

KIC 009239124

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})
009239124-01	OBS	No	1.858212	132.302398	3.0	11.263	9.7	1.8	1.58	7208	0.31	5223.73
009239124-02	OBS	No	163.413890	211.708662	62.6	19.700	16.0	3.7	1.58	7208	1.40	13.36
009239124-03	OBS	No	119.264711	155.464198	168.8	16.663	9.4	10.1	1.58	7208	2.27	20.33
009239124-04	OBS	No	113.022304	135.293748	134.8	9.311	8.2	8.0	1.58	7208	2.05	21.84
009239124-05	OBS	No	34.868190	144.939141	113.8	3.512	8.4	8.0	1.58	7208	1.85	104.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009239124-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009239124-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009239124-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009239124-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009239124-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

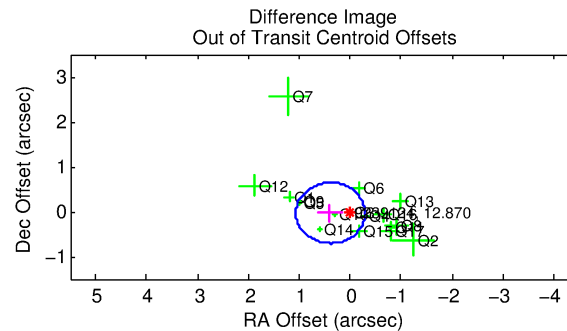
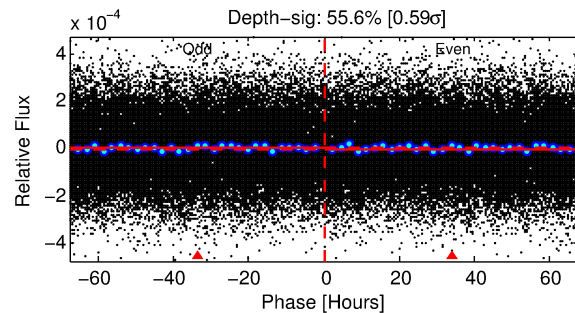
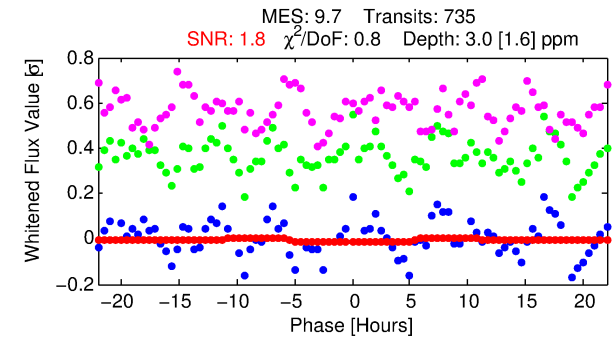
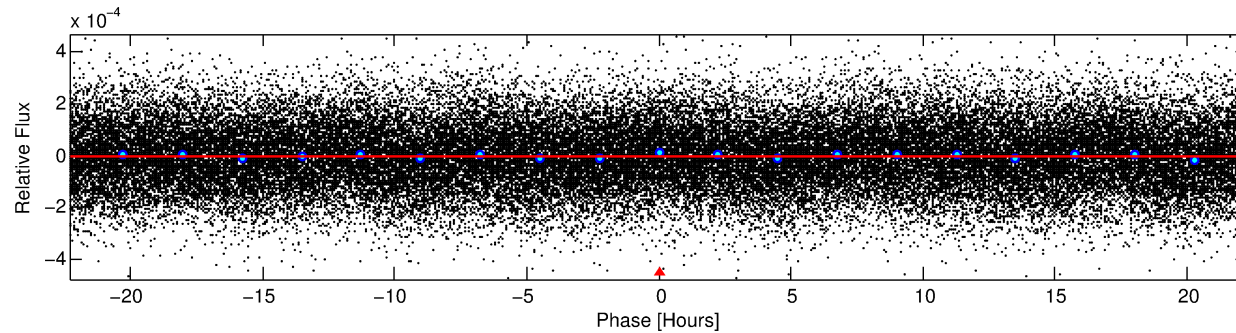
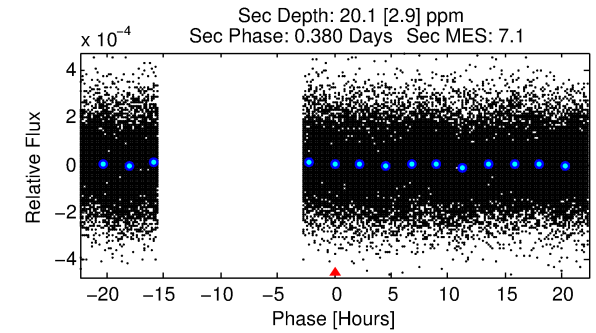
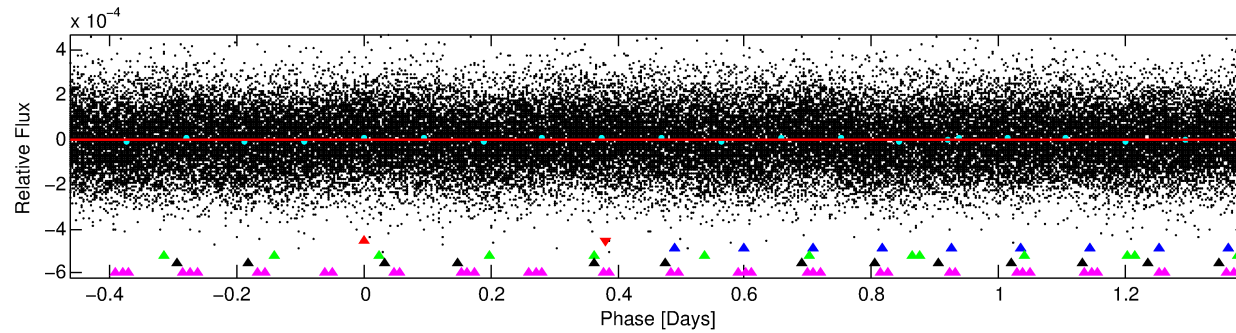
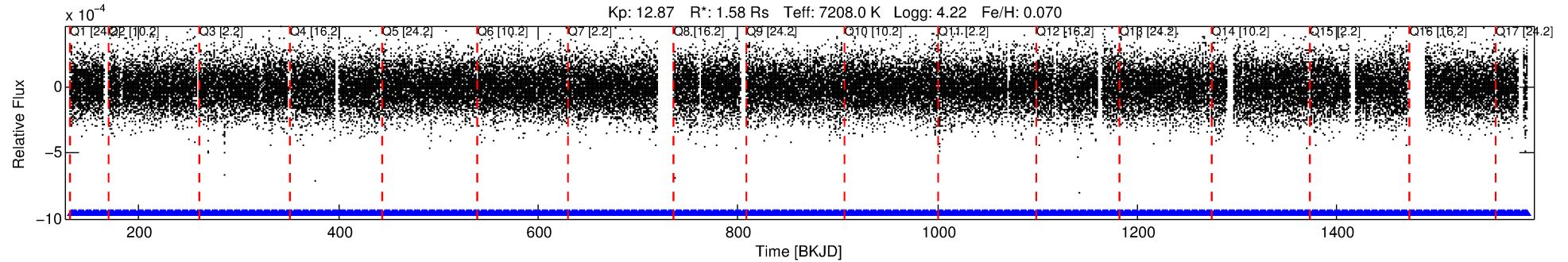
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009239124-01

No Significant Match Found

DV One-Page Summary

KIC: 9239124 Candidate: 1 of 5 Period: 1.858 d



DV Fit Results:

Period = 1.85821 [0.00013] d
Epoch = 132.3024 [0.0323] BKJD
Rp/R* = 0.0018 [0.0015]
a/R* = 1.11 [1.09]
b = 0.87 [1.40]
Seff = 5223.73 [2318.00]
Teq = 2168 [240] K
Rp = 0.31 [0.29] Re
a = 0.0340 [0.0098] AU
Ag = 131.20 [229.63] [0.57σ]
Teffp = 11343 [4861] K [1.89σ]

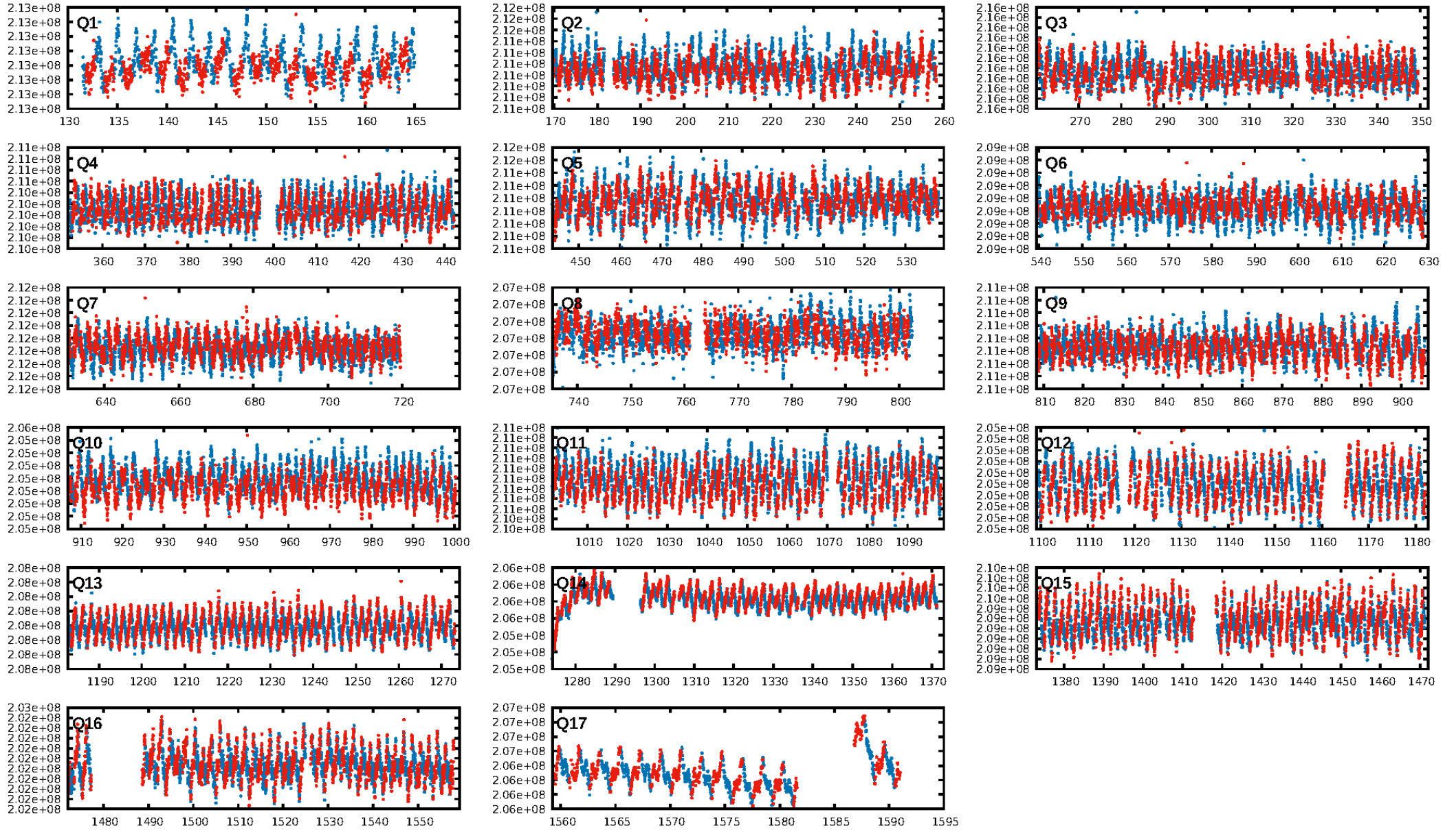
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [67.15σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.33e-11
RollingBand-fgt: 1.00 [701/701]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.391 arcsec [1.73σ]
KicOffset-rm: 0.280 arcsec [1.12σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.53 [9/17]
DiffImageOverlap-fno: 1.00 [17/17]

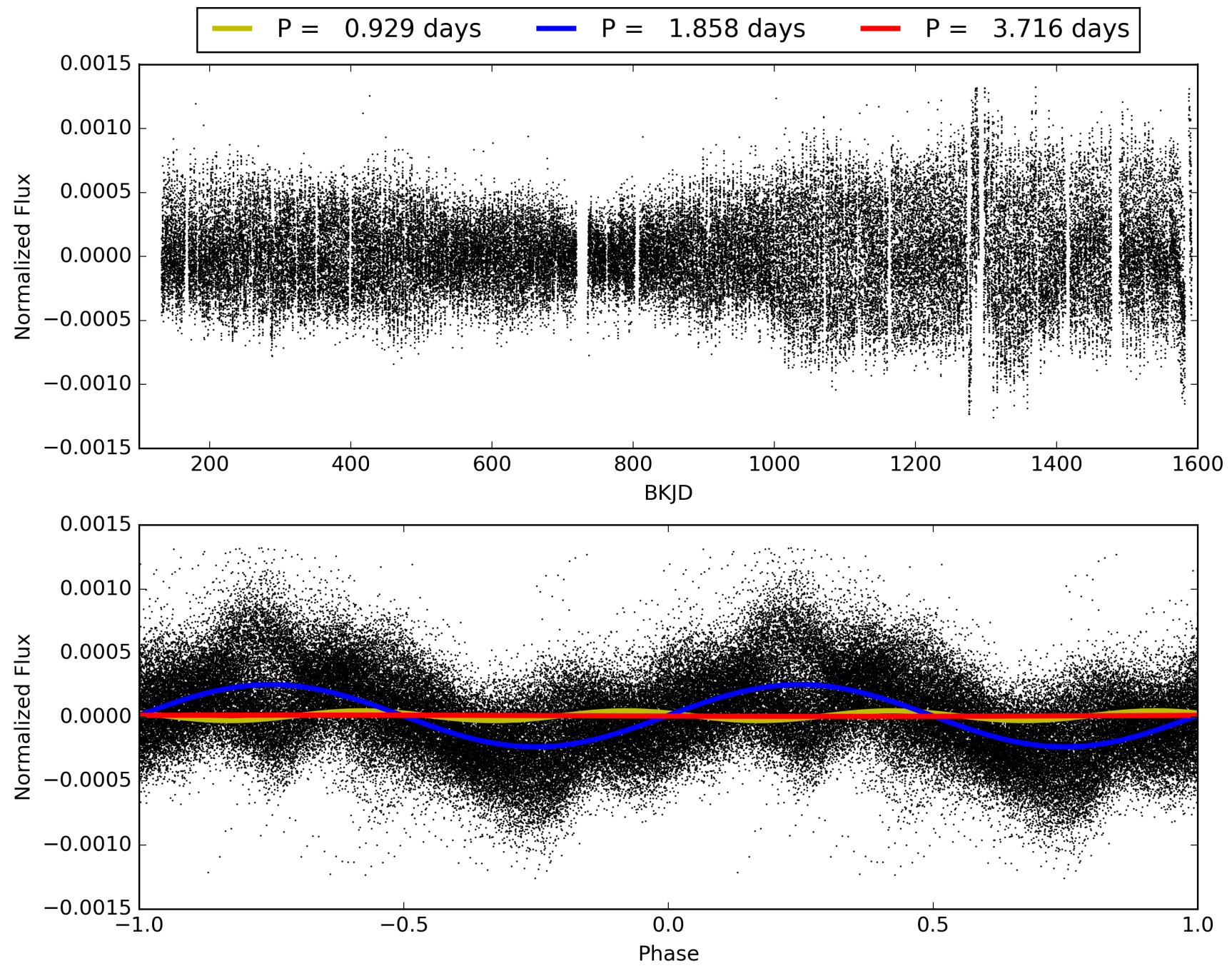
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:06:03 Z

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

TCE 009239124-01, PDC Light Curves

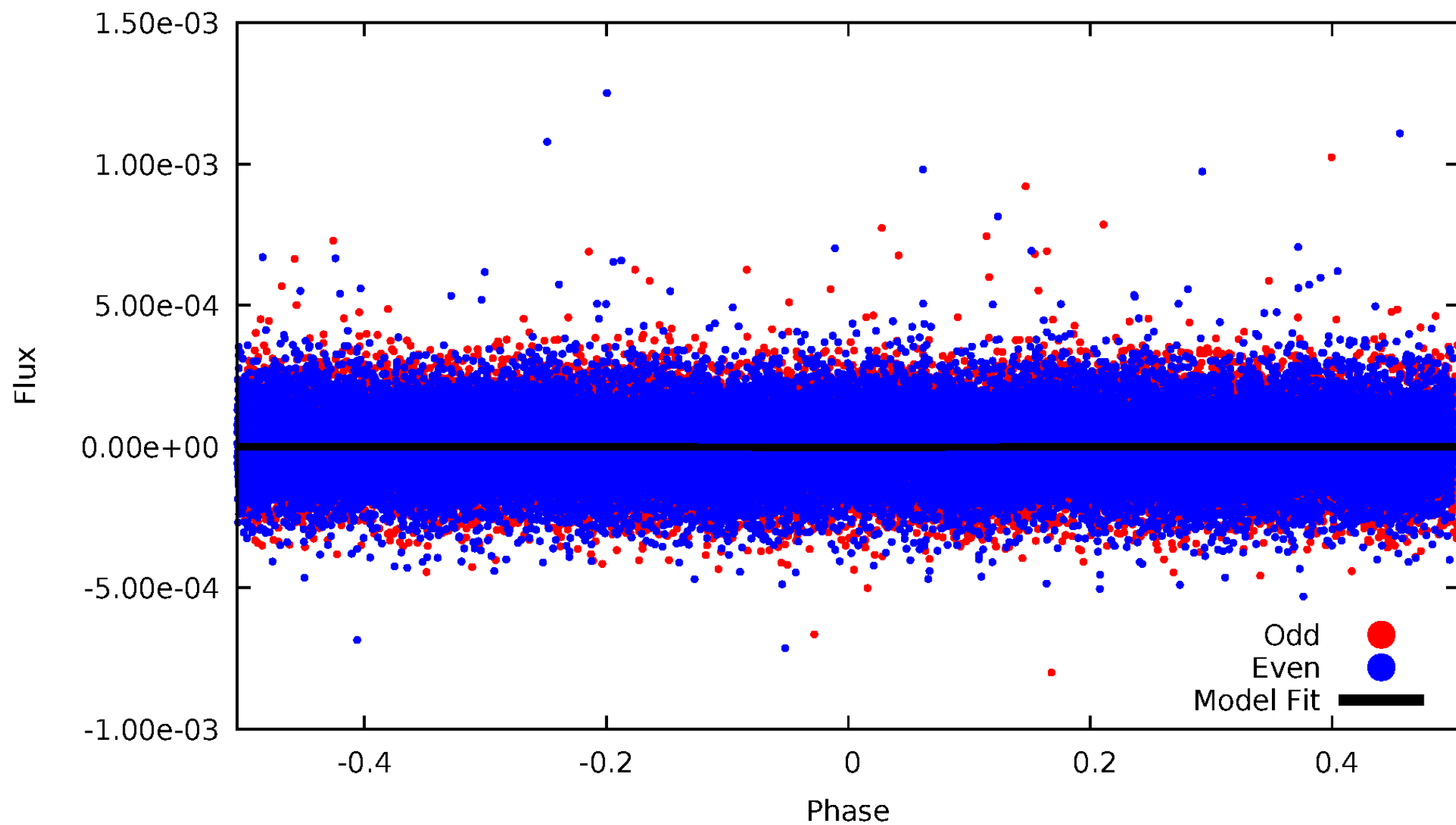


TCE 009239124-01



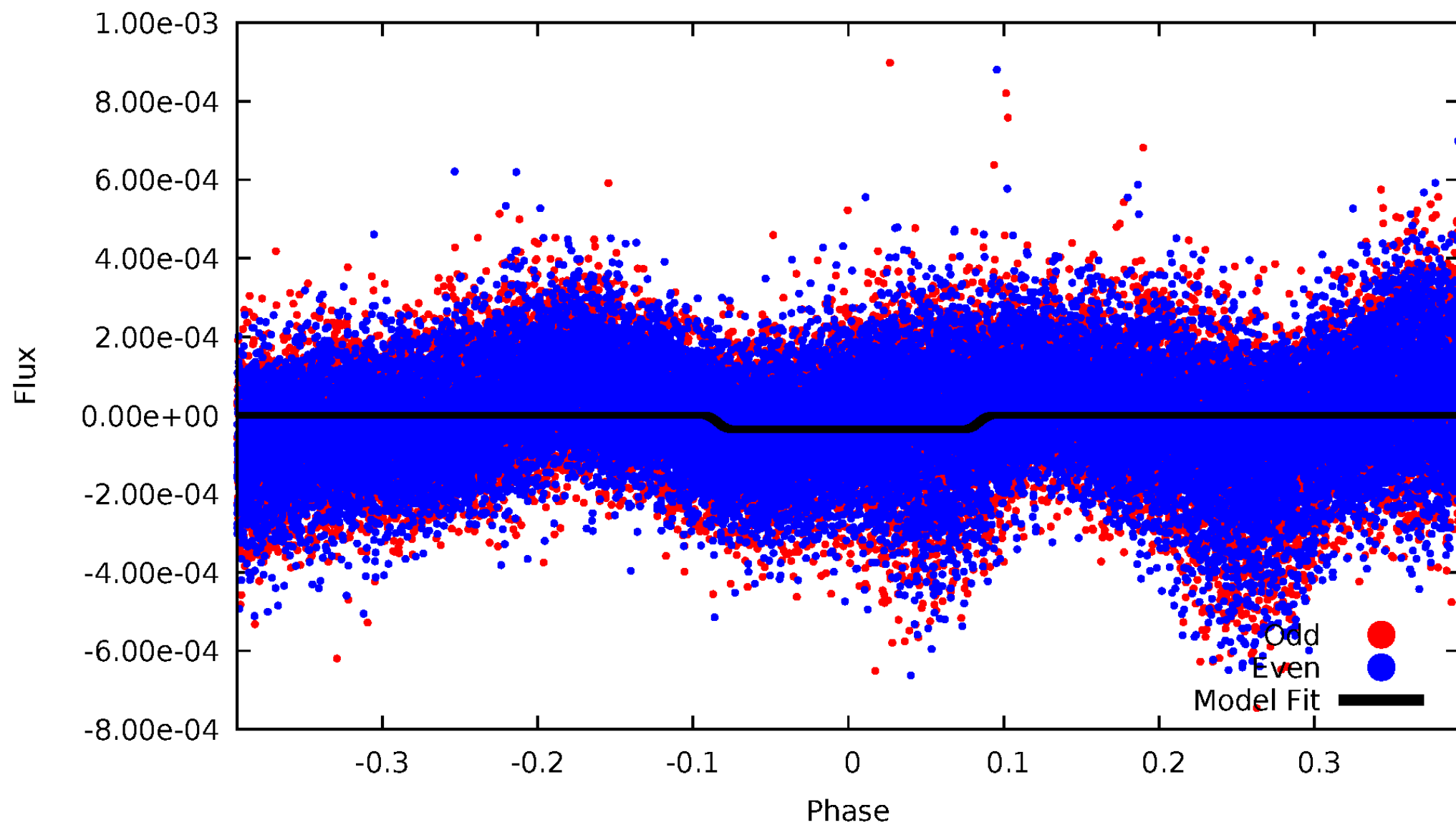
DV Odd/Even

TCE 009239124-01

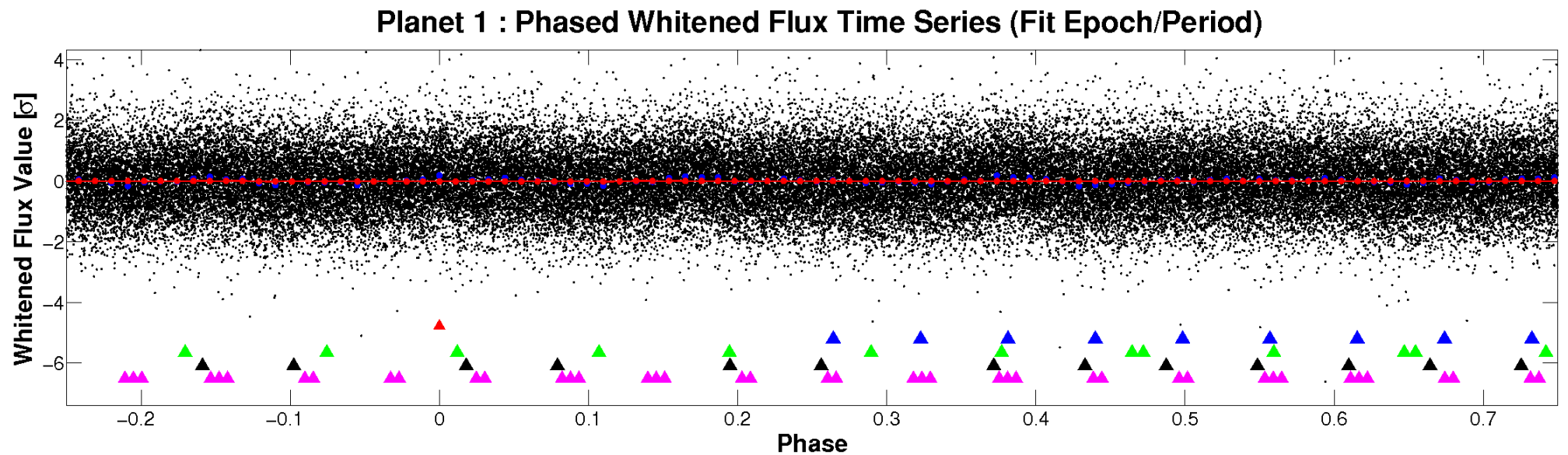
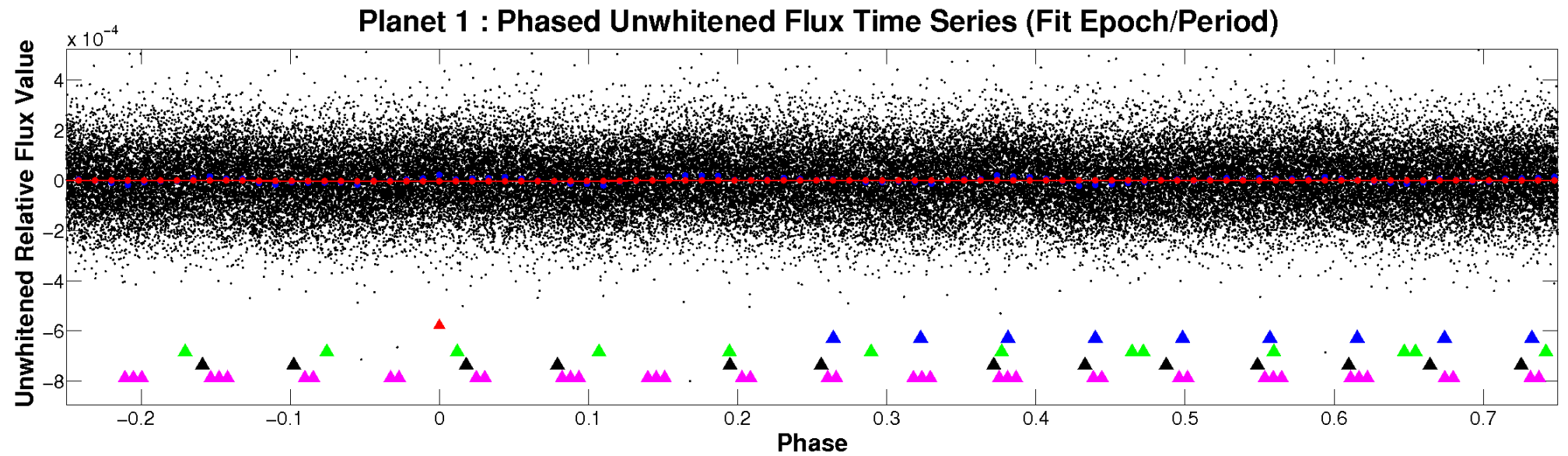


ALT Odd/Even

TCE 009239124-01

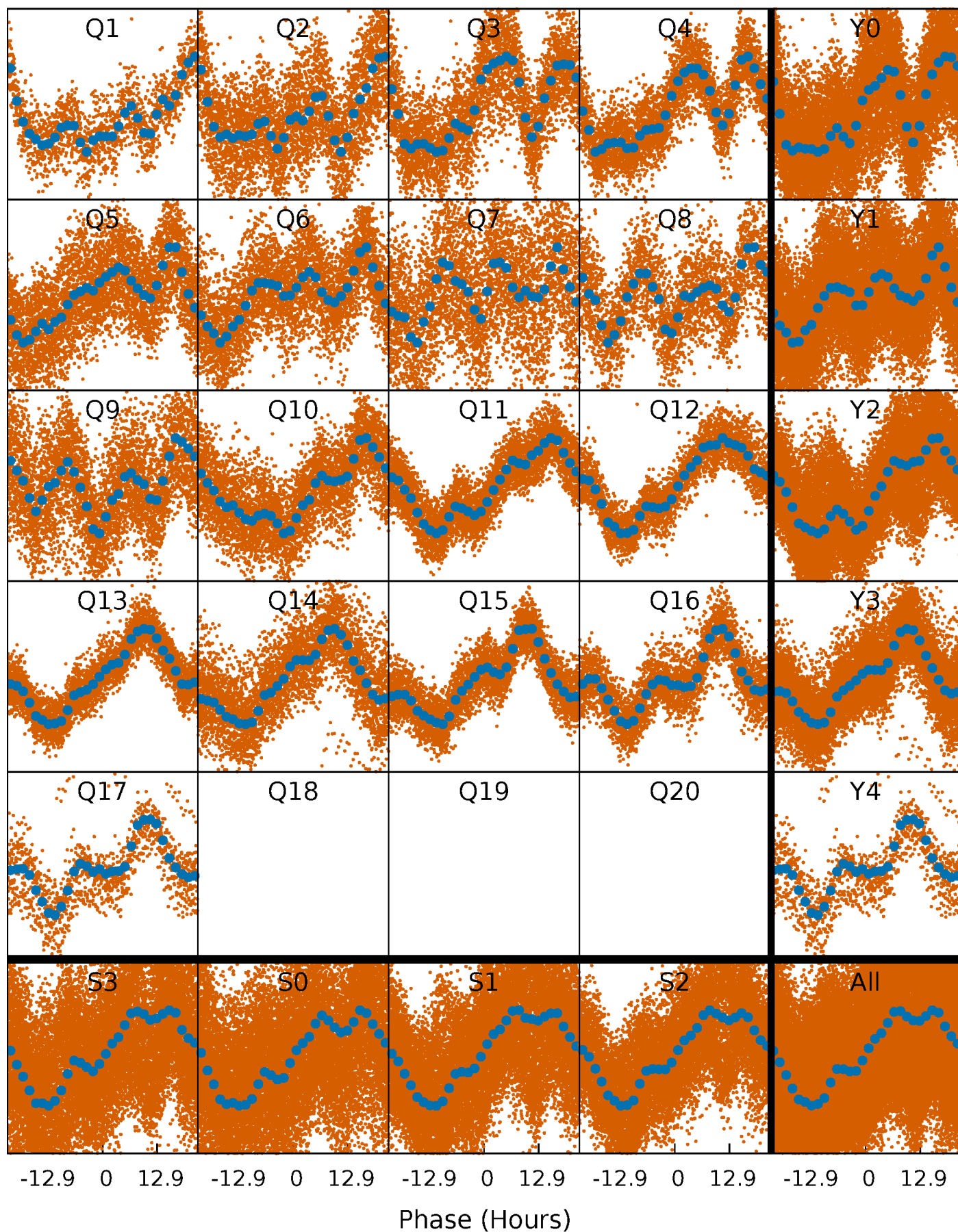


Non-Whitened Vs. Whitened Light Curve



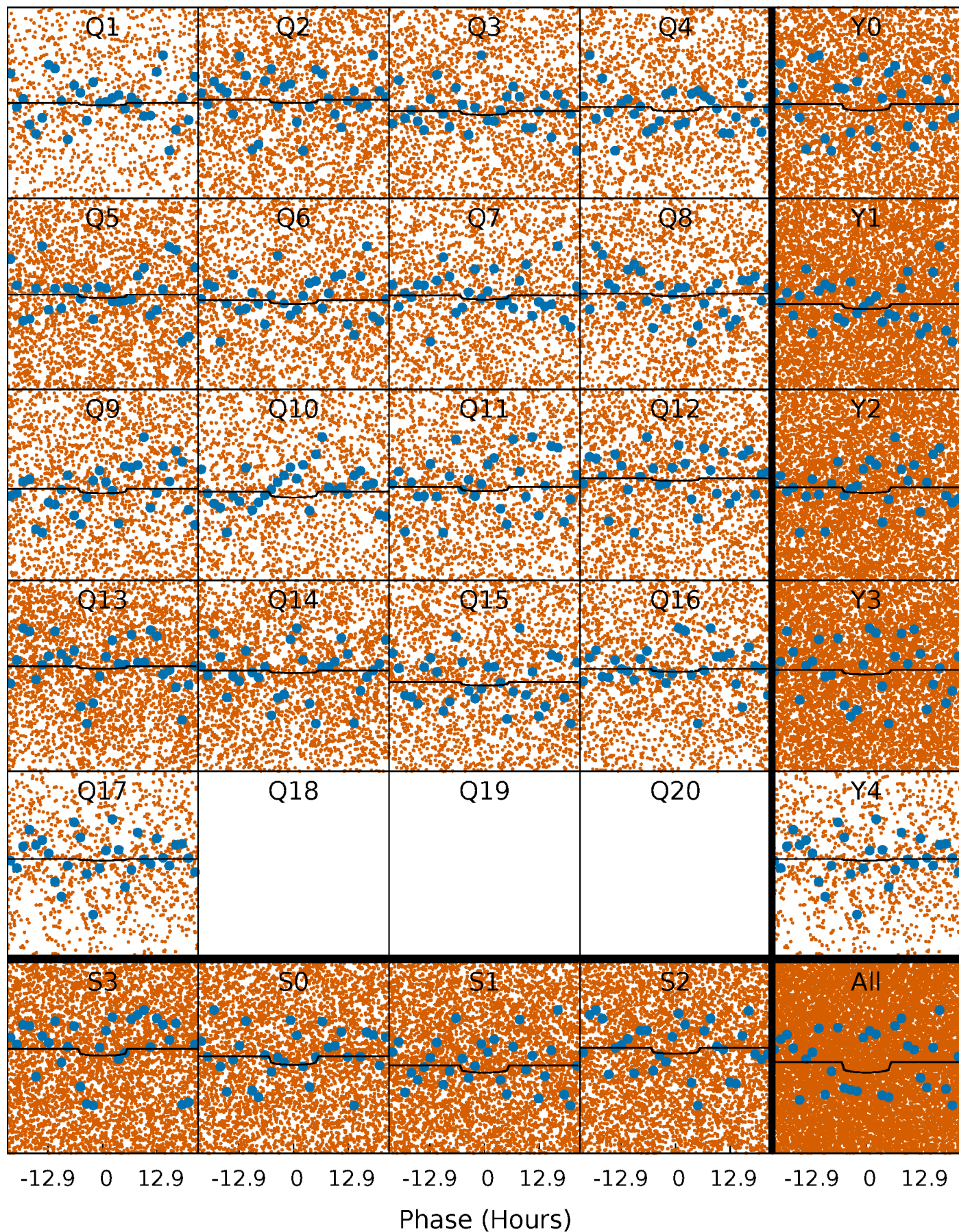
PDC Quarter-Phased Transit Curves

TCE 009239124-01 P= 1.858212 Days $T_0=132.302398$ (BKJD)



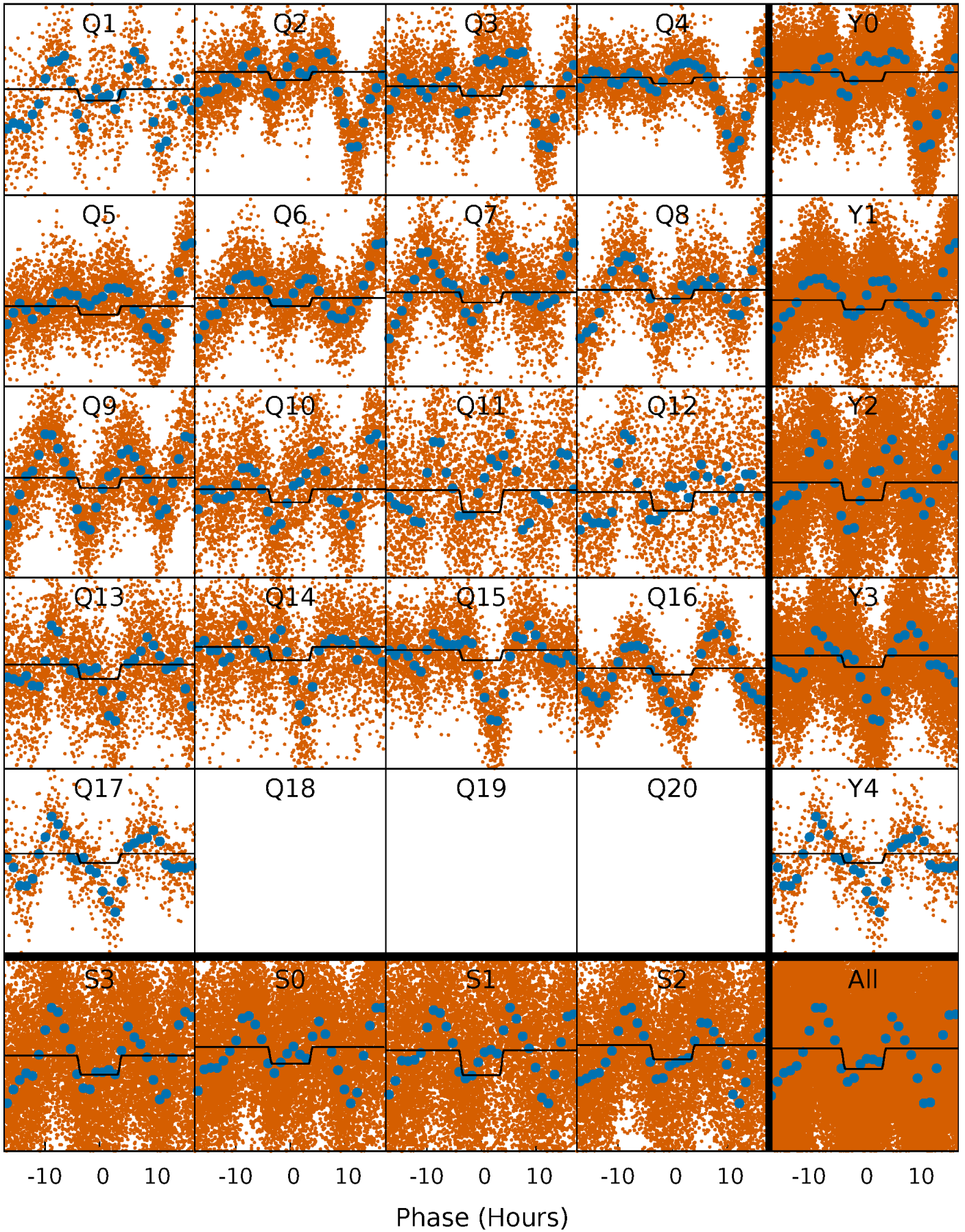
DV Quarter-Phased Transit Curves

TCE 009239124-01 P= 1.858212 Days $T_0=132.302398$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

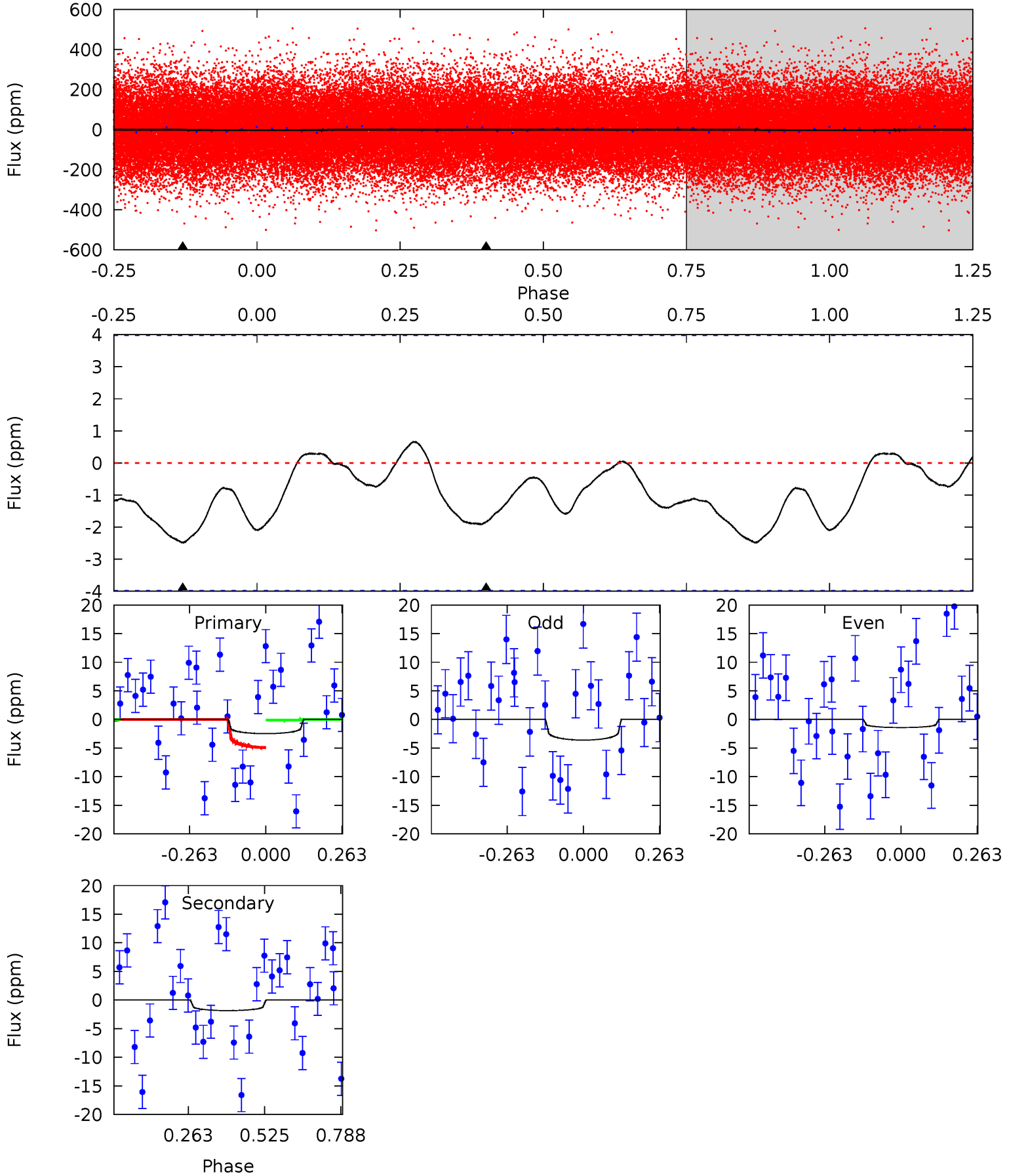
TCE 009239124-01 P= 1.858388 Days $T_0=132.276978$ (BKJD)



DV Model-Shift Uniqueness Test

009239124-01, P = 1.858212 Days, E = 130.444186 Days

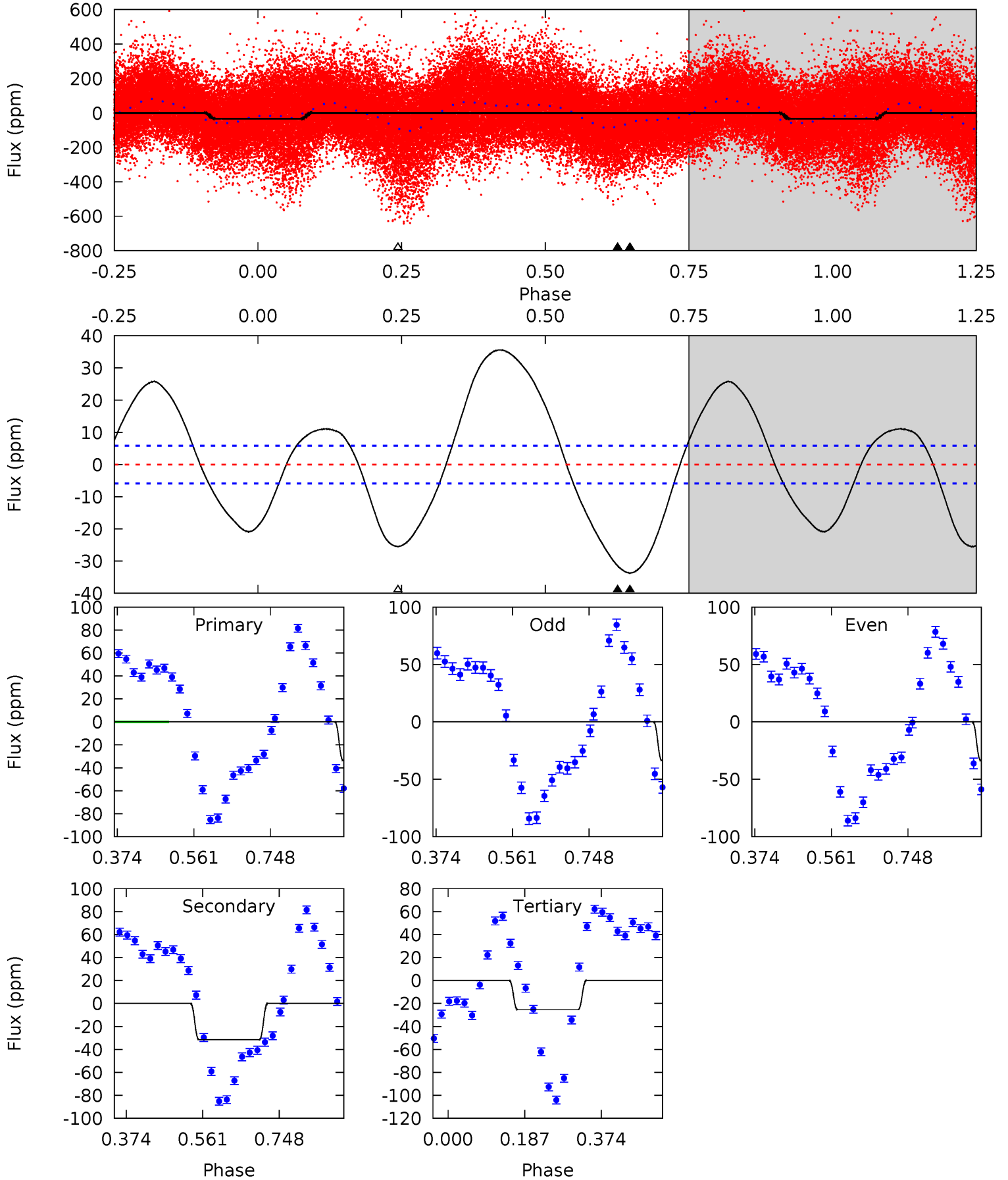
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.71	2.01	0	0	4.36	1.12	0.23	2.71	2.71	2.01	2.01	1.20	0.93	0.21	2.58



Alt Model-Shift Uniqueness Test

009239124-01, P = 1.858388 Days, E = 130.418590 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.4	23.7	19.2	0	4.43	1.32	13.2	6.20	25.4	4.50	23.7	0.03	1.18	0.51	11.7



Stellar Parameters For KIC 009239124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7208^{+200}_{-343}	$4.222^{+0.075}_{-0.210}$	$0.070^{+0.200}_{-0.350}$	$1.581^{+0.565}_{-0.242}$	$1.519^{+0.226}_{-0.226}$	$0.541^{+0.221}_{-0.296}$
	+3%/-5%	+2%/-5%	+286%/-500%	+36%/-15%	+15%/-15%	+41%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009239124-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2 ± 1	$0.37^{+0.28}_{-0.21}$	3065^{+237}_{-187}	5722^{+3528}_{-1497}	$8.330^{+35.918}_{-6.142}$
Alt.	-31 ± 1	$1.09^{+0.32}_{-0.30}$	3075^{+245}_{-185}	6838^{+1321}_{-817}	16^{+14}_{-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 $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

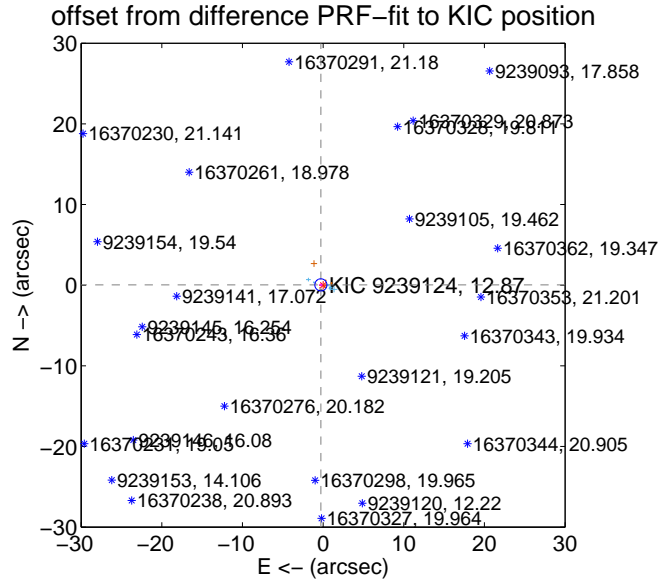
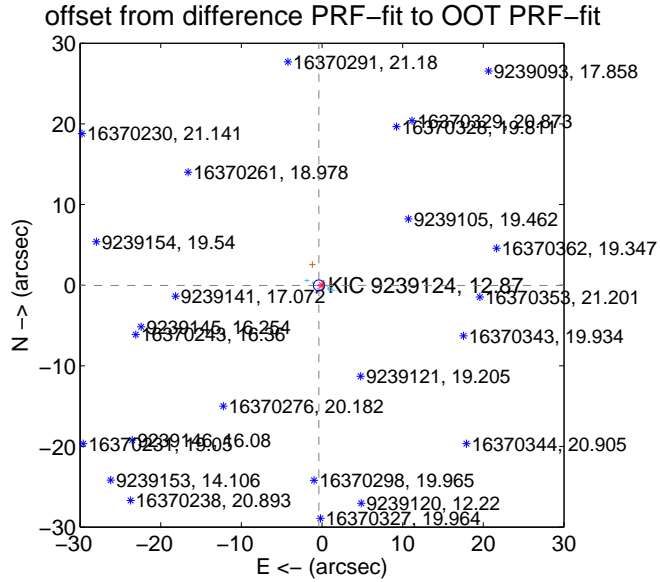
DV Centroid Data

Supplemental centroid analysis for 009239124-01. Kepler magnitude: 12.87. Transit SNR 1.83

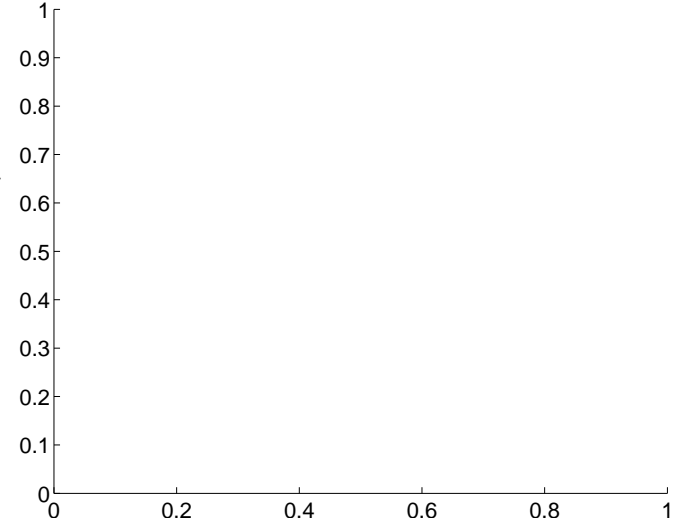
There are 9 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.391 ± 0.226	1.73	0.390 ± 0.233	-0.031 ± 0.179
PRF-fit source offset from KIC position	0.280 ± 0.251	1.12	0.277 ± 0.240	0.037 ± 0.181
photometric centroid source offset	—	—	—	—

