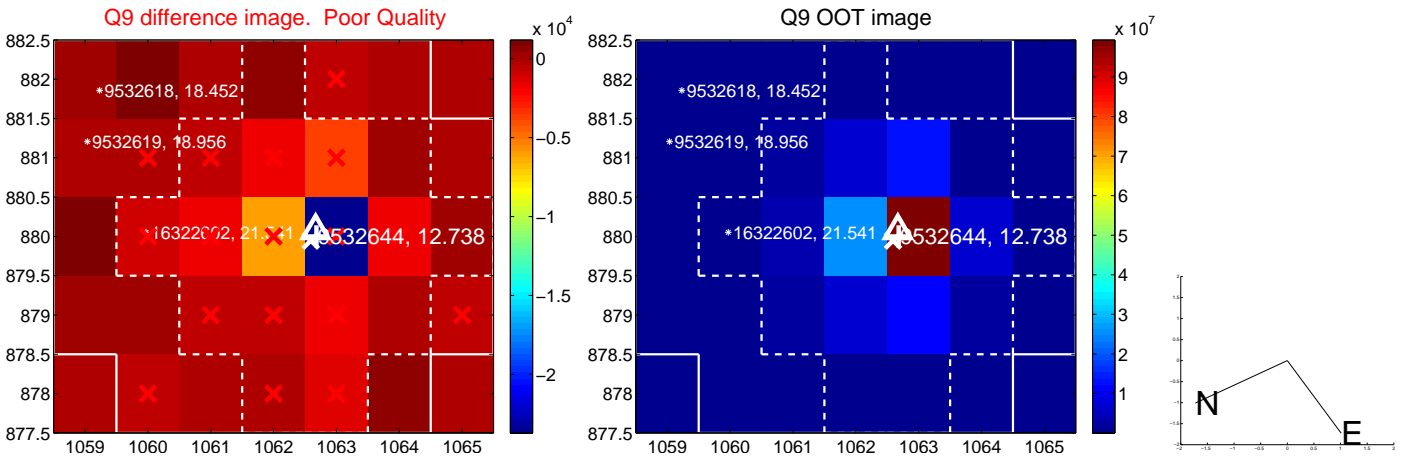
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



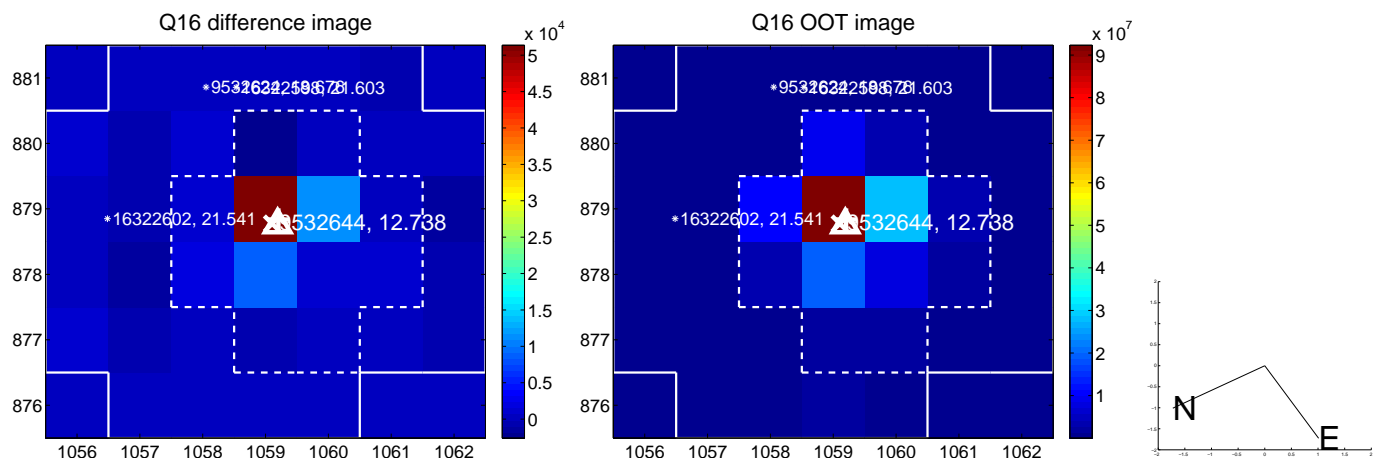
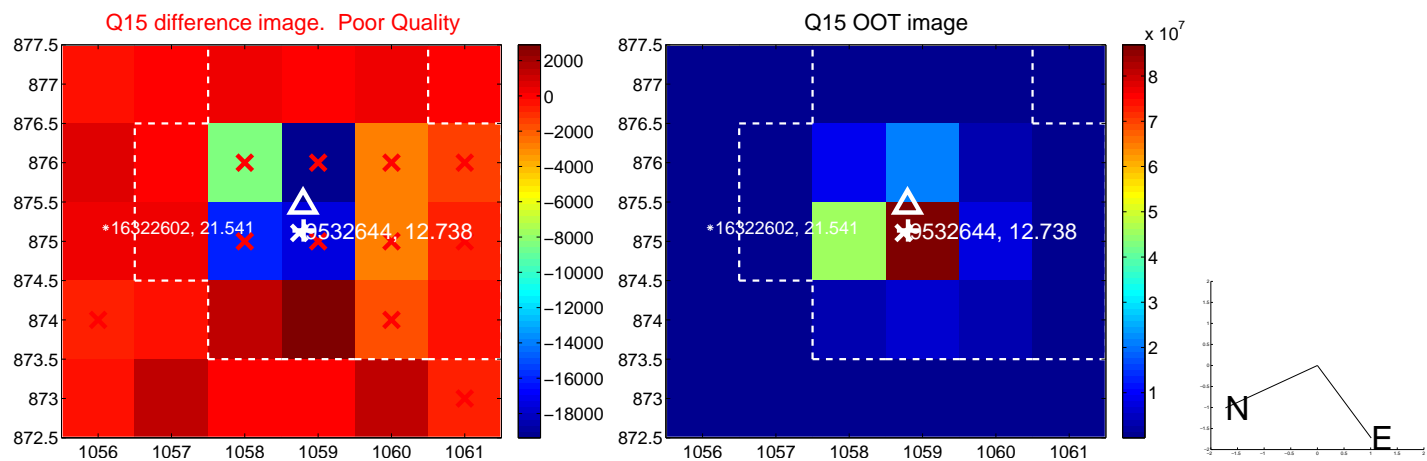
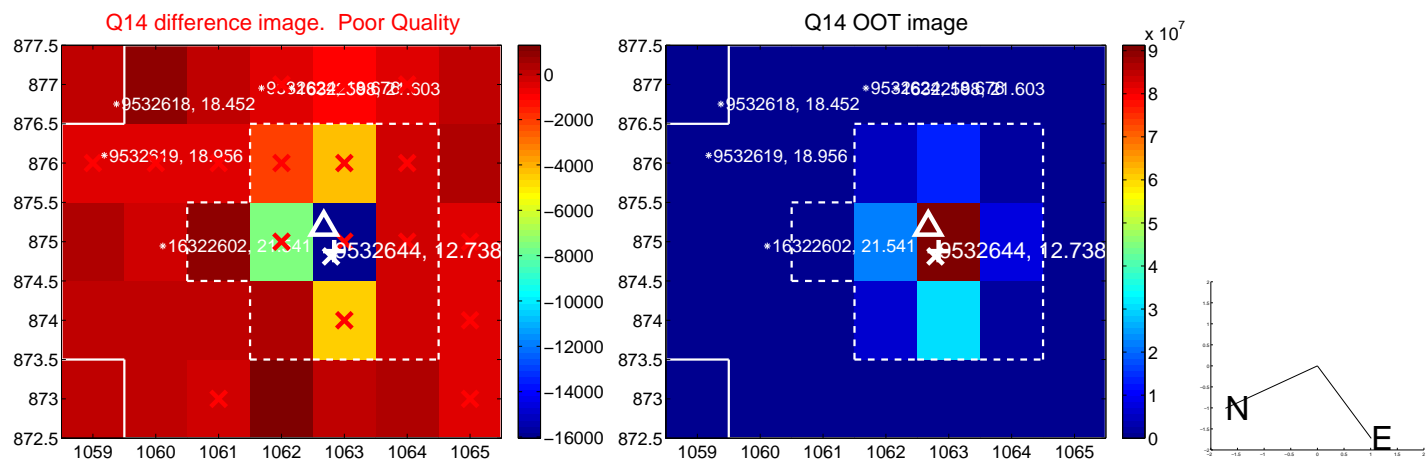
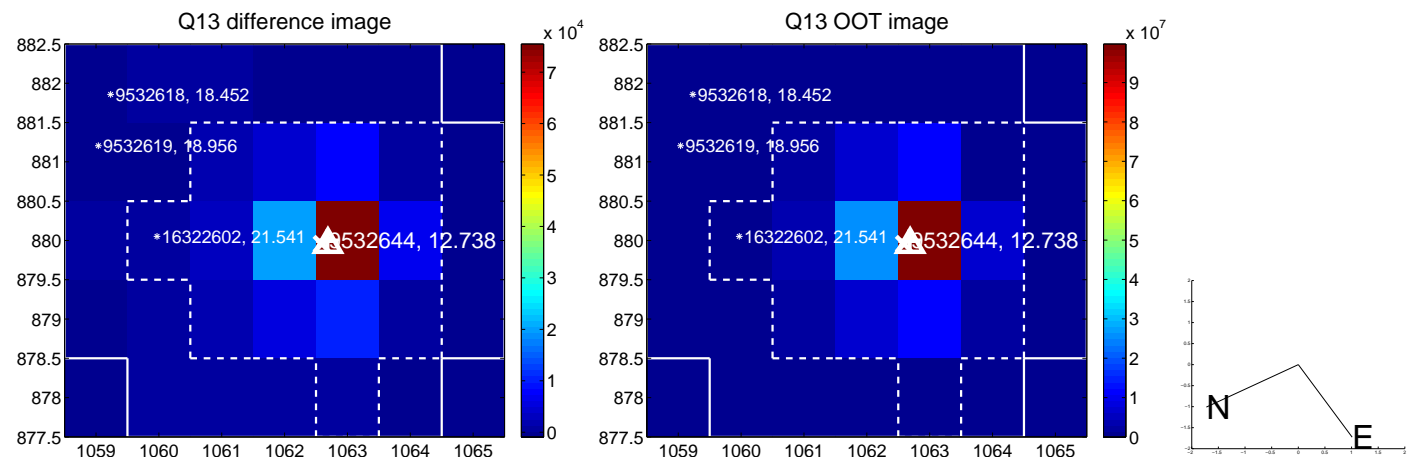
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



