

KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

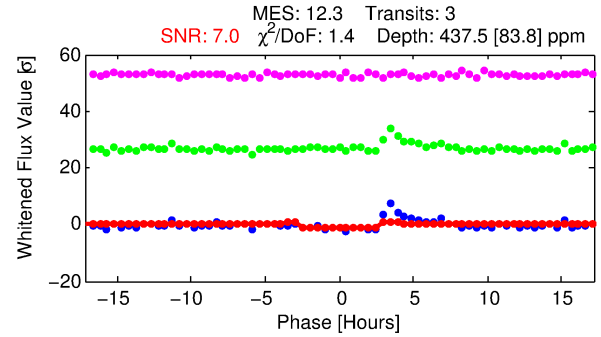
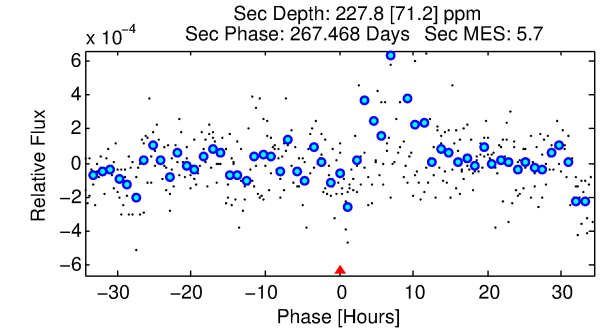
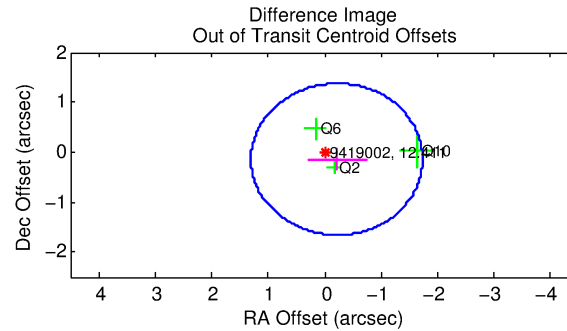
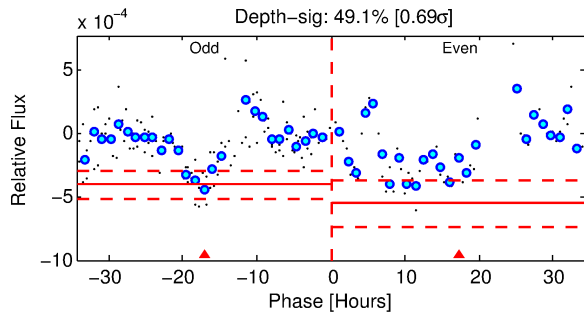
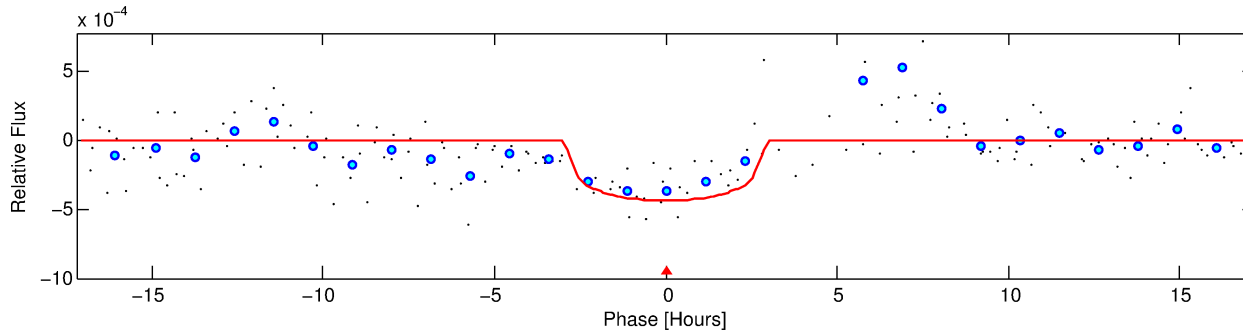
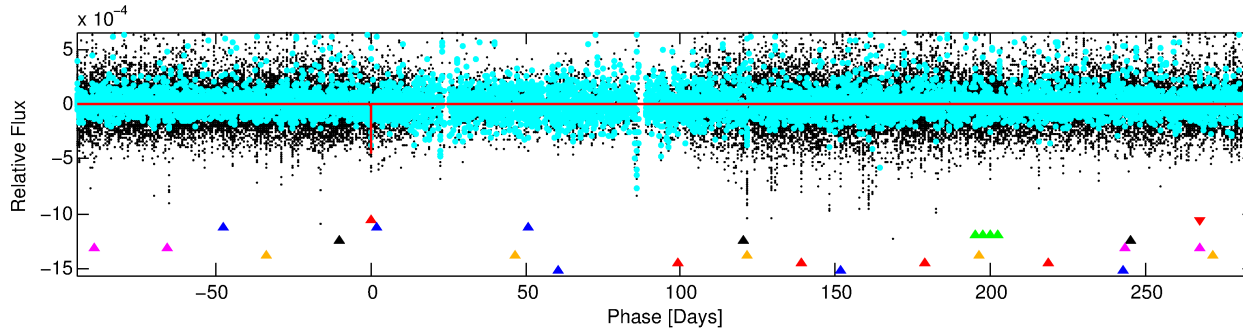
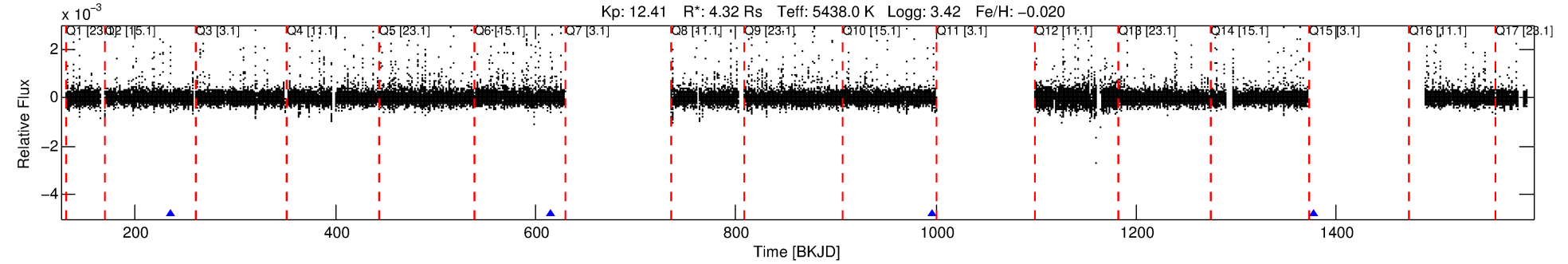
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-01

No Significant Match Found

DV One-Page Summary

KIC: 9419002 Candidate: 1 of 8 Period: 380.669 d



DV Fit Results:

Period = 380.66890 [0.00660] d
Epoch = 235.0340 [0.0085] BKJD
Rp/R* = 0.0201 [0.0179]
a/R* = 403.64 [1444.80]
b = 0.64 [3.34]
Seff = 9.32 [13.45]
Teq = 446 [161] K
Rp = 9.46 [11.07] Re
a = 1.2521 [1.0521] AU
Ag = 2194.38 [5075.64] [0.43 σ]
Teffp = 4715 [2143] K [1.99 σ]

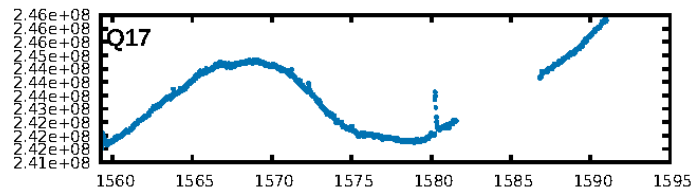
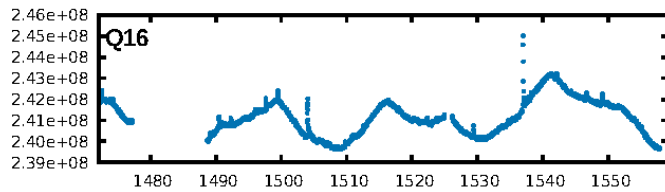
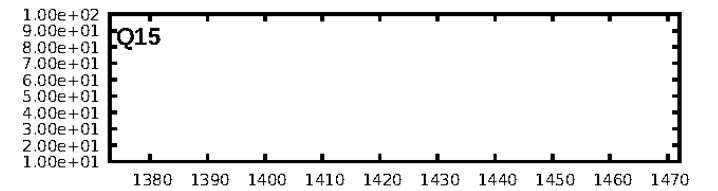
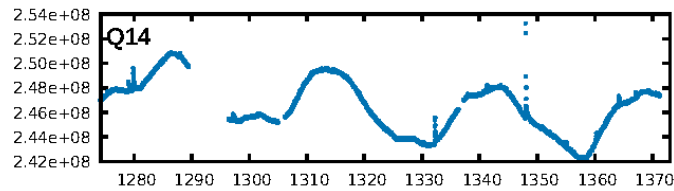
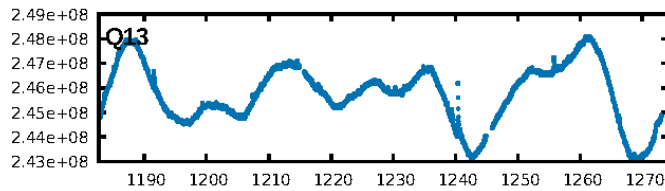
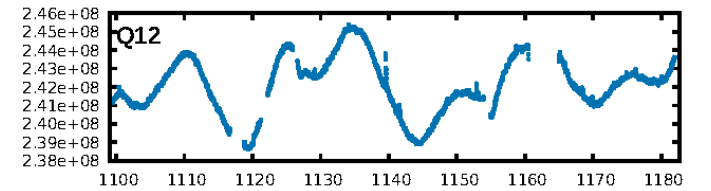
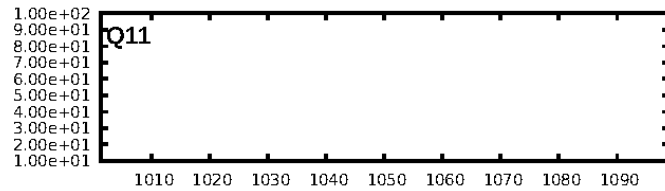
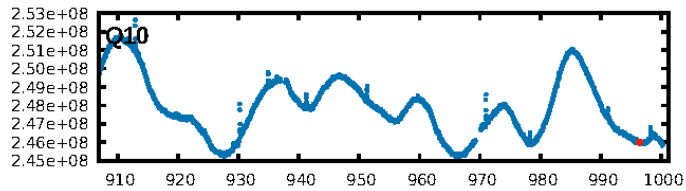
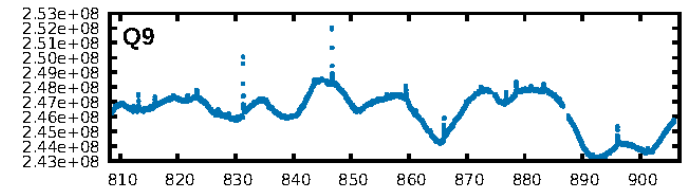
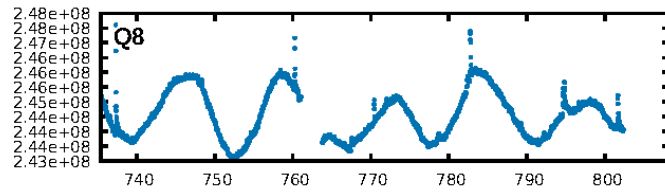
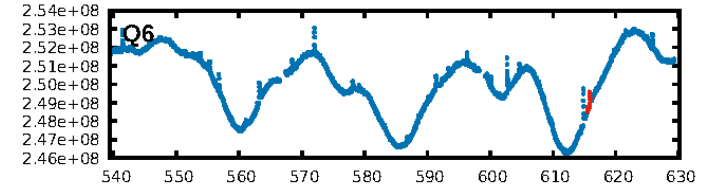
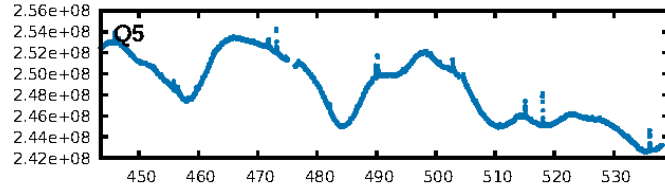
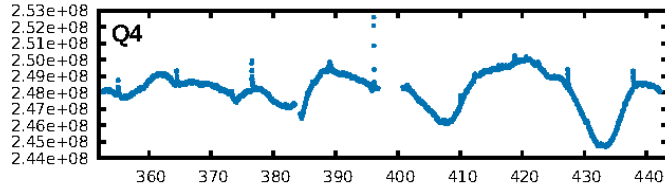
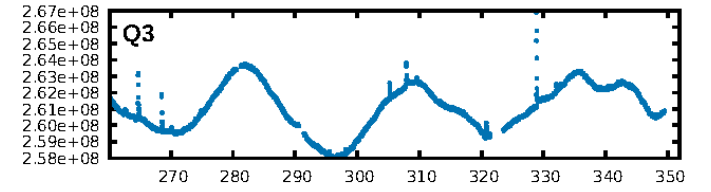
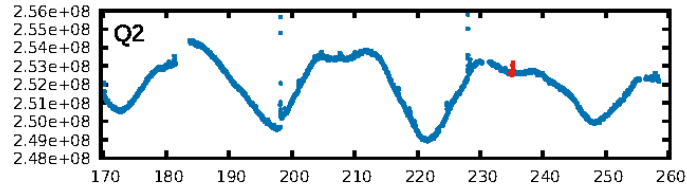
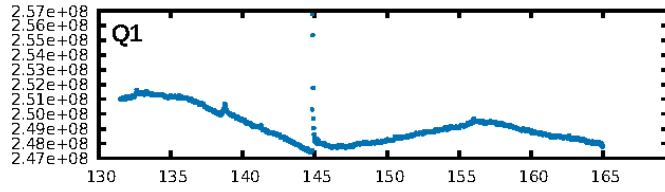
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.66 σ]
LongPeriod-sig: 100.0% [87.21 σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 74.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 111.2
Centroid-sig: 3.5%
Centroid-so: 0.956 arcsec [1.51 σ]
OotOffset-rm: 0.258 arcsec [0.51 σ]
KicOffset-rm: 0.168 arcsec [0.44 σ]
OotOffset-st: 3/0/0/0 [3]
KicOffset-st: 3/0/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

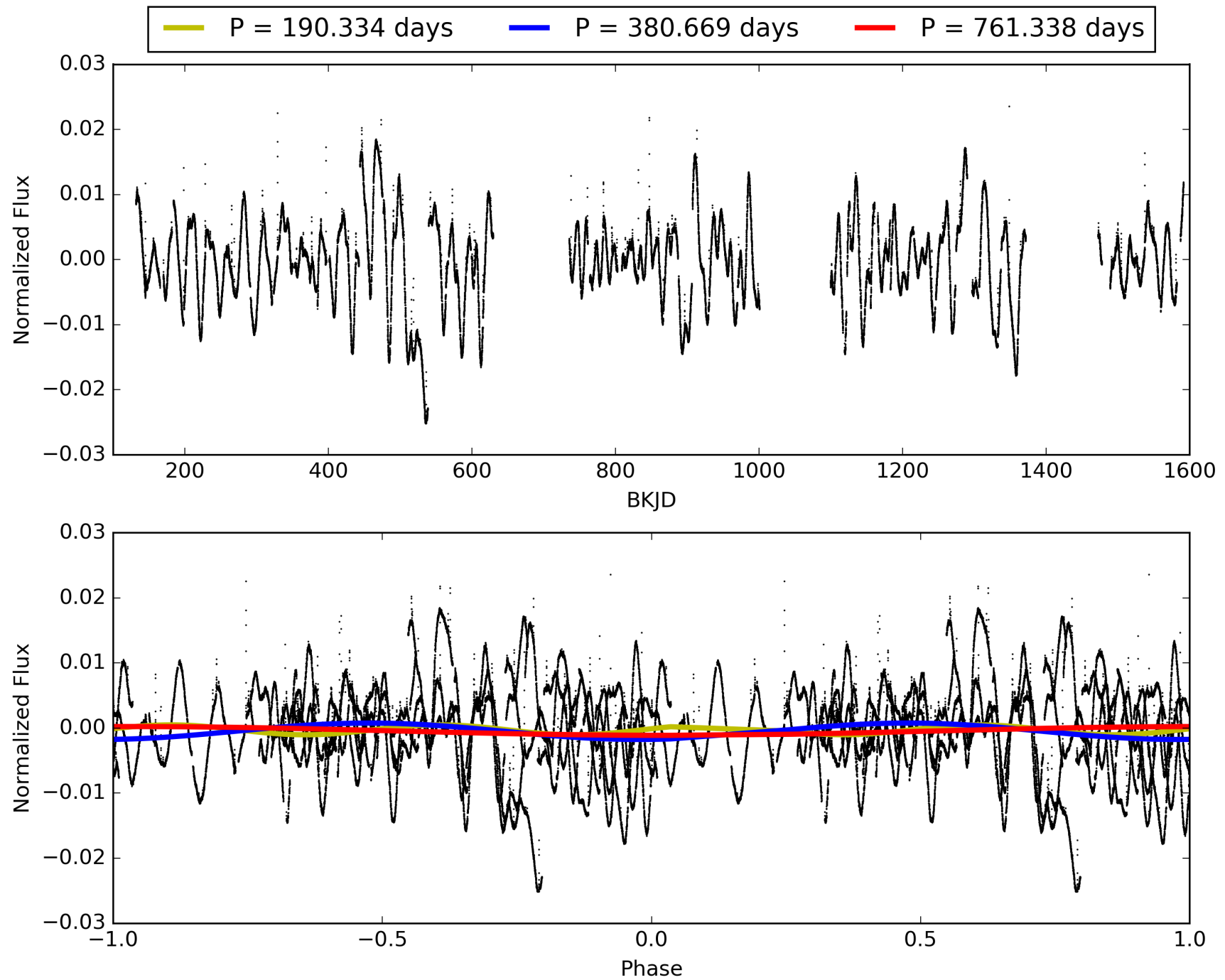
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:27:19 Z

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

TCE 009419002-01, PDC Light Curves

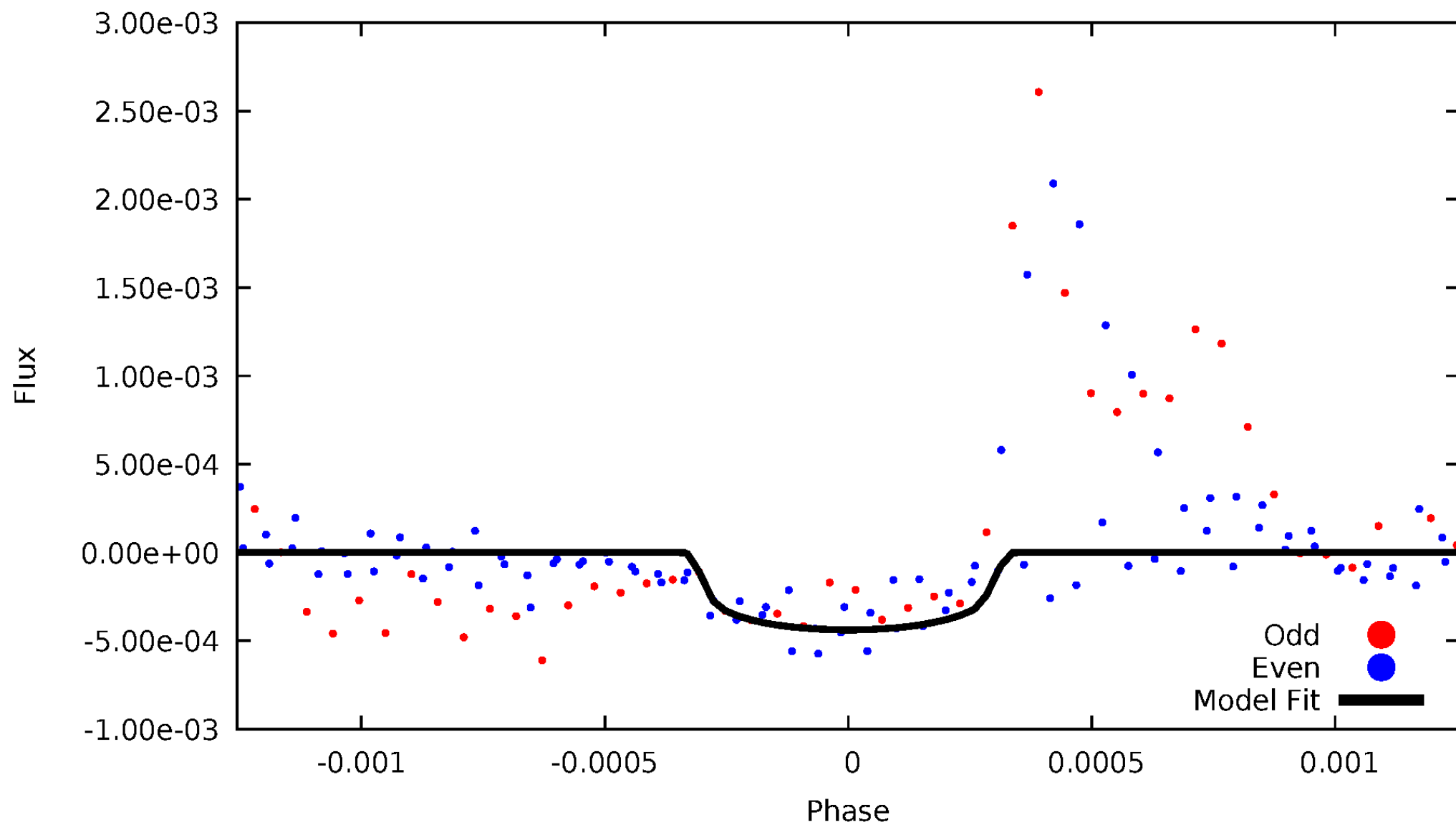


TCE 009419002-01



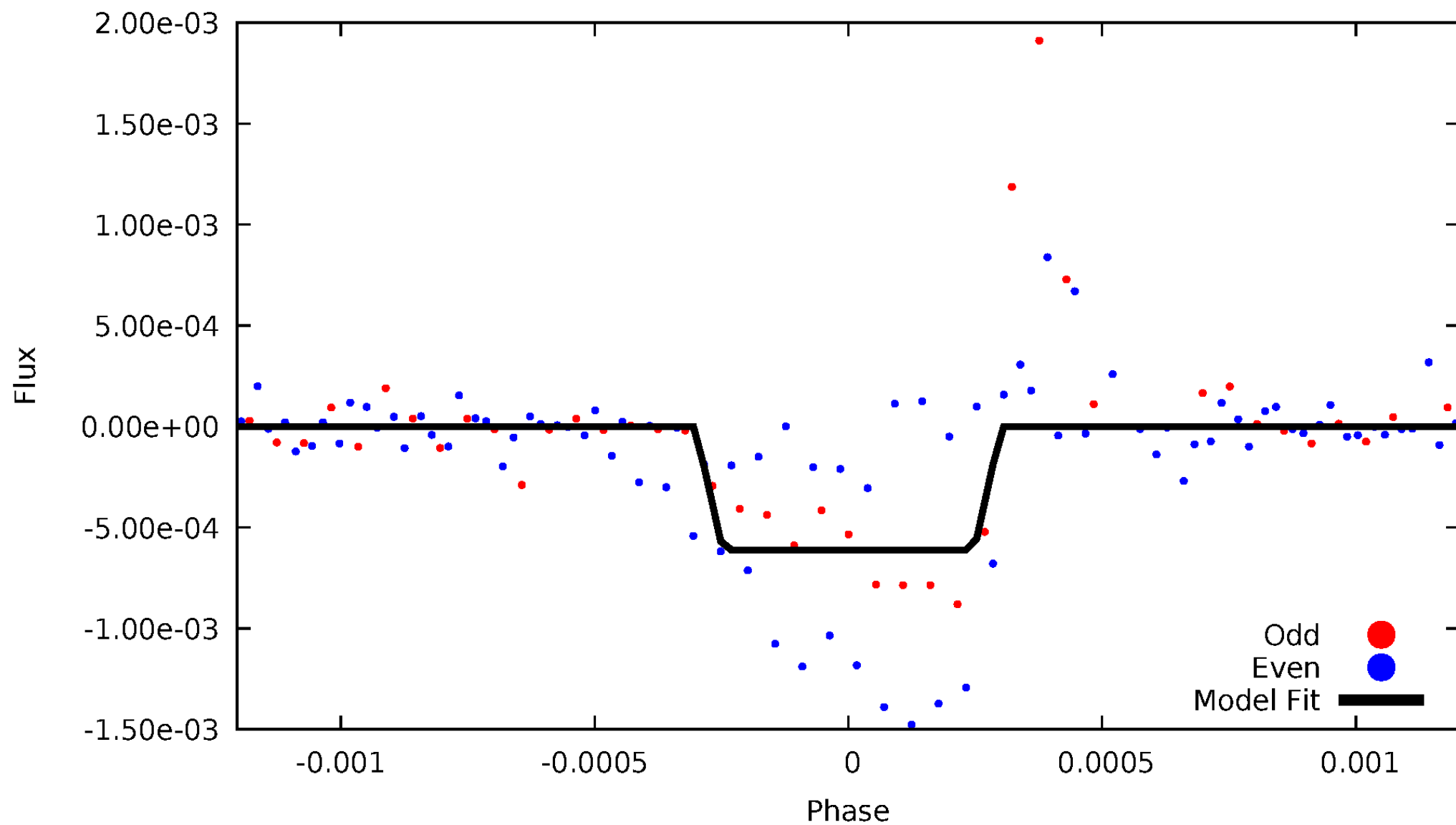
DV Odd/Even

TCE 009419002-01



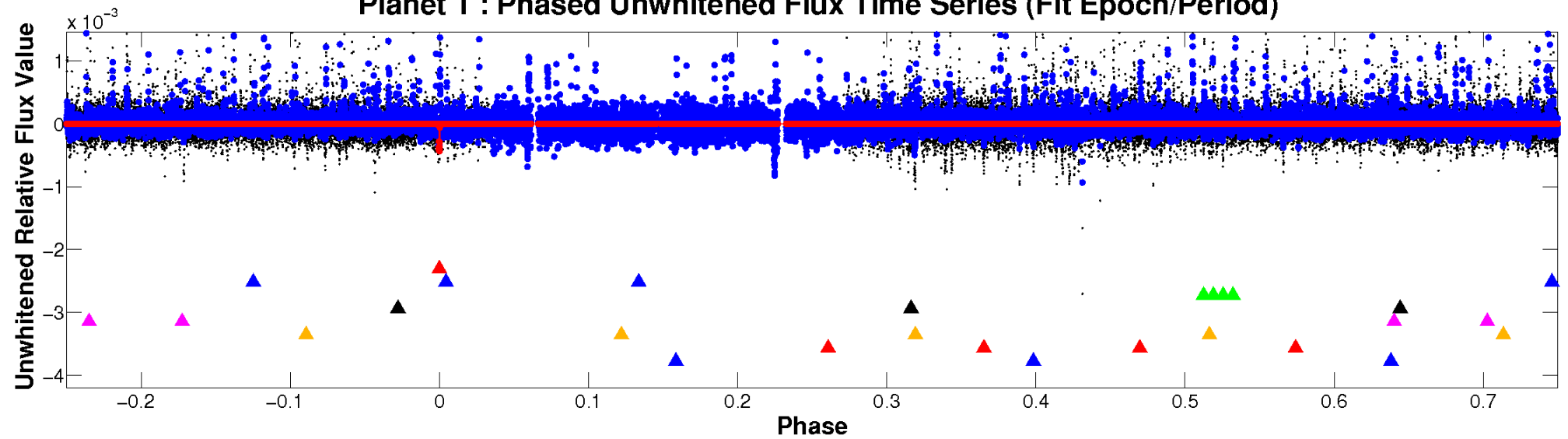
ALT Odd/Even

TCE 009419002-01

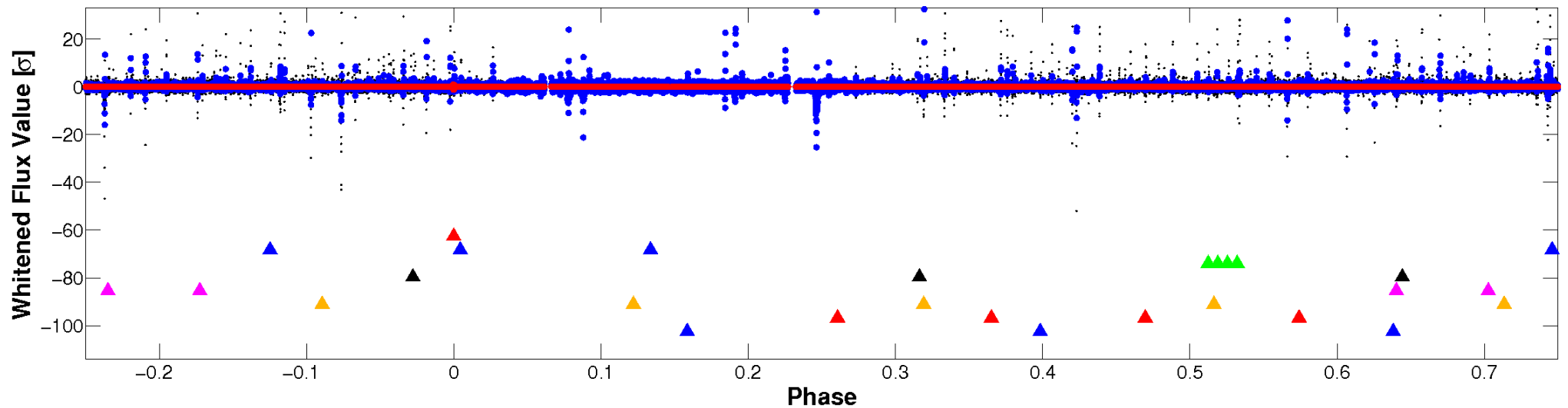


Non-Whitened Vs. Whitened Light Curve

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

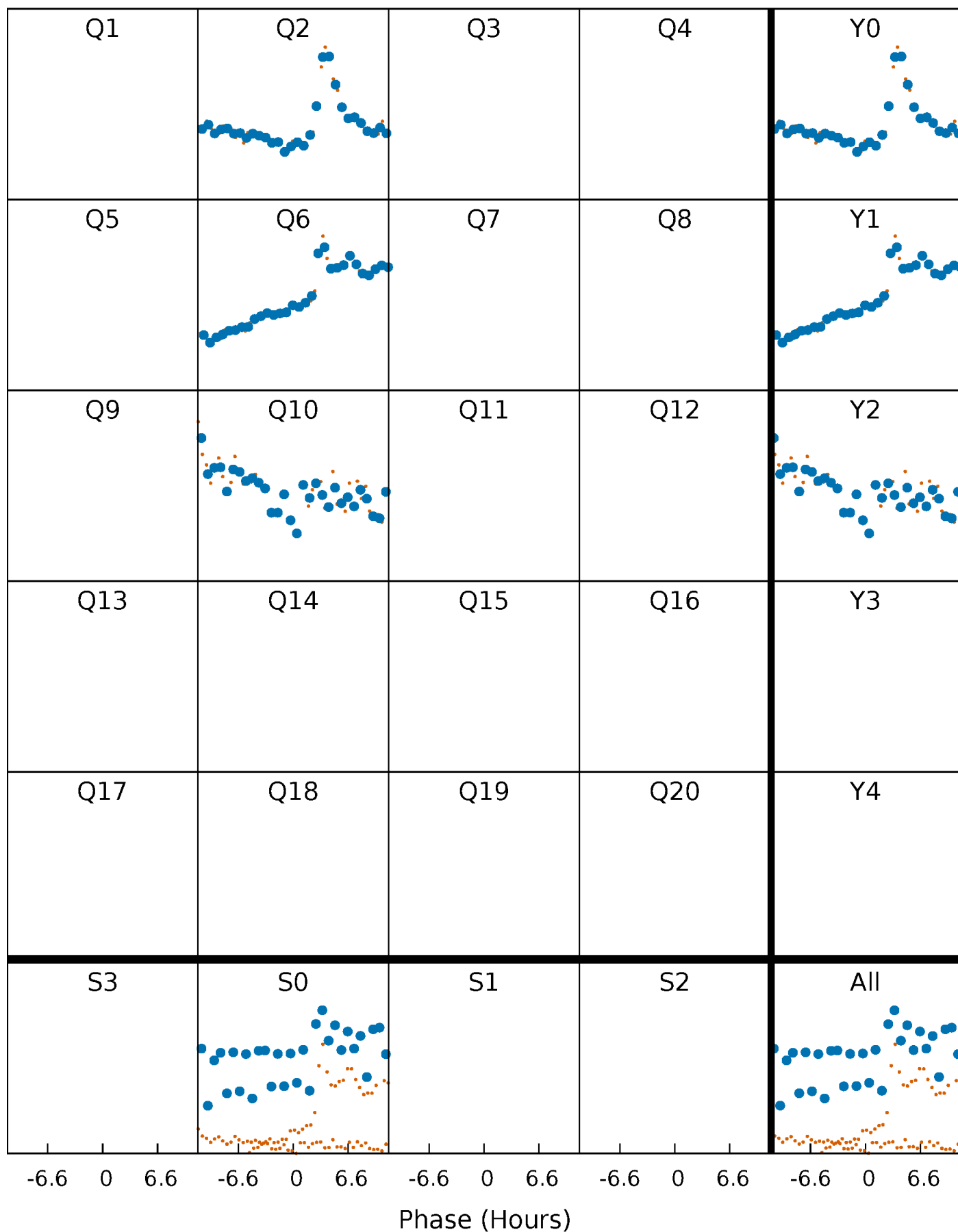


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



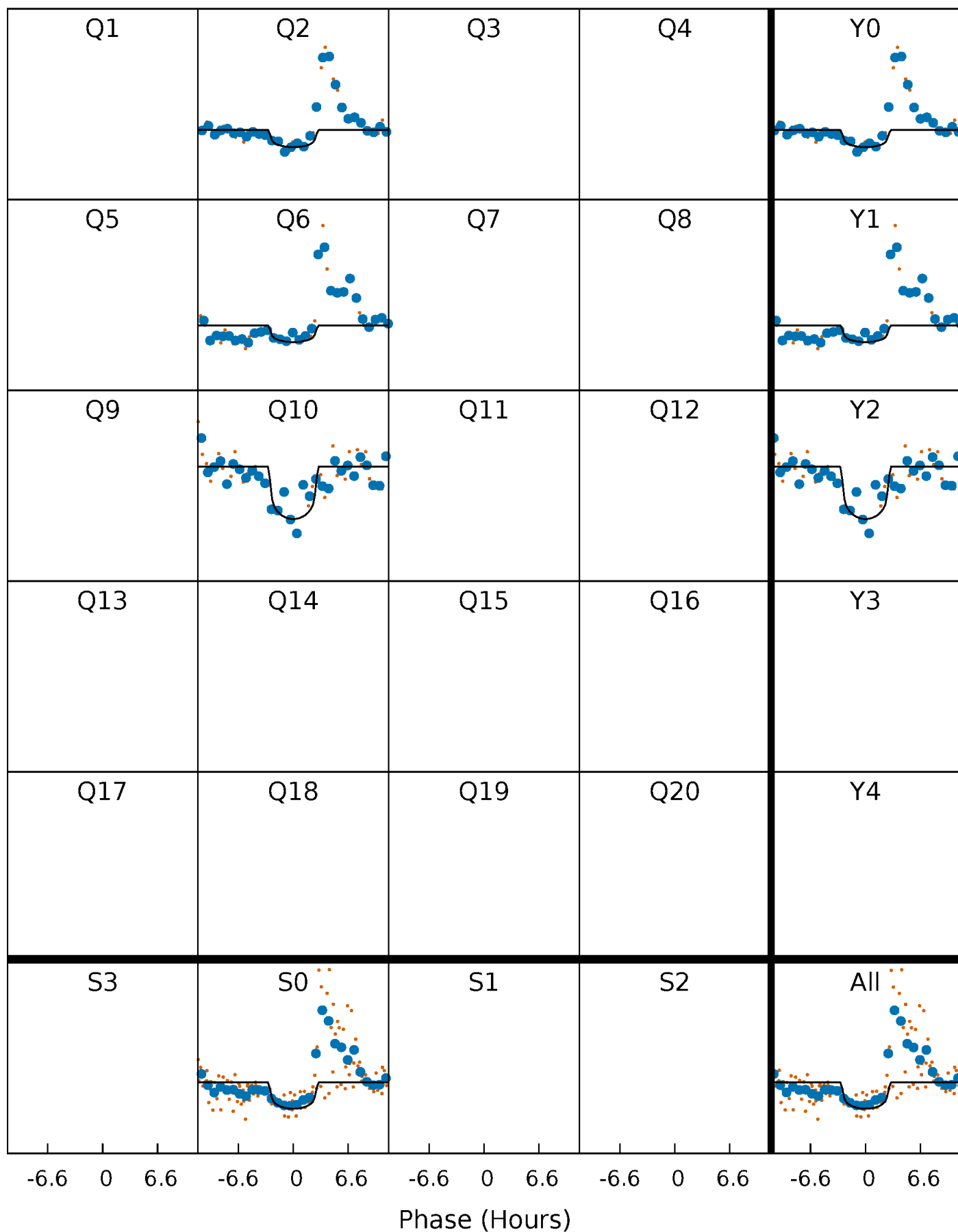
PDC Quarter-Phased Transit Curves

TCE 009419002-01 P=380.668902 Days $T_0=235.033970$ (BKJD)



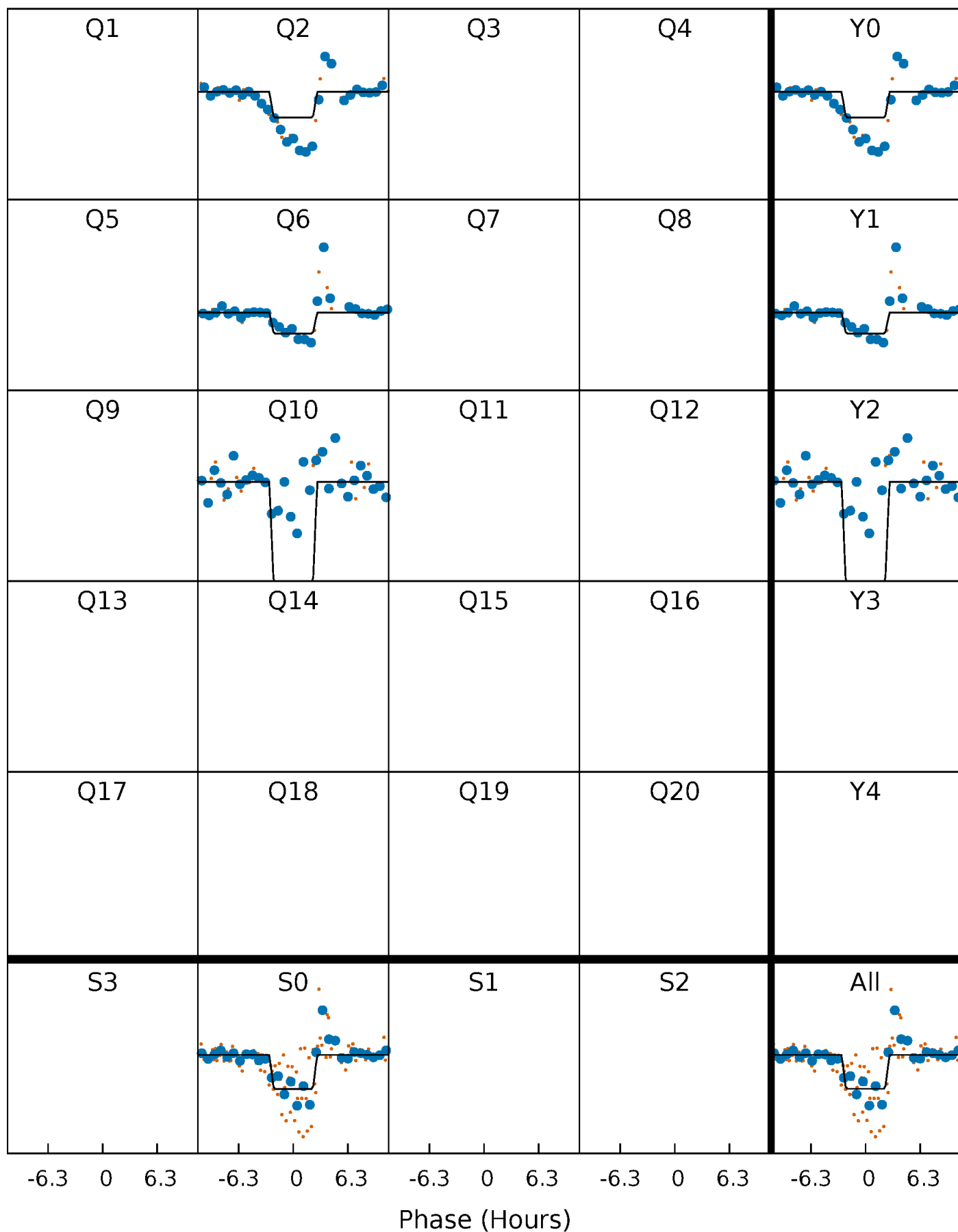
DV Quarter-Phased Transit Curves

TCE 009419002-01 P=380.668902 Days $T_0=235.033970$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

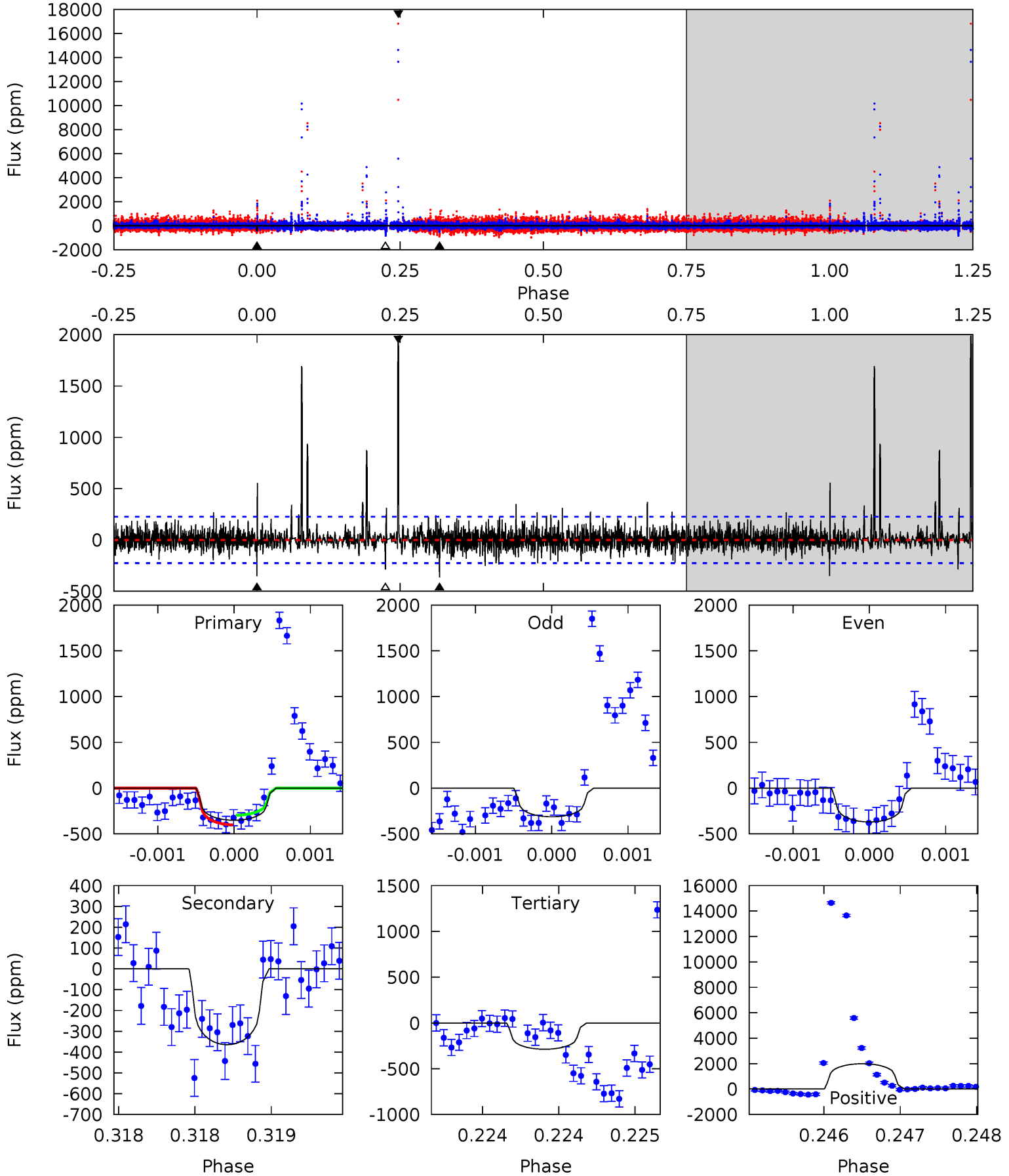
TCE 009419002-01 P=380.663600 Days $T_0=235.044866$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-01, P = 380.668902 Days, E = 235.033970 Days

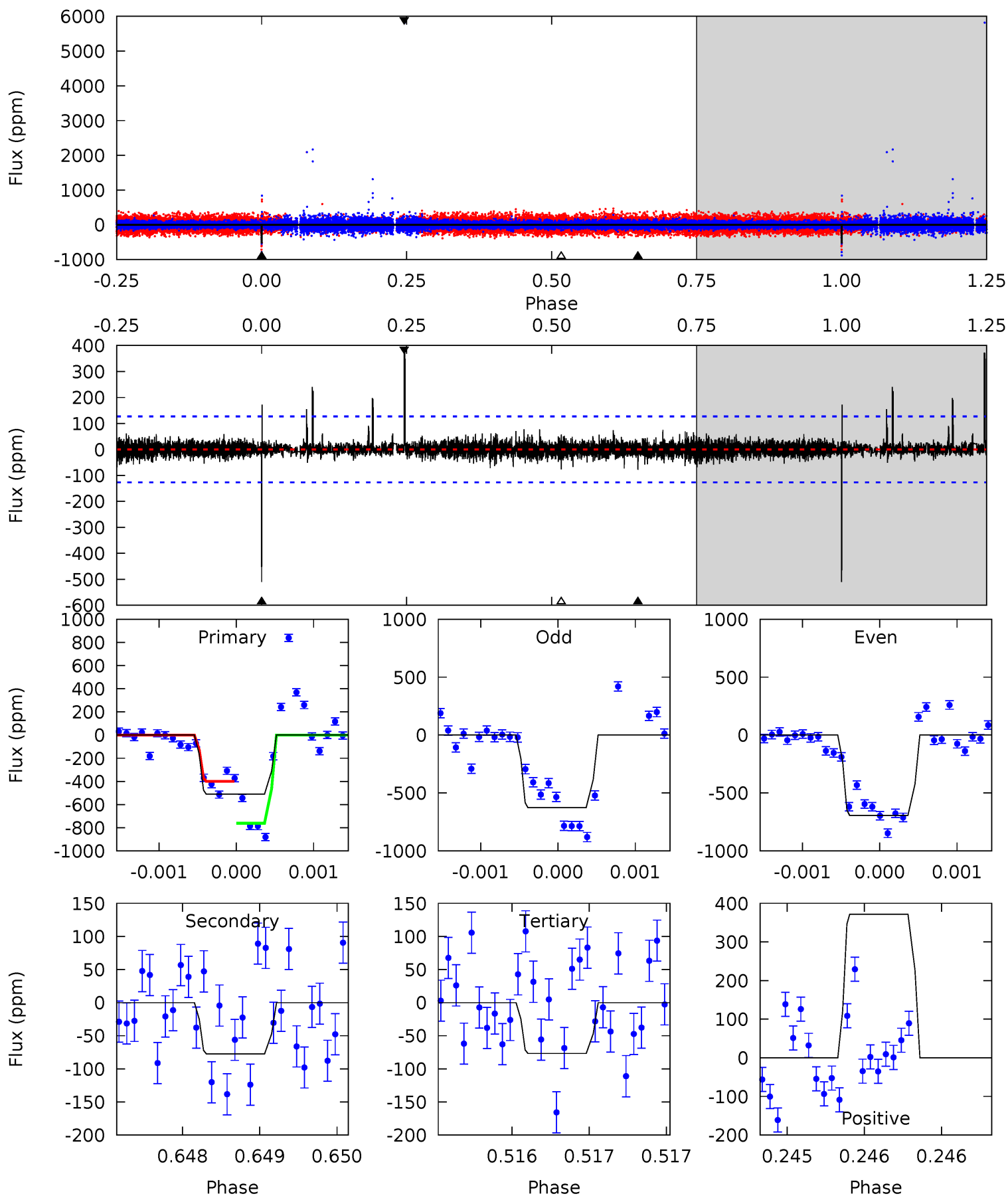
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.57	8.89	7.00	48.6	5.52	3.40	2.37	1.57	-40.0	1.89	-39.7	0.51	0.98	0.85	1.20



Alt Model-Shift Uniqueness Test

009419002-01, P = 380.663600 Days, E = 235.044866 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	3.39	3.36	16.3	5.54	3.44	0.79	19.0	6.05	0.03	-12.9	1.74	0.99	0.42	6.94



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-365 ± 41	$9.57^{+8.23}_{-5.72}$	611^{+55}_{-120}	4857^{+2417}_{-824}	3186^{+16434}_{-2230}
Alt.	-77 ± 23	$10.17^{+7.90}_{-6.70}$	604^{+55}_{-120}	3589^{+1436}_{-531}	642^{+4578}_{-460}

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

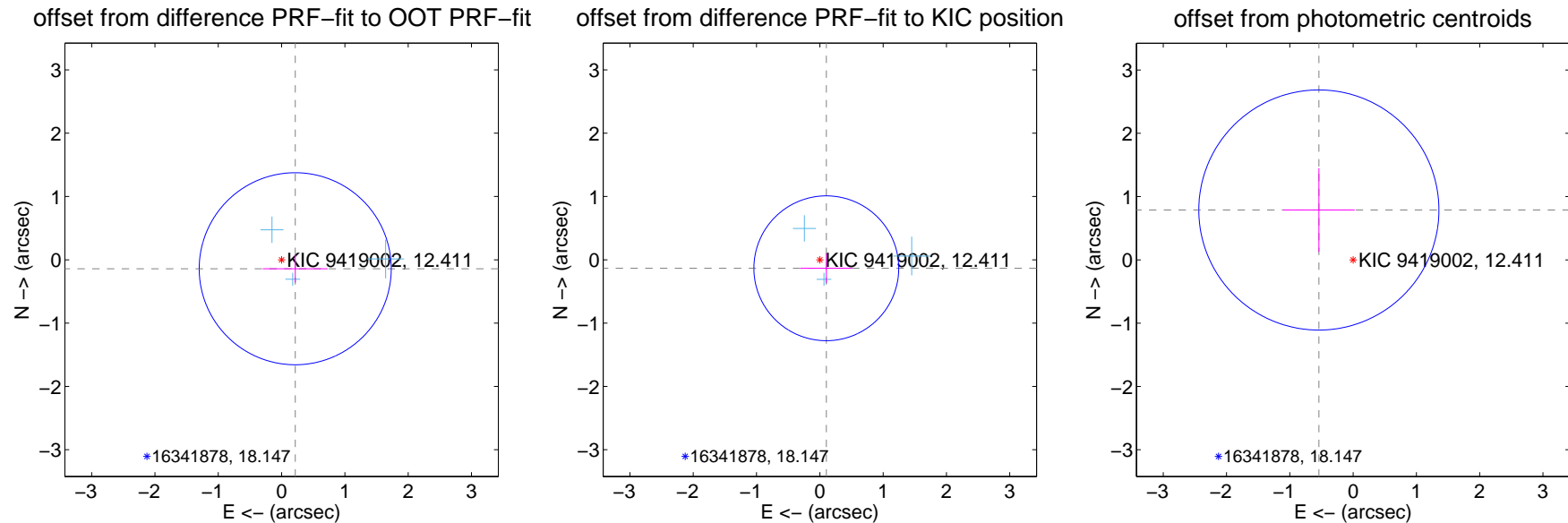
DV Centroid Data

Supplemental centroid analysis for 009419002-01. Kepler magnitude: 12.41. Transit SNR 6.95

There are 3 quarters with good PRF difference image offsets

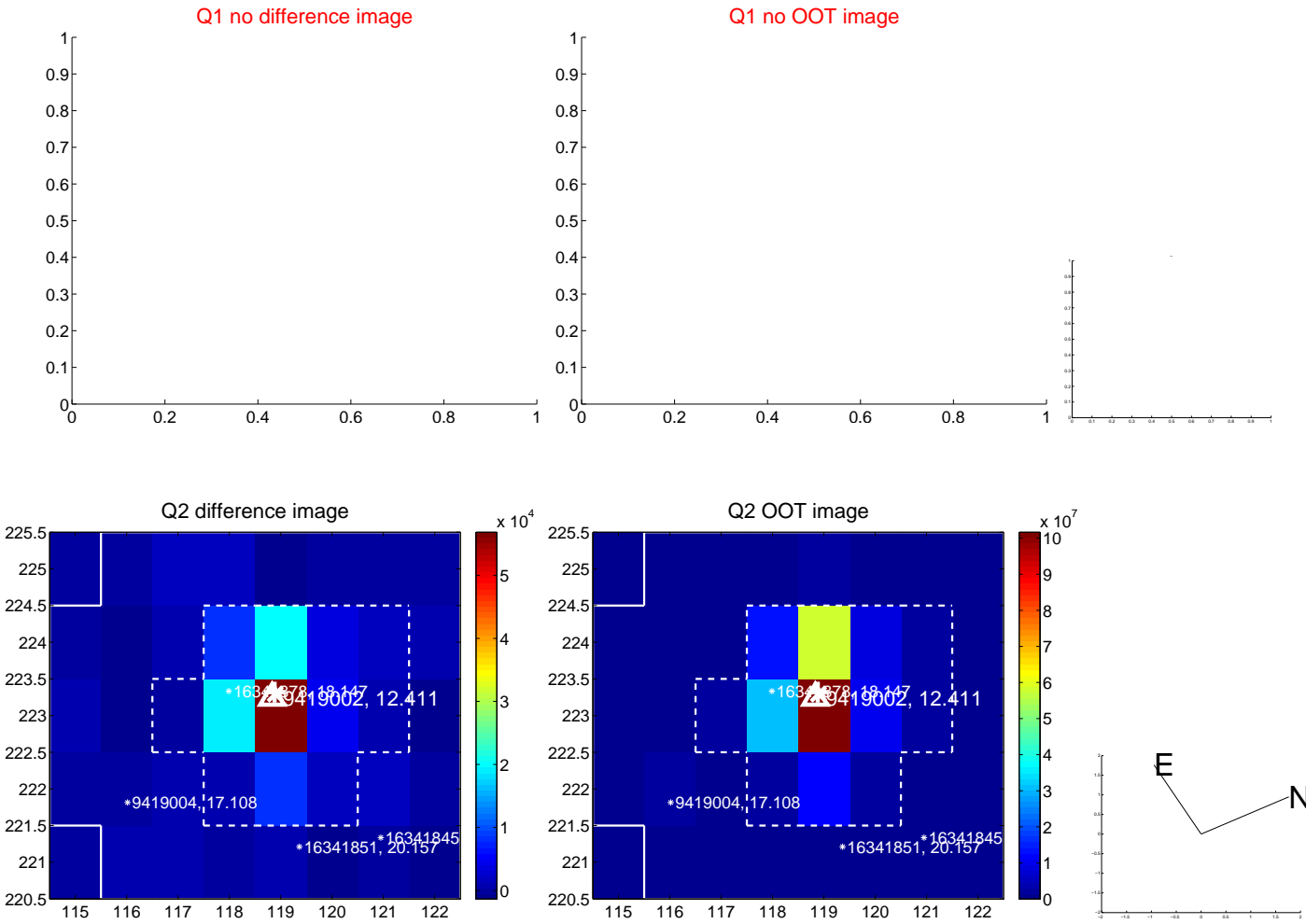
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.258 ± 0.506	0.51	-0.216 ± 0.513	-0.141 ± 0.219
PRF-fit source offset from KIC position	0.168 ± 0.381	0.44	-0.102 ± 0.407	-0.134 ± 0.236
photometric centroid source offset	0.96 ± 0.63	1.51	0.54 ± 0.57	0.79 ± 0.66

