

KIC 004819301

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})
004819301-01	OBS	No	644.919324	137.065635	972.9	7.653	11.8	6.8	1.98	5190	6.43	1.19
004819301-02	OBS	No	398.853172	458.971734	722.6	2.535	16.2	6.7	1.98	5190	5.27	2.25
004819301-03	OBS	No	272.471195	298.974588	636.3	2.351	16.1	8.0	1.98	5190	5.01	3.74
004819301-04	OBS	No	501.433847	377.200222	661.9	3.321	15.1	6.4	1.98	5190	5.18	1.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004819301-01	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
004819301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
004819301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—CENT_KIC_POS
004819301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

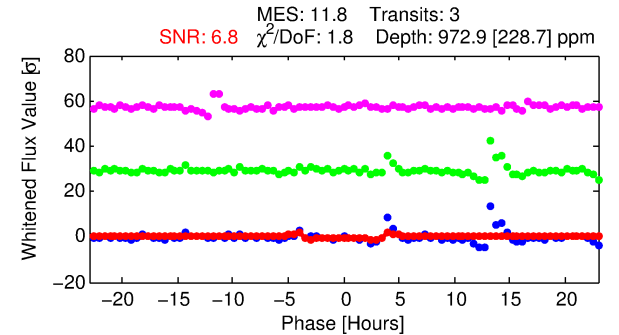
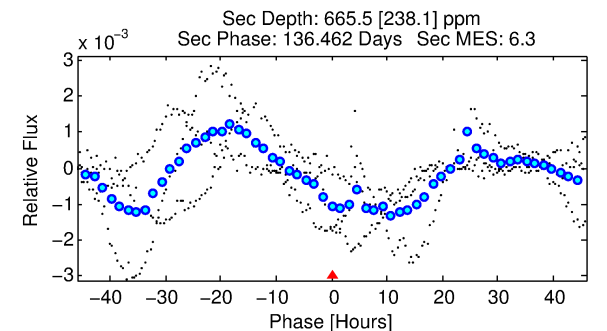
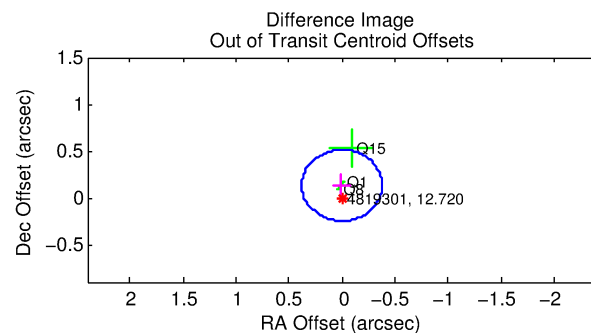
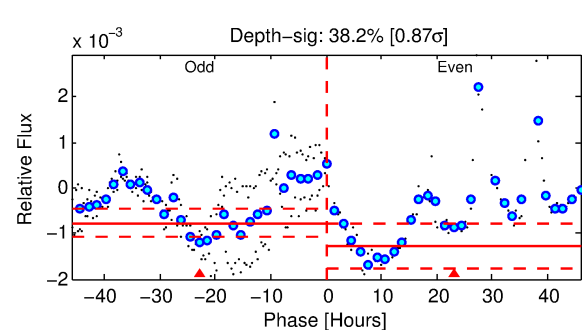
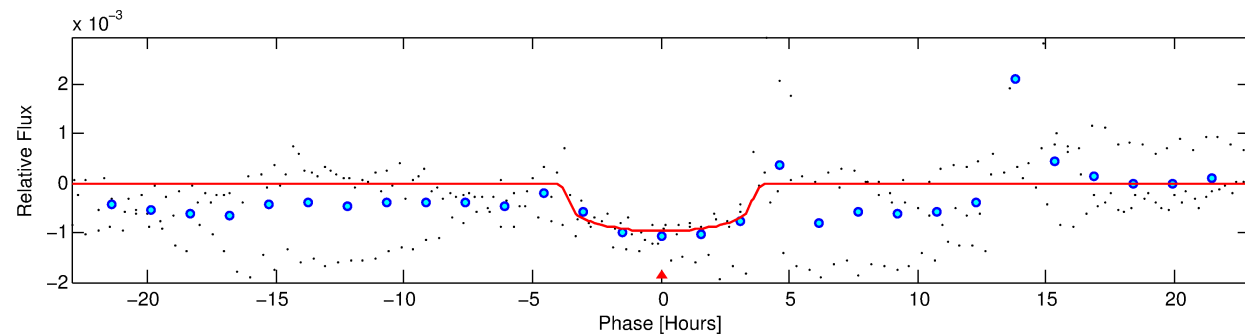
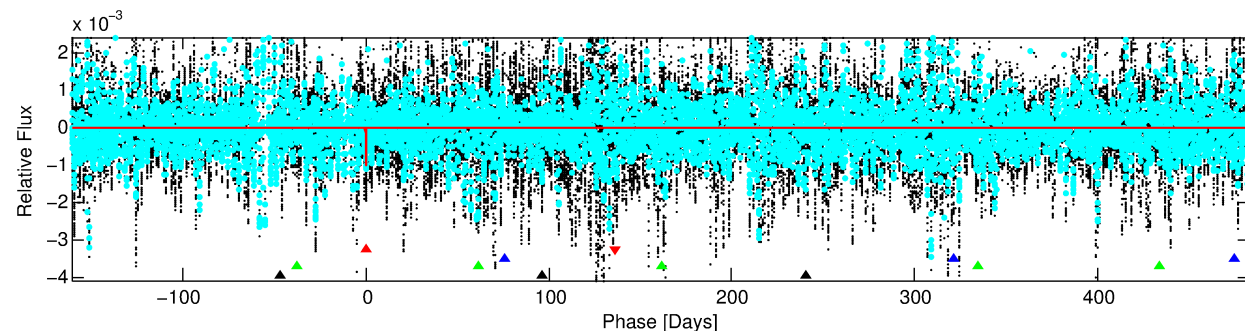
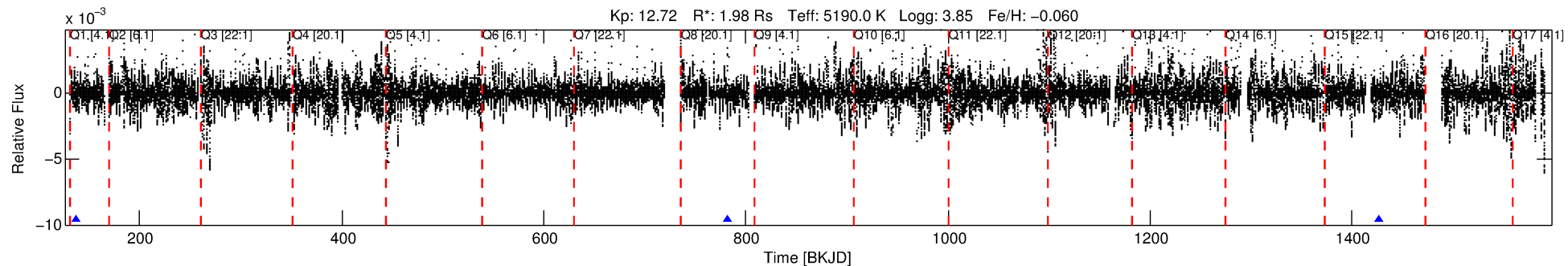
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004819301-01

No Significant Match Found

DV One-Page Summary

KIC: 4819301 Candidate: 1 of 4 Period: 644.919 d



DV Fit Results:

Period = 644.91932 [0.00637] d
Epoch = 137.0656 [0.0084] BKJD
Rp/R* = 0.0297 [0.0197]
a/R* = 528.22 [1250.28]
b = 0.62 [2.37]
Seff = 1.19 [1.30]
Teq = 266 [73] K
Rp = 6.43 [5.78] Re
a = 1.4665 [0.9472] AU
Ag = 19047.32 [33340.26] [0.57 σ]
Teffp = 4833 [1670] K [2.73 σ]

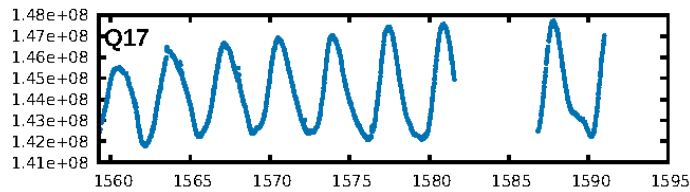
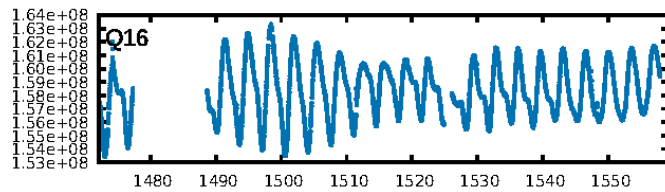
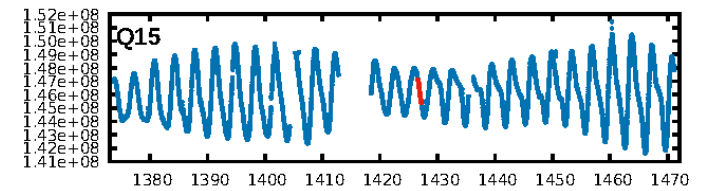
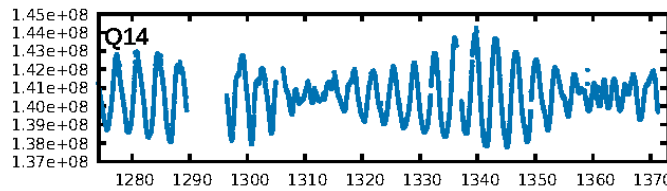
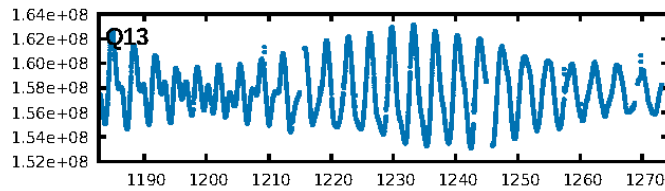
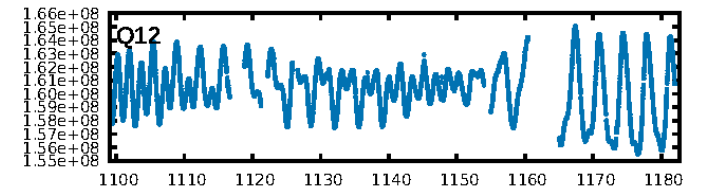
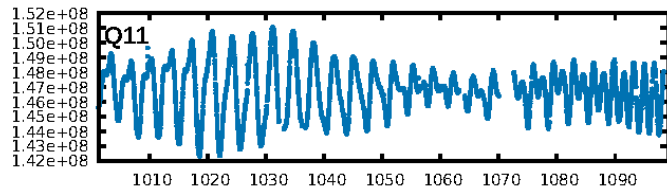
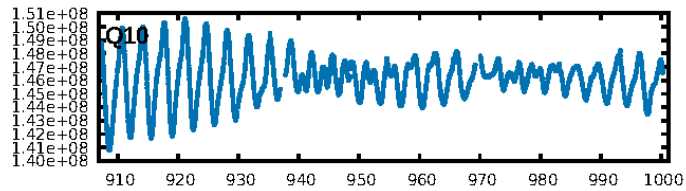
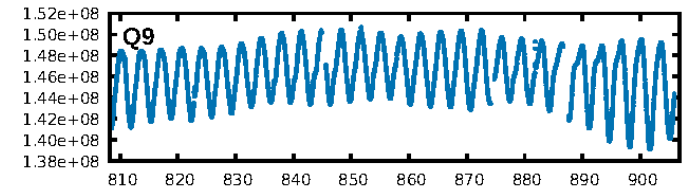
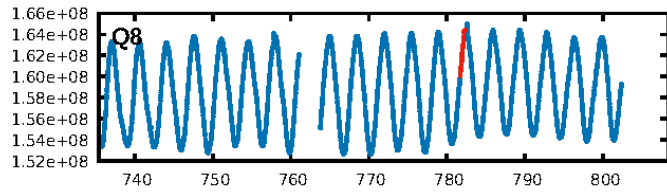
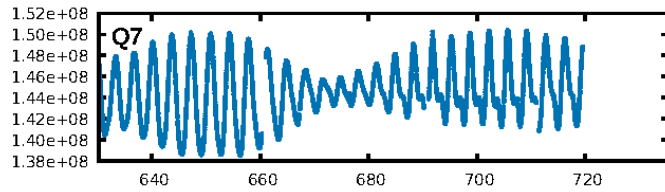
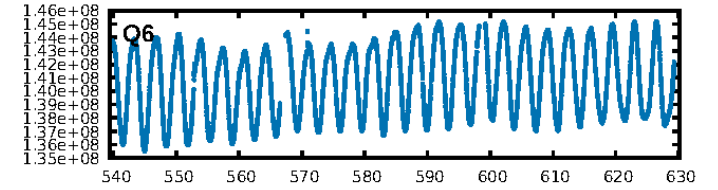
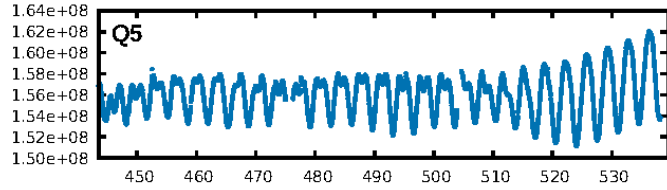
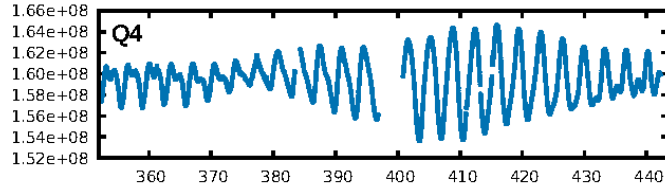
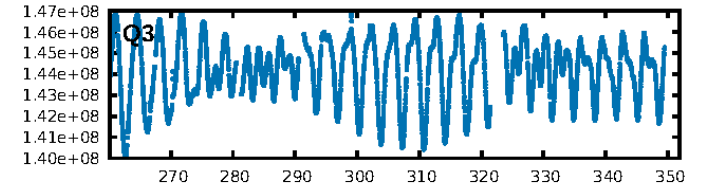
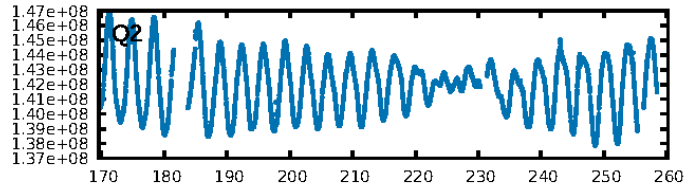
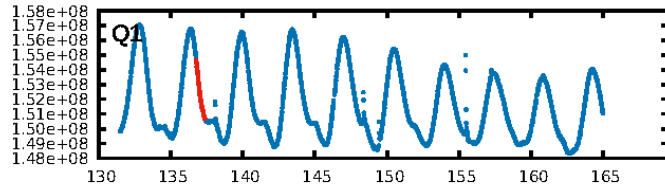
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [412.78 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 9.2%
ModelChiSquareGof-sig: 57.9%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -2.529
Centroid-sig: 20.3%
Centroid-so: 3.044 arcsec [1.60 σ]
OotOffset-rm: 0.132 arcsec [1.05 σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-rm: 1.143 arcsec [12.17 σ]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

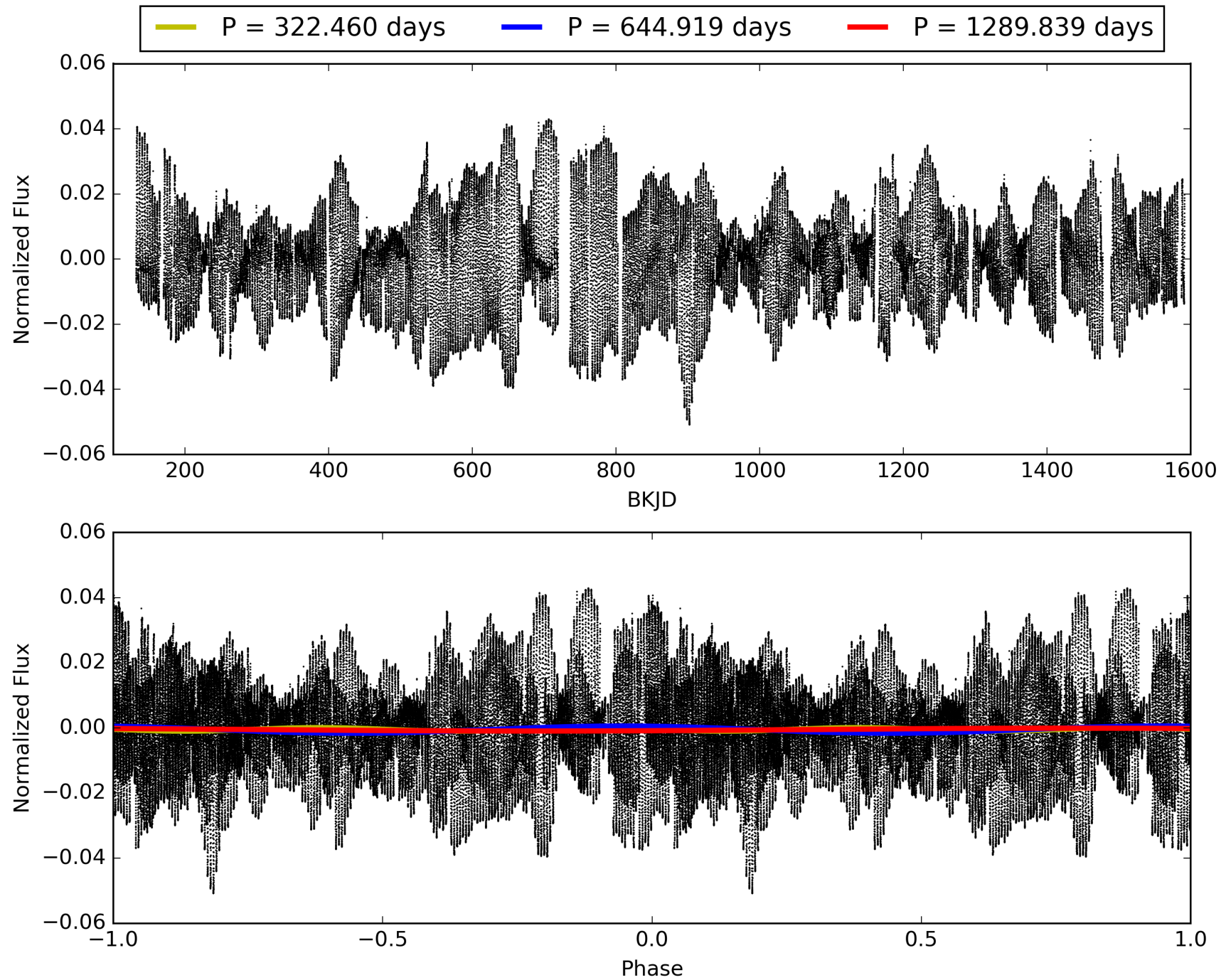
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:24:02 Z

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

TCE 004819301-01, PDC Light Curves

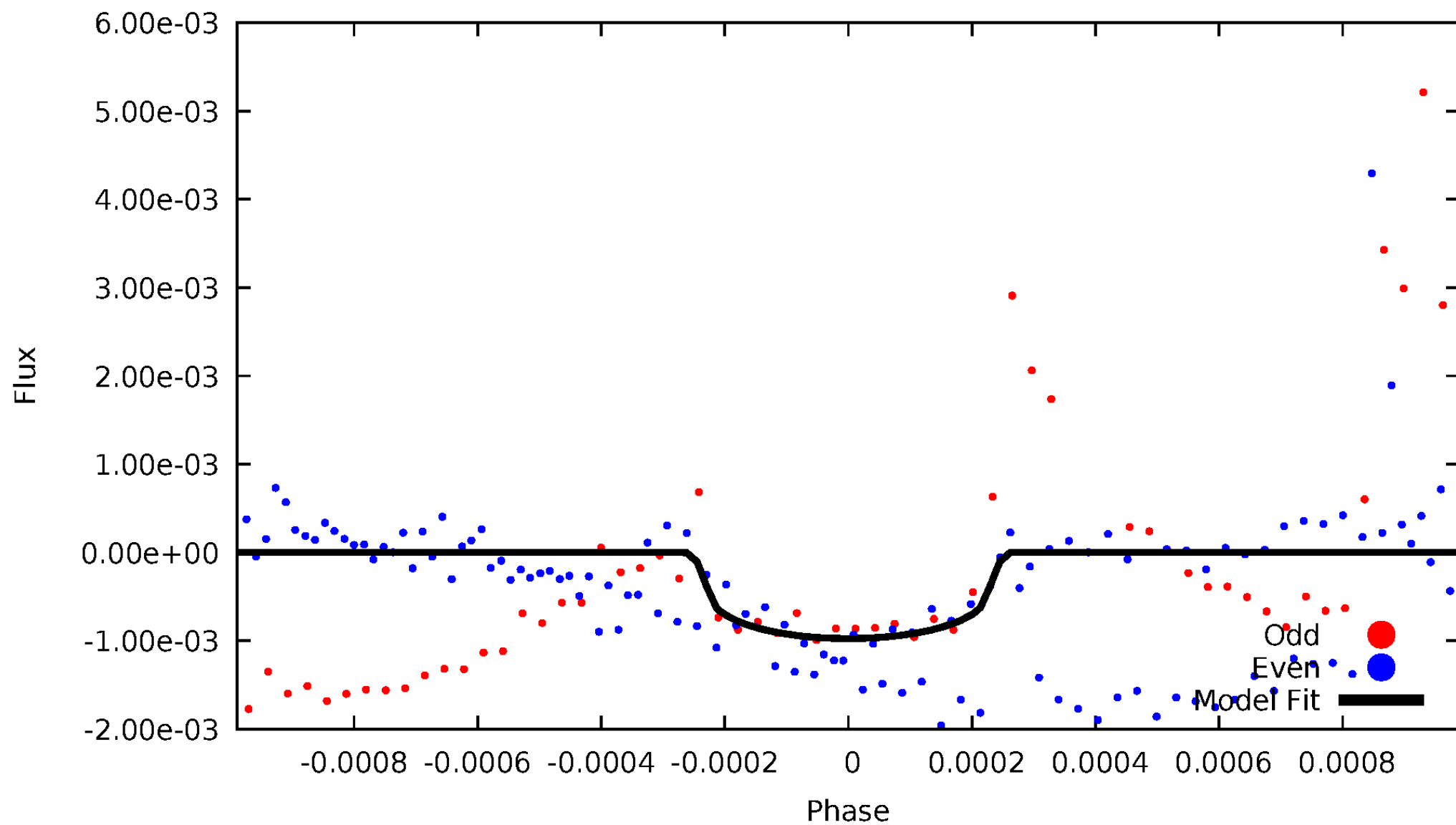


TCE 004819301-01



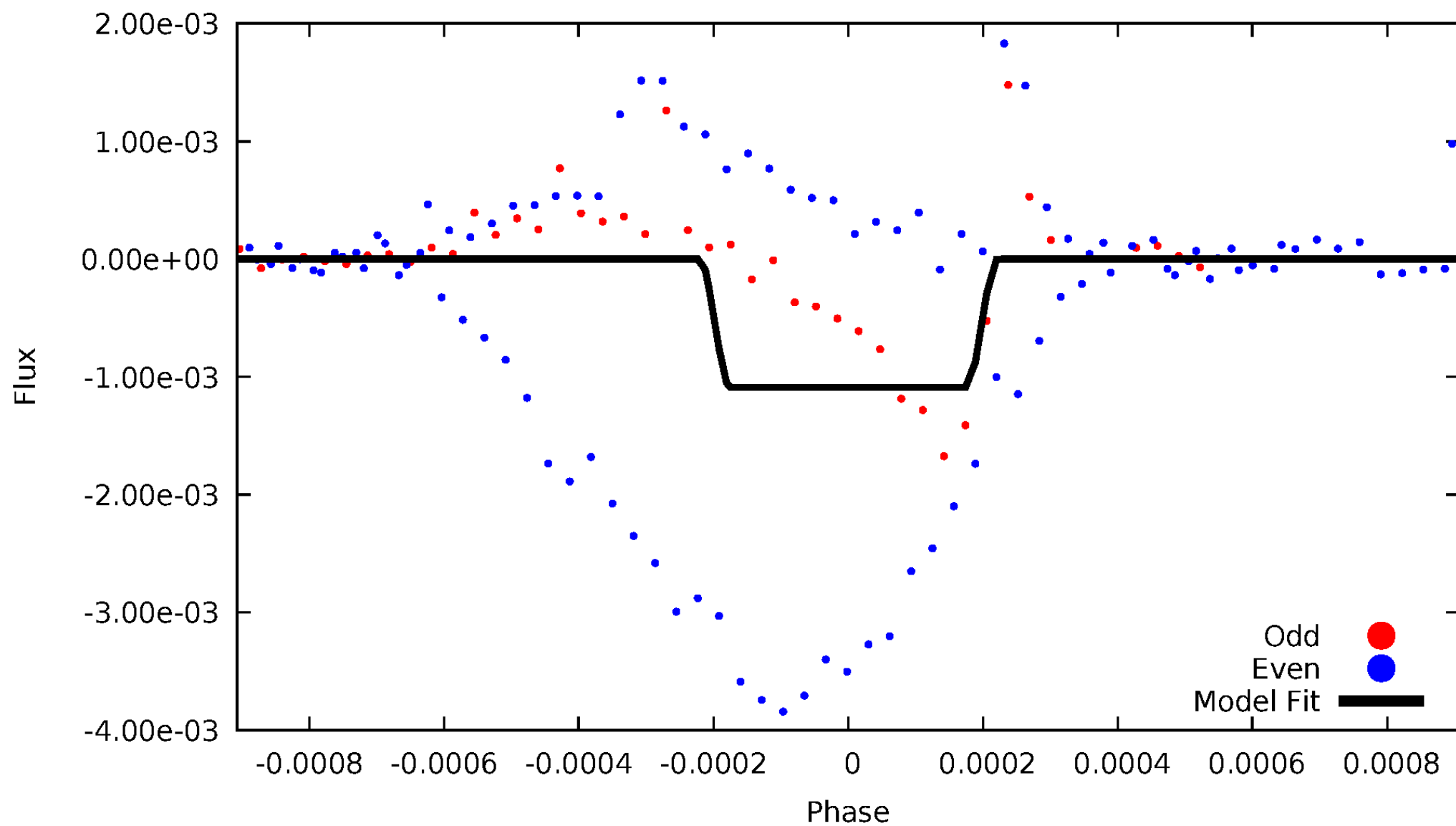
DV Odd/Even

TCE 004819301-01

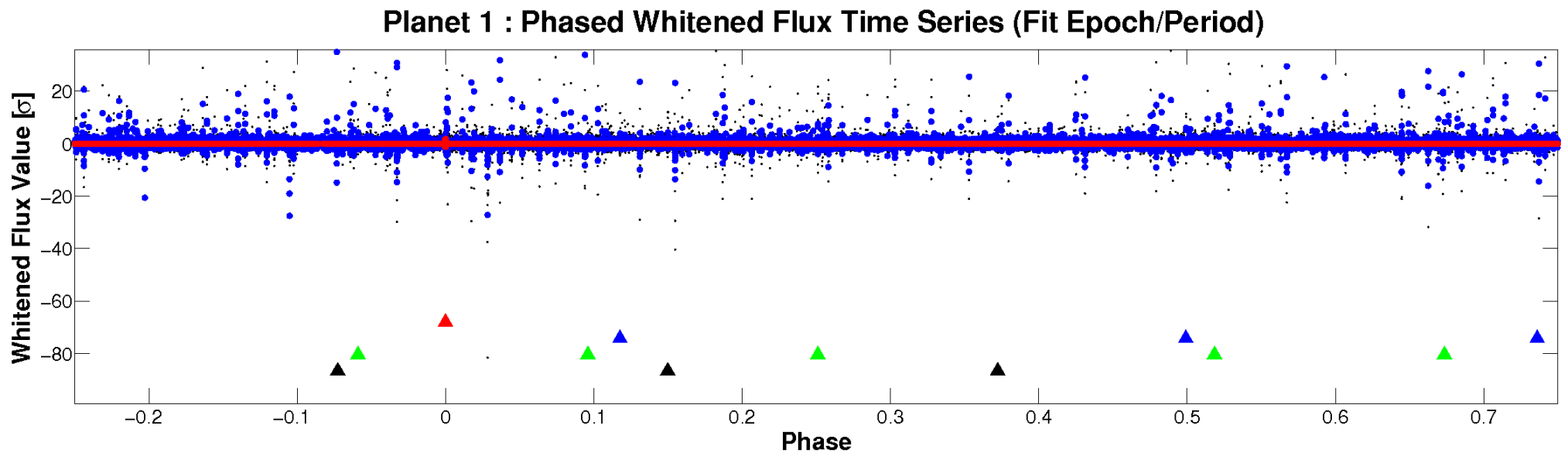
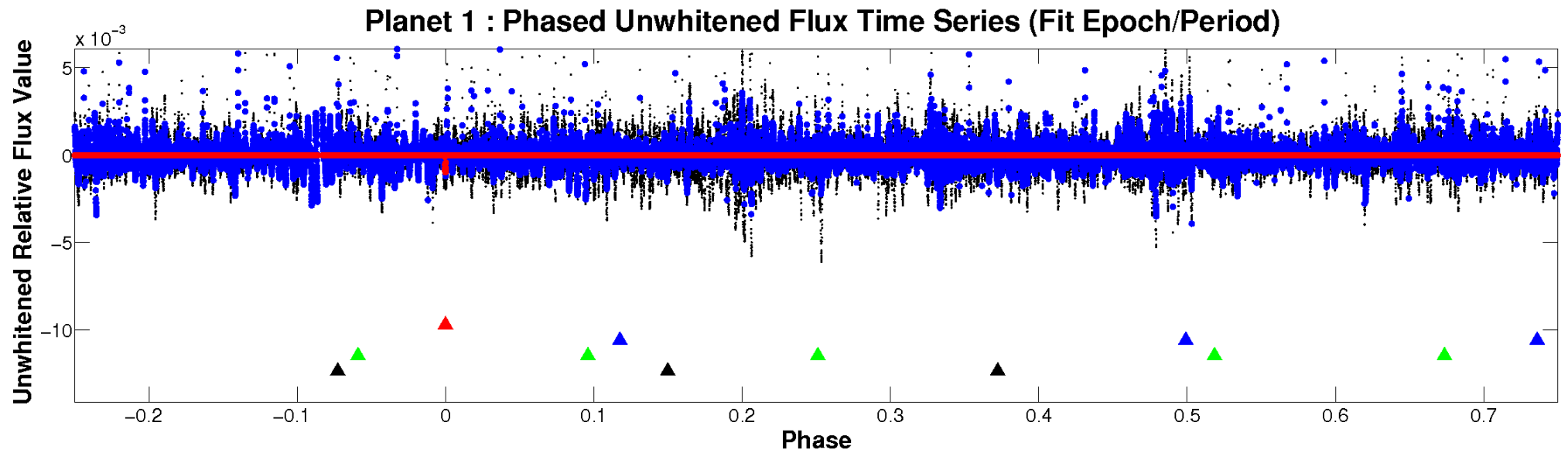


ALT Odd/Even

TCE 004819301-01

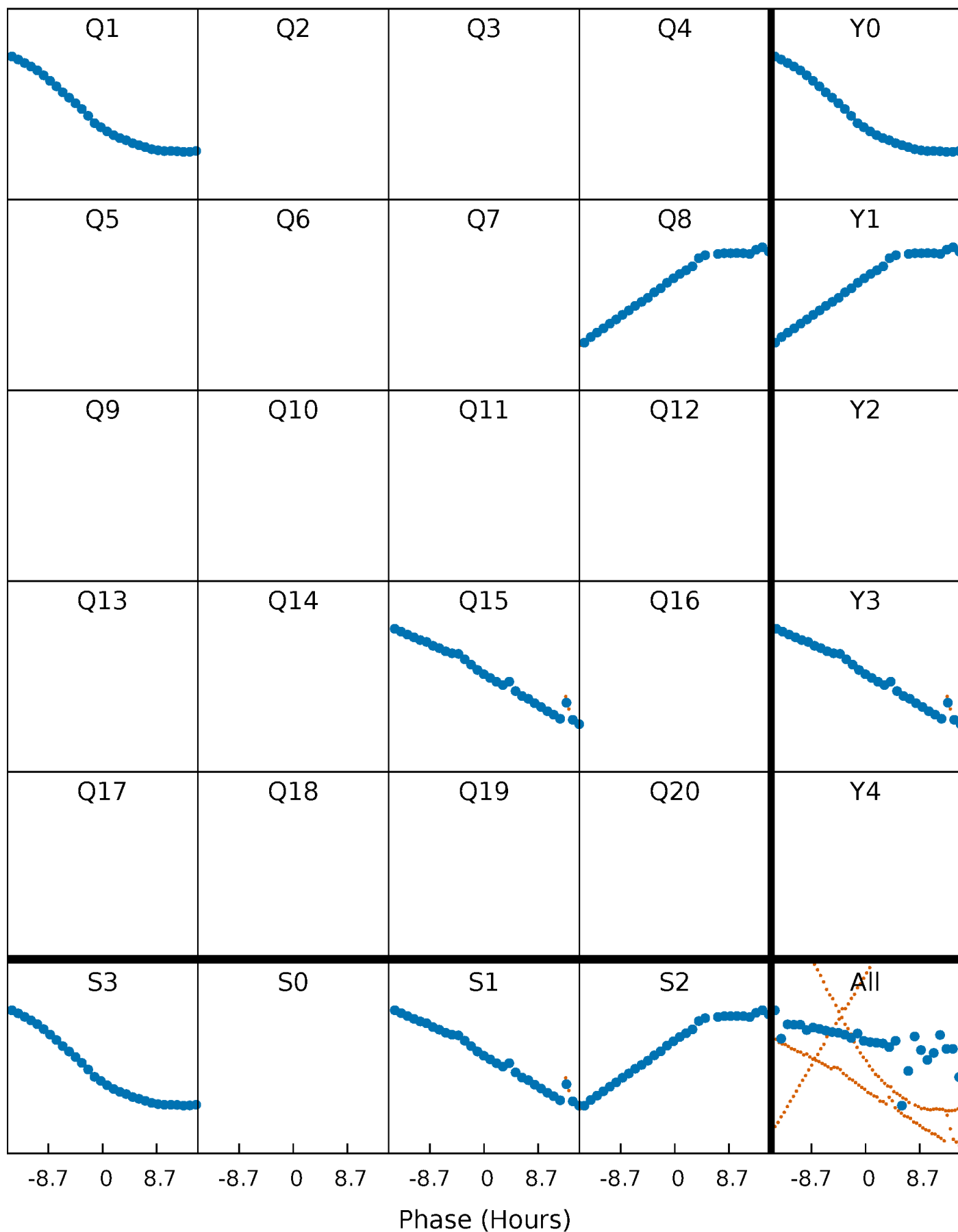


Non-Whitened Vs. Whitened Light Curve



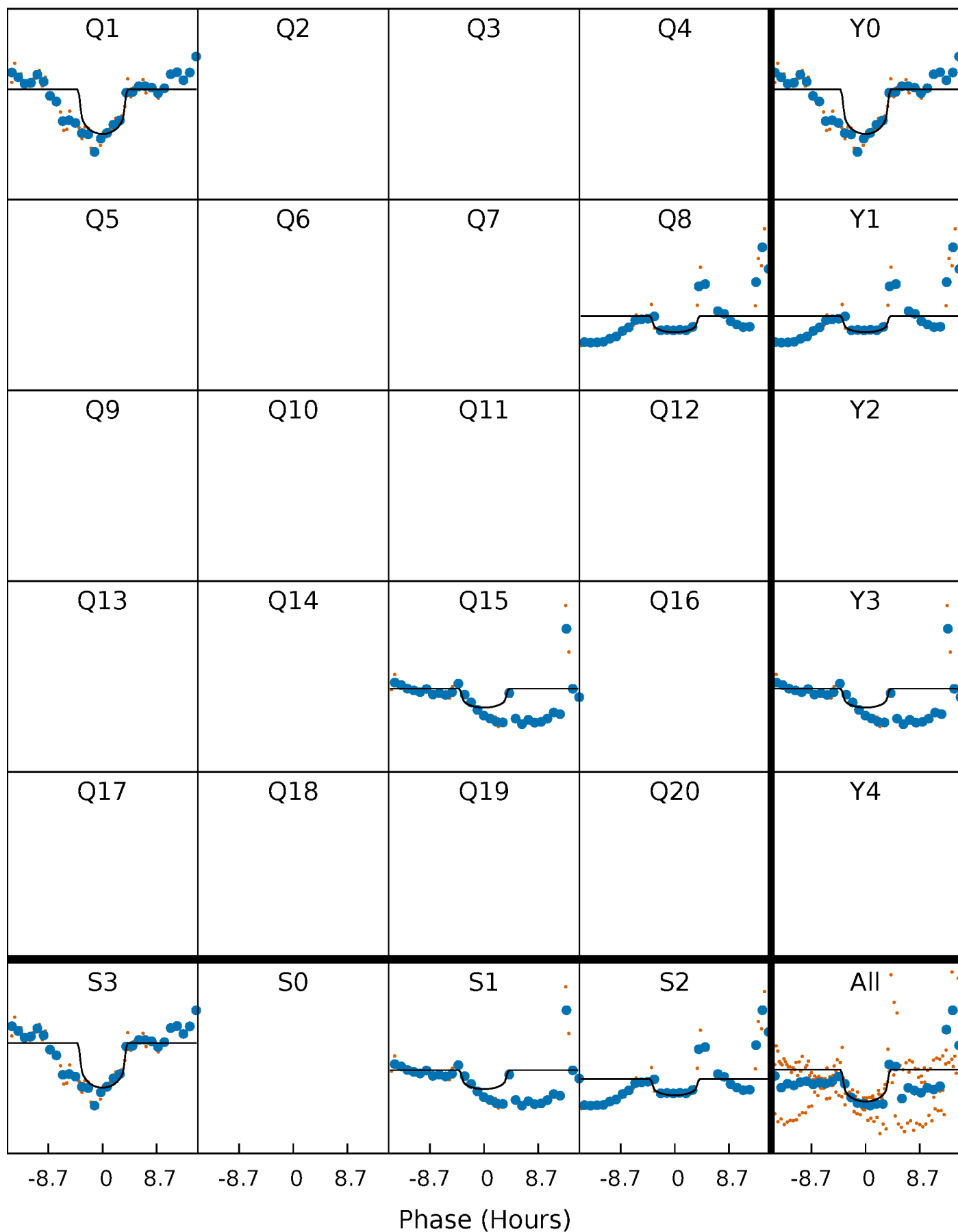
PDC Quarter-Phased Transit Curves

TCE 004819301-01 $P=644.919324$ Days $T_0=137.065635$ (BKJD)



