

KIC 005023338

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})
005023338-01	OBS	No	1.120853	132.348937	398.9	0.992	9.8	14.3	3.80	7661	7.92	55640.25
005023338-02	OBS	No	0.560424	132.033461	354.5	1.053	11.6	19.7	3.80	7661	7.34	0.00
005023338-03	OBS	No	0.560422	131.637145	379.8	0.901	11.3	19.8	3.80	7661	7.75	0.00
005023338-04	OBS	No	1.120854	131.871296	571.7	0.704	10.1	19.1	3.80	7661	9.58	55640.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005023338-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005023338-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

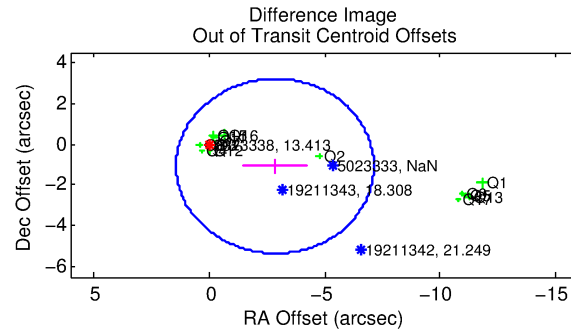
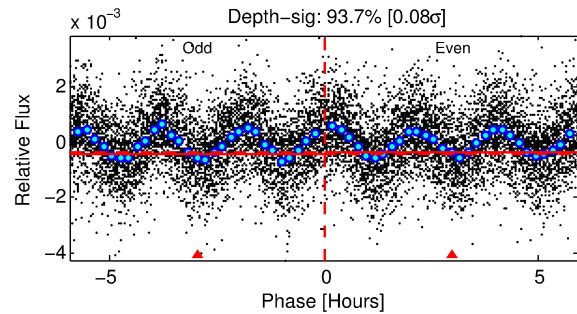
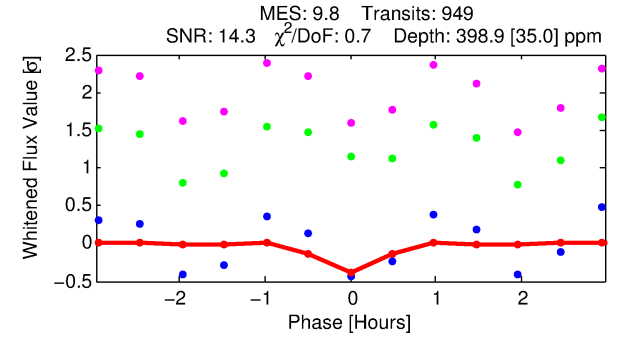
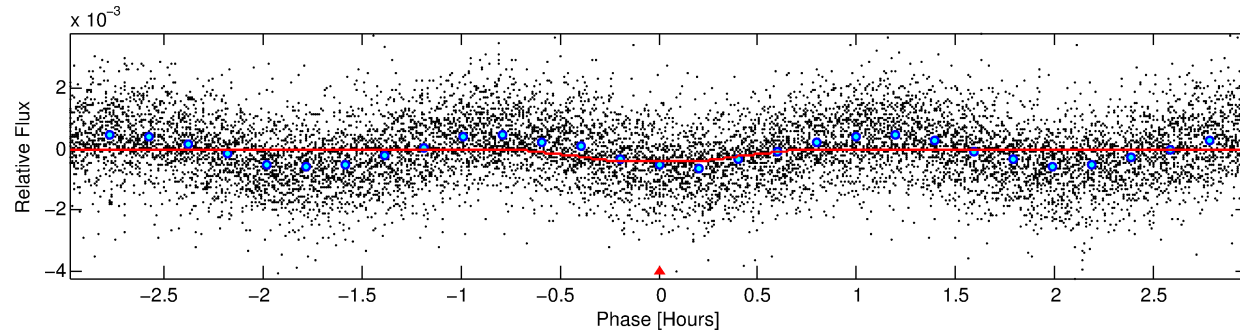
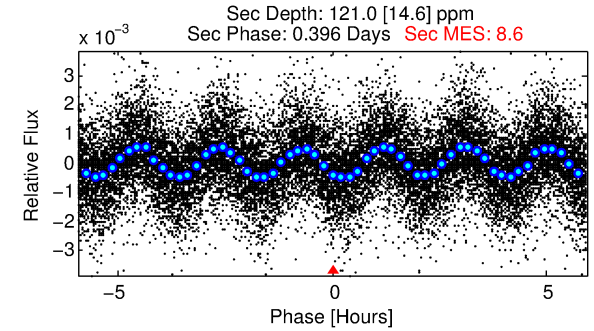
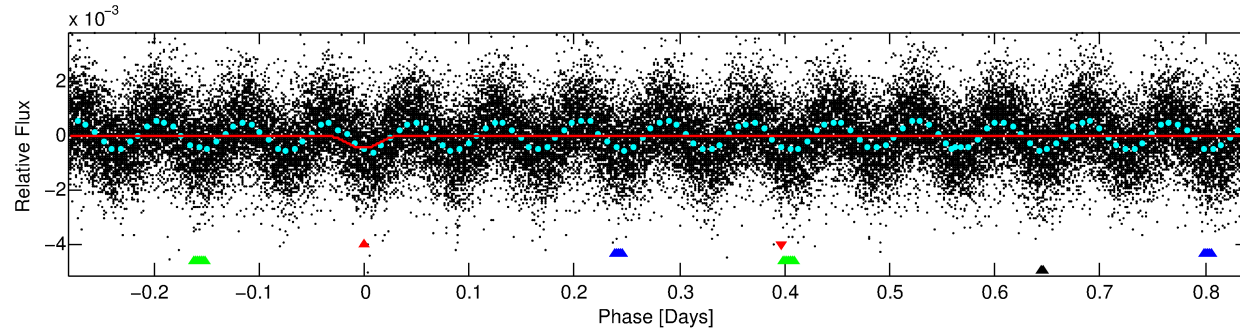
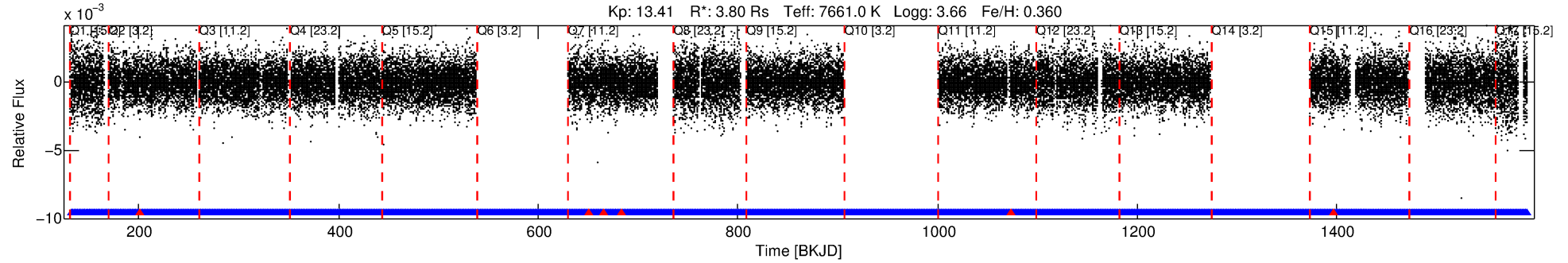
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005023338-01

No Significant Match Found

DV One-Page Summary

KIC: 5023338 Candidate: 1 of 4 Period: 1.121 d



DV Fit Results:

Period = 1.12085 [0.00001] d
Epoch = 132.3489 [0.0011] BKJD
Rp/R* = 0.0191 [0.0072]
a/R* = 7.70 [16.02]
b = 0.50 [3.19]
Seff = 55640.25 [39463.15]
Teq = 3916 [694] K
Rp = 7.93 [4.74] Re
a = 0.0283 [0.0123] AU
Ag = 0.85 [0.87] [-0.17σ]
Teffp = 5814 [1143] K [1.42σ]

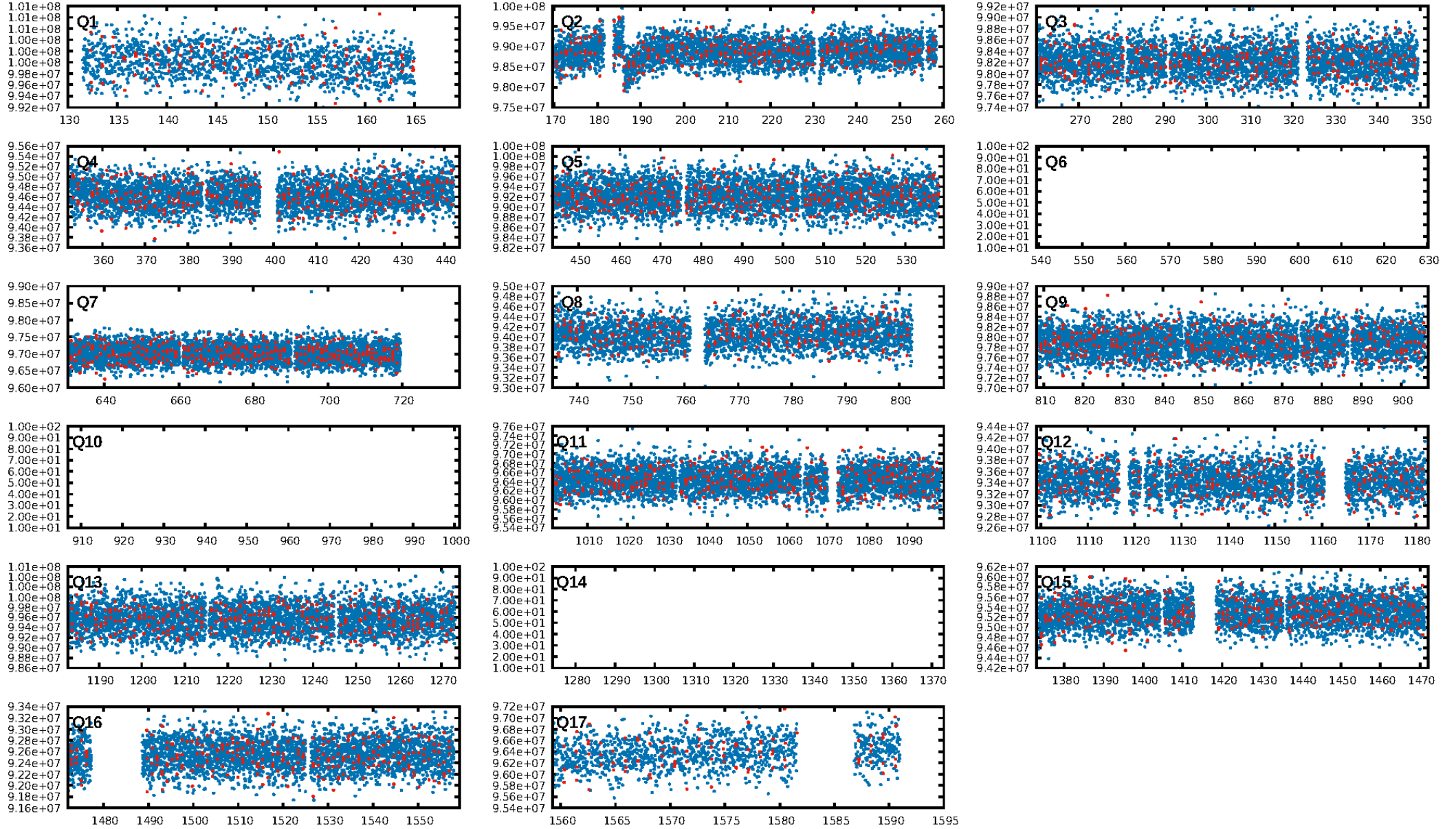
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.30σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [889/895]
GhostDiagnostic-chr: 2.447
Centroid-sig: 0.0%
Centroid-so: 1.266 arcsec [3.73σ]
OotOffset-rm: 3.049 arcsec [2.14σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-rm: 0.201 arcsec [1.61σ]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

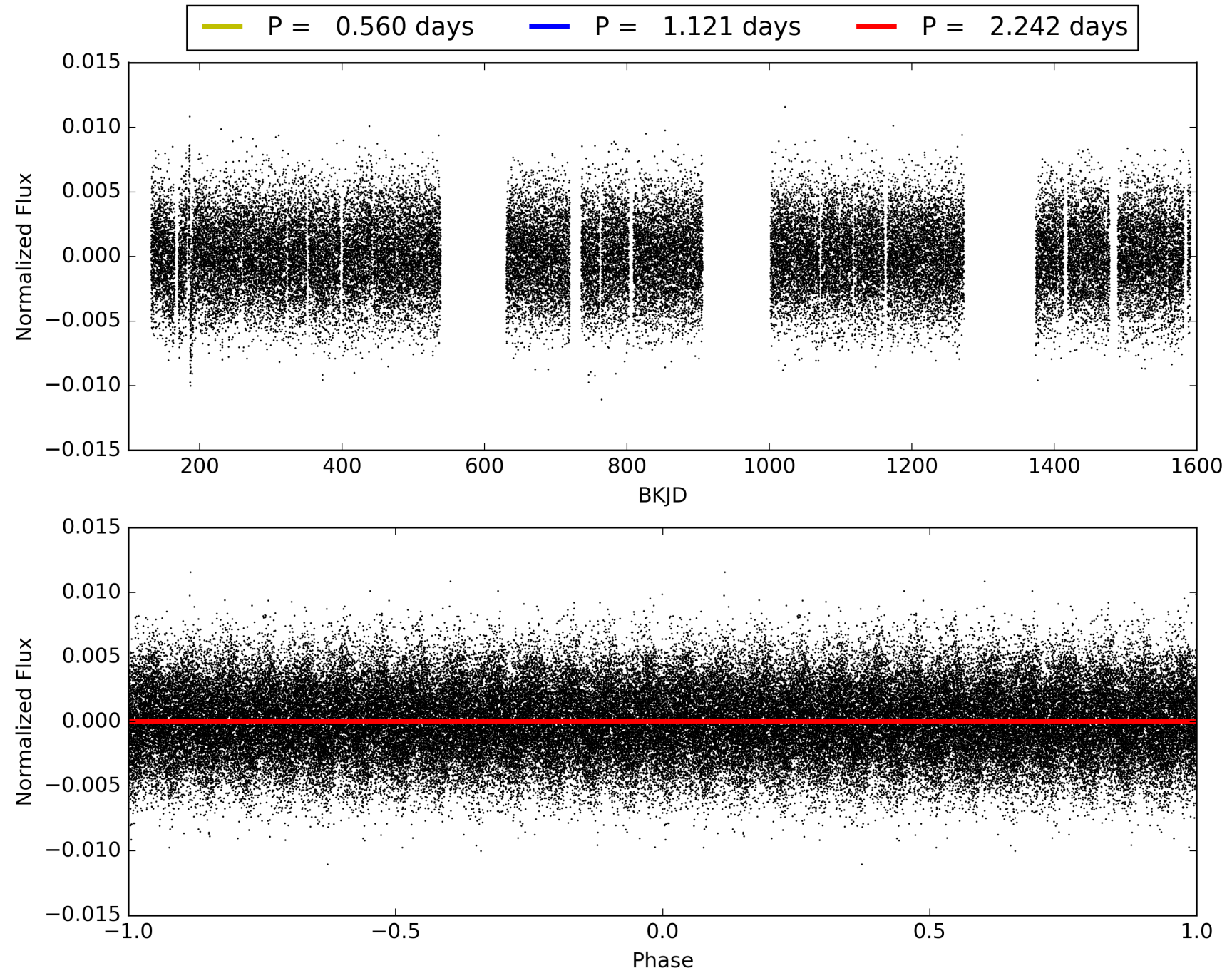
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:42 Z

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

TCE 005023338-01, PDC Light Curves

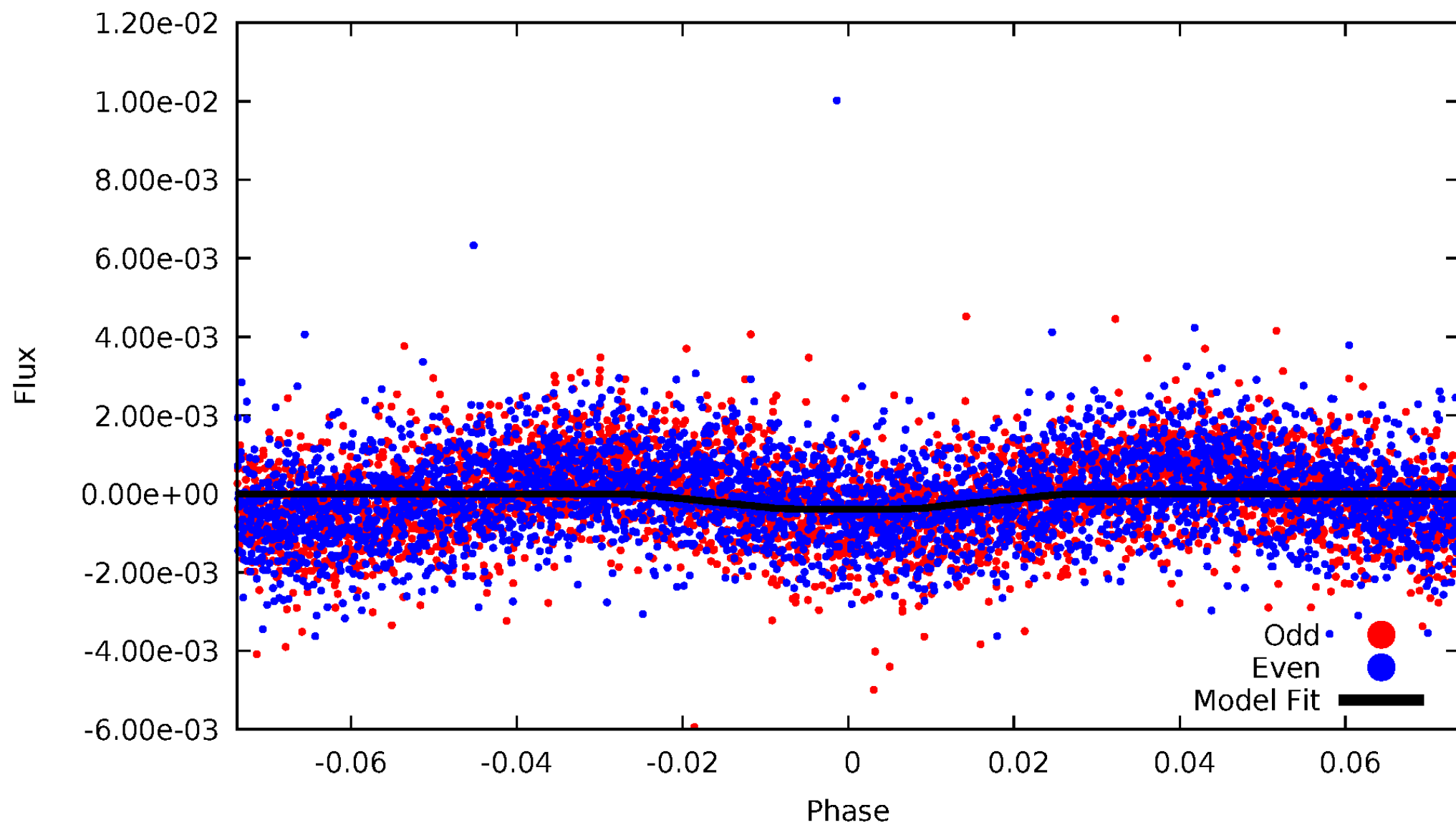


TCE 005023338-01



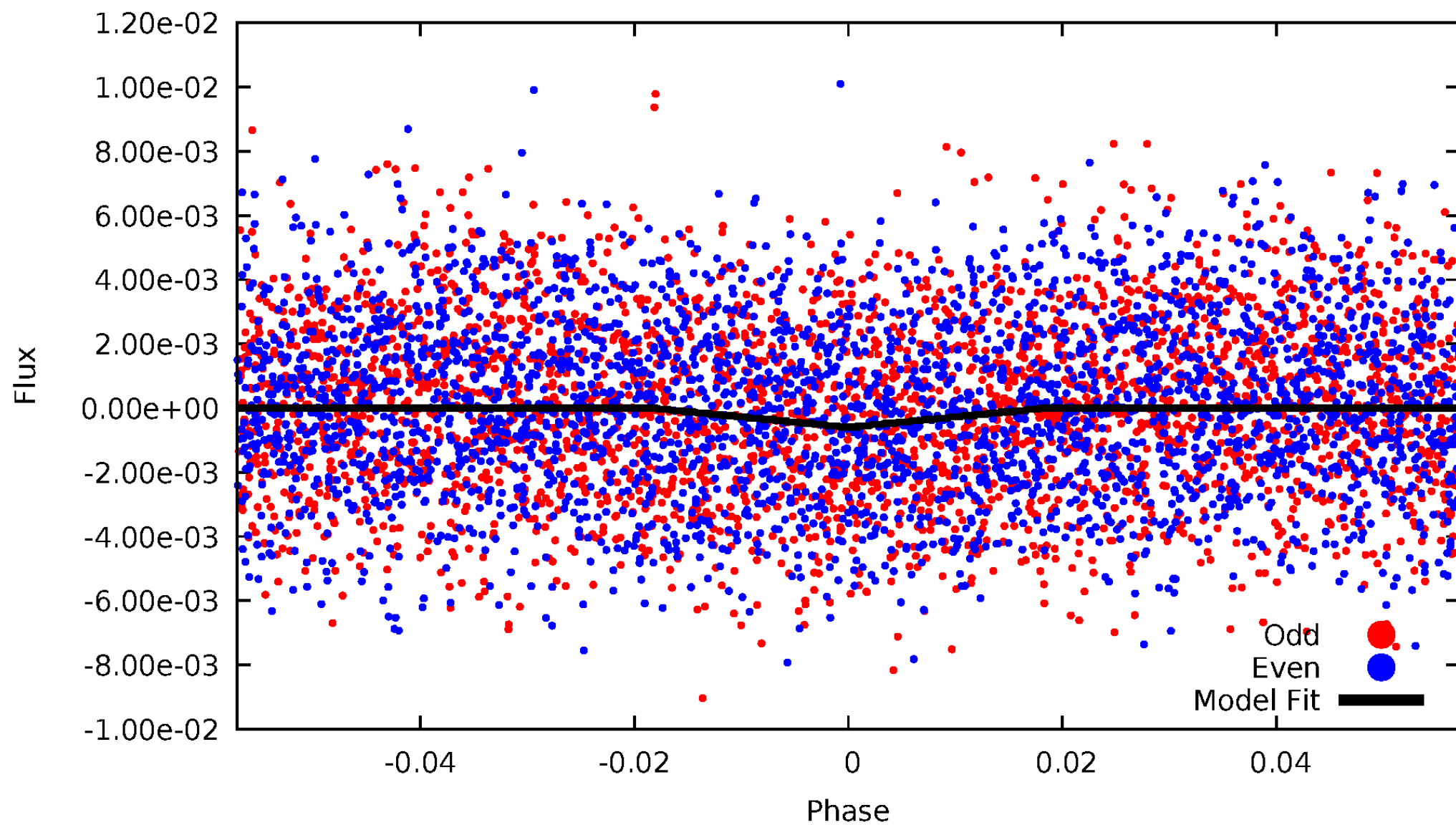
DV Odd/Even

TCE 005023338-01



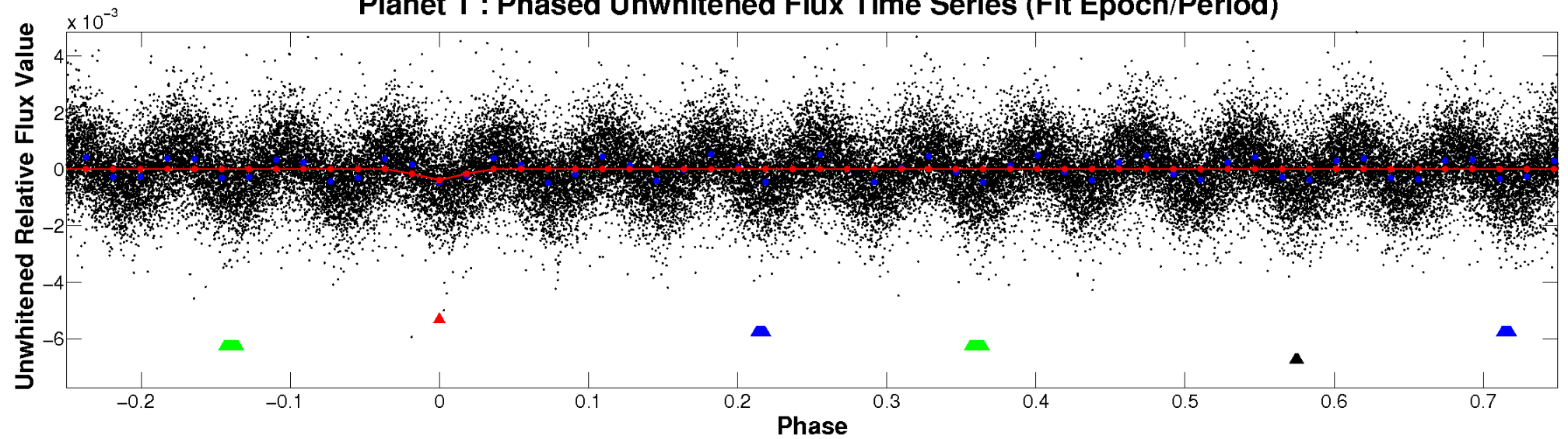
ALT Odd/Even

TCE 005023338-01

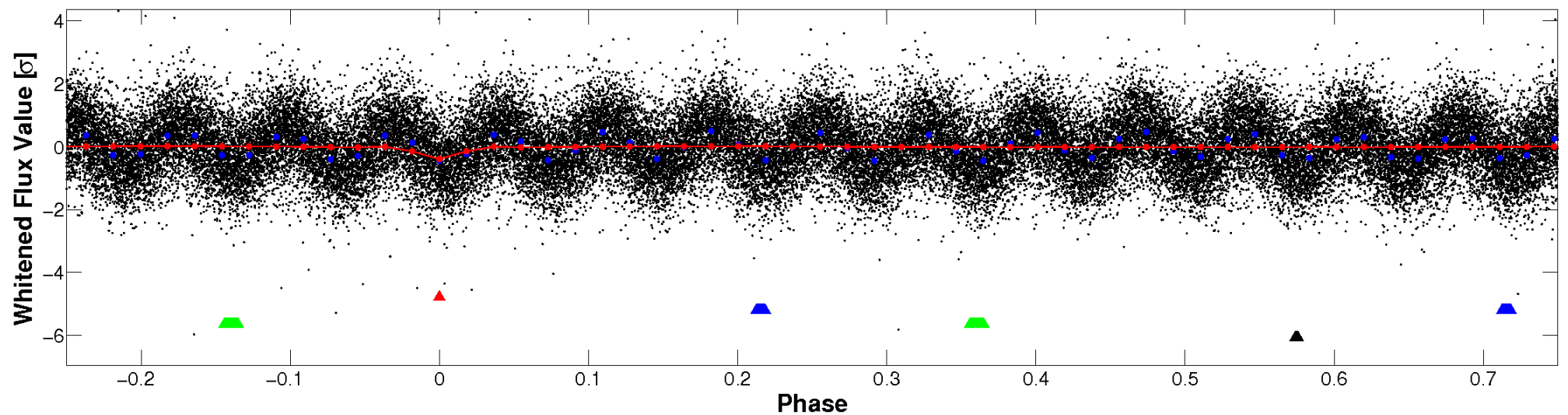


Non-Whitened Vs. Whitened Light Curve

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

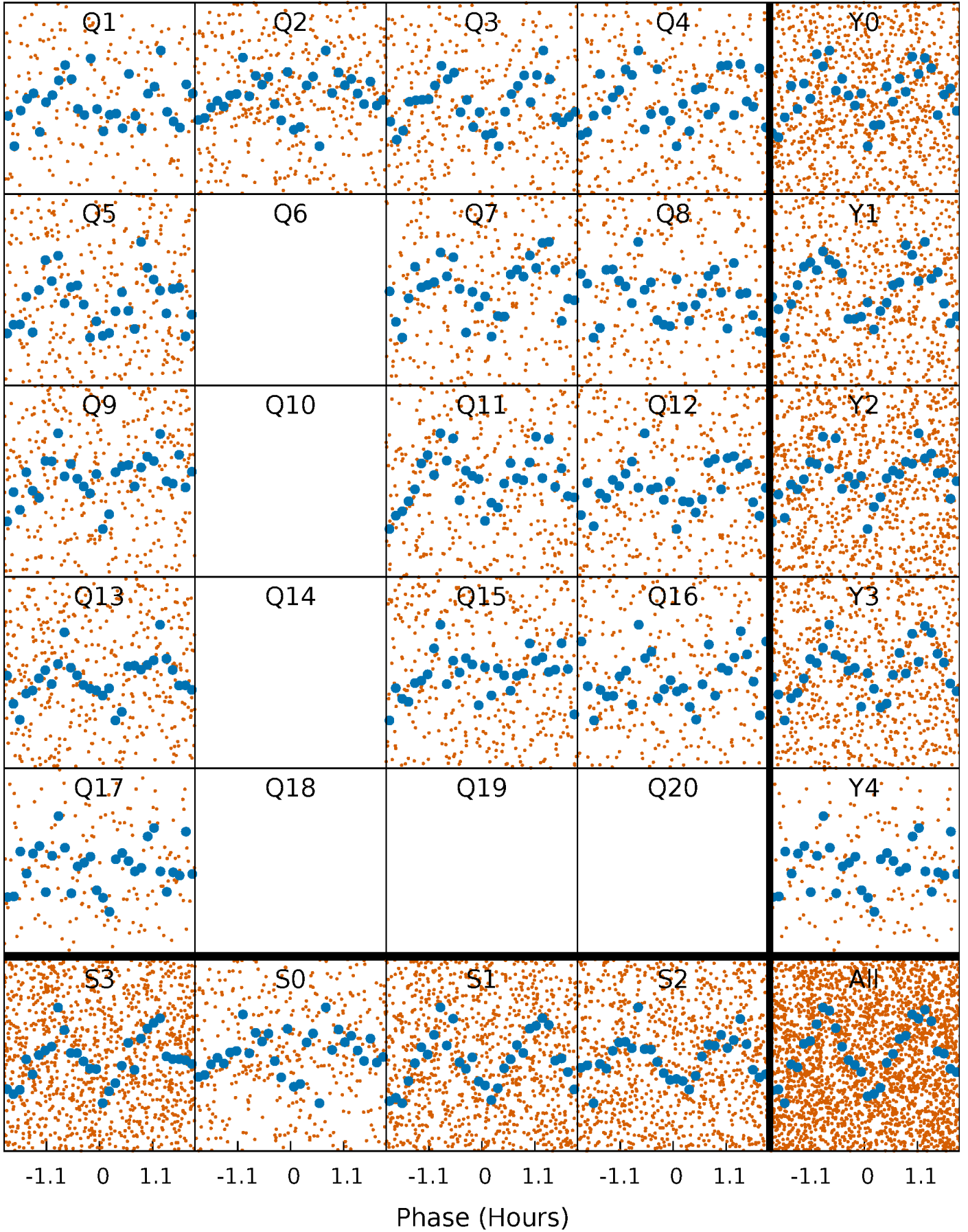


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



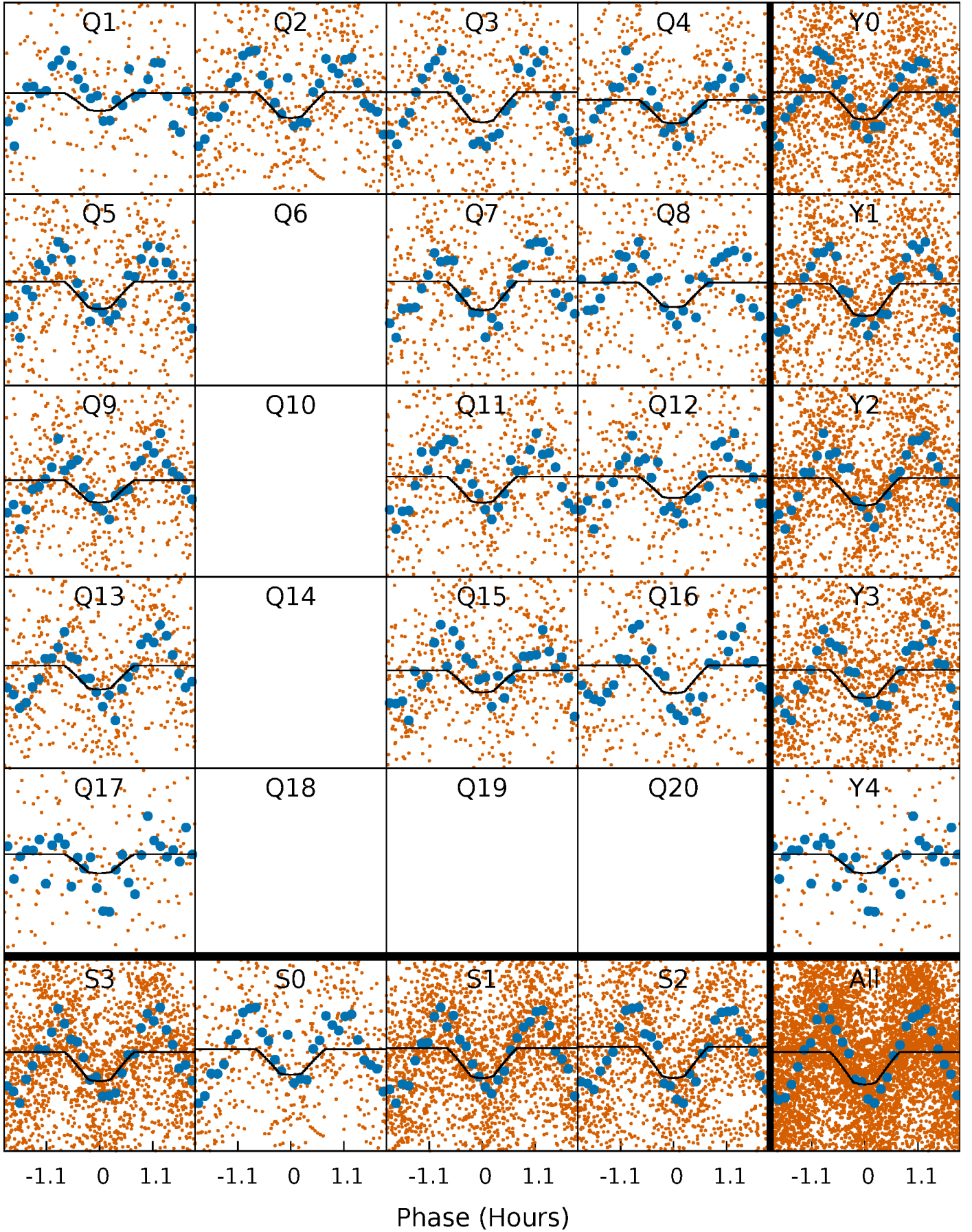
PDC Quarter-Phased Transit Curves

TCE 005023338-01 $P = 1.120853$ Days $T_0 = 132.348938$ (BKJD)



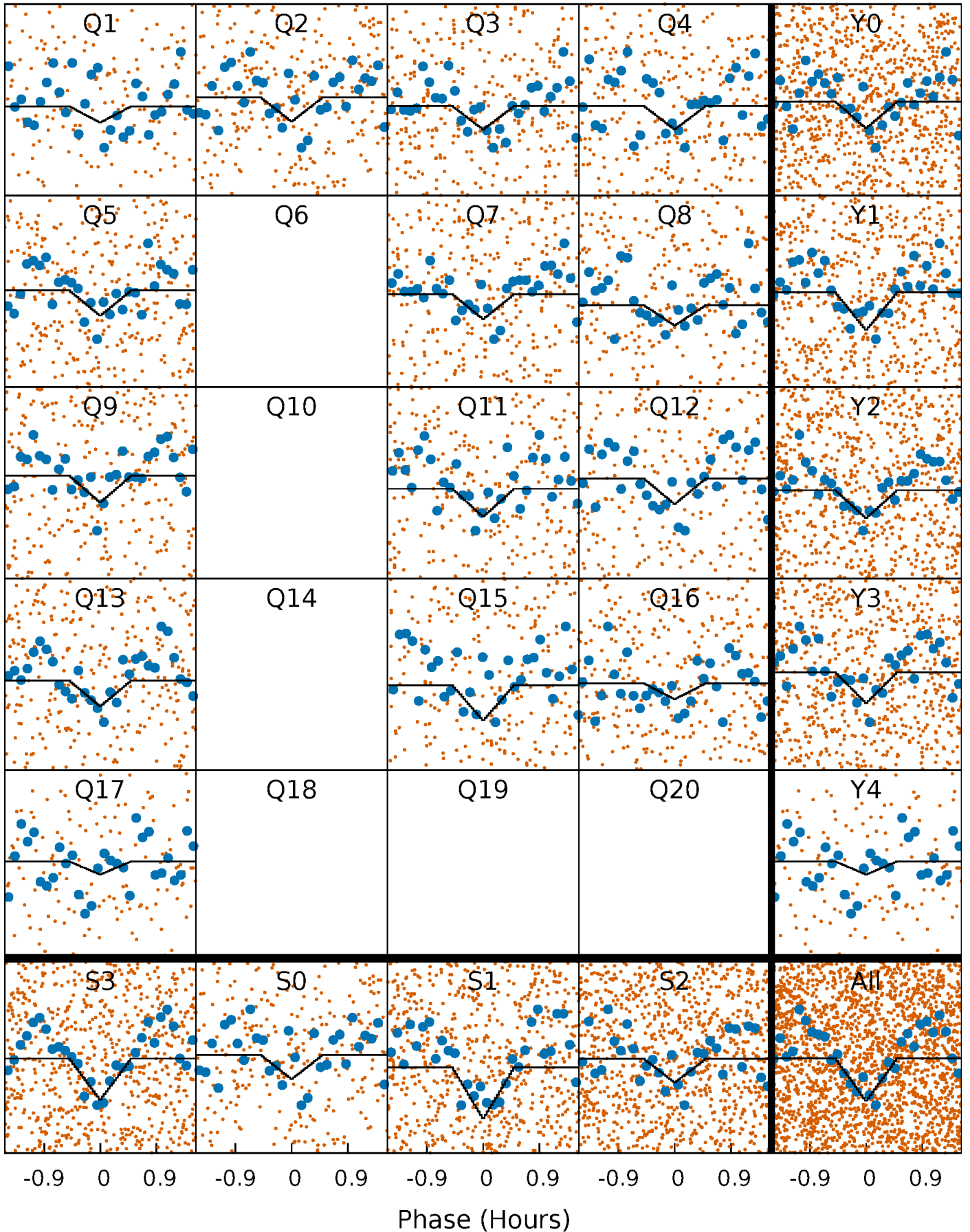
DV Quarter-Phased Transit Curves

TCE 005023338-01 P= 1.120853 Days $T_0=132.348938$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

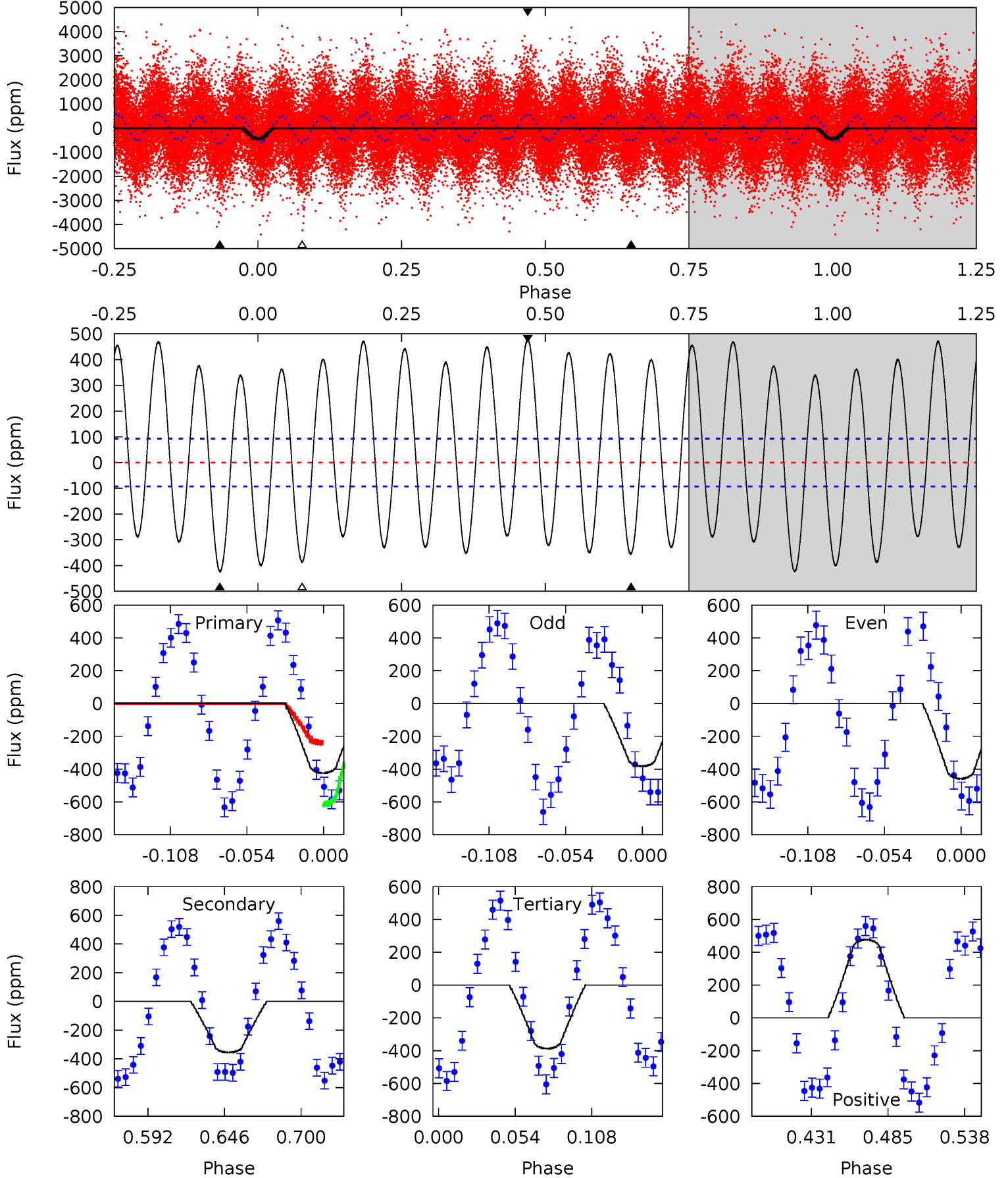
TCE 005023338-01 P= 1.120865 Days $T_0=132.347042$ (BKJD)



DV Model-Shift Uniqueness Test

005023338-01, P = 1.120853 Days, E = 131.228085 Days

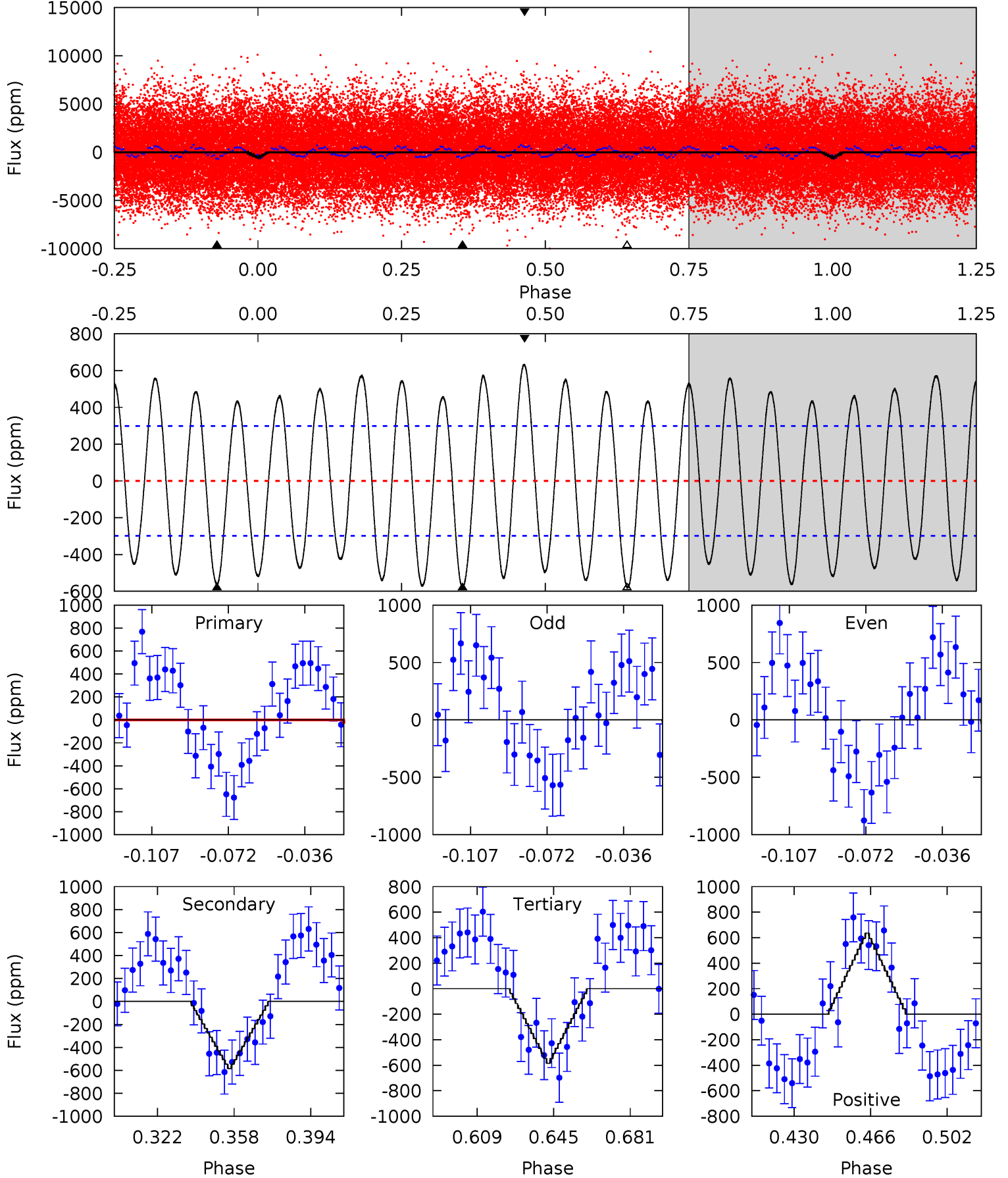
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.5	18.0	19.6	24.1	4.69	1.93	13.8	1.86	-2.69	-1.62	-6.16	1.94	1.02	0.53	9.53



