

KIC 005880320

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})
005880320-01	OBS	1060.01	12.109728	140.212614	246.2	6.074	21.1	21.4	1.46	6021	2.71	241.30
005880320-02	OBS	1060.02	4.757937	132.938323	127.1	4.762	16.1	17.2	1.46	6021	1.89	838.52
005880320-03	OBS	1060.03	20.496576	147.455633	193.5	6.532	10.6	11.5	1.46	6021	2.24	119.63
005880320-04	OBS	1060.04	8.193480	138.999175	106.2	5.382	9.7	10.5	1.46	6021	1.88	406.24
005880320-05	OBS	No	387.599534	147.307459	411.9	12.610	9.7	5.0	1.46	6021	3.24	2.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005880320-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-02	OBS	PC	0.76	0	0	0	0	NO_COMMENT
005880320-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-04	OBS	PC	0.88	0	0	0	0	NO_COMMENT
005880320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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.

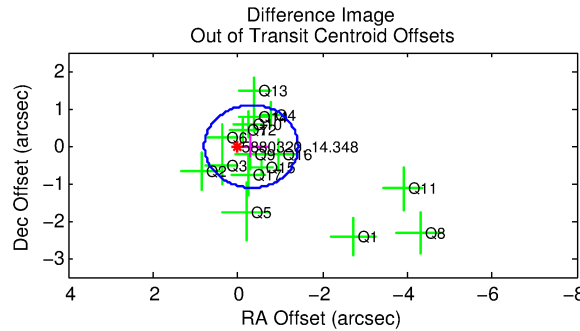
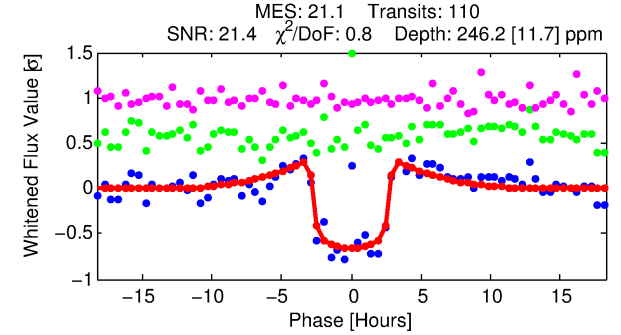
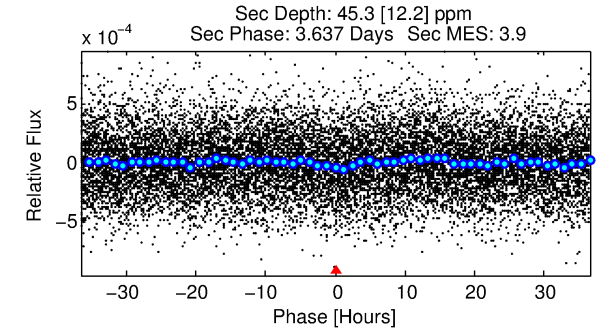
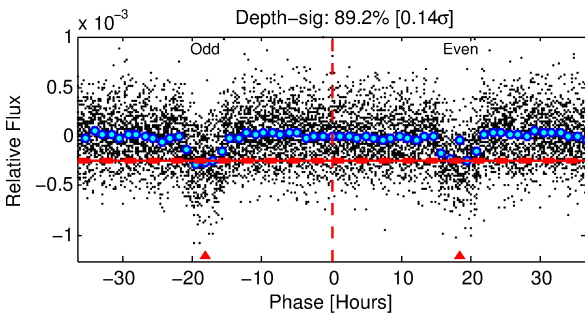
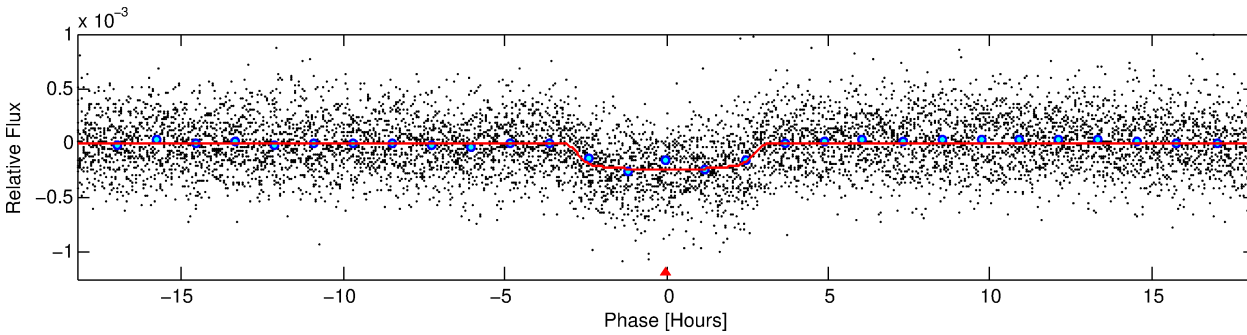
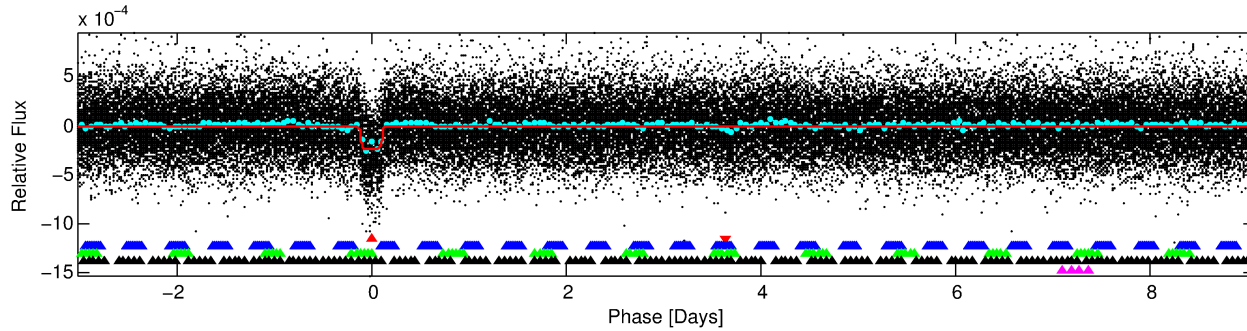
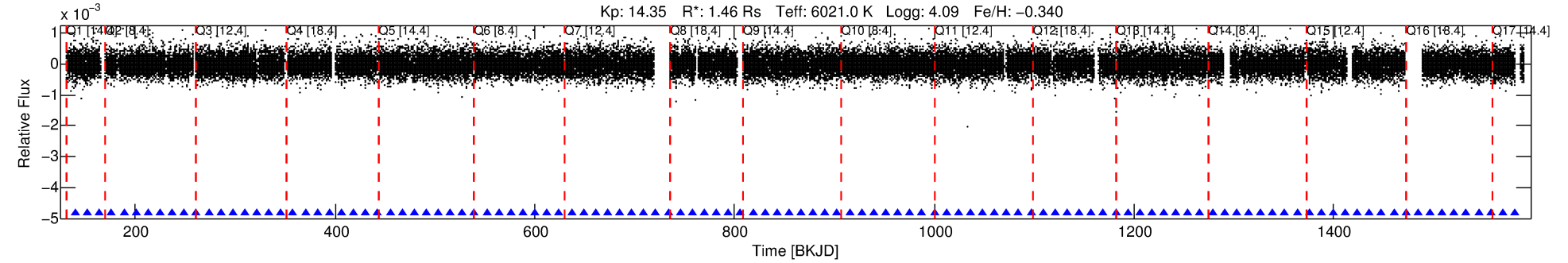
Ephemeris Match Information For 005880320-01

No Significant Match Found

DV One-Page Summary

KIC: 5880320 Candidate: 1 of 5 Period: 12.110 d

KOI: K01060.01 Corr: 0.977



DV Fit Results:

Period = 12.10973 [0.00006] d
Epoch = 140.2126 [0.0040] BKJD
Rp/R* = 0.0171 [0.0012]
a/R* = 6.98 [2.26]
b = 0.91 [0.06]
Seff = 241.30 [83.58]
Teff = 1005 [87] K
Rp = 2.71 [0.66] Re
a = 0.1018 [0.0219] AU
Ag = 35.10 [15.89] [2.15 σ]
Teffp = 3782 [295] K [9.02 σ]

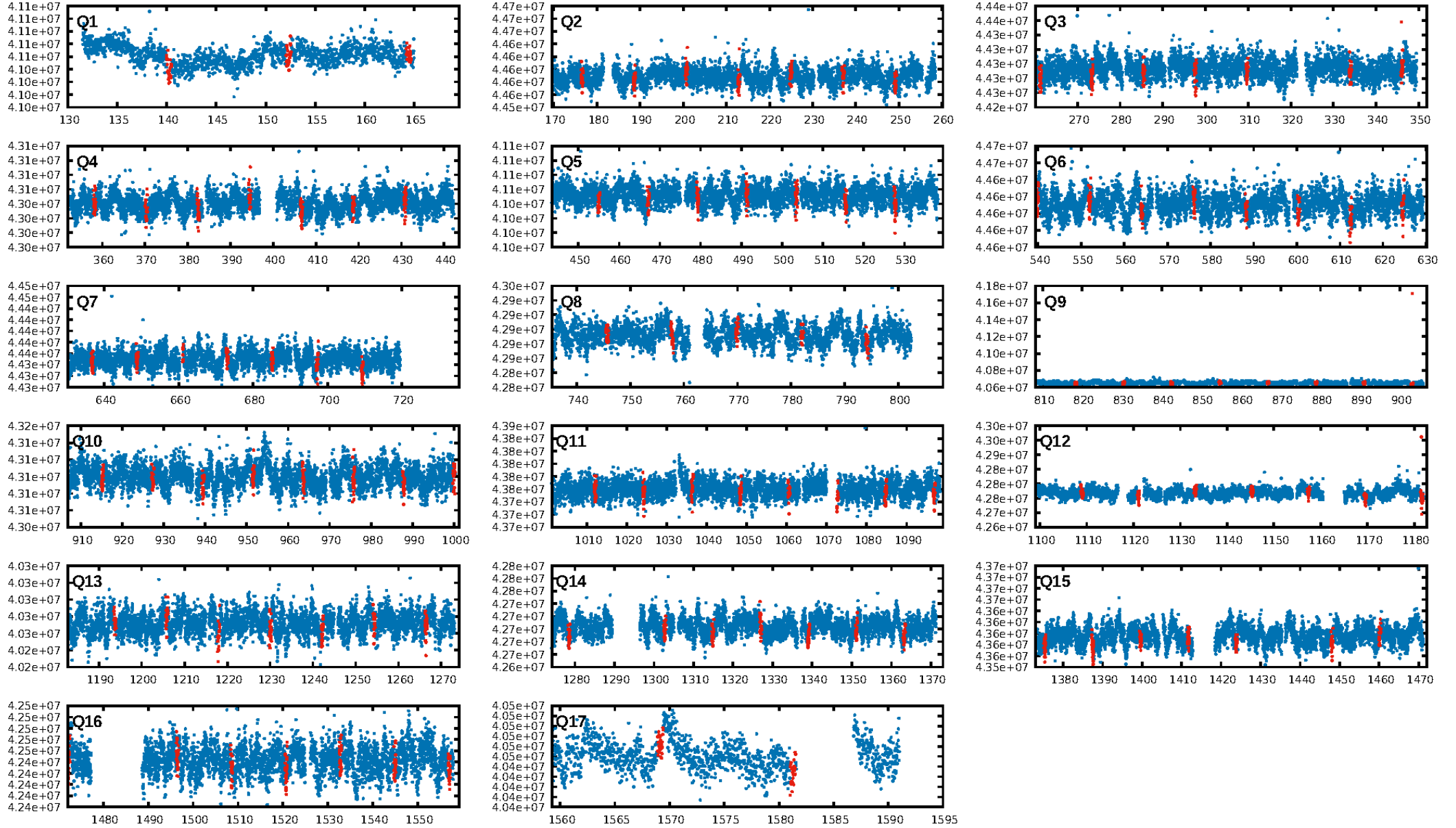
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.58 σ]
LongPeriod-sig: 100.0% [22.57 σ]
ModelChiSquare2-sig: 99.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.84e-91
RollingBand-fgt: 1.00 [105/105]
GhostDiagnostic-chr: 2.341
Centroid-sig: 27.0%
Centroid-so: 0.278 arcsec [0.68 σ]
OotOffset-rm: 0.323 arcsec [0.88 σ]
KicOffset-rm: 0.290 arcsec [0.78 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

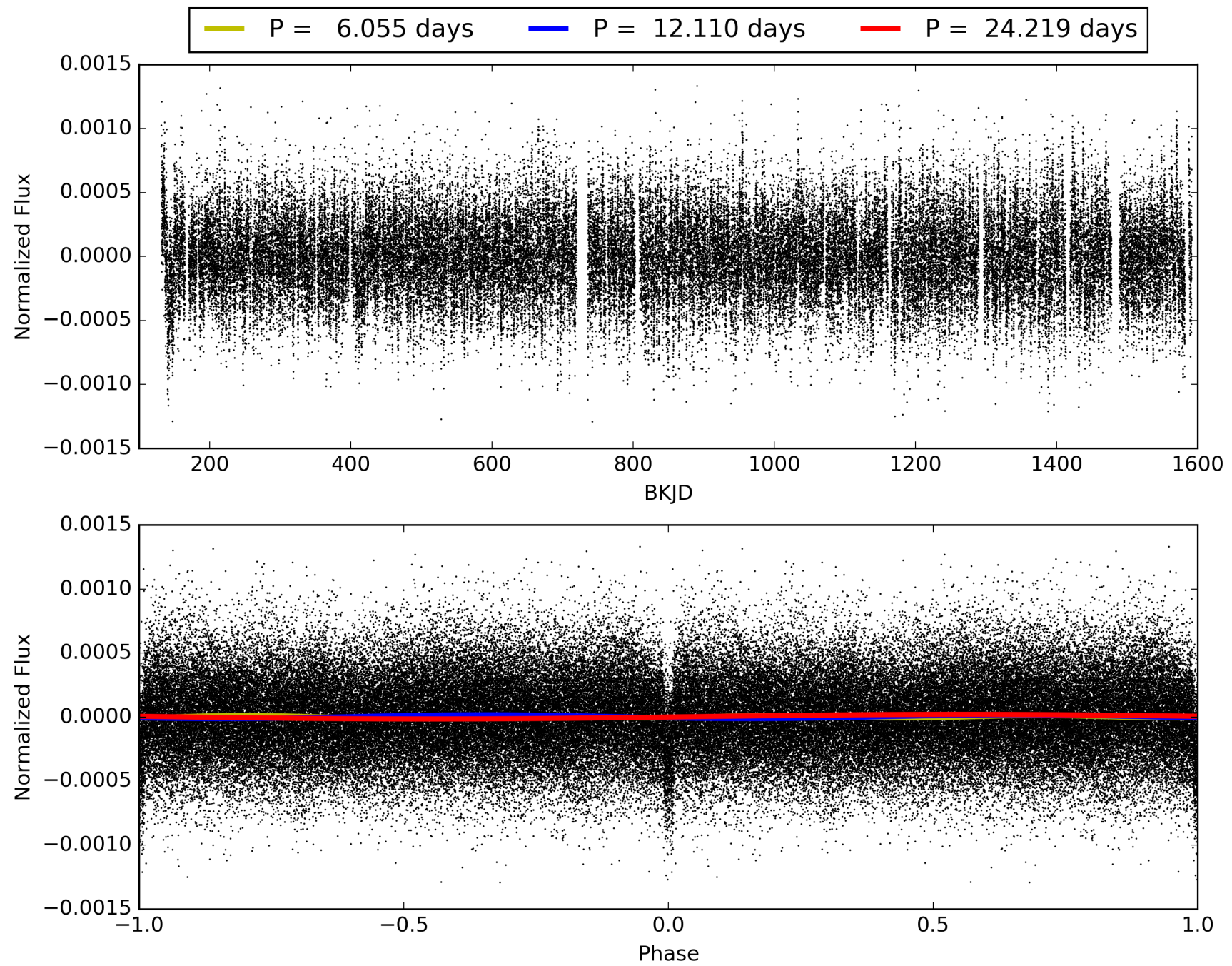
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:02:19 Z

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

TCE 005880320-01, PDC Light Curves

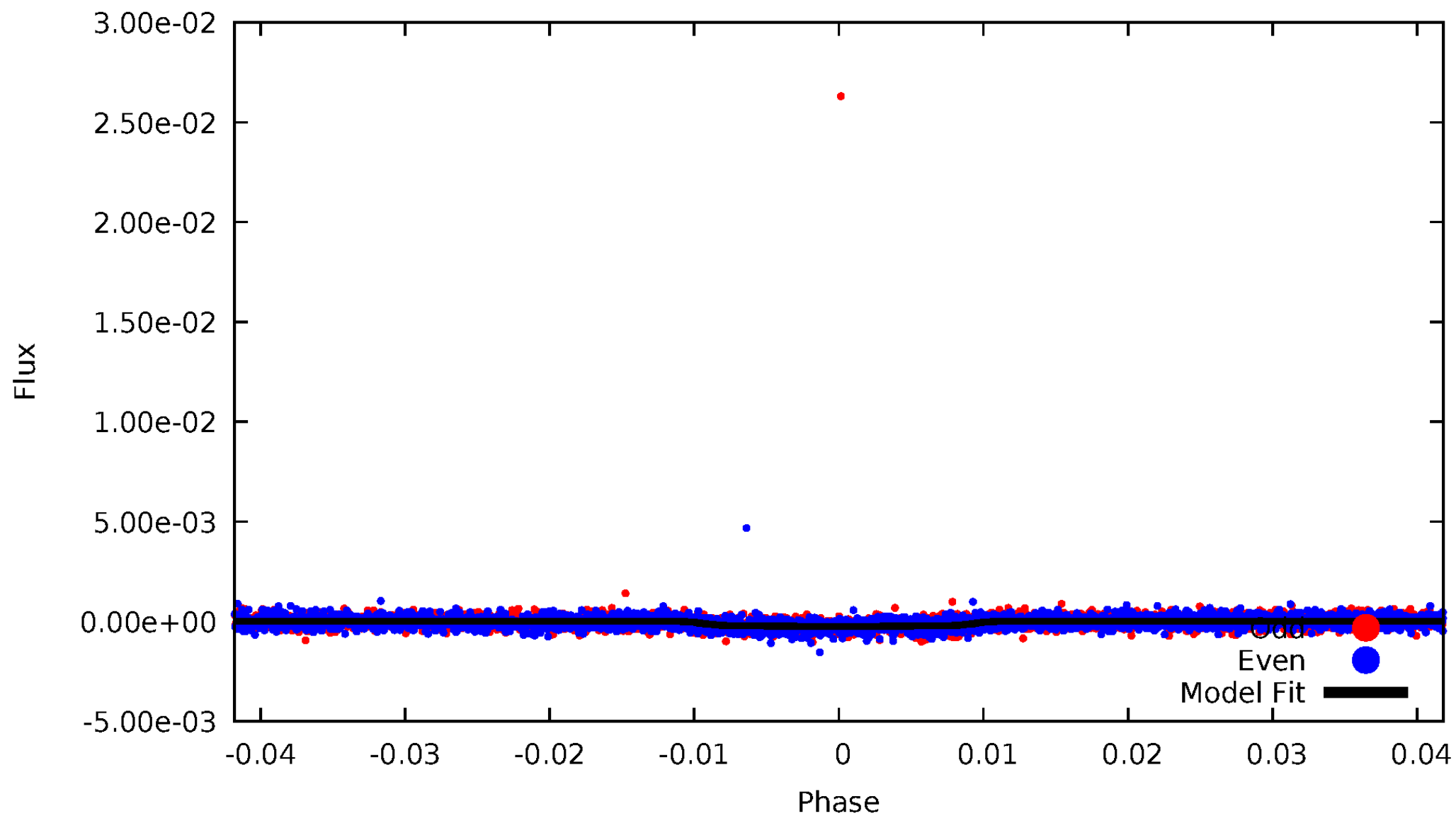


TCE 005880320-01



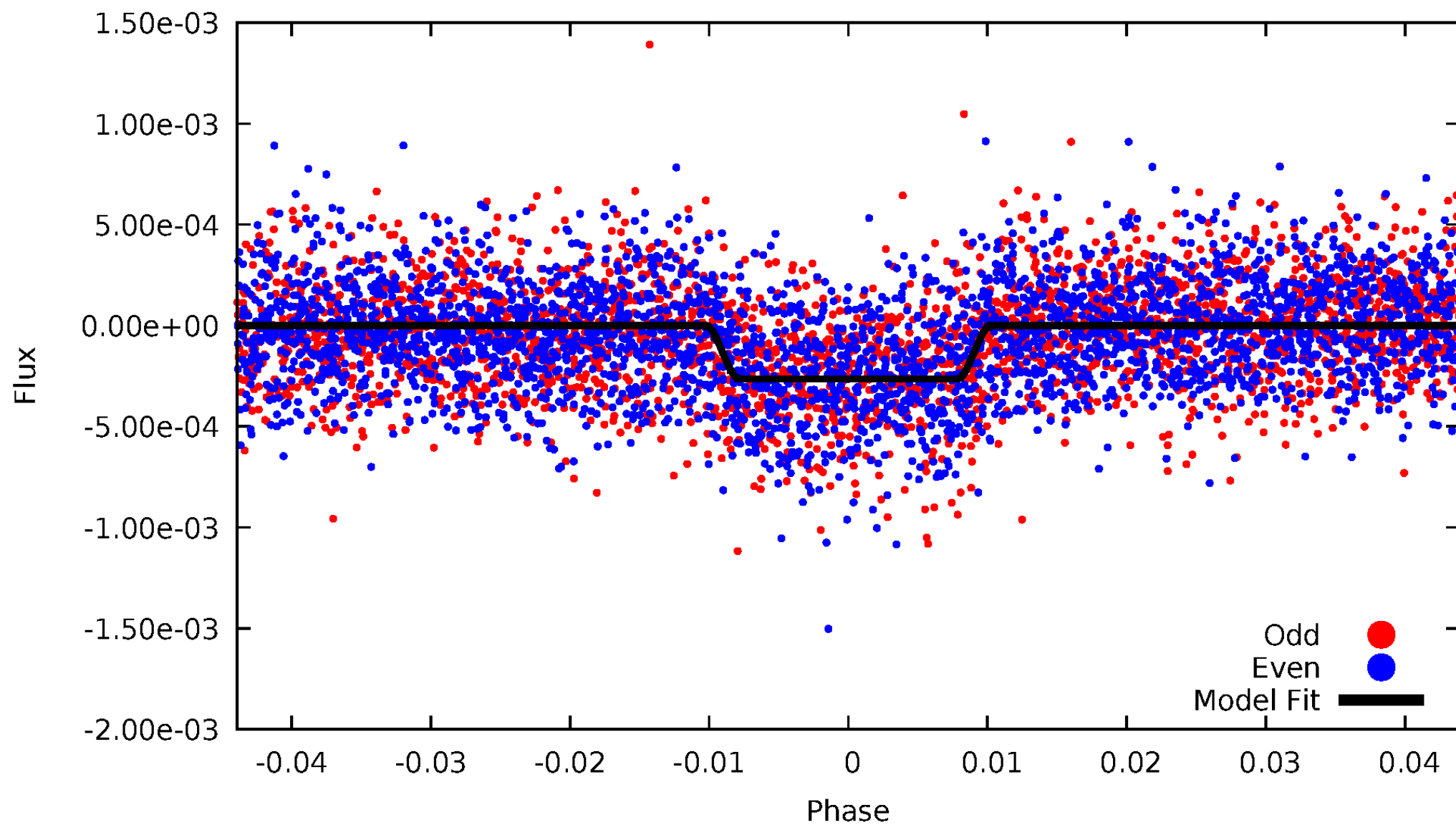
DV Odd/Even

TCE 005880320-01



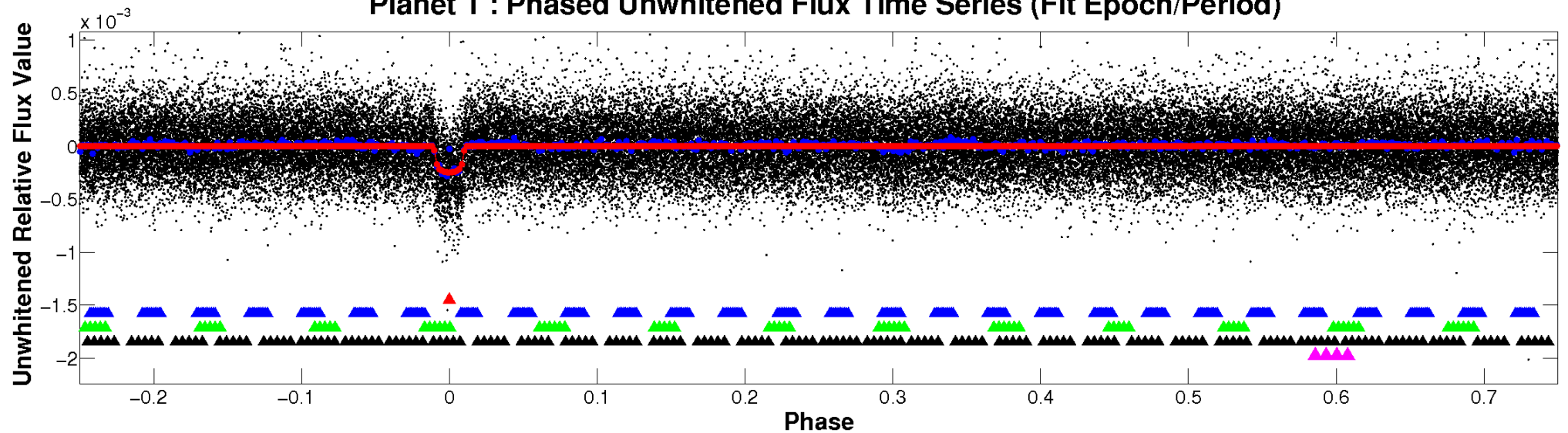
ALT Odd/Even

TCE 005880320-01

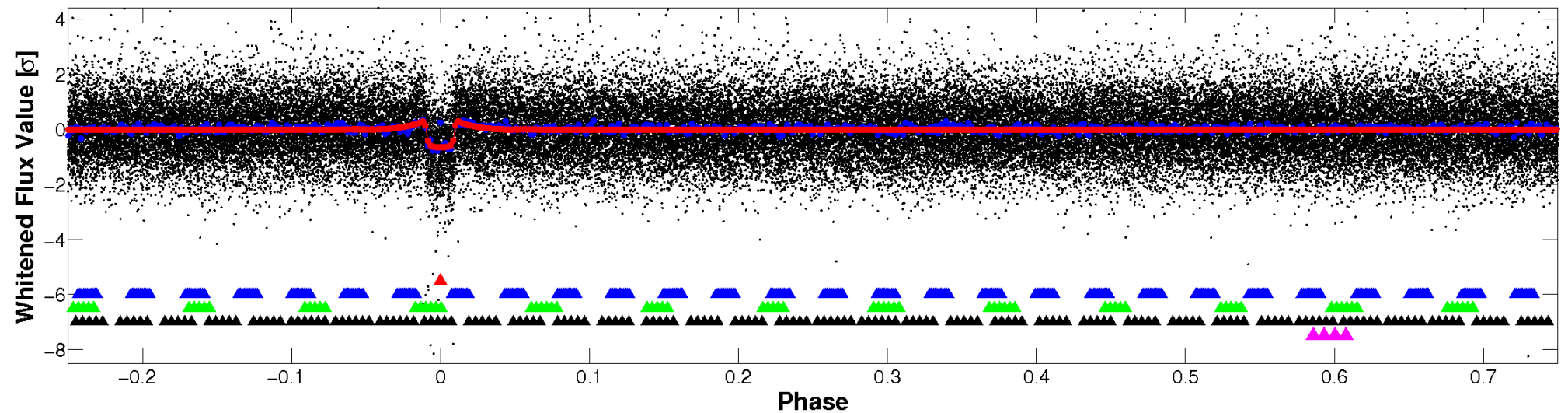


Non-Whitened Vs. Whitened Light Curve

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

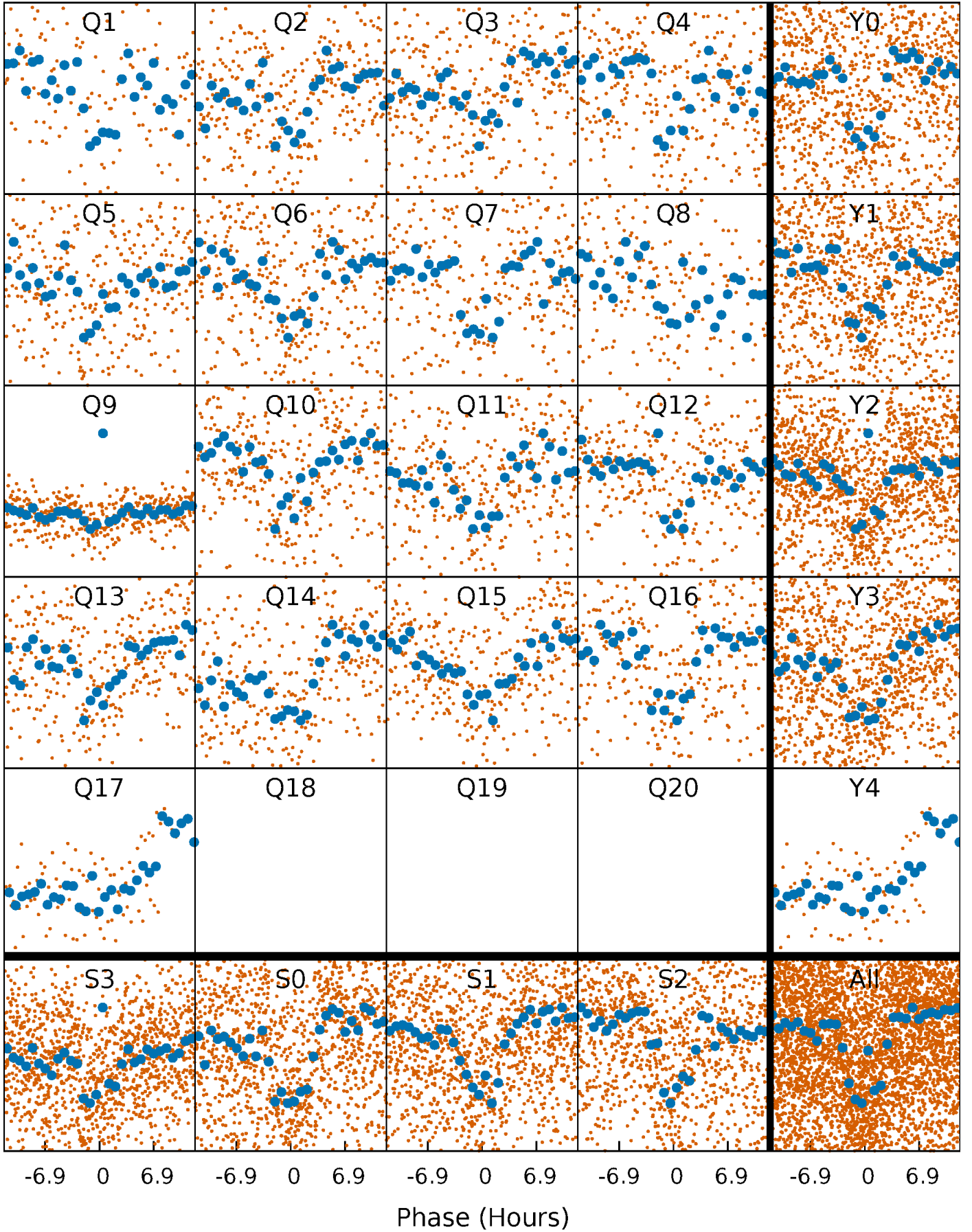


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



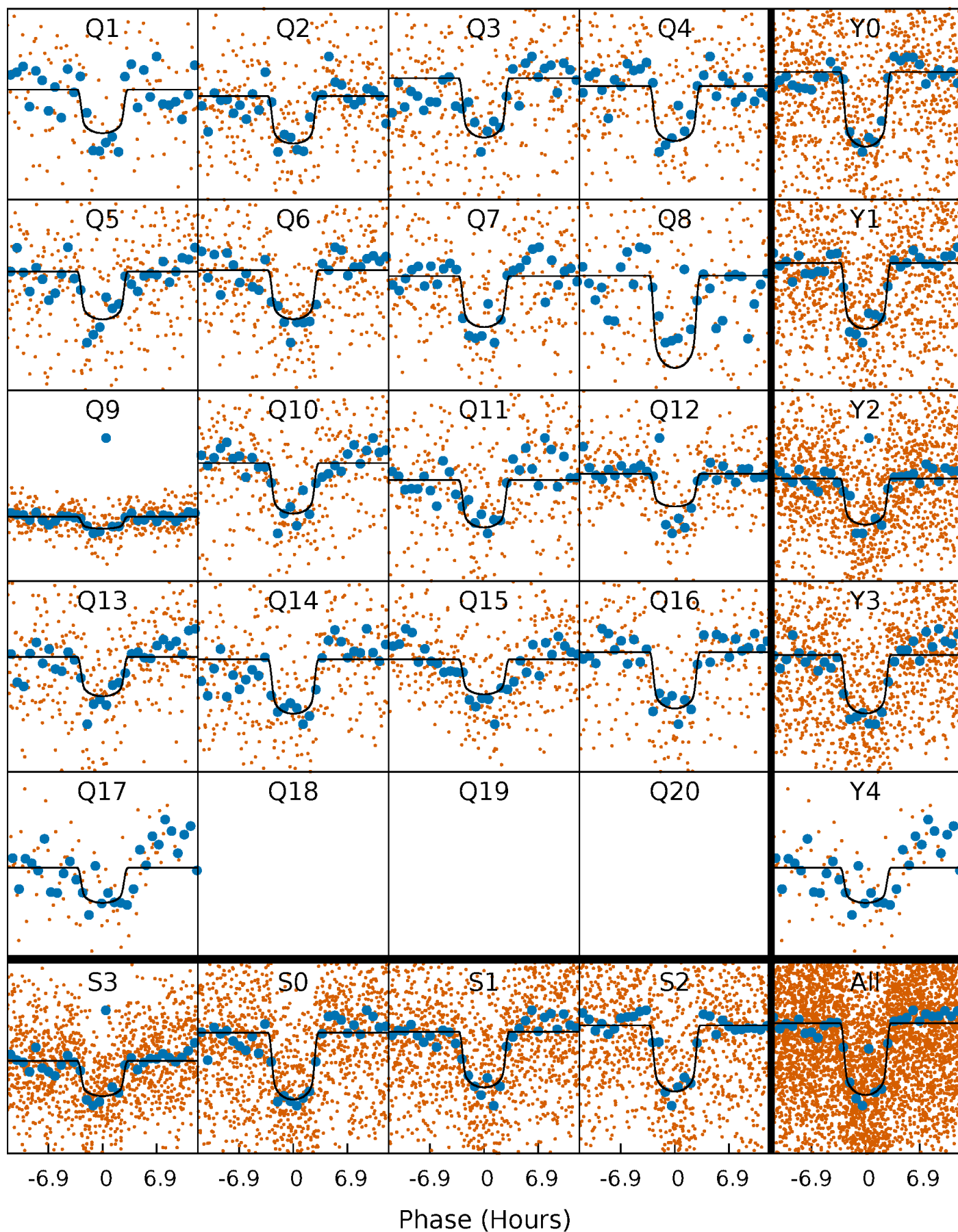
PDC Quarter-Phased Transit Curves

TCE 005880320-01 P= 12.109728 Days $T_0=140.212614$ (BKJD)



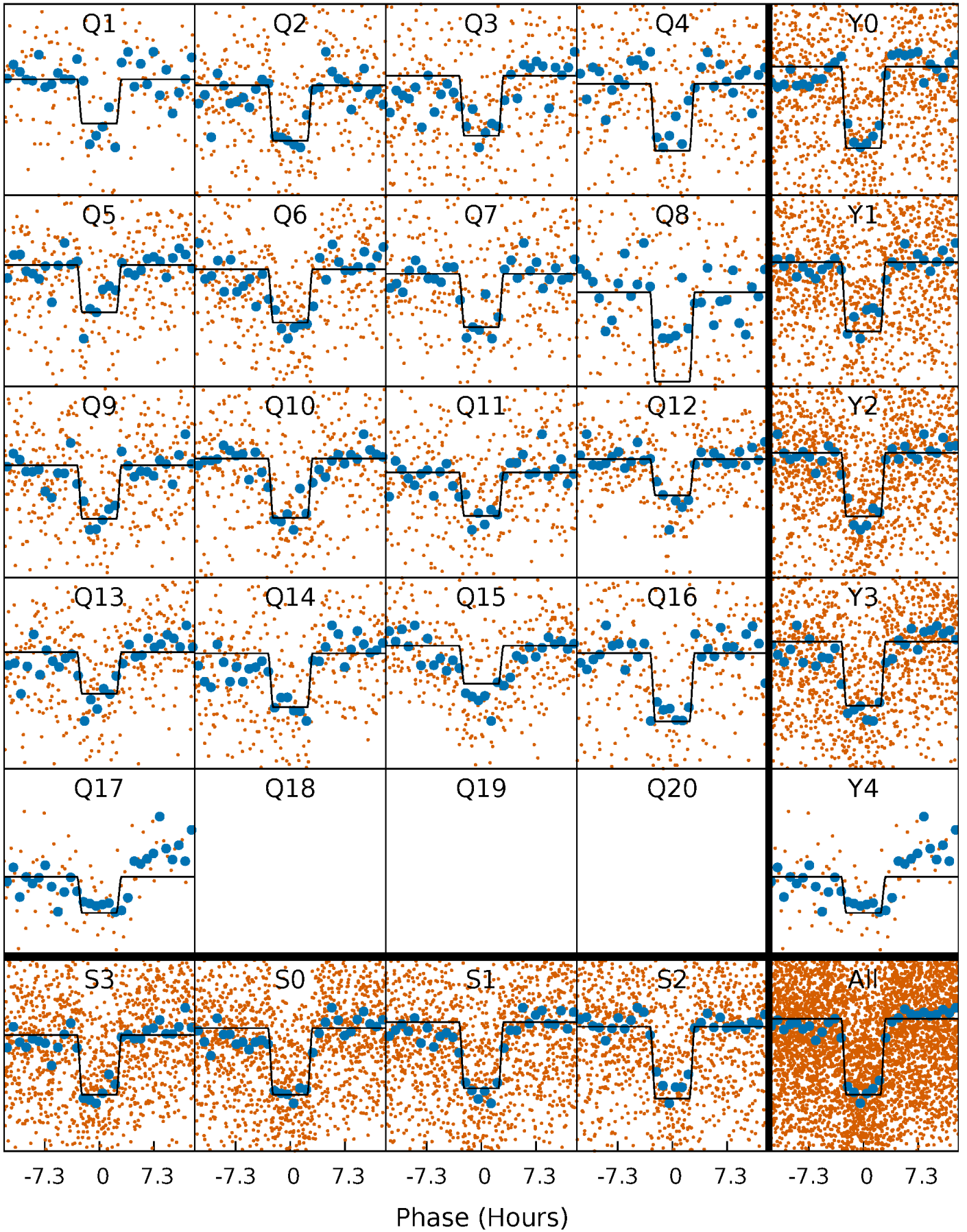
DV Quarter-Phased Transit Curves

TCE 005880320-01 P= 12.109728 Days $T_0=140.212614$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

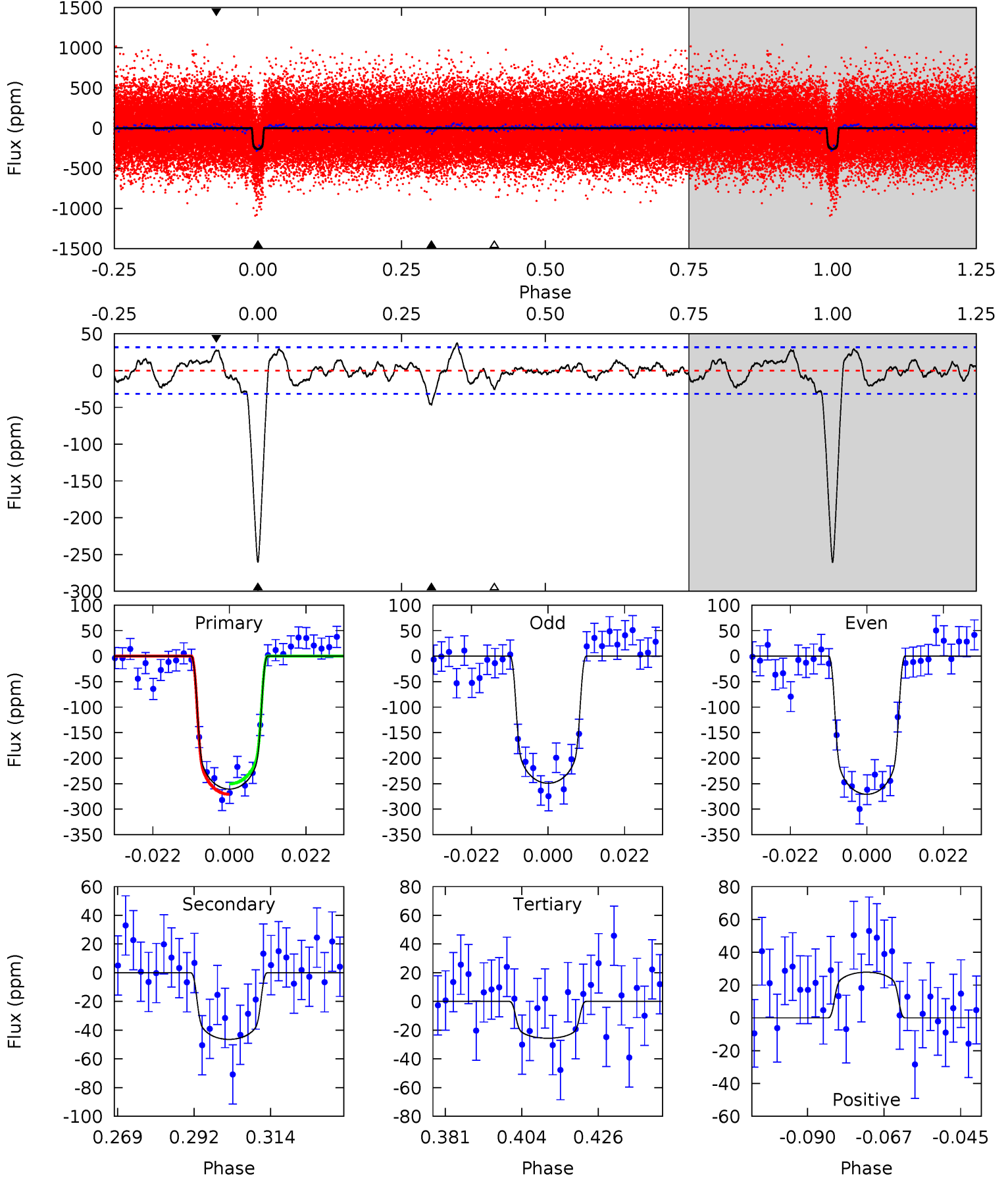
TCE 005880320-01 P= 12.109833 Days $T_0=140.204911$ (BKJD)



DV Model-Shift Uniqueness Test

005880320-01, P = 12.109728 Days, E = 128.102886 Days

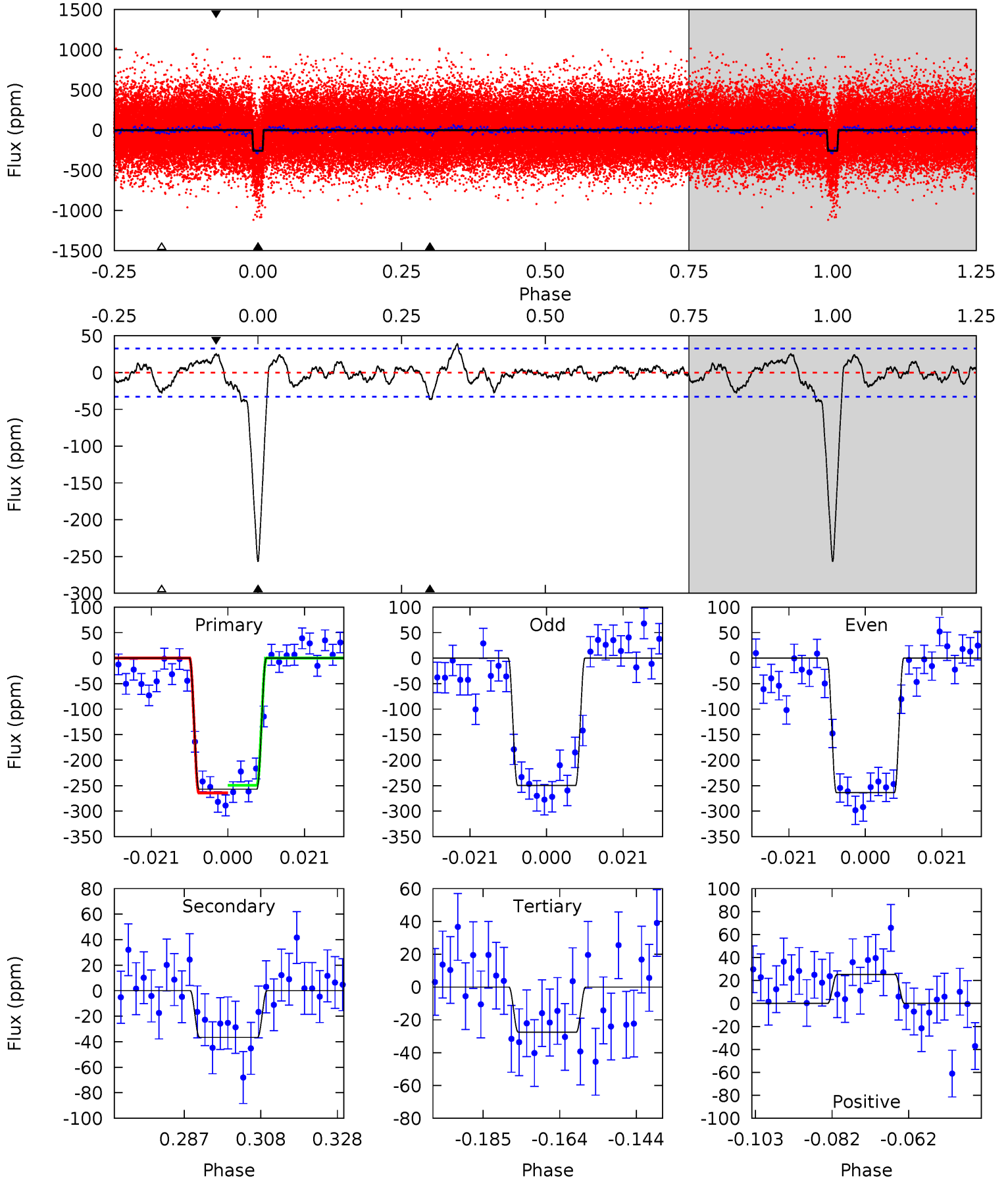
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.1	7.15	3.94	4.28	4.87	2.28	1.71	36.2	35.8	3.20	2.86	1.66	0.92	0.12	1.57



Alt Model-Shift Uniqueness Test

005880320-01, P = 12.109833 Days, E = 128.095078 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.4	5.47	4.11	3.77	4.89	2.32	1.70	34.3	34.6	1.37	1.70	1.05	1.05	0.13	1.11



Stellar Parameters For KIC 005880320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6021^{+120}_{-120}	$4.093^{+0.195}_{-0.105}$	$-0.340^{+0.150}_{-0.150}$	$1.458^{+0.226}_{-0.339}$	$0.960^{+0.088}_{-0.080}$	$0.436^{+0.451}_{-0.139}$
	+2%/-2%	+5%/-3%	+44%/-44%	+16%/-23%	+9%/-8%	+103%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005880320-01 / KOI 1060.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-46 ± 6	$2.71^{+0.33}_{-0.40}$	1396^{+69}_{-84}	4088^{+159}_{-153}	37^{+13}_{-10}
Alt.	-37 ± 7	$2.55^{+0.32}_{-0.34}$	1394^{+65}_{-81}	3991^{+175}_{-168}	32^{+13}_{-8}

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 $A_{obs} \gg 1.0$

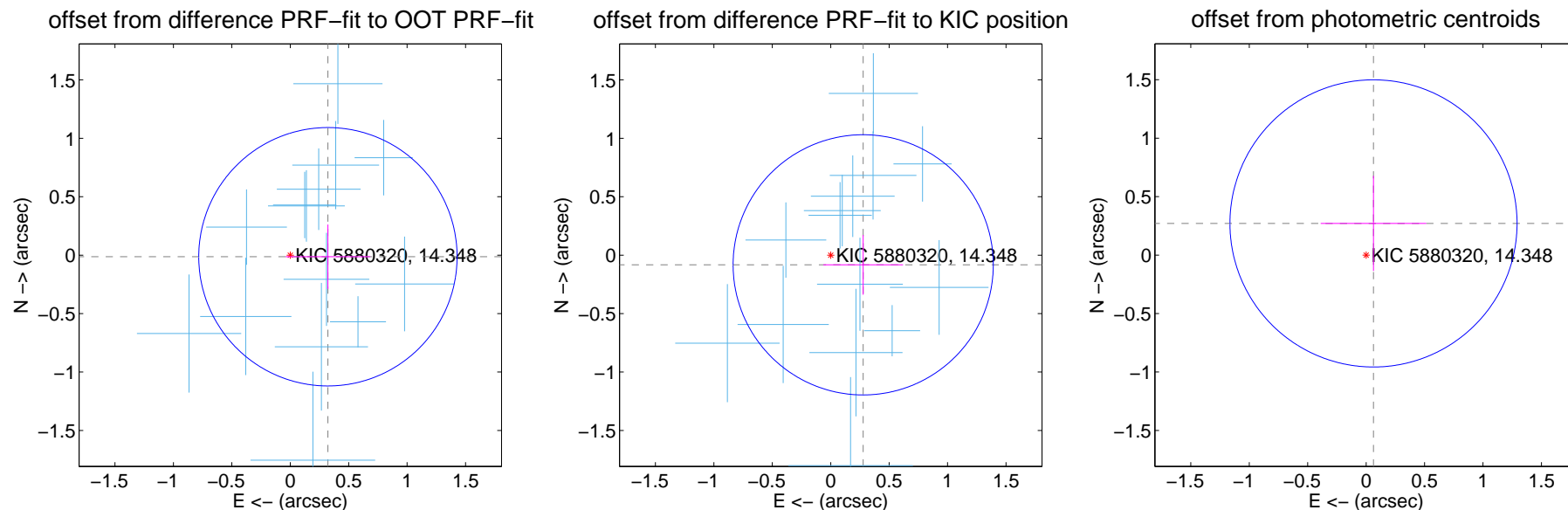
DV Centroid Data

Supplemental centroid analysis for 005880320-01. Kepler magnitude: 14.35. Transit SNR 21.40