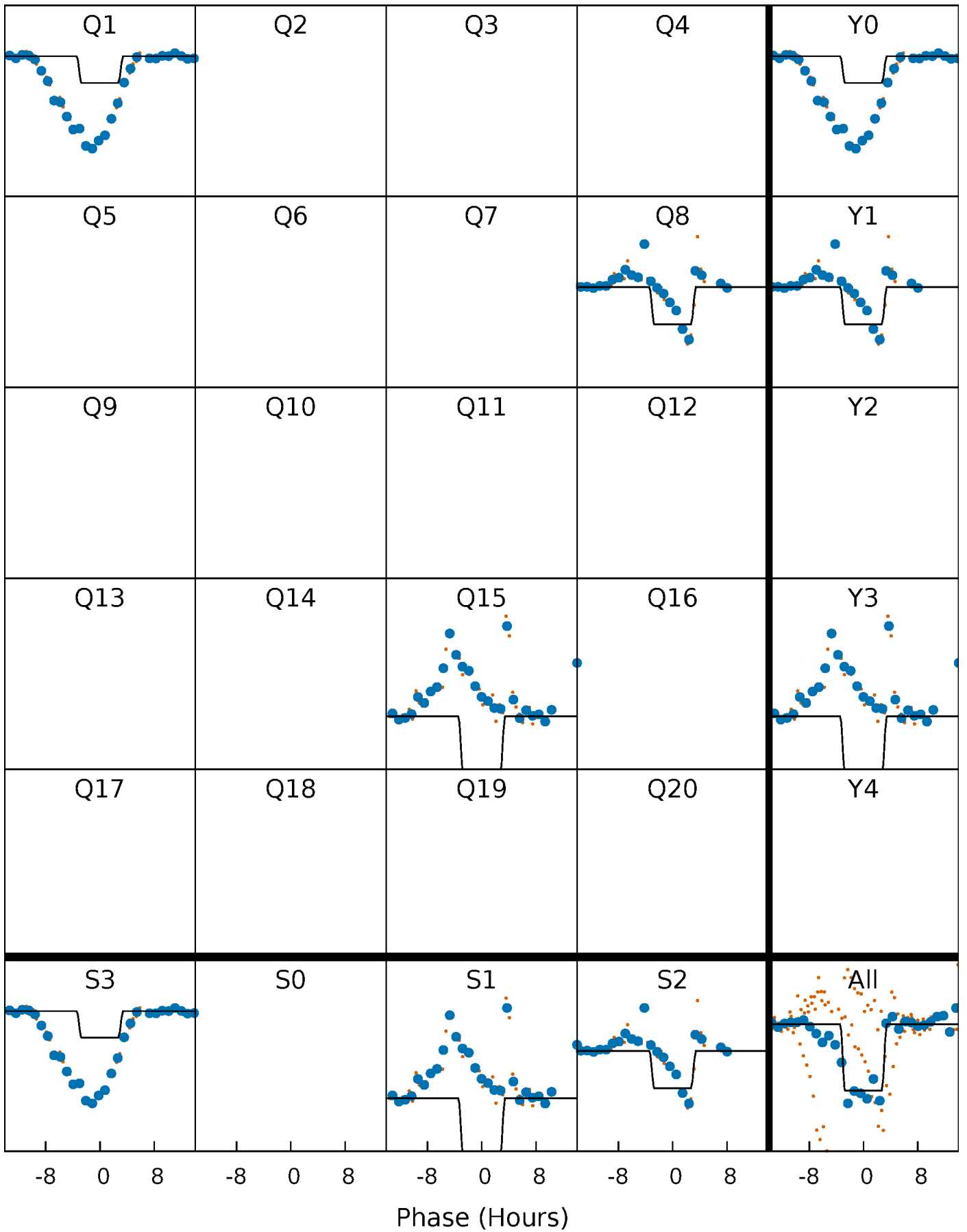
DV Quarter-Phased Transit Curves

TCE 004819301-01 $P=644.919324$ Days $T_0=137.065635$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

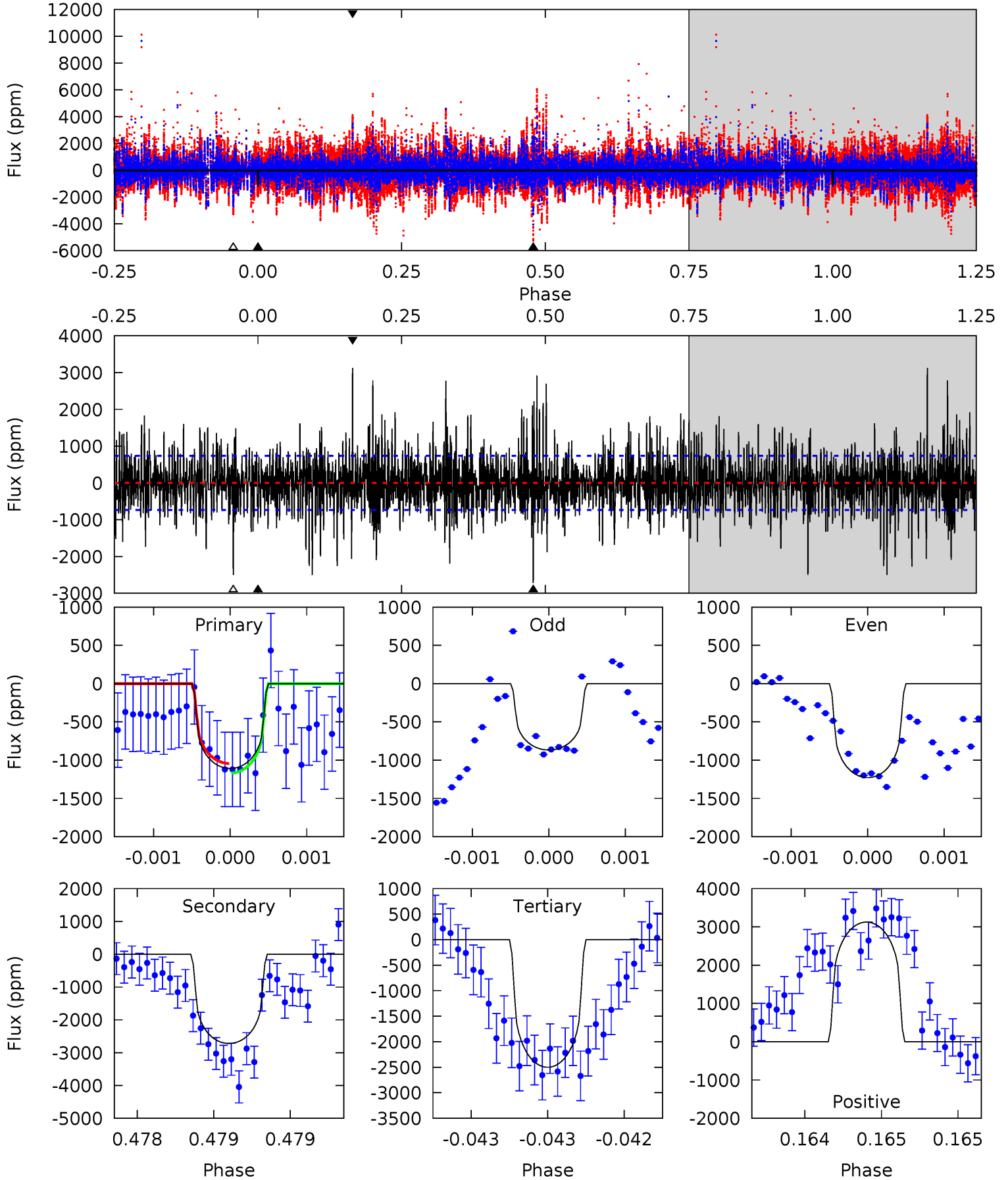
TCE 004819301-01 P=644.910398 Days $T_0=137.092607$ (BKJD)



DV Model-Shift Uniqueness Test

004819301-01, P = 644.919324 Days, E = 137.065635 Days

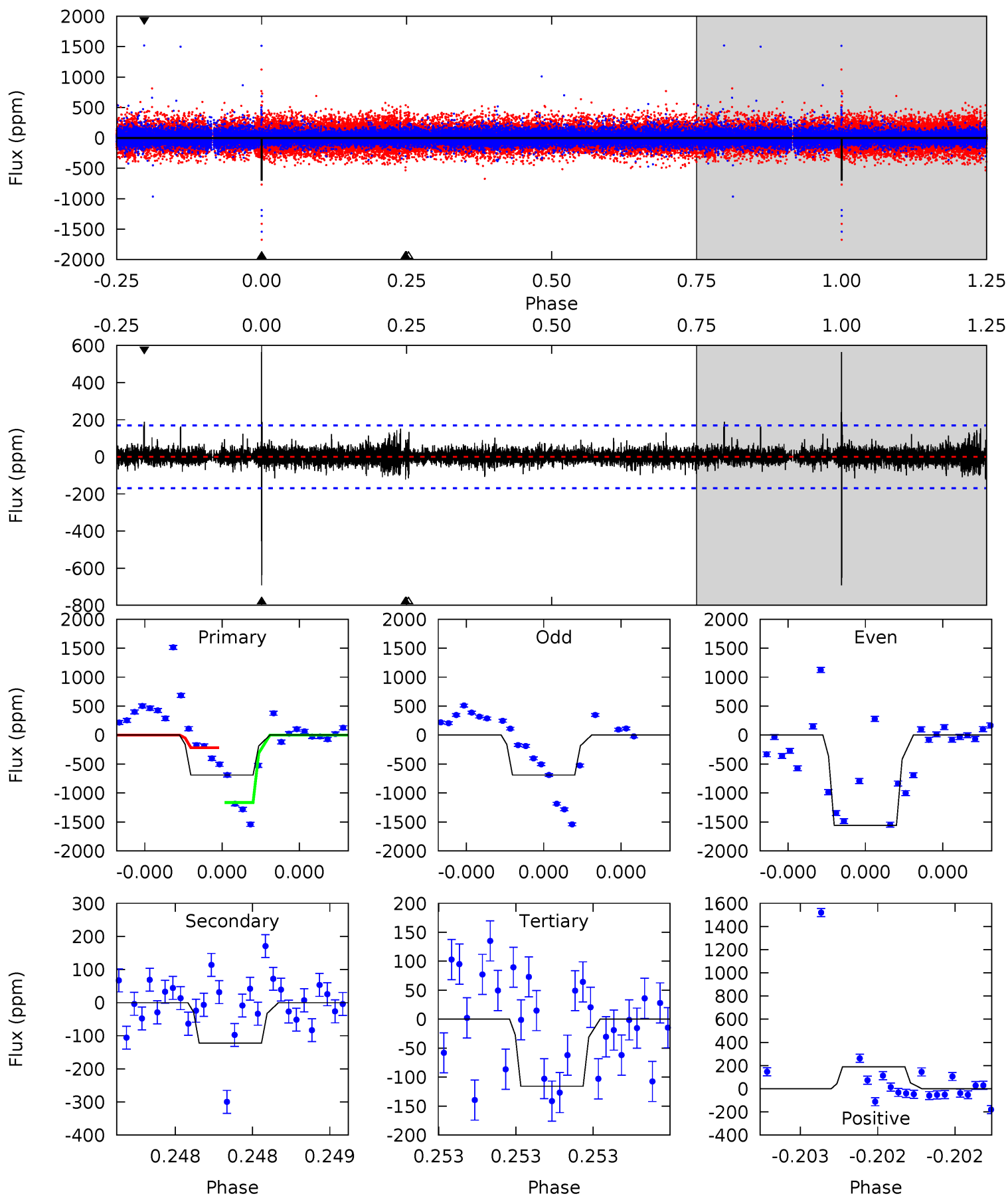
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.38	20.6	18.9	23.6	5.57	3.47	4.56	-10.5	-15.2	1.66	-3.07	1.28	1.01	0.53	0.48



Alt Model-Shift Uniqueness Test

004819301-01, P = 644.910398 Days, E = 137.092607 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.9	4.05	3.83	6.25	5.60	3.52	0.77	19.1	16.6	0.22	-2.20	21.6	1.67	0.45	0



Stellar Parameters For KIC 004819301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5190^{+203}_{-166}	$3.849^{+0.656}_{-0.303}$	$-0.060^{+0.300}_{-0.250}$	$1.981^{+0.984}_{-1.202}$	$1.011^{+0.207}_{-0.207}$	$0.183^{+2.242}_{-0.127}$
	+4%/-3%	+17%/-8%	+500%/-417%	+50%/-61%	+20%/-20%	+1224%/-69%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004819301-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2718 ± 132	$5.97^{+5.08}_{-3.54}$	367^{+51}_{-61}	6719^{+5004}_{-1462}	$93126^{+448633}_{-67427}$
Alt.	-122 ± 30	$6.41^{+5.15}_{-3.54}$	369^{+52}_{-60}	3461^{+1035}_{-449}	3219^{+13542}_{-2169}

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

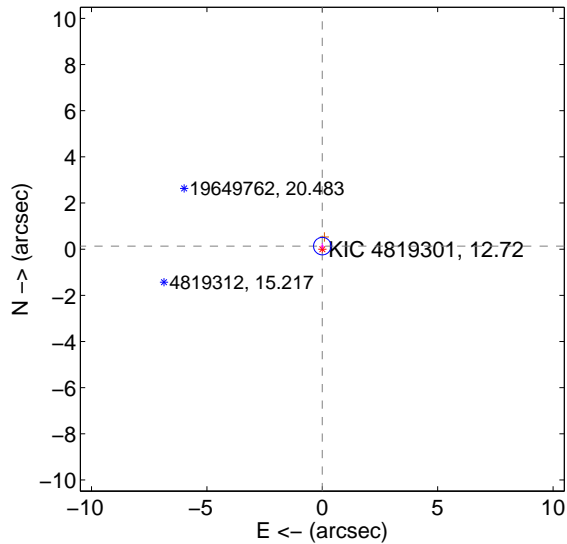
Supplemental centroid analysis for 004819301-01. Kepler magnitude: 12.72. Transit SNR 6.79

There are 1 quarters with good PRF difference image offsets

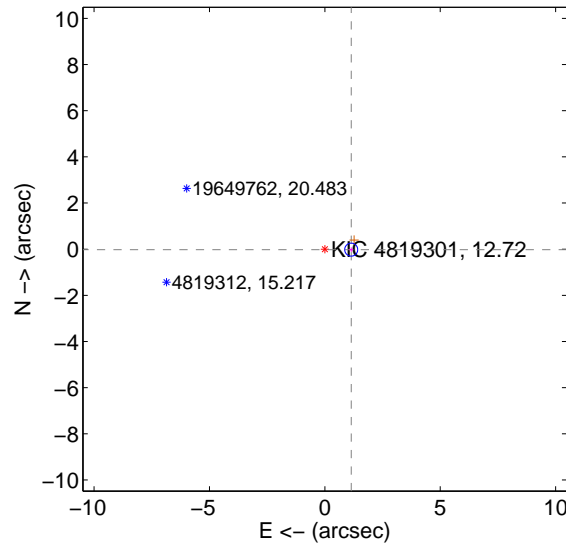
The direct PRF centroid is offset from the target star catalog position by about 1.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.126	1.05	0.000 ± 0.071	0.132 ± 0.126
PRF-fit source offset from KIC position	1.143 ± 0.094	12.17	-1.142 ± 0.094	-0.020 ± 0.095
photometric centroid source offset	3.04 ± 1.90	1.60	-3.04 ± 1.90	-0.20 ± 0.59

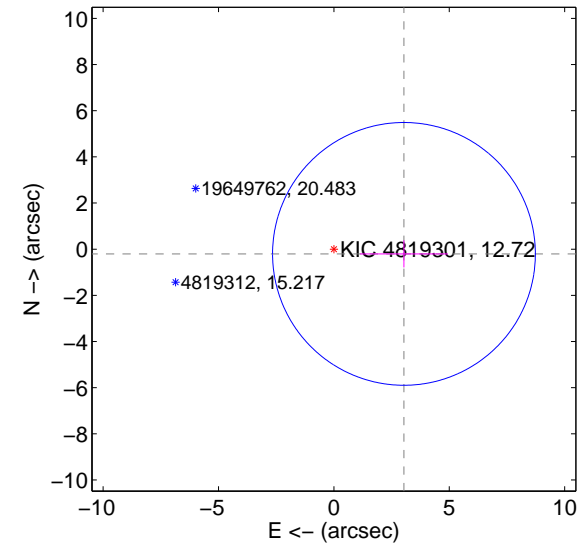
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

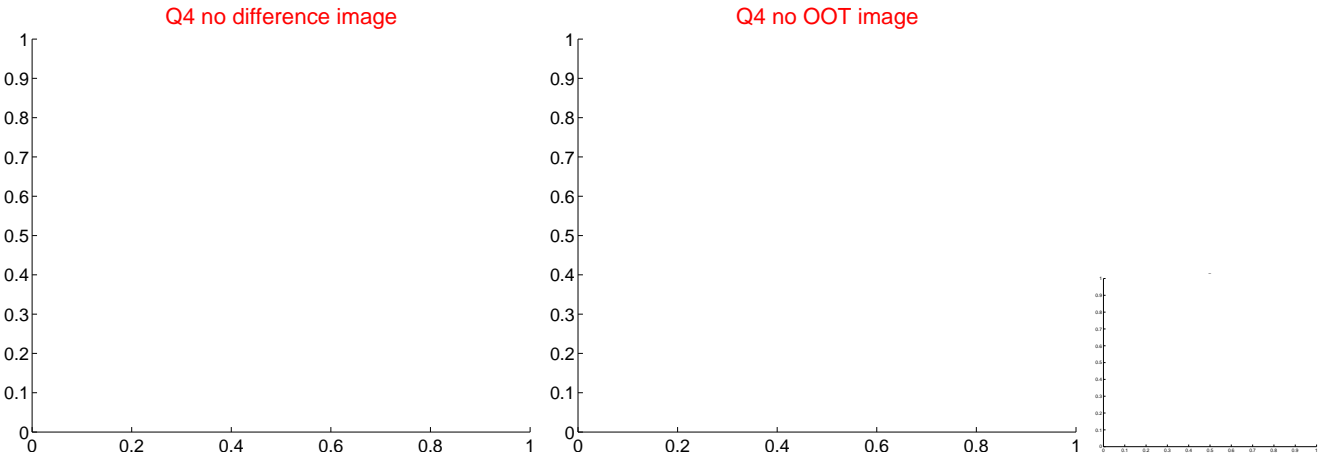
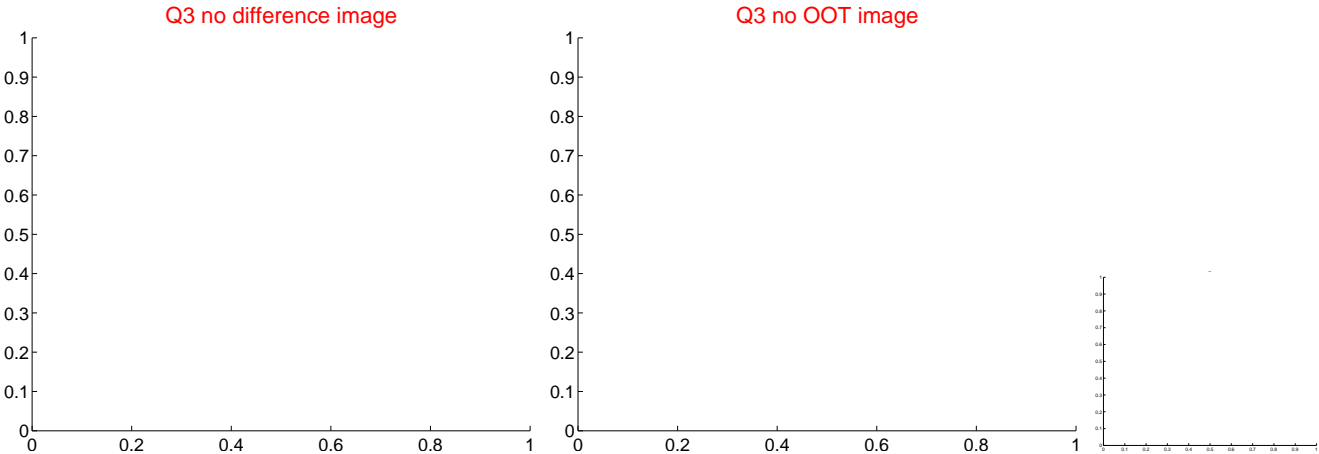
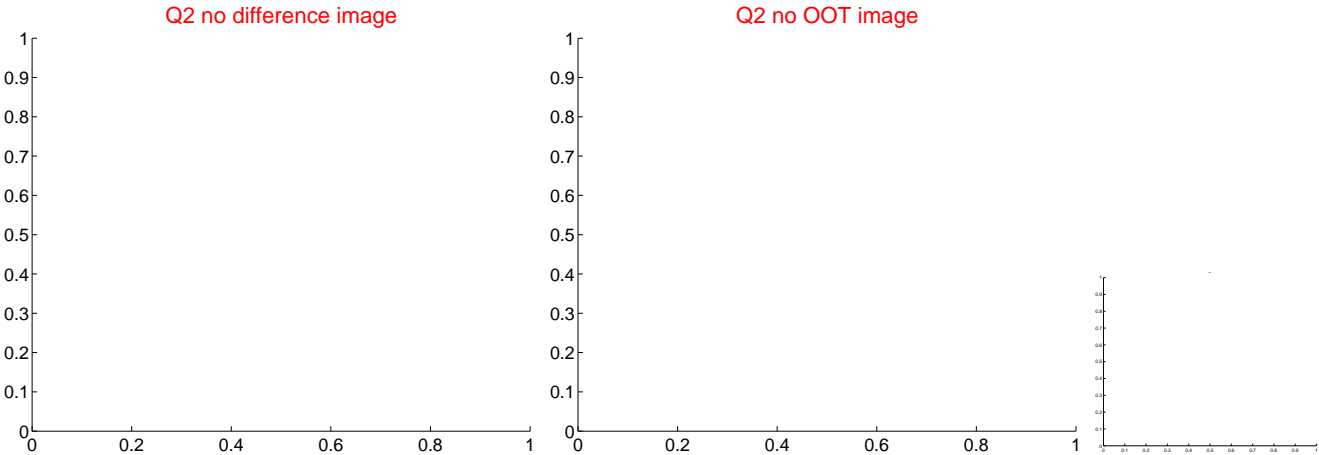
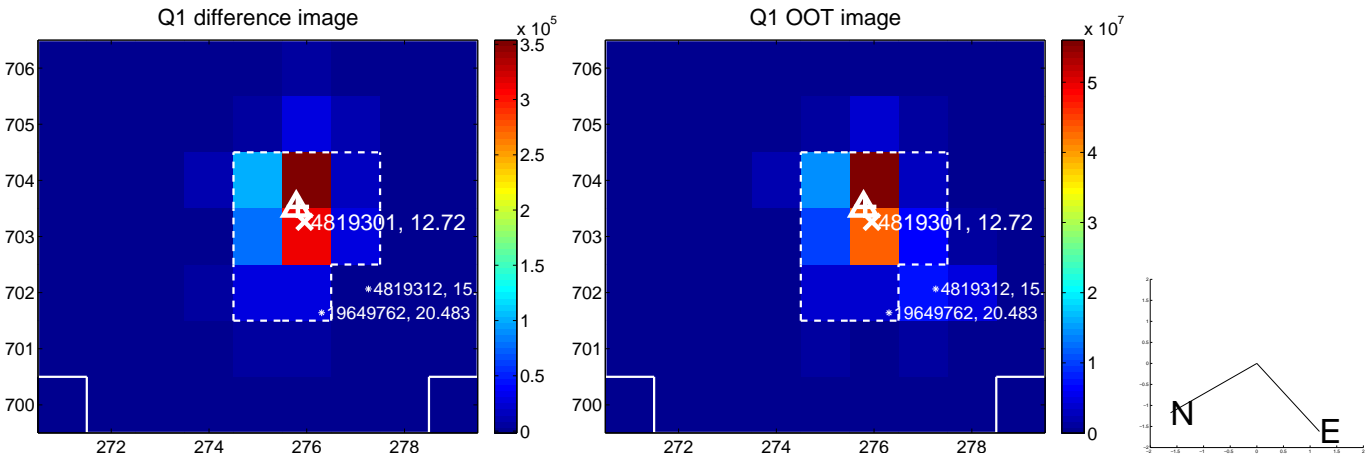


offset from photometric centroids

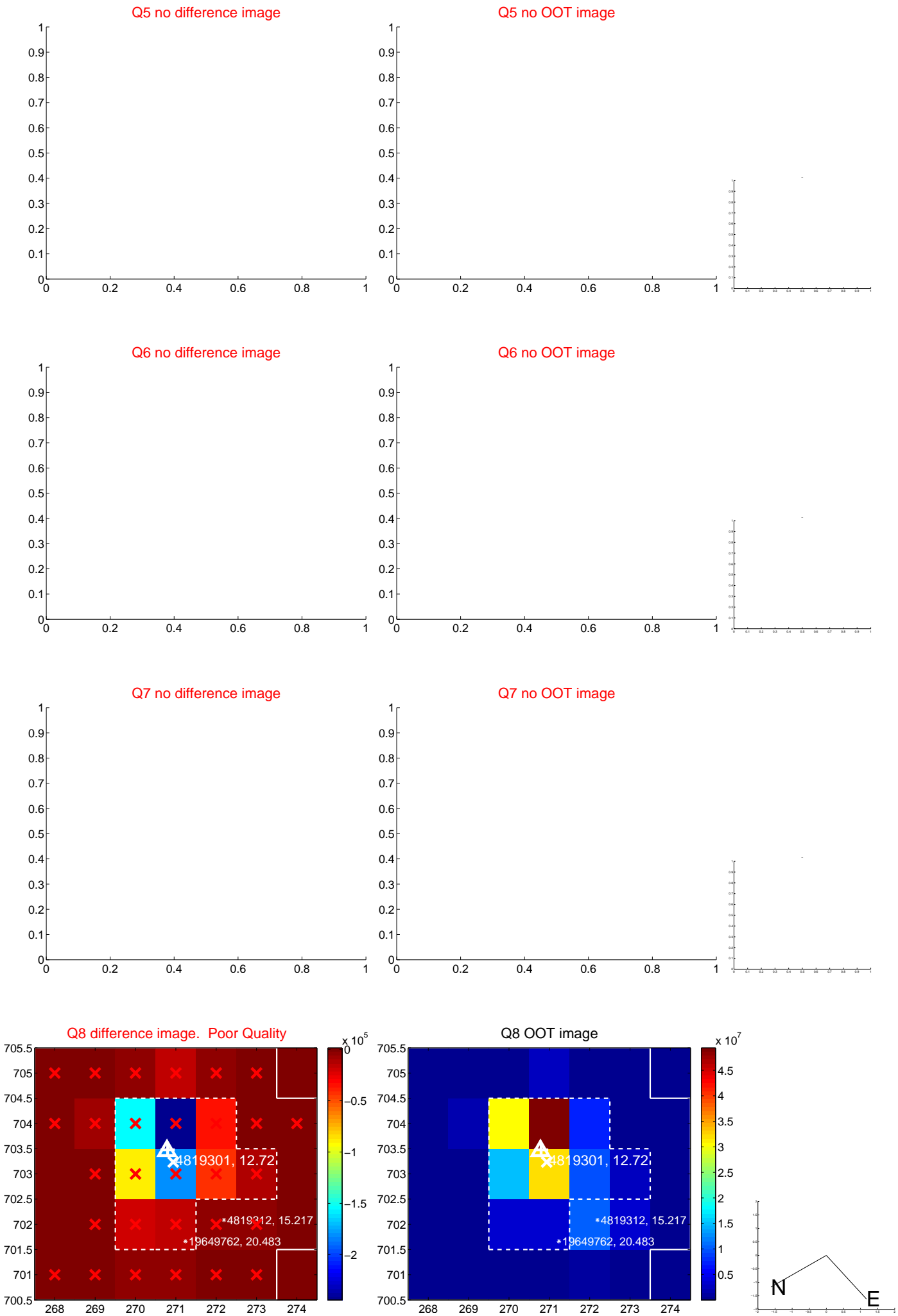


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



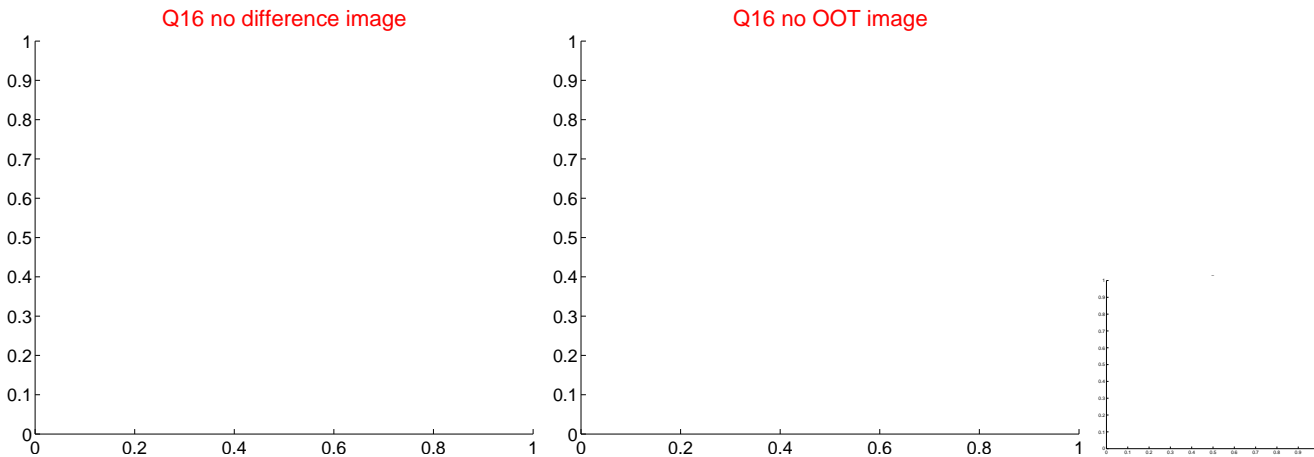
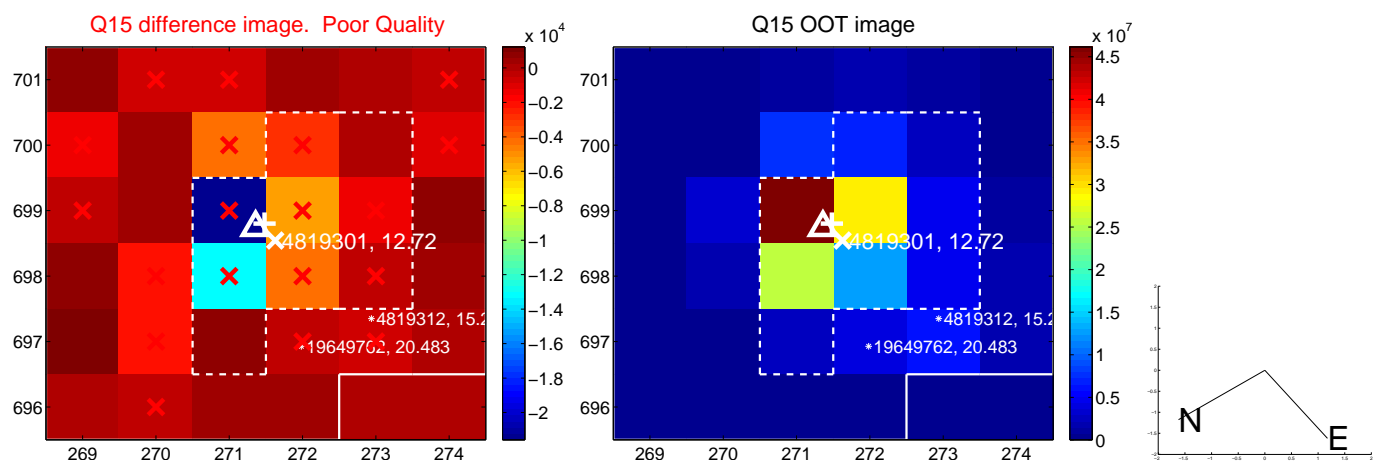
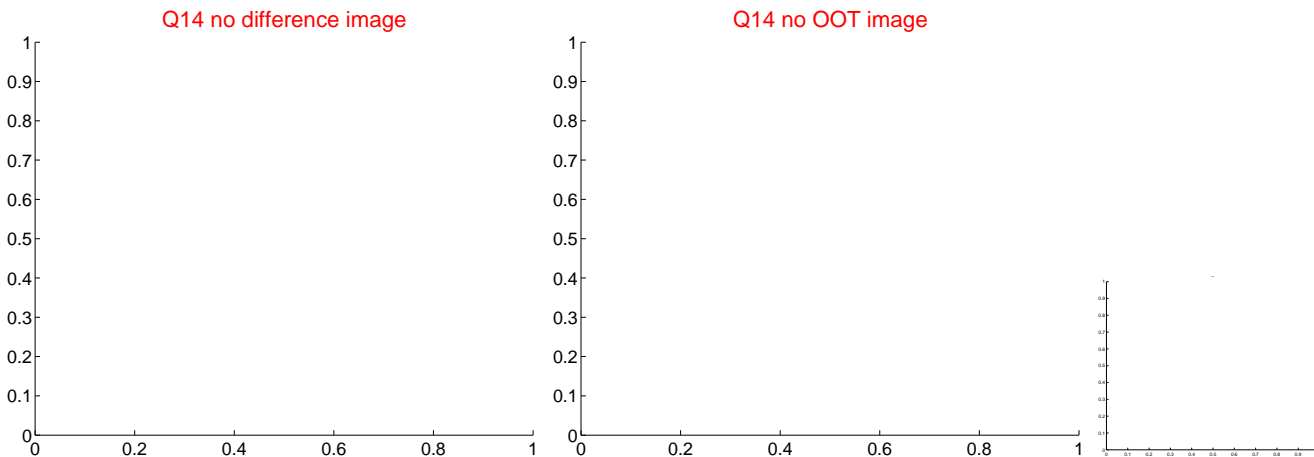
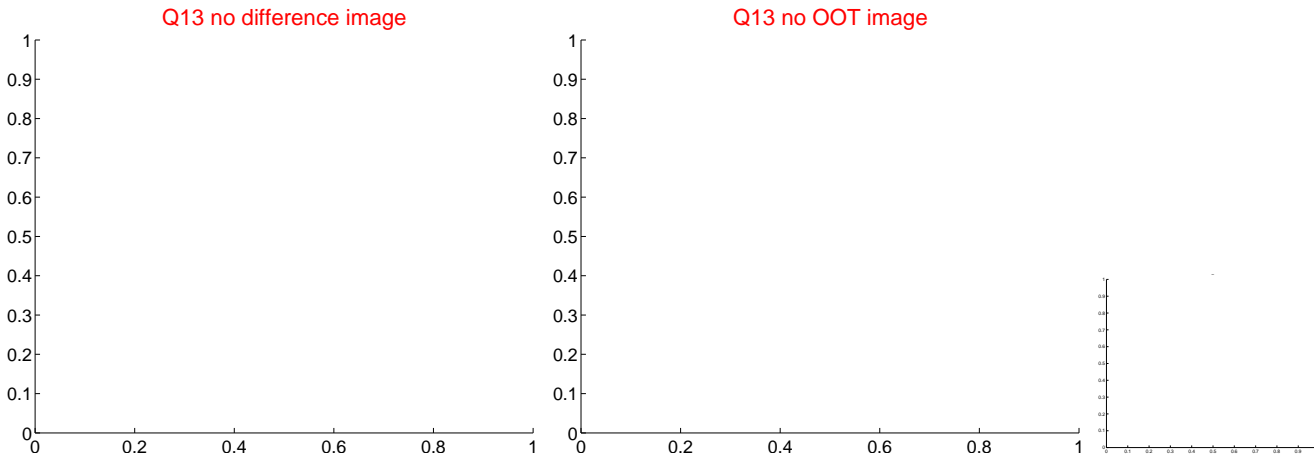
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



