

KIC 009950201

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})
009950201-01	OBS	No	360.825949	156.816069	1734.8	18.294	9.1	8.8	0.91	6074	4.41	1.05
009950201-02	OBS	No	360.218963	160.638838	1651.0	19.123	8.7	8.6	0.91	6074	4.30	1.05
009950201-03	OBS	No	376.459664	506.818185	1973.5	16.378	8.9	8.5	0.91	6074	5.08	0.99
009950201-04	OBS	No	409.216806	225.949250	1551.2	28.520	7.9	8.0	0.91	6074	4.58	0.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009950201-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009950201-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH
009950201-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009950201-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

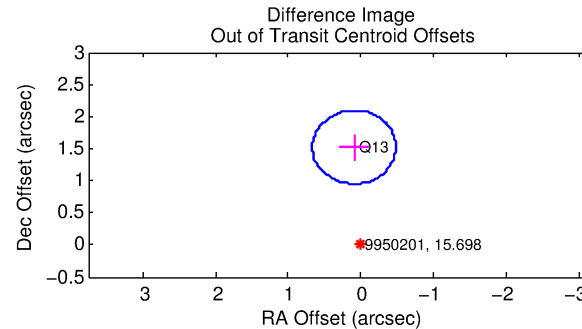
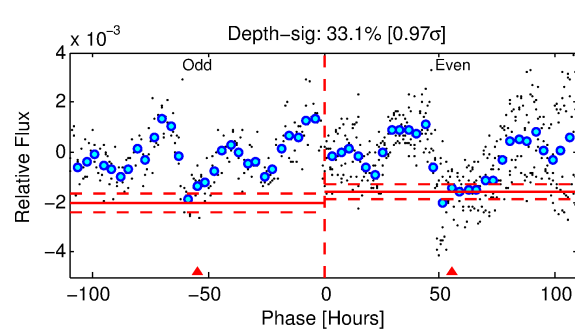
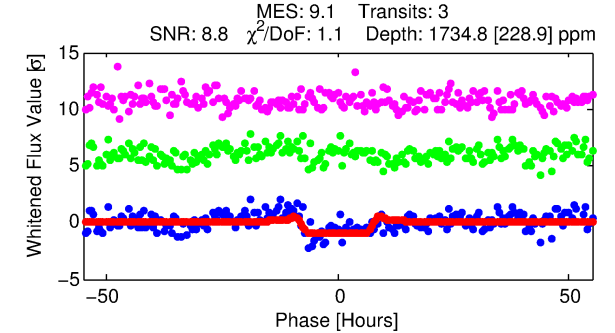
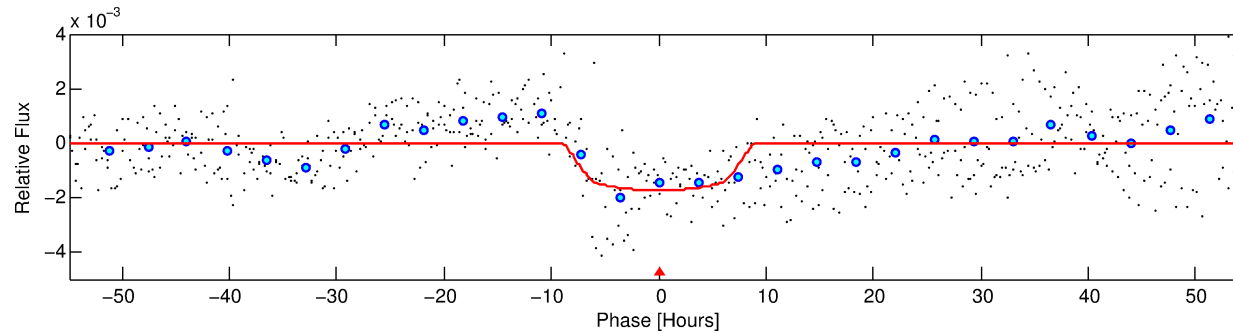
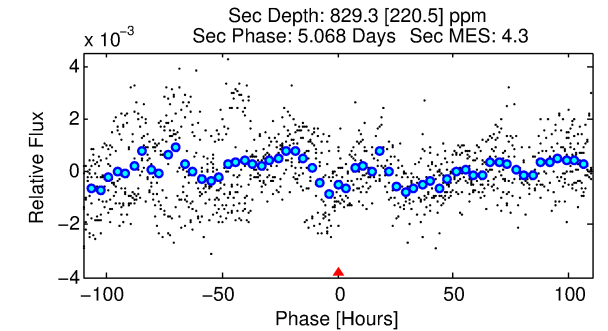
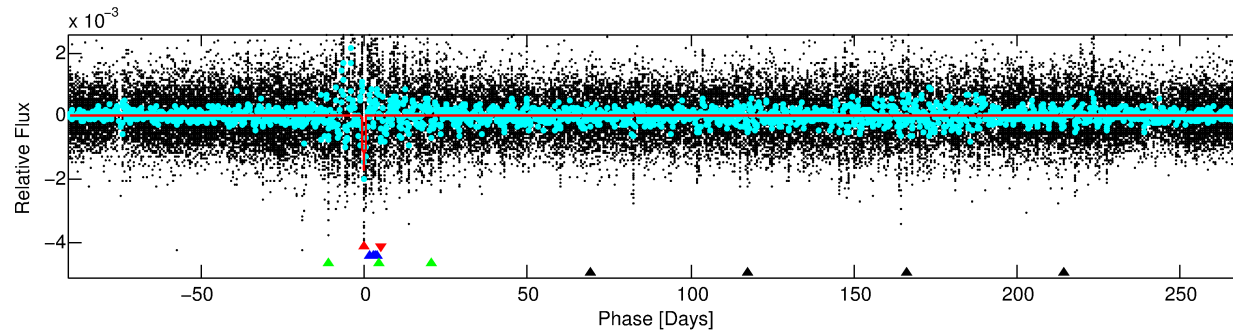
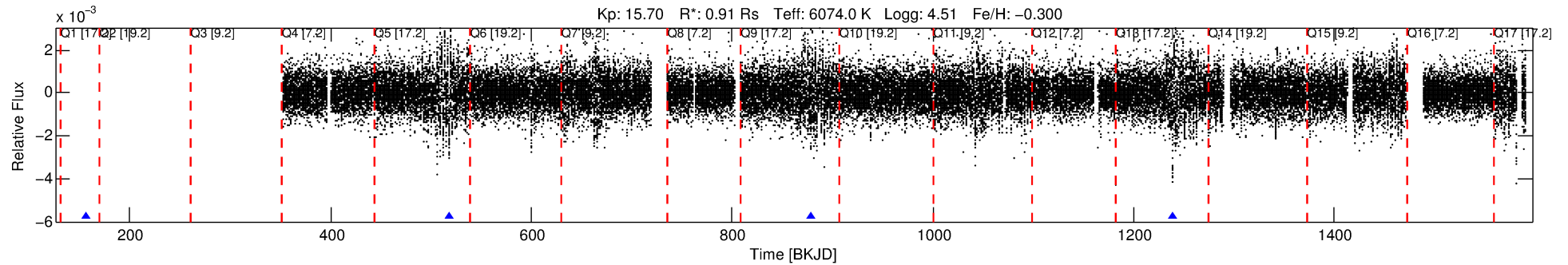
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009950201-01

No Significant Match Found

DV One-Page Summary

KIC: 9950201 Candidate: 1 of 4 Period: 360.826 d



DV Fit Results:

Period = 360.82595 [0.01837] d
Epoch = 156.8161 [0.0390] BKJD
Rp/R* = 0.0442 [0.0037]
a/R* = 84.28 [18.20]
b = 0.88 [0.06]
Seff = 1.05 [0.44]
Teq = 258 [27] K
Rp = 4.41 [1.44] Re
a = 0.9860 [0.2638] AU
Ag = 22772.45 [11458.86] [1.99σ]
Teff = 4900 [429] K [10.80σ]

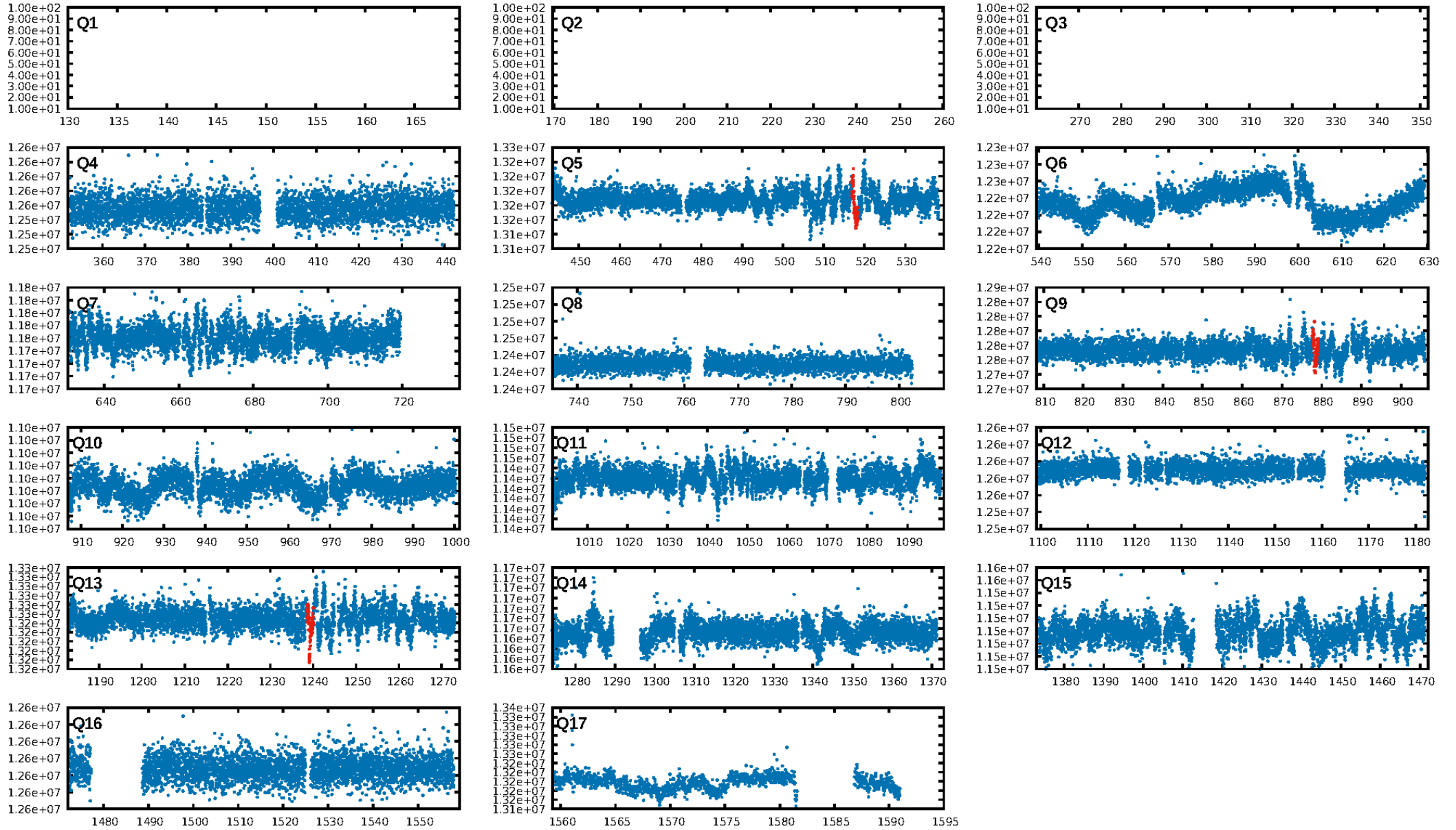
DV Diagnostic Results:

ShortPeriod-sig: 41.8% [0.55σ]
LongPeriod-sig: 100.0% [15.28σ]
ModelChiSquare2-sig: 70.2%
ModelChiSquareGof-sig: 96.9%
Bootstrap-pfa: 1.53e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.27
Centroid-sig: 0.0%
Centroid-so: 4.537 arcsec [2.44σ]
OotOffset-rm: 1.526 arcsec [7.98σ]
KicOffset-rm: 1.935 arcsec [10.13σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

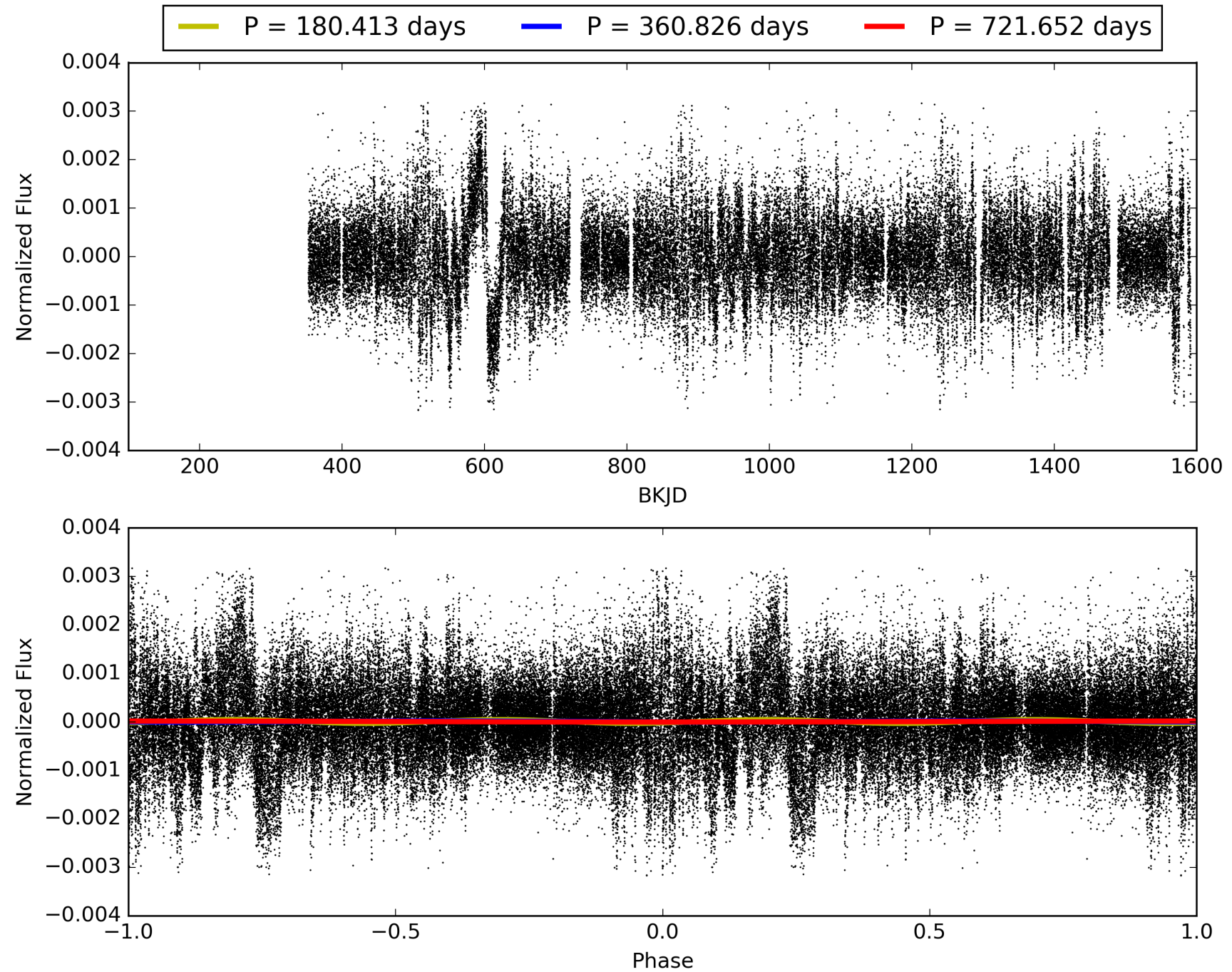
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:07:59 Z

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

TCE 009950201-01, PDC Light Curves

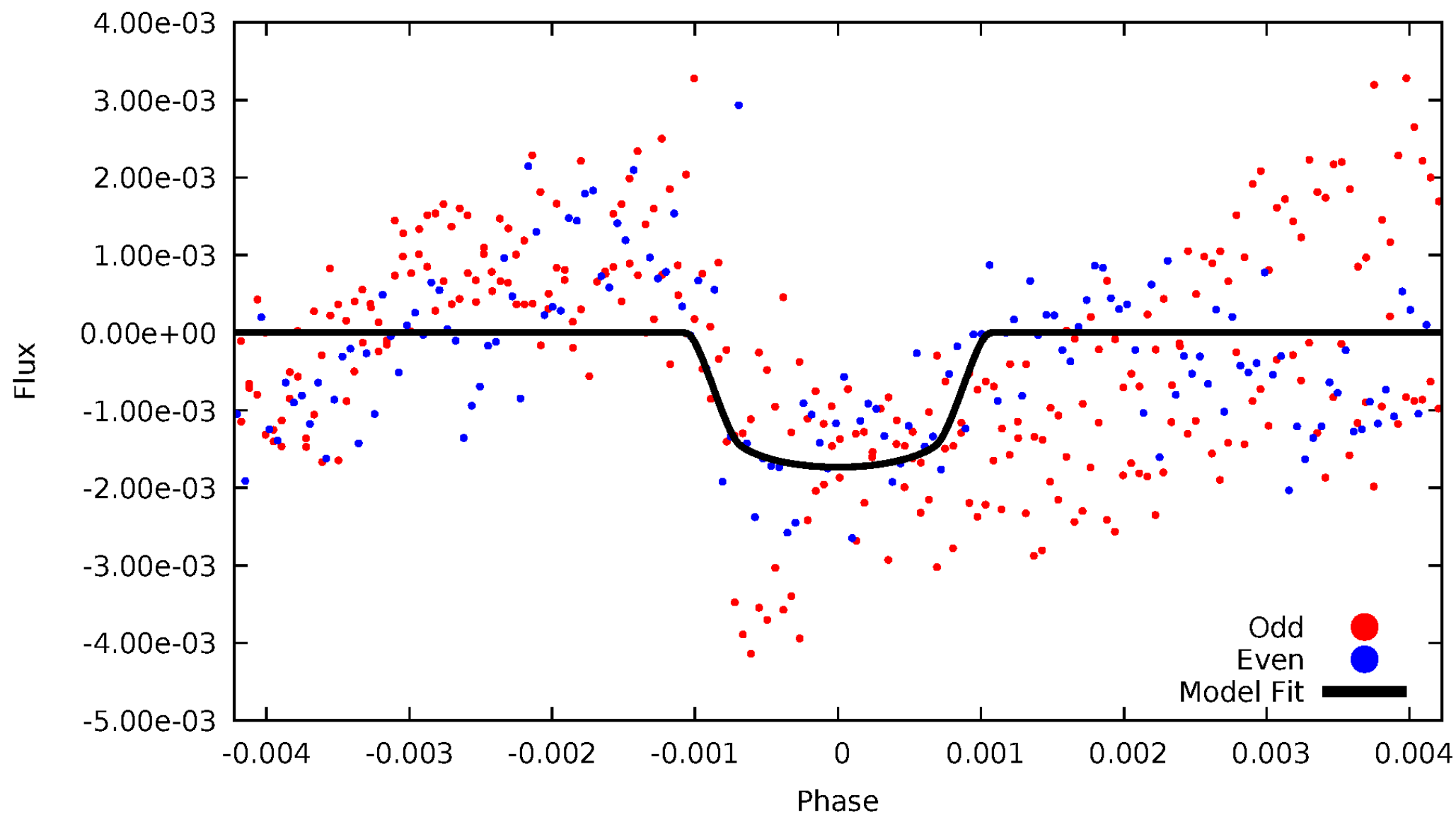


TCE 009950201-01



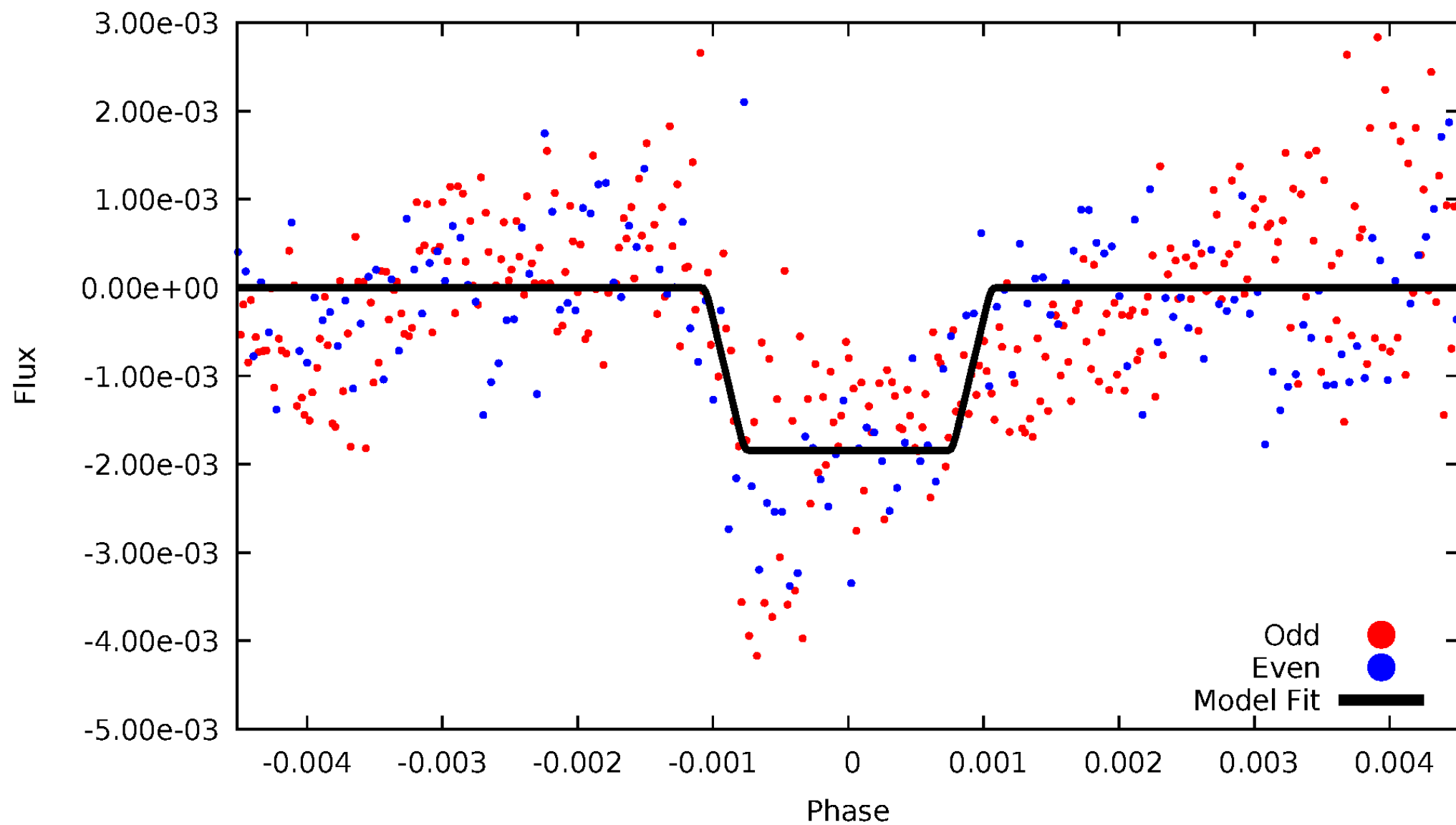
DV Odd/Even

TCE 009950201-01



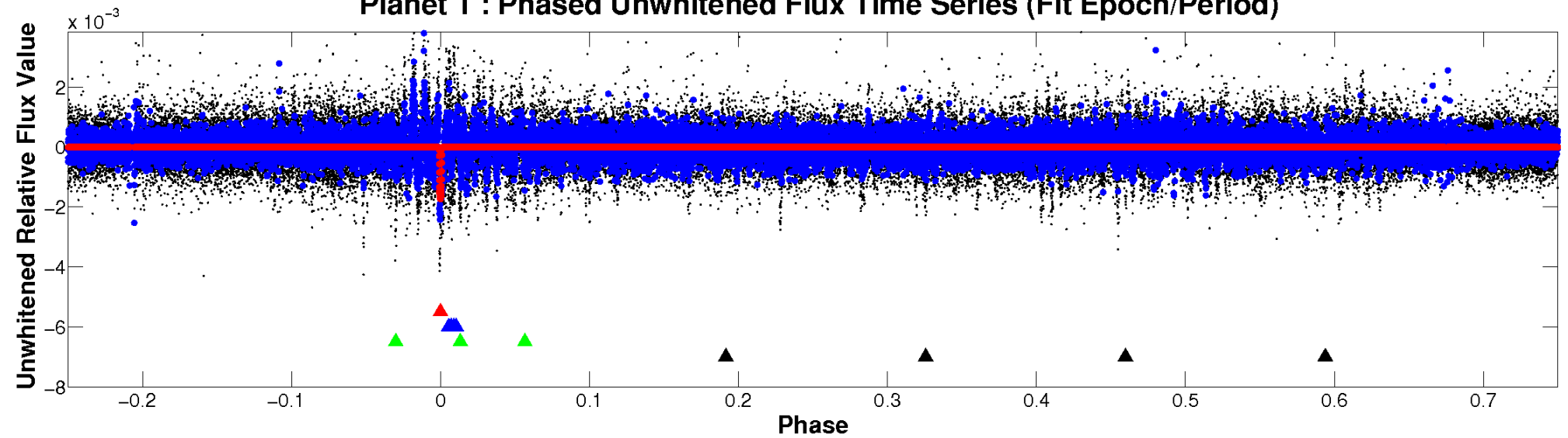
ALT Odd/Even

TCE 009950201-01

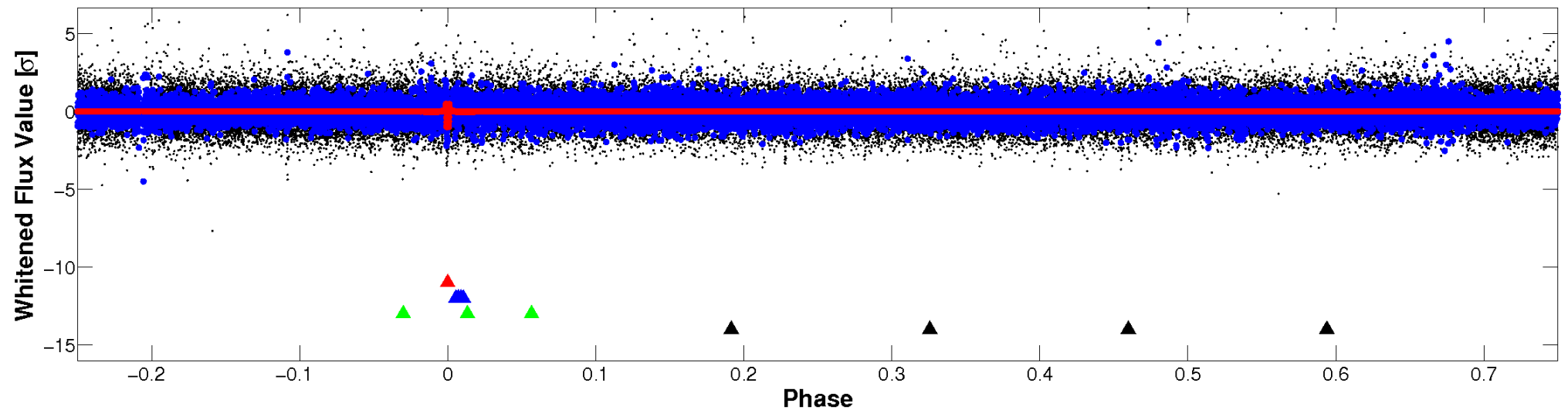


Non-Whitened Vs. Whitened Light Curve

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

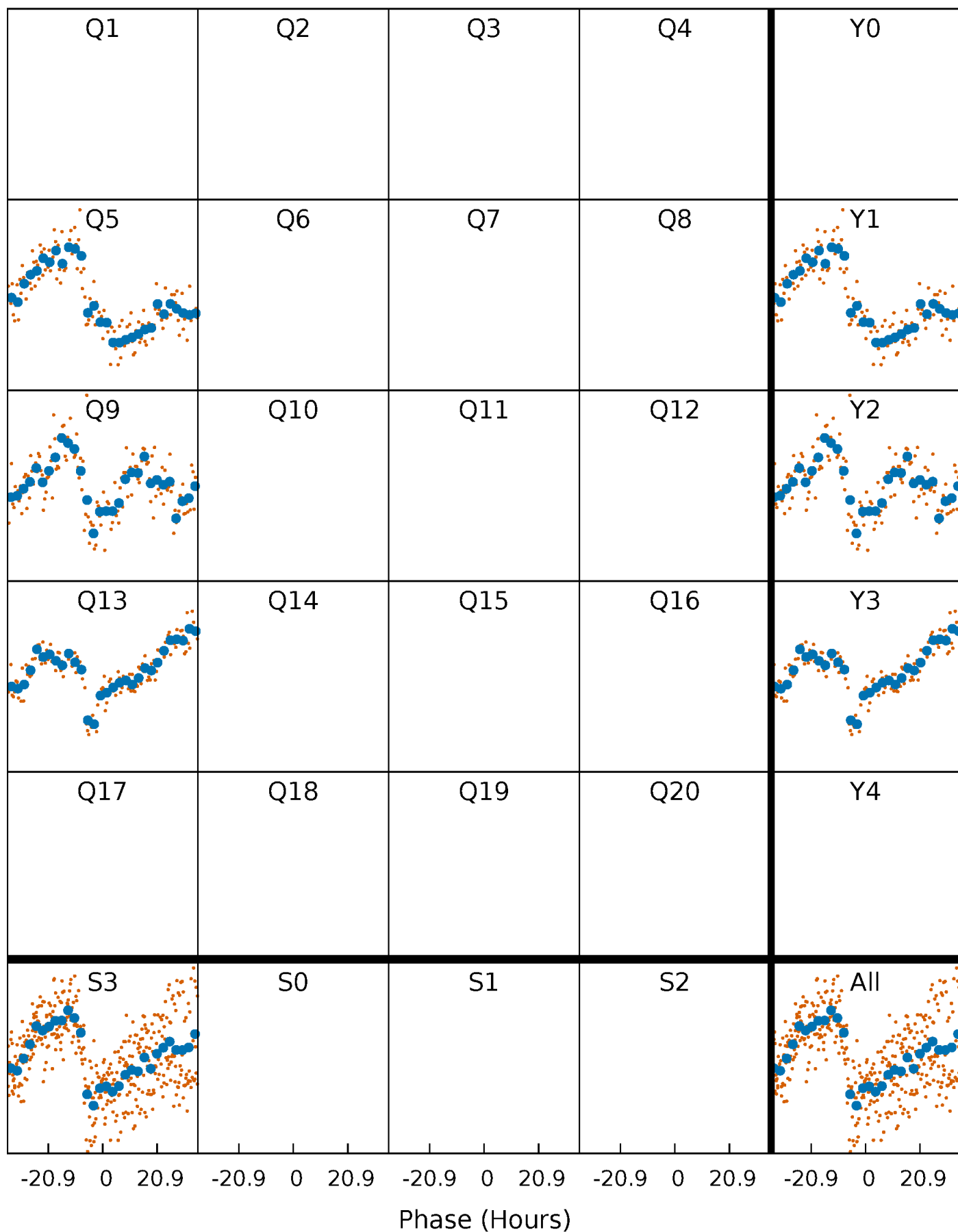


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



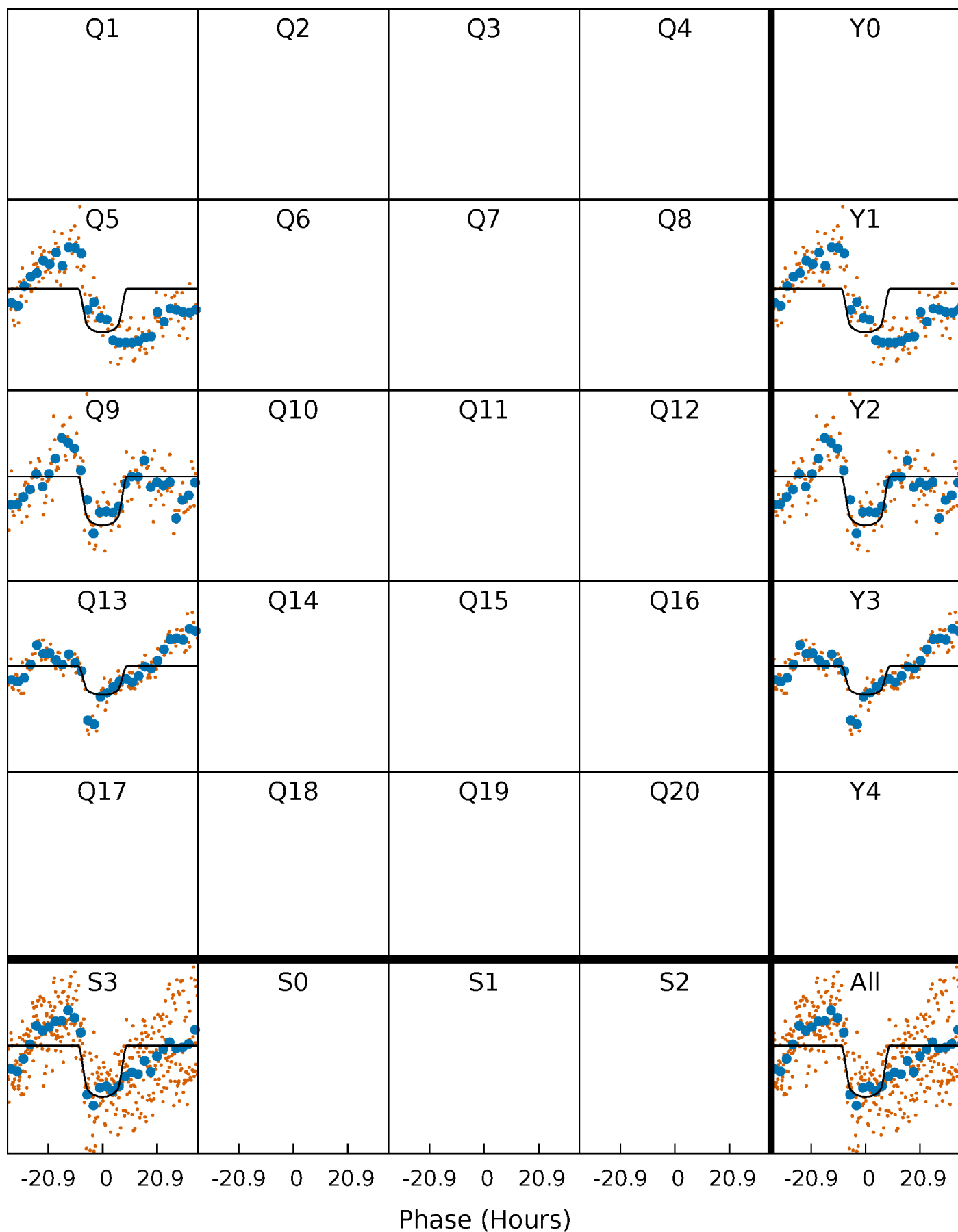
PDC Quarter-Phased Transit Curves

TCE 009950201-01 $P=360.825949$ Days $T_0=156.816069$ (BKJD)