Alt Model-Shift Uniqueness Test

005023338-01, P = 1.120865 Days, E = 131.226177 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.06	9.36	9.35	10.2	4.78	2.10	5.90	-0.30	-1.12	0.00	-0.82	1.79	0.93	0.52	1.35



Stellar Parameters For KIC 005023338

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7661^{+212}_{-363}	$3.660^{+0.397}_{-0.132}$	$0.360^{+0.050}_{-0.400}$	$3.803^{+0.756}_{-1.765}$	$2.410^{+0.217}_{-0.652}$	$0.062^{+0.249}_{-0.020}$
	+3%/-5%	+11%/-4%	+14%/-111%	+20%/-46%	+9%/-27%	+403%/-33%
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 005023338-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-355 ± 20	$7.19^{+3.44}_{-2.96}$	5291^{+423}_{-656}	7229^{+2512}_{-1284}	$2.972^{+4.934}_{-1.579}$
Alt.	-585 ± 63	$9.01^{+3.84}_{-3.06}$	5298^{+450}_{-611}	7341^{+1879}_{-1230}	$2.962^{+4.162}_{-1.403}$

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 $A_{obs} \gg 1.0$

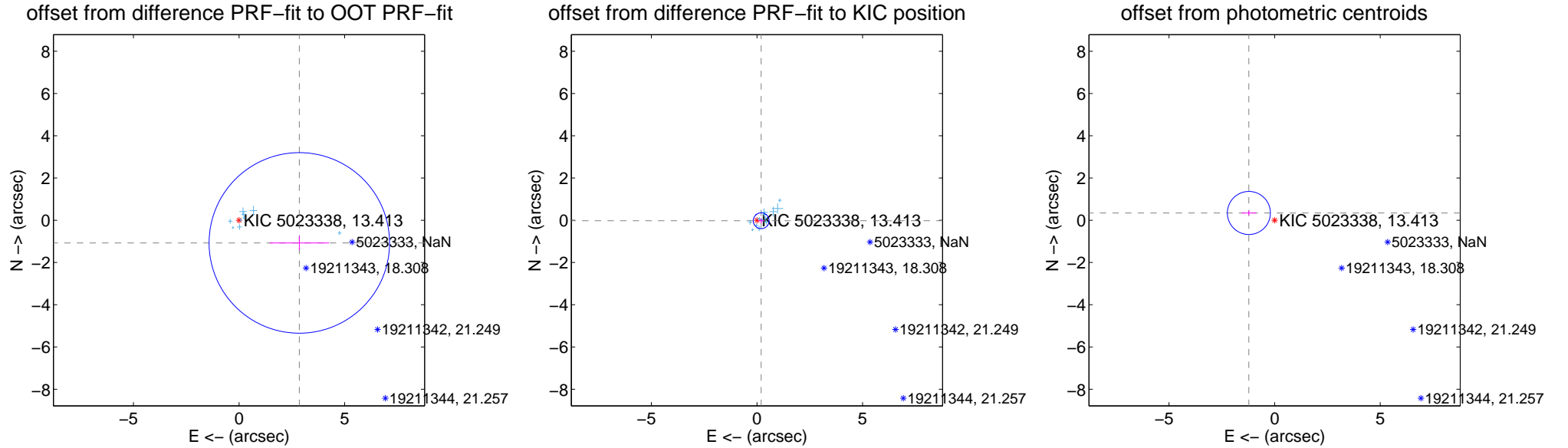
DV Centroid Data

Supplemental centroid analysis for 005023338-01. Kepler magnitude: 13.41. Transit SNR 14.28

There are 14 quarters with good PRF difference image offsets

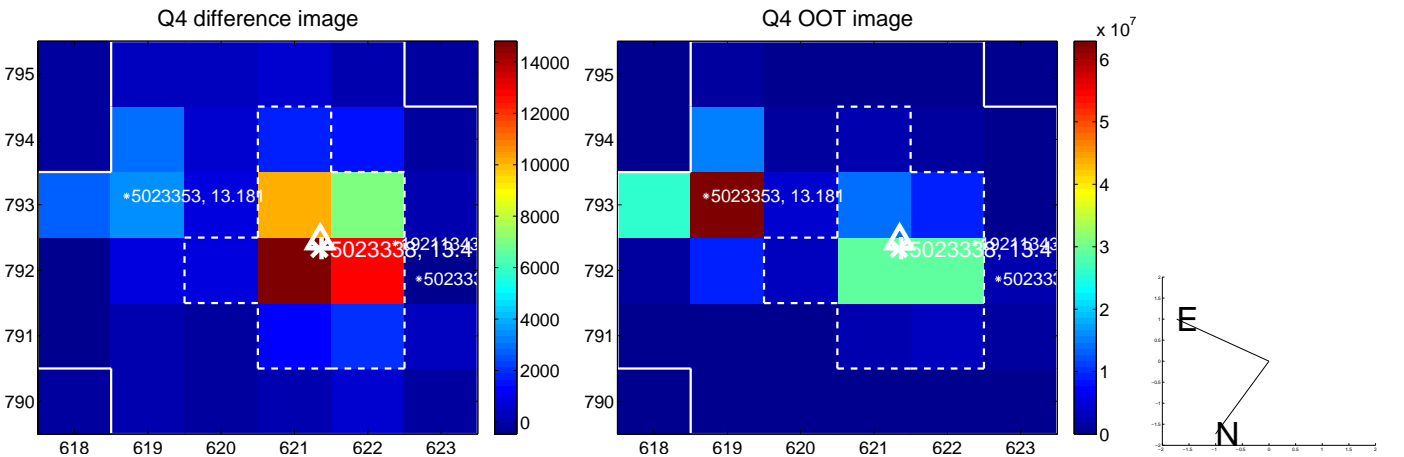
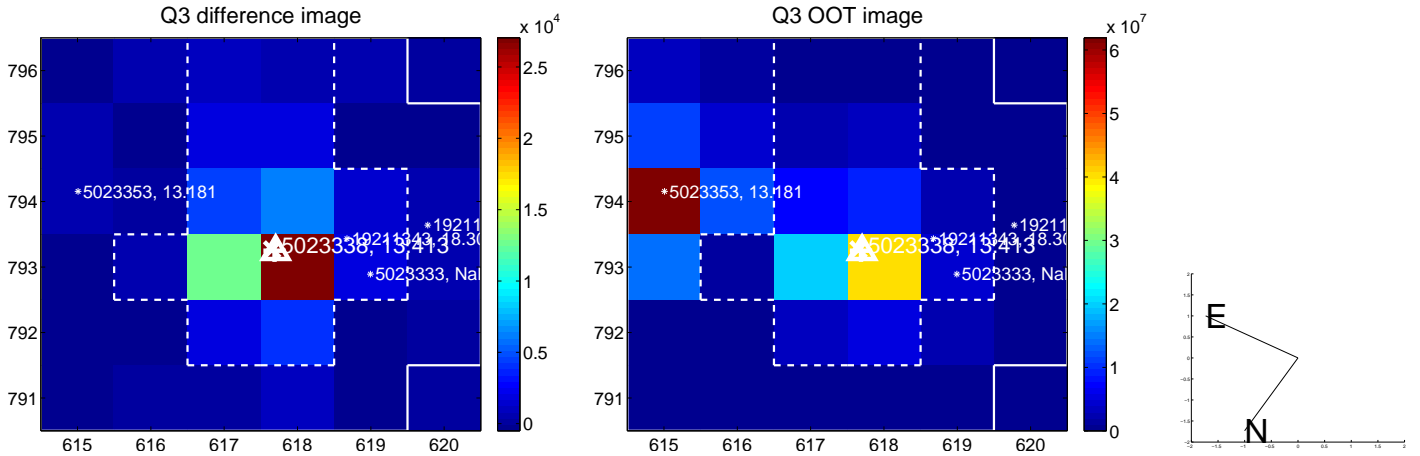
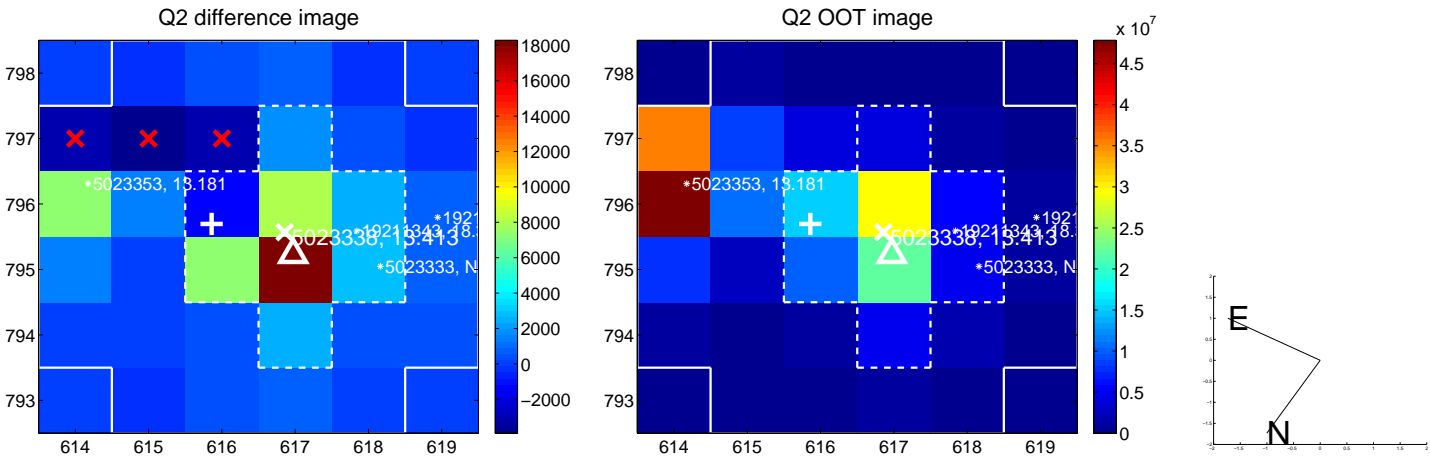
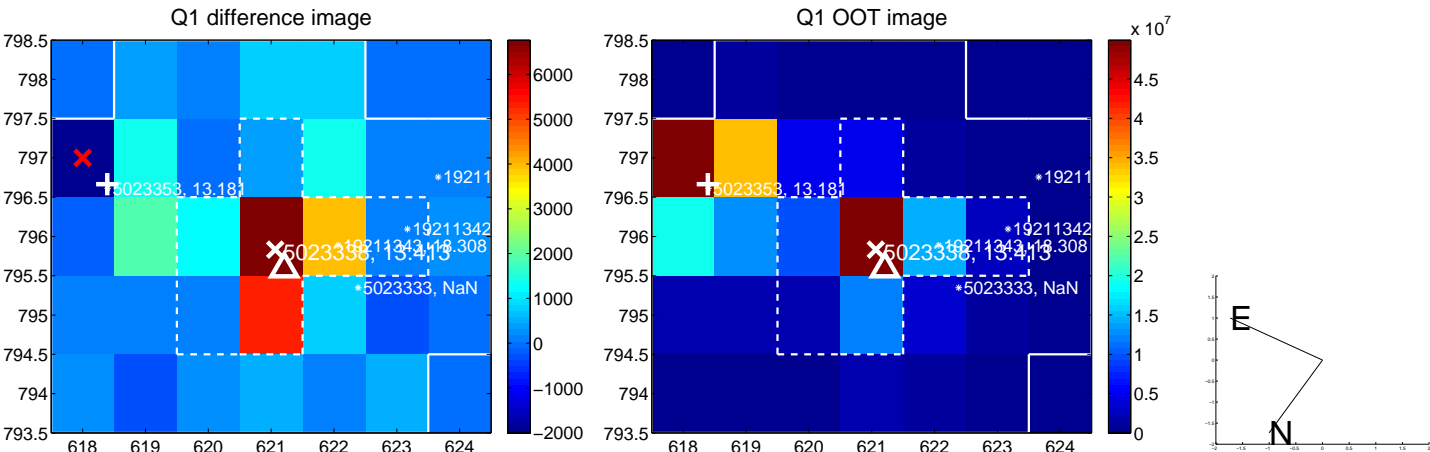
The OOT PRF centroid is offset from the target star catalog position by about 11.11 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.049 ± 1.424	2.14	-2.854 ± 1.405	-1.074 ± 0.330
PRF-fit source offset from KIC position	0.201 ± 0.125	1.61	-0.199 ± 0.135	-0.024 ± 0.124
photometric centroid source offset	1.27 ± 0.34	3.73	1.22 ± 0.35	0.34 ± 0.11

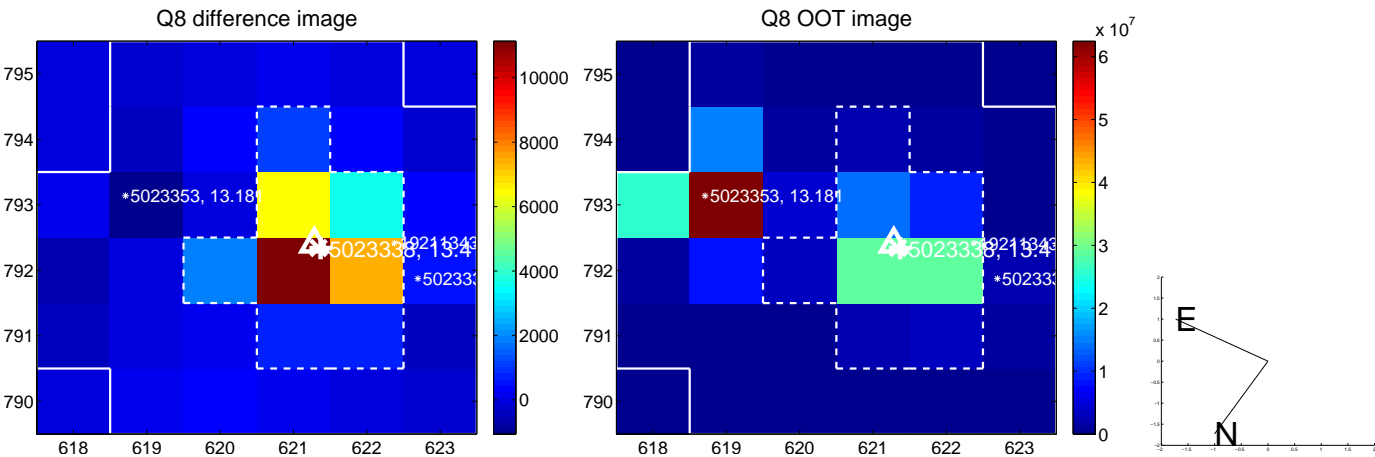
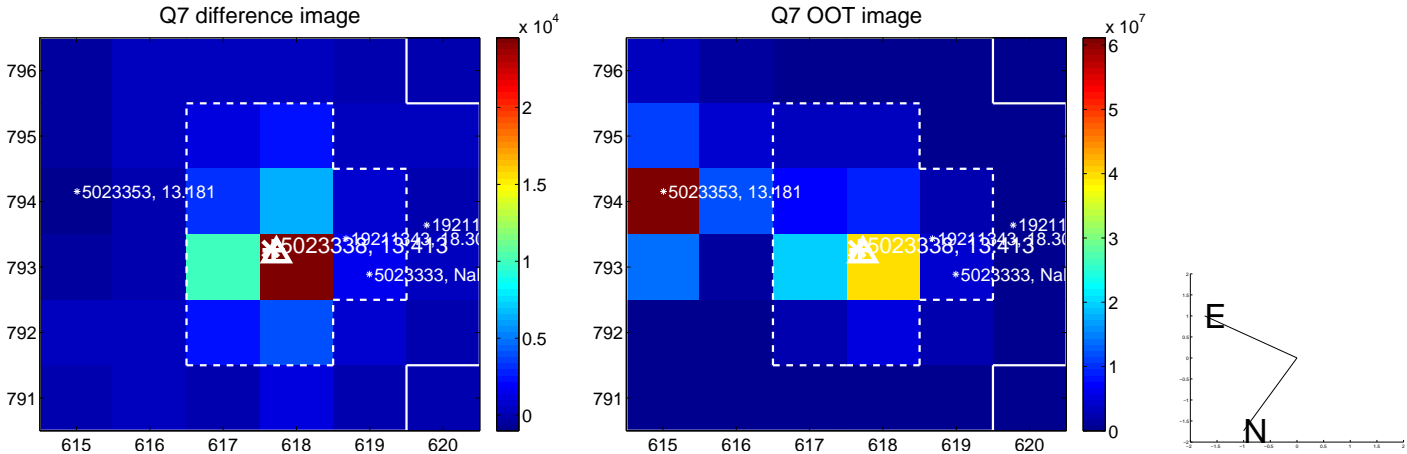
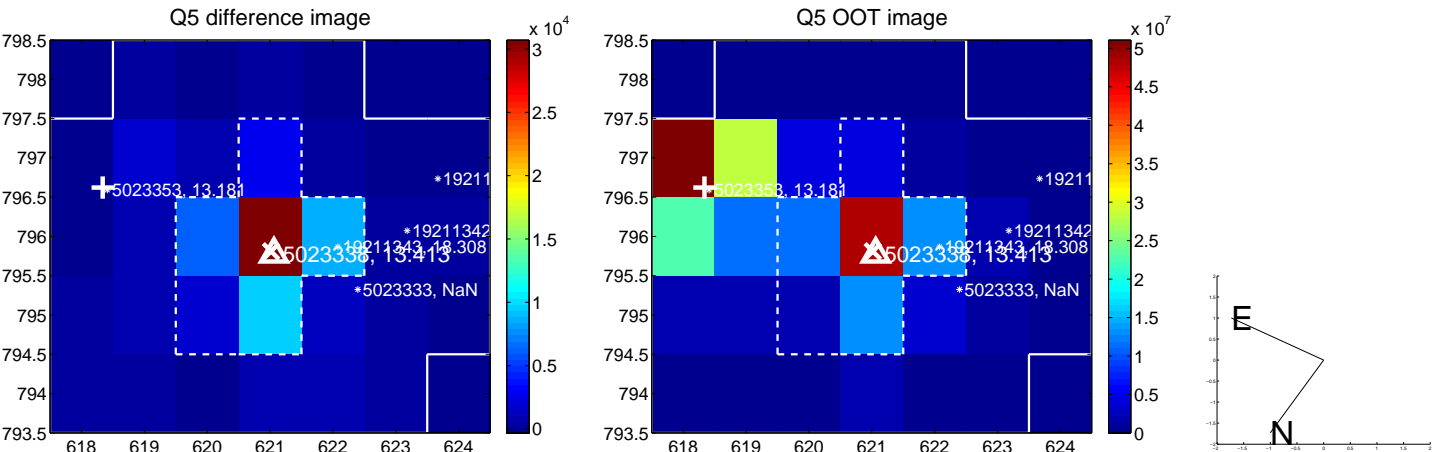


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

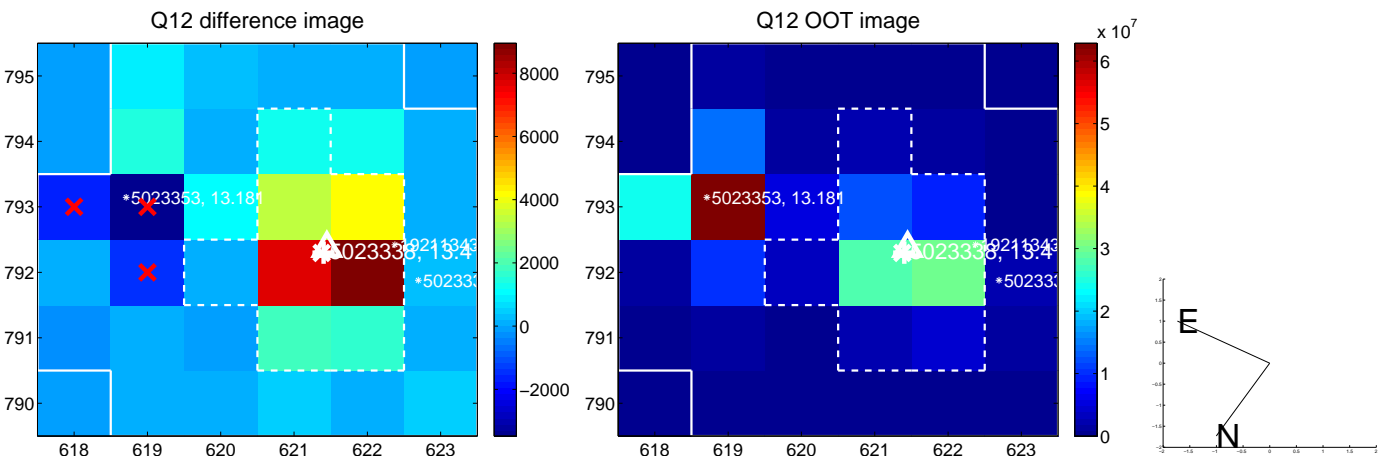
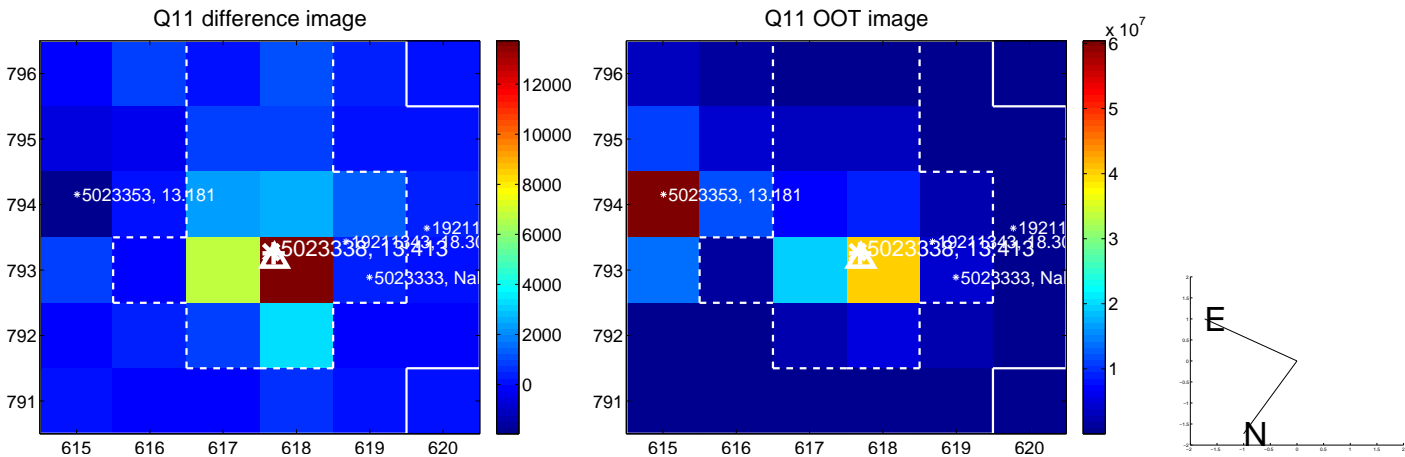
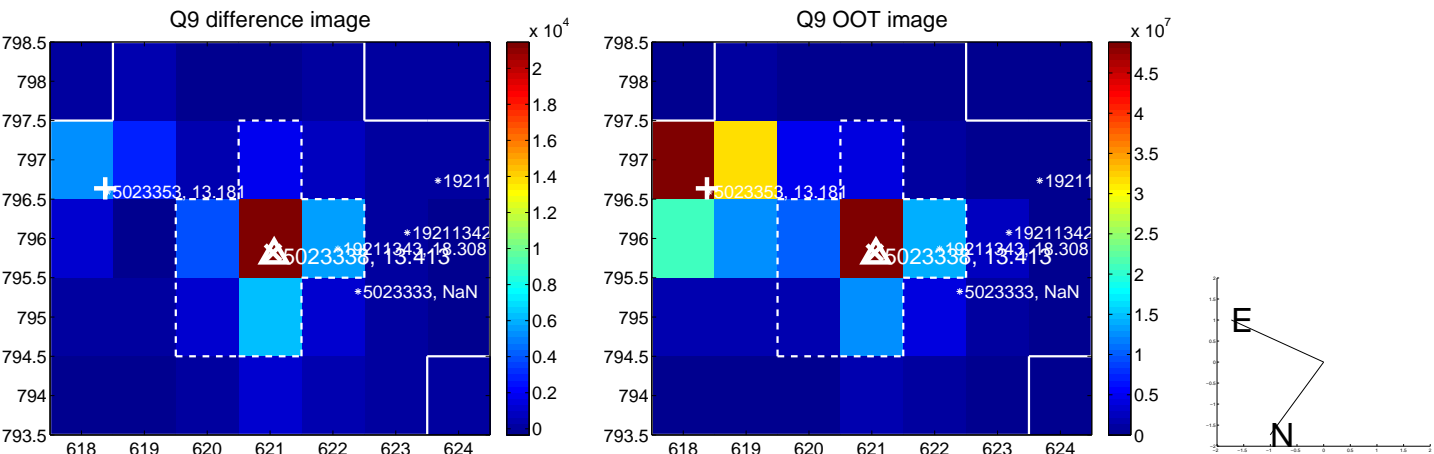
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



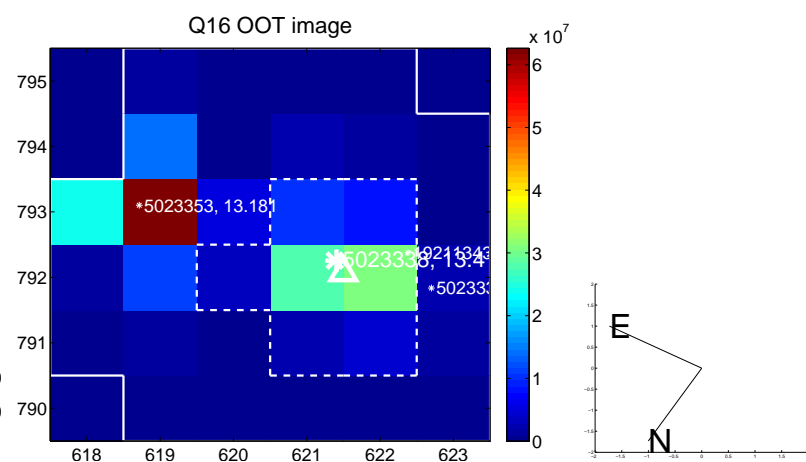
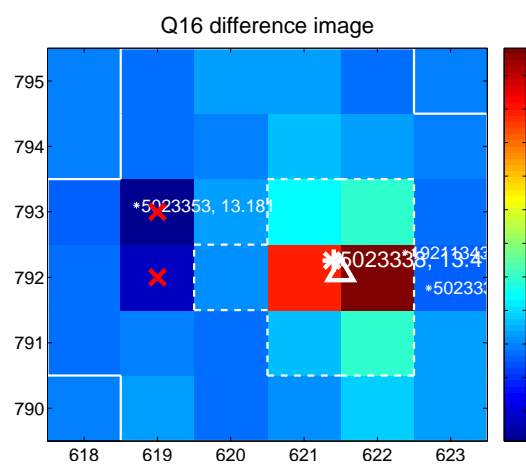
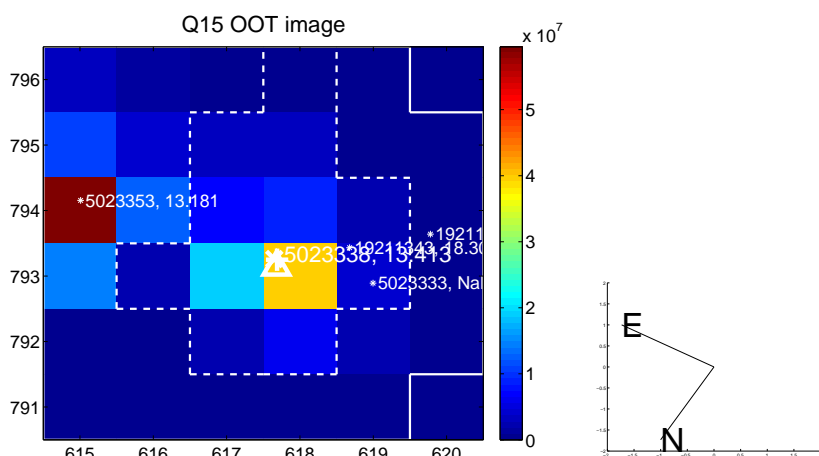
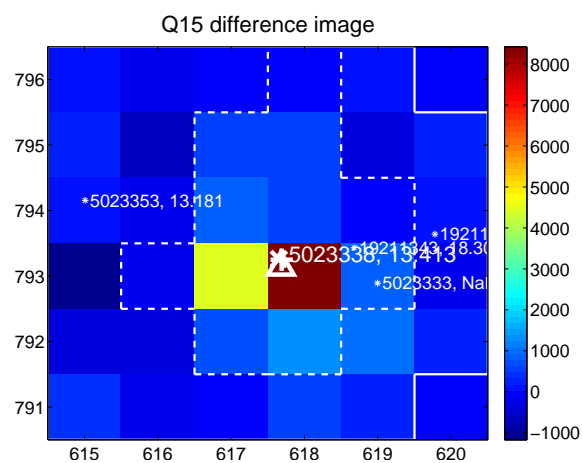
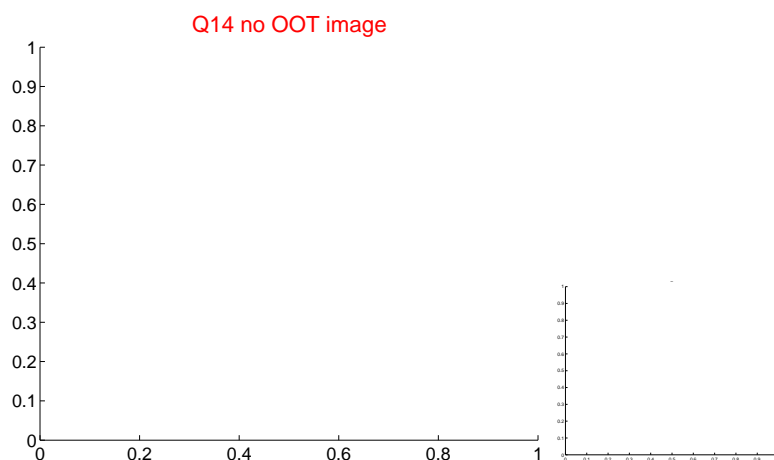
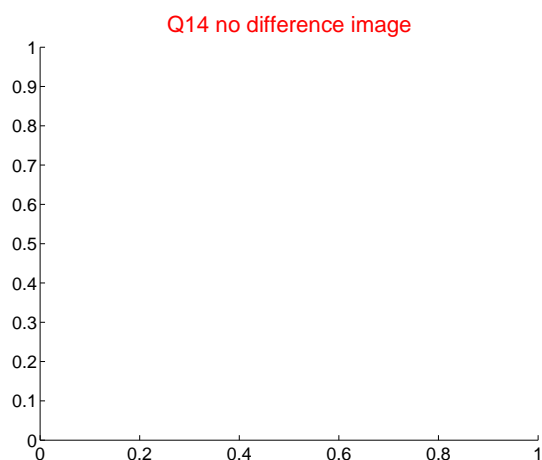
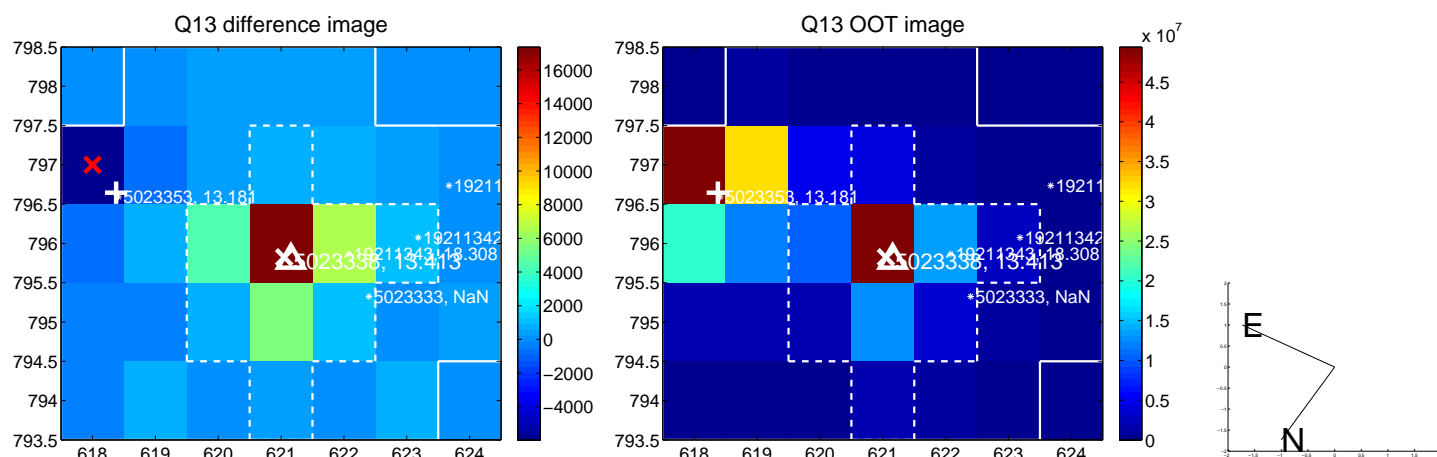
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



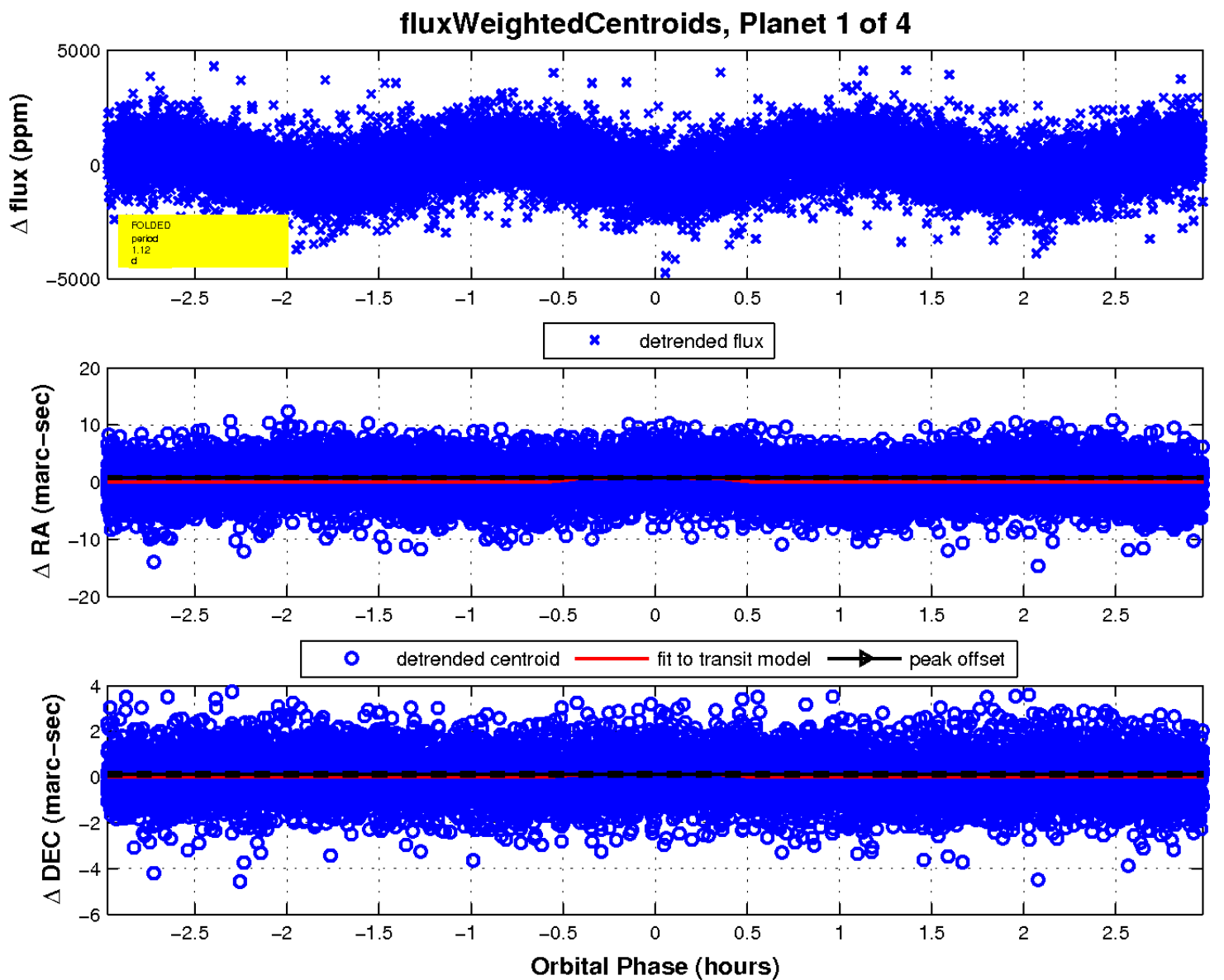
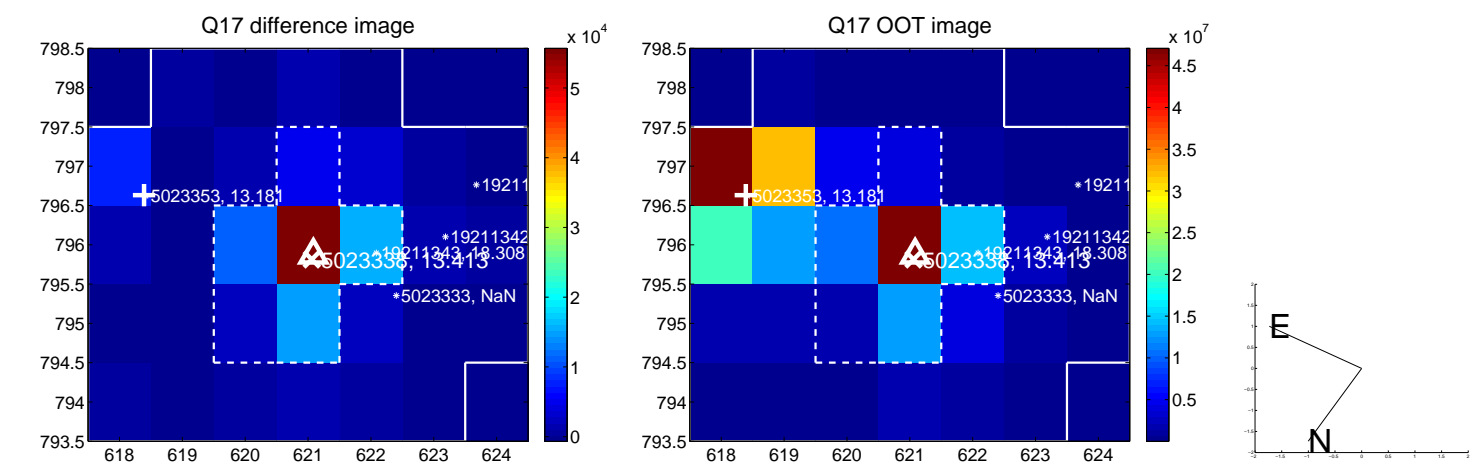
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



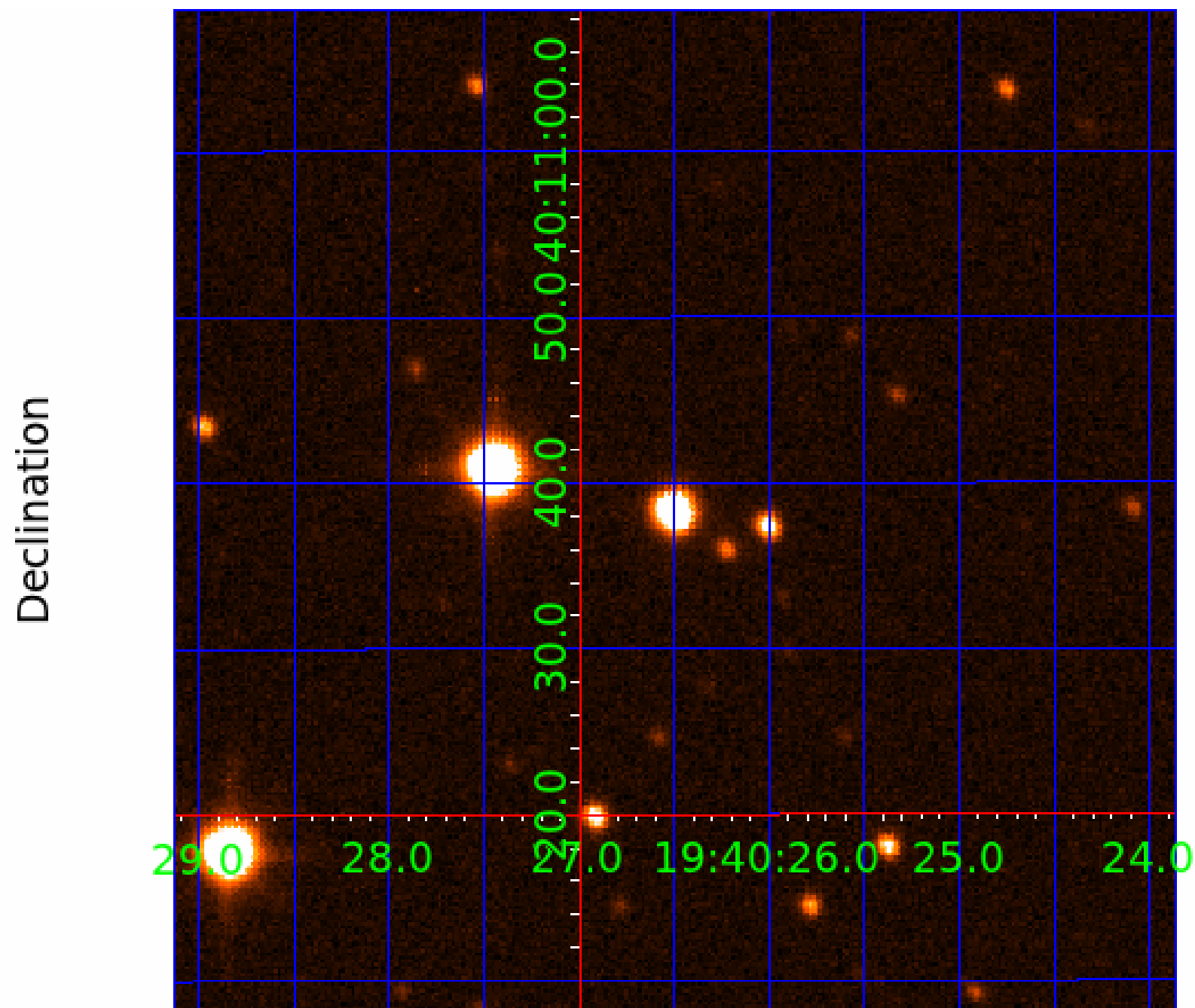
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 005023338

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})
005023338-01	OBS	No	1.120853	132.348937	398.9	0.992	9.8	14.3	3.80	7661	7.92	55640.25
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005023338-03	OBS	No	0.560422	131.637145	379.8	0.901	11.3	19.8	3.80	7661	7.75	0.00
005023338-04	OBS	No	1.120854	131.871296	571.7	0.704	10.1	19.1	3.80	7661	9.58	55640.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005023338-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005023338-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