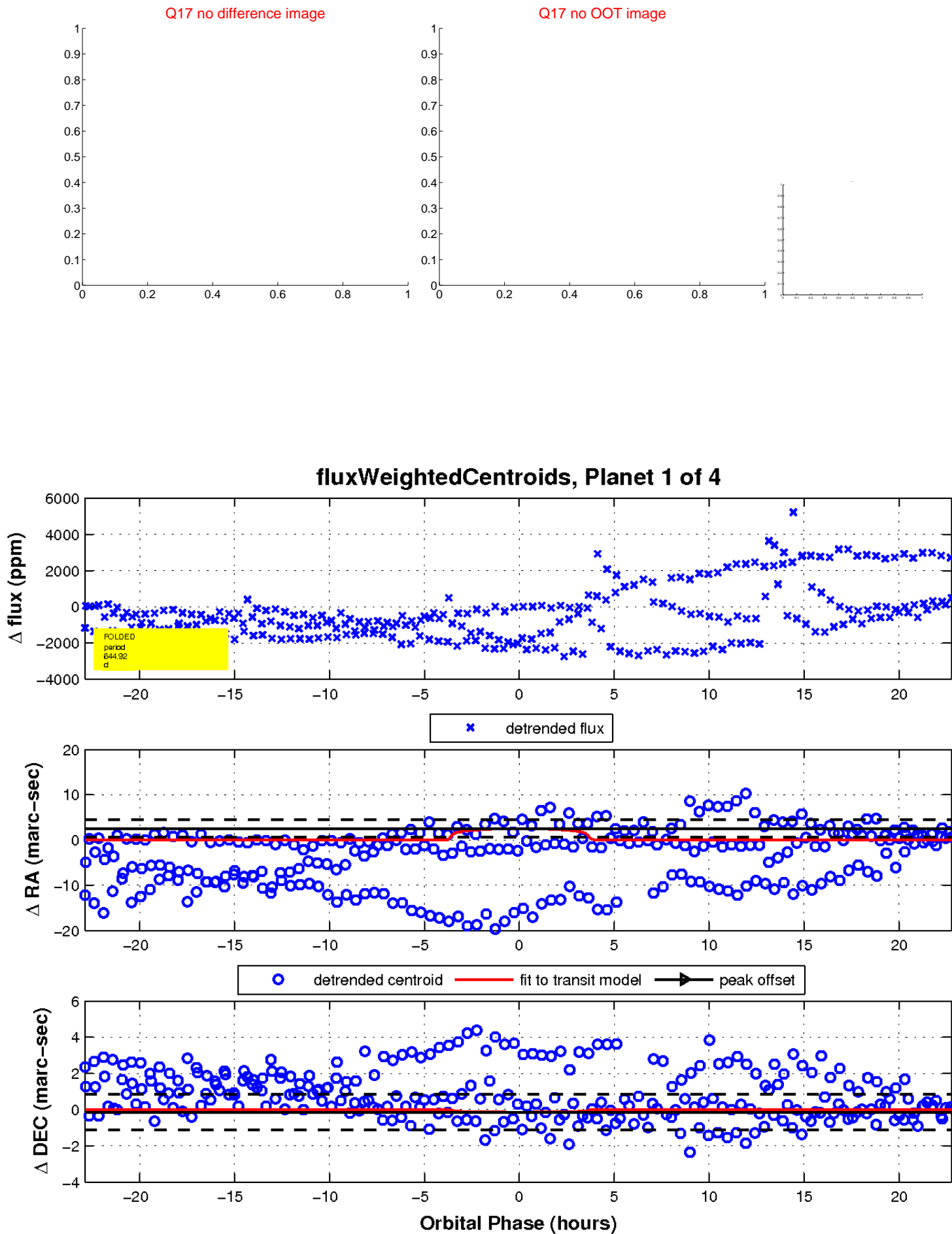
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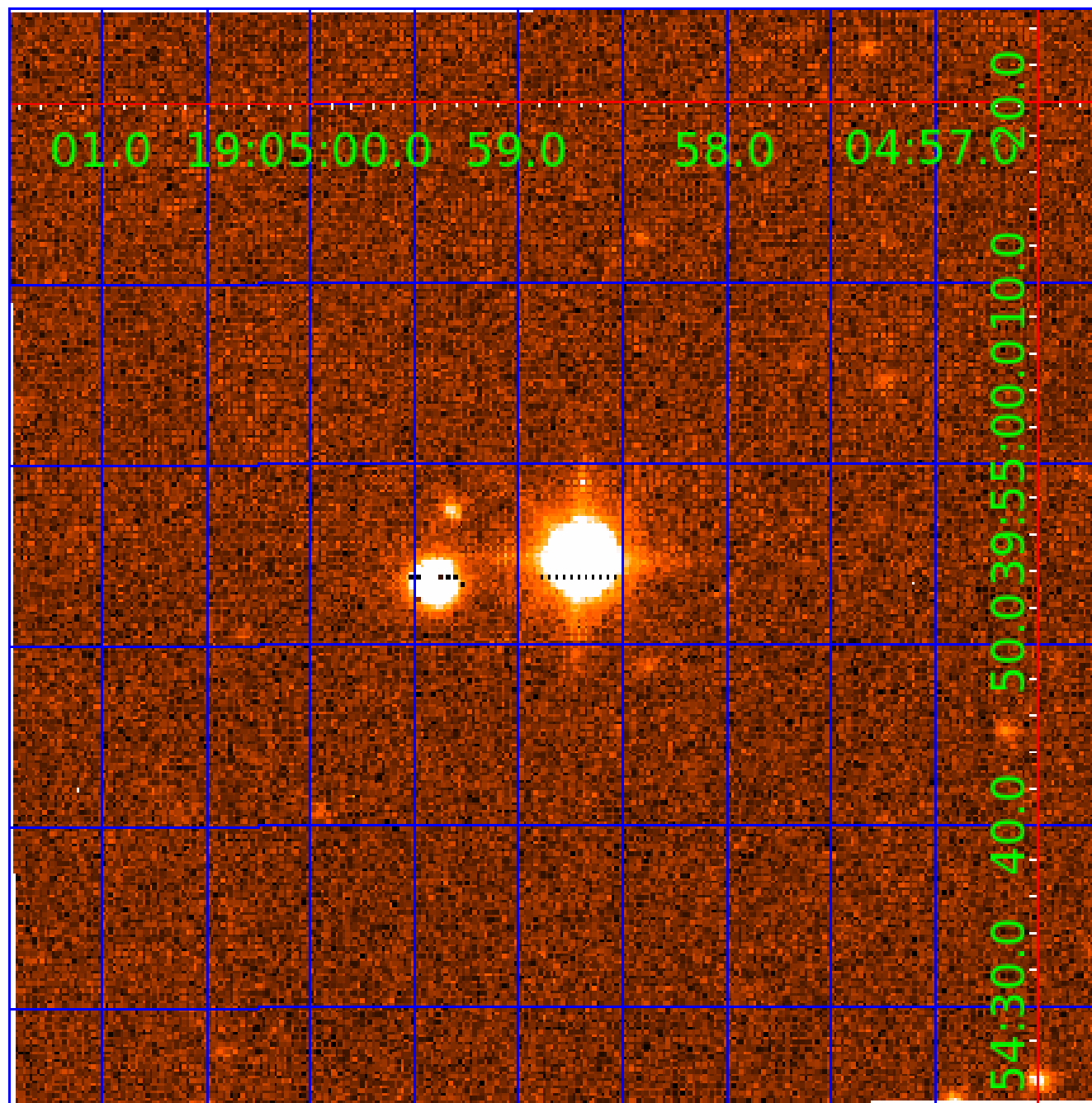


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UKIRT Image

Declination



KIC 004819301

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004819301-01	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
004819301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
004819301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—CENT_KIC_POS
004819301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

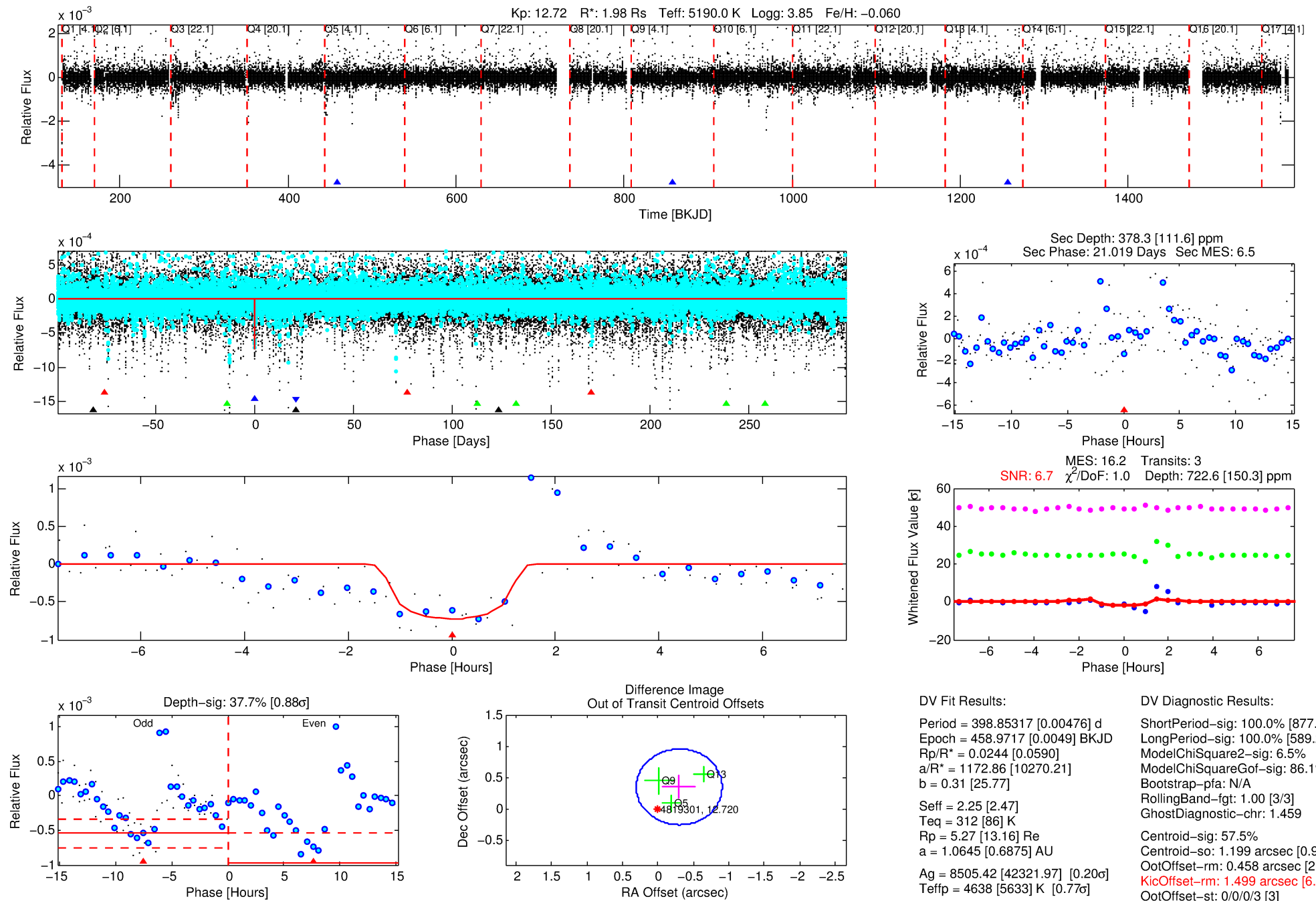
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004819301-02

No Significant Match Found

DV One-Page Summary

KIC: 4819301 Candidate: 2 of 4 Period: 398.853 d



DV Fit Results:

Period = 398.85317 [0.00476] d
Epoch = 458.9717 [0.0049] BKJD
Rp/R* = 0.0244 [0.0590]
a/R* = 1172.86 [10270.21]
b = 0.31 [25.77]
Seff = 2.25 [2.47]
Teff = 312 [86] K
Rp = 5.27 [13.16] Re
a = 1.0645 [0.6875] AU
Ag = 8505.42 [42321.97] [0.20 σ]
Teffp = 4638 [5633] K [0.77 σ]

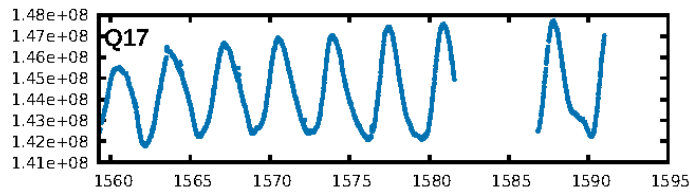
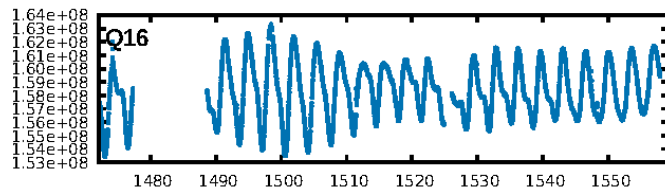
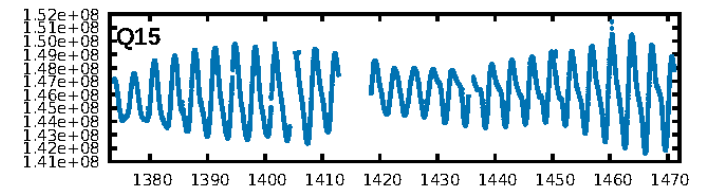
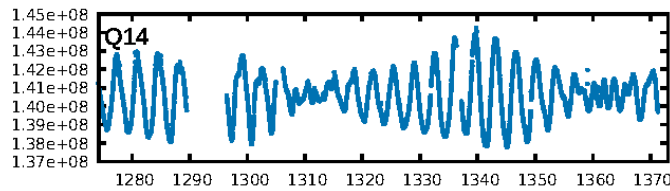
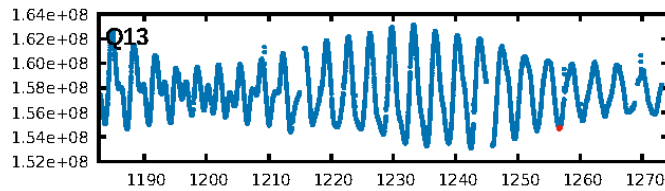
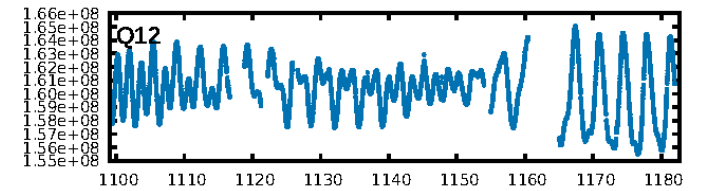
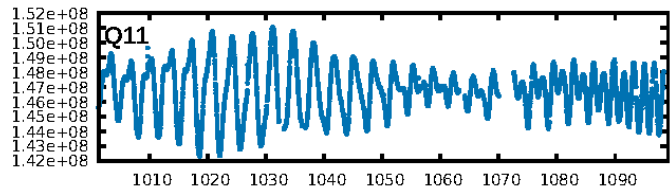
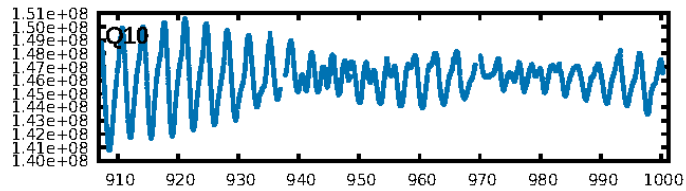
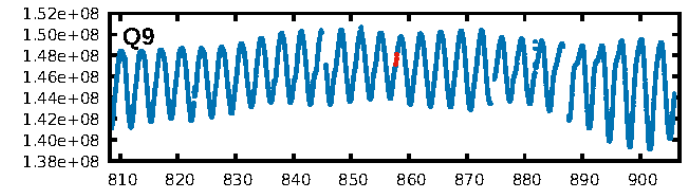
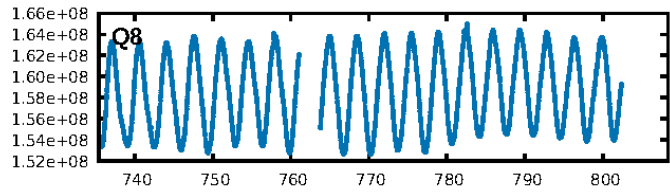
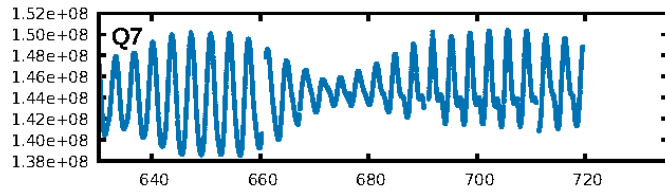
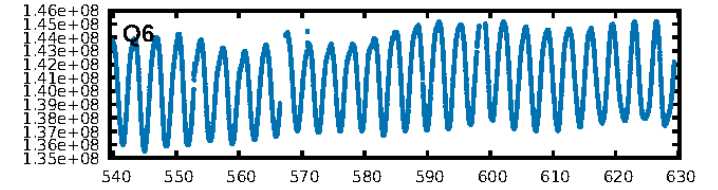
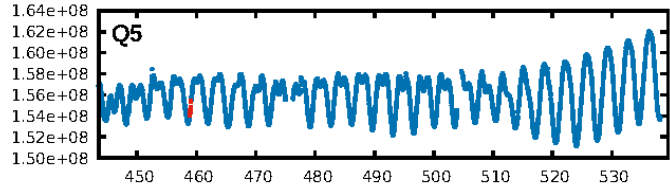
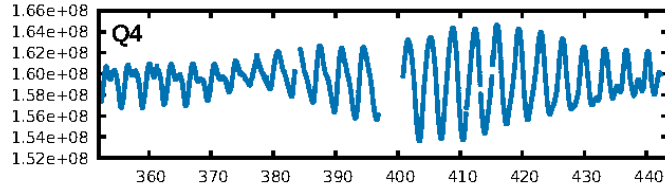
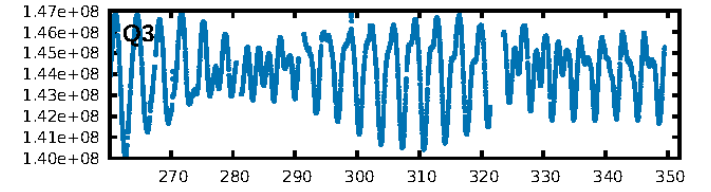
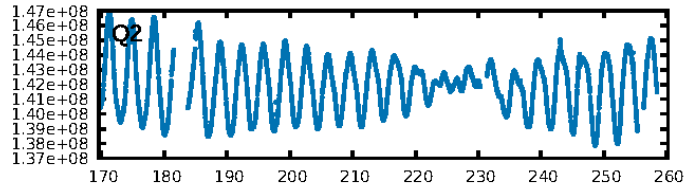
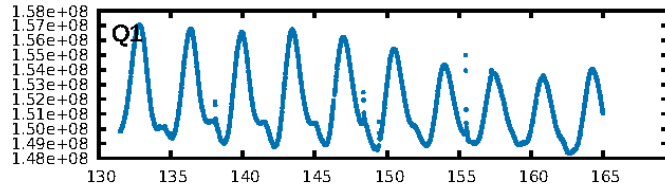
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [877.26 σ]
LongPeriod-sig: 100.0% [589.28 σ]
ModelChiSquare2-sig: 6.5%
ModelChiSquareGof-sig: 86.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.459
Centroid-sig: 57.5%
Centroid-so: 1.199 arcsec [0.91 σ]
OotOffset-rm: 0.458 arcsec [2.27 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-rm: 1.499 arcsec [6.06 σ]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

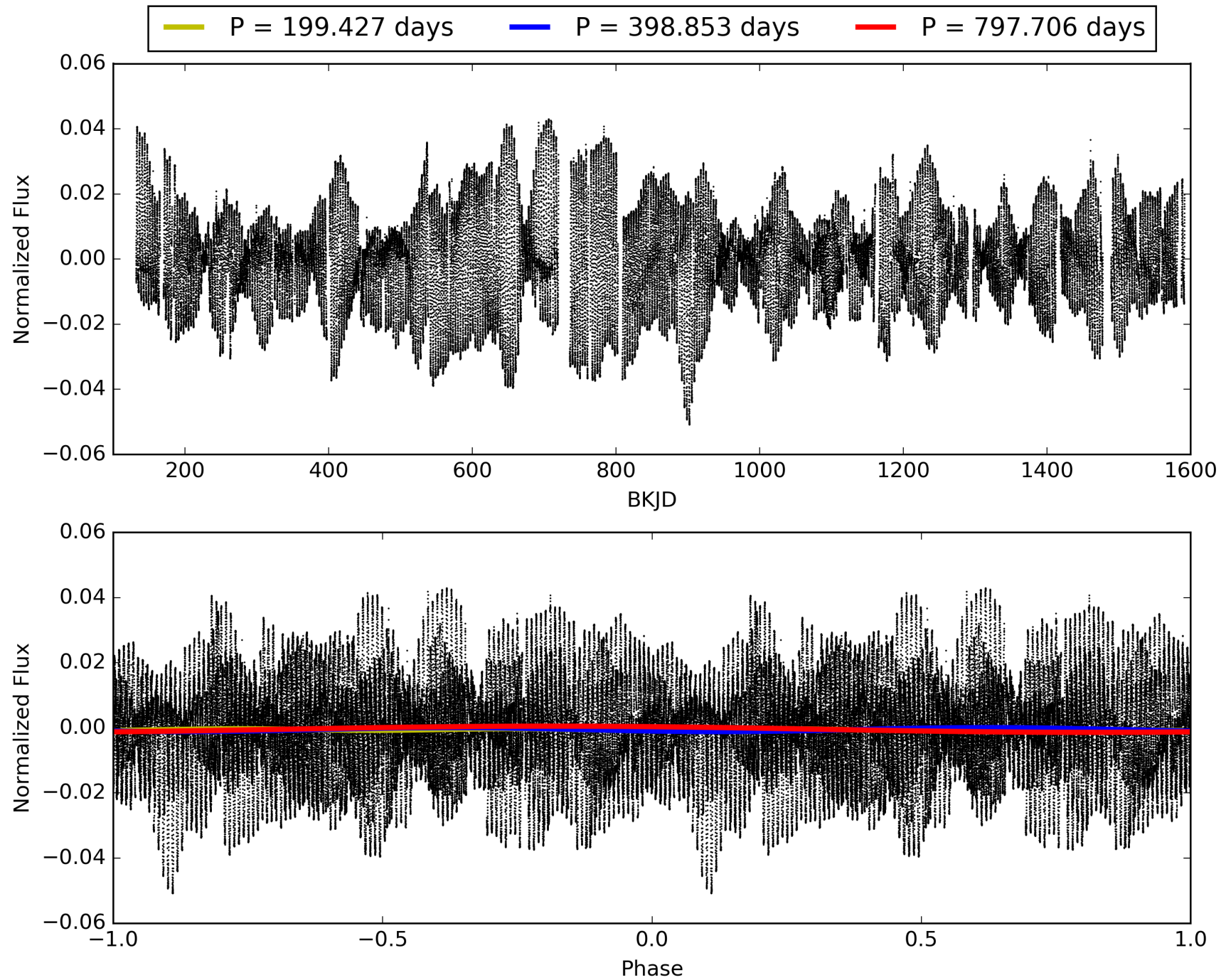
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:24:23 Z