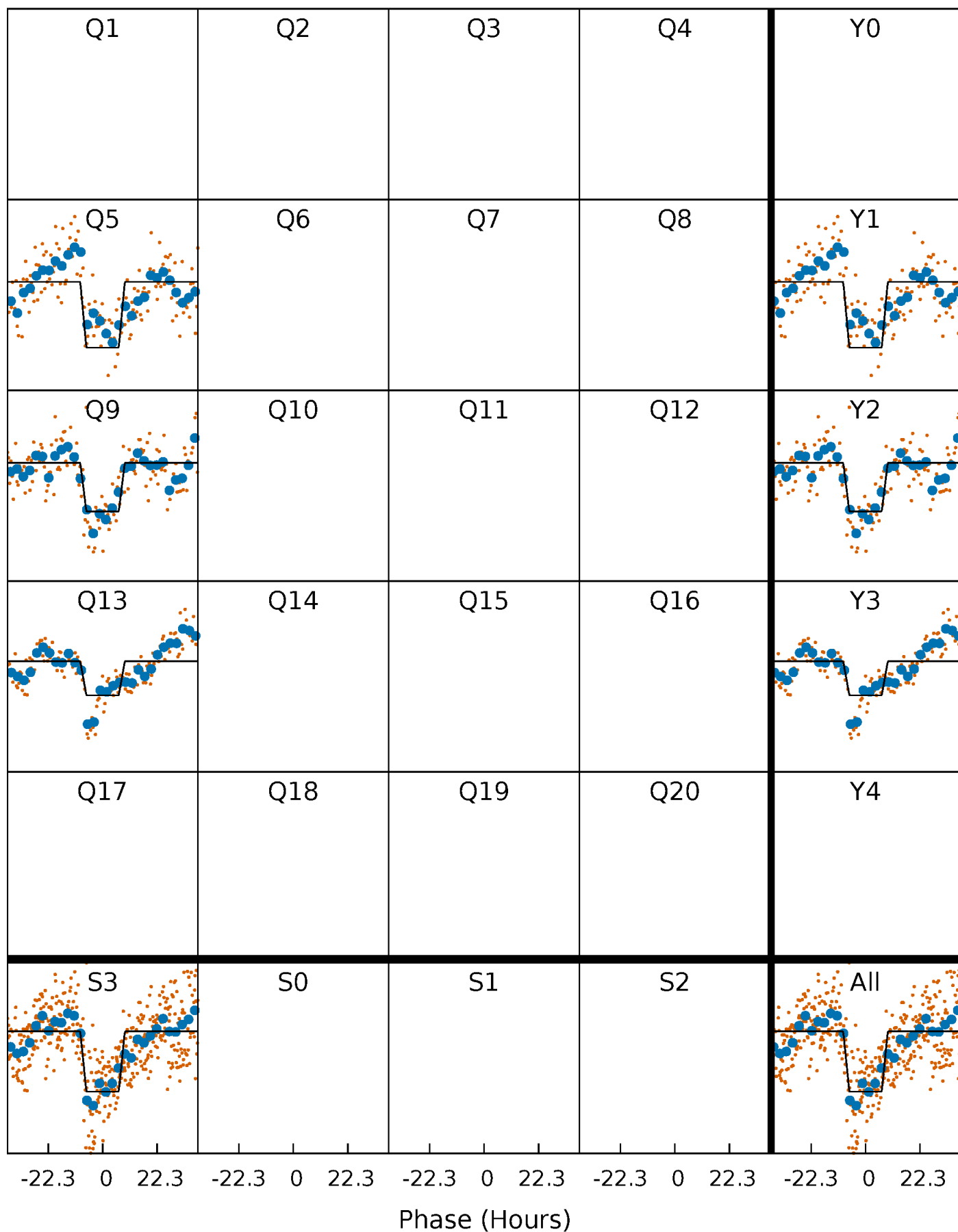
DV Quarter-Phased Transit Curves

TCE 009950201-01 P=360.825949 Days $T_0=156.816069$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

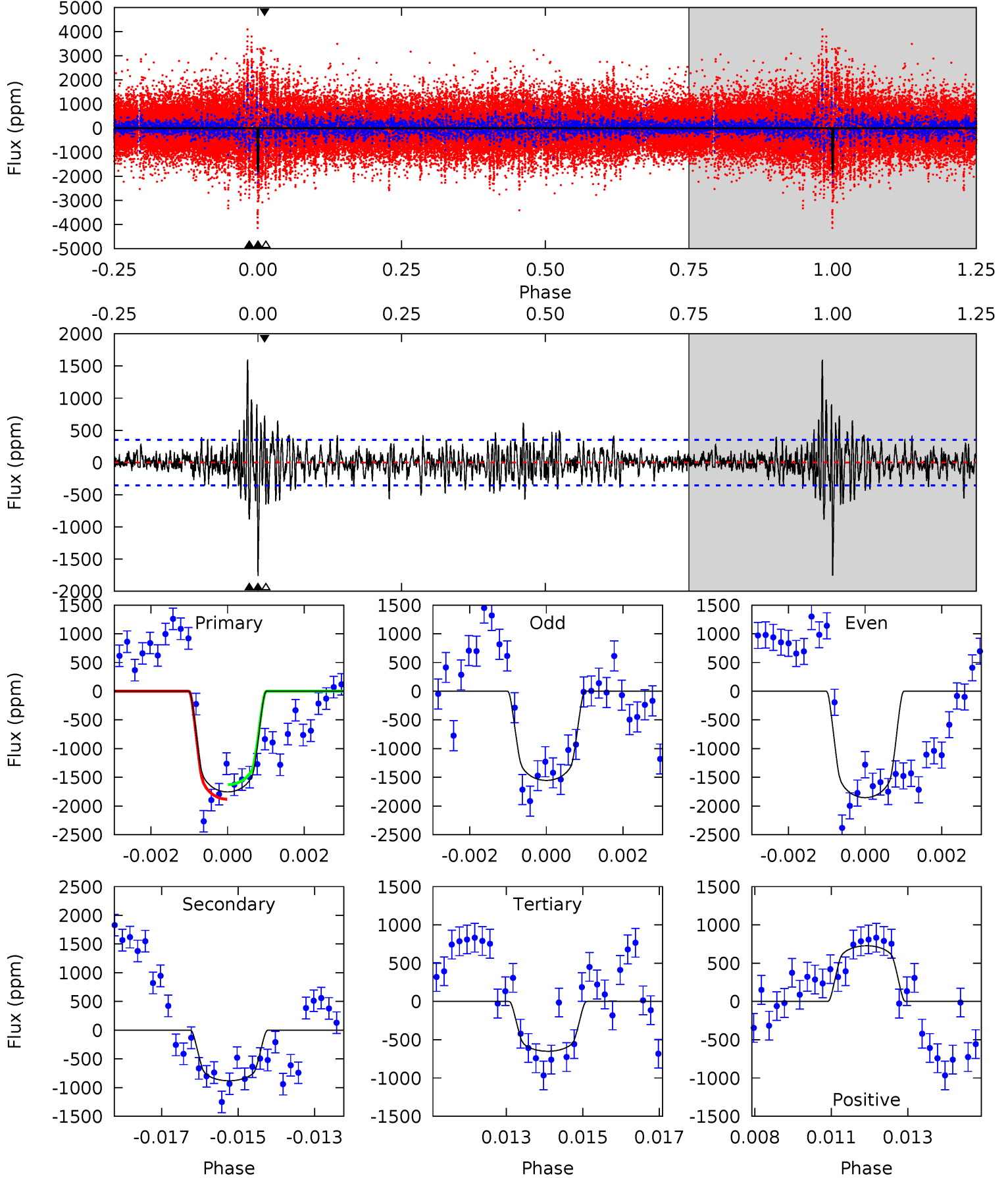
TCE 009950201-01 P=360.822614 Days $T_0=156.850457$ (BKJD)



DV Model-Shift Uniqueness Test

009950201-01, P = 360.825949 Days, E = 156.816069 Days

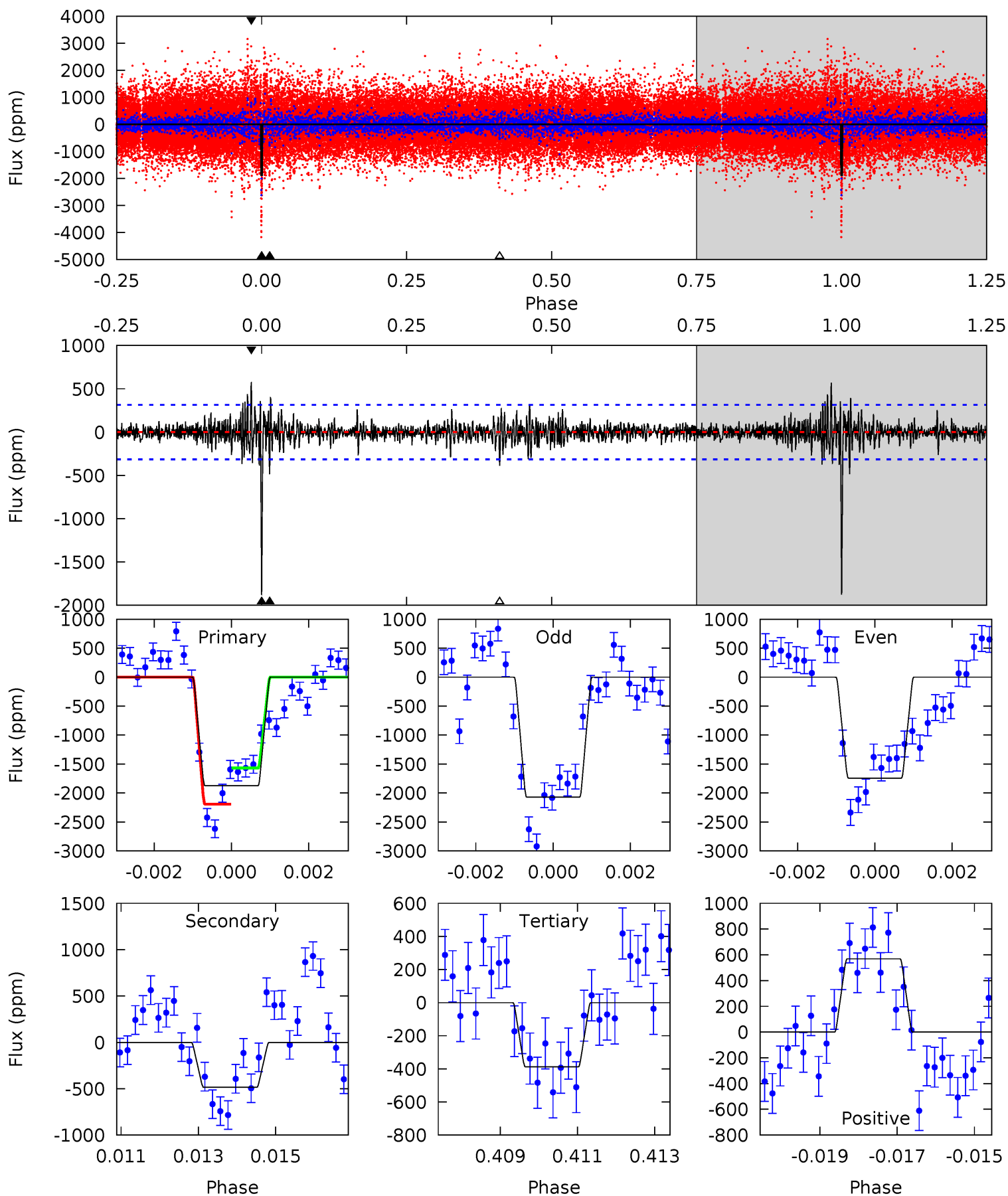
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	13.2	9.77	10.9	5.32	3.07	2.74	16.6	15.4	3.46	2.30	2.12	1.20	0.48	1.90



Alt Model-Shift Uniqueness Test

009950201-01, P = 360.822614 Days, E = 156.850457 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.6	8.18	6.54	9.58	5.31	3.07	1.36	25.1	22.0	1.64	-1.40	2.61	0.93	0.23	5.27



Stellar Parameters For KIC 009950201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6074^{+191}_{-233}	$4.508^{+0.054}_{-0.216}$	$-0.300^{+0.300}_{-0.300}$	$0.914^{+0.288}_{-0.096}$	$0.982^{+0.129}_{-0.129}$	$1.813^{+0.507}_{-0.946}$
	+3%/-4%	+1%/-5%	+100%/-100%	+32%/-11%	+13%/-13%	+28%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009950201-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-881 ± 67	$4.63^{+0.82}_{-0.55}$	367^{+29}_{-20}	5027^{+270}_{-251}	21679^{+5922}_{-5564}
Alt.	-485 ± 59	$4.48^{+0.80}_{-0.55}$	368^{+29}_{-20}	4510^{+249}_{-226}	12597^{+3902}_{-3371}

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

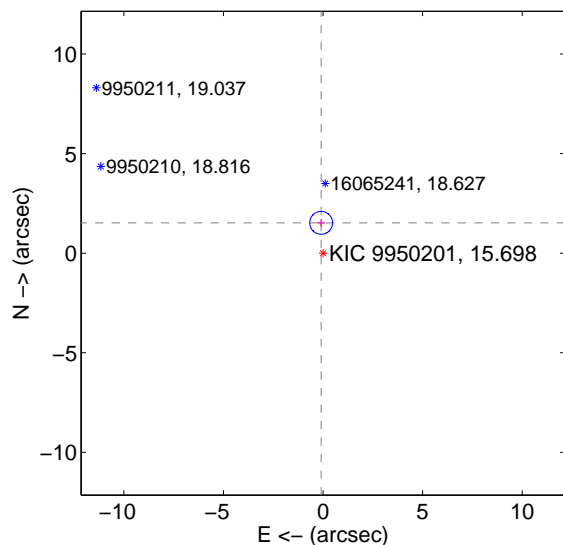
Supplemental centroid analysis for 009950201-01. Kepler magnitude: 15.70. Transit SNR 8.80

There are 0 quarters with good PRF difference image offsets

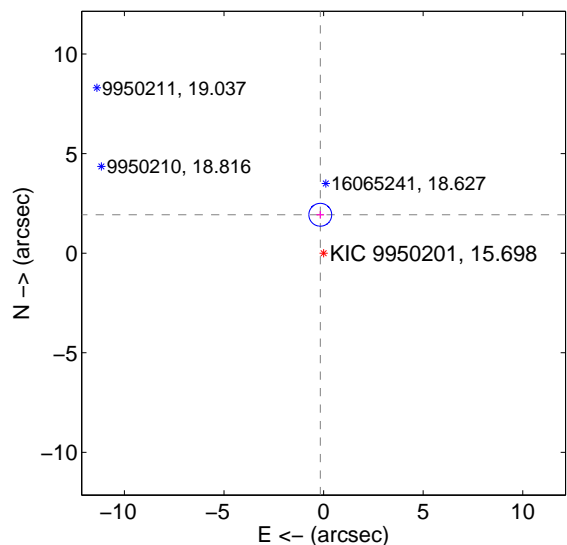
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.526 ± 0.191	7.98	0.095 ± 0.191	1.523 ± 0.191
PRF-fit source offset from KIC position	1.935 ± 0.191	10.13	0.166 ± 0.191	1.928 ± 0.191
photometric centroid source offset	4.54 ± 1.86	2.44	2.29 ± 2.16	3.92 ± 1.75

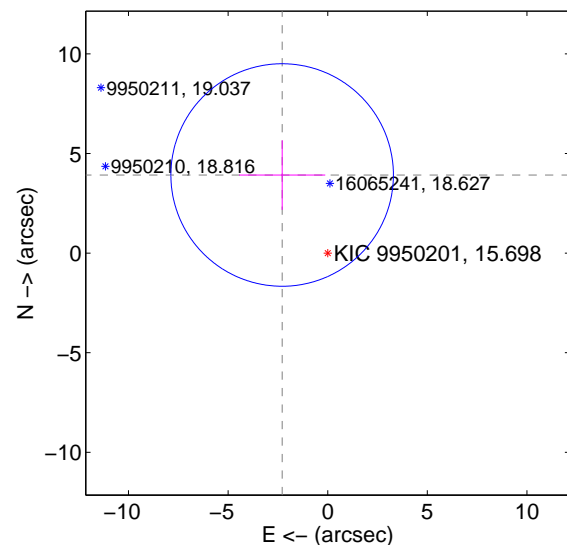
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

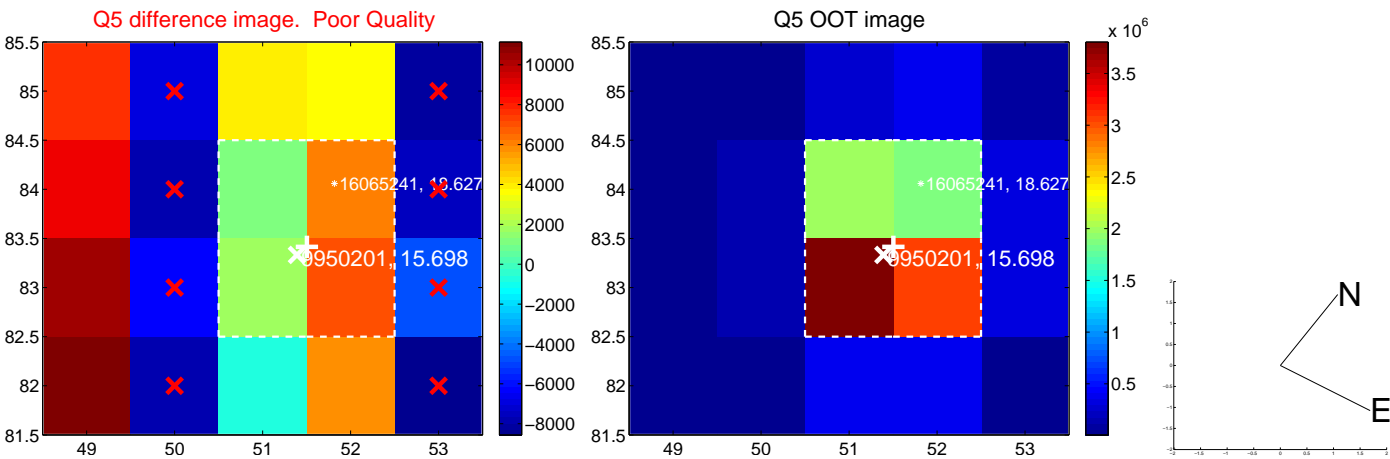


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

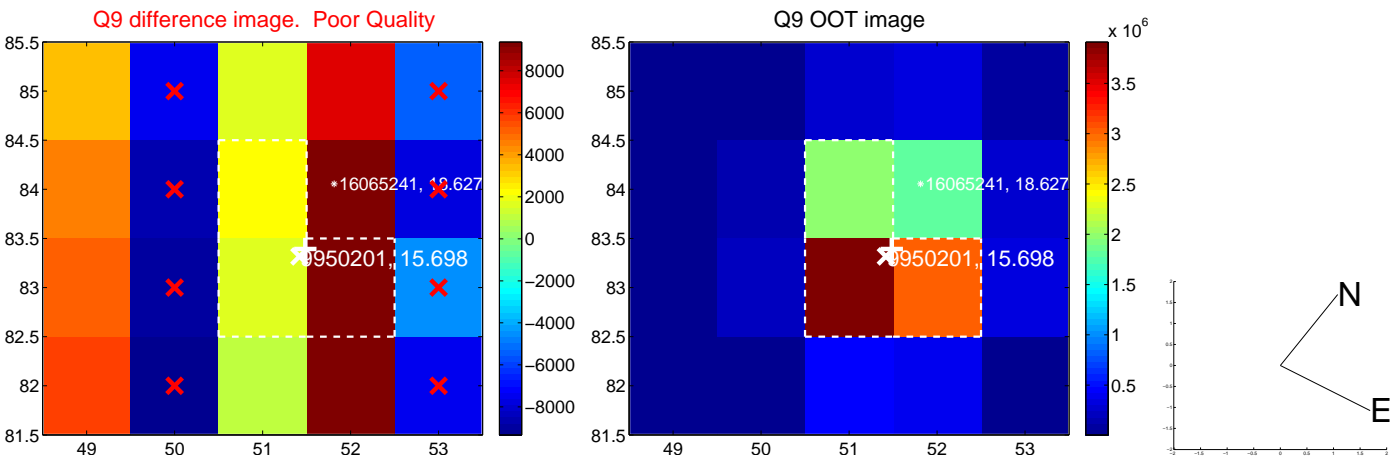
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



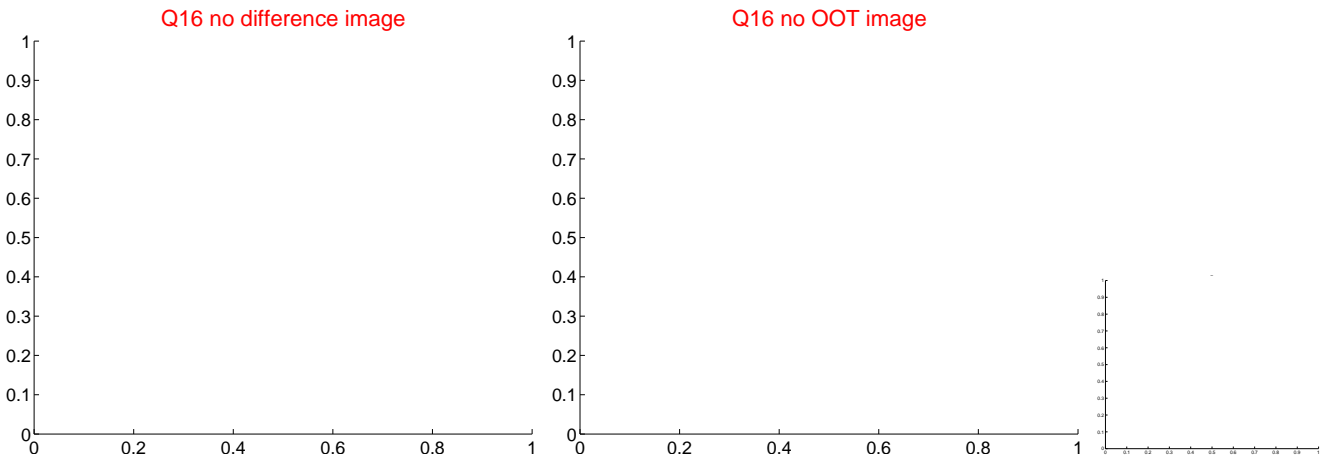
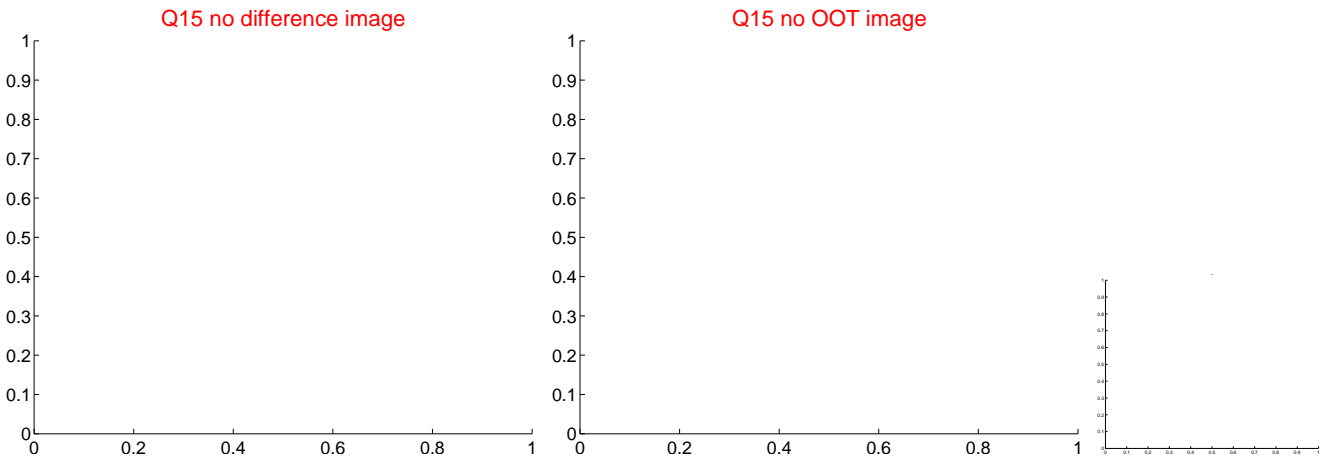
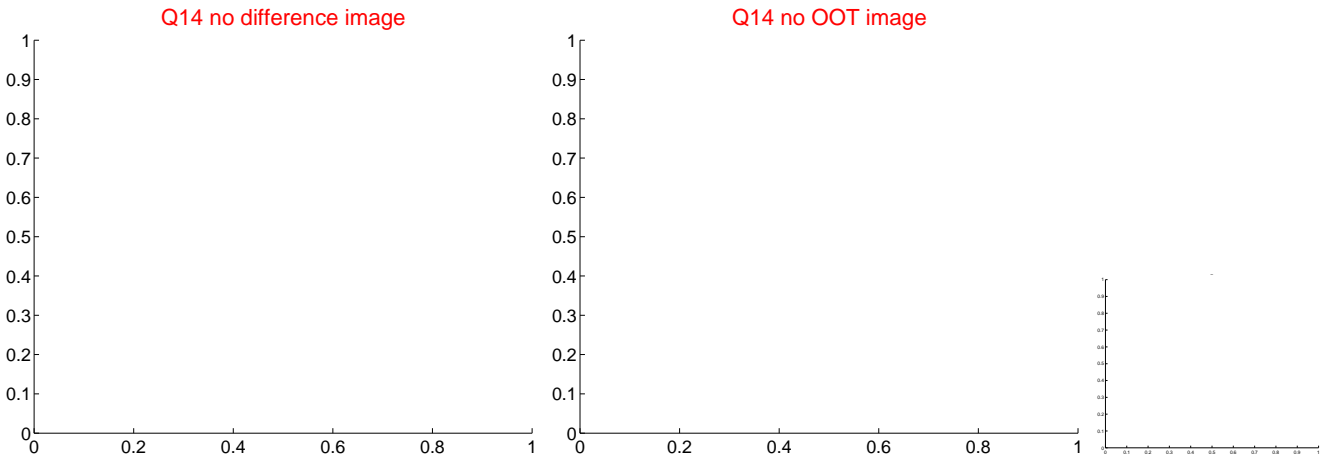
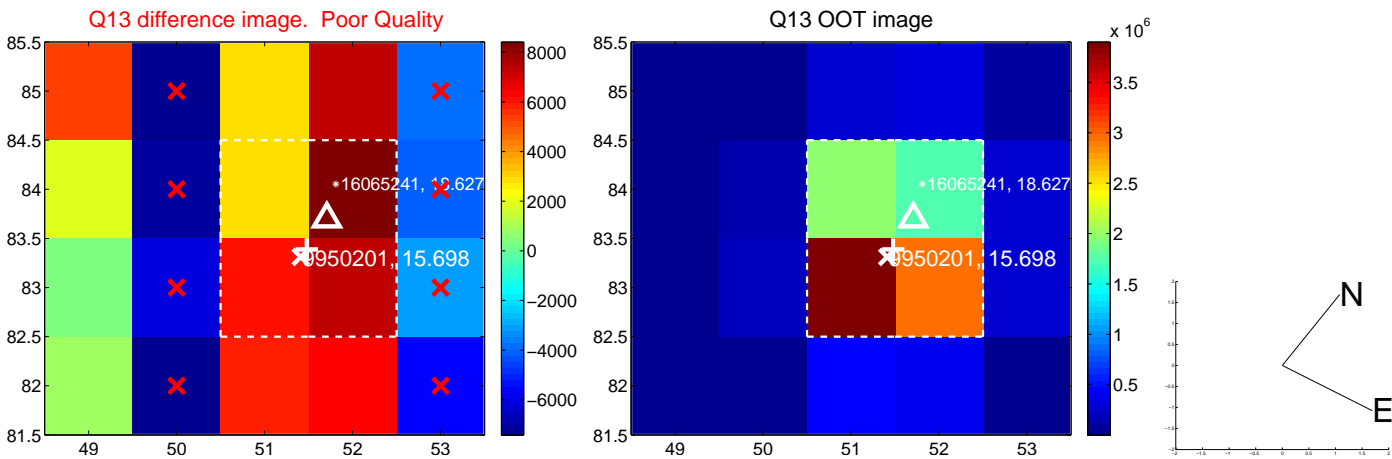
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



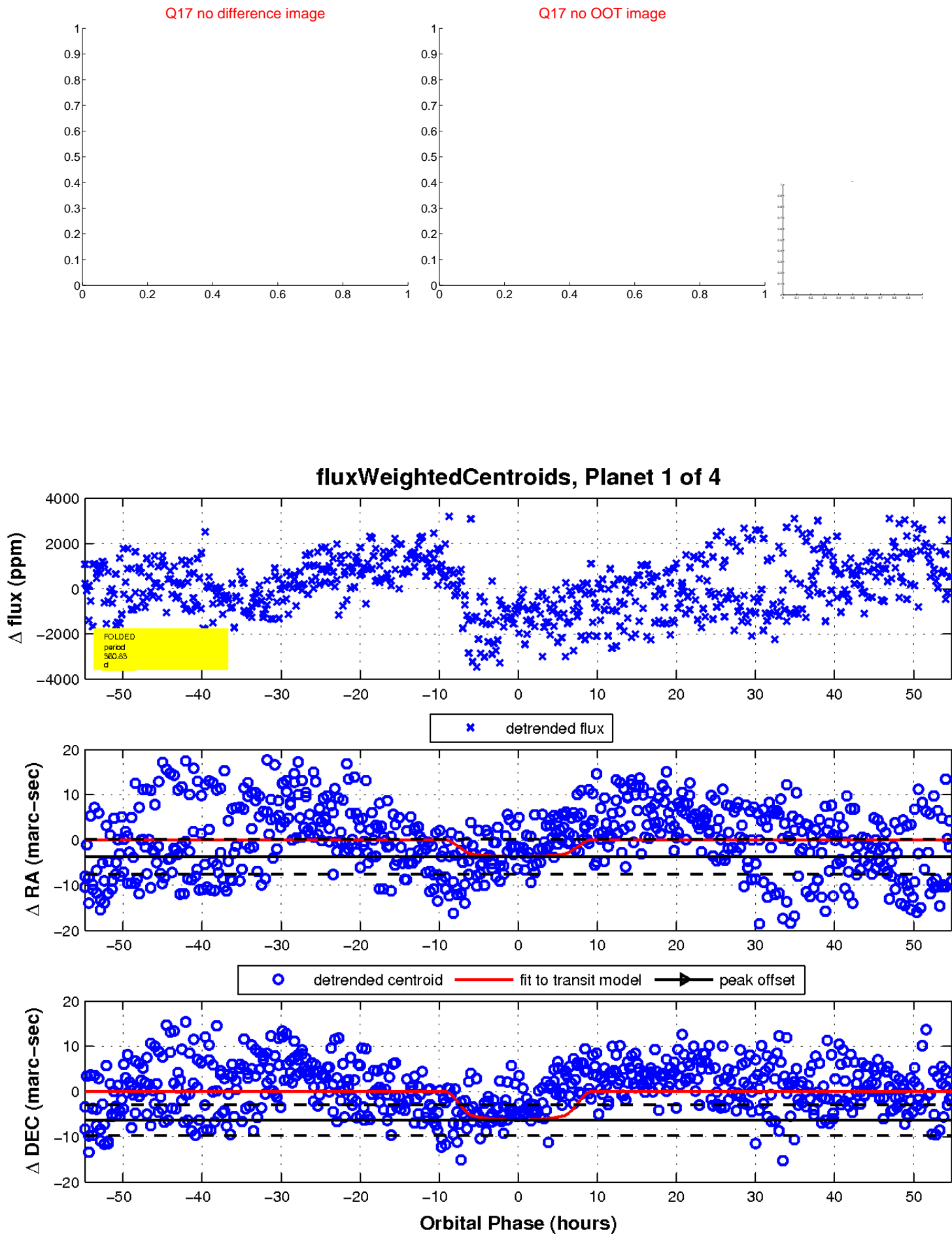
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