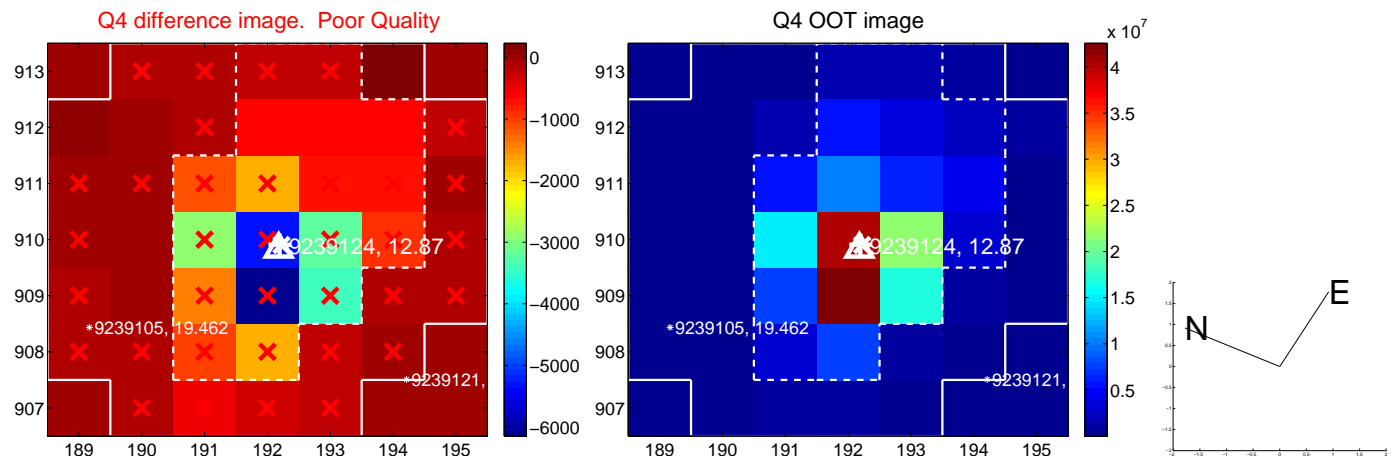
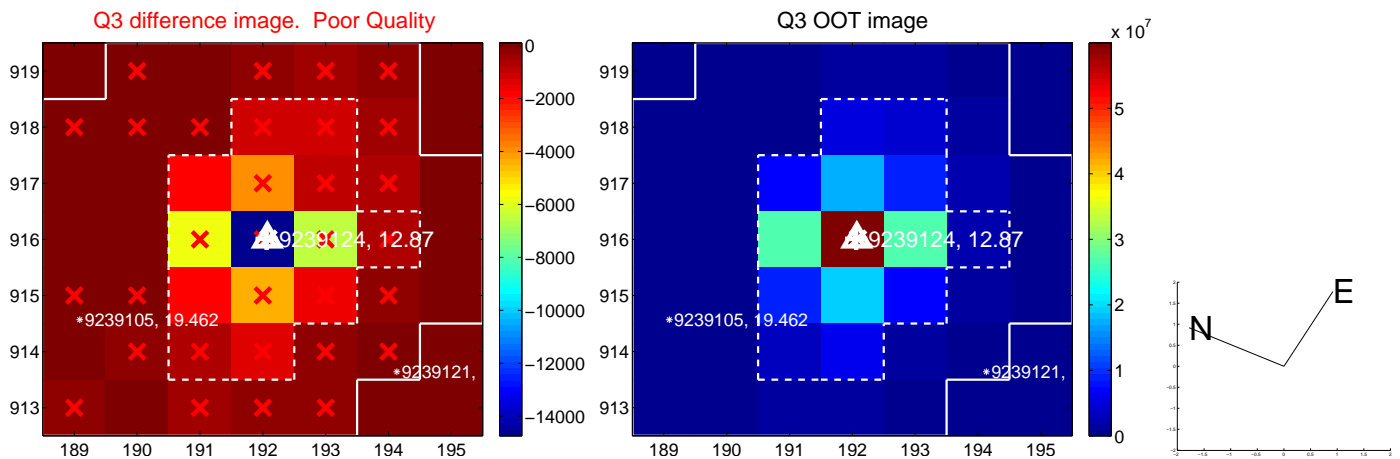
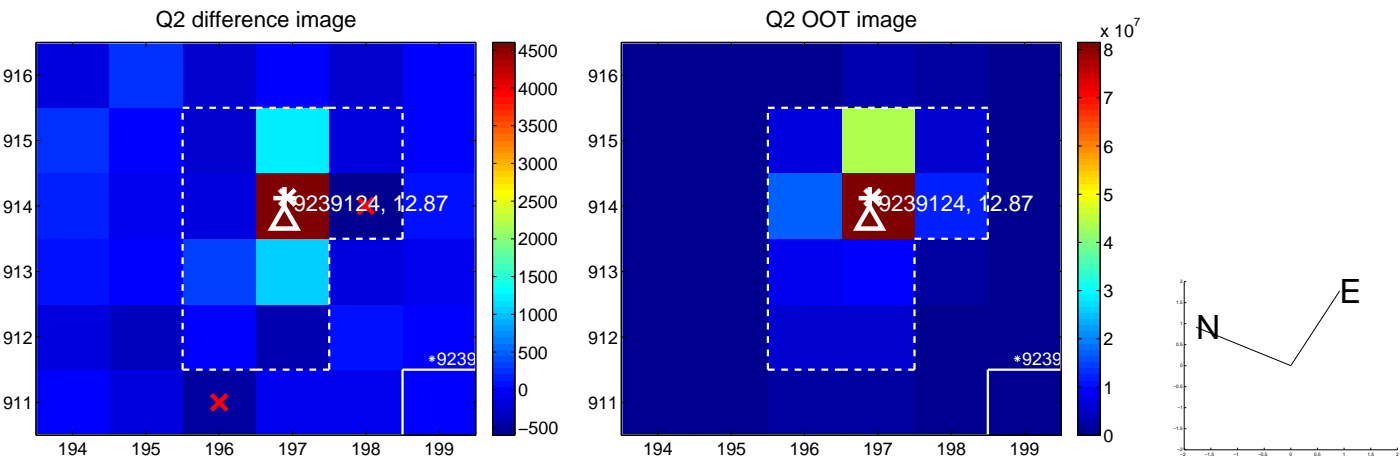
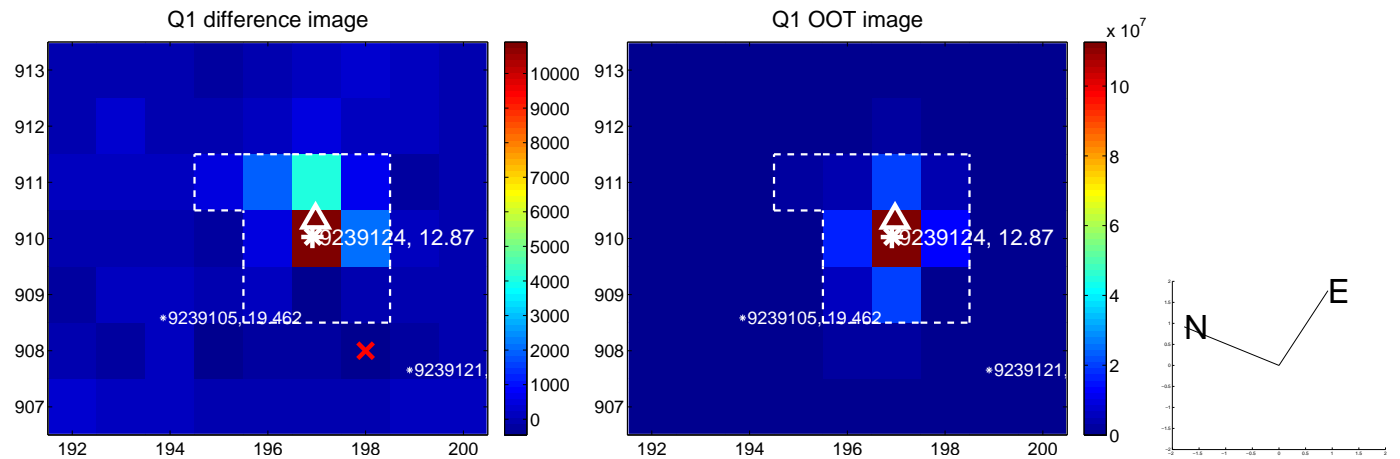


There are no photometric centroids

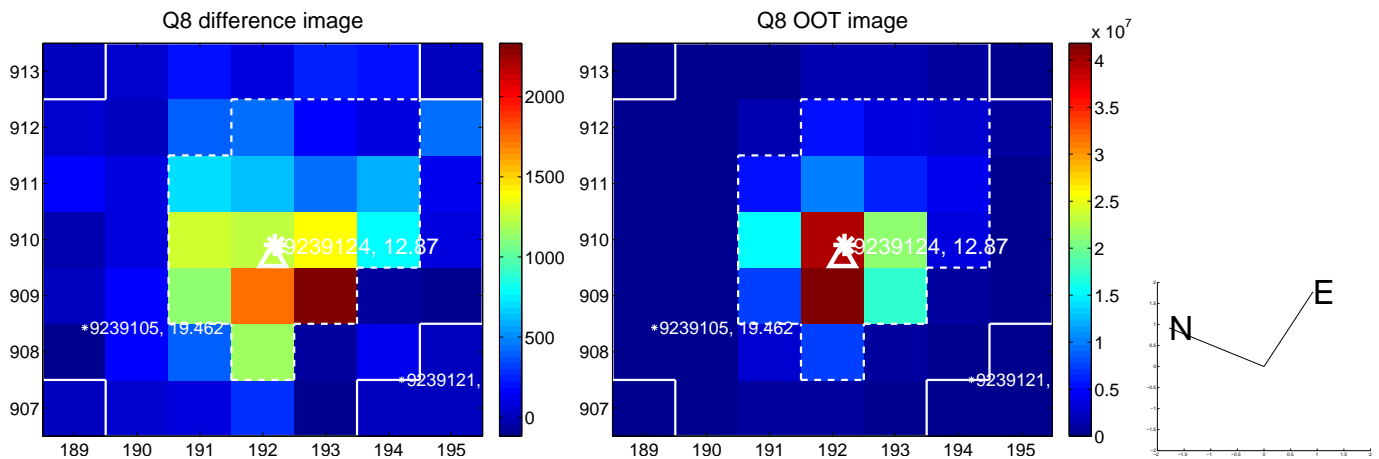
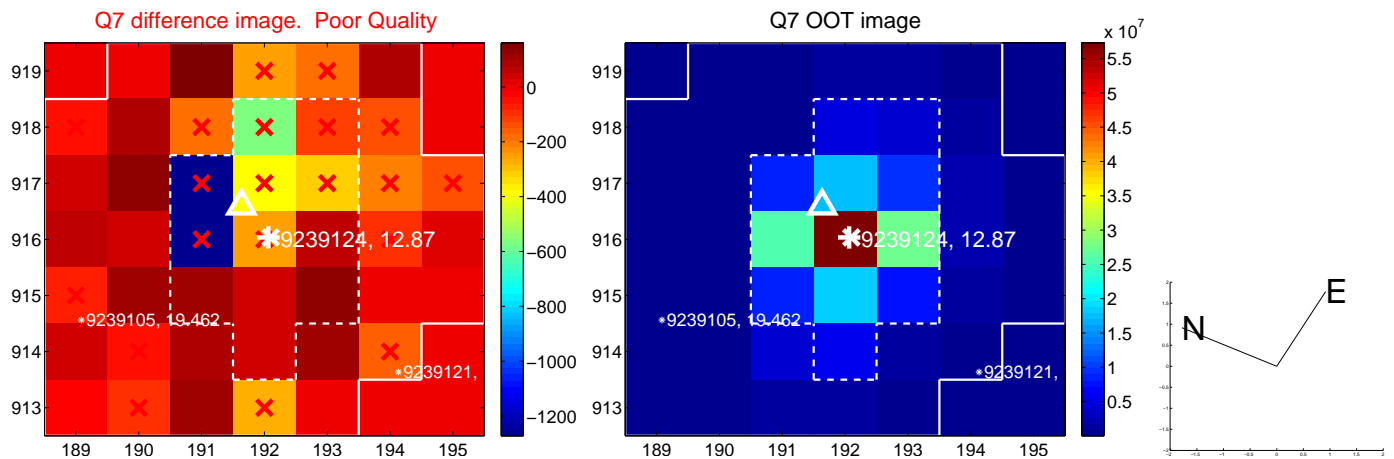
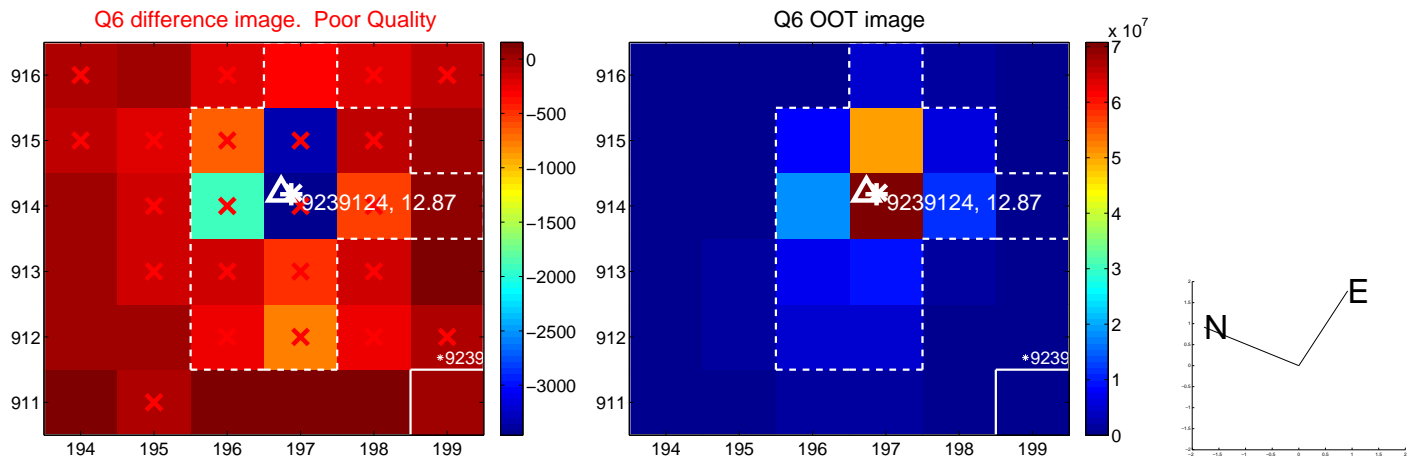
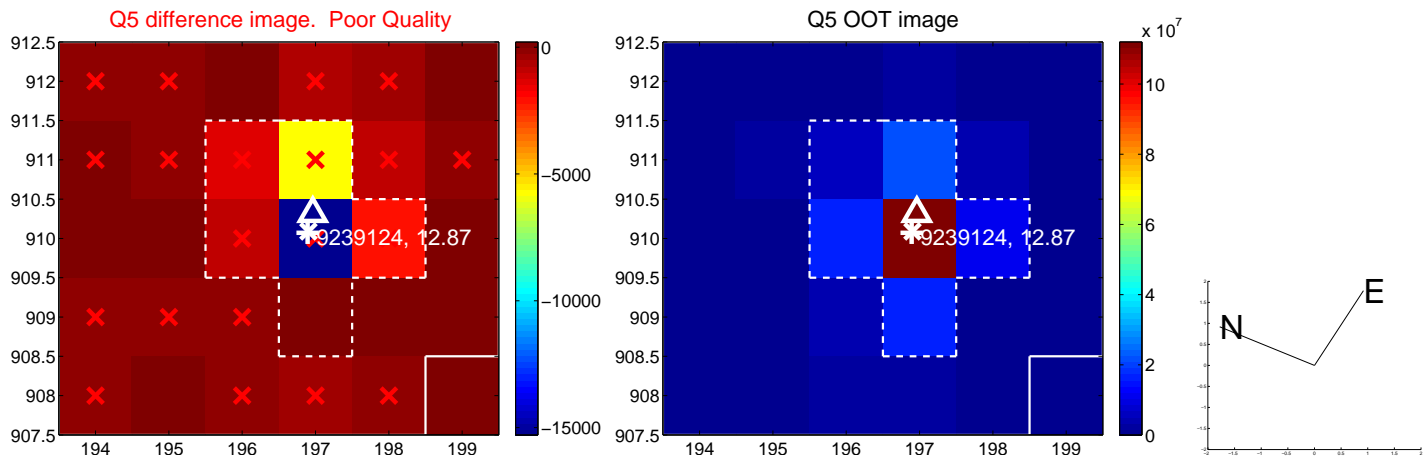


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

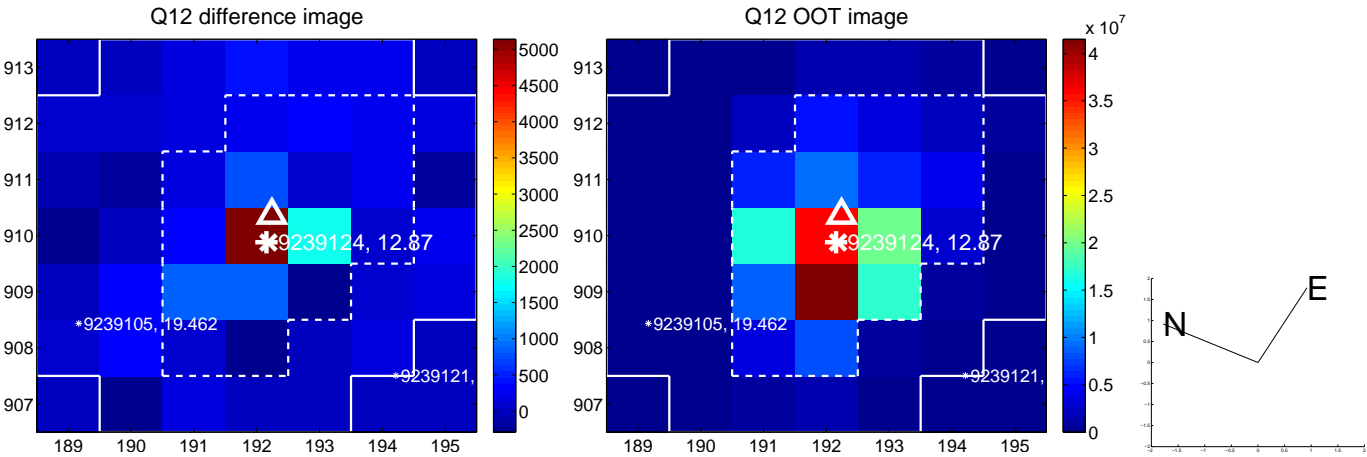
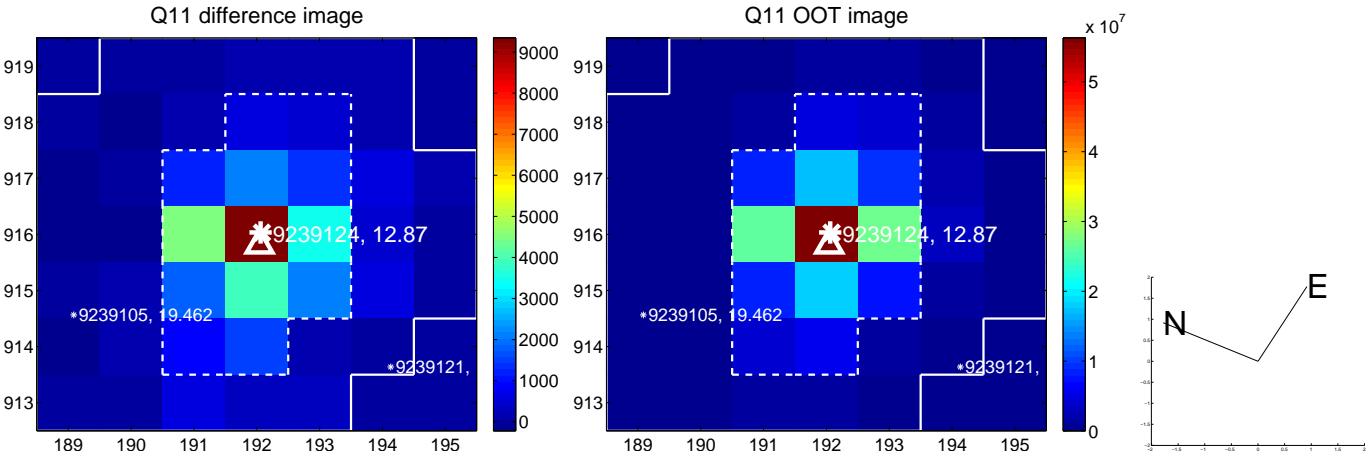
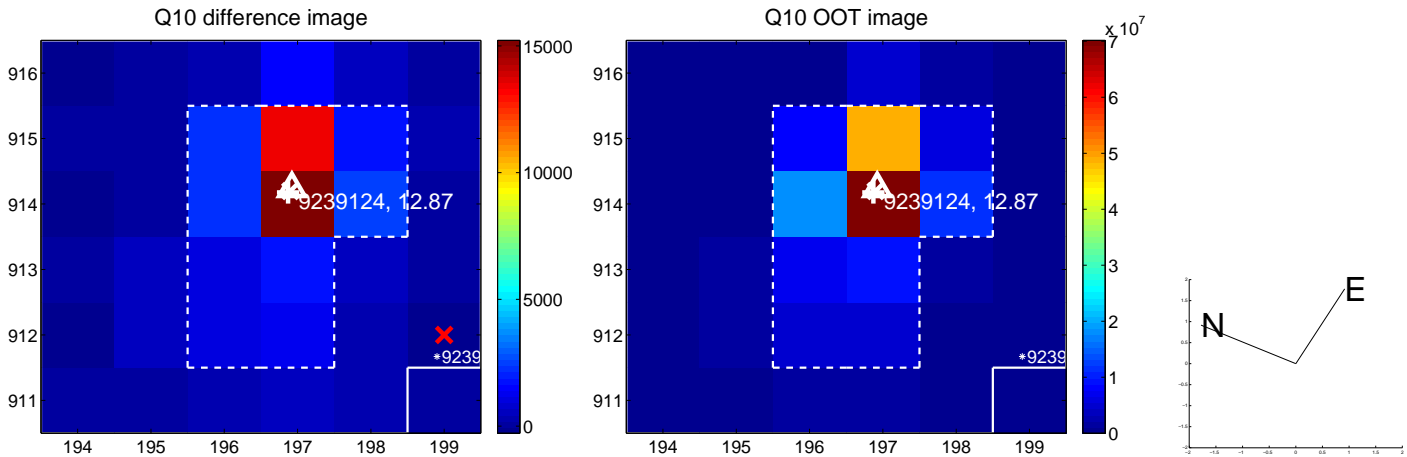
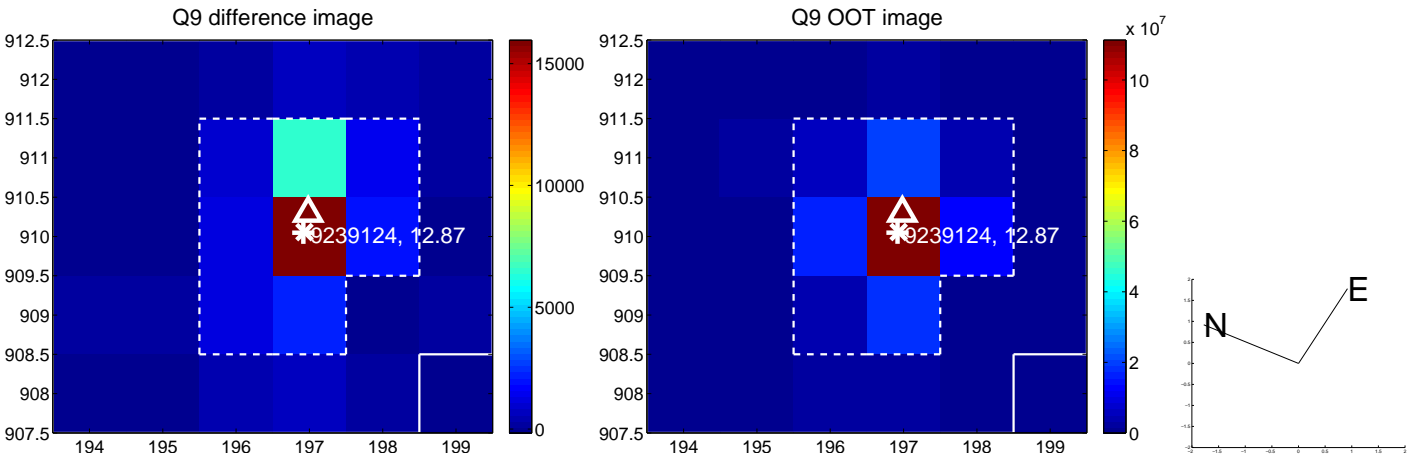
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



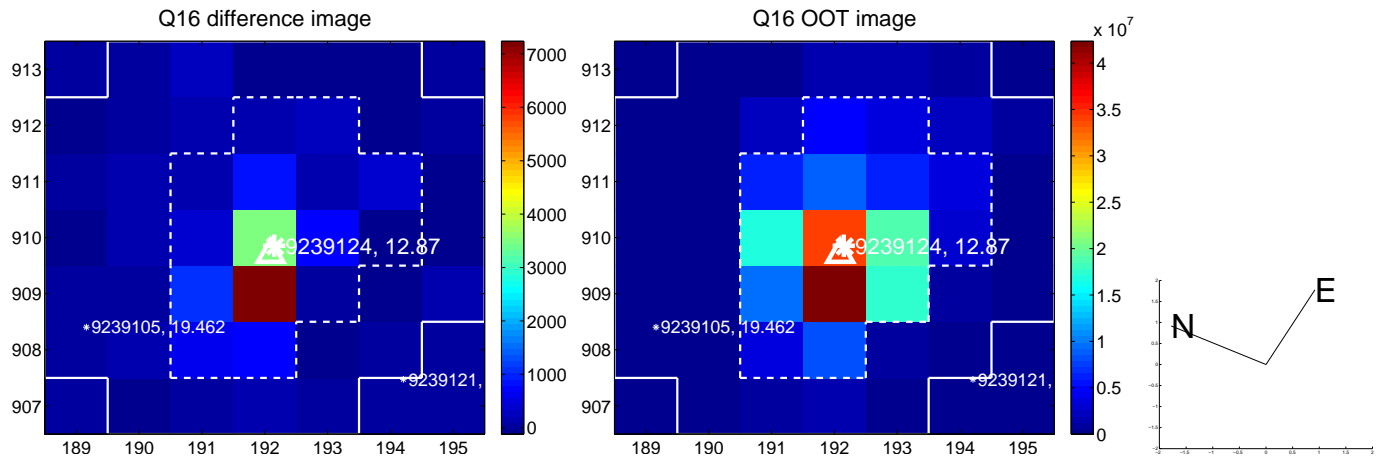
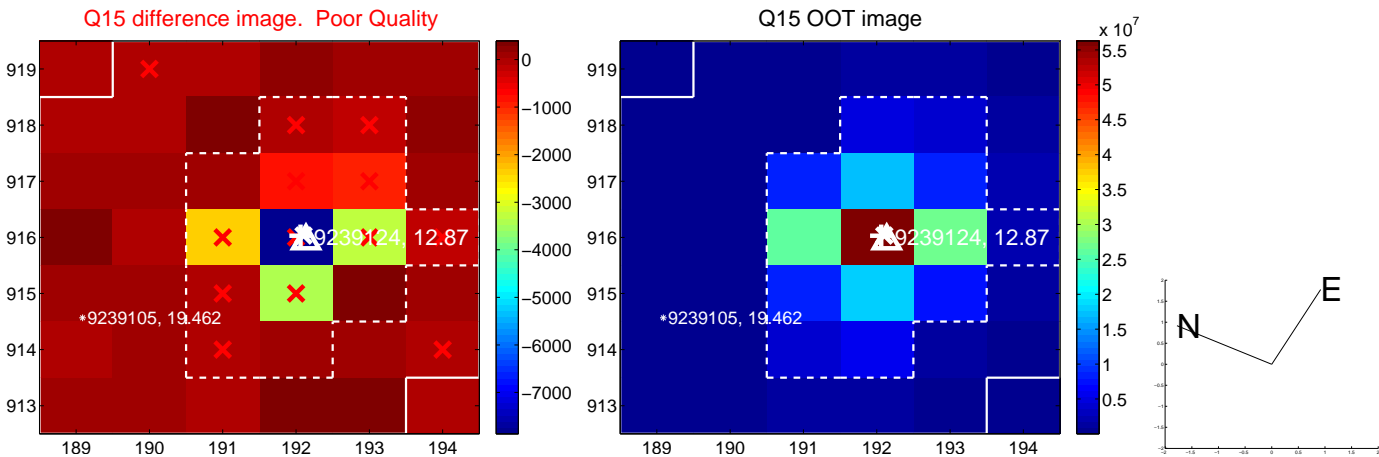
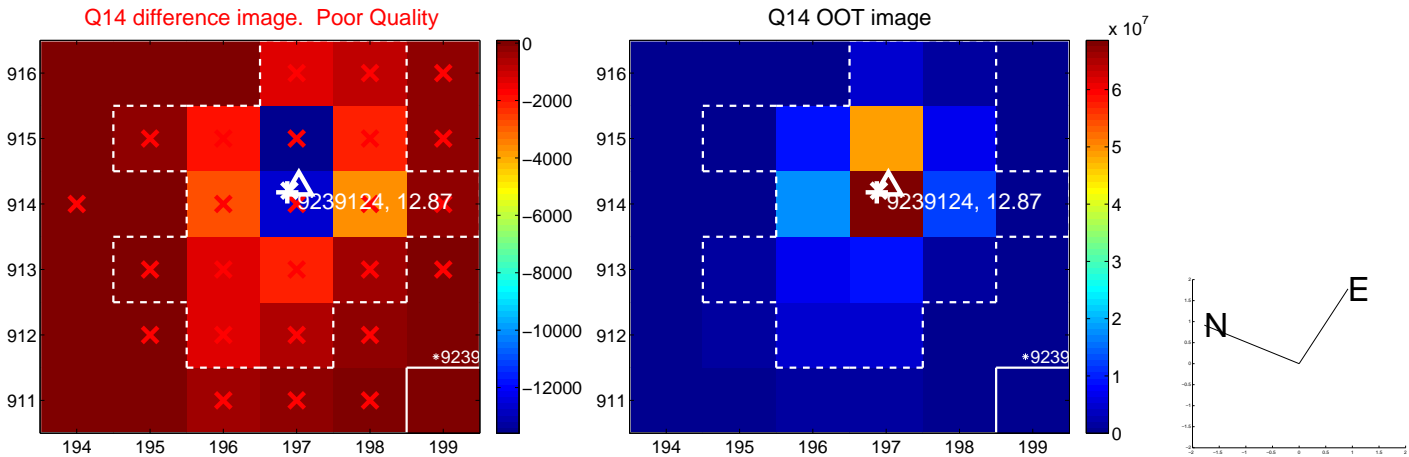
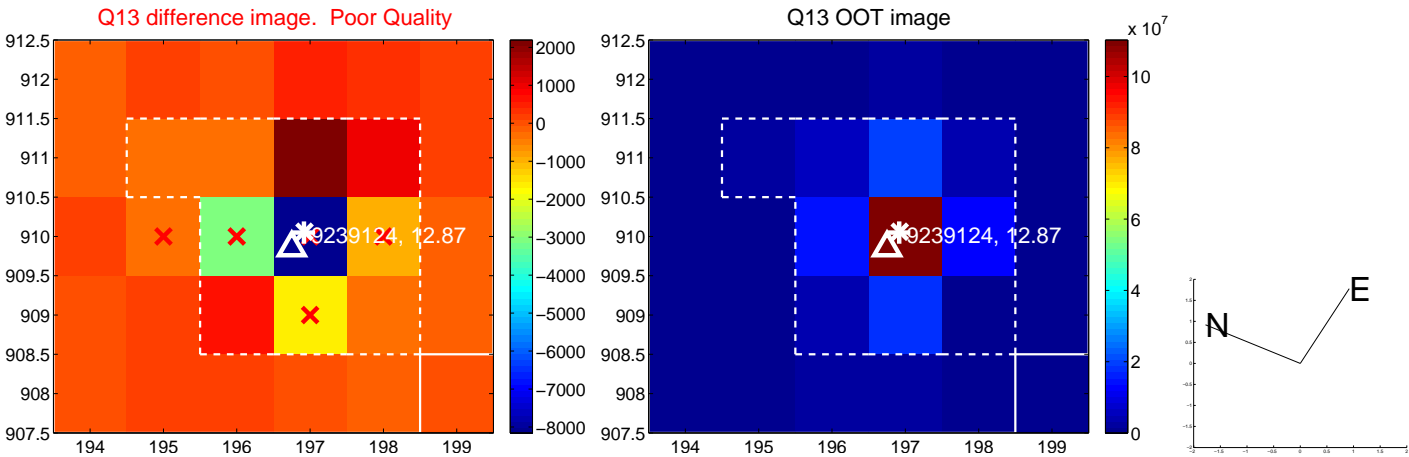
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



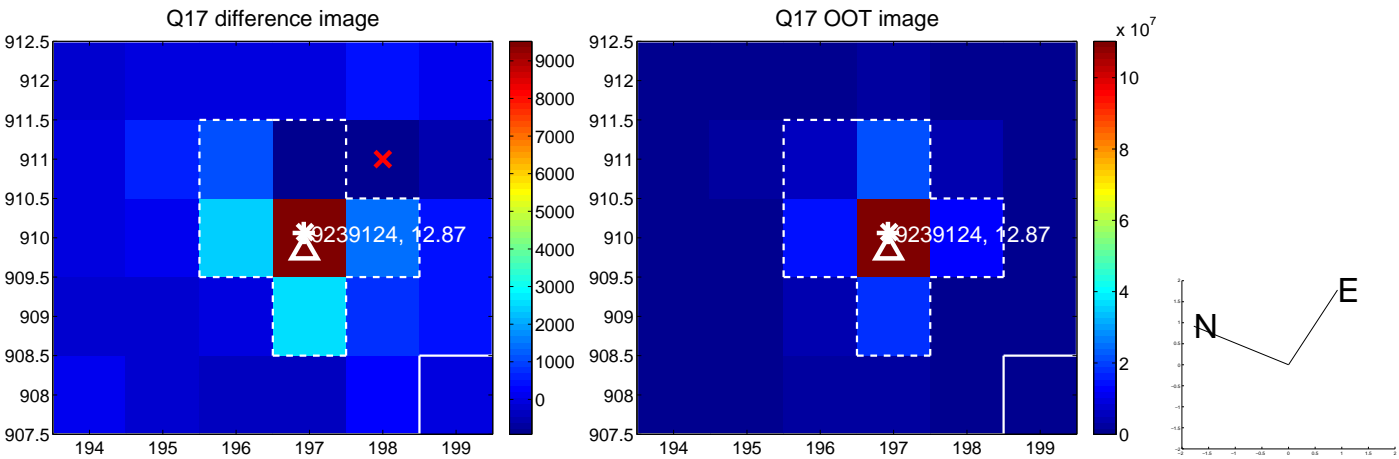
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

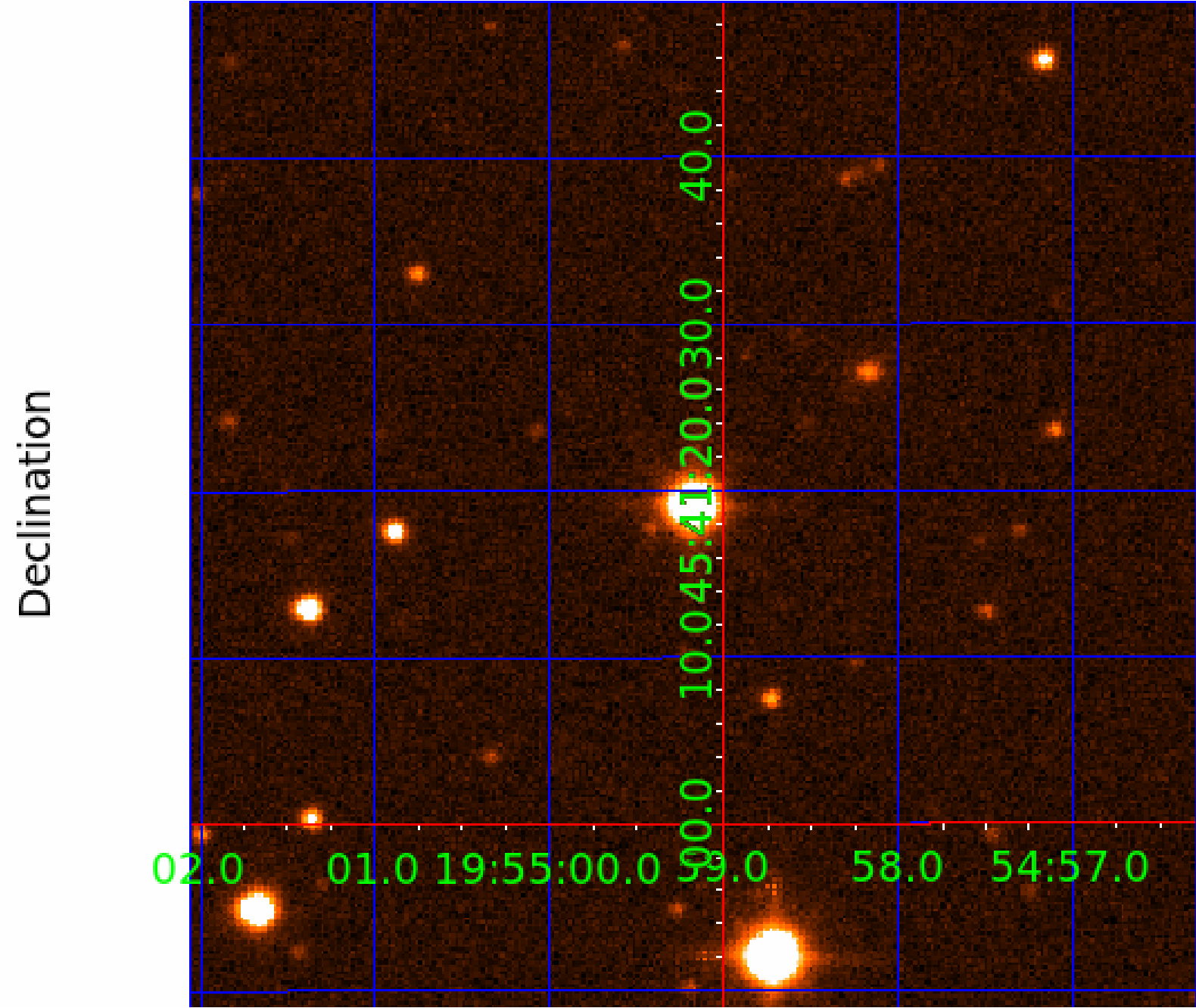


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image



KIC 009239124

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})
009239124-01	OBS	No	1.858212	132.302398	3.0	11.263	9.7	1.8	1.58	7208	0.31	5223.73
009239124-02	OBS	No	163.413890	211.708662	62.6	19.700	16.0	3.7	1.58	7208	1.40	13.36
009239124-03	OBS	No	119.264711	155.464198	168.8	16.663	9.4	10.1	1.58	7208	2.27	20.33
009239124-04	OBS	No	113.022304	135.293748	134.8	9.311	8.2	8.0	1.58	7208	2.05	21.84
009239124-05	OBS	No	34.868190	144.939141	113.8	3.512	8.4	8.0	1.58	7208	1.85	104.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009239124-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009239124-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009239124-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009239124-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009239124-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

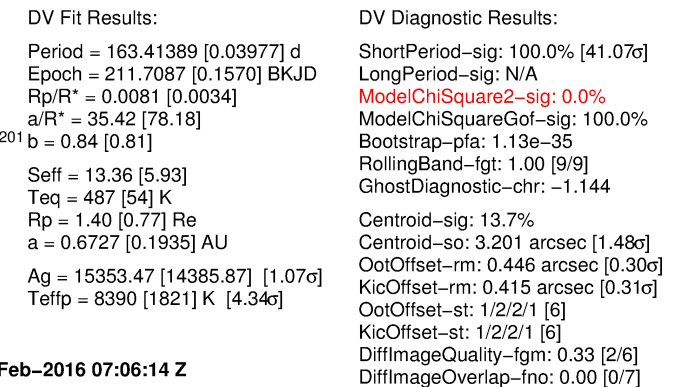
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

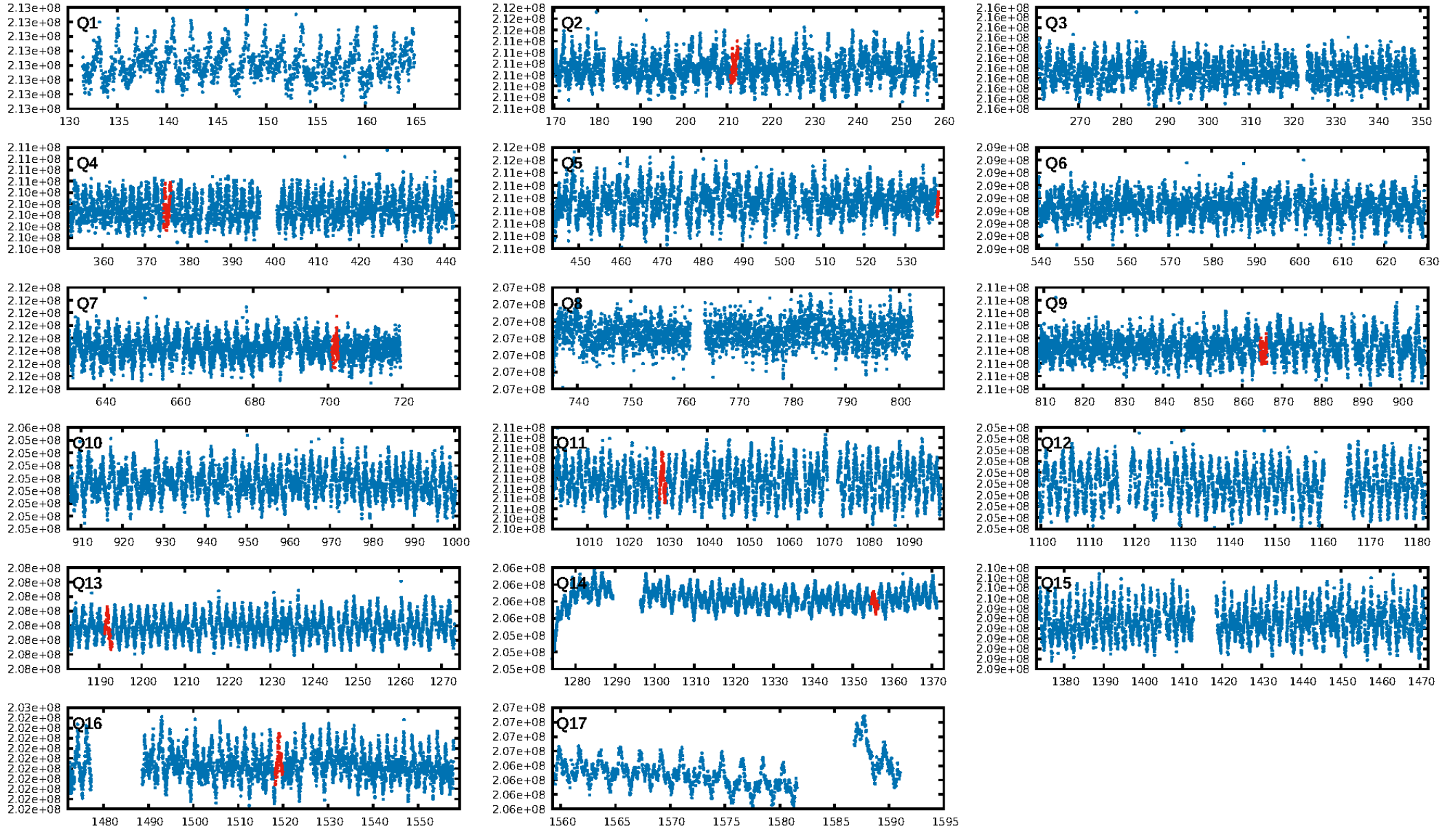
Ephemeris Match Information For 009239124-02

No Significant Match Found

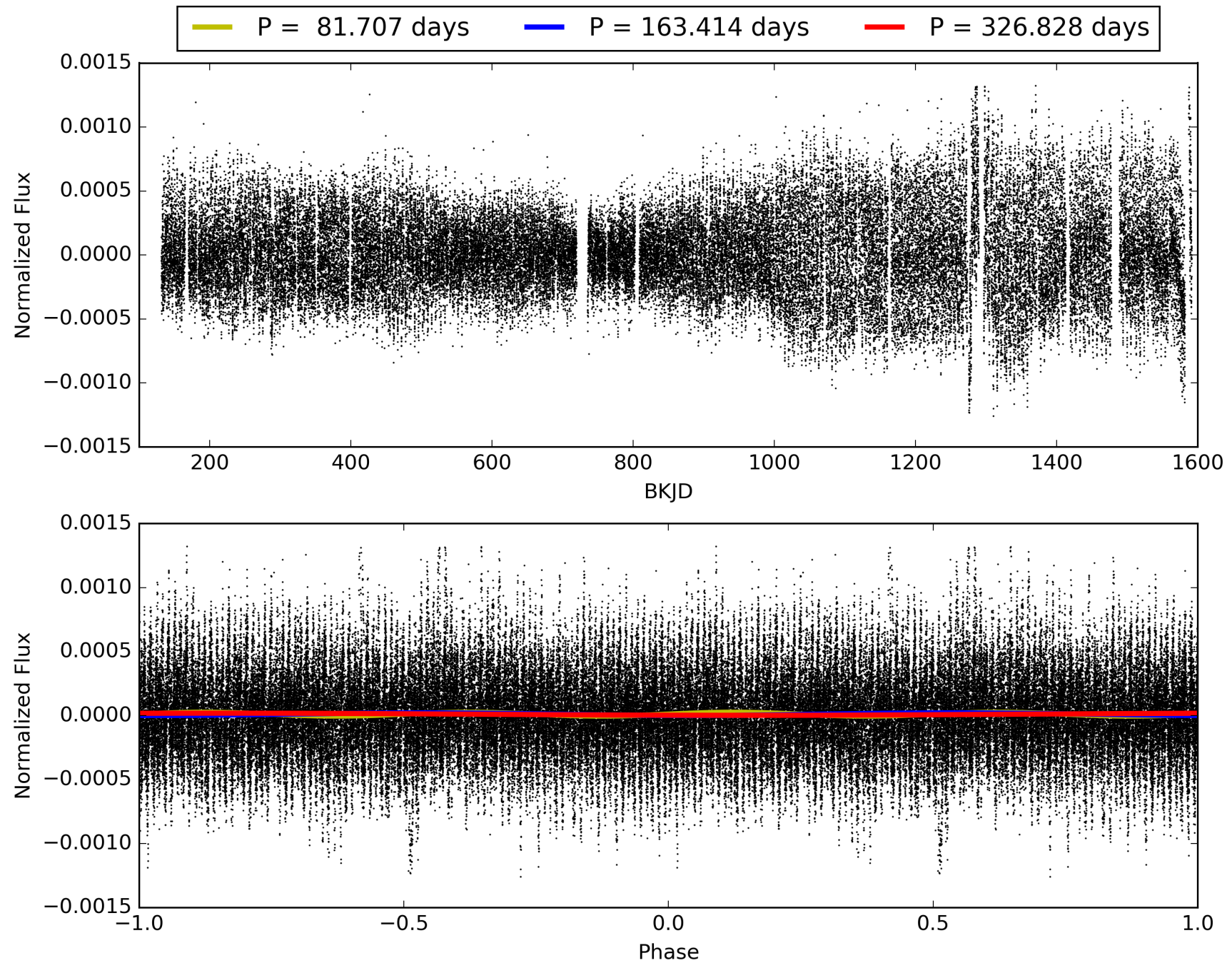
KIC: 9239124 Candidate: 2 of 5 Period: 163.414 d



