

KIC 009673483

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})
009673483-01	OBS	No	0.930619	132.494908	44.3	3.430	9.9	6.3	1.17	6515	0.88	5712.26
009673483-02	OBS	No	0.930663	131.834999	81.8	3.170	11.1	12.7	1.17	6515	1.24	5711.90
009673483-03	OBS	No	296.886186	244.750877	837.9	5.261	11.3	10.6	1.17	6515	3.63	2.62
009673483-04	OBS	No	8.988526	135.584083	350.7	4.500	8.8	-1.0	1.17	6515	2.21	277.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009673483-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009673483-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009673483-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009673483-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

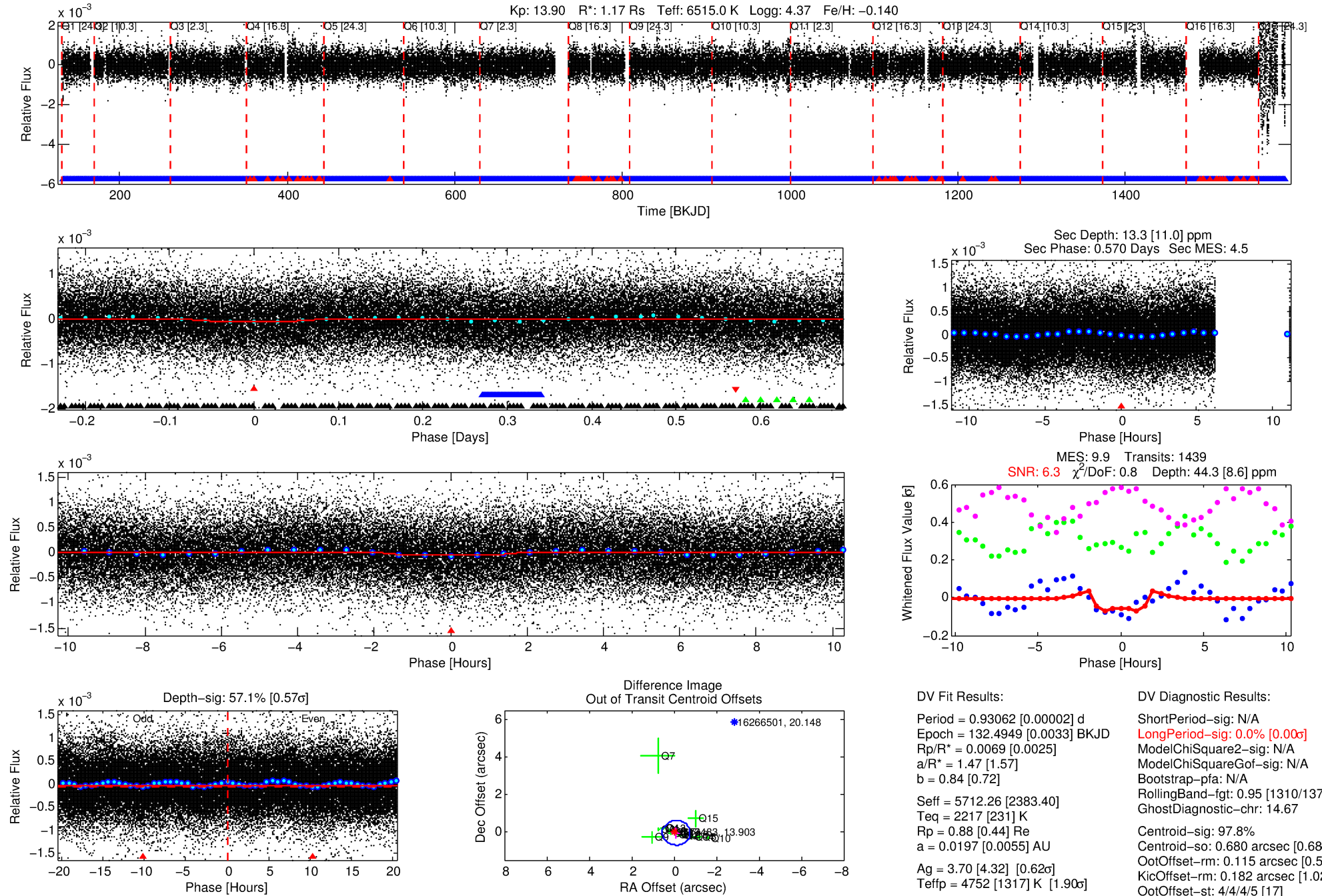
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009673483-01

No Significant Match Found

DV One-Page Summary

KIC: 9673483 Candidate: 1 of 4 Period: 0.931 d



DV Fit Results:

Period = 0.93062 [0.00002] d
Epoch = 132.4949 [0.0033] BKJD
Rp/R* = 0.0069 [0.0025]
a/R* = 1.47 [1.57]
b = 0.84 [0.72]
Seff = 5712.26 [2383.40]
Teff = 2217 [231] K
Rp = 0.88 [0.44] Re
a = 0.0197 [0.0055] AU
Ag = 3.70 [4.32] [0.62 σ]
Teffp = 4752 [1317] K [1.90 σ]

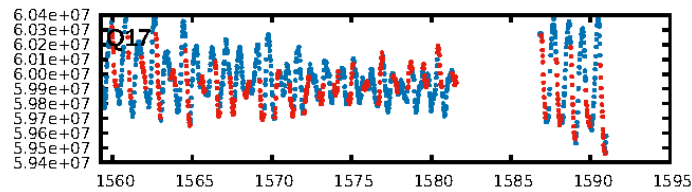
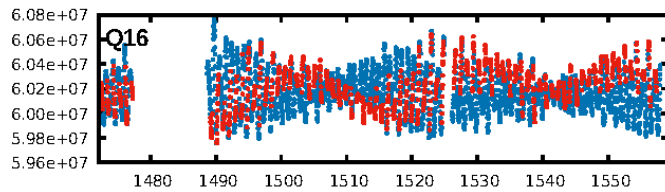
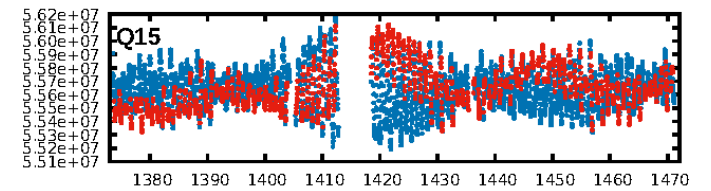
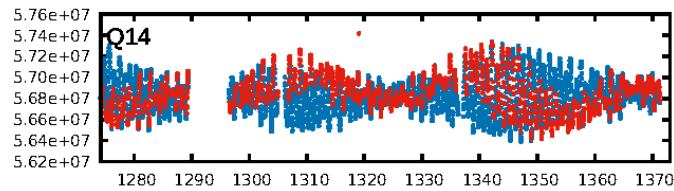
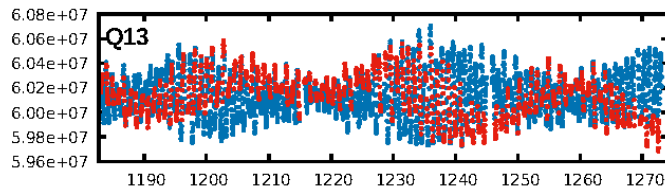
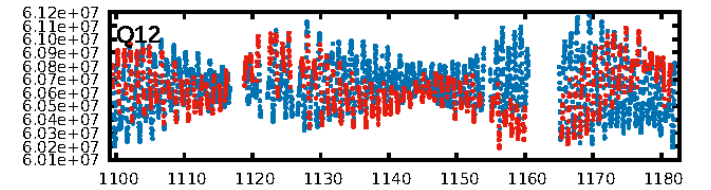
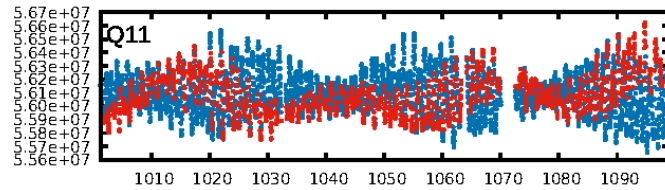
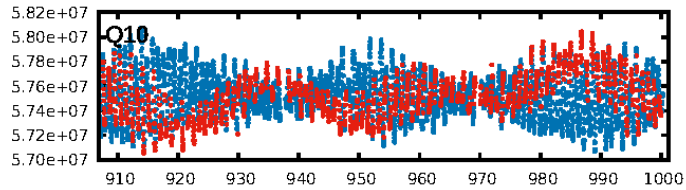
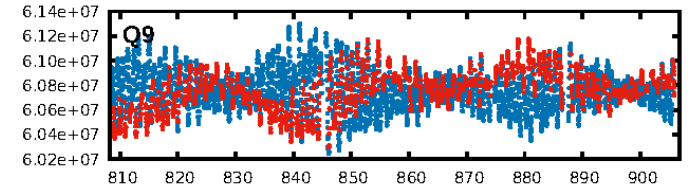
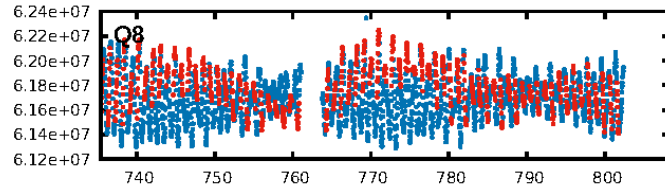
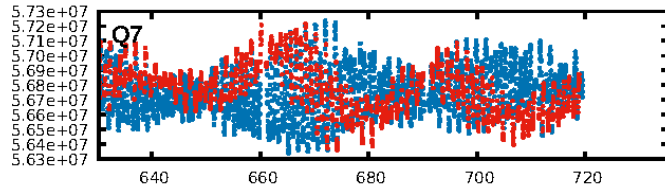
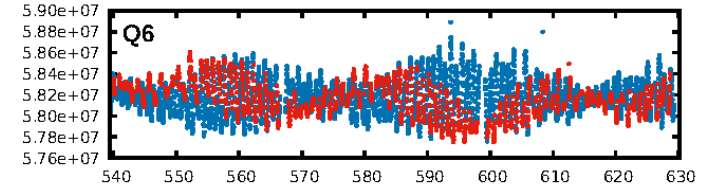
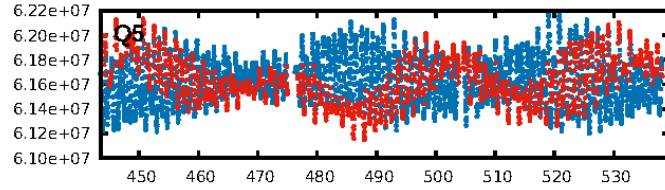
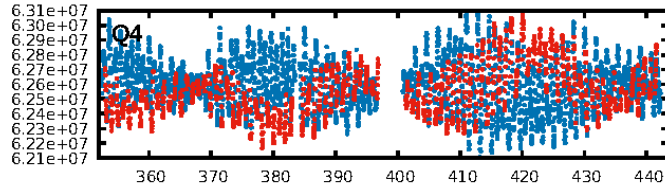
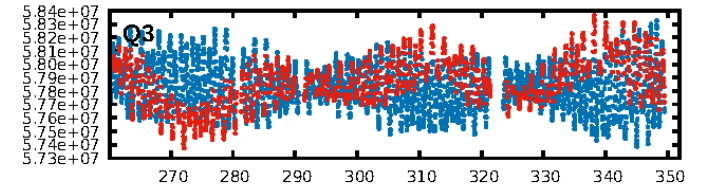
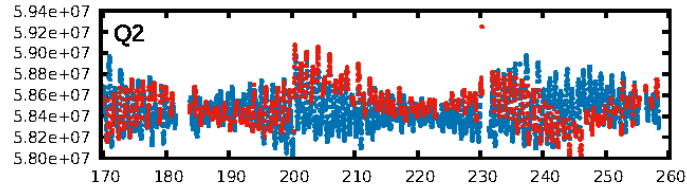
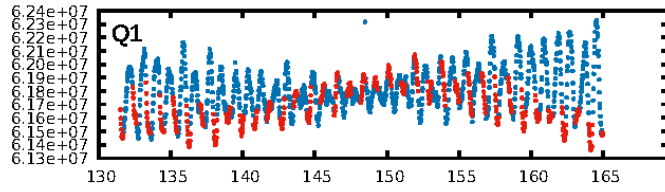
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [1310/1374]
GhostDiagnostic-chr: 14.67
Centroid-sig: 97.8%
Centroid-so: 0.680 arcsec [0.68 σ]
OotOffset-rm: 0.115 arcsec [0.52 σ]
KicOffset-rm: 0.182 arcsec [1.02 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 0.00 [0/17]

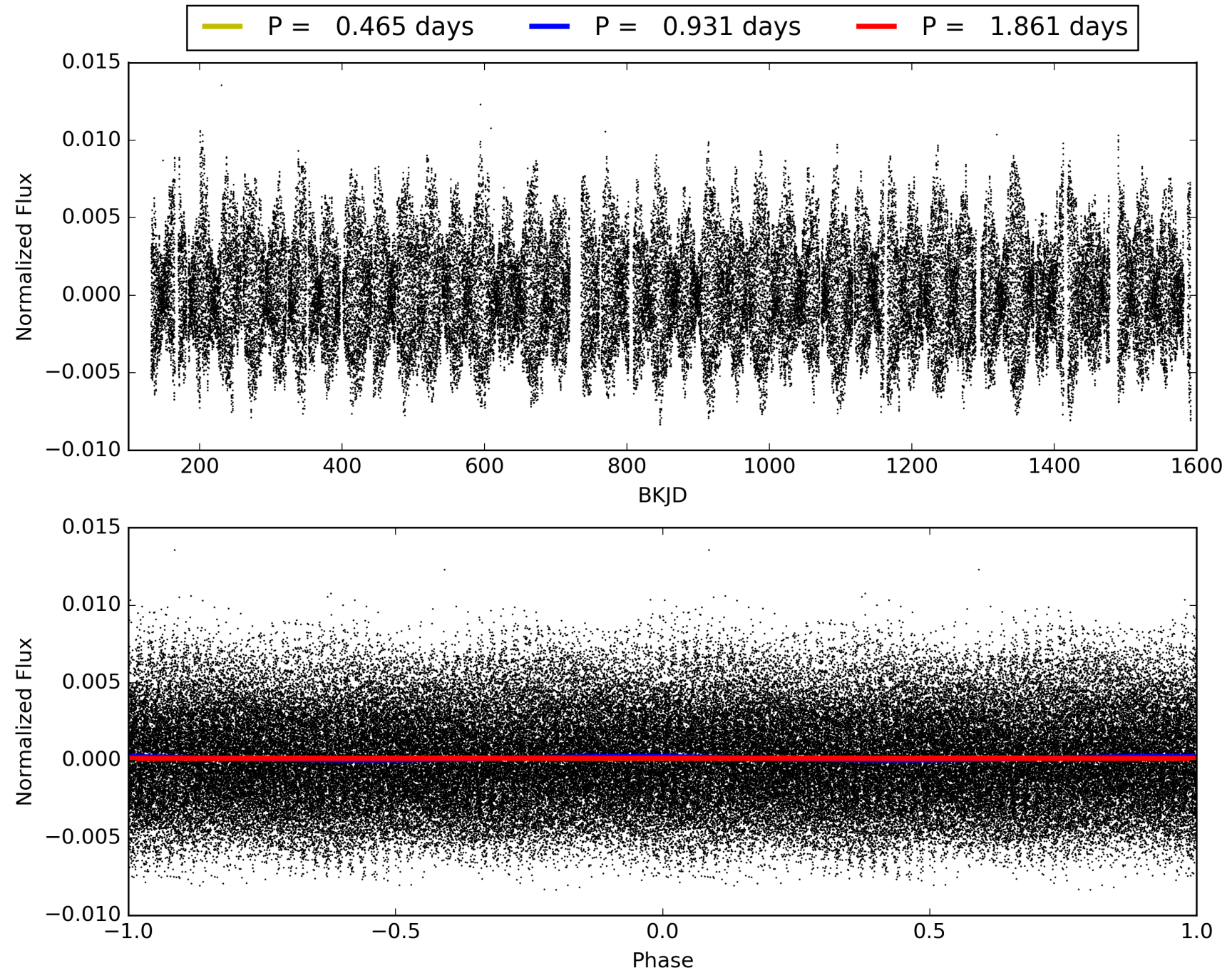
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:18:07 Z

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

TCE 009673483-01, PDC Light Curves

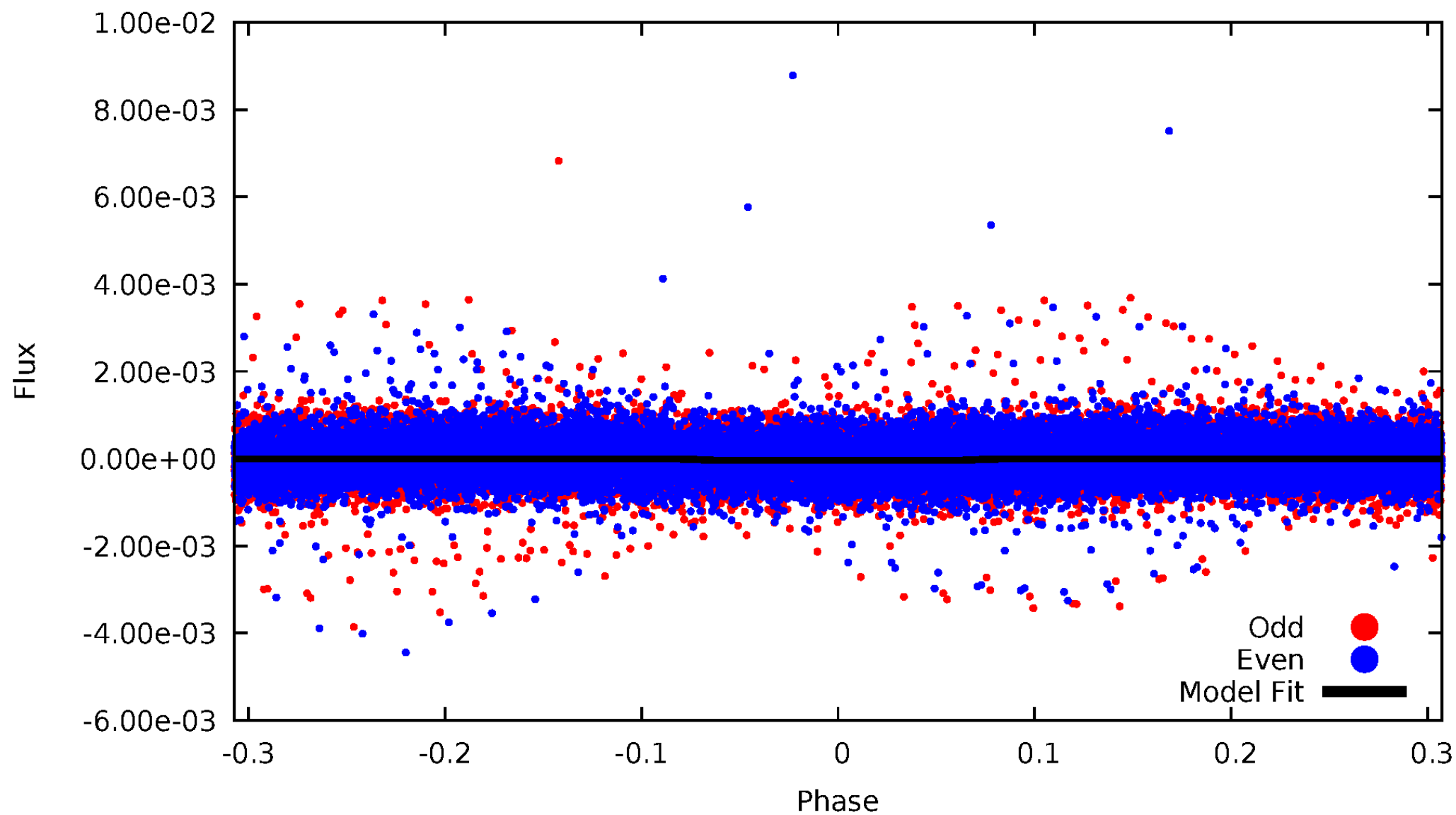


TCE 009673483-01



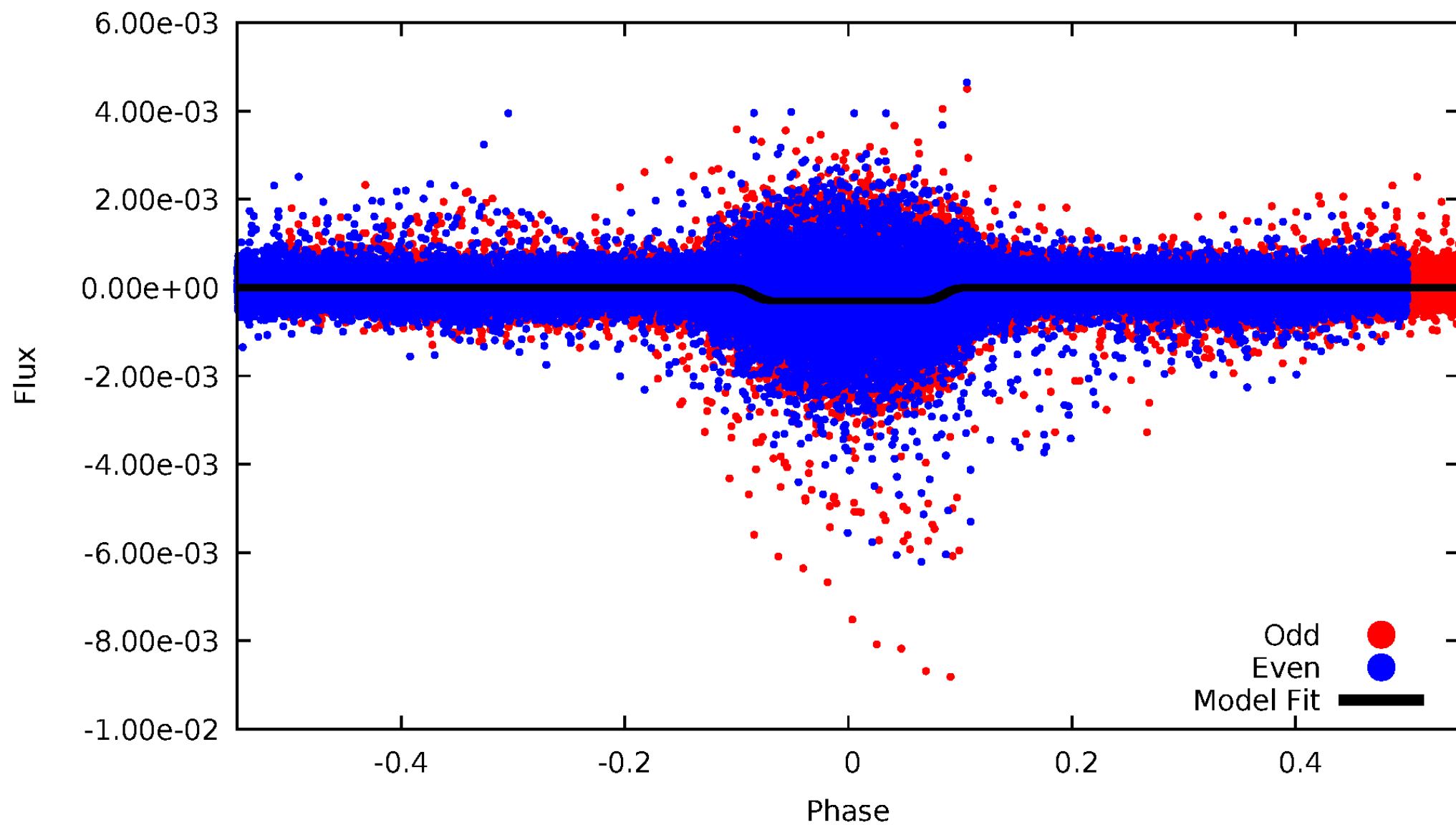
DV Odd/Even

TCE 009673483-01



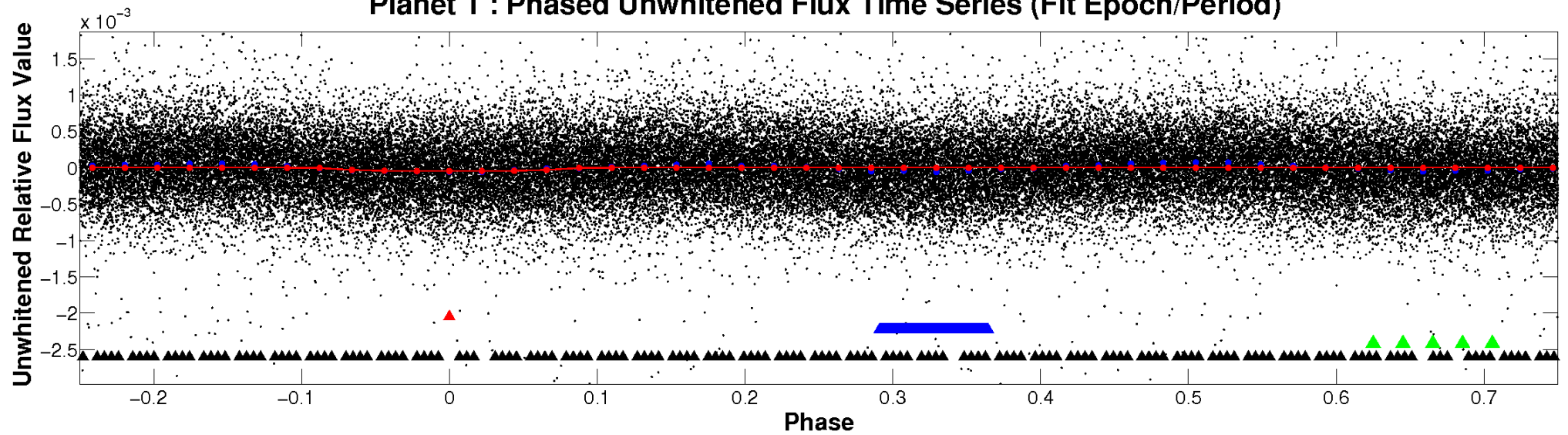
ALT Odd/Even

TCE 009673483-01

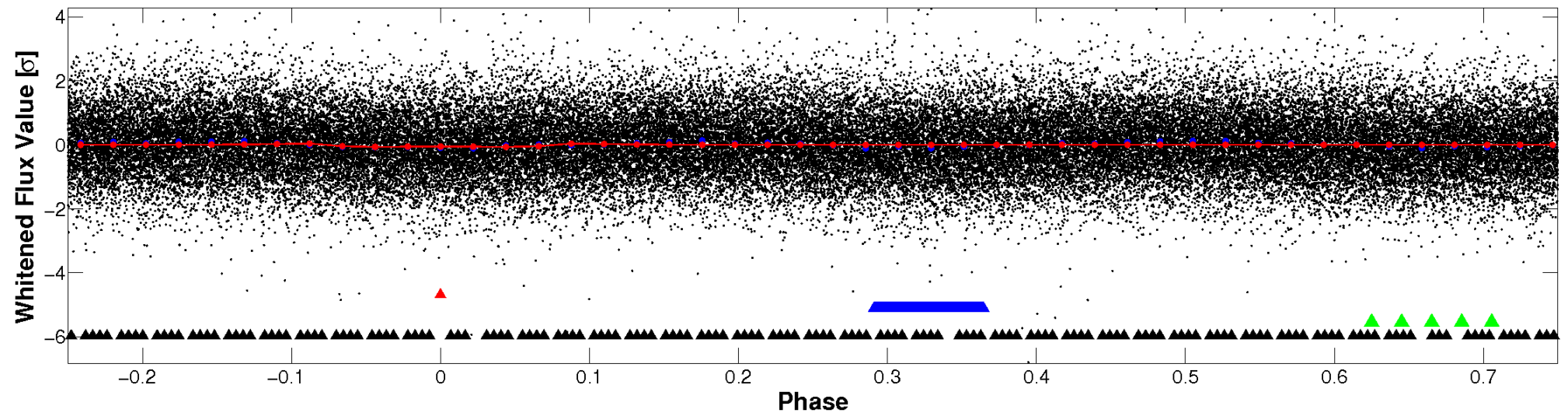


Non-Whitened Vs. Whitened Light Curve

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

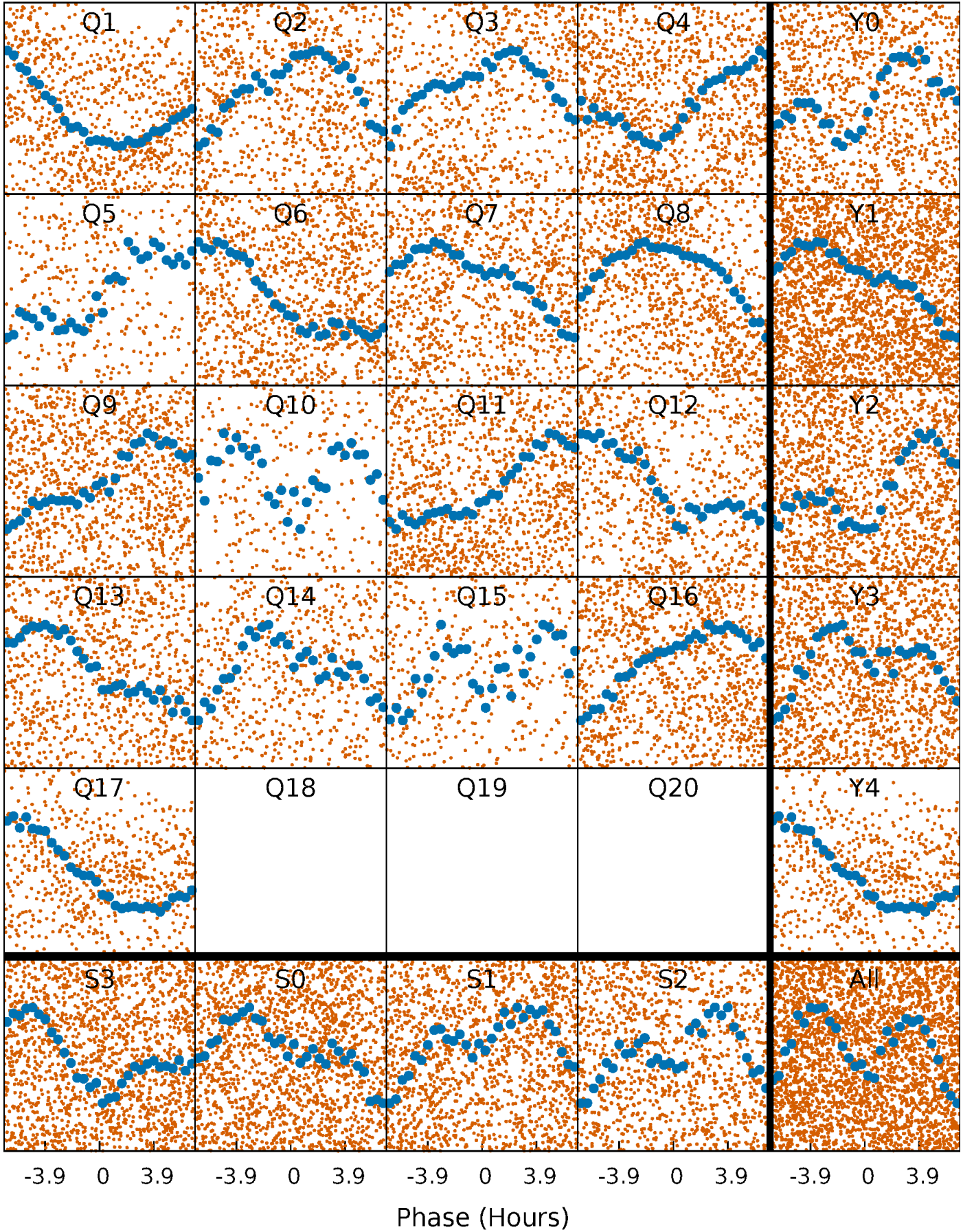


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



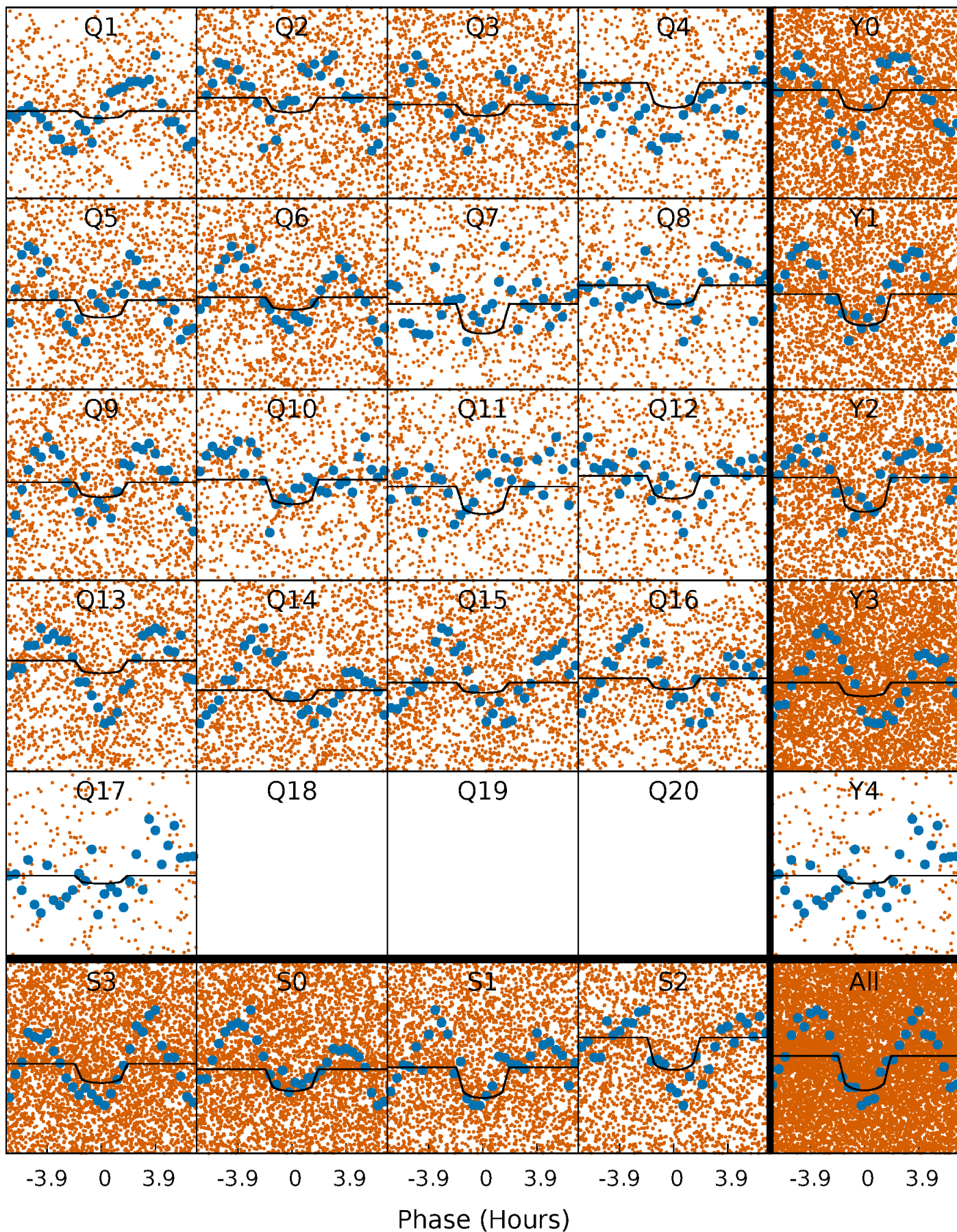
PDC Quarter-Phased Transit Curves

TCE 009673483-01 P= 0.930619 Days $T_0=132.494908$ (BKJD)



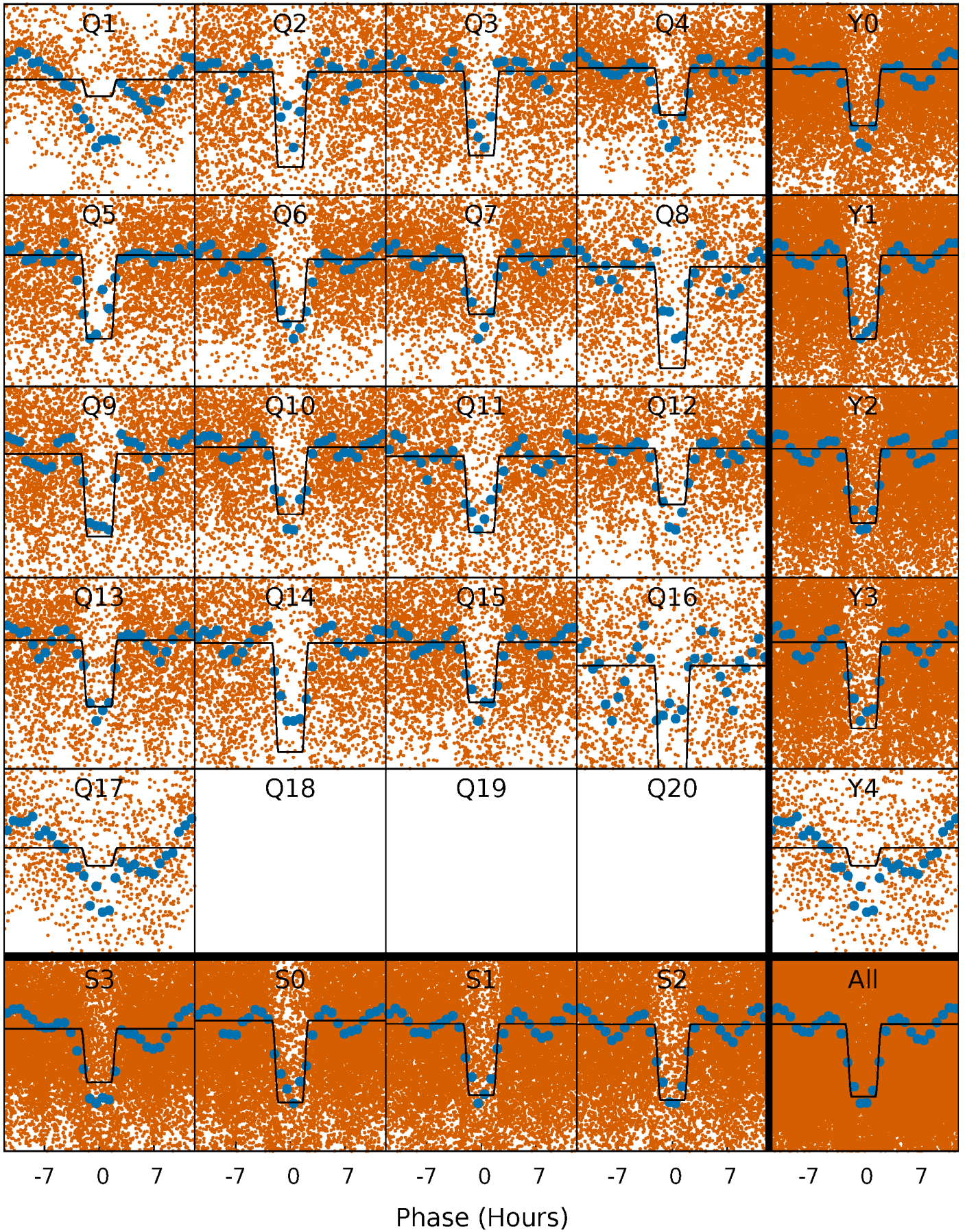
DV Quarter-Phased Transit Curves

TCE 009673483-01 P= 0.930619 Days $T_0=132.494908$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

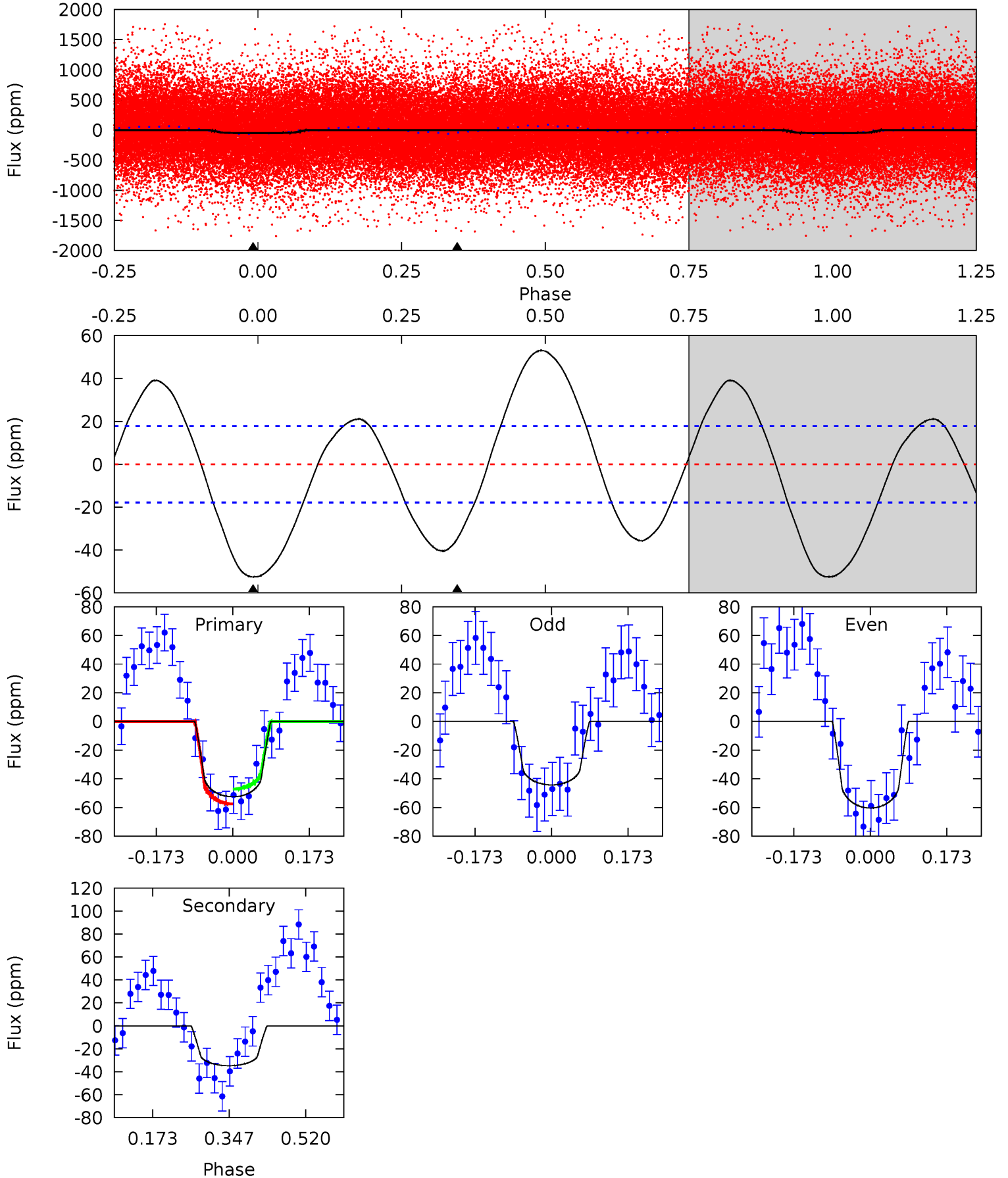
TCE 009673483-01 P= 0.930686 Days $T_0=132.437483$ (BKJD)