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

TCE 004819301-02, PDC Light Curves

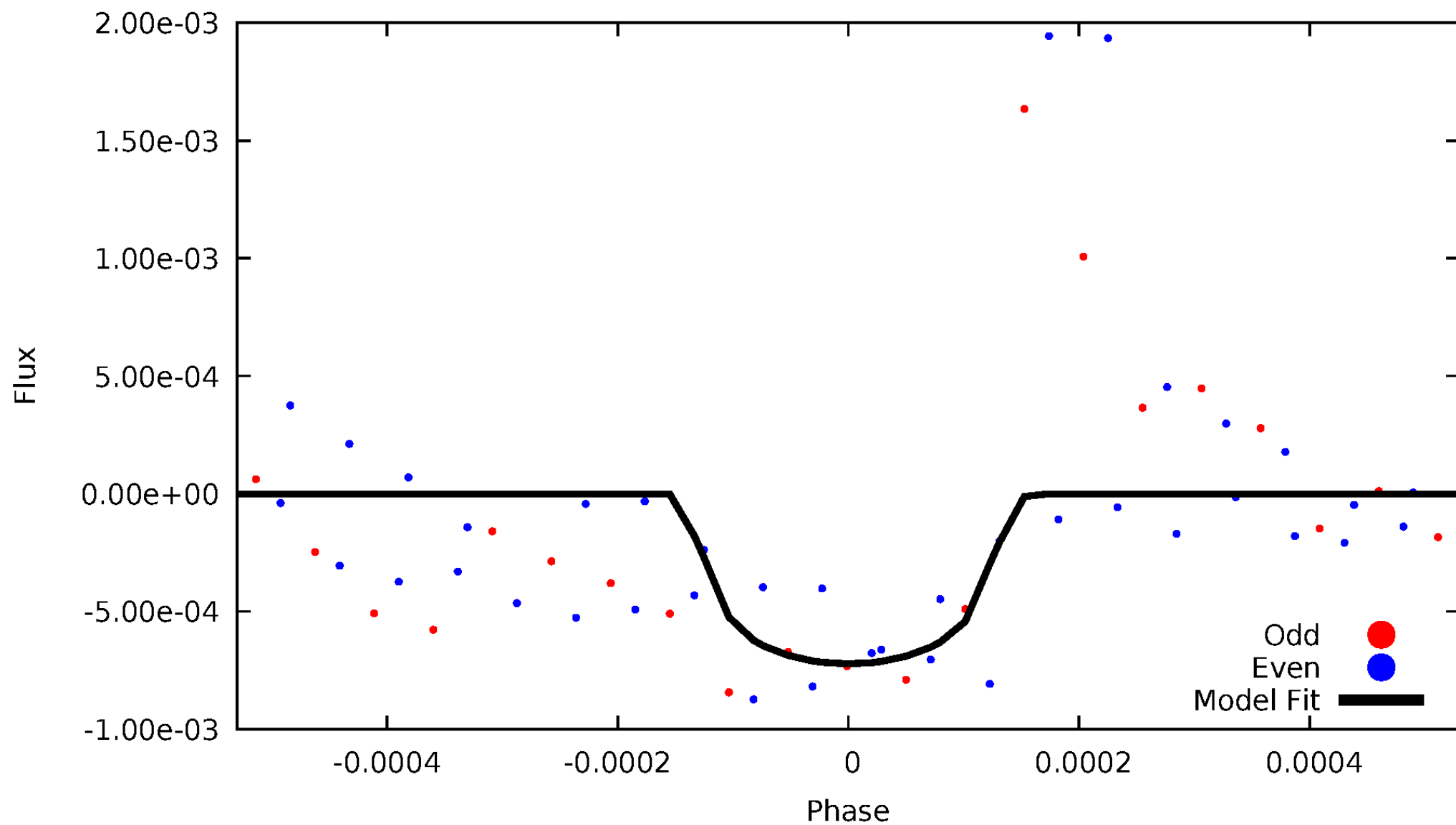


TCE 004819301-02



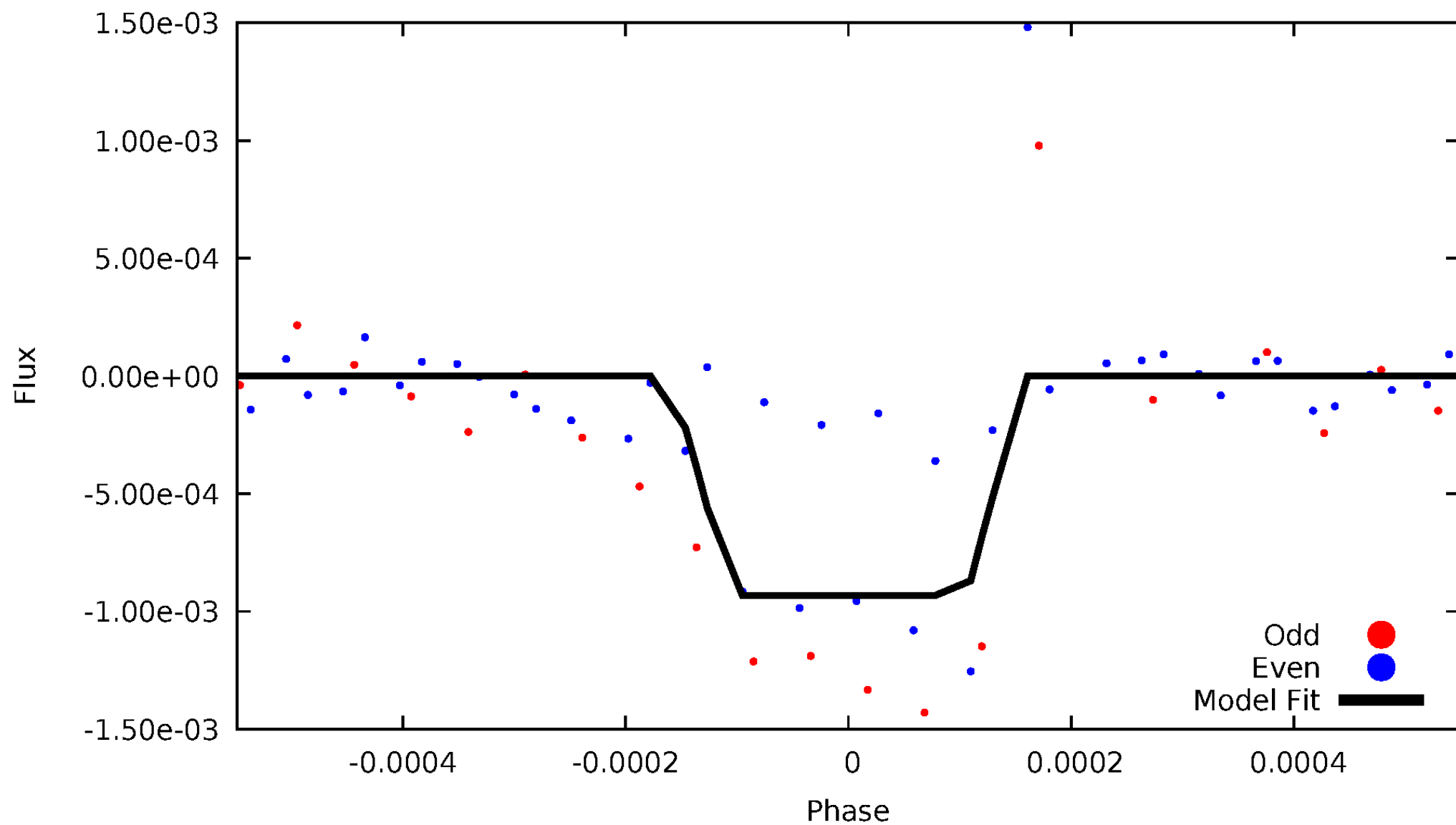
DV Odd/Even

TCE 004819301-02



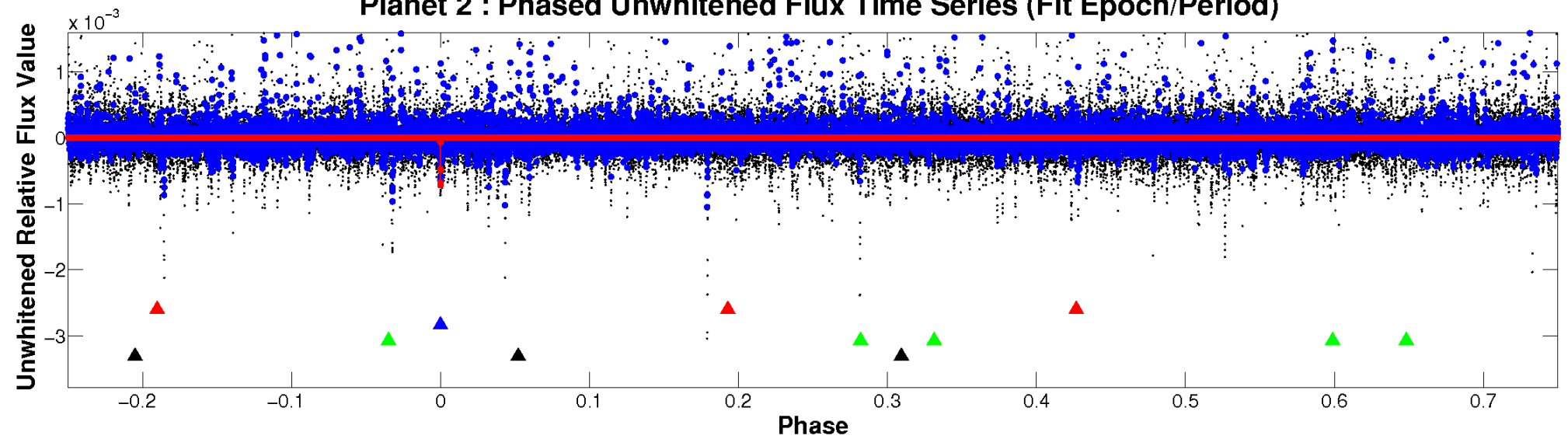
ALT Odd/Even

TCE 004819301-02

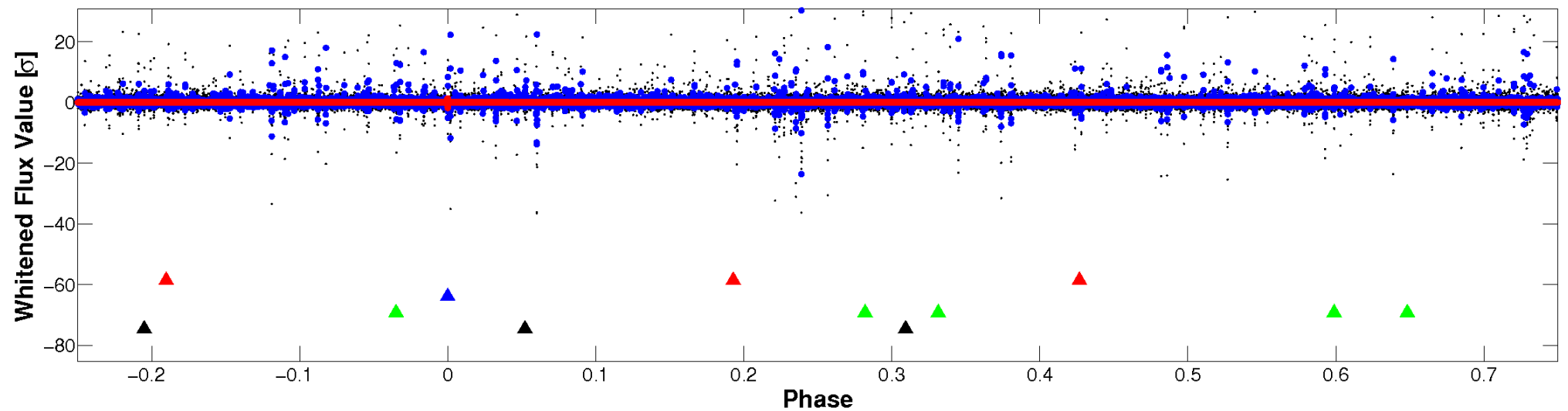


Non-Whitened Vs. Whitened Light Curve

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

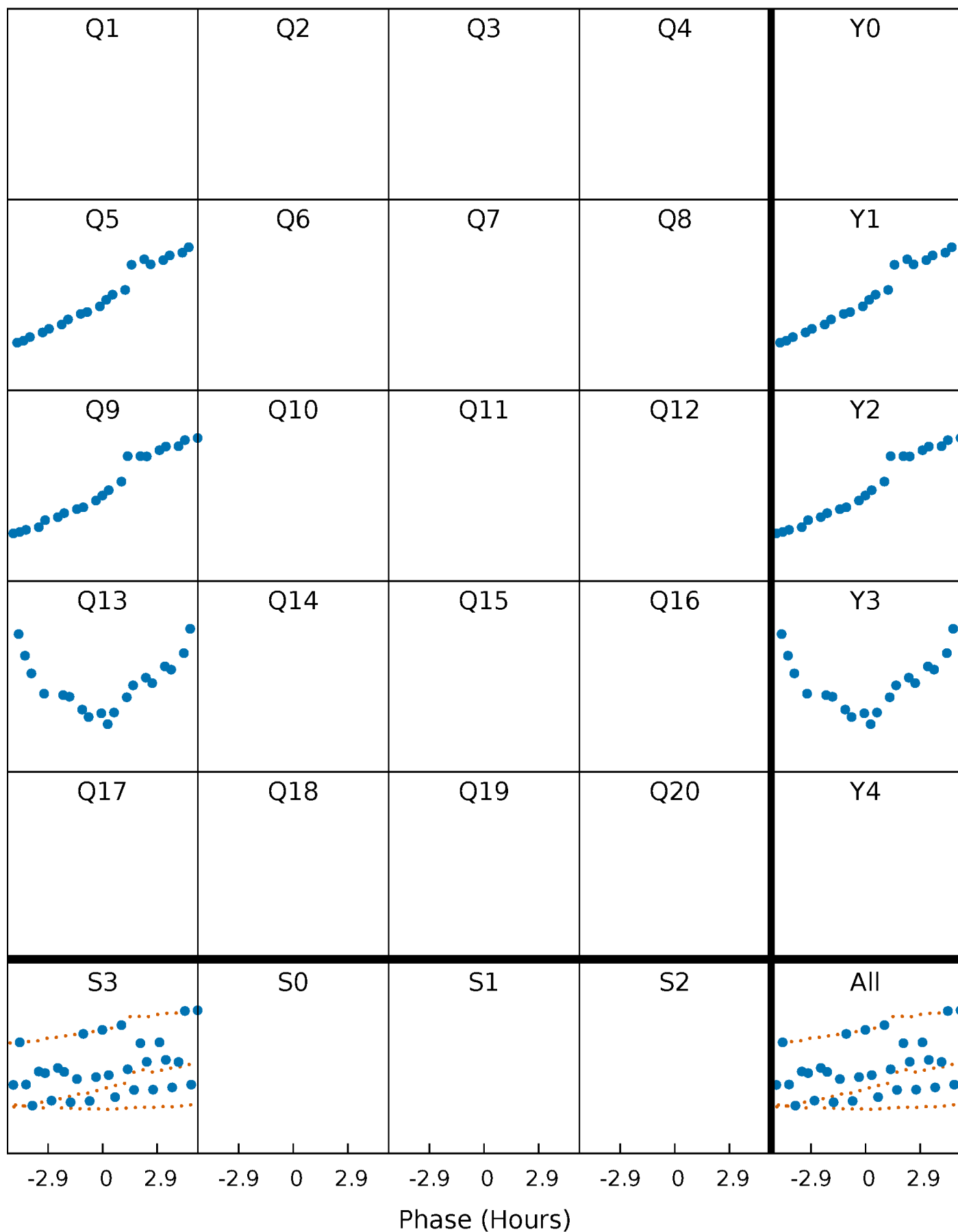


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



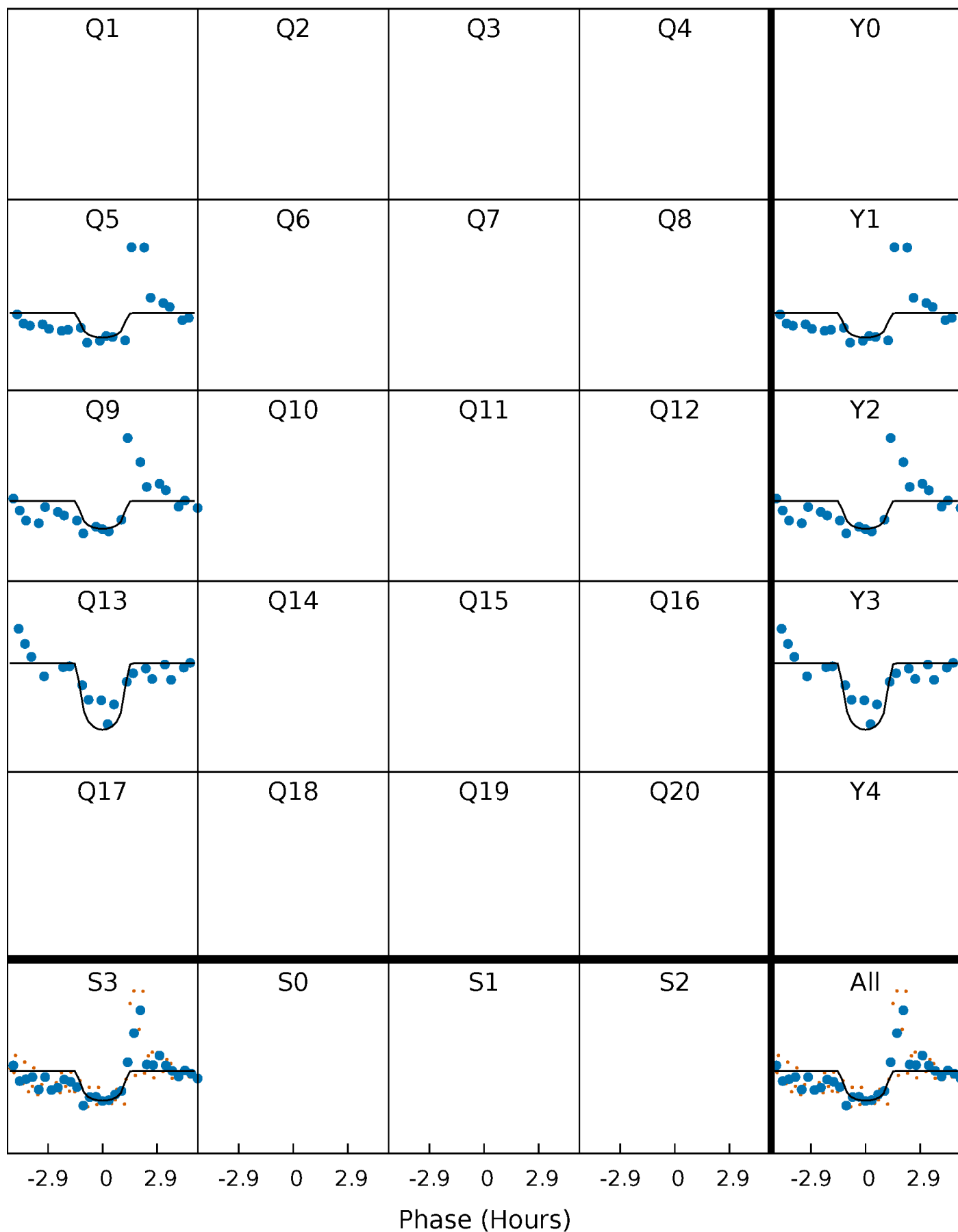
PDC Quarter-Phased Transit Curves

TCE 004819301-02 $P=398.853173$ Days $T_0=458.971735$ (BKJD)



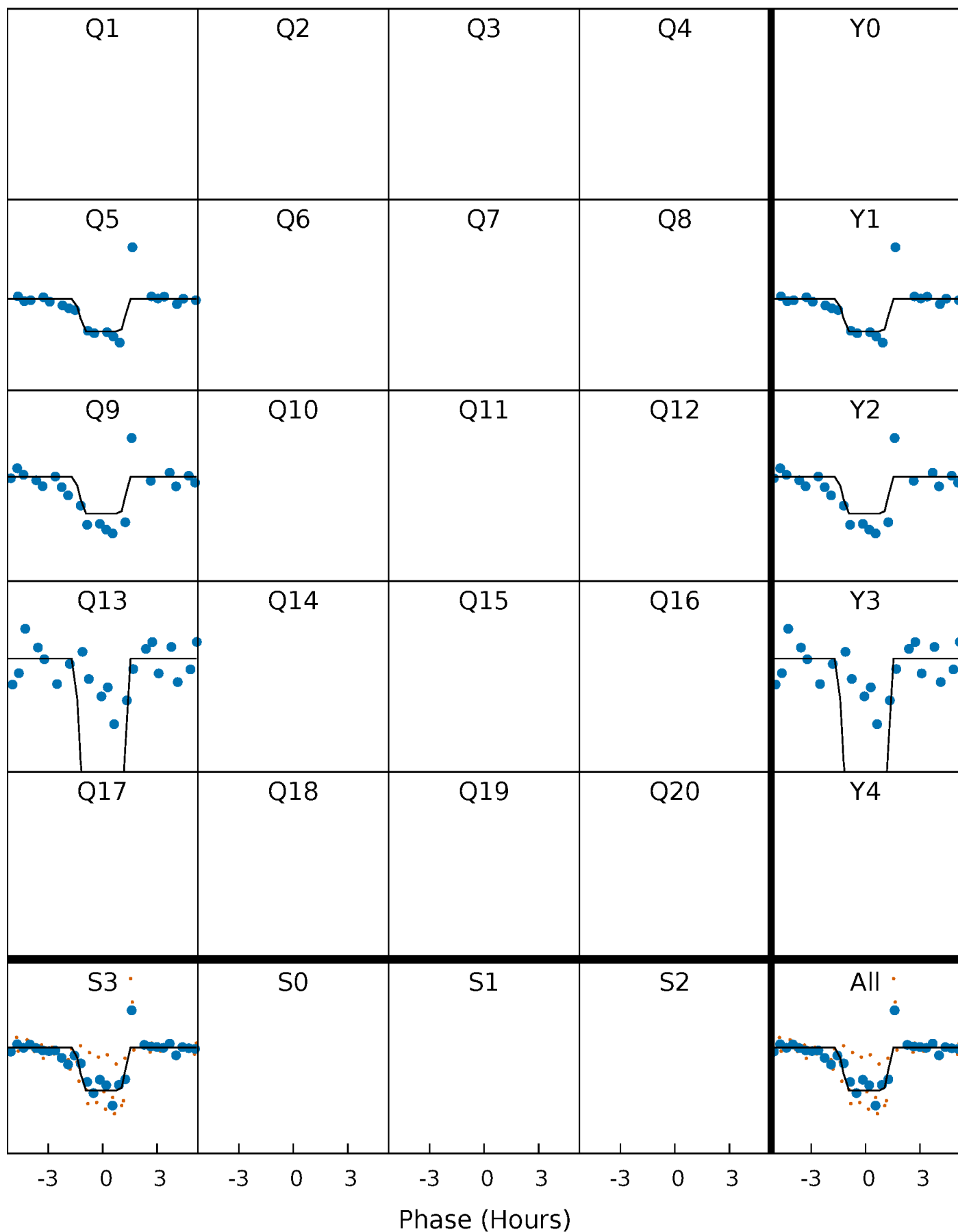
DV Quarter-Phased Transit Curves

TCE 004819301-02 $P=398.853173$ Days $T_0=458.971735$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

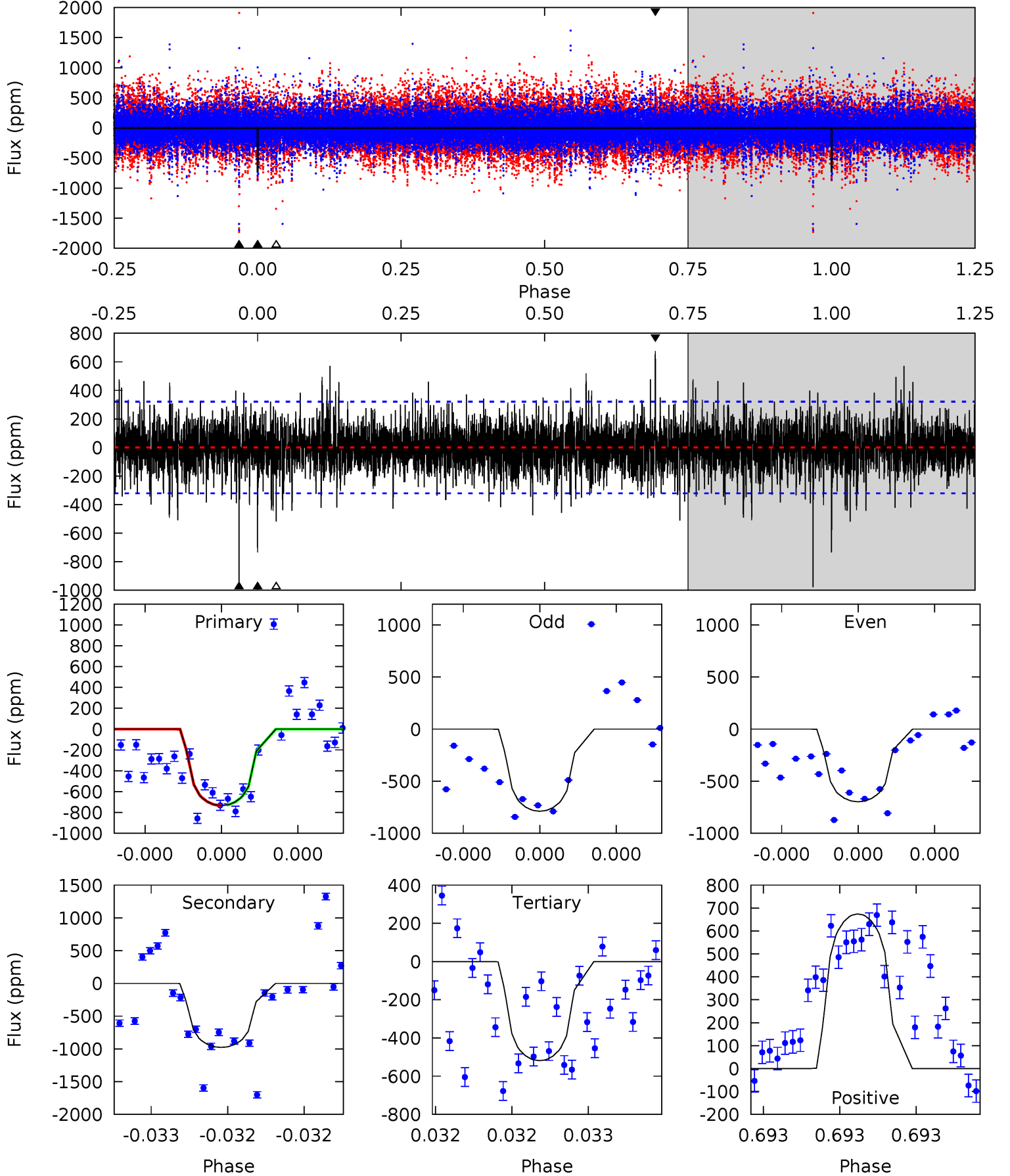
TCE 004819301-02 $P=398.840695$ Days $T_0=458.976839$ (BKJD)



DV Model-Shift Uniqueness Test

004819301-02, P = 398.853173 Days, E = 60.118562 Days

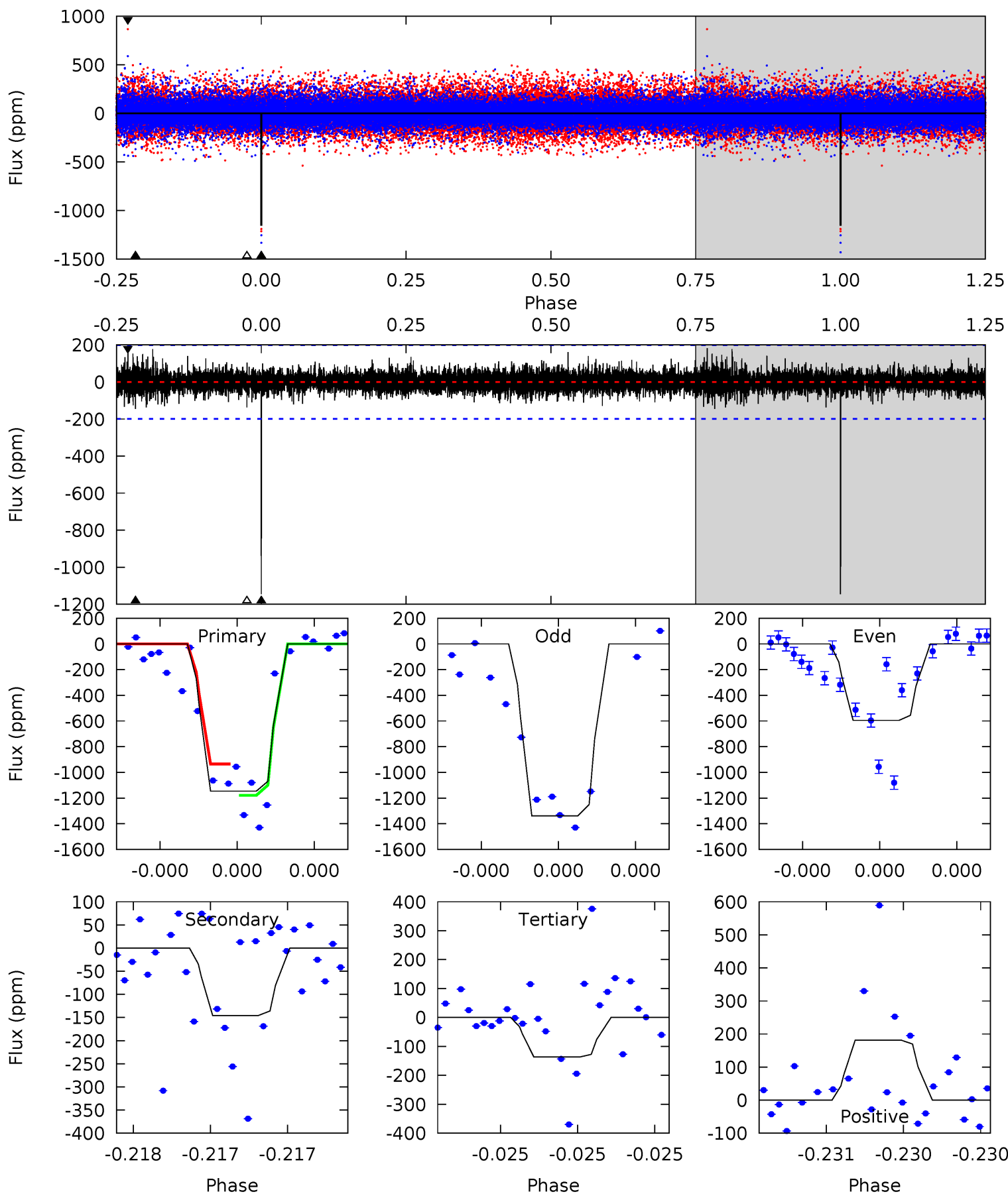
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	17.3	9.16	11.9	5.67	3.63	2.04	3.81	1.05	8.10	5.35	0.62	0.93	0.41	0.04



Alt Model-Shift Uniqueness Test

004819301-02, P = 398.840695 Days, E = 60.136144 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.7	4.15	3.90	5.18	5.68	3.64	0.90	28.8	27.5	0.26	-1.03	12.1	0.82	0.14	3.65



Stellar Parameters For KIC 004819301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5190^{+203}_{-166}	$3.849^{+0.656}_{-0.303}$	$-0.060^{+0.300}_{-0.250}$	$1.981^{+0.984}_{-1.202}$	$1.011^{+0.207}_{-0.207}$	$0.183^{+2.242}_{-0.127}$
	+4%/-3%	+17%/-8%	+500%/-417%	+50%/-61%	+20%/-20%	+1224%/-69%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004819301-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-977 ± 57	$10.21^{+11.57}_{-6.93}$	433^{+56}_{-73}	4177^{+2890}_{-805}	5772^{+52032}_{-4445}
Alt.	-146 ± 35	$10.42^{+12.22}_{-7.50}$	433^{+61}_{-73}	3079^{+1494}_{-525}	814^{+8430}_{-647}

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

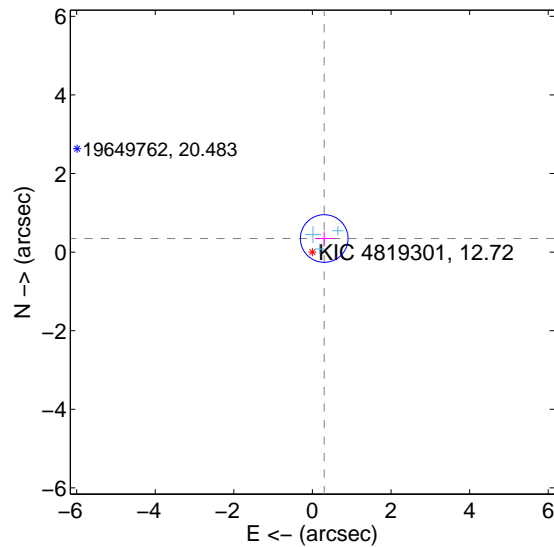
Supplemental centroid analysis for 004819301-02. Kepler magnitude: 12.72. Transit SNR 6.71

There are 3 quarters with good PRF difference image offsets

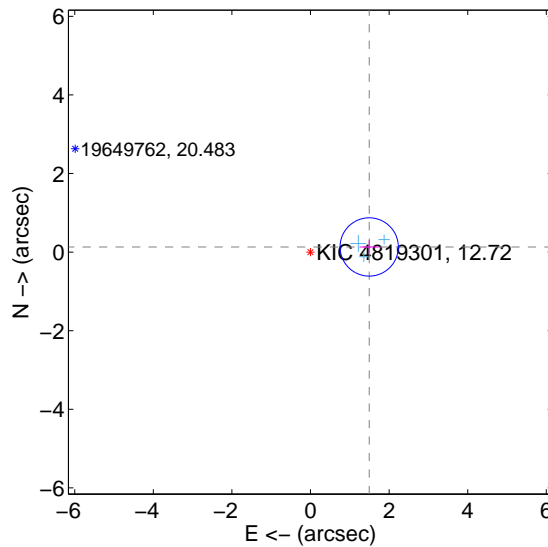
The direct PRF centroid is offset from the target star catalog position by about 1.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.458 ± 0.202	2.27	-0.300 ± 0.226	0.346 ± 0.181
PRF-fit source offset from KIC position	1.499 ± 0.247	6.06	-1.493 ± 0.248	0.131 ± 0.173
photometric centroid source offset	1.20 ± 1.31	0.91	-0.96 ± 1.54	-0.72 ± 0.75

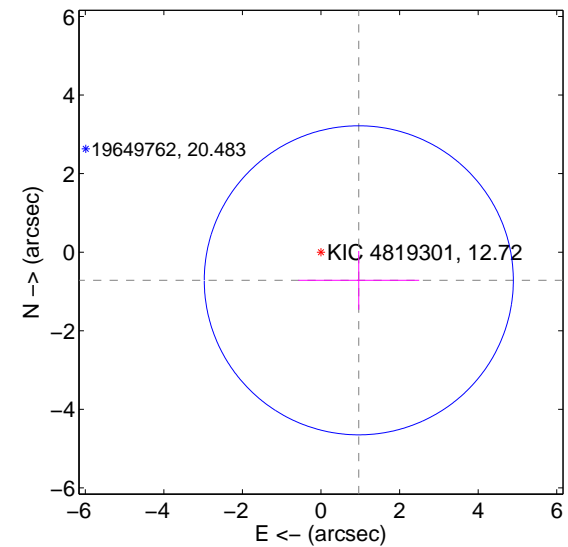
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

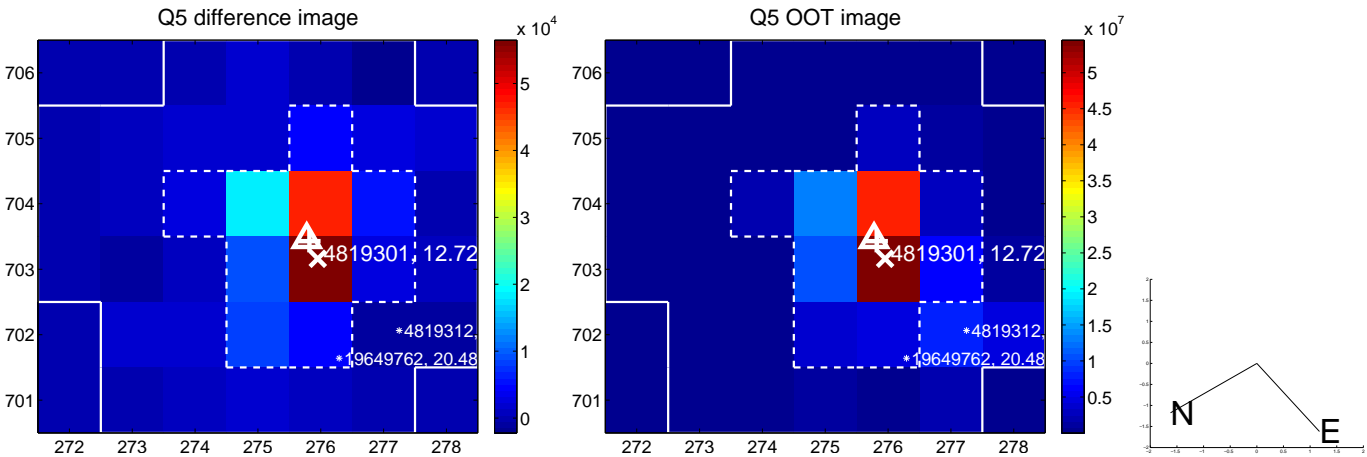


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

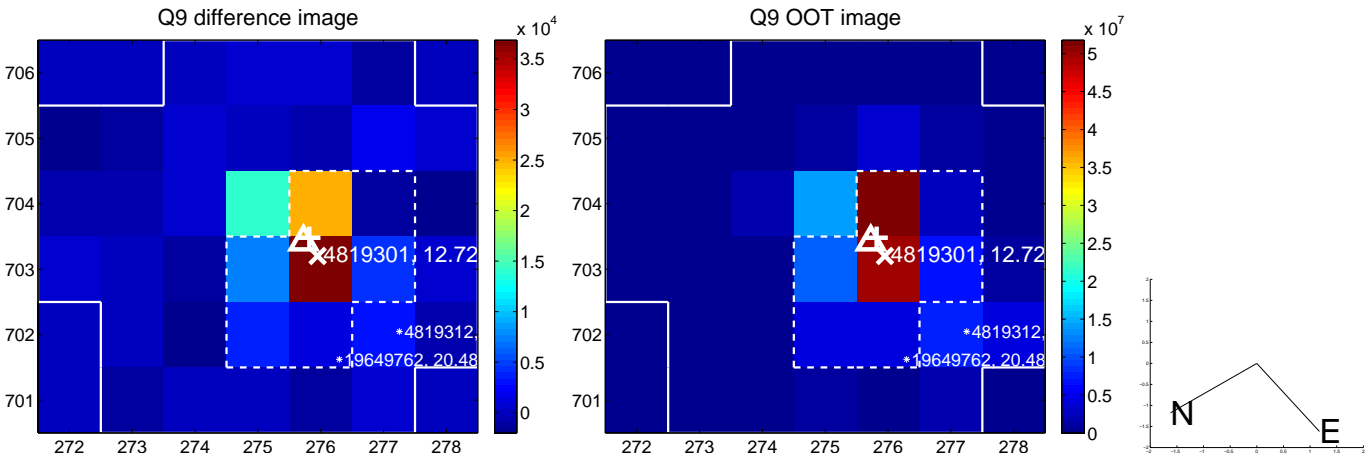
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



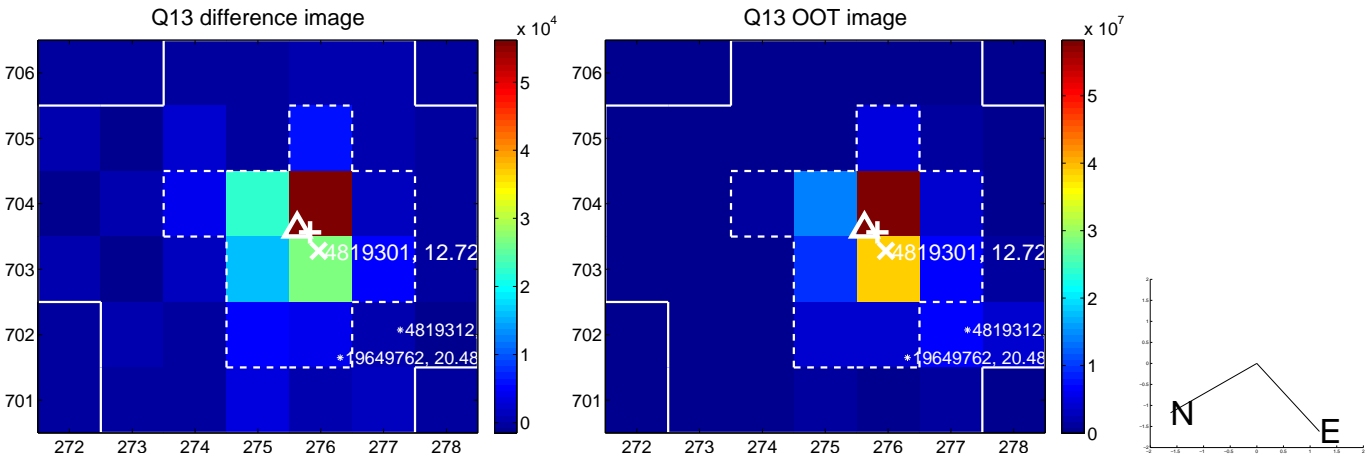
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



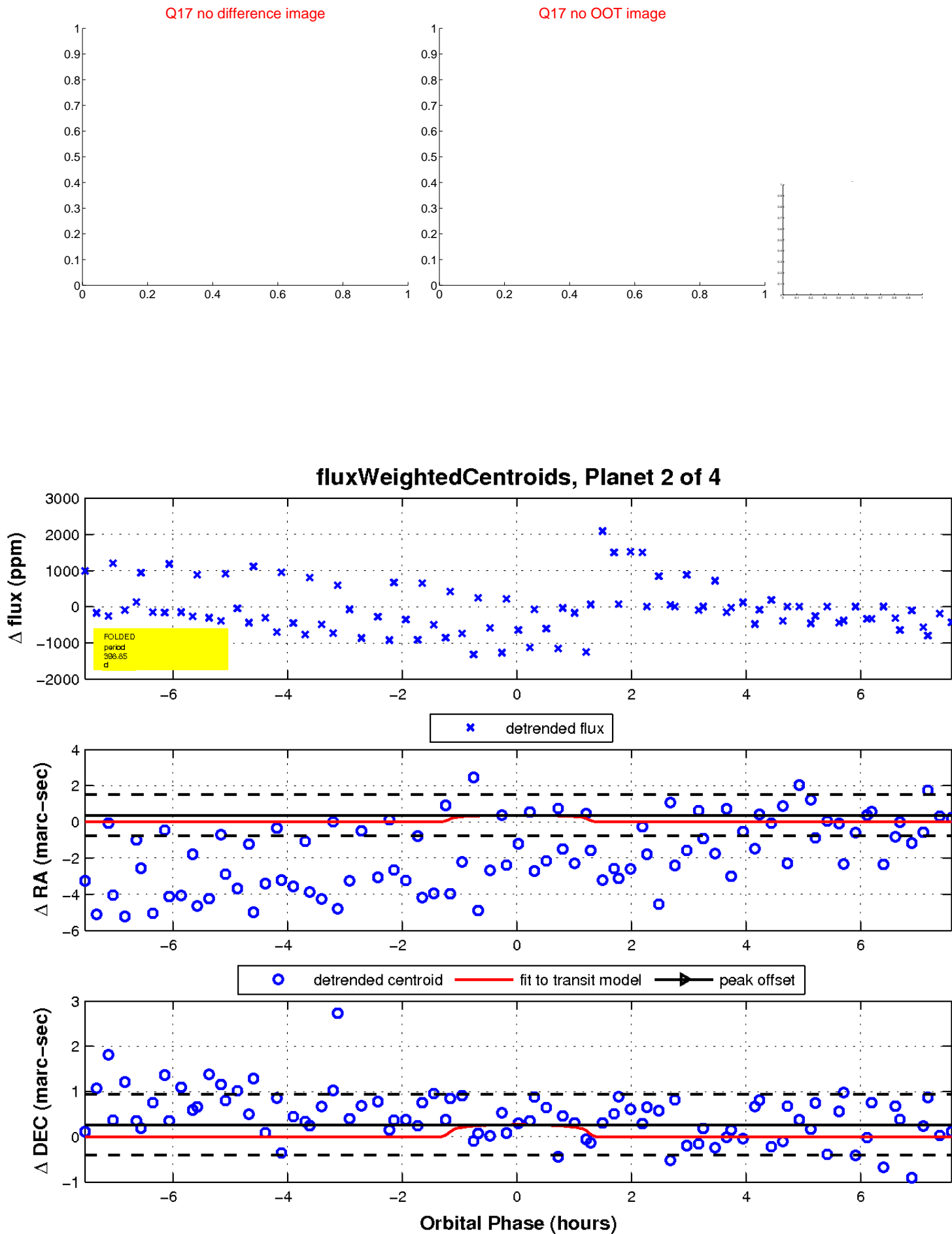
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