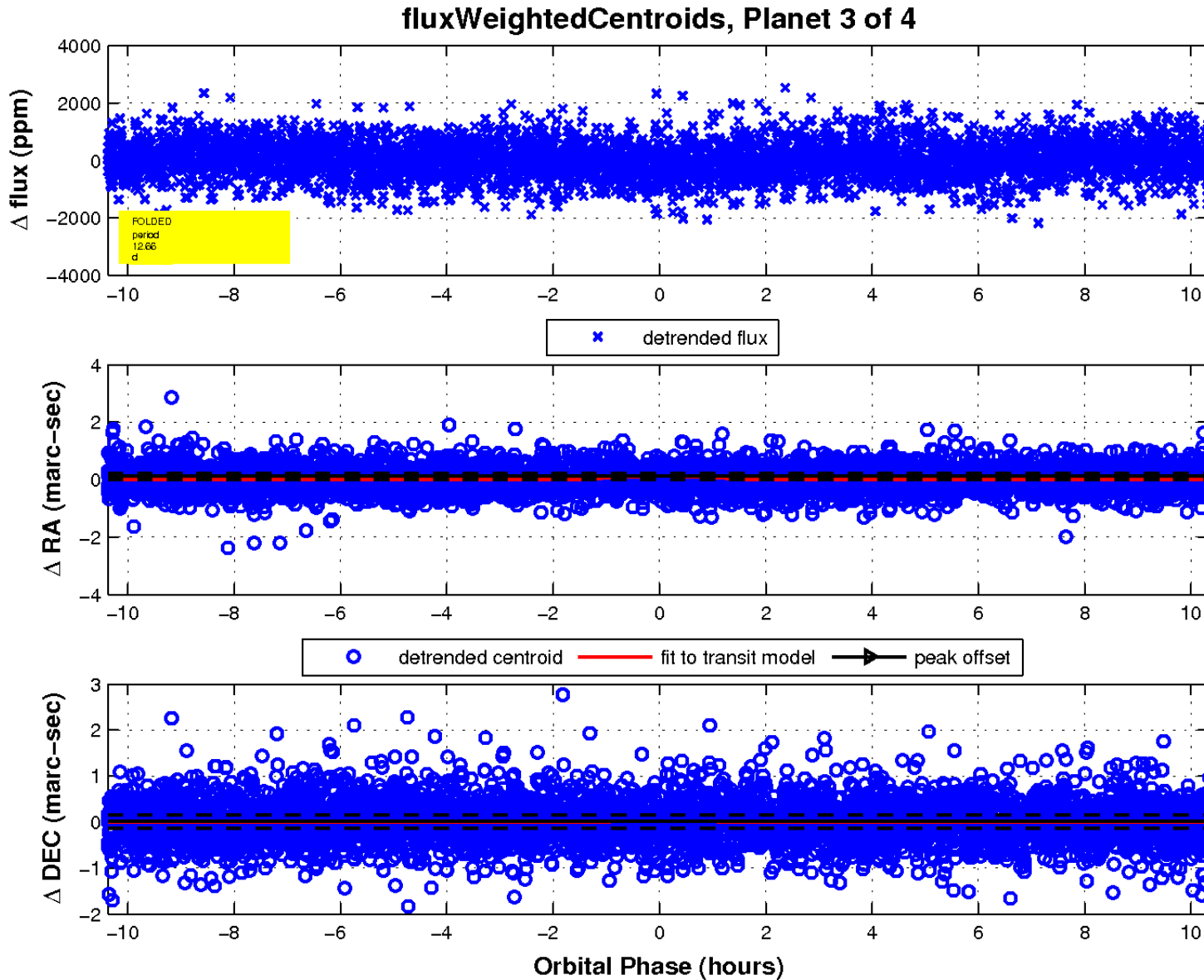
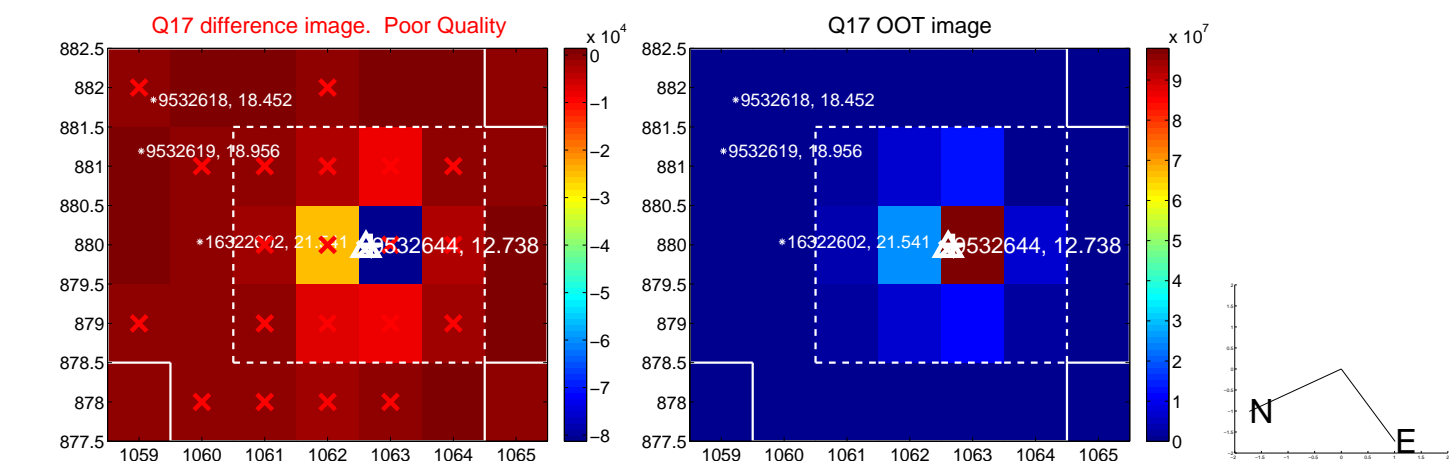
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

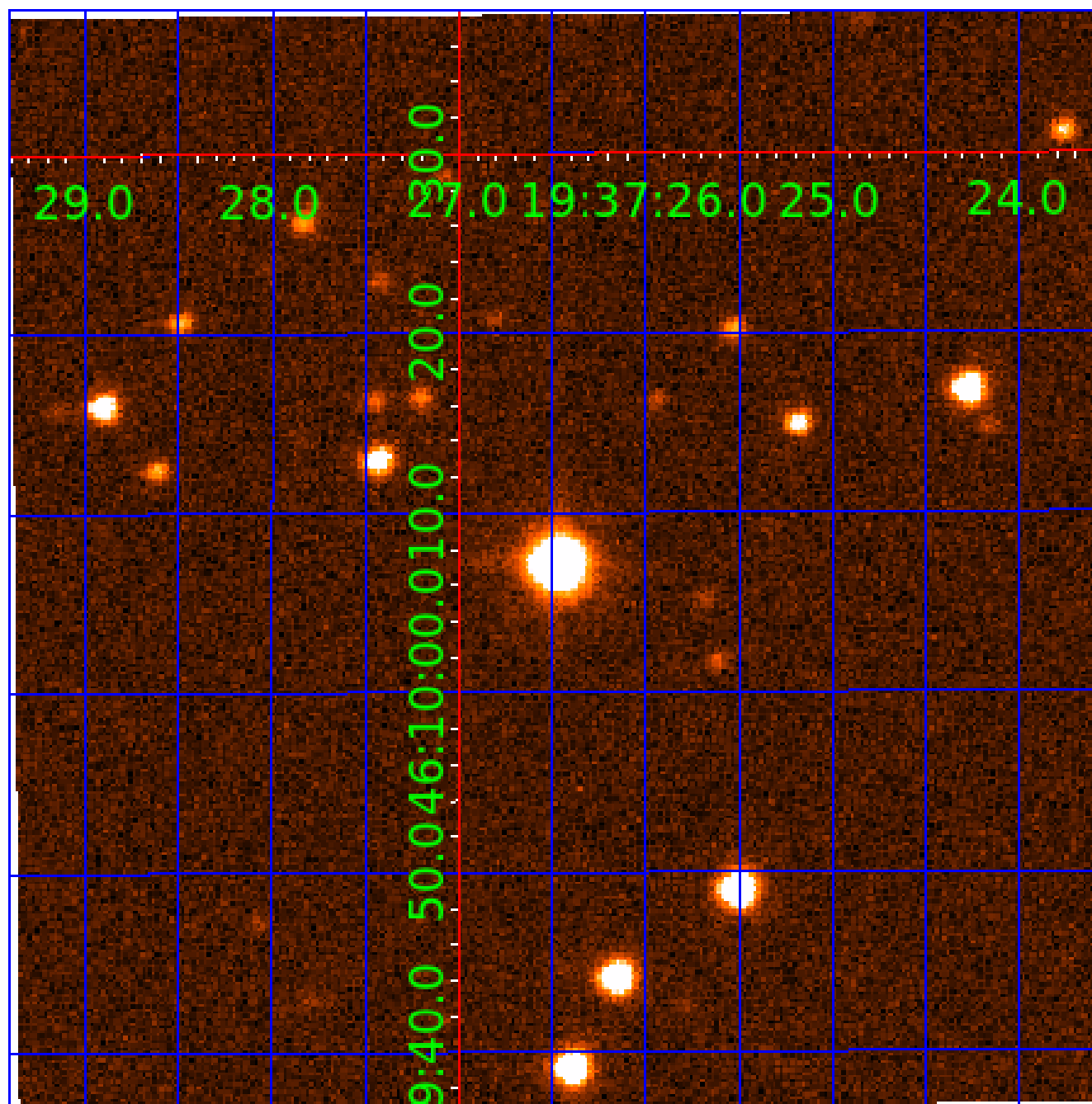


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009532644

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})
009532644-01	OBS	No	0.542873	131.696791	81.3	2.251	11.0	11.9	4.18	7523	4.38	0.00
009532644-02	OBS	No	7.558805	137.806885	305.4	3.367	9.4	8.2	4.18	7523	8.57	5033.07
009532644-03	OBS	No	12.658635	134.069580	518.4	3.459	8.3	8.9	4.18	7523	17.63	2530.78
009532644-04	OBS	No	173.651202	139.091643	1478.3	3.188	8.2	7.9	4.18	7523	29.76	77.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532644-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009532644-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009532644-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009532644-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

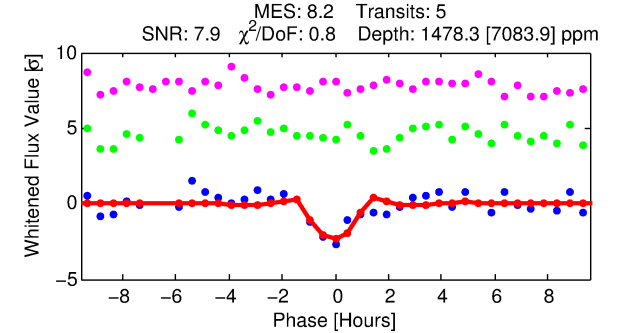
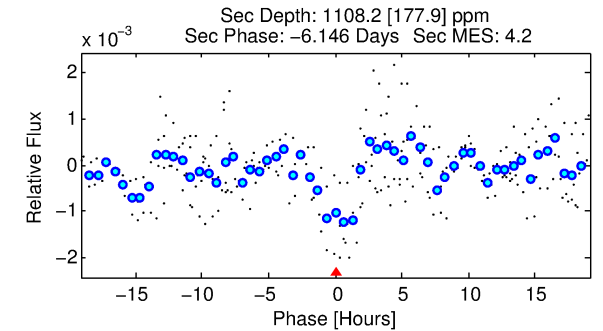
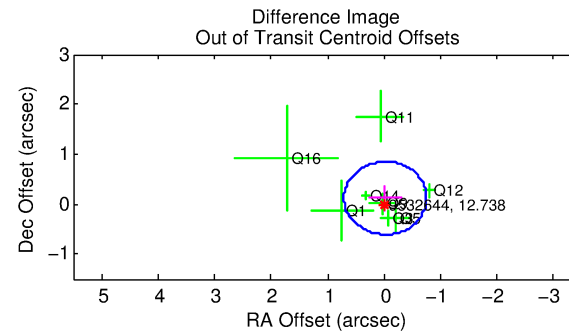
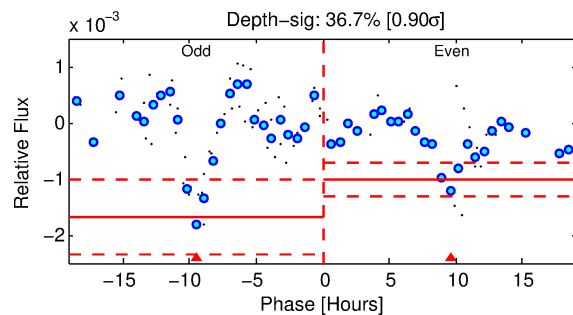
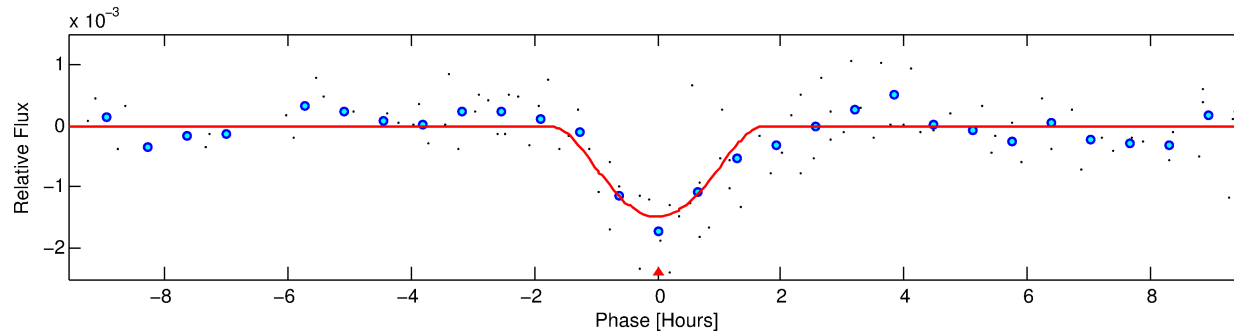
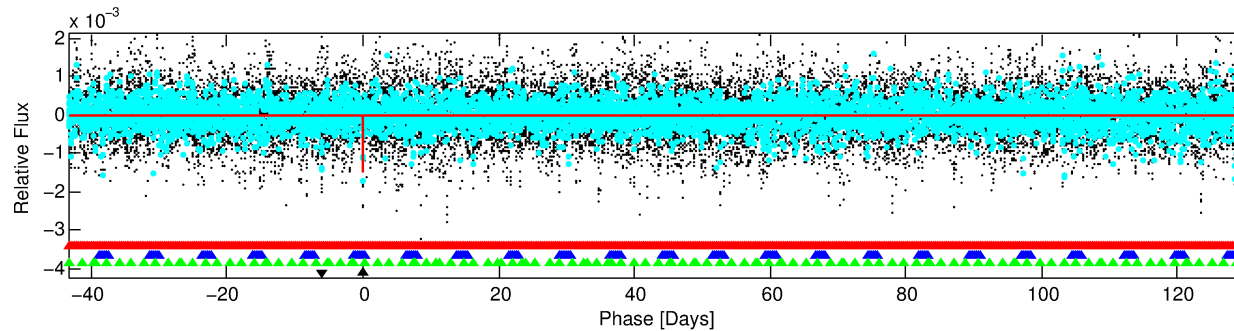
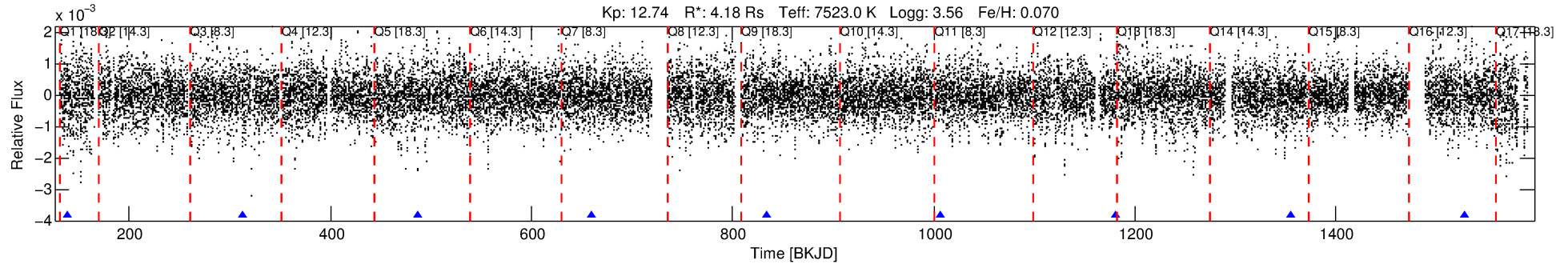
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009532644-04

