

KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

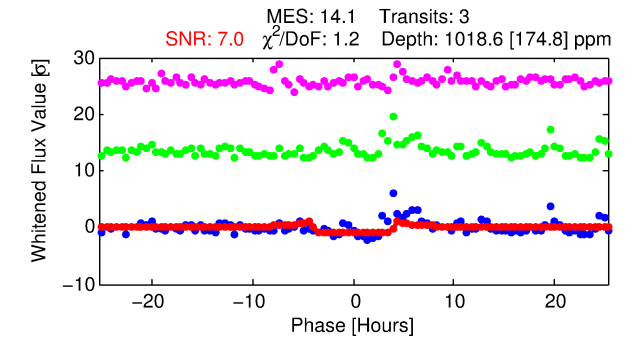
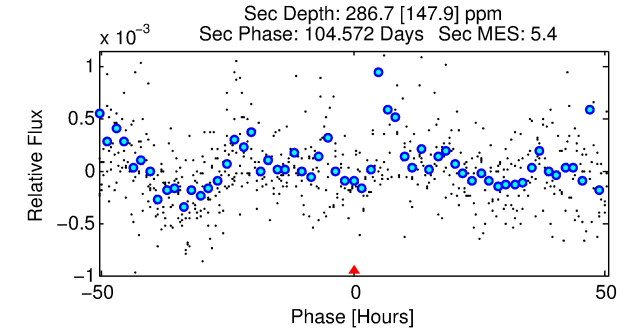
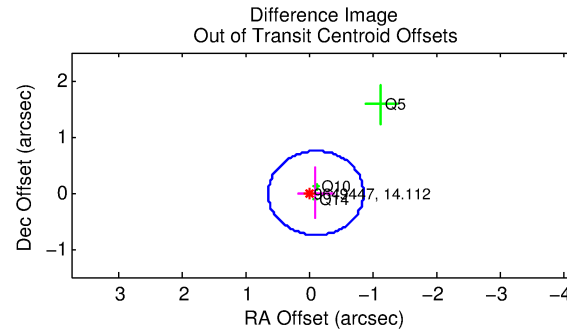
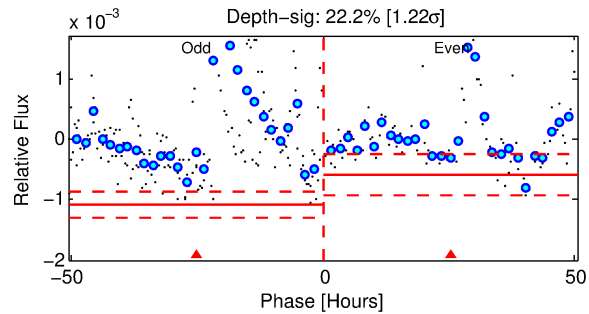
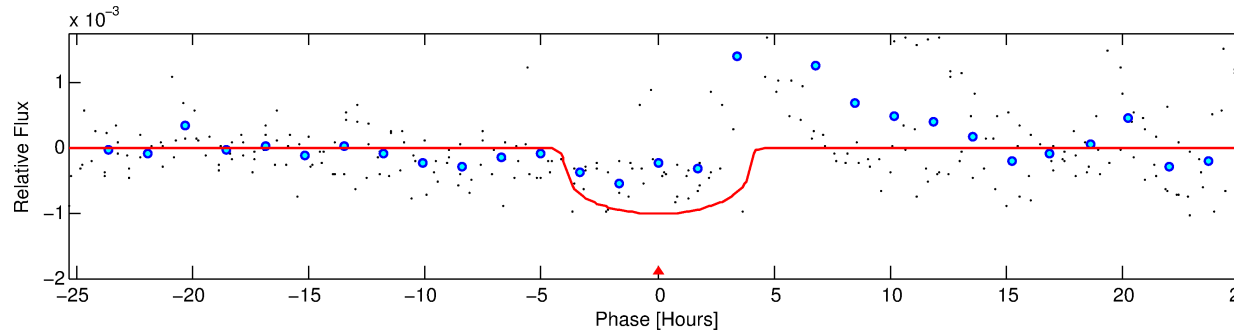
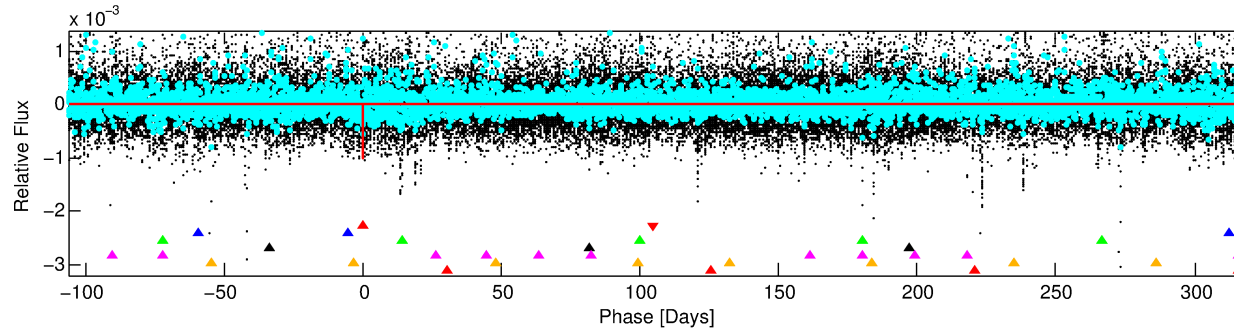
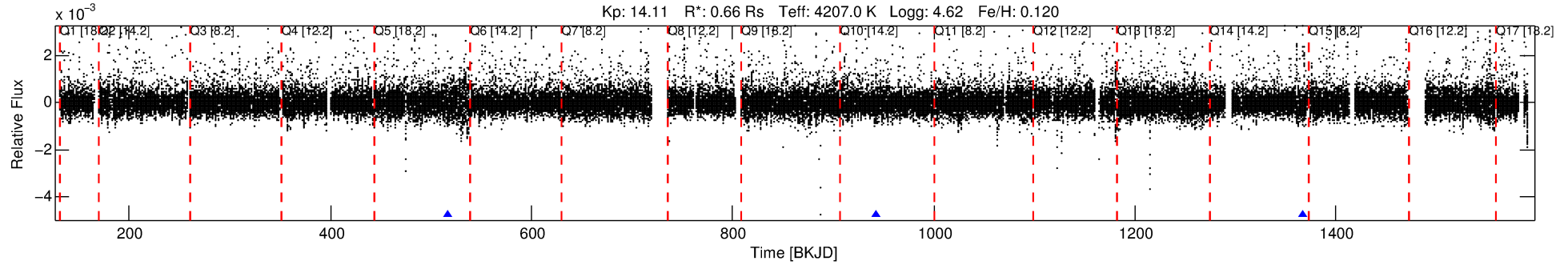
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-01

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 1 of 7 Period: 425.140 d



DV Fit Results:

Period = 425.13962 [0.00778] d
Epoch = 517.1256 [0.0116] BKJD
Rp/R* = 0.0303 [0.0150]
a/R* = 316.46 [475.89]
b = 0.62 [1.52]
Seff = 0.13 [0.02]
Teq = 154 [6] K
Rp = 2.17 [1.09] Re
a = 0.9589 [0.0645] AU
Ag = 30752.55 [34451.17] [0.89 σ]
Teffp = 3145 [883] K [3.39 σ]

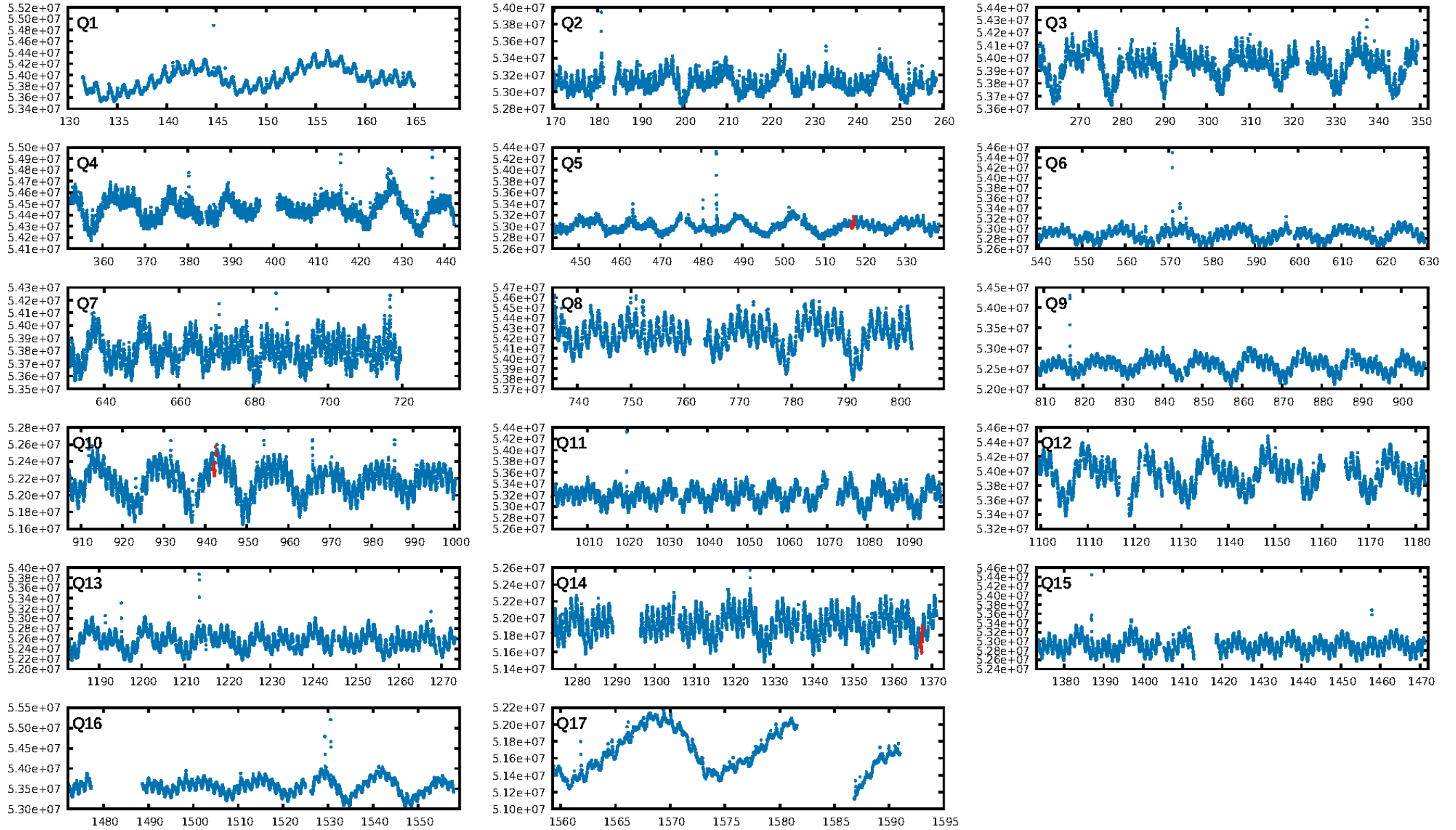
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [224.15 σ]
LongPeriod-sig: 100.0% [58.97 σ]
ModelChiSquare2-sig: 22.9%
ModelChiSquareGof-sig: 94.8%
Bootstrap-pfa: 2.37e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.546
Centroid-sig: 37.7%
Centroid-so: 0.400 arcsec [0.83 σ]
OotOffset-rm: 0.098 arcsec [0.39 σ]
OotOffset-st: 2/0/0/1 [3]
KicOffset-rm: 0.458 arcsec [3.07 σ]
KicOffset-st: 2/0/0/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

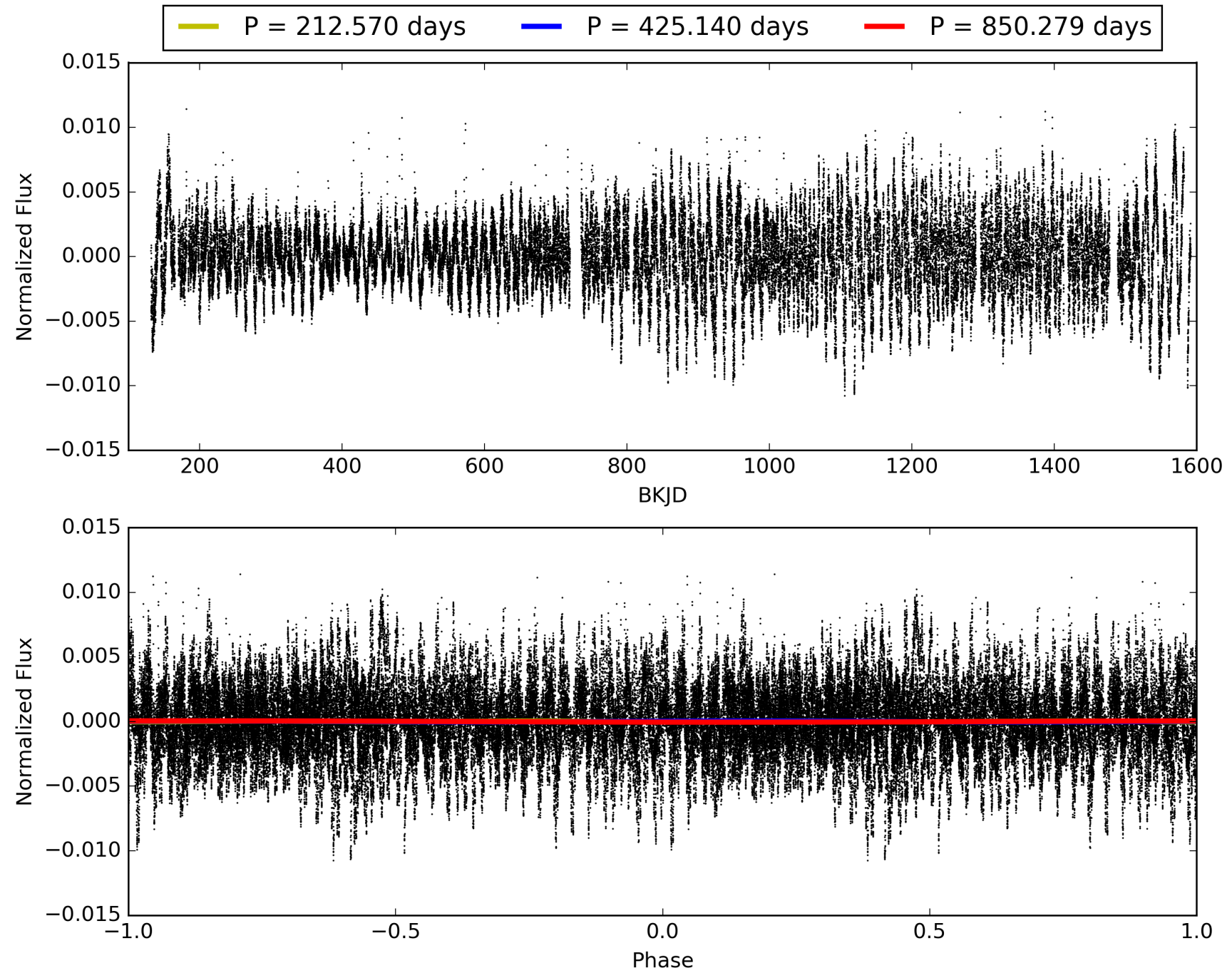
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:53:24 Z

