

KIC 007973867

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})
007973867-01	OBS	No	0.953301	131.852228	16.0	5.351	9.9	8.1	1.65	7053	0.77	13754.35
007973867-02	OBS	No	307.913127	394.960592	371.9	30.880	10.3	8.7	1.65	7053	3.58	6.21
007973867-03	OBS	No	114.927559	172.606871	222.0	9.720	9.0	7.3	1.65	7053	2.64	23.09
007973867-04	OBS	No	108.314995	162.321150	182.6	10.481	7.7	6.8	1.65	7053	2.43	24.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007973867-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
007973867-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007973867-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007973867-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

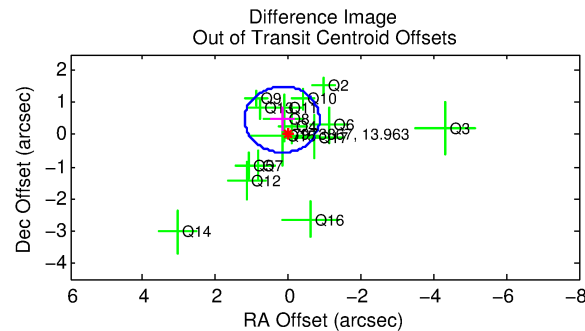
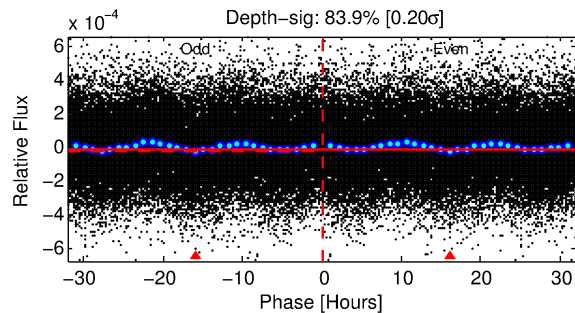
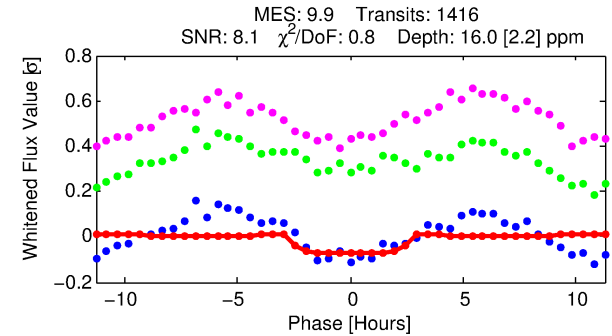
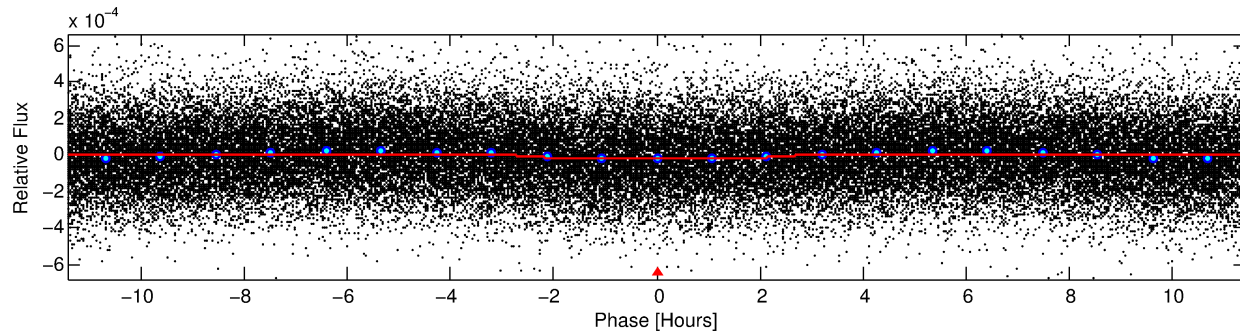
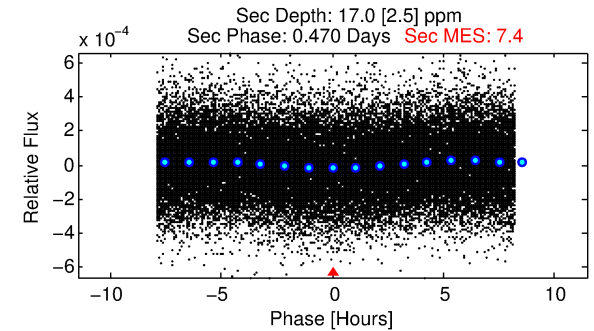
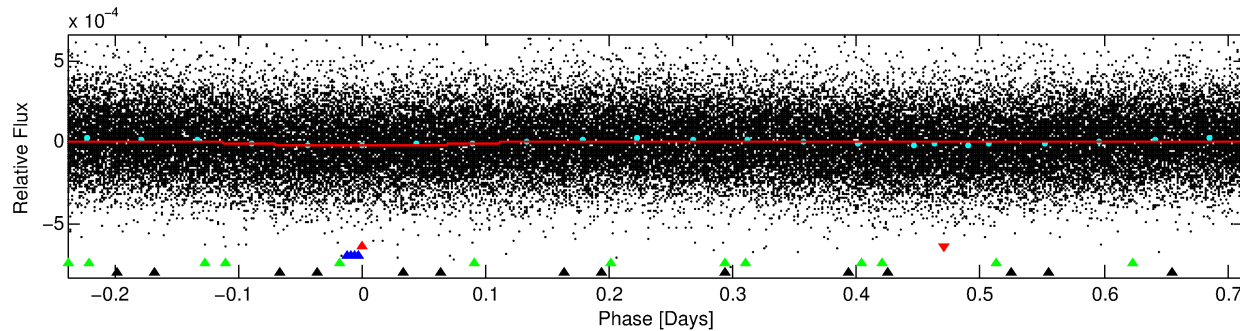
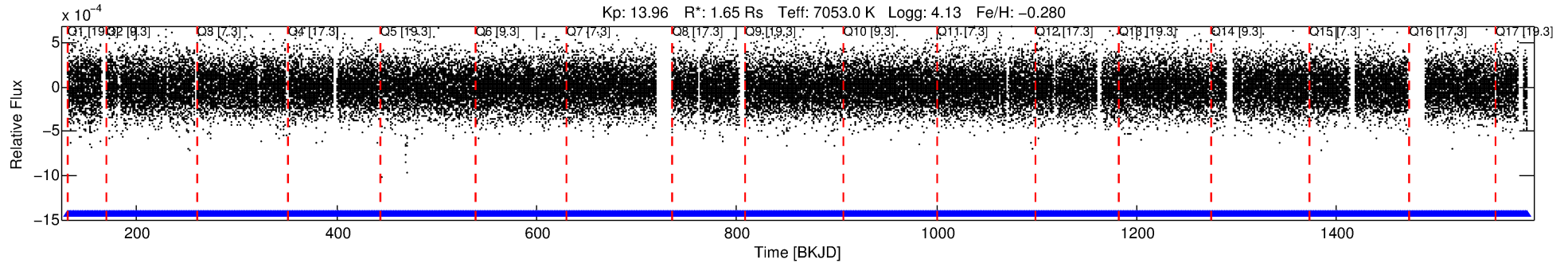
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007973867-01

No Significant Match Found

DV One-Page Summary

KIC: 7973867 Candidate: 1 of 4 Period: 0.953 d



DV Fit Results:

Period = 0.95330 [0.00002] d
Epoch = 131.8522 [0.0060] BKJD
Rp/R* = 0.0043 [0.0023]
a/R* = 1.11 [0.75]
b = 0.90 [0.70]
Seff = 13754.35 [5172.42]
Teq = 2761 [260] K
Rp = 0.77 [0.48] Re
a = 0.0210 [0.0050] AU
Ag = 6.93 [7.97] [0.74σ]
Teffp = 6928 [1931] K [2.14σ]

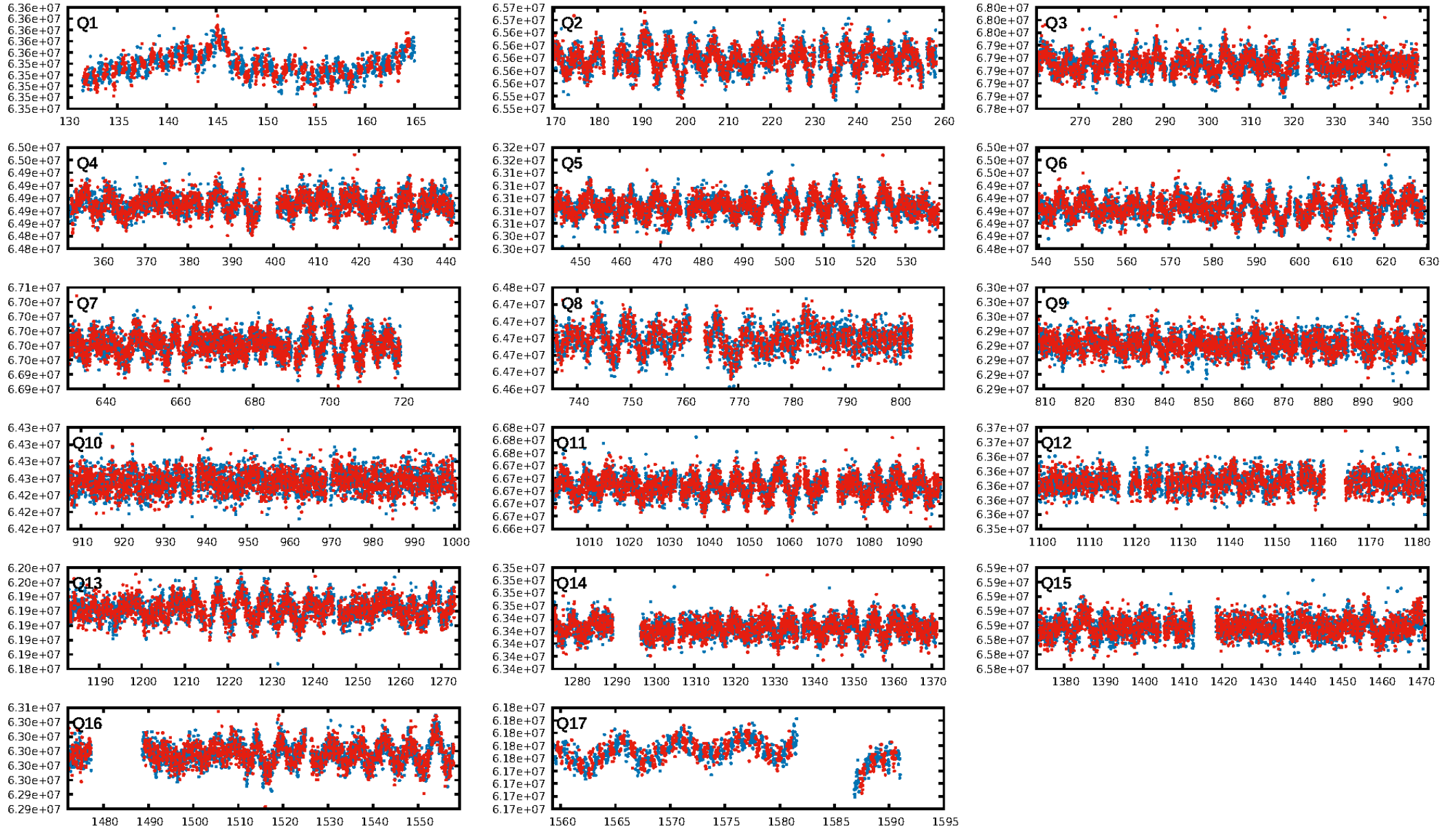
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [218.95σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.17e-14
RollingBand-fgt: 1.00 [1354/1354]
GhostDiagnostic-chr: 4.65
Centroid-sig: 0.5%
Centroid-so: 2.299 arcsec [1.81σ]
OotOffset-rm: 0.500 arcsec [1.46σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.424 arcsec [1.22σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [17/17]

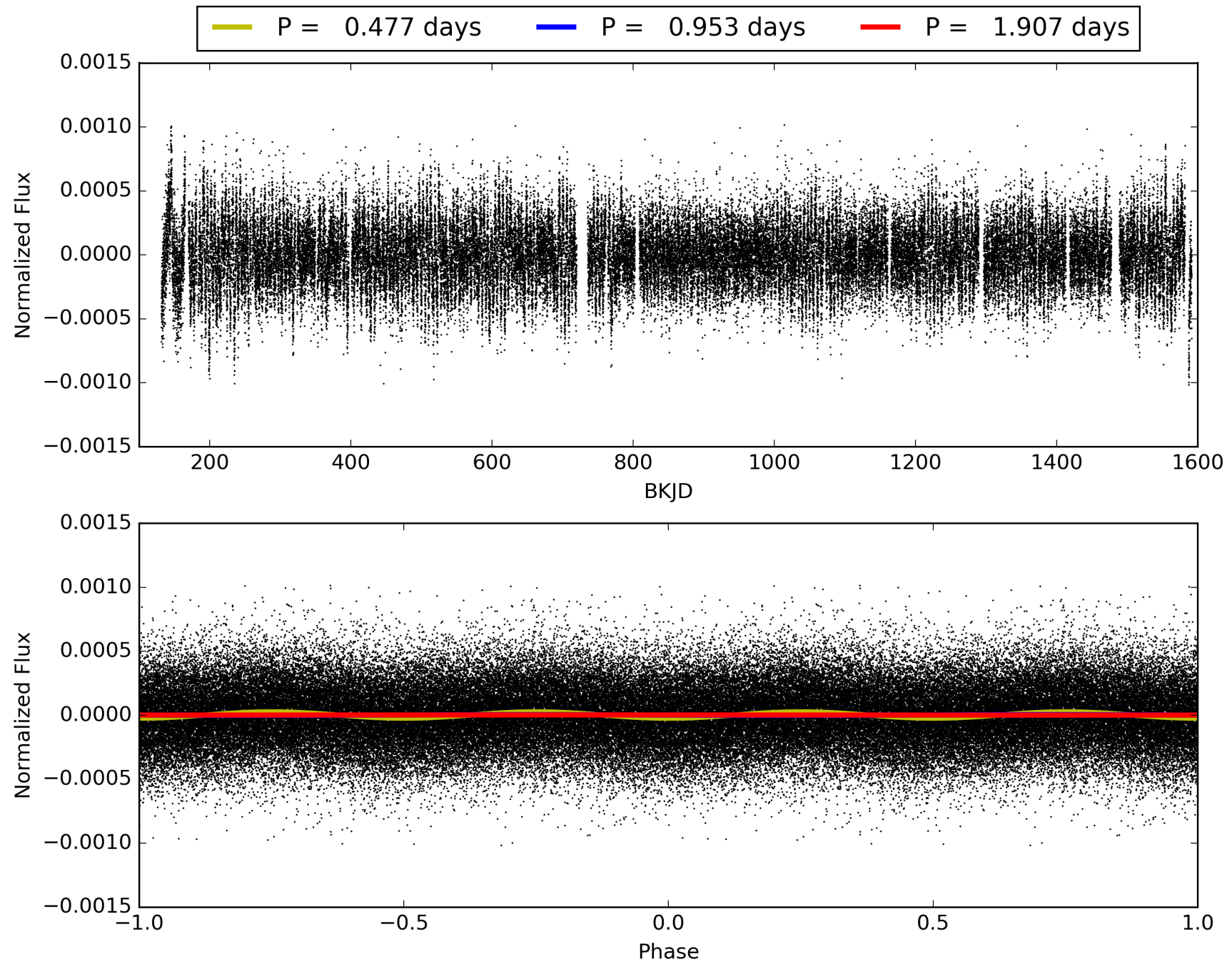
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:13:46 Z

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

TCE 007973867-01, PDC Light Curves

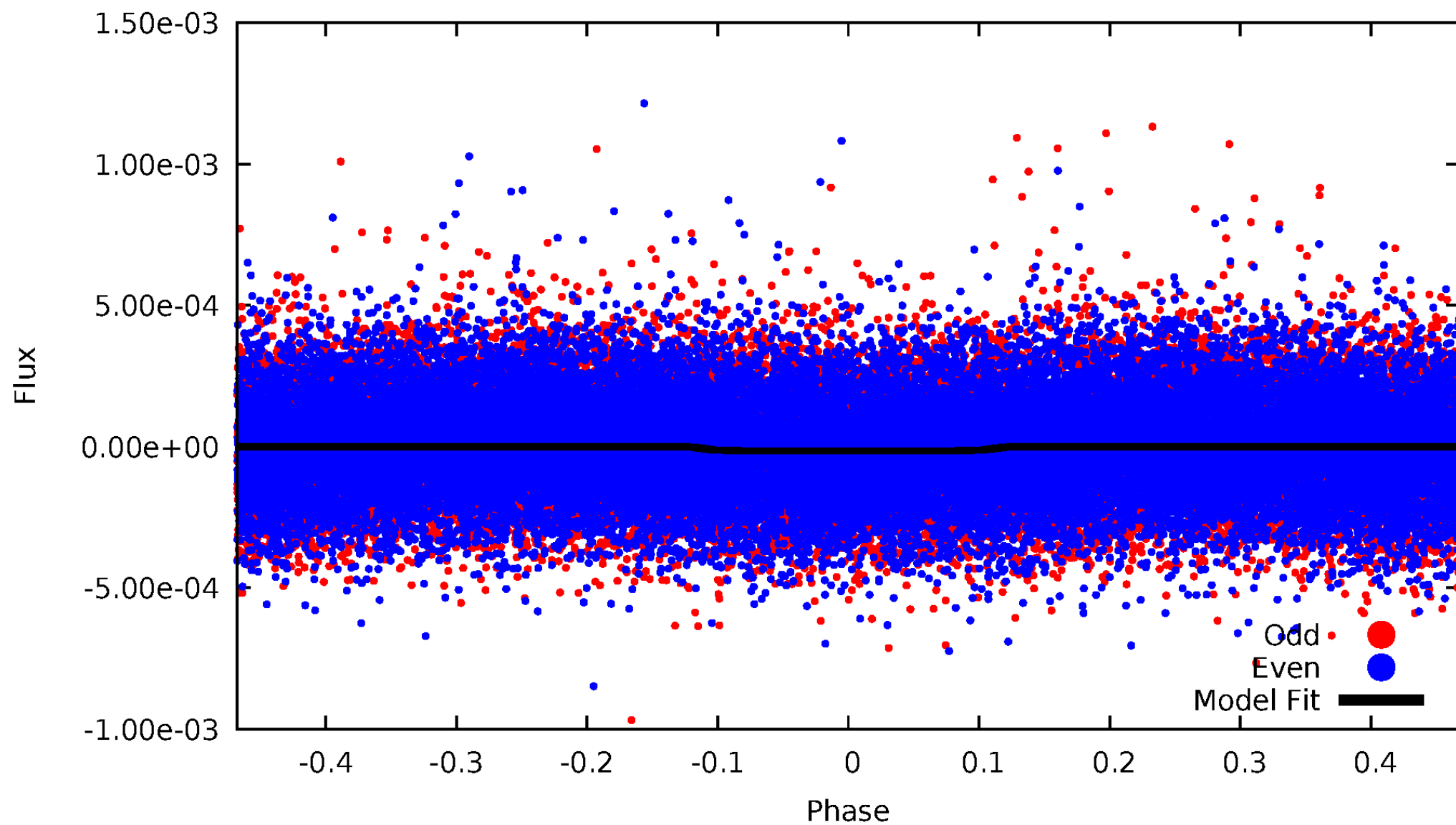


TCE 007973867-01



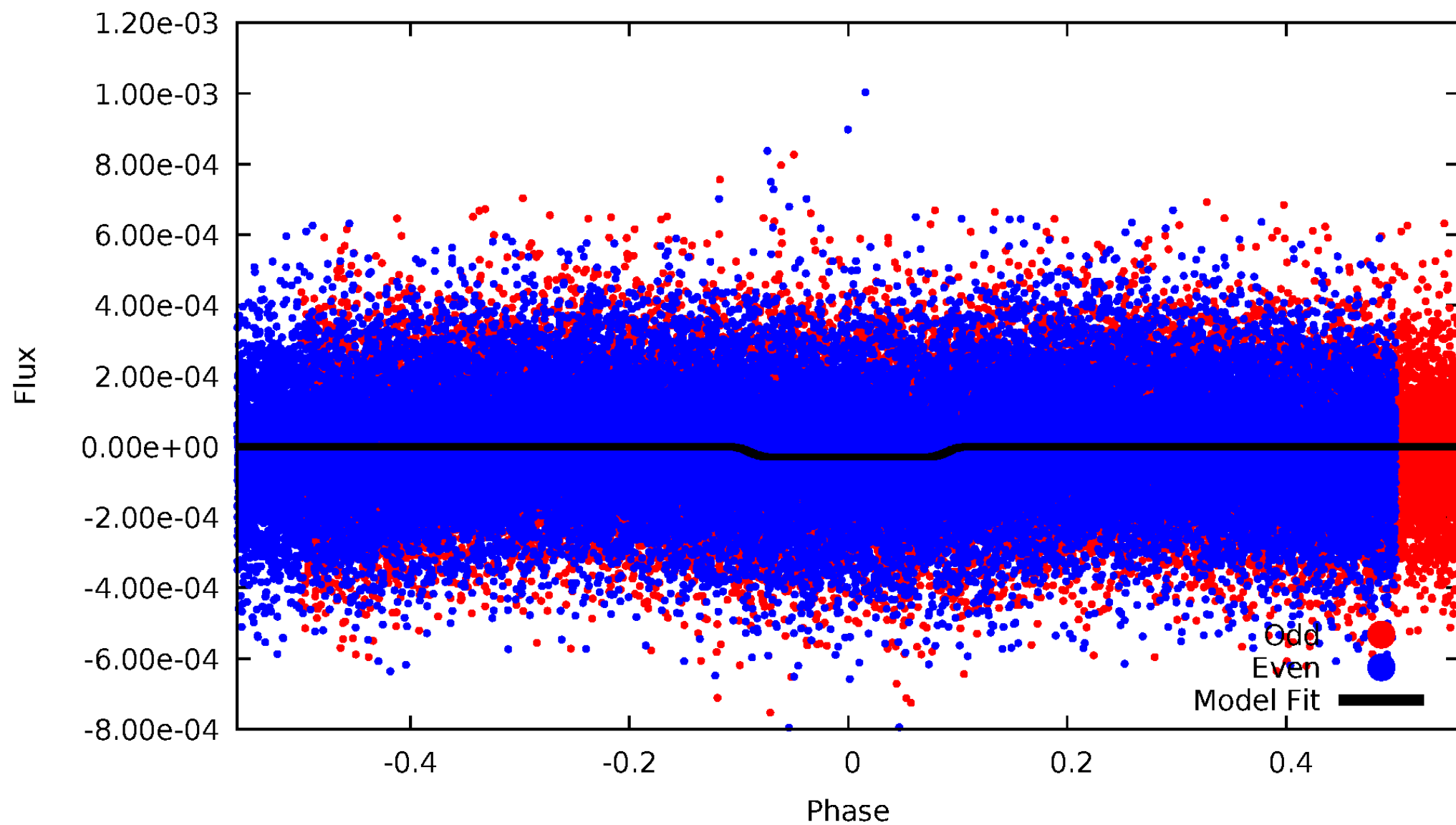
DV Odd/Even

TCE 007973867-01



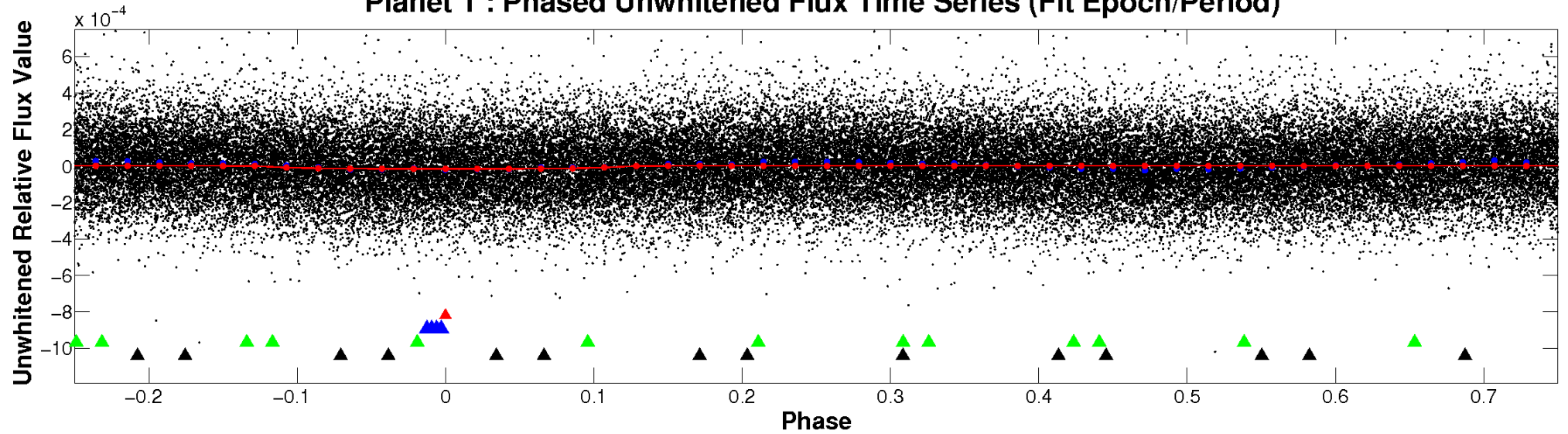
ALT Odd/Even

TCE 007973867-01

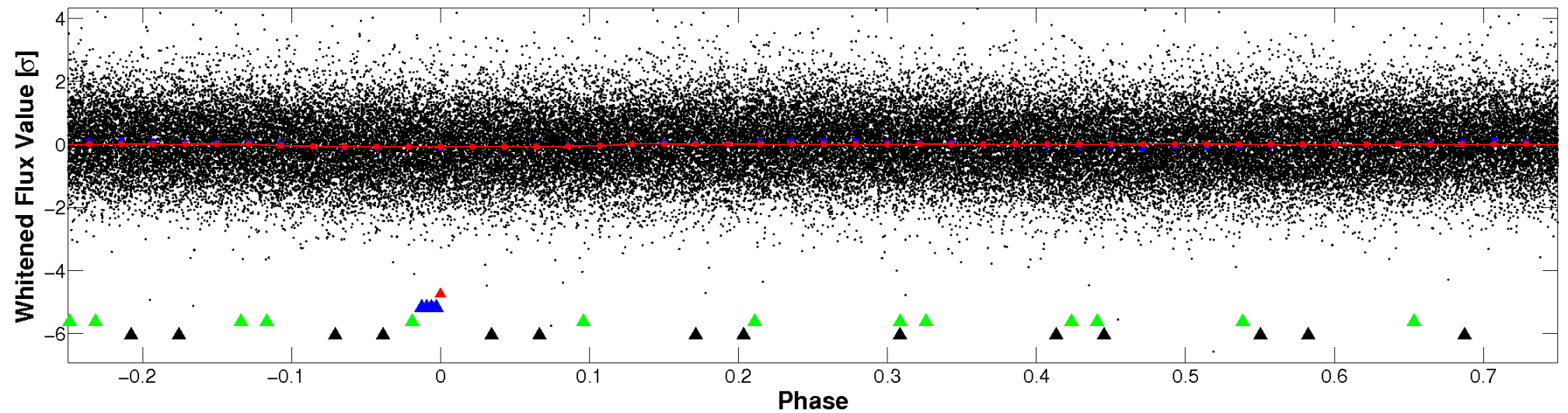


Non-Whitened Vs. Whitened Light Curve

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

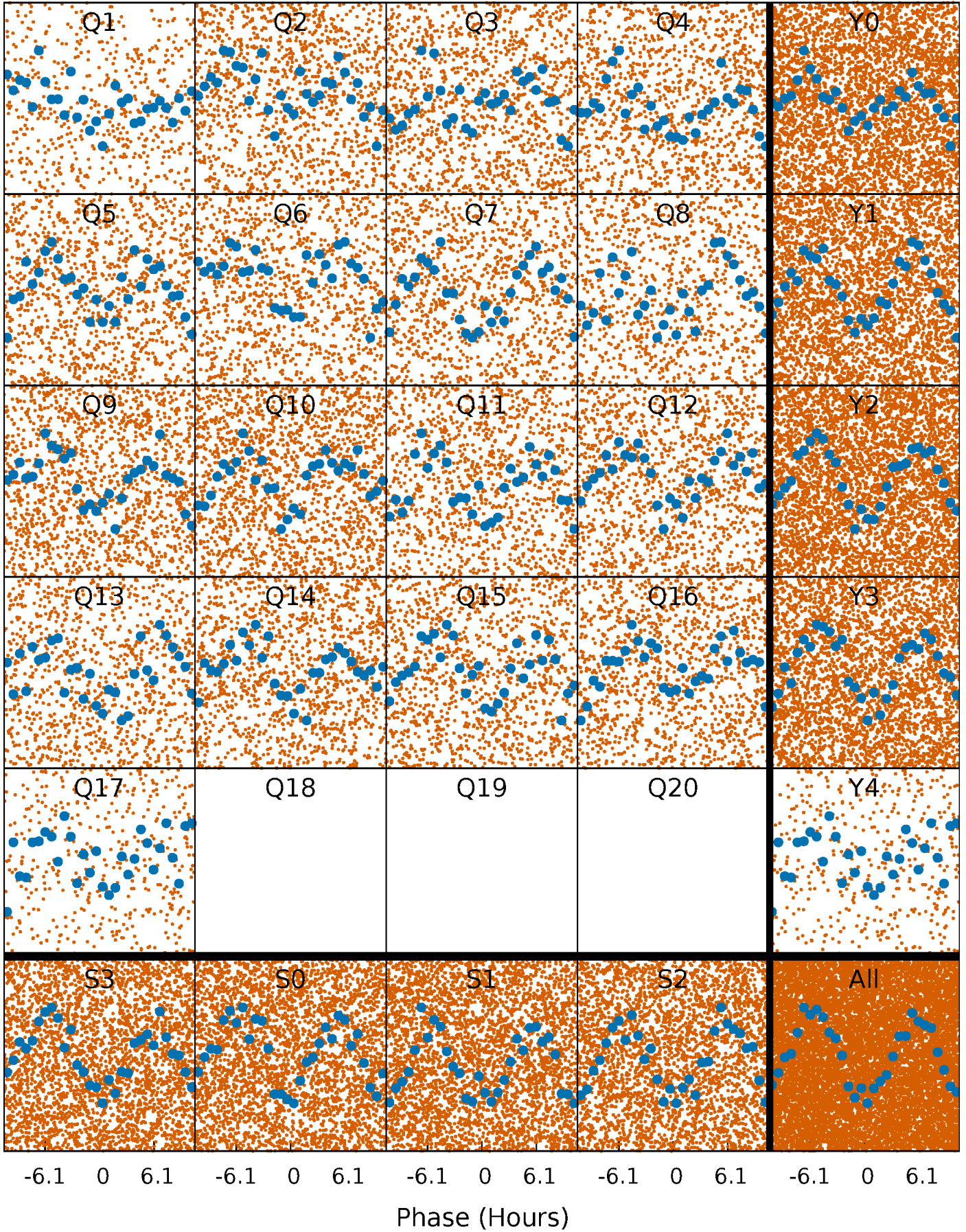


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



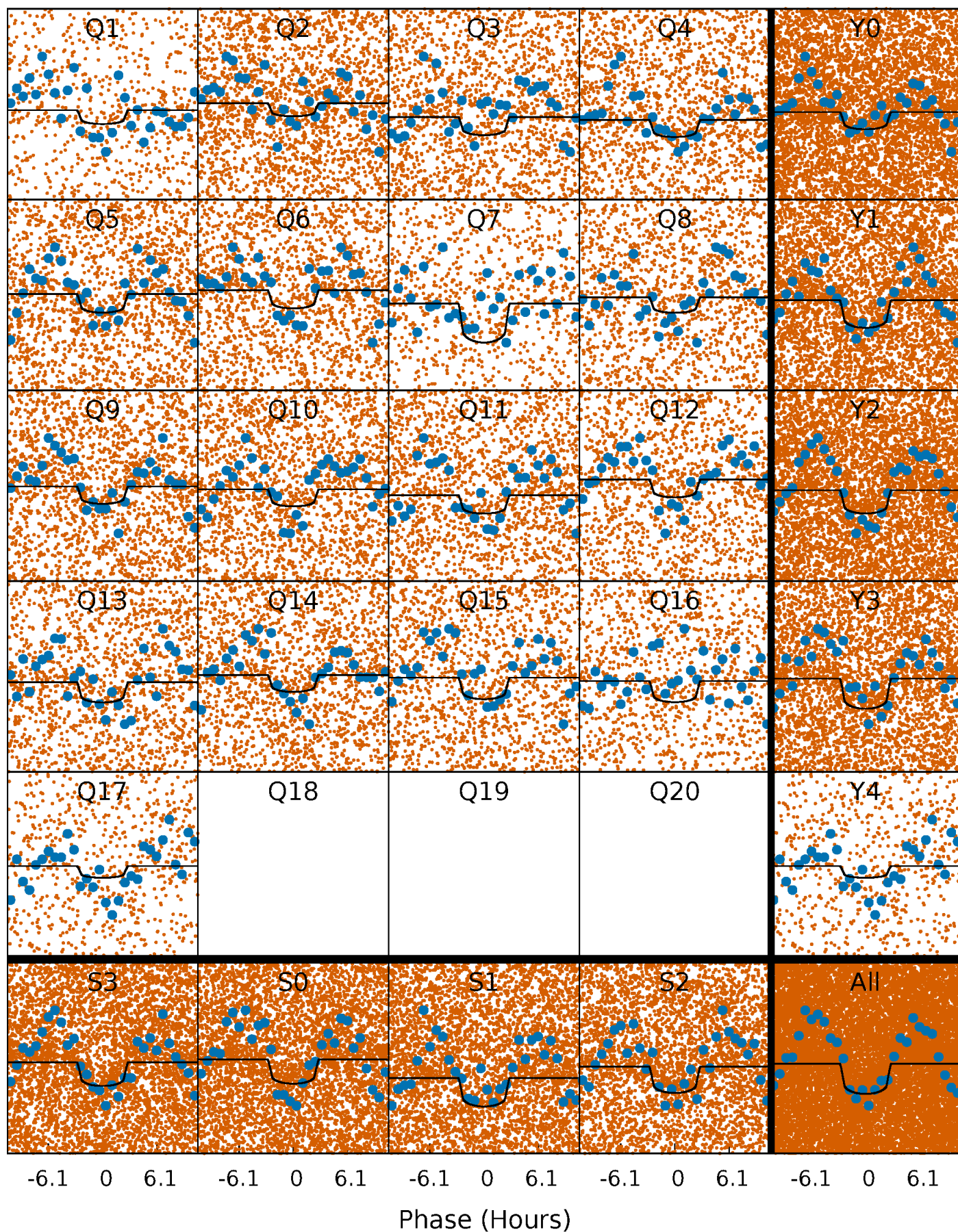
PDC Quarter-Phased Transit Curves

TCE 007973867-01 P= 0.953301 Days $T_0=131.852228$ (BKJD)



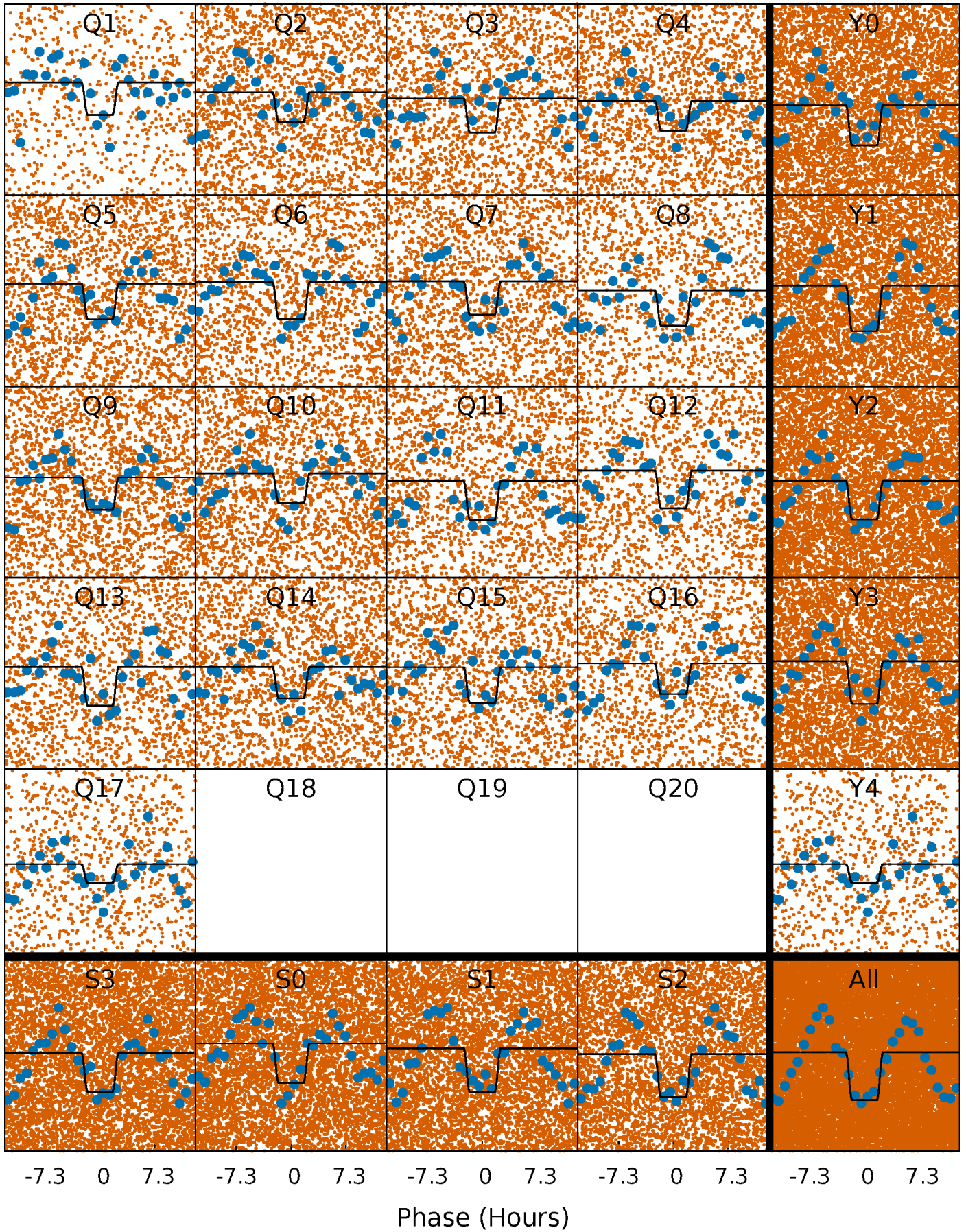
DV Quarter-Phased Transit Curves

TCE 007973867-01 P= 0.953301 Days $T_0=131.852228$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

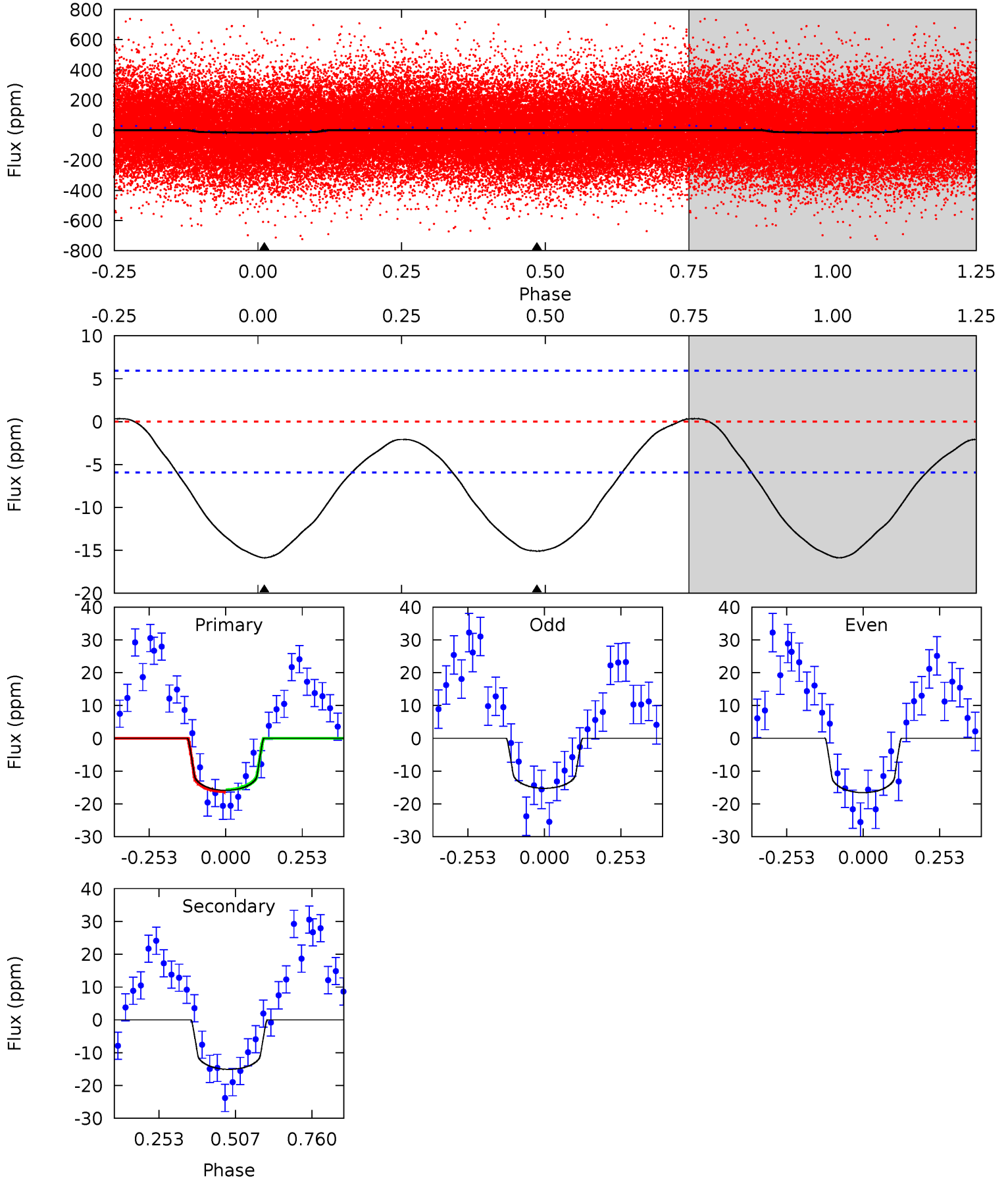
TCE 007973867-01 P= 0.953343 Days $T_0=131.825969$ (BKJD)