DV Model-Shift Uniqueness Test

009673483-01, P = 0.930619 Days, E = 130.633670 Days

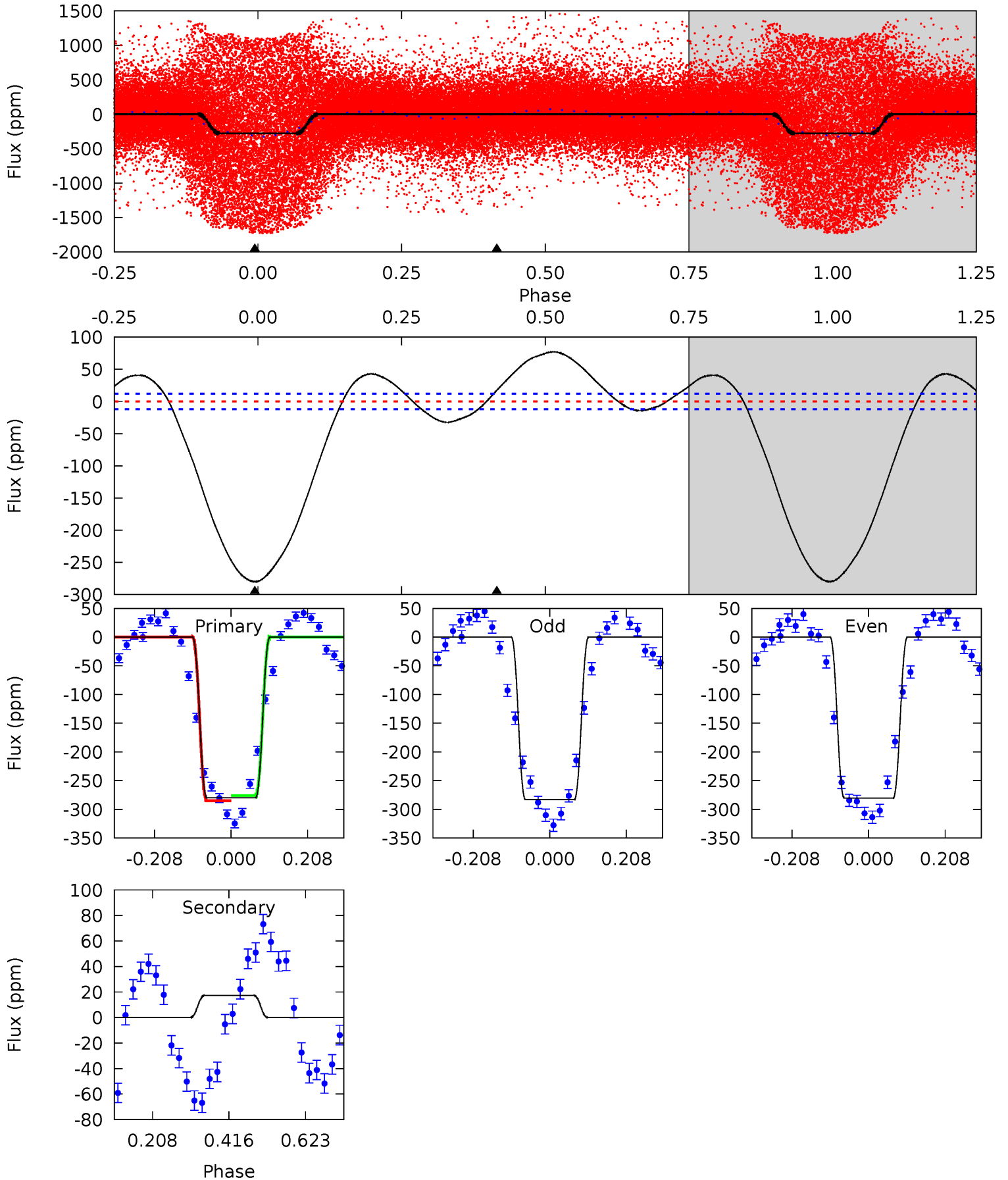
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	8.64	0	0	4.45	1.36	6.63	13.1	13.1	8.64	8.64	2.02	0.89	0.50	1.29



Alt Model-Shift Uniqueness Test

009673483-01, P = 0.930686 Days, E = 131.506797 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.3	-6.35	0	0	4.41	1.26	6.98	102.3	102.3	-6.35	-6.35	0.49	0.99	0.22	1.66



Stellar Parameters For KIC 009673483

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6515^{+155}_{-213}	$4.371^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.172^{+0.405}_{-0.135}$	$1.180^{+0.173}_{-0.156}$	$1.033^{+0.312}_{-0.571}$
	+2%/-3%	+2%/-5%	+179%/-214%	+35%/-12%	+15%/-13%	+30%/-55%
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 009673483-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-35 ± 4	$0.90^{+0.39}_{-0.30}$	3145^{+227}_{-165}	5917^{+1702}_{-747}	$8.942^{+12.546}_{-4.424}$
Alt.	17 ± 3	$2.28^{+0.48}_{-0.38}$	3142^{+221}_{-155}	-3874^{+172}_{-191}	$-0.708^{+0.231}_{-0.320}$

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 $A_{obs} \gg 1.0$

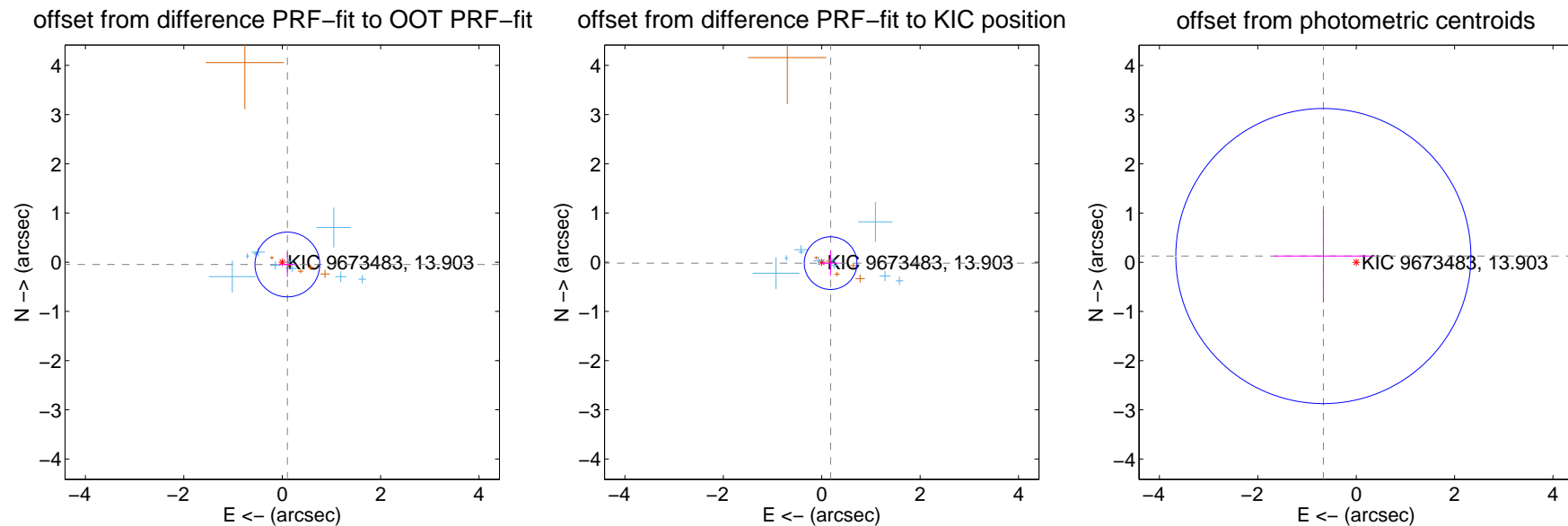
DV Centroid Data

Supplemental centroid analysis for 009673483-01. Kepler magnitude: 13.90. Transit SNR 6.33

There are 11 quarters with good PRF difference image offsets

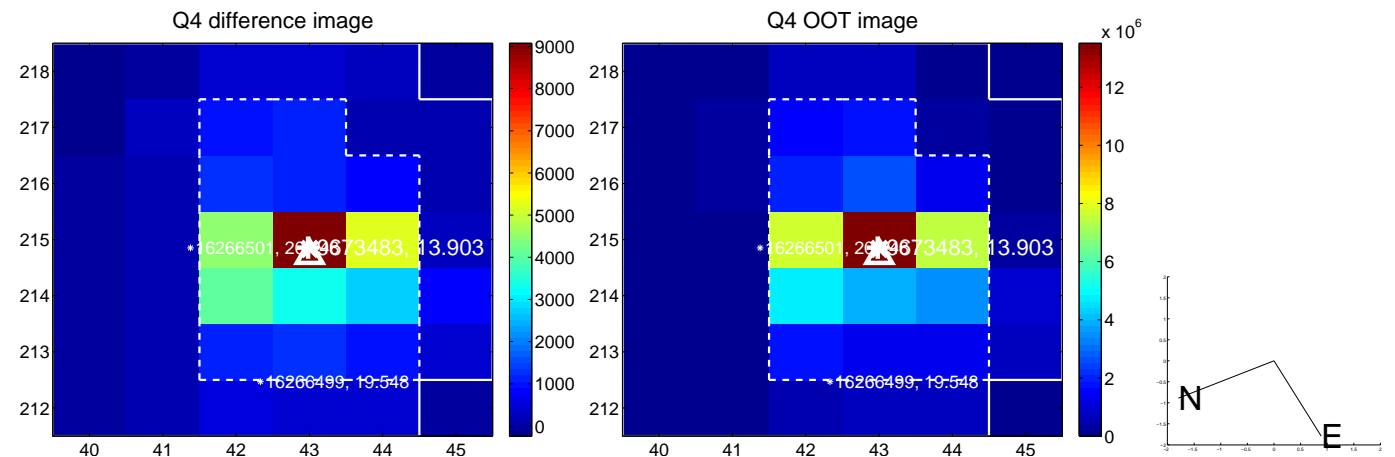
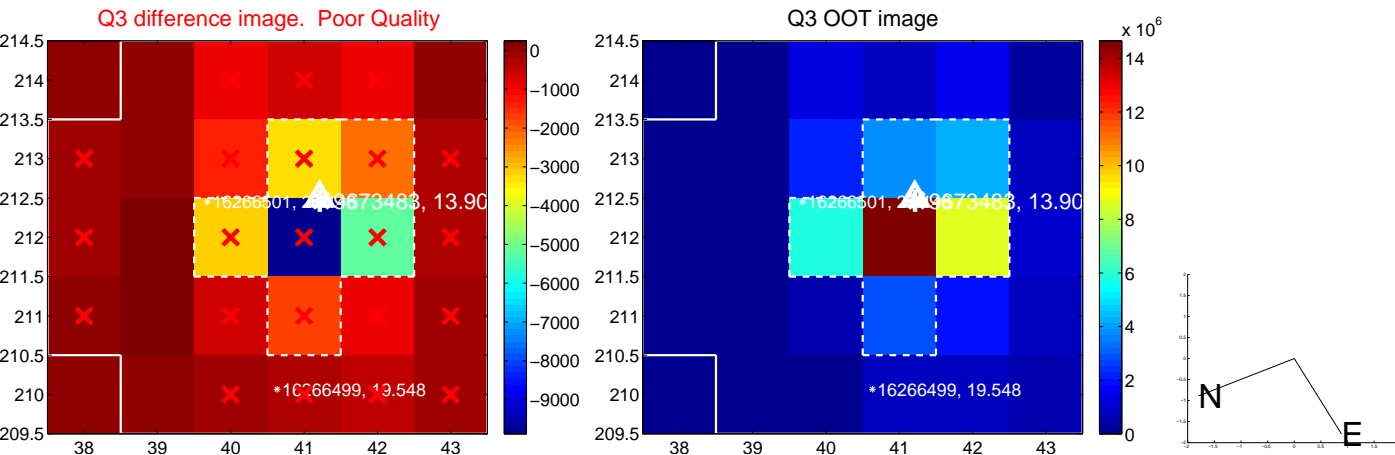
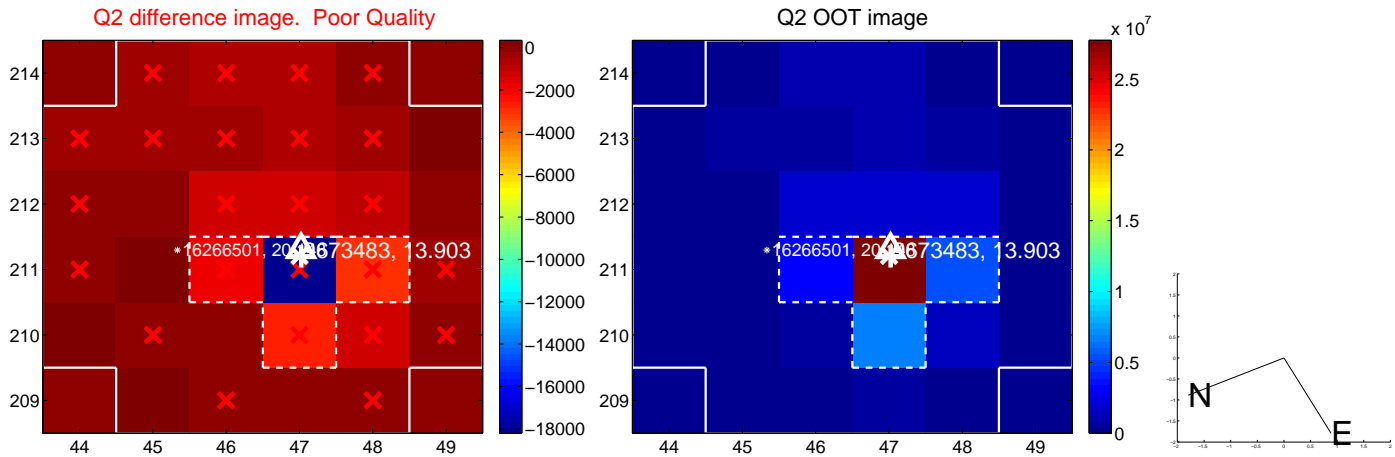
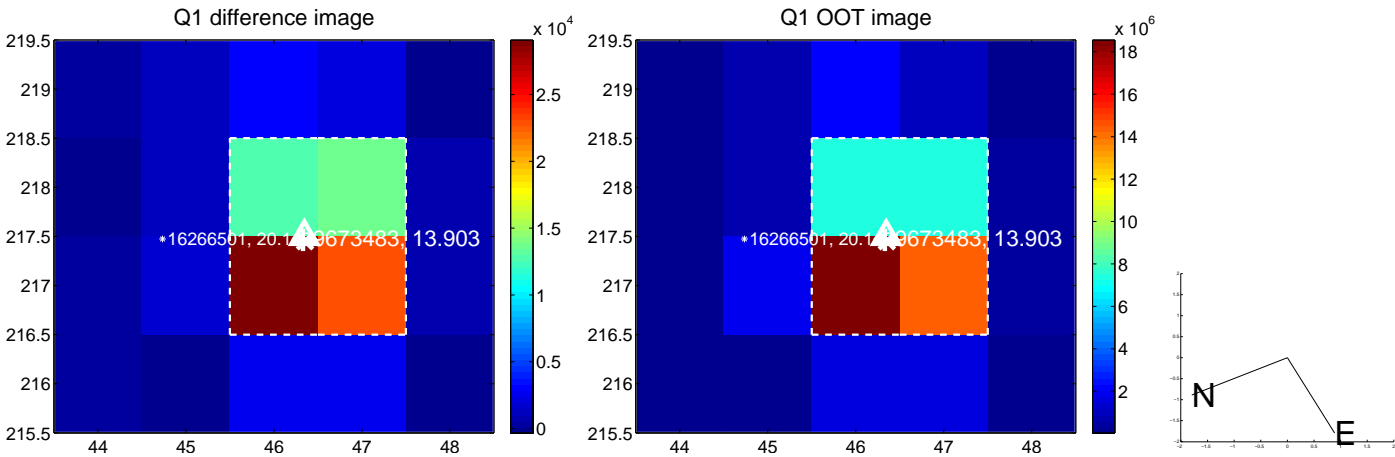
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.115 ± 0.219	0.52	-0.105 ± 0.181	-0.047 ± 0.254
PRF-fit source offset from KIC position	0.182 ± 0.178	1.02	-0.181 ± 0.171	-0.019 ± 0.252
photometric centroid source offset	0.68 ± 1.00	0.68	0.67 ± 1.00	0.13 ± 0.94

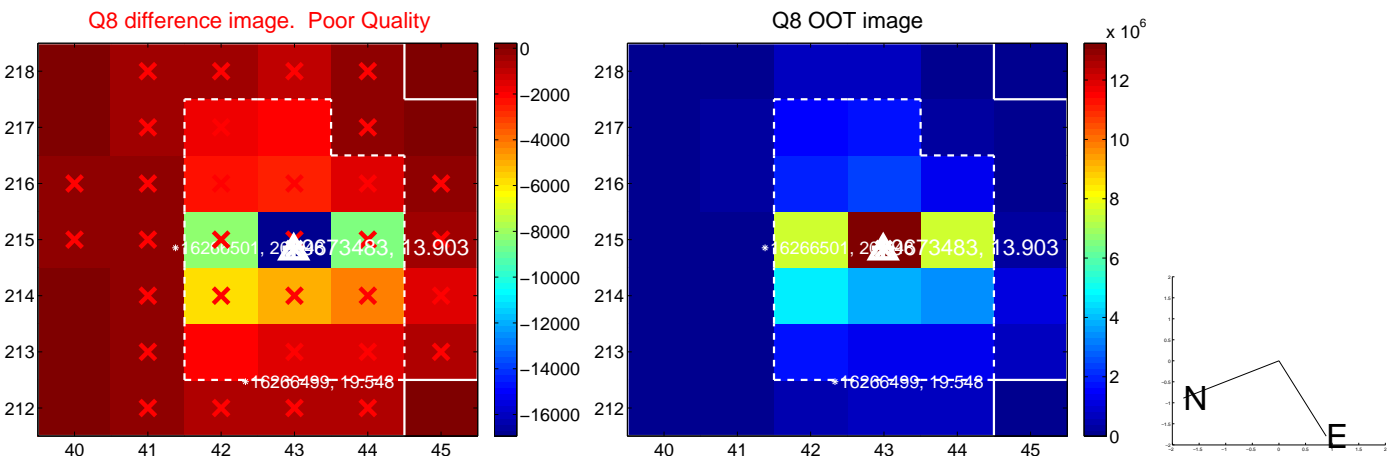
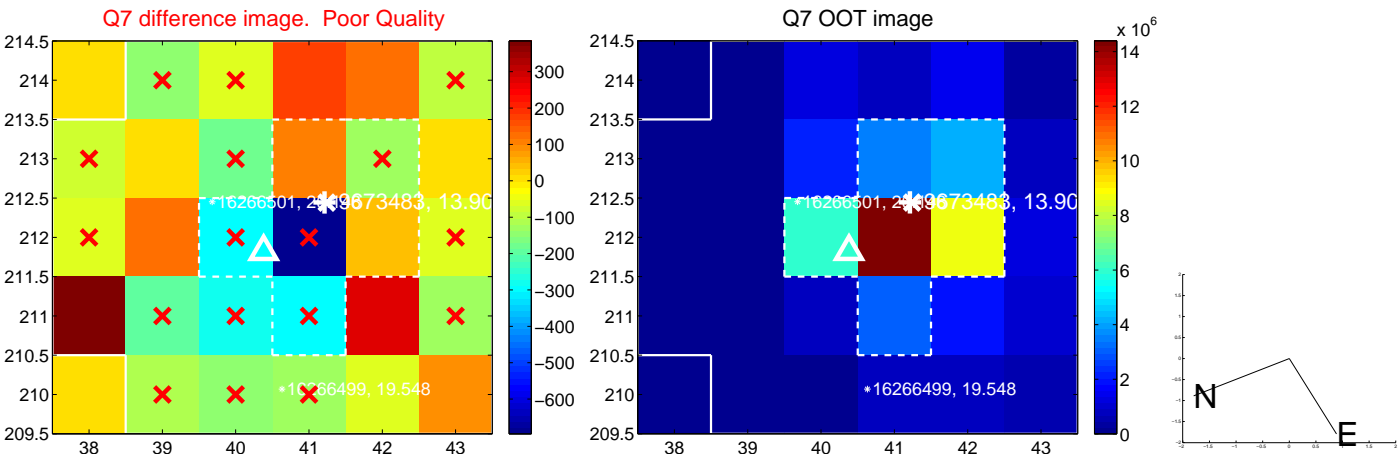
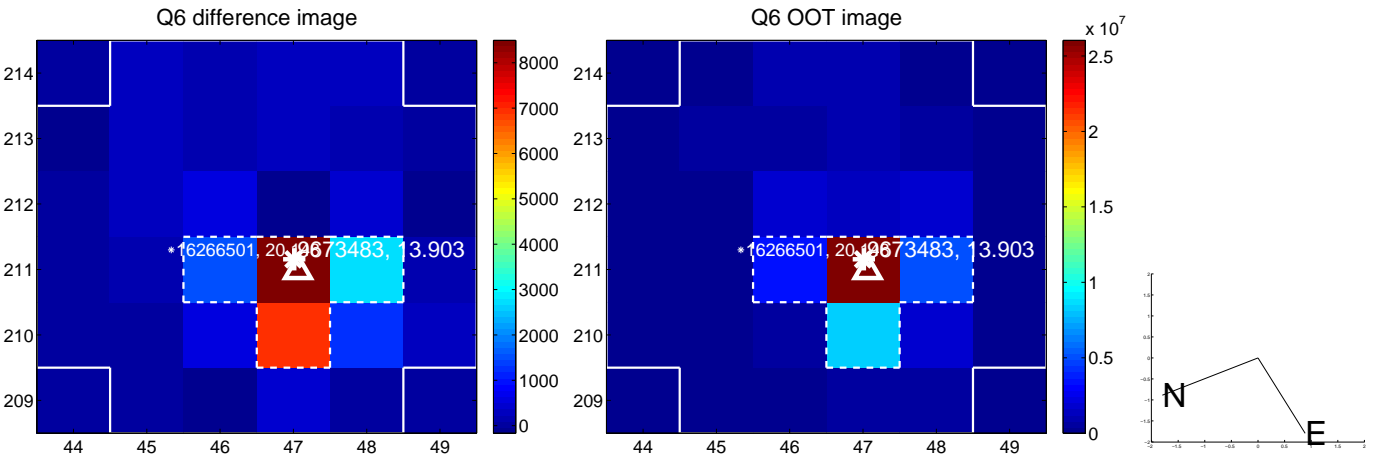
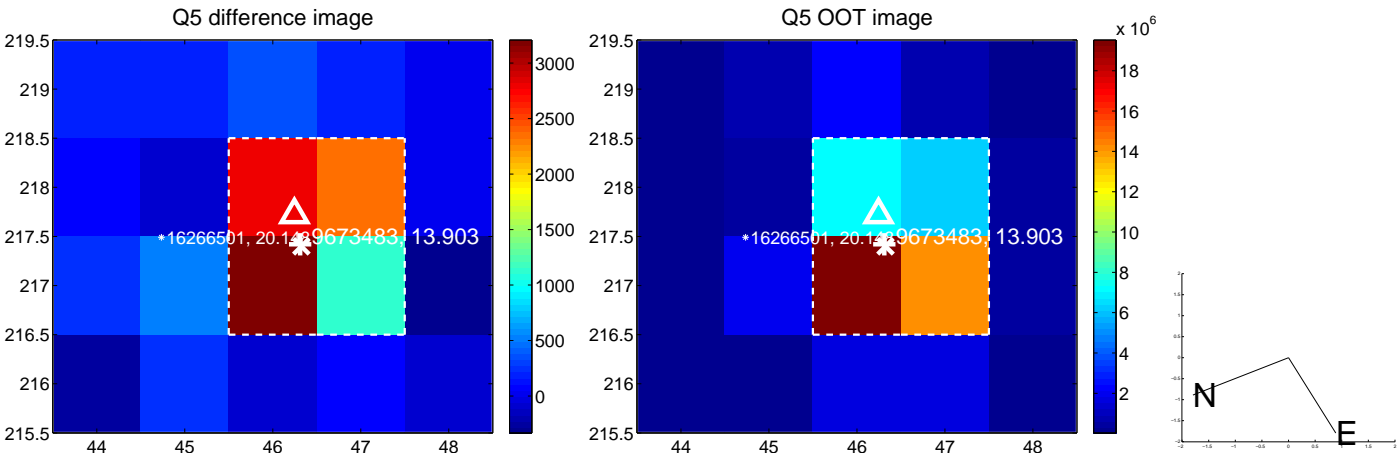


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

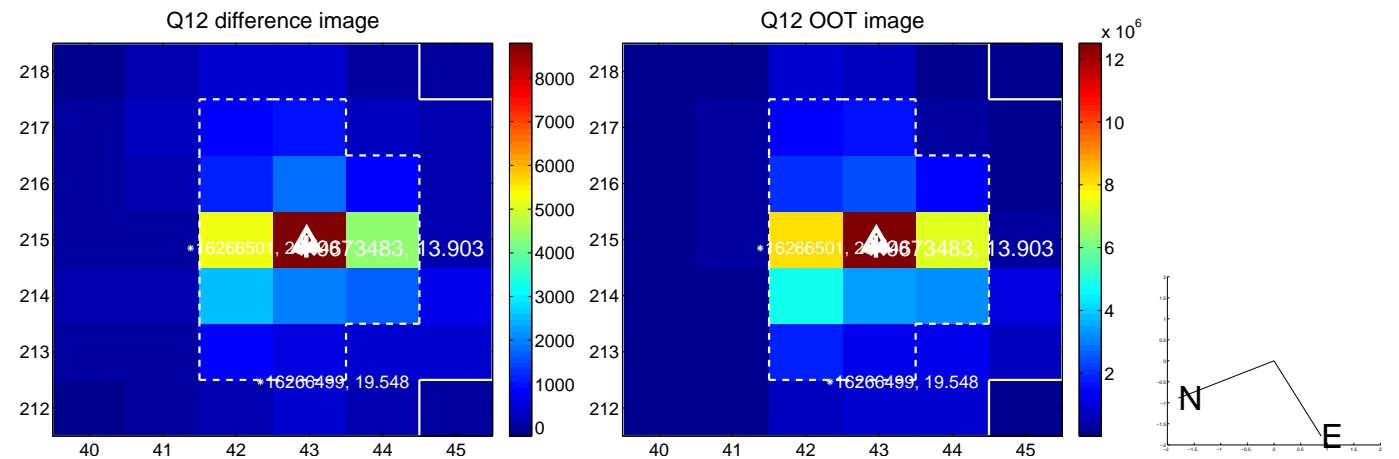
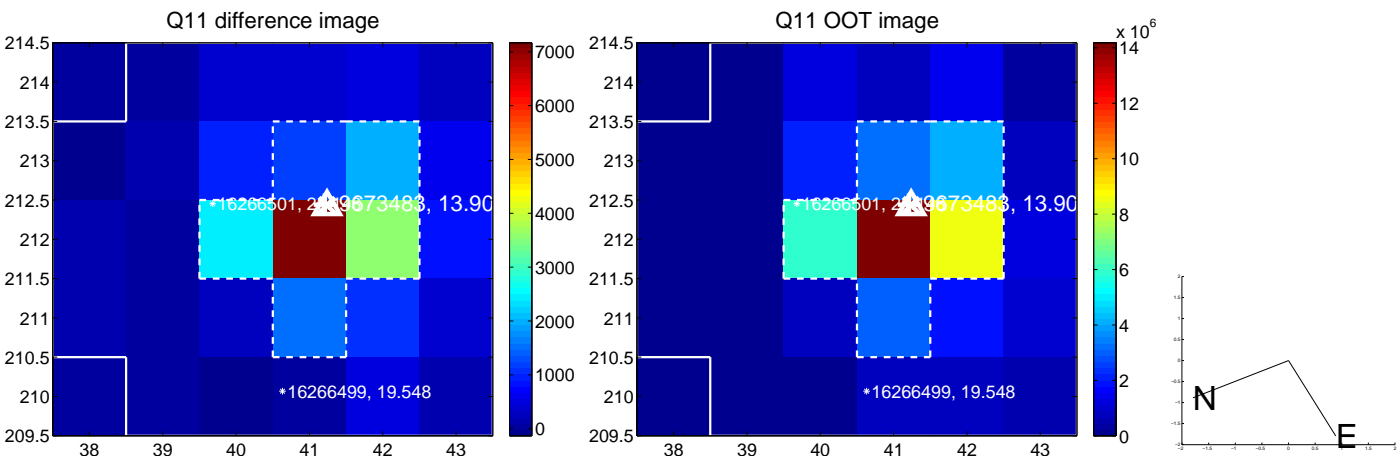
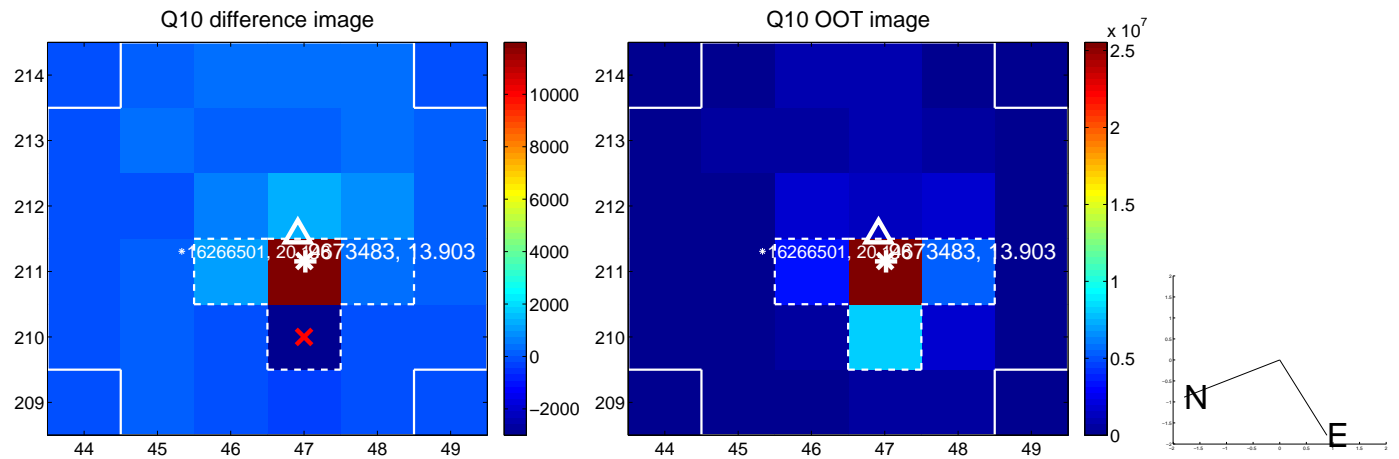
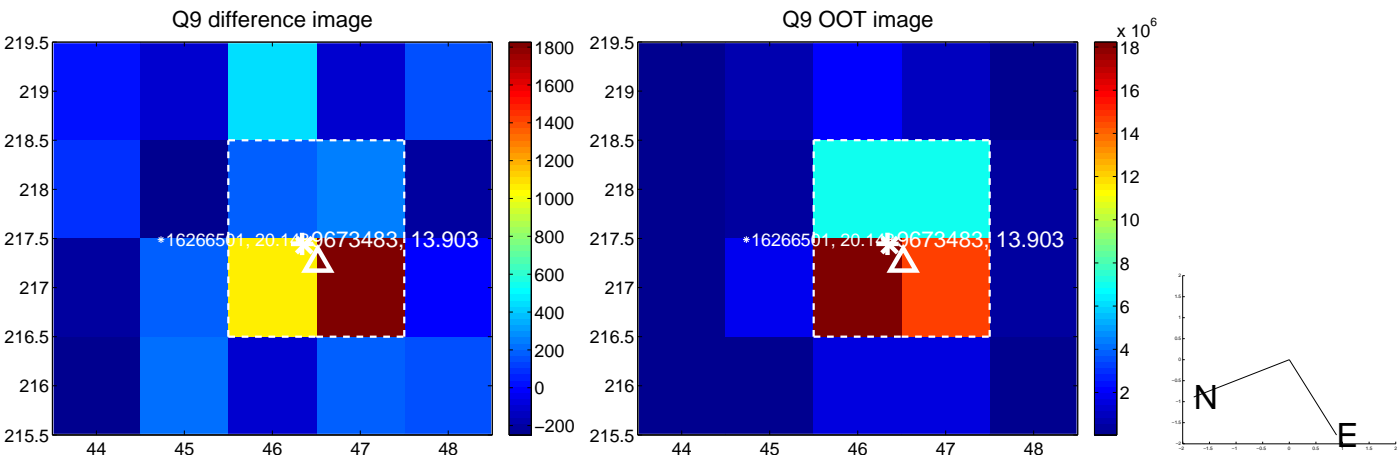
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



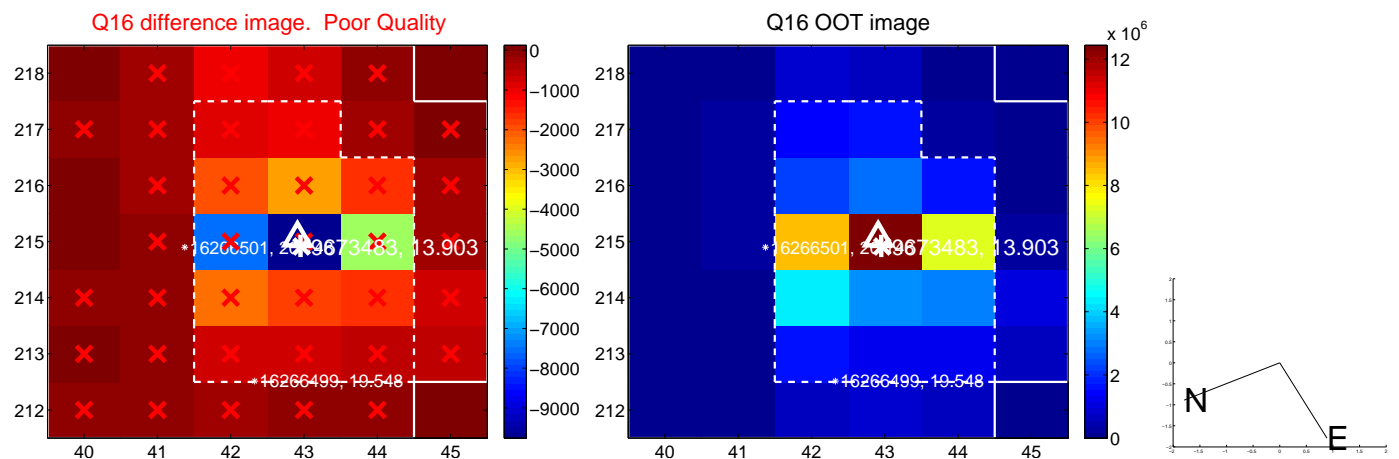
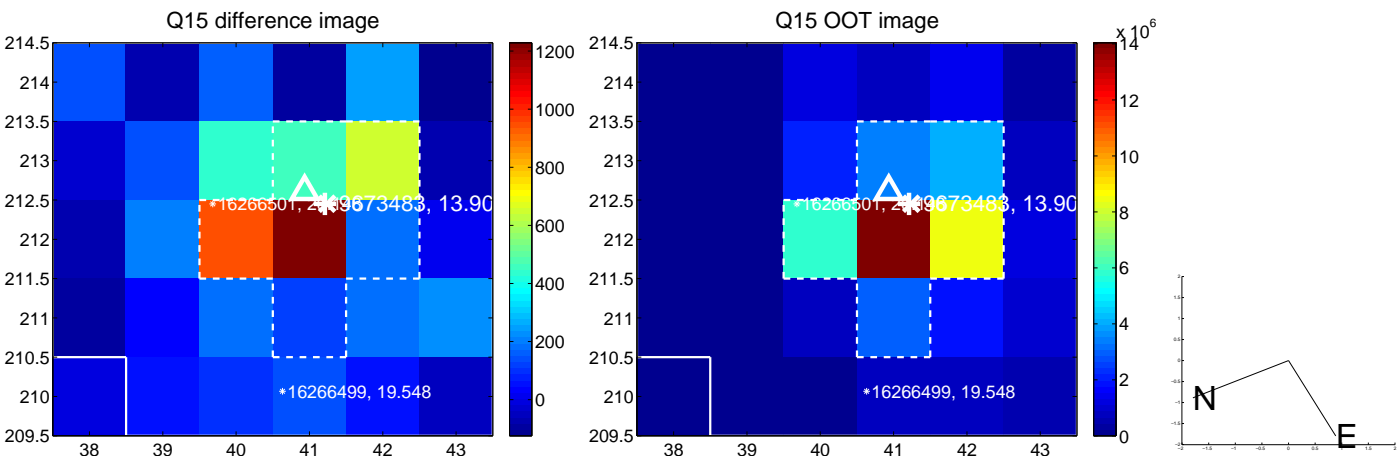
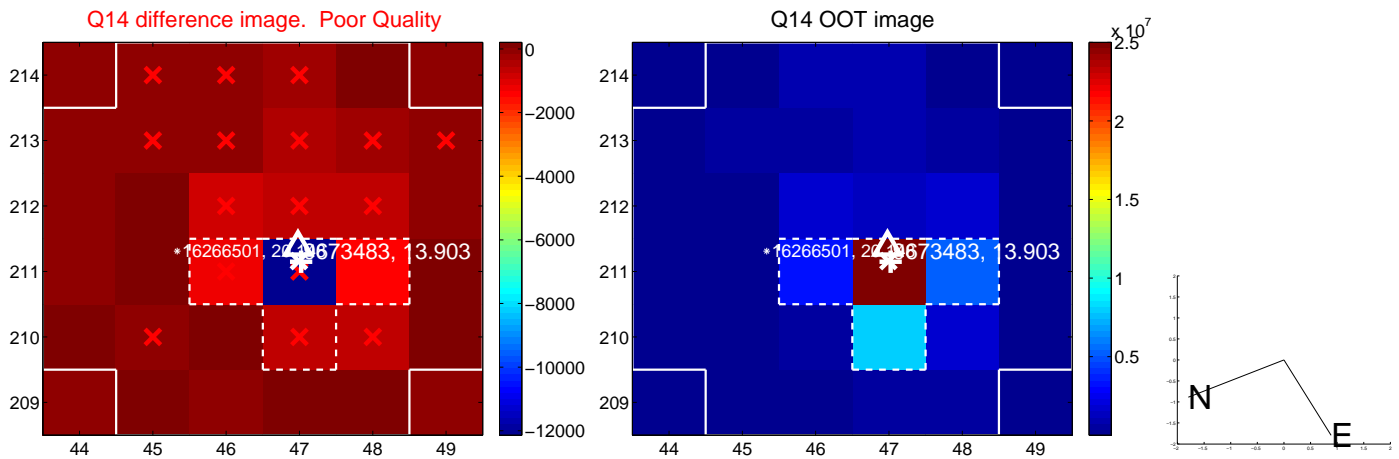
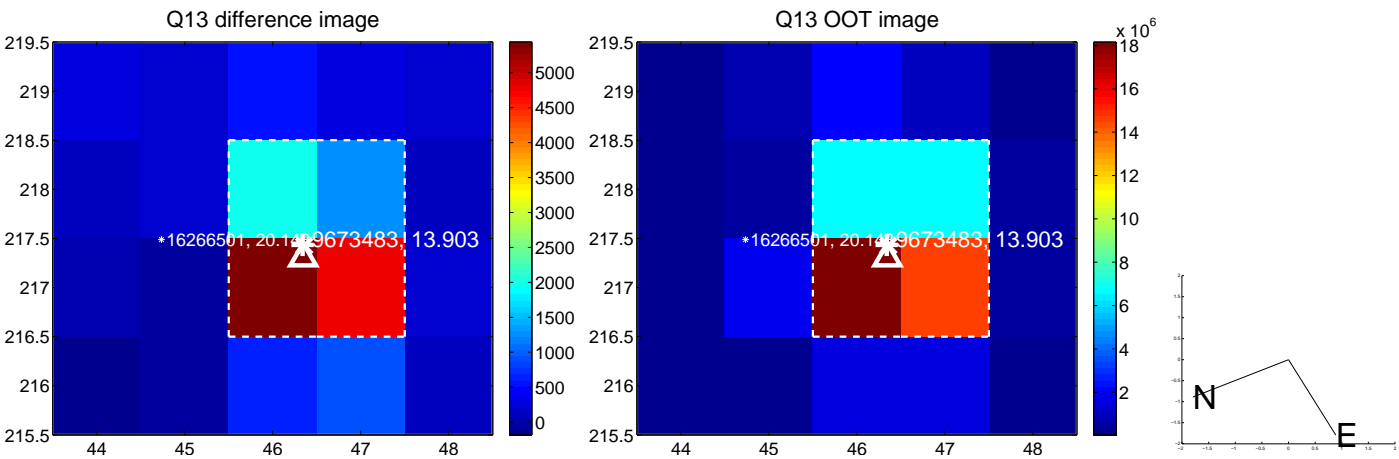
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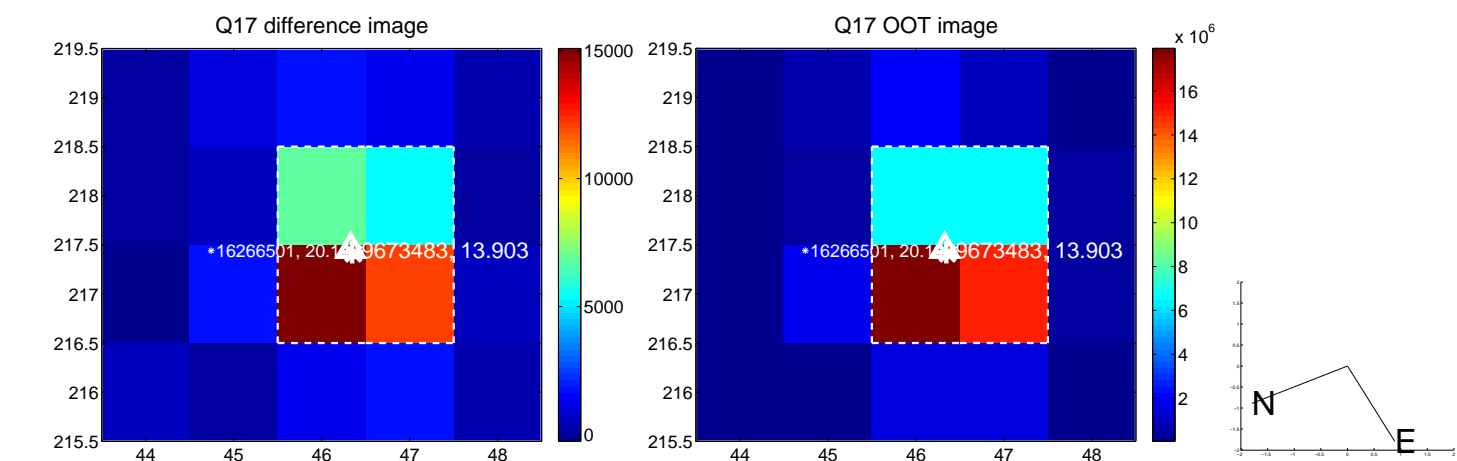
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



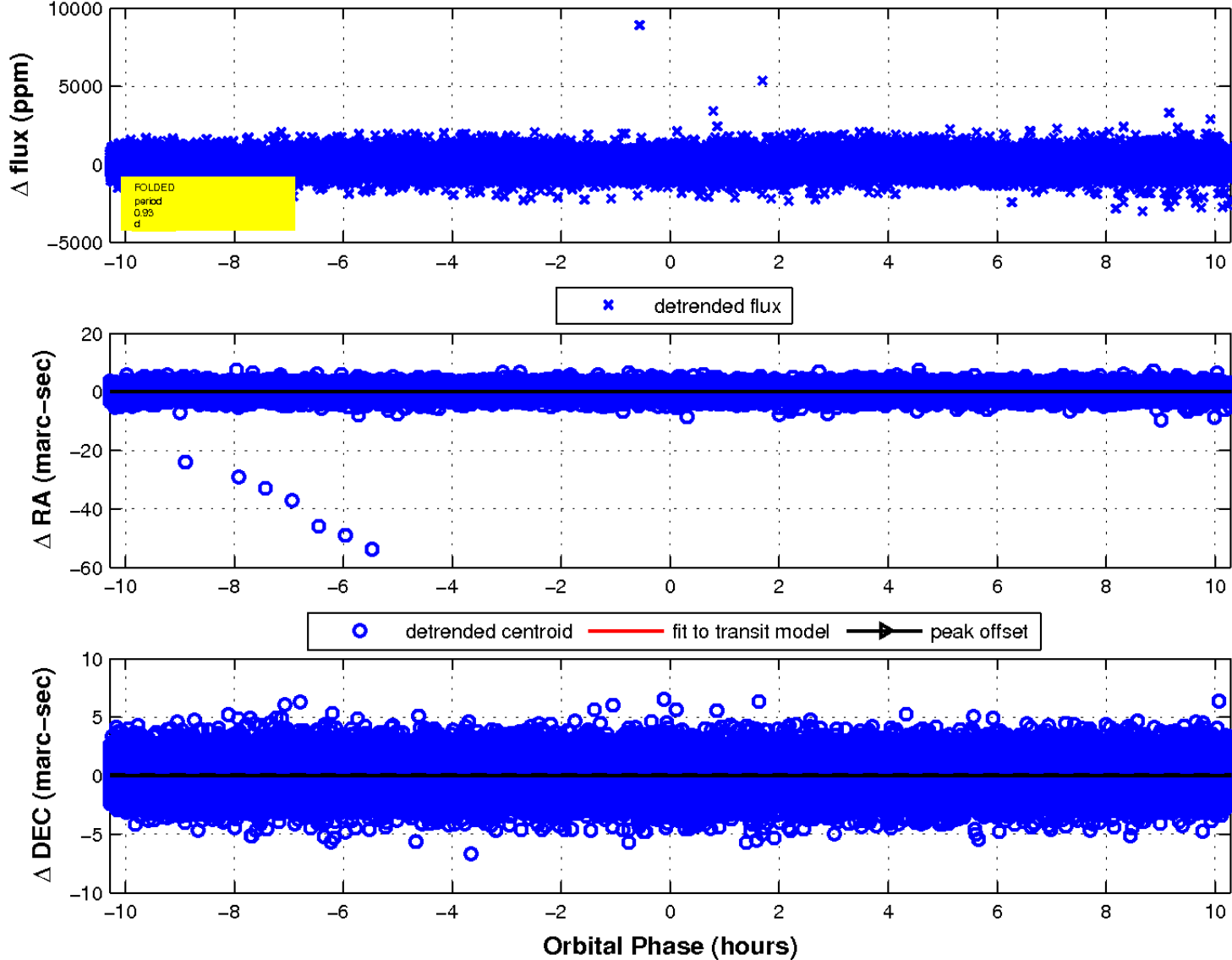
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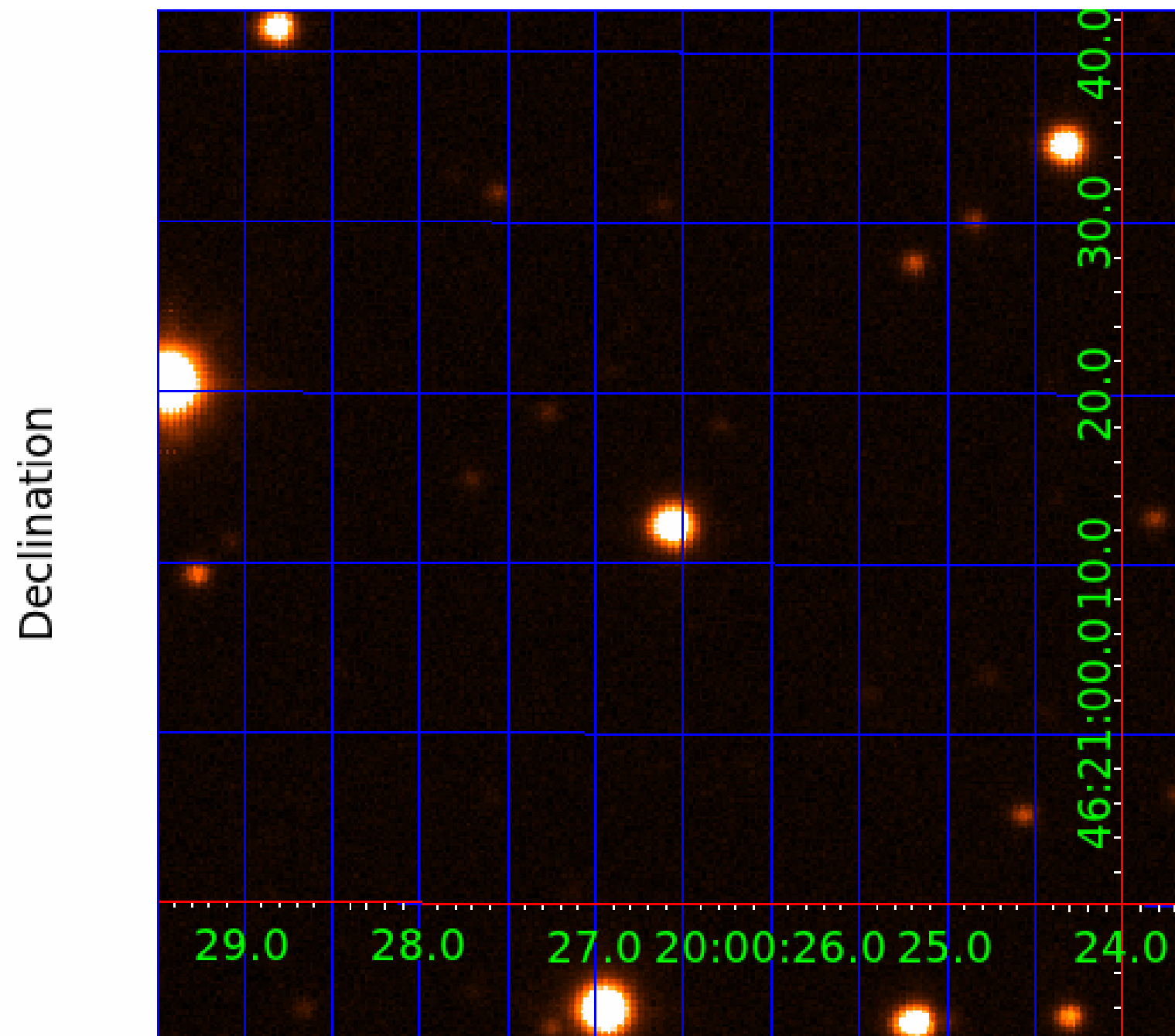
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image