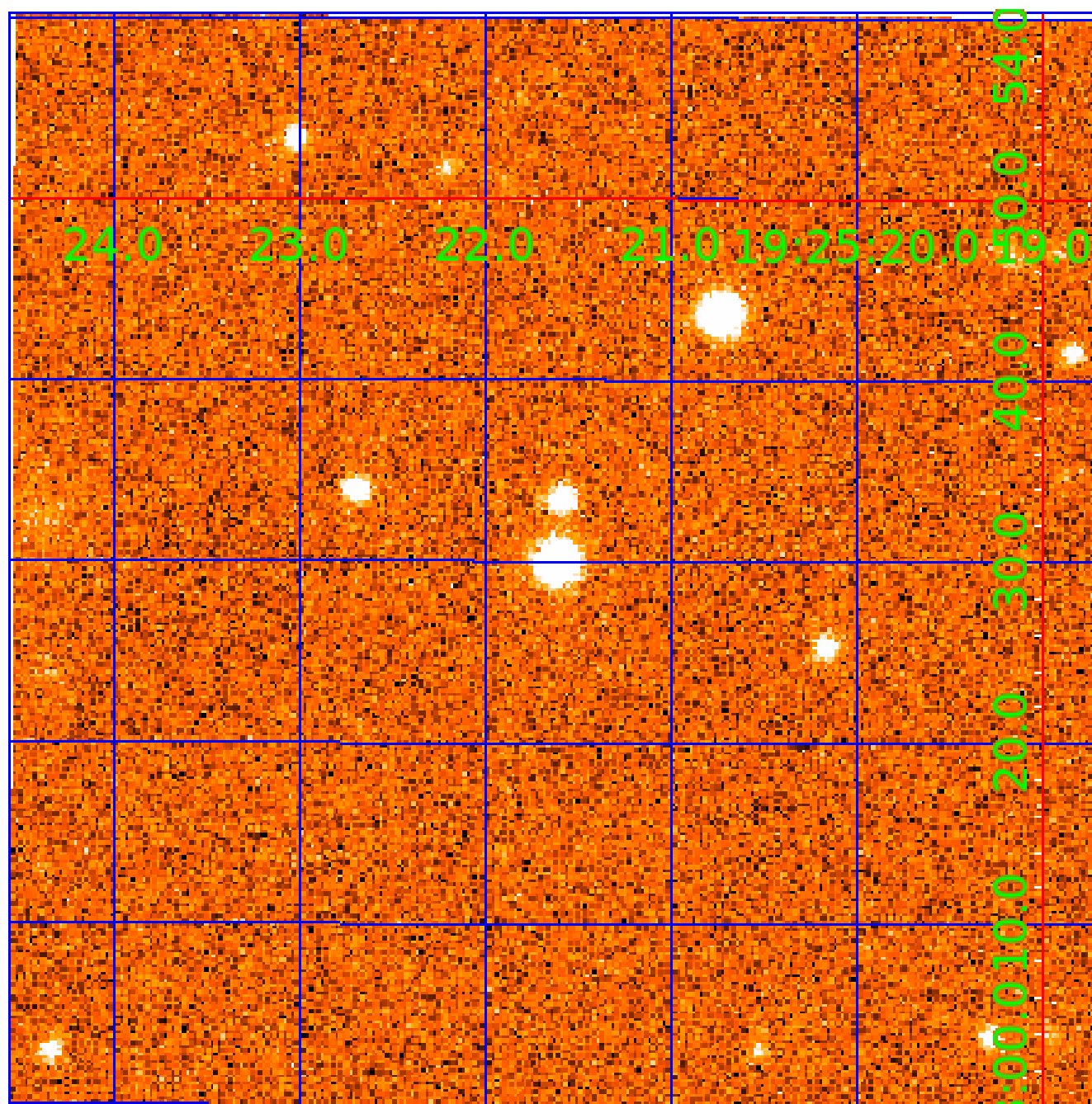


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009950201

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})
009950201-01	OBS	No	360.825949	156.816069	1734.8	18.294	9.1	8.8	0.91	6074	4.41	1.05
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009950201-03	OBS	No	376.459664	506.818185	1973.5	16.378	8.9	8.5	0.91	6074	5.08	0.99
009950201-04	OBS	No	409.216806	225.949250	1551.2	28.520	7.9	8.0	0.91	6074	4.58	0.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009950201-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009950201-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH
009950201-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009950201-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

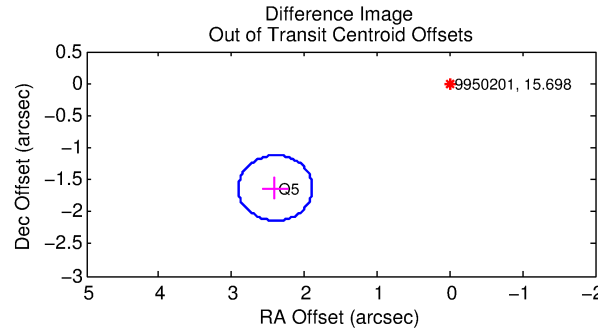
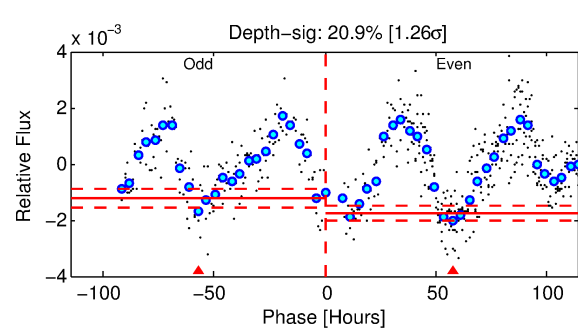
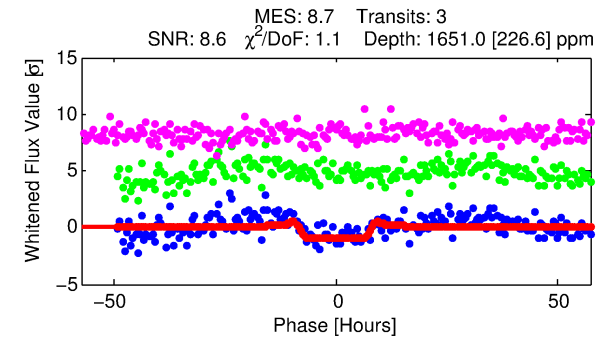
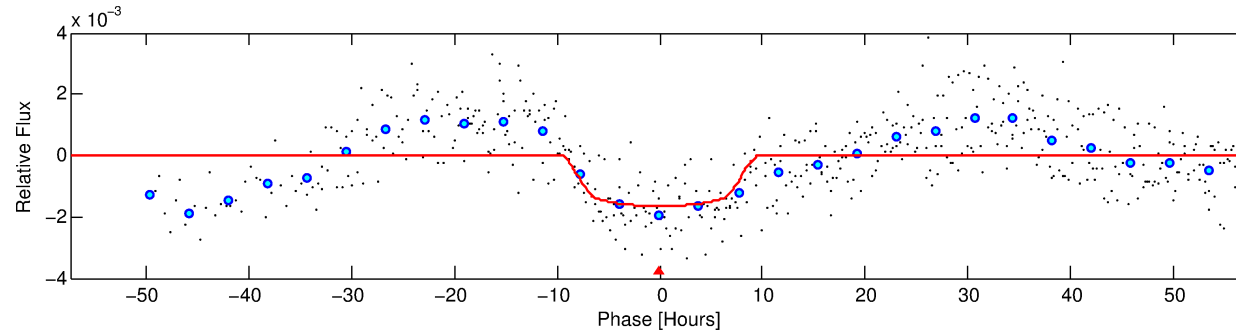
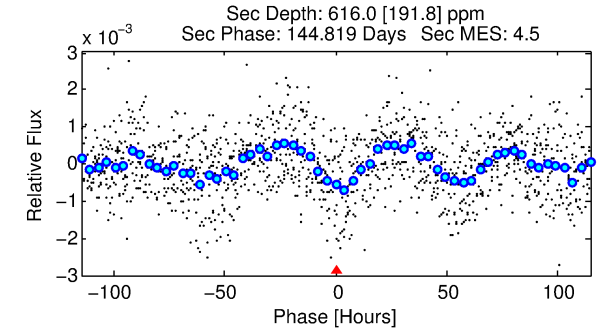
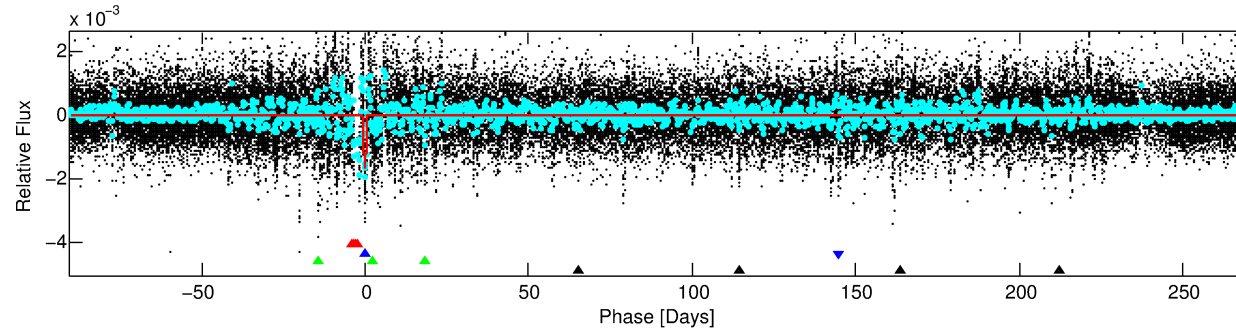
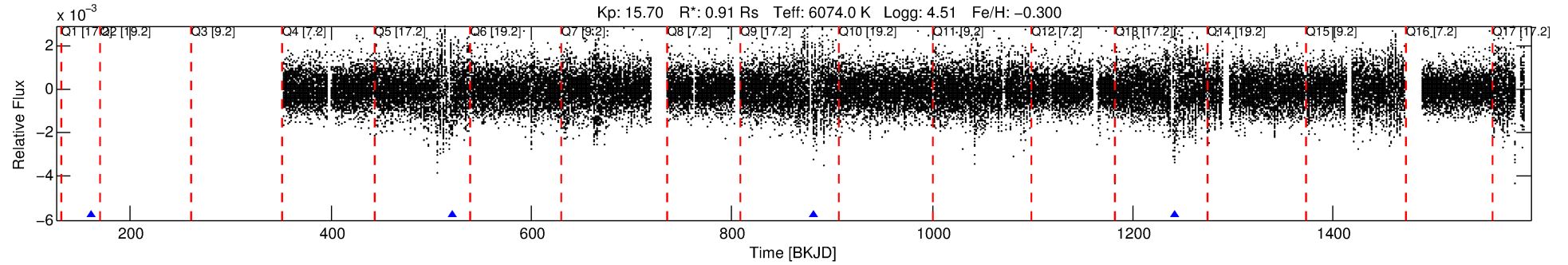
Ephemeris Match Information For 009950201-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009950201-02	9950201	009950279-01	9950279	1:1	138.2	35	-1	15.65	15.69	1.36	Col-Anomaly	1	1.68	2.62

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9950201 Candidate: 2 of 4 Period: 360.219 d



DV Fit Results:

Period = 360.21896 [0.01977] d
Epoch = 160.6388 [0.0416] BKJD
Rp/R* = 0.0431 [0.0038]
a/R* = 80.64 [18.72]
b = 0.88 [0.06]
Seff = 1.05 [0.44]
Teq = 258 [27] K
Rp = 4.30 [1.41] Re
a = 0.9849 [0.2636] AU
Ag = 17789.50 [9447.81] [1.88σ]
Teff = 4609 [449] K [9.68σ]

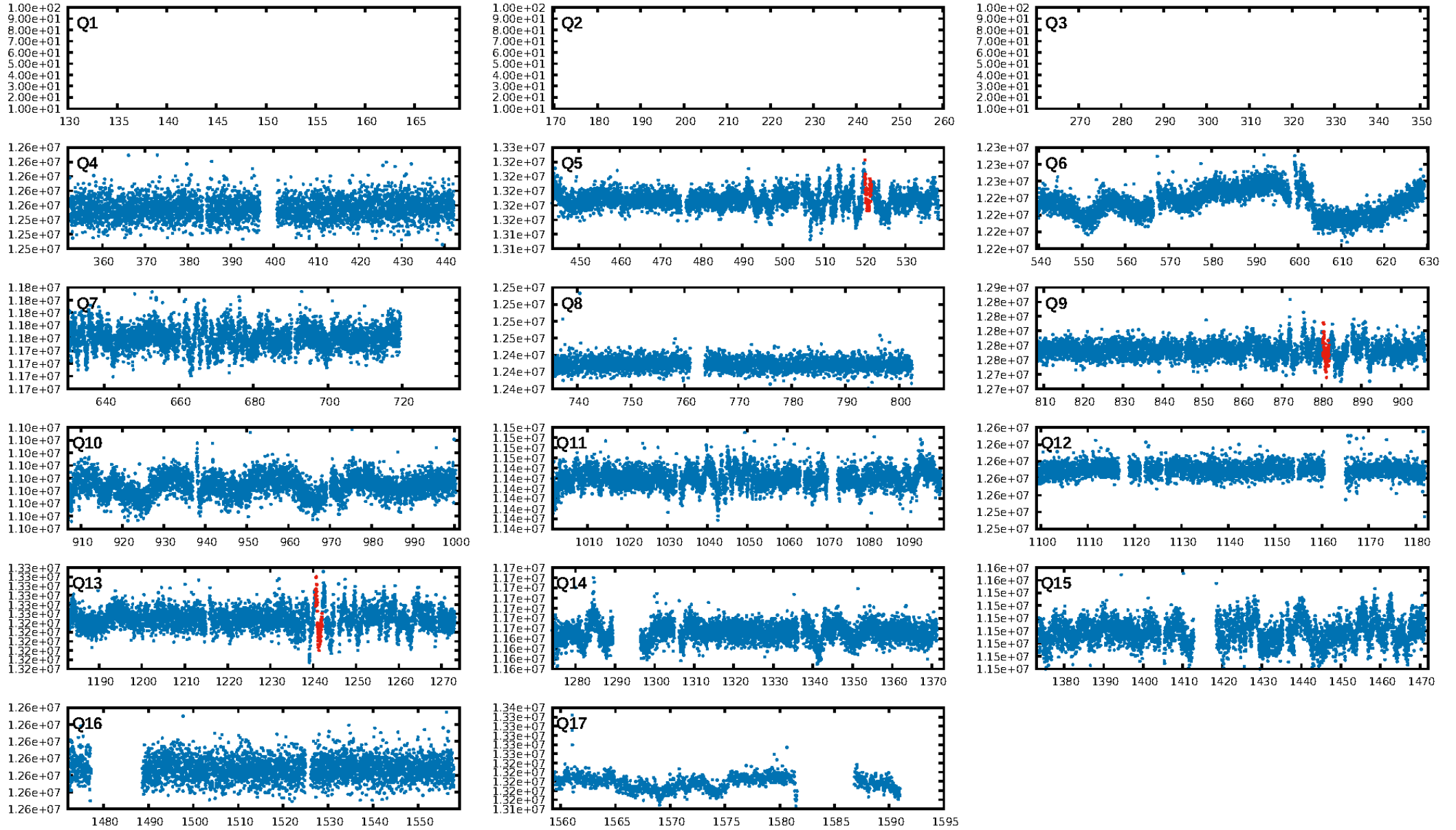
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 41.8% [0.55σ]
ModelChiSquare2-sig: 31.5%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 4.11e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.702
Centroid-sig: 14.2%
Centroid-so: 2.978 arcsec [1.36σ]
OotOffset-rm: 2.903 arcsec [17.11σ]
KicOffset-rm: 2.829 arcsec [16.60σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [2/2]

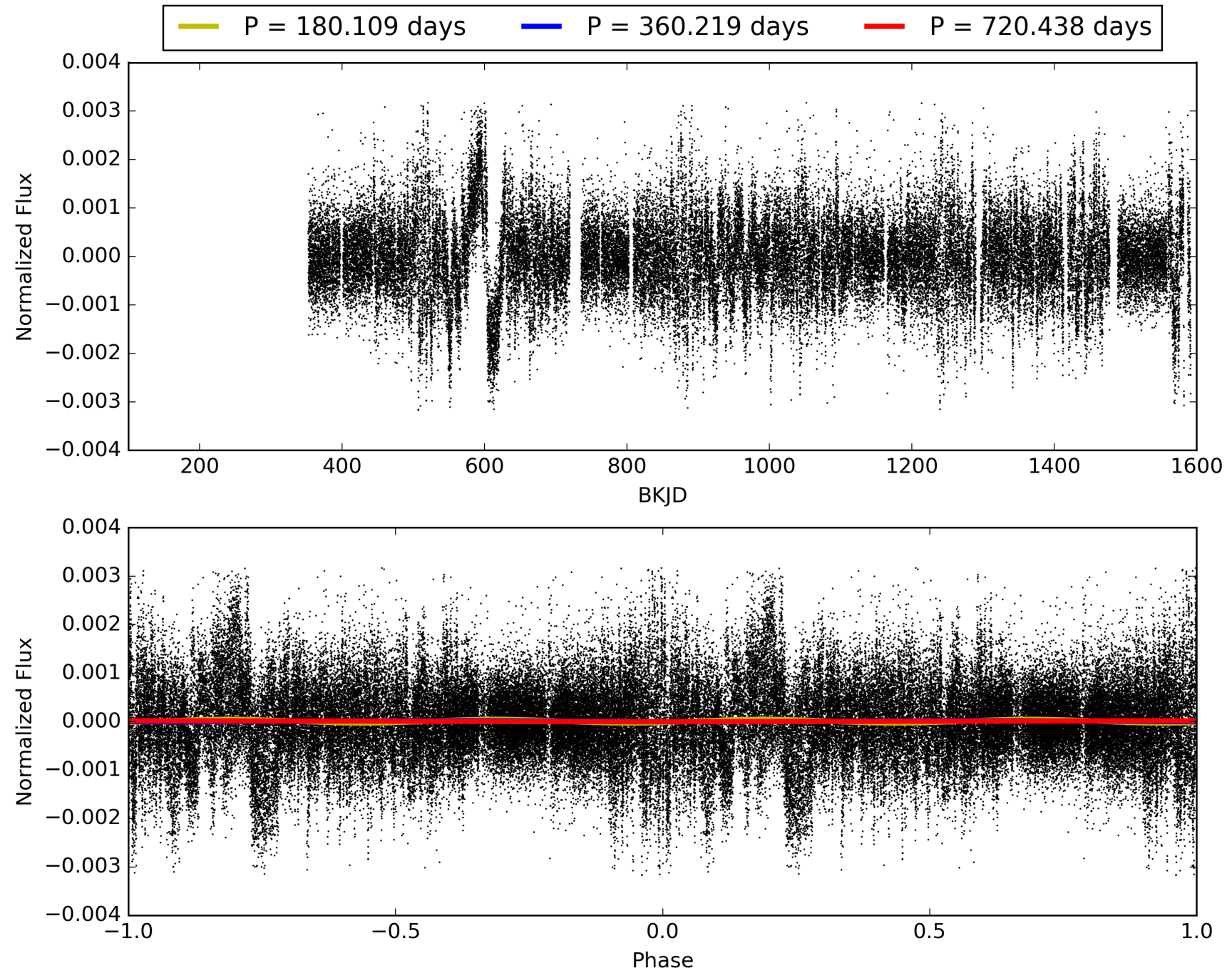
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:08:07 Z