There are 15 quarters with good PRF difference image offsets

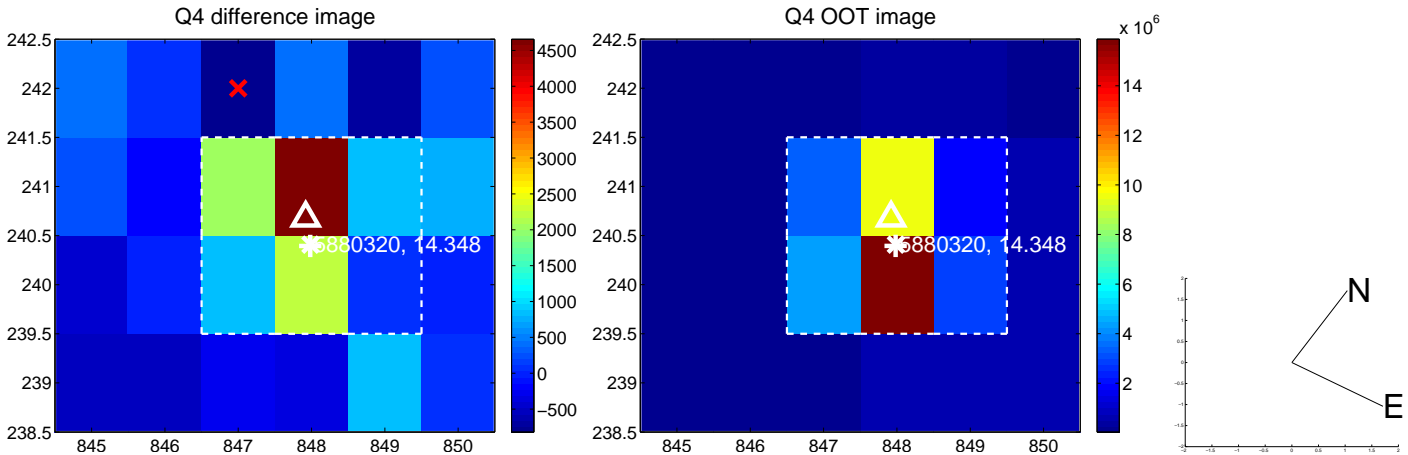
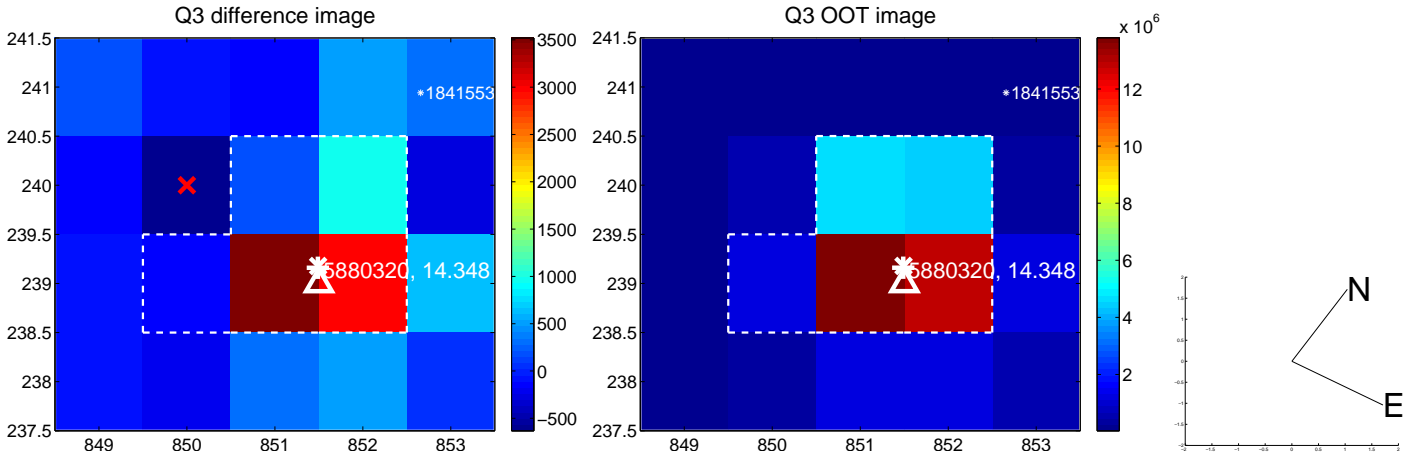
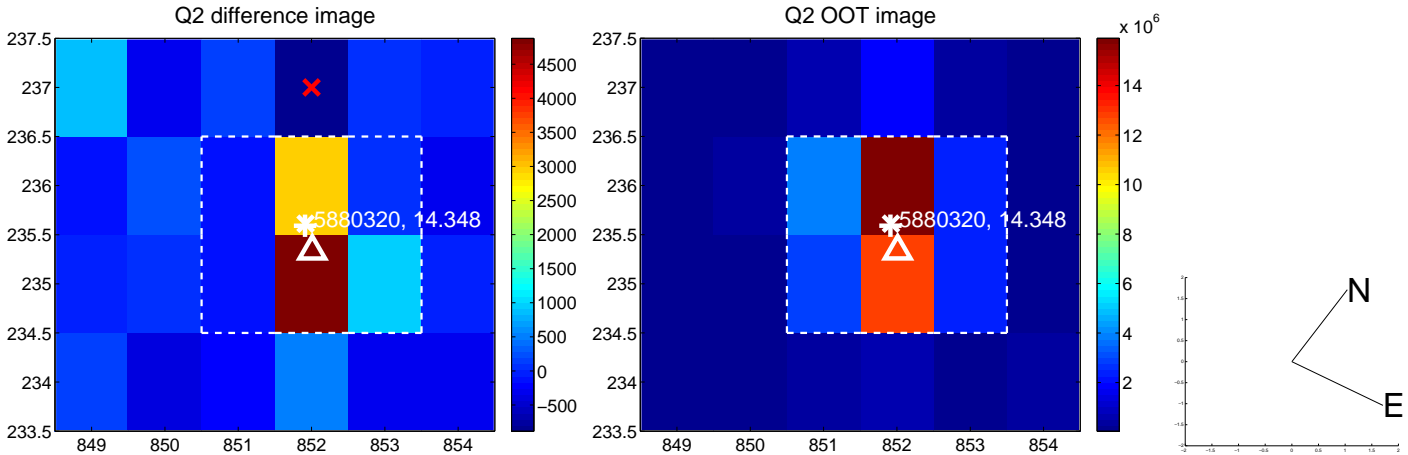
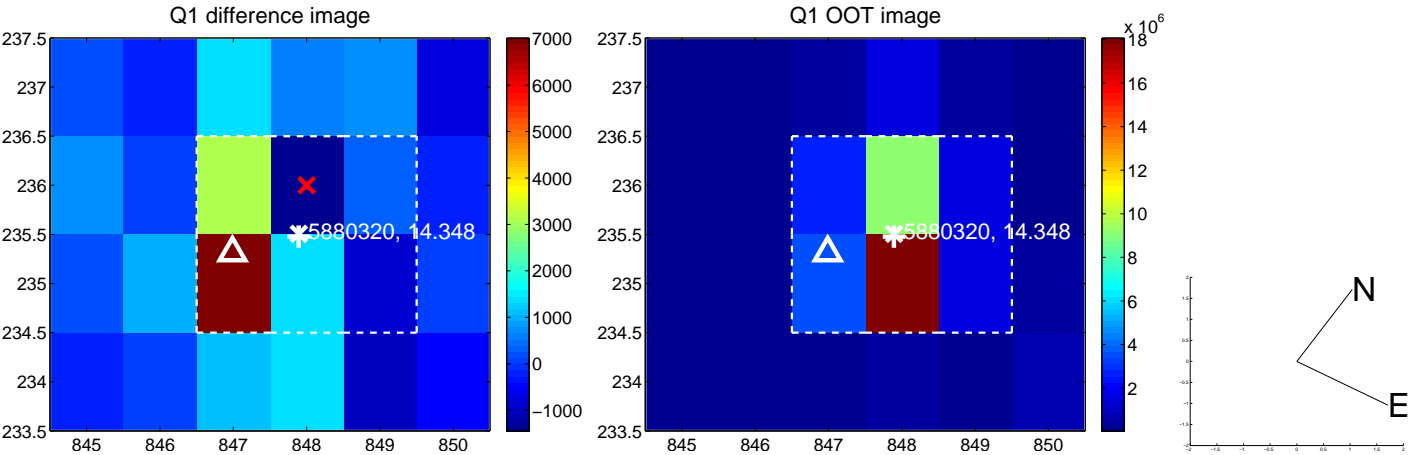
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.323 ± 0.369	0.88	-0.322 ± 0.362	-0.014 ± 0.276
PRF-fit source offset from KIC position	0.290 ± 0.371	0.78	-0.278 ± 0.341	-0.083 ± 0.255
photometric centroid source offset	0.28 ± 0.41	0.68	-0.06 ± 0.45	0.27 ± 0.41

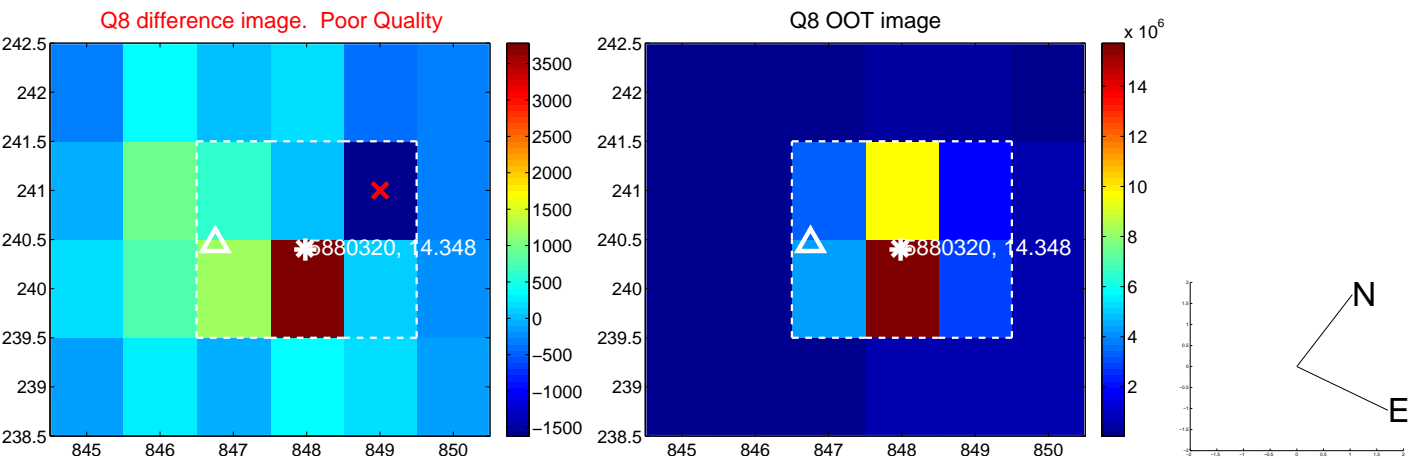
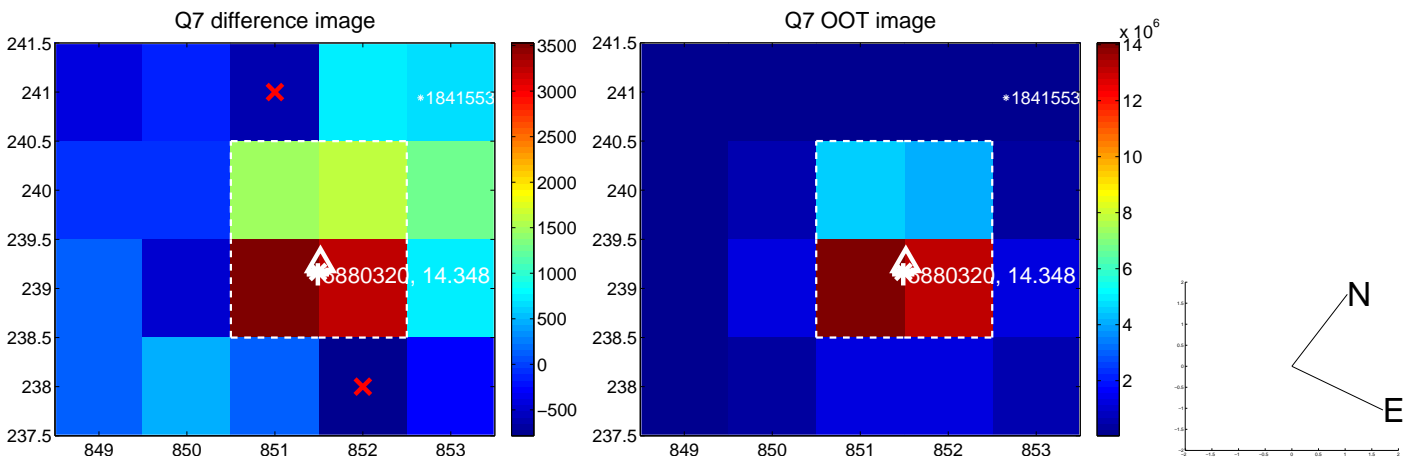
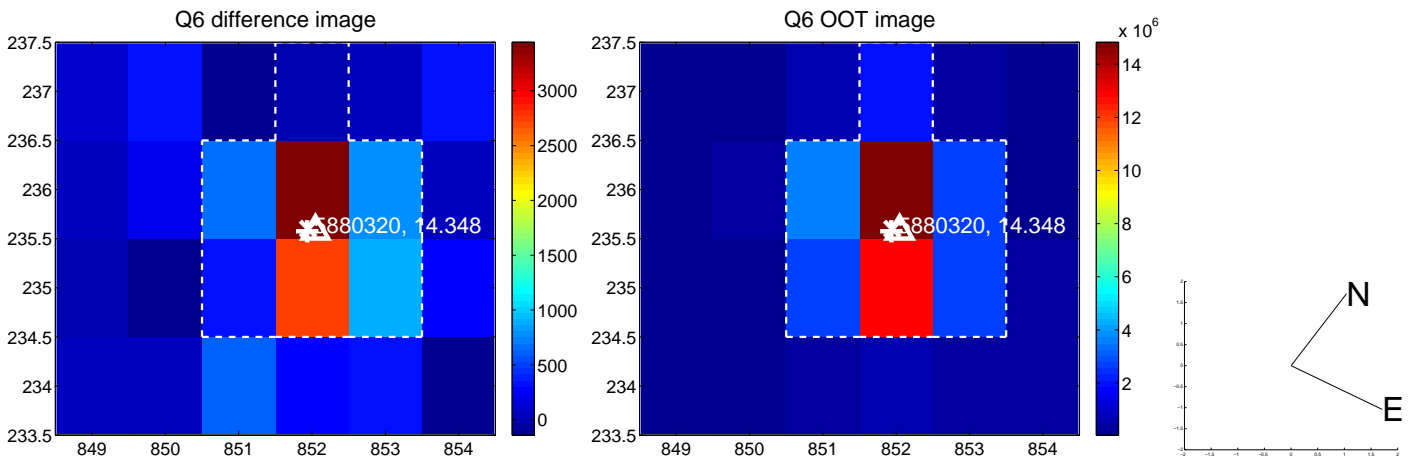
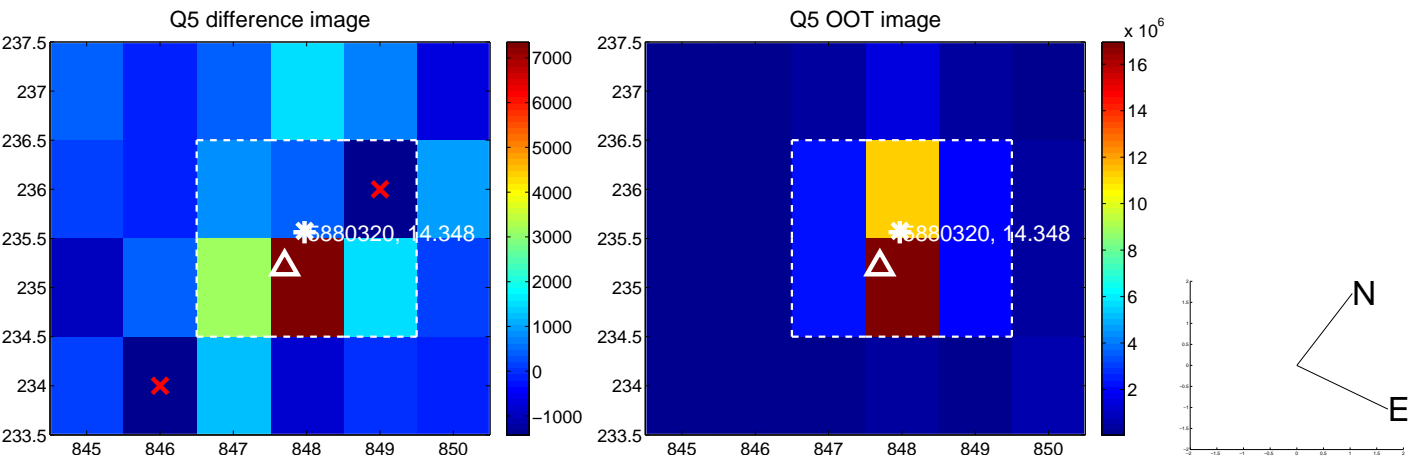


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

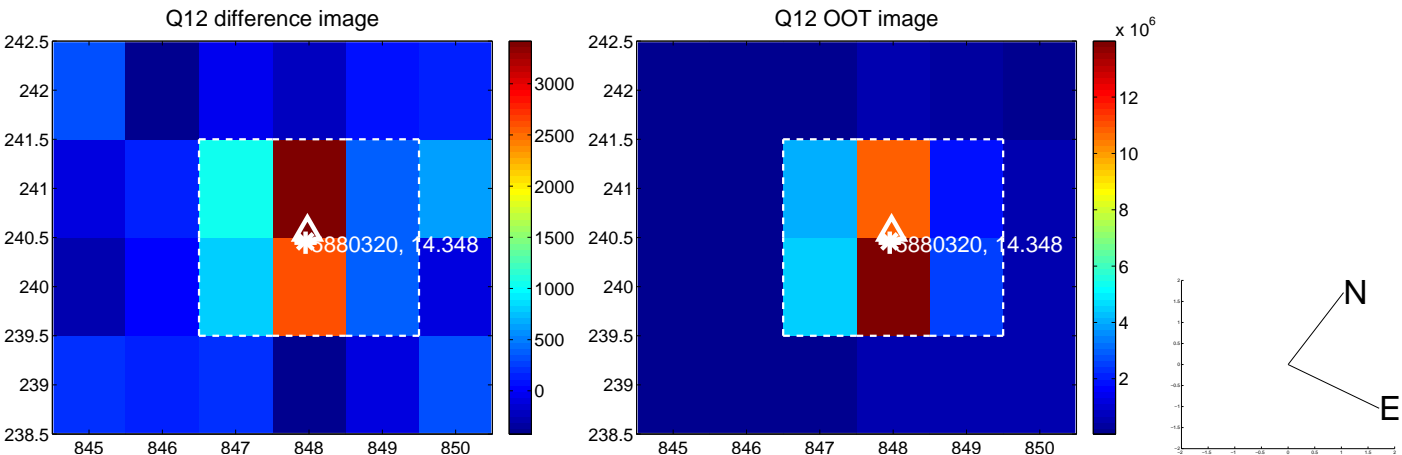
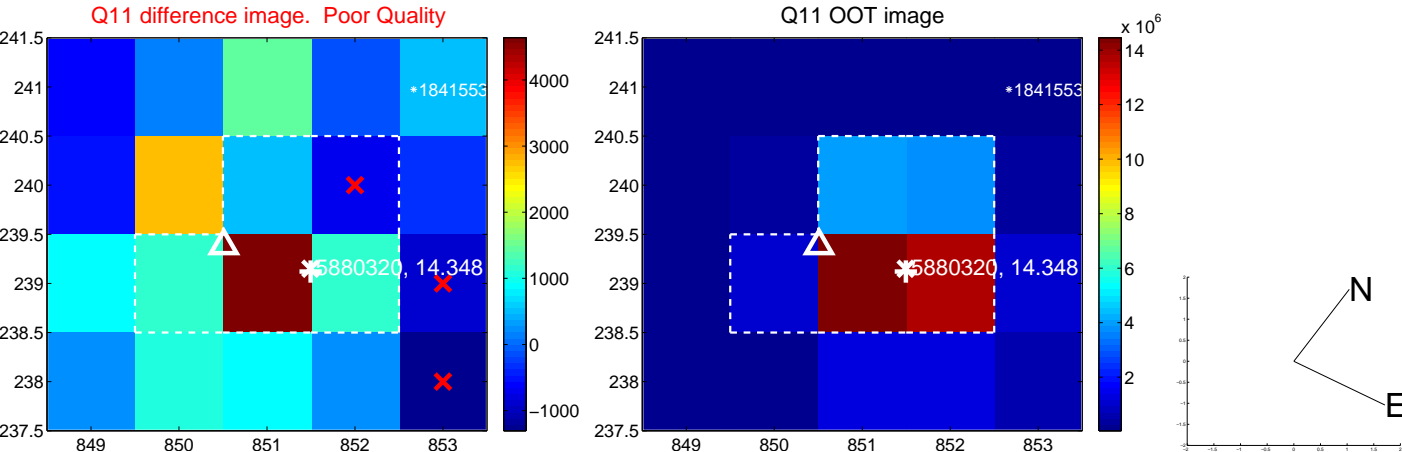
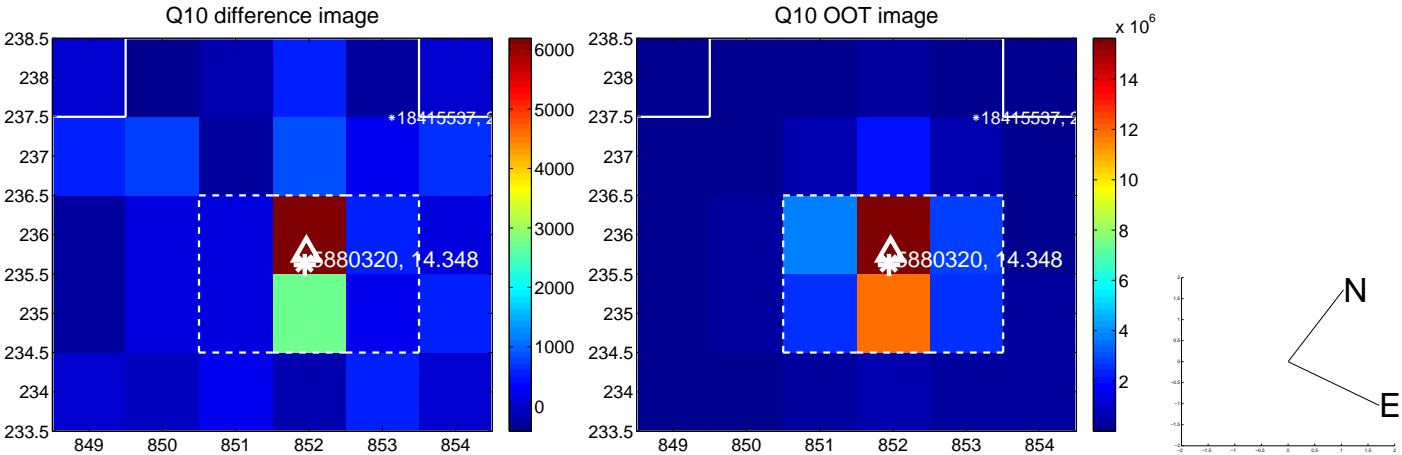
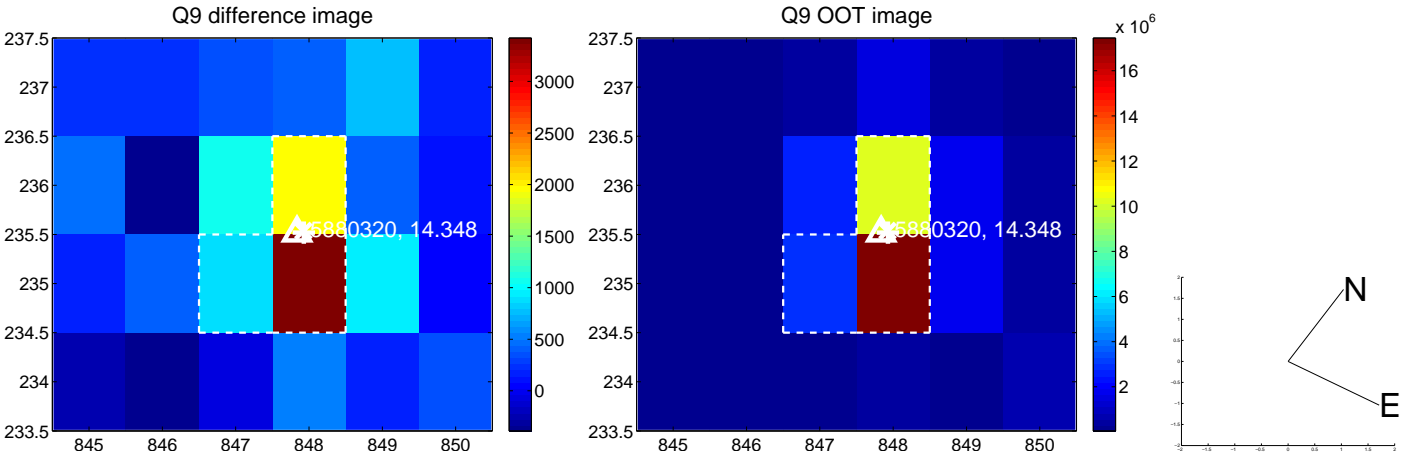
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



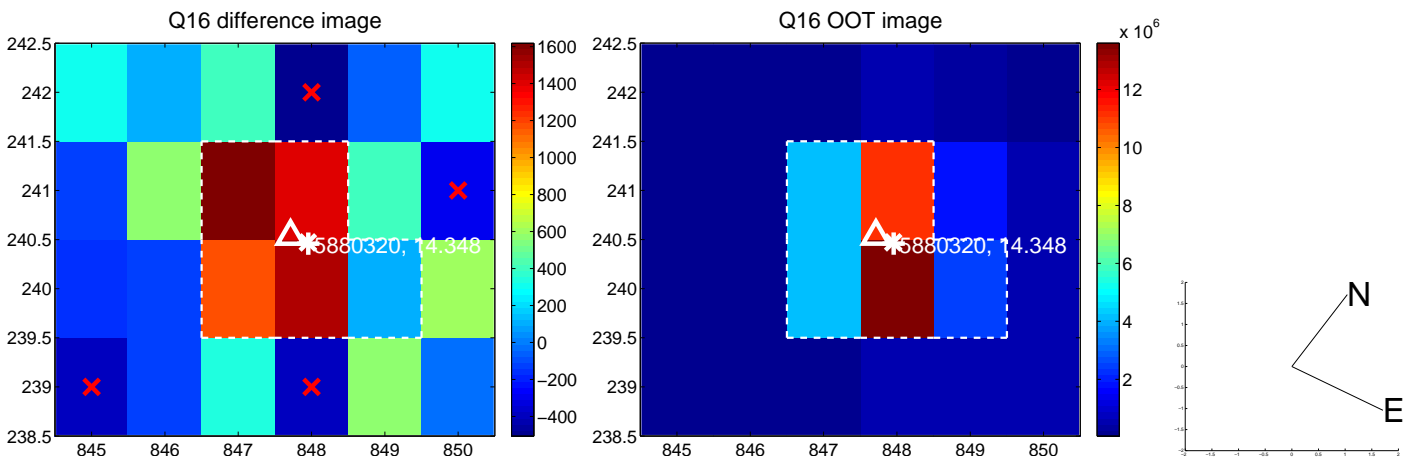
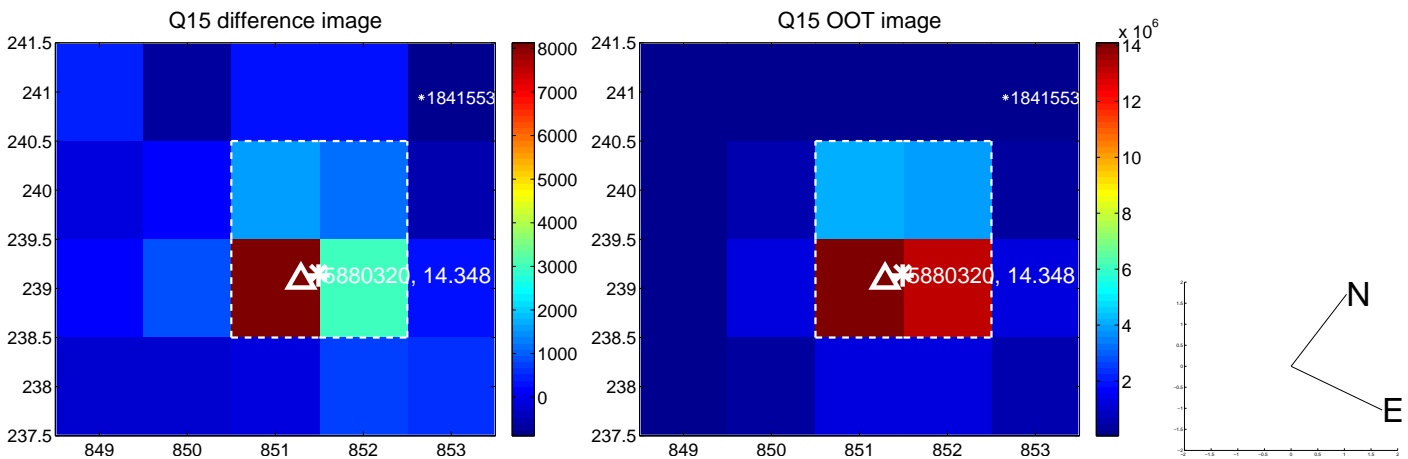
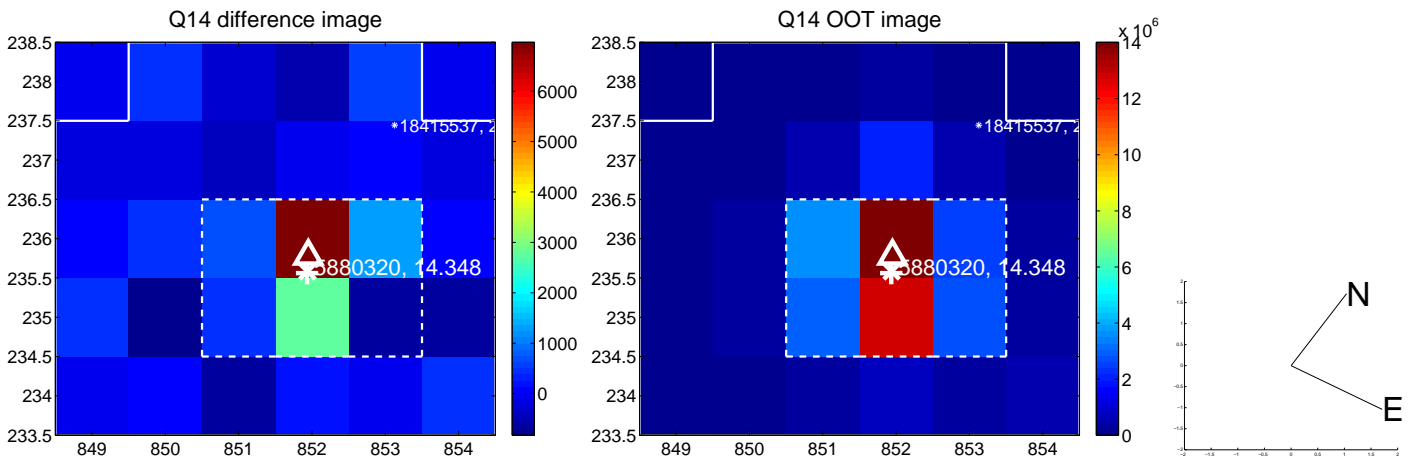
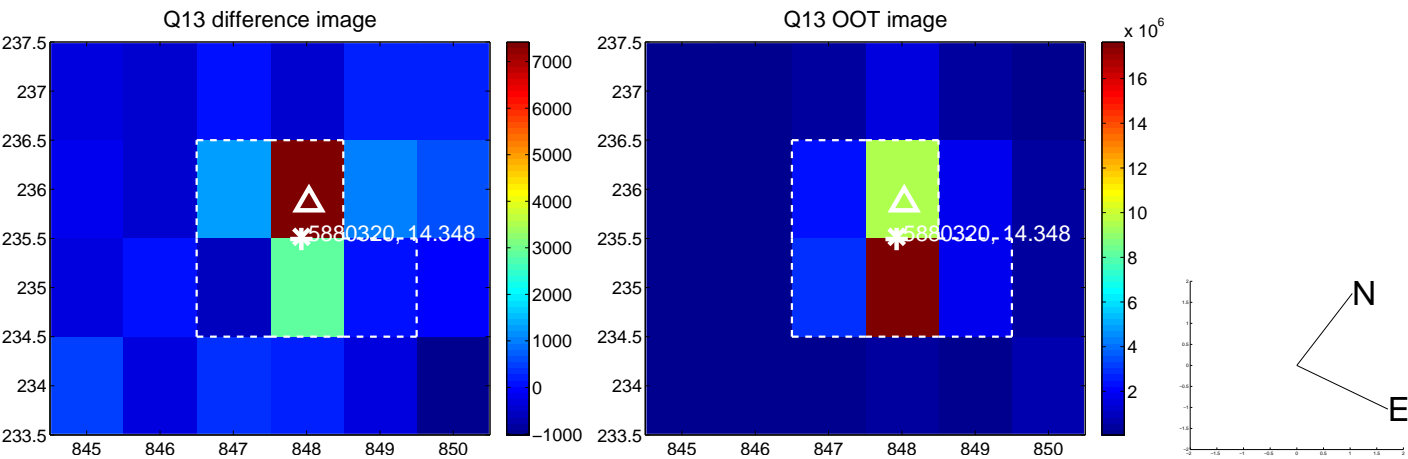
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



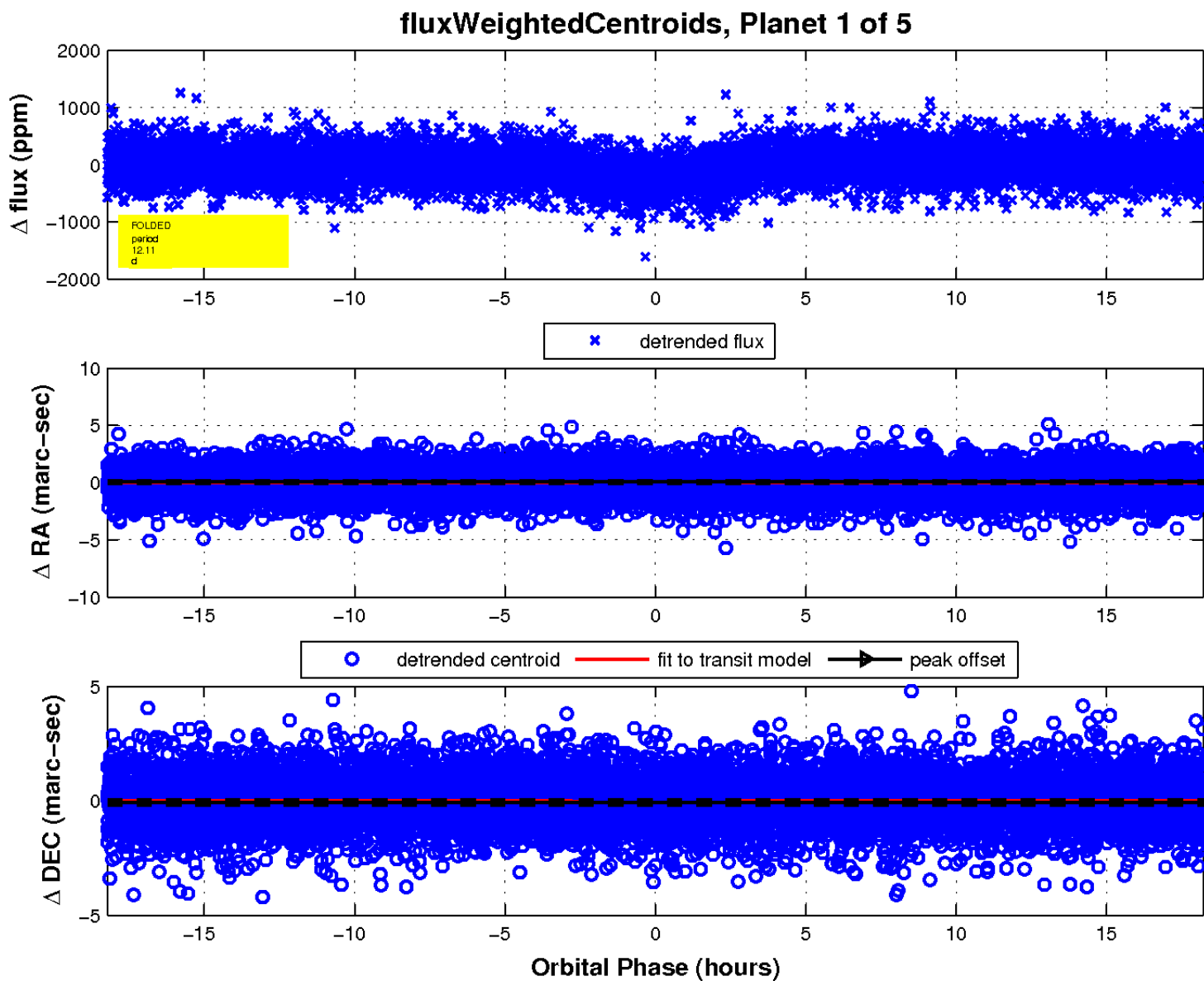
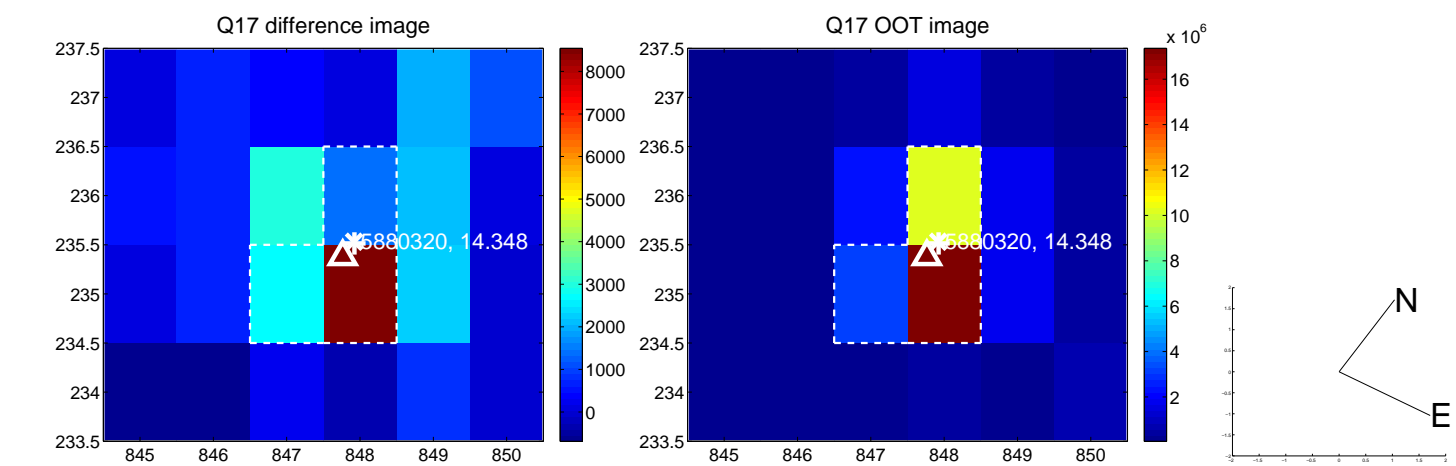
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

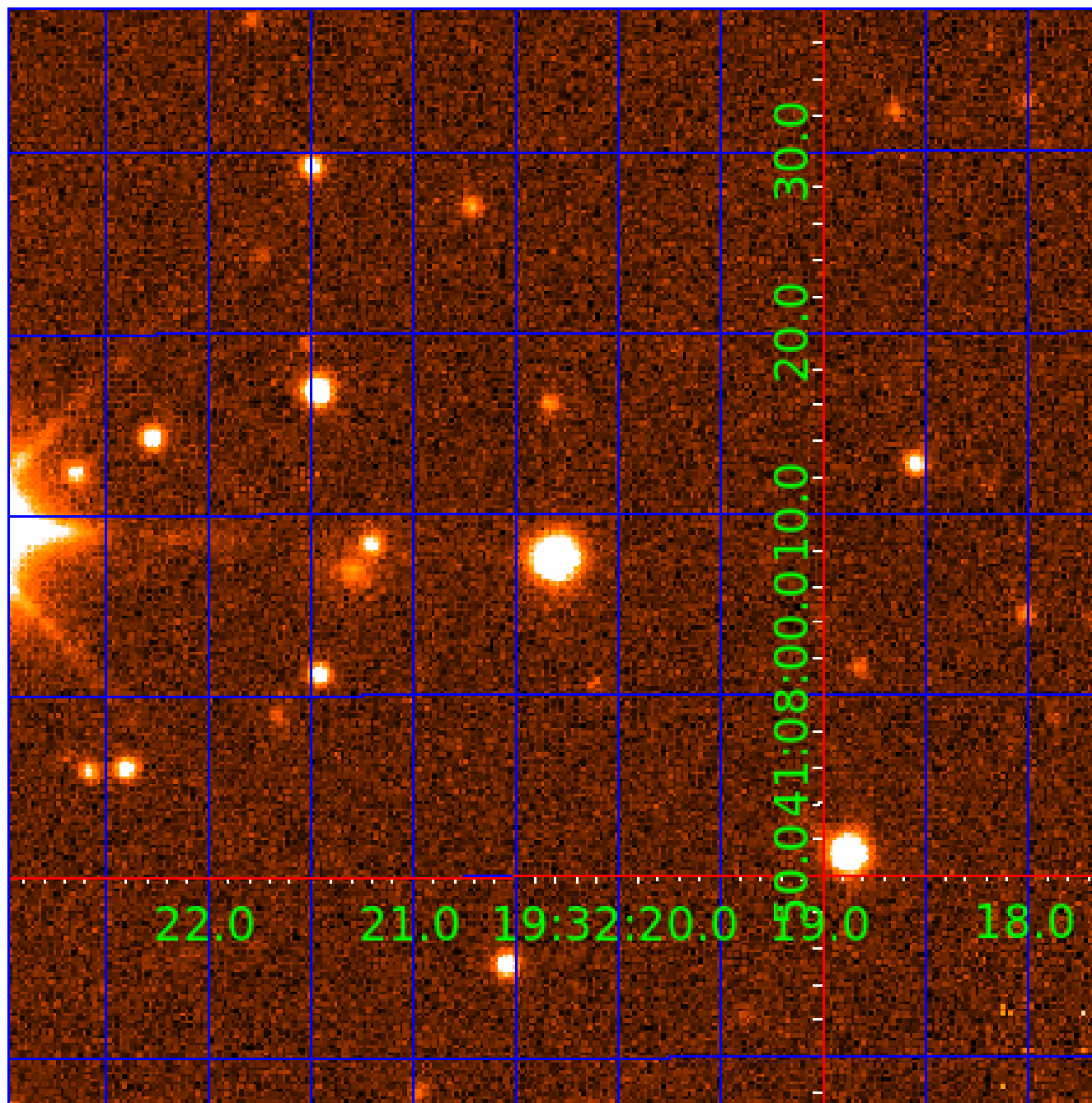


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005880320

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})
005880320-01	OBS	1060.01	12.109728	140.212614	246.2	6.074	21.1	21.4	1.46	6021	2.71	241.30
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005880320-04	OBS	1060.04	8.193480	138.999175	106.2	5.382	9.7	10.5	1.46	6021	1.88	406.24
005880320-05	OBS	No	387.599534	147.307459	411.9	12.610	9.7	5.0	1.46	6021	3.24	2.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005880320-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-02	OBS	PC	0.76	0	0	0	0	NO_COMMENT
005880320-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-04	OBS	PC	0.88	0	0	0	0	NO_COMMENT
005880320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

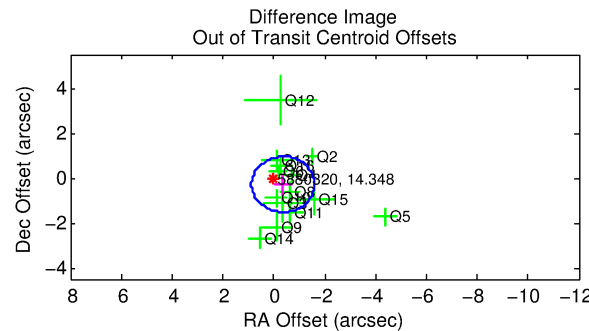
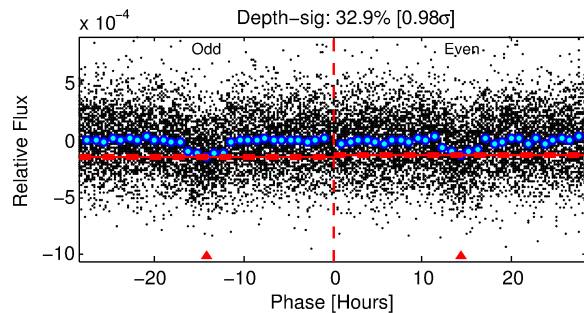
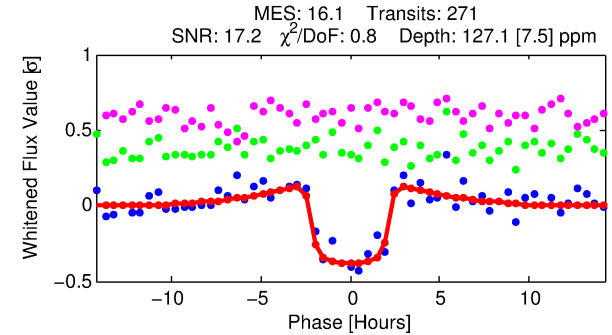
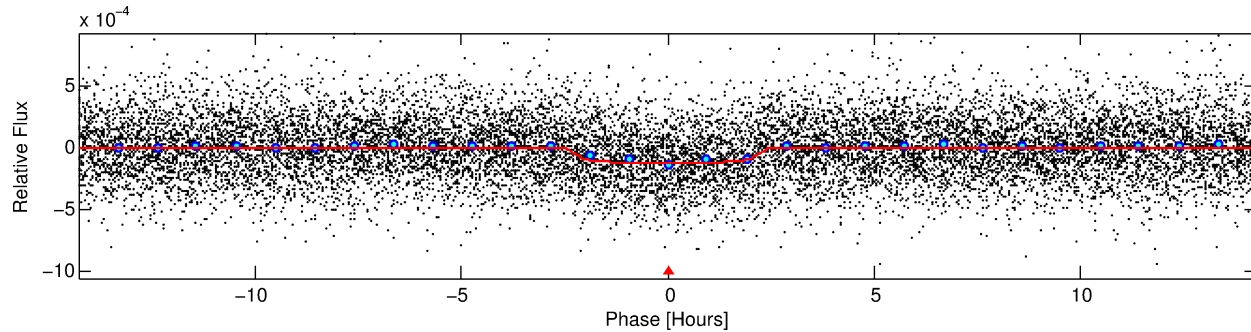
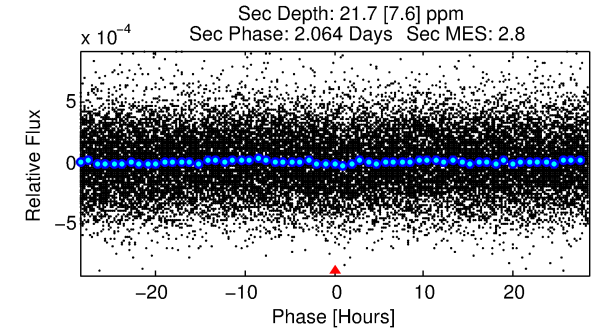
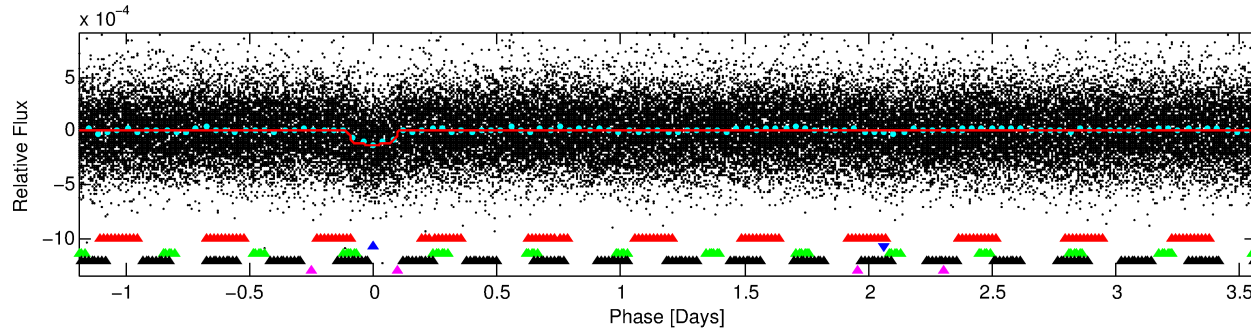
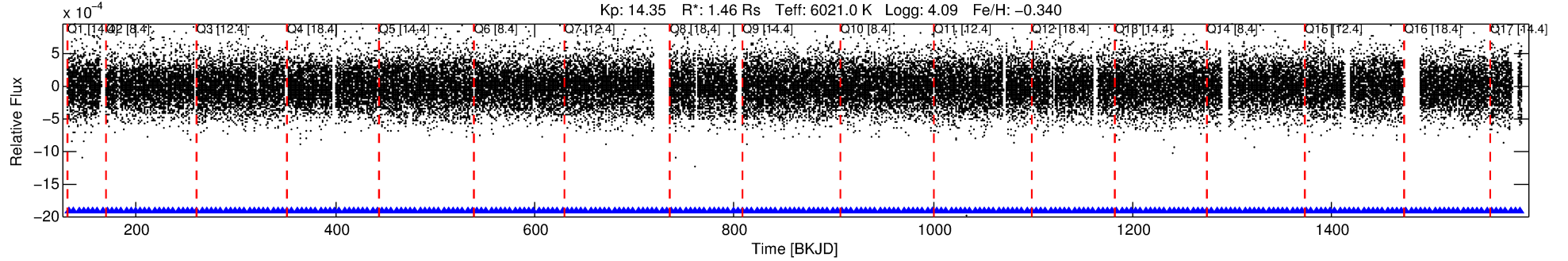
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005880320-02

No Significant Match Found

DV One-Page Summary

KIC: 5880320 Candidate: 2 of 5 Period: 4.758 d
KOI: K01060.02 Corr: 0.991



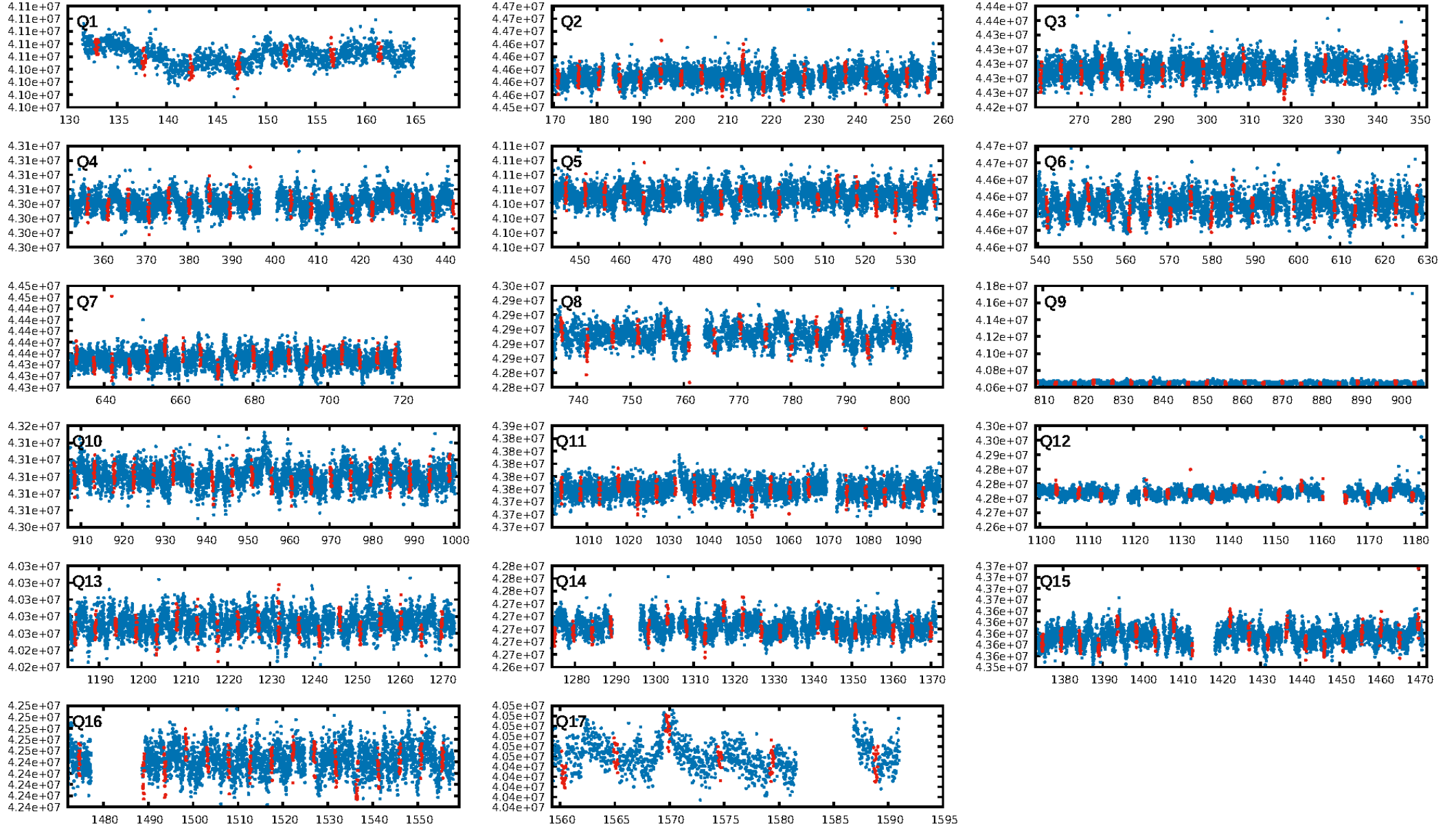
DV Fit Results:

Period = 4.75794 [0.00002] d
Epoch = 132.9383 [0.0031] BKJD
Rp/R* = 0.0119 [0.0028]
a/R* = 4.00 [4.60]
b = 0.87 [0.34]
Seff = 838.52 [290.45]
Teq = 1372 [119] K
Rp = 1.89 [0.63] Re
a = 0.0546 [0.0118] AU
Ag = 9.96 [6.73] [1.33σ]
Teffp = 3769 [556] K [4.21σ]