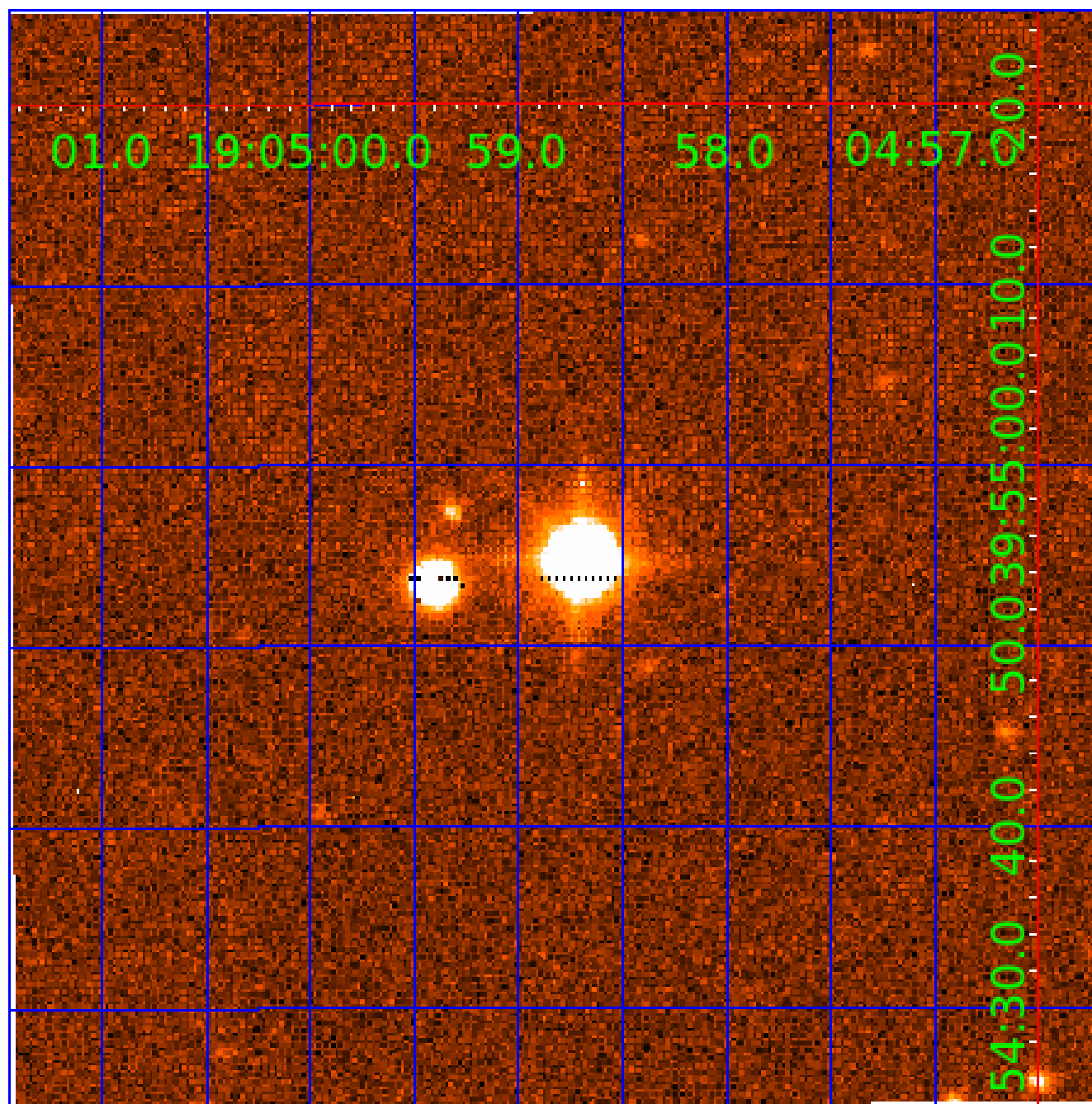


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004819301

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})
004819301-01	OBS	No	644.919324	137.065635	972.9	7.653	11.8	6.8	1.98	5190	6.43	1.19
004819301-02	OBS	No	398.853172	458.971734	722.6	2.535	16.2	6.7	1.98	5190	5.27	2.25
004819301-03	OBS	No	272.471195	298.974588	636.3	2.351	16.1	8.0	1.98	5190	5.01	3.74
004819301-04	OBS	No	501.433847	377.200222	661.9	3.321	15.1	6.4	1.98	5190	5.18	1.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004819301-01	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
004819301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
004819301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—CENT_KIC_POS
004819301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

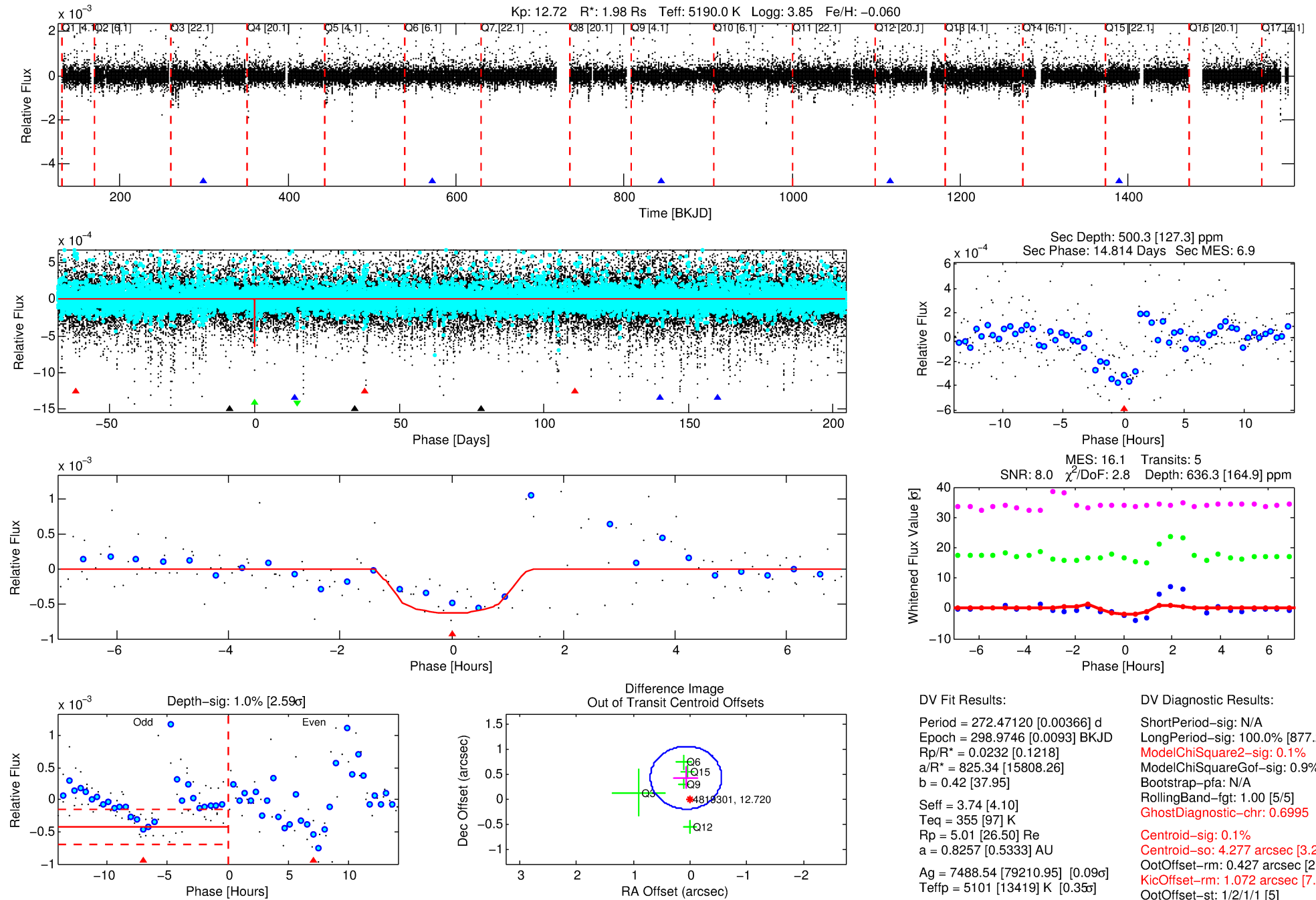
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004819301-03

No Significant Match Found

DV One-Page Summary

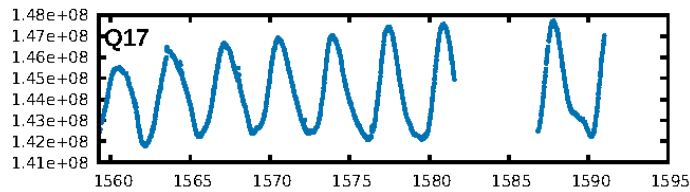
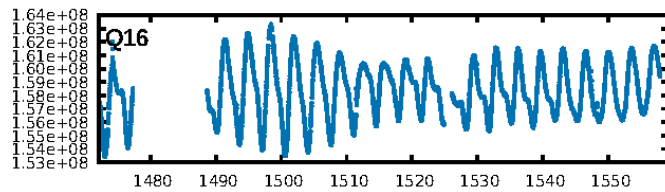
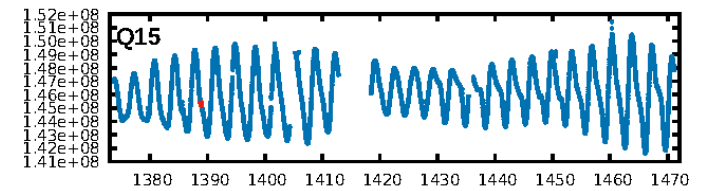
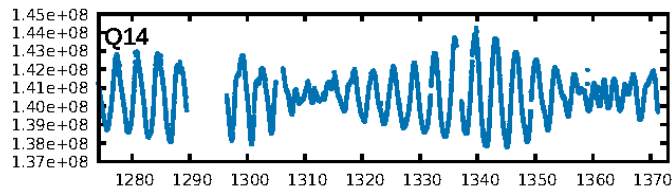
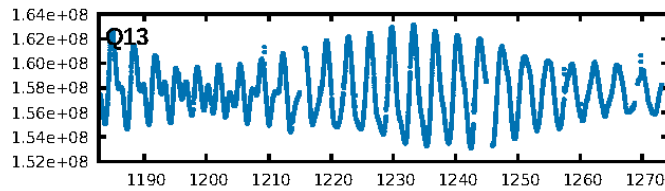
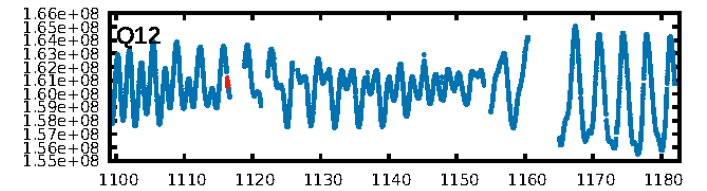
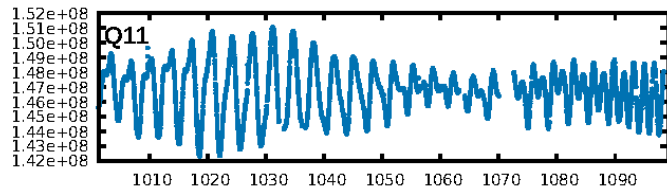
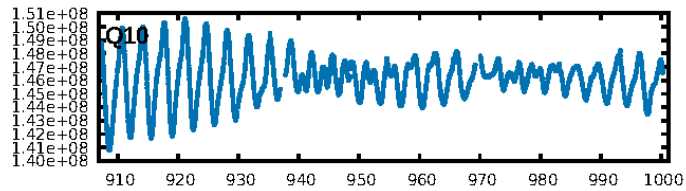
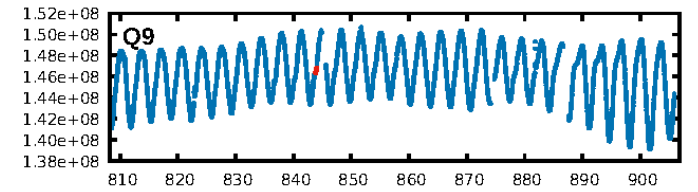
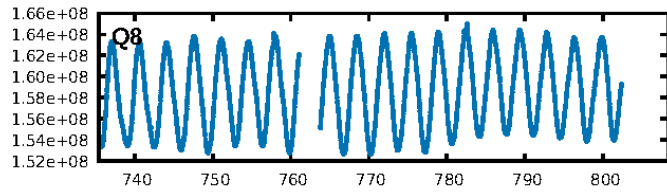
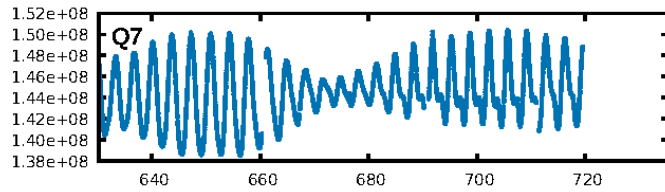
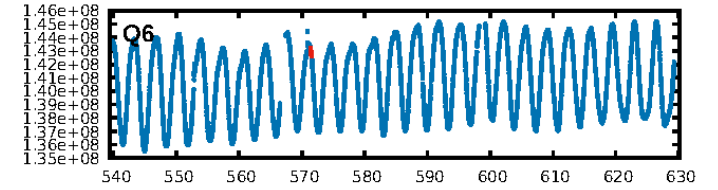
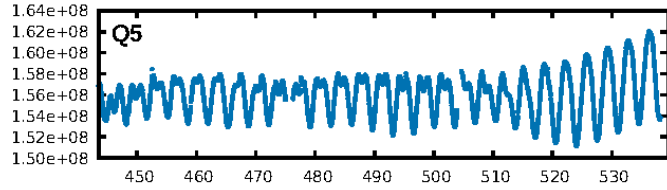
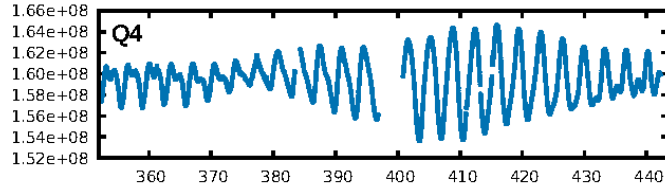
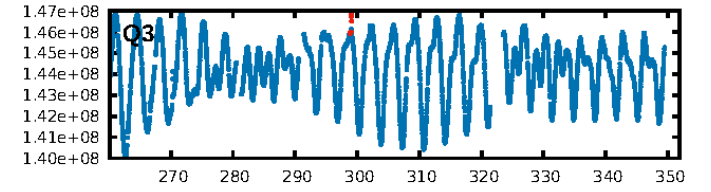
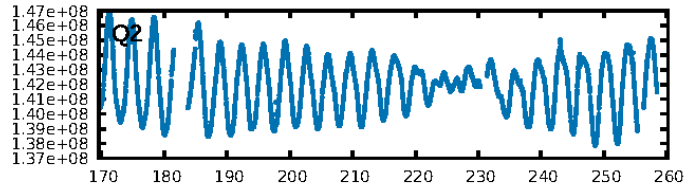
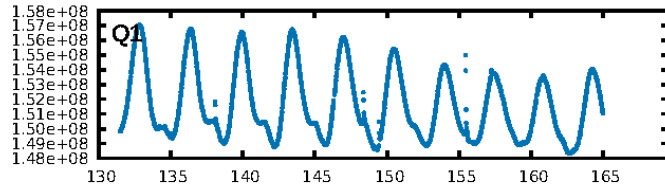
KIC: 4819301 Candidate: 3 of 4 Period: 272.471 d



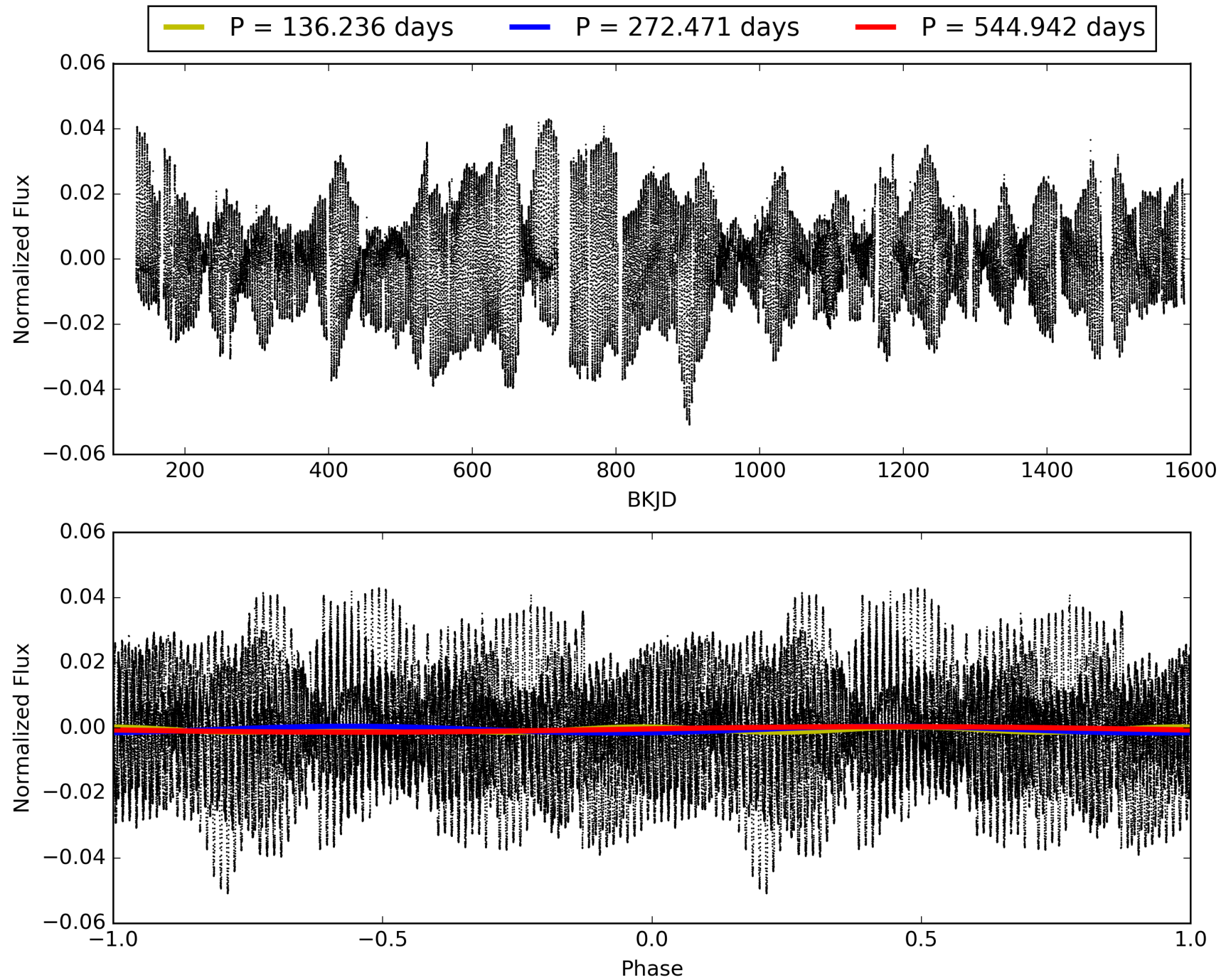
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:24:41 Z

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

TCE 004819301-03, PDC Light Curves

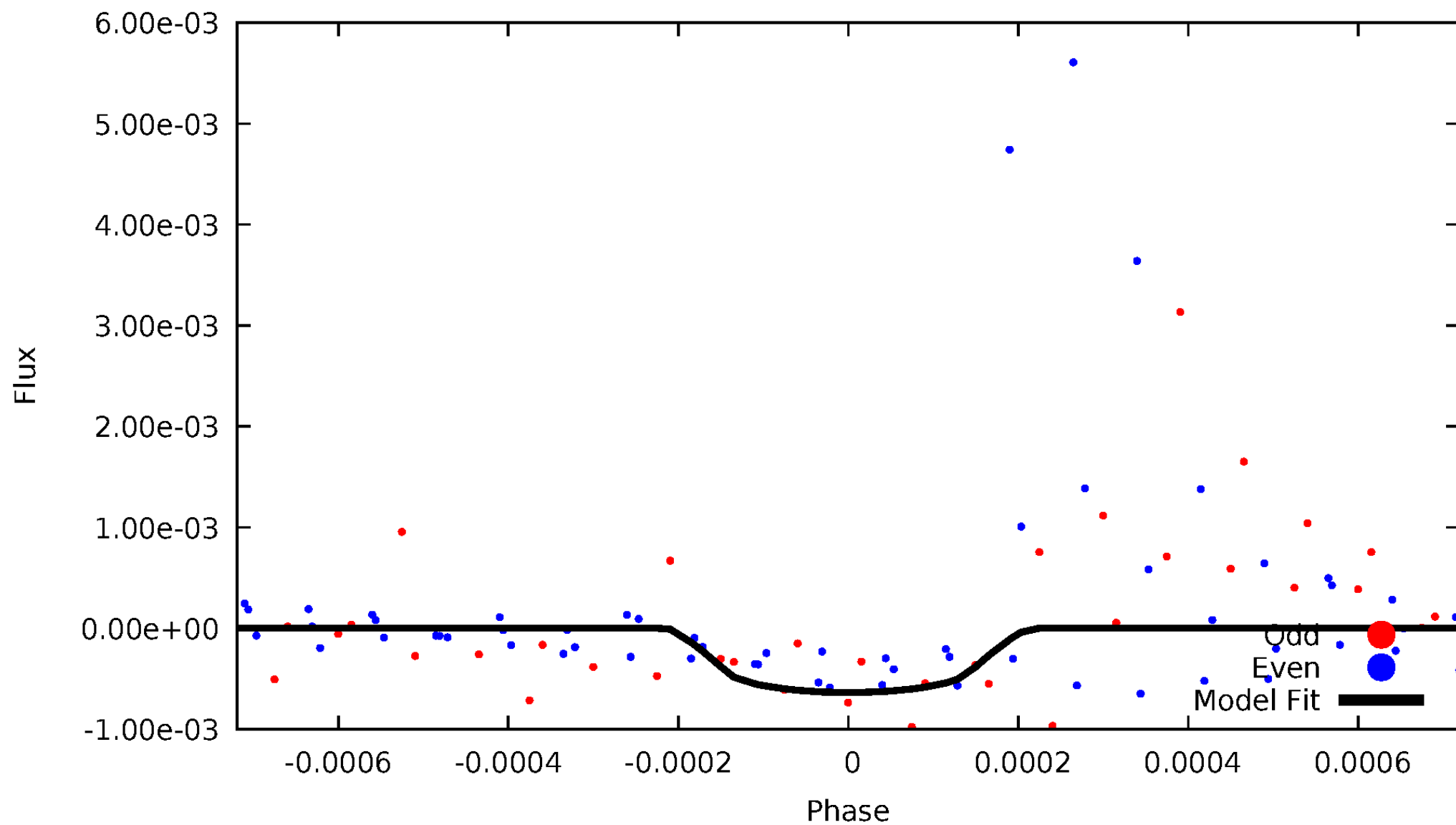


TCE 004819301-03



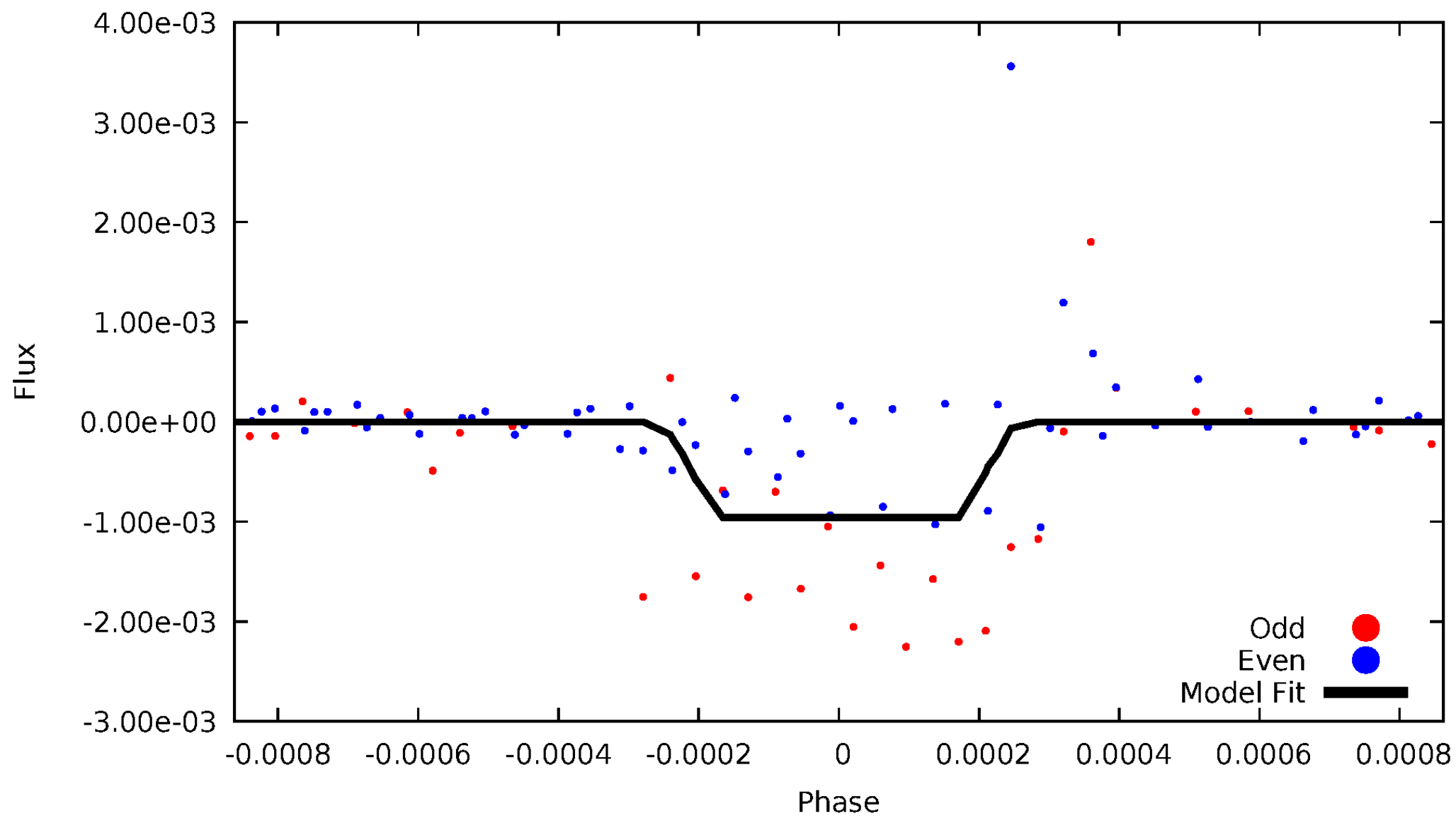
DV Odd/Even

TCE 004819301-03



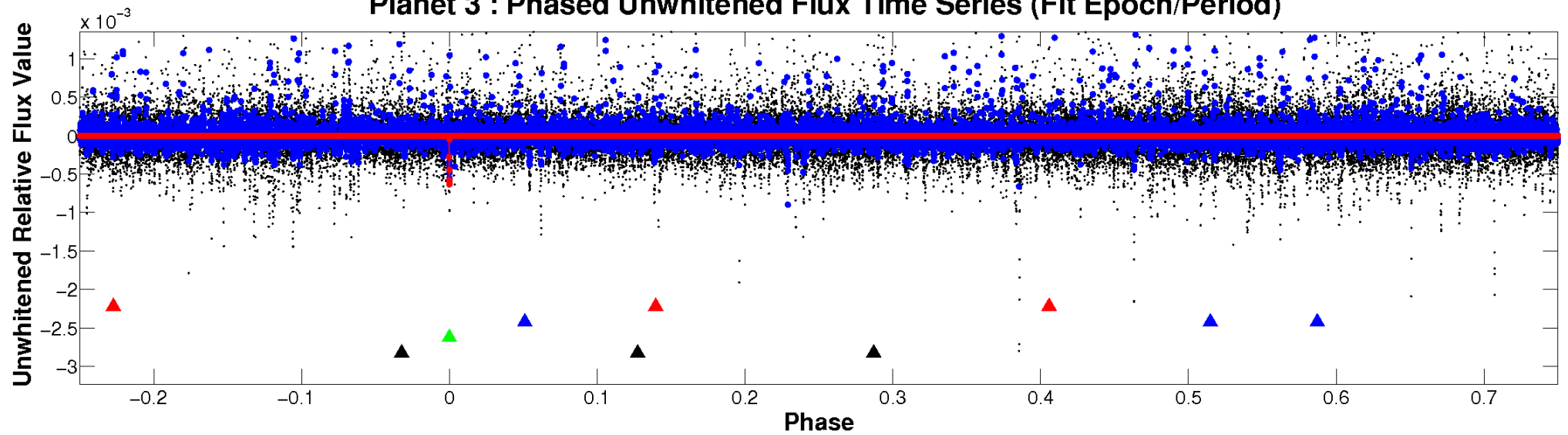
ALT Odd/Even

TCE 004819301-03

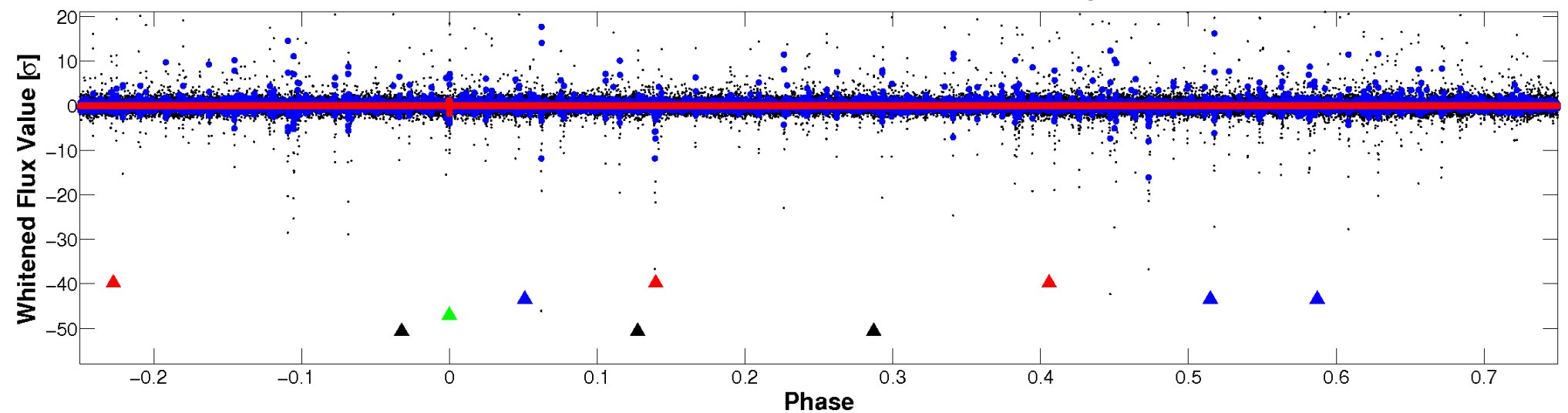


Non-Whitened Vs. Whitened Light Curve

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

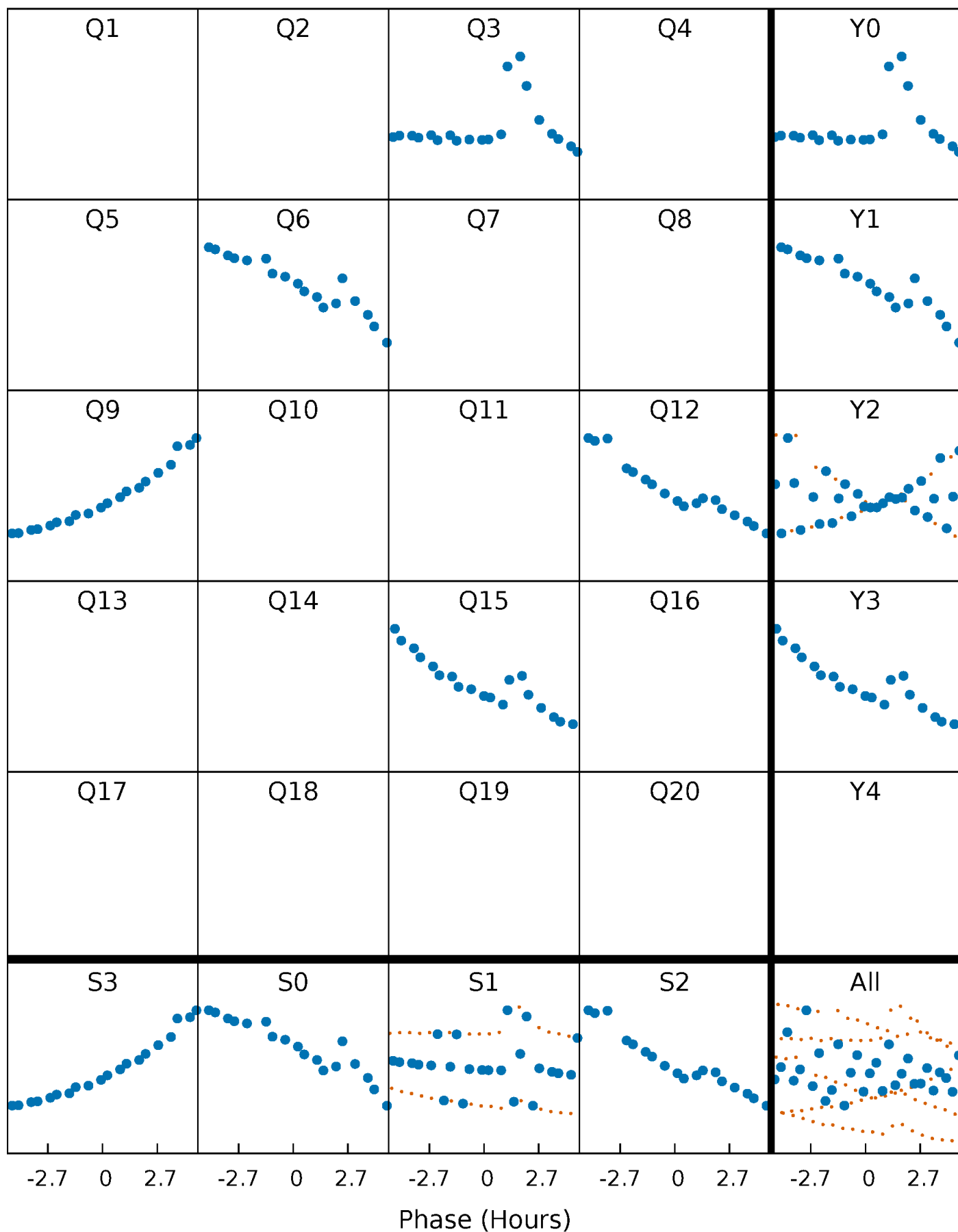


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



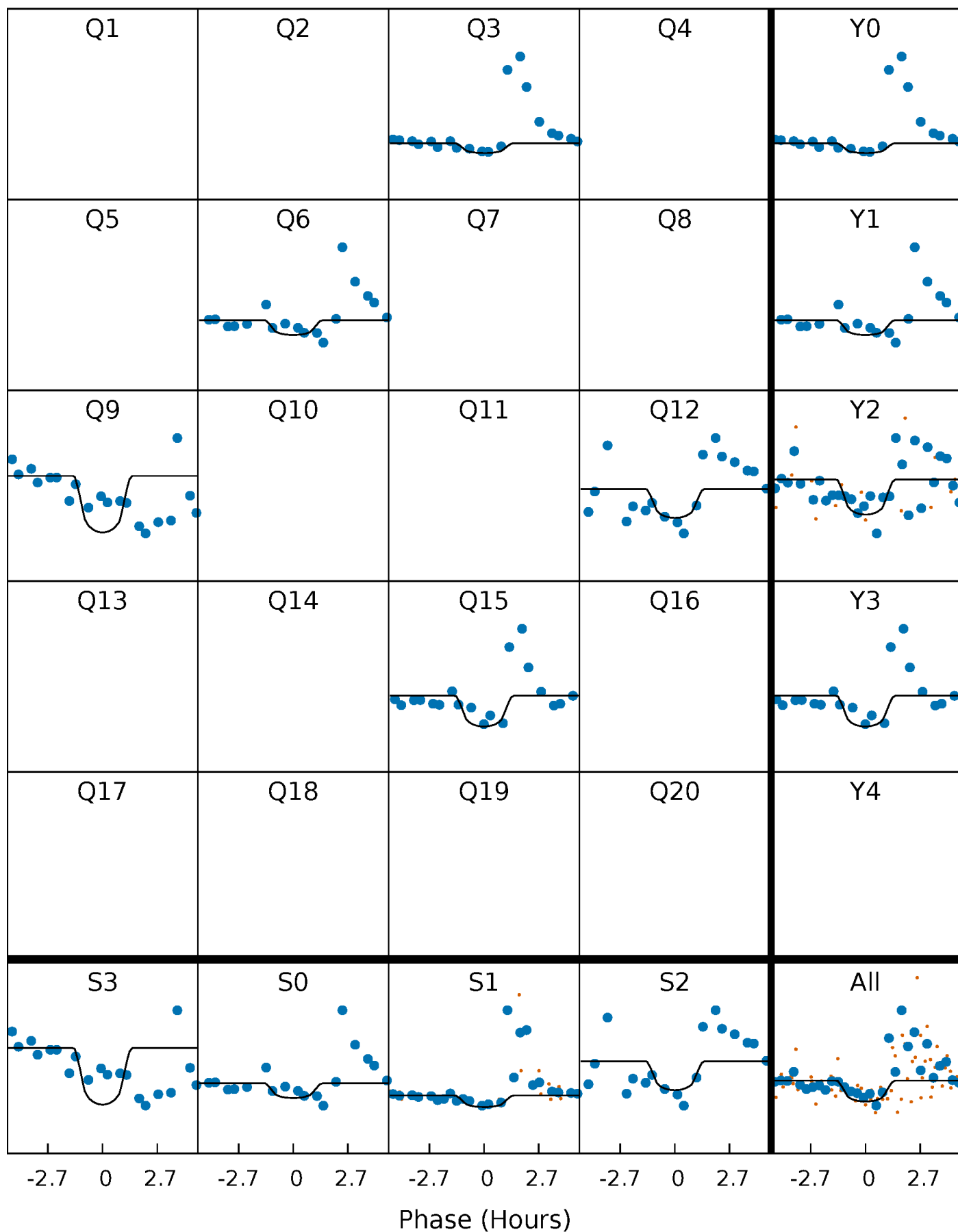
PDC Quarter-Phased Transit Curves

TCE 004819301-03 $P=272.471195$ Days $T_0=298.974588$ (BKJD)