KIC 009673483

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009673483-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009673483-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009673483-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

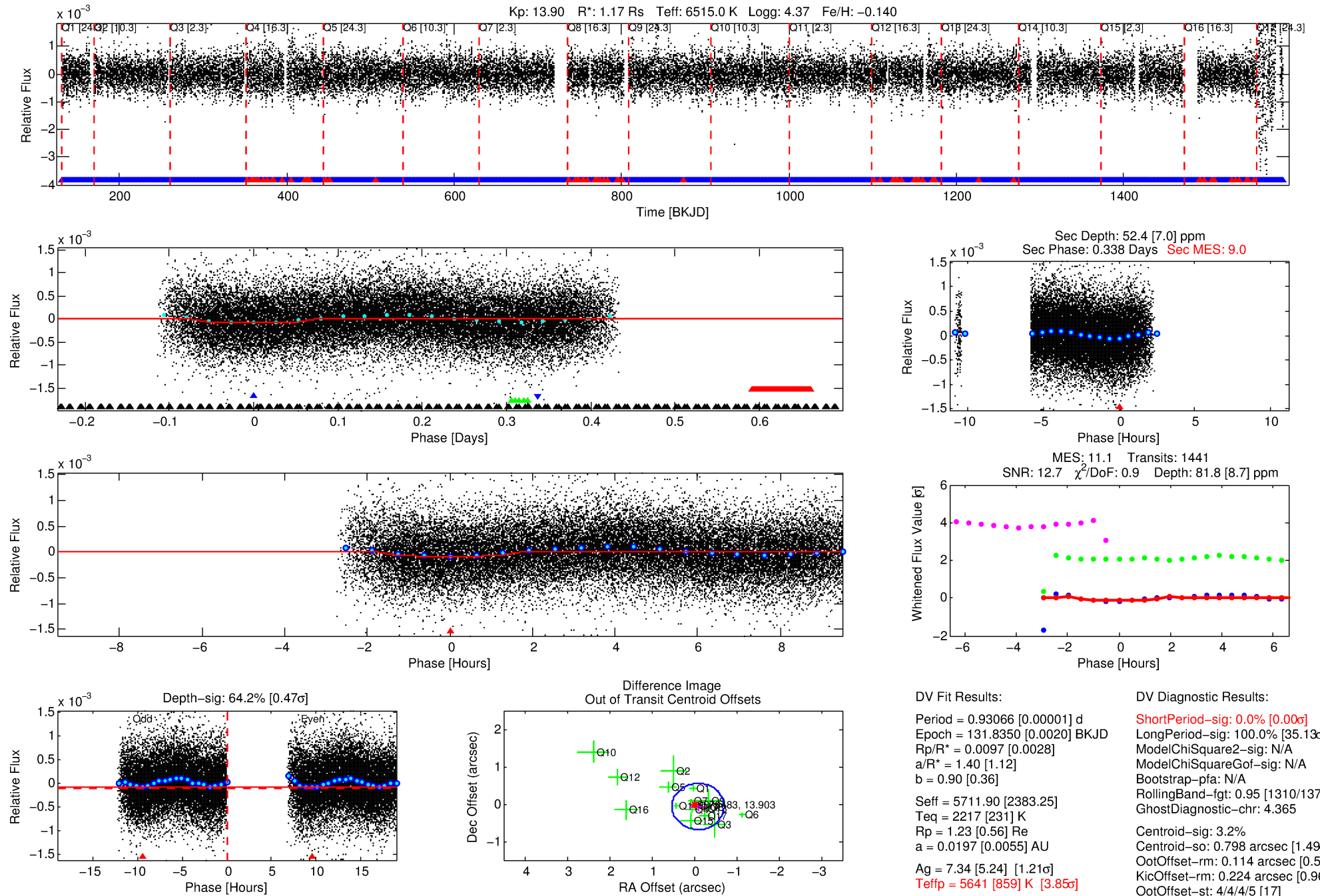
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009673483-02

No Significant Match Found

DV One-Page Summary

KIC: 9673483 Candidate: 2 of 4 Period: 0.931 d



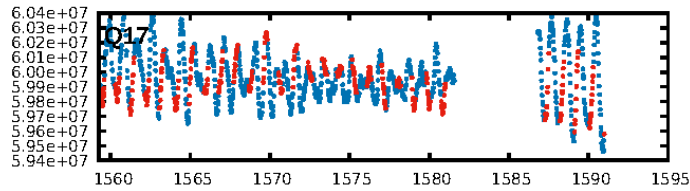
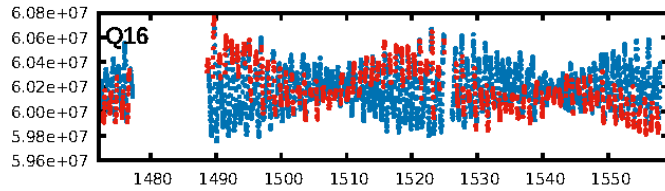
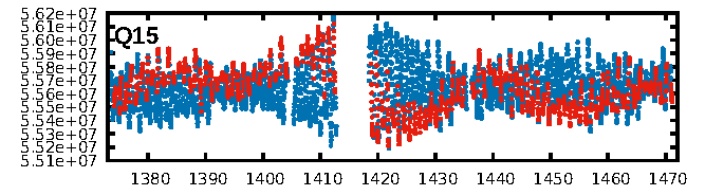
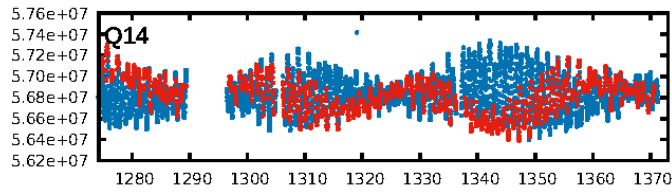
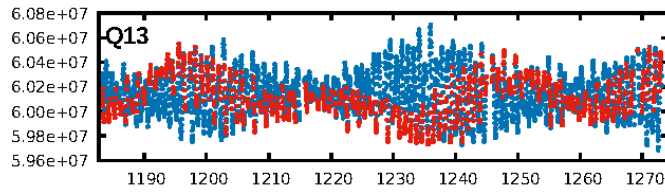
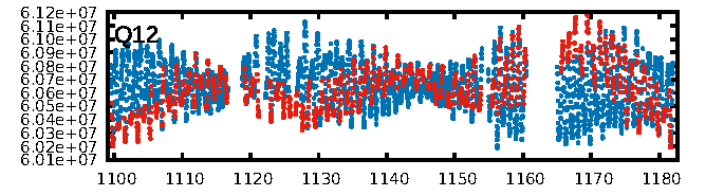
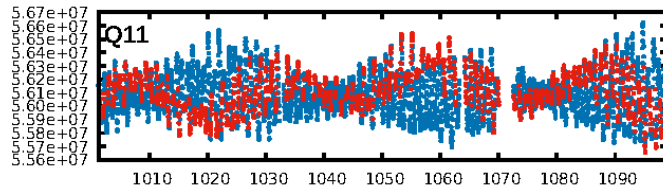
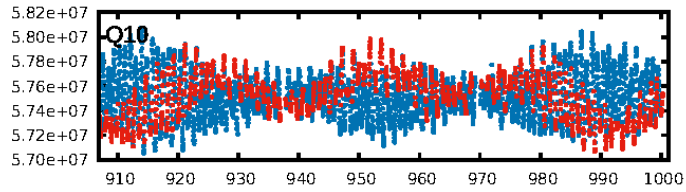
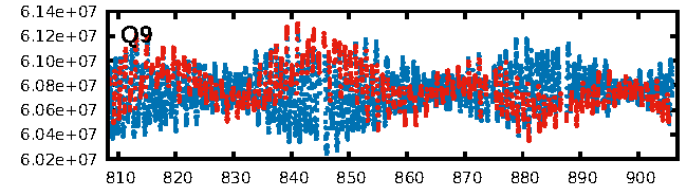
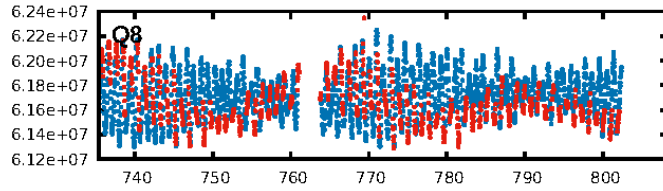
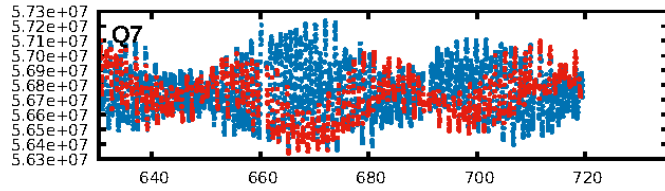
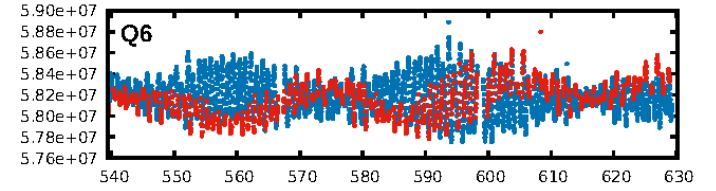
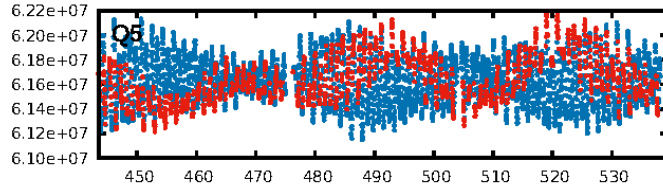
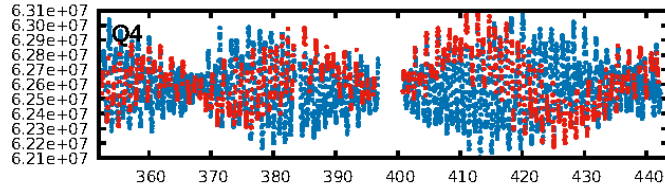
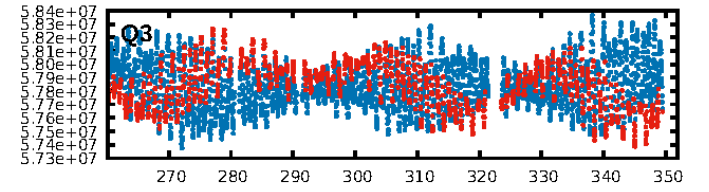
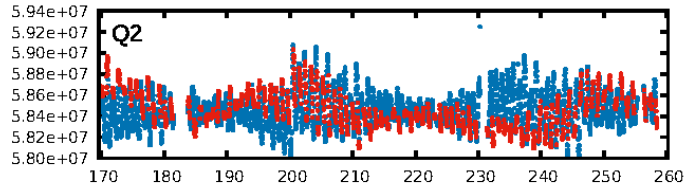
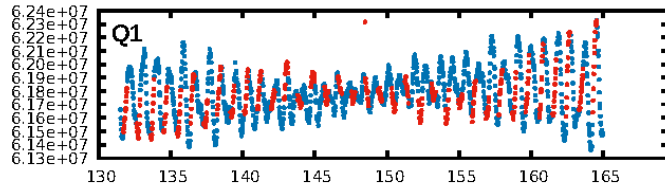
DV Fit Results:

Period = 0.93066 [0.00001] d
Epoch = 131.8350 [0.0020] BKJD
Rp/R* = 0.0097 [0.0028]
a/R* = 1.40 [1.12]
b = 0.90 [0.36]
Seff = 5711.90 [2383.25]
Teq = 2217 [231] K
Rp = 1.23 [0.56] Re
a = 0.0197 [0.0055] AU
Ag = 7.34 [5.24] [1.21 σ]
Teffp = 5641 [859] K [3.85 σ]

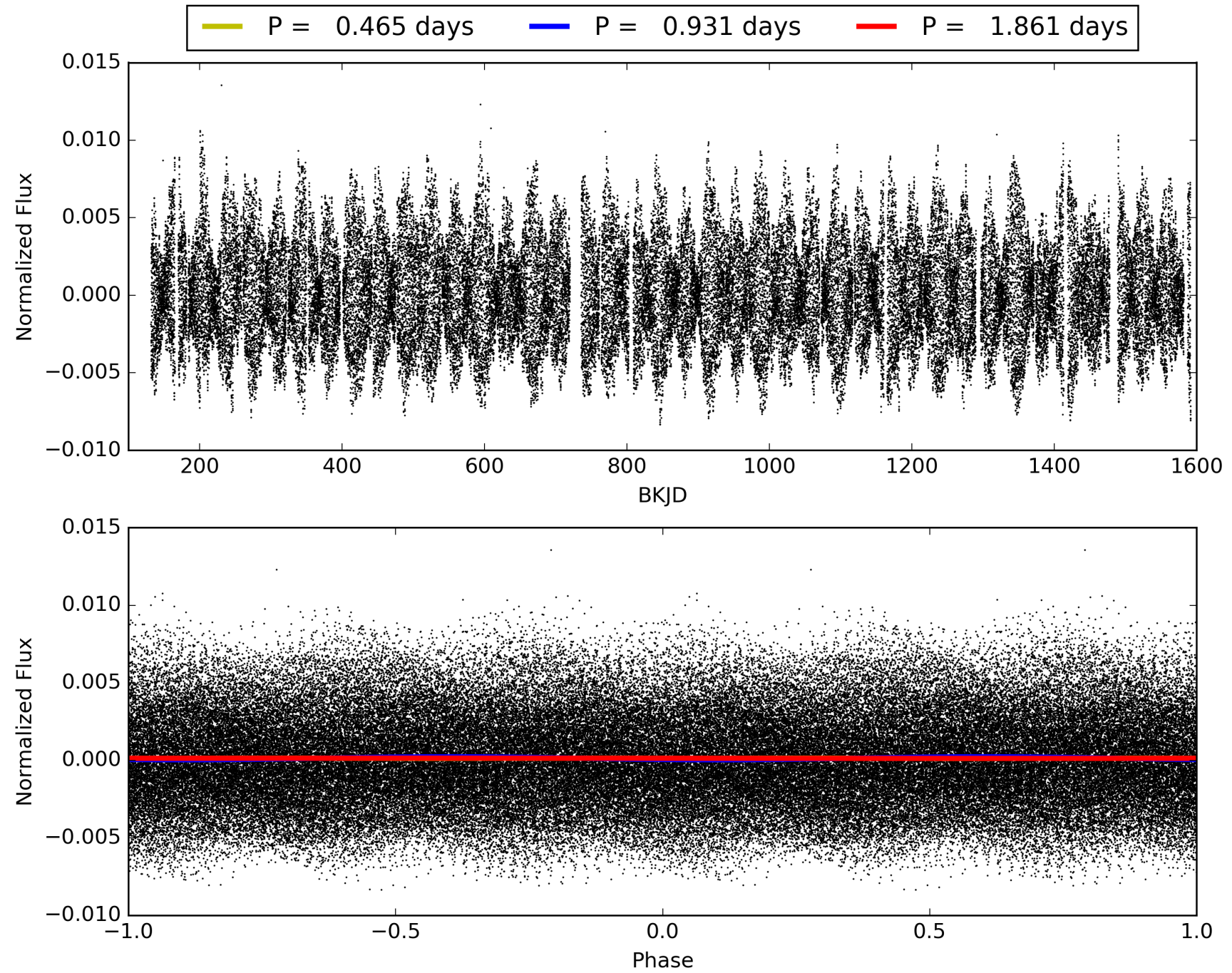
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [35.13 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [1310/1377]
GhostDiagnostic-chr: 4.365
Centroid-sig: 3.2%
Centroid-so: 0.798 arcsec [1.49 σ]
OotOffset-rm: 0.114 arcsec [0.56 σ]
KicOffset-rm: 0.224 arcsec [0.96 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.71 [12/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009673483-02, PDC Light Curves

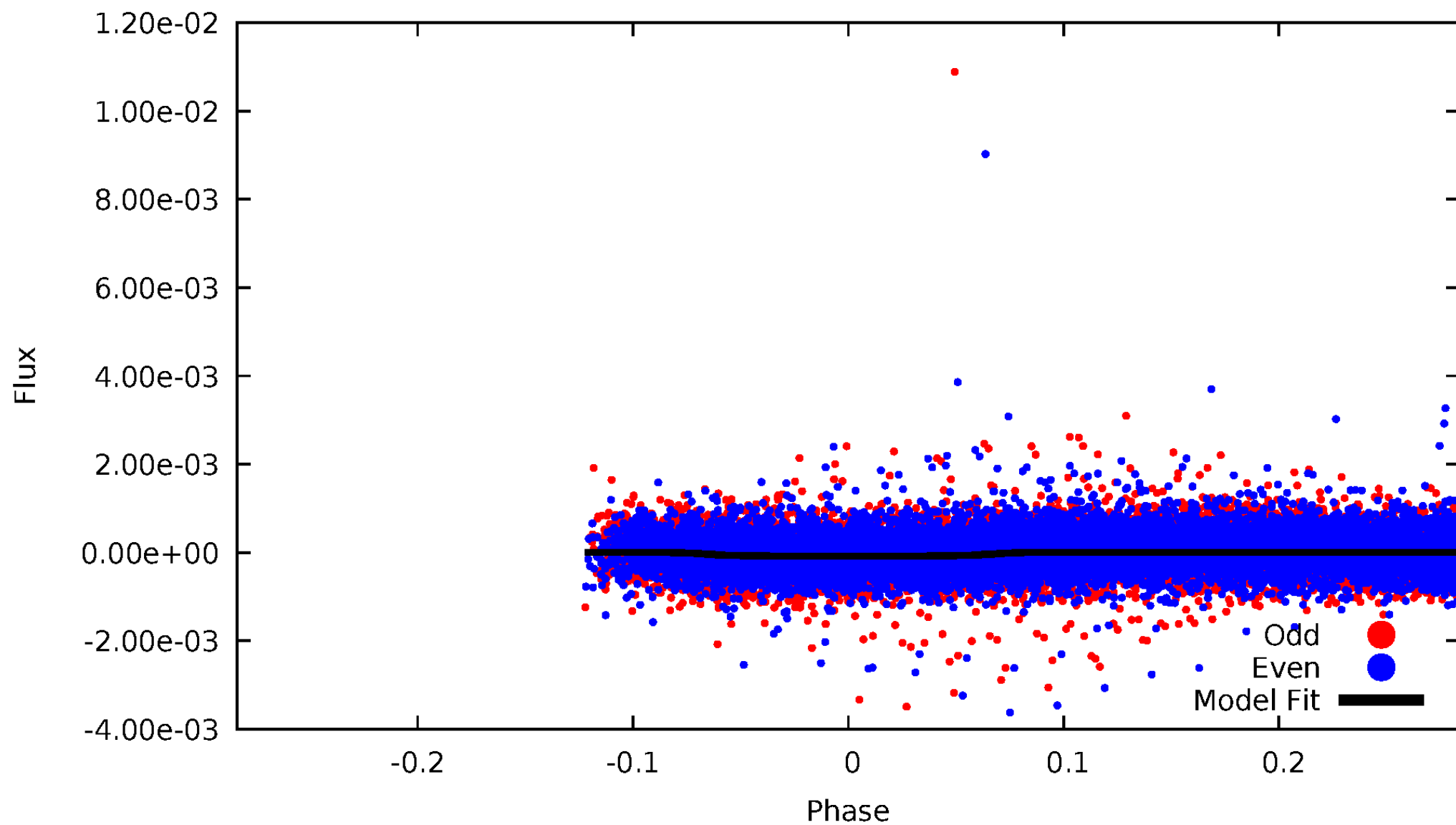


TCE 009673483-02



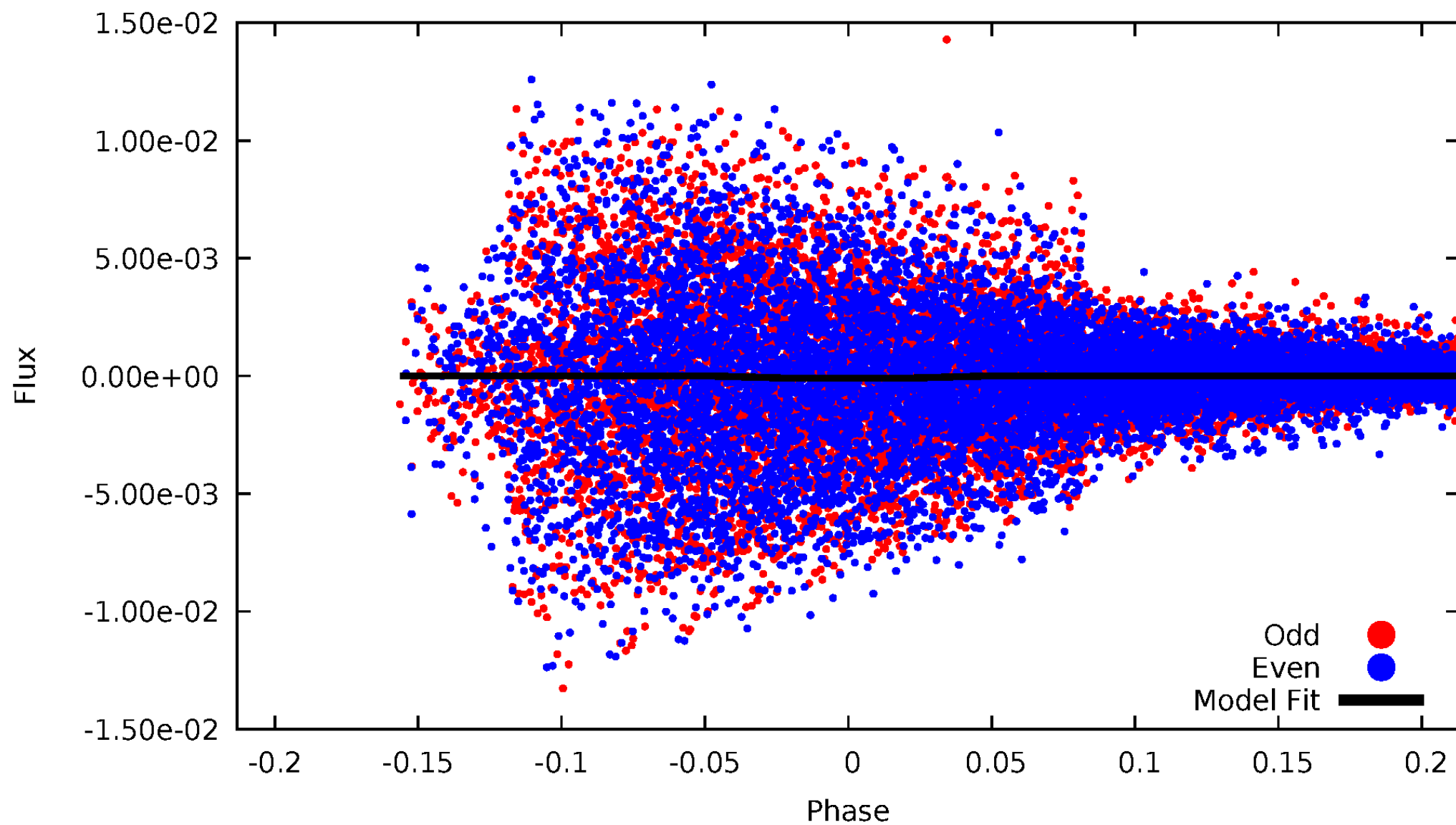
DV Odd/Even

TCE 009673483-02



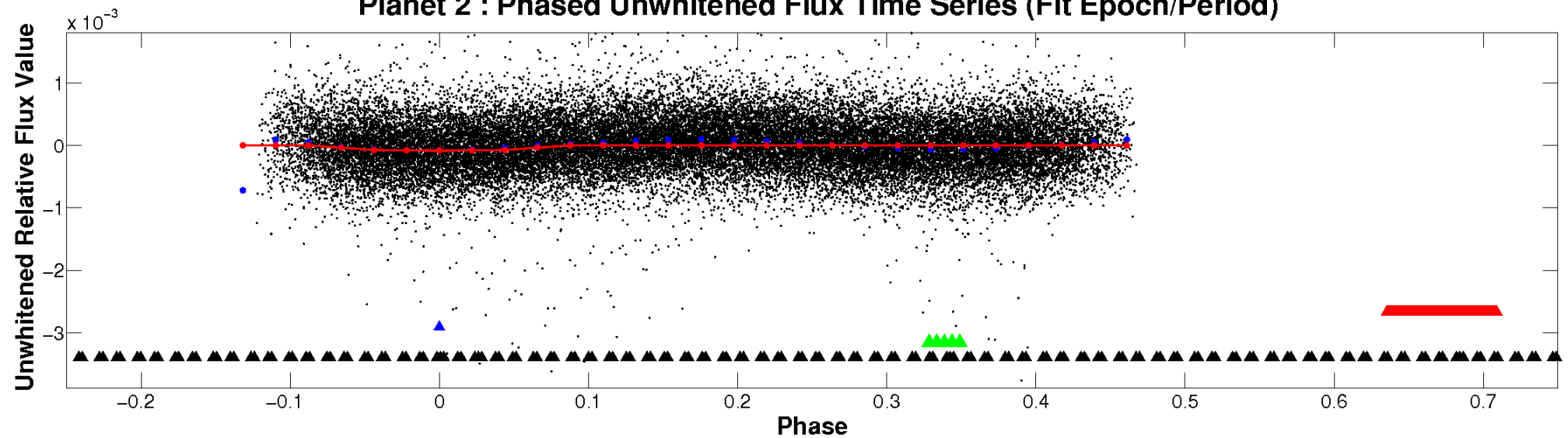
ALT Odd/Even

TCE 009673483-02

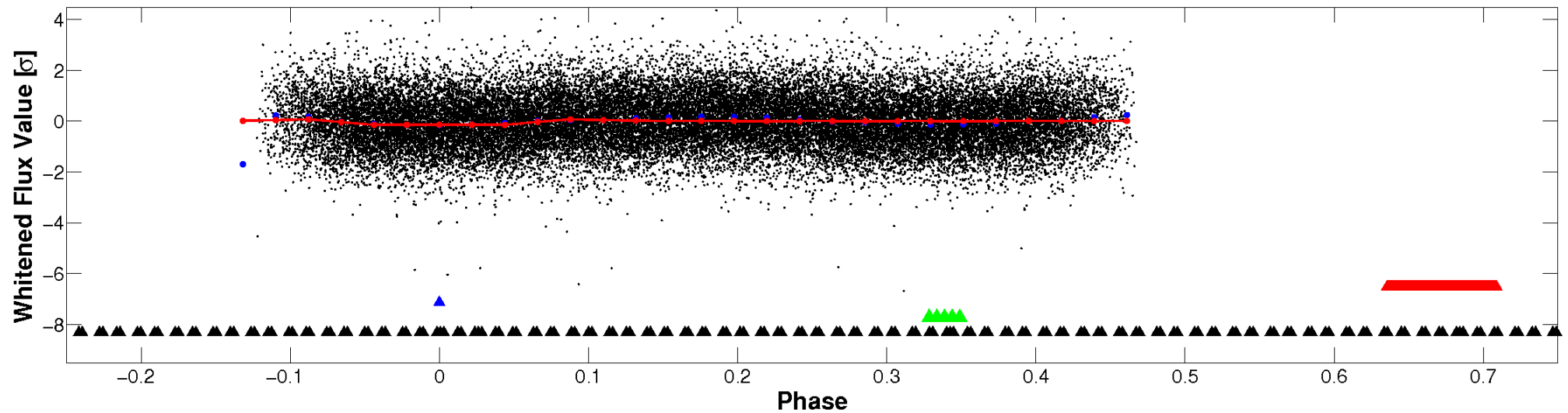


Non-Whitened Vs. Whitened Light Curve

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

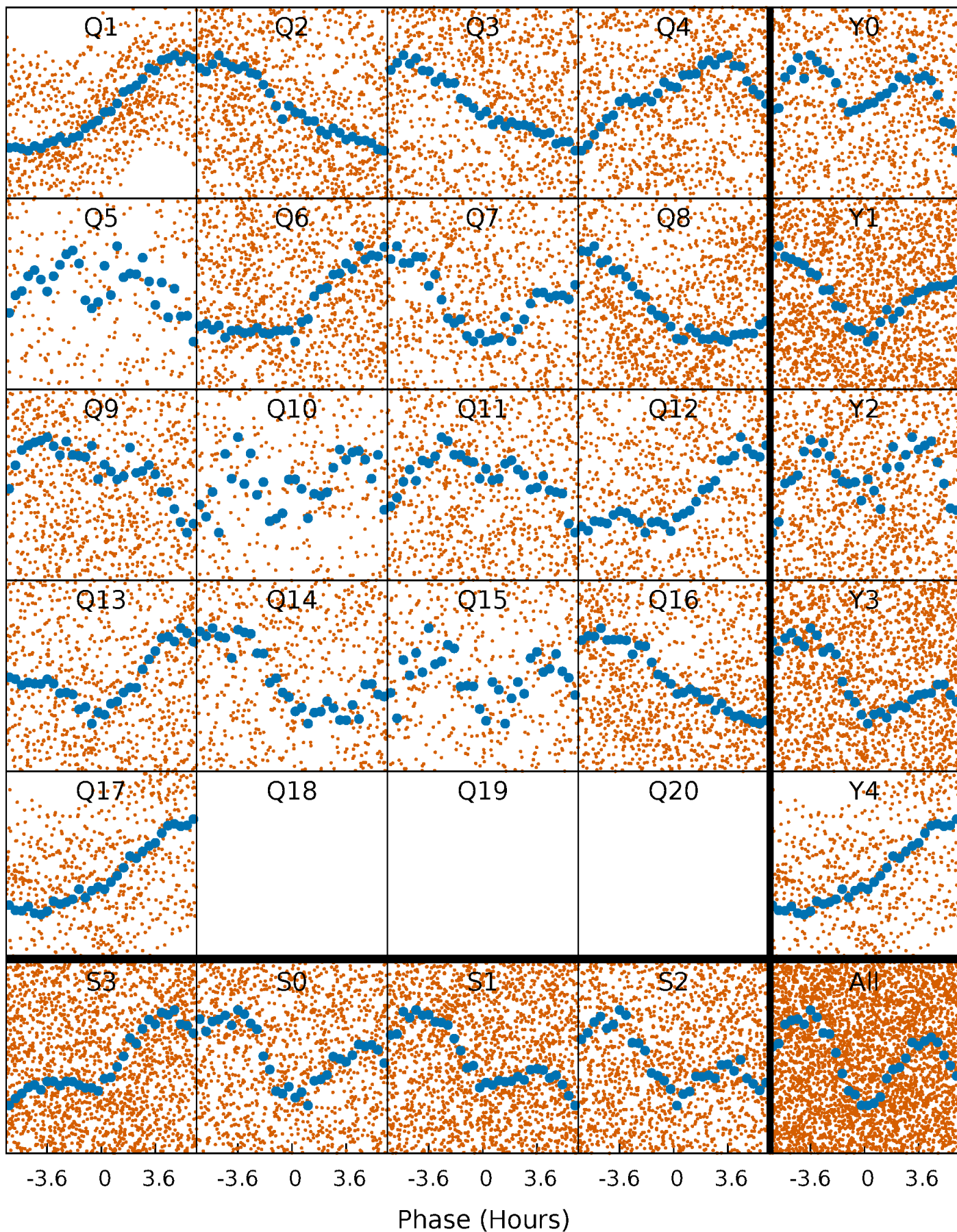


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



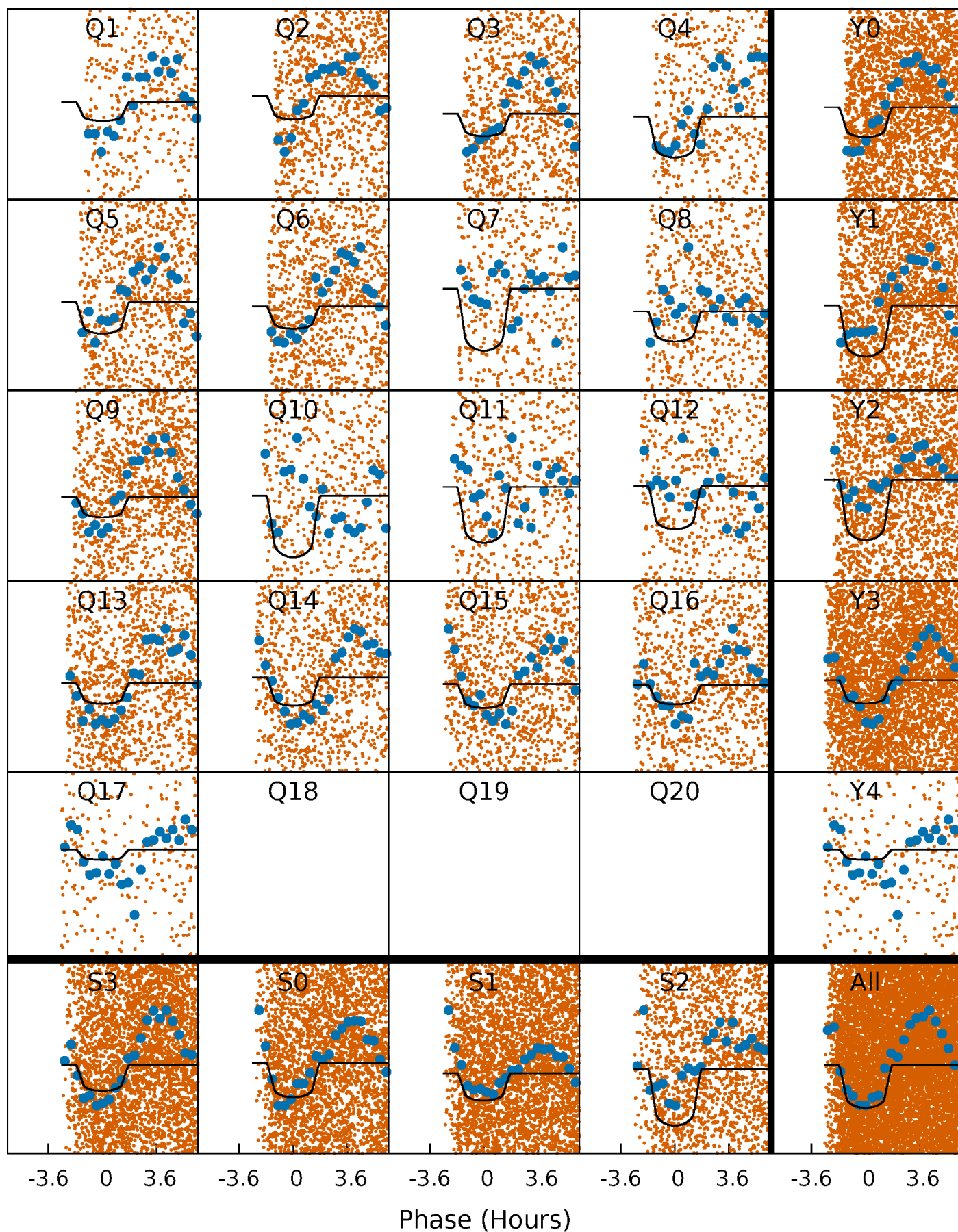
PDC Quarter-Phased Transit Curves

TCE 009673483-02 P= 0.930663 Days $T_0=131.834999$ (BKJD)



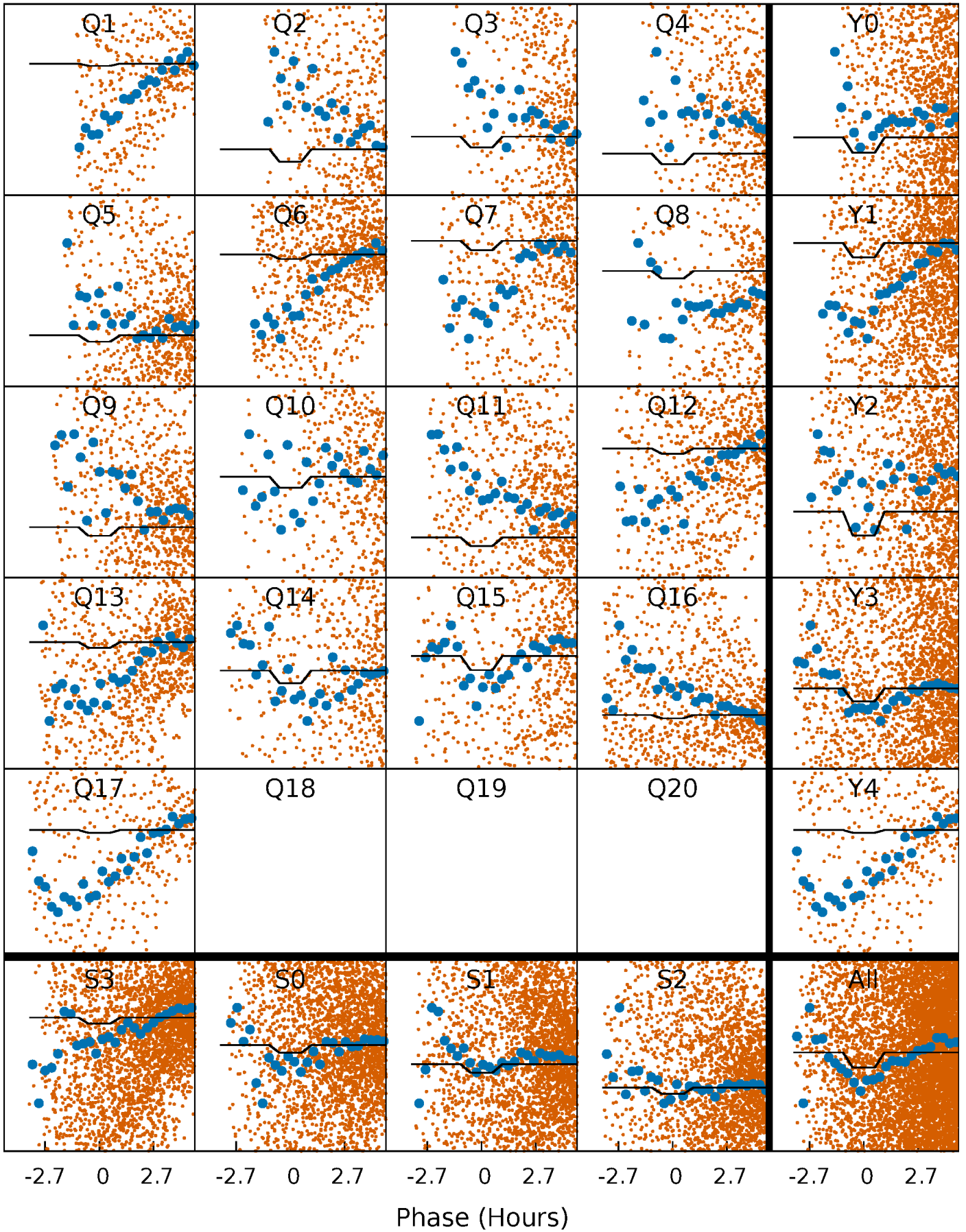
DV Quarter-Phased Transit Curves

TCE 009673483-02 P= 0.930663 Days $T_0=131.834999$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

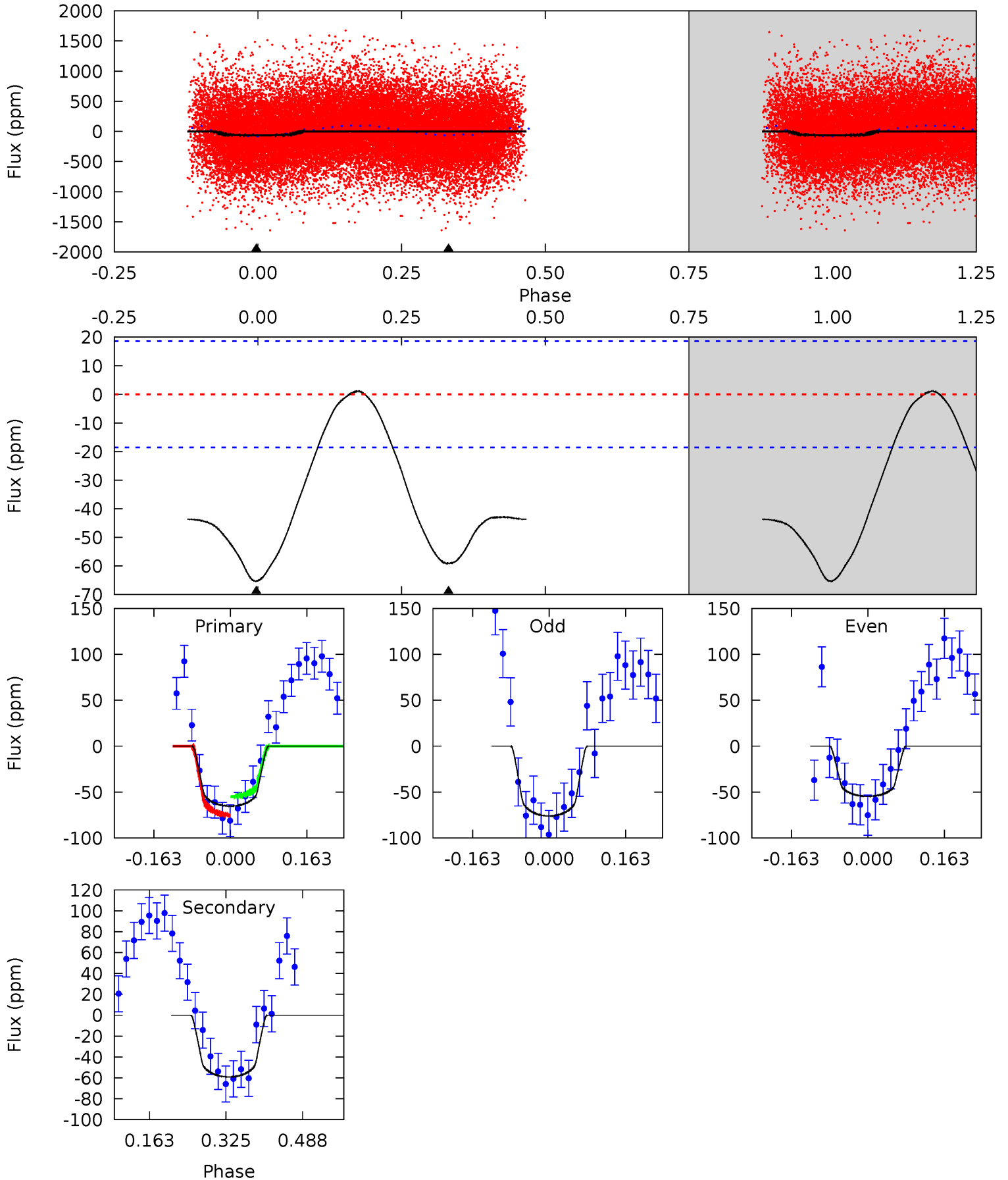
TCE 009673483-02 P= 0.930683 Days $T_0=131.835158$ (BKJD)