TCE 009239124-02, PDC Light Curves

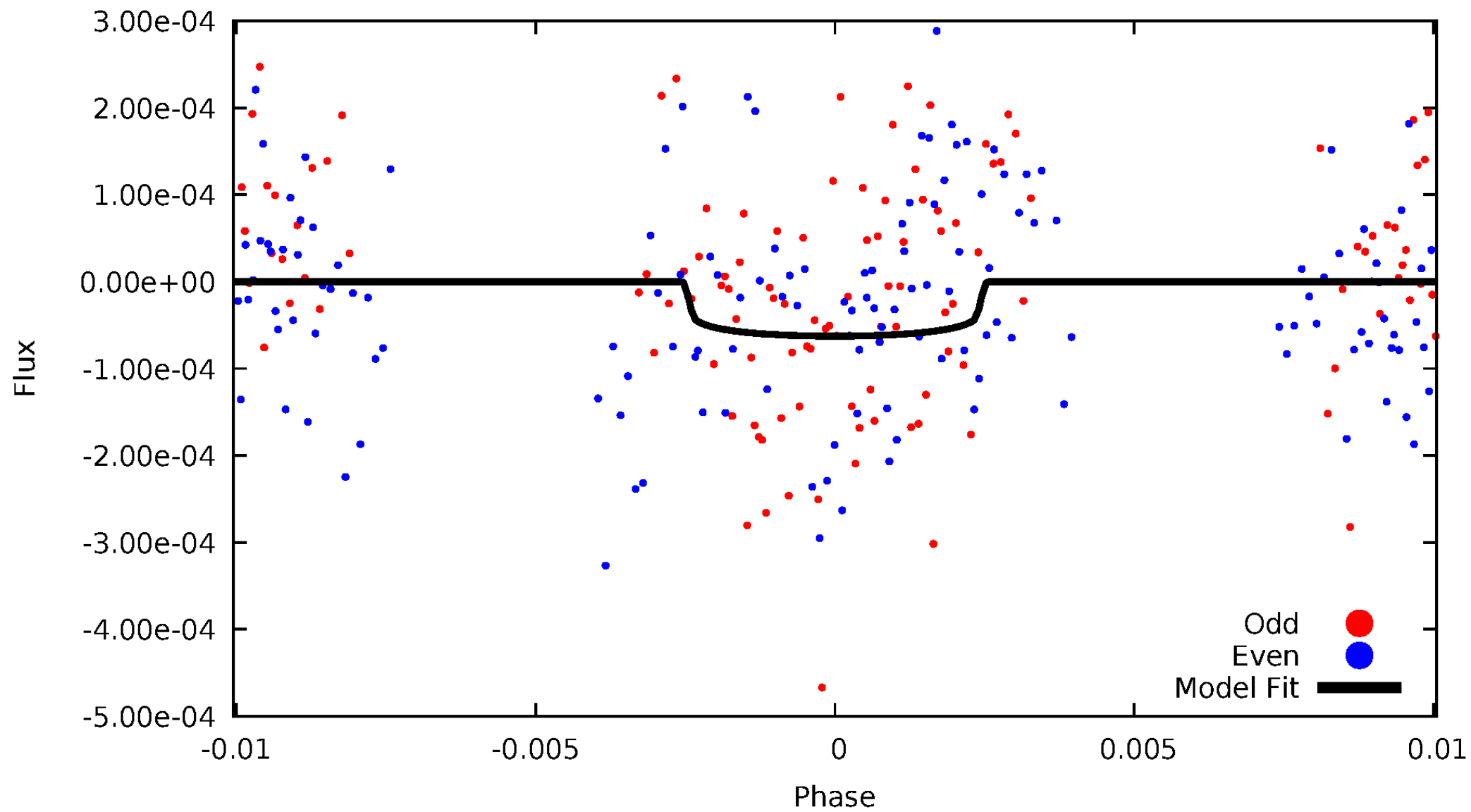


TCE 009239124-02



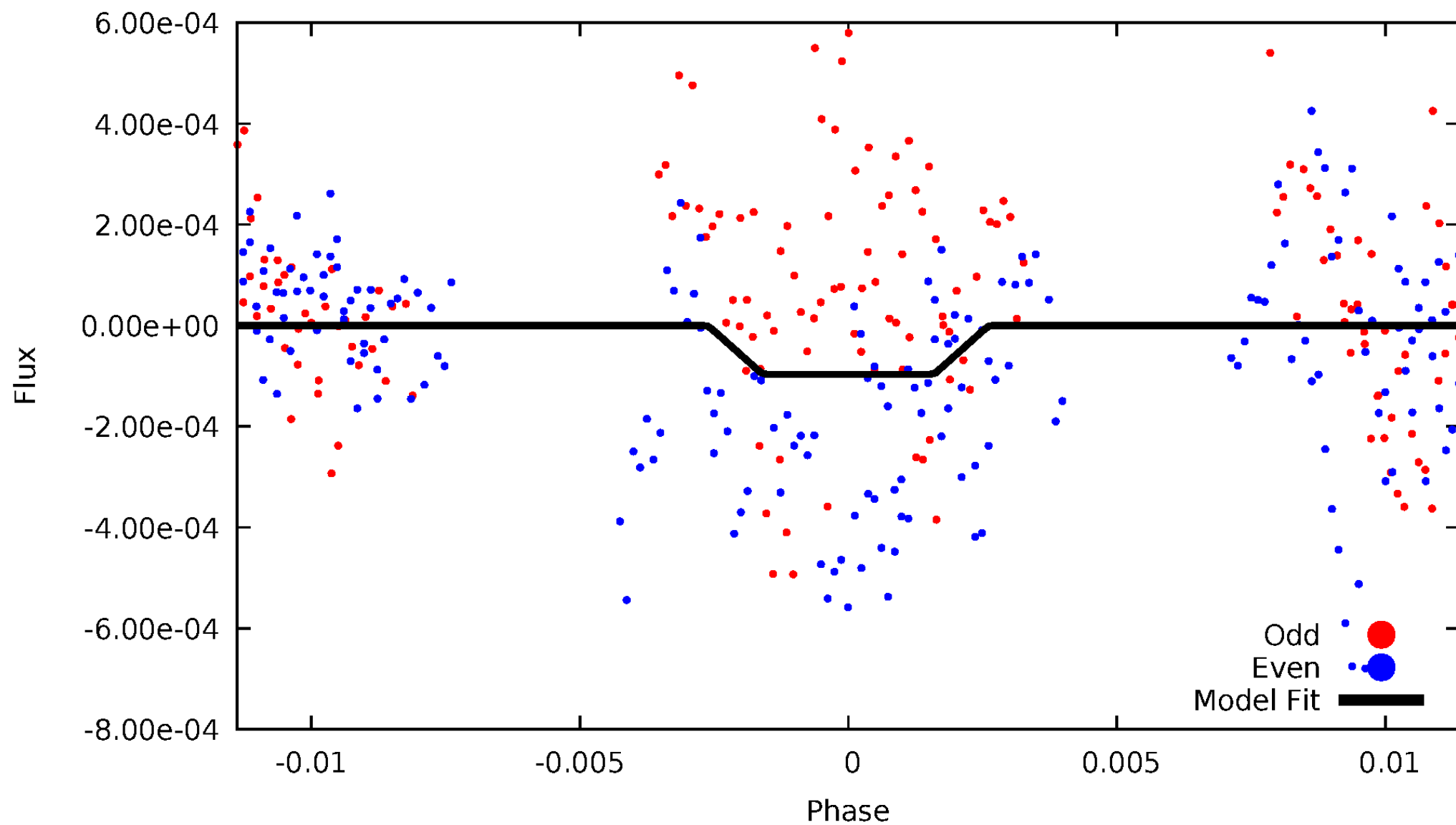
DV Odd/Even

TCE 009239124-02



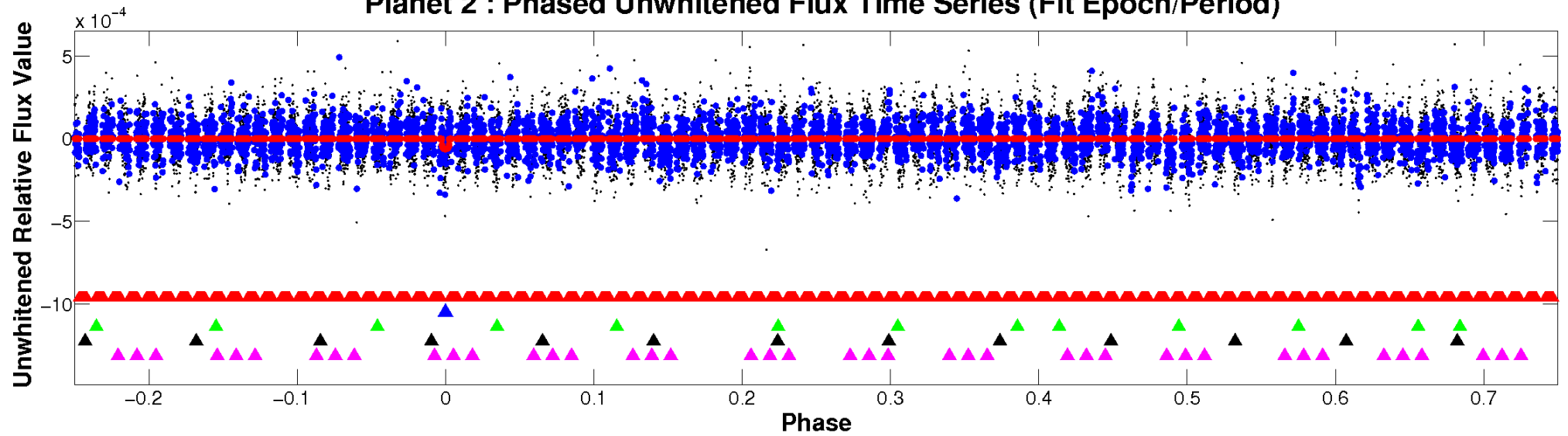
ALT Odd/Even

TCE 009239124-02

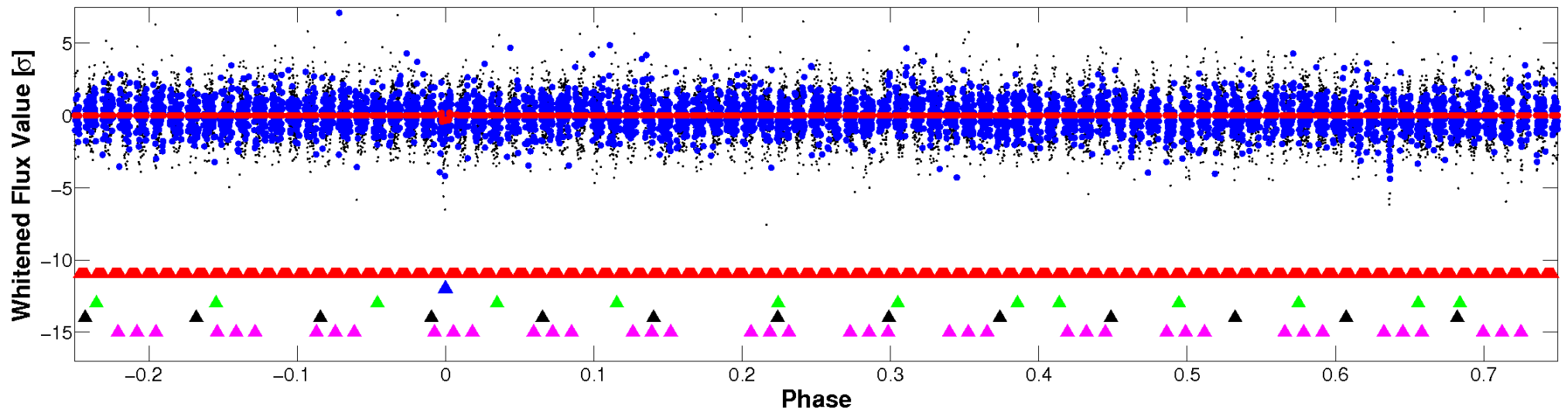


Non-Whitened Vs. Whitened Light Curve

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

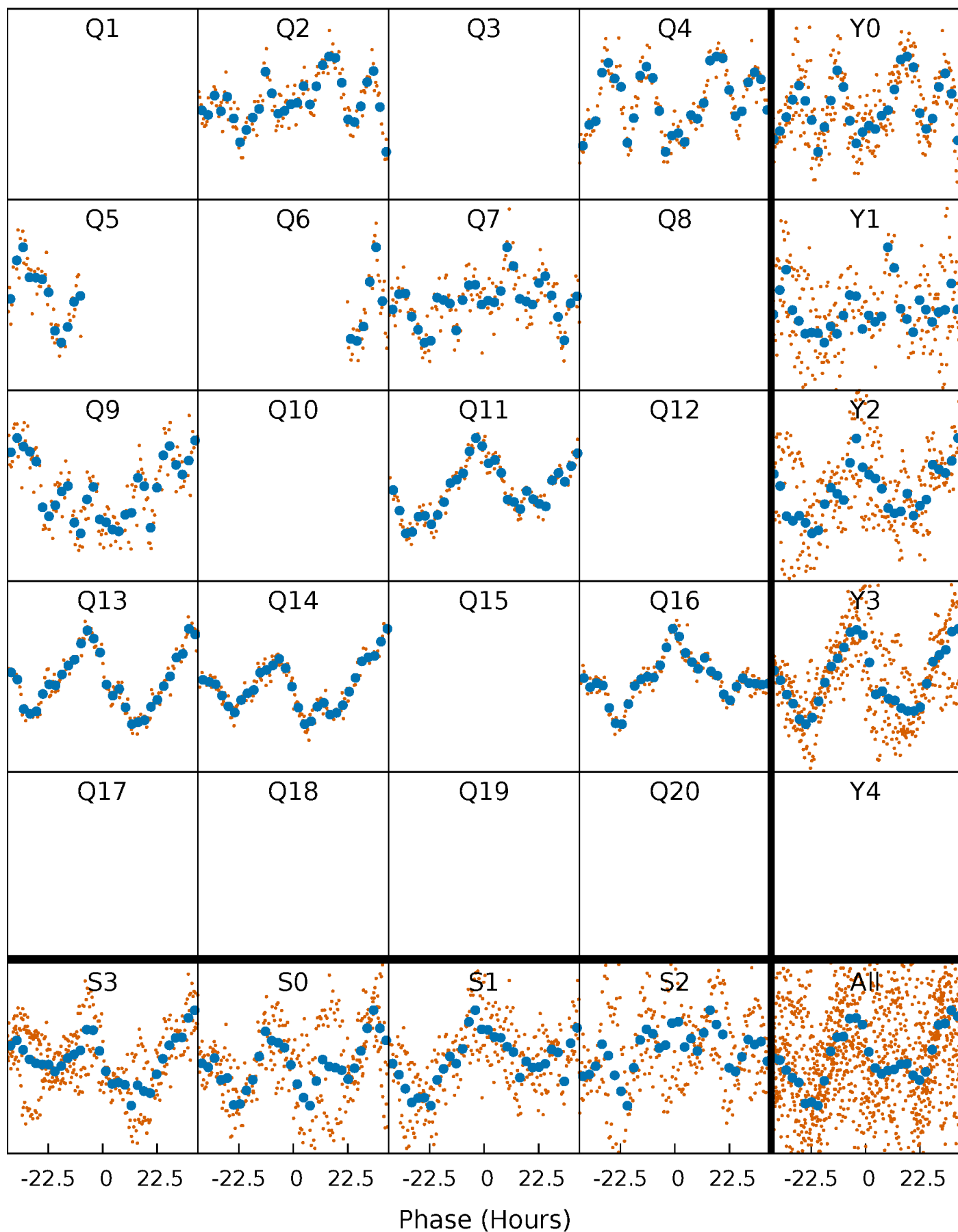


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



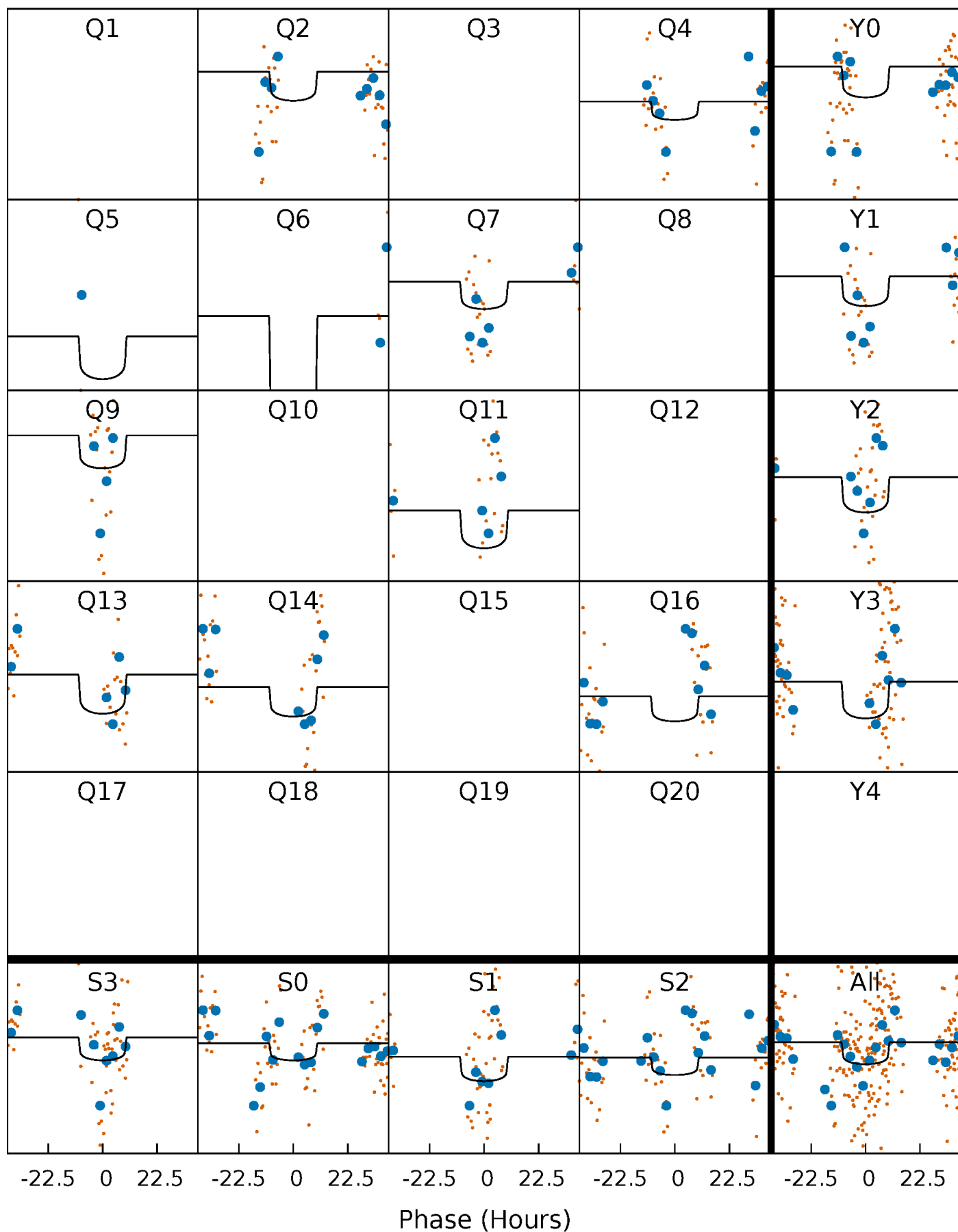
PDC Quarter-Phased Transit Curves

TCE 009239124-02 P=163.413890 Days $T_0=211.708662$ (BKJD)



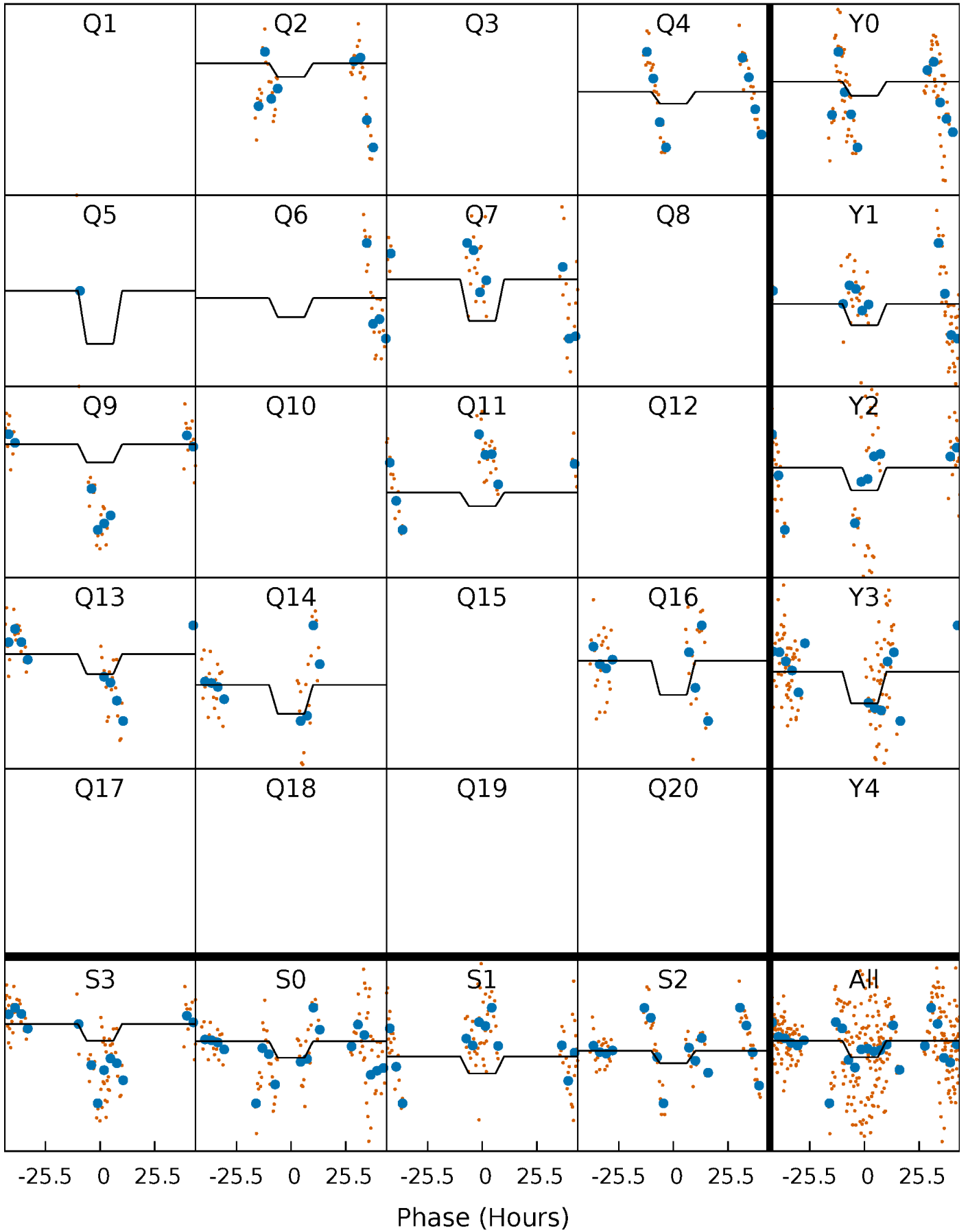
DV Quarter-Phased Transit Curves

TCE 009239124-02 P=163.413890 Days $T_0=211.708662$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

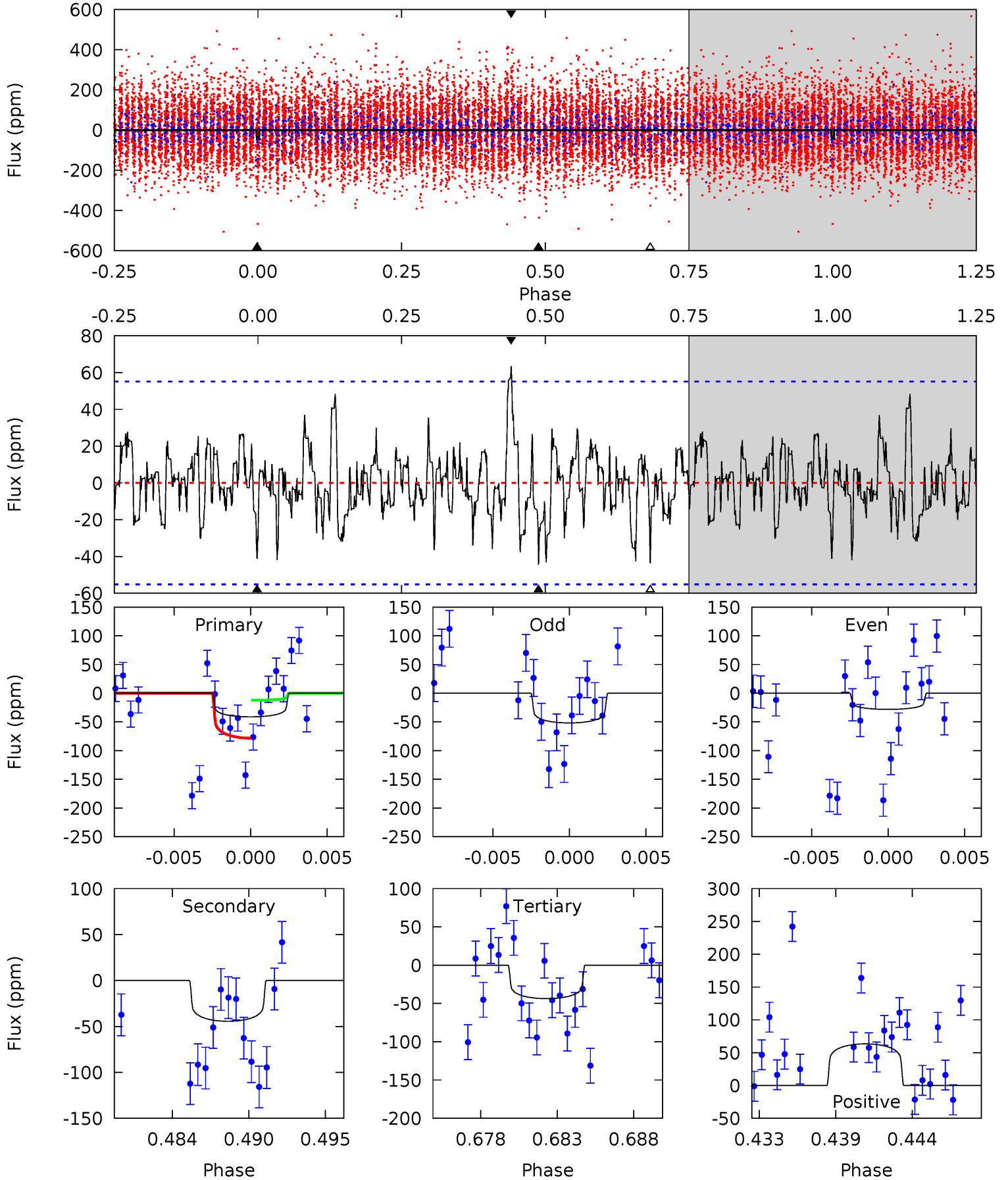
TCE 009239124-02 P=163.407179 Days $T_0=211.756842$ (BKJD)



DV Model-Shift Uniqueness Test

009239124-02, $P = 163.413890$ Days, $E = 48.294772$ Days

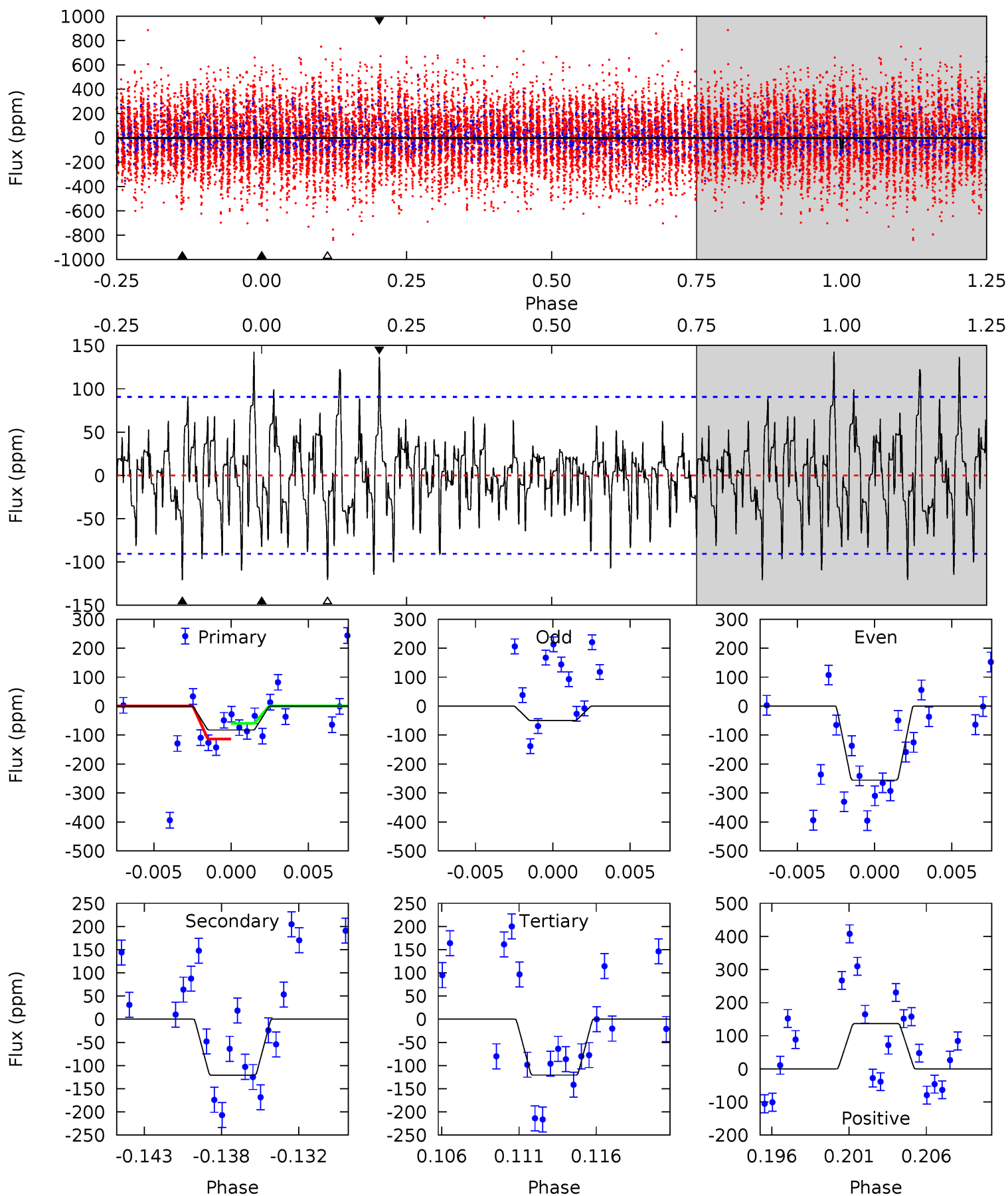
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.86	4.15	4.08	5.93	5.15	2.80	1.45	-0.22	-2.07	0.07	-1.78	1.11	0.43	0.59	3.07



Alt Model-Shift Uniqueness Test

009239124-02, P = 163.407179 Days, E = 48.349663 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.69	6.86	6.85	7.76	5.15	2.79	2.18	-2.17	-3.08	0.01	-0.90	5.82	0.83	0.54	1.52



Stellar Parameters For KIC 009239124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7208^{+200}_{-343}	$4.222^{+0.075}_{-0.210}$	$0.070^{+0.200}_{-0.350}$	$1.581^{+0.565}_{-0.242}$	$1.519^{+0.226}_{-0.226}$	$0.541^{+0.221}_{-0.296}$
	+3%/-5%	+2%/-5%	+286%/-500%	+36%/-15%	+15%/-15%	+41%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009239124-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-44 ± 11	$1.44^{+0.68}_{-0.59}$	694^{+53}_{-43}	6505^{+2468}_{-1115}	5223^{+9767}_{-2964}
Alt.	-121 ± 18	$1.78^{+0.70}_{-0.62}$	695^{+51}_{-45}	7569^{+2506}_{-1139}	8969^{+12472}_{-4088}

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 $A_{obs} \gg 1.0$

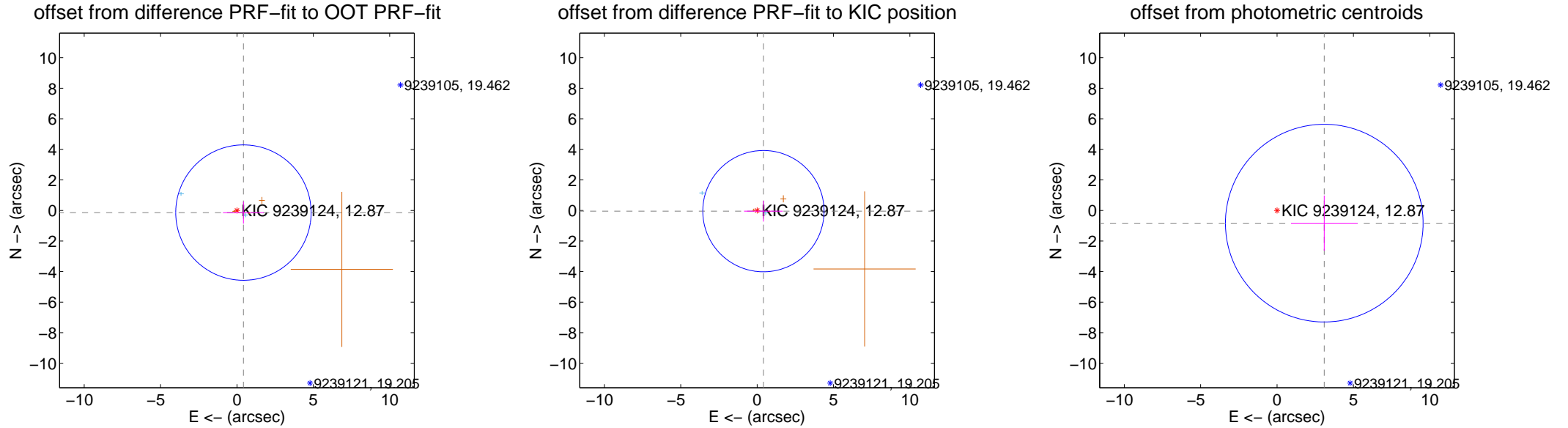
DV Centroid Data

Supplemental centroid analysis for 009239124-02. Kepler magnitude: 12.87. Transit SNR 3.68

There are 2 quarters with good PRF difference image offsets

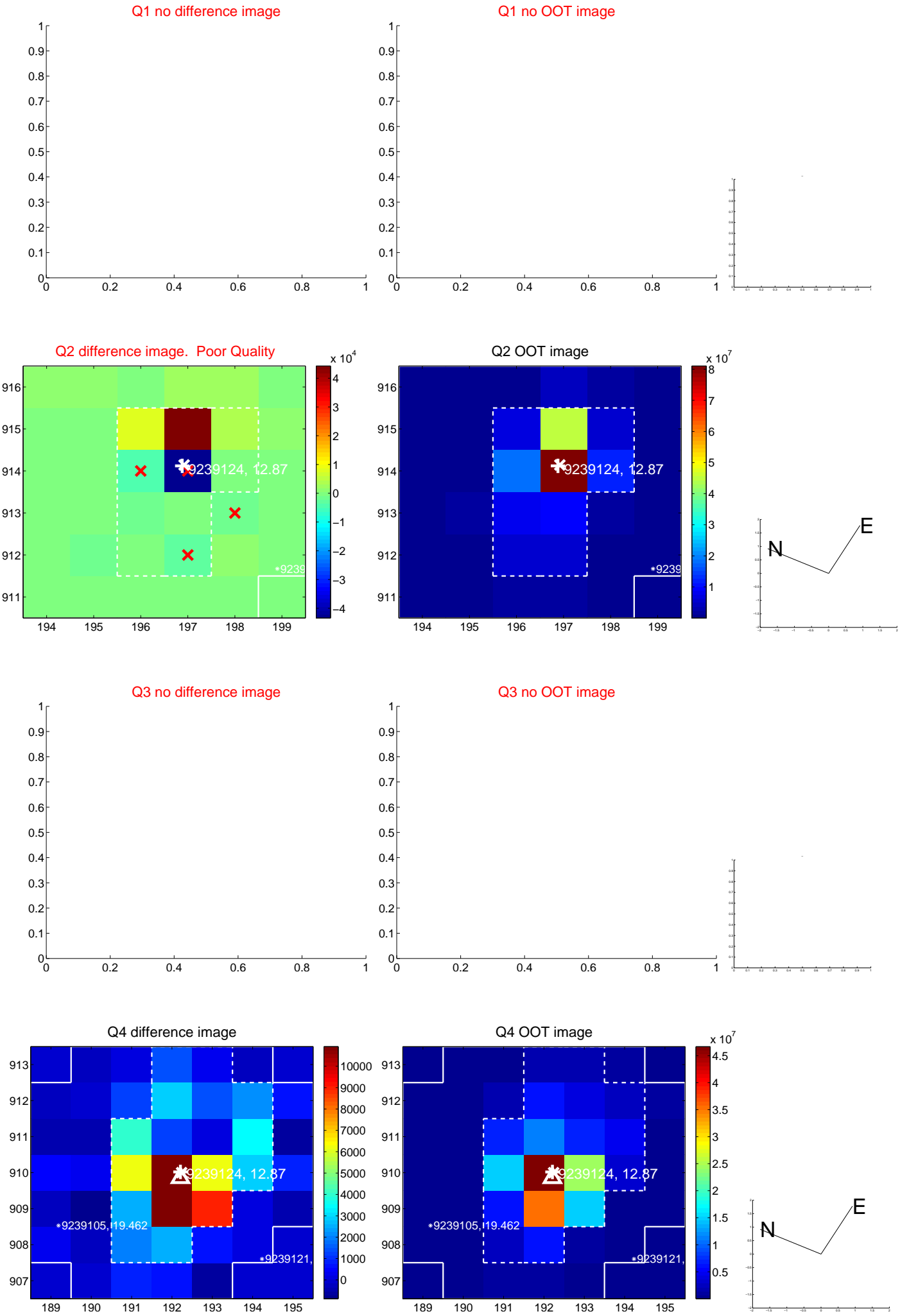
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.446 ± 1.477	0.30	-0.424 ± 1.336	-0.139 ± 0.718
PRF-fit source offset from KIC position	0.415 ± 1.323	0.31	-0.412 ± 1.264	-0.046 ± 0.681
photometric centroid source offset	3.20 ± 2.16	1.48	-3.09 ± 2.18	-0.83 ± 1.80

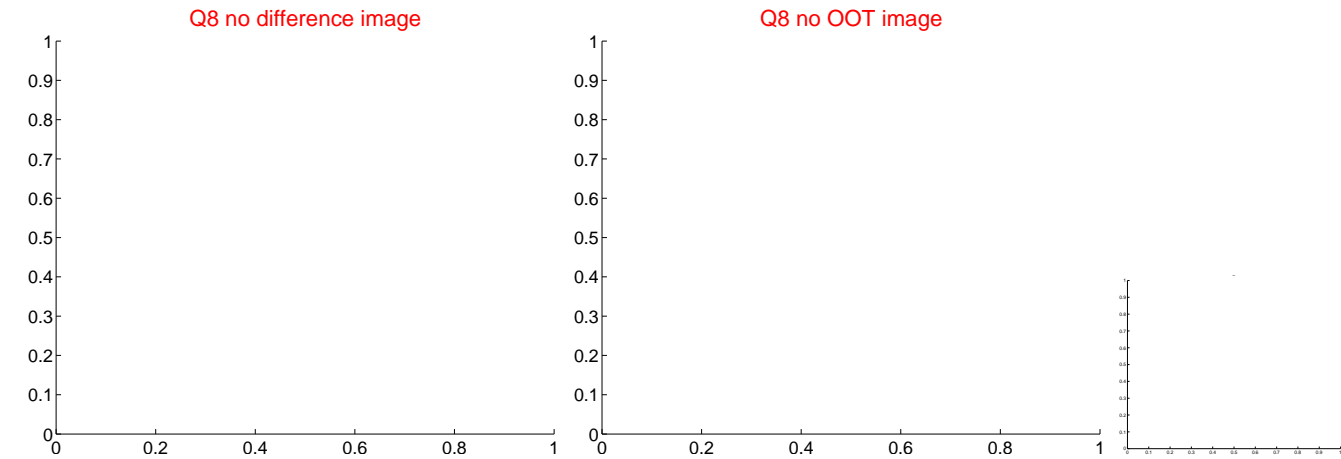
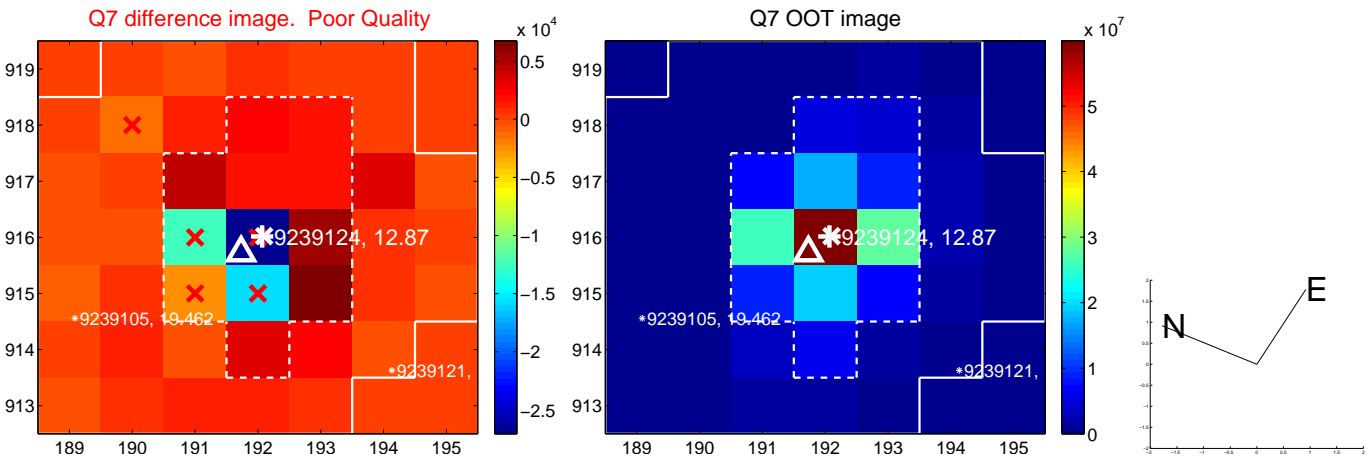
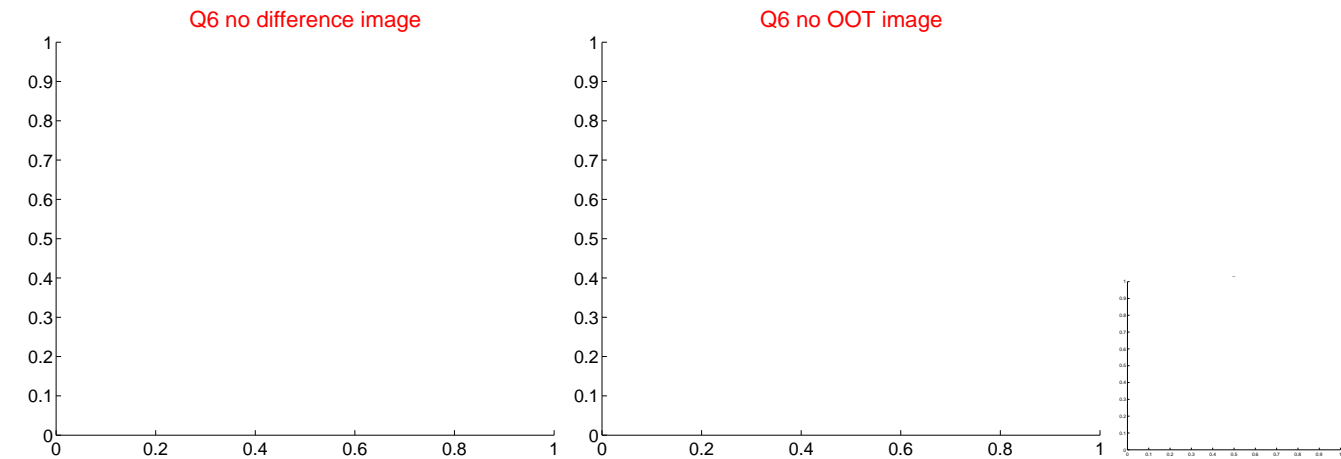


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

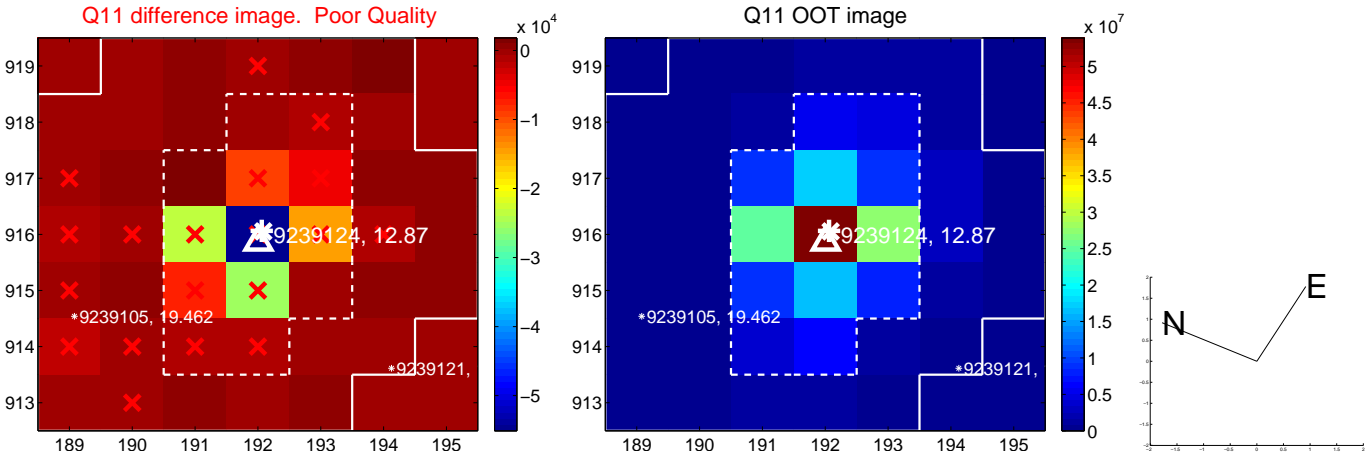
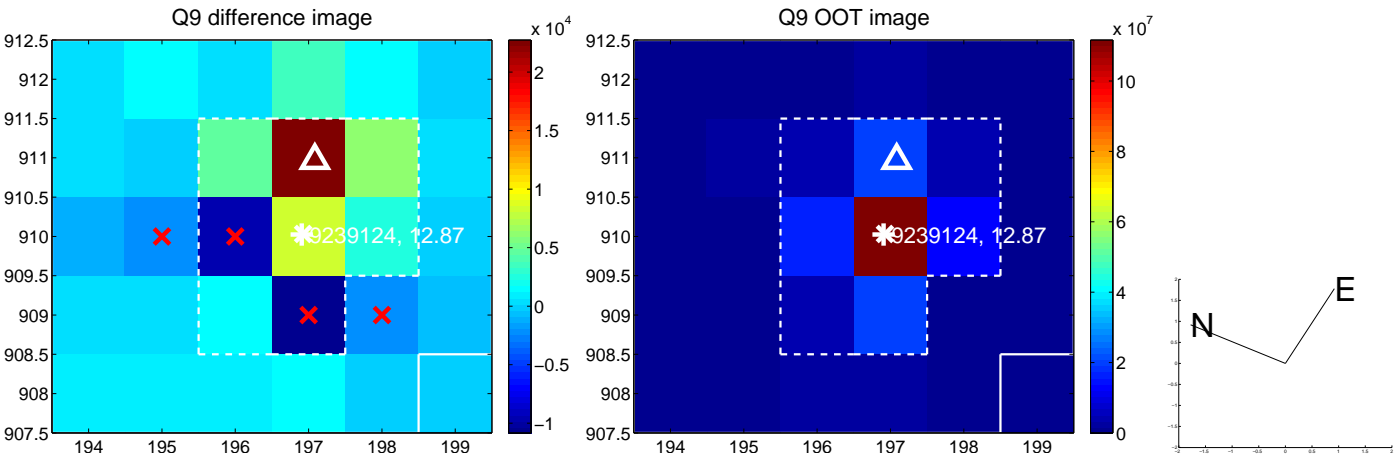
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



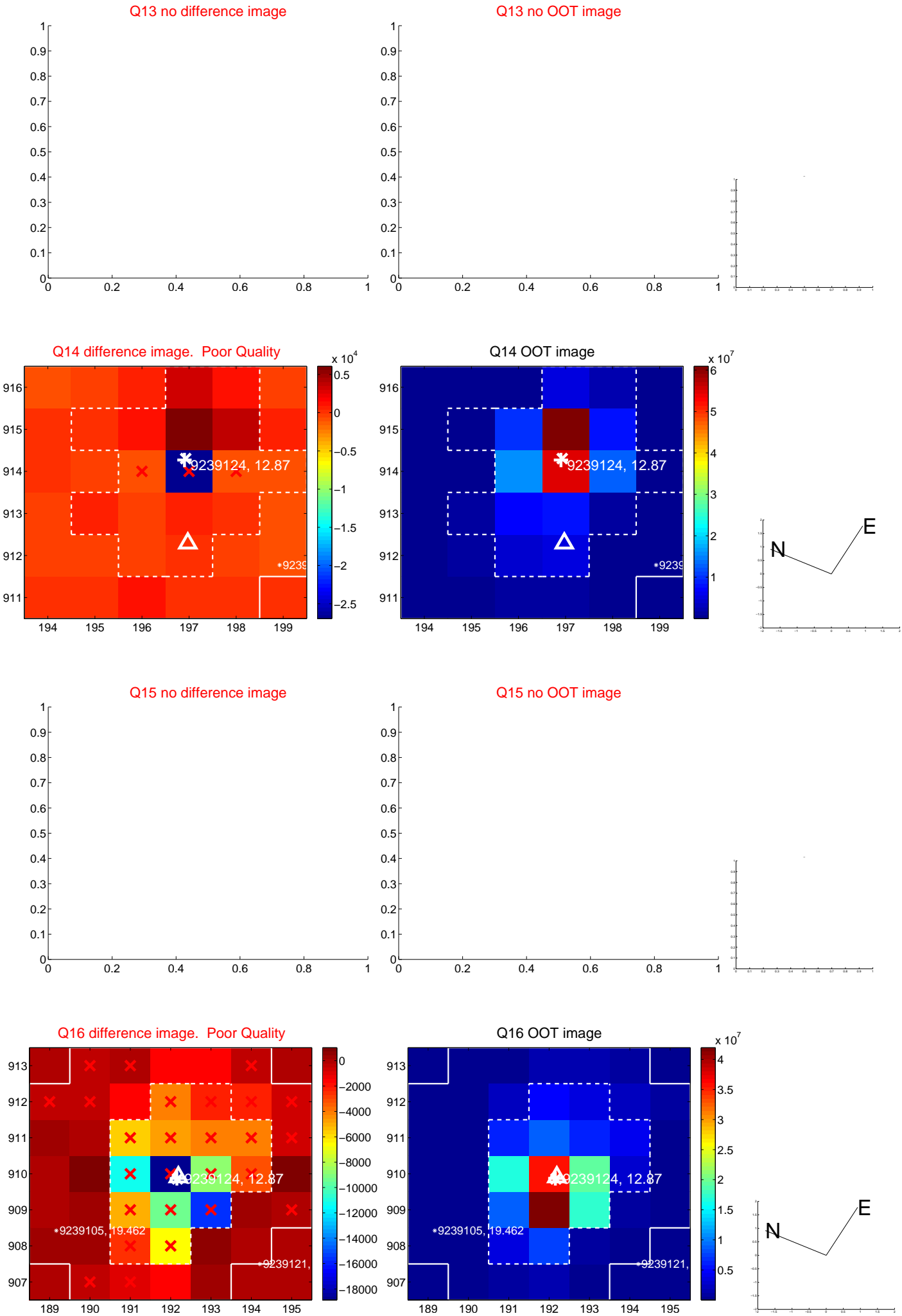
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



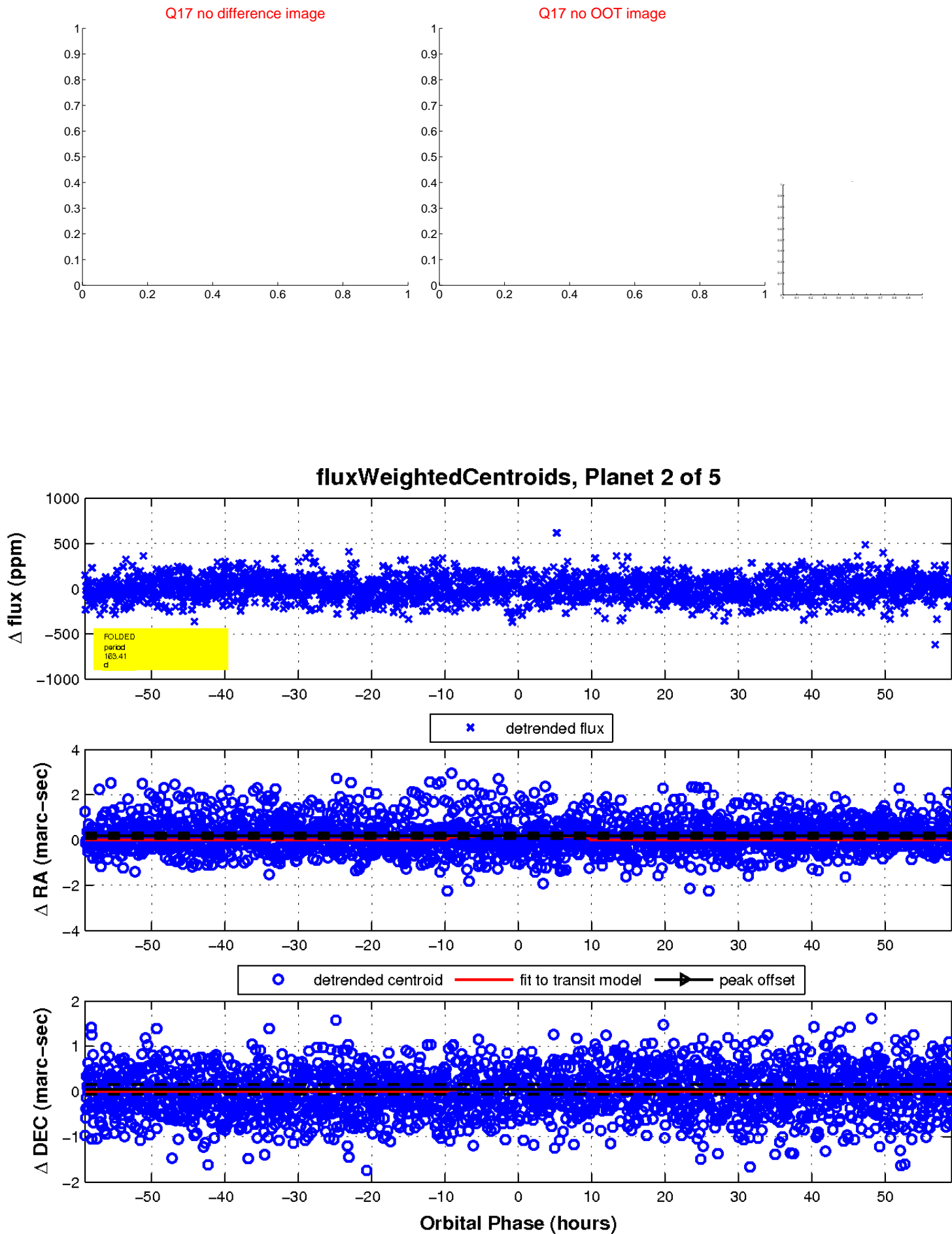
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