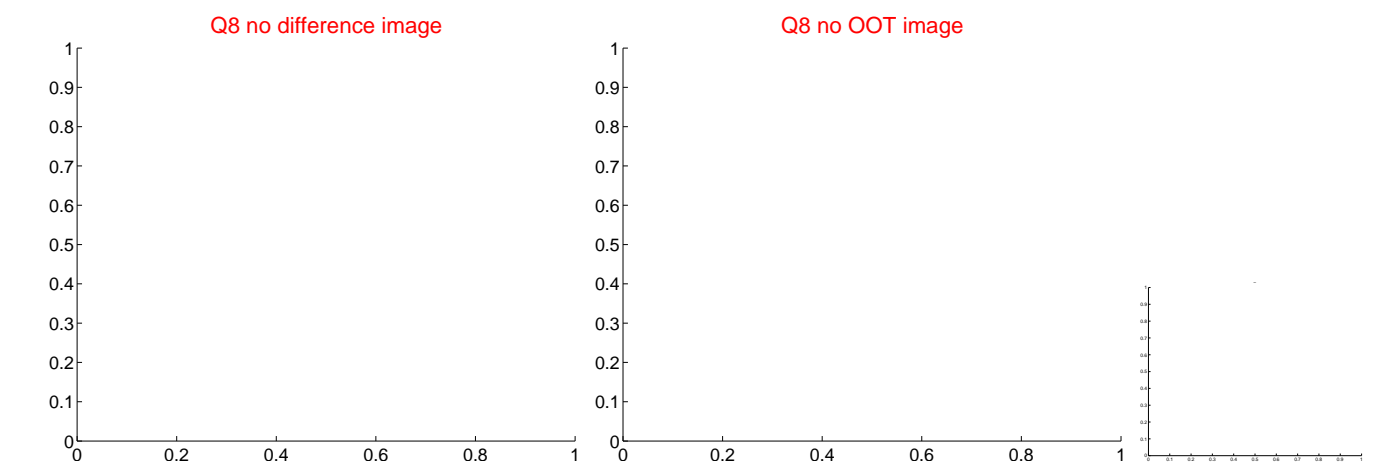
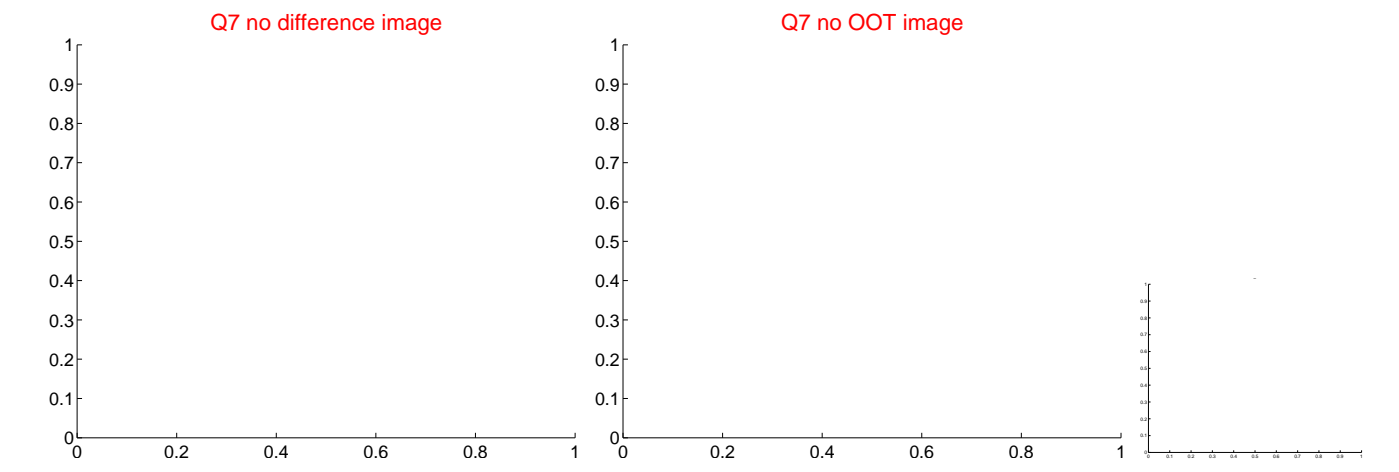
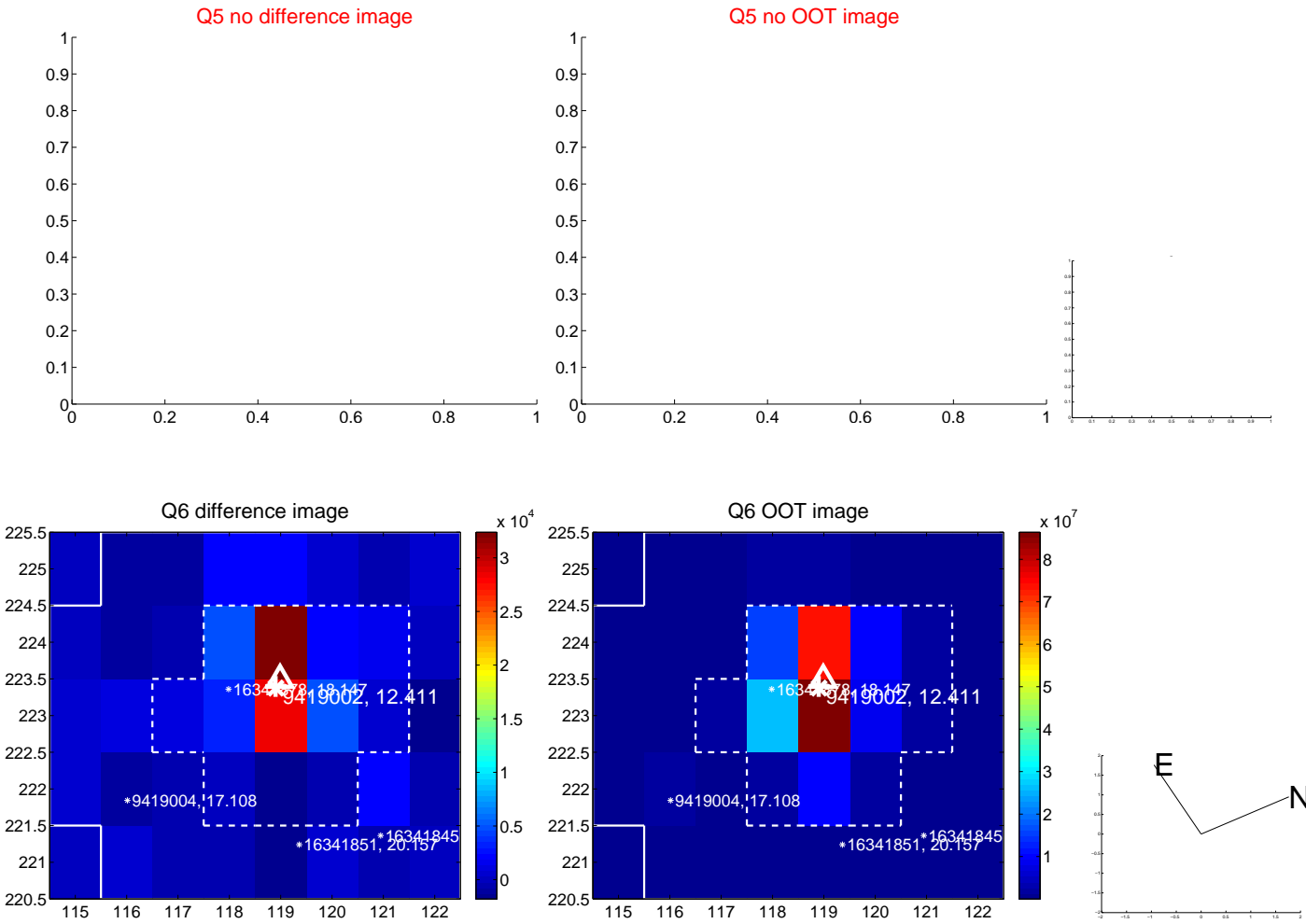


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

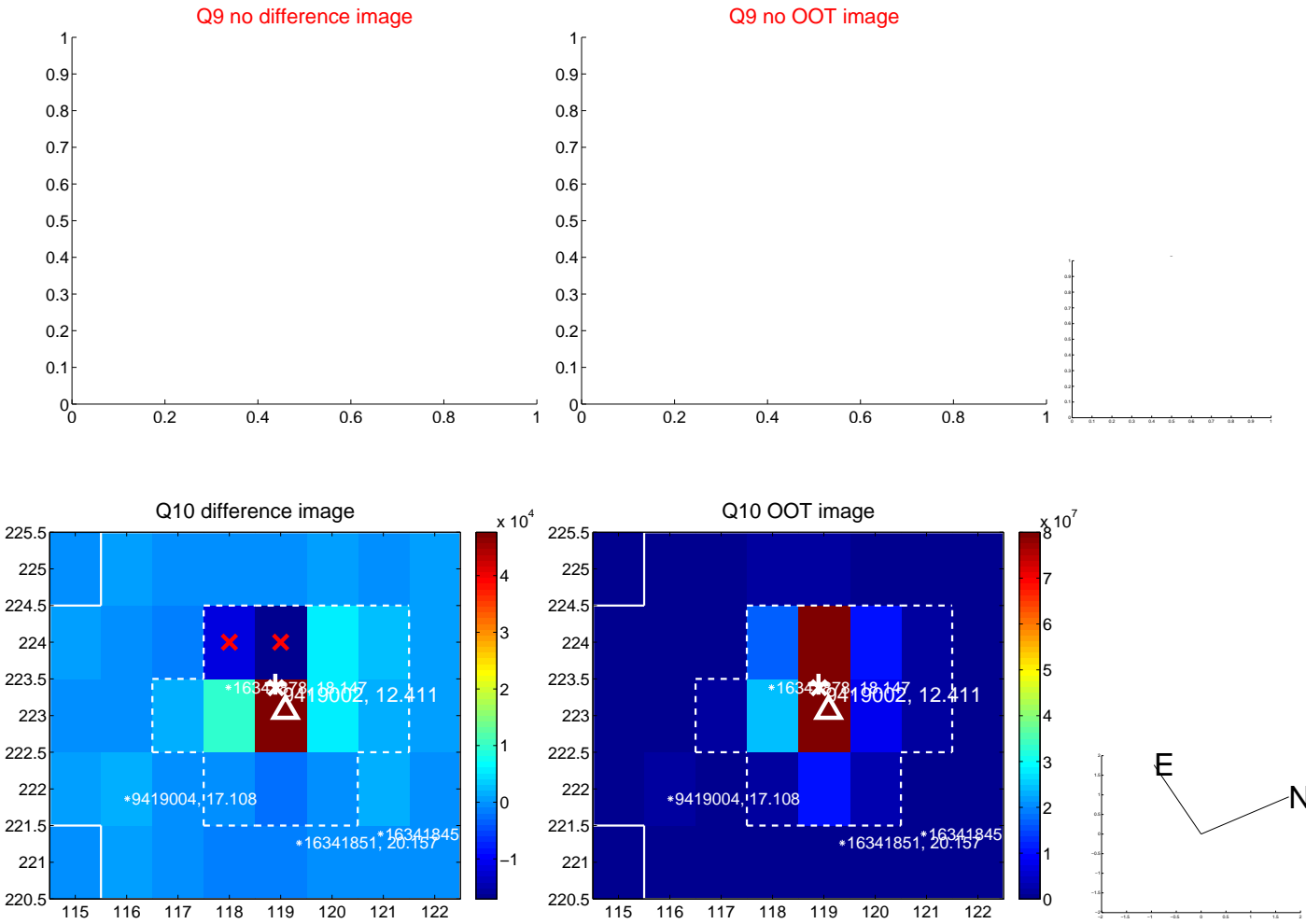
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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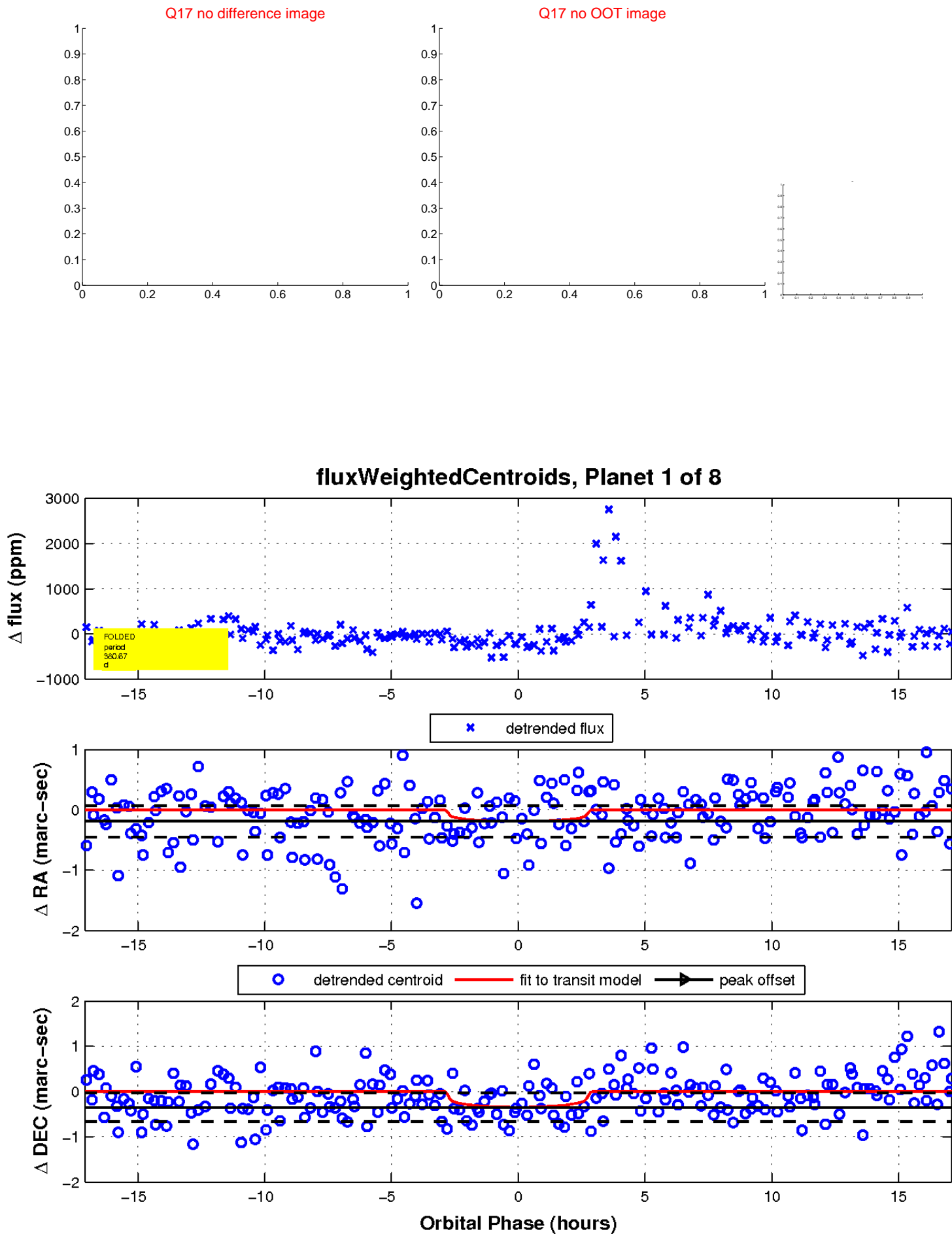
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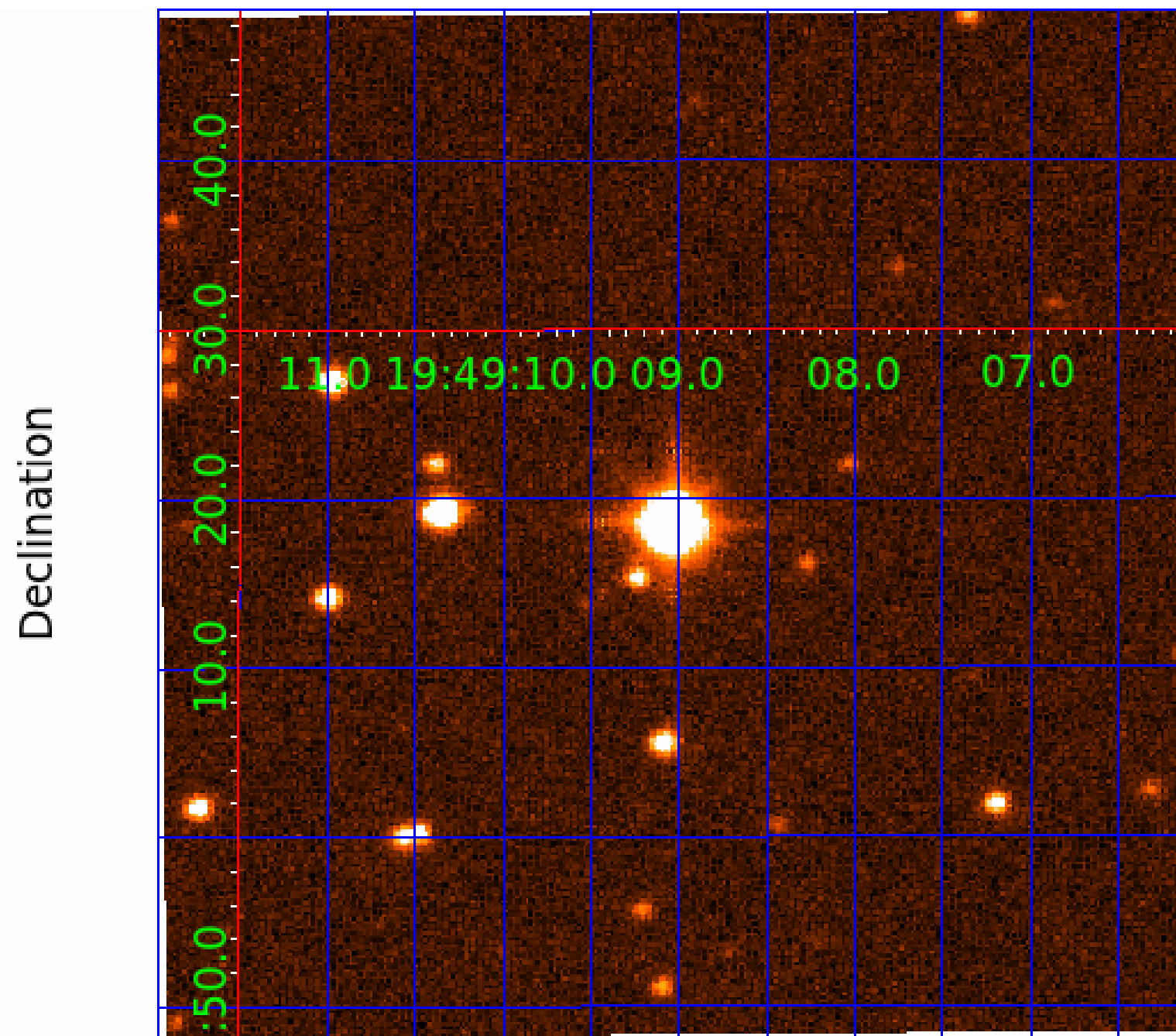
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UKIRT Image



KIC 009419002

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009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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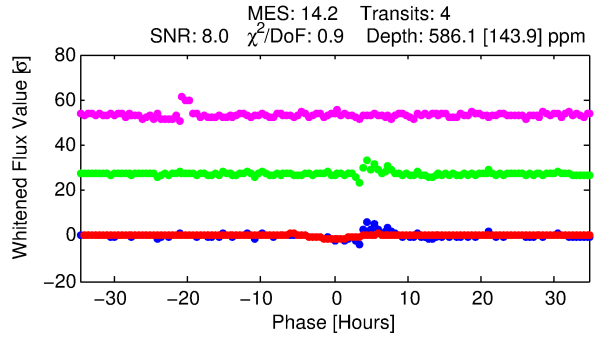
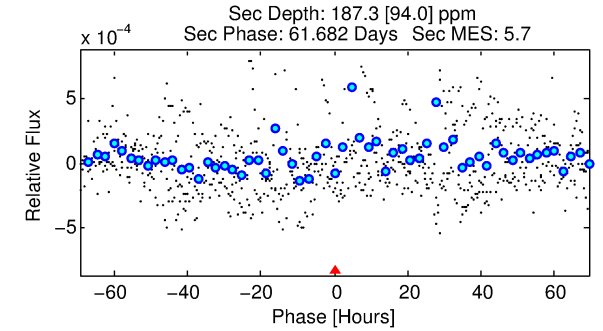
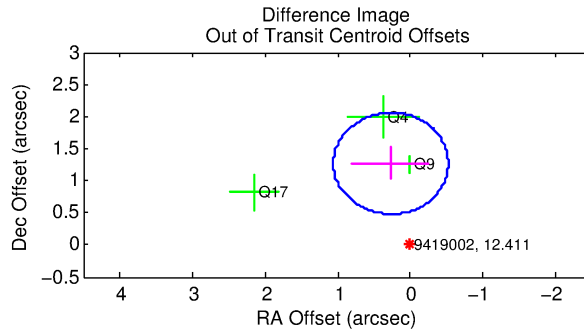
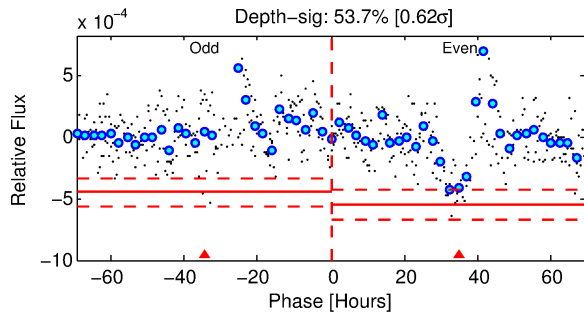
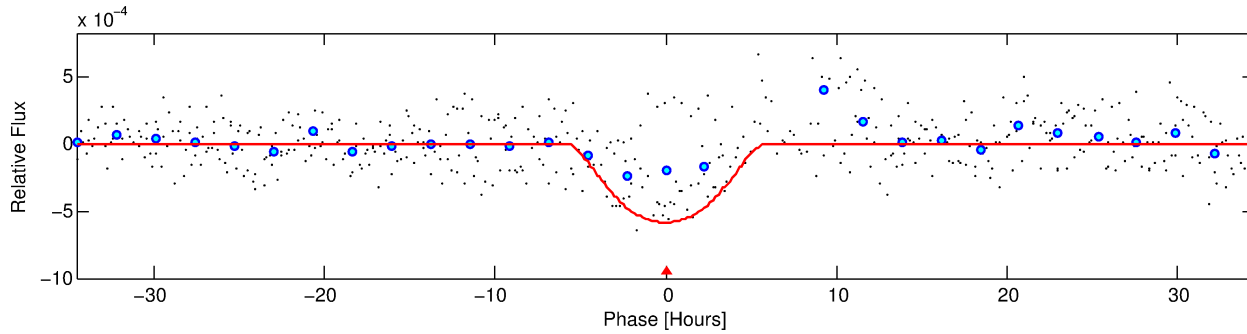
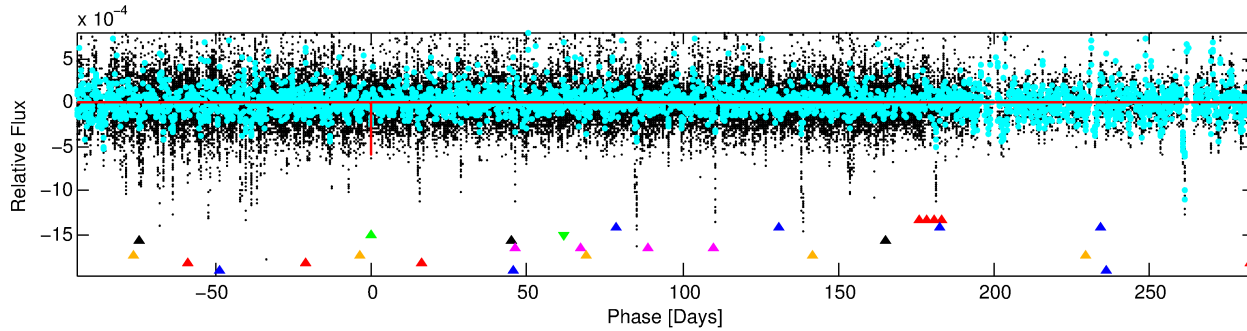
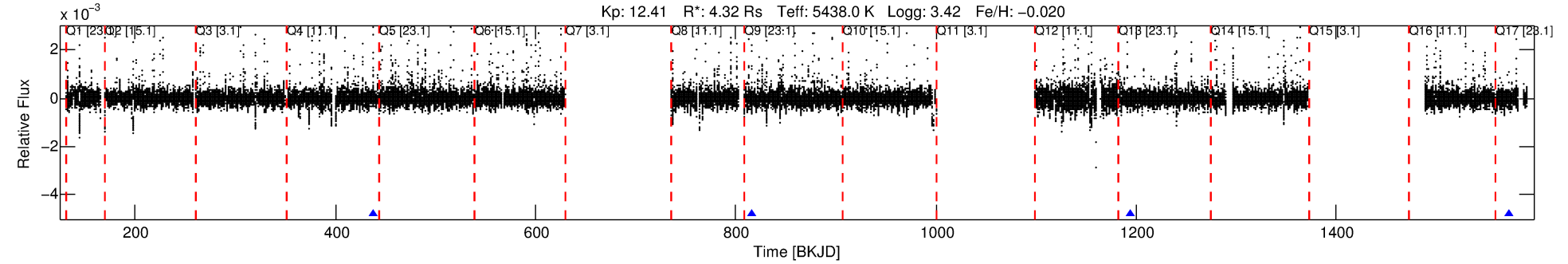
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-03

No Significant Match Found

DV One-Page Summary

KIC: 9419002 Candidate: 3 of 8 Period: 378.171 d



DV Fit Results:

Period = 378.17136 [0.01139] d
Epoch = 437.6062 [0.0207] BKJD
Rp/R* = 0.0322 [0.0149]
a/R* = 83.28 [21.01]
b = 0.98 [0.04]
Seff = 9.40 [13.57]
Teq = 447 [161] K
Rp = 15.19 [13.46] Re
a = 1.2467 [1.0475] AU
Ag = 693.76 [1234.37] [0.56 σ]
Teffp = 3543 [939] K [3.25 σ]

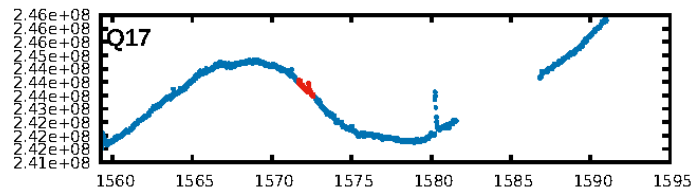
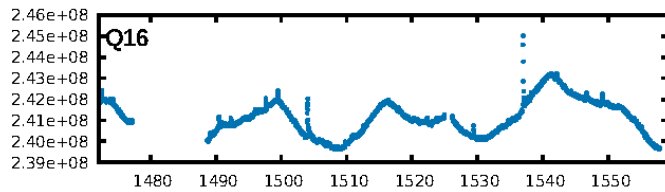
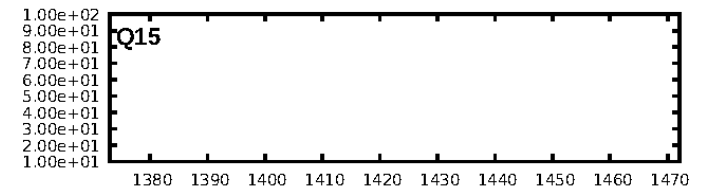
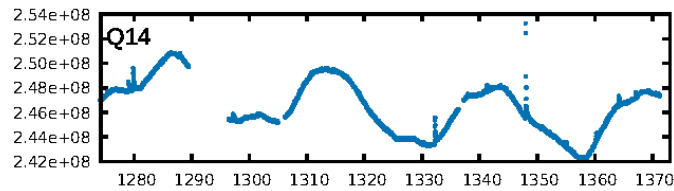
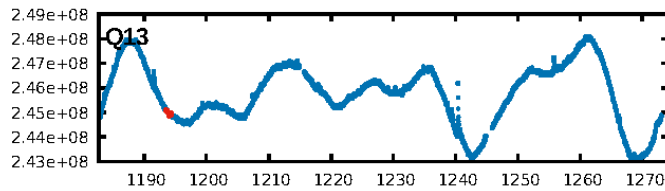
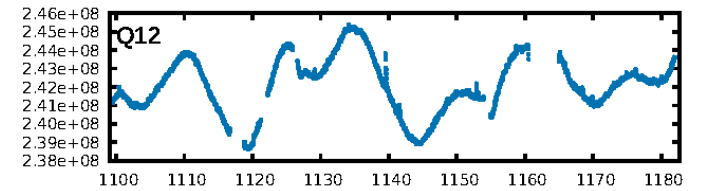
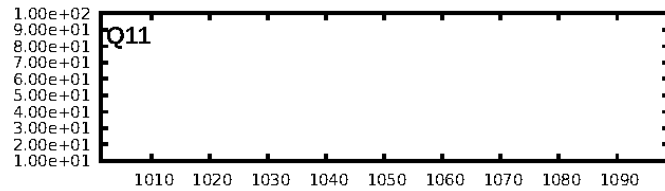
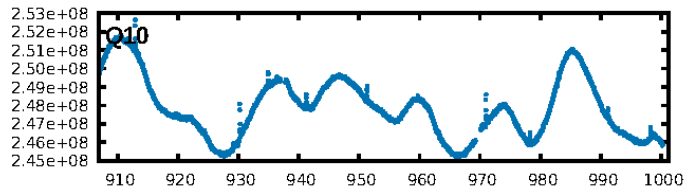
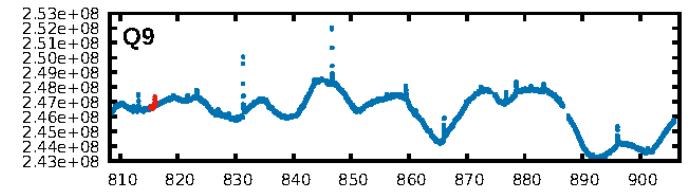
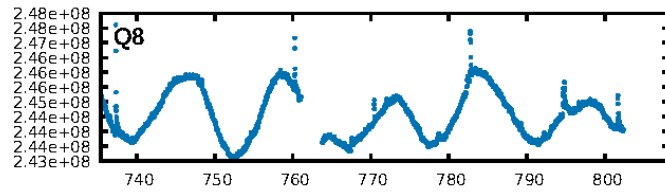
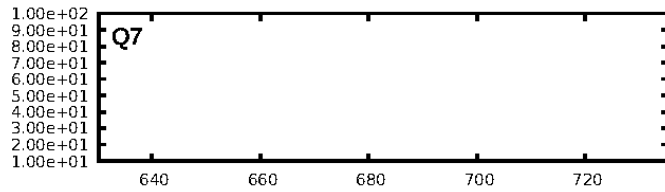
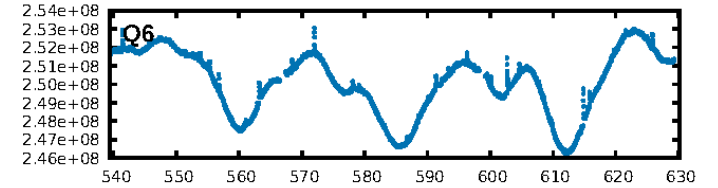
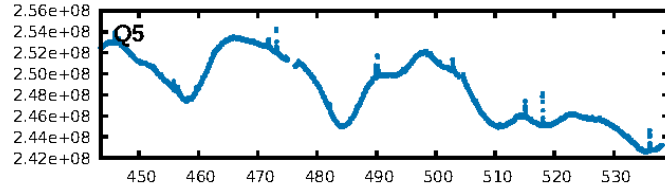
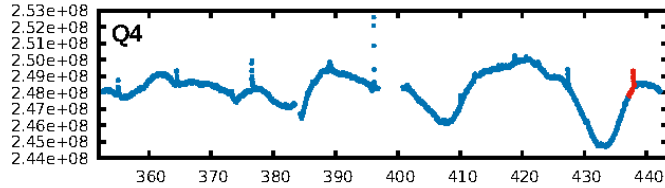
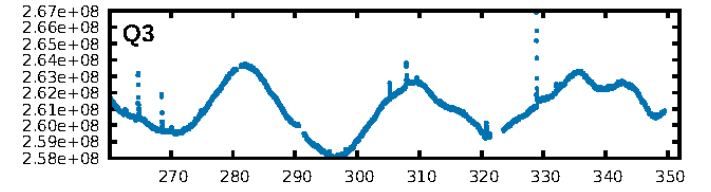
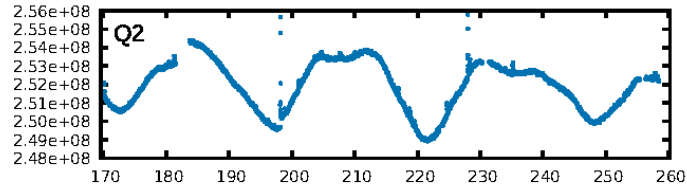
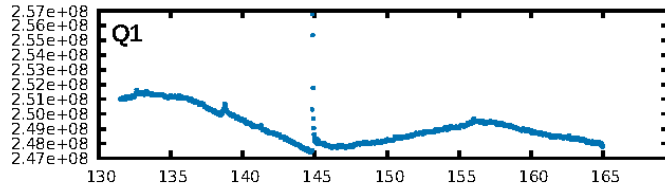
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.94 σ]
LongPeriod-sig: 100.0% [4.66 σ]
ModelChiSquare2-sig: 14.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.383
Centroid-sig: 39.0%
Centroid-so: 0.166 arcsec [0.60 σ]
OotOffset-rm: 1.298 arcsec [4.93 σ]
KicOffset-rm: 1.429 arcsec [5.44 σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

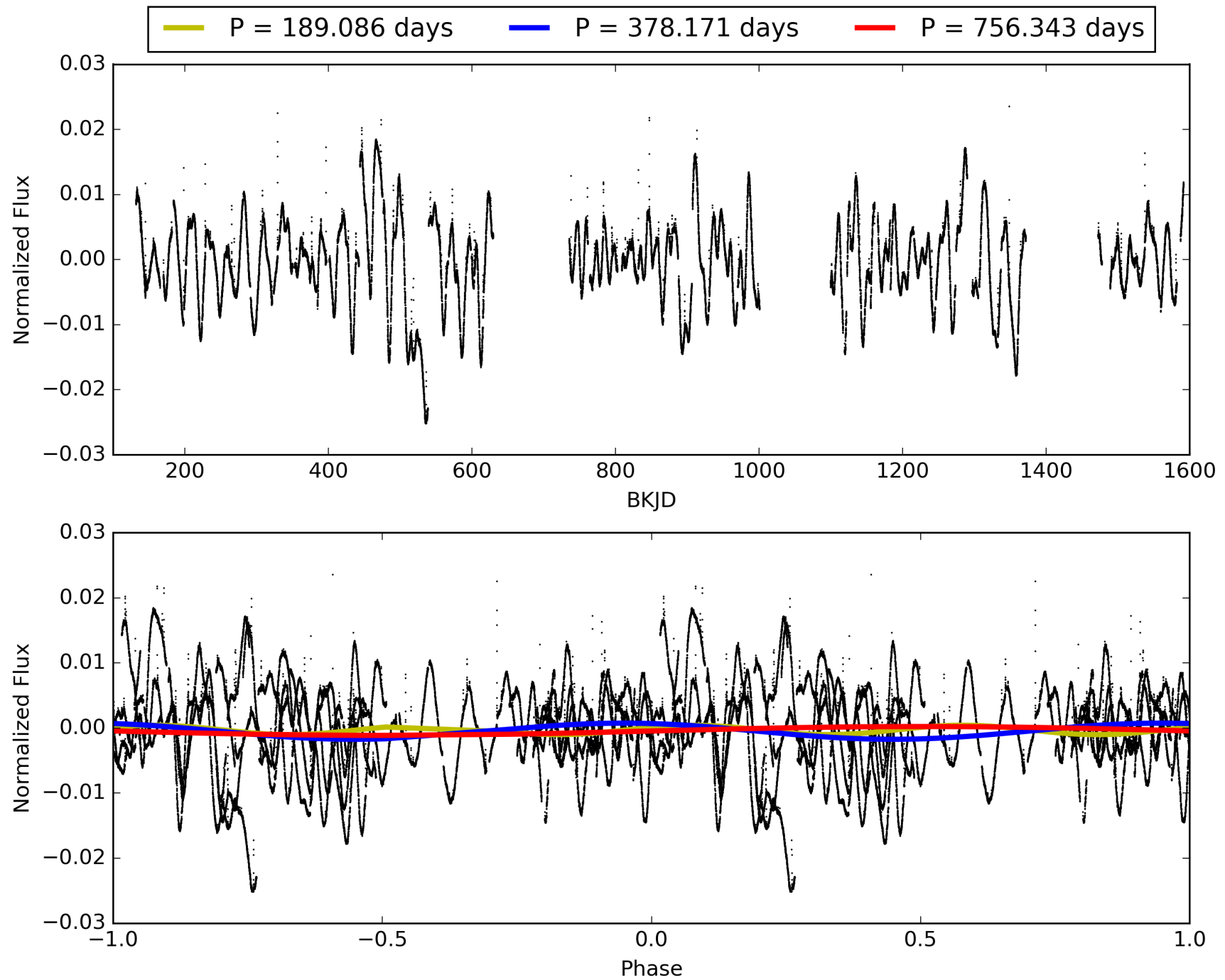
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:27:35 Z

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

TCE 009419002-03, PDC Light Curves

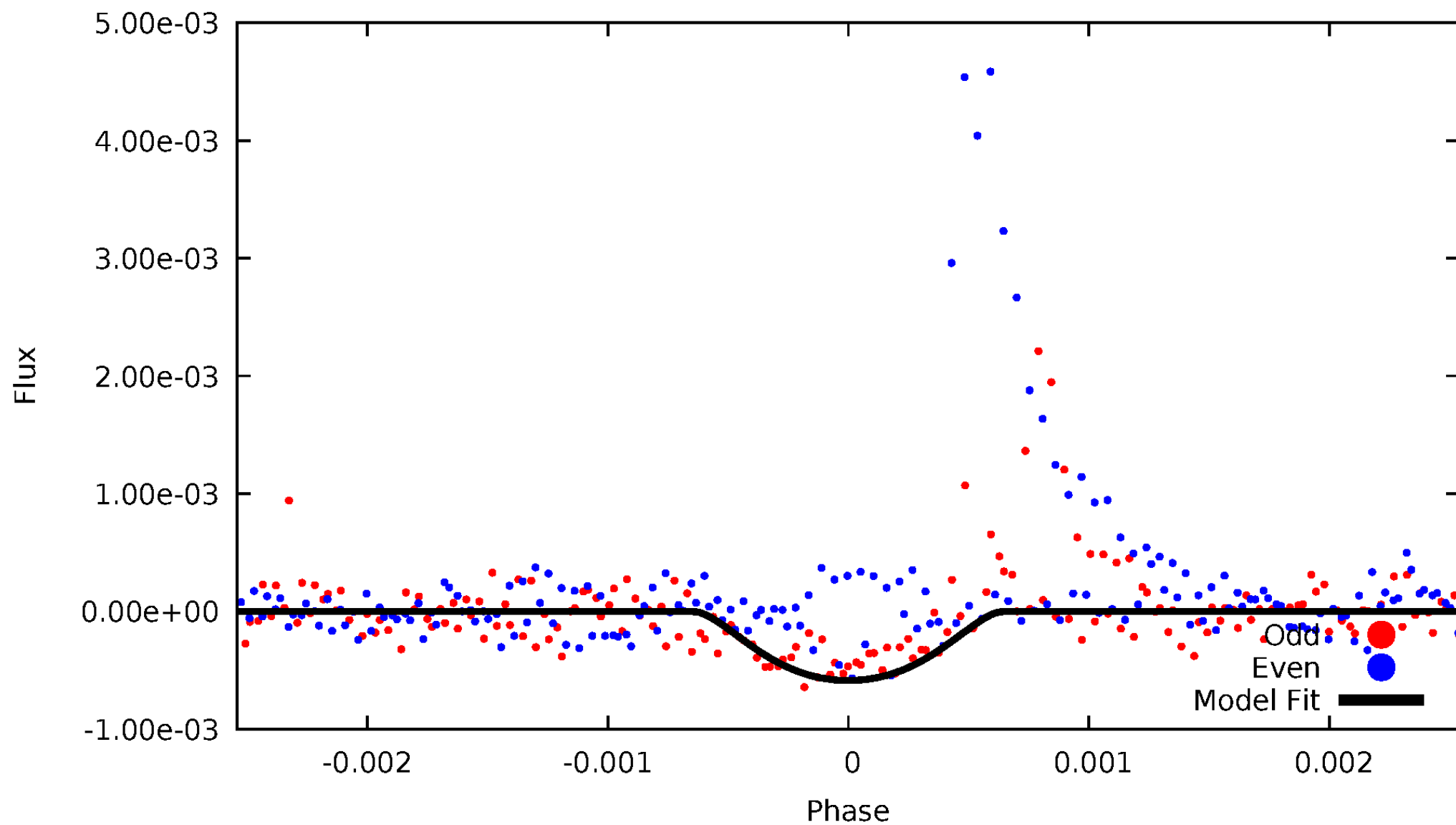


TCE 009419002-03



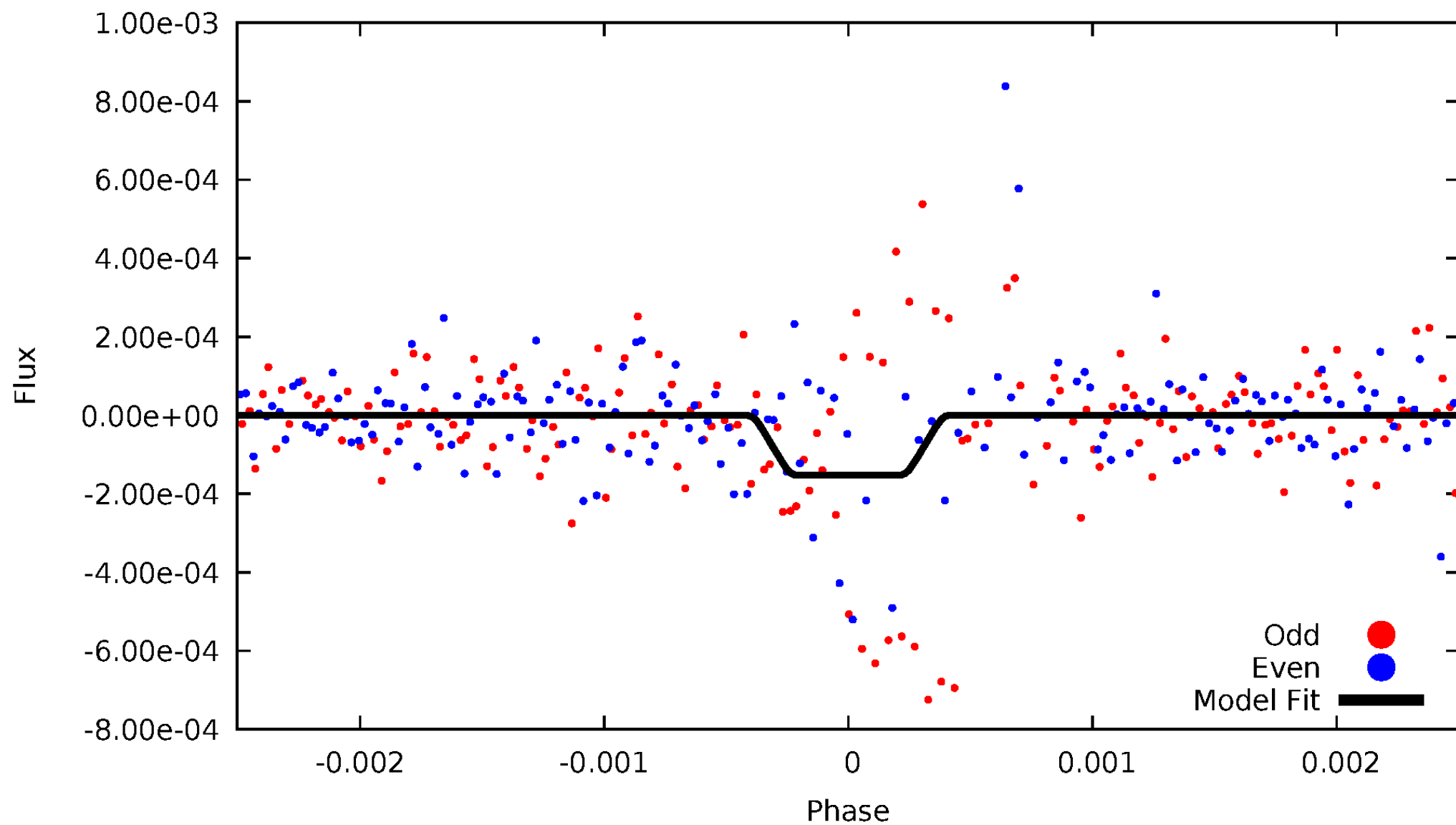
DV Odd/Even

TCE 009419002-03



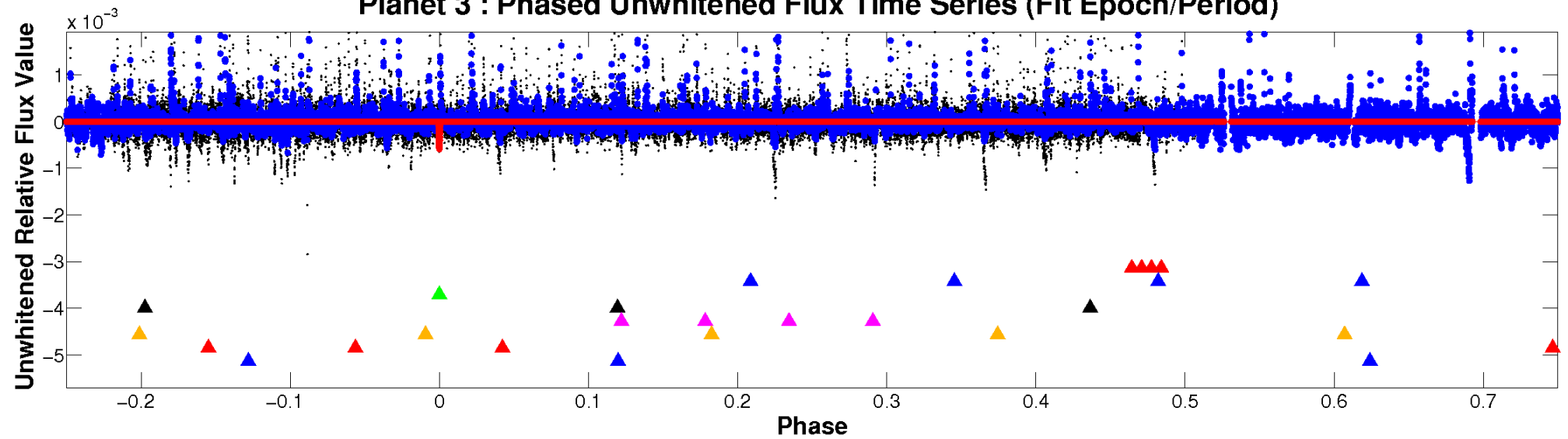
ALT Odd/Even

TCE 009419002-03

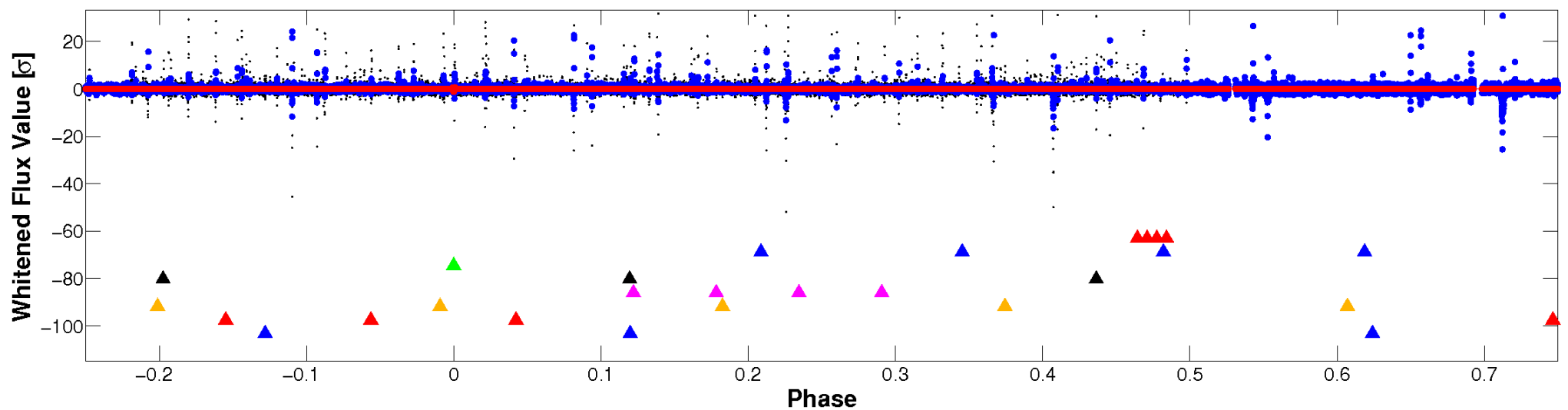


Non-Whitened Vs. Whitened Light Curve

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

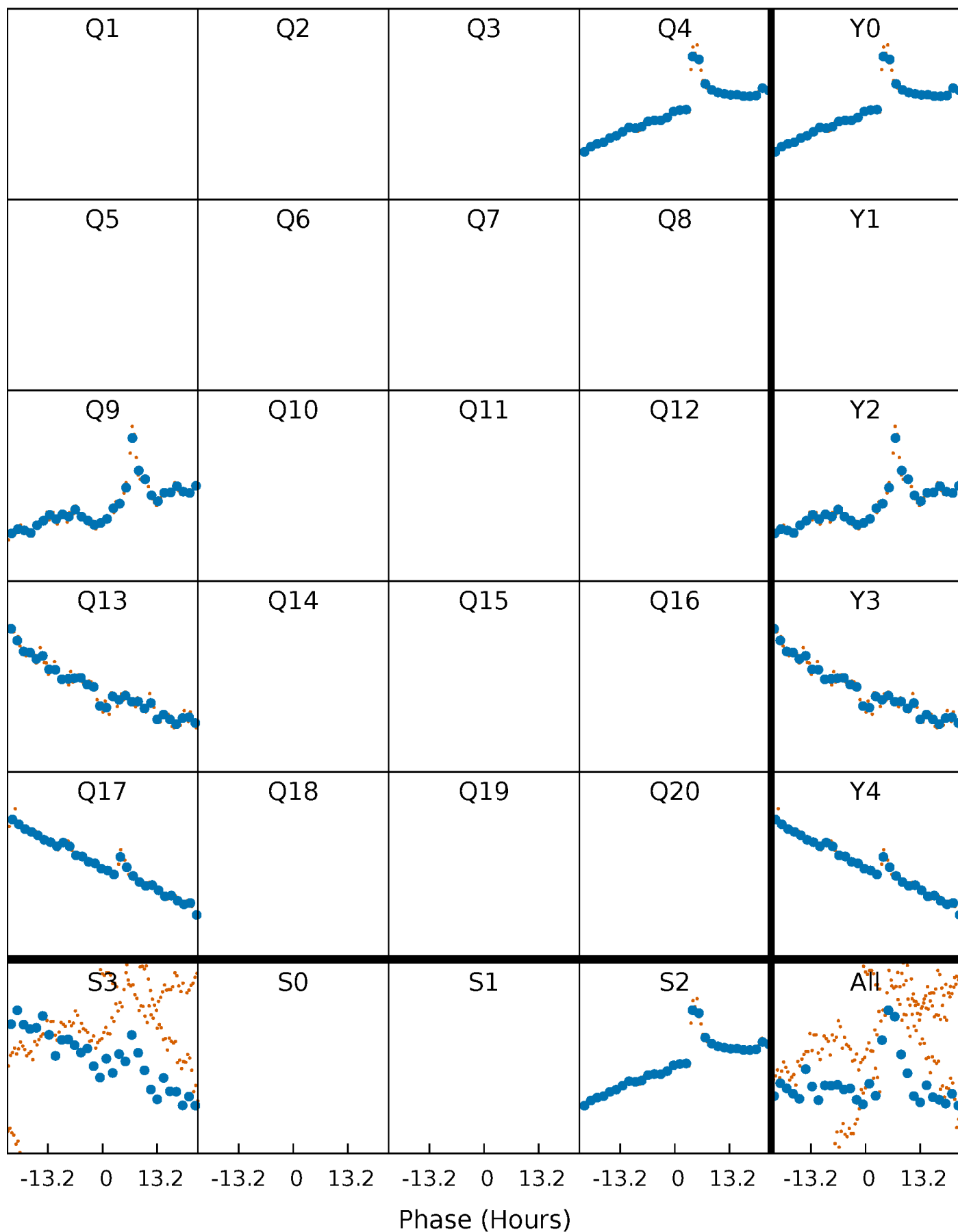


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



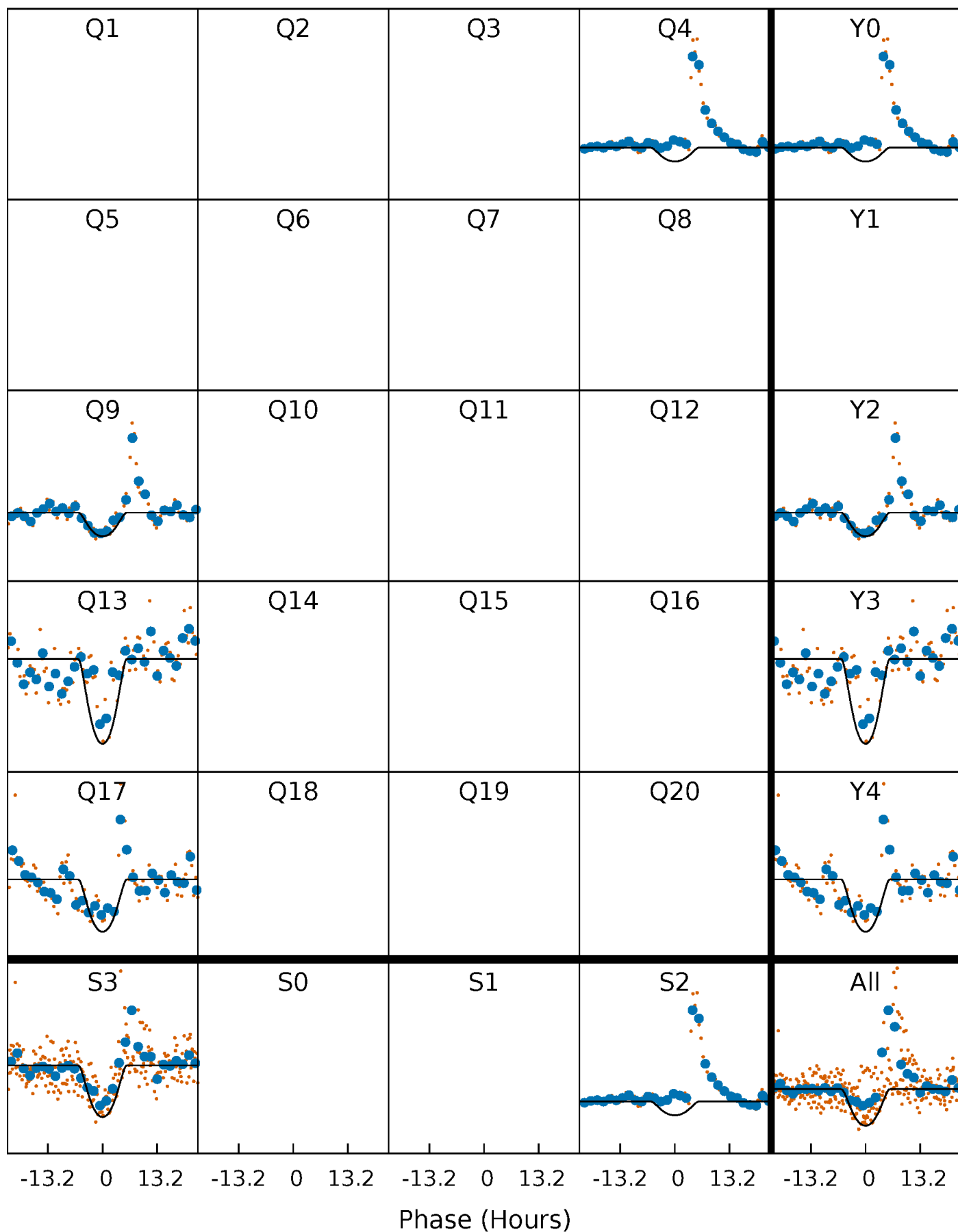
PDC Quarter-Phased Transit Curves

TCE 009419002-03 $P=378.171364$ Days $T_0=437.606176$ (BKJD)



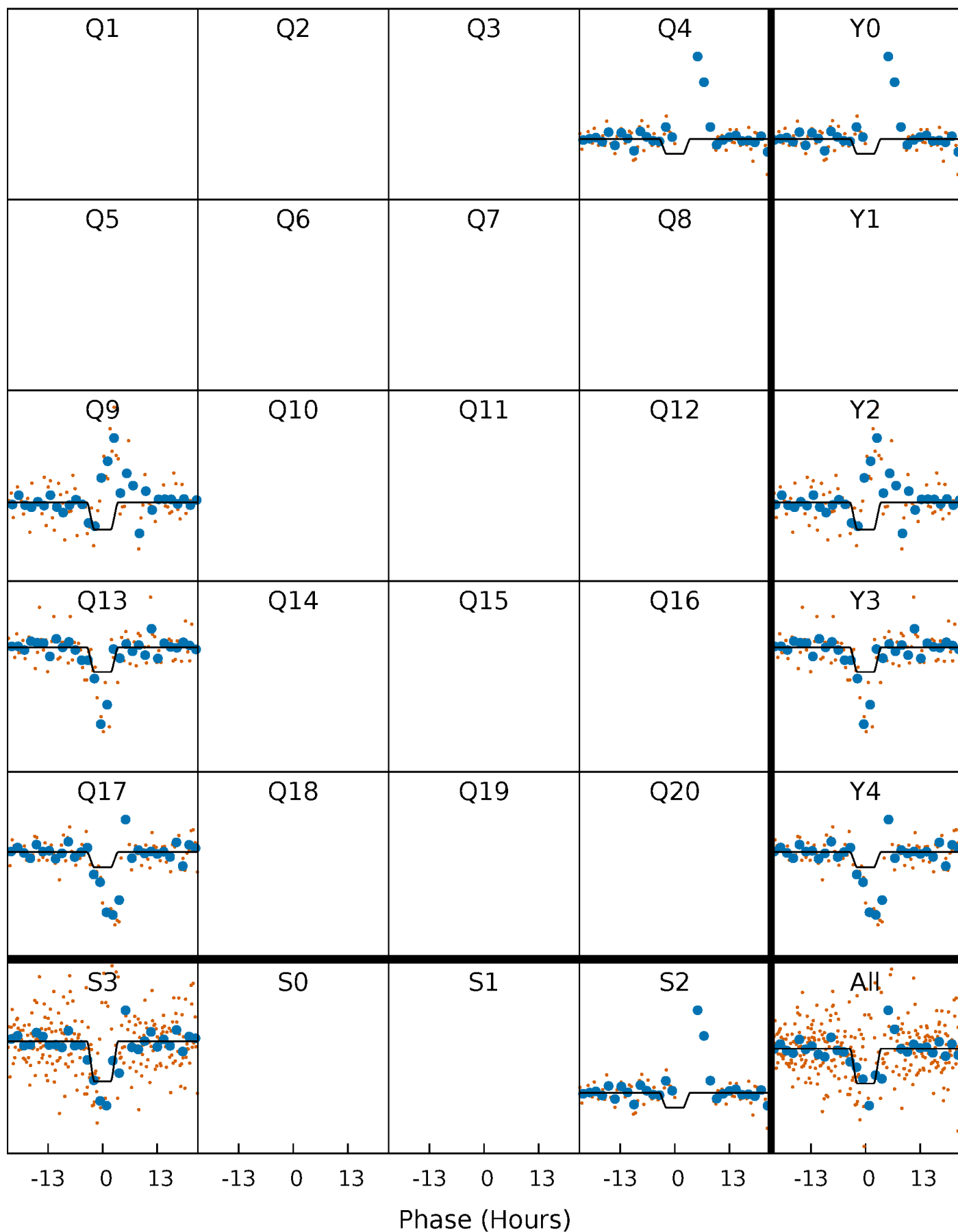
DV Quarter-Phased Transit Curves

TCE 009419002-03 $P=378.171364$ Days $T_0=437.606176$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