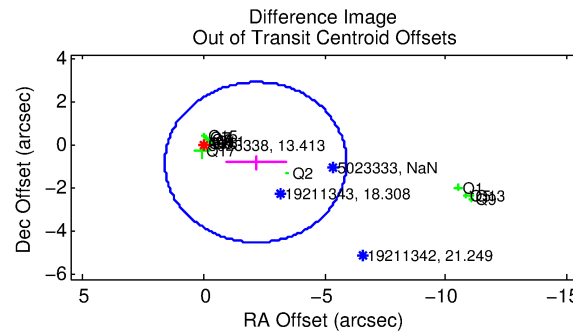
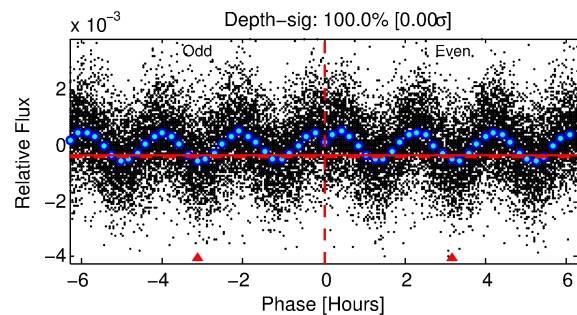
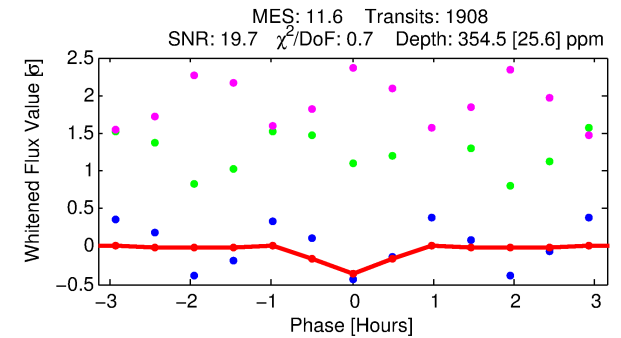
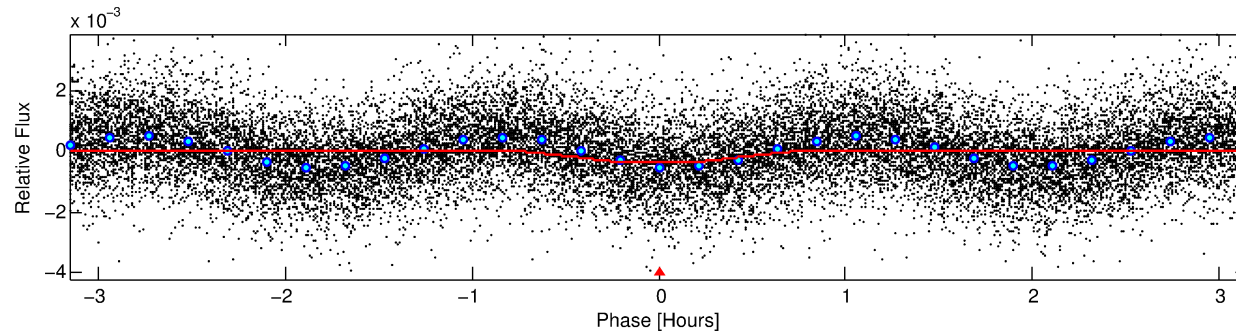
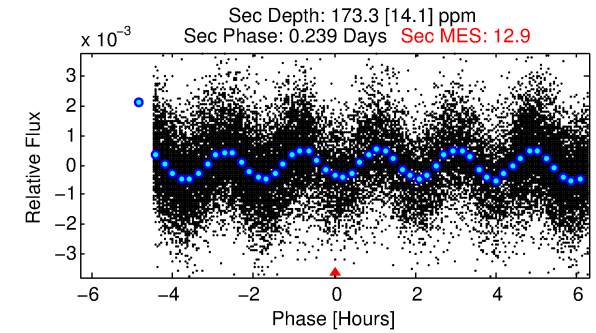
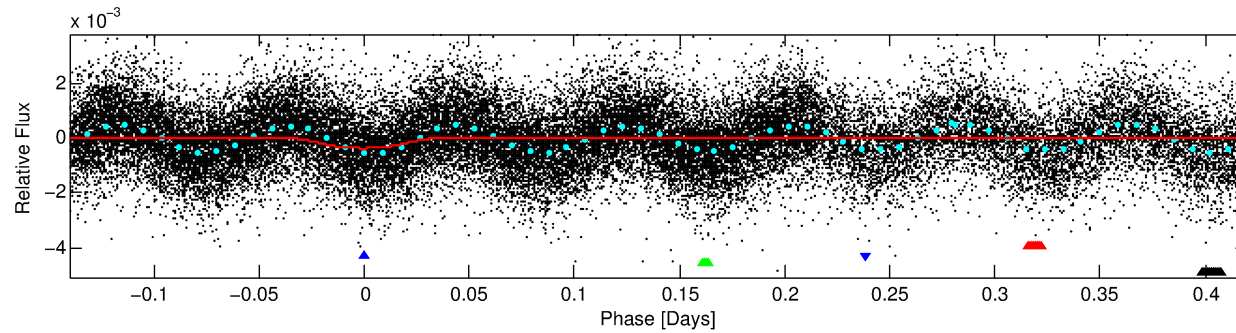
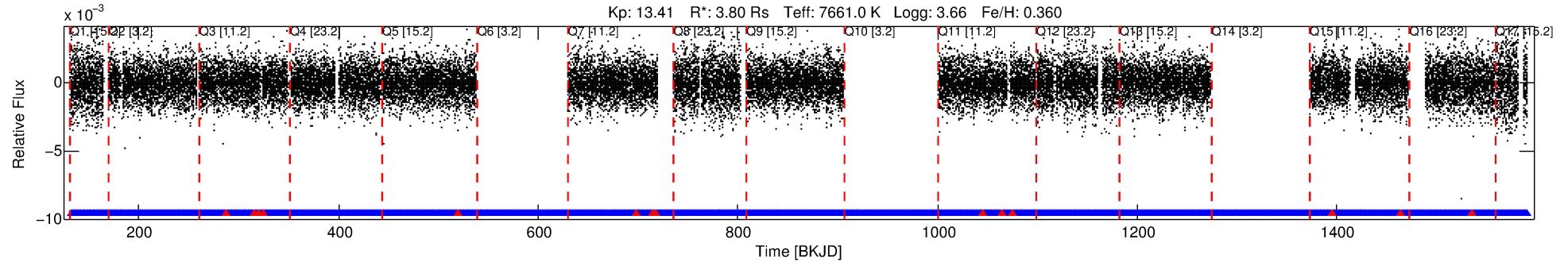
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005023338-02

No Significant Match Found

DV One-Page Summary

KIC: 5023338 Candidate: 2 of 4 Period: 0.560 d



DV Fit Results:

Period = 0.56042 [0.00001] d
Epoch = 132.0335 [0.0008] BKJD
Rp/R* = 0.0177 [0.0063]
a/R* = 4.00 [7.48]
b = 0.31 [5.95]
Seff = N/A
Teq = N/A
Rp = 7.34 [4.30] Re
a = N/A
Ag = N/A
Teffp = N/A

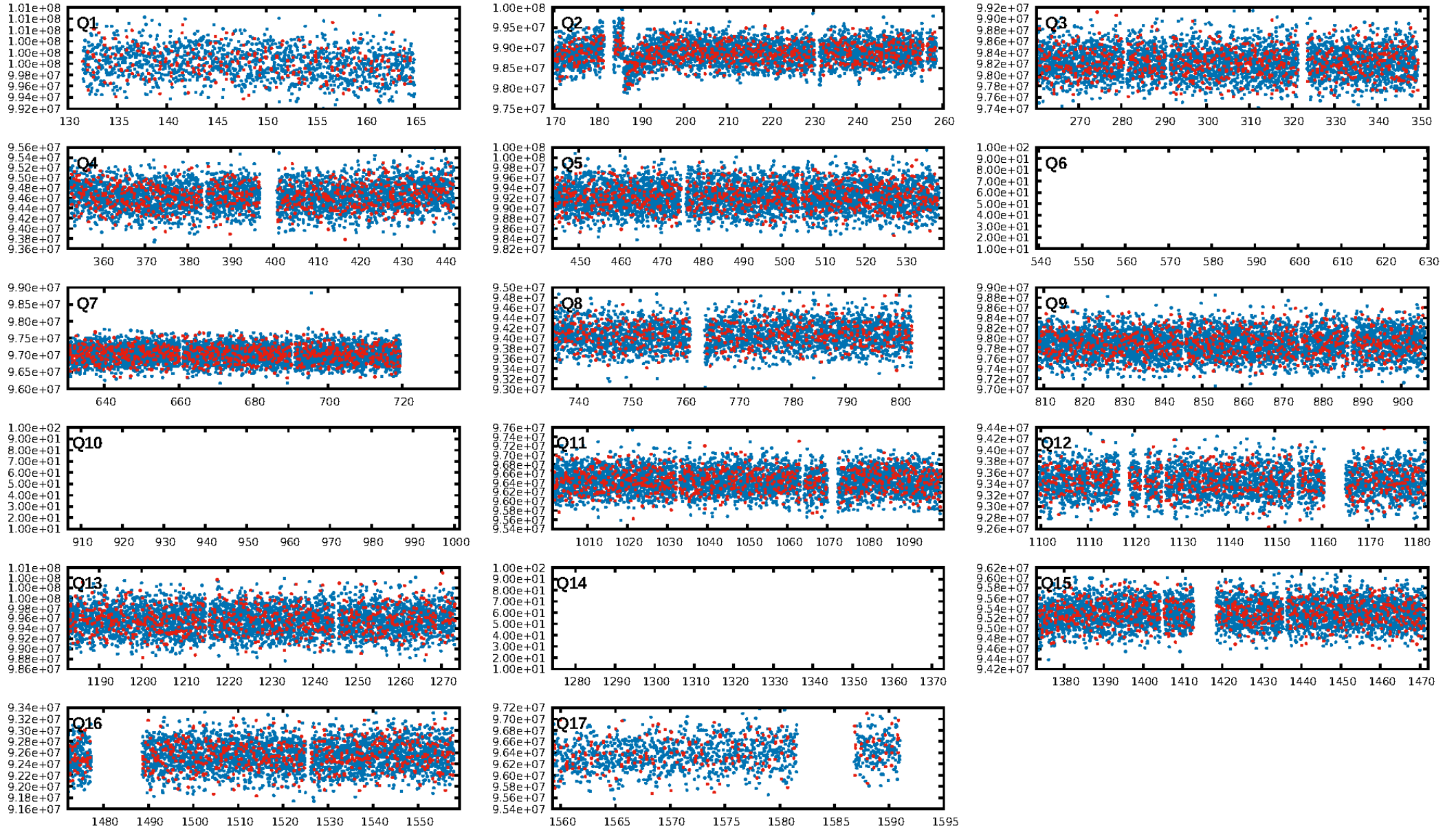
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [9.30σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGoF-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1786/1800]
GhostDiagnostic-chr: 2.974
Centroid-sig: 0.0%
Centroid-so: 1.146 arcsec [4.91σ]
OotOffset-rm: 2.299 arcsec [1.84σ]
KicOffset-rm: 0.312 arcsec [0.56σ]
OotOffset-st: 1/4/3/5 [13]
KicOffset-st: 1/4/3/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 0.00 [0/14]

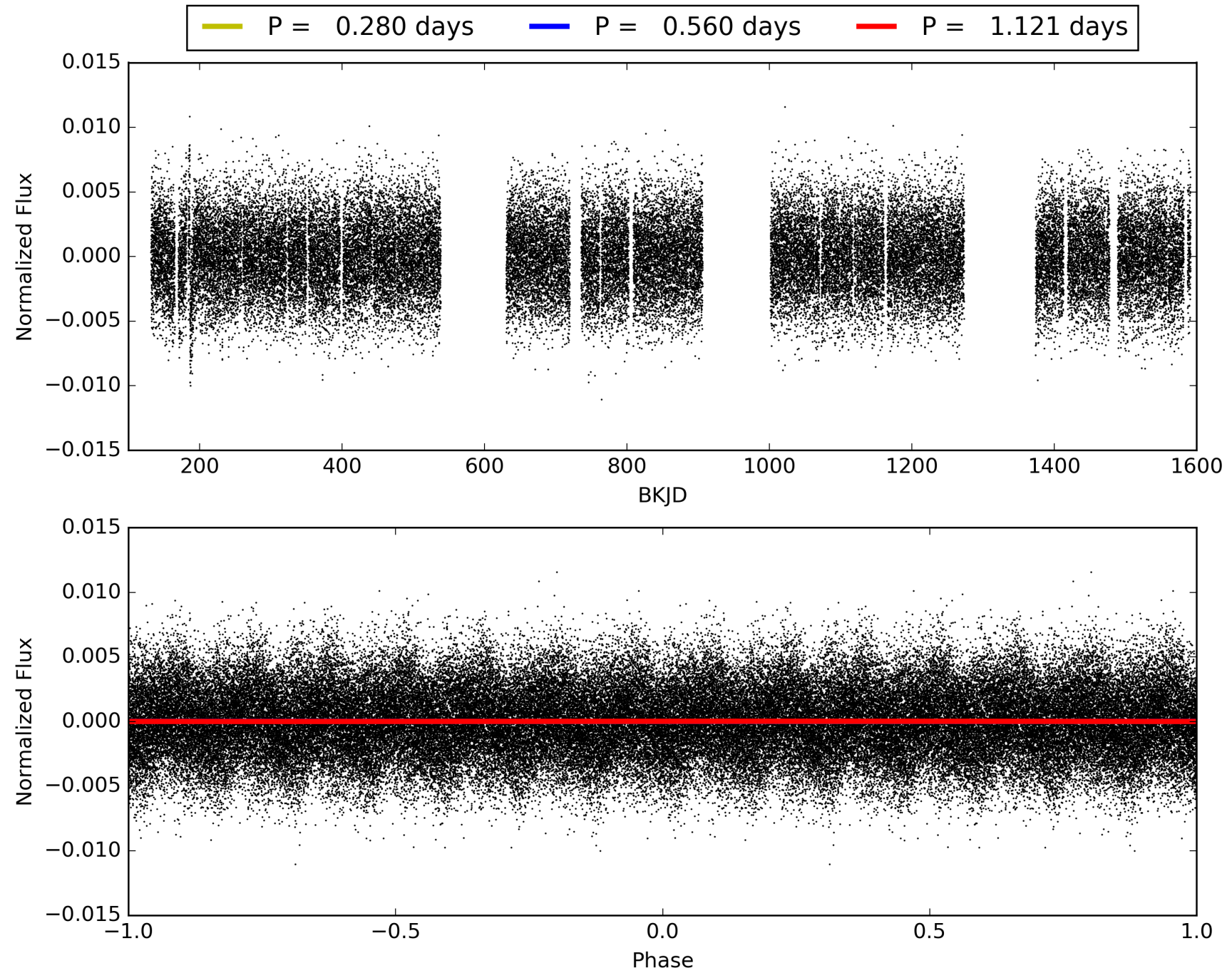
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:50 Z

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

TCE 005023338-02, PDC Light Curves

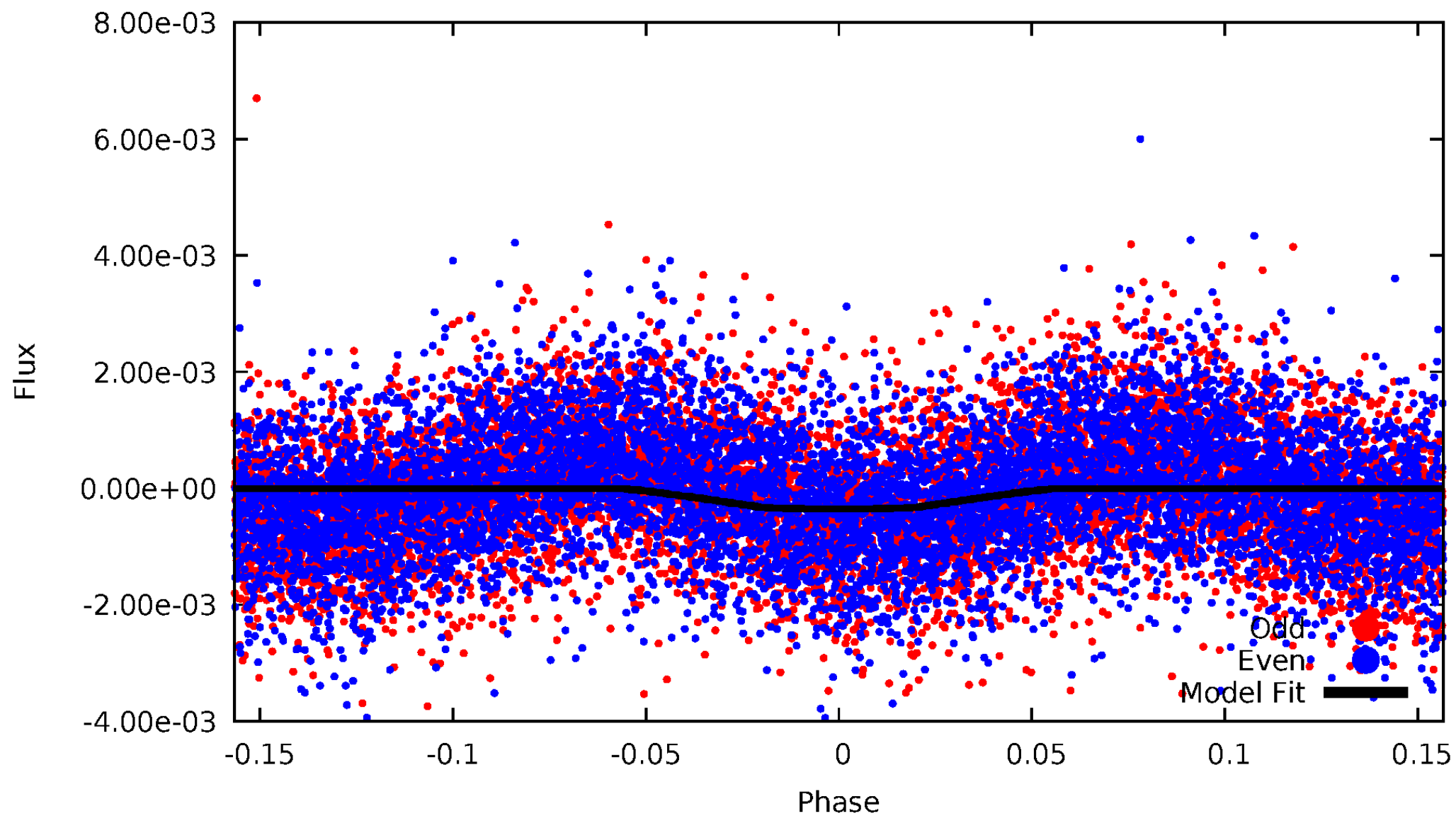


TCE 005023338-02



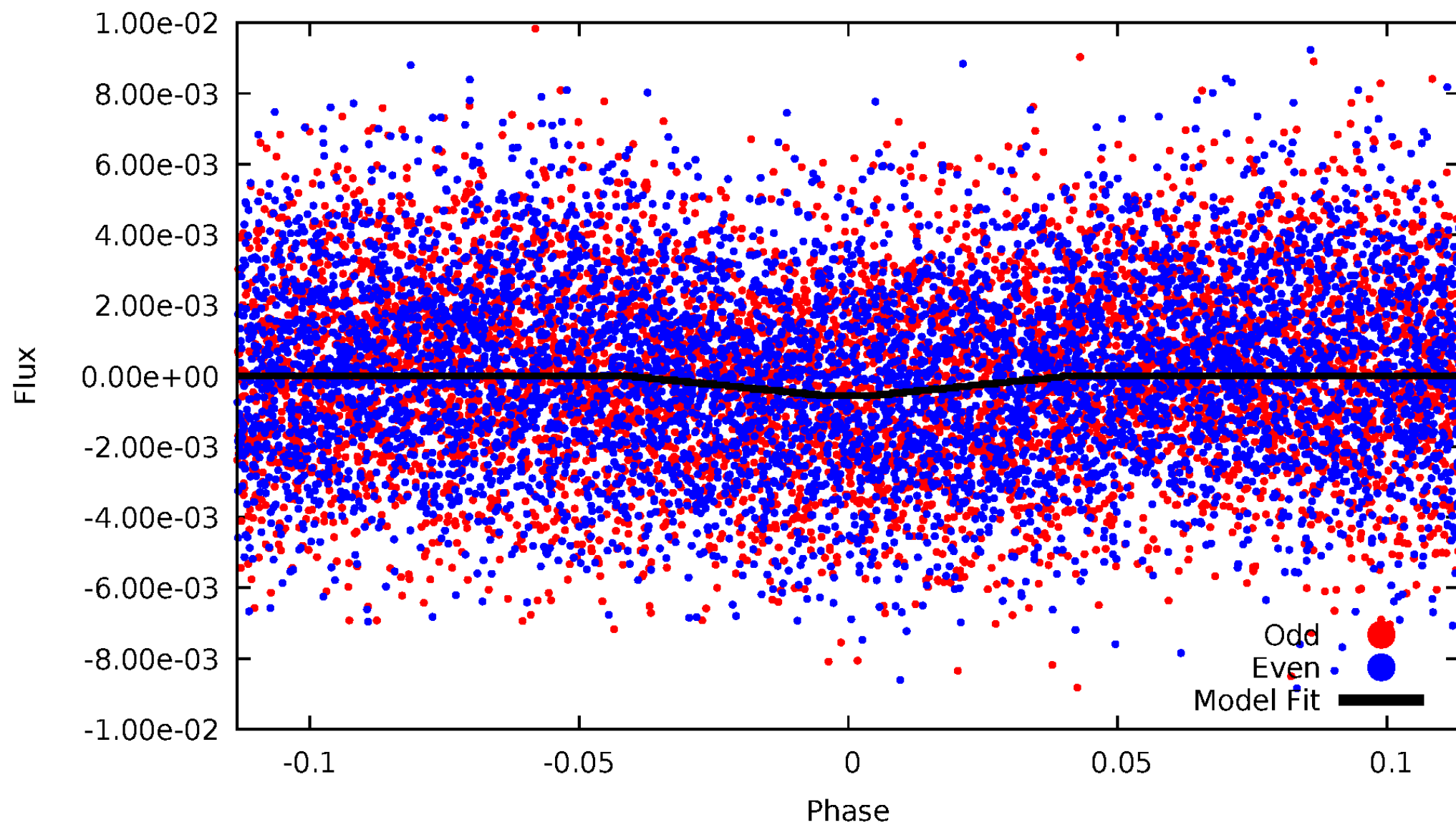
DV Odd/Even

TCE 005023338-02



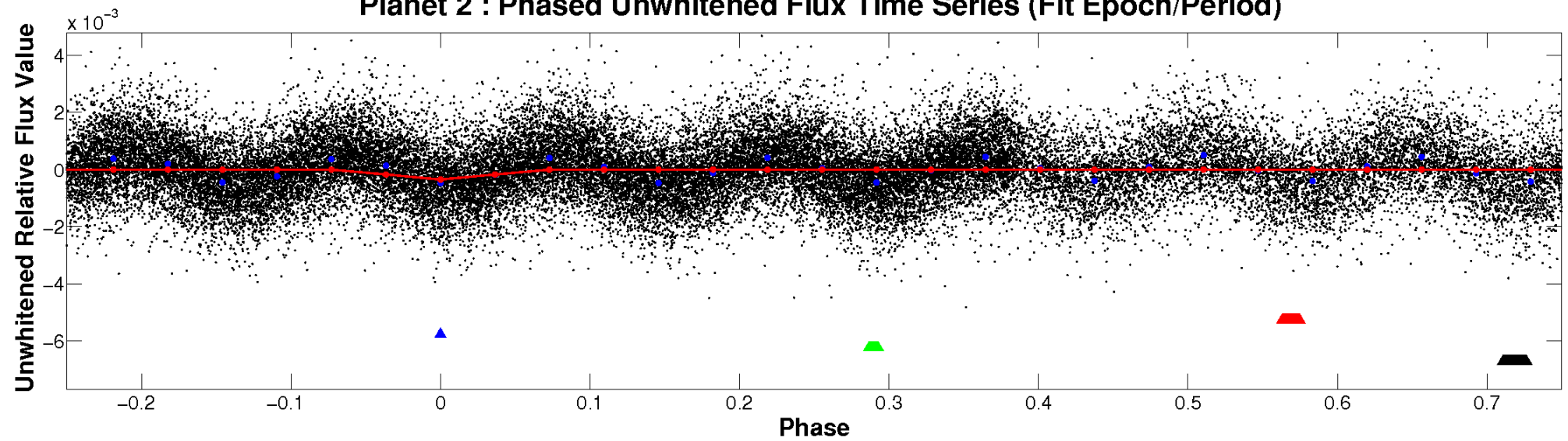
ALT Odd/Even

TCE 005023338-02

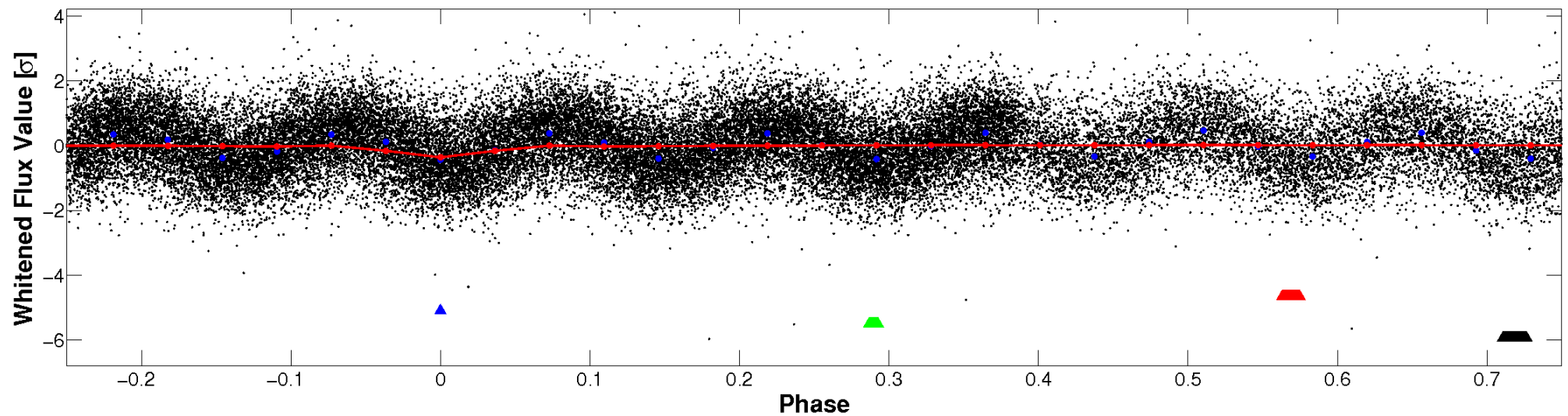


Non-Whitened Vs. Whitened Light Curve

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

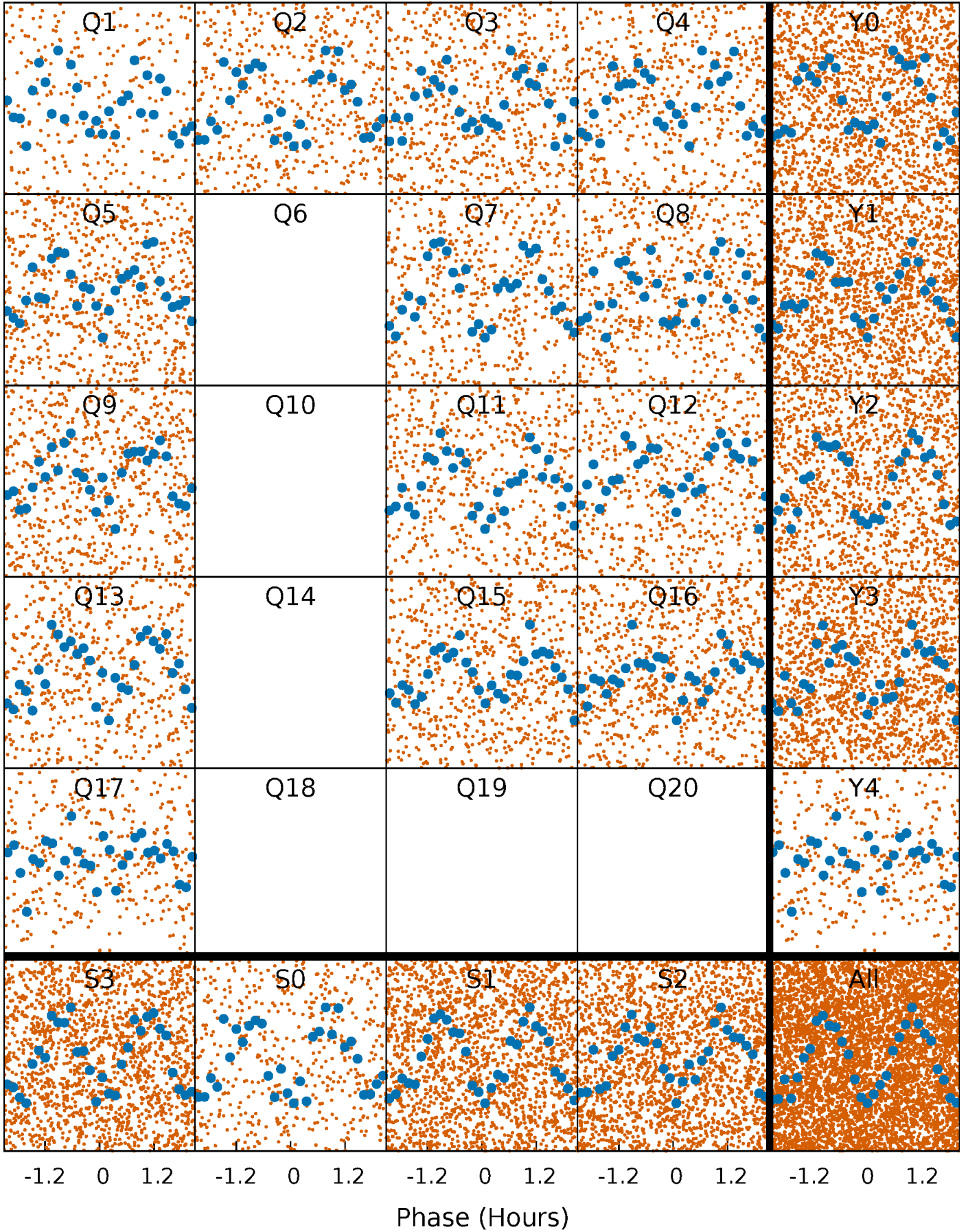


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



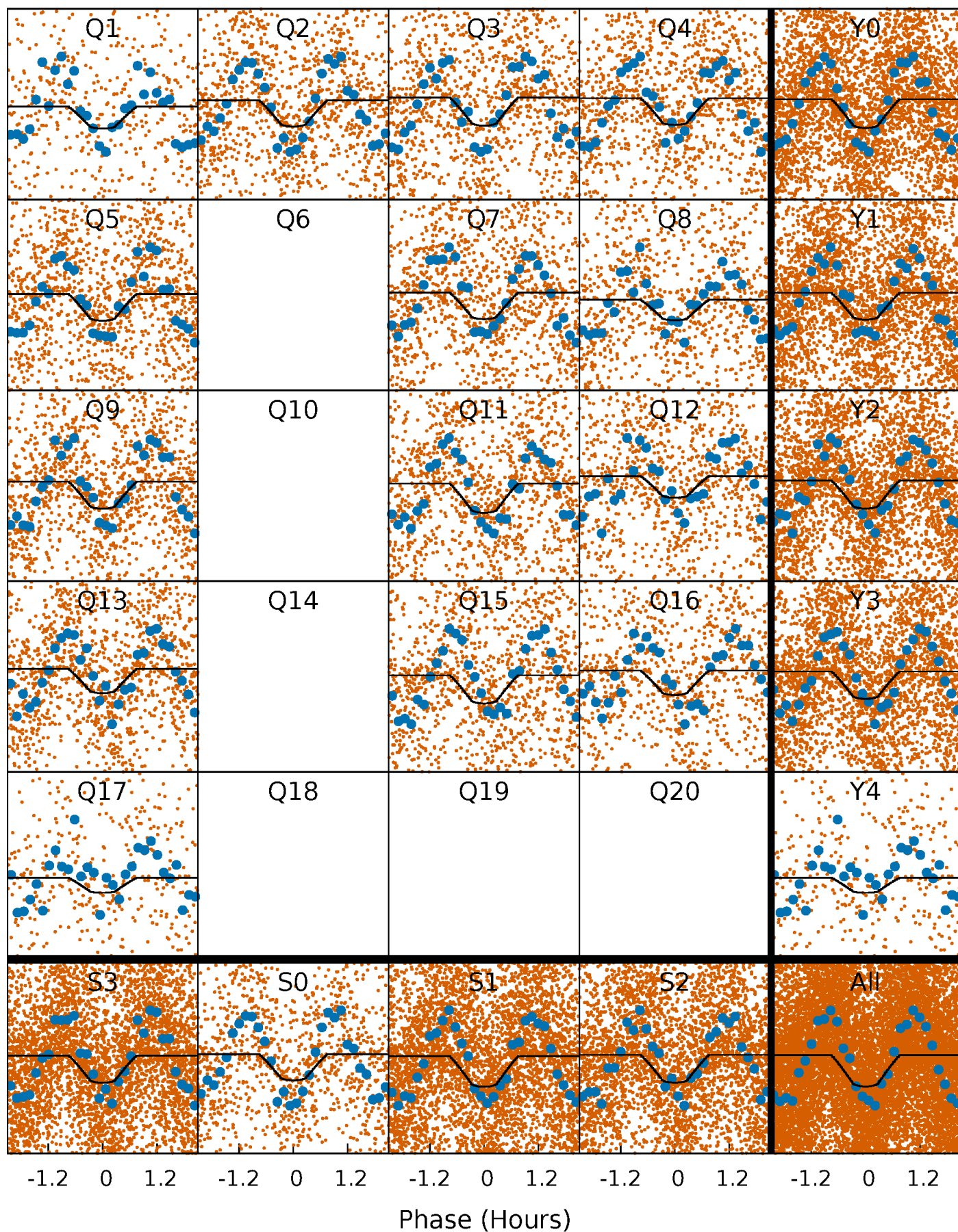
PDC Quarter-Phased Transit Curves

TCE 005023338-02 P= 0.560424 Days $T_0=132.033461$ (BKJD)



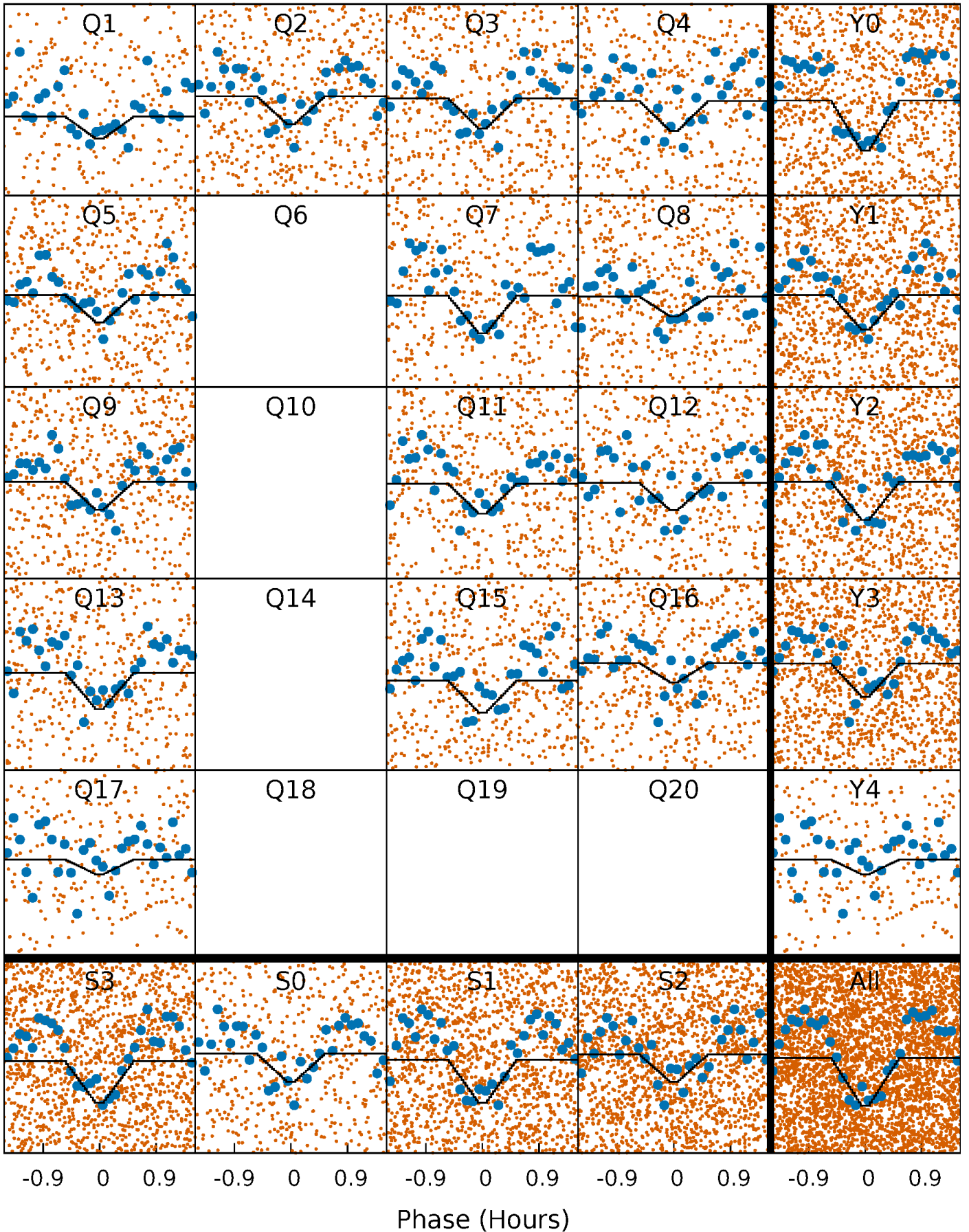
DV Quarter-Phased Transit Curves

TCE 005023338-02 P= 0.560424 Days $T_0=132.033461$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

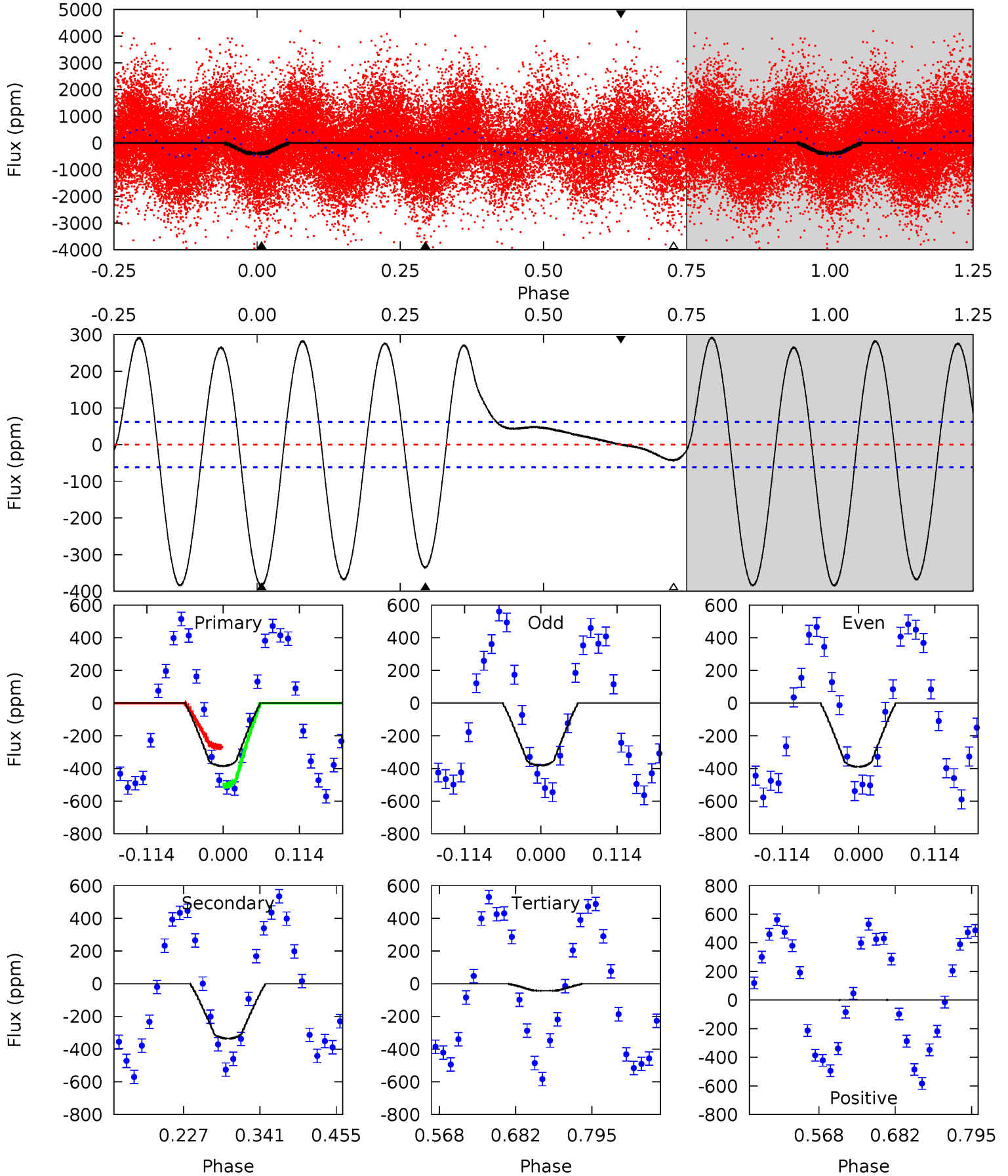
TCE 005023338-02 P= 0.560428 Days $T_0=132.032794$ (BKJD)



DV Model-Shift Uniqueness Test

005023338-02, P = 0.560424 Days, E = 131.473037 Days

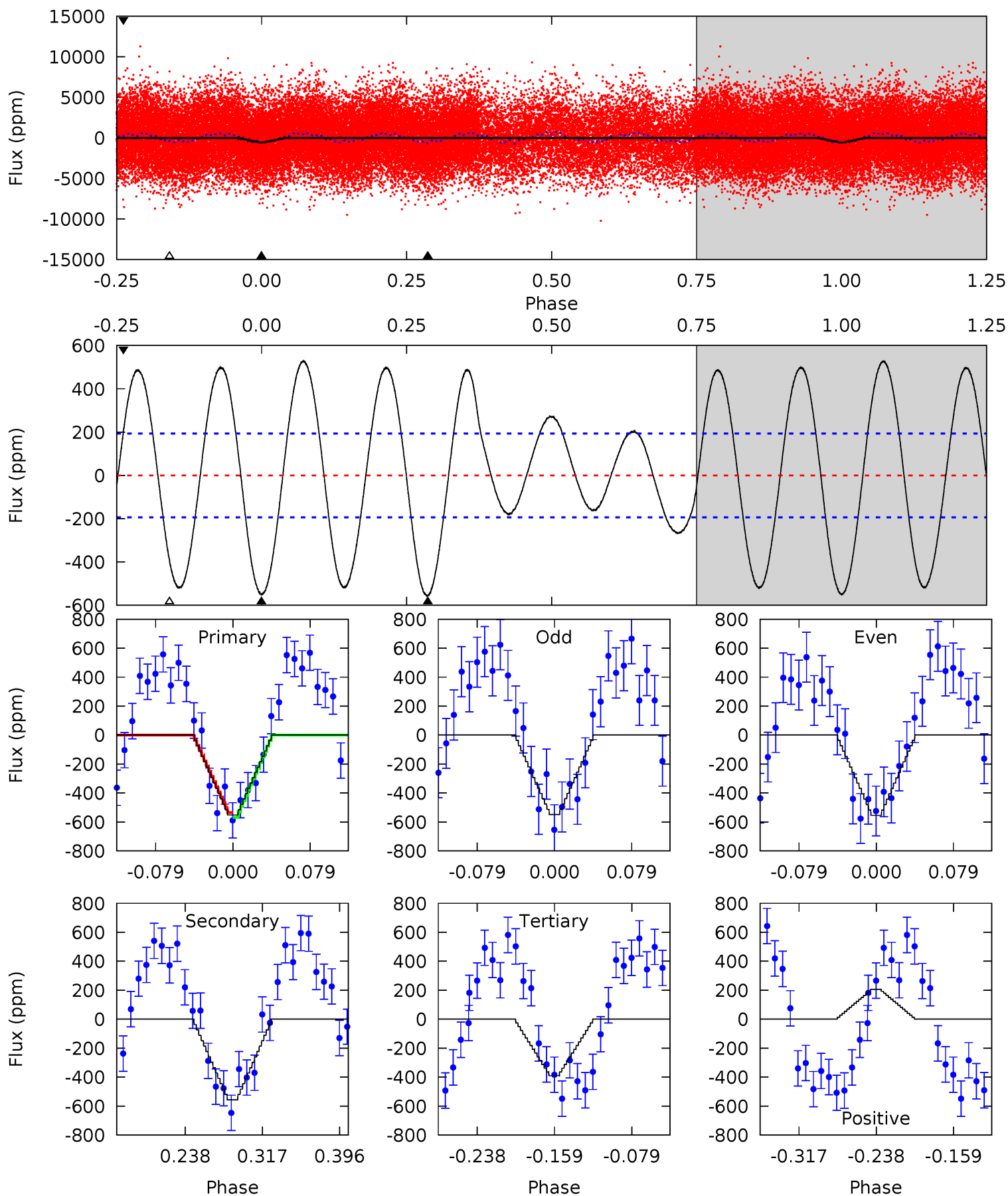
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	24.7	3.17	0.04	4.54	1.58	13.6	25.1	28.3	21.5	24.6	0.29	0.98	0.43	8.89