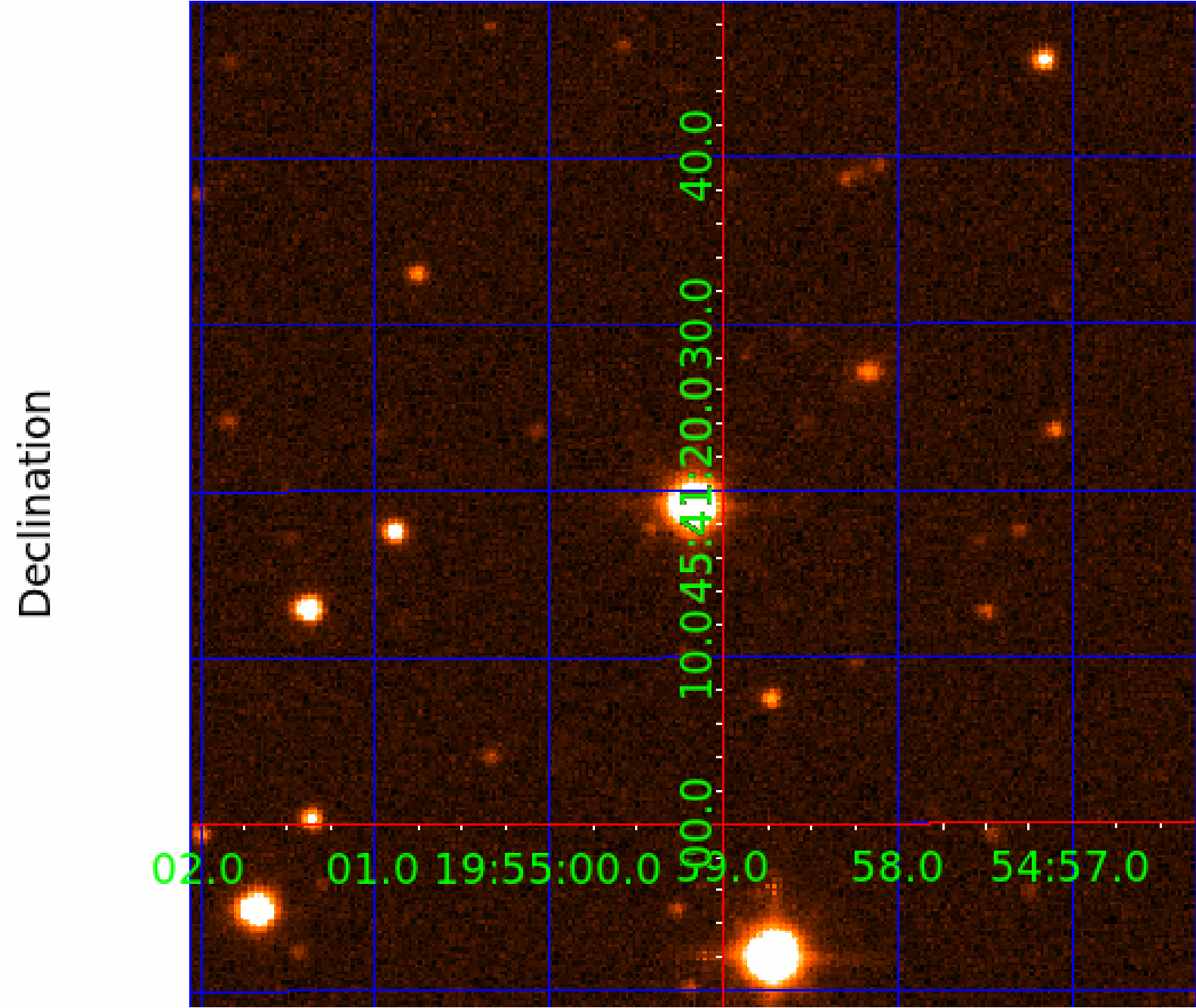
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009239124

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})
009239124-01	OBS	No	1.858212	132.302398	3.0	11.263	9.7	1.8	1.58	7208	0.31	5223.73
009239124-02	OBS	No	163.413890	211.708662	62.6	19.700	16.0	3.7	1.58	7208	1.40	13.36
009239124-03	OBS	No	119.264711	155.464198	168.8	16.663	9.4	10.1	1.58	7208	2.27	20.33
009239124-04	OBS	No	113.022304	135.293748	134.8	9.311	8.2	8.0	1.58	7208	2.05	21.84
009239124-05	OBS	No	34.868190	144.939141	113.8	3.512	8.4	8.0	1.58	7208	1.85	104.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009239124-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009239124-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009239124-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009239124-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009239124-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

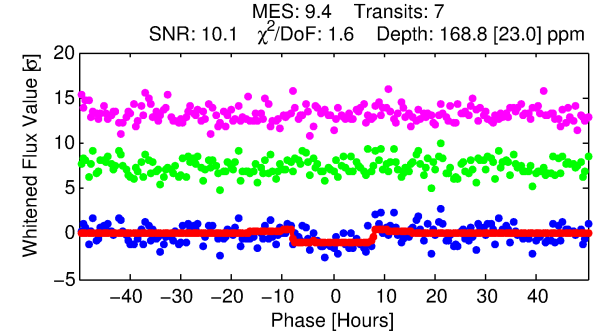
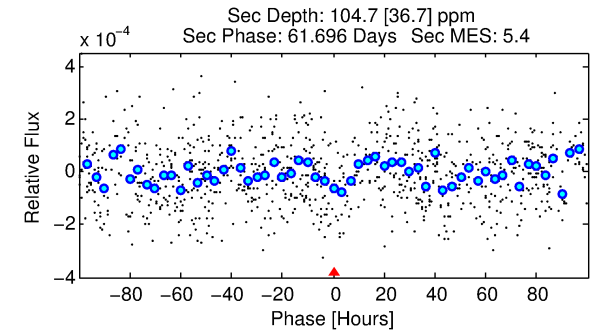
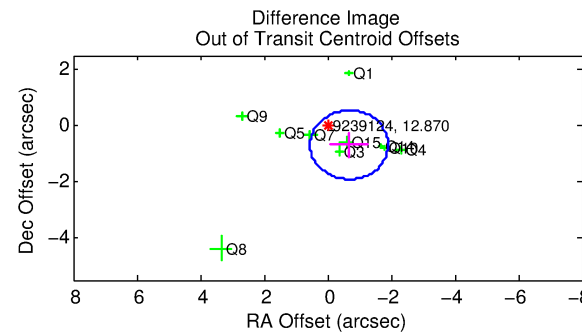
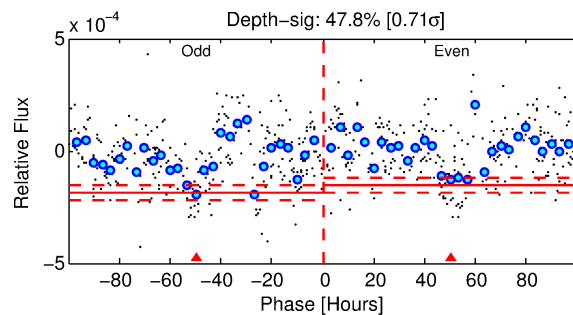
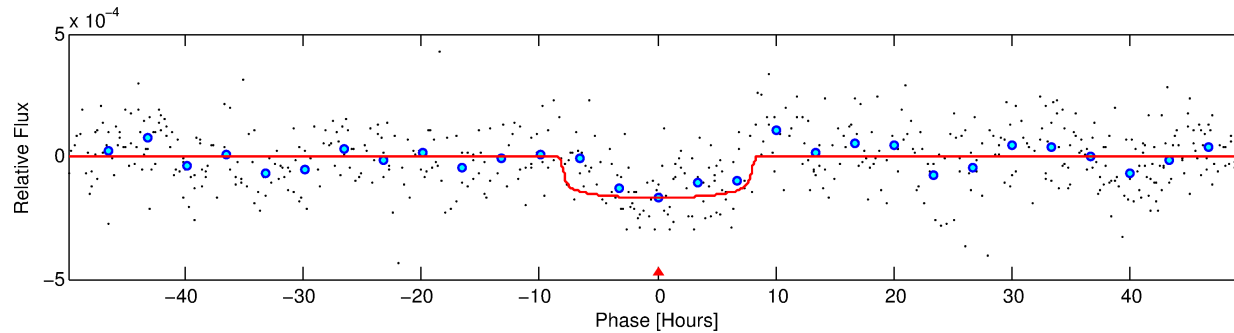
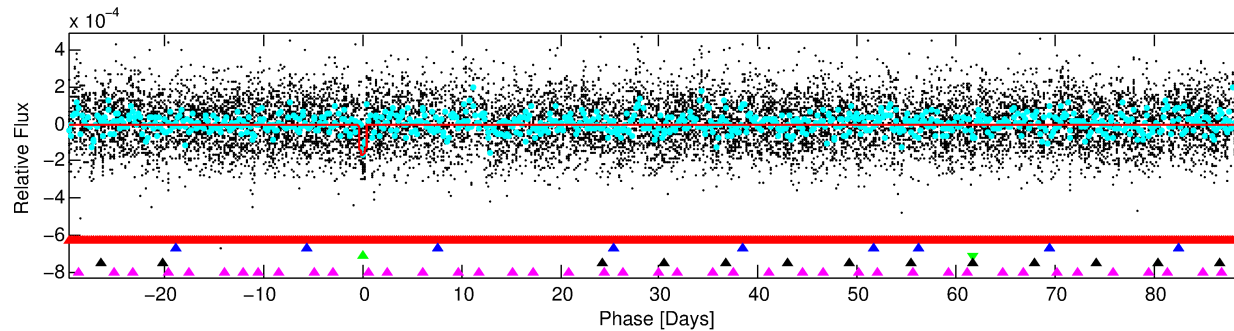
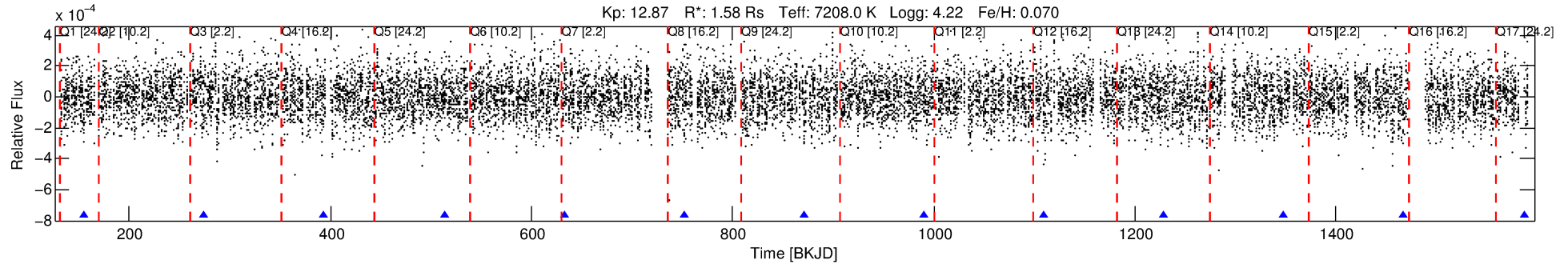
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009239124-03

No Significant Match Found

DV One-Page Summary

KIC: 9239124 Candidate: 3 of 5 Period: 119.265 d



DV Fit Results:

Period = 119.26471 [0.00504] d
Epoch = 155.4642 [0.0331] BKJD
Rp/R* = 0.0132 [0.0025]
a/R* = 33.08 [34.52]
b = 0.81 [0.44]
Seff = 20.33 [9.02]
Teq = 541 [60] K
Rp = 2.27 [0.92] Re
a = 0.5453 [0.1569] AU
Ag = 3311.57 [2151.28] [1.54 σ]
Teffp = 6350 [866] K [6.69 σ]

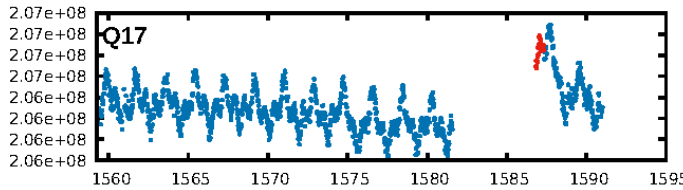
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.85 σ]
LongPeriod-sig: 100.0% [41.07 σ]
ModelChiSquare2-sig: 30.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.41e-12
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 1.062
Centroid-sig: 59.5%
Centroid-so: 0.572 arcsec [0.92 σ]
OotOffset-rm: 0.964 arcsec [2.36 σ]
KicOffset-rm: 0.994 arcsec [2.17 σ]
OotOffset-st: 2/3/2/3 [10]
KicOffset-st: 2/3/2/3 [10]
DiffImageQuality-fgm: 0.40 [4/10]
DiffImageOverlap-fno: 0.00 [0/10]

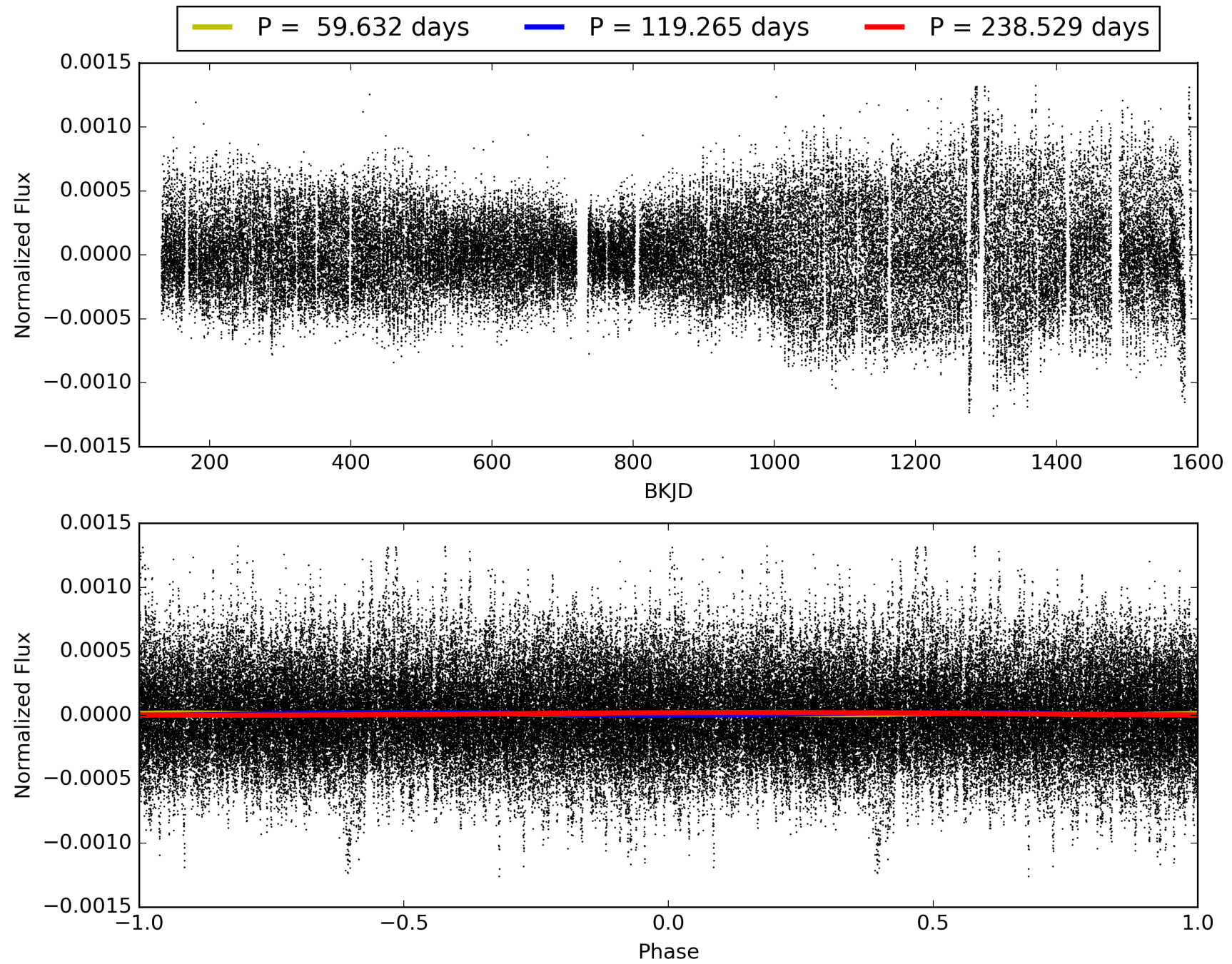
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:06:18 Z

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

TCE 009239124-03, PDC Light Curves

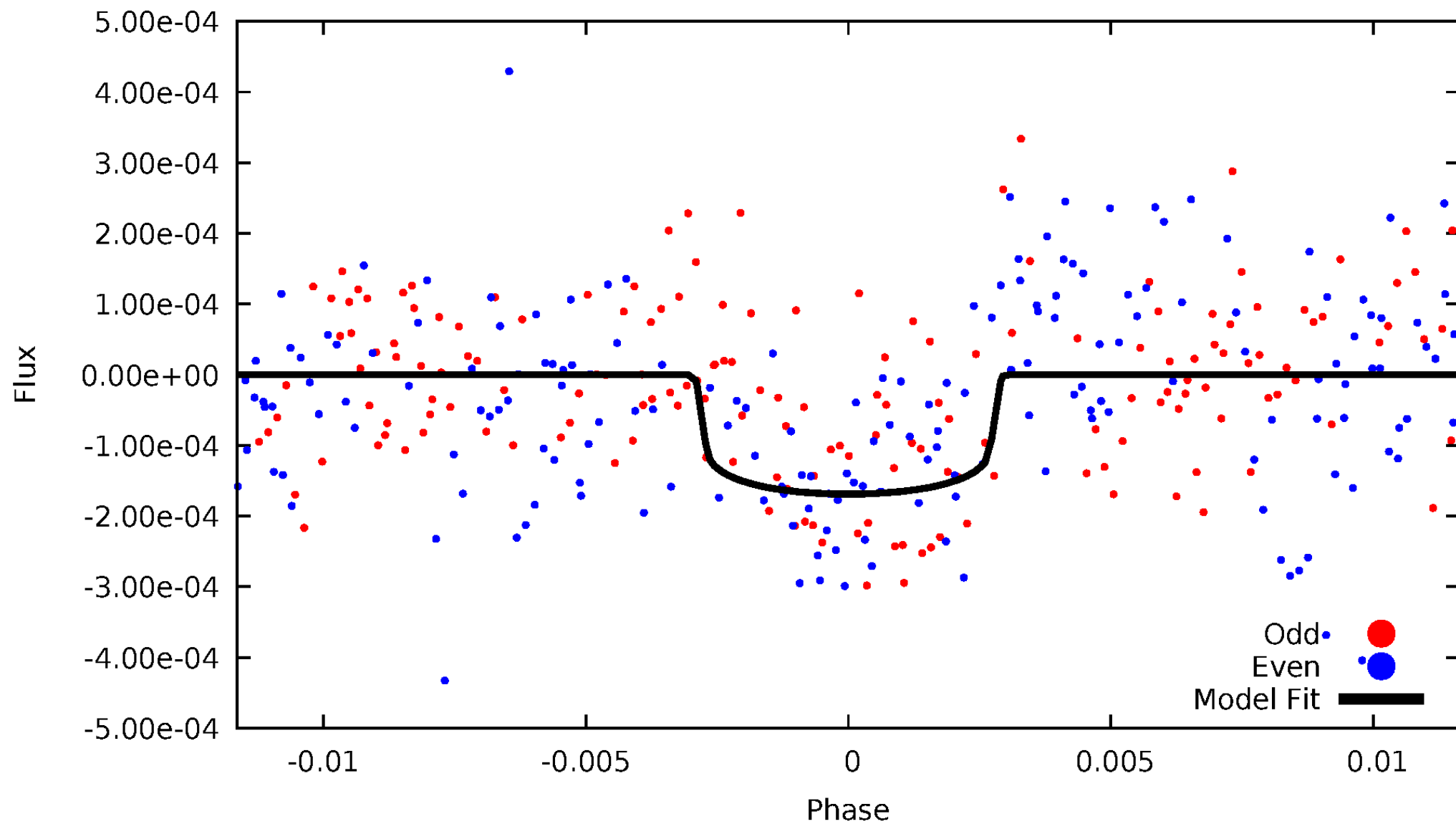


TCE 009239124-03



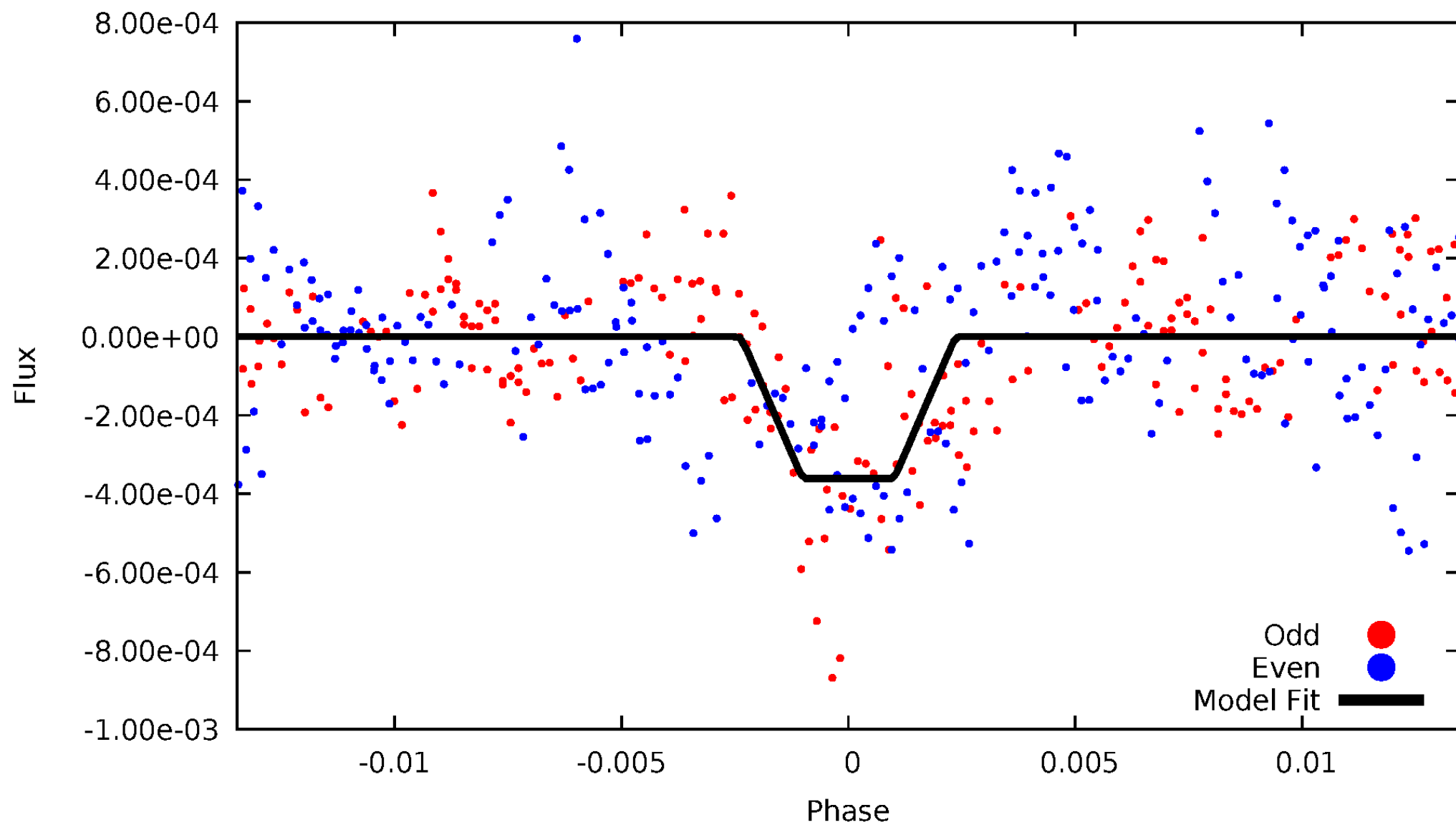
DV Odd/Even

TCE 009239124-03



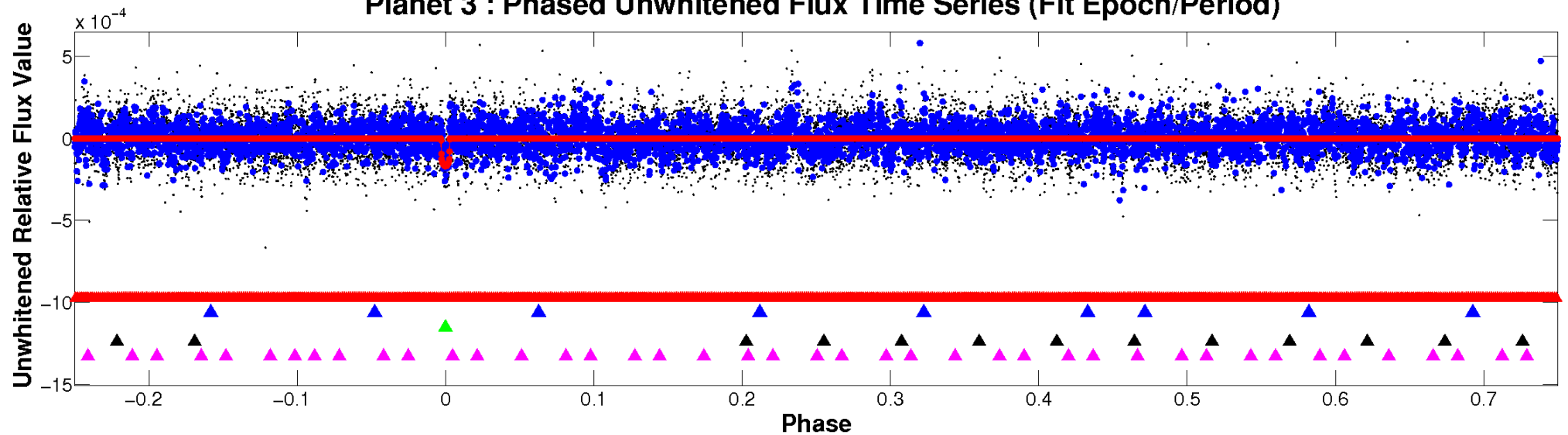
ALT Odd/Even

TCE 009239124-03

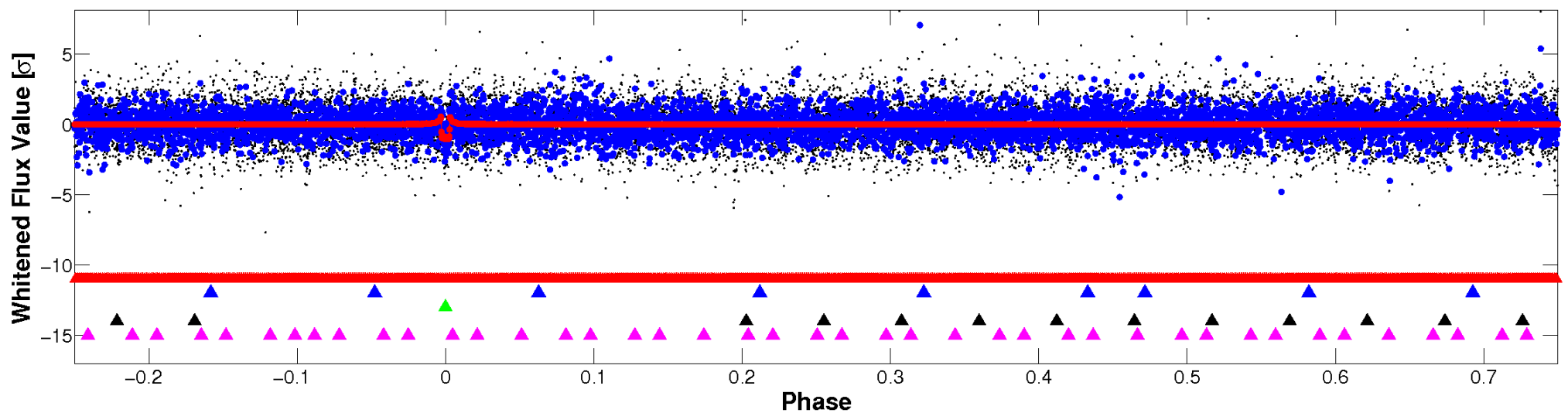


Non-Whitened Vs. Whitened Light Curve

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

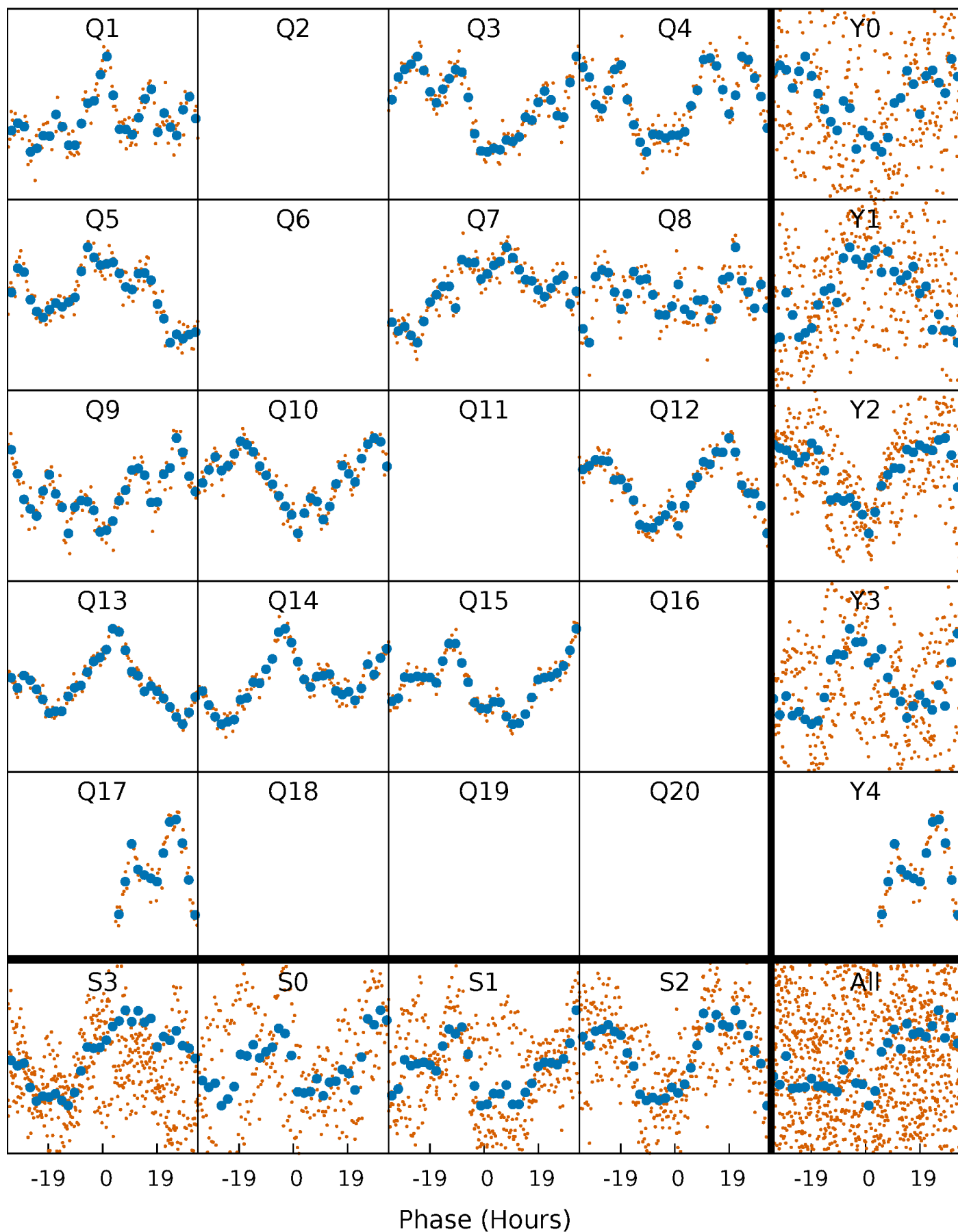


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



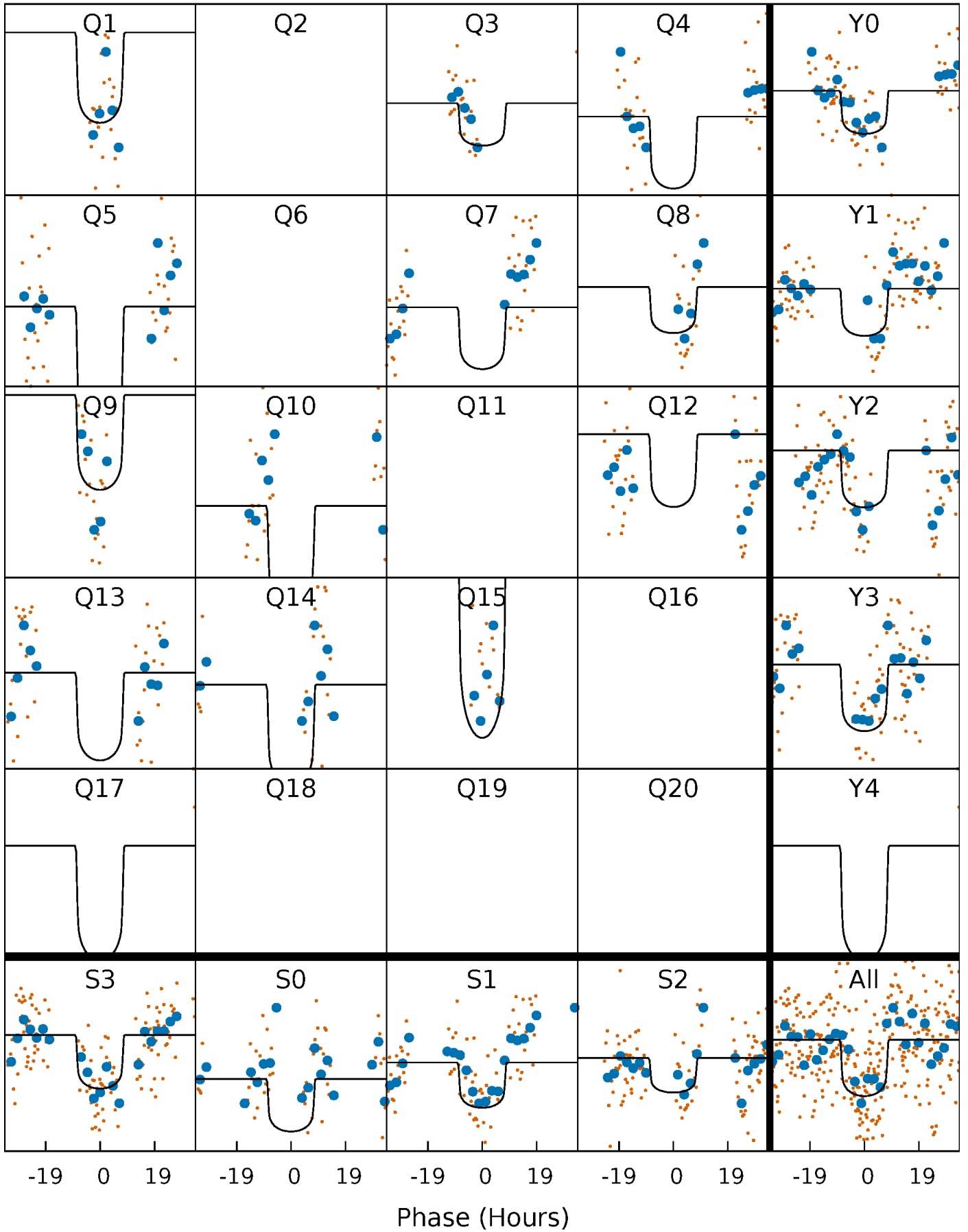
PDC Quarter-Phased Transit Curves

TCE 009239124-03 P=119.264711 Days $T_0=155.464198$ (BKJD)



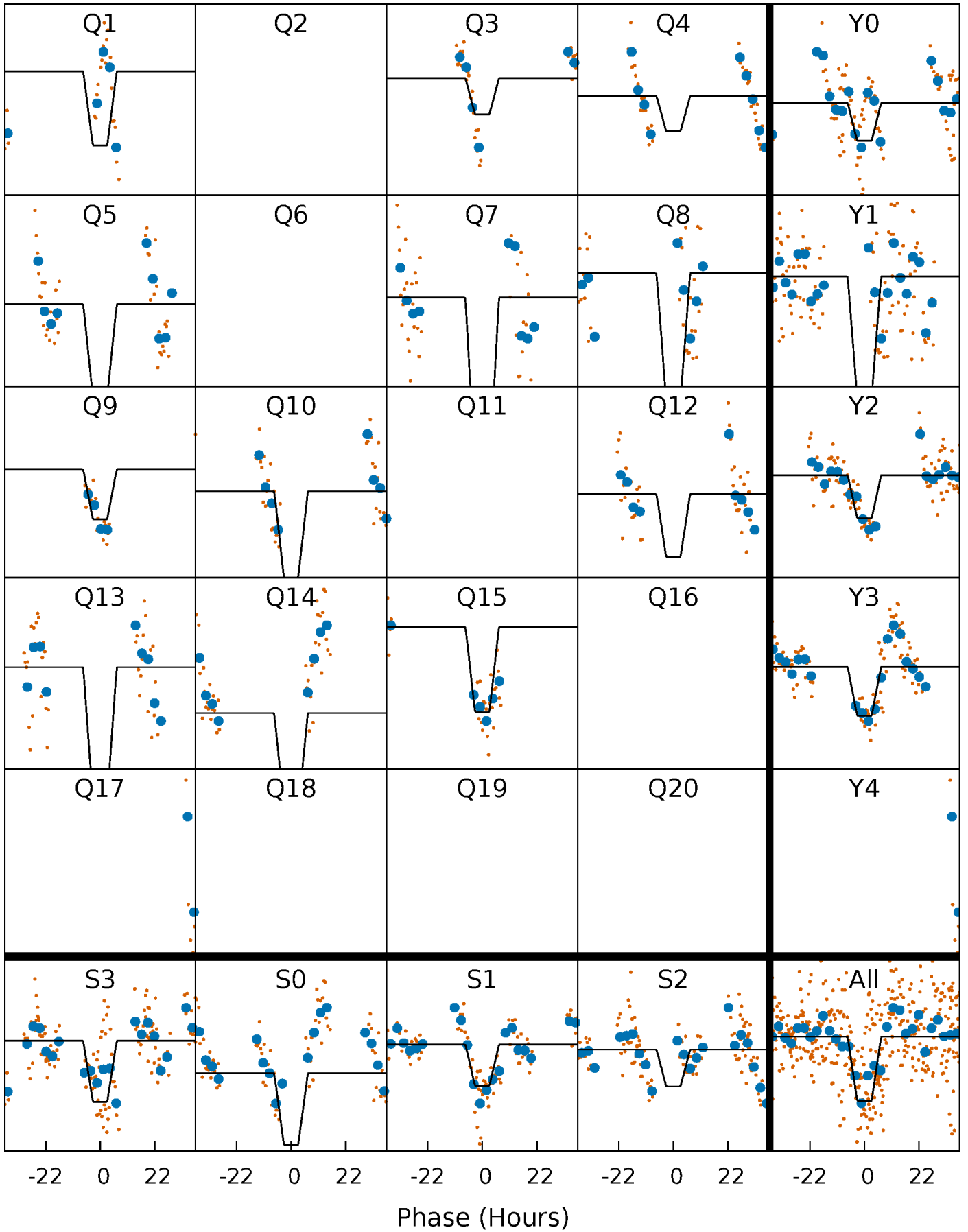
DV Quarter-Phased Transit Curves

TCE 009239124-03 P=119.264711 Days $T_0=155.464198$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

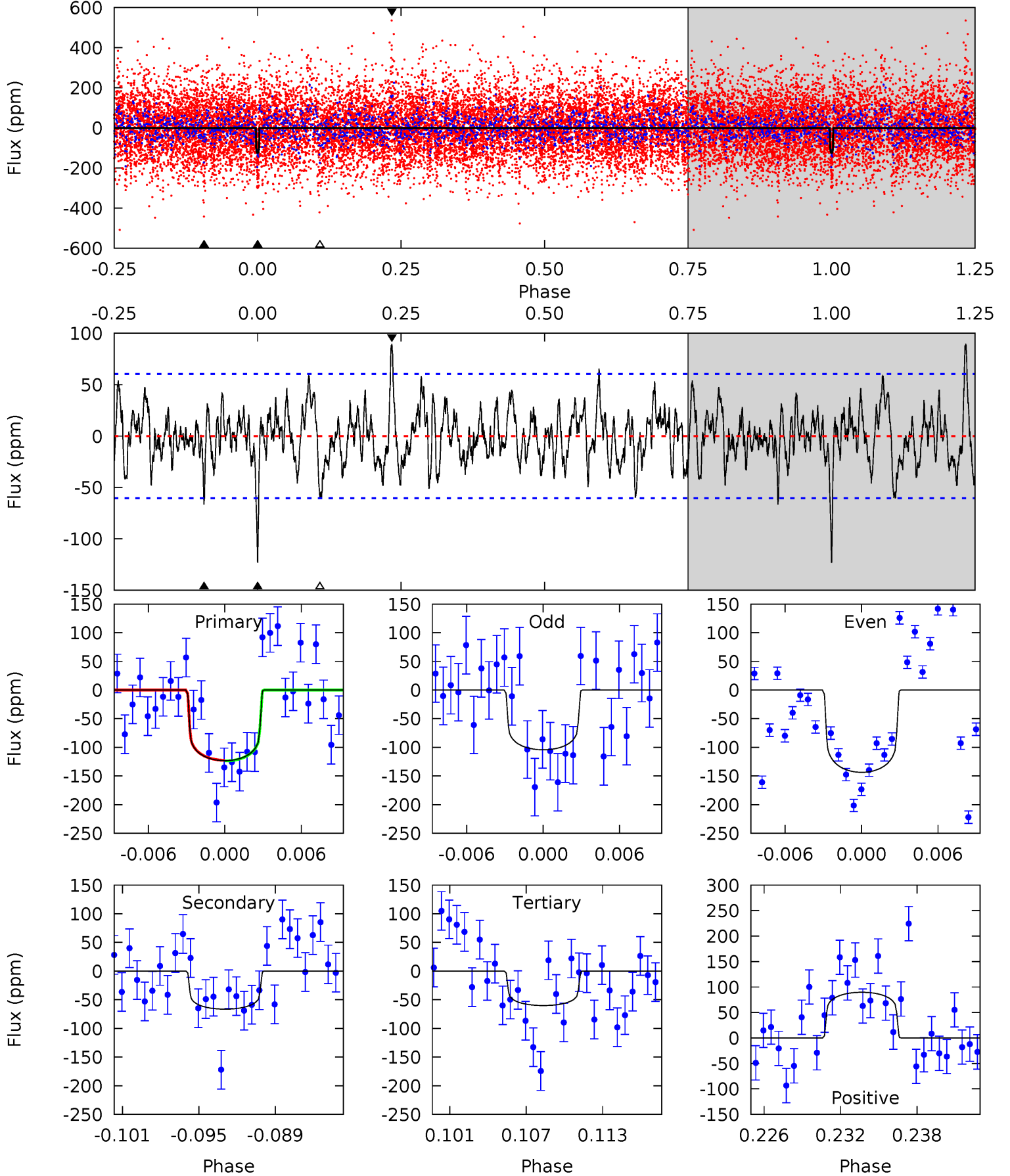
TCE 009239124-03 P=119.263879 Days $T_0=155.408640$ (BKJD)



DV Model-Shift Uniqueness Test

009239124-03, P = 119.264711 Days, E = 36.199487 Days

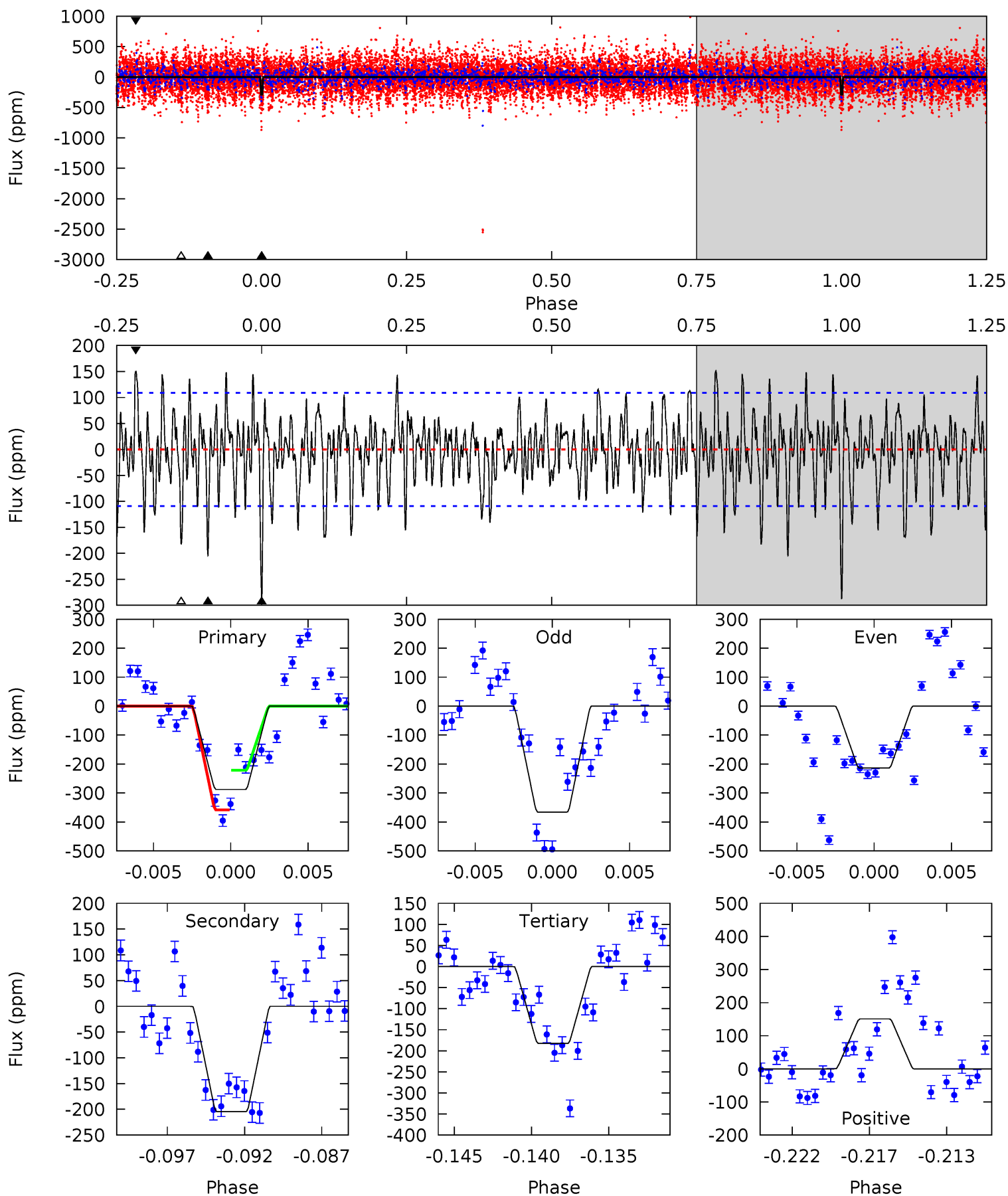
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	5.64	5.10	7.61	5.12	2.75	1.92	5.36	2.85	0.53	-1.98	1.67	0.65	0.42	0.05



Alt Model-Shift Uniqueness Test

009239124-03, P = 119.263879 Days, E = 36.144761 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	9.68	8.65	7.13	5.16	2.82	2.59	4.98	6.50	1.03	2.54	3.64	0.36	0.34	3.27



Stellar Parameters For KIC 009239124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7208^{+200}_{-343}	$4.222^{+0.075}_{-0.210}$	$0.070^{+0.200}_{-0.350}$	$1.581^{+0.565}_{-0.242}$	$1.519^{+0.226}_{-0.226}$	$0.541^{+0.221}_{-0.296}$
	+3%/-5%	+2%/-5%	+286%/-500%	+36%/-15%	+15%/-15%	+41%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009239124-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-66 ± 12	$2.38^{+0.58}_{-0.51}$	769^{+66}_{-47}	5573^{+729}_{-517}	1832^{+1331}_{-675}
Alt.	-204 ± 21	$3.40^{+0.77}_{-0.58}$	767^{+63}_{-45}	6163^{+526}_{-463}	2755^{+1363}_{-833}

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

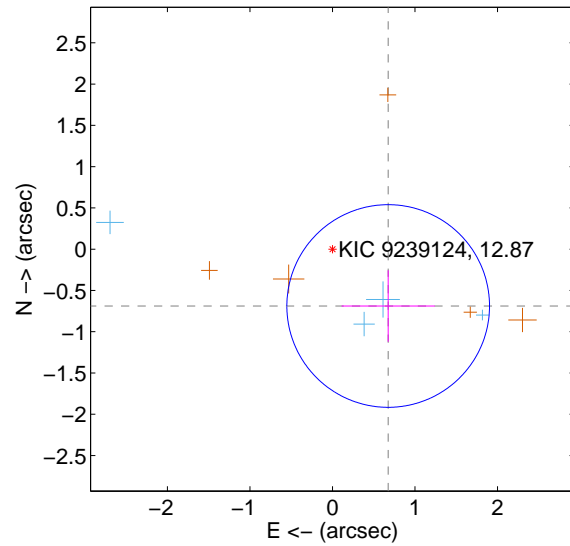
Supplemental centroid analysis for 009239124-03. Kepler magnitude: 12.87. Transit SNR 10.11

There are 4 quarters with good PRF difference image offsets

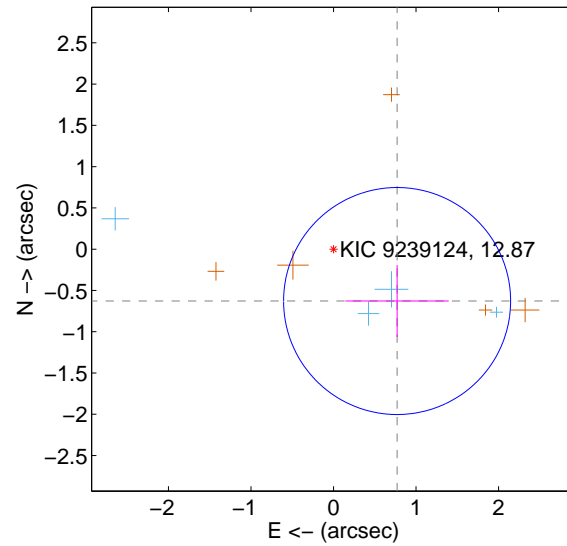
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.964 ± 0.409	2.36	-0.675 ± 0.565	-0.688 ± 0.433
PRF-fit source offset from KIC position	0.994 ± 0.458	2.17	-0.770 ± 0.626	-0.628 ± 0.436
photometric centroid source offset	0.57 ± 0.62	0.92	-0.56 ± 0.63	0.09 ± 0.54

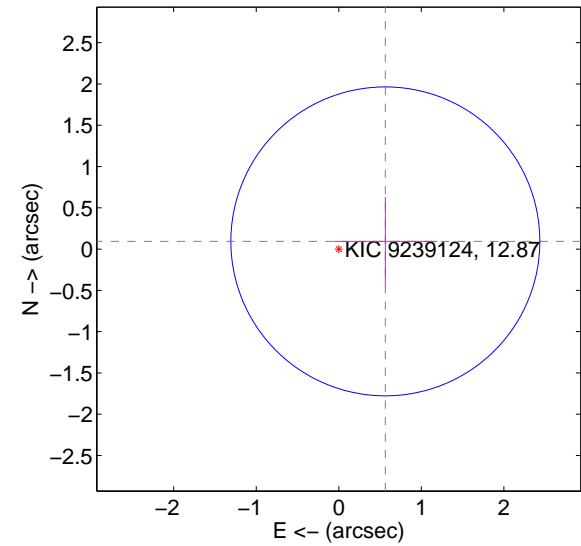
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

