

KIC 002996903

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})
002996903-01	OBS	No	434.490397	281.915053	2374.4	4.778	17.4	6.3	0.76	4797	3.64	0.27
002996903-02	OBS	No	440.707041	487.453306	1919.9	2.584	15.4	6.4	0.76	4797	3.61	0.26
002996903-03	OBS	No	322.069715	244.861316	1455.2	3.489	20.8	3.5	0.76	4797	2.80	0.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002996903-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002996903-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002996903-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

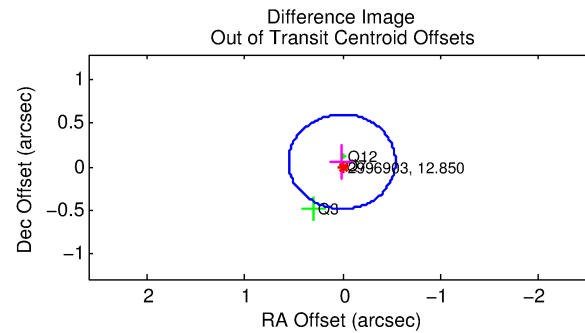
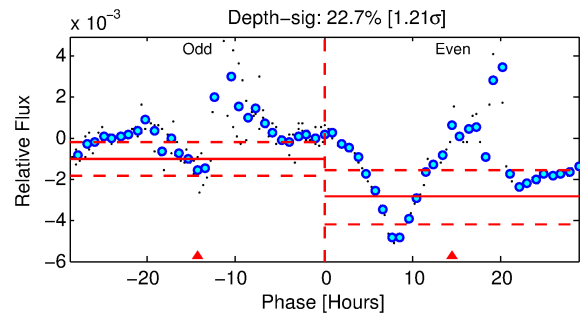
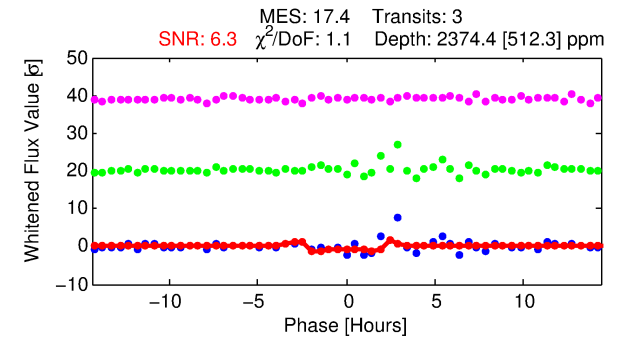
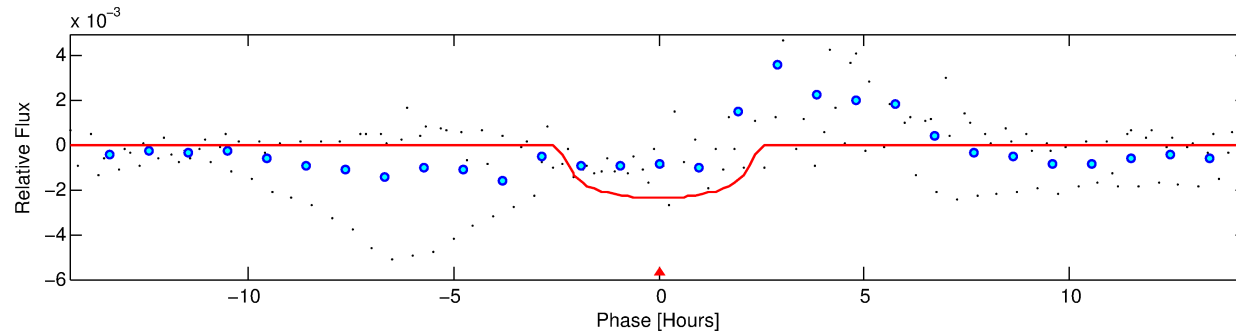
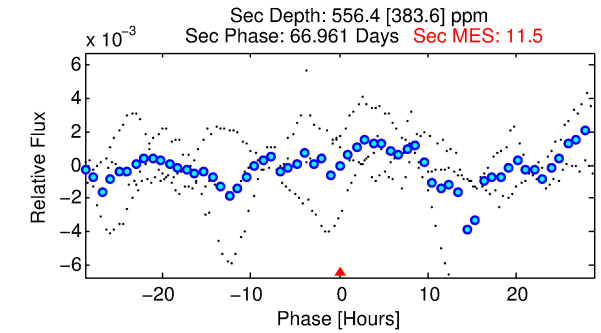
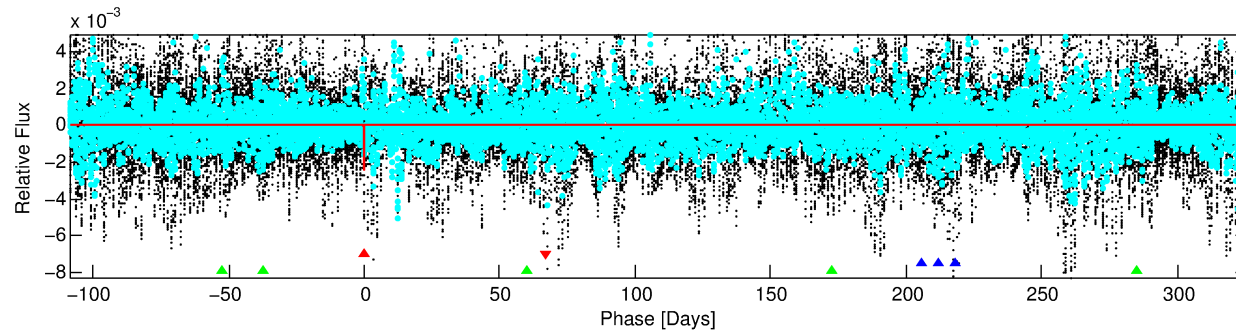
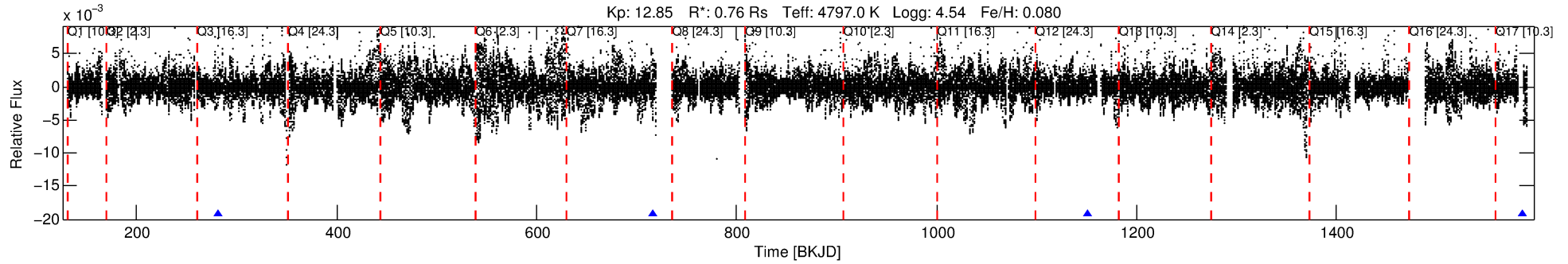
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002996903-01

No Significant Match Found

DV One-Page Summary

KIC: 2996903 Candidate: 1 of 3 Period: 434.490 d



DV Fit Results:

Period = 434.49040 [0.00413] d
Epoch = 281.9151 [0.0054] BKJD
Rp/R* = 0.0436 [0.0359]
a/R* = 690.69 [1775.55]
b = 0.32 [7.36]
Seff = 0.27 [0.03]
Teff = 183 [6] K
Rp = 3.64 [3.00] Re
a = 1.0172 [0.0633] AU
Ag = 23947.43 [42815.33] [0.56 σ]
Teffp = 3527 [1575] K [2.12 σ]

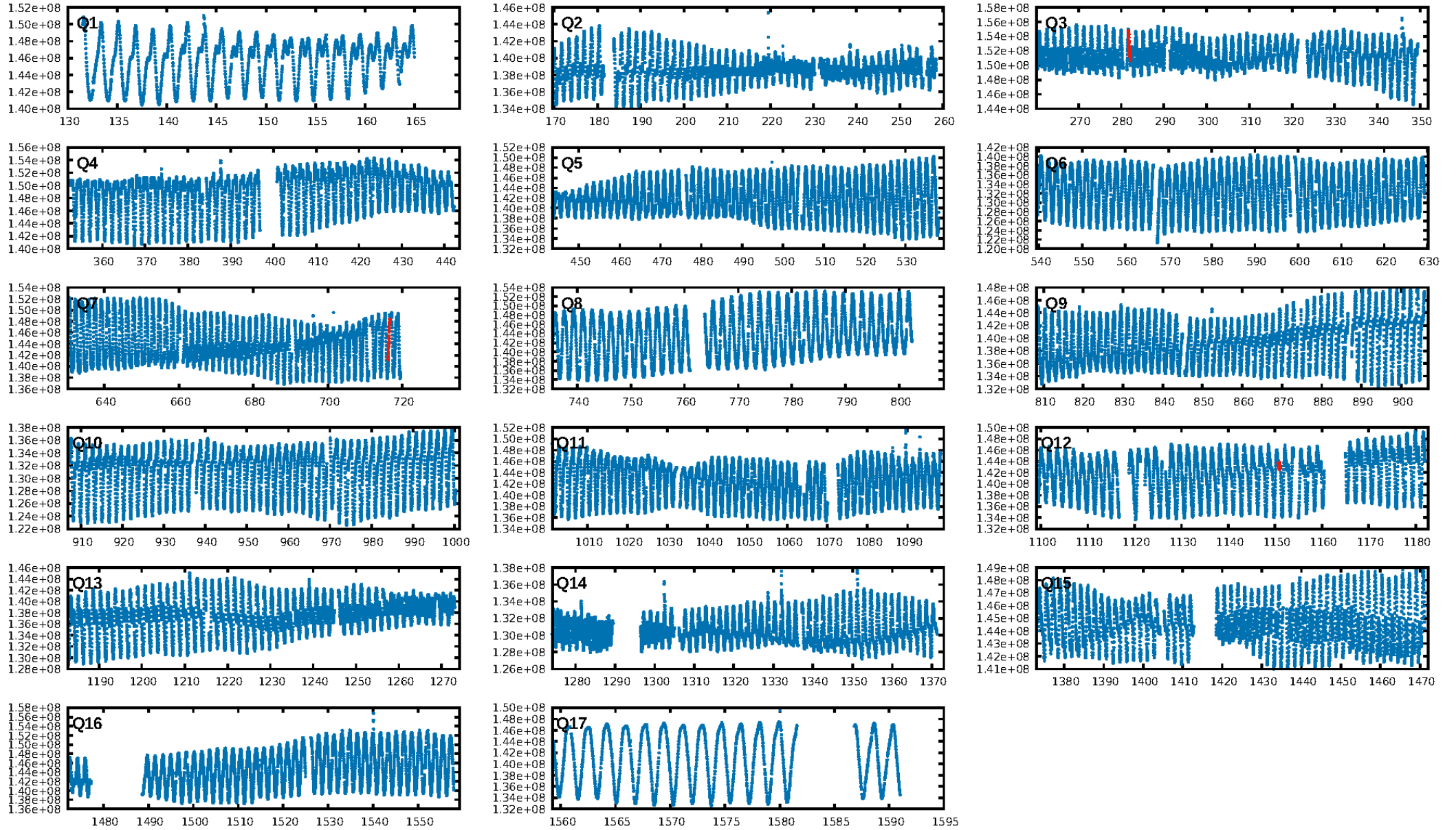
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [456.02 σ]
LongPeriod-sig: 100.0% [27.47 σ]
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 96.4%
Bootstrap-pfa: 2.07e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.471
Centroid-sig: 18.5%
Centroid-so: 0.638 arcsec [1.65 σ]
OotOffset-rm: 0.058 arcsec [0.32 σ]
OotOffset-st: 0/2/1/0 [3]
KicOffset-rm: 0.083 arcsec [0.42 σ]
KicOffset-st: 0/2/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

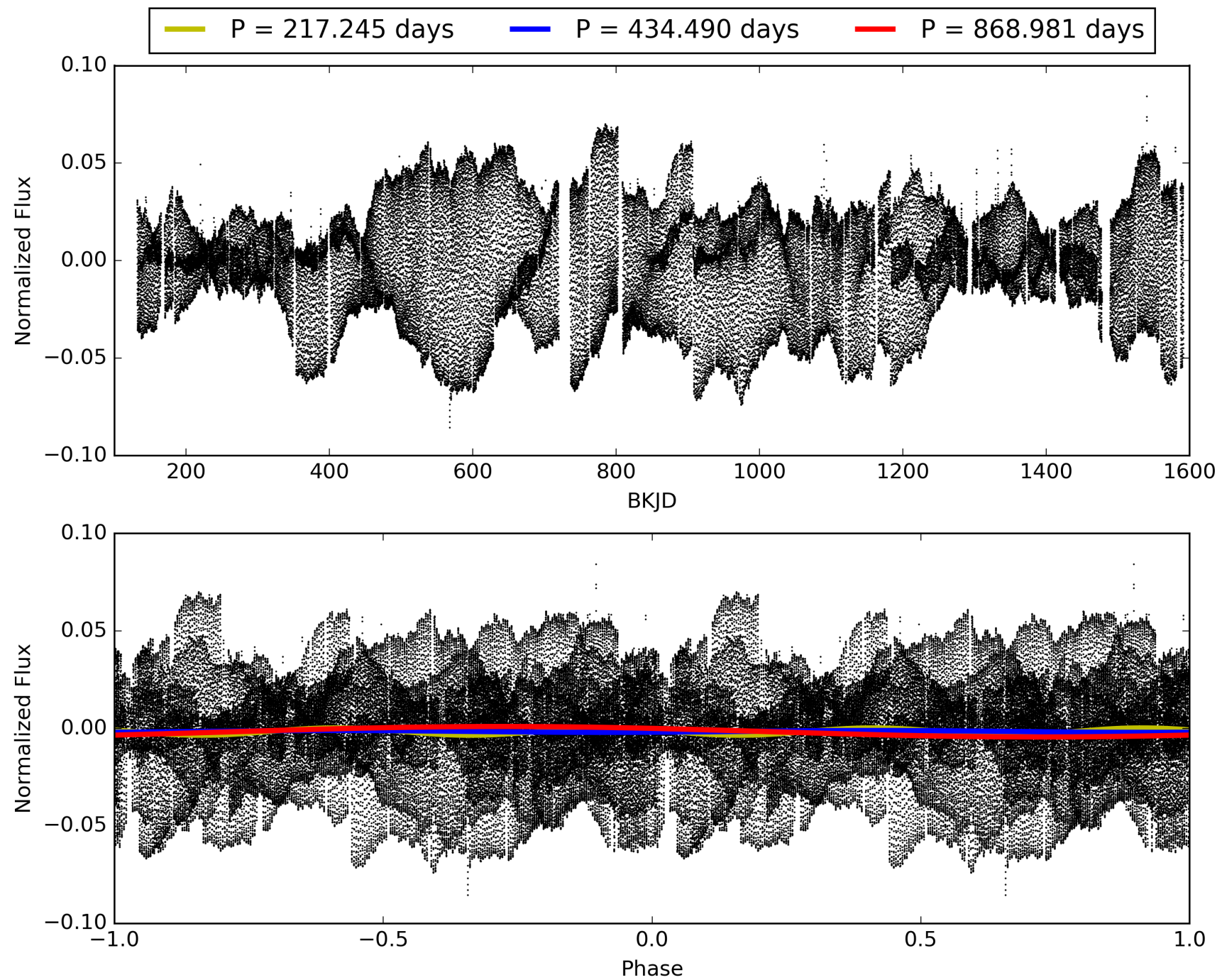
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:22:06 Z

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

TCE 002996903-01, PDC Light Curves

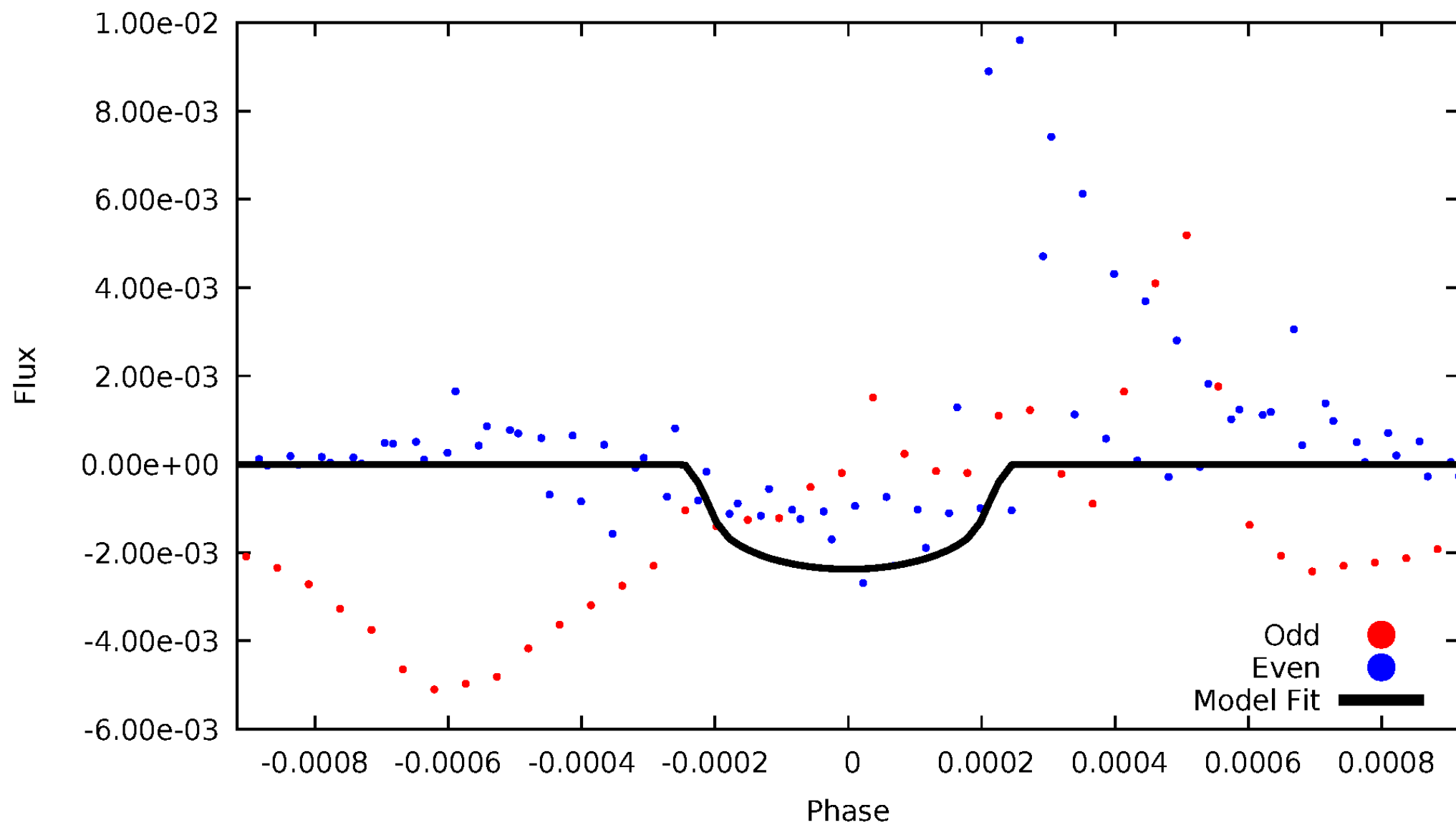


TCE 002996903-01



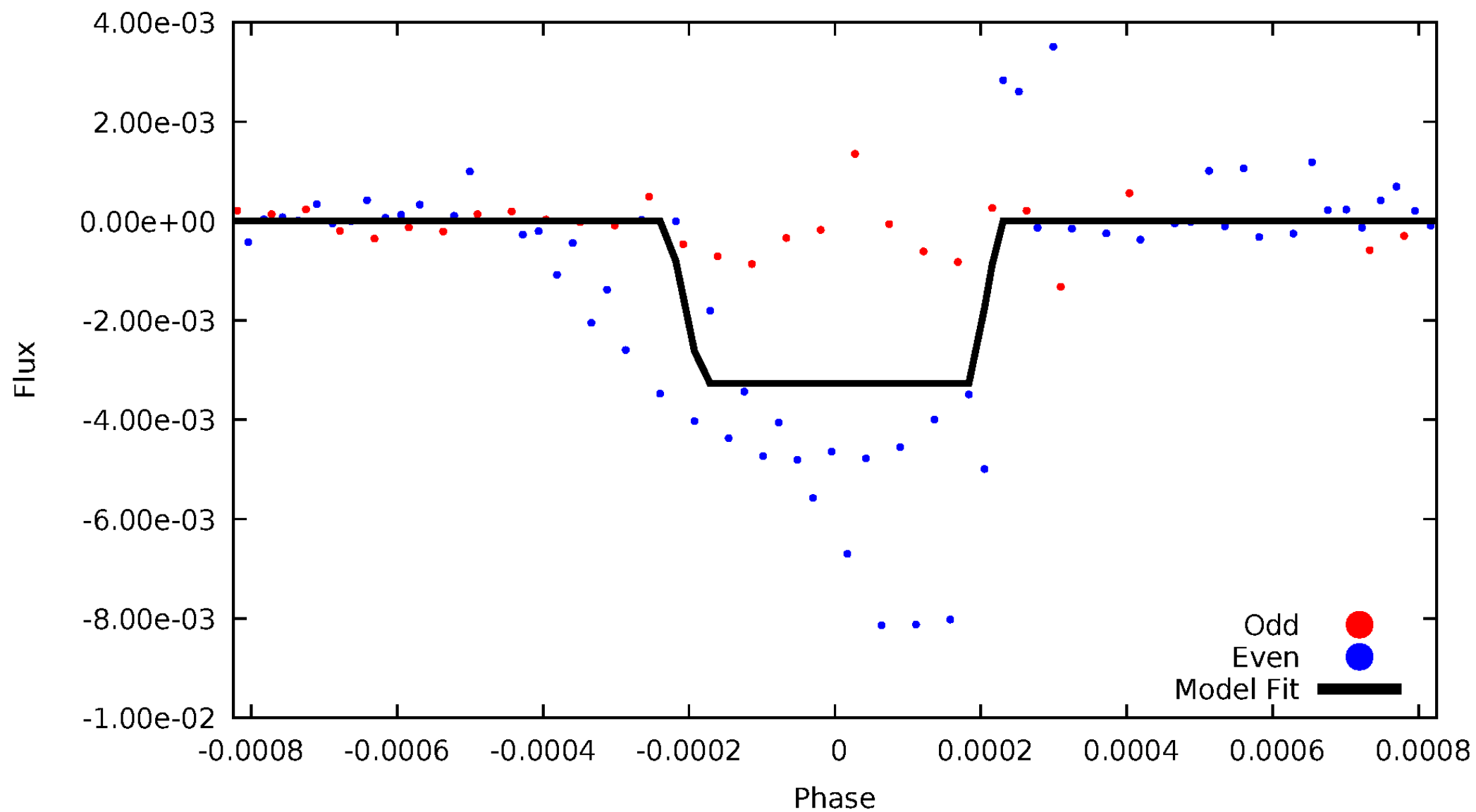
DV Odd/Even

TCE 002996903-01

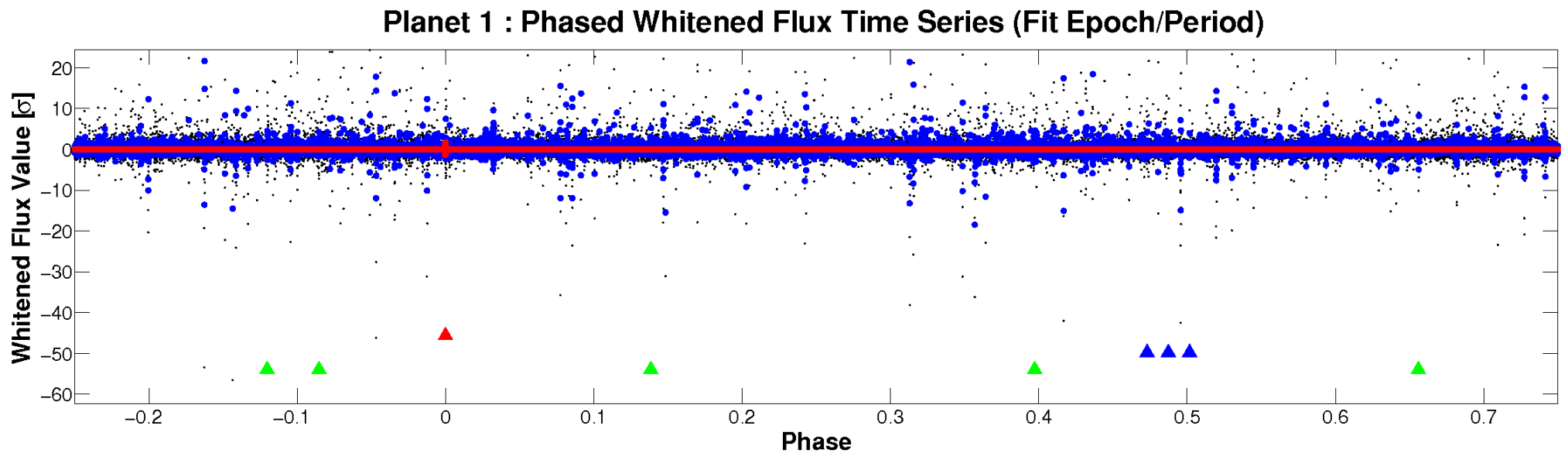
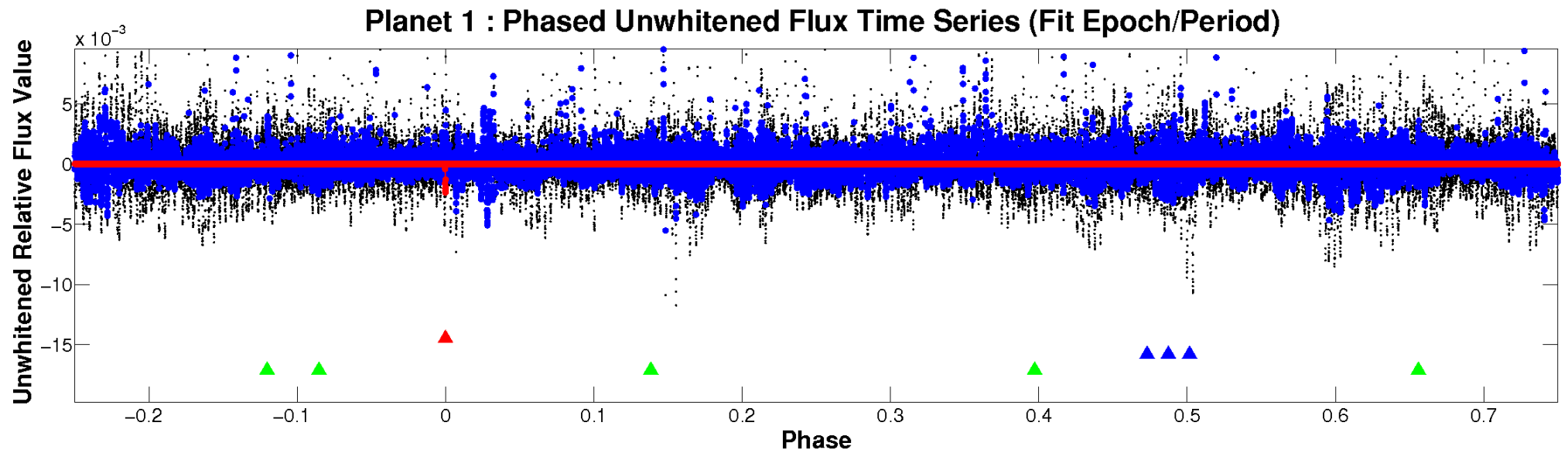