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

TCE 009950201-02, PDC Light Curves

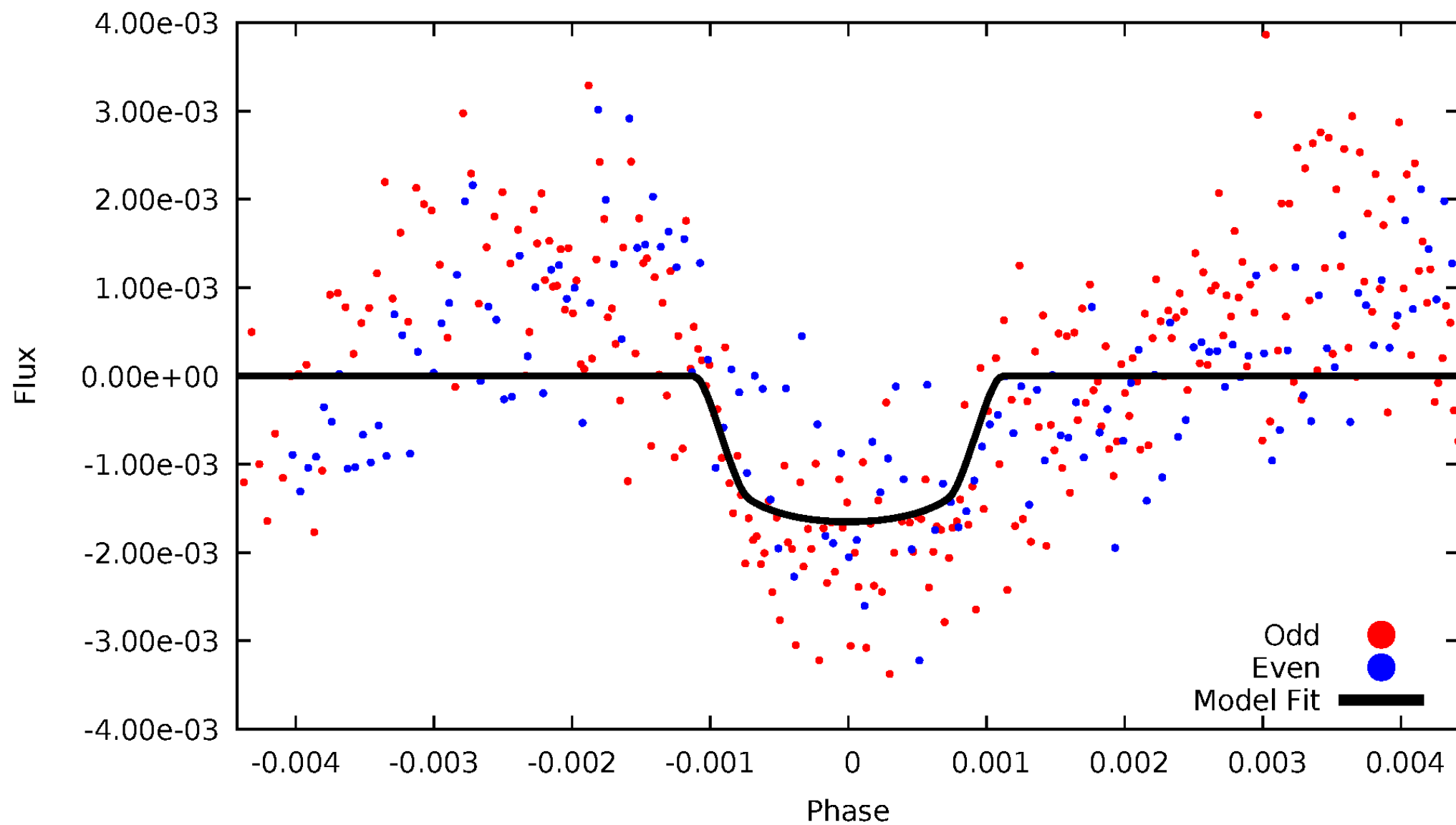


TCE 009950201-02



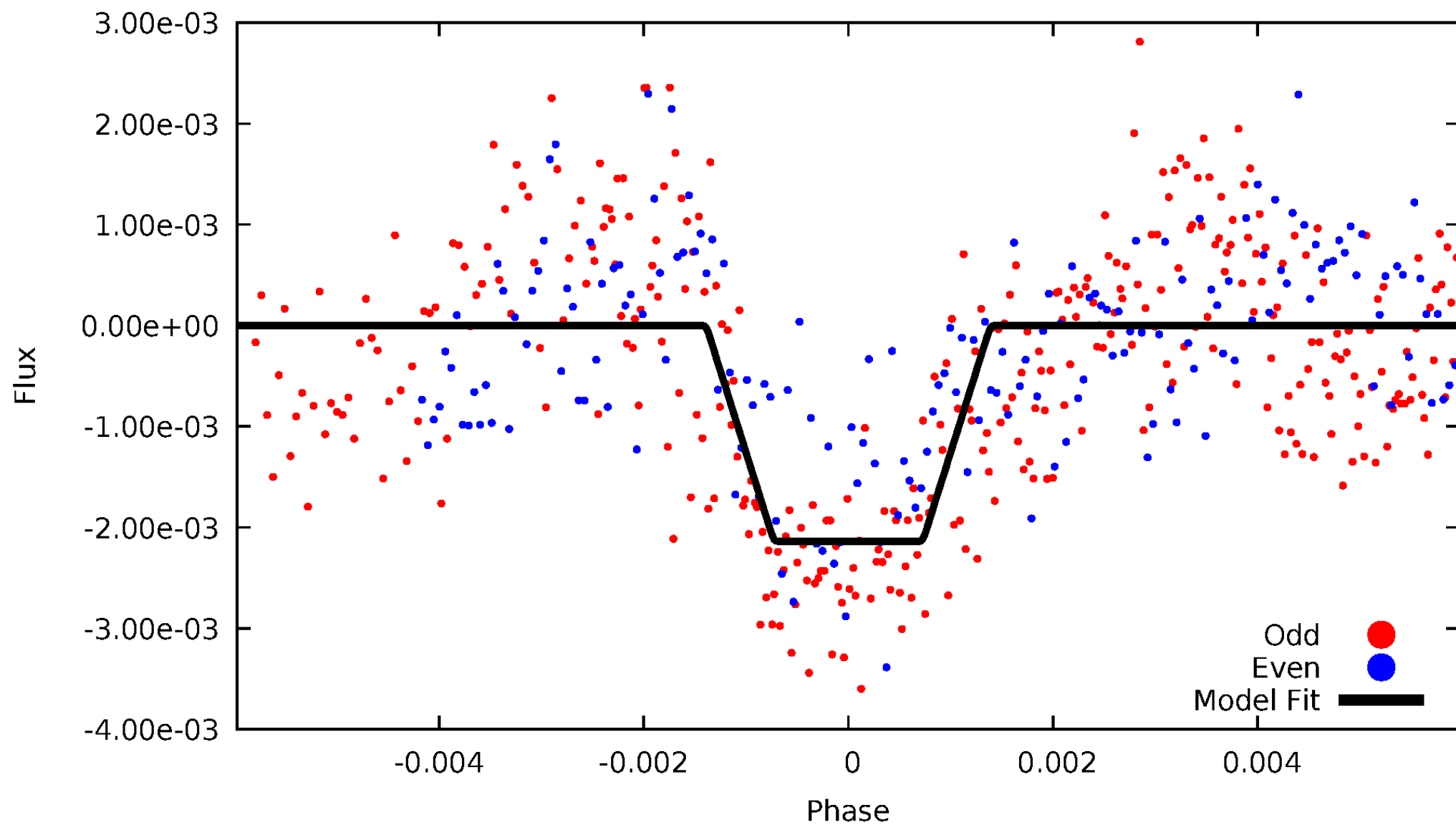
DV Odd/Even

TCE 009950201-02



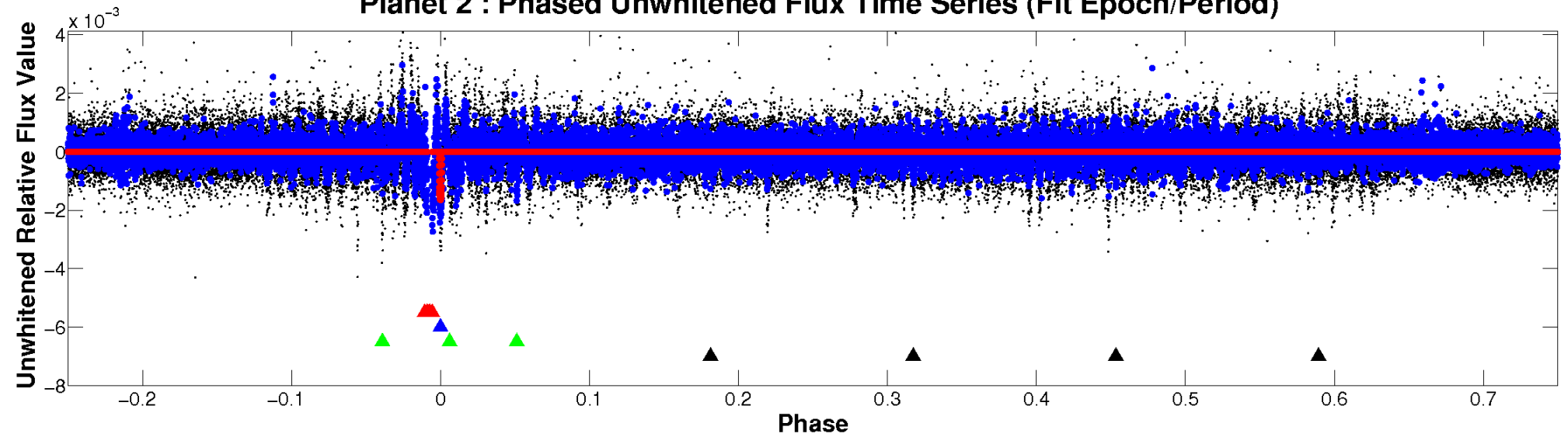
ALT Odd/Even

TCE 009950201-02

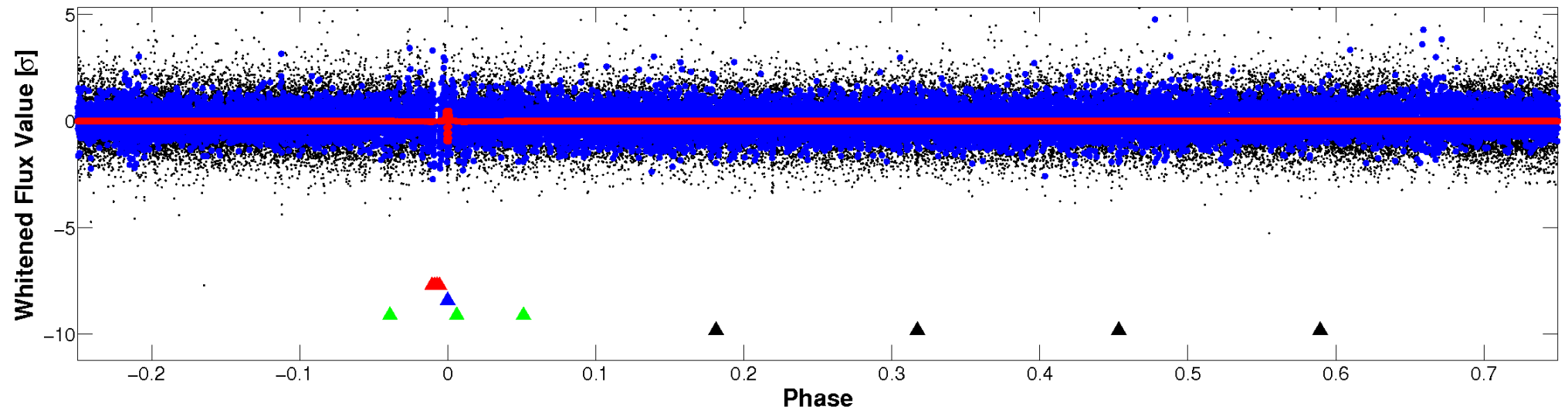


Non-Whitened Vs. Whitened Light Curve

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

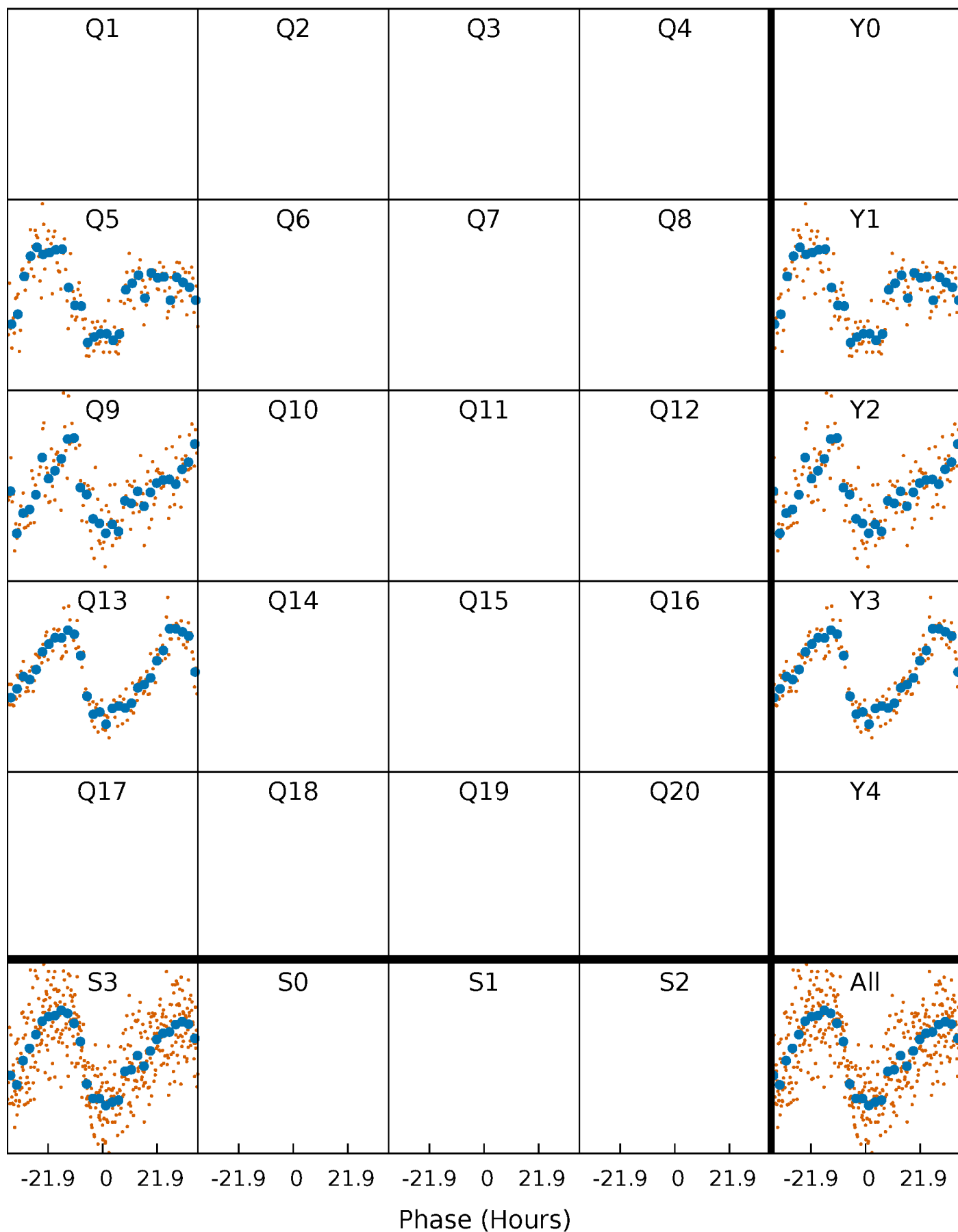


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



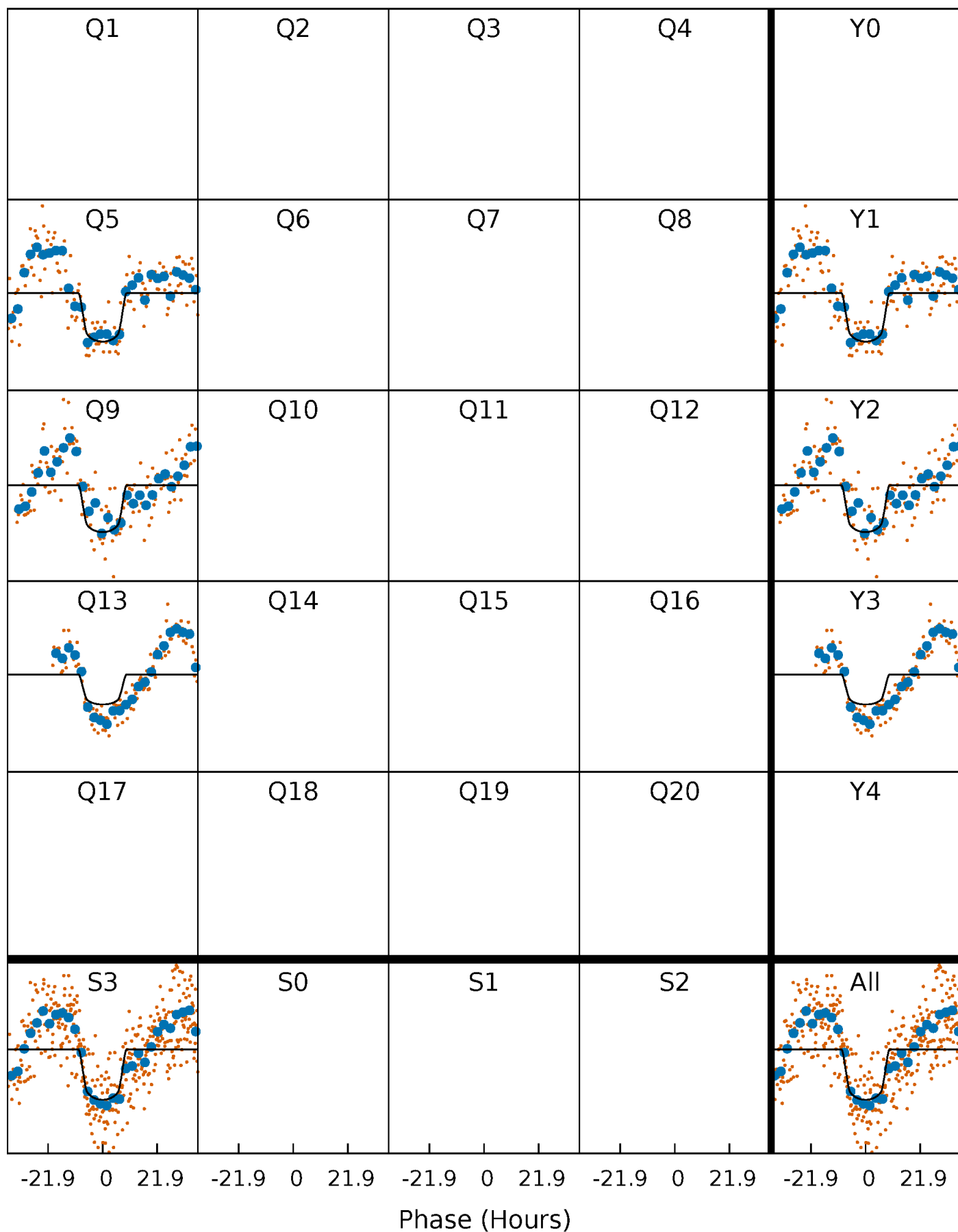
PDC Quarter-Phased Transit Curves

TCE 009950201-02 $P=360.218963$ Days $T_0=160.638838$ (BKJD)



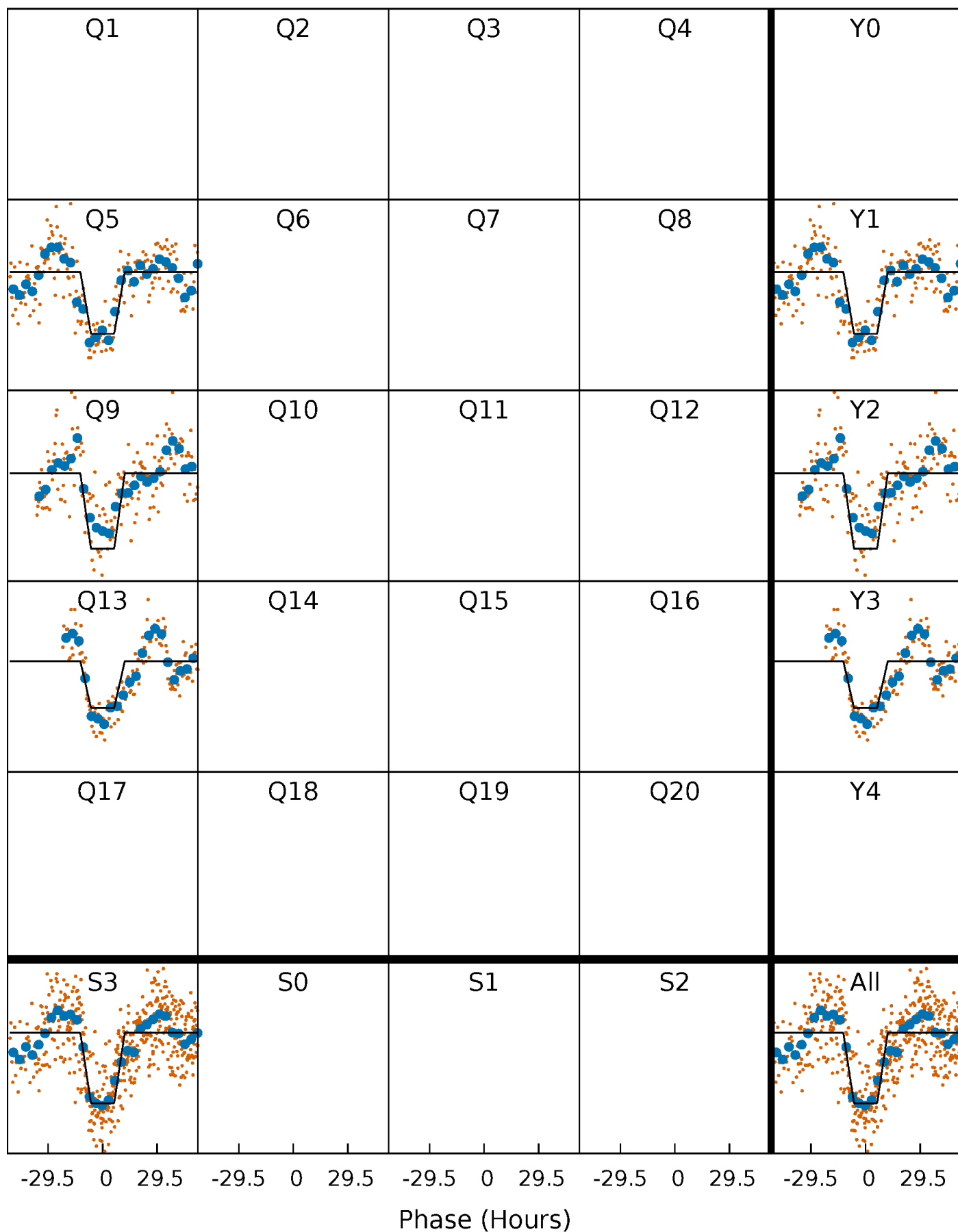
DV Quarter-Phased Transit Curves

TCE 009950201-02 $P=360.218963$ Days $T_0=160.638838$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

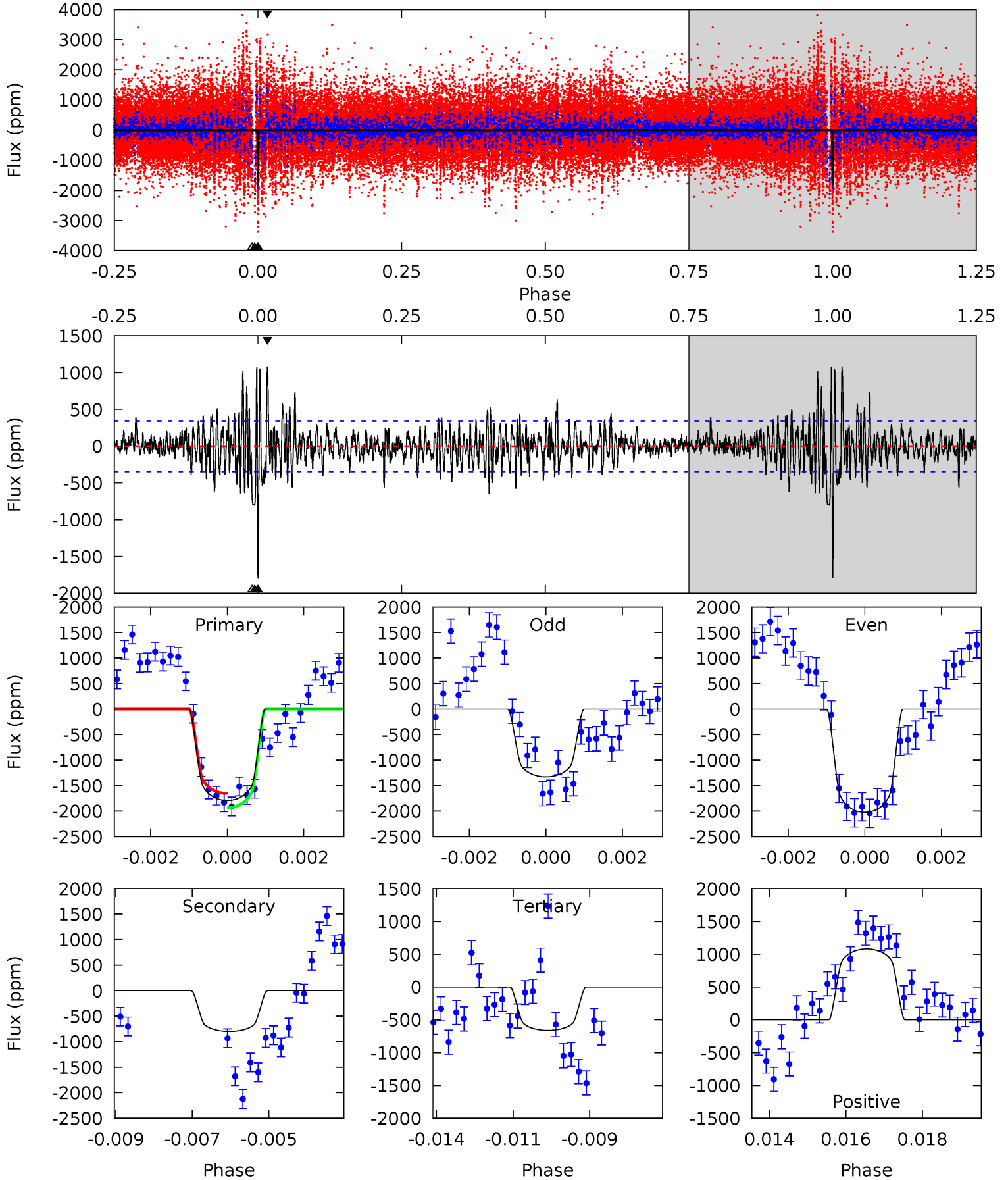
TCE 009950201-02 $P=360.230040$ Days $T_0=160.668169$ (BKJD)



DV Model-Shift Uniqueness Test

009950201-02, P = 360.218963 Days, E = 160.638838 Days

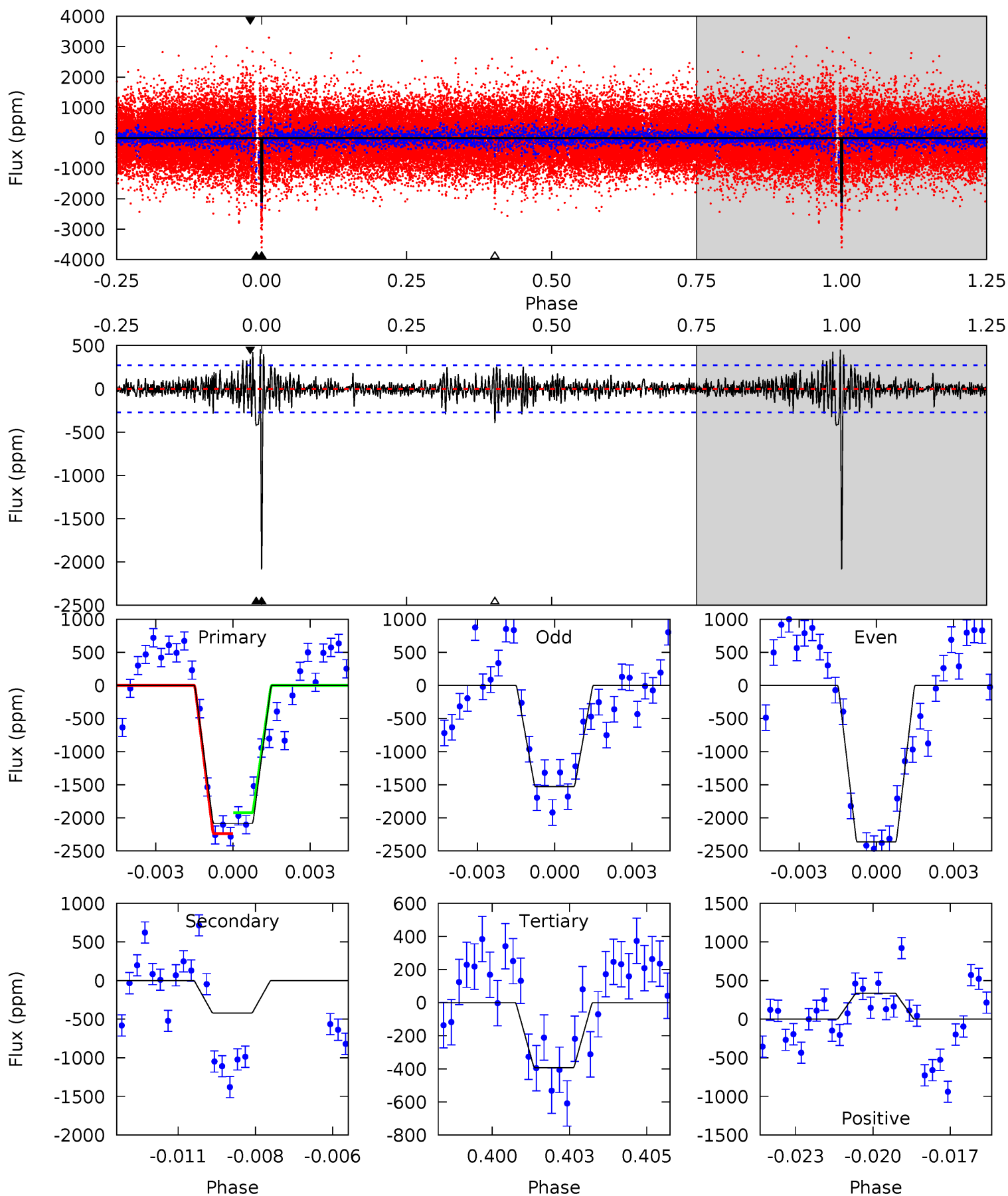
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.7	12.3	10.2	16.7	5.30	3.05	3.07	17.5	11.0	2.12	-4.37	5.06	1.10	0.38	2.15



Alt Model-Shift Uniqueness Test

009950201-02, P = 360.230040 Days, E = 160.668169 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.3	8.13	7.61	6.51	5.26	2.99	1.49	32.7	33.8	0.52	1.62	7.65	0.95	0.18	3.05



Stellar Parameters For KIC 009950201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6074^{+191}_{-233}	$4.508^{+0.054}_{-0.216}$	$-0.300^{+0.300}_{-0.300}$	$0.914^{+0.288}_{-0.096}$	$0.982^{+0.129}_{-0.129}$	$1.813^{+0.507}_{-0.946}$
	+3%/-4%	+1%/-5%	+100%/-100%	+32%/-11%	+13%/-13%	+28%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009950201-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-798 ± 65	$4.42^{+0.80}_{-0.51}$	367^{+28}_{-18}	4982^{+266}_{-234}	21007^{+6248}_{-5537}
Alt.	-420 ± 52	$4.76^{+0.88}_{-0.56}$	368^{+28}_{-19}	4281^{+208}_{-209}	9442^{+2989}_{-2452}

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

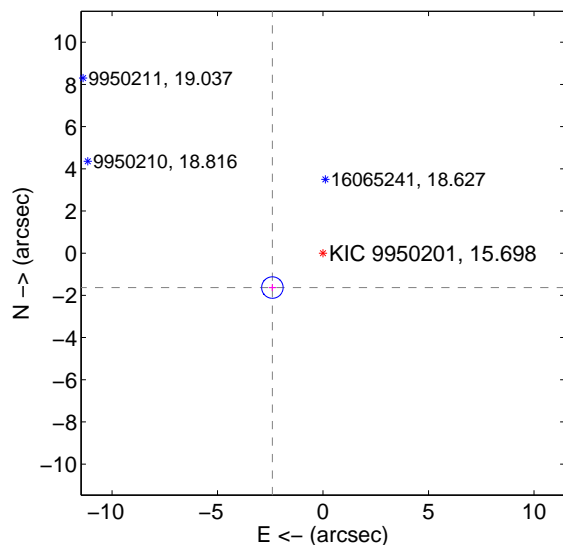
Supplemental centroid analysis for 009950201-02. Kepler magnitude: 15.70. Transit SNR 8.61

There are 0 quarters with good PRF difference image offsets

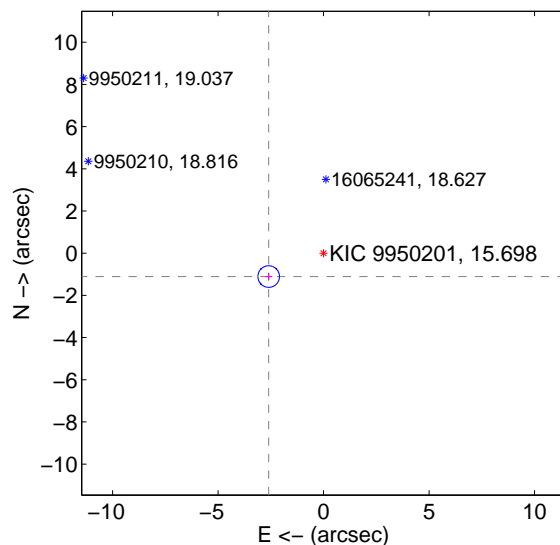
The direct PRF centroid is offset from the target star catalog position by about 0.56 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.903 ± 0.170	17.11	2.402 ± 0.171	-1.631 ± 0.166
PRF-fit source offset from KIC position	2.829 ± 0.170	16.60	2.602 ± 0.171	-1.108 ± 0.166
photometric centroid source offset	2.98 ± 2.19	1.36	-2.68 ± 2.27	1.29 ± 1.84

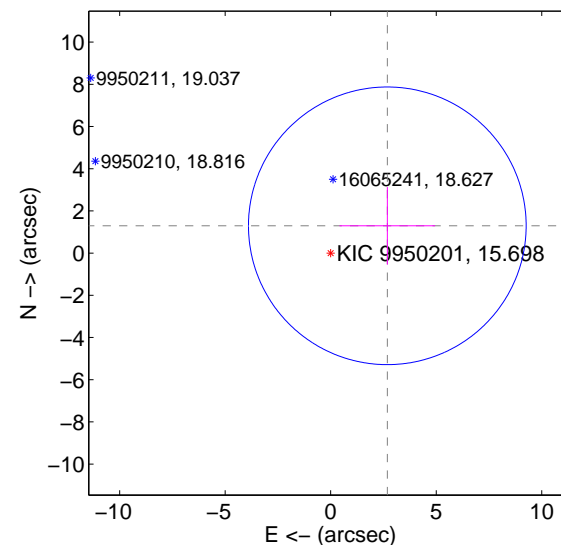
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

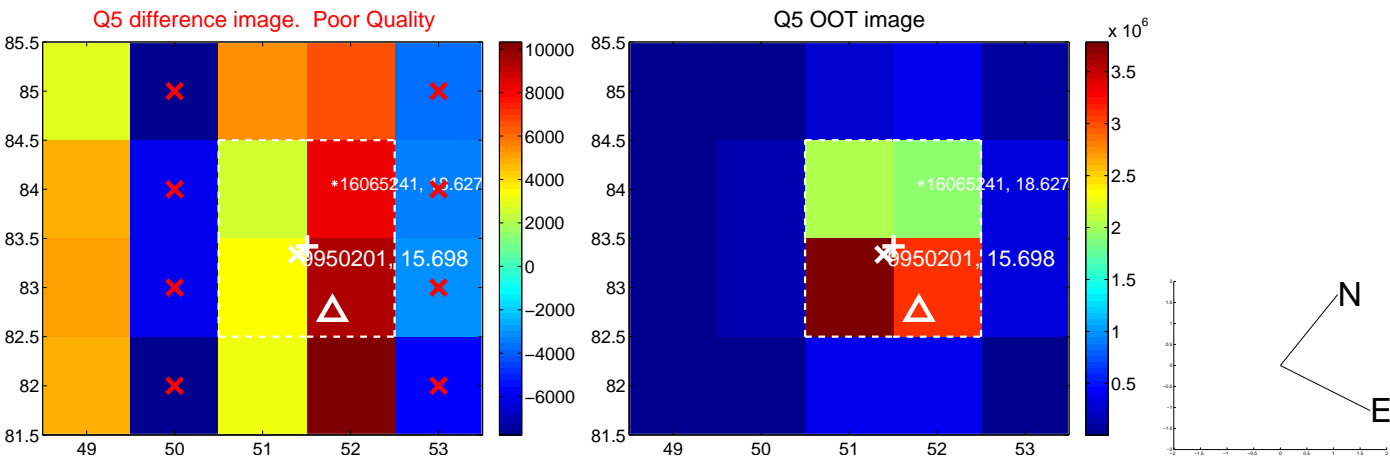


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

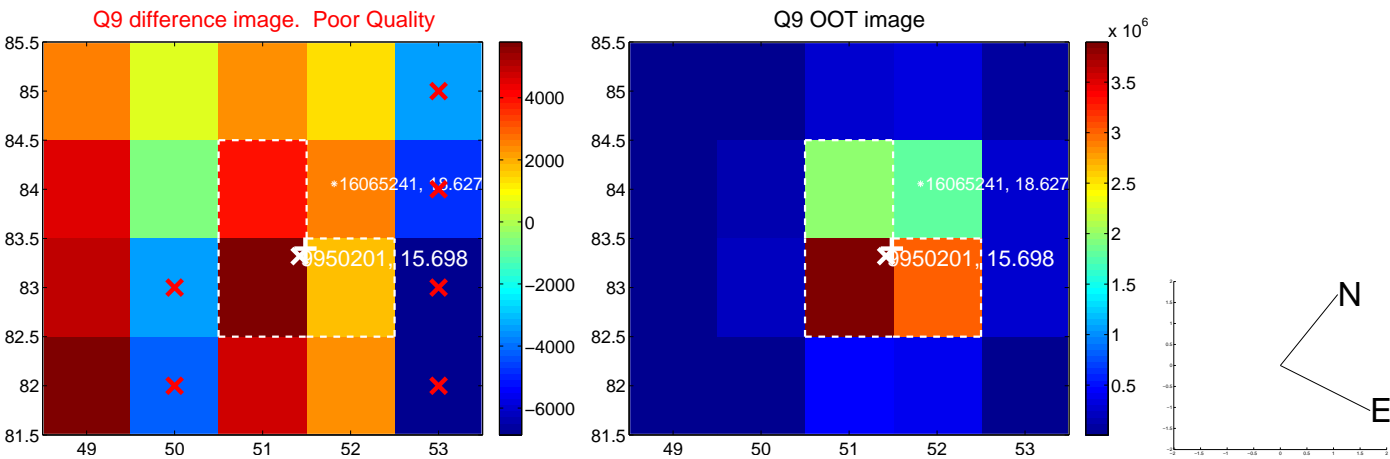
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



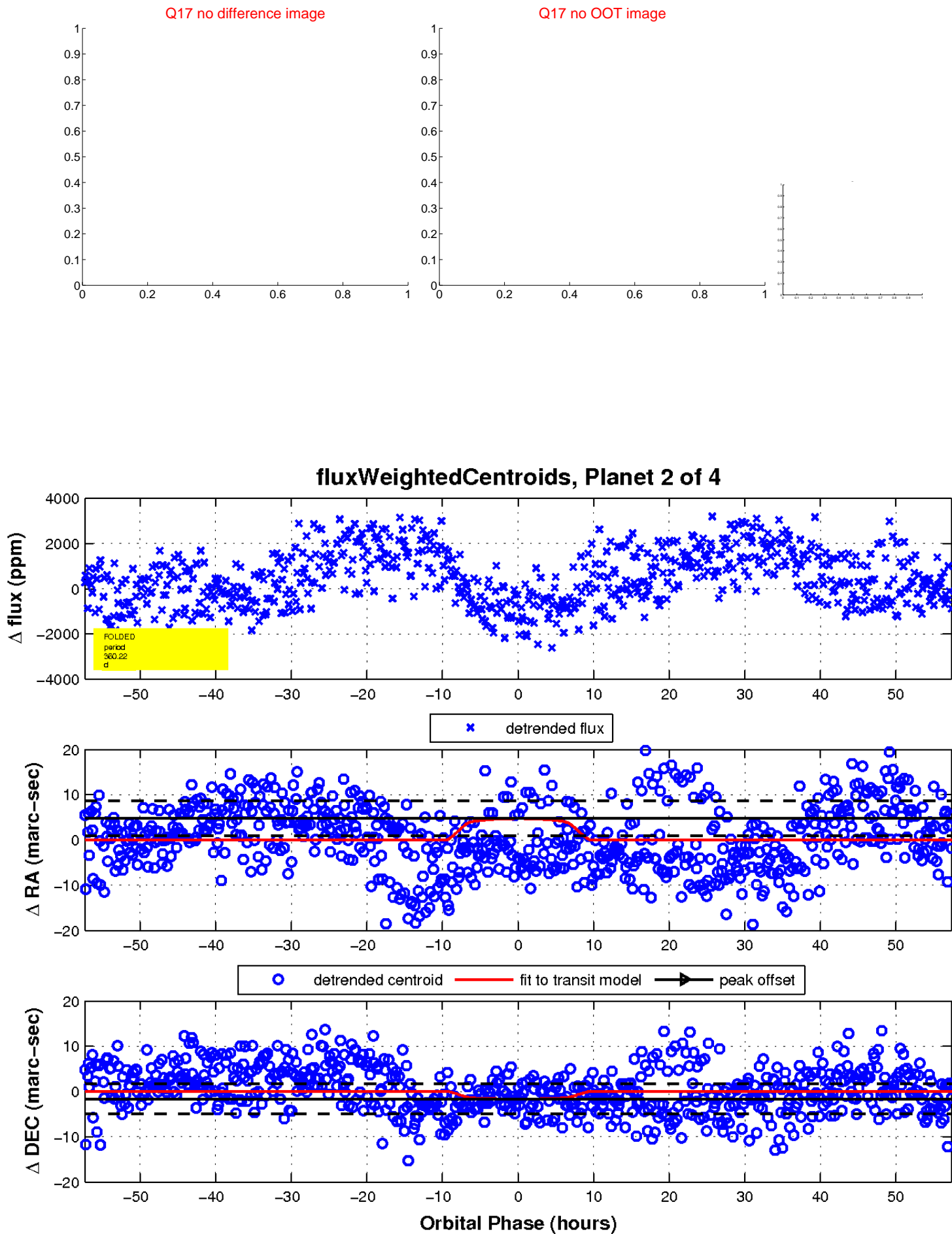
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

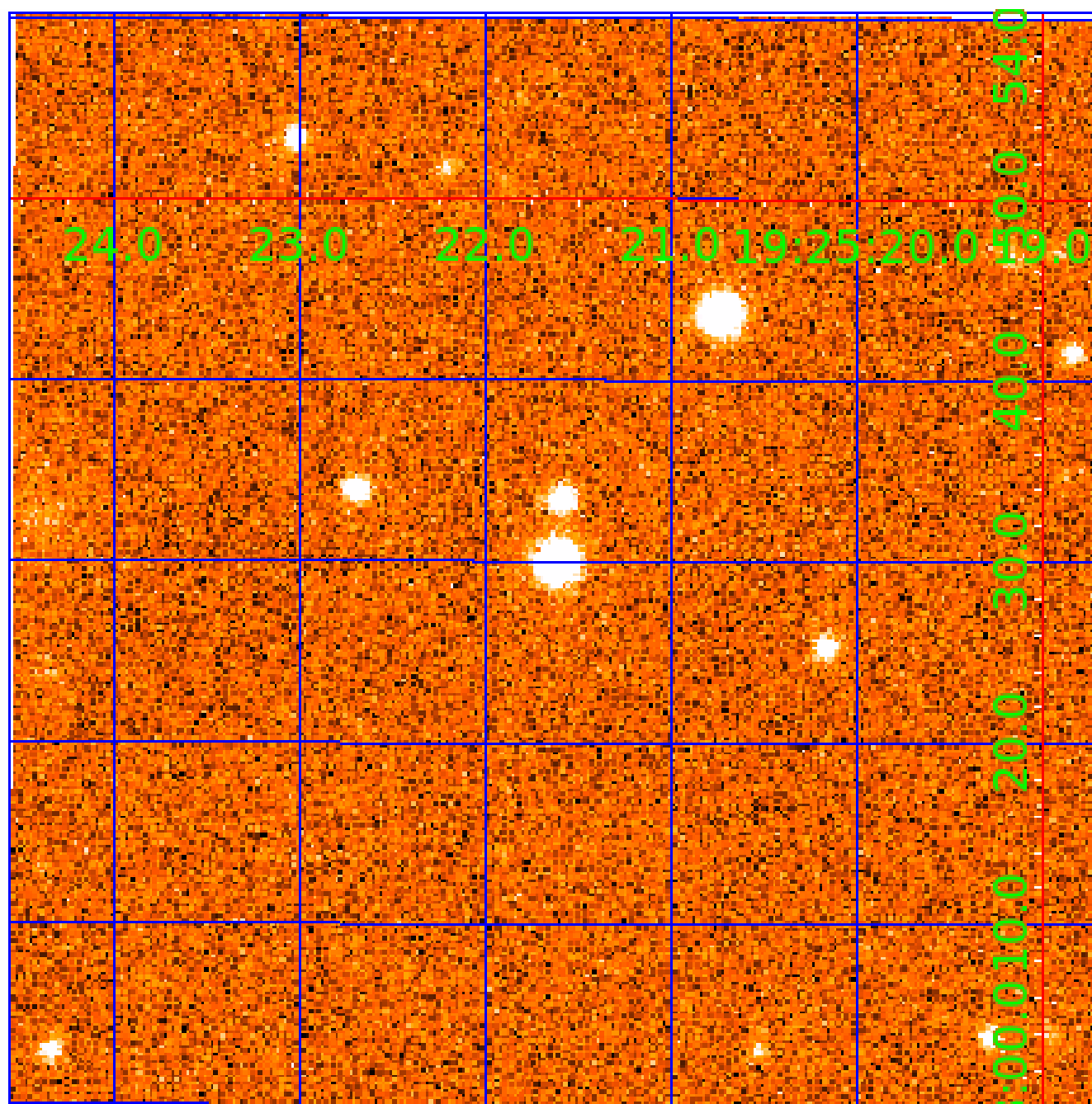


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009950201

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})
009950201-01	OBS	No	360.825949	156.816069	1734.8	18.294	9.1	8.8	0.91	6074	4.41	1.05
009950201-02	OBS	No	360.218963	160.638838	1651.0	19.123	8.7	8.6	0.91	6074	4.30	1.05
009950201-03	OBS	No	376.459664	506.818185	1973.5	16.378	8.9	8.5	0.91	6074	5.08	0.99
009950201-04	OBS	No	409.216806	225.949250	1551.2	28.520	7.9	8.0	0.91	6074	4.58	0.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009950201-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009950201-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH
009950201-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009950201-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