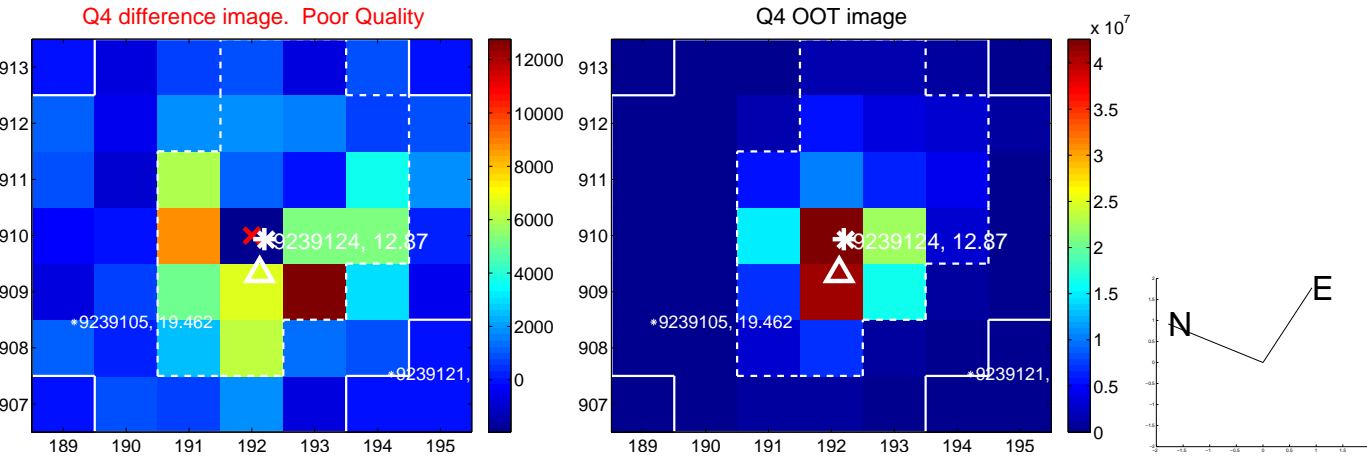
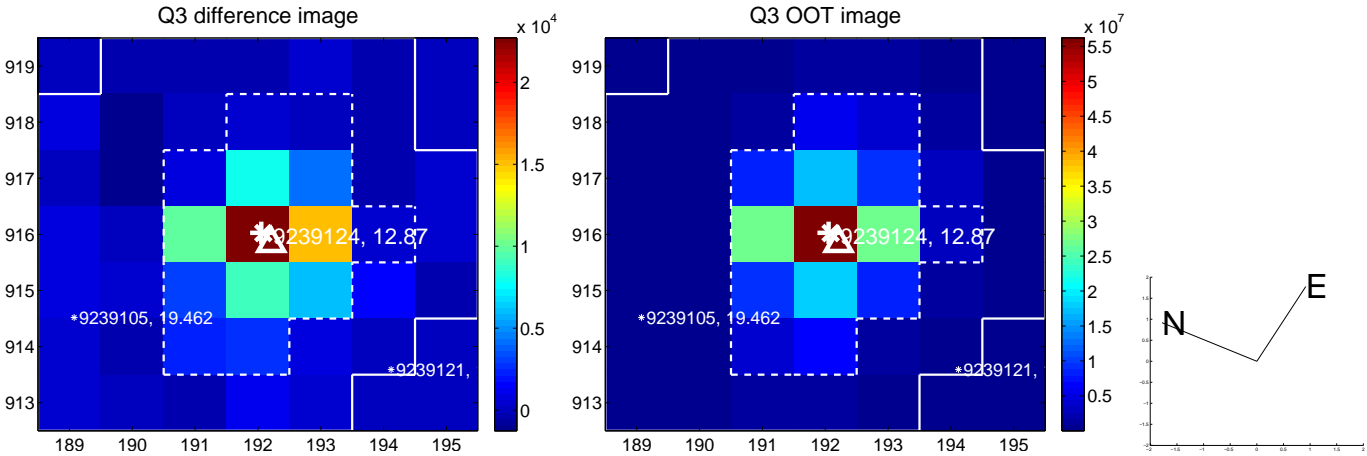
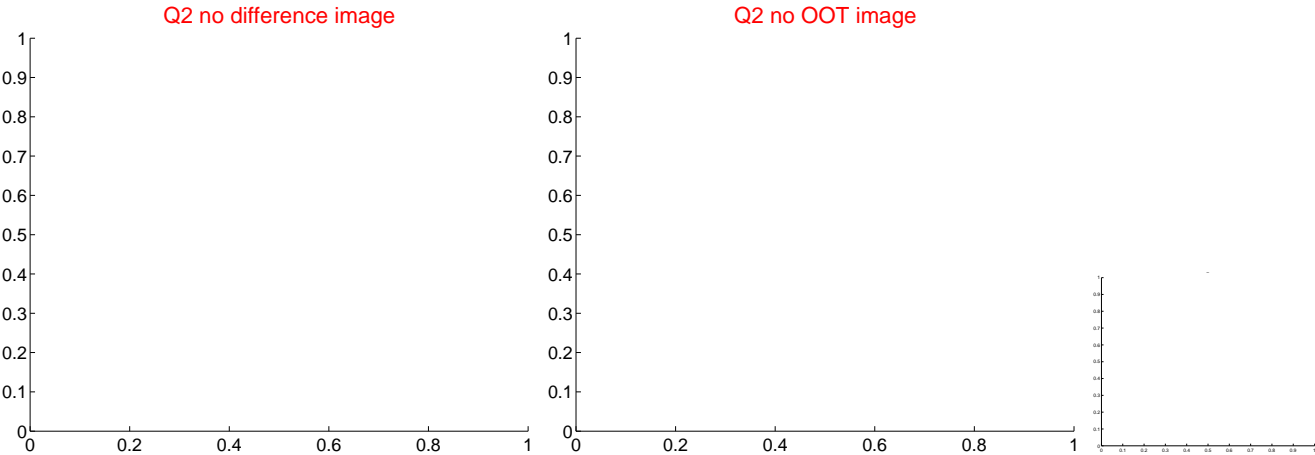
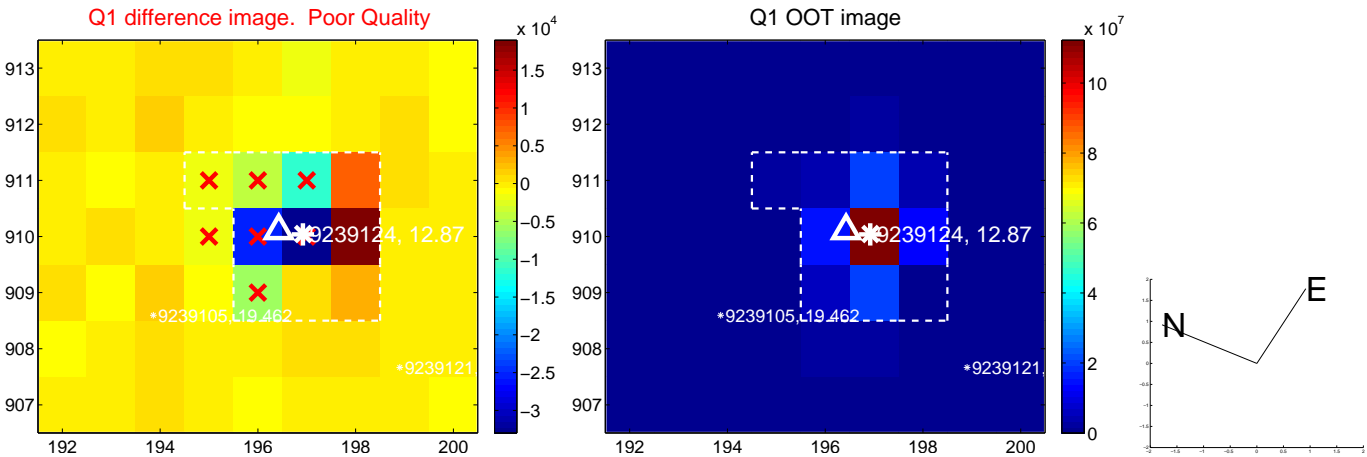


offset from photometric centroids

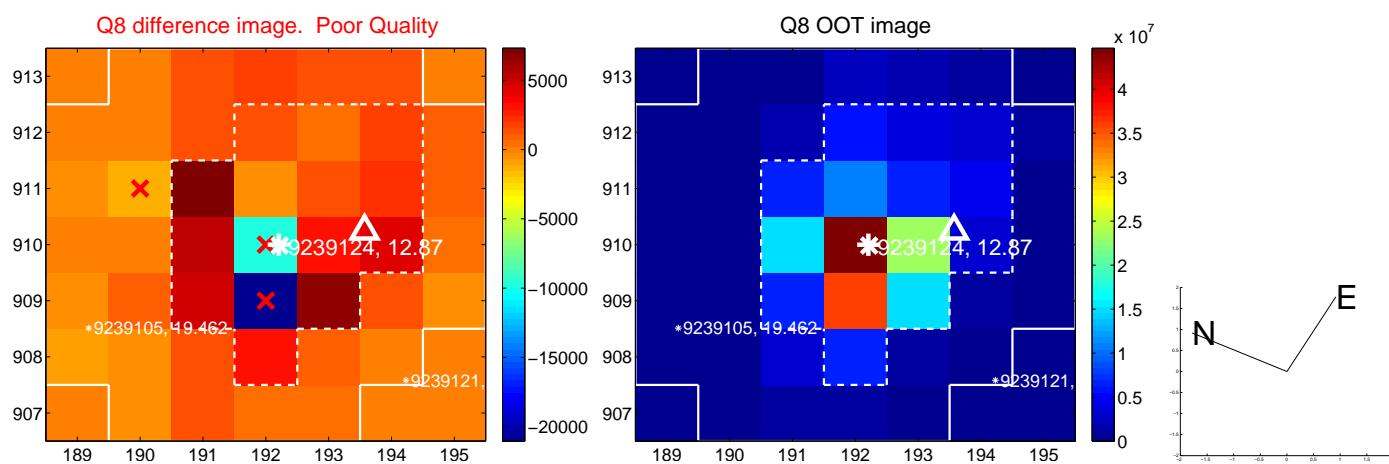
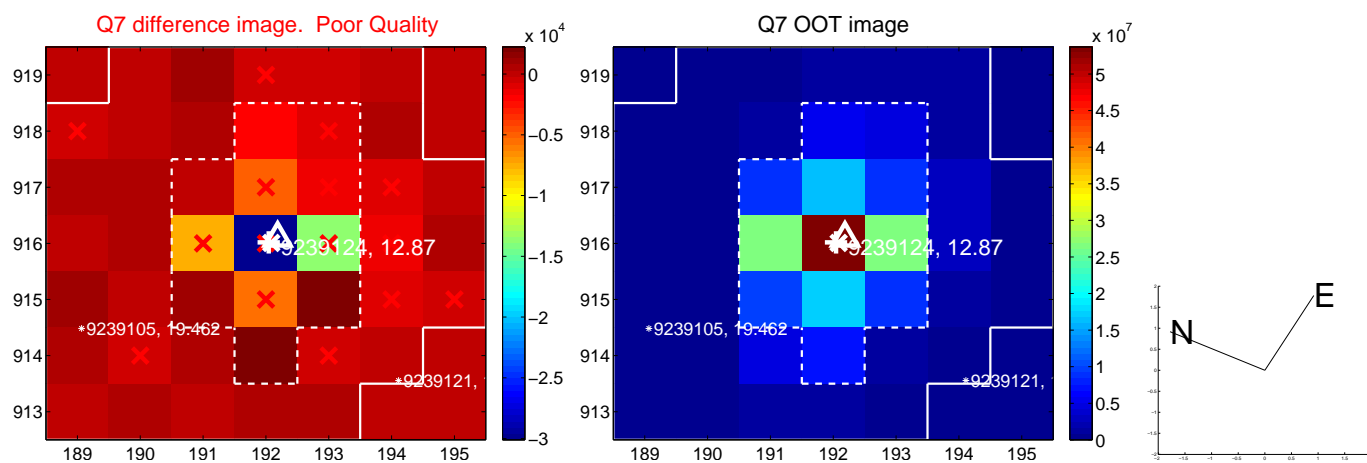
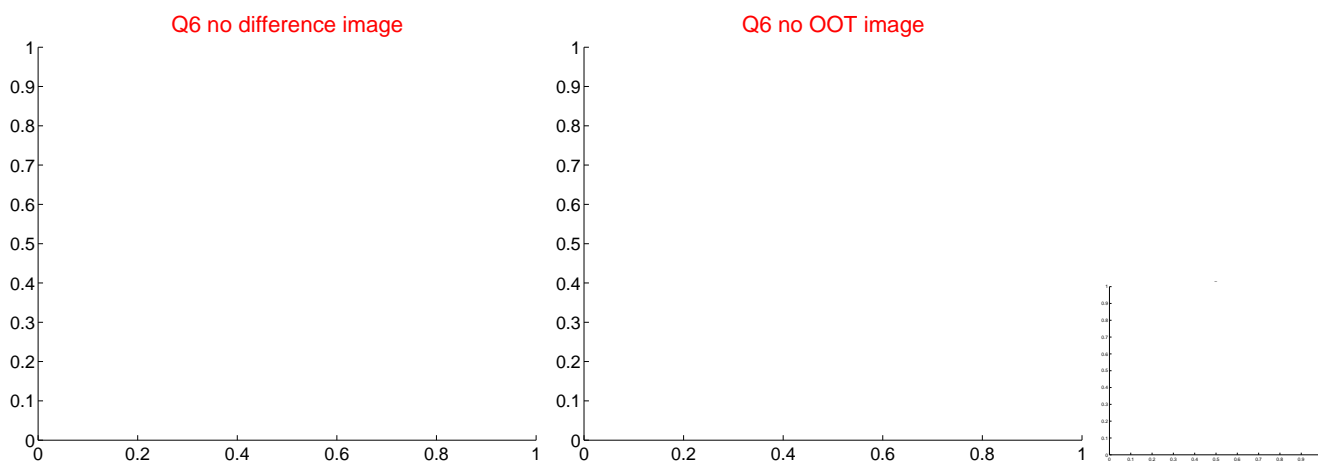
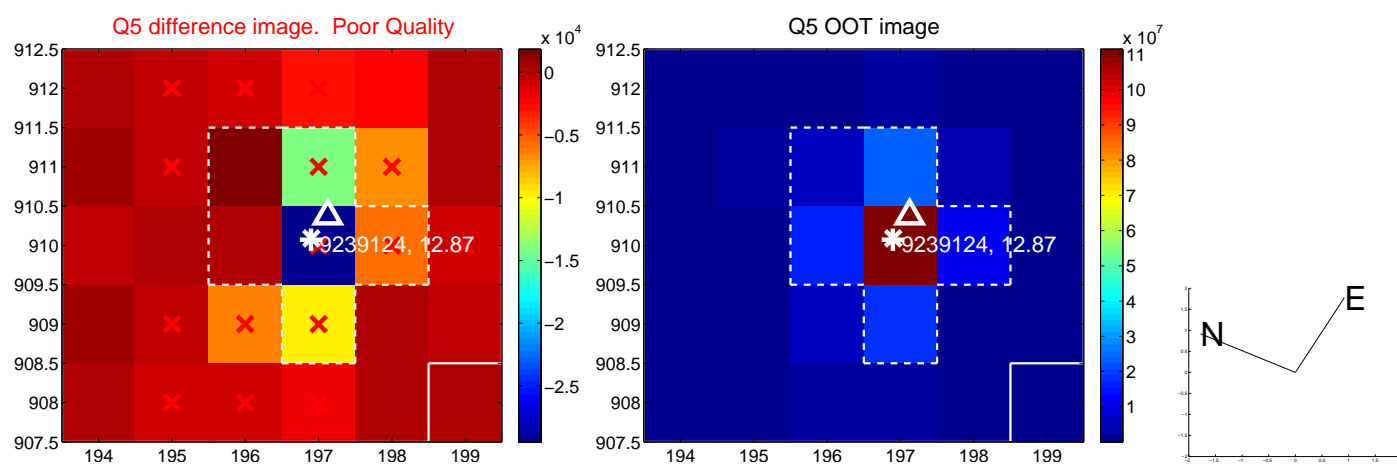


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

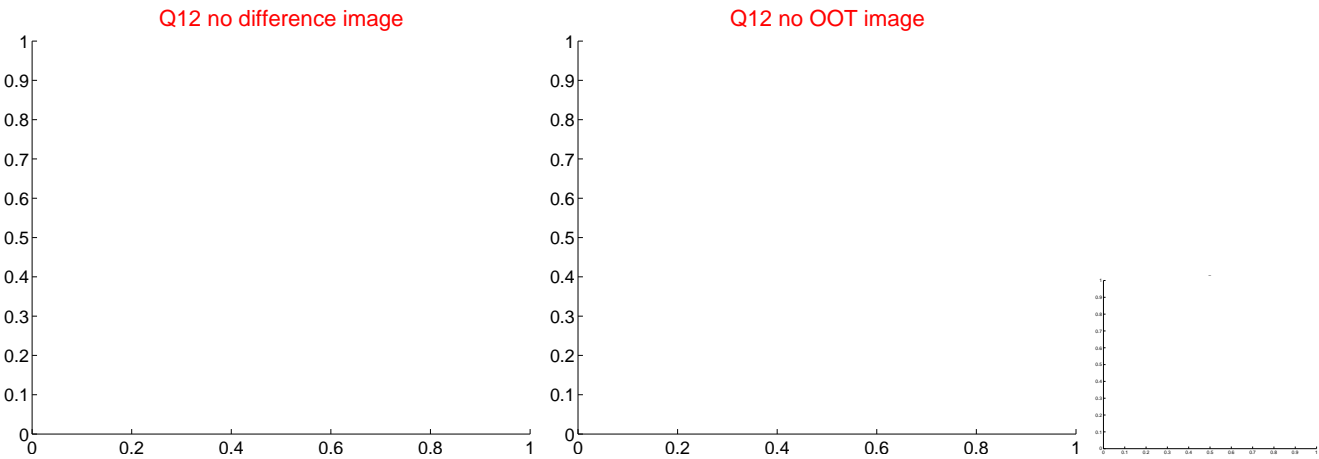
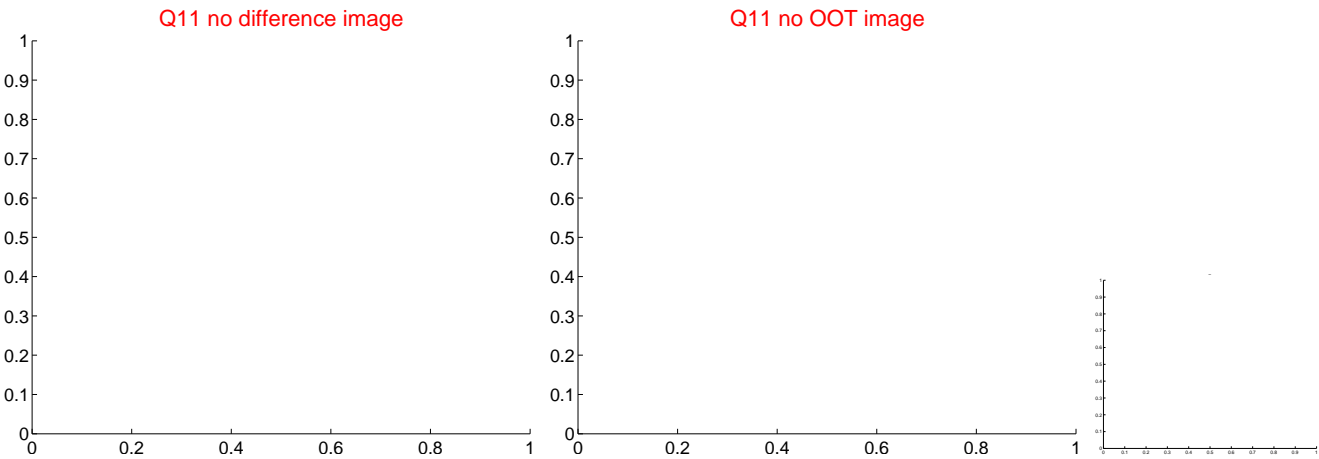
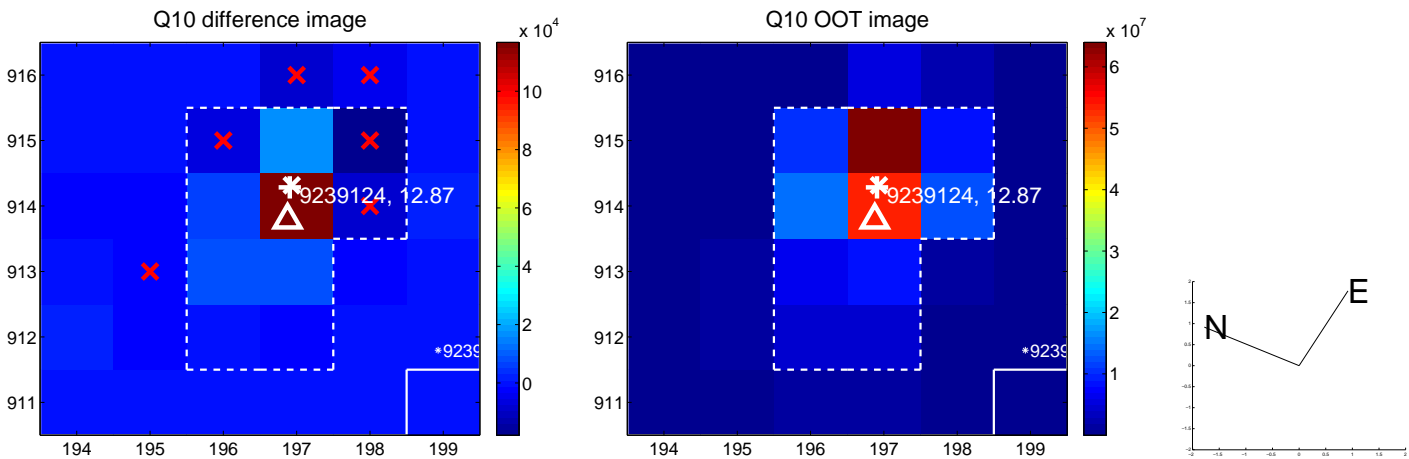
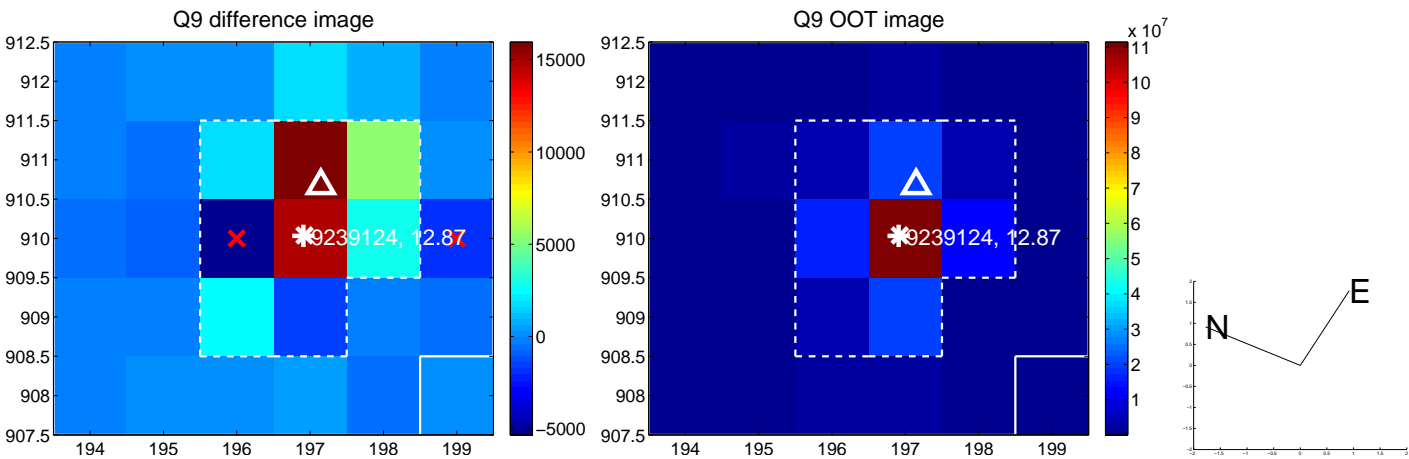
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



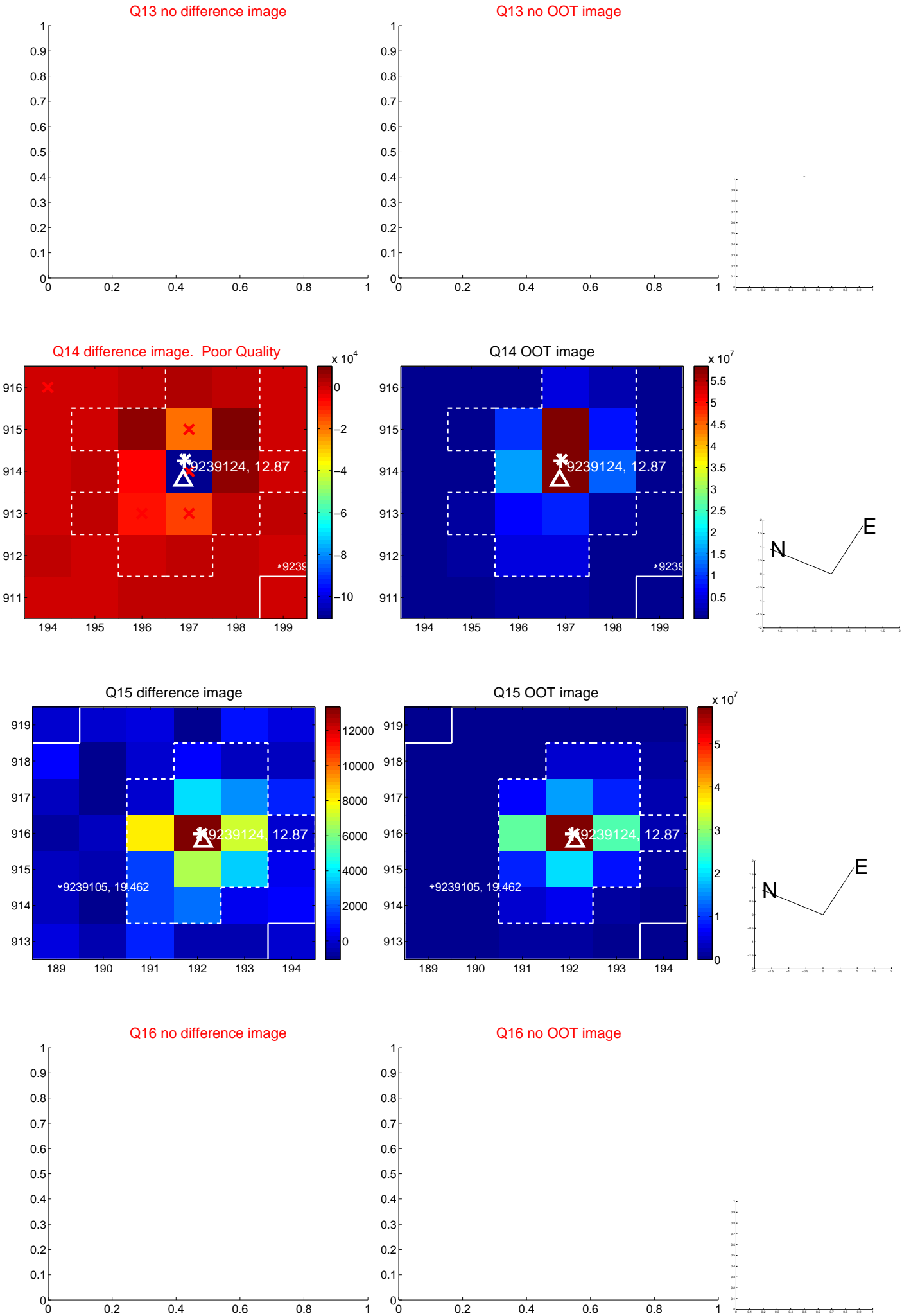
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



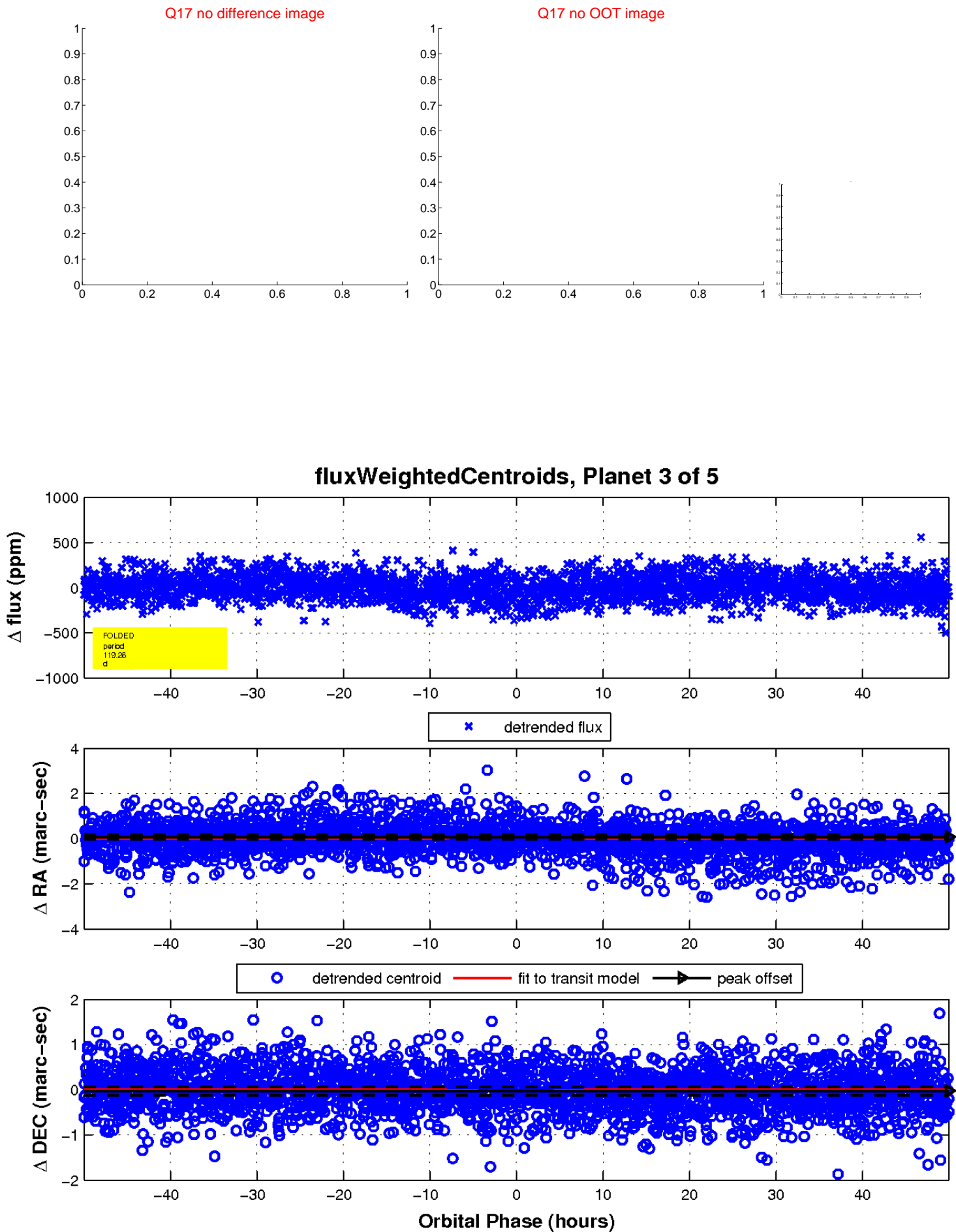
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



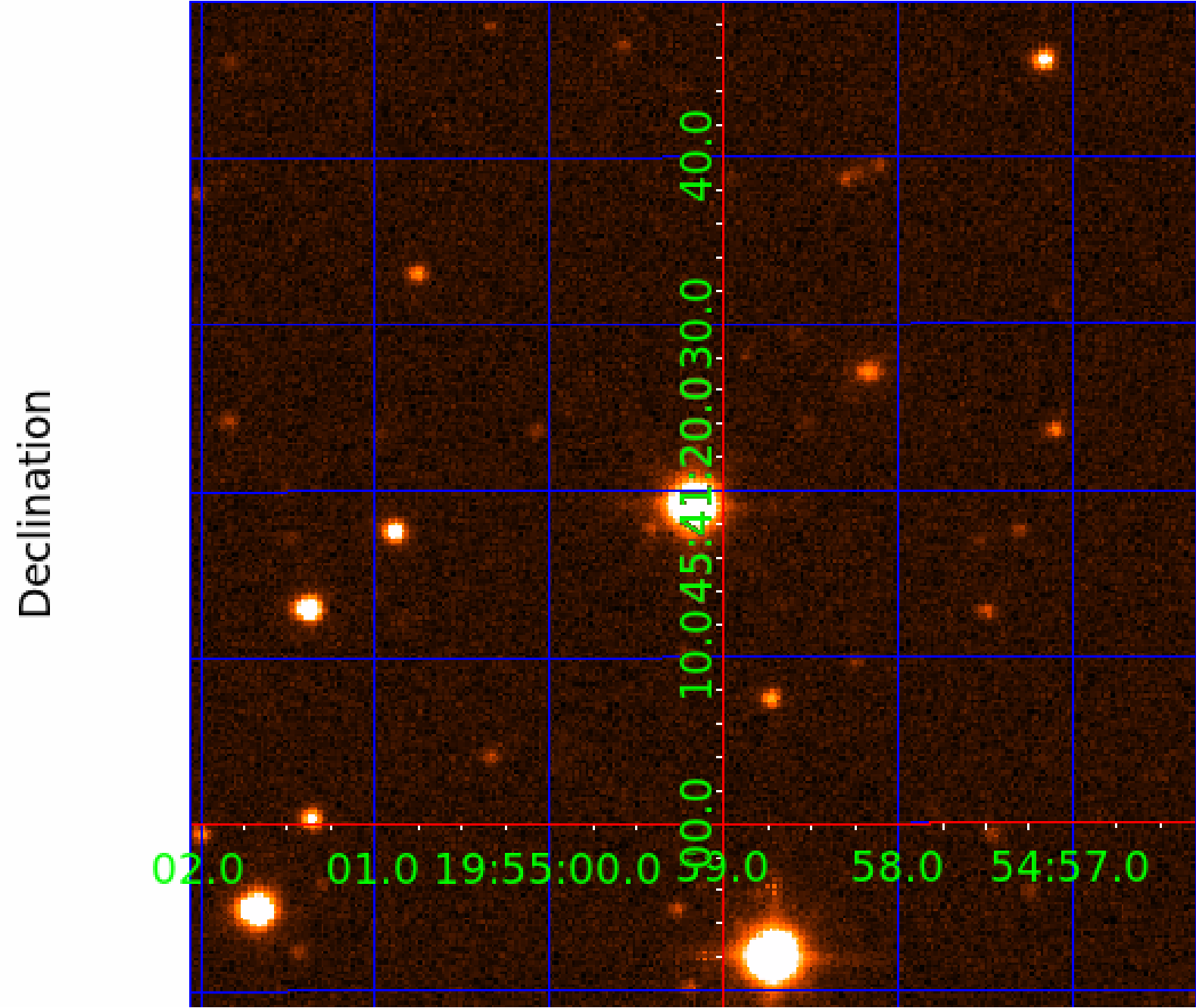
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009239124

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})
009239124-01	OBS	No	1.858212	132.302398	3.0	11.263	9.7	1.8	1.58	7208	0.31	5223.73
009239124-02	OBS	No	163.413890	211.708662	62.6	19.700	16.0	3.7	1.58	7208	1.40	13.36
009239124-03	OBS	No	119.264711	155.464198	168.8	16.663	9.4	10.1	1.58	7208	2.27	20.33
009239124-04	OBS	No	113.022304	135.293748	134.8	9.311	8.2	8.0	1.58	7208	2.05	21.84
009239124-05	OBS	No	34.868190	144.939141	113.8	3.512	8.4	8.0	1.58	7208	1.85	104.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009239124-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009239124-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009239124-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009239124-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009239124-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

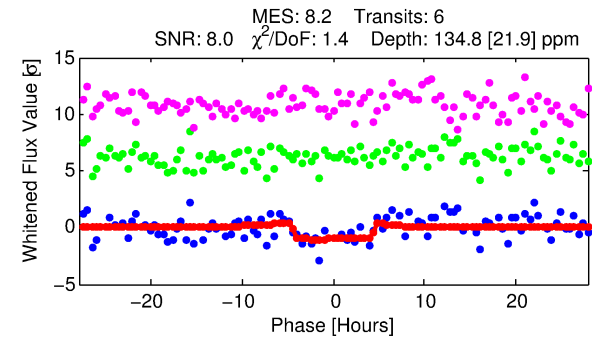
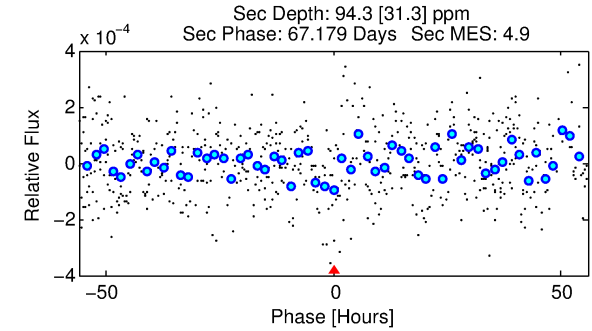
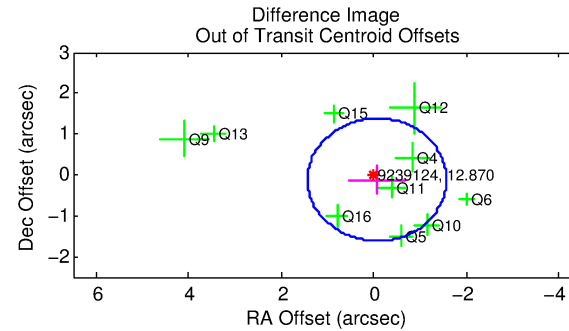
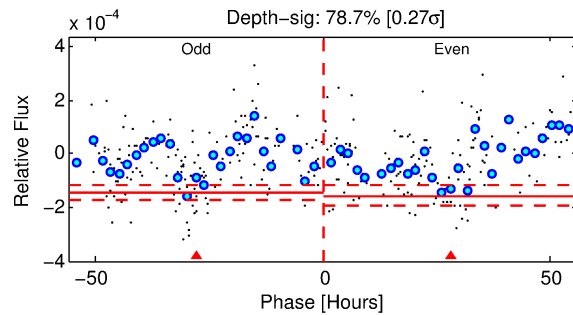
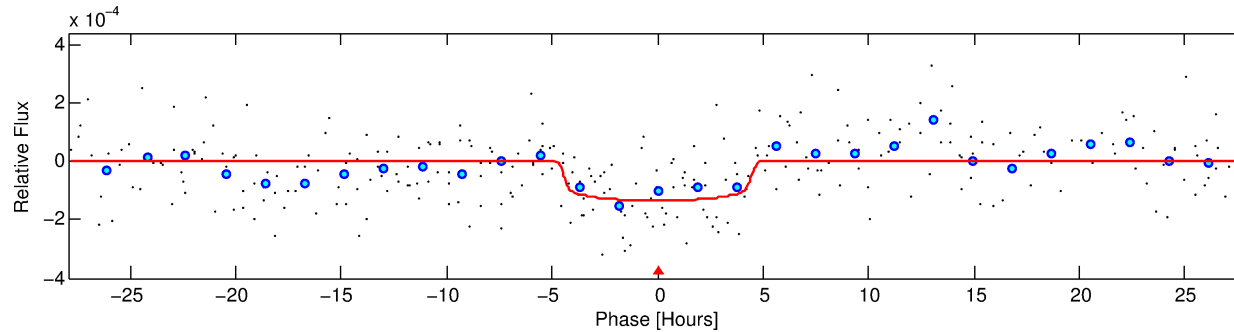
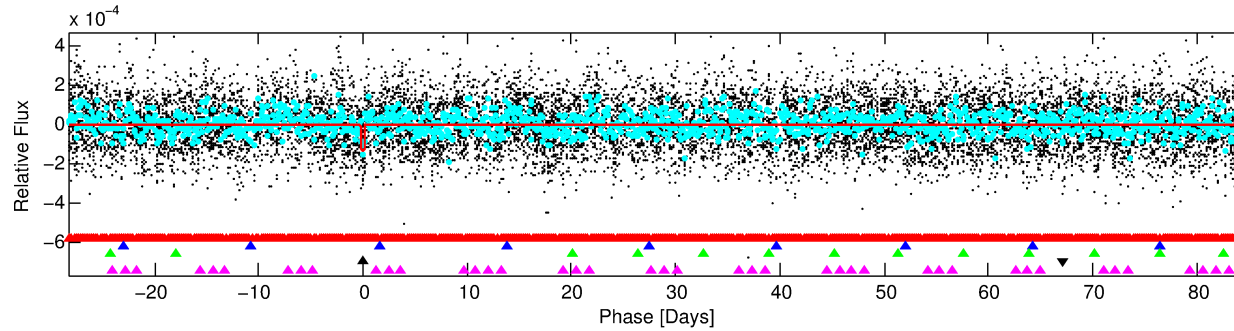
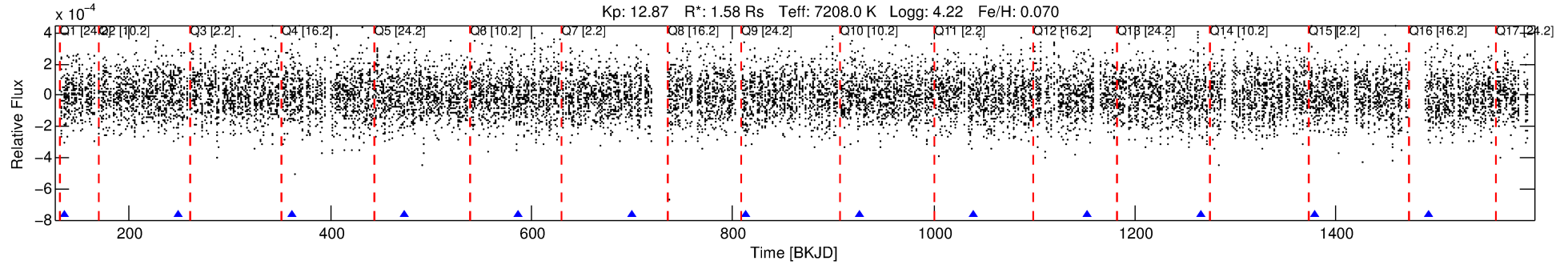
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009239124-04

No Significant Match Found

DV One-Page Summary

KIC: 9239124 Candidate: 4 of 5 Period: 113.022 d



DV Fit Results:

Period = 113.02230 [0.00189] d
Epoch = 135.2937 [0.0150] BKJD
Rp/R* = 0.0119 [0.0035]
a/R* = 52.62 [89.64]
b = 0.84 [0.61]
Seff = 21.84 [9.69]
Teq = 551 [61] K
Rp = 2.05 [0.95] Re
a = 0.5261 [0.1513] AU
Ag = 3402.64 [2669.15] [1.27 σ]
Teffp = 6509 [1140] K [5.22 σ]

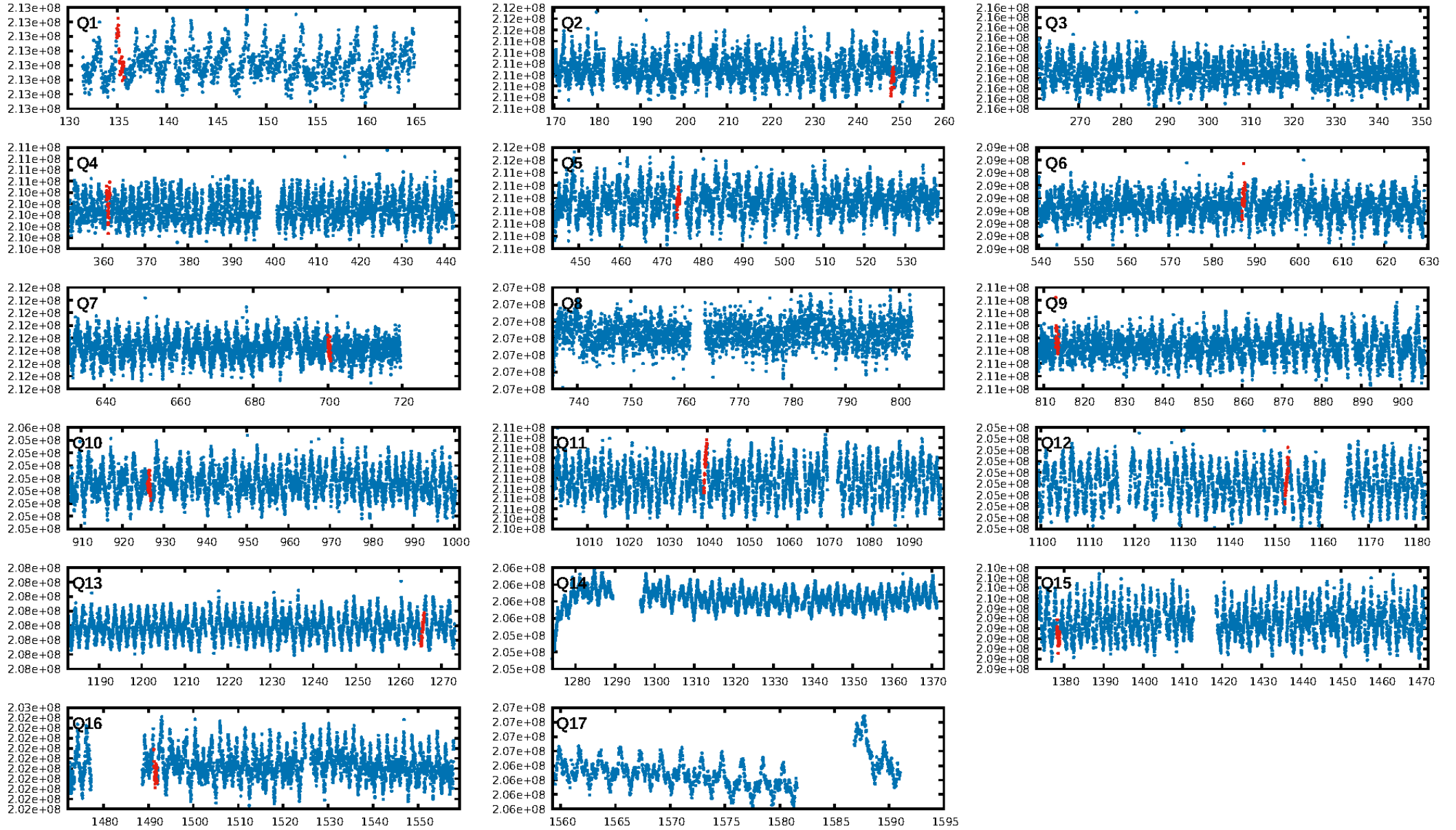
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [188.48 σ]
LongPeriod-sig: 100.0% [7.85 σ]
ModelChiSquare2-sig: 5.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.67e-08
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.6053
Centroid-sig: 8.1%
Centroid-so: 1.272 arcsec [1.42 σ]
OotOffset-rm: 0.138 arcsec [0.28 σ]
KicOffset-rm: 0.152 arcsec [0.23 σ]
OotOffset-st: 2/2/3/3 [10]
KicOffset-st: 2/2/3/3 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.00 [0/13]

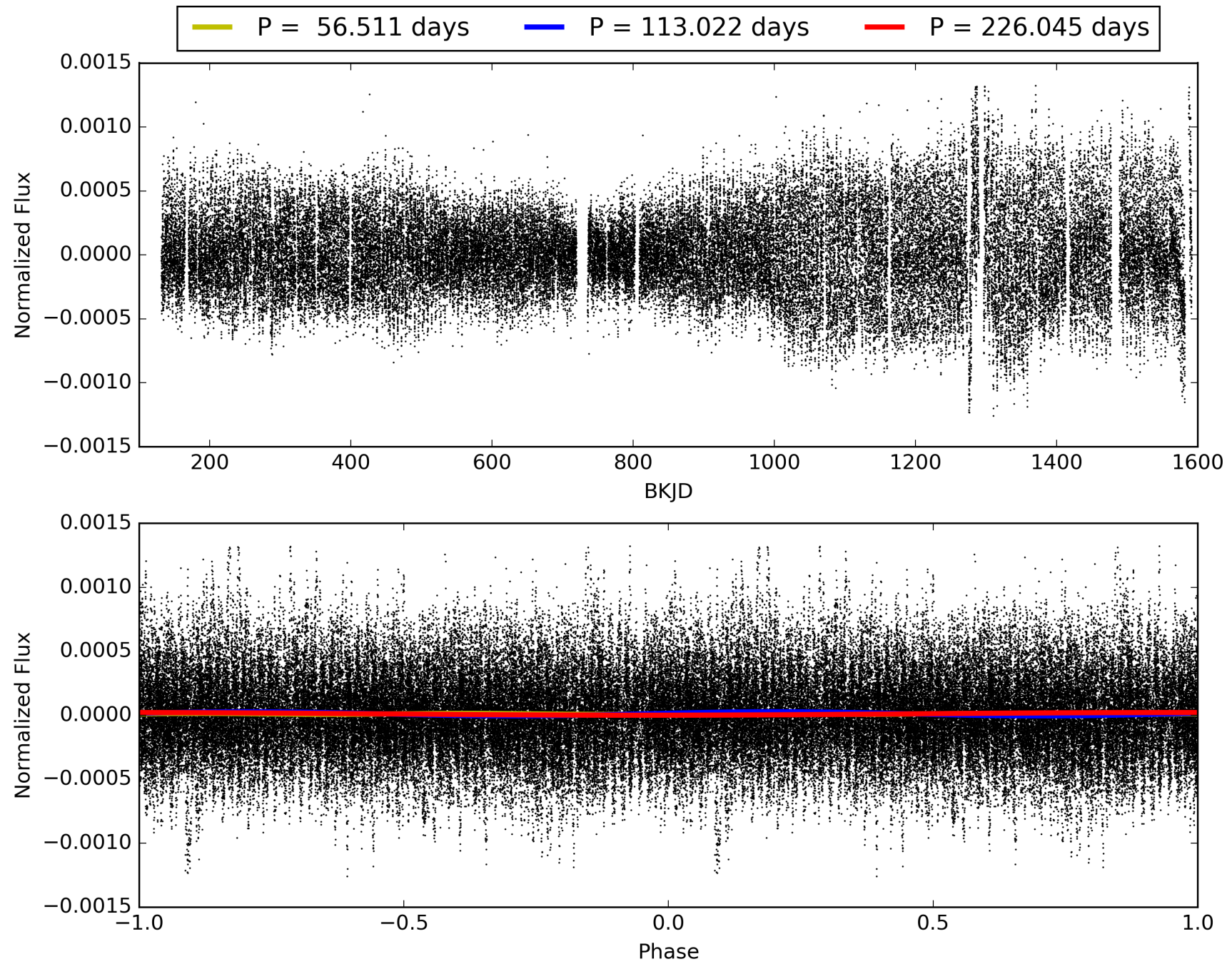
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:06:22 Z