ALT Odd/Even

TCE 002996903-01

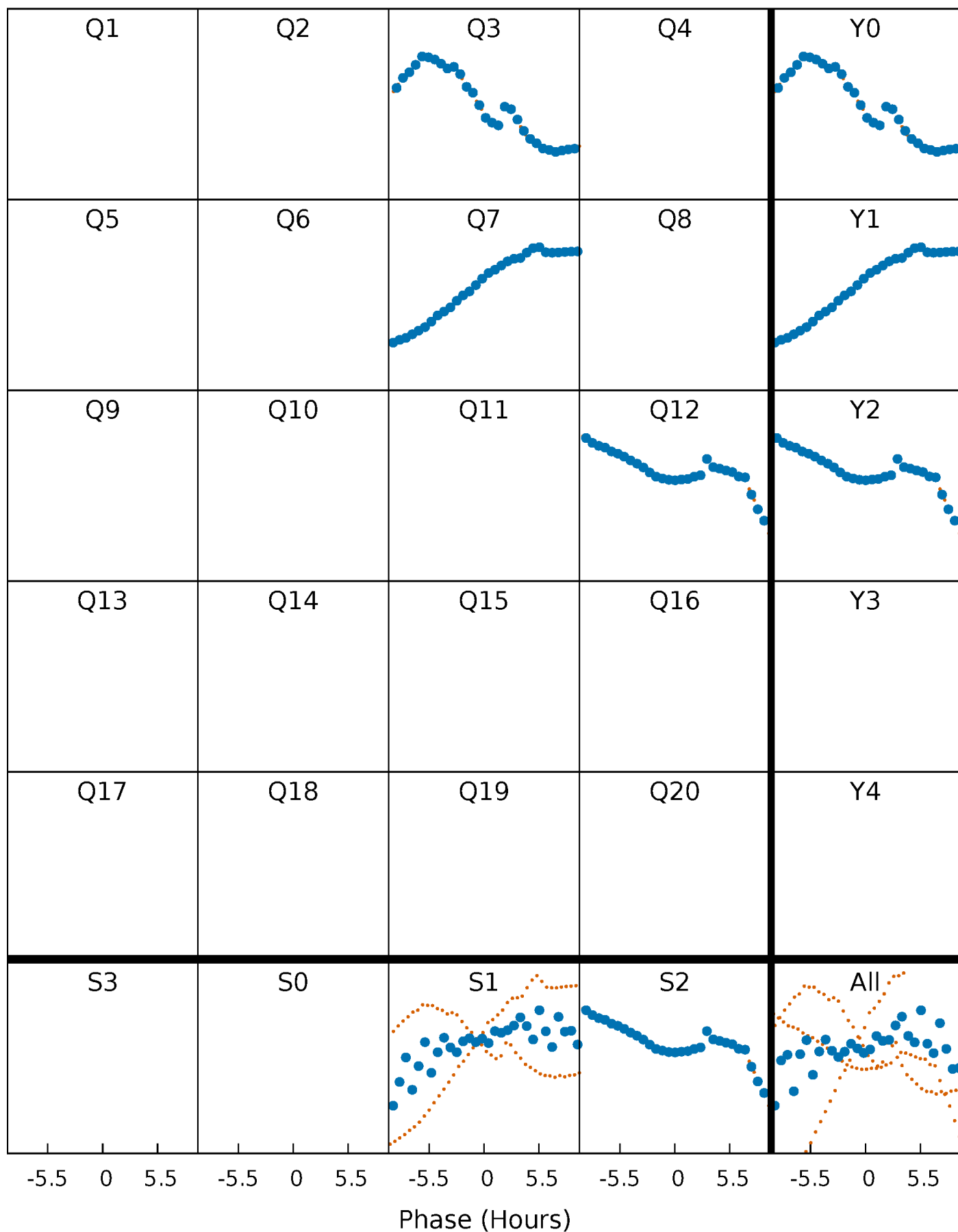


Non-Whitened Vs. Whitened Light Curve



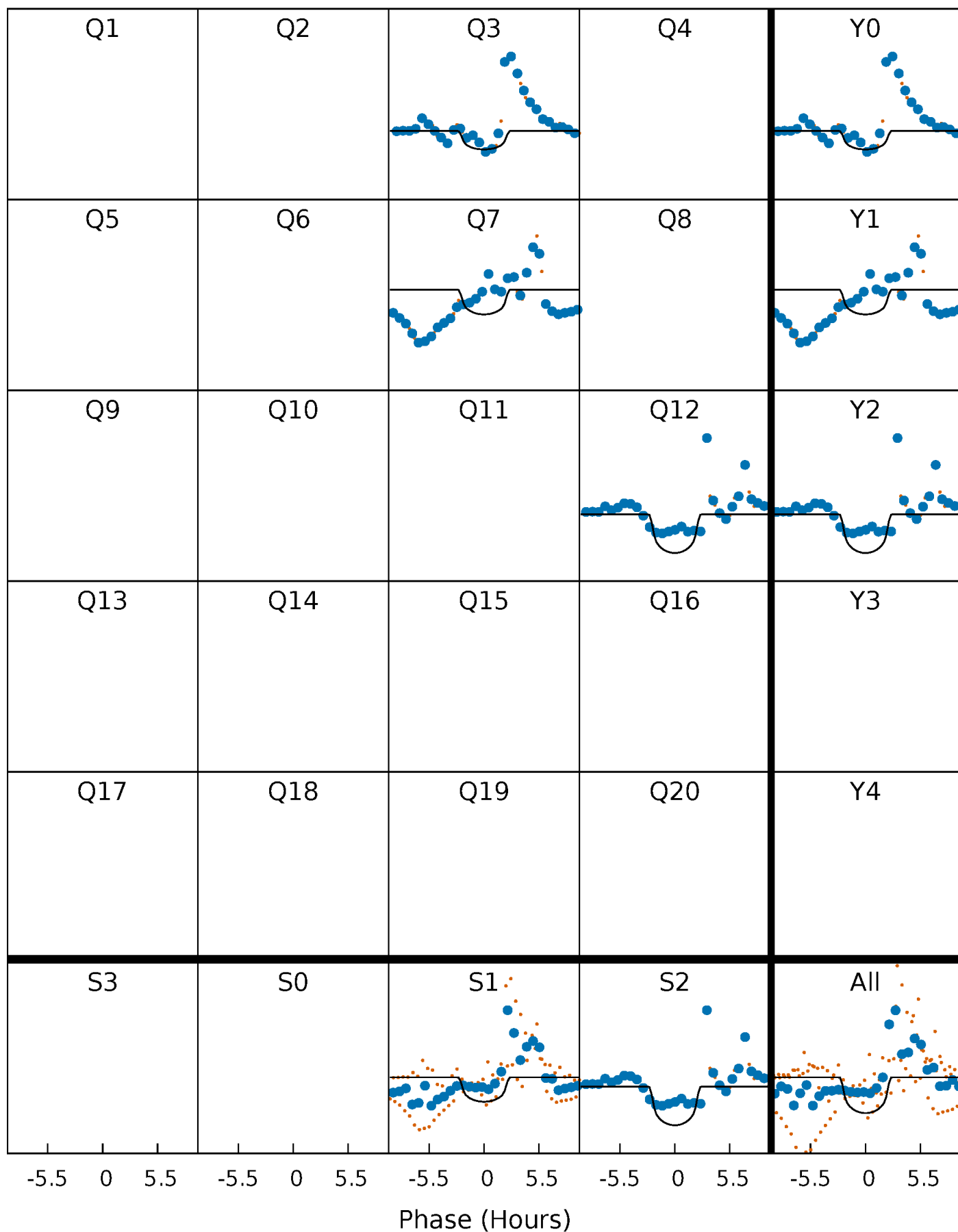
PDC Quarter-Phased Transit Curves

TCE 002996903-01 P=434.490397 Days $T_0=281.915053$ (BKJD)



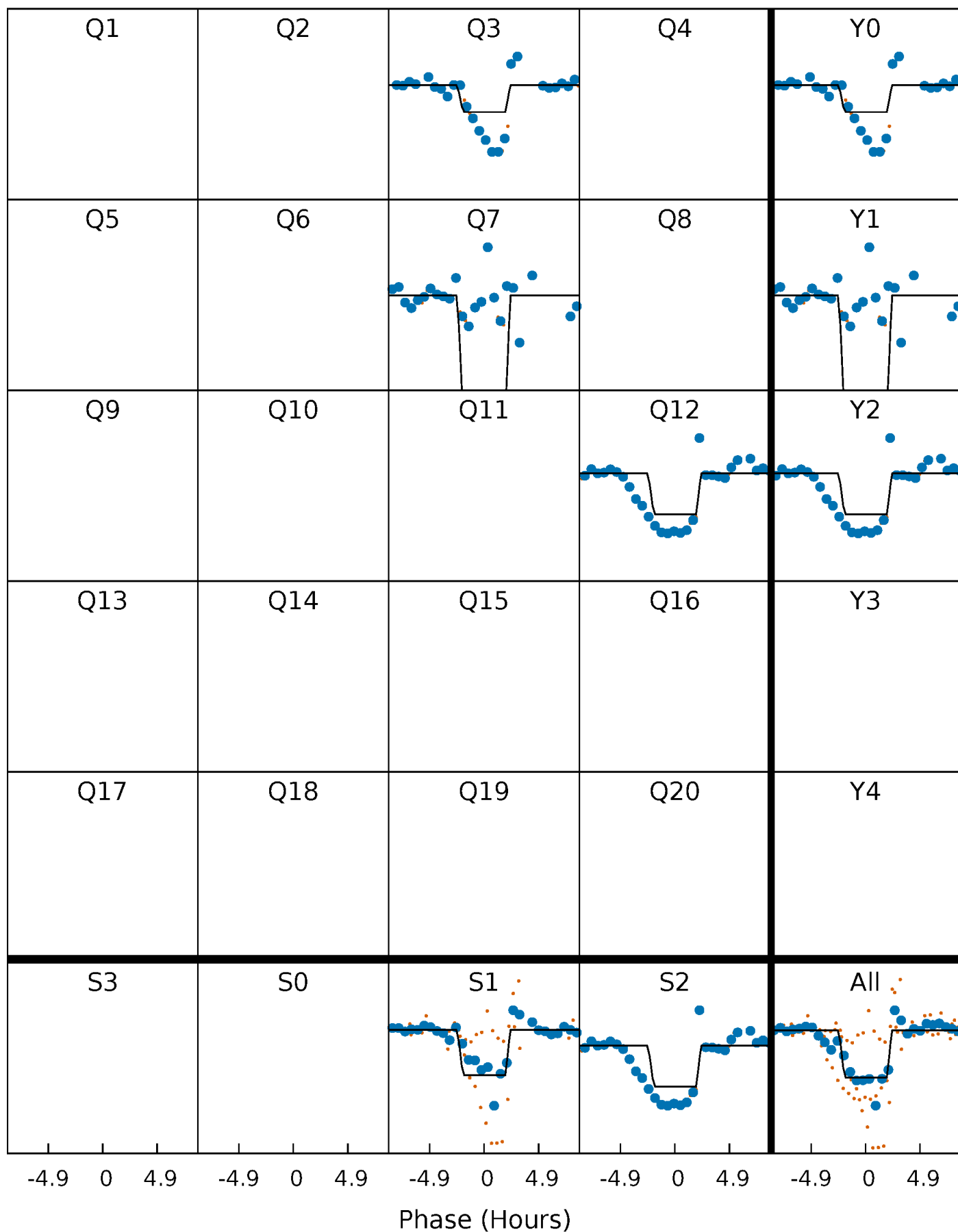
DV Quarter-Phased Transit Curves

TCE 002996903-01 P=434.490397 Days $T_0=281.915053$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

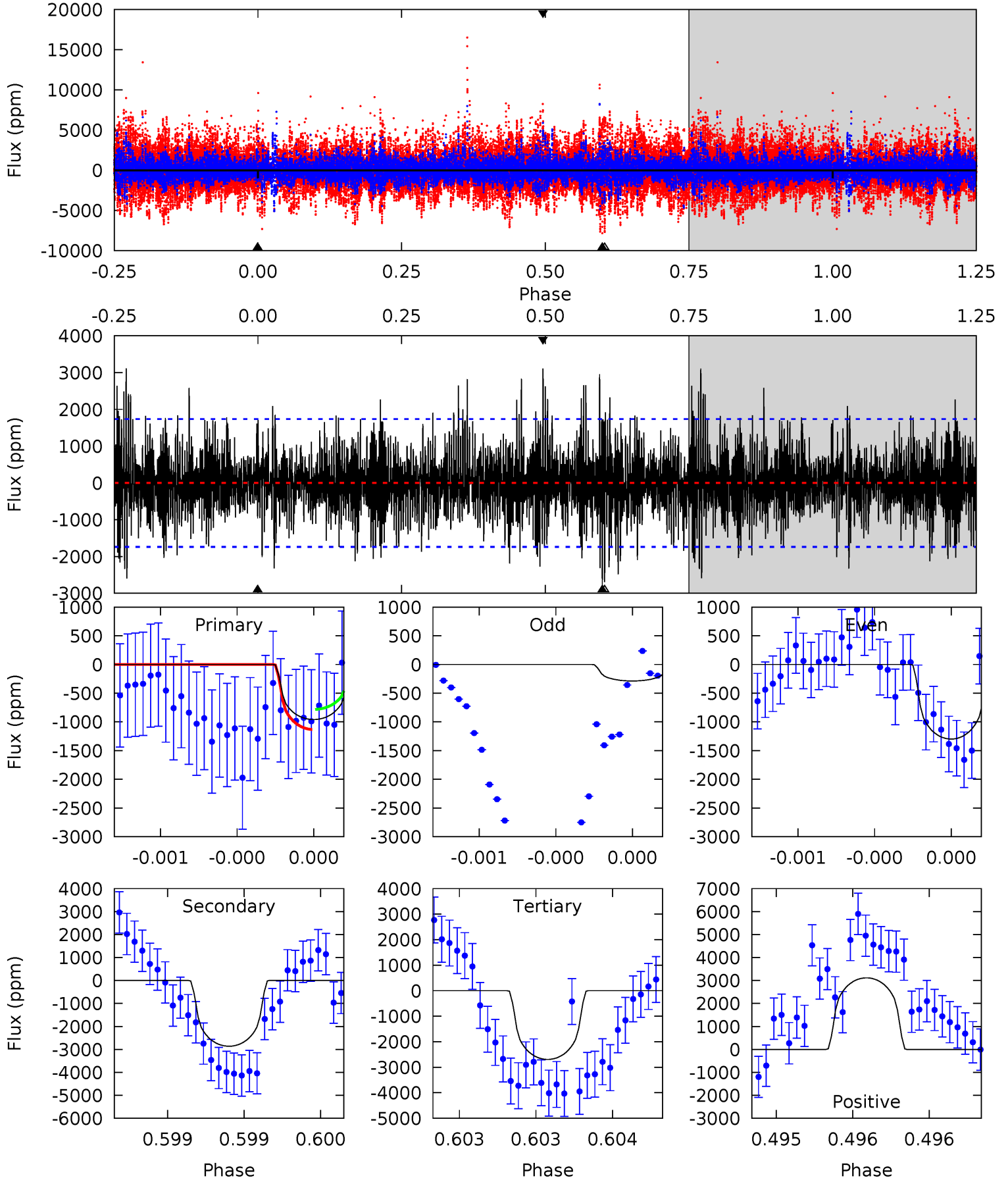
TCE 002996903-01 P=434.512842 Days $T_0=281.896915$ (BKJD)



DV Model-Shift Uniqueness Test

002996903-01, P = 434.490397 Days, E = 281.915053 Days

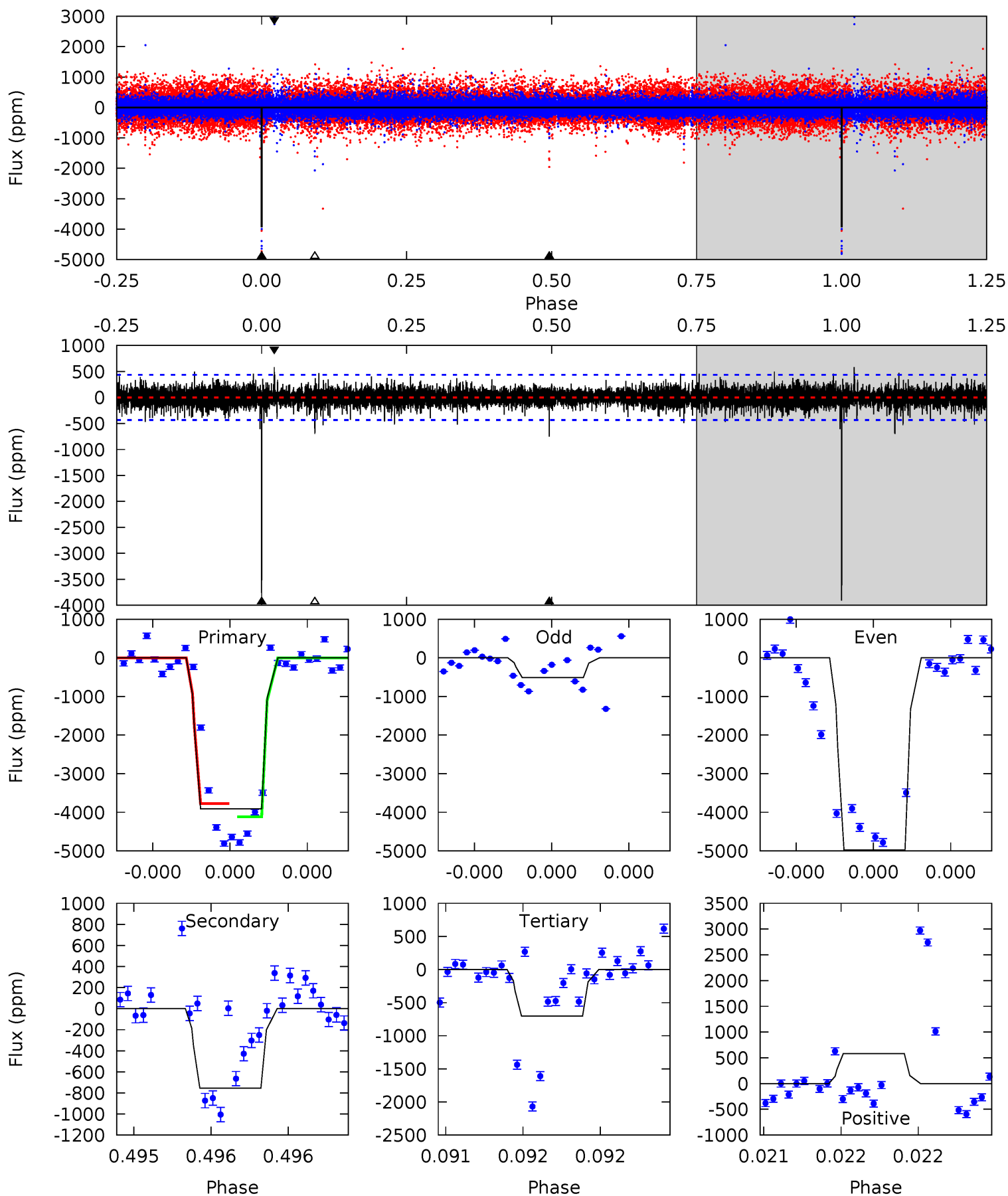
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.08	9.19	8.64	9.99	5.58	3.49	2.25	-5.56	-6.92	0.55	-0.81	1.43	0.85	0.52	0.57



Alt Model-Shift Uniqueness Test

002996903-01, P = 434.512842 Days, E = 281.896915 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.2	9.69	9.01	7.47	5.59	3.51	1.34	41.2	42.7	0.68	2.22	37.1	0.79	0.13	2.15



Stellar Parameters For KIC 002996903

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4797^{+76}_{-85}	$4.543^{+0.060}_{-0.016}$	$0.080^{+0.150}_{-0.150}$	$0.764^{+0.026}_{-0.048}$	$0.744^{+0.050}_{-0.027}$	$2.348^{+0.537}_{-0.156}$
	+2%/-2%	+1%/-0%	+188%/-188%	+3%/-6%	+7%/-4%	+23%/-7%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002996903-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2862 ± 312	$4.02^{+2.69}_{-2.48}$	254^{+5}_{-6}	5005^{+3151}_{-938}	$103903^{+581020}_{-67893}$
Alt.	-755 ± 78	$4.88^{+3.02}_{-2.74}$	254^{+5}_{-6}	3615^{+1283}_{-507}	17939^{+78146}_{-11012}

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

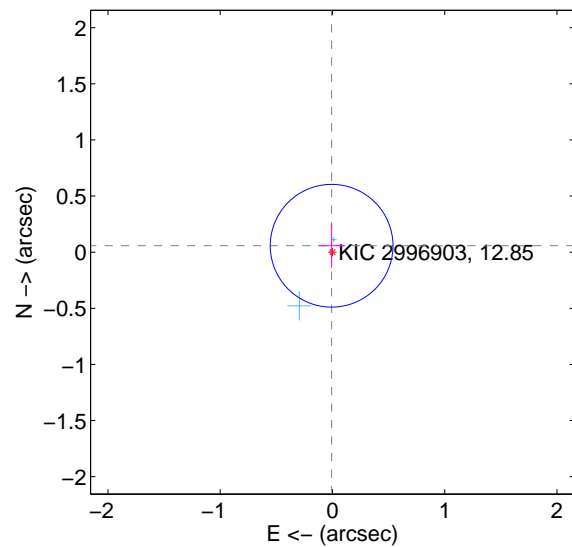
Supplemental centroid analysis for 002996903-01. Kepler magnitude: 12.85. Transit SNR 6.31

There are 2 quarters with good PRF difference image offsets

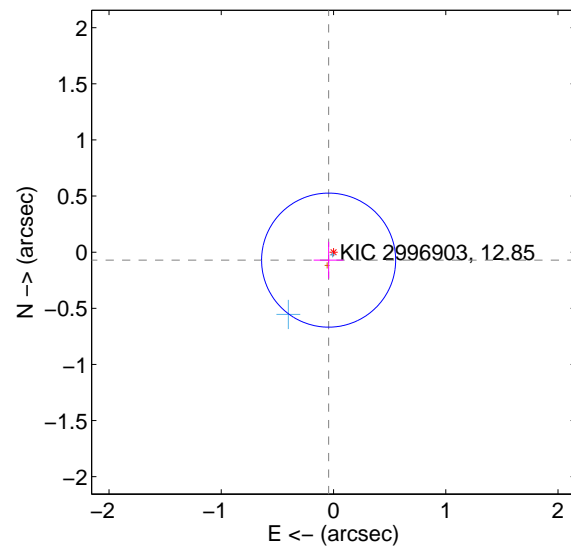
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.058 ± 0.182	0.32	0.007 ± 0.120	0.057 ± 0.196
PRF-fit source offset from KIC position	0.083 ± 0.199	0.42	0.044 ± 0.133	-0.071 ± 0.164
photometric centroid source offset	0.64 ± 0.39	1.65	-0.16 ± 0.26	-0.62 ± 0.39

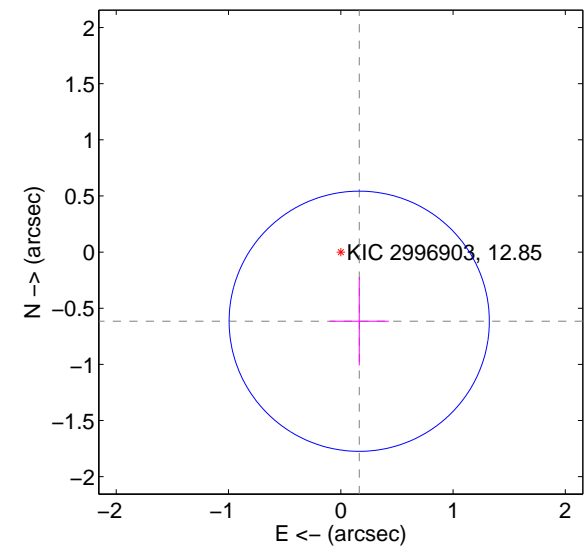
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