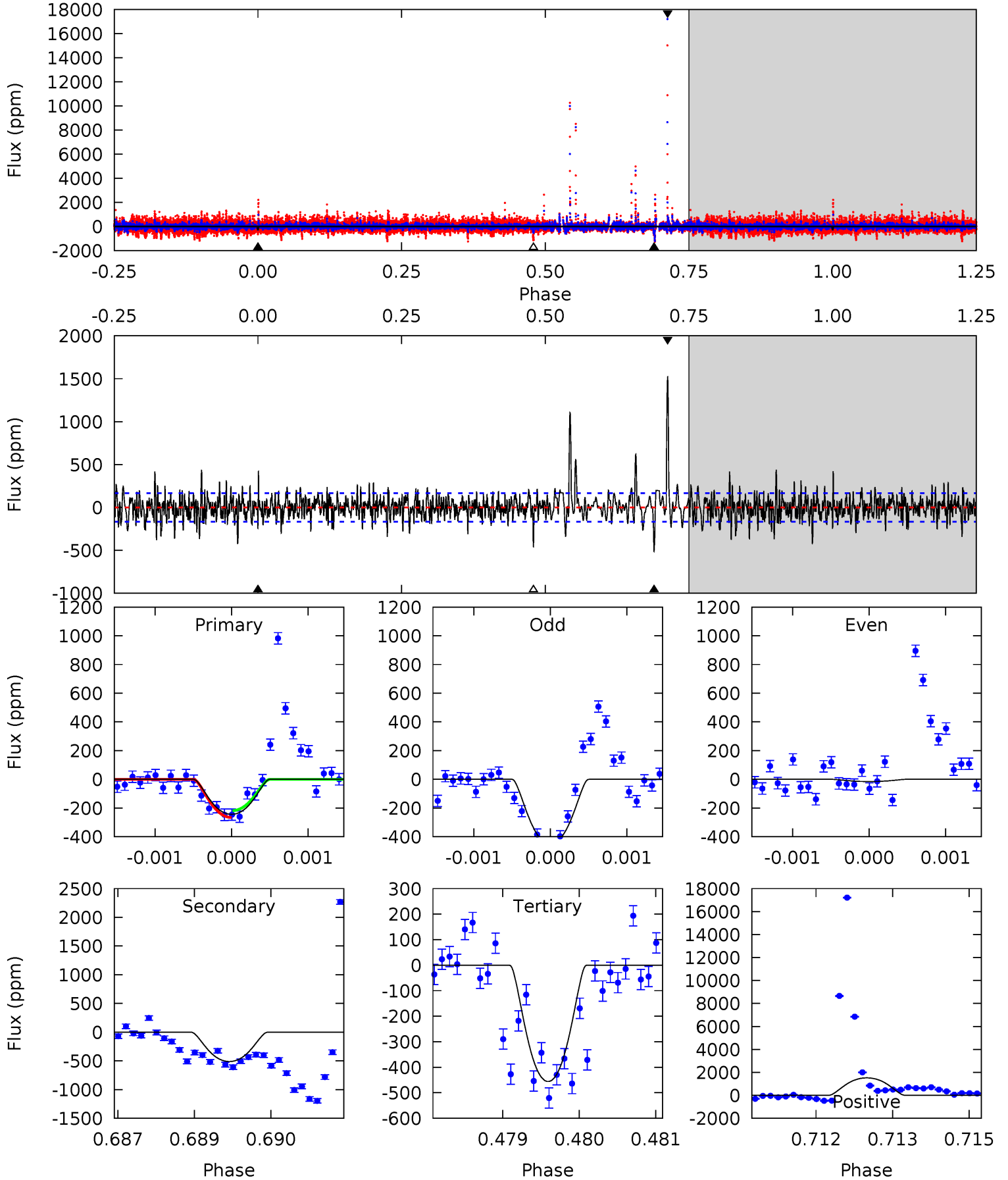
TCE 009419002-03 $P=378.150273$ Days $T_0=437.647554$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-03, P = 378.171364 Days, E = 59.434812 Days

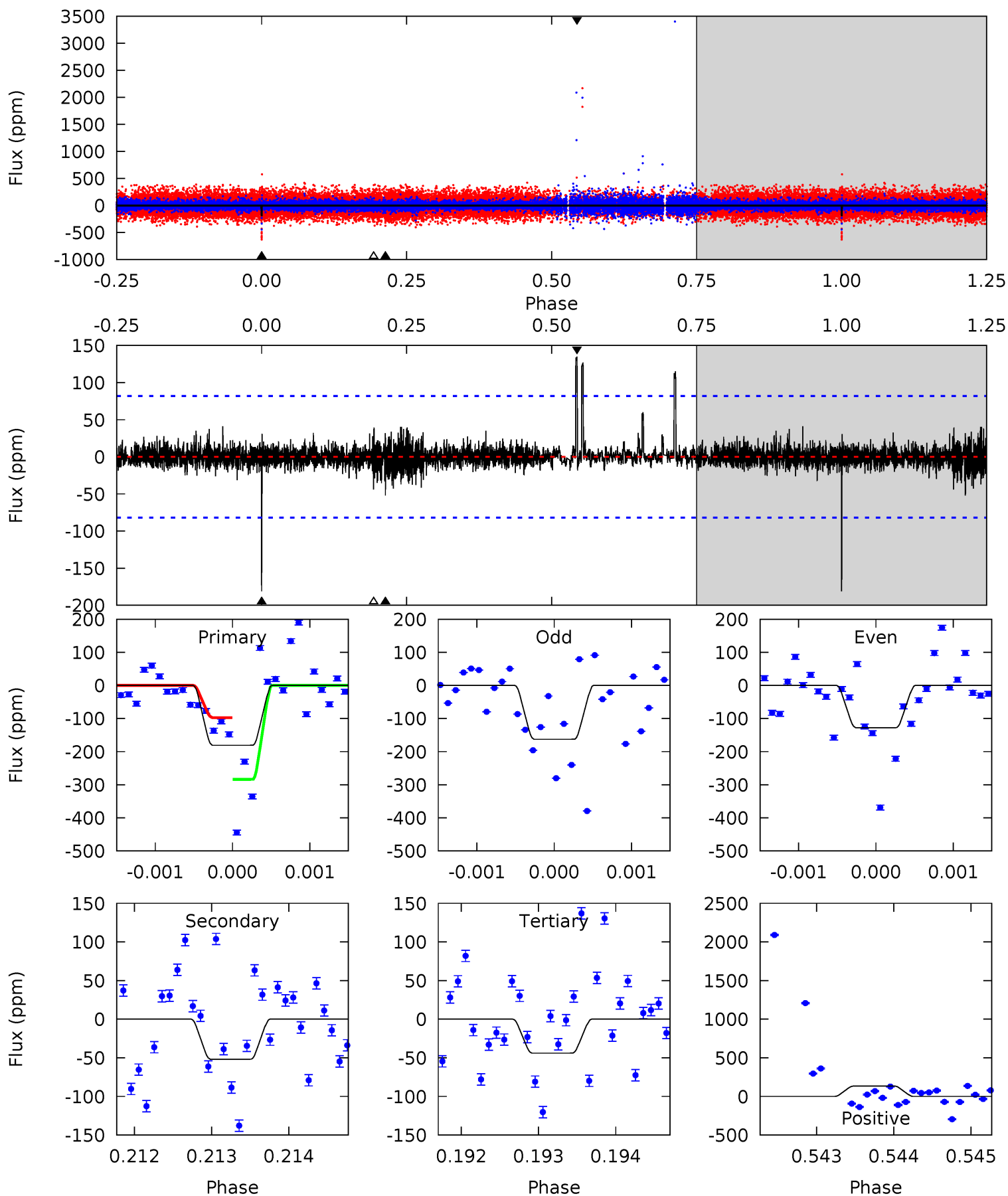
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.97	16.7	14.9	49.7	5.40	3.22	3.94	-6.94	-41.8	1.81	-33.0	6.33	0.48	0.75	0.75



Alt Model-Shift Uniqueness Test

009419002-03, P = 378.150273 Days, E = 59.497281 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.48	2.95	9.04	5.49	3.35	0.69	9.18	3.09	0.53	-5.56	1.23	1.36	0.43	6.05



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-511 ± 31	$12.57^{+8.09}_{-6.64}$	608^{+54}_{-126}	4728^{+1382}_{-661}	2682^{+9103}_{-1678}
Alt.	-52 ± 15	$6.41^{+6.83}_{-4.30}$	612^{+50}_{-119}	3903^{+2045}_{-682}	1007^{+7838}_{-749}

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

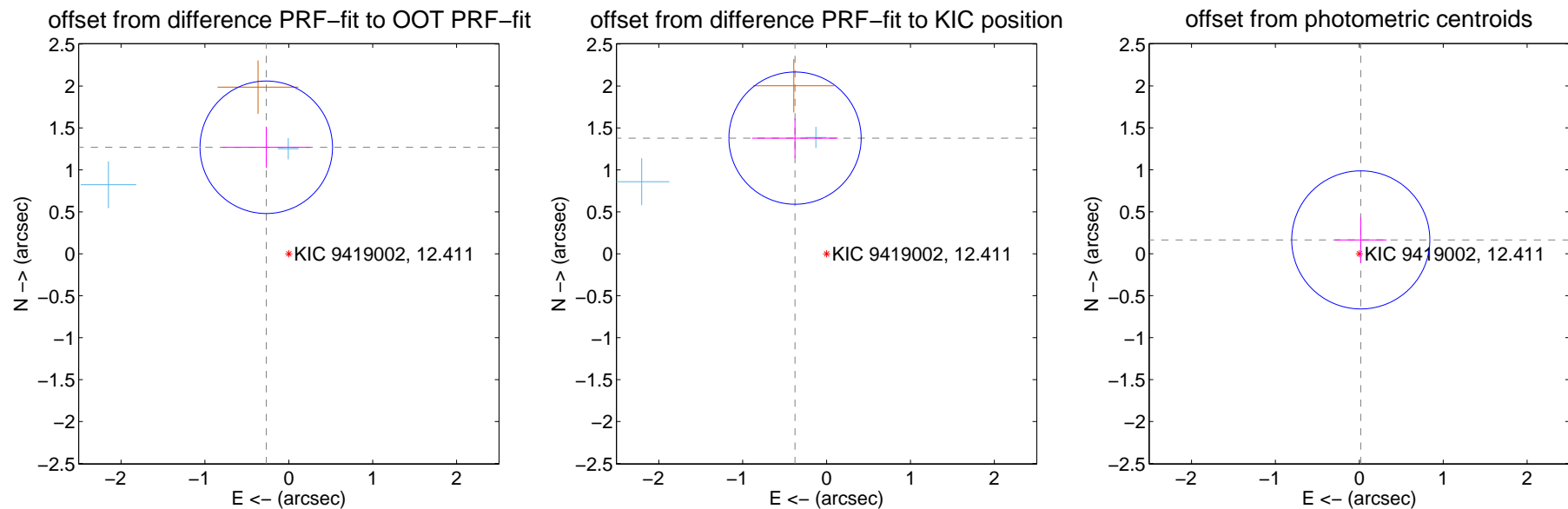
DV Centroid Data

Supplemental centroid analysis for 009419002-03. Kepler magnitude: 12.41. Transit SNR 7.97

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.298 ± 0.263	4.93	0.269 ± 0.526	1.270 ± 0.245
PRF-fit source offset from KIC position	1.429 ± 0.263	5.44	0.376 ± 0.510	1.379 ± 0.234
photometric centroid source offset	0.17 ± 0.27	0.60	-0.02 ± 0.31	0.16 ± 0.27



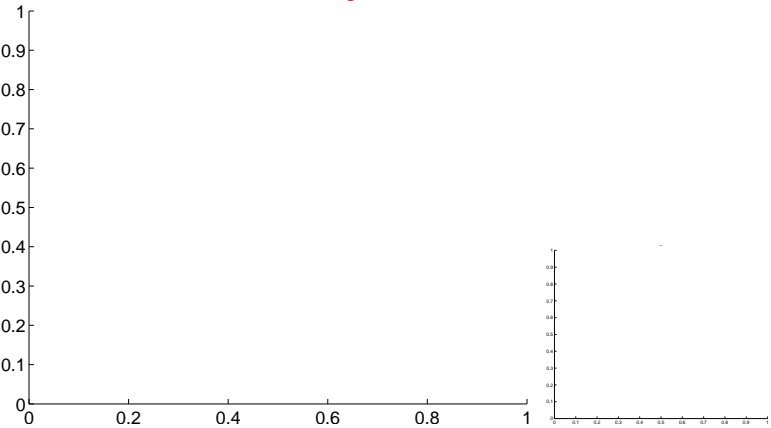
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



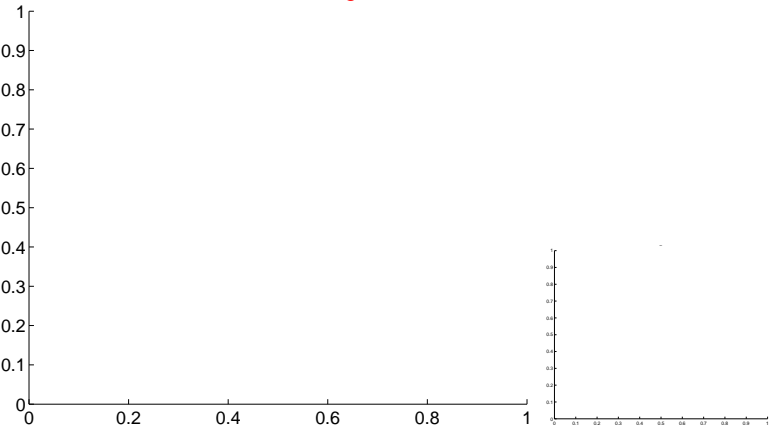
Q1 no OOT image



Q2 no difference image



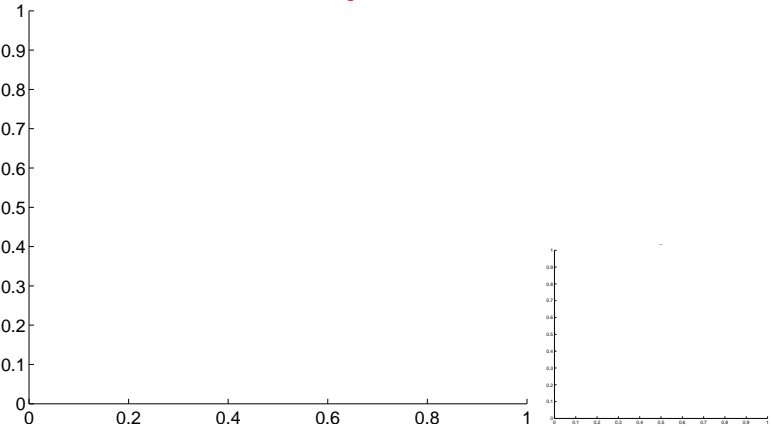
Q2 no OOT image



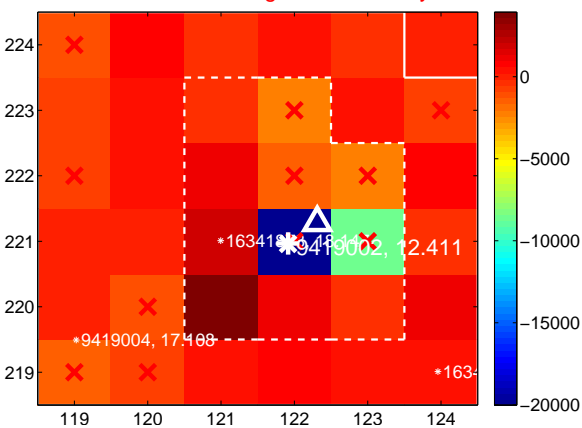
Q3 no difference image



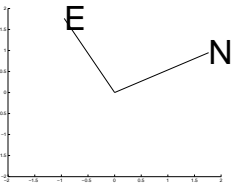
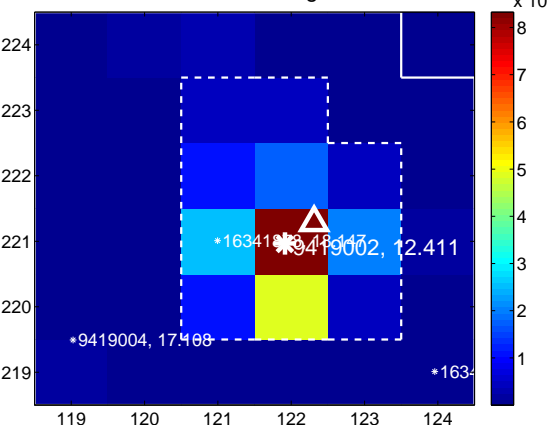
Q3 no OOT image



Q4 difference image. Poor Quality



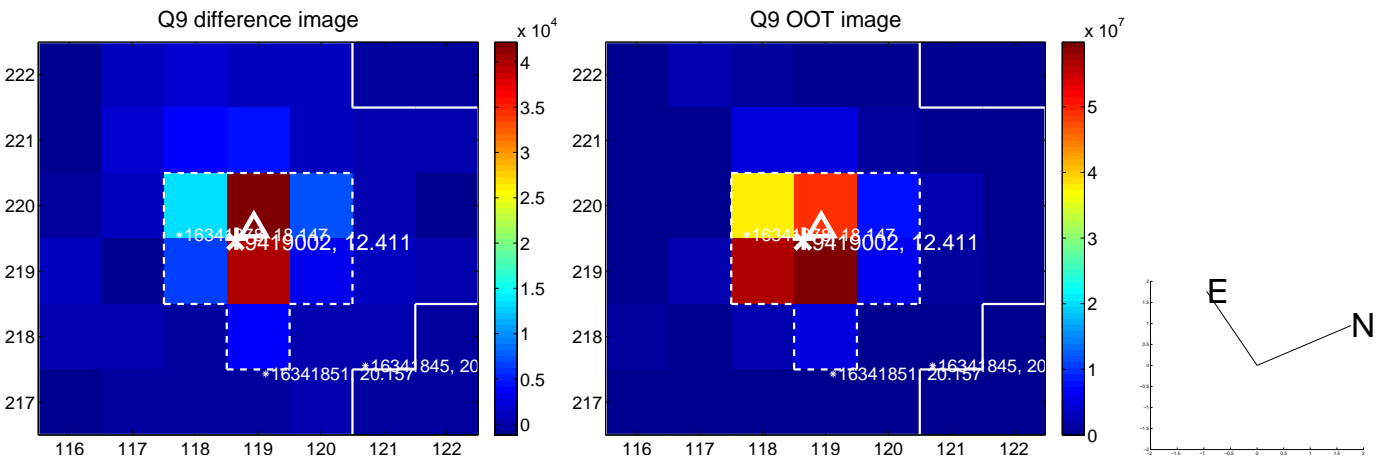
Q4 OOT image



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



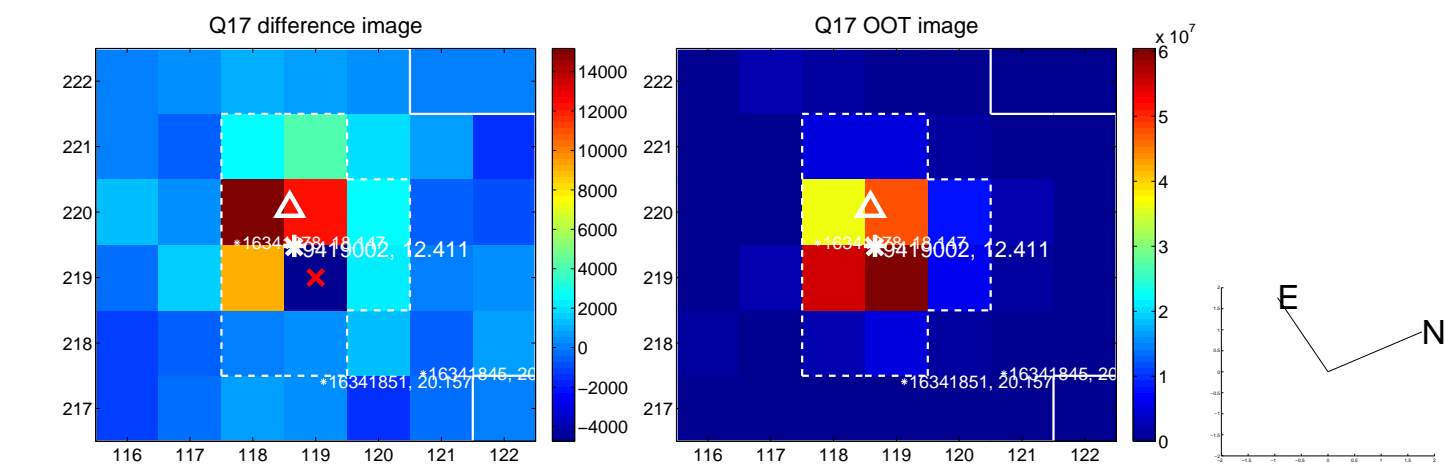
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



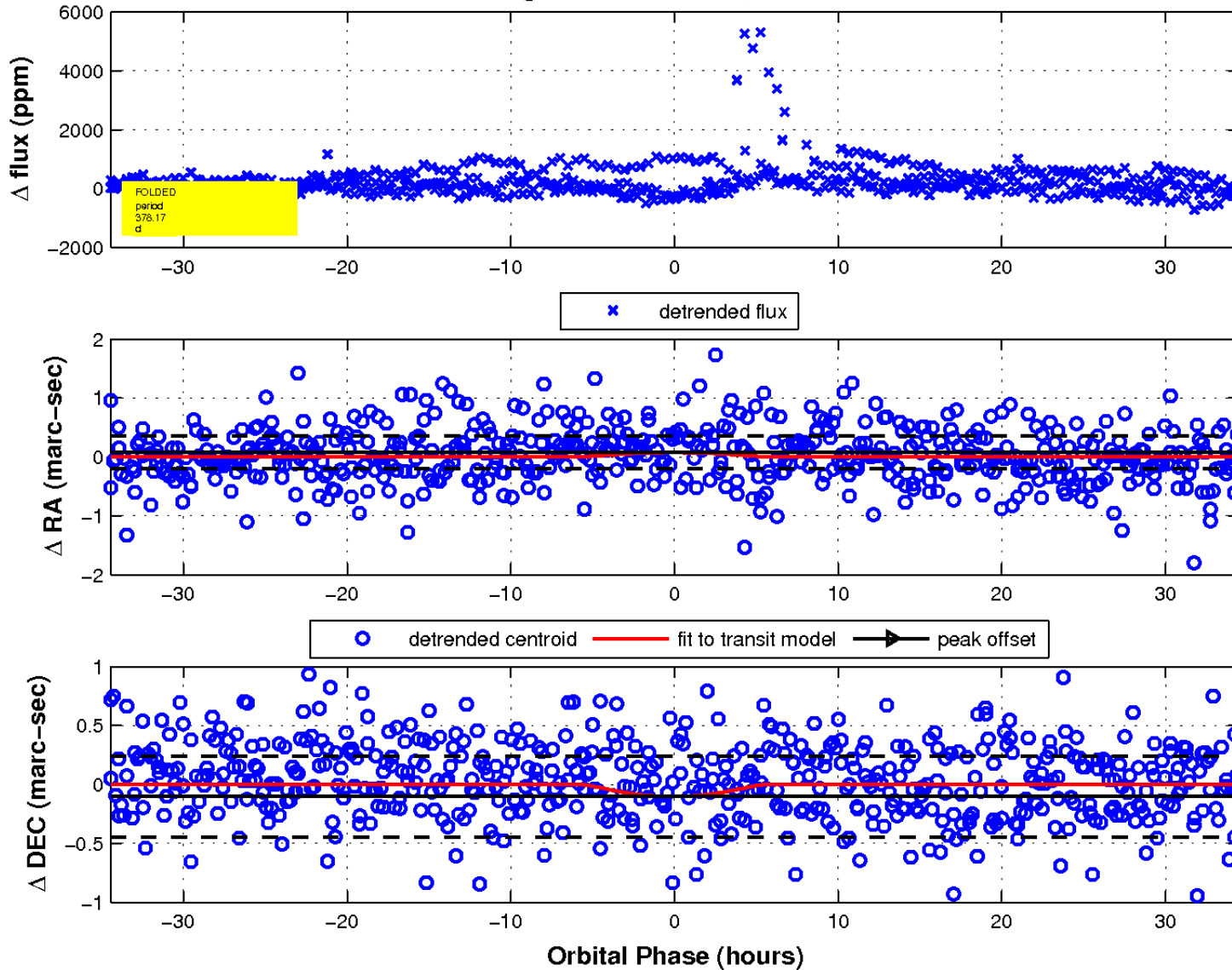
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



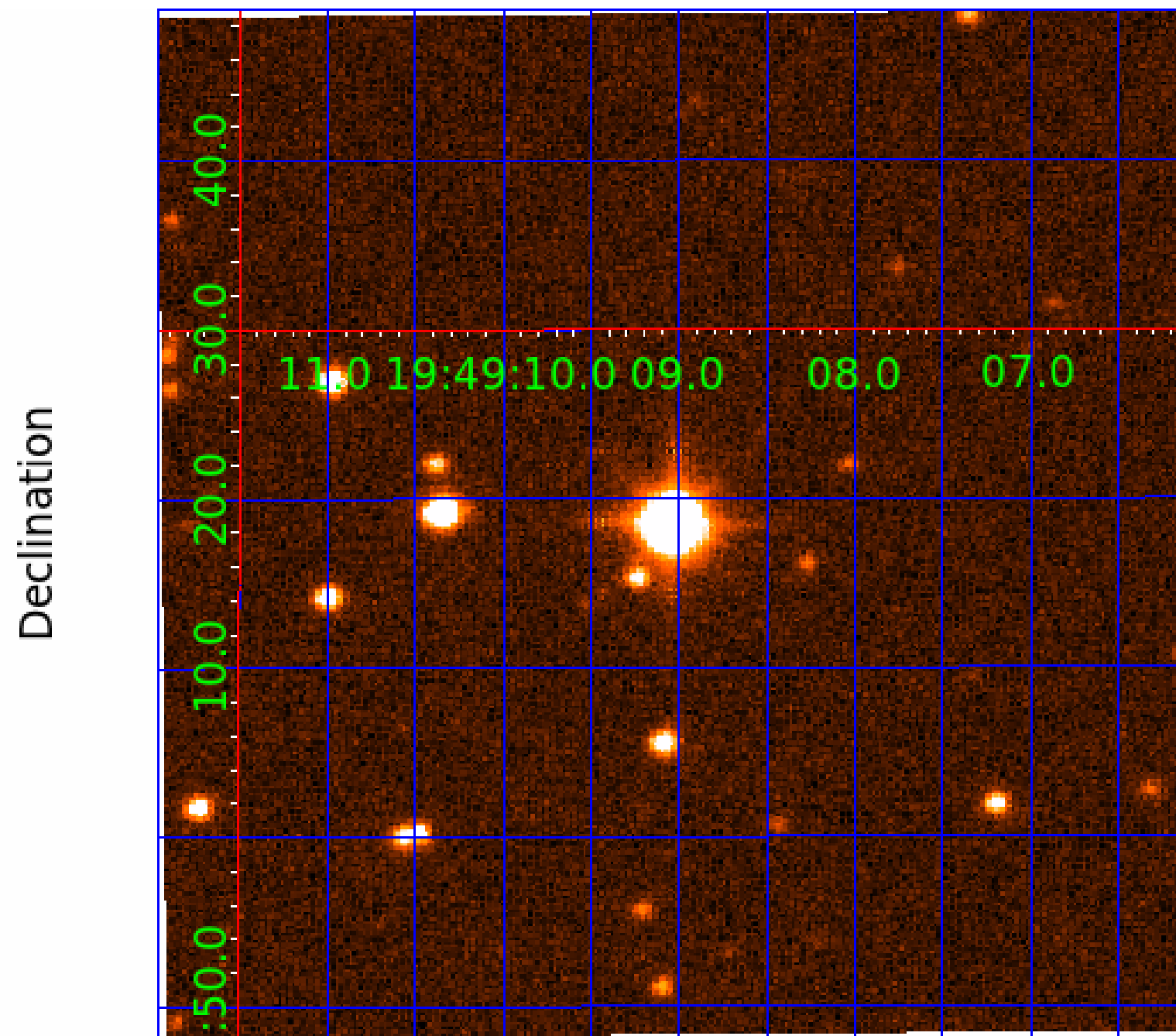
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 8



UKIRT Image



KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

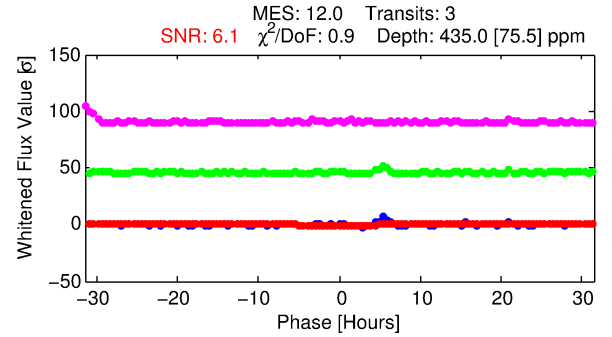
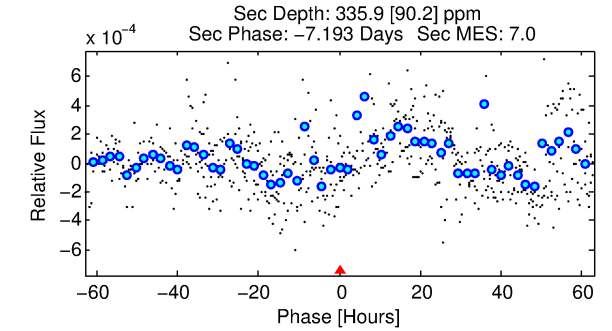
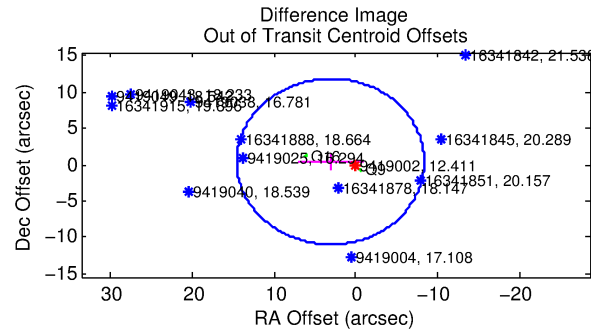
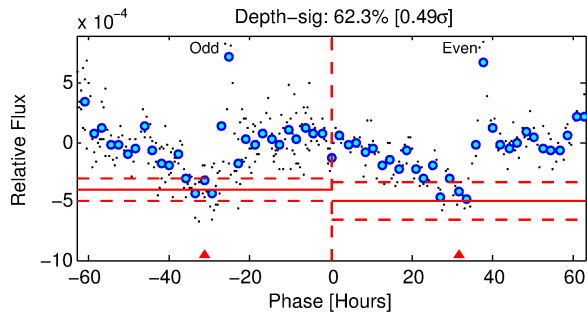
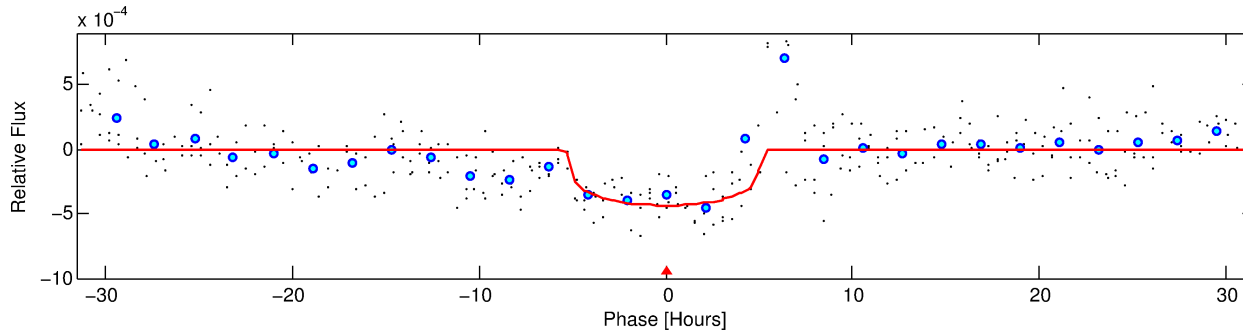
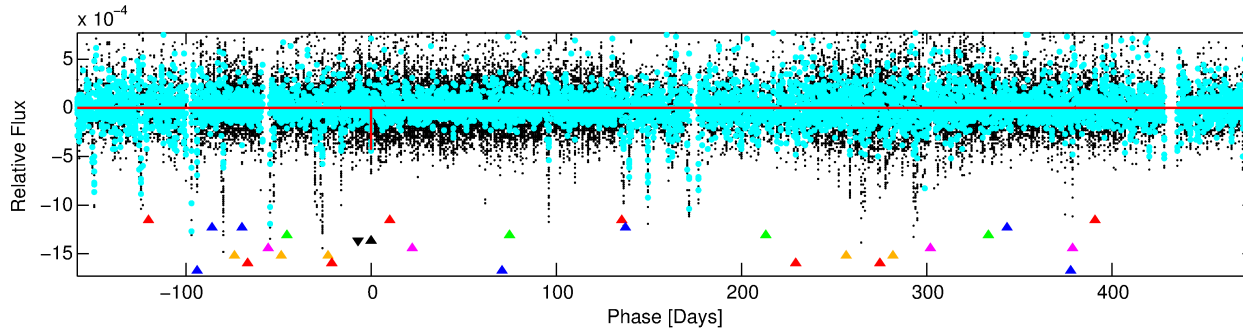
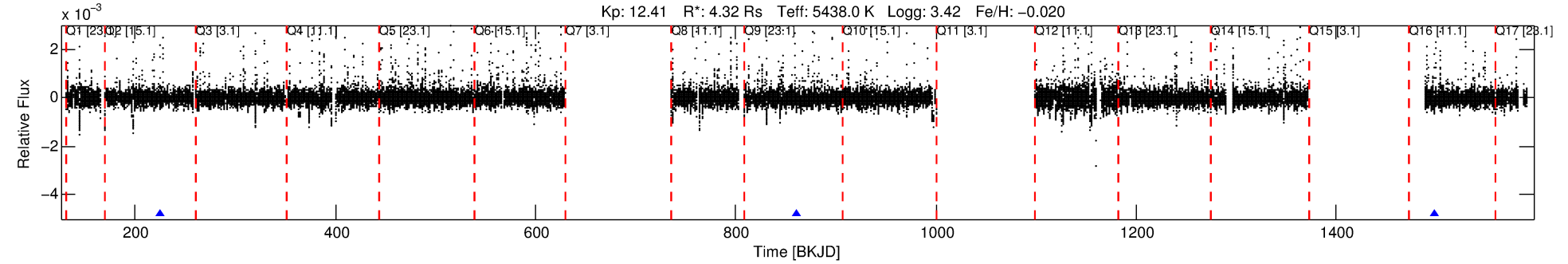
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-04

No Significant Match Found

DV One-Page Summary

KIC: 9419002 Candidate: 4 of 8 Period: 636.485 d



DV Fit Results:

Period = 636.48517 [0.00719] d
Epoch = 224.4810 [0.0101] BKJD
Rp/R* = 0.0199 [0.0081]
a/R* = 378.36 [591.89]
b = 0.61 [1.63]
Seff = 4.70 [6.78]
Teq = 375 [135] K
Rp = 9.36 [8.03] Re
a = 1.7639 [1.4822] AU
Ag = 6558.38 [10962.99] [0.60 σ]
Teffp = 5223 [1132] K [4.25 σ]

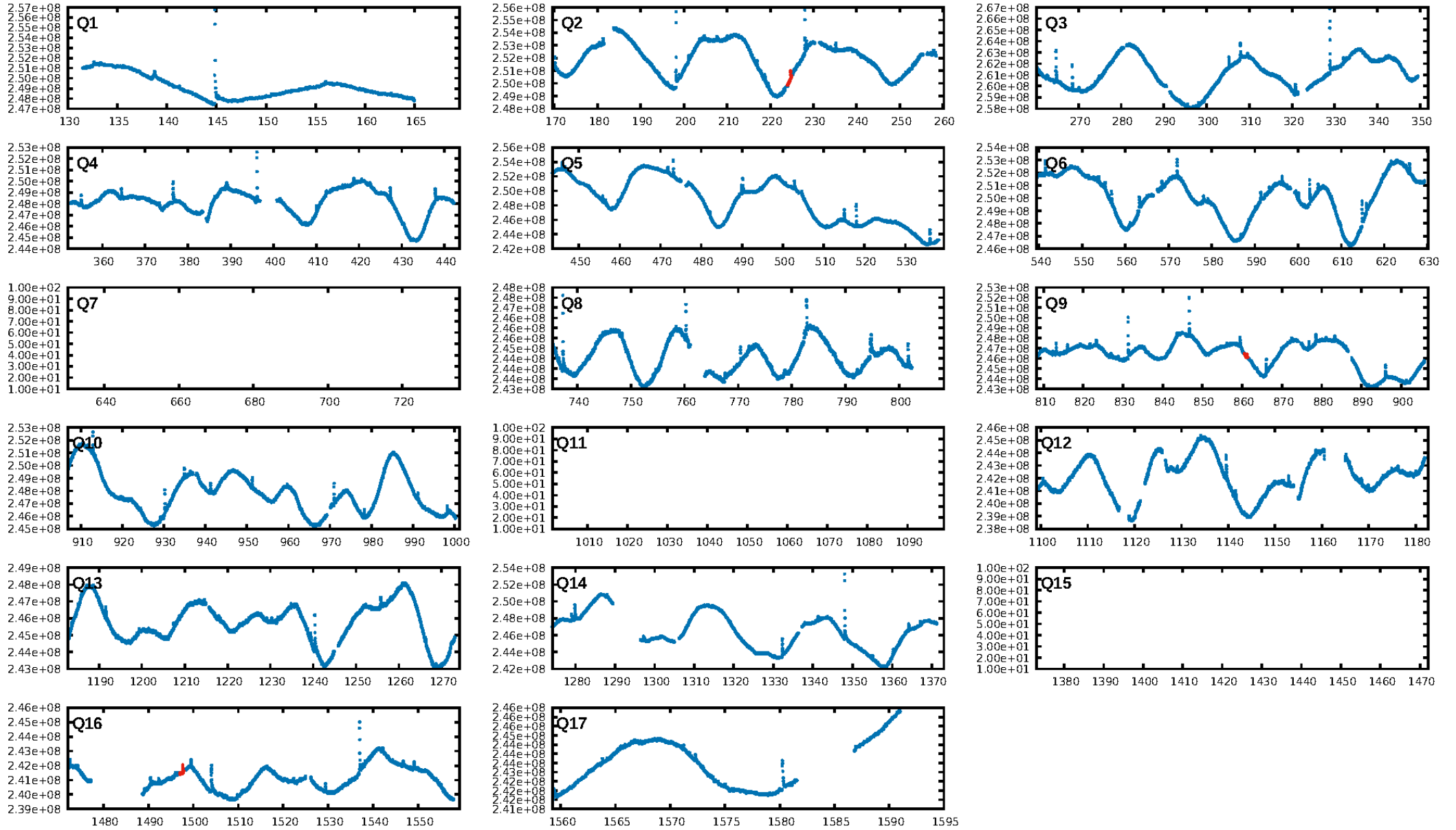
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [345.26 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 17.6%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.559
Centroid-sig: 65.3%
Centroid-so: 0.204 arcsec [0.47 σ]
OotOffset-rm: 3.158 arcsec [0.83 σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 3.285 arcsec [0.87 σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

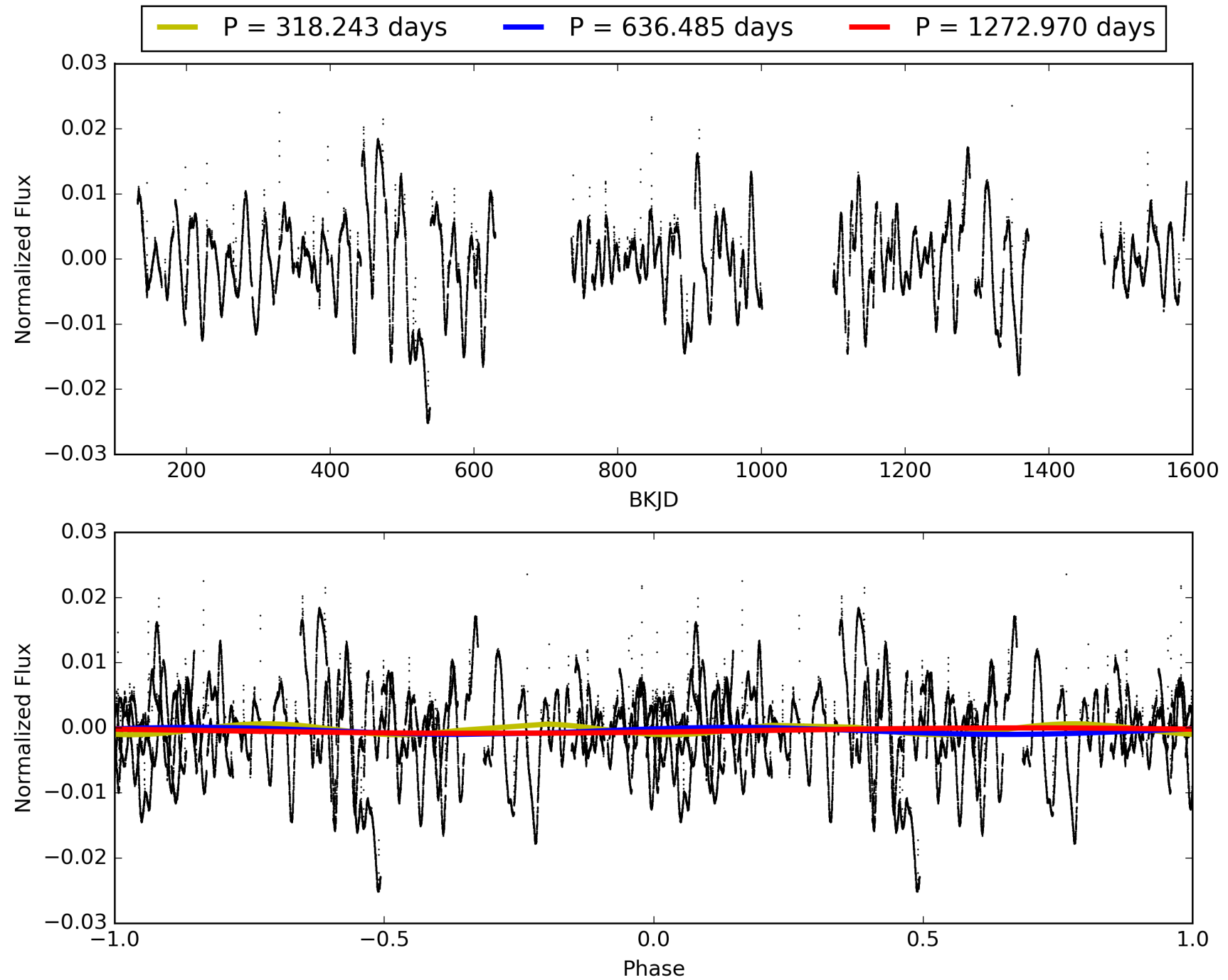
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:27:45 Z

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

TCE 009419002-04, PDC Light Curves

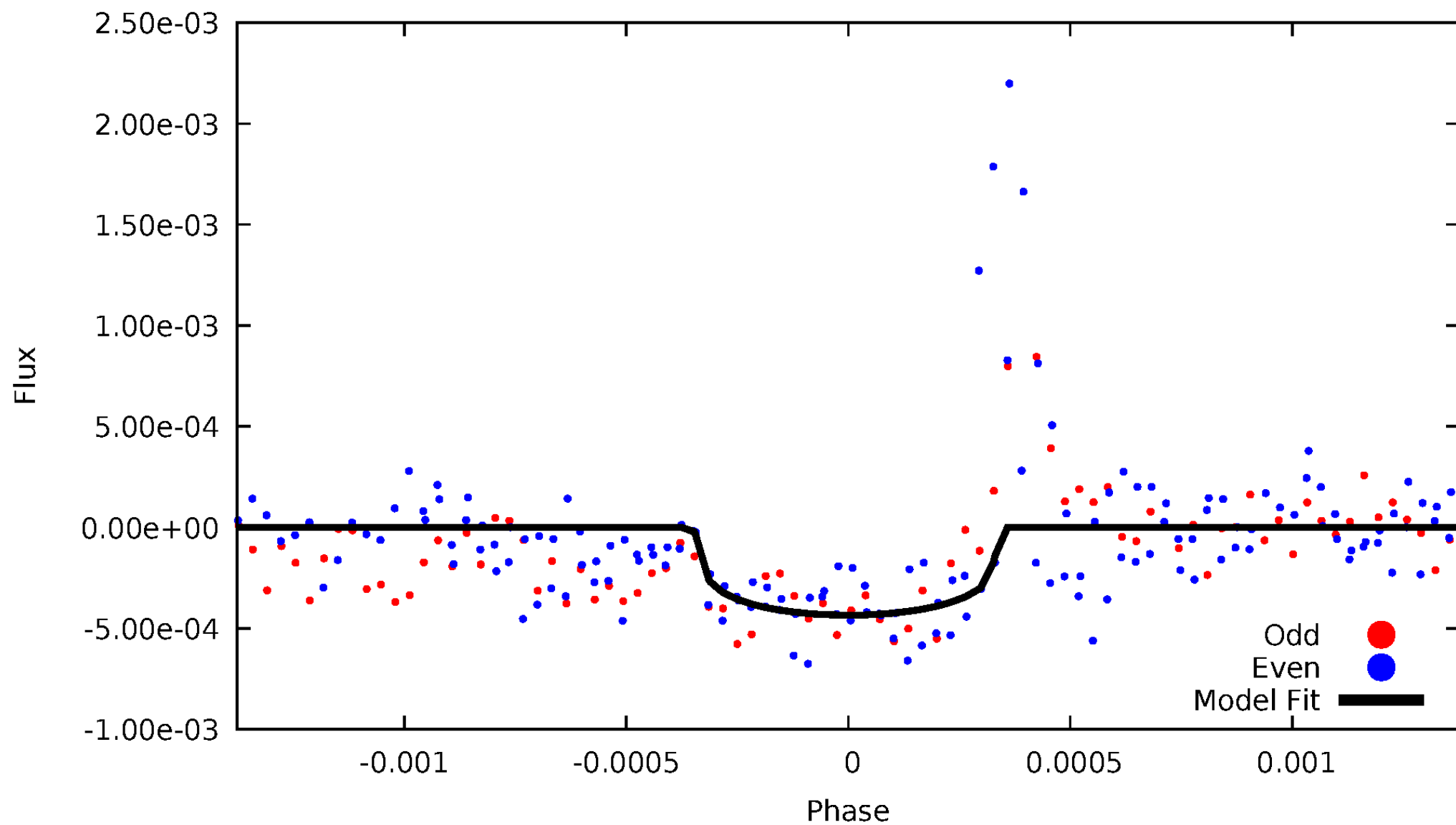


TCE 009419002-04



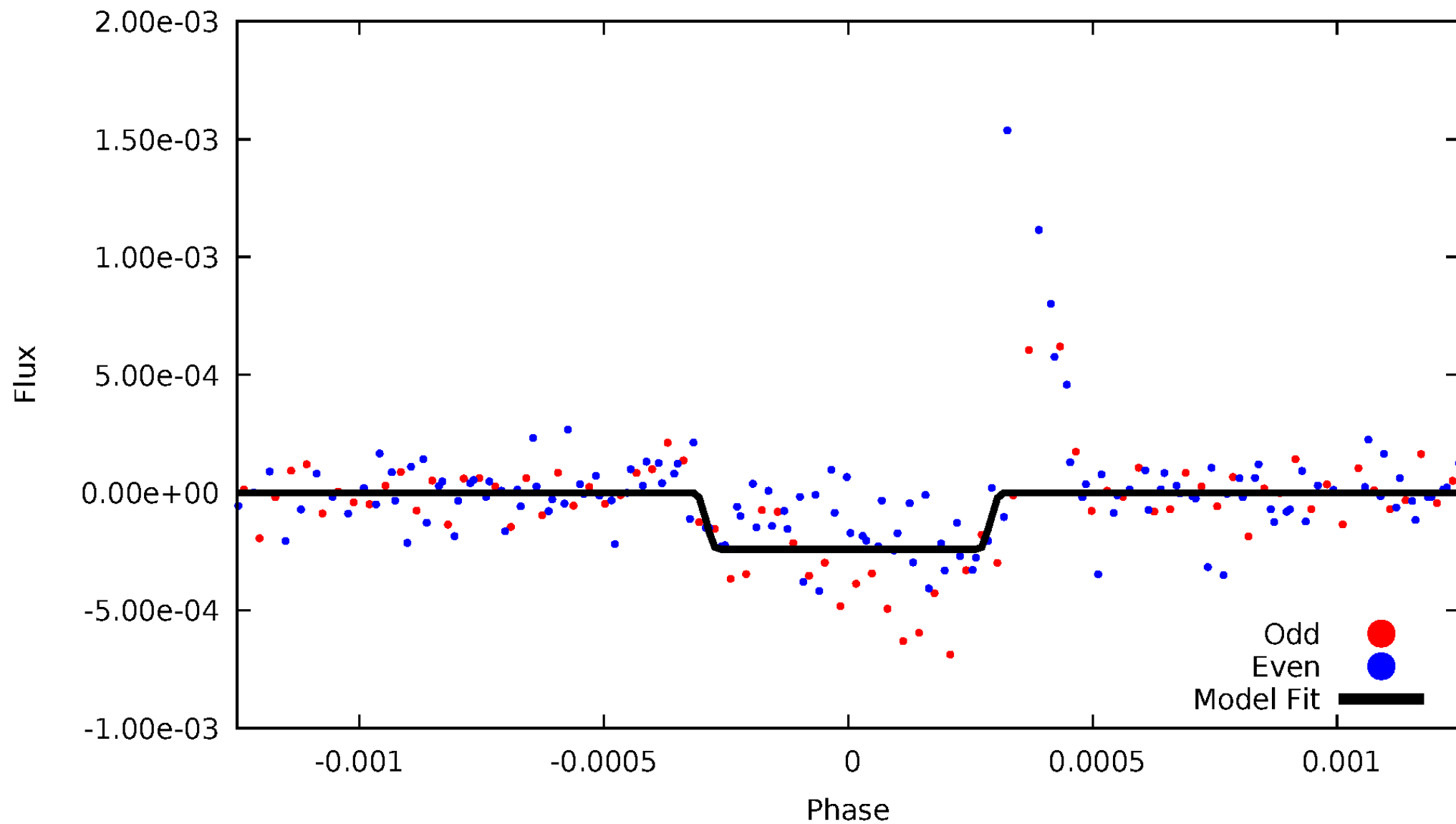
DV Odd/Even

TCE 009419002-04



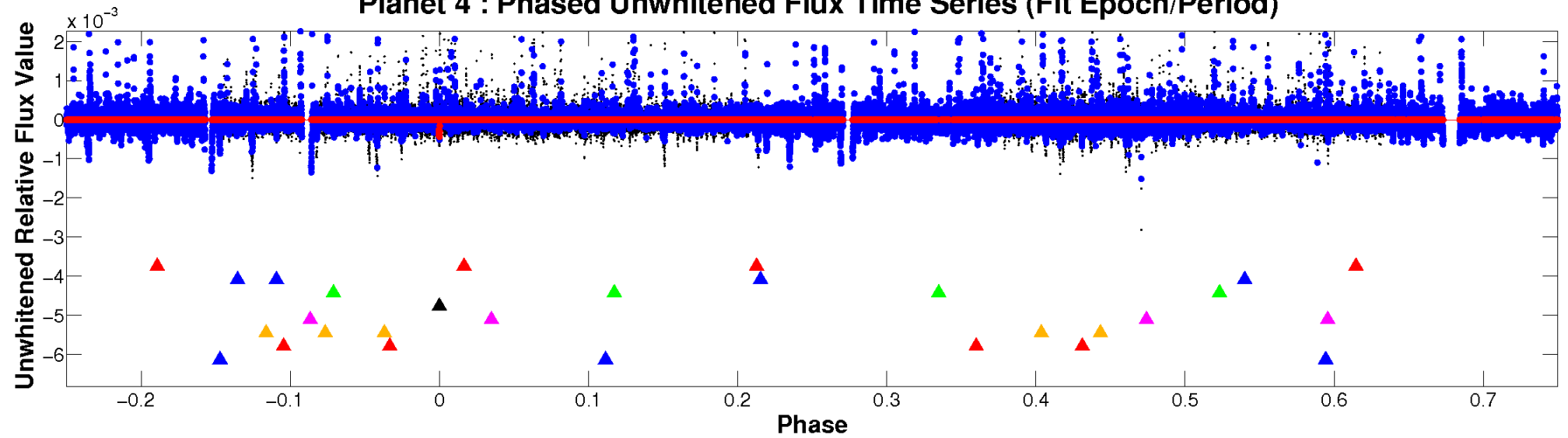
ALT Odd/Even

TCE 009419002-04

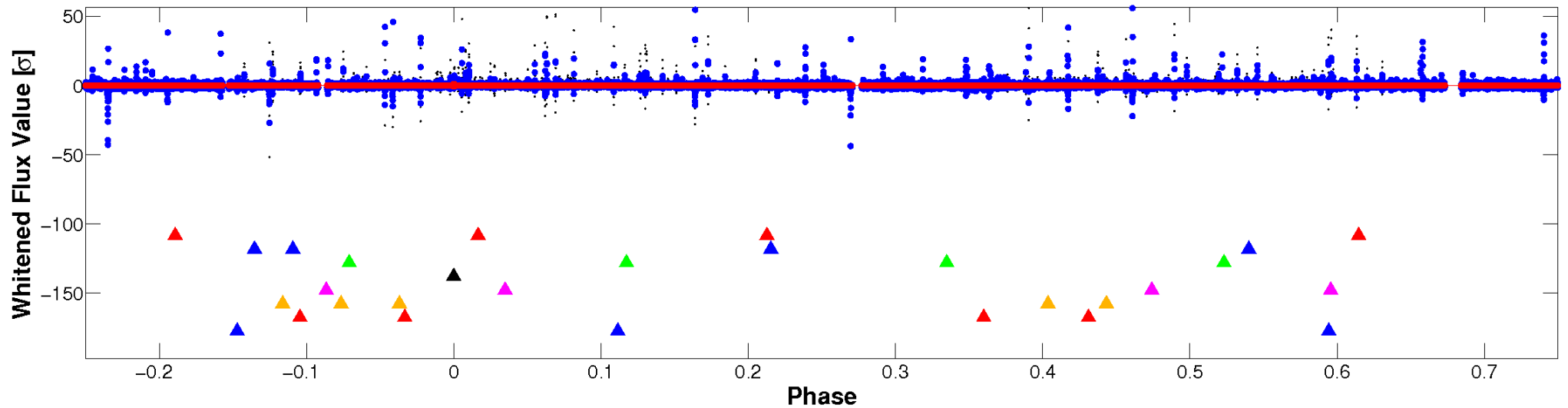


Non-Whitened Vs. Whitened Light Curve

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

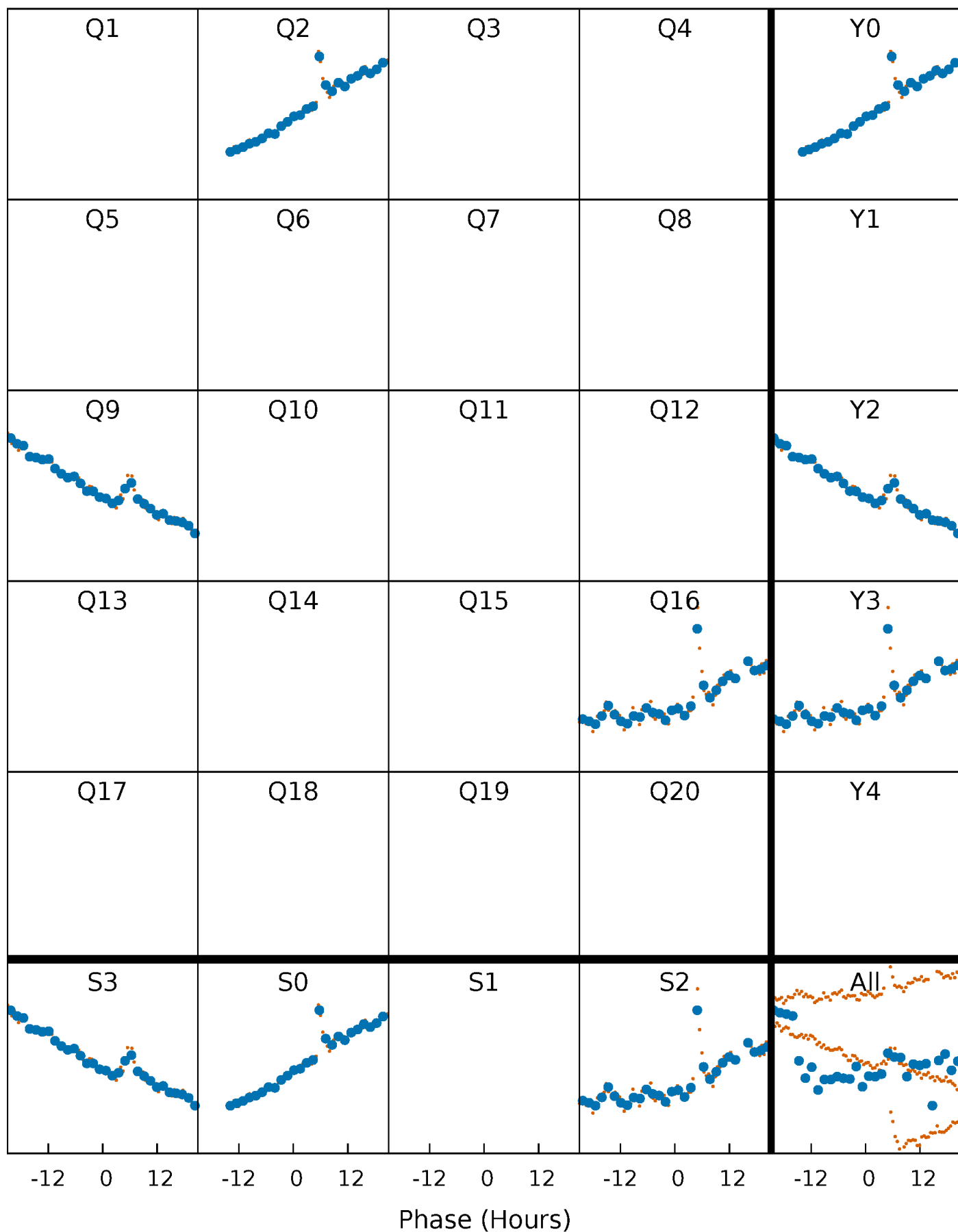


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



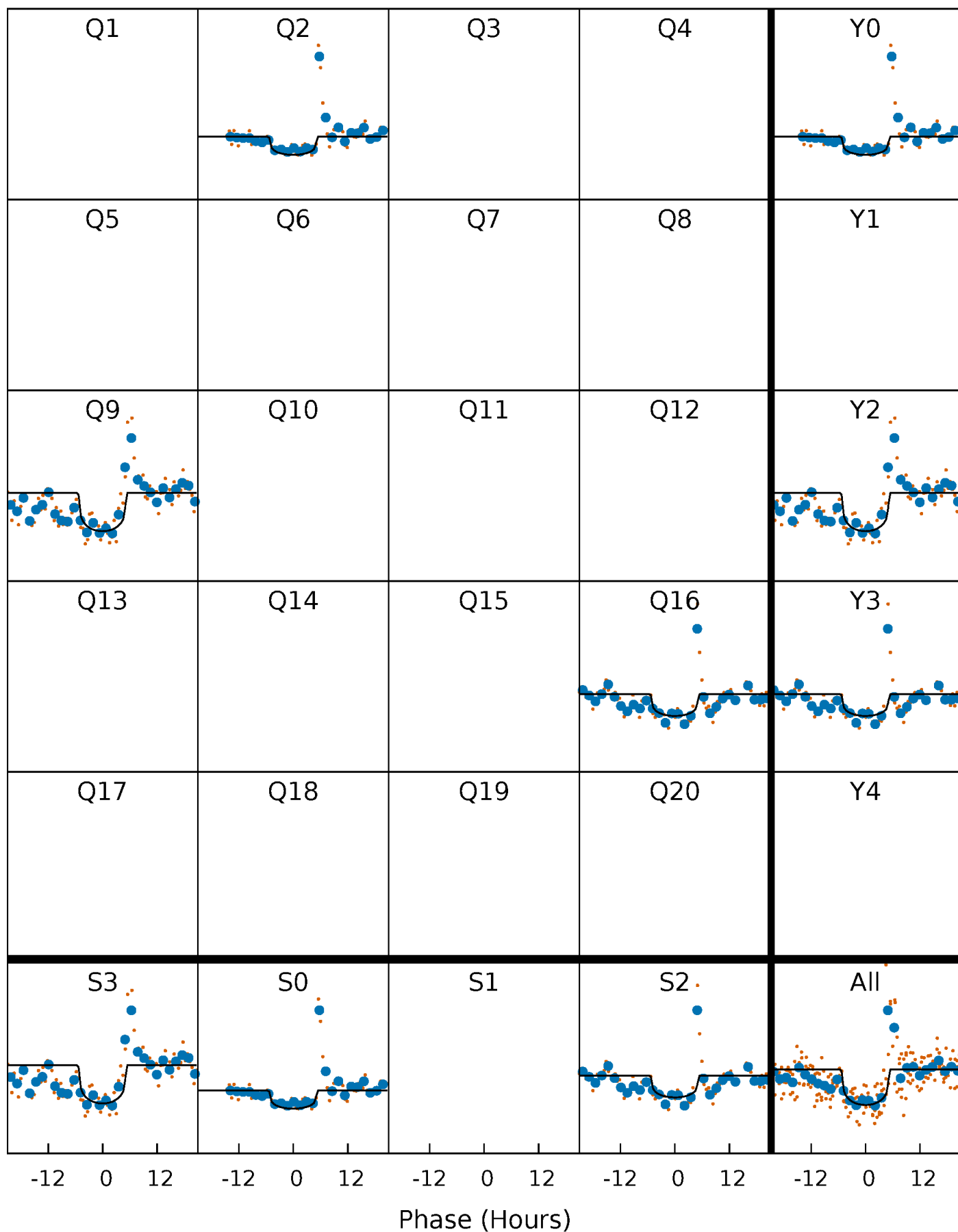
PDC Quarter-Phased Transit Curves

TCE 009419002-04 P=636.485171 Days $T_0=224.480977$ (BKJD)