Alt Model-Shift Uniqueness Test

005023338-02, P = 0.560428 Days, E = 131.472366 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	13.3	9.30	4.91	4.61	1.75	6.88	3.85	8.24	3.99	8.38	0.06	0.96	0.49	0.40



Stellar Parameters For KIC 005023338

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7661^{+212}_{-363}	$3.660^{+0.397}_{-0.132}$	$0.360^{+0.050}_{-0.400}$	$3.803^{+0.756}_{-1.765}$	$2.410^{+0.217}_{-0.652}$	$0.062^{+0.249}_{-0.020}$
	+3%/-5%	+11%/-4%	+14%/-111%	+20%/-46%	+9%/-27%	+403%/-33%
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 005023338-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-335 ± 14	$6.53^{+3.32}_{-2.69}$	6706^{+542}_{-750}	7198^{+3221}_{-1689}	$1.342^{+2.423}_{-0.744}$
Alt.	-557 ± 42	$8.92^{+3.19}_{-2.99}$	6737^{+497}_{-780}	7069^{+1838}_{-1383}	$1.197^{+1.534}_{-0.539}$

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

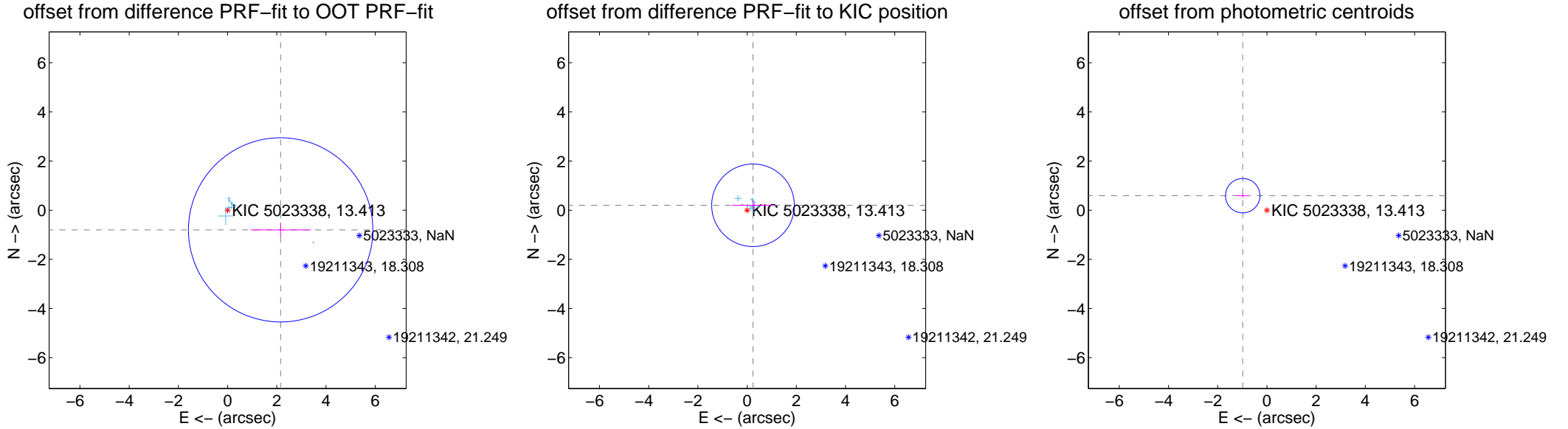
DV Centroid Data

Supplemental centroid analysis for 005023338-02. Kepler magnitude: 13.41. Transit SNR 19.71

There are 13 quarters with good PRF difference image offsets

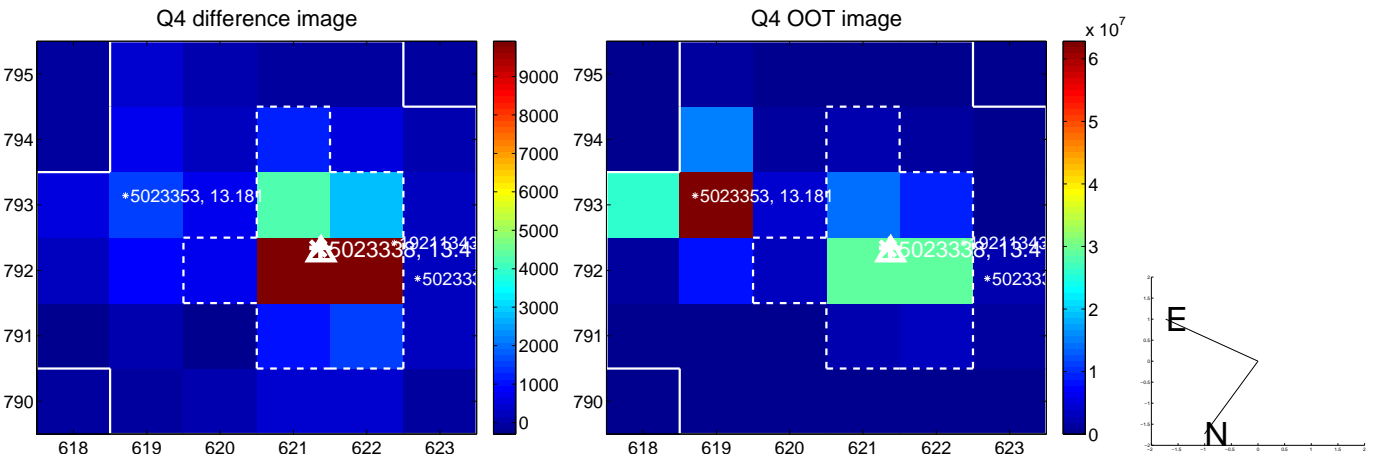
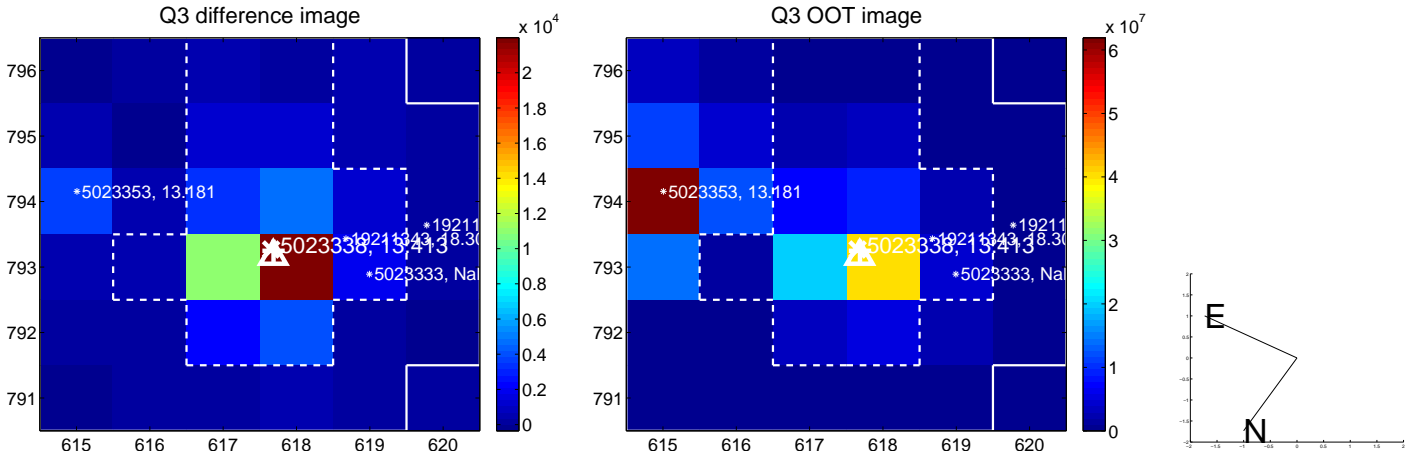
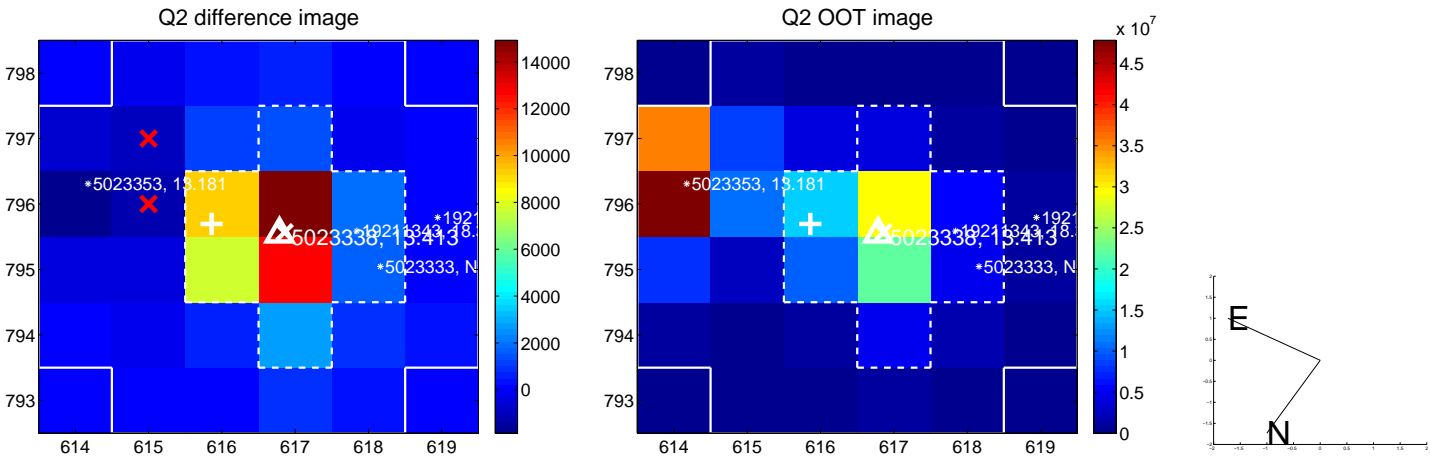
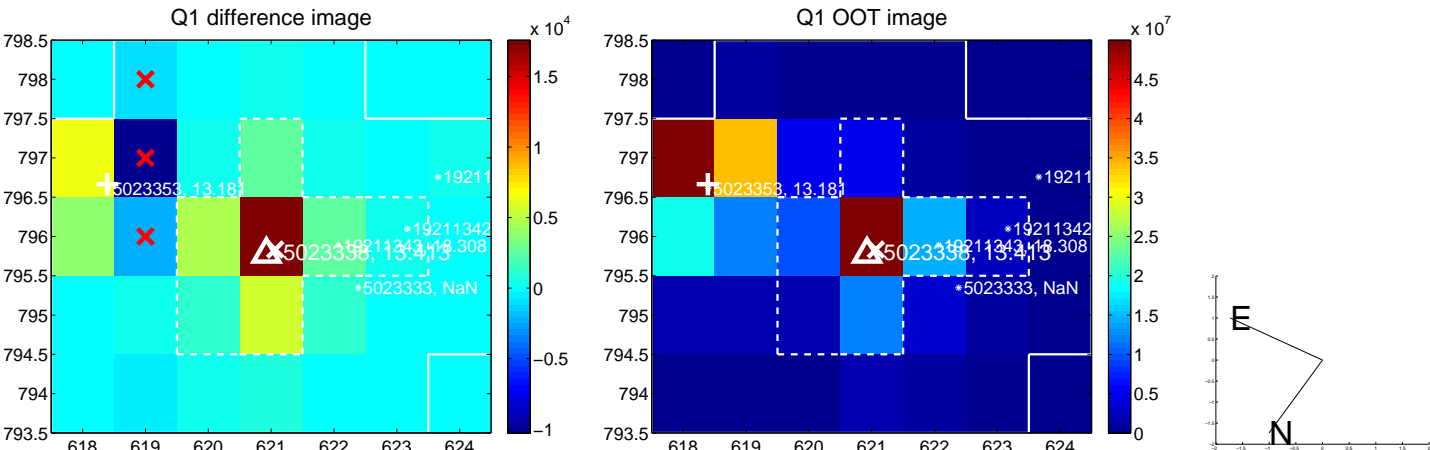
The OOT PRF centroid is offset from the target star catalog position by about 11.11 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.299 ± 1.249	1.84	-2.156 ± 1.228	-0.800 ± 0.297
PRF-fit source offset from KIC position	0.312 ± 0.560	0.56	-0.239 ± 0.859	0.200 ± 0.177
photometric centroid source offset	1.15 ± 0.23	4.91	0.98 ± 0.27	0.59 ± 0.09

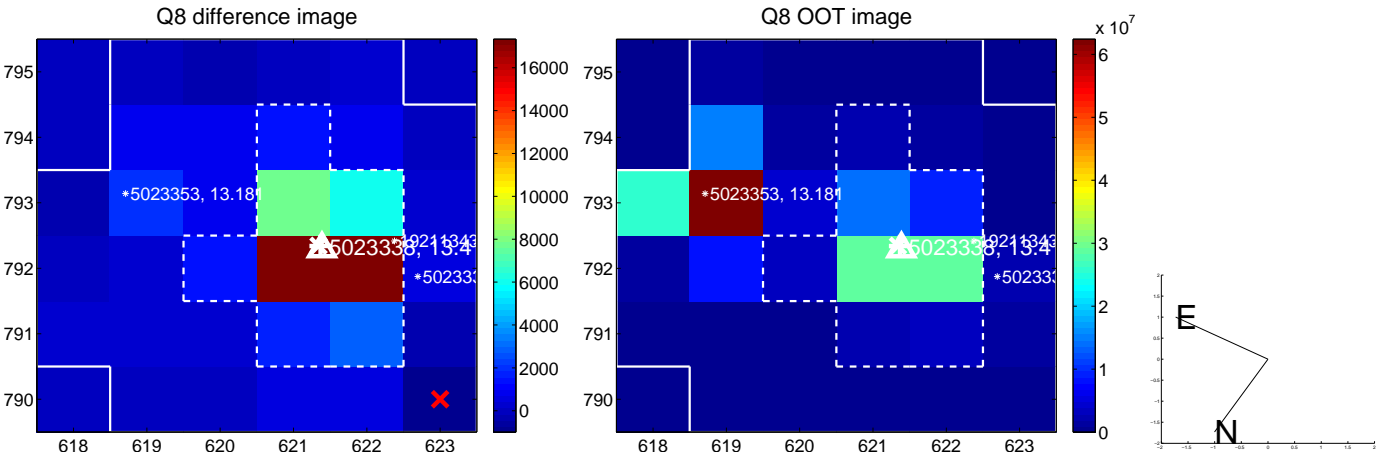
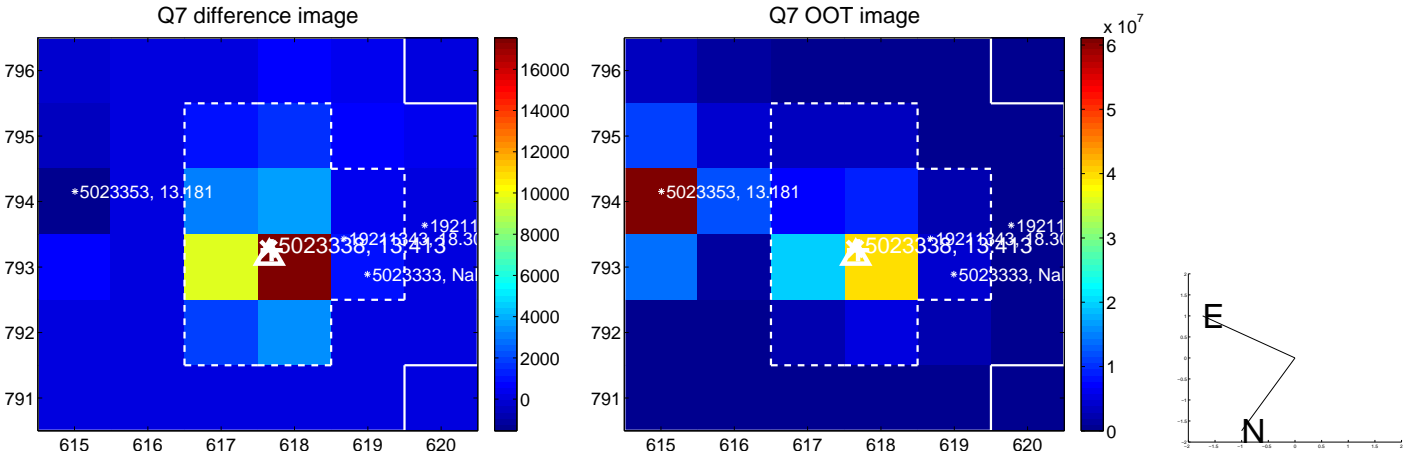
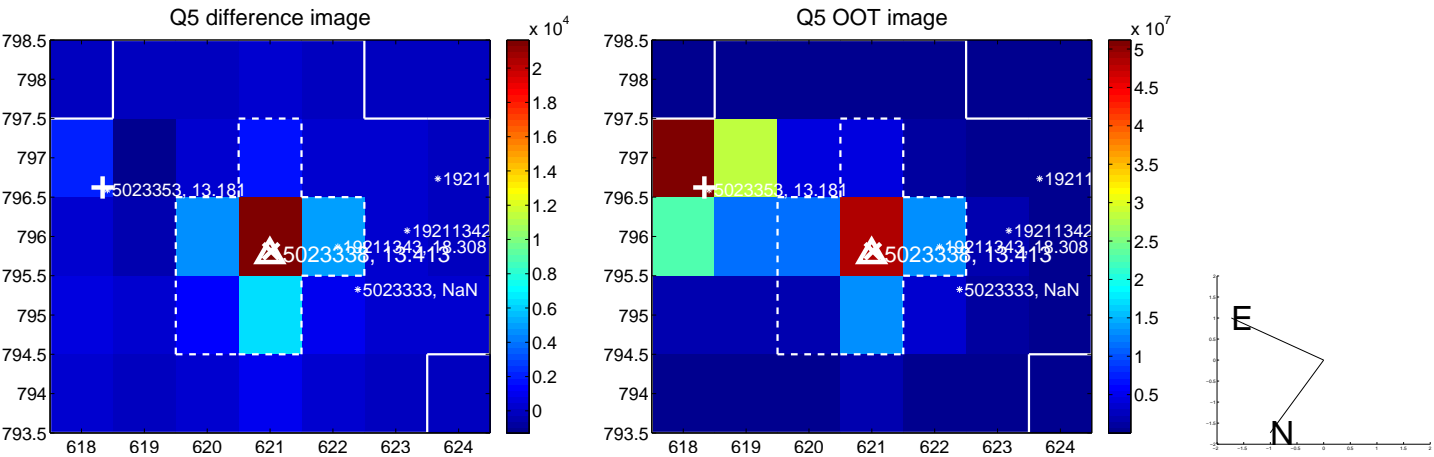


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

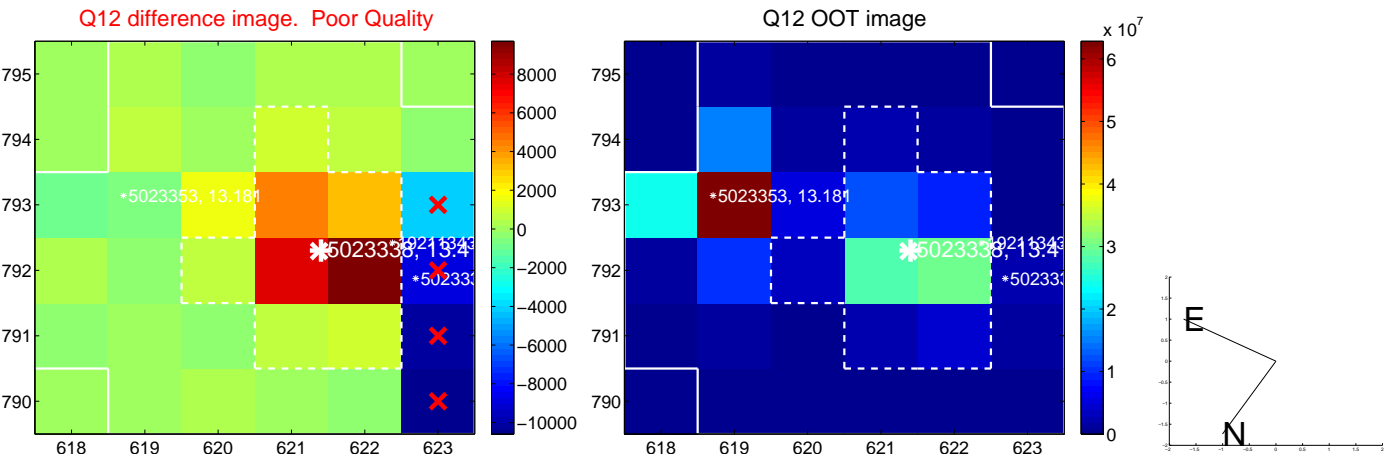
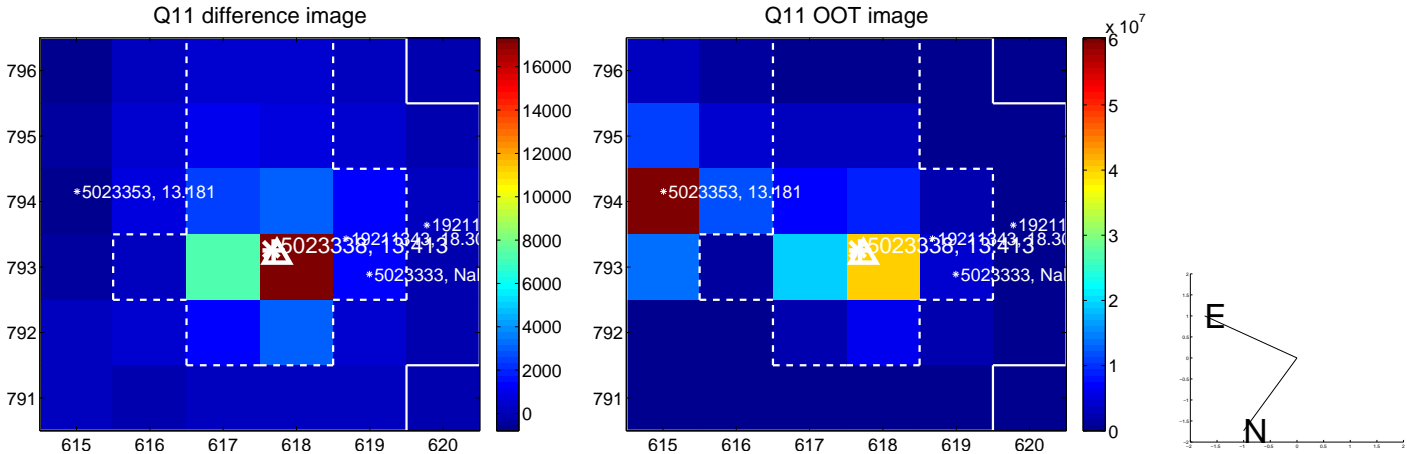
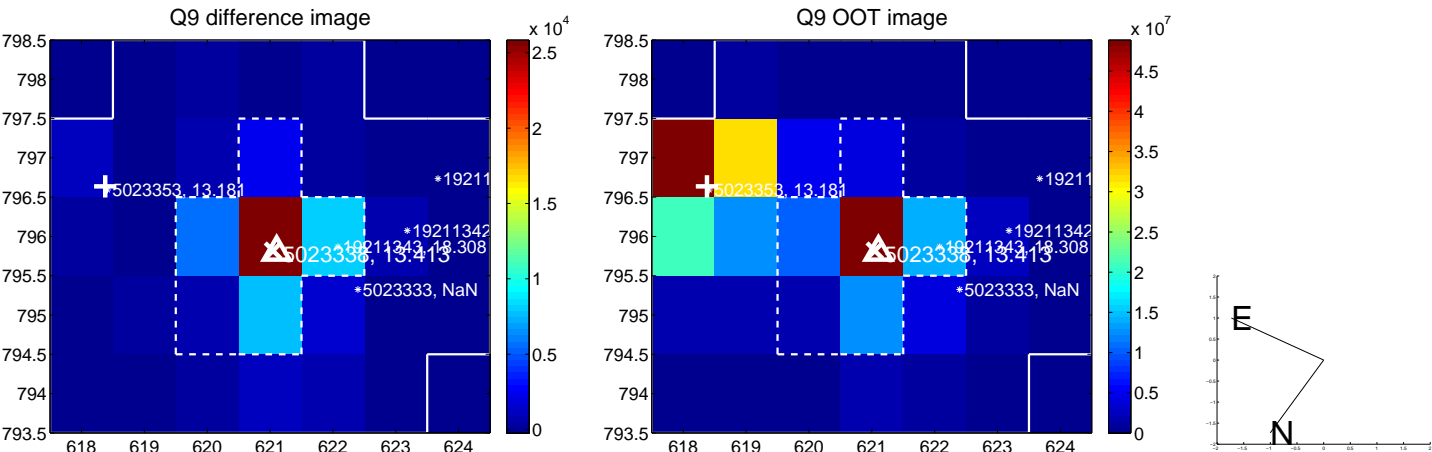
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



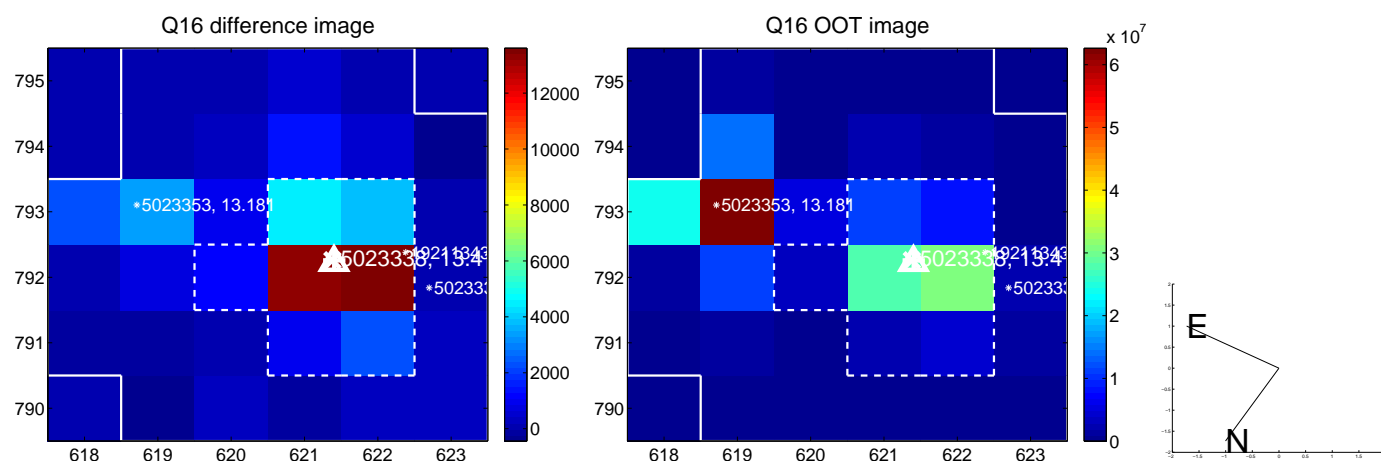
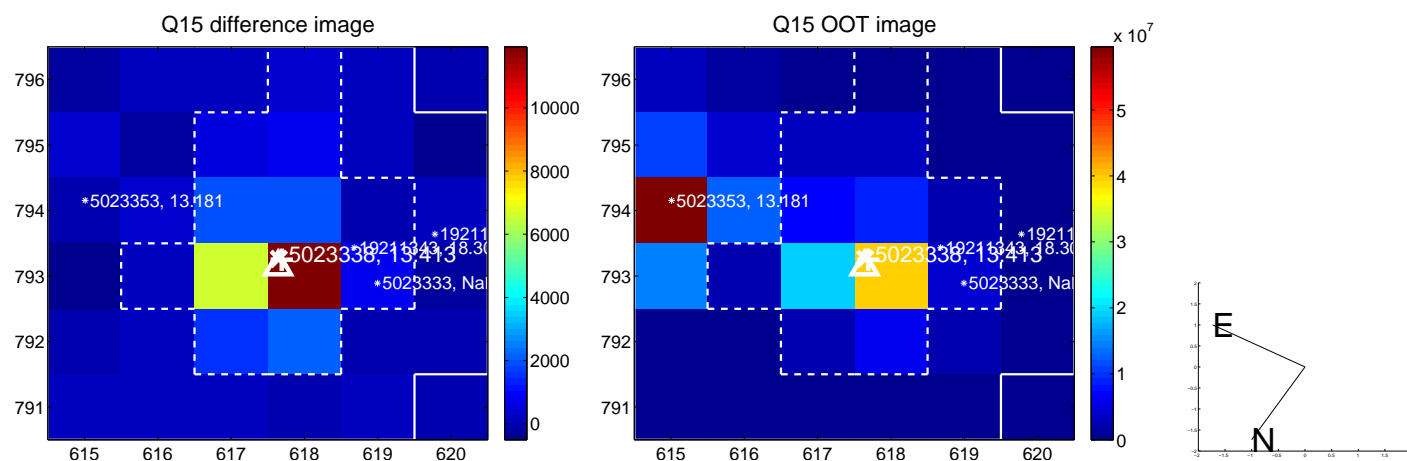
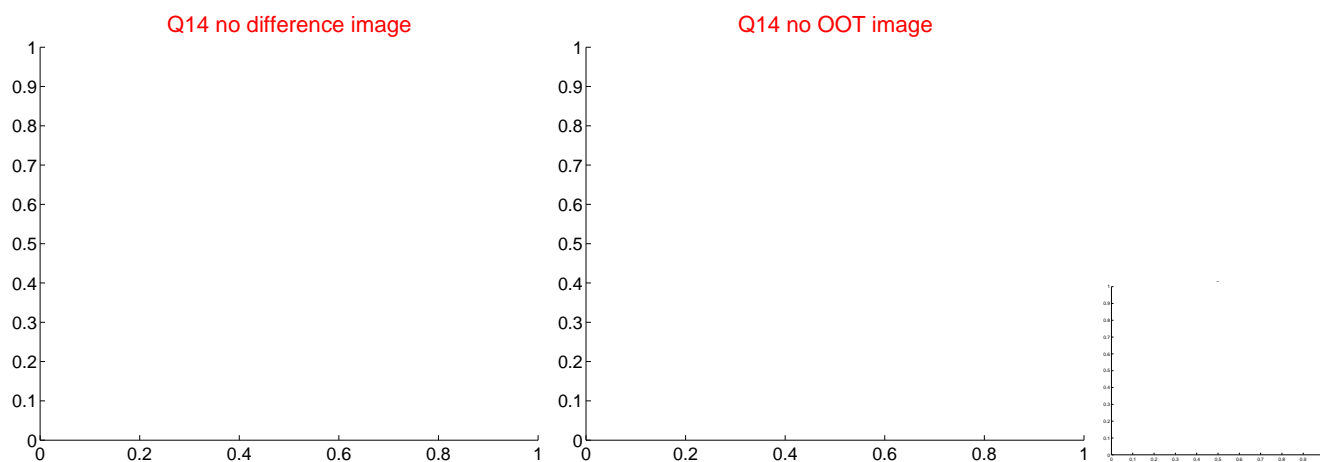
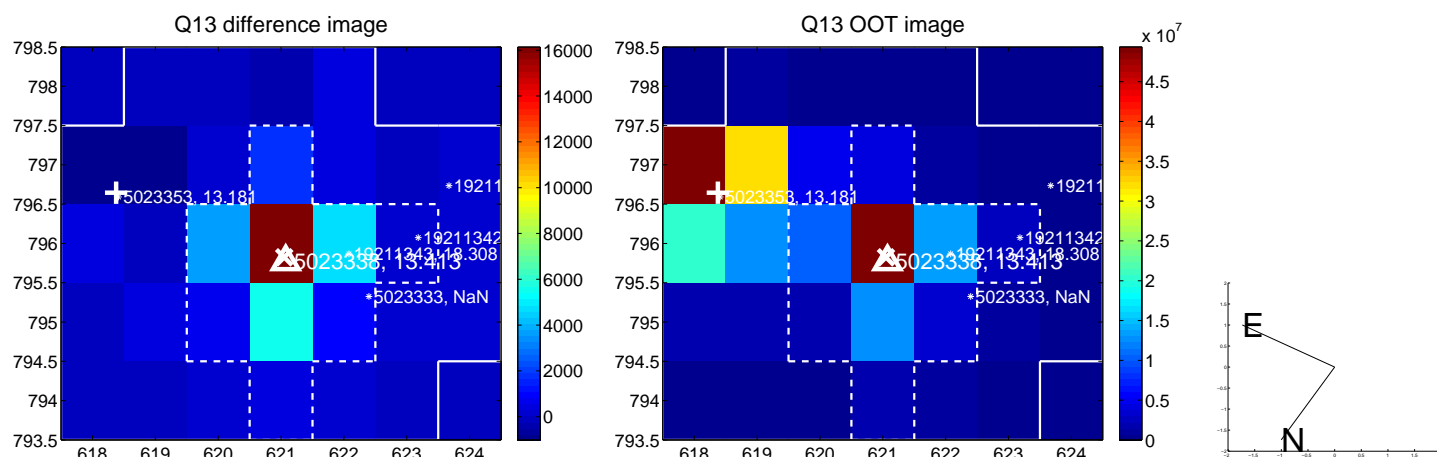
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



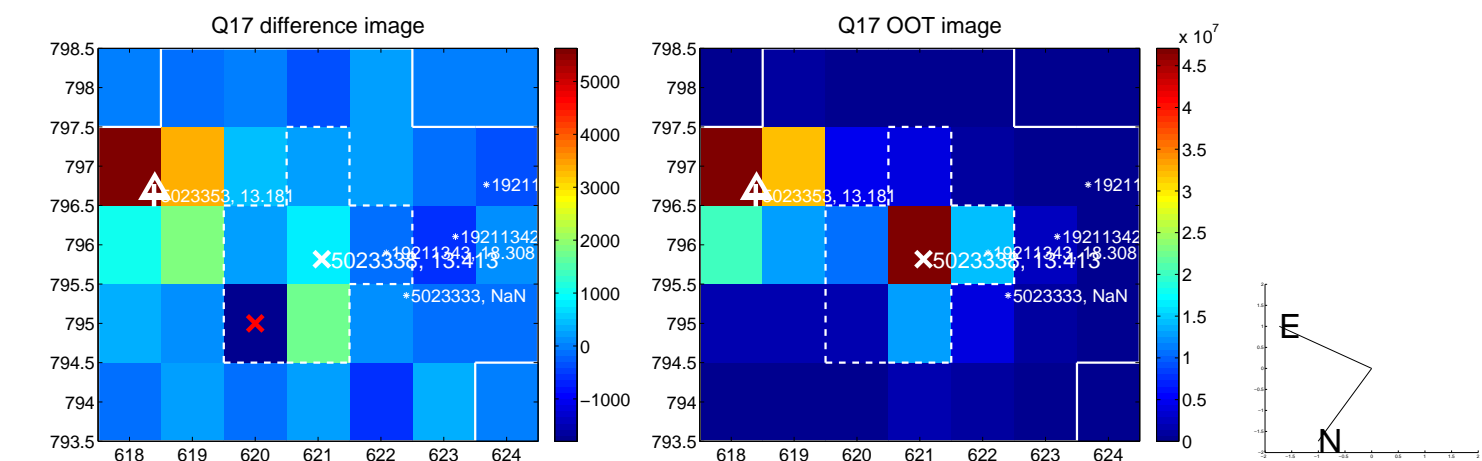
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



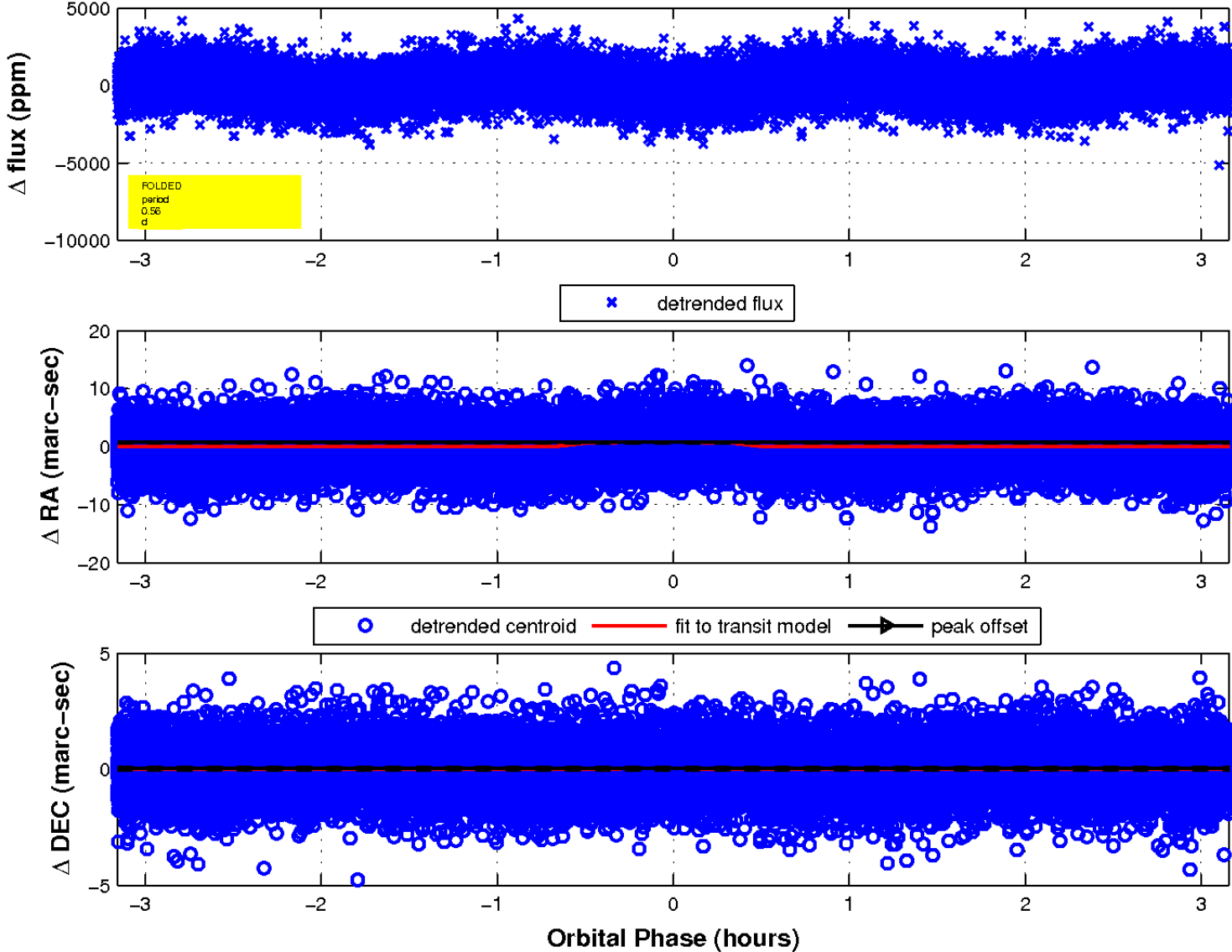
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



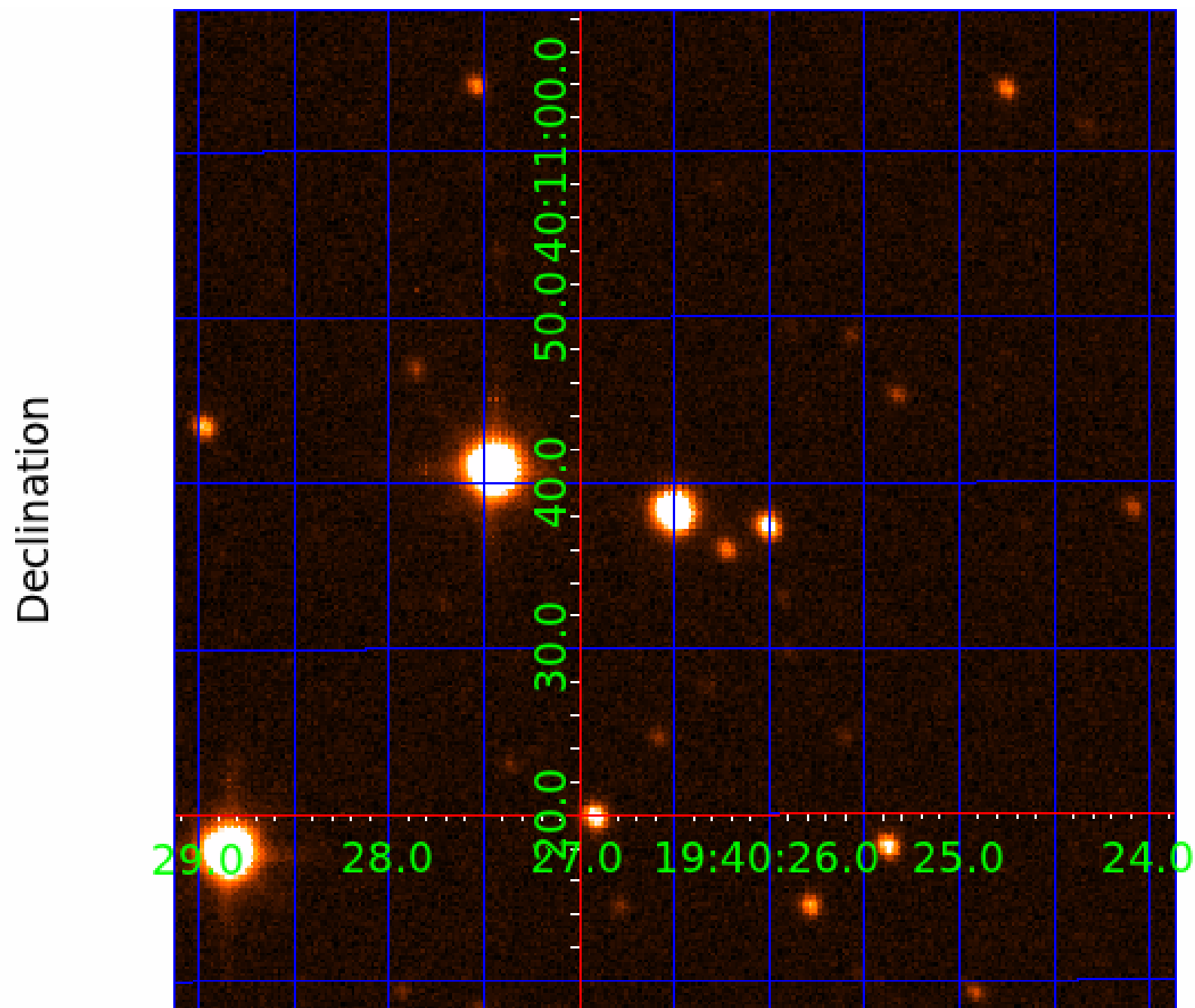
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 005023338

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})
005023338-01	OBS	No	1.120853	132.348937	398.9	0.992	9.8	14.3	3.80	7661	7.92	55640.25
005023338-02	OBS	No	0.560424	132.033461	354.5	1.053	11.6	19.7	3.80	7661	7.34	0.00
005023338-03	OBS	No	0.560422	131.637145	379.8	0.901	11.3	19.8	3.80	7661	7.75	0.00
005023338-04	OBS	No	1.120854	131.871296	571.7	0.704	10.1	19.1	3.80	7661	9.58	55640.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005023338-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005023338-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