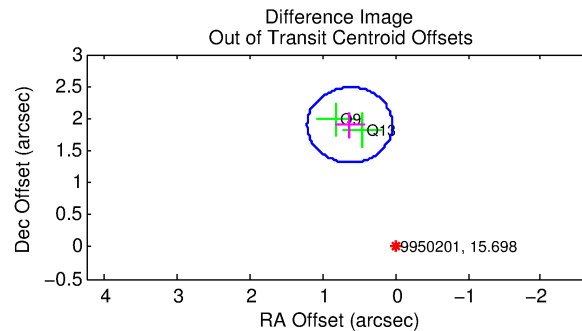
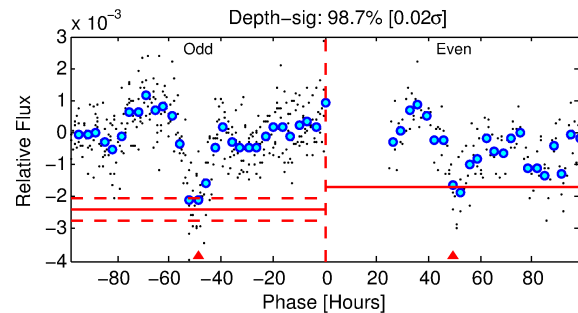
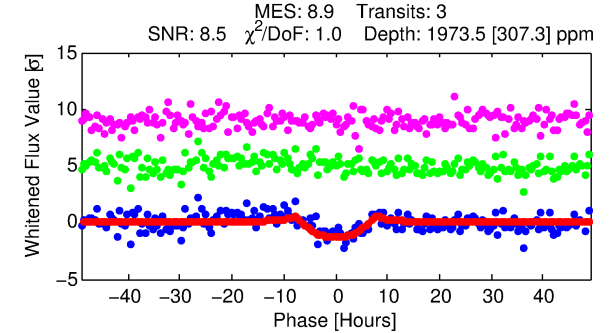
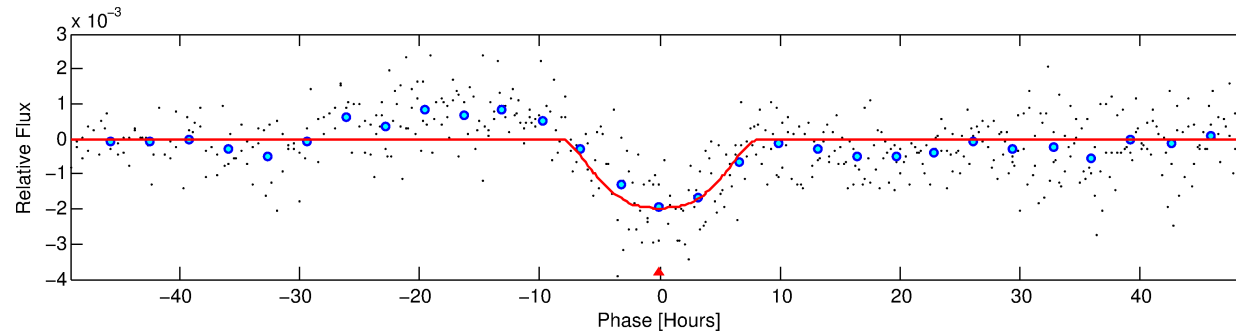
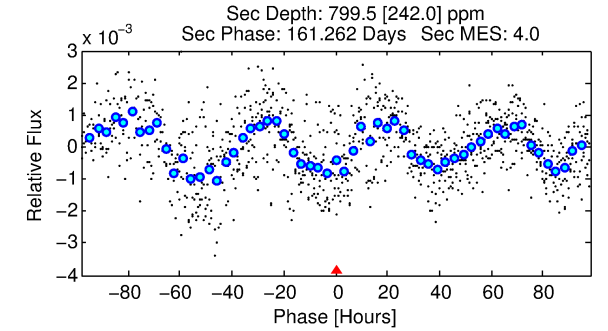
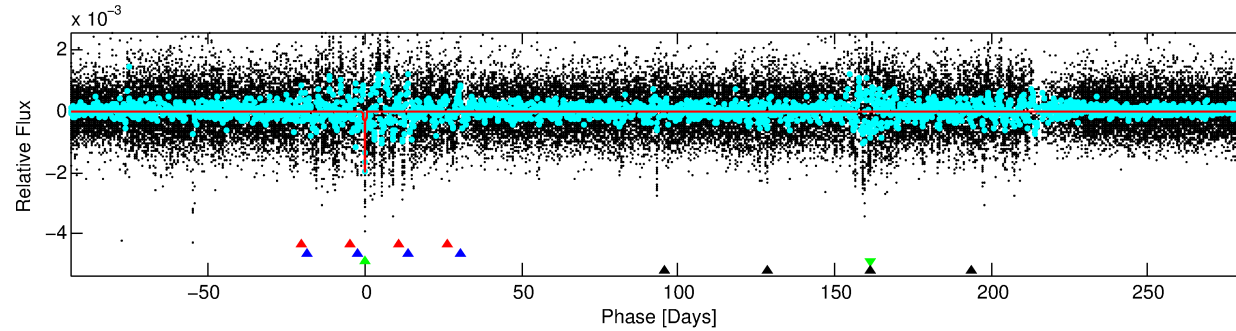
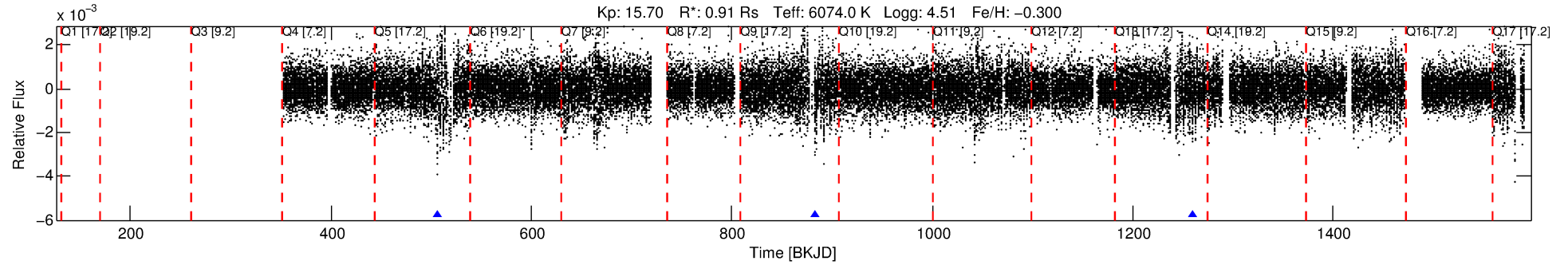
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009950201-03

No Significant Match Found

DV One-Page Summary

KIC: 9950201 Candidate: 3 of 4 Period: 376.460 d



DV Fit Results:

Period = 376.45966 [0.02119] d
Epoch = 506.8182 [0.0283] BKJD
Rp/R* = 0.0510 [0.0053]
a/R* = 80.09 [10.35]
b = 0.95 [0.02]
Seff = 0.99 [0.42]
Teq = 254 [27] K
Rp = 5.08 [1.68] Re
a = 1.0142 [0.2714] AU
Ag = 17515.78 [9403.32] [1.86σ]
Teff = 4525 [449] K [9.49σ]

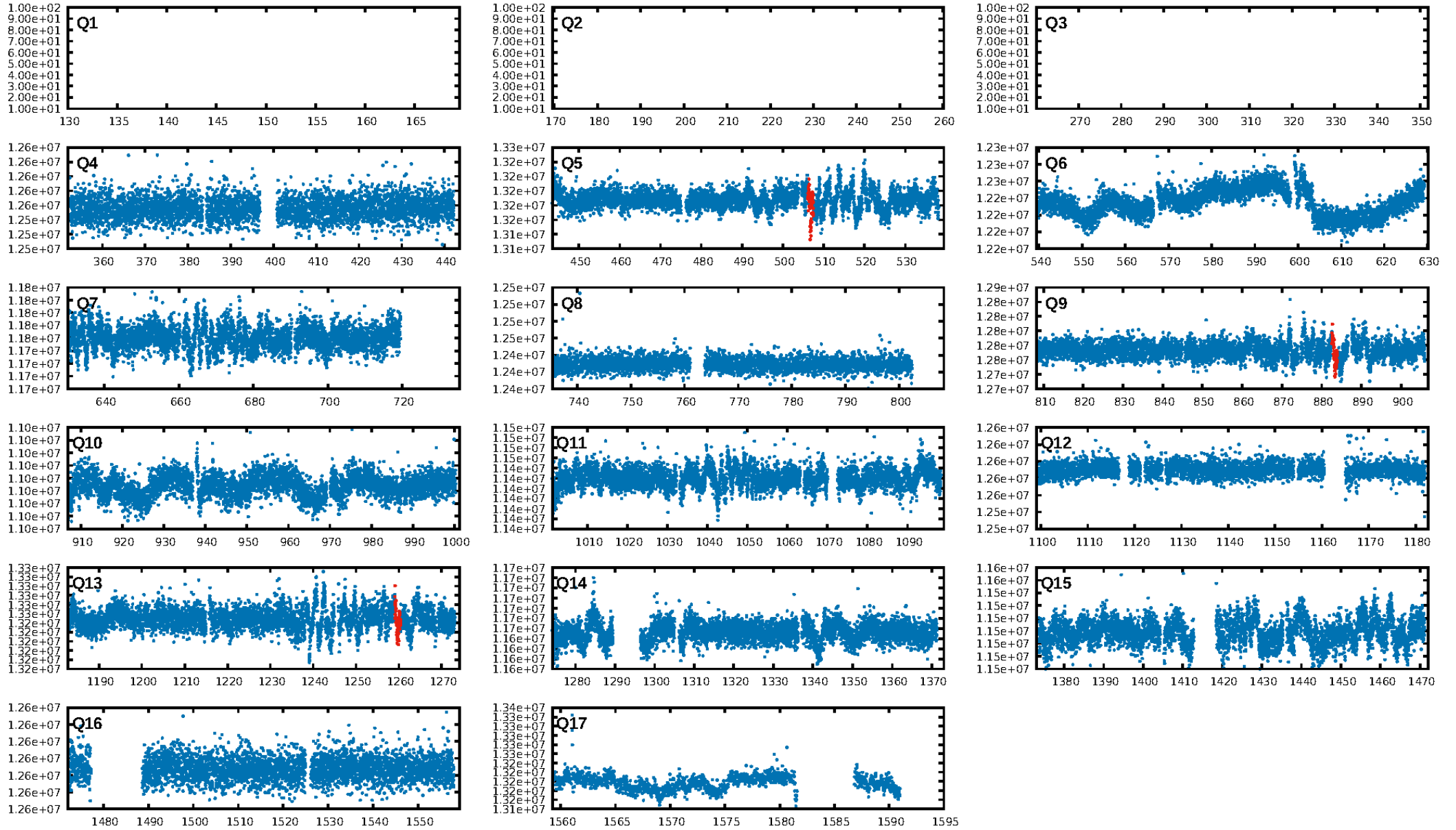
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.28σ]
LongPeriod-sig: 100.0% [23.90σ]
ModelChiSquare2-sig: 4.9%
ModelChiSquareGoF-sig: 96.7%
Bootstrap-pfa: 1.43e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.625
Centroid-sig: 13.4%
Centroid-so: 3.672 arcsec [1.73σ]
OotOffset-rm: 2.000 arcsec [10.21σ]
KicOffset-rm: 2.402 arcsec [12.28σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

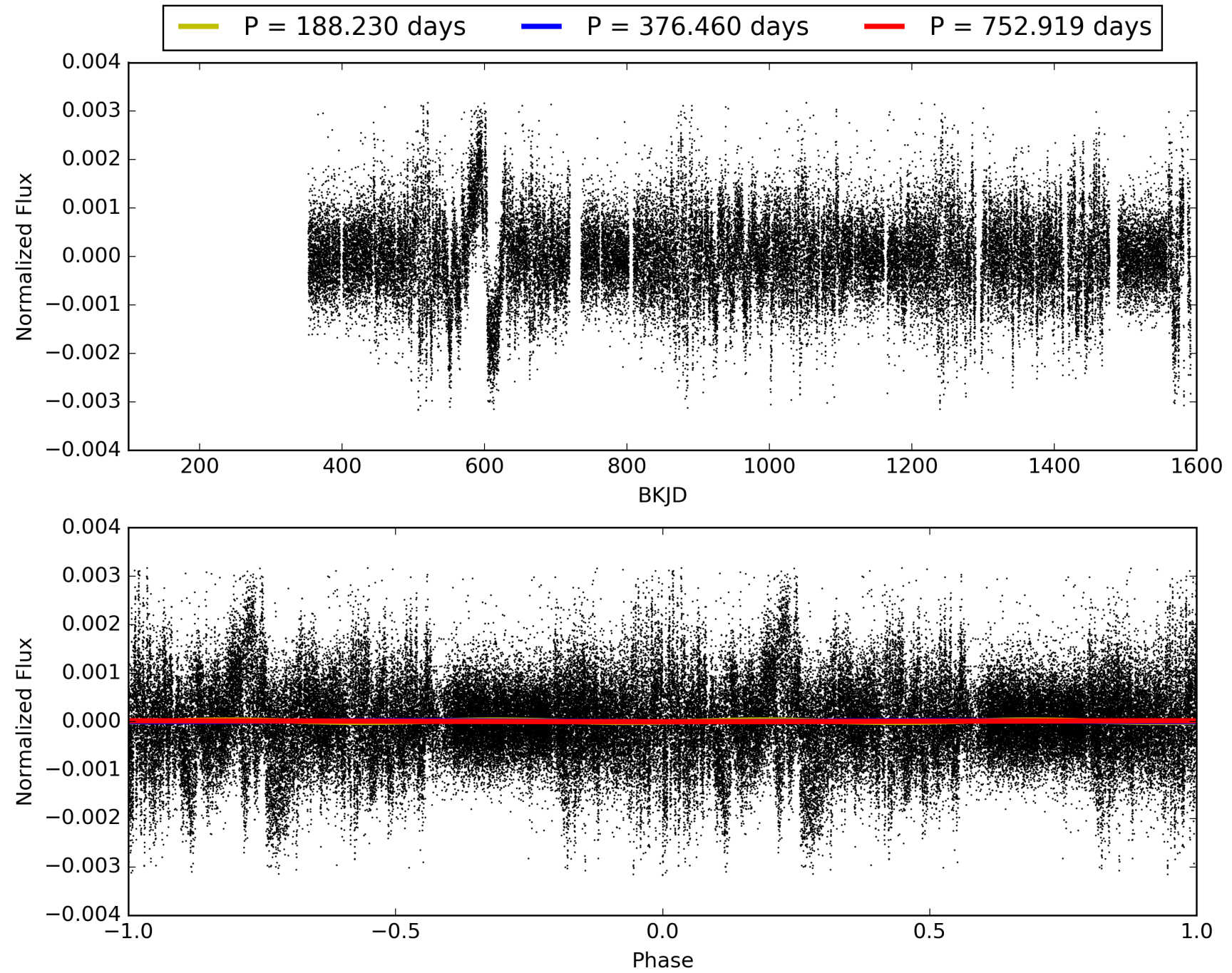
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:08:15 Z

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

TCE 009950201-03, PDC Light Curves

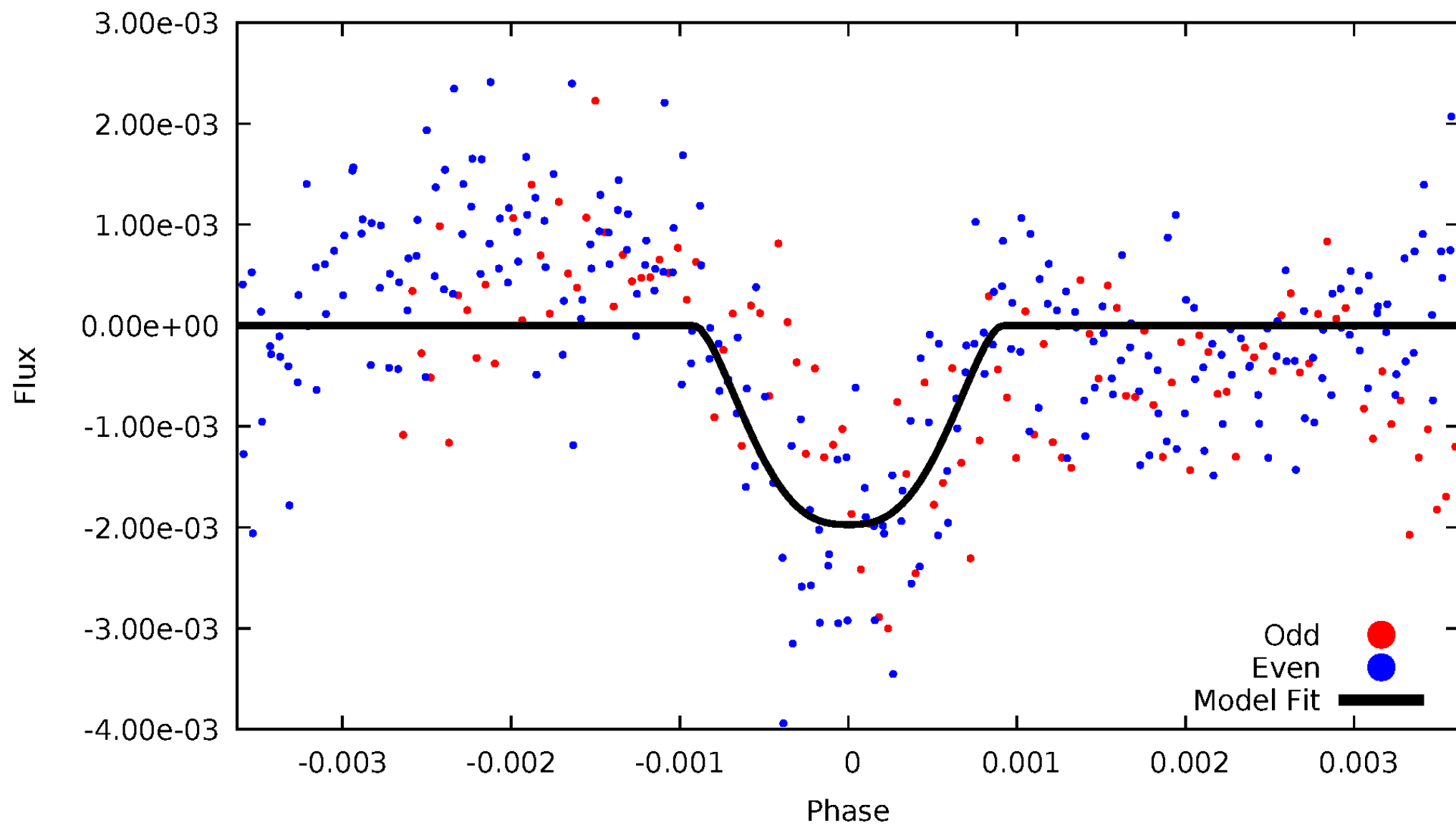


TCE 009950201-03



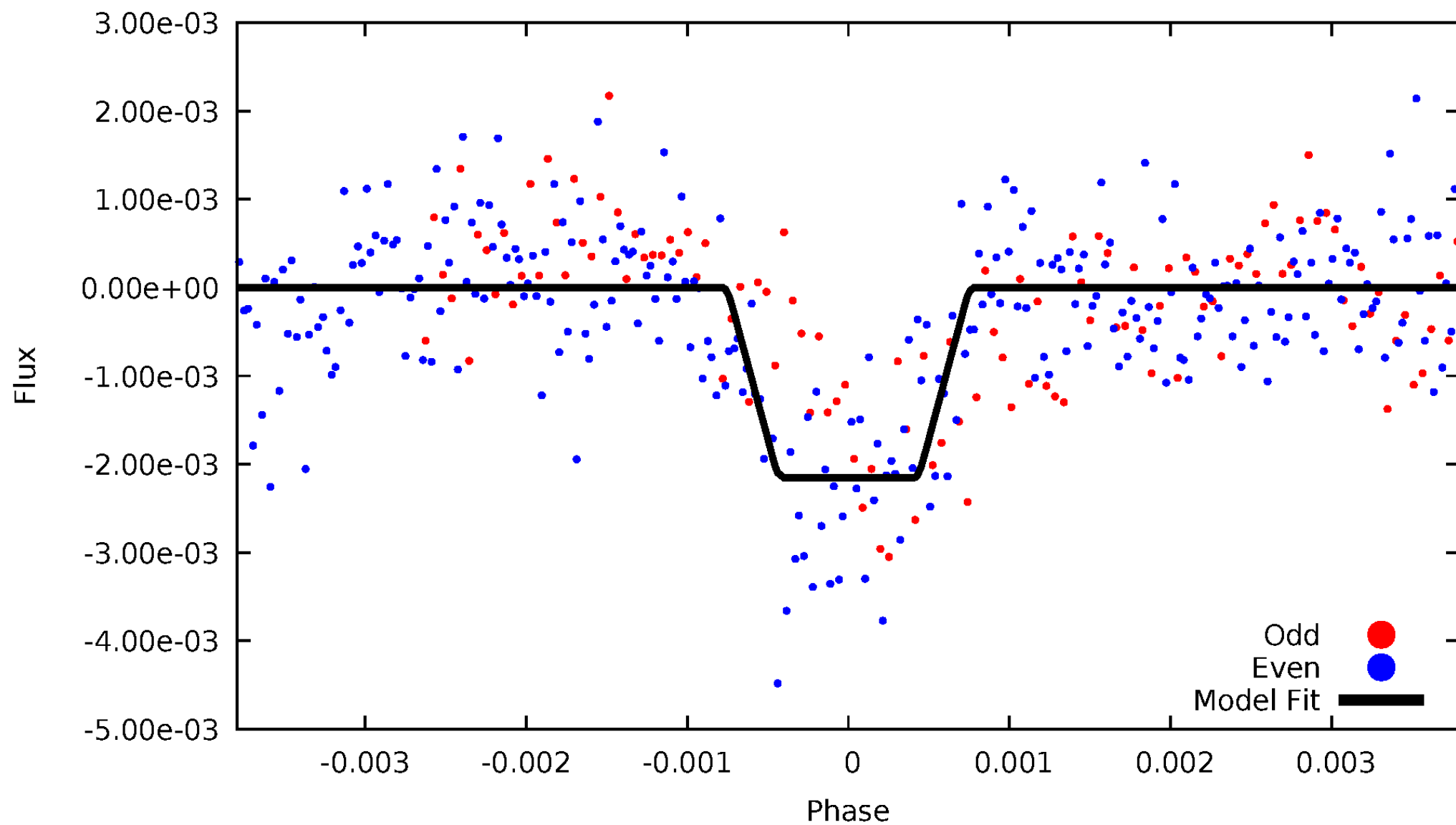
DV Odd/Even

TCE 009950201-03



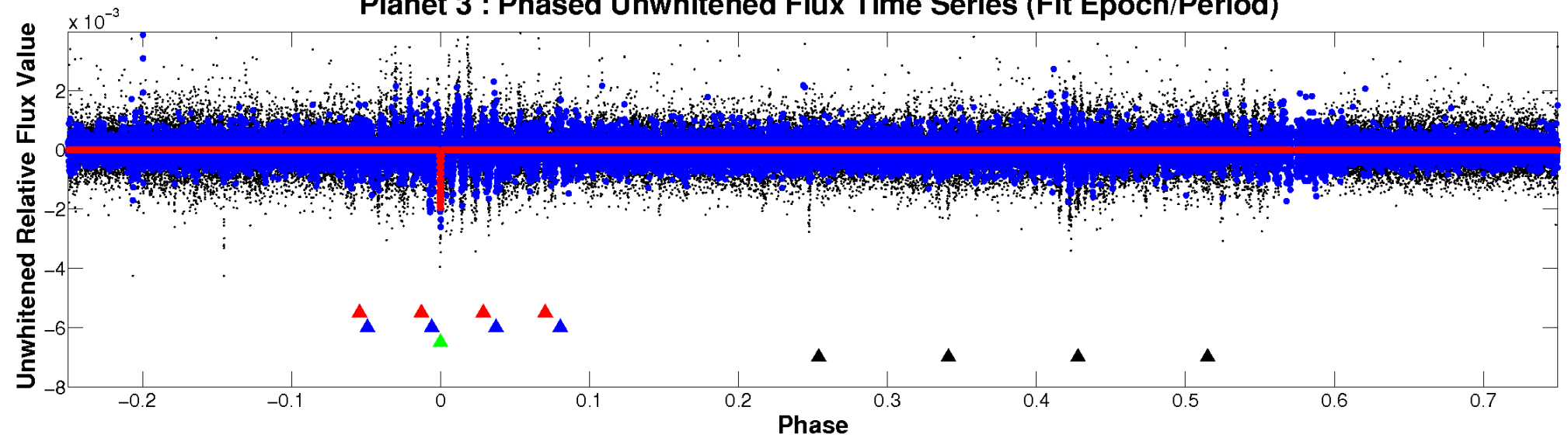
ALT Odd/Even

TCE 009950201-03

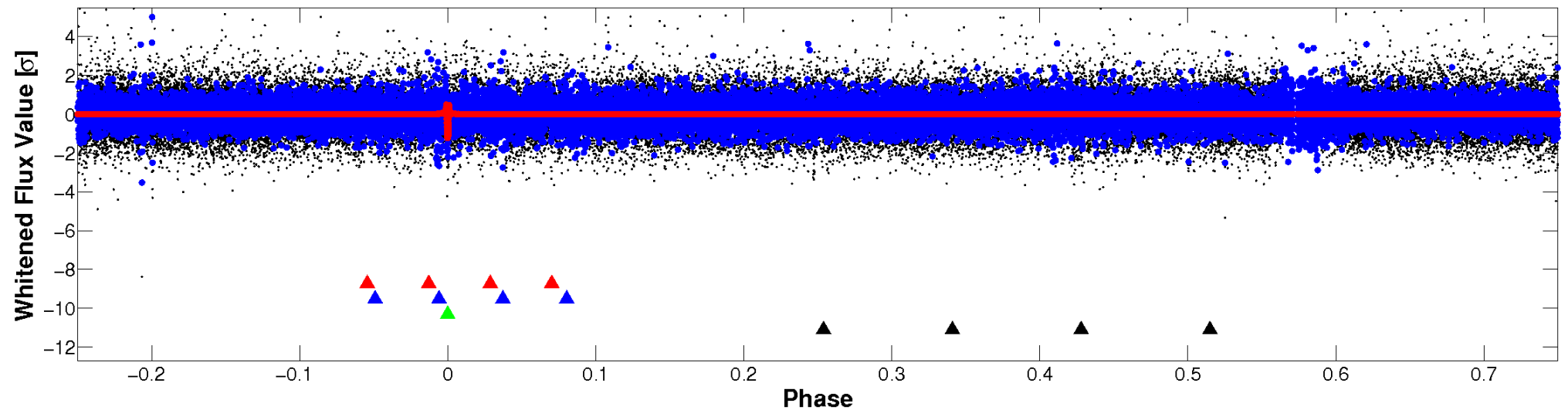


Non-Whitened Vs. Whitened Light Curve

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

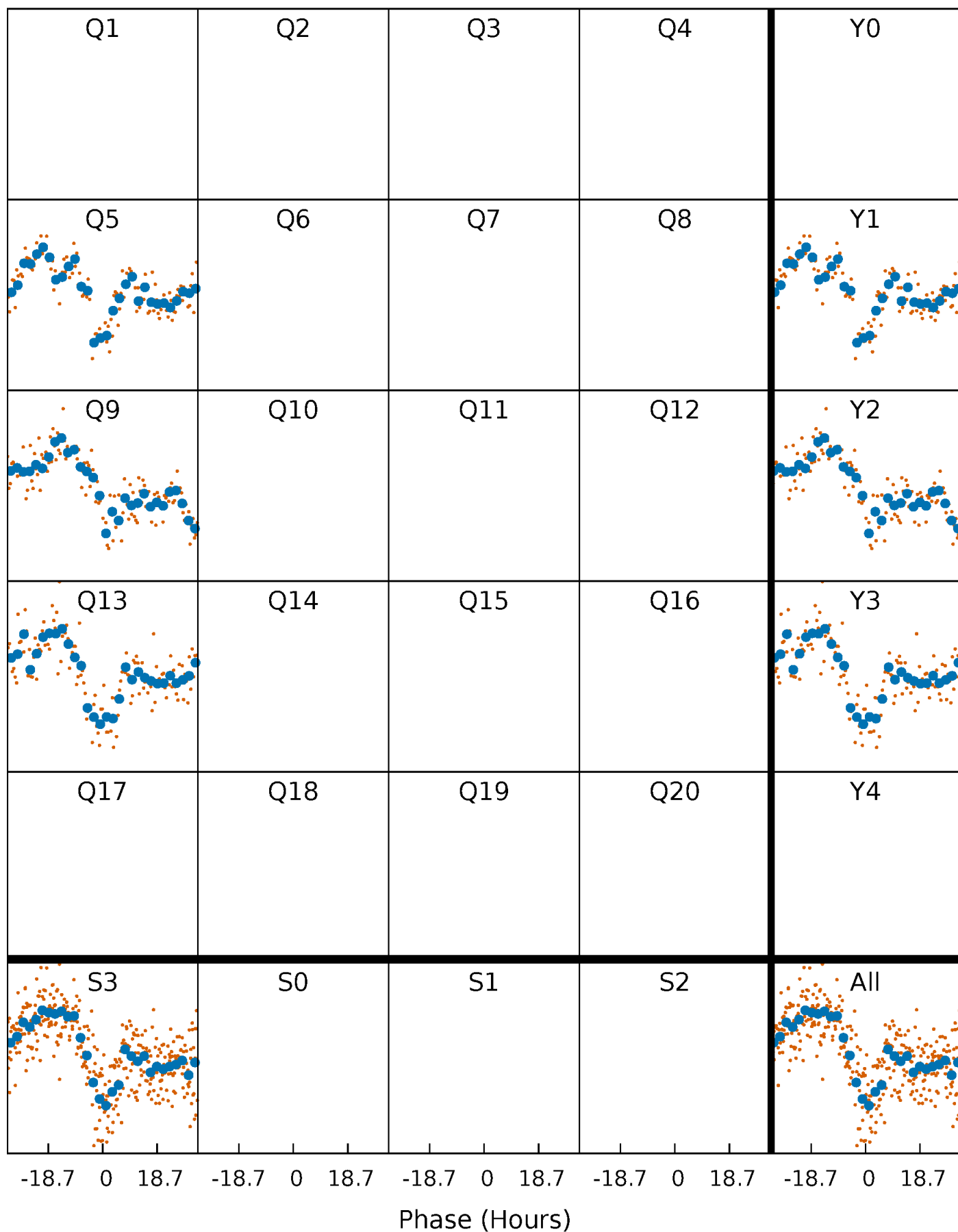


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



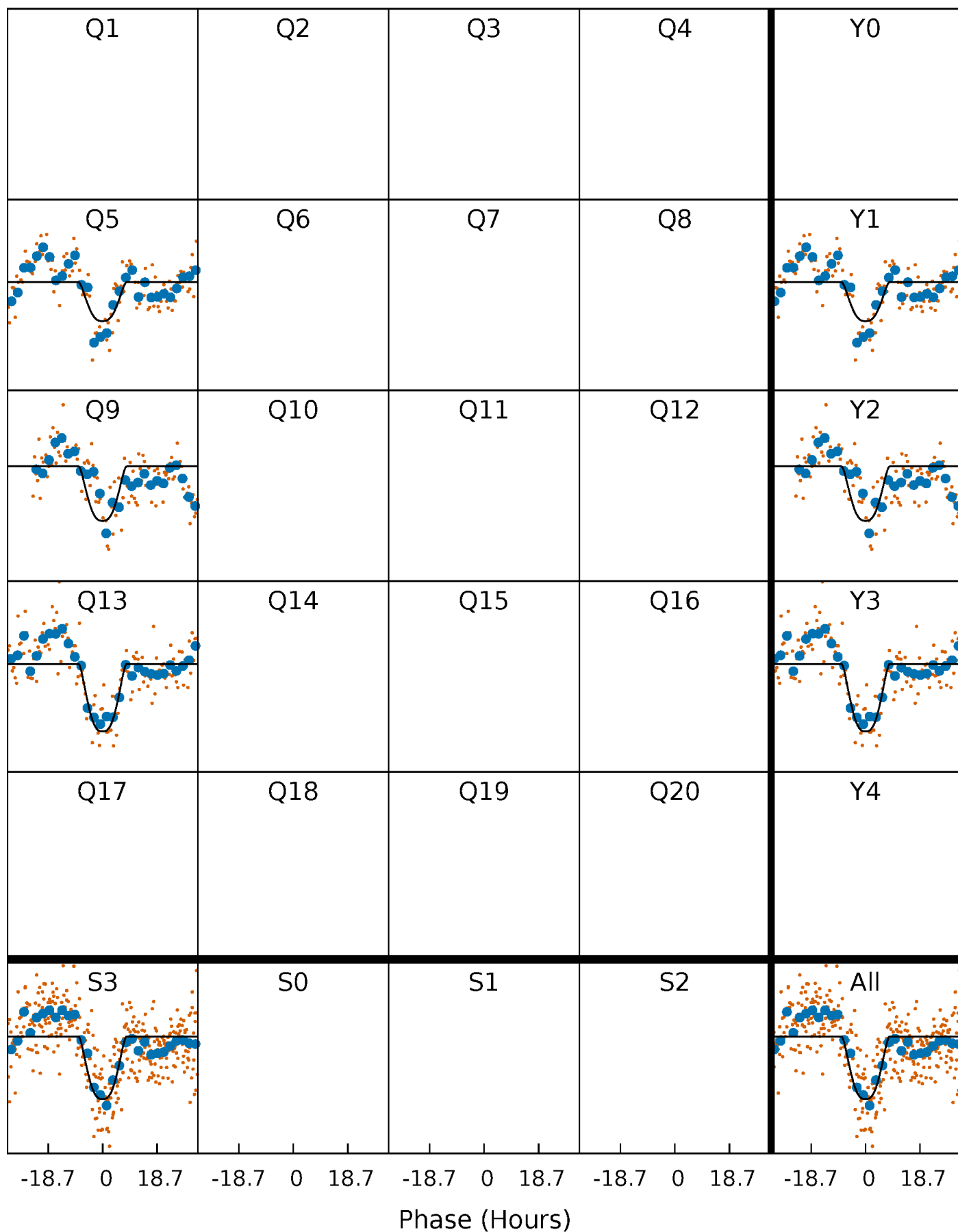
PDC Quarter-Phased Transit Curves

TCE 009950201-03 $P=376.459664$ Days $T_0=506.818185$ (BKJD)