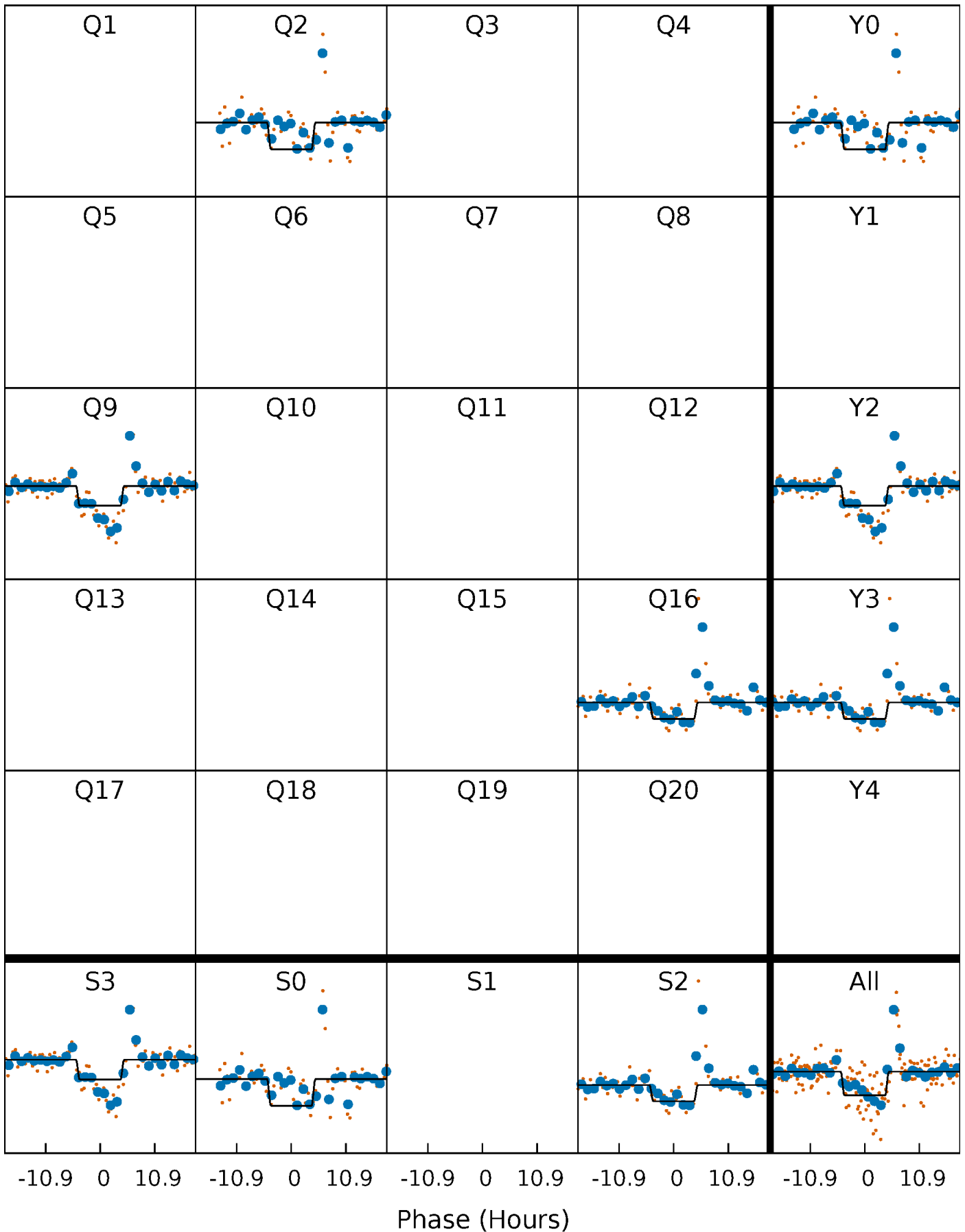
DV Quarter-Phased Transit Curves

TCE 009419002-04 P=636.485171 Days $T_0=224.480977$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

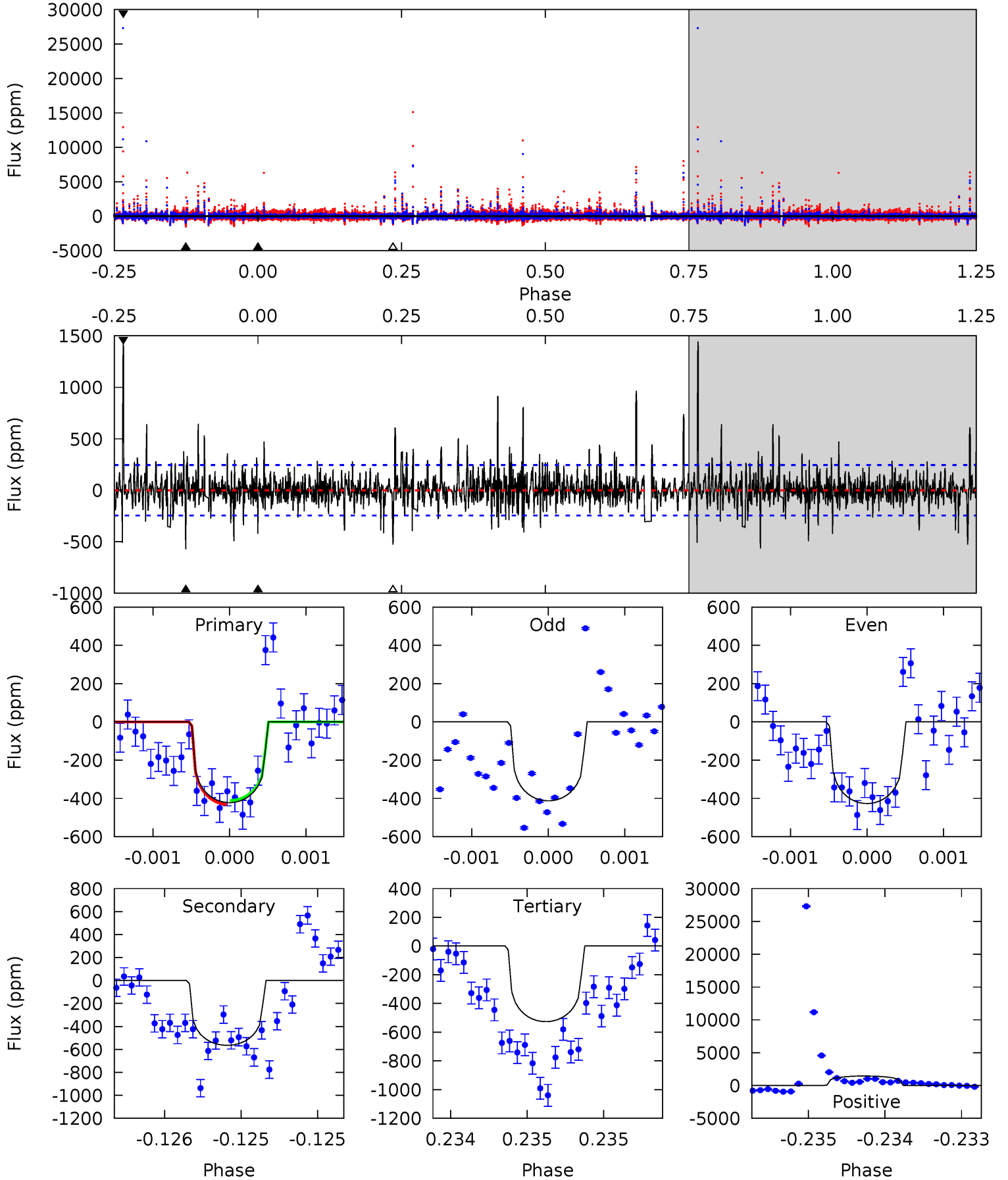
TCE 009419002-04 P=636.471338 Days $T_0=224.488904$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-04, P = 636.485171 Days, E = 224.480977 Days

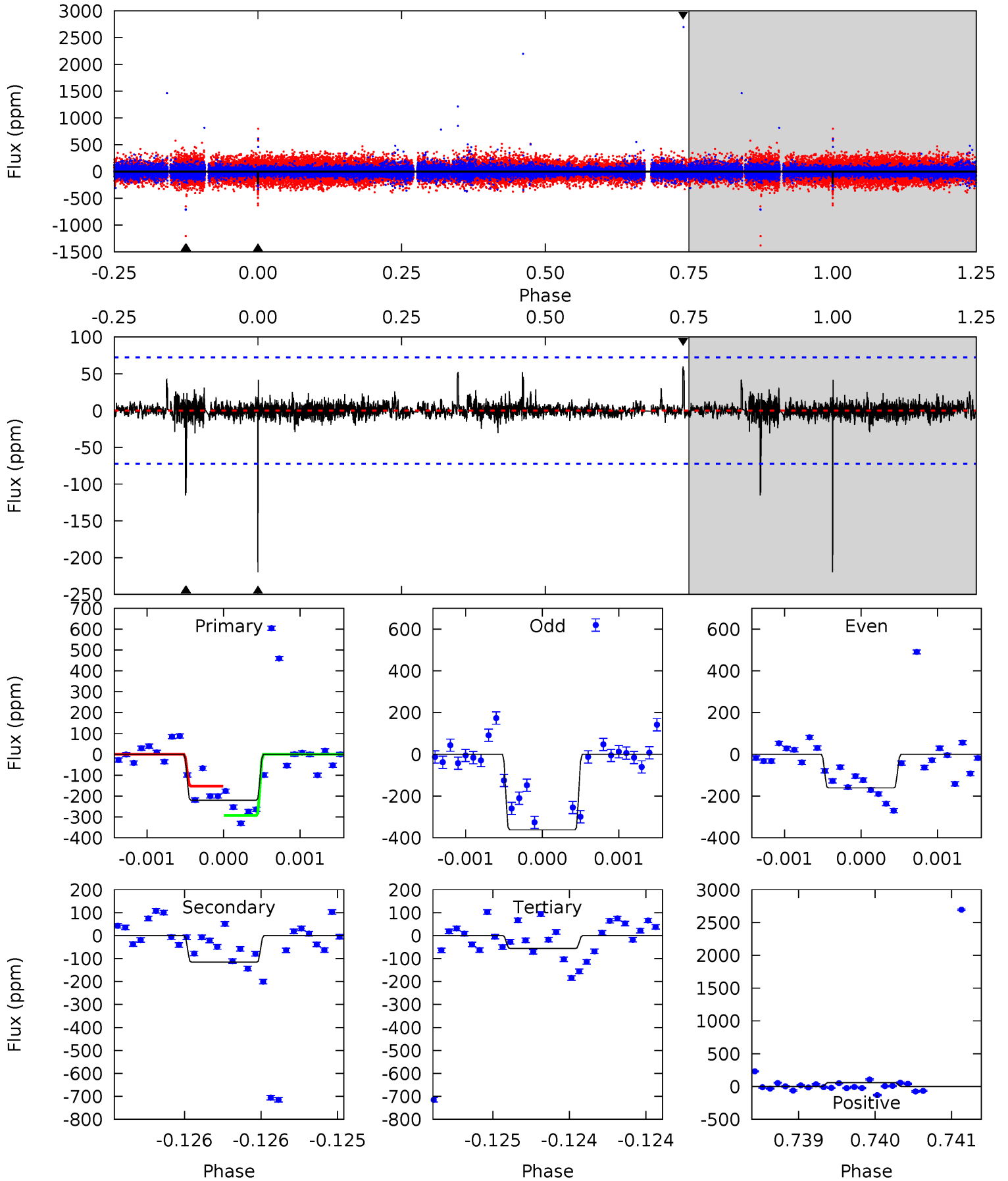
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.50	12.7	11.9	32.5	5.51	3.39	2.90	-2.36	-23.0	0.85	-19.8	0.12	0.99	0.72	0.27



Alt Model-Shift Uniqueness Test

009419002-04, P = 636.471338 Days, E = 224.488904 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	8.82	4.25	4.58	5.54	3.43	0.55	12.6	12.2	4.56	4.24	7.71	1.03	0.21	5.42



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-565 ± 44	$7.91^{+4.55}_{-4.02}$	512^{+44}_{-99}	5955^{+1752}_{-938}	15046^{+44179}_{-8765}
Alt.	-115 ± 13	$6.16^{+4.24}_{-3.51}$	512^{+44}_{-103}	4653^{+1583}_{-671}	5052^{+21179}_{-3228}

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

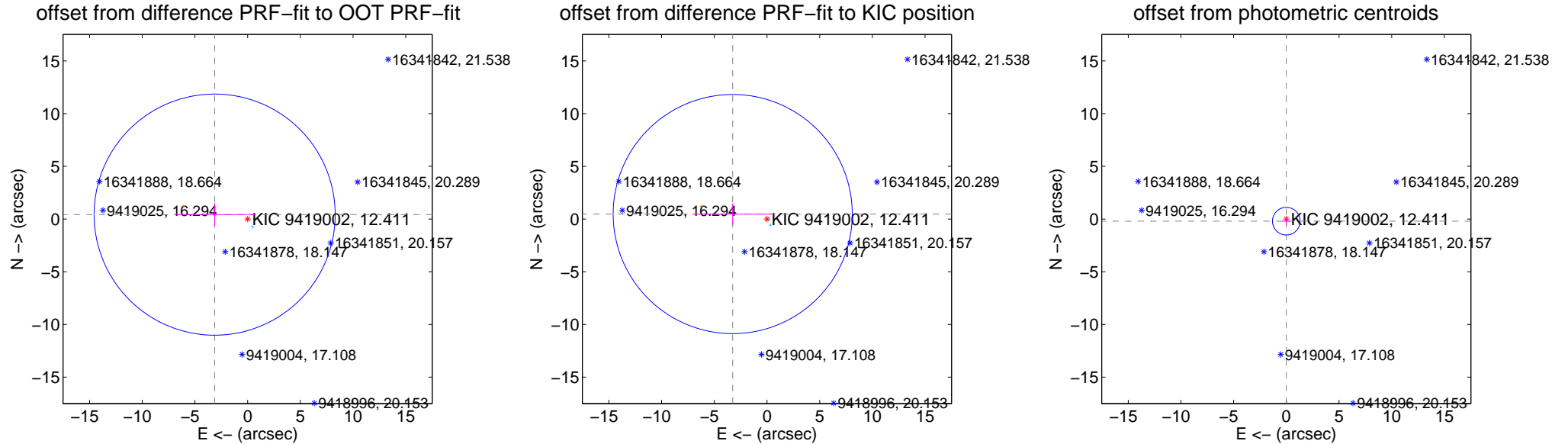
DV Centroid Data

Supplemental centroid analysis for 009419002-04. Kepler magnitude: 12.41. Transit SNR 6.06

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.158 ± 3.812	0.83	3.130 ± 3.843	0.416 ± 1.109
PRF-fit source offset from KIC position	3.285 ± 3.781	0.87	3.251 ± 3.818	0.471 ± 1.015
photometric centroid source offset	0.20 ± 0.44	0.47	0.01 ± 0.43	-0.20 ± 0.44



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

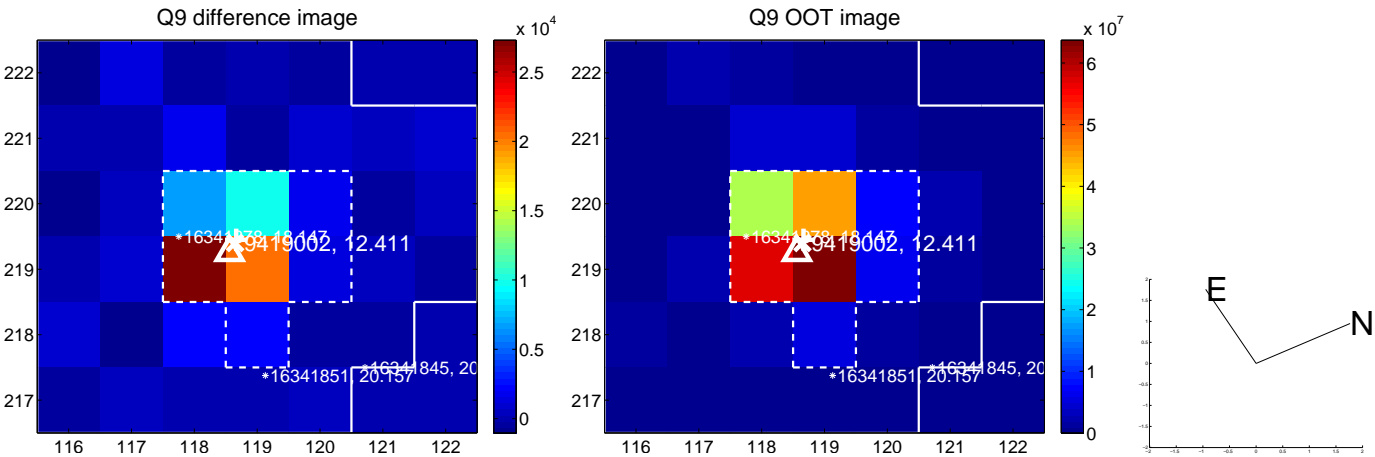
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



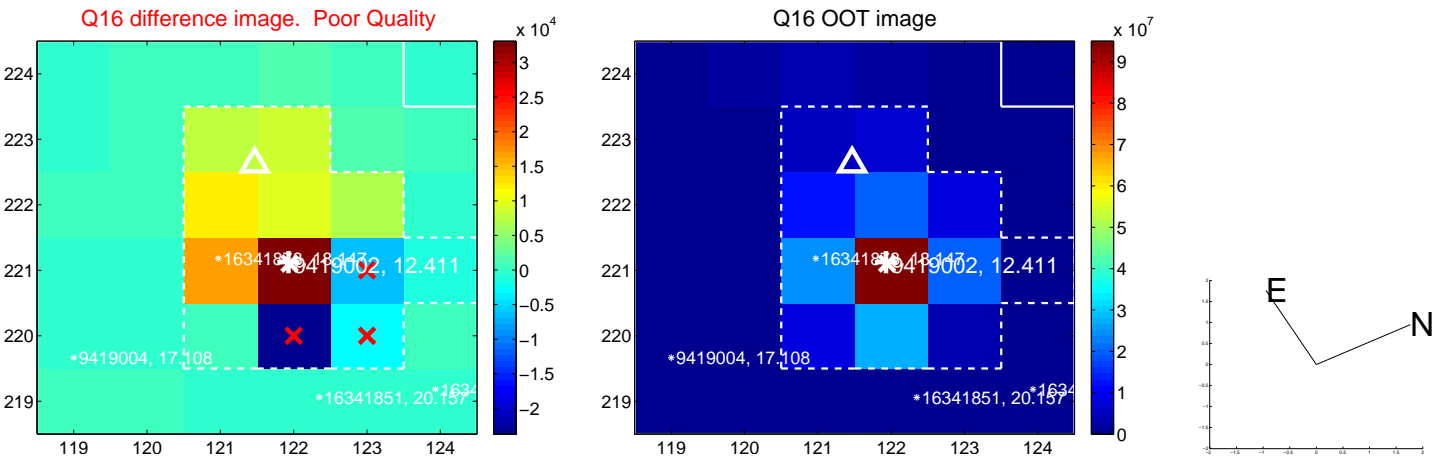
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



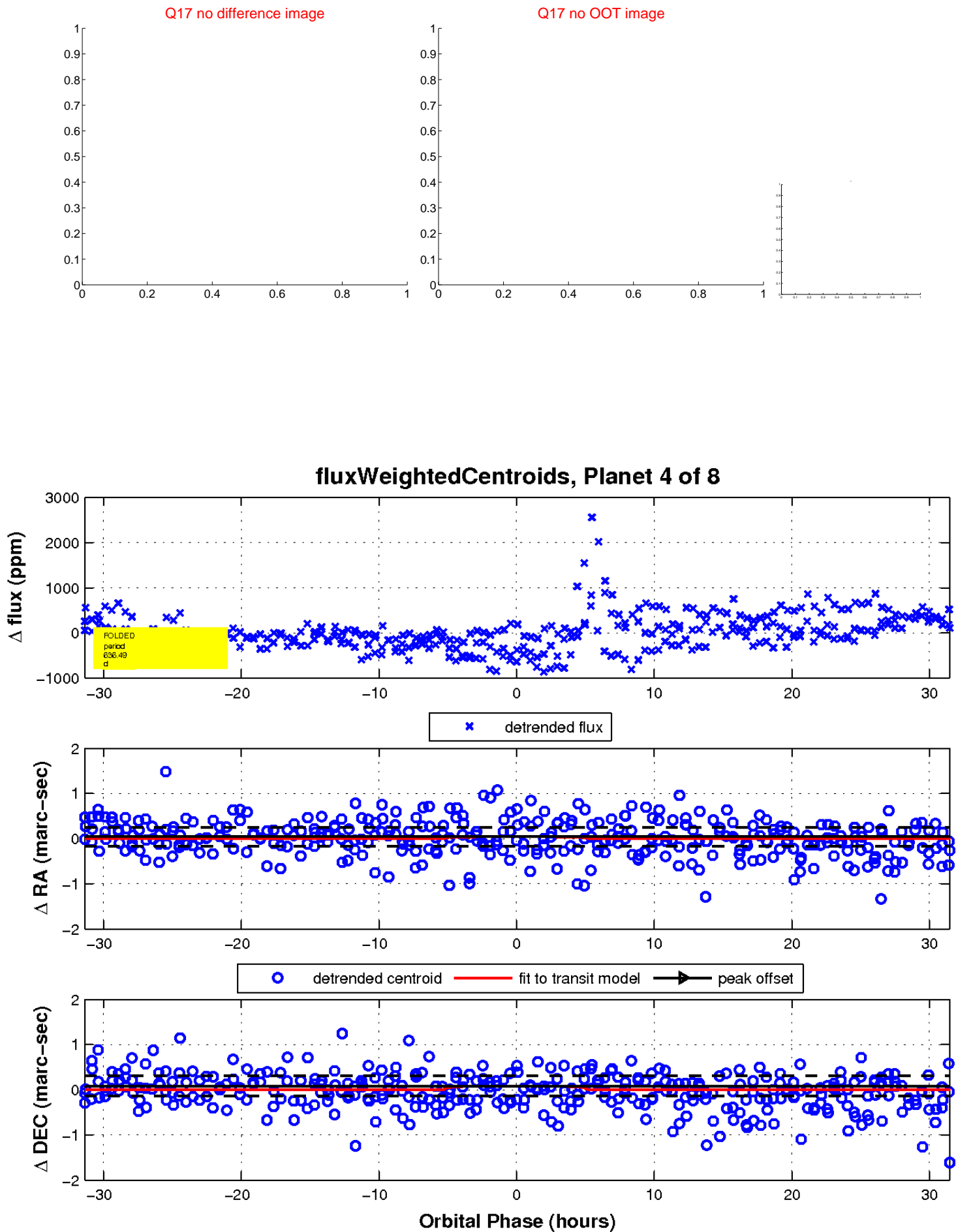
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



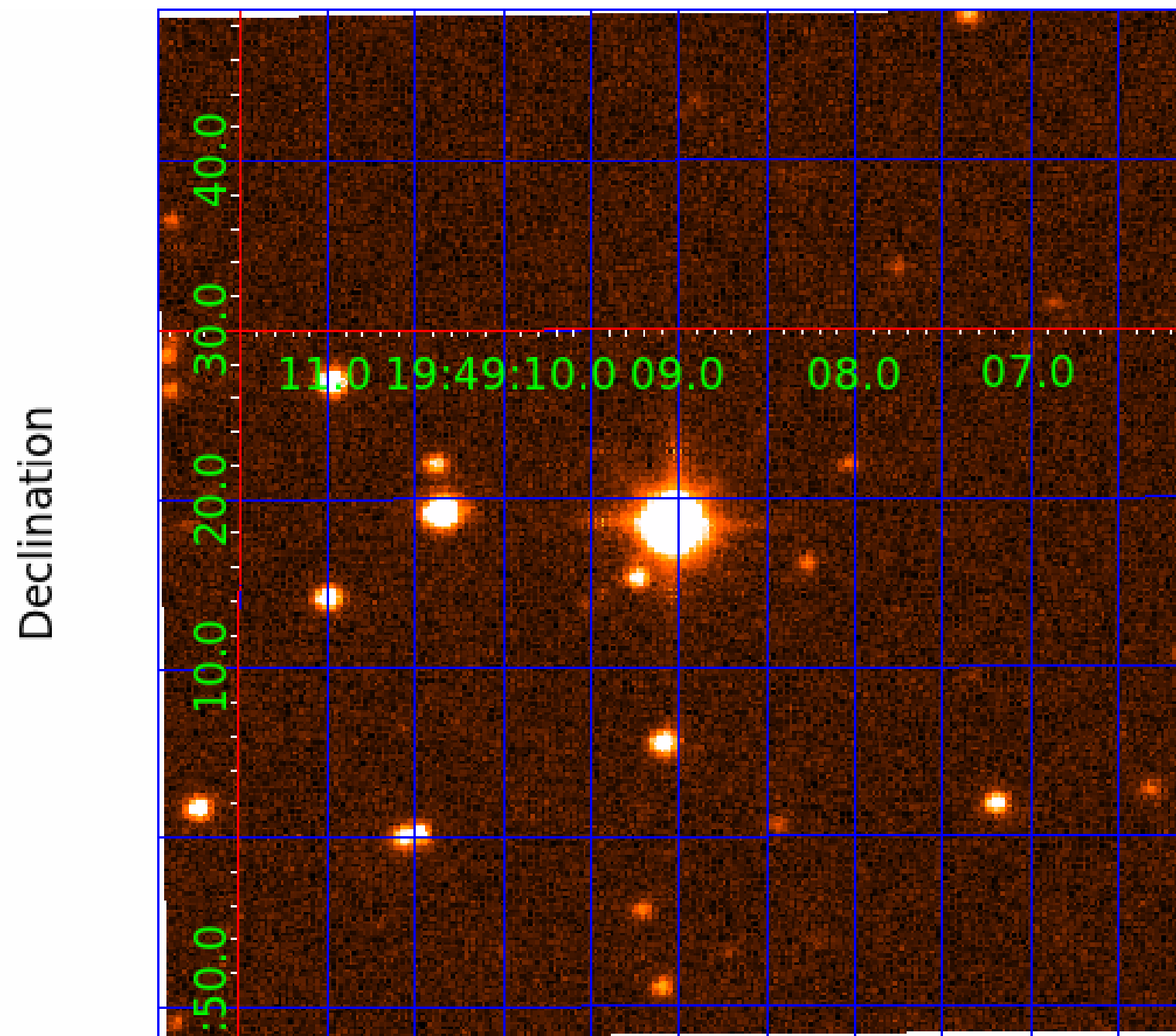
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

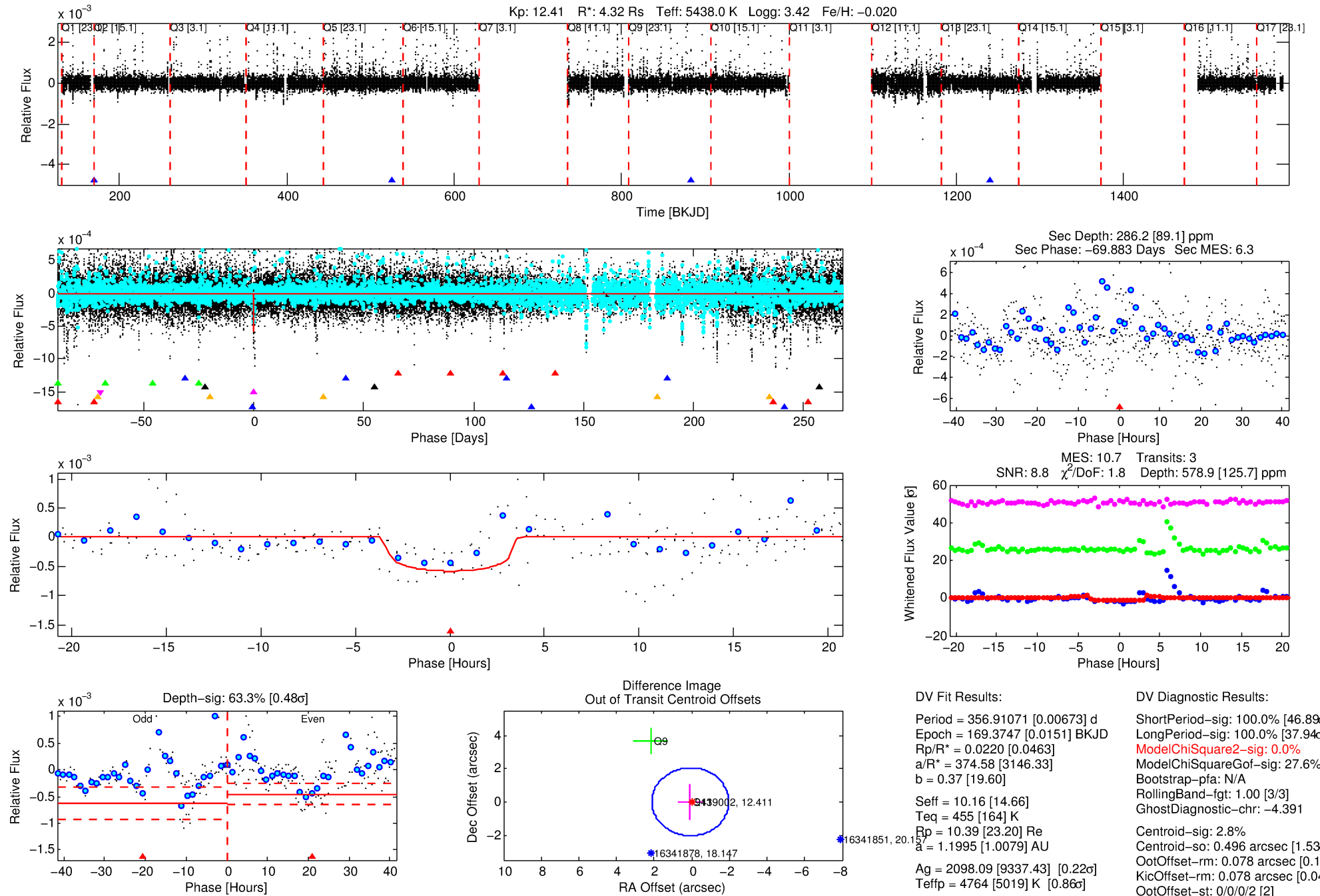
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-05

No Significant Match Found

DV One-Page Summary

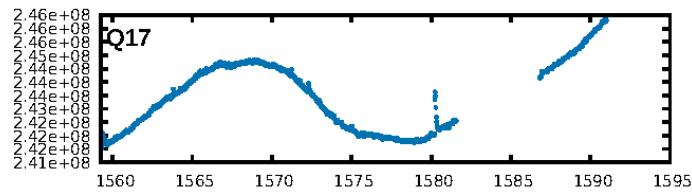
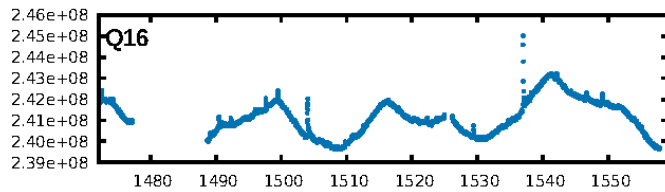
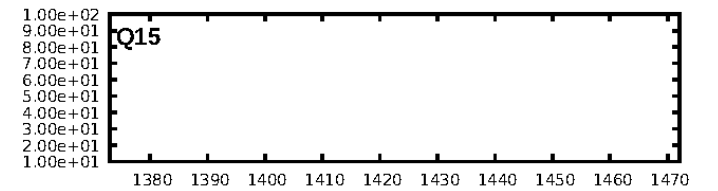
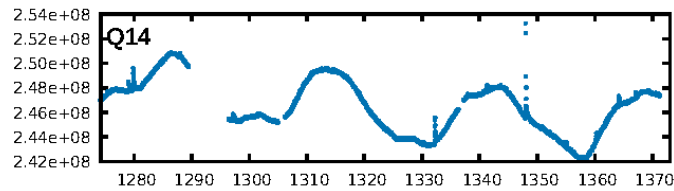
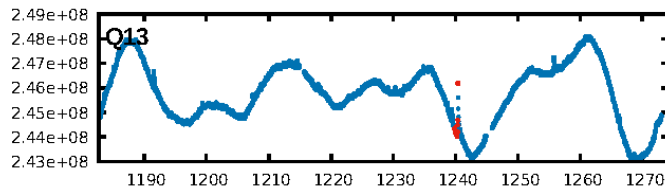
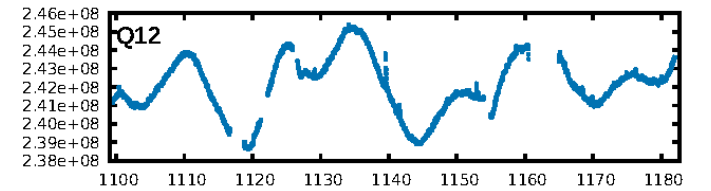
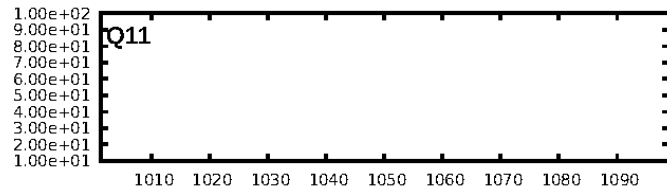
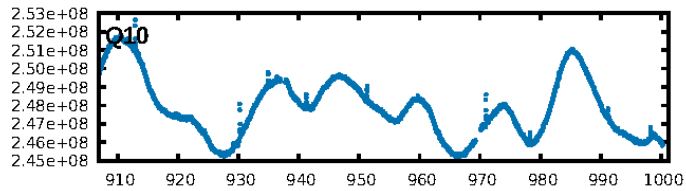
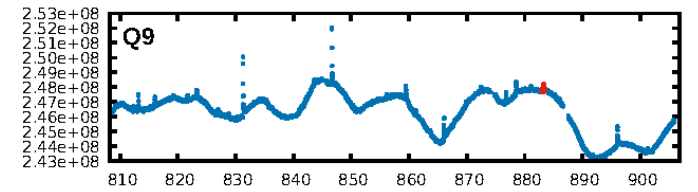
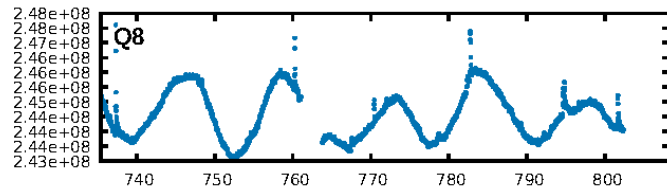
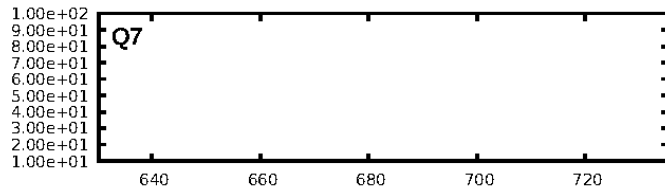
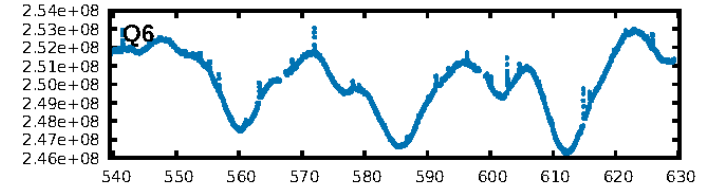
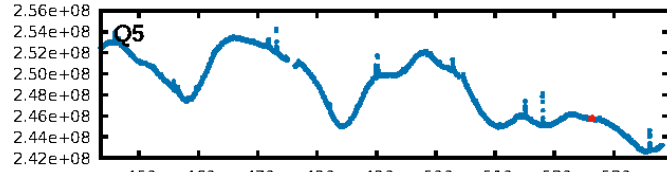
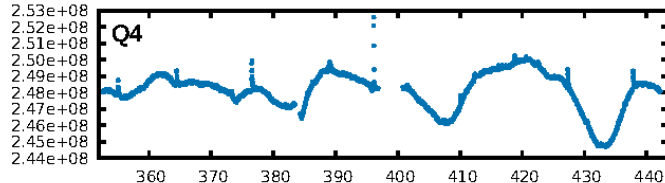
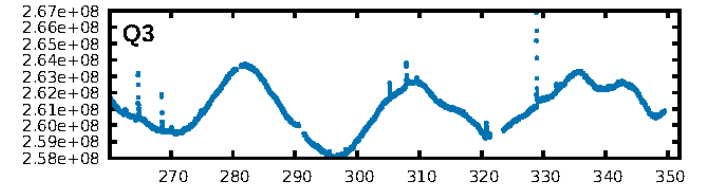
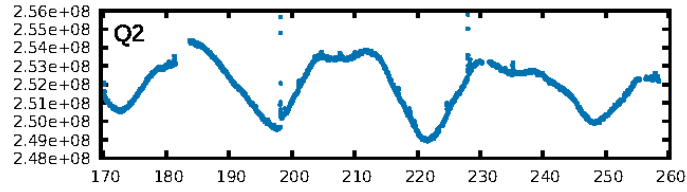
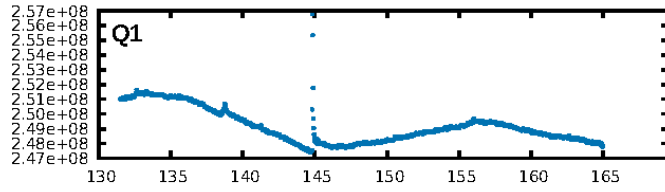
KIC: 9419002 Candidate: 5 of 8 Period: 356.911 d



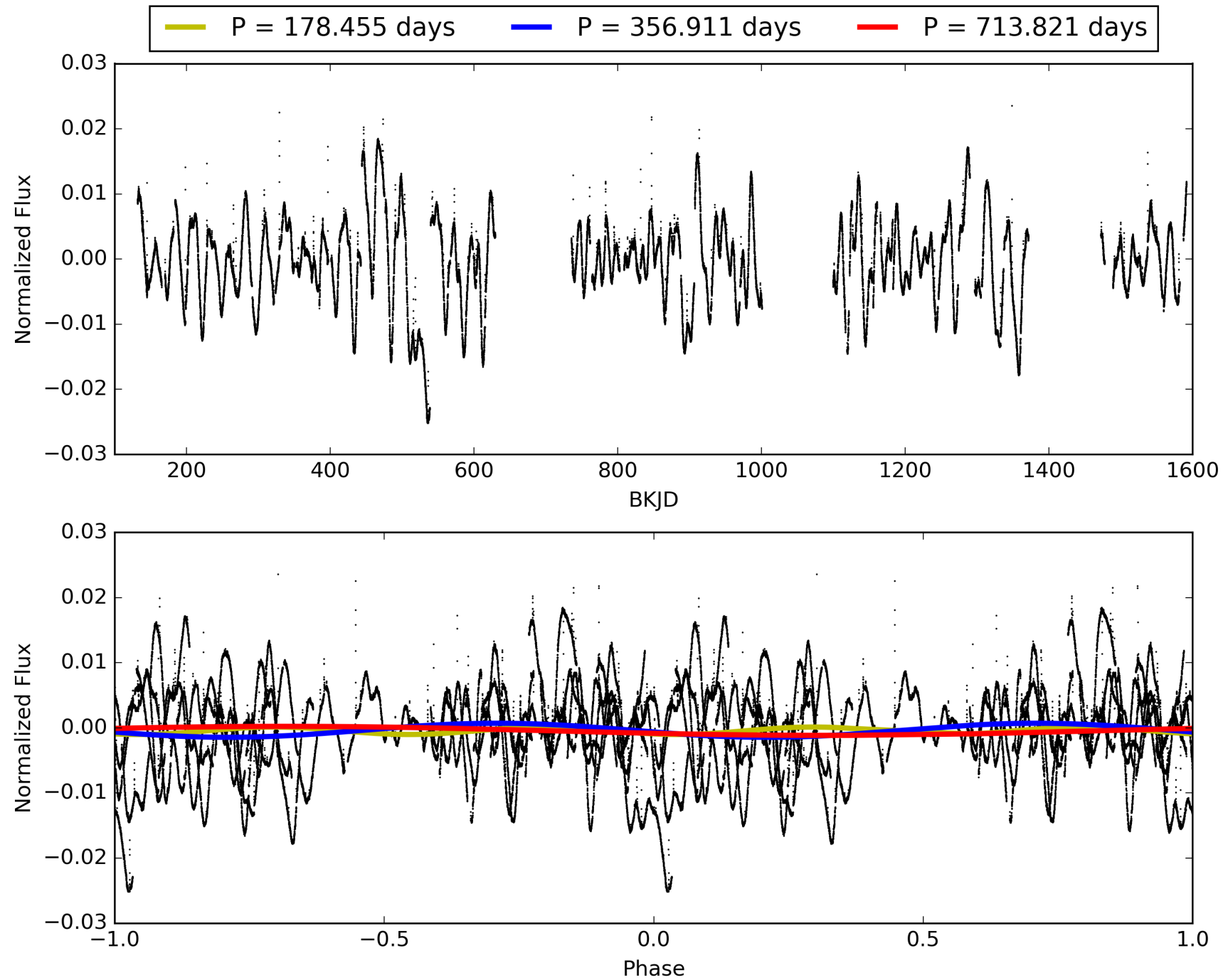
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:27:54 Z

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

TCE 009419002-05, PDC Light Curves

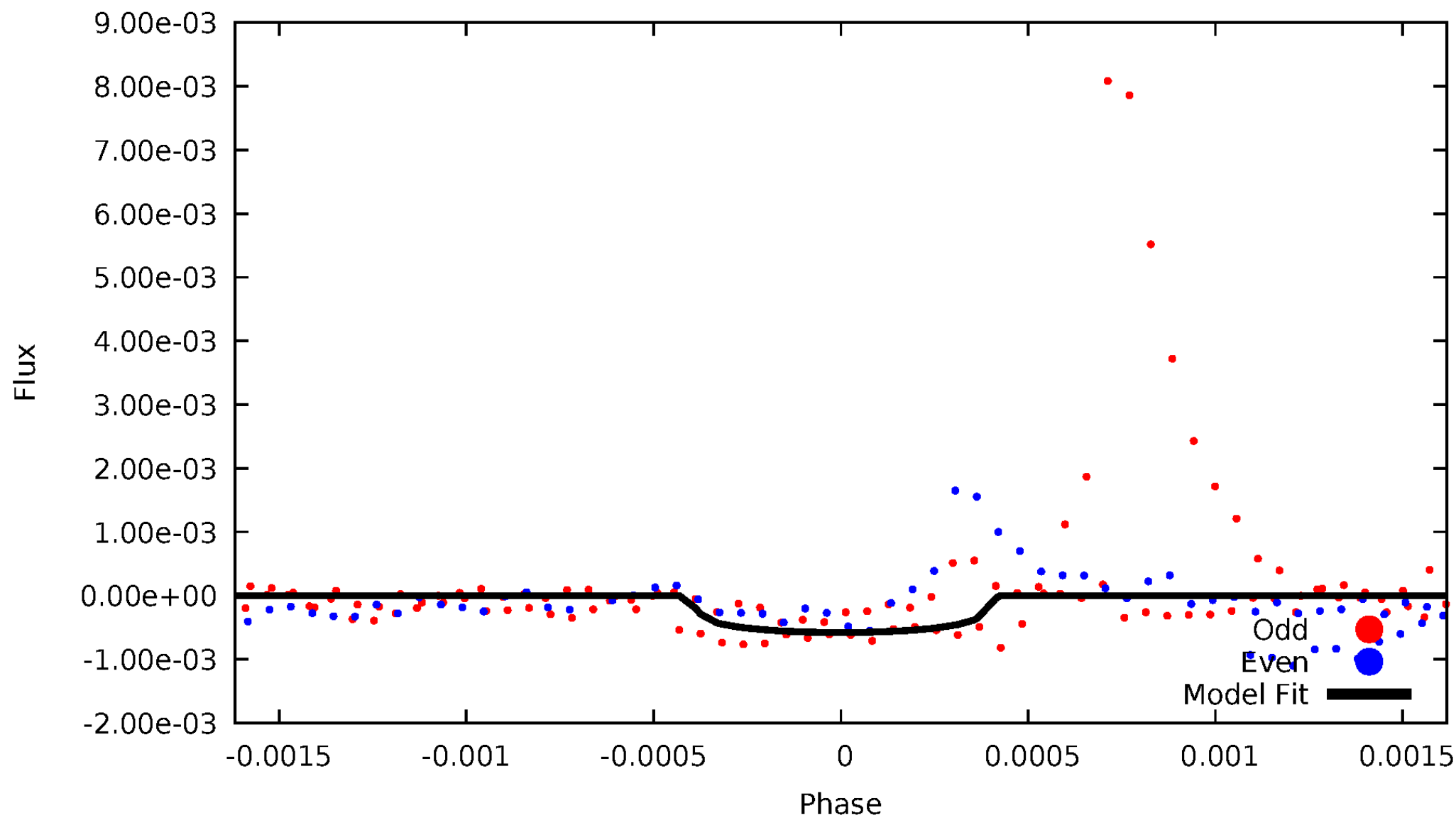


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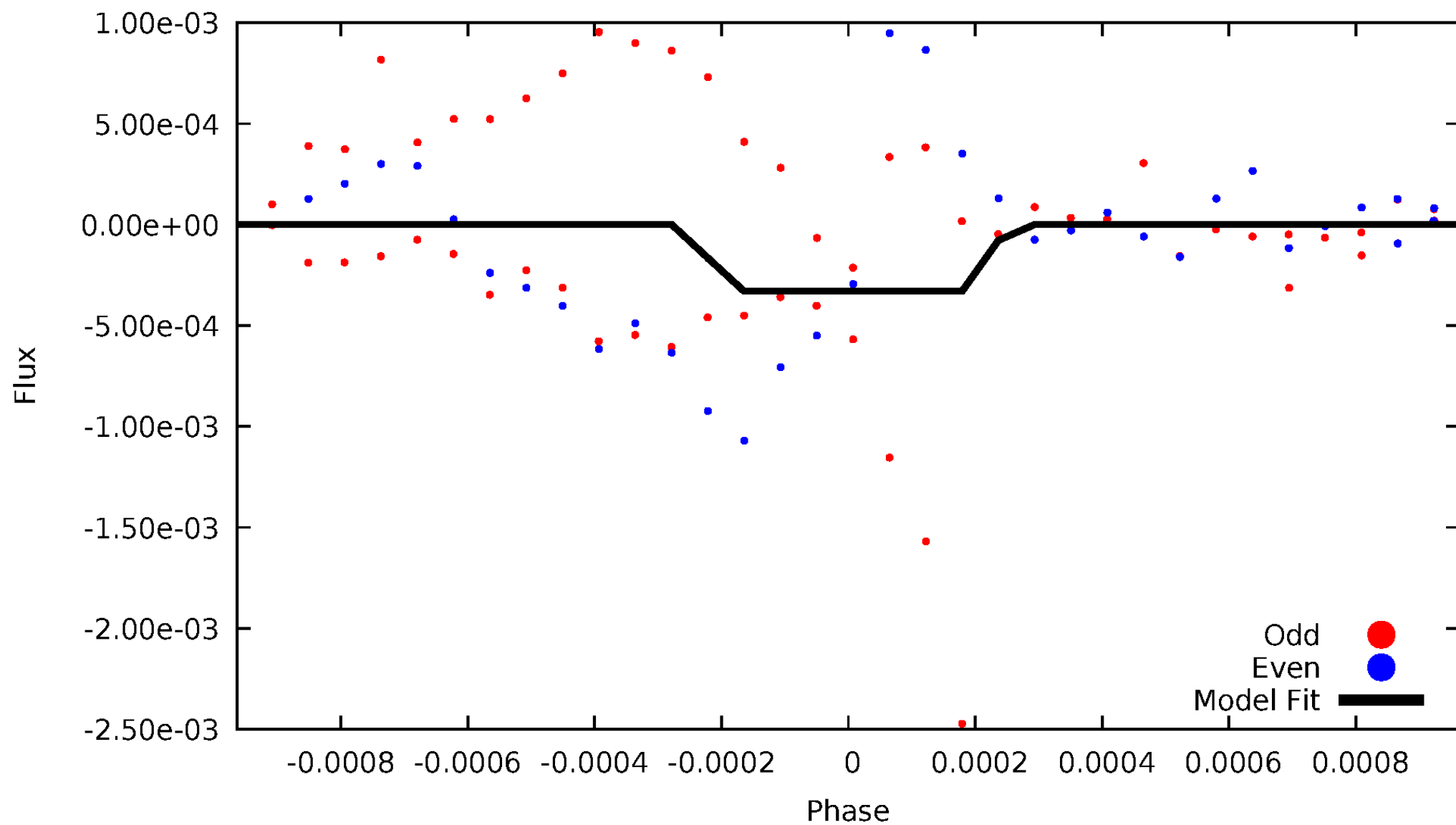
DV Odd/Even

TCE 009419002-05



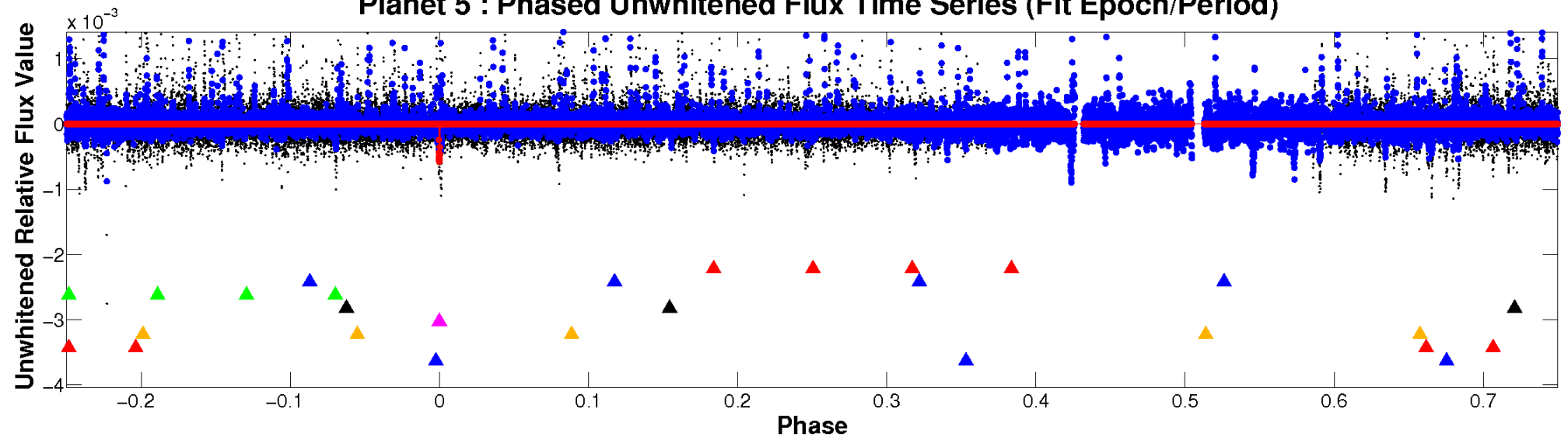
ALT Odd/Even

TCE 009419002-05

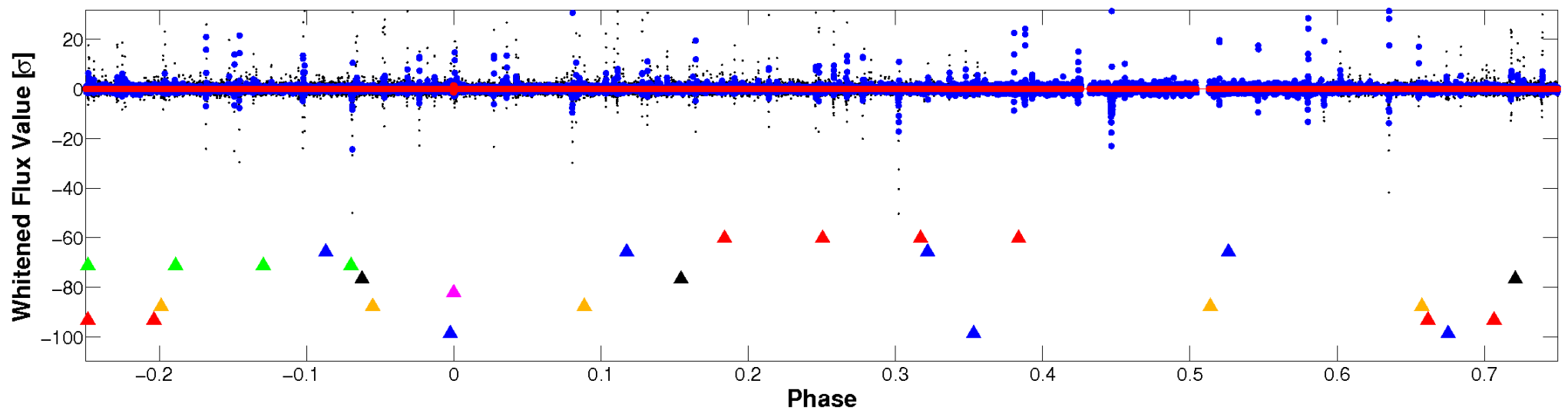


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

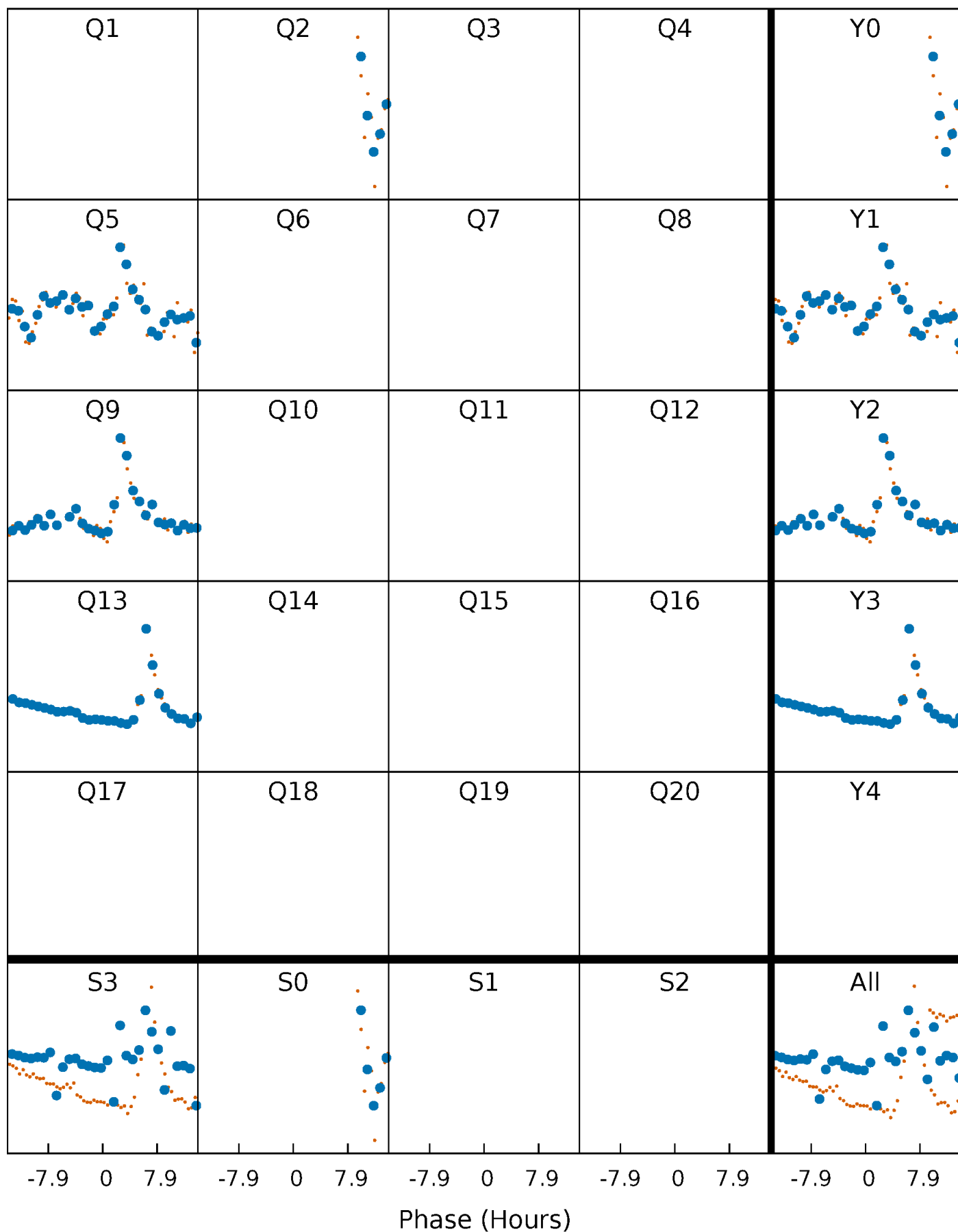


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



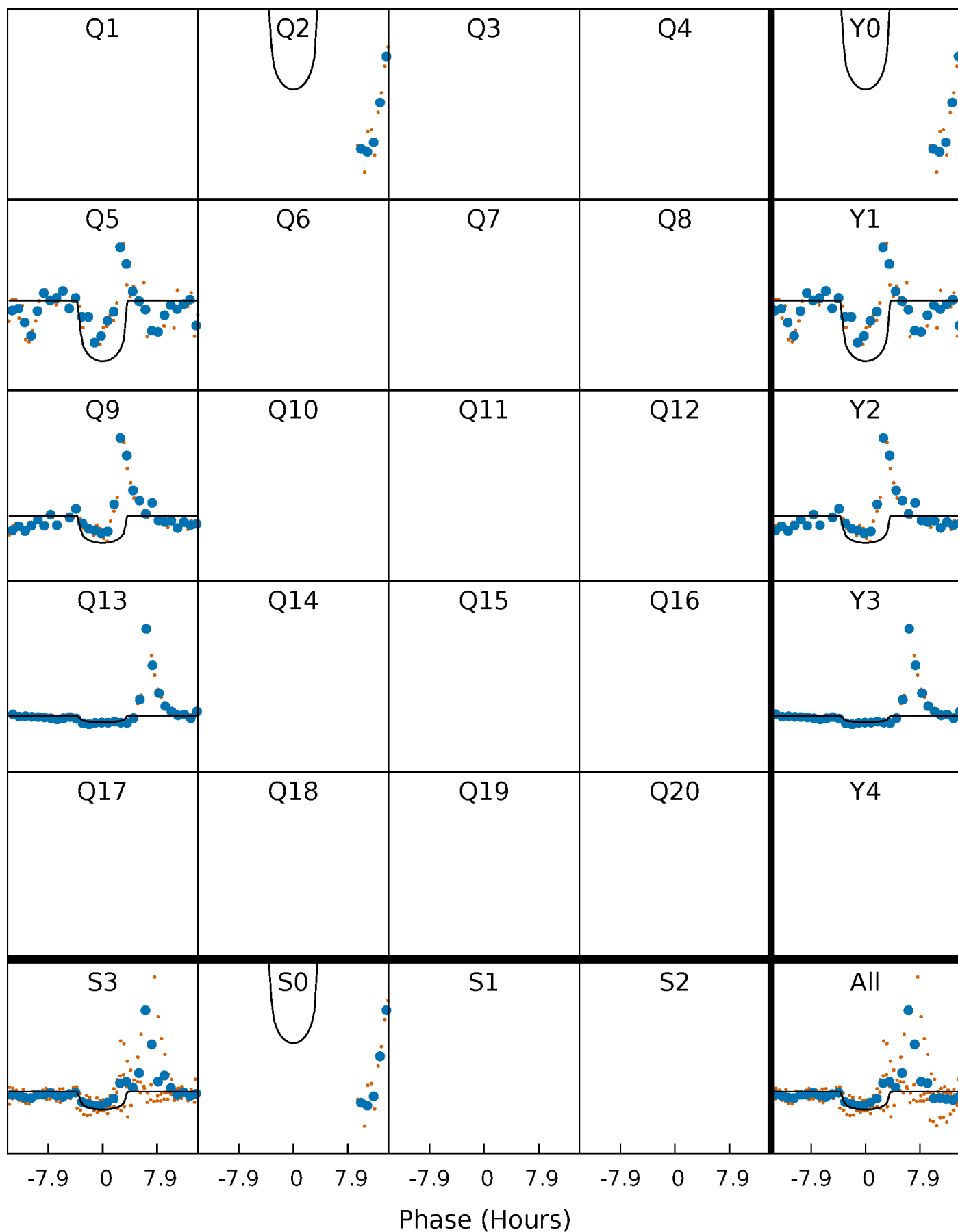
PDC Quarter-Phased Transit Curves

TCE 009419002-05 $P=356.910709$ Days $T_0=169.374660$ (BKJD)