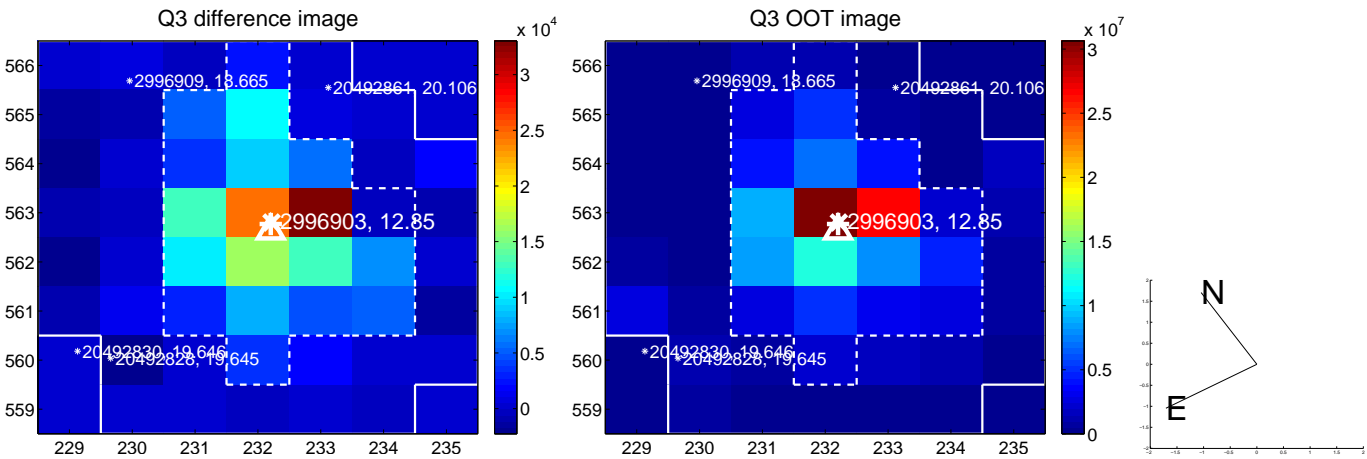


offset from photometric centroids

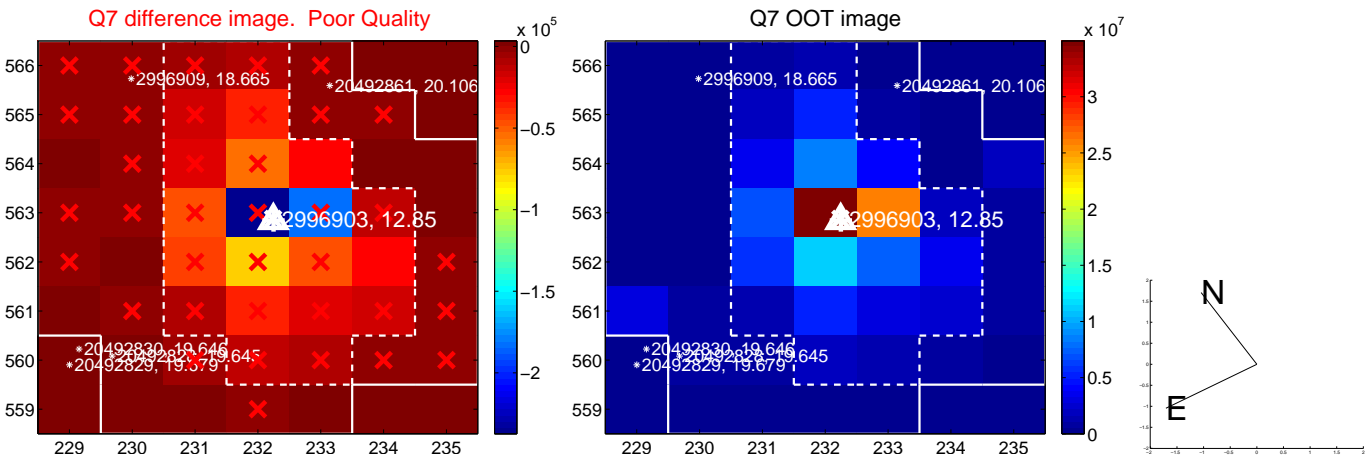


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

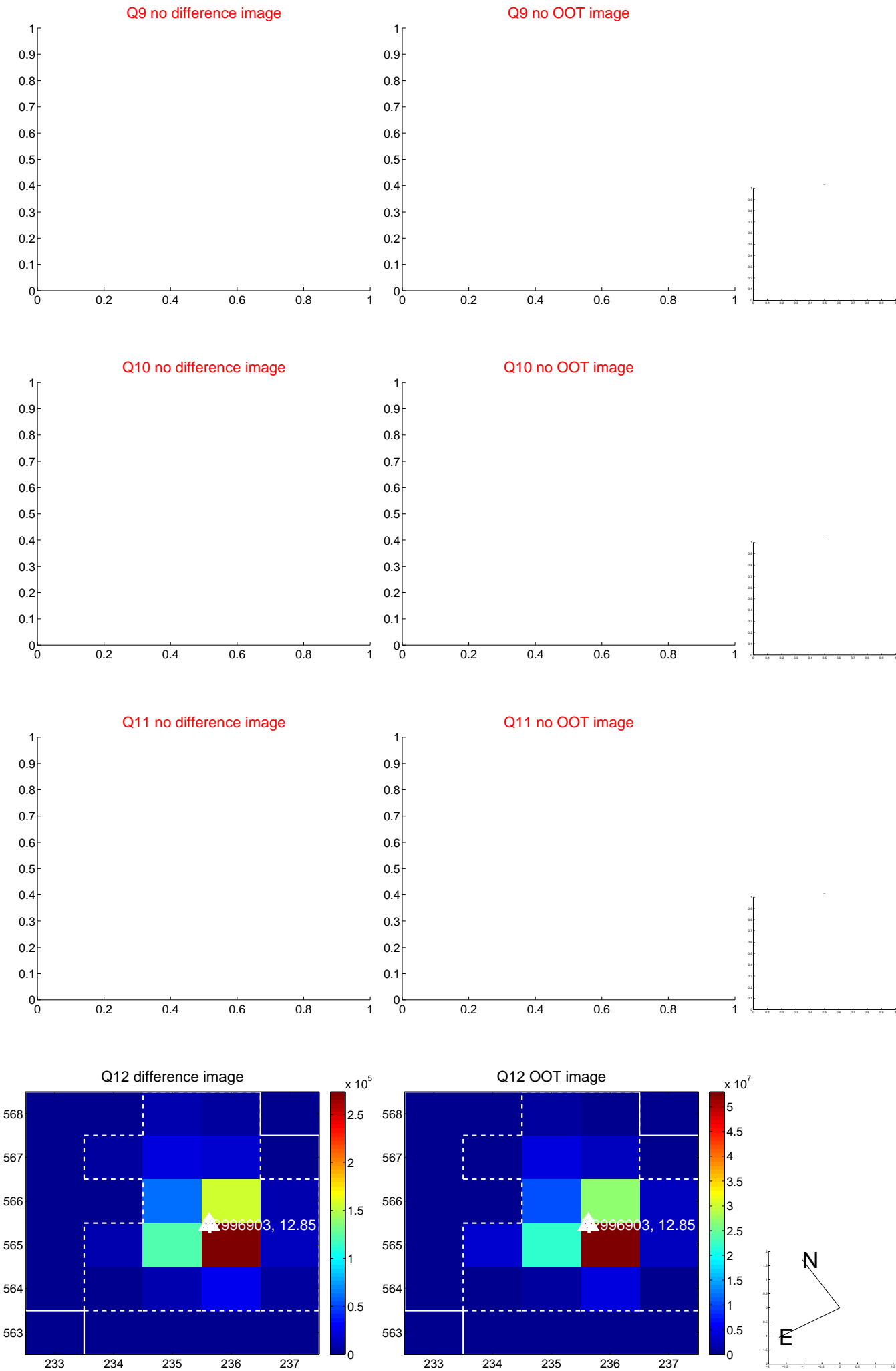
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



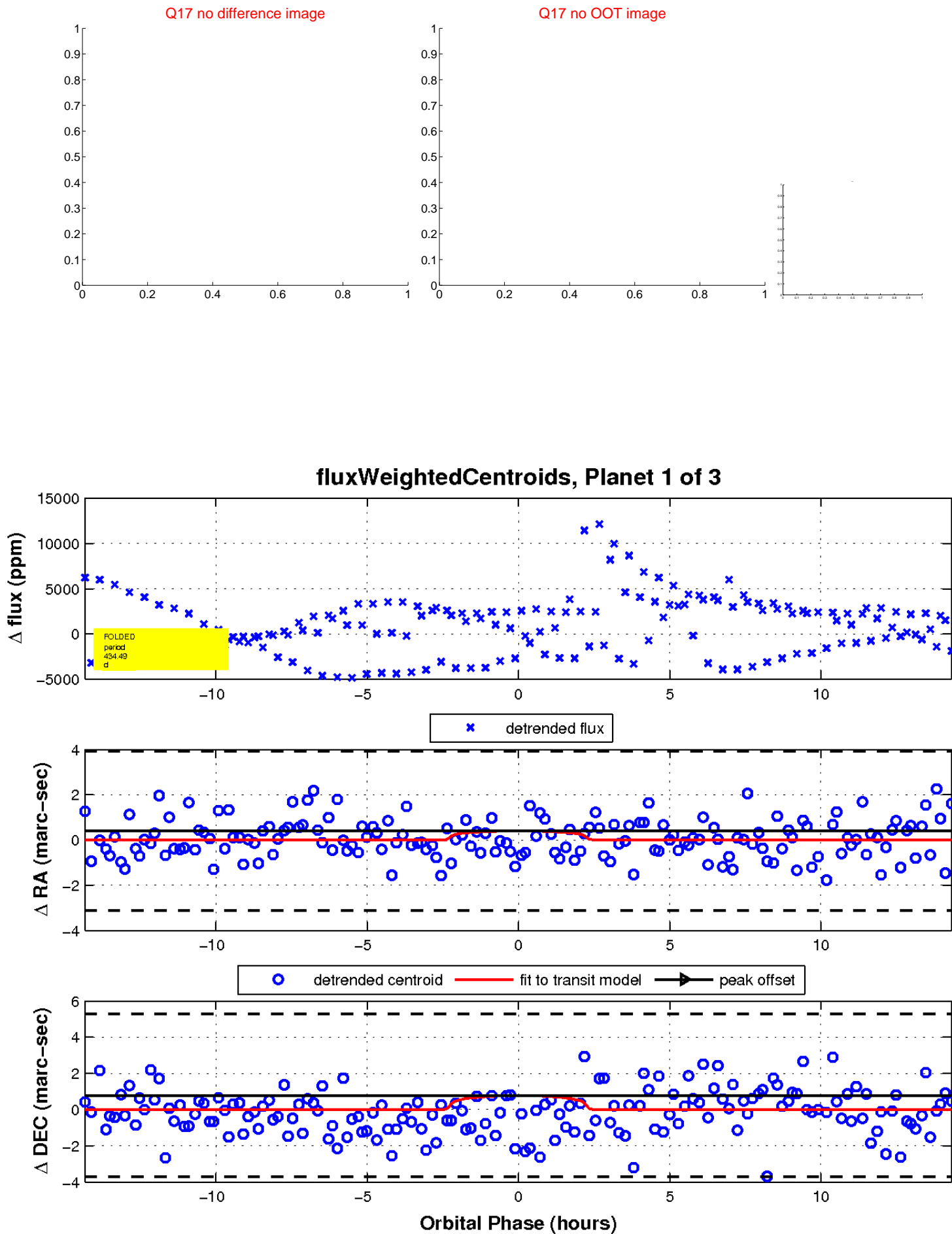
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

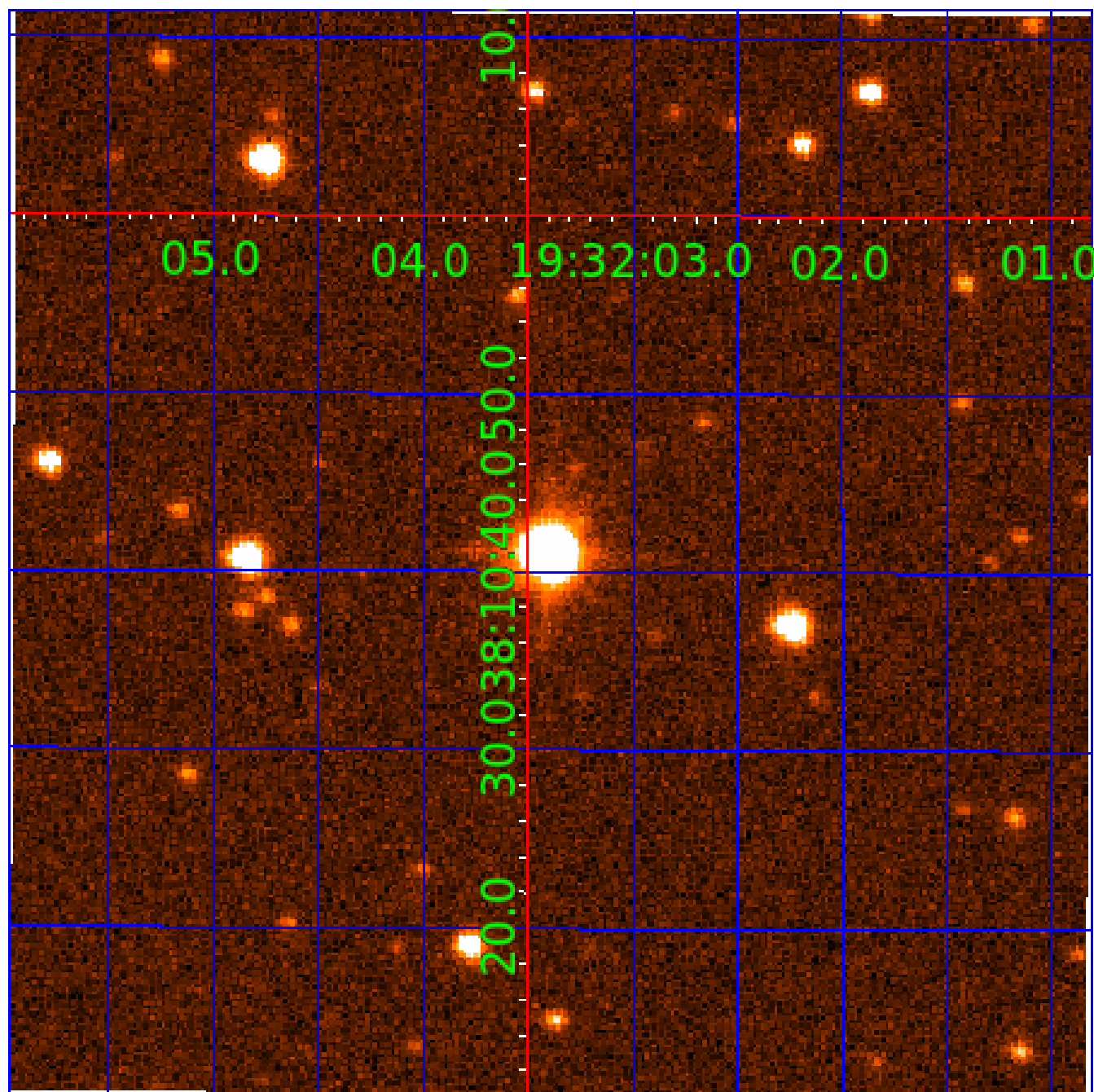


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002996903

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})
002996903-01	OBS	No	434.490397	281.915053	2374.4	4.778	17.4	6.3	0.76	4797	3.64	0.27
002996903-02	OBS	No	440.707041	487.453306	1919.9	2.584	15.4	6.4	0.76	4797	3.61	0.26
002996903-03	OBS	No	322.069715	244.861316	1455.2	3.489	20.8	3.5	0.76	4797	2.80	0.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002996903-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002996903-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002996903-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

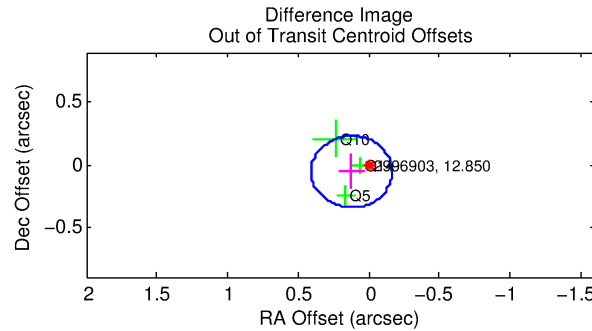
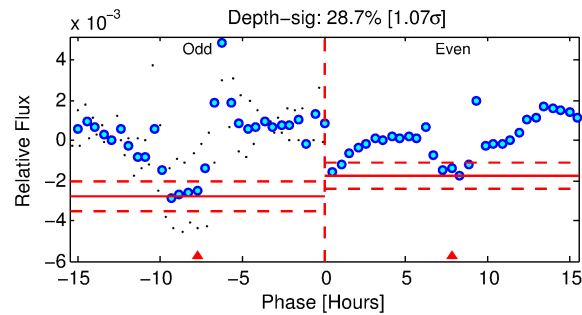
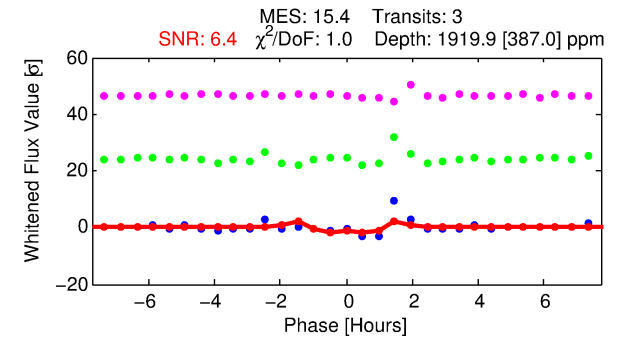
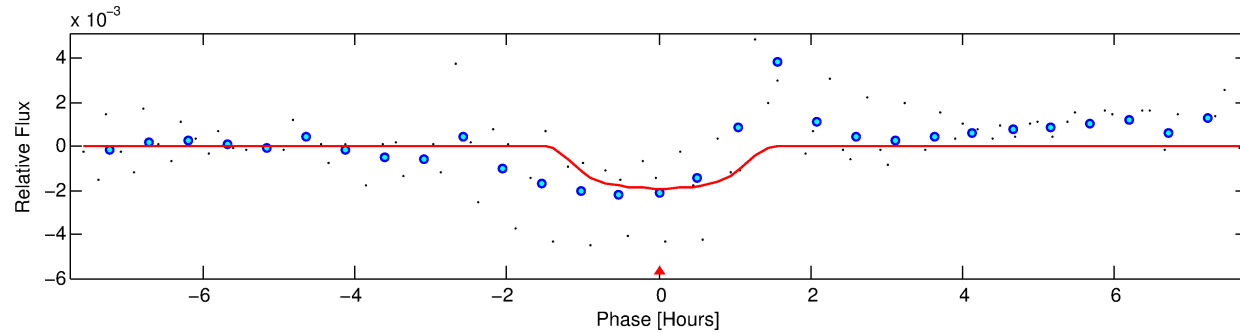
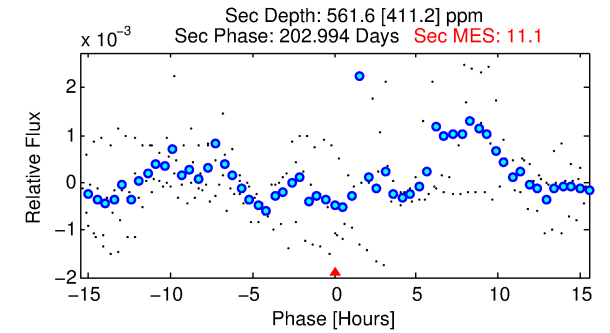
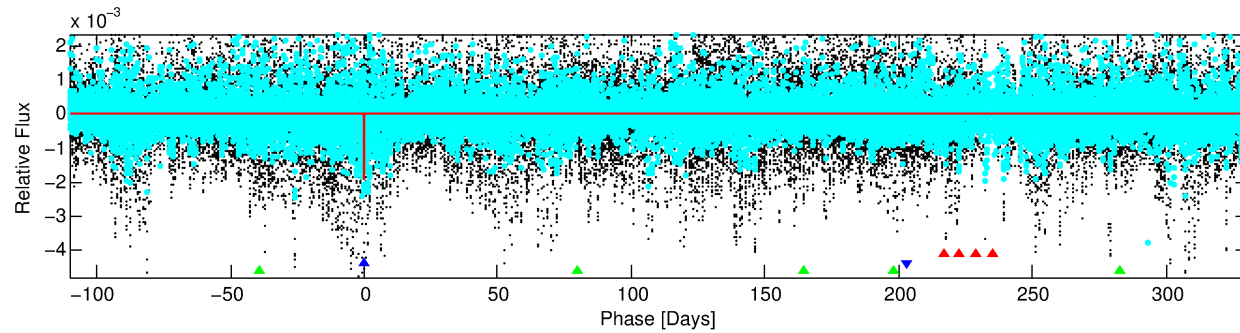
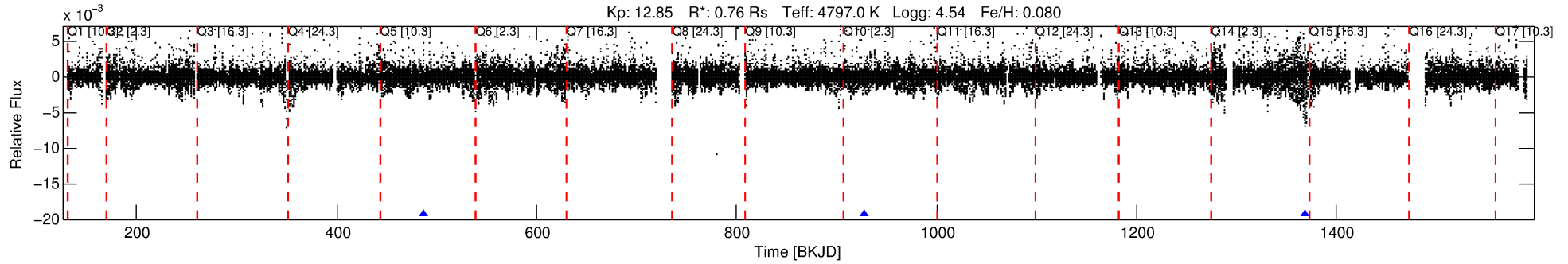
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002996903-02

No Significant Match Found

DV One-Page Summary

KIC: 2996903 Candidate: 2 of 3 Period: 440.707 d



DV Fit Results:

Period = 440.70704 [0.00430] d
Epoch = 487.4533 [0.0051] BKJD
Rp/R* = 0.0433 [0.0277]
a/R* = 985.53 [1905.70]
b = 0.72 [1.33]
Seff = 0.26 [0.03]
Teq = 183 [6] K
Rp = 3.61 [2.32] Re
a = 1.0269 [0.0639] AU
Ag = 25043.43 [37001.19] [0.68 σ]
Teffp = 3550 [1310] K [2.57 σ]

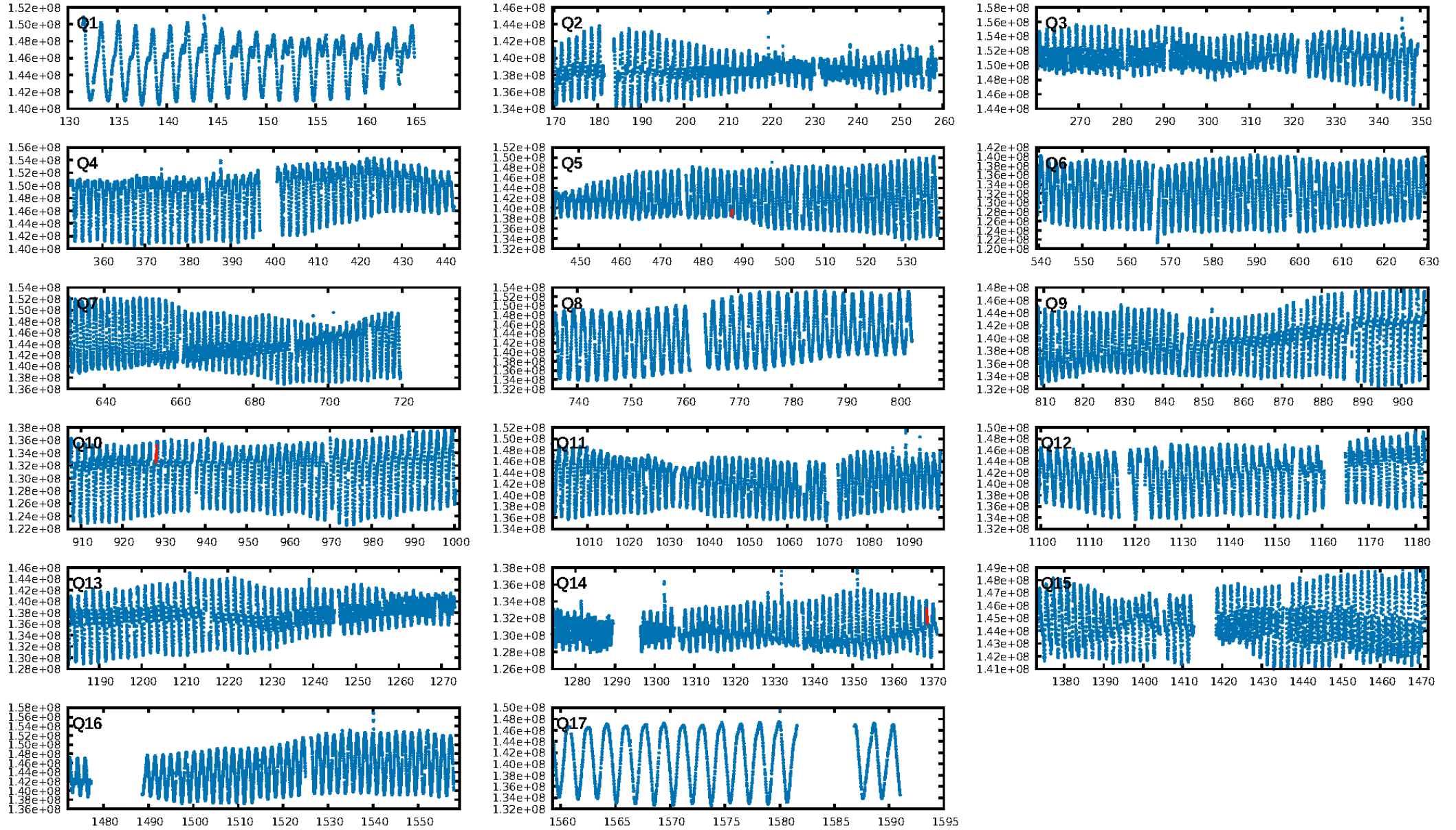
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [27.47 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 69.8%
ModelChiSquareGof-sig: 74.0%
Bootstrap-pfa: 7.87e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3478
Centroid-sig: 30.8%
Centroid-so: 0.229 arcsec [0.55 σ]
OotOffset-rm: 0.135 arcsec [1.42 σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-rm: 0.131 arcsec [0.87 σ]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