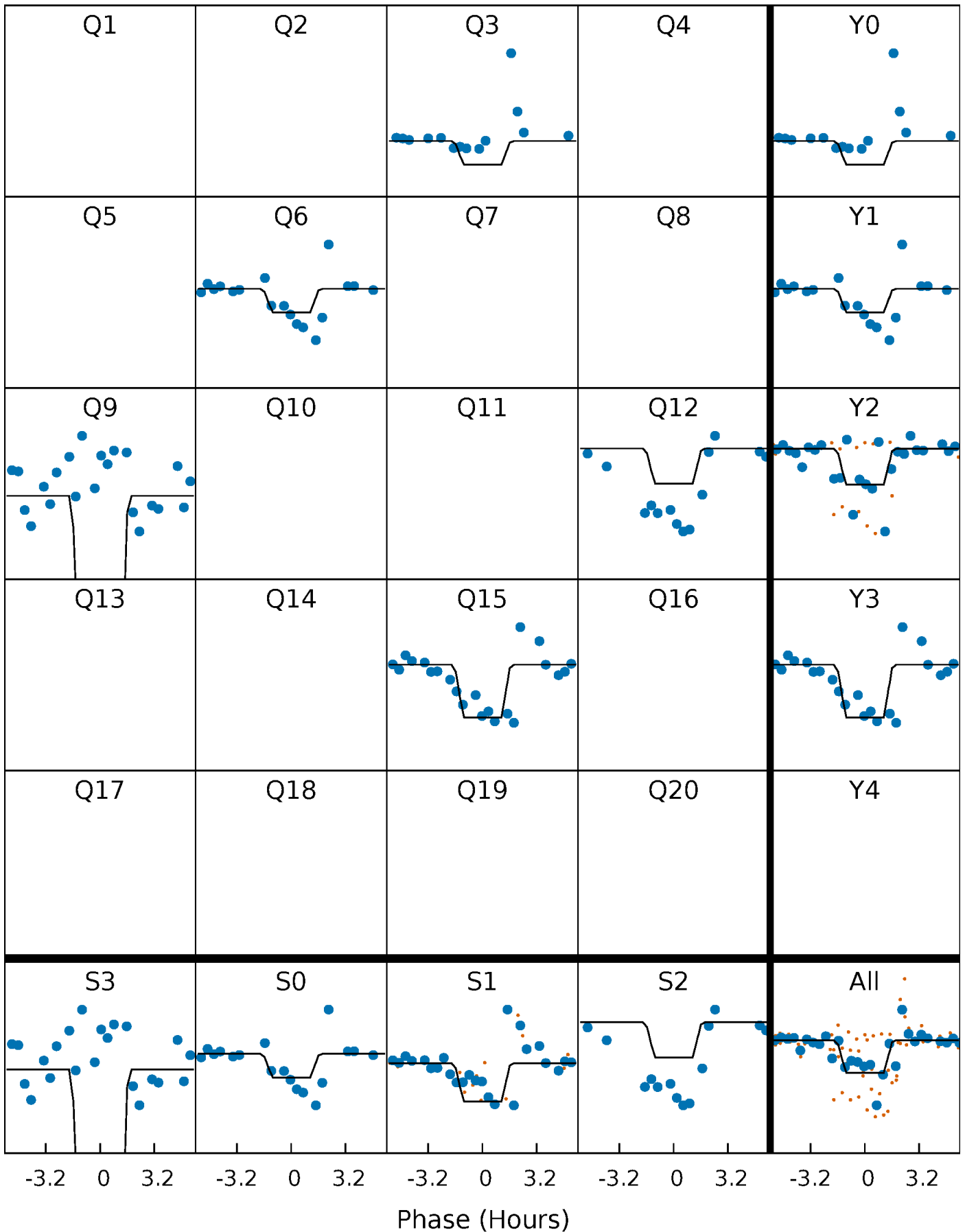
DV Quarter-Phased Transit Curves

TCE 004819301-03 $P=272.471195$ Days $T_0=298.974588$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

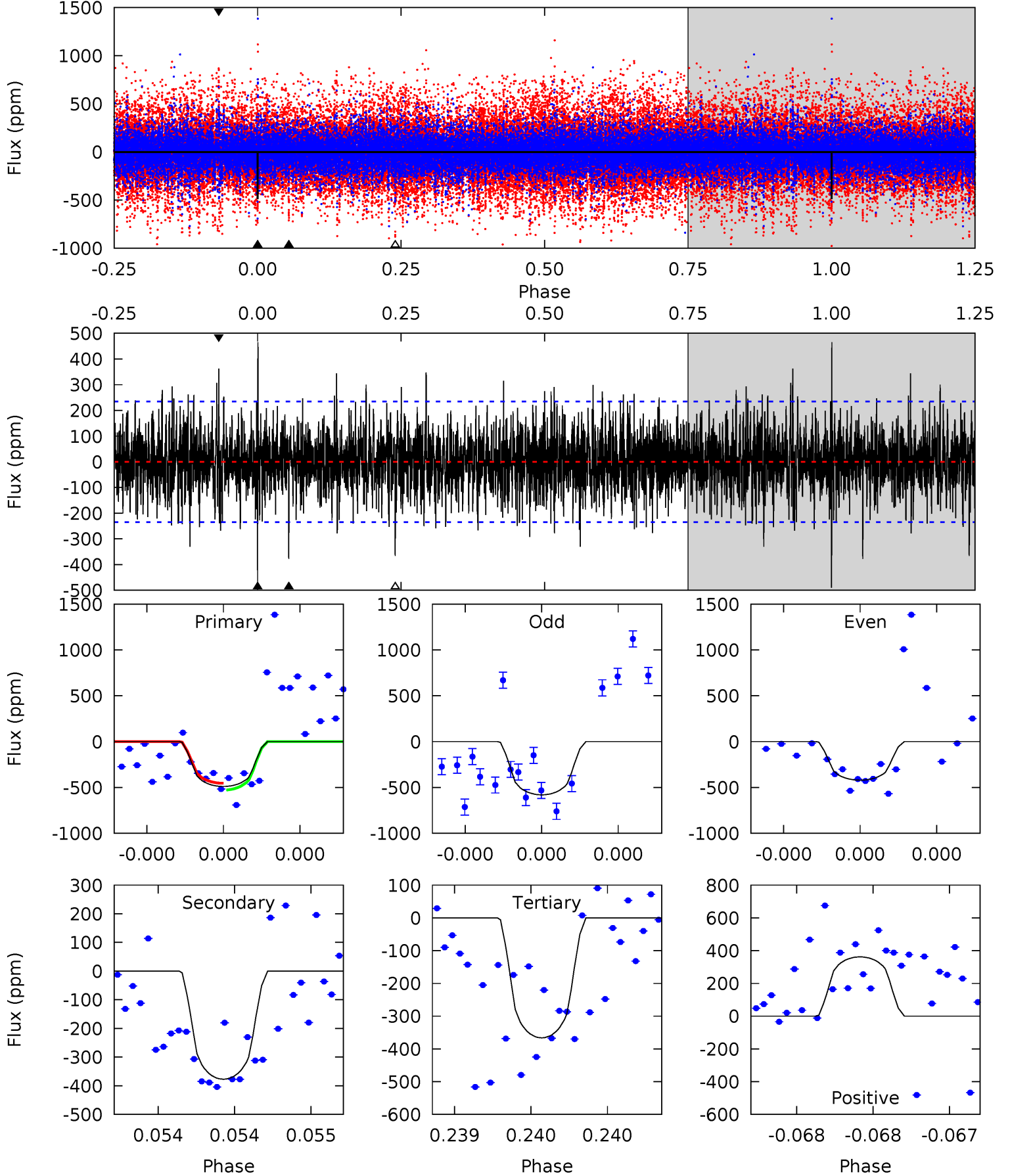
TCE 004819301-03 P=272.453919 Days $T_0=299.000269$ (BKJD)



DV Model-Shift Uniqueness Test

004819301-03, $P = 272.471195$ Days, $E = 26.503393$ Days

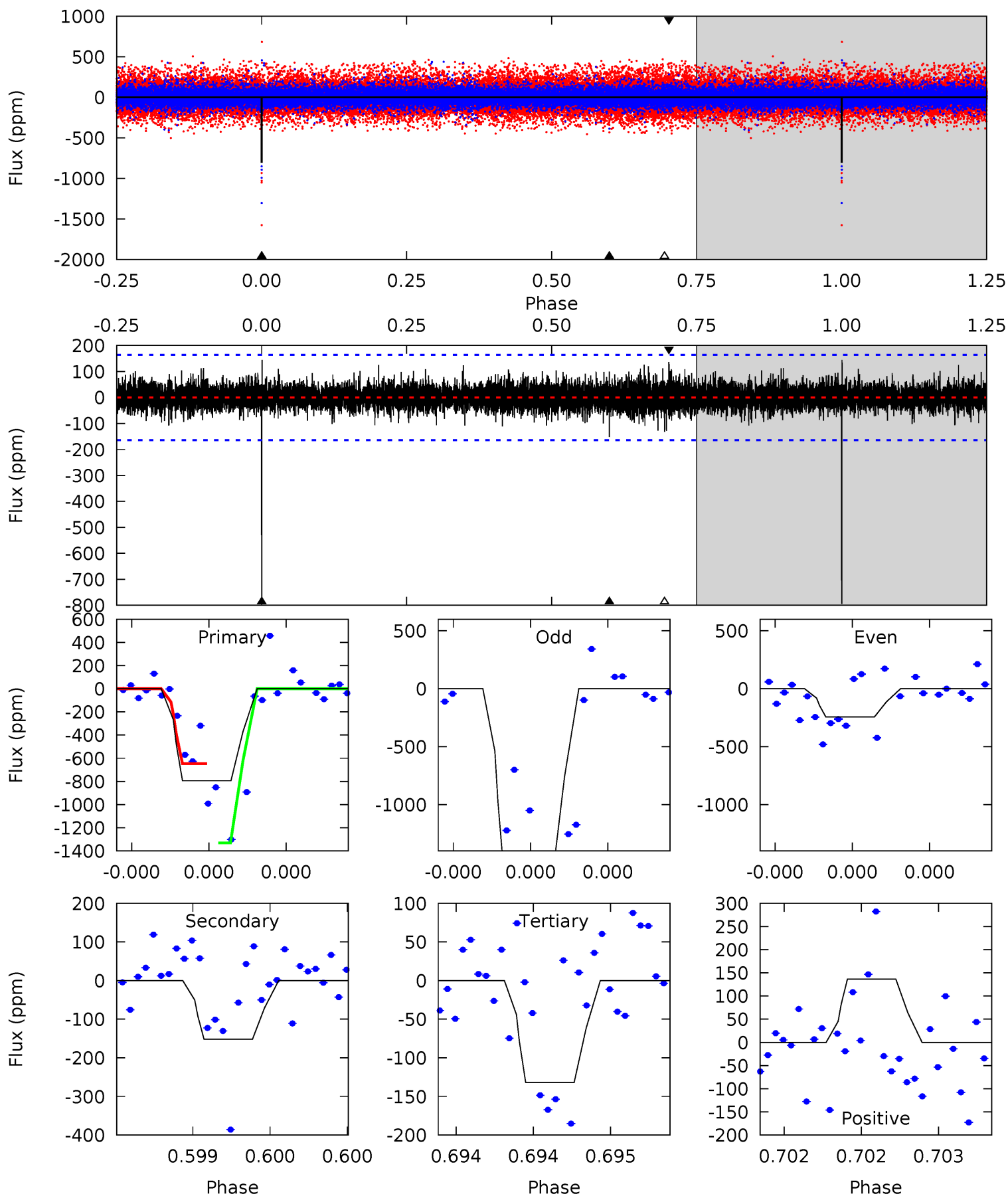
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	9.03	8.77	8.66	5.62	3.55	2.07	2.95	3.06	0.26	0.36	1.79	1.06	0.49	0.88



Alt Model-Shift Uniqueness Test

004819301-03, P = 272.453919 Days, E = 26.546350 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	5.16	4.49	4.63	5.58	3.49	0.98	22.5	22.4	0.68	0.53	29.2	0.95	0.15	10.7



Stellar Parameters For KIC 004819301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5190^{+203}_{-166}	$3.849^{+0.656}_{-0.303}$	$-0.060^{+0.300}_{-0.250}$	$1.981^{+0.984}_{-1.202}$	$1.011^{+0.207}_{-0.207}$	$0.183^{+2.242}_{-0.127}$
	+4%/-3%	+17%/-8%	+500%/-417%	+50%/-61%	+20%/-20%	+1224%/-69%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004819301-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-377 ± 42	$17.57^{+22.62}_{-12.20}$	492^{+70}_{-85}	3029^{+1498}_{-535}	440^{+4634}_{-353}
Alt.	-152 ± 29	$18.54^{+23.29}_{-12.61}$	488^{+70}_{-76}	2673^{+940}_{-441}	158^{+1478}_{-125}

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

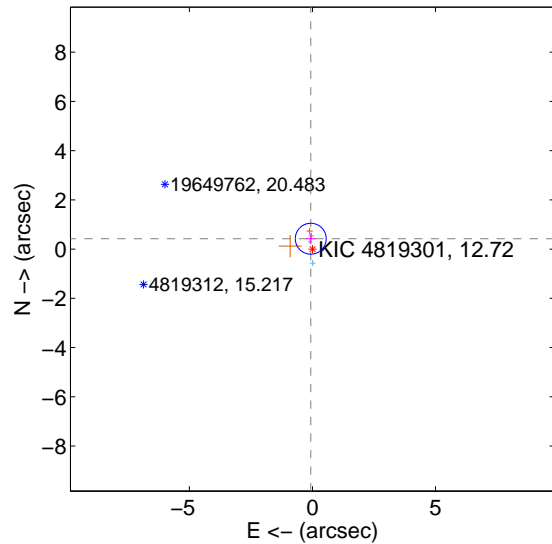
Supplemental centroid analysis for 004819301-03. Kepler magnitude: 12.72. Transit SNR 8.01

There are 3 quarters with good PRF difference image offsets

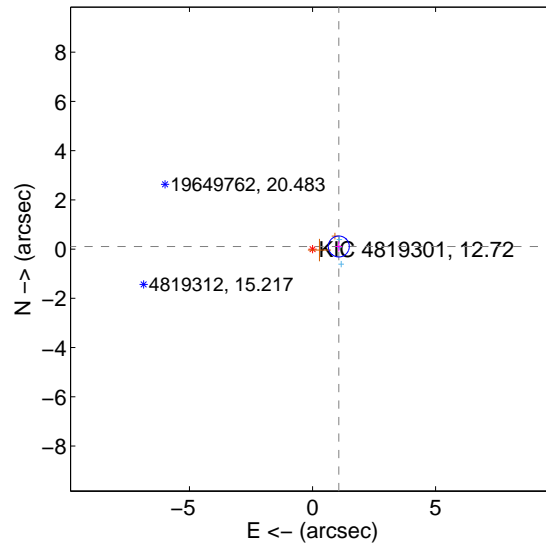
The direct PRF centroid is offset from the target star catalog position by about 1.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.427 ± 0.209	2.04	0.068 ± 0.214	0.421 ± 0.211
PRF-fit source offset from KIC position	1.072 ± 0.142	7.55	-1.067 ± 0.138	0.106 ± 0.206
photometric centroid source offset	4.28 ± 1.30	3.28	-4.22 ± 1.32	-0.71 ± 0.68

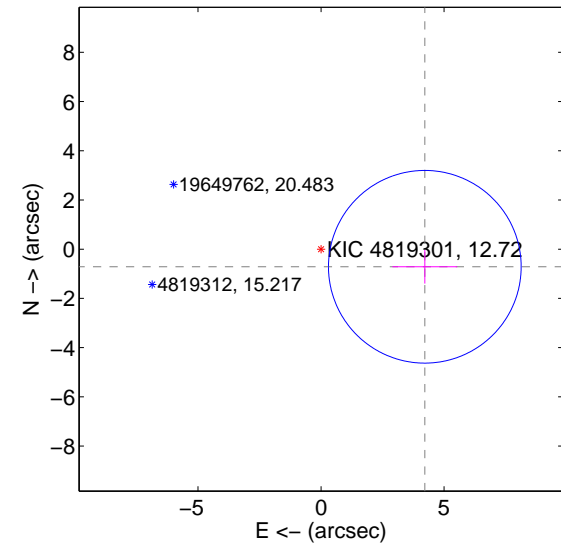
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

Q1 no difference image



Q1 no OOT image



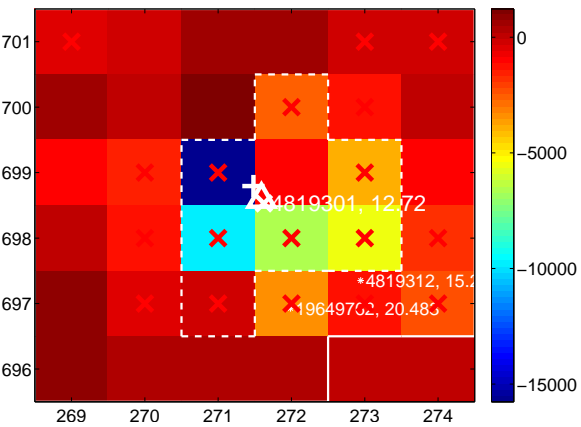
Q2 no difference image



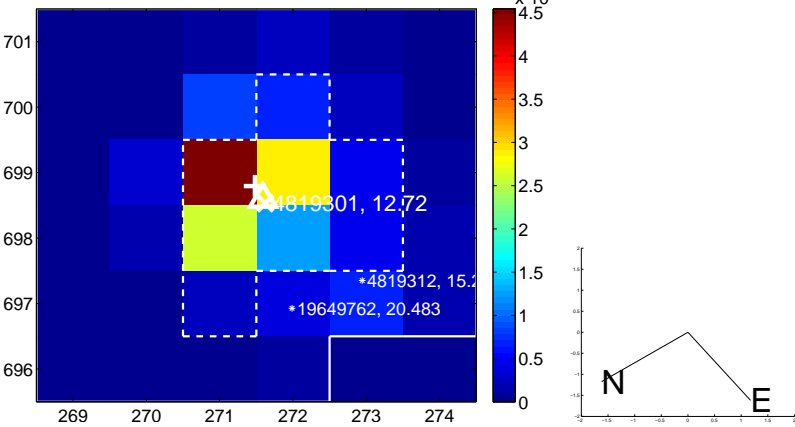
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



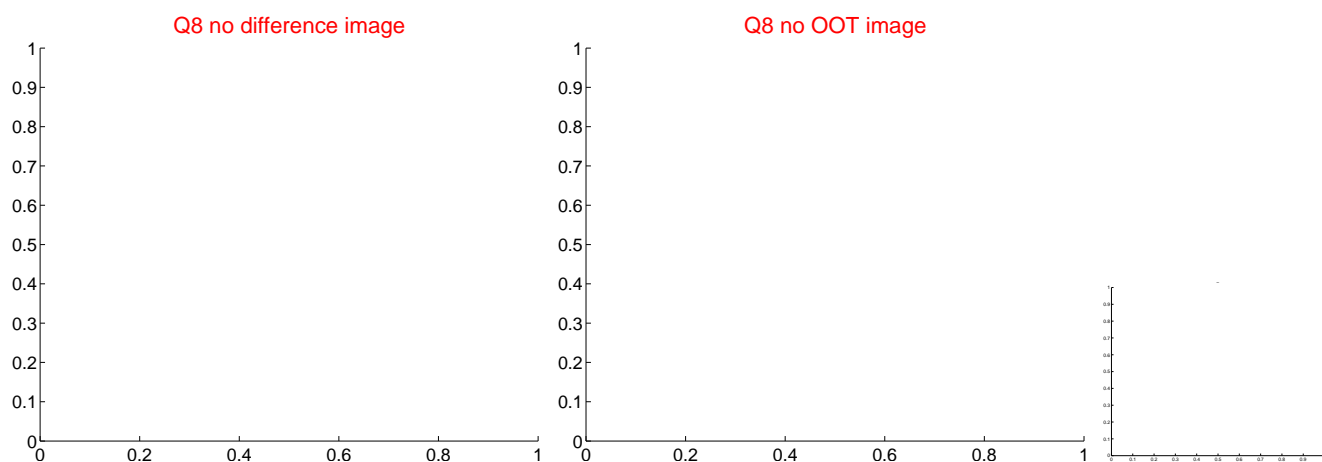
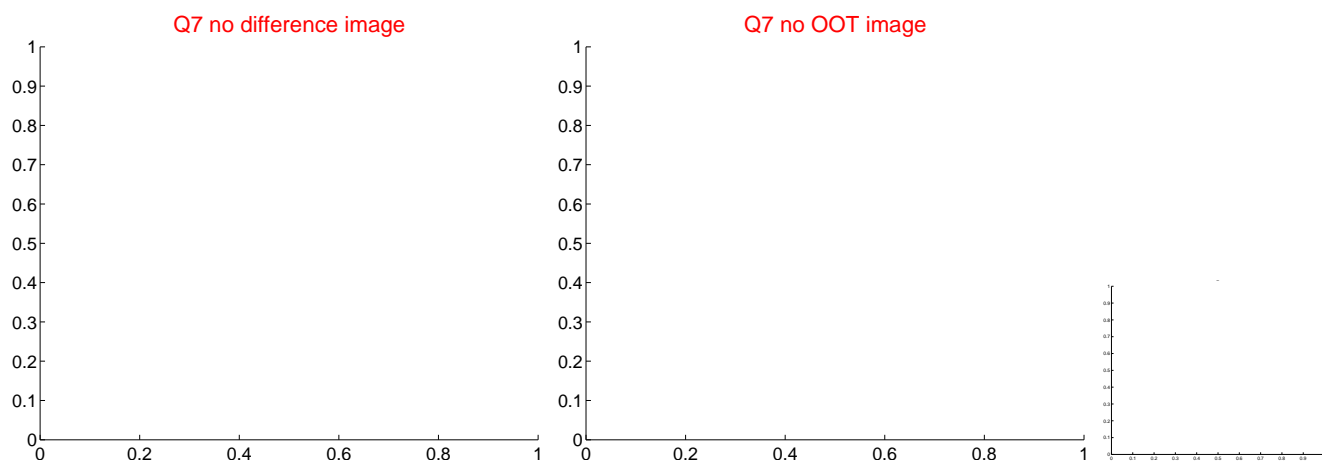
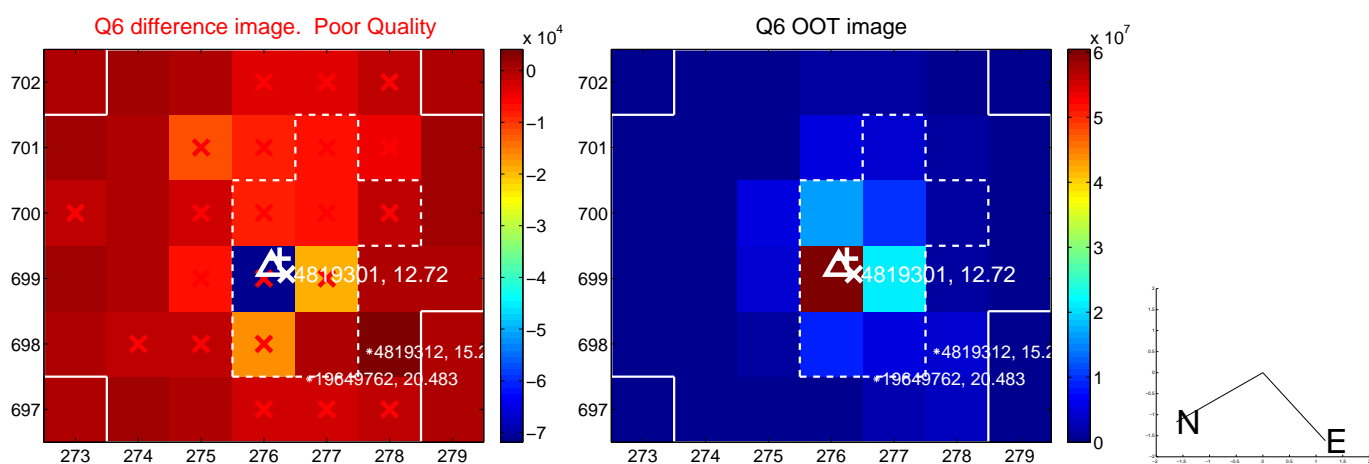
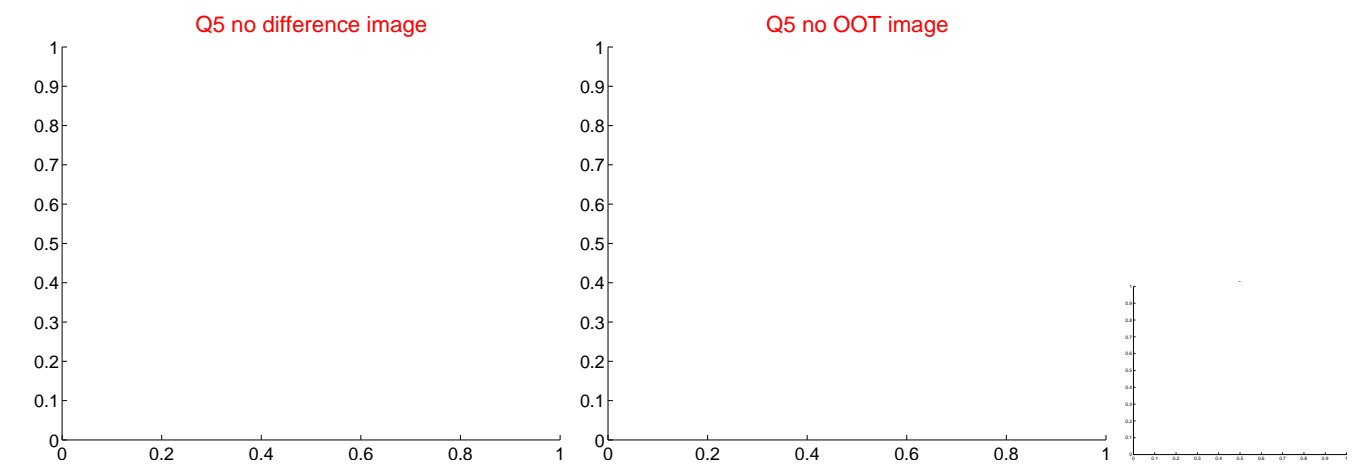
Q4 no difference image



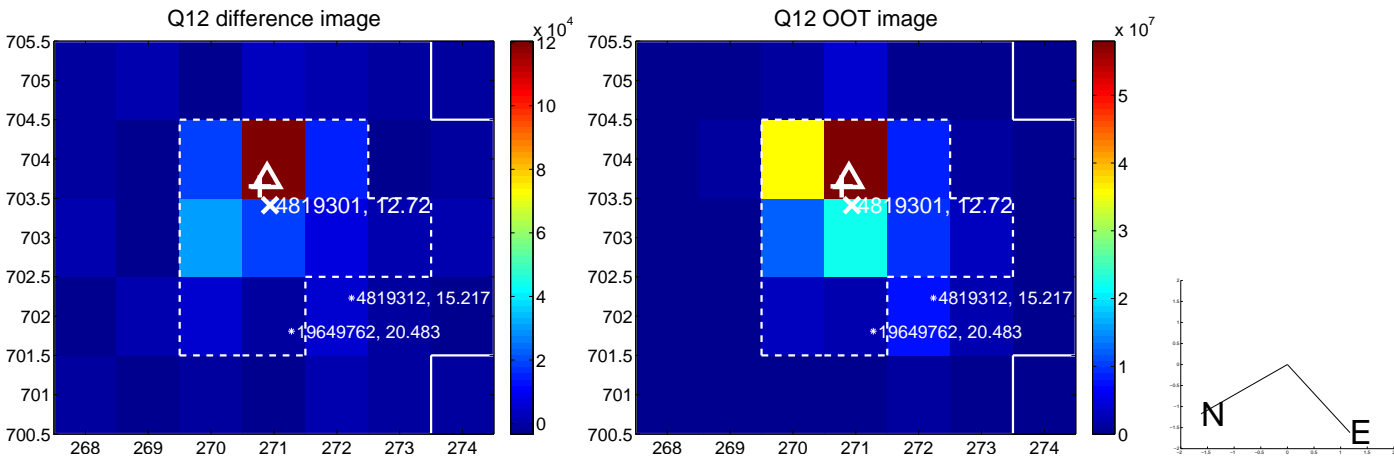
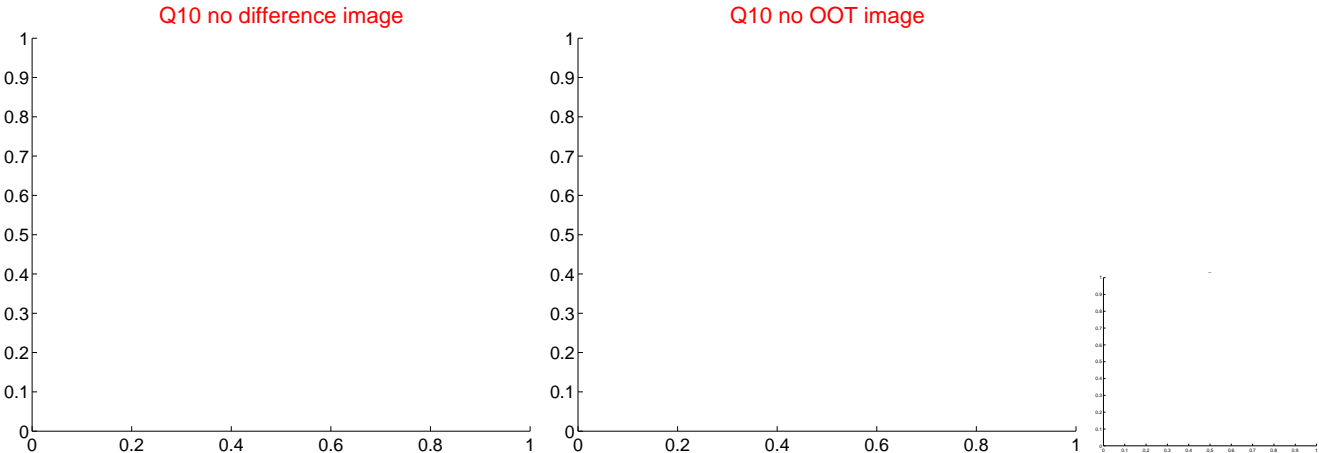
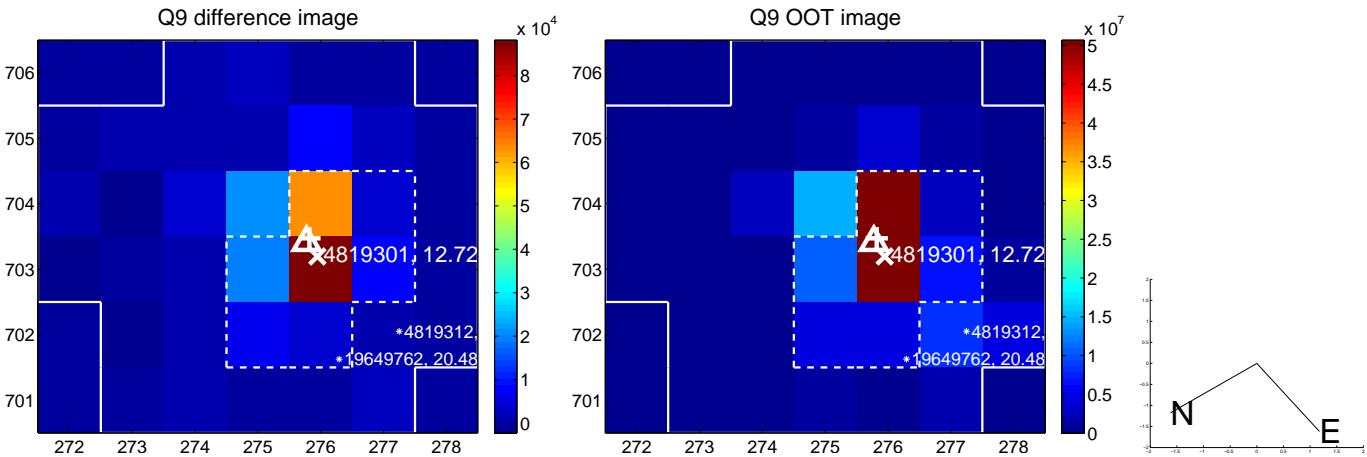
Q4 no OOT image