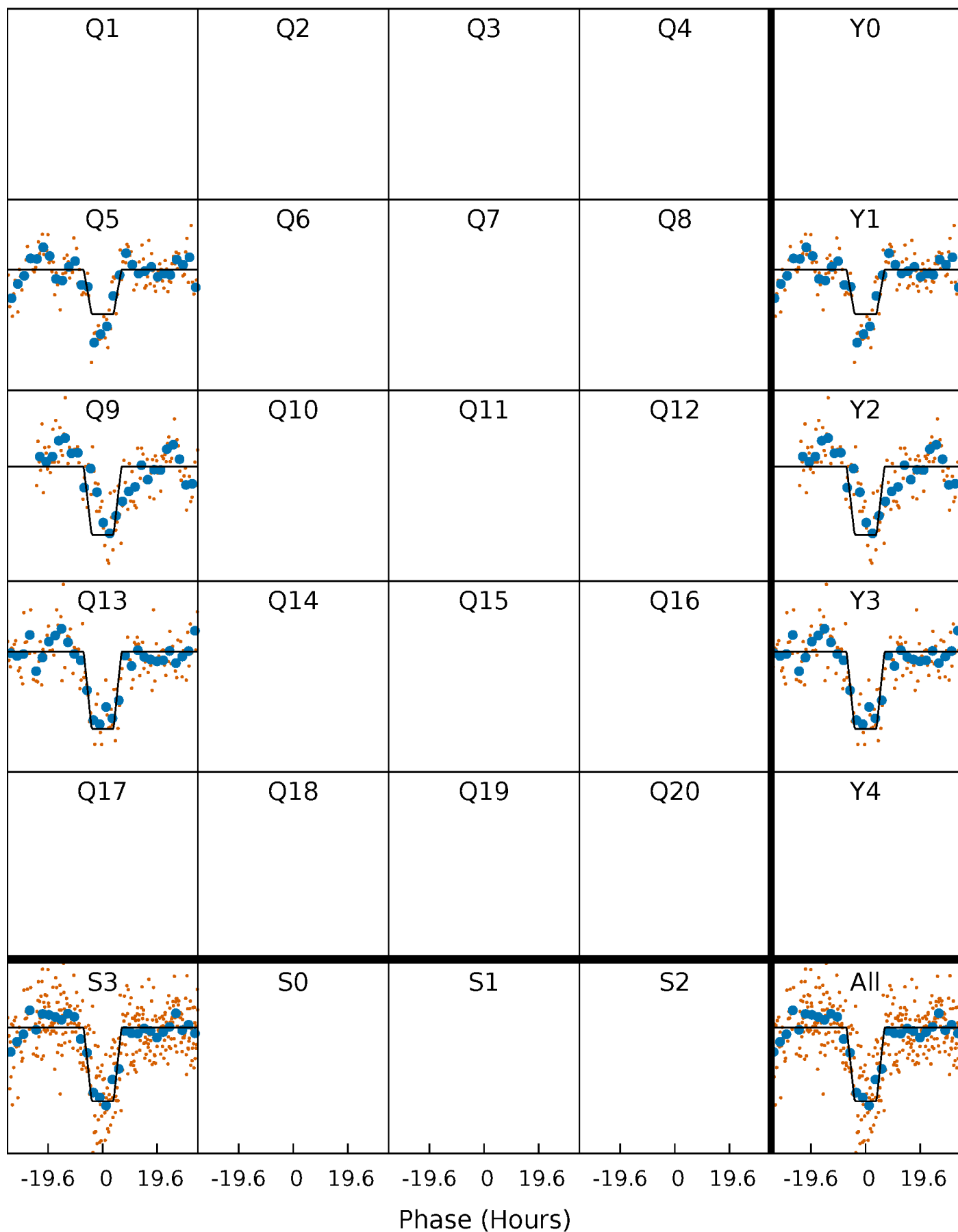
DV Quarter-Phased Transit Curves

TCE 009950201-03 $P=376.459664$ Days $T_0=506.818185$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

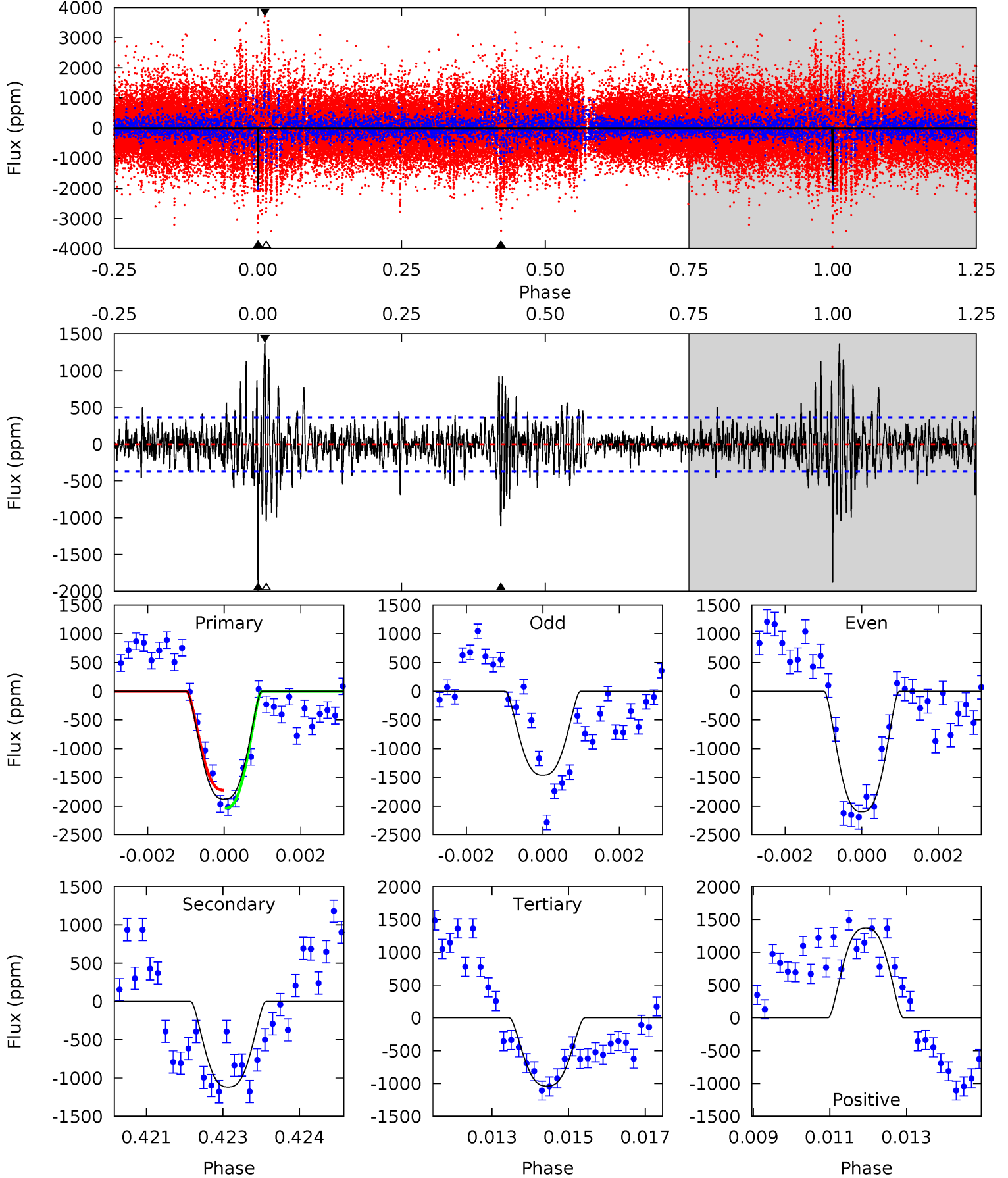
TCE 009950201-03 $P=376.433853$ Days $T_0=506.838045$ (BKJD)



DV Model-Shift Uniqueness Test

009950201-03, P = 376.459664 Days, E = 130.358521 Days

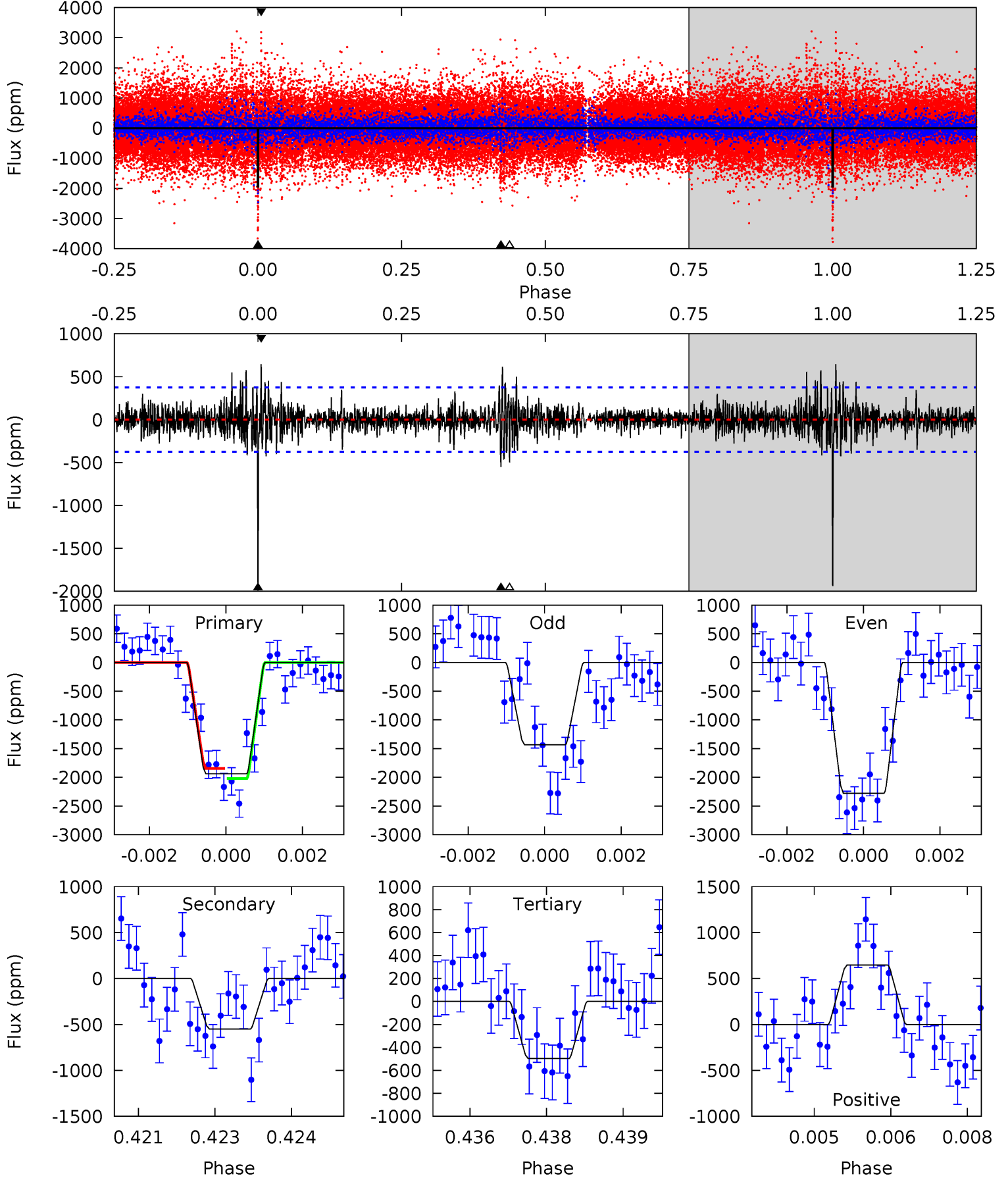
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.4	16.3	15.1	19.9	5.34	3.11	3.25	12.2	7.43	1.15	-3.67	4.37	1.04	0.42	2.29



Alt Model-Shift Uniqueness Test

009950201-03, P = 376.433853 Days, E = 130.404192 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.8	7.91	7.13	9.26	5.38	3.17	1.57	20.7	18.5	0.77	-1.36	5.83	1.04	0.25	1.28



Stellar Parameters For KIC 009950201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6074^{+191}_{-233}	$4.508^{+0.054}_{-0.216}$	$-0.300^{+0.300}_{-0.300}$	$0.914^{+0.288}_{-0.096}$	$0.982^{+0.129}_{-0.129}$	$1.813^{+0.507}_{-0.946}$
	+3%/-4%	+1%/-5%	+100%/-100%	+32%/-11%	+13%/-13%	+28%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009950201-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1118 ± 69	$5.27^{+1.03}_{-0.73}$	364^{+29}_{-20}	5021^{+283}_{-268}	21989^{+7820}_{-5832}
Alt.	-551 ± 70	$4.87^{+0.97}_{-0.75}$	364^{+27}_{-20}	4485^{+282}_{-235}	12877^{+5288}_{-3940}

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

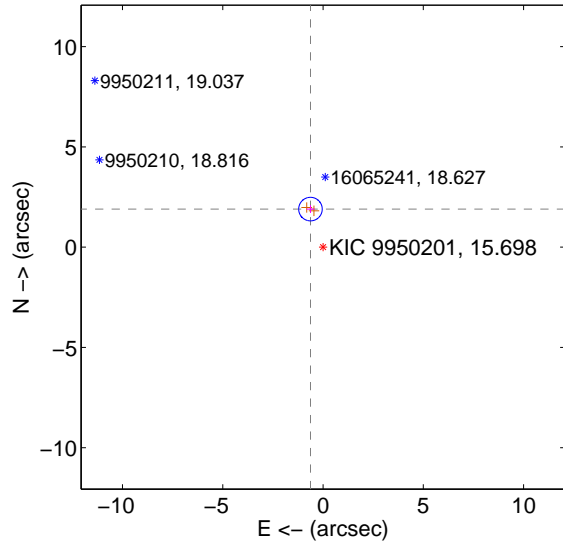
Supplemental centroid analysis for 009950201-03. Kepler magnitude: 15.70. Transit SNR 8.46

There are 0 quarters with good PRF difference image offsets

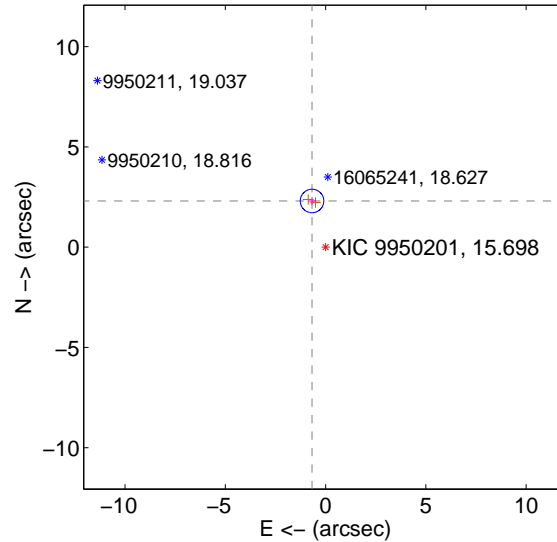
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.000 ± 0.196	10.21	0.627 ± 0.198	1.899 ± 0.195
PRF-fit source offset from KIC position	2.402 ± 0.196	12.28	0.676 ± 0.198	2.305 ± 0.195
photometric centroid source offset	3.67 ± 2.13	1.73	3.52 ± 2.16	1.04 ± 1.76

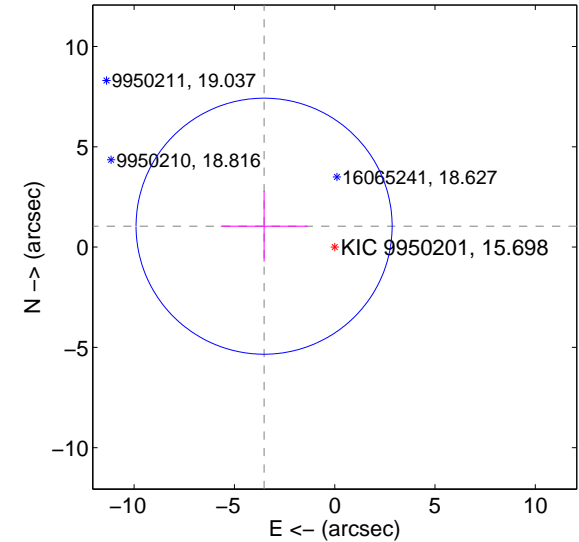
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

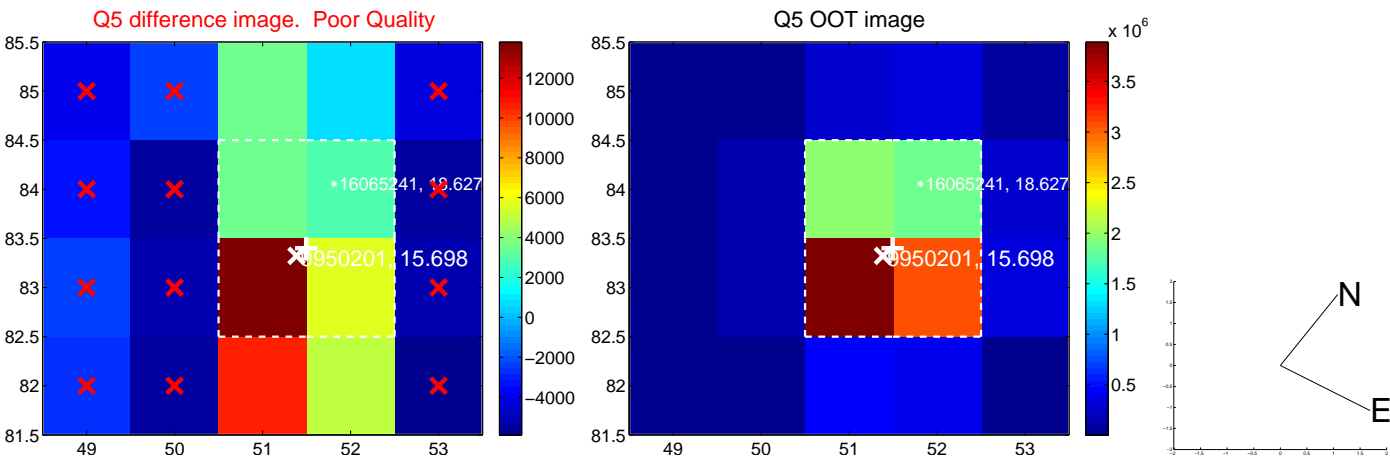


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

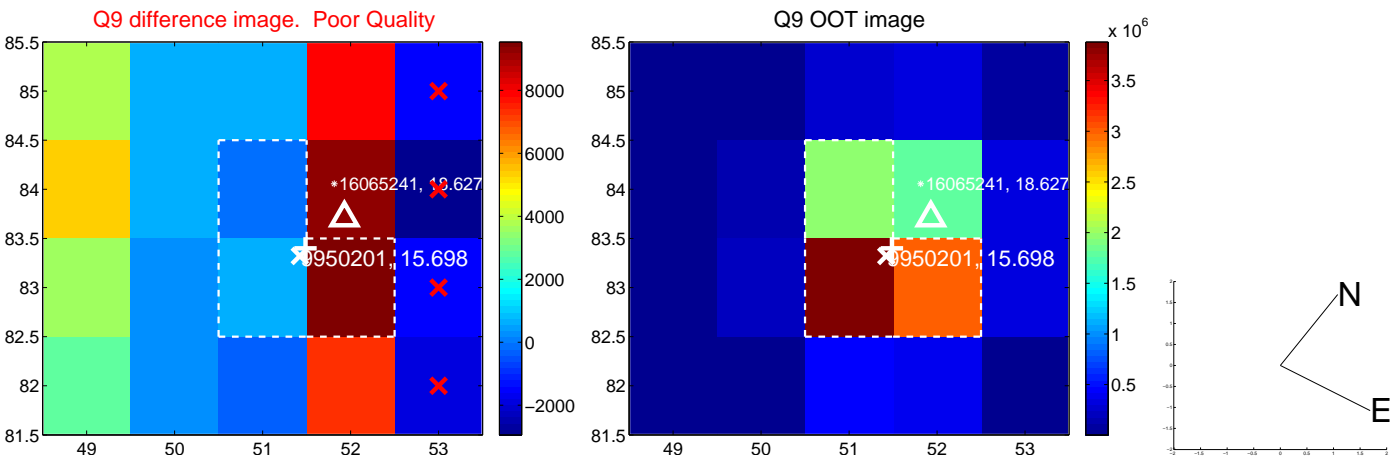
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



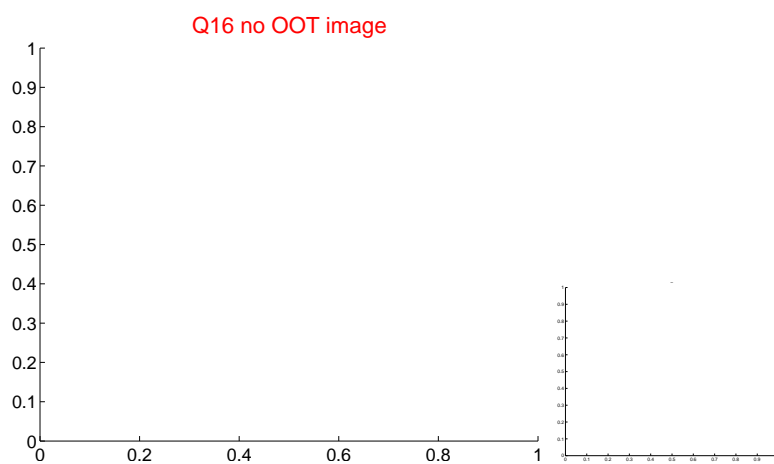
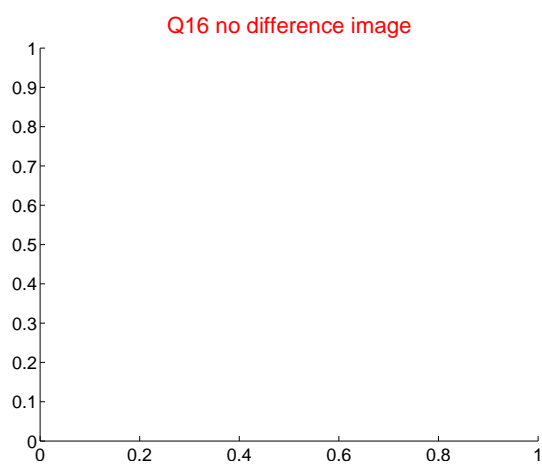
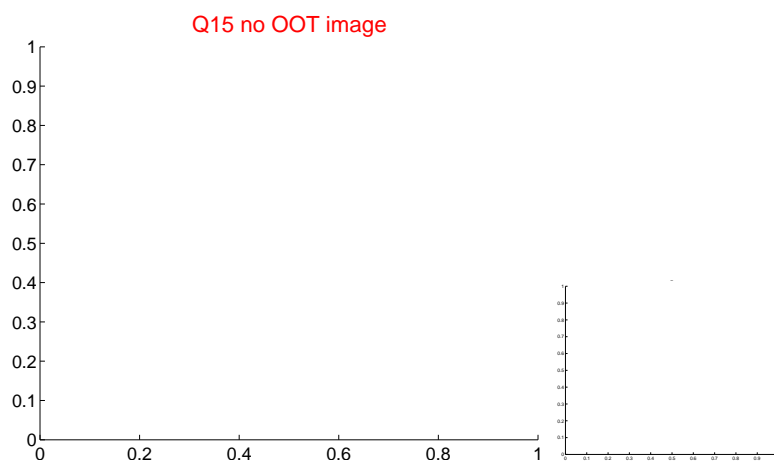
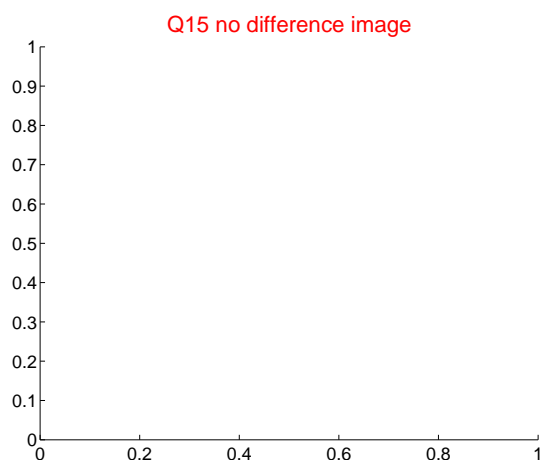
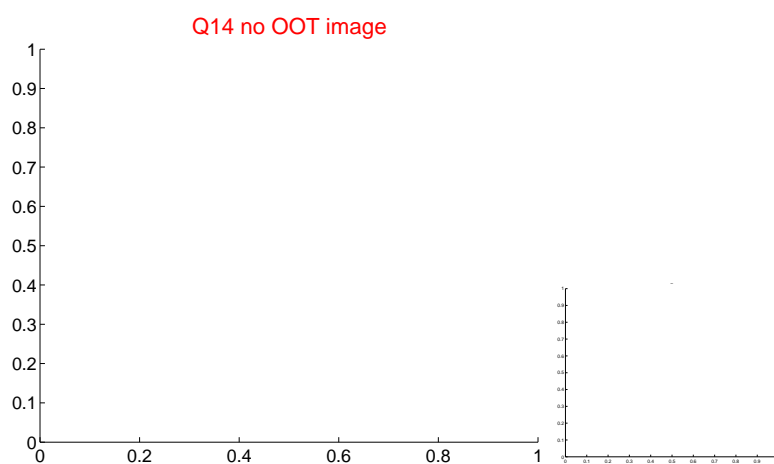
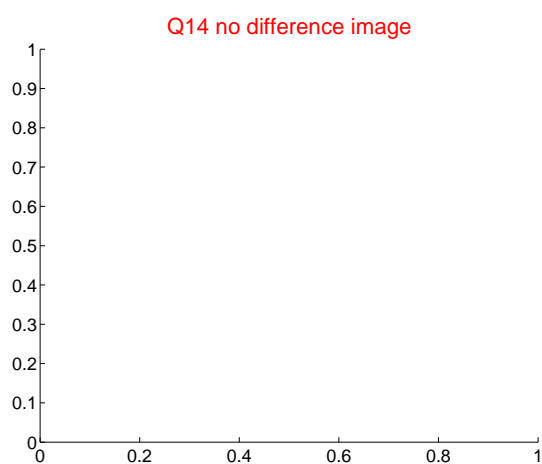
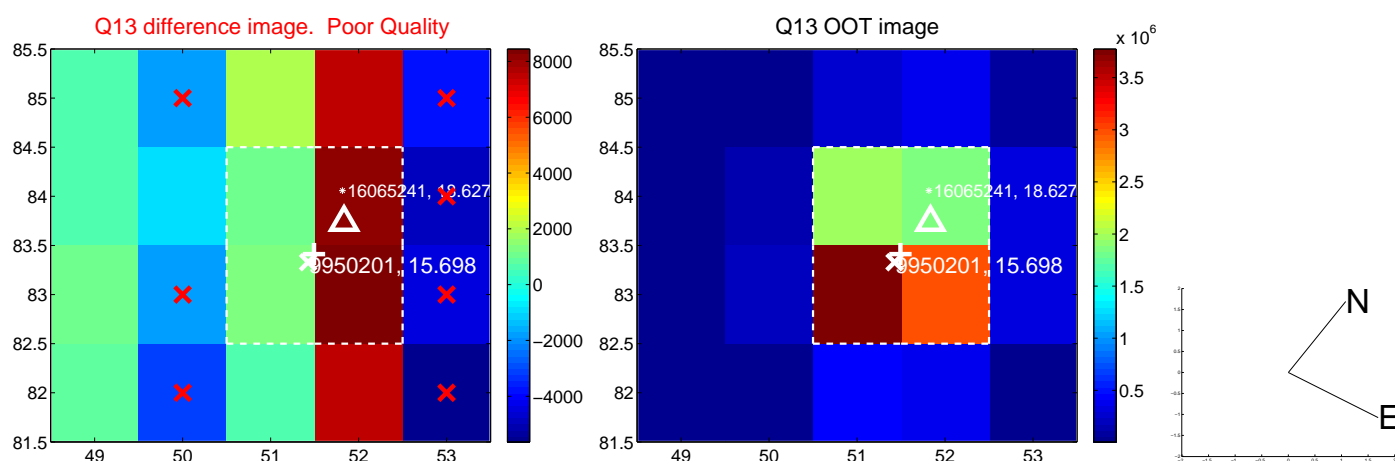
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



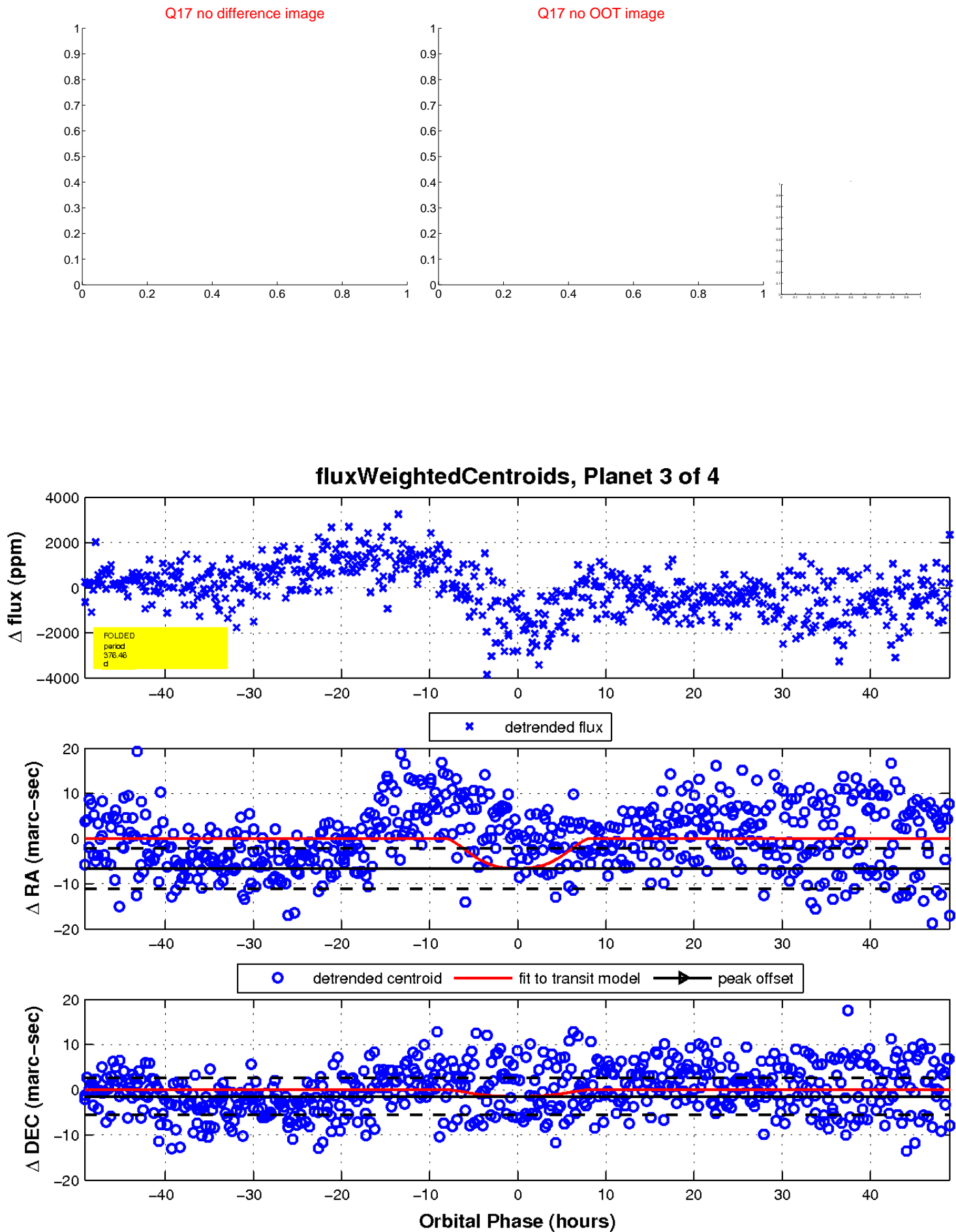
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