DV Model-Shift Uniqueness Test

007973867-01, P = 0.953301 Days, E = 130.898927 Days

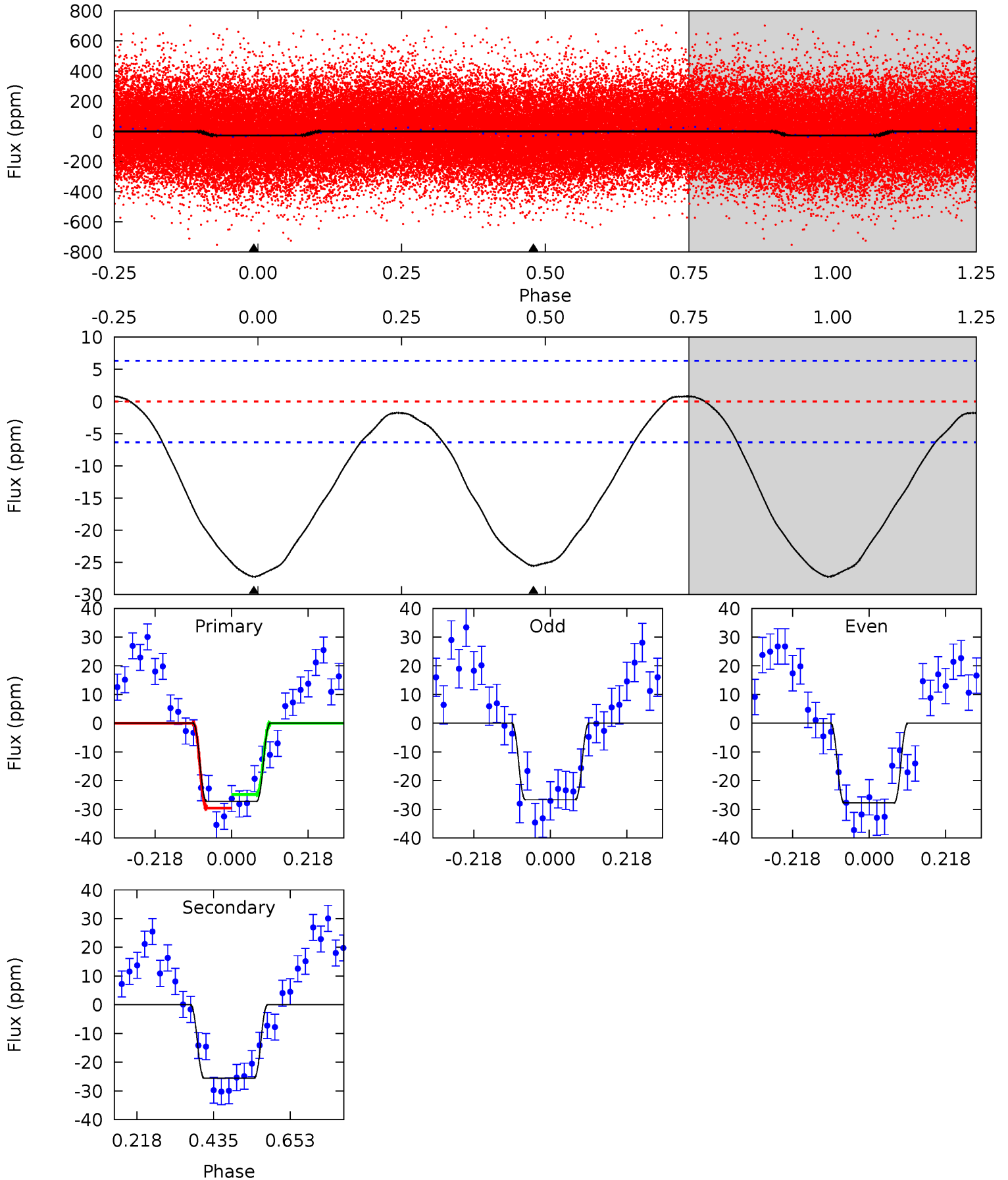
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	11.1	0	0	4.37	1.14	0.72	11.7	11.7	11.1	11.1	0.49	0.99	0.02	0.21



Alt Model-Shift Uniqueness Test

007973867-01, $P = 0.953343$ Days, $E = 130.872626$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	17.8	0	0	4.40	1.23	0.92	18.9	18.9	17.8	17.8	0.39	1.07	0.03	1.62



Stellar Parameters For KIC 007973867

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7053^{+199}_{-313}	$4.134^{+0.175}_{-0.175}$	$-0.280^{+0.250}_{-0.350}$	$1.654^{+0.482}_{-0.395}$	$1.363^{+0.214}_{-0.235}$	$0.424^{+0.407}_{-0.206}$
	+3%/-4%	+4%/-4%	+89%/-125%	+29%/-24%	+16%/-17%	+96%/-49%
Source	PHO1	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 007973867-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 1	$0.78^{+0.42}_{-0.37}$	3832^{+317}_{-291}	6526^{+3202}_{-1300}	$6.023^{+16.003}_{-3.528}$
Alt.	-26 ± 1	$1.00^{+0.43}_{-0.43}$	3845^{+312}_{-276}	6568^{+2674}_{-1078}	$6.115^{+12.440}_{-3.085}$

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 $A_{obs} \gg 1.0$

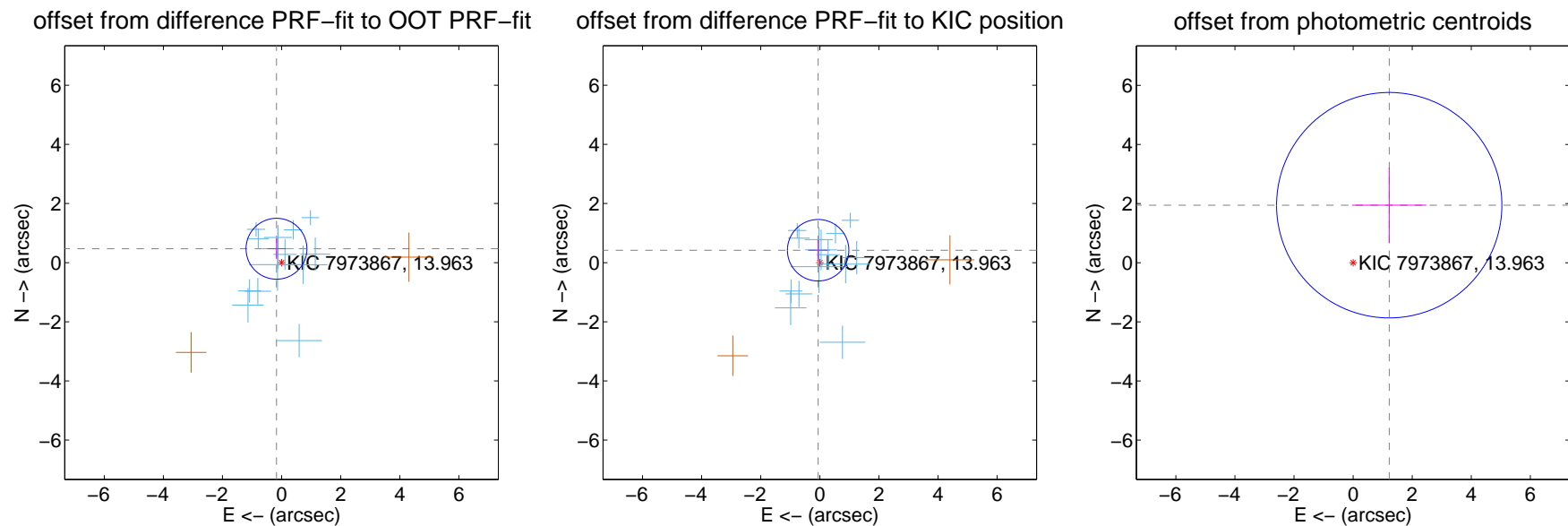
DV Centroid Data

Supplemental centroid analysis for 007973867-01. Kepler magnitude: 13.96. Transit SNR 8.06

There are 14 quarters with good PRF difference image offsets

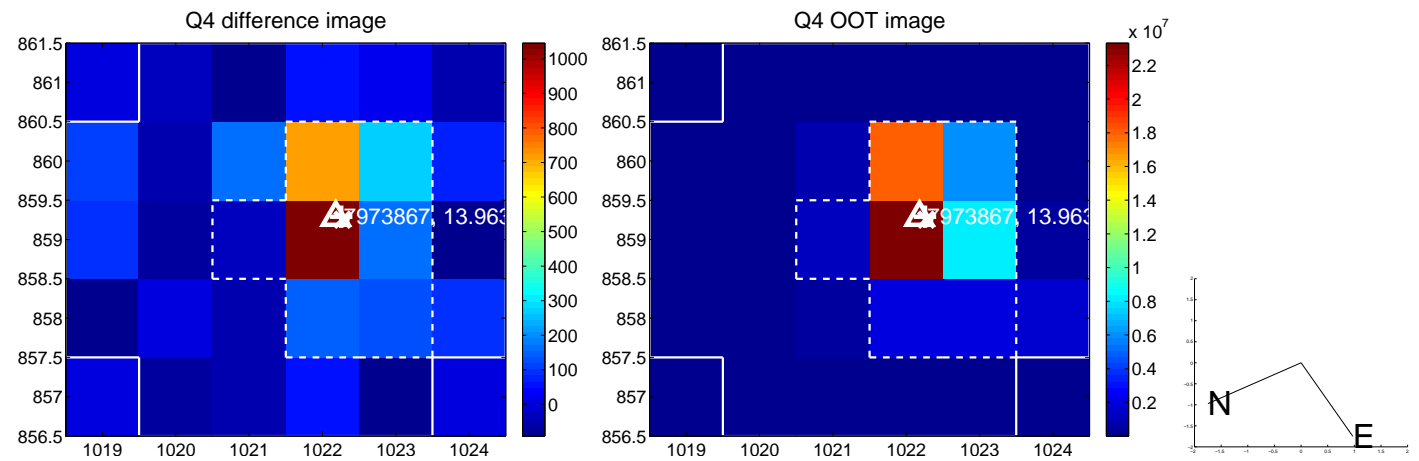
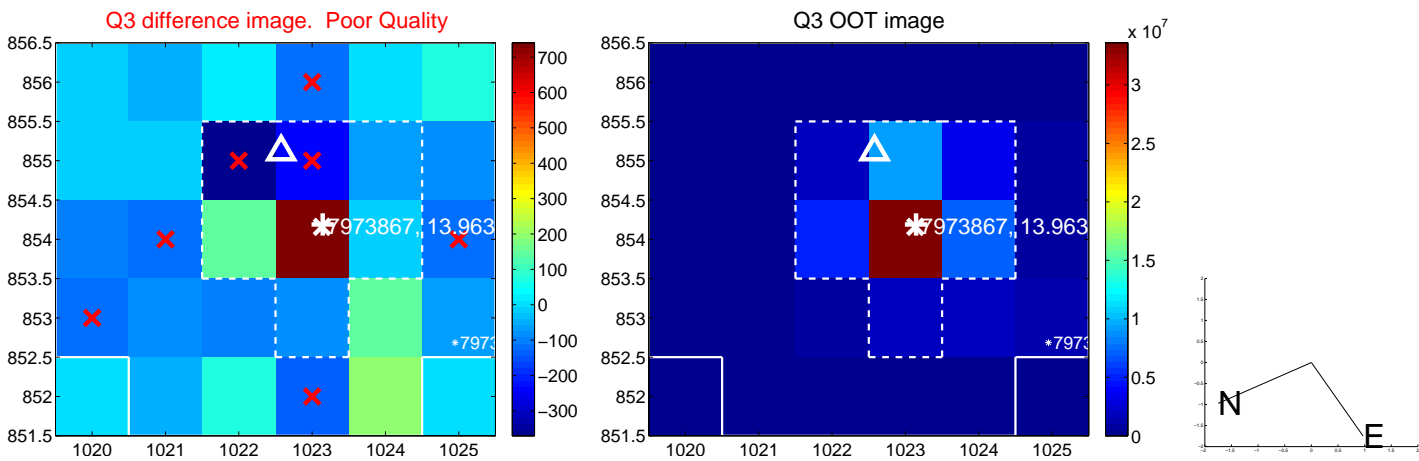
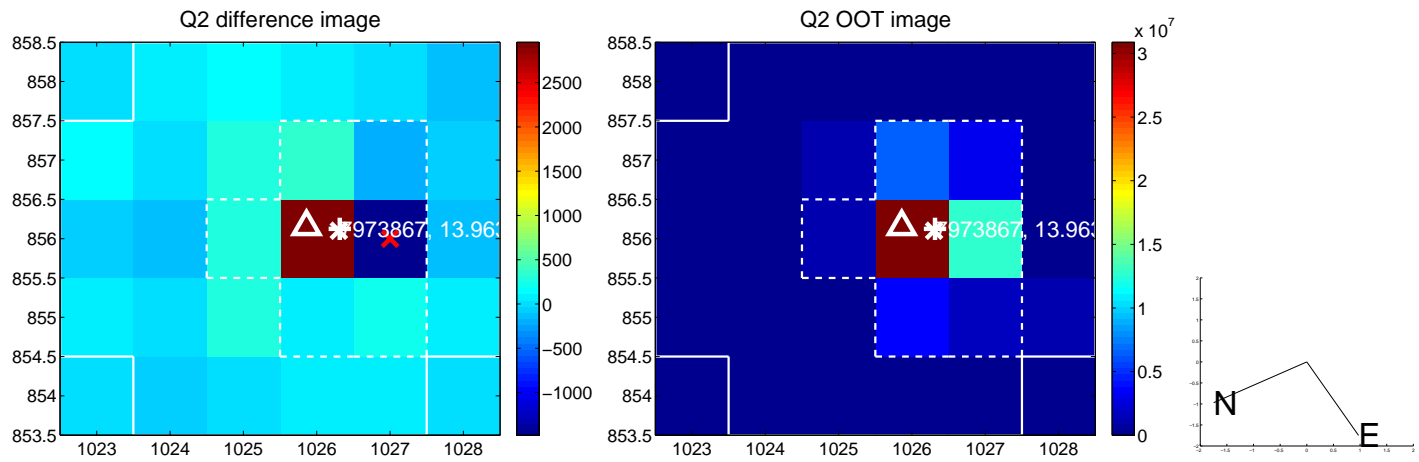
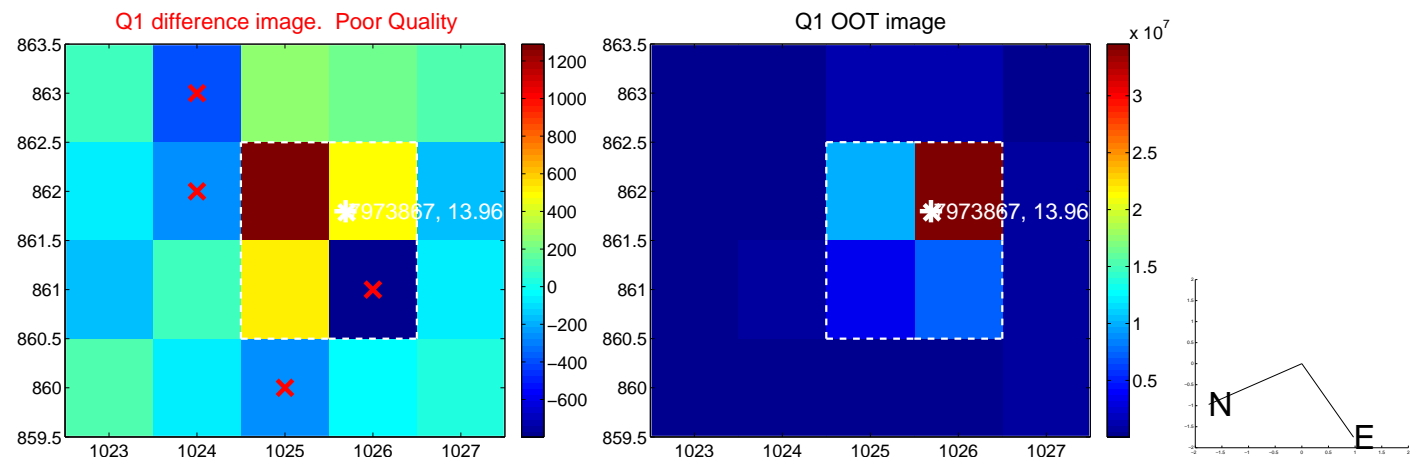
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.500 ± 0.343	1.46	0.172 ± 0.308	0.470 ± 0.348
PRF-fit source offset from KIC position	0.424 ± 0.347	1.22	0.057 ± 0.309	0.420 ± 0.347
photometric centroid source offset	2.30 ± 1.27	1.81	-1.22 ± 1.26	1.95 ± 1.28

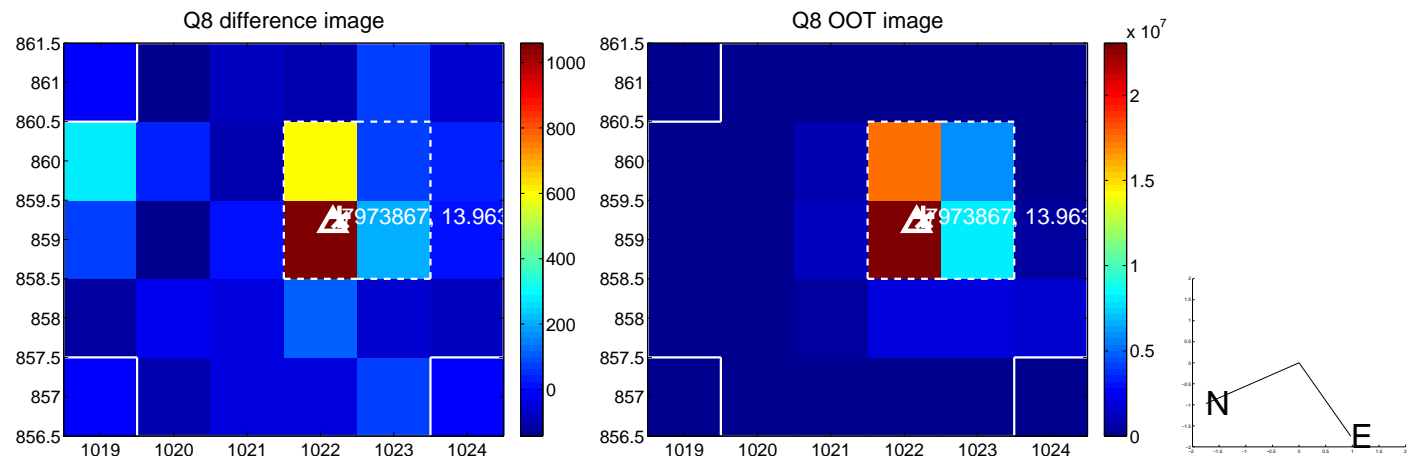
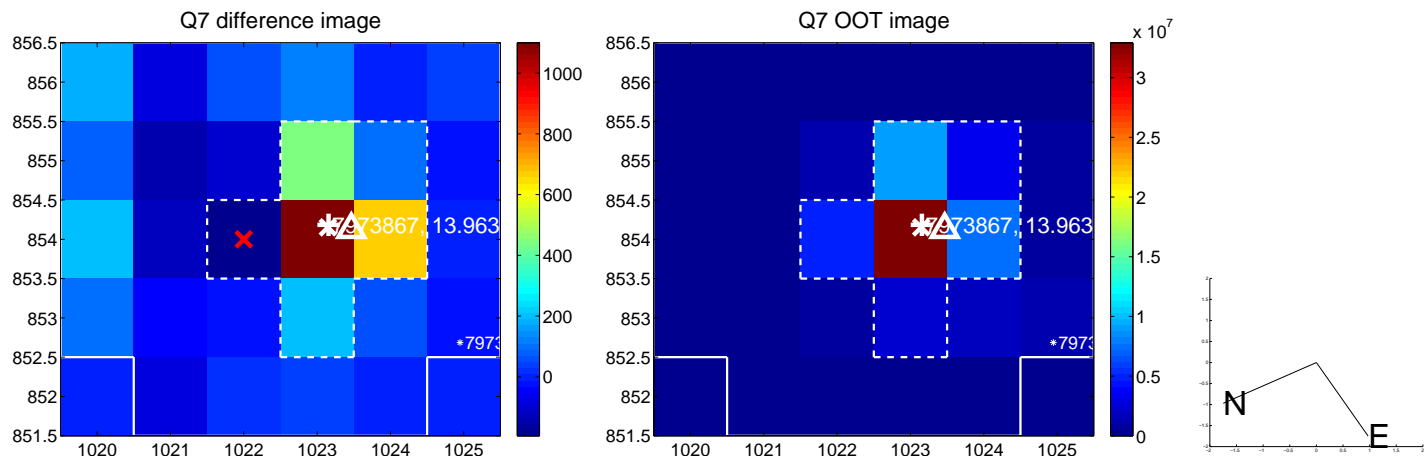
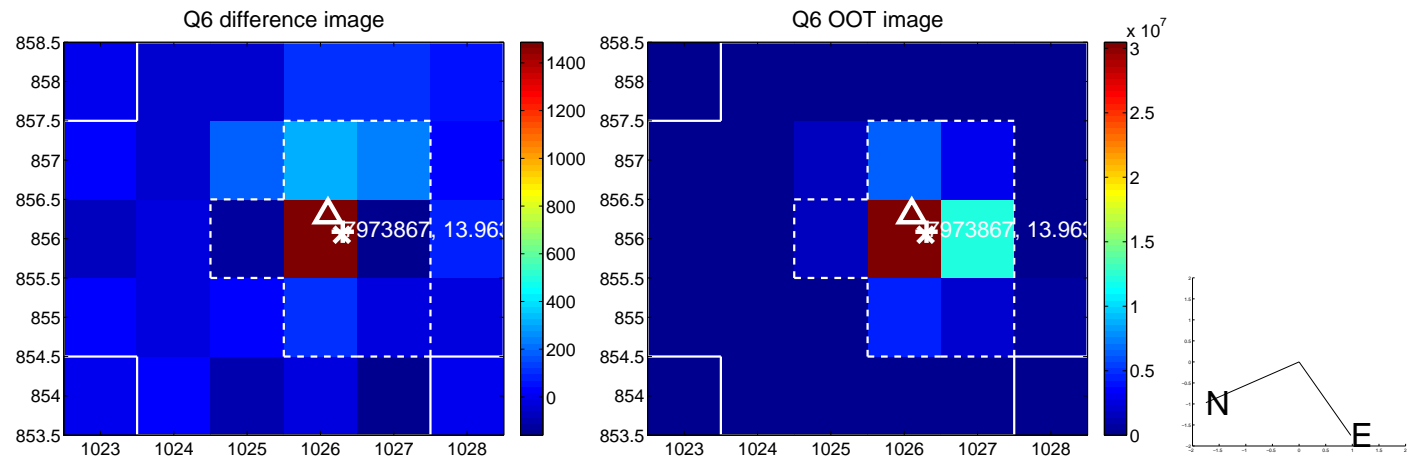
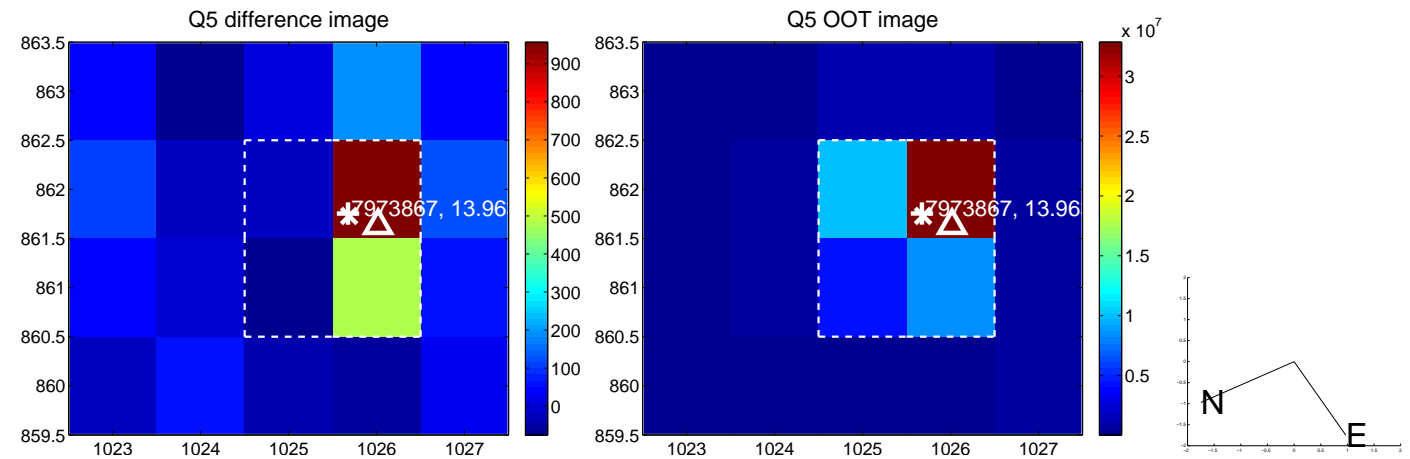


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

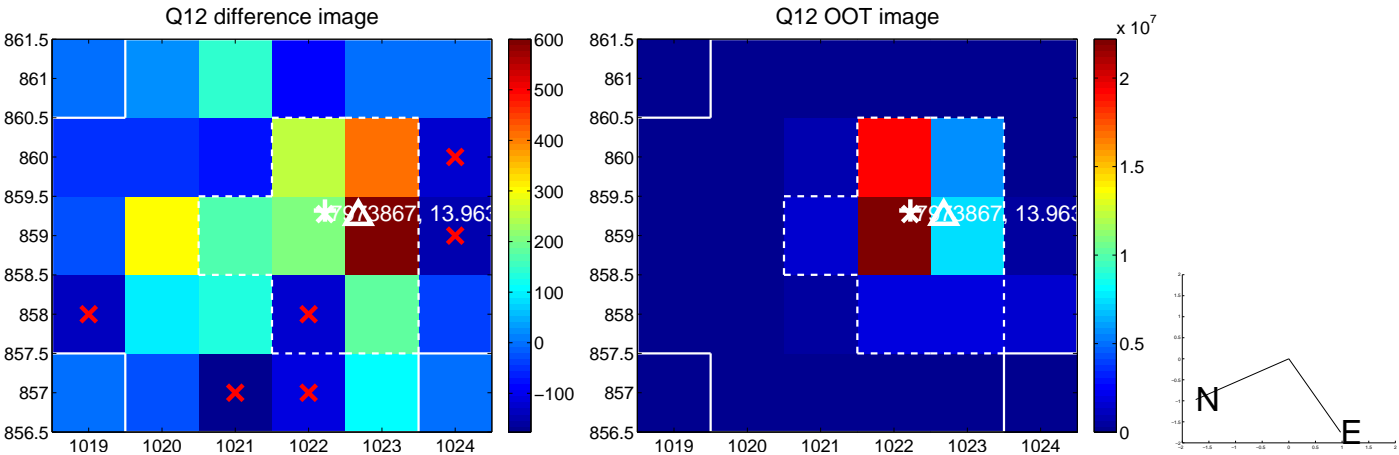
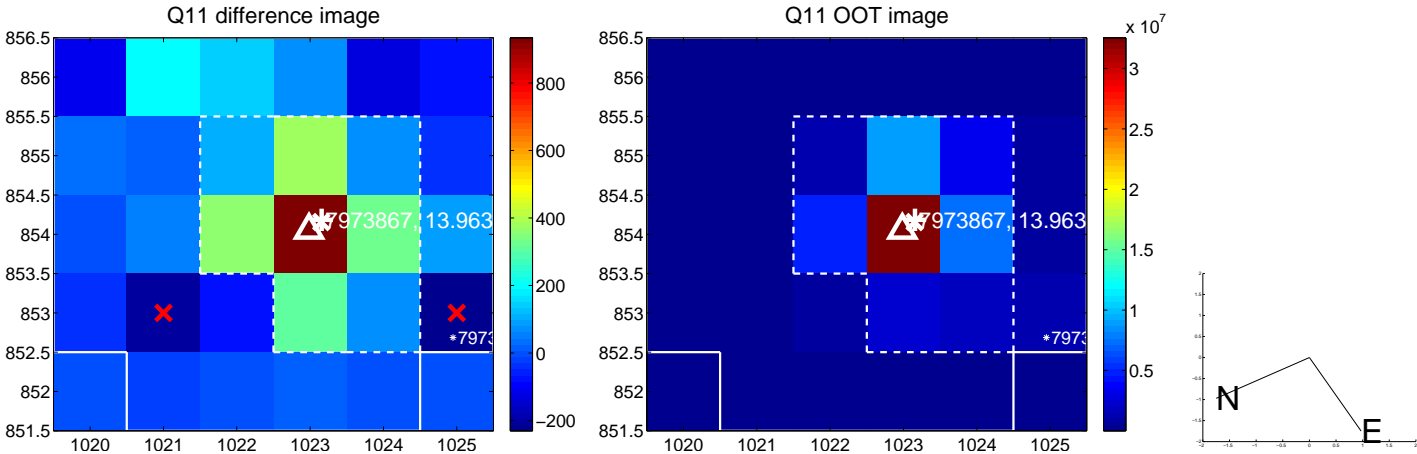
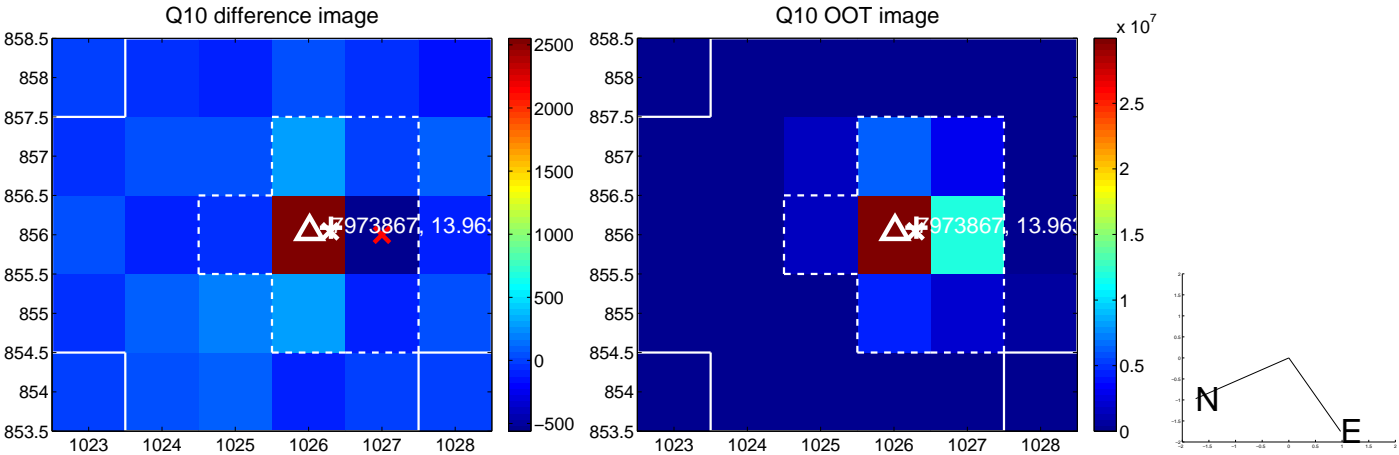
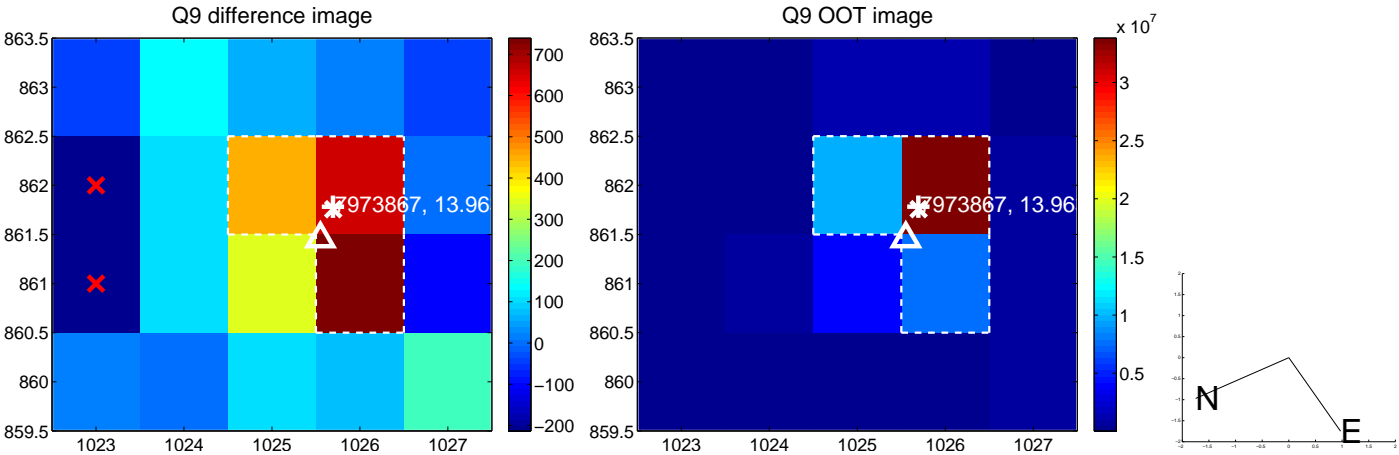
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



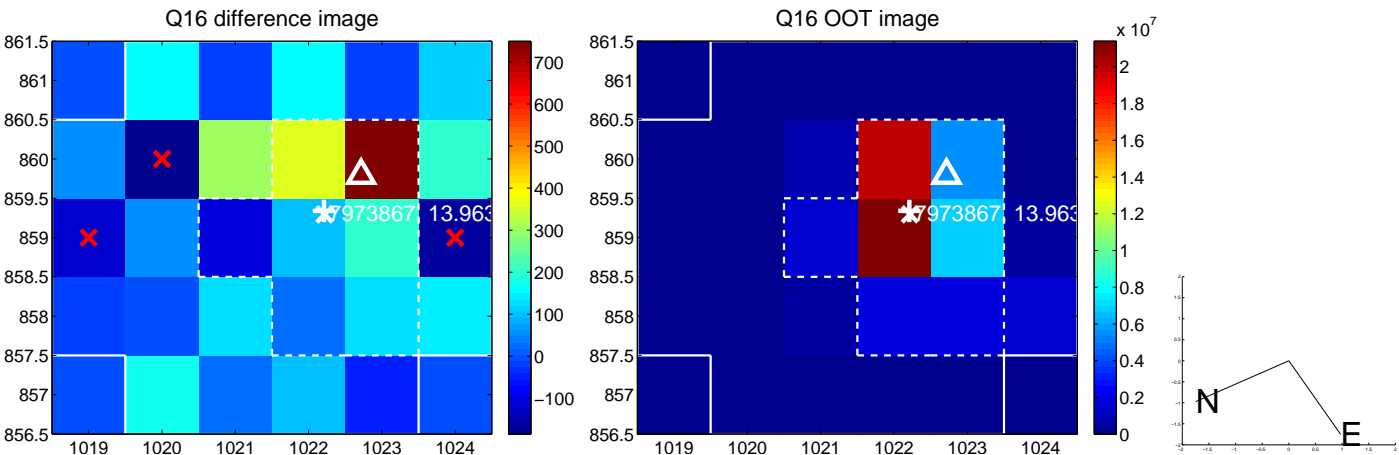
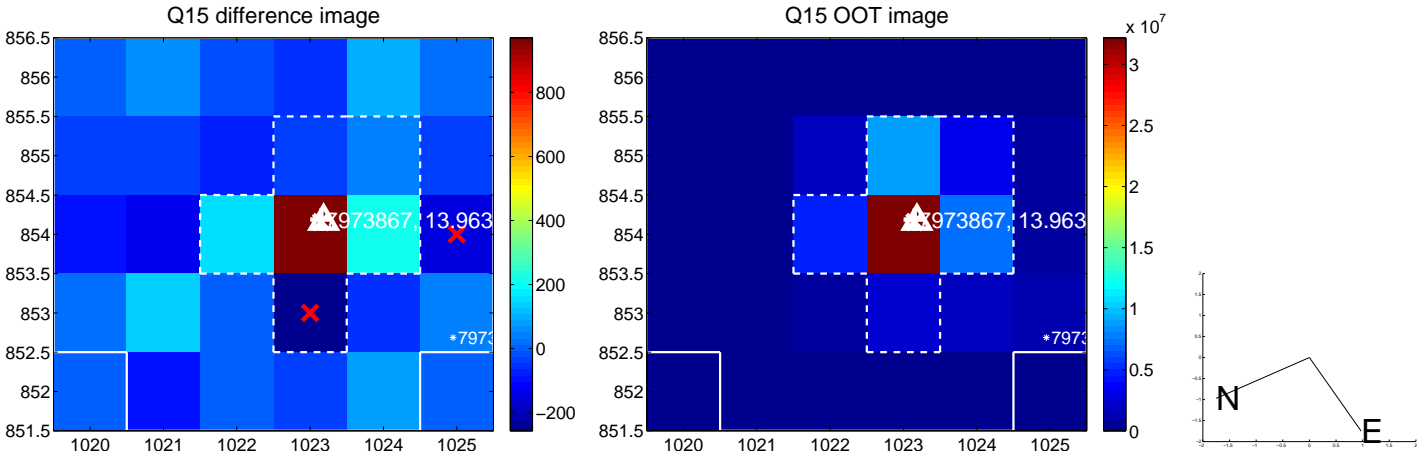
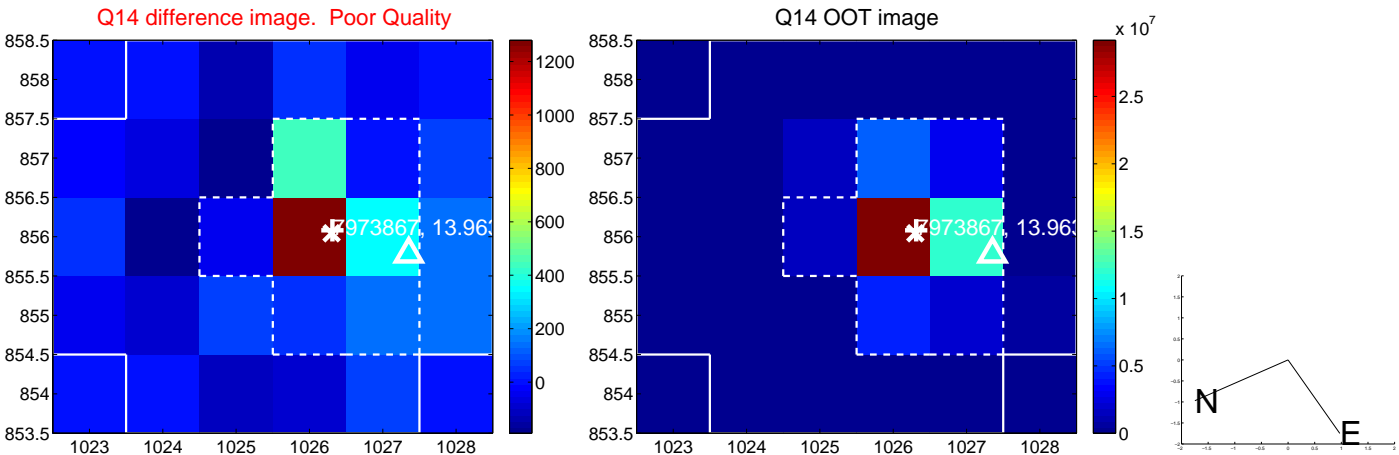
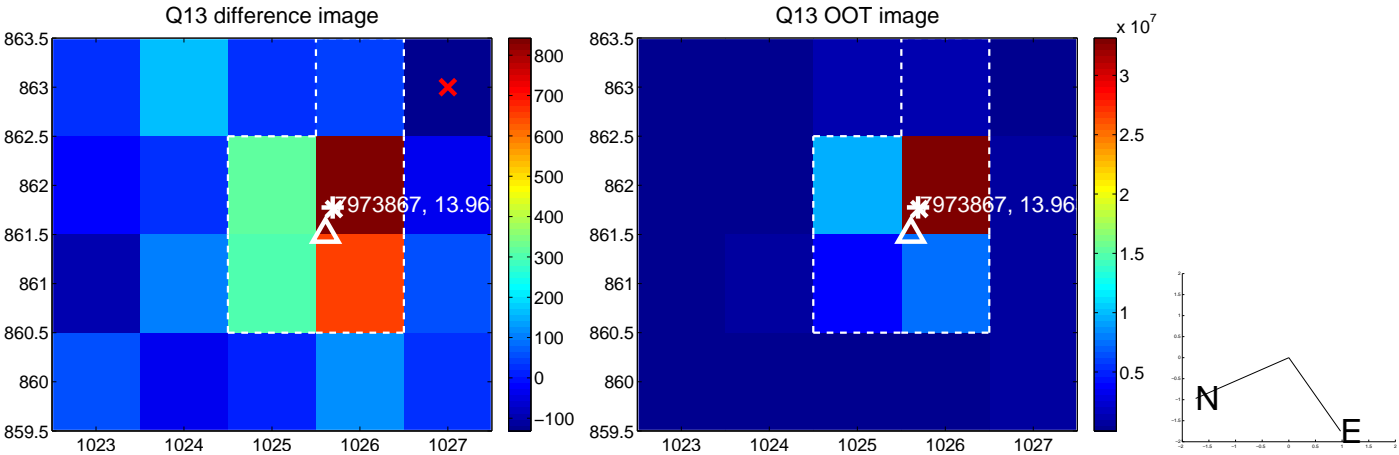
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



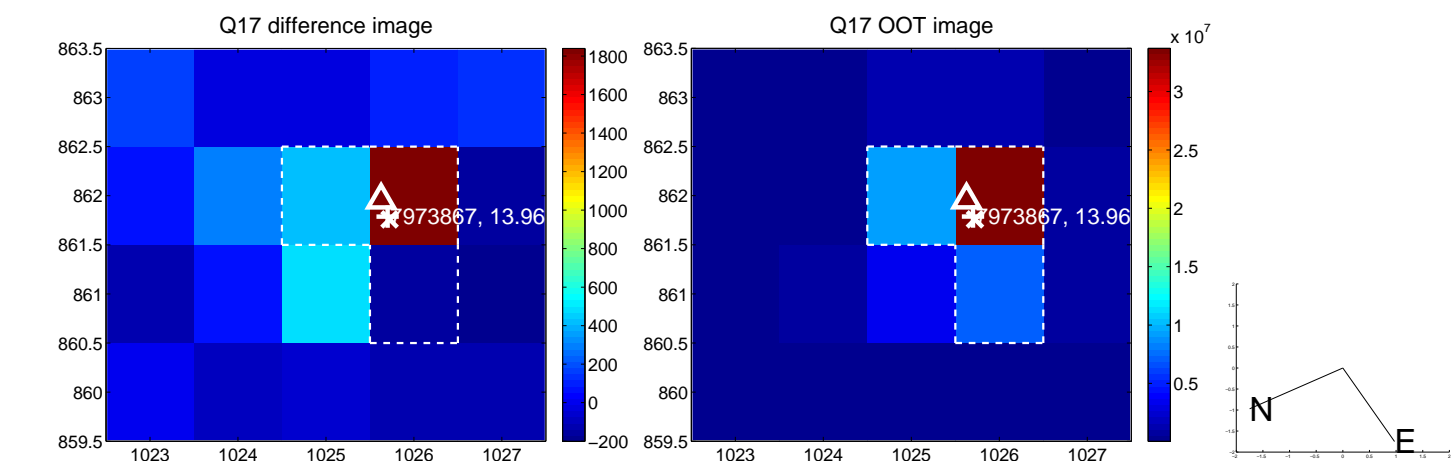
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