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

TCE 009649447-01, PDC Light Curves

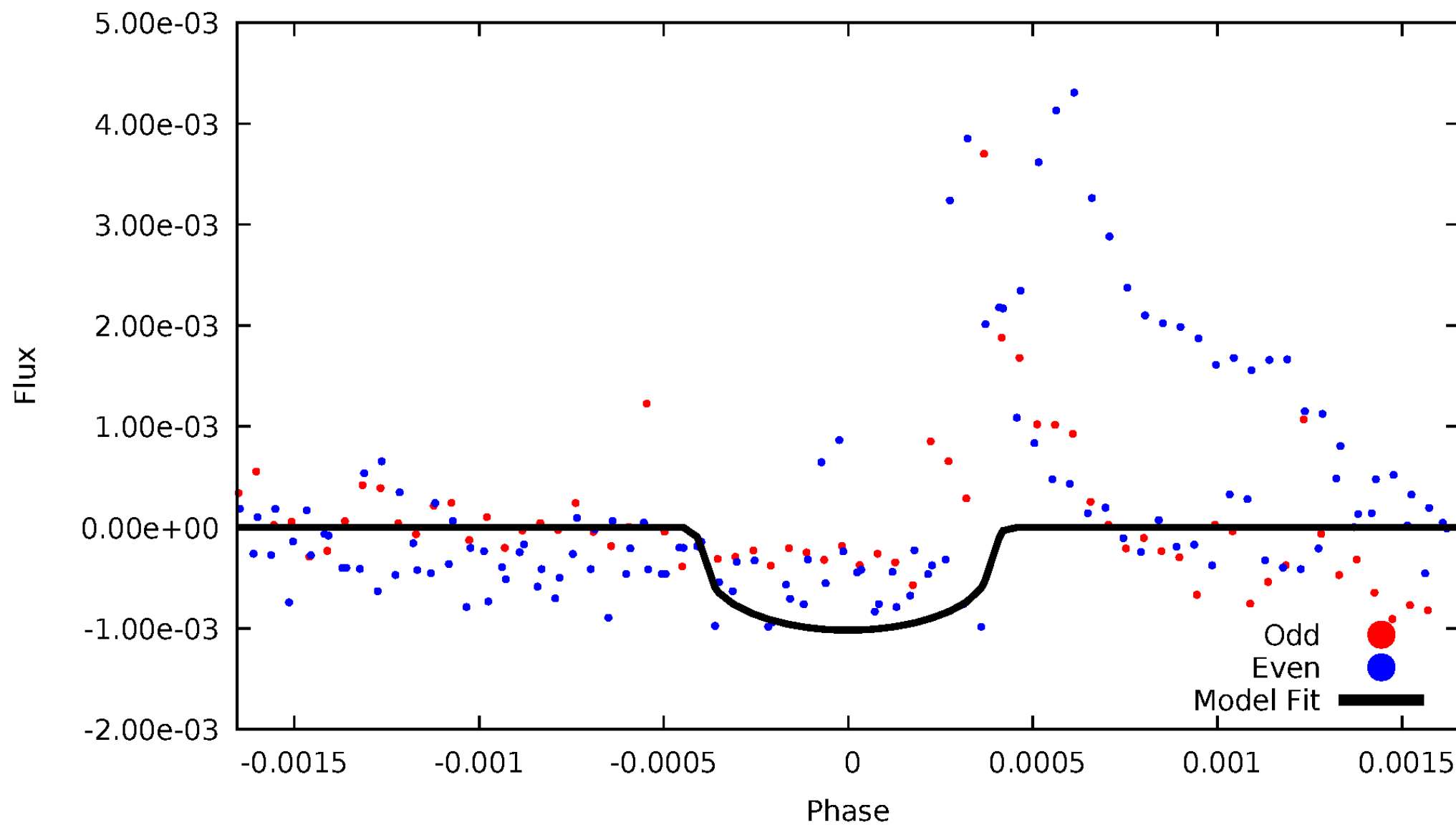


TCE 009649447-01



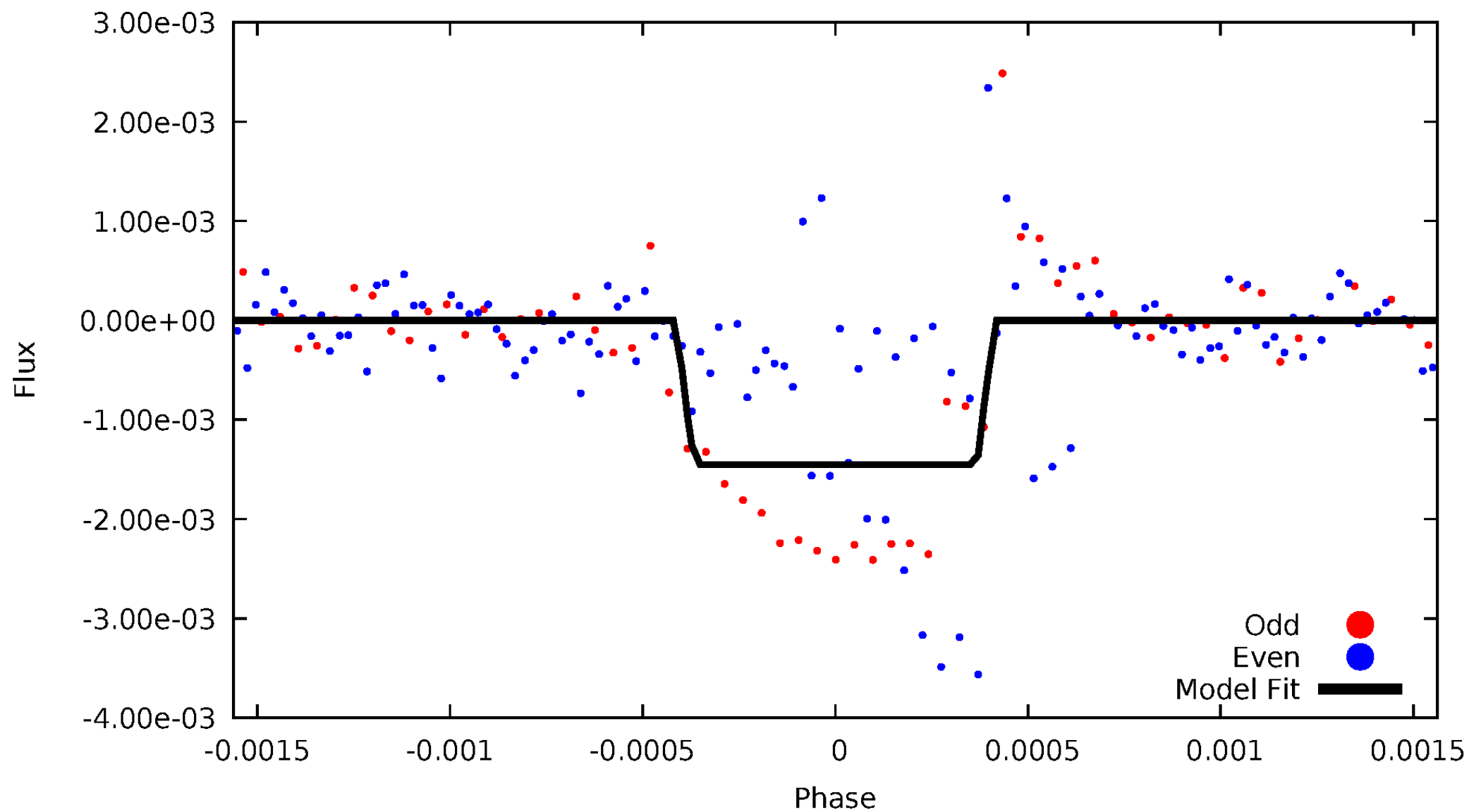
DV Odd/Even

TCE 009649447-01



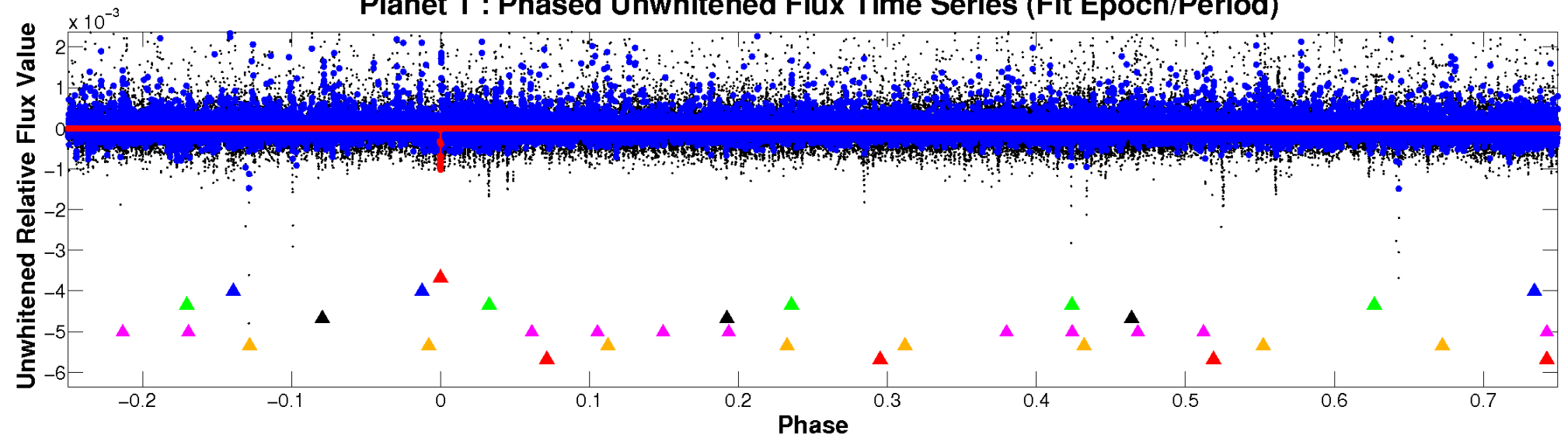
ALT Odd/Even

TCE 009649447-01

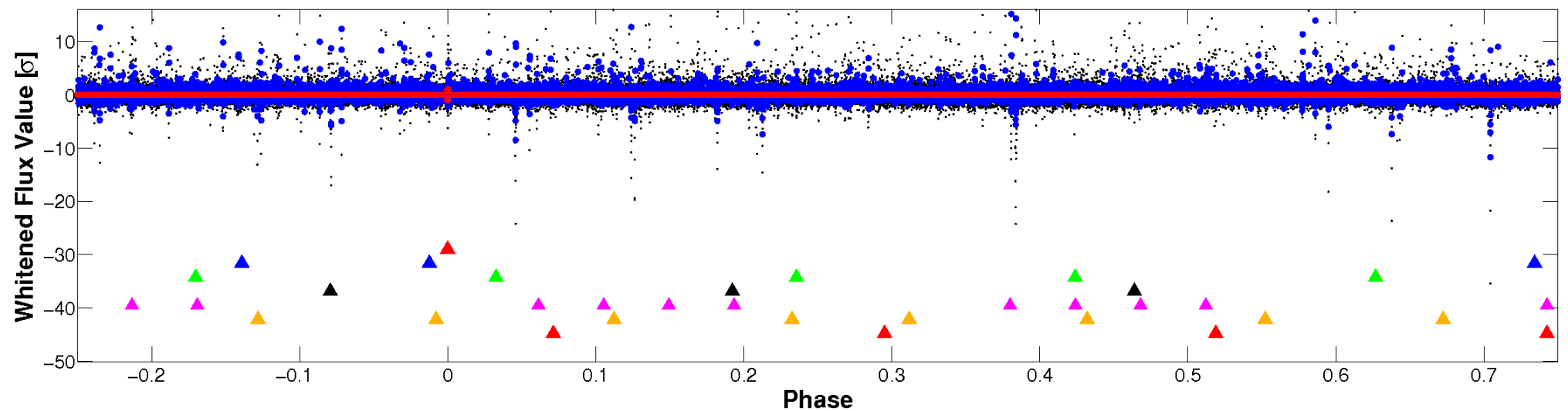


Non-Whitened Vs. Whitened Light Curve

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

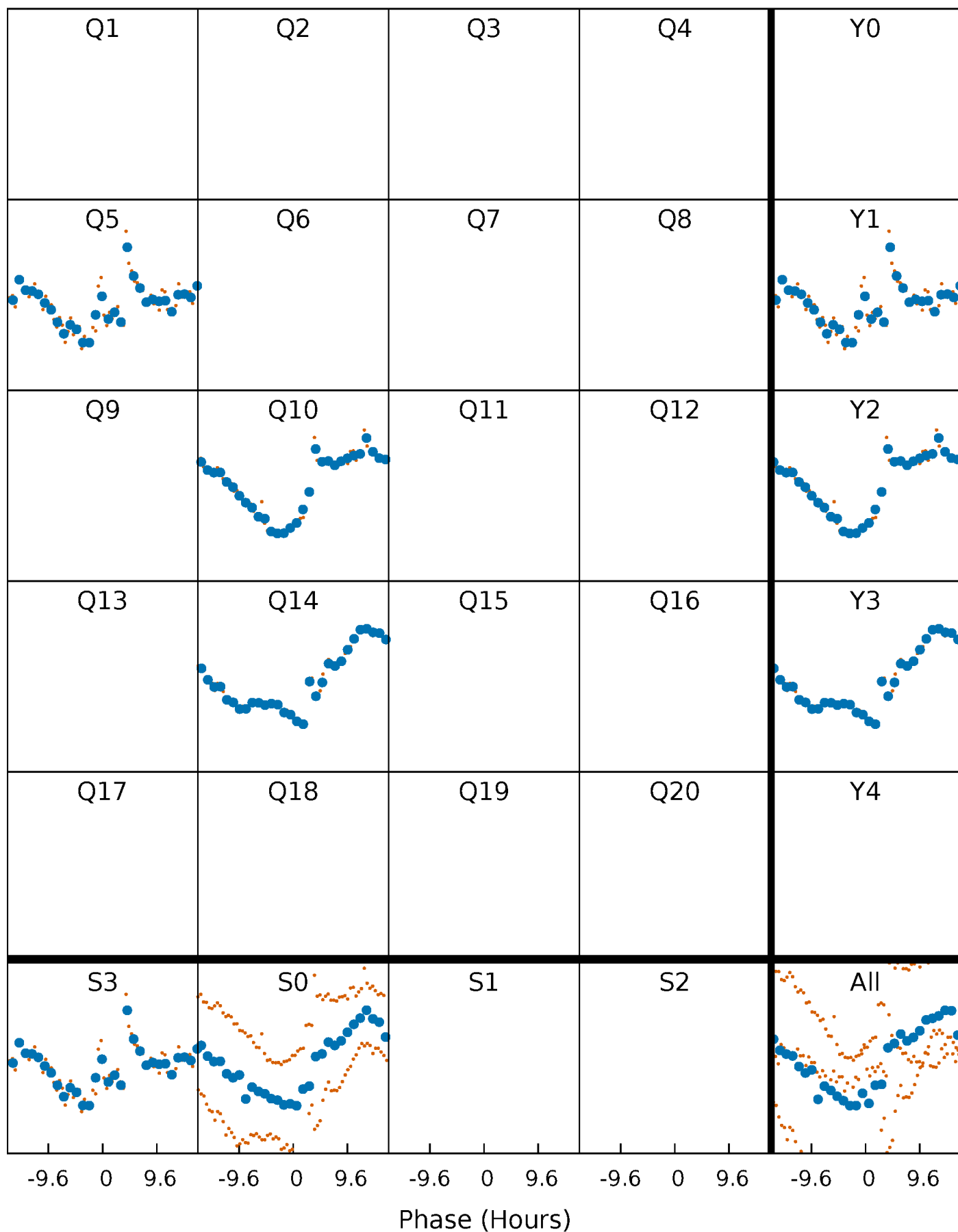


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



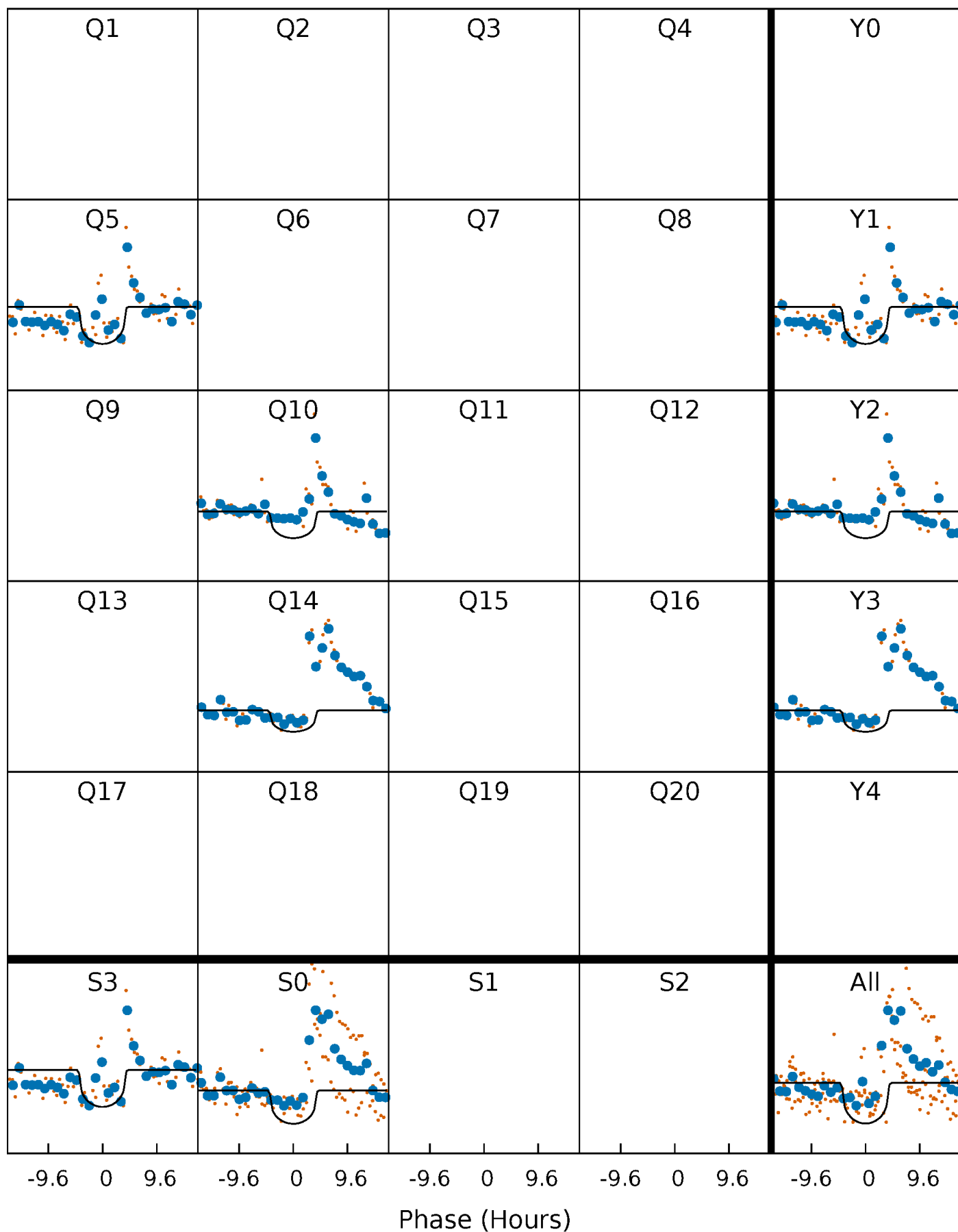
PDC Quarter-Phased Transit Curves

TCE 009649447-01 P=425.139616 Days $T_0=517.125624$ (BKJD)



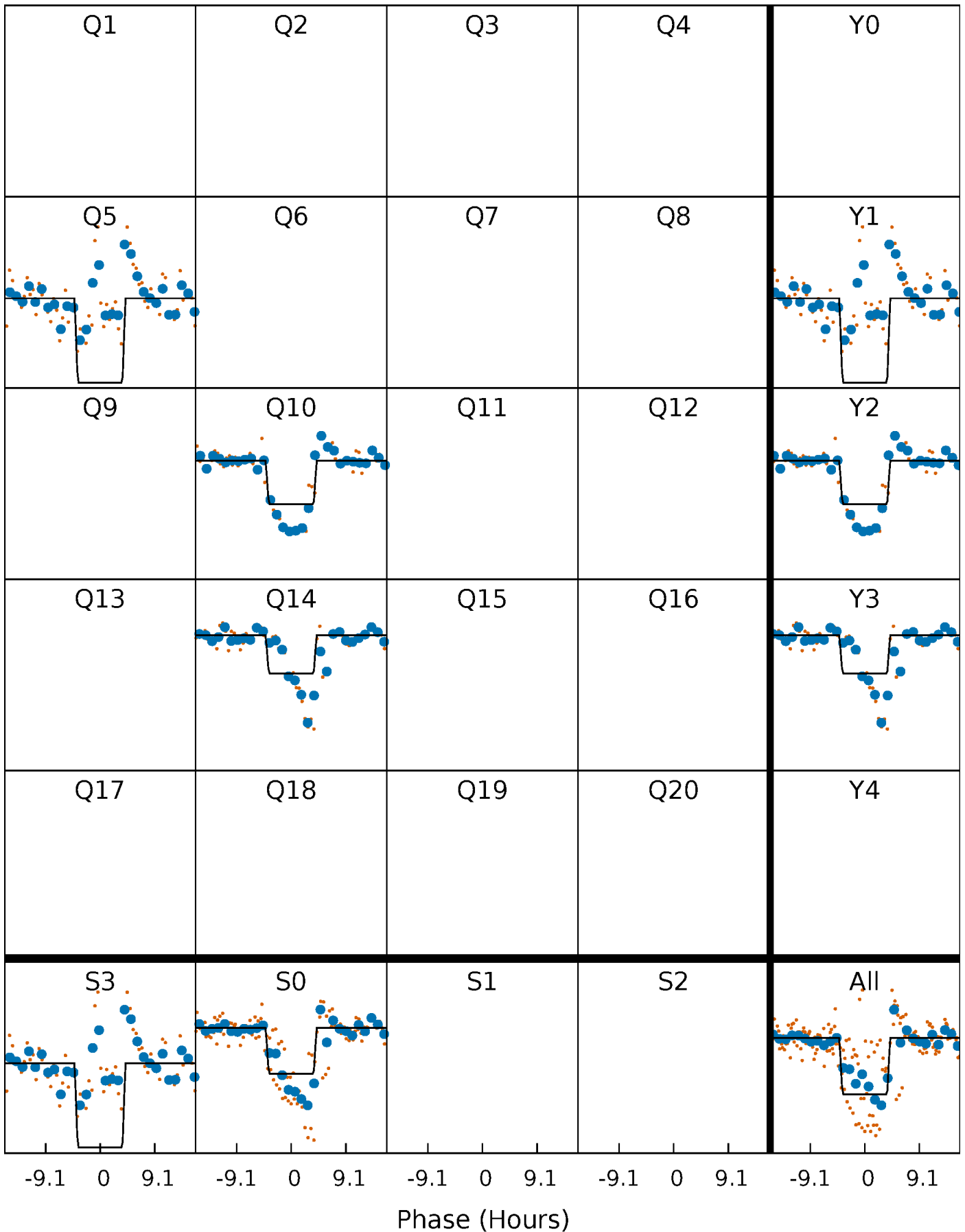
DV Quarter-Phased Transit Curves

TCE 009649447-01 P=425.139616 Days $T_0=517.125624$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

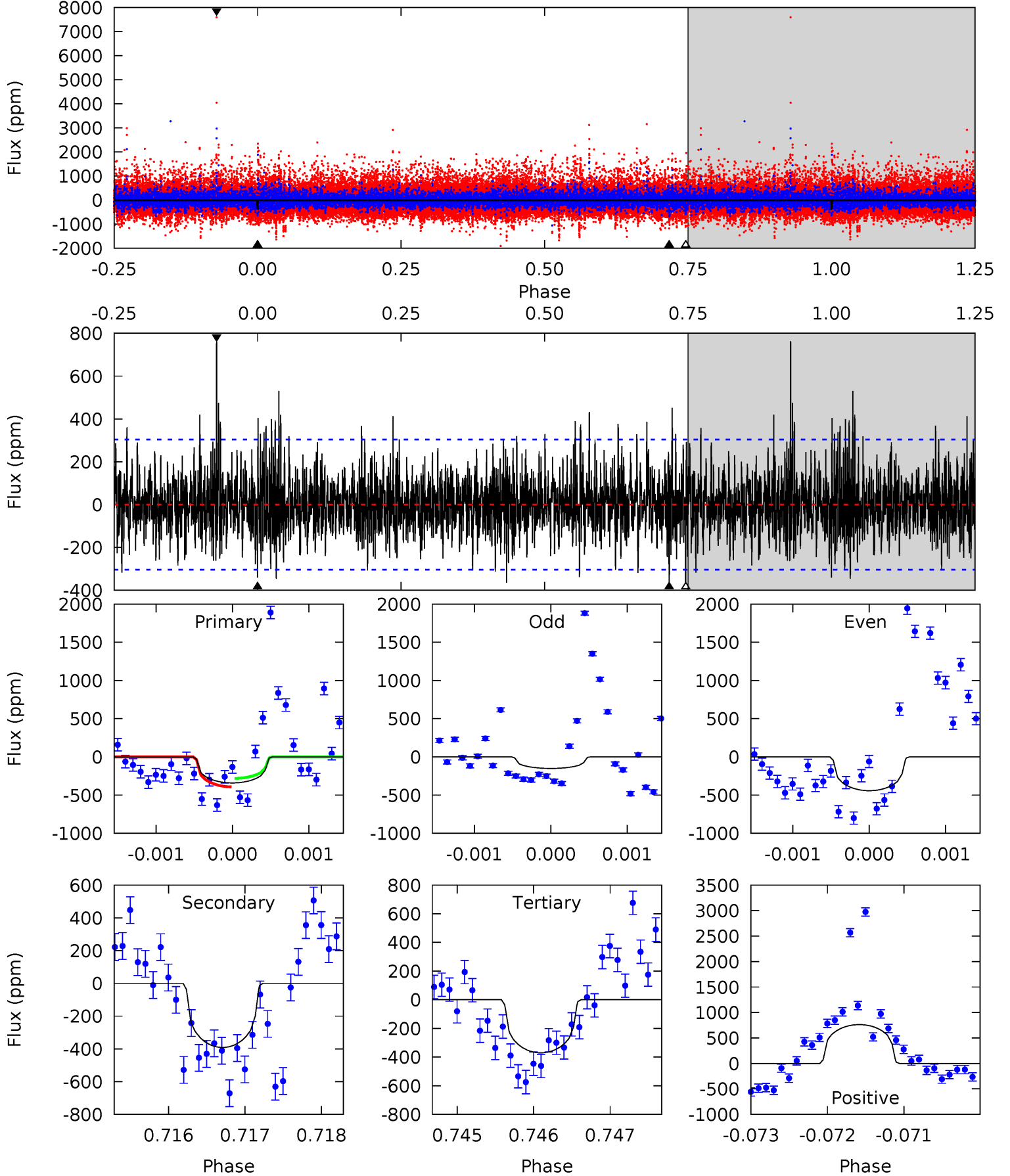
TCE 009649447-01 P=425.106593 Days $T_0=517.130509$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-01, $P = 425.139616$ Days, $E = 91.986008$ Days

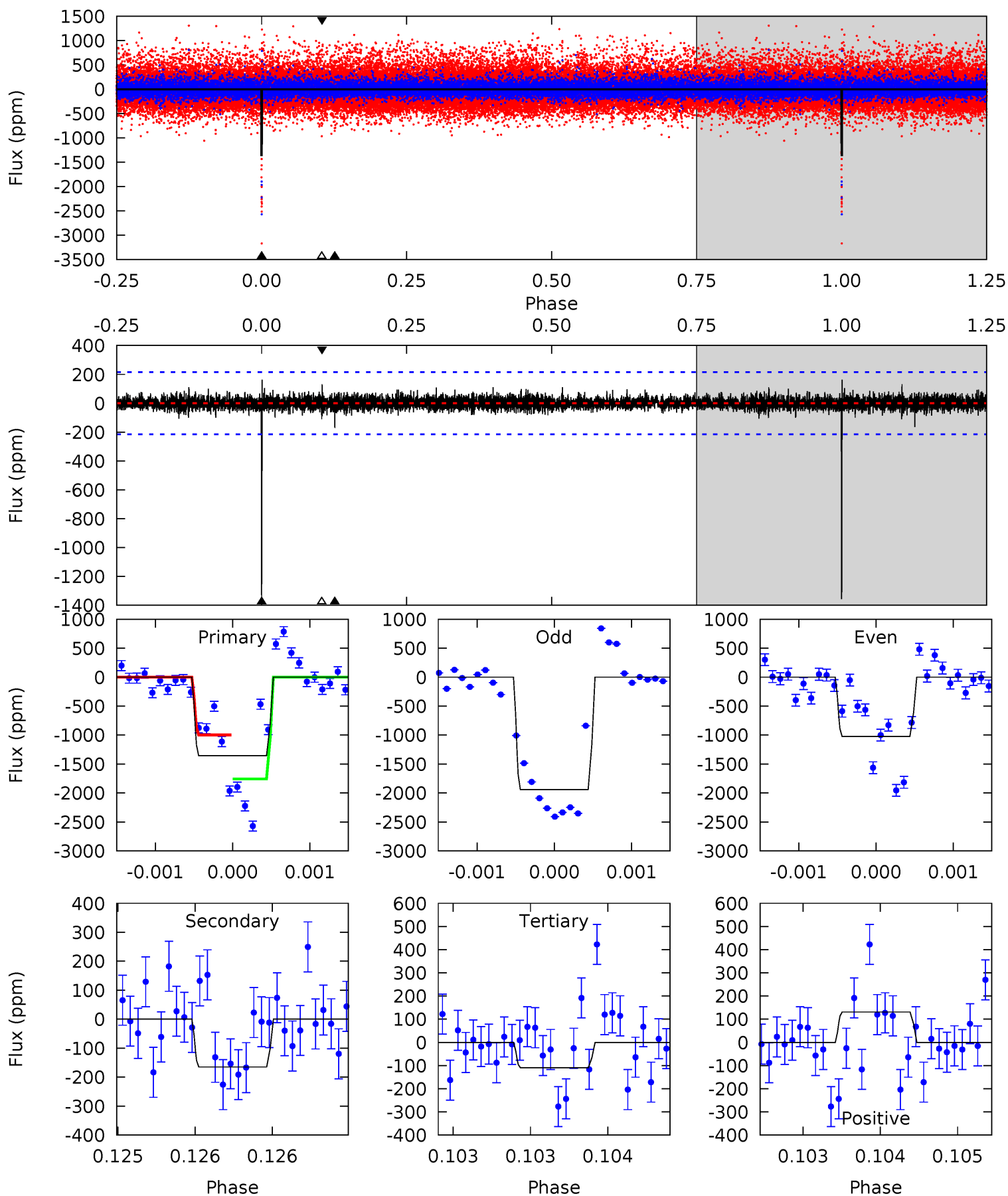
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.14	7.05	6.67	13.7	5.48	3.33	2.05	-0.53	-7.59	0.38	-6.68	2.03	-10.6	0.66	1.00



Alt Model-Shift Uniqueness Test

009649447-01, P = 425.106593 Days, E = 92.023916 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.7	4.22	2.81	3.35	5.49	3.35	0.67	31.9	31.3	1.41	0.87	12.4	0.76	0.11	9.75



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-391 ± 55	$2.21^{+1.05}_{-1.06}$	213^{+7}_{-7}	3617^{+952}_{-438}	$40891^{+109822}_{-22374}$
Alt.	-165 ± 39	$2.72^{+1.06}_{-1.01}$	213^{+7}_{-8}	2964^{+466}_{-295}	11463^{+18085}_{-6113}

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

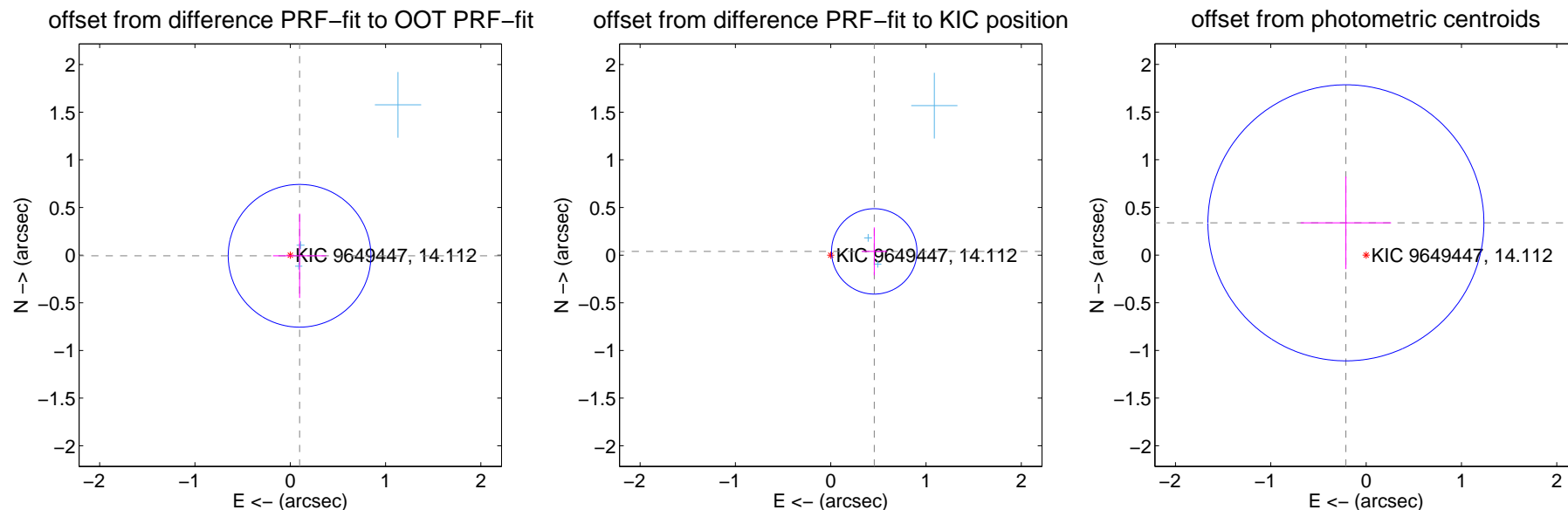
DV Centroid Data

Supplemental centroid analysis for 009649447-01. Kepler magnitude: 14.11. Transit SNR 6.97

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.098 ± 0.250	0.39	-0.098 ± 0.279	-0.007 ± 0.443
PRF-fit source offset from KIC position	0.458 ± 0.149	3.07	-0.457 ± 0.132	0.039 ± 0.251
photometric centroid source offset	0.40 ± 0.48	0.83	0.21 ± 0.47	0.34 ± 0.49

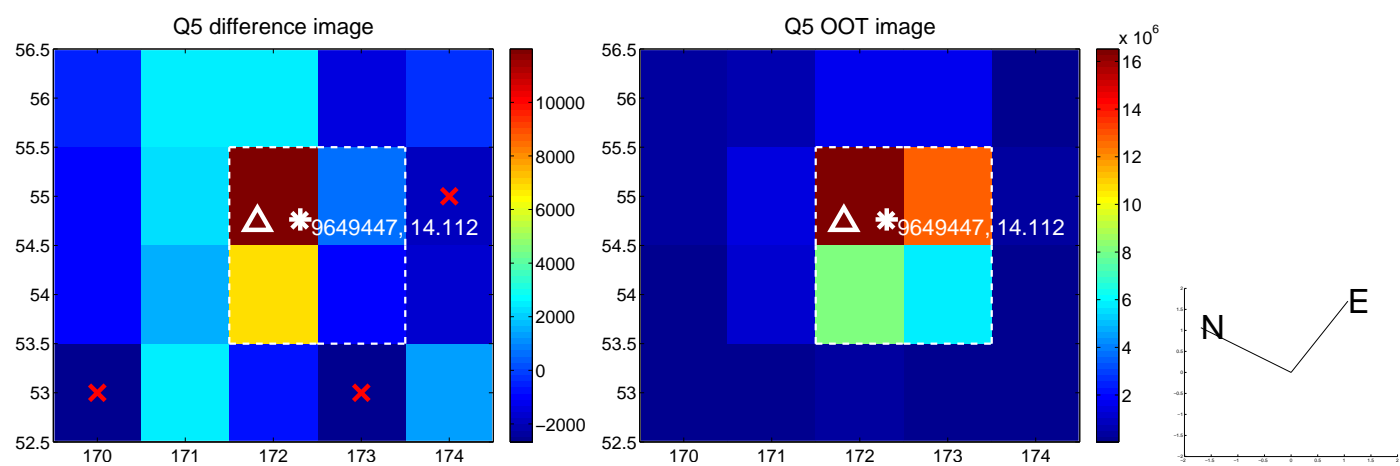


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

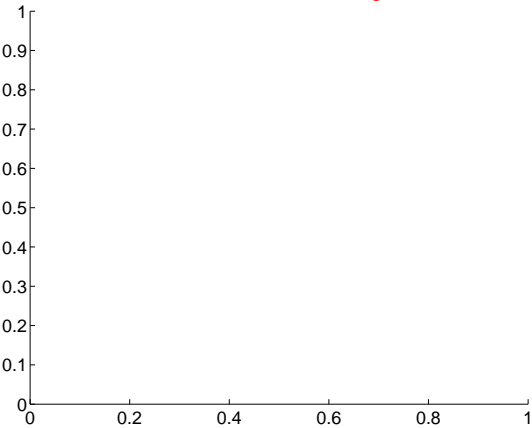
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



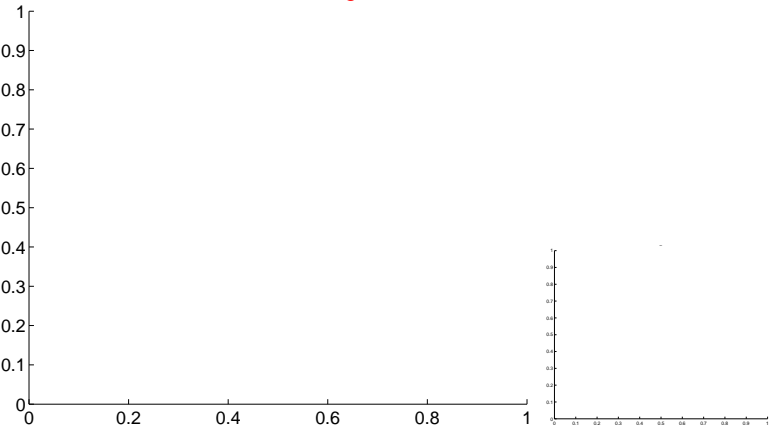
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