DV Model-Shift Uniqueness Test

009673483-02, P = 0.930663 Days, E = 130.904336 Days

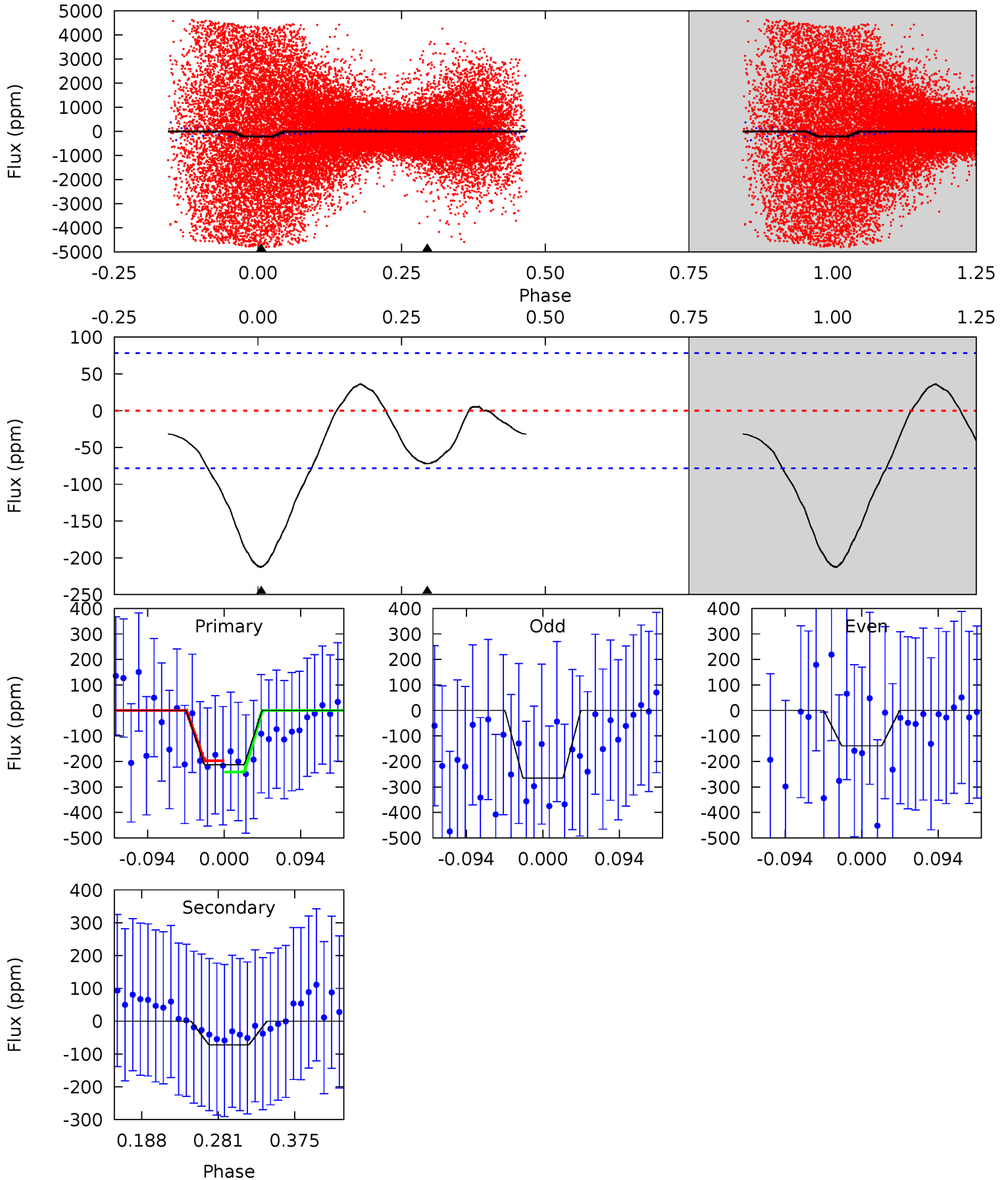
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	14.2	0	0	4.46	1.40	0.32	15.7	15.7	14.2	14.2	2.60	0.89	0.02	2.38



Alt Model-Shift Uniqueness Test

009673483-02, P = 0.930683 Days, E = 130.904475 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	4.22	0	0	4.58	1.68	1.87	12.4	12.4	4.22	4.22	3.94	0.67	0.15	0.60



Stellar Parameters For KIC 009673483

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6515^{+155}_{-213}	$4.371^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.172^{+0.405}_{-0.135}$	$1.180^{+0.173}_{-0.156}$	$1.033^{+0.312}_{-0.571}$
	+2%/-3%	+2%/-5%	+179%/-214%	+35%/-12%	+15%/-13%	+30%/-55%
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 009673483-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-59 ± 4	$1.28^{+0.42}_{-0.40}$	3138^{+233}_{-156}	5696^{+1197}_{-633}	$7.442^{+8.117}_{-3.132}$
Alt.	-72 ± 17	$1.22^{+0.42}_{-0.39}$	3138^{+244}_{-168}	6157^{+1620}_{-856}	$9.830^{+13.007}_{-4.653}$

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 $A_{obs} \gg 1.0$

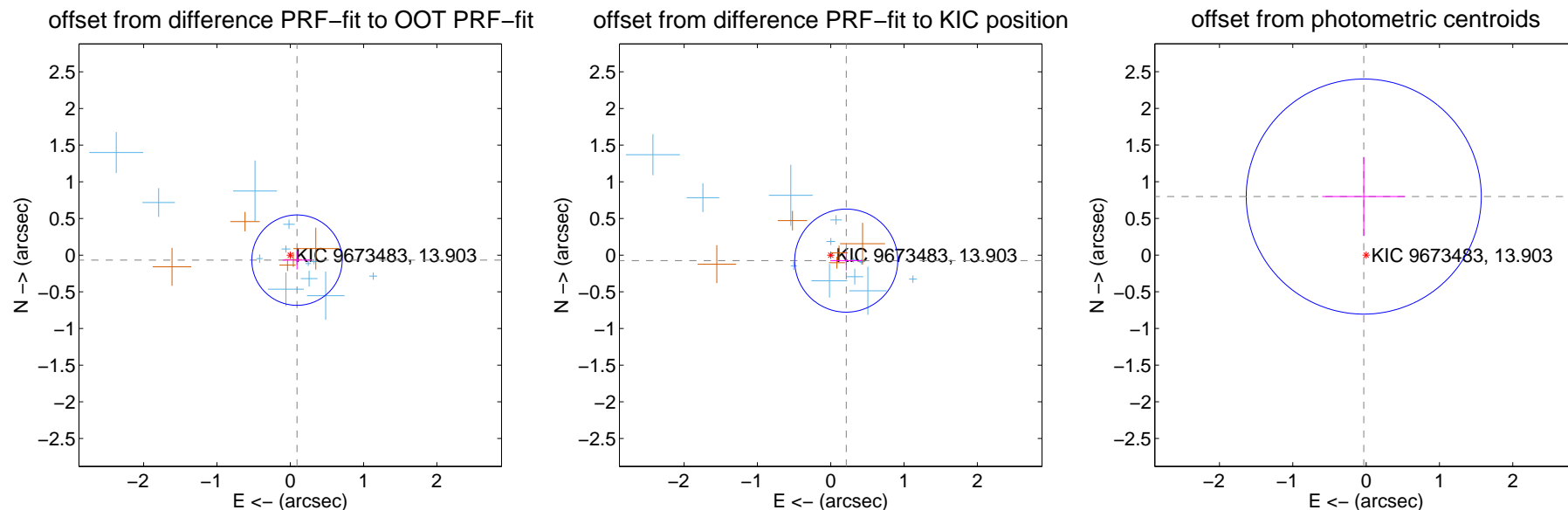
DV Centroid Data

Supplemental centroid analysis for 009673483-02. Kepler magnitude: 13.90. Transit SNR 12.70

There are 12 quarters with good PRF difference image offsets

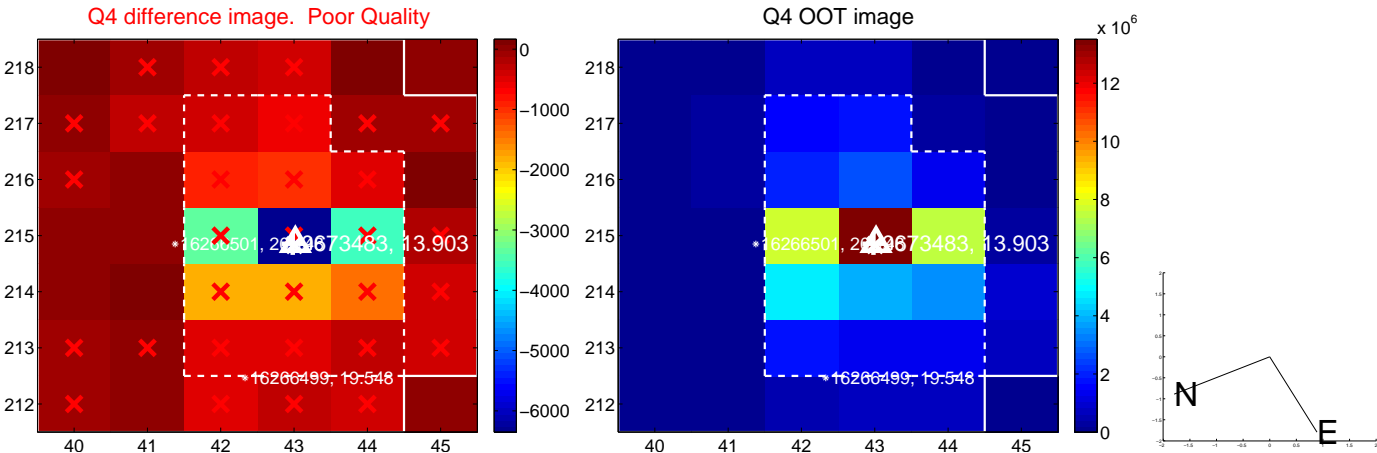
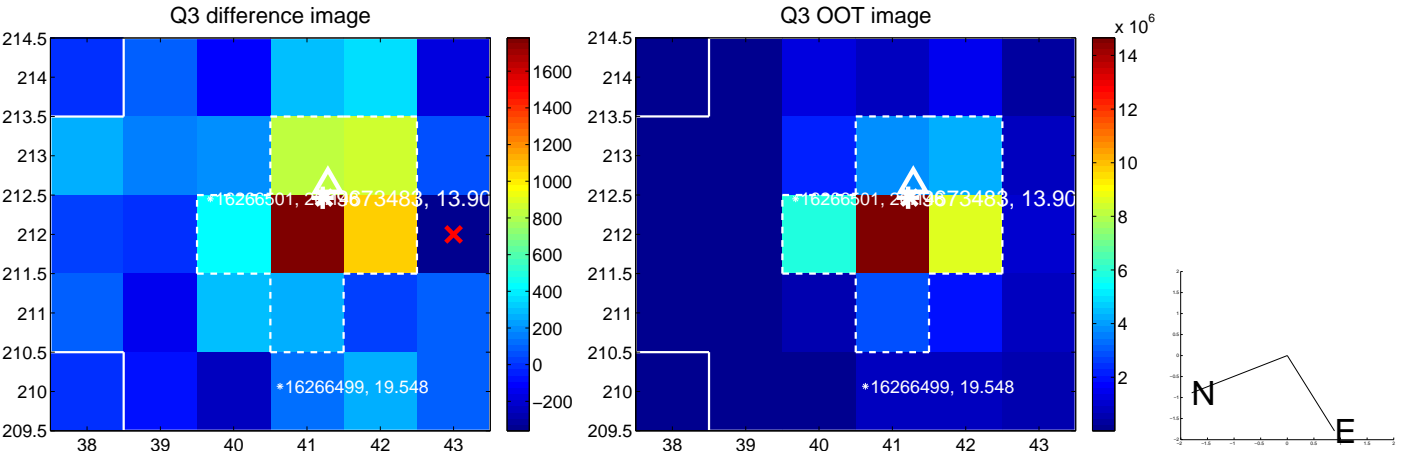
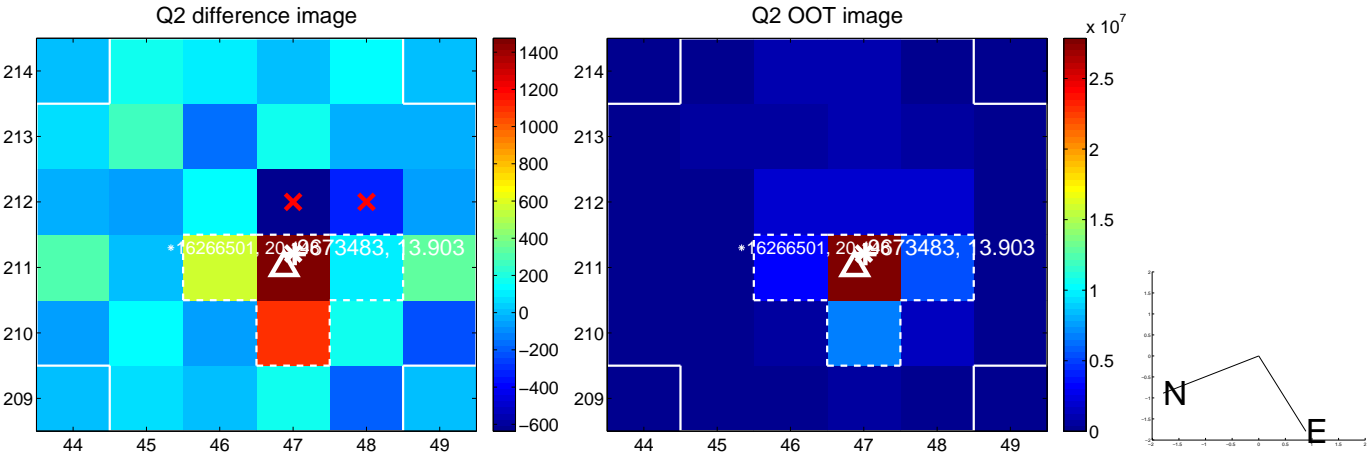
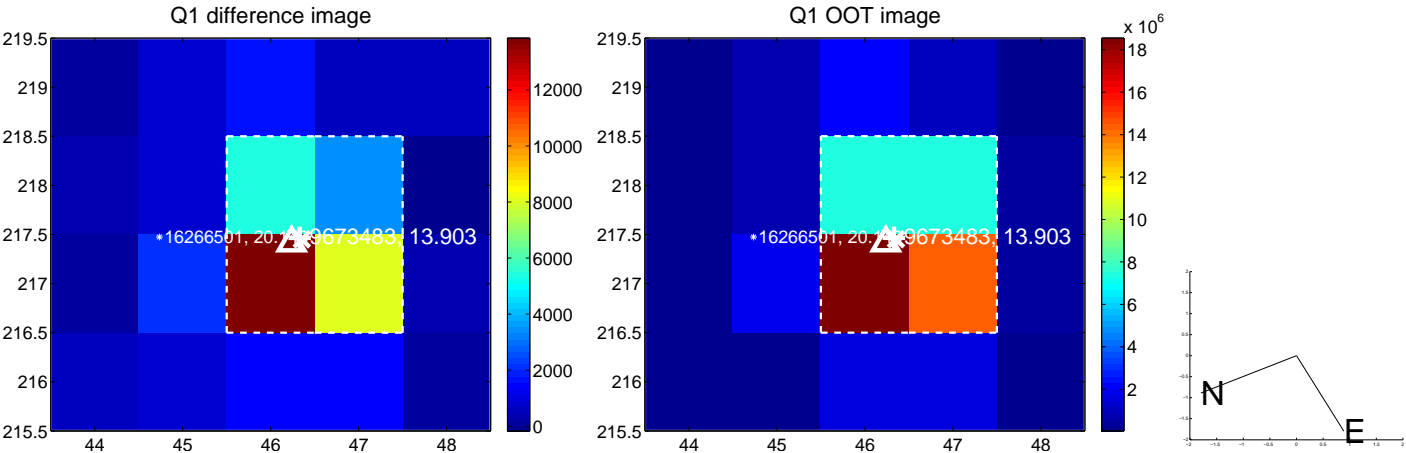
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.114 ± 0.205	0.56	-0.092 ± 0.195	-0.068 ± 0.128
PRF-fit source offset from KIC position	0.224 ± 0.234	0.96	-0.211 ± 0.218	-0.075 ± 0.133
photometric centroid source offset	0.80 ± 0.53	1.49	0.03 ± 0.57	0.80 ± 0.53

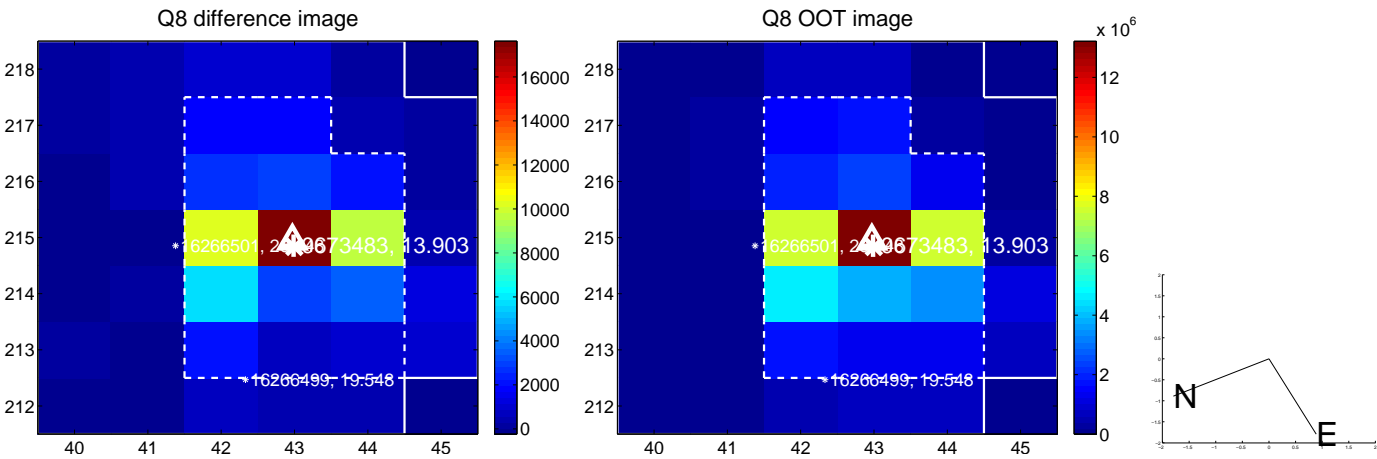
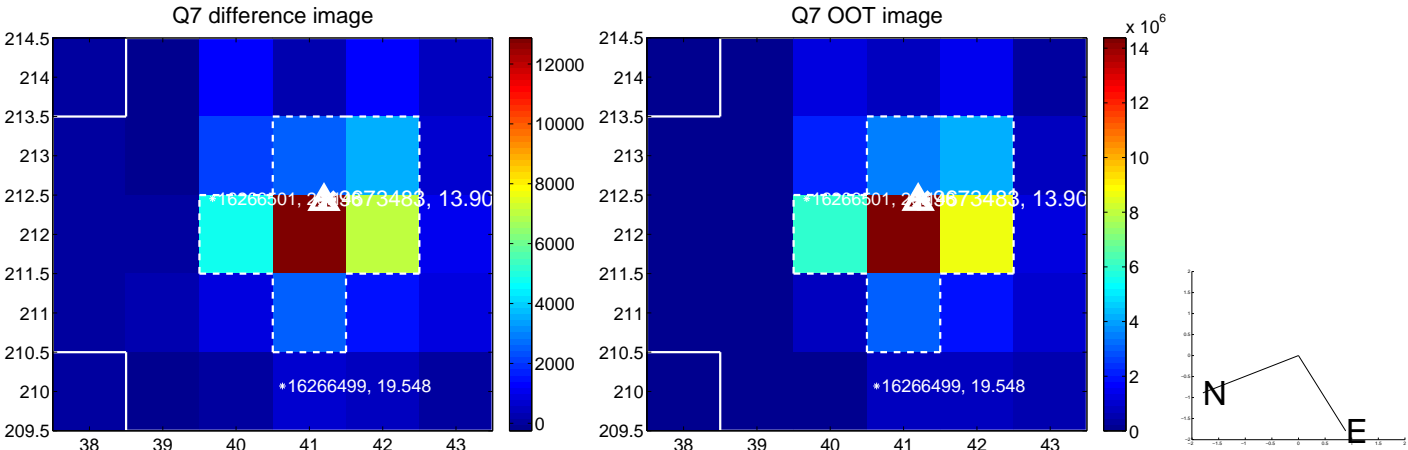
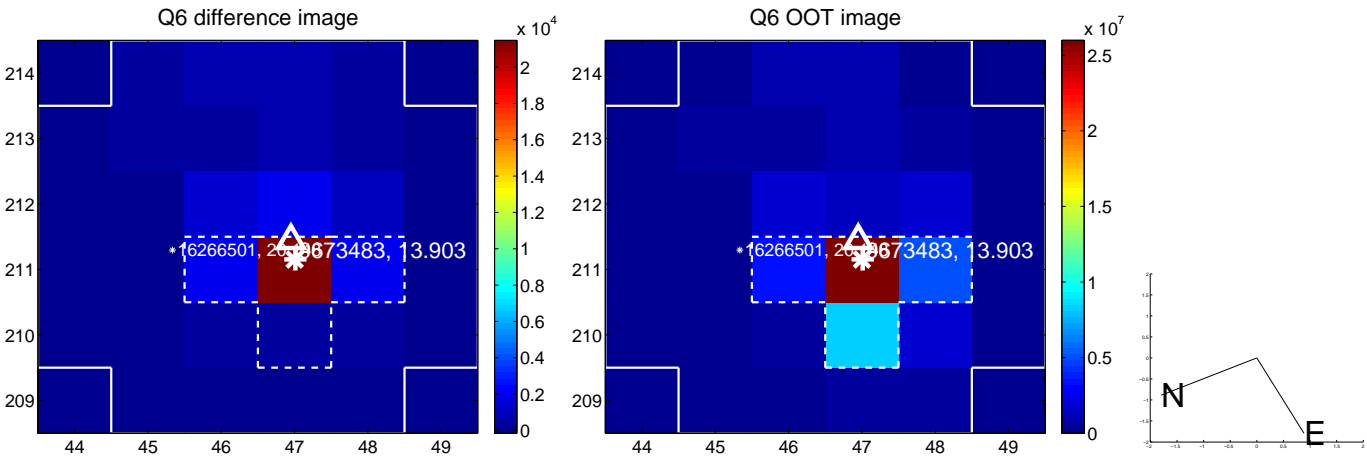
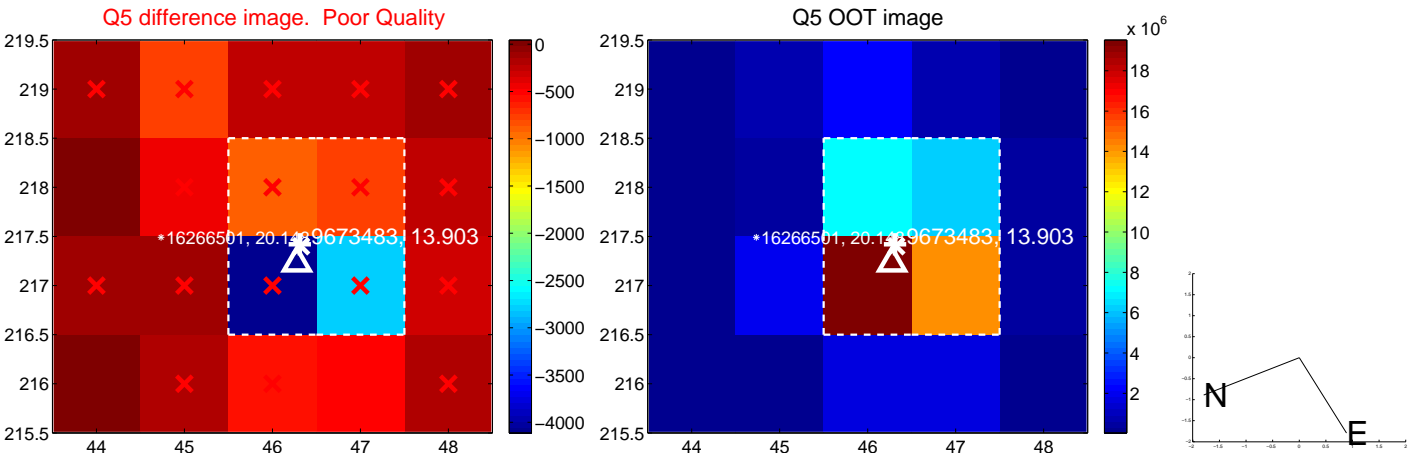


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

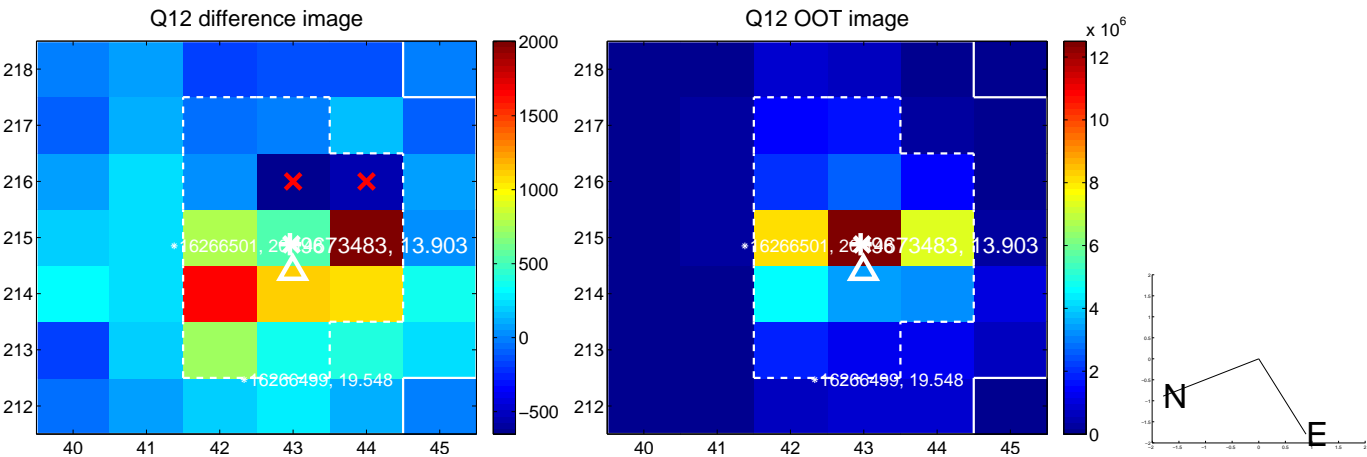
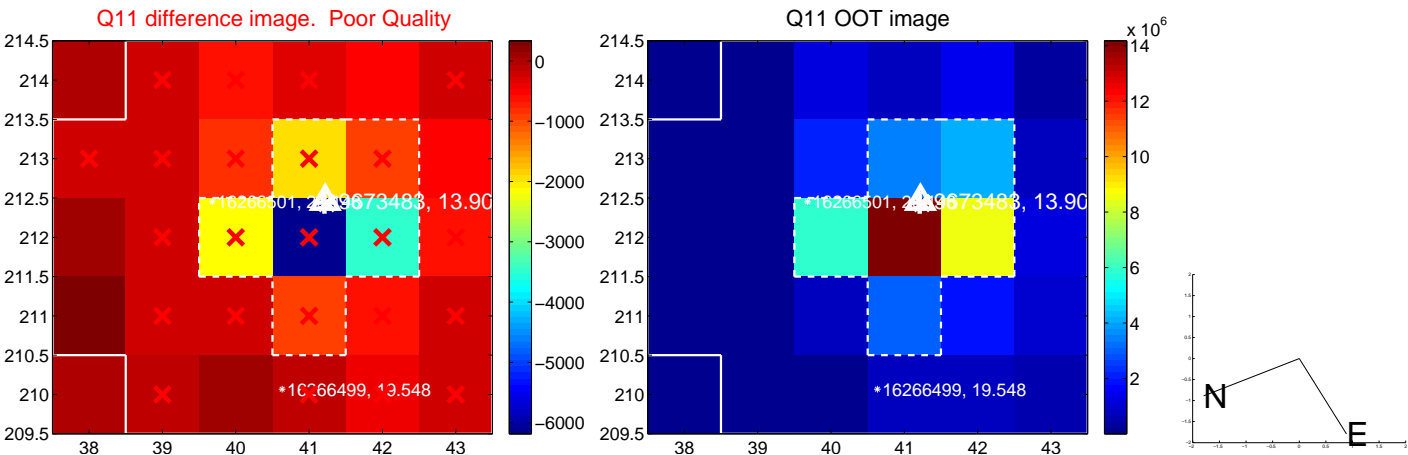
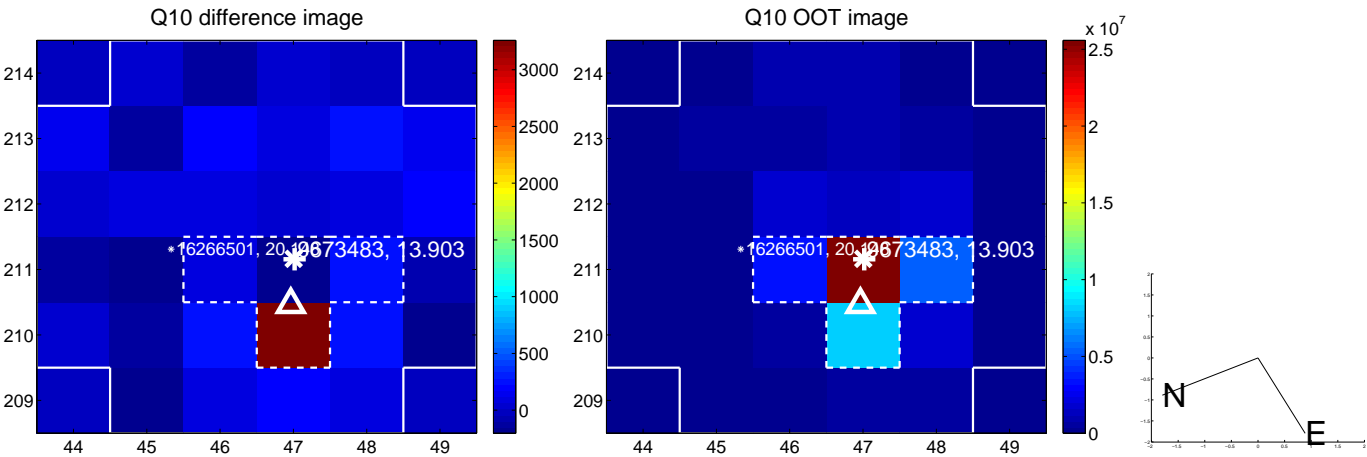
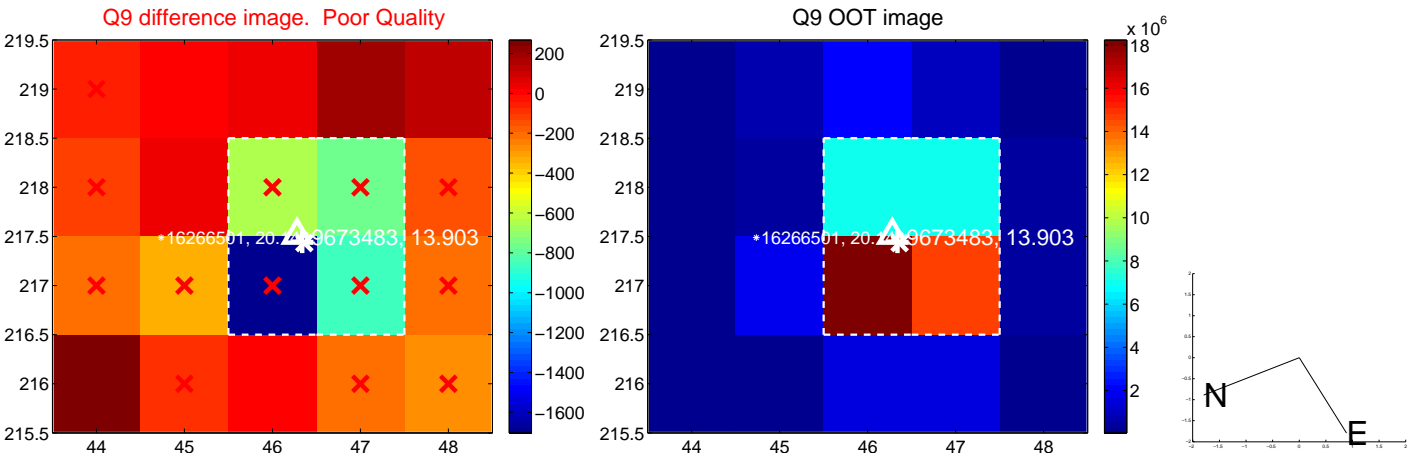
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



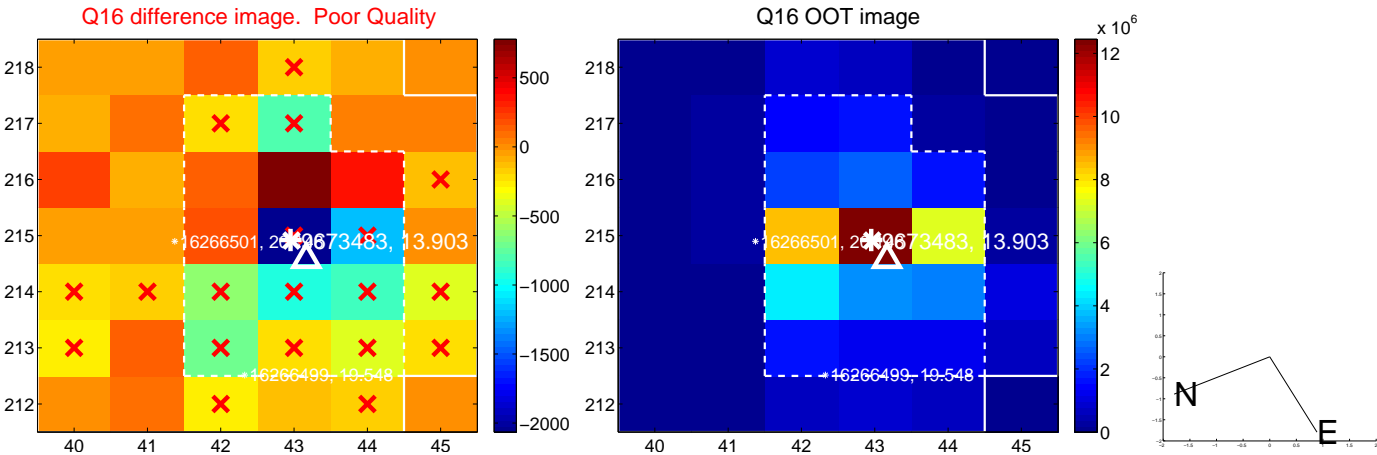
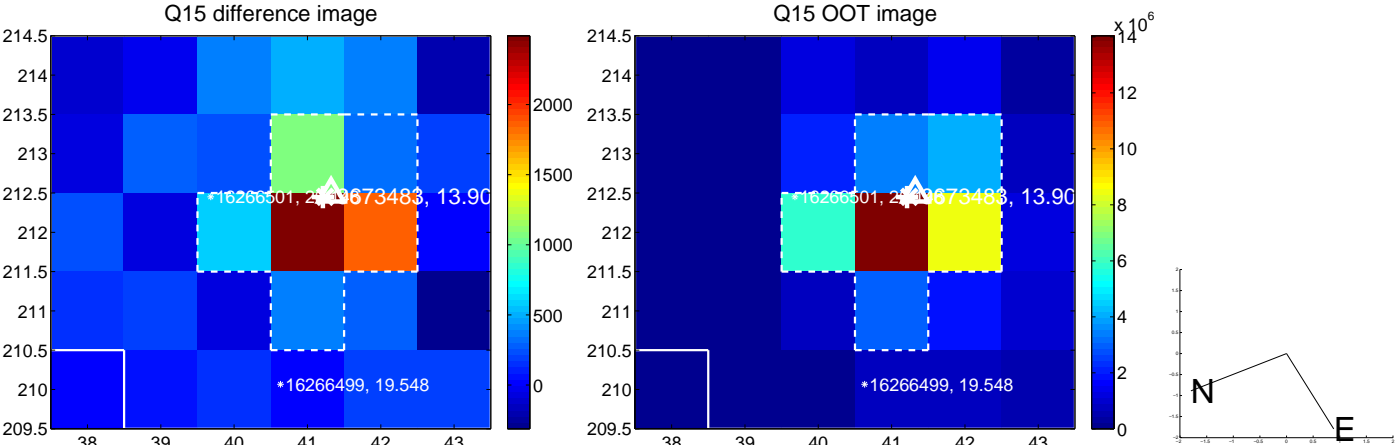
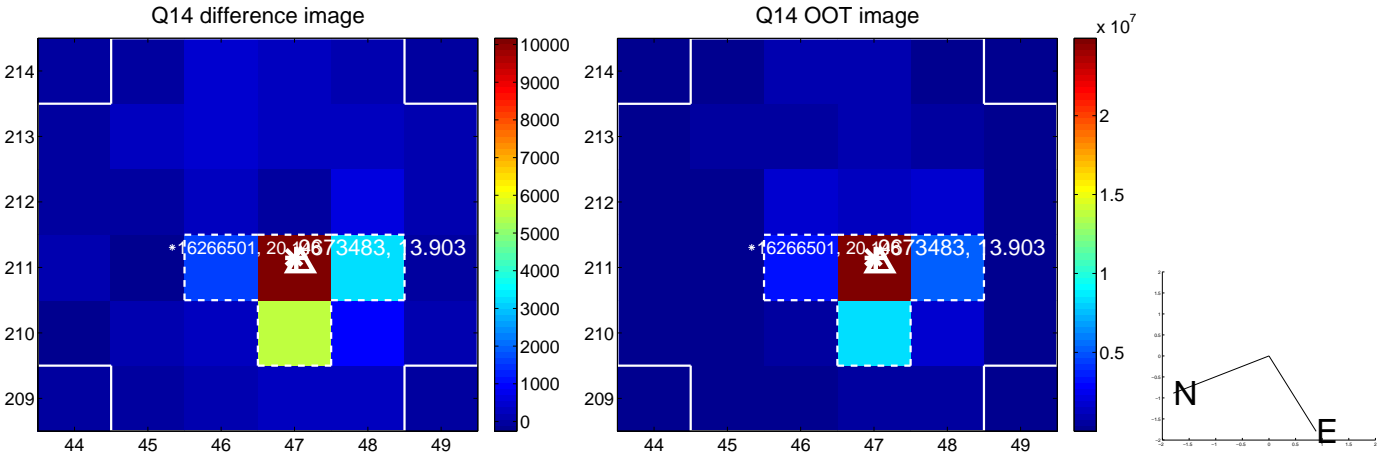
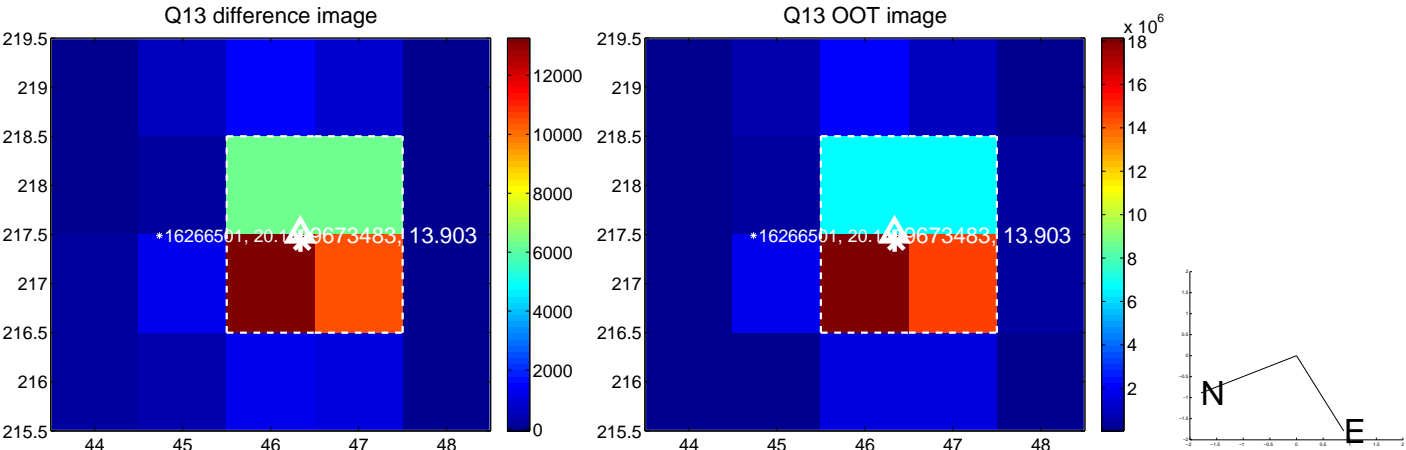
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



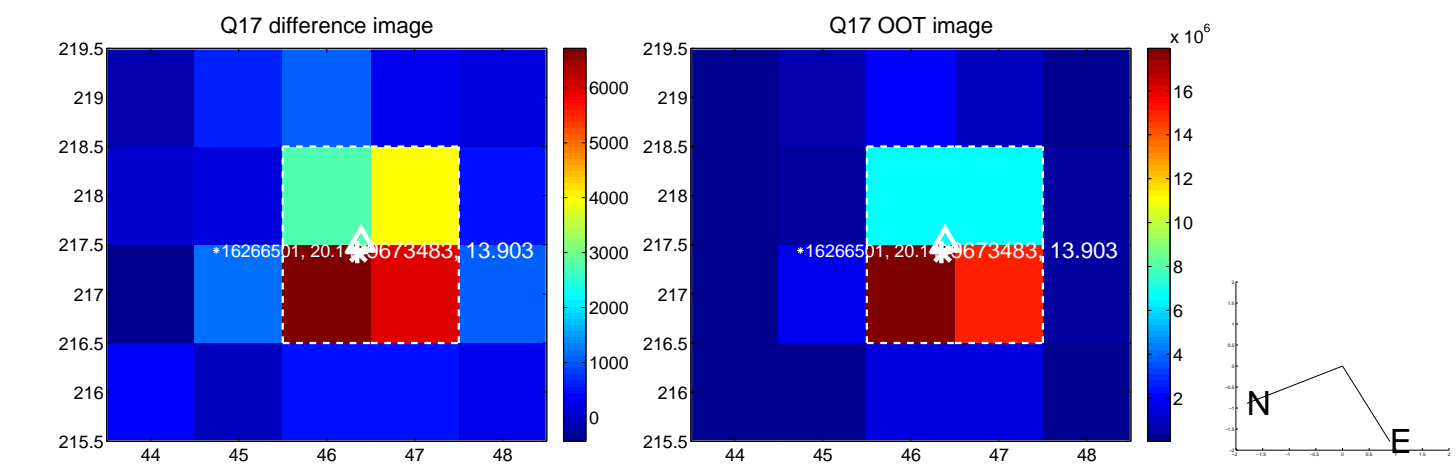
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