No Significant Match Found

DV One-Page Summary

KIC: 9532644 Candidate: 4 of 4 Period: 173.651 d



DV Fit Results:

Period = 173.65120 [0.00129] d
Epoch = 139.0916 [0.0053] BKJD
Rp/R* = 0.0653 [0.1669]
a/R* = 152.79 [94.69]
b = 1.00 [0.45]
Seff = 77.07 [68.80]
Teq = 756 [169] K
Rp = 29.76 [77.66] Re
a = 0.8062 [0.4290] AU
Ag = 447.37 [2321.24] [0.19 σ]
Teffp = 5372 [6873] K [0.67 σ]

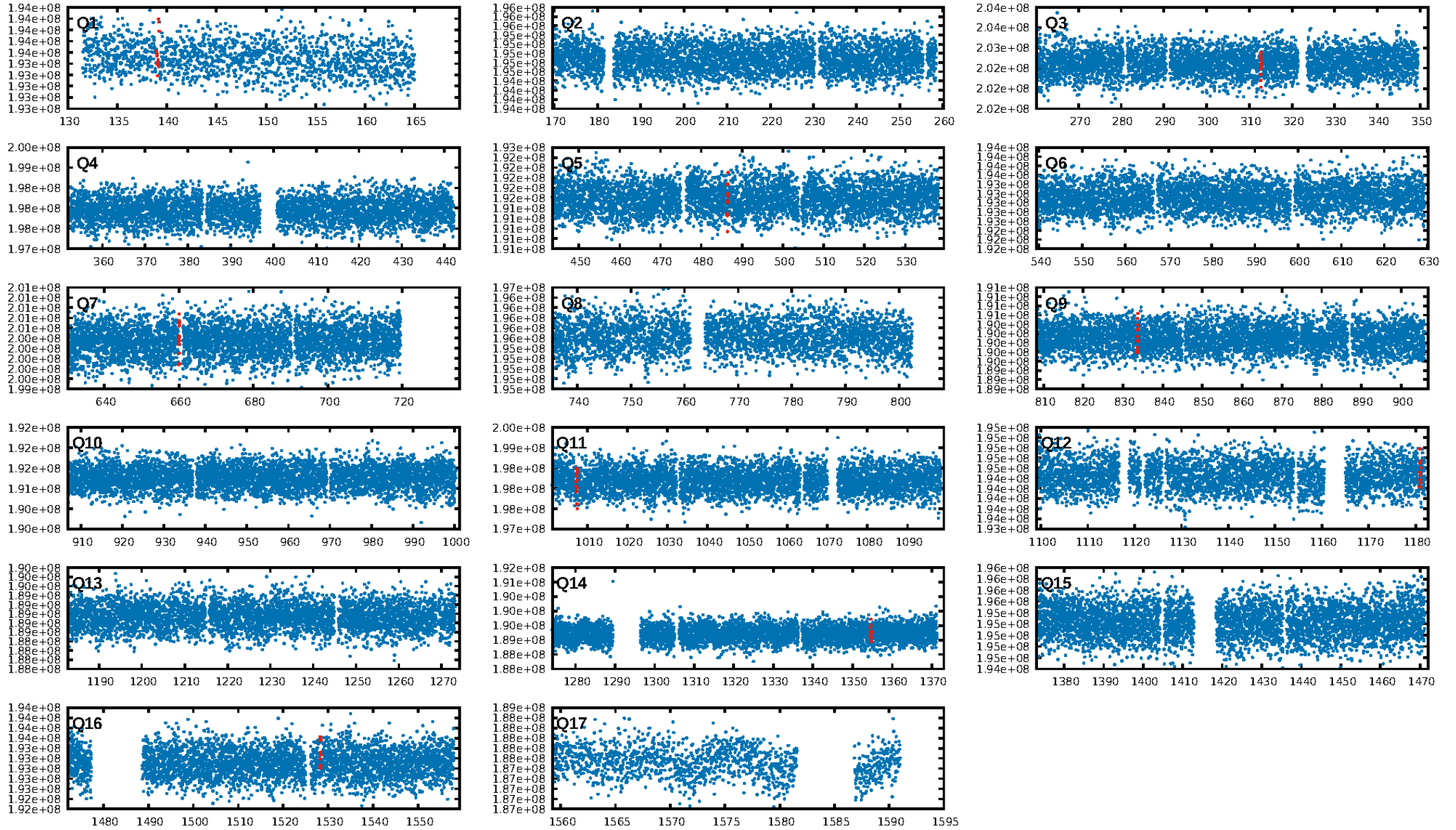
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [821.37 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 4.1%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 1.98e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.342
Centroid-sig: 12.5%
Centroid-so: 0.496 arcsec [3.16 σ]
OotOffset-rm: 0.121 arcsec [0.50 σ]
KicOffset-rm: 0.263 arcsec [1.12 σ]
OotOffset-st: 1/2/2/3 [8]
KicOffset-st: 1/2/2/3 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/8]

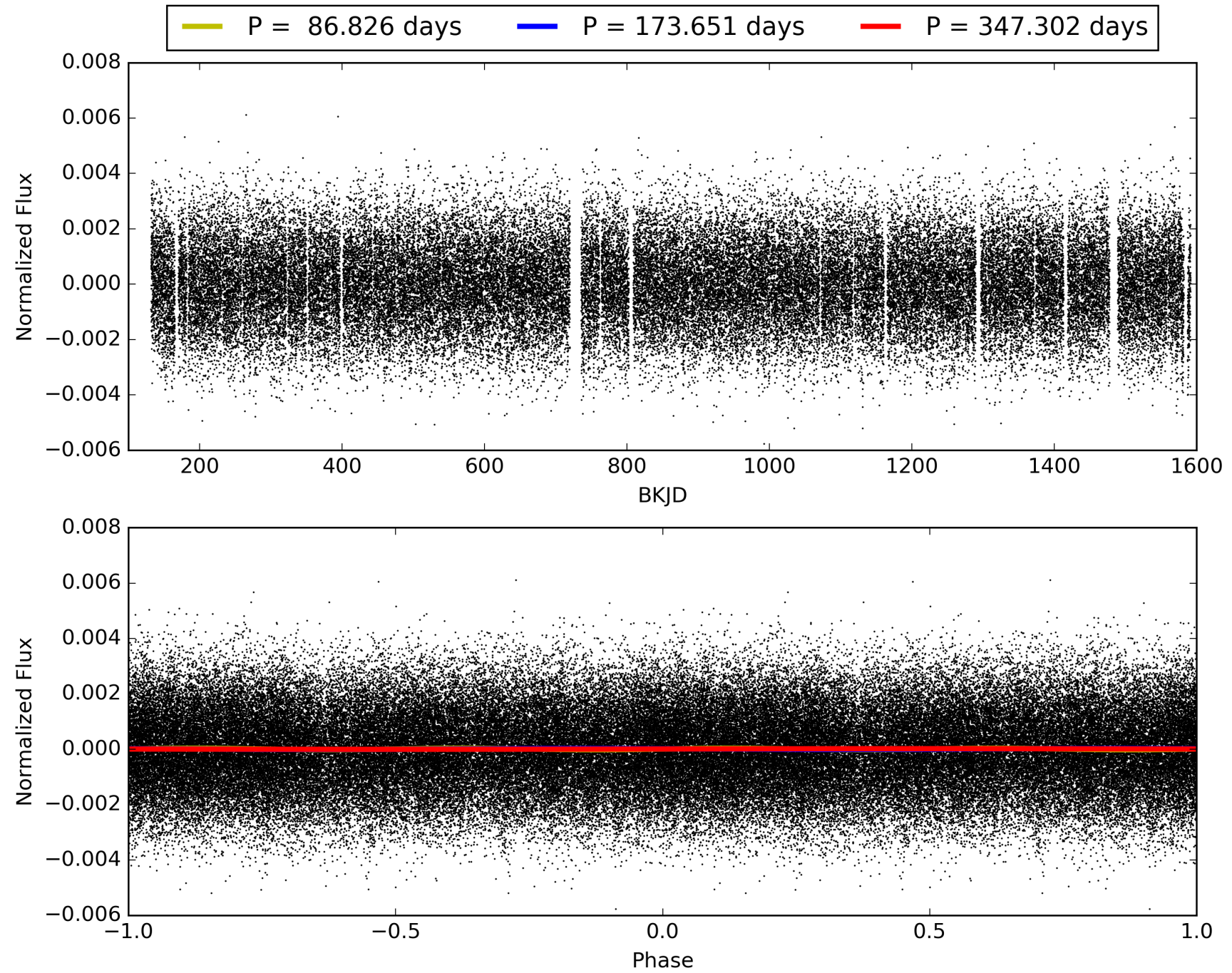
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:12:34 Z