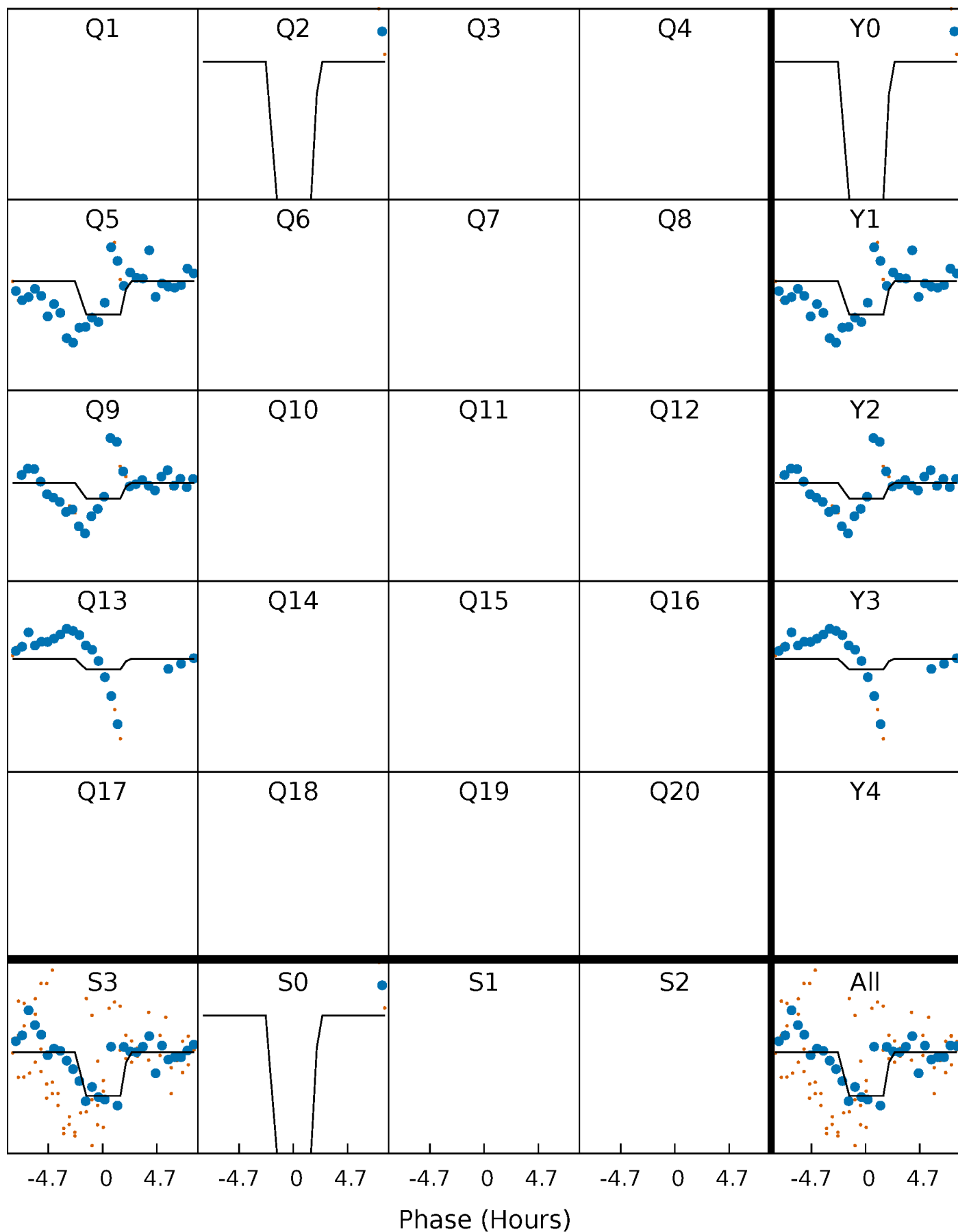
DV Quarter-Phased Transit Curves

TCE 009419002-05 $P=356.910709$ Days $T_0=169.374660$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

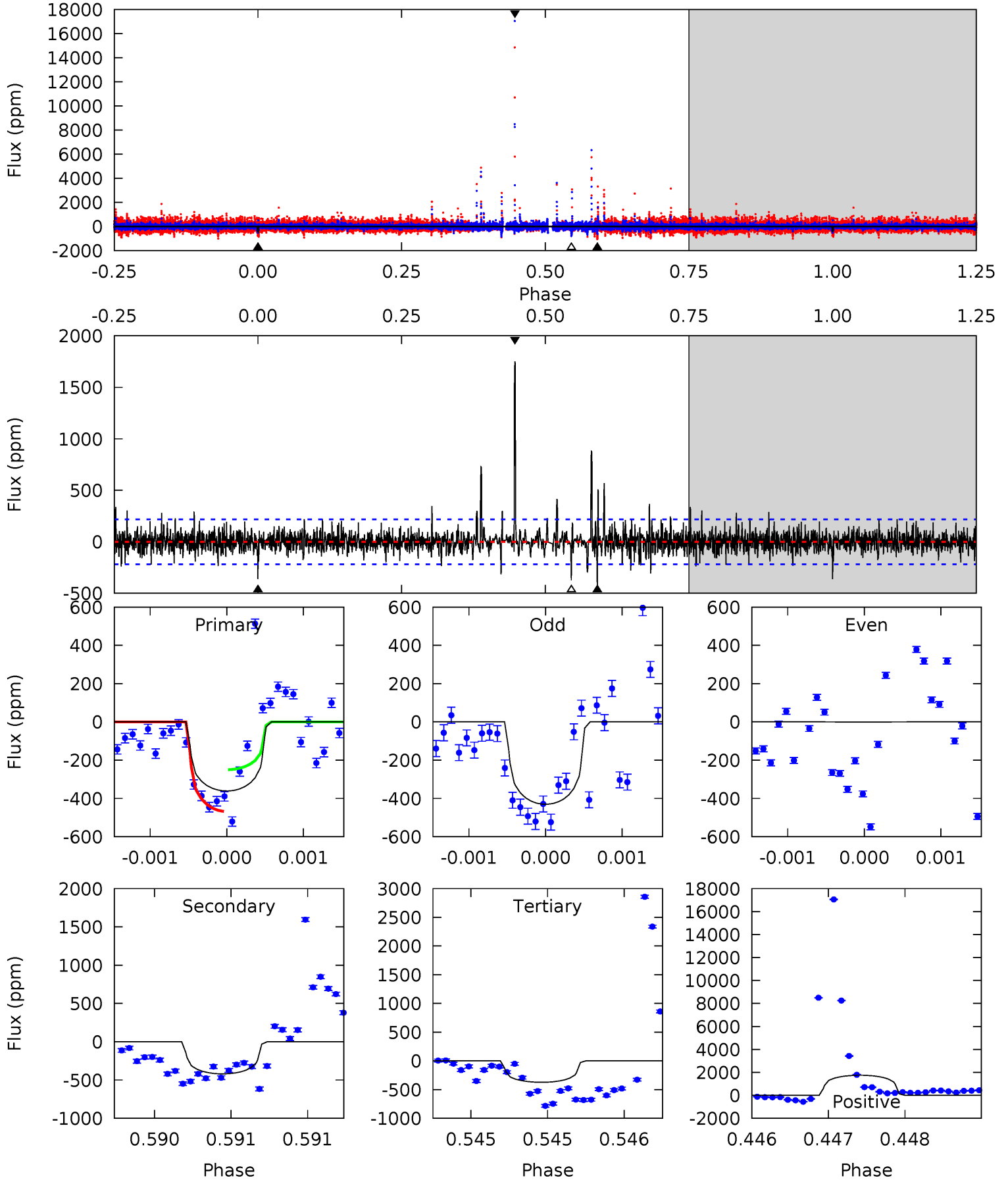
TCE 009419002-05 $P=356.912992$ Days $T_0=169.456073$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-05, P = 356.910709 Days, E = 169.374660 Days

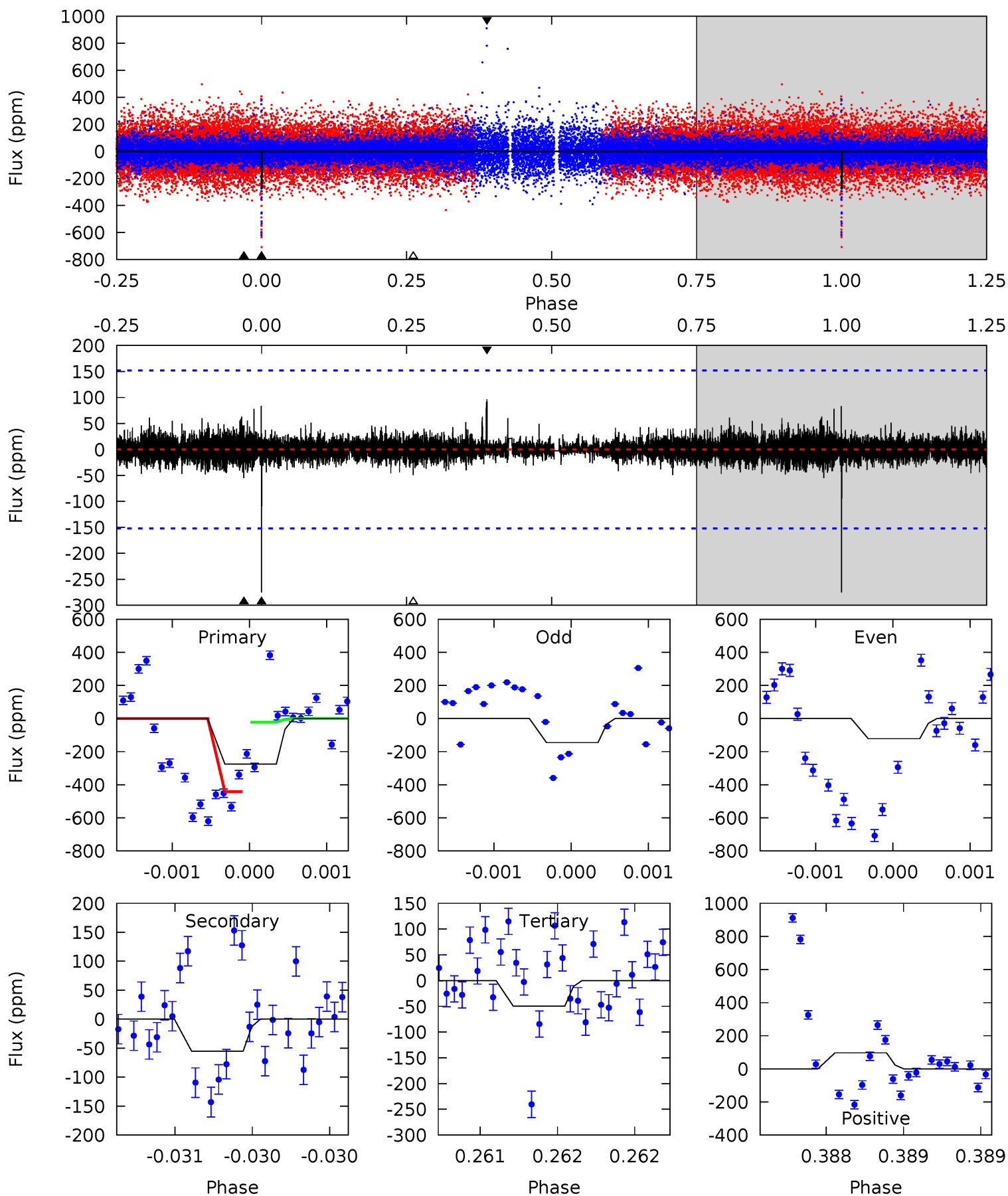
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.09	10.6	9.39	44.1	5.49	3.35	2.21	-0.30	-35.0	1.18	-33.5	4.69	1.80	0.81	2.77



Alt Model-Shift Uniqueness Test

009419002-05, P = 356.912992 Days, E = 169.456073 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	2.02	1.82	3.53	5.57	3.47	0.46	8.28	6.56	0.20	-1.51	0.48	2.37	0.26	7.76



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-420 ± 40	$16.16^{+17.28}_{-11.35}$	621^{+55}_{-118}	4111^{+2659}_{-749}	1307^{+12411}_{-1015}
Alt.	-55 ± 27	$15.15^{+17.91}_{-10.53}$	617^{+59}_{-117}	2988^{+1274}_{-563}	170^{+1465}_{-139}

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

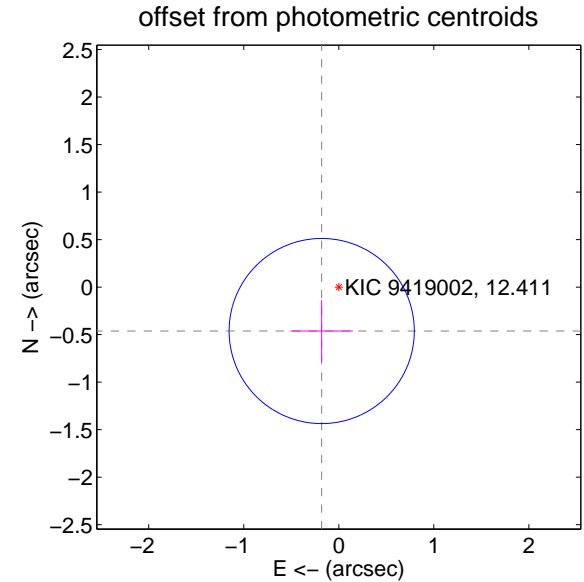
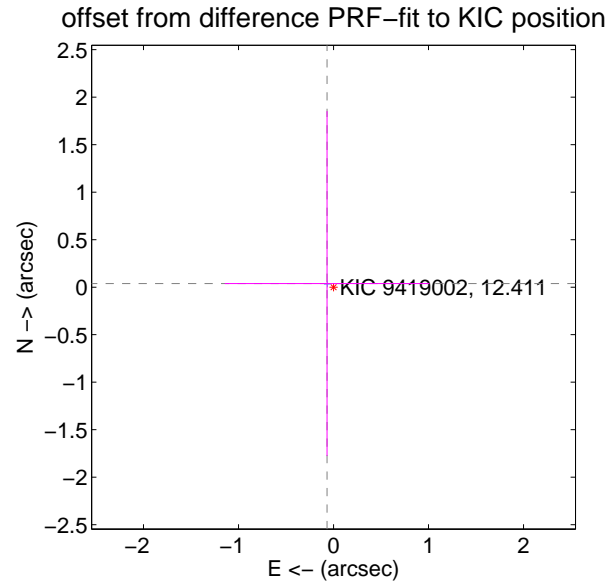
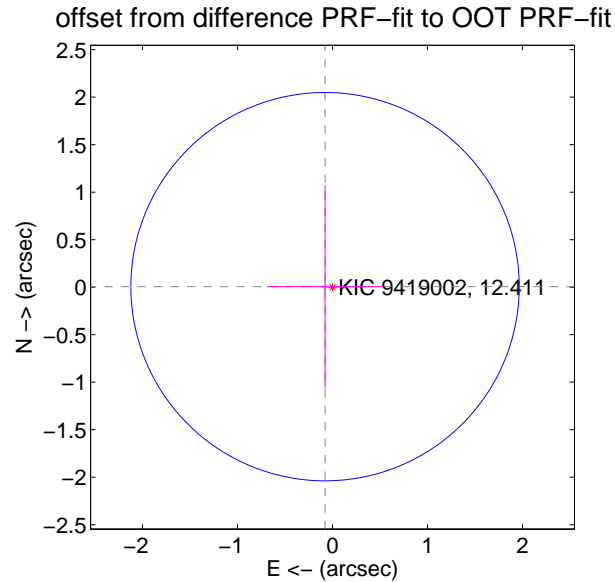
DV Centroid Data

Supplemental centroid analysis for 009419002-05. Kepler magnitude: 12.41. Transit SNR 8.85

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.078 ± 0.681	0.12	0.078 ± 0.610	0.005 ± 1.064
PRF-fit source offset from KIC position	0.078 ± 1.826	0.04	0.068 ± 1.077	0.038 ± 1.814
photometric centroid source offset	0.50 ± 0.32	1.53	0.18 ± 0.33	-0.46 ± 0.32

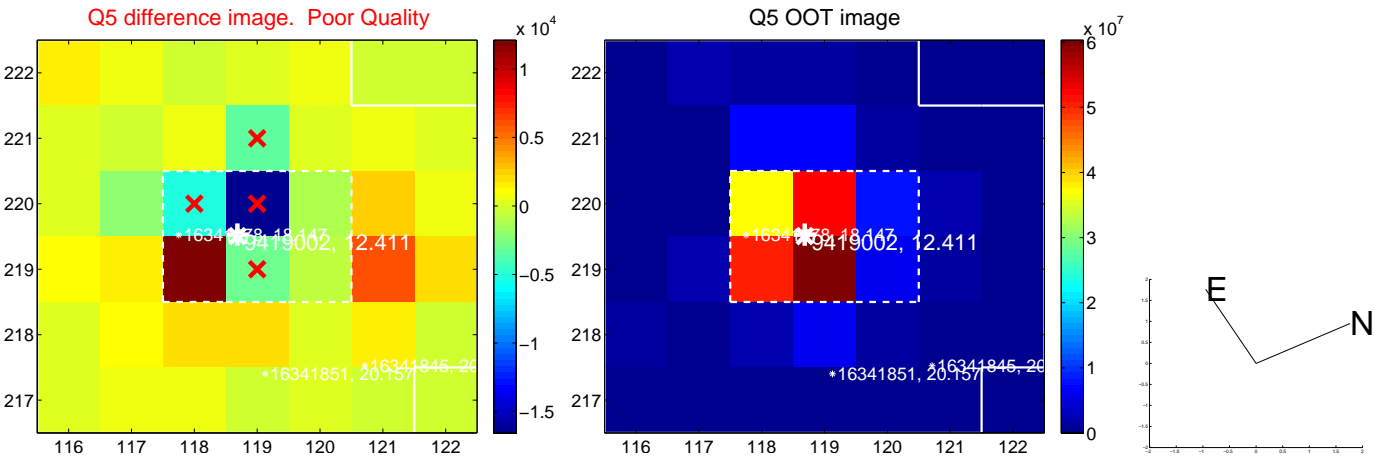


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

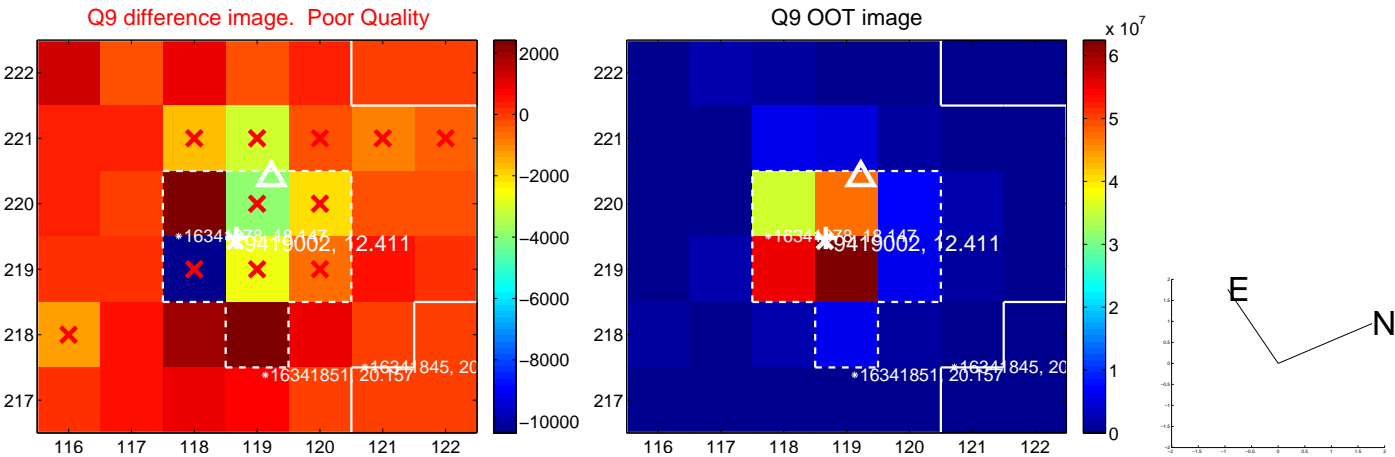
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



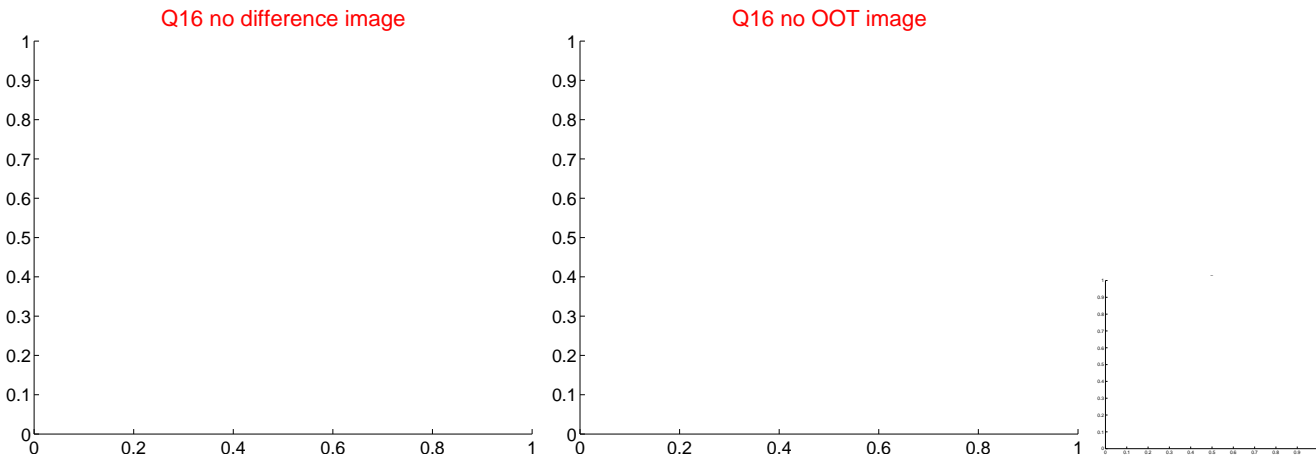
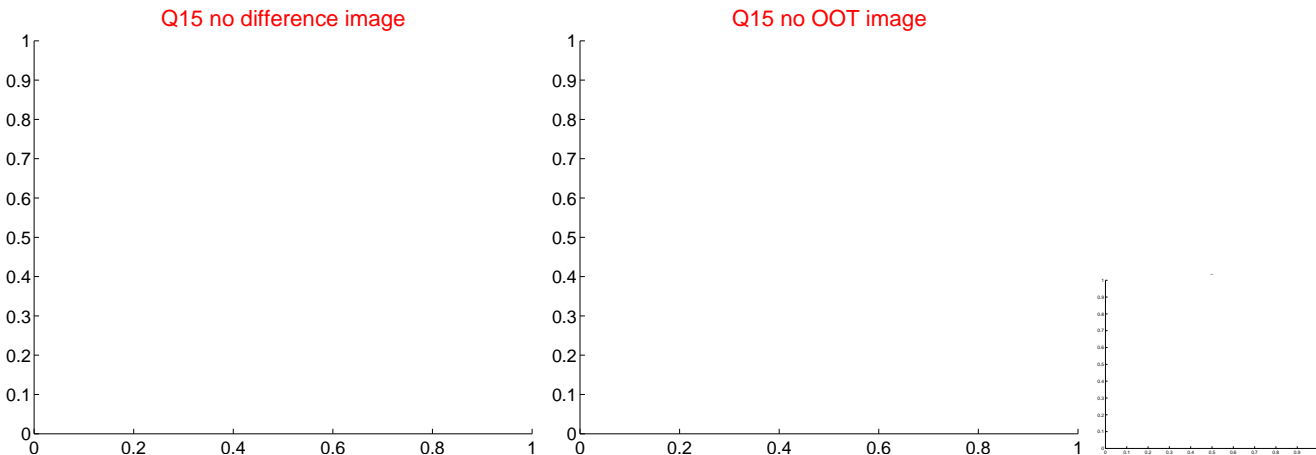
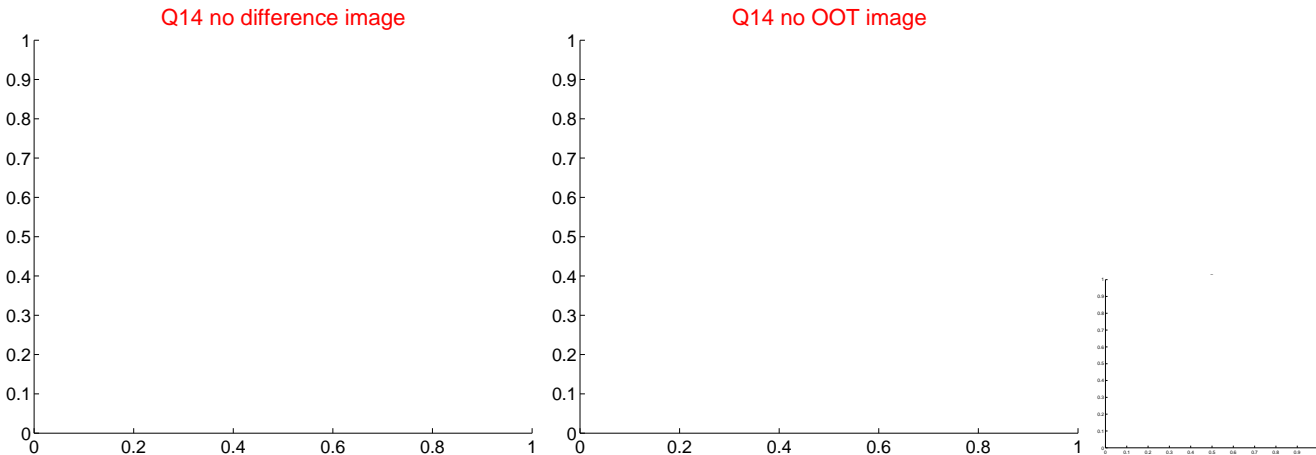
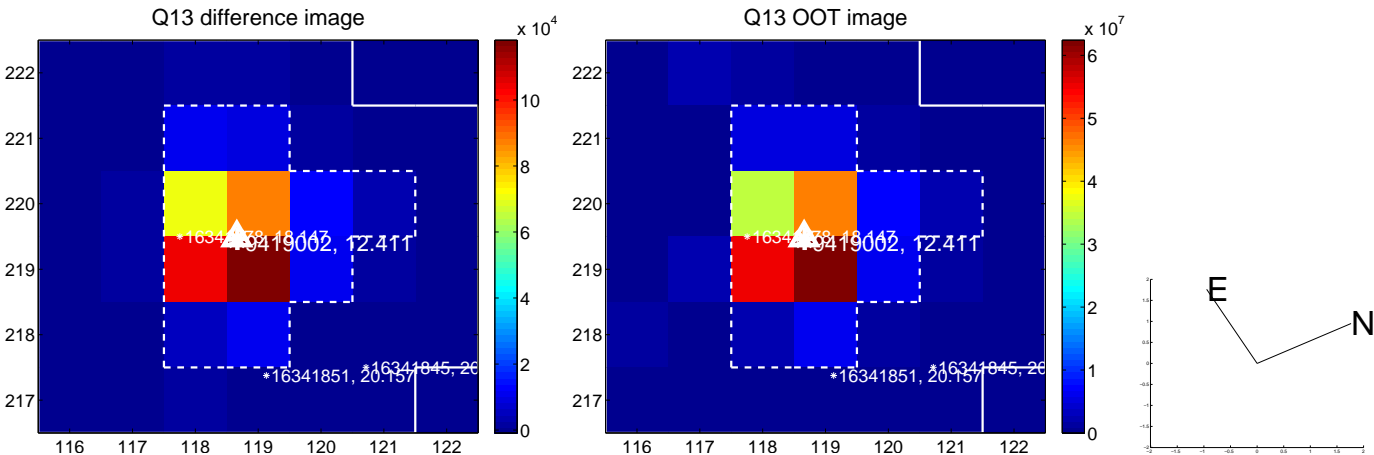
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



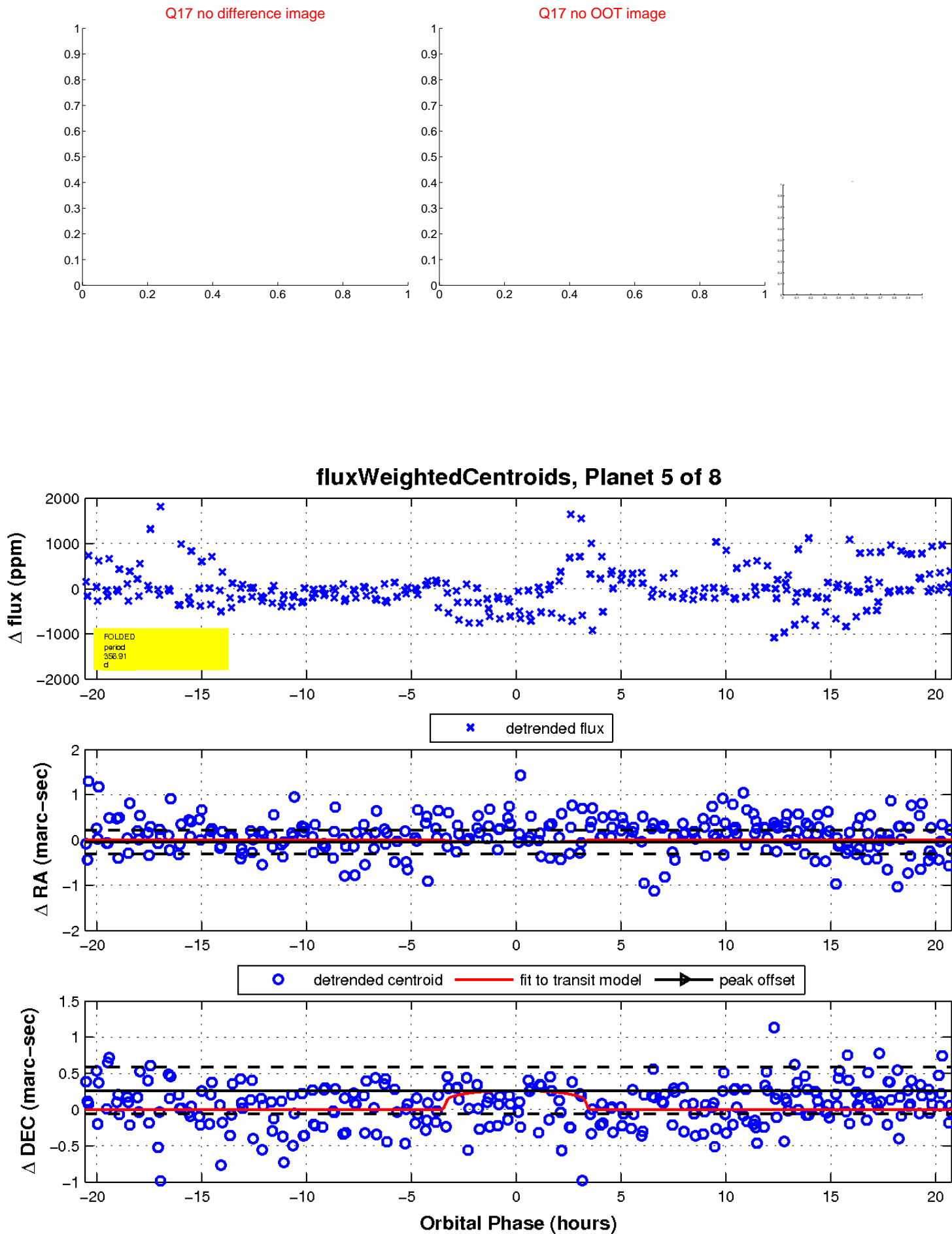
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



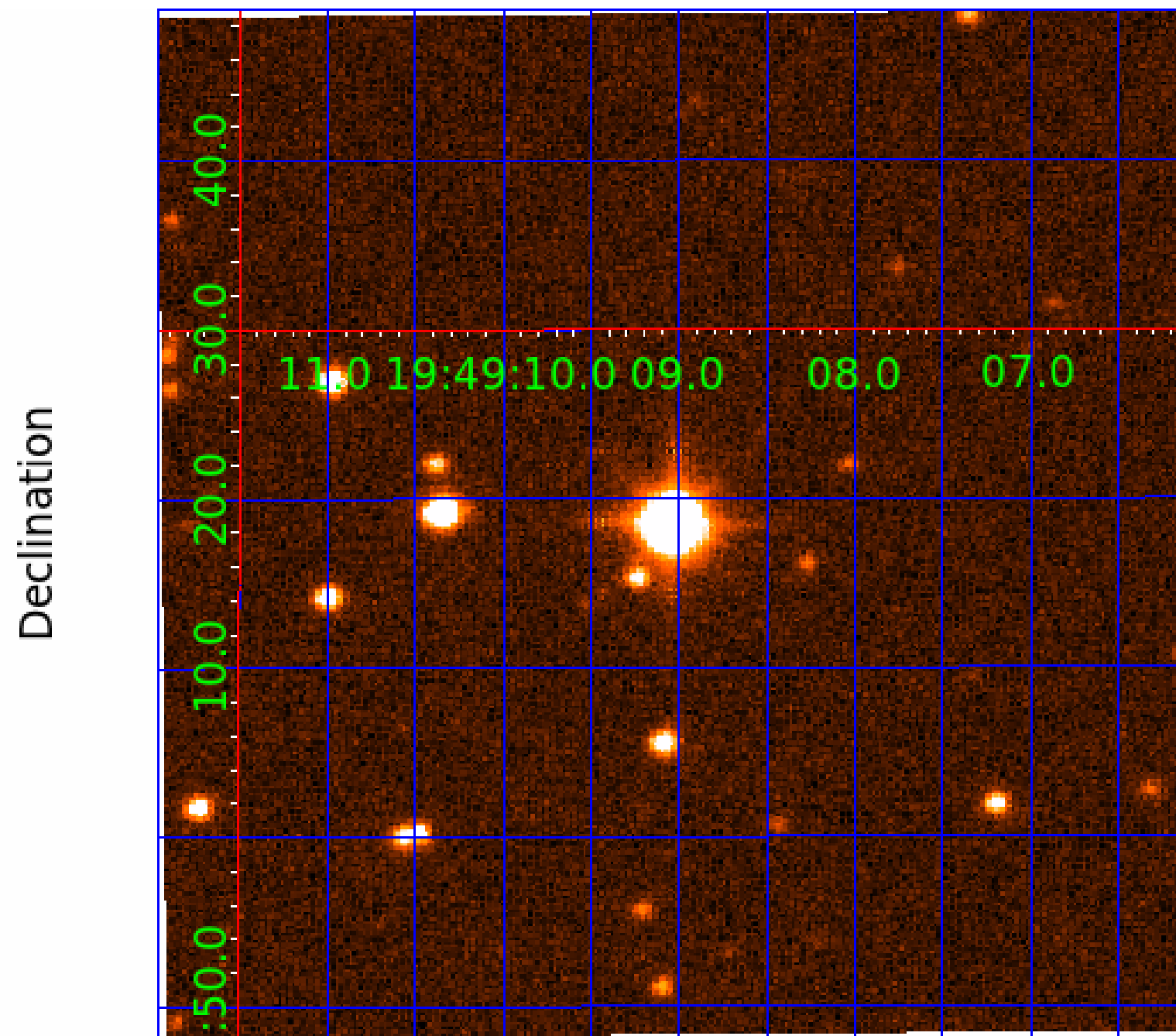
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image



KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

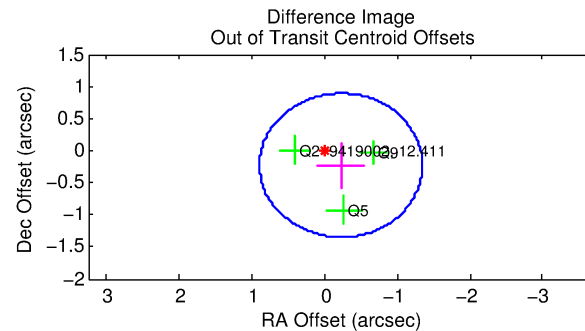
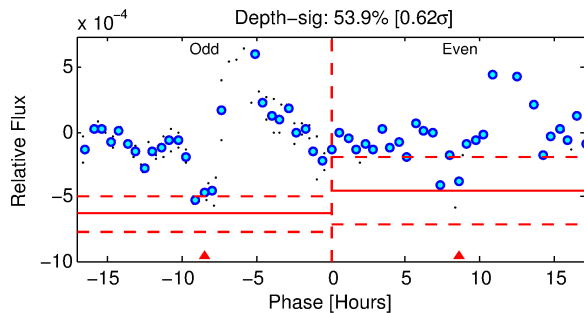
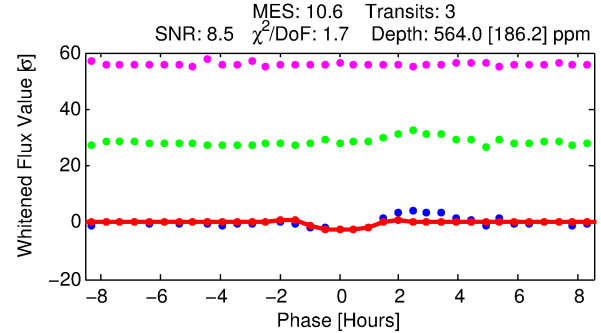
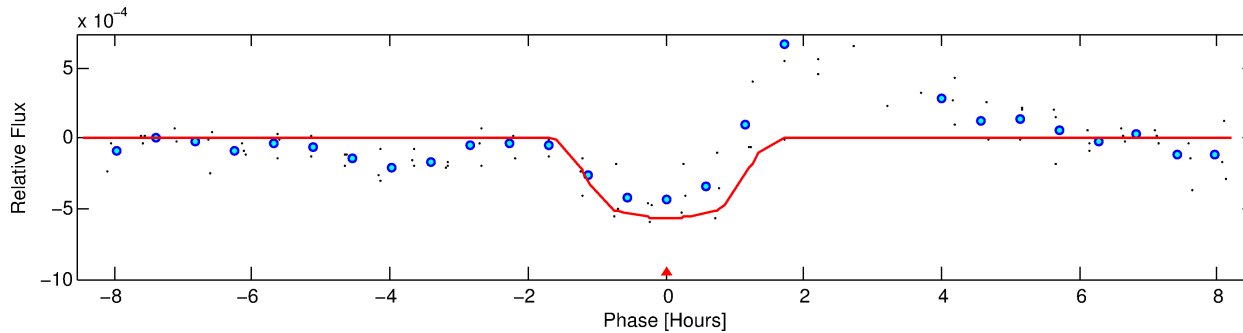
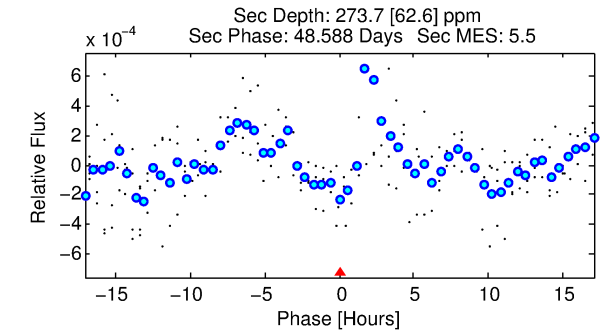
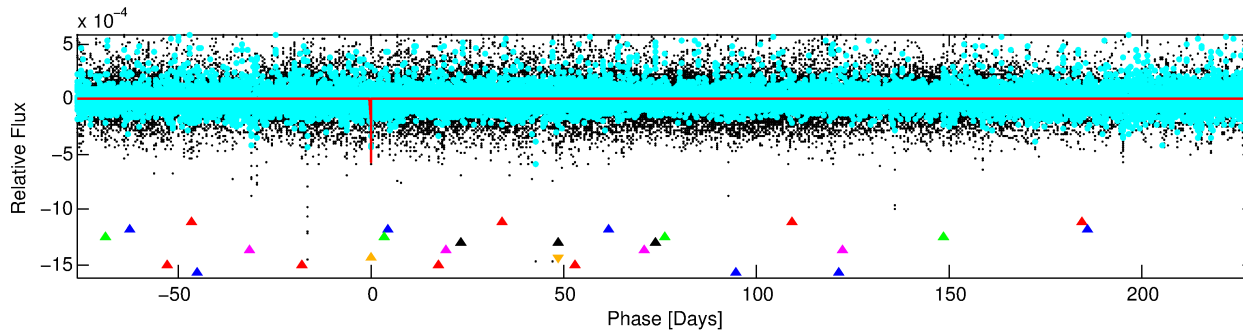
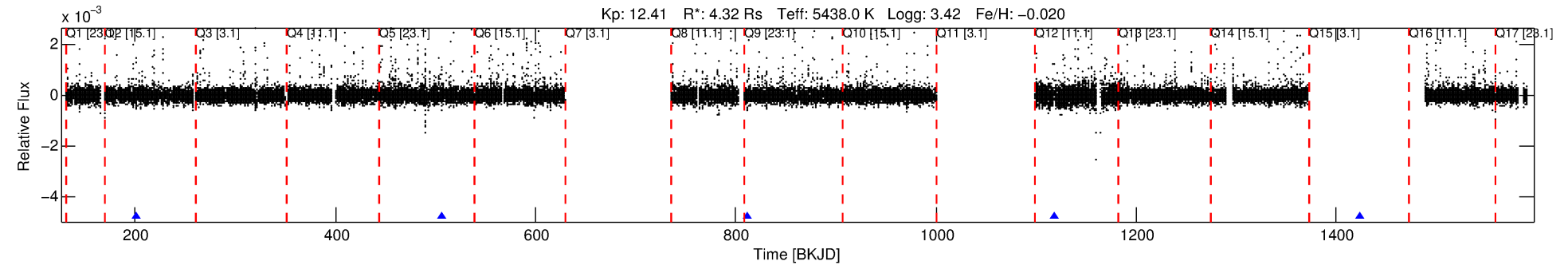
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-06

No Significant Match Found

DV One-Page Summary

KIC: 9419002 Candidate: 6 of 8 Period: 305.624 d



DV Fit Results:

Period = 305.62390 [0.00380] d
Epoch = 201.0176 [0.0056] BKJD
Rp/R* = 0.0267 [0.1311]
a/R* = 374.84 [8296.39]
b = 0.92 [3.84]
Seff = 12.49 [18.02]
Teff = 479 [173] K
Rp = 12.60 [62.51] Re
a = 1.0816 [0.9089] AU
Ag = 1110.56 [11013.21] [0.10 sigma]
Teffp = 4279 [10497] K [0.36 sigma]

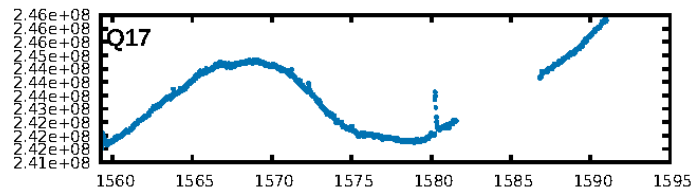
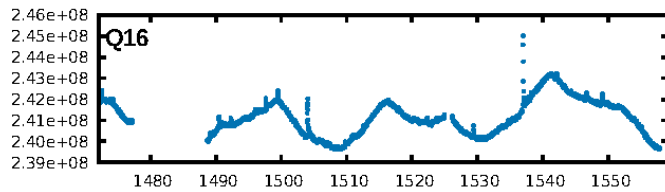
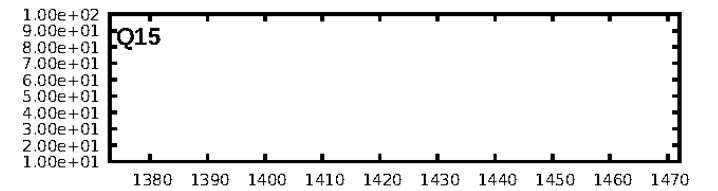
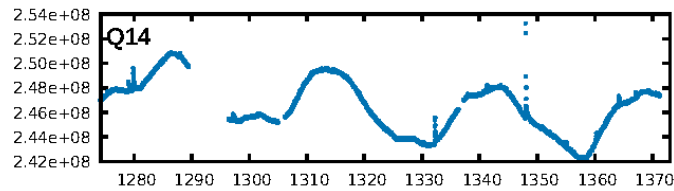
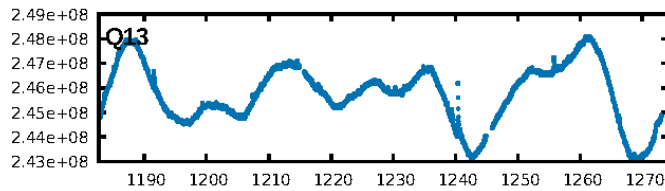
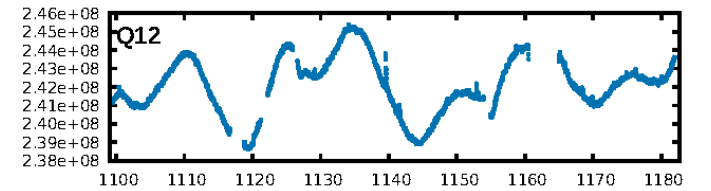
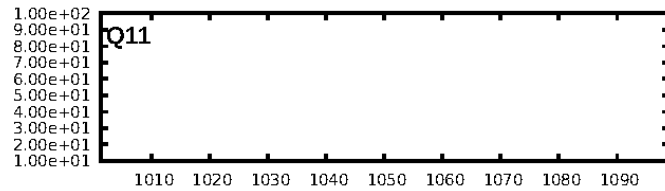
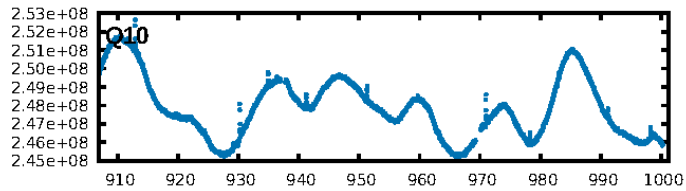
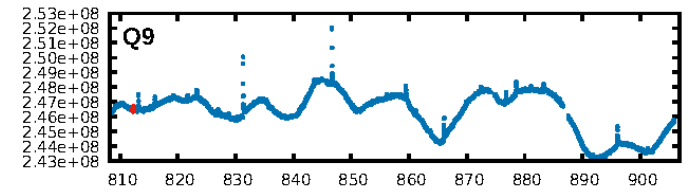
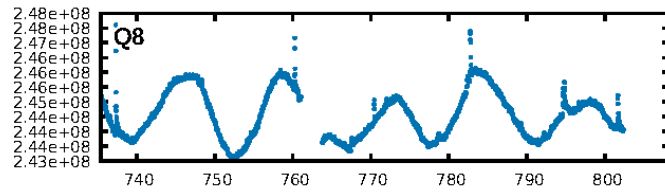
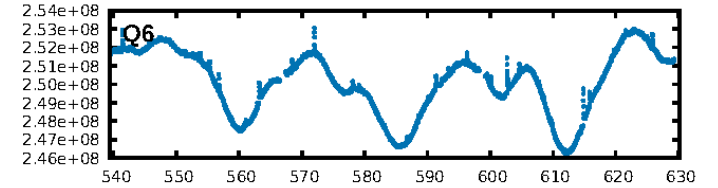
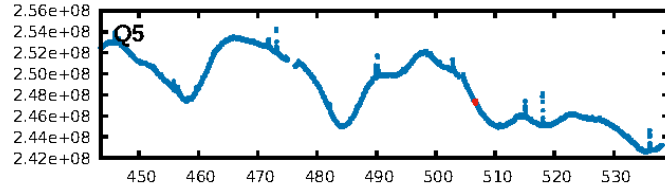
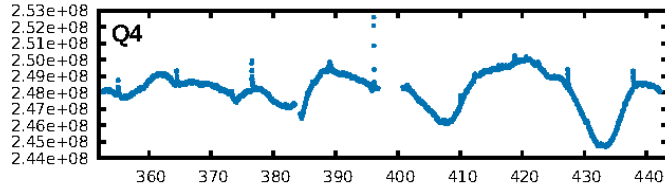
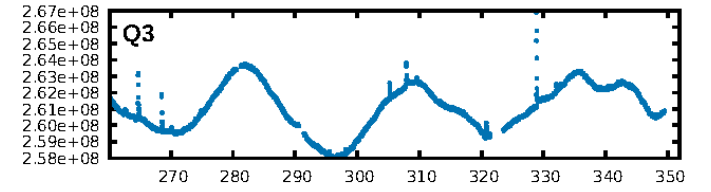
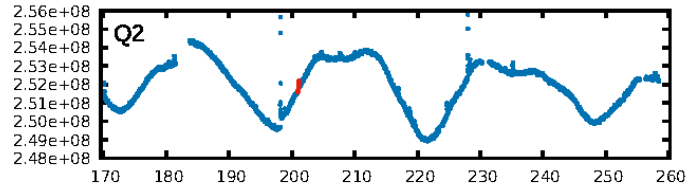
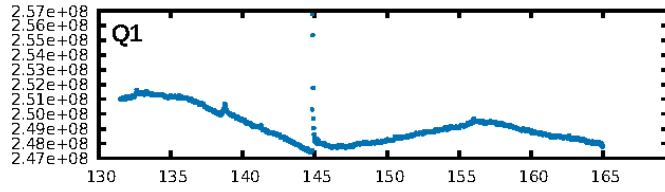
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [161.81 sigma]
ModelChiSquare2-sig: 25.5%
ModelChiSquareGof-sig: 51.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.836
Centroid-sig: 28.9%
Centroid-so: 0.406 arcsec [0.90 sigma]
OotOffset-rm: 0.322 arcsec [0.86 sigma]
OotOffset-st: 1/0/0/2 [3]
KicOffset-rm: 0.225 arcsec [0.64 sigma]
KicOffset-st: 1/0/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

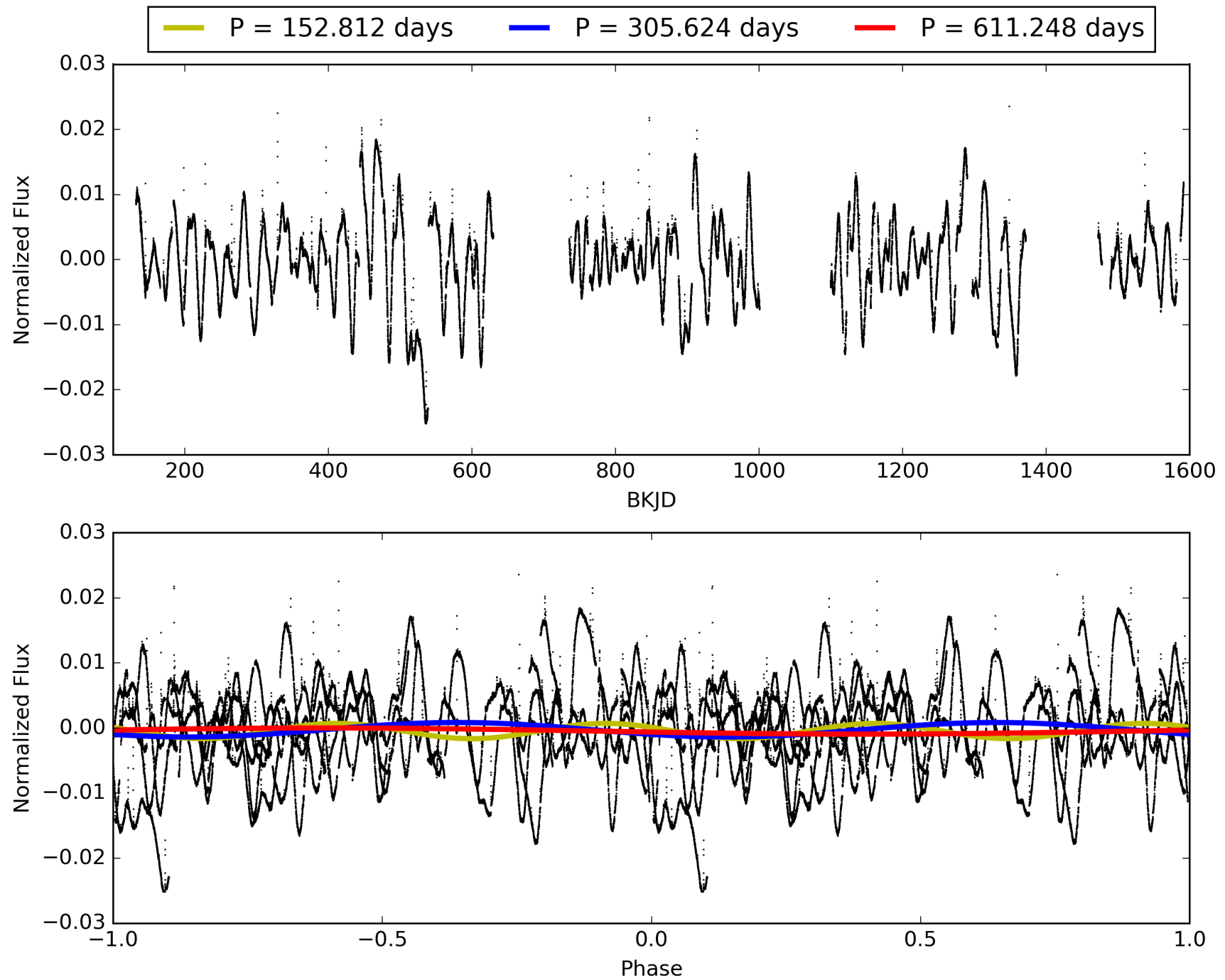
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:28:07 Z