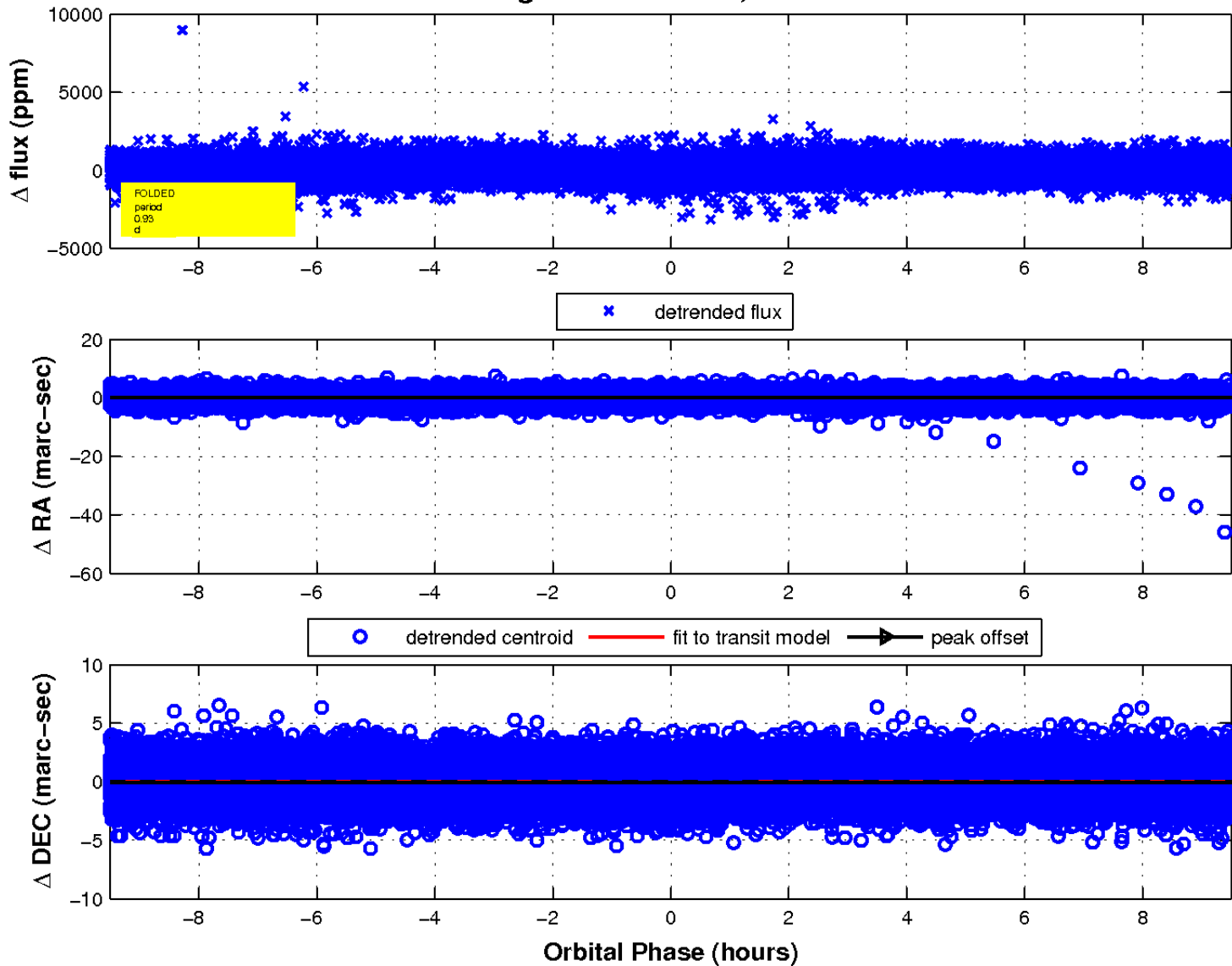
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



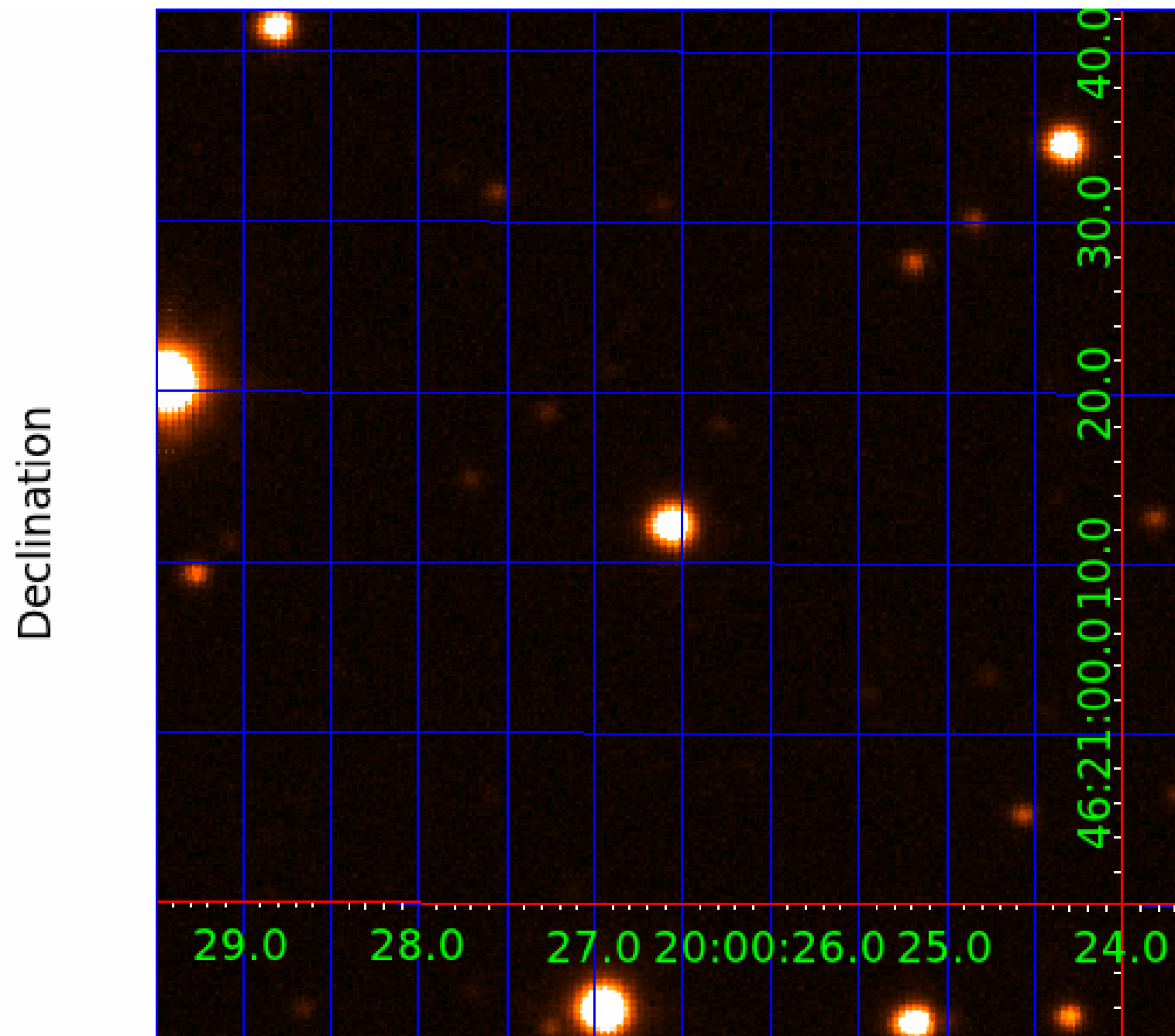
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 009673483

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})
009673483-01	OBS	No	0.930619	132.494908	44.3	3.430	9.9	6.3	1.17	6515	0.88	5712.26
009673483-02	OBS	No	0.930663	131.834999	81.8	3.170	11.1	12.7	1.17	6515	1.24	5711.90
009673483-03	OBS	No	296.886186	244.750877	837.9	5.261	11.3	10.6	1.17	6515	3.63	2.62
009673483-04	OBS	No	8.988526	135.584083	350.7	4.500	8.8	-1.0	1.17	6515	2.21	277.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009673483-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009673483-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009673483-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009673483-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

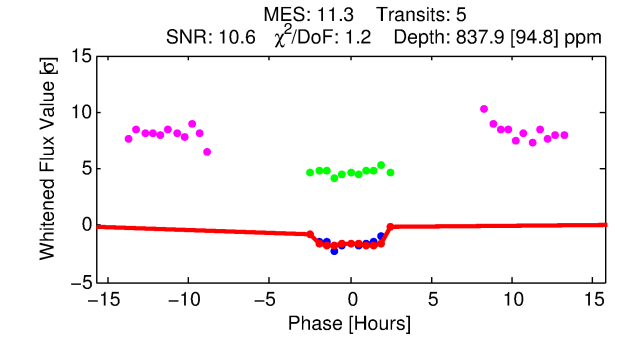
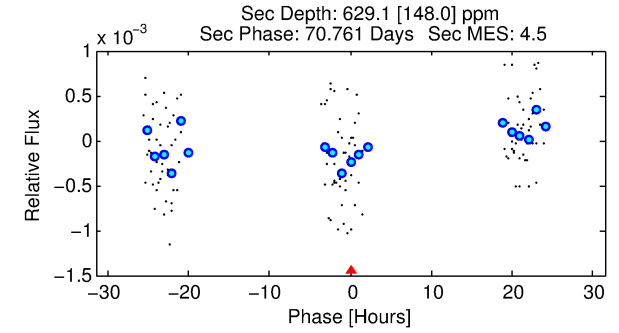
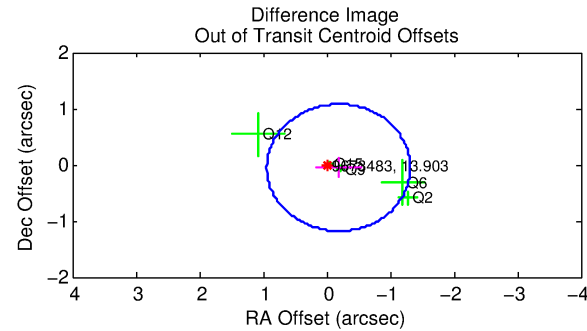
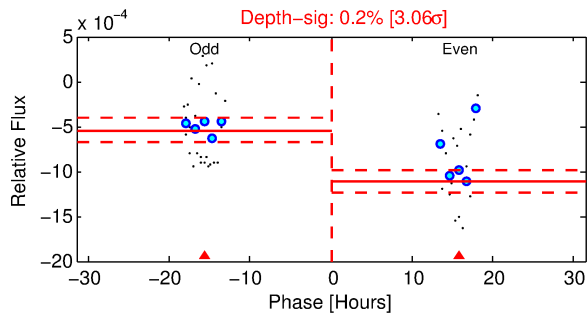
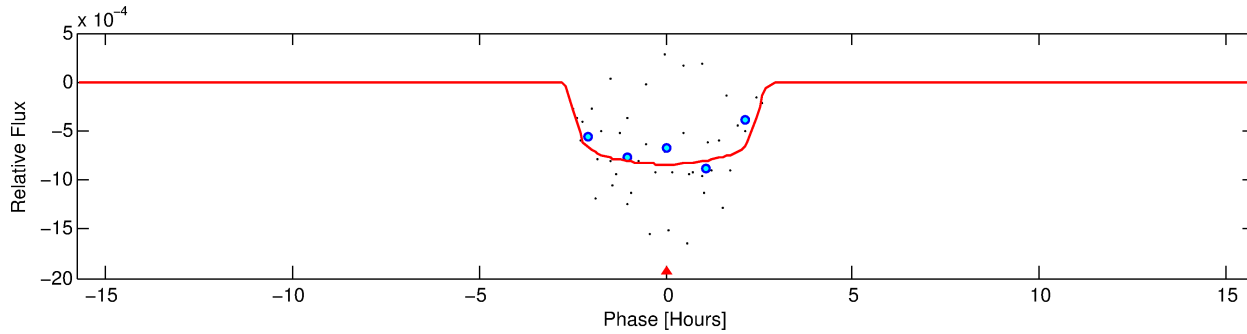
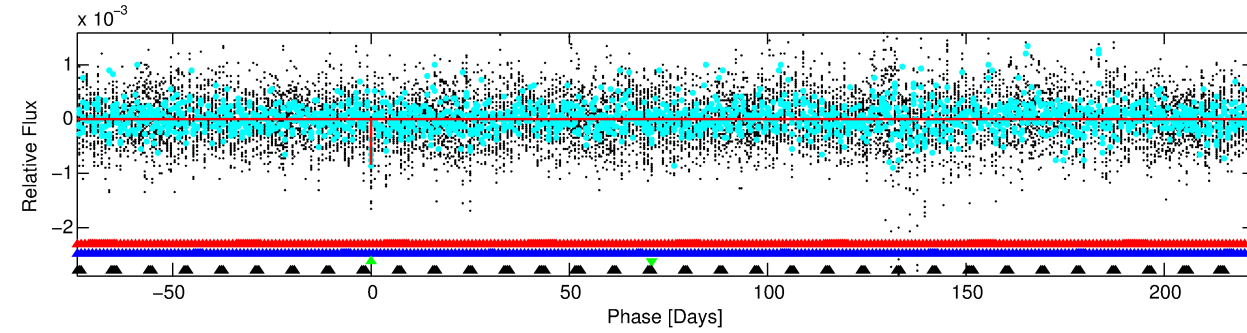
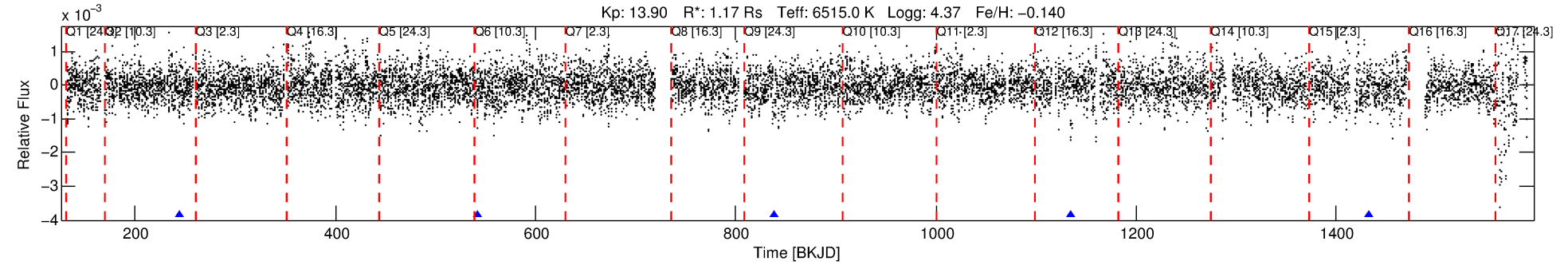
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009673483-03

No Significant Match Found

DV One-Page Summary

KIC: 9673483 Candidate: 3 of 4 Period: 296.886 d



DV Fit Results:

Period = 296.88619 [0.00565] d
Epoch = 244.7509 [0.0113] BKJD
Rp/R* = 0.0284 [0.0393]
a/R* = 323.68 [2437.00]
b = 0.70 [5.44]
Seff = 2.62 [1.09]
Teq = 324 [34] K
Rp = 3.63 [5.18] Re
a = 0.9198 [0.2586] AU
Ag = 22176.63 [62205.22] [0.36σ]
Teffp = 6121 [4254] K [1.36σ]

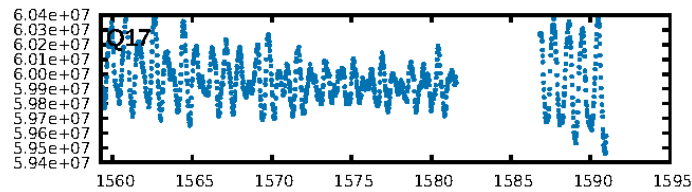
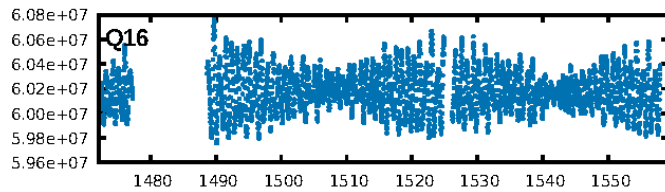
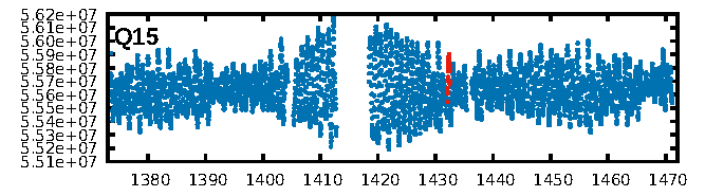
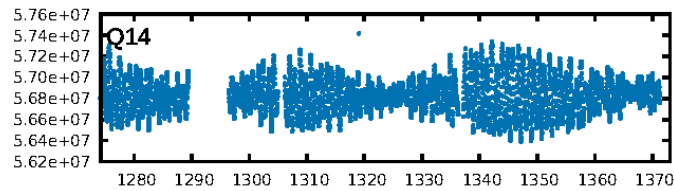
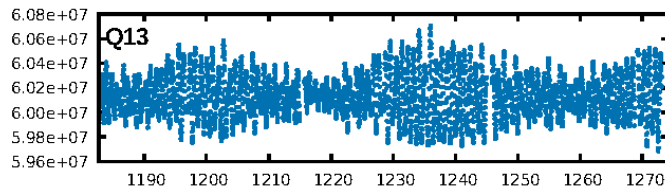
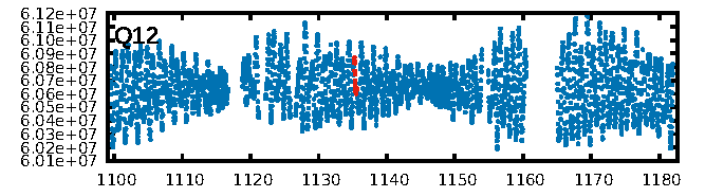
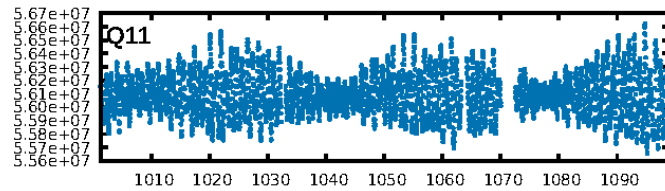
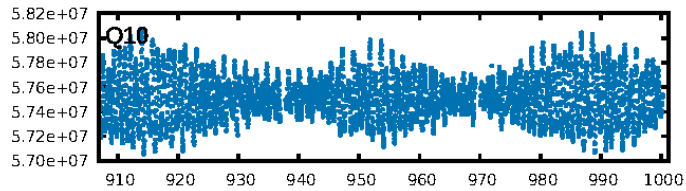
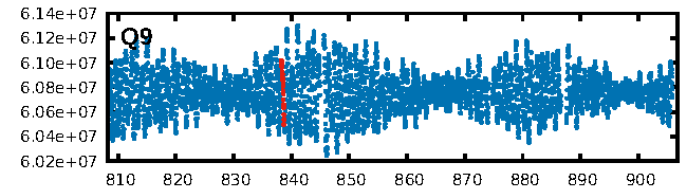
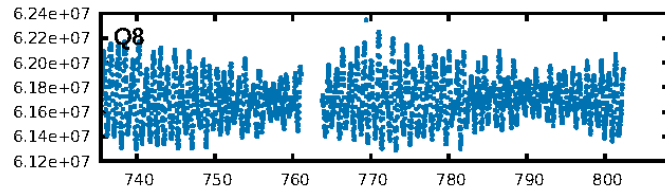
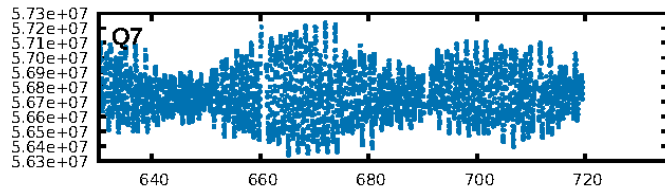
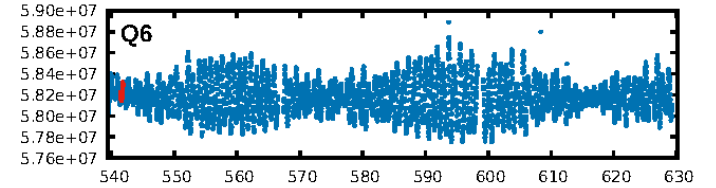
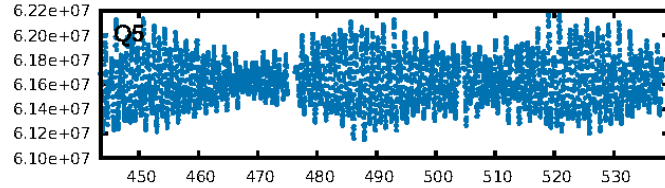
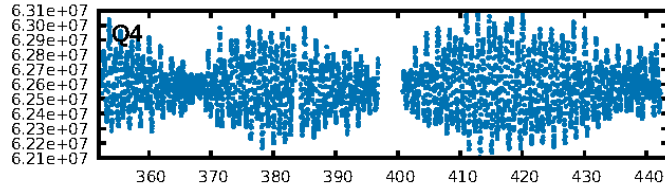
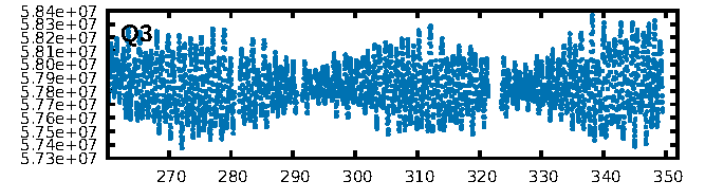
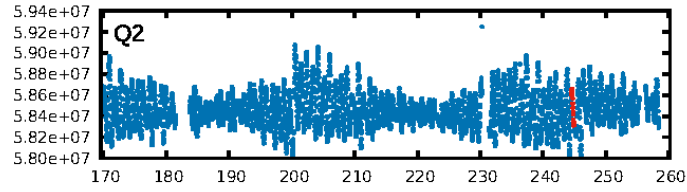
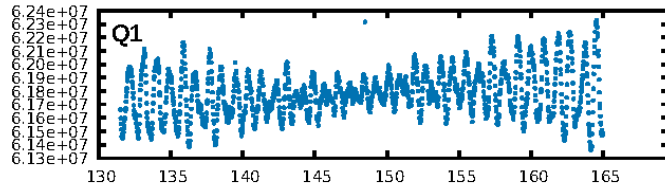
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [998.08σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 97.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 2.336
Centroid-sig: 24.0%
Centroid-so: 0.376 arcsec [0.49σ]
OotOffset-rm: 0.195 arcsec [0.52σ]
KicOffset-rm: 0.245 arcsec [0.97σ]
OotOffset-st: 2/1/1/1 [5]
KicOffset-st: 2/1/1/1 [5]
DiffImageQuality-fgm: 0.20 [1/5]
DiffImageOverlap-fno: 0.00 [0/5]

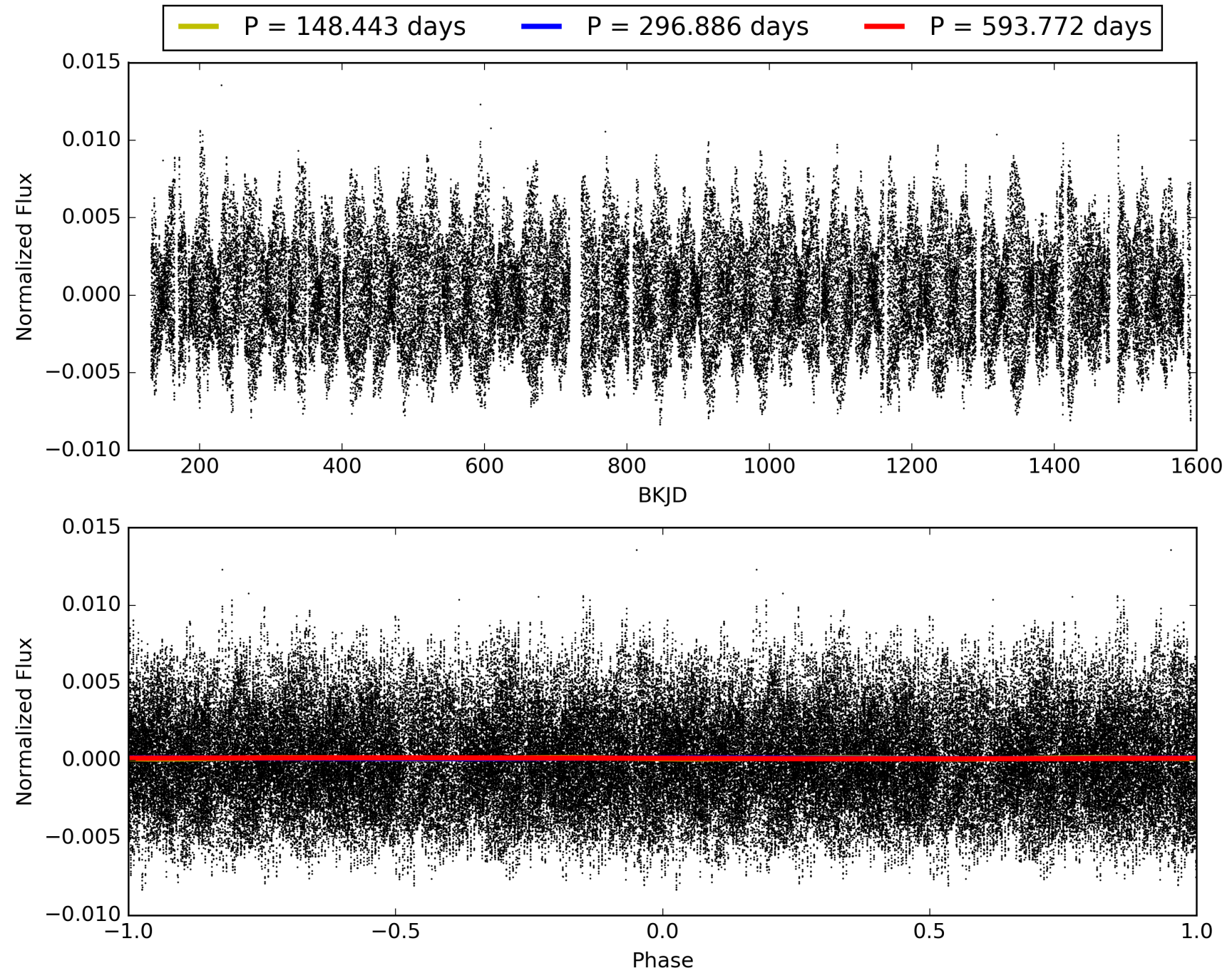
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:18:27 Z

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

TCE 009673483-03, PDC Light Curves

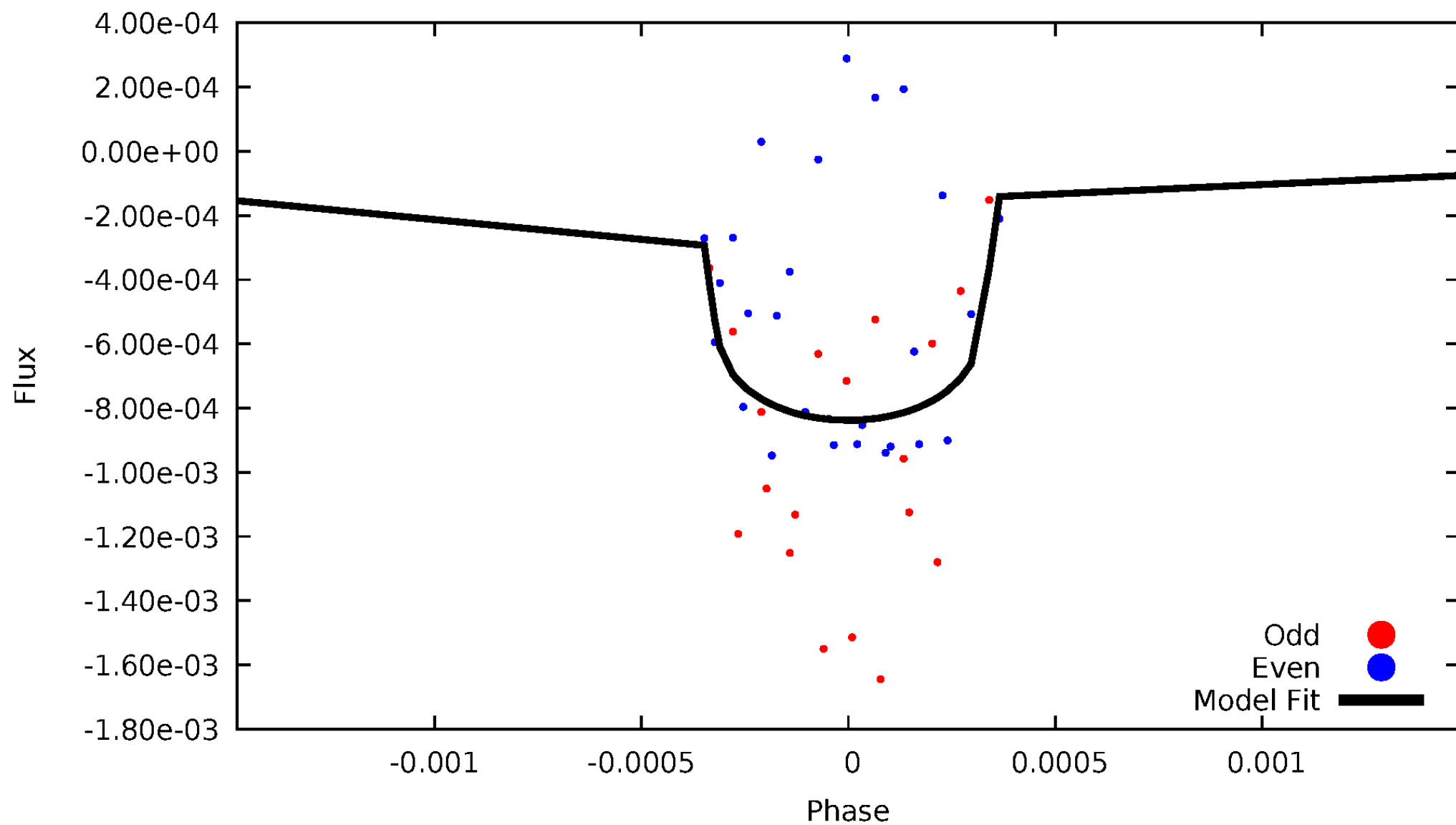


TCE 009673483-03



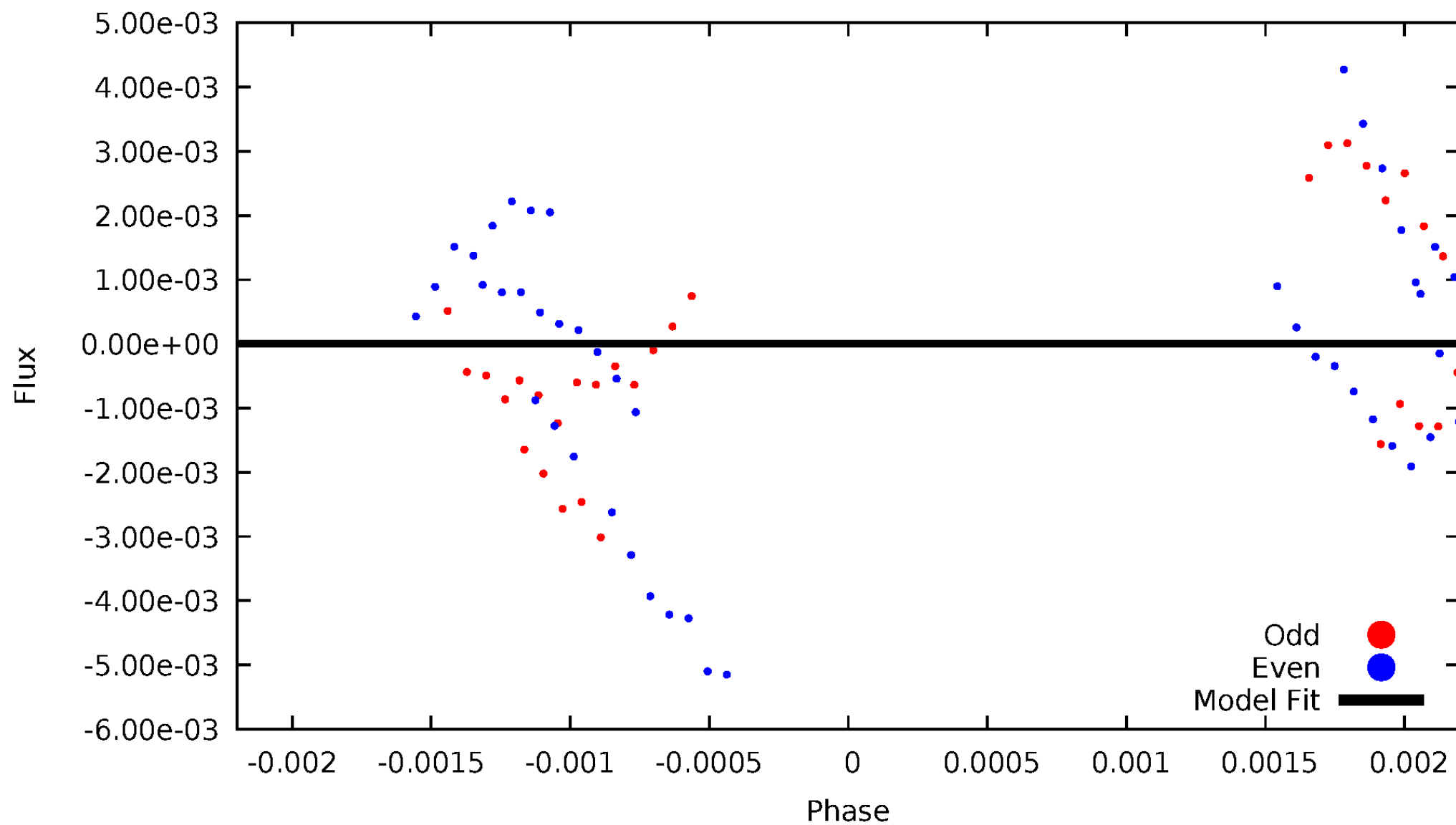
DV Odd/Even

TCE 009673483-03



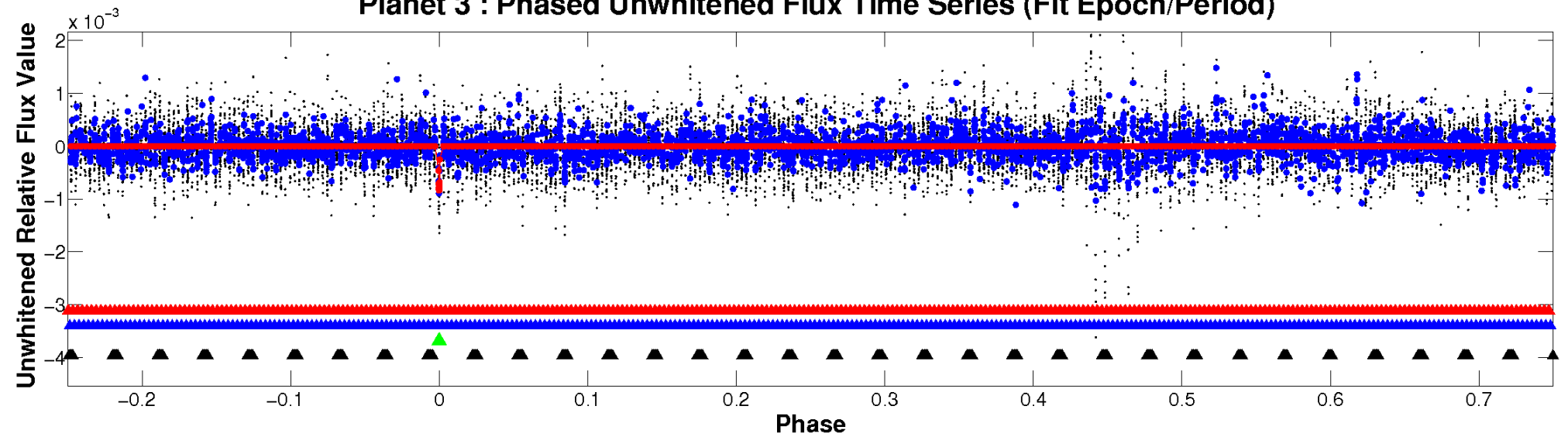
ALT Odd/Even

TCE 009673483-03

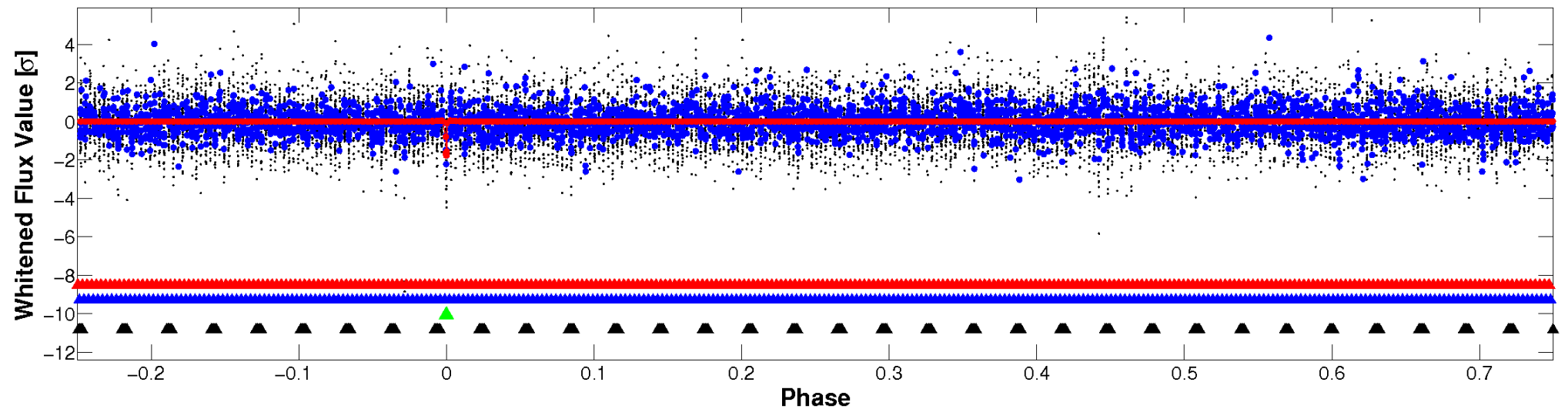


Non-Whitened Vs. Whitened Light Curve

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

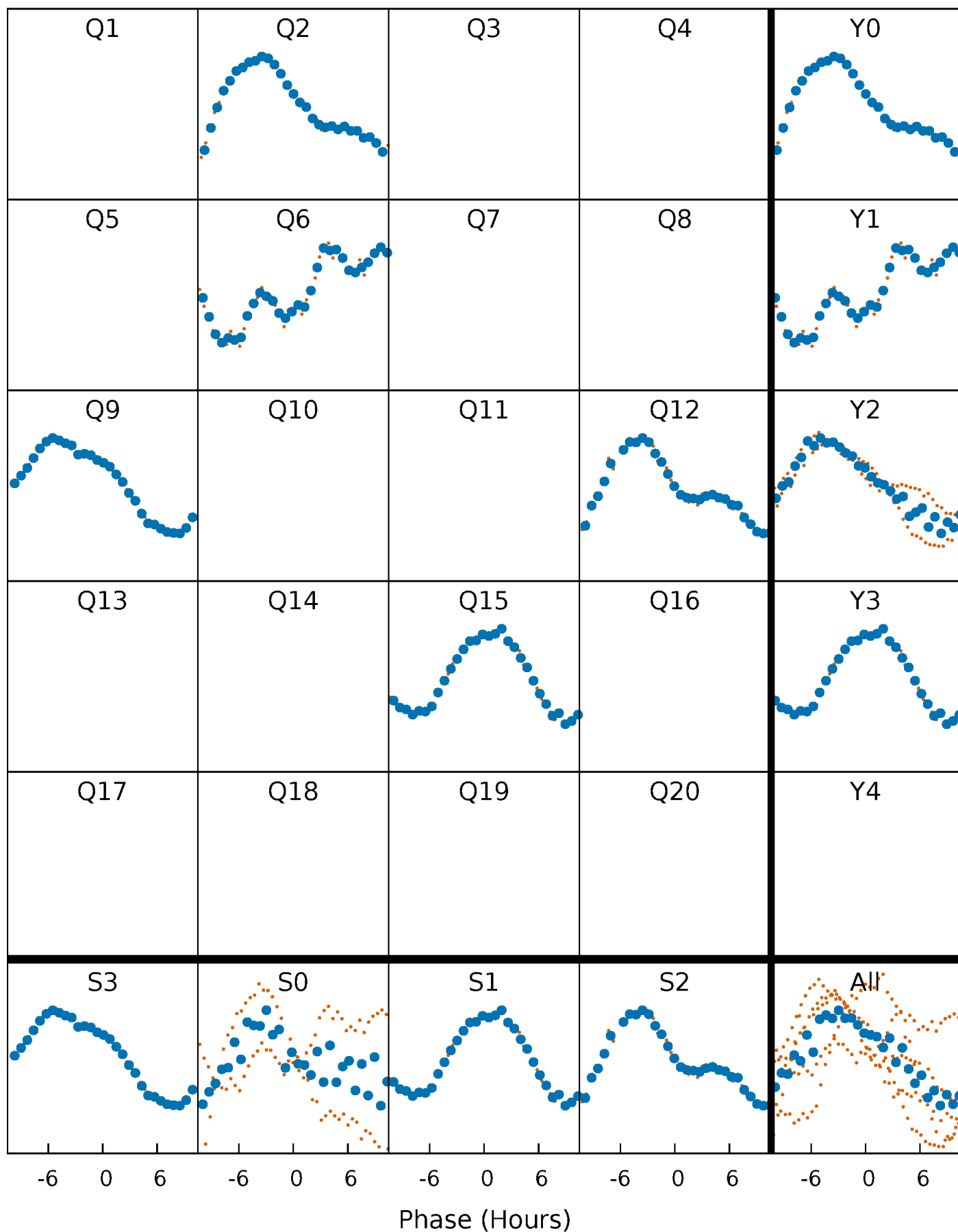


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



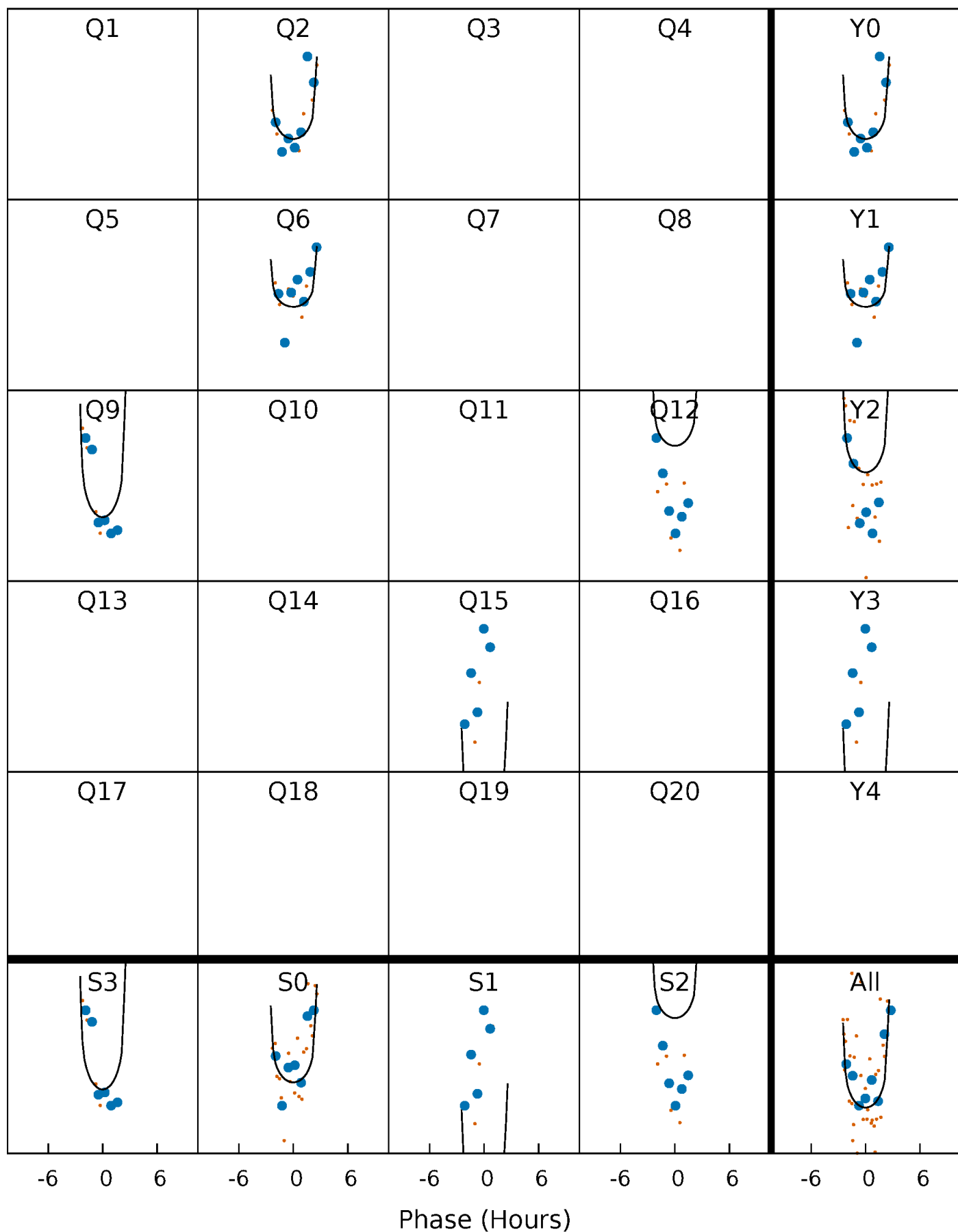
PDC Quarter-Phased Transit Curves

TCE 009673483-03 $P=296.886186$ Days $T_0=244.750877$ (BKJD)