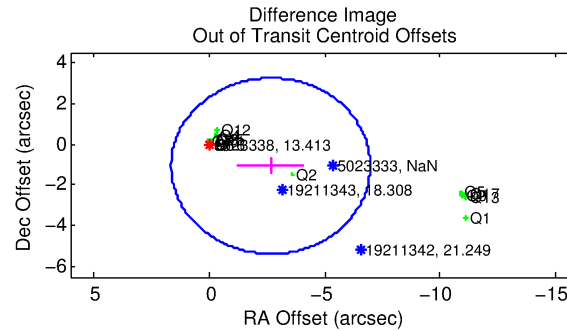
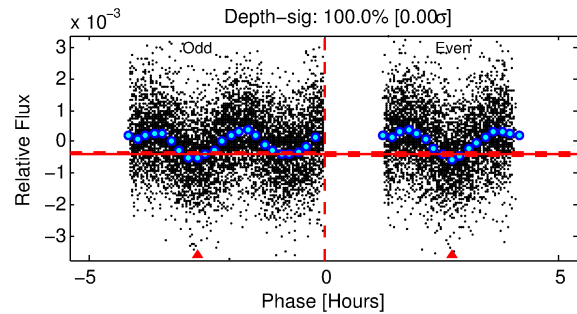
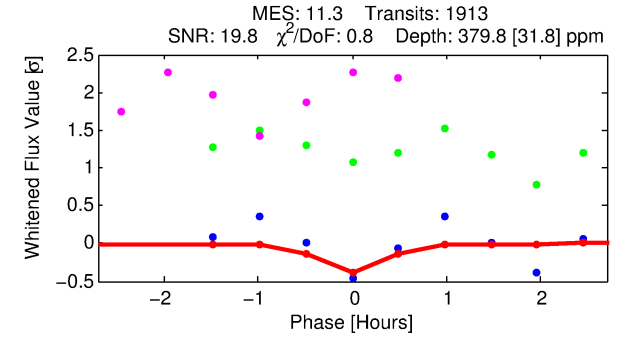
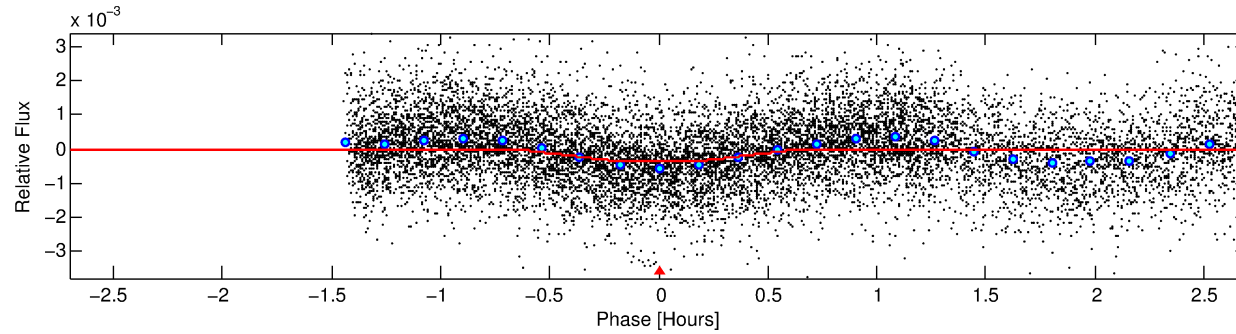
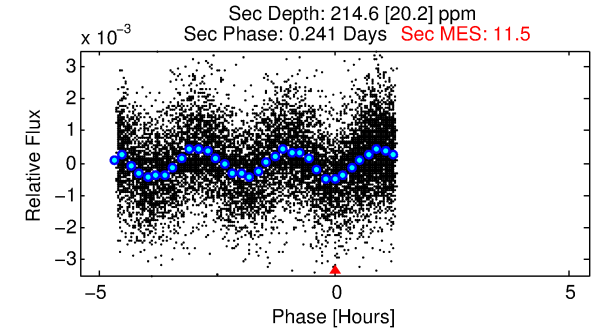
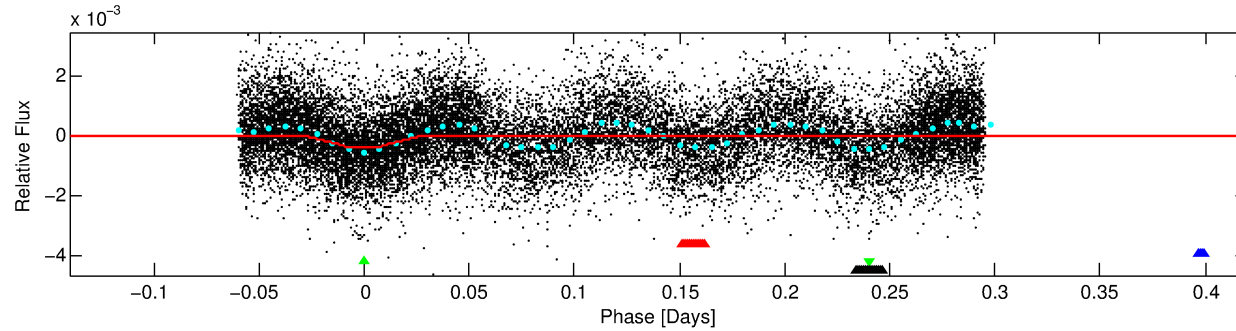
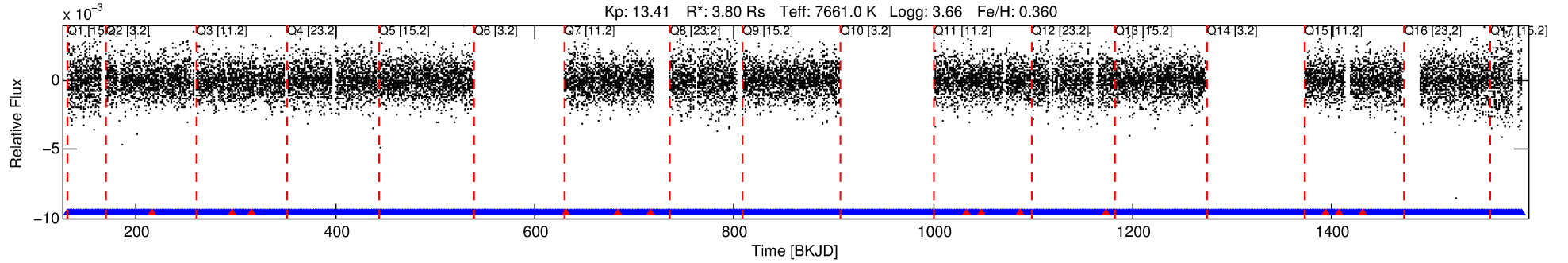
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005023338-03

No Significant Match Found

DV One-Page Summary

KIC: 5023338 Candidate: 3 of 4 Period: 0.560 d



DV Fit Results:

Period = 0.56042 [0.00001] d
Epoch = 131.6371 [0.0008] BKJD
Rp/R* = 0.0187 [0.0055]
a/R* = 4.28 [6.63]
b = 0.50 [2.47]
Seff = N/A
Teq = N/A
Rp = 7.75 [4.25] Re
a = N/A
Ag = N/A
Teffp = N/A

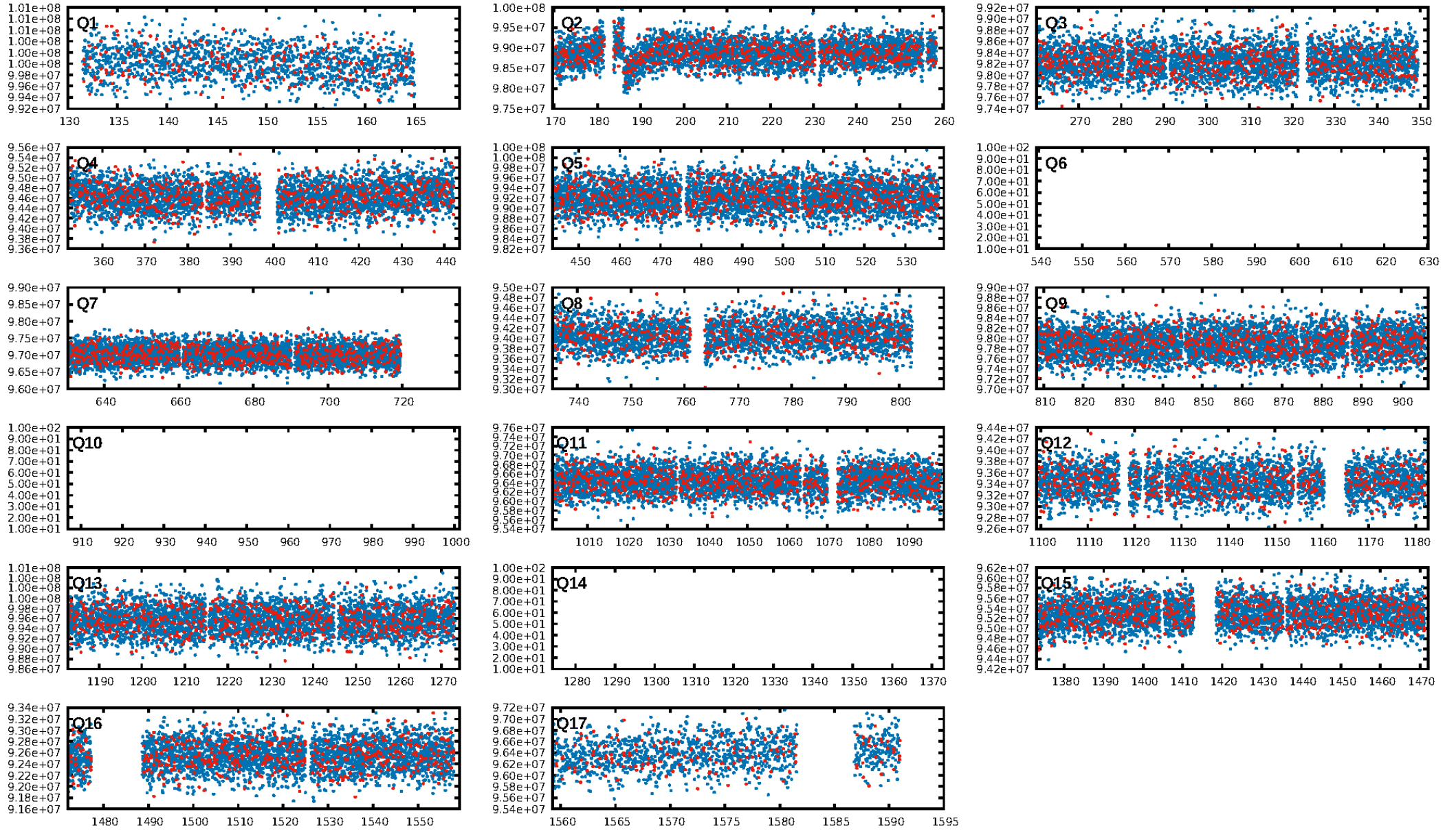
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1792/1805]
GhostDiagnostic-chr: 5.223
Centroid-sig: 0.0%
Centroid-so: 1.047 arcsec [4.28σ]
OotOffset-rm: 2.873 arcsec [2.00σ]
KicOffset-rm: 0.223 arcsec [2.63σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

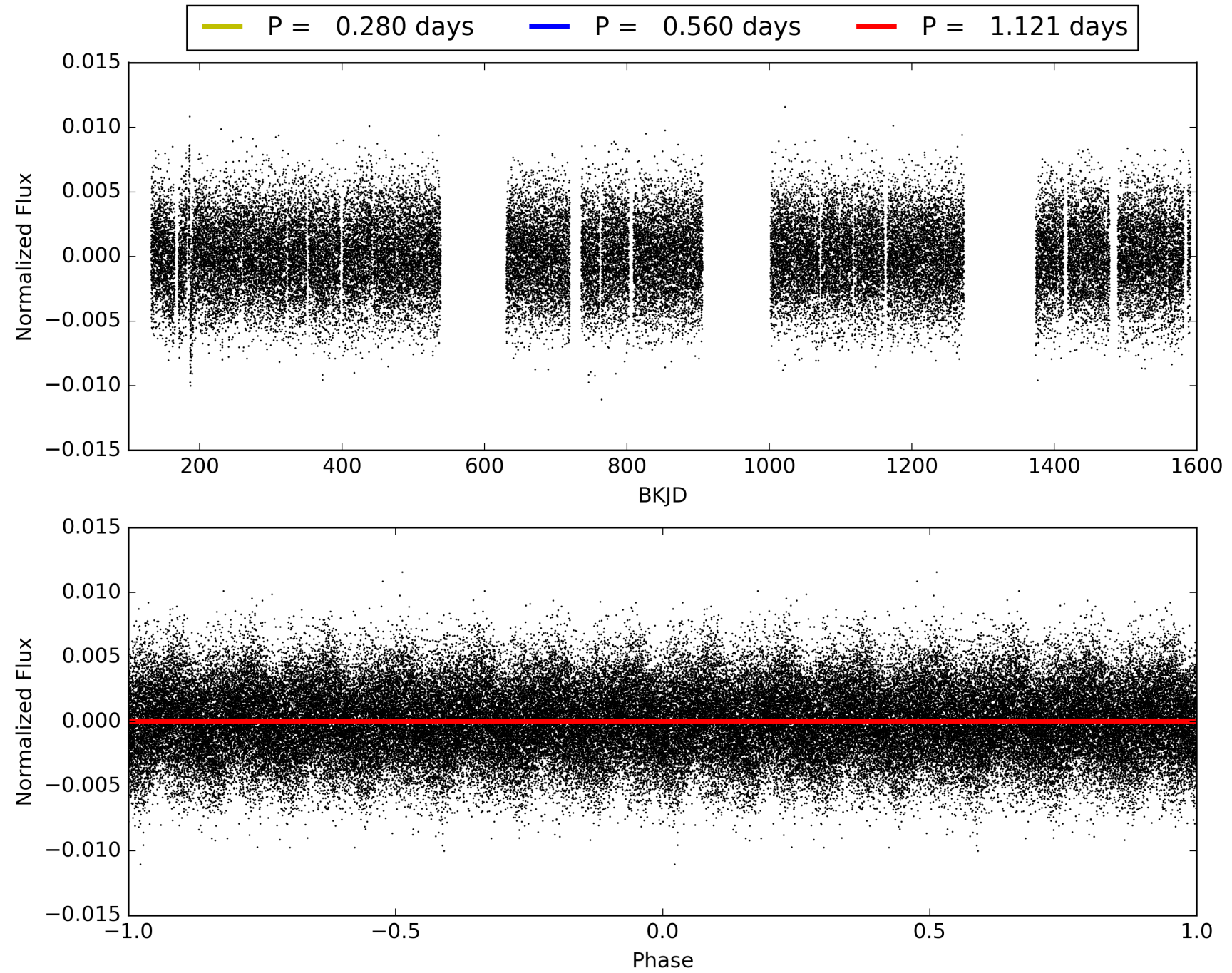
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:59 Z

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

TCE 005023338-03, PDC Light Curves

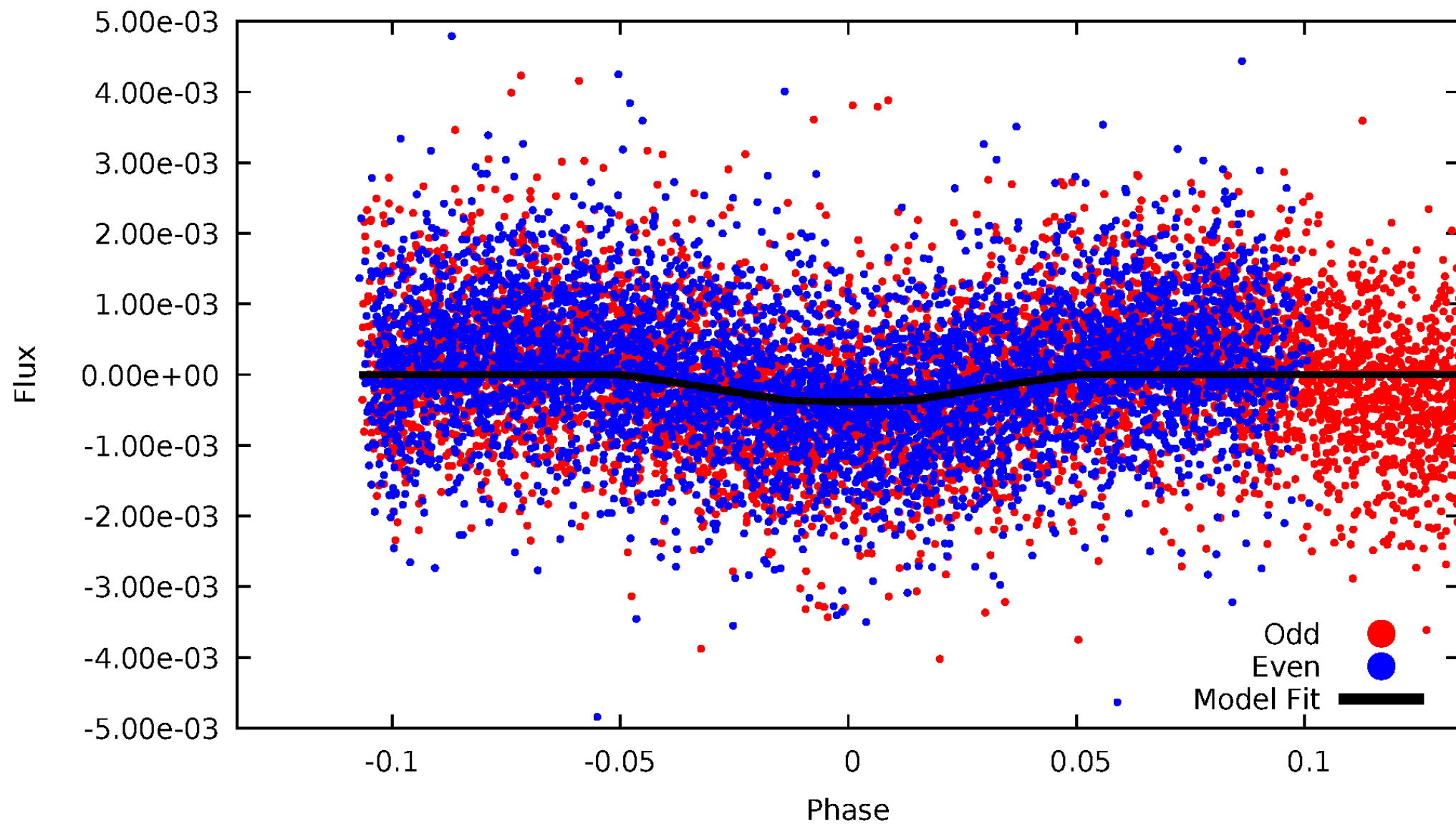


TCE 005023338-03



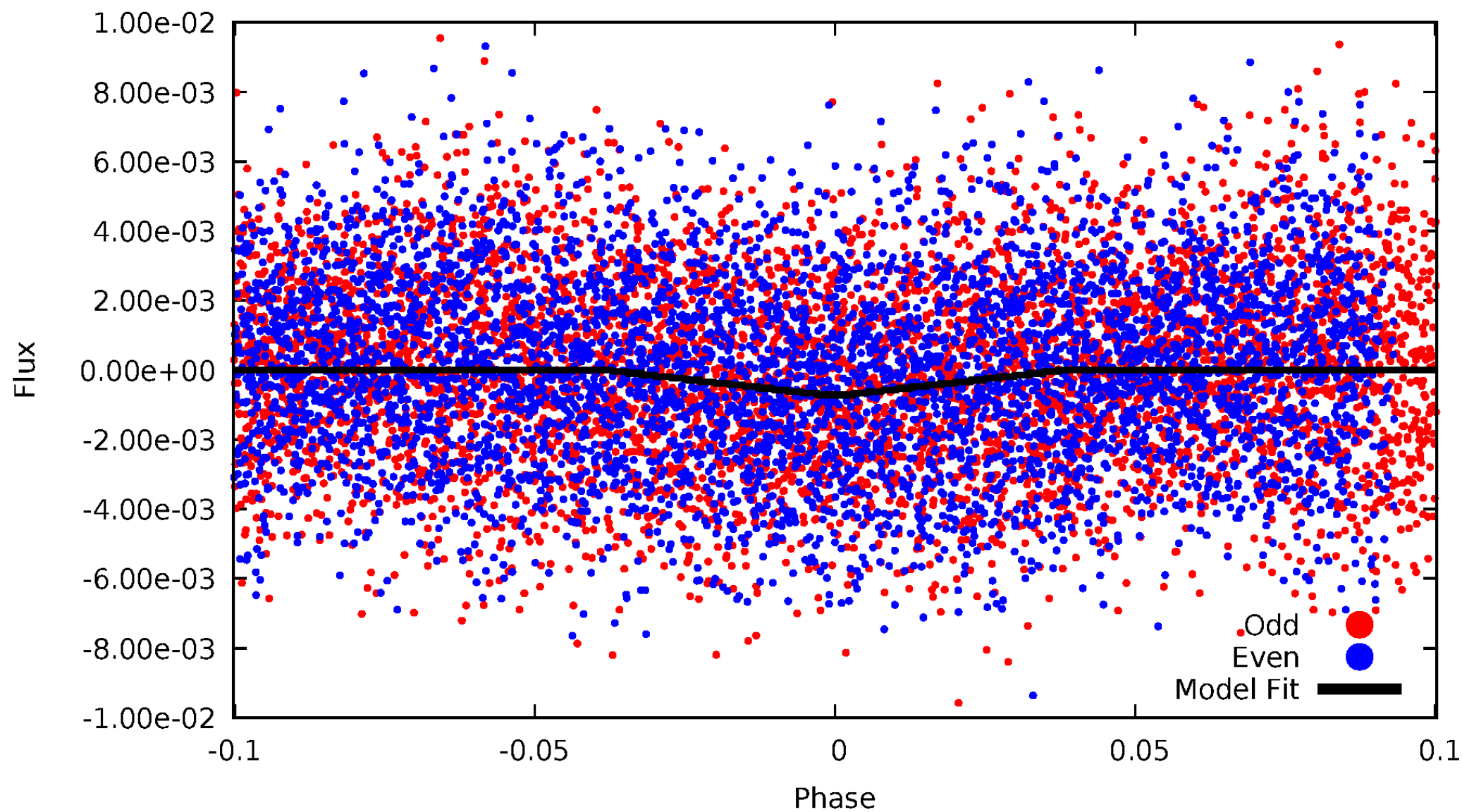
DV Odd/Even

TCE 005023338-03



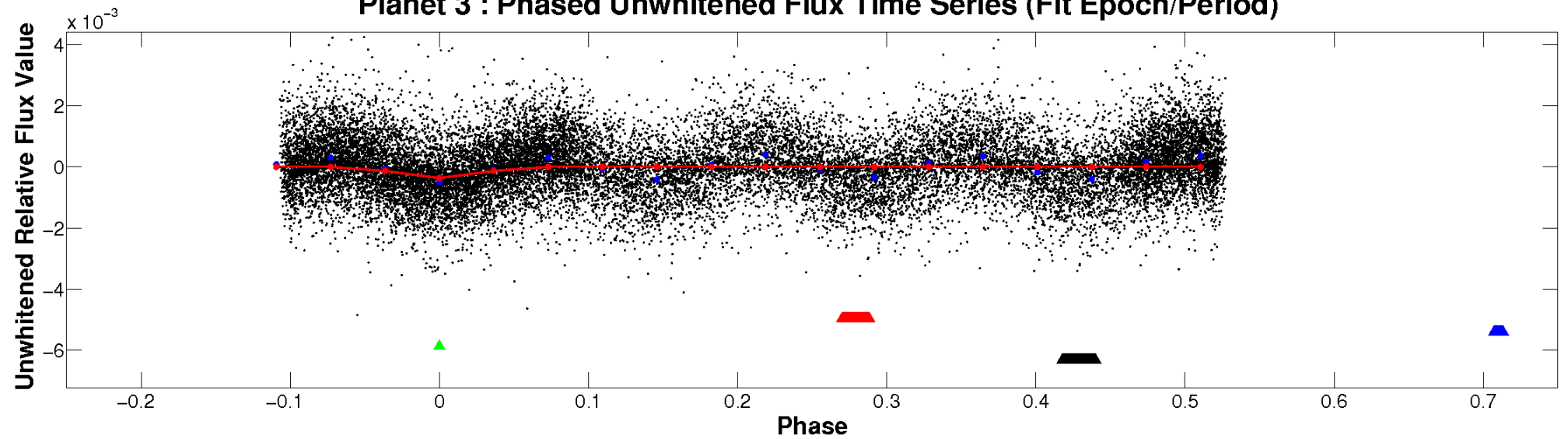
ALT Odd/Even

TCE 005023338-03

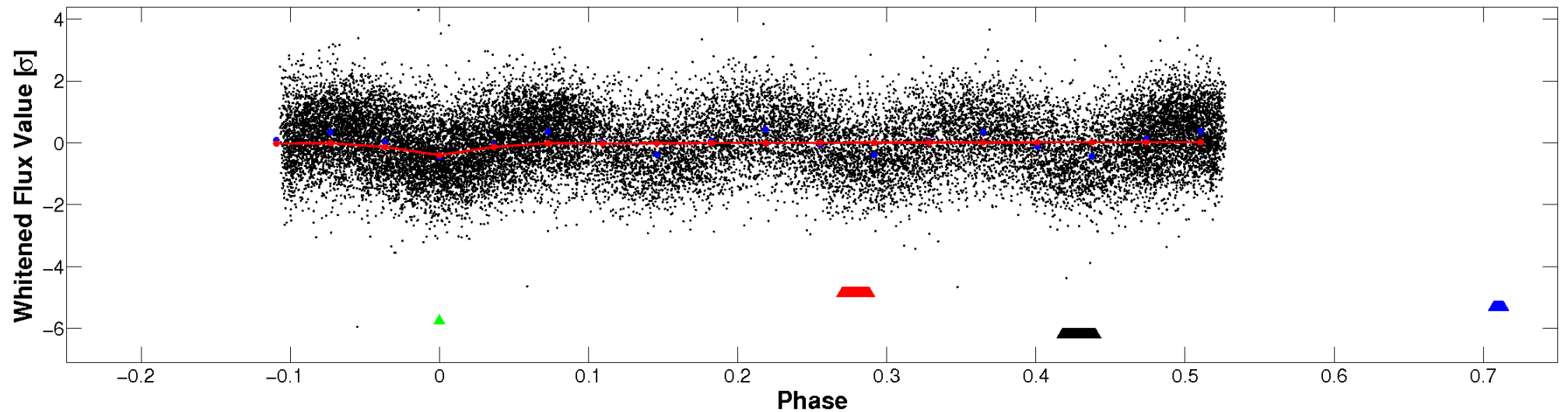


Non-Whitened Vs. Whitened Light Curve

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

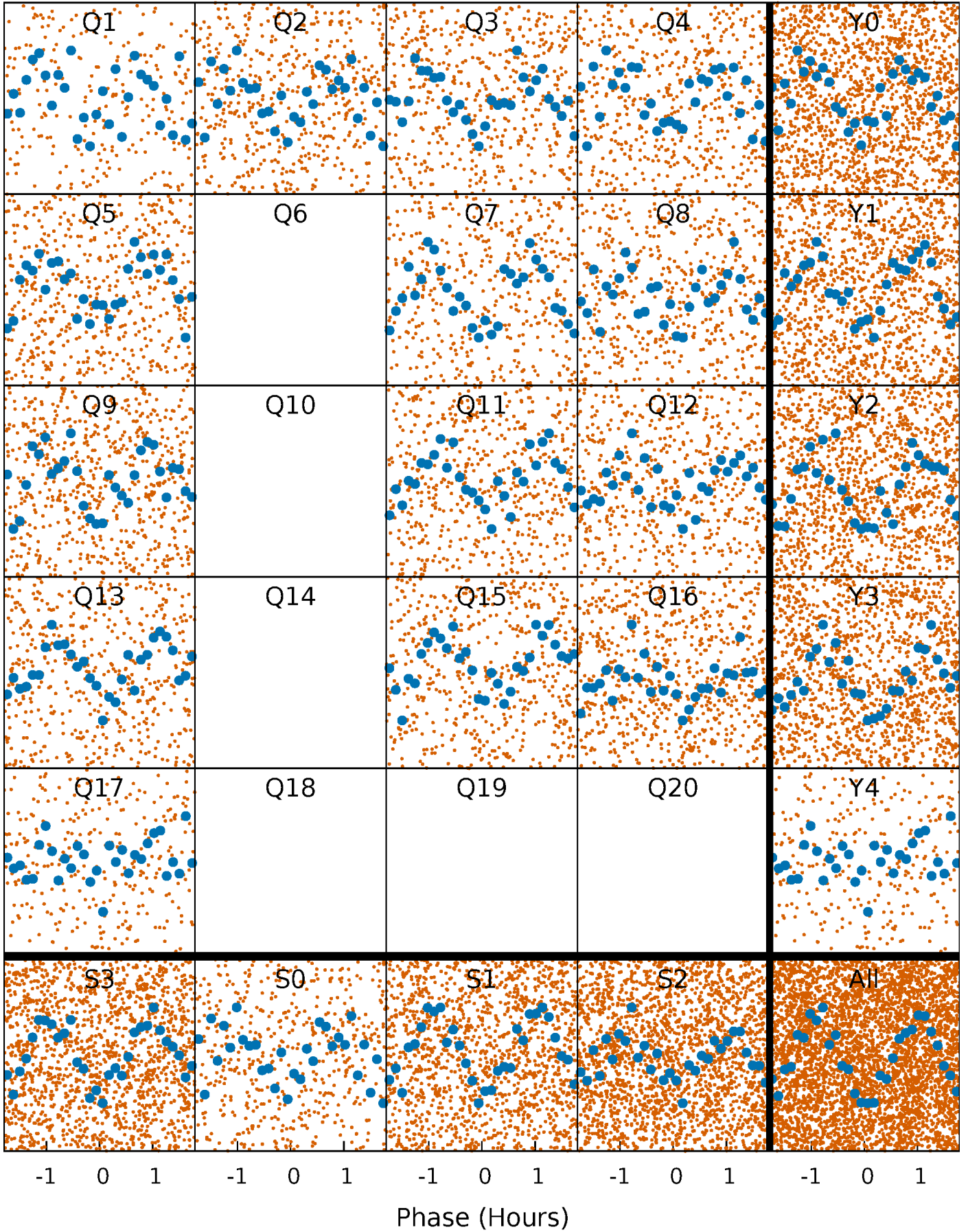


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



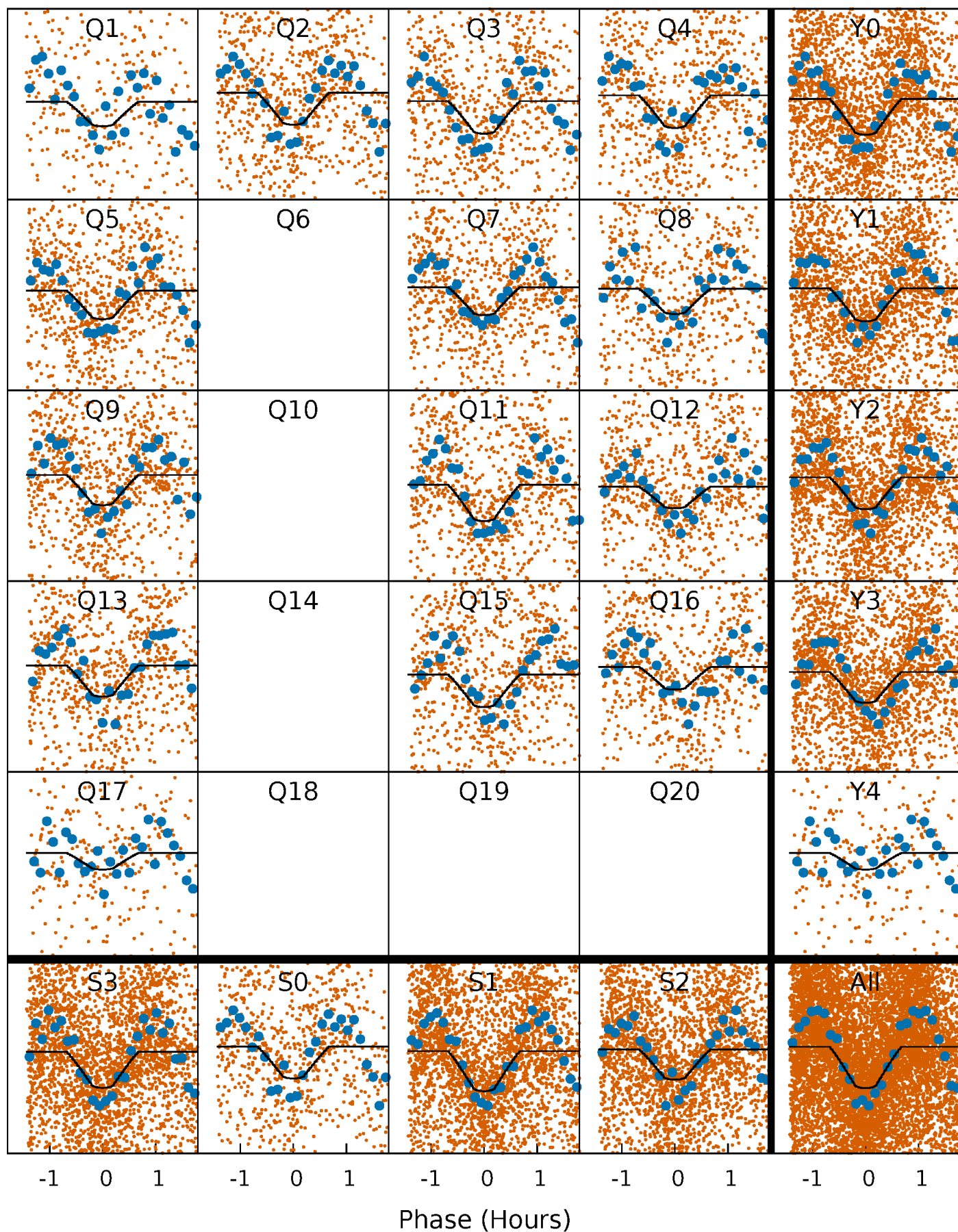
PDC Quarter-Phased Transit Curves

TCE 005023338-03 P= 0.560422 Days $T_0=131.637145$ (BKJD)



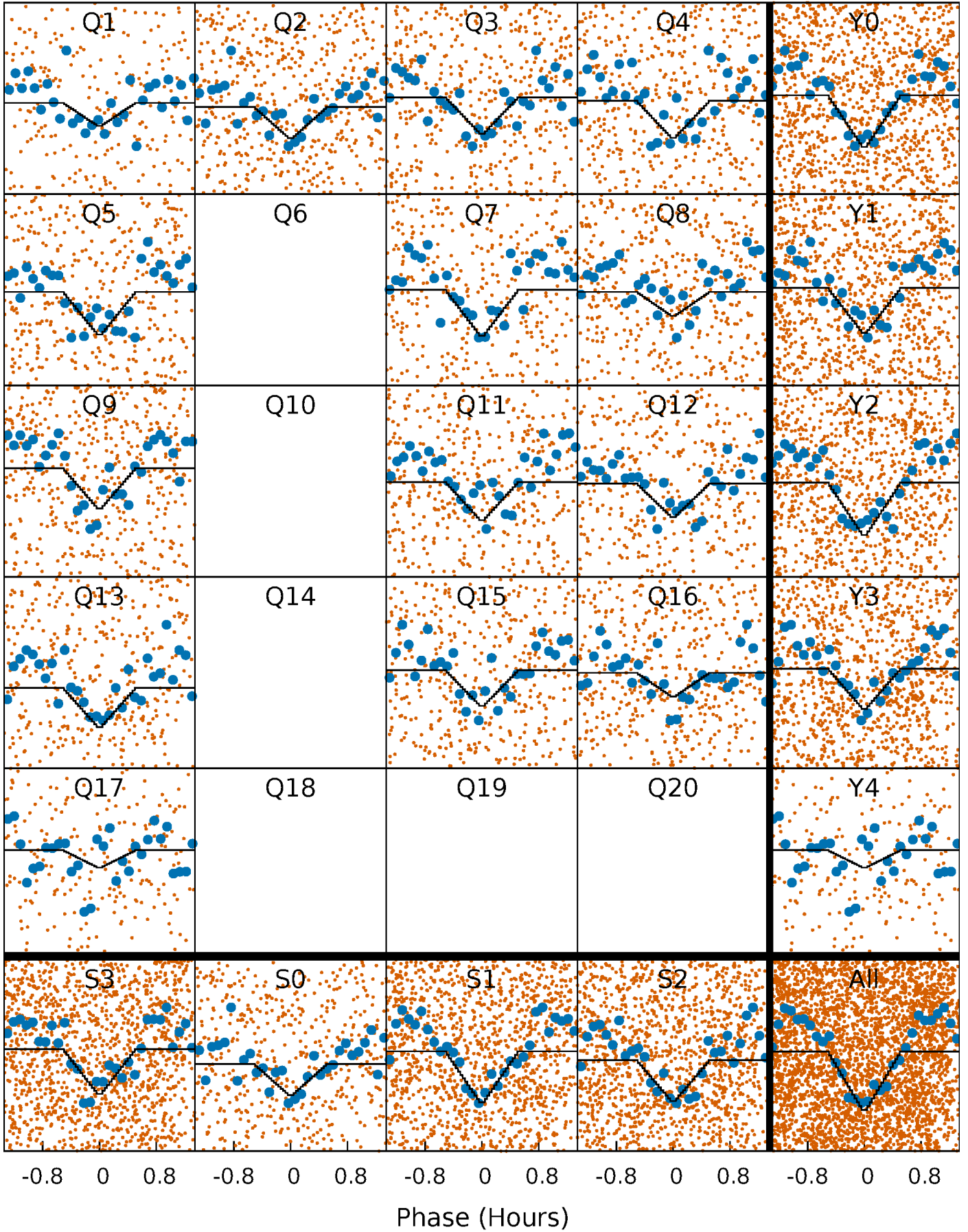
DV Quarter-Phased Transit Curves

TCE 005023338-03 P= 0.560422 Days $T_0=131.637145$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

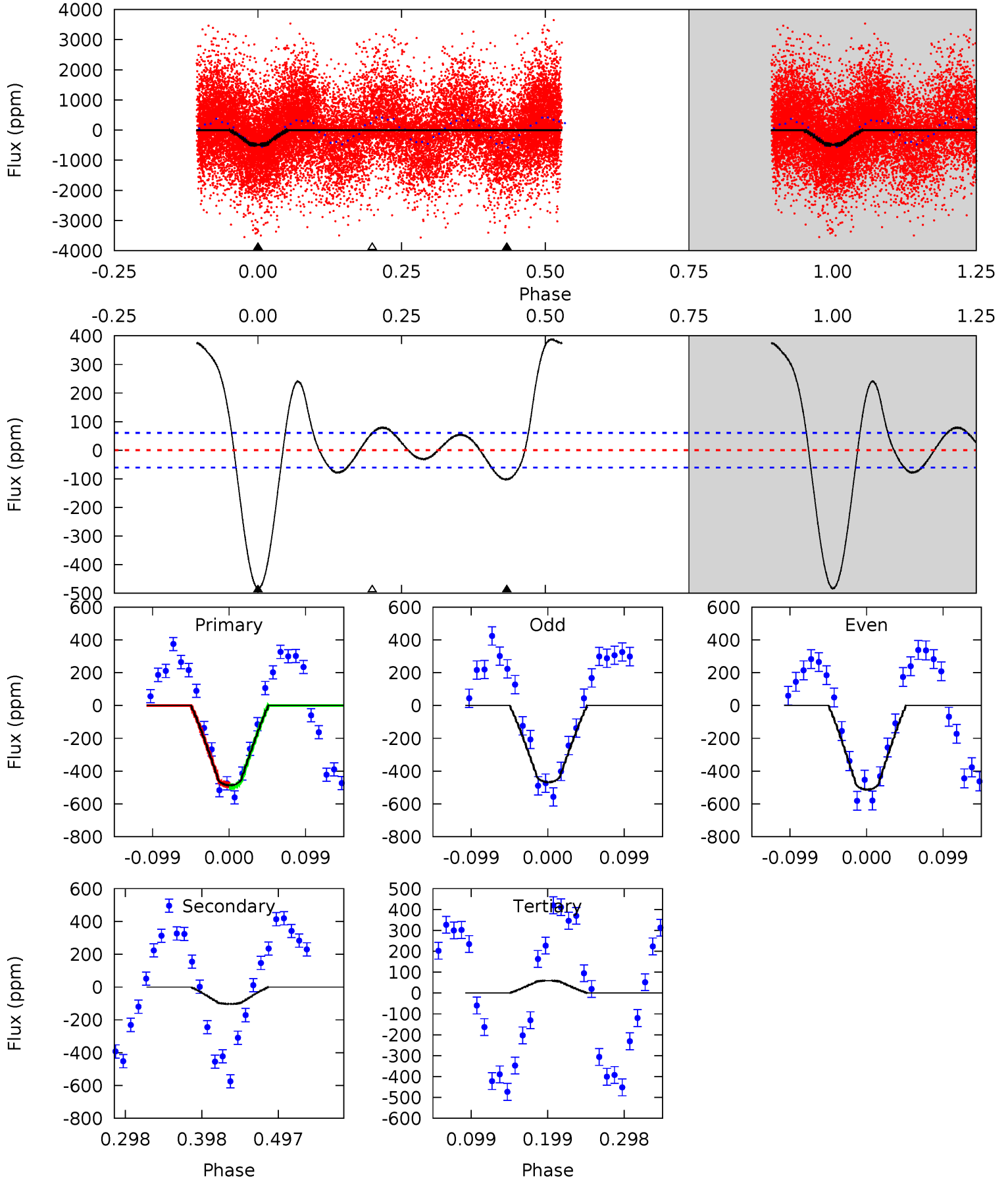
TCE 005023338-03 P= 0.560428 Days $T_0=131.631869$ (BKJD)



DV Model-Shift Uniqueness Test

005023338-03, P = 0.560422 Days, E = 131.076723 Days

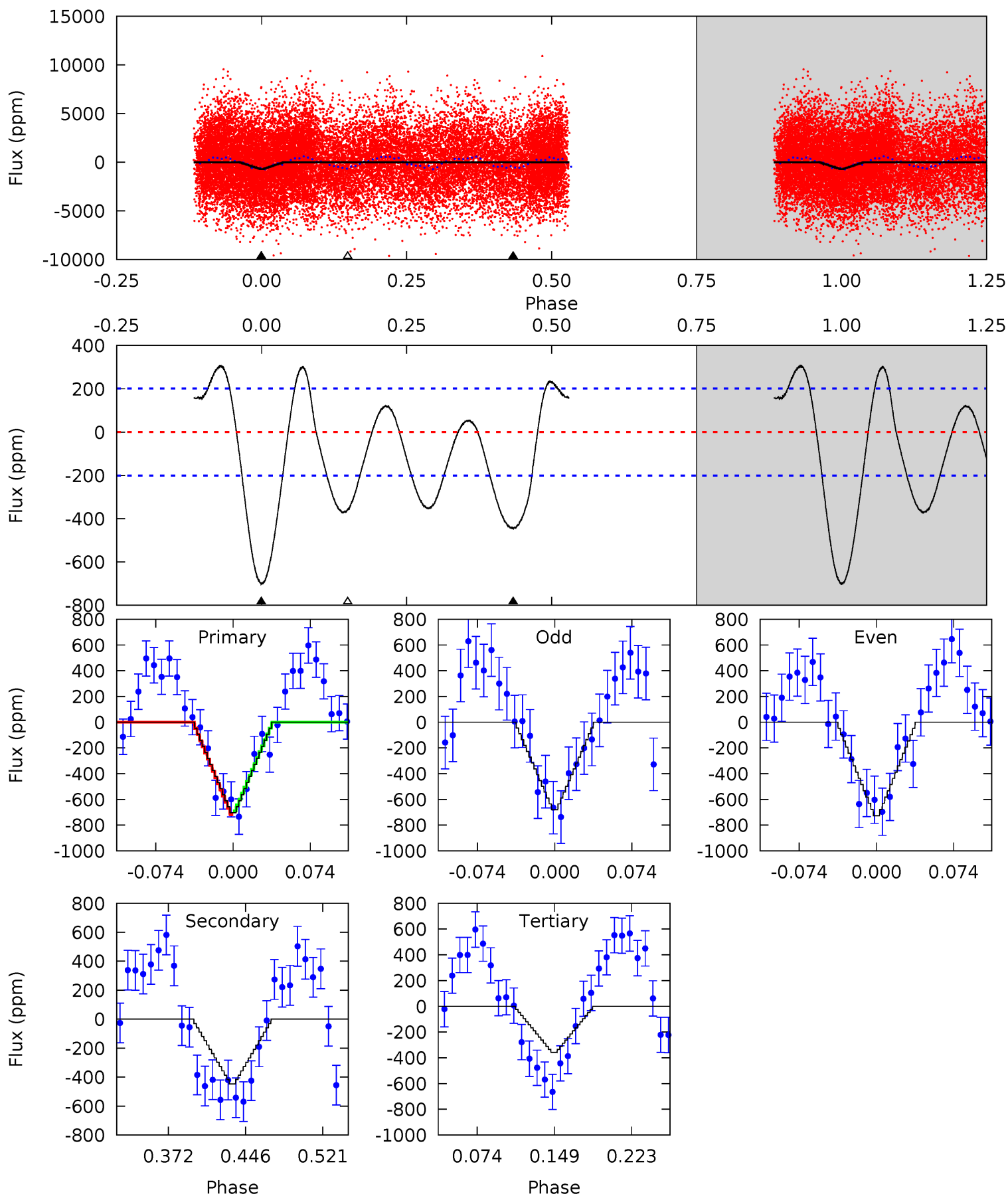
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.7	7.75	-4.45	0	4.57	1.65	6.15	41.1	36.7	12.2	7.75	1.72	1.00	0.44	0.44