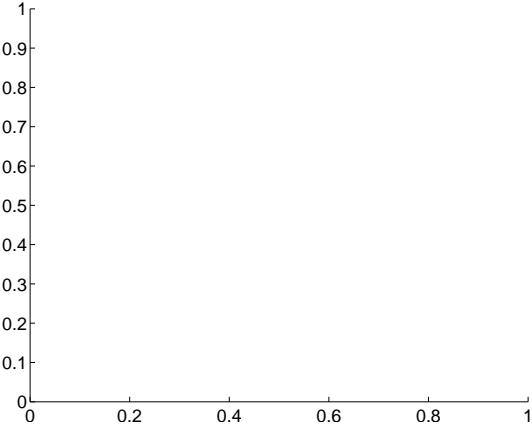
Q6 no difference image



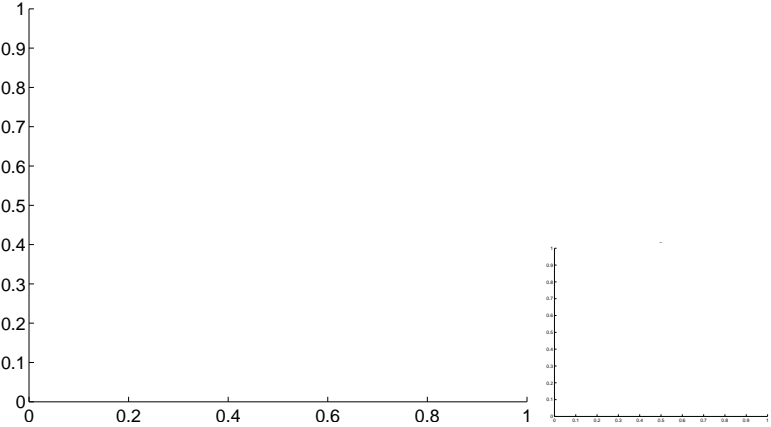
Q6 no OOT image



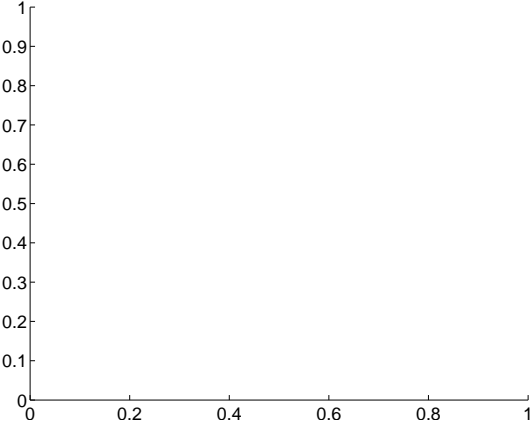
Q7 no difference image



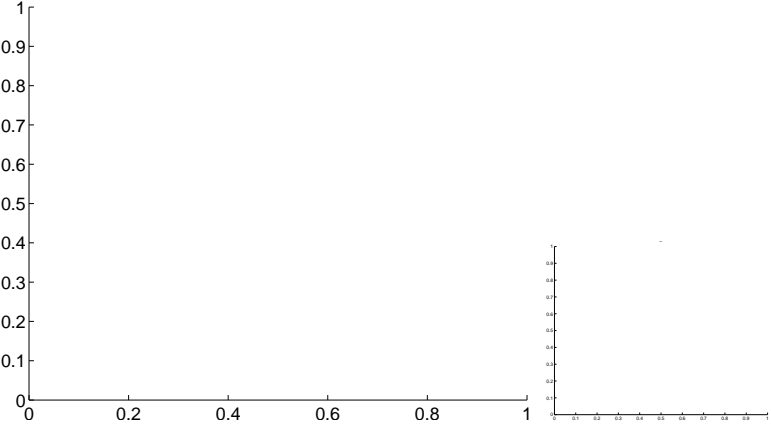
Q7 no OOT image



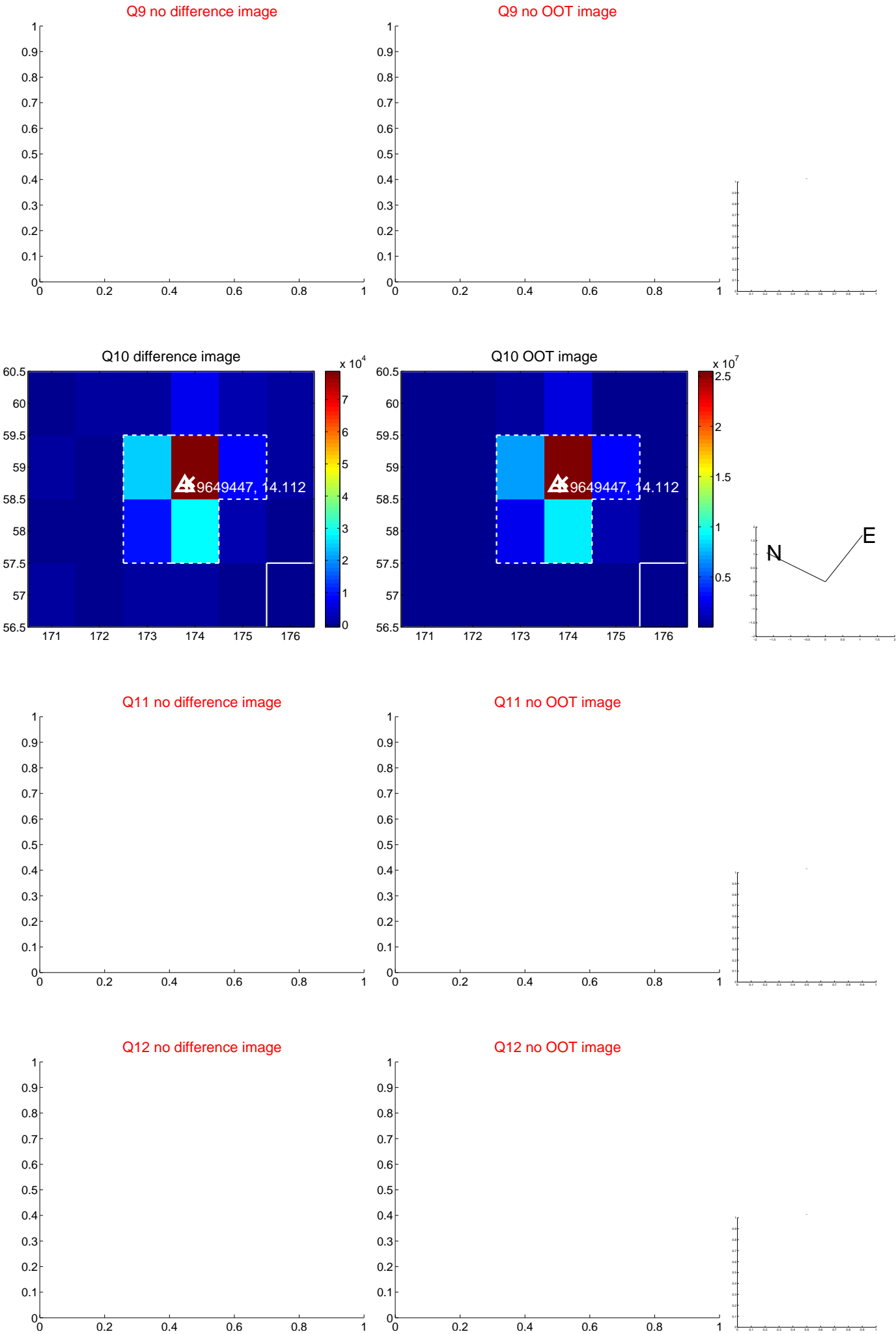
Q8 no difference image



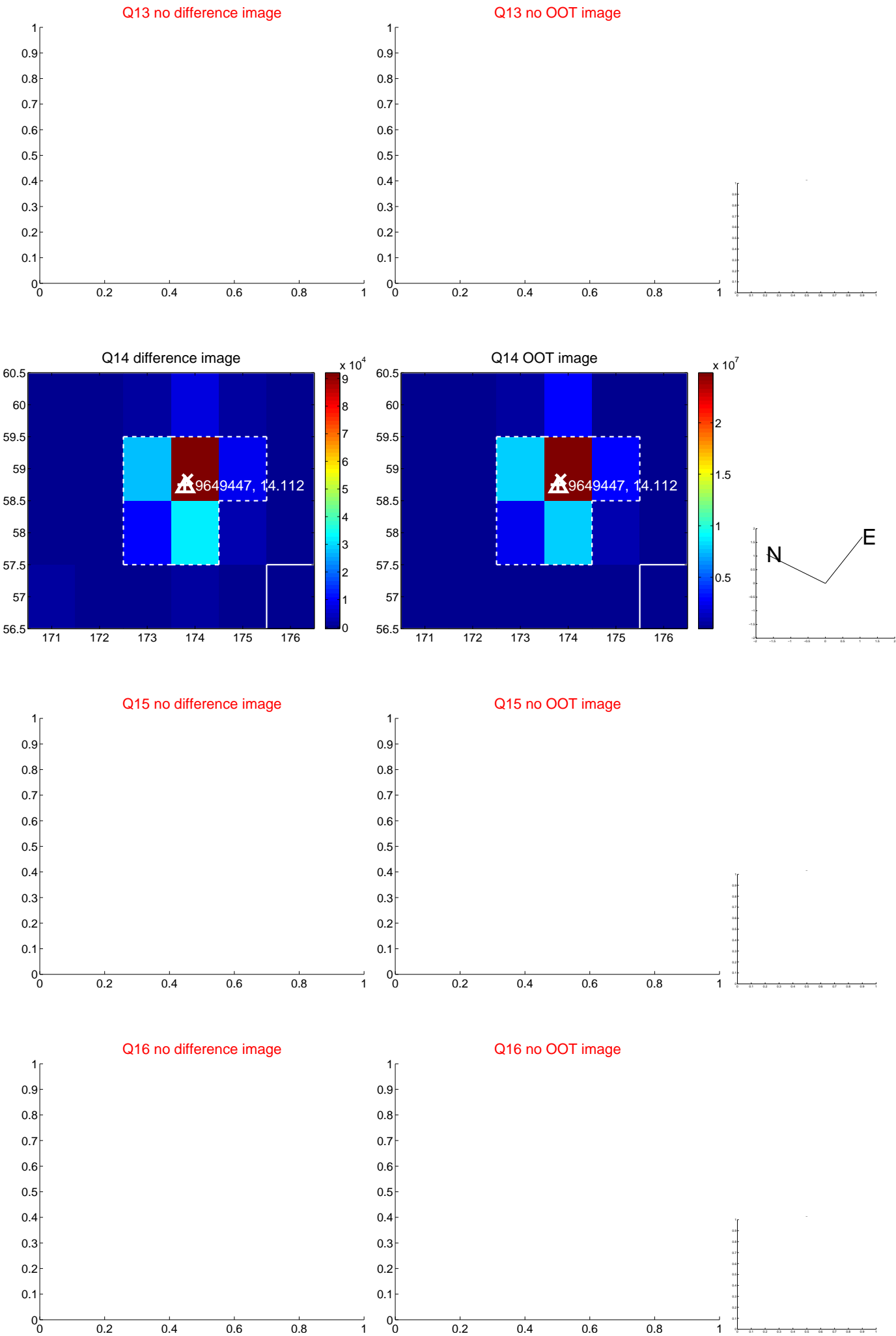
Q8 no OOT image



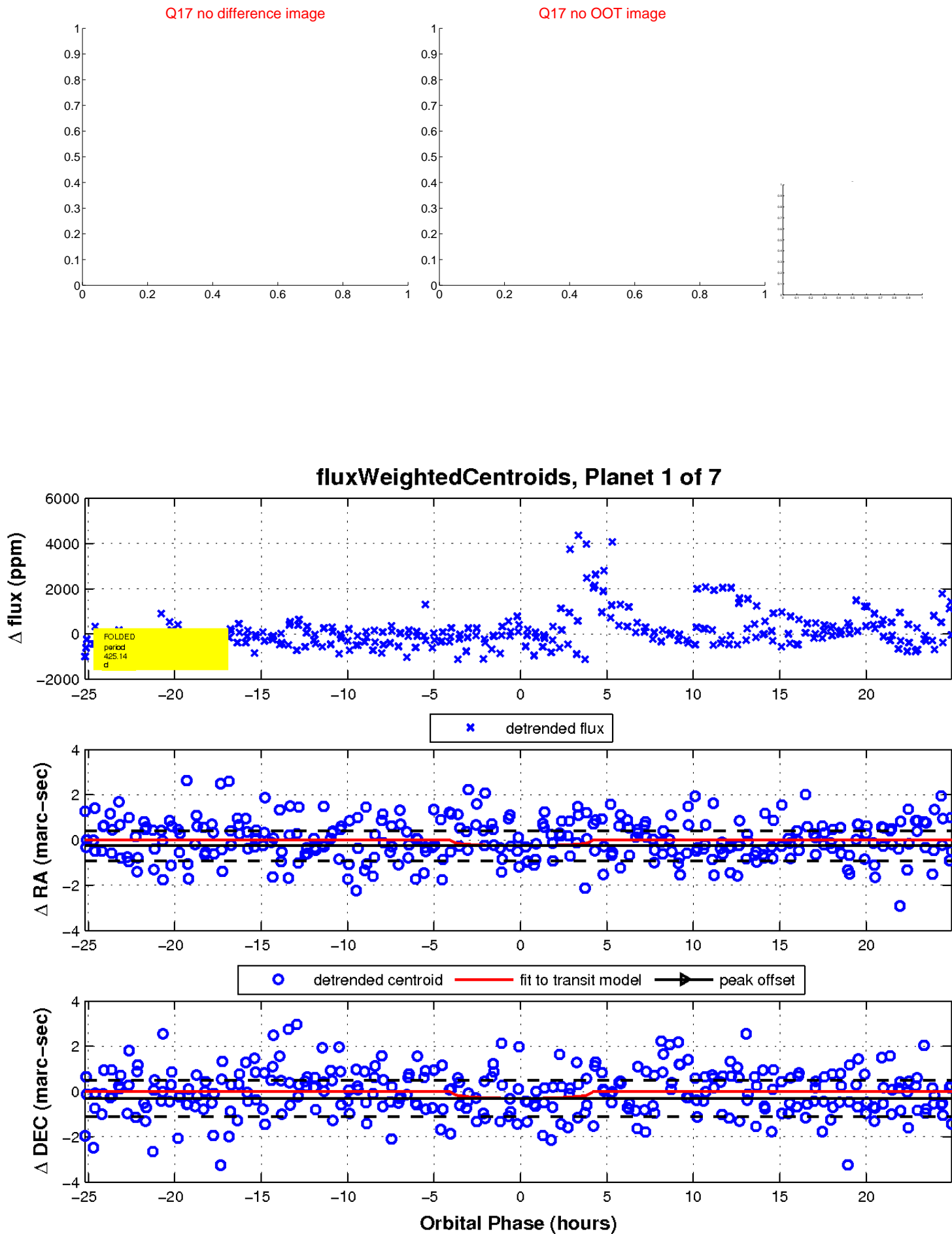
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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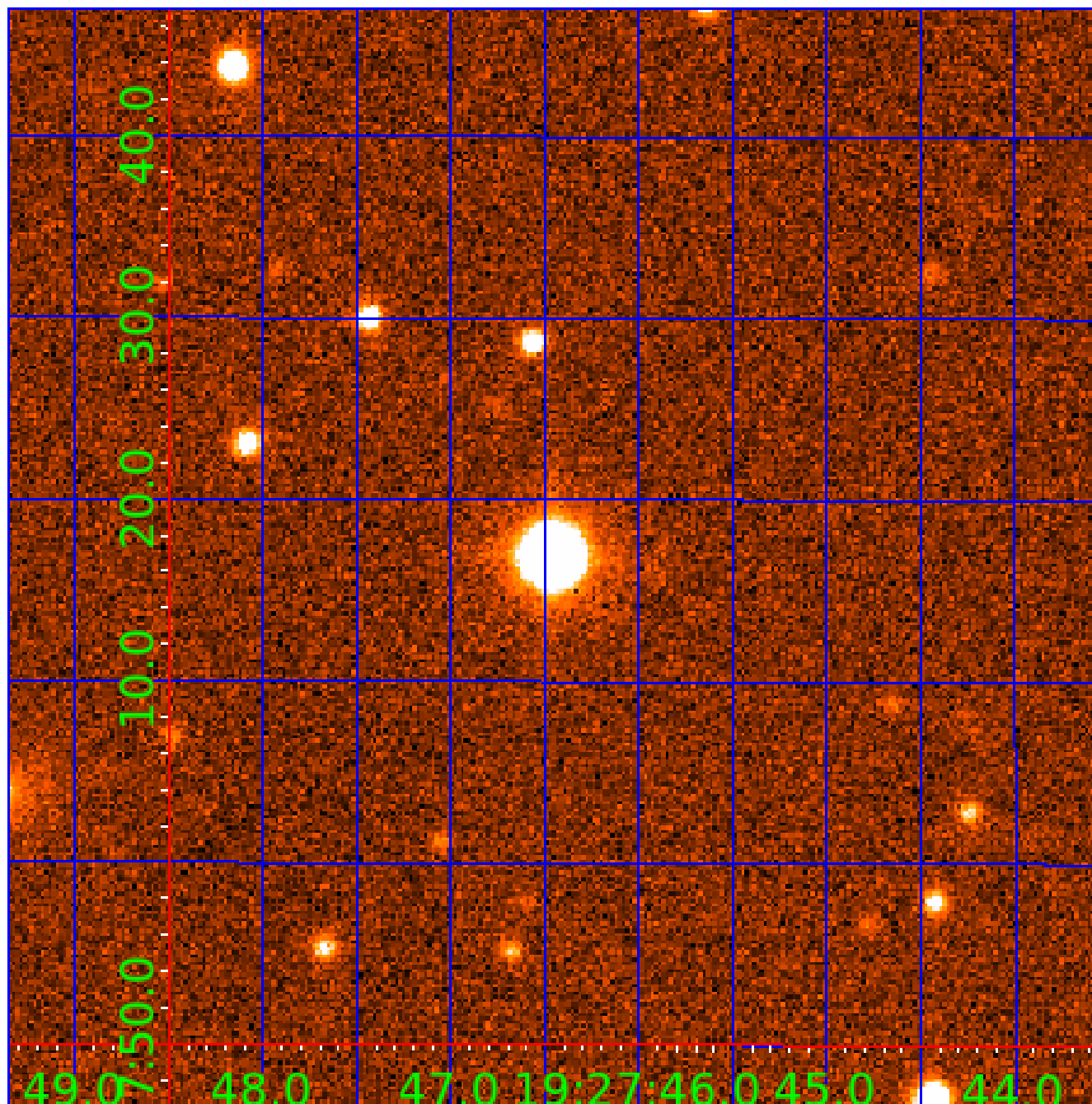


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

Q1-17 DR25 TCE Parameters

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Robovetter Results

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009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

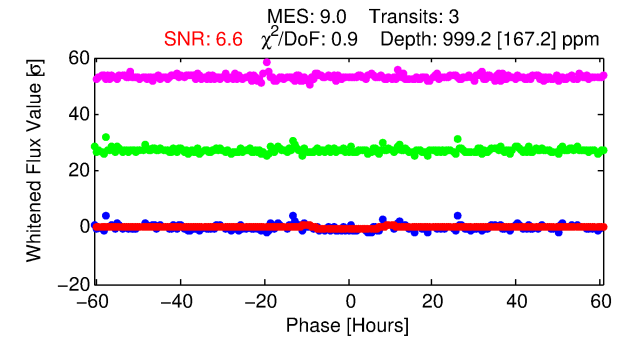
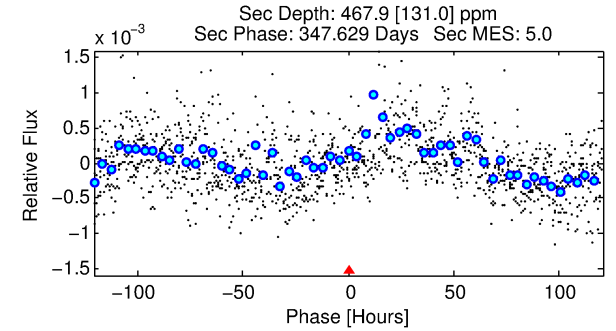
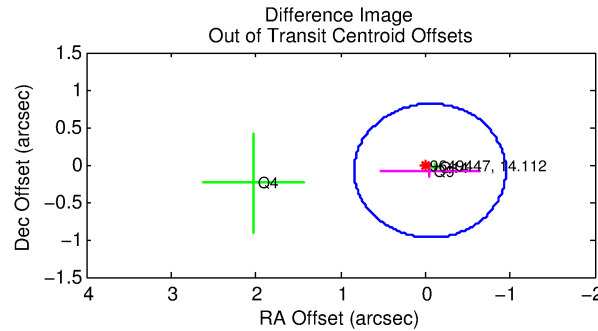
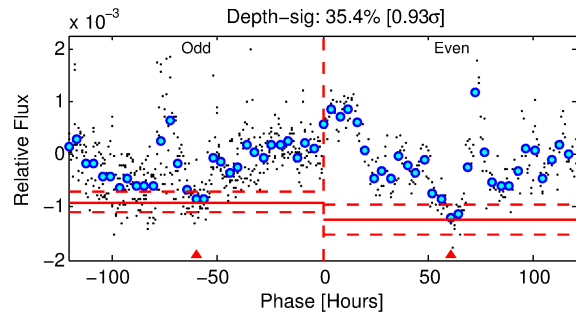
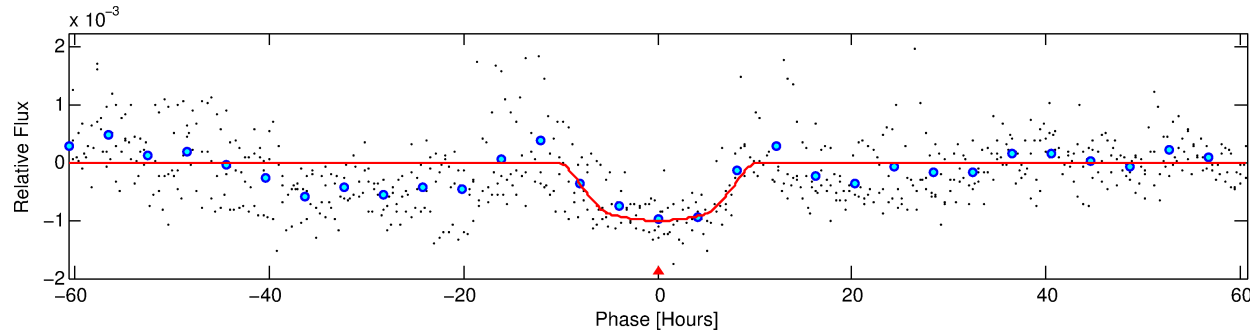
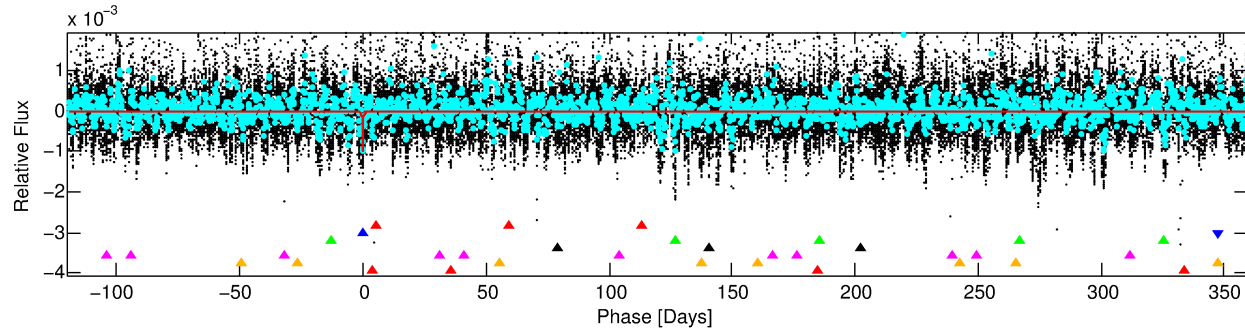
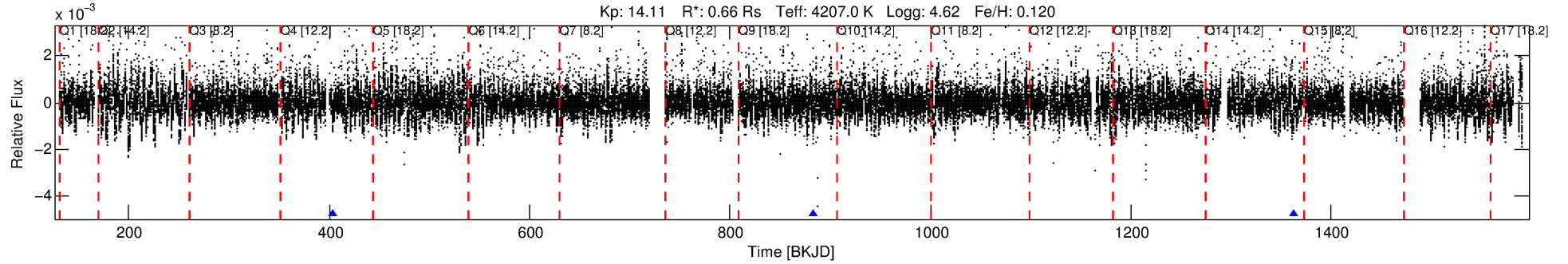
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-02

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 2 of 7 Period: 478.989 d



DV Fit Results:

Period = 478.98902 [0.02175] d
Epoch = 404.1662 [0.0289] BKJD
Rp/R* = 0.0375 [0.0037]
a/R* = 82.01 [12.71]
b = 0.93 [0.02]
Seff = 0.11 [0.02]
Teq = 148 [6] K
Rp = 2.69 [0.35] Re
a = 1.0382 [0.0699] AU
Ag = 38321.29 [13636.20] [2.81σ]
Teffp = 3194 [292] K [10.44σ]

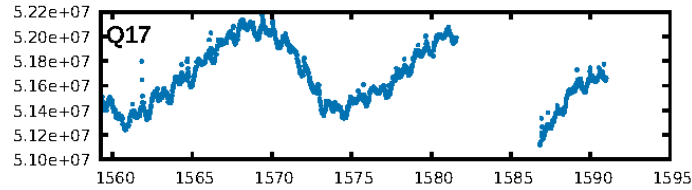
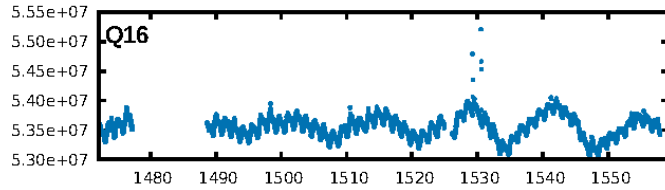
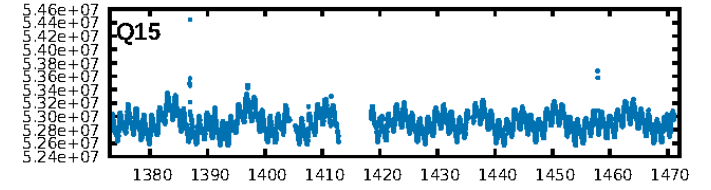
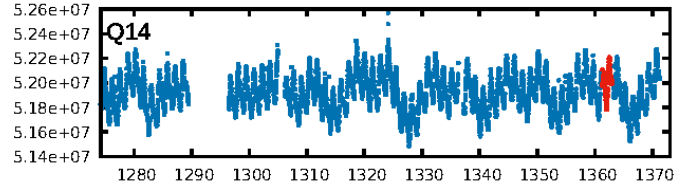
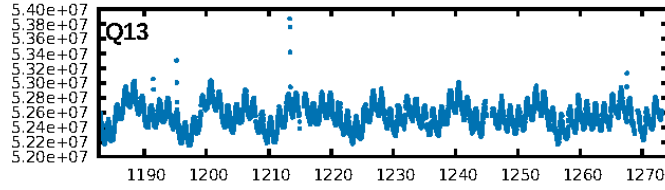
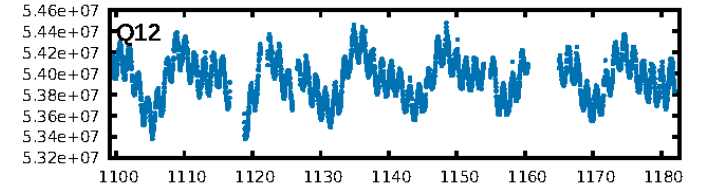
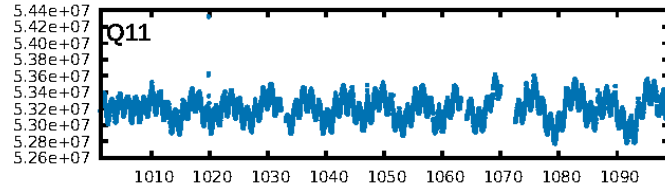
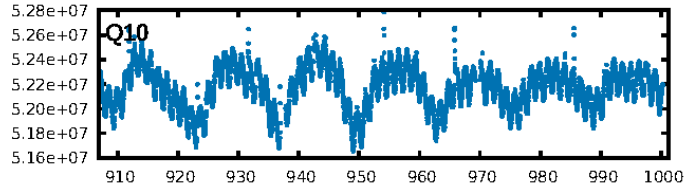
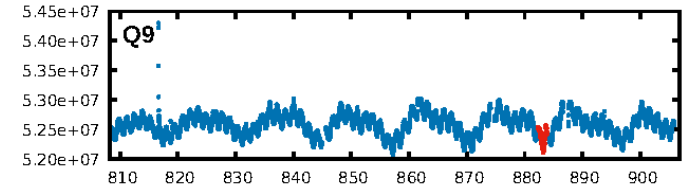
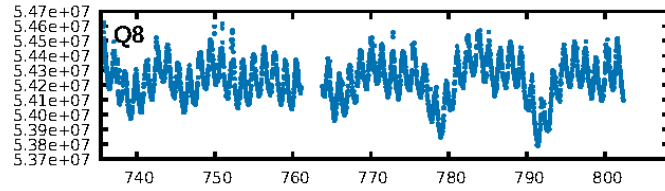
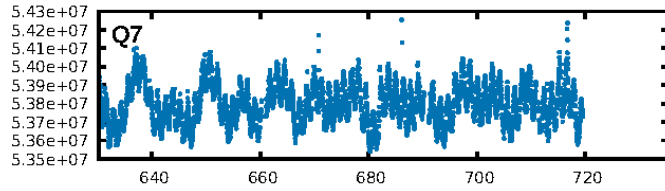
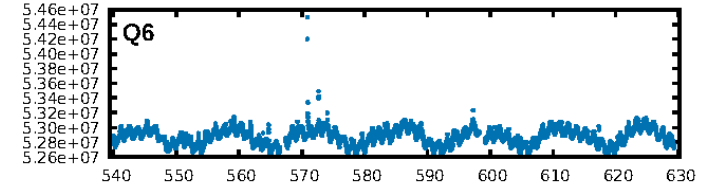
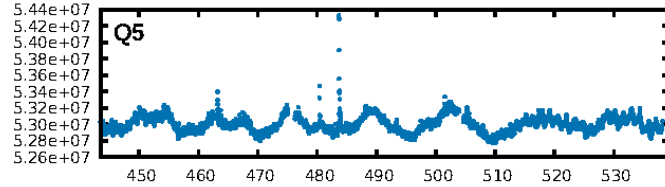
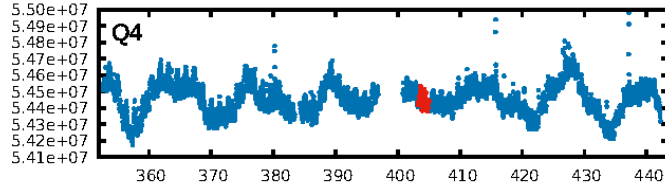
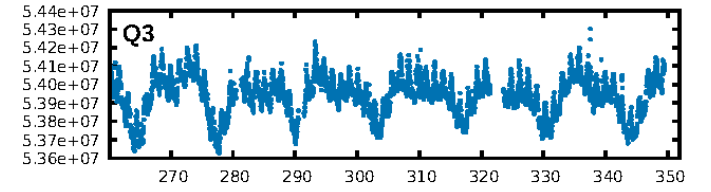
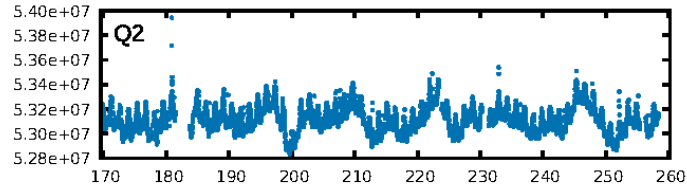
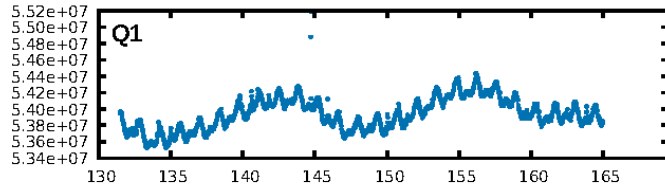
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.97σ]
LongPeriod-sig: 100.0% [60.78σ]
ModelChiSquare2-sig: 80.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.72e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -15.14
Centroid-sig: 4.4%
Centroid-so: 0.615 arcsec [1.48σ]
OotOffset-rm: 0.098 arcsec [0.33σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.091 arcsec [0.12σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