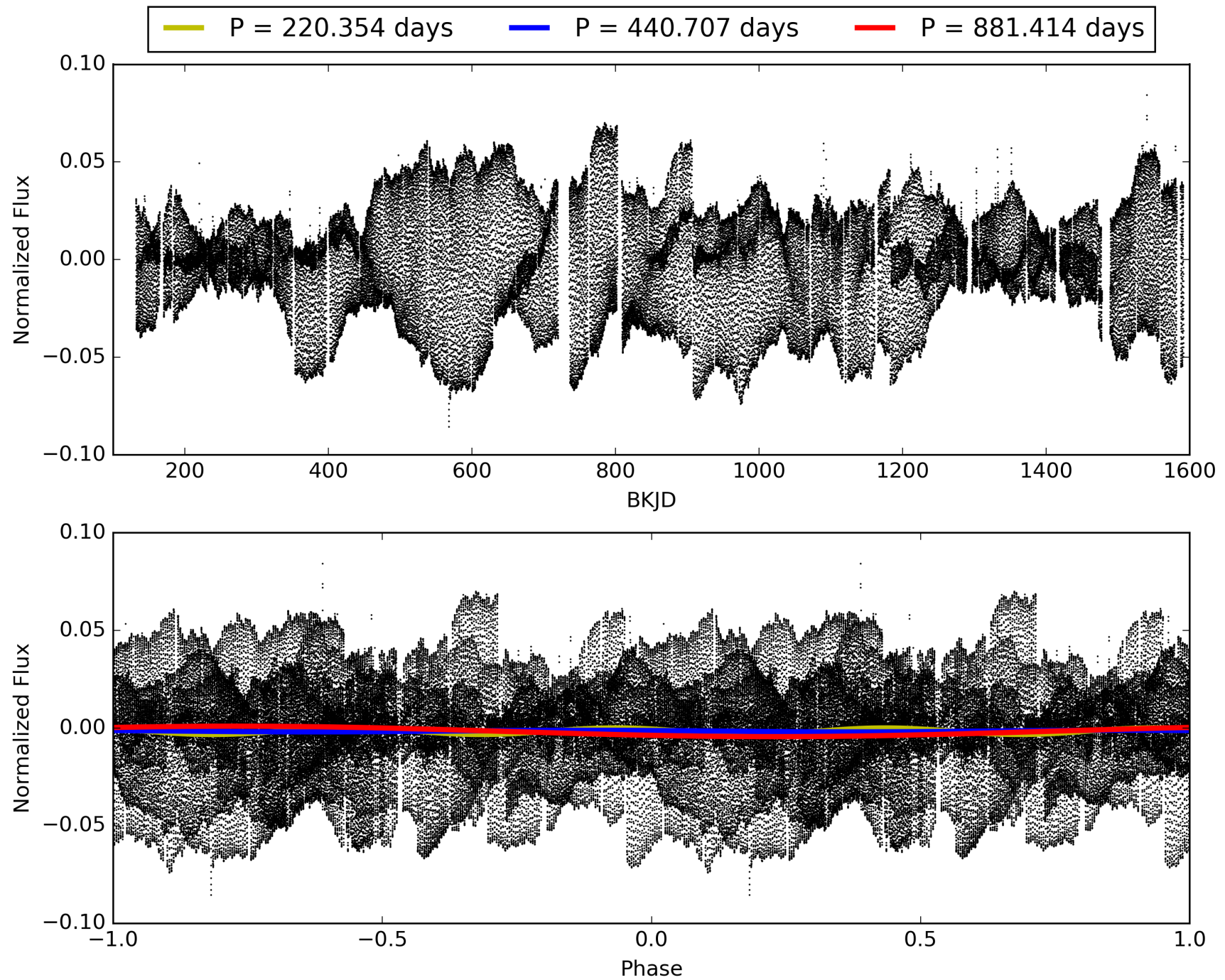
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:22:28 Z

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

TCE 002996903-02, PDC Light Curves

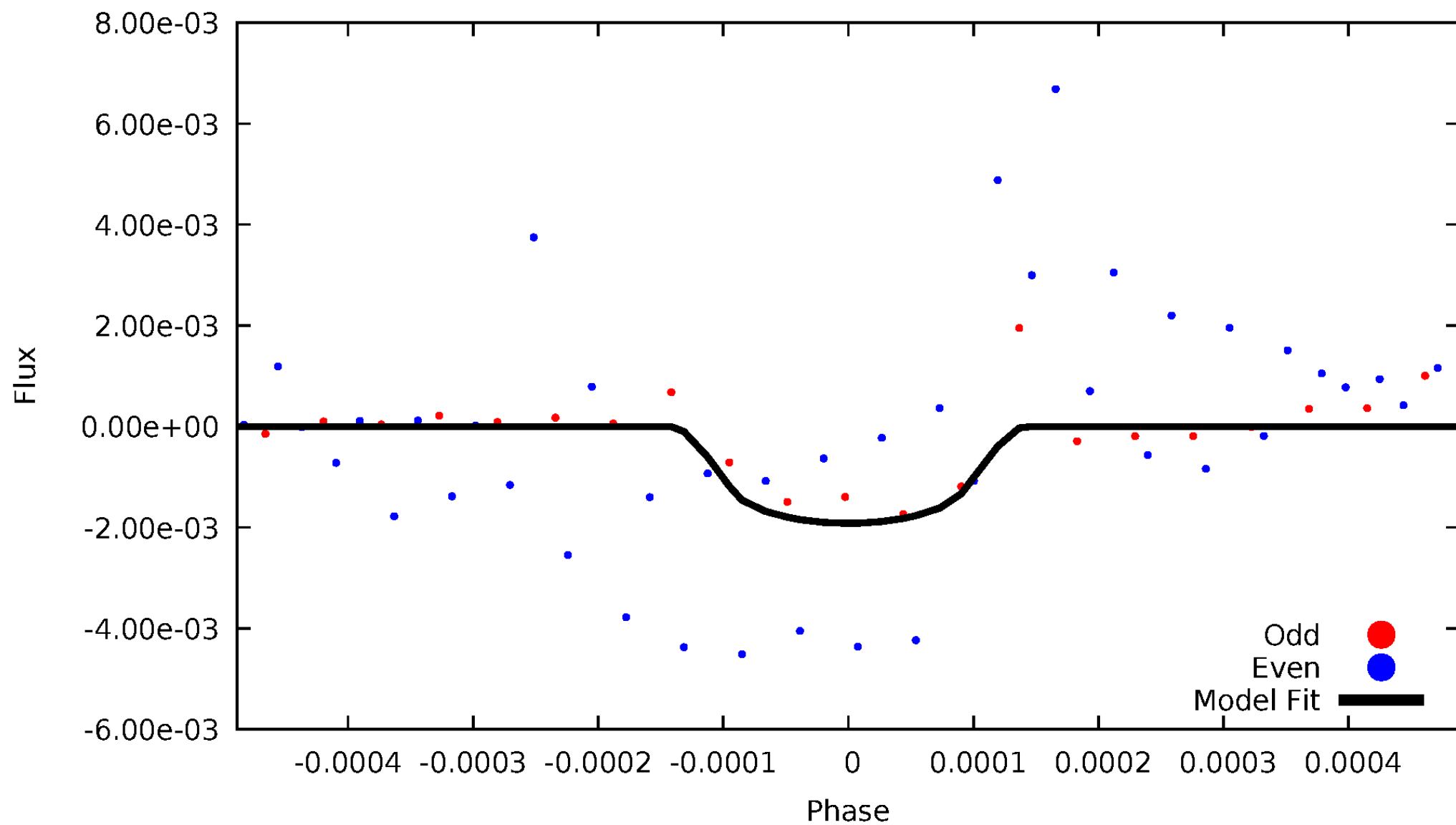


TCE 002996903-02



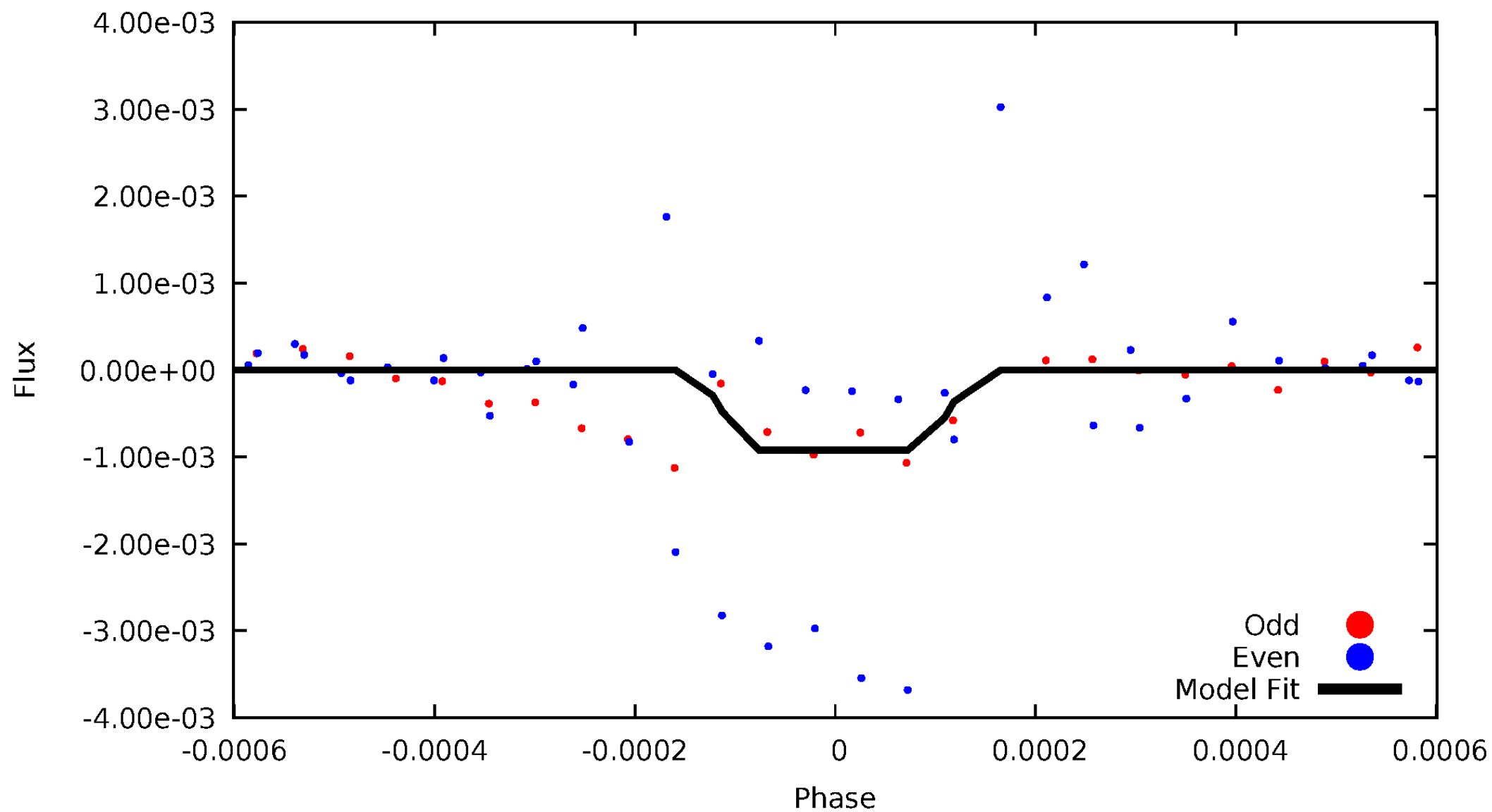
DV Odd/Even

TCE 002996903-02



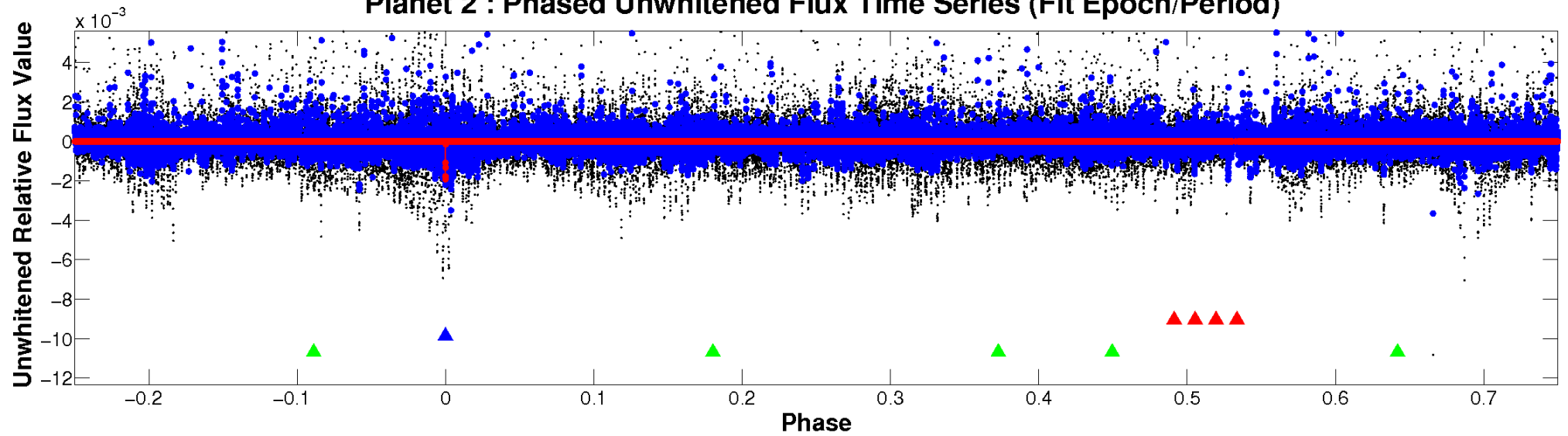
ALT Odd/Even

TCE 002996903-02

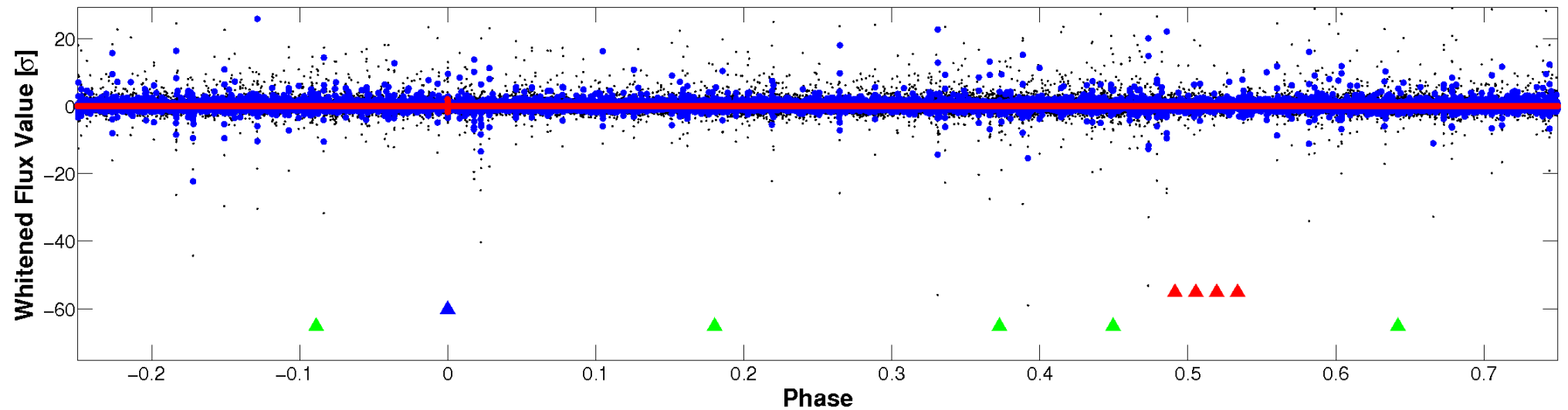


Non-Whitened Vs. Whitened Light Curve

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

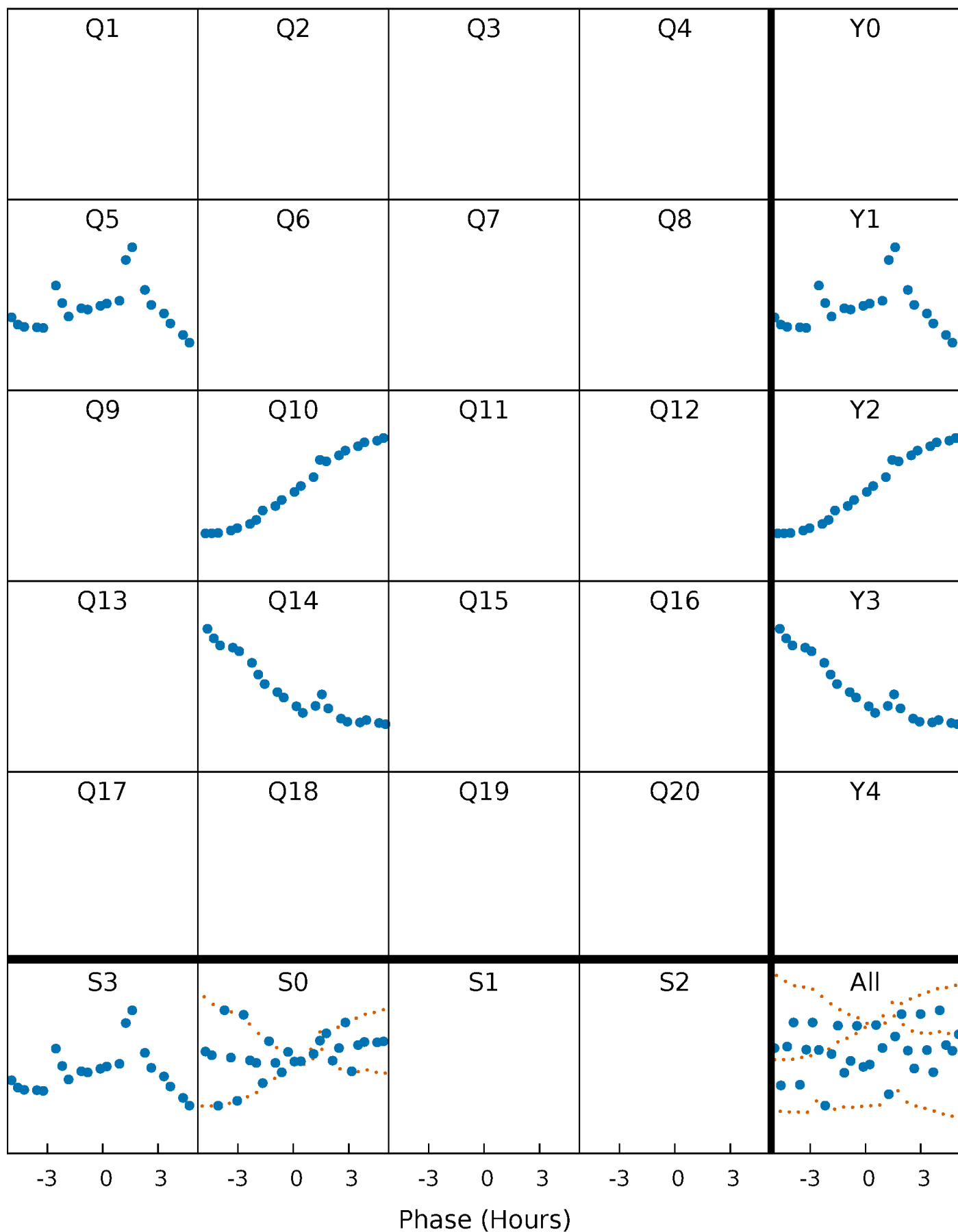


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



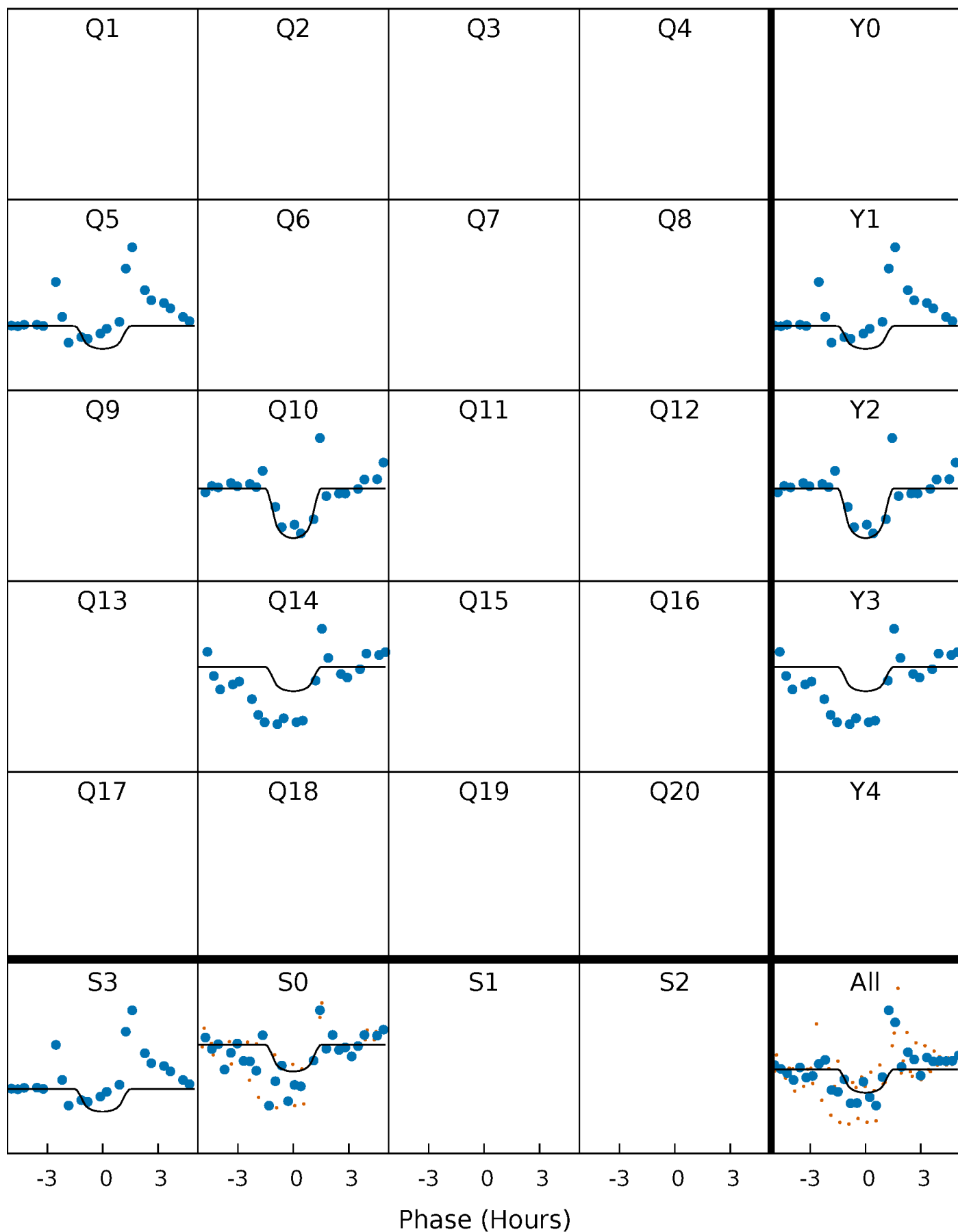
PDC Quarter-Phased Transit Curves

TCE 002996903-02 P=440.707041 Days $T_0=487.453306$ (BKJD)



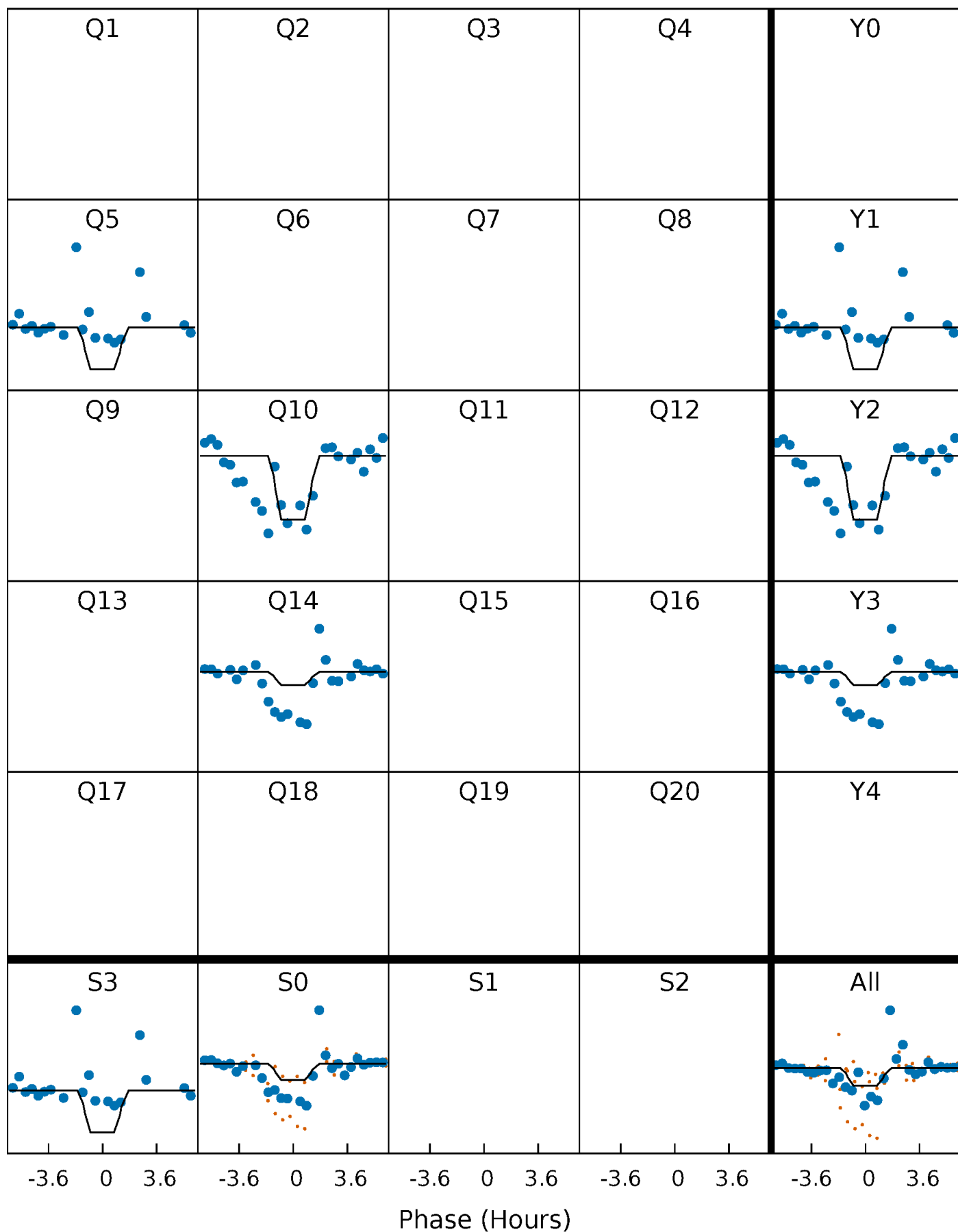
DV Quarter-Phased Transit Curves

TCE 002996903-02 $P=440.707041$ Days $T_0=487.453306$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