Alt Model-Shift Uniqueness Test

005023338-03, P = 0.560428 Days, E = 131.071441 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	10.3	8.24	0	4.63	1.78	4.84	7.94	16.2	2.02	10.3	0.54	0.93	0.30	0.35



Stellar Parameters For KIC 005023338

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7661^{+212}_{-363}	$3.660^{+0.397}_{-0.132}$	$0.360^{+0.050}_{-0.400}$	$3.803^{+0.756}_{-1.765}$	$2.410^{+0.217}_{-0.652}$	$0.062^{+0.249}_{-0.020}$
	+3%/-5%	+11%/-4%	+14%/-111%	+20%/-46%	+9%/-27%	+403%/-33%
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 005023338-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-103 ± 13	$7.22^{+2.60}_{-2.47}$	6707^{+557}_{-717}	3739^{+1813}_{-8325}	$0.345^{+0.408}_{-0.160}$
Alt.	-446 ± 43	$10.55^{+3.12}_{-3.12}$	6786^{+551}_{-825}	5709^{+1244}_{-1122}	$0.688^{+0.630}_{-0.271}$

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

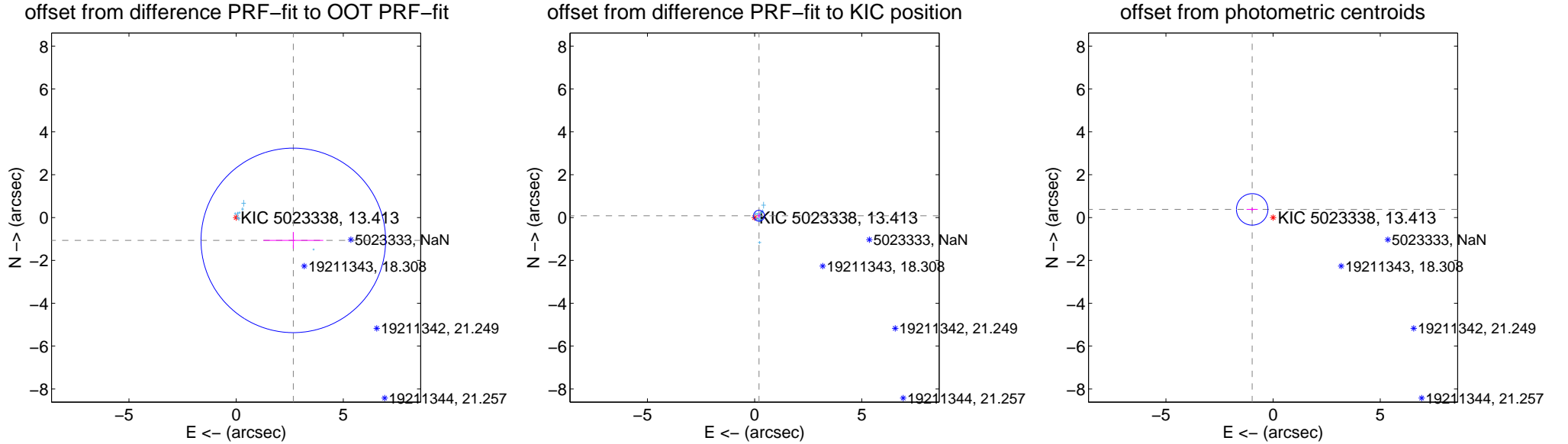
DV Centroid Data

Supplemental centroid analysis for 005023338-03. Kepler magnitude: 13.41. Transit SNR 19.84

There are 14 quarters with good PRF difference image offsets

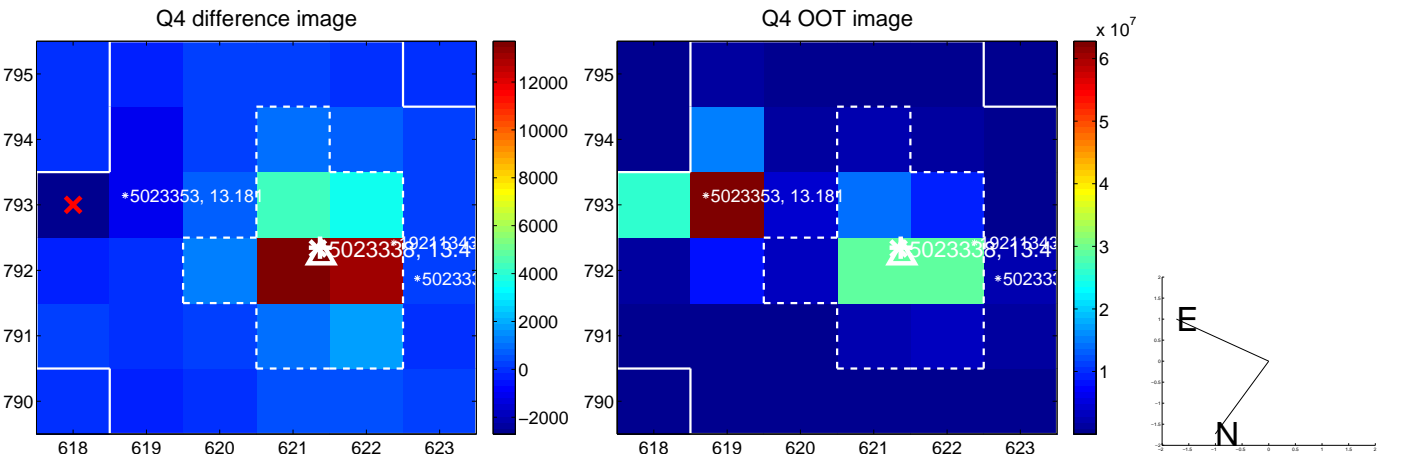
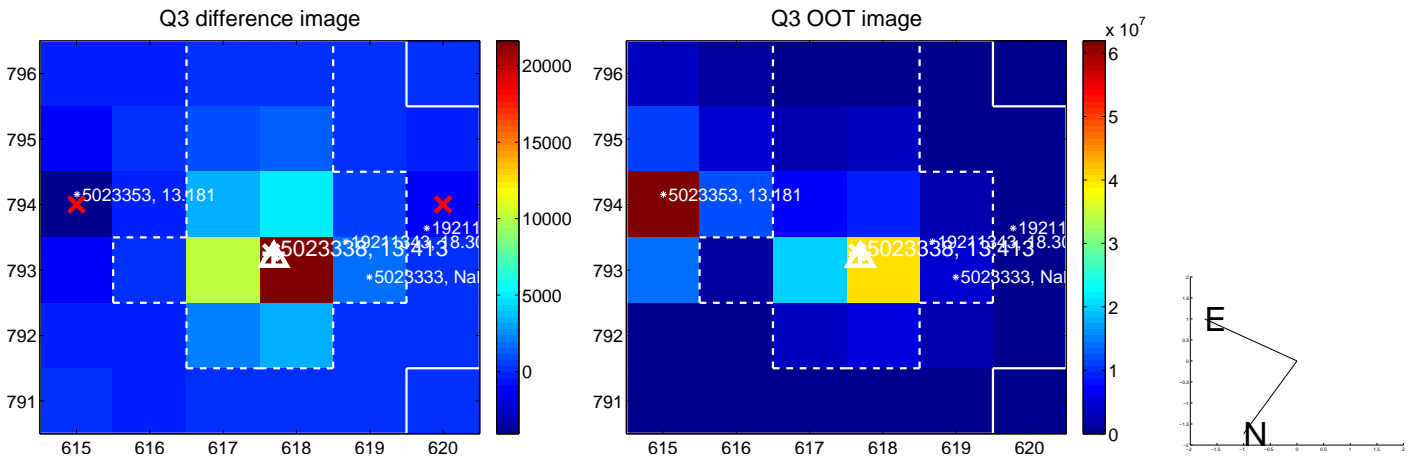
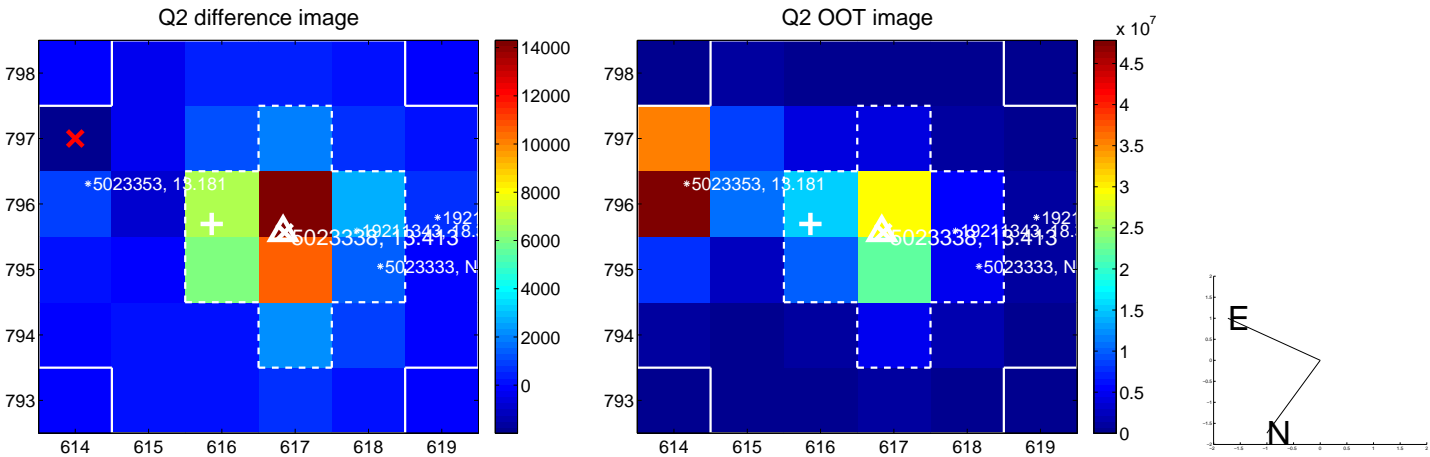
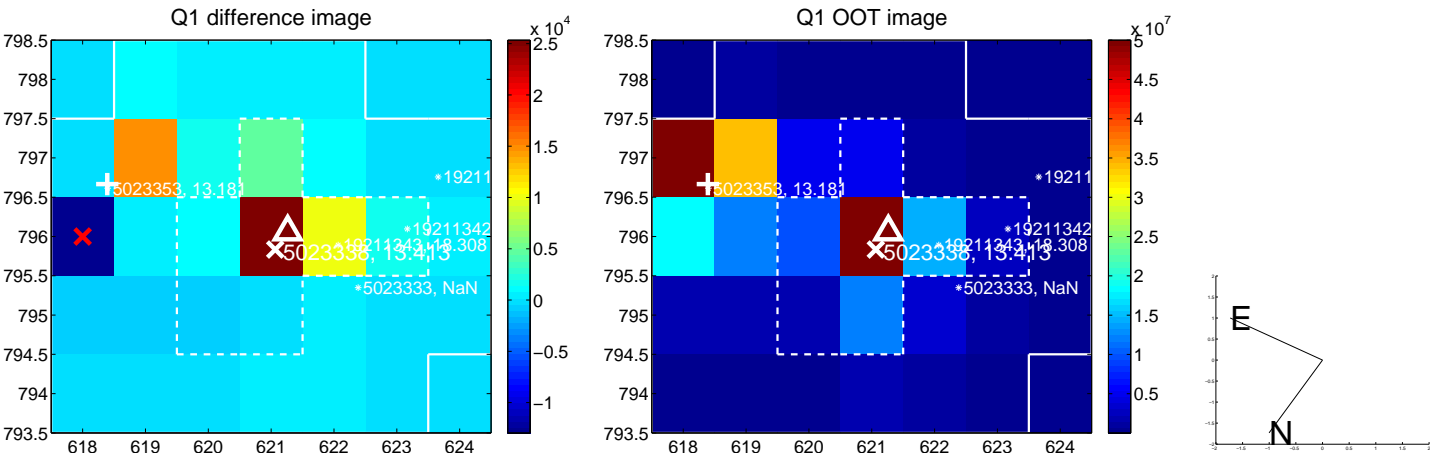
The OOT PRF centroid is offset from the target star catalog position by about 11.11 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.873 ± 1.435	2.00	-2.668 ± 1.397	-1.065 ± 0.390
PRF-fit source offset from KIC position	0.223 ± 0.085	2.63	-0.206 ± 0.074	0.085 ± 0.114
photometric centroid source offset	1.05 ± 0.24	4.28	0.98 ± 0.26	0.38 ± 0.09

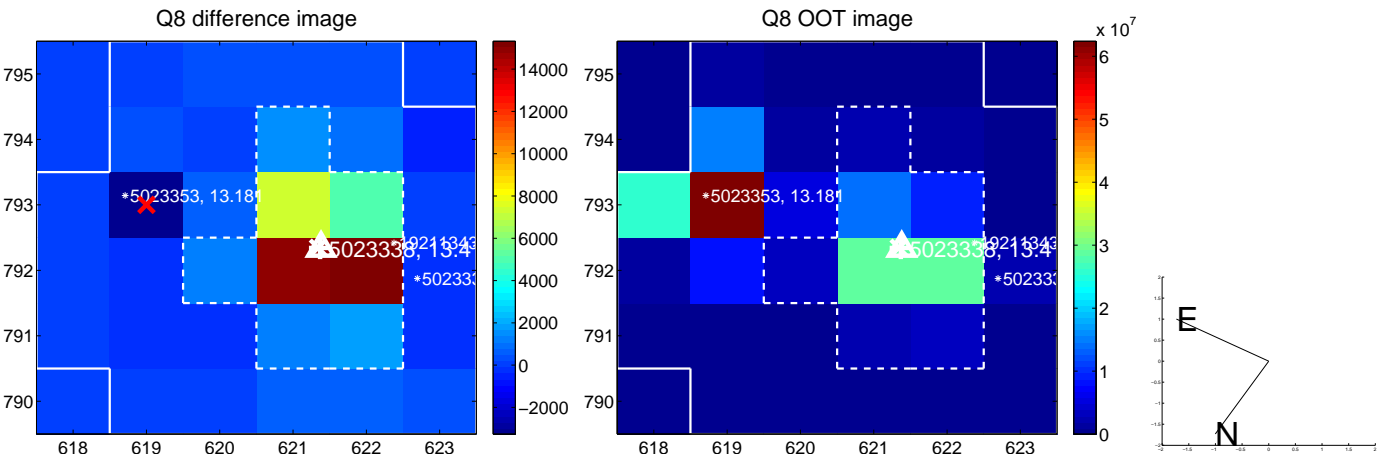
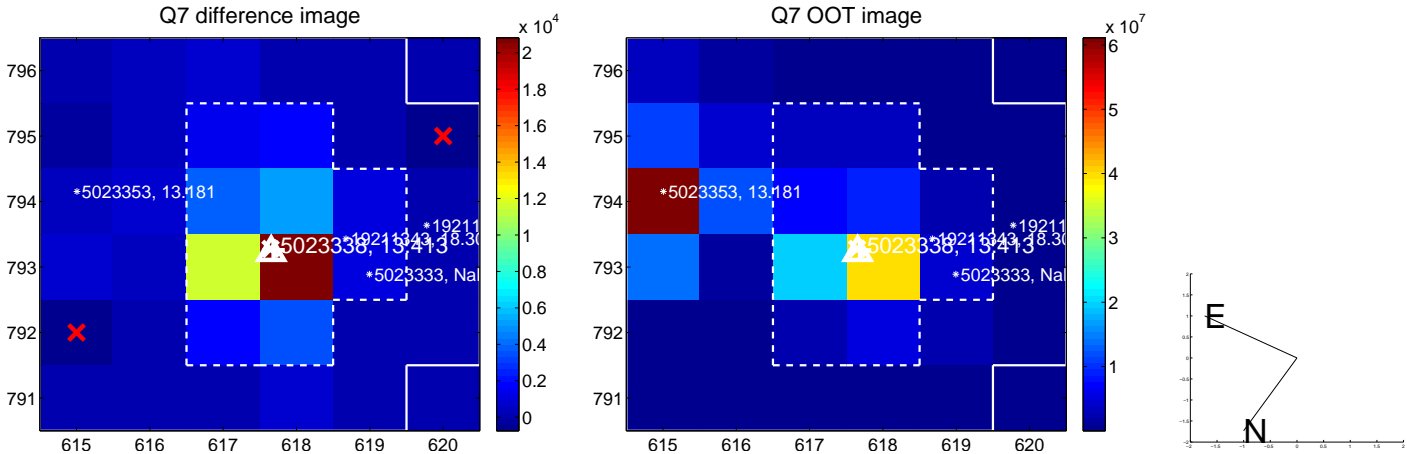
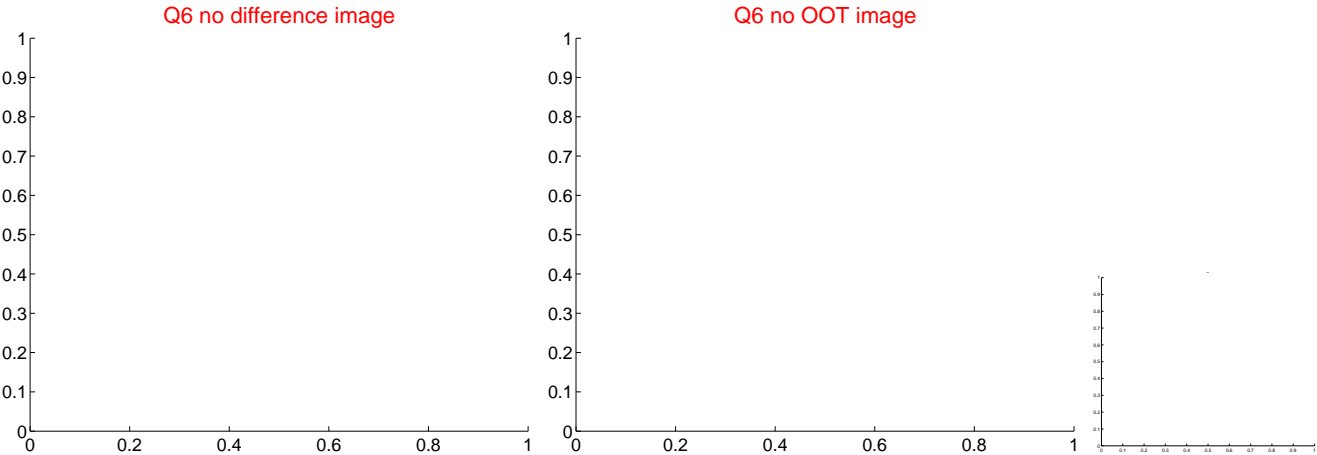
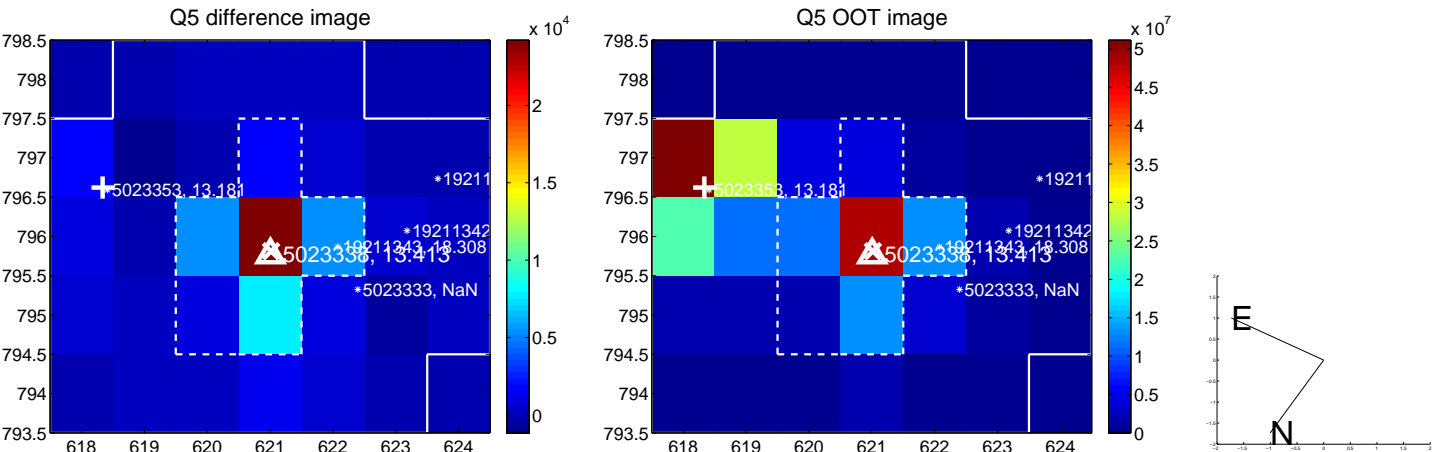


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

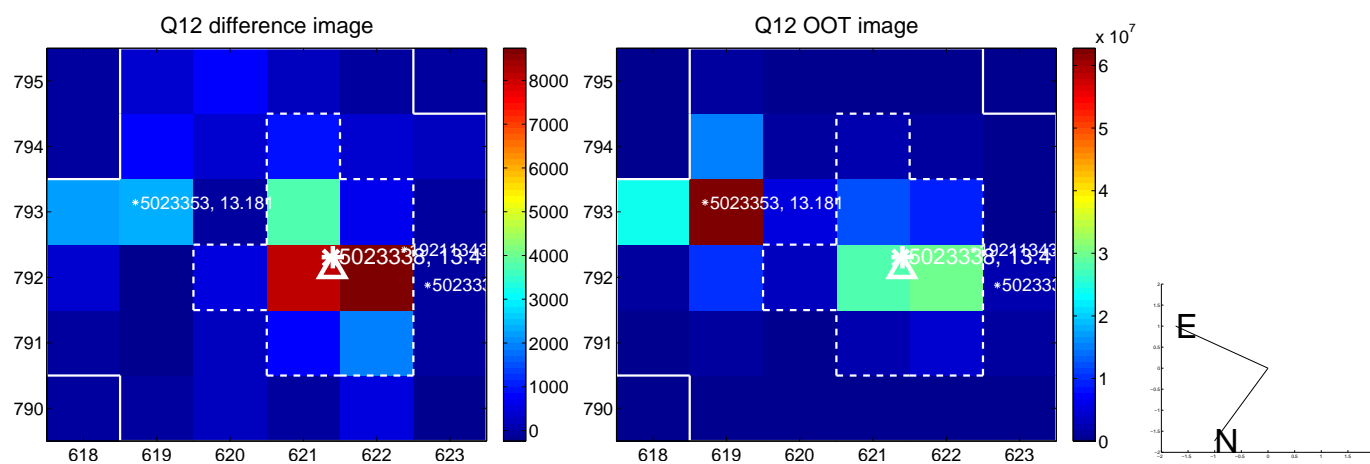
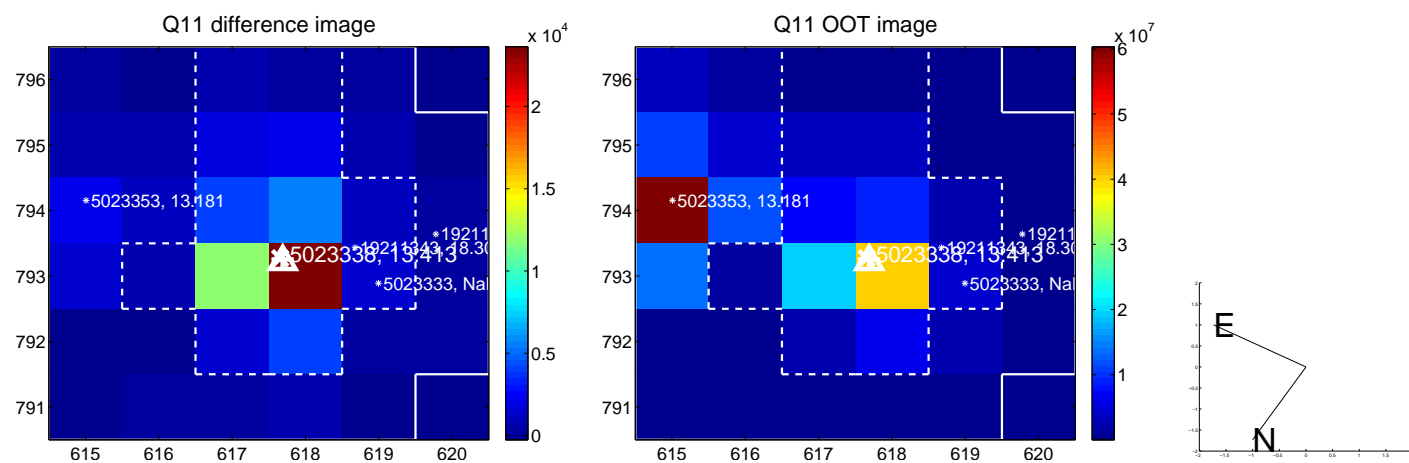
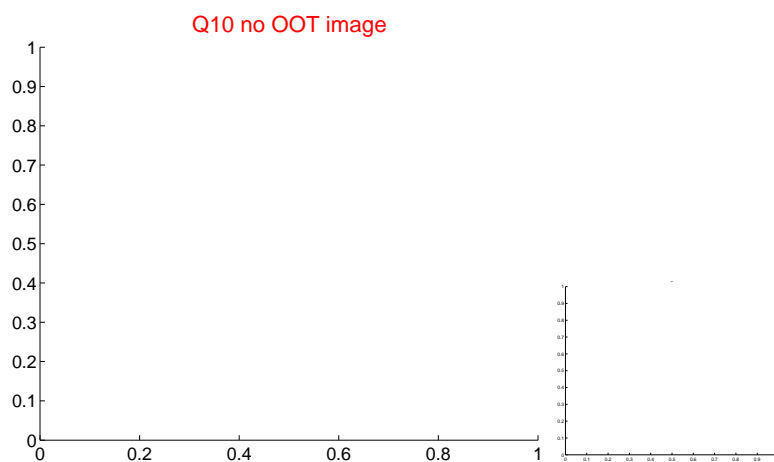
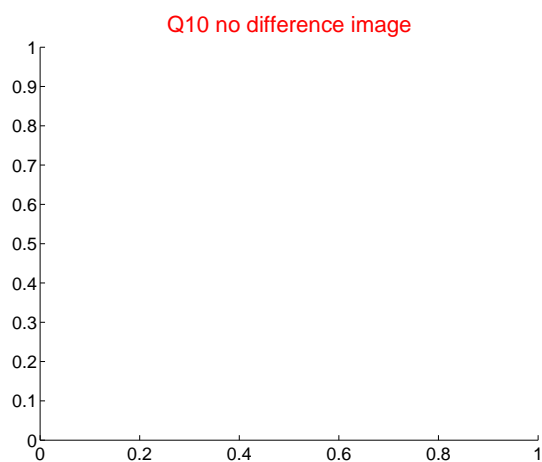
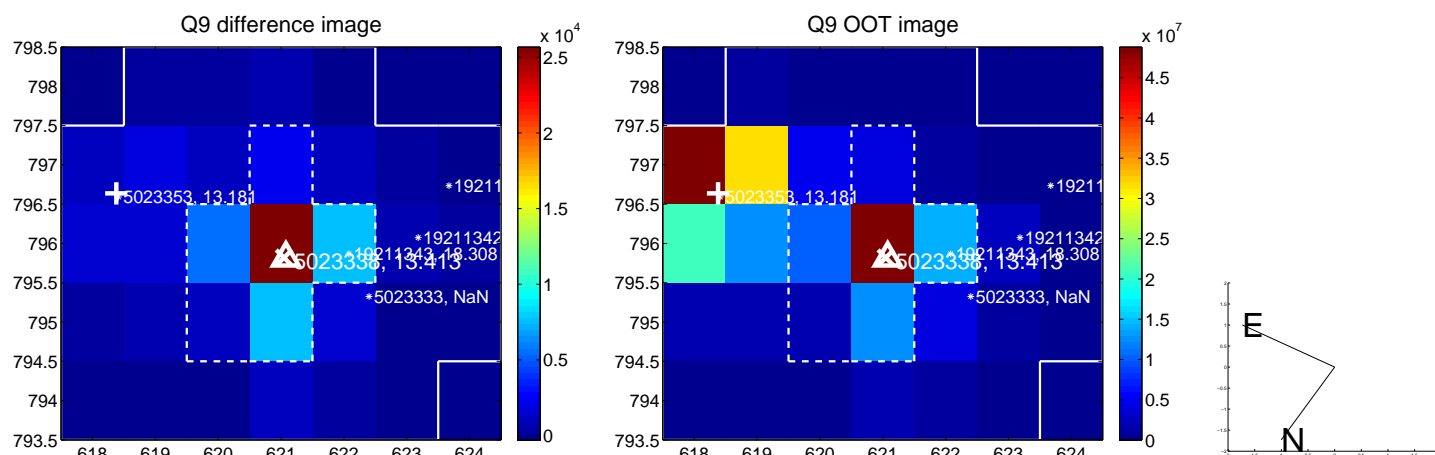
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



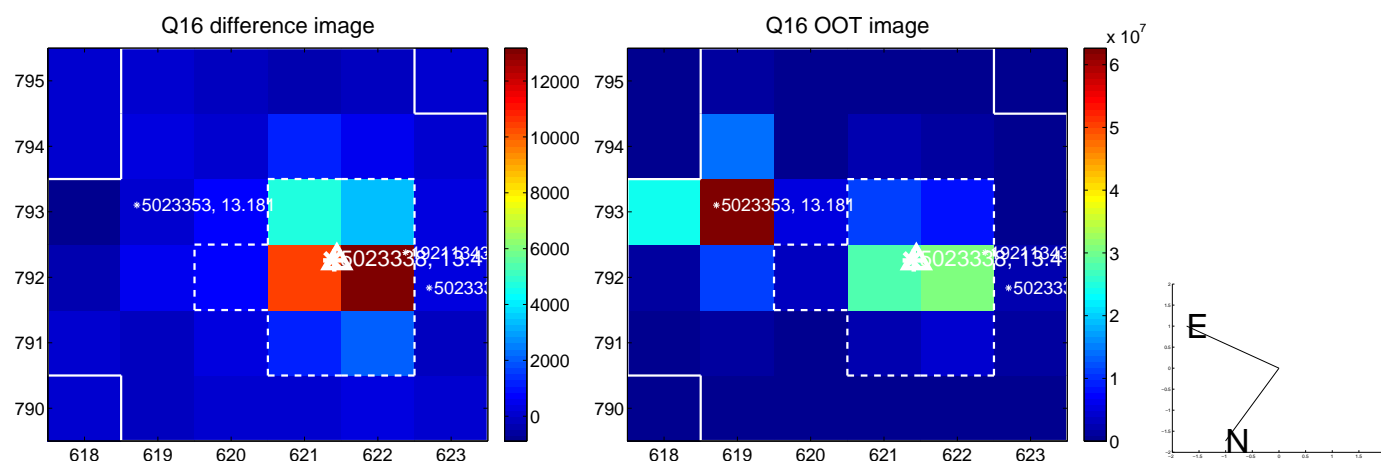
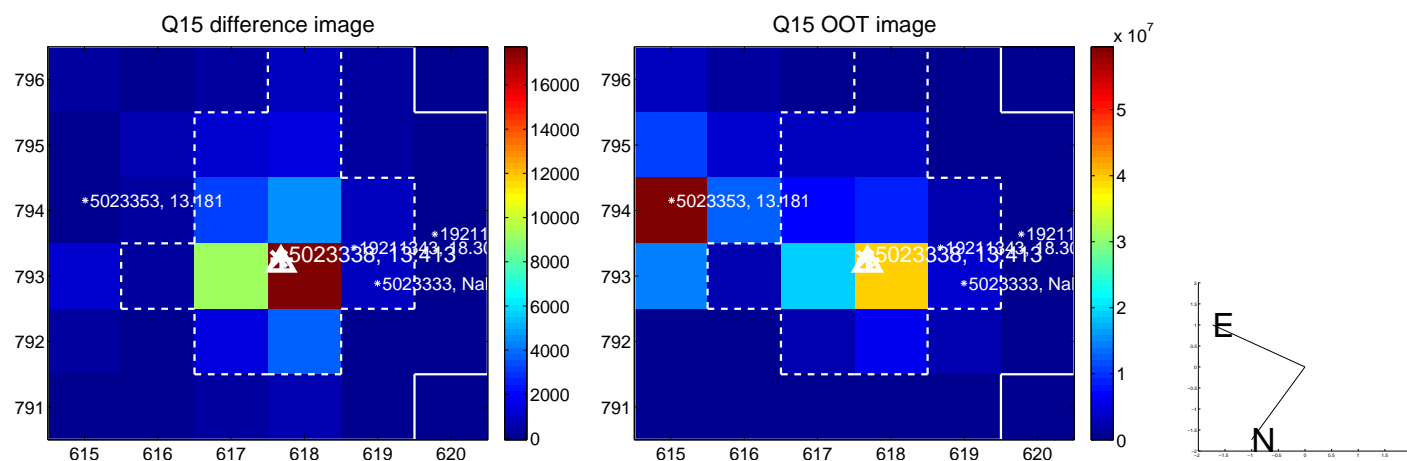
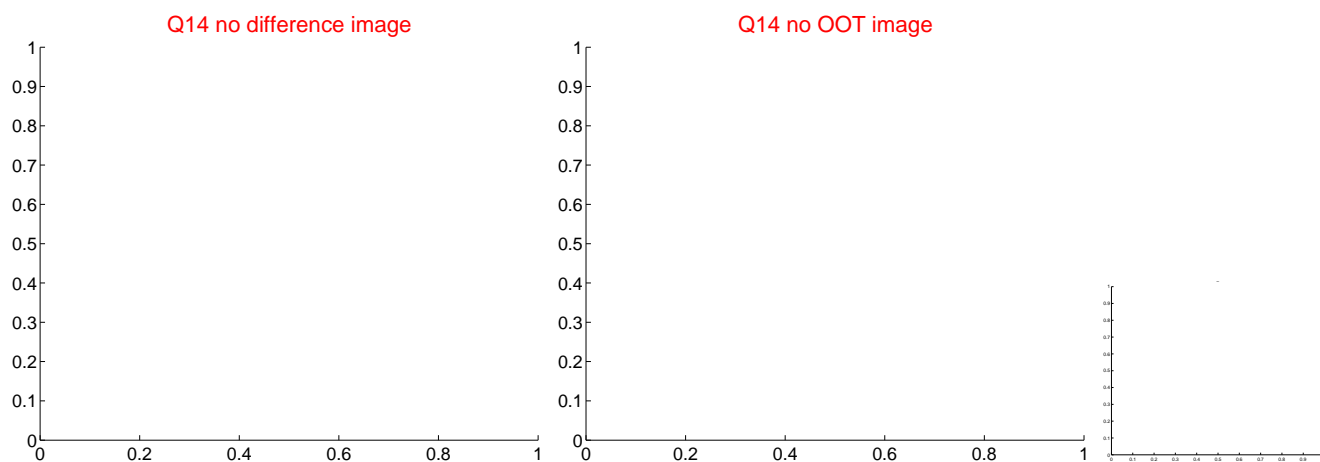
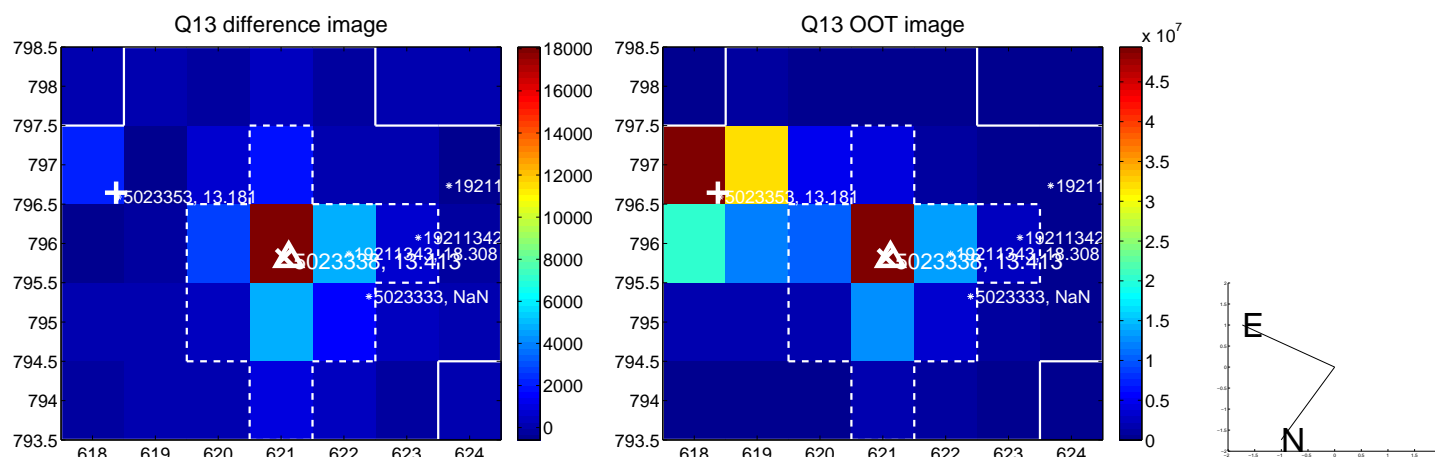
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



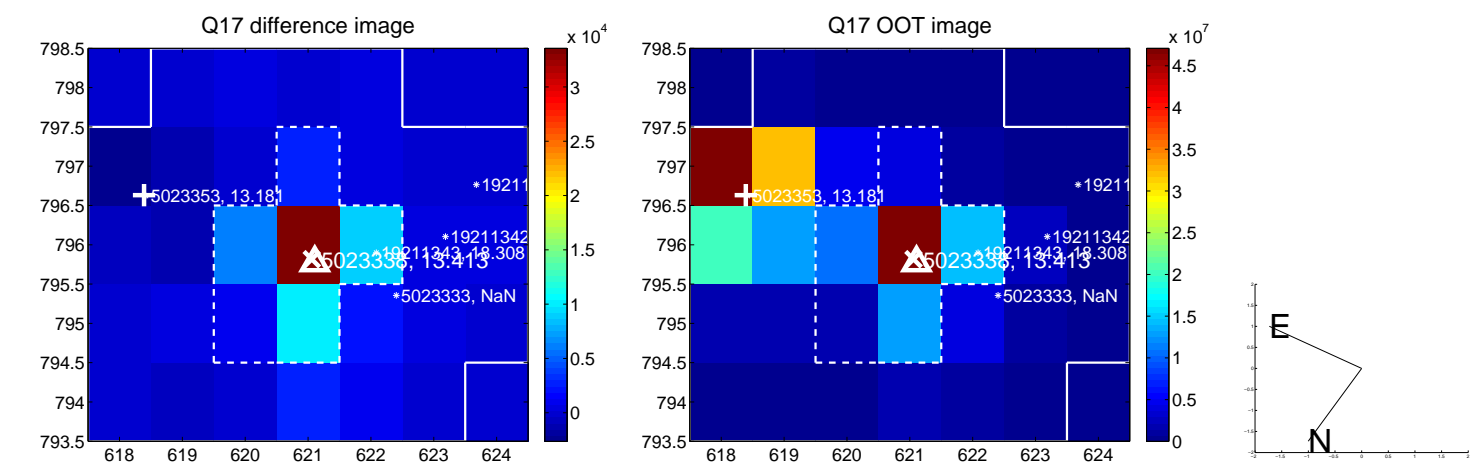
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



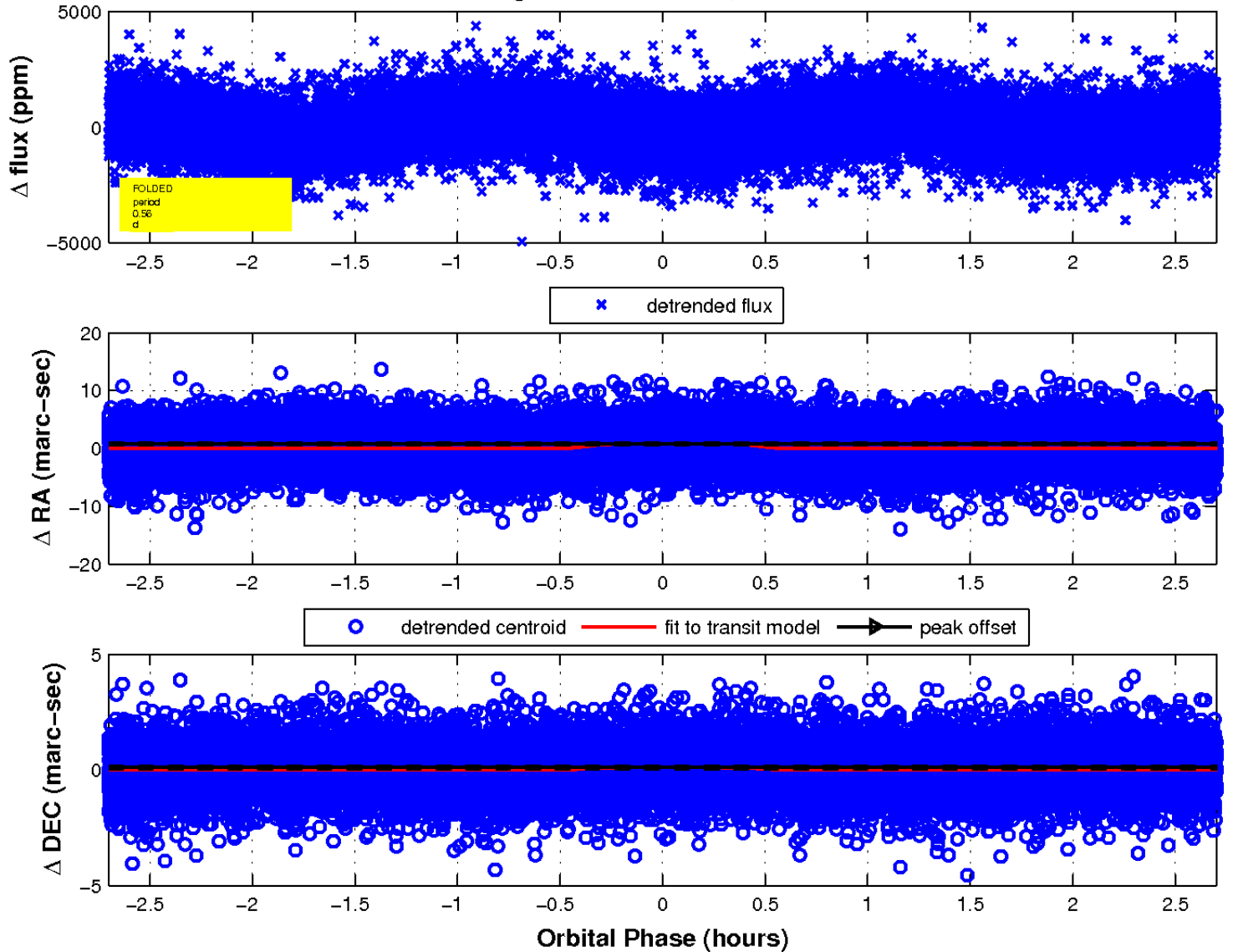
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