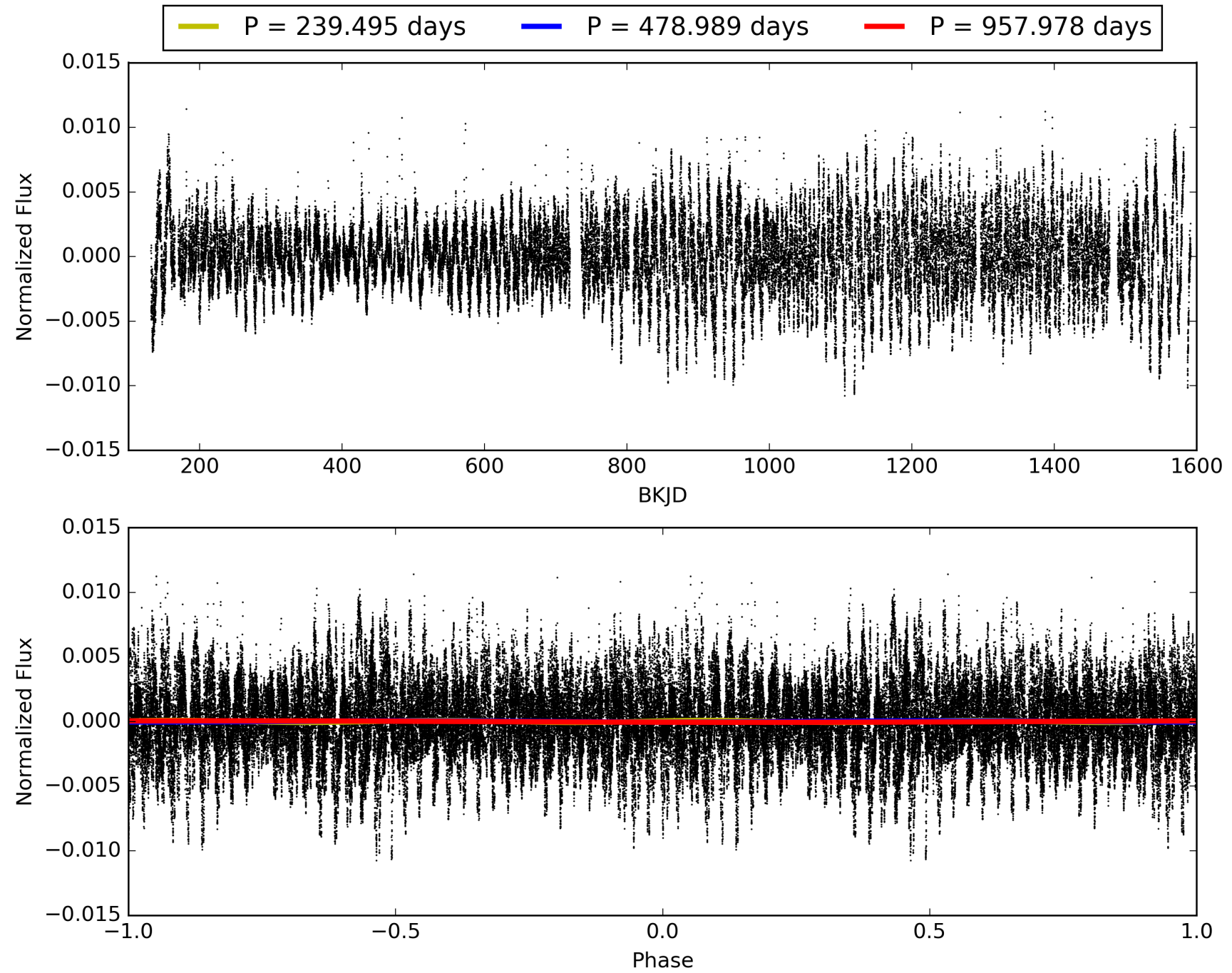
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:53:33 Z

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

TCE 009649447-02, PDC Light Curves

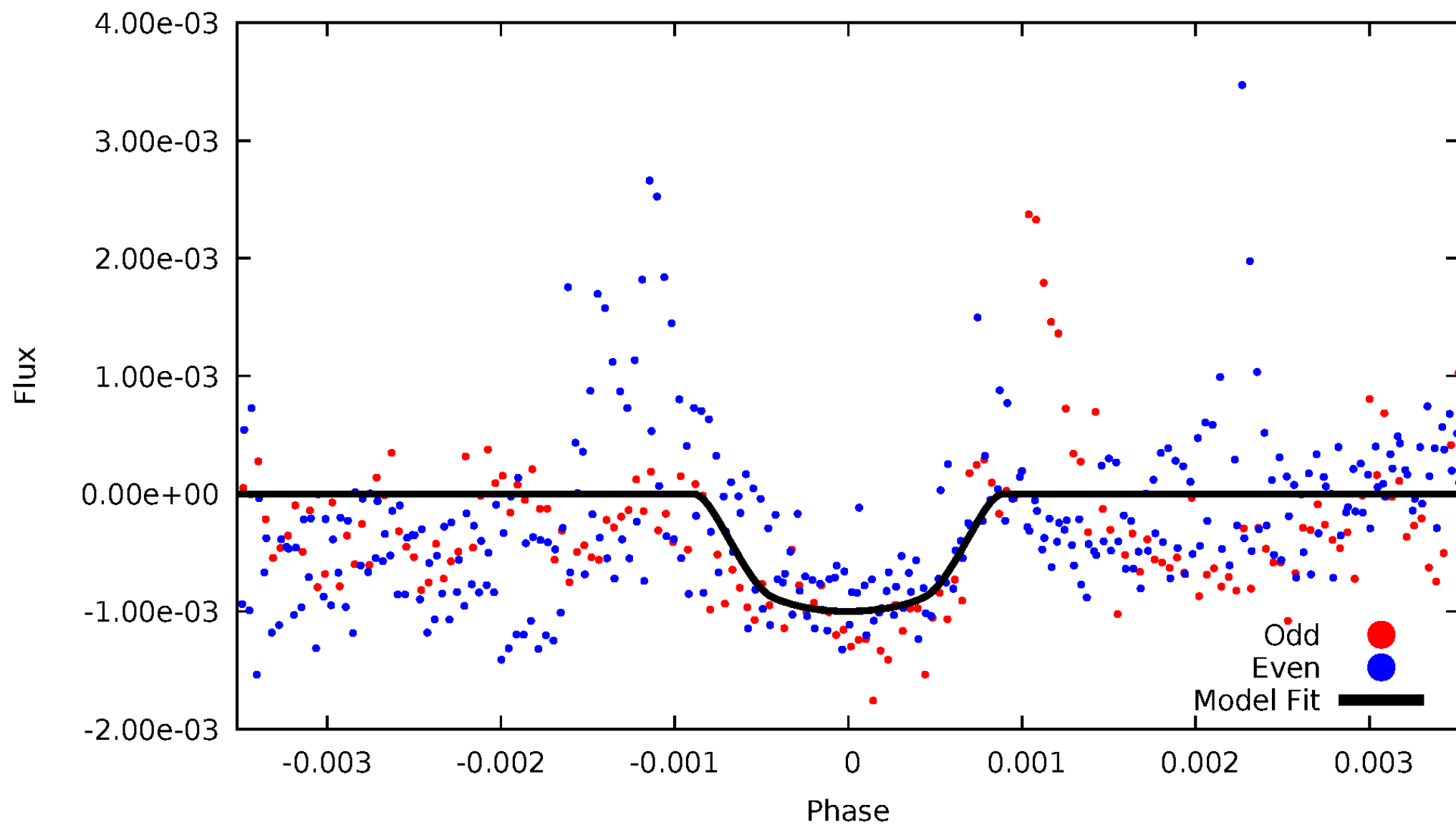


TCE 009649447-02



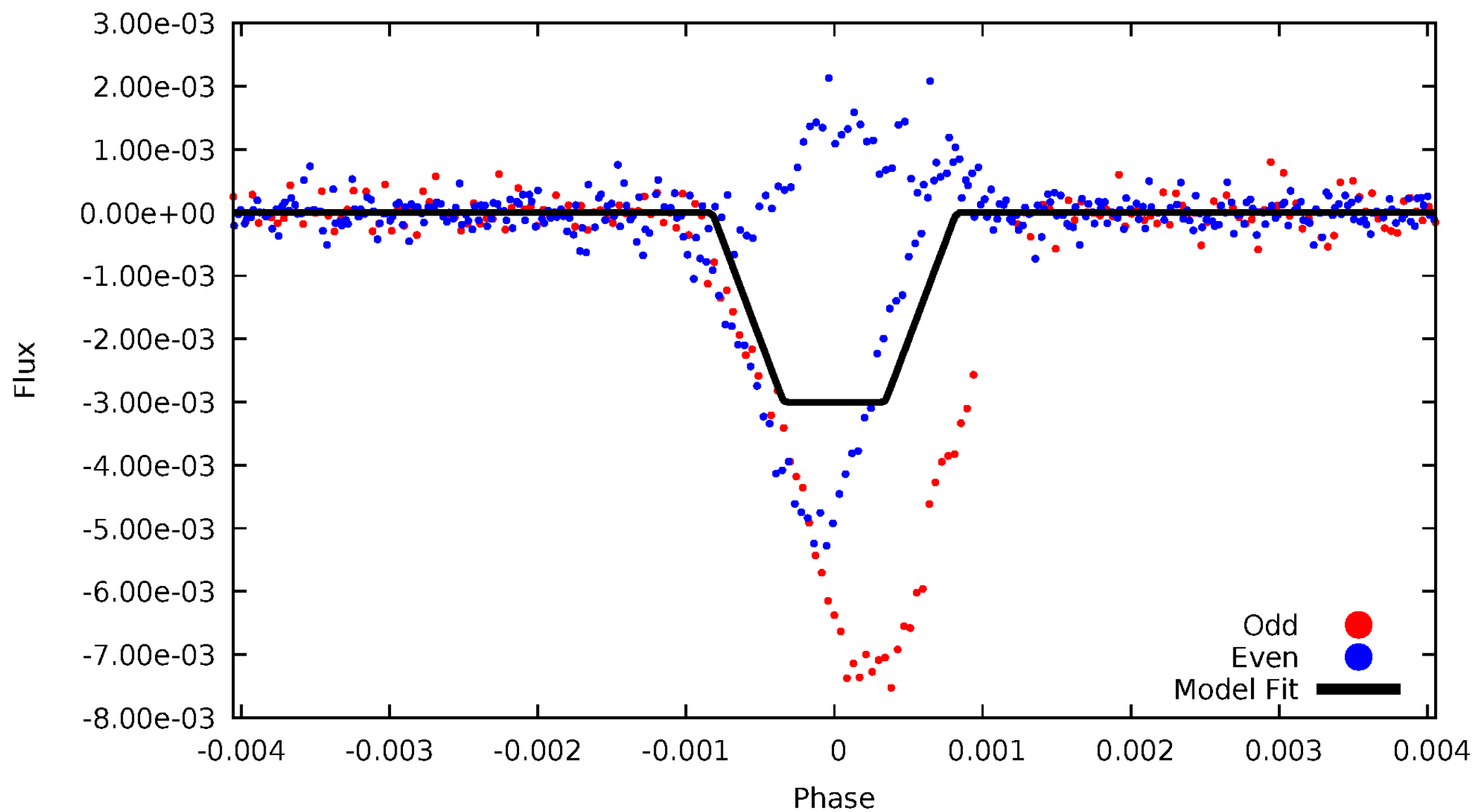
DV Odd/Even

TCE 009649447-02



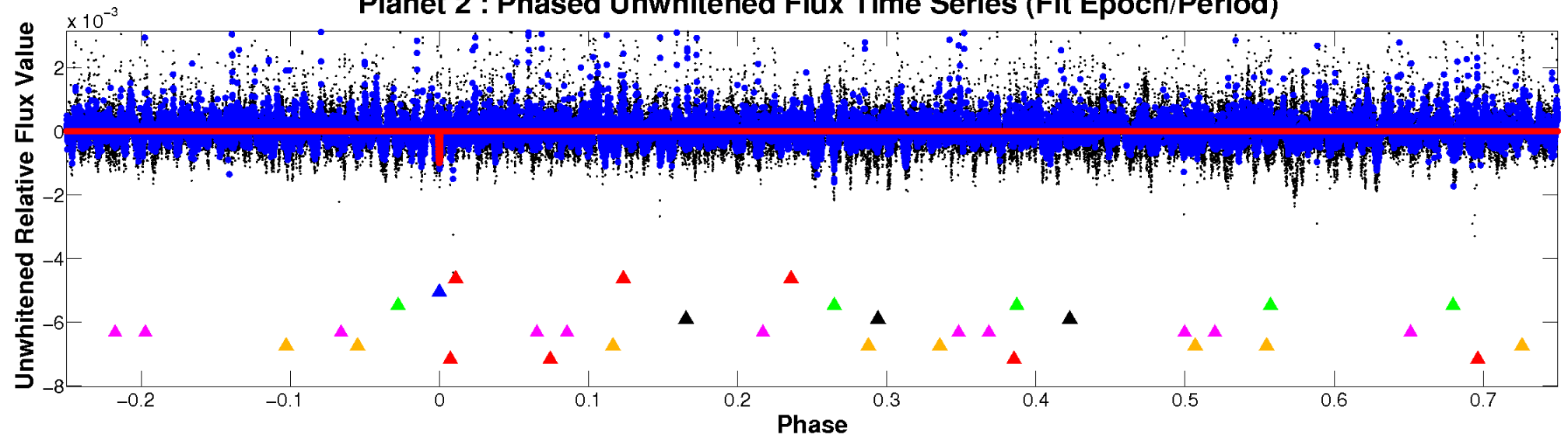
ALT Odd/Even

TCE 009649447-02

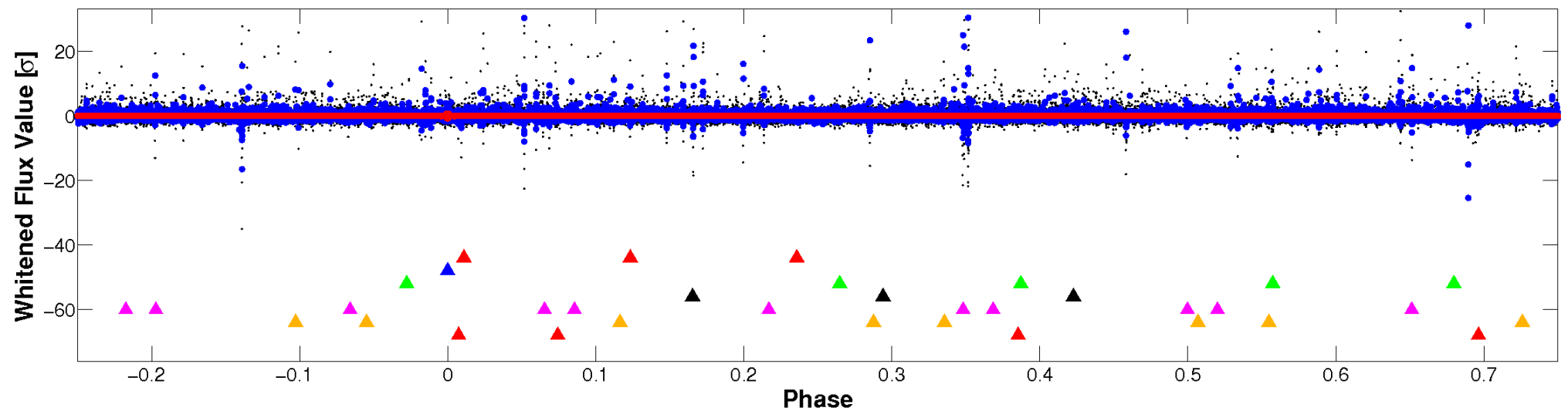


Non-Whitened Vs. Whitened Light Curve

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

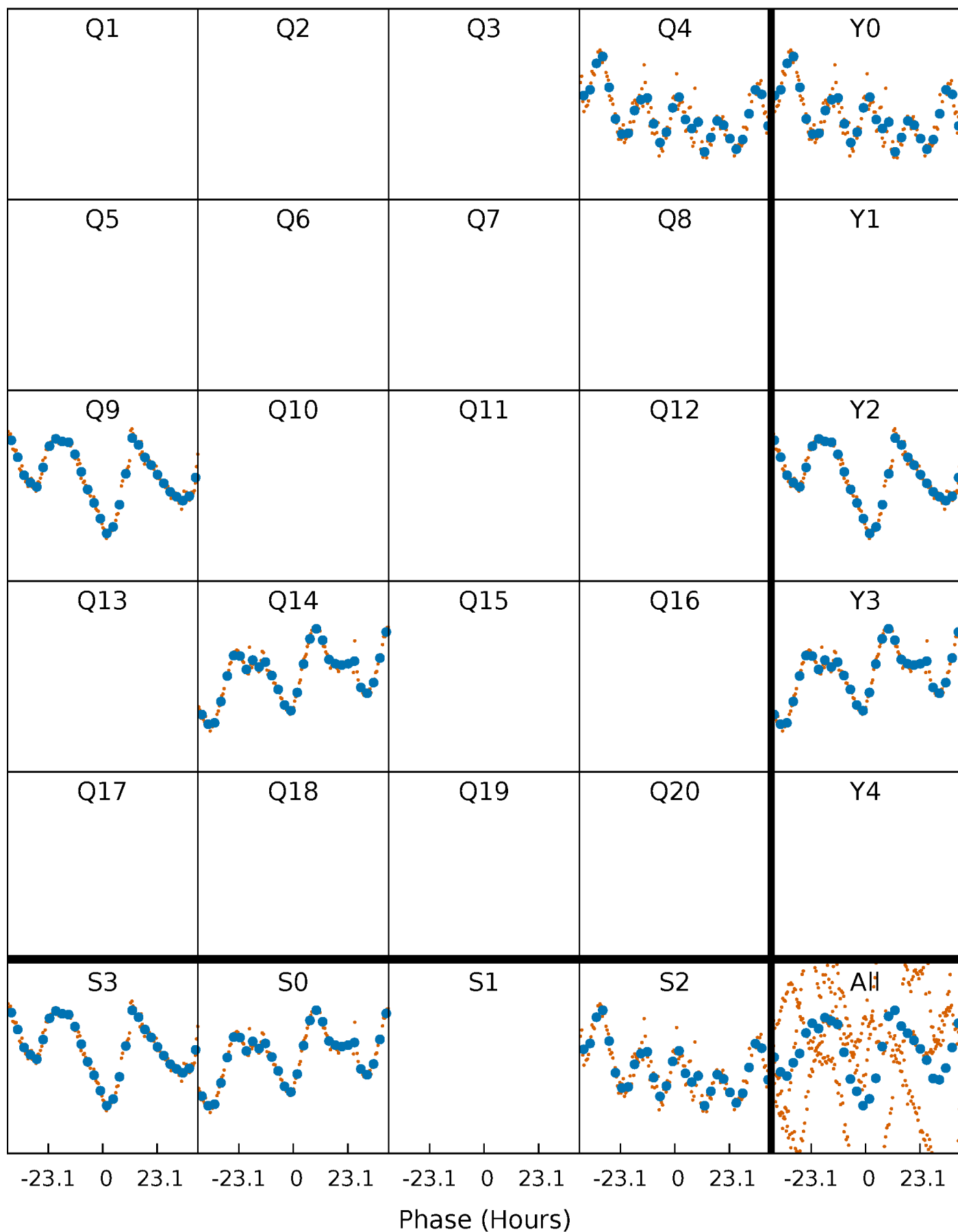


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 009649447-02 $P=478.989018$ Days $T_0=404.166215$ (BKJD)



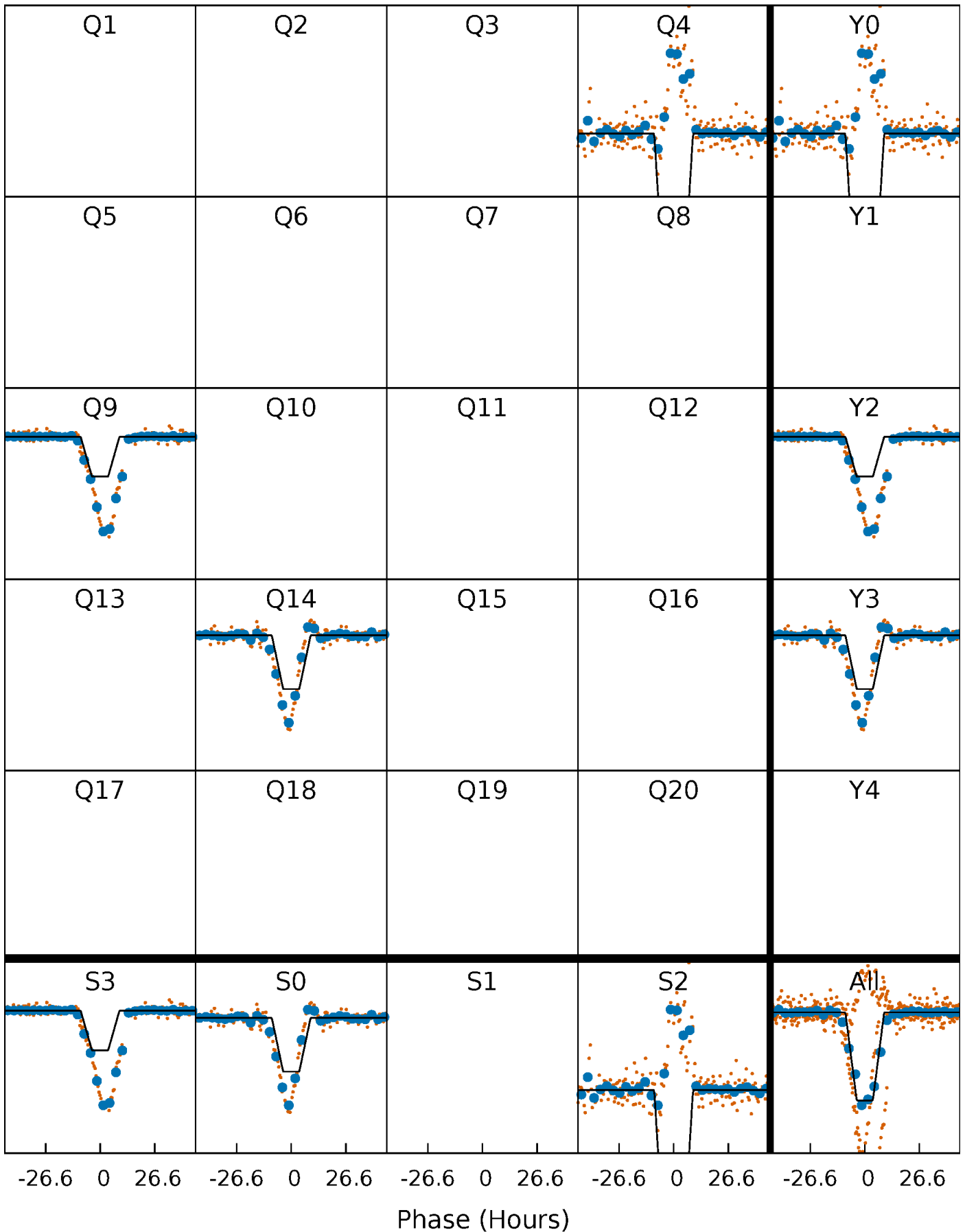
DV Quarter-Phased Transit Curves

TCE 009649447-02 $P=478.989018$ Days $T_0=404.166215$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

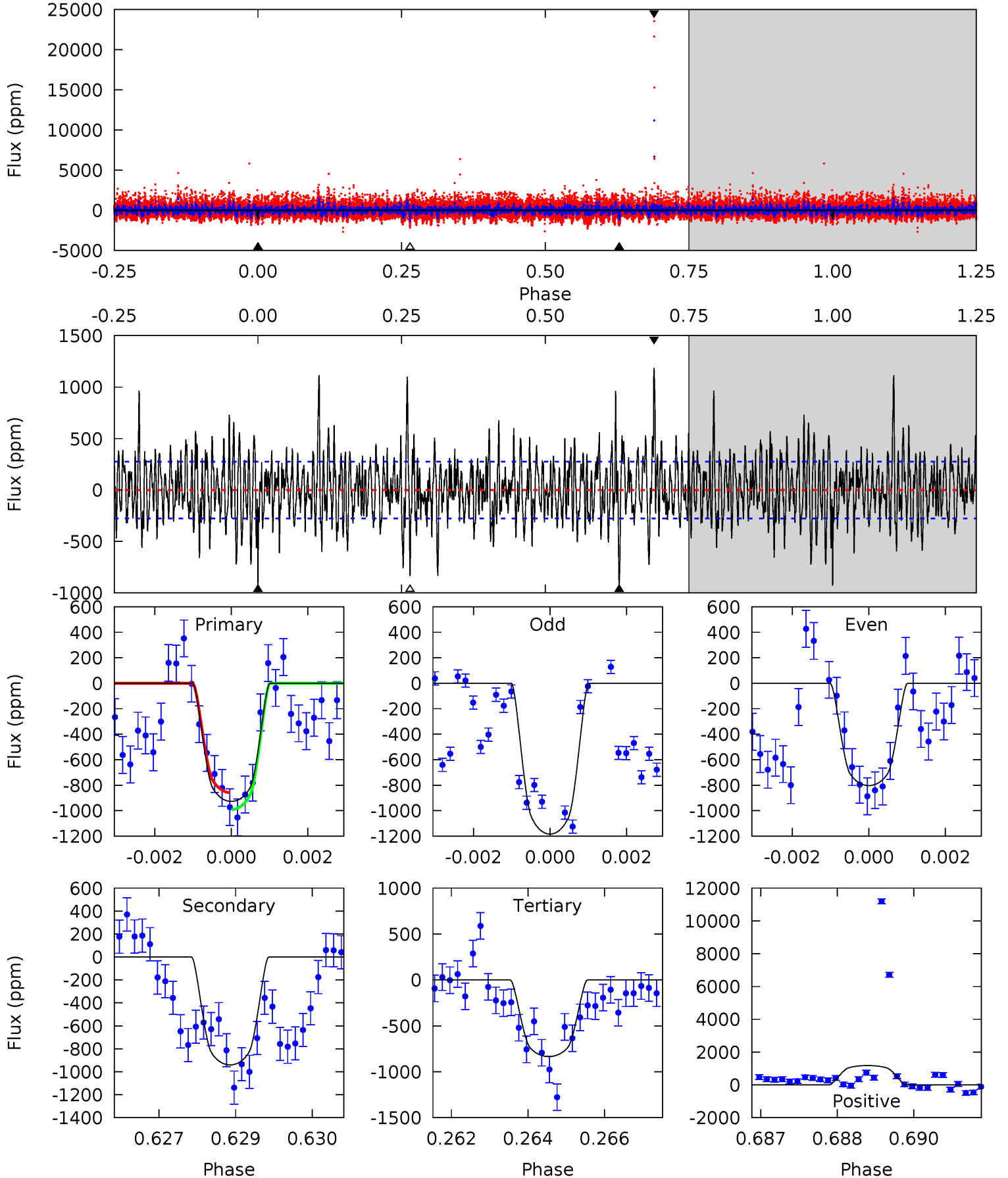
TCE 009649447-02 P=478.969458 Days $T_0=404.213526$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-02, P = 478.989018 Days, E = 404.166215 Days

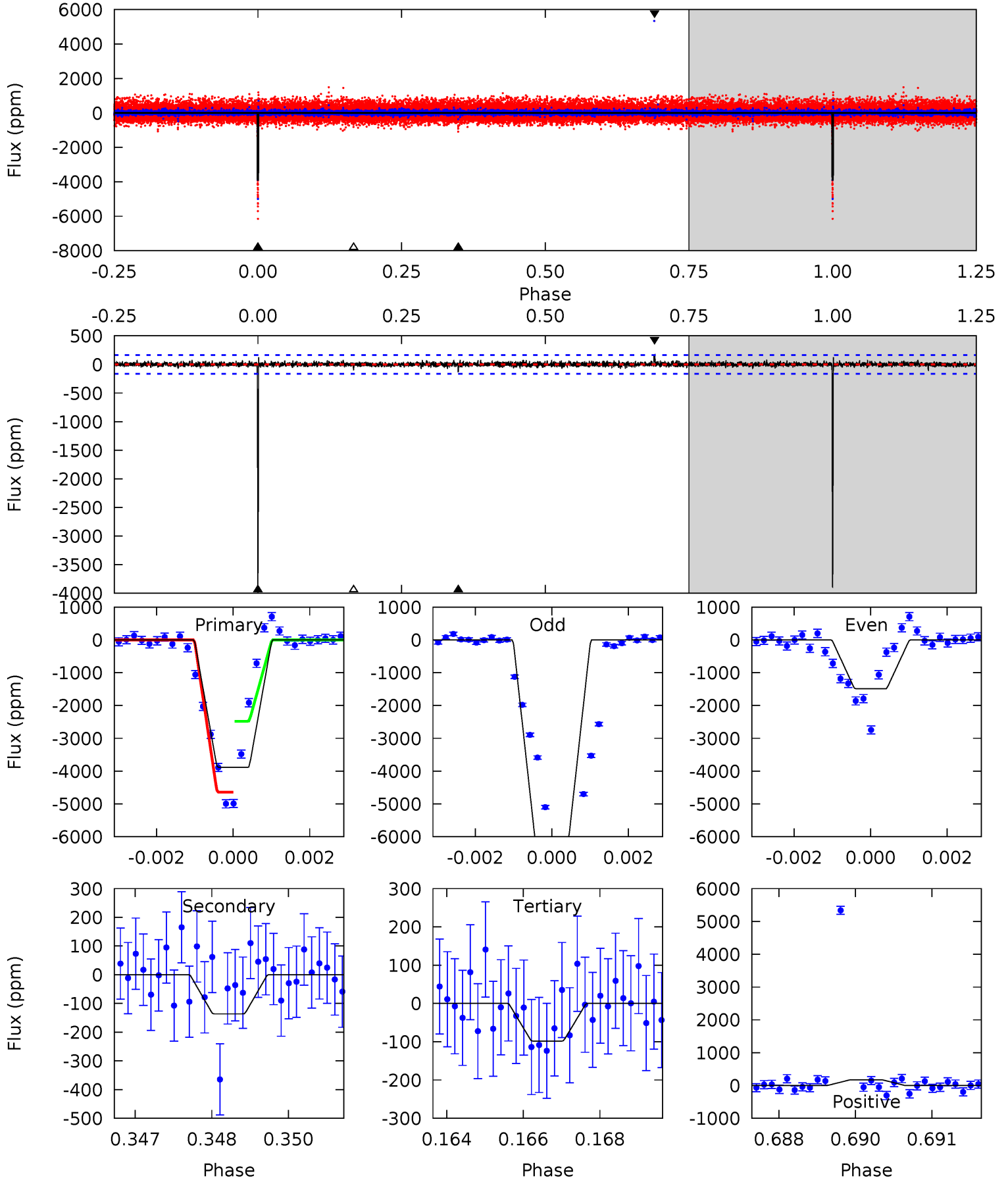
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.0	18.2	16.2	22.8	5.35	3.13	5.06	1.79	-4.88	2.05	-4.61	3.03	1.06	0.56	1.28