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

TCE 009239124-04, PDC Light Curves

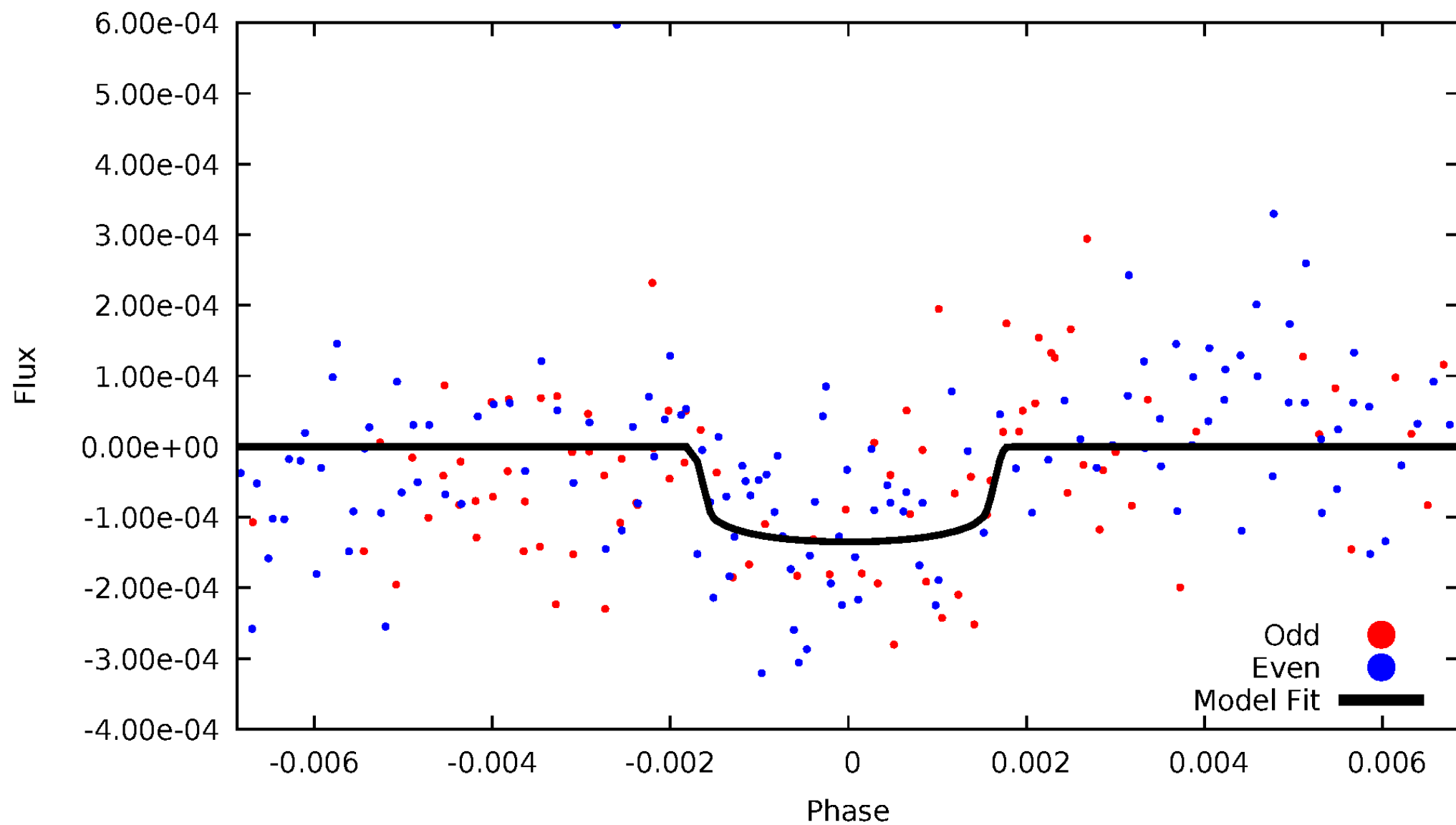


TCE 009239124-04



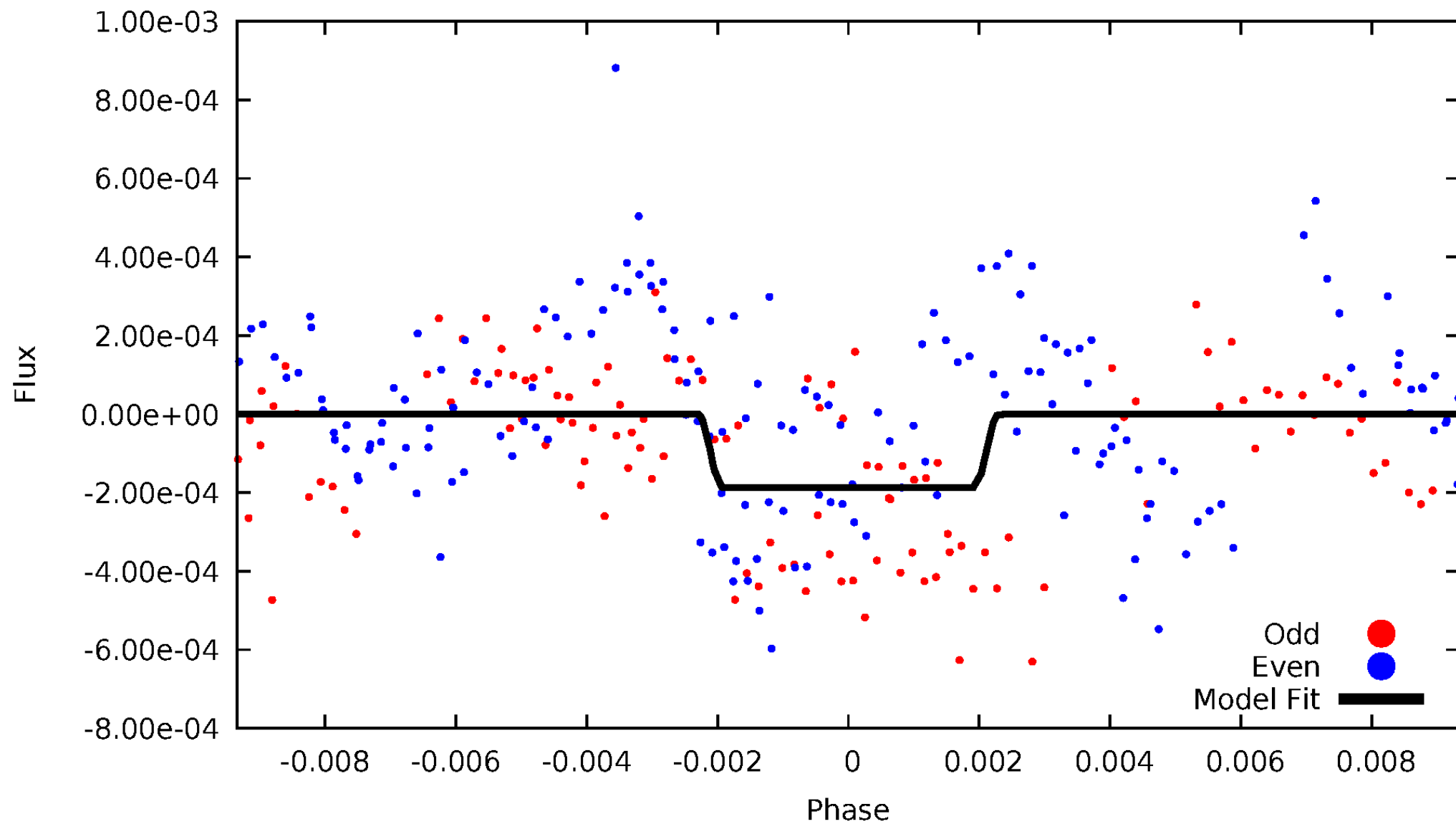
DV Odd/Even

TCE 009239124-04



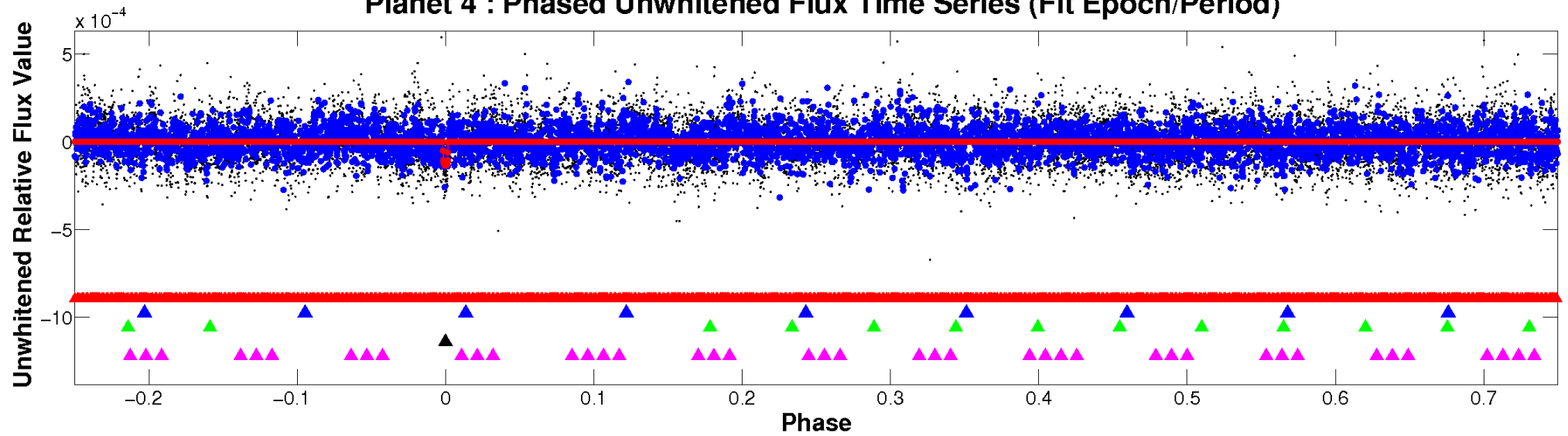
ALT Odd/Even

TCE 009239124-04

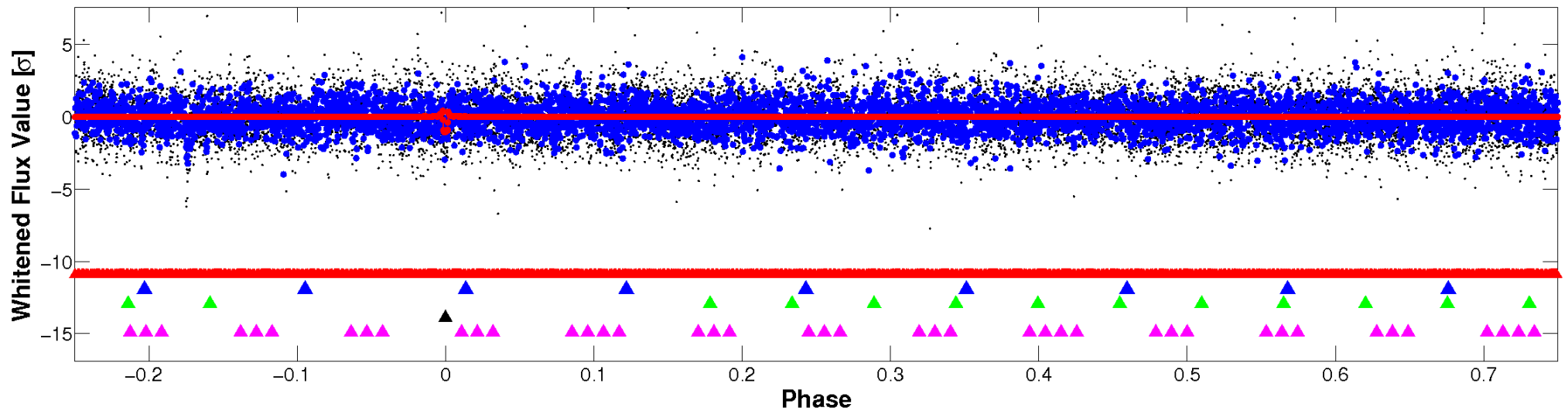


Non-Whitened Vs. Whitened Light Curve

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

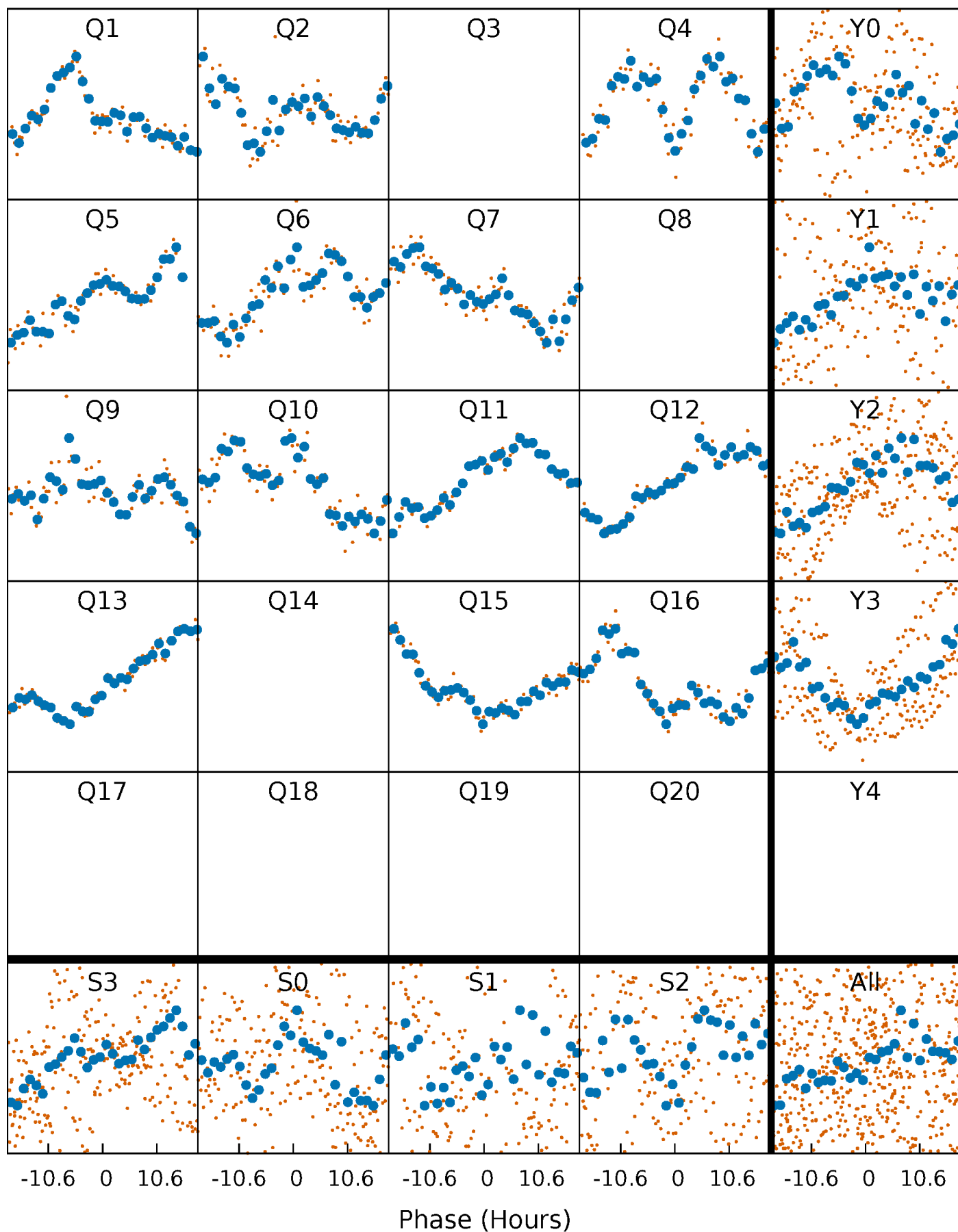


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



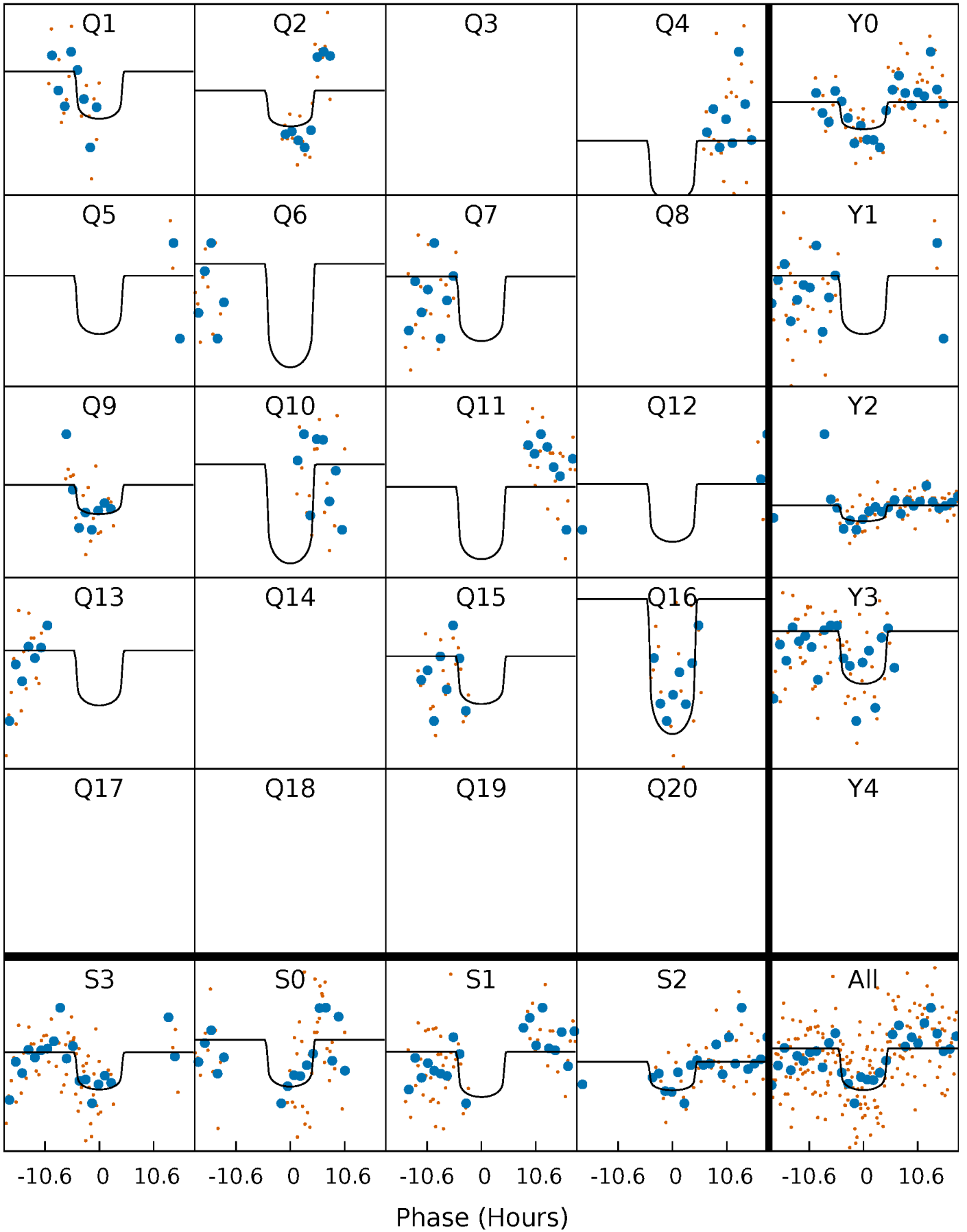
PDC Quarter-Phased Transit Curves

TCE 009239124-04 P=113.022304 Days $T_0=135.293748$ (BKJD)



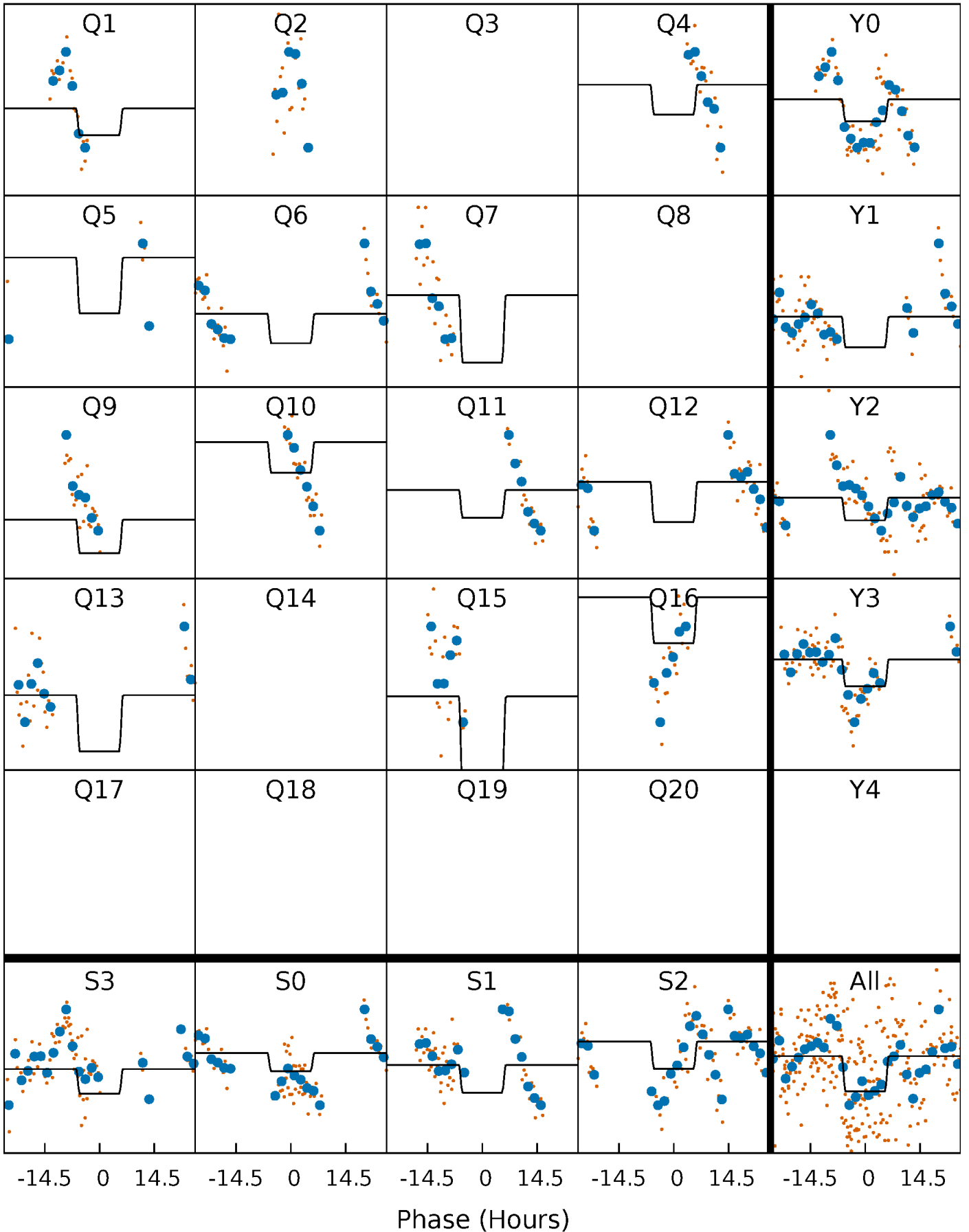
DV Quarter-Phased Transit Curves

TCE 009239124-04 P=113.022304 Days $T_0=135.293748$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

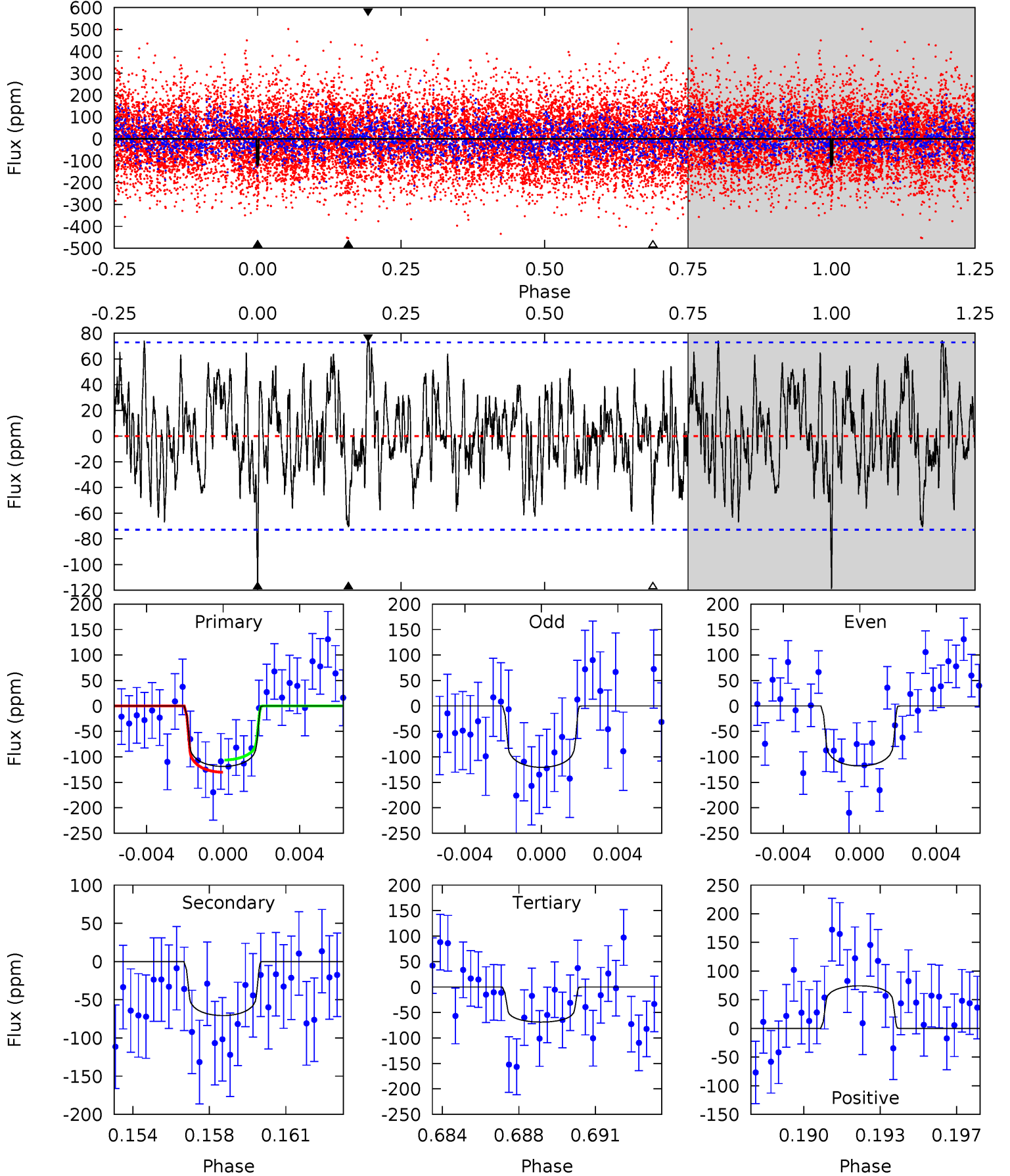
TCE 009239124-04 P=113.017653 Days $T_0=135.429538$ (BKJD)



DV Model-Shift Uniqueness Test

009239124-04, P = 113.022304 Days, E = 22.271444 Days

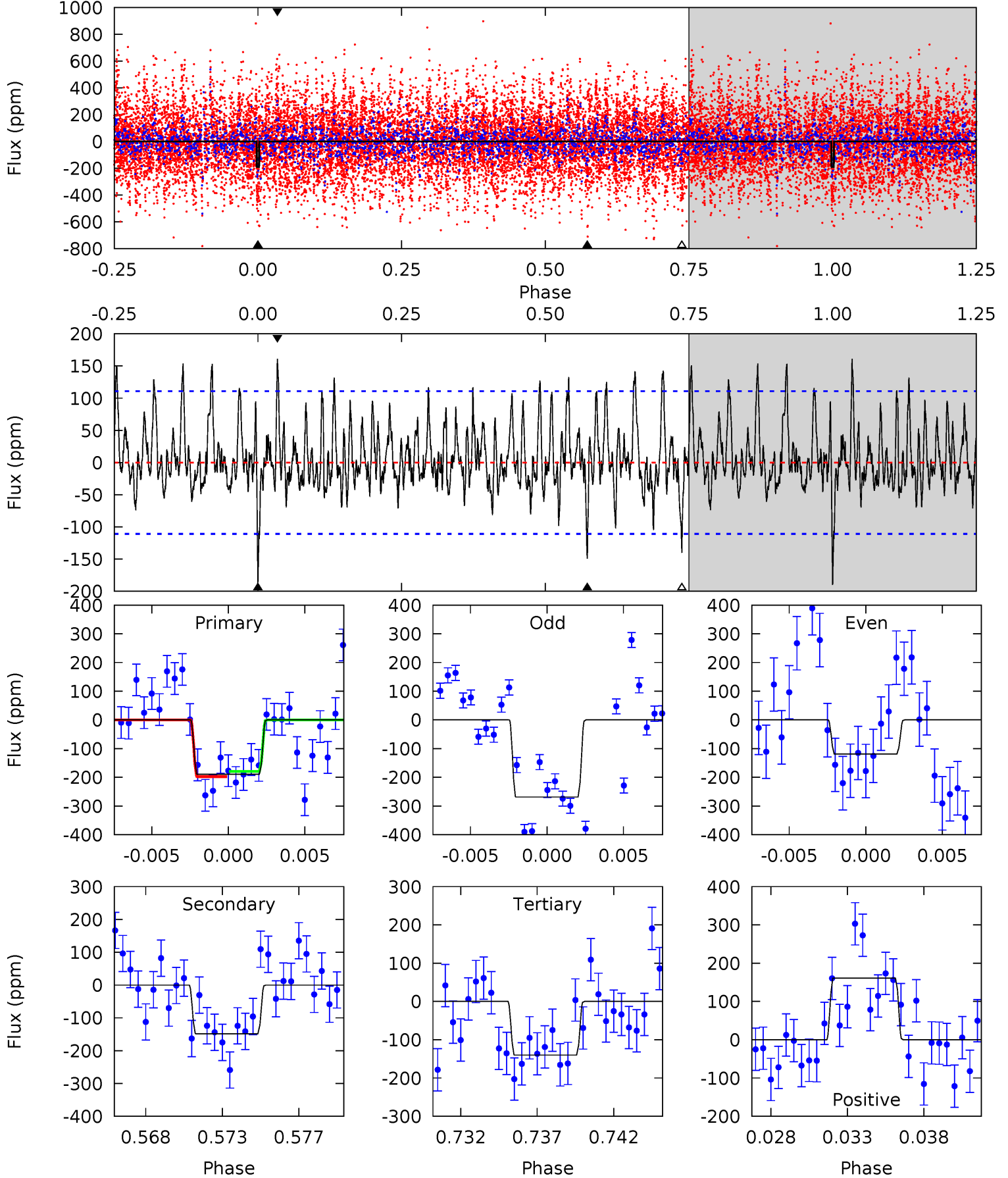
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.50	5.06	4.93	5.32	5.22	2.91	1.89	3.58	3.18	0.13	-0.26	0.09	0.89	0.38	0.86



Alt Model-Shift Uniqueness Test

009239124-04, $P = 113.017653$ Days, $E = 22.411885$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.85	6.92	6.53	7.52	5.17	2.83	2.18	2.32	1.33	0.40	-0.60	3.48	0.93	0.46	0.42



Stellar Parameters For KIC 009239124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7208^{+200}_{-343}	$4.222^{+0.075}_{-0.210}$	$0.070^{+0.200}_{-0.350}$	$1.581^{+0.565}_{-0.242}$	$1.519^{+0.226}_{-0.226}$	$0.541^{+0.221}_{-0.296}$
	+3%/-5%	+2%/-5%	+286%/-500%	+36%/-15%	+15%/-15%	+41%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009239124-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-71 ± 14	$2.19^{+0.65}_{-0.70}$	782^{+58}_{-43}	5948^{+1209}_{-719}	2224^{+2697}_{-977}
Alt.	-148 ± 21	$2.43^{+0.79}_{-0.67}$	784^{+65}_{-47}	6741^{+1304}_{-810}	3726^{+3231}_{-1607}

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

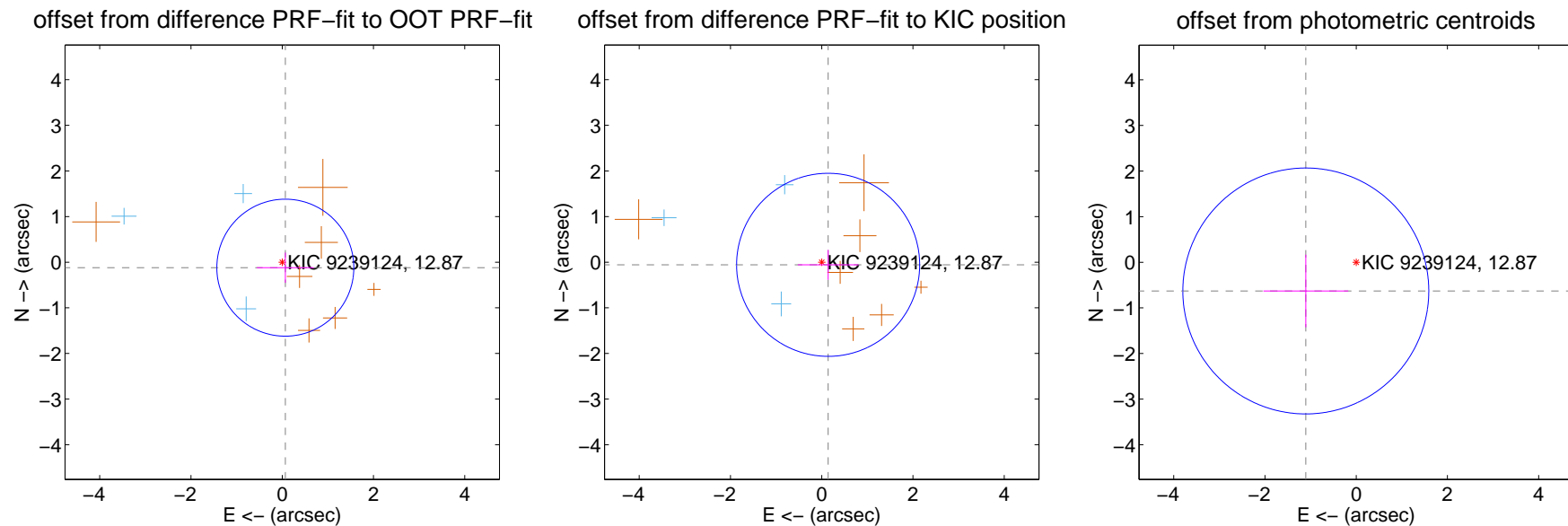
DV Centroid Data

Supplemental centroid analysis for 009239124-04. Kepler magnitude: 12.87. Transit SNR 8.00

There are 3 quarters with good PRF difference image offsets

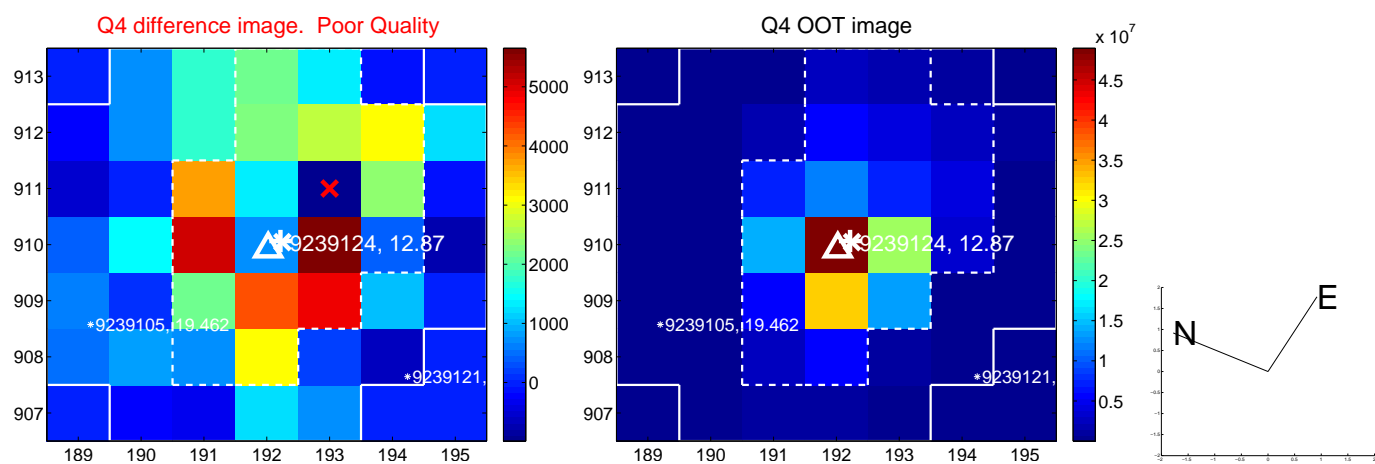
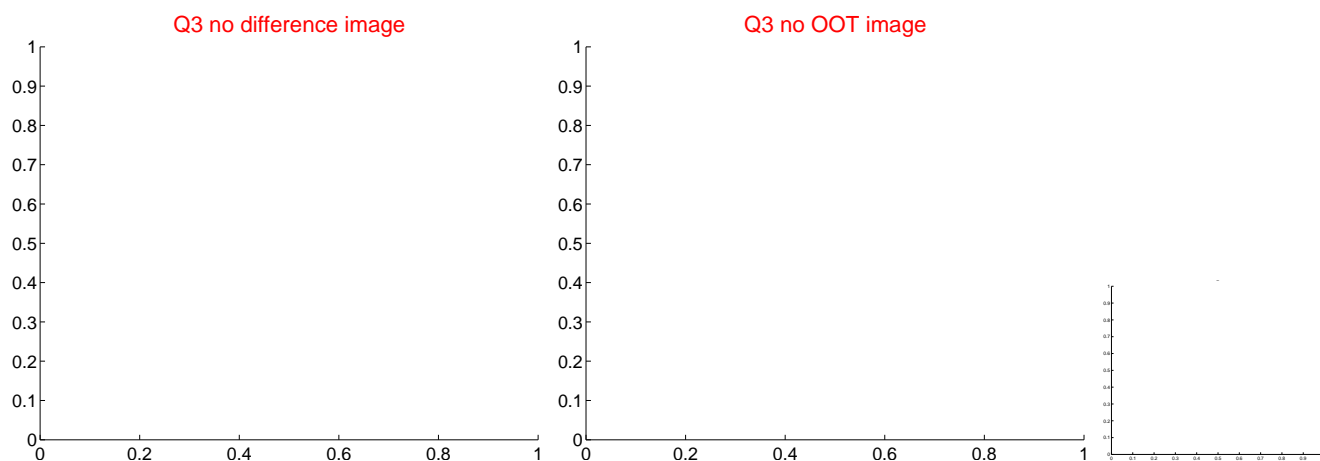
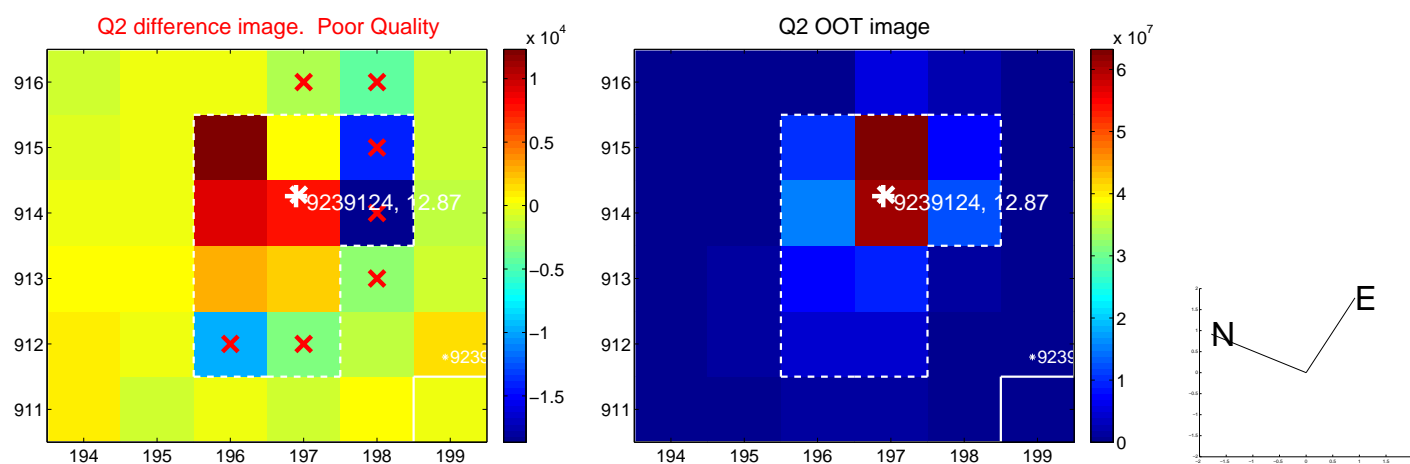
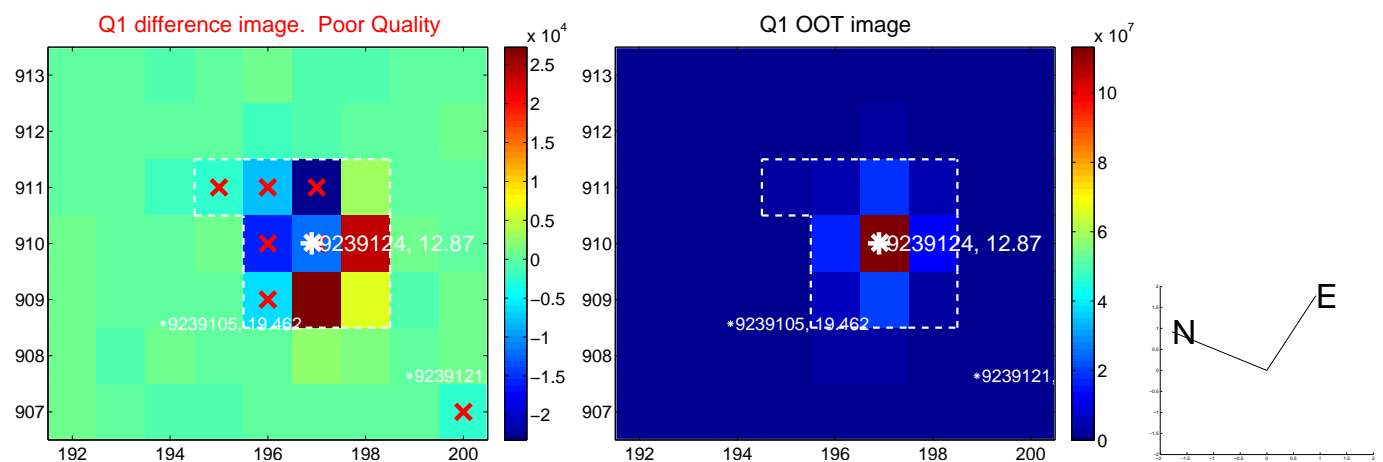
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.138 ± 0.500	0.28	-0.068 ± 0.623	-0.120 ± 0.331
PRF-fit source offset from KIC position	0.152 ± 0.669	0.23	-0.140 ± 0.665	-0.058 ± 0.326
photometric centroid source offset	1.27 ± 0.90	1.42	1.10 ± 0.93	-0.63 ± 0.80

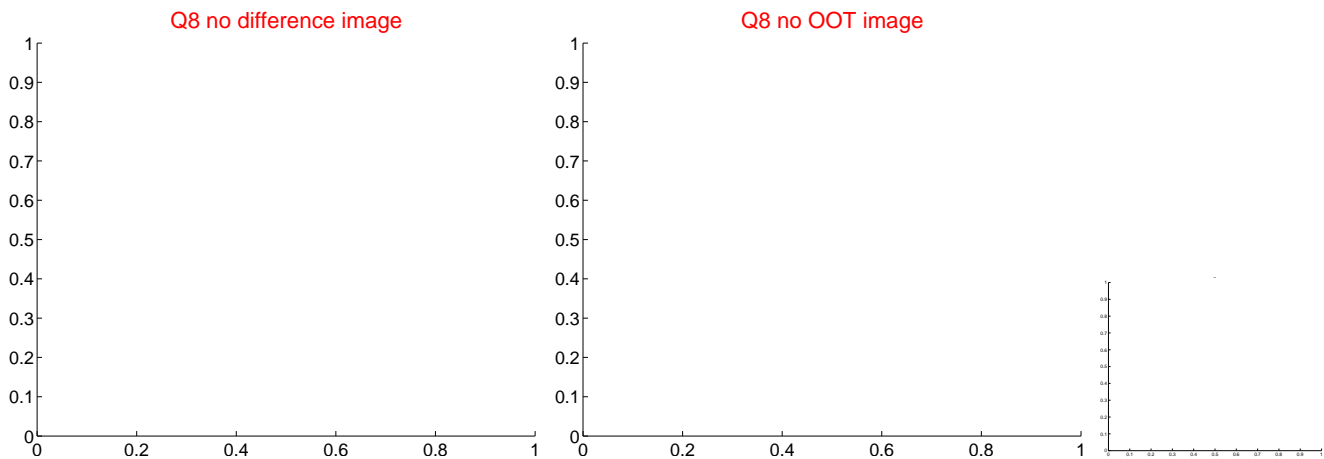
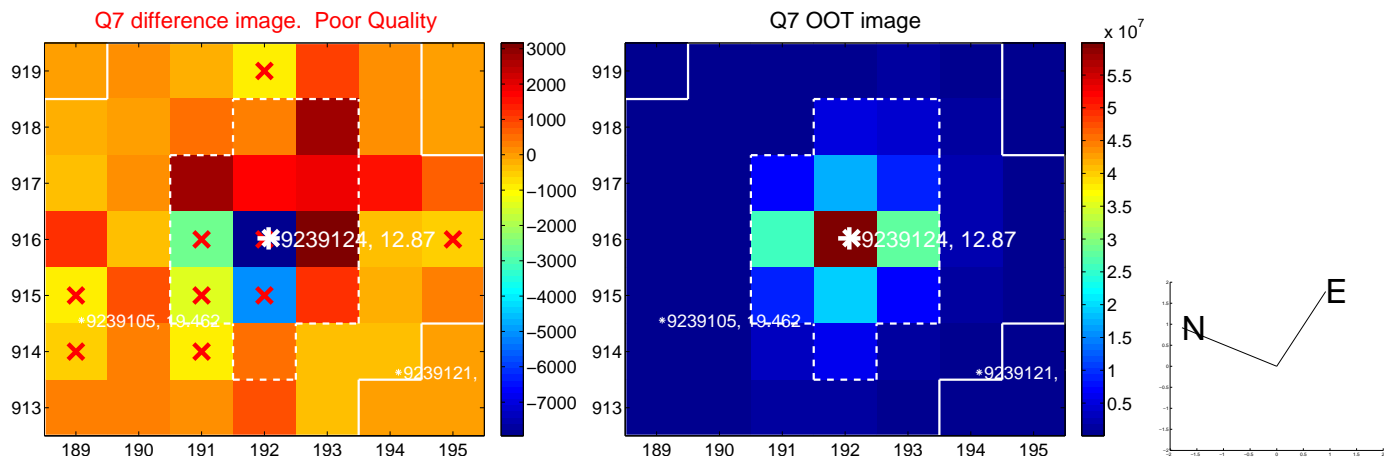
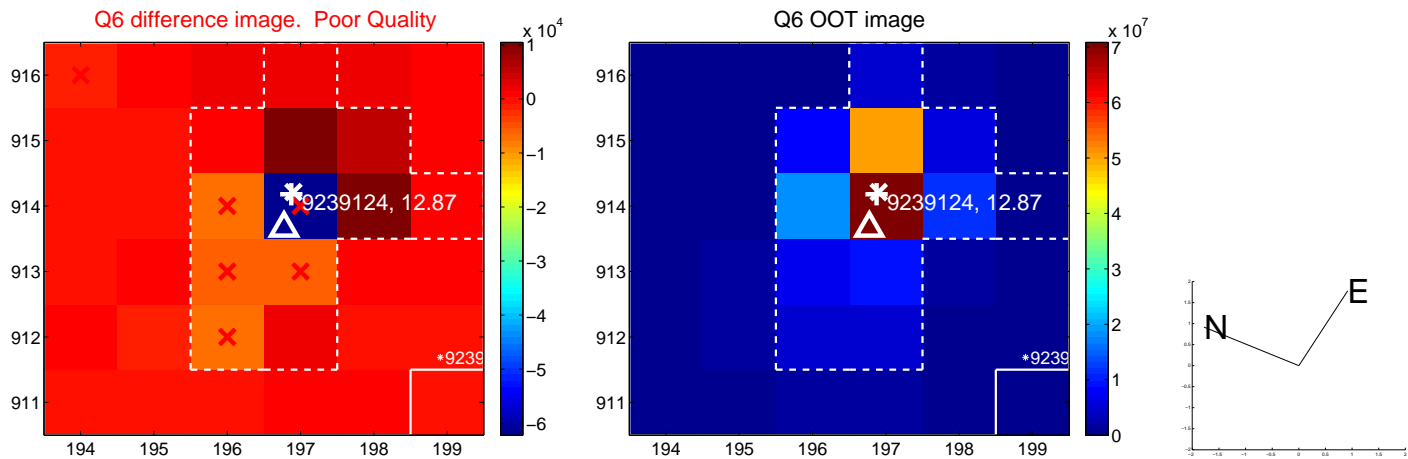
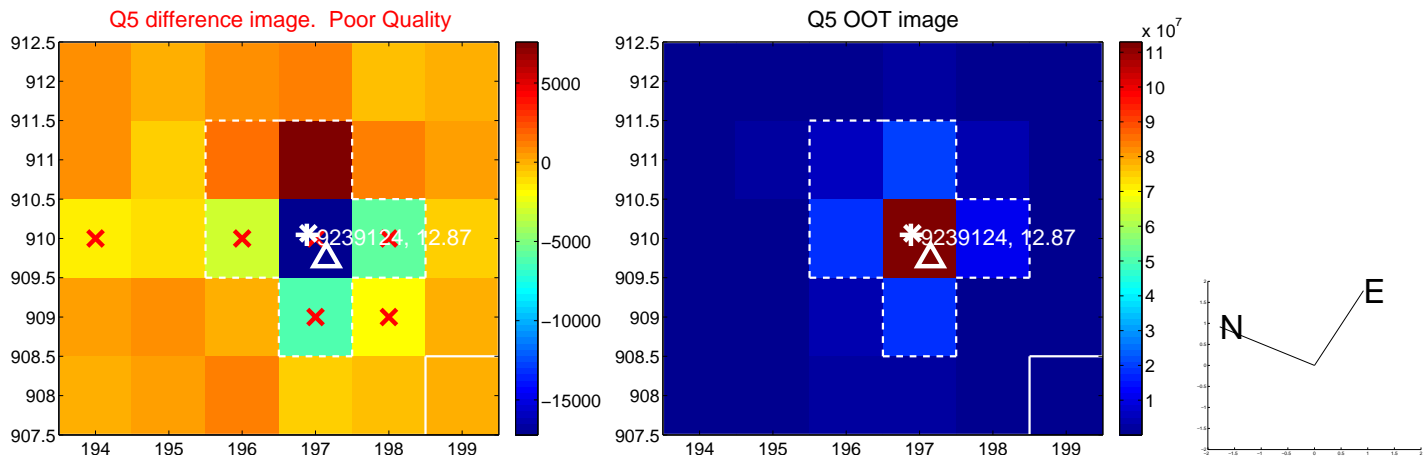