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

TCE 009419002-06, PDC Light Curves

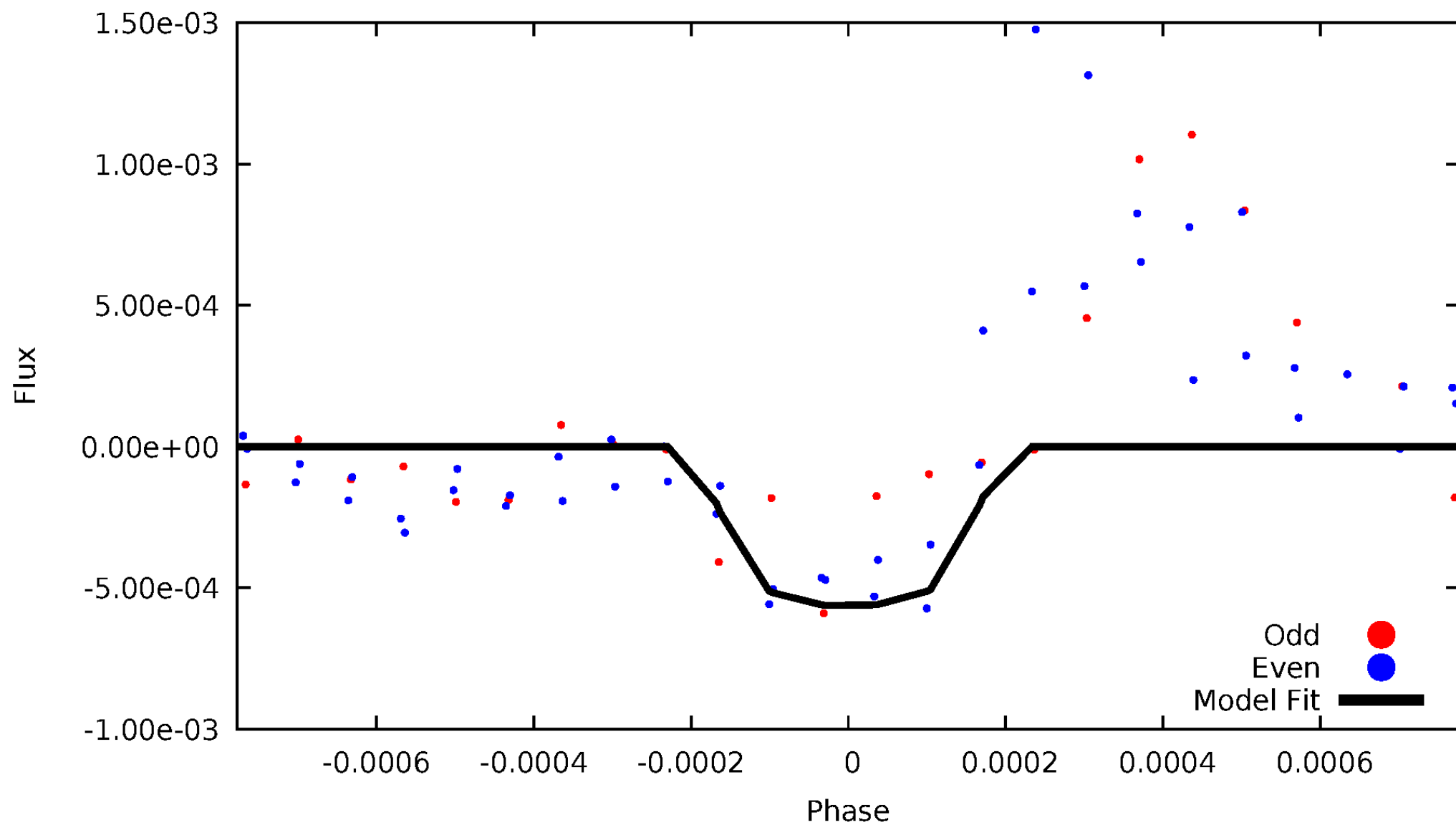


TCE 009419002-06



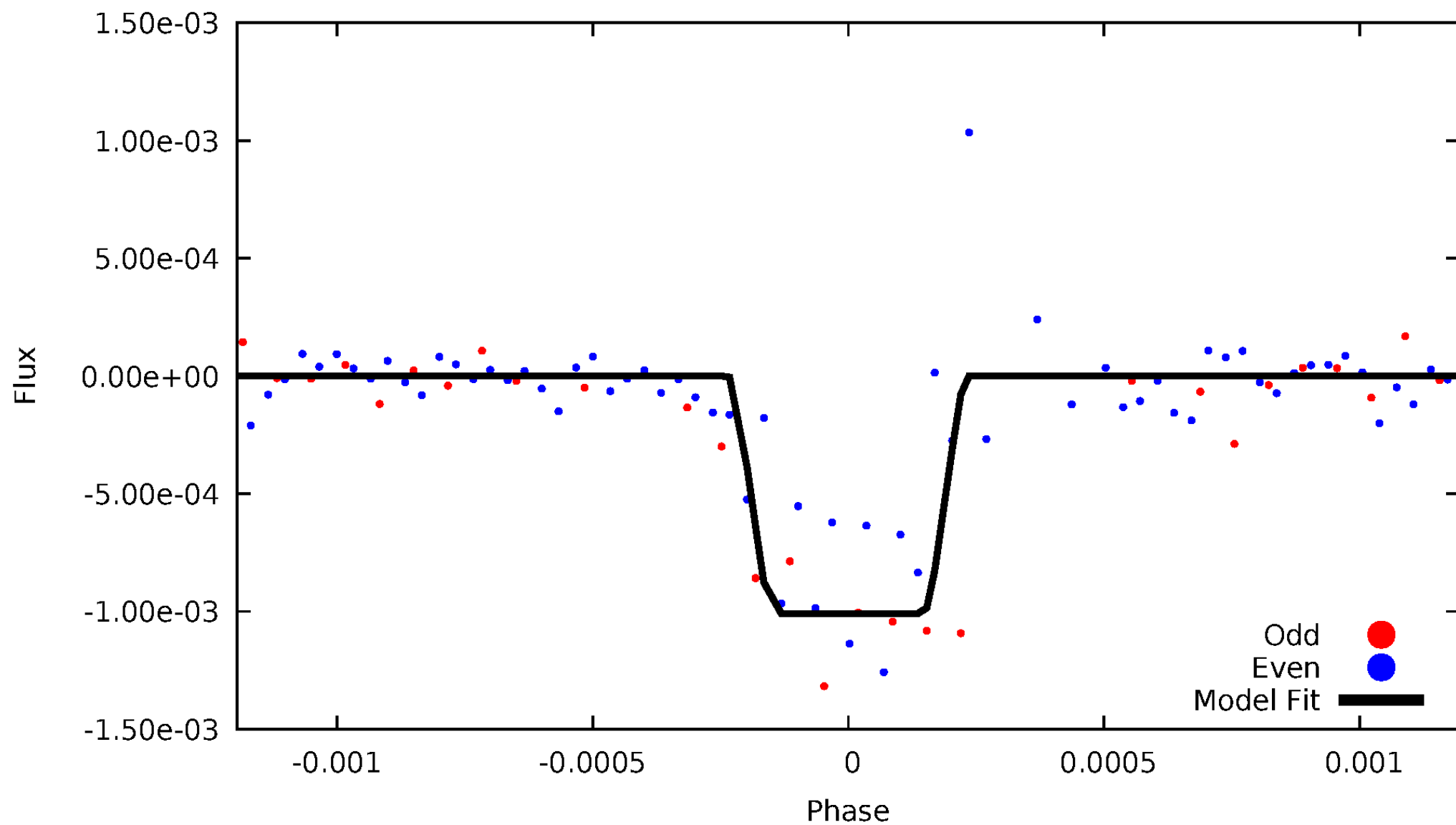
DV Odd/Even

TCE 009419002-06



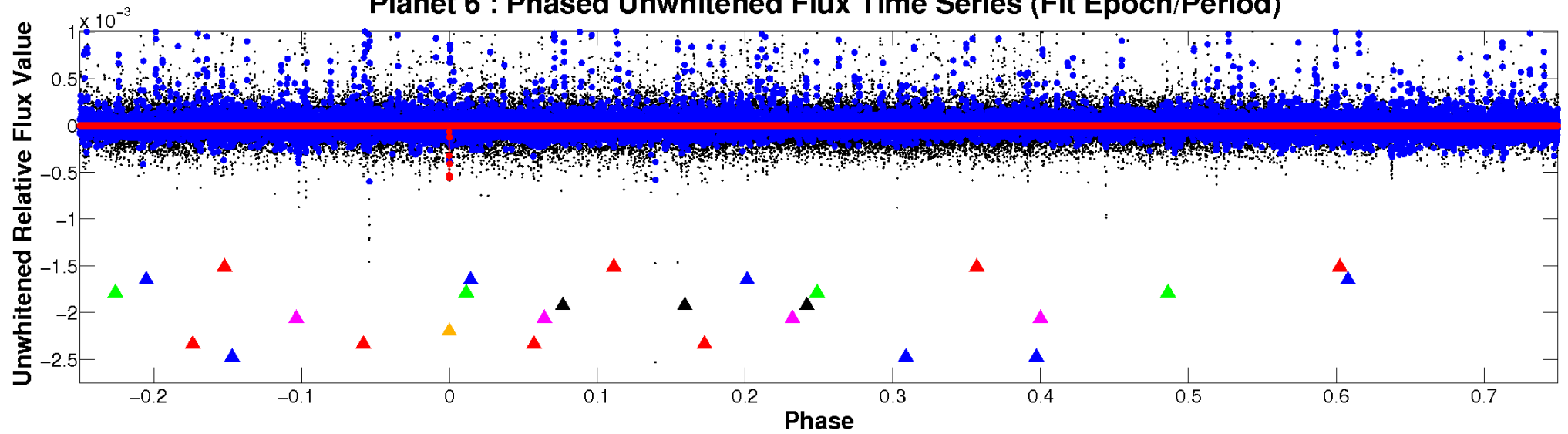
ALT Odd/Even

TCE 009419002-06

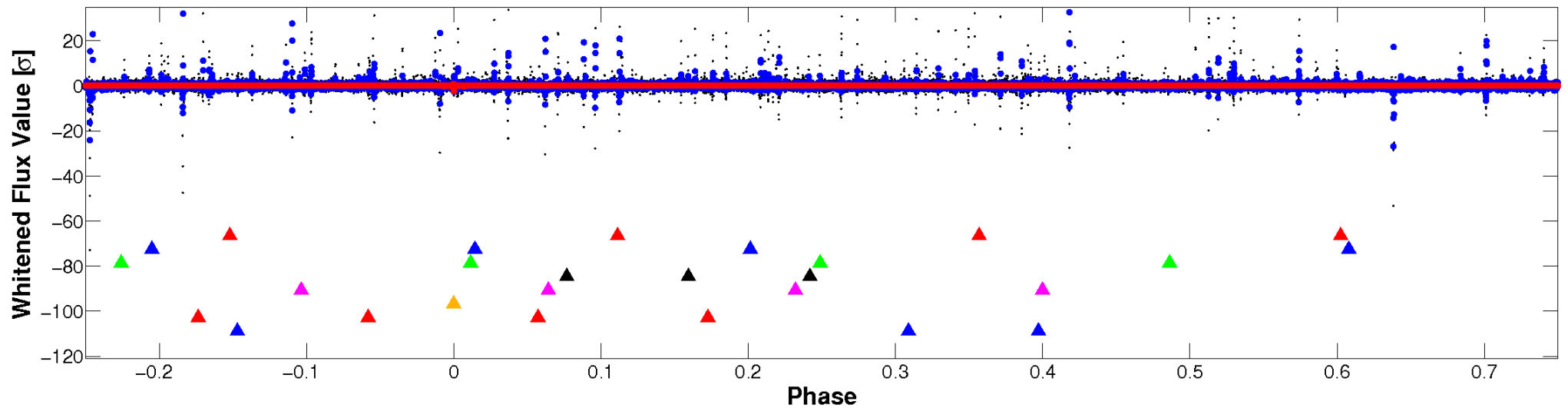


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

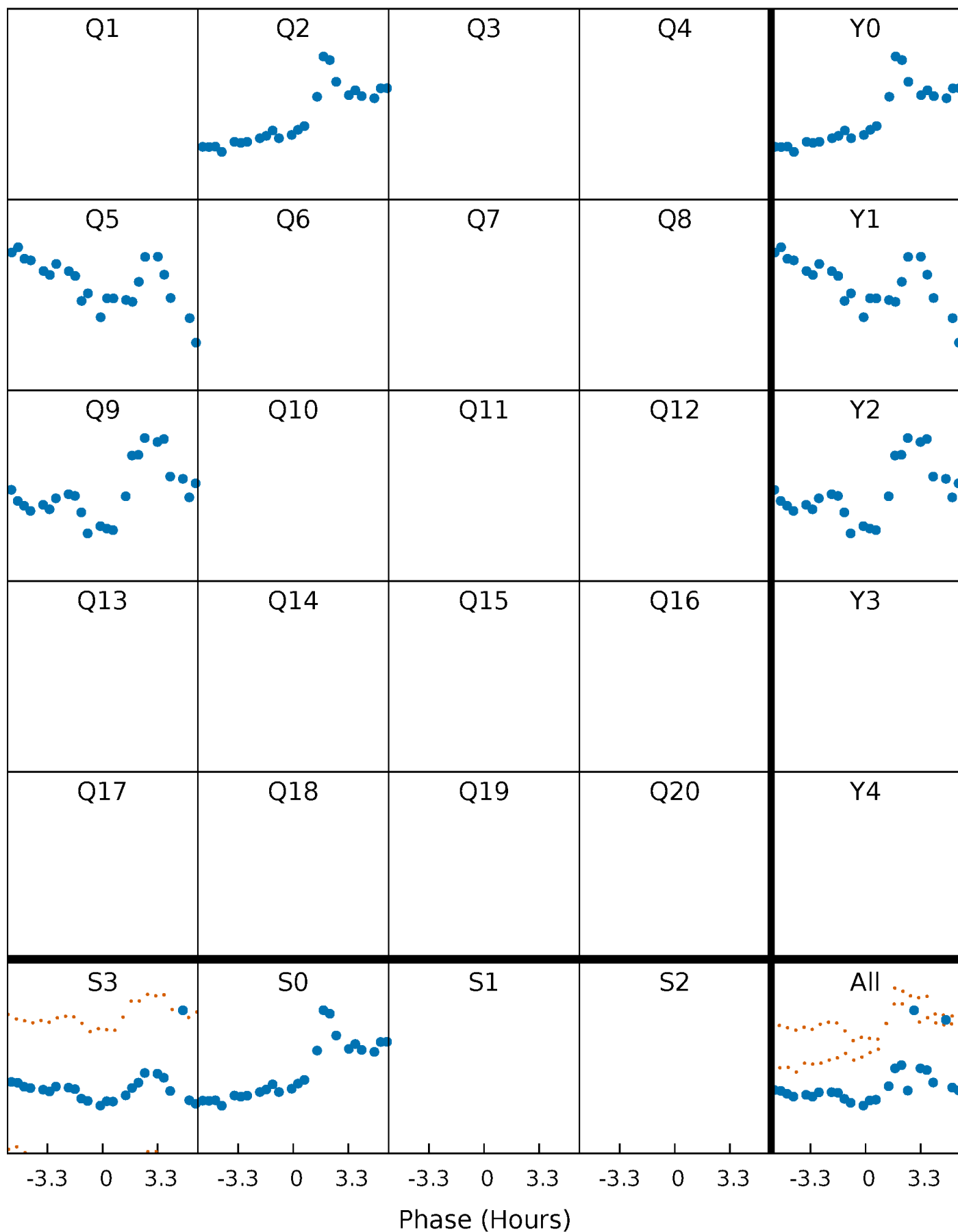


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



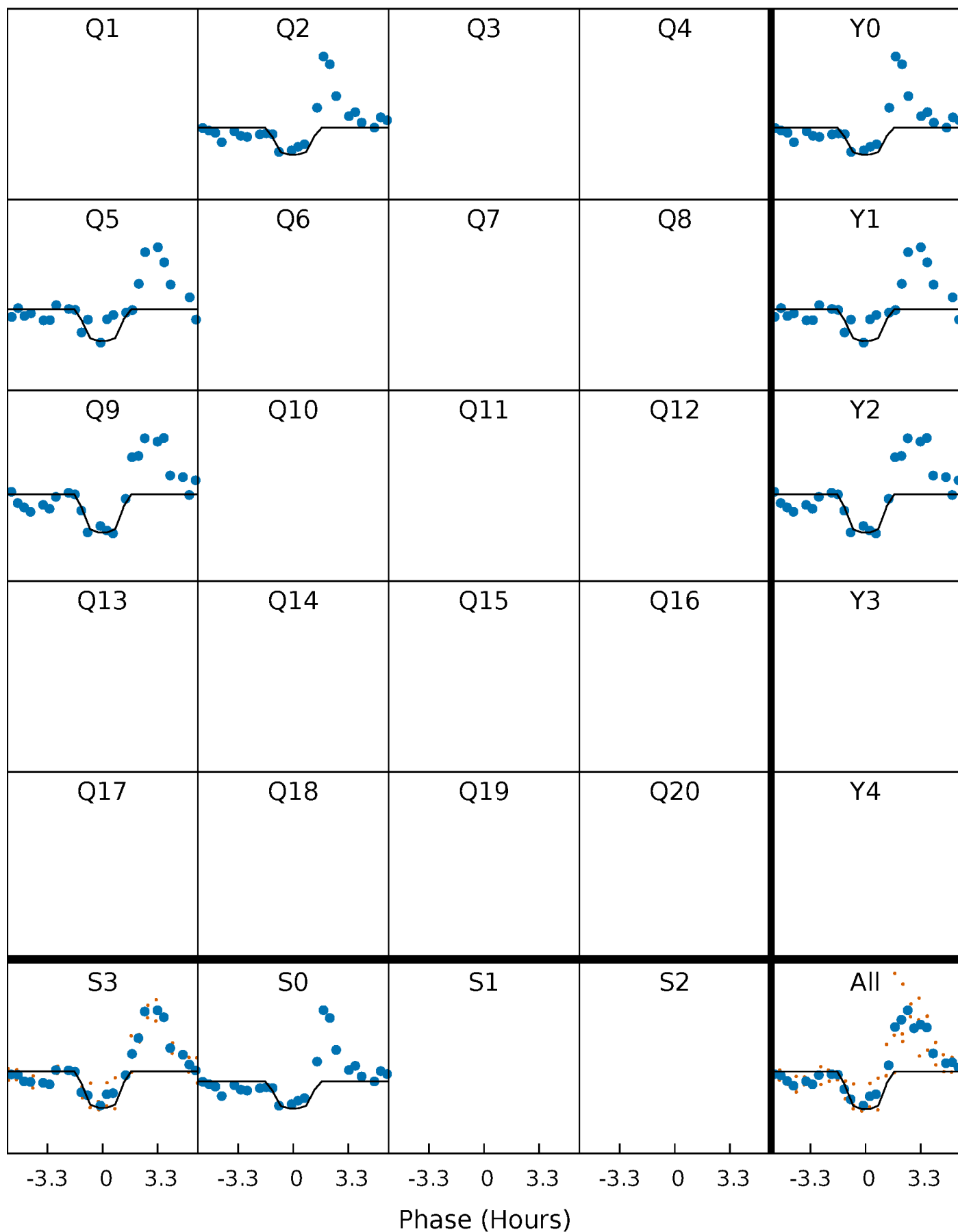
PDC Quarter-Phased Transit Curves

TCE 009419002-06 $P=305.623895$ Days $T_0=201.017649$ (BKJD)



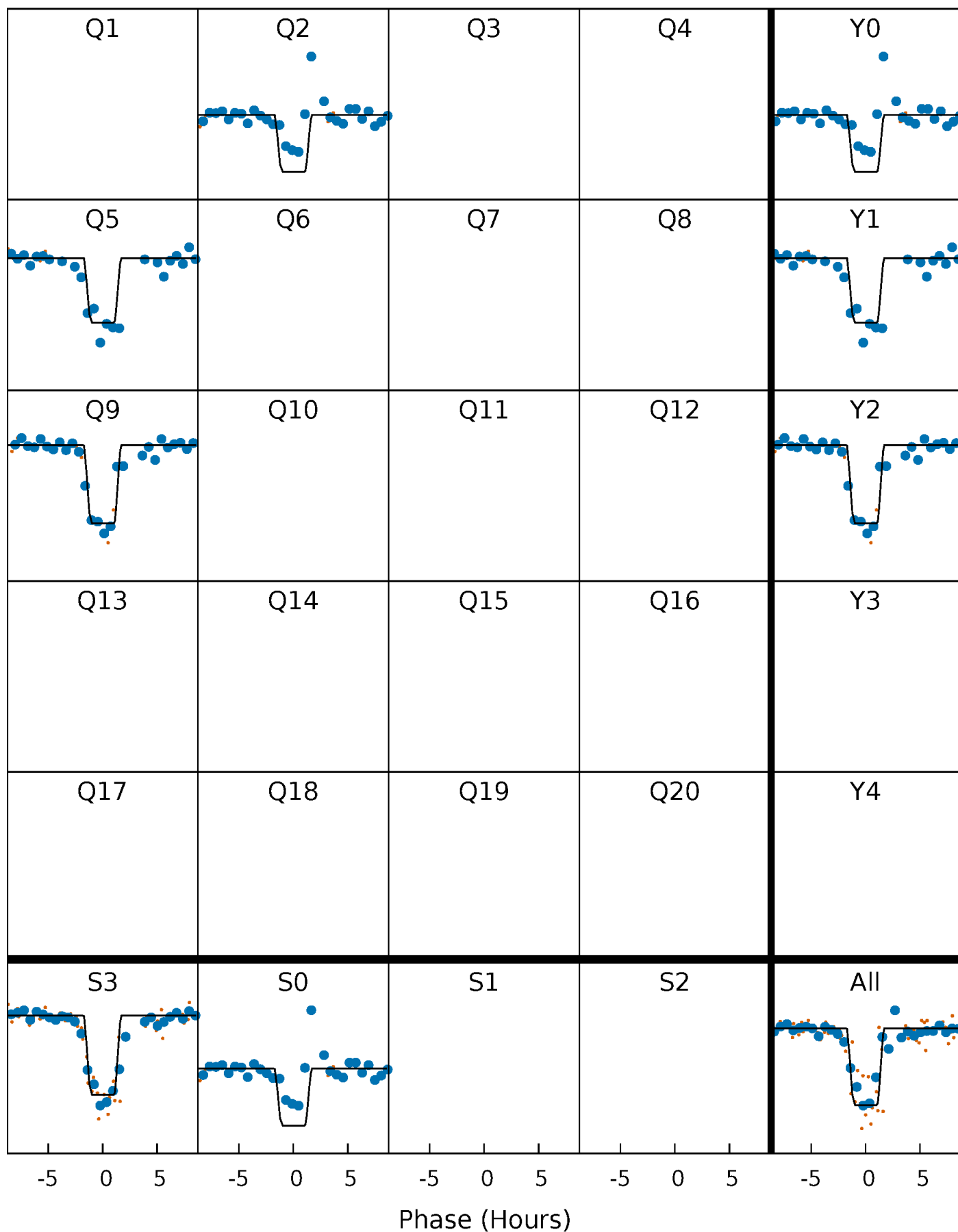
DV Quarter-Phased Transit Curves

TCE 009419002-06 P=305.623895 Days $T_0=201.017649$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

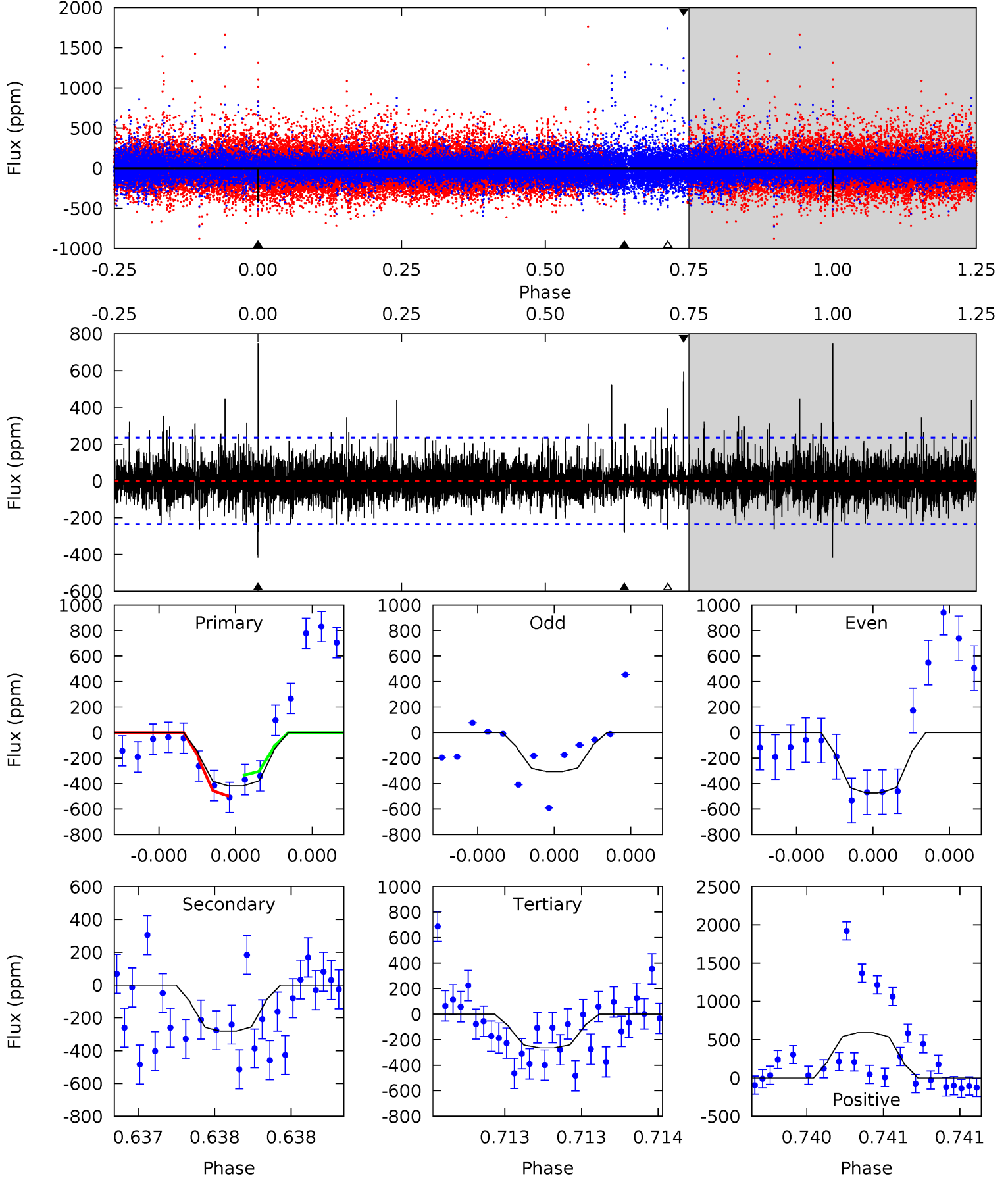
TCE 009419002-06 P=305.628173 Days $T_0=201.018358$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-06, P = 305.623895 Days, E = 201.017649 Days

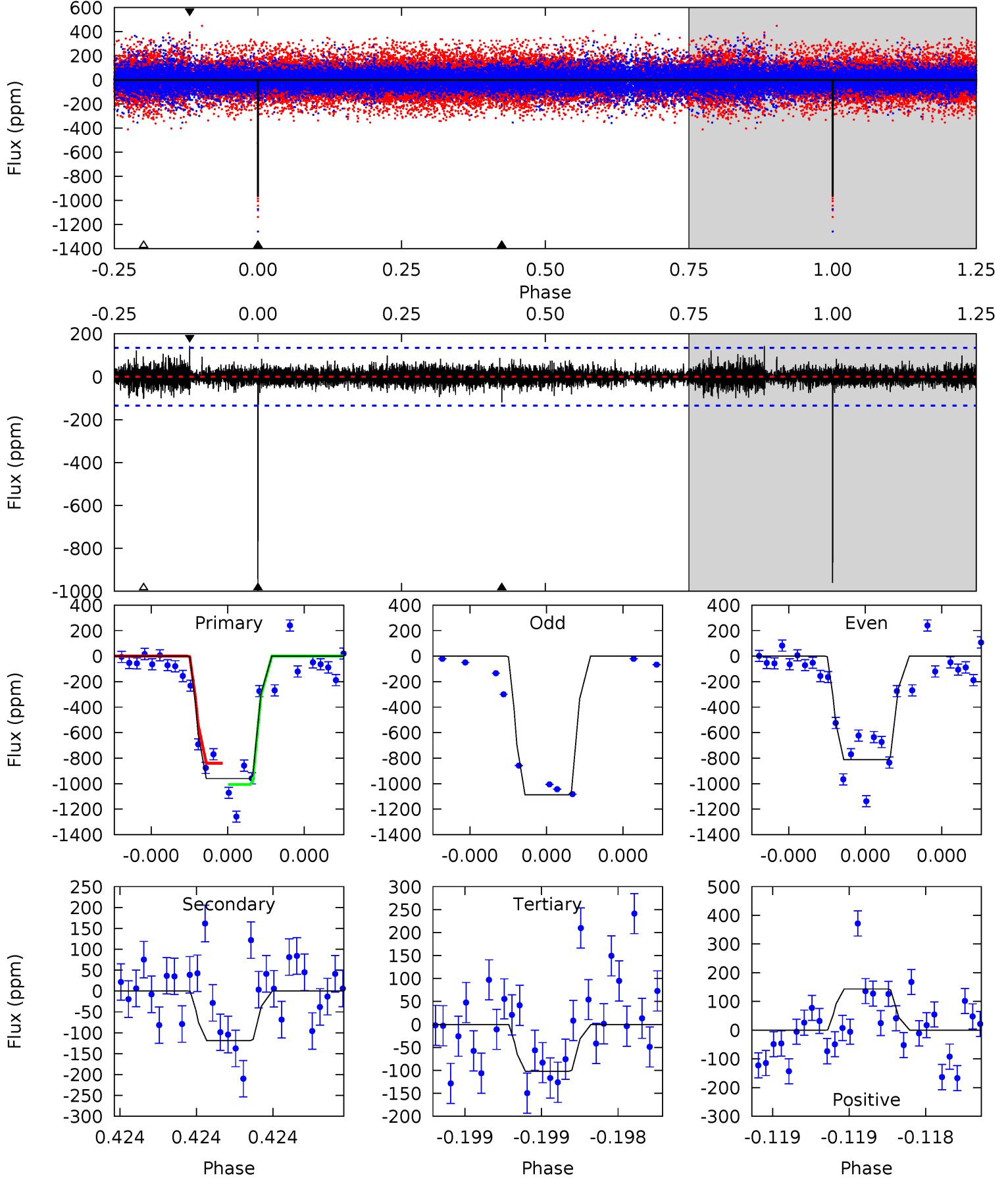
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	6.75	6.34	14.2	5.64	3.58	1.68	3.66	-4.24	0.41	-7.50	1.35	1.04	0.64	1.96



Alt Model-Shift Uniqueness Test

009419002-06, P = 305.628173 Days, E = 201.018358 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	4.92	4.23	5.95	5.58	3.50	0.93	35.6	33.9	0.69	-1.03	5.29	0.84	0.13	3.54



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-281 ± 42	$38.27^{+47.29}_{-26.96}$	654^{+53}_{-113}	2938^{+1342}_{-504}	121^{+1228}_{-97}
Alt.	-119 ± 24	$40.06^{+49.00}_{-29.93}$	655^{+54}_{-117}	2571^{+1231}_{-414}	45^{+584}_{-36}

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

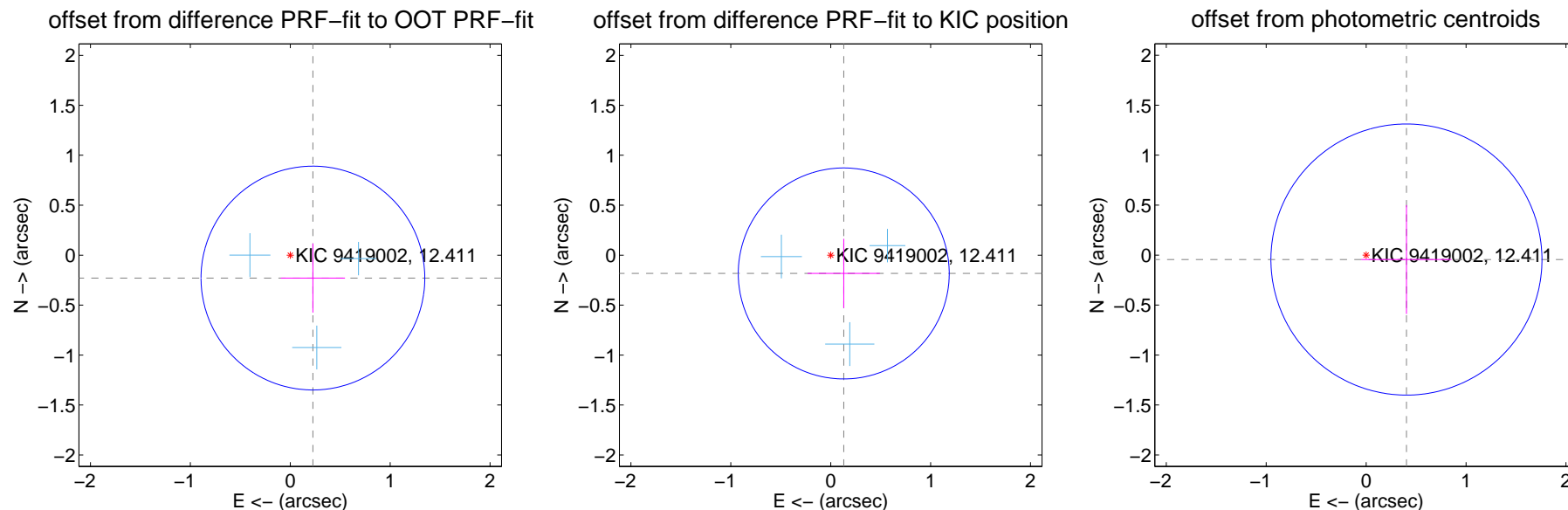
DV Centroid Data

Supplemental centroid analysis for 009419002-06. Kepler magnitude: 12.41. Transit SNR 8.49

There are 3 quarters with good PRF difference image offsets

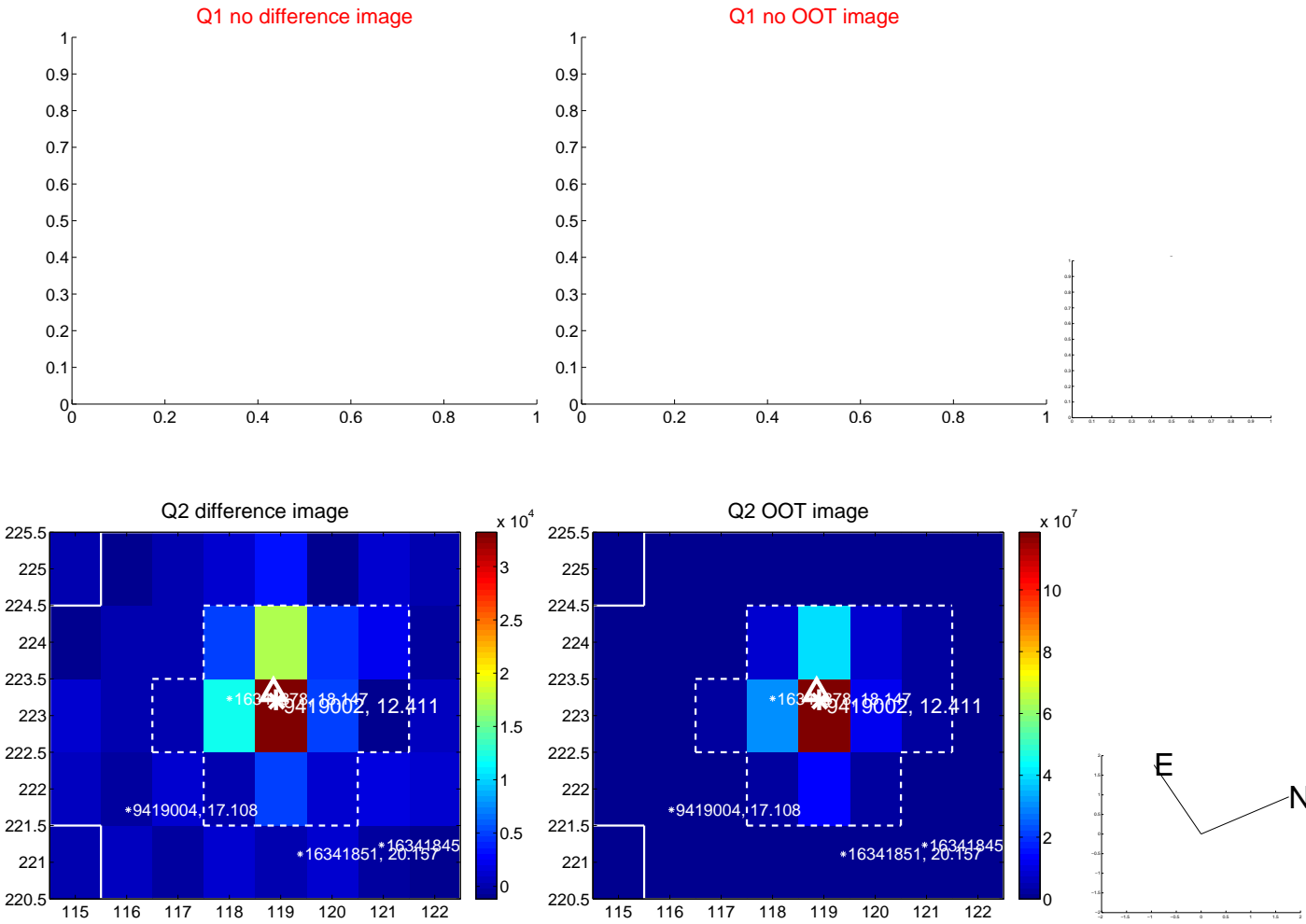
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.322 ± 0.373	0.86	-0.227 ± 0.321	-0.229 ± 0.346
PRF-fit source offset from KIC position	0.225 ± 0.352	0.64	-0.130 ± 0.362	-0.183 ± 0.347
photometric centroid source offset	0.41 ± 0.45	0.90	-0.40 ± 0.45	-0.04 ± 0.54

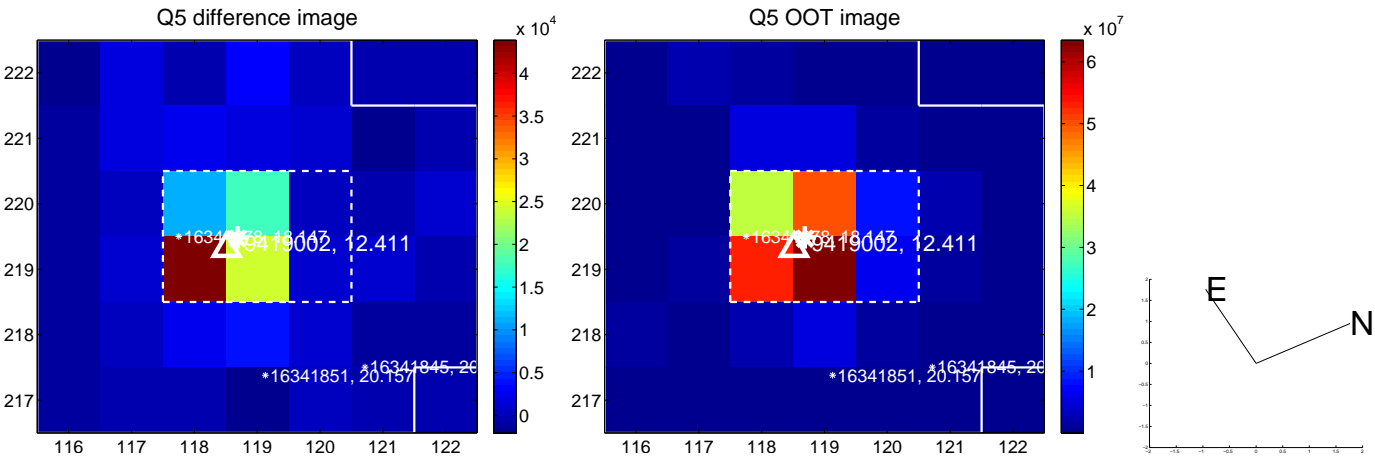


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

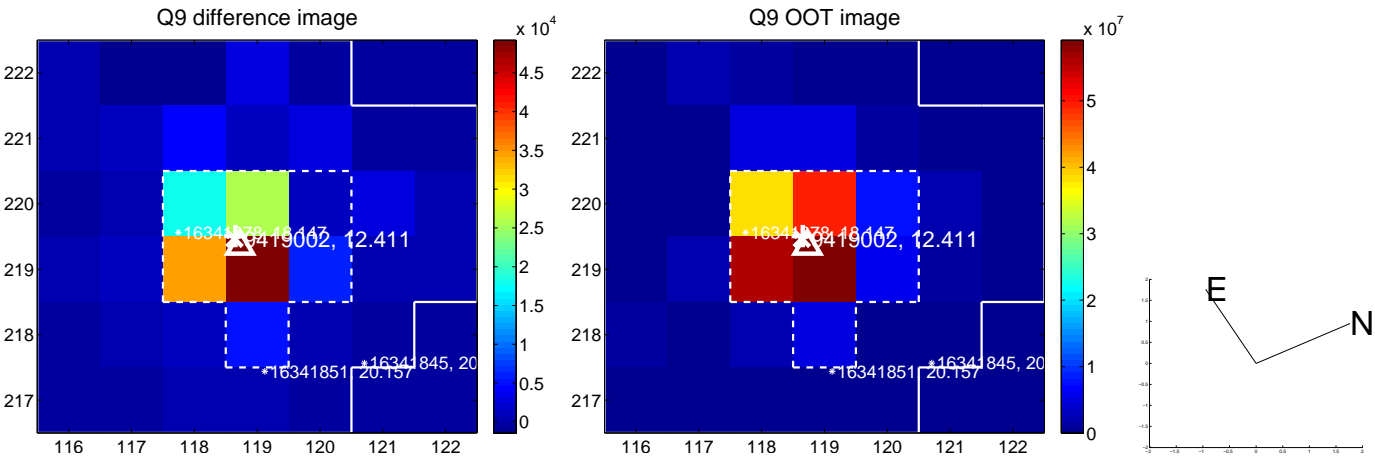
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



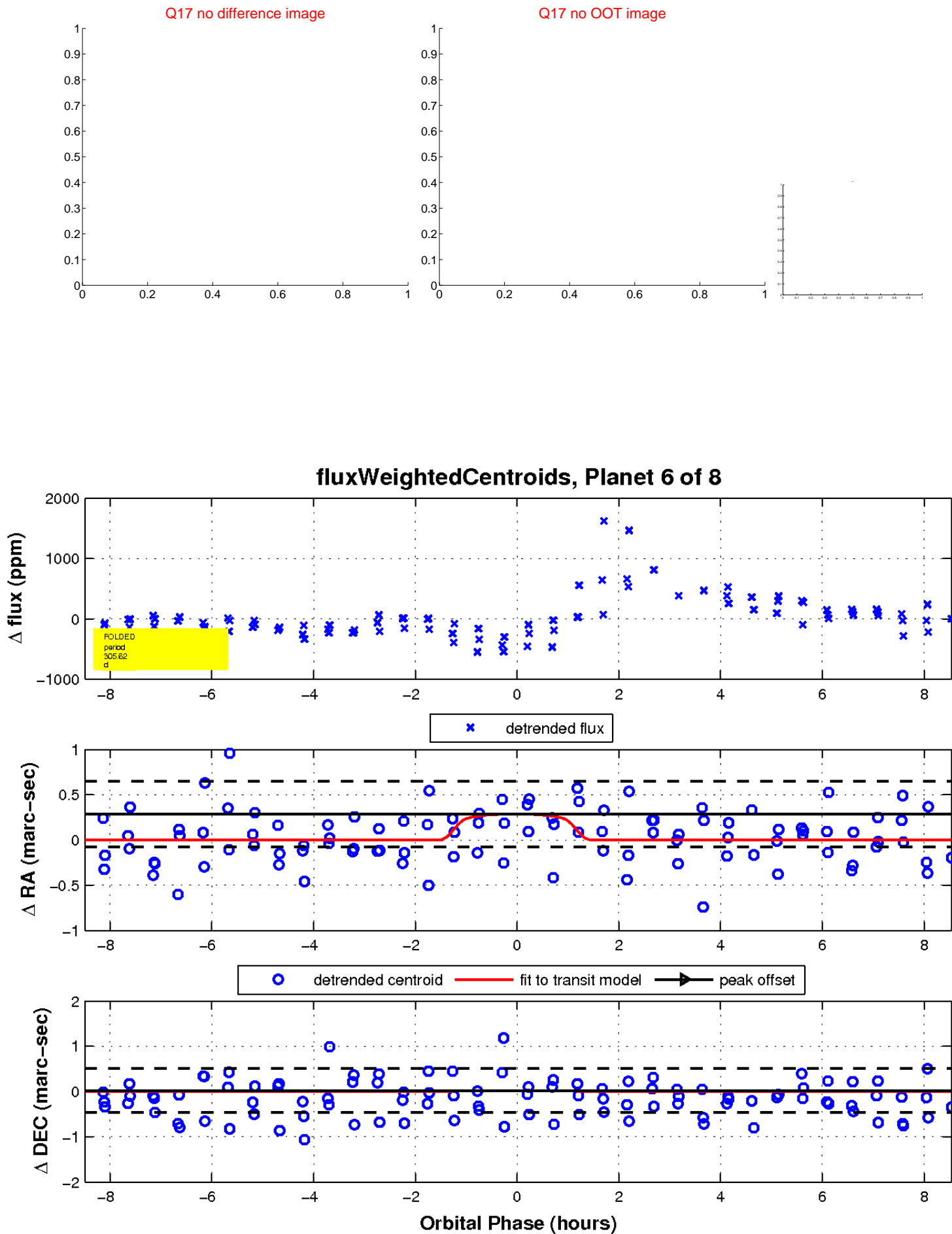
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



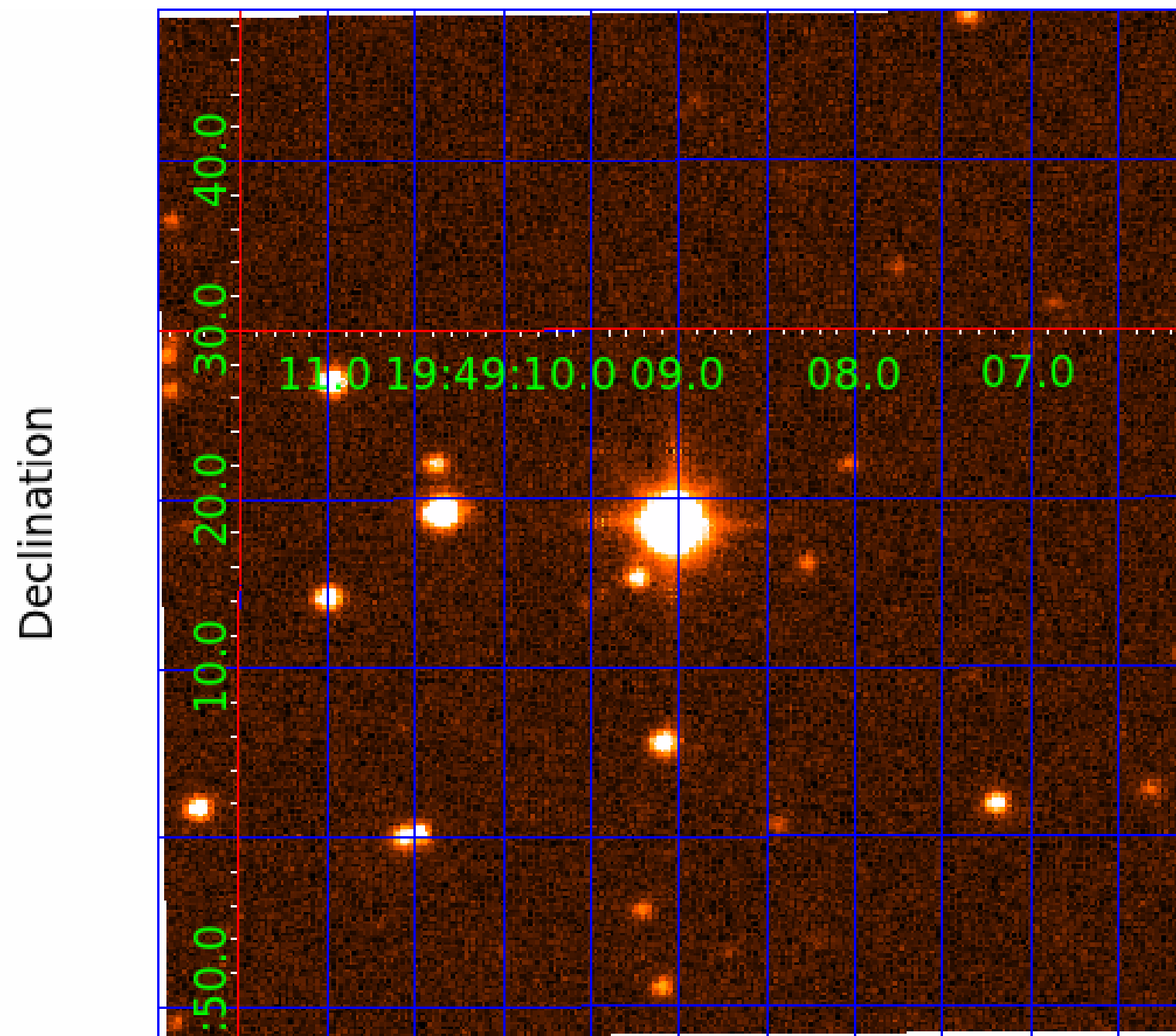
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

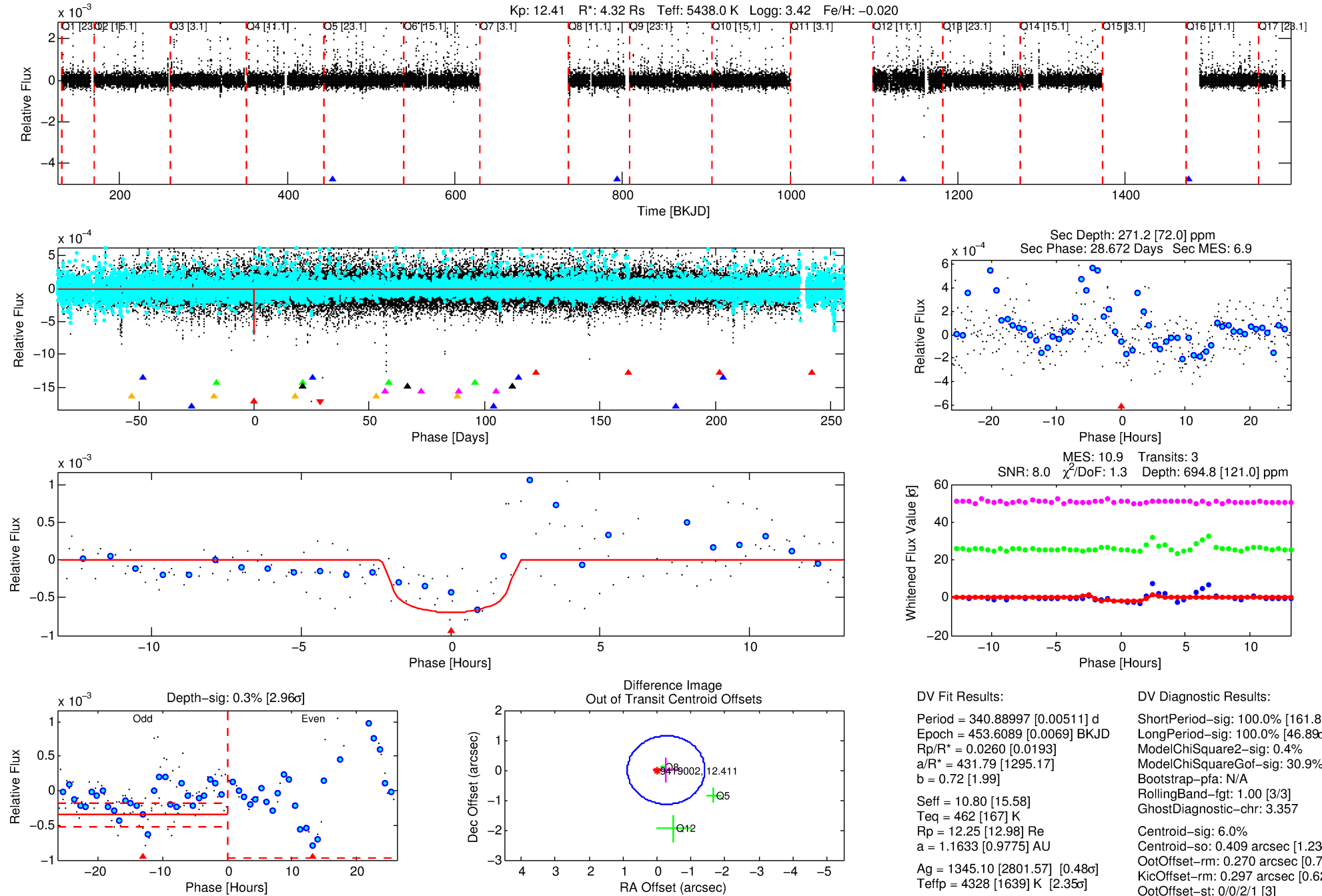
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-07

No Significant Match Found

DV One-Page Summary

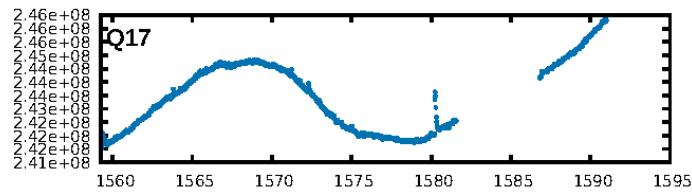
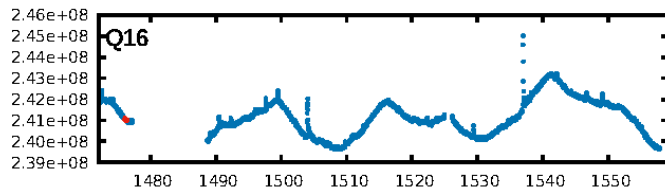
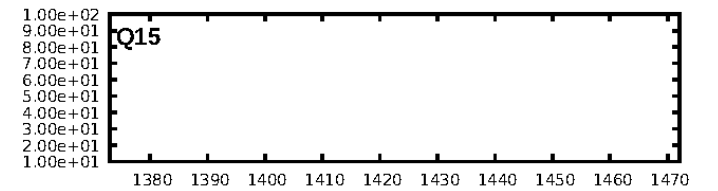
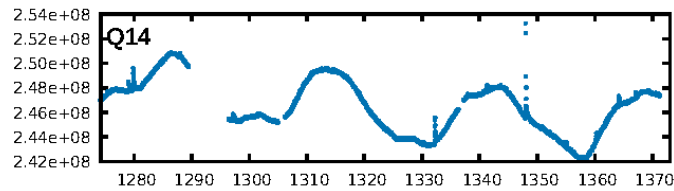
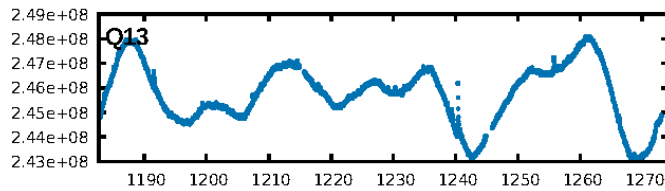
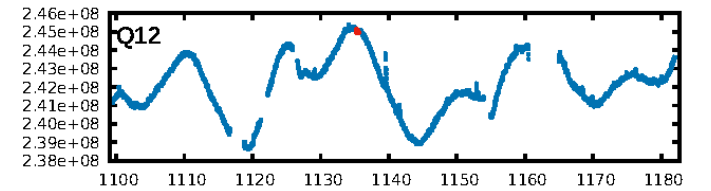
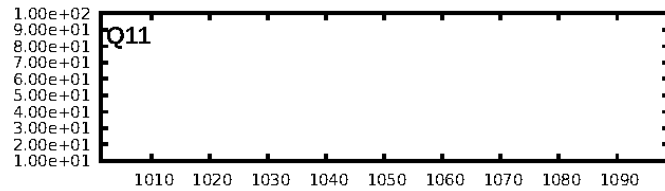
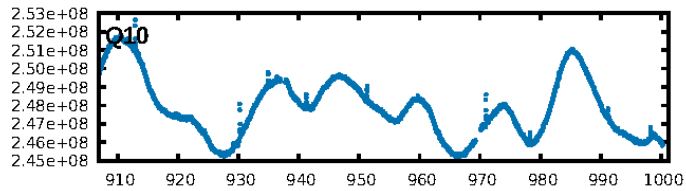
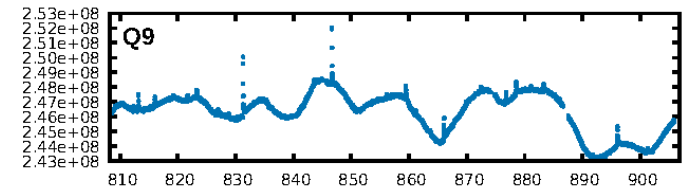
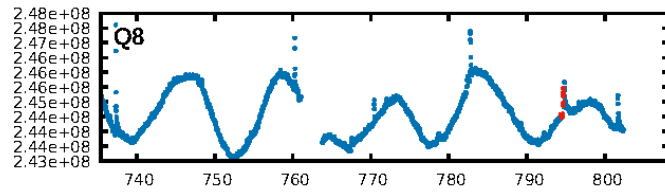
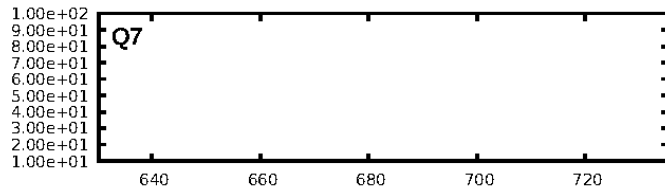
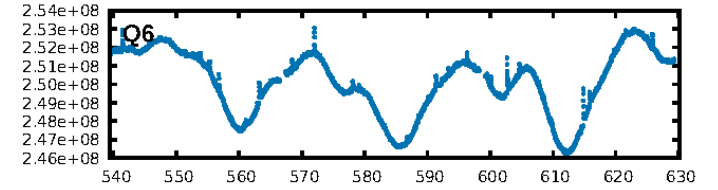
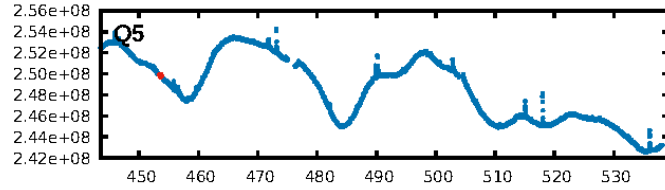
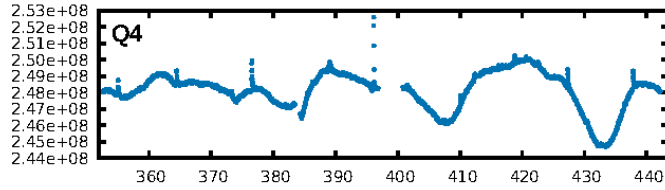
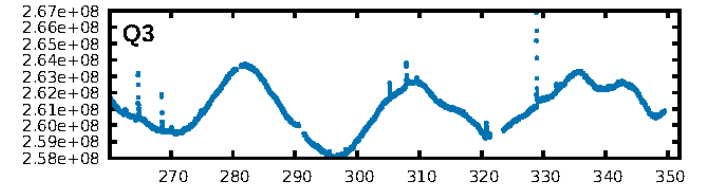
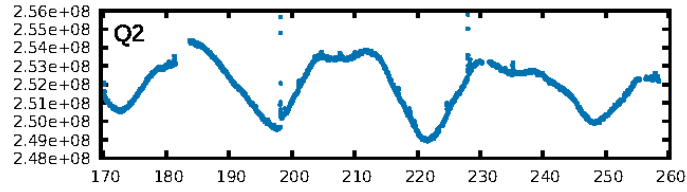
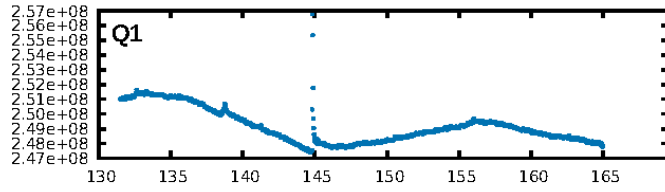
KIC: 9419002 Candidate: 7 of 8 Period: 340.890 d