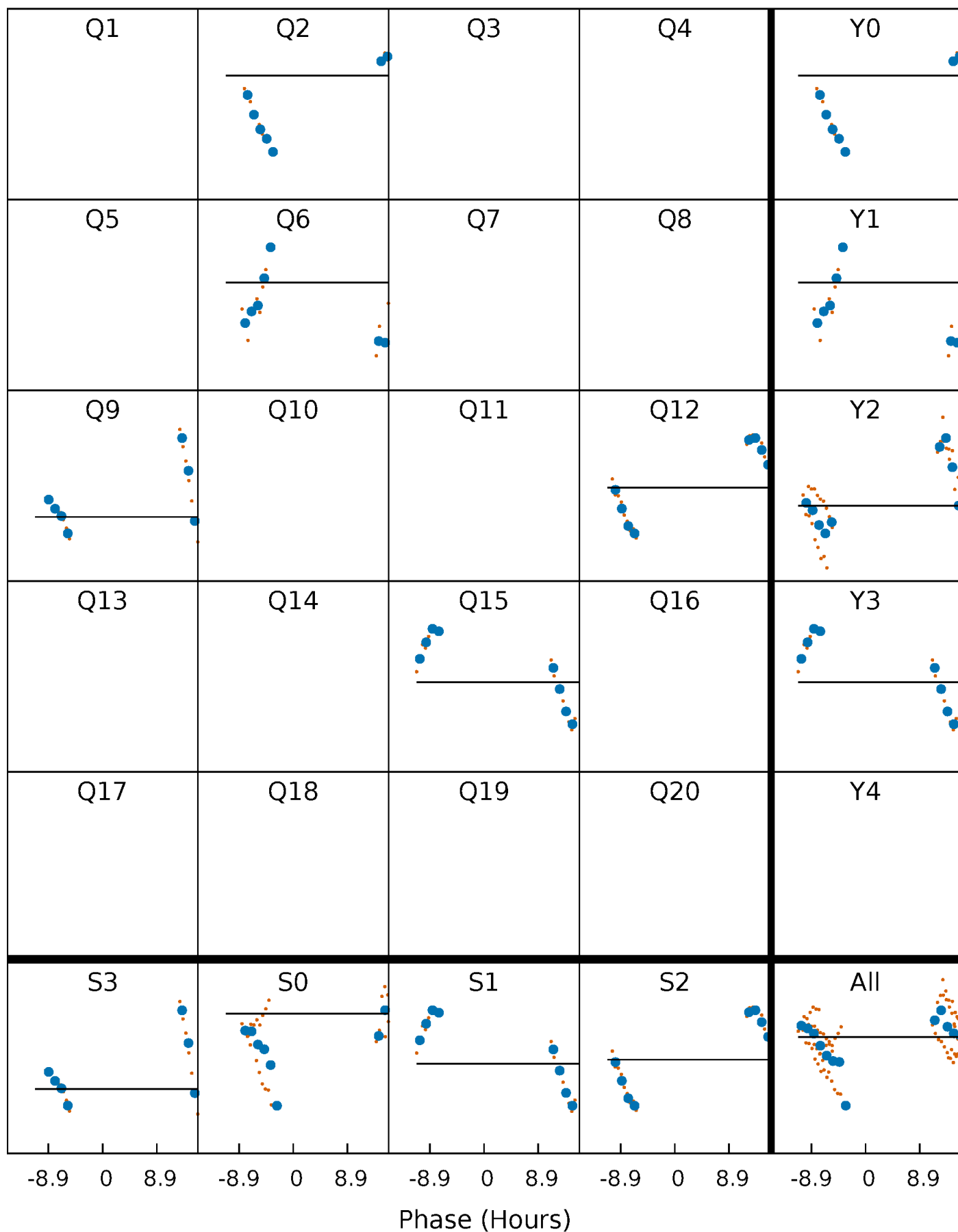
DV Quarter-Phased Transit Curves

TCE 009673483-03 $P=296.886186$ Days $T_0=244.750877$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

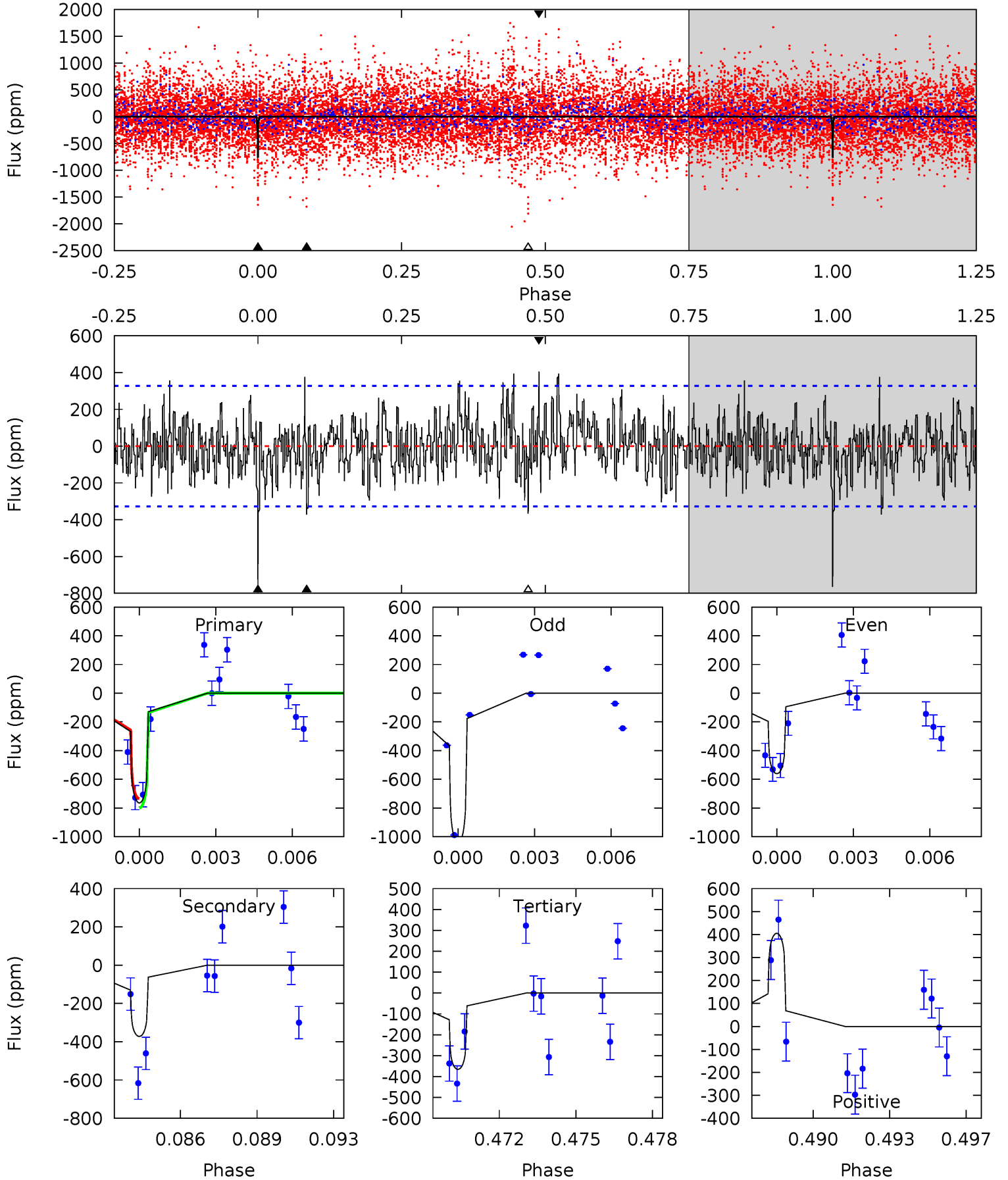
TCE 009673483-03 P=296.916173 Days $T_0=244.989073$ (BKJD)



DV Model-Shift Uniqueness Test

009673483-03, P = 296.886186 Days, E = 244.750877 Days

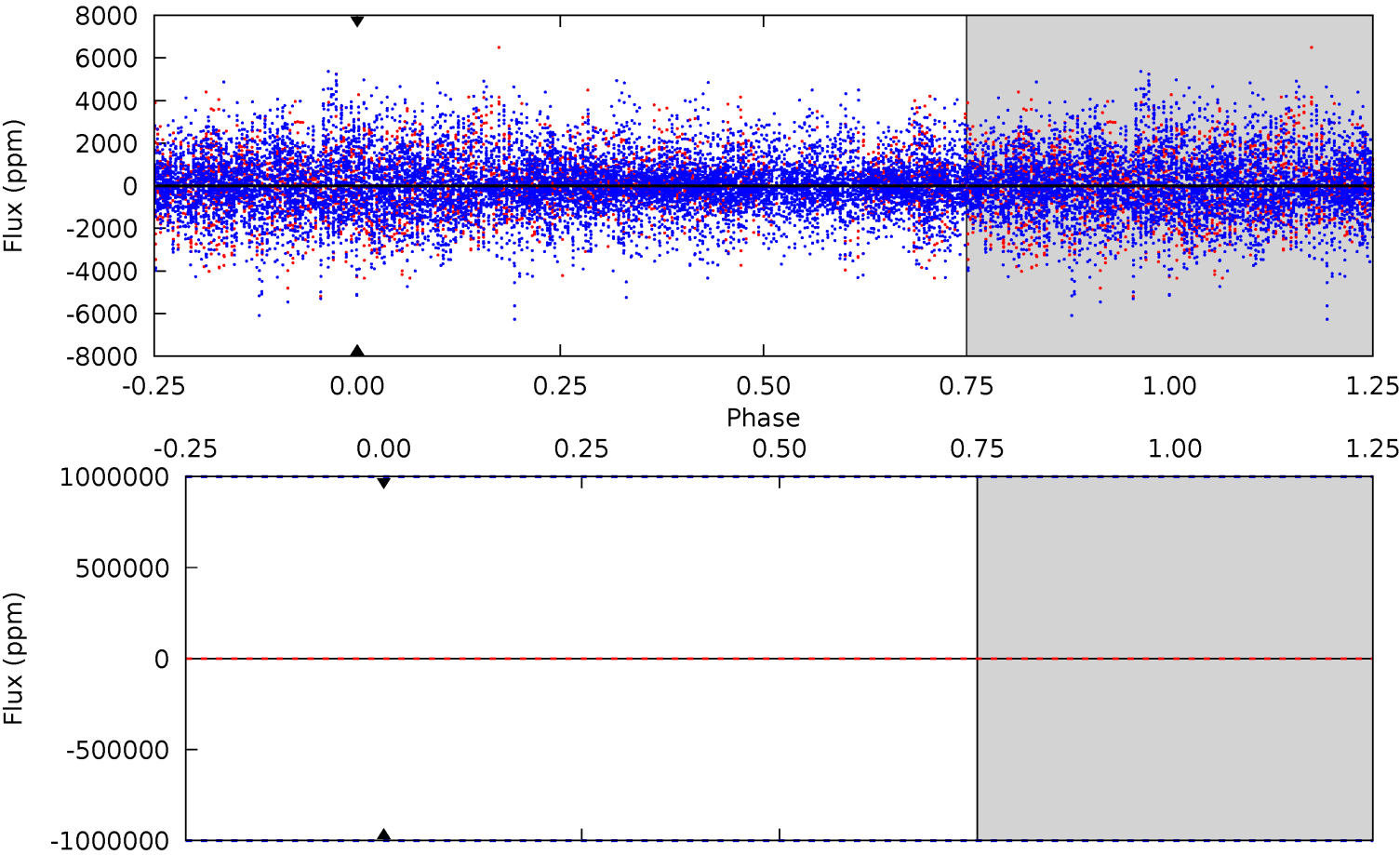
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	5.96	5.85	6.49	5.25	2.96	1.95	6.39	5.75	0.11	-0.53	3.78	0.95	0.35	0.52



Alt Model-Shift Uniqueness Test

009673483-03, P = 296.916173 Days, E = 244.989073 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Stellar Parameters For KIC 009673483

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6515^{+155}_{-213}	$4.371^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.172^{+0.405}_{-0.135}$	$1.180^{+0.173}_{-0.156}$	$1.033^{+0.312}_{-0.571}$
	+2%/-3%	+2%/-5%	+179%/-214%	+35%/-12%	+15%/-13%	+30%/-55%
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 009673483-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-372 ± 62	$5.43^{+4.56}_{-3.40}$	459^{+36}_{-23}	4632^{+2710}_{-939}	5778^{+34659}_{-4121}
Alt.	0 ± 1000000	$9.73^{+4.98}_{-4.83}$	461^{+33}_{-22}	5440^{+20176}_{-29380}	$10513^{+707386}_{-637222}$

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

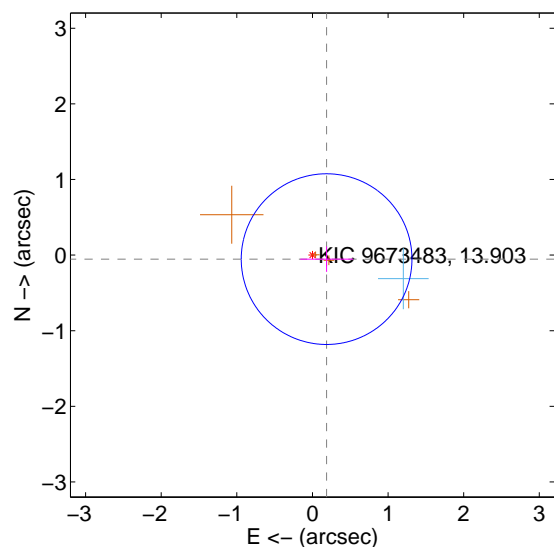
Supplemental centroid analysis for 009673483-03. Kepler magnitude: 13.90. Transit SNR 10.56

There are 1 quarters with good PRF difference image offsets

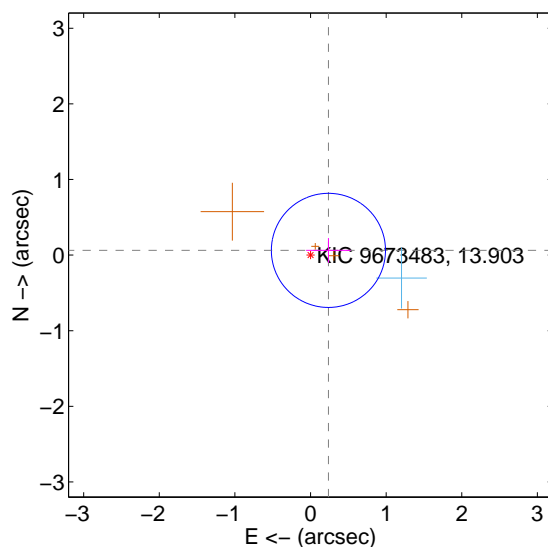
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.195 ± 0.376	0.52	-0.187 ± 0.349	-0.053 ± 0.168
PRF-fit source offset from KIC position	0.245 ± 0.252	0.97	-0.237 ± 0.294	0.062 ± 0.163
photometric centroid source offset	0.38 ± 0.76	0.49	-0.27 ± 0.79	0.27 ± 0.74

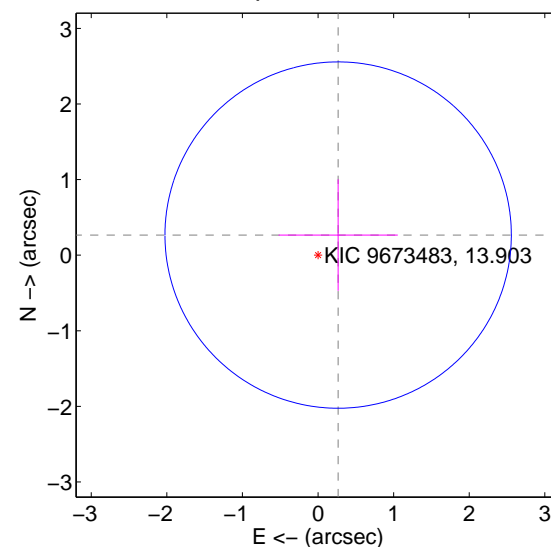
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

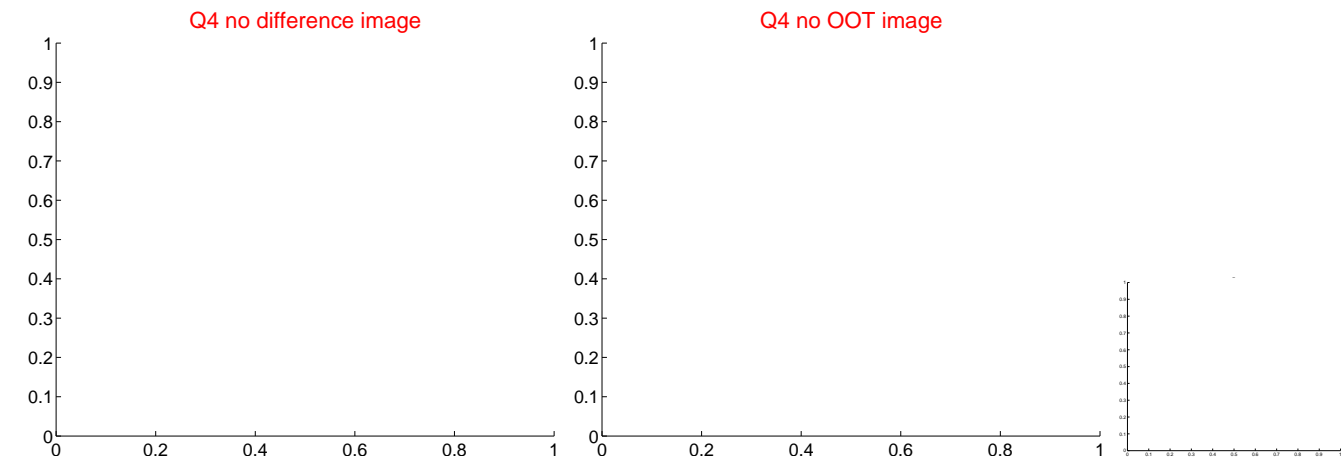
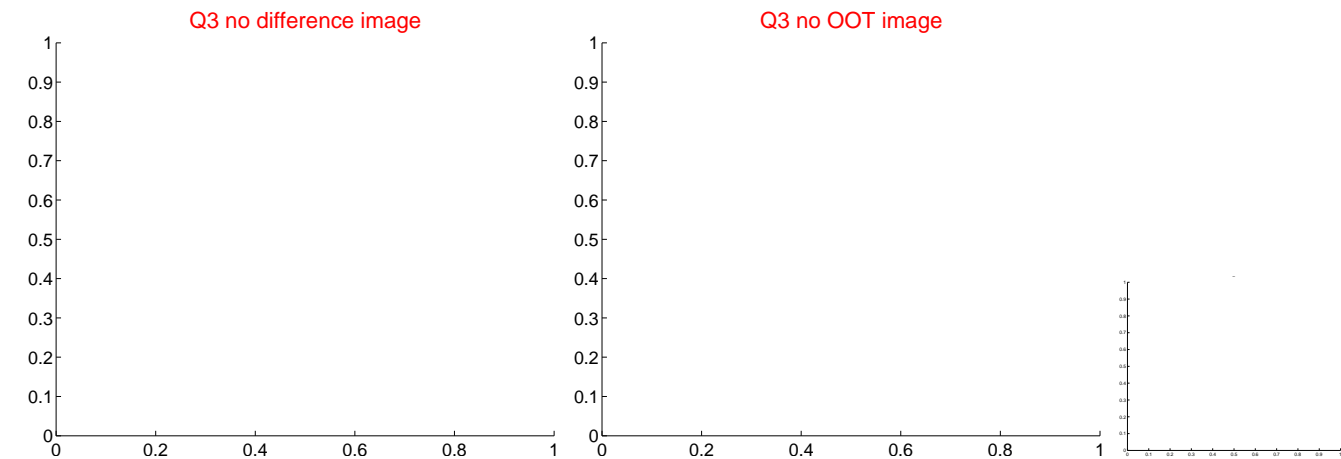
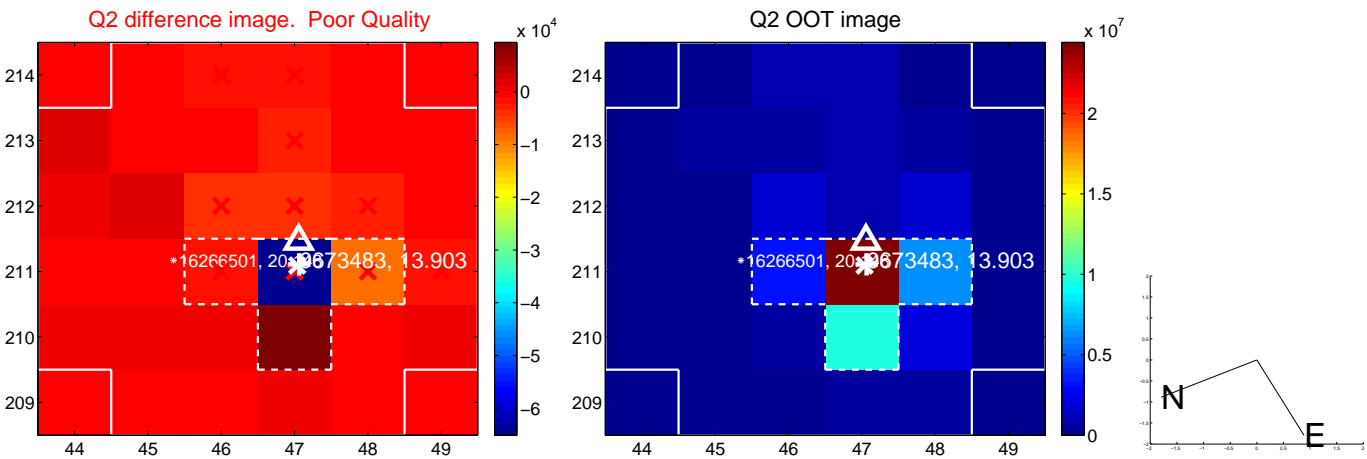


offset from photometric centroids

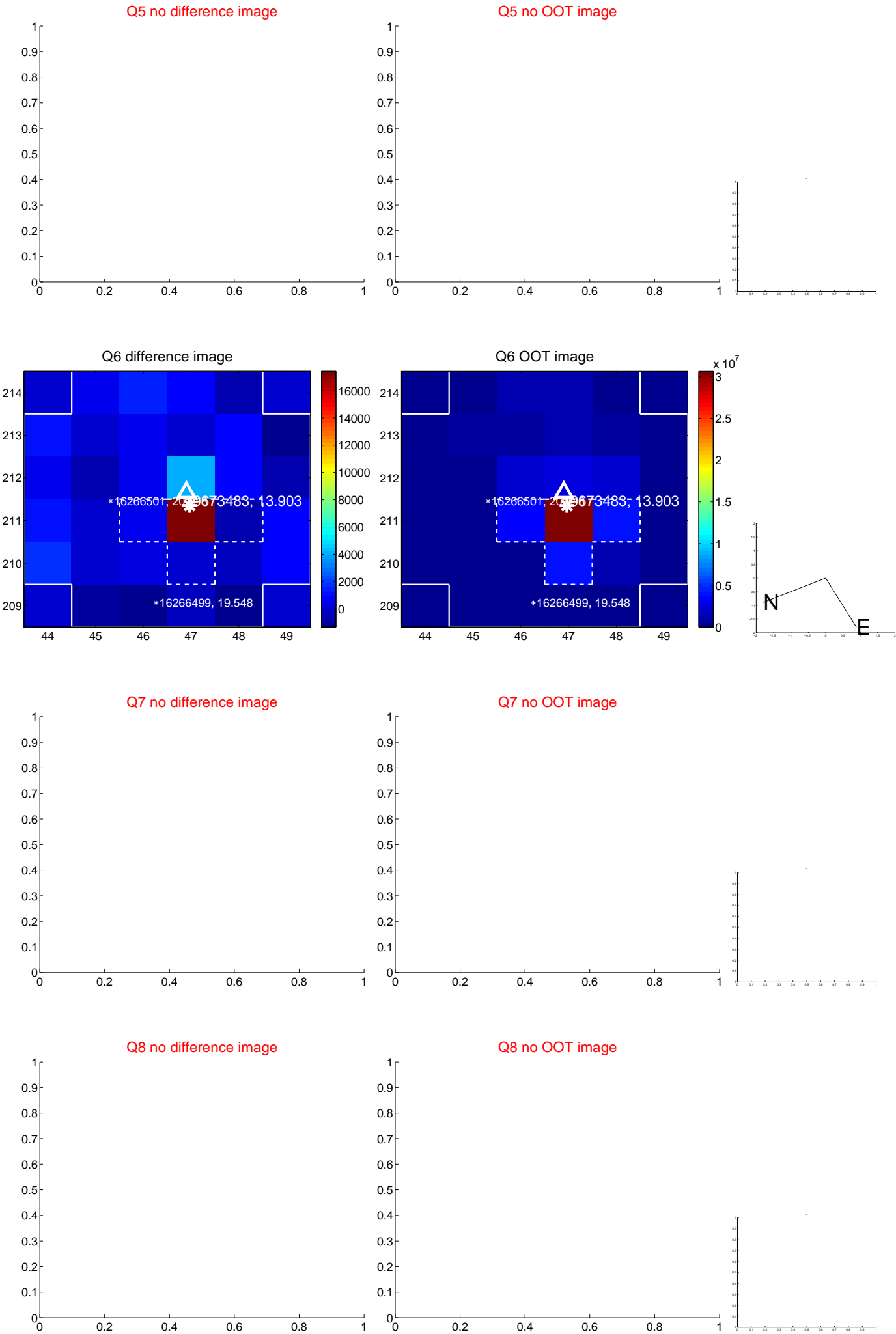


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

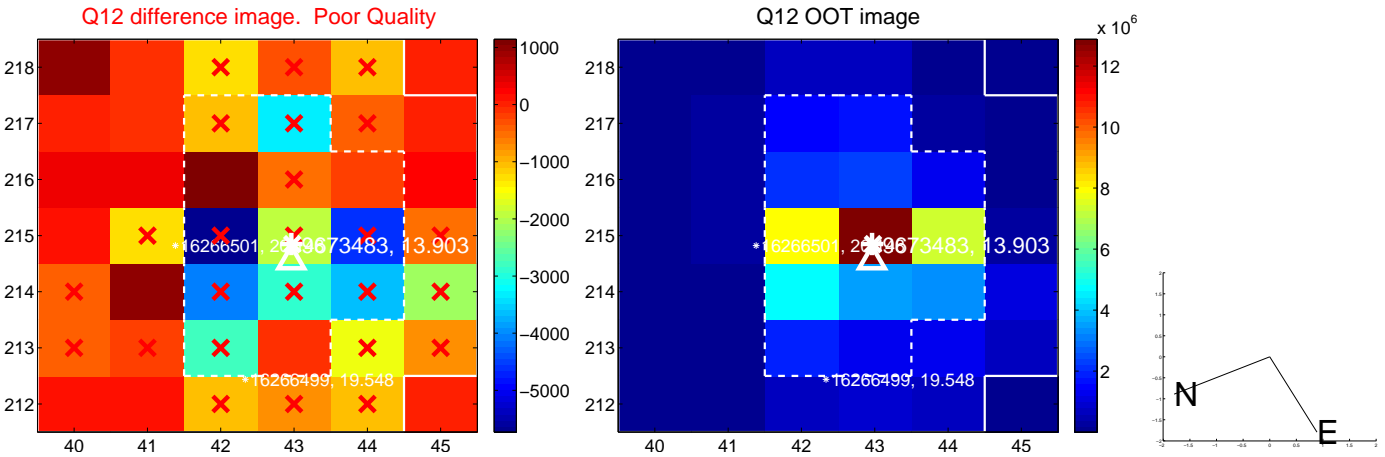
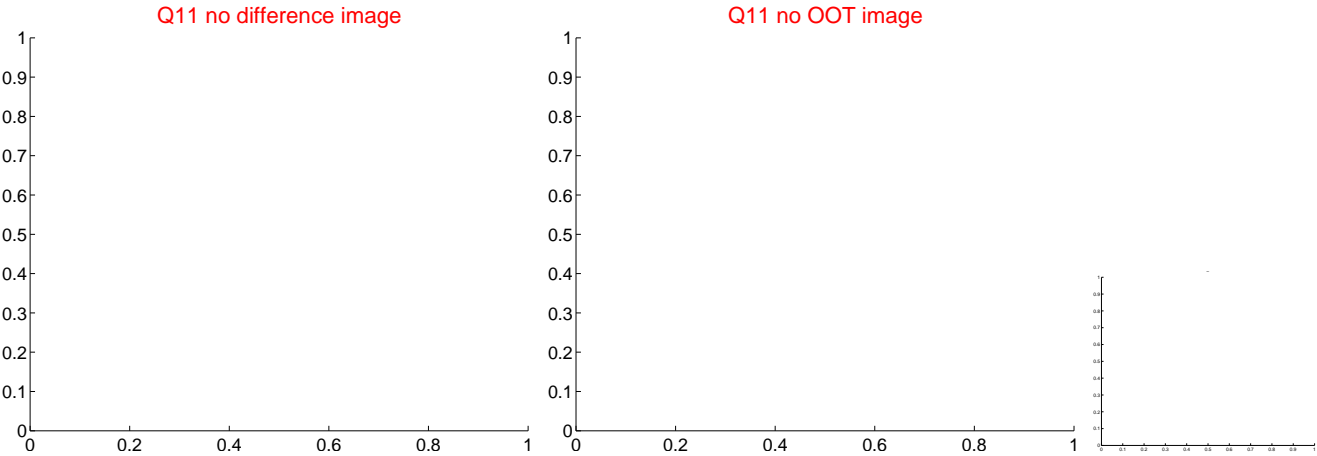
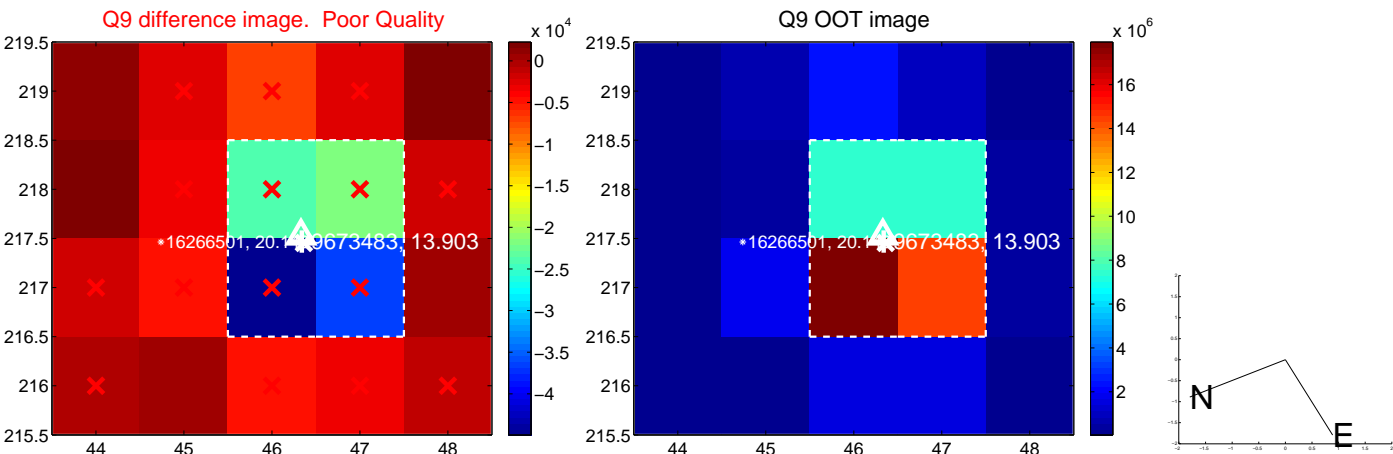
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



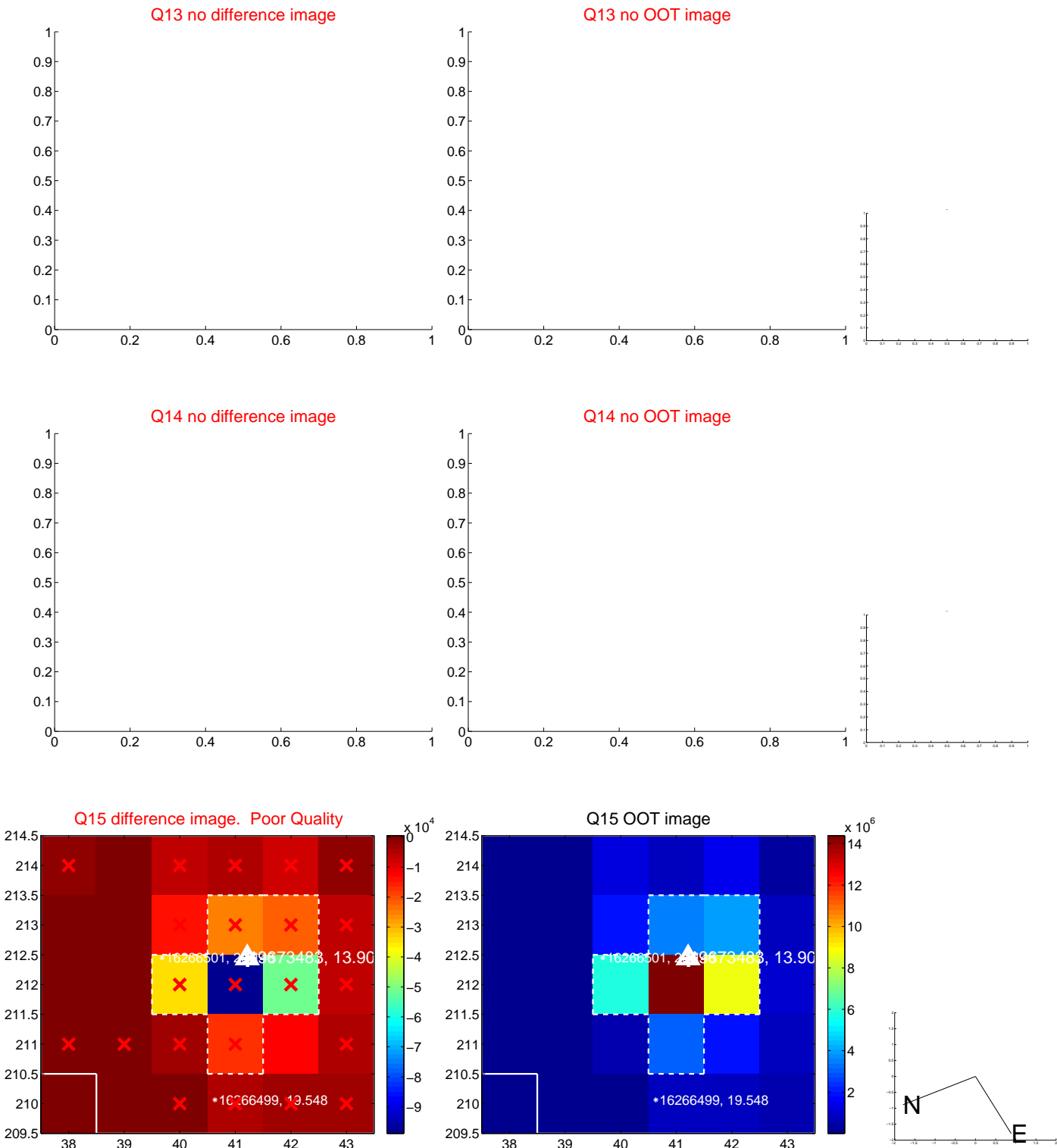
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



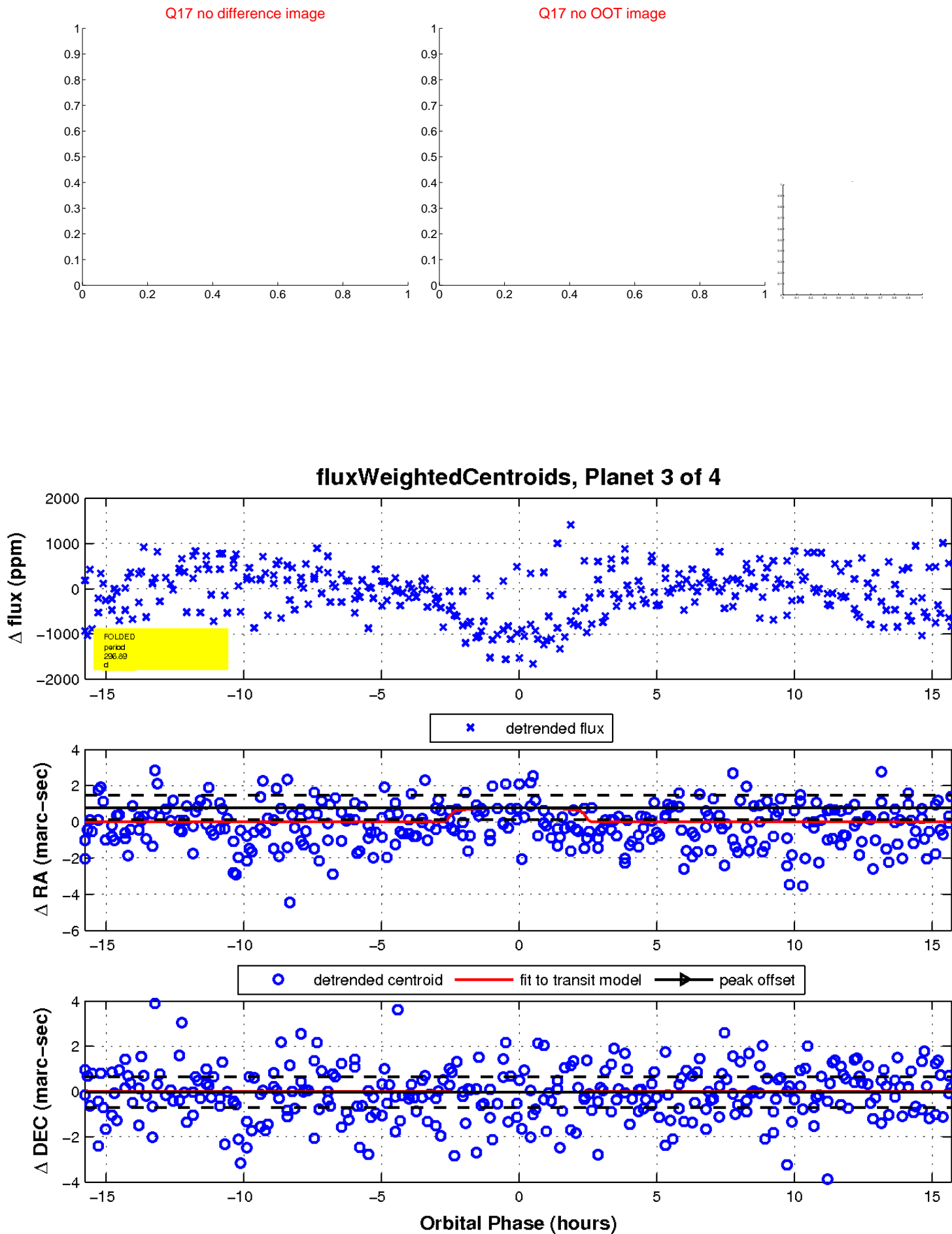
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



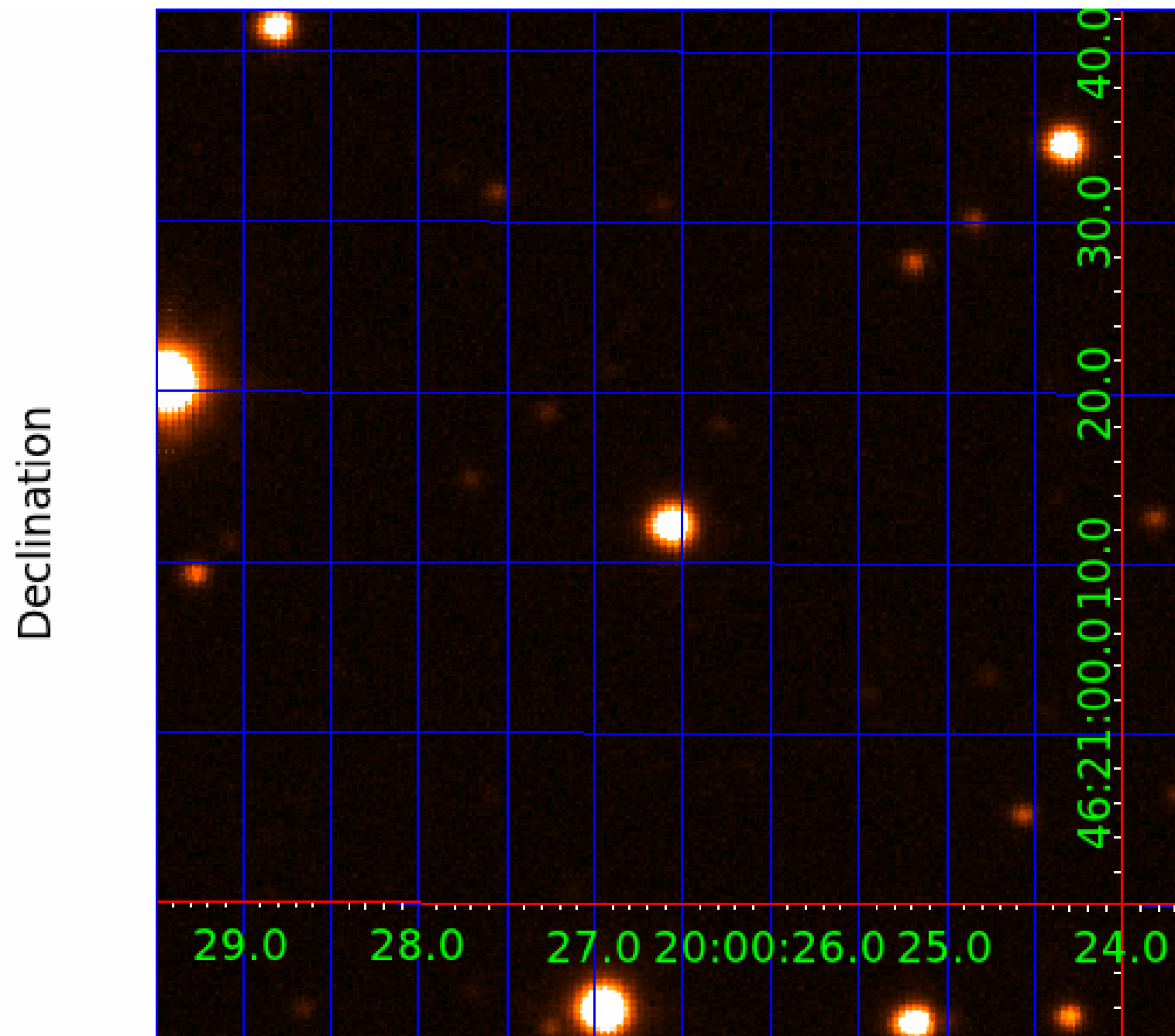
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009673483

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})
009673483-01	OBS	No	0.930619	132.494908	44.3	3.430	9.9	6.3	1.17	6515	0.88	5712.26
009673483-02	OBS	No	0.930663	131.834999	81.8	3.170	11.1	12.7	1.17	6515	1.24	5711.90
009673483-03	OBS	No	296.886186	244.750877	837.9	5.261	11.3	10.6	1.17	6515	3.63	2.62
009673483-04	OBS	No	8.988526	135.584083	350.7	4.500	8.8	-1.0	1.17	6515	2.21	277.71

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009673483-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009673483-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
009673483-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009673483-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