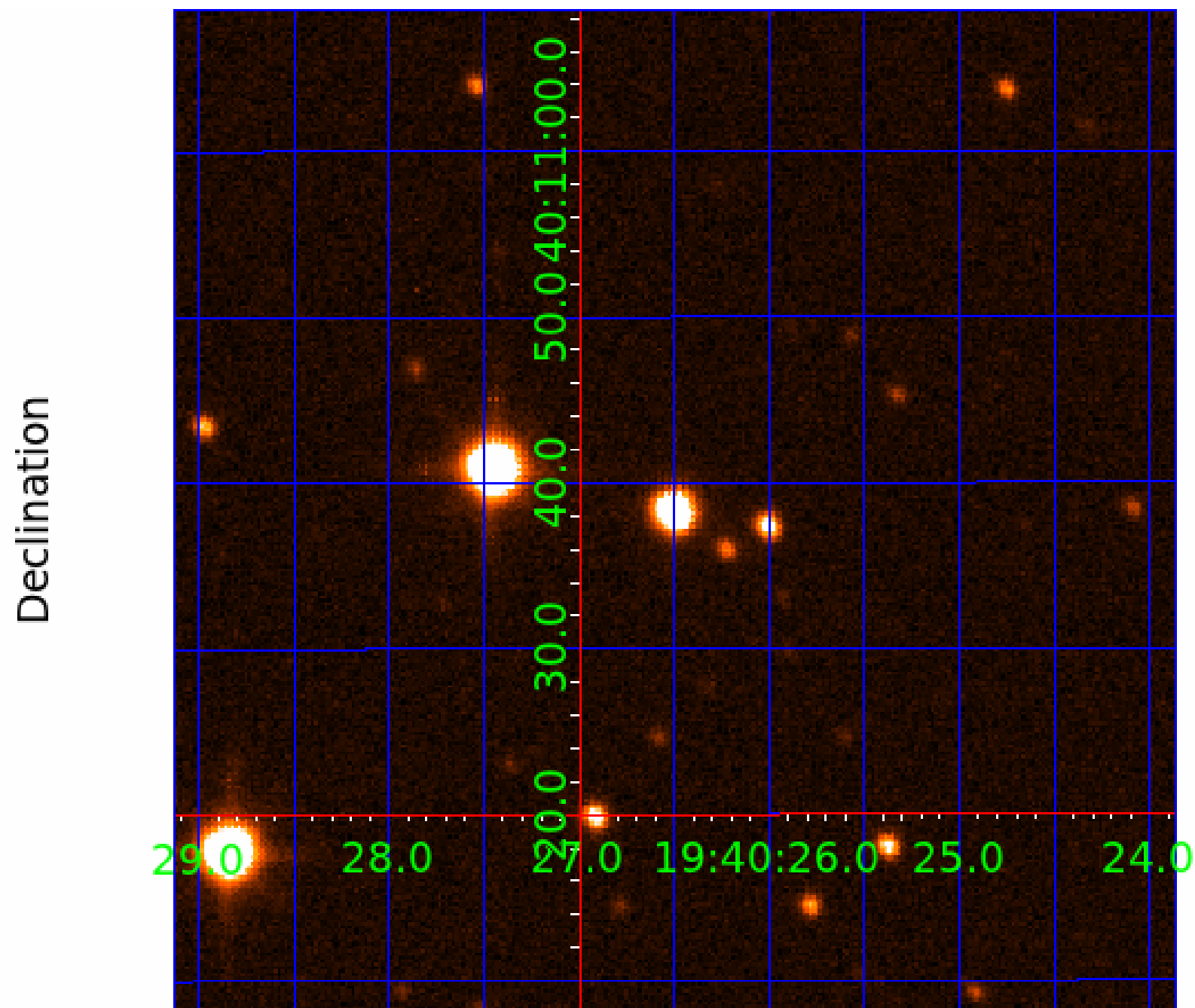
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 4



UKIRT Image



KIC 005023338

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})
005023338-01	OBS	No	1.120853	132.348937	398.9	0.992	9.8	14.3	3.80	7661	7.92	55640.25
005023338-02	OBS	No	0.560424	132.033461	354.5	1.053	11.6	19.7	3.80	7661	7.34	0.00
005023338-03	OBS	No	0.560422	131.637145	379.8	0.901	11.3	19.8	3.80	7661	7.75	0.00
005023338-04	OBS	No	1.120854	131.871296	571.7	0.704	10.1	19.1	3.80	7661	9.58	55640.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005023338-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
005023338-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_KIC_POS
005023338-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_KIC_POS

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

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

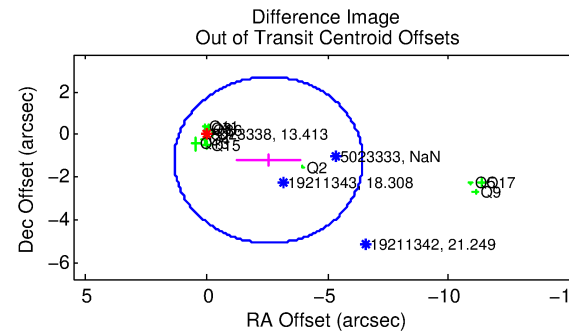
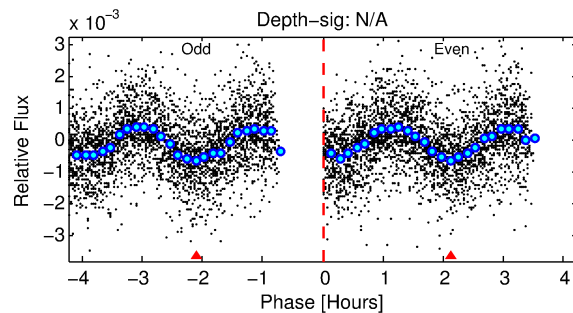
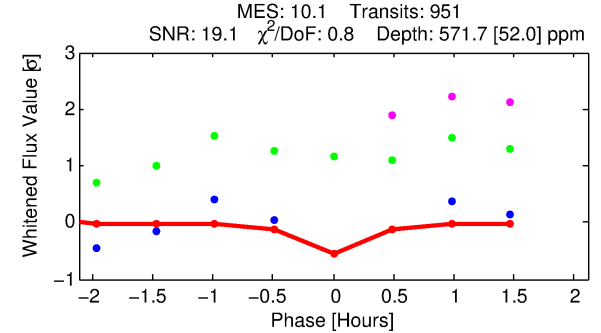
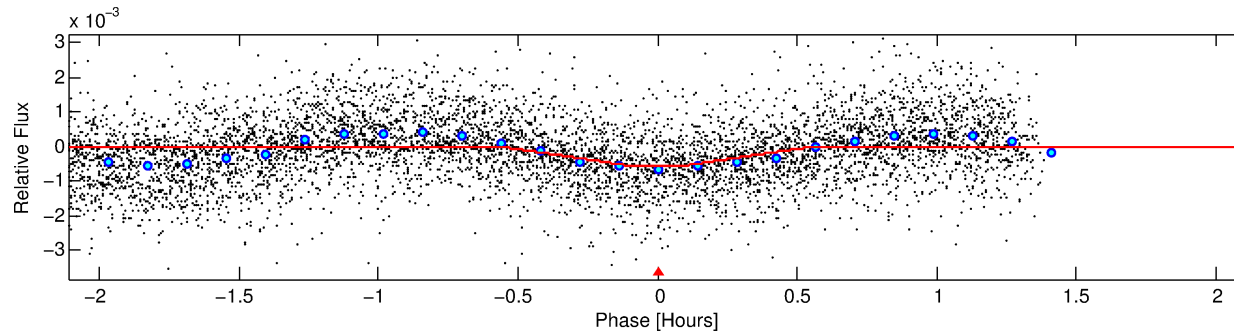
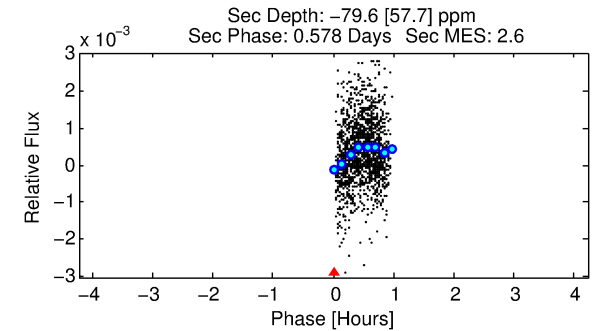
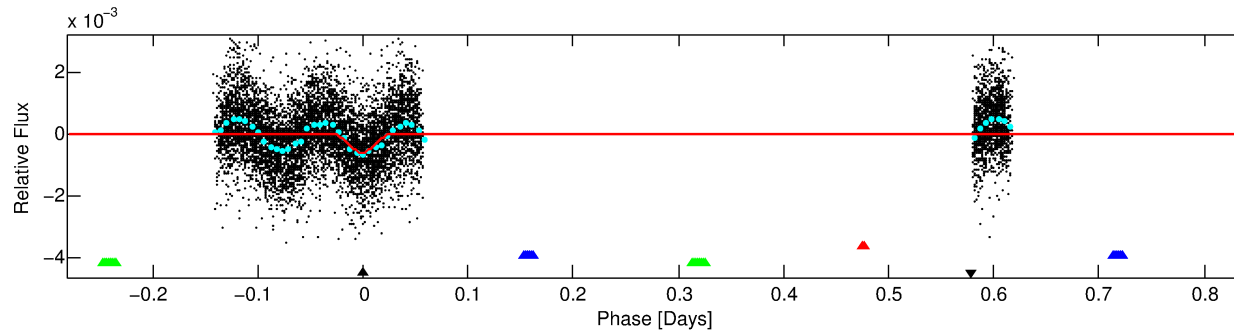
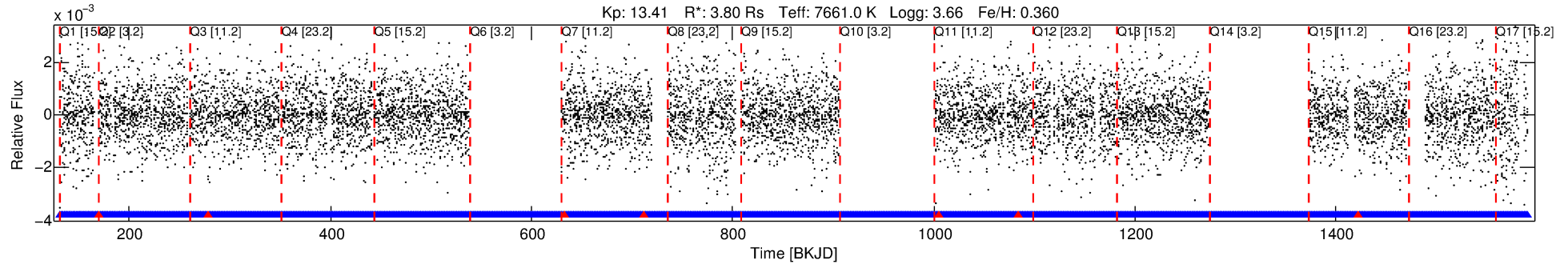
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005023338-04

No Significant Match Found

DV One-Page Summary

KIC: 5023338 Candidate: 4 of 4 Period: 1.121 d



DV Fit Results:

Period = 1.12085 [0.00001] d
Epoch = 131.8713 [0.0007] BKJD
Rp/R* = 0.0231 [0.0072]
a/R* = 10.88 [18.80]
b = 0.50 [2.63]
Seff = 55640.14 [39463.07]
Teq = 3916 [694] K
Rp = 9.58 [5.36] Re
a = 0.0283 [0.0123] AU
Ag = N/A
Teffp = N/A

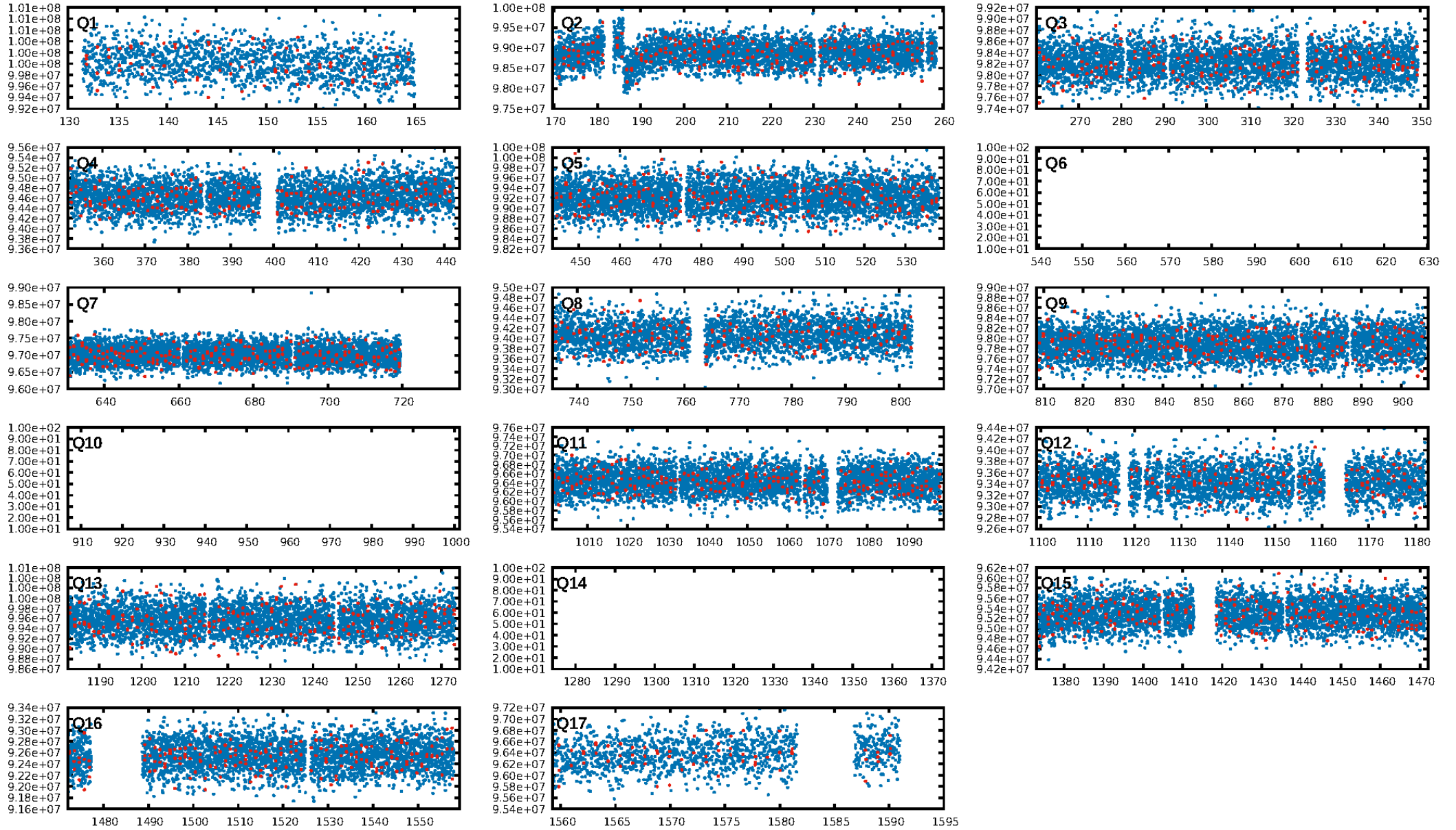
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [891/898]
GhostDiagnostic-chr: -62.35
Centroid-sig: 0.0%
Centroid-so: 1.581 arcsec [6.36σ]
OotOffset-rm: 2.833 arcsec [2.18σ]
KicOffset-rm: 0.215 arcsec [0.27σ]
OotOffset-st: 1/4/3/4 [12]
KicOffset-st: 1/4/3/4 [12]
DiffImageQuality-fgm: 0.92 [11/12]
DiffImageOverlap-fno: 0.00 [0/14]

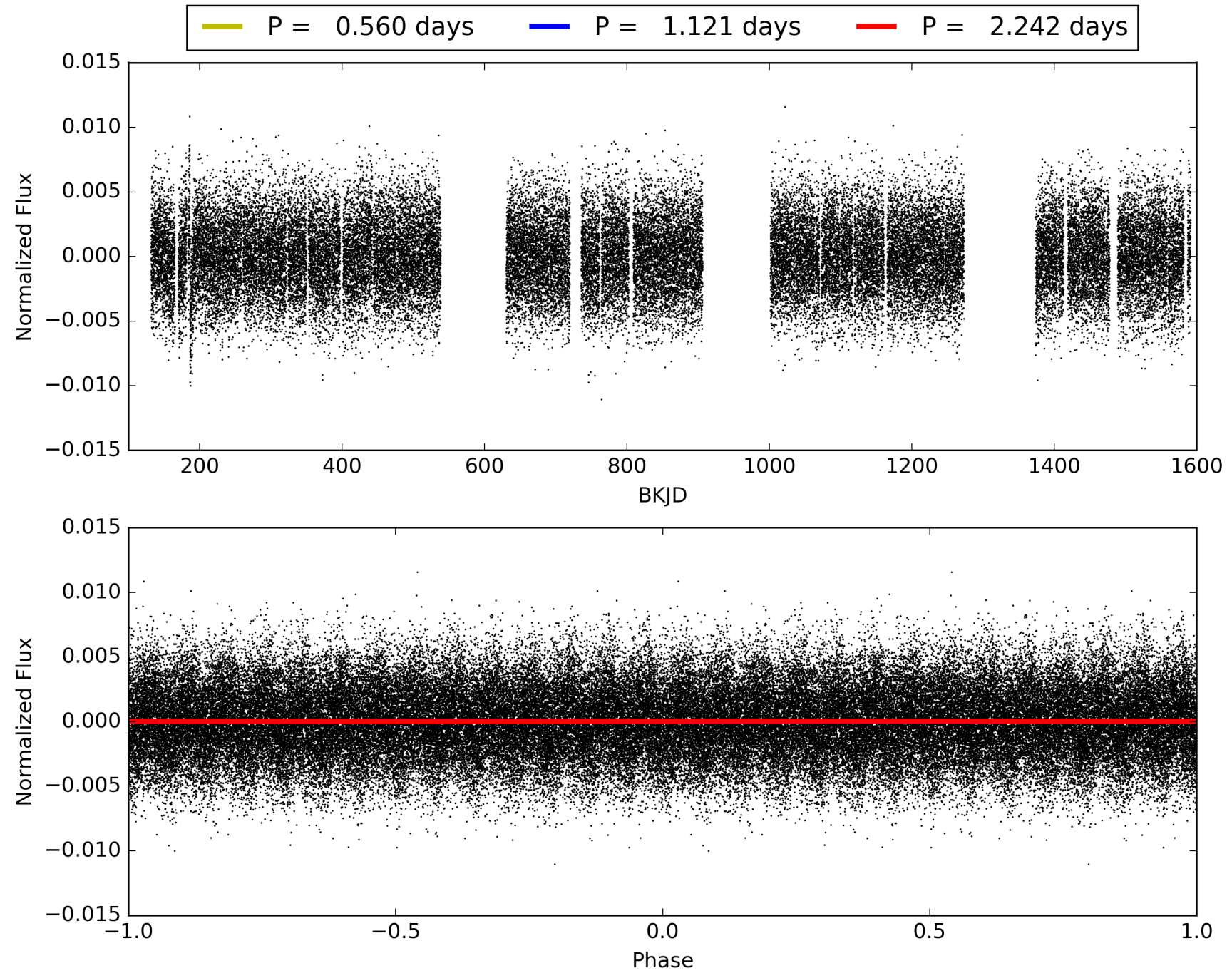
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:47:04 Z

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

TCE 005023338-04, PDC Light Curves

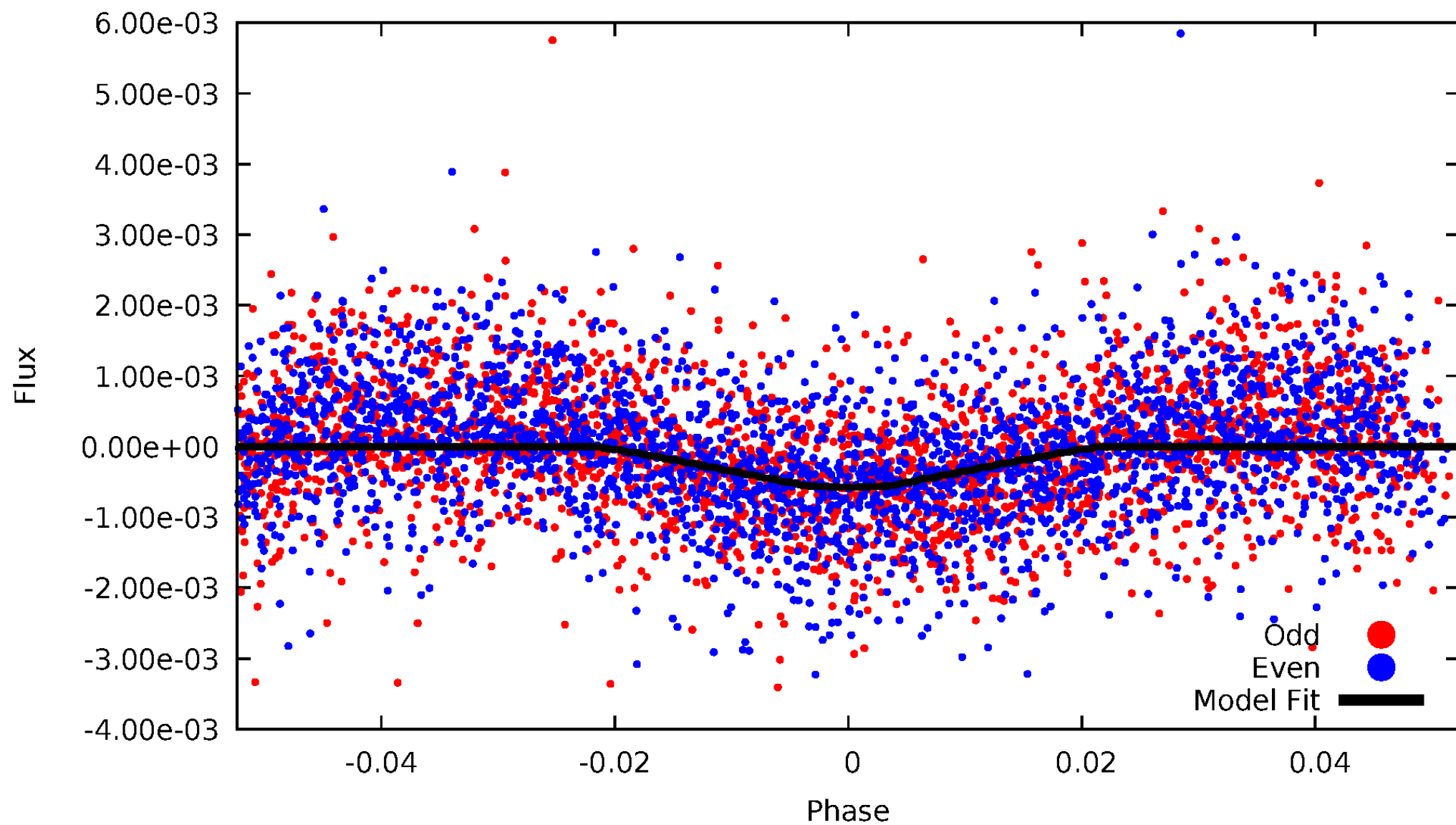


TCE 005023338-04



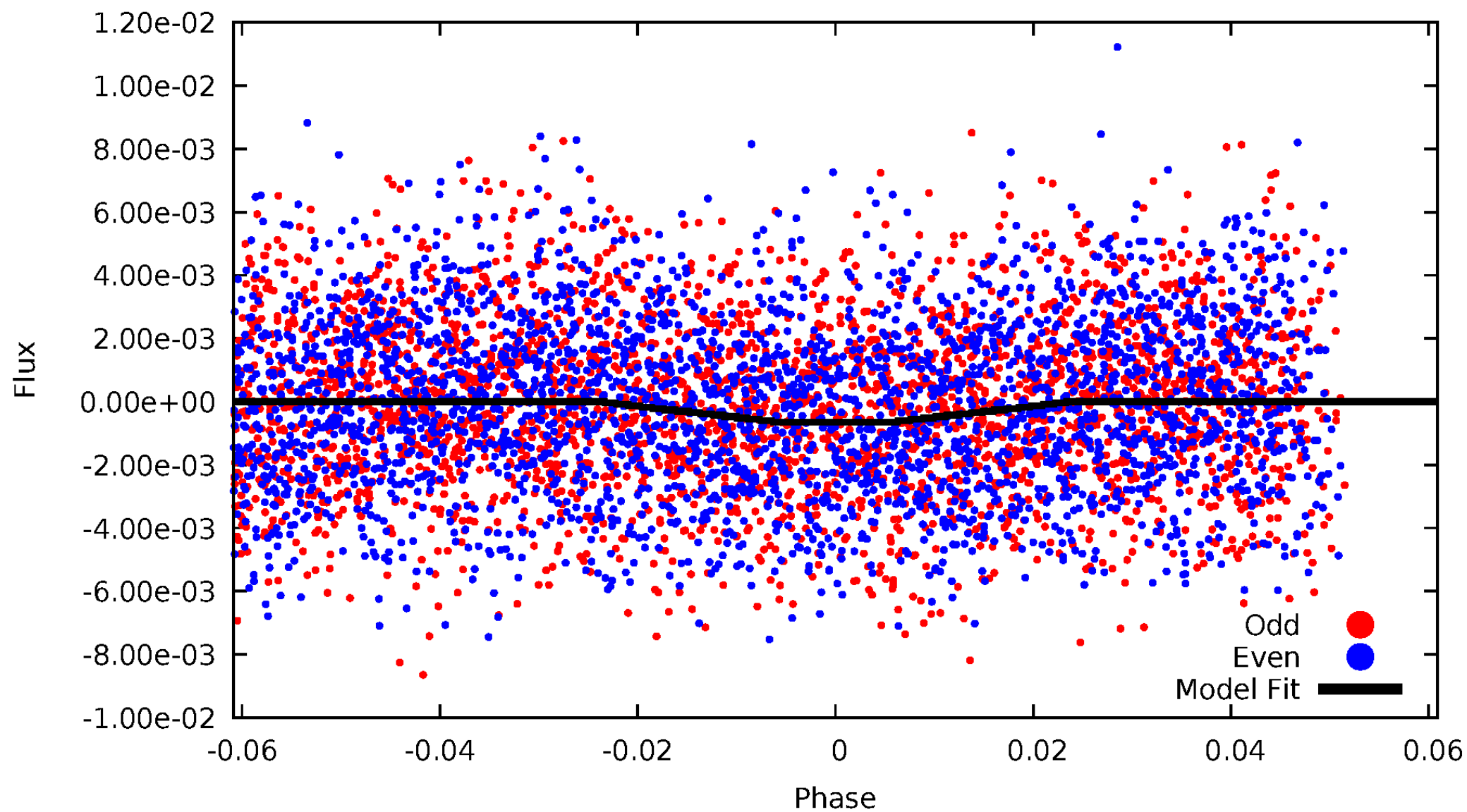
DV Odd/Even

TCE 005023338-04



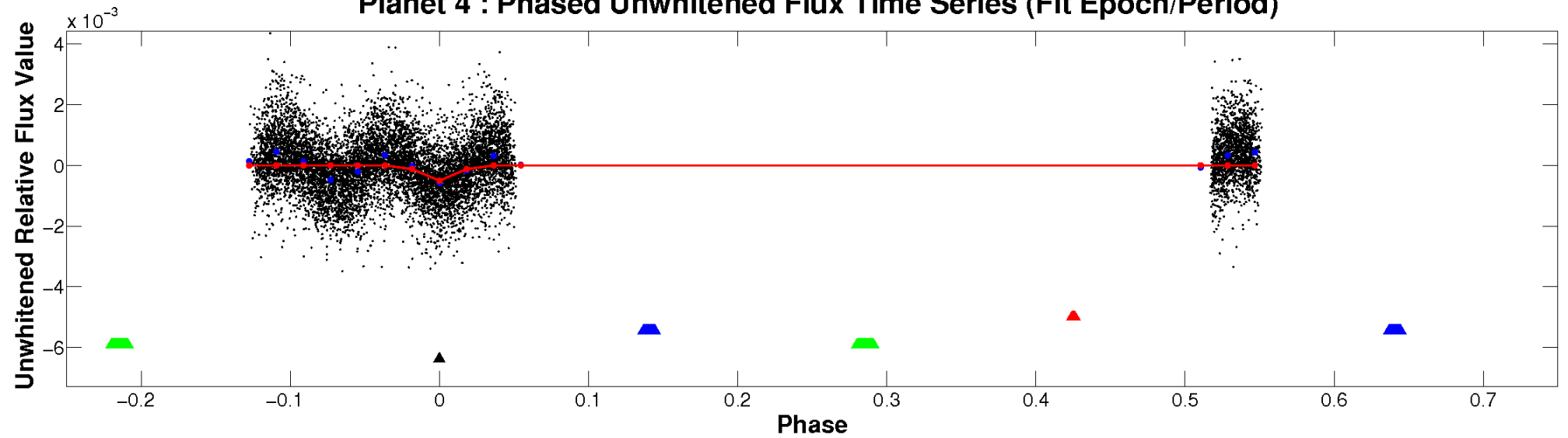
ALT Odd/Even

TCE 005023338-04

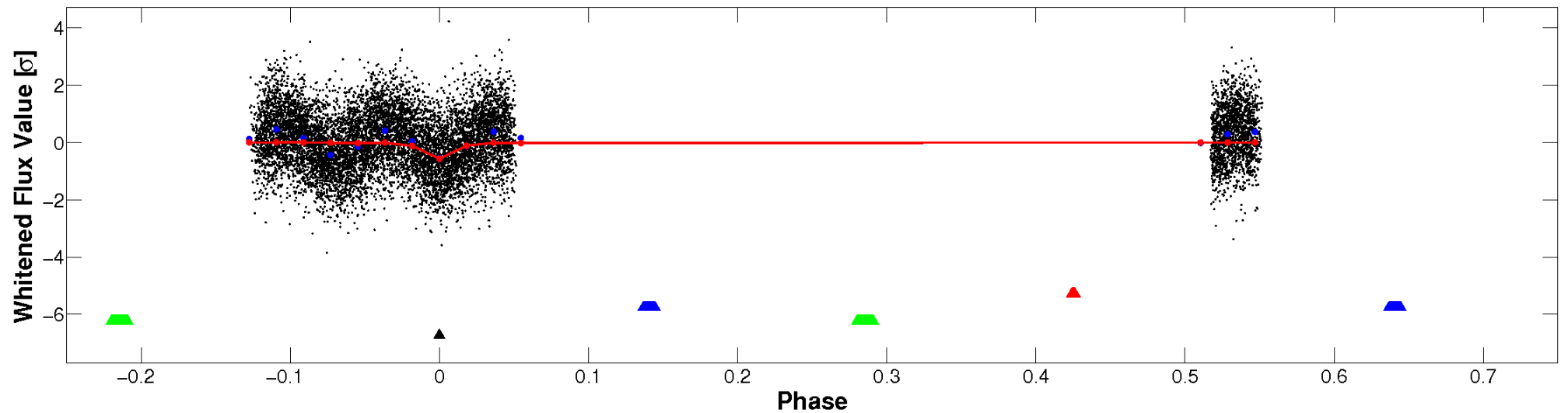


Non-Whitened Vs. Whitened Light Curve

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

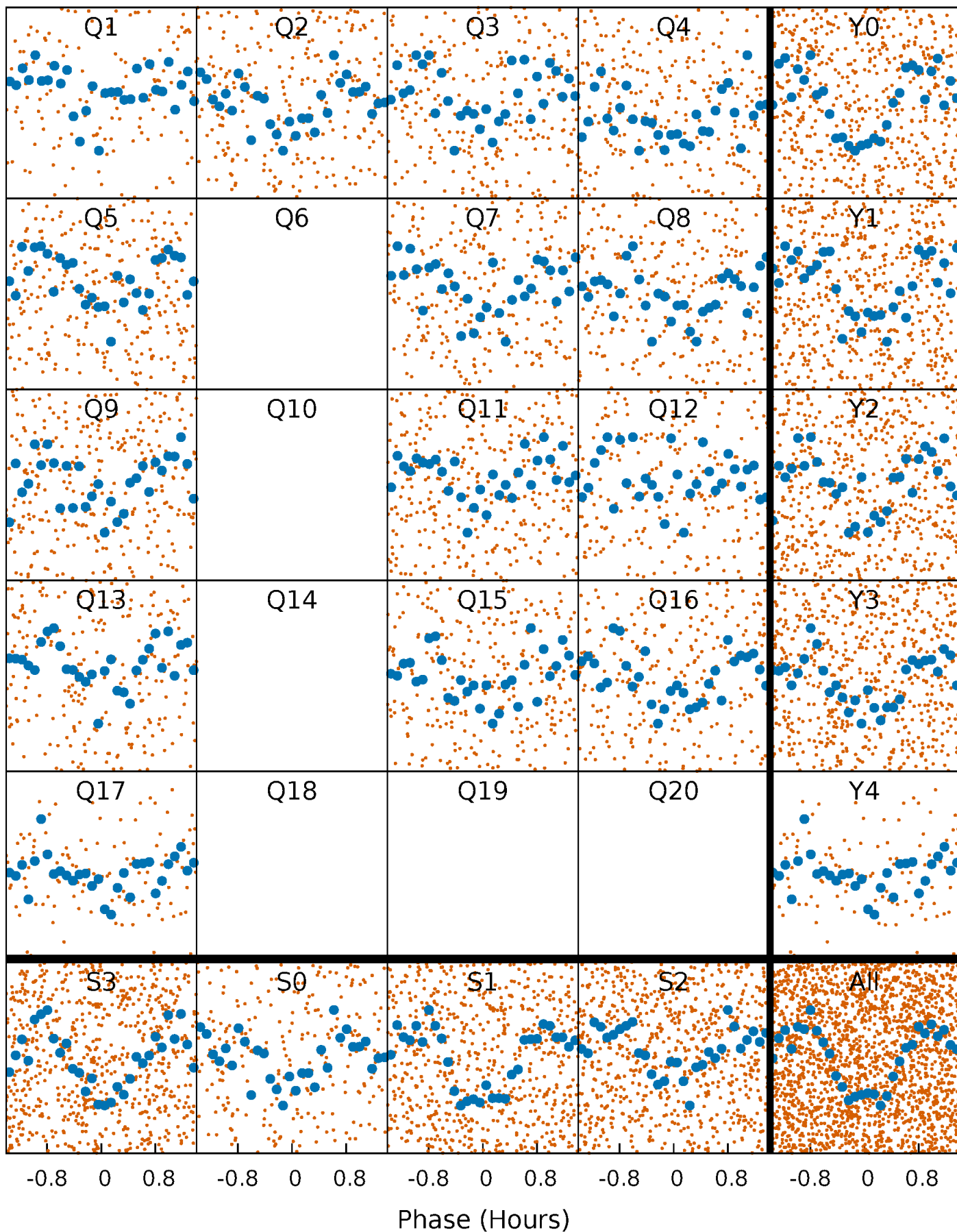


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



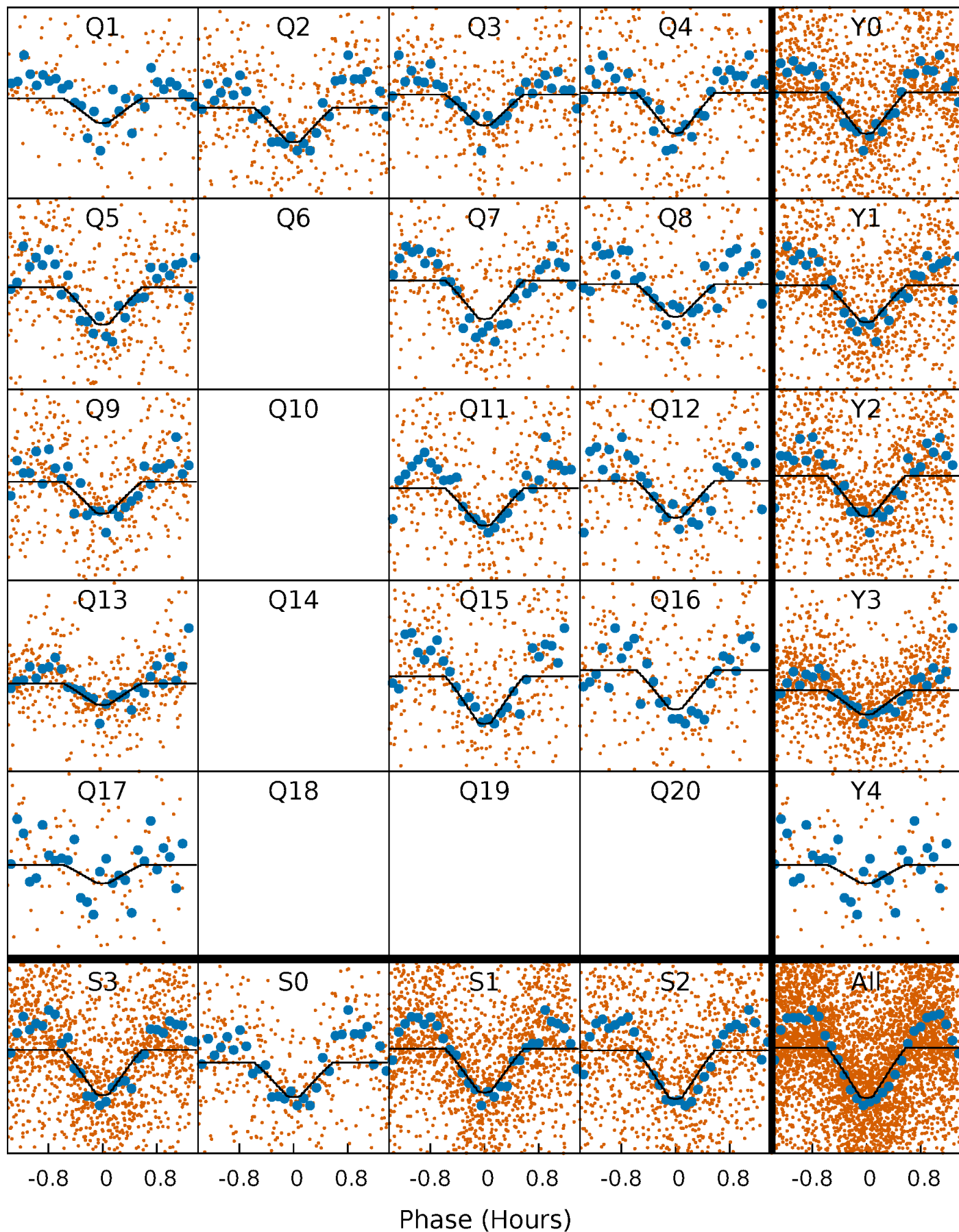
PDC Quarter-Phased Transit Curves

TCE 005023338-04 P= 1.120854 Days $T_0=131.871296$ (BKJD)



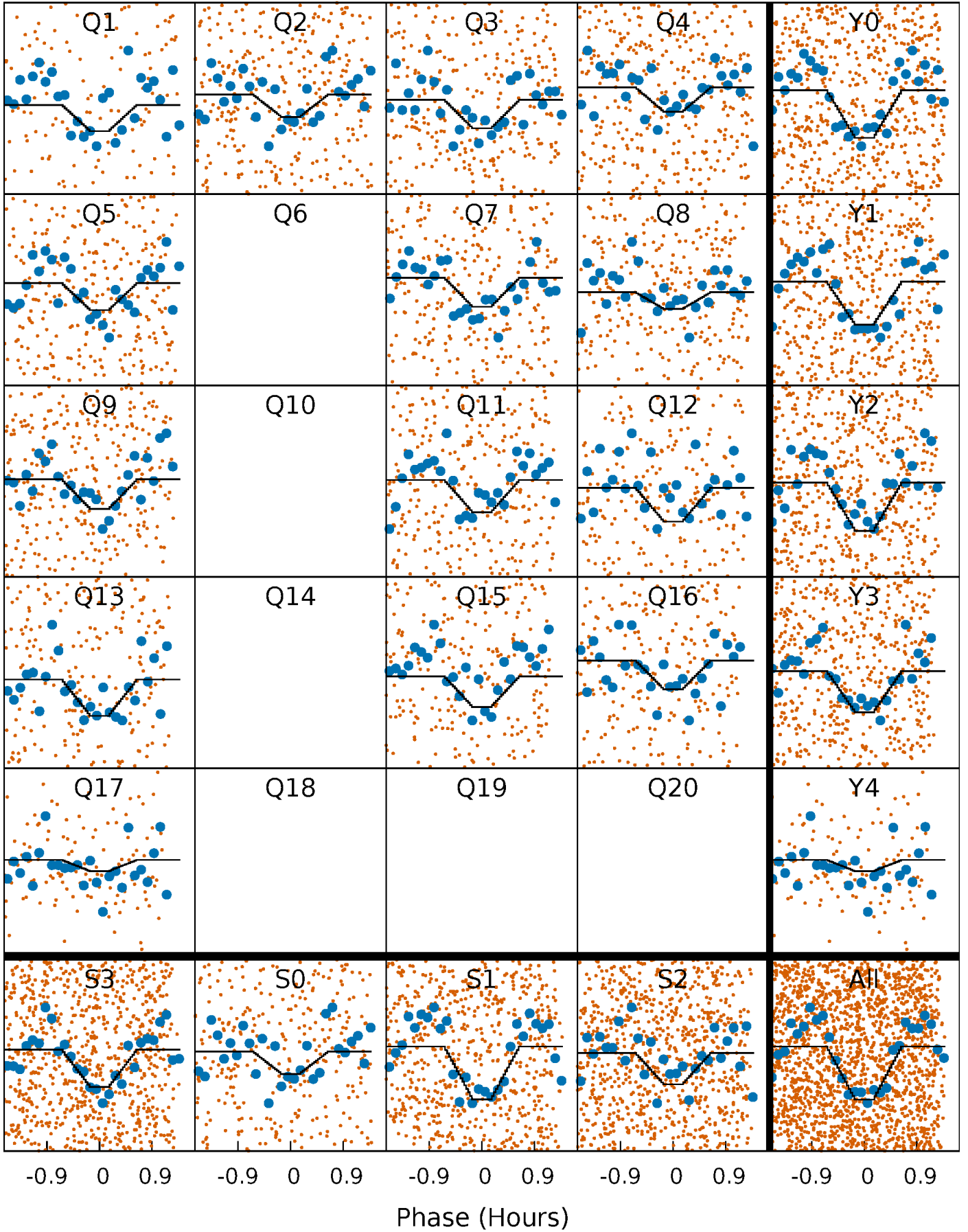
DV Quarter-Phased Transit Curves

TCE 005023338-04 $P = 1.120854$ Days $T_0 = 131.871296$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

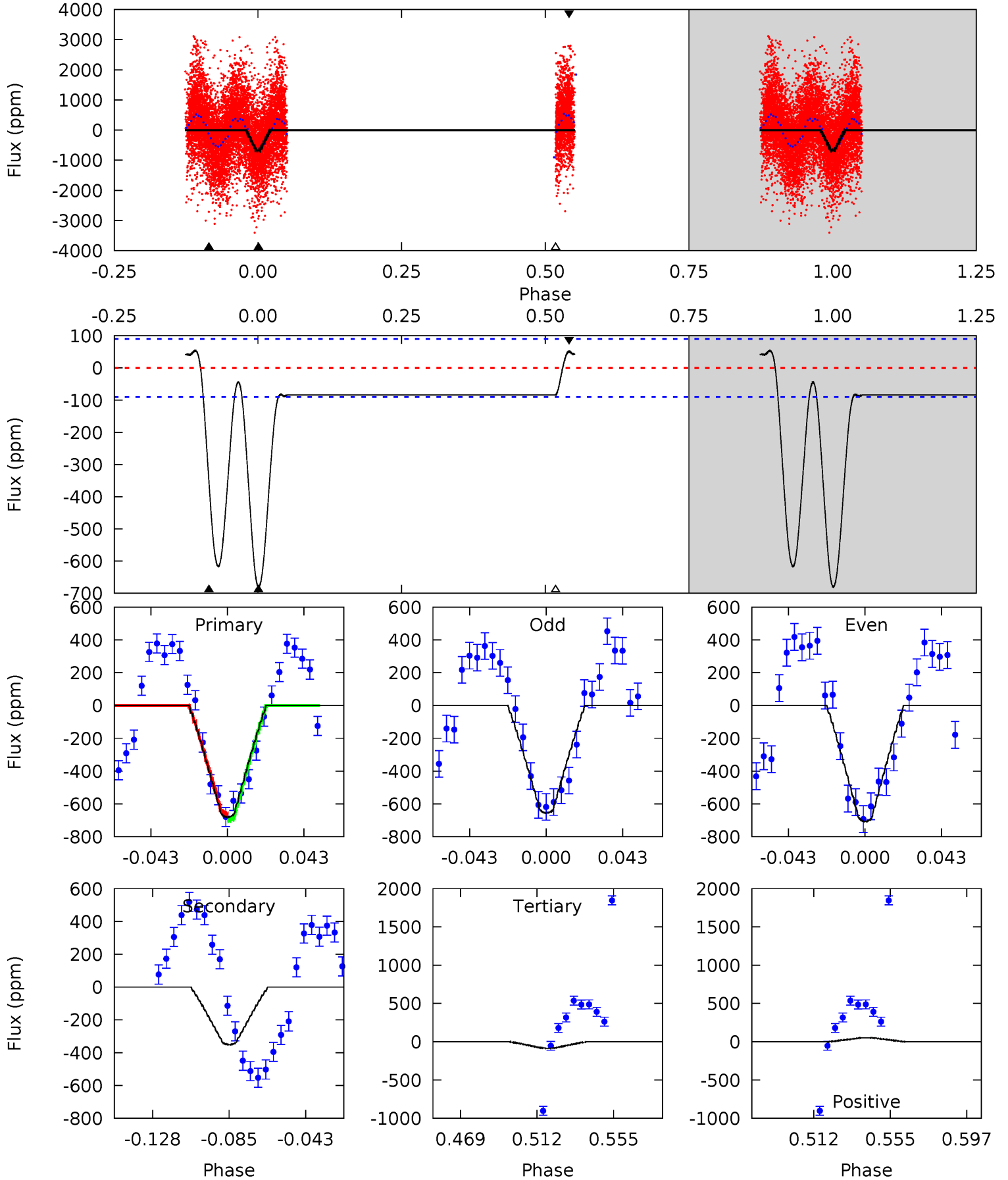
TCE 005023338-04 P= 1.120856 Days $T_0=131.871156$ (BKJD)