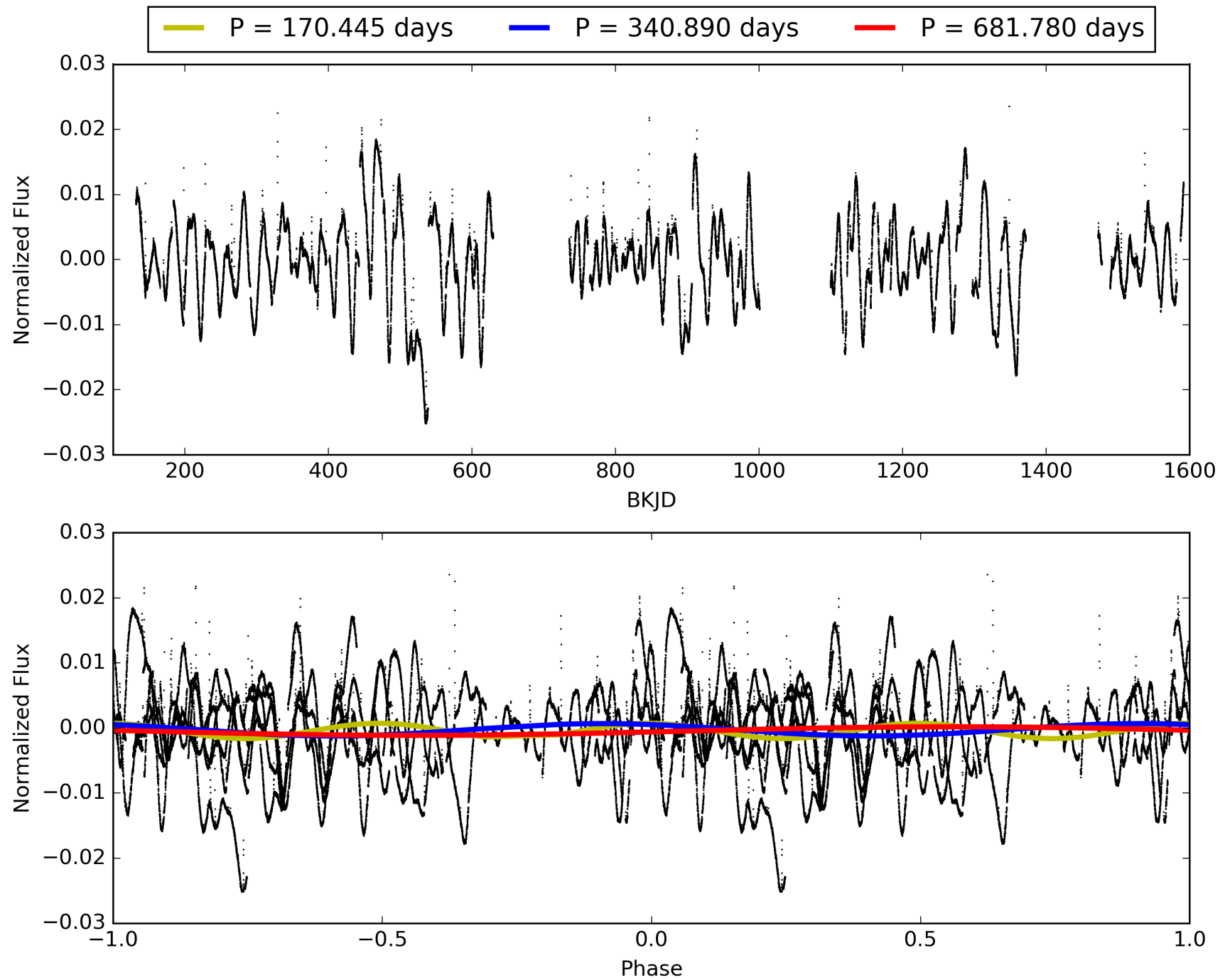
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:28:18 Z

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

TCE 009419002-07, PDC Light Curves

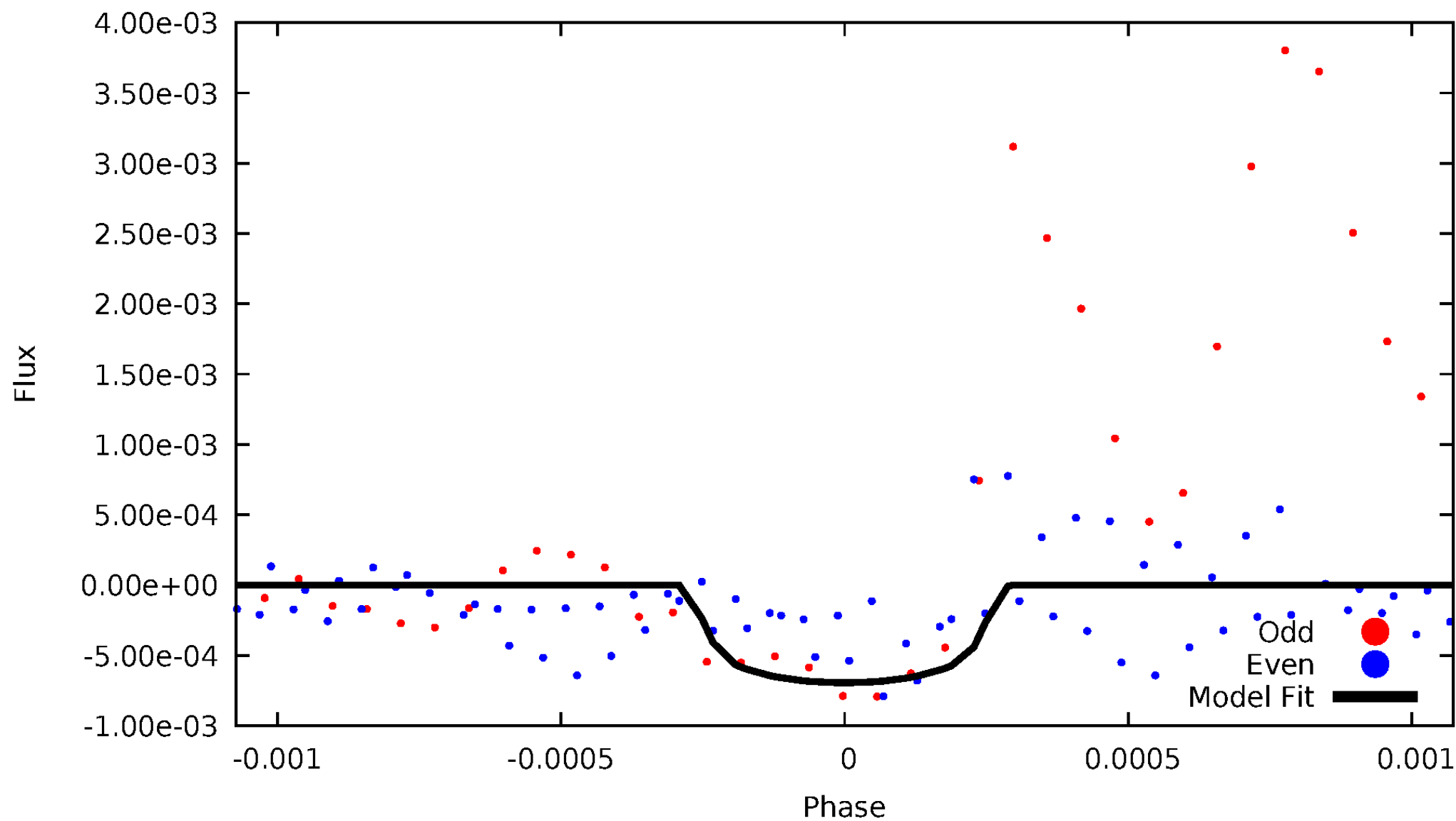


TCE 009419002-07



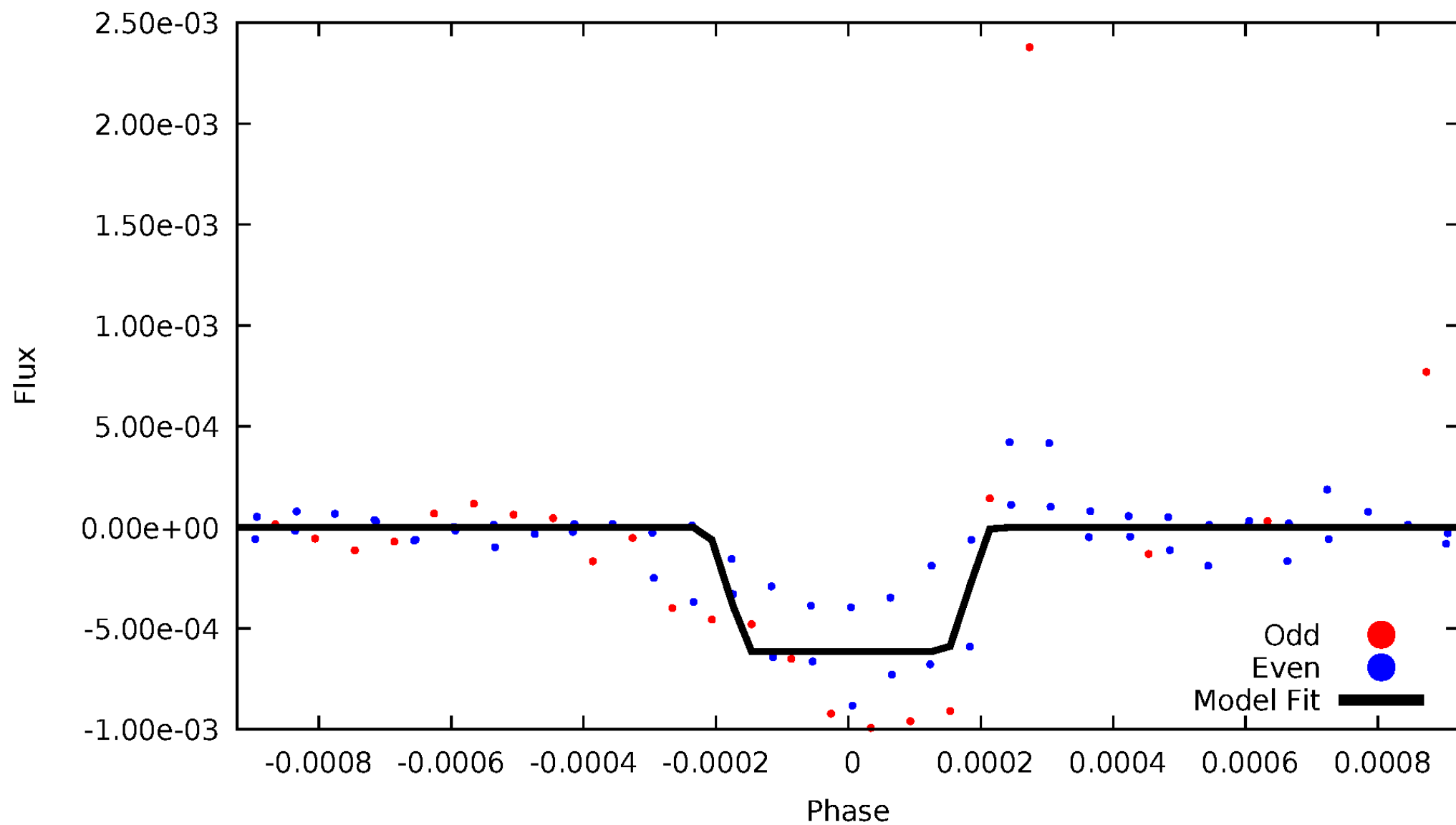
DV Odd/Even

TCE 009419002-07



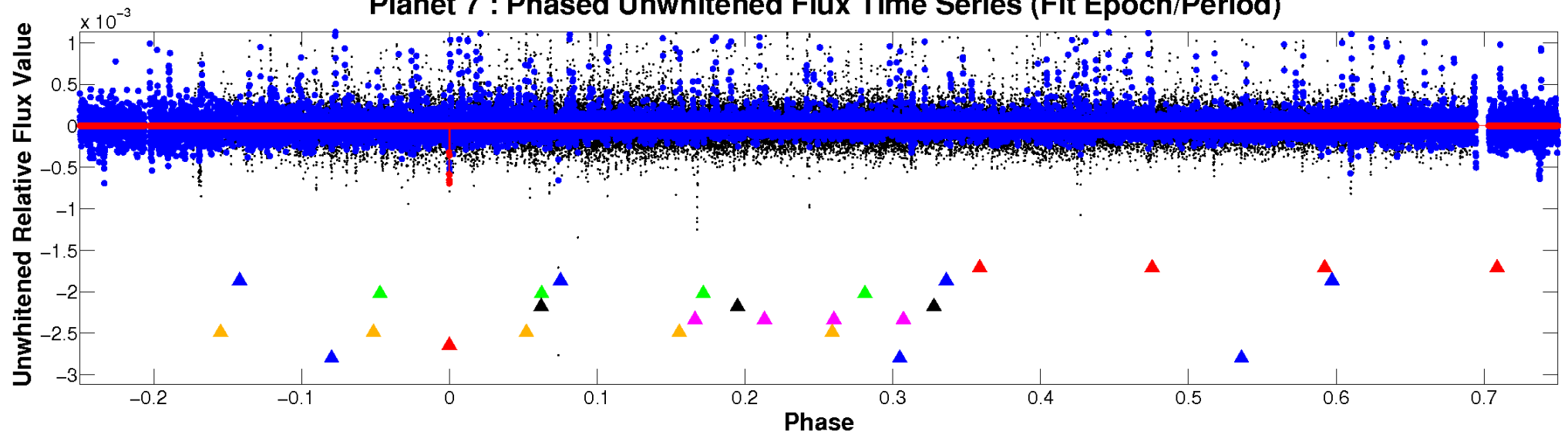
ALT Odd/Even

TCE 009419002-07

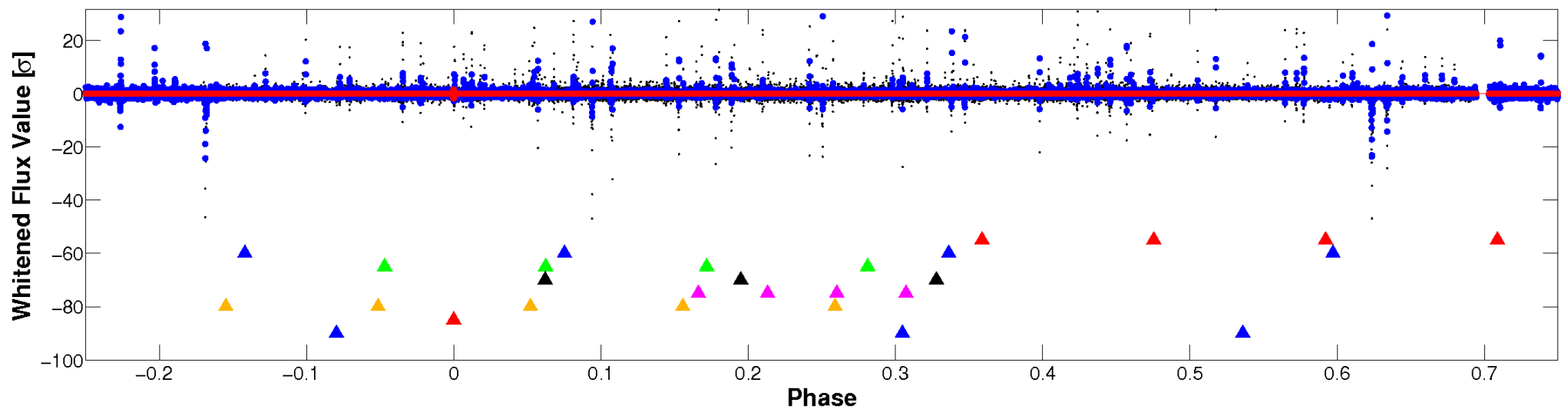


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

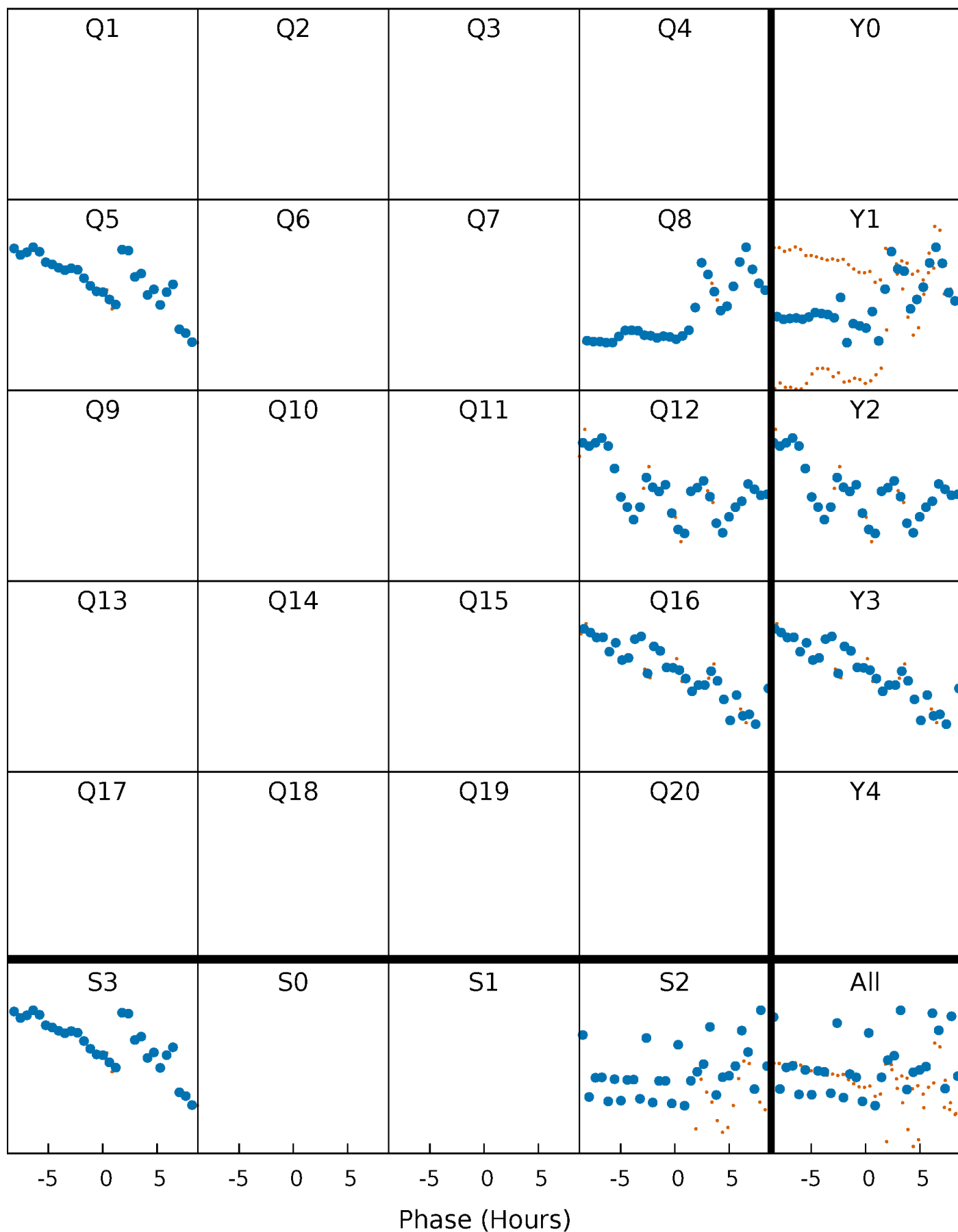


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



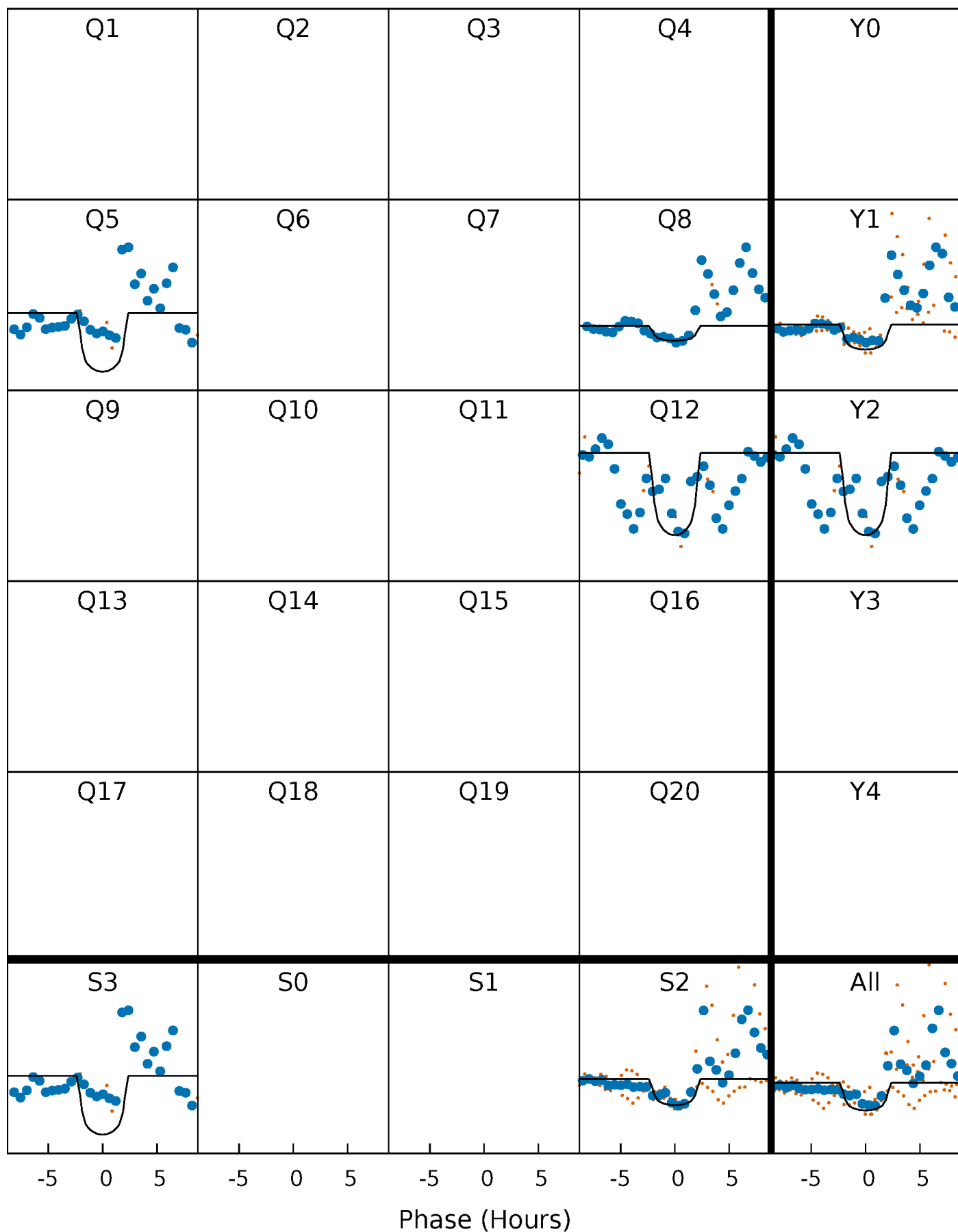
PDC Quarter-Phased Transit Curves

TCE 009419002-07 $P=340.889973$ Days $T_0=453.608913$ (BKJD)



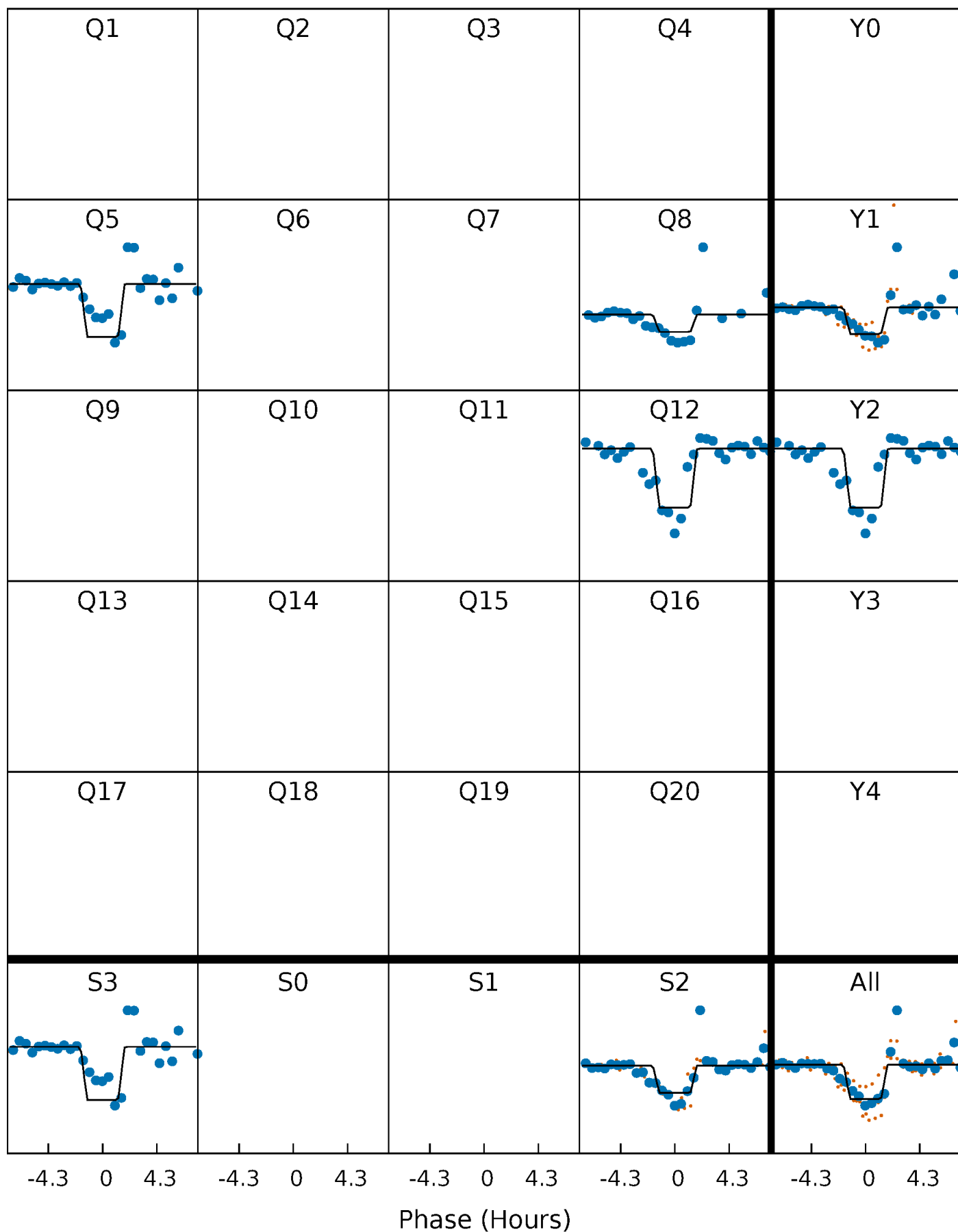
DV Quarter-Phased Transit Curves

TCE 009419002-07 $P=340.889973$ Days $T_0=453.608913$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

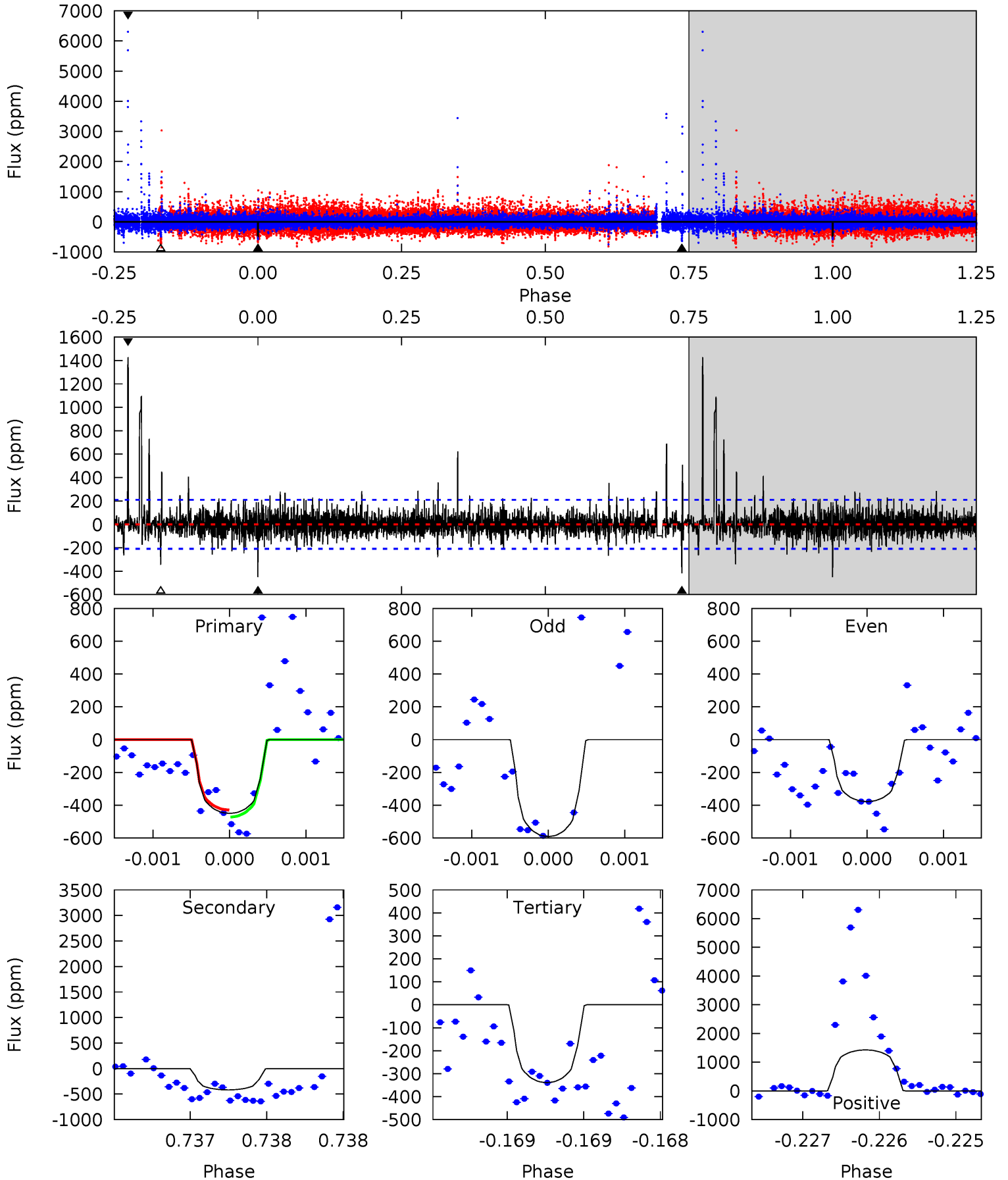
TCE 009419002-07 $P=340.903241$ Days $T_0=453.603583$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-07, P = 340.889973 Days, E = 112.718940 Days

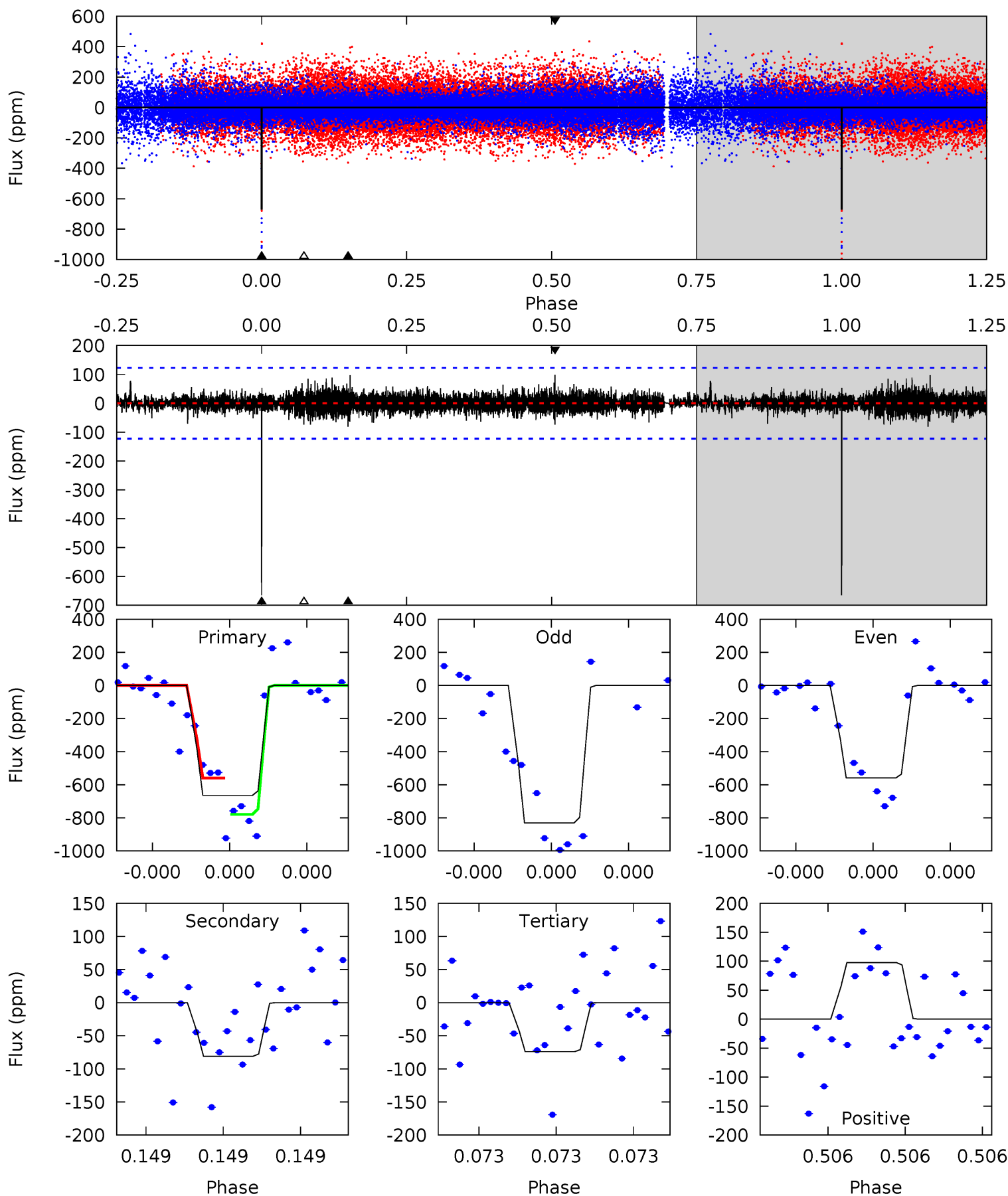
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	11.1	8.97	37.8	5.54	3.44	2.04	2.93	-25.9	2.09	-26.7	1.67	0.82	0.76	0.56



Alt Model-Shift Uniqueness Test

009419002-07, P = 340.903241 Days, E = 112.700342 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.4	3.70	3.38	4.46	5.60	3.53	0.81	27.0	25.9	0.31	-0.76	5.64	1.04	0.13	4.96



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-418 ± 38	$11.02^{+9.16}_{-6.65}$	633^{+51}_{-118}	4764^{+2192}_{-821}	2508^{+13150}_{-1731}
Alt.	-81 ± 22	$10.32^{+10.02}_{-6.54}$	637^{+54}_{-124}	3613^{+1407}_{-568}	545^{+2718}_{-404}

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 $A_{obs} \gg 1.0$

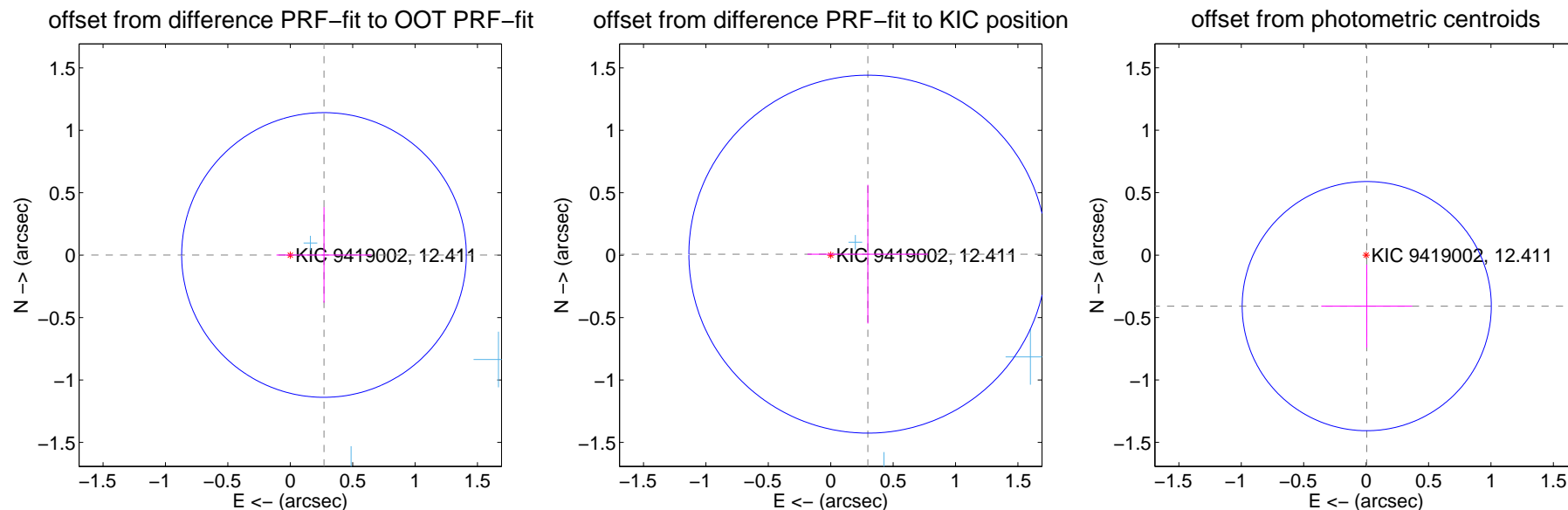
DV Centroid Data

Supplemental centroid analysis for 009419002-07. Kepler magnitude: 12.41. Transit SNR 7.96

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.270 ± 0.380	0.71	-0.270 ± 0.380	0.001 ± 0.383
PRF-fit source offset from KIC position	0.297 ± 0.478	0.62	-0.297 ± 0.484	0.008 ± 0.556
photometric centroid source offset	0.41 ± 0.33	1.23	-0.00 ± 0.36	-0.41 ± 0.33

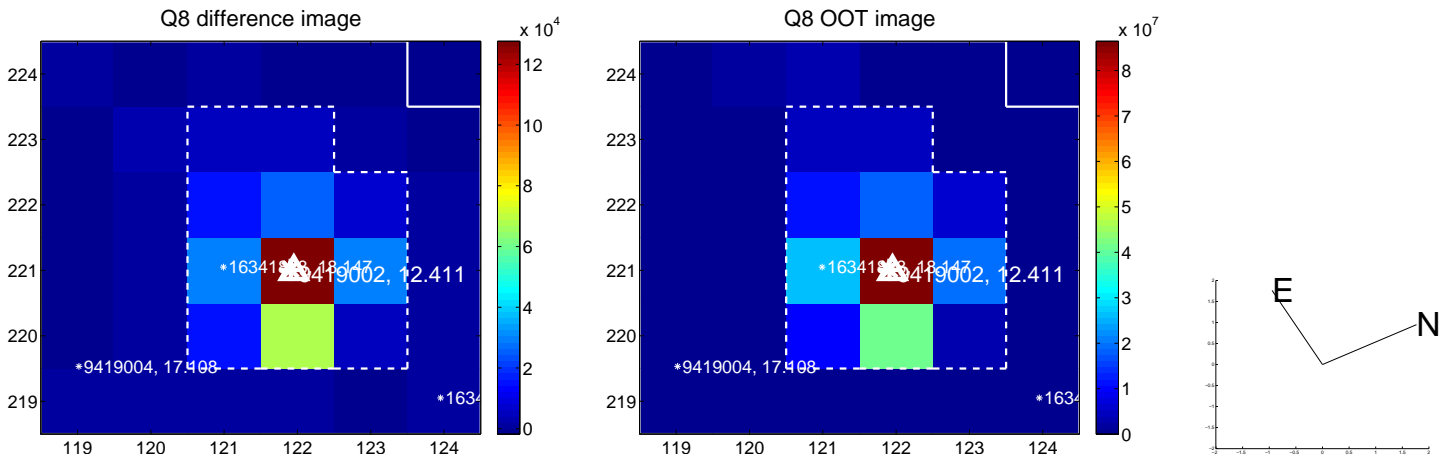
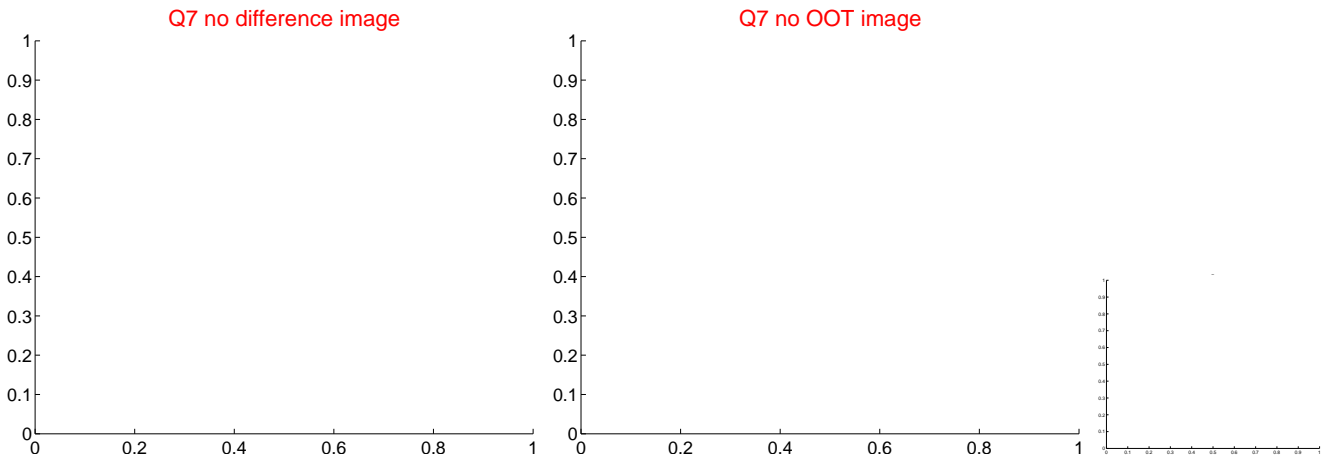
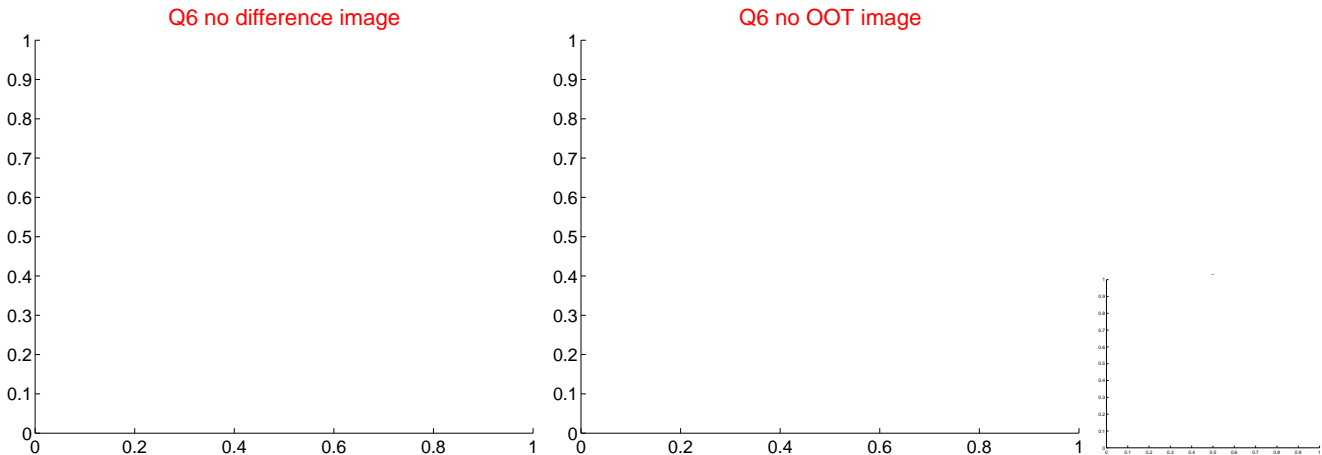
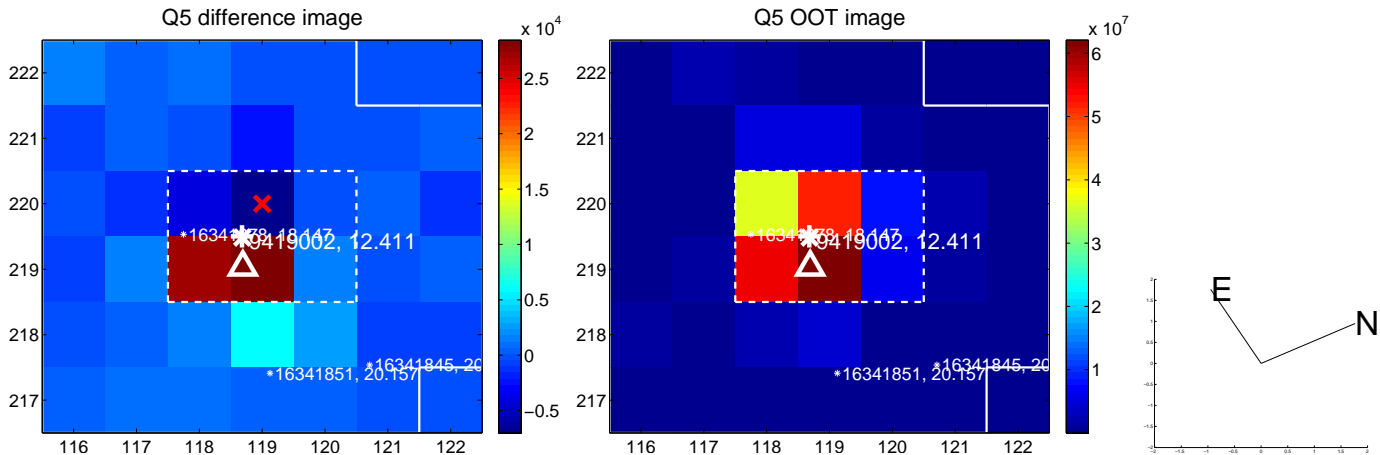


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



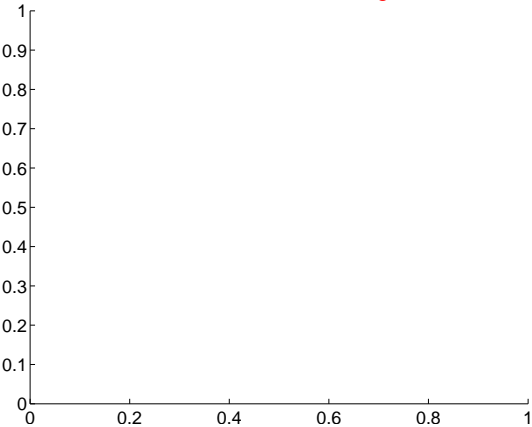
Q10 no difference image



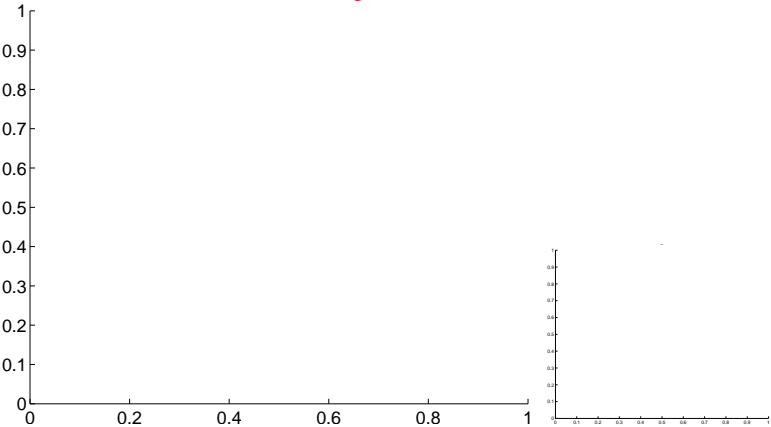
Q10 no OOT image



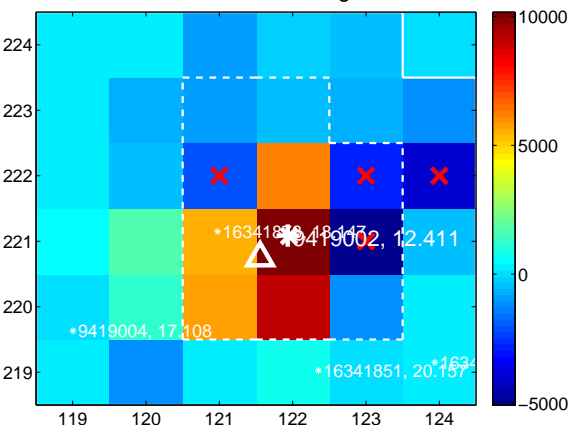
Q11 no difference image



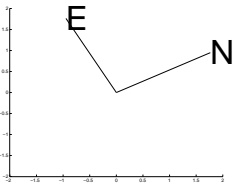
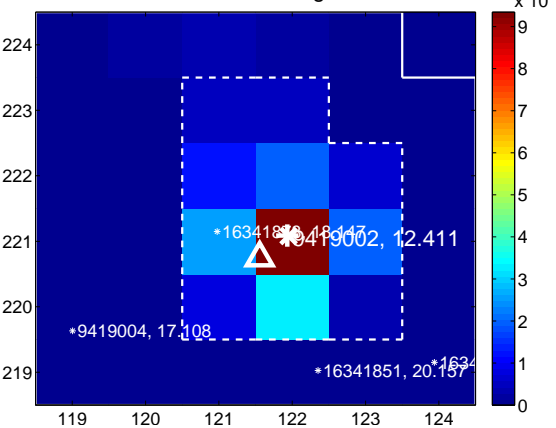
Q11 no OOT image



Q12 difference image



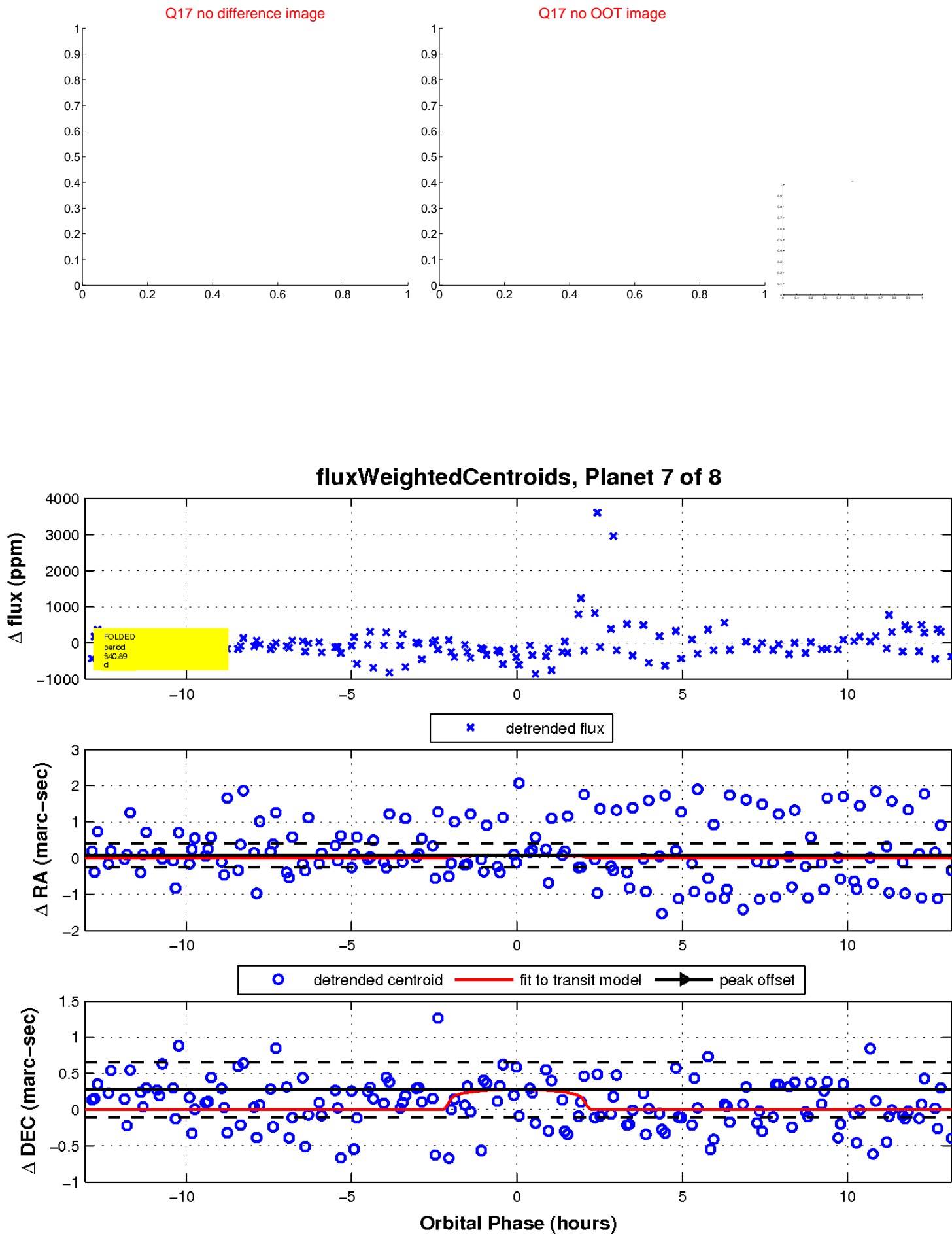
Q12 OOT image



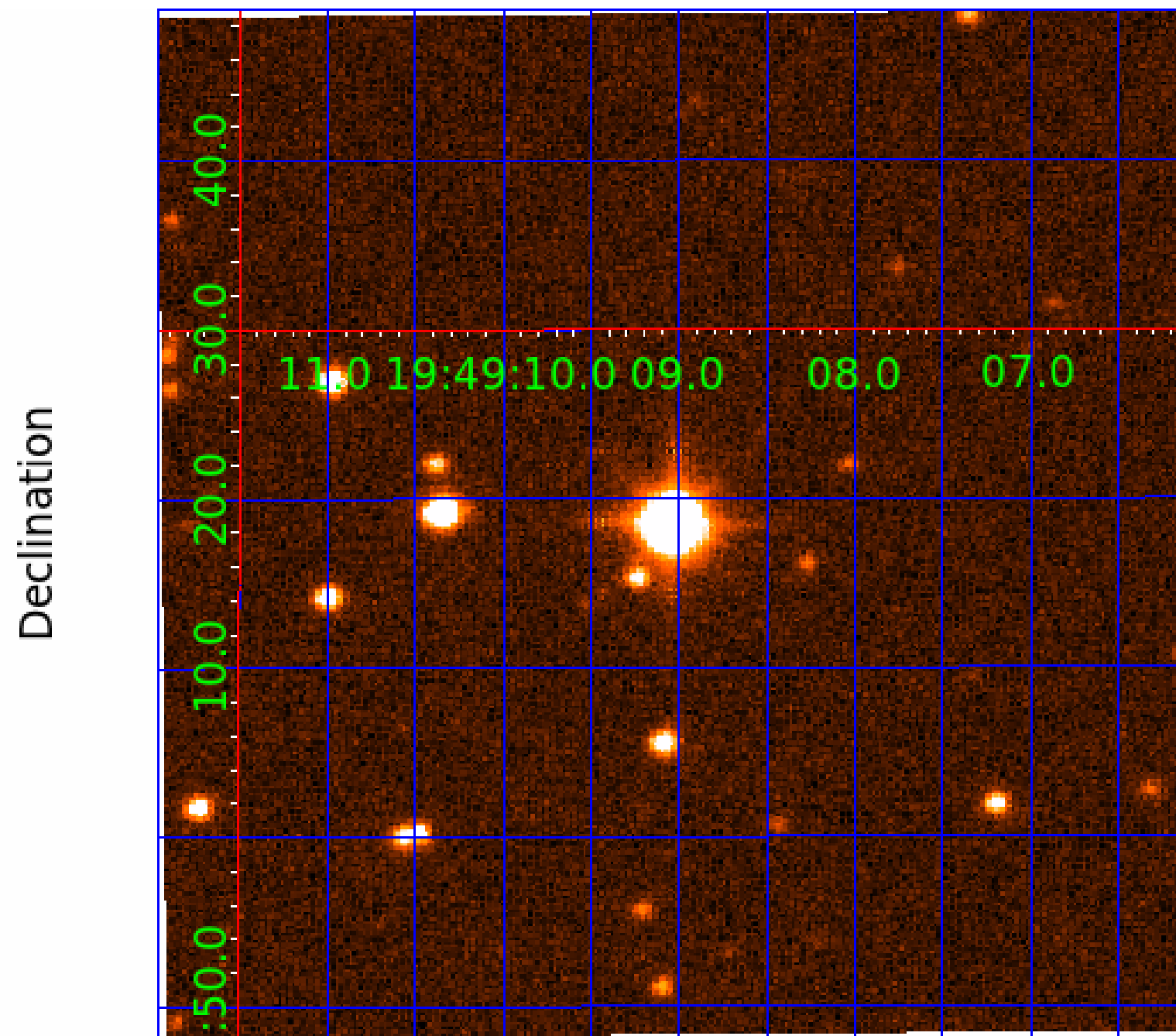
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009419002