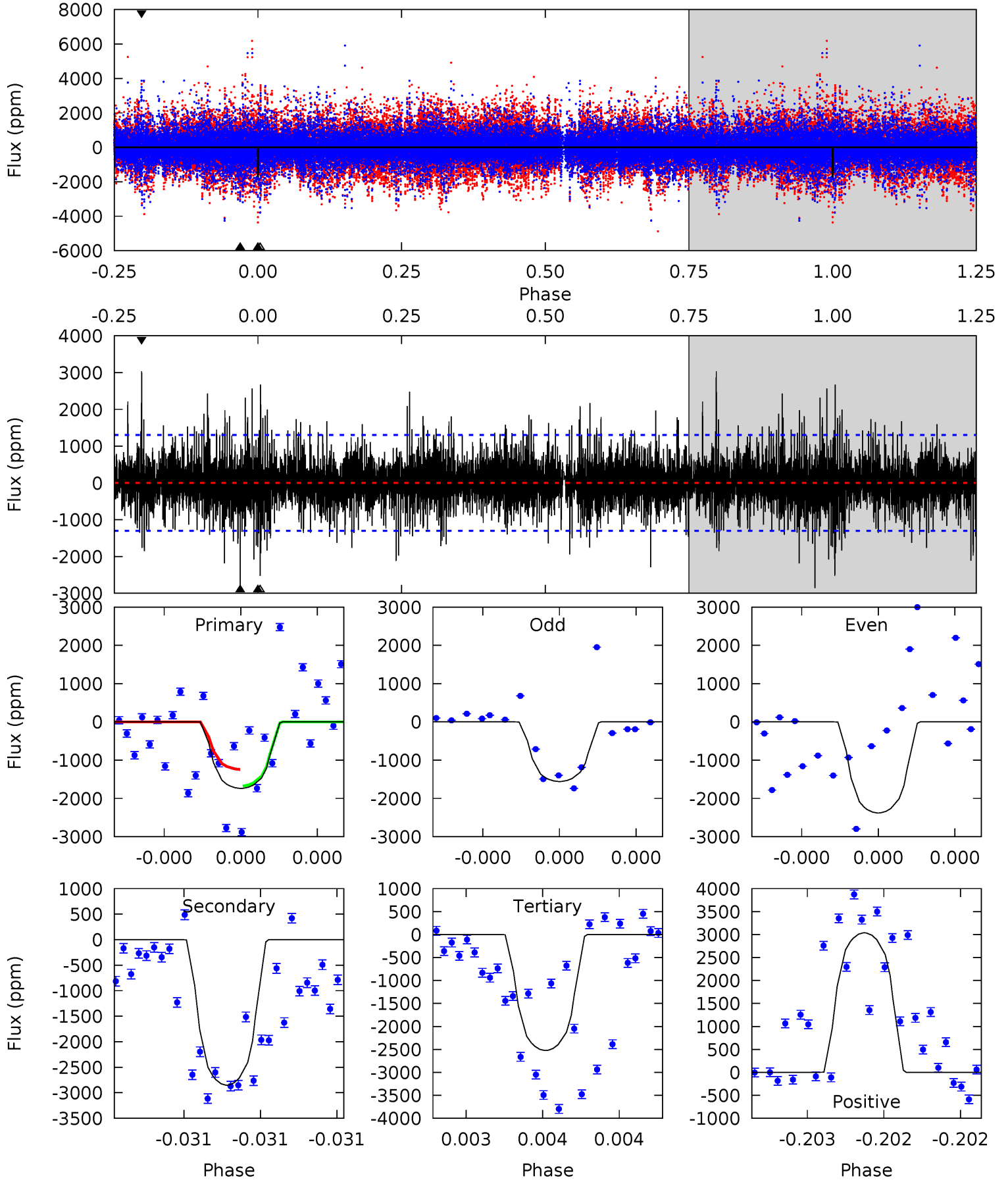
TCE 002996903-02 P=440.711022 Days $T_0=487.437254$ (BKJD)



DV Model-Shift Uniqueness Test

002996903-02, P = 440.707041 Days, E = 46.746265 Days

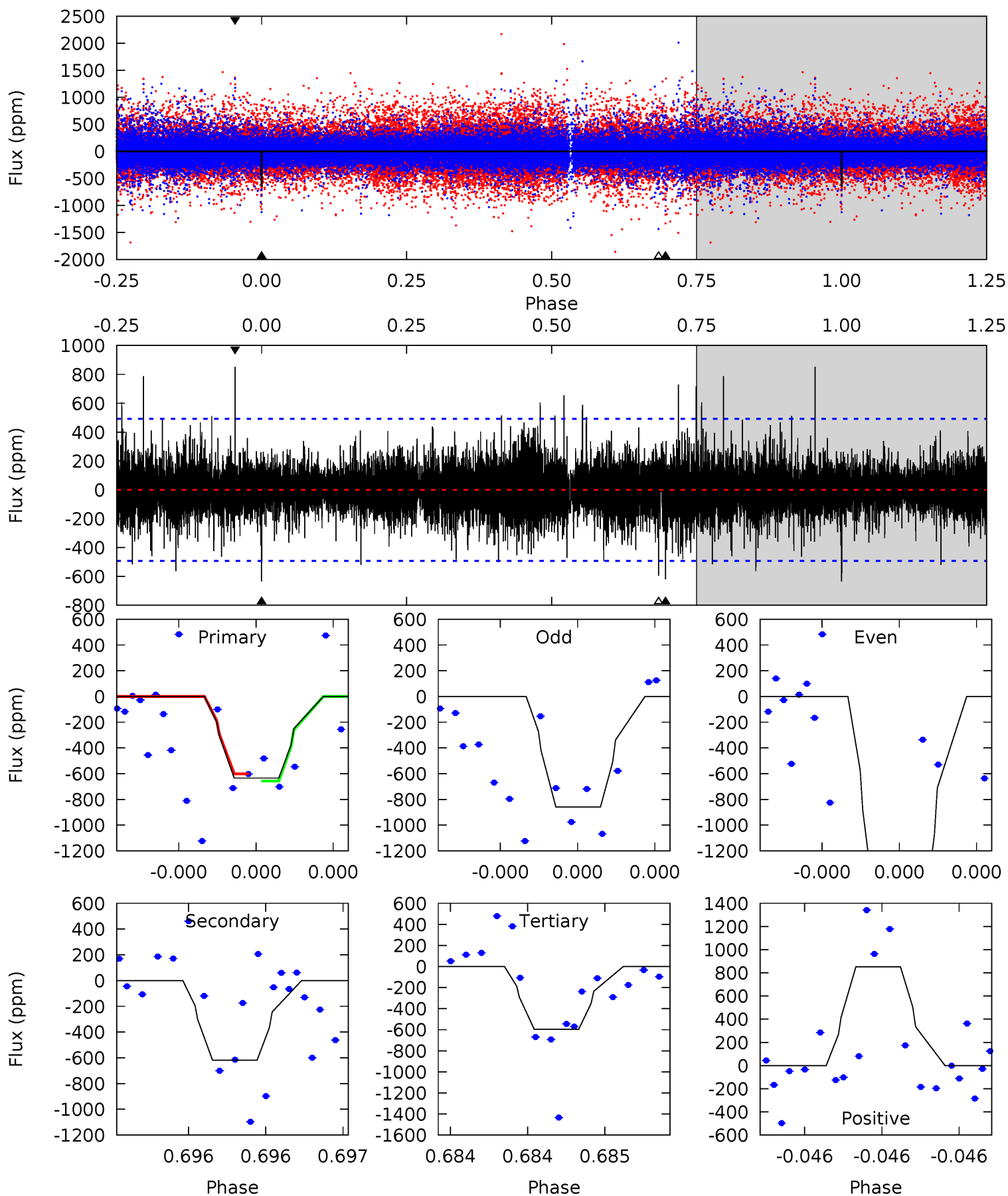
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.58	12.4	11.0	13.2	5.68	3.64	2.13	-3.43	-5.66	1.42	-0.81	1.61	1.35	0.52	0.92



Alt Model-Shift Uniqueness Test

002996903-02, P = 440.711022 Days, E = 46.726232 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.34	7.16	6.89	9.87	5.70	3.67	1.38	0.45	-2.52	0.27	-2.70	5.94	1.72	0.57	0



Stellar Parameters For KIC 002996903

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4797^{+76}_{-85}	$4.543^{+0.060}_{-0.016}$	$0.080^{+0.150}_{-0.150}$	$0.764^{+0.026}_{-0.048}$	$0.744^{+0.050}_{-0.027}$	$2.348^{+0.537}_{-0.156}$
	+2%/-2%	+1%/-0%	+188%/-188%	+3%/-6%	+7%/-4%	+23%/-7%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002996903-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2852 ± 229	$3.76^{+2.21}_{-1.98}$	253^{+5}_{-6}	5112^{+2431}_{-849}	$119803^{+400710}_{-72077}$
Alt.	-618 ± 86	$2.85^{+2.15}_{-1.72}$	253^{+5}_{-6}	4212^{+2005}_{-749}	$44285^{+232317}_{-29720}$

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

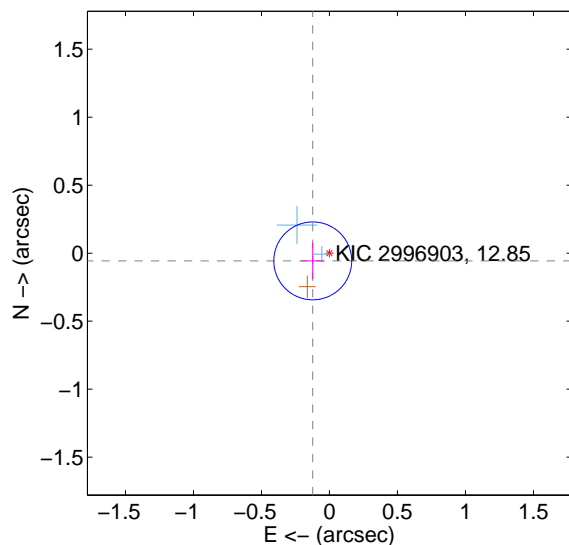
Supplemental centroid analysis for 002996903-02. Kepler magnitude: 12.85. Transit SNR 6.44

There are 2 quarters with good PRF difference image offsets

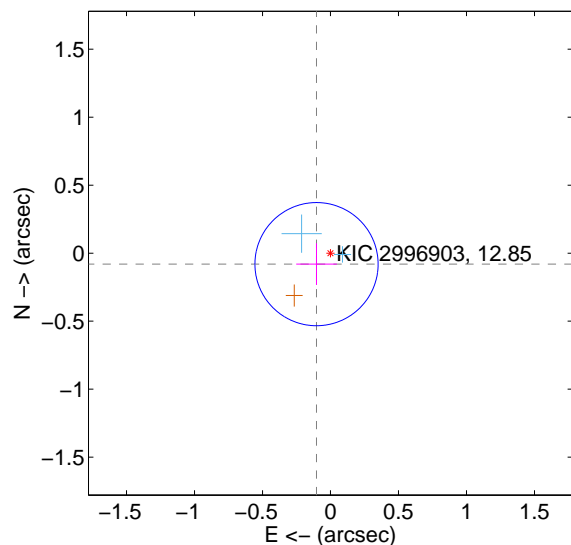
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.135 ± 0.095	1.42	0.123 ± 0.085	-0.057 ± 0.133
PRF-fit source offset from KIC position	0.131 ± 0.151	0.87	0.103 ± 0.149	-0.081 ± 0.153
photometric centroid source offset	0.23 ± 0.42	0.55	-0.23 ± 0.42	0.00 ± 0.48

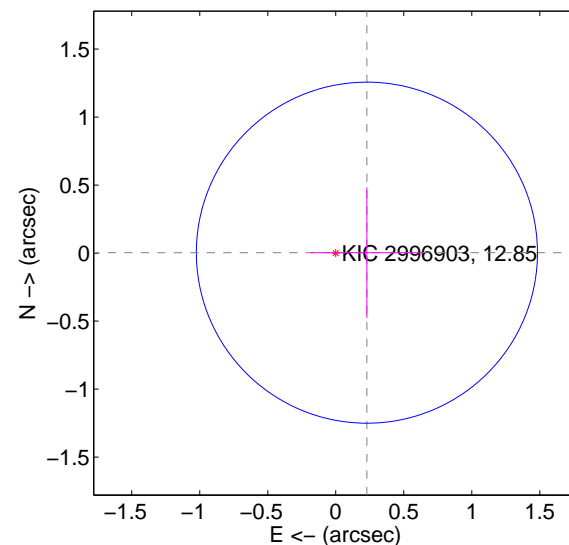
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

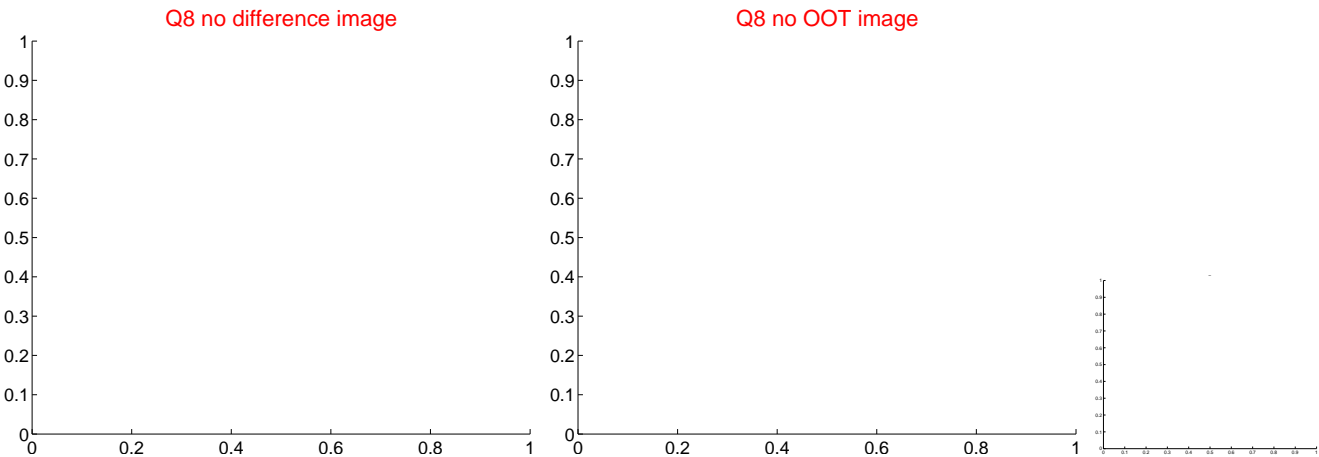
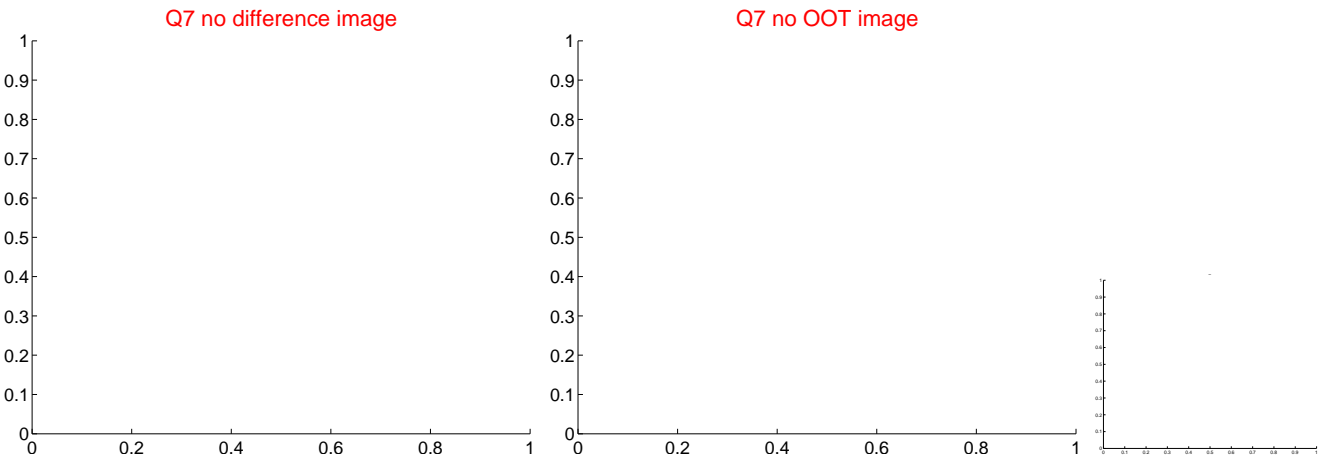
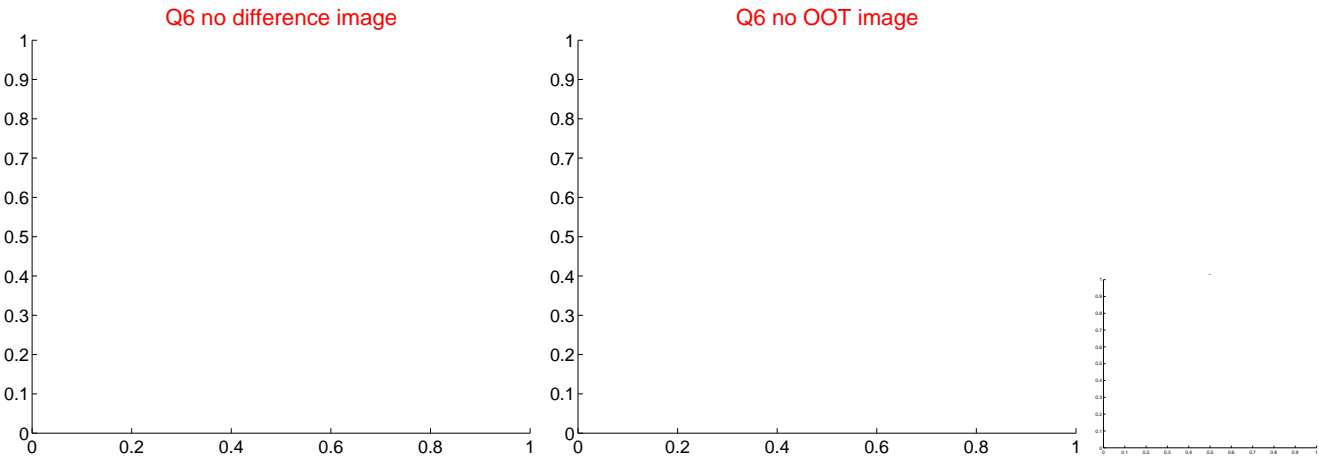
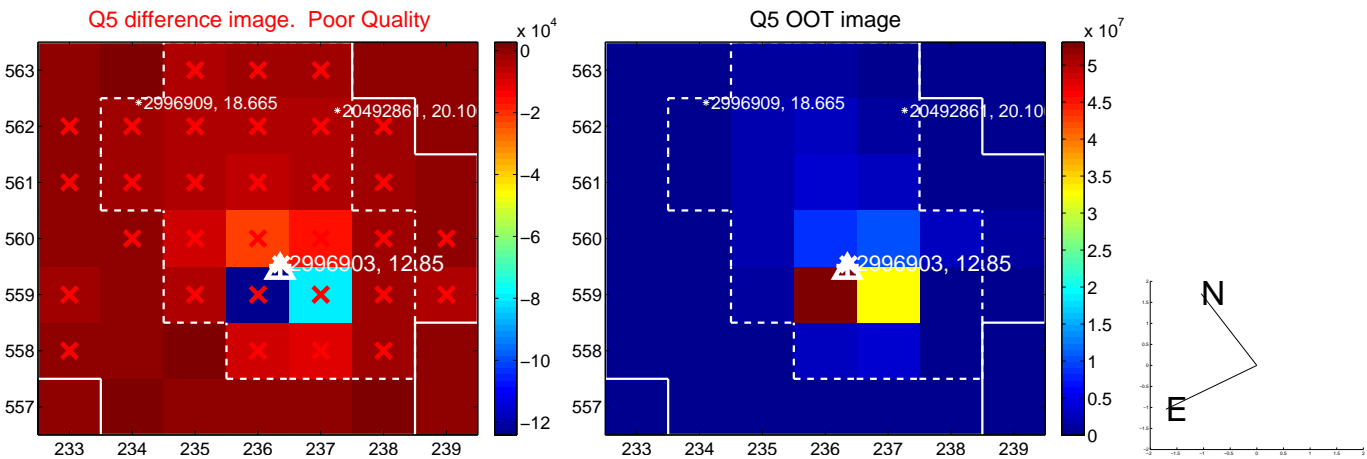


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

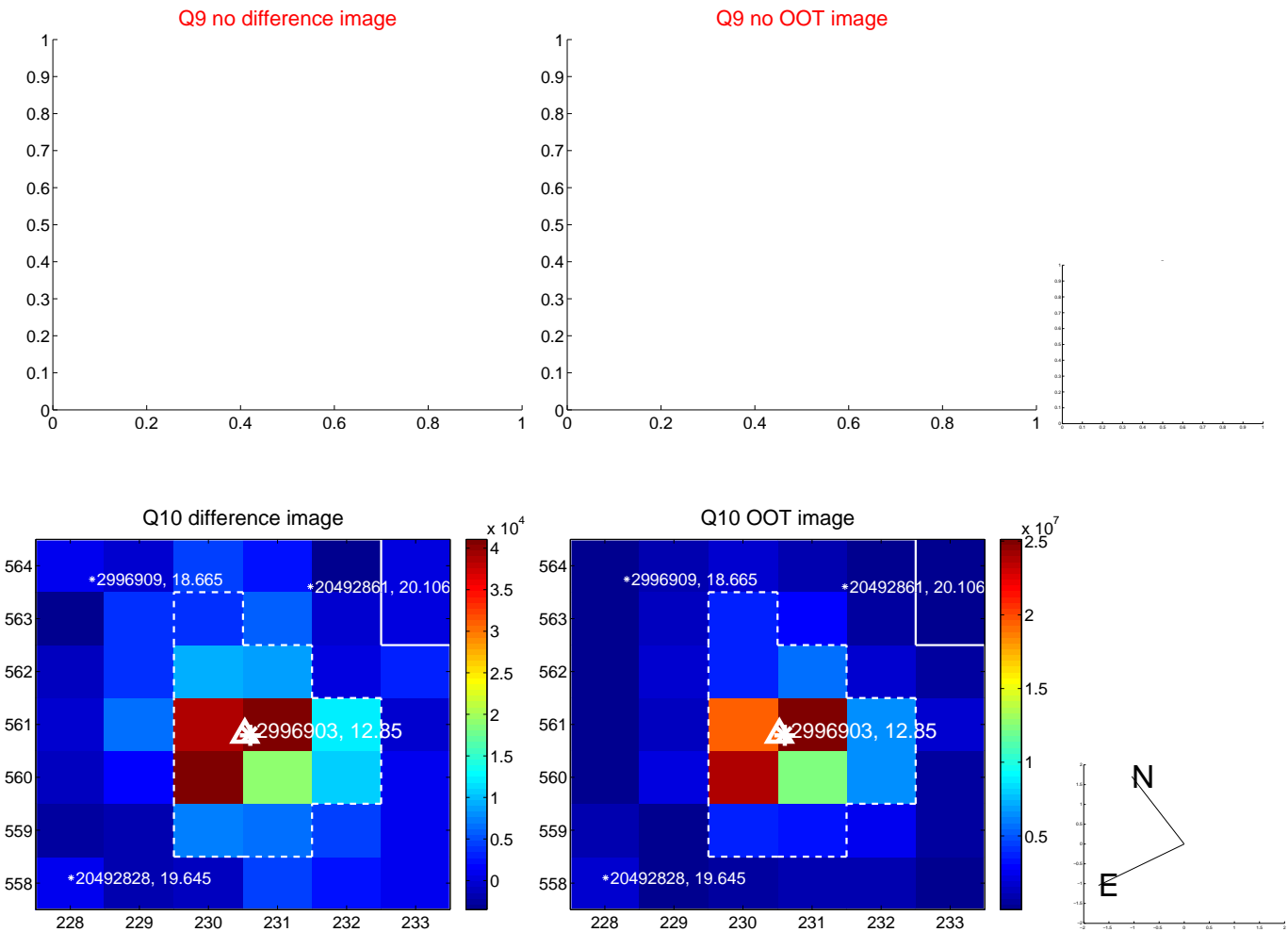
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