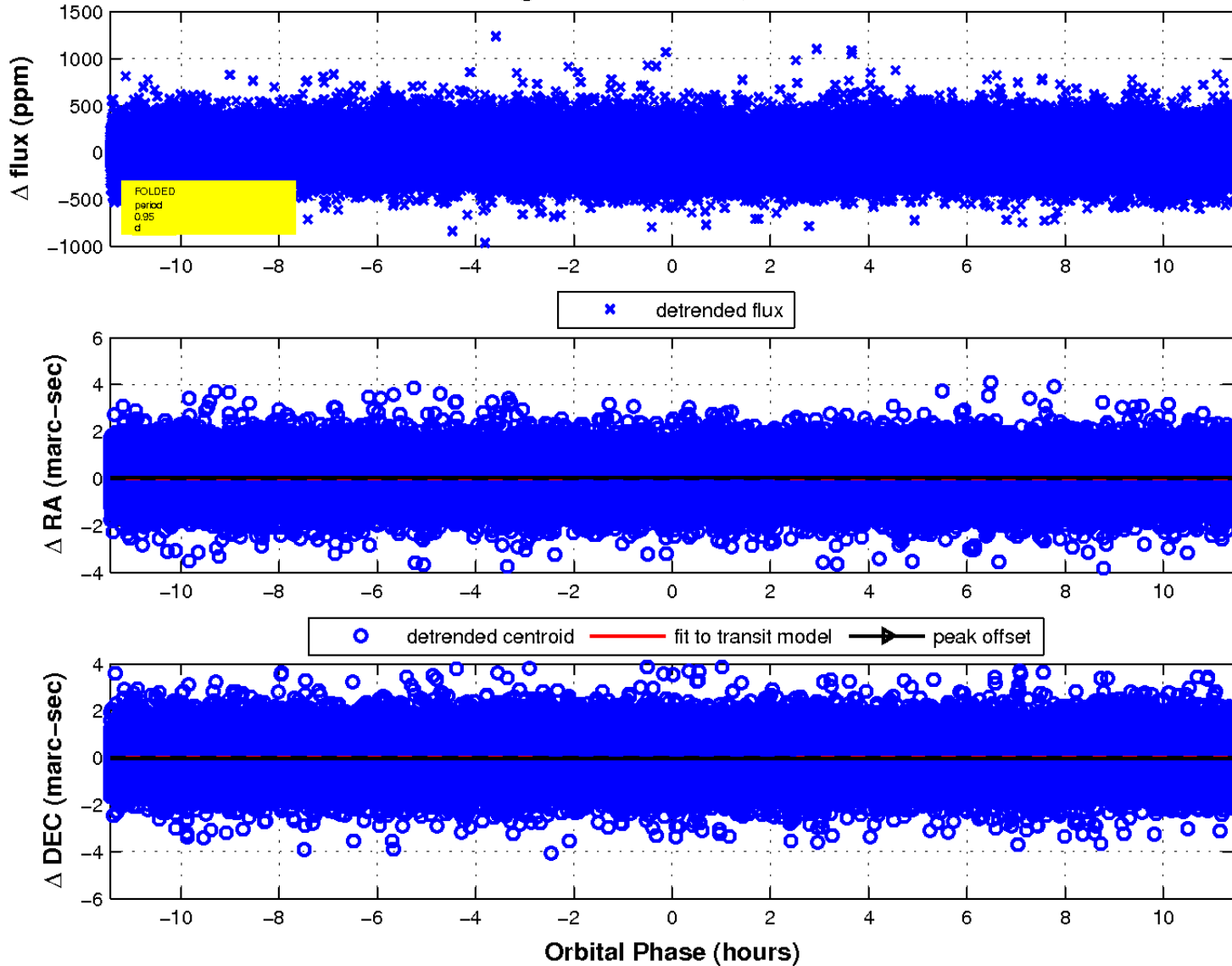
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

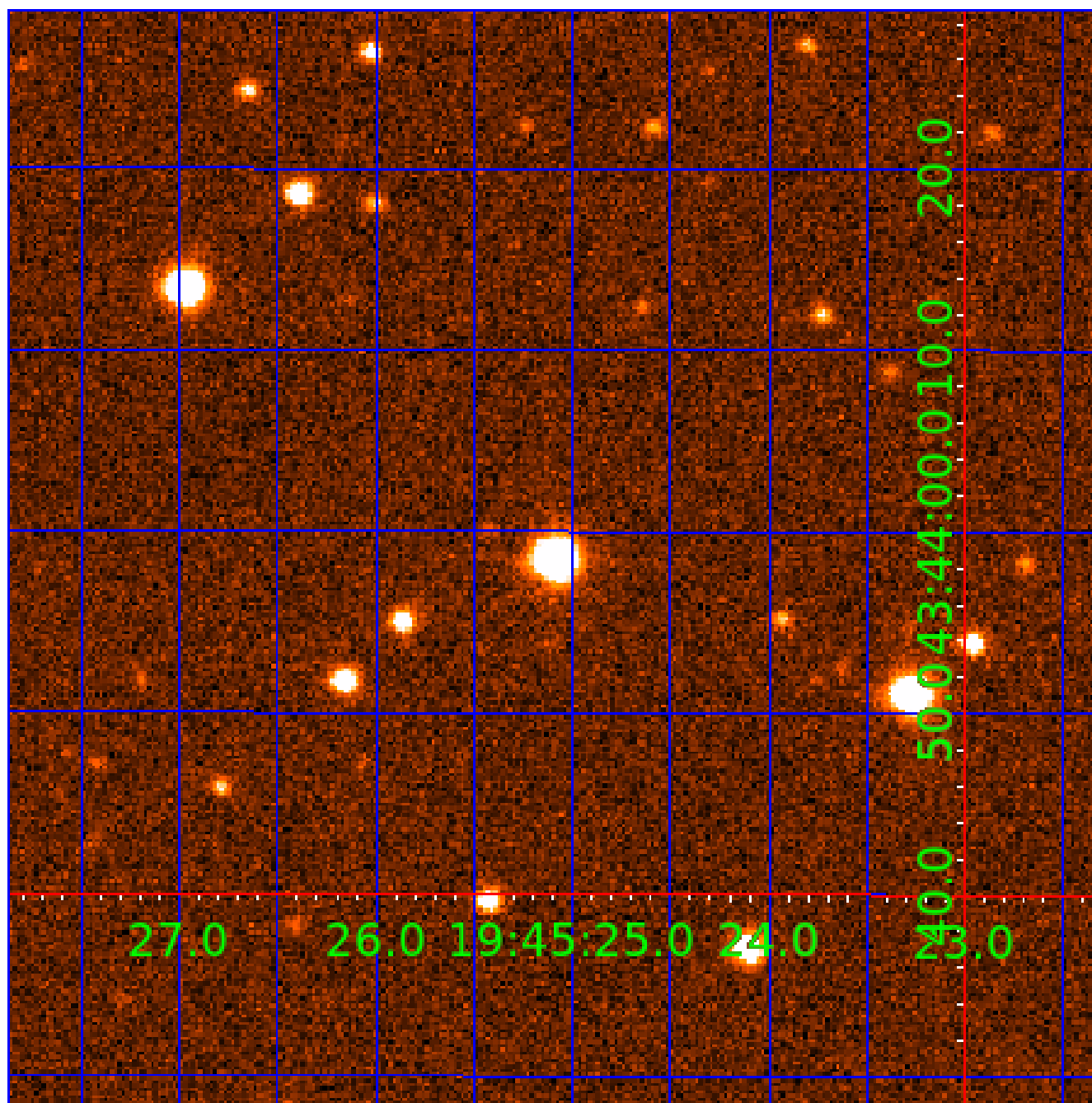


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 007973867

Q1-17 DR25 TCE Parameters

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007973867-01	OBS	No	0.953301	131.852228	16.0	5.351	9.9	8.1	1.65	7053	0.77	13754.35
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007973867-03	OBS	No	114.927559	172.606871	222.0	9.720	9.0	7.3	1.65	7053	2.64	23.09
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Robovetter Results

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007973867-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007973867-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

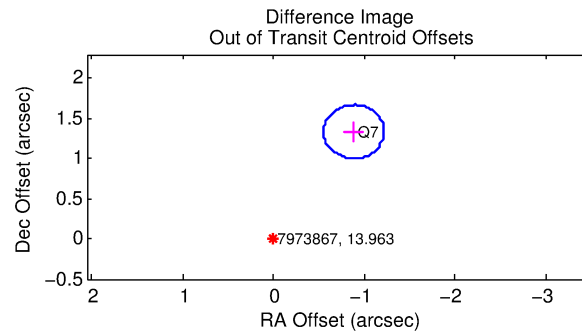
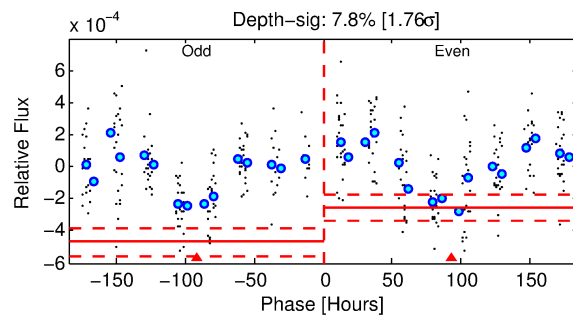
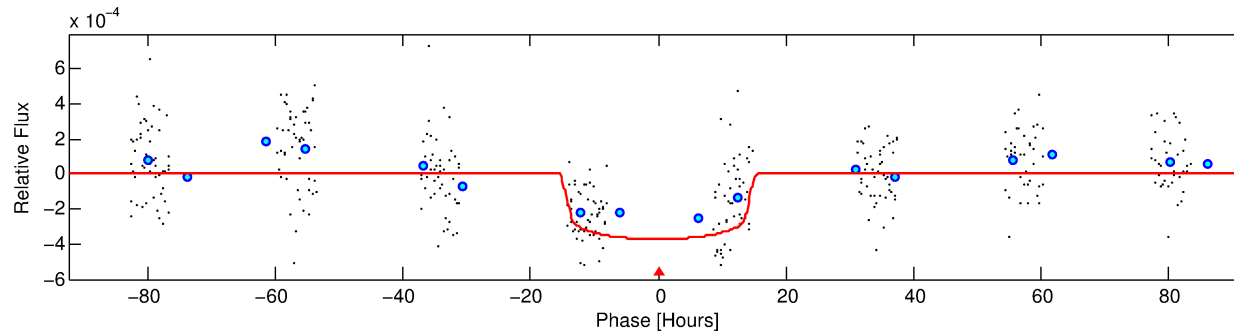
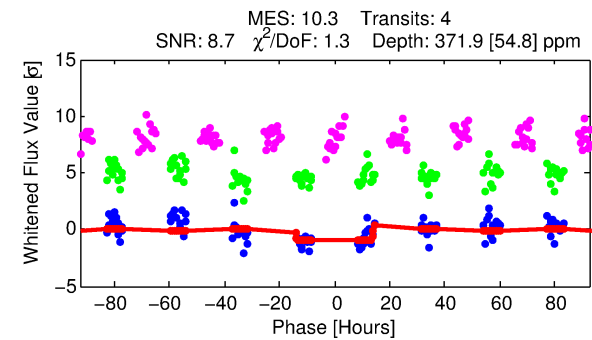
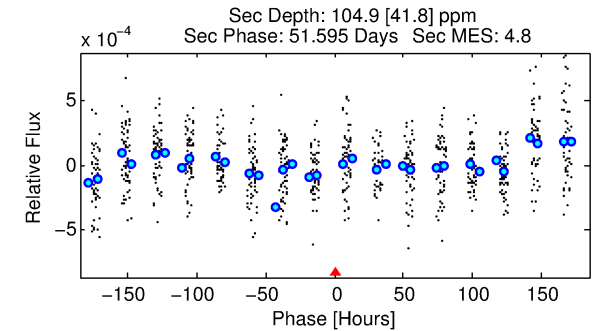
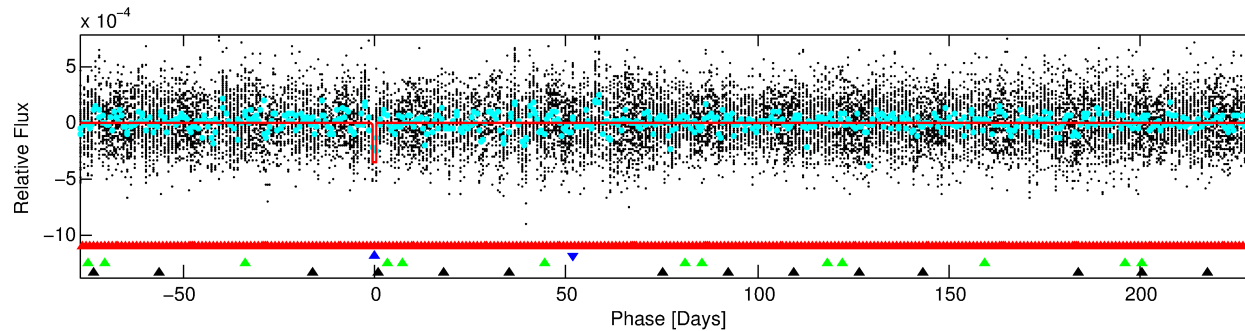
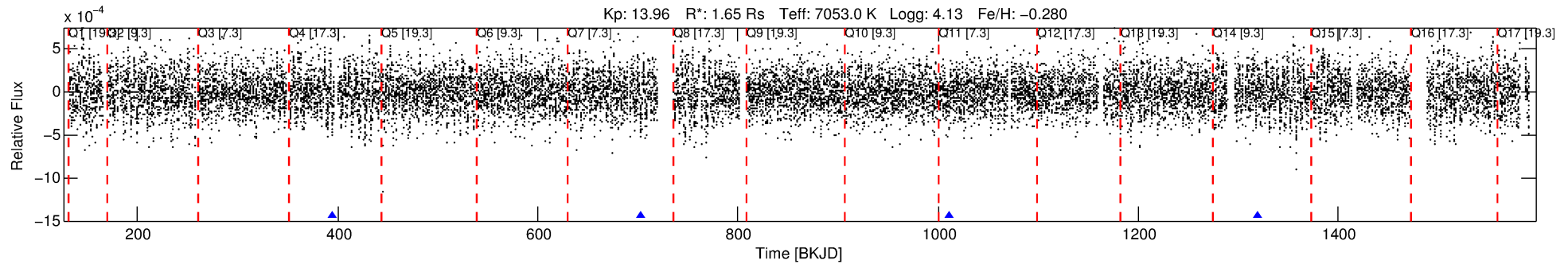
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007973867-02

No Significant Match Found

DV One-Page Summary

KIC: 7973867 Candidate: 2 of 4 Period: 307.913 d



DV Fit Results:

Period = 307.91313 [0.01311] d
Epoch = 394.9606 [0.0236] BKJD
Rp/R* = 0.0198 [0.0022]
a/R* = 43.73 [21.35]
b = 0.84 [0.16]
Seff = 6.21 [2.33]
Teq = 402 [38] K
Rp = 3.58 [1.12] Re
a = 0.9886 [0.2335] AU
Ag = 4404.16 [2491.52] [1.77σ]
Teffp = 5069 [623] K [7.48σ]

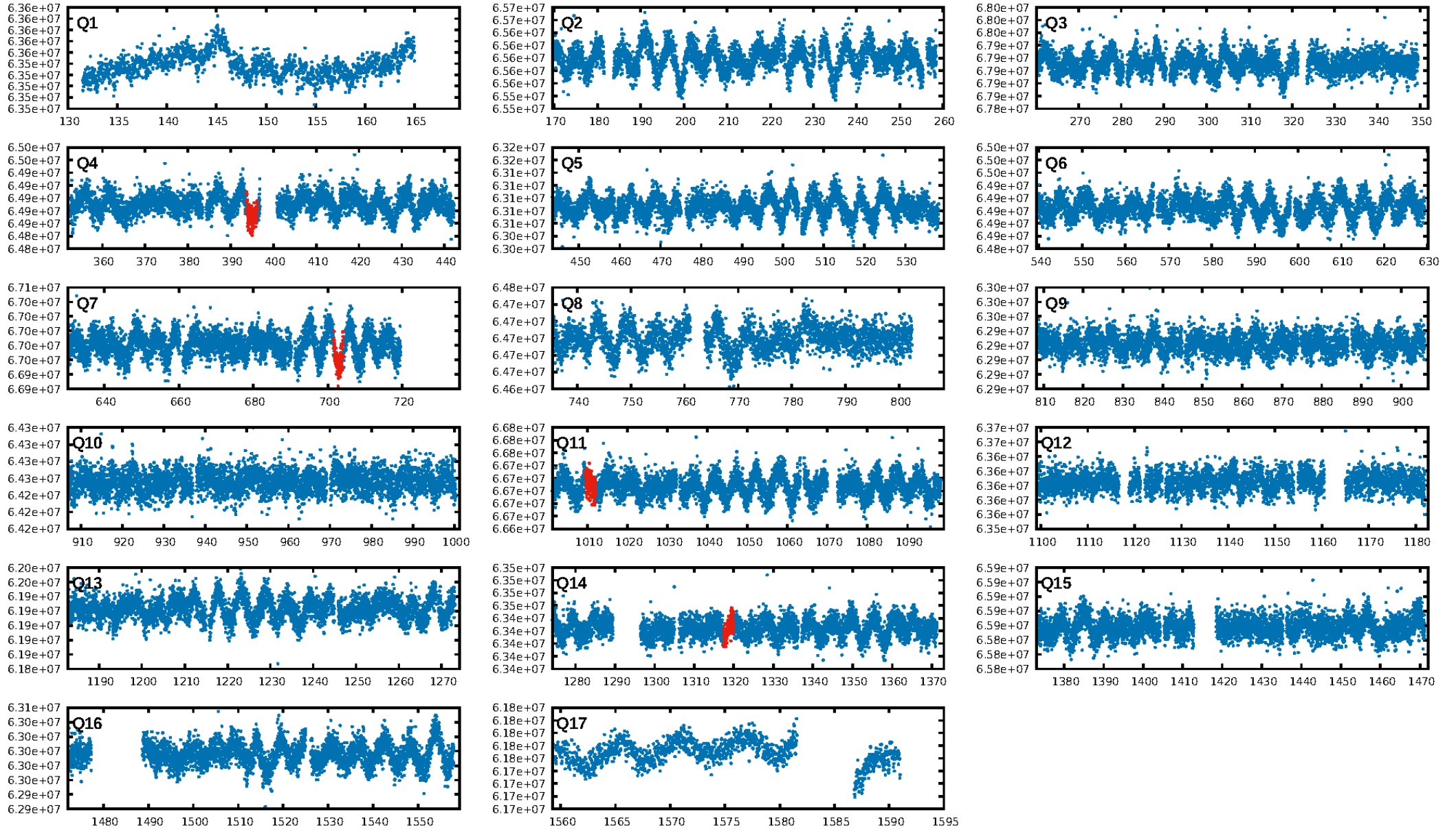
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [143.07σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 20.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.63e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.701
Centroid-sig: 16.6%
Centroid-so: 0.654 arcsec [1.27σ]
OotOffset-rm: 1.603 arcsec [14.39σ]
KicOffset-rm: 1.597 arcsec [14.42σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
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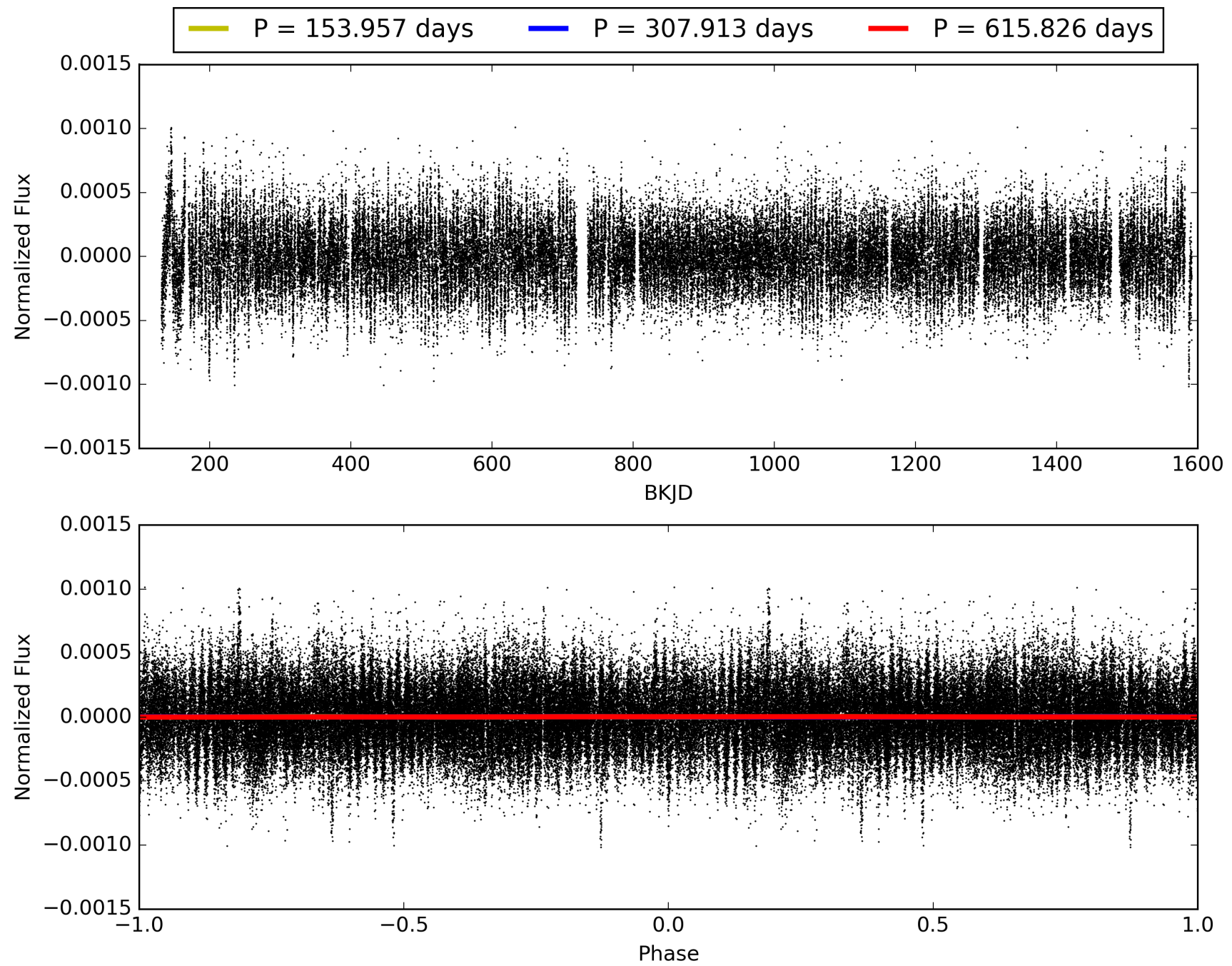
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:14:03 Z

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

TCE 007973867-02, PDC Light Curves

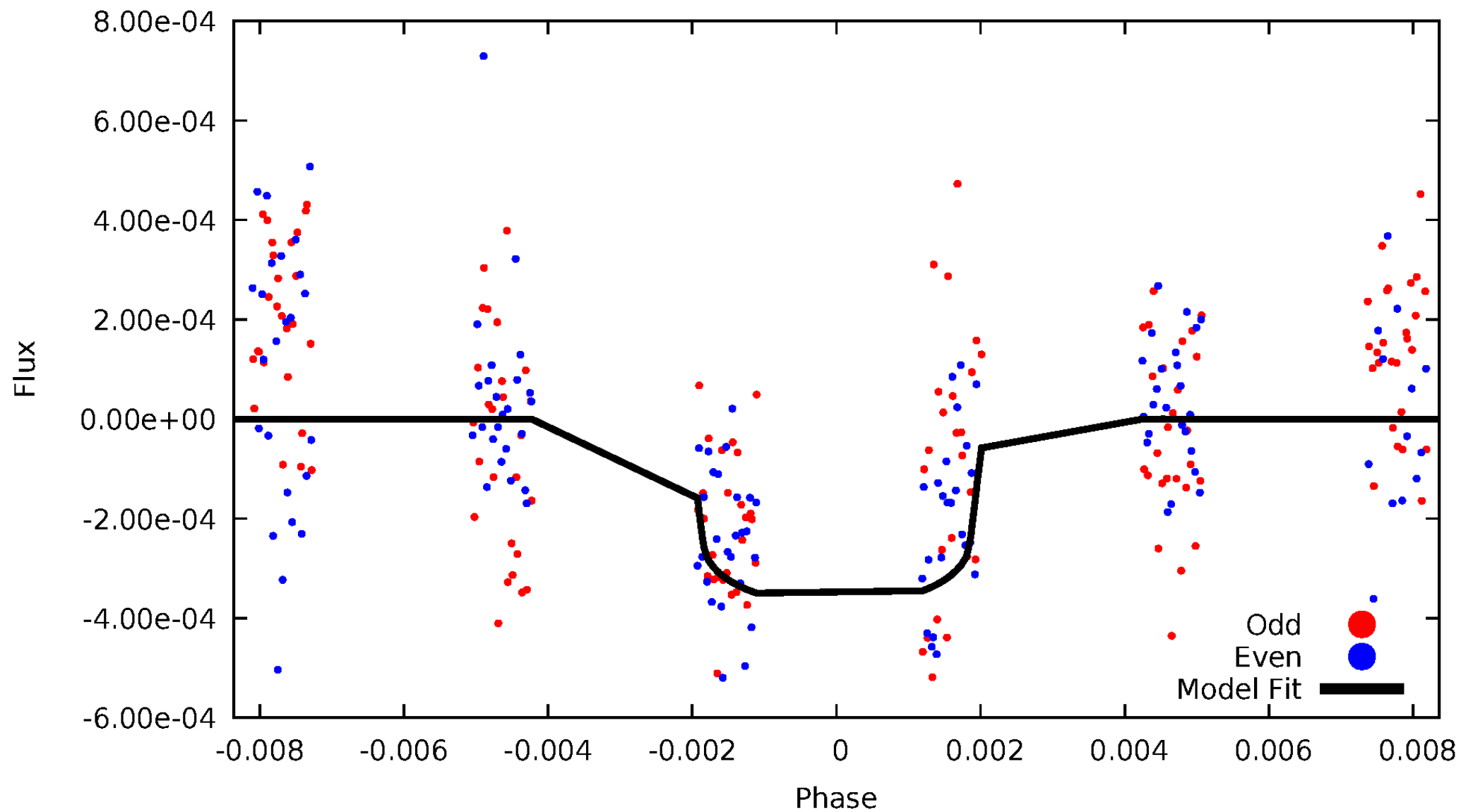


TCE 007973867-02



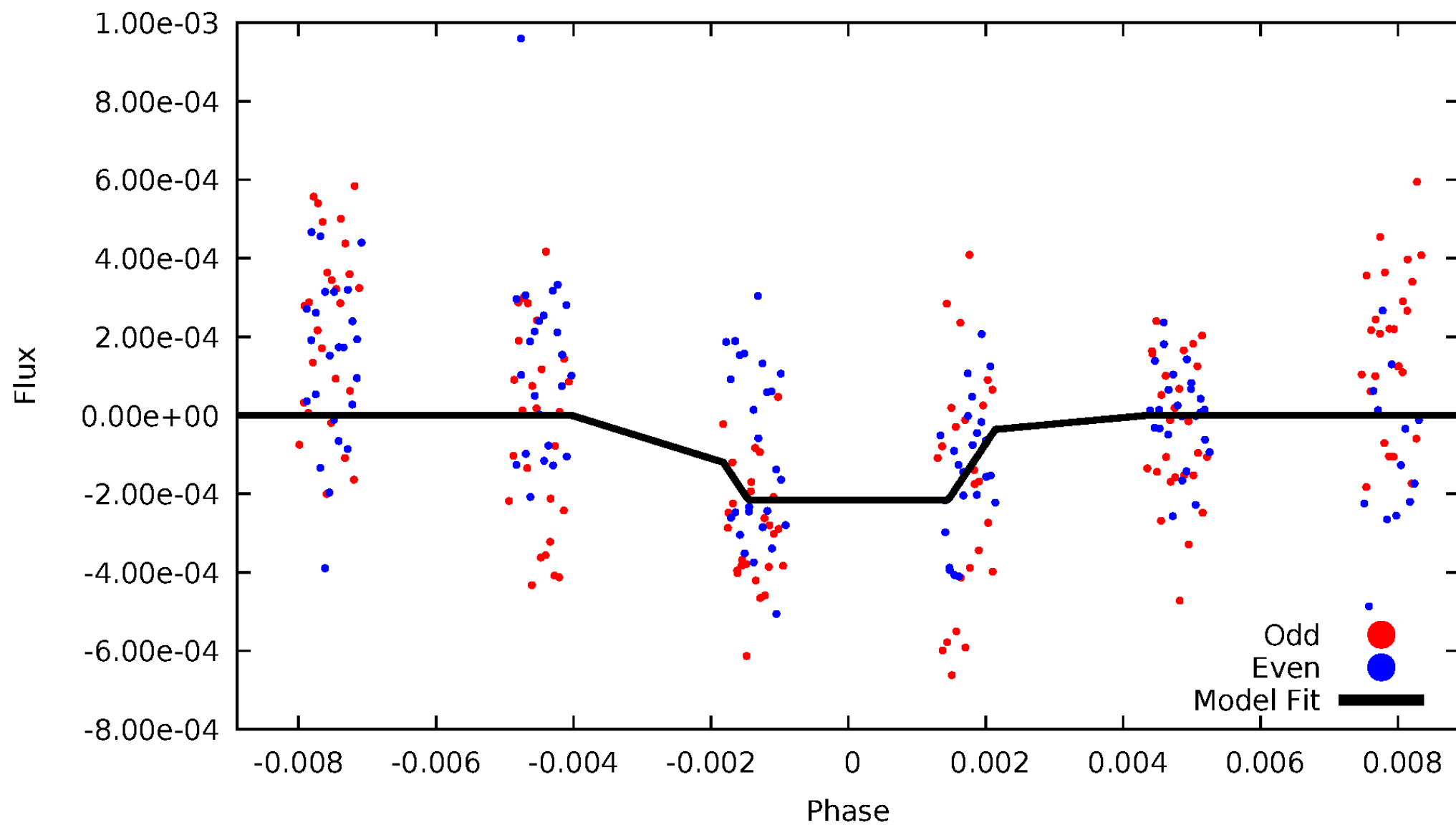
DV Odd/Even

TCE 007973867-02



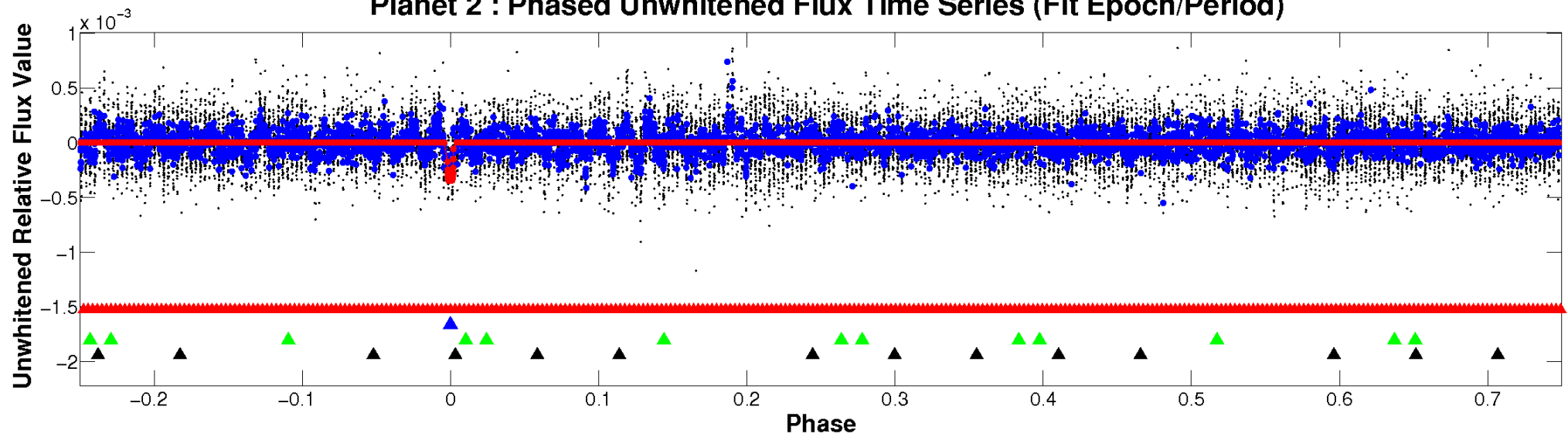
ALT Odd/Even

TCE 007973867-02

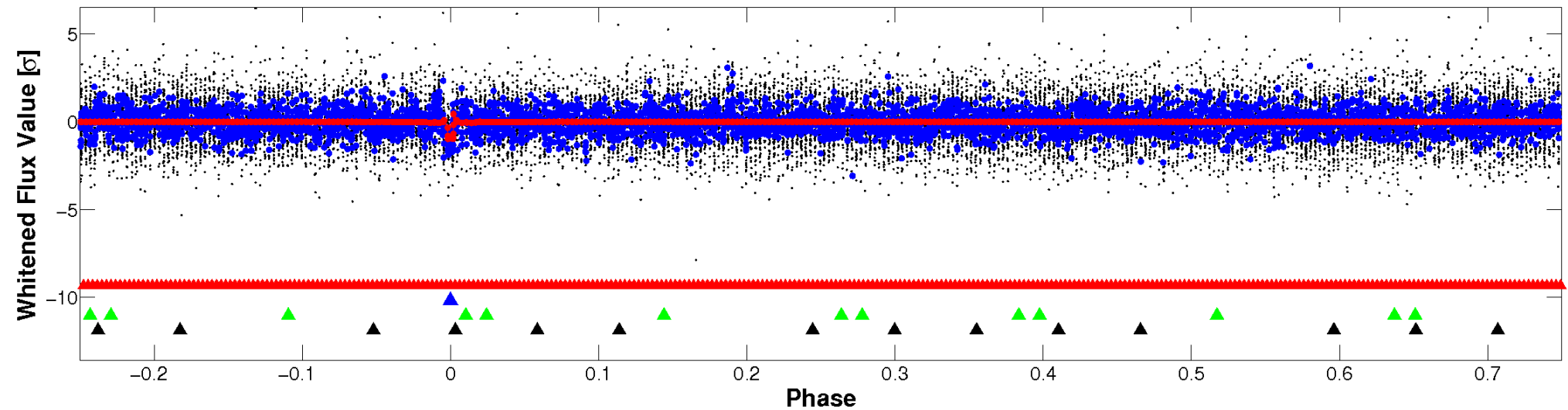


Non-Whitened Vs. Whitened Light Curve

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

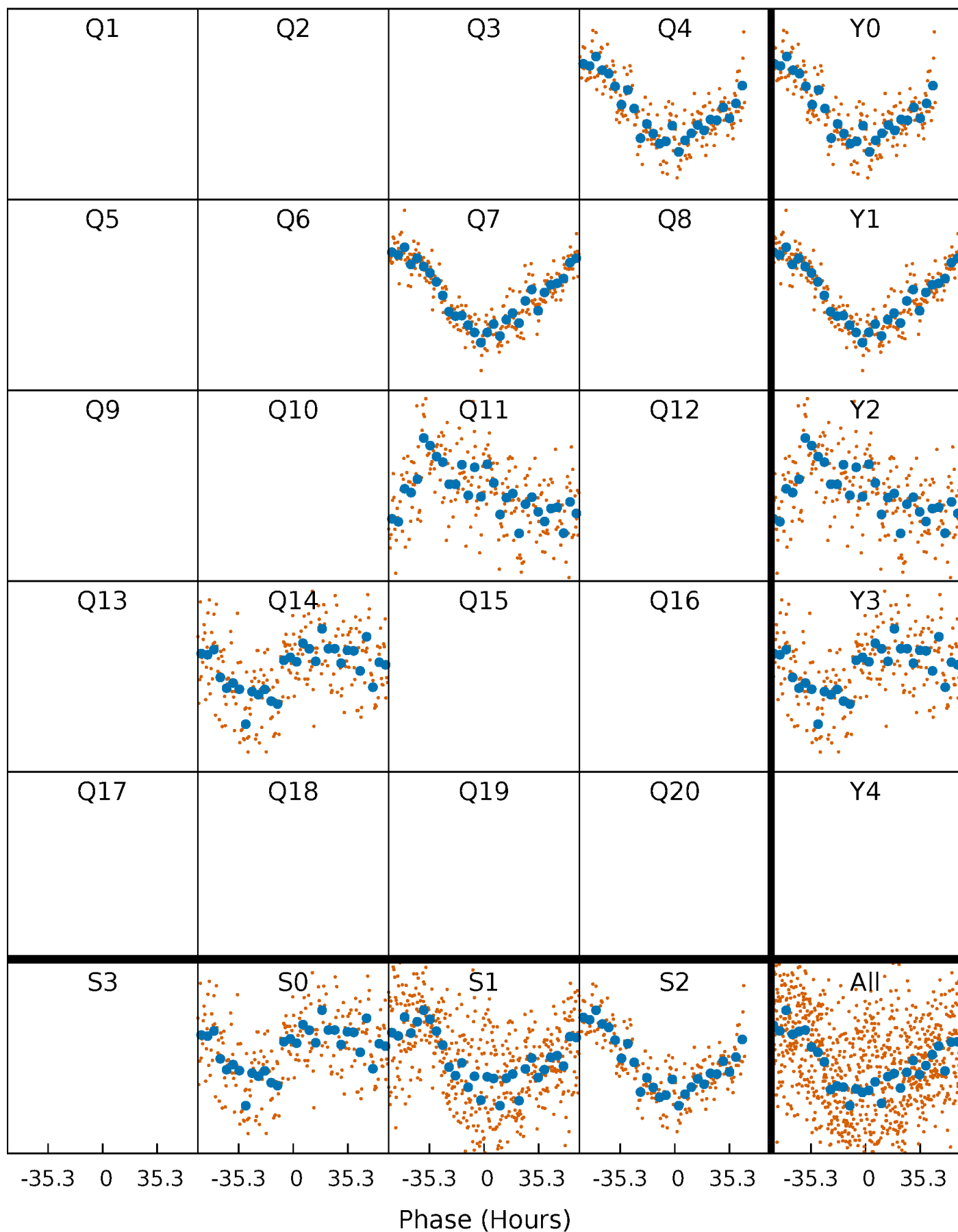


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



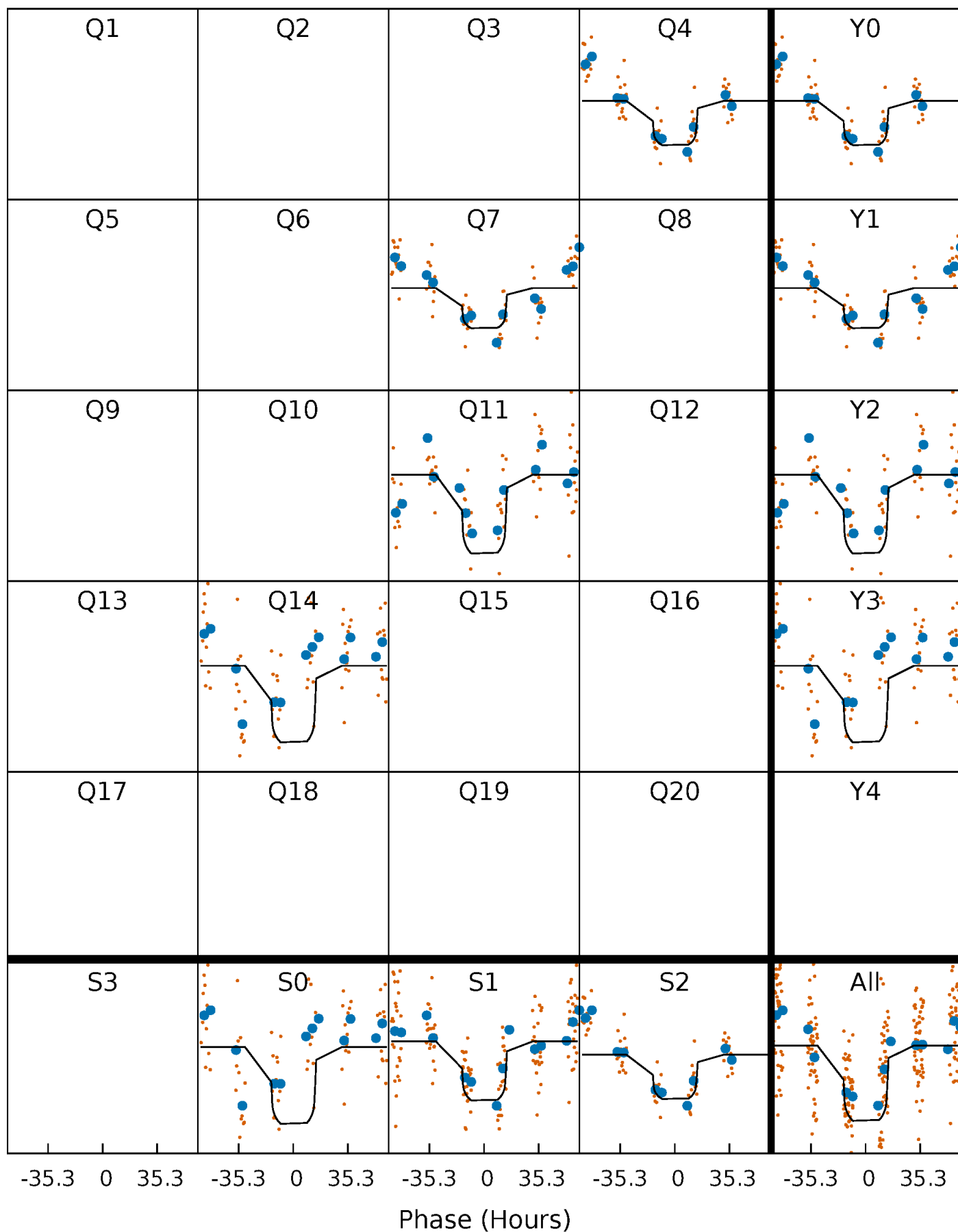
PDC Quarter-Phased Transit Curves

TCE 007973867-02 P=307.913127 Days $T_0=394.960592$ (BKJD)