Alt Model-Shift Uniqueness Test

009649447-02, P = 478.969458 Days, E = 404.213526 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
127.9	4.48	3.23	5.72	5.36	3.15	0.64	124.6	122.2	1.25	-1.23	99.8	0.81	0.04	34.9



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-941 ± 52	$2.66^{+0.30}_{-0.29}$	205^{+7}_{-8}	3917^{+195}_{-178}	79919^{+20981}_{-15566}
Alt.	-136 ± 30	$3.89^{+0.31}_{-0.30}$	205^{+7}_{-7}	2620^{+109}_{-102}	5274^{+1533}_{-1372}

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

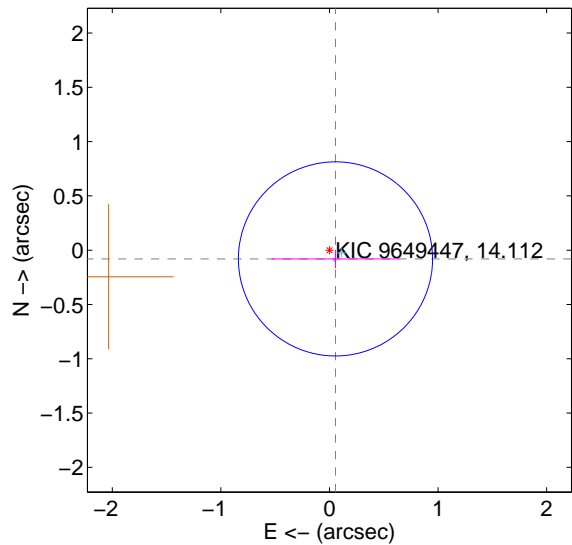
Supplemental centroid analysis for 009649447-02. Kepler magnitude: 14.11. Transit SNR 6.64

There are 2 quarters with good PRF difference image offsets

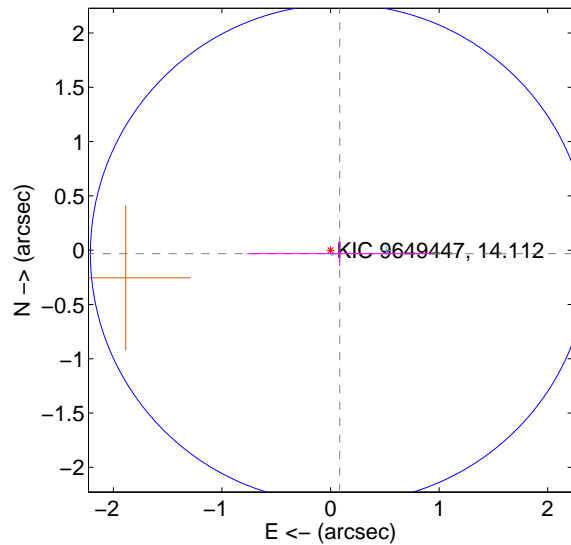
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.098 ± 0.298	0.33	-0.055 ± 0.588	-0.080 ± 0.084
PRF-fit source offset from KIC position	0.091 ± 0.766	0.12	-0.085 ± 0.854	-0.032 ± 0.114
photometric centroid source offset	0.61 ± 0.41	1.48	0.45 ± 0.40	0.42 ± 0.43

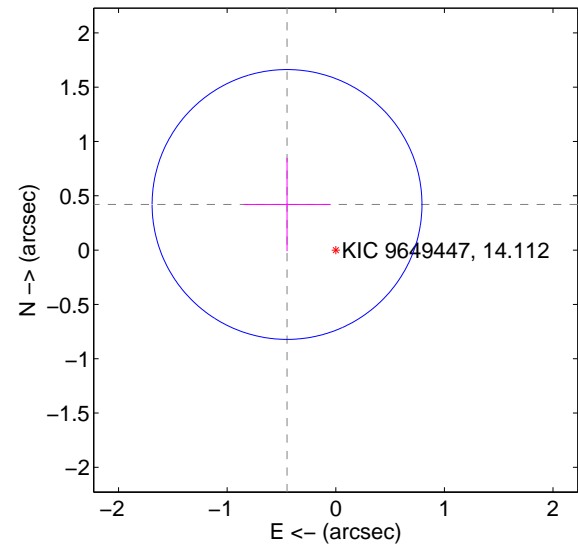
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

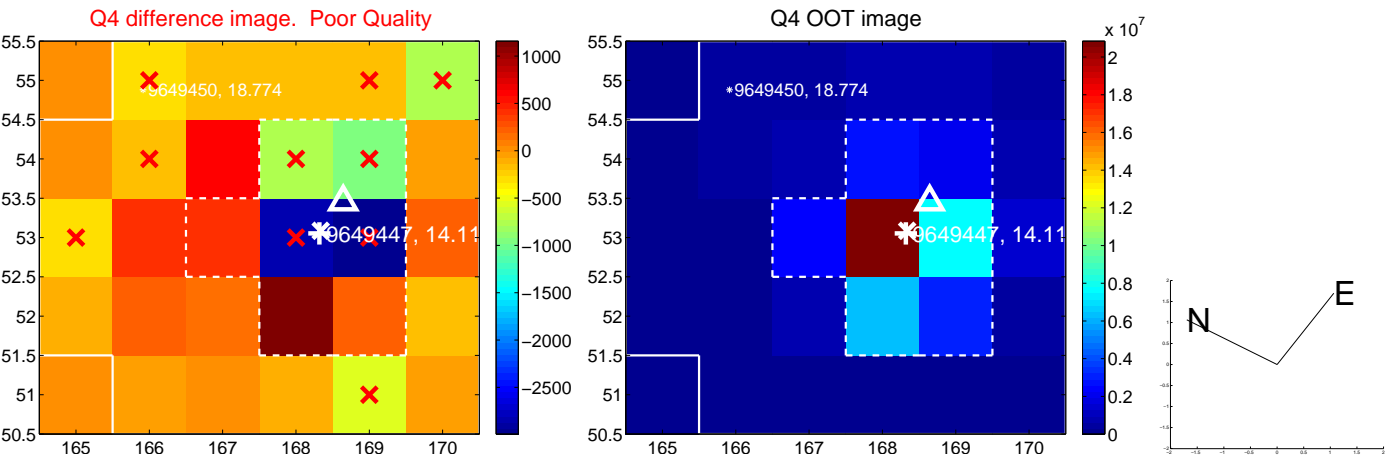


offset from photometric centroids



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

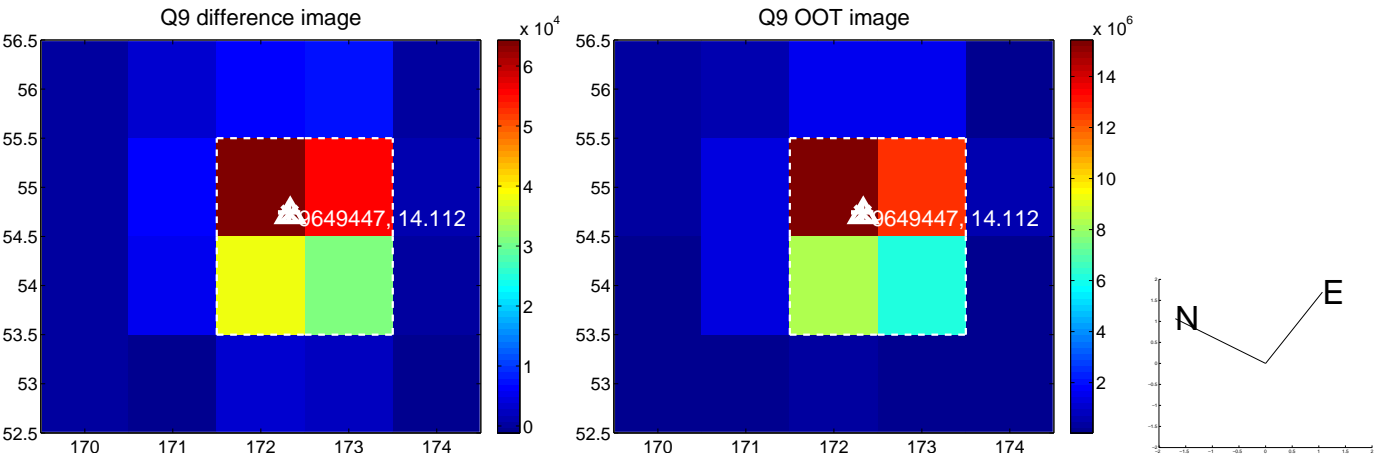
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



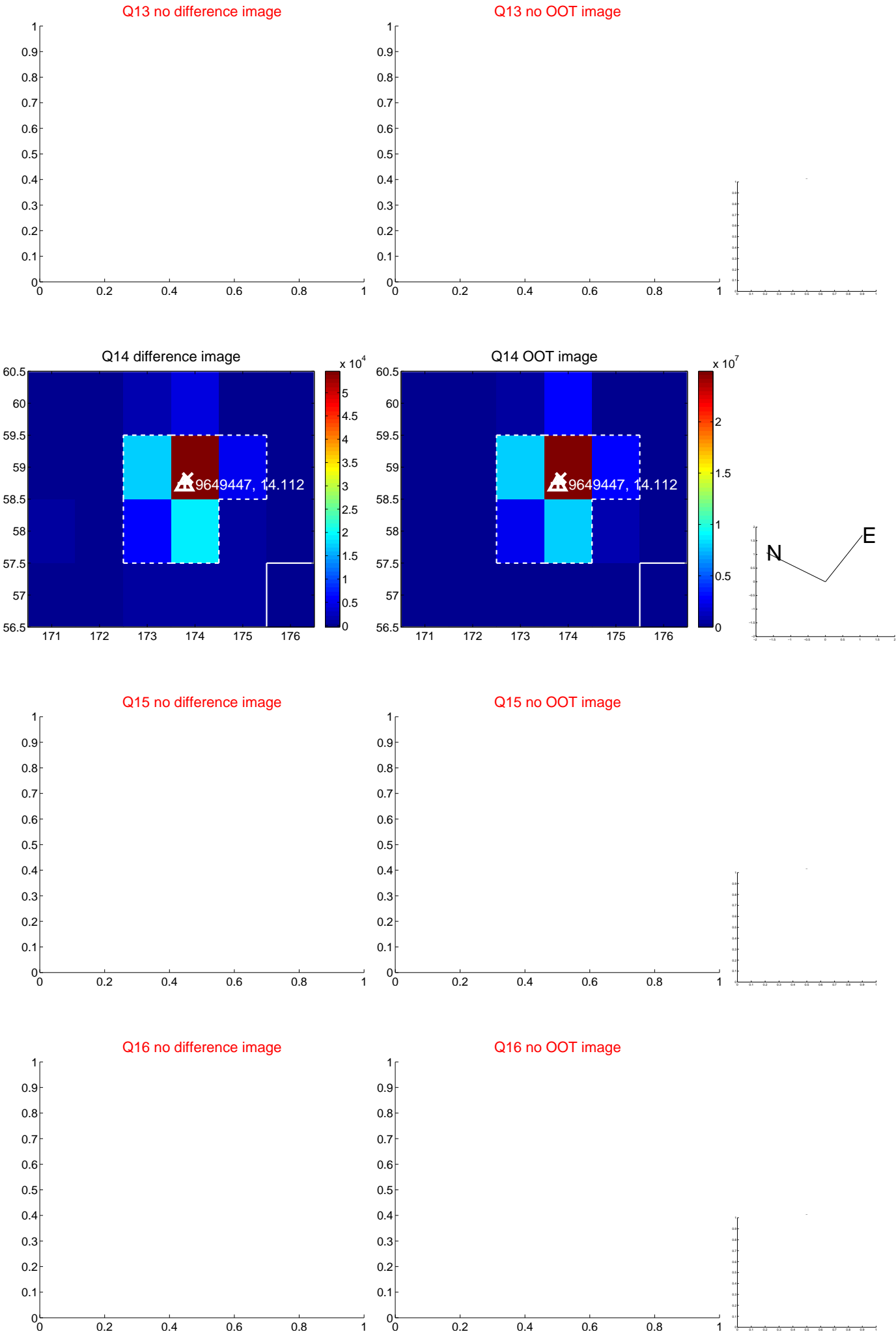
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



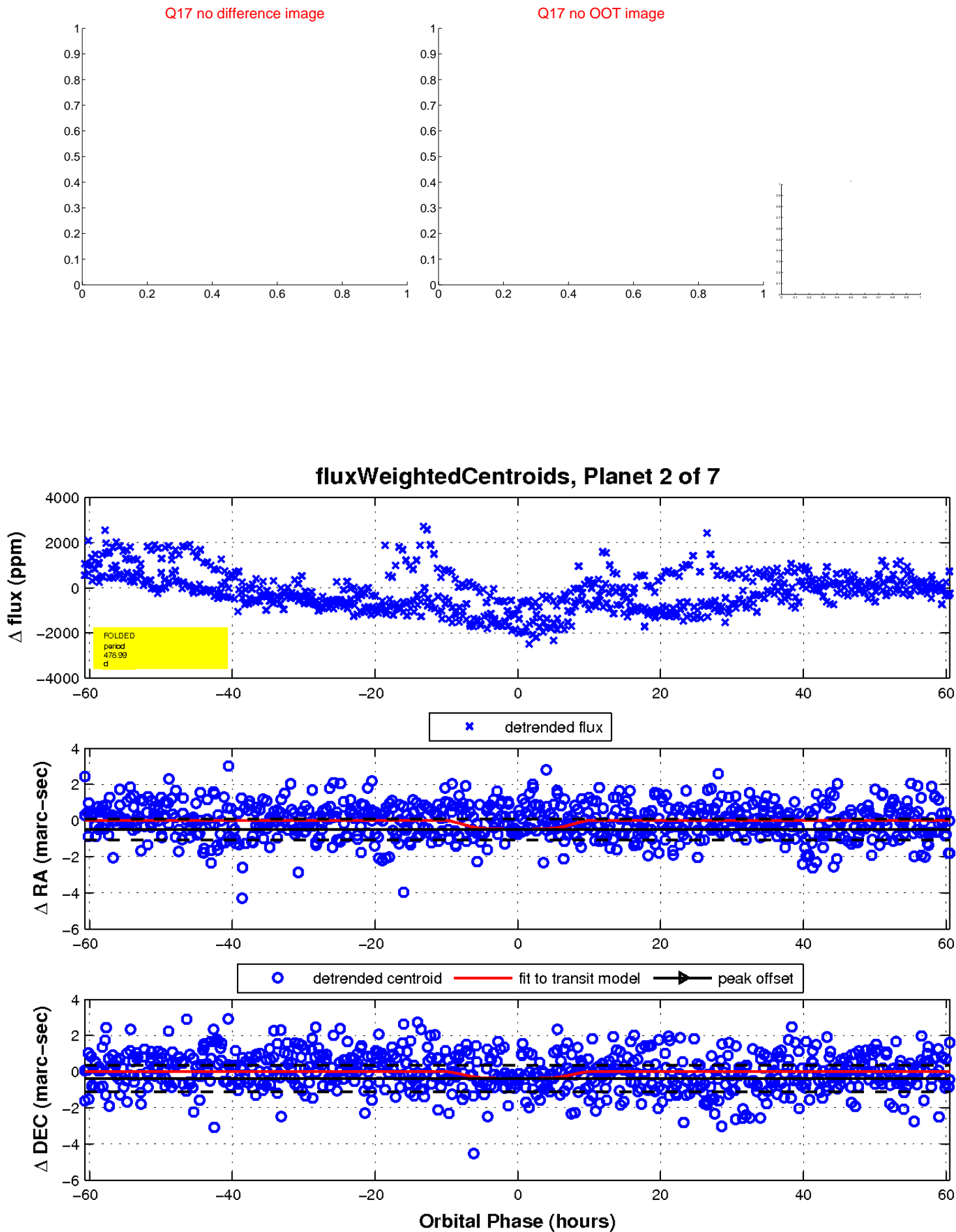
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

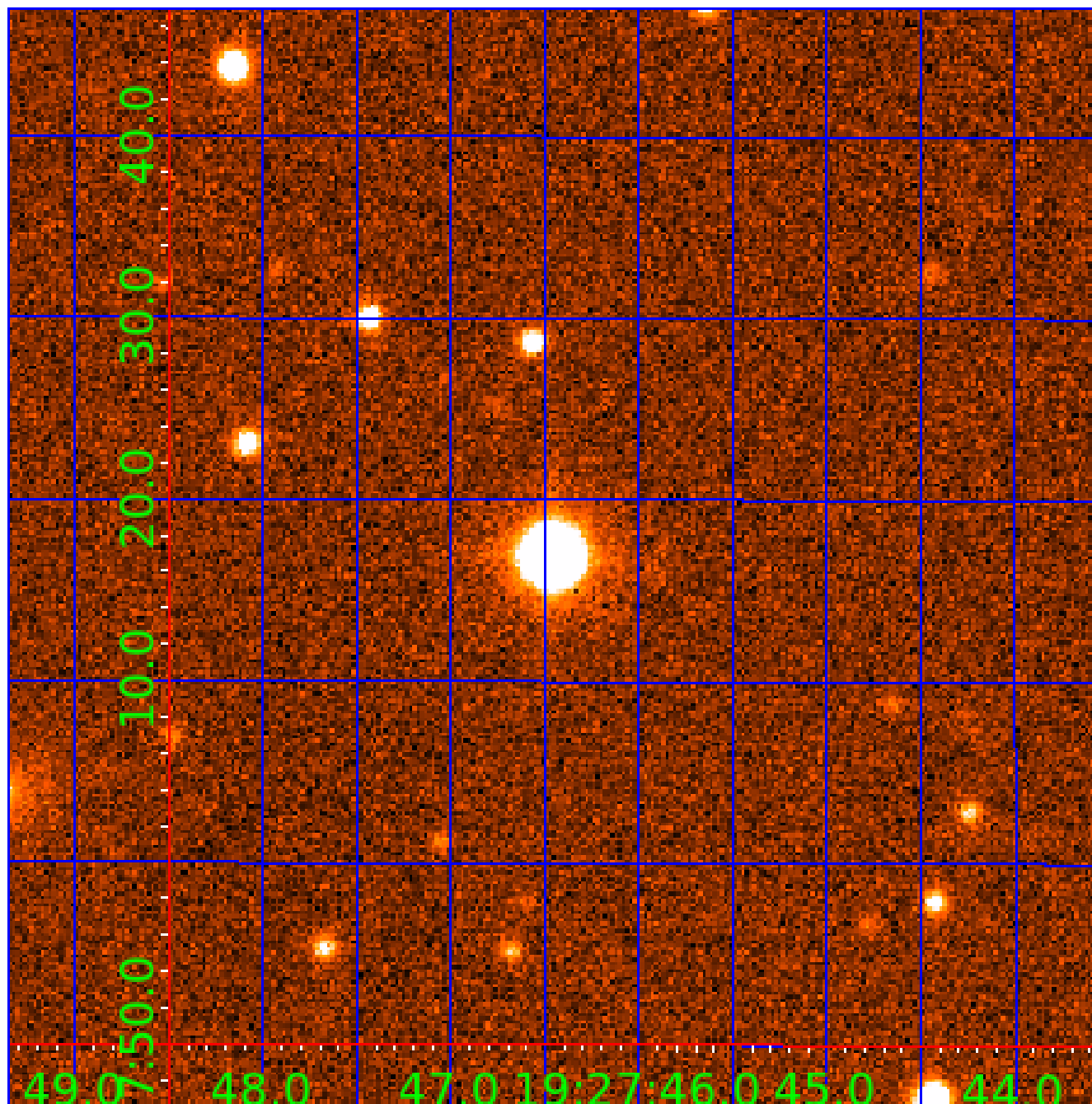


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

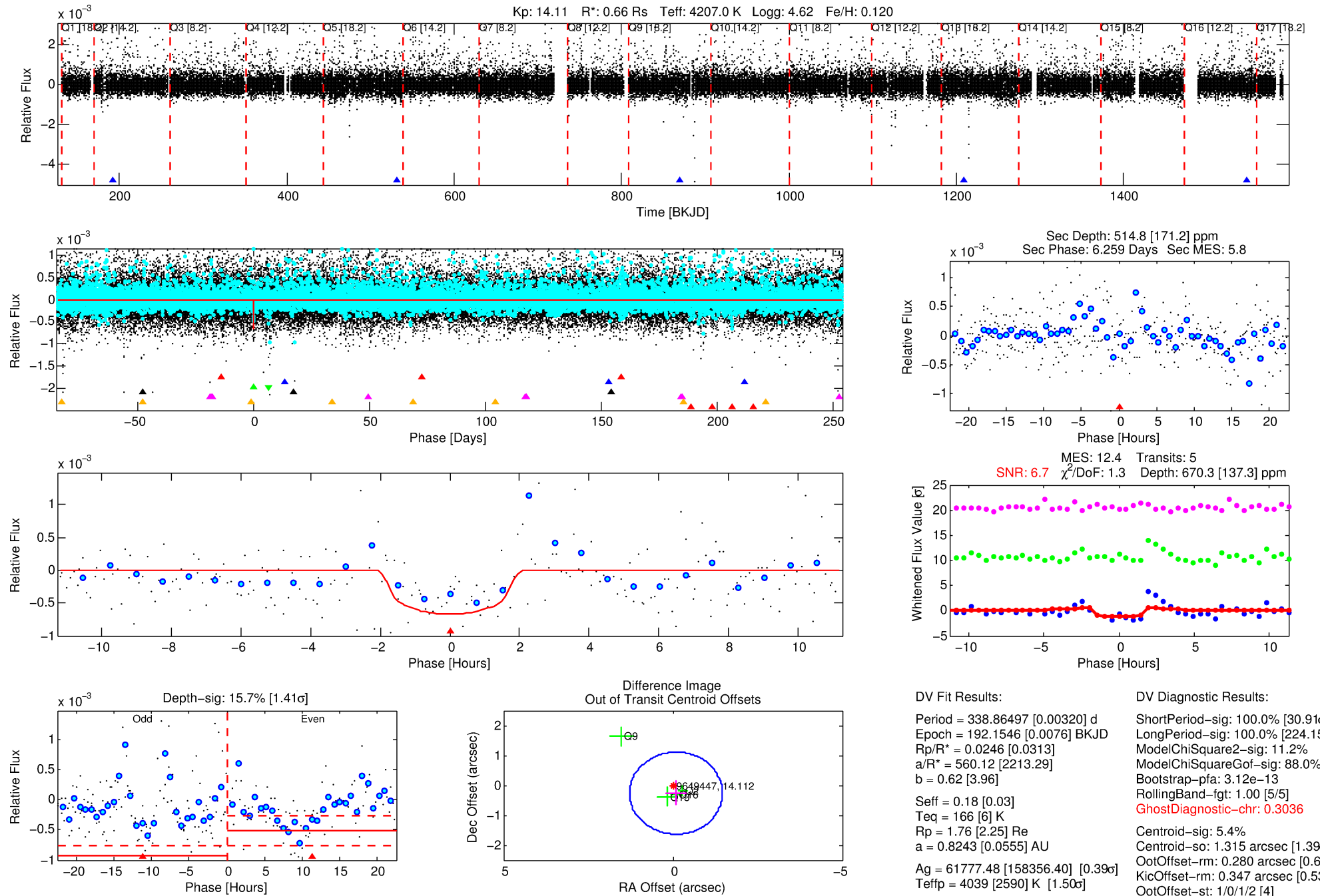
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-03

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 3 of 7 Period: 338.865 d



DV Fit Results:

Period = 338.86497 [0.00320] d
Epoch = 192.1546 [0.0076] BKJD
Rp/R* = 0.0246 [0.0313]
a/R* = 560.12 [2213.29]
b = 0.62 [3.96]
Seff = 0.18 [0.03]
Teq = 166 [6] K
Rp = 1.76 [2.25] Re
a = 0.8243 [0.0555] AU
Ag = 61777.48 [158356.40] [0.39 σ]
Teff = 4039 [2590] K [1.50 σ]

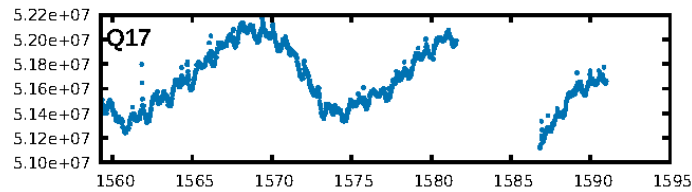
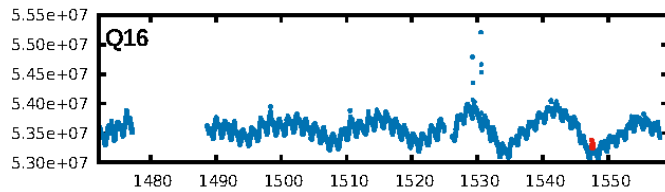
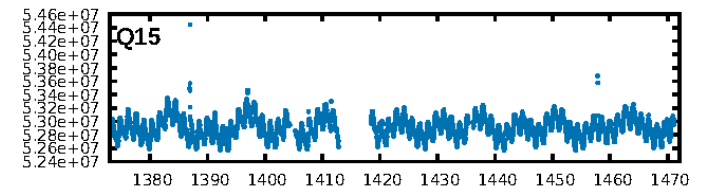
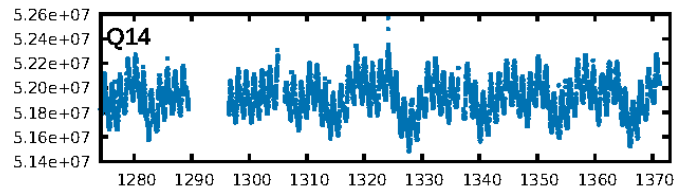
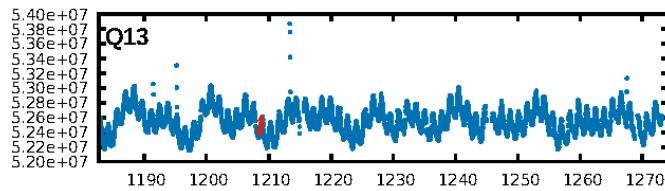
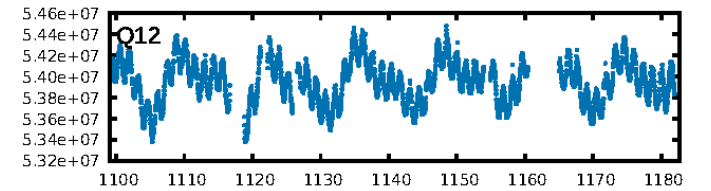
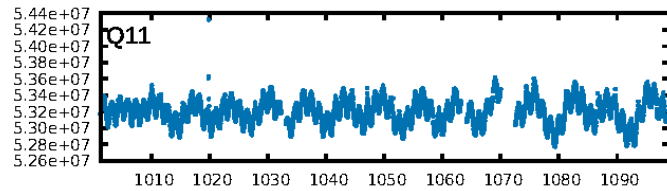
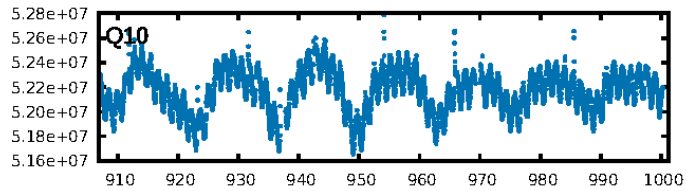
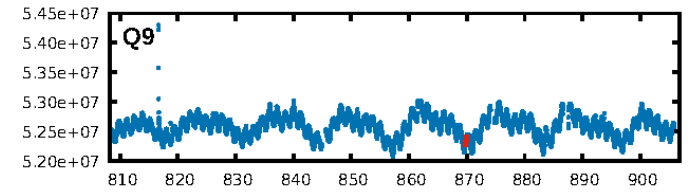
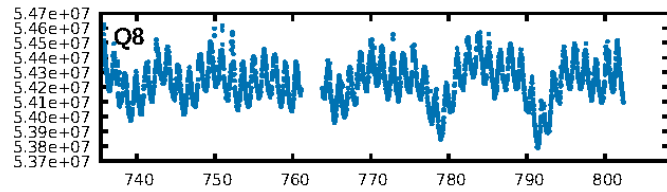
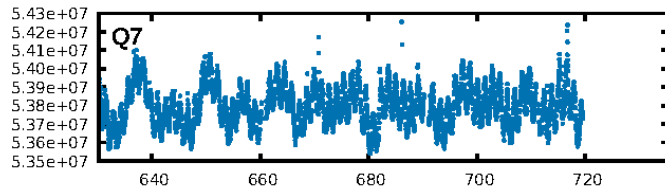
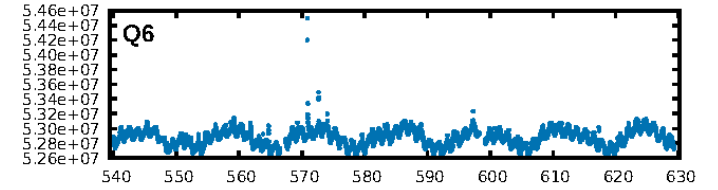
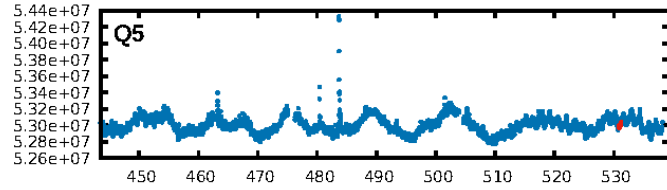
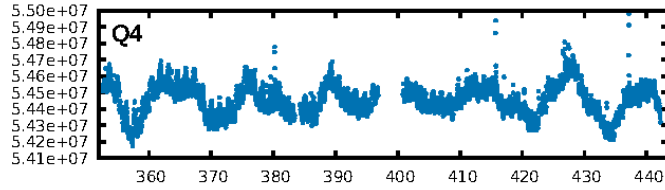
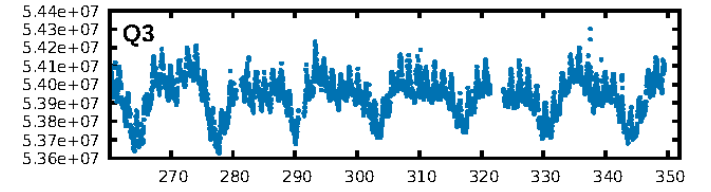
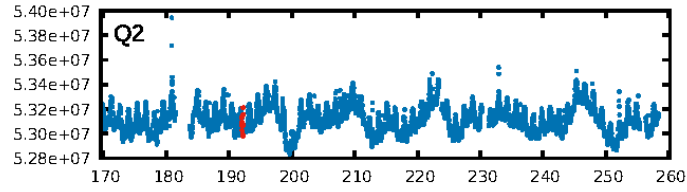
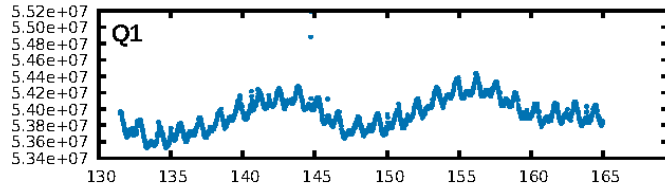
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.91 σ]
LongPeriod-sig: 100.0% [224.15 σ]
ModelChiSquare2-sig: 11.2%
ModelChiSquareGof-sig: 88.0%
Bootstrap-pfa: 3.12e-13
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.3036
Centroid-sig: 5.4%
Centroid-so: 1.315 arcsec [1.39 σ]
OotOffset-rm: 0.280 arcsec [0.61 σ]
KicOffset-rm: 0.347 arcsec [0.53 σ]
OotOffset-st: 1/0/1/2 [4]
KicOffset-st: 1/0/1/2 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 1.00 [5/5]