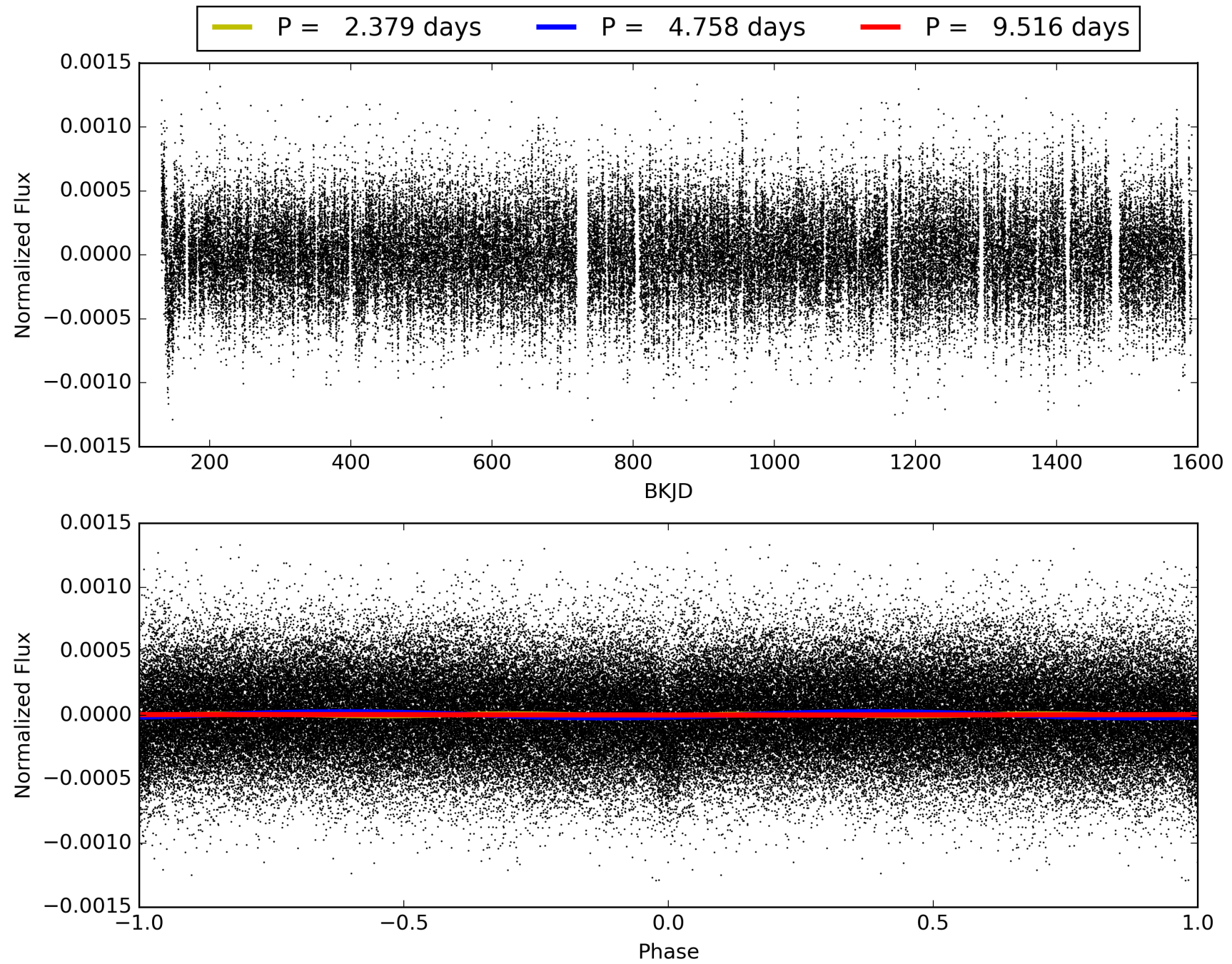
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.47σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.01e-54
RollingBand-fgt: 1.00 [258/258]
GhostDiagnostic-chr: 2.778
Centroid-sig: 53.2%
Centroid-so: 0.462 arcsec [0.82σ]
OotOffset-rm: 0.457 arcsec [1.11σ]
KicOffset-rm: 0.476 arcsec [1.25σ]
OotOffset-st: 4/3/4/3 [14]
KicOffset-st: 4/3/4/3 [14]
DiffImageQuality-fgm: 0.86 [12/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005880320-02, PDC Light Curves

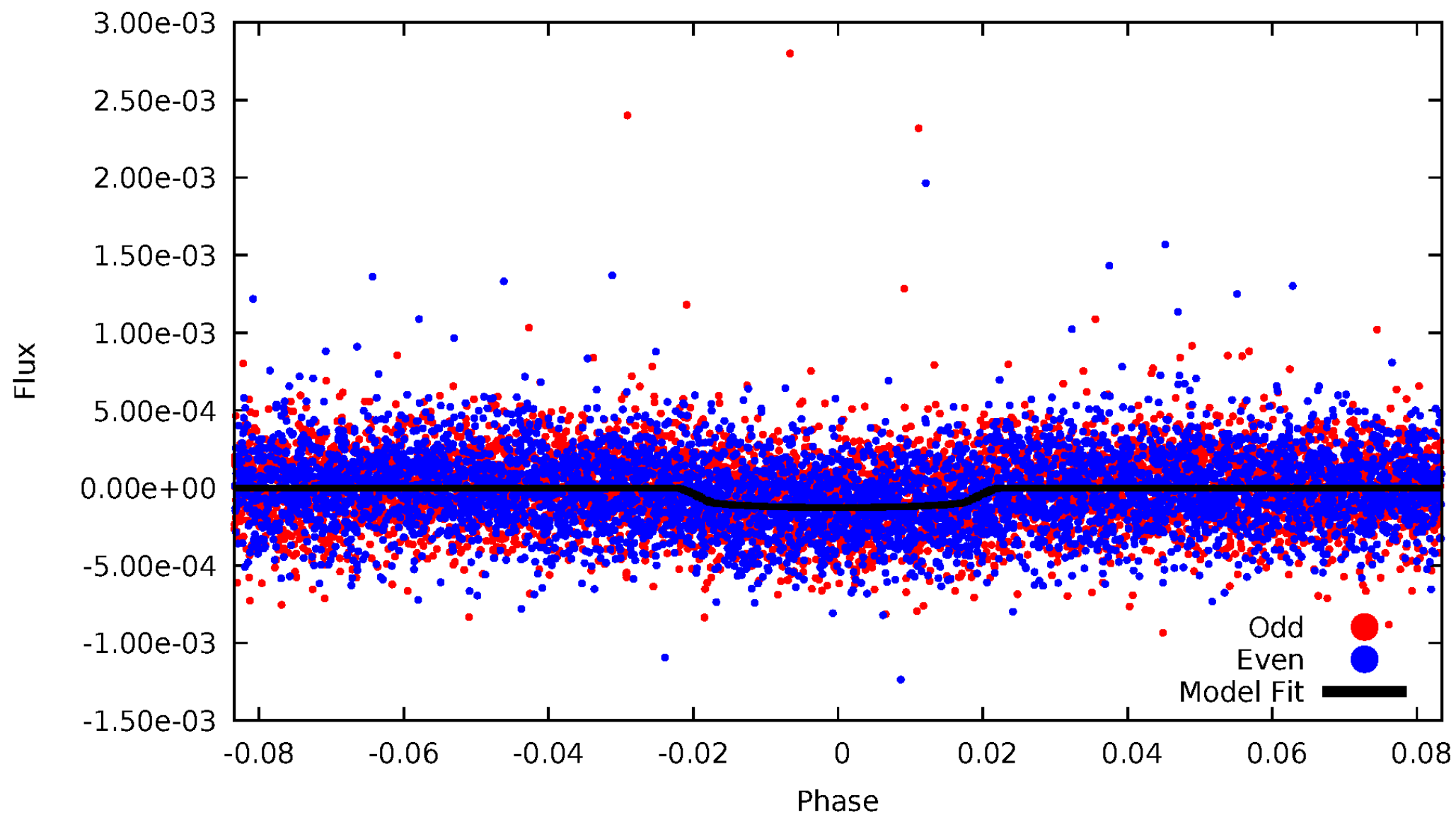


TCE 005880320-02



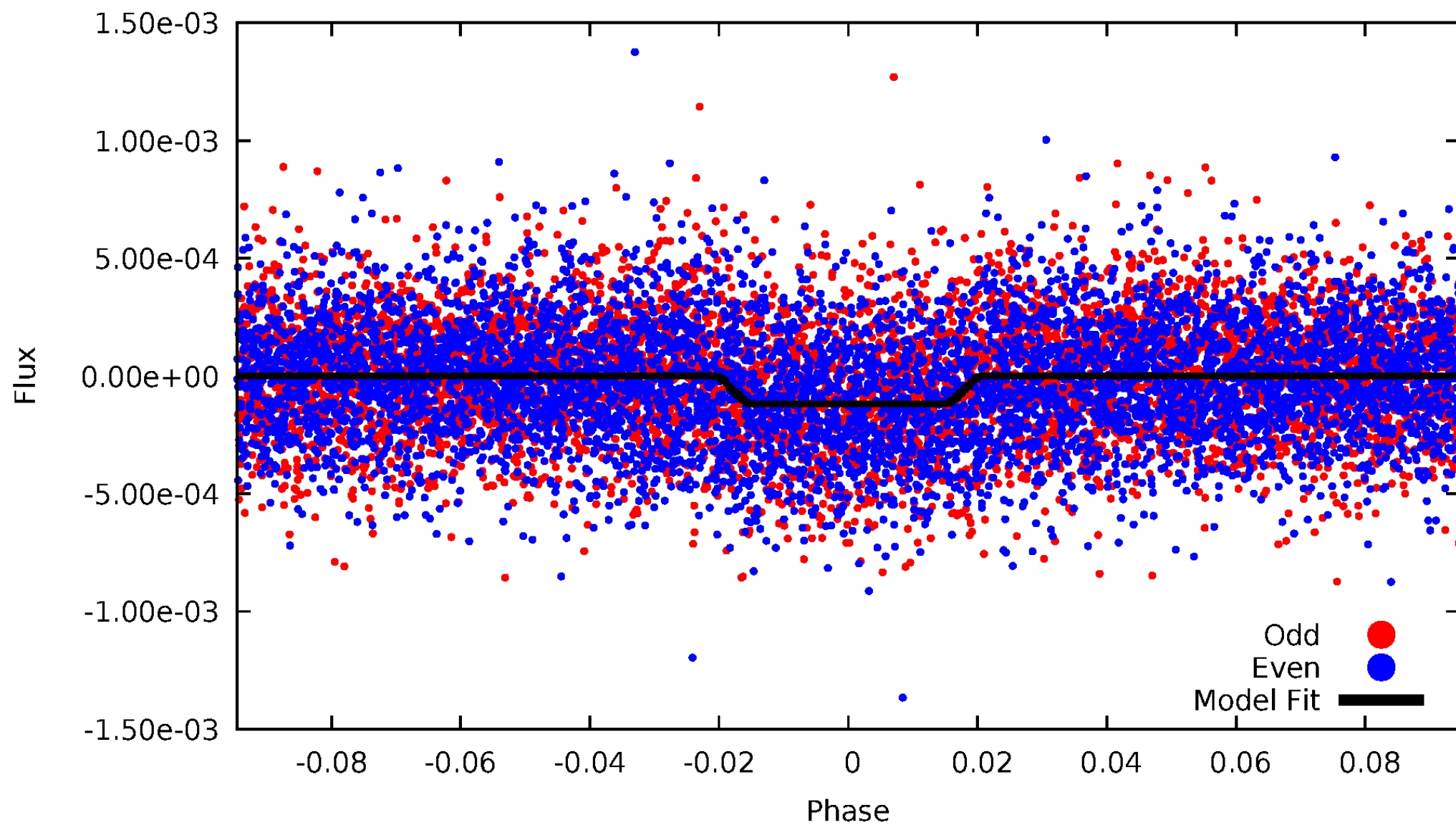
DV Odd/Even

TCE 005880320-02



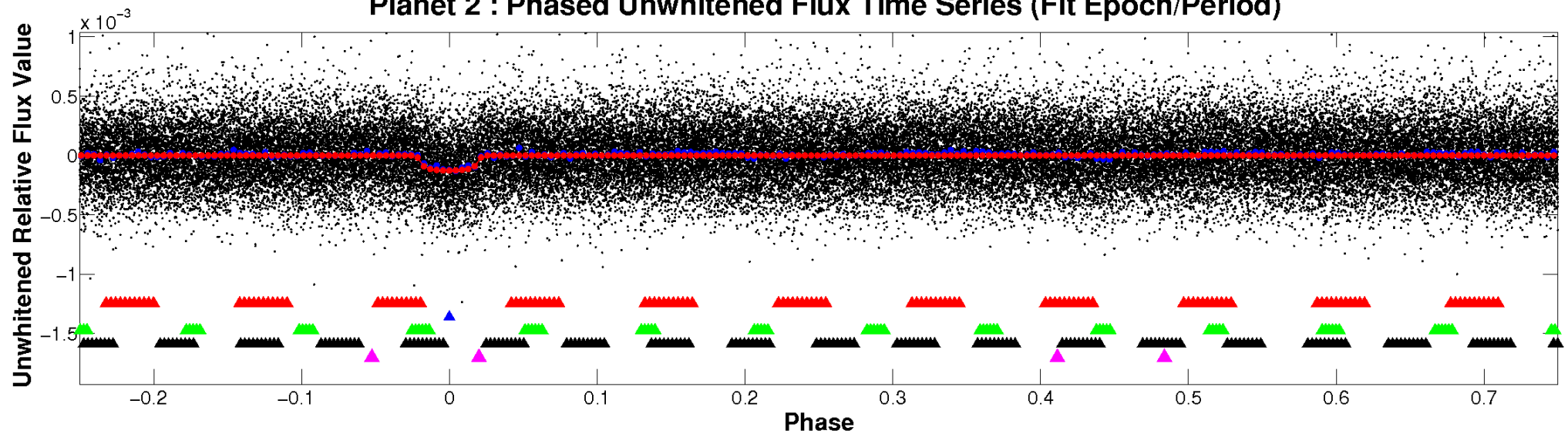
ALT Odd/Even

TCE 005880320-02

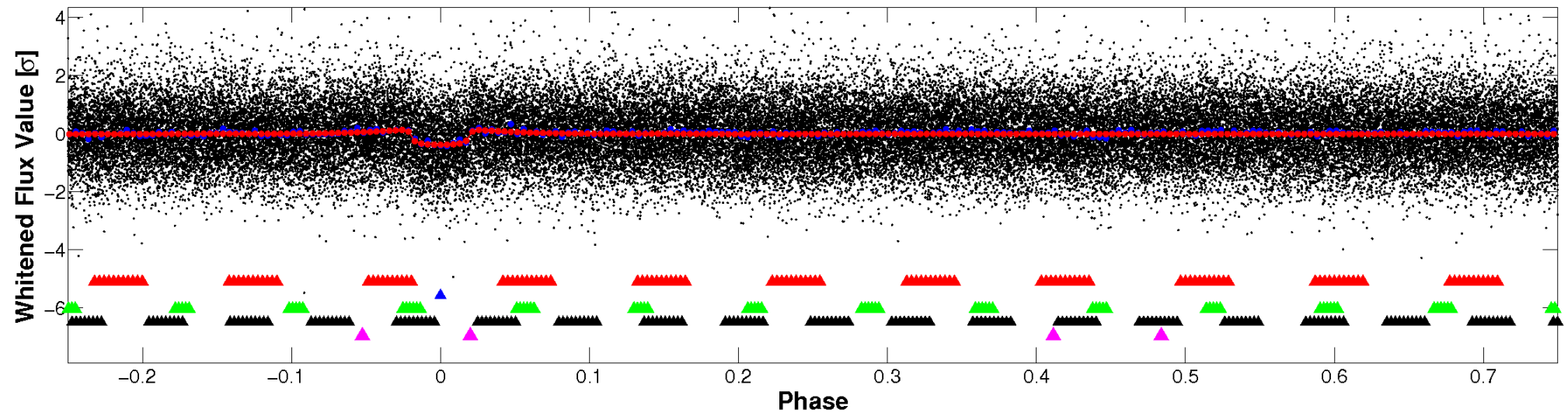


Non-Whitened Vs. Whitened Light Curve

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

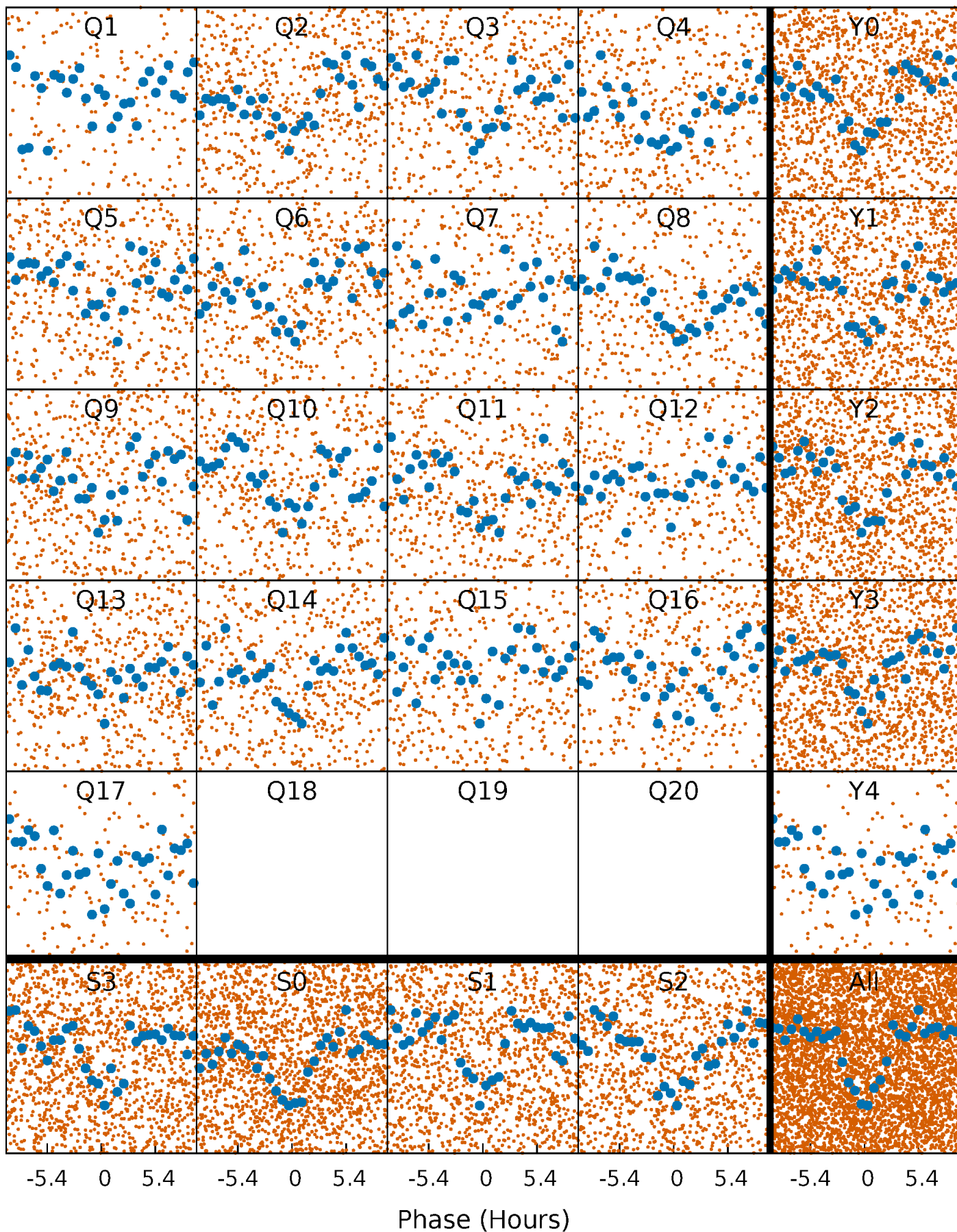


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



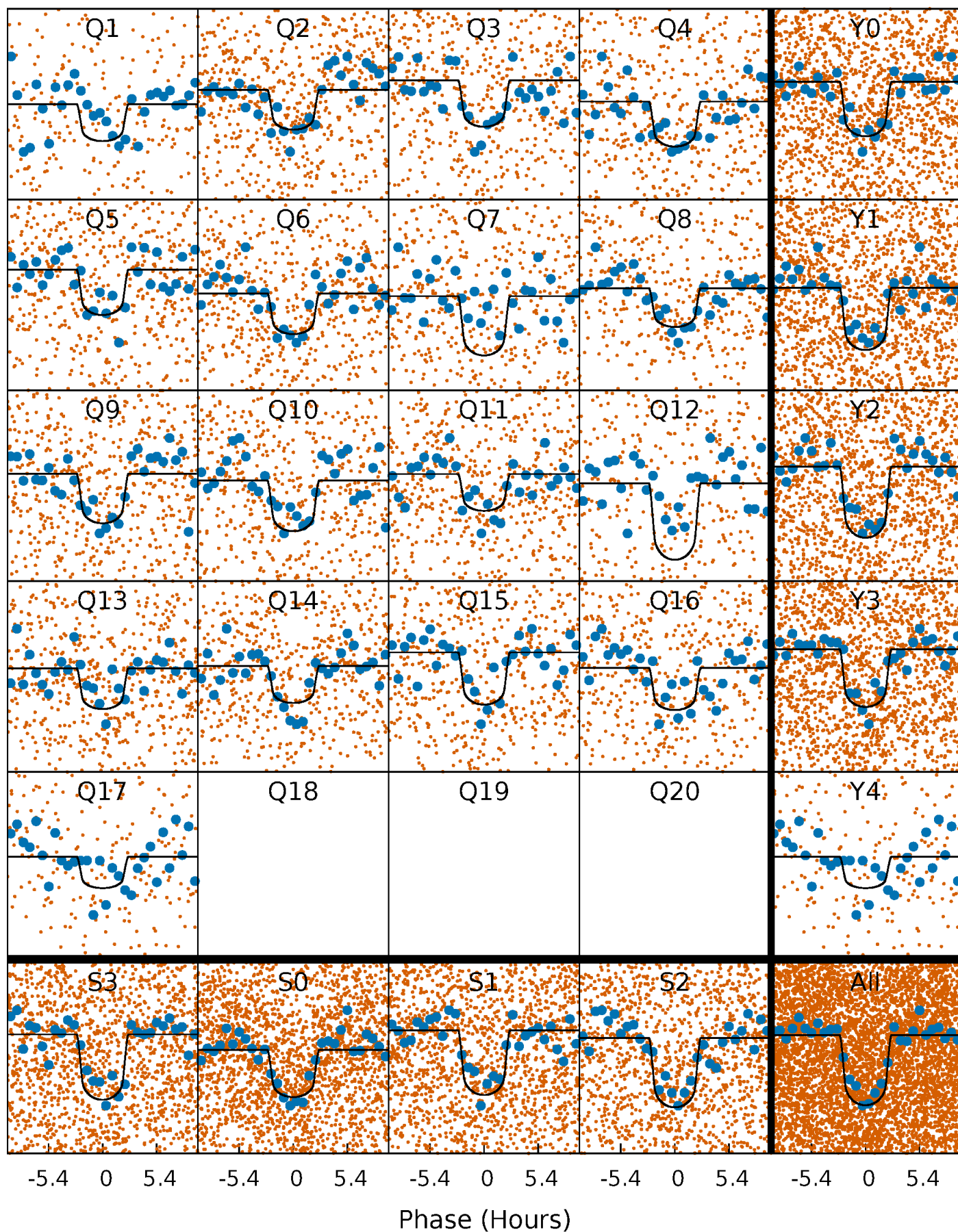
PDC Quarter-Phased Transit Curves

TCE 005880320-02 $P = 4.757937$ Days $T_0 = 132.938323$ (BKJD)



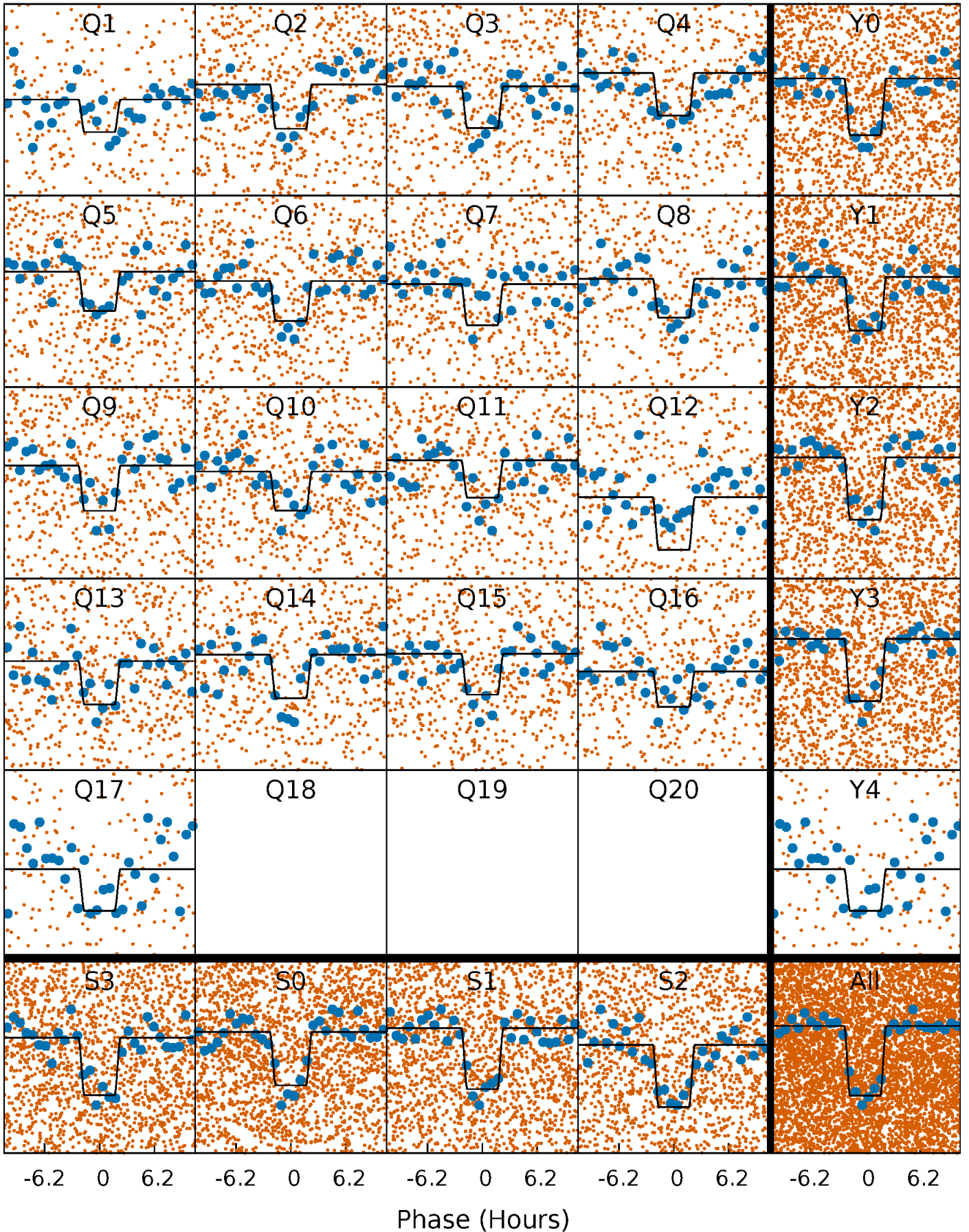
DV Quarter-Phased Transit Curves

TCE 005880320-02 P= 4.757937 Days $T_0=132.938323$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

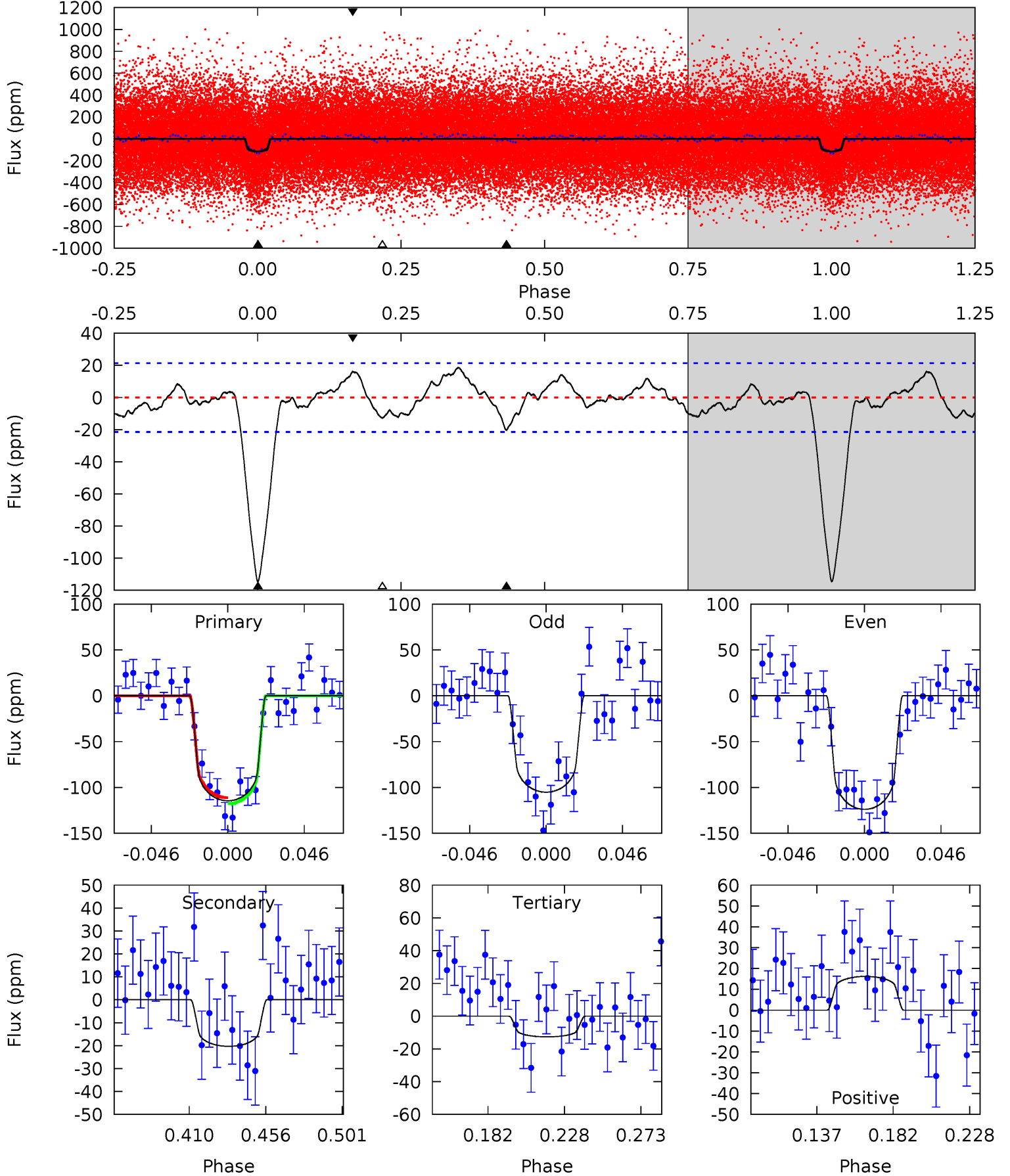
TCE 005880320-02 P= 4.758026 Days $T_0=132.927807$ (BKJD)



DV Model-Shift Uniqueness Test

005880320-02, P = 4.757937 Days, E = 128.180386 Days

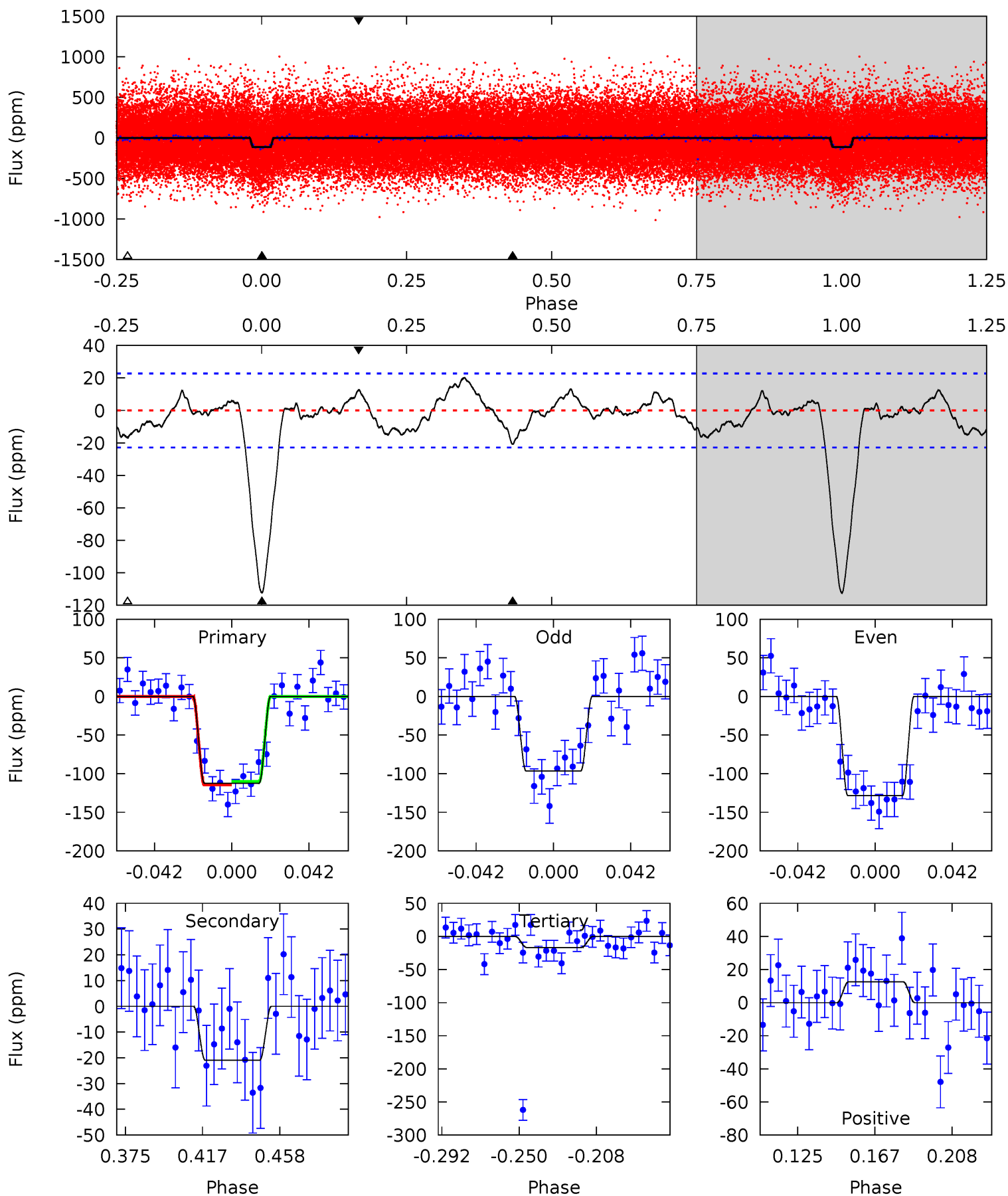
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	4.48	2.79	3.57	4.73	2.00	1.63	22.5	21.7	1.69	0.91	2.07	0.96	0.14	0.72



Alt Model-Shift Uniqueness Test

005880320-02, P = 4.758026 Days, E = 128.169781 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	4.35	3.49	2.62	4.75	2.04	1.65	19.9	20.8	0.87	1.73	3.32	0.95	0.15	0.47



Stellar Parameters For KIC 005880320

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6021^{+120}_{-120}	$4.093^{+0.195}_{-0.105}$	$-0.340^{+0.150}_{-0.150}$	$1.458^{+0.226}_{-0.339}$	$0.960^{+0.088}_{-0.080}$	$0.436^{+0.451}_{-0.139}$
	+2%/-2%	+5%/-3%	+44%/-44%	+16%/-23%	+9%/-8%	+103%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005880320-02 / KOI 1060.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-20 ± 5	$1.88^{+0.51}_{-0.47}$	1910^{+93}_{-122}	3980^{+467}_{-357}	$9.544^{+8.079}_{-4.193}$
Alt.	-21 ± 5	$1.74^{+0.46}_{-0.51}$	1907^{+100}_{-115}	4149^{+537}_{-373}	12^{+11}_{-5}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

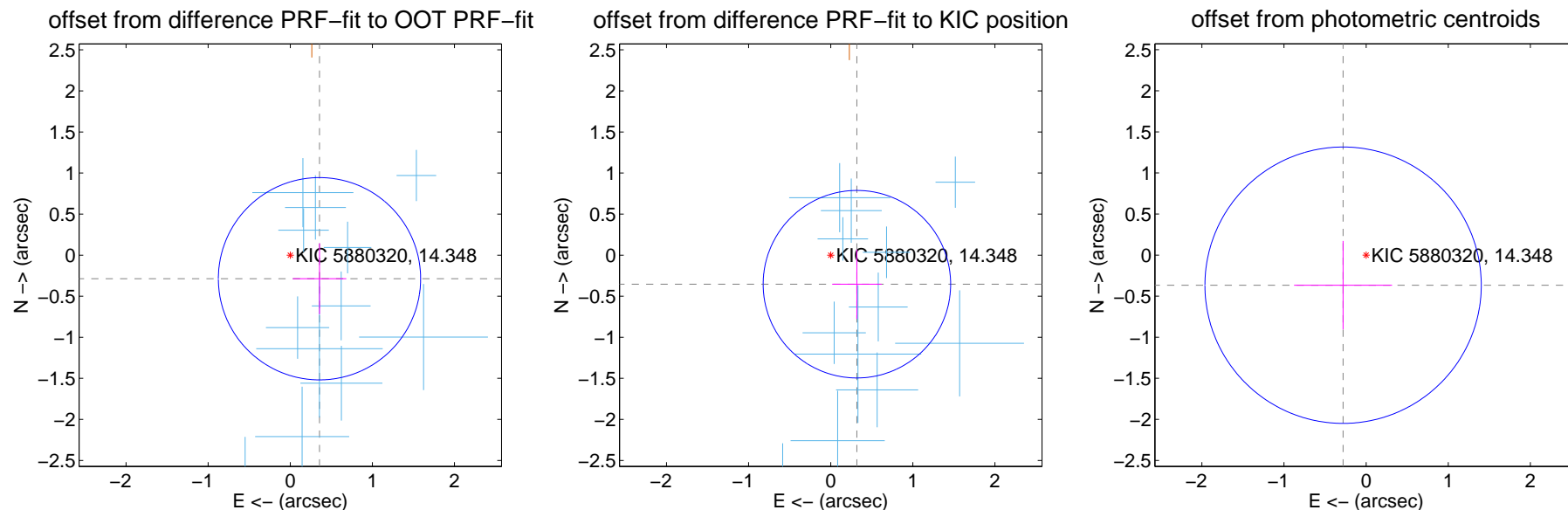
DV Centroid Data

Supplemental centroid analysis for 005880320-02. Kepler magnitude: 14.35. Transit SNR 17.22

There are 12 quarters with good PRF difference image offsets

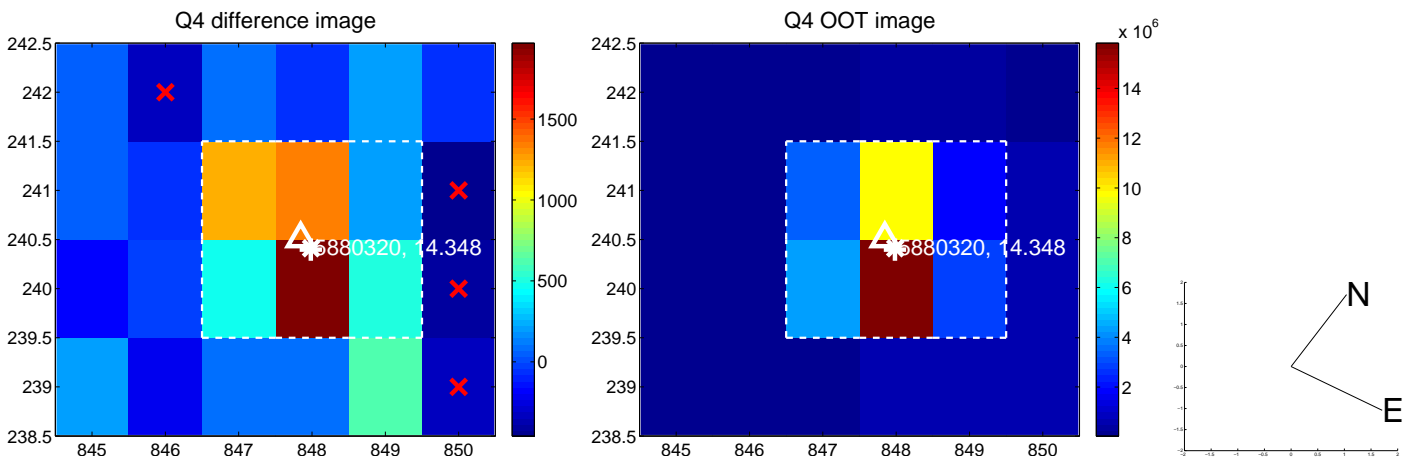
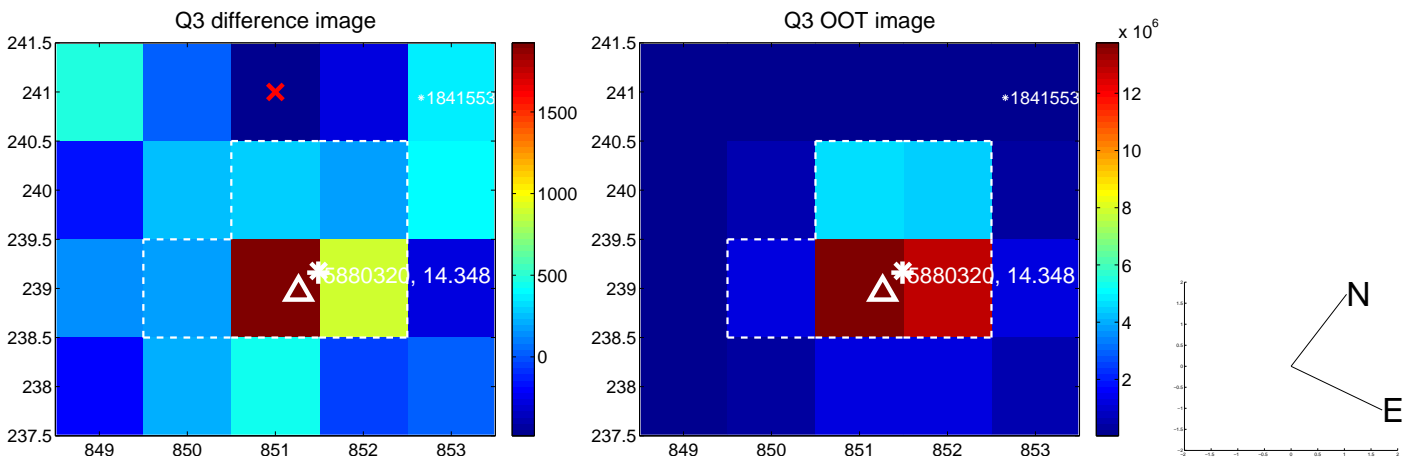
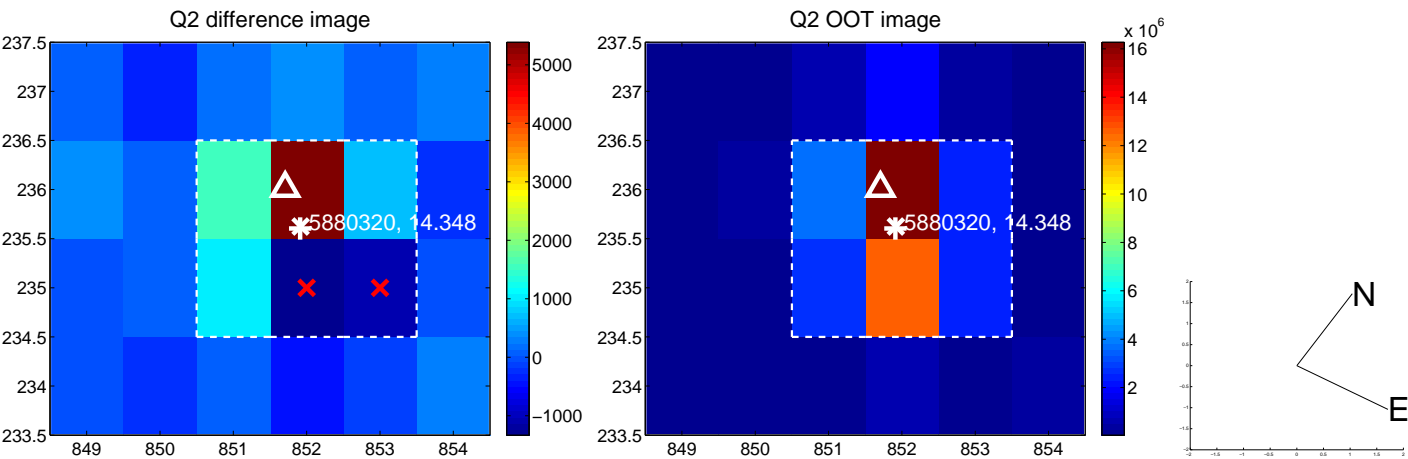
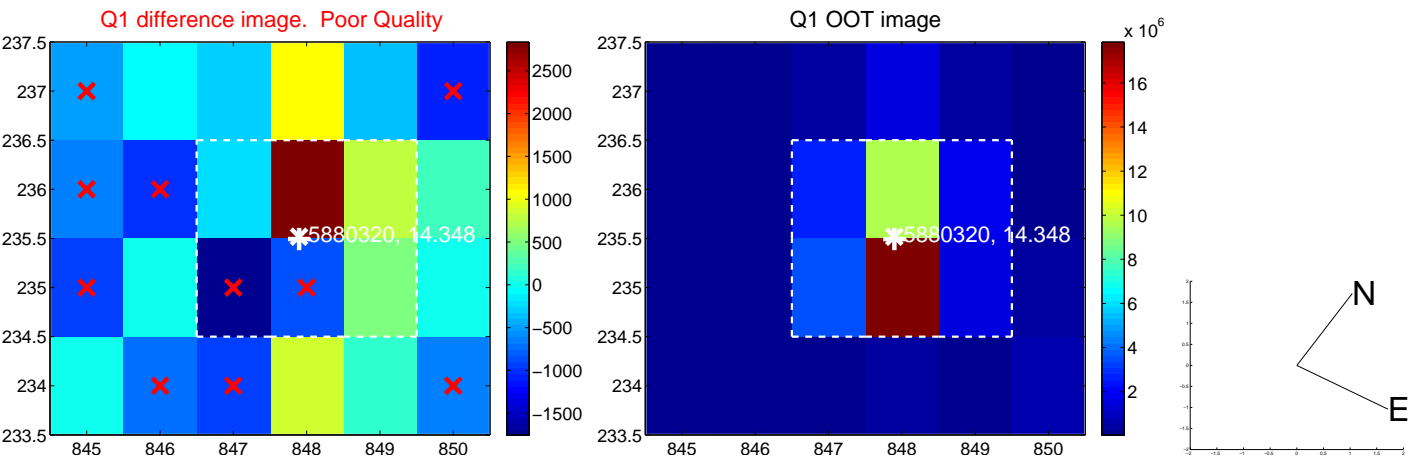
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.457 ± 0.411	1.11	-0.356 ± 0.326	-0.287 ± 0.432
PRF-fit source offset from KIC position	0.476 ± 0.381	1.25	-0.319 ± 0.301	-0.354 ± 0.422
photometric centroid source offset	0.46 ± 0.56	0.82	0.28 ± 0.60	-0.37 ± 0.54

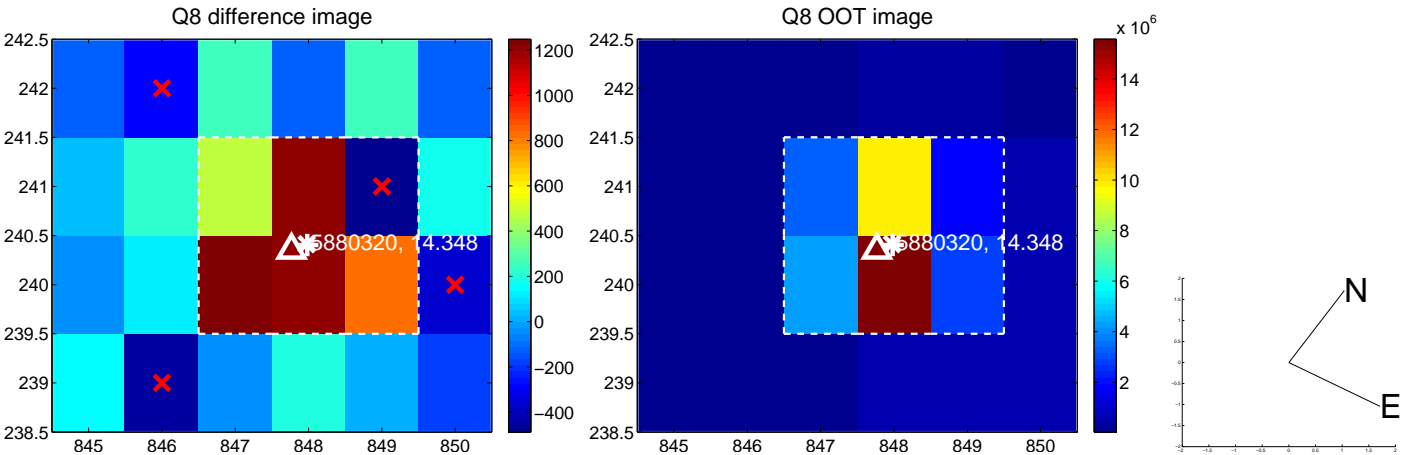
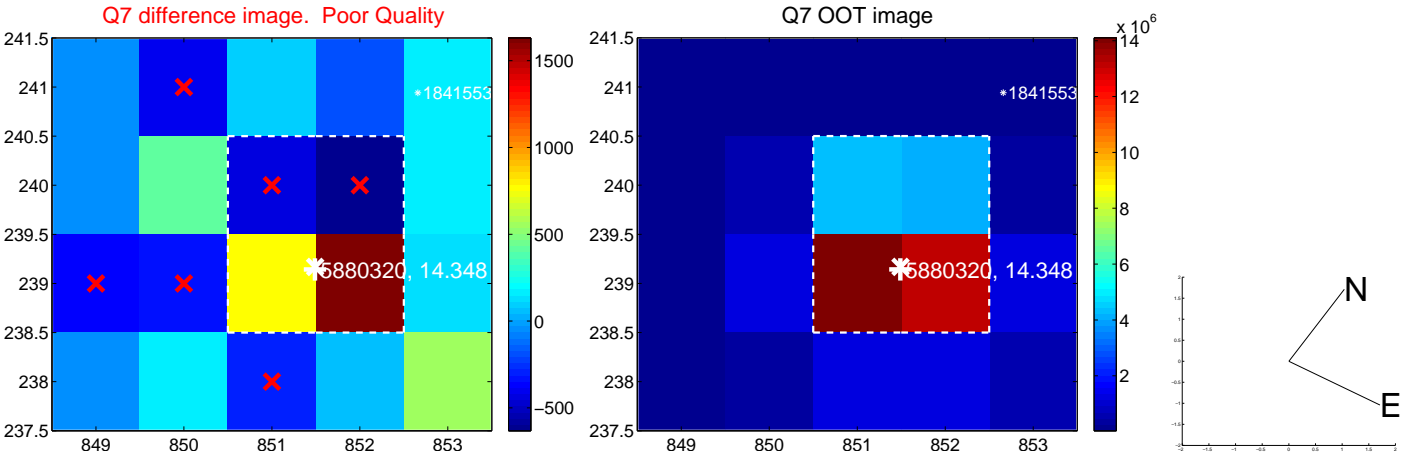
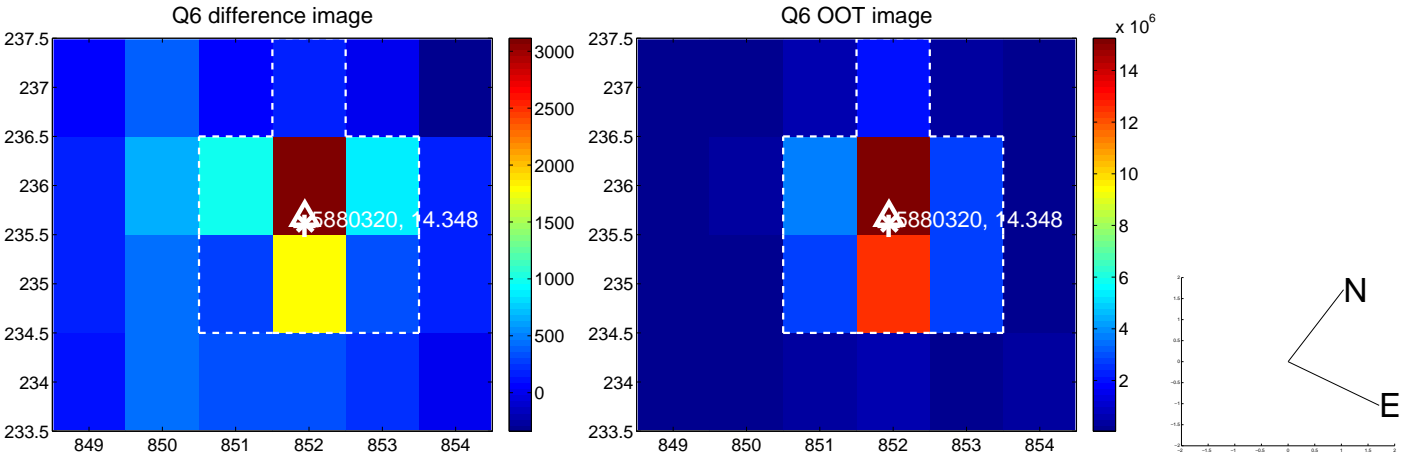
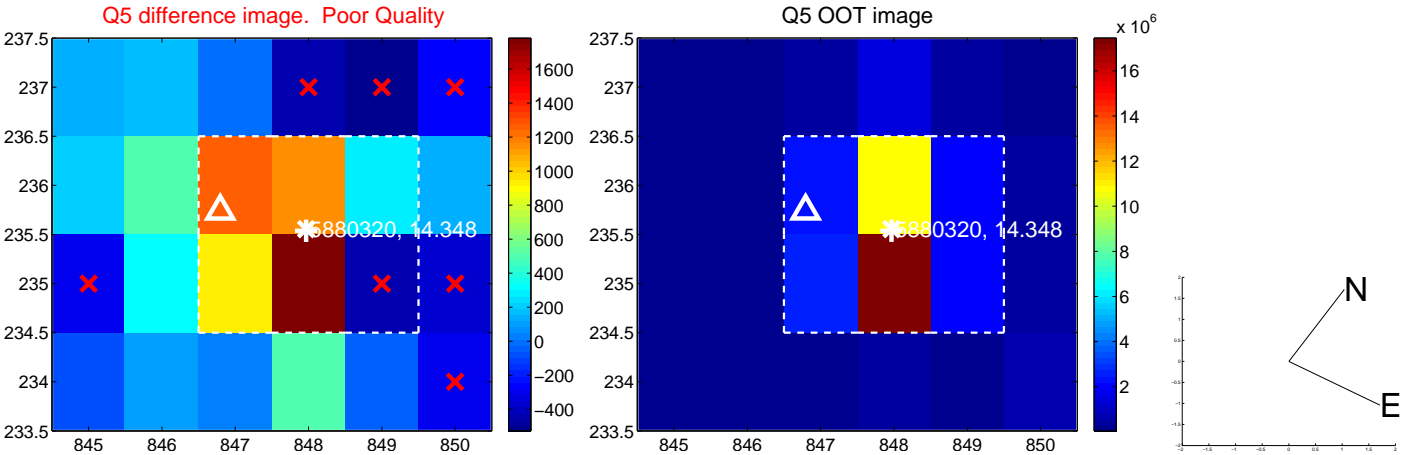