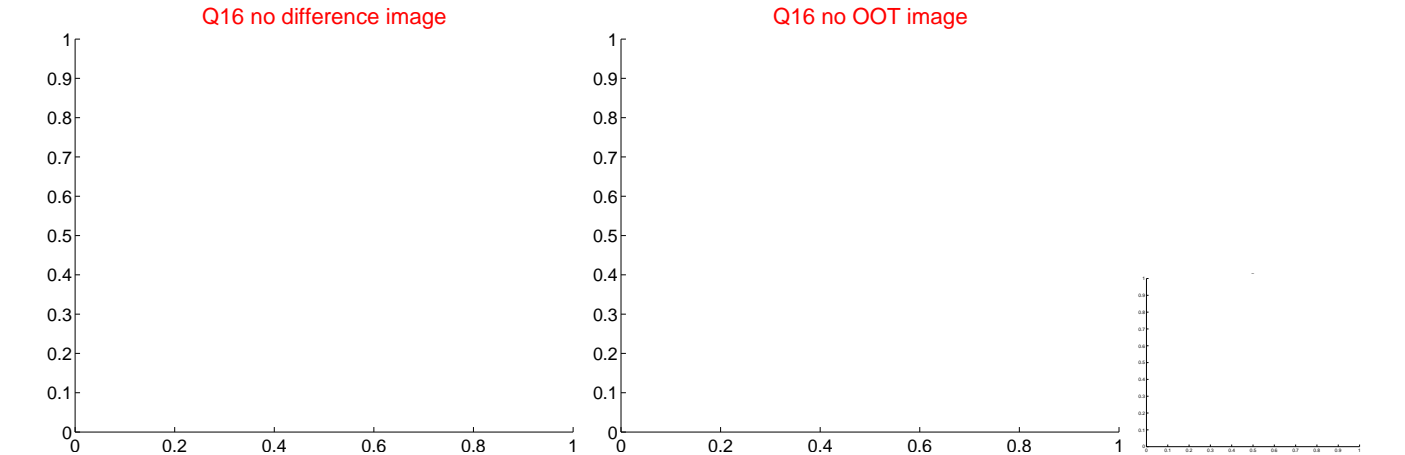
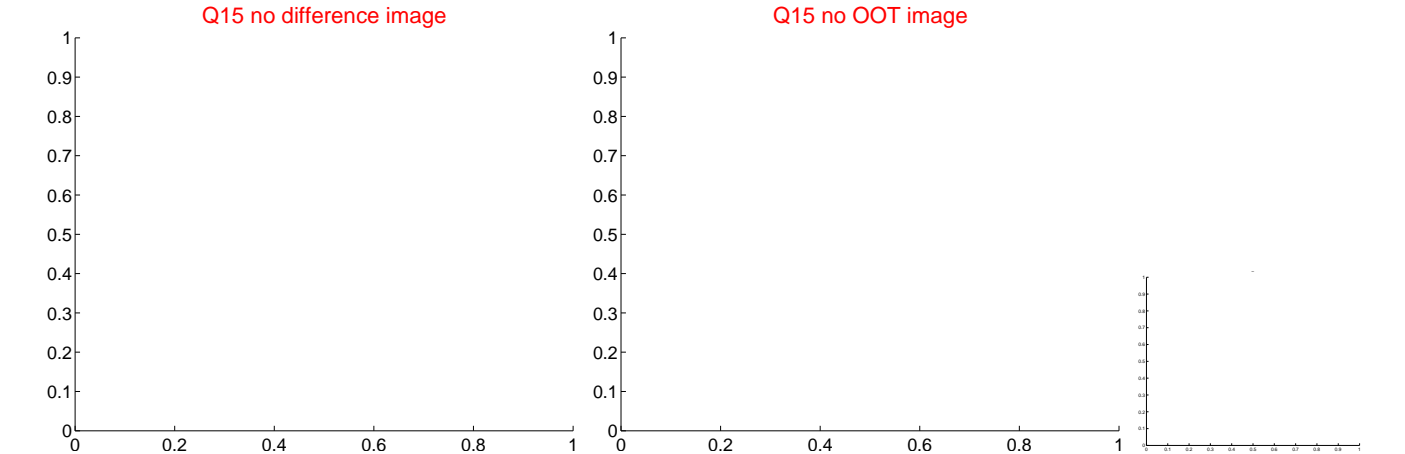
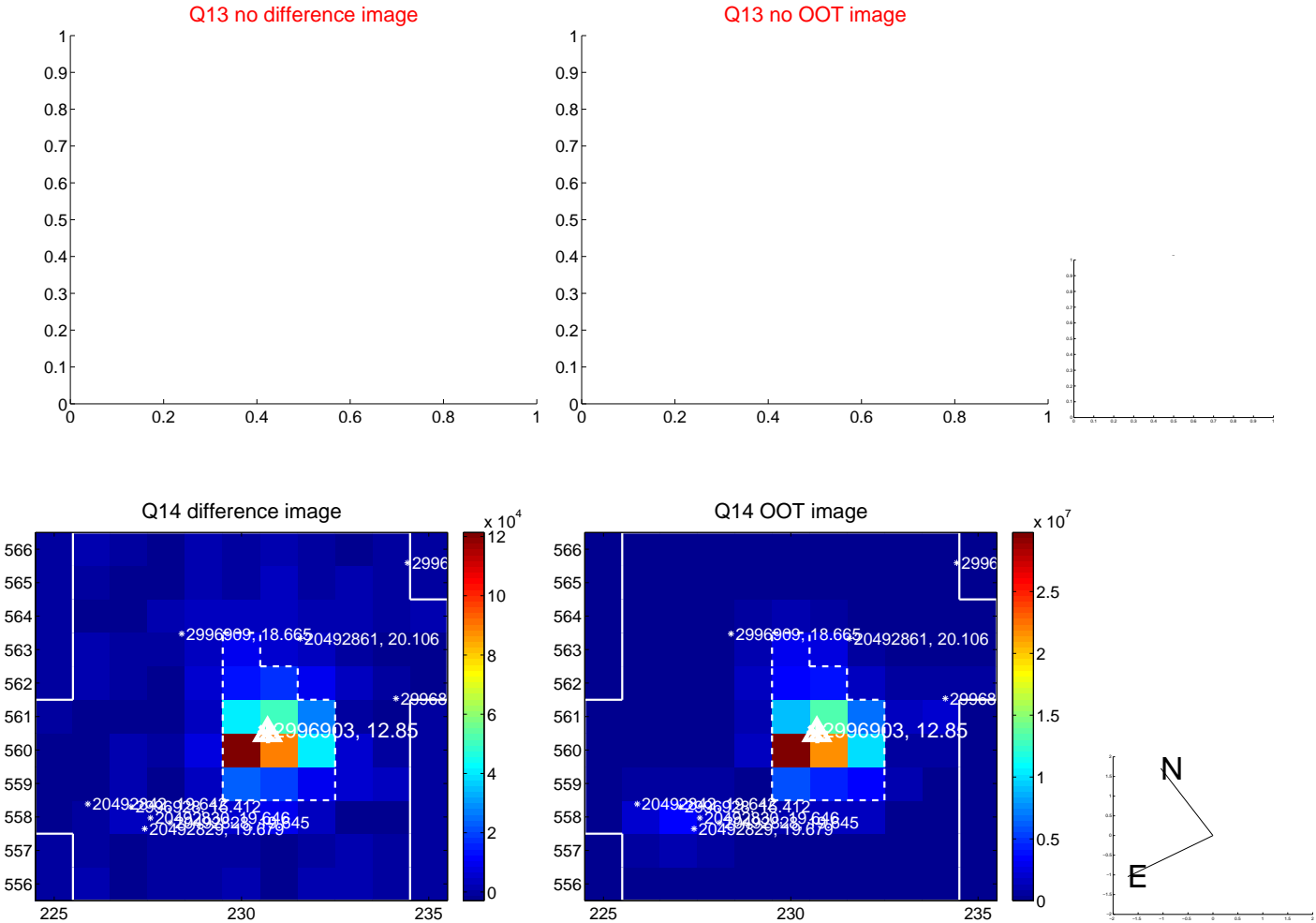
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



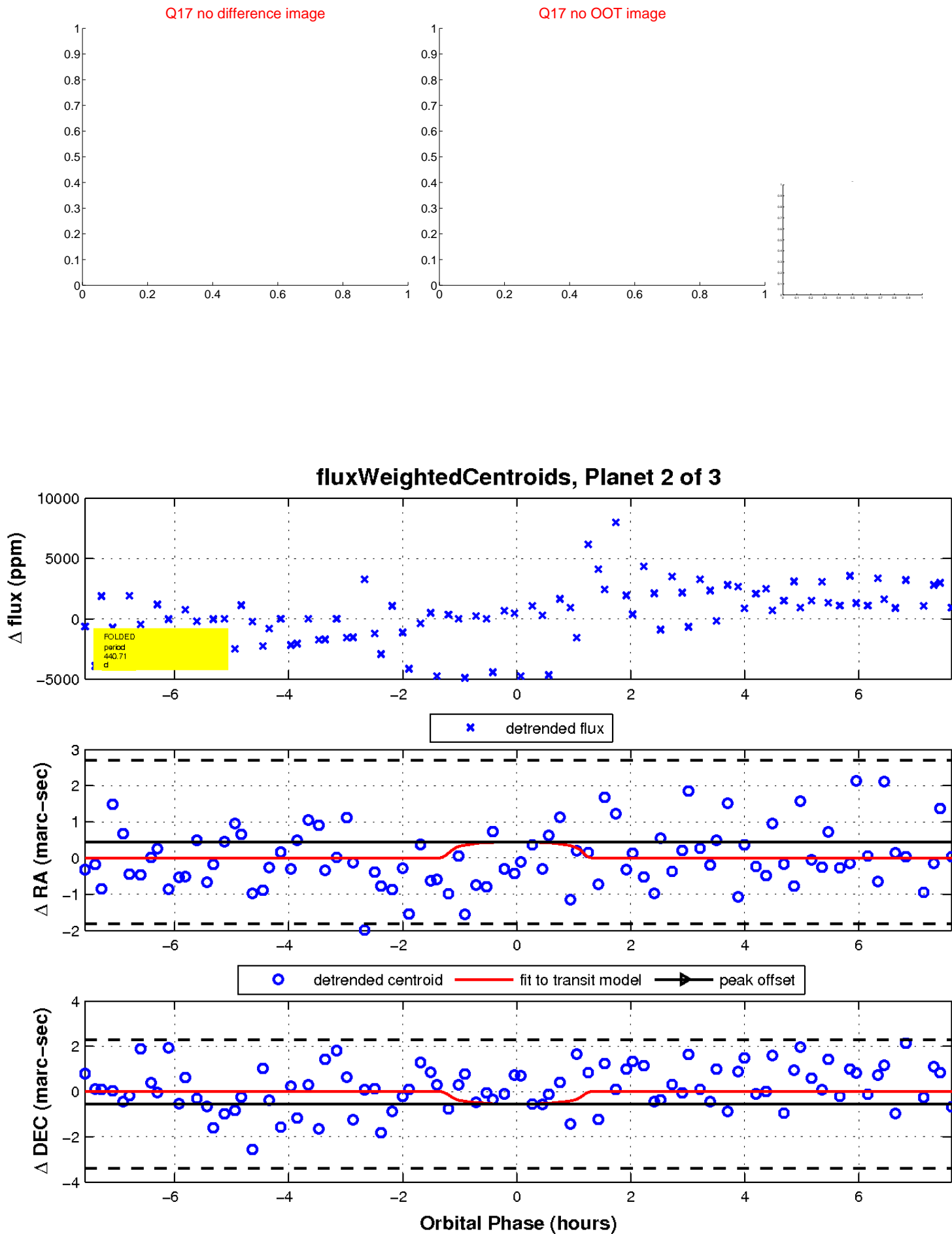
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

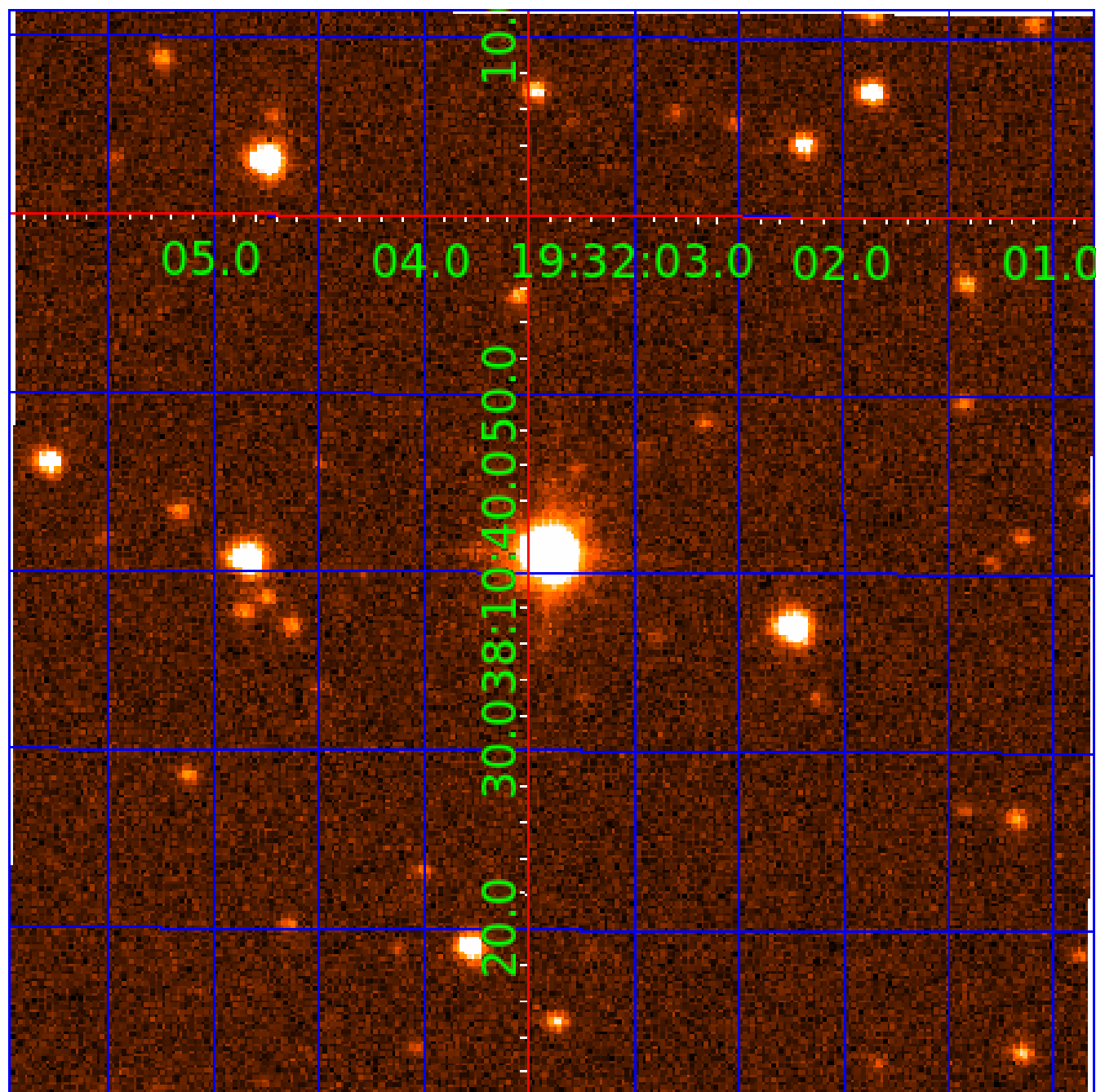


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002996903

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})
002996903-01	OBS	No	434.490397	281.915053	2374.4	4.778	17.4	6.3	0.76	4797	3.64	0.27
002996903-02	OBS	No	440.707041	487.453306	1919.9	2.584	15.4	6.4	0.76	4797	3.61	0.26
002996903-03	OBS	No	322.069715	244.861316	1455.2	3.489	20.8	3.5	0.76	4797	2.80	0.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002996903-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002996903-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
002996903-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

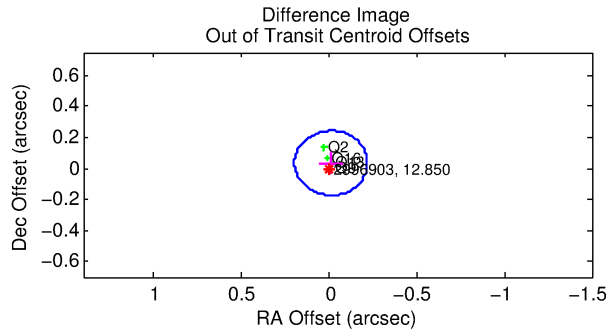
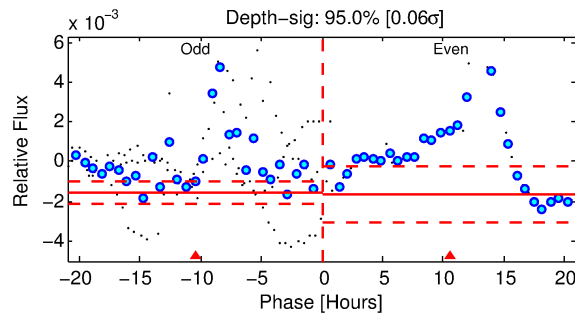
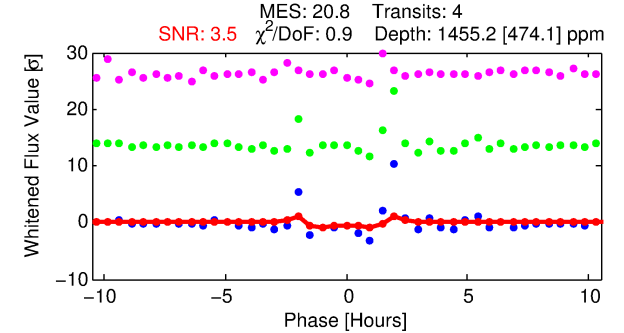
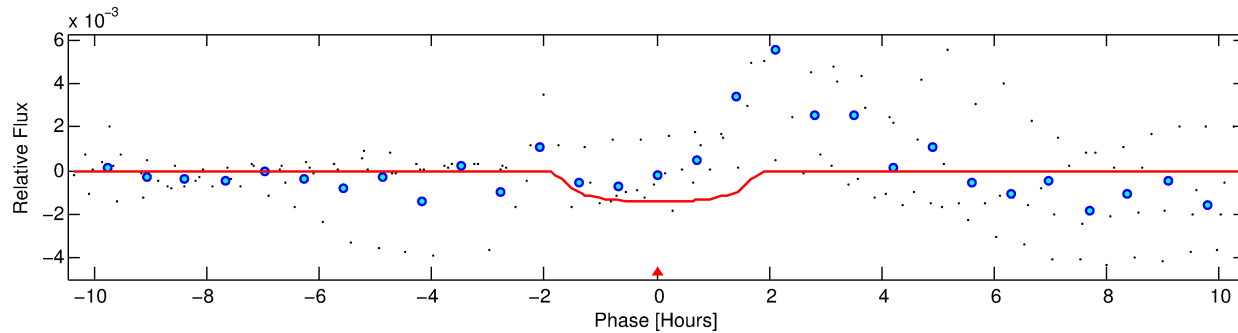
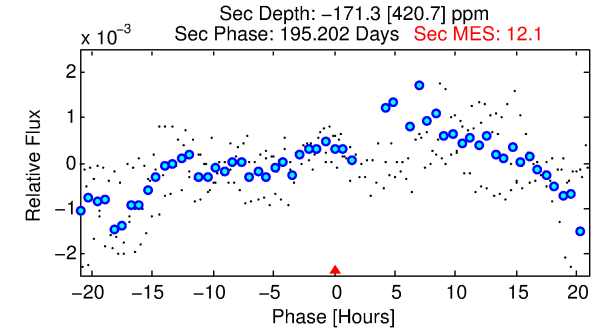
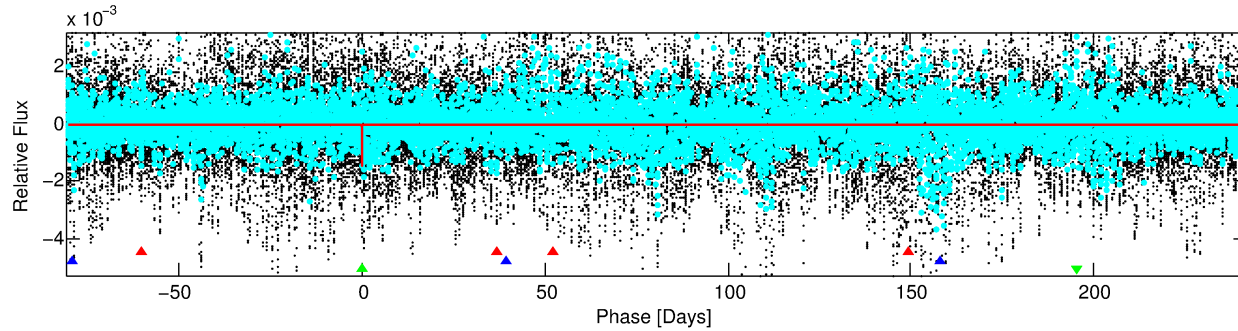
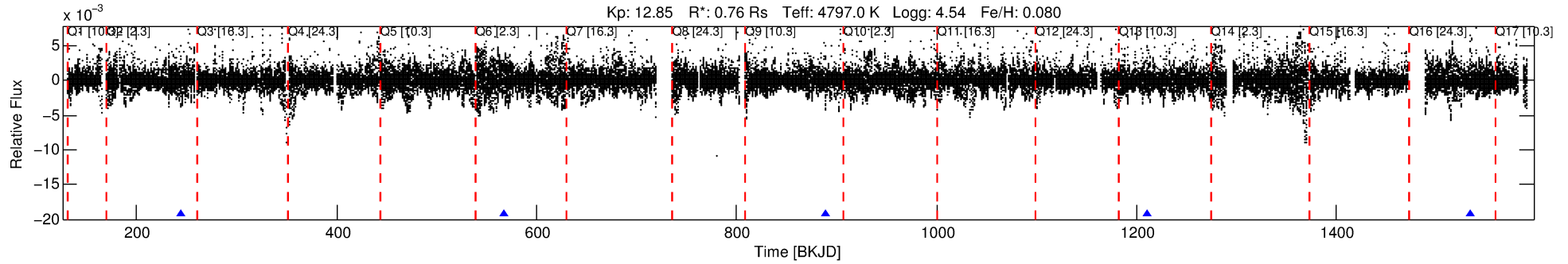
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002996903-03

No Significant Match Found

DV One-Page Summary

KIC: 2996903 Candidate: 3 of 3 Period: 322.070 d



DV Fit Results:

Period = 322.06971 [0.00287] d
Epoch = 244.8613 [0.0076] BKJD
Rp/R* = 0.0336 [0.0797]
a/R* = 728.76 [5427.11]
b = 0.01 [583.87]
Seff = 0.40 [0.05]
Teq = 203 [6] K
Rp = 2.80 [6.65] Re
a = 0.8332 [0.0519] AU
Ag = N/A
Teffp = N/A

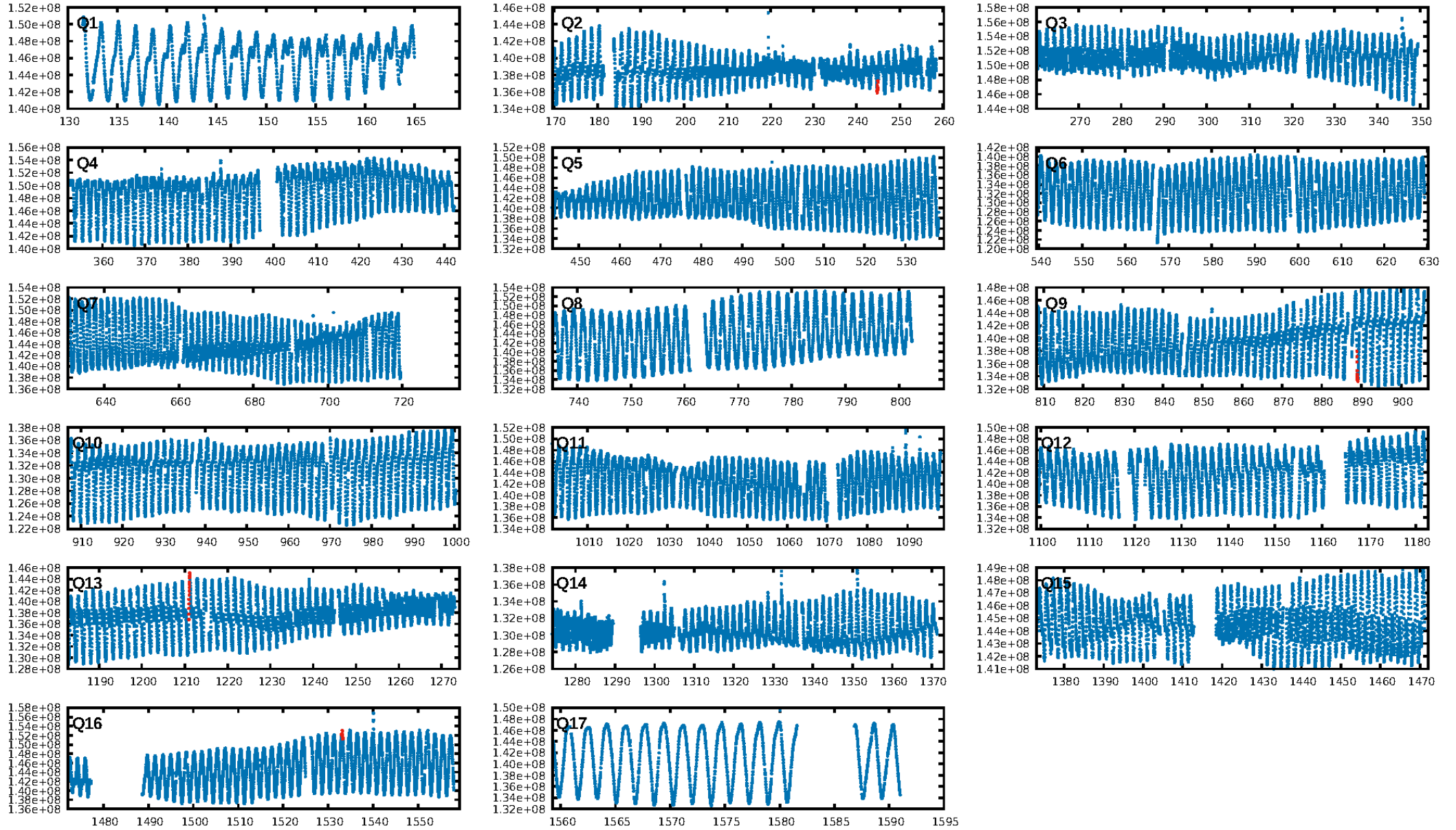
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [456.02 σ]
ModelChiSquare2-sig: 39.9%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: 1.87e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.149
Centroid-sig: 36.8%
Centroid-so: 0.233 arcsec [0.51 σ]
OotOffset-rm: 0.037 arcsec [0.53 σ]
OotOffset-st: 1/0/1/2 [4]
KicOffset-rm: 0.025 arcsec [0.32 σ]
KicOffset-st: 1/0/1/2 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

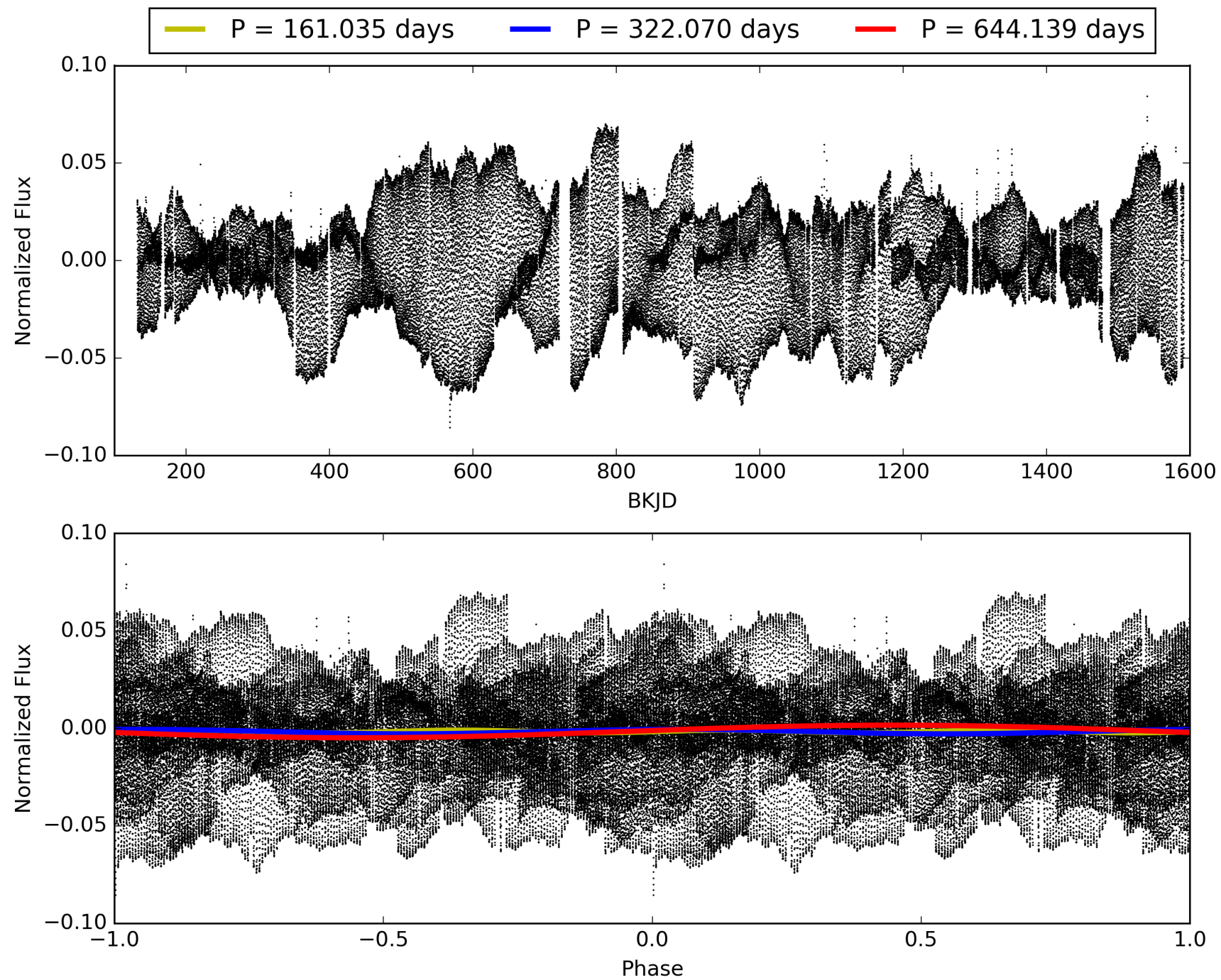
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:22:43 Z