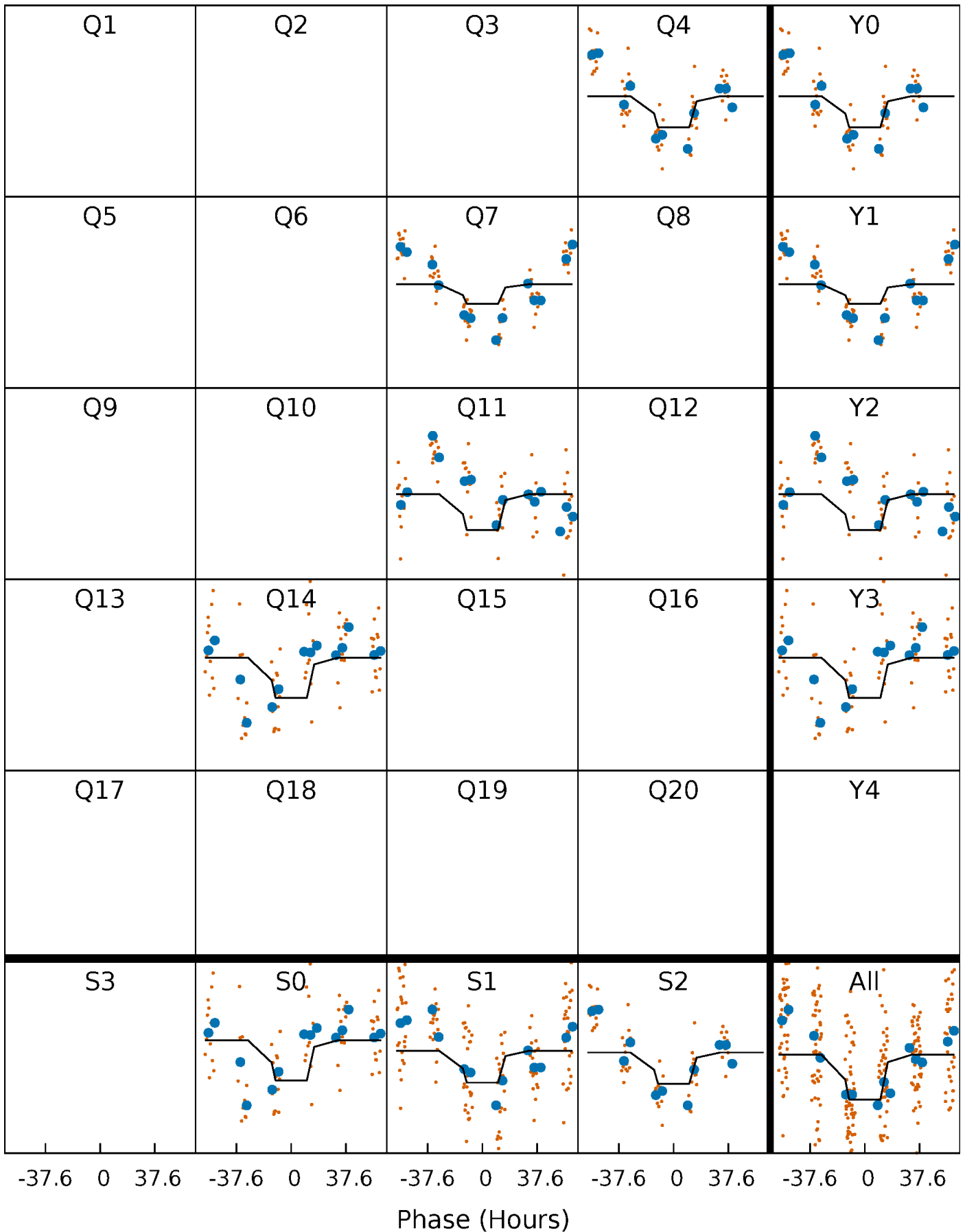
DV Quarter-Phased Transit Curves

TCE 007973867-02 $P=307.913127$ Days $T_0=394.960592$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

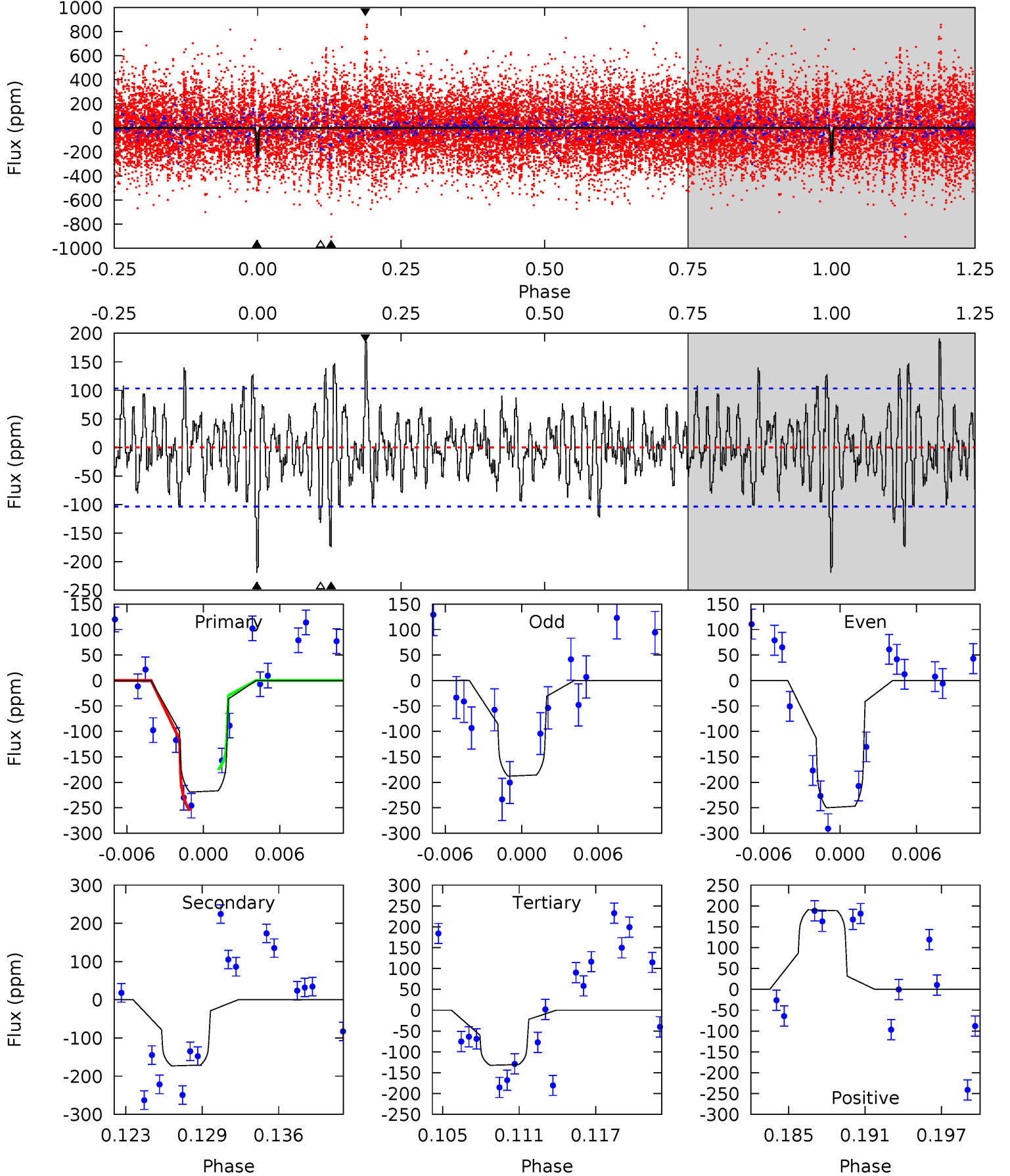
TCE 007973867-02 P=307.926938 Days $T_0=394.893298$ (BKJD)



DV Model-Shift Uniqueness Test

007973867-02, $P = 307.913127$ Days, $E = 87.047465$ Days

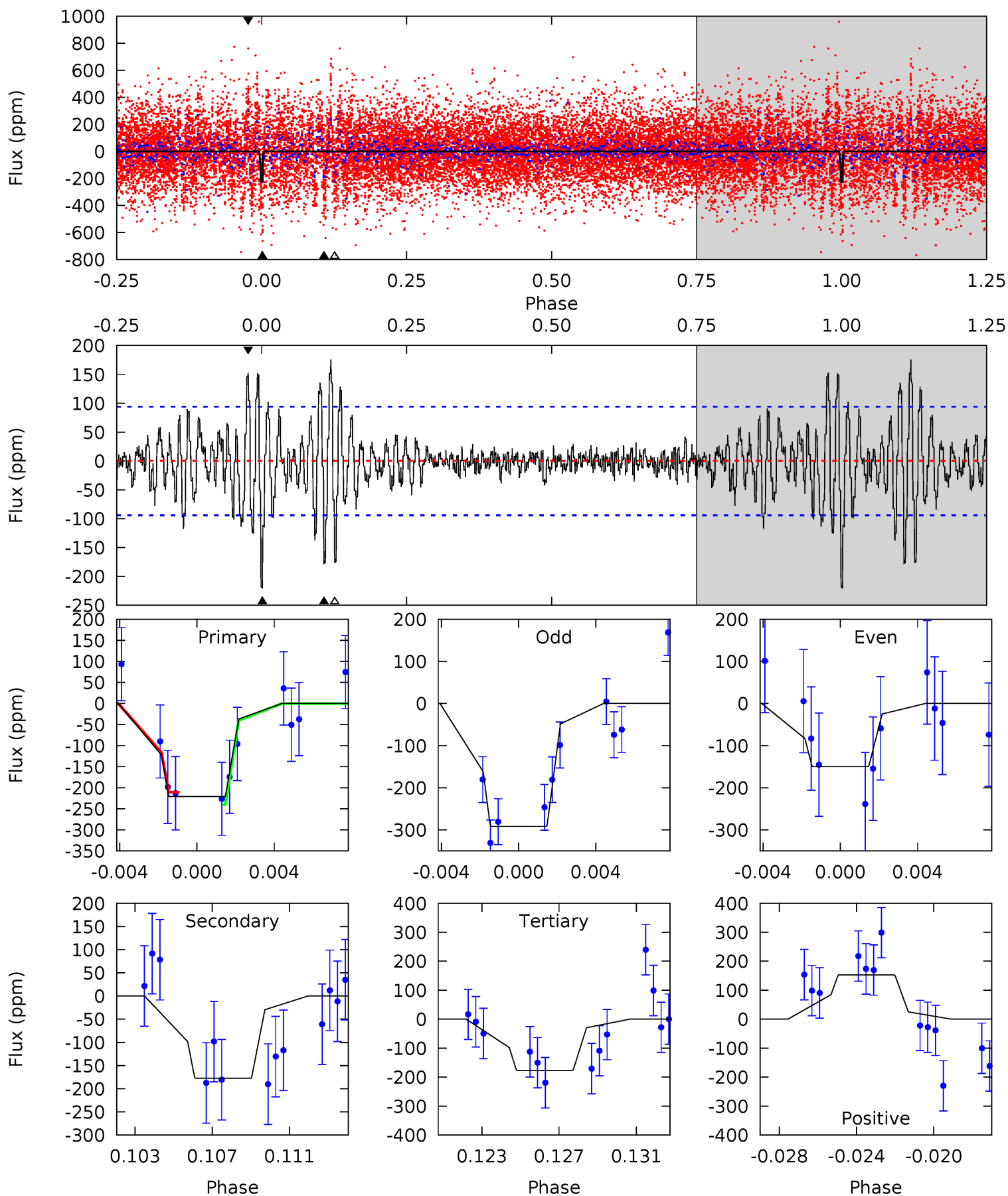
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	8.57	6.54	9.46	5.12	2.74	2.19	4.31	1.39	2.03	-0.89	1.54	0.88	0.47	1.98



Alt Model-Shift Uniqueness Test

007973867-02, P = 307.926938 Days, E = 86.966360 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	9.83	9.78	8.46	5.20	2.88	2.02	2.47	3.78	0.05	1.36	3.94	1.05	0.44	0.82



Stellar Parameters For KIC 007973867

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7053^{+199}_{-313}	$4.134^{+0.175}_{-0.175}$	$-0.280^{+0.250}_{-0.350}$	$1.654^{+0.482}_{-0.395}$	$1.363^{+0.214}_{-0.235}$	$0.424^{+0.407}_{-0.206}$
	+3%/-4%	+4%/-4%	+89%/-125%	+29%/-24%	+16%/-17%	+96%/-49%
Source	PHO1	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 007973867-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-173 ± 20	$3.63^{+0.72}_{-0.67}$	563^{+42}_{-42}	5663^{+410}_{-355}	6920^{+3130}_{-2016}
Alt.	-177 ± 18	$2.65^{+0.59}_{-0.51}$	561^{+41}_{-44}	6588^{+724}_{-509}	13276^{+6964}_{-4288}

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 $A_{obs} \gg 1.0$

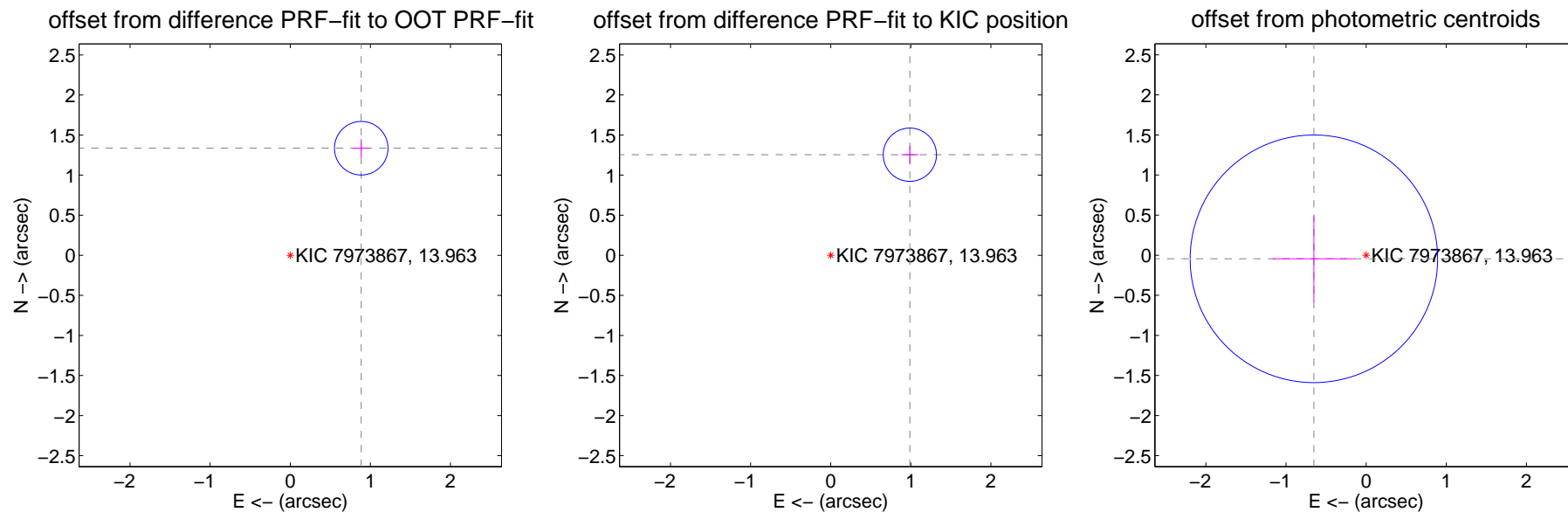
DV Centroid Data

Supplemental centroid analysis for 007973867-02. Kepler magnitude: 13.96. Transit SNR 8.74

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.603 ± 0.111	14.39	-0.886 ± 0.106	1.336 ± 0.114
PRF-fit source offset from KIC position	1.597 ± 0.111	14.42	-0.988 ± 0.106	1.255 ± 0.114
photometric centroid source offset	0.65 ± 0.51	1.27	0.65 ± 0.51	-0.04 ± 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.

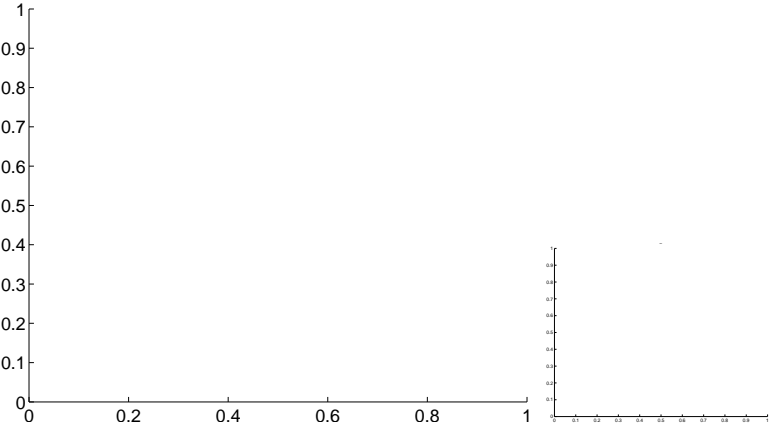


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

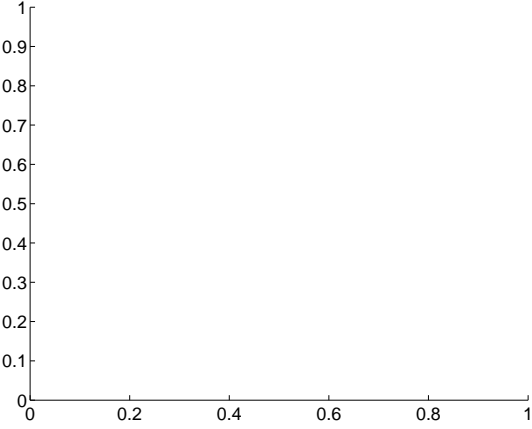
Q5 no difference image



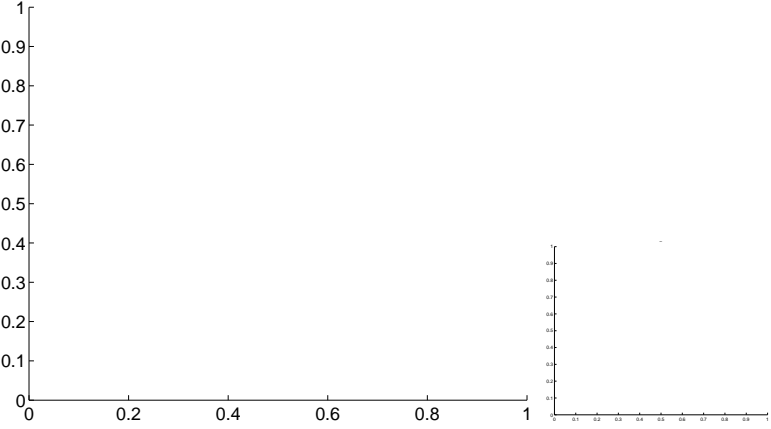
Q5 no OOT image



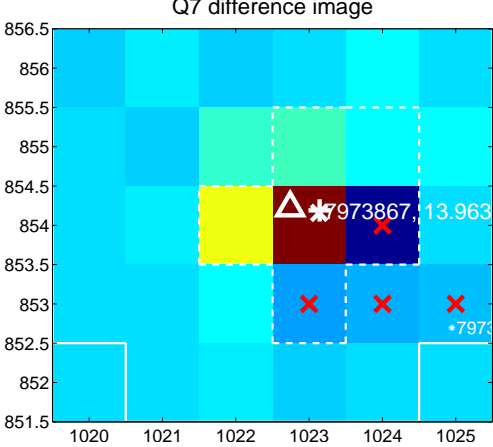
Q6 no difference image



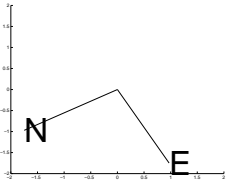
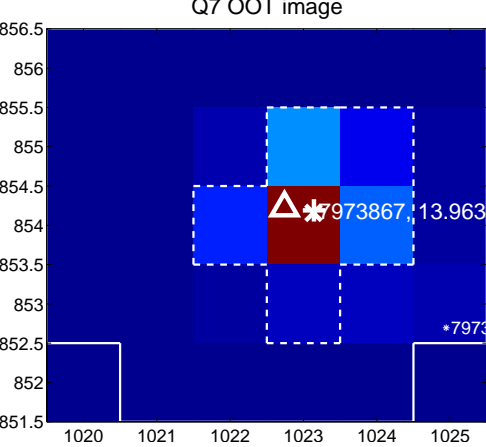
Q6 no OOT image



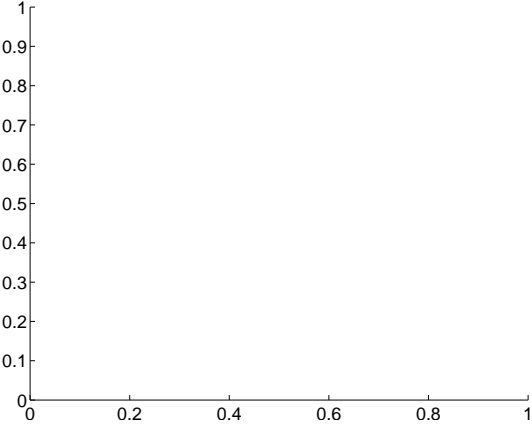
Q7 difference image



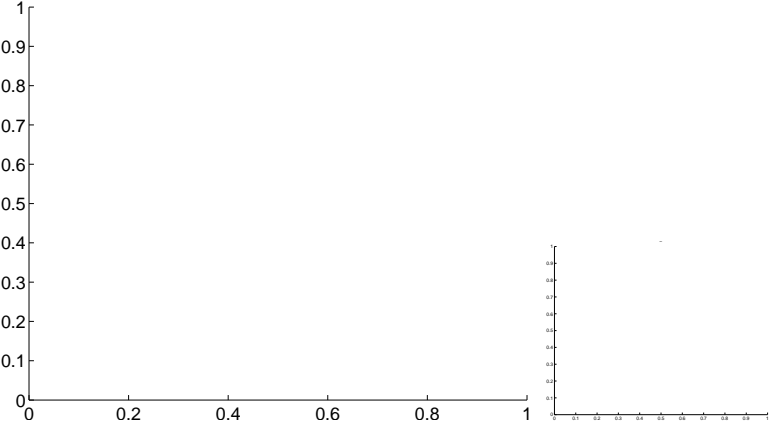
Q7 OOT image



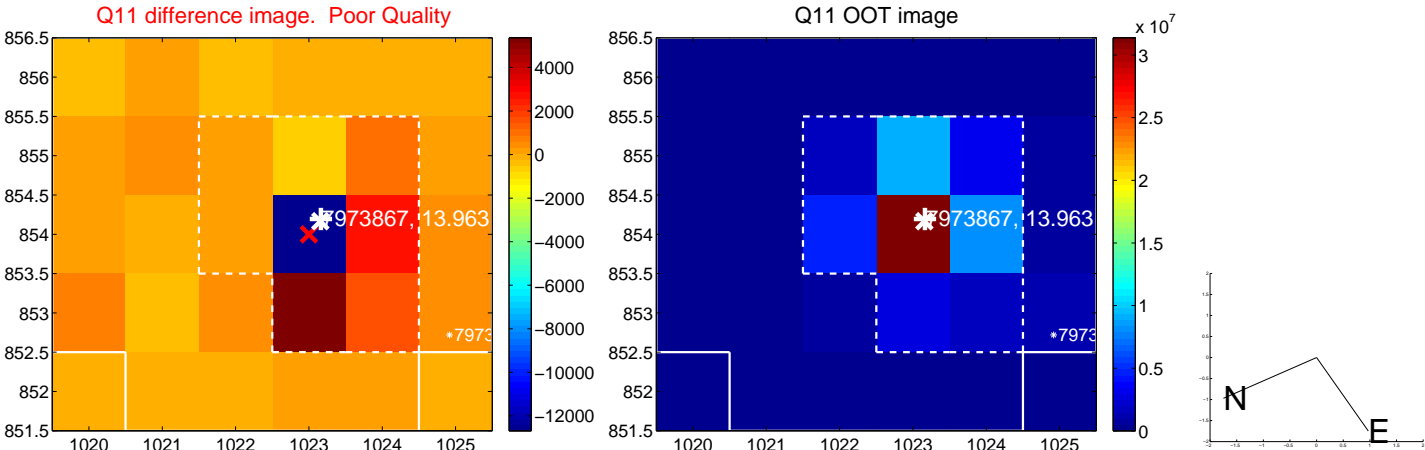
Q8 no difference image



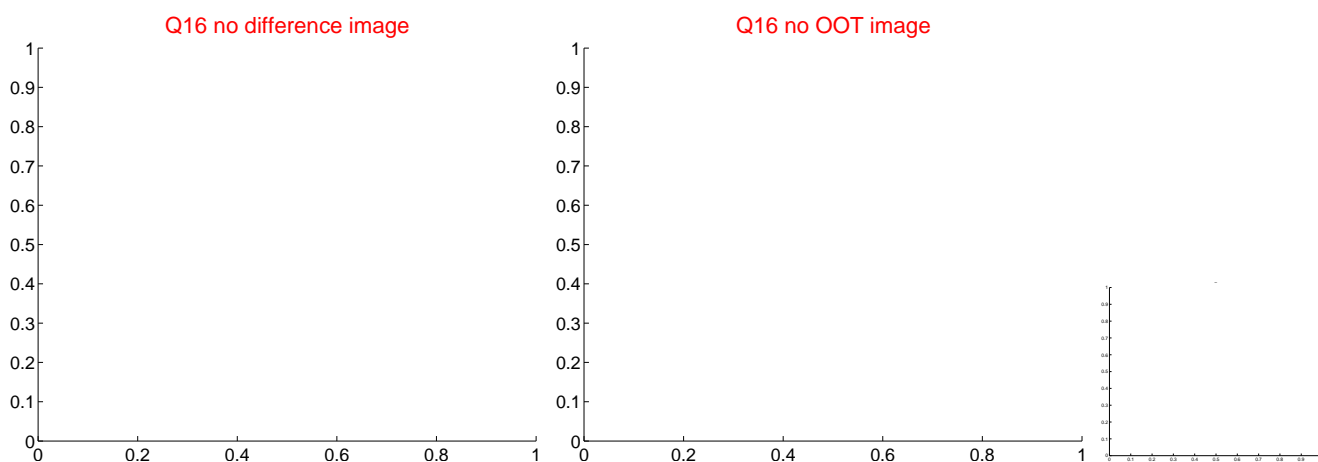
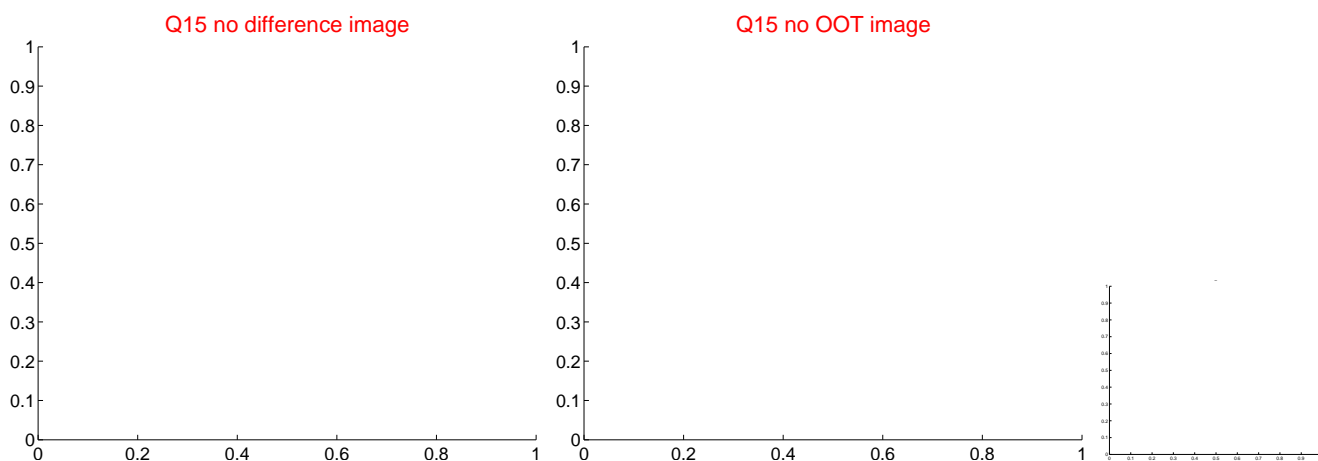
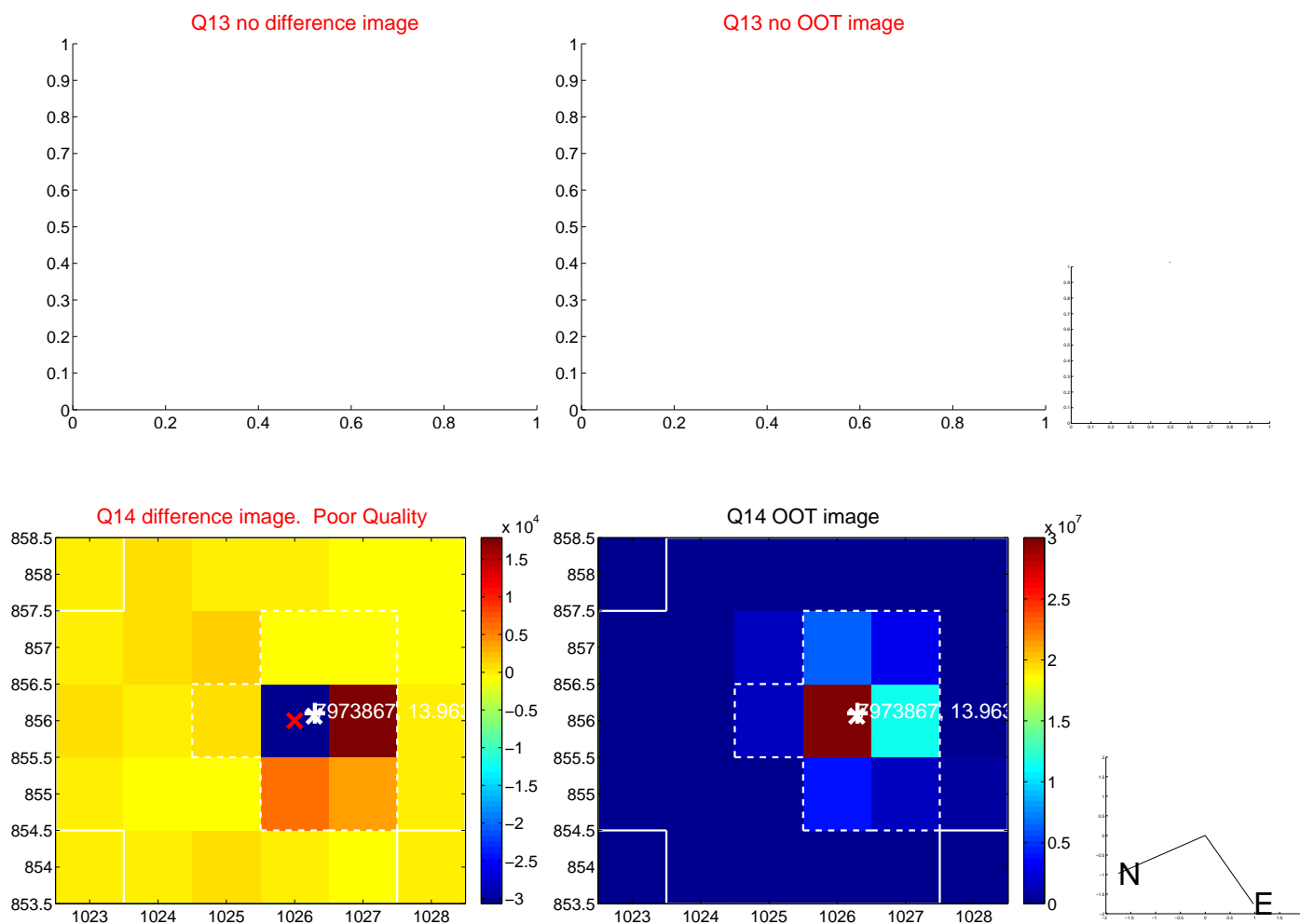
Q8 no OOT image



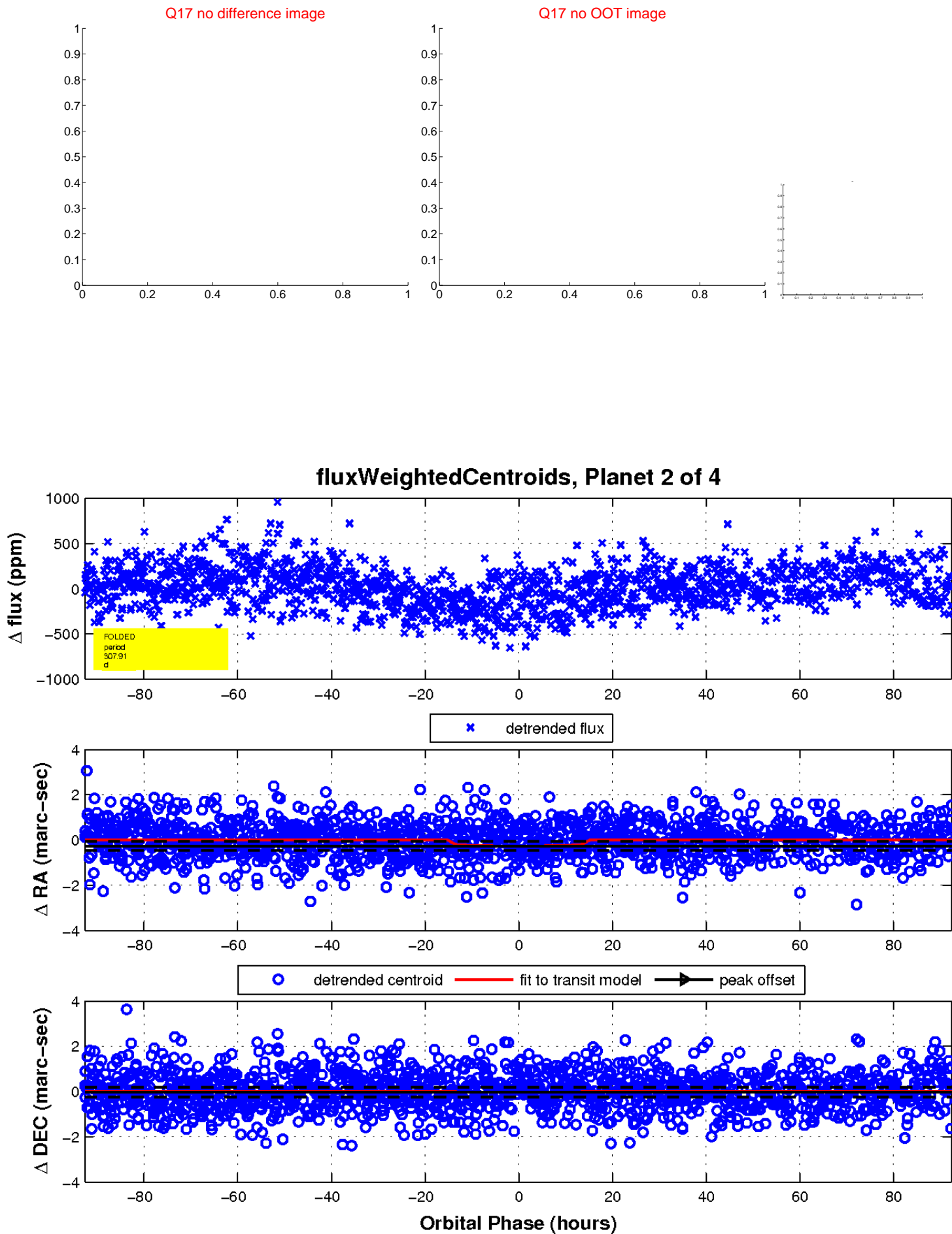
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

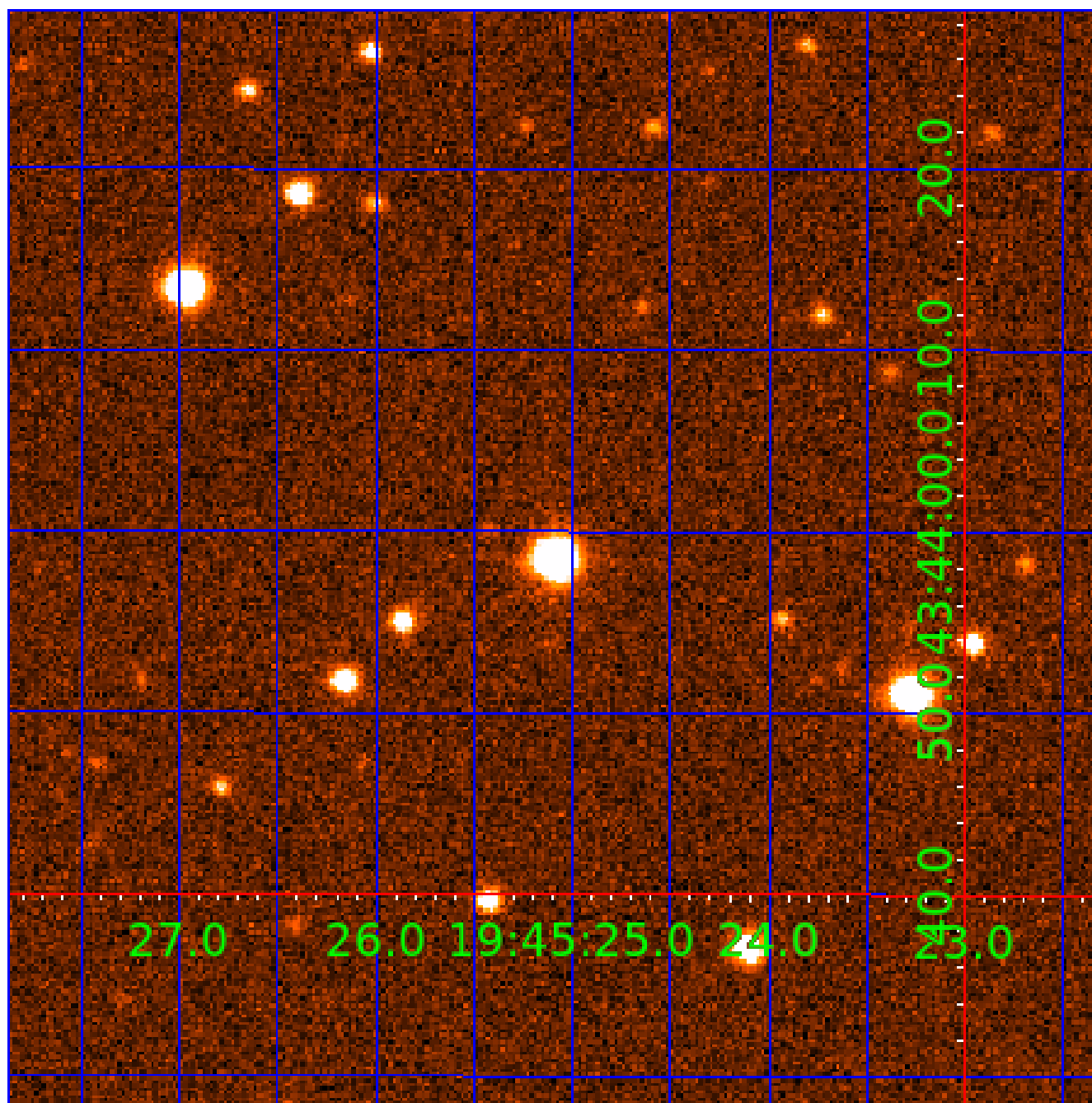


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007973867

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})
007973867-01	OBS	No	0.953301	131.852228	16.0	5.351	9.9	8.1	1.65	7053	0.77	13754.35
007973867-02	OBS	No	307.913127	394.960592	371.9	30.880	10.3	8.7	1.65	7053	3.58	6.21
007973867-03	OBS	No	114.927559	172.606871	222.0	9.720	9.0	7.3	1.65	7053	2.64	23.09
007973867-04	OBS	No	108.314995	162.321150	182.6	10.481	7.7	6.8	1.65	7053	2.43	24.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007973867-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
007973867-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007973867-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007973867-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