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

TCE 009532644-04, PDC Light Curves

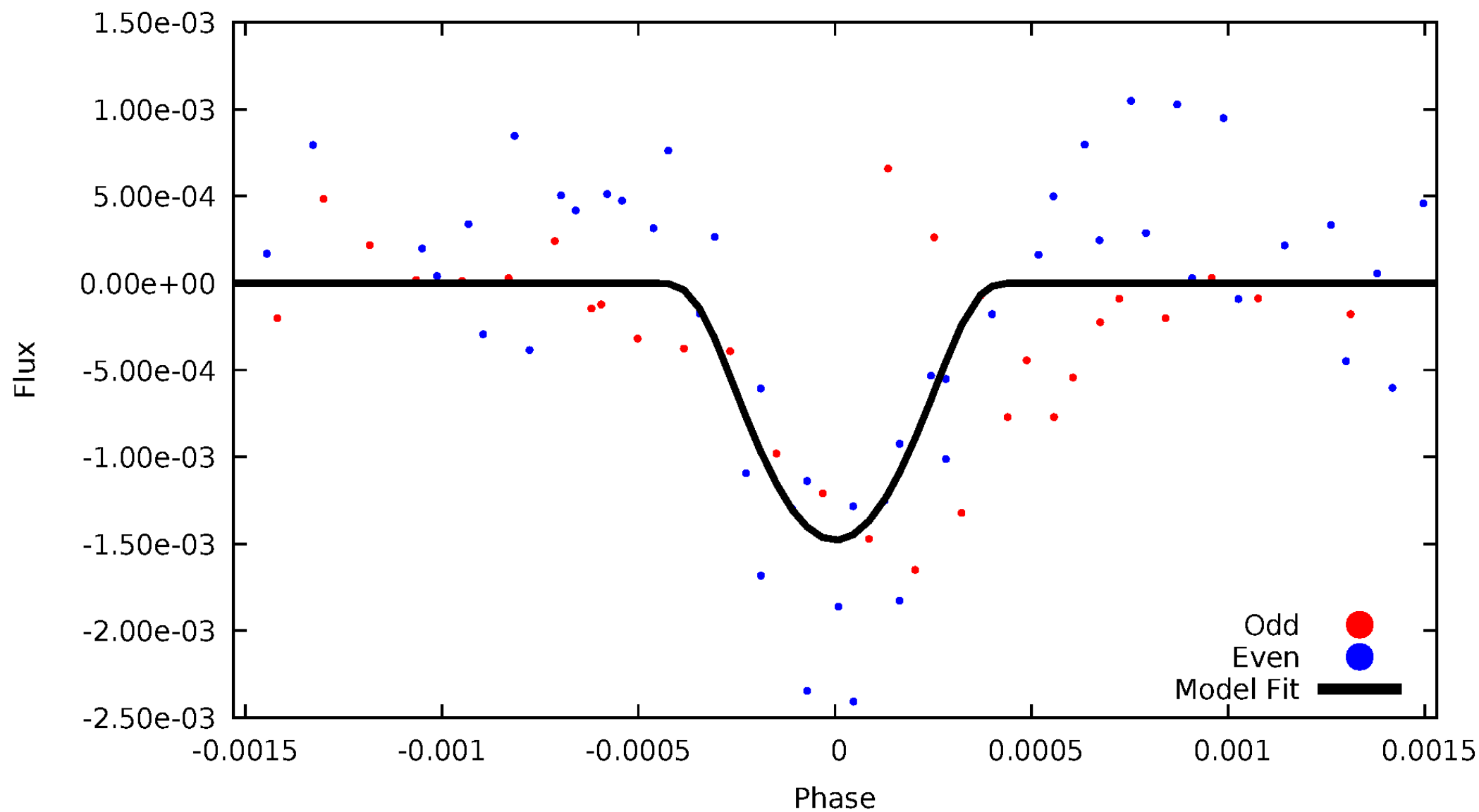


TCE 009532644-04



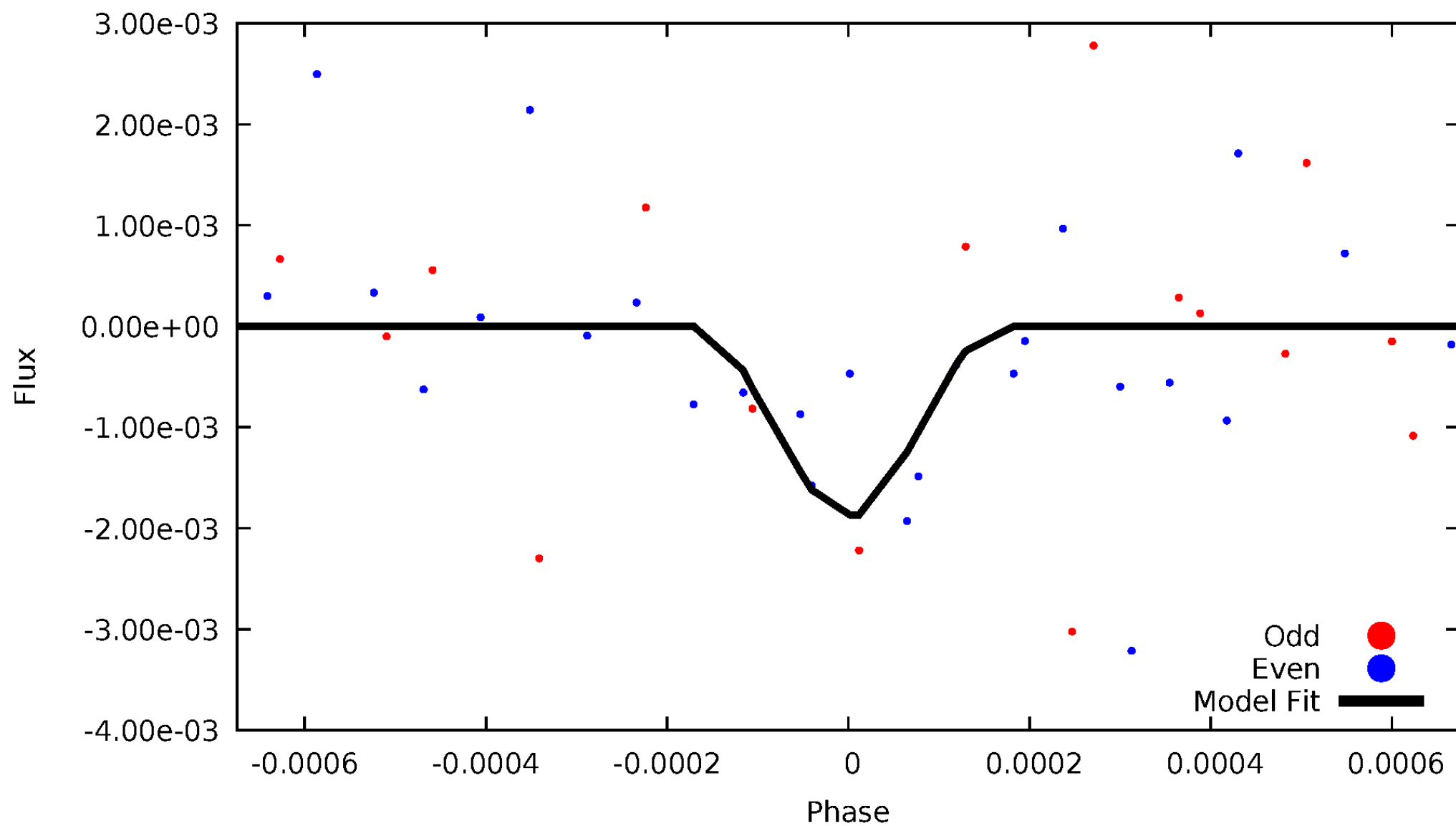
DV Odd/Even

TCE 009532644-04



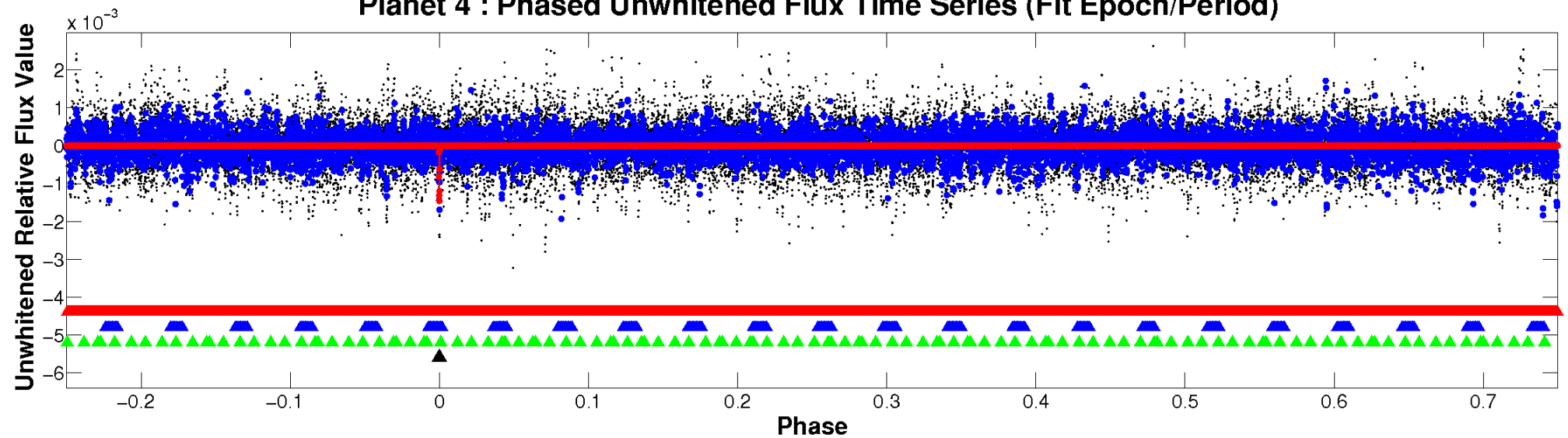
ALT Odd/Even

TCE 009532644-04

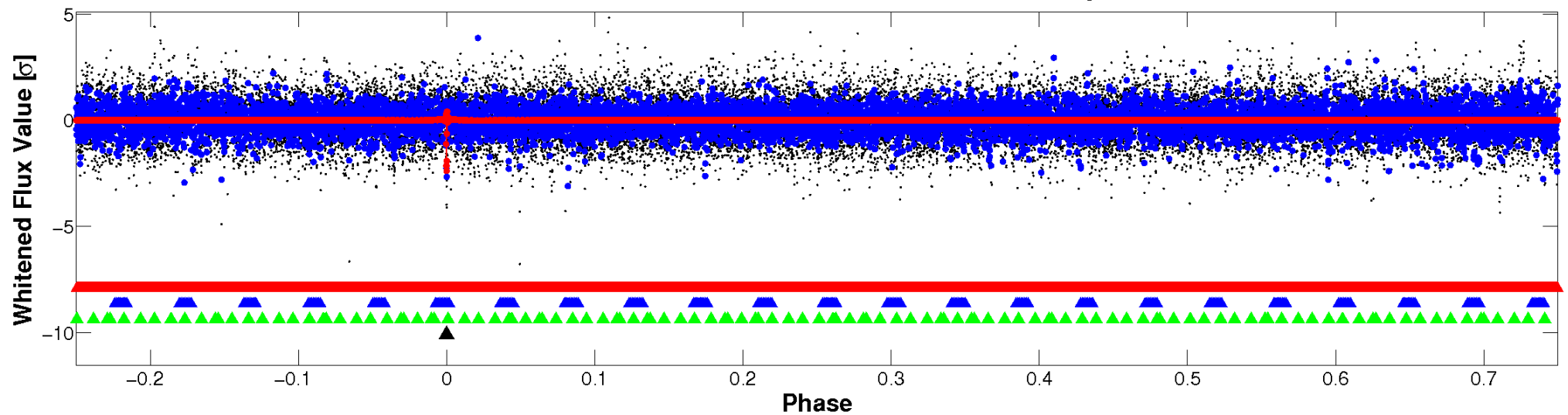


Non-Whitened Vs. Whitened Light Curve

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

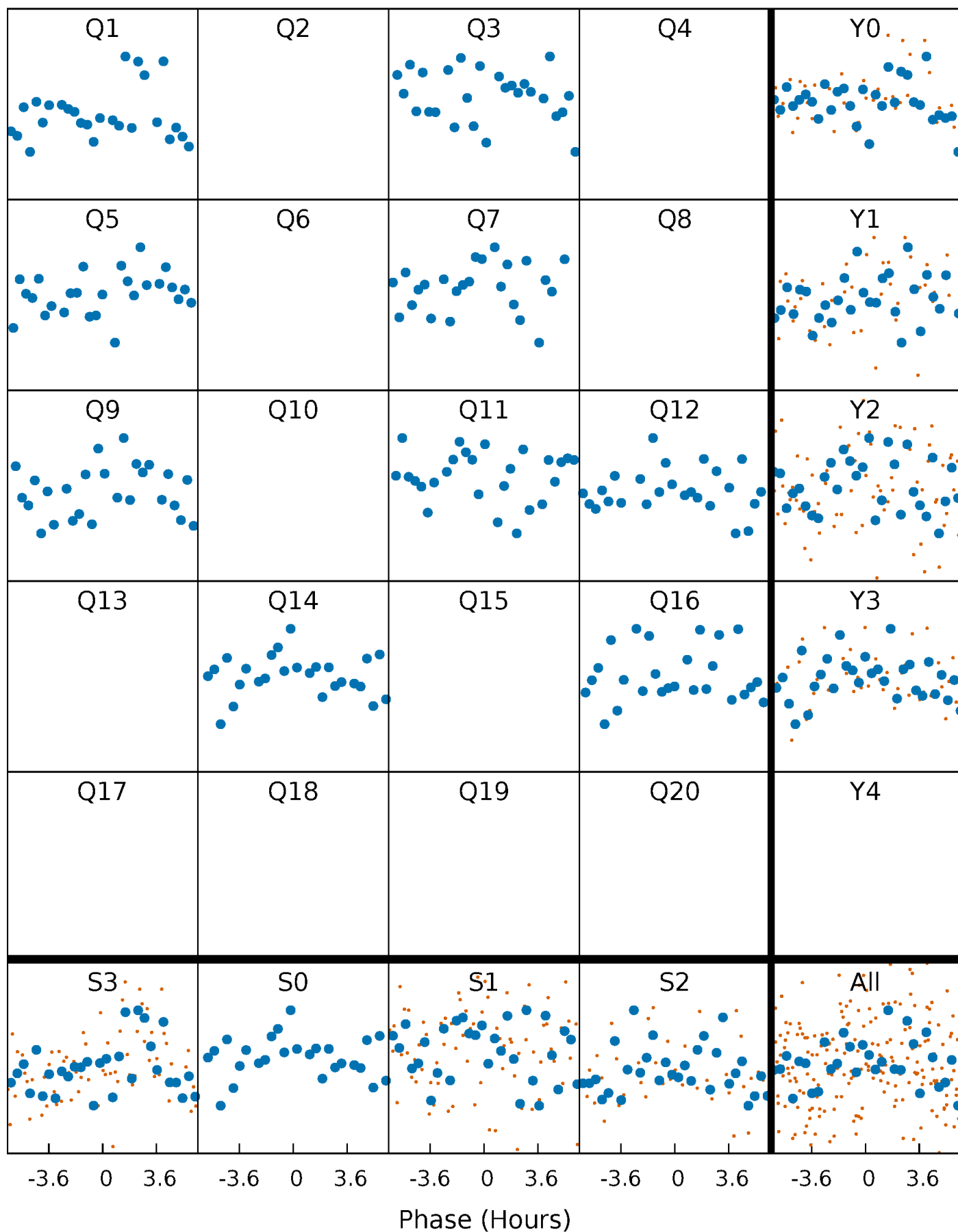