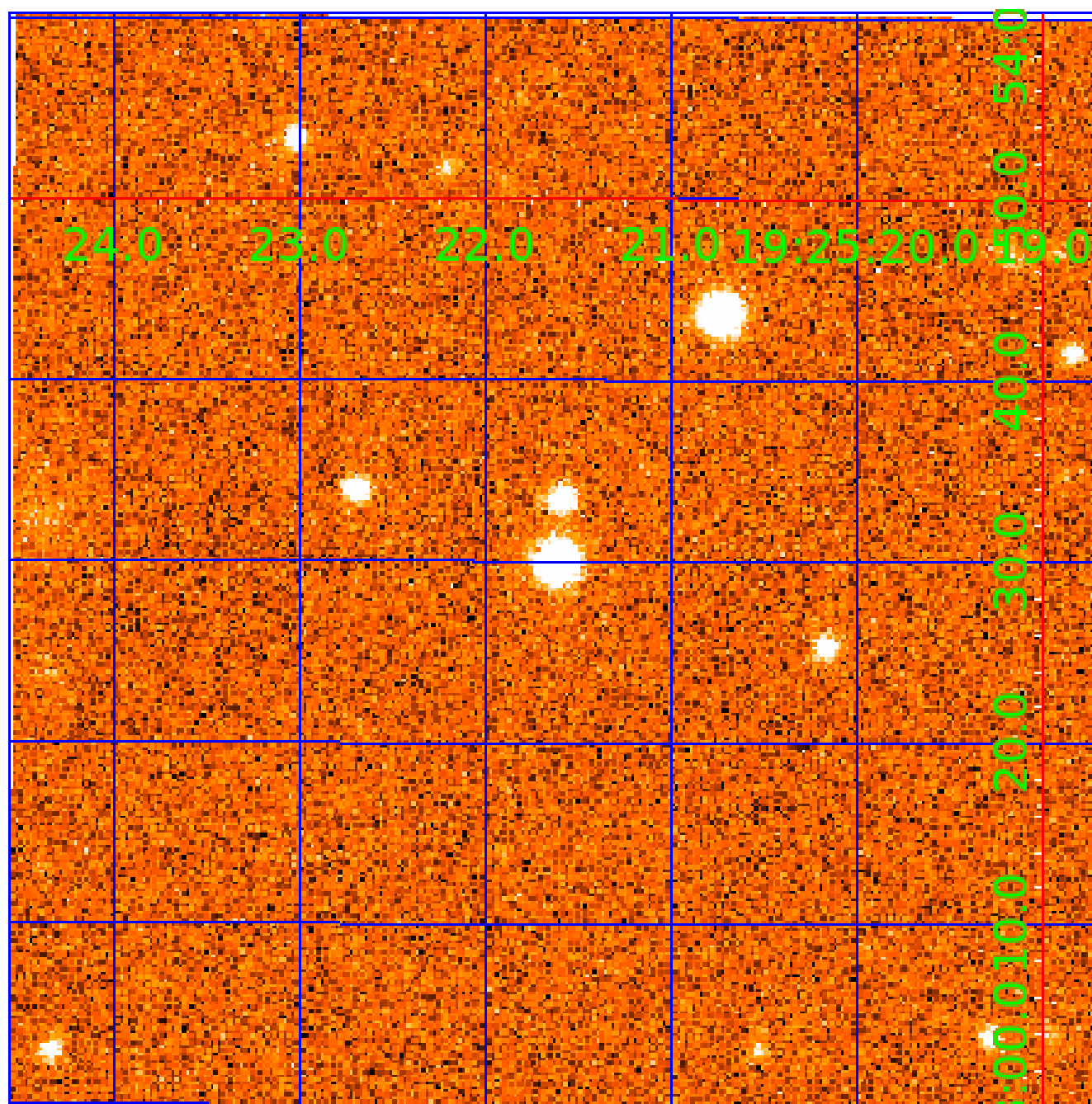


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009950201

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})
009950201-01	OBS	No	360.825949	156.816069	1734.8	18.294	9.1	8.8	0.91	6074	4.41	1.05
009950201-02	OBS	No	360.218963	160.638838	1651.0	19.123	8.7	8.6	0.91	6074	4.30	1.05
009950201-03	OBS	No	376.459664	506.818185	1973.5	16.378	8.9	8.5	0.91	6074	5.08	0.99
009950201-04	OBS	No	409.216806	225.949250	1551.2	28.520	7.9	8.0	0.91	6074	4.58	0.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009950201-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS
009950201-02	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—EPHEM_MATCH
009950201-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009950201-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

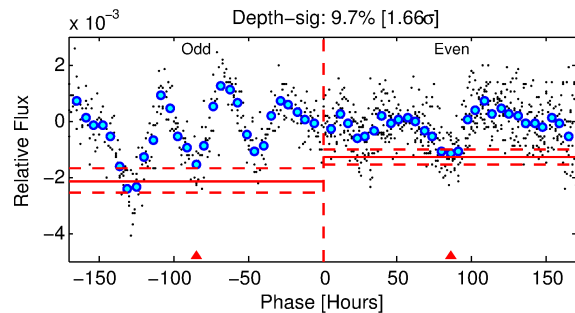
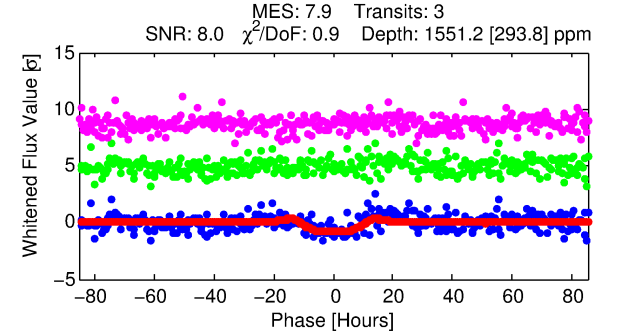
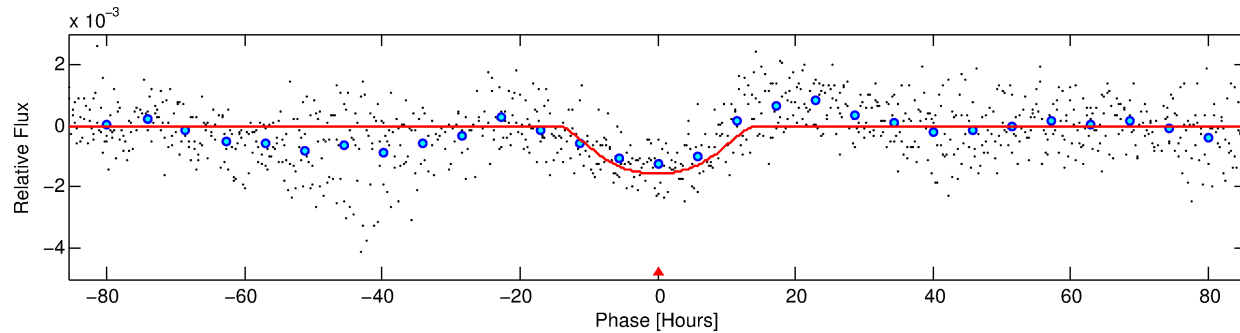
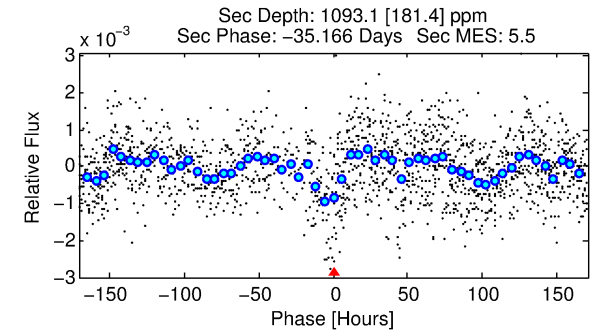
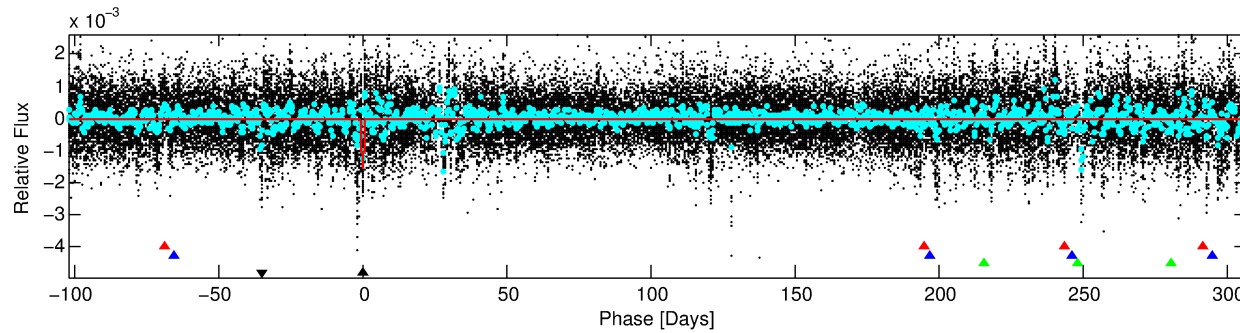
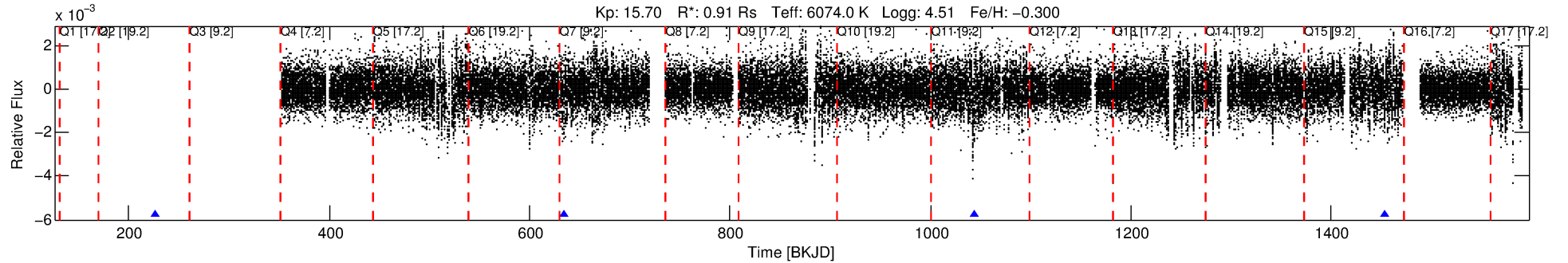
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009950201-04

No Significant Match Found

DV One-Page Summary

KIC: 9950201 Candidate: 4 of 4 Period: 409.217 d



DV Fit Results:

Period = 409.21681 [0.03661] d
Epoch = 225.9492 [0.0743] BKJD
Rp/R* = 0.0459 [0.0064]
a/R* = 46.78 [6.41]
b = 0.95 [0.02]
Seff = 0.89 [0.37]
Teq = 247 [26] K
Rp = 4.58 [1.58] Re
a = 1.0723 [0.2869] AU
Ag = 33023.15 [16818.49] [1.96σ]
Teffp = 5156 [463] K [10.59σ]

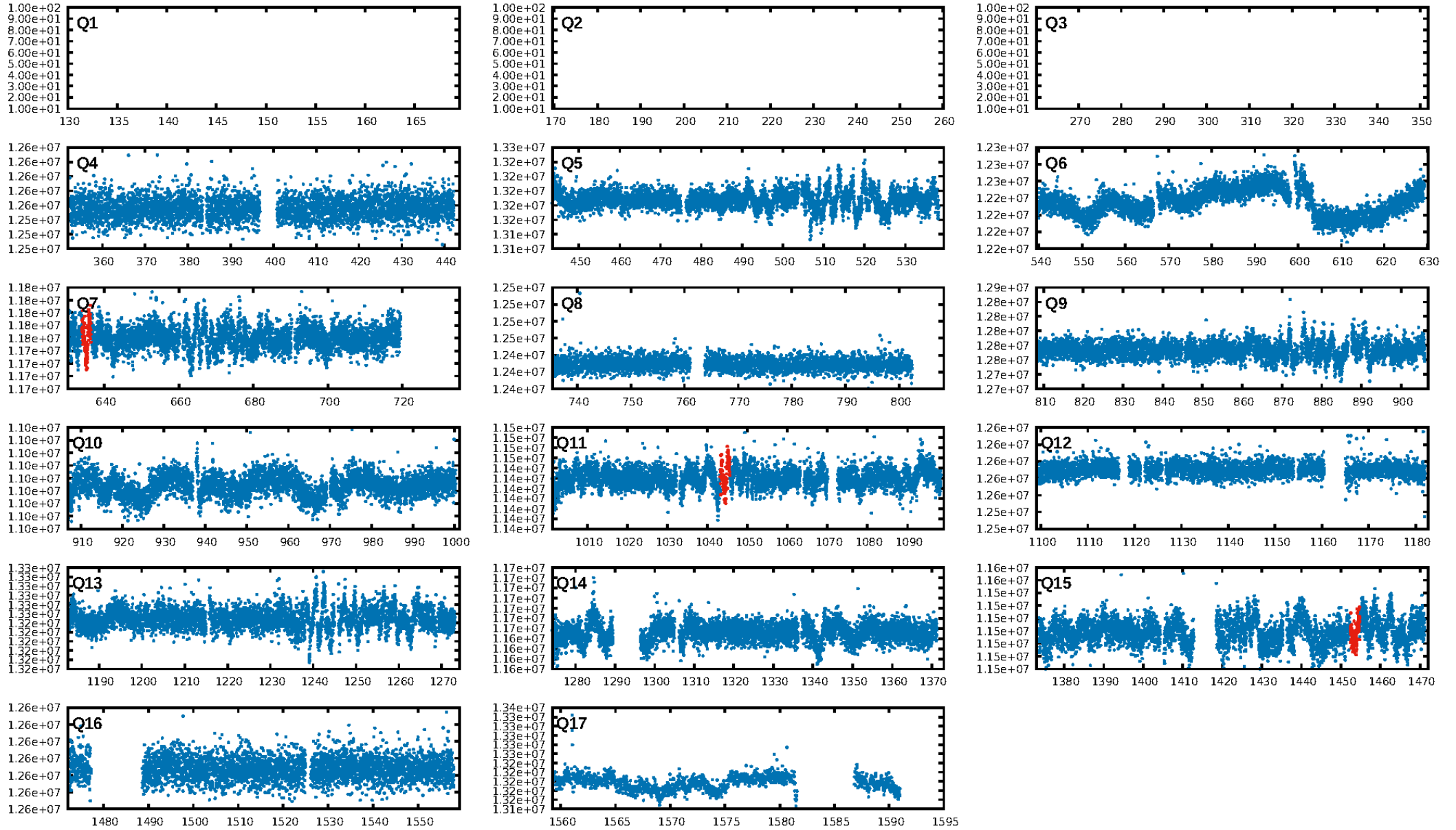
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.90σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 20.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.08e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.959
Centroid-sig: 61.7%
Centroid-so: 1.448 arcsec [0.79σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

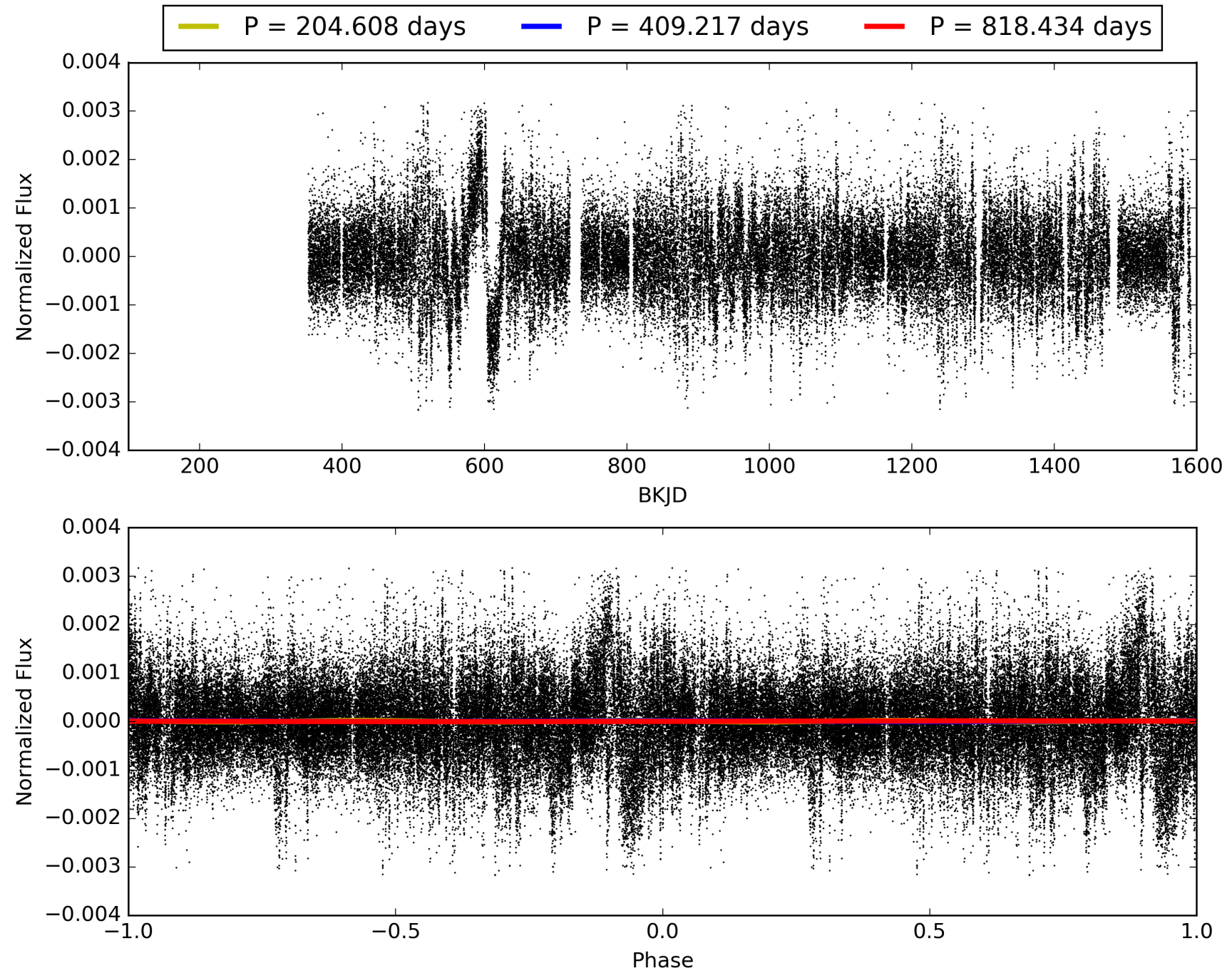
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:08:22 Z