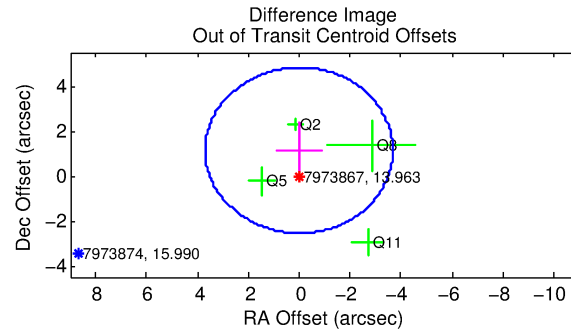
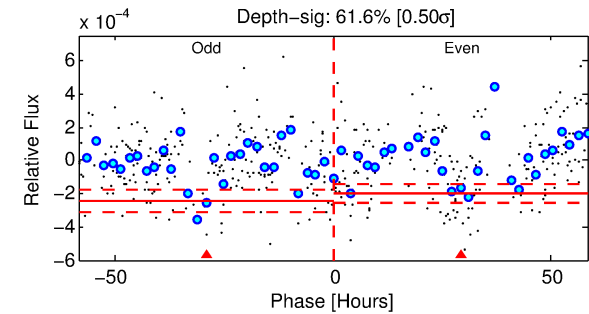
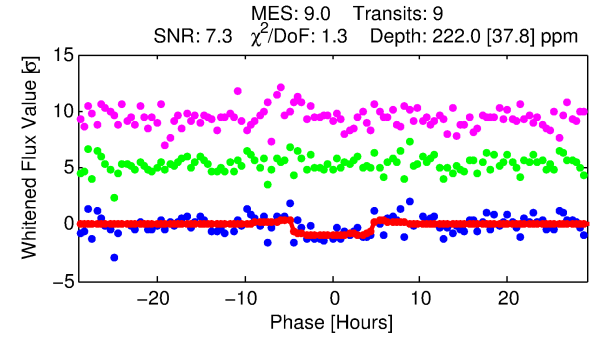
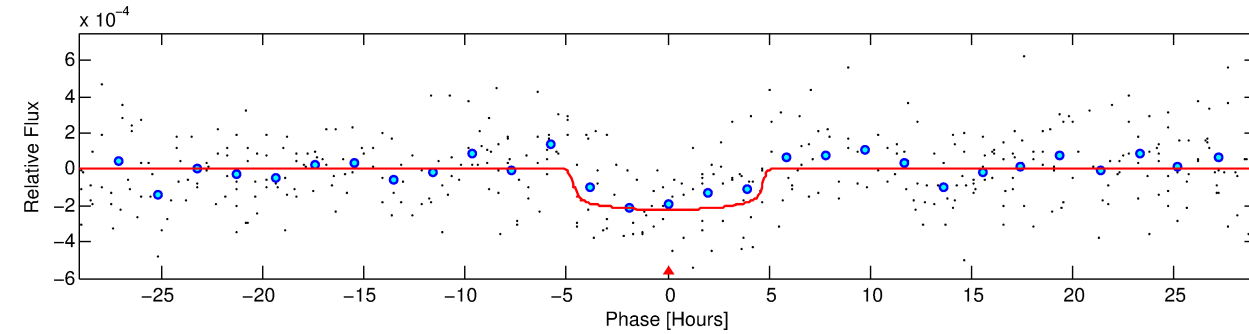
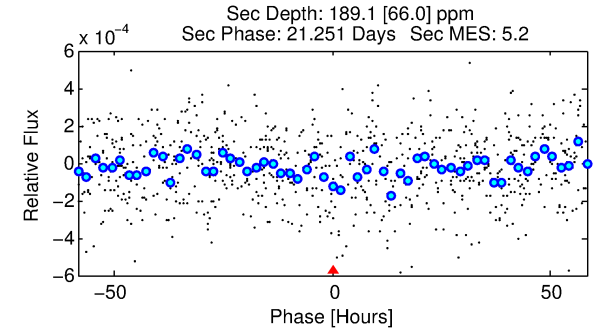
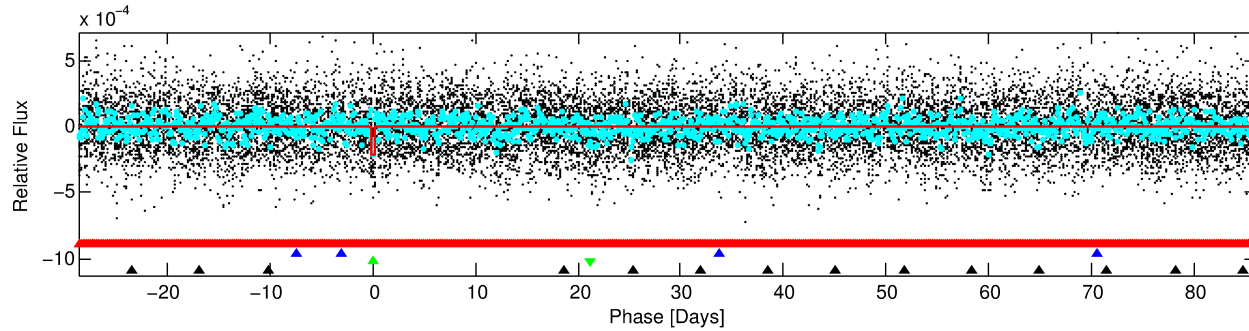
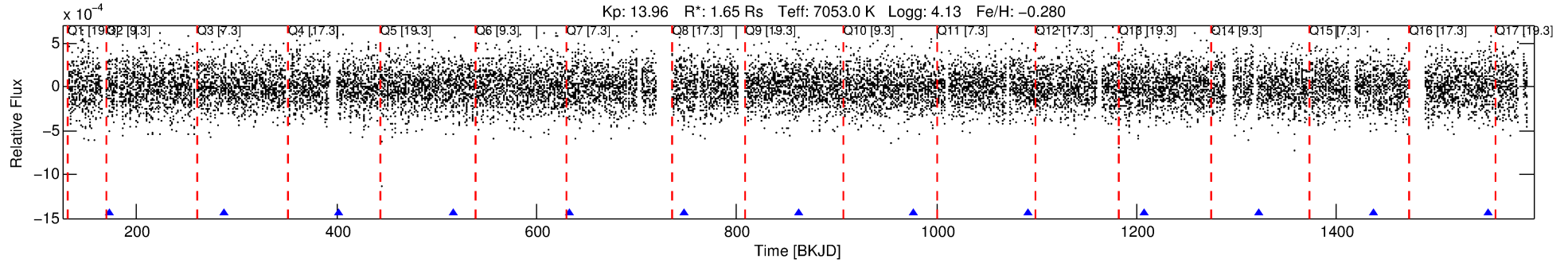
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007973867-03

No Significant Match Found

DV One-Page Summary

KIC: 7973867 Candidate: 3 of 4 Period: 114.928 d



DV Fit Results:

Period = 114.92756 [0.00249] d
Epoch = 172.6069 [0.0175] BKJD
Rp/R* = 0.0147 [0.0069]
a/R* = 65.75 [182.82]
b = 0.71 [1.97]
Seff = 23.09 [8.68]
Teff = 559 [53] K
Rp = 2.64 [1.47] Re
a = 0.5125 [0.1210] AU
Ag = 3907.49 [4152.99] [0.94σ]
Teffp = 6833 [1751] K [3.58σ]

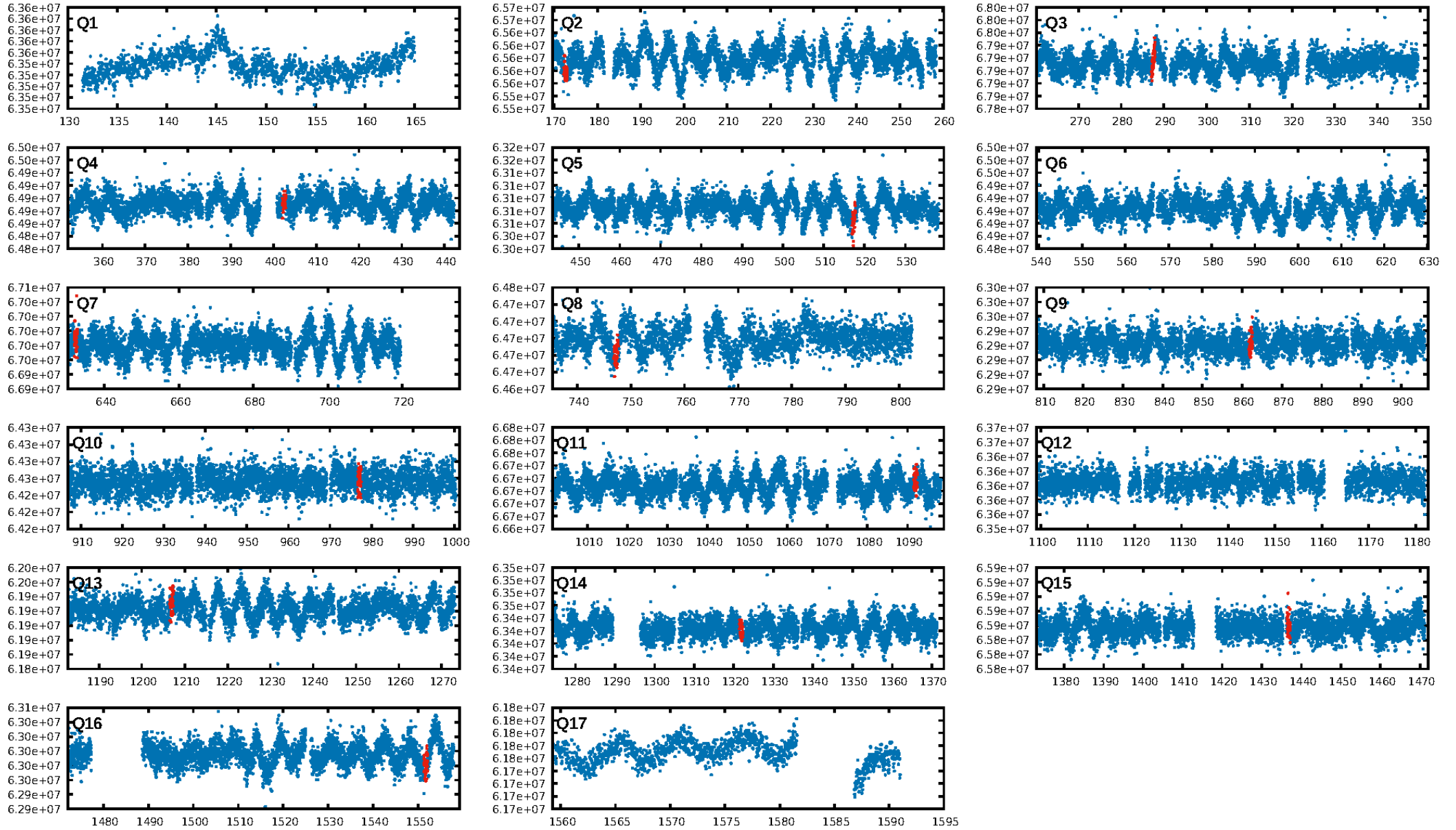
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.10σ]
LongPeriod-sig: 100.0% [143.07σ]
ModelChiSquare2-sig: 0.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.32e-11
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -0.3027
Centroid-sig: 67.6%
Centroid-so: 0.511 arcsec [0.70σ]
OotOffset-rm: 1.137 arcsec [0.93σ]
KicOffset-rm: 1.110 arcsec [0.90σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.00 [0/11]

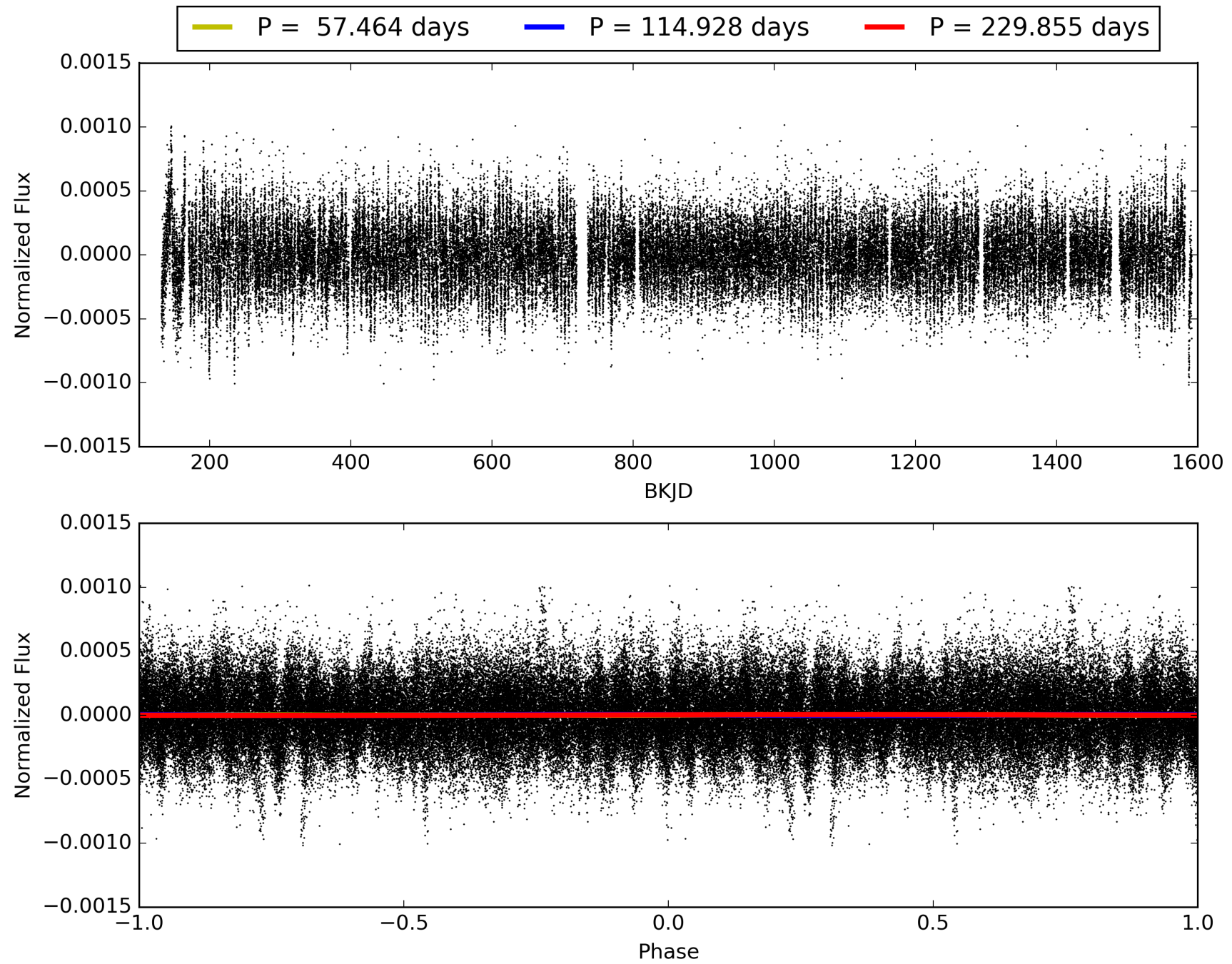
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:14:07 Z

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

TCE 007973867-03, PDC Light Curves

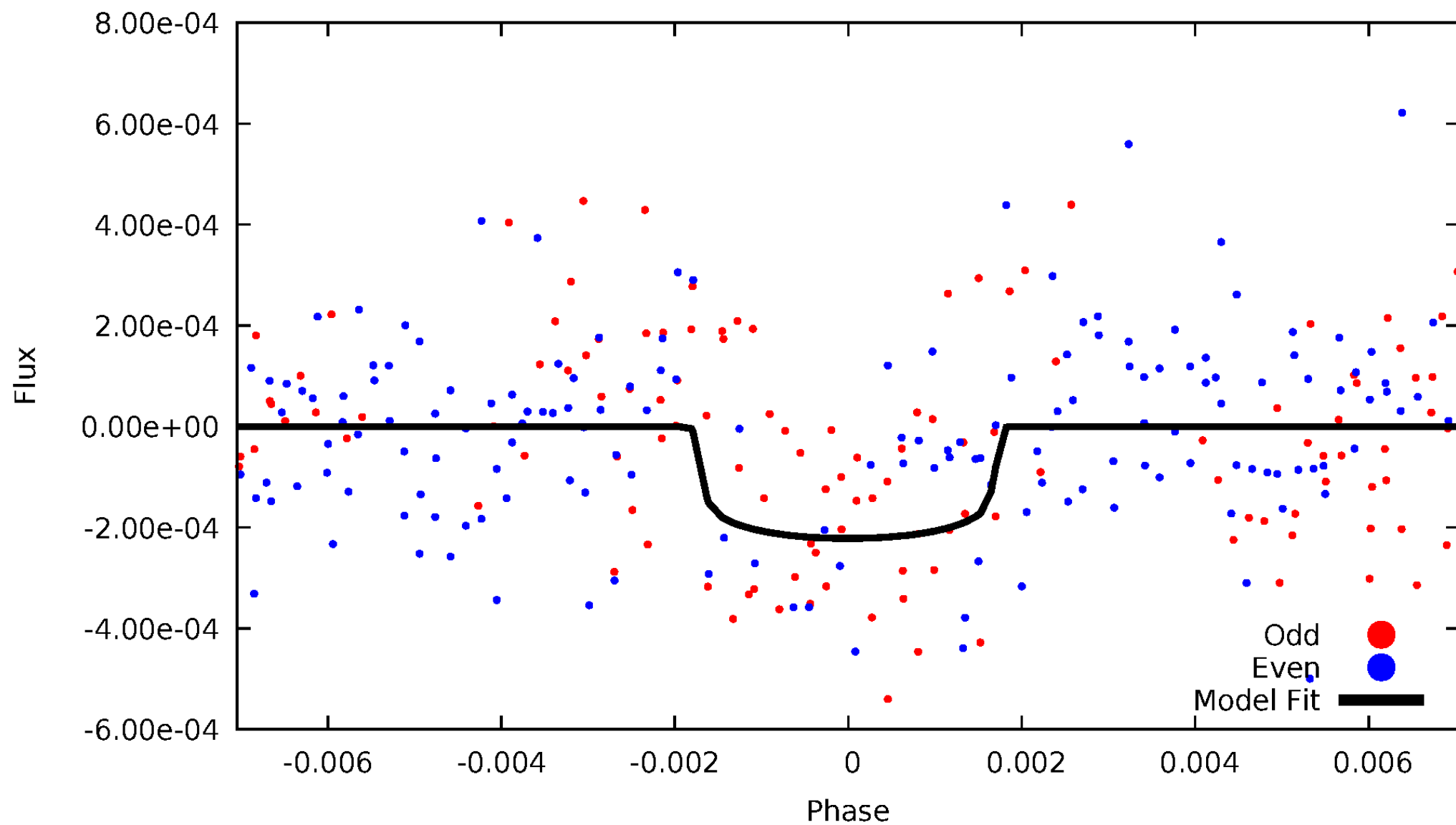


TCE 007973867-03



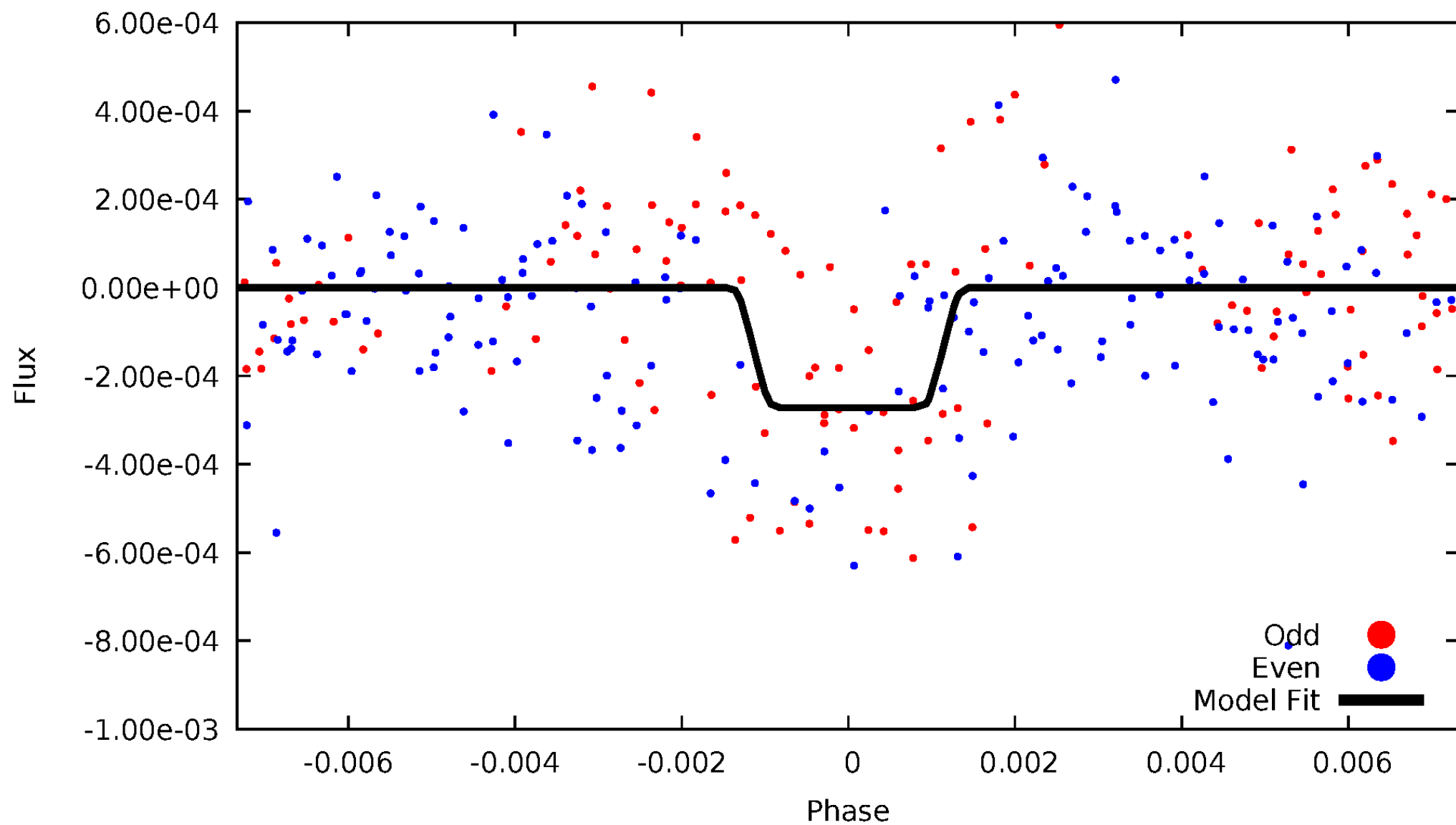
DV Odd/Even

TCE 007973867-03

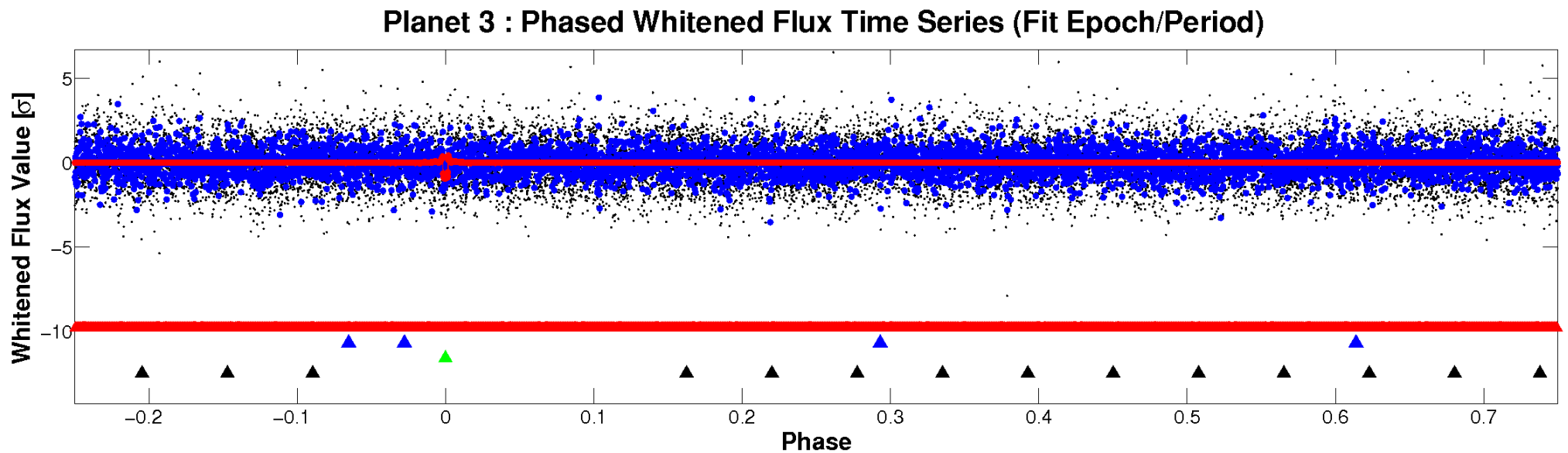
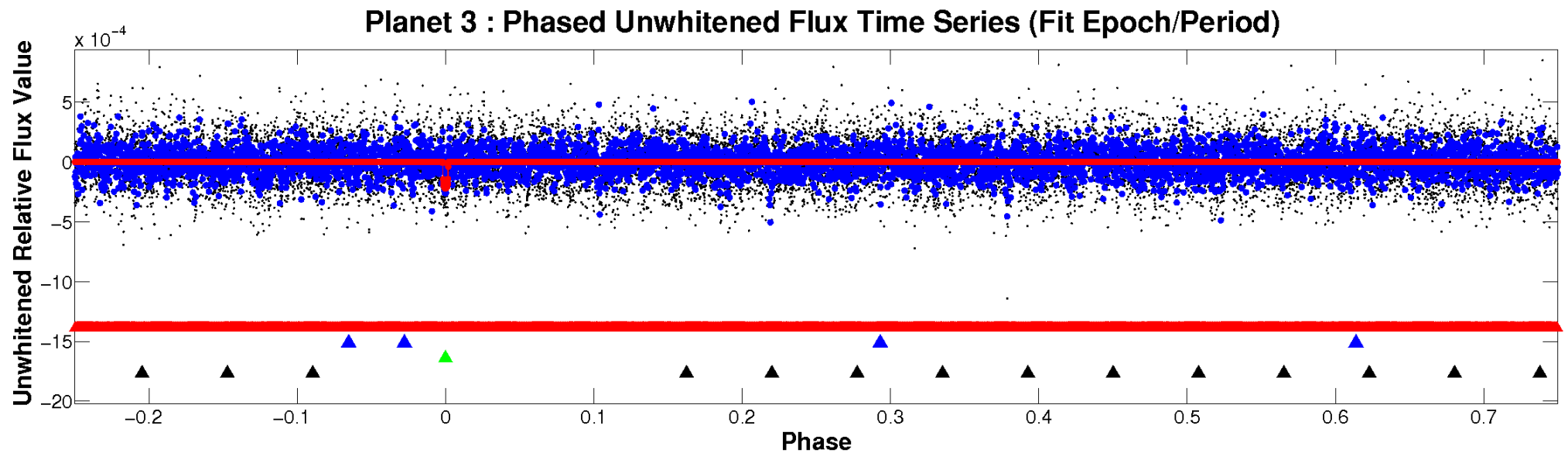


ALT Odd/Even

TCE 007973867-03

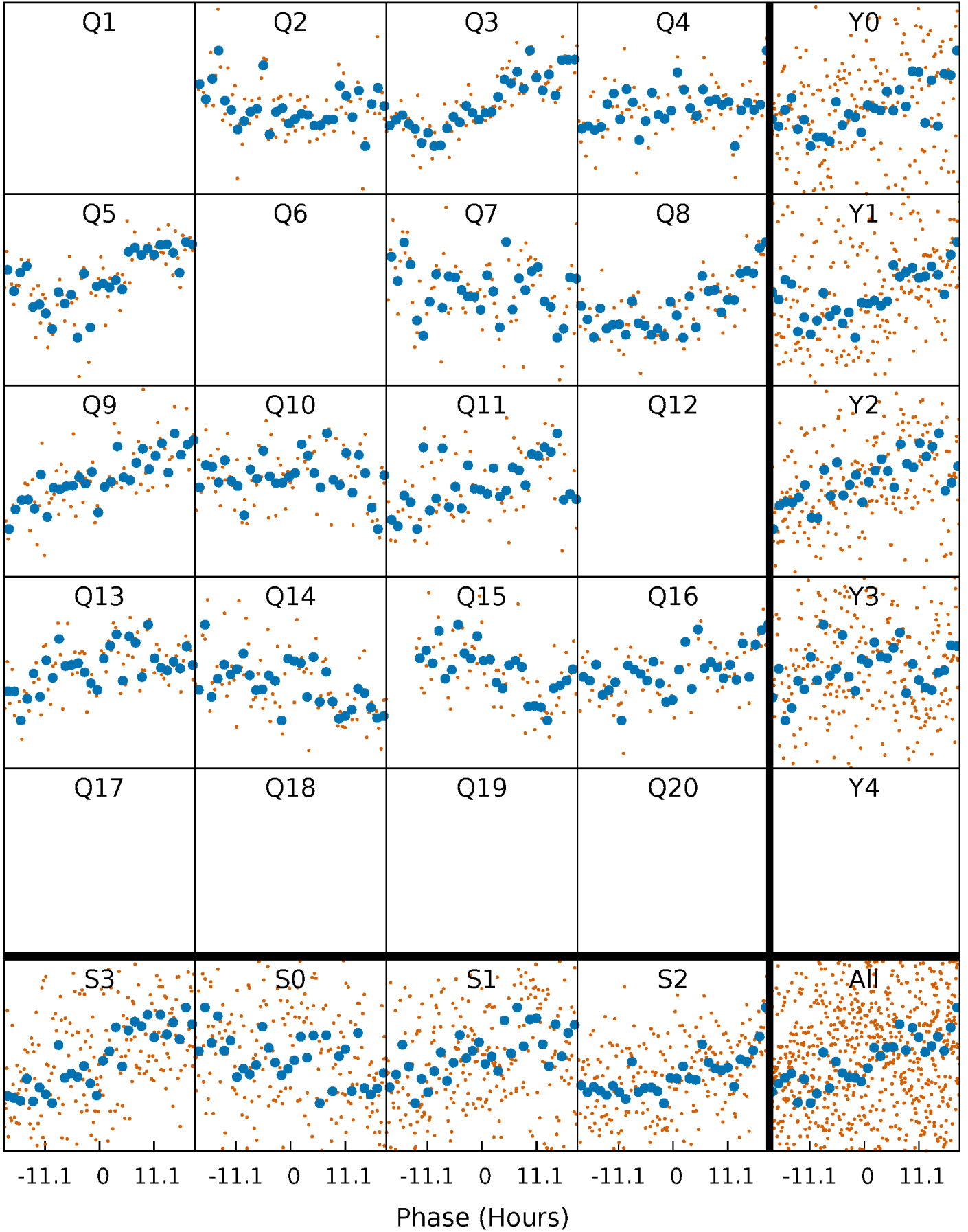


Non-Whitened Vs. Whitened Light Curve



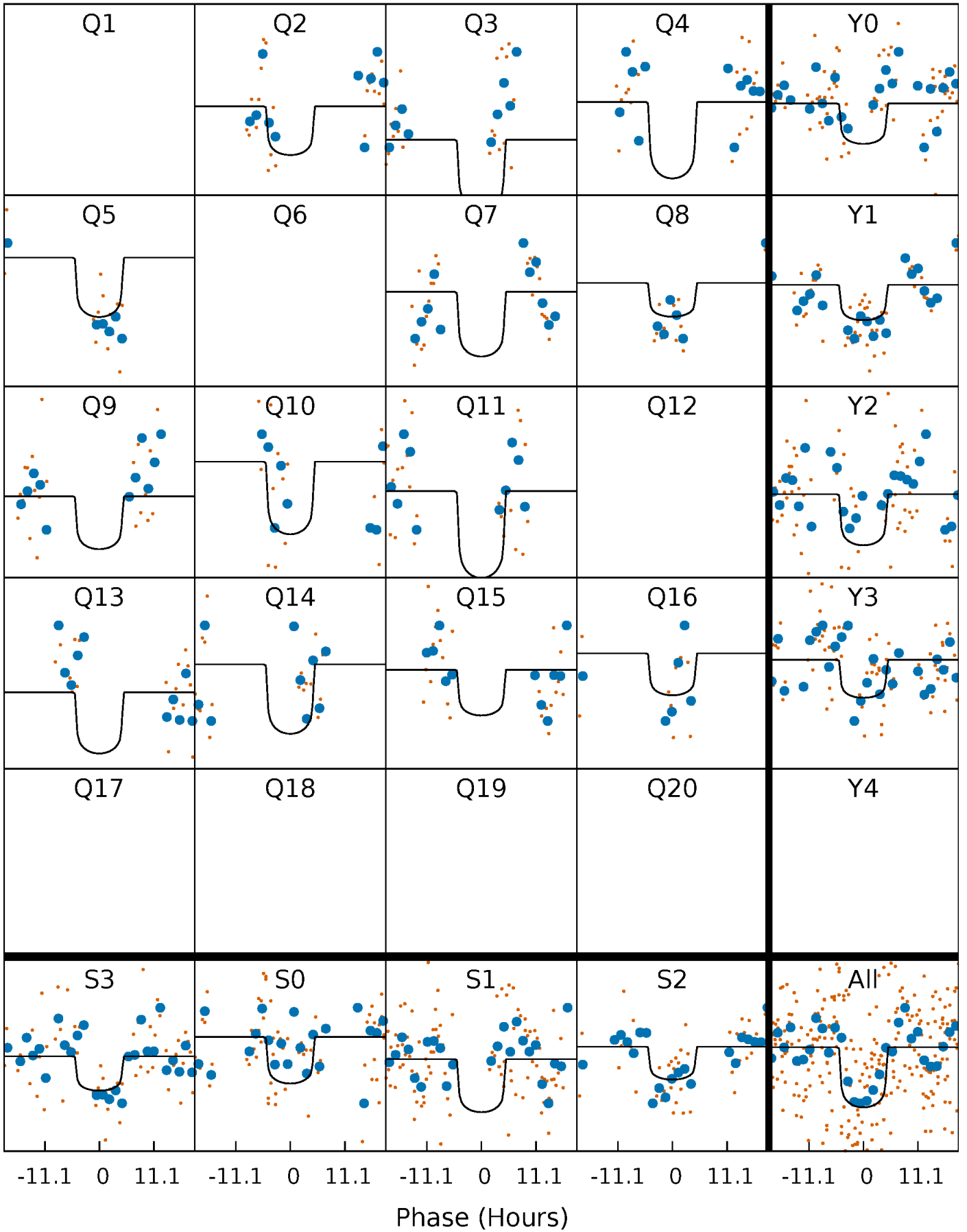
PDC Quarter-Phased Transit Curves

TCE 007973867-03 P=114.927559 Days $T_0=172.606871$ (BKJD)



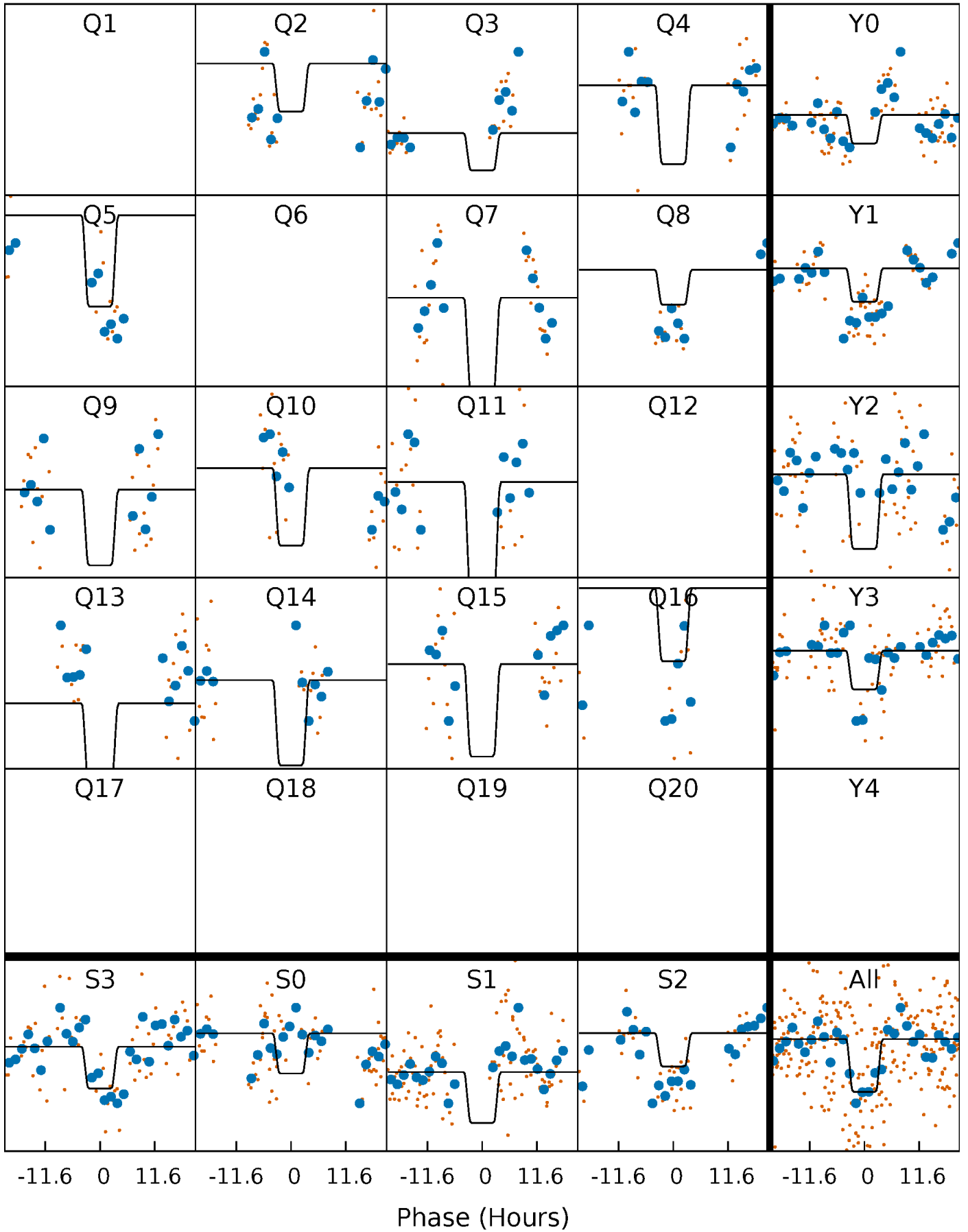
DV Quarter-Phased Transit Curves

TCE 007973867-03 P=114.927559 Days $T_0=172.606871$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

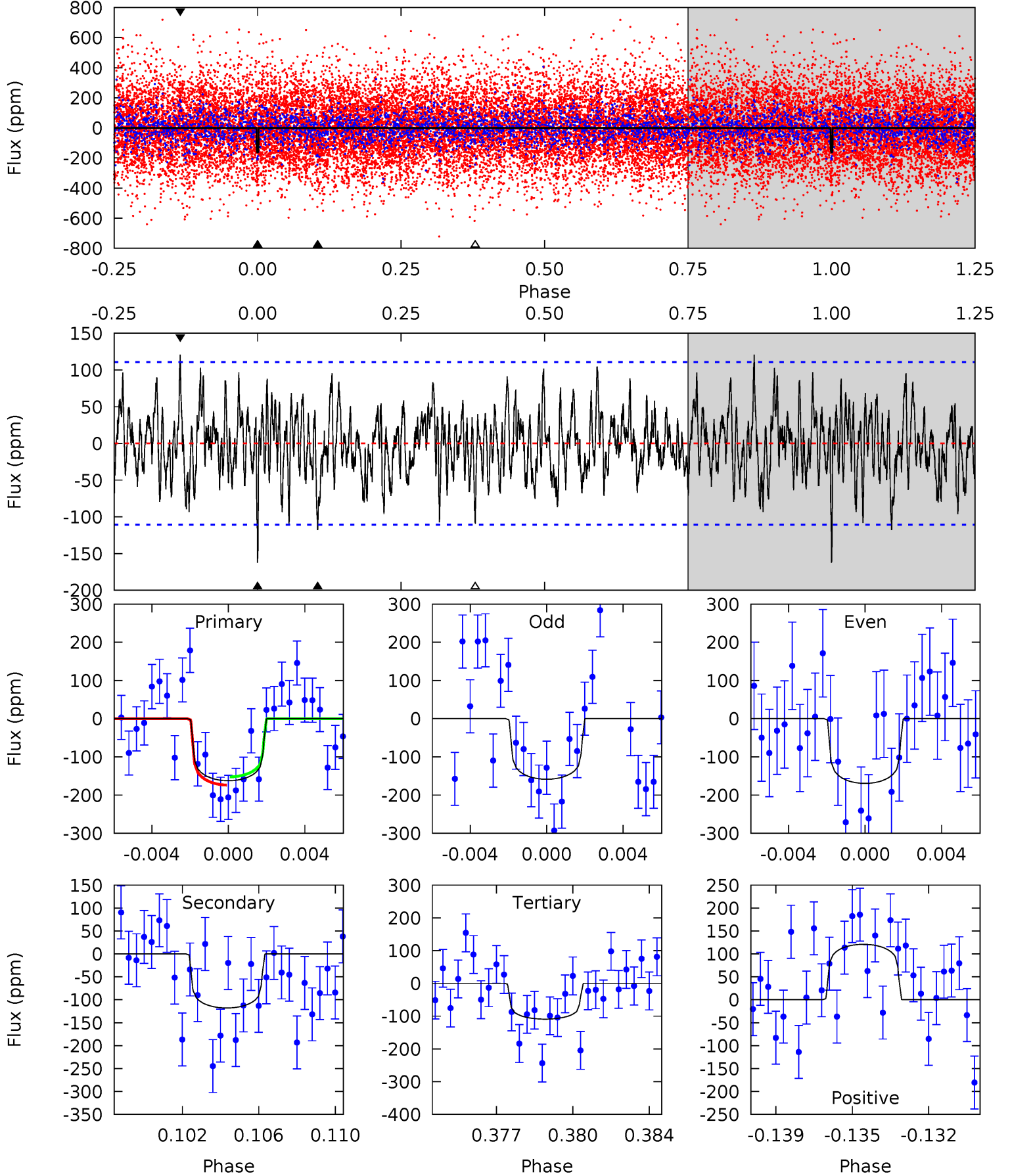
TCE 007973867-03 P=114.927269 Days $T_0=172.611633$ (BKJD)



DV Model-Shift Uniqueness Test

007973867-03, $P = 114.927559$ Days, $E = 57.679312$ Days

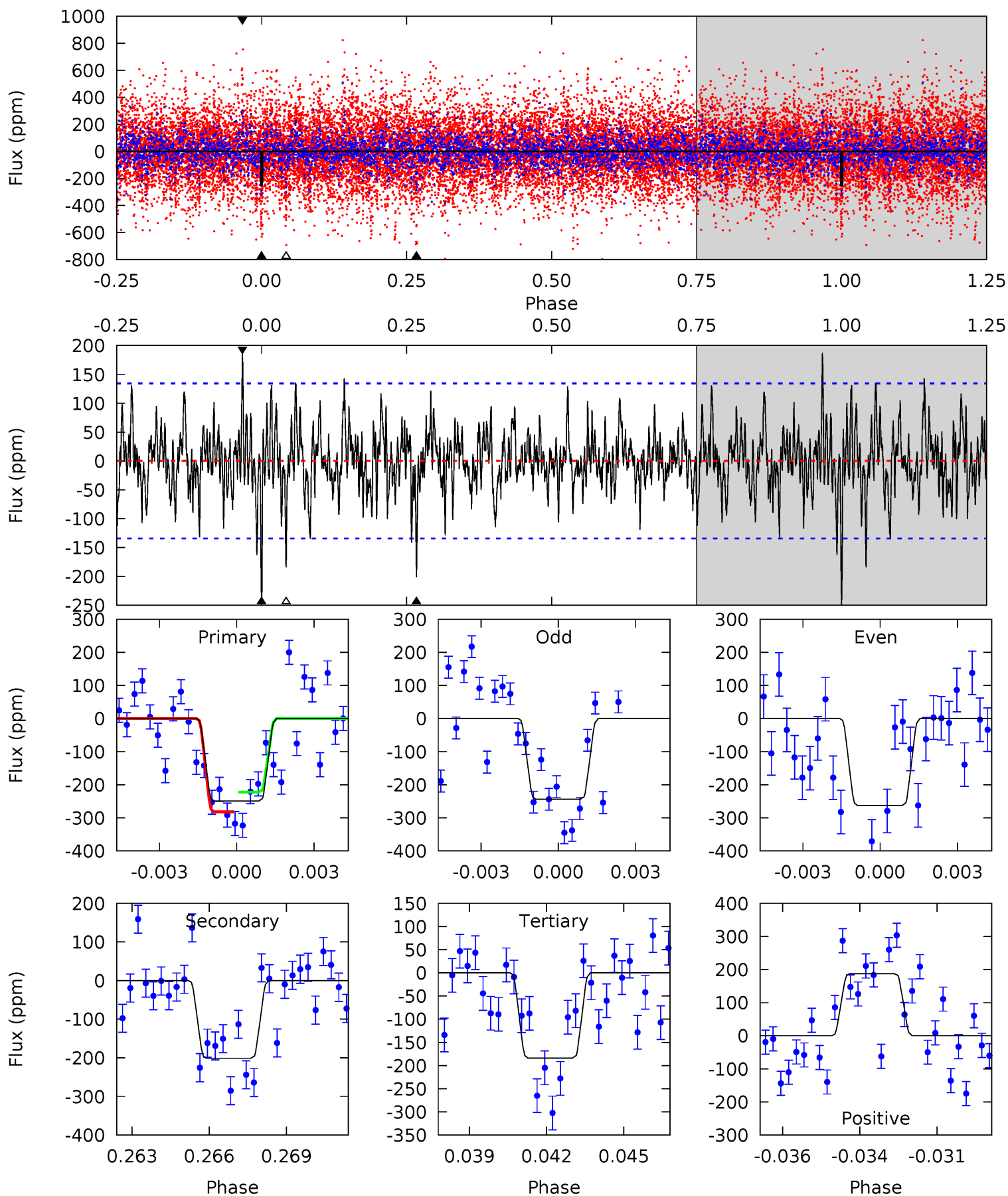
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.65	5.56	5.14	5.69	5.22	2.91	1.76	2.51	1.95	0.41	-0.14	0.25	1.12	0.43	0.50