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

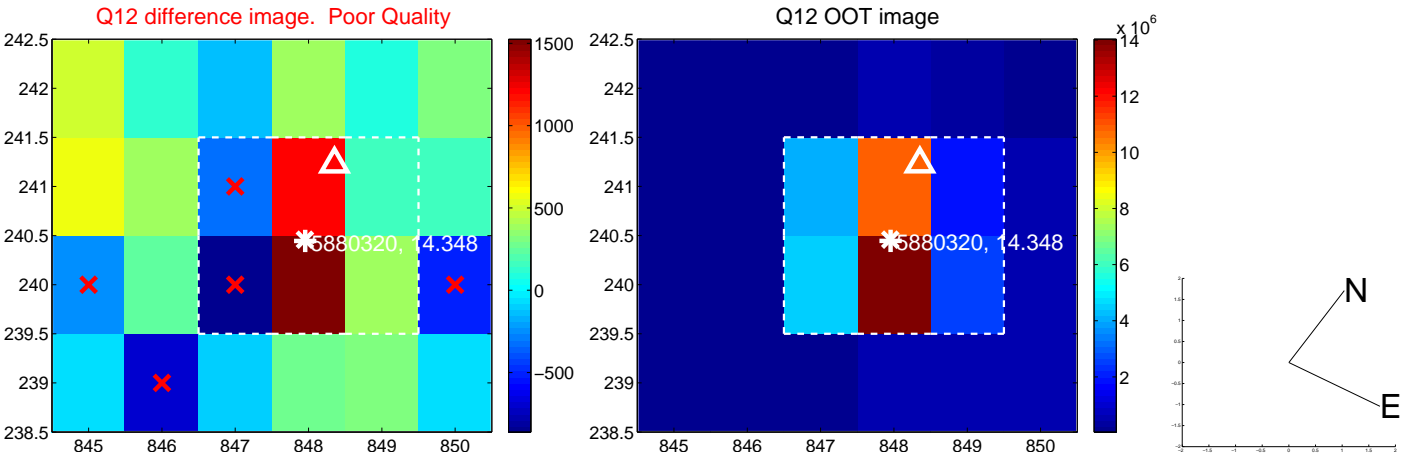
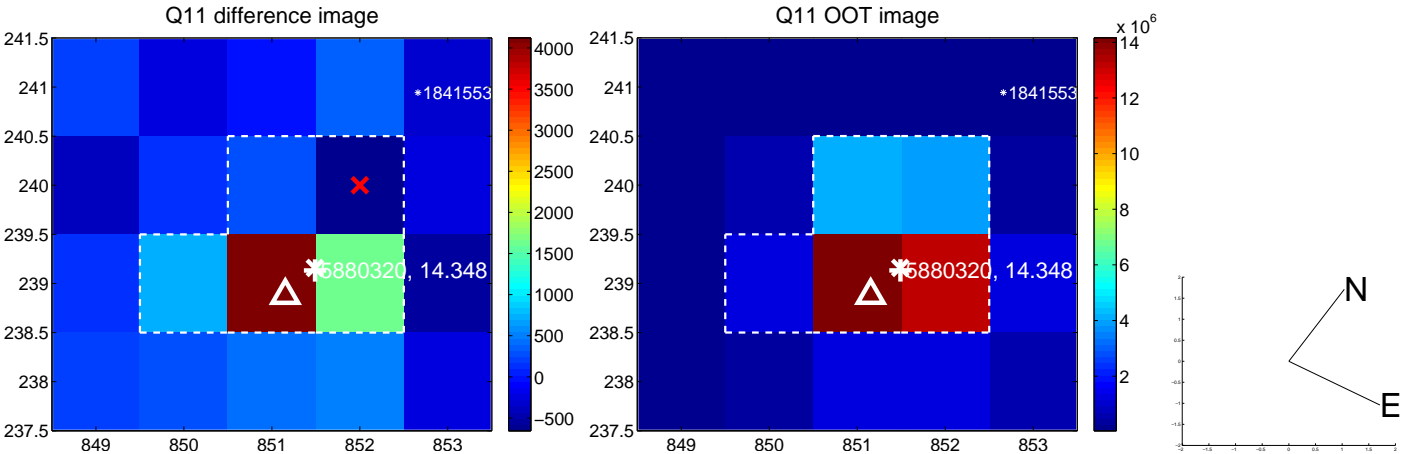
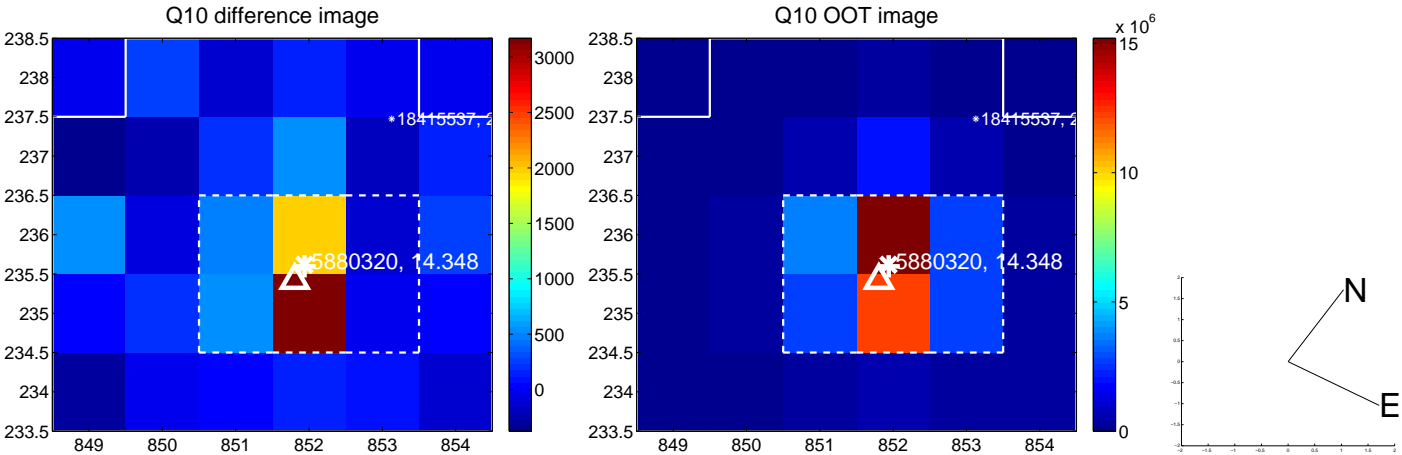
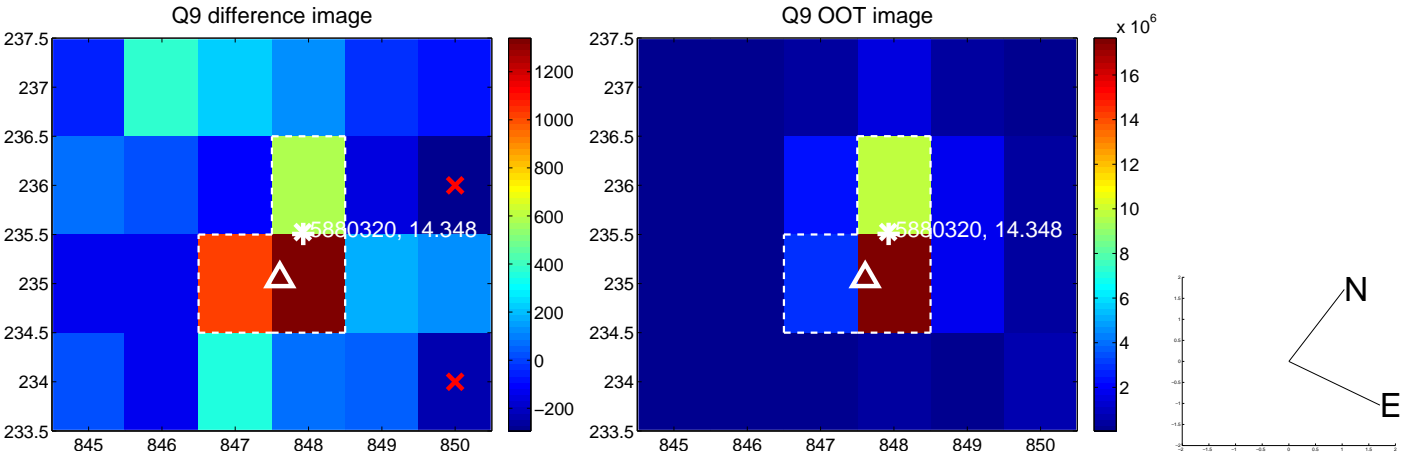
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



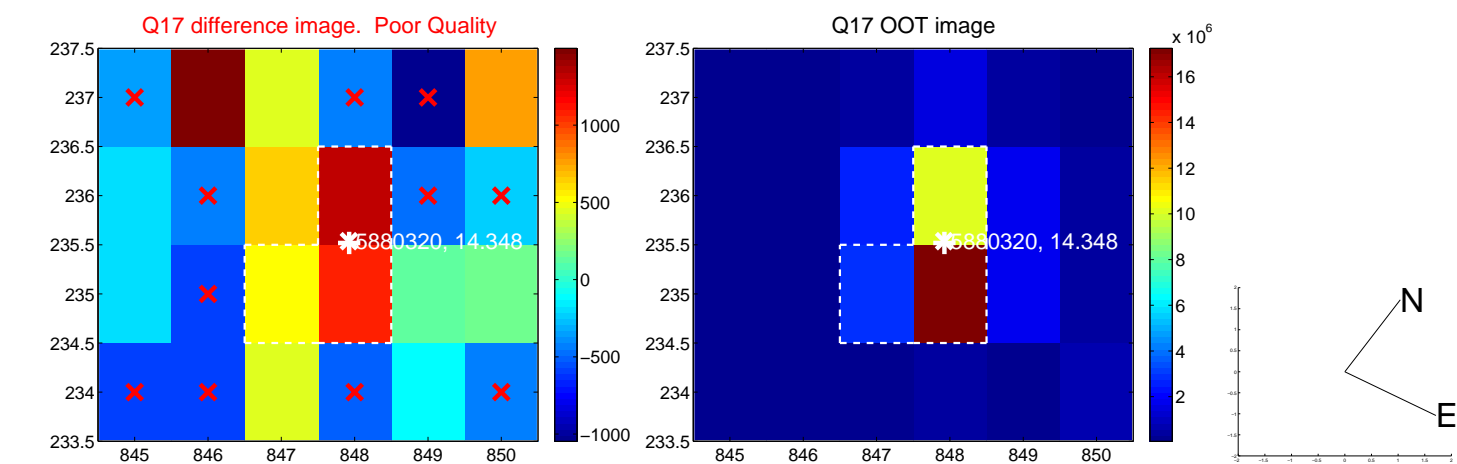
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



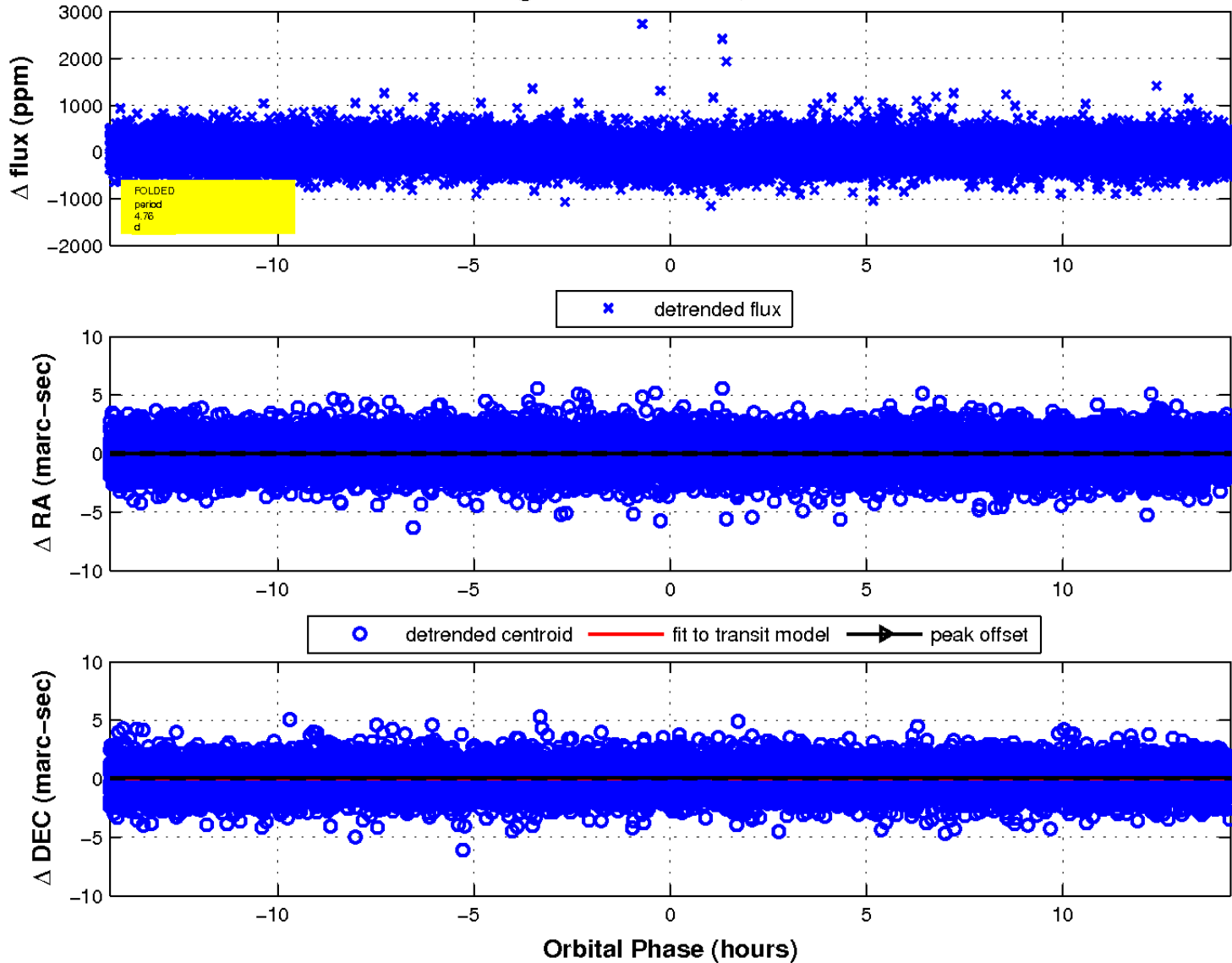
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

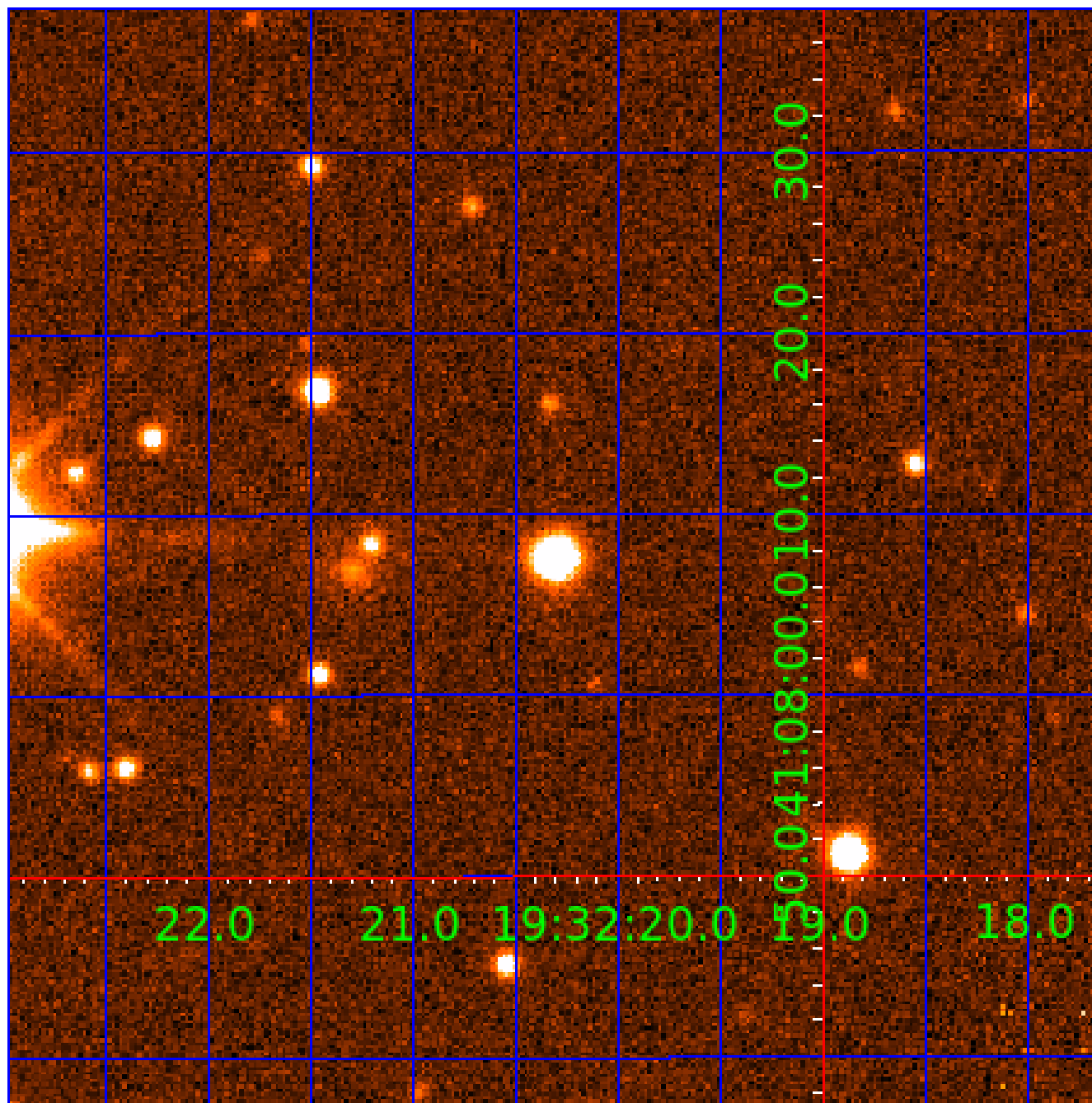


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 005880320

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})
005880320-01	OBS	1060.01	12.109728	140.212614	246.2	6.074	21.1	21.4	1.46	6021	2.71	241.30
005880320-02	OBS	1060.02	4.757937	132.938323	127.1	4.762	16.1	17.2	1.46	6021	1.89	838.52
005880320-03	OBS	1060.03	20.496576	147.455633	193.5	6.532	10.6	11.5	1.46	6021	2.24	119.63
005880320-04	OBS	1060.04	8.193480	138.999175	106.2	5.382	9.7	10.5	1.46	6021	1.88	406.24
005880320-05	OBS	No	387.599534	147.307459	411.9	12.610	9.7	5.0	1.46	6021	3.24	2.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005880320-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-02	OBS	PC	0.76	0	0	0	0	NO_COMMENT
005880320-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-04	OBS	PC	0.88	0	0	0	0	NO_COMMENT
005880320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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.

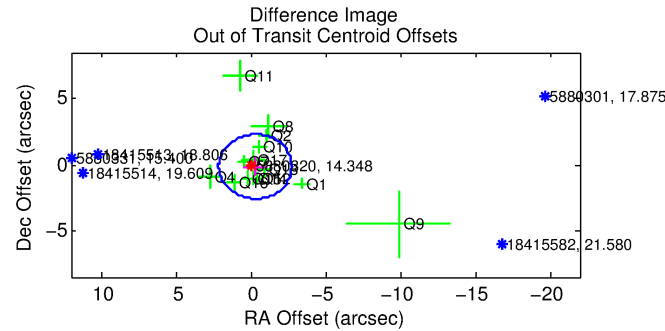
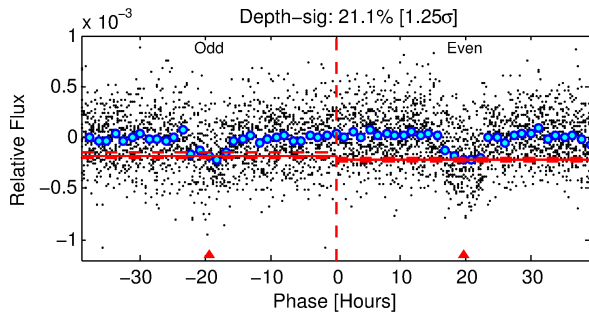
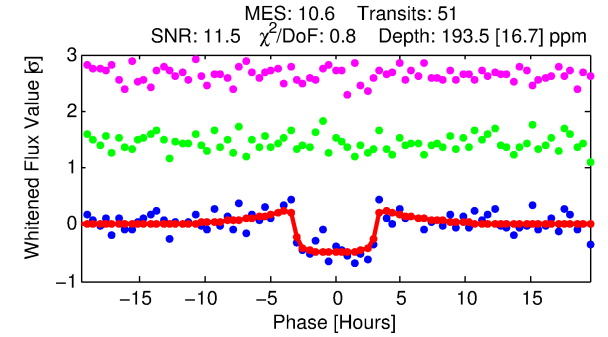
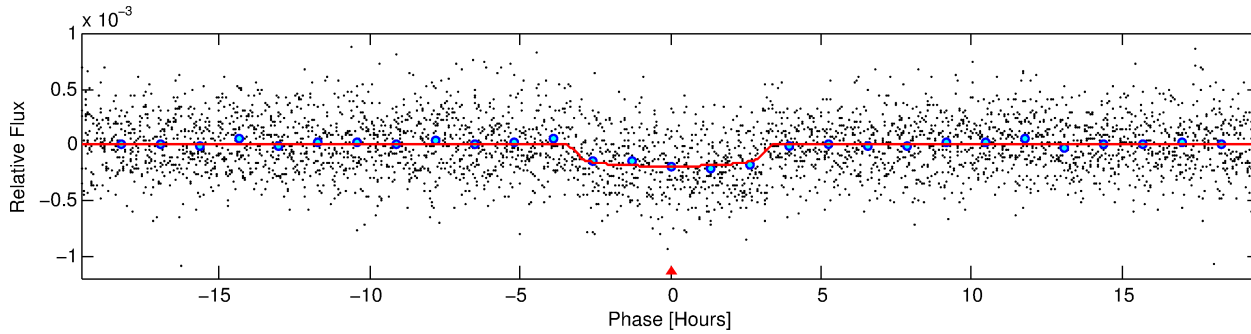
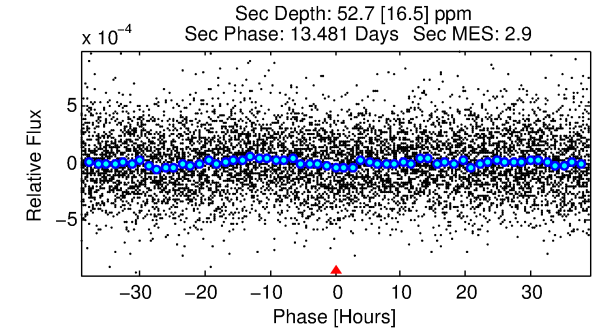
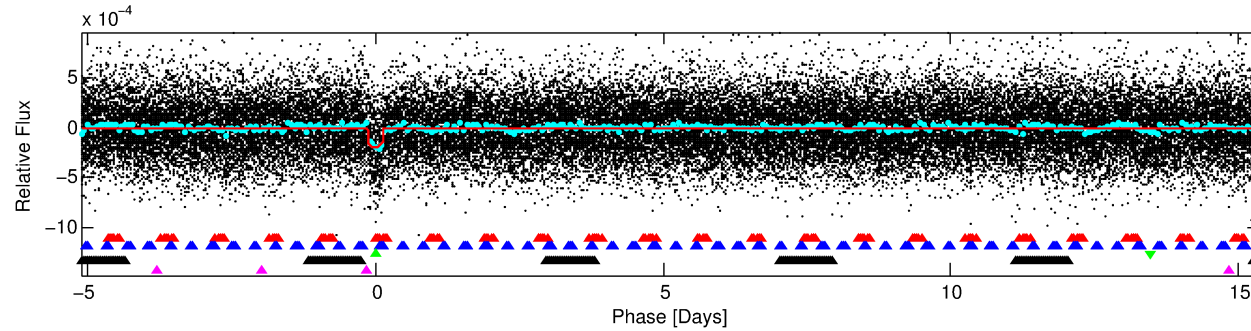
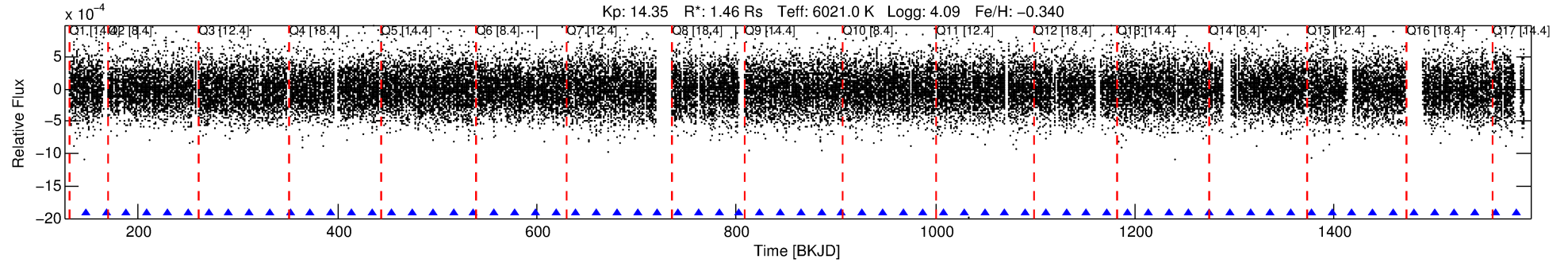
Ephemeris Match Information For 005880320-03

No Significant Match Found

DV One-Page Summary

KIC: 5880320 Candidate: 3 of 5 Period: 20.497 d

KOI: K01060.03 Corr: 0.988



DV Fit Results:

Period = 20.49658 [0.00020] d
Epoch = 147.4556 [0.0077] BKJD
Rp/R* = 0.0141 [0.0046]
a/R* = 15.03 [24.83]
b = 0.80 [0.76]
Seff = 119.63 [41.44]
Teq = 843 [73] K
Rp = 2.24 [0.90] Re
a = 0.1447 [0.0312] AU
Ag = 120.65 [96.91] [1.23σ]
Teffp = 4321 [792] K [4.37σ]

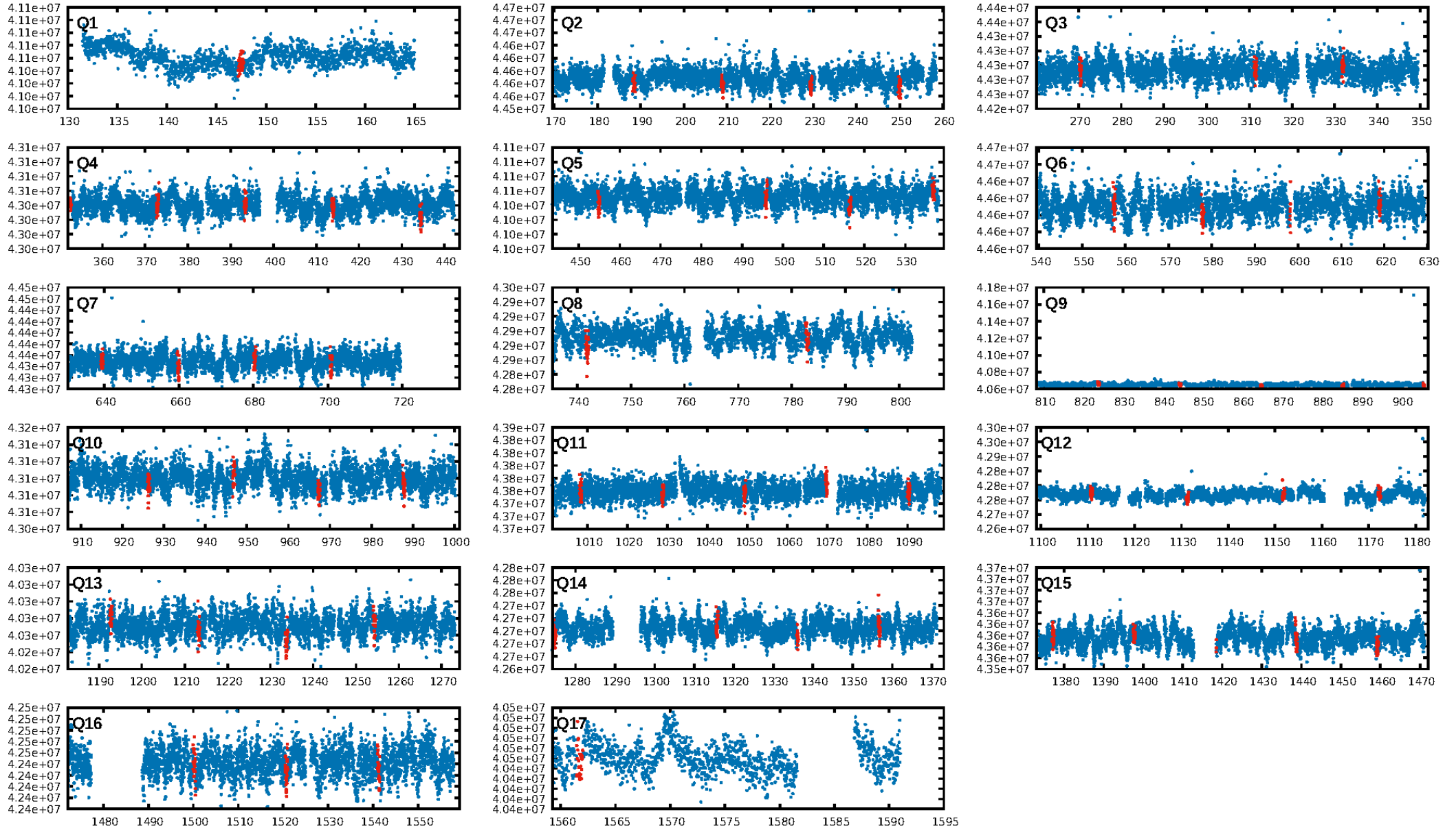
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.57σ]
LongPeriod-sig: 100.0% [620.41σ]
ModelChiSquare2-sig: 97.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.61e-25
RollingBand-fgt: 1.00 [49/49]
GhostDiagnostic-chr: 3.085
Centroid-sig: 54.0%
Centroid-so: 0.721 arcsec [0.99σ]
OotOffset-rm: 0.340 arcsec [0.42σ]
KicOffset-rm: 0.342 arcsec [0.42σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 0.88 [15/17]

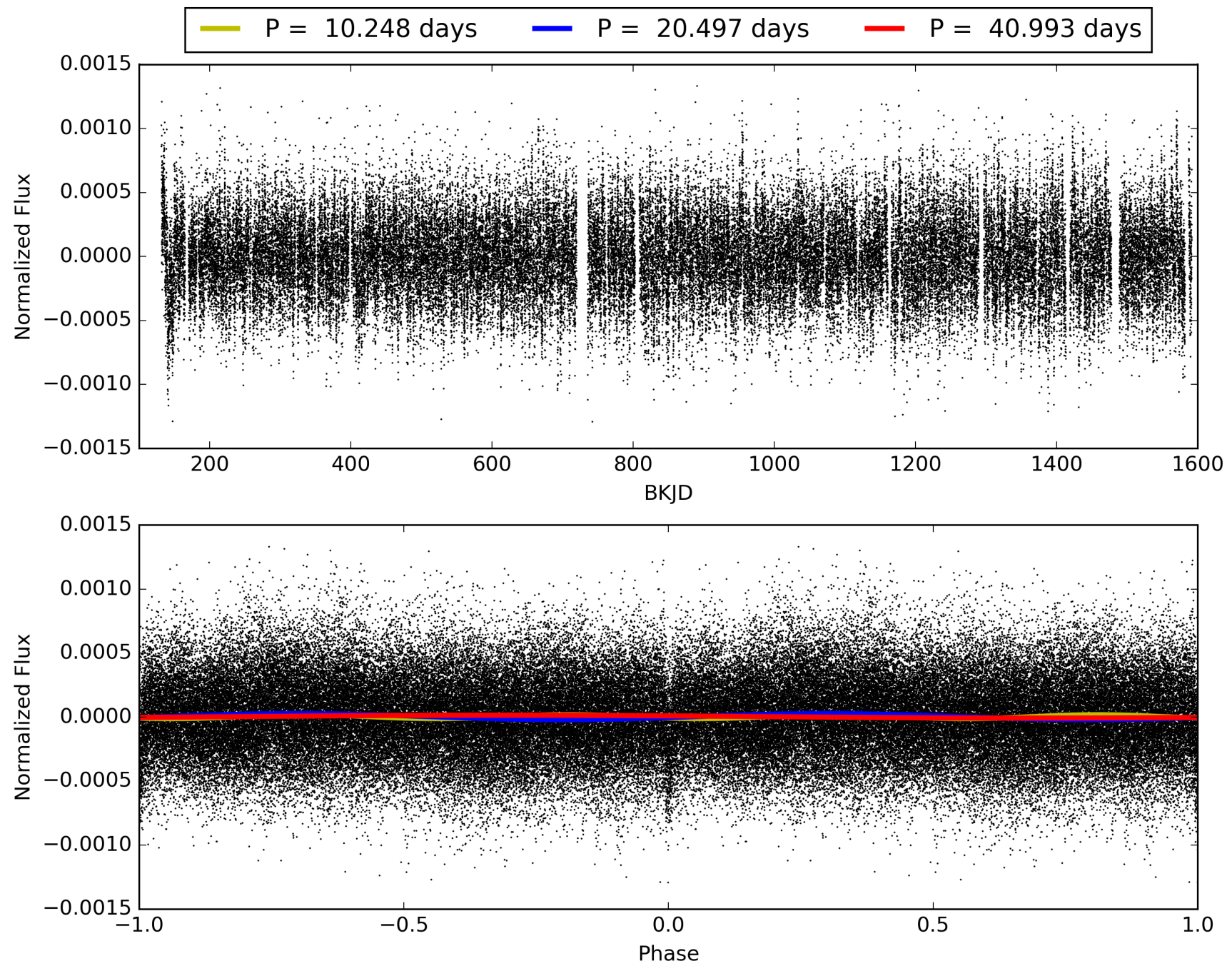
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:02:35 Z

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

TCE 005880320-03, PDC Light Curves

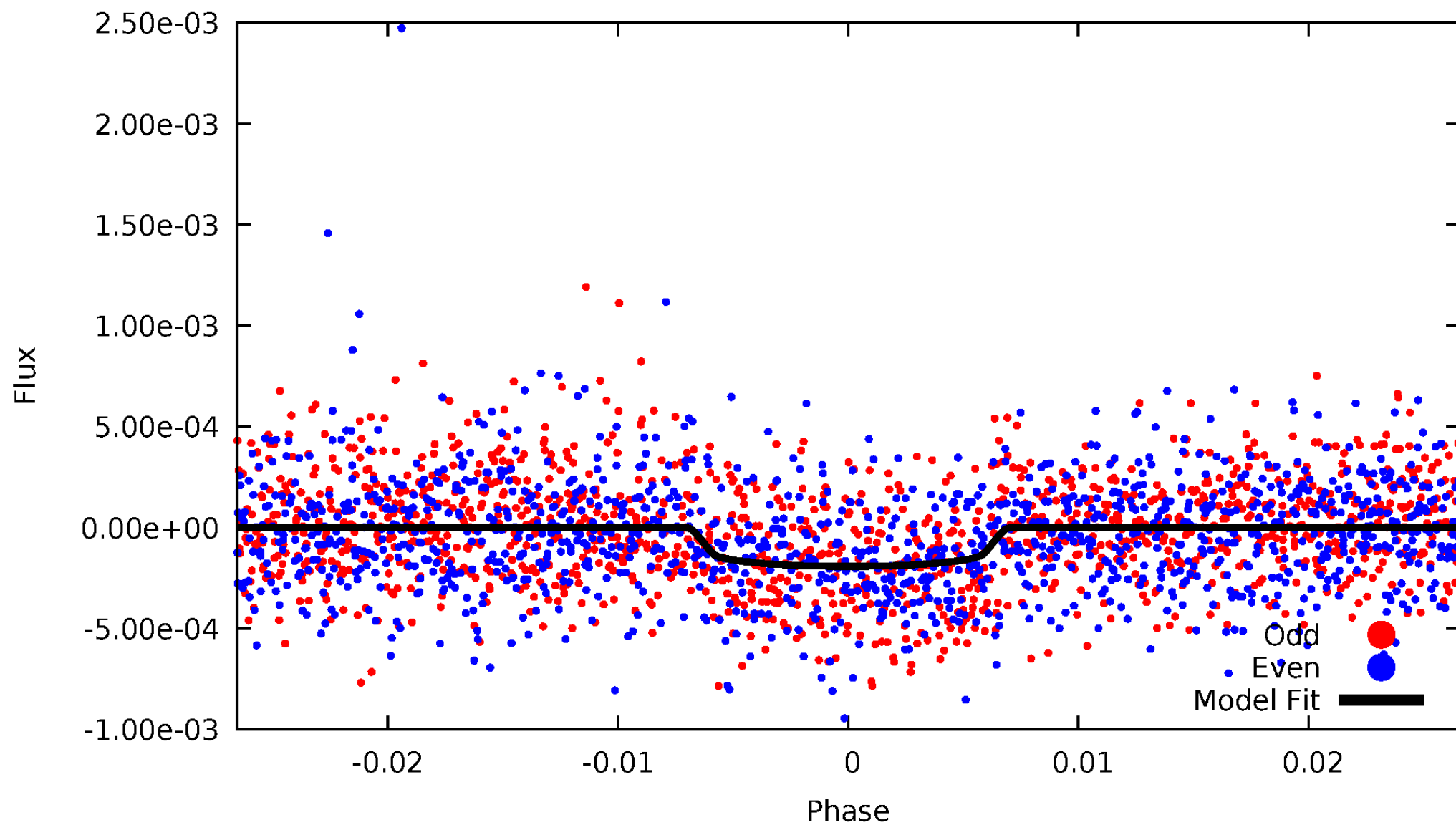


TCE 005880320-03



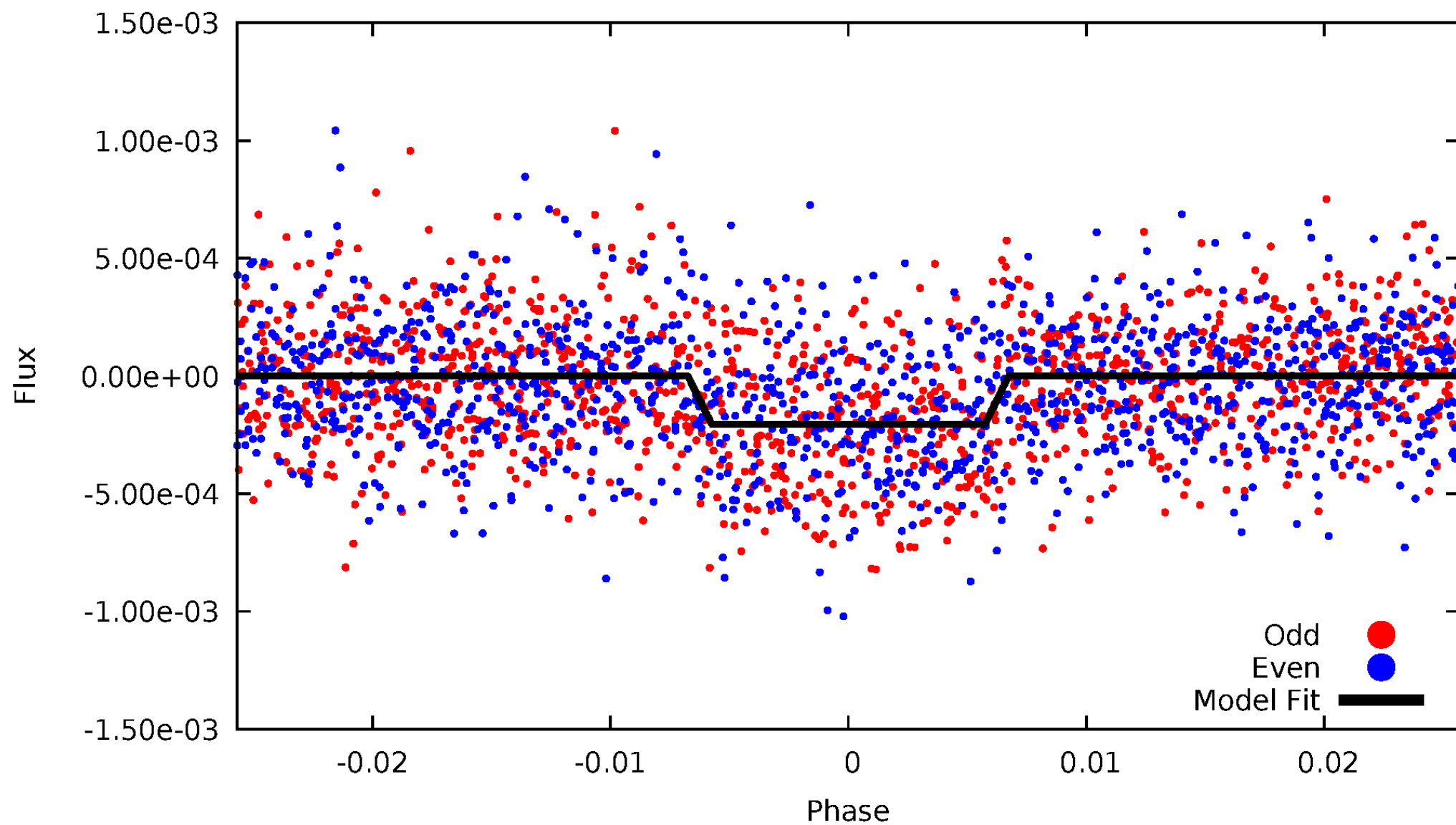
DV Odd/Even

TCE 005880320-03



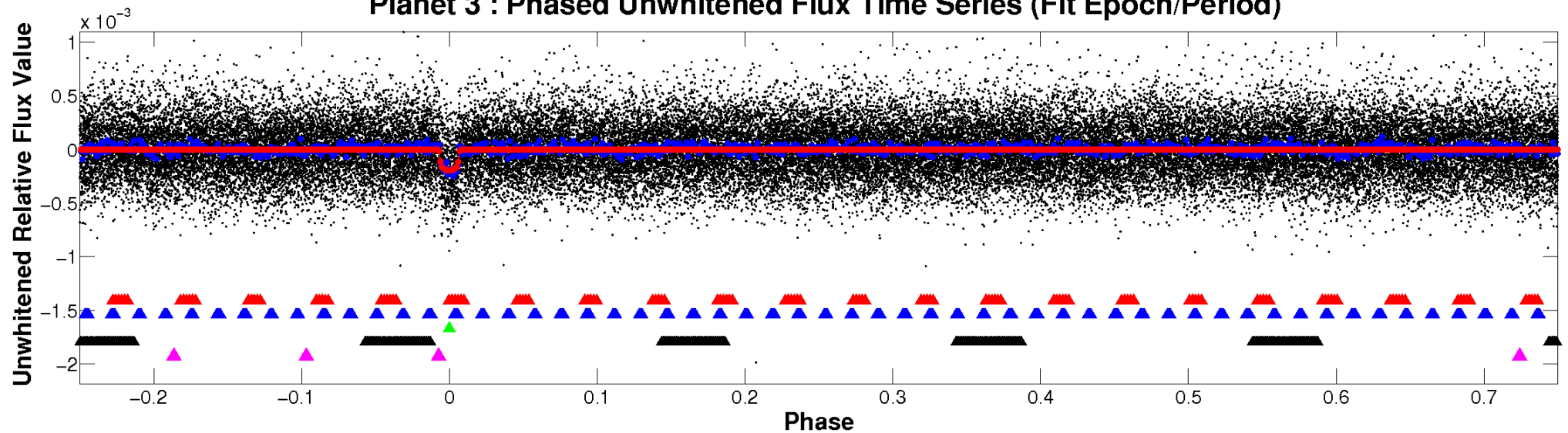
ALT Odd/Even

TCE 005880320-03

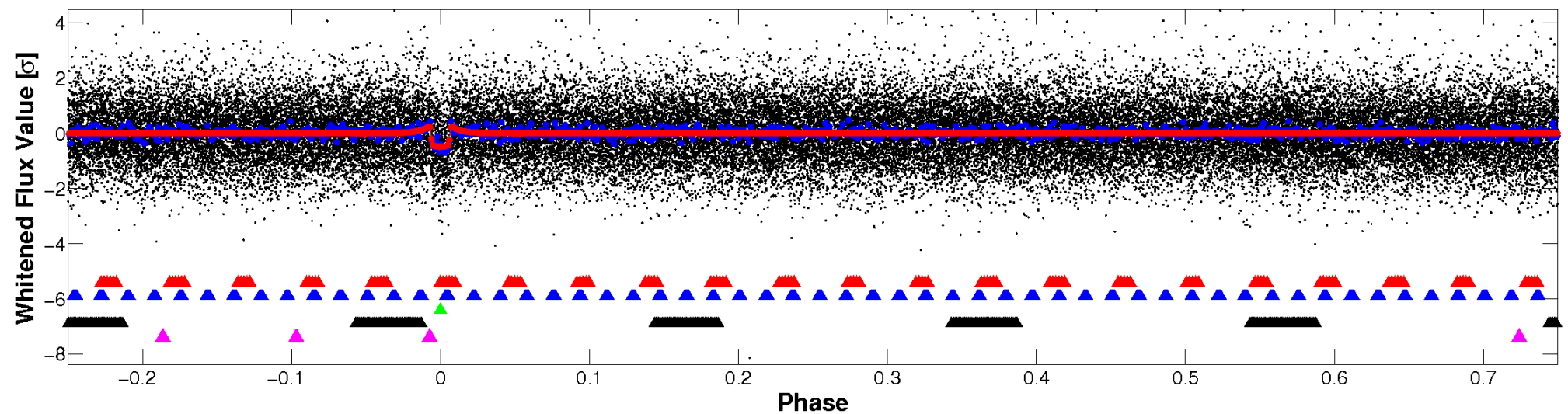


Non-Whitened Vs. Whitened Light Curve

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

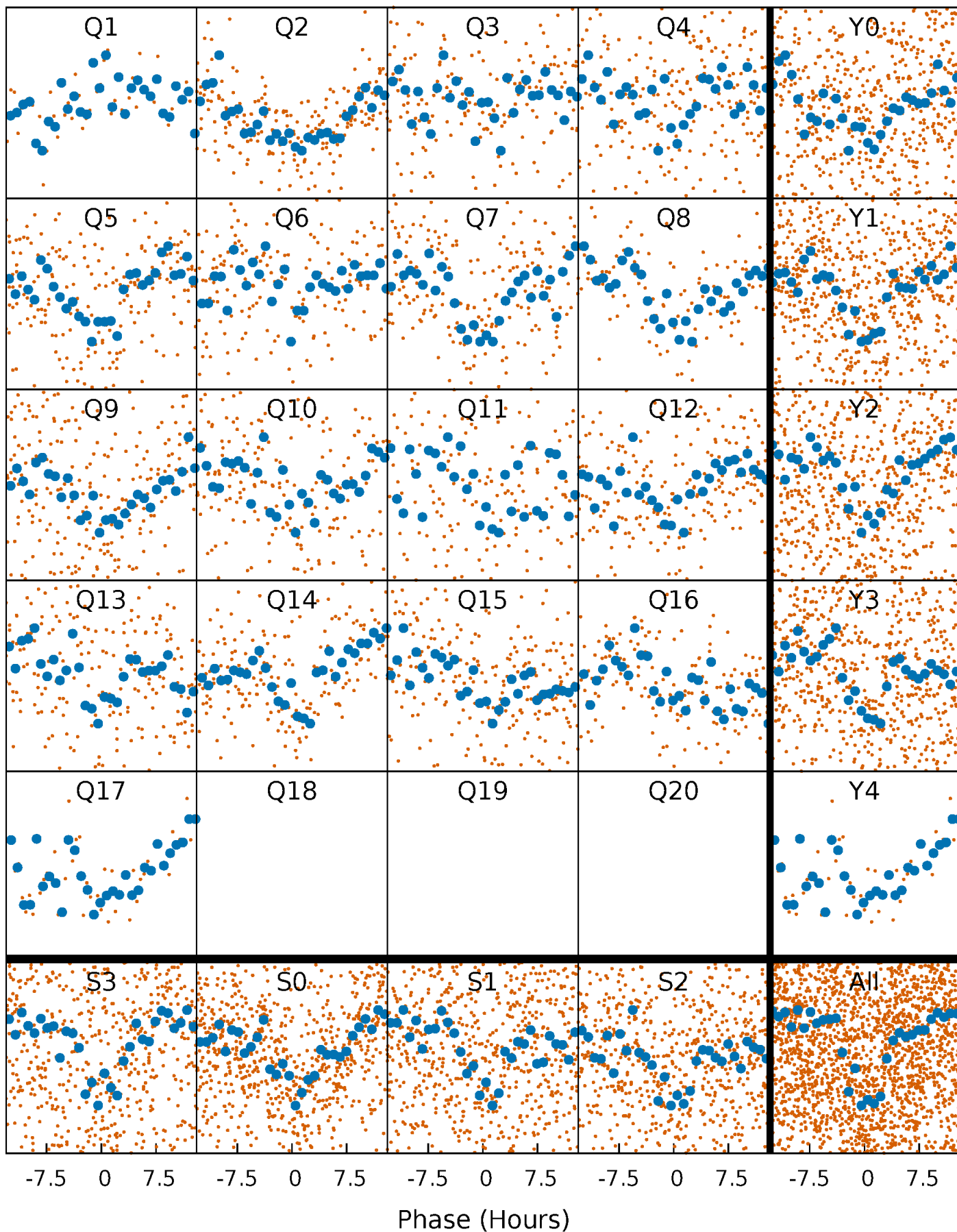


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



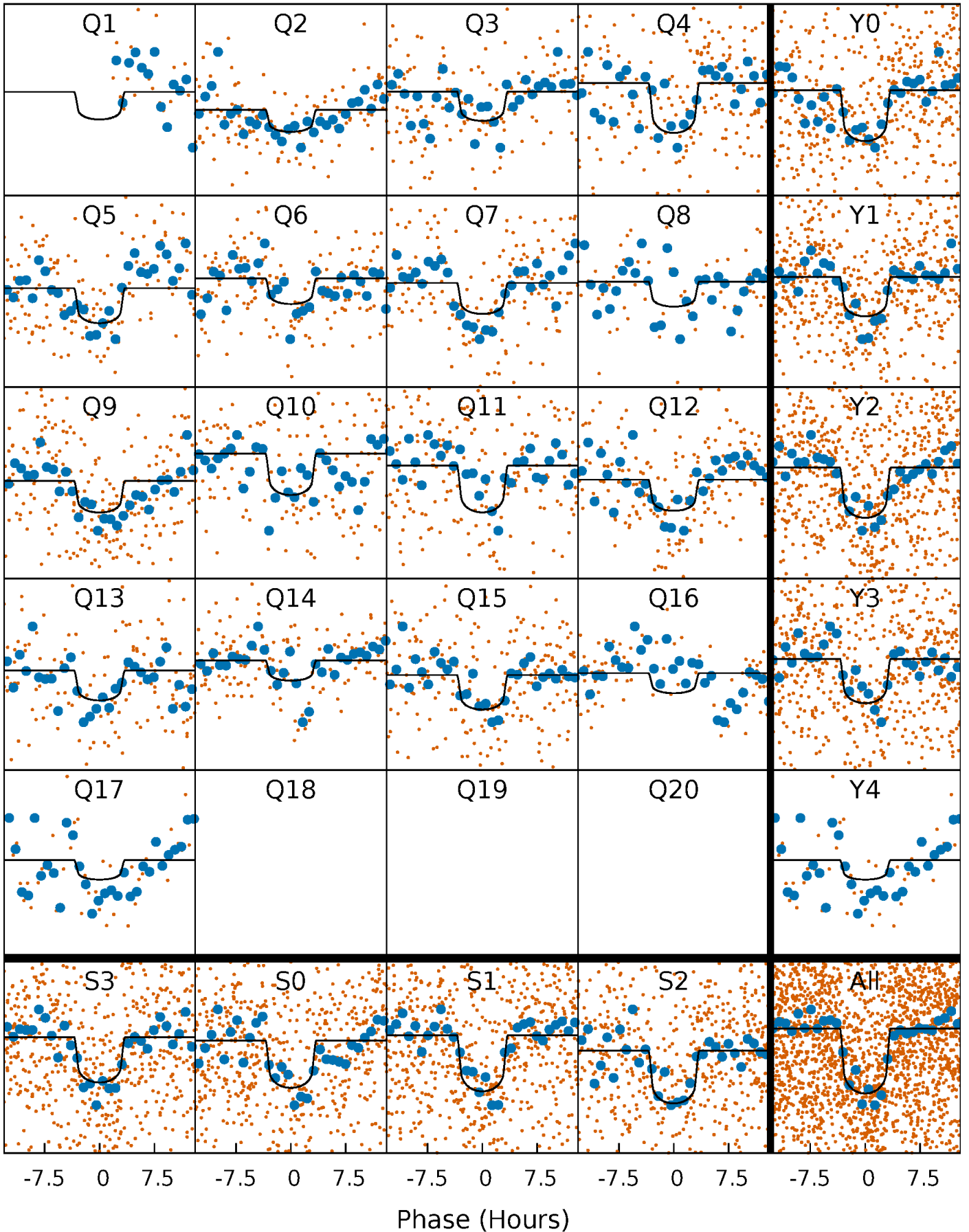
PDC Quarter-Phased Transit Curves

TCE 005880320-03 P= 20.496576 Days $T_0=147.455633$ (BKJD)