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



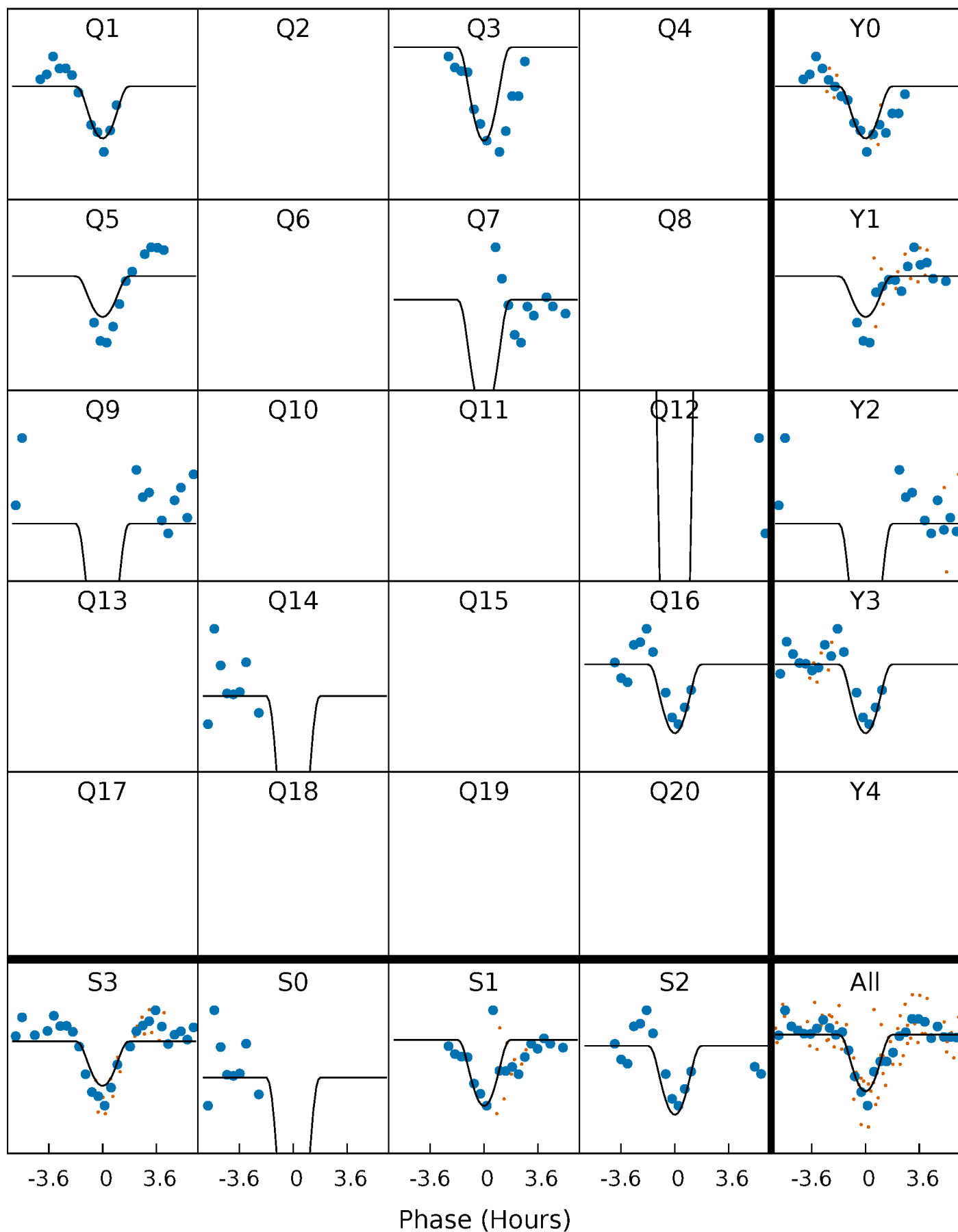
PDC Quarter-Phased Transit Curves

TCE 009532644-04 P=173.651202 Days $T_0=139.091643$ (BKJD)



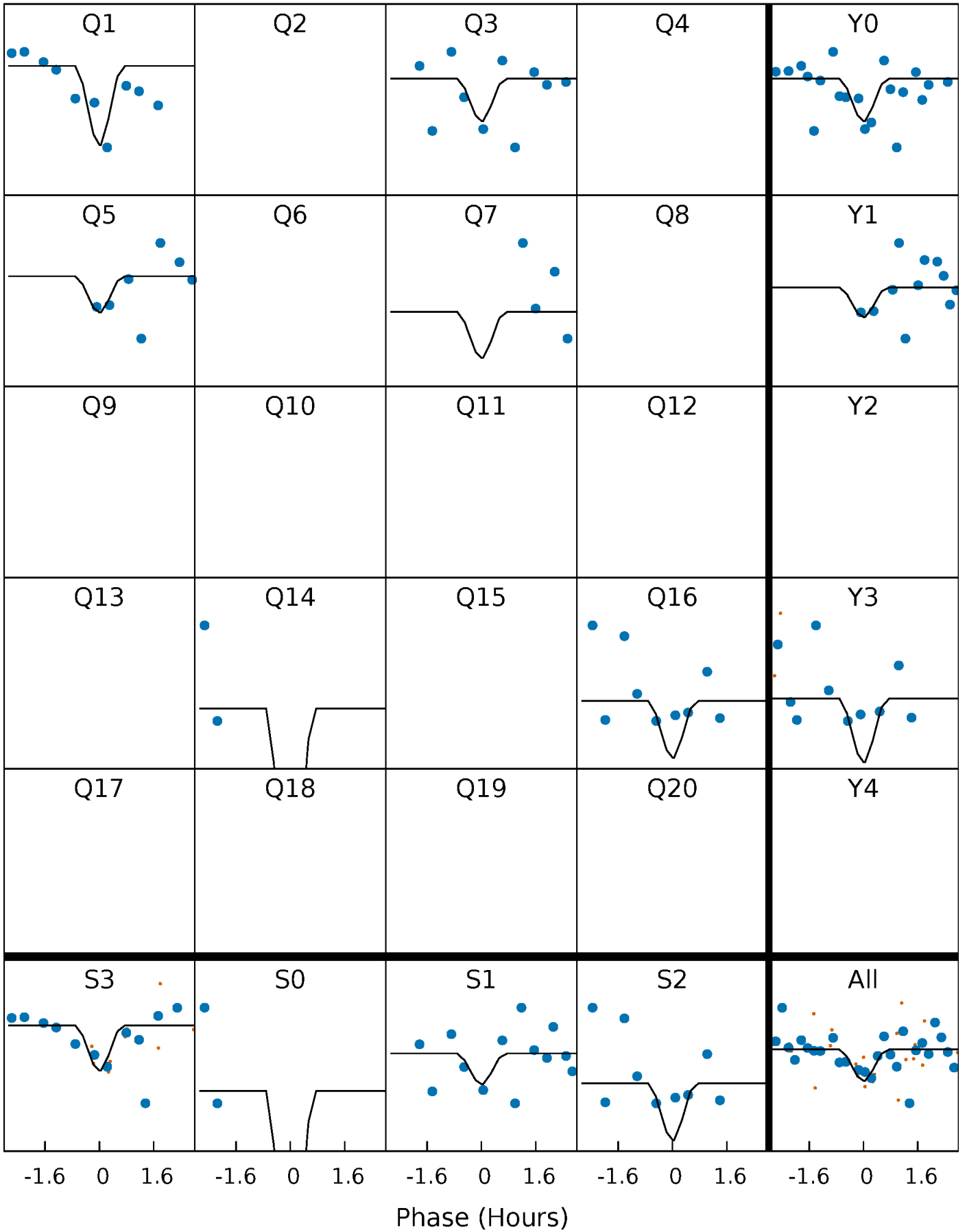
DV Quarter-Phased Transit Curves

TCE 009532644-04 P=173.651202 Days $T_0=139.091643$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

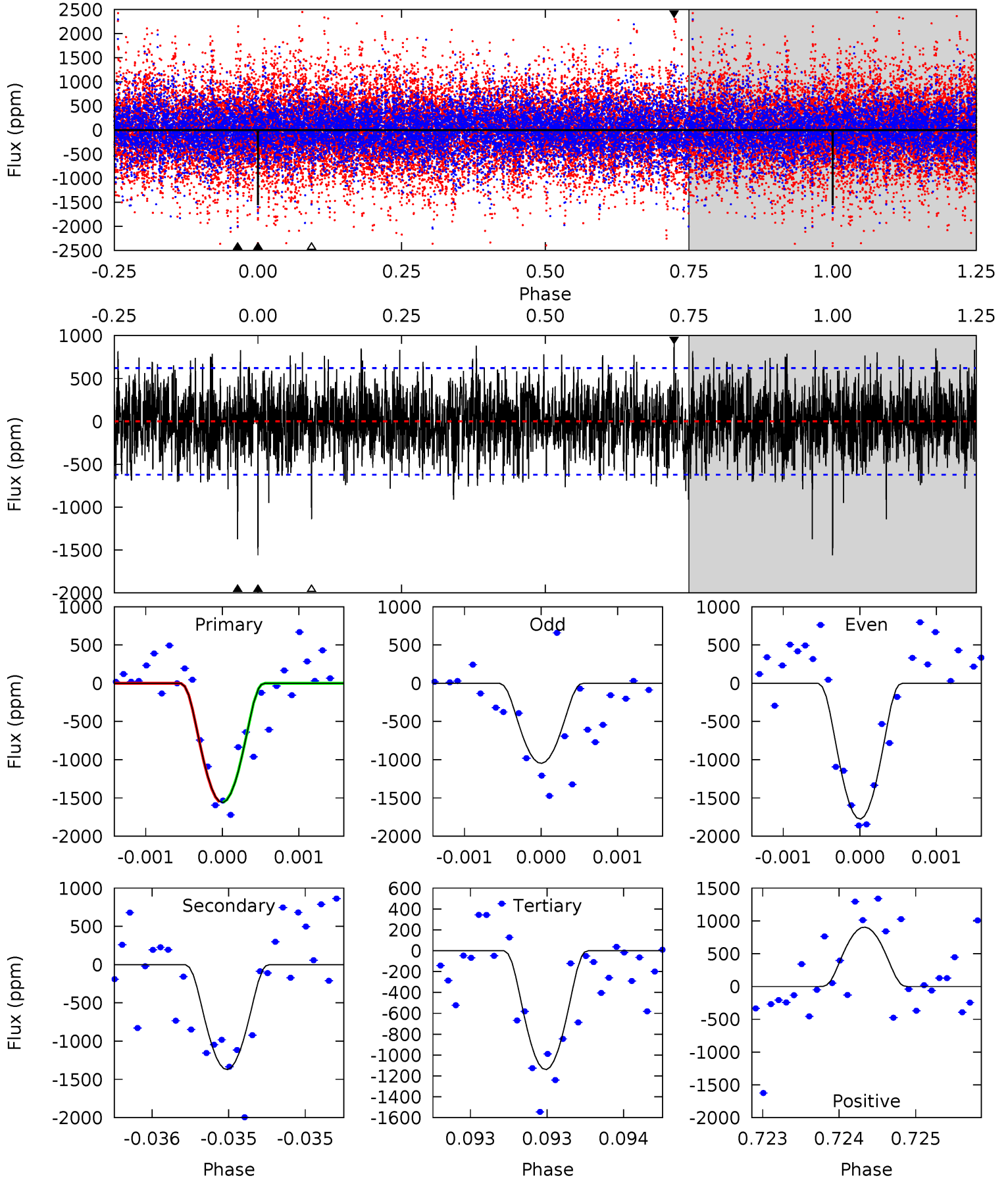
TCE 009532644-04 $P=173.653386$ Days $T_0=139.061510$ (BKJD)