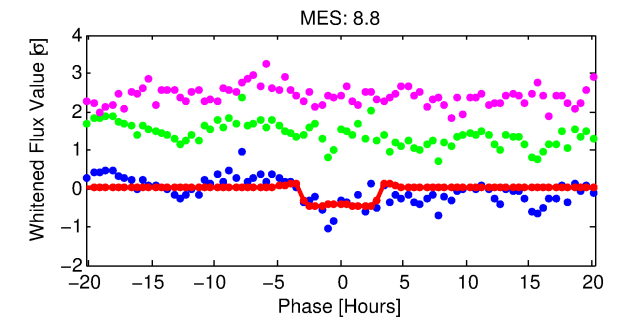
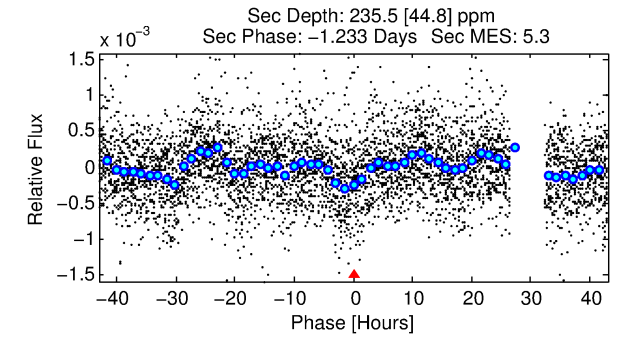
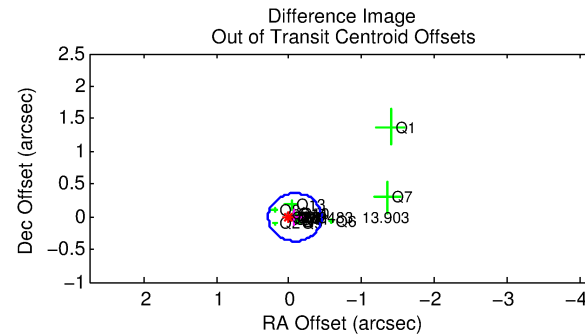
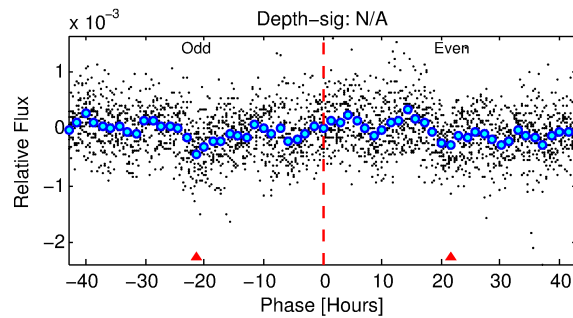
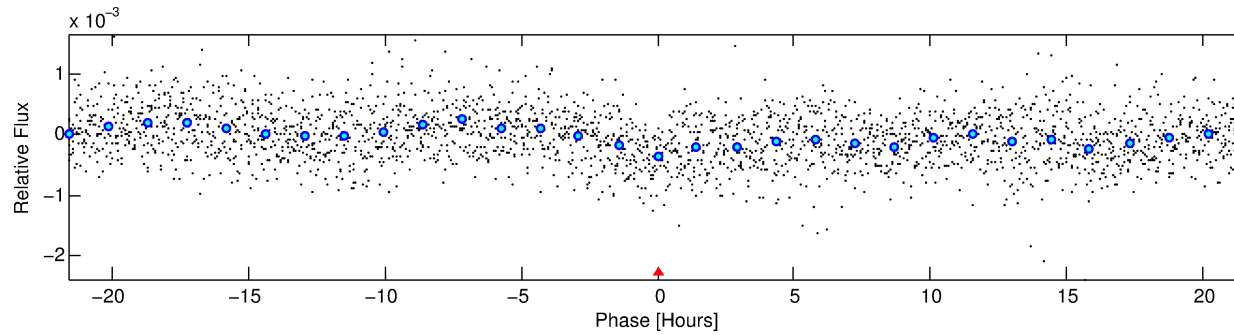
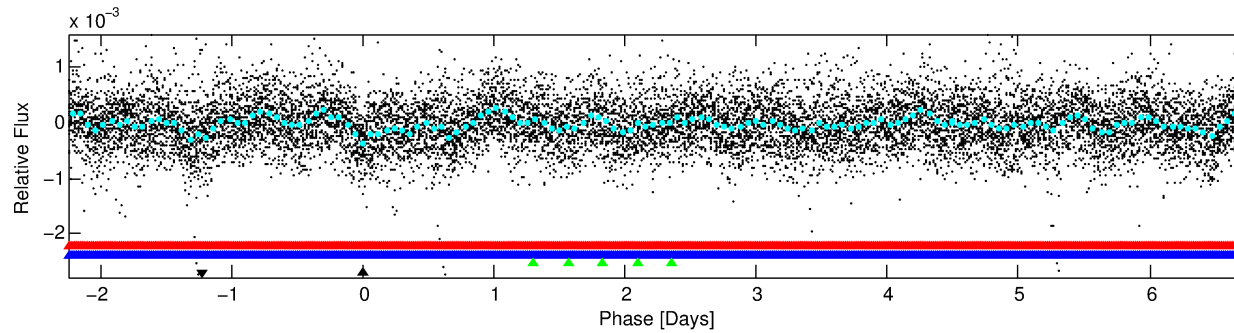
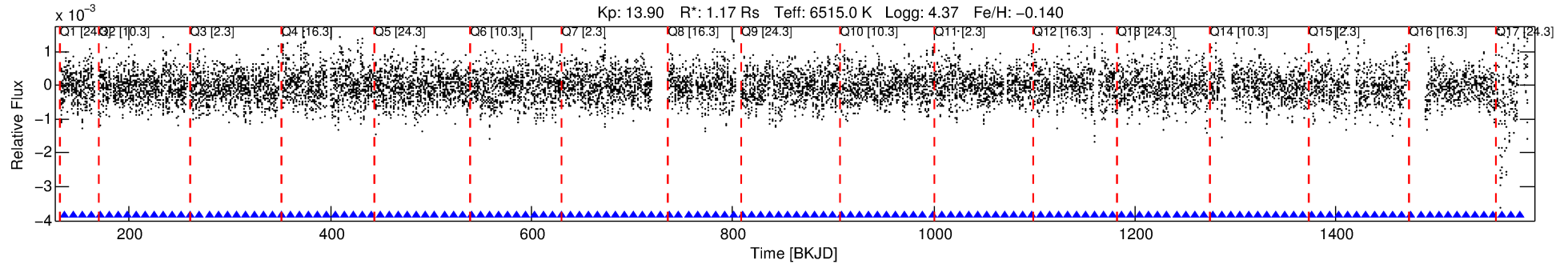
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009673483-04

No Significant Match Found

DV One-Page Summary

KIC: 9673483 Candidate: 4 of 4 Period: 8.989 d



TPS TCE Results:

Period = 8.98853 d
Epoch = 135.5841 BKJD

DV fit results are unavailable

DV Diagnostic Results:

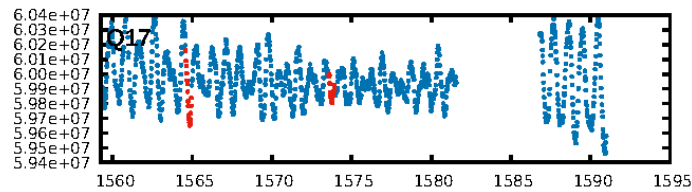
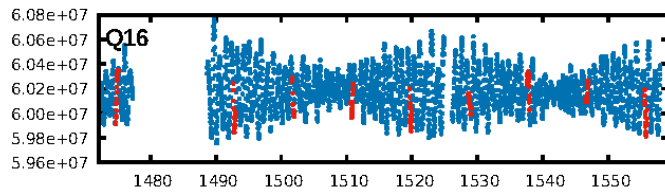
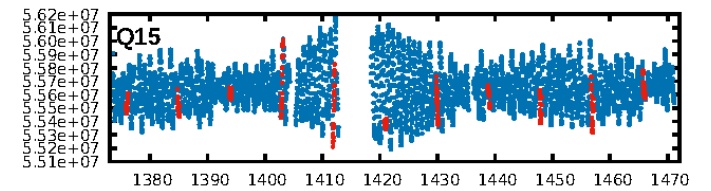
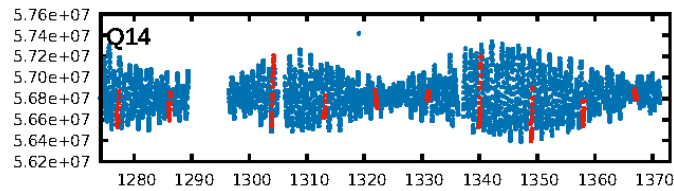
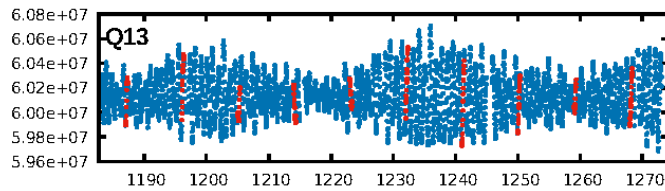
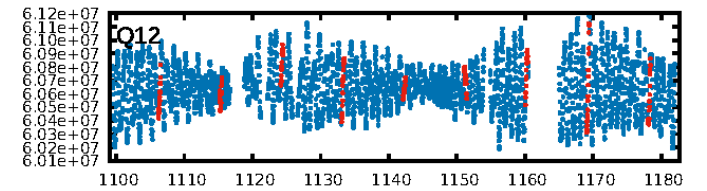
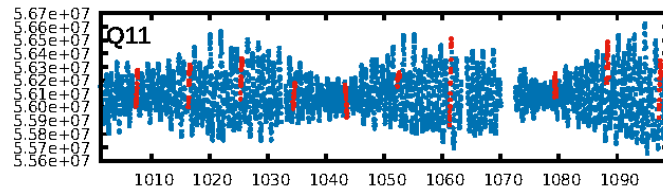
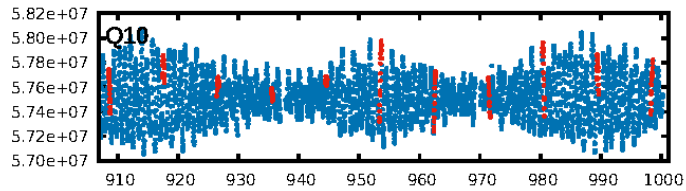
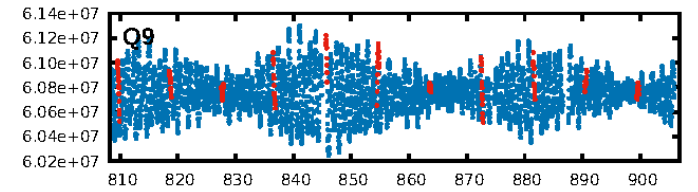
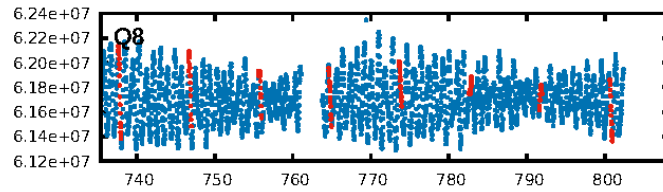
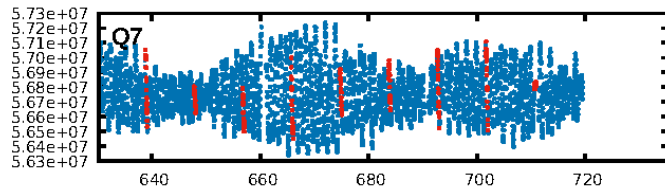
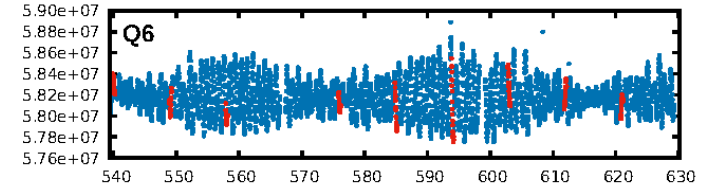
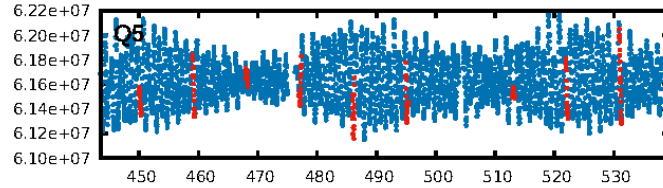
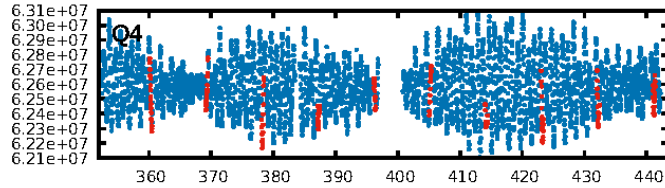
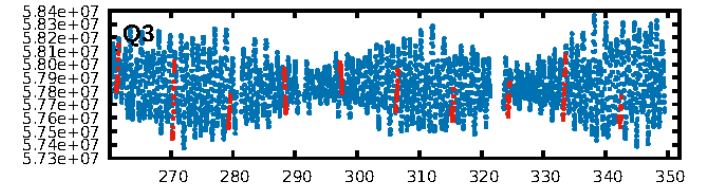
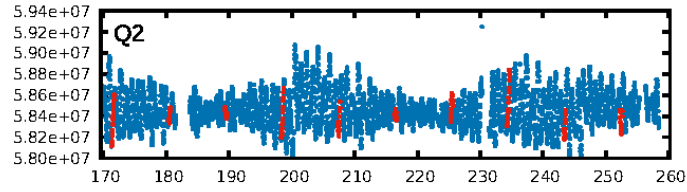
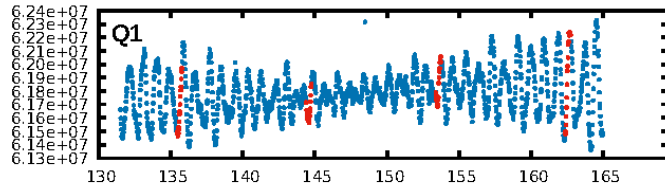
ShortPeriod-sig: 100.0% [35.13σ]
LongPeriod-sig: 100.0% [998.08σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [79/79]
GhostDiagnostic-chr: 0.5064

Centroid-sig: 17.4%
Centroid-so: 0.869 arcsec [5.34σ]
OotOffset-rm: 0.080 arcsec [0.66σ]
KicOffset-rm: 0.070 arcsec [0.50σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.69 [11/16]
DiffImageOverlap-fno: 0.00 [0/17]

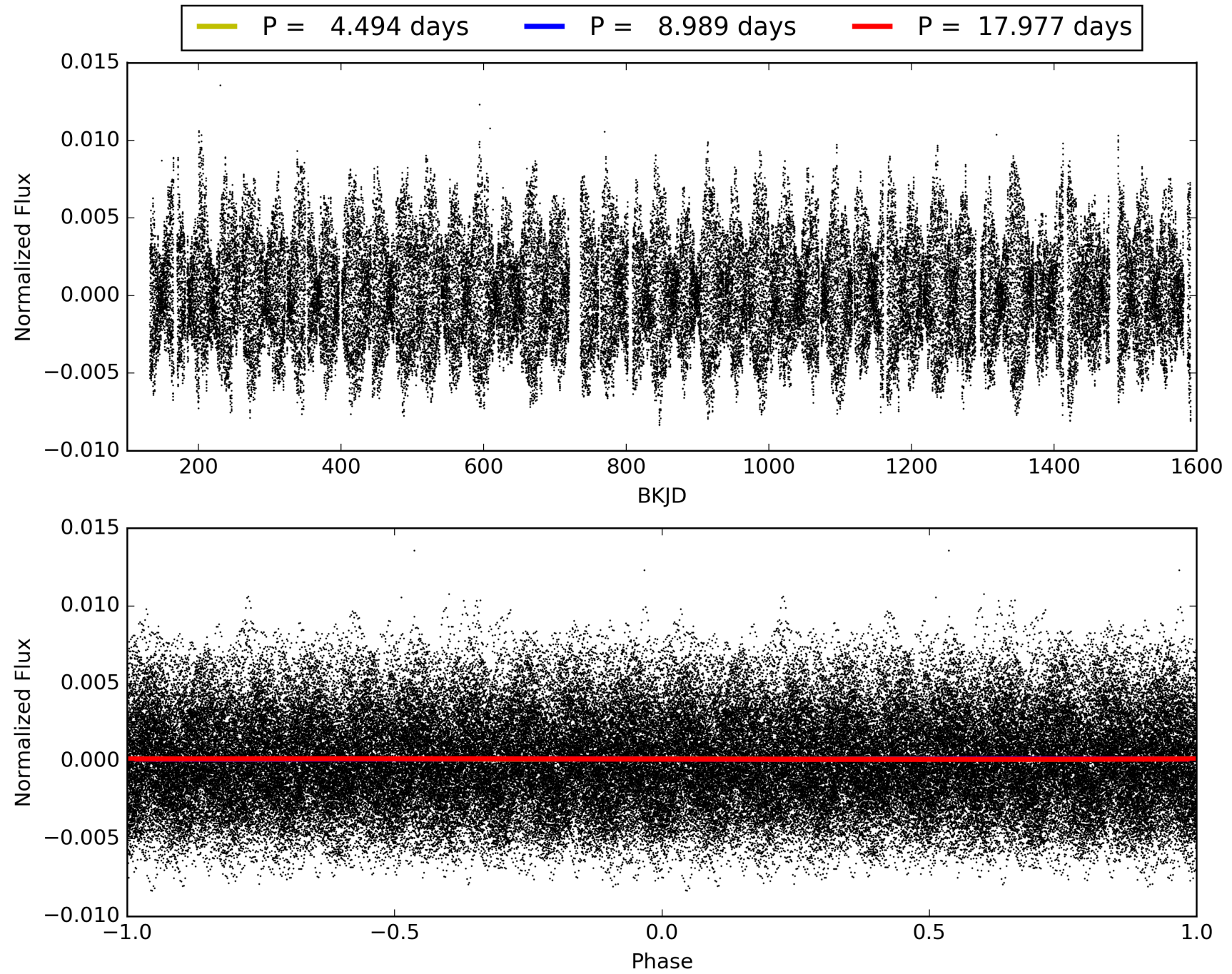
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:18:30 Z

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

TCE 009673483-04, PDC Light Curves

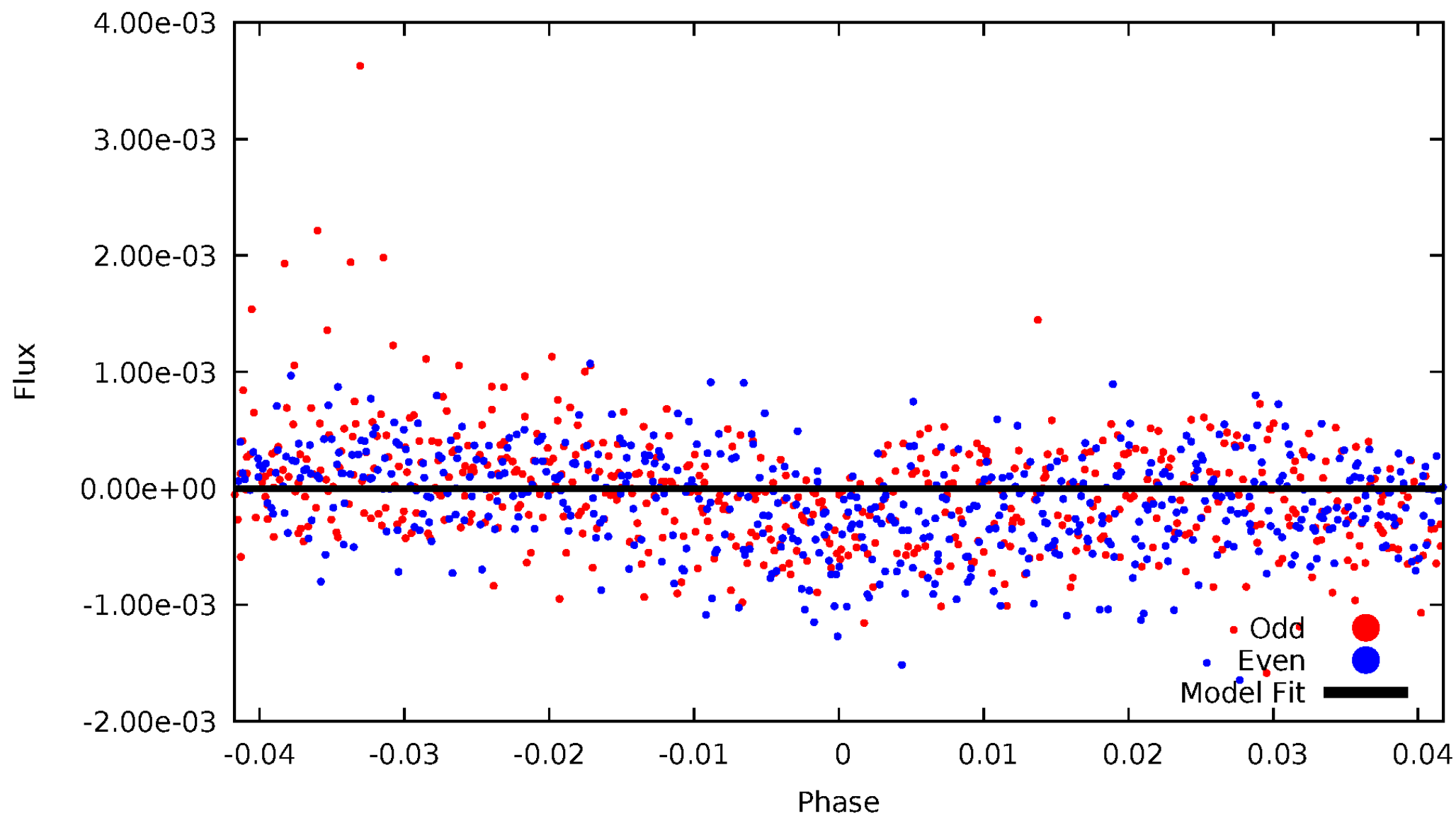


TCE 009673483-04



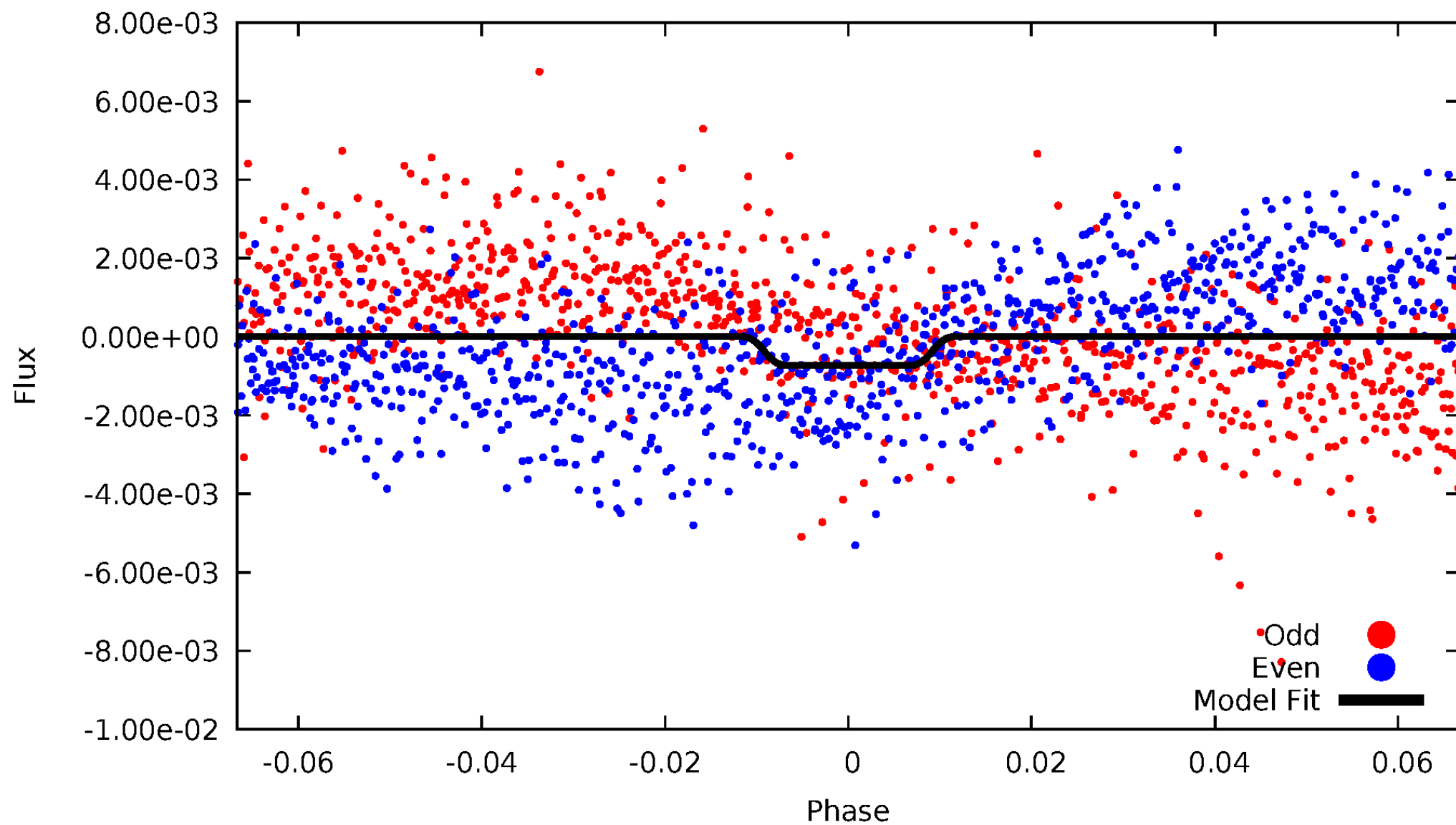
DV Odd/Even

TCE 009673483-04



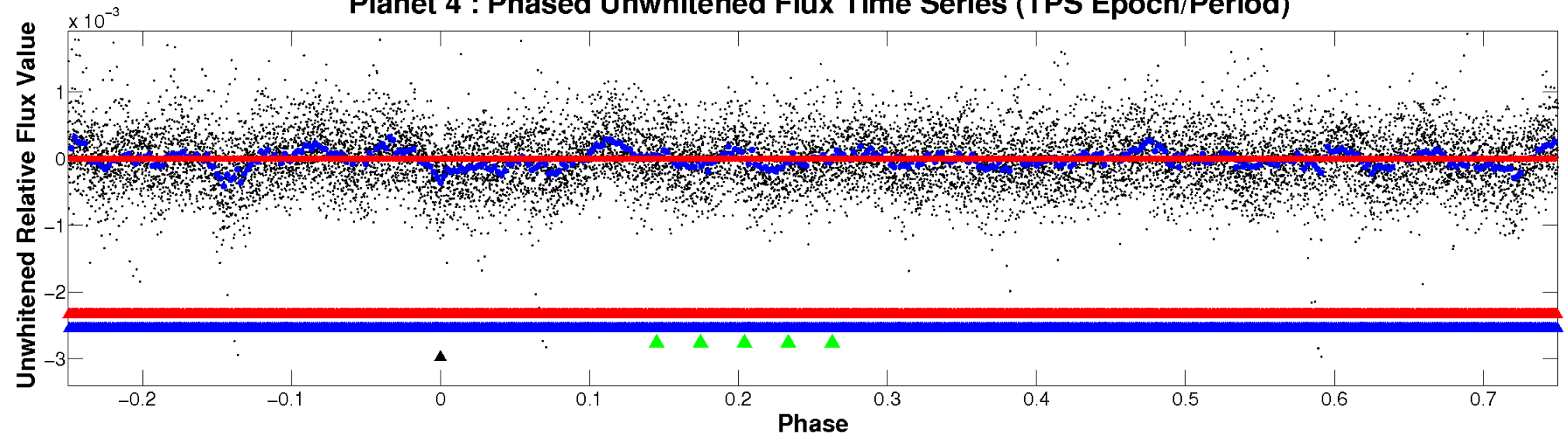
ALT Odd/Even

TCE 009673483-04

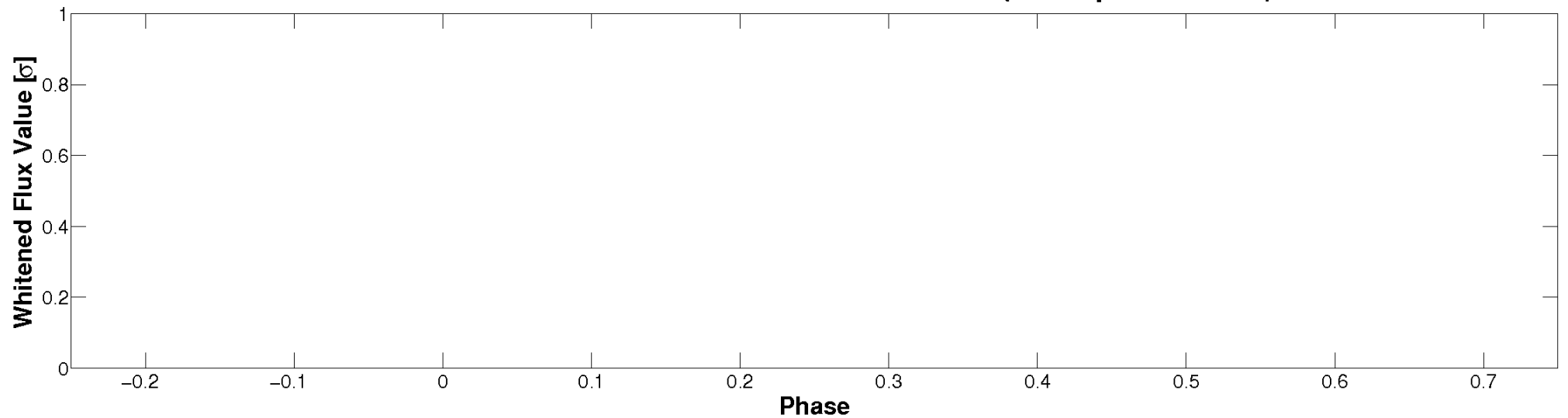


Non-Whitened Vs. Whitened Light Curve

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

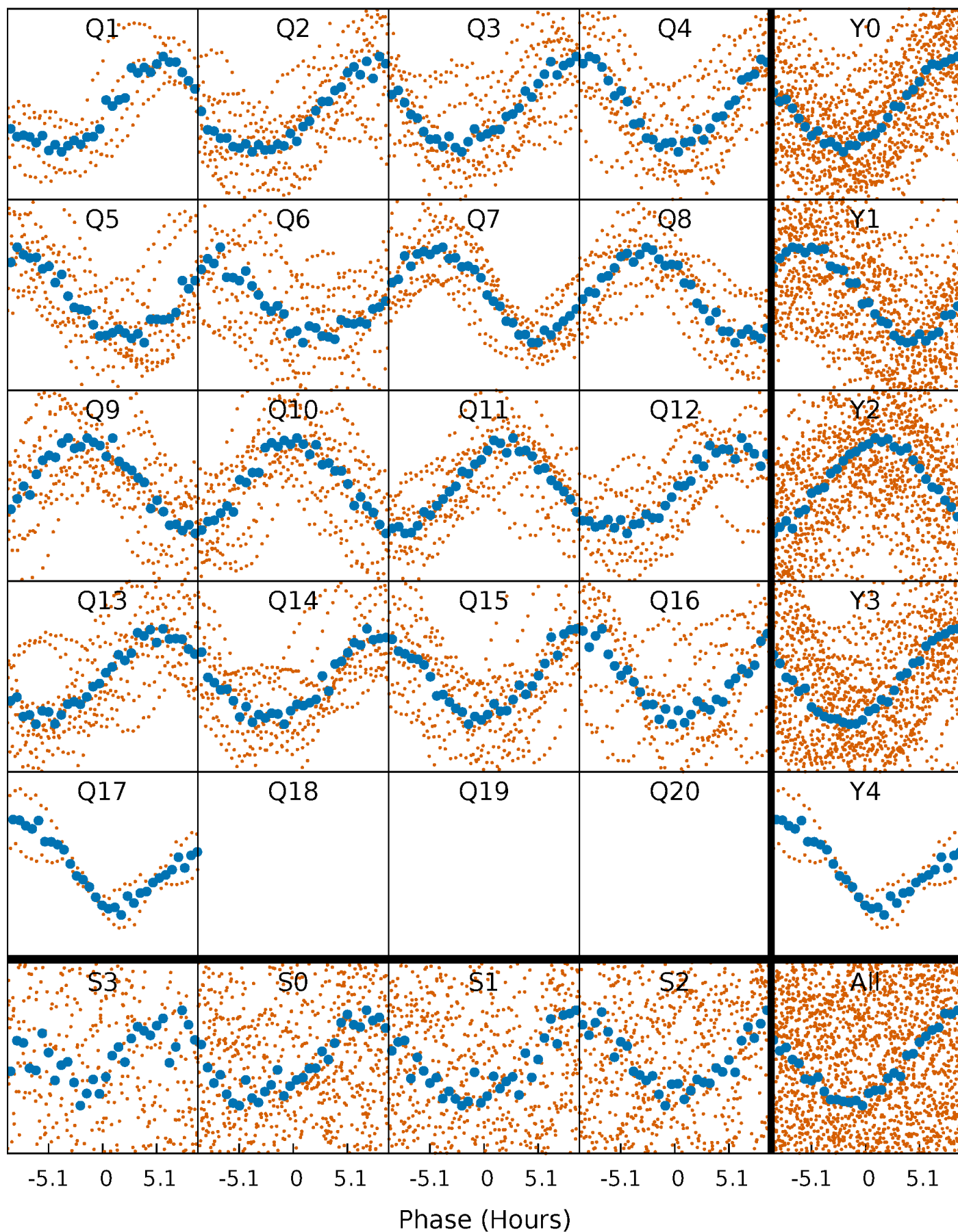


Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)



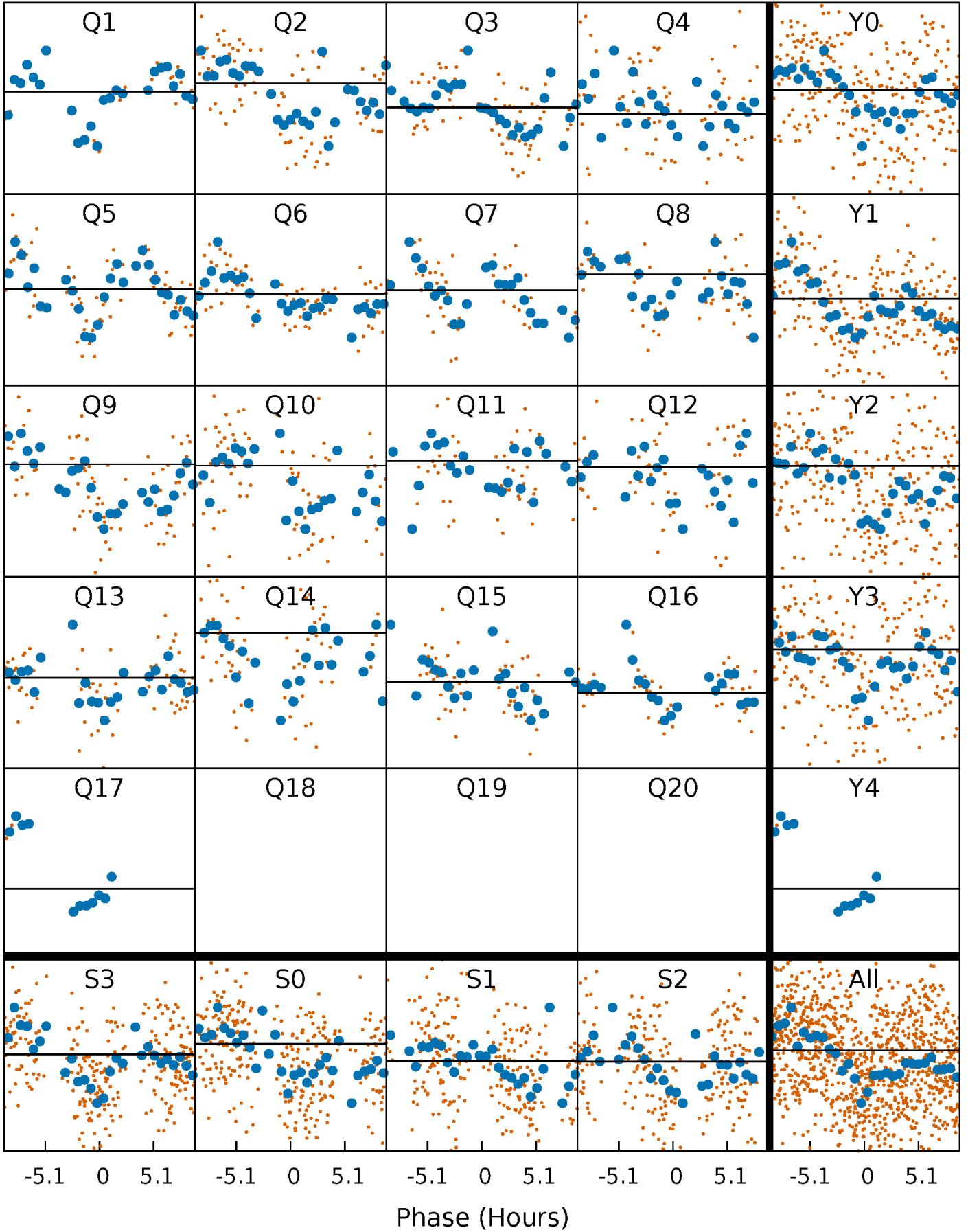
PDC Quarter-Phased Transit Curves

TCE 009673483-04 P= 8.988526 Days $T_0=135.584083$ (BKJD)



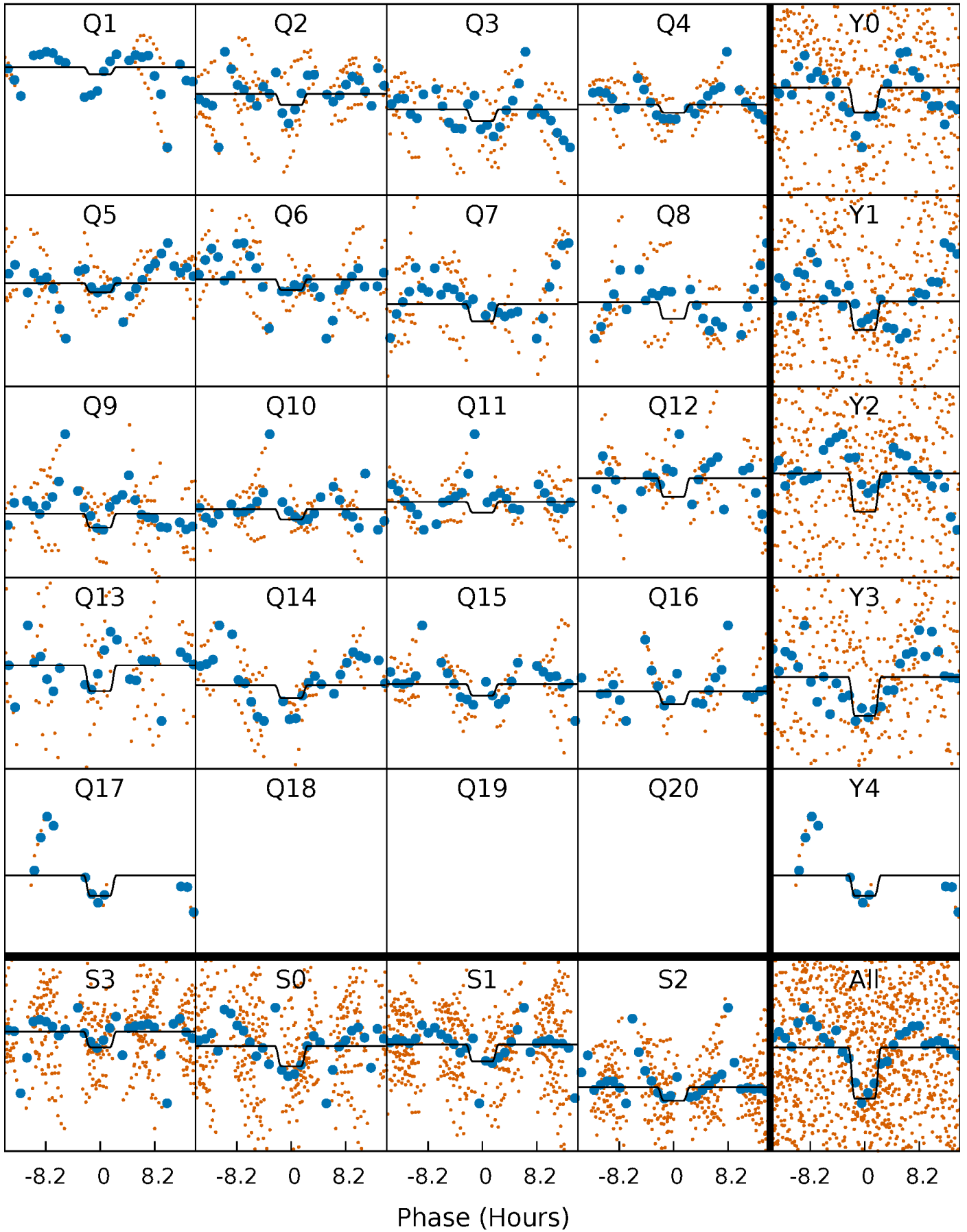
DV Quarter-Phased Transit Curves

TCE 009673483-04 P= 8.988526 Days $T_0=135.584083$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

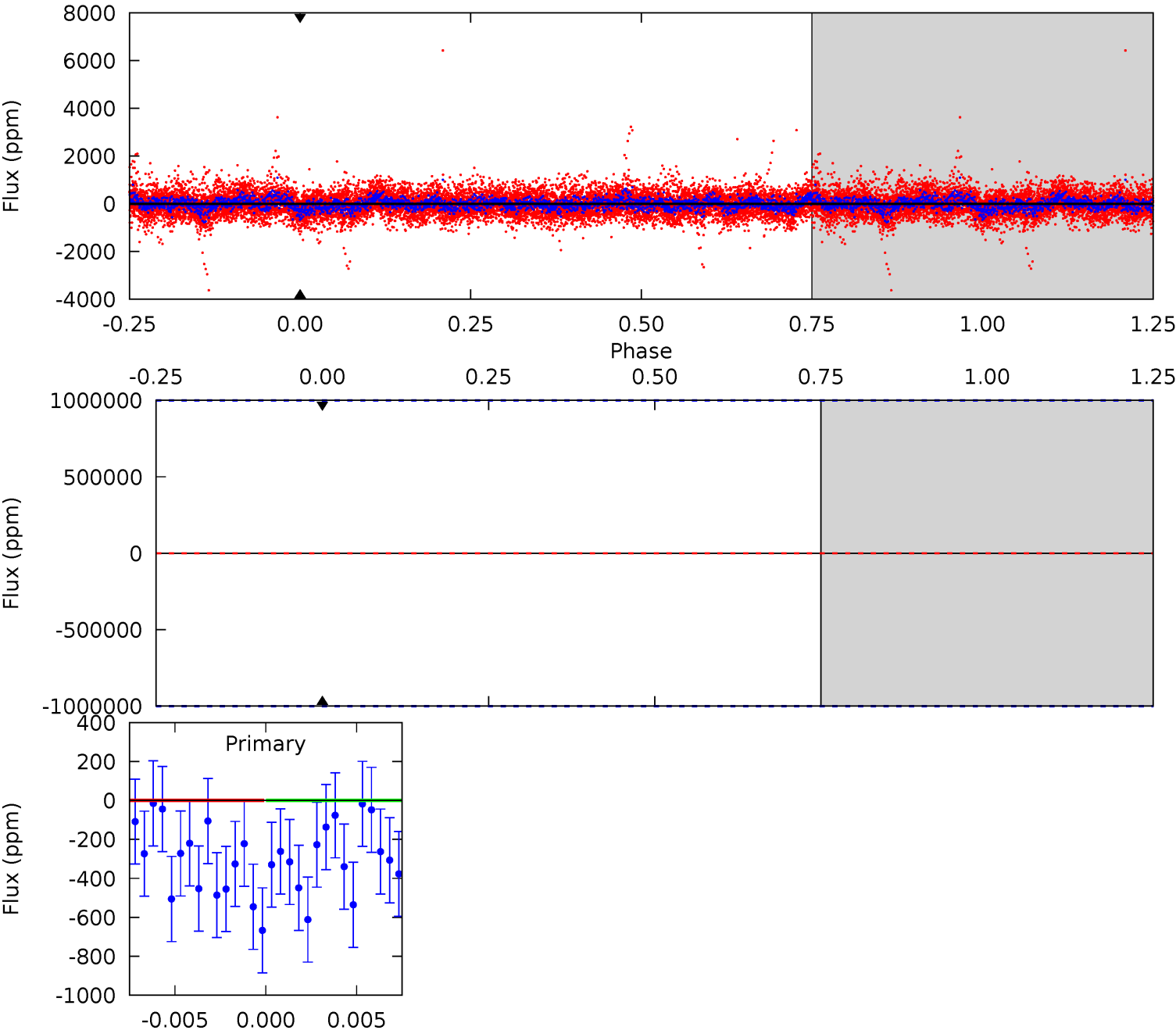
TCE 009673483-04 $P = 8.988526$ Days $T_0 = 135.590156$ (BKJD)