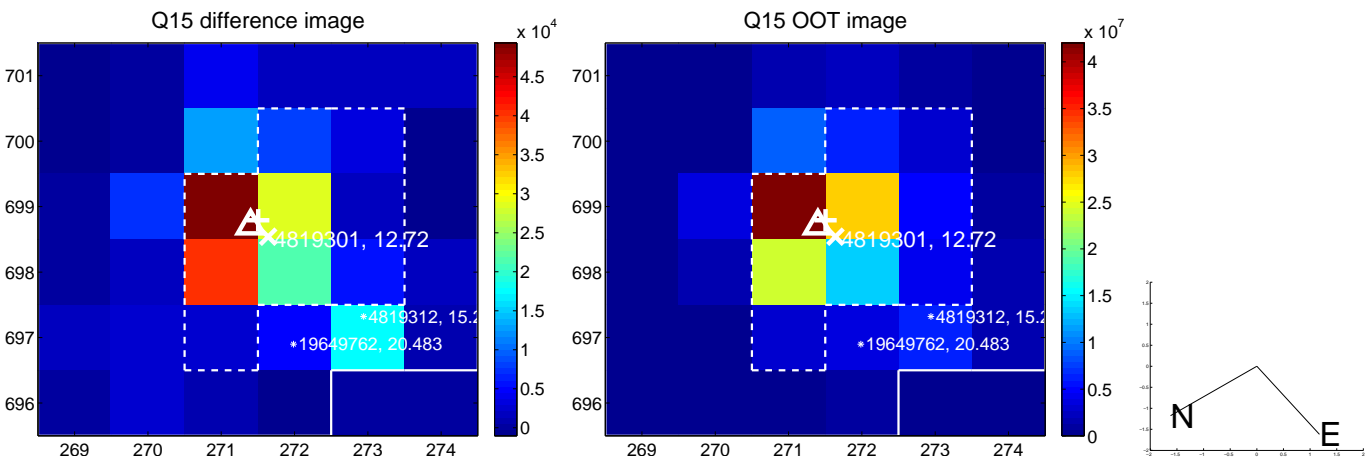
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



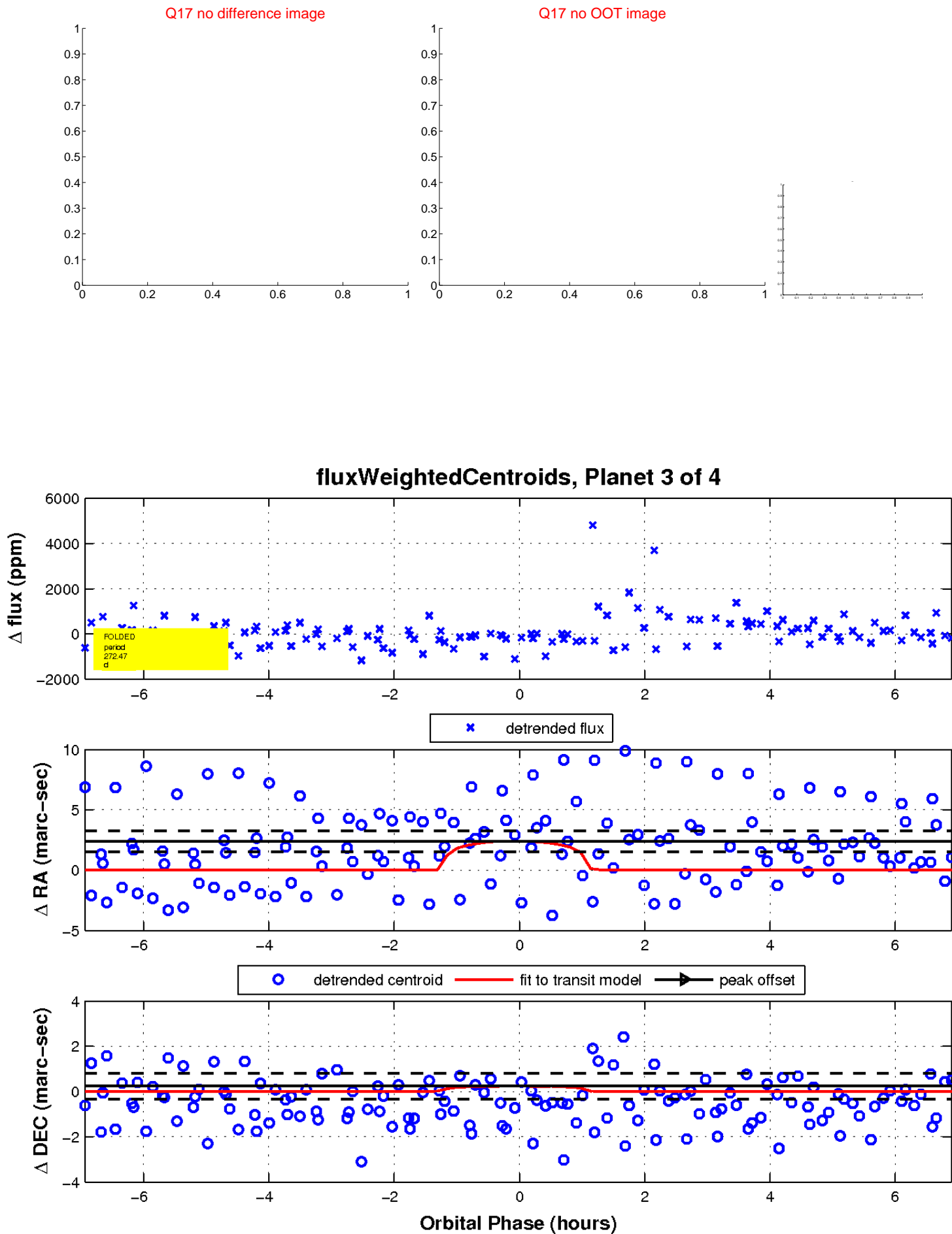
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

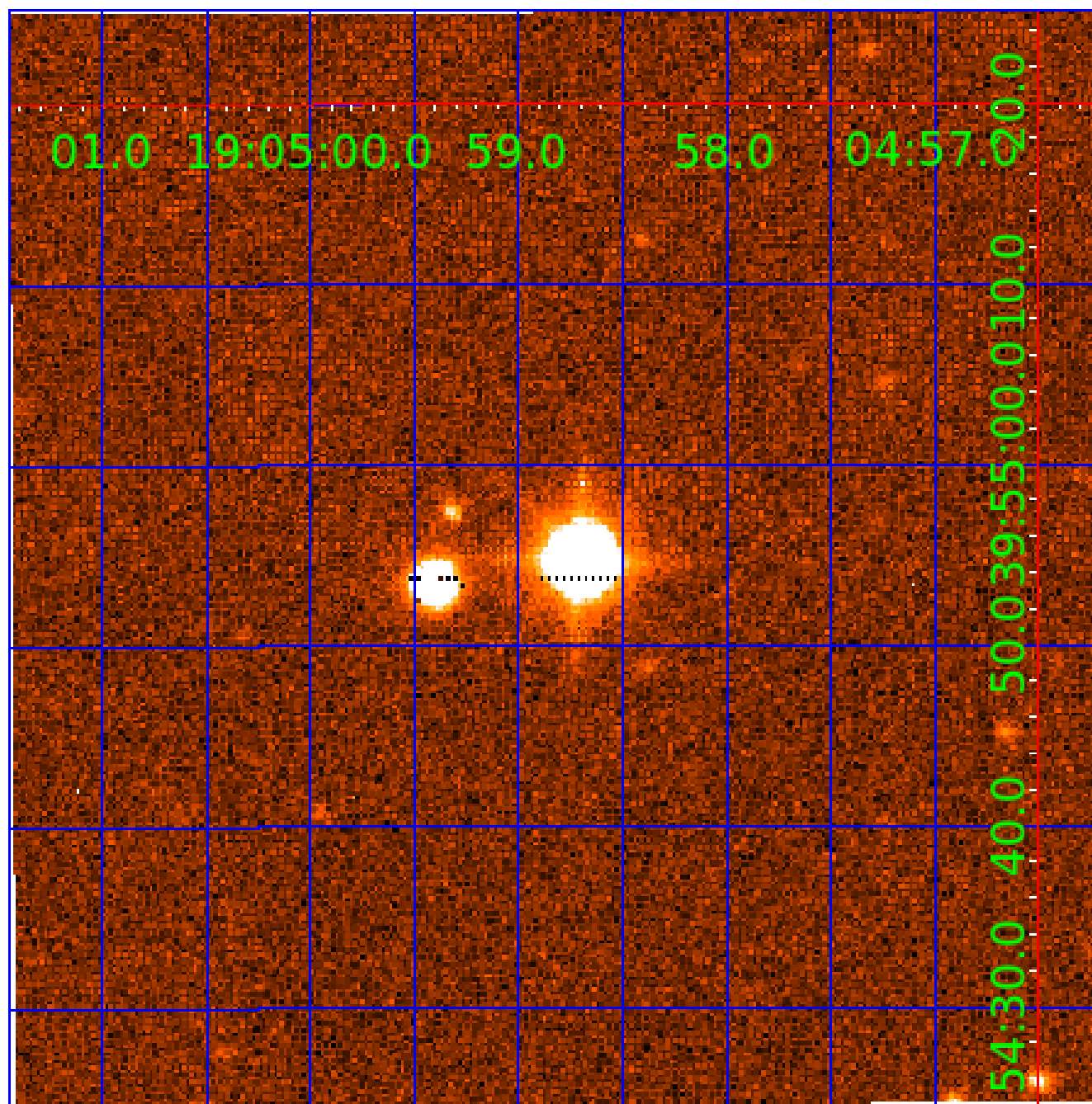


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004819301

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})
004819301-01	OBS	No	644.919324	137.065635	972.9	7.653	11.8	6.8	1.98	5190	6.43	1.19
004819301-02	OBS	No	398.853172	458.971734	722.6	2.535	16.2	6.7	1.98	5190	5.27	2.25
004819301-03	OBS	No	272.471195	298.974588	636.3	2.351	16.1	8.0	1.98	5190	5.01	3.74
004819301-04	OBS	No	501.433847	377.200222	661.9	3.321	15.1	6.4	1.98	5190	5.18	1.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004819301-01	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
004819301-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS
004819301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—CENT_KIC_POS
004819301-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

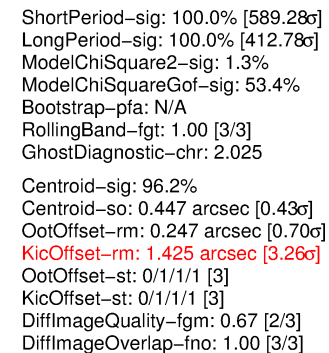
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 004819301-04

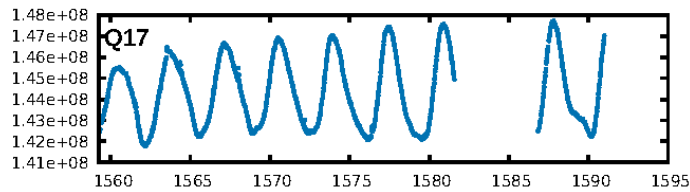
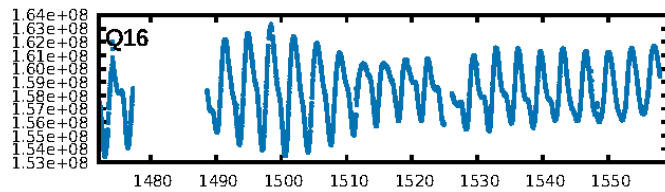
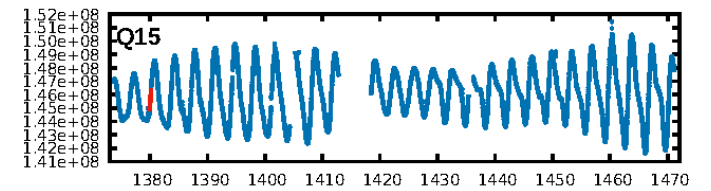
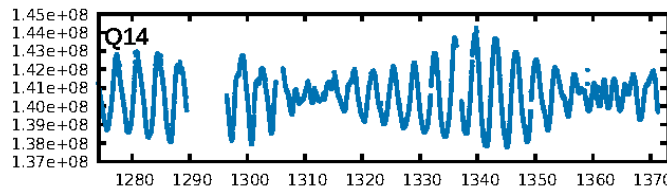
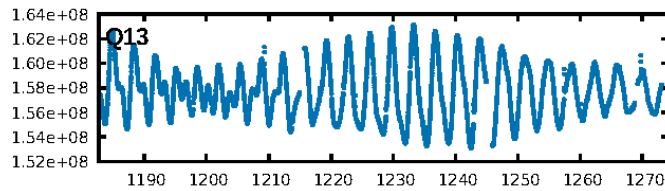
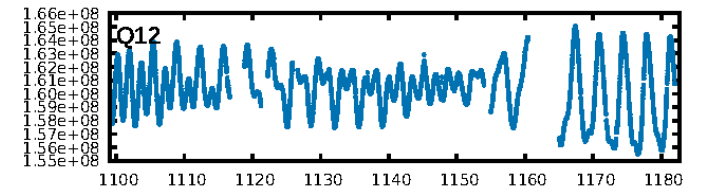
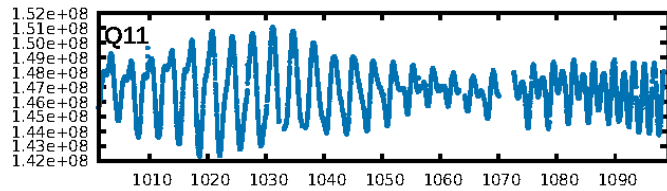
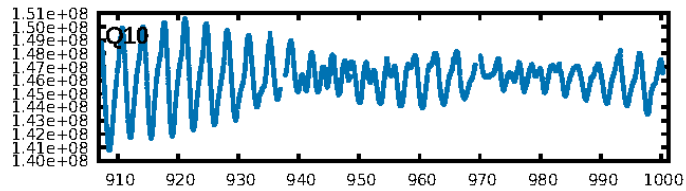
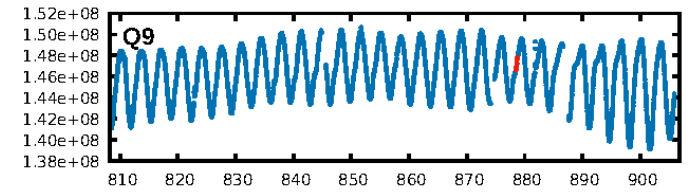
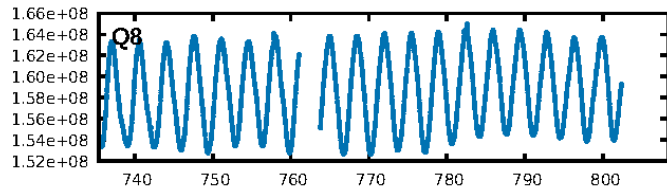
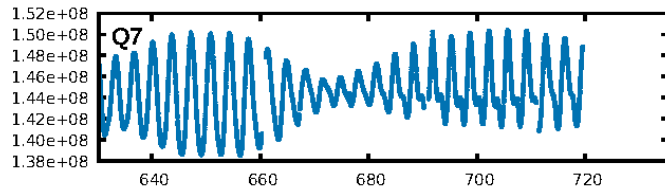
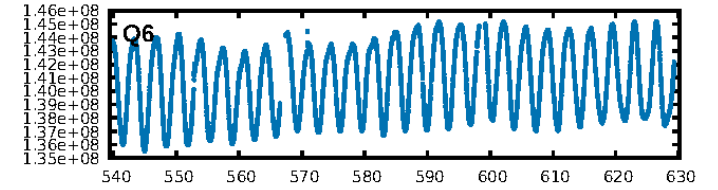
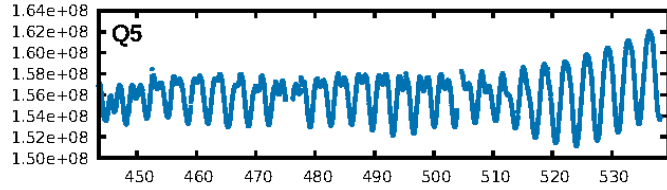
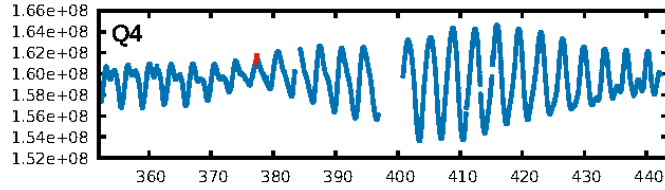
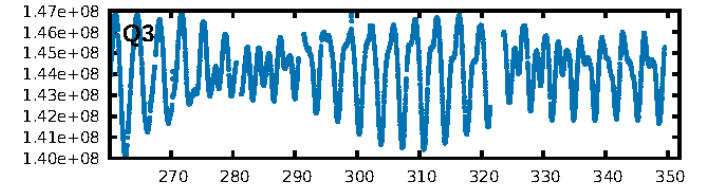
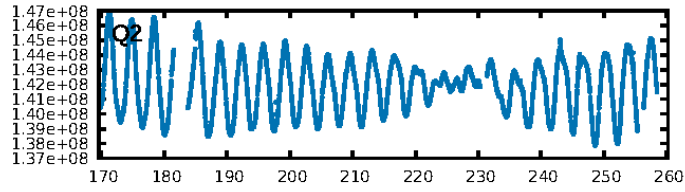
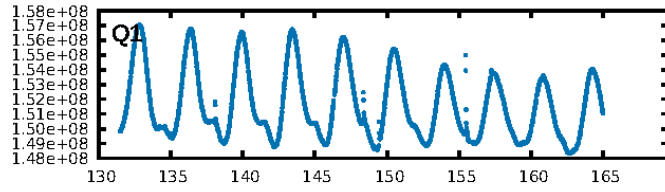
No Significant Match Found

KIC: 4819301 Candidate: 4 of 4 Period: 501.434 d

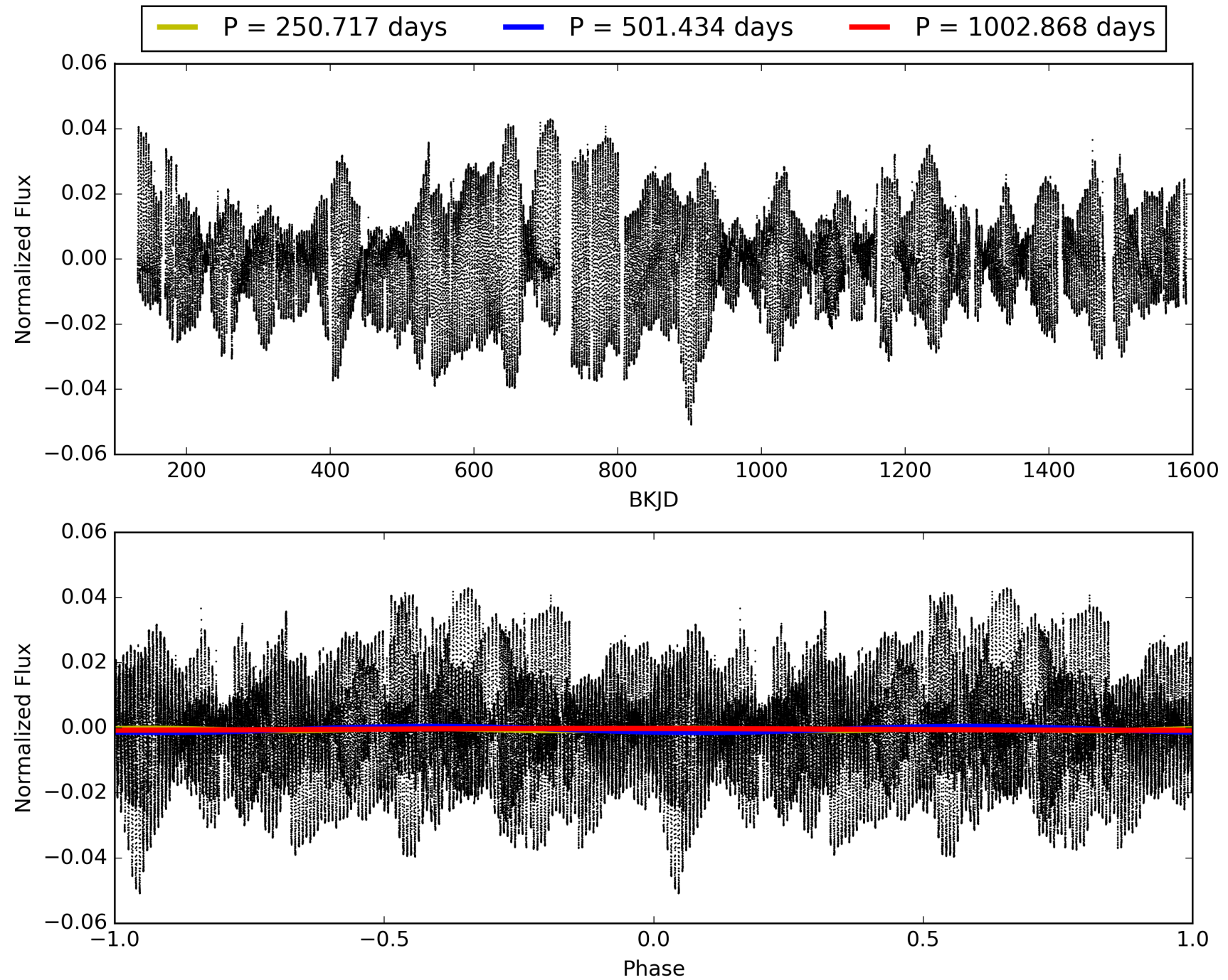


This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004819301-04, PDC Light Curves