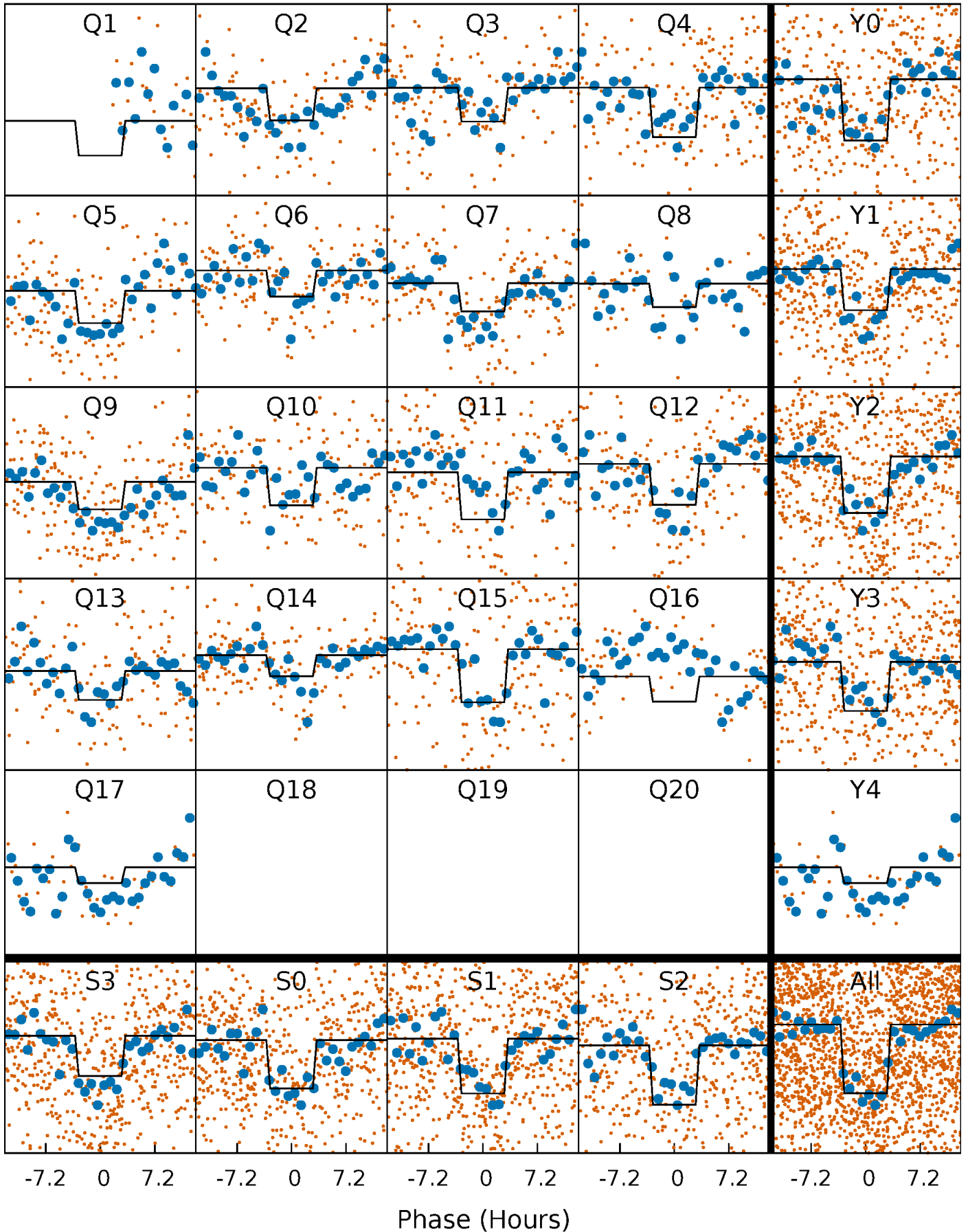
DV Quarter-Phased Transit Curves

TCE 005880320-03 P= 20.496576 Days $T_0=147.455633$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

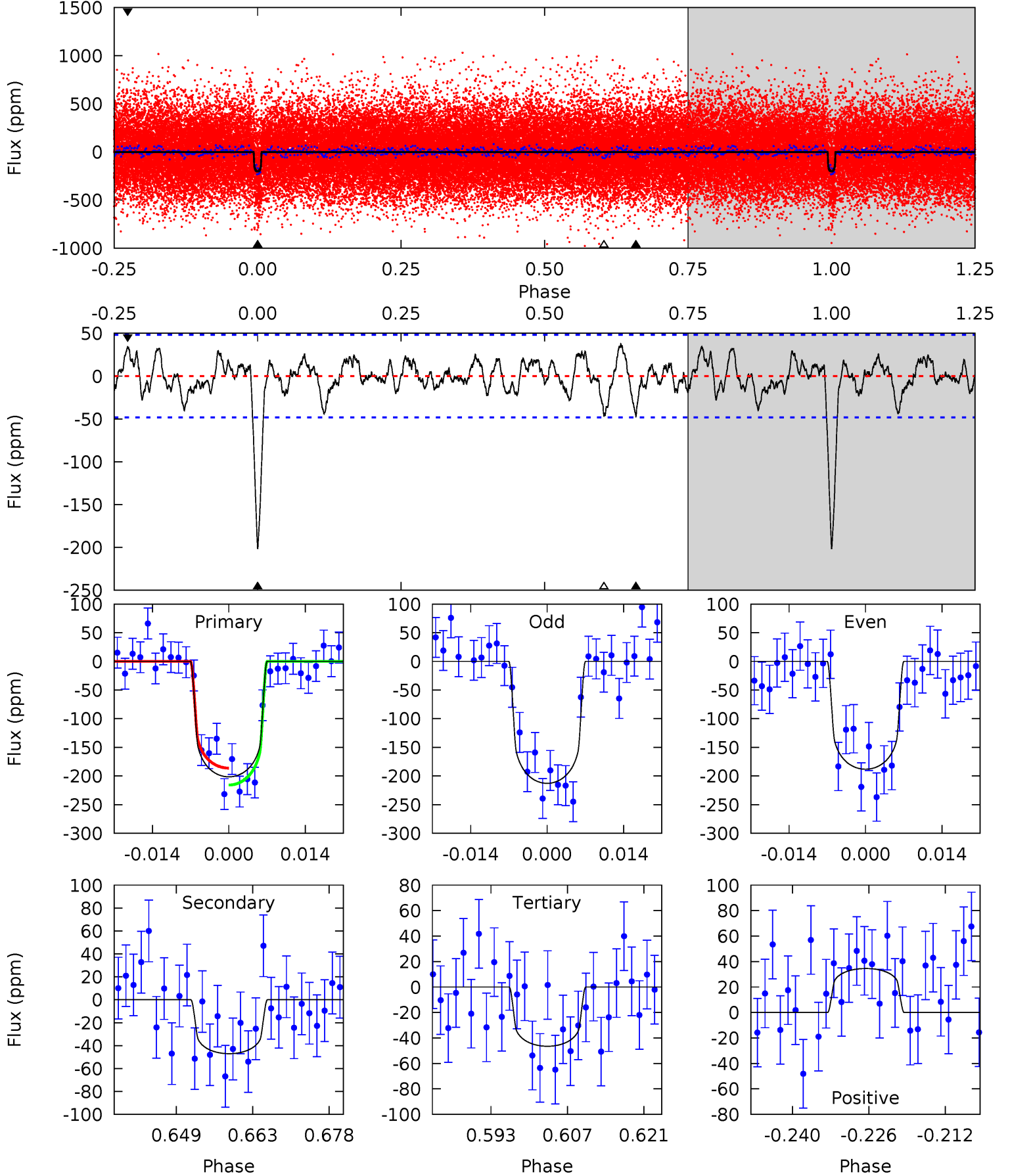
TCE 005880320-03 P= 20.496412 Days $T_0=147.462192$ (BKJD)



DV Model-Shift Uniqueness Test

005880320-03, P = 20.496576 Days, E = 126.959057 Days

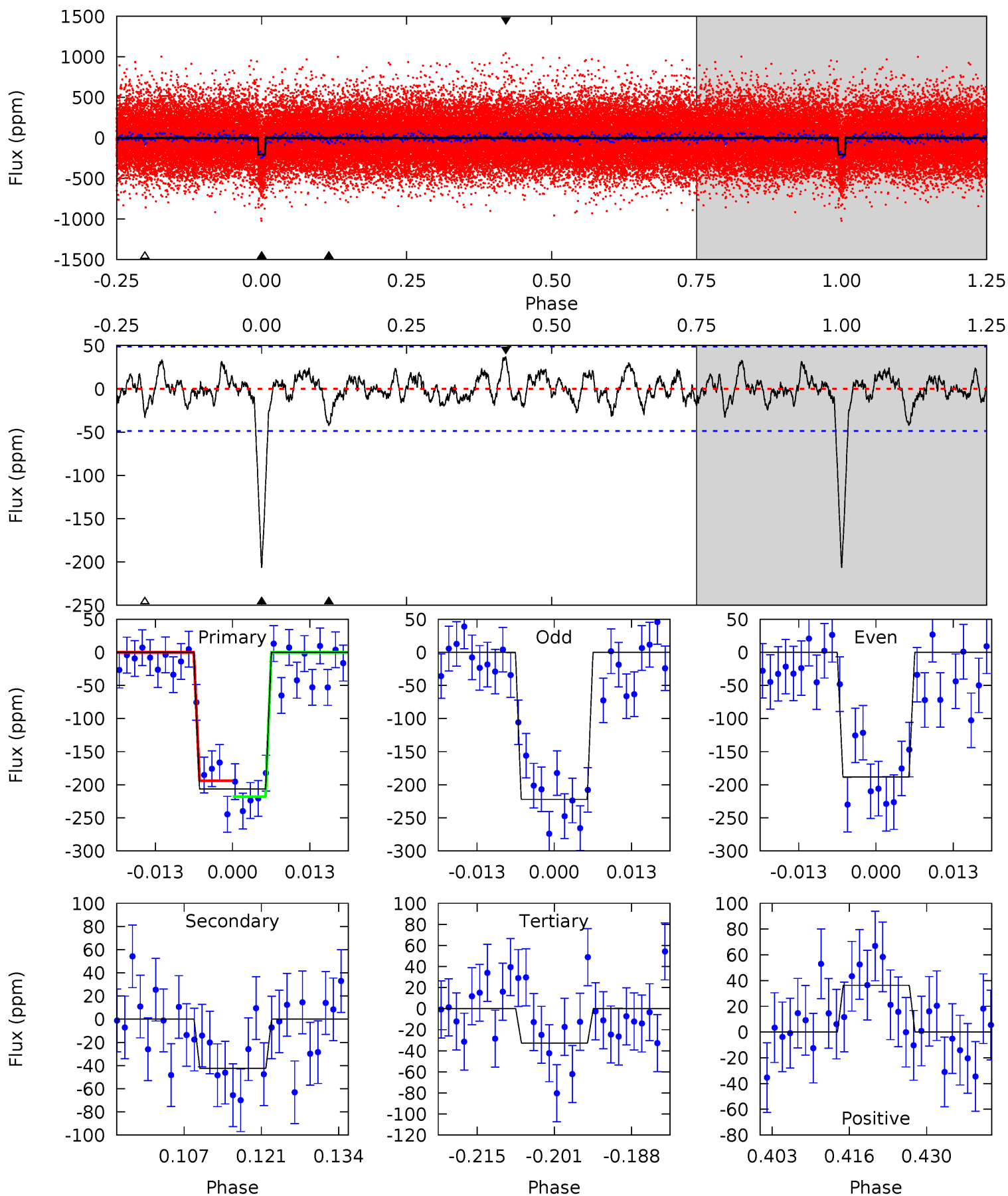
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.7	4.83	4.78	3.55	4.96	2.45	1.55	15.9	17.1	0.05	1.28	1.26	0.84	0.16	1.51



Alt Model-Shift Uniqueness Test

005880320-03, P = 20.496412 Days, E = 126.965780 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.1	4.34	3.34	3.70	4.97	2.47	1.27	17.7	17.4	1.00	0.63	1.72	0.91	0.15	1.24



Stellar Parameters For KIC 005880320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6021^{+120}_{-120}	$4.093^{+0.195}_{-0.105}$	$-0.340^{+0.150}_{-0.150}$	$1.458^{+0.226}_{-0.339}$	$0.960^{+0.088}_{-0.080}$	$0.436^{+0.451}_{-0.139}$
	+2%/-2%	+5%/-3%	+44%/-44%	+16%/-23%	+9%/-8%	+103%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005880320-03 / KOI 1060.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-47 ± 10	$2.19^{+0.77}_{-0.76}$	1169^{+61}_{-74}	4392^{+751}_{-478}	113^{+145}_{-56}
Alt.	-43 ± 10	$2.22^{+0.81}_{-0.72}$	1175^{+58}_{-69}	4311^{+779}_{-470}	100^{+124}_{-49}

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

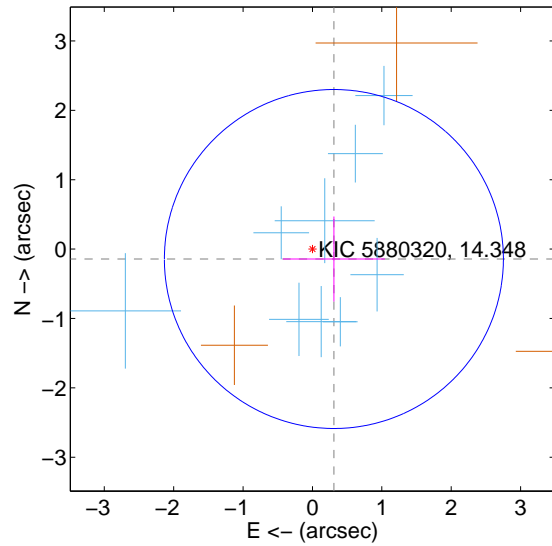
Supplemental centroid analysis for 005880320-03. Kepler magnitude: 14.35. Transit SNR 11.46

There are 9 quarters with good PRF difference image offsets

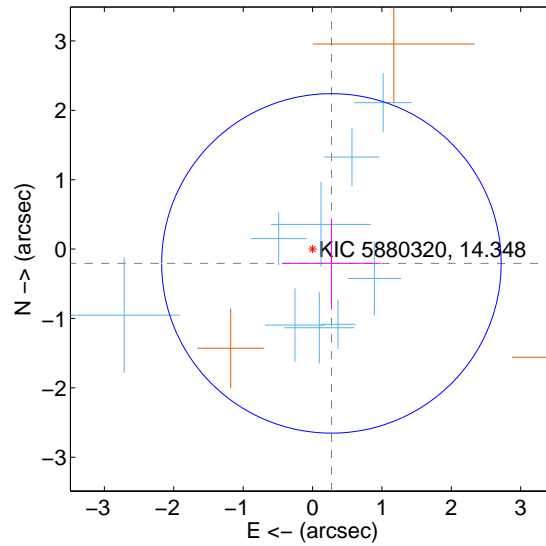
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.340 ± 0.814	0.42	-0.309 ± 0.735	-0.143 ± 0.612
PRF-fit source offset from KIC position	0.342 ± 0.815	0.42	-0.272 ± 0.712	-0.206 ± 0.645
photometric centroid source offset	0.72 ± 0.73	0.99	0.71 ± 0.73	0.13 ± 0.66

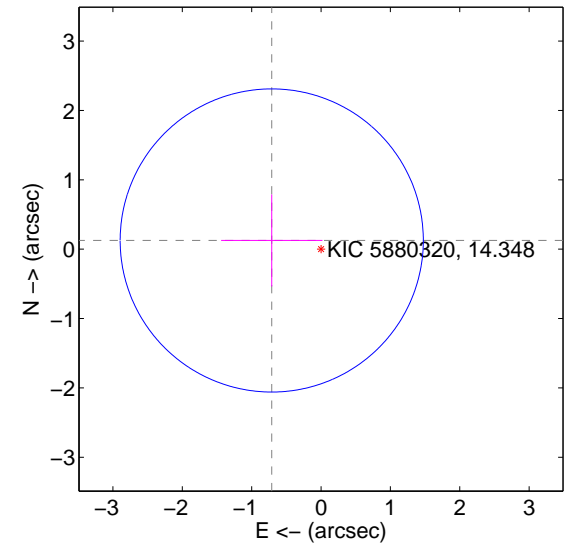
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

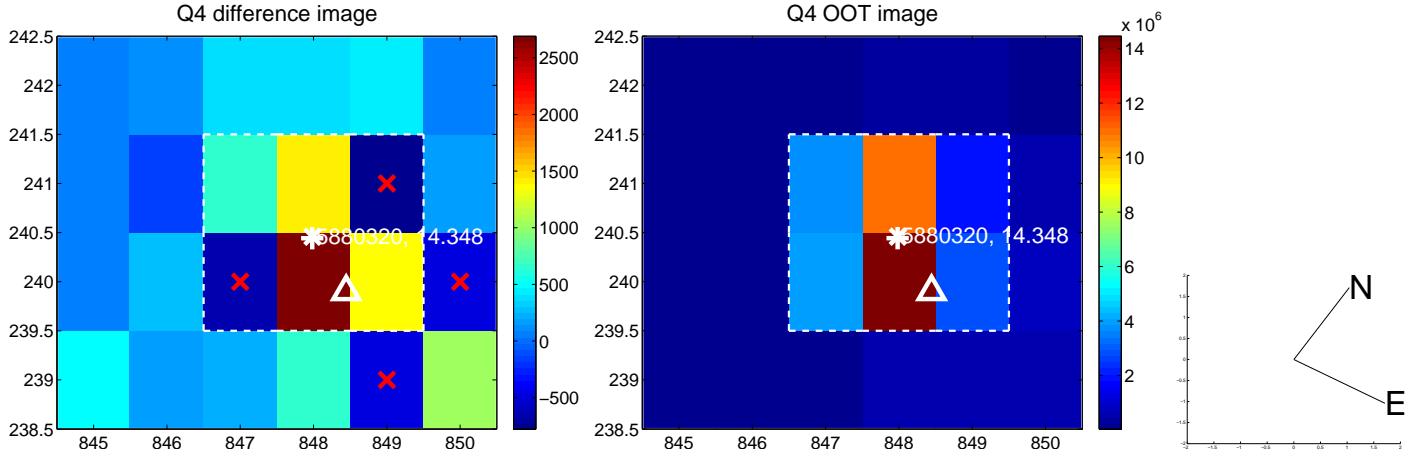
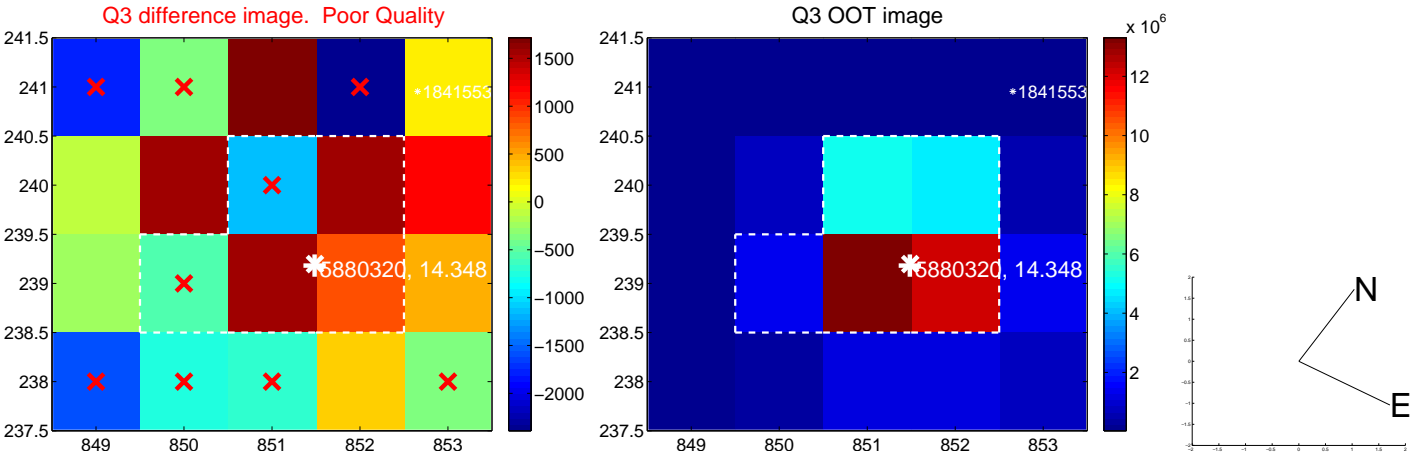
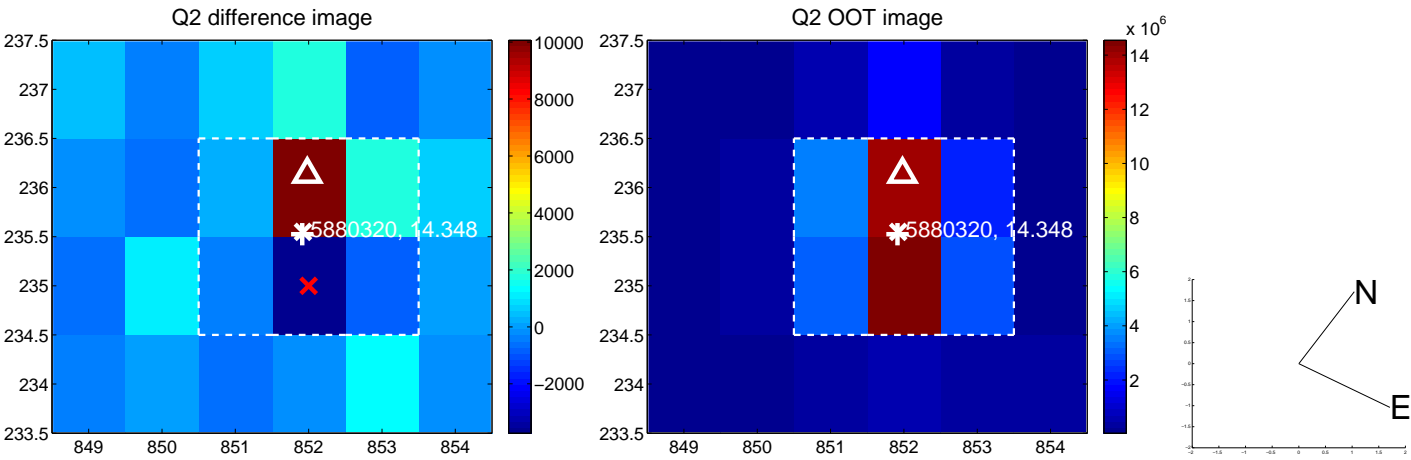
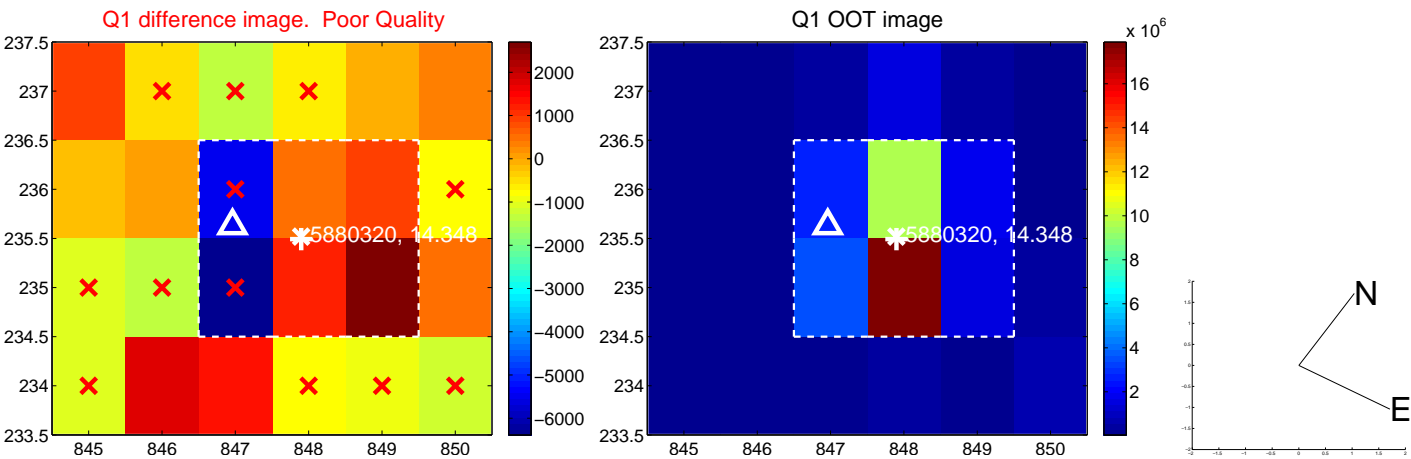


offset from photometric centroids

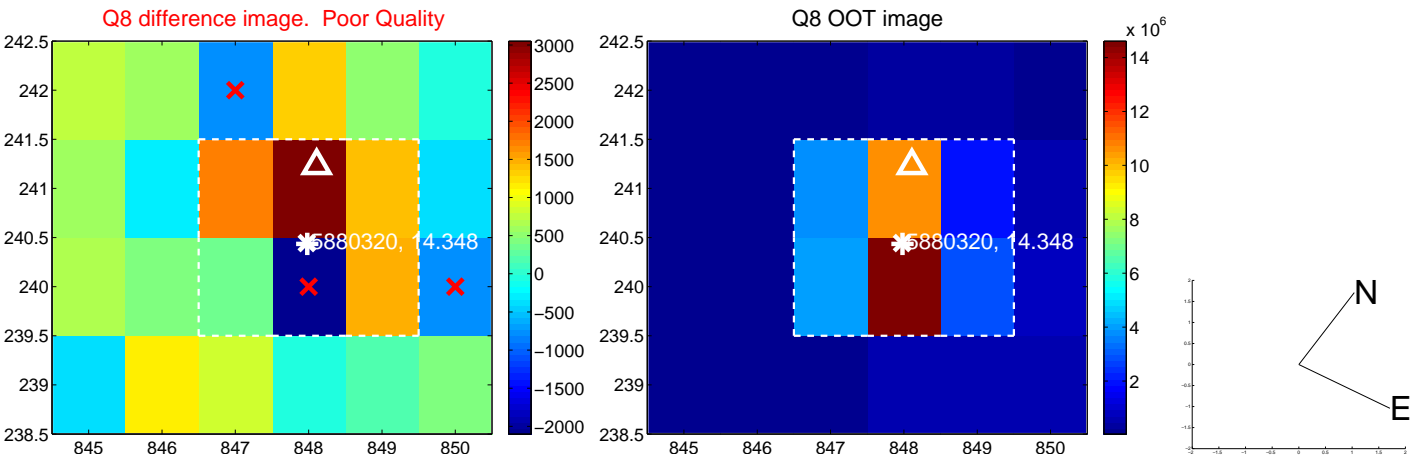
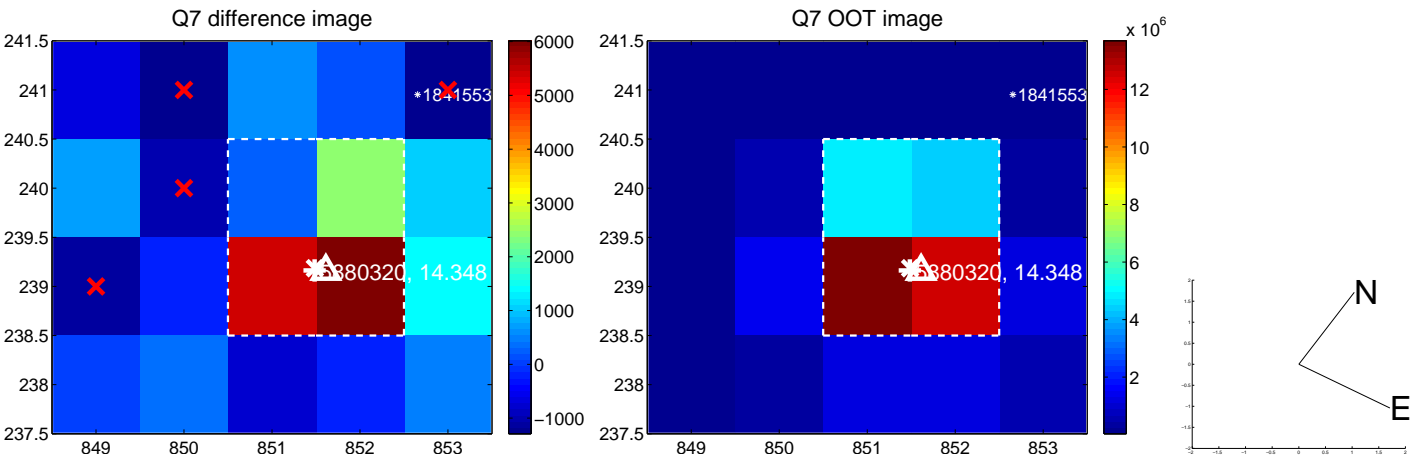
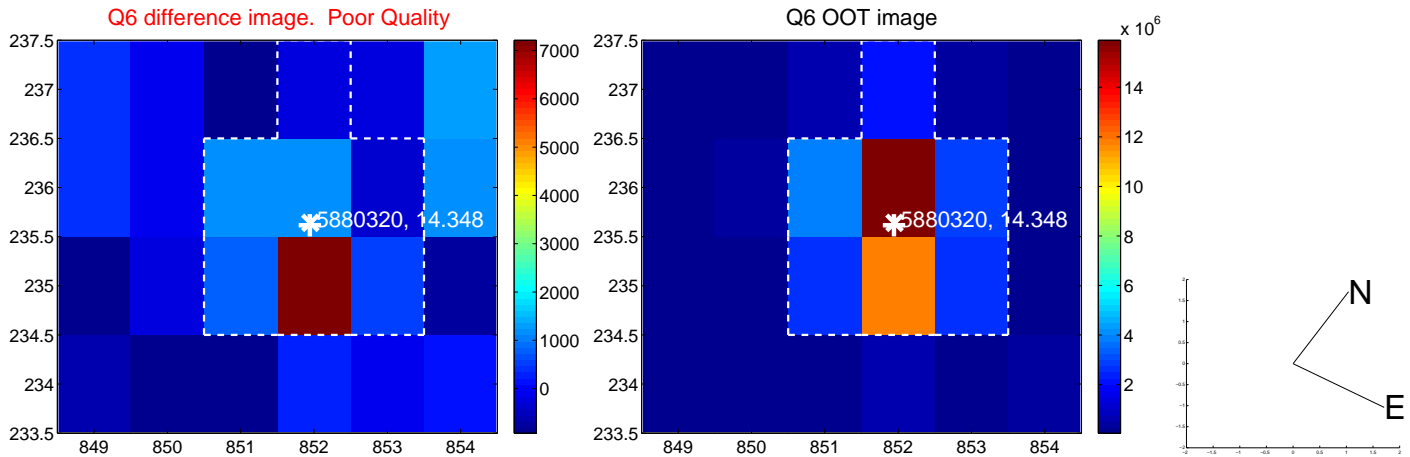
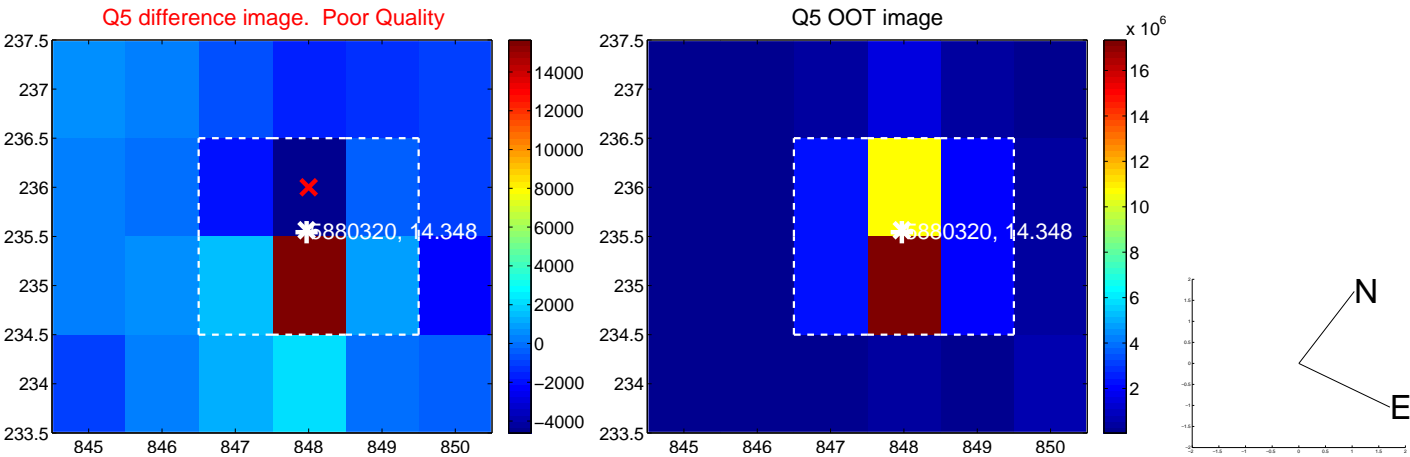


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

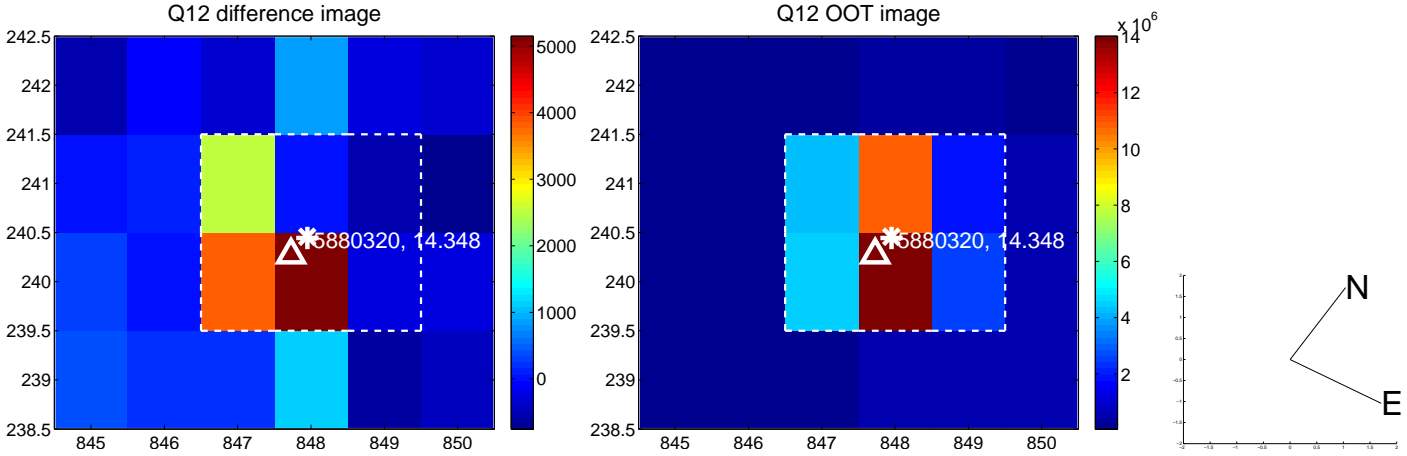
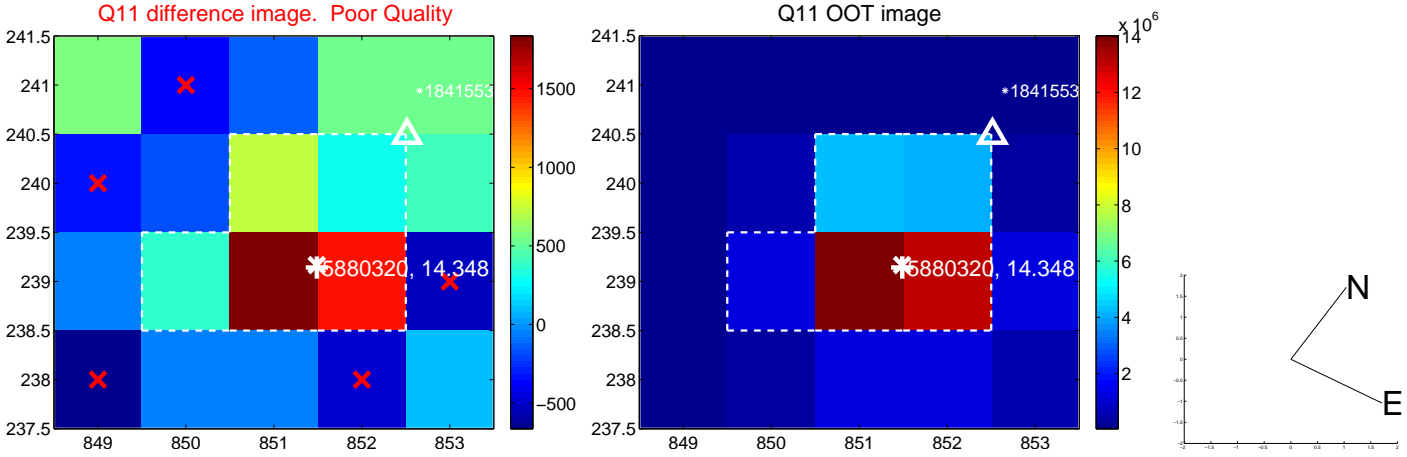
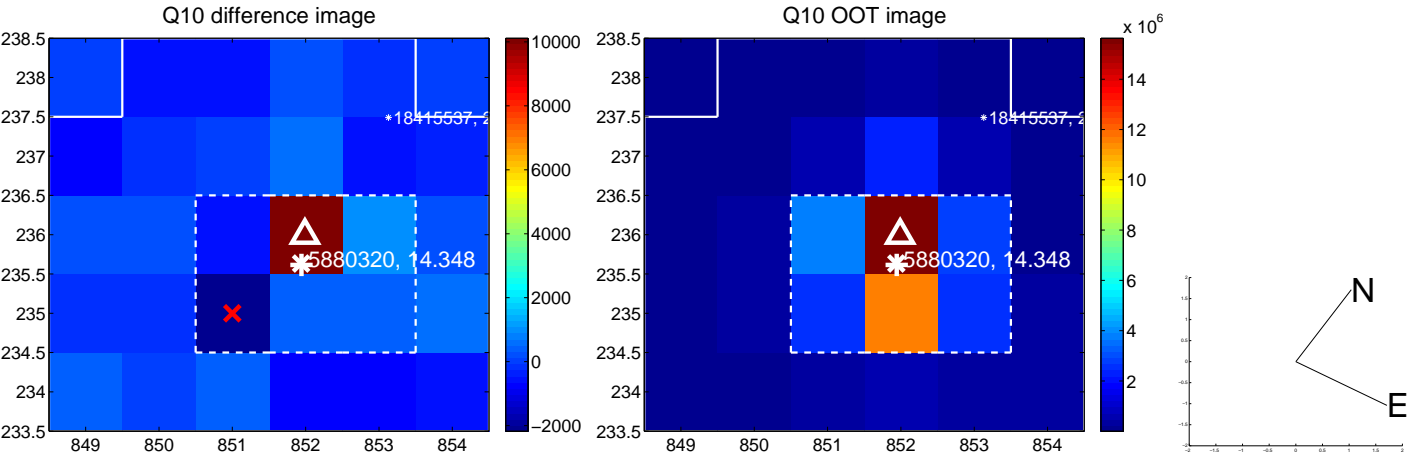
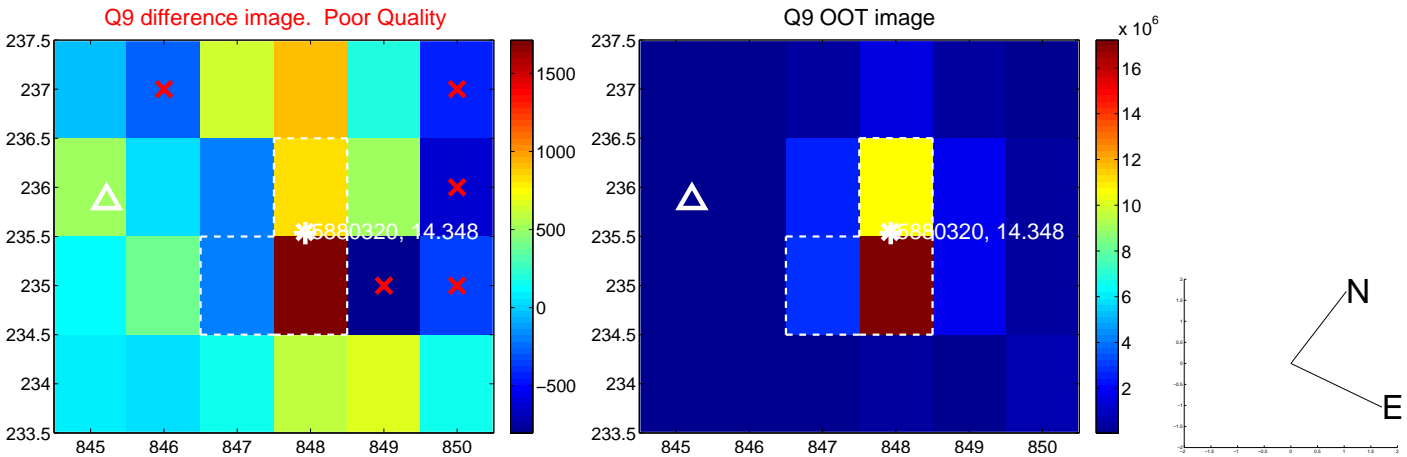
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



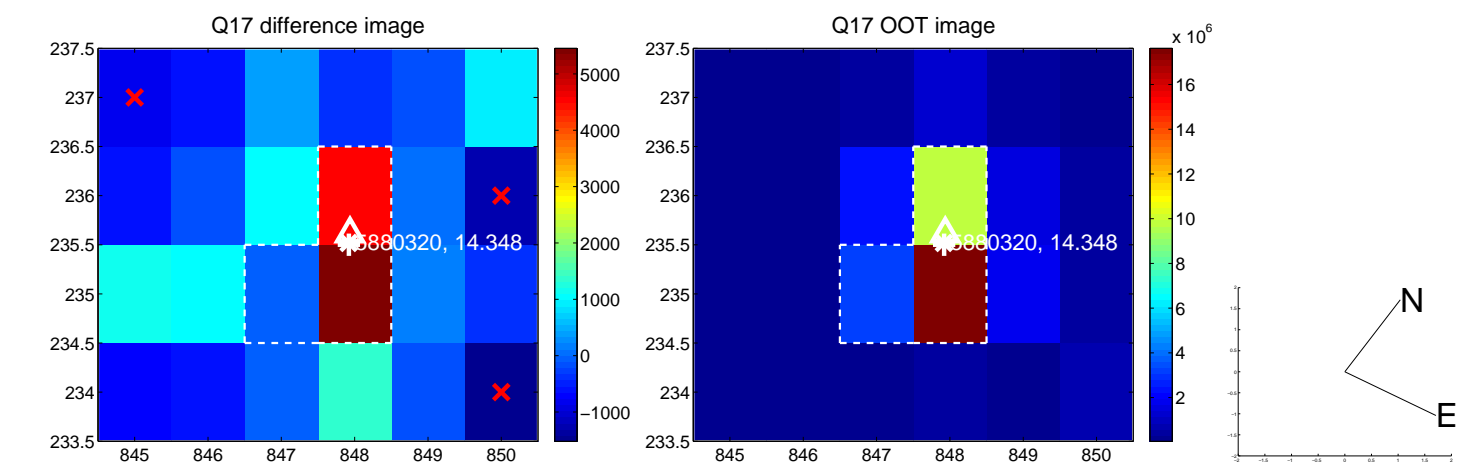
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



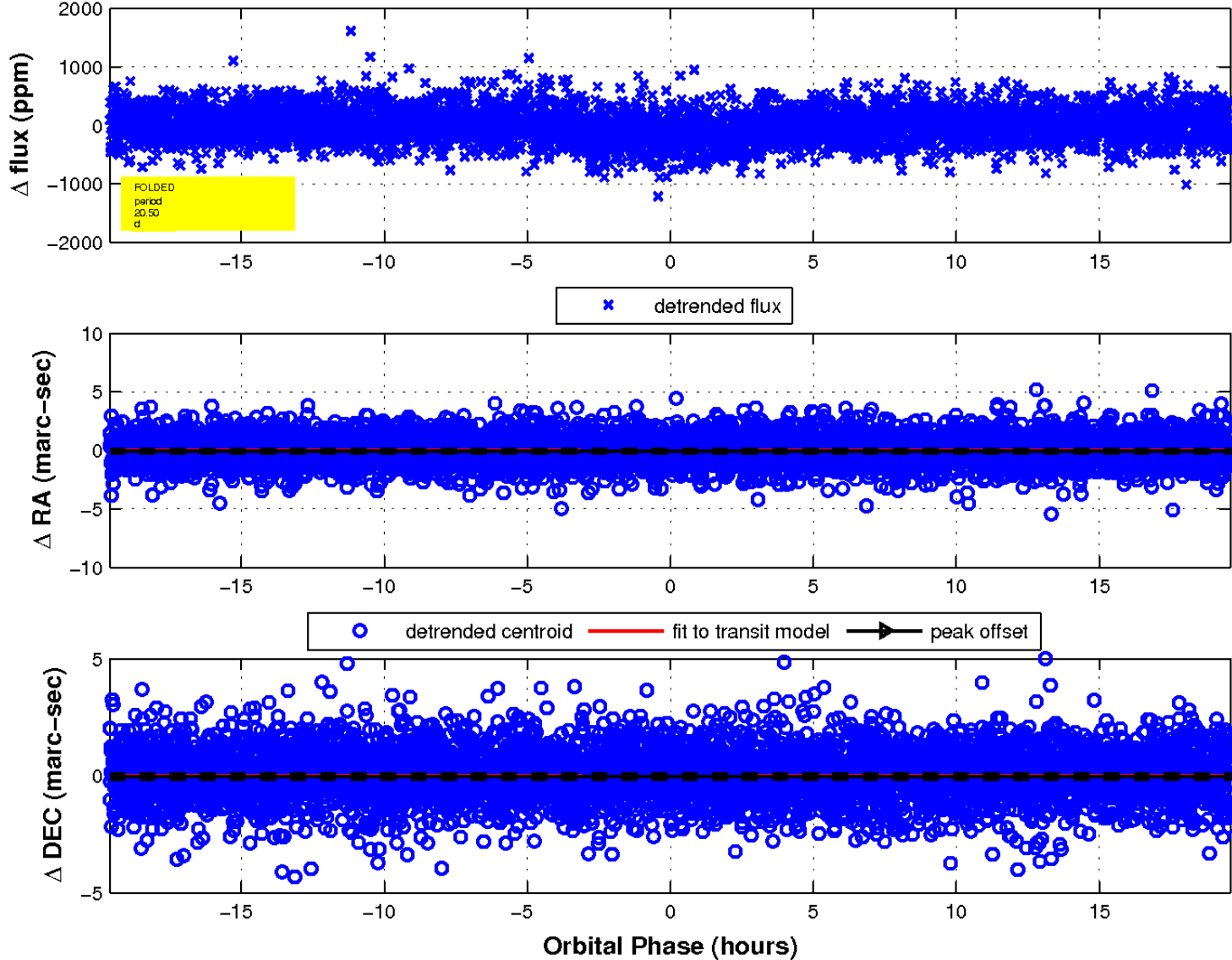
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

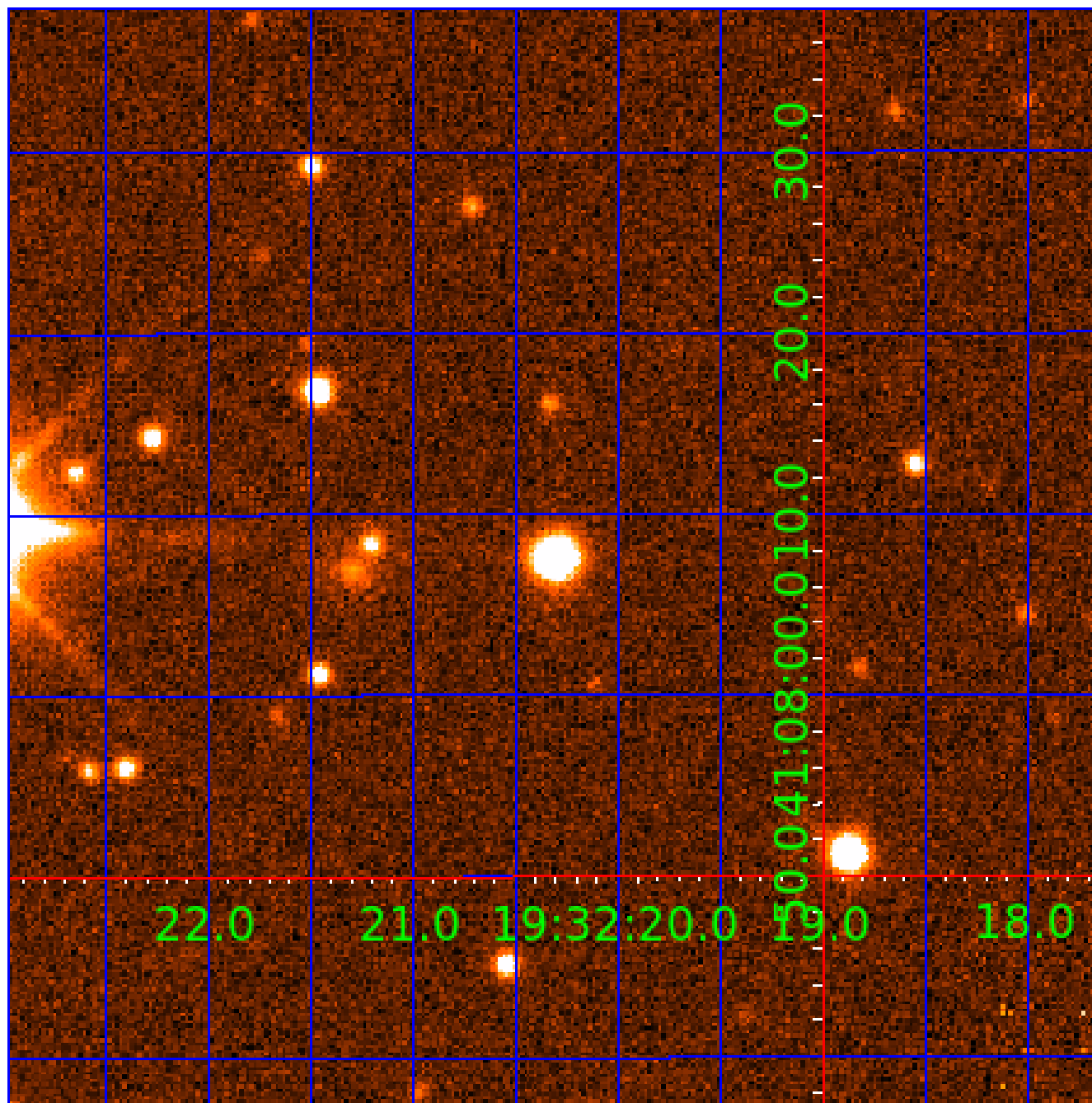


fluxWeightedCentroids, Planet 3 of 5



UKIRT Image

Declination



KIC 005880320

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})
005880320-01	OBS	1060.01	12.109728	140.212614	246.2	6.074	21.1	21.4	1.46	6021	2.71	241.30
005880320-02	OBS	1060.02	4.757937	132.938323	127.1	4.762	16.1	17.2	1.46	6021	1.89	838.52
005880320-03	OBS	1060.03	20.496576	147.455633	193.5	6.532	10.6	11.5	1.46	6021	2.24	119.63
005880320-04	OBS	1060.04	8.193480	138.999175	106.2	5.382	9.7	10.5	1.46	6021	1.88	406.24
005880320-05	OBS	No	387.599534	147.307459	411.9	12.610	9.7	5.0	1.46	6021	3.24	2.37

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005880320-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-02	OBS	PC	0.76	0	0	0	0	NO_COMMENT
005880320-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-04	OBS	PC	0.88	0	0	0	0	NO_COMMENT
005880320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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 005880320-04