DV Model-Shift Uniqueness Test

009673483-04, P = 8.988526 Days, E = 126.595557 Days

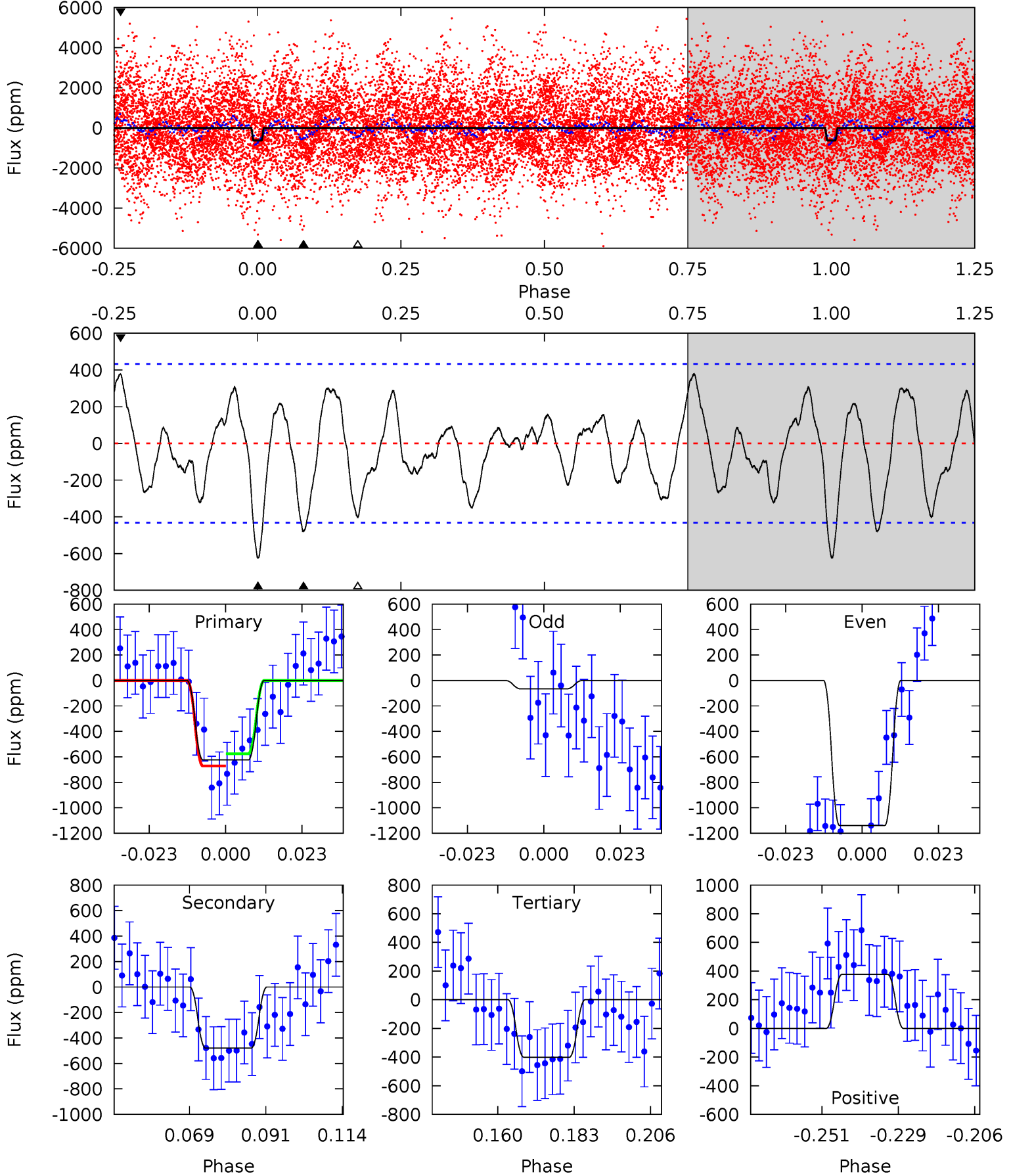
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009673483-04, P = 8.988526 Days, E = 126.601630 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.03	5.40	4.52	4.25	4.87	2.28	1.86	2.51	2.77	0.88	1.15	6.14	0.85	0.38	0.55



Stellar Parameters For KIC 009673483

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6515^{+155}_{-213}	$4.371^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.172^{+0.405}_{-0.135}$	$1.180^{+0.173}_{-0.156}$	$1.033^{+0.312}_{-0.571}$
	+2%/-3%	+2%/-5%	+179%/-214%	+35%/-12%	+15%/-13%	+30%/-55%
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 009673483-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$9.92^{+9.90}_{-6.78}$	1475^{+102}_{-78}	2699^{+30243}_{-26043}	$3.073^{+10418.020}_{-6389.051}$
Alt.	-480 ± 89	$10.16^{+11.42}_{-6.87}$	1480^{+105}_{-79}	3822^{+2316}_{-833}	19^{+169}_{-15}

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 $A_{obs} \gg 1.0$

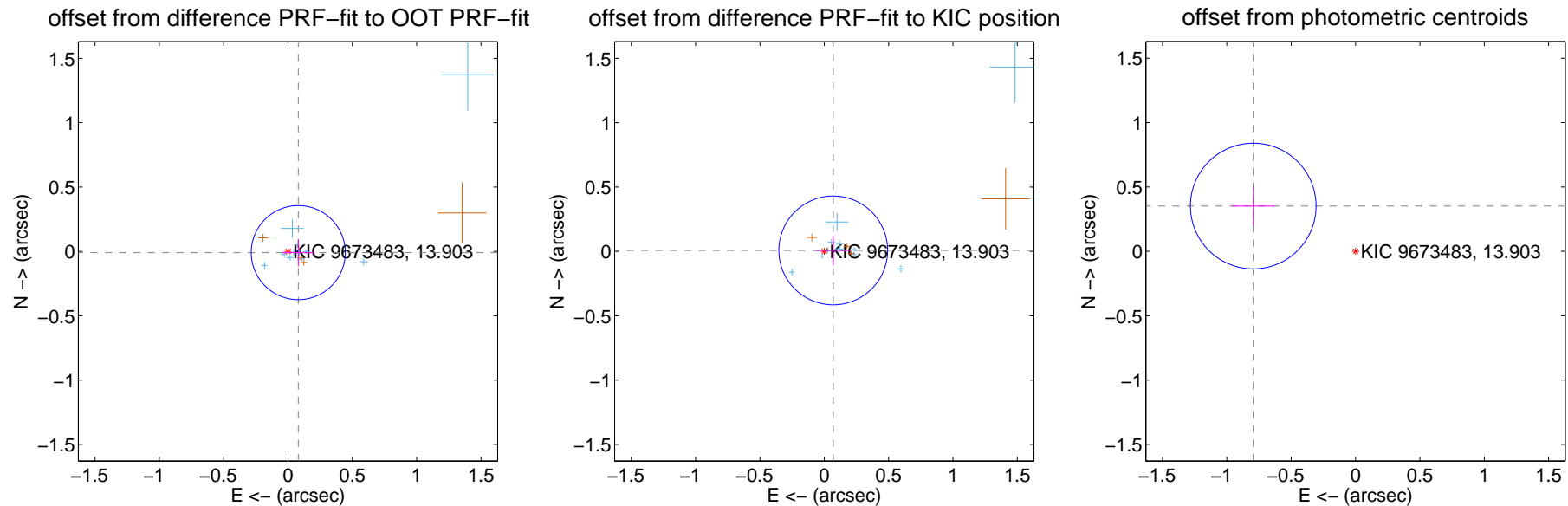
DV Centroid Data

Supplemental centroid analysis for 009673483-04. Kepler magnitude: 13.90. Transit SNR -1.00

There are 11 quarters with good PRF difference image offsets

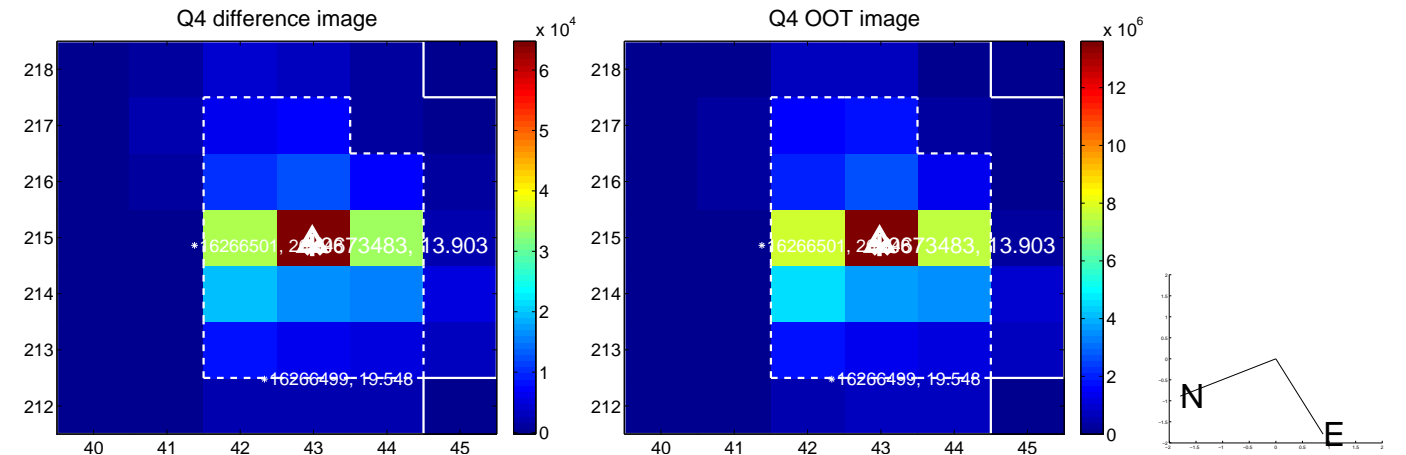
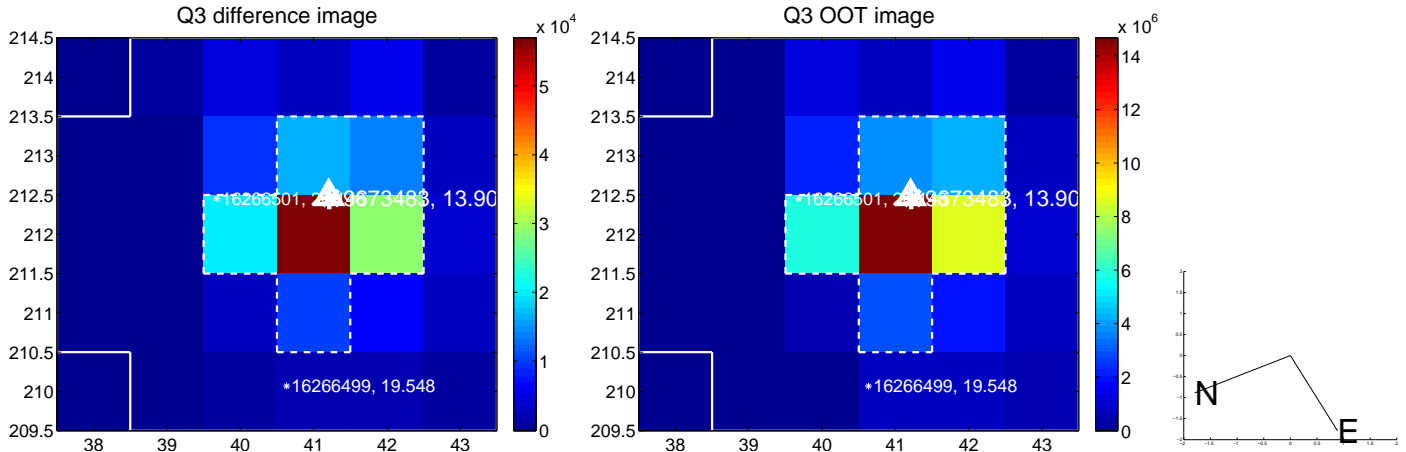
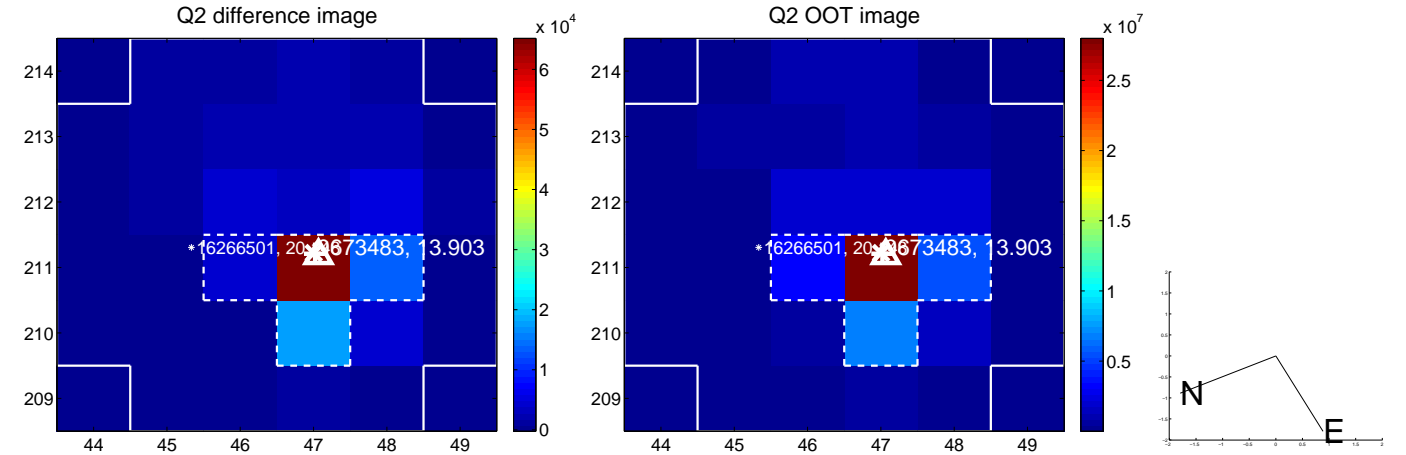
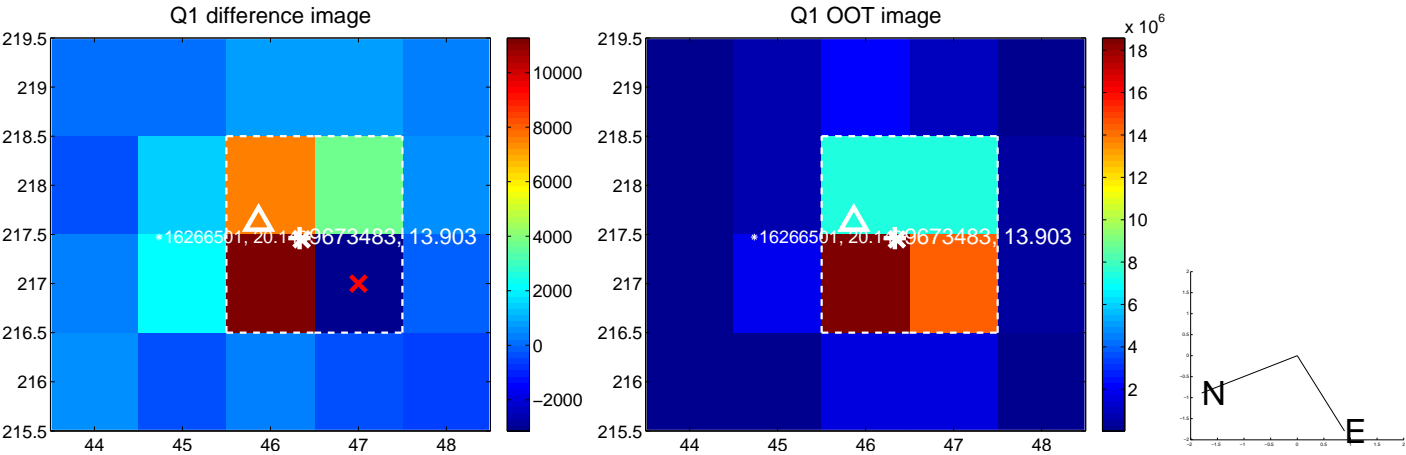
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.122	0.66	-0.080 ± 0.128	-0.009 ± 0.106
PRF-fit source offset from KIC position	0.070 ± 0.141	0.50	-0.069 ± 0.134	0.008 ± 0.117
photometric centroid source offset	0.87 ± 0.16	5.34	0.79 ± 0.16	0.35 ± 0.15

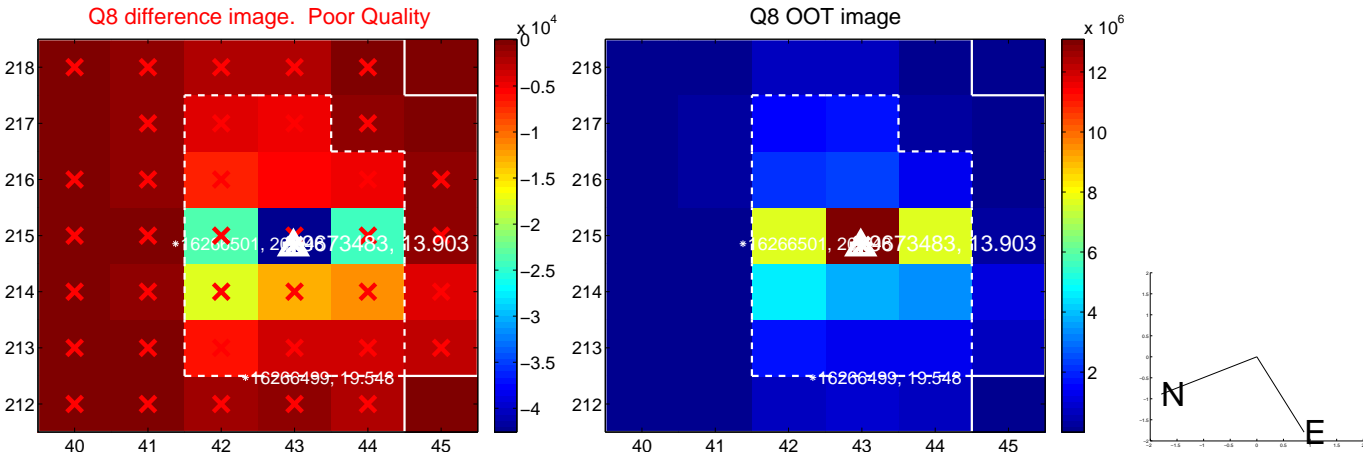
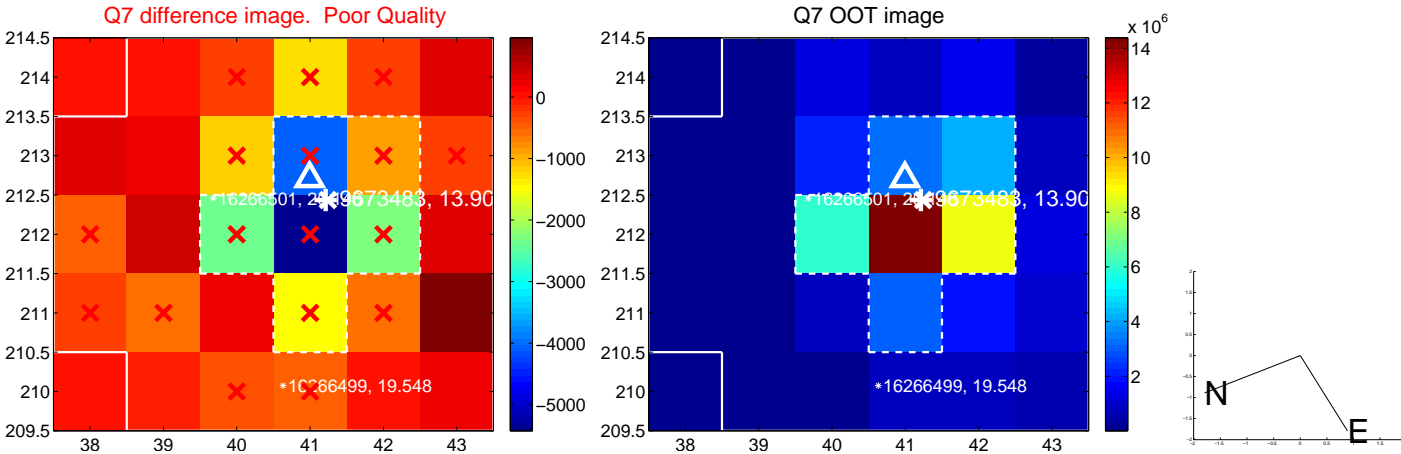
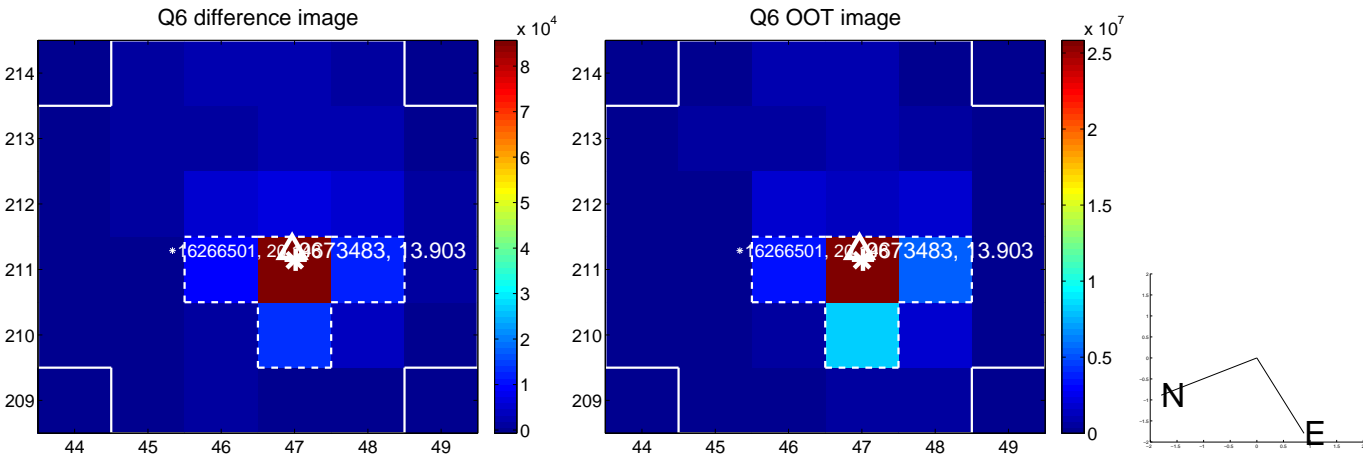
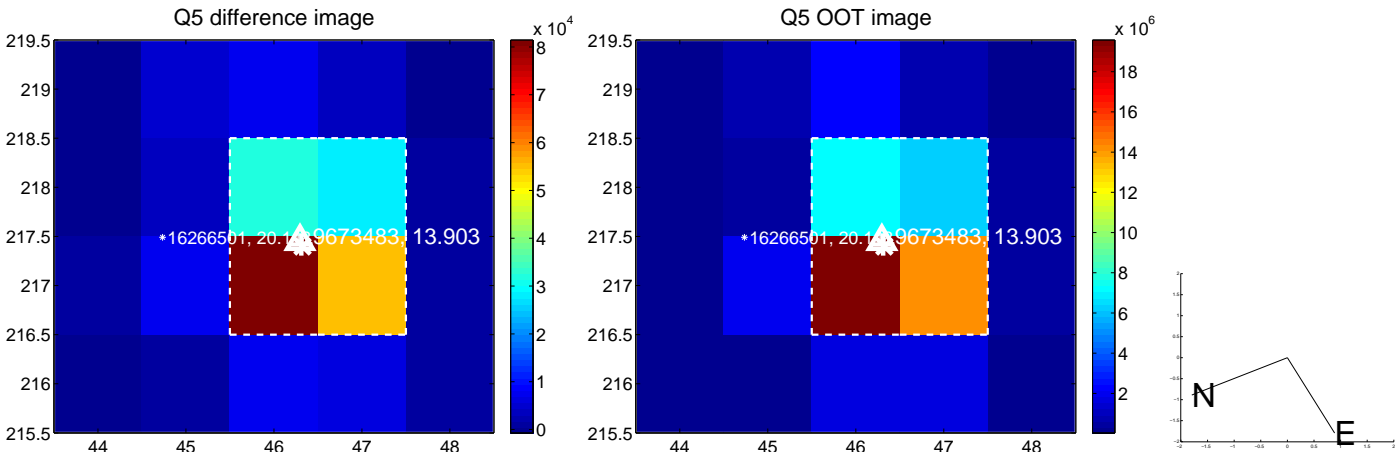


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

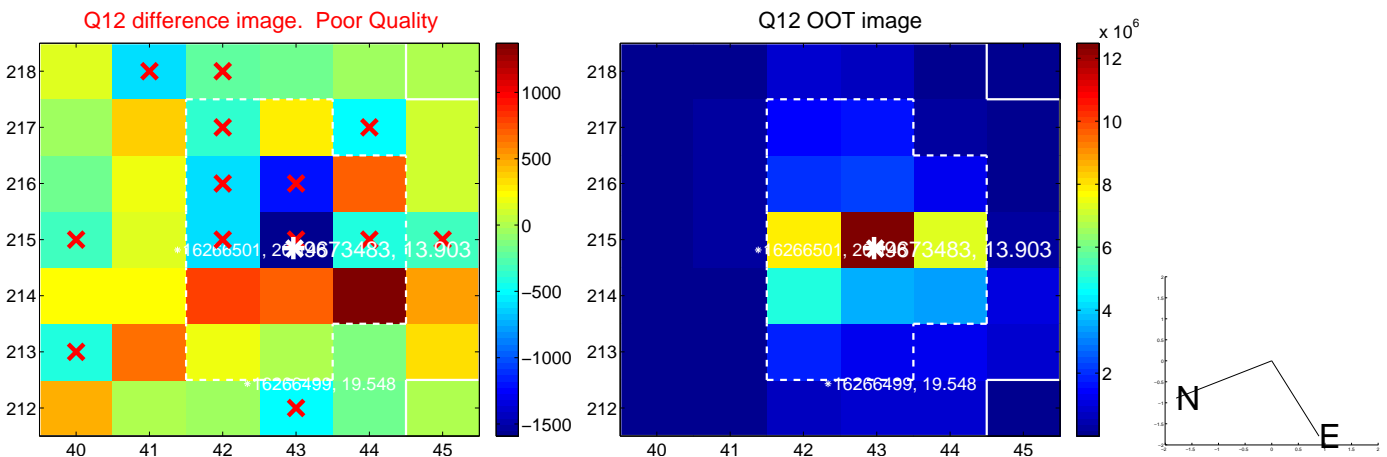
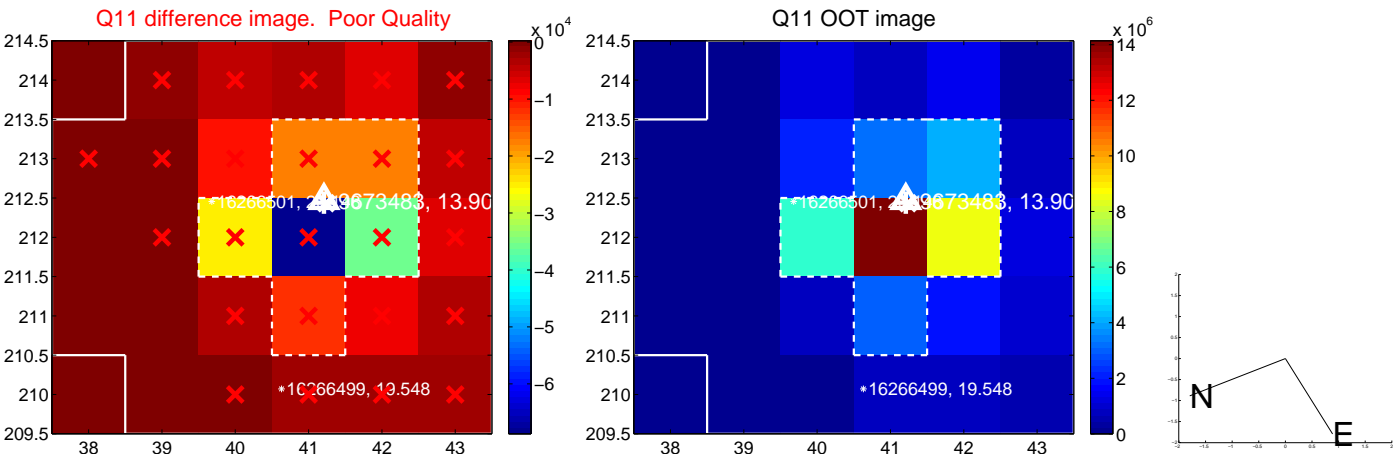
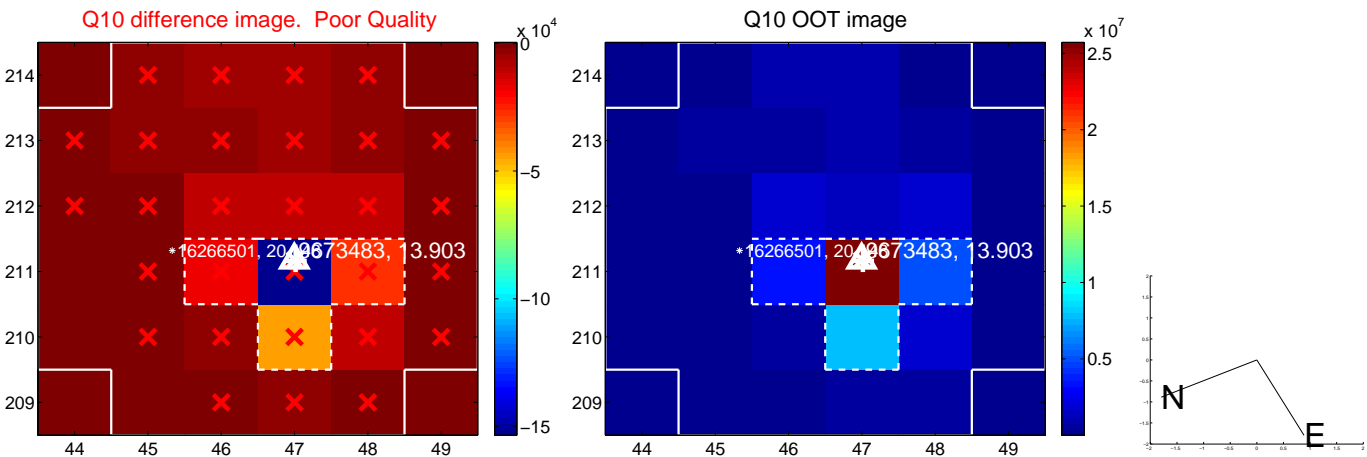
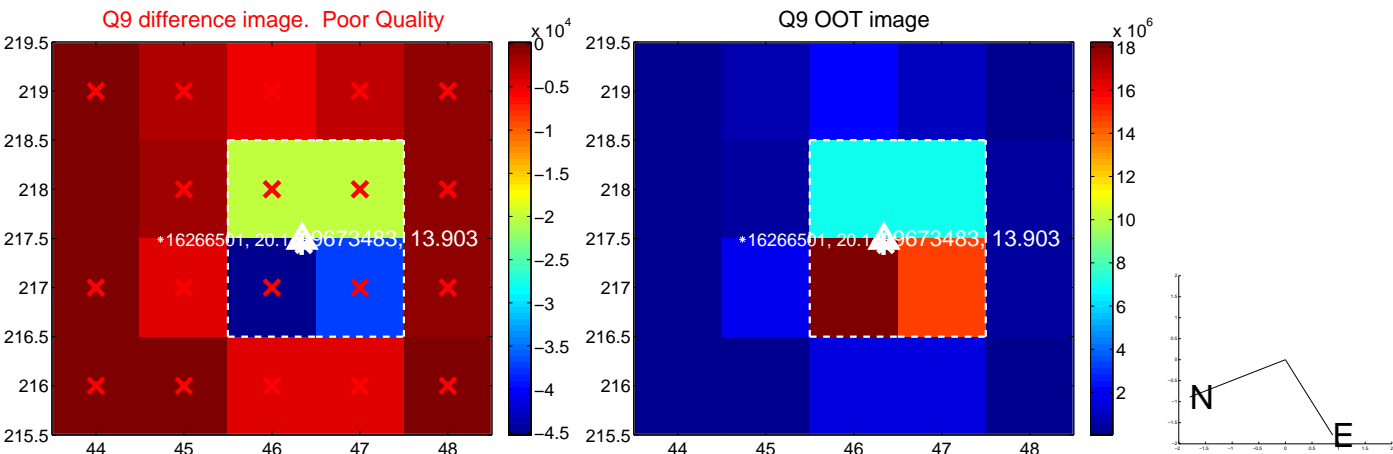
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



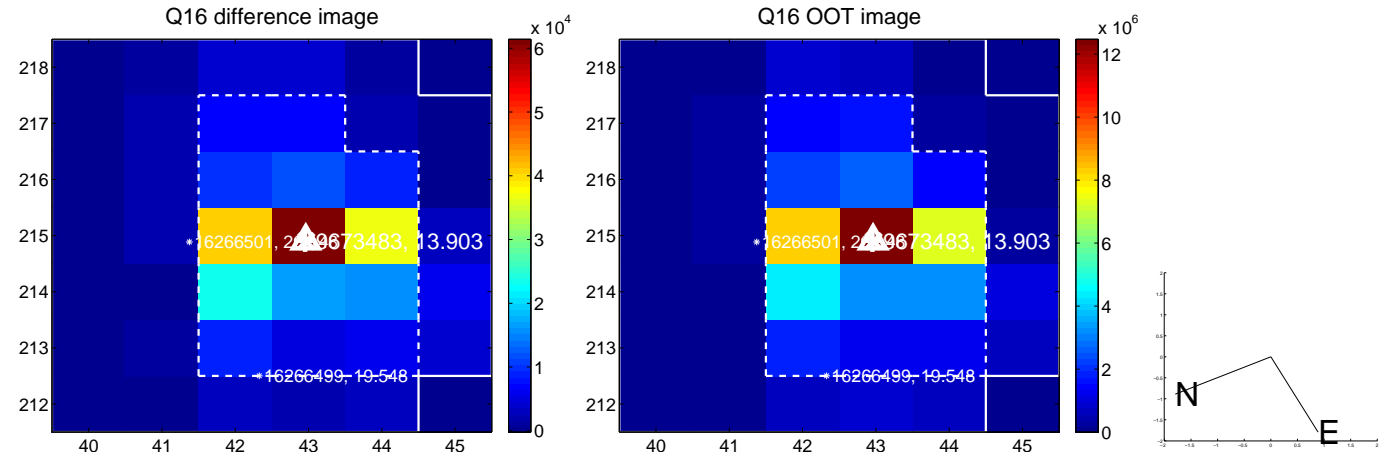
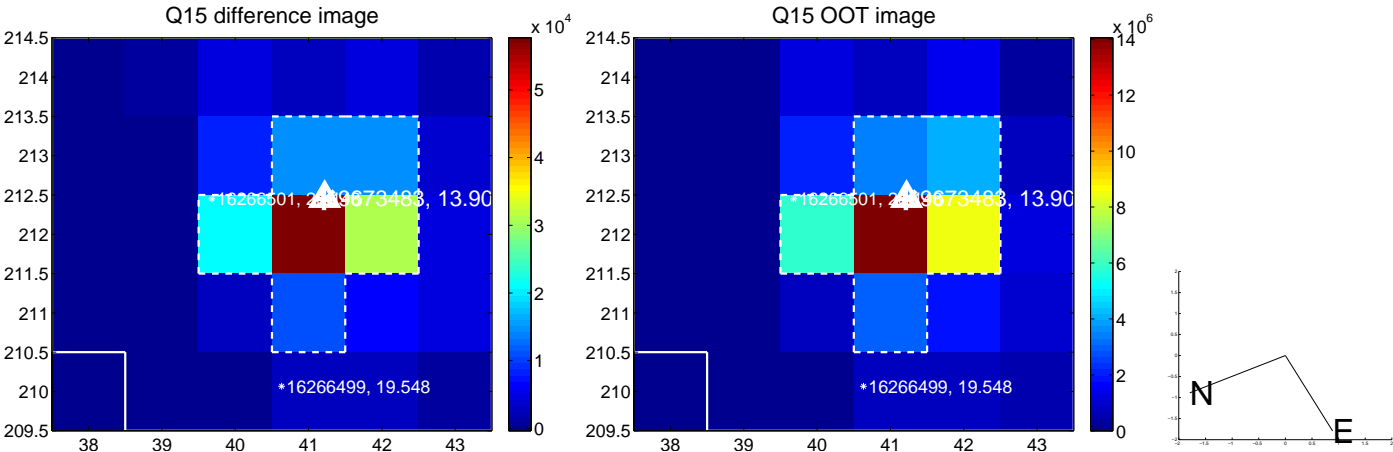
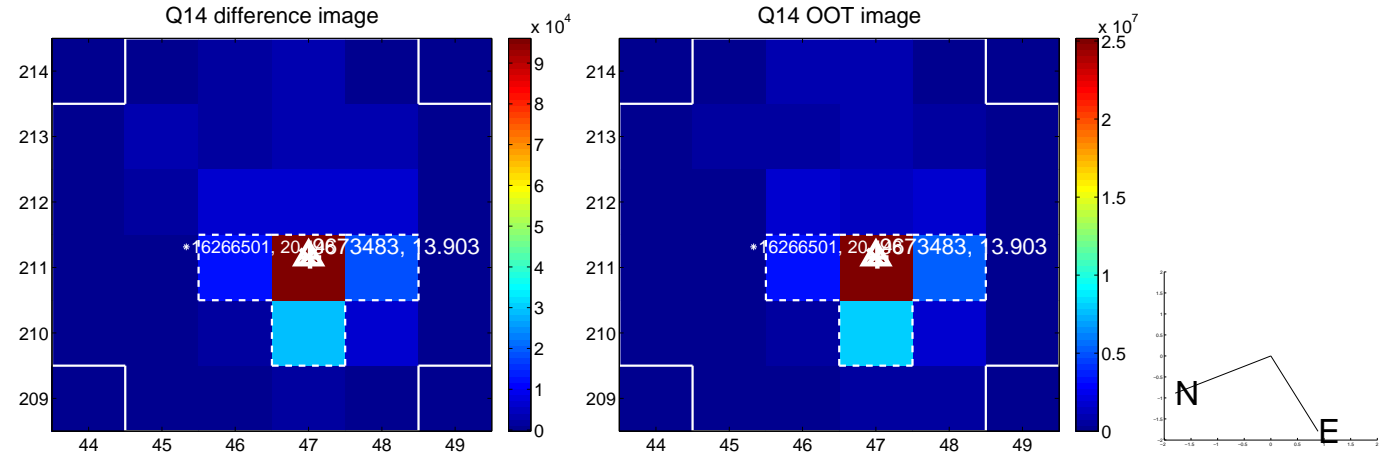
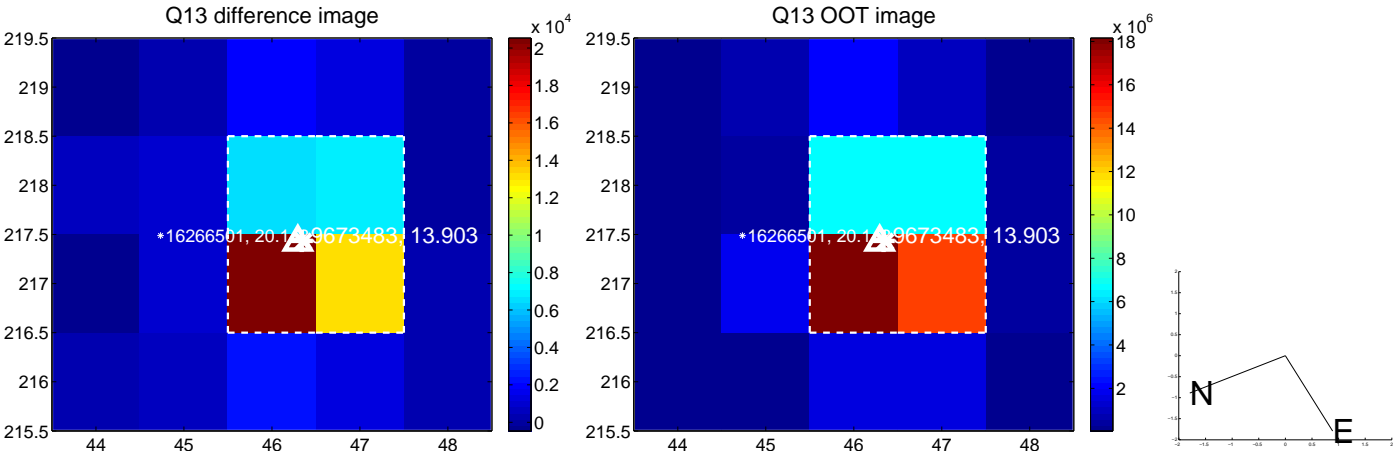
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



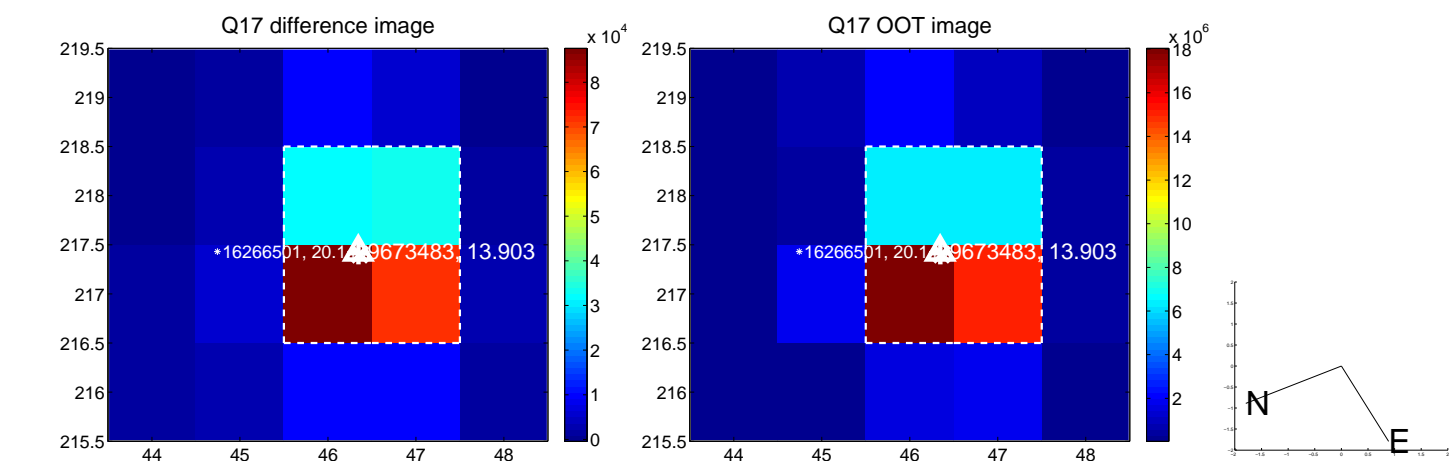
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



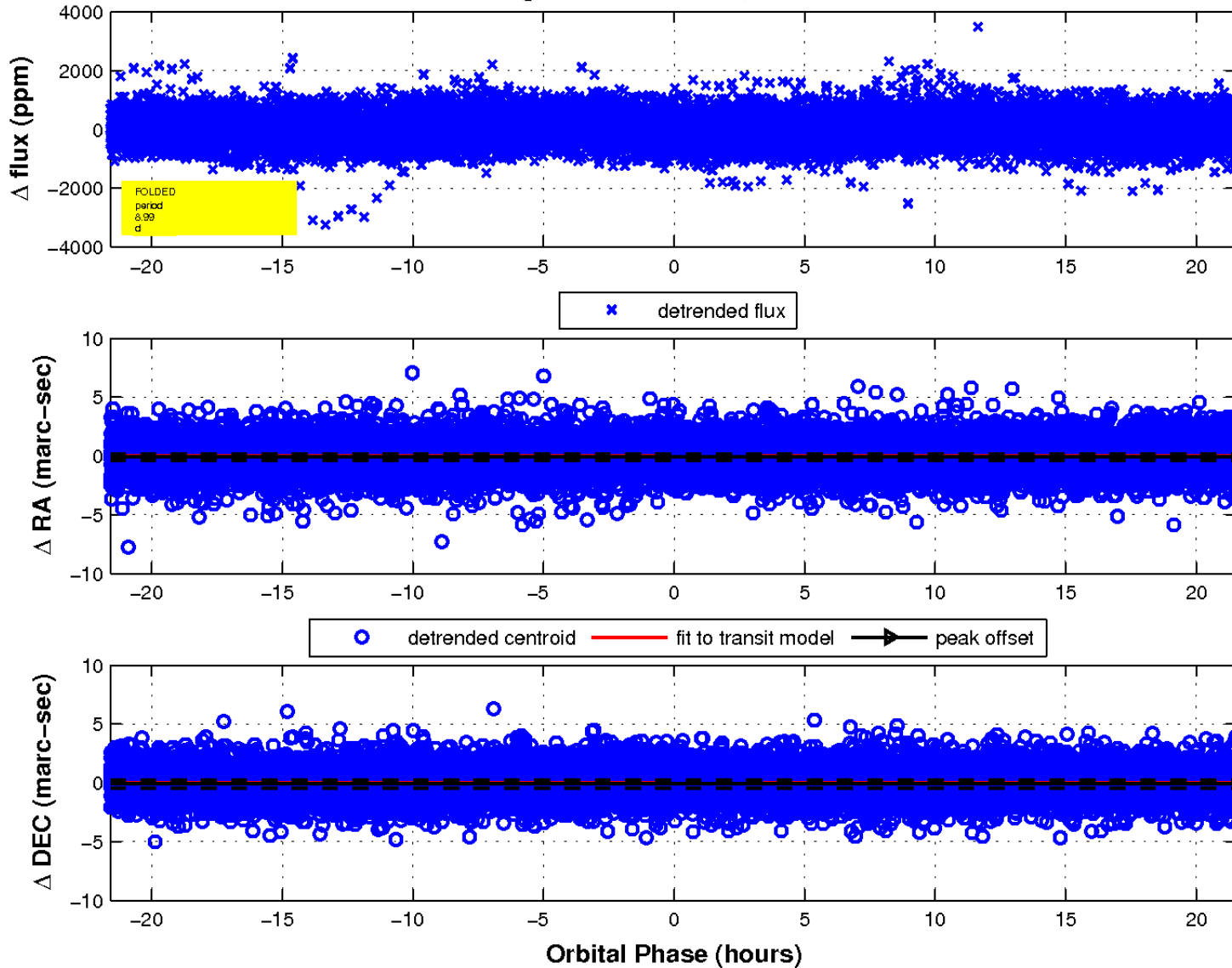
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