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

TCE 009950201-04, PDC Light Curves

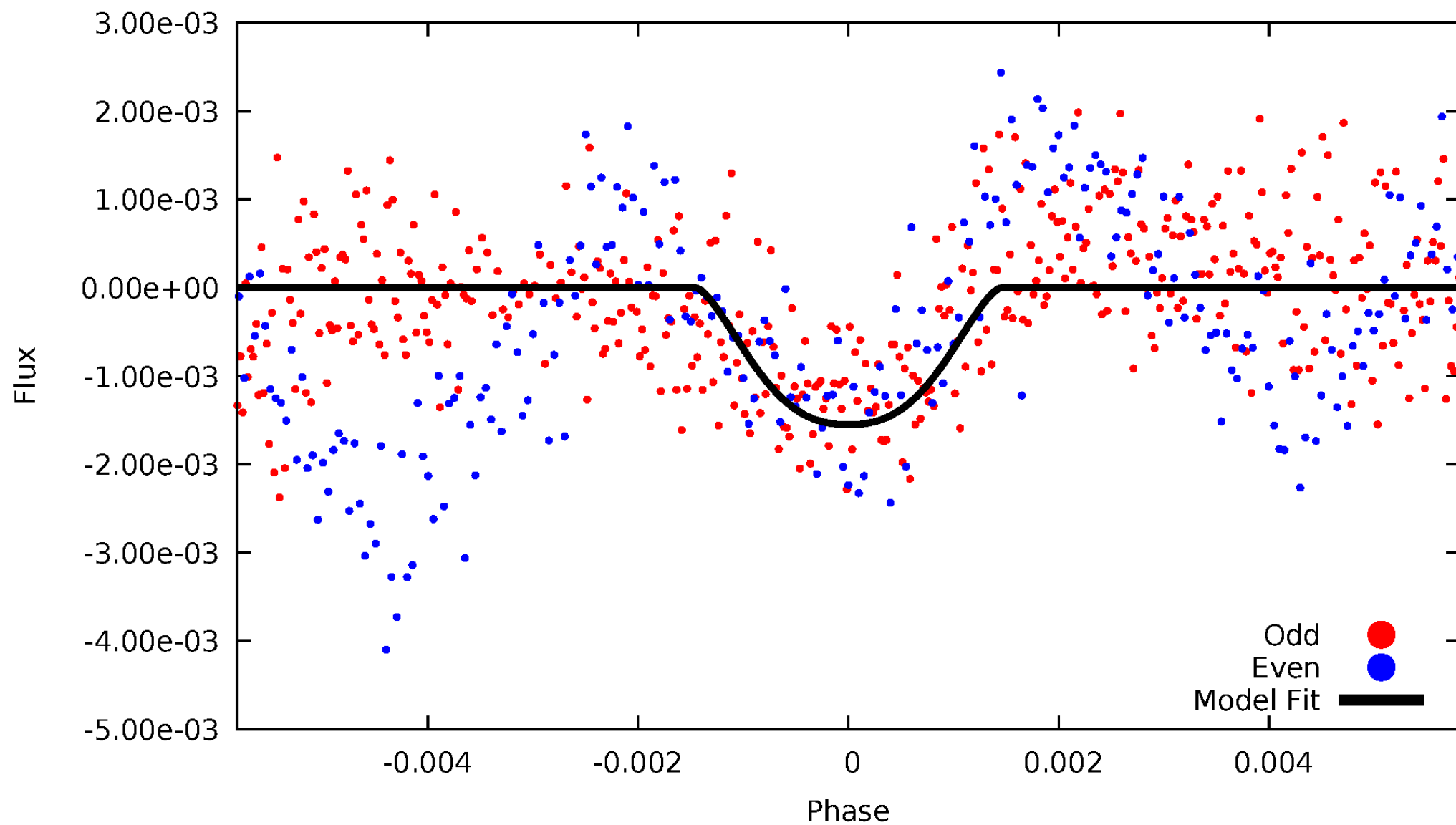


TCE 009950201-04



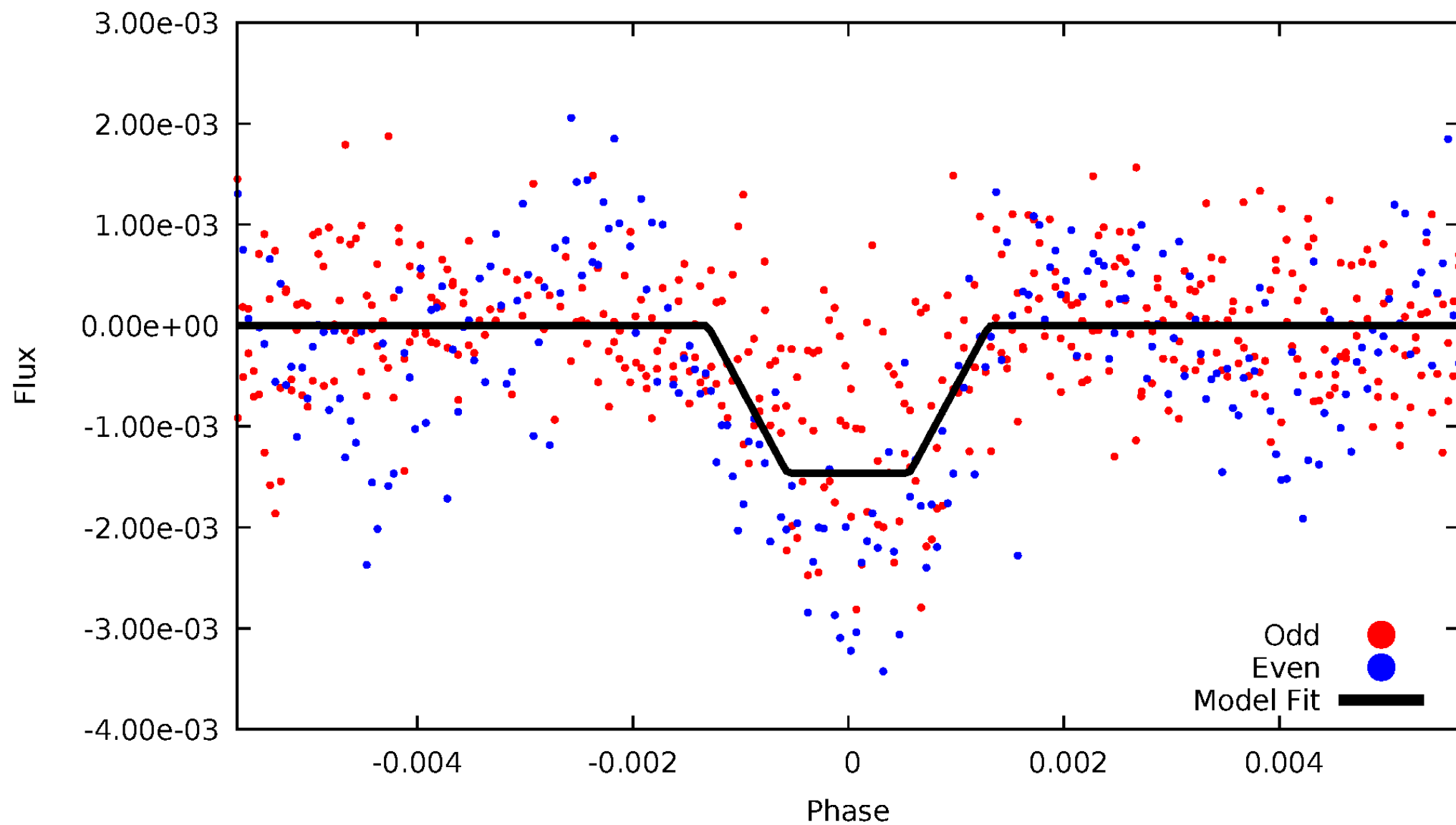
DV Odd/Even

TCE 009950201-04



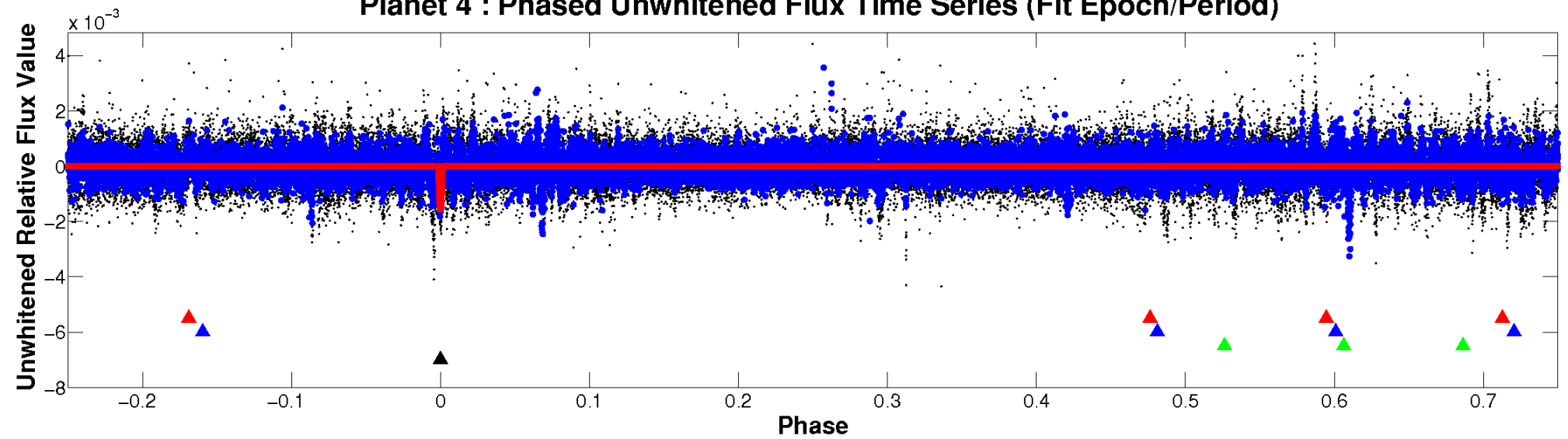
ALT Odd/Even

TCE 009950201-04

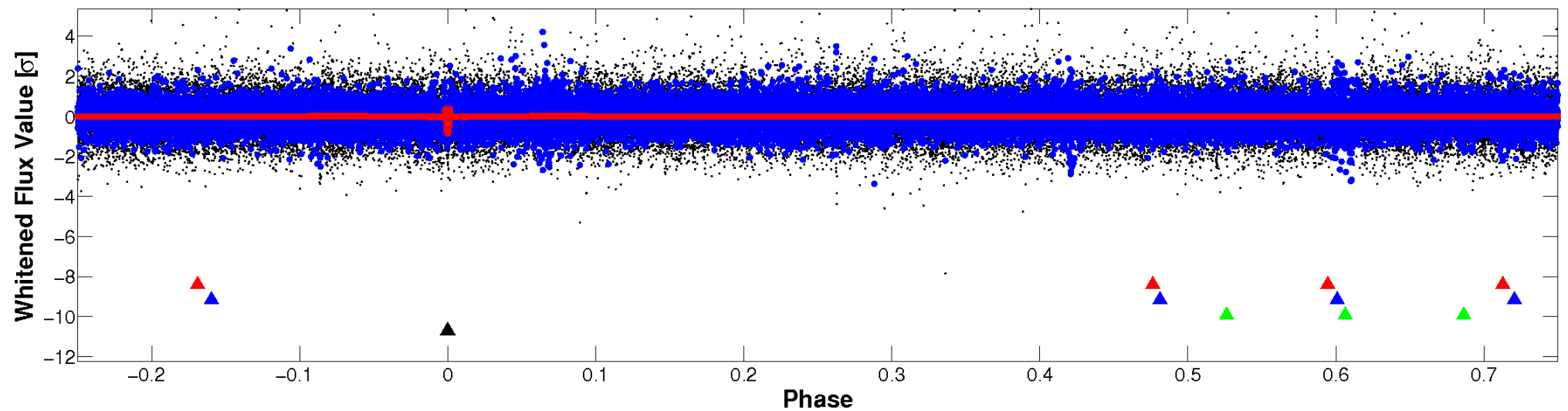


Non-Whitened Vs. Whitened Light Curve

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

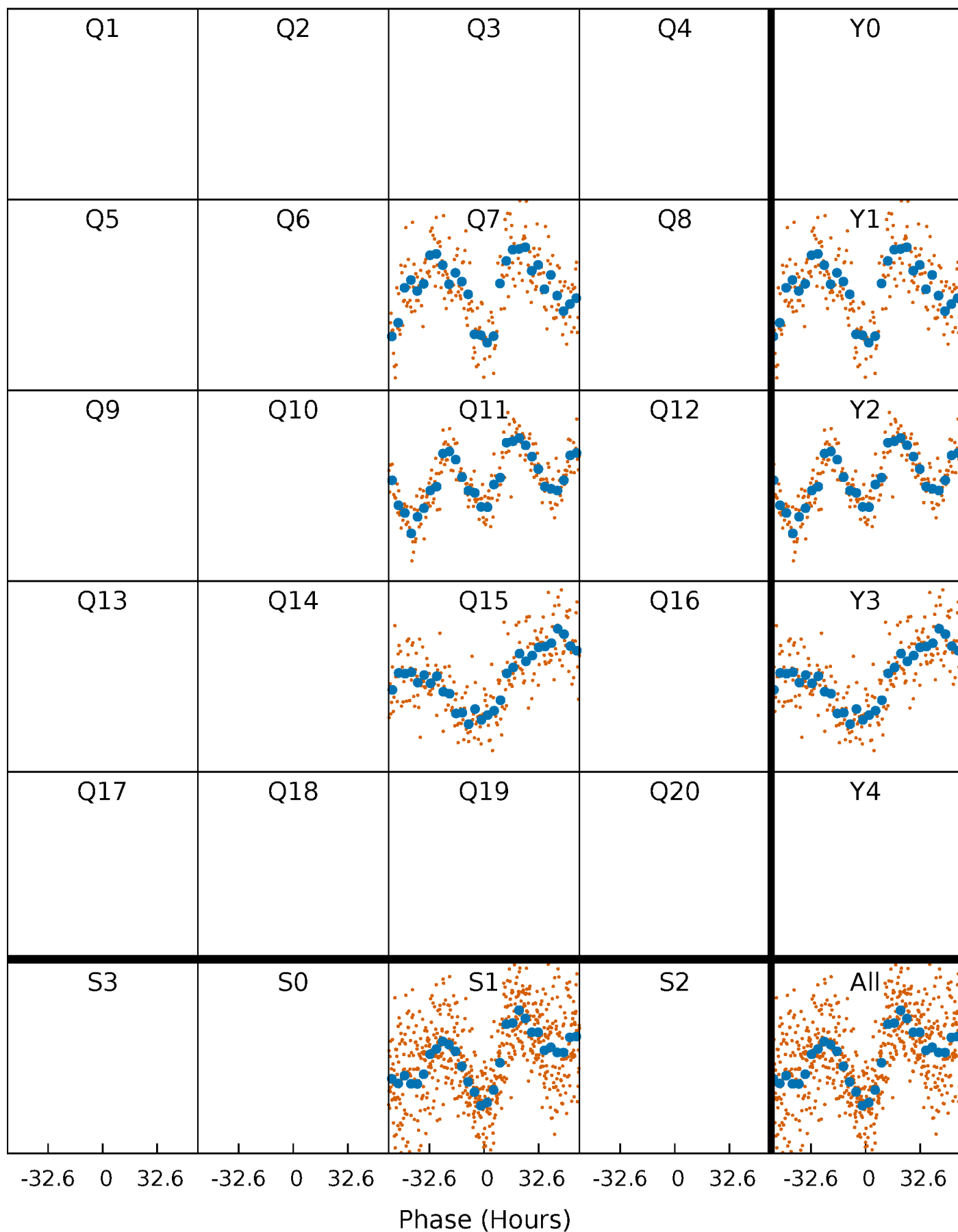


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



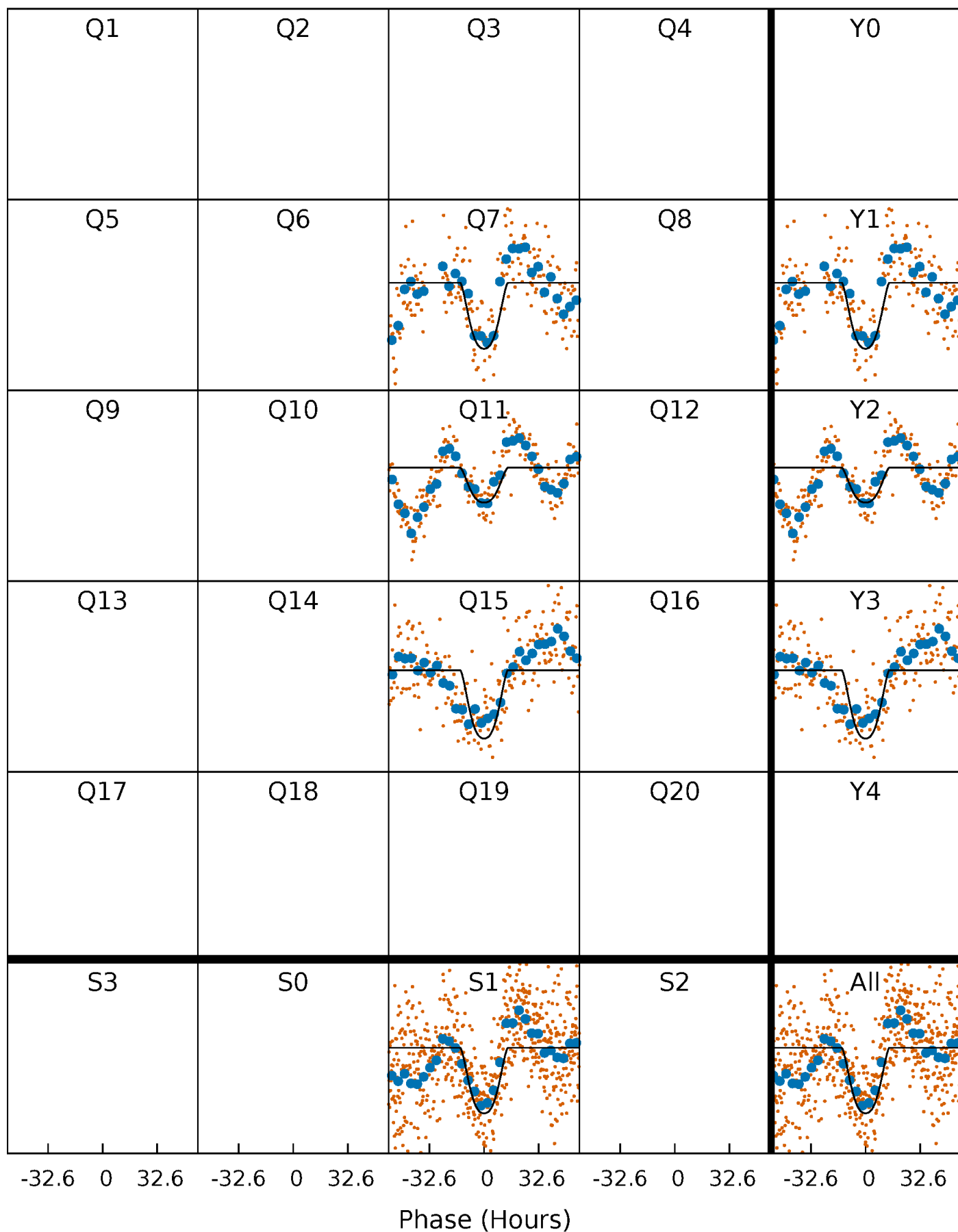
PDC Quarter-Phased Transit Curves

TCE 009950201-04 P=409.216806 Days $T_0=225.949250$ (BKJD)



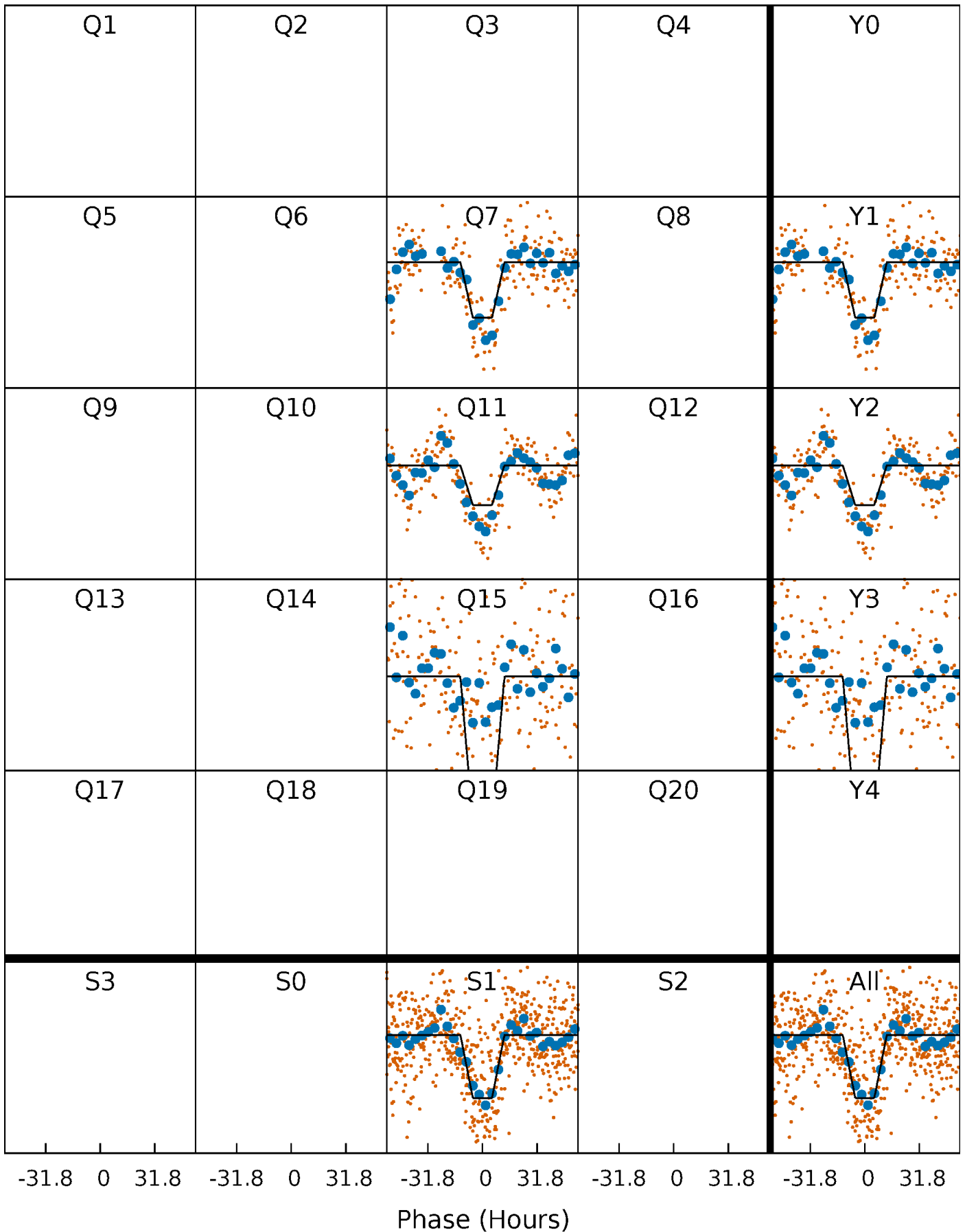
DV Quarter-Phased Transit Curves

TCE 009950201-04 P=409.216806 Days $T_0=225.949250$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

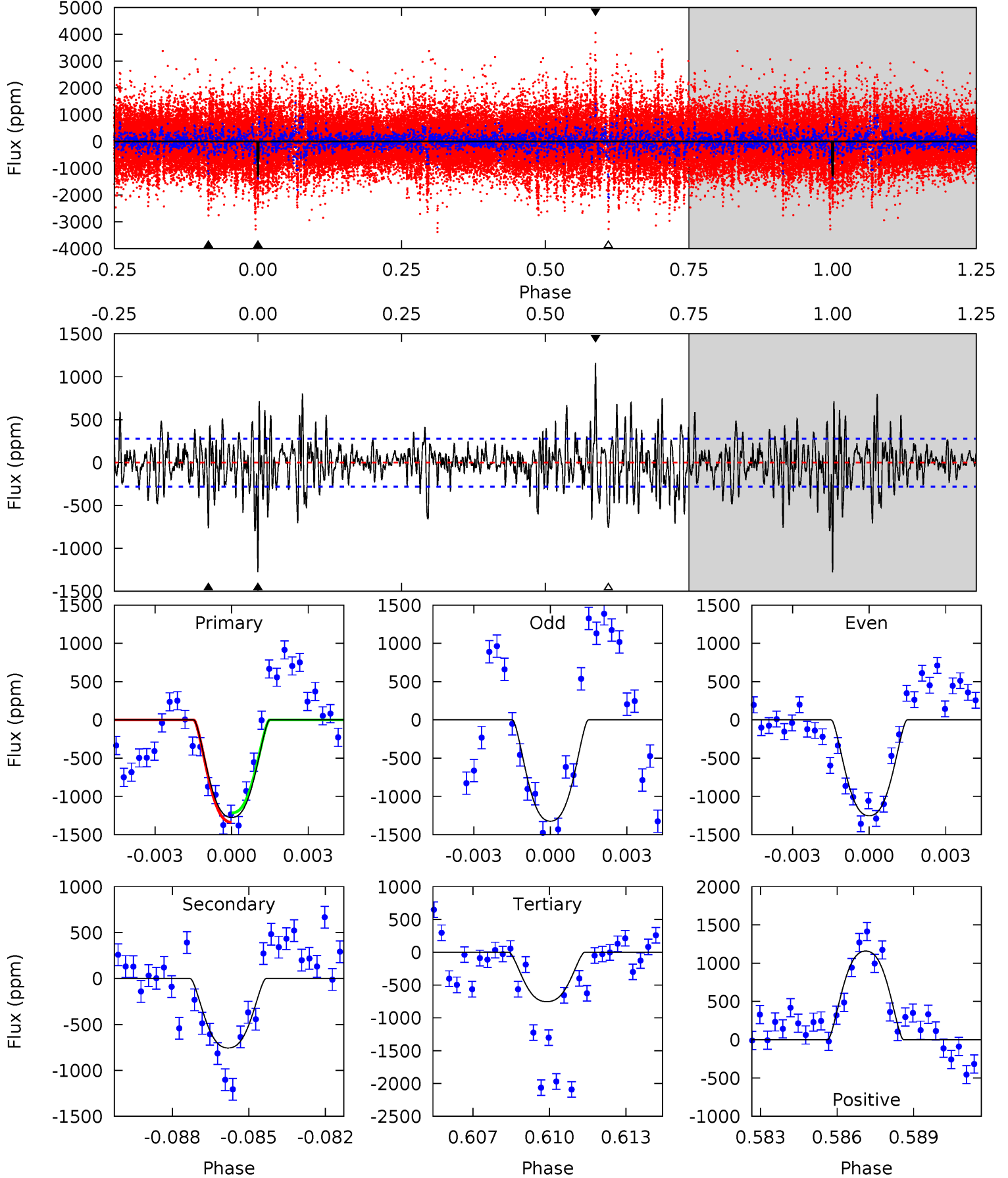
TCE 009950201-04 $P=409.284207$ Days $T_0=225.845671$ (BKJD)



DV Model-Shift Uniqueness Test

009950201-04, P = 409.216806 Days, E = 225.949250 Days

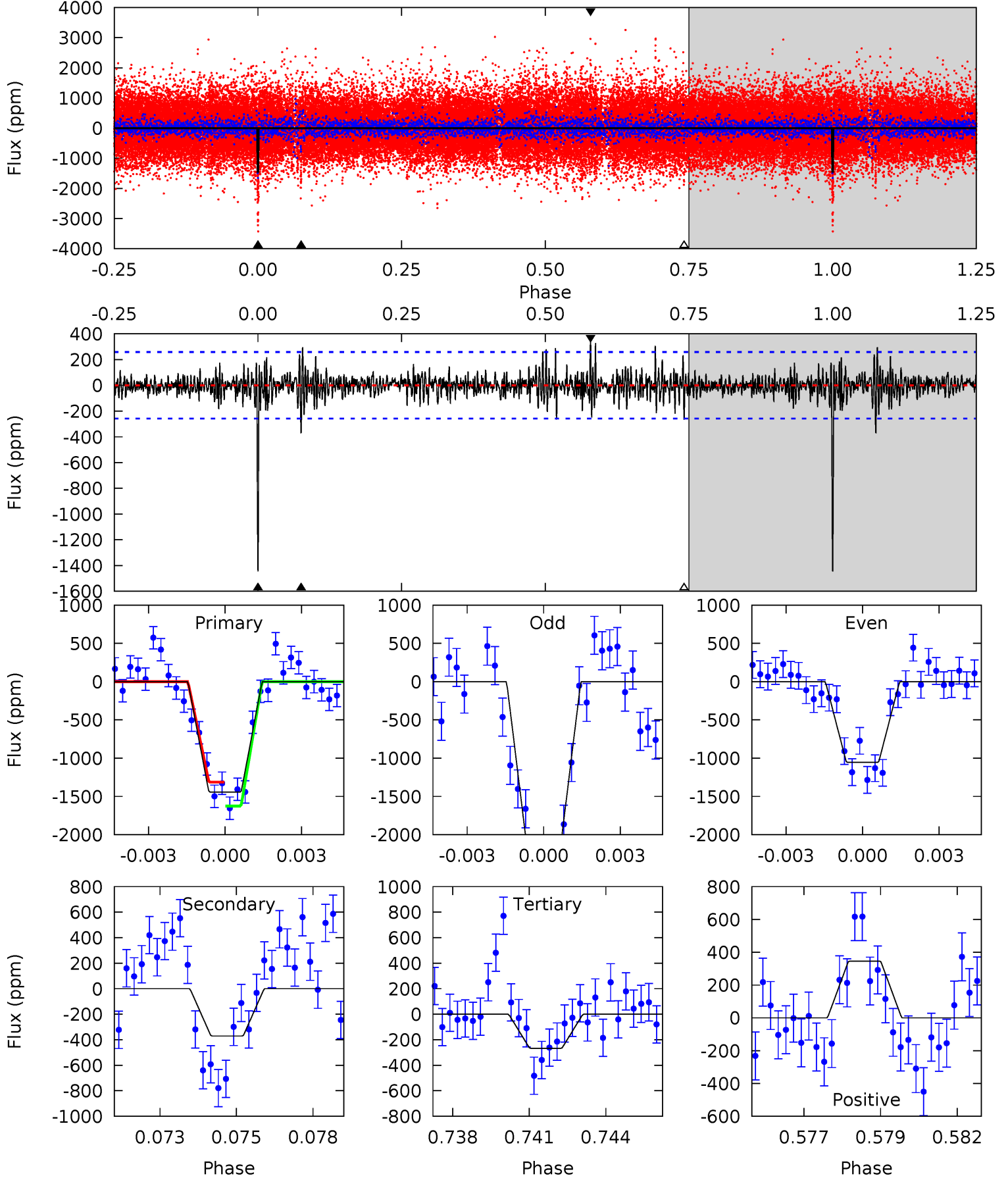
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.0	14.3	14.2	21.8	5.26	2.97	4.17	9.85	2.22	0.06	-7.56	0.64	1.01	0.48	1.15



Alt Model-Shift Uniqueness Test

009950201-04, P = 409.284207 Days, E = 225.845671 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	7.57	5.45	7.06	5.27	3.00	1.38	24.0	22.4	2.11	0.51	11.3	0.81	0.19	3.17



Stellar Parameters For KIC 009950201

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6074^{+191}_{-233}	$4.508^{+0.054}_{-0.216}$	$-0.300^{+0.300}_{-0.300}$	$0.914^{+0.288}_{-0.096}$	$0.982^{+0.129}_{-0.129}$	$1.813^{+0.507}_{-0.946}$
	+3%/-4%	+1%/-5%	+100%/-100%	+32%/-11%	+13%/-13%	+28%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009950201-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-757 ± 53	$4.76^{+0.94}_{-0.75}$	352^{+28}_{-20}	4805^{+358}_{-292}	20469^{+8877}_{-5933}
Alt.	-371 ± 49	$3.95^{+0.88}_{-0.68}$	353^{+24}_{-19}	4476^{+390}_{-287}	14473^{+7443}_{-4628}

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 $A_{obs} \gg 1.0$

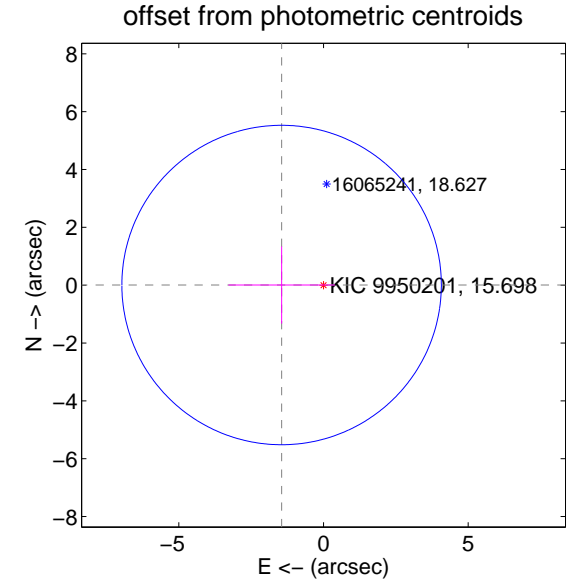
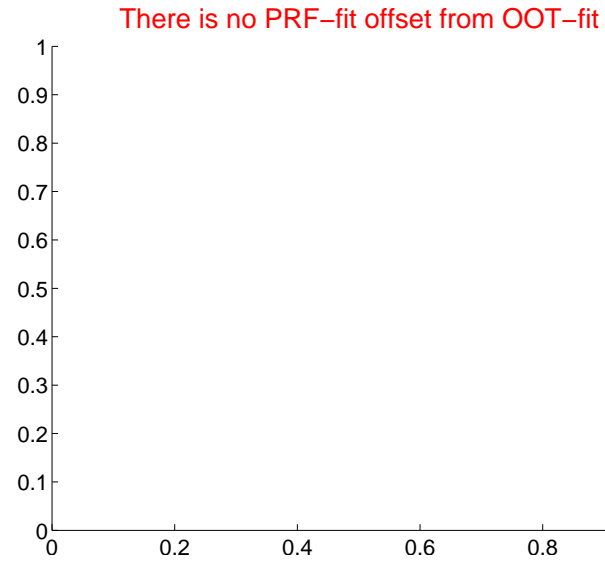
DV Centroid Data

Supplemental centroid analysis for 009950201-04. Kepler magnitude: 15.70. Transit SNR 8.01

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	1.45 ± 1.84	0.79	1.45 ± 1.84	0.01 ± 1.33



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.

Q9 no difference image



Q9 no OOT image



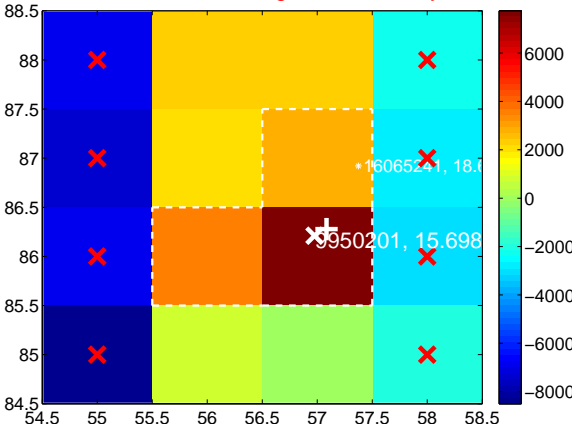
Q10 no difference image



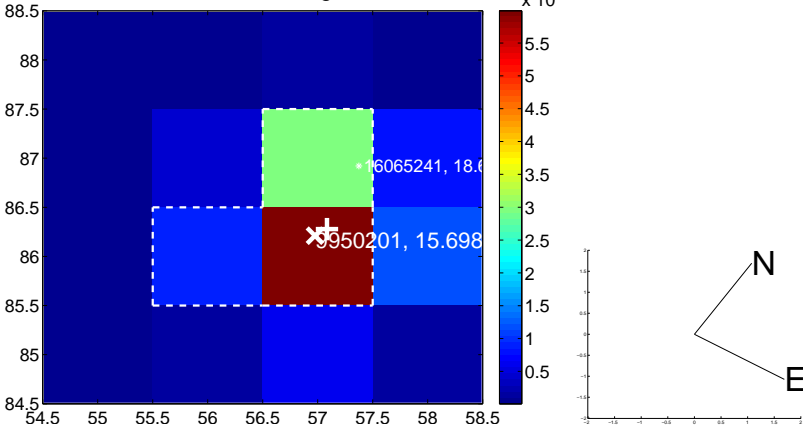
Q10 no OOT image



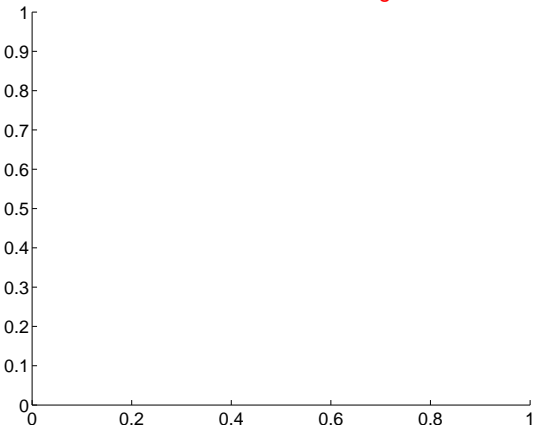
Q11 difference image. Poor Quality



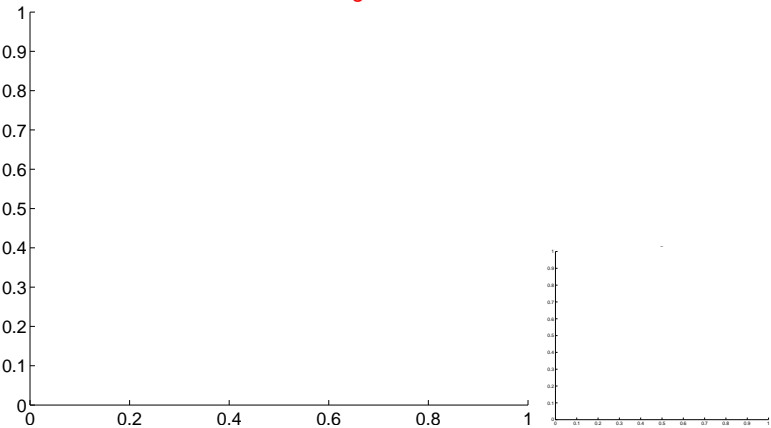
Q11 OOT image



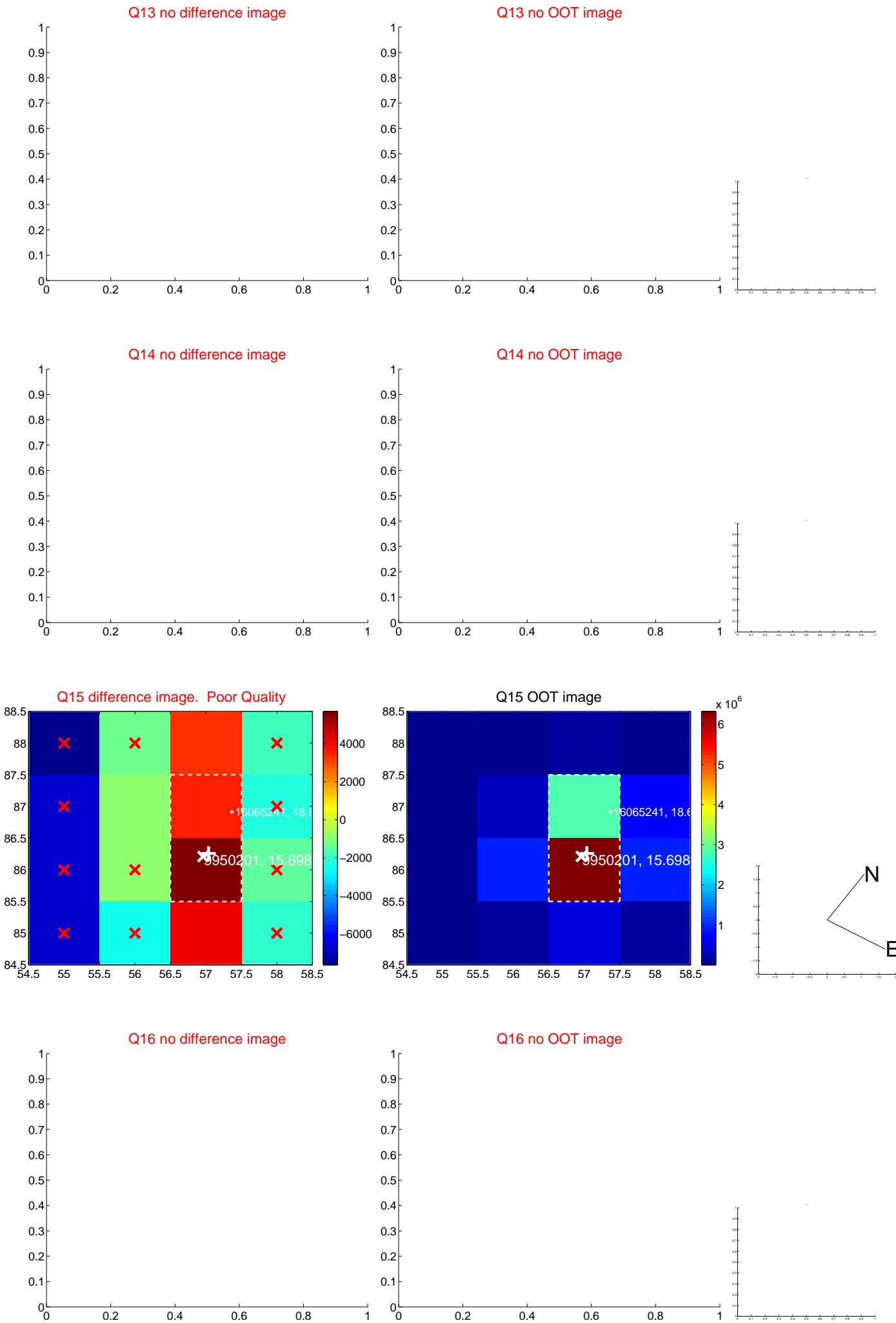
Q12 no difference image



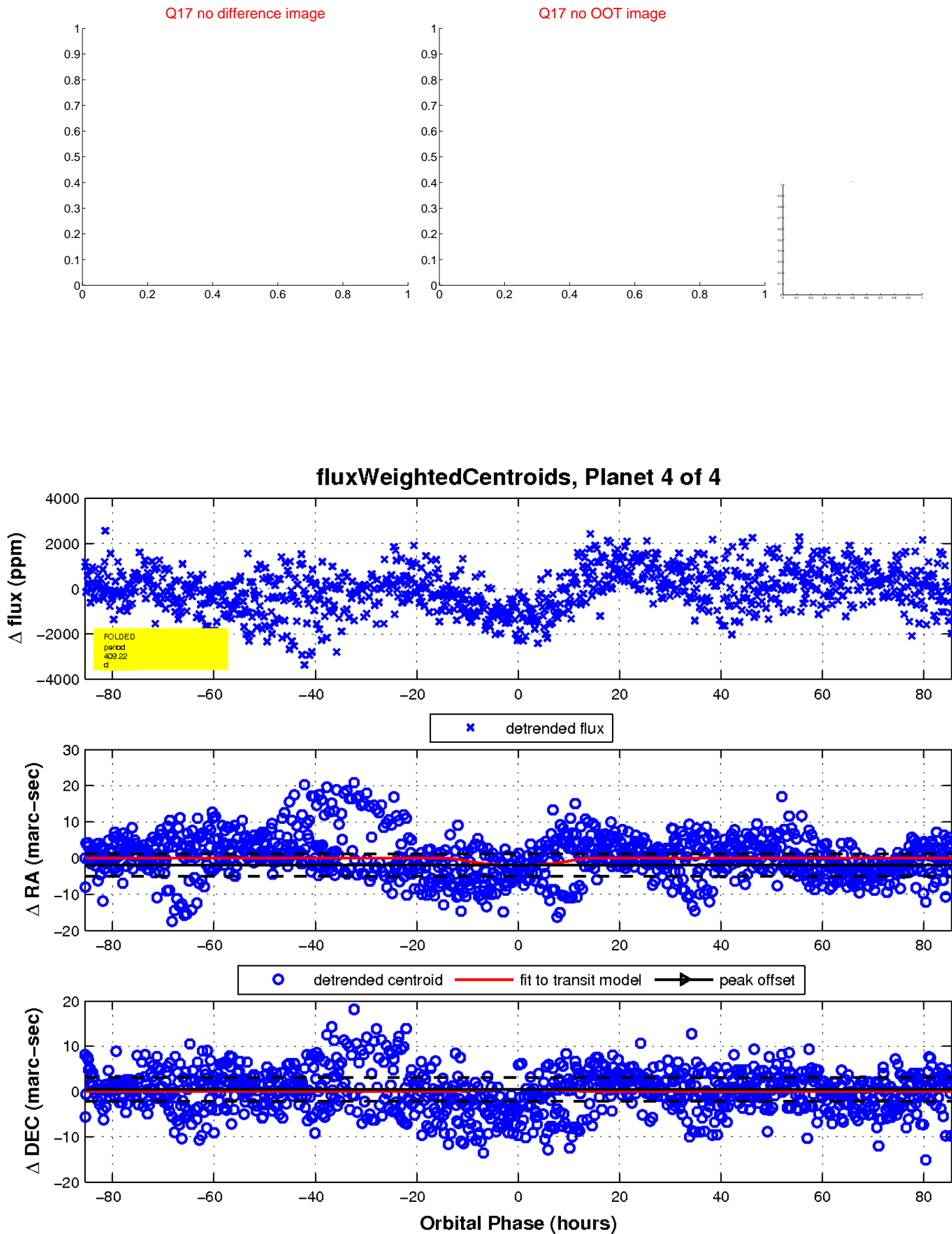
Q12 no OOT image



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.



UKIRT Image

Declination