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

TCE 002996903-03, PDC Light Curves

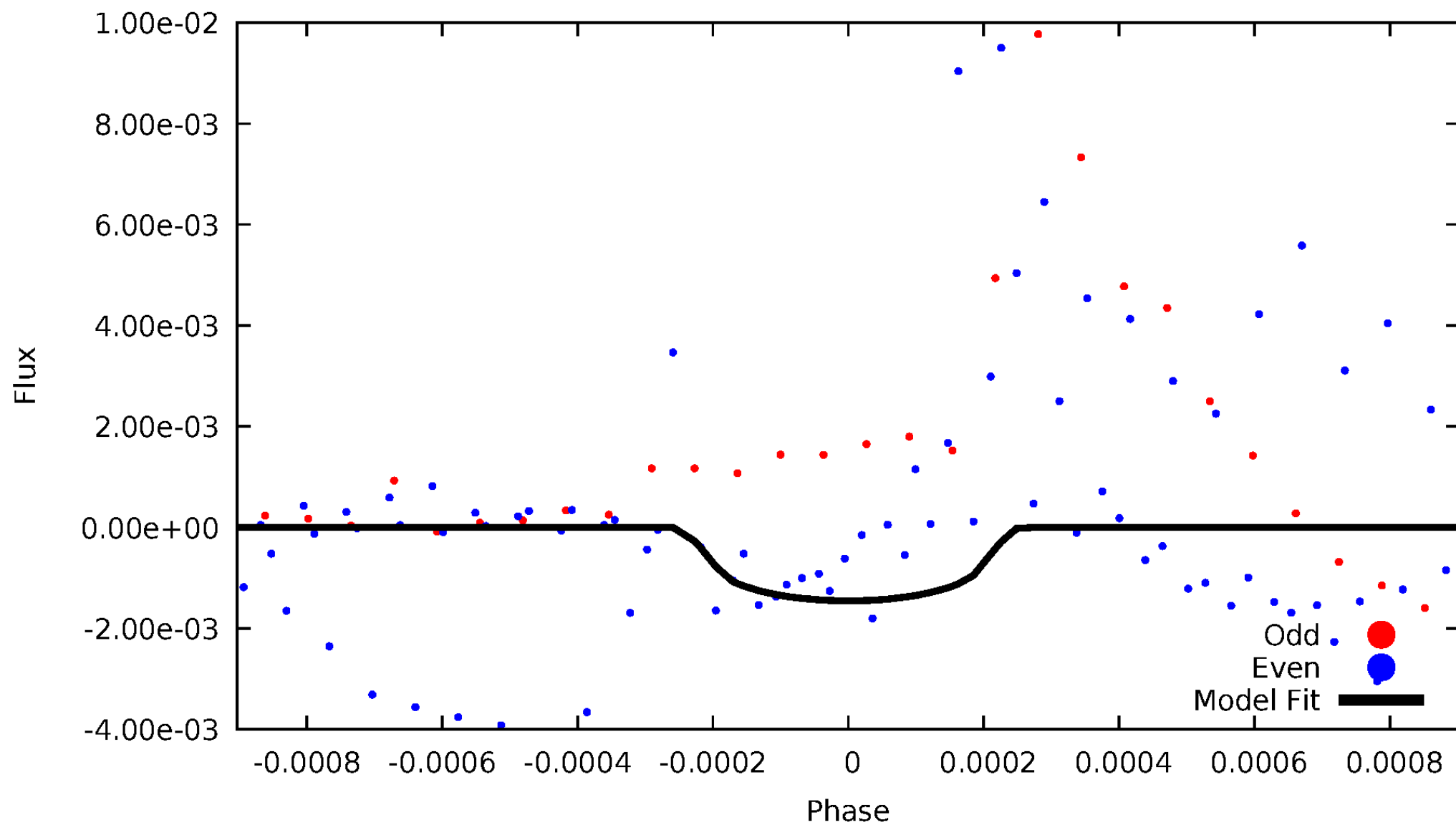


TCE 002996903-03



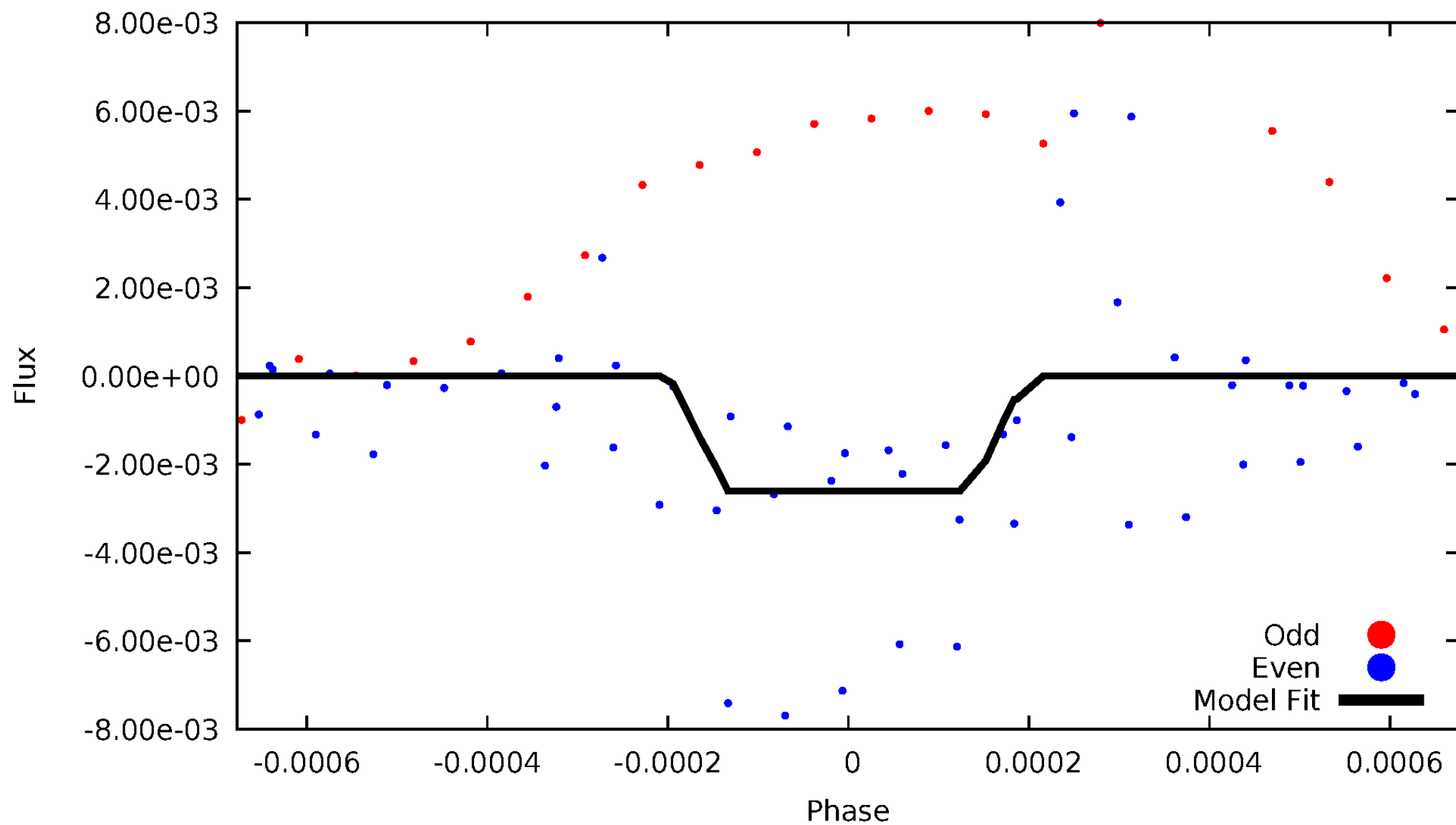
DV Odd/Even

TCE 002996903-03



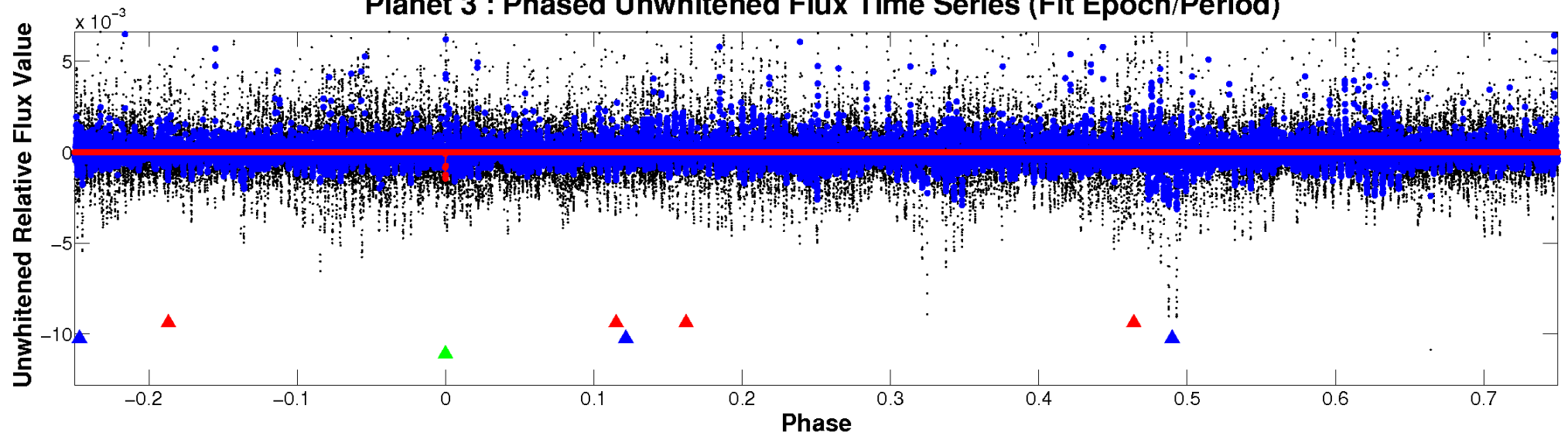
ALT Odd/Even

TCE 002996903-03

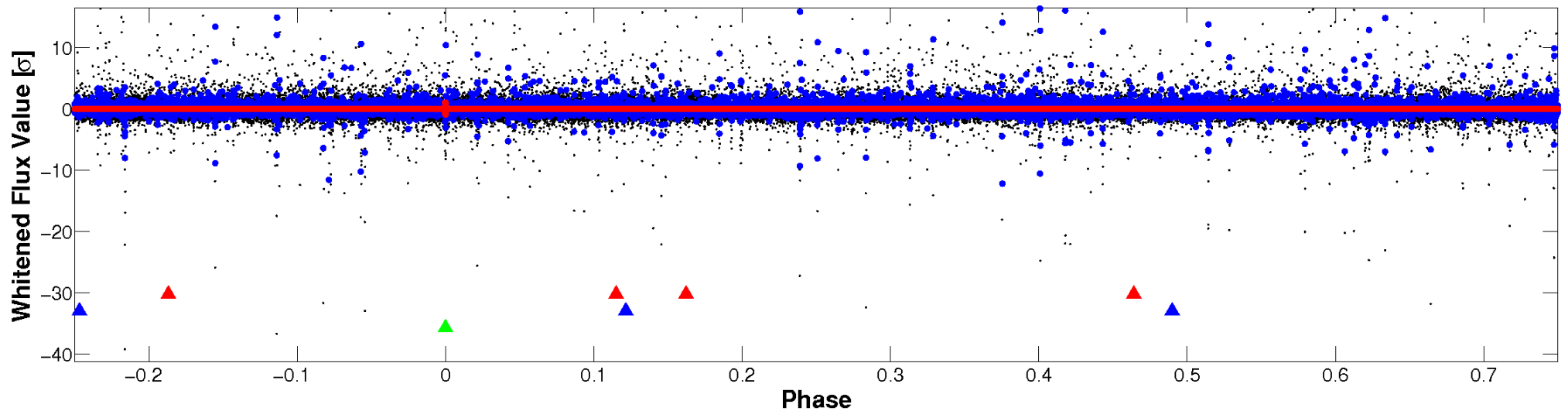


Non-Whitened Vs. Whitened Light Curve

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

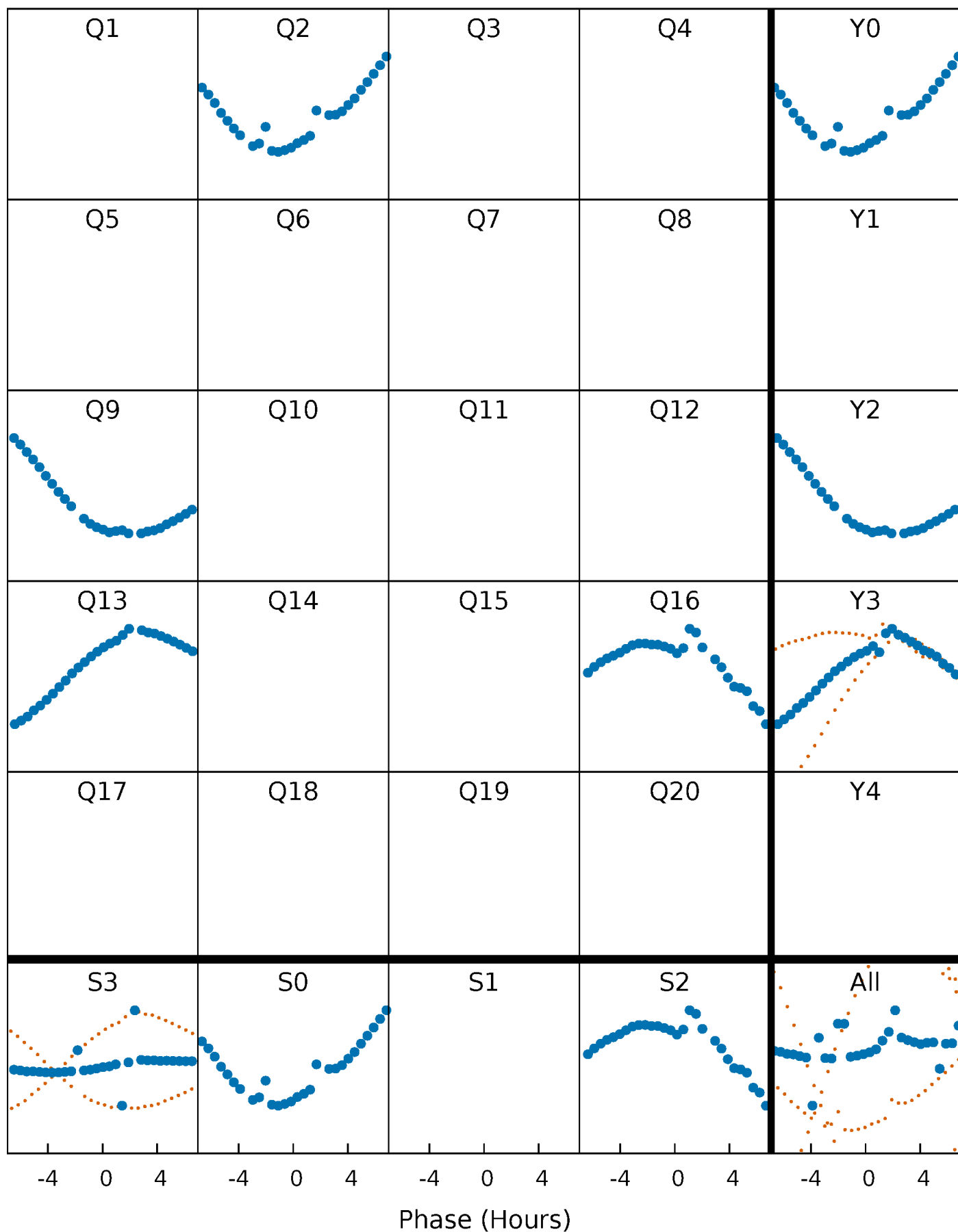


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



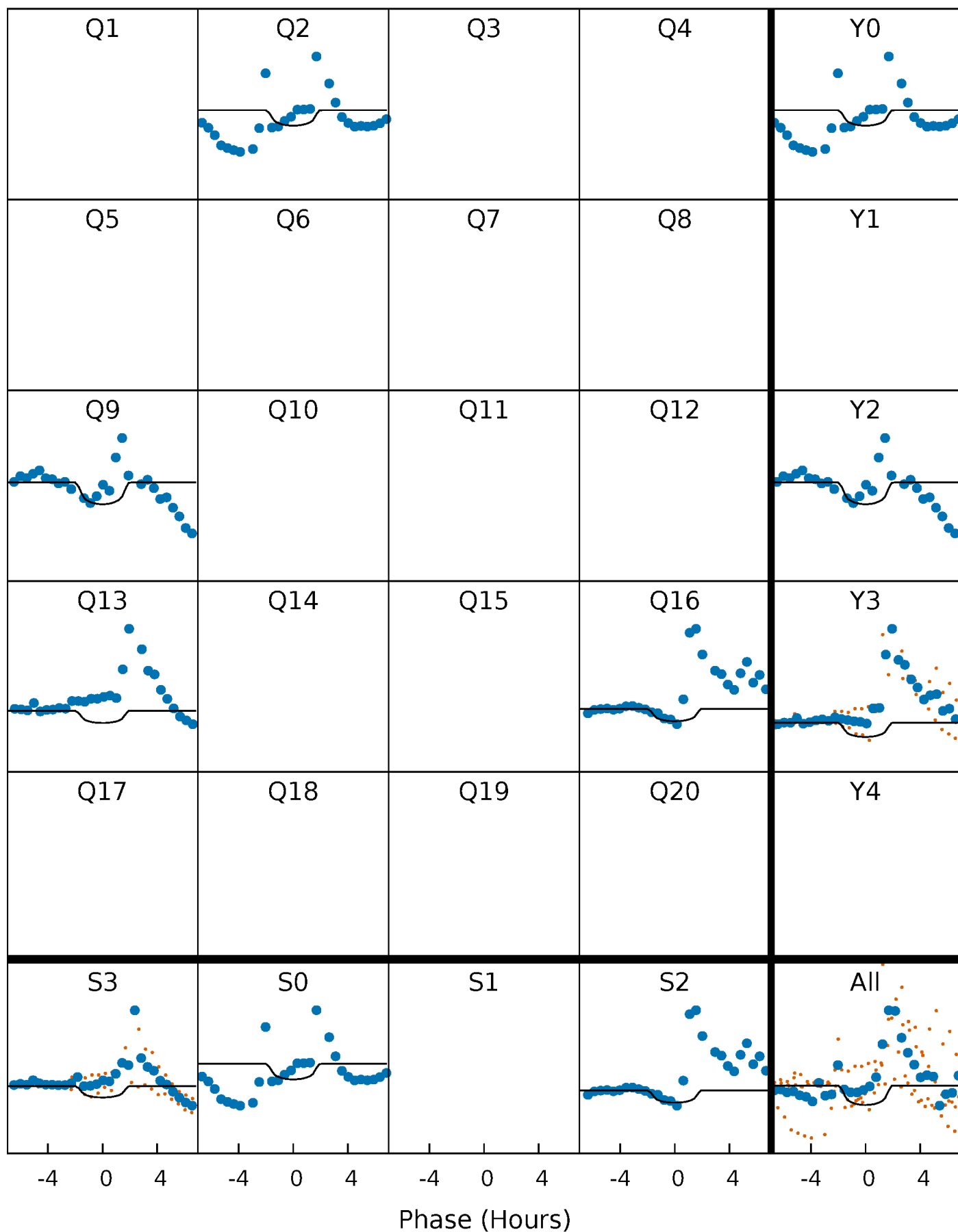
PDC Quarter-Phased Transit Curves

TCE 002996903-03 $P=322.069715$ Days $T_0=244.861316$ (BKJD)



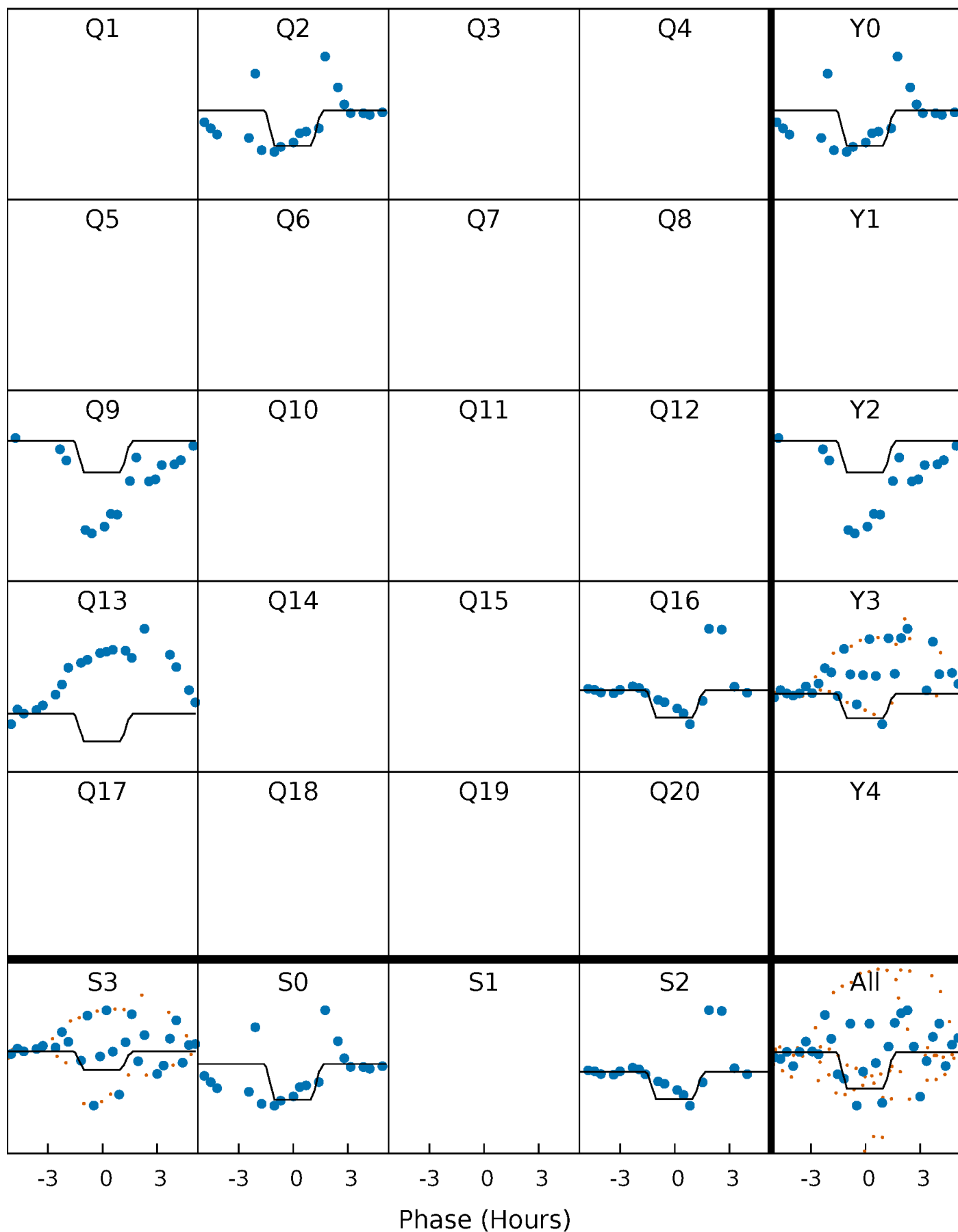
DV Quarter-Phased Transit Curves

TCE 002996903-03 $P=322.069715$ Days $T_0=244.861316$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

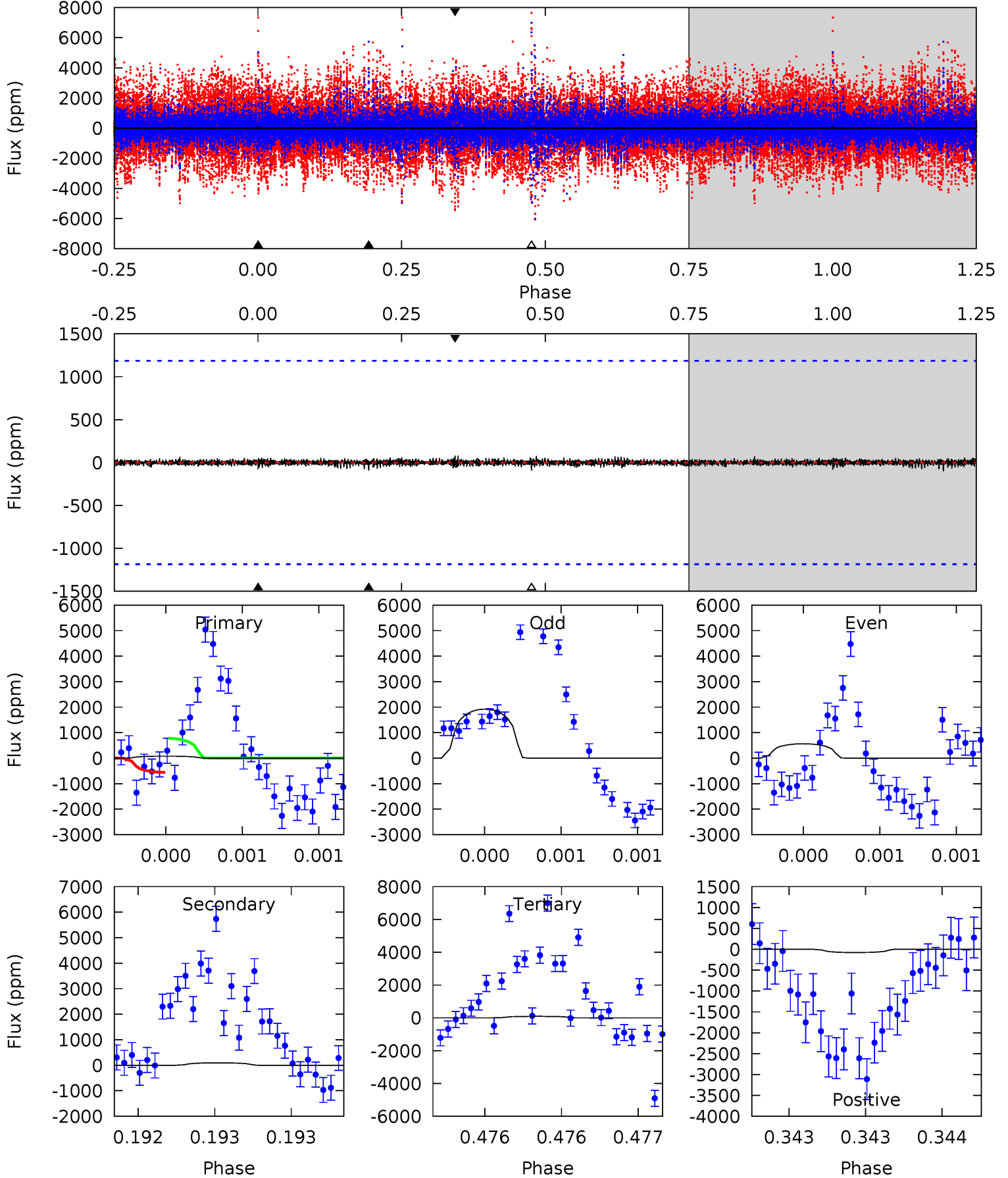
TCE 002996903-03 P=322.061570 Days $T_0=244.865684$ (BKJD)