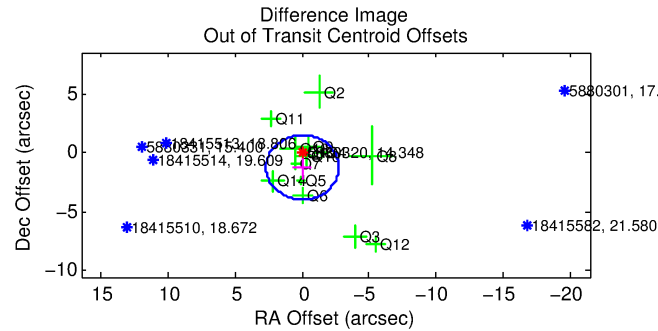
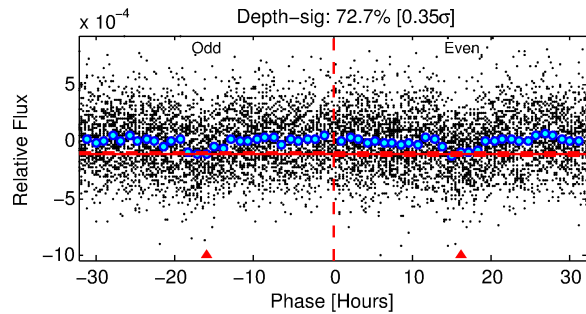
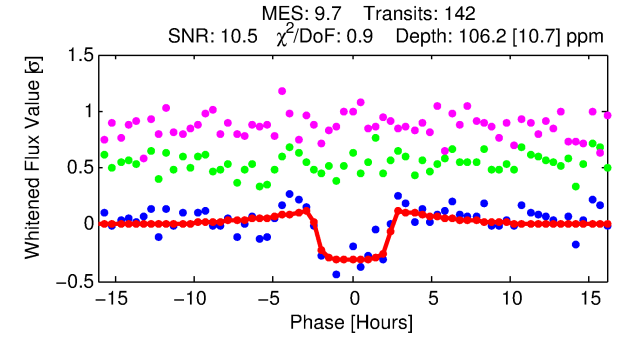
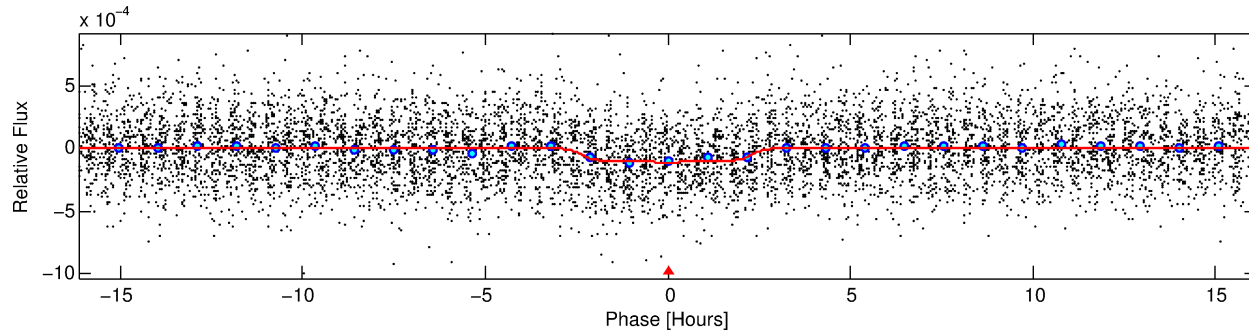
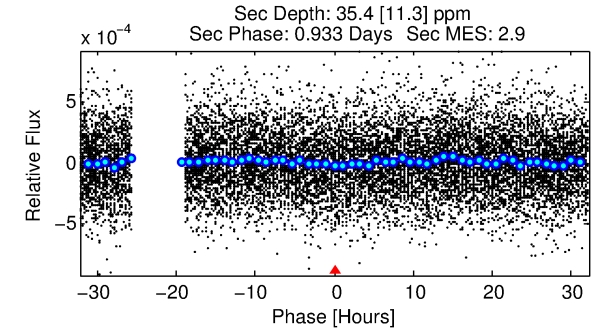
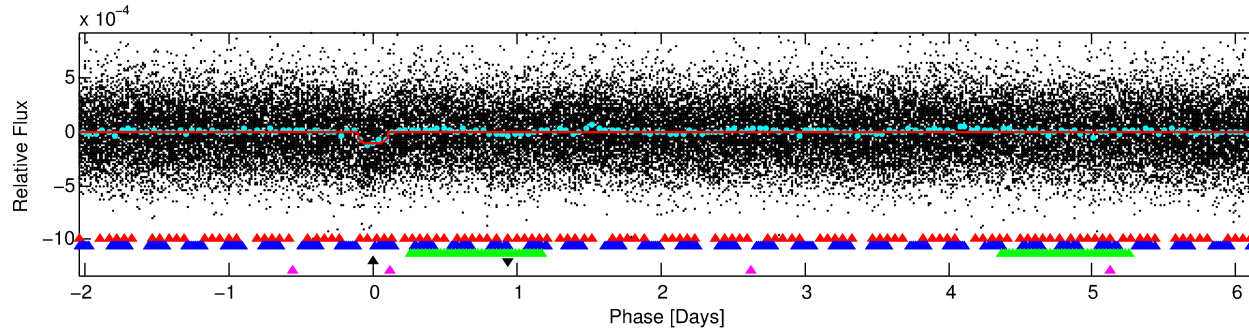
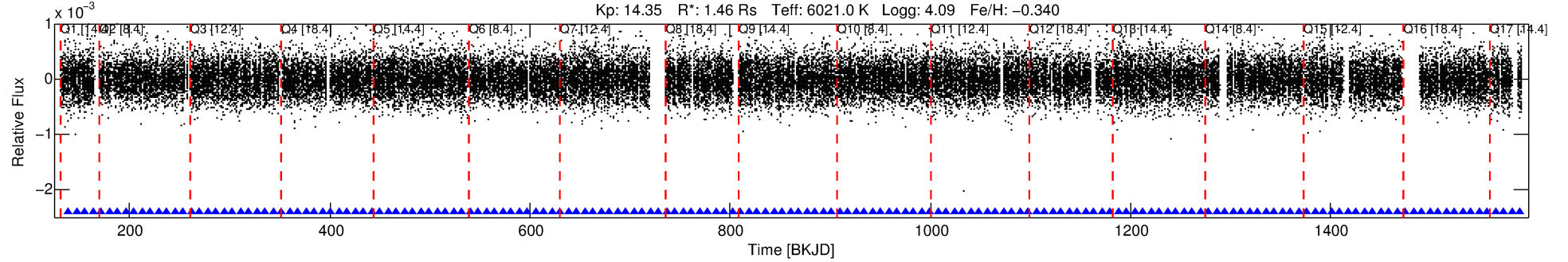
No Significant Match Found

DV One-Page Summary

KIC: 5880320 Candidate: 4 of 5 Period: 8.193 d

KOI: K01060.04 Corr: 0.965

Kp: 14.35 R*: 1.46 Rs Teff: 6021.0 K Logg: 4.09 Fe/H: -0.340



DV Fit Results:

Period = 8.19348 [0.00008] d
Epoch = 138.9992 [0.0079] BKJD
Rp/R* = 0.0118 [0.0014]
a/R* = 4.08 [2.30]
b = 0.95 [0.06]
Seff = 406.24 [140.72]
Teq = 1145 [99] K
Rp = 1.88 [0.49] Re
a = 0.0785 [0.0169] AU
Ag = 33.80 [17.72] [1.85σ]
Teffp = 4268 [437] K [6.98σ]

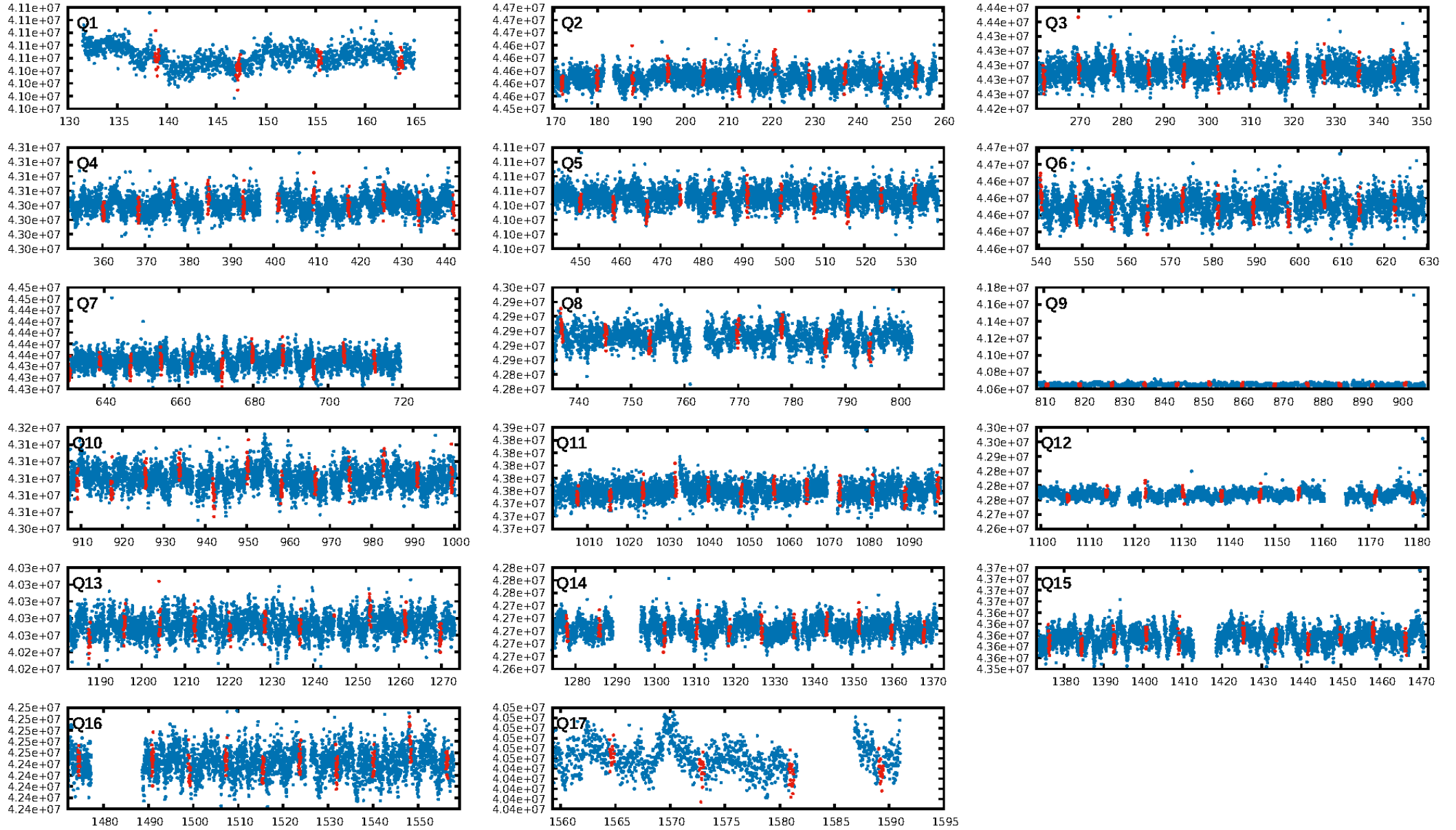
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.47σ]
LongPeriod-sig: 100.0% [11.58σ]
ModelChiSquare2-sig: 89.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.04e-21
RollingBand-fgt: 1.00 [136/136]
GhostDiagnostic-chr: 2.175
Centroid-sig: 50.1%
Centroid-so: 0.554 arcsec [0.62σ]
OotOffset-rm: 1.237 arcsec [1.37σ]
KicOffset-rm: 1.312 arcsec [1.67σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [17/17]

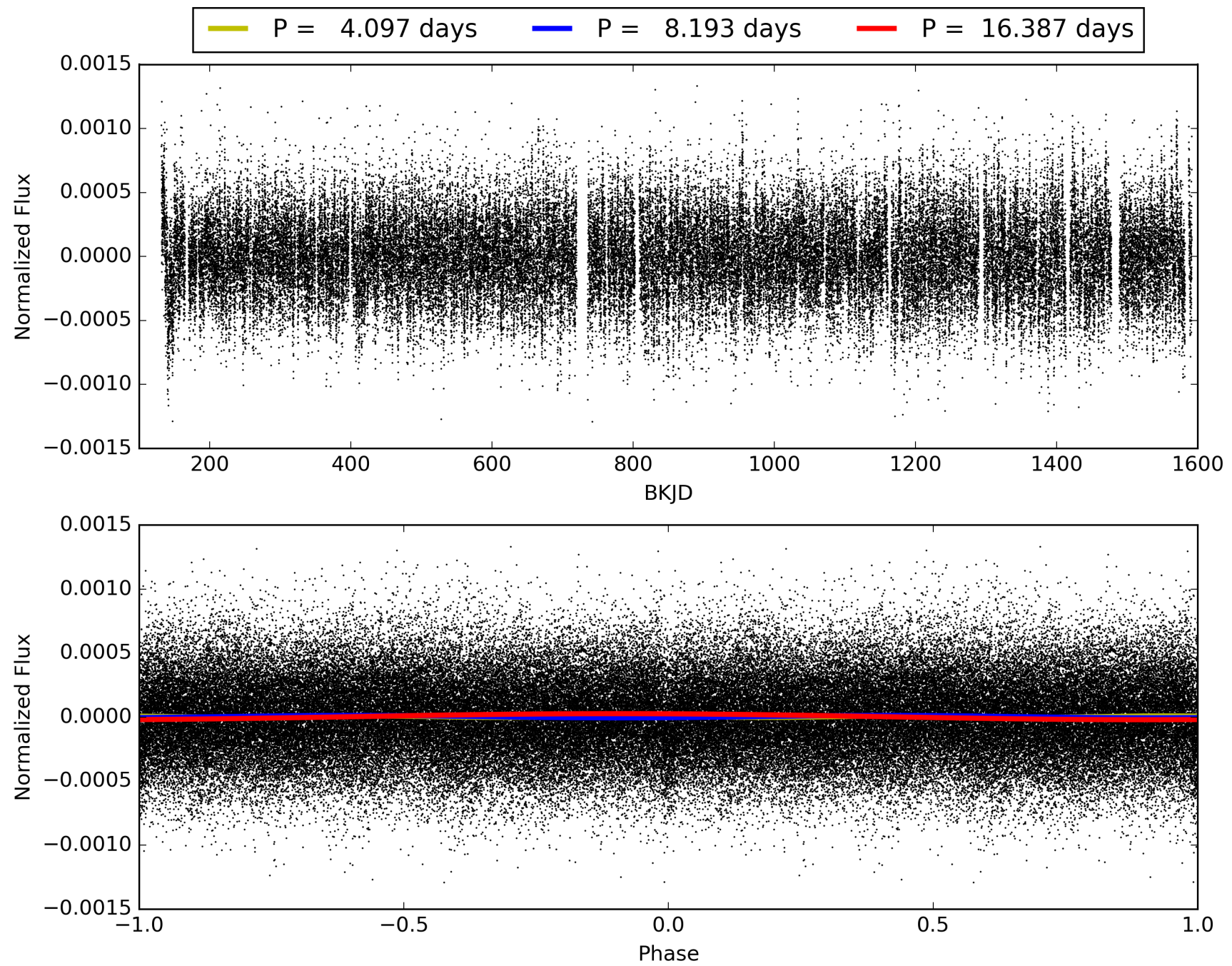
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:02:41 Z

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

TCE 005880320-04, PDC Light Curves

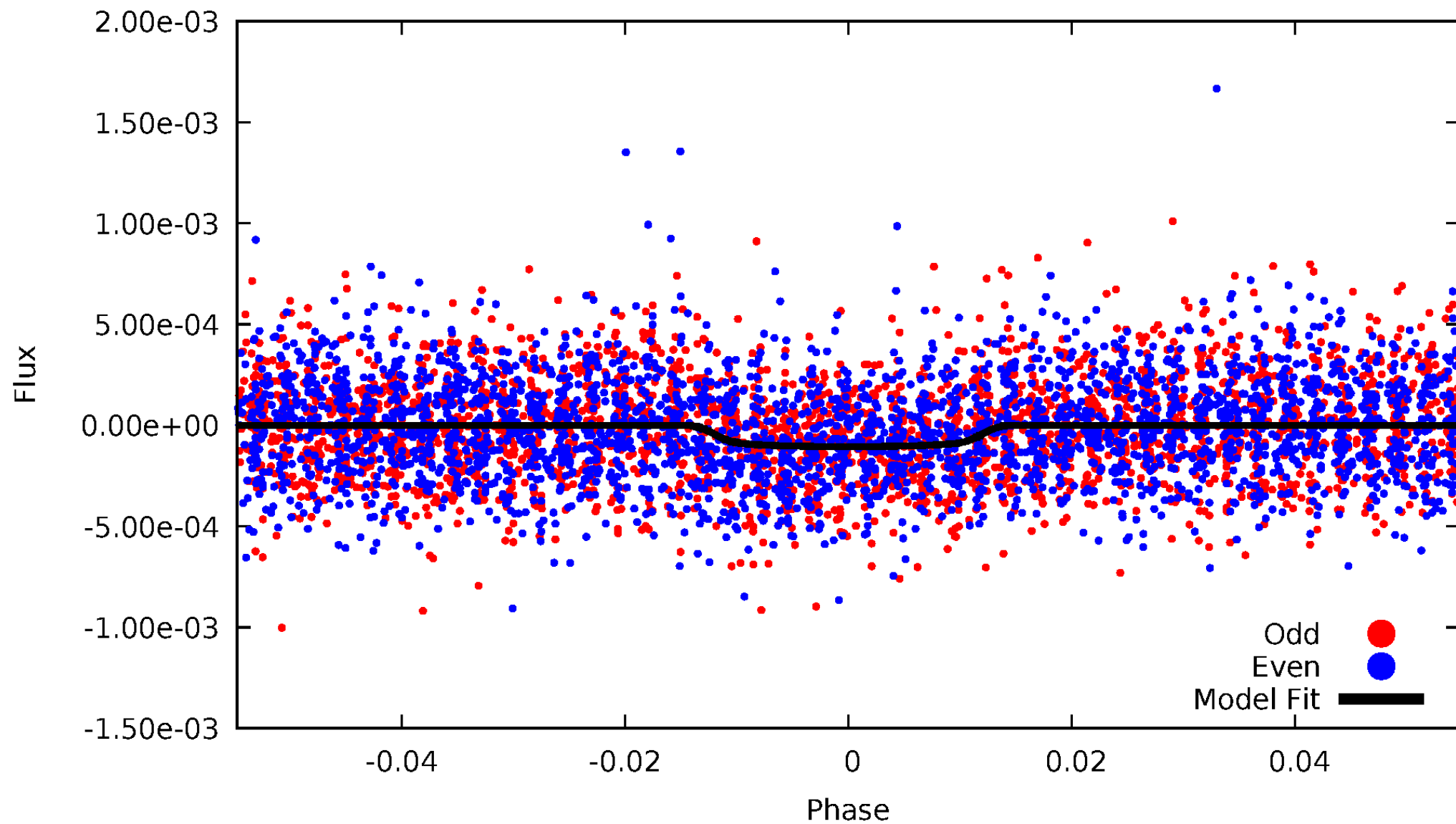


TCE 005880320-04



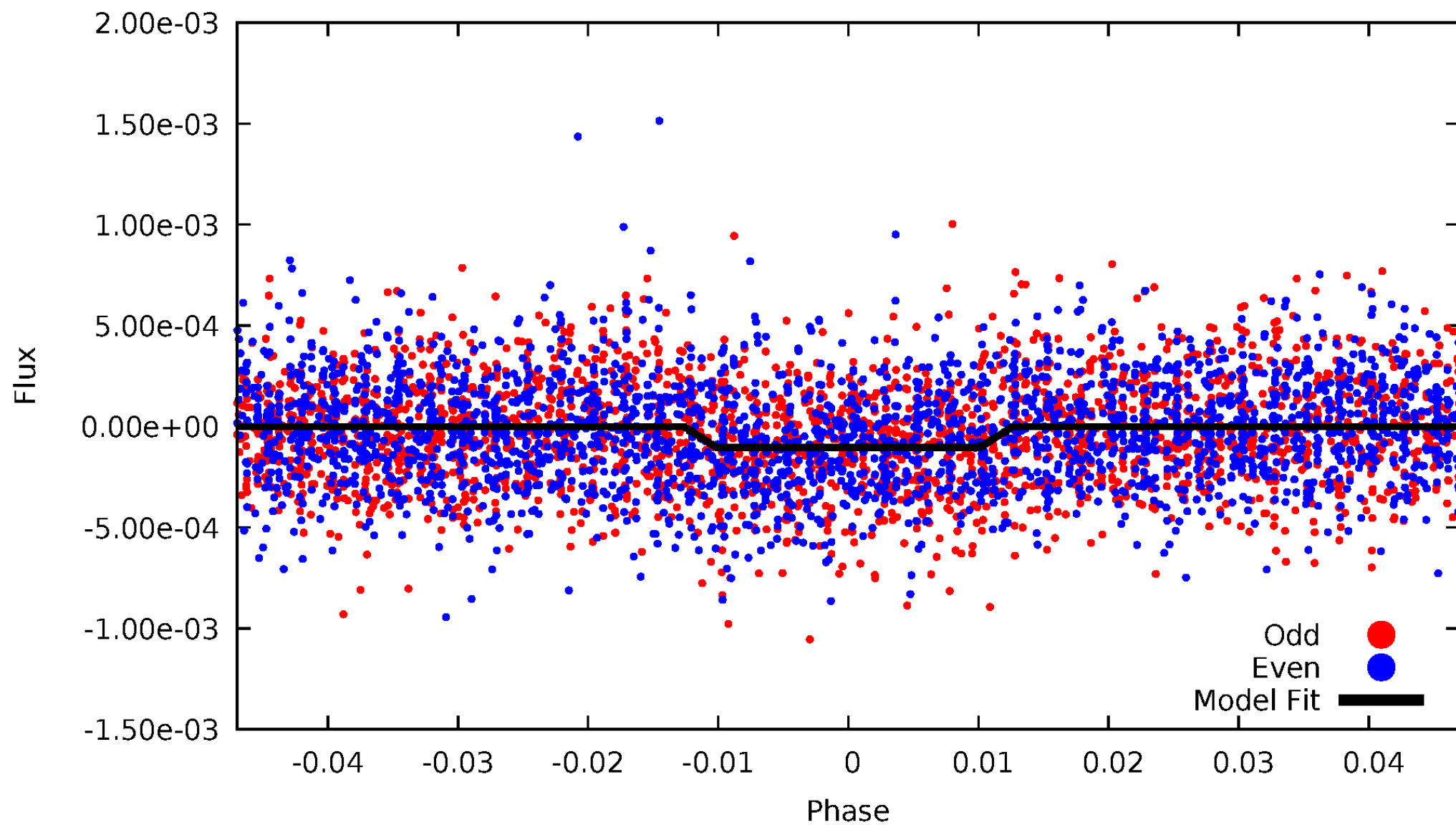
DV Odd/Even

TCE 005880320-04



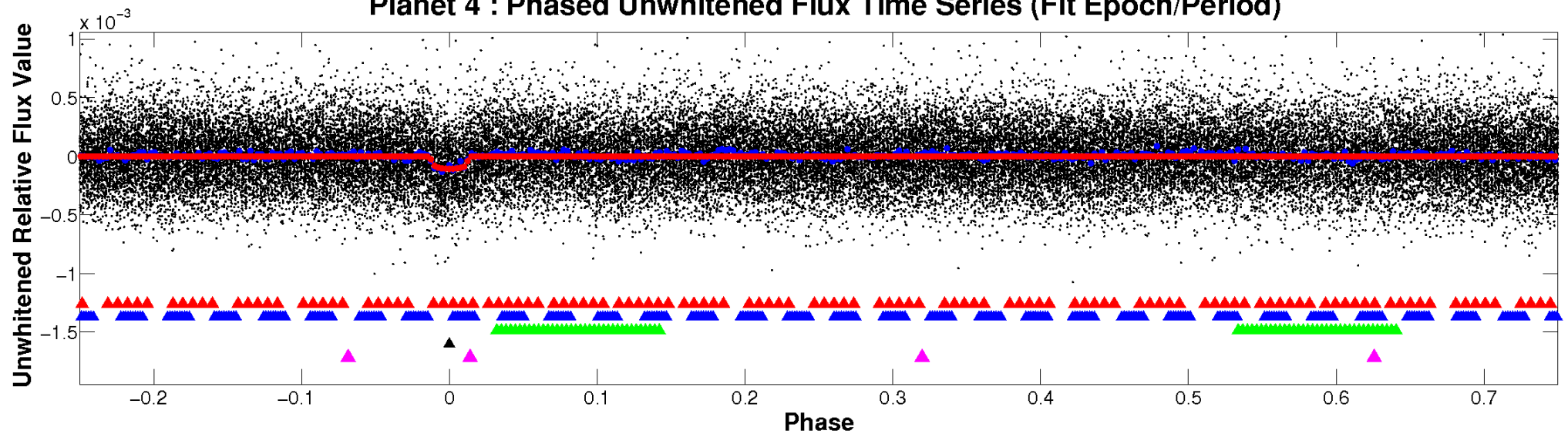
ALT Odd/Even

TCE 005880320-04

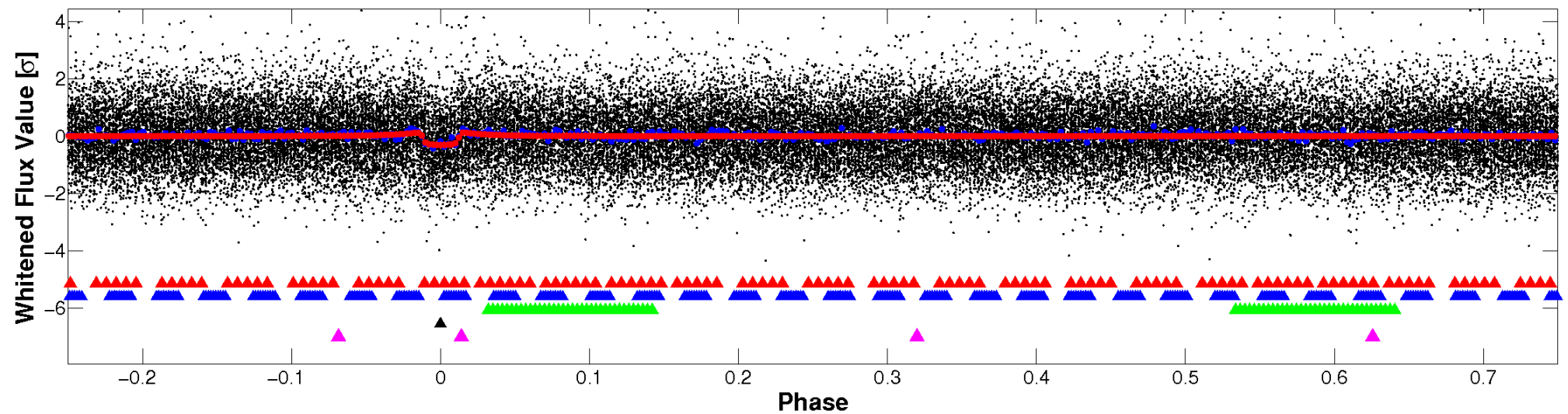


Non-Whitened Vs. Whitened Light Curve

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

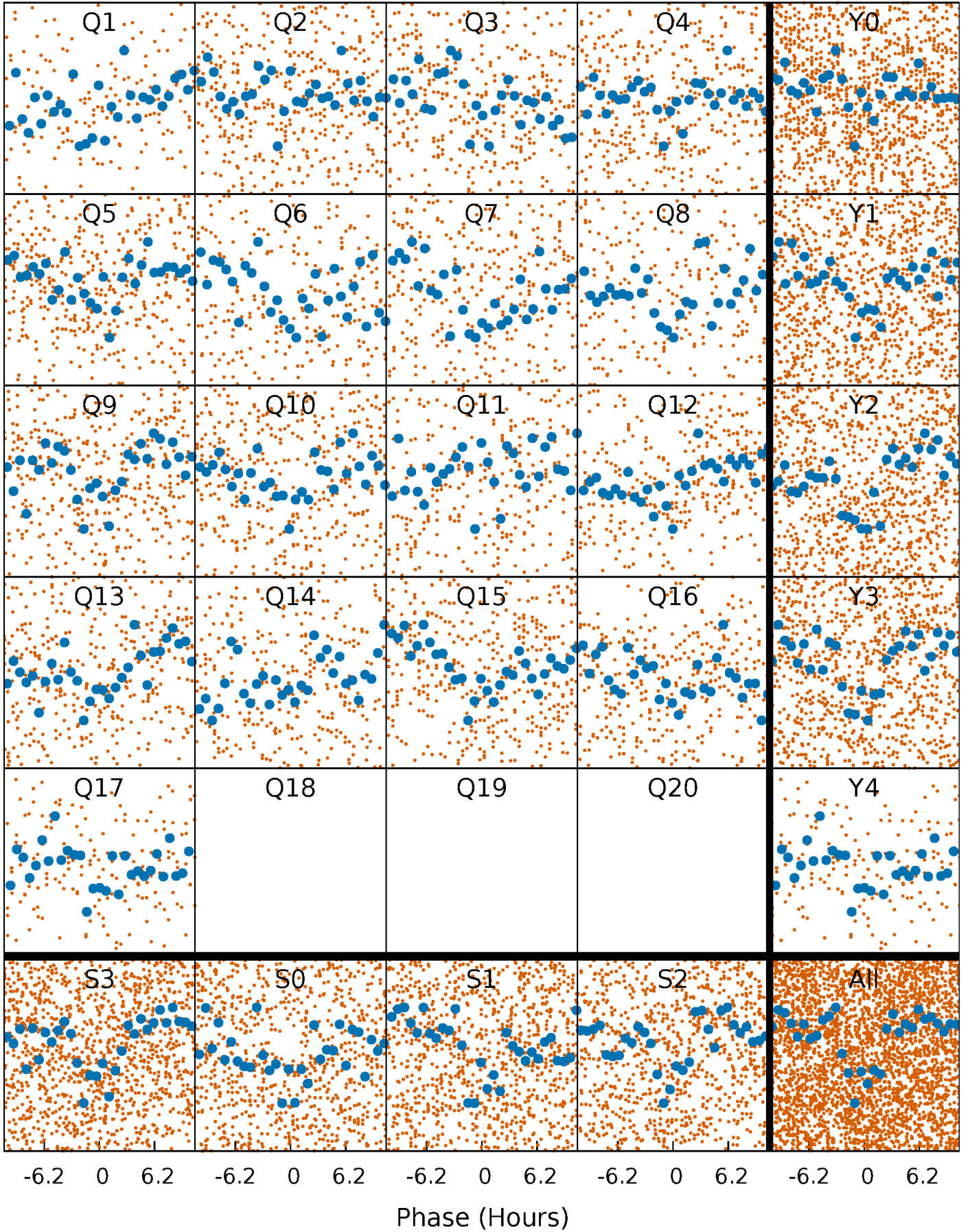


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



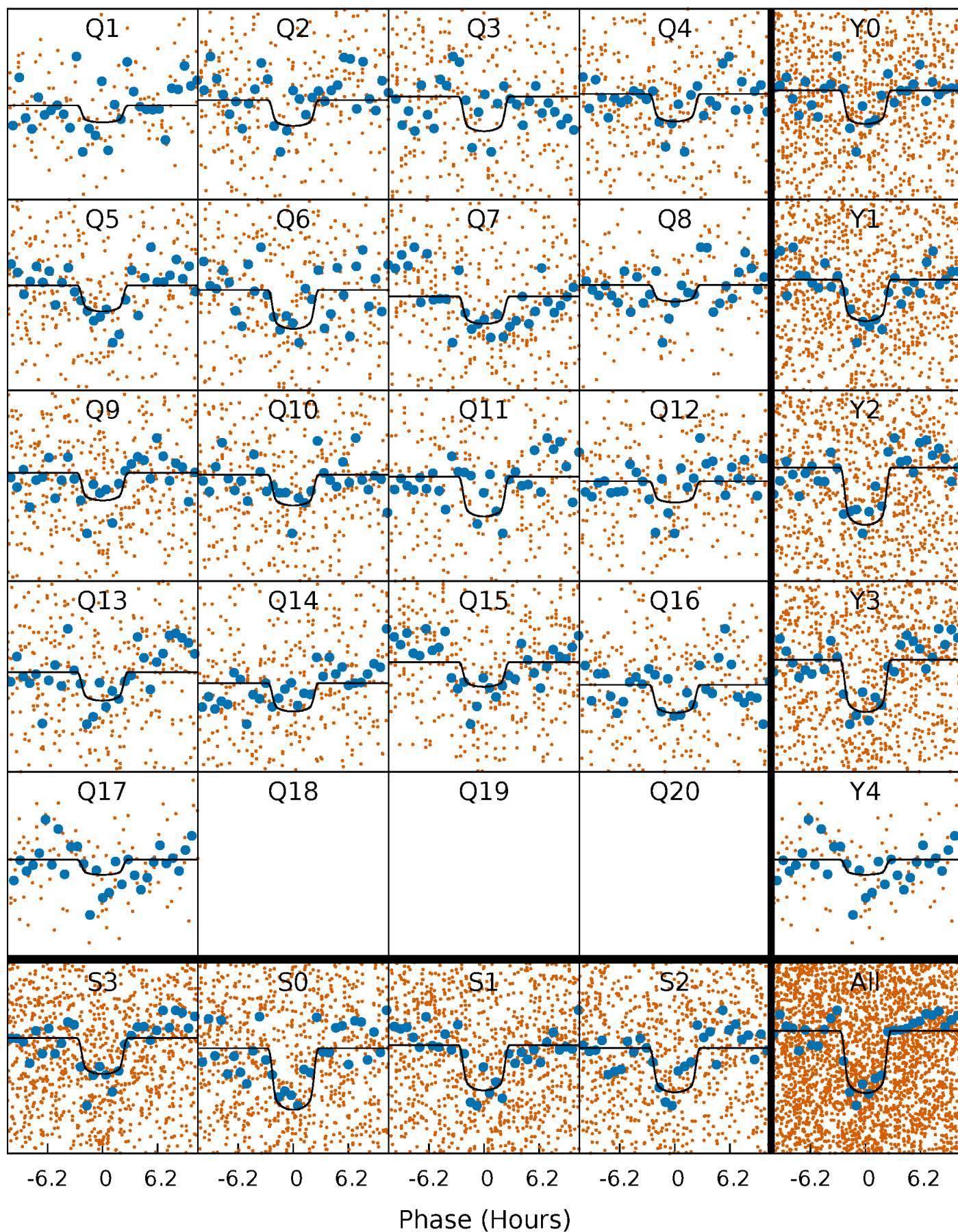
PDC Quarter-Phased Transit Curves

TCE 005880320-04 P= 8.193480 Days $T_0=138.999175$ (BKJD)



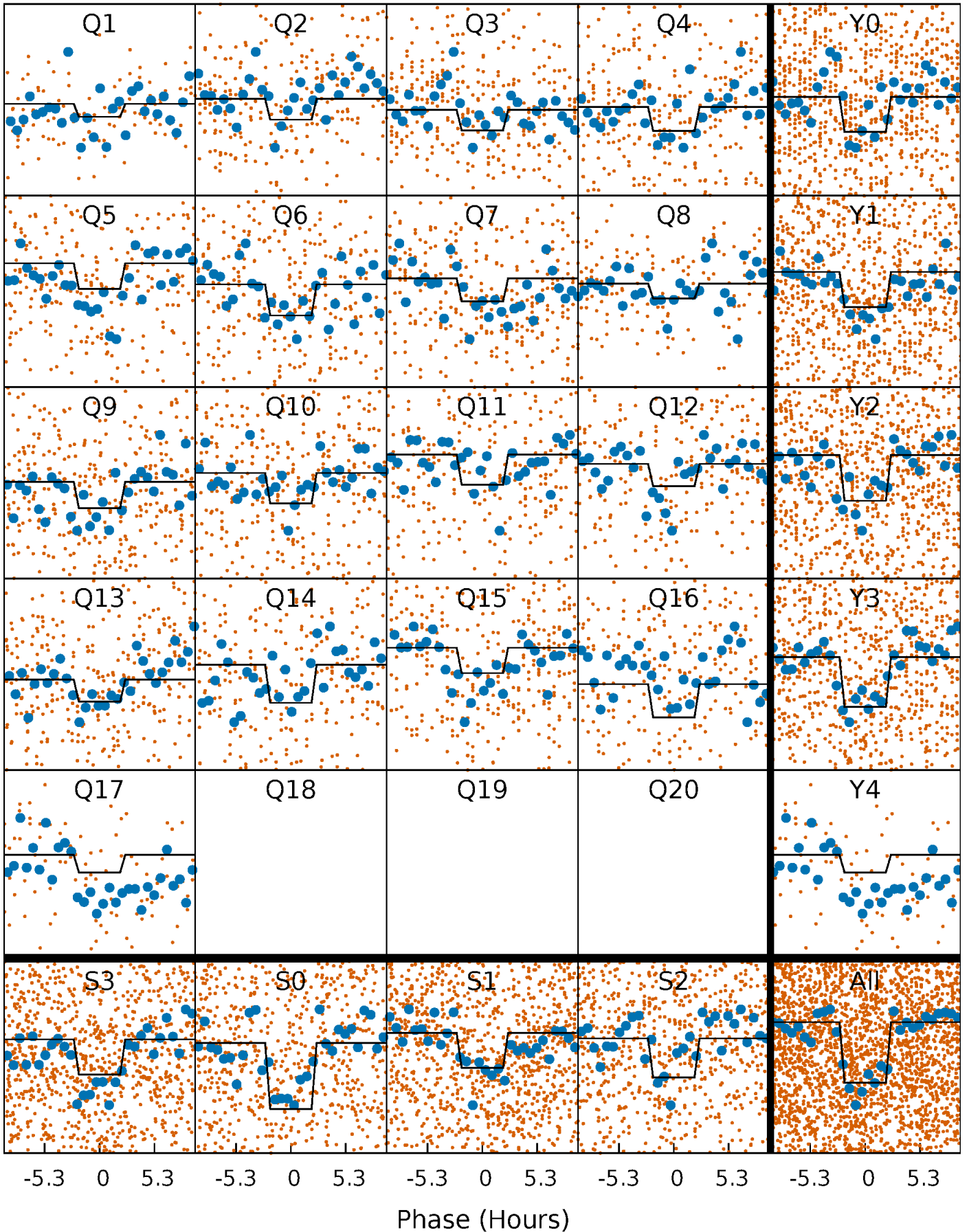
DV Quarter-Phased Transit Curves

TCE 005880320-04 $P = 8.193480$ Days $T_0 = 138.999175$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

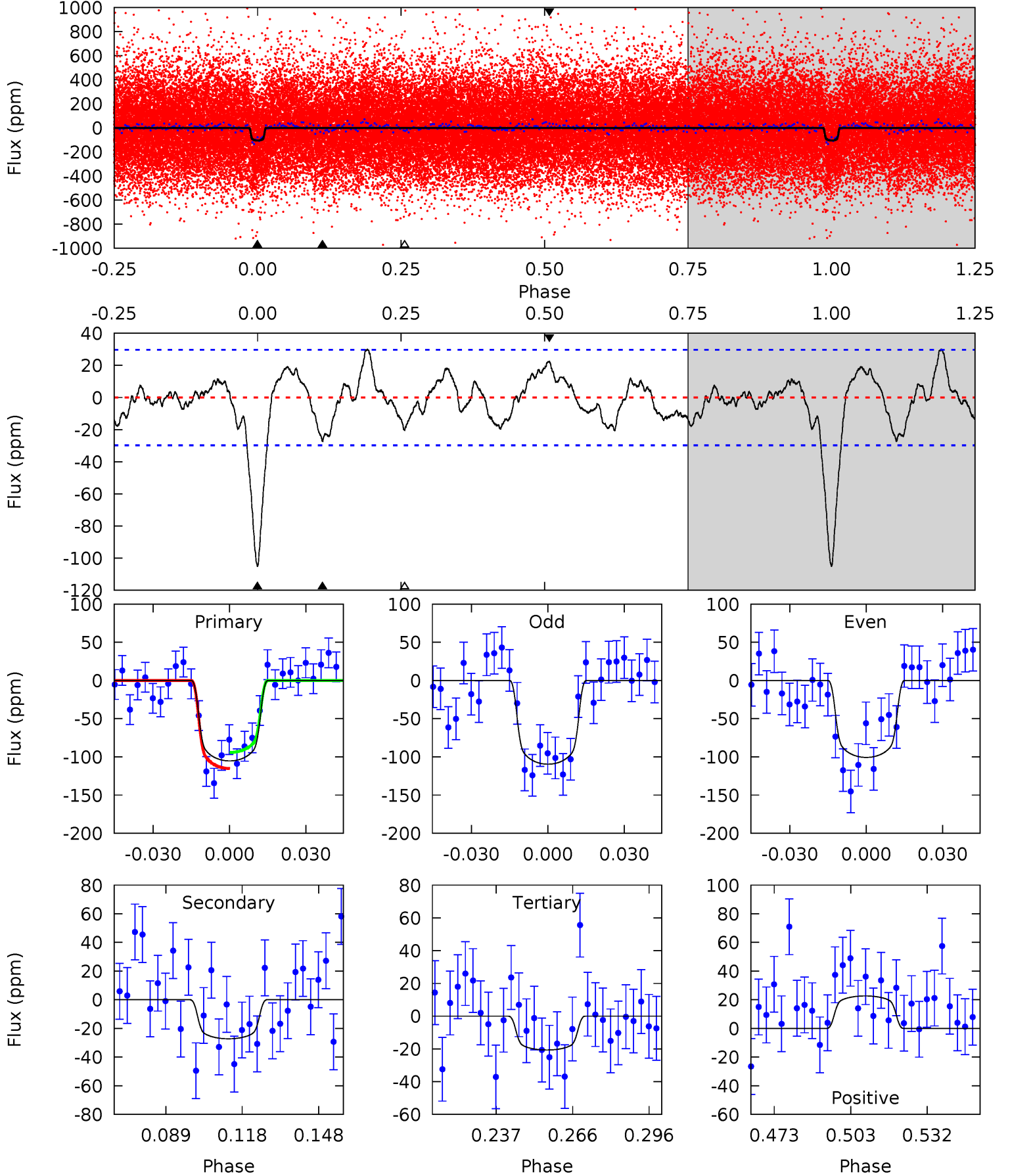
TCE 005880320-04 P= 8.193580 Days $T_0=138.993171$ (BKJD)



DV Model-Shift Uniqueness Test

005880320-04, P = 8.193480 Days, E = 130.805695 Days

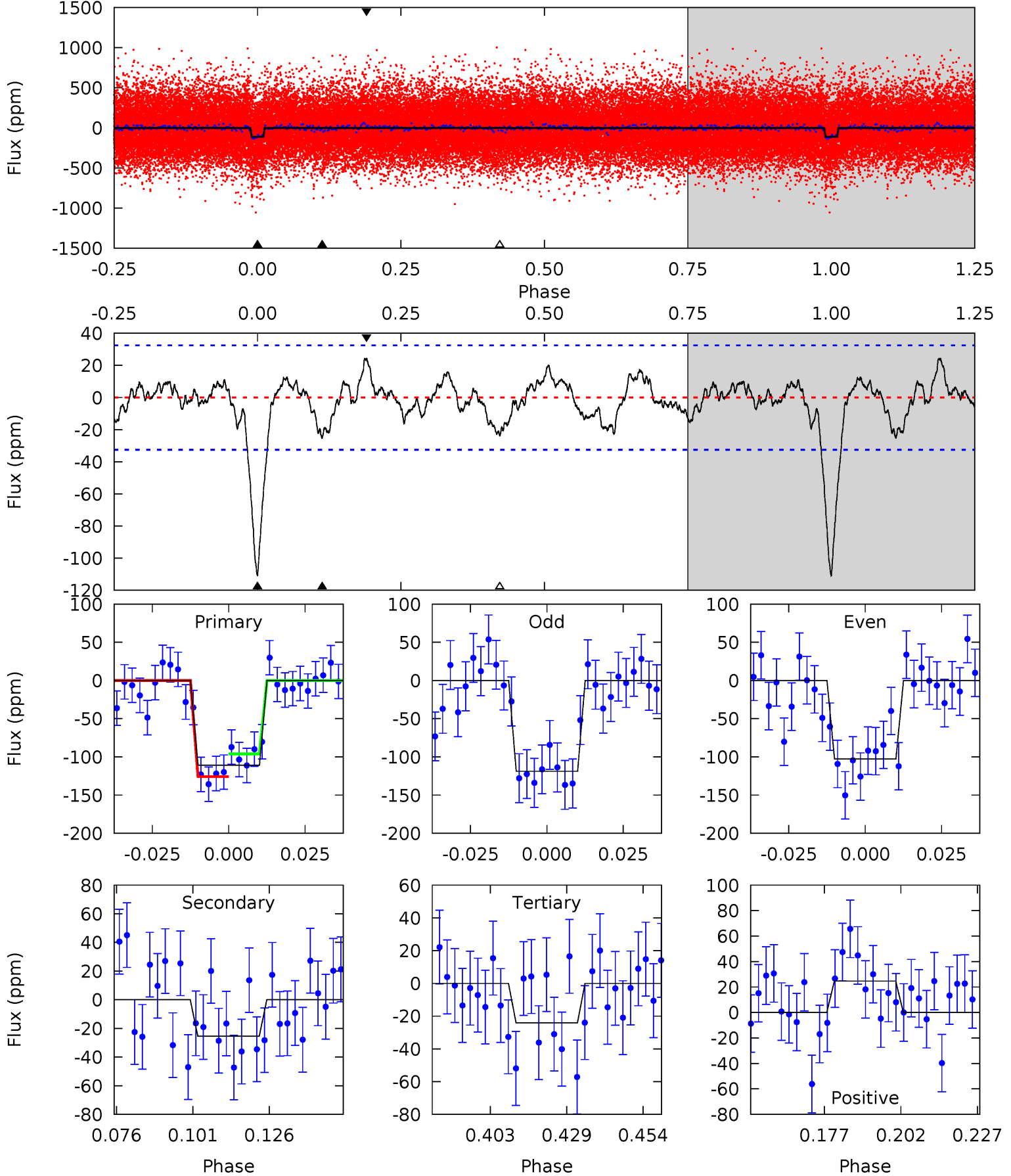
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	4.41	3.35	3.67	4.81	2.18	1.72	13.7	13.4	1.06	0.74	0.72	0.91	0.22	1.71



Alt Model-Shift Uniqueness Test

005880320-04, P = 8.193580 Days, E = 130.799591 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	3.80	3.59	3.67	4.85	2.24	1.38	13.0	12.9	0.21	0.13	1.21	1.08	0.18	2.22



Stellar Parameters For KIC 005880320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6021^{+120}_{-120}	$4.093^{+0.195}_{-0.105}$	$-0.340^{+0.150}_{-0.150}$	$1.458^{+0.226}_{-0.339}$	$0.960^{+0.088}_{-0.080}$	$0.436^{+0.451}_{-0.139}$
	+2%/-2%	+5%/-3%	+44%/-44%	+16%/-23%	+9%/-8%	+103%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005880320-04 / KOI 1060.04

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-27 ± 6	$1.84^{+0.32}_{-0.31}$	1587^{+85}_{-98}	4244^{+280}_{-257}	27^{+14}_{-9}
Alt.	-25 ± 7	$1.59^{+0.31}_{-0.28}$	1589^{+80}_{-106}	4414^{+349}_{-317}	34^{+19}_{-12}

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 $A_{obs} \gg 1.0$

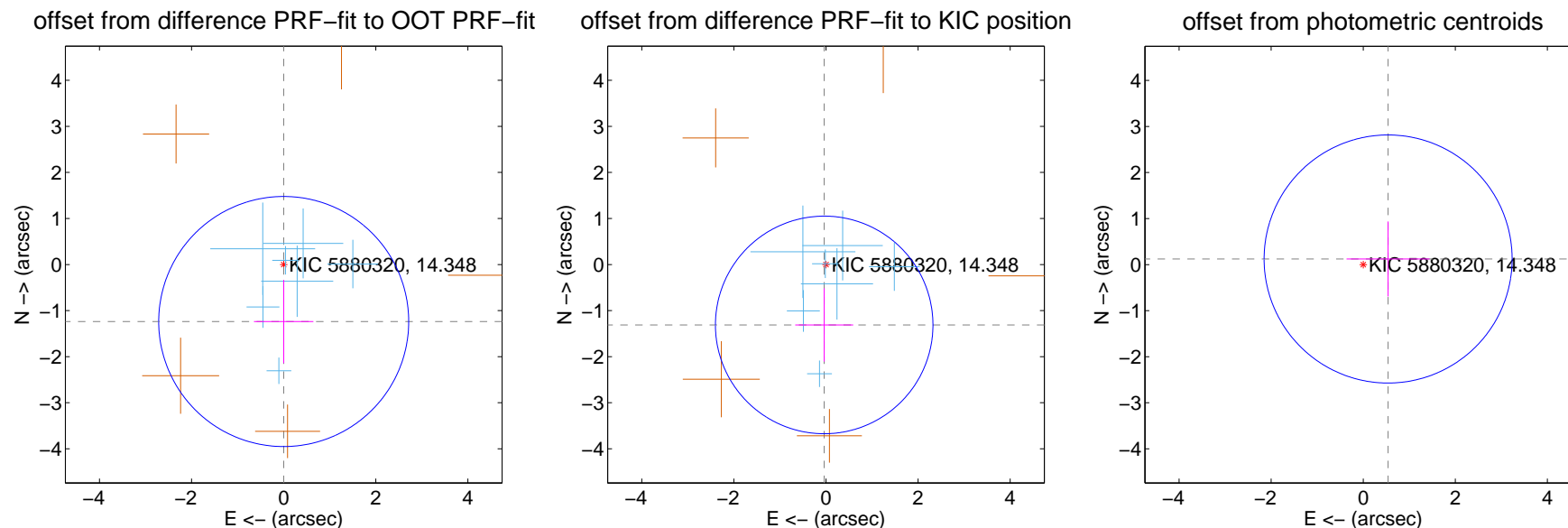
DV Centroid Data

Supplemental centroid analysis for 005880320-04. Kepler magnitude: 14.35. Transit SNR 10.51

There are 7 quarters with good PRF difference image offsets

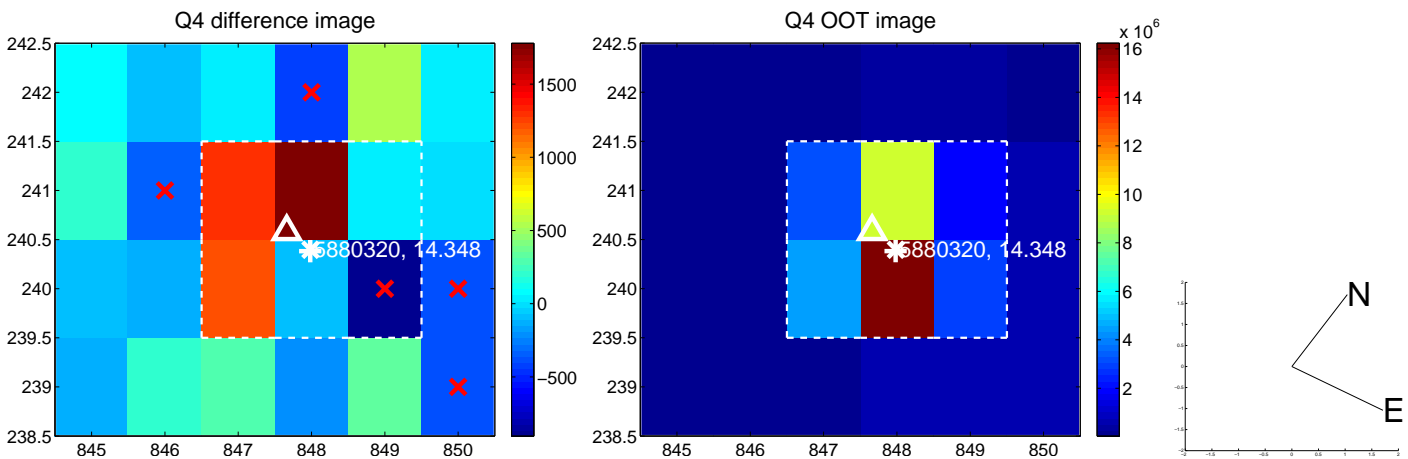
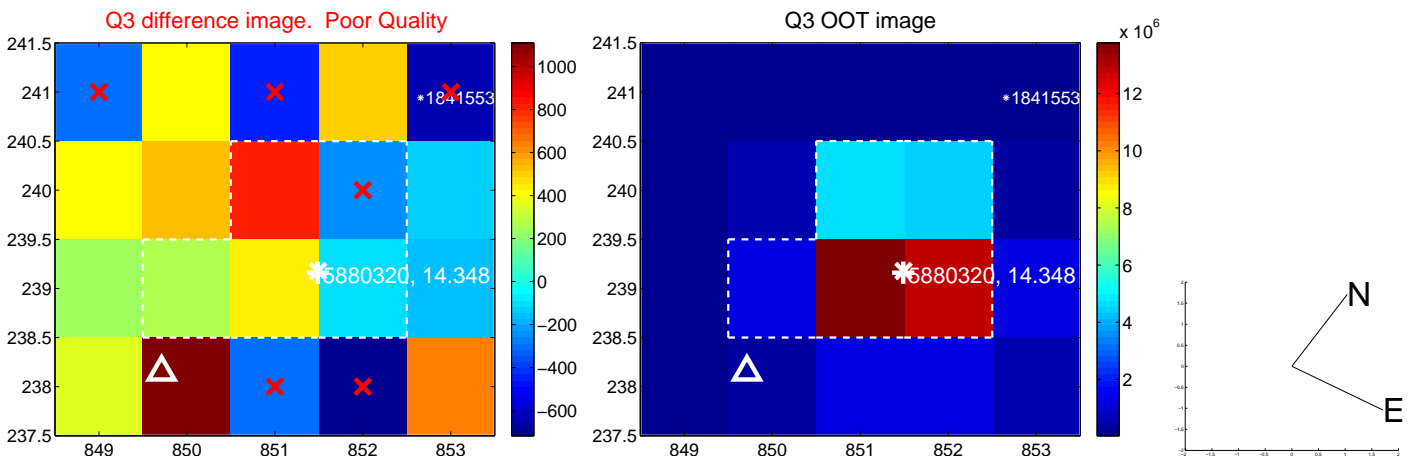
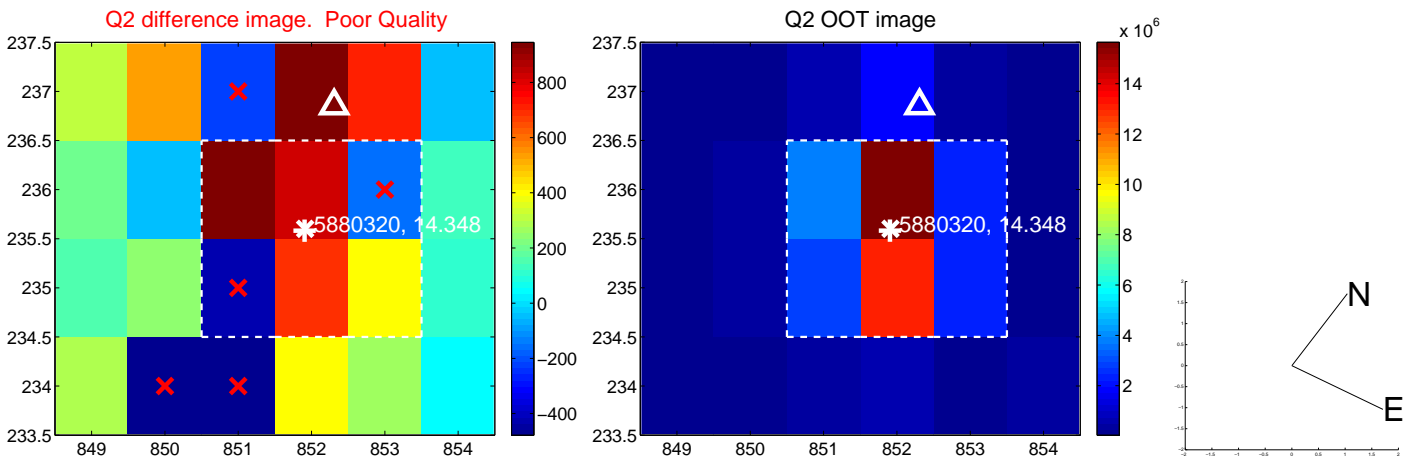
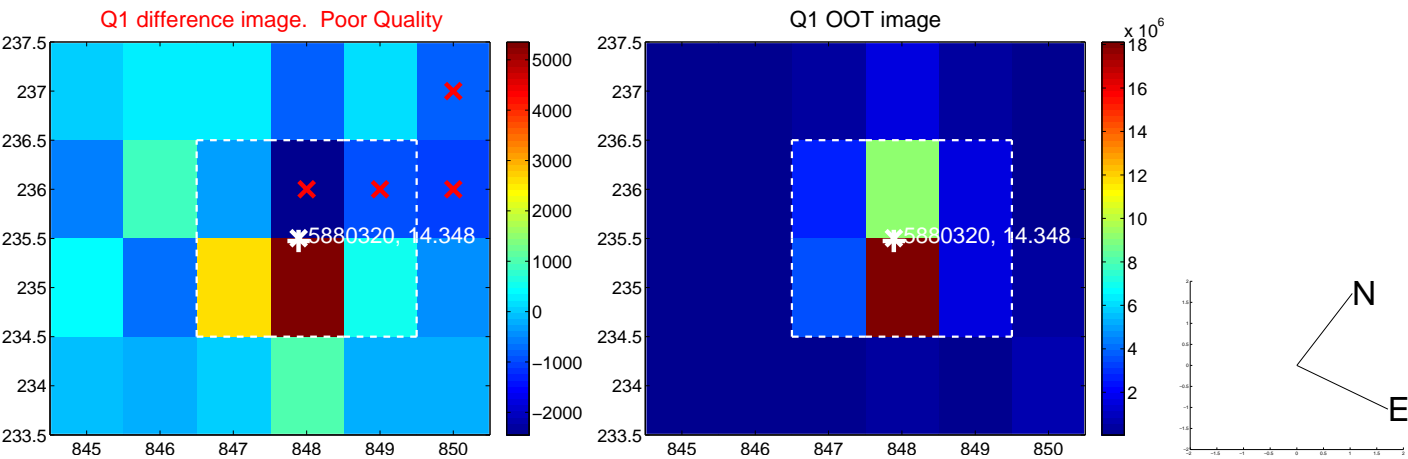
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.237 ± 0.905	1.37	-0.000 ± 0.645	-1.237 ± 0.905
PRF-fit source offset from KIC position	1.312 ± 0.787	1.67	0.039 ± 0.630	-1.311 ± 0.794
photometric centroid source offset	0.55 ± 0.90	0.62	-0.54 ± 0.90	0.12 ± 0.82