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})
009419002-01	OBS	No	380.668902	235.033970	437.5	5.733	12.3	7.0	4.32	5438	9.46	9.32
009419002-03	OBS	No	378.171364	437.606176	586.1	11.526	14.2	8.0	4.32	5438	15.19	9.40
009419002-04	OBS	No	636.485171	224.480977	435.0	10.517	12.0	6.1	4.32	5438	9.36	4.70
009419002-05	OBS	No	356.910709	169.374660	578.9	6.928	10.7	8.8	4.32	5438	10.39	10.16
009419002-06	OBS	No	305.623895	201.017649	564.0	2.850	10.6	8.5	4.32	5438	12.60	12.49
009419002-07	OBS	No	340.889973	453.608913	694.8	4.386	10.9	8.0	4.32	5438	12.25	10.80
009419002-08	OBS	No	471.926691	295.422201	228.1	4.500	10.7	-1.0	4.32	5438	6.41	7.00

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009419002-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS
009419002-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009419002-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009419002-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV
009419002-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS
009419002-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_NOFITS

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

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

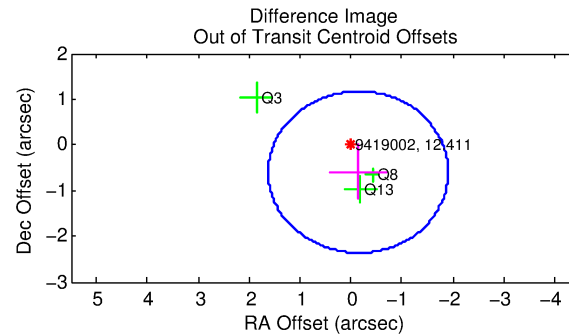
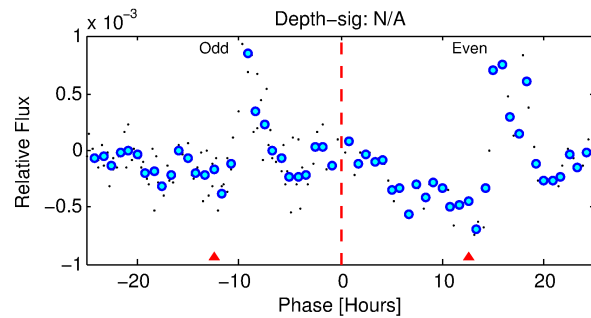
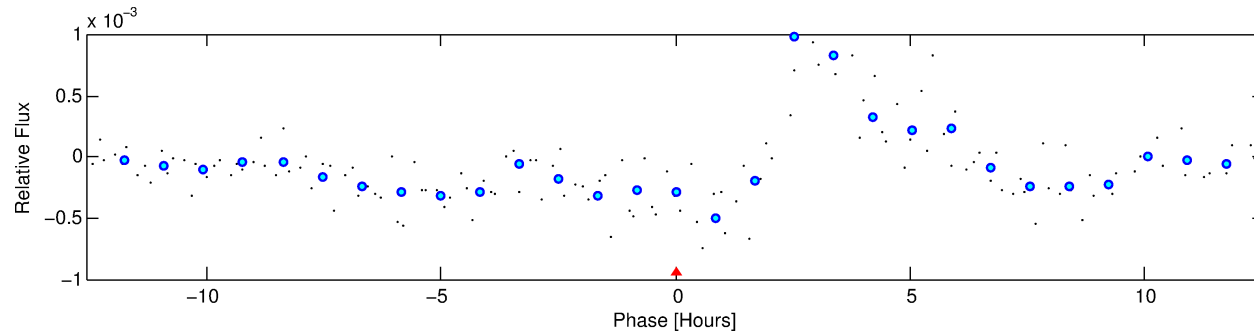
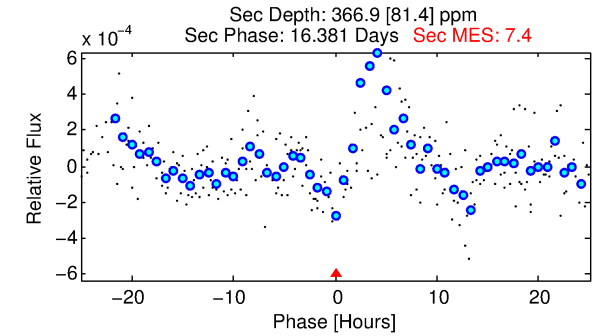
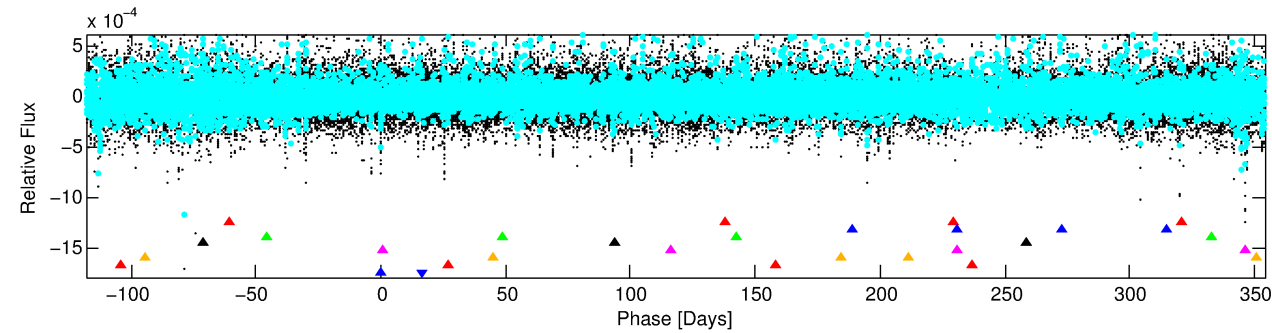
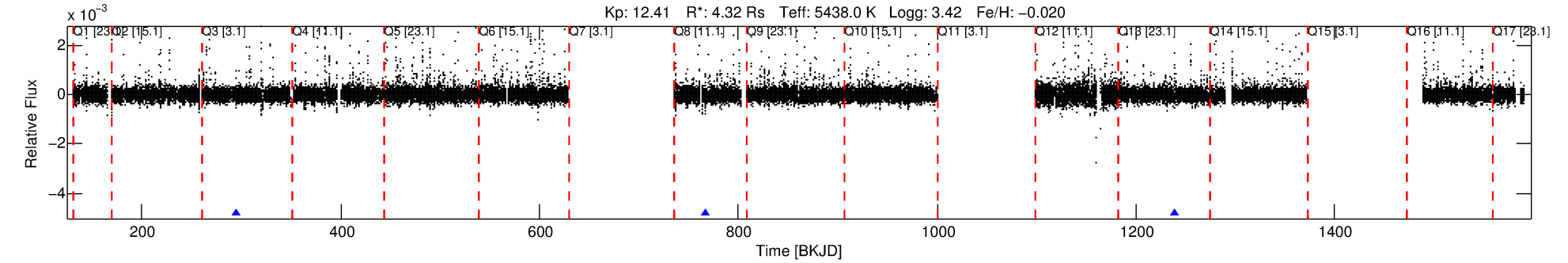
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009419002-08

No Significant Match Found

DV One-Page Summary

KIC: 9419002 Candidate: 8 of 8 Period: 471.927 d



TPS TCE Results:

Period = 471.92669 d
Epoch = 295.4222 BKJD

DV fit results are unavailable

DV Diagnostic Results:

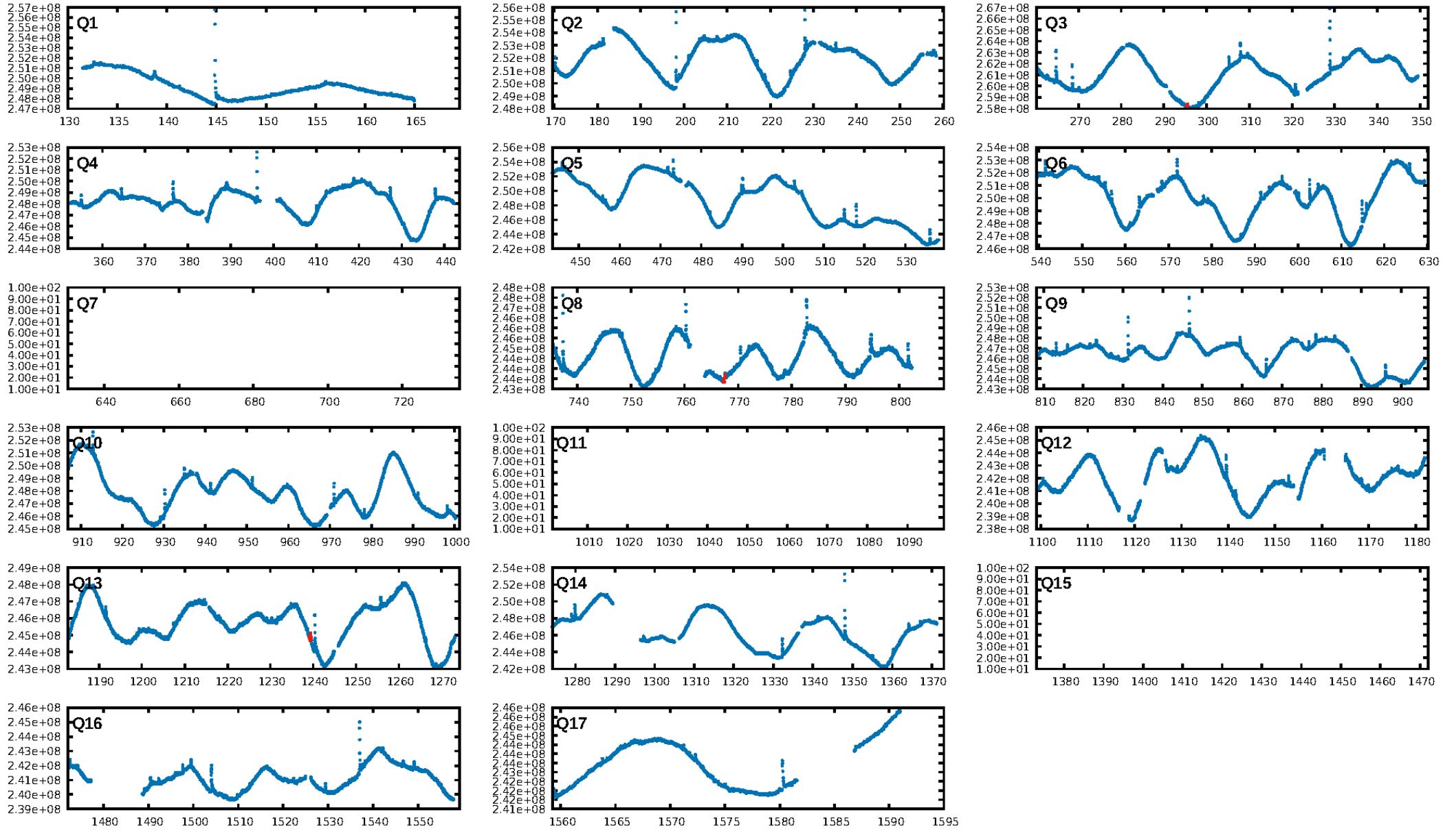
ShortPeriod-sig: 100.0% [77.32σ]
LongPeriod-sig: 100.0% [345.26σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3724

Centroid-sig: 24.3%
Centroid-so: 0.504 arcsec [1.31σ]
OotOffset-rm: 0.613 arcsec [1.04σ]
KicOffset-rm: 0.609 arcsec [1.05σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

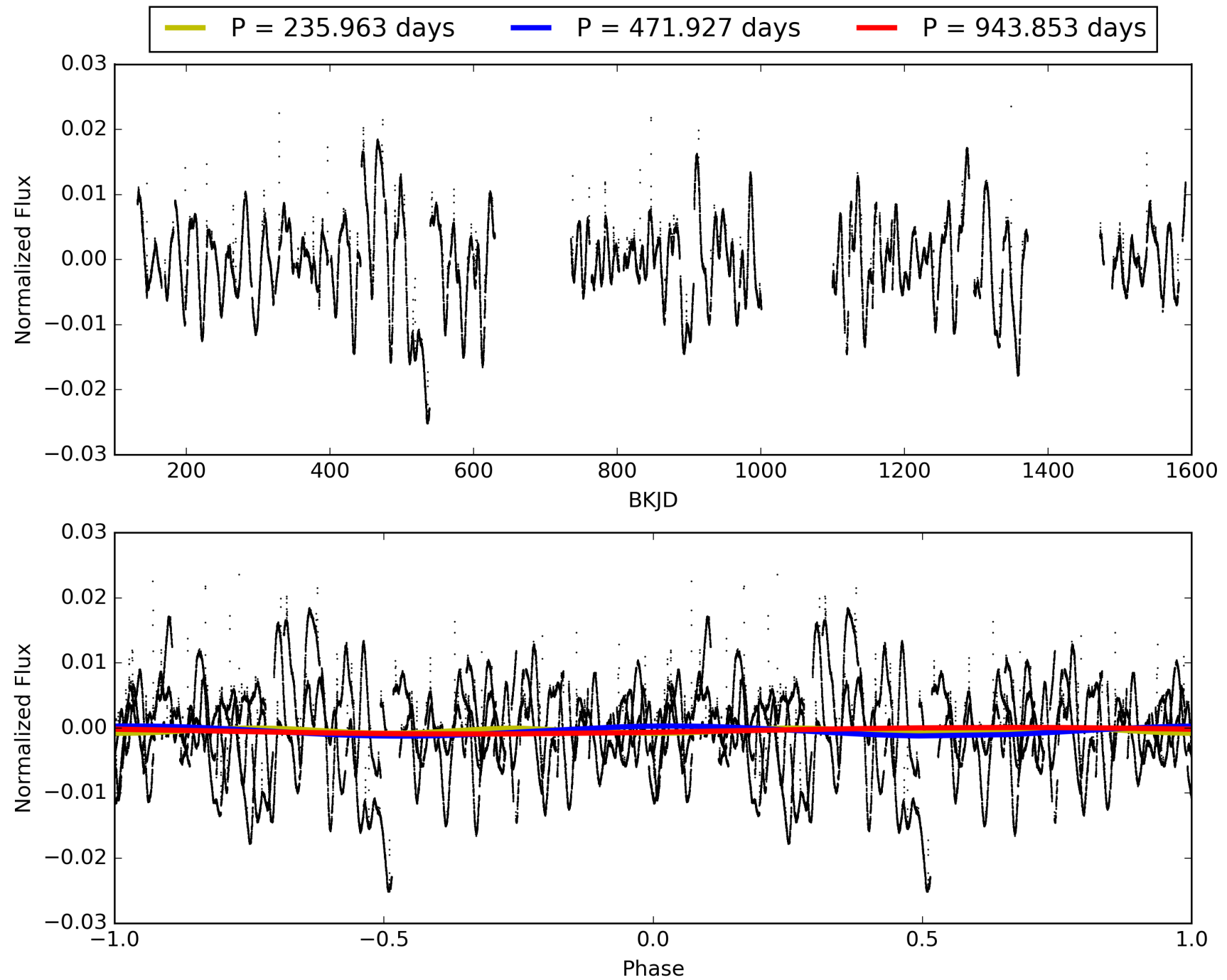
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:28:32 Z

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

TCE 009419002-08, PDC Light Curves

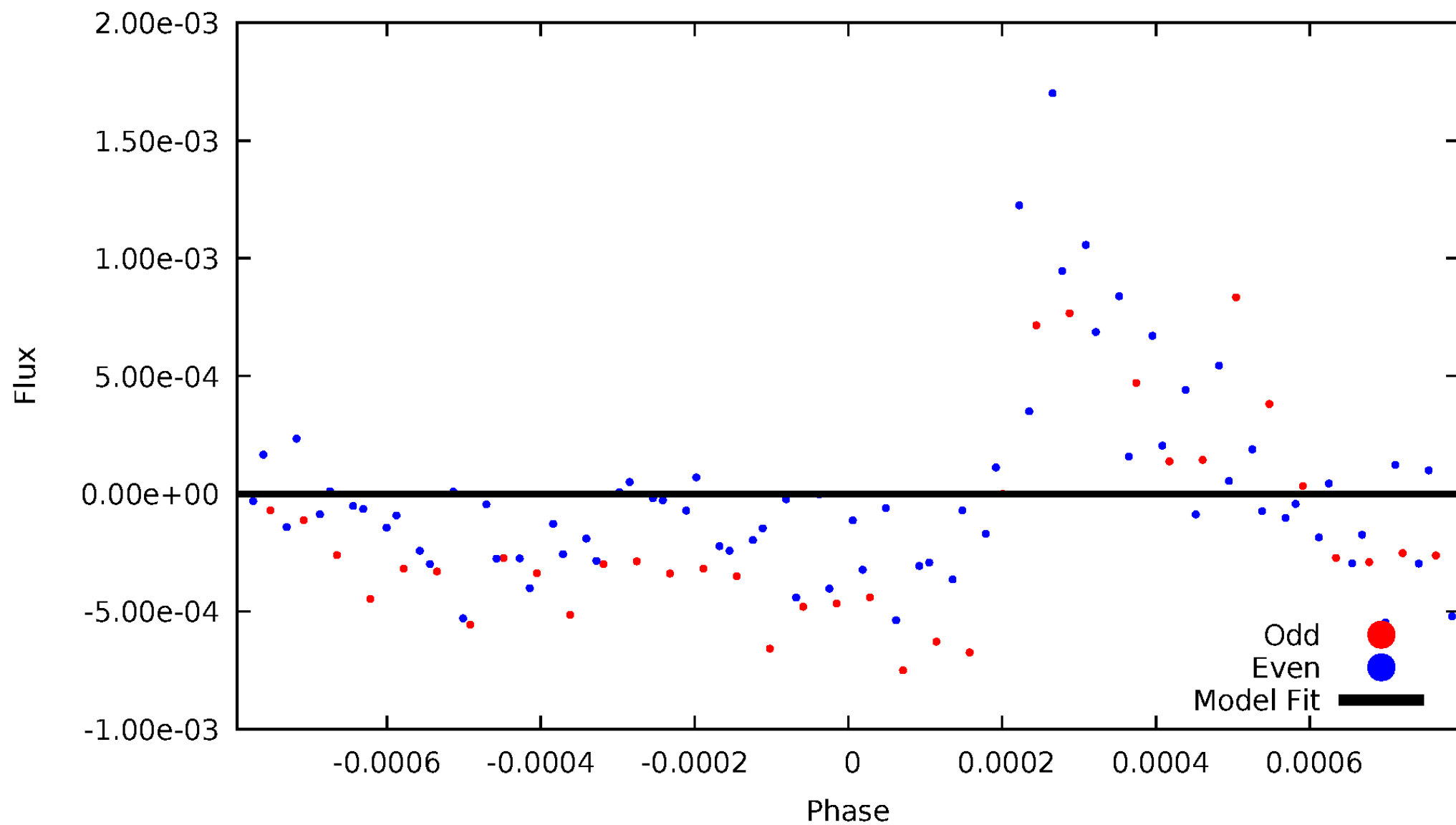


TCE 009419002-08



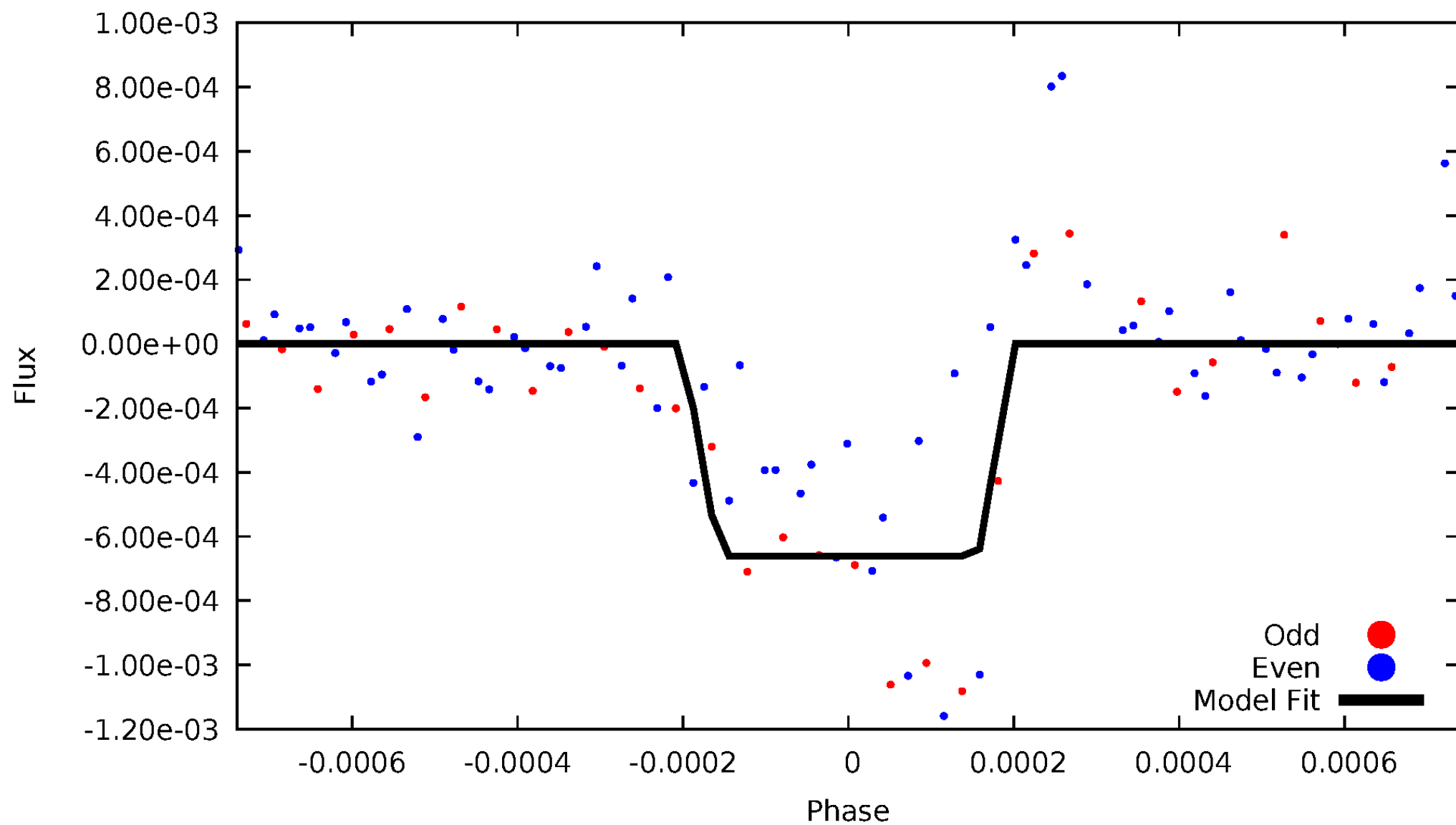
DV Odd/Even

TCE 009419002-08



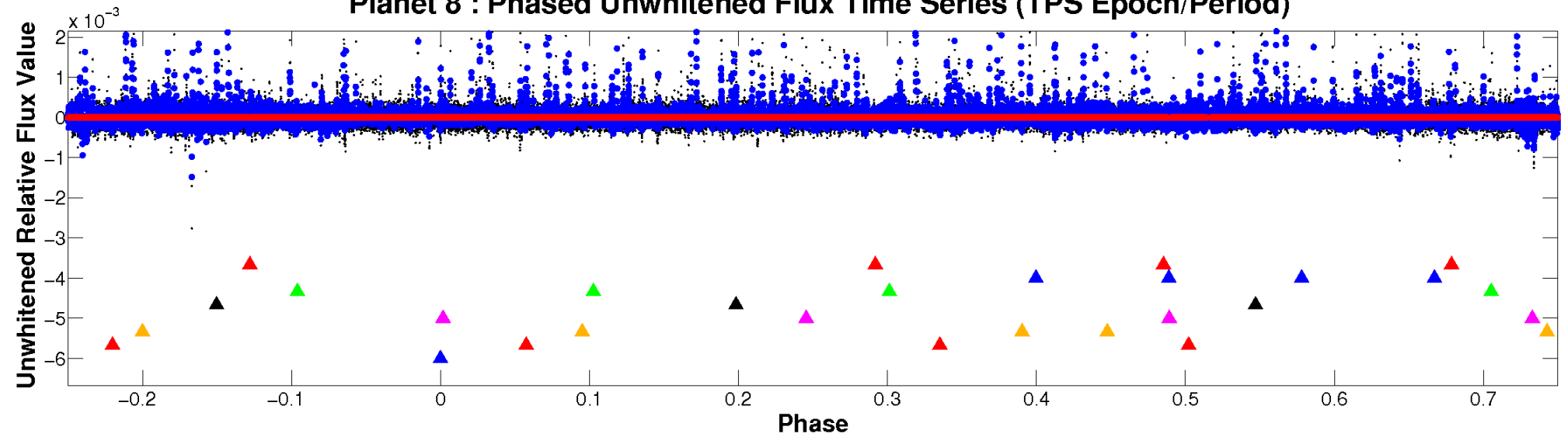
ALT Odd/Even

TCE 009419002-08

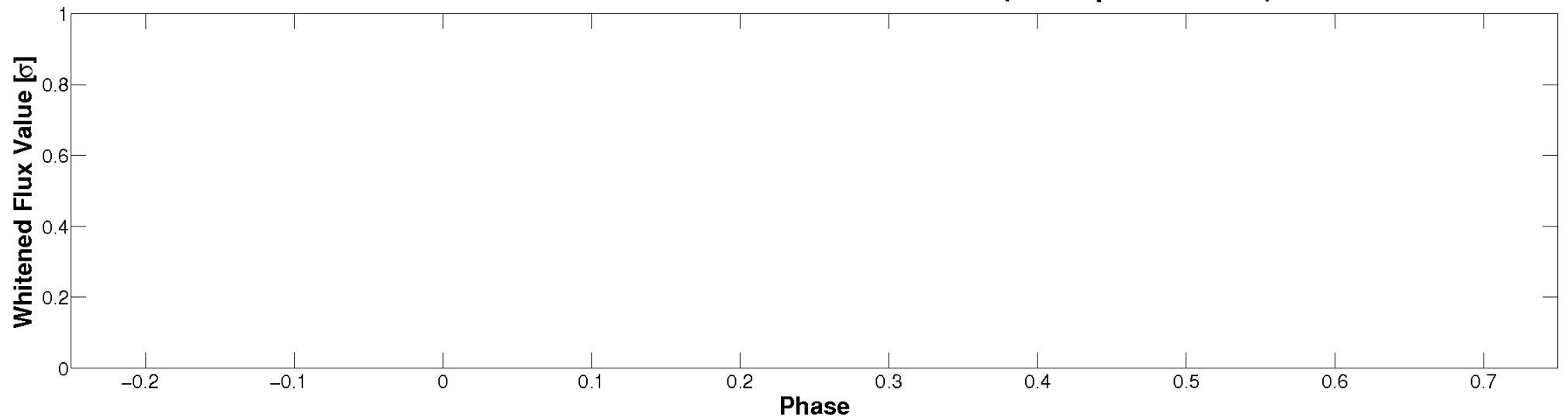


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

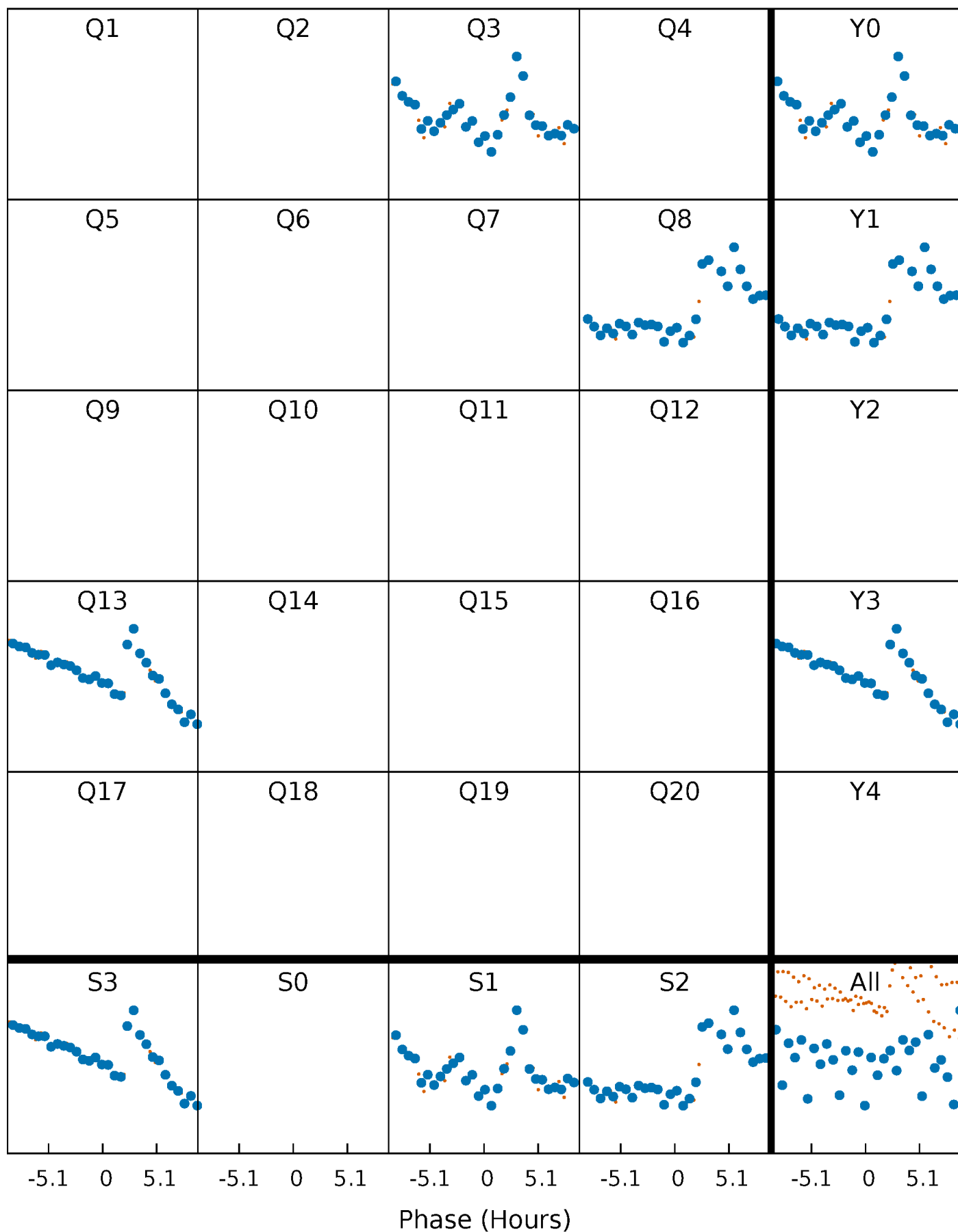


Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)



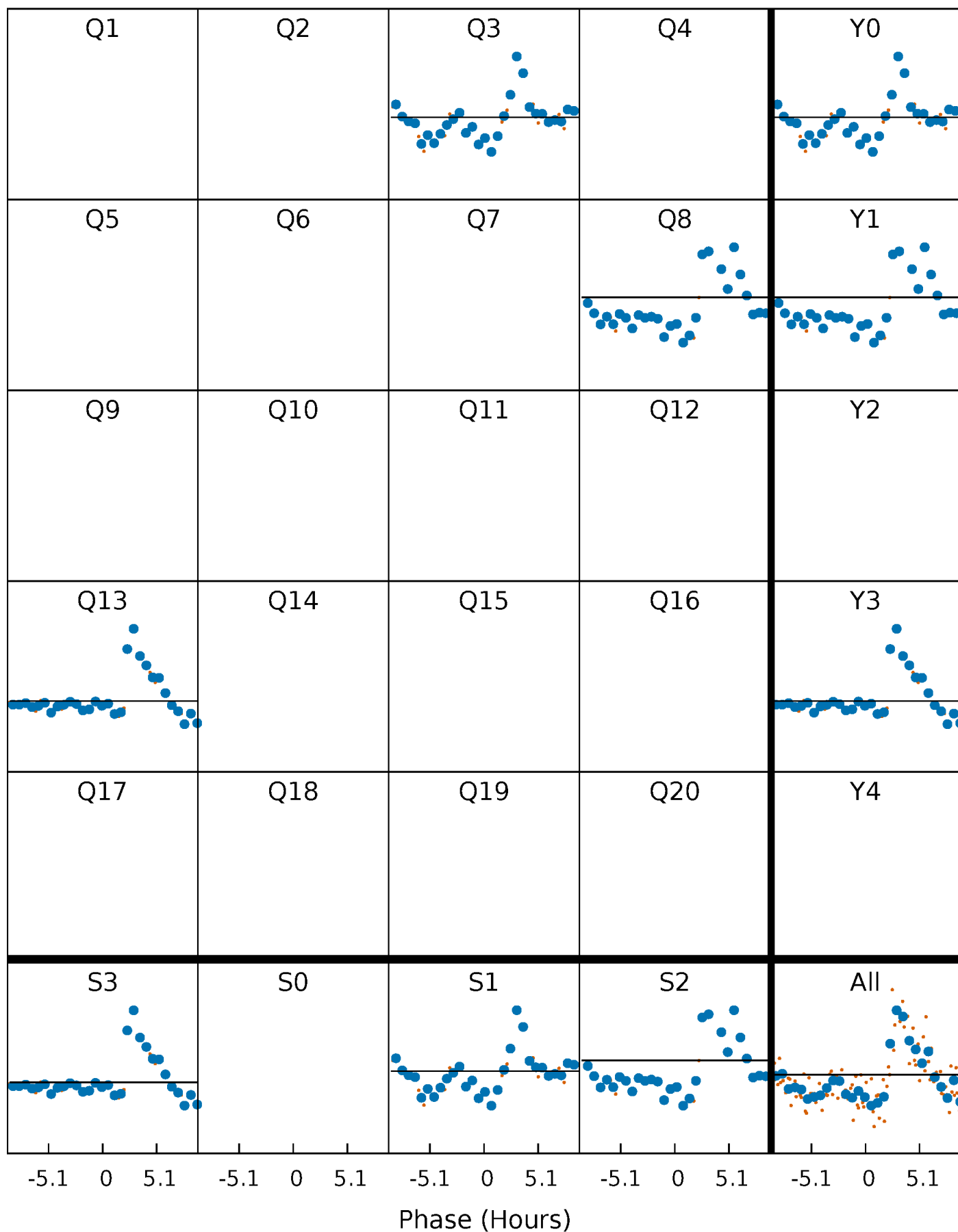
PDC Quarter-Phased Transit Curves

TCE 009419002-08 P=471.926691 Days $T_0=295.422201$ (BKJD)



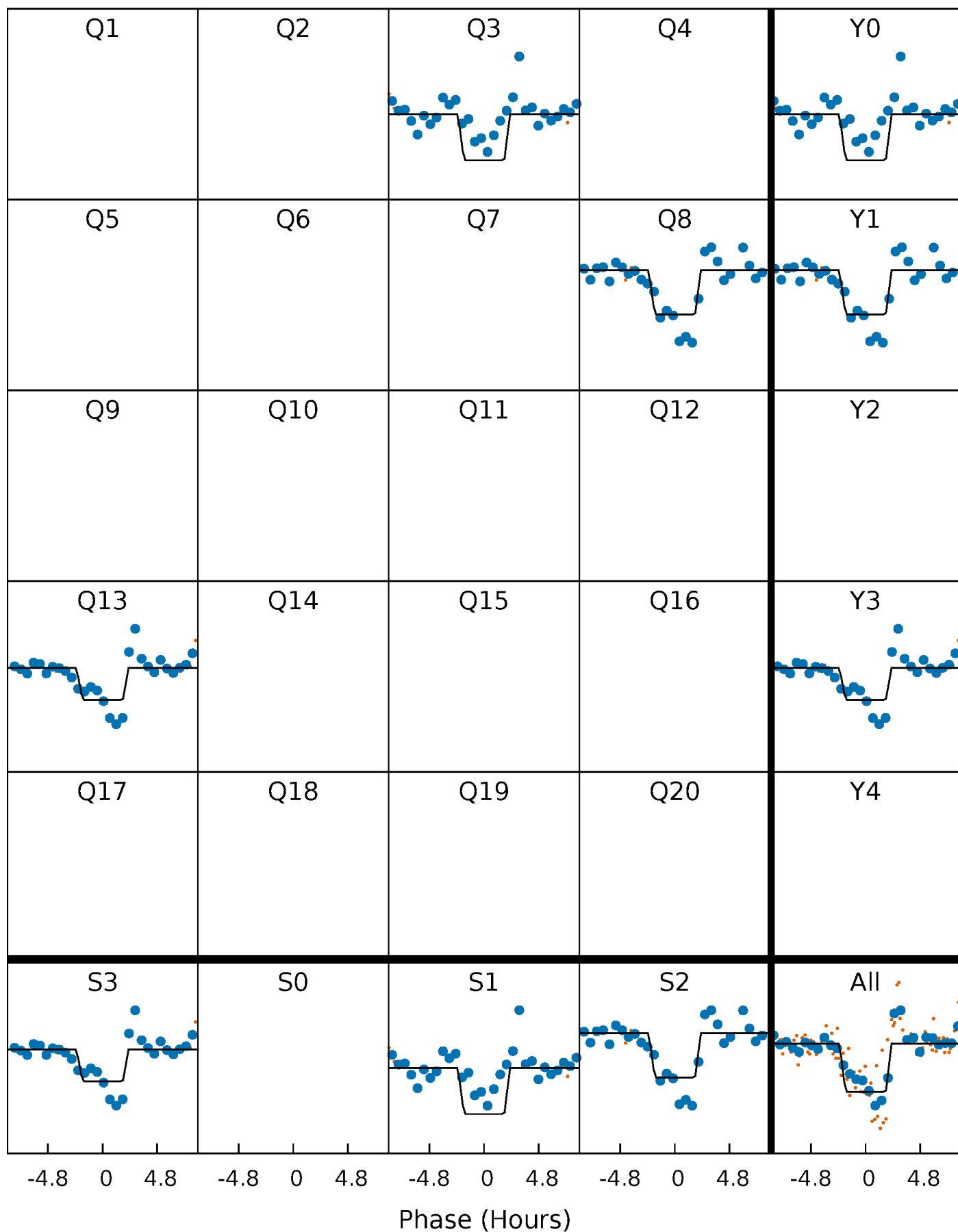
DV Quarter-Phased Transit Curves

TCE 009419002-08 $P=471.926691$ Days $T_0=295.422201$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

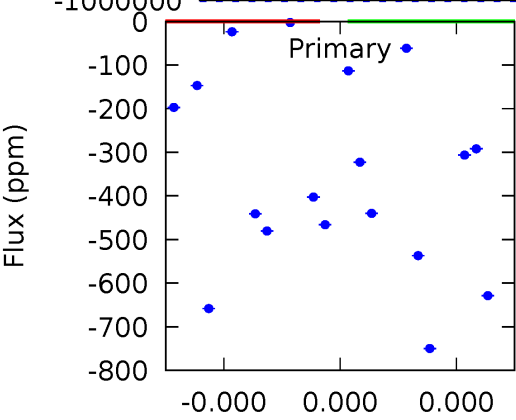
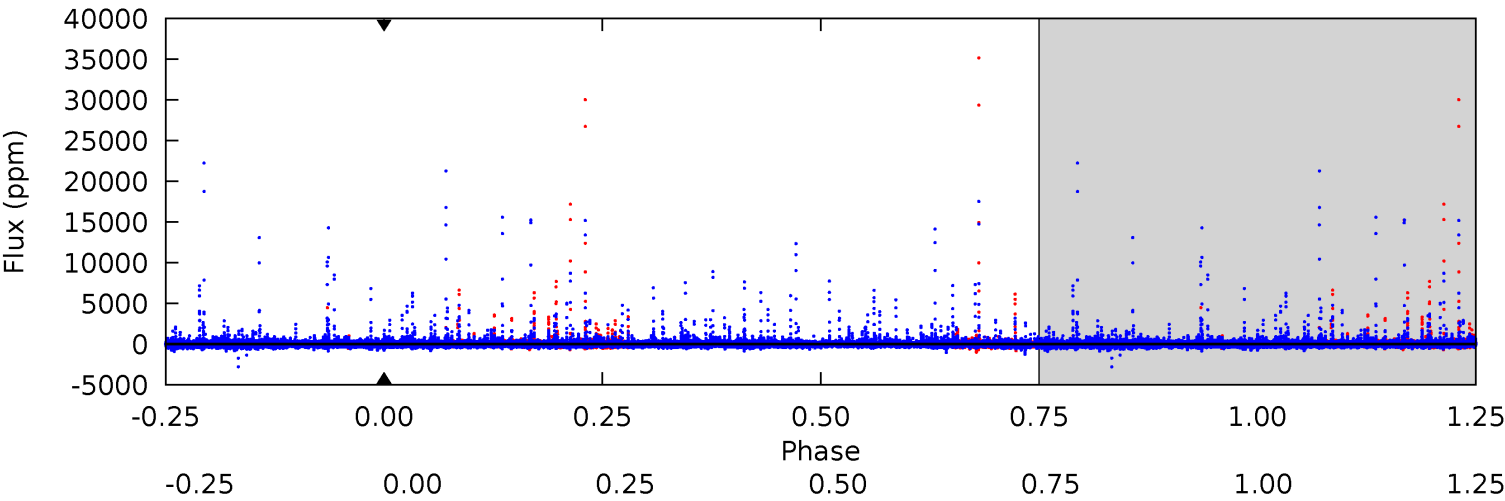
TCE 009419002-08 P=471.926691 Days $T_0=295.431668$ (BKJD)



DV Model-Shift Uniqueness Test

009419002-08, P = 471.926691 Days, E = 295.422201 Days

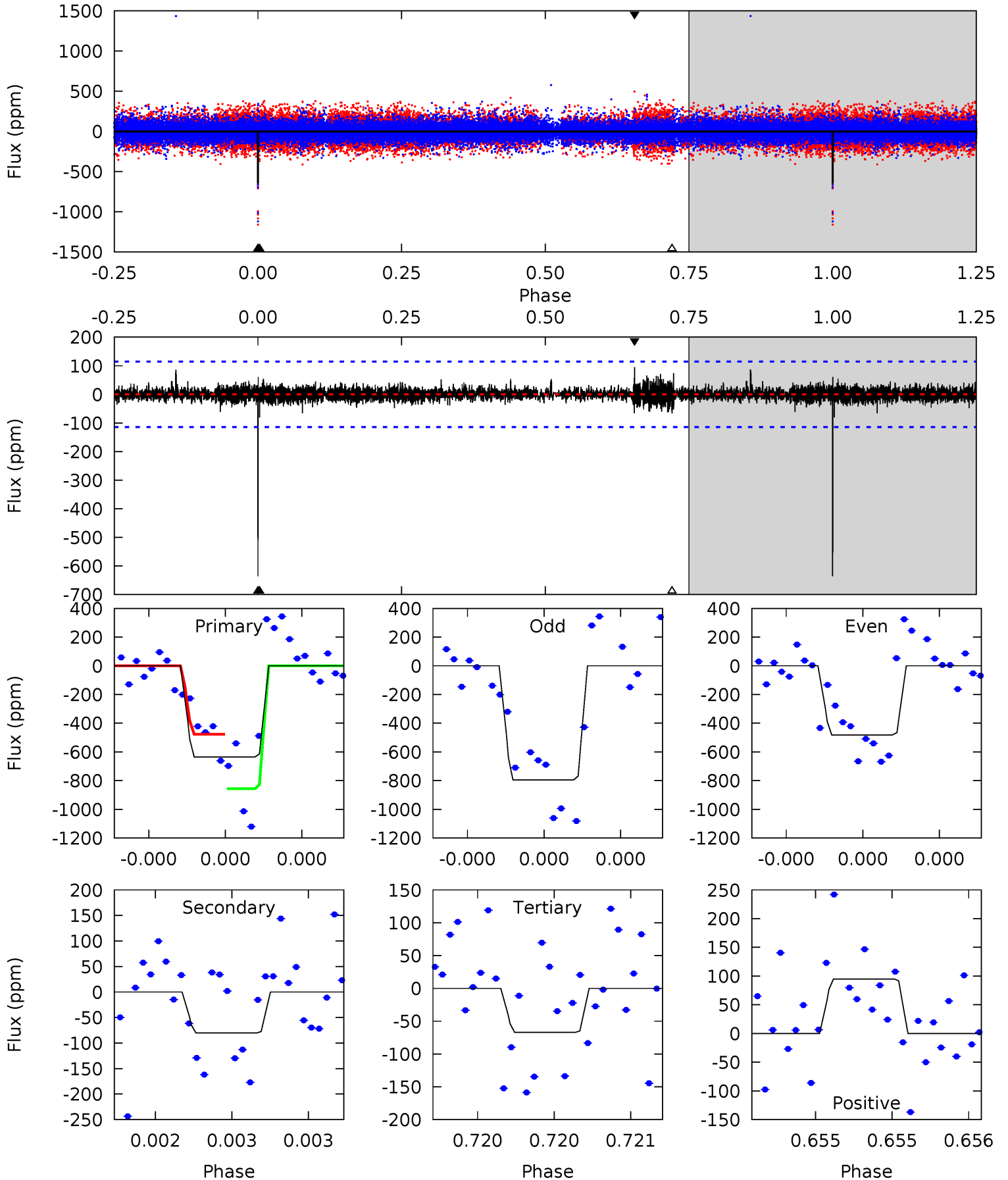
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009419002-08, P = 471.926691 Days, E = 295.431668 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.2	3.95	3.30	4.67	5.63	3.57	0.65	27.9	26.6	0.65	-0.72	7.83	0.81	0.13	9.13



Stellar Parameters For KIC 009419002

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5438^{+188}_{-188}	$3.424^{+0.876}_{-0.155}$	$-0.020^{+0.300}_{-0.300}$	$4.319^{+0.816}_{-3.265}$	$1.807^{+0.208}_{-0.884}$	$0.032^{+0.778}_{-0.013}$
	+3%/-3%	+26%/-5%	+1500%/-1500%	+19%/-76%	+12%/-49%	+2462%/-43%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009419002-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$26.92^{+35.01}_{-19.01}$	568^{+52}_{-106}	3313^{+19824}_{-22678}	$294^{+353184}_{-234835}$
Alt.	-80 ± 20	$29.42^{+34.66}_{-20.42}$	571^{+48}_{-105}	2657^{+1002}_{-435}	96^{+1062}_{-74}

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

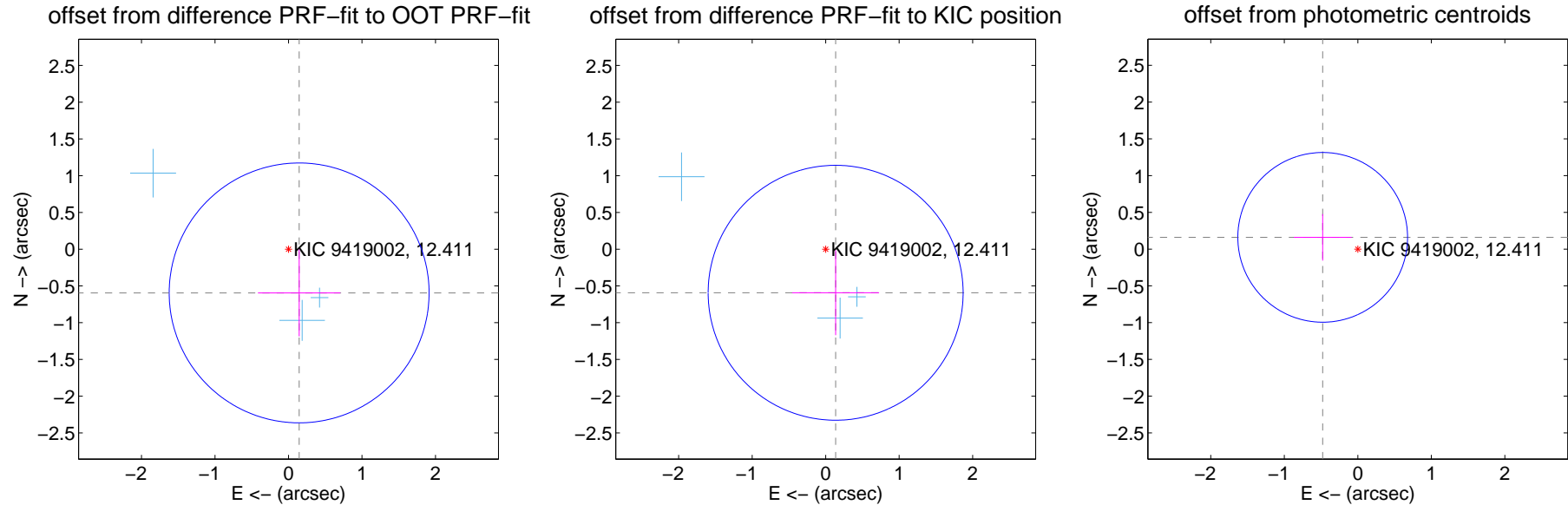
DV Centroid Data

Supplemental centroid analysis for 009419002-08. Kepler magnitude: 12.41. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

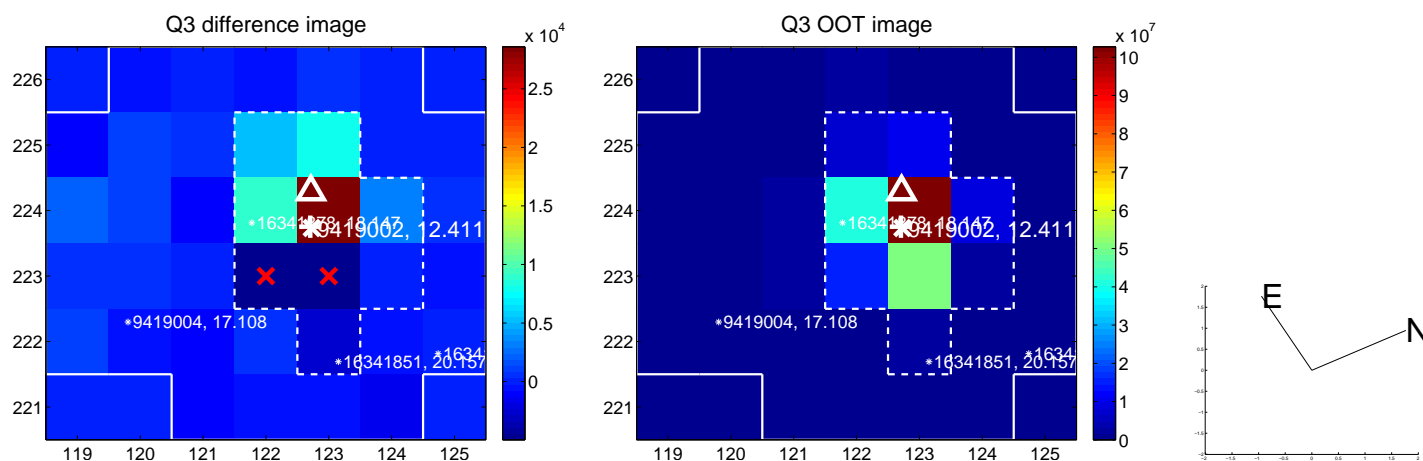
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.613 ± 0.589	1.04	-0.145 ± 0.560	-0.595 ± 0.591
PRF-fit source offset from KIC position	0.609 ± 0.578	1.05	-0.136 ± 0.590	-0.593 ± 0.578
photometric centroid source offset	0.50 ± 0.38	1.31	0.48 ± 0.39	0.16 ± 0.32



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

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



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



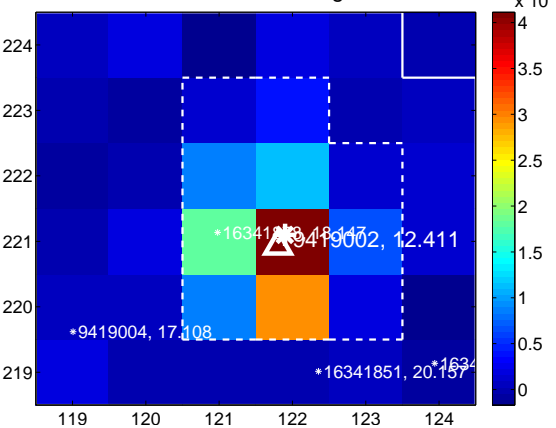
Q7 no difference image



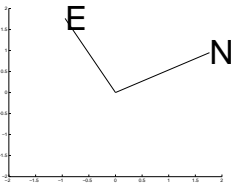
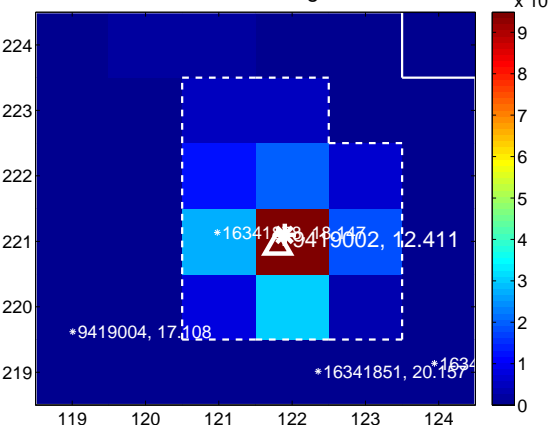
Q7 no OOT image



Q8 difference image



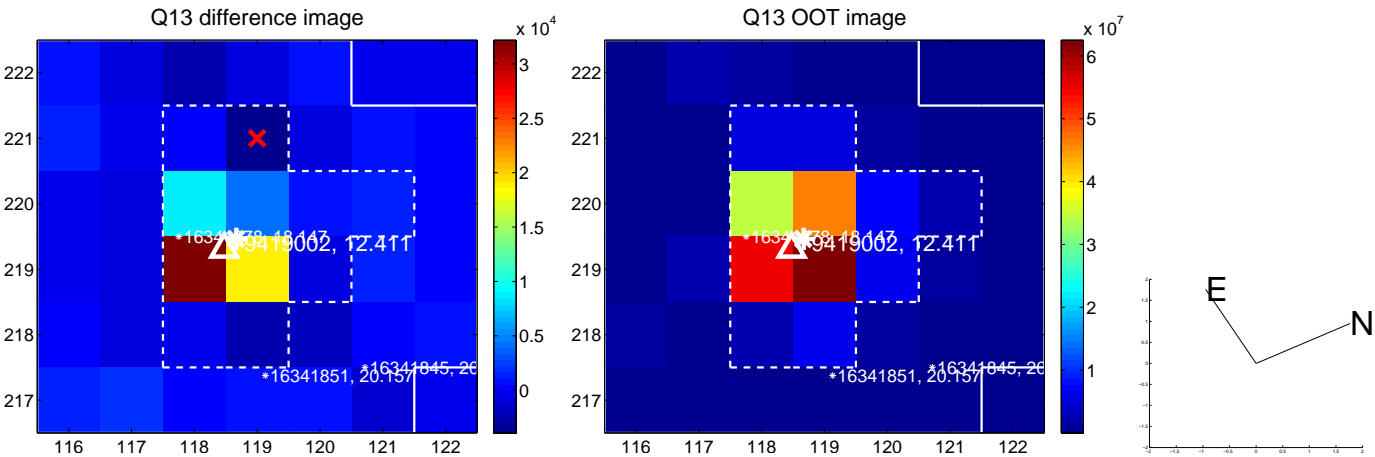
Q8 OOT image



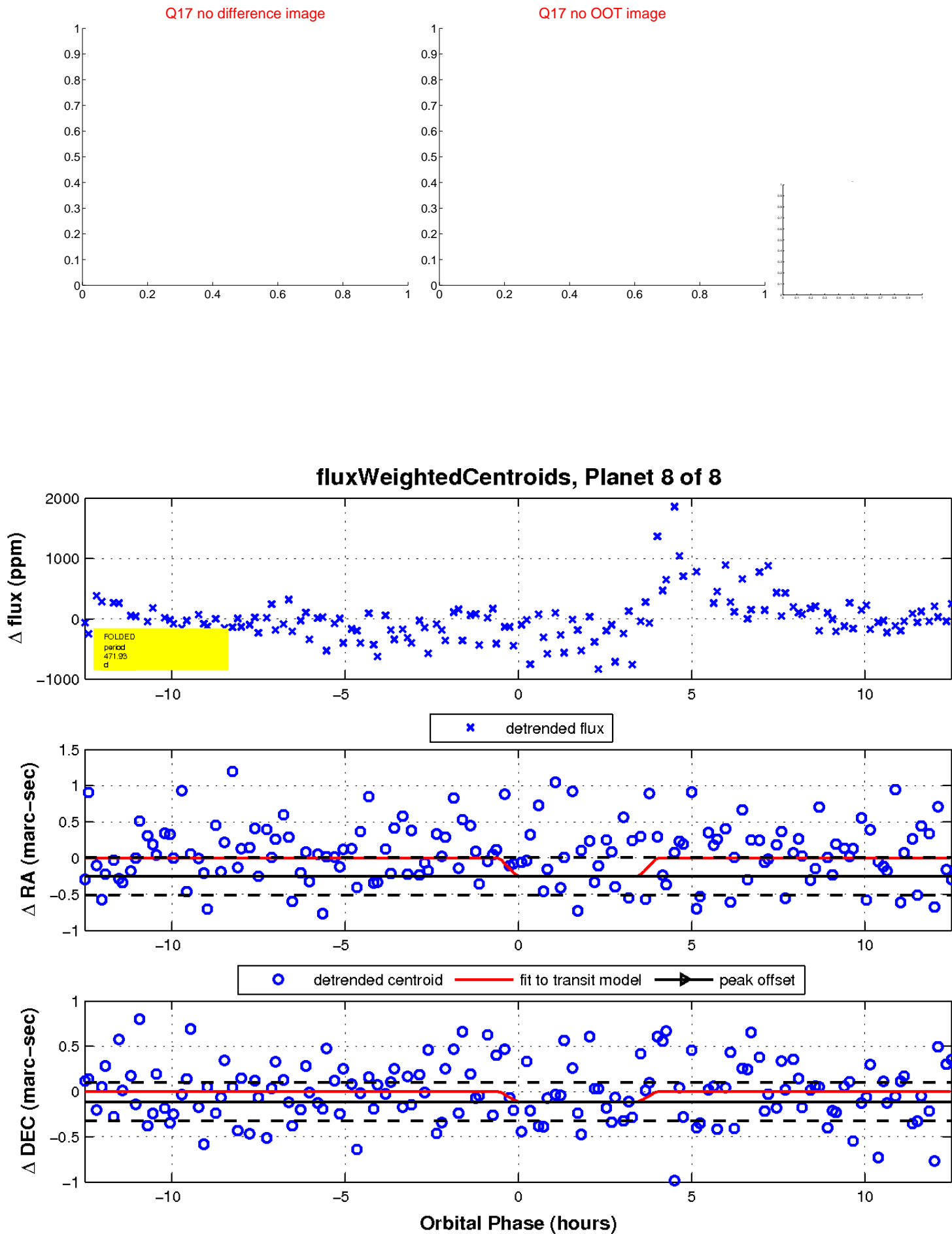
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