Alt Model-Shift Uniqueness Test

007973867-03, P = 114.927269 Days, E = 57.684364 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.77	7.87	7.20	7.35	5.27	2.99	1.79	2.57	2.42	0.67	0.52	0.36	1.31	0.43	1.17



Stellar Parameters For KIC 007973867

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7053^{+199}_{-313}	$4.134^{+0.175}_{-0.175}$	$-0.280^{+0.250}_{-0.350}$	$1.654^{+0.482}_{-0.395}$	$1.363^{+0.214}_{-0.235}$	$0.424^{+0.407}_{-0.206}$
	+3%/-4%	+4%/-4%	+89%/-125%	+29%/-24%	+16%/-17%	+96%/-49%
Source	PHO1	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 007973867-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-118 ± 21	$2.58^{+1.38}_{-1.19}$	781^{+55}_{-56}	6064^{+2596}_{-1063}	2469^{+6921}_{-1432}
Alt.	-201 ± 26	$2.94^{+1.49}_{-1.22}$	779^{+62}_{-60}	6493^{+2378}_{-1077}	3383^{+6476}_{-1883}

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 $A_{obs} \gg 1.0$

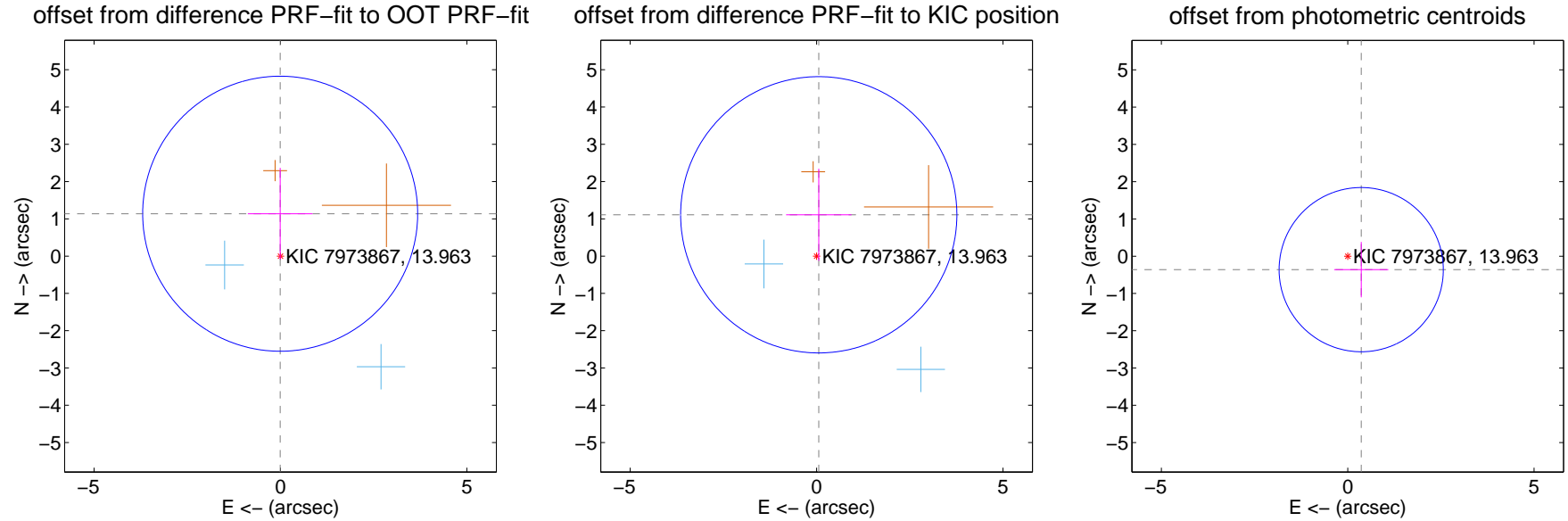
DV Centroid Data

Supplemental centroid analysis for 007973867-03. Kepler magnitude: 13.96. Transit SNR 7.26

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.137 ± 1.230	0.93	0.008 ± 0.868	1.137 ± 1.230
PRF-fit source offset from KIC position	1.110 ± 1.235	0.90	-0.058 ± 0.876	1.109 ± 1.236
photometric centroid source offset	0.51 ± 0.73	0.70	-0.36 ± 0.73	-0.36 ± 0.74



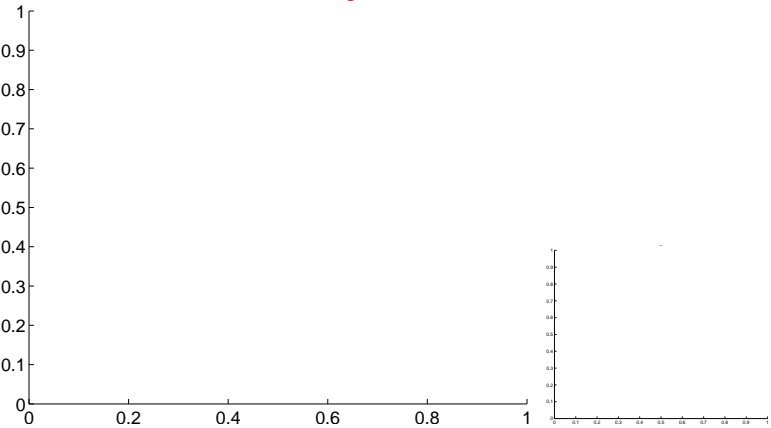
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

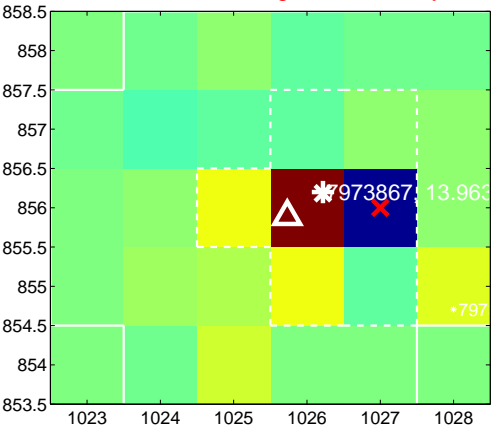
Q1 no difference image



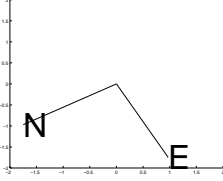
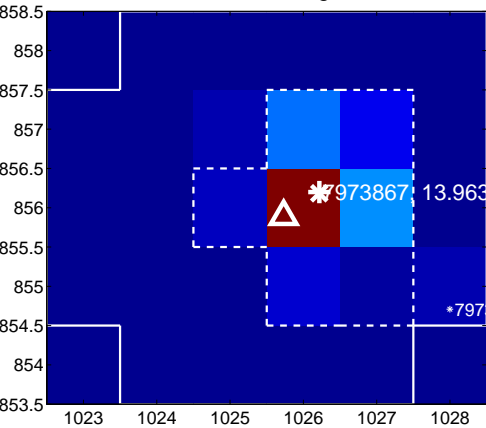
Q1 no OOT image



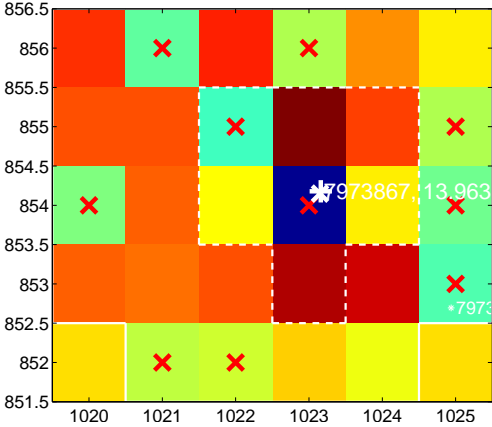
Q2 difference image. Poor Quality



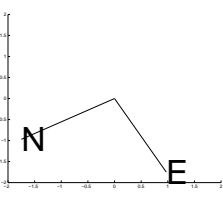
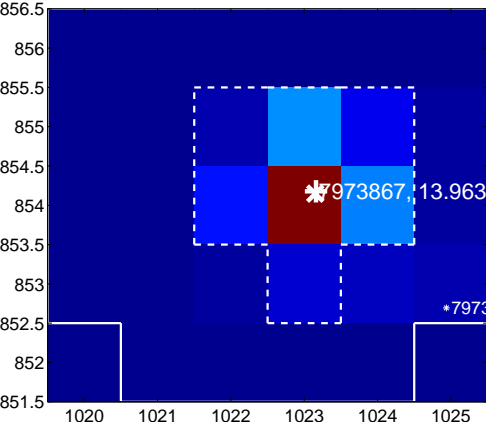
Q2 OOT image



Q3 difference image. Poor Quality



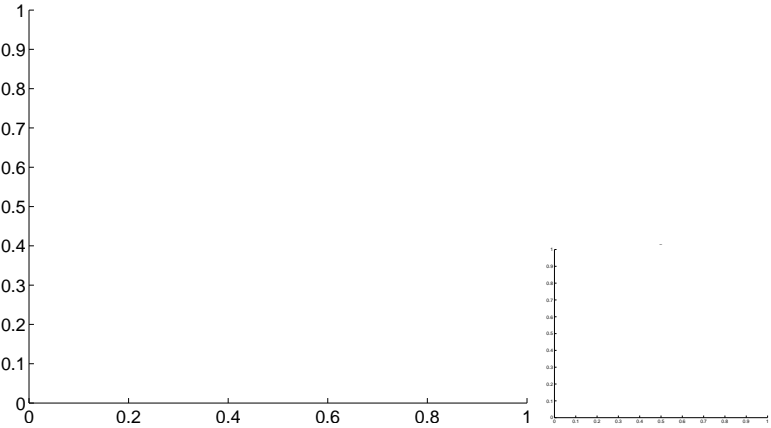
Q3 OOT image



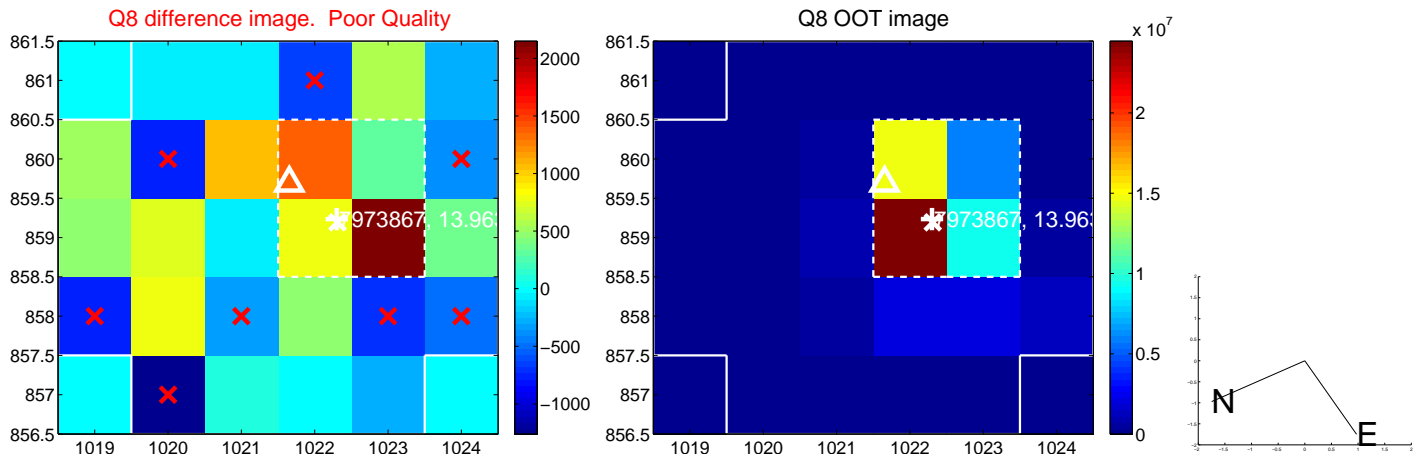
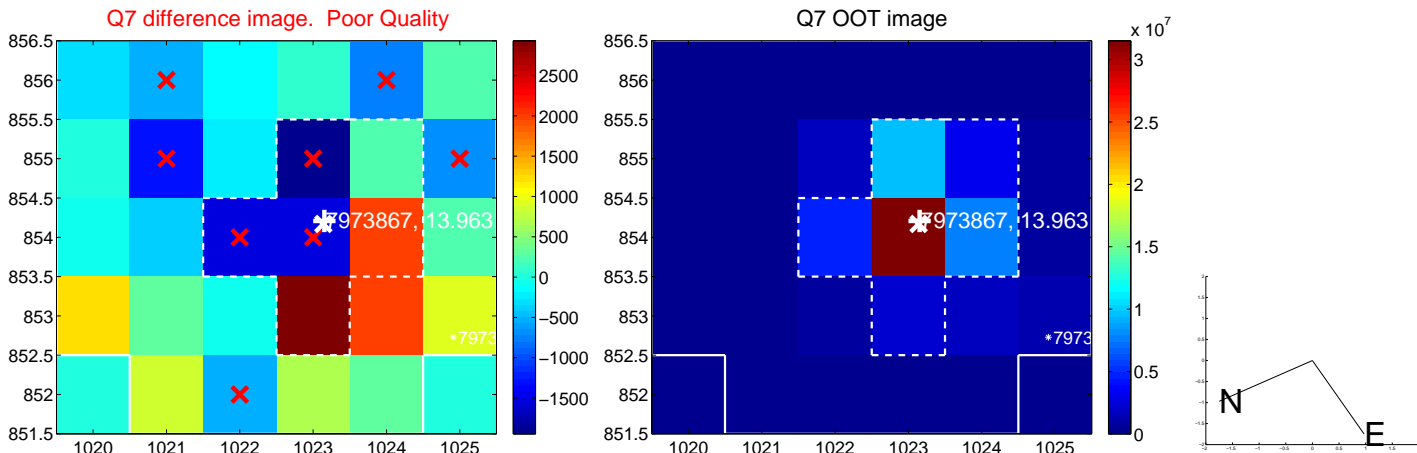
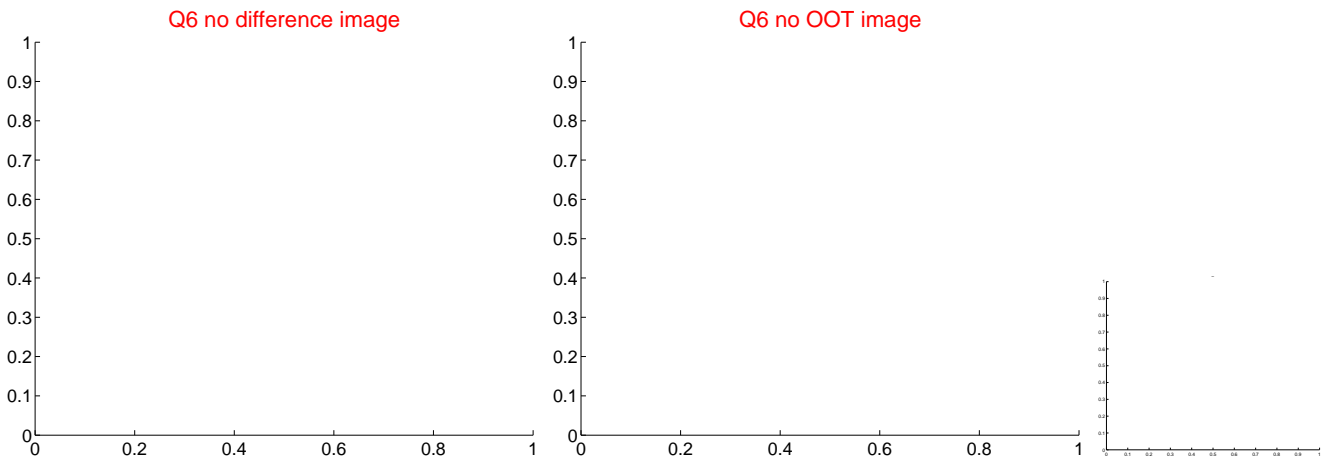
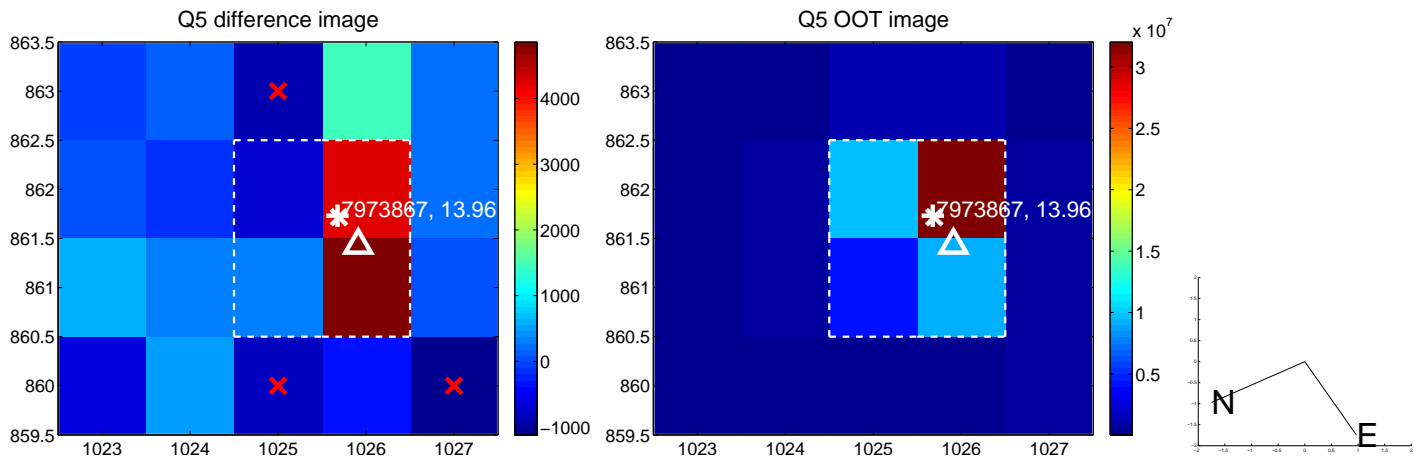
Q4 no difference image



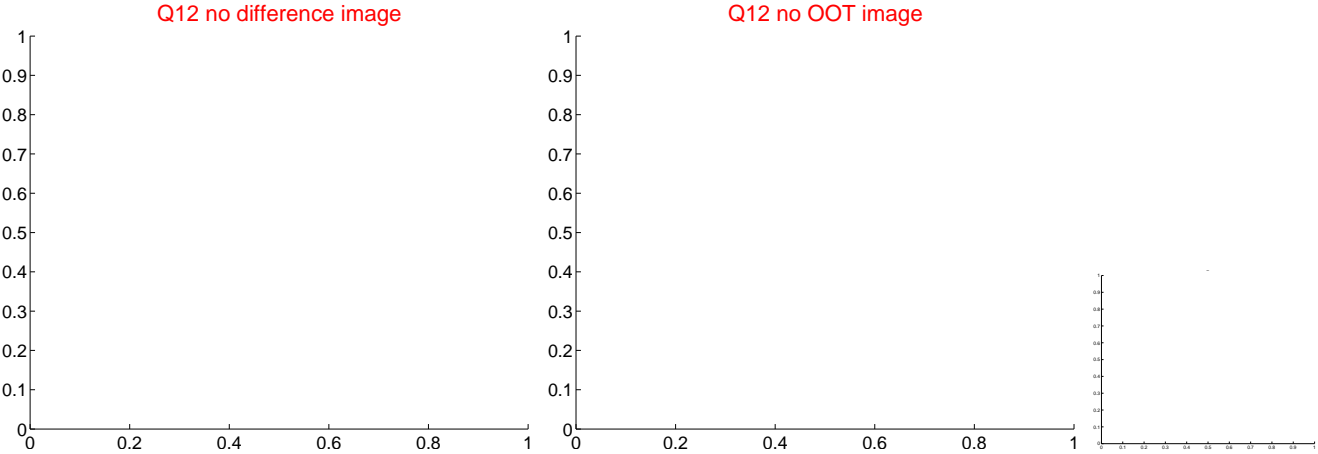
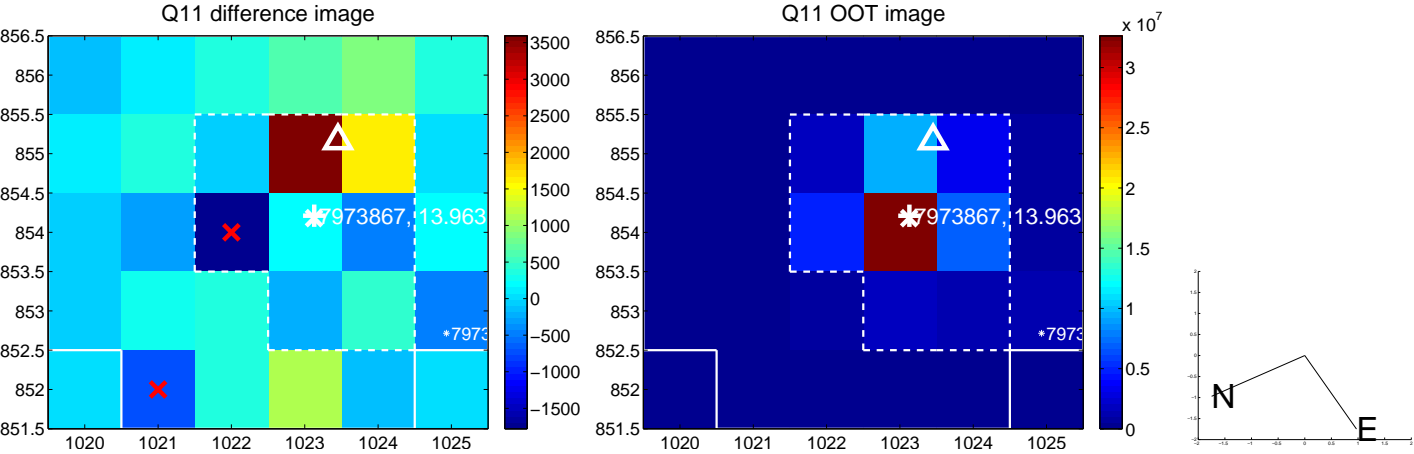
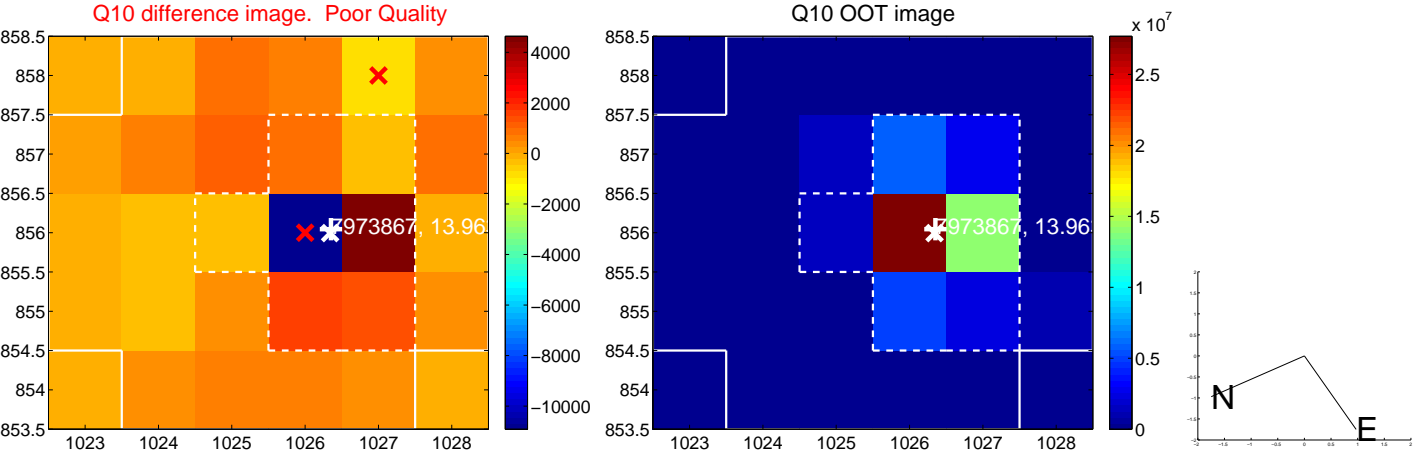
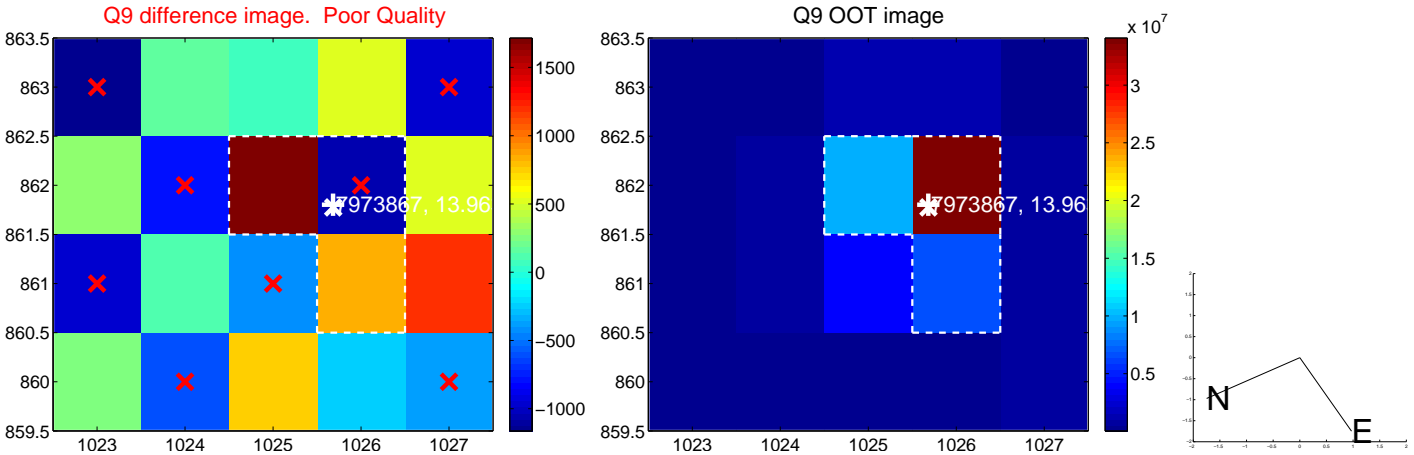
Q4 no OOT image



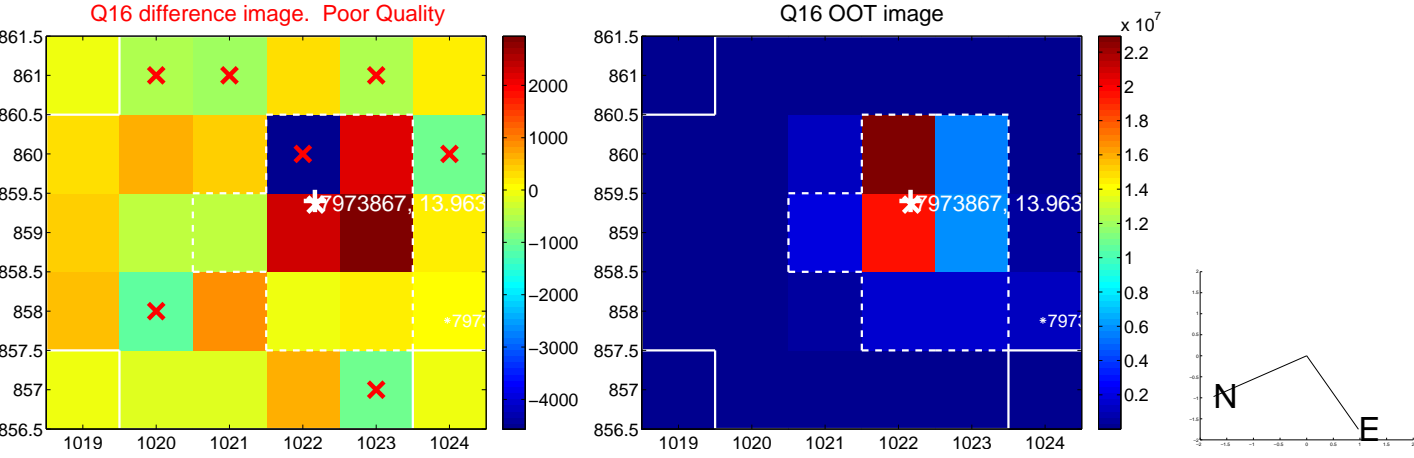
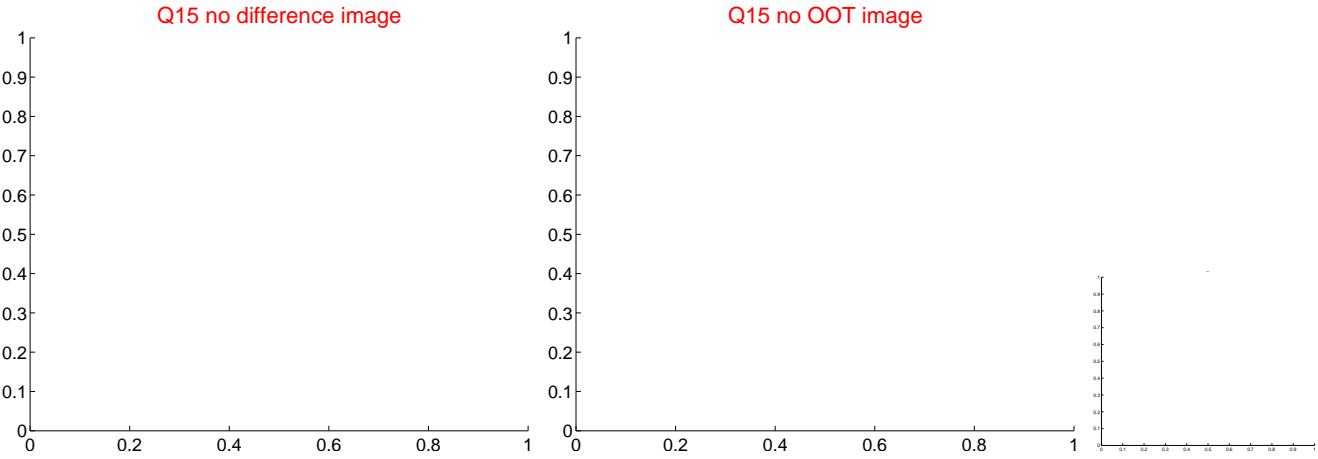
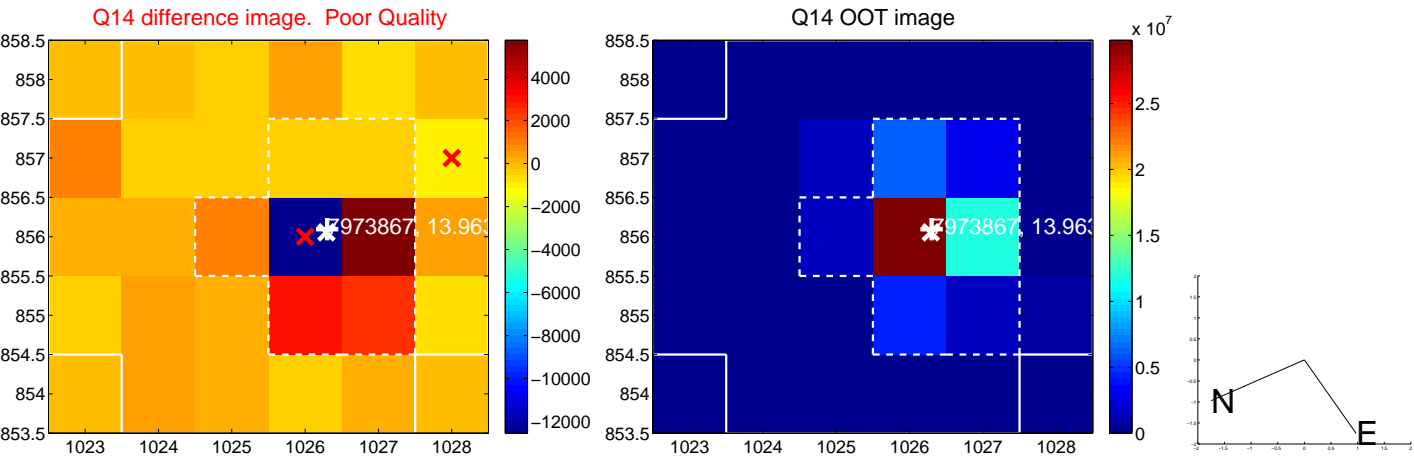
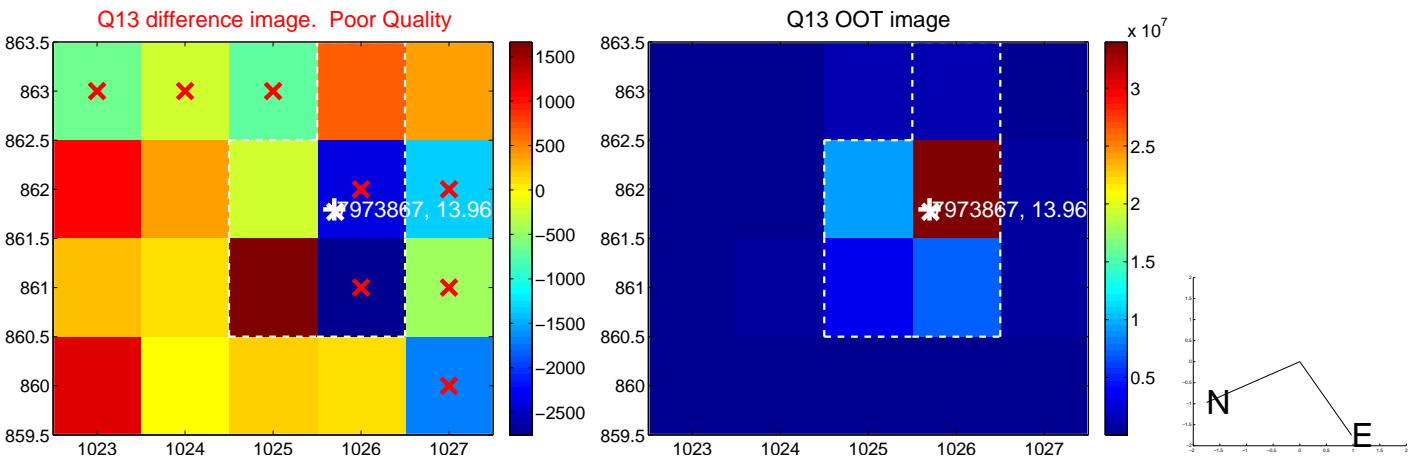
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



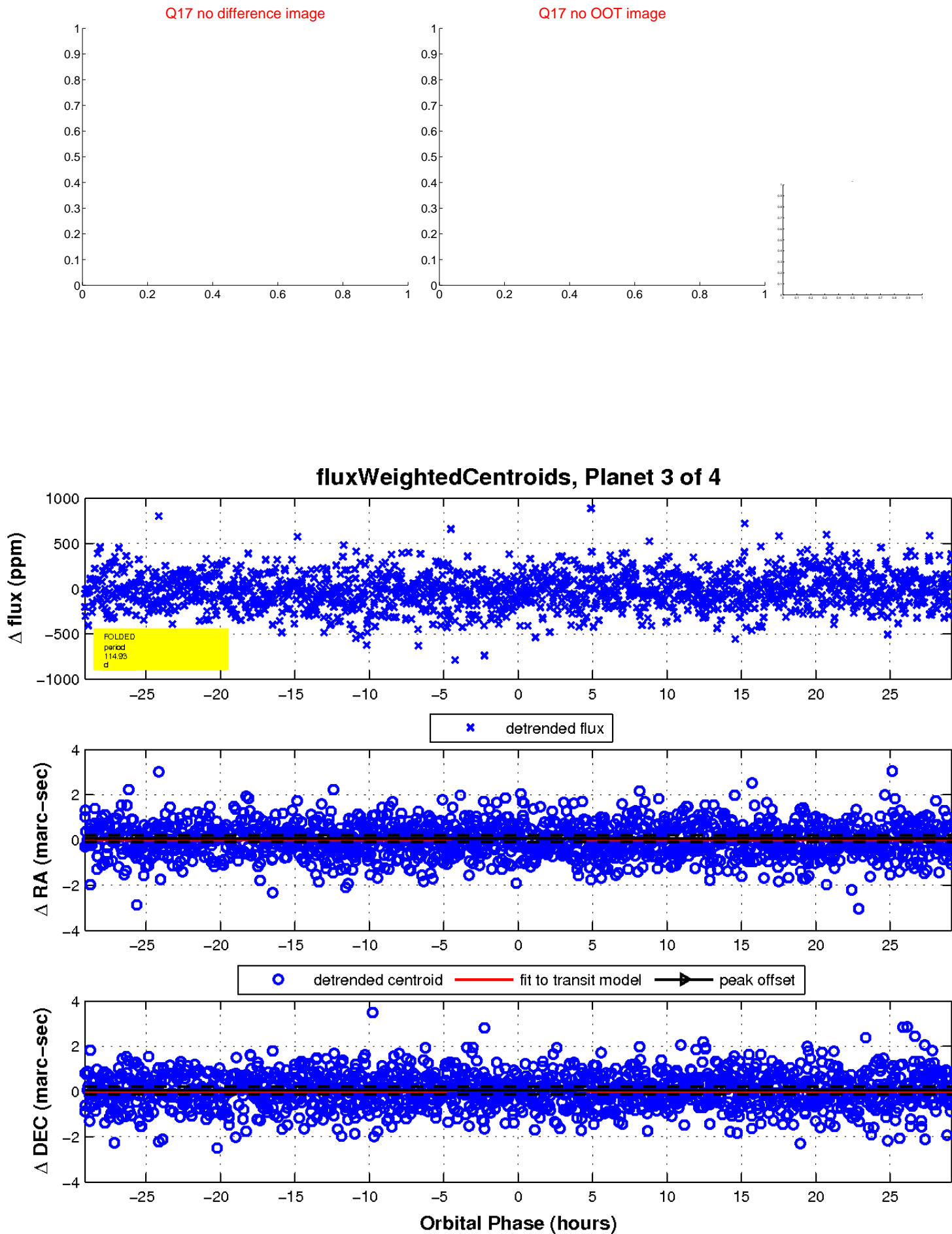
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

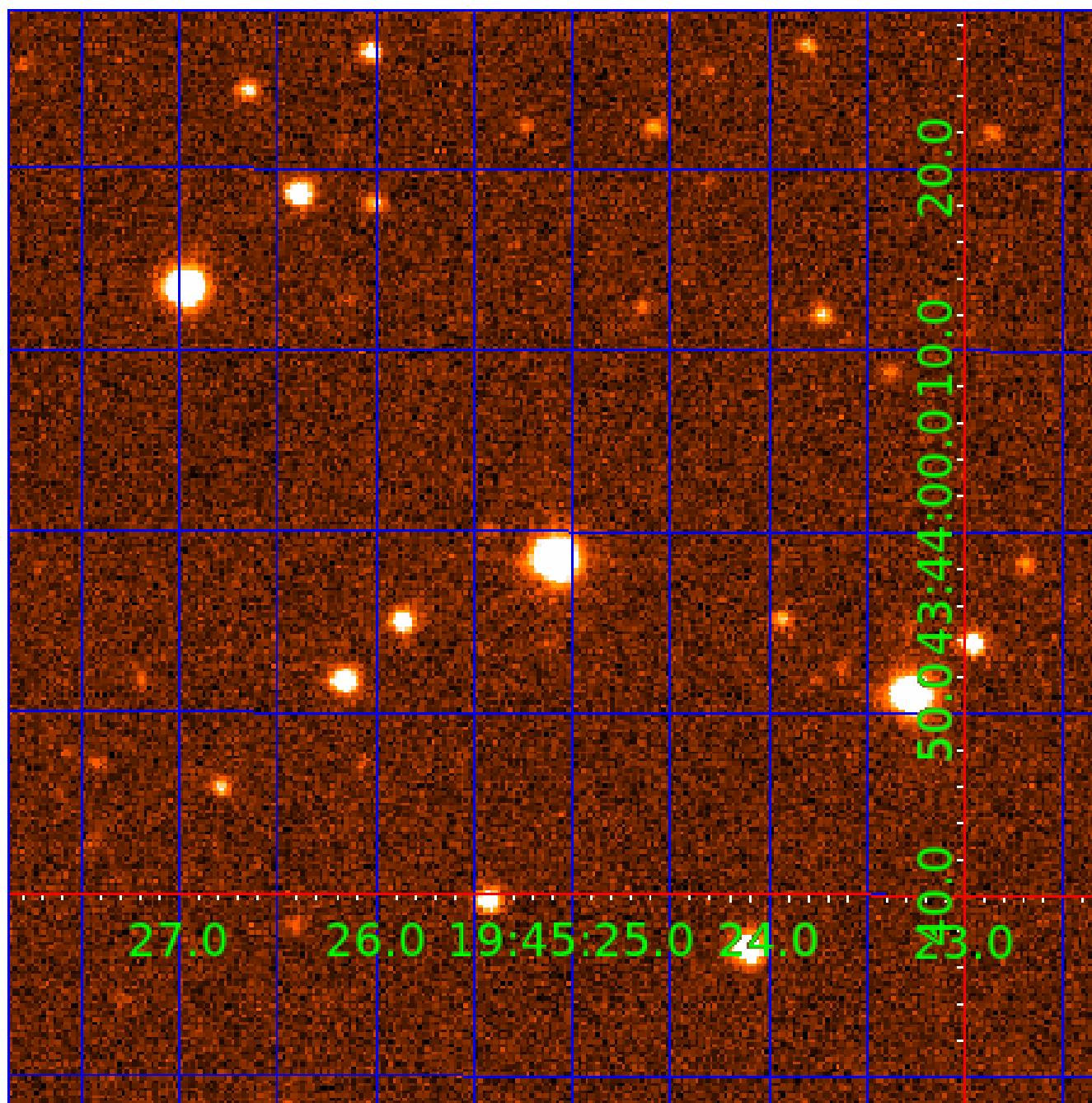


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007973867

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})
007973867-01	OBS	No	0.953301	131.852228	16.0	5.351	9.9	8.1	1.65	7053	0.77	13754.35
007973867-02	OBS	No	307.913127	394.960592	371.9	30.880	10.3	8.7	1.65	7053	3.58	6.21
007973867-03	OBS	No	114.927559	172.606871	222.0	9.720	9.0	7.3	1.65	7053	2.64	23.09
007973867-04	OBS	No	108.314995	162.321150	182.6	10.481	7.7	6.8	1.65	7053	2.43	24.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007973867-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
007973867-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007973867-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007973867-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