DV Model-Shift Uniqueness Test

009532644-04, P = 173.651202 Days, E = 139.091643 Days

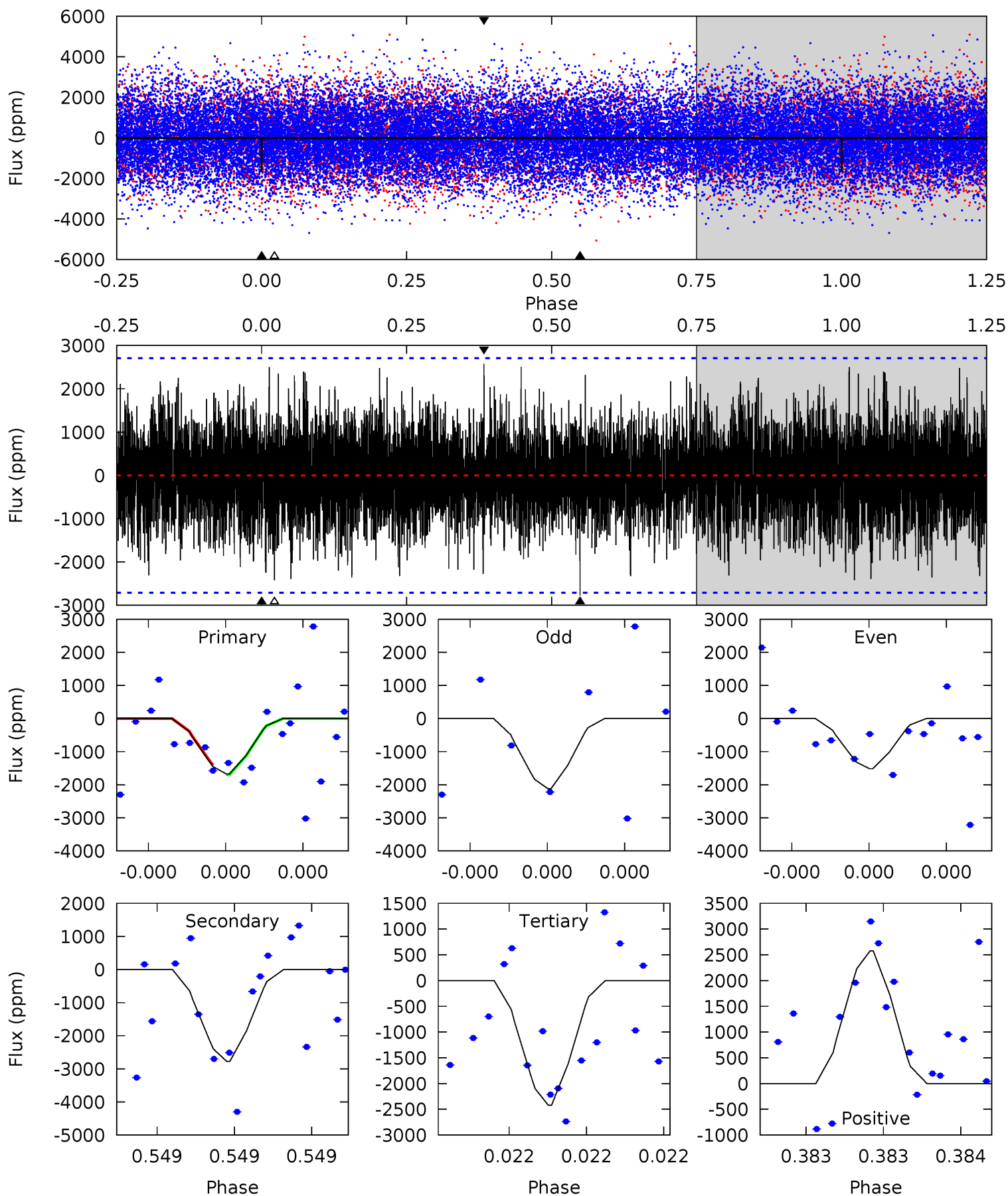
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	12.1	10.1	8.00	5.49	3.36	2.43	3.71	5.79	2.05	4.13	3.10	0.78	0.37	0.02



Alt Model-Shift Uniqueness Test

009532644-04, P = 173.653386 Days, E = 139.061510 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.52	5.83	5.09	5.42	5.70	3.67	1.47	-1.57	-1.90	0.74	0.41	0.55	0.85	0.48	0.29



Stellar Parameters For KIC 009532644

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7523^{+207}_{-337}	$3.561^{+0.522}_{-0.058}$	$0.070^{+0.200}_{-0.300}$	$4.178^{+0.549}_{-2.195}$	$2.318^{+0.183}_{-0.731}$	$0.045^{+0.279}_{-0.009}$
	+3%/-4%	+15%/-2%	+286%/-429%	+13%/-53%	+8%/-32%	+624%/-20%
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 009532644-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1372 ± 113	$52.39^{+61.13}_{-36.76}$	1005^{+71}_{-131}	4134^{+2765}_{-877}	179^{+1658}_{-142}
Alt.	-2772 ± 475	$49.82^{+57.48}_{-35.12}$	1000^{+81}_{-129}	4805^{+4012}_{-1104}	396^{+3854}_{-312}

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

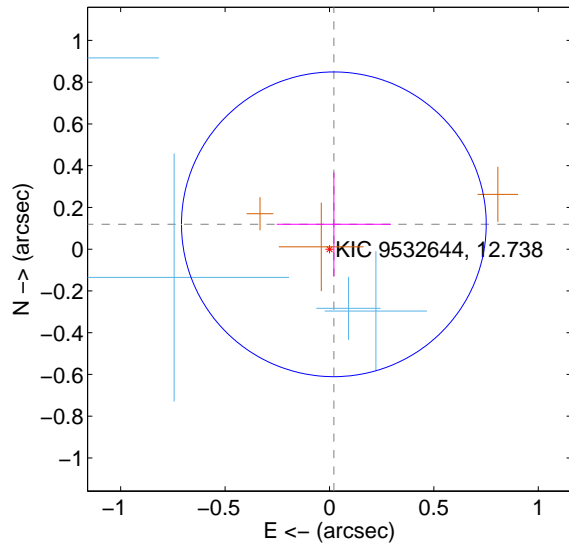
Supplemental centroid analysis for 009532644-04. Kepler magnitude: 12.74. Transit SNR 7.90

There are 4 quarters with good PRF difference image offsets

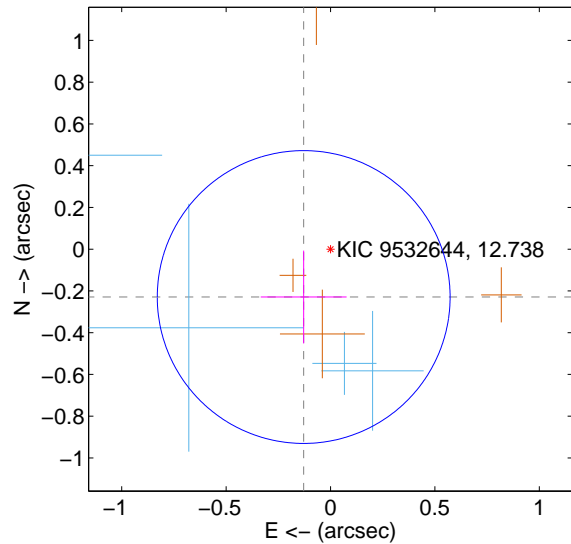
The direct PRF centroid is offset from the target star catalog position by about 0.47 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.243	0.50	-0.021 ± 0.274	0.119 ± 0.248
PRF-fit source offset from KIC position	0.263 ± 0.234	1.12	0.129 ± 0.206	-0.229 ± 0.222
photometric centroid source offset	0.50 ± 0.16	3.16	-0.02 ± 0.16	-0.50 ± 0.16

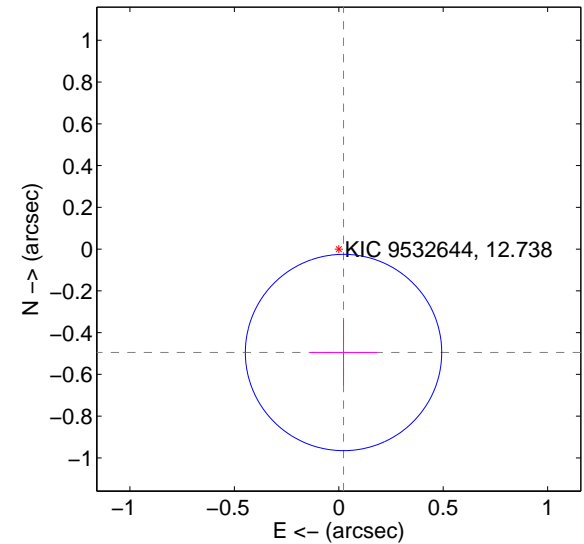
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

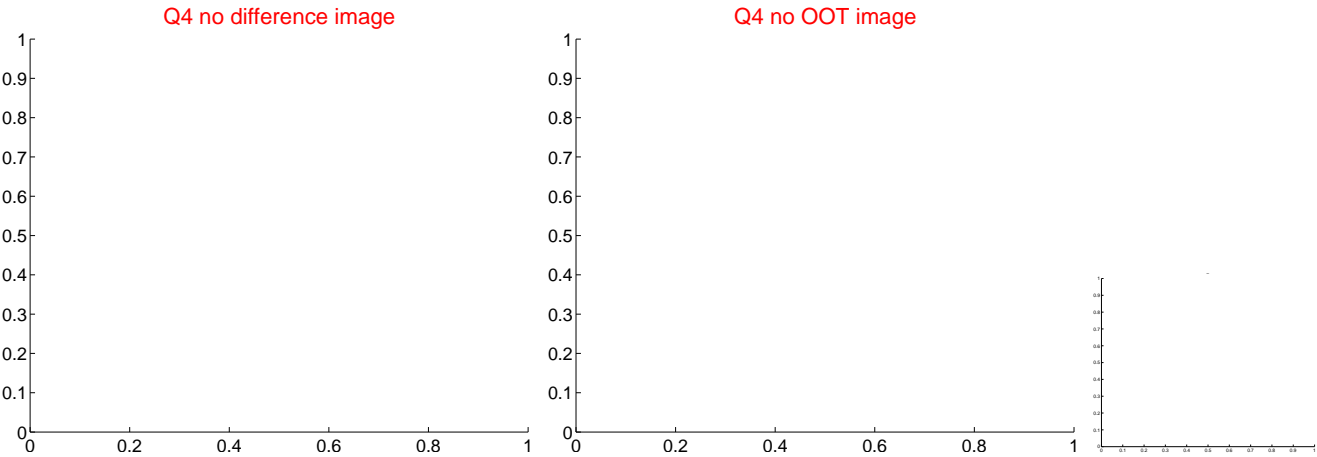
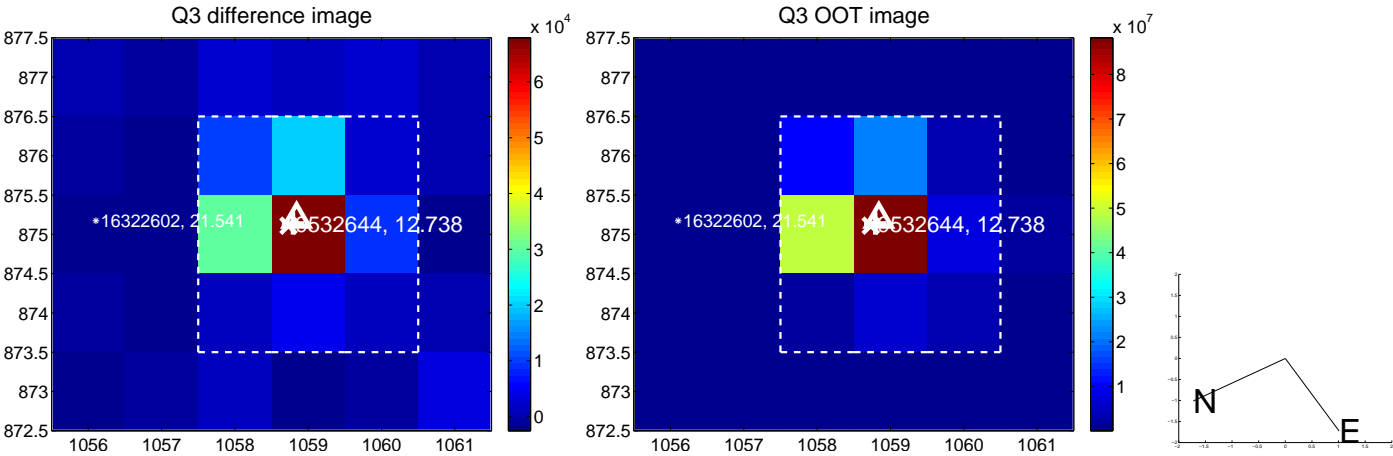
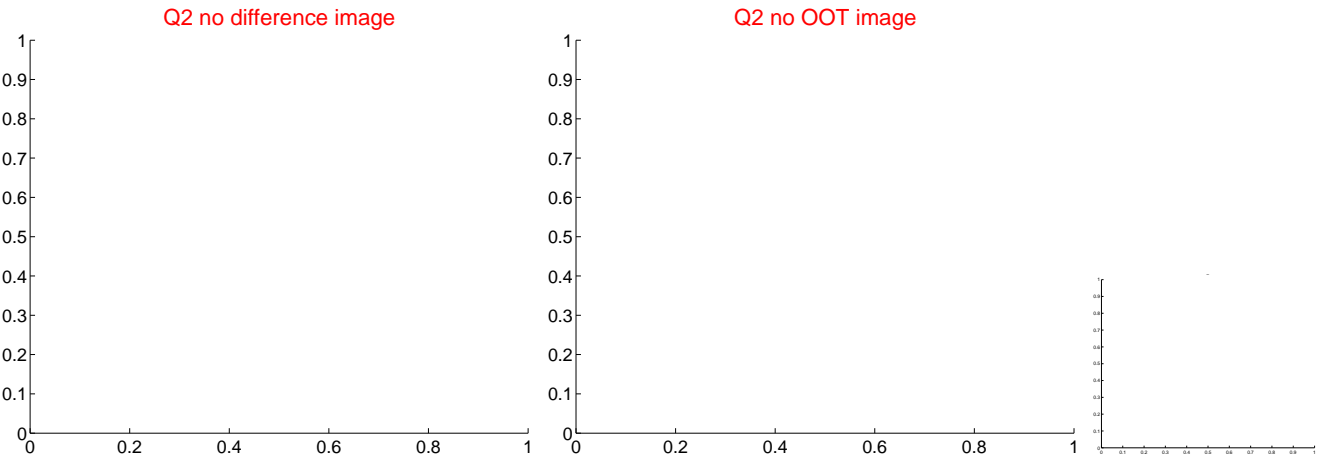
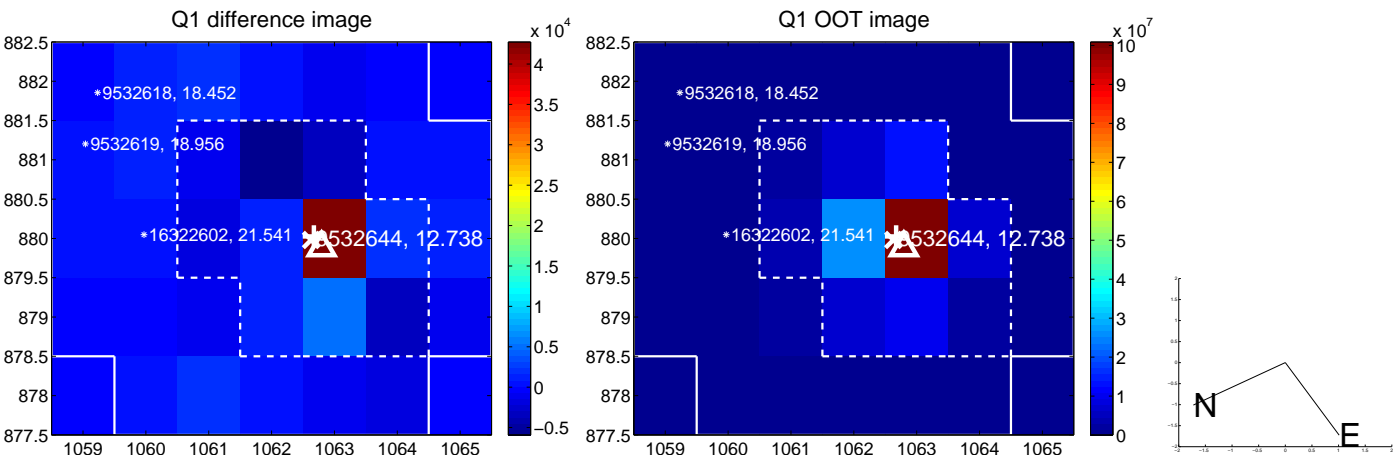