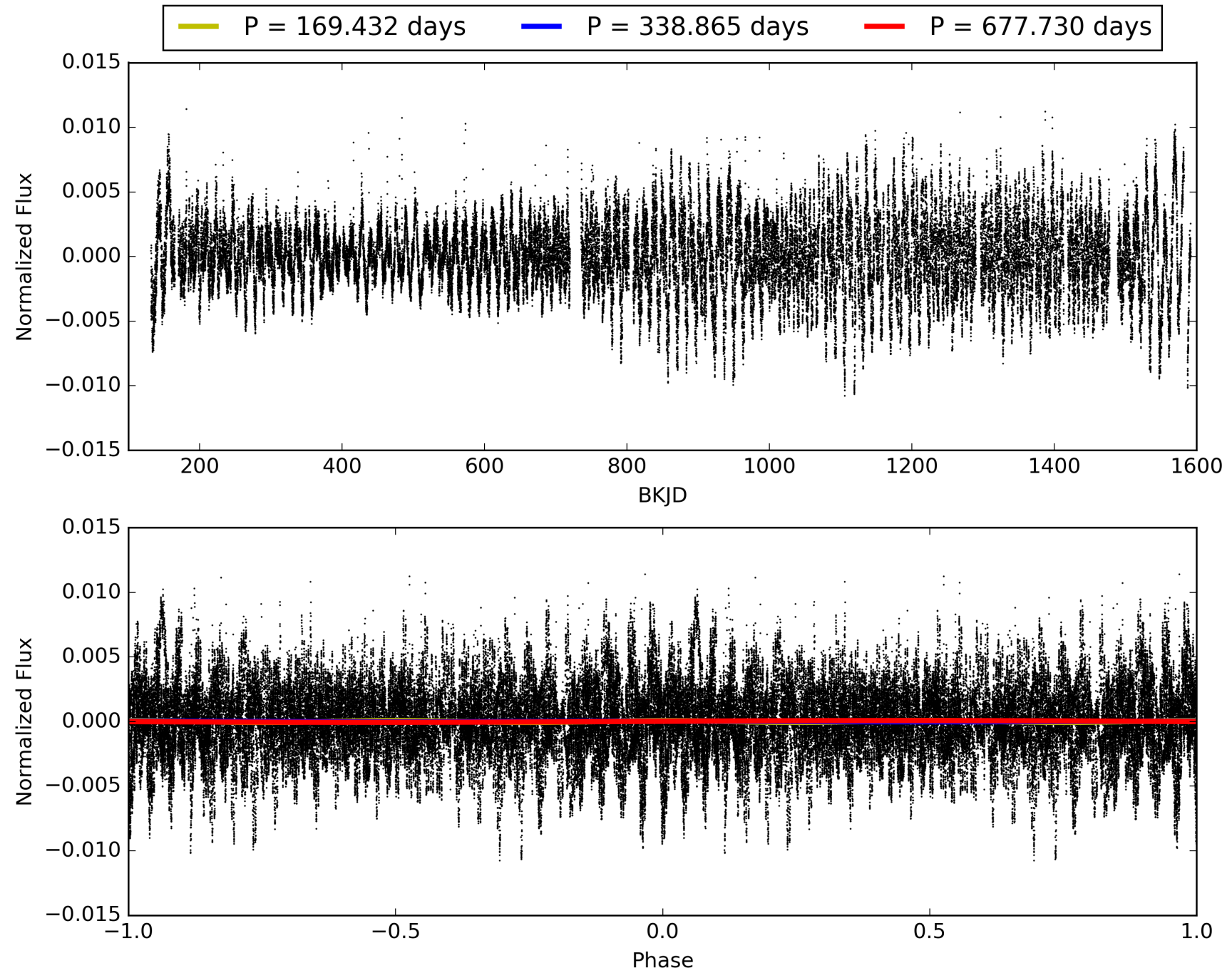
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:53:48 Z

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

TCE 009649447-03, PDC Light Curves

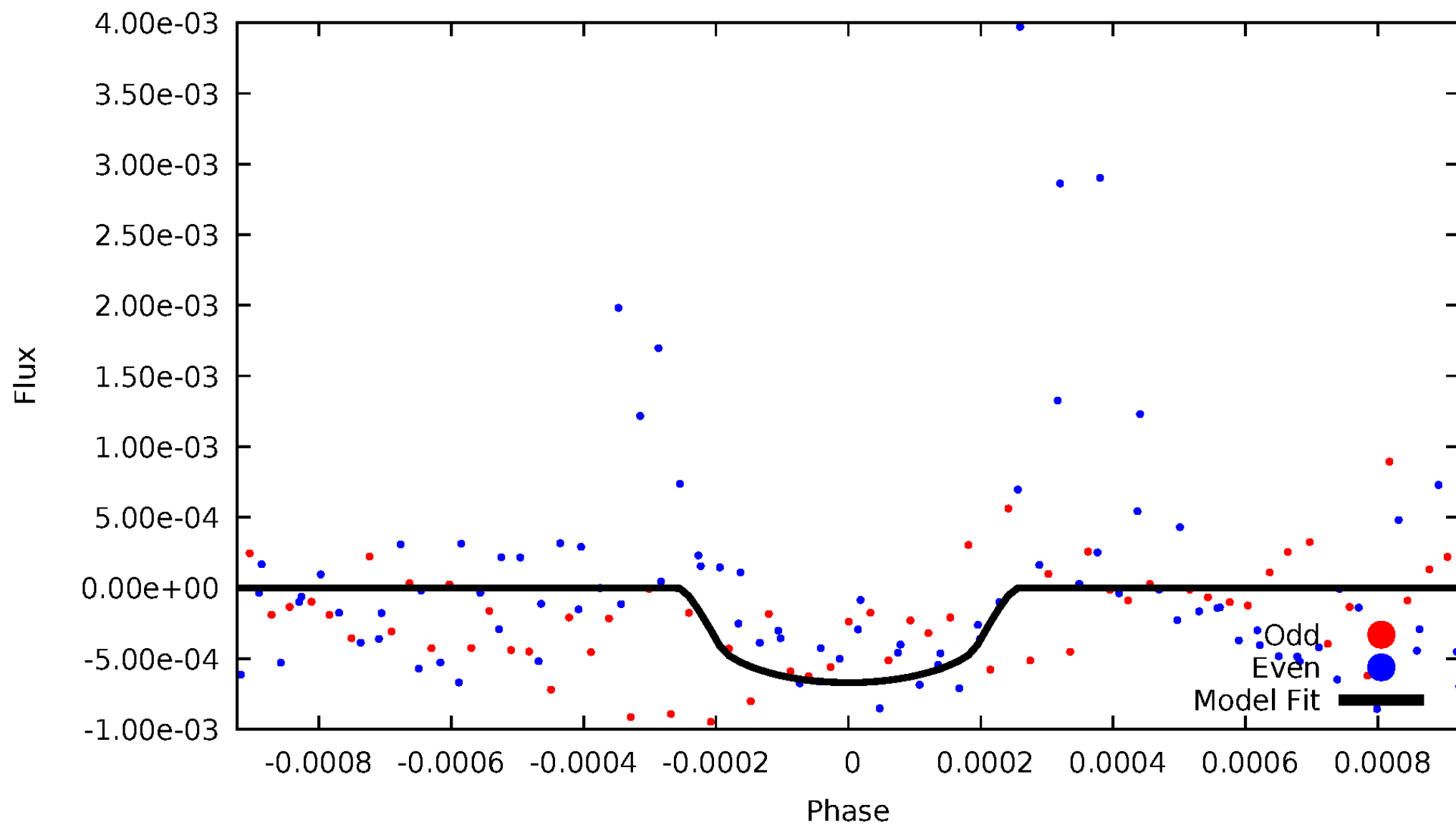


TCE 009649447-03



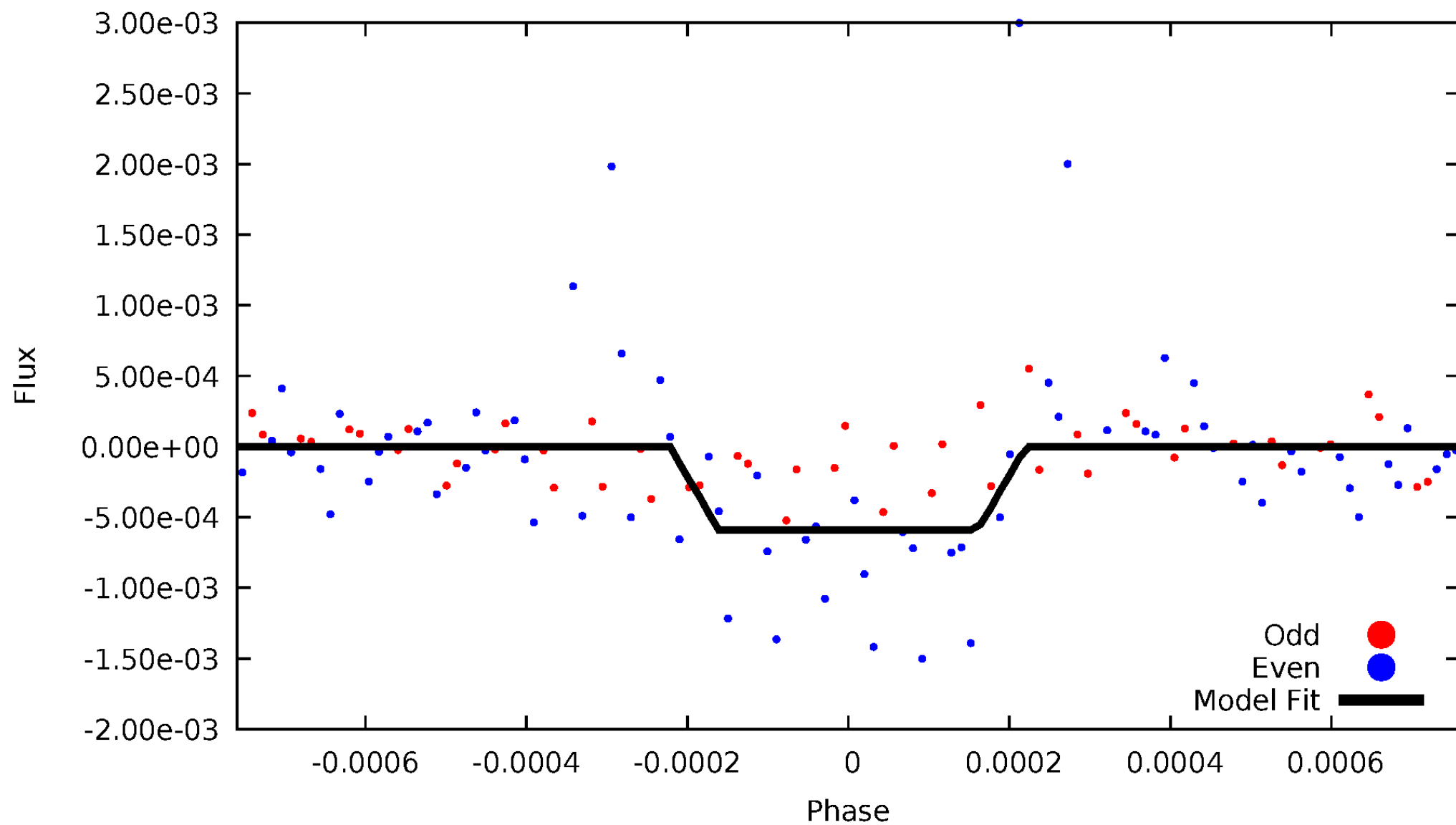
DV Odd/Even

TCE 009649447-03



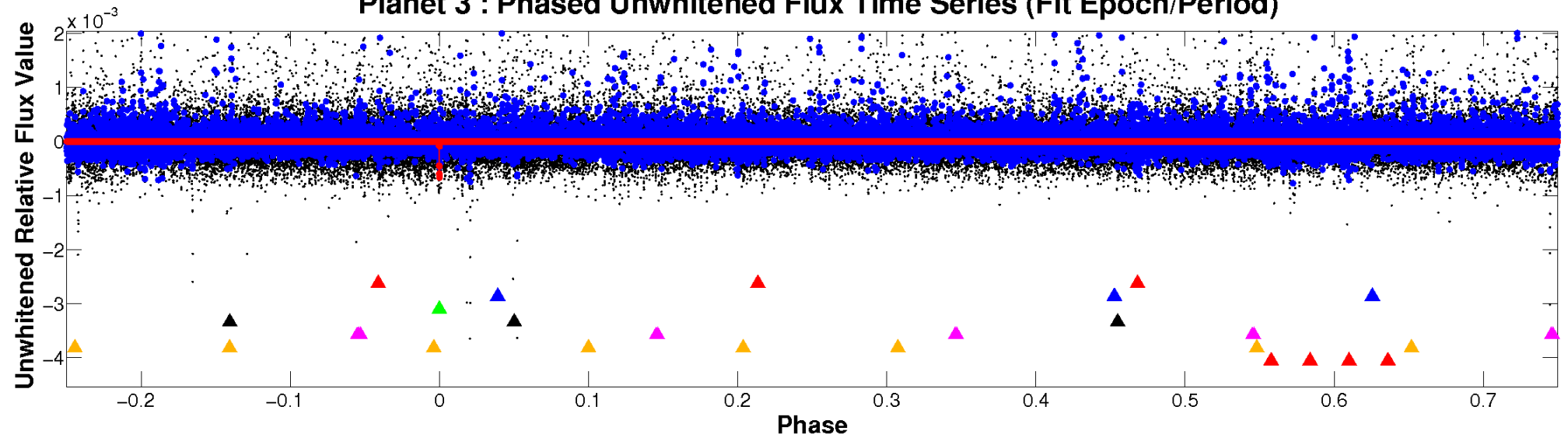
ALT Odd/Even

TCE 009649447-03

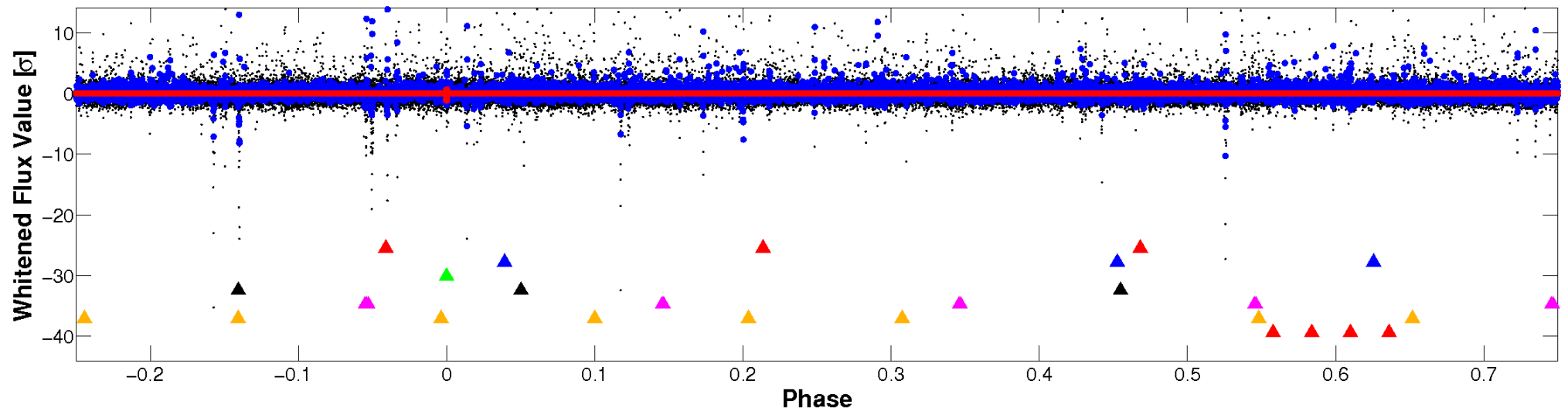


Non-Whitened Vs. Whitened Light Curve

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

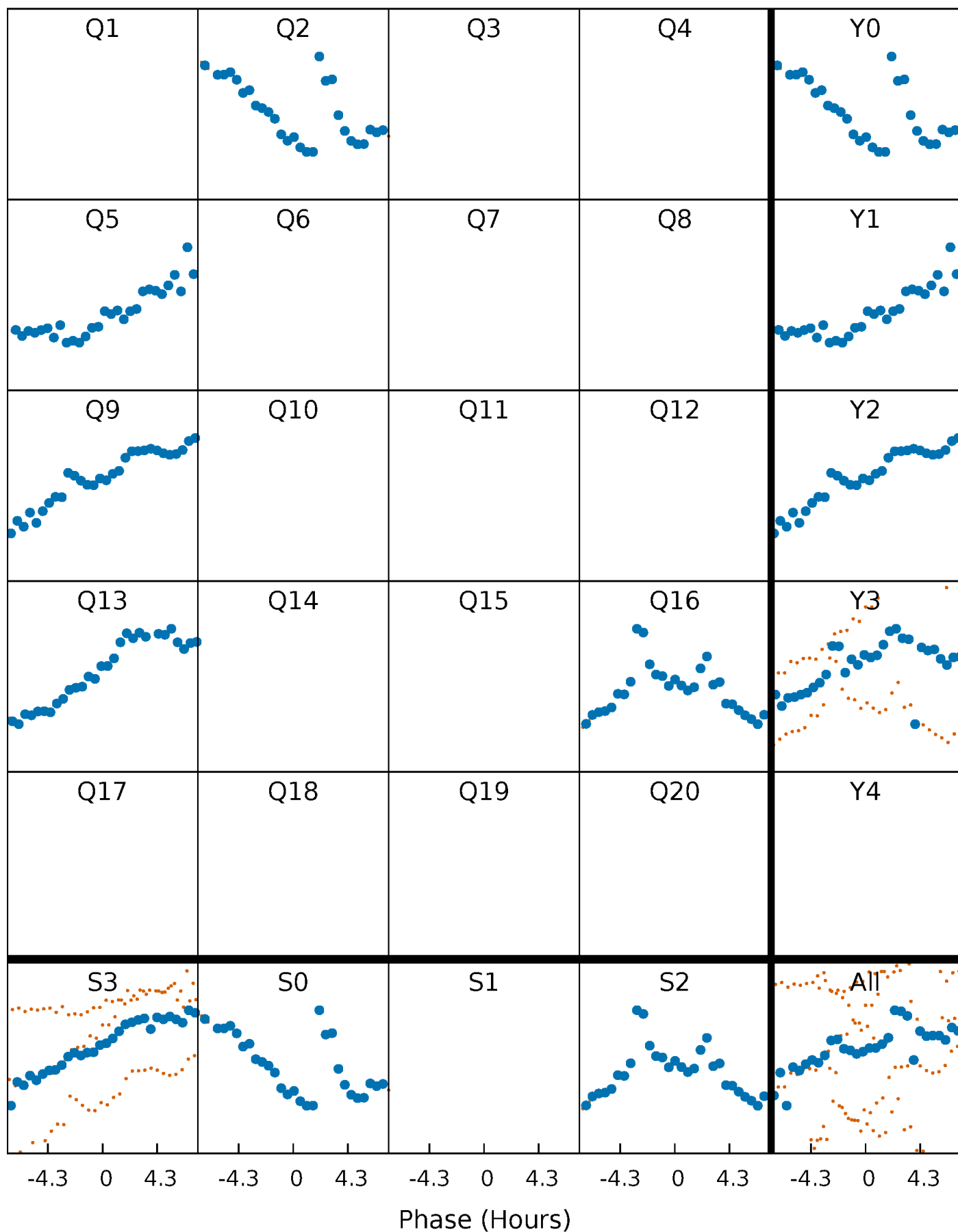


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



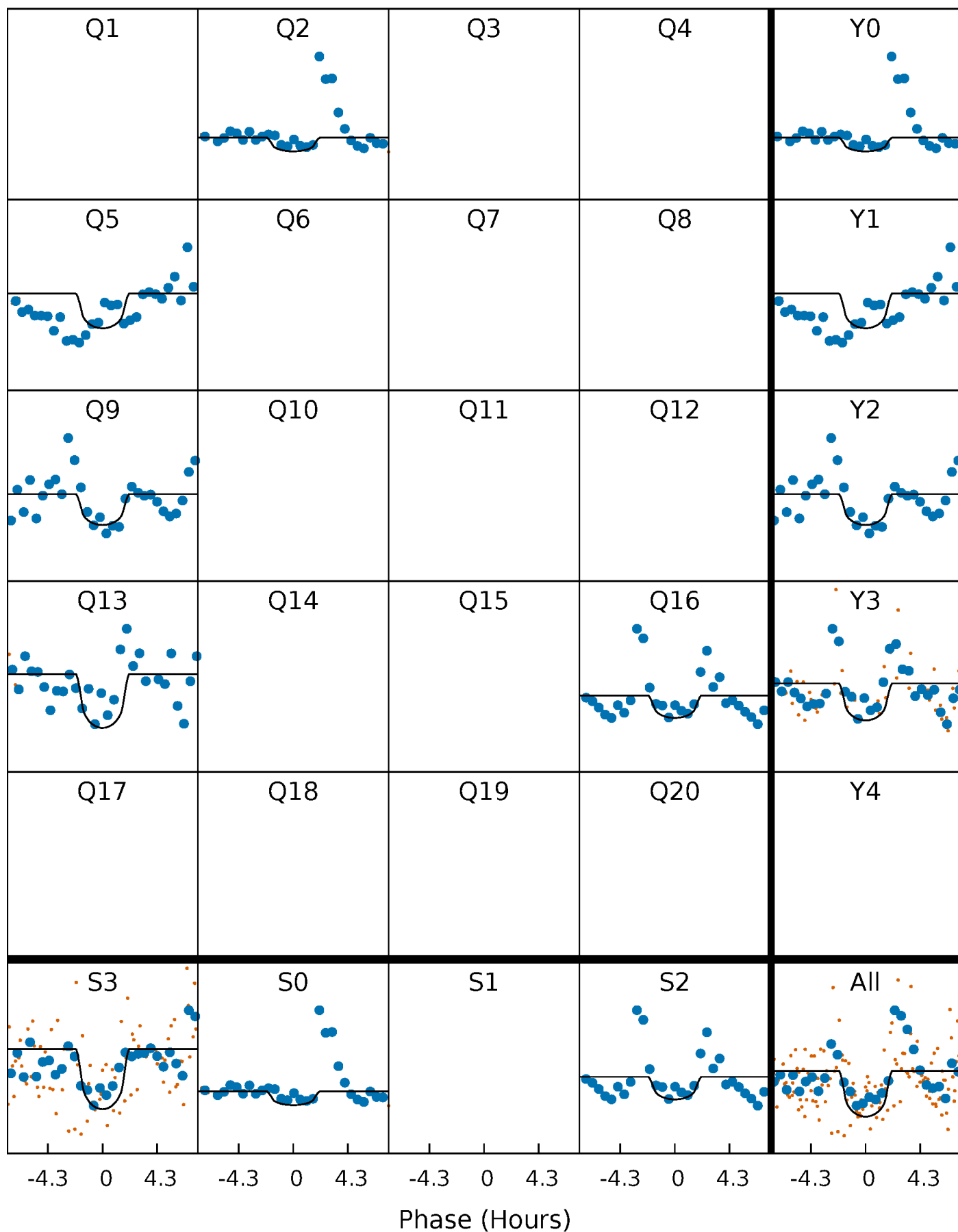
PDC Quarter-Phased Transit Curves

TCE 009649447-03 $P=338.864967$ Days $T_0=192.154613$ (BKJD)



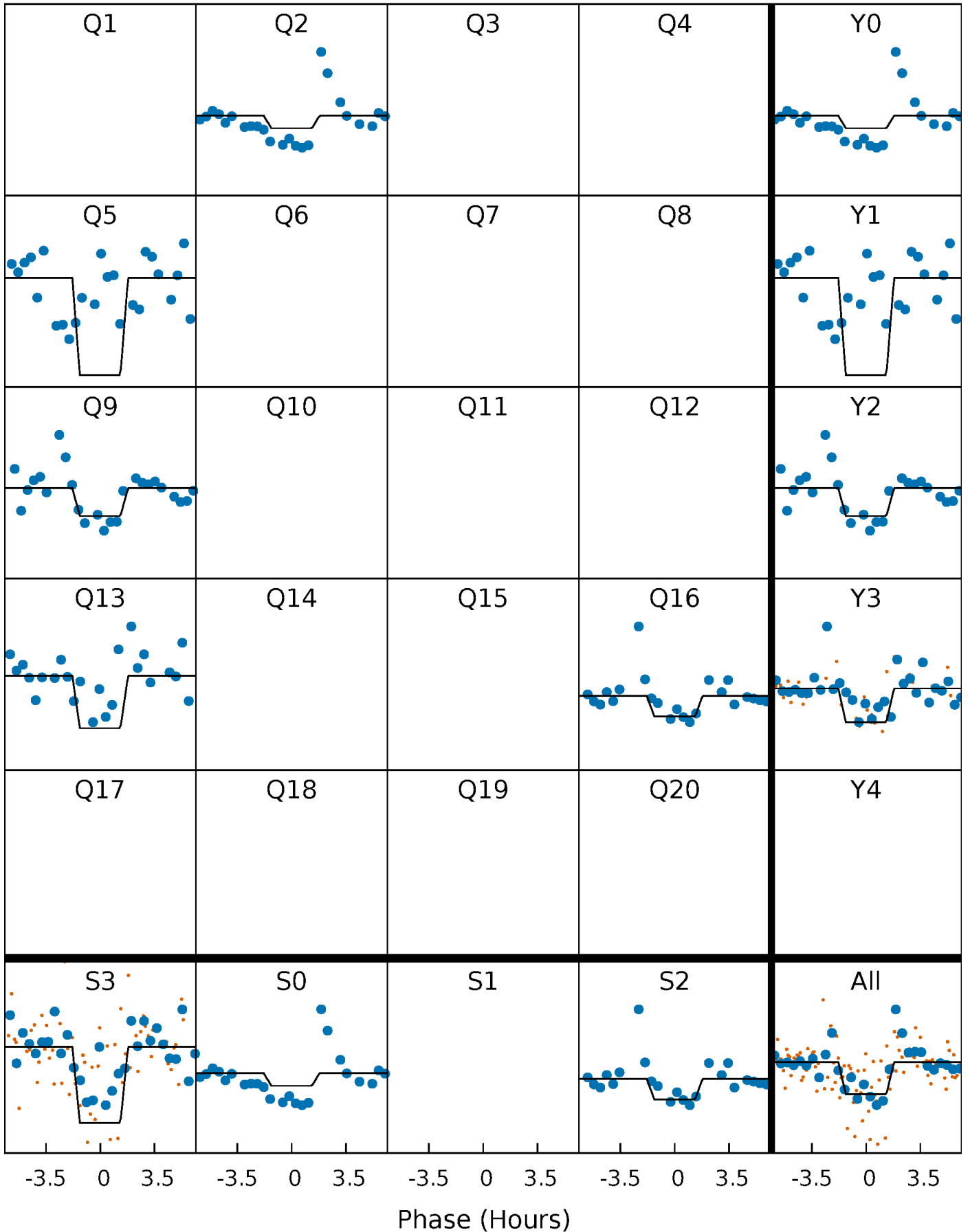
DV Quarter-Phased Transit Curves

TCE 009649447-03 $P=338.864967$ Days $T_0=192.154613$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