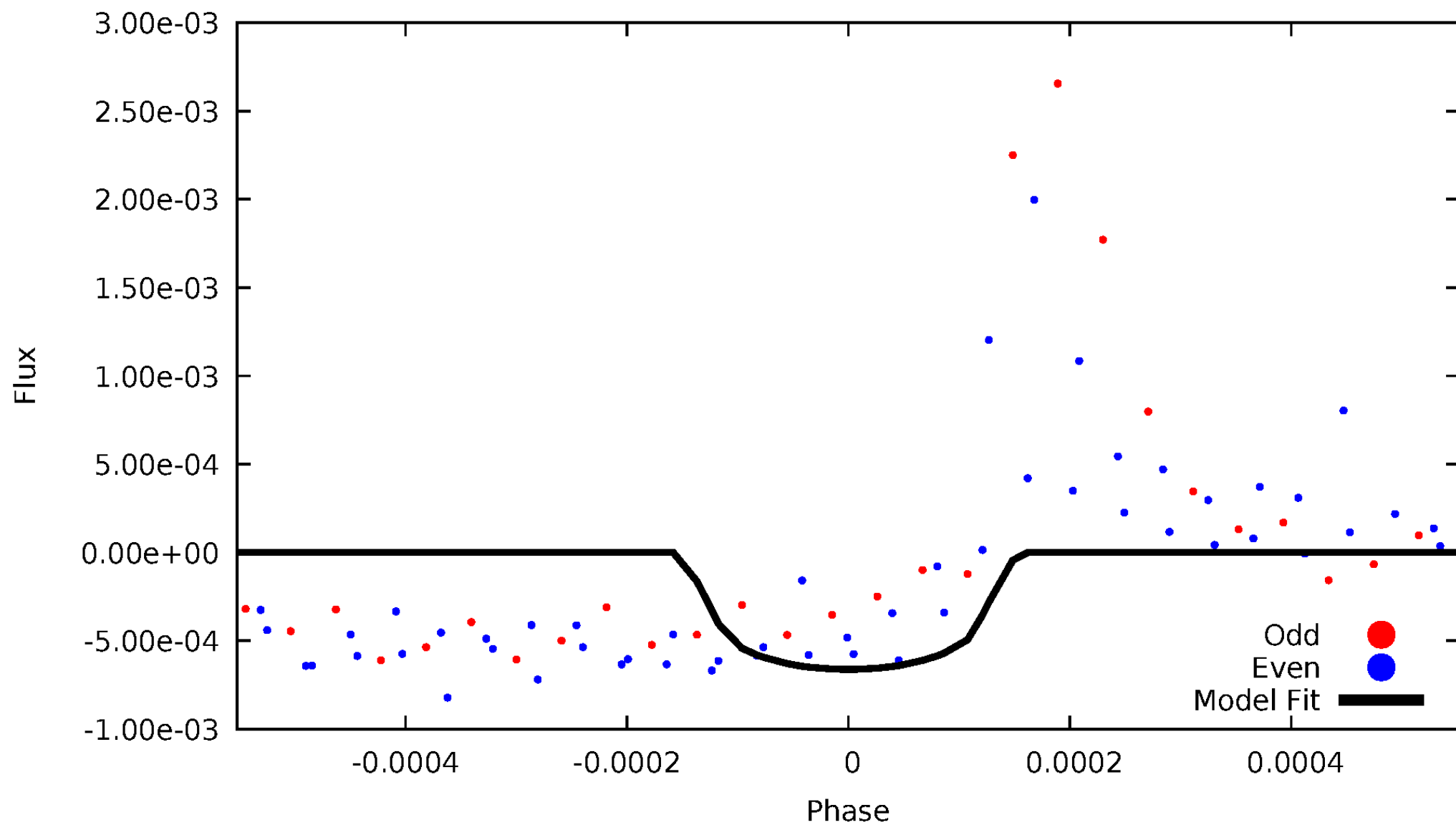


TCE 004819301-04



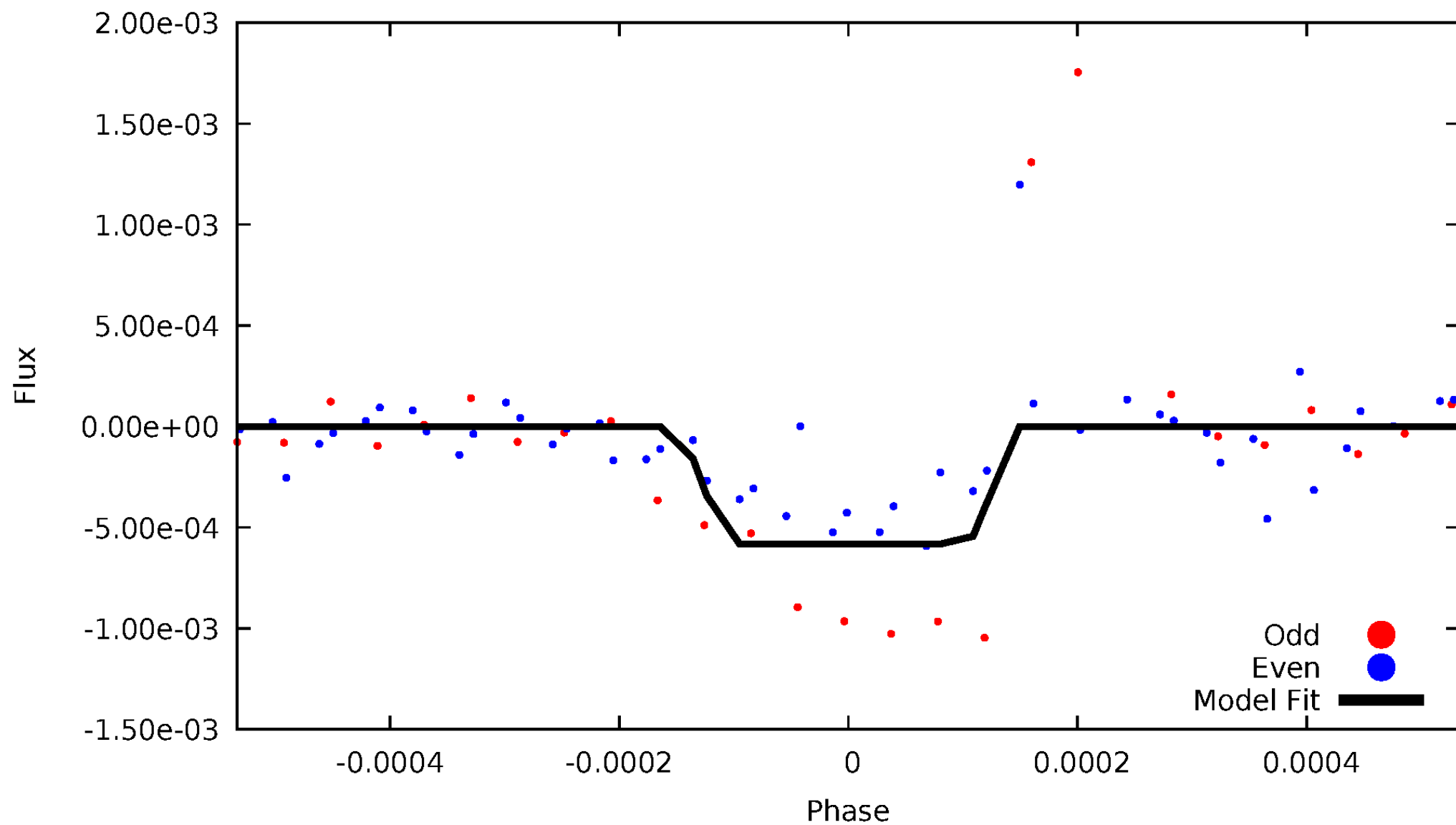
DV Odd/Even

TCE 004819301-04



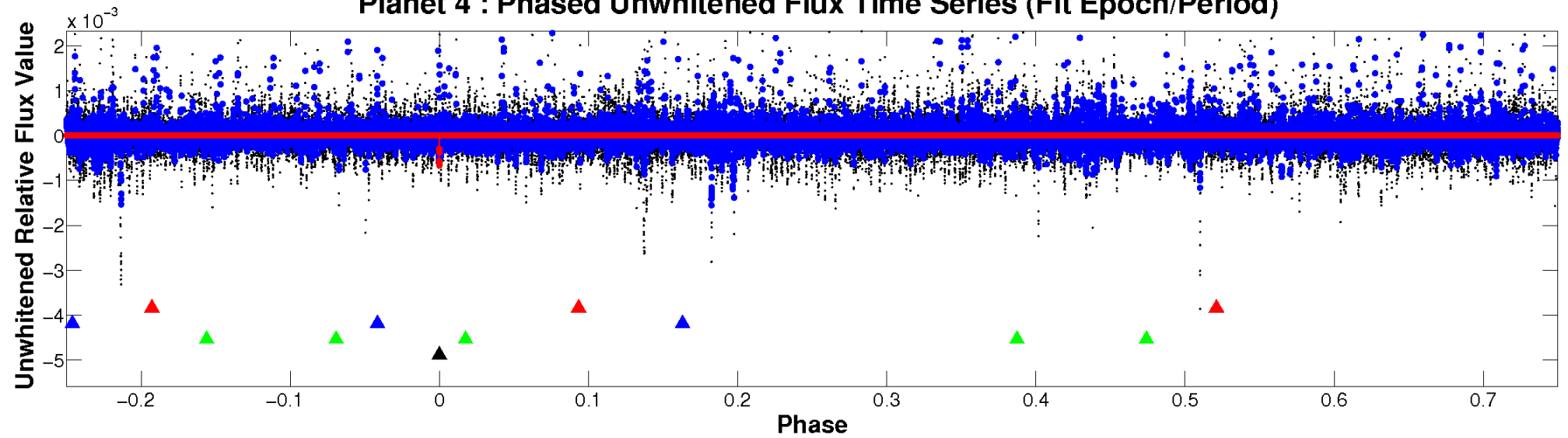
ALT Odd/Even

TCE 004819301-04

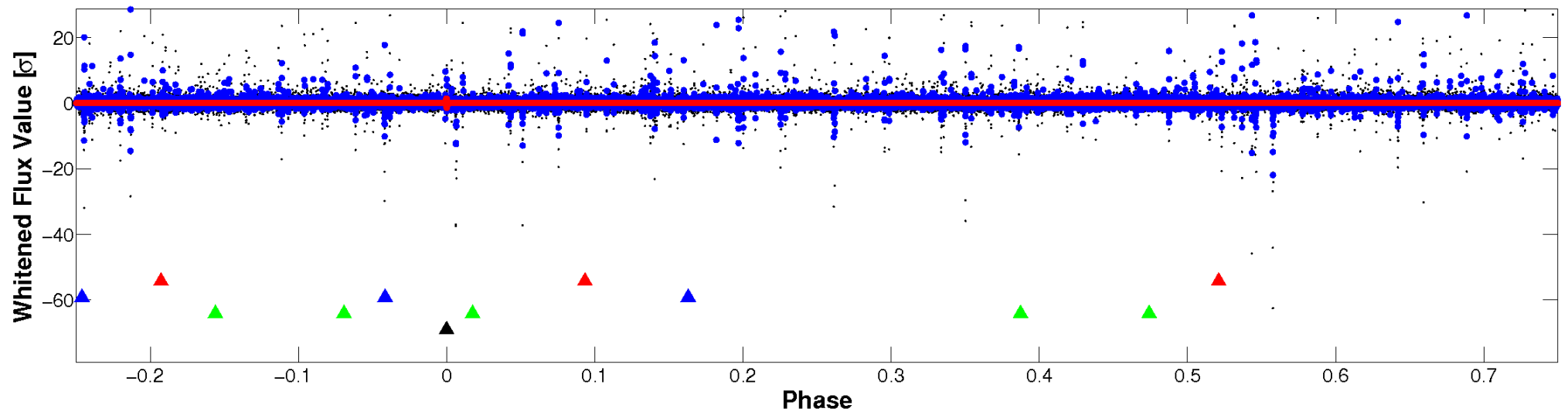


Non-Whitened Vs. Whitened Light Curve

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

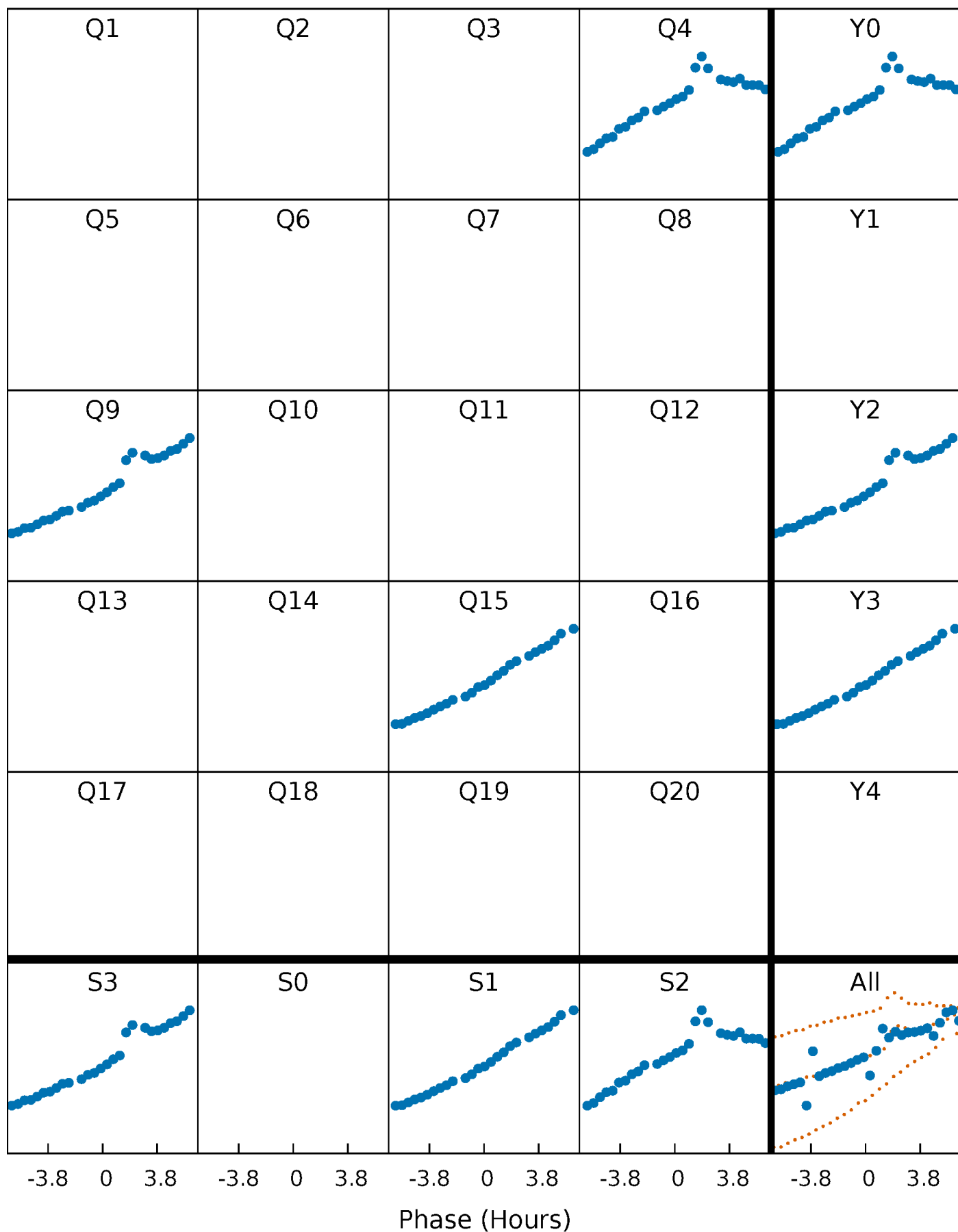


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



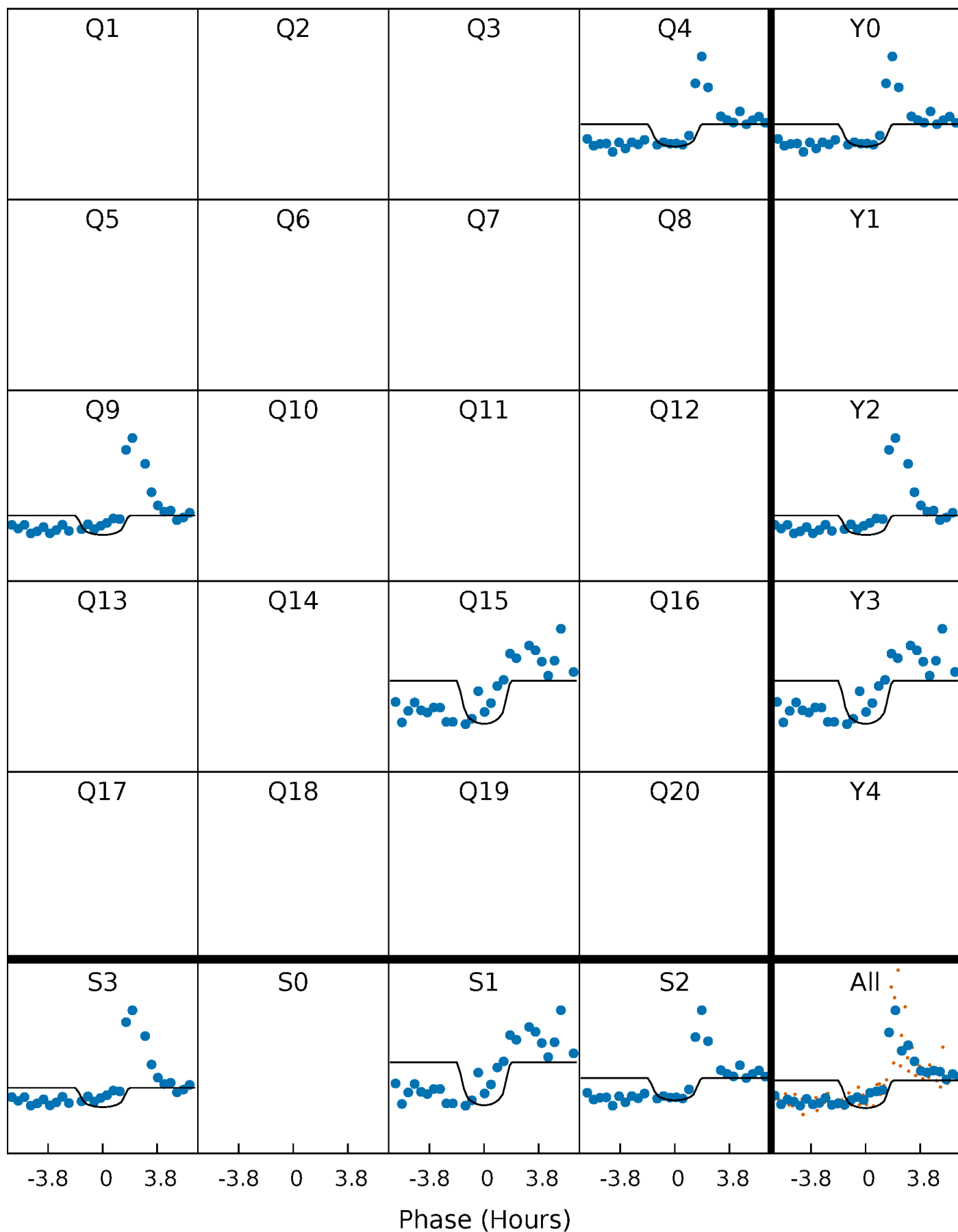
PDC Quarter-Phased Transit Curves

TCE 004819301-04 $P=501.433847$ Days $T_0=377.200222$ (BKJD)



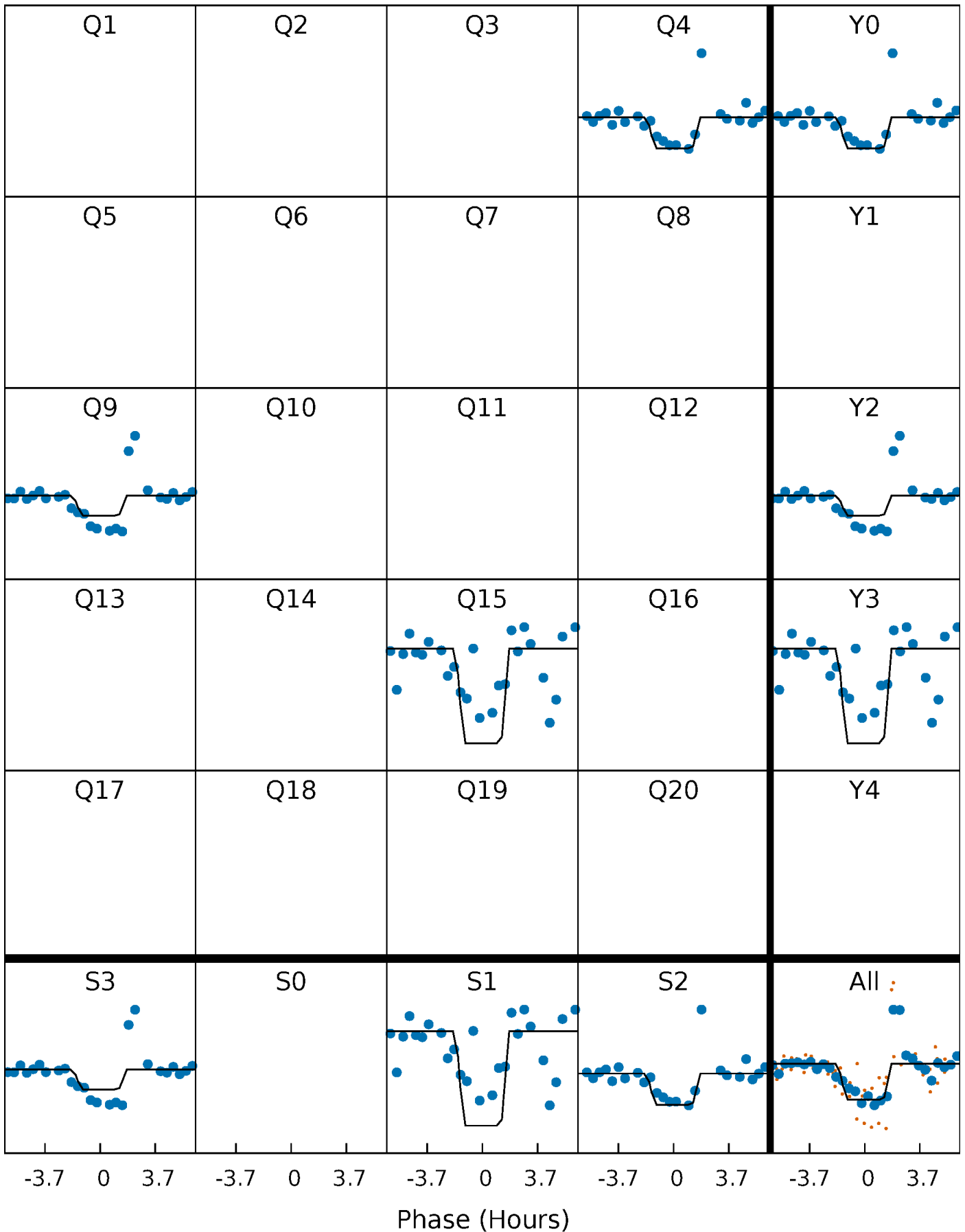
DV Quarter-Phased Transit Curves

TCE 004819301-04 $P=501.433847$ Days $T_0=377.200222$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

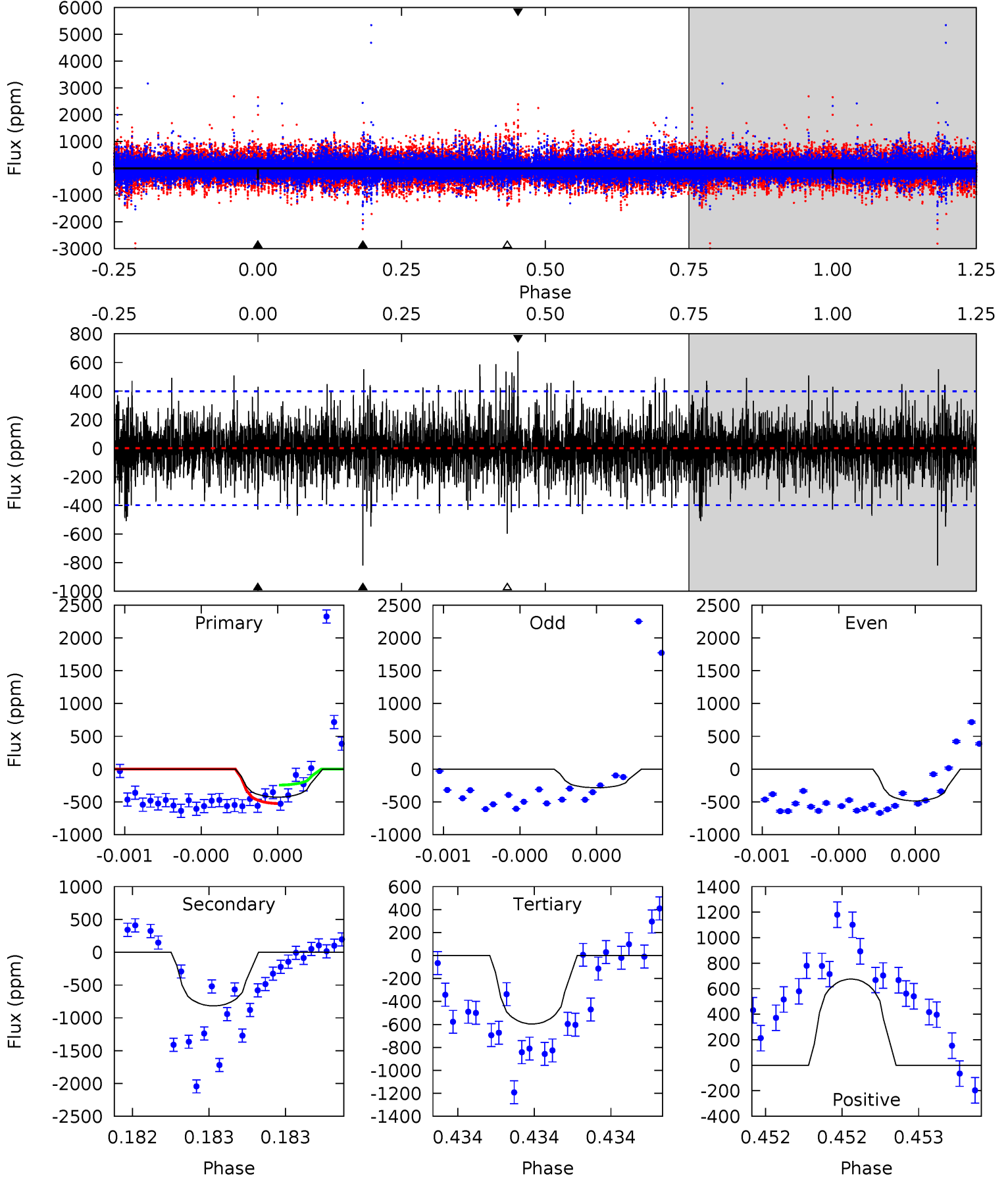
TCE 004819301-04 P=501.439562 Days $T_0=377.188918$ (BKJD)



DV Model-Shift Uniqueness Test

004819301-04, P = 501.433847 Days, E = 377.200222 Days

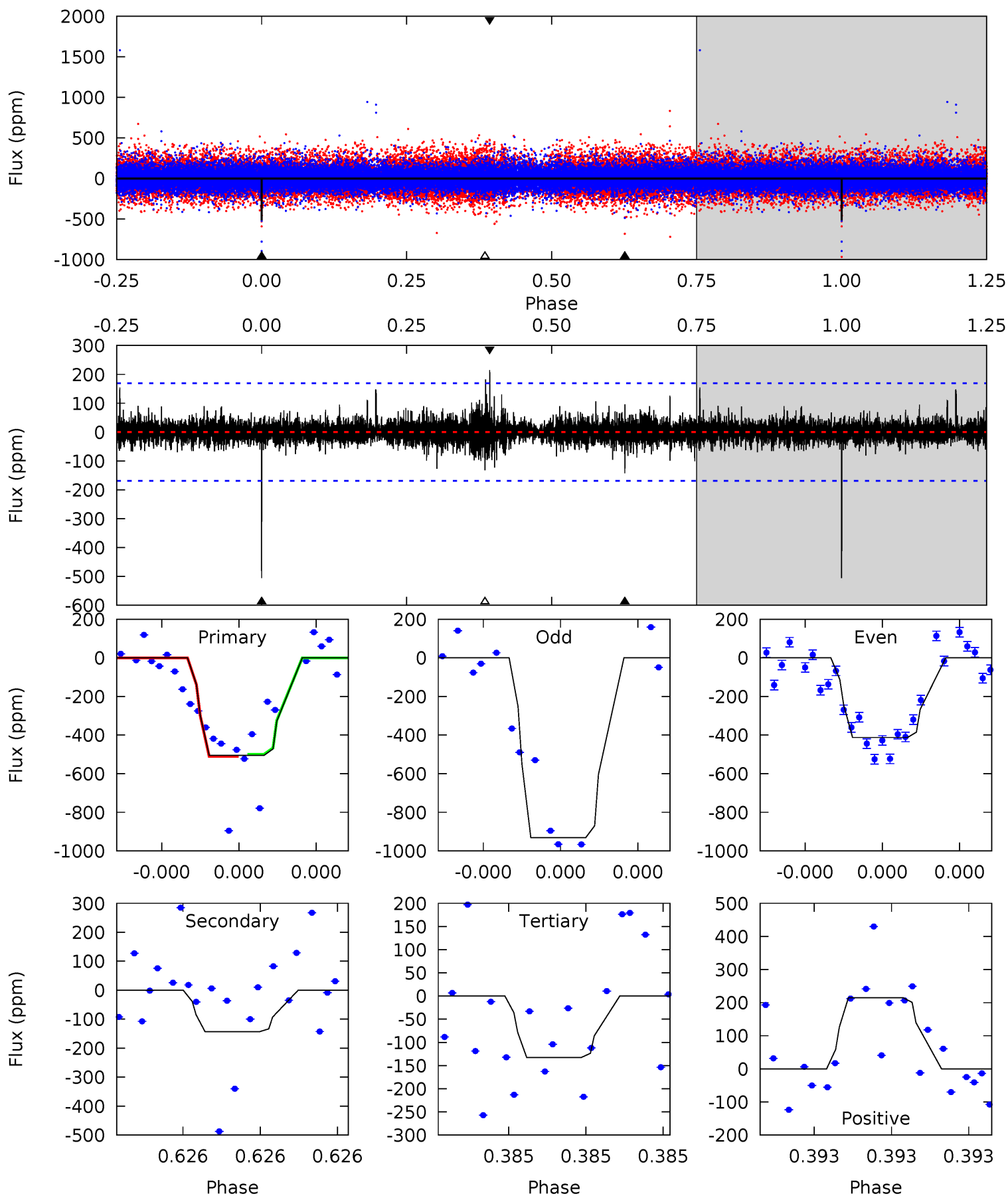
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.10	11.7	8.51	9.64	5.67	3.63	1.75	-2.41	-3.54	3.16	2.03	1.16	1.01	0.45	2.07



Alt Model-Shift Uniqueness Test

004819301-04, P = 501.439562 Days, E = 377.188918 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	4.82	4.46	7.24	5.70	3.67	0.76	12.6	9.79	0.35	-2.43	8.86	1.21	0.30	0.17



Stellar Parameters For KIC 004819301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5190^{+203}_{-166}	$3.849^{+0.656}_{-0.303}$	$-0.060^{+0.300}_{-0.250}$	$1.981^{+0.984}_{-1.202}$	$1.011^{+0.207}_{-0.207}$	$0.183^{+2.242}_{-0.127}$
	+4%/-3%	+17%/-8%	+500%/-417%	+50%/-61%	+20%/-20%	+1224%/-69%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 004819301-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-819 ± 70	$11.55^{+14.10}_{-8.32}$	399^{+62}_{-65}	3980^{+2537}_{-857}	5244^{+59216}_{-4181}
Alt.	-143 ± 30	$11.99^{+14.76}_{-8.46}$	400^{+51}_{-63}	2951^{+1377}_{-483}	841^{+9139}_{-673}

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

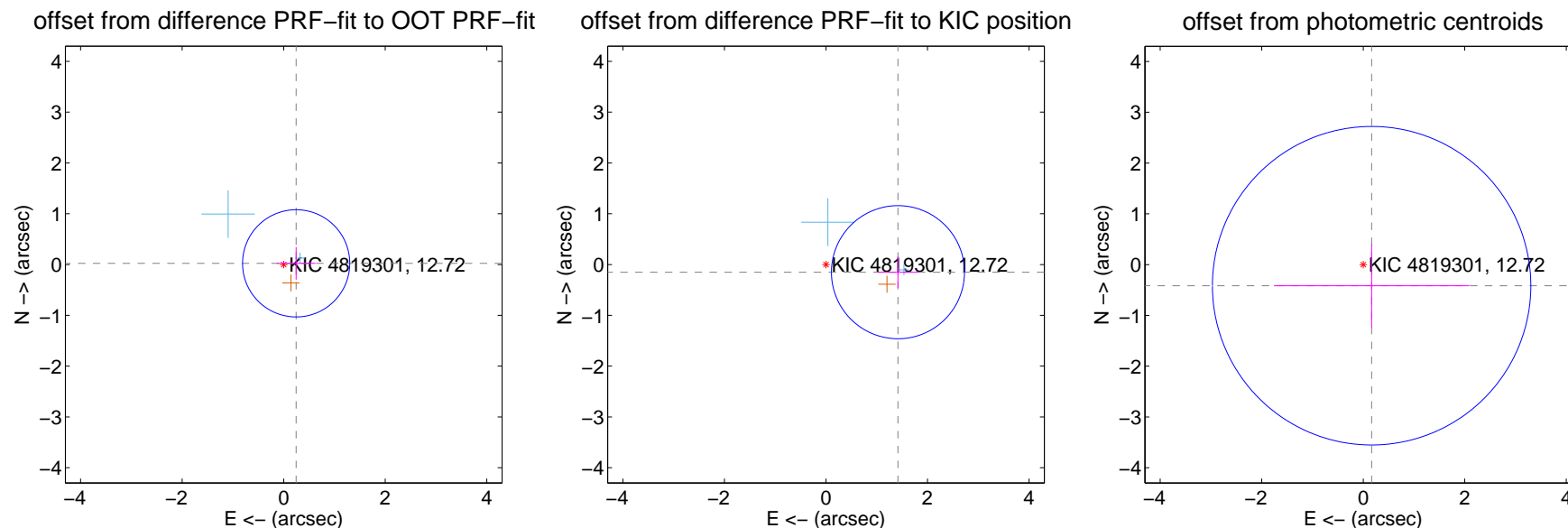
DV Centroid Data

Supplemental centroid analysis for 004819301-04. Kepler magnitude: 12.72. Transit SNR 6.41

There are 2 quarters with good PRF difference image offsets

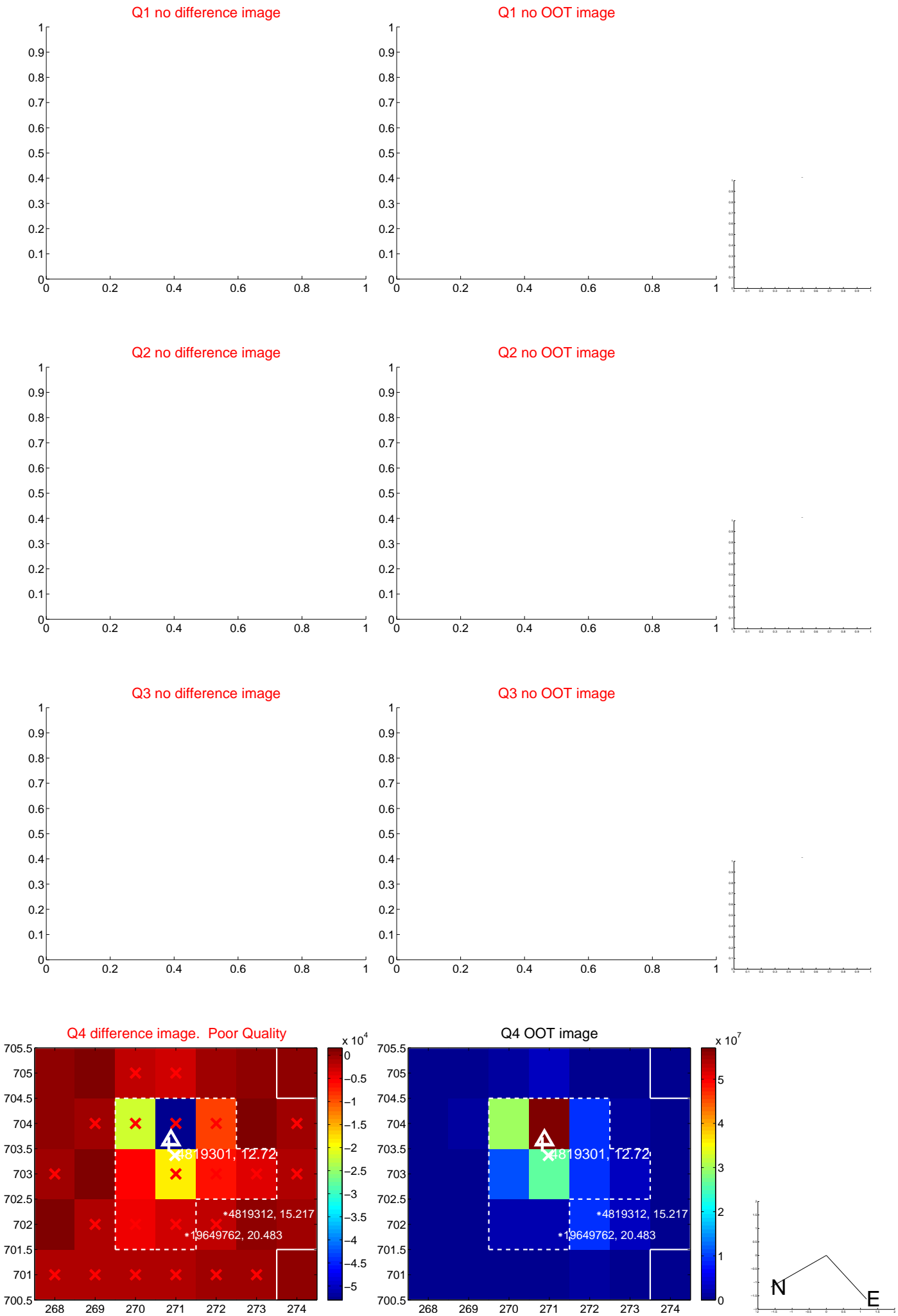
The direct PRF centroid is offset from the target star catalog position by about 1.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.247 ± 0.352	0.70	-0.246 ± 0.380	0.024 ± 0.321
PRF-fit source offset from KIC position	1.425 ± 0.437	3.26	-1.417 ± 0.408	-0.151 ± 0.308
photometric centroid source offset	0.45 ± 1.05	0.43	-0.17 ± 1.92	-0.42 ± 0.82



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

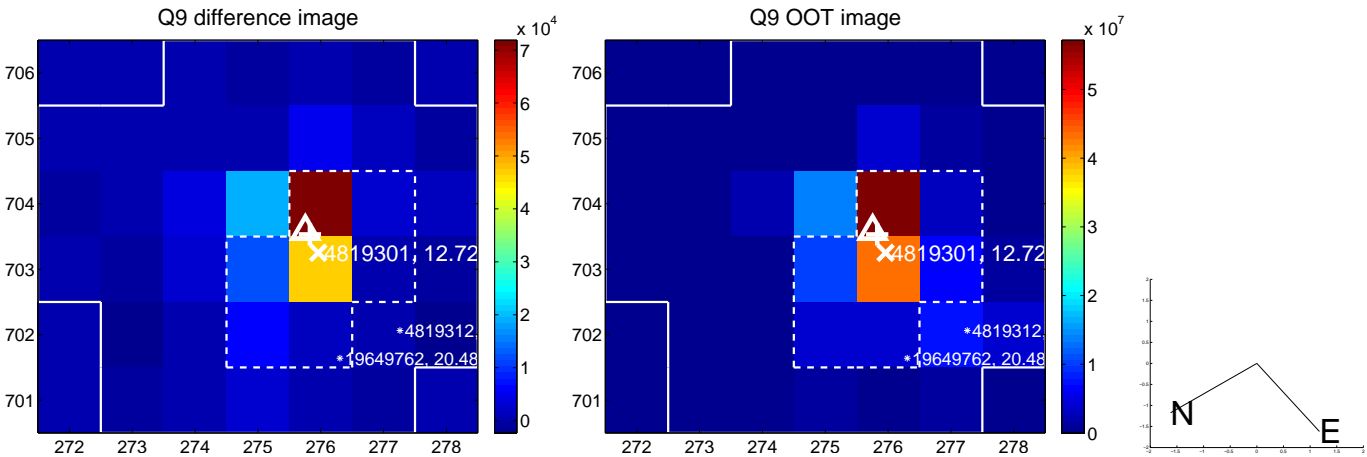
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



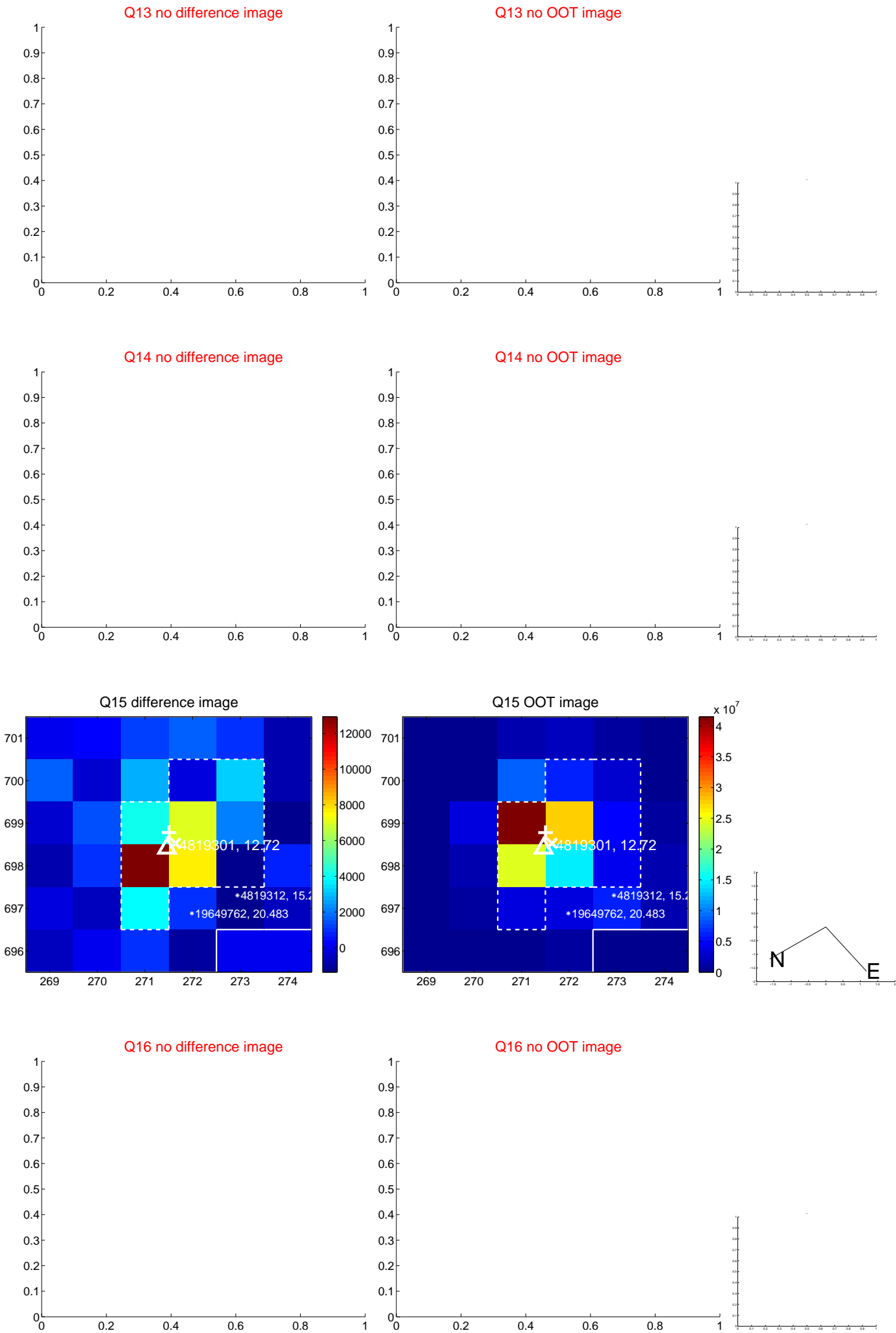
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



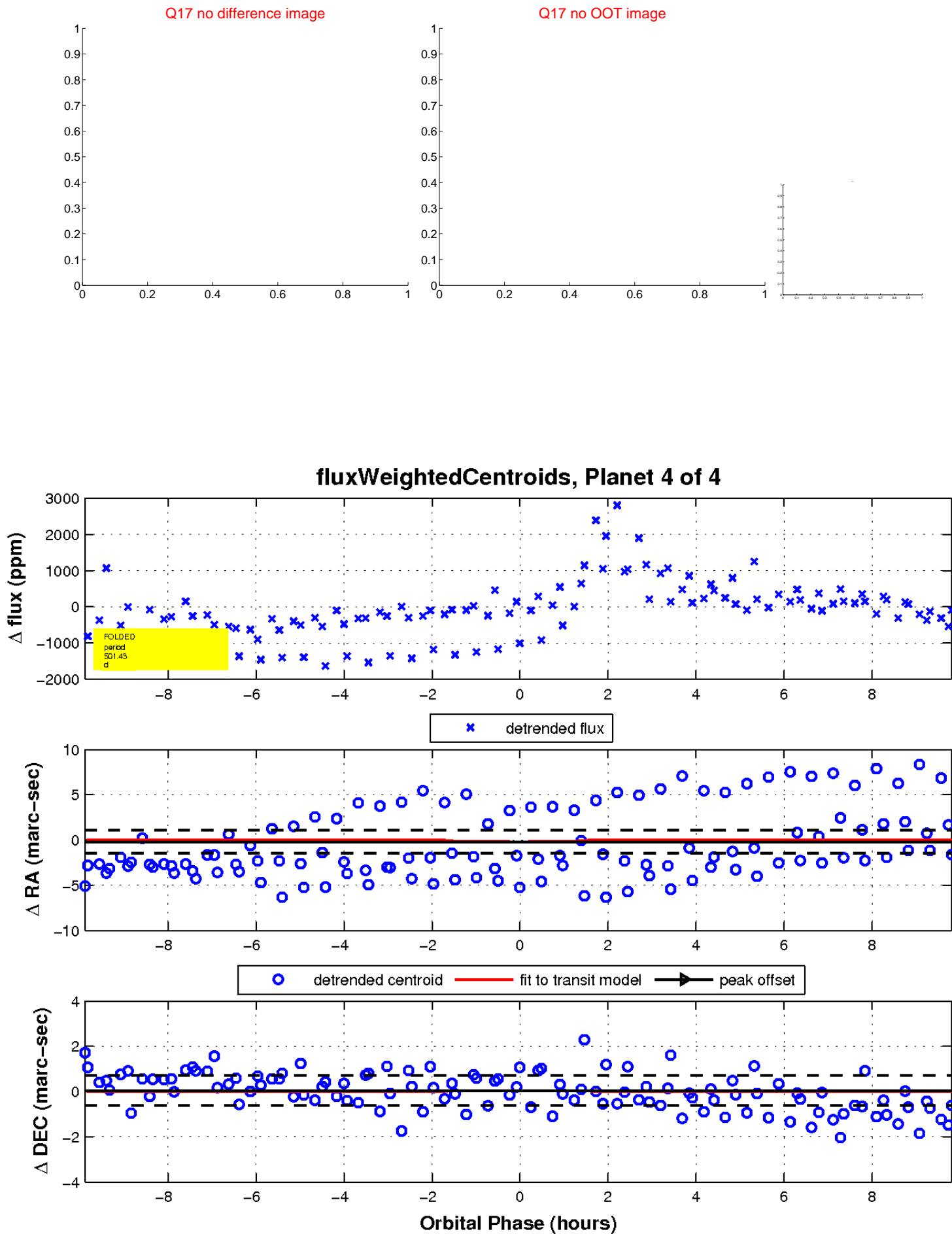
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