DV Model-Shift Uniqueness Test

005023338-04, P = 1.120854 Days, E = 130.750442 Days

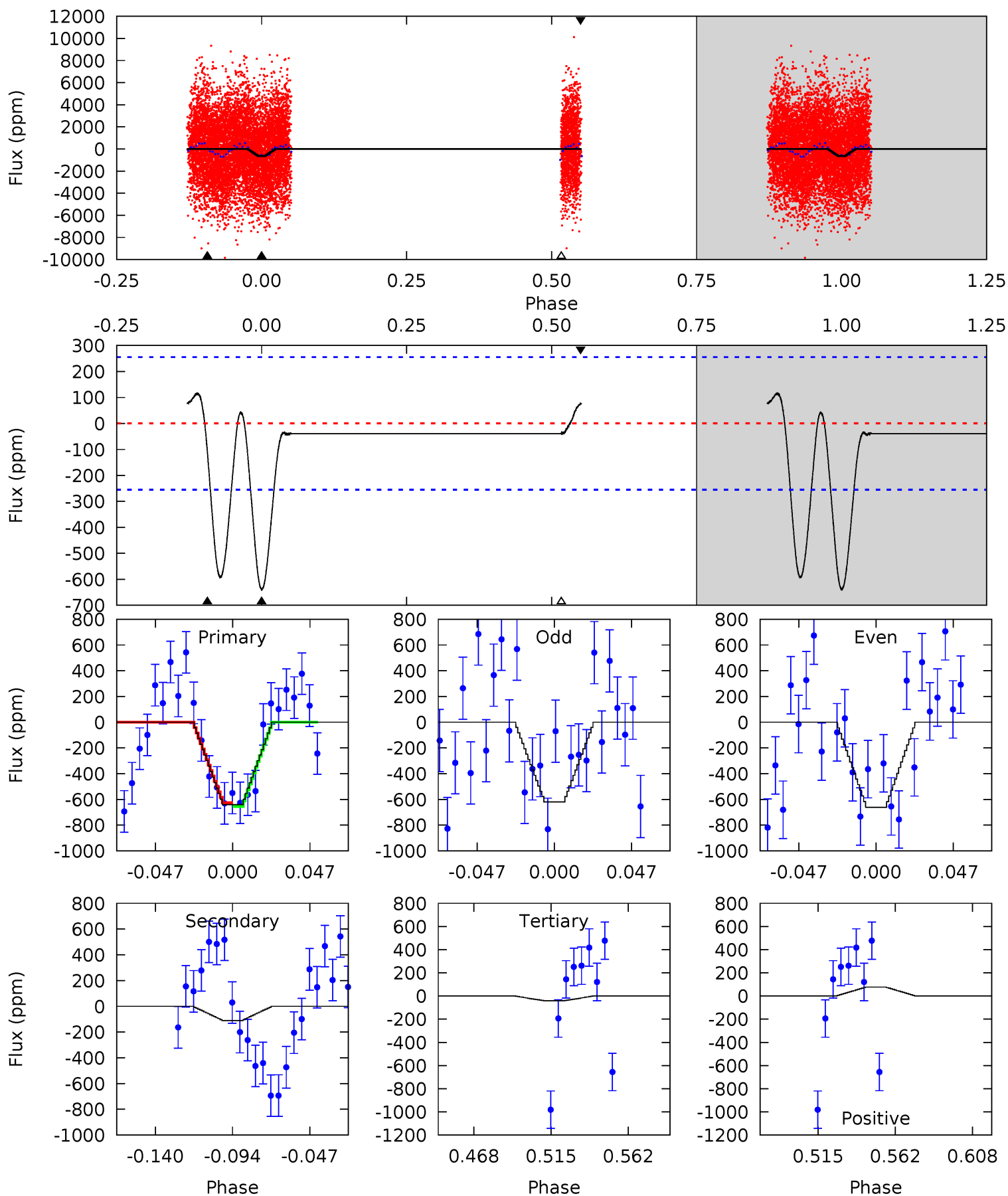
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.7	18.4	4.41	2.72	4.74	2.03	2.94	31.3	33.0	14.0	15.7	1.37	1.03	0.07	1.00



Alt Model-Shift Uniqueness Test

005023338-04, P = 1.120856 Days, E = 130.750300 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	2.04	0.76	1.43	4.72	1.99	0.70	11.1	10.4	1.28	0.61	0.39	1.03	0.15	0.28



Stellar Parameters For KIC 005023338

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7661^{+212}_{-363}	$3.660^{+0.397}_{-0.132}$	$0.360^{+0.050}_{-0.400}$	$3.803^{+0.756}_{-1.765}$	$2.410^{+0.217}_{-0.652}$	$0.062^{+0.249}_{-0.020}$
	+3%/-5%	+11%/-4%	+14%/-111%	+20%/-46%	+9%/-27%	+403%/-33%
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 005023338-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-350 ± 19	$8.90^{+3.67}_{-3.19}$	5320^{+421}_{-574}	6447^{+1680}_{-1038}	$1.930^{+2.615}_{-0.933}$
Alt.	-110 ± 54	$9.60^{+3.60}_{-3.48}$	5347^{+443}_{-618}	4100^{+1446}_{-7731}	$0.481^{+0.915}_{-0.263}$

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 $A_{obs} \gg 1.0$

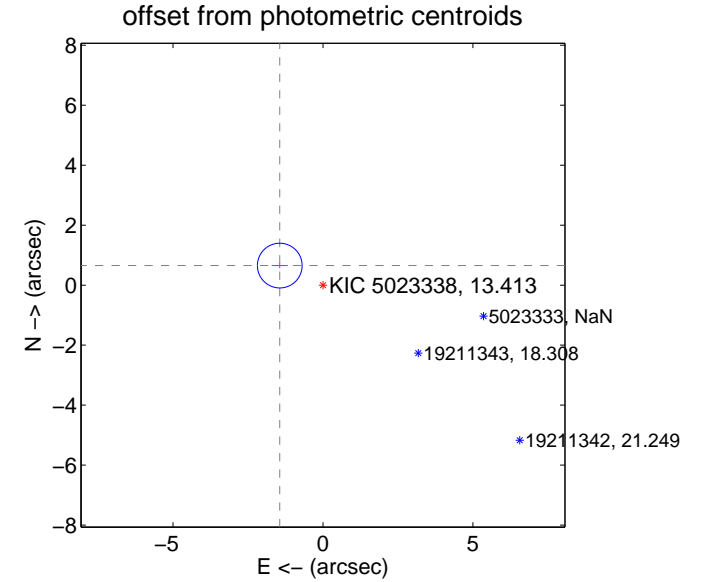
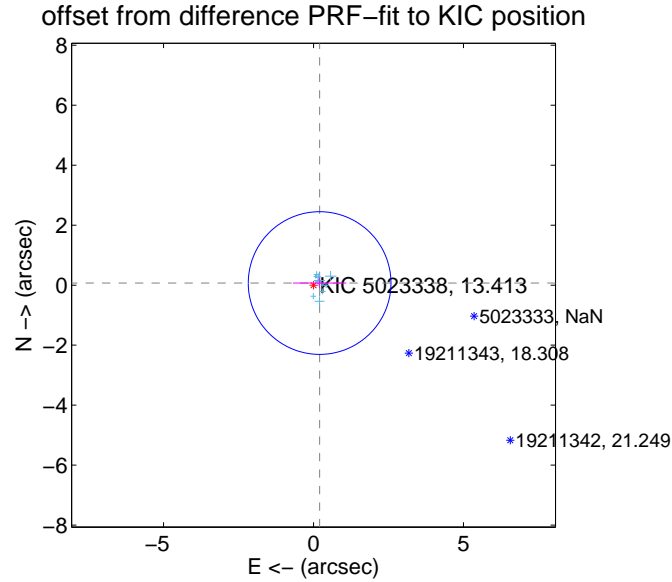
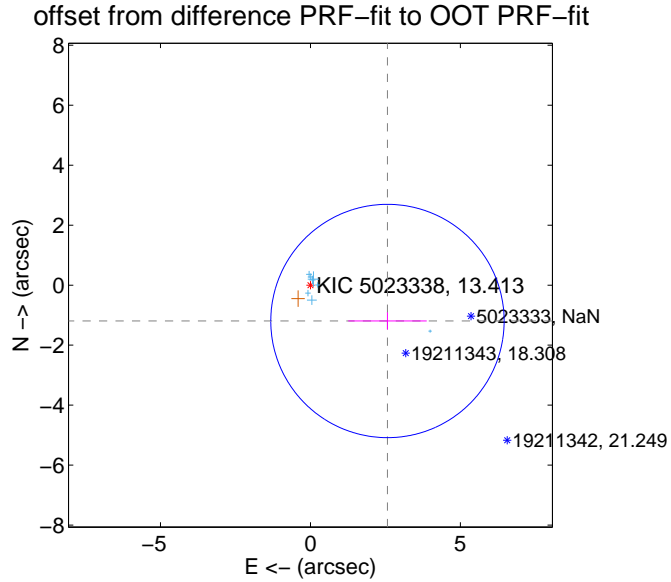
DV Centroid Data

Supplemental centroid analysis for 005023338-04. Kepler magnitude: 13.41. Transit SNR 19.15

There are 11 quarters with good PRF difference image offsets

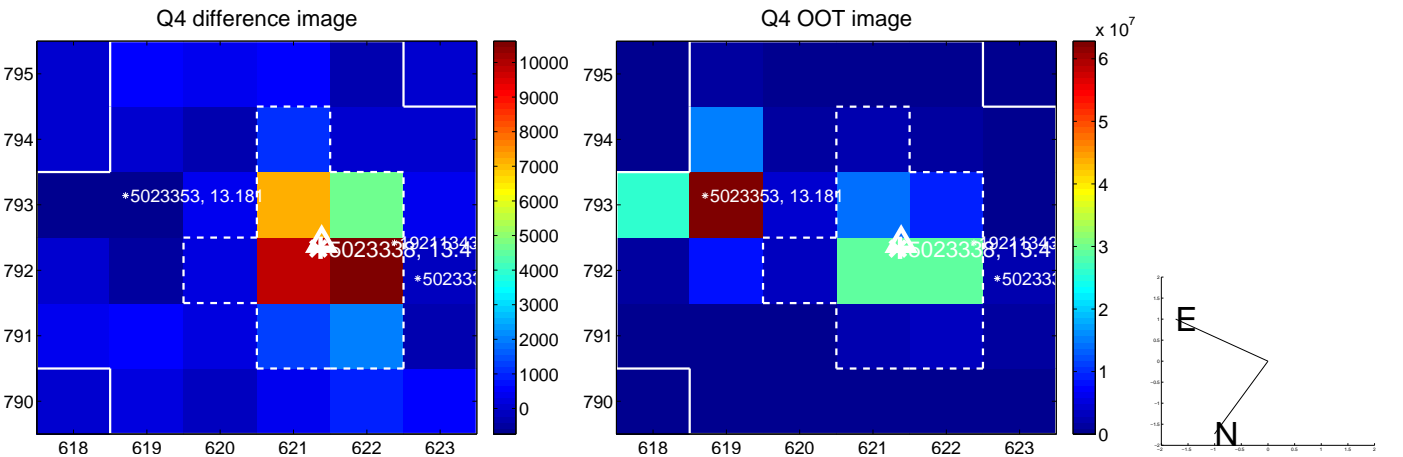
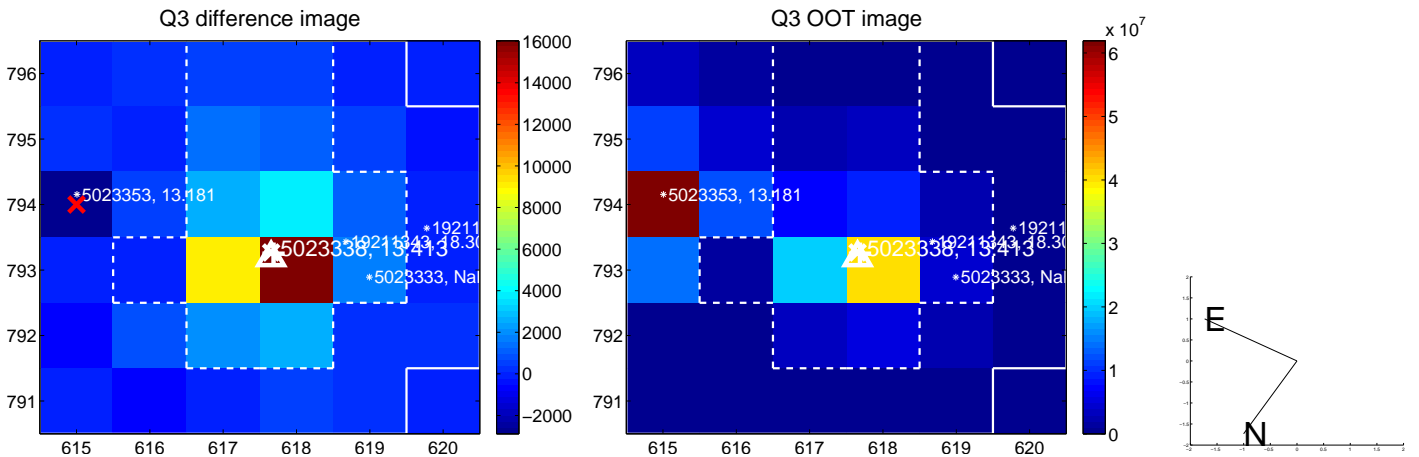
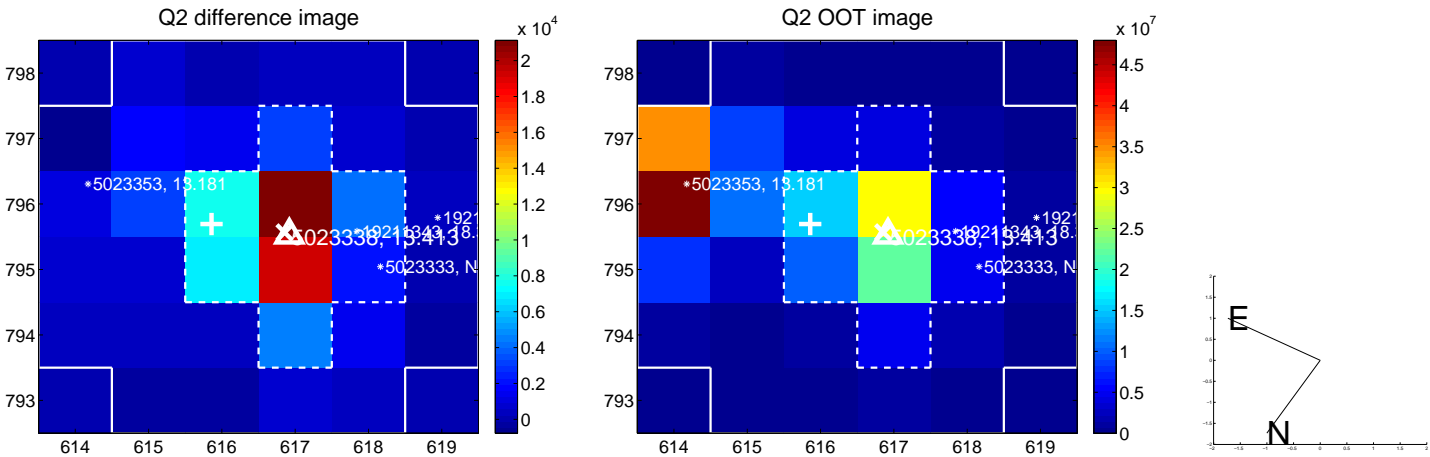
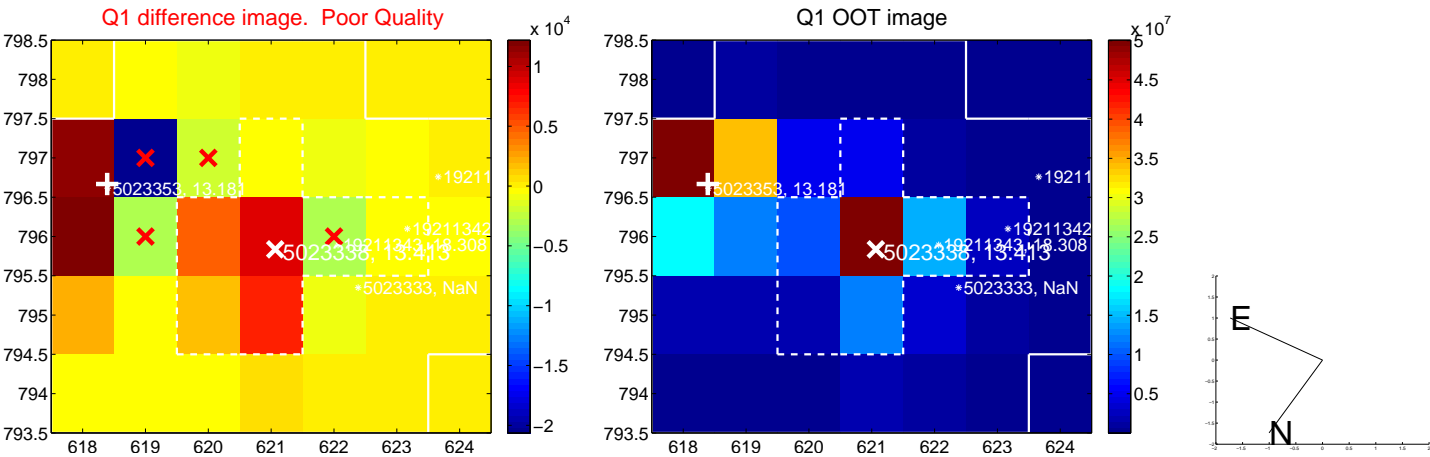
The OOT PRF centroid is offset from the target star catalog position by about 11.11 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.833 ± 1.297	2.18	-2.568 ± 1.308	-1.195 ± 0.287
PRF-fit source offset from KIC position	0.215 ± 0.793	0.27	-0.203 ± 0.889	0.071 ± 0.177
photometric centroid source offset	1.58 ± 0.25	6.36	1.44 ± 0.27	0.65 ± 0.09

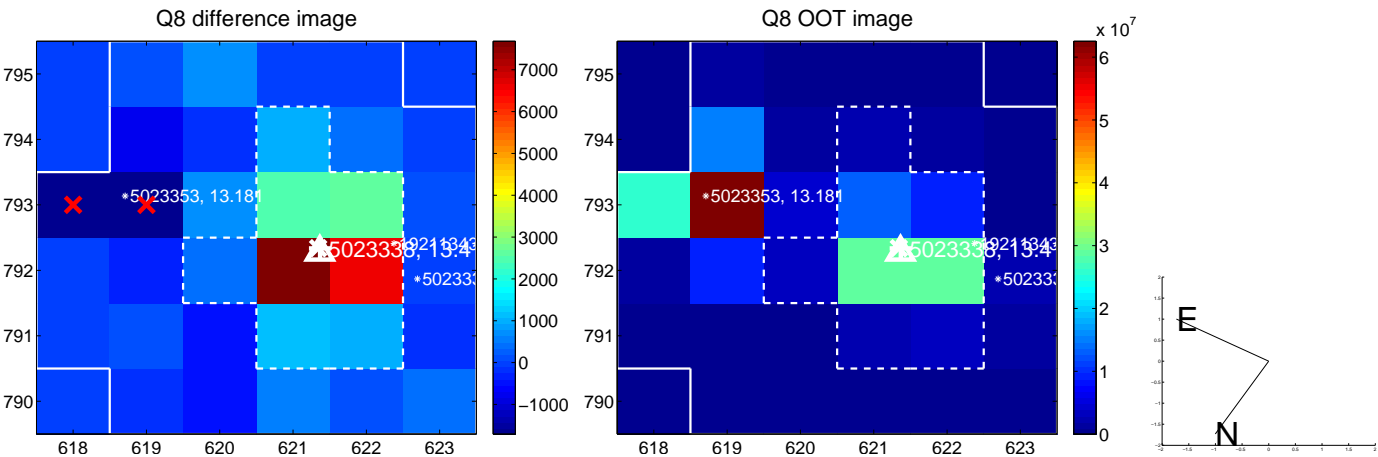
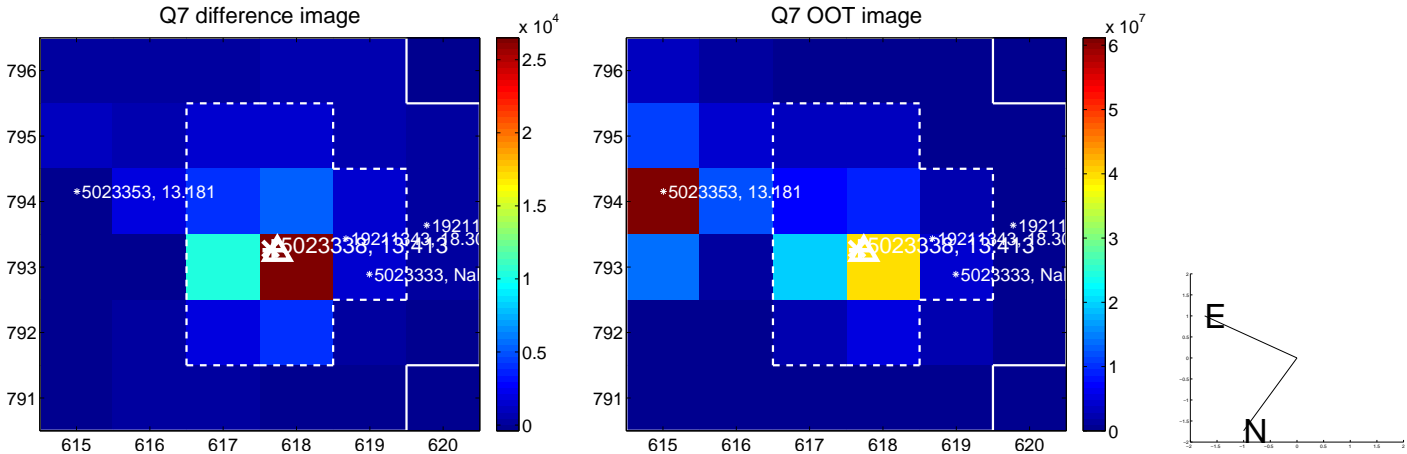
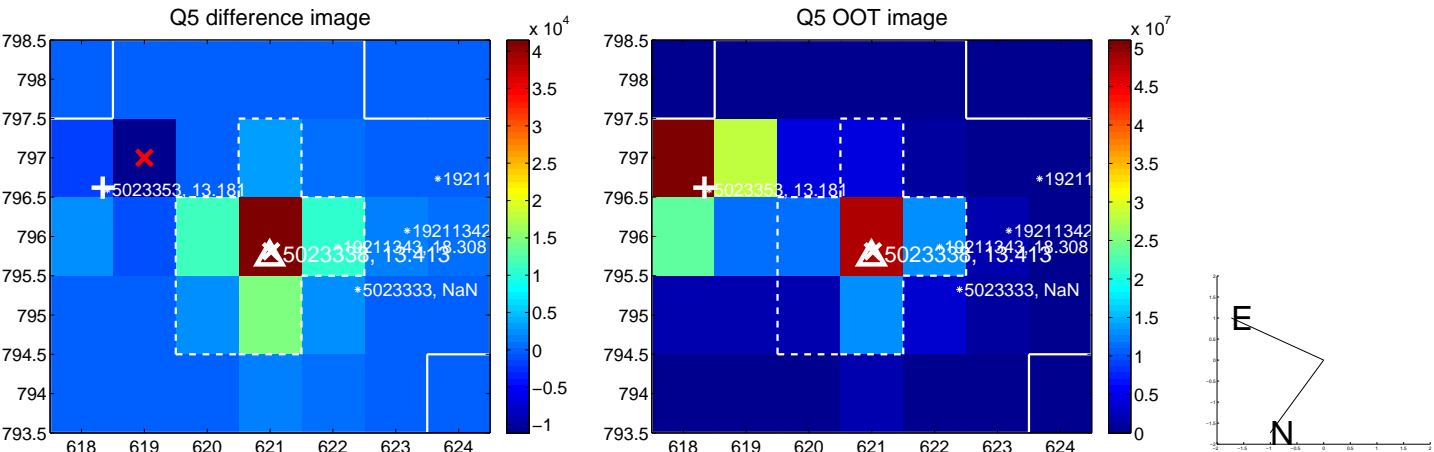


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

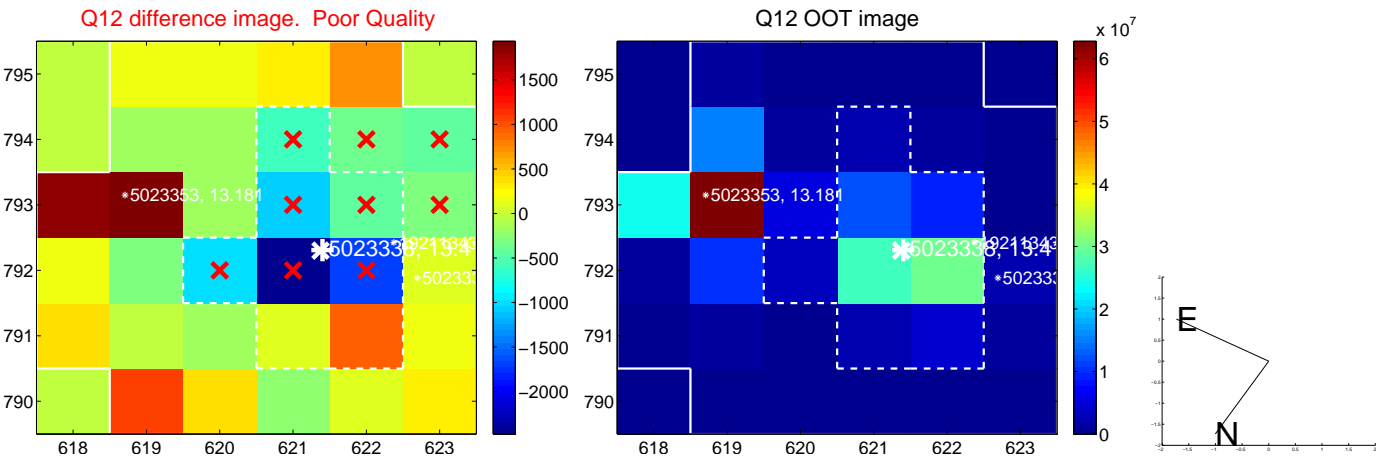
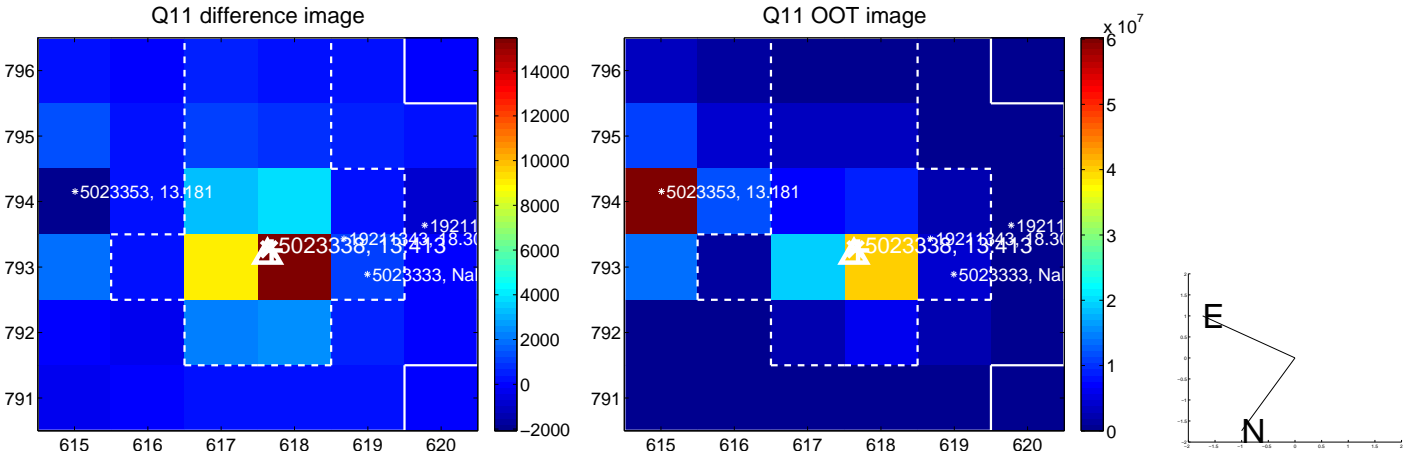
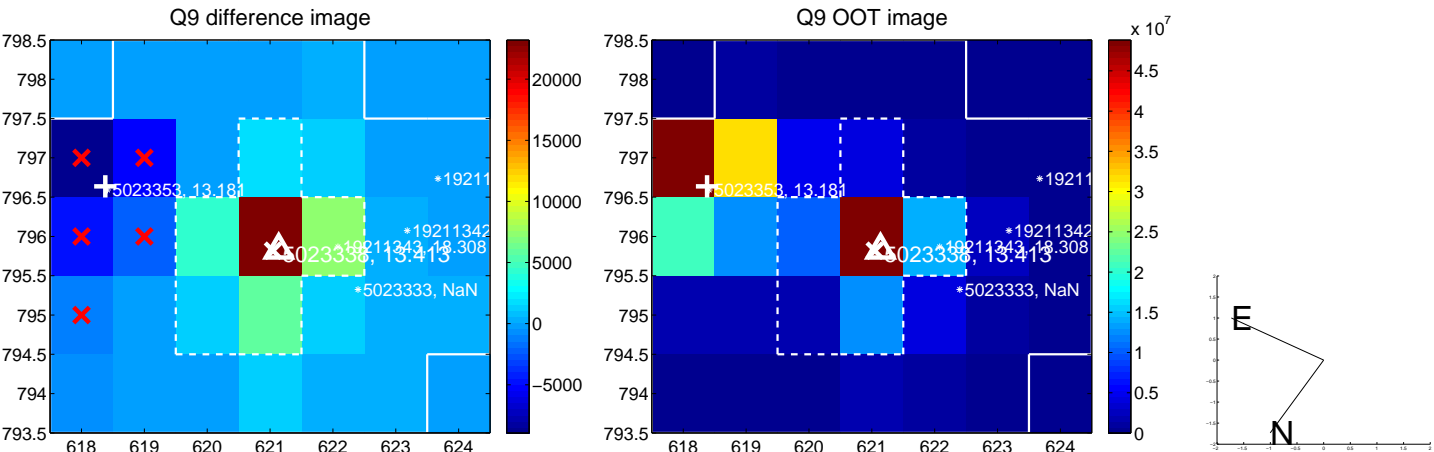
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



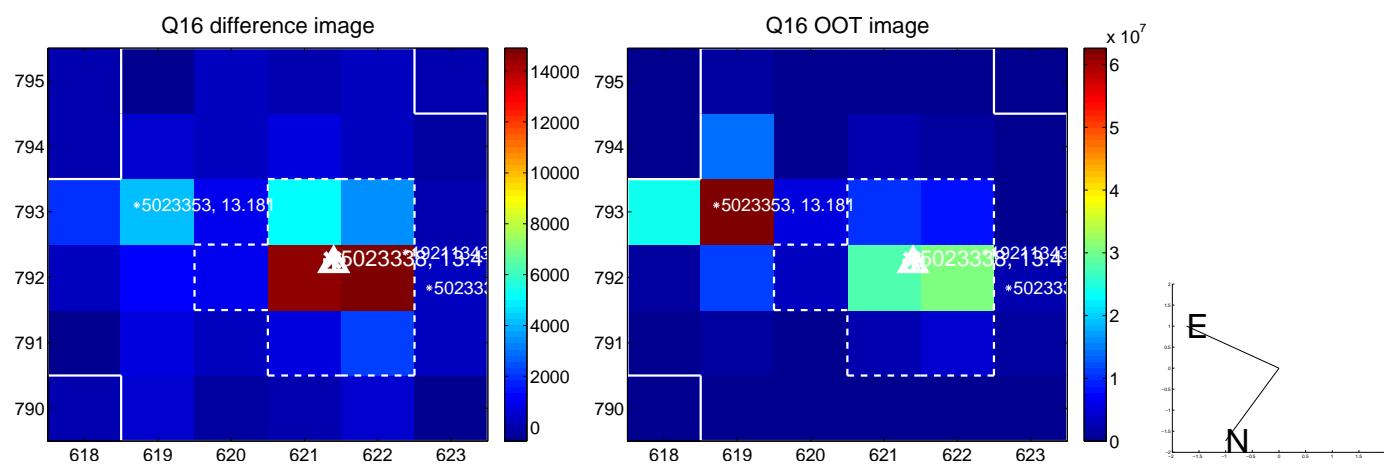
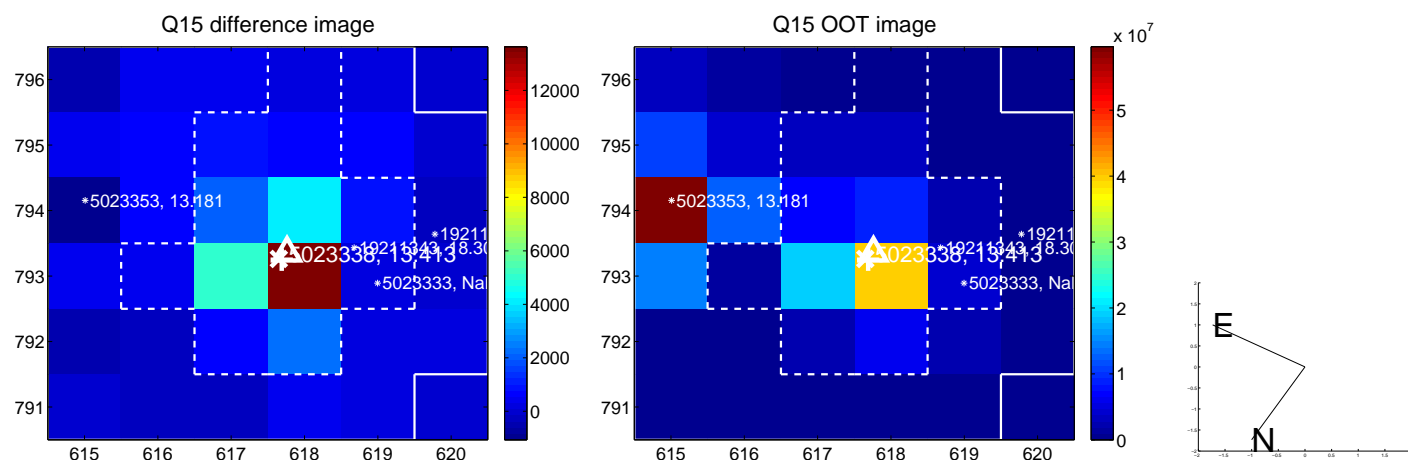
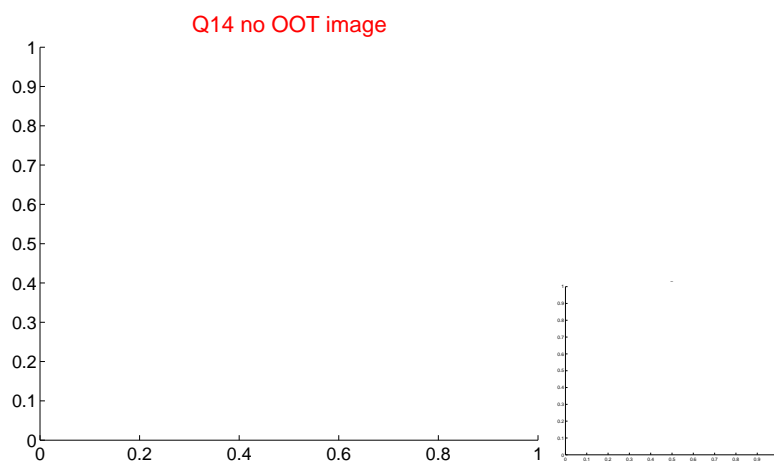
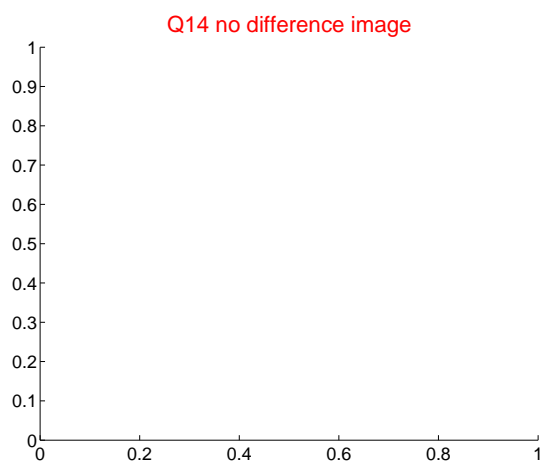
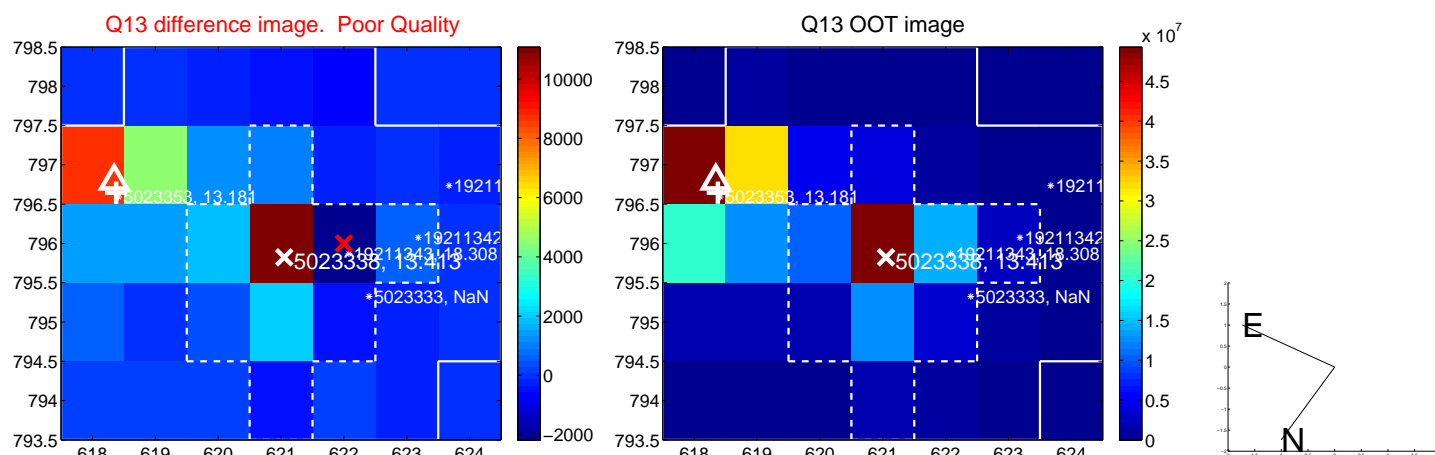
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



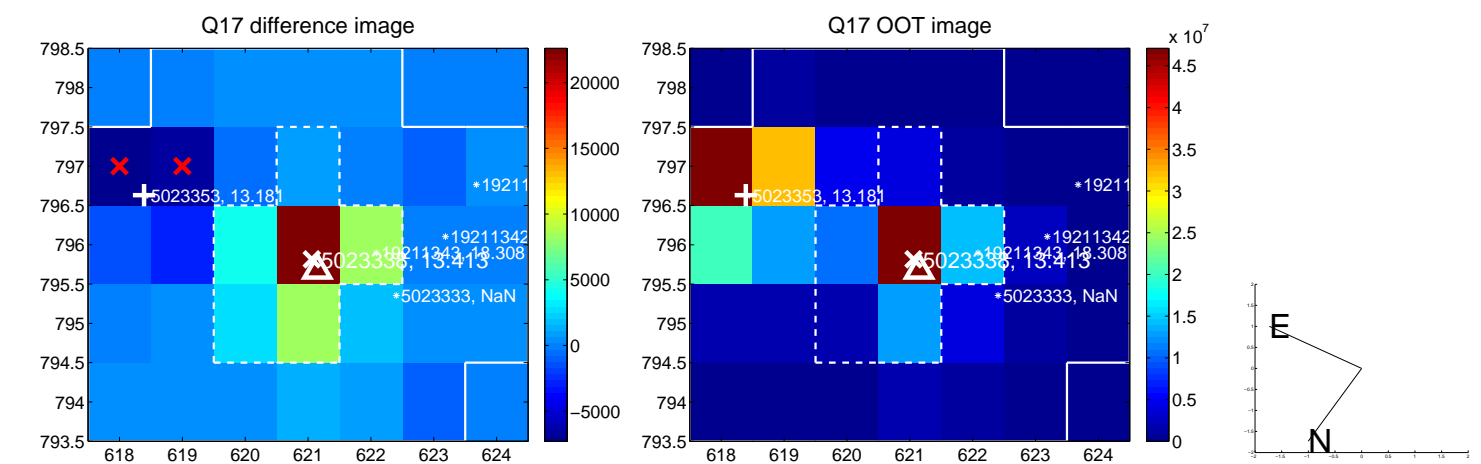
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



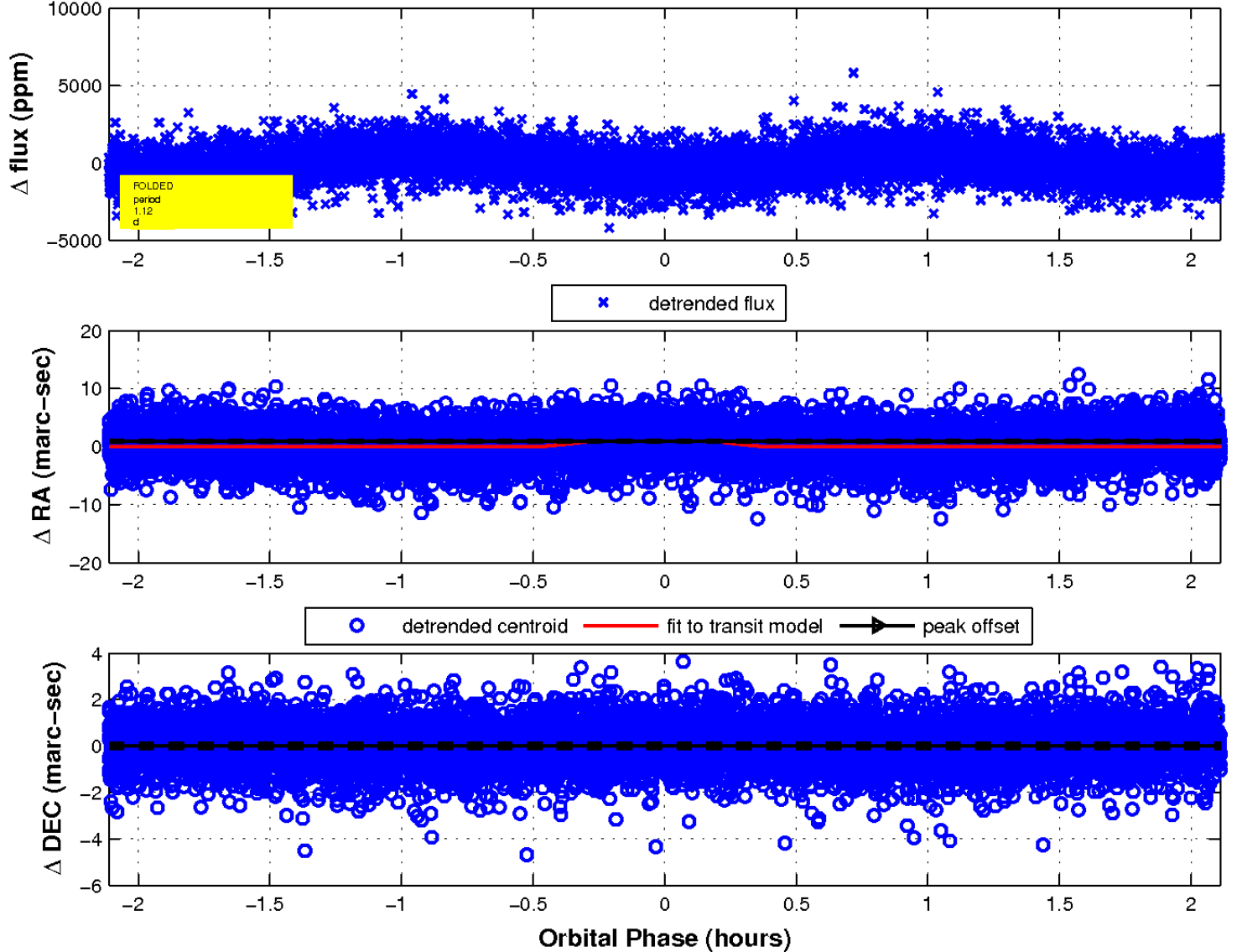
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