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

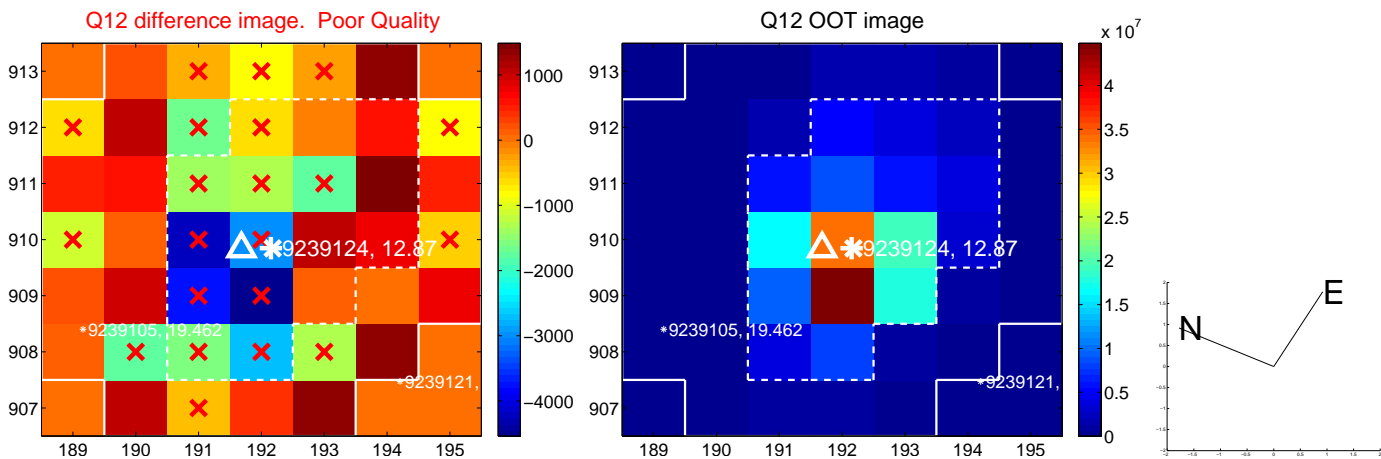
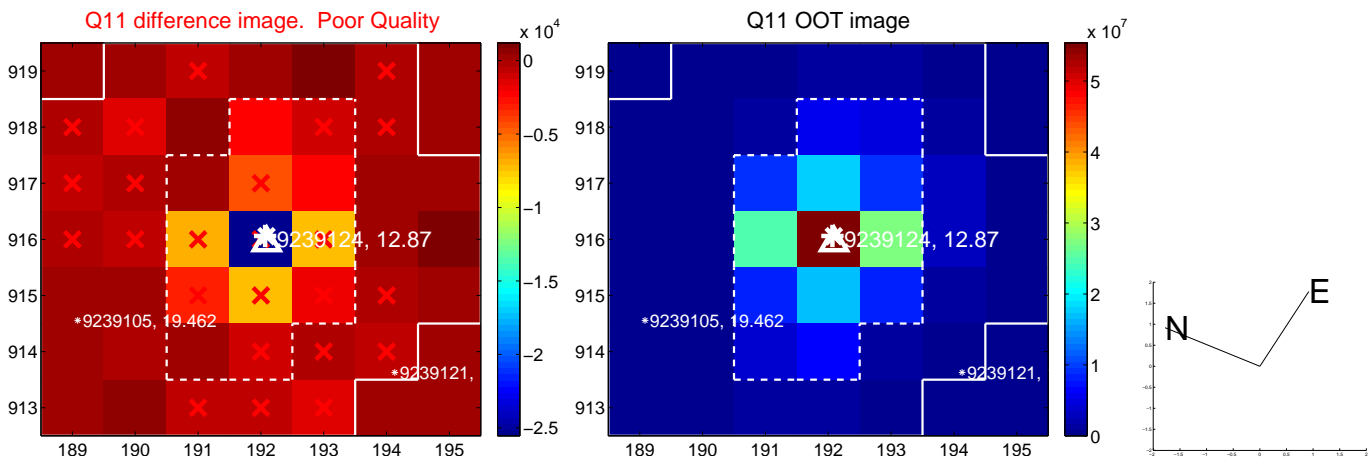
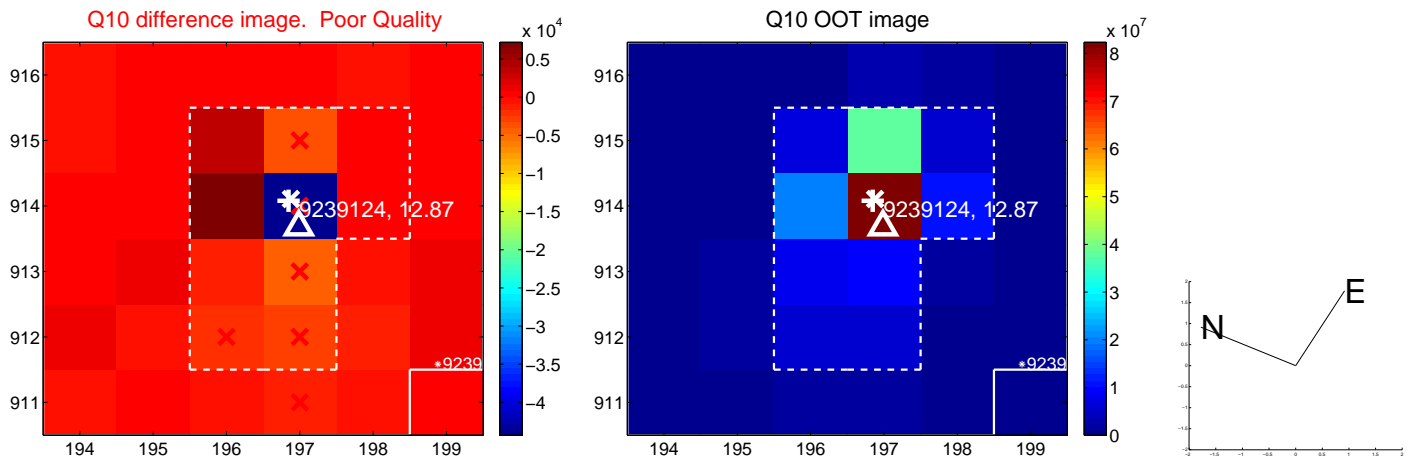
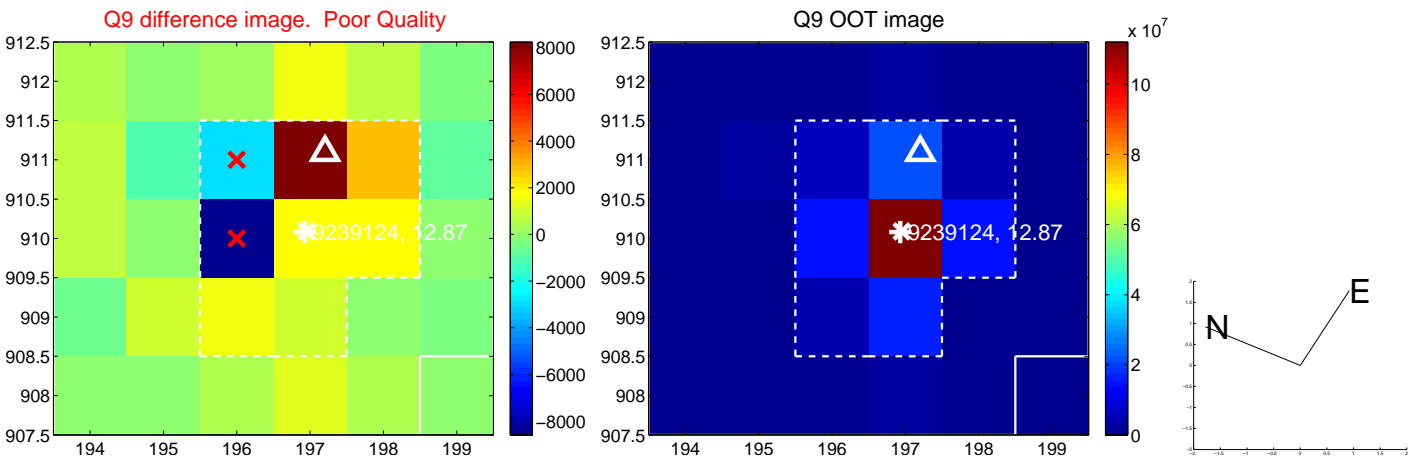
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



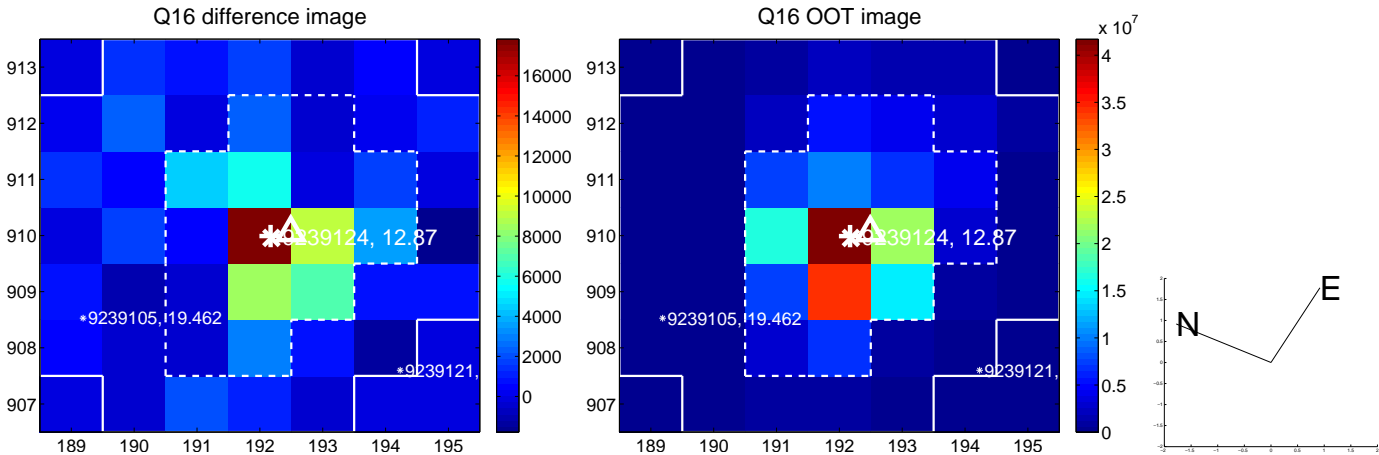
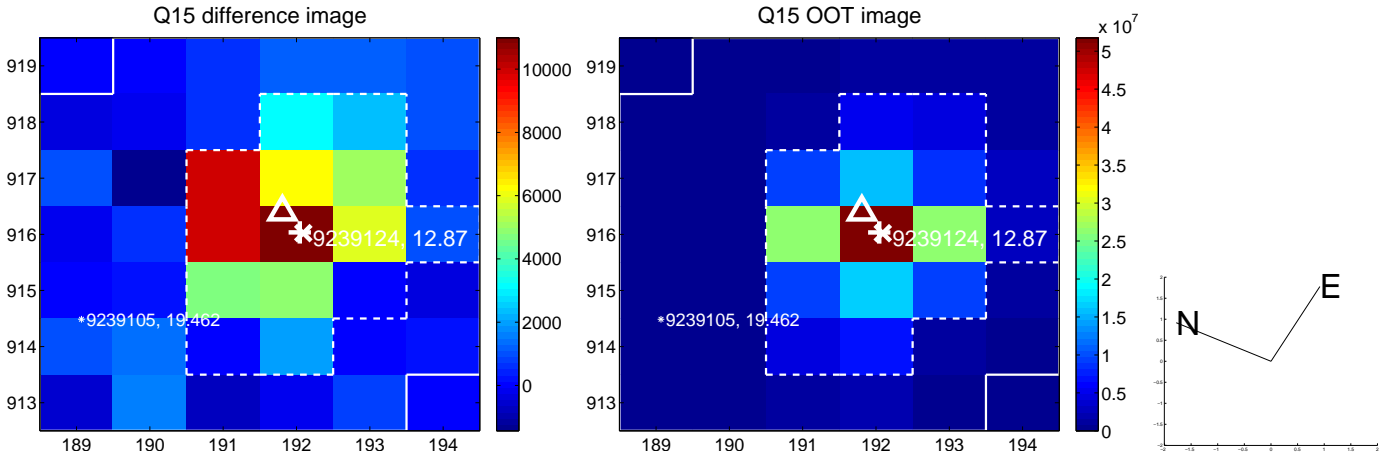
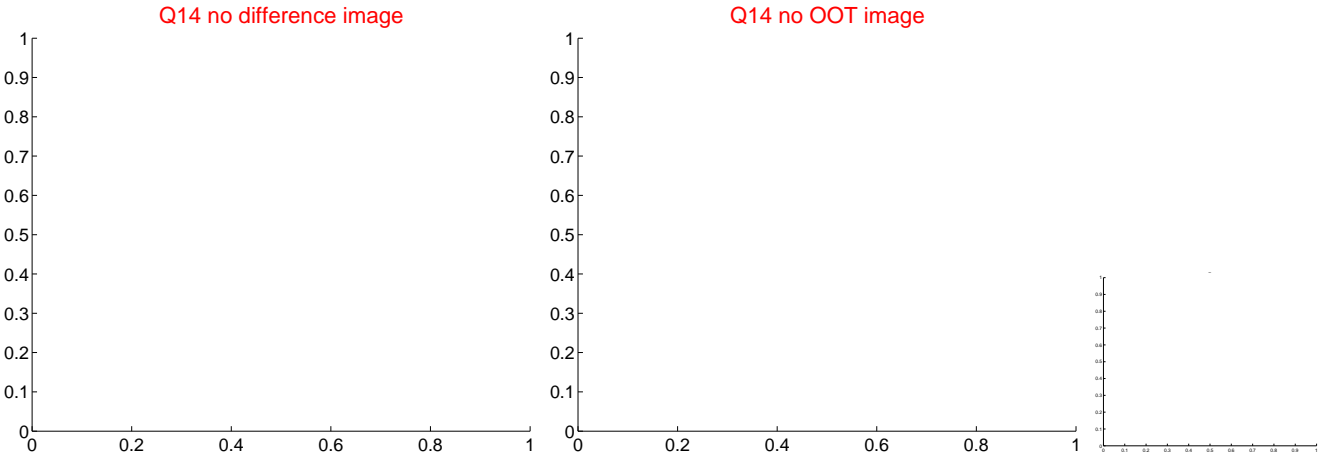
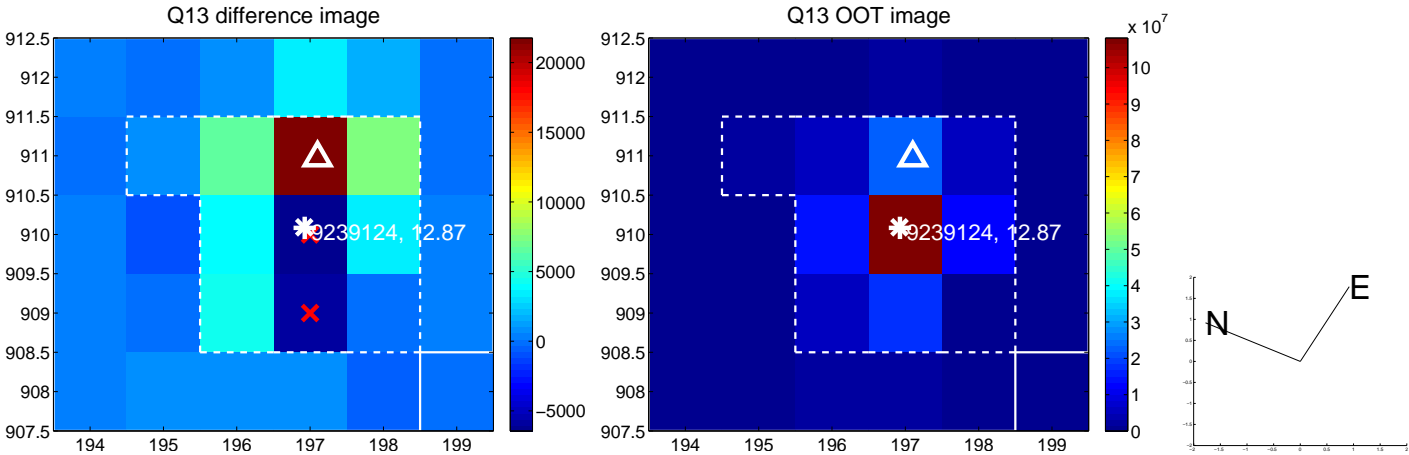
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



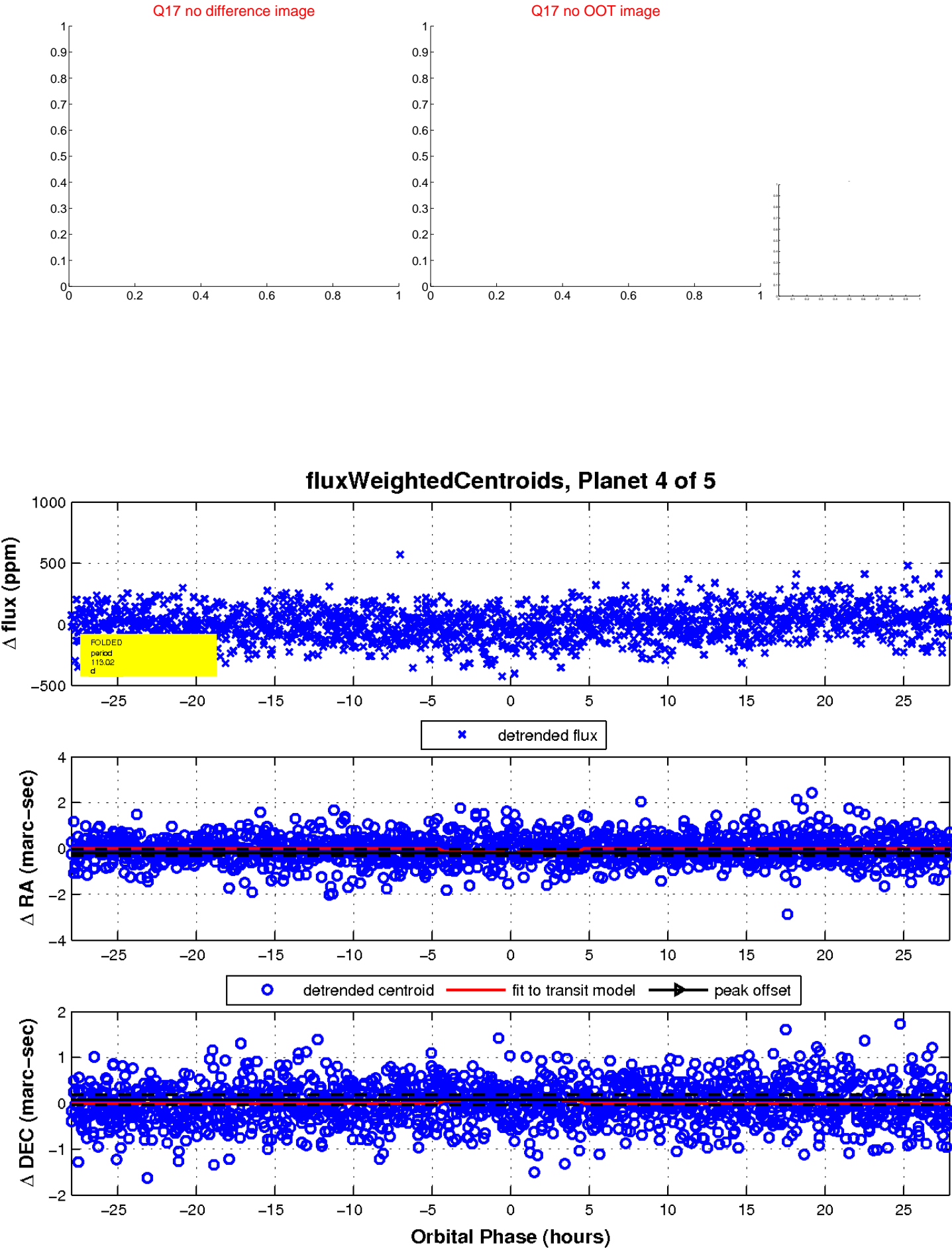
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



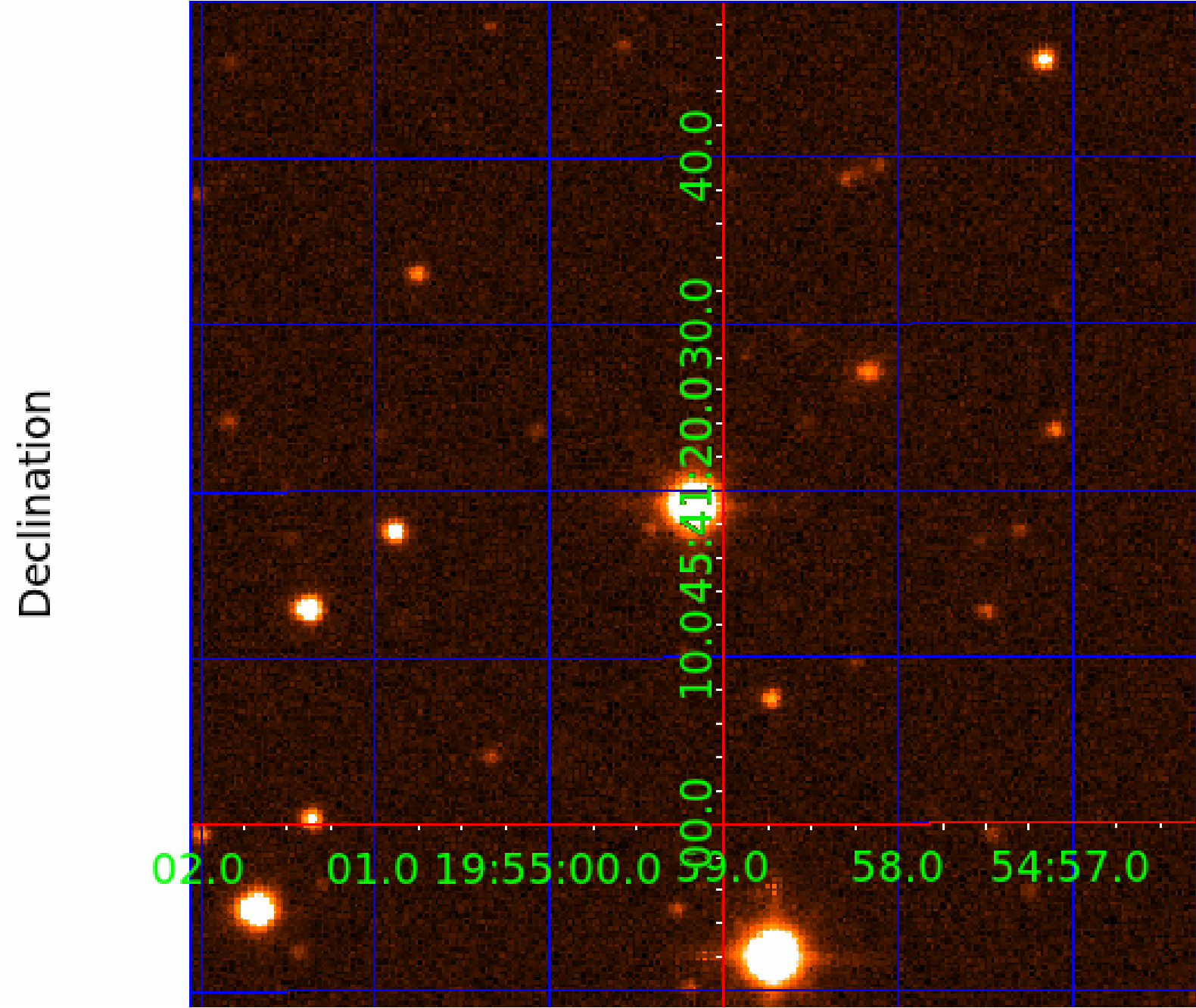
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009239124

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})
009239124-01	OBS	No	1.858212	132.302398	3.0	11.263	9.7	1.8	1.58	7208	0.31	5223.73
009239124-02	OBS	No	163.413890	211.708662	62.6	19.700	16.0	3.7	1.58	7208	1.40	13.36
009239124-03	OBS	No	119.264711	155.464198	168.8	16.663	9.4	10.1	1.58	7208	2.27	20.33
009239124-04	OBS	No	113.022304	135.293748	134.8	9.311	8.2	8.0	1.58	7208	2.05	21.84
009239124-05	OBS	No	34.868190	144.939141	113.8	3.512	8.4	8.0	1.58	7208	1.85	104.76

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009239124-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009239124-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009239124-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009239124-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT
009239124-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

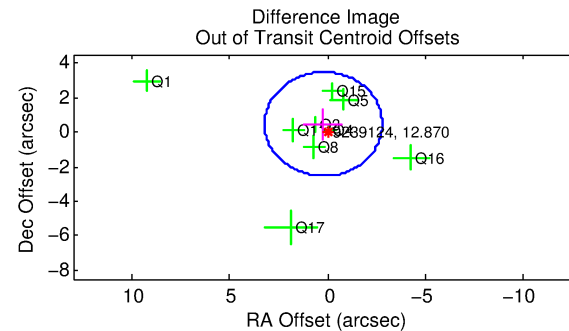
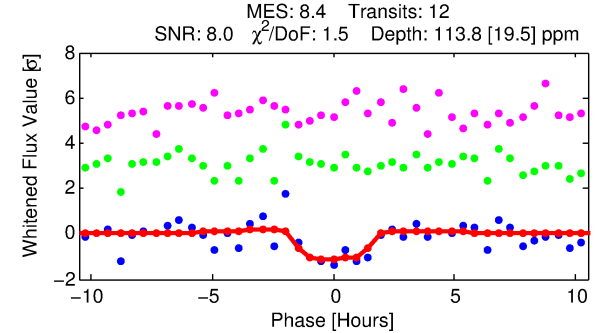
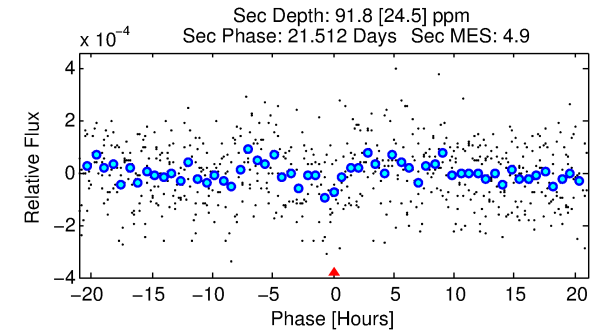
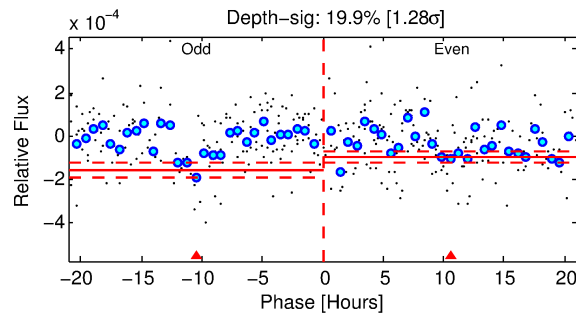
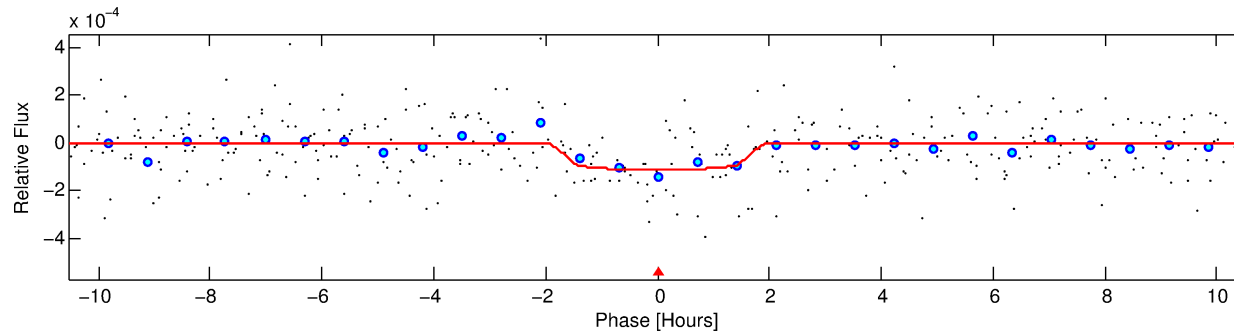
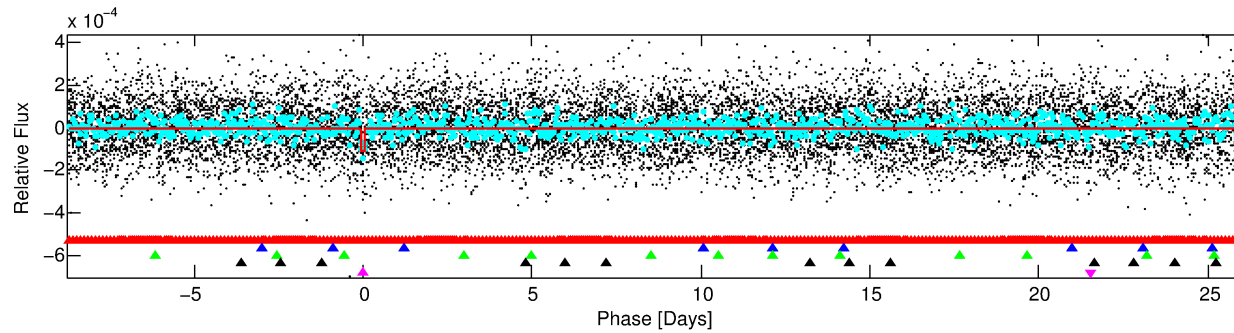
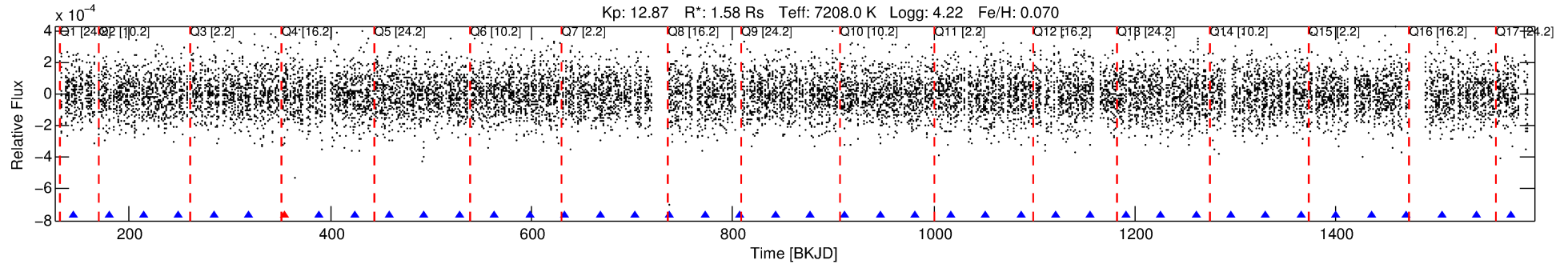
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009239124-05

No Significant Match Found

DV One-Page Summary

KIC: 9239124 Candidate: 5 of 5 Period: 34.868 d



DV Fit Results:

Period = 34.86819 [0.00048] d
Epoch = 144.9391 [0.0116] BKJD
Rp/R* = 0.0107 [0.0117]
a/R* = 47.98 [320.36]
b = 0.79 [3.24]
Seff = 104.76 [46.49]
Teq = 816 [91] K
Rp = 1.85 [2.12] Re
a = 0.2402 [0.0691] AU
Ag = 849.93 [1897.87] [0.45 σ]
Teffp = 6810 [3754] K [1.60 σ]

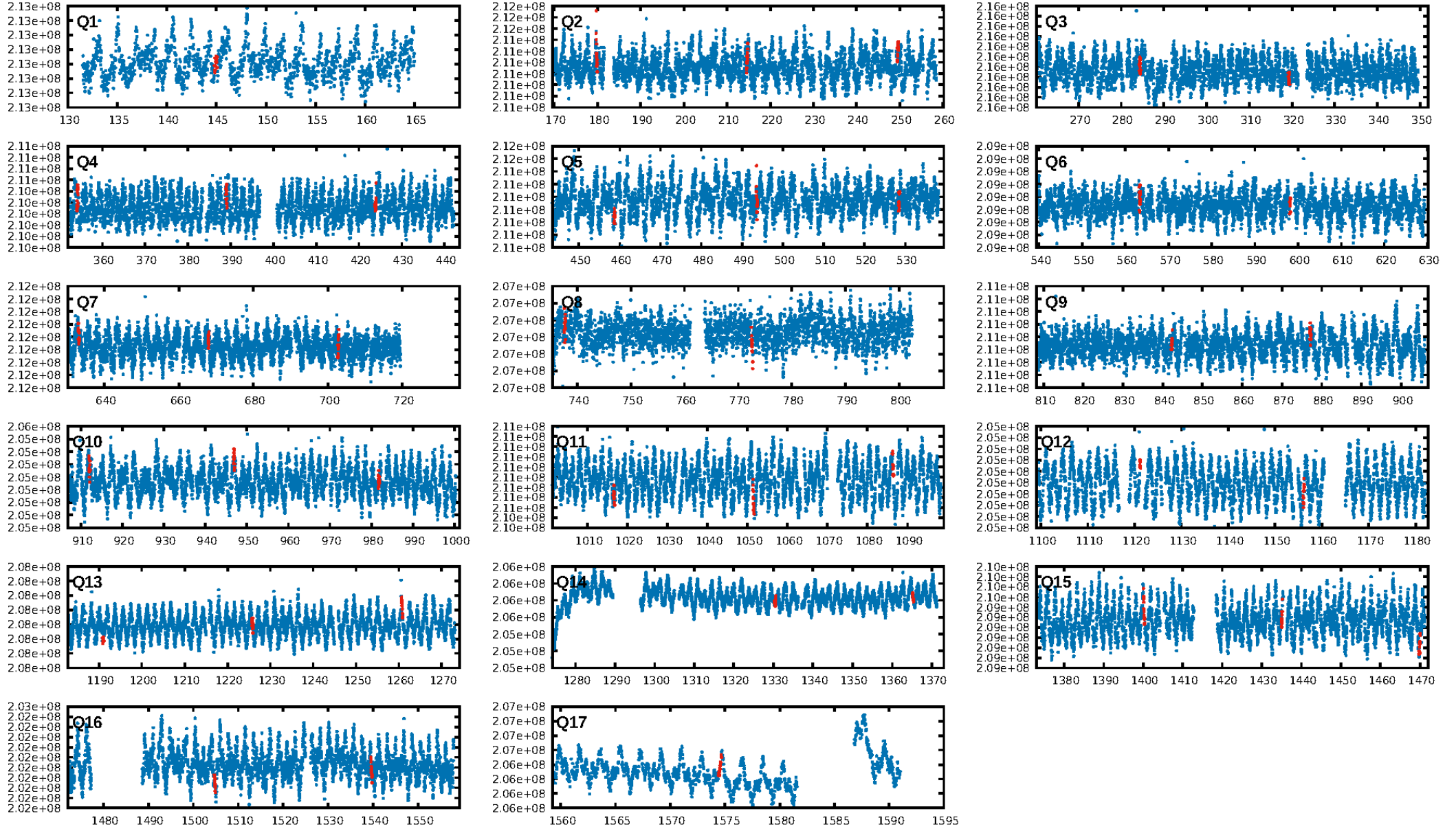
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.15 σ]
LongPeriod-sig: 100.0% [188.48 σ]
ModelChiSquare2-sig: 15.7%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 2.85e-08
RollingBand-fgt: 0.92 [11/12]
GhostDiagnostic-chr: 0.5712
Centroid-sig: 13.4%
Centroid-so: 0.825 arcsec [1.04 σ]
OotOffset-rm: 0.510 arcsec [0.51 σ]
KicOffset-rm: 0.597 arcsec [0.75 σ]
OotOffset-st: 0/3/3/3 [9]
KicOffset-st: 0/3/3/3 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.62 [10/16]

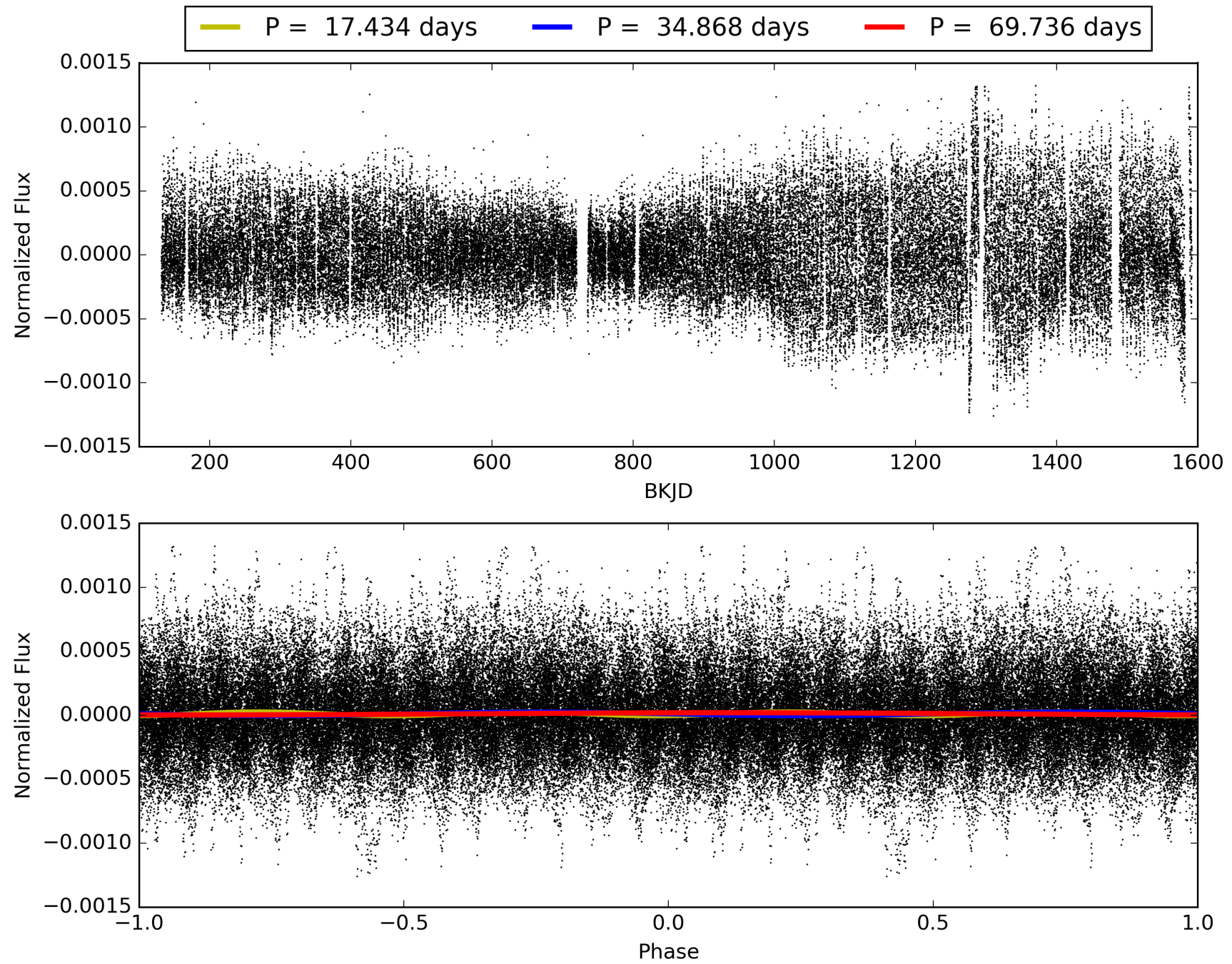
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:06:26 Z

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

TCE 009239124-05, PDC Light Curves

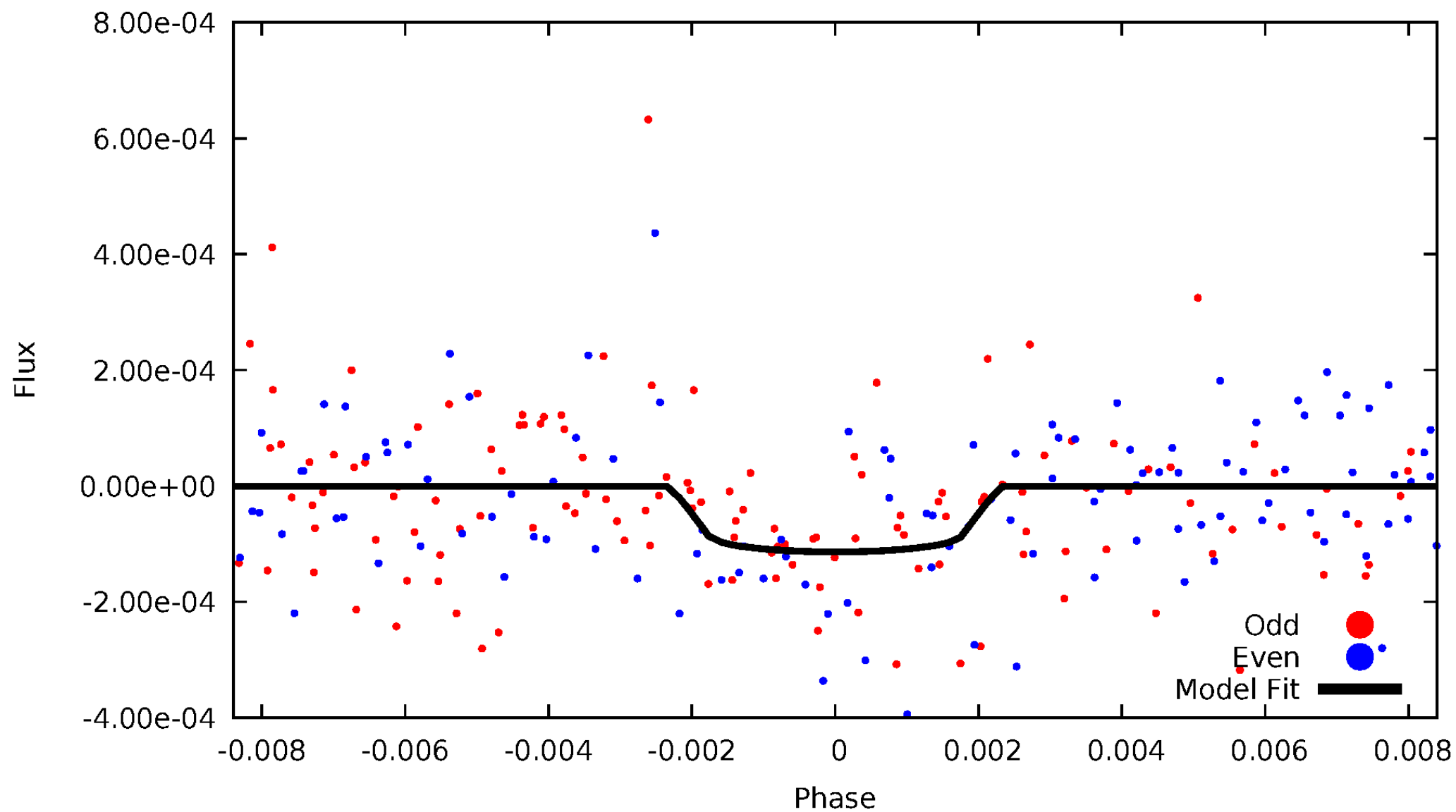


TCE 009239124-05



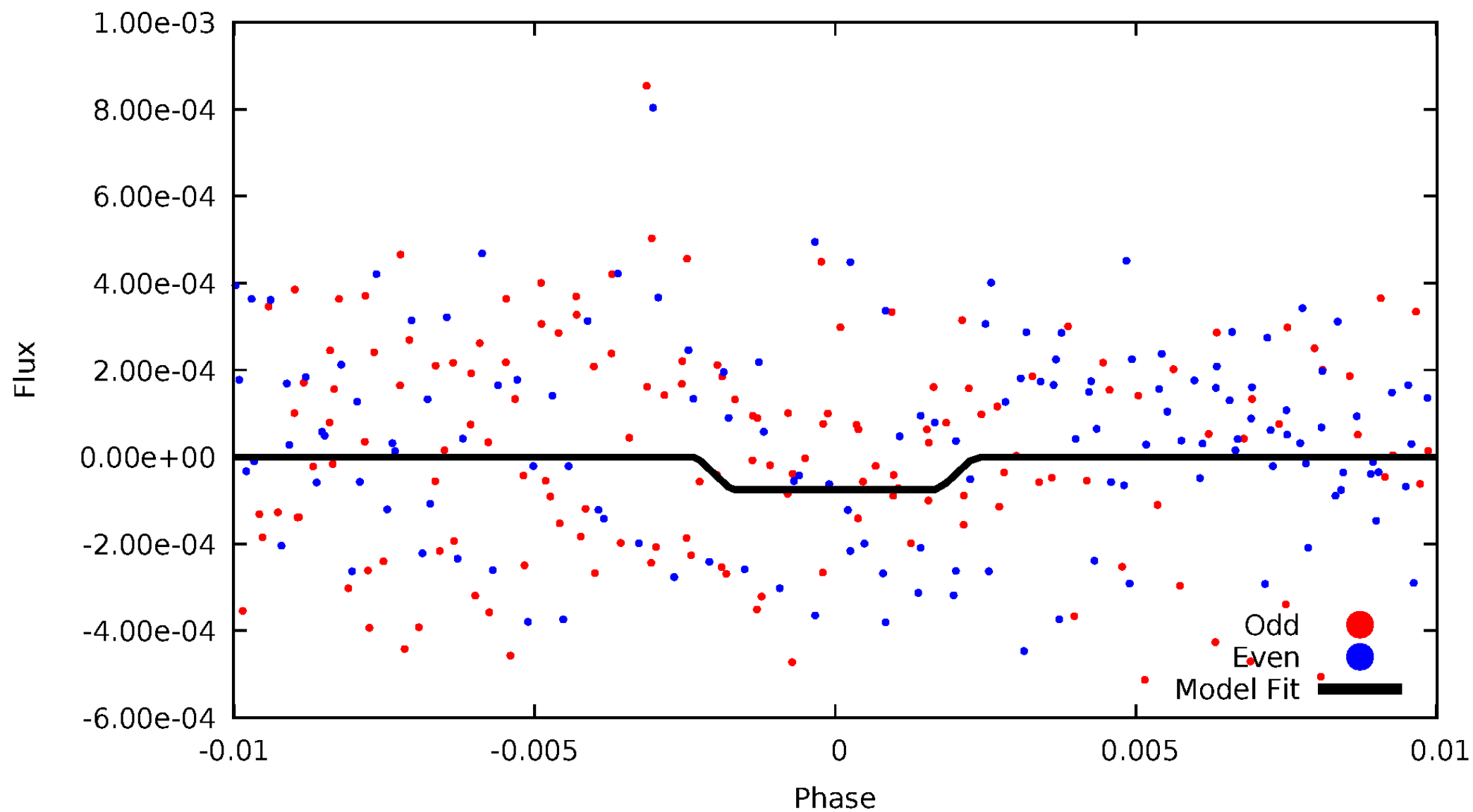
DV Odd/Even

TCE 009239124-05

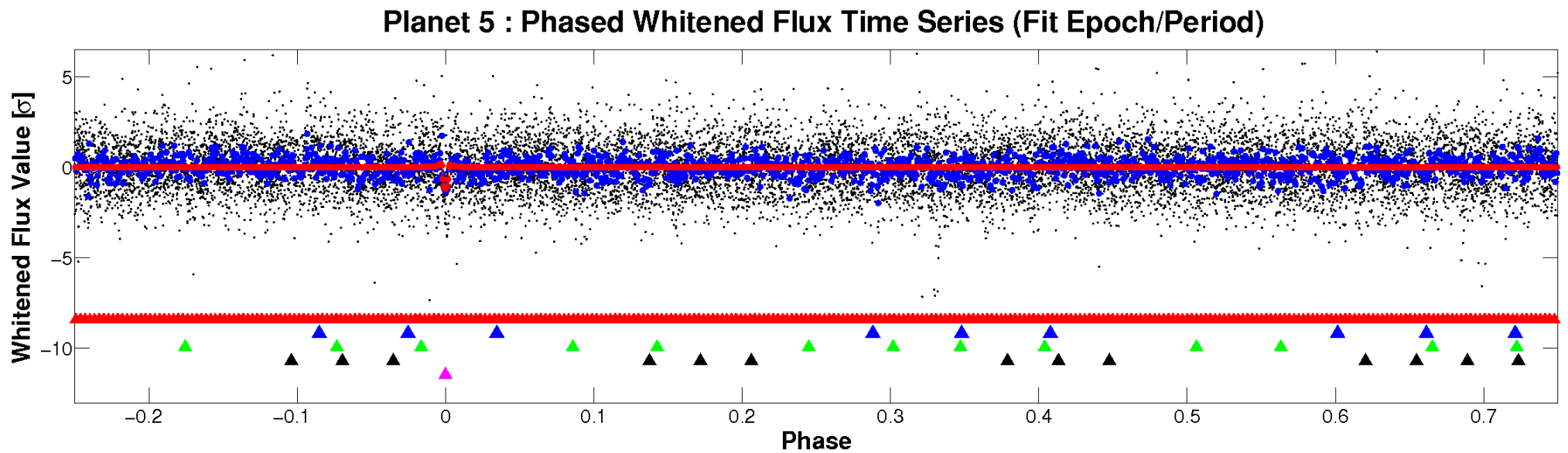
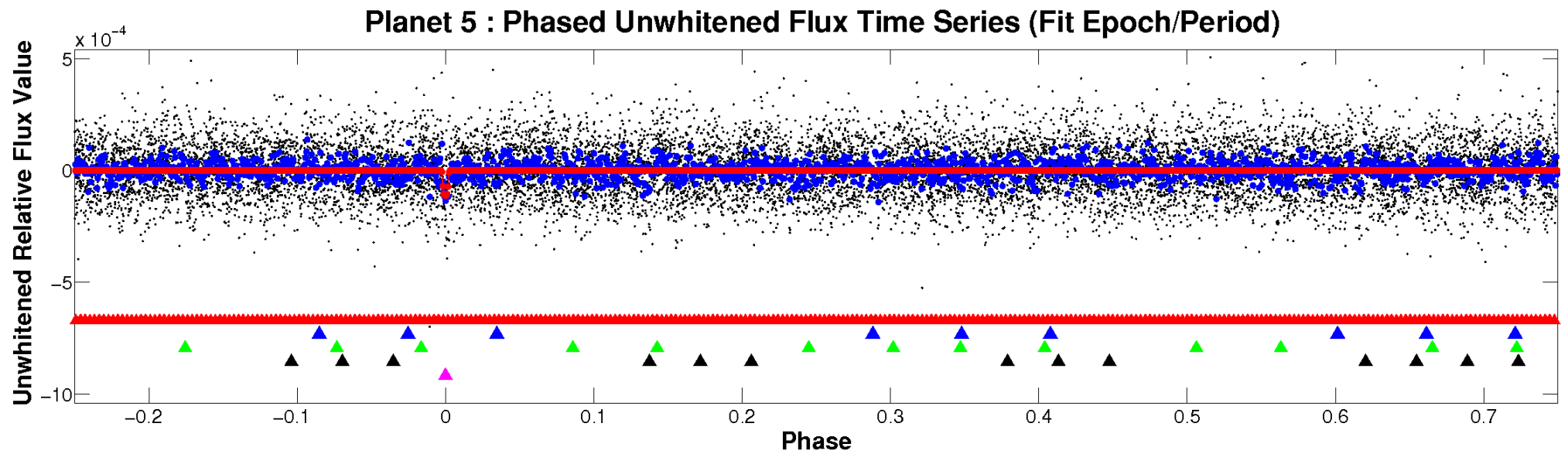


ALT Odd/Even

TCE 009239124-05

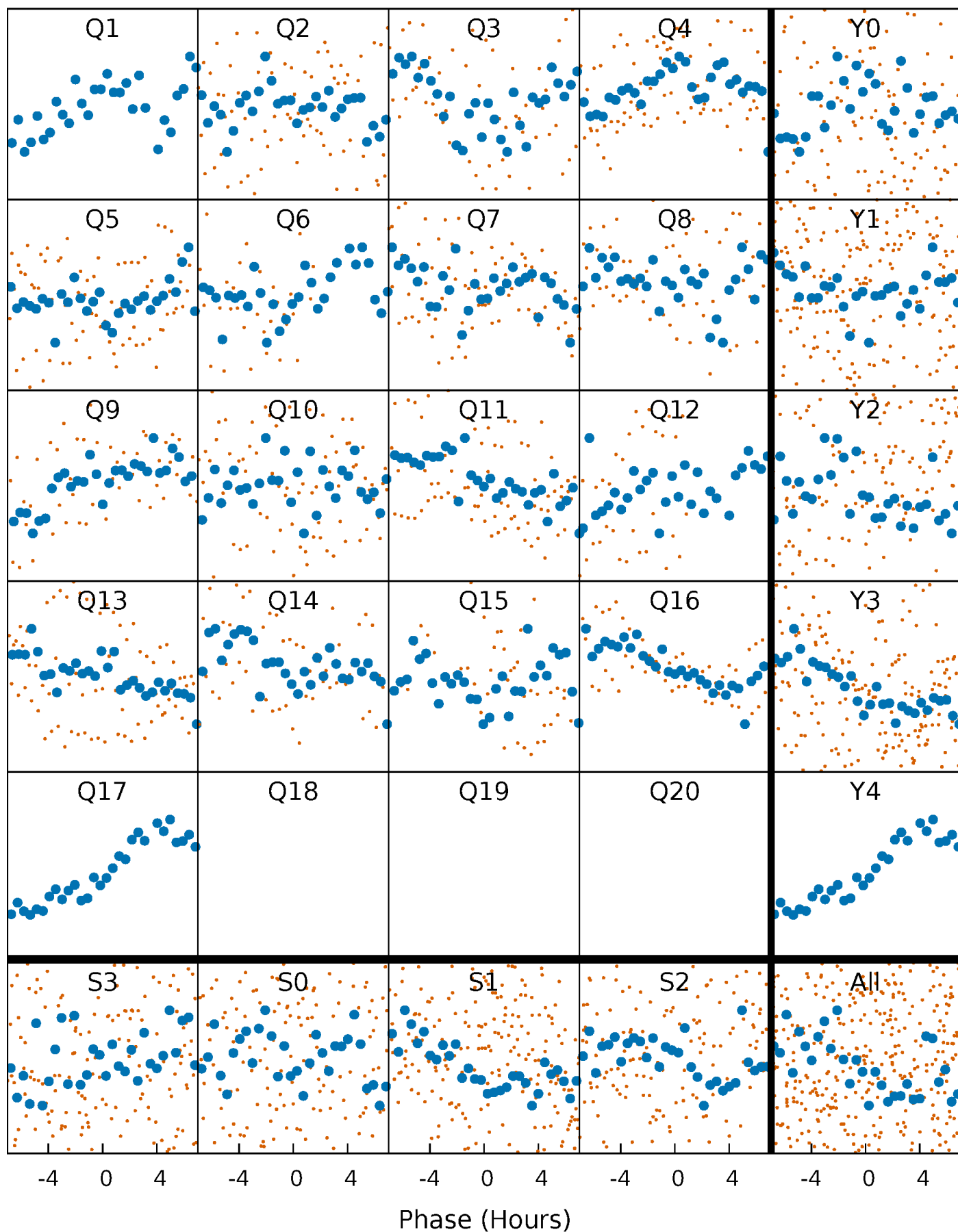


Non-Whitened Vs. Whitened Light Curve



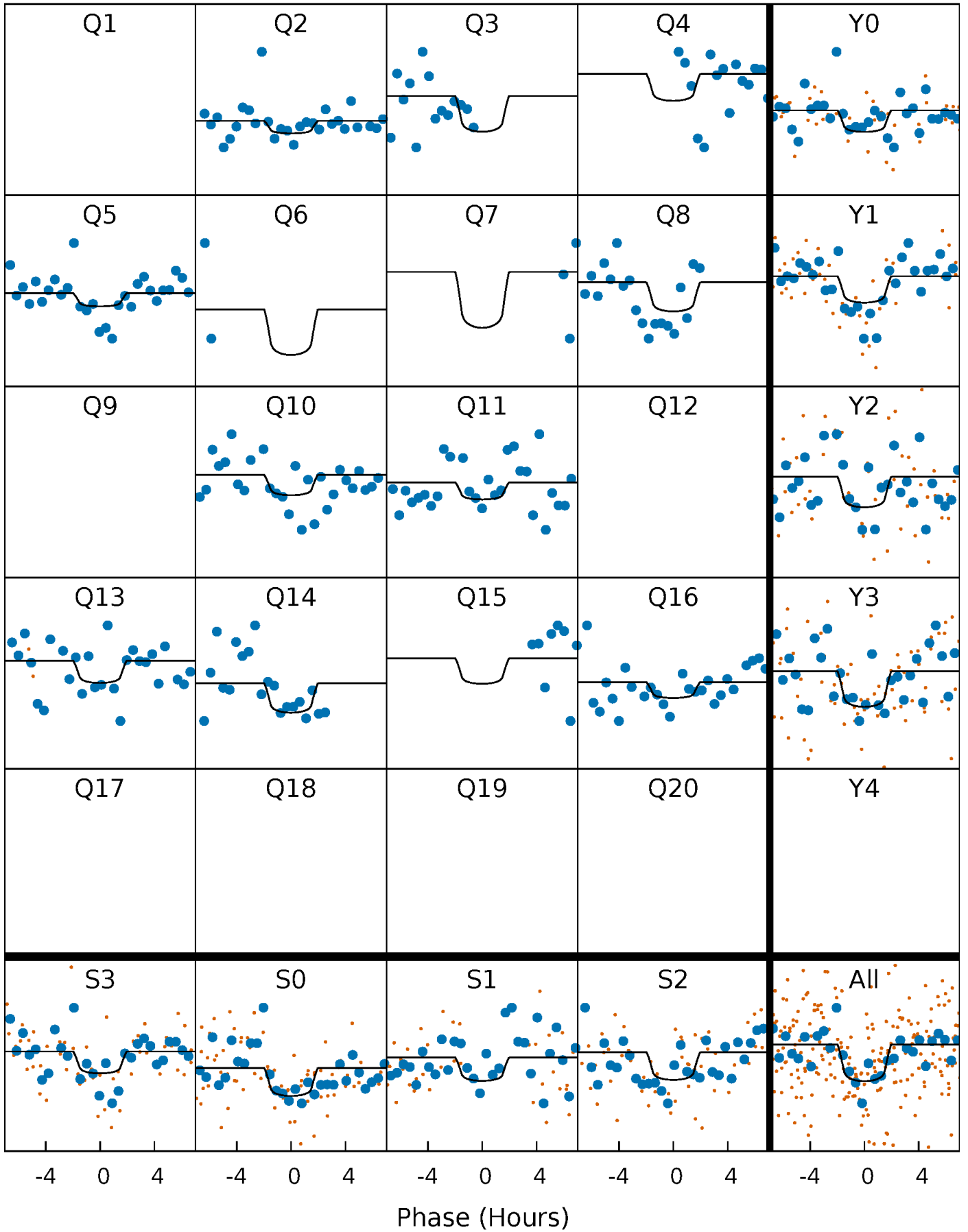
PDC Quarter-Phased Transit Curves

TCE 009239124-05 P= 34.868190 Days $T_0=144.939141$ (BKJD)