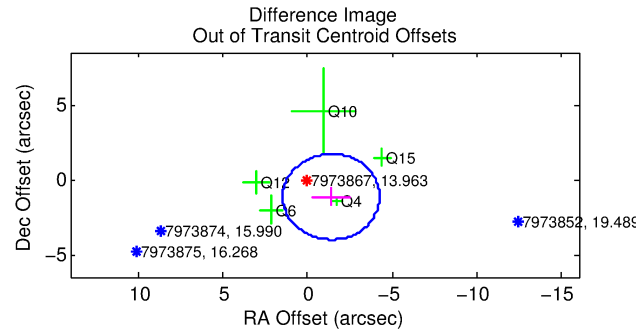
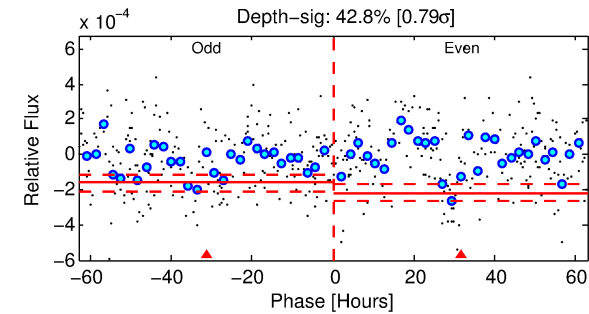
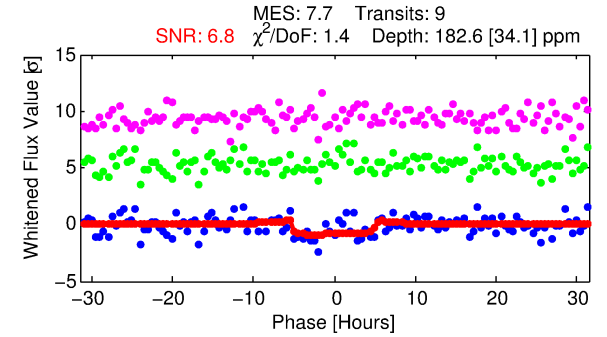
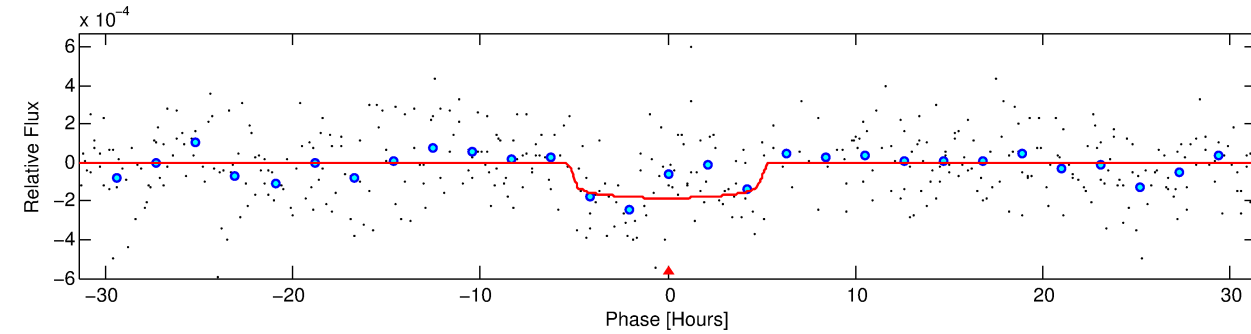
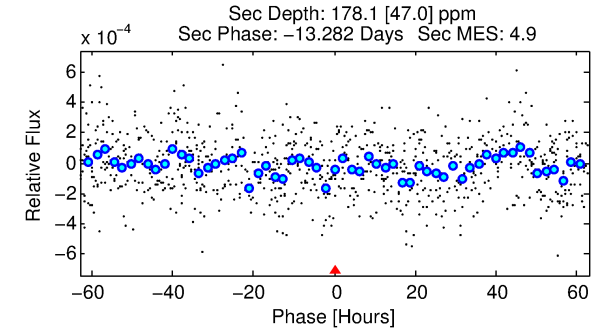
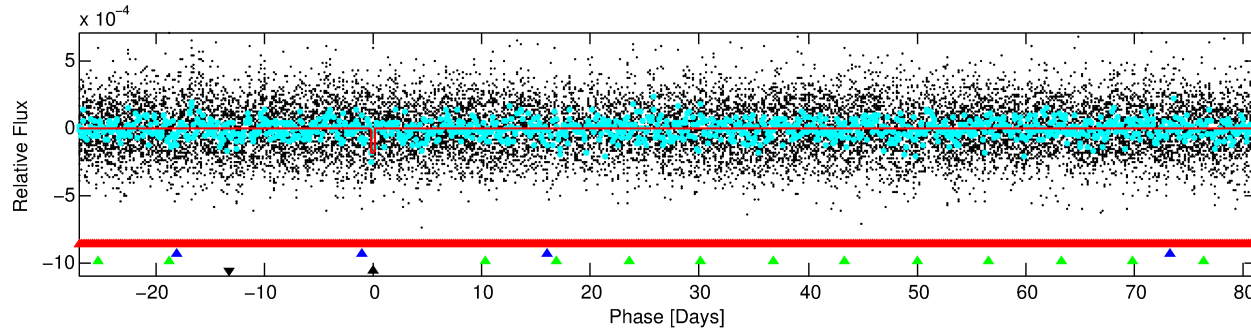
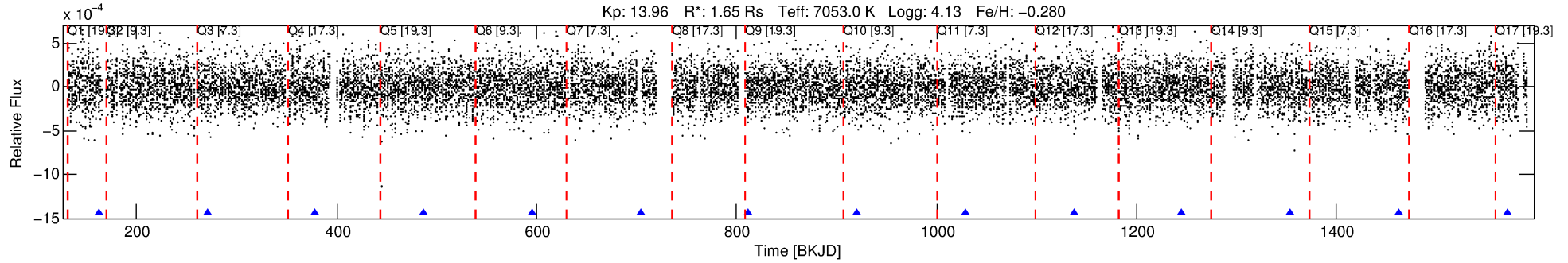
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007973867-04

No Significant Match Found

DV One-Page Summary

KIC: 7973867 Candidate: 4 of 4 Period: 108.315 d



DV Fit Results:

Period = 108.31500 [0.00296] d
Epoch = 162.3211 [0.0263] BKJD
Rp/R* = 0.0134 [0.0063]
a/R* = 53.54 [147.24]
b = 0.75 [1.59]
Seff = 24.99 [9.40]
Teq = 570 [54] K
Rp = 2.43 [1.34] Re
a = 0.4926 [0.1164] AU
Ag = 4037.34 [4143.16] [0.97σ]
Teffp = 7027 [1734] K [3.72σ]

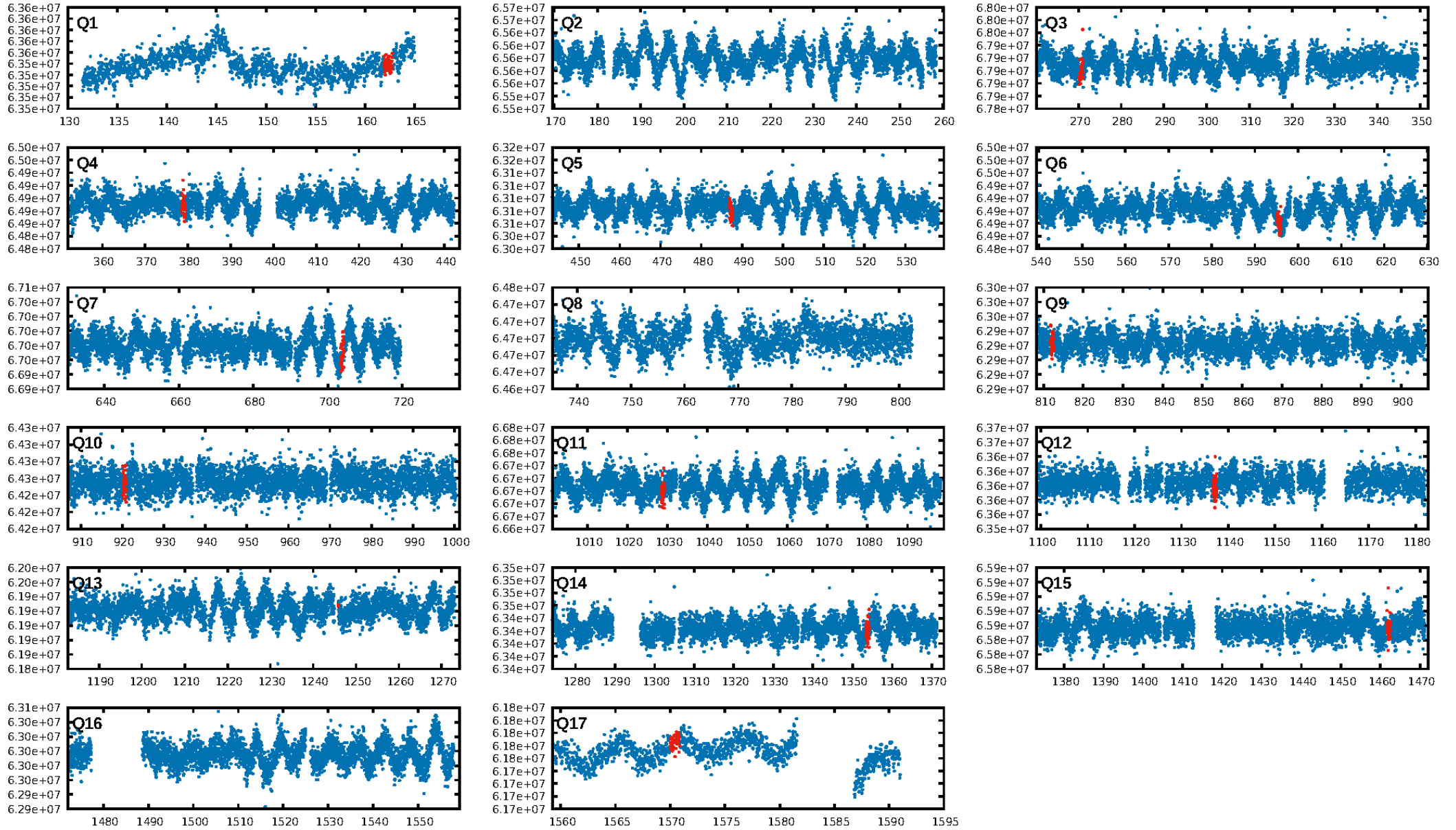
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [218.95σ]
LongPeriod-sig: 100.0% [11.10σ]
ModelChiSquare2-sig: 17.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.22e-09
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -1.221
Centroid-sig: 31.7%
Centroid-so: 0.796 arcsec [0.95σ]
OotOffset-rm: 1.794 arcsec [1.88σ]
OotOffset-st: 2/1/2/0 [5]
KicOffset-rm: 1.933 arcsec [1.96σ]
KicOffset-st: 2/1/2/0 [5]
DiffImageQuality-fgm: 0.00 [0/5]
DiffImageOverlap-fno: 0.00 [0/13]

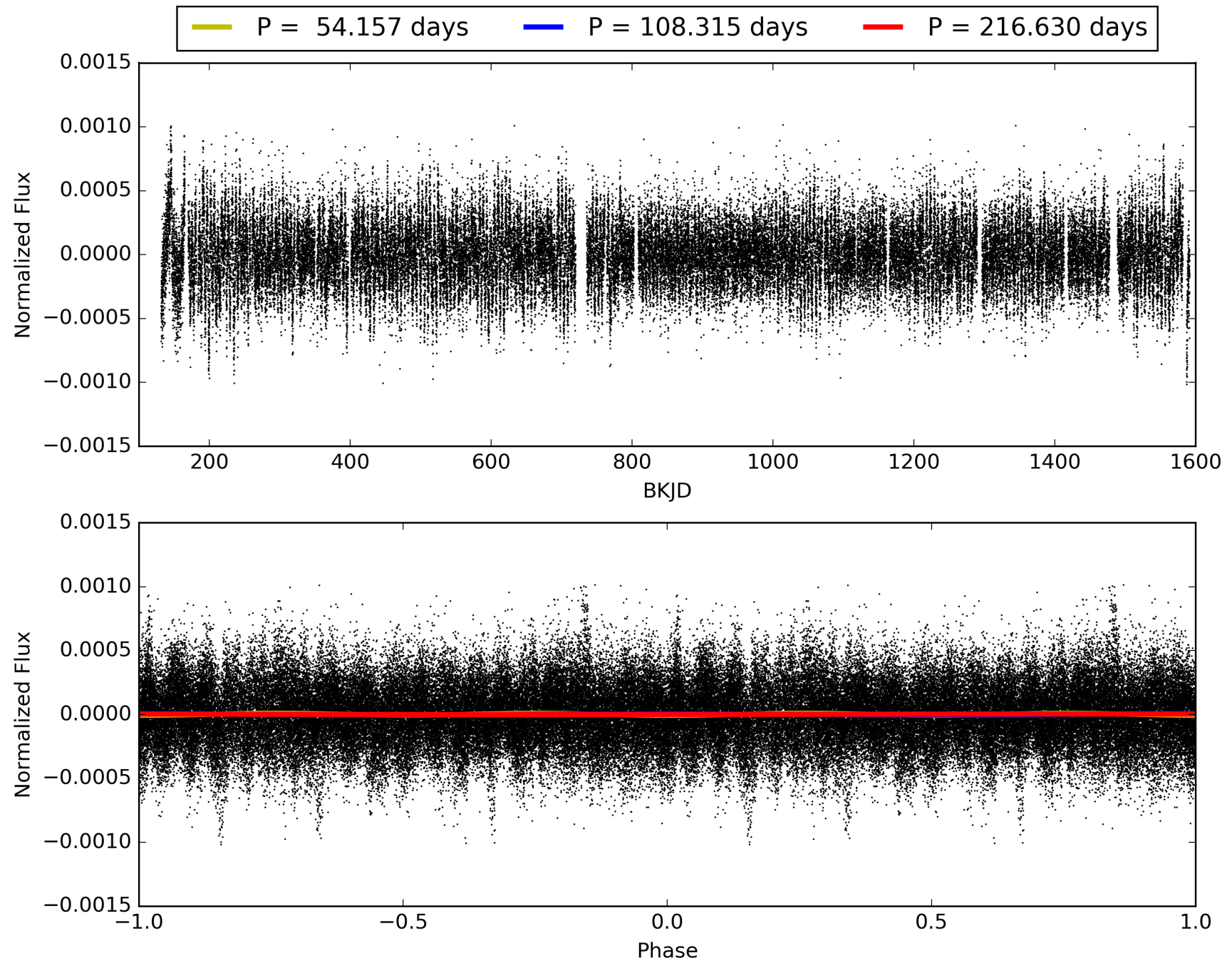
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:14:11 Z

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

TCE 007973867-04, PDC Light Curves

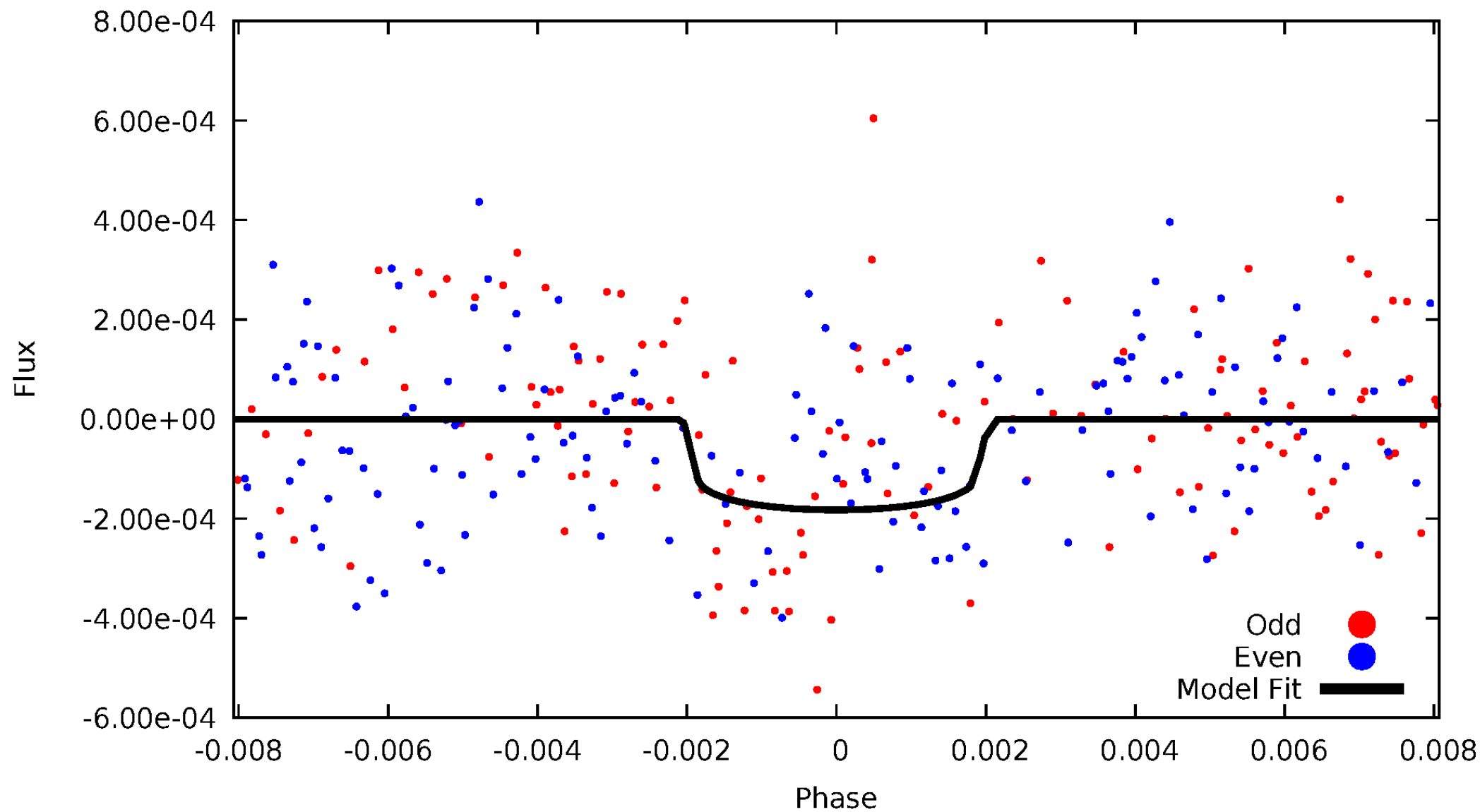


TCE 007973867-04



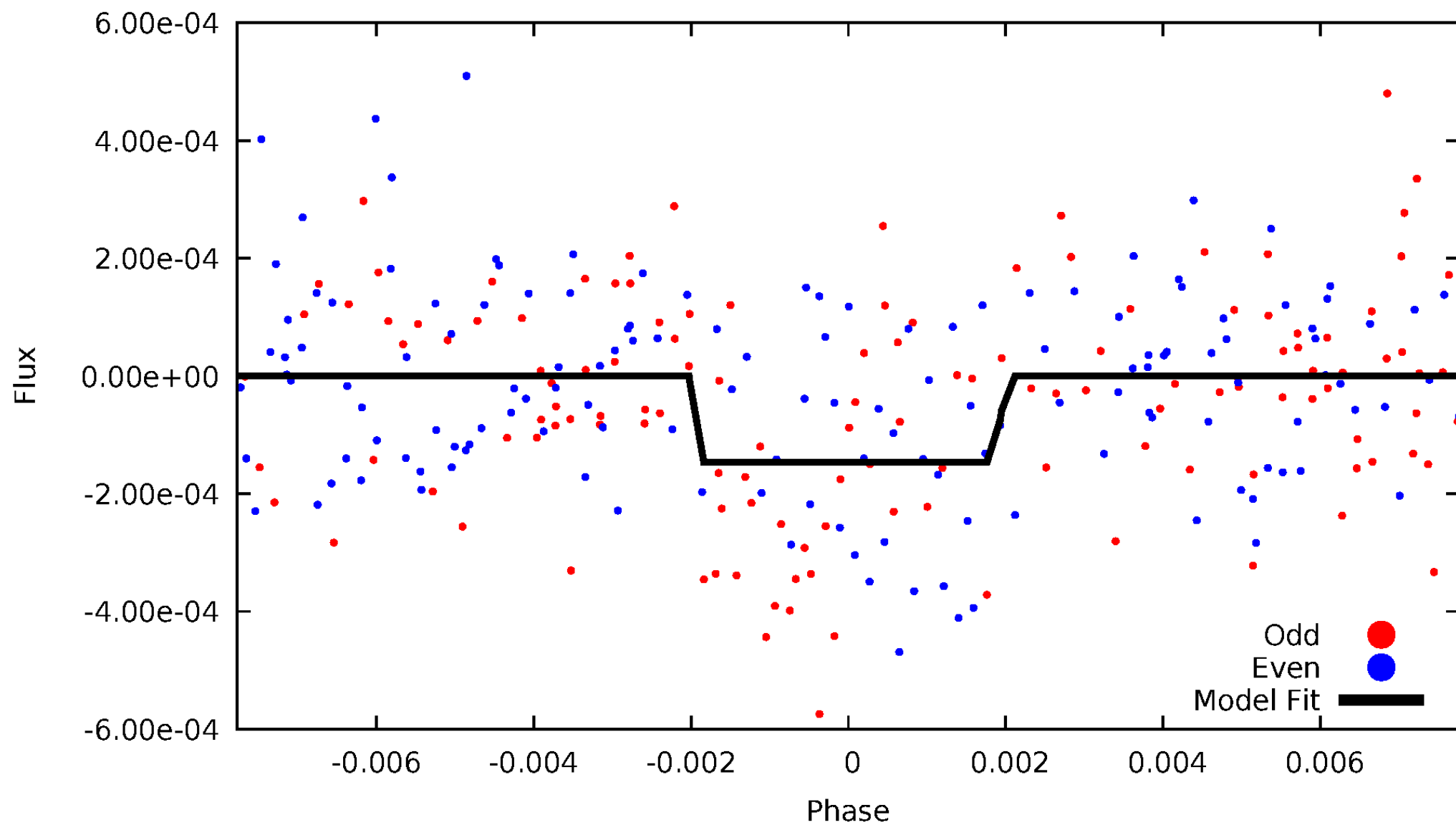
DV Odd/Even

TCE 007973867-04



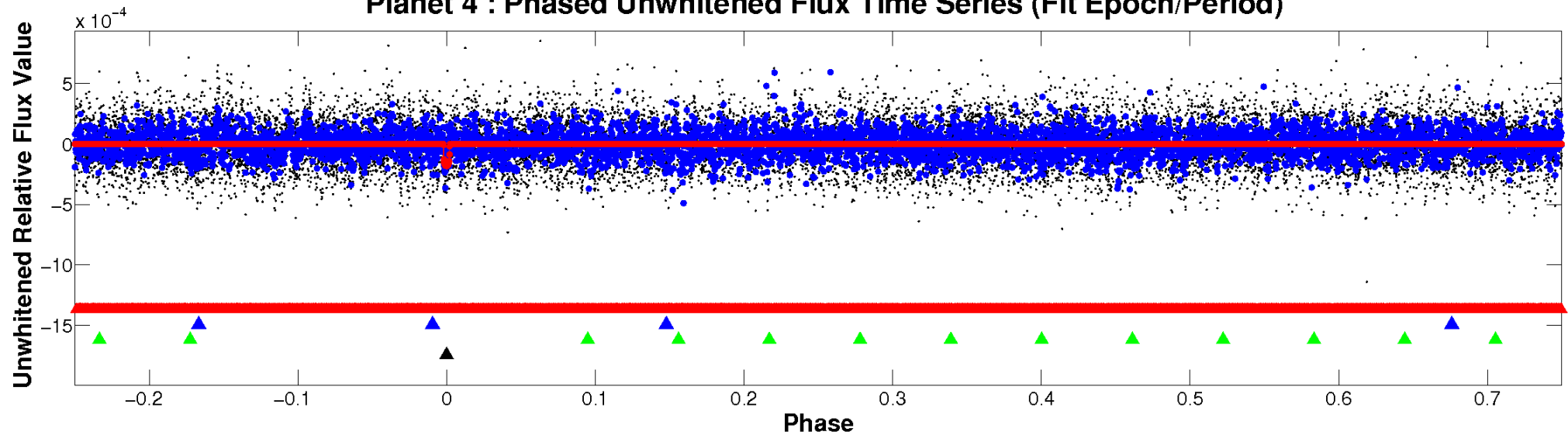
ALT Odd/Even

TCE 007973867-04

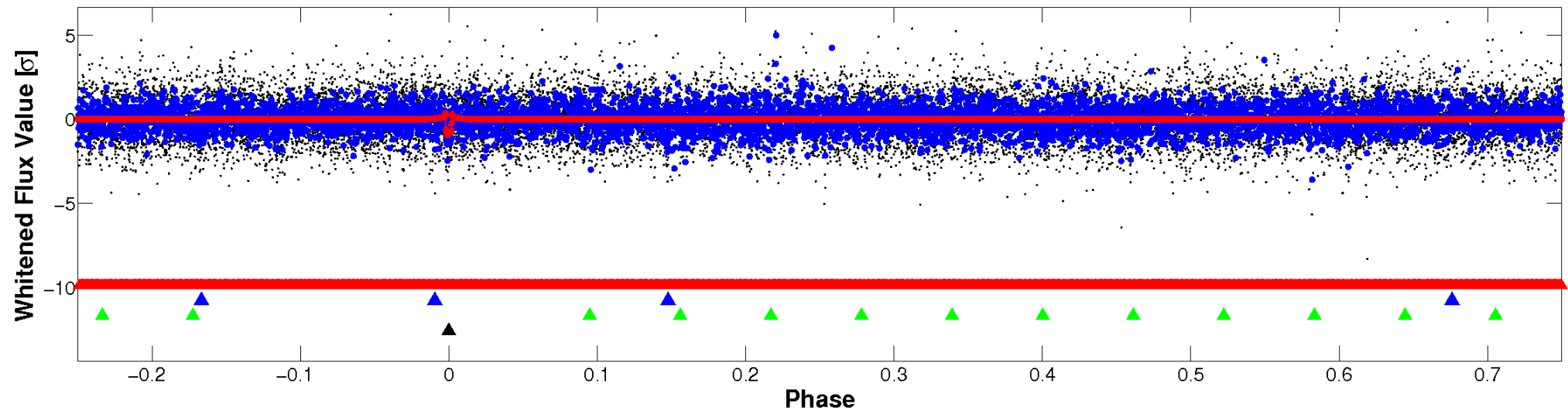


Non-Whitened Vs. Whitened Light Curve

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

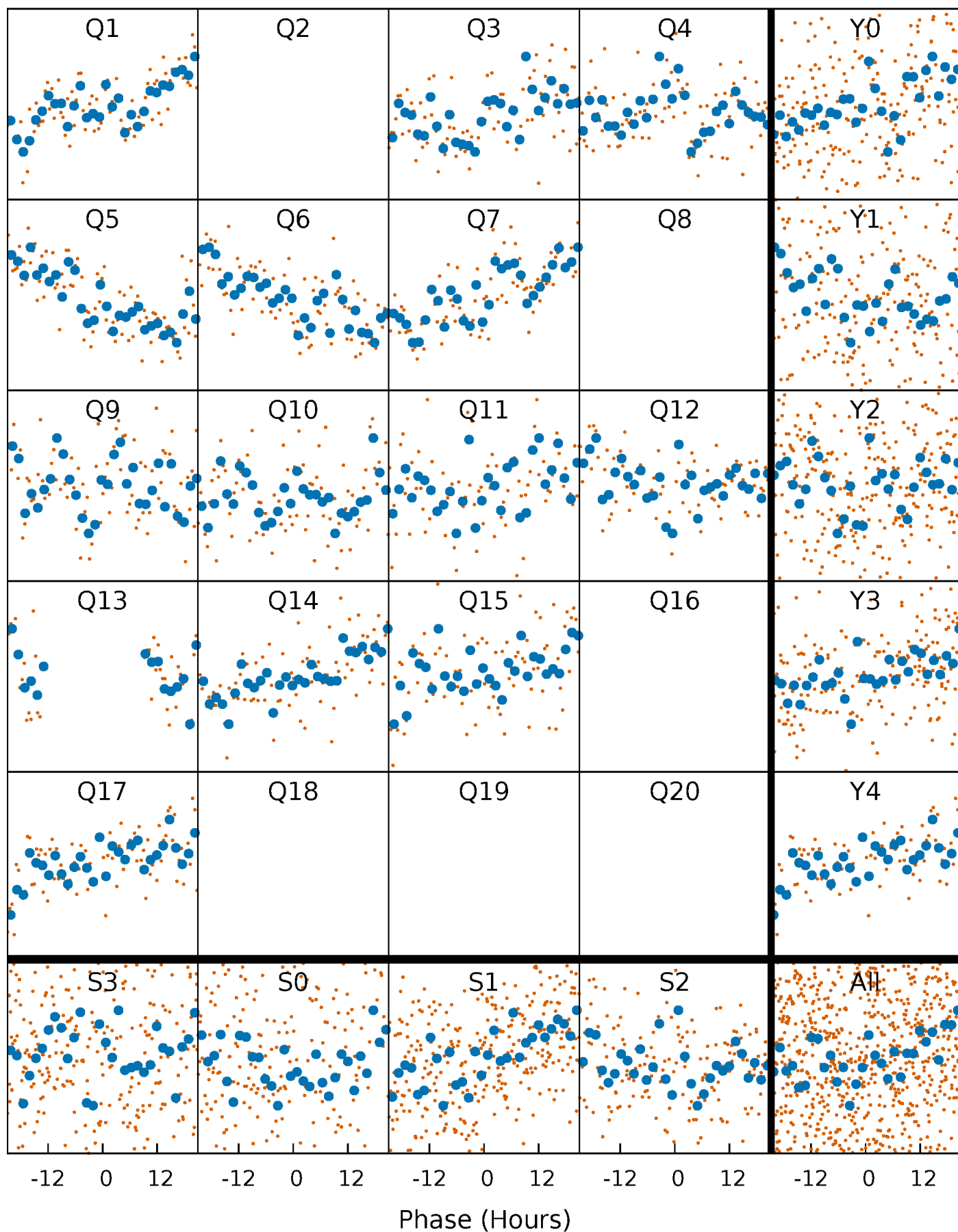


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



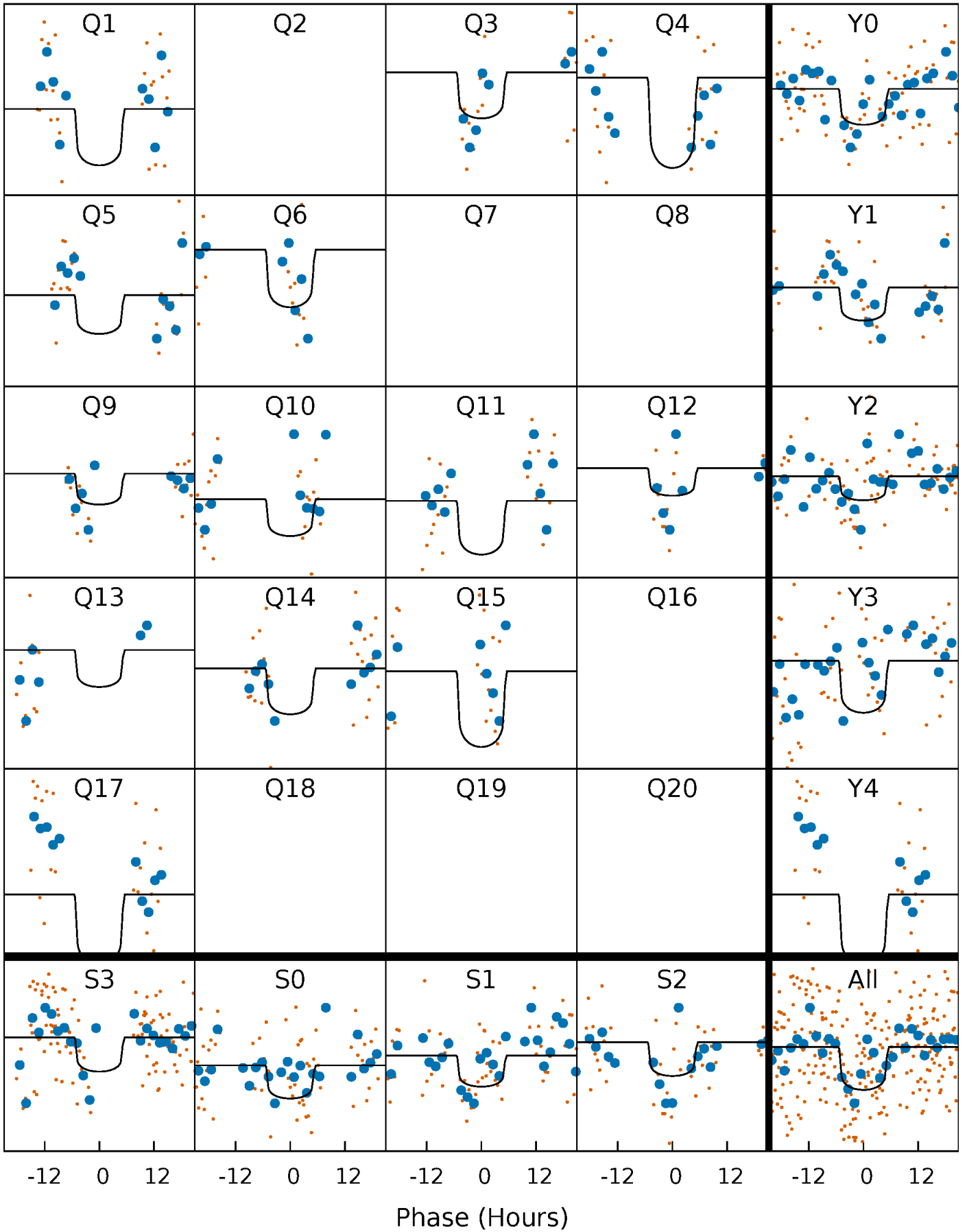
PDC Quarter-Phased Transit Curves

TCE 007973867-04 $P=108.314995$ Days $T_0=162.321150$ (BKJD)



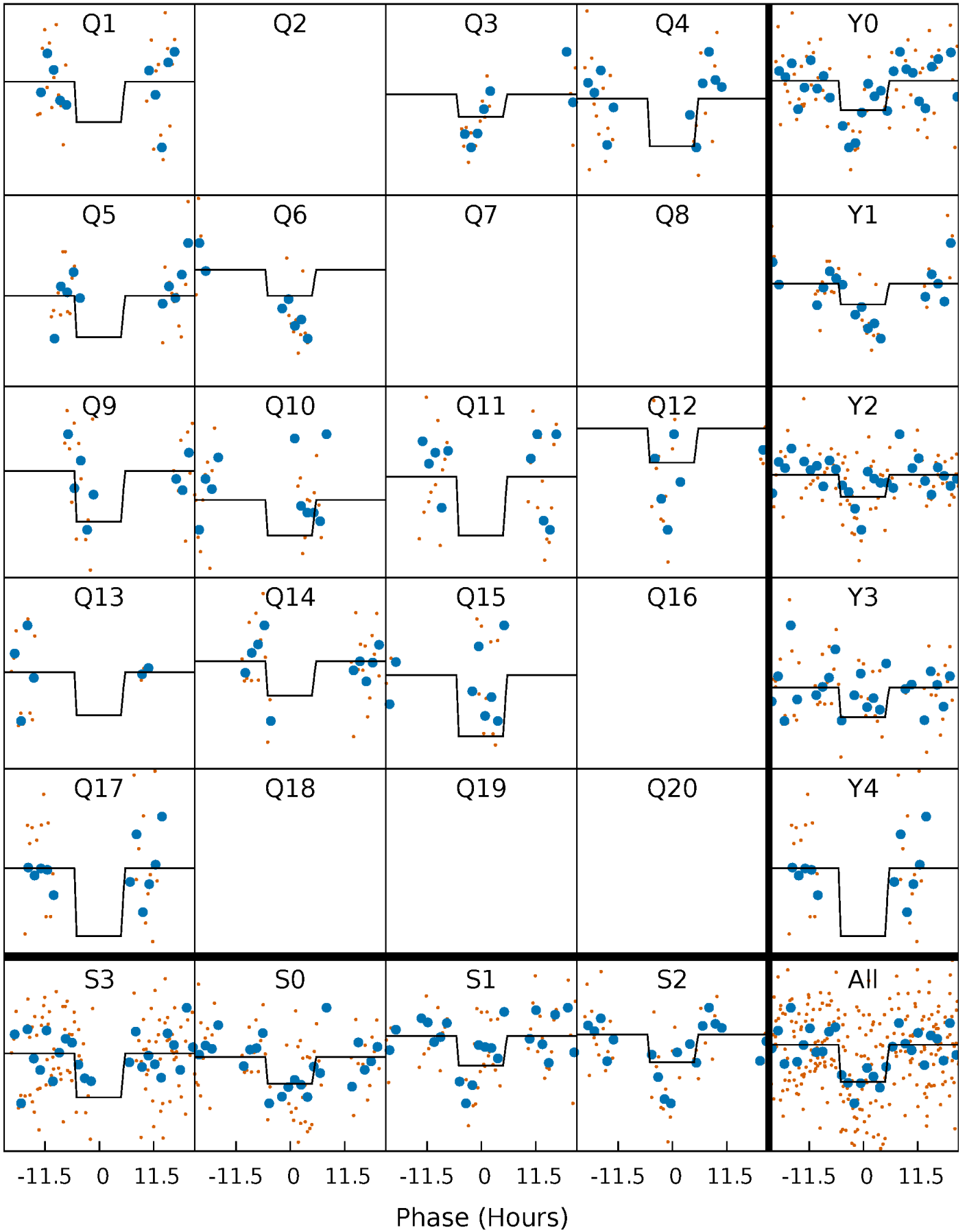
DV Quarter-Phased Transit Curves

TCE 007973867-04 P=108.314995 Days $T_0=162.321150$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

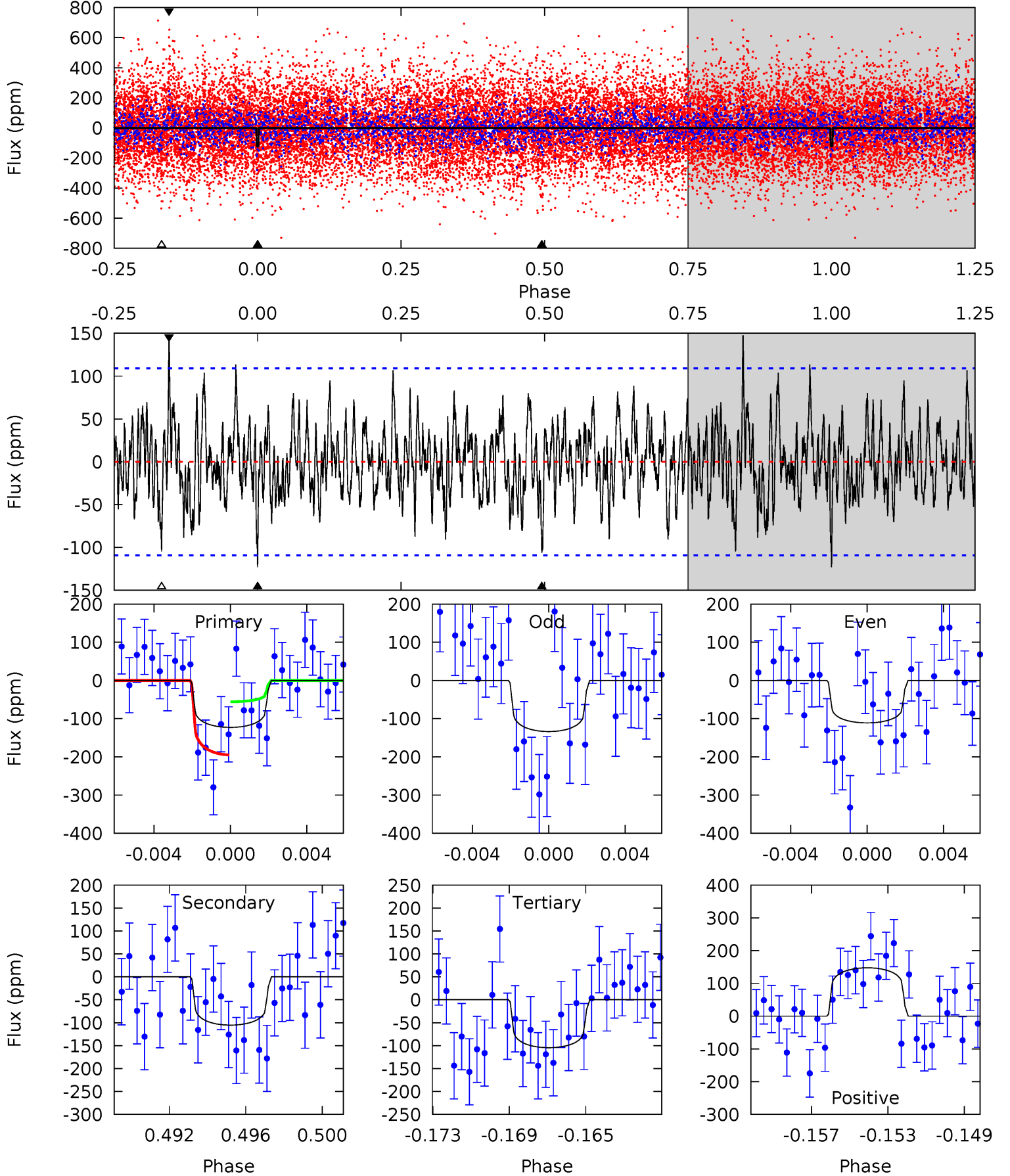
TCE 007973867-04 P=108.318991 Days $T_0=162.297046$ (BKJD)