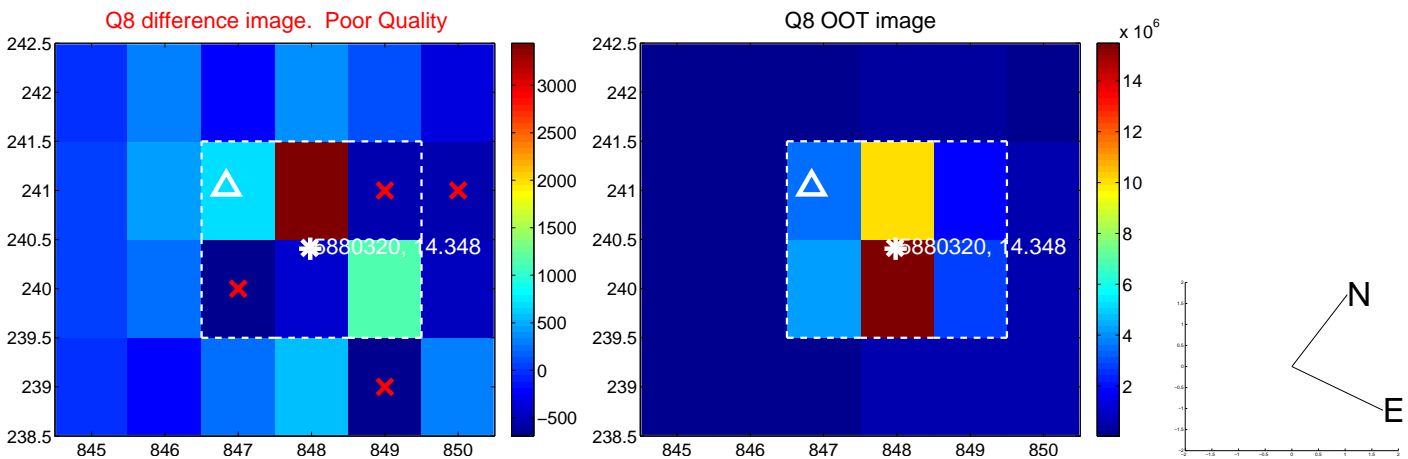
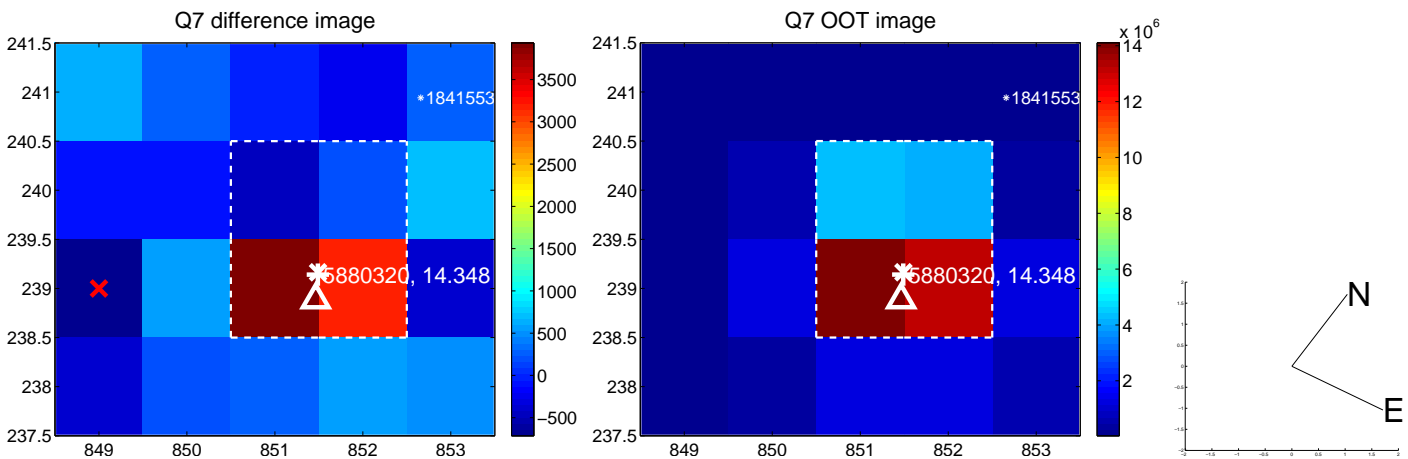
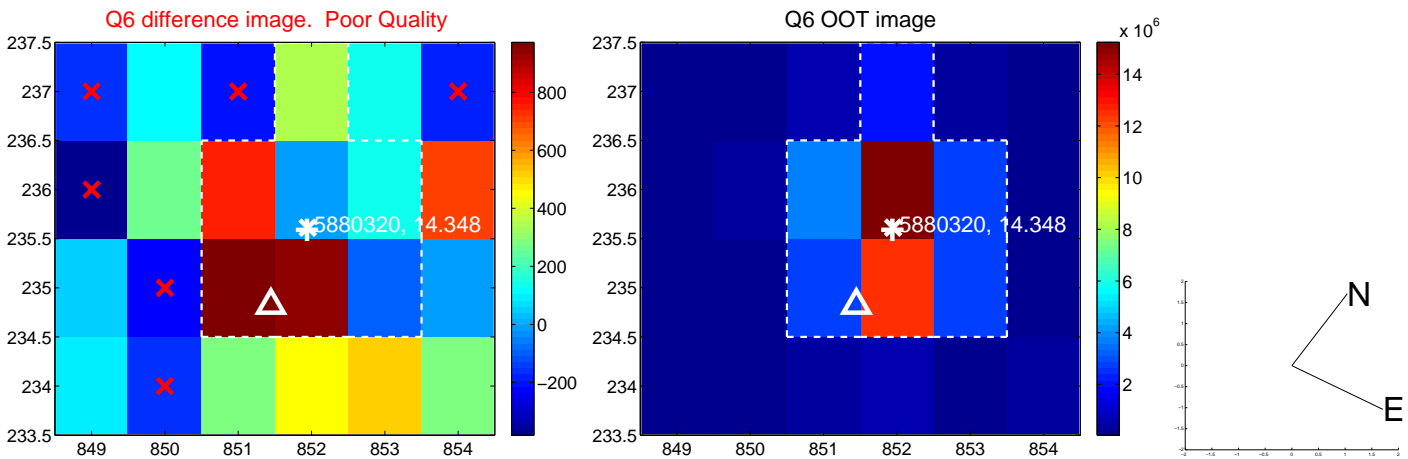
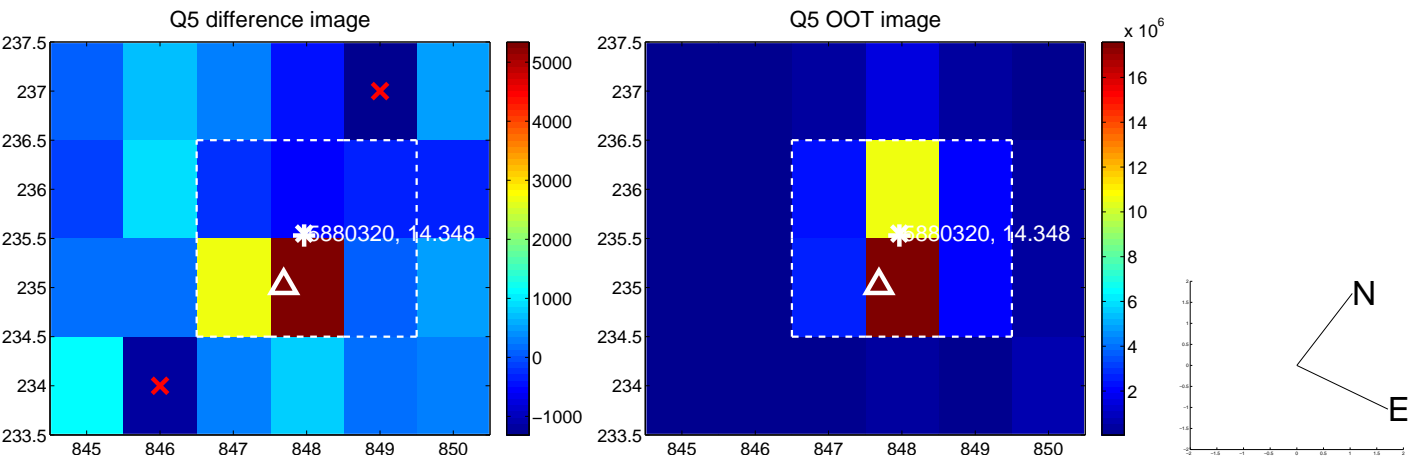


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

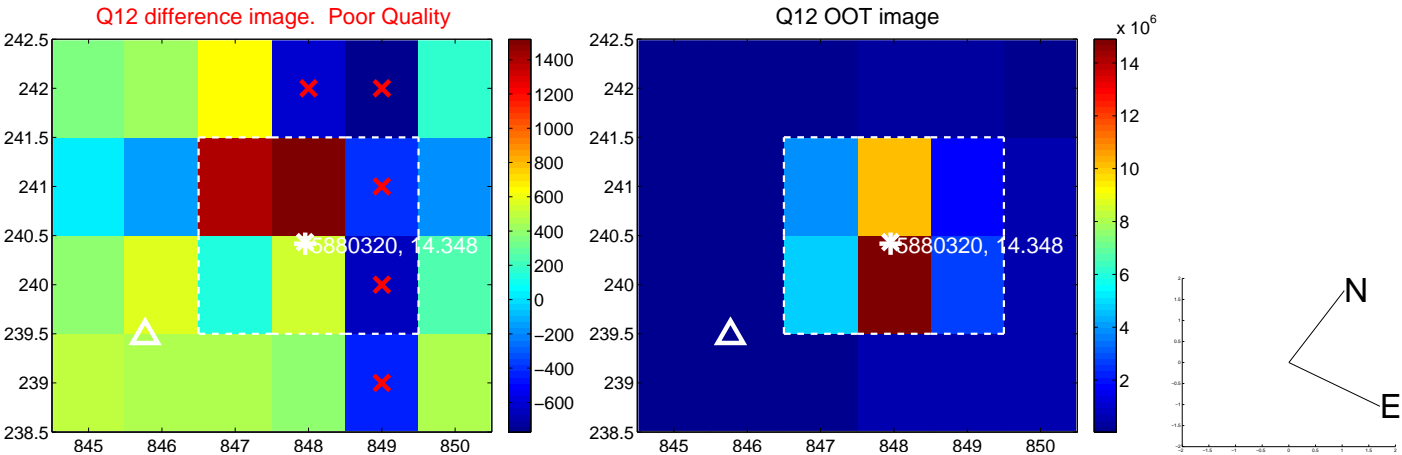
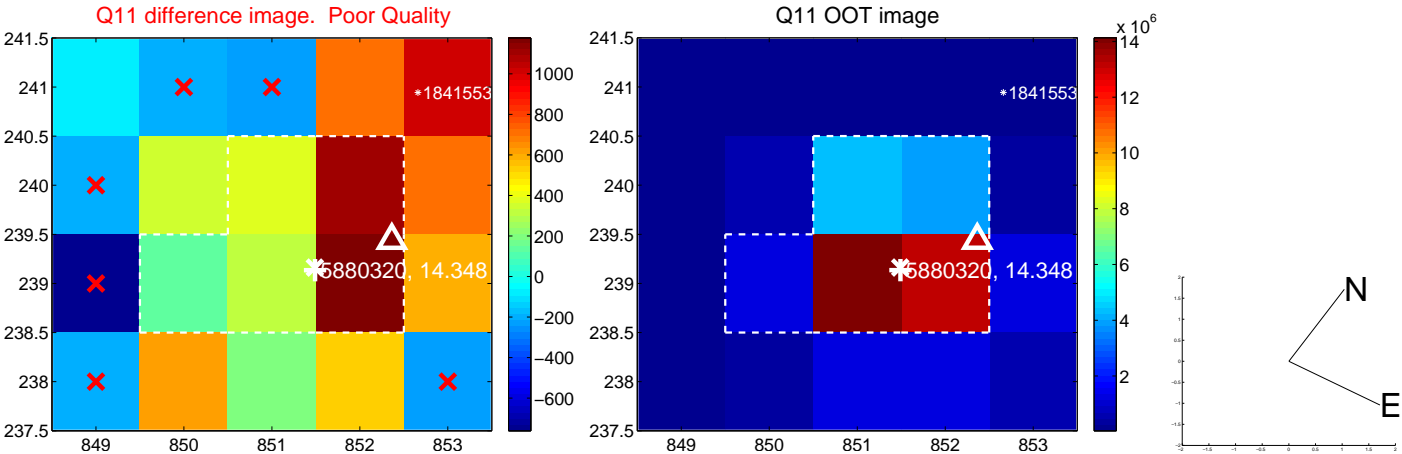
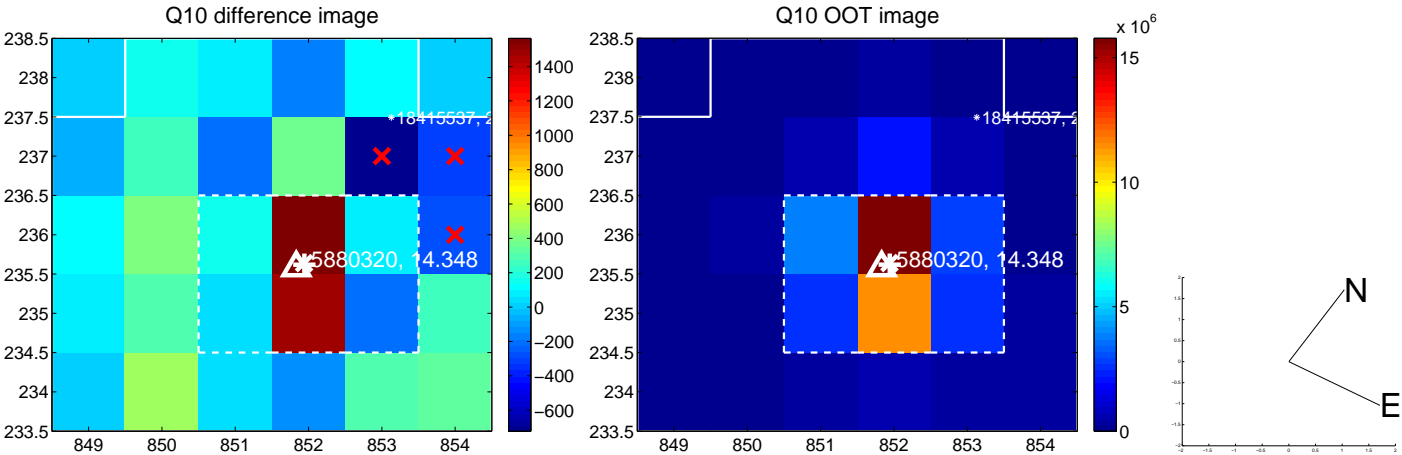
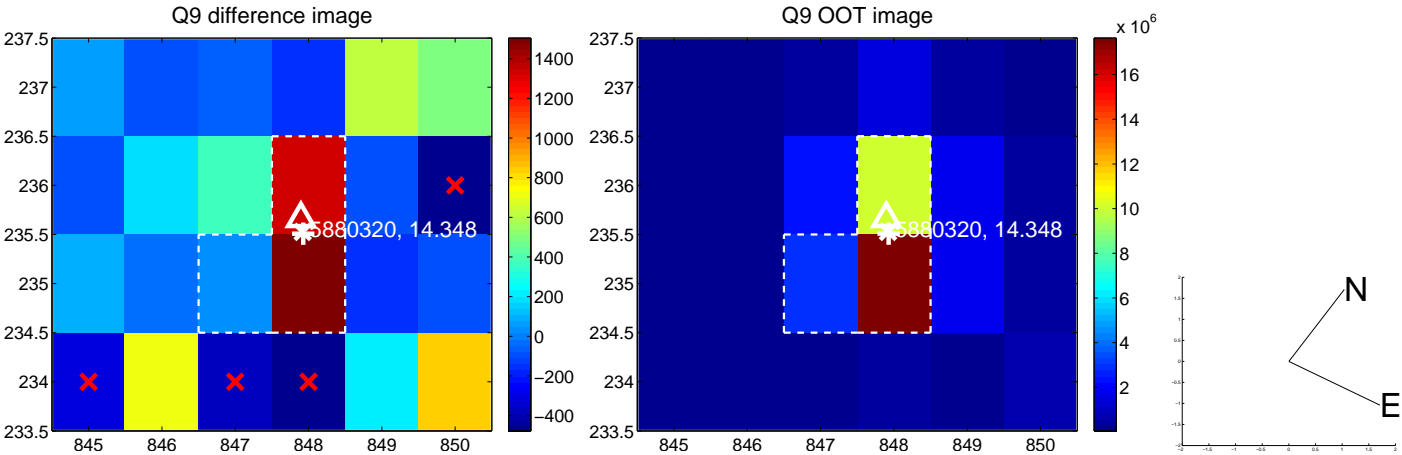
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



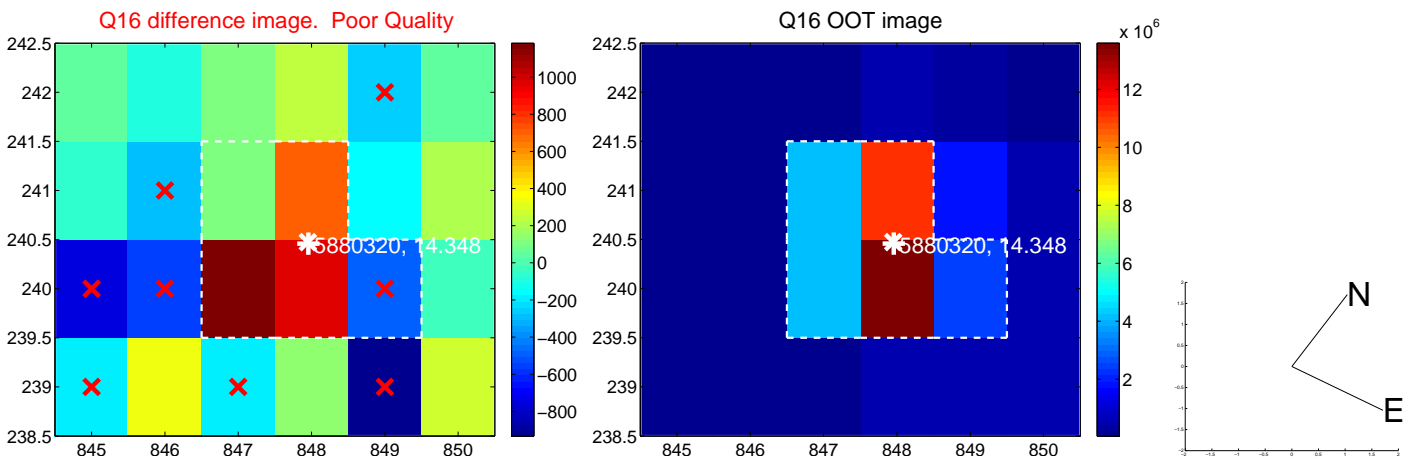
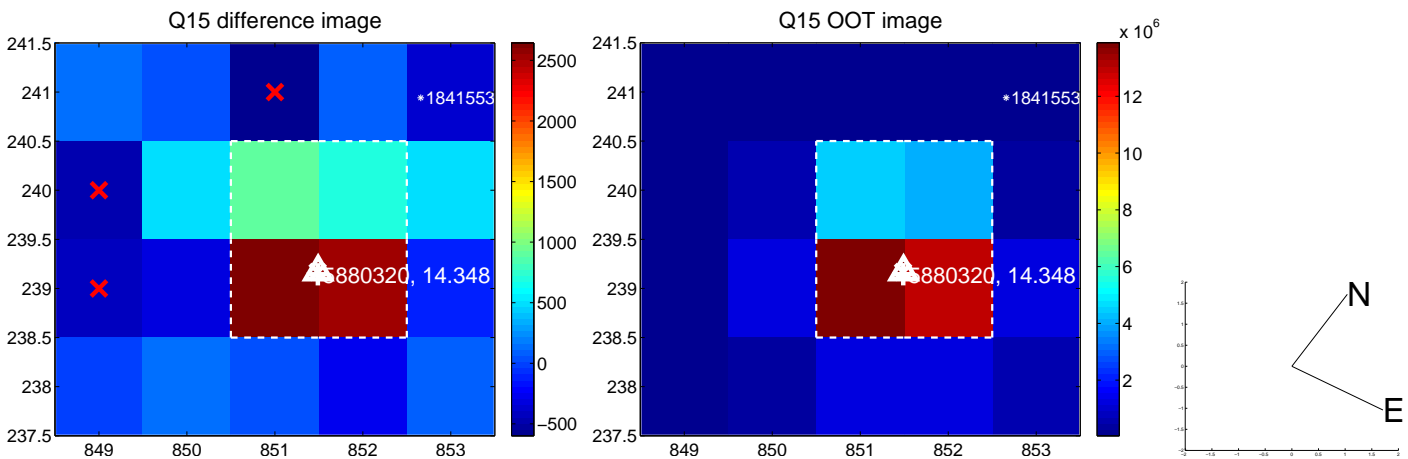
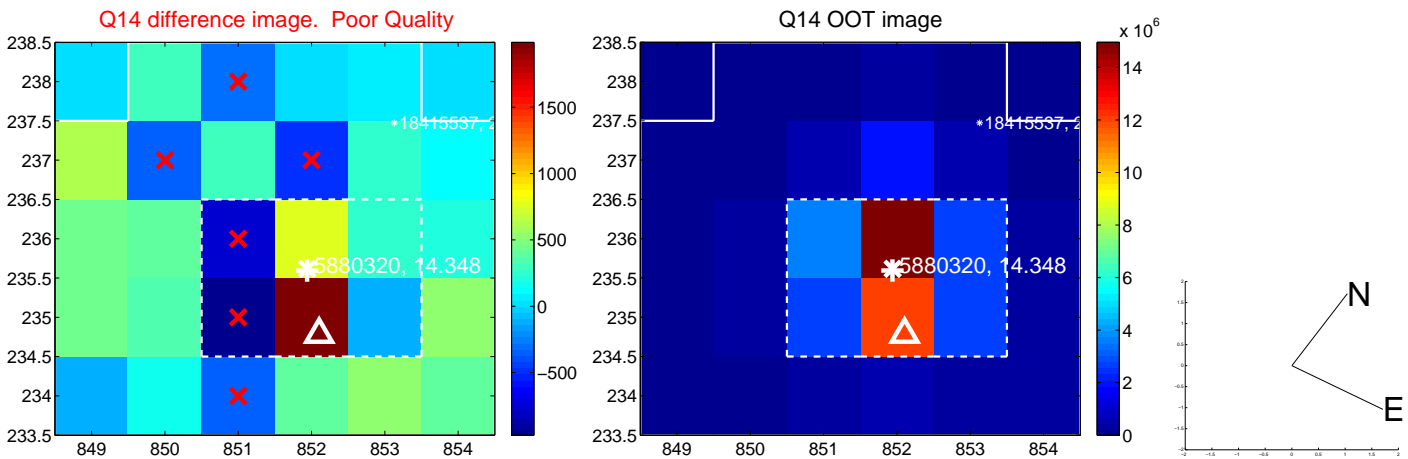
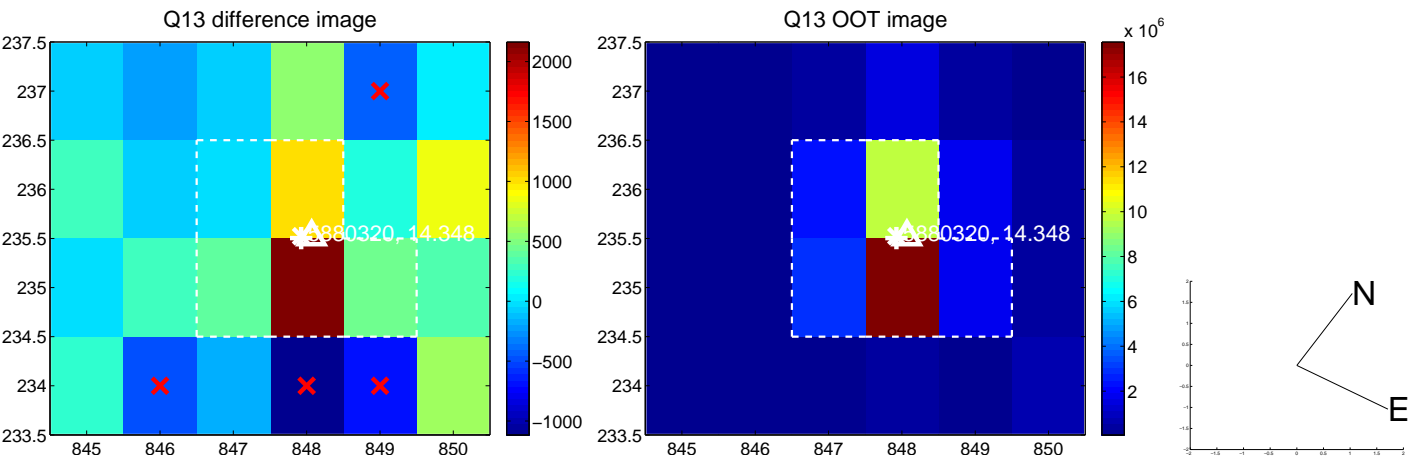
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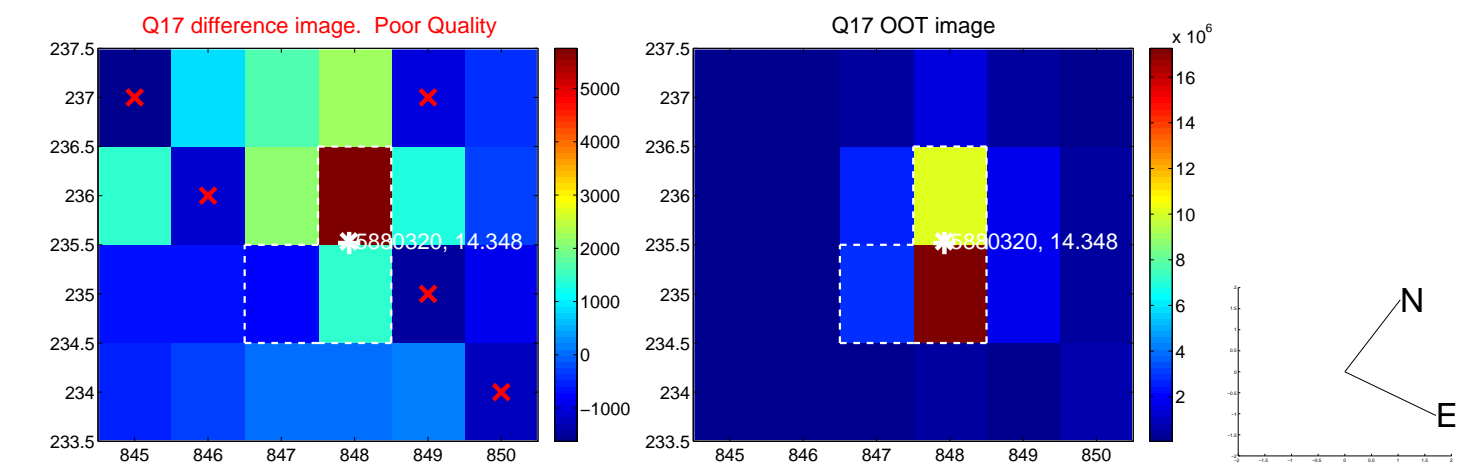
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



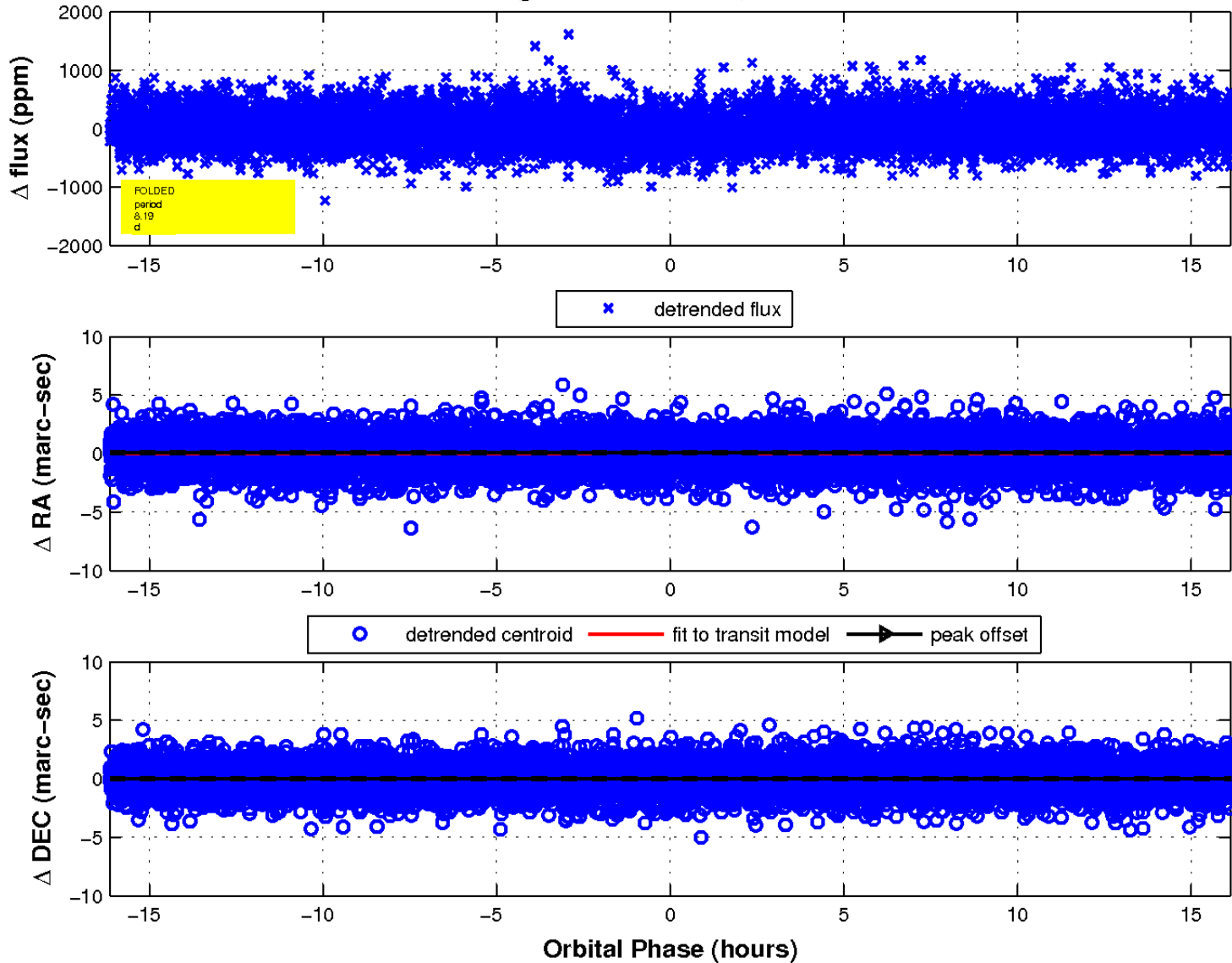
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

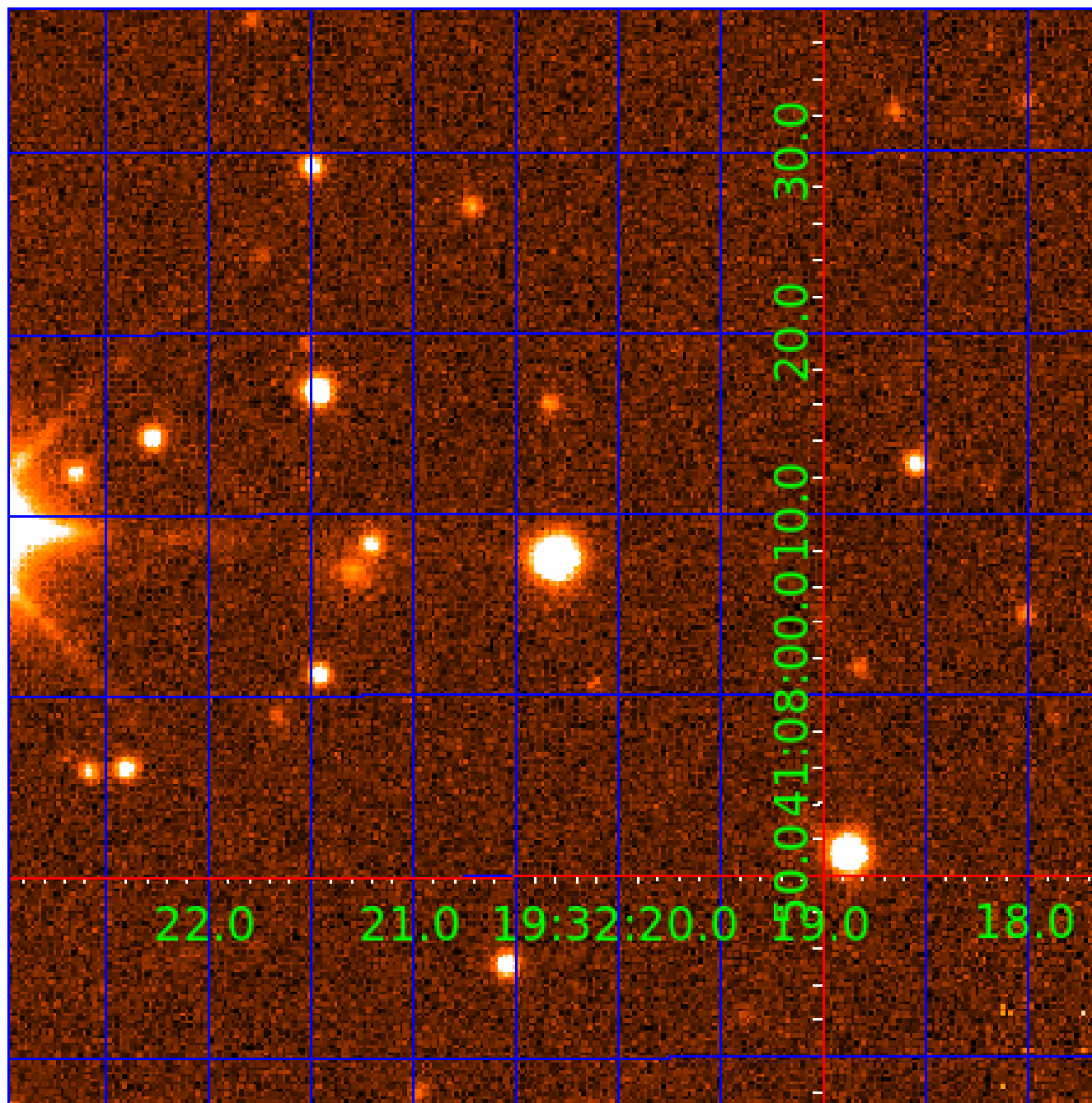


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



KIC 005880320

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})
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005880320-02	OBS	1060.02	4.757937	132.938323	127.1	4.762	16.1	17.2	1.46	6021	1.89	838.52
005880320-03	OBS	1060.03	20.496576	147.455633	193.5	6.532	10.6	11.5	1.46	6021	2.24	119.63
005880320-04	OBS	1060.04	8.193480	138.999175	106.2	5.382	9.7	10.5	1.46	6021	1.88	406.24
005880320-05	OBS	No	387.599534	147.307459	411.9	12.610	9.7	5.0	1.46	6021	3.24	2.37

Robovetter Results

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005880320-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-02	OBS	PC	0.76	0	0	0	0	NO_COMMENT
005880320-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005880320-04	OBS	PC	0.88	0	0	0	0	NO_COMMENT
005880320-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS

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.

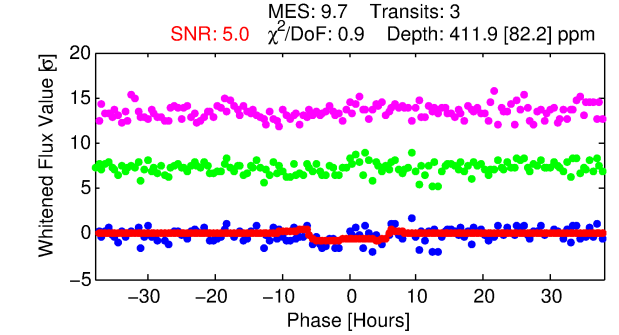
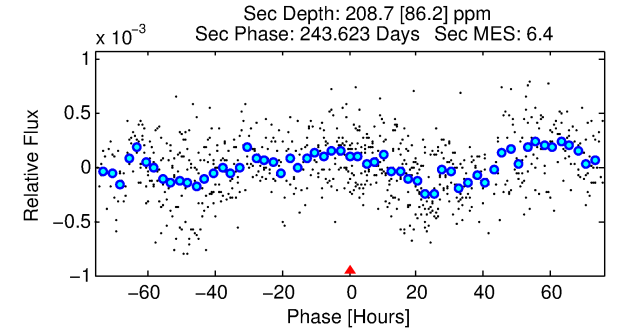
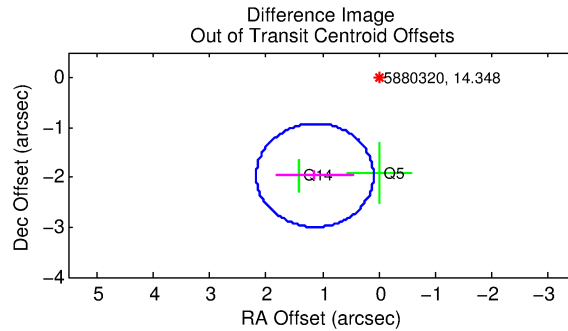
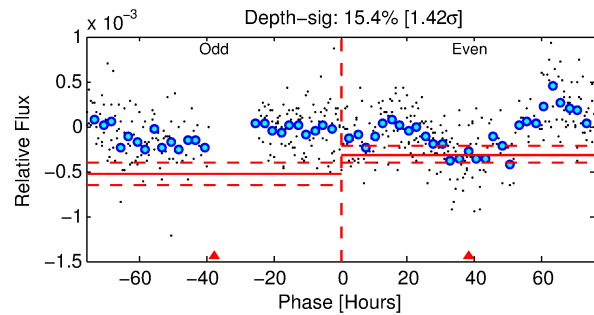
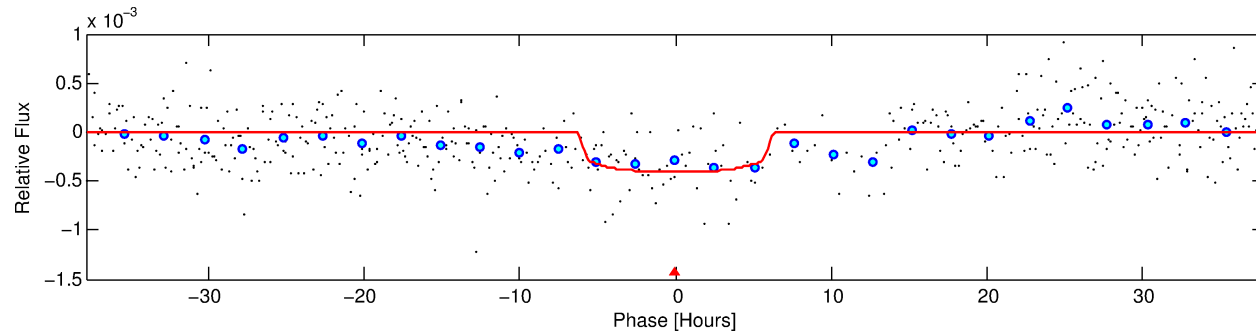
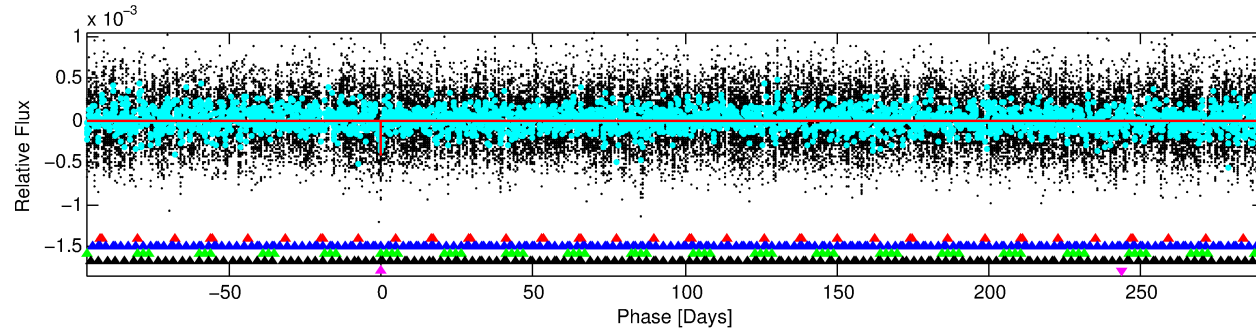
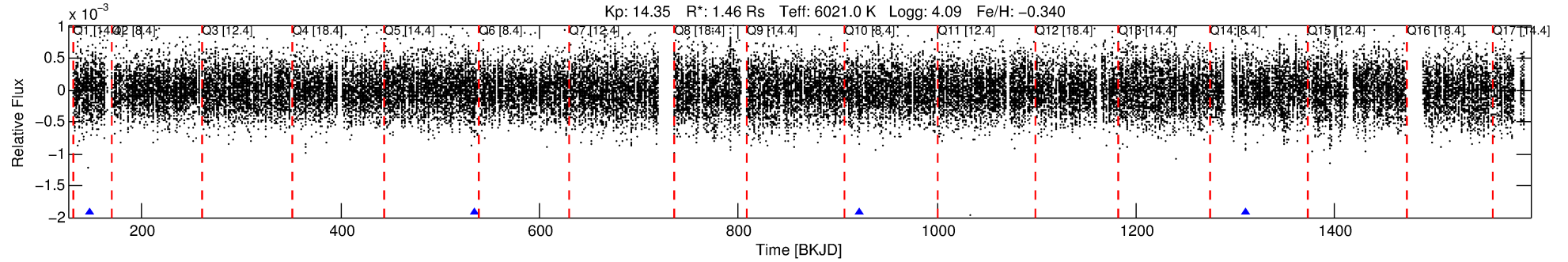
Ephemeris Match Information For 005880320-05

No Significant Match Found

DV One-Page Summary

KIC: 5880320 Candidate: 5 of 5 Period: 387.600 d
KOI: K01060 Corr: No Ephemeris Match

Kp: 14.35 R*: 1.46 Rs Teff: 6021.0 K Logg: 4.09 Fe/H: -0.340



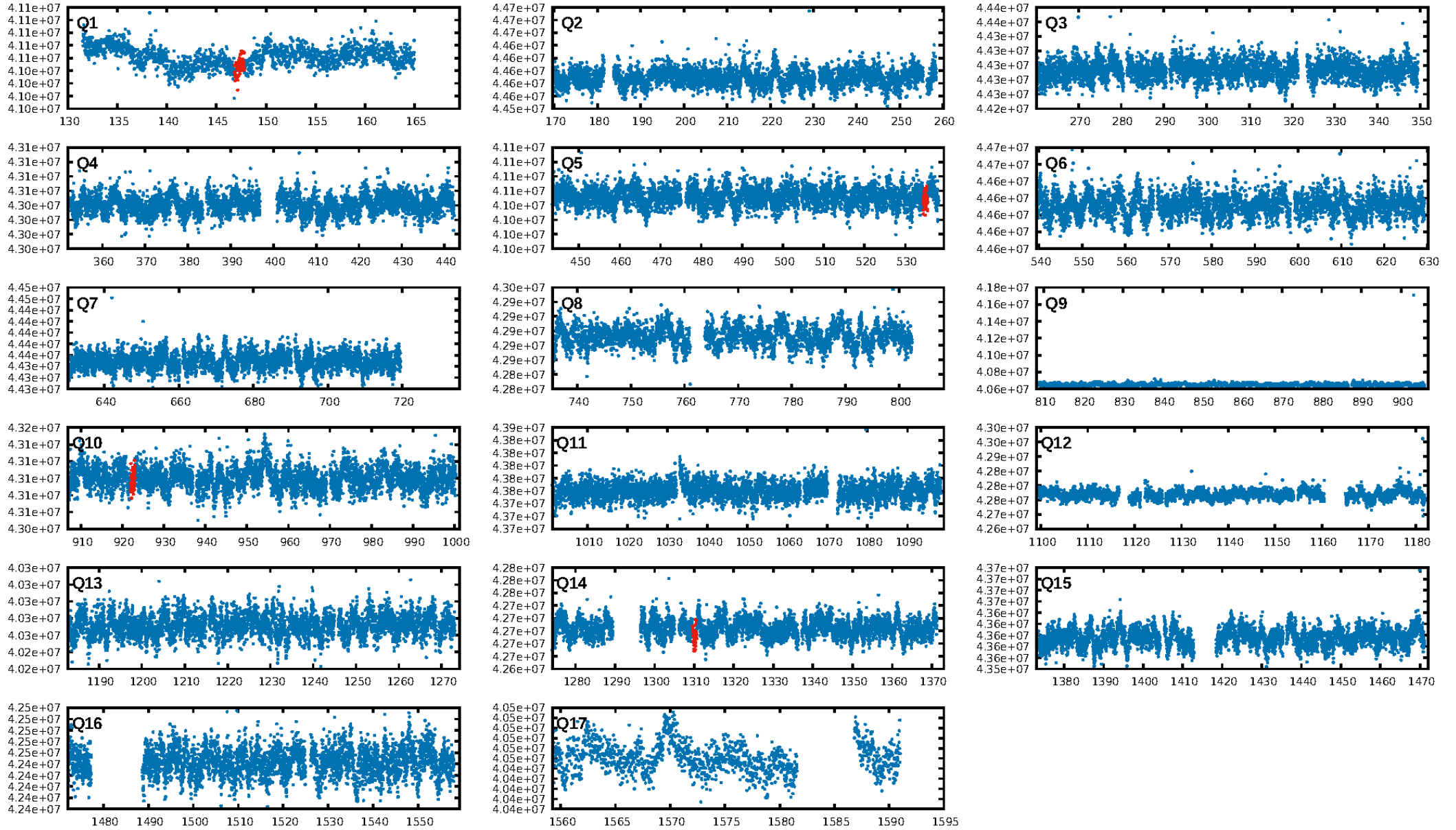
DV Fit Results:

Period = 387.59953 [0.01716] d
Epoch = 147.3075 [0.0308] BKJD
Rp/R* = 0.0203 [0.0063]
a/R* = 156.47 [226.46]
b = 0.77 [0.77]
Seff = 2.37 [0.82]
Teq = 317 [27] K
Rp = 3.24 [1.26] Re
a = 1.0267 [0.2212] AU
Ag = 11550.33 [9463.59] [1.22σ]
Teffp = 5073 [953] K [4.99σ]

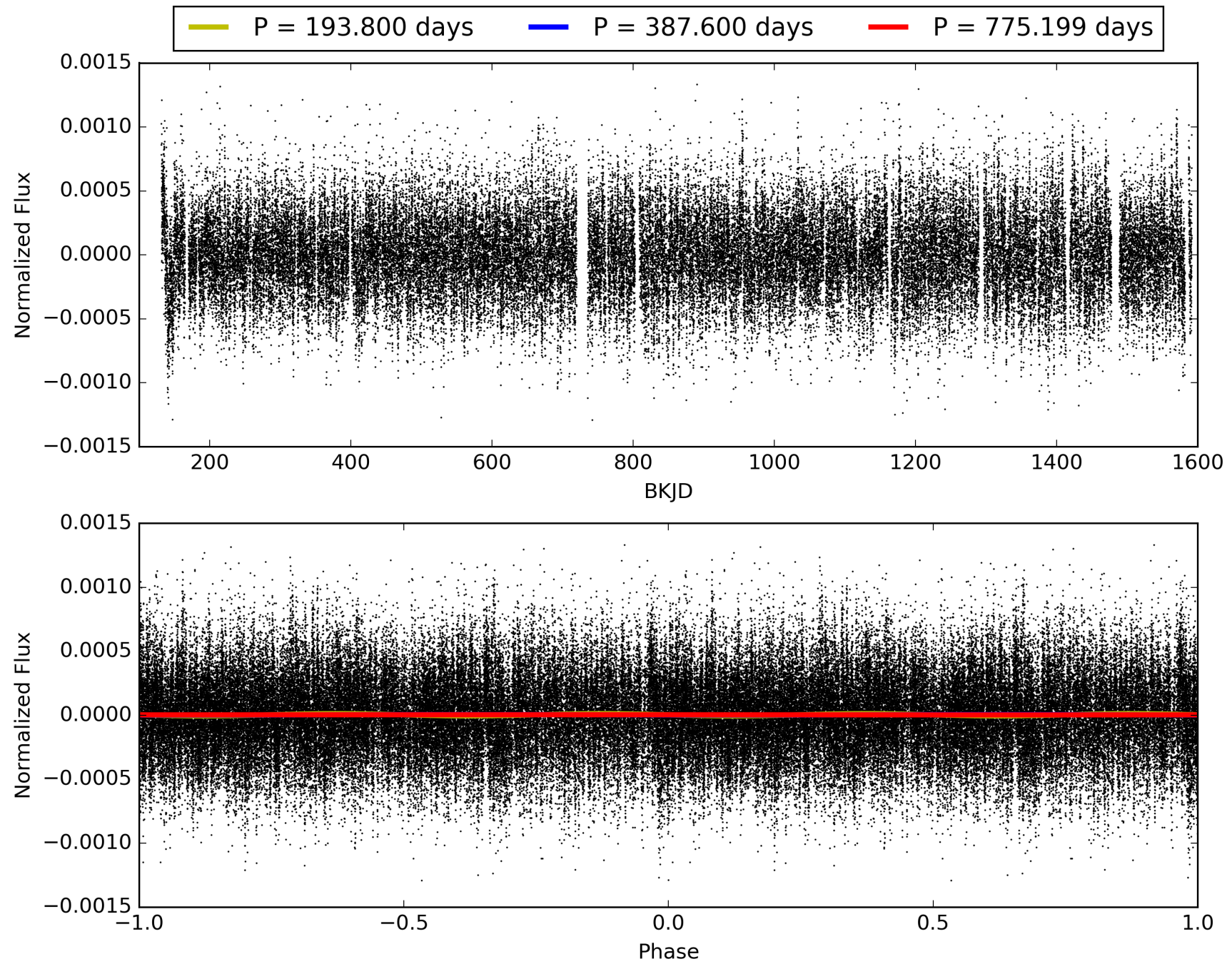
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [620.41σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.99e-19
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.103
Centroid-sig: 40.5%
Centroid-so: 0.739 arcsec [0.79σ]
OotOffset-rm: 2.268 arcsec [6.56σ]
KicOffset-rm: 2.370 arcsec [6.85σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.25 [1/4]