offset from photometric centroids

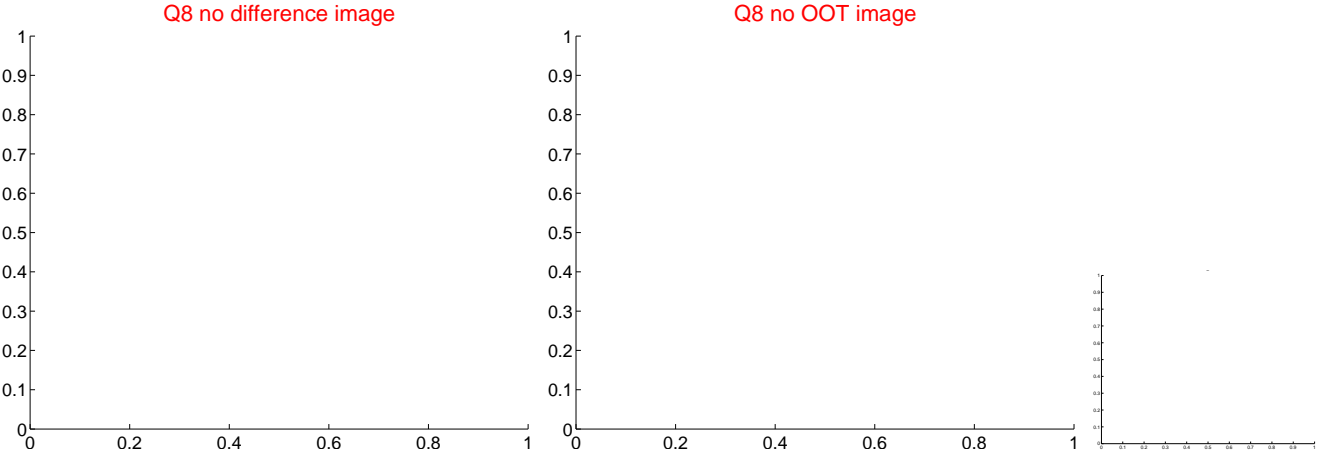
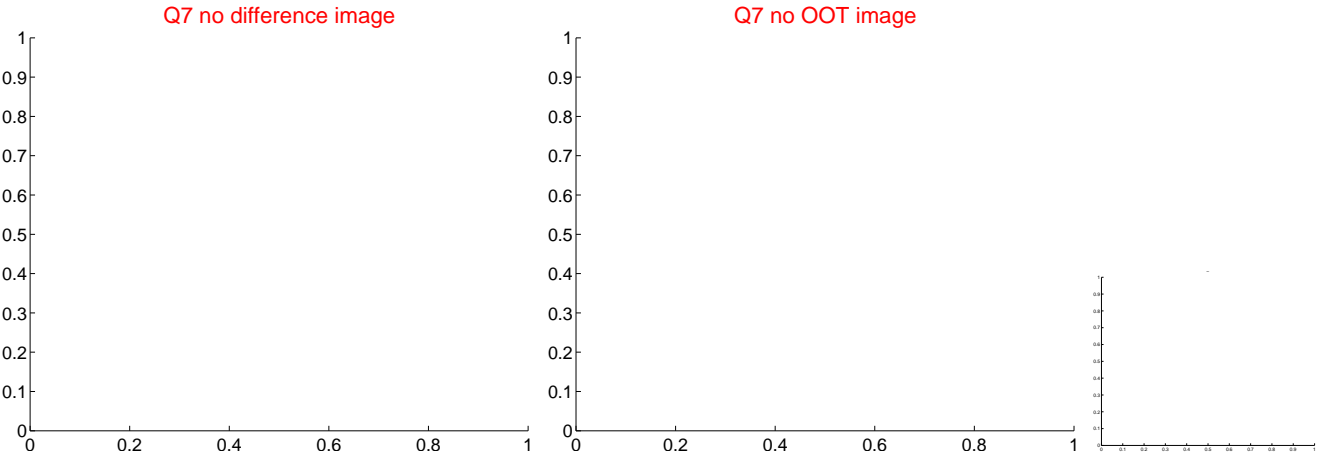
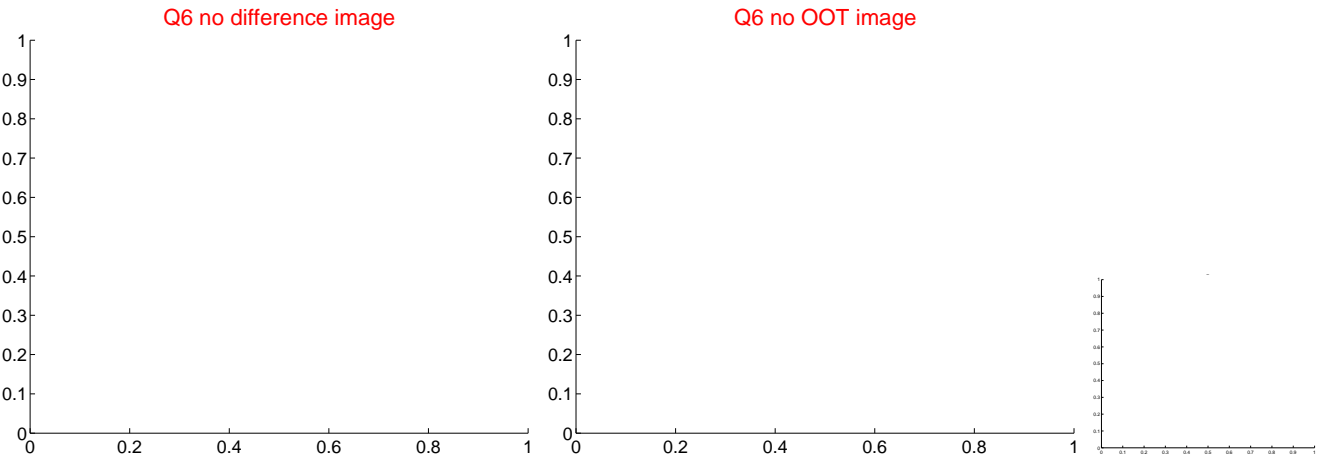
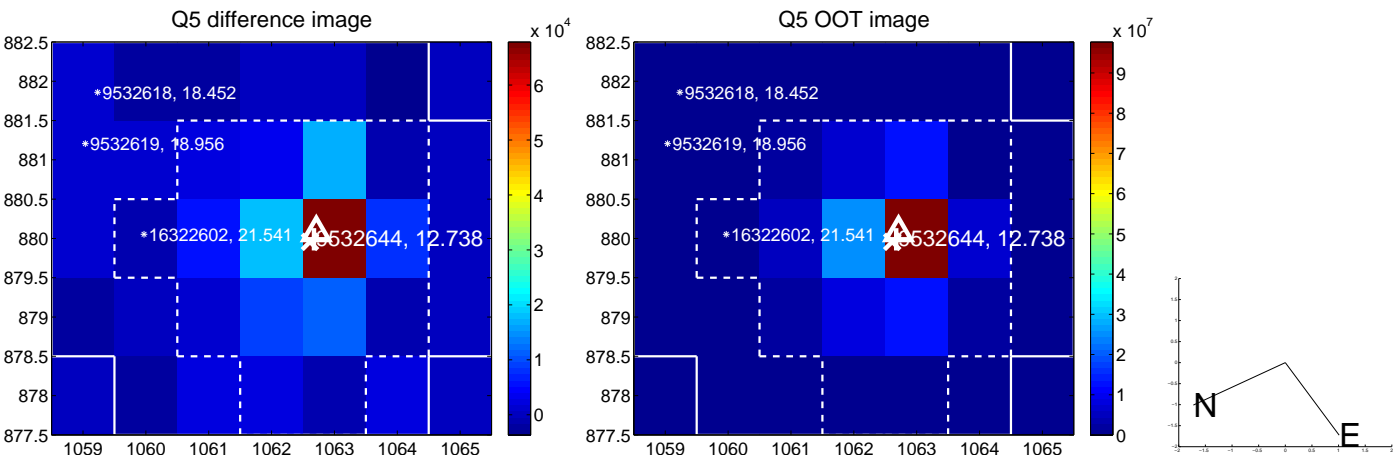