DV Model-Shift Uniqueness Test

002996903-03, P = 322.069715 Days, E = 244.861316 Days

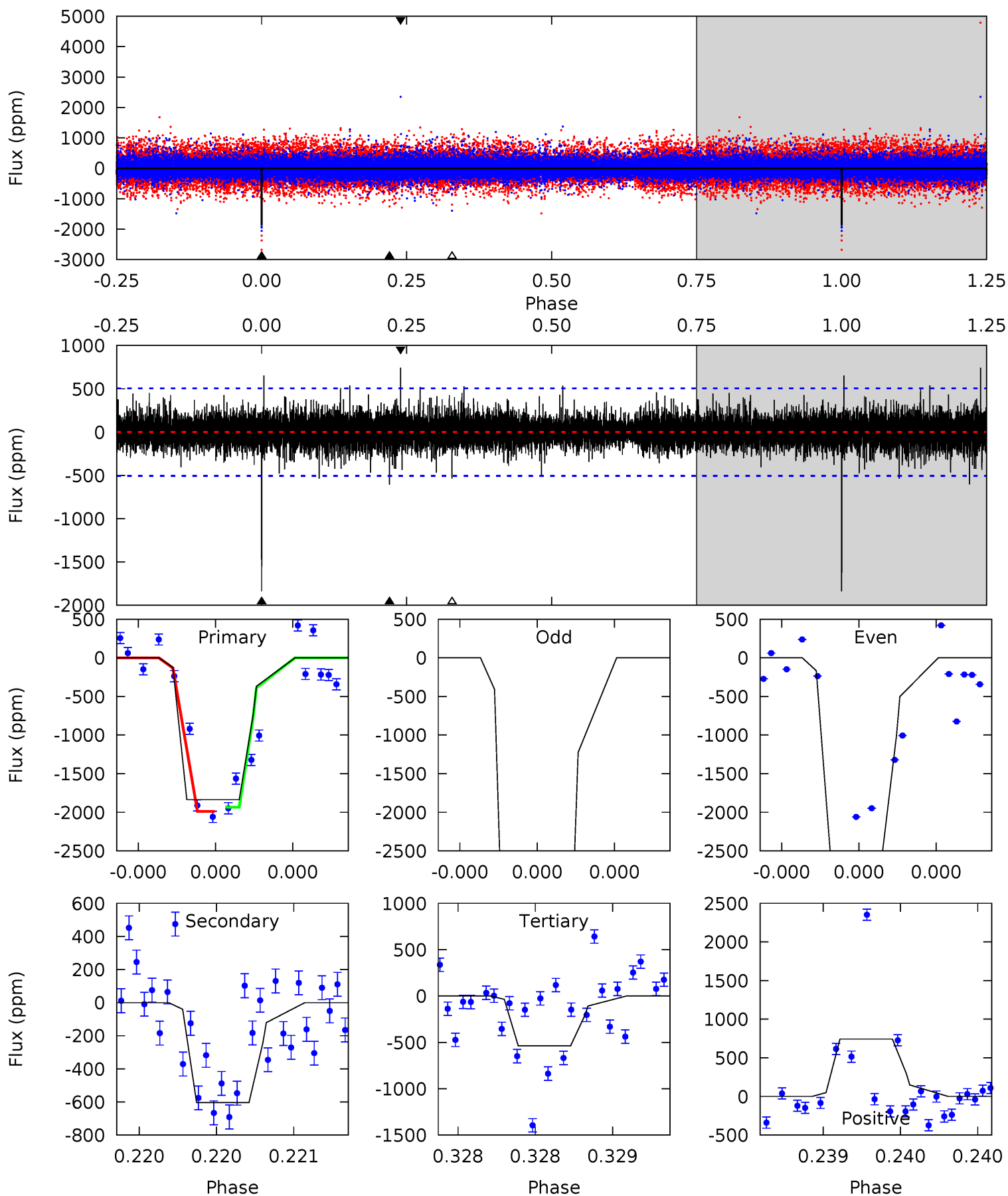
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.36	0.44	0.43	0.37	5.57	3.48	0.08	-0.07	-0.01	0.01	0.07	2.40	1.26	0.46	0.53



Alt Model-Shift Uniqueness Test

002996903-03, P = 322.061570 Days, E = 244.865684 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	6.73	5.99	8.28	5.63	3.57	1.22	14.5	12.2	0.74	-1.55	22.0	0.60	0.29	0.28



Stellar Parameters For KIC 002996903

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4797^{+76}_{-85}	$4.543^{+0.060}_{-0.016}$	$0.080^{+0.150}_{-0.150}$	$0.764^{+0.026}_{-0.048}$	$0.744^{+0.050}_{-0.027}$	$2.348^{+0.537}_{-0.156}$
	+2%/-2%	+1%/-0%	+188%/-188%	+3%/-6%	+7%/-4%	+23%/-7%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 002996903-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-93 ± 213	$5.59^{+5.57}_{-3.85}$	281^{+5}_{-6}	2370^{+1113}_{-5086}	561^{+9190}_{-2256}
Alt.	-604 ± 90	$6.42^{+5.81}_{-4.30}$	281^{+6}_{-6}	3197^{+1501}_{-529}	5516^{+45806}_{-4028}

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 $A_{obs} \gg 1.0$

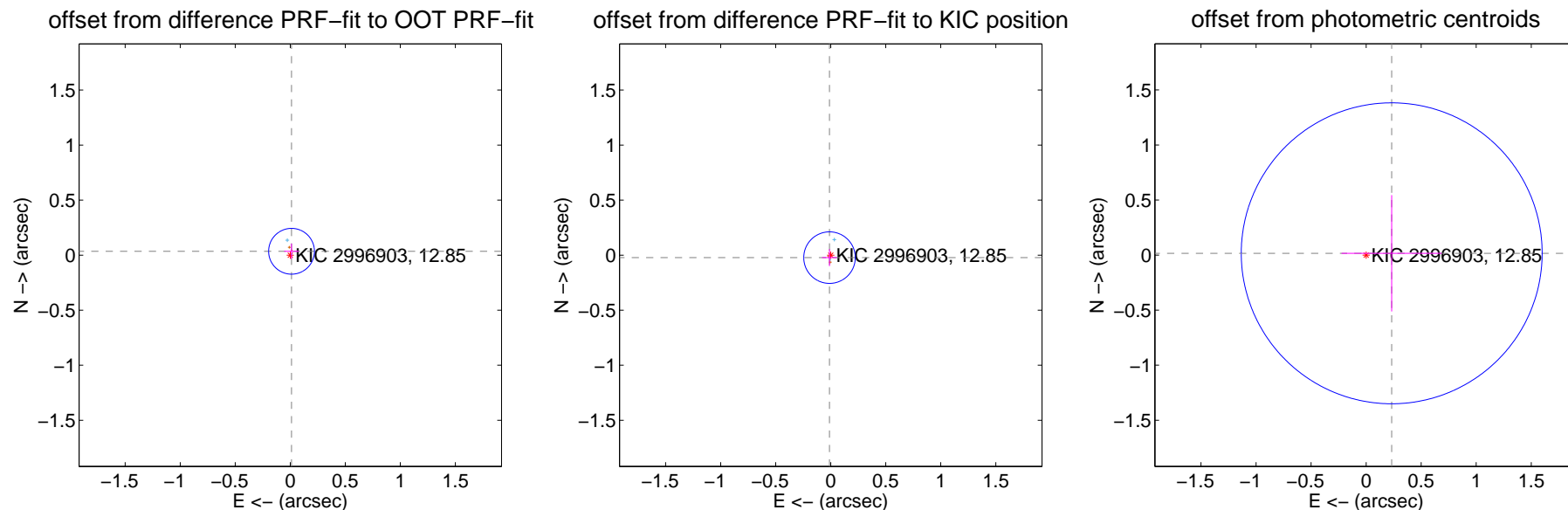
DV Centroid Data

Supplemental centroid analysis for 002996903-03. Kepler magnitude: 12.85. Transit SNR 3.53

There are 2 quarters with good PRF difference image offsets

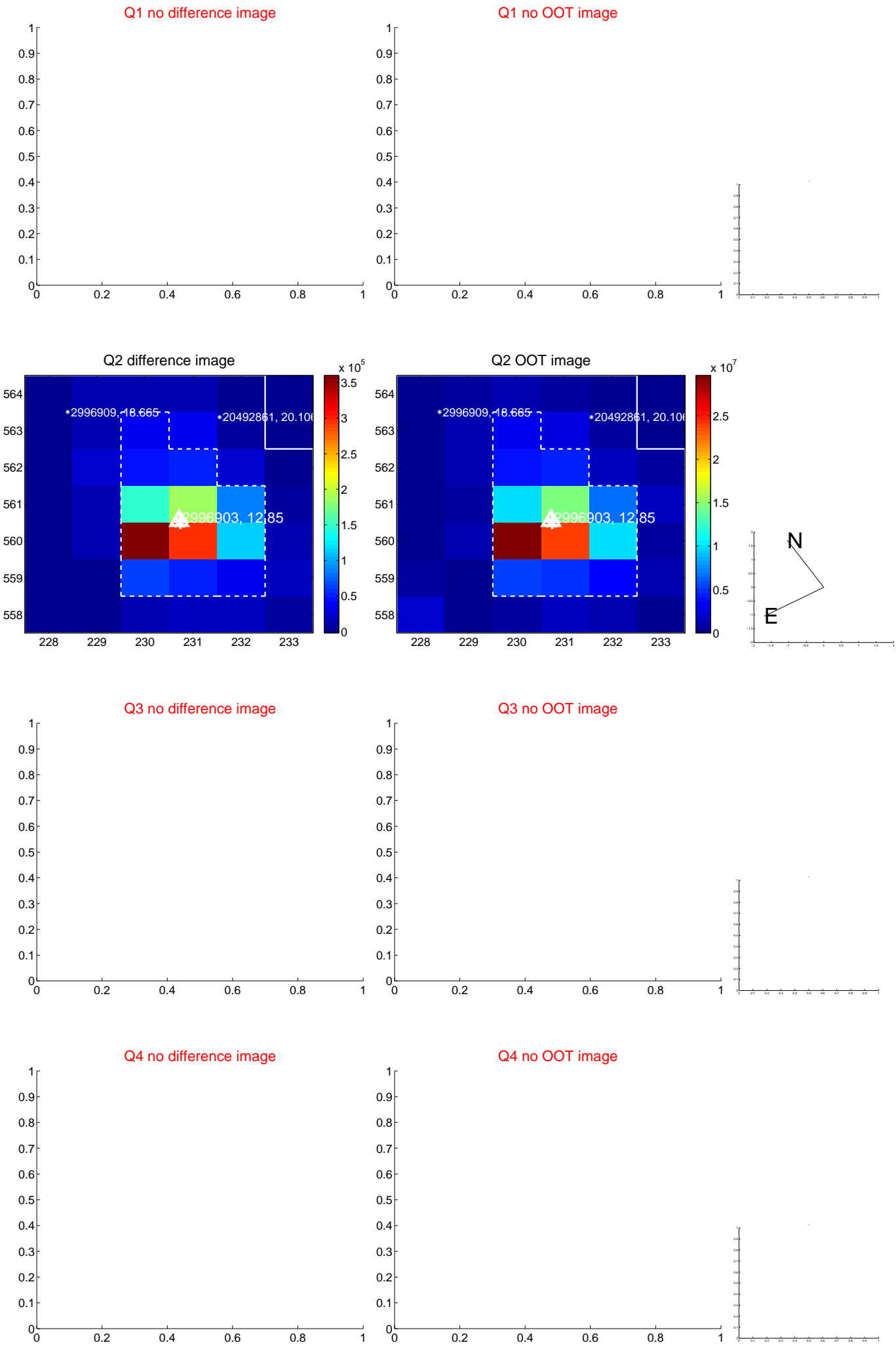
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.037 ± 0.069	0.53	-0.012 ± 0.067	0.035 ± 0.070
PRF-fit source offset from KIC position	0.025 ± 0.078	0.32	0.011 ± 0.068	-0.022 ± 0.078
photometric centroid source offset	0.23 ± 0.46	0.51	-0.23 ± 0.46	0.02 ± 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.

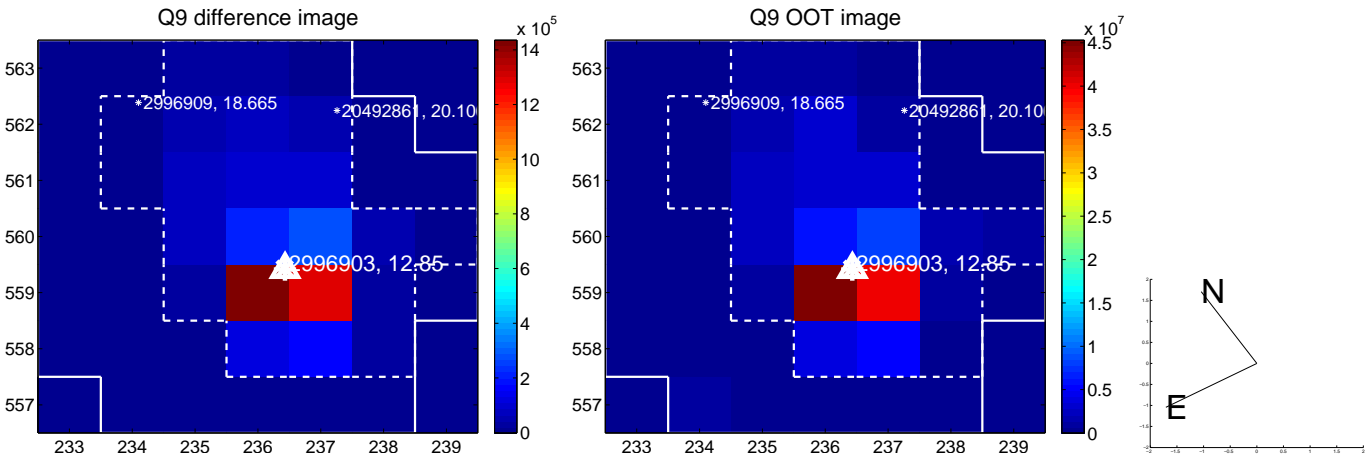
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



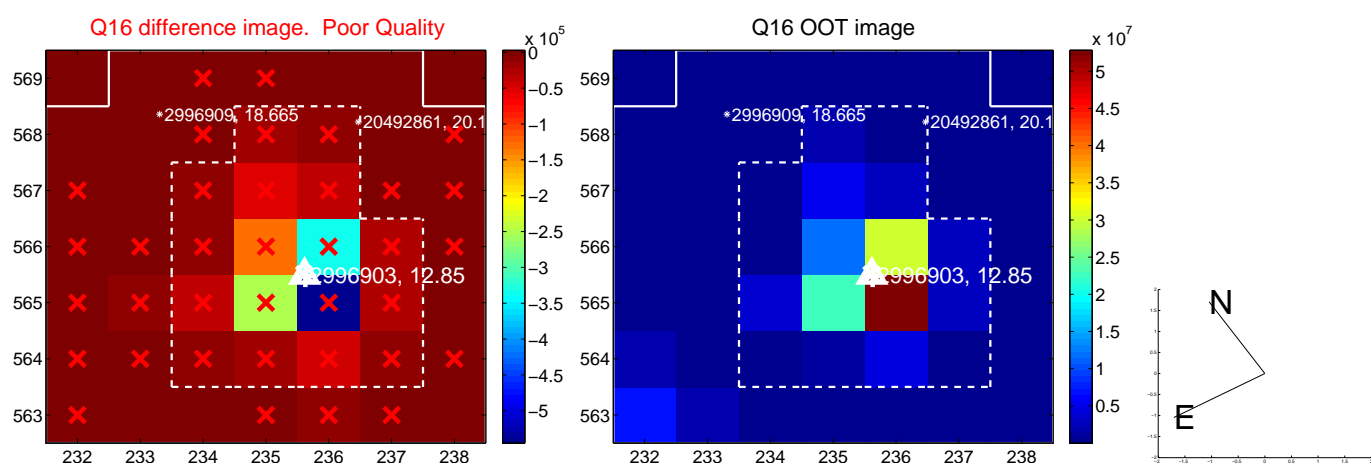
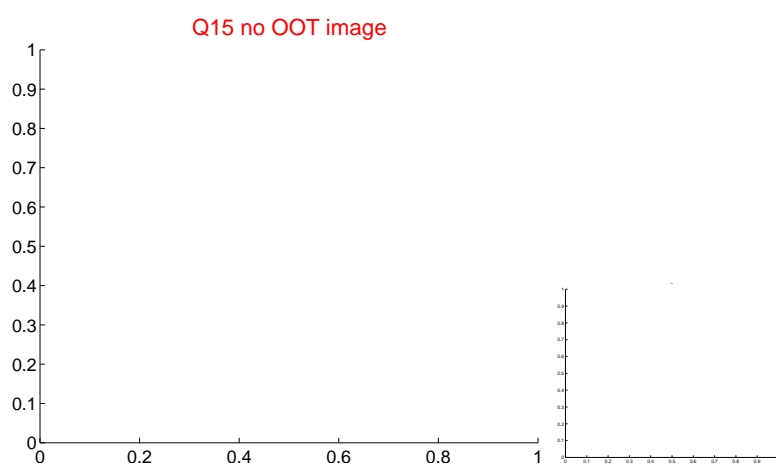
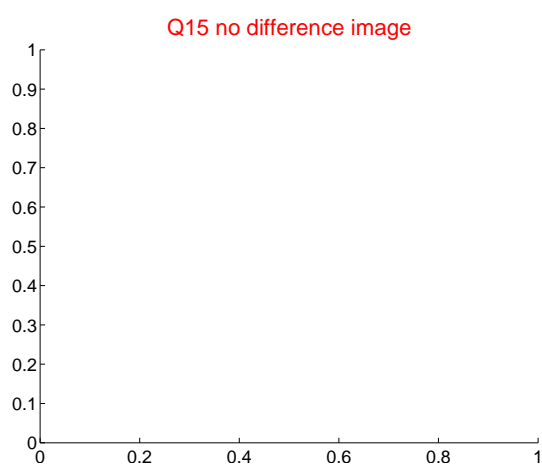
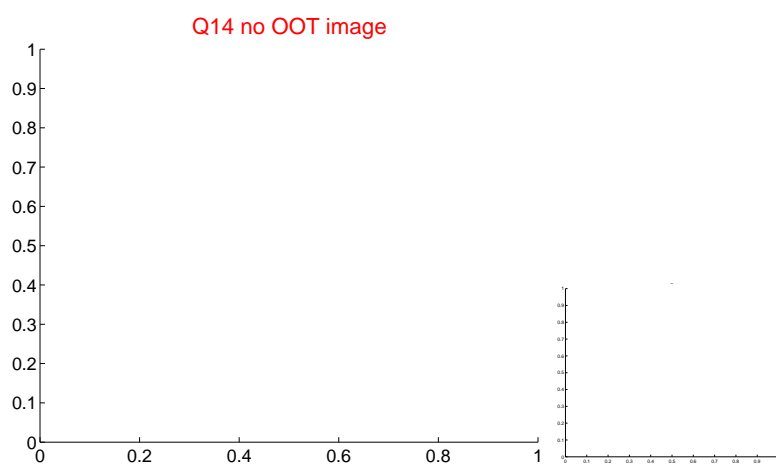
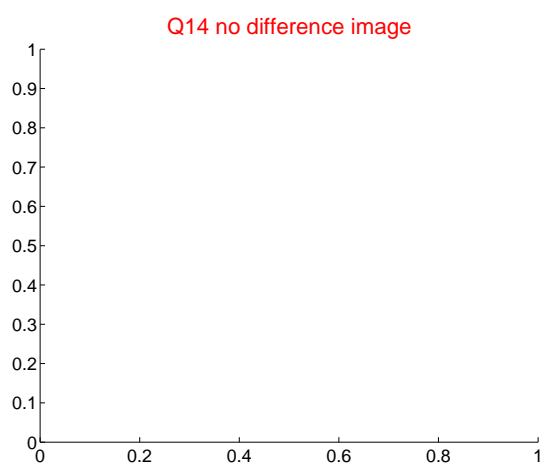
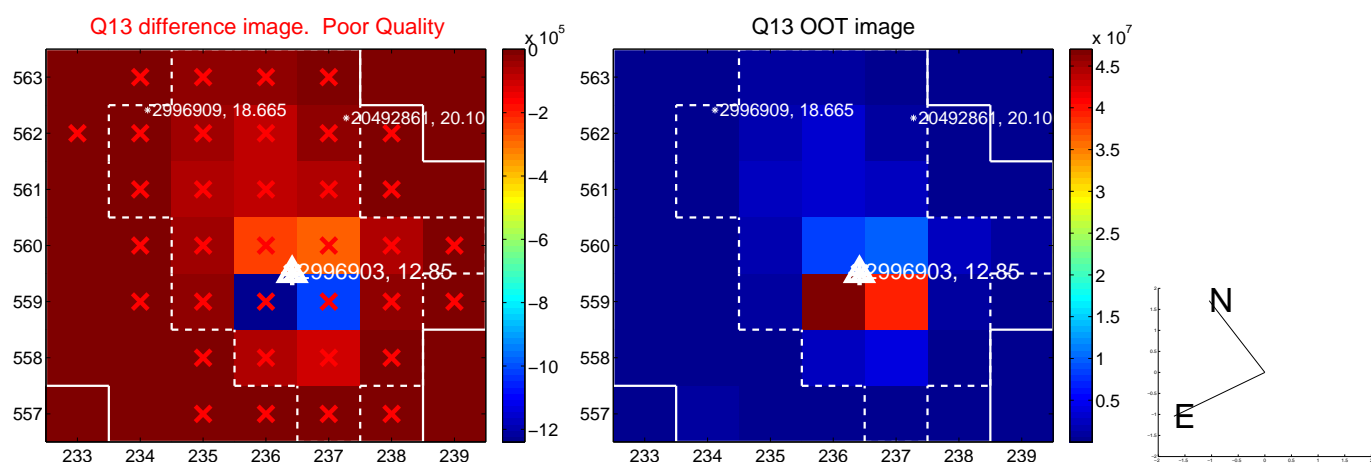
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



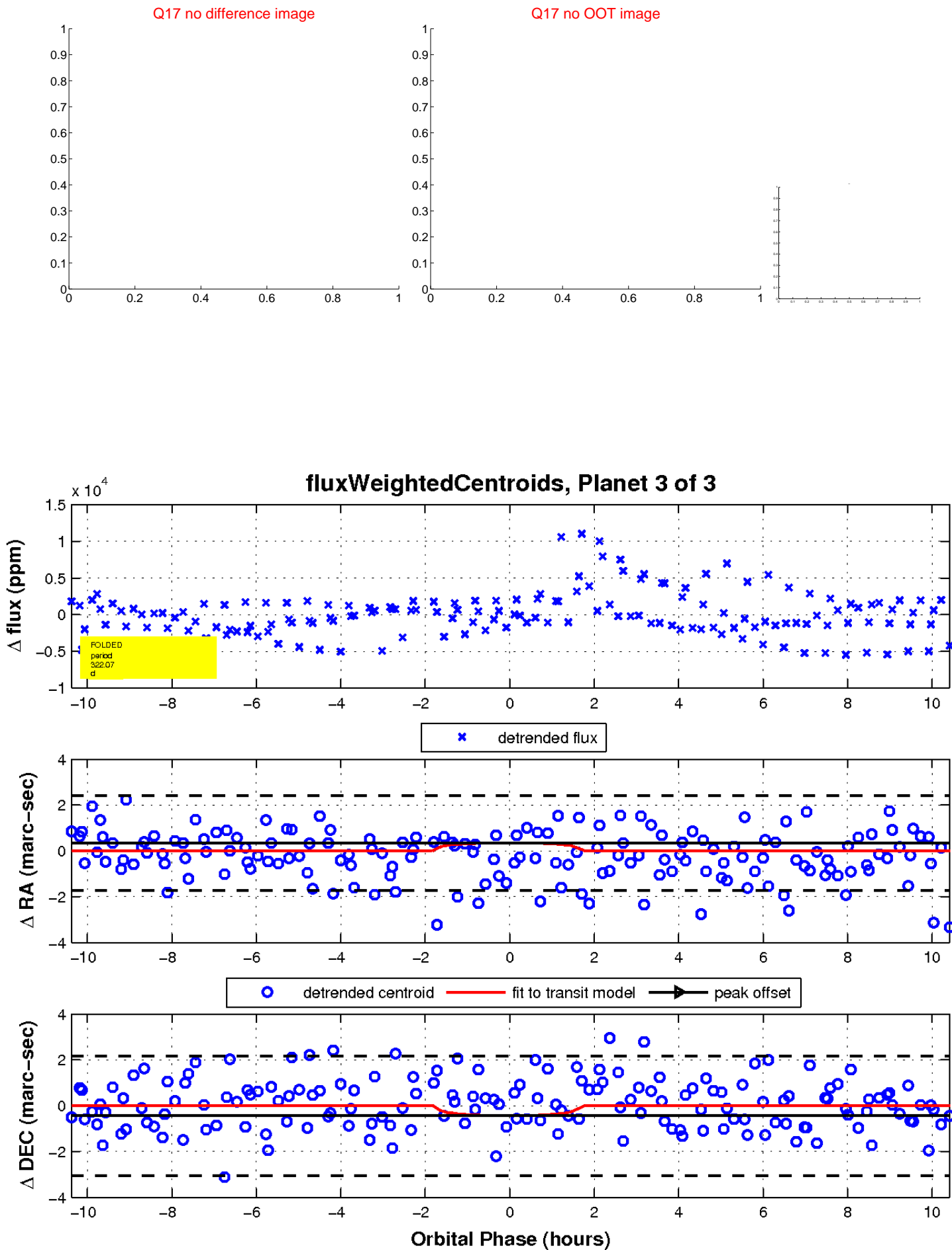
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