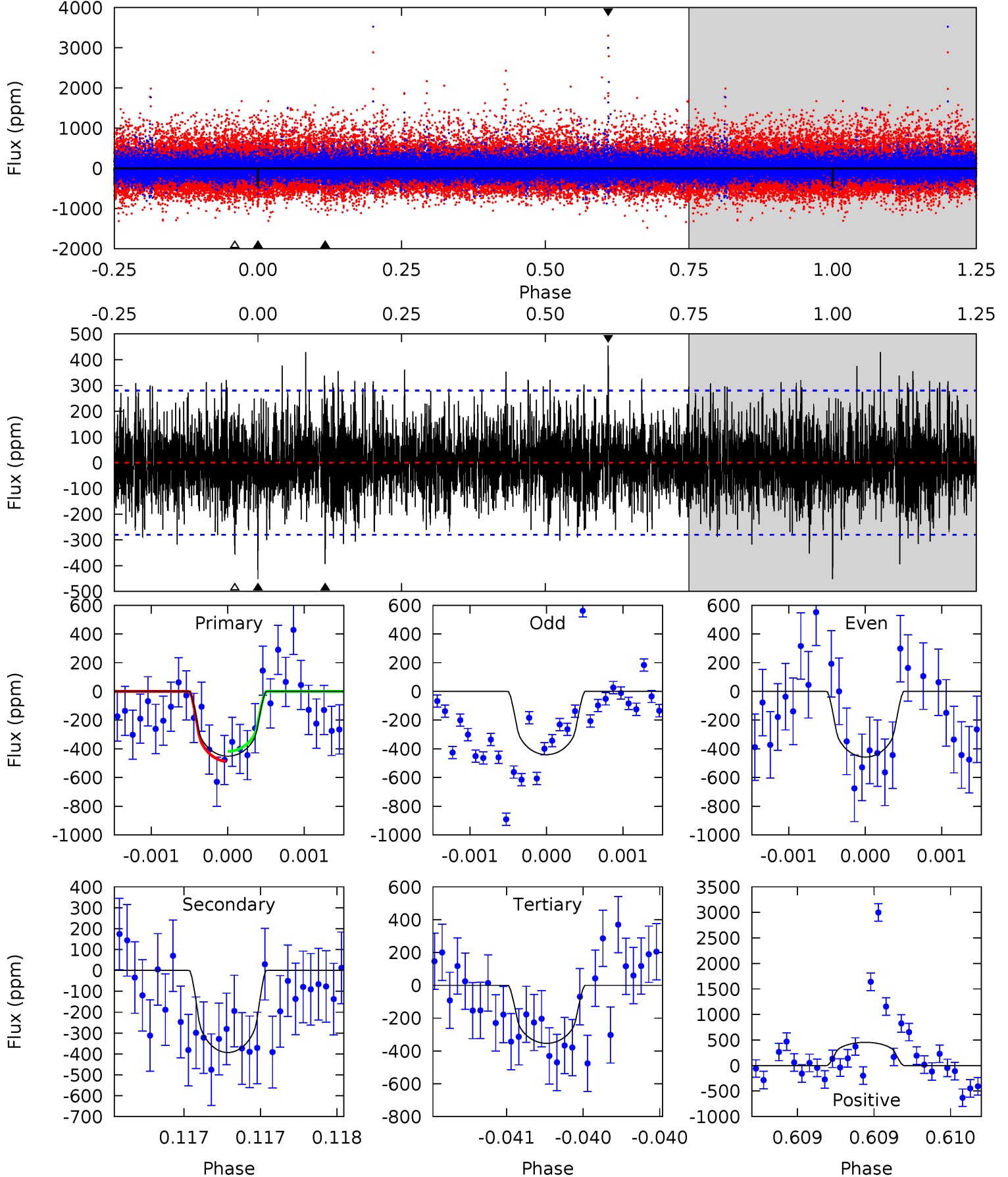
TCE 009649447-03 $P=338.861574$ Days $T_0=192.170646$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-03, P = 338.864967 Days, E = 192.154613 Days

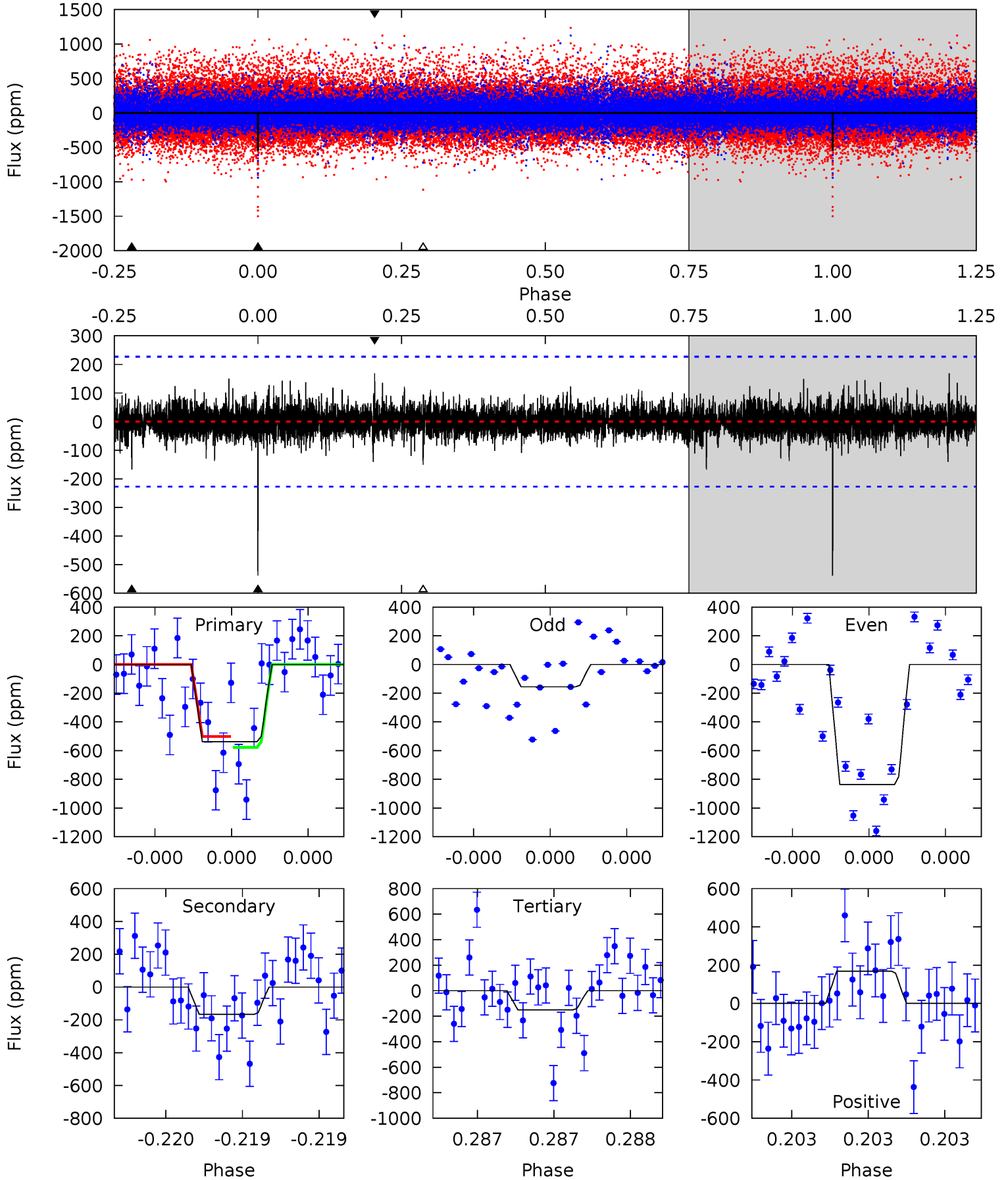
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.97	7.82	7.03	9.04	5.57	3.47	2.02	1.95	-0.06	0.79	-1.22	0.14	1.02	0.50	0.69



Alt Model-Shift Uniqueness Test

009649447-03, P = 338.861574 Days, E = 192.170646 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	4.12	3.71	4.16	5.60	3.53	0.81	9.56	9.11	0.41	-0.04	8.38	1.11	0.24	0.94



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-393 ± 50	$2.33^{+2.04}_{-1.49}$	230^{+8}_{-8}	3558^{+1615}_{-640}	$27407^{+179382}_{-19823}$
Alt.	-167 ± 41	$2.23^{+2.06}_{-1.47}$	230^{+8}_{-8}	3114^{+1409}_{-486}	11919^{+98539}_{-8667}

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 $A_{obs} \gg 1.0$

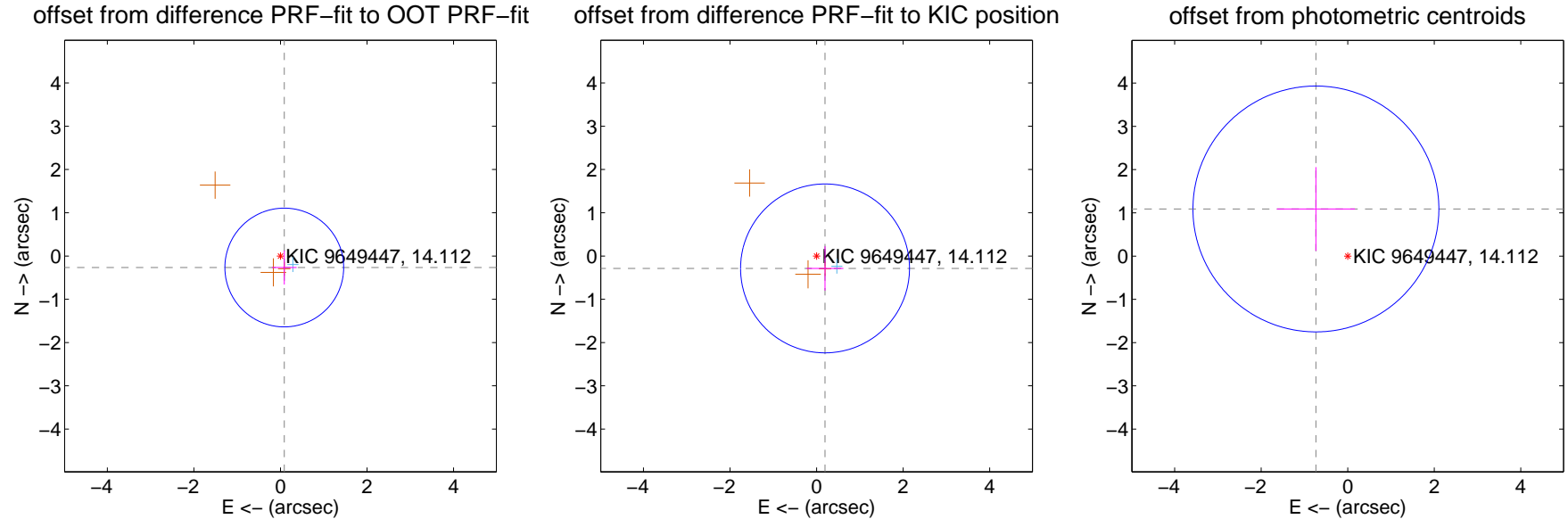
DV Centroid Data

Supplemental centroid analysis for 009649447-03. Kepler magnitude: 14.11. Transit SNR 6.67

There are 1 quarters with good PRF difference image offsets

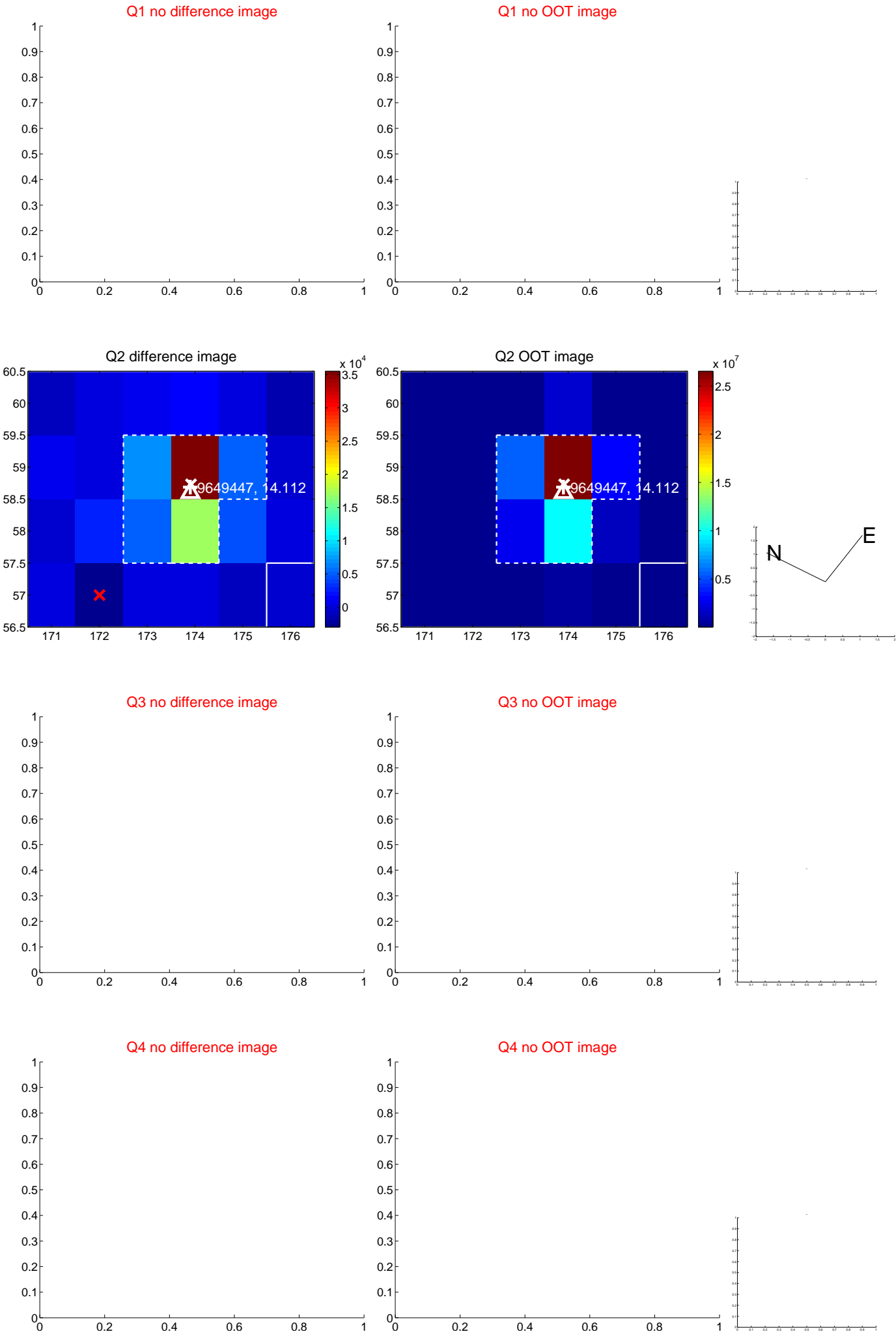
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.280 ± 0.457	0.61	-0.088 ± 0.285	-0.266 ± 0.395
PRF-fit source offset from KIC position	0.347 ± 0.651	0.53	-0.195 ± 0.425	-0.286 ± 0.512
photometric centroid source offset	1.31 ± 0.95	1.39	0.74 ± 0.90	1.09 ± 0.97

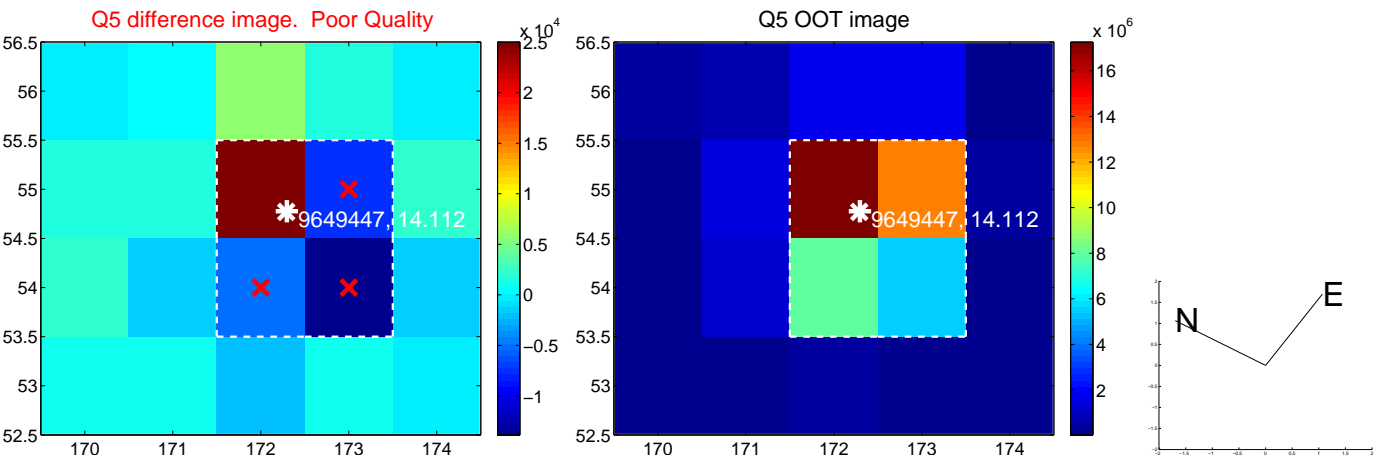


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

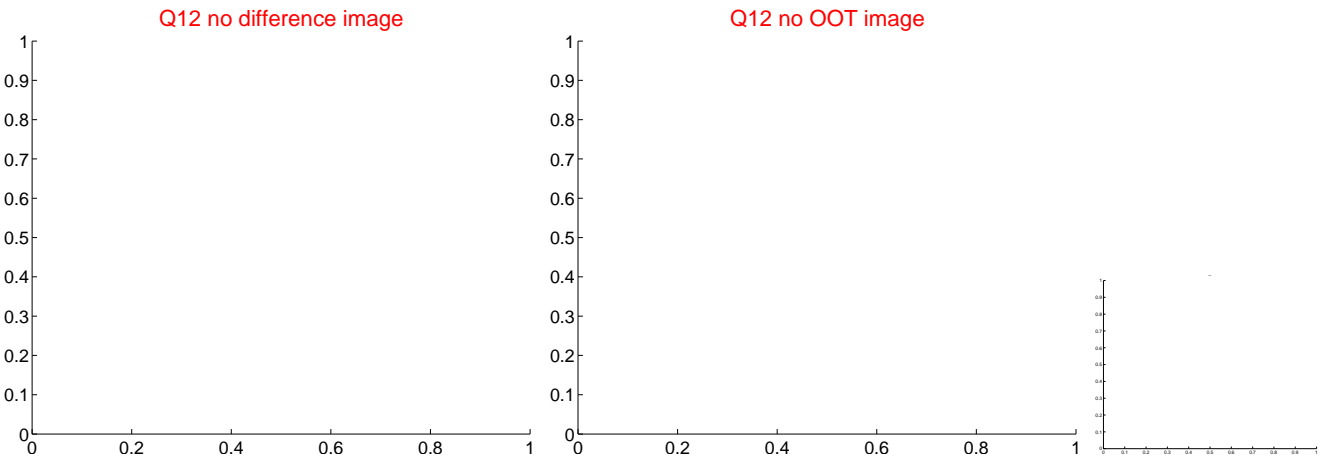
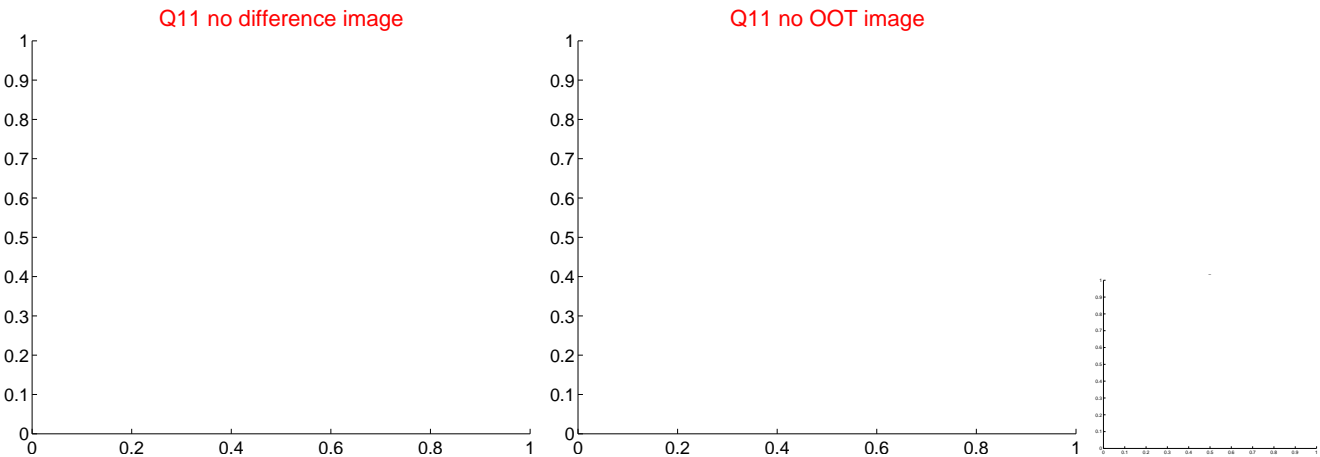
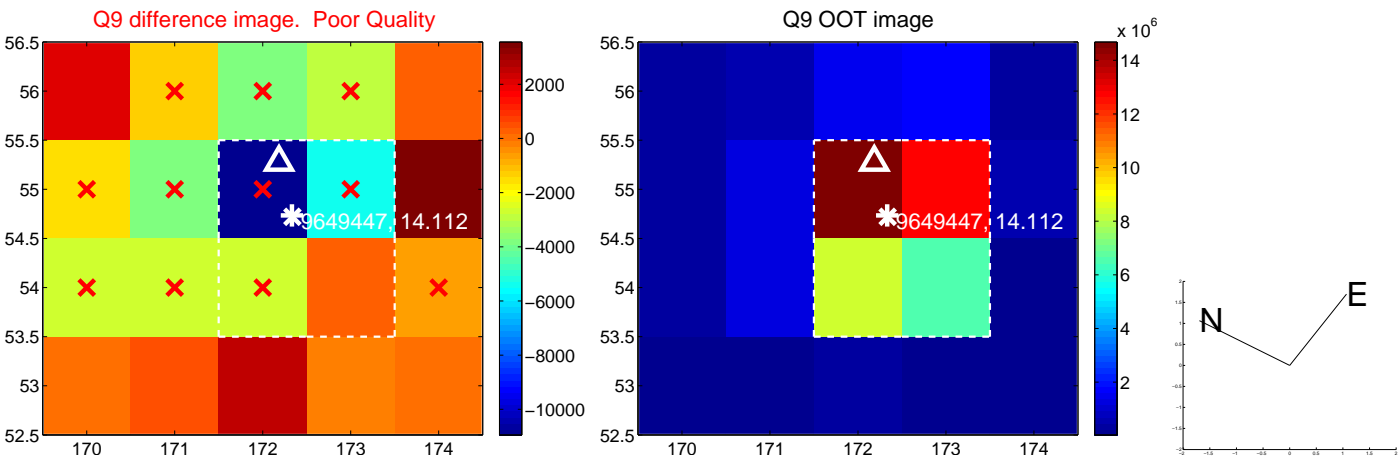
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



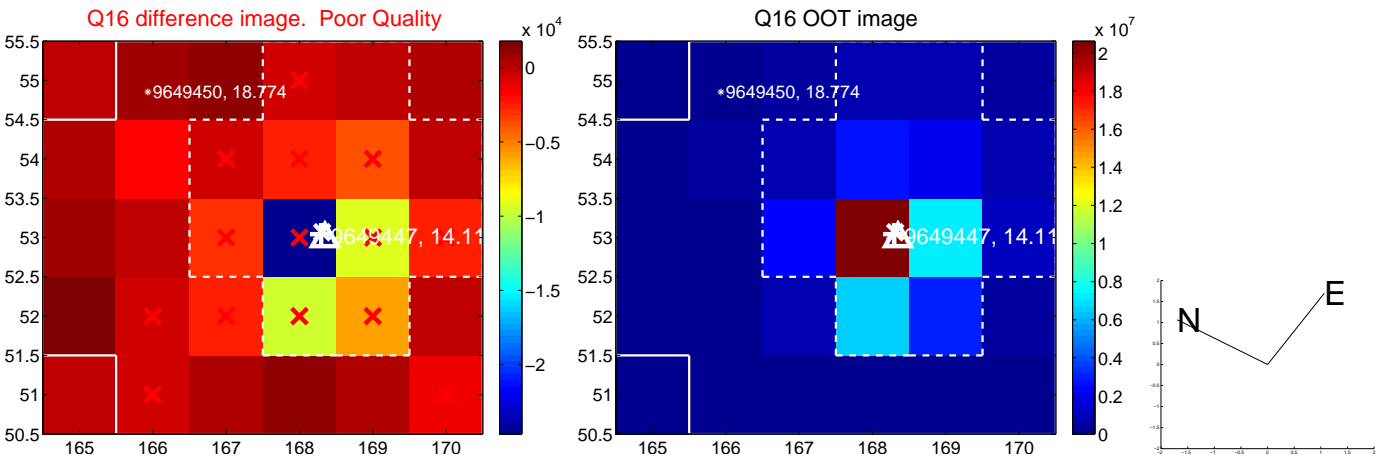
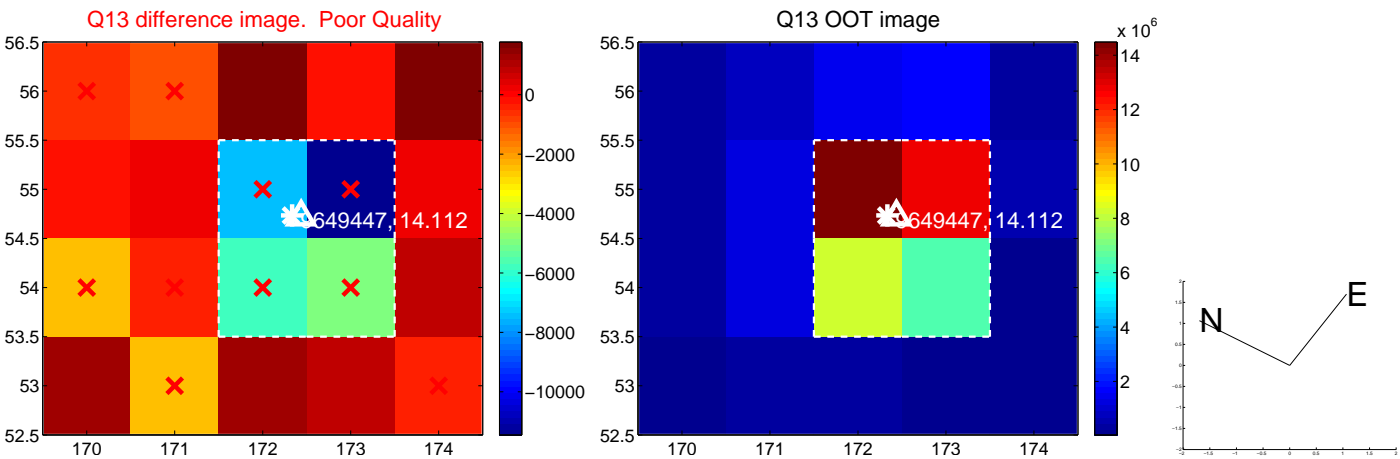
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