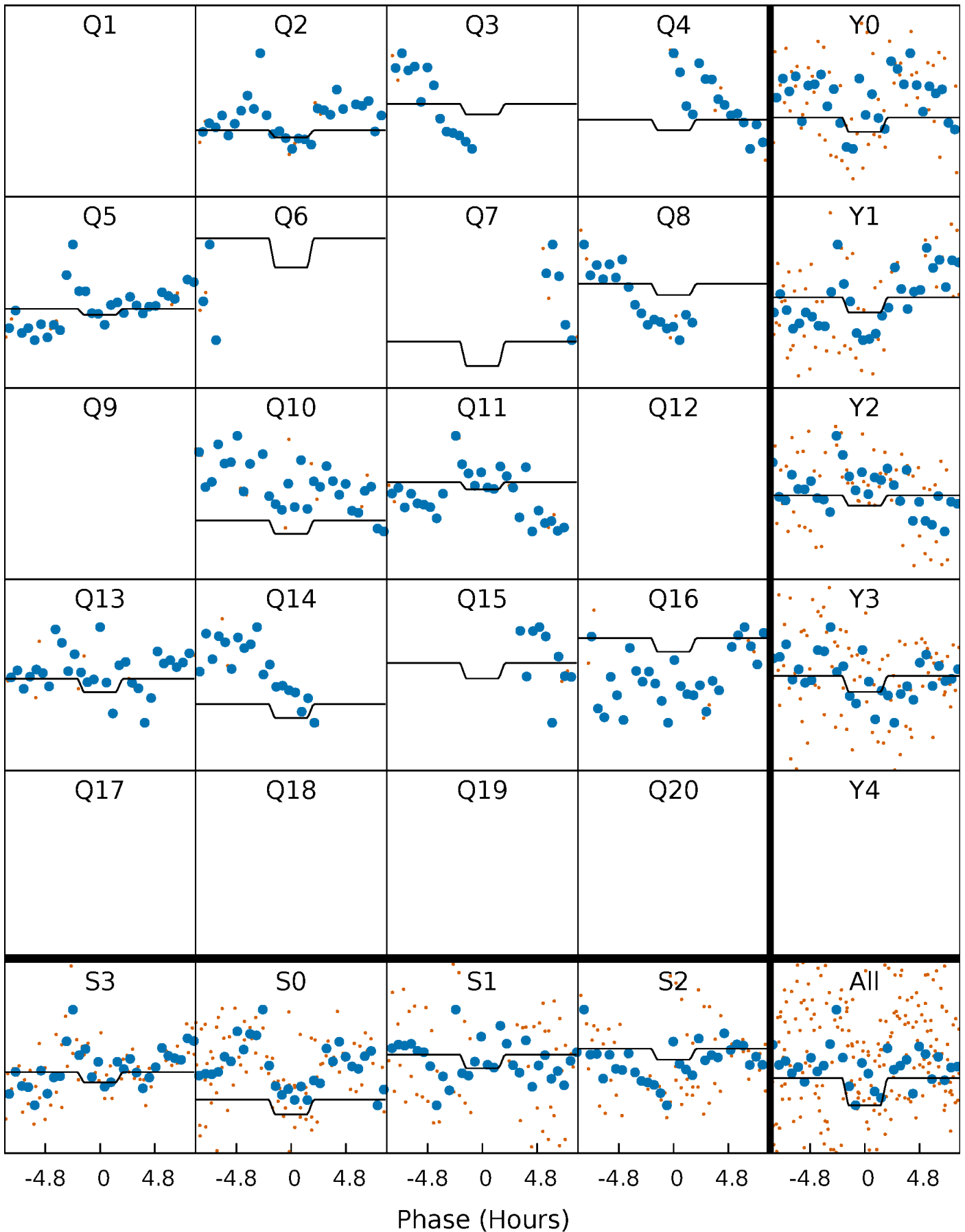
DV Quarter-Phased Transit Curves

TCE 009239124-05 $P = 34.868190$ Days $T_0 = 144.939141$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

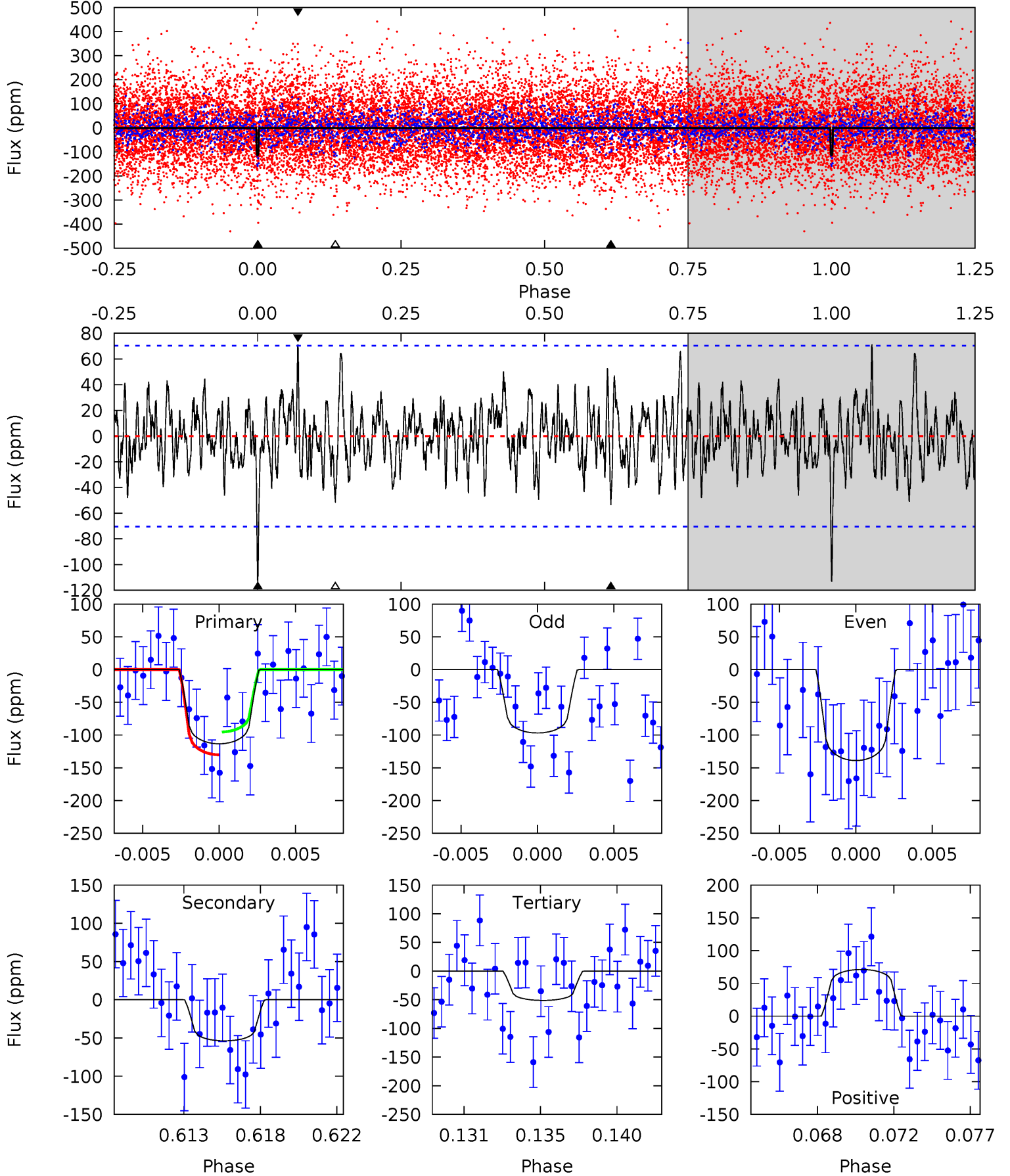
TCE 009239124-05 P= 34.868143 Days $T_0=144.957671$ (BKJD)



DV Model-Shift Uniqueness Test

009239124-05, P = 34.868190 Days, E = 110.070951 Days

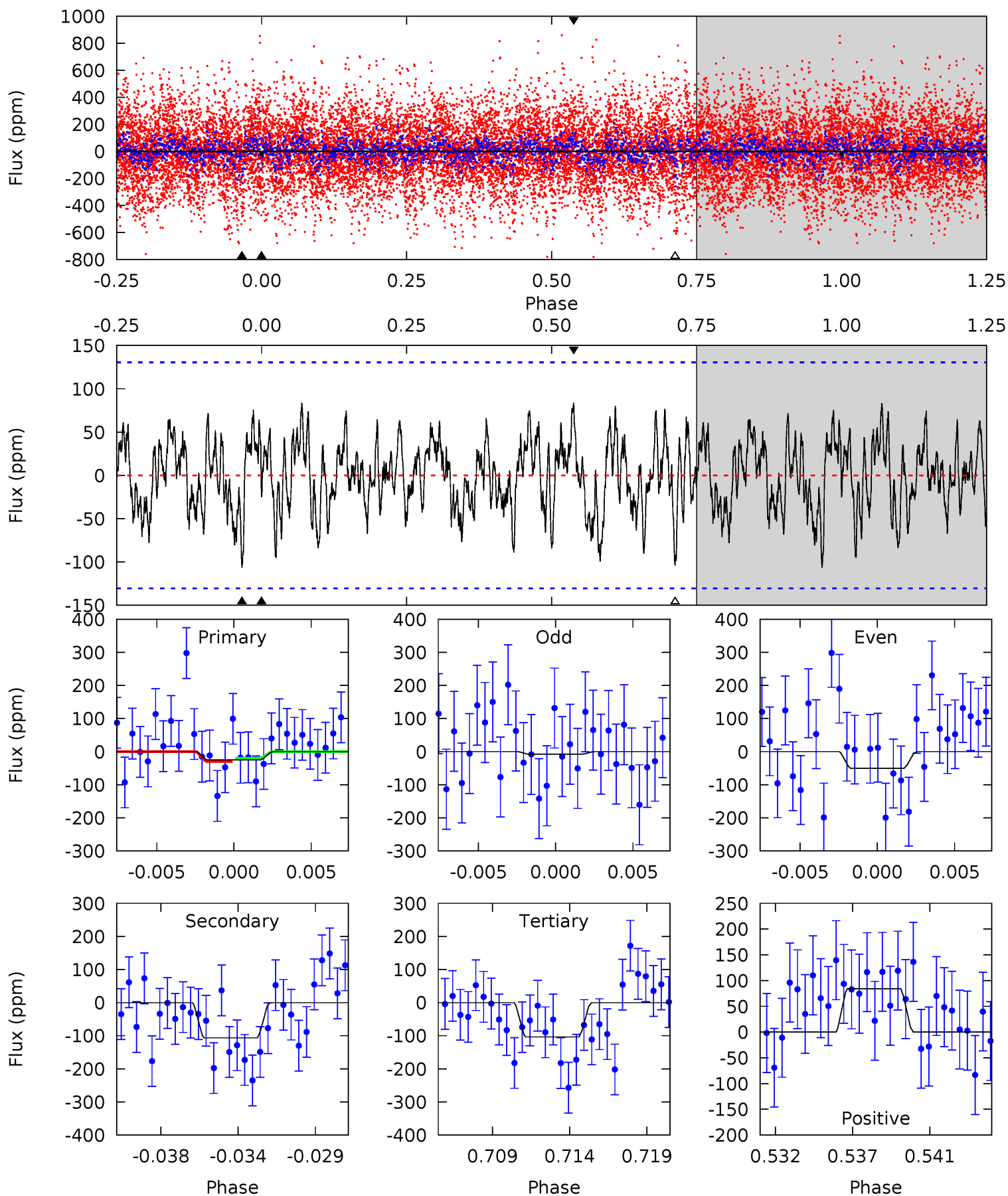
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.33	3.95	3.76	5.24	5.18	2.84	1.47	4.57	3.10	0.19	-1.28	1.51	1.07	0.39	1.28



Alt Model-Shift Uniqueness Test

009239124-05, P = 34.868143 Days, E = 110.089528 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.99	4.21	4.11	3.32	5.17	2.82	1.47	-3.12	-2.33	0.11	0.89	0.83	-1.68	0.44	0.19



Stellar Parameters For KIC 009239124

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7208^{+200}_{-343}	$4.222^{+0.075}_{-0.210}$	$0.070^{+0.200}_{-0.350}$	$1.581^{+0.565}_{-0.242}$	$1.519^{+0.226}_{-0.226}$	$0.541^{+0.221}_{-0.296}$
	+3%/-5%	+2%/-5%	+286%/-500%	+36%/-15%	+15%/-15%	+41%/-55%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009239124-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-54 ± 14	$2.39^{+1.78}_{-1.50}$	1157^{+82}_{-71}	5272^{+3819}_{-1089}	292^{+1807}_{-201}
Alt.	-106 ± 25	$2.11^{+2.00}_{-1.41}$	1154^{+96}_{-75}	6524^{+7784}_{-1648}	697^{+5688}_{-501}

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 $A_{obs} \gg 1.0$

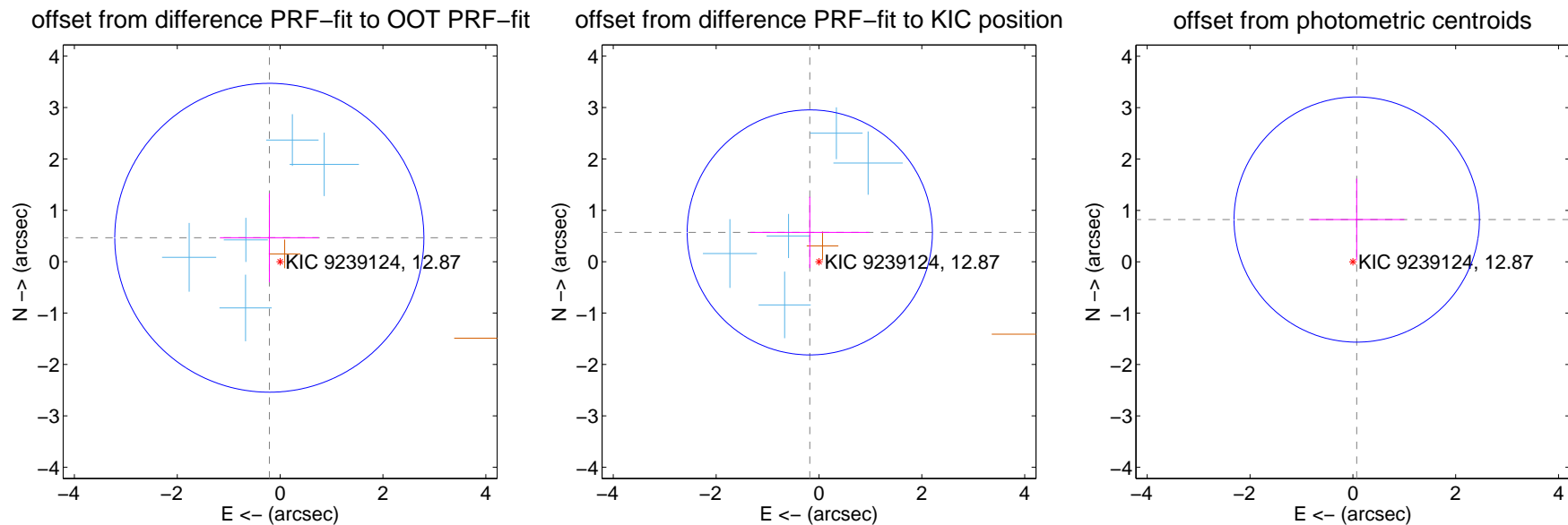
DV Centroid Data

Supplemental centroid analysis for 009239124-05. Kepler magnitude: 12.87. Transit SNR 7.99

There are 5 quarters with good PRF difference image offsets

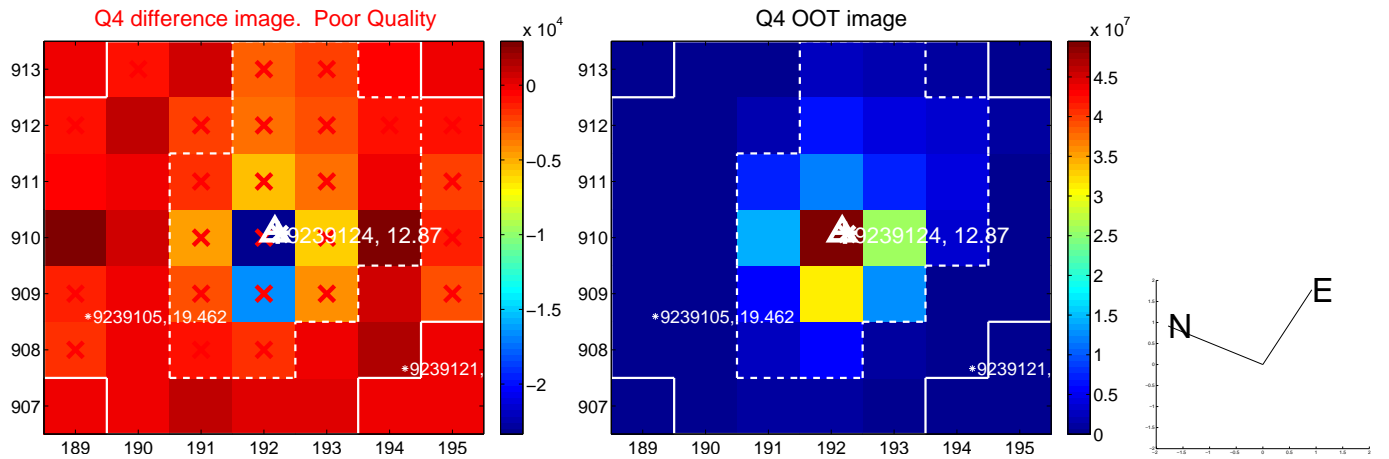
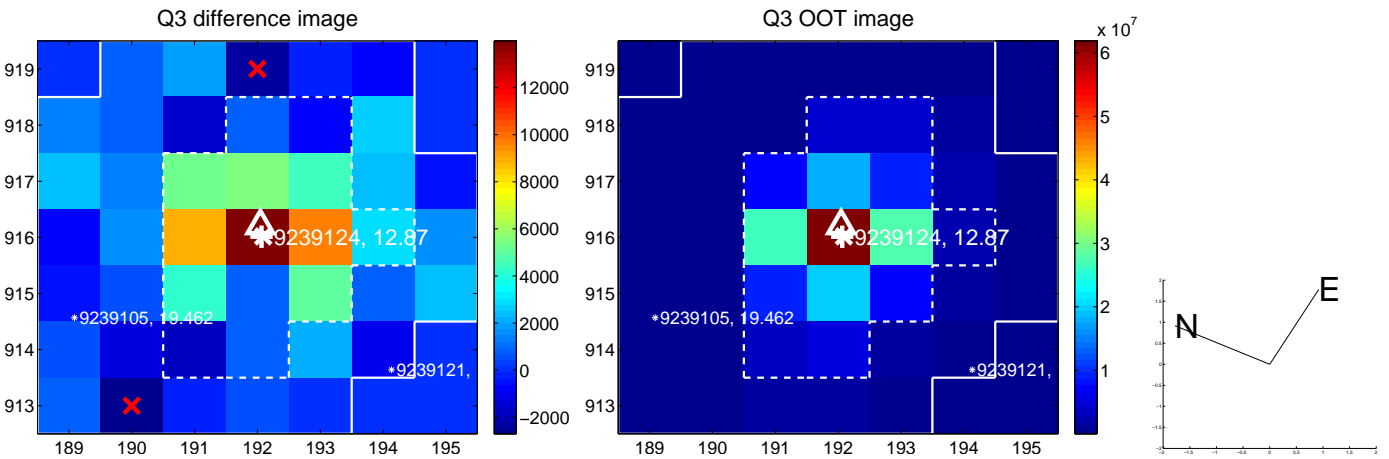
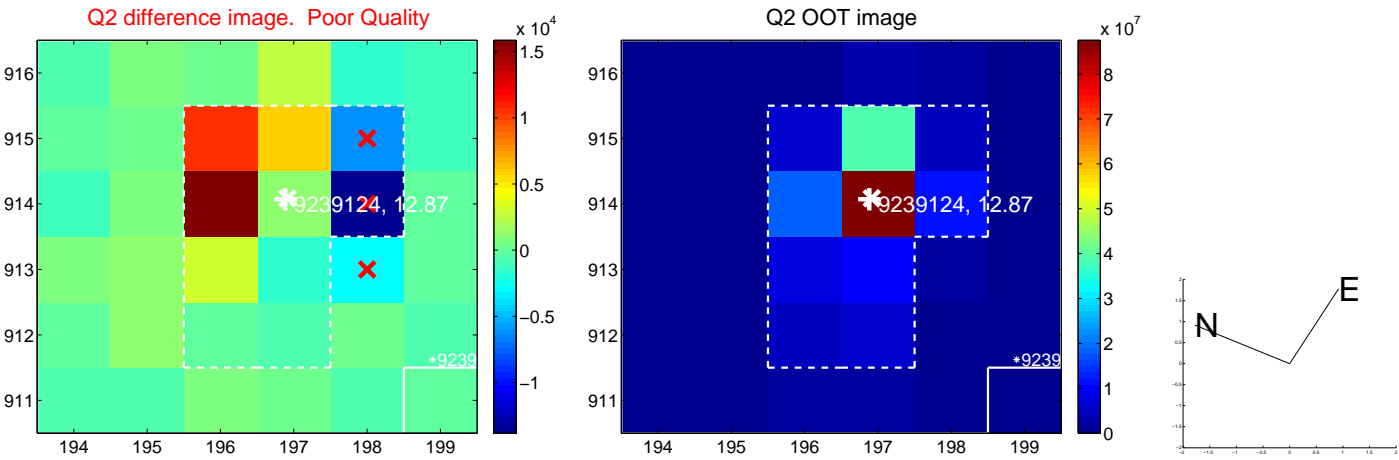
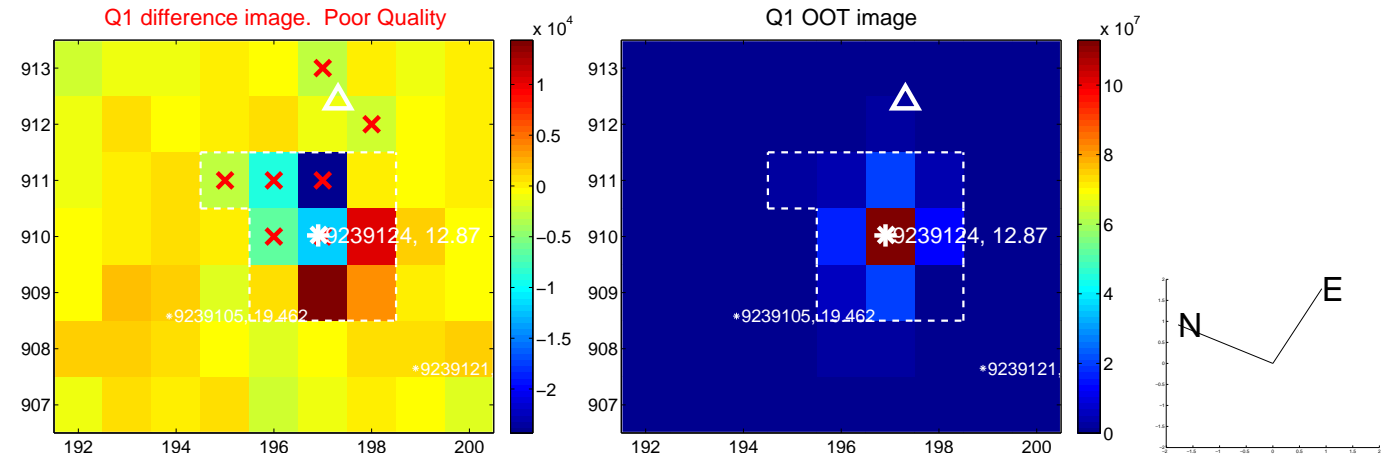
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.510 ± 1.002	0.51	0.210 ± 0.962	0.465 ± 0.864
PRF-fit source offset from KIC position	0.597 ± 0.795	0.75	0.179 ± 1.155	0.570 ± 0.692
photometric centroid source offset	0.82 ± 0.80	1.04	-0.08 ± 0.93	0.82 ± 0.79

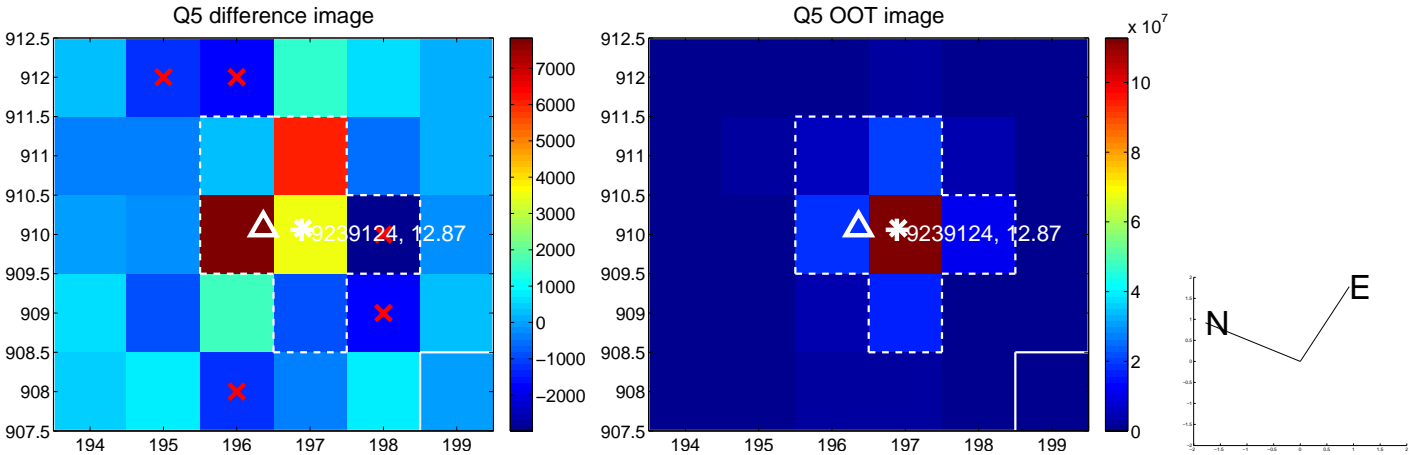


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

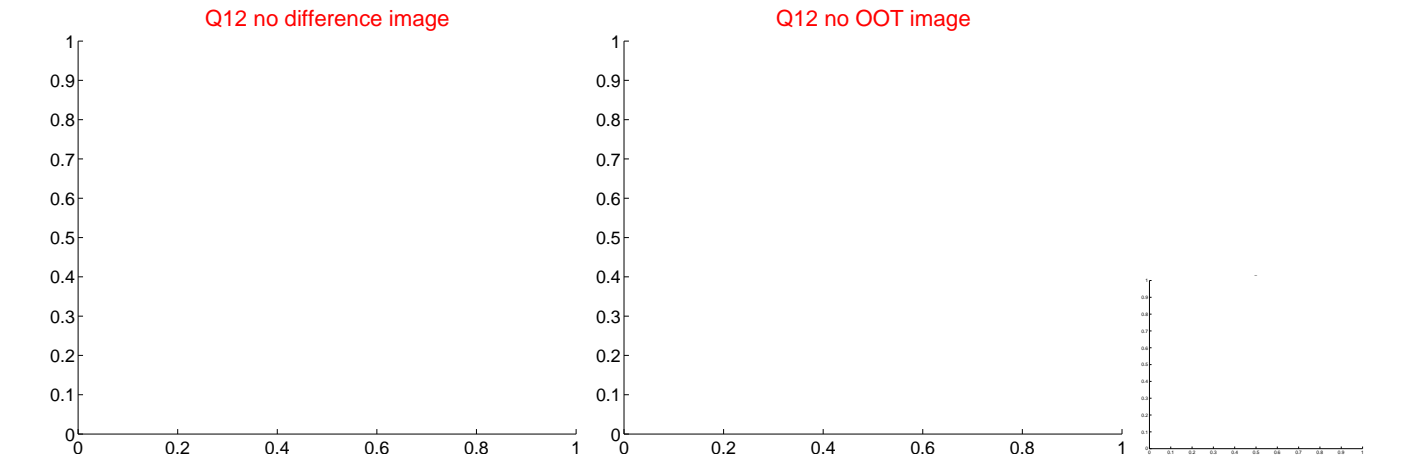
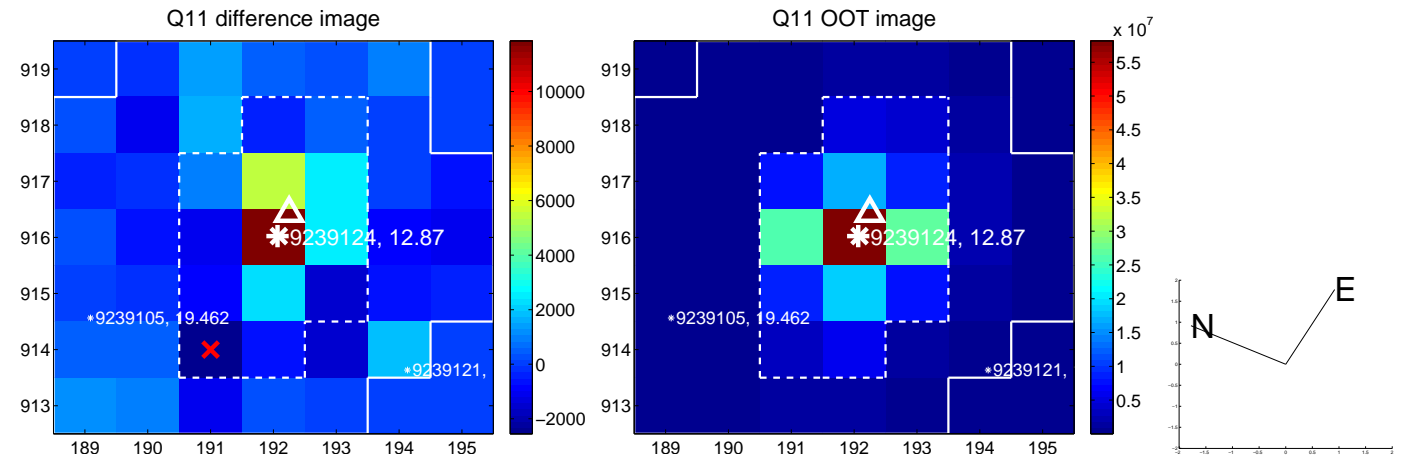
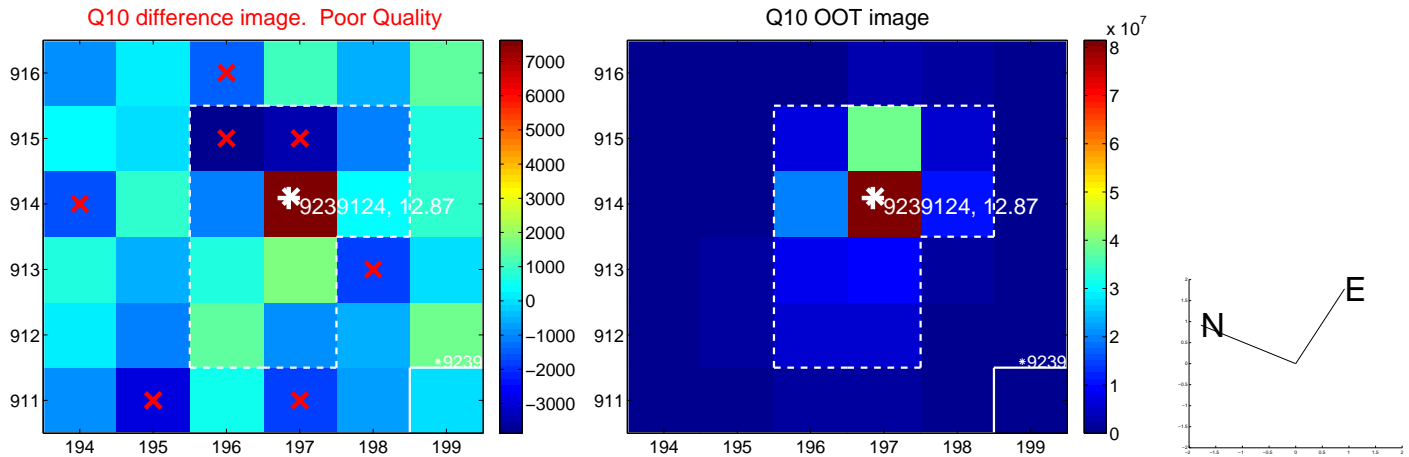
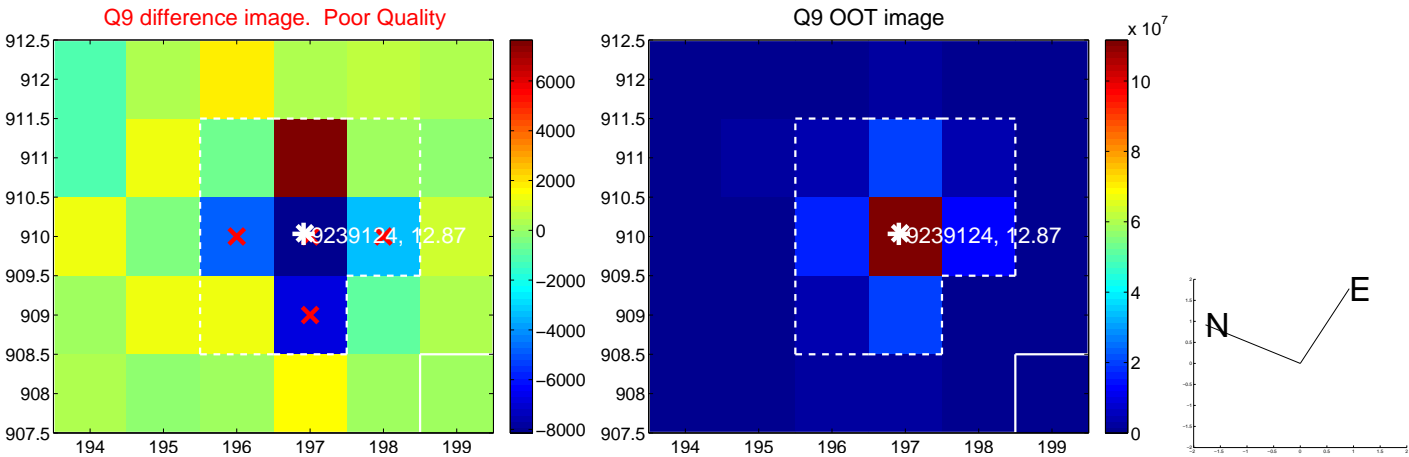
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



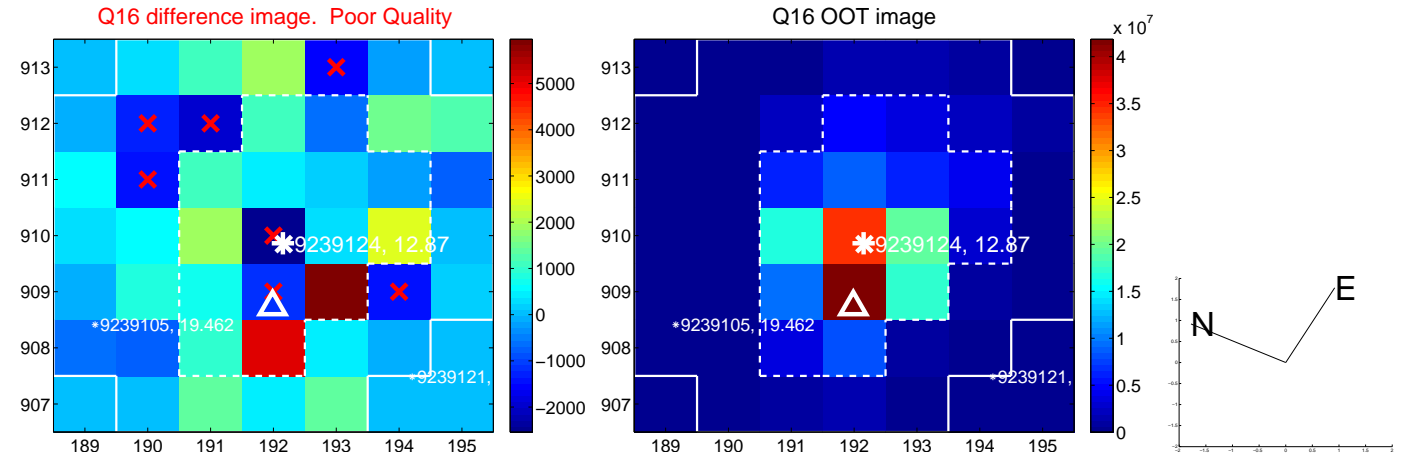
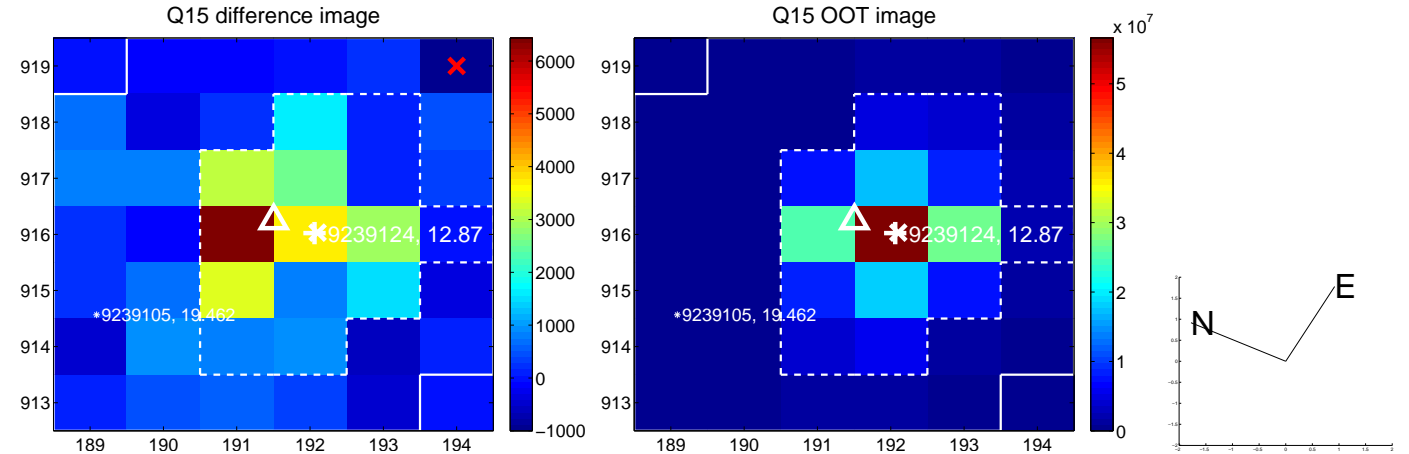
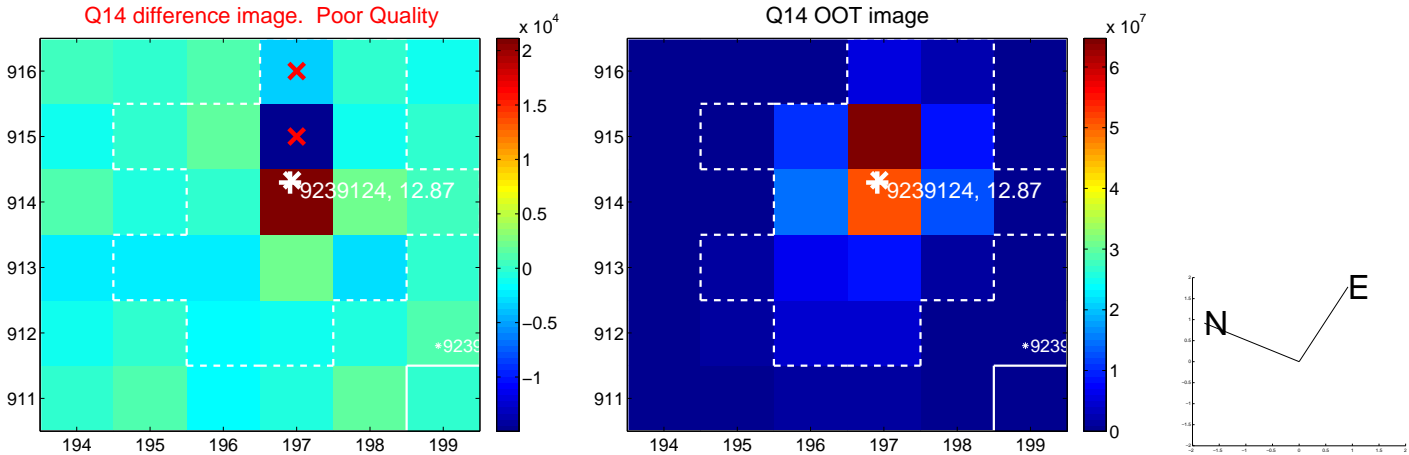
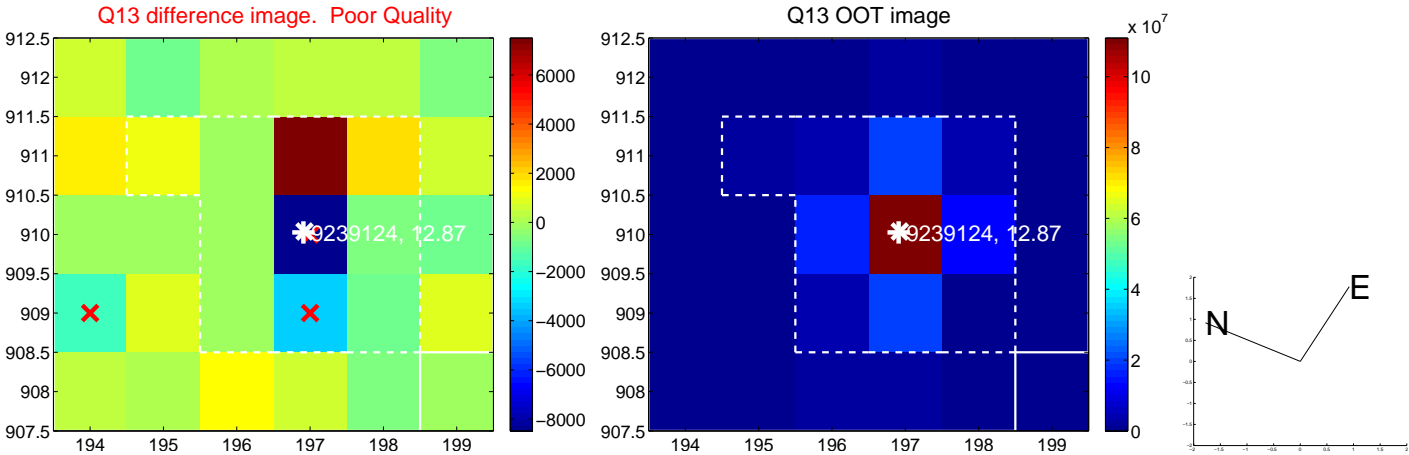
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



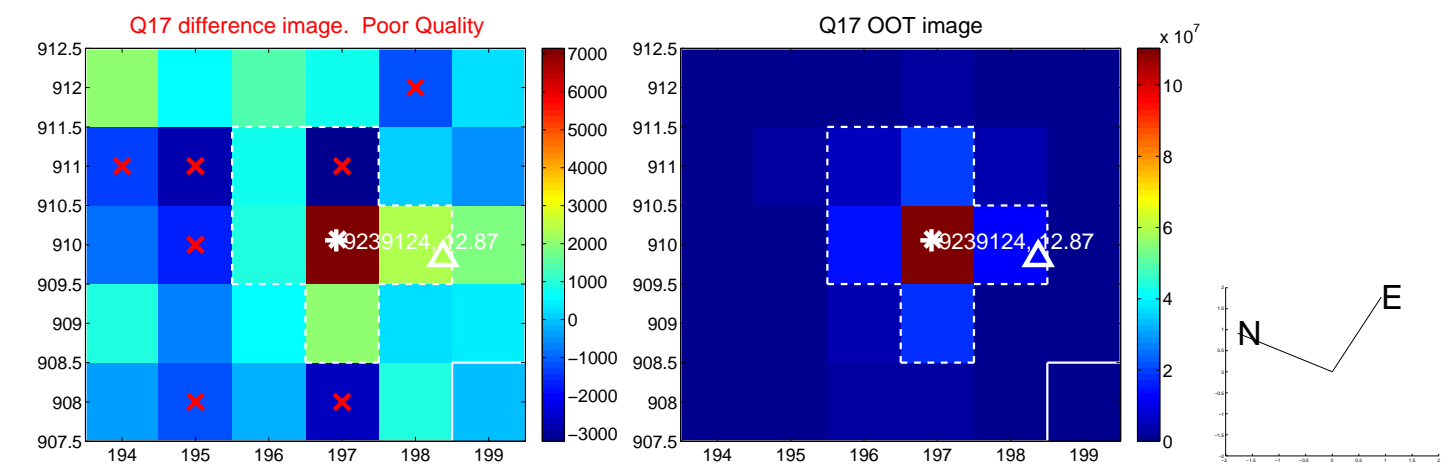
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



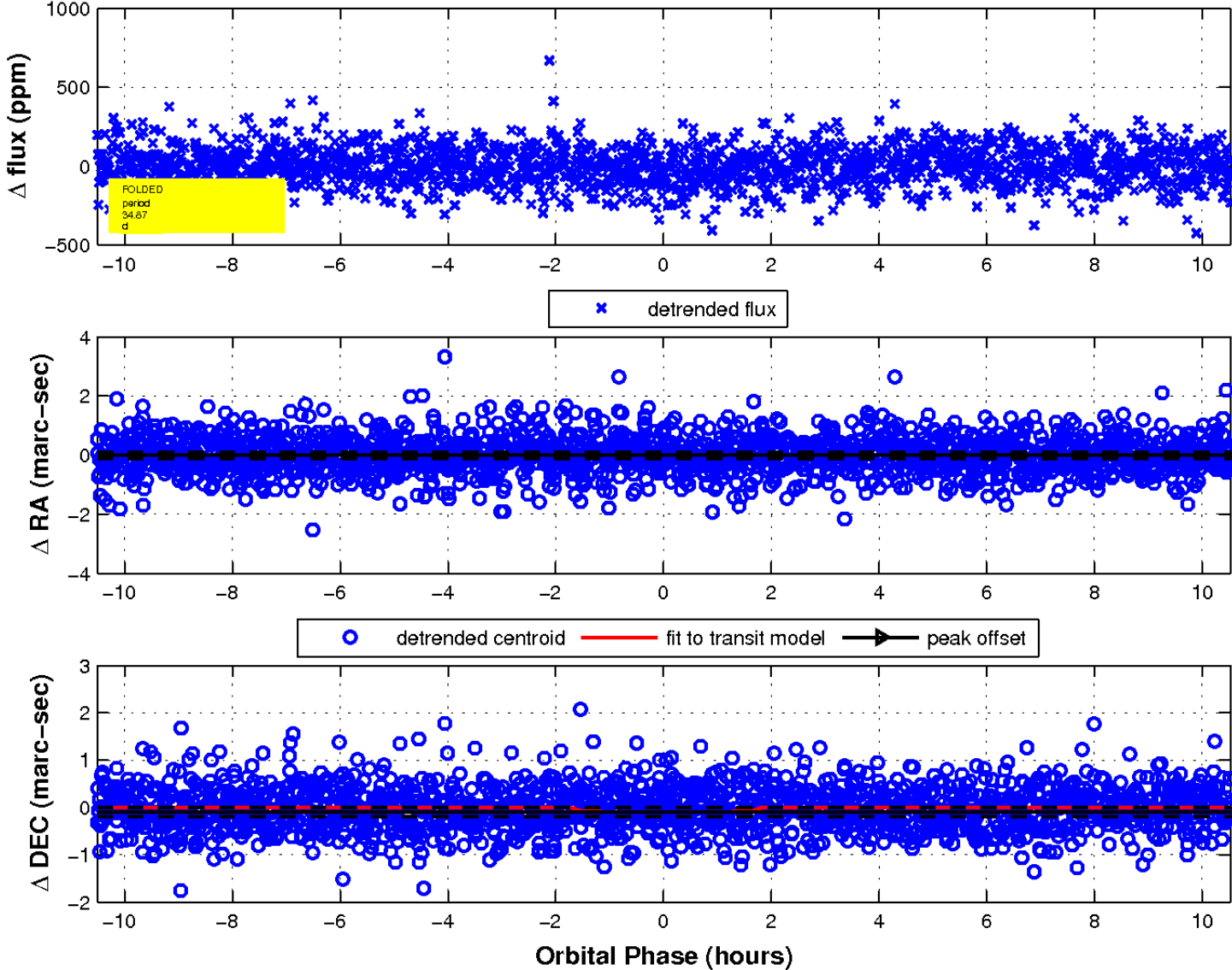
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