DV Model-Shift Uniqueness Test

007973867-04, $P = 108.314995$ Days, $E = 54.006155$ Days

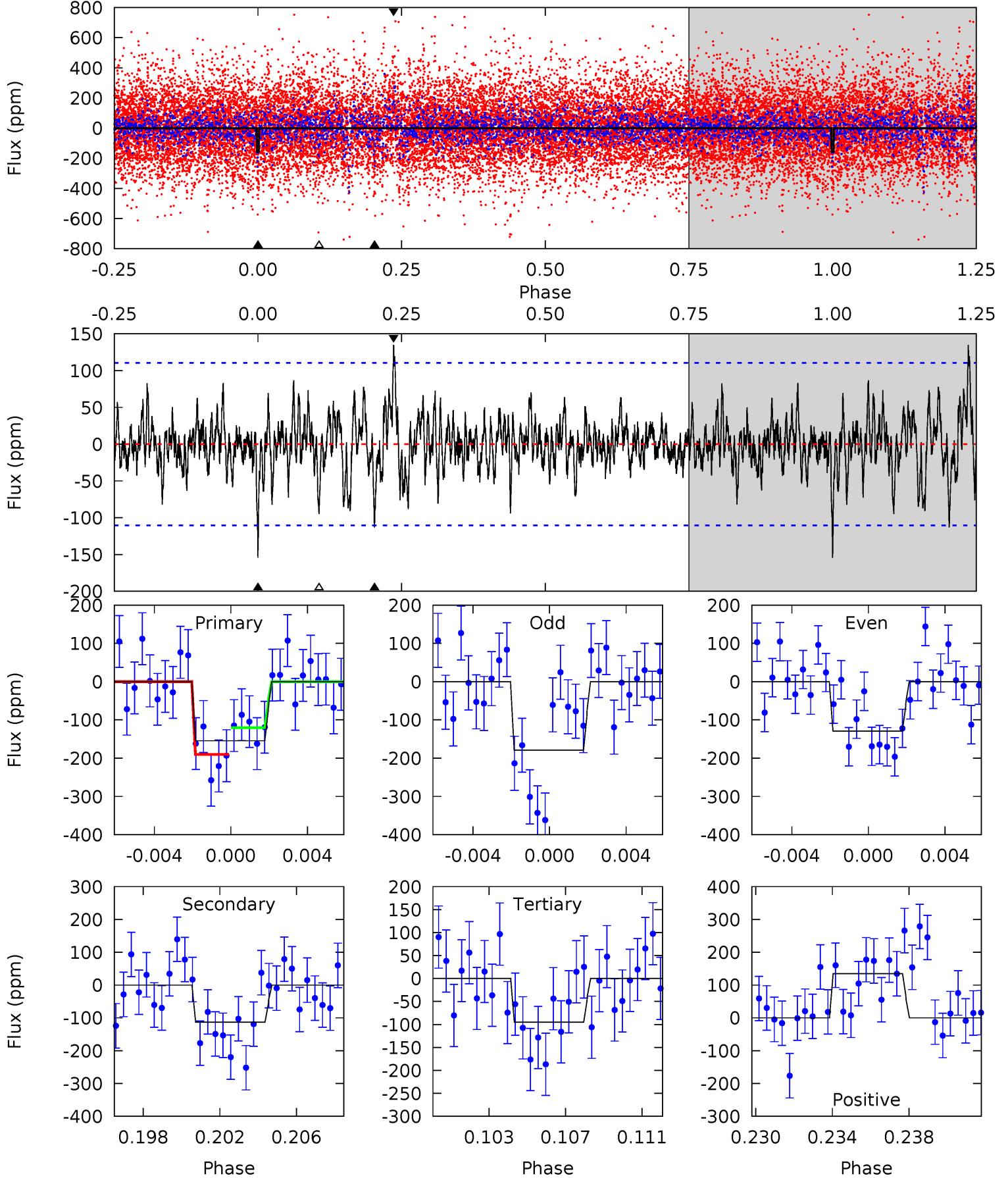
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.85	5.02	4.98	7.04	5.20	2.88	1.72	0.87	-1.18	0.04	-2.02	0.55	0.87	0.55	3.32



Alt Model-Shift Uniqueness Test

007973867-04, P = 108.318991 Days, E = 53.978055 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.28	5.33	4.48	6.35	5.20	2.88	1.34	2.80	0.93	0.85	-1.02	1.18	1.38	0.47	1.65



Stellar Parameters For KIC 007973867

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7053^{+199}_{-313}	$4.134^{+0.175}_{-0.175}$	$-0.280^{+0.250}_{-0.350}$	$1.654^{+0.482}_{-0.395}$	$1.363^{+0.214}_{-0.235}$	$0.424^{+0.407}_{-0.206}$
	+3%/-4%	+4%/-4%	+89%/-125%	+29%/-24%	+16%/-17%	+96%/-49%
Source	PHO1	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 007973867-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-105 ± 21	$2.38^{+1.32}_{-1.09}$	793^{+61}_{-59}	6030^{+2500}_{-1009}	2377^{+5968}_{-1391}
Alt.	-113 ± 21	$2.24^{+1.17}_{-1.02}$	792^{+55}_{-52}	6488^{+2873}_{-1247}	3123^{+6947}_{-1832}

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 $A_{obs} \gg 1.0$

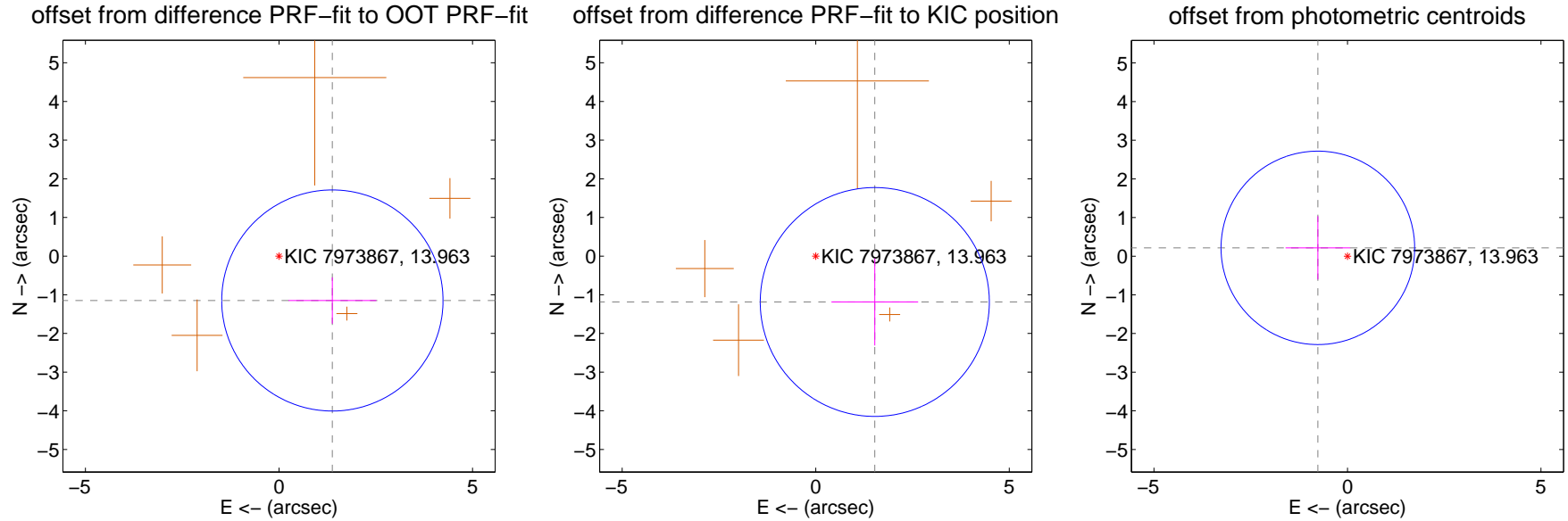
DV Centroid Data

Supplemental centroid analysis for 007973867-04. Kepler magnitude: 13.96. Transit SNR 6.78

There are 0 quarters with good PRF difference image offsets

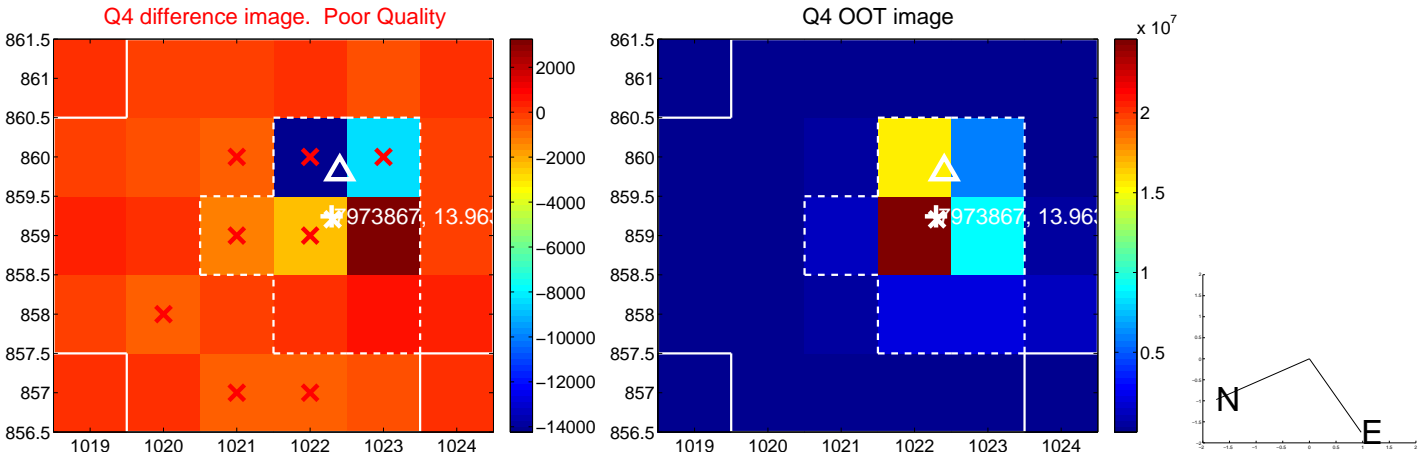
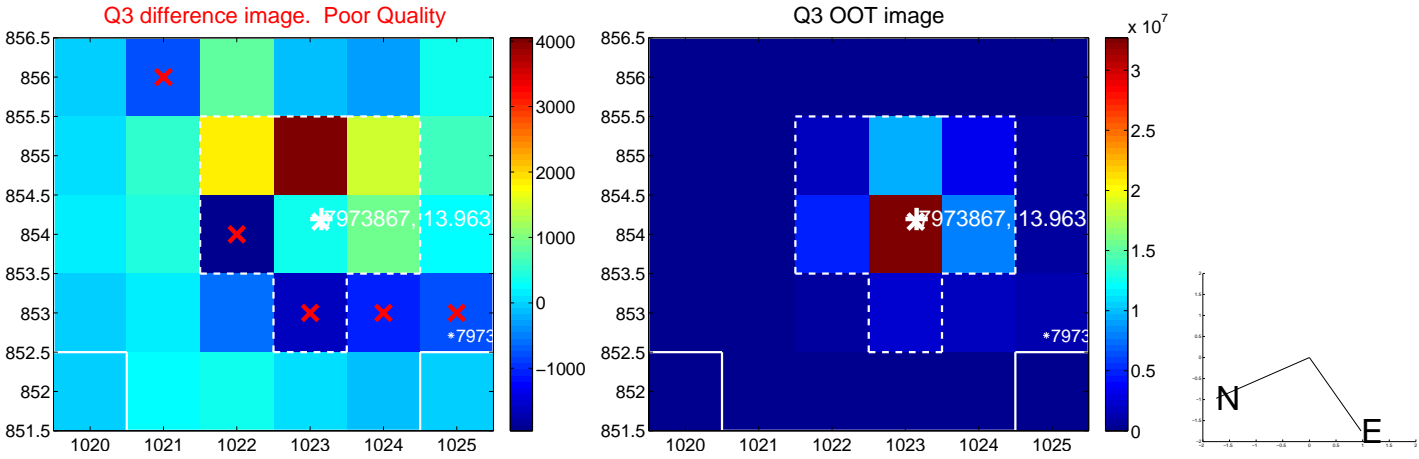
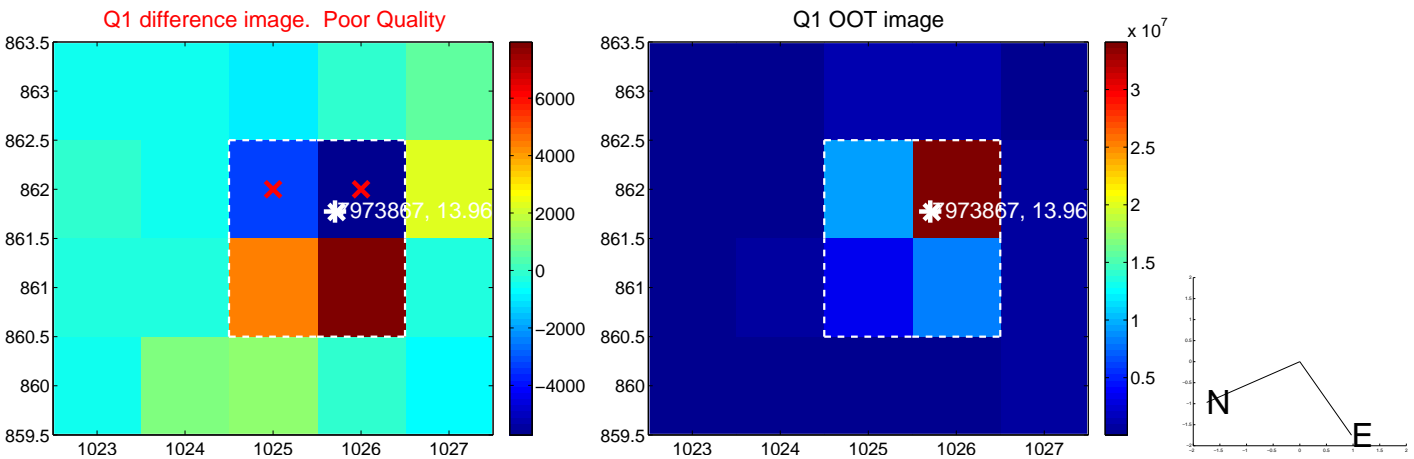
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.794 ± 0.953	1.88	-1.379 ± 1.135	-1.147 ± 0.599
PRF-fit source offset from KIC position	1.933 ± 0.987	1.96	-1.526 ± 1.122	-1.186 ± 1.125
photometric centroid source offset	0.80 ± 0.83	0.95	0.77 ± 0.84	0.22 ± 0.82

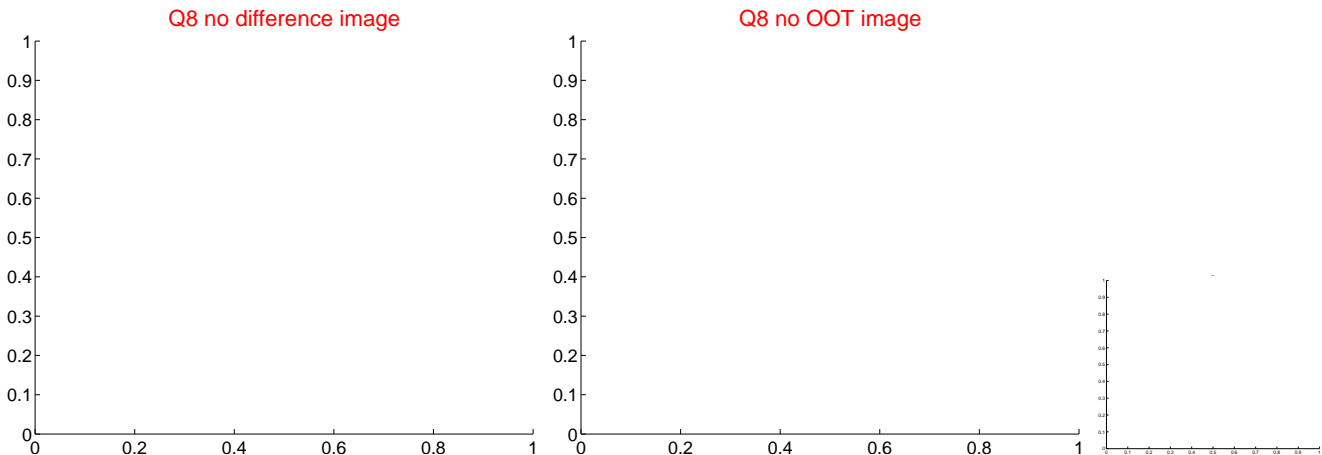
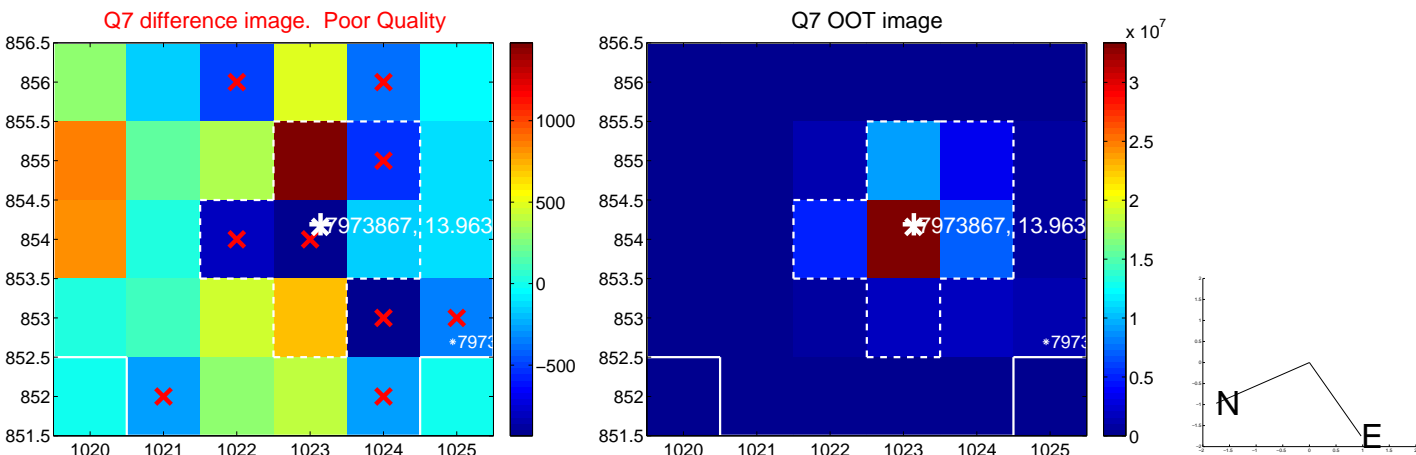
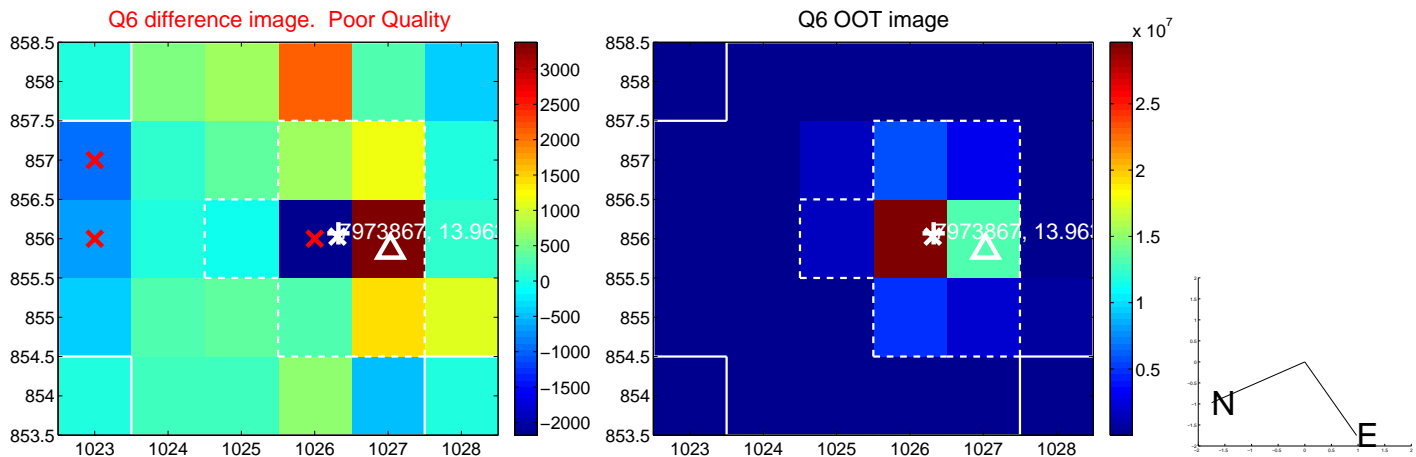
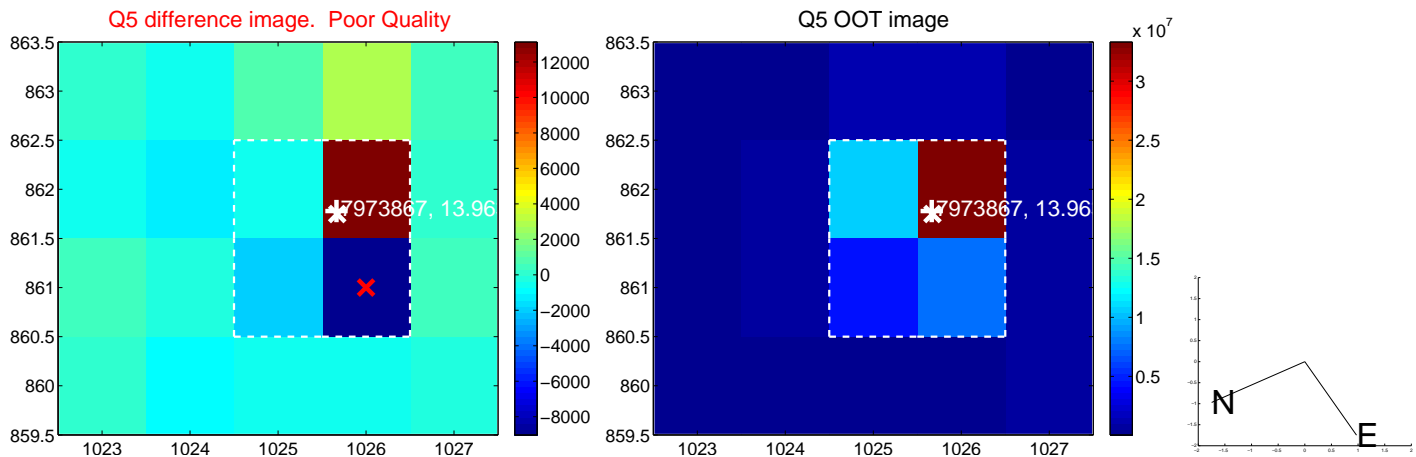


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

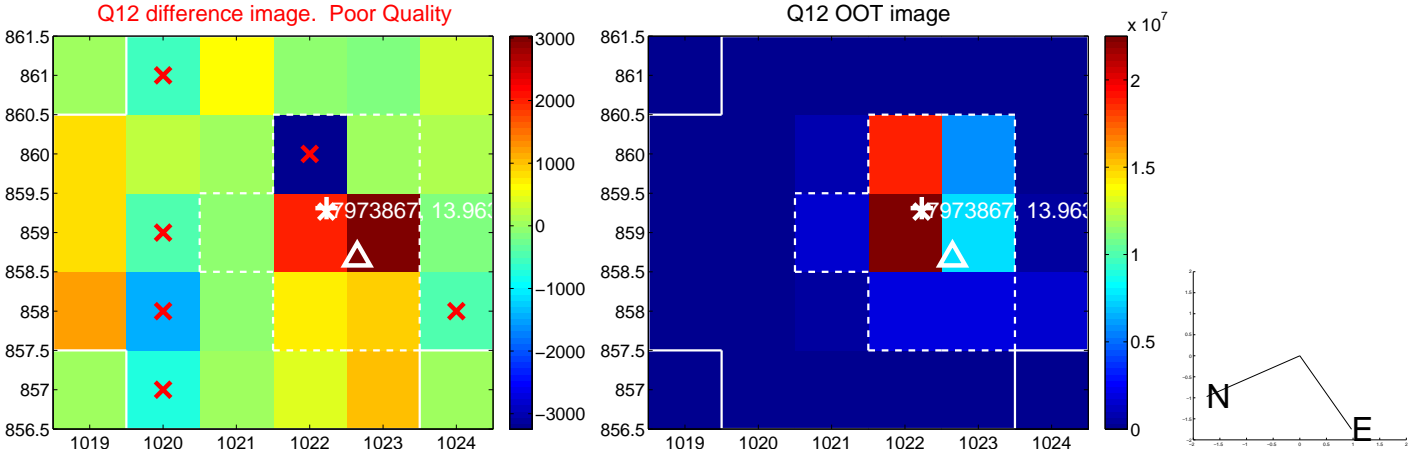
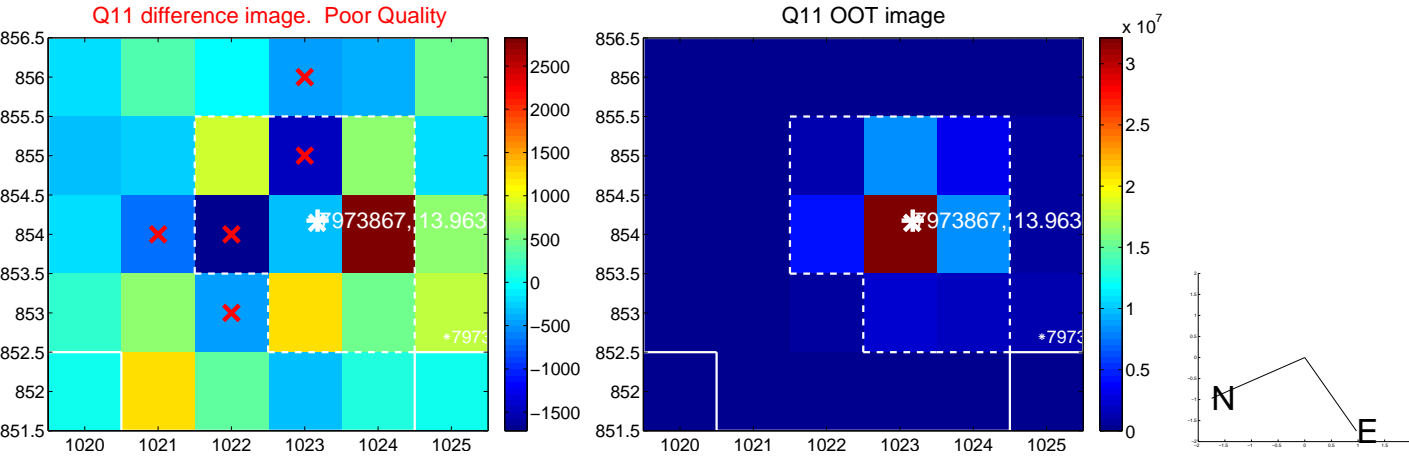
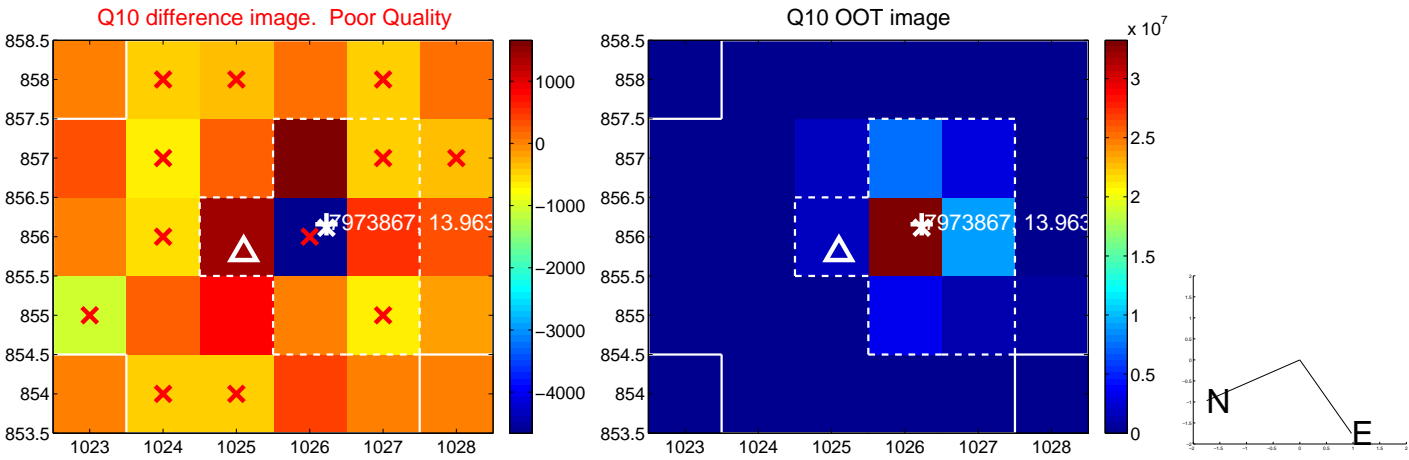
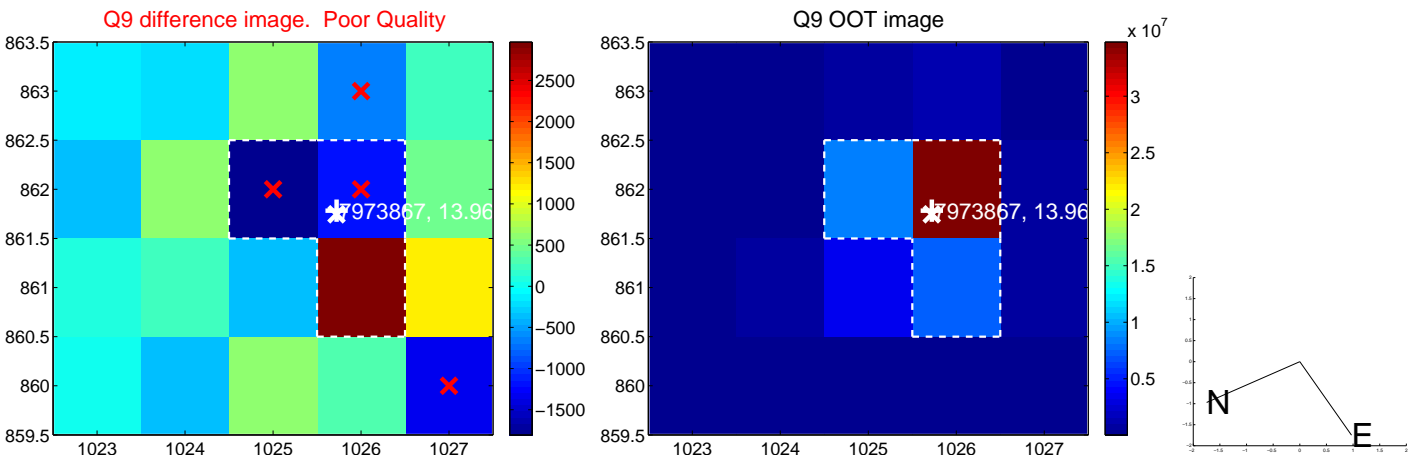
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

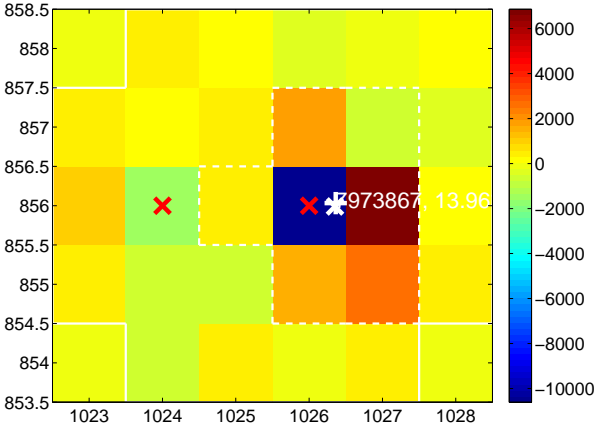
Q13 no difference image



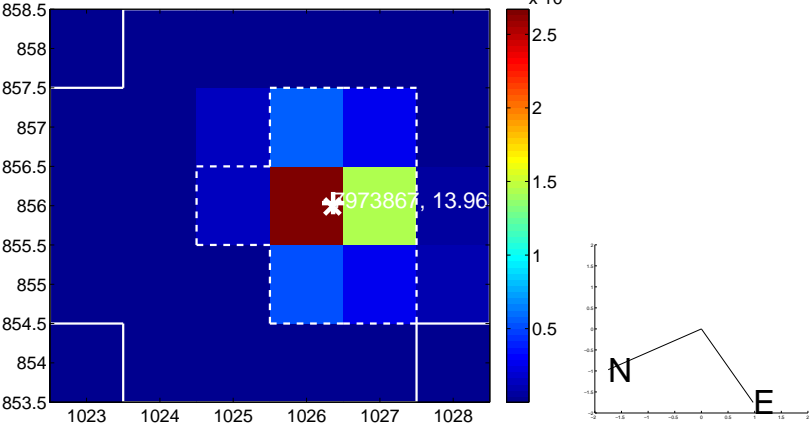
Q13 no OOT image



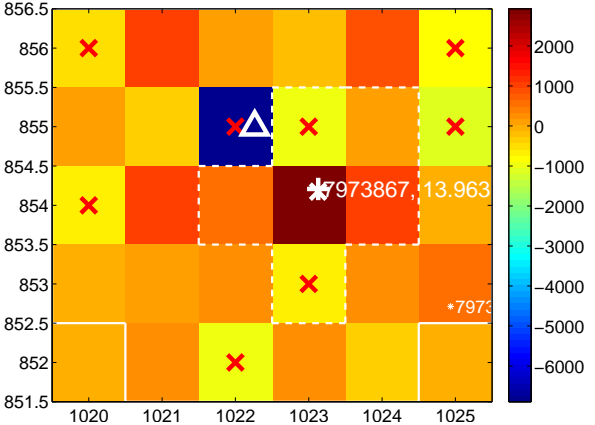
Q14 difference image. Poor Quality



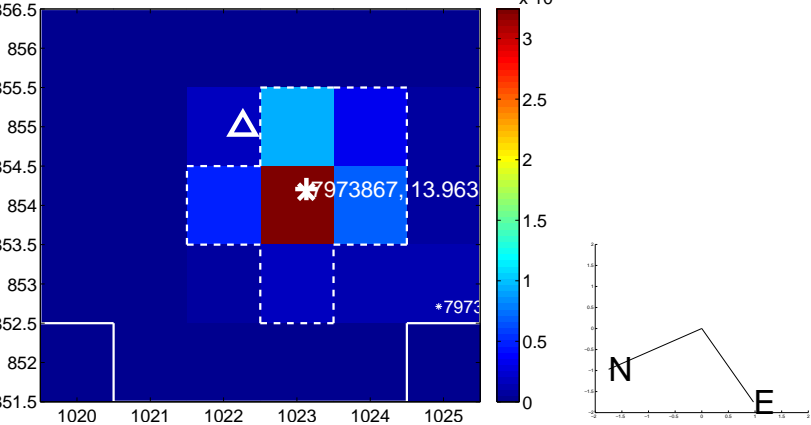
Q14 OOT image



Q15 difference image. Poor Quality



Q15 OOT image



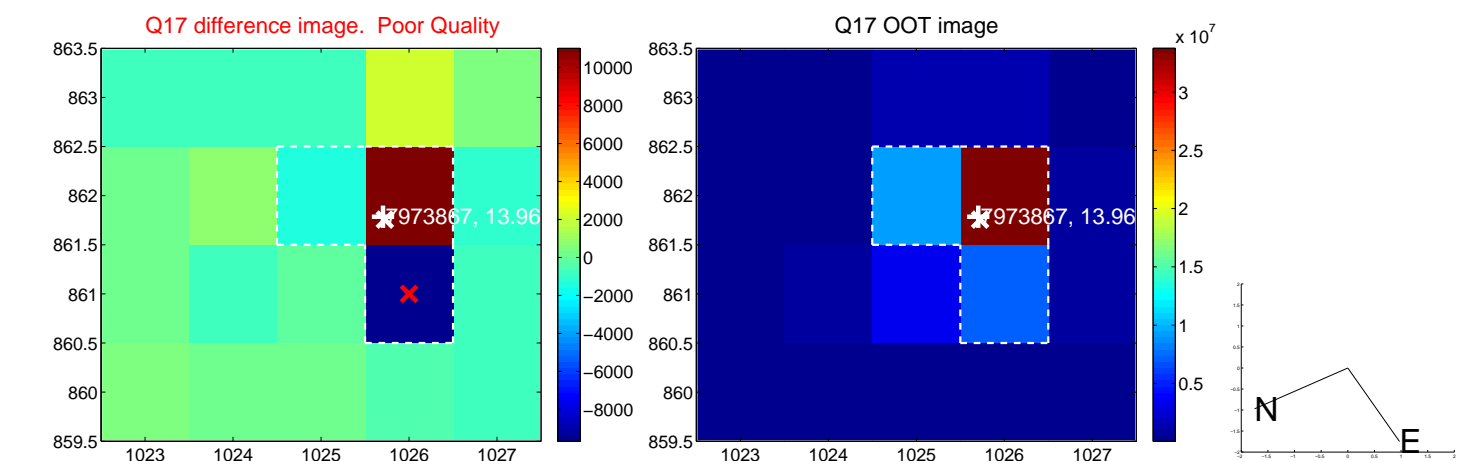
Q16 no difference image



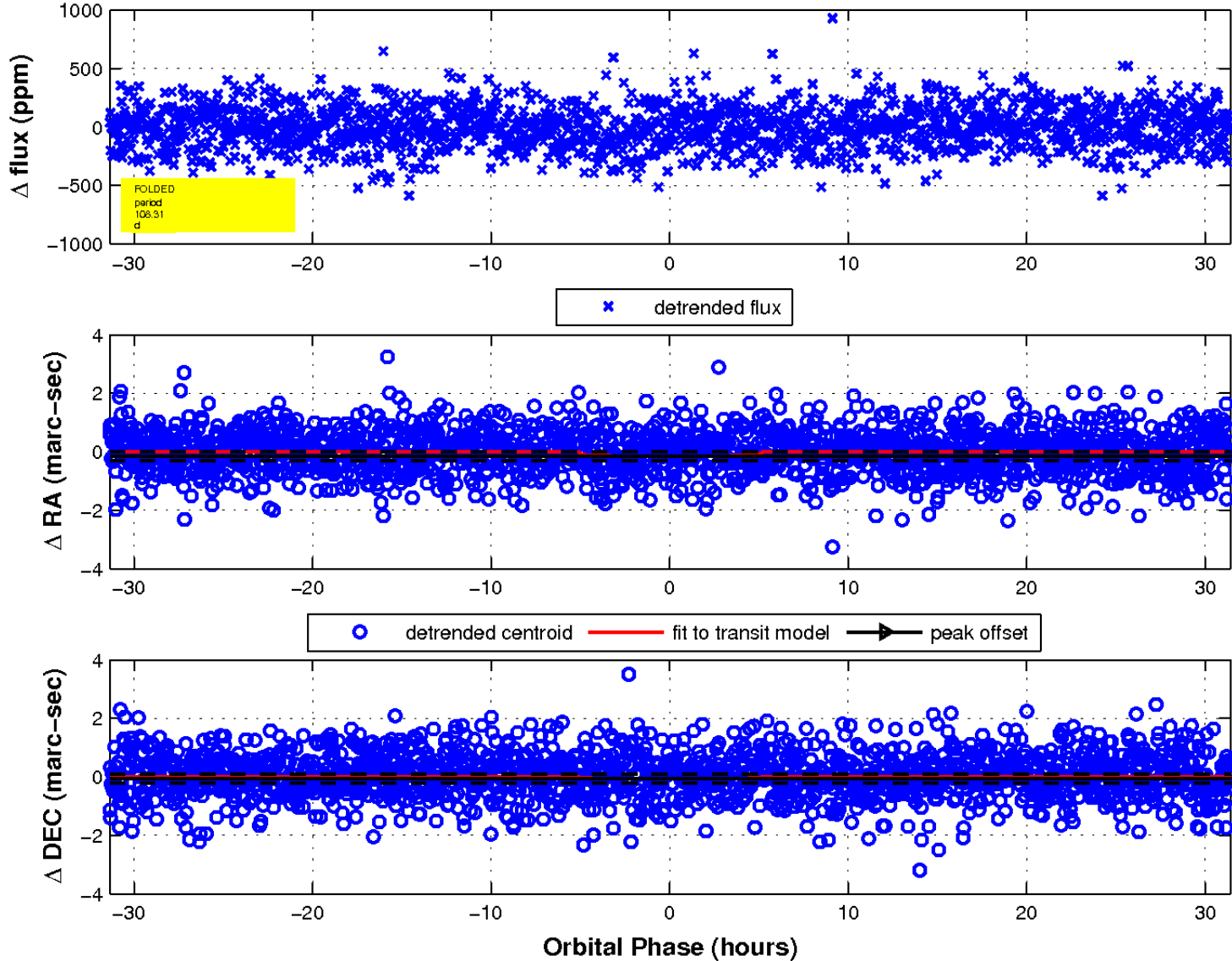
Q16 no OOT image



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