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

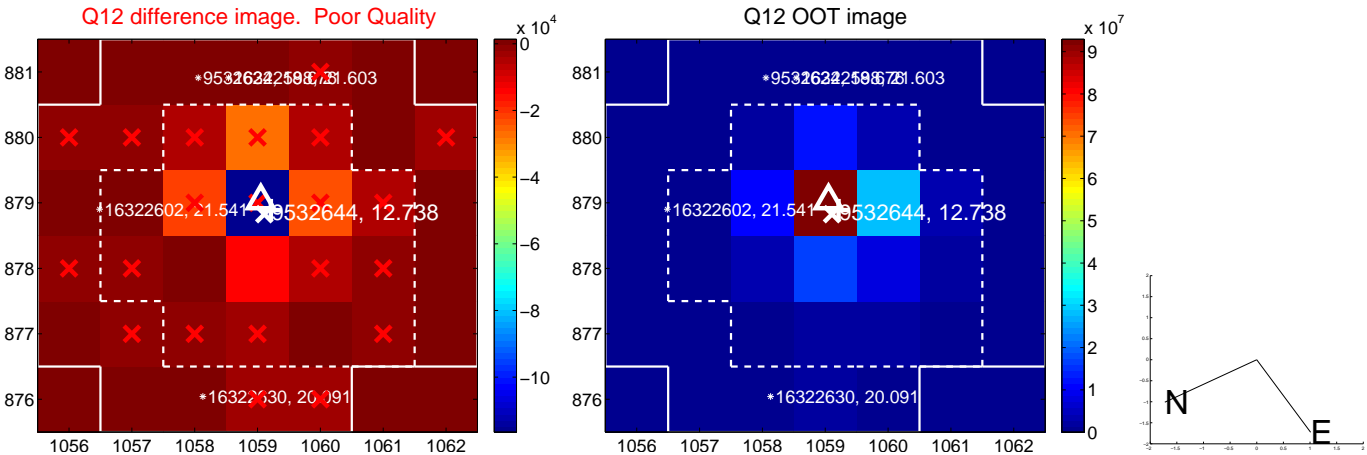
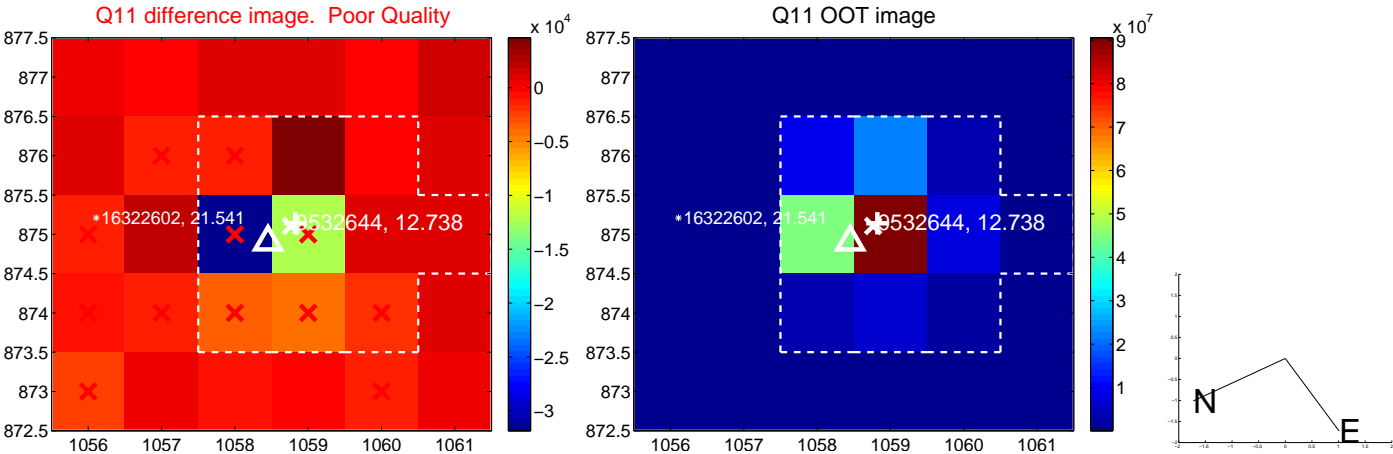
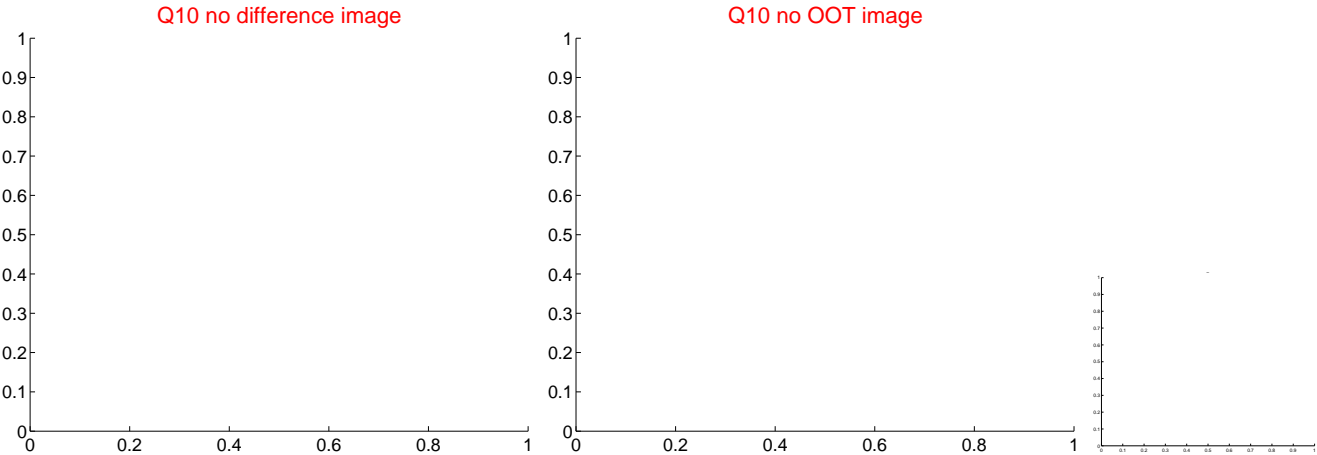
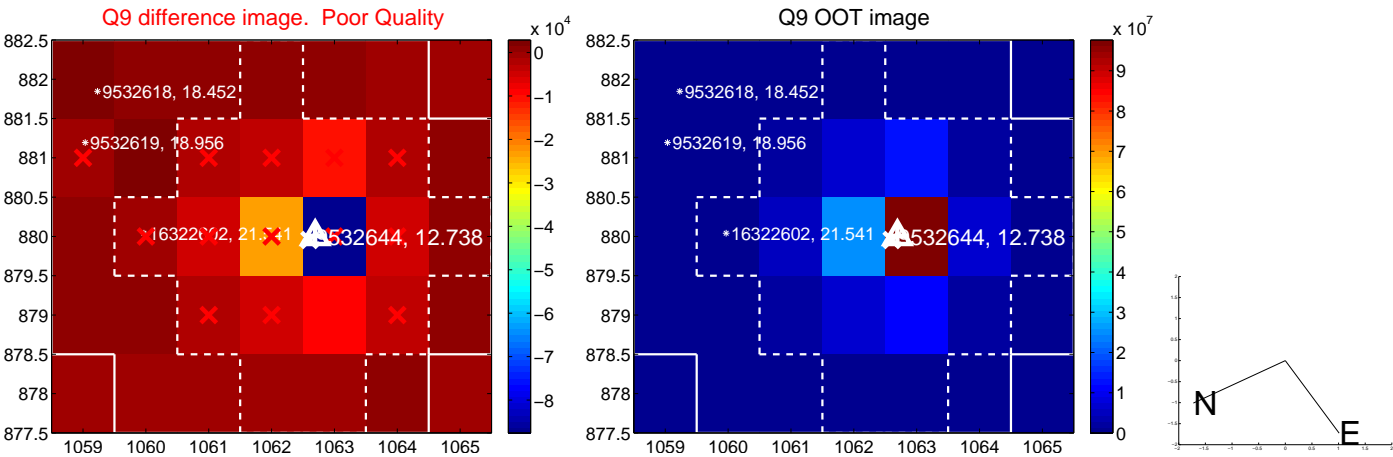
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



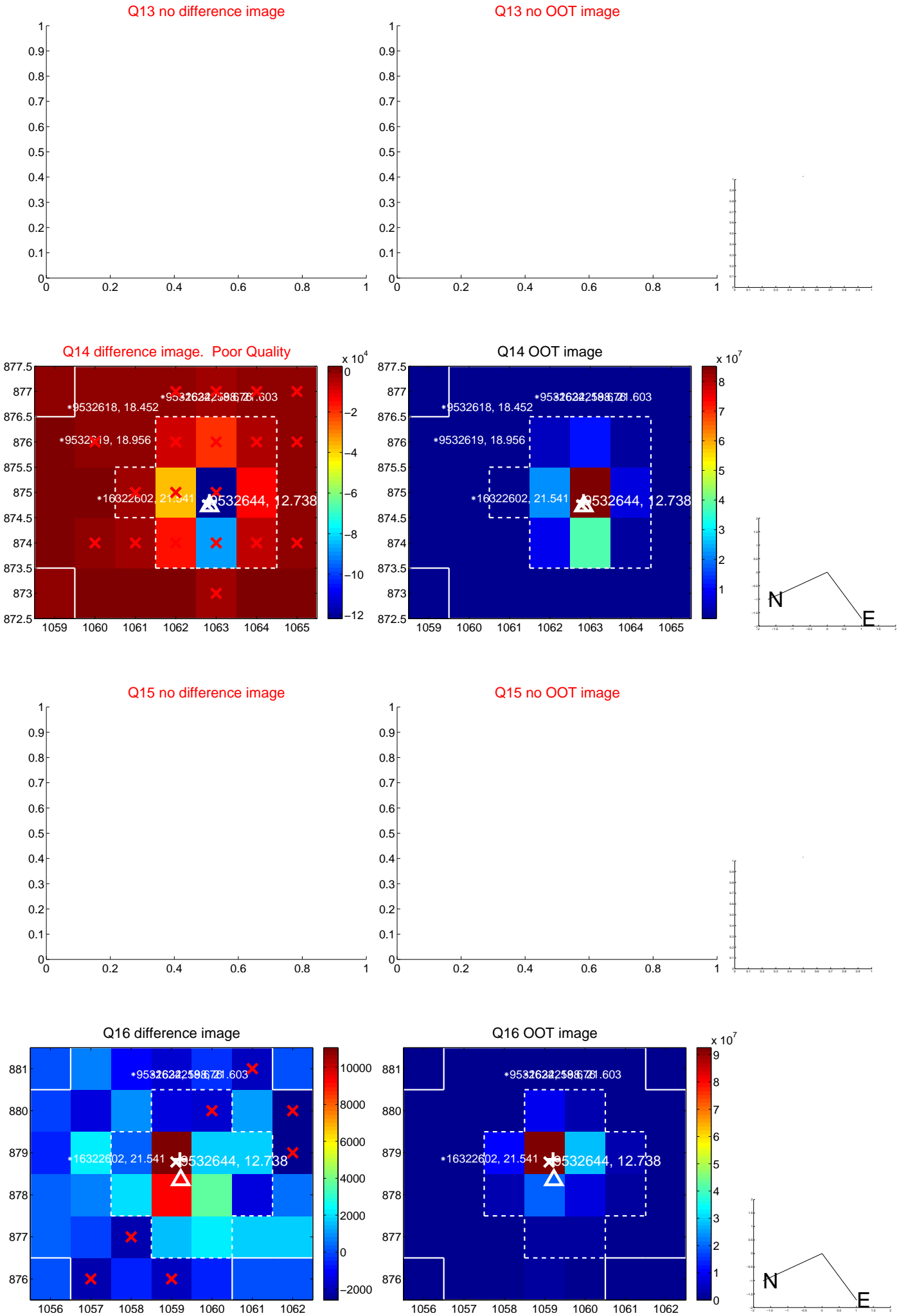
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



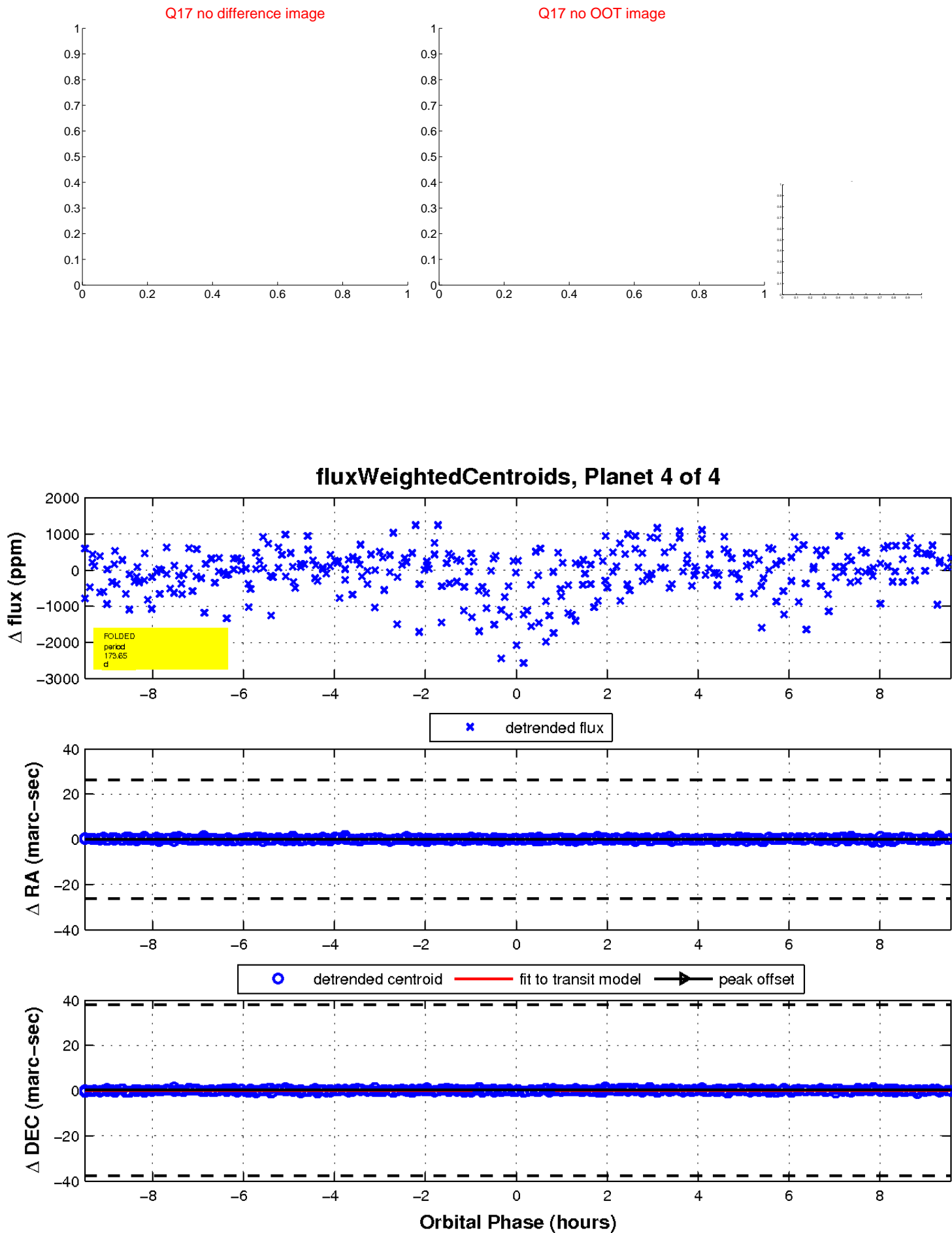
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