TCE 005880320-05, PDC Light Curves

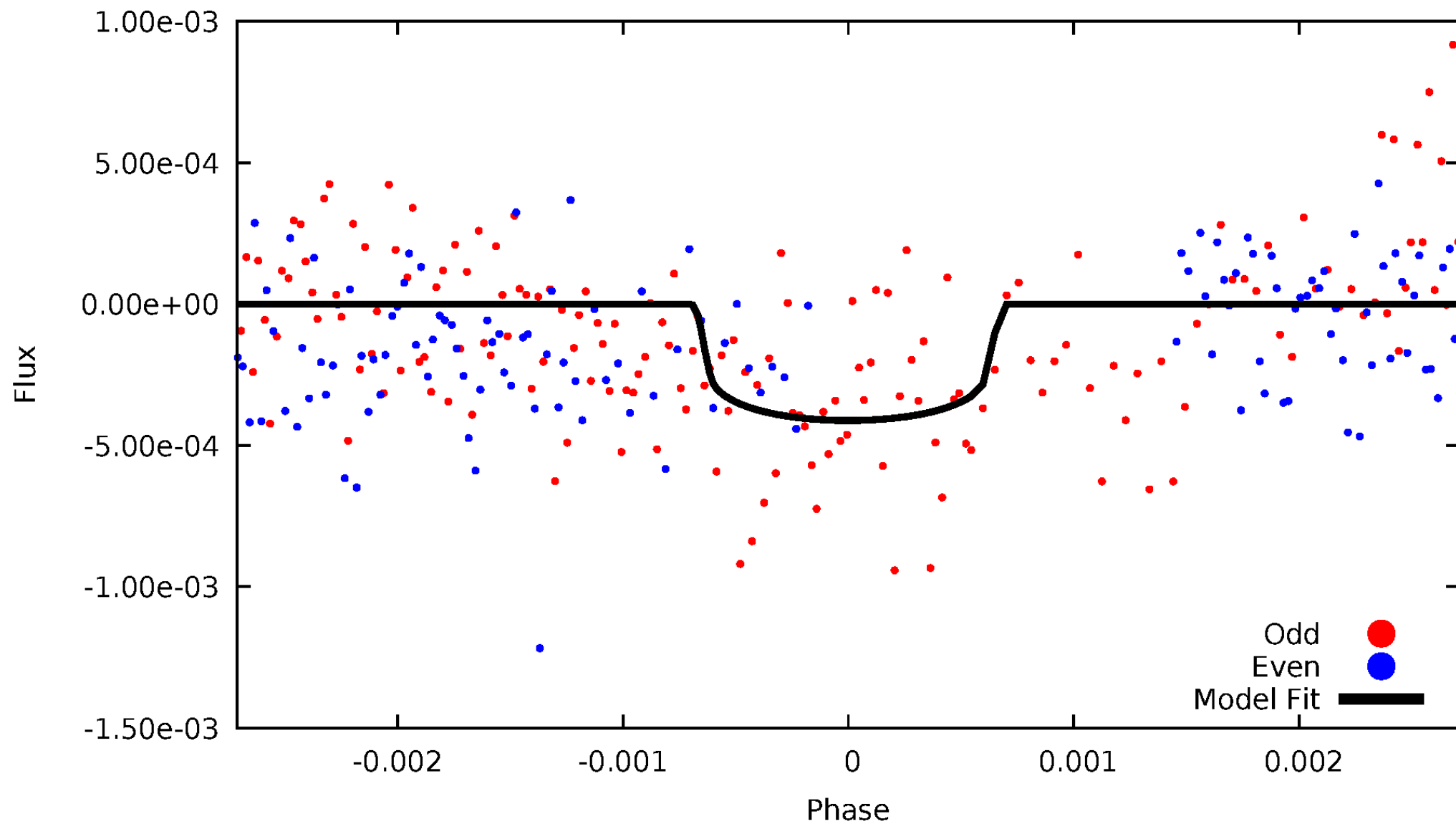


TCE 005880320-05



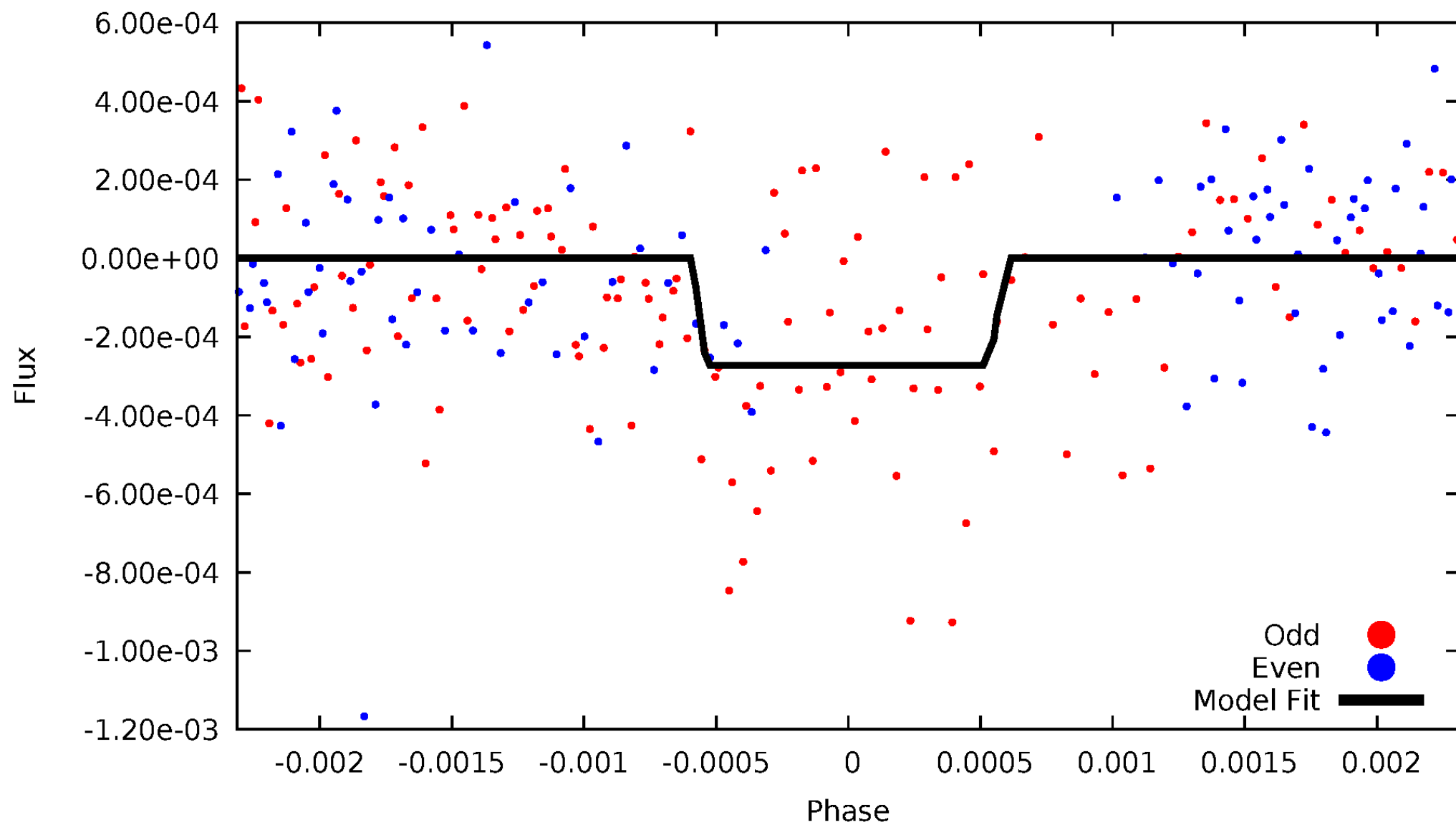
DV Odd/Even

TCE 005880320-05



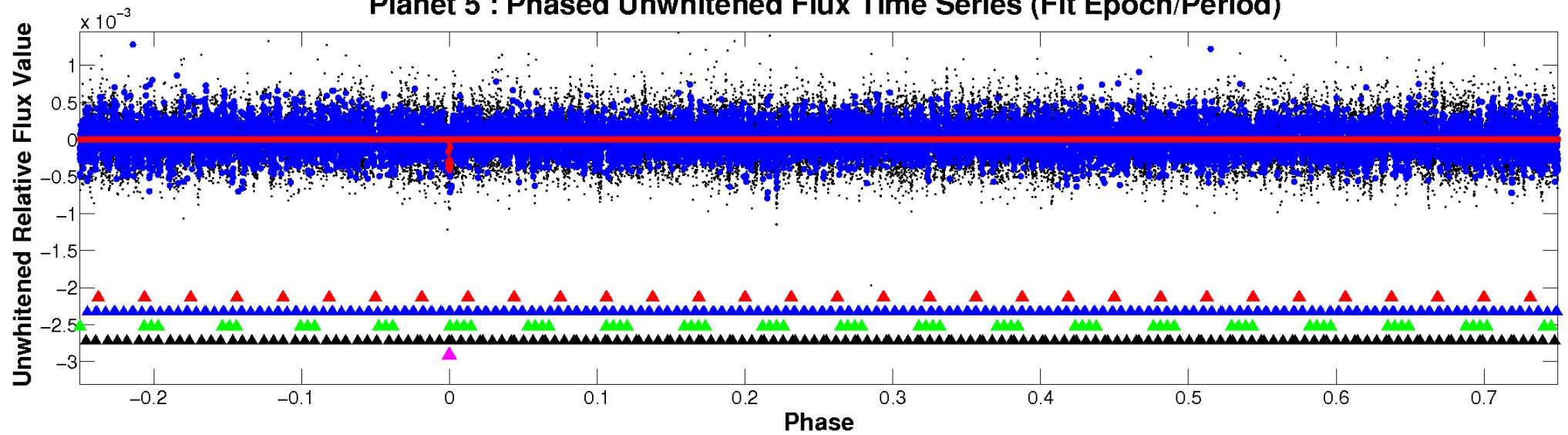
ALT Odd/Even

TCE 005880320-05

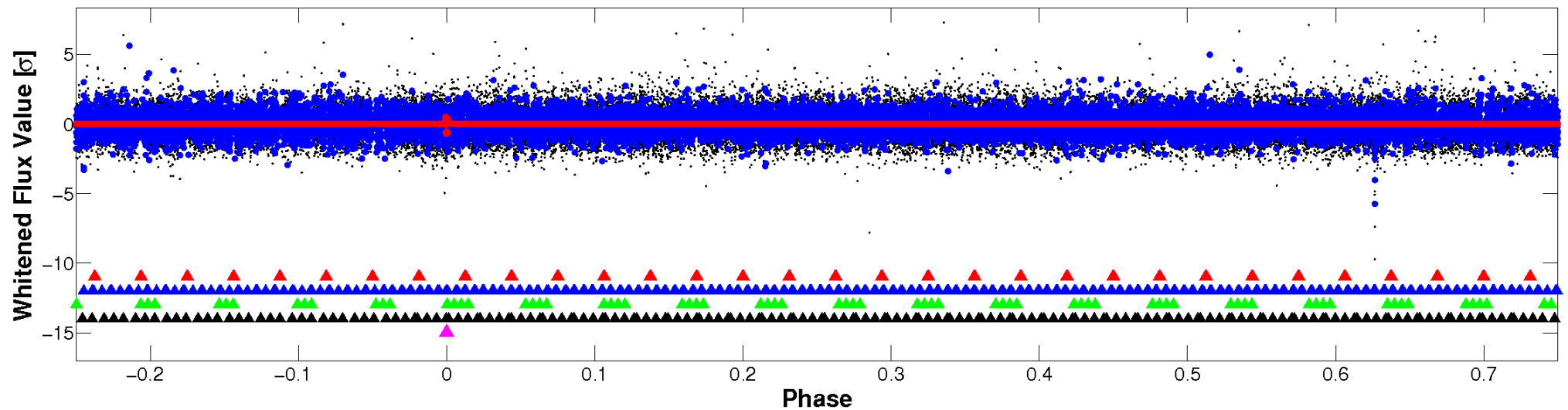


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

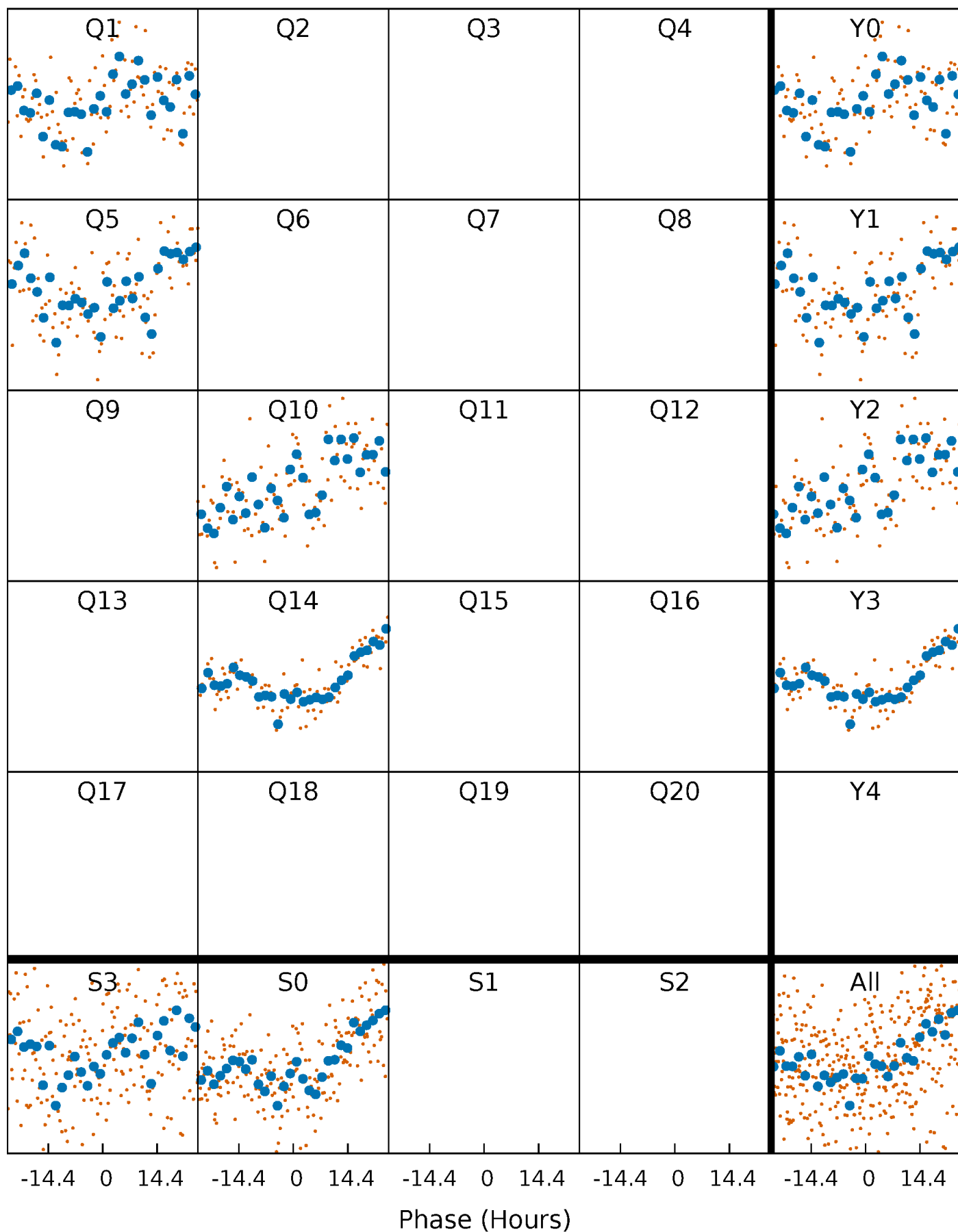


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



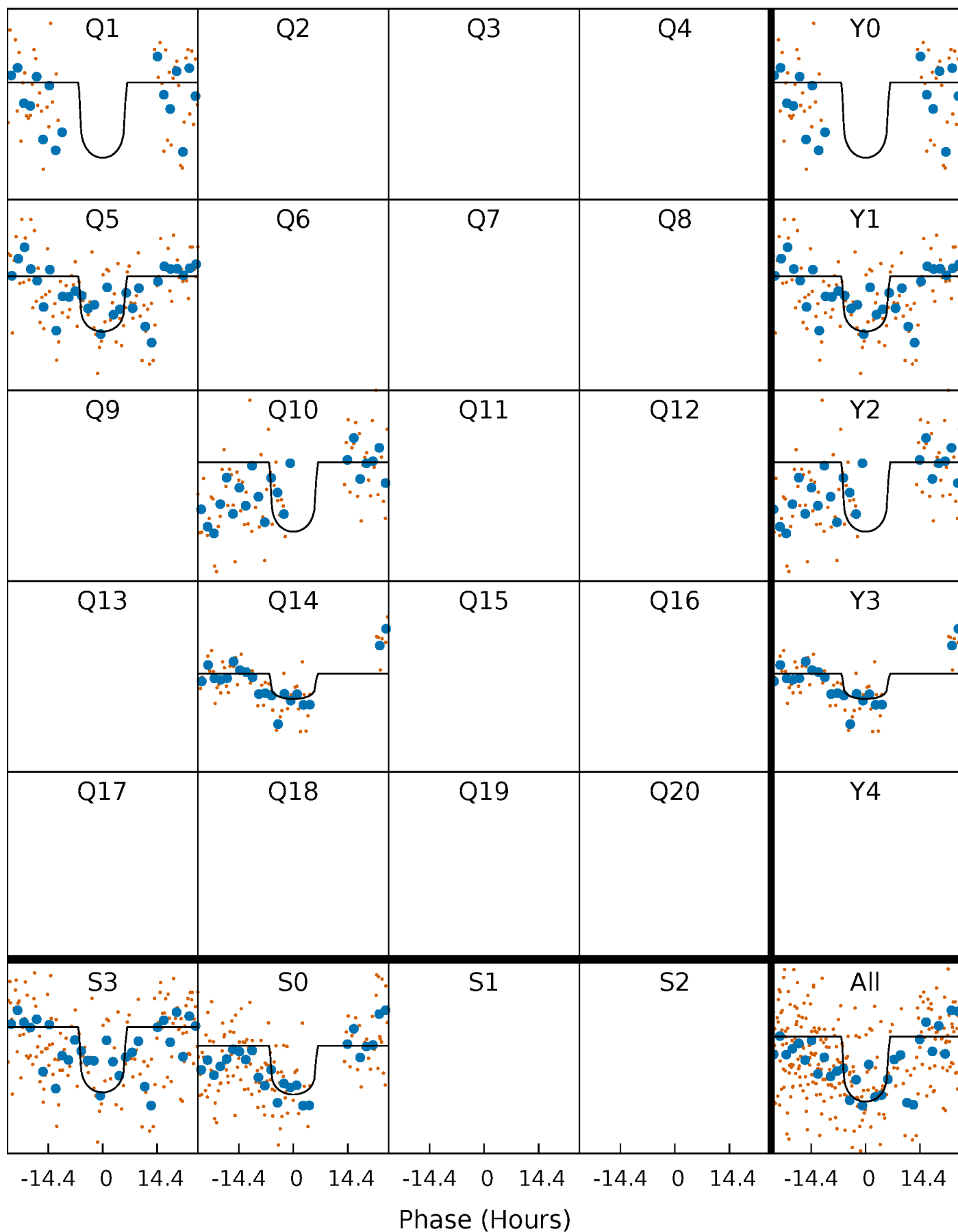
PDC Quarter-Phased Transit Curves

TCE 005880320-05 $P=387.599534$ Days $T_0=147.307459$ (BKJD)



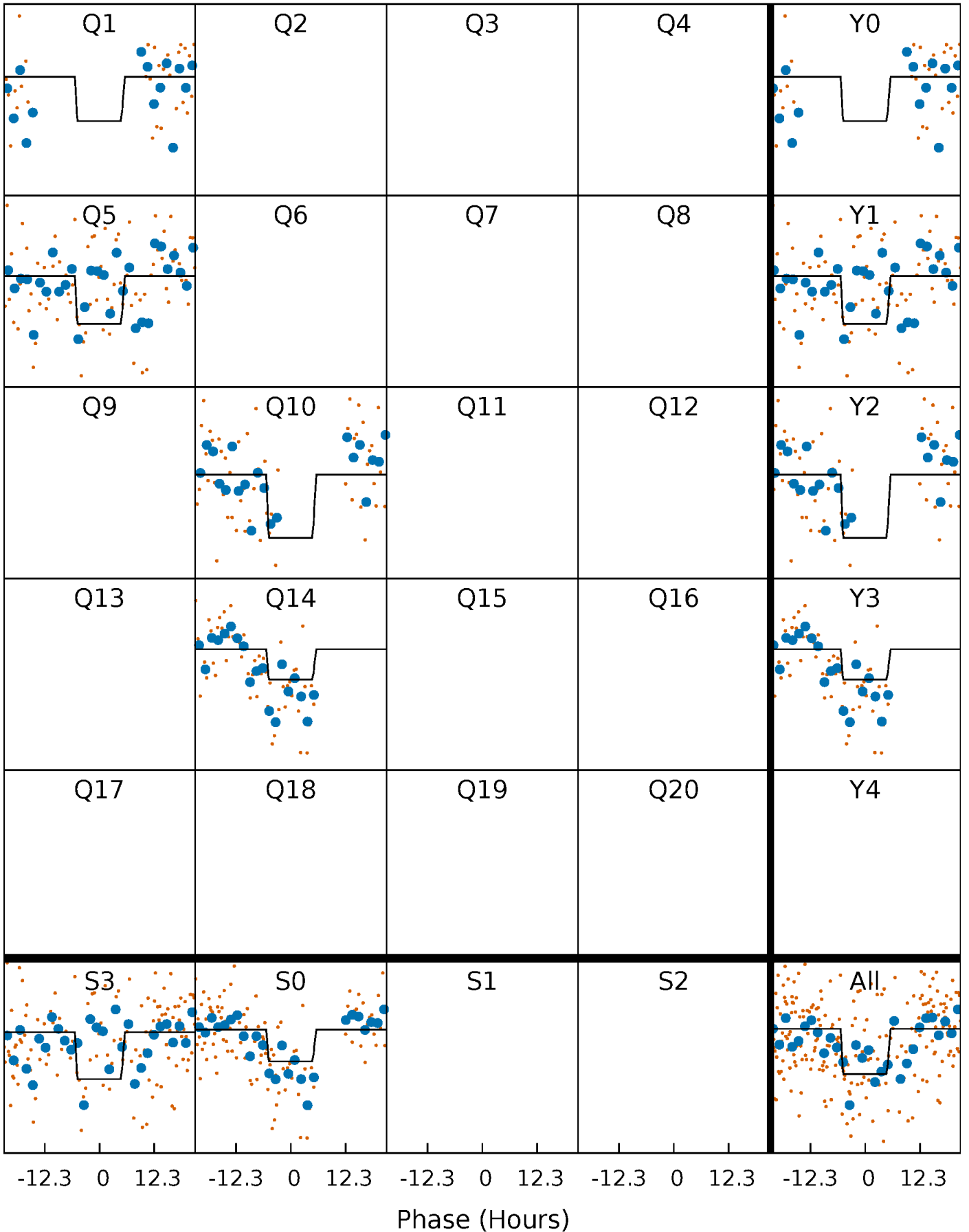
DV Quarter-Phased Transit Curves

TCE 005880320-05 $P=387.599534$ Days $T_0=147.307459$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

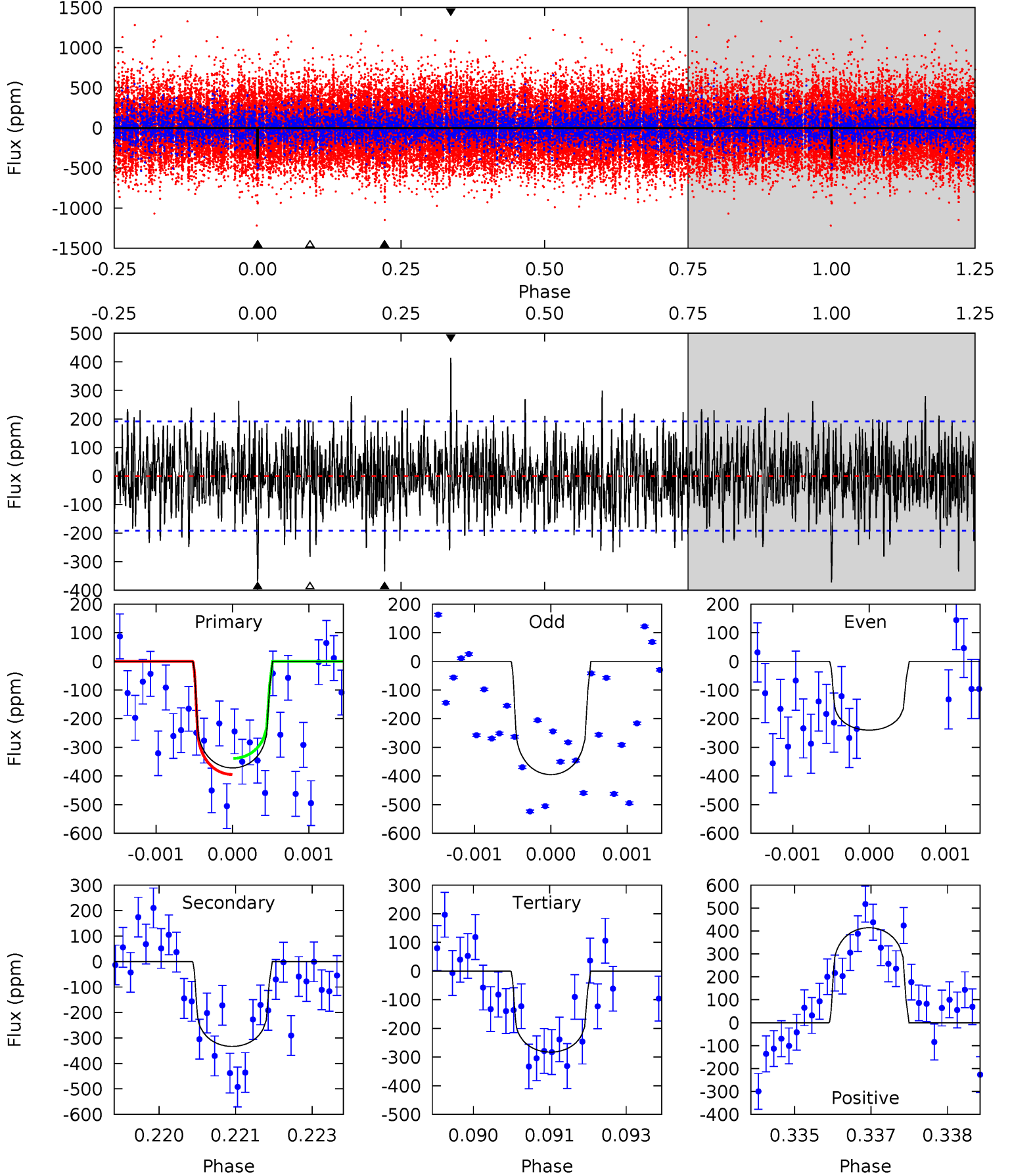
TCE 005880320-05 $P=387.536088$ Days $T_0=147.486551$ (BKJD)



DV Model-Shift Uniqueness Test

005880320-05, P = 387.599534 Days, E = 147.307459 Days

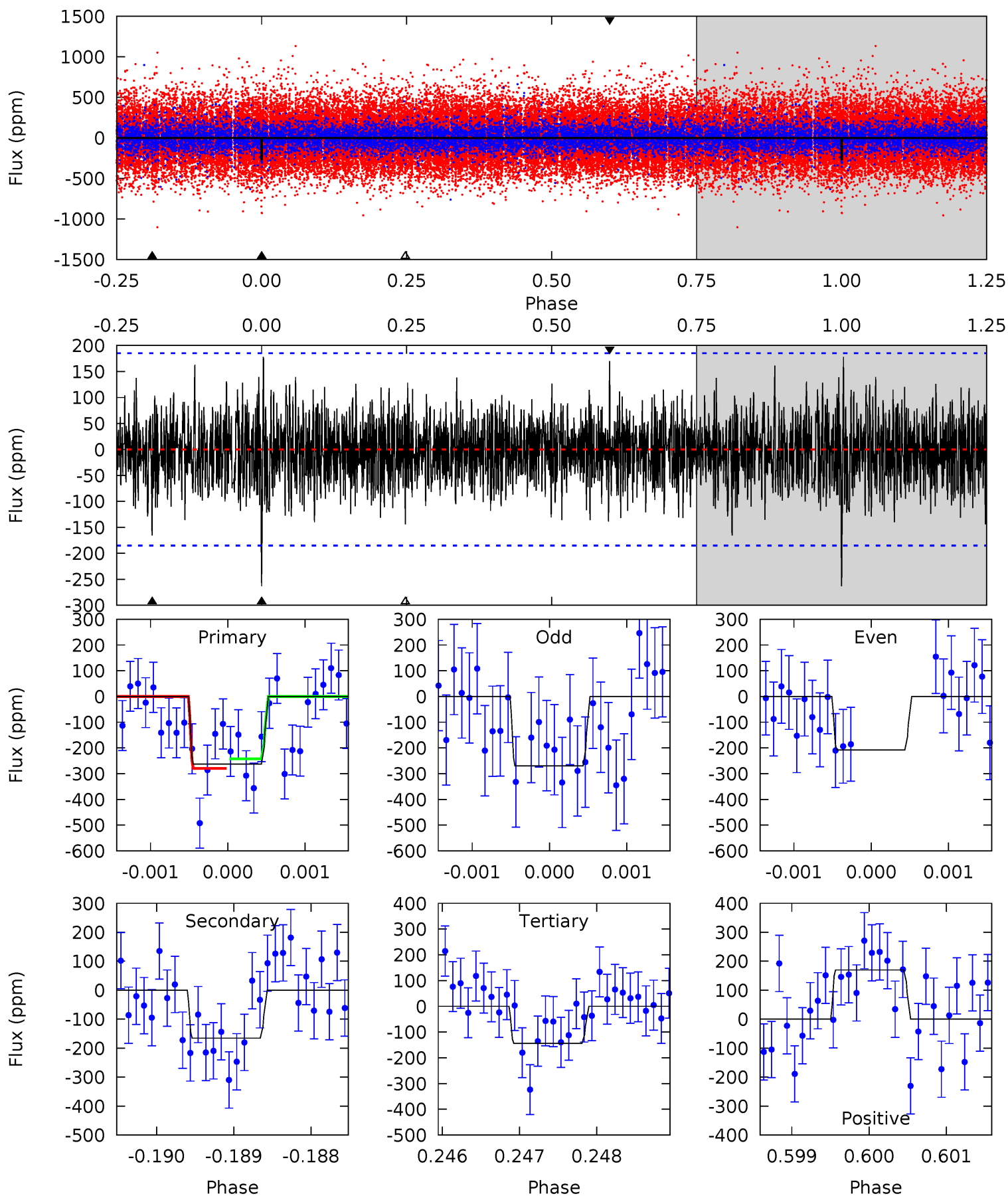
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	9.41	7.98	11.7	5.40	3.21	2.54	2.52	-1.19	1.42	-2.28	1.67	1.24	0.53	0.77



Alt Model-Shift Uniqueness Test

005880320-05, P = 387.536088 Days, E = 147.486551 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.70	4.85	4.22	4.98	5.42	3.25	1.35	3.48	2.72	0.62	-0.13	0.55	1.20	0.40	0.55



Stellar Parameters For KIC 005880320

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6021^{+120}_{-120}	$4.093^{+0.195}_{-0.105}$	$-0.340^{+0.150}_{-0.150}$	$1.458^{+0.226}_{-0.339}$	$0.960^{+0.088}_{-0.080}$	$0.436^{+0.451}_{-0.139}$
	+2%/-2%	+5%/-3%	+44%/-44%	+16%/-23%	+9%/-8%	+103%/-32%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005880320-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-333 ± 35	$3.13^{+1.04}_{-1.03}$	440^{+20}_{-27}	5731^{+1224}_{-647}	19862^{+23747}_{-8964}
Alt.	-166 ± 34	$2.60^{+1.06}_{-0.96}$	441^{+21}_{-27}	5333^{+1302}_{-707}	14229^{+22614}_{-7148}

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

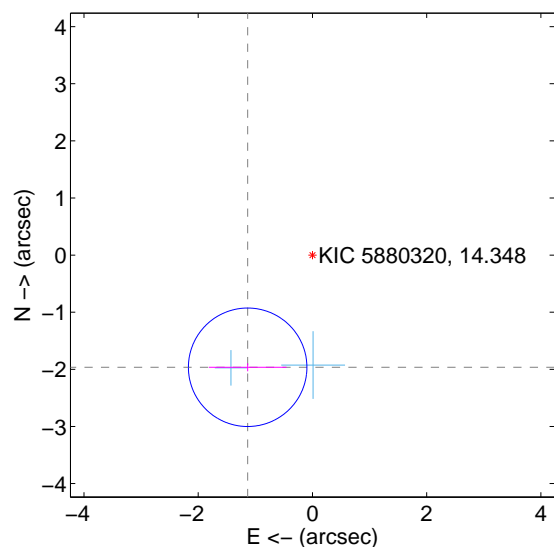
Supplemental centroid analysis for 005880320-05. Kepler magnitude: 14.35. Transit SNR 5.03

There are 2 quarters with good PRF difference image offsets

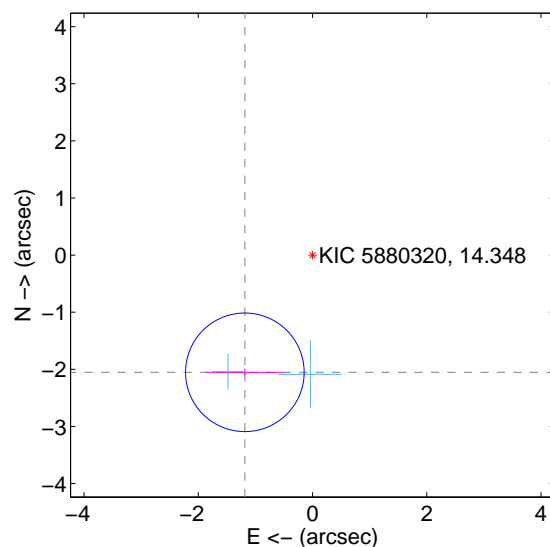
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.268 ± 0.346	6.56	1.134 ± 0.680	-1.964 ± 0.071
PRF-fit source offset from KIC position	2.370 ± 0.346	6.85	1.185 ± 0.681	-2.052 ± 0.070
photometric centroid source offset	0.74 ± 0.93	0.79	0.47 ± 1.03	0.57 ± 0.85

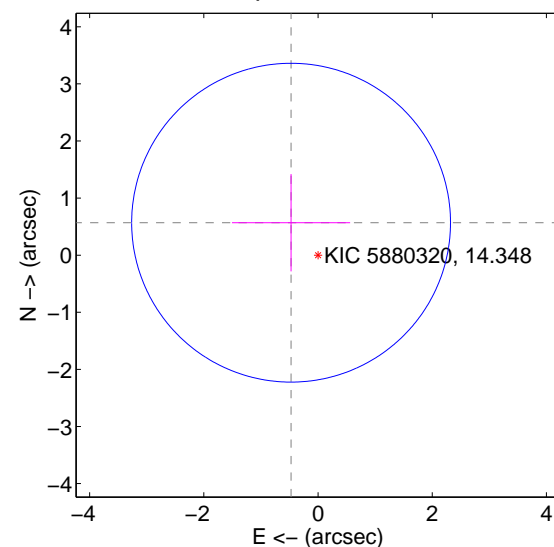
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

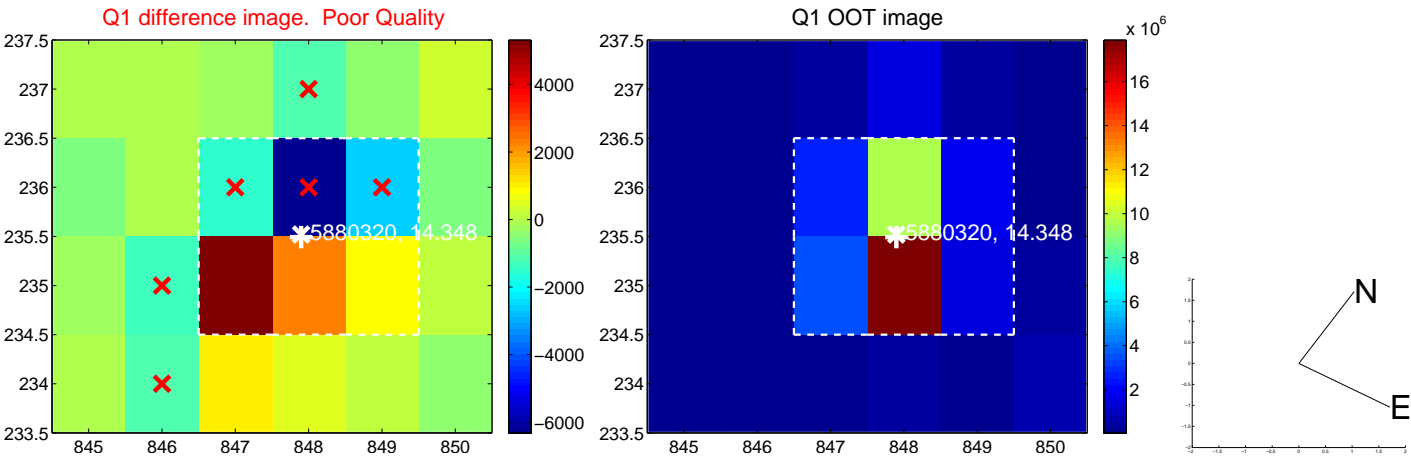


offset from photometric centroids

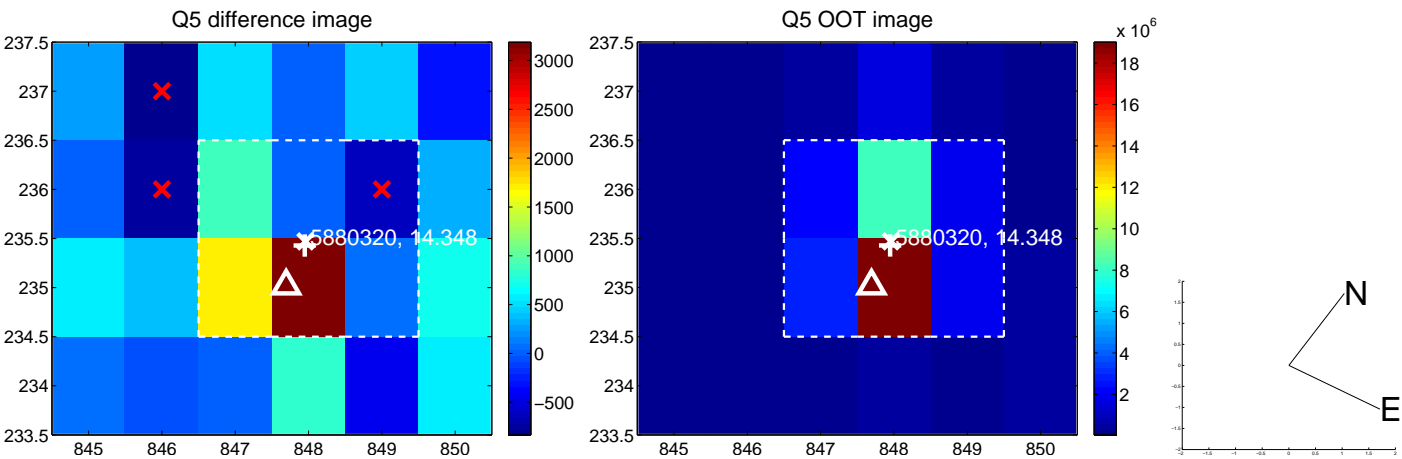


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

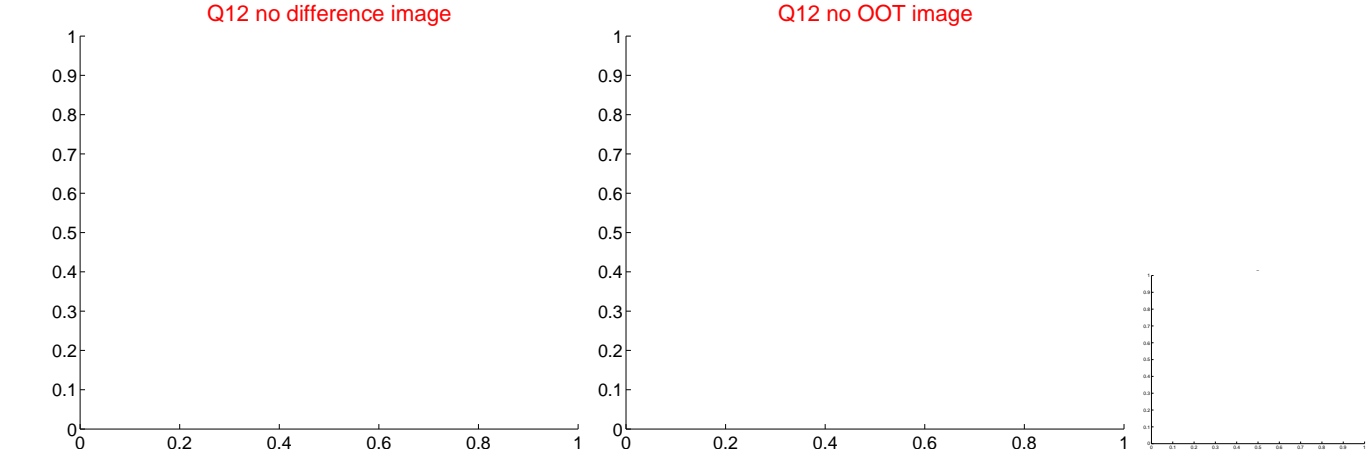
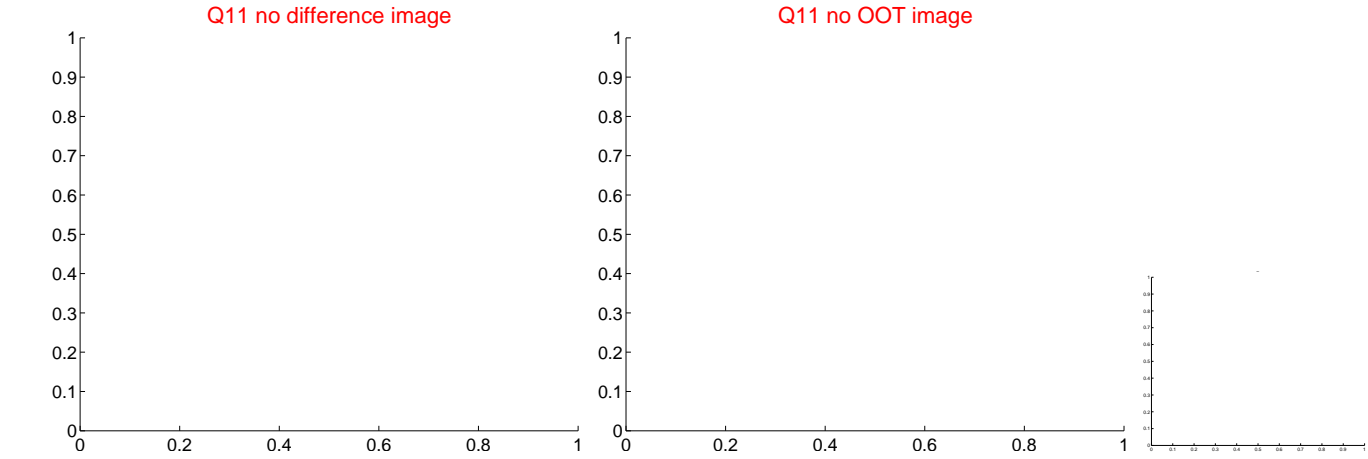
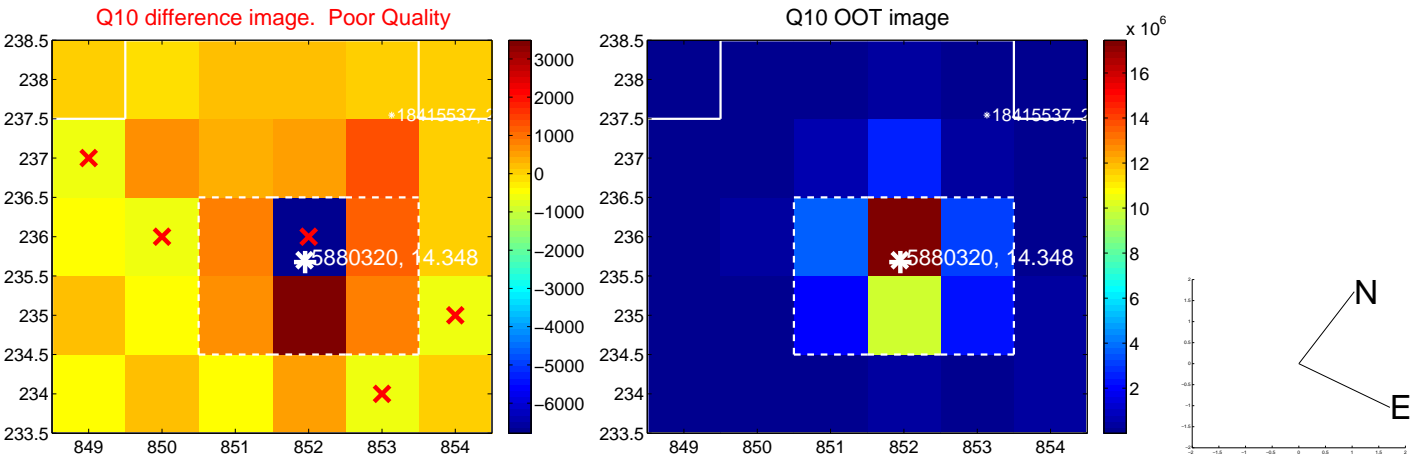
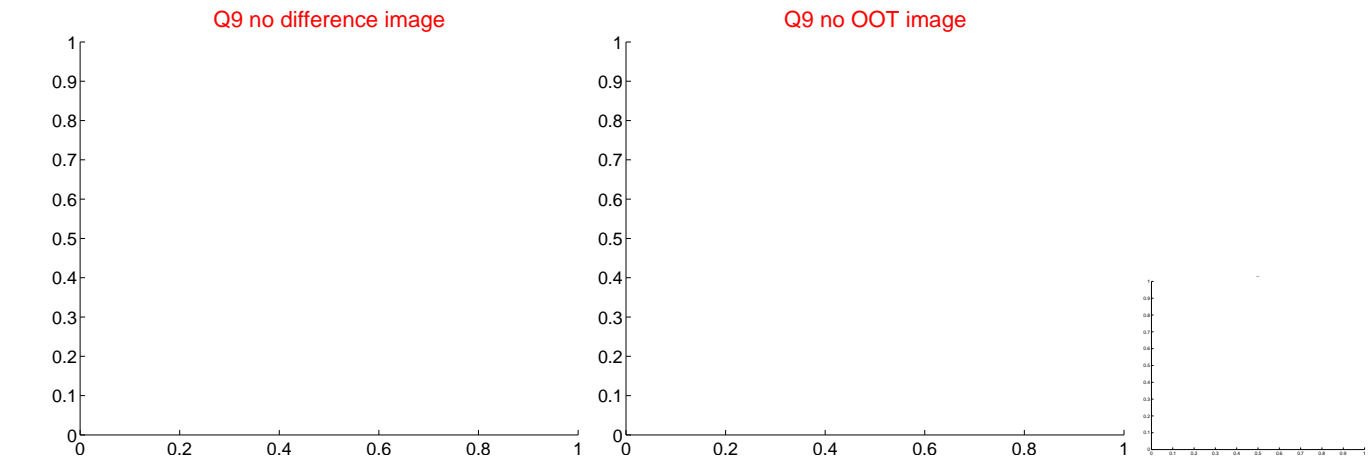
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



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

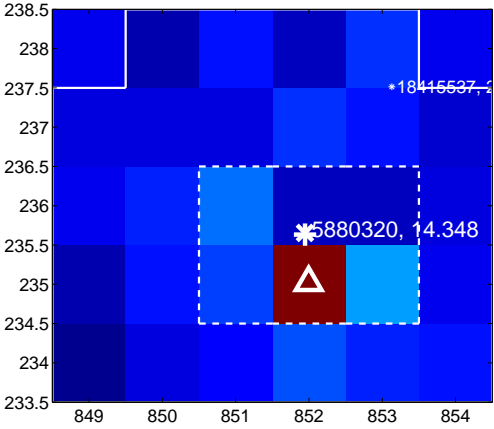
Q13 no difference image



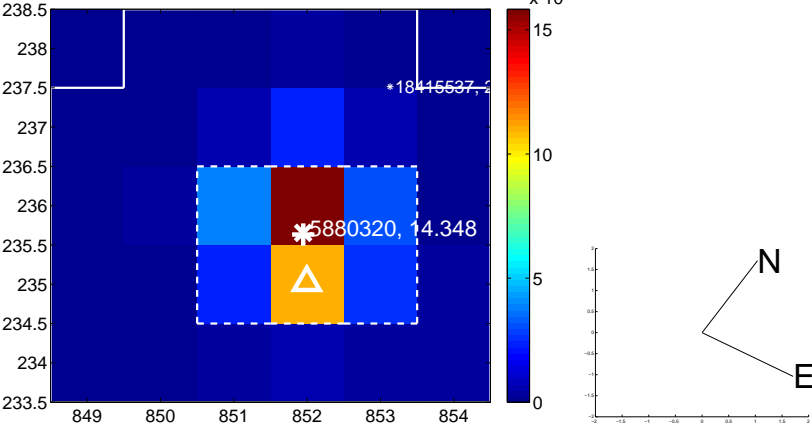
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



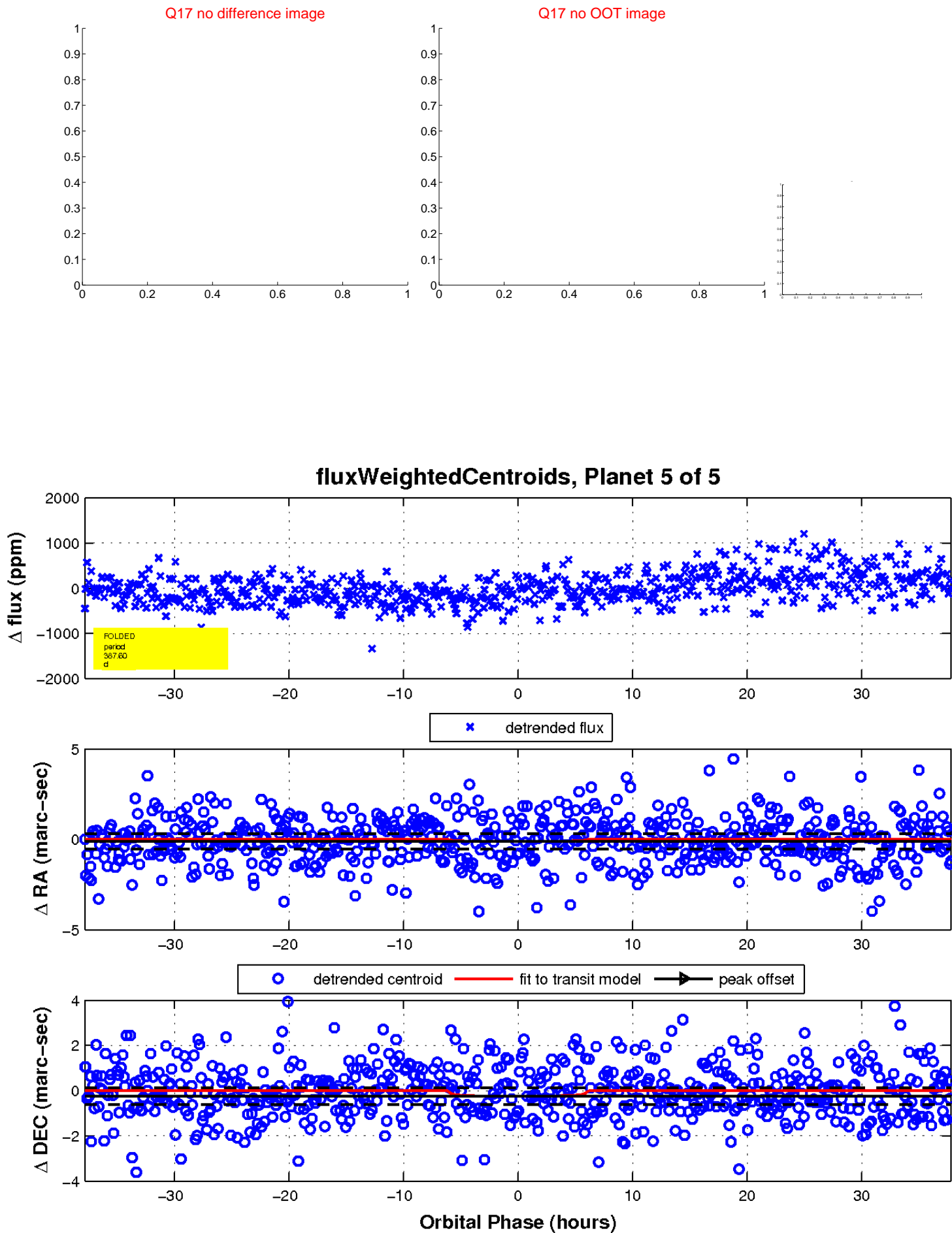
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