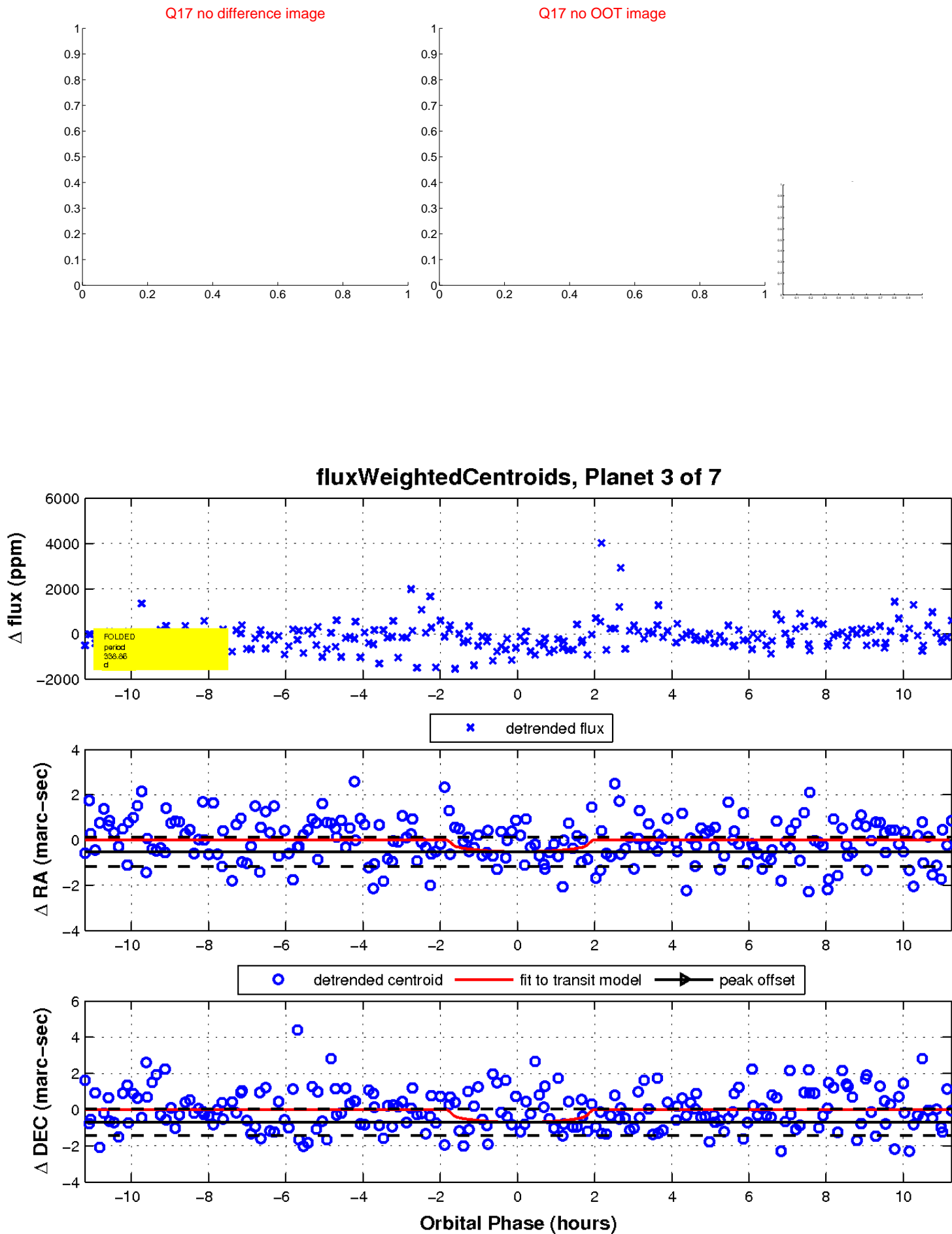
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

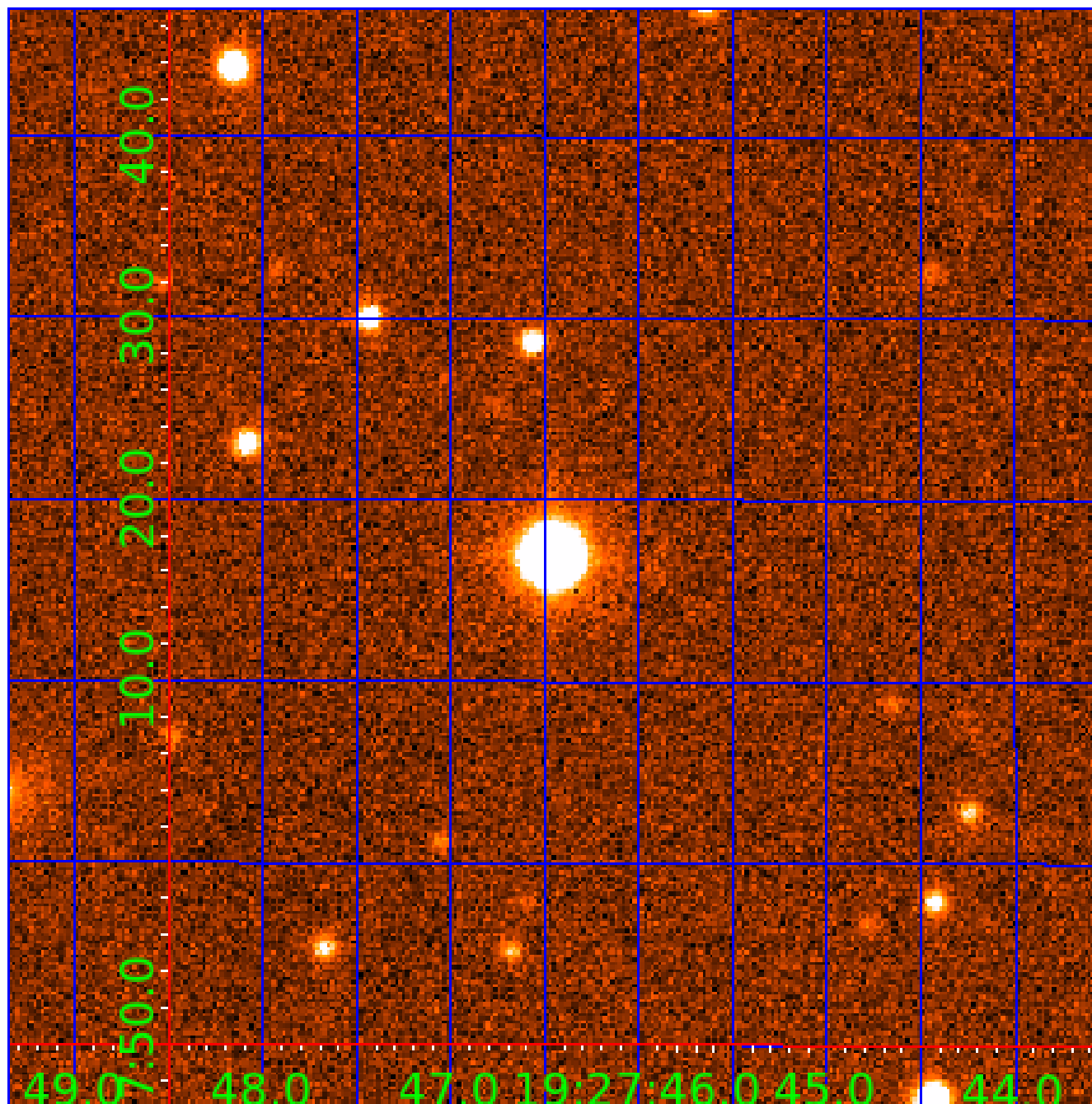


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

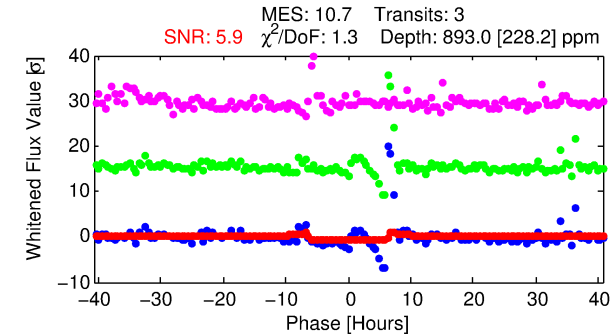
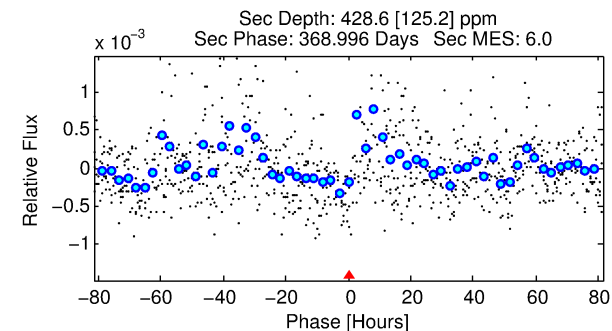
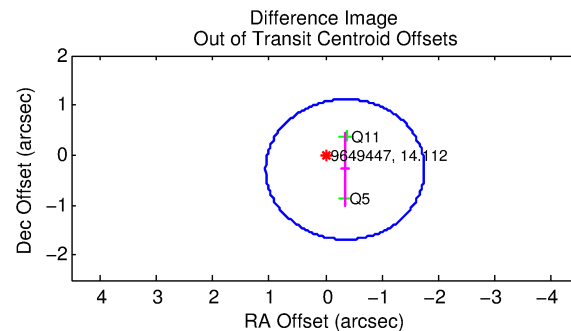
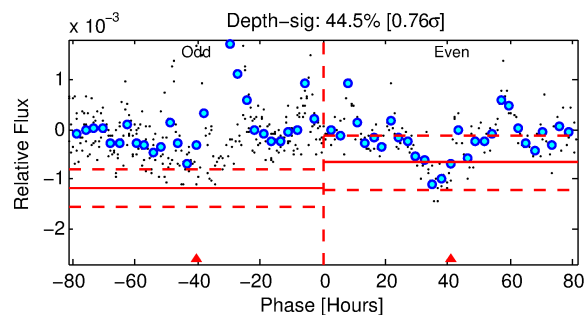
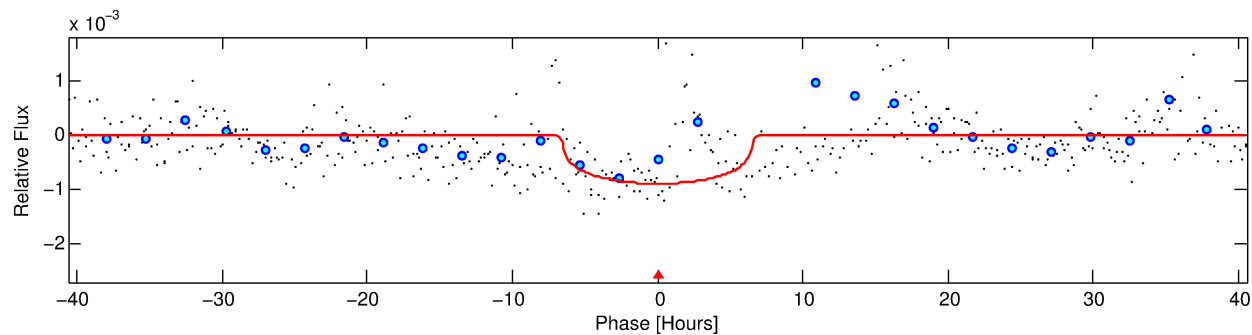
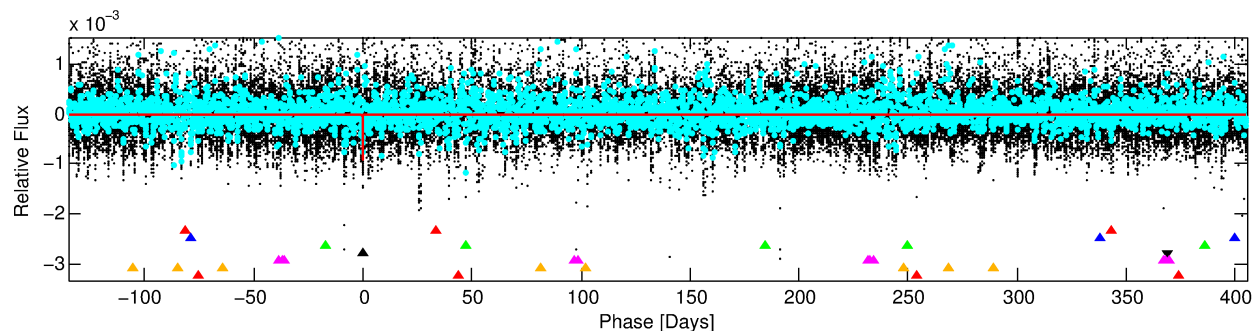
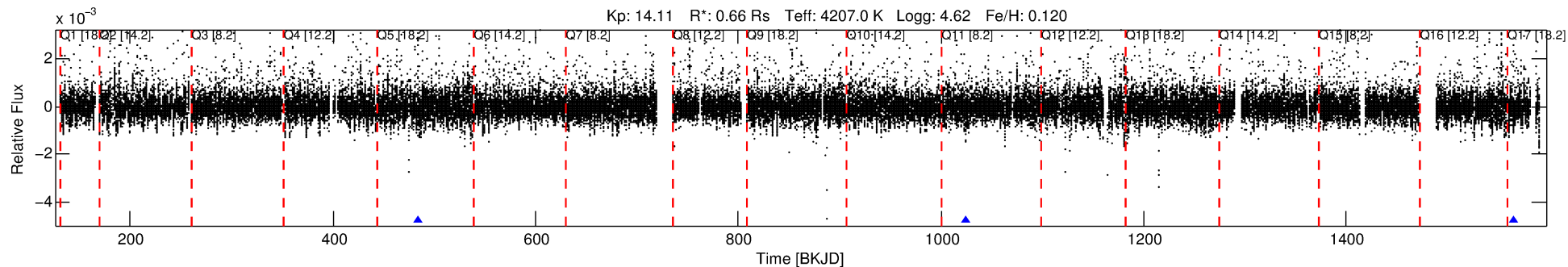
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-04

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 4 of 7 Period: 540.617 d



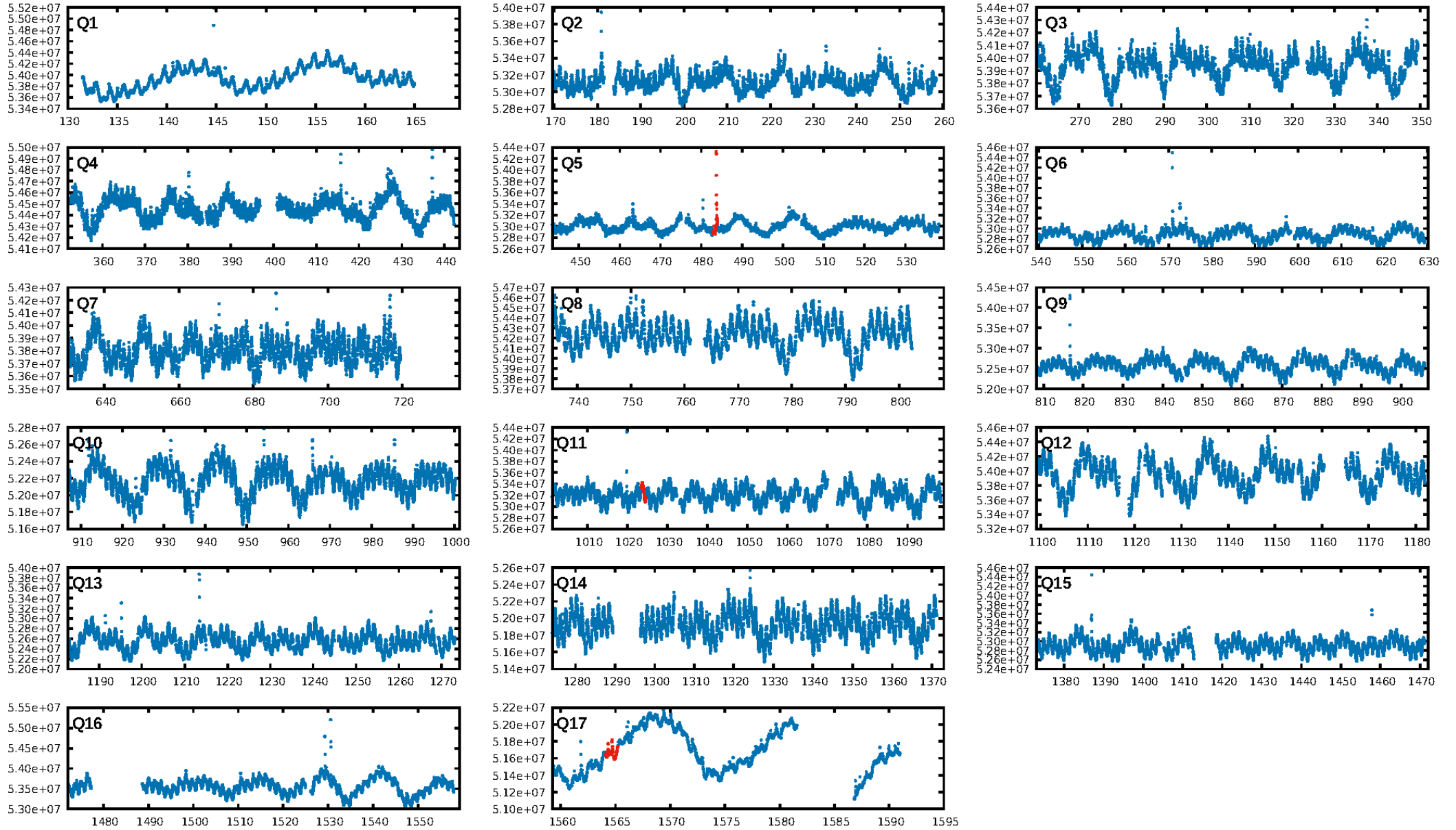
DV Fit Results:

Period = 540.61718 [0.01322] d
Epoch = 483.4026 [0.0186] BKJD
Rp/R* = 0.0277 [0.0165]
a/R* = 267.41 [478.36]
b = 0.54 [2.41]
Seff = 0.10 [0.01]
Teq = 142 [6] K
Rp = 1.98 [1.19] Re
a = 1.1255 [0.0757] AU
Ag = 75848.26 [93292.96] [0.81 σ]
Teffp = 3638 [1121] K [3.12 σ]

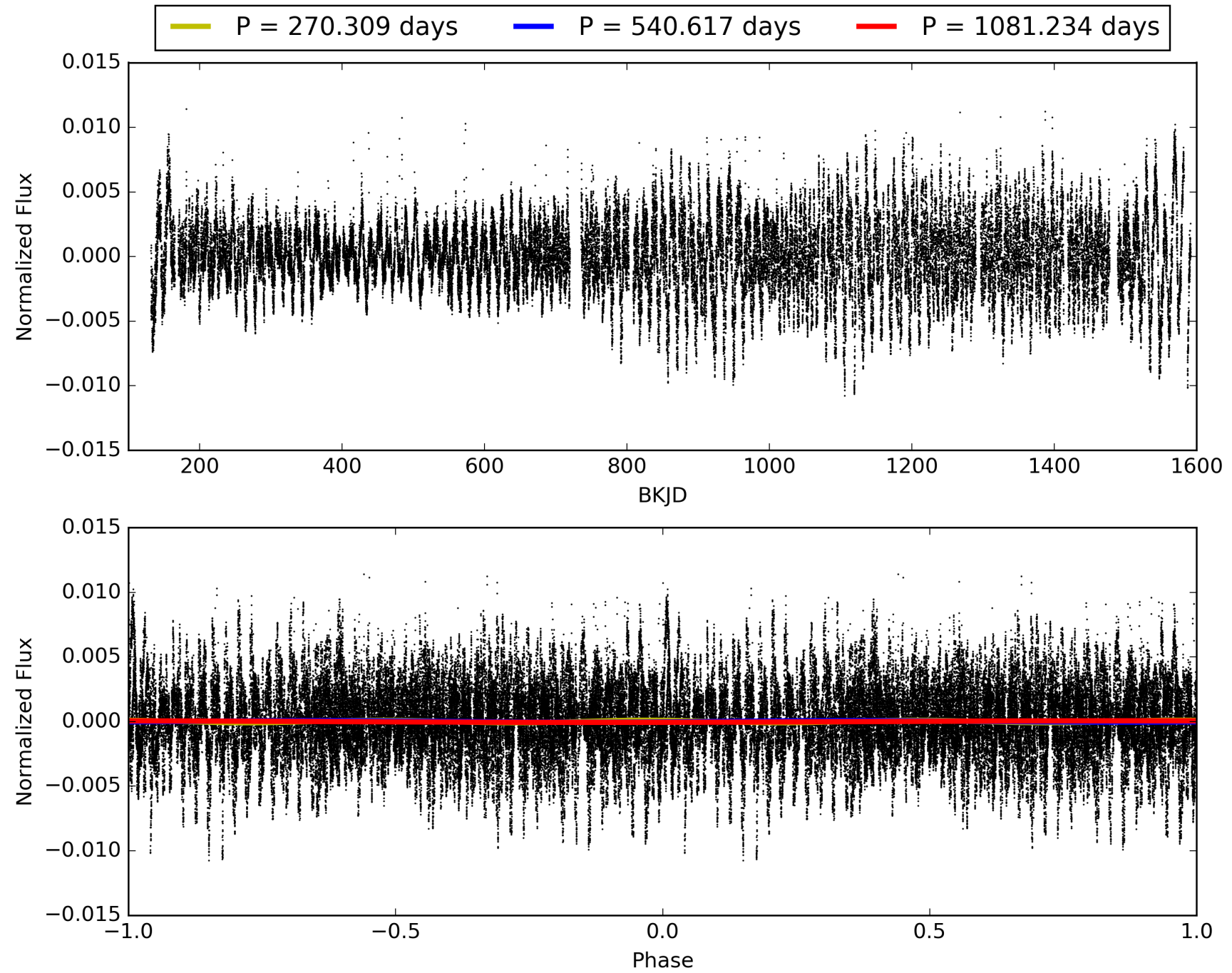
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.78 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 66.7%
Bootstrap-pfa: 1.45e-10
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 10.94
Centroid-sig: 28.9%
Centroid-so: 0.686 arcsec [1.30 σ]
OotOffset-rm: 0.449 arcsec [0.96 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 0.402 arcsec [0.94 σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009649447-04, PDC Light Curves

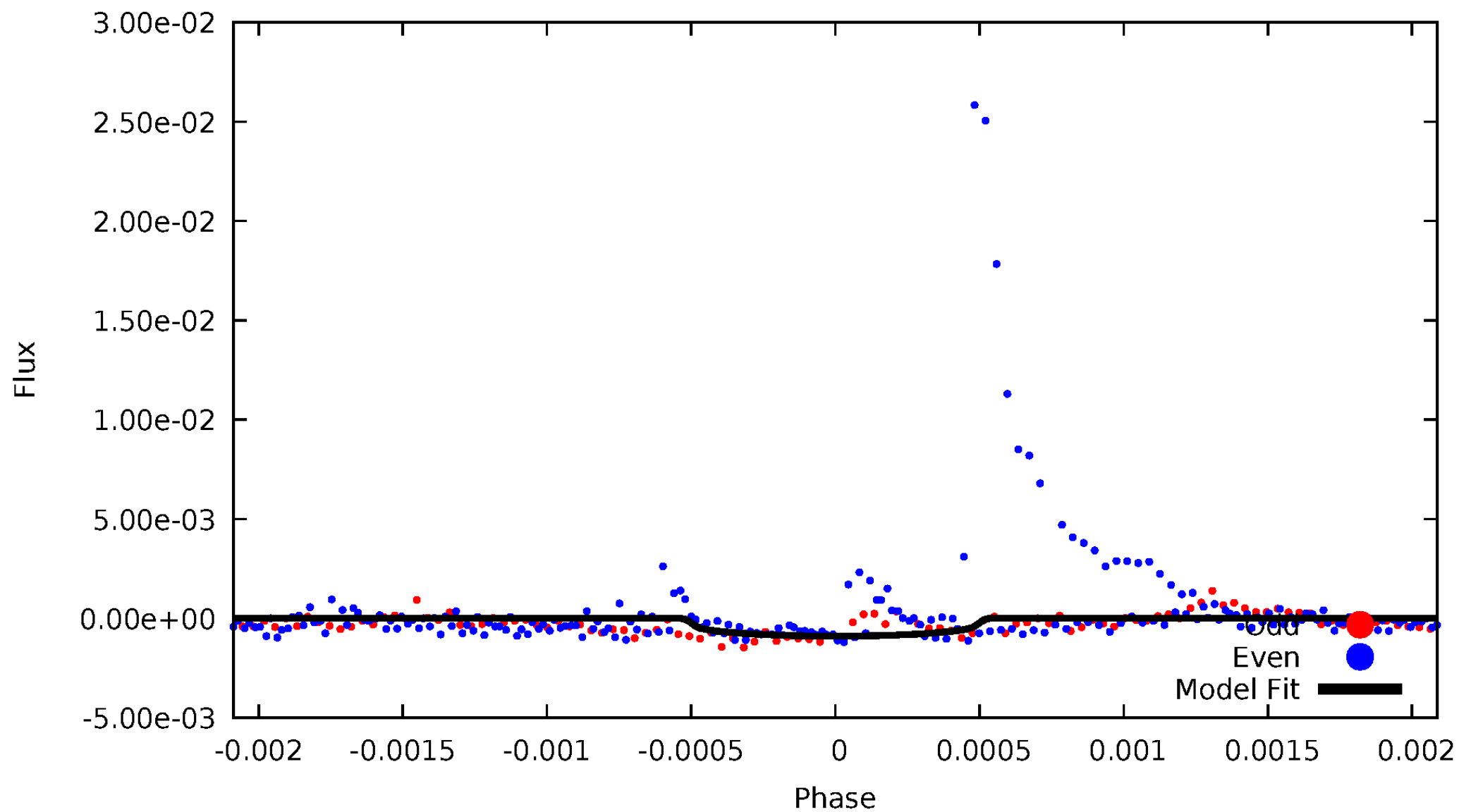


TCE 009649447-04



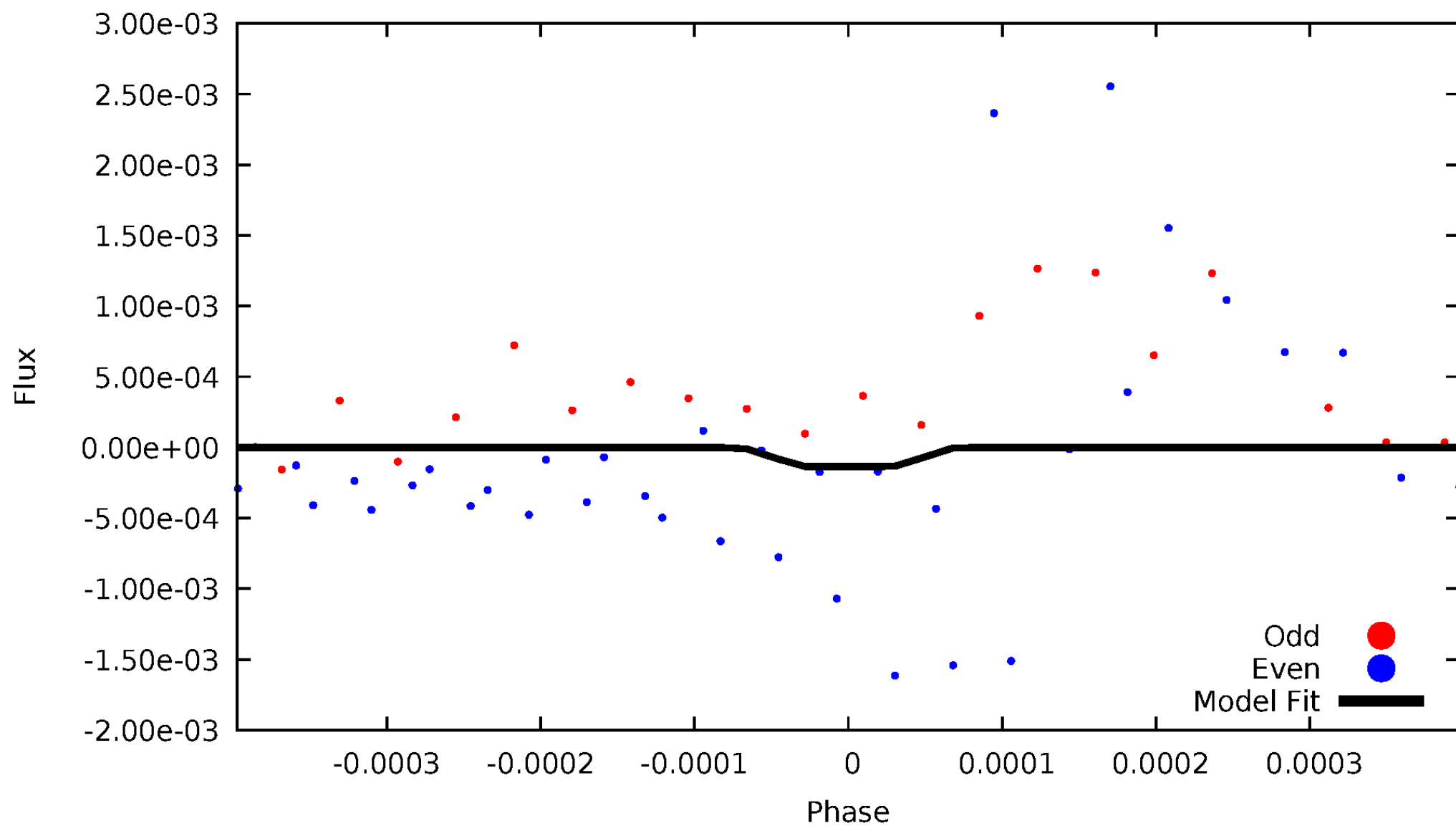
DV Odd/Even

TCE 009649447-04



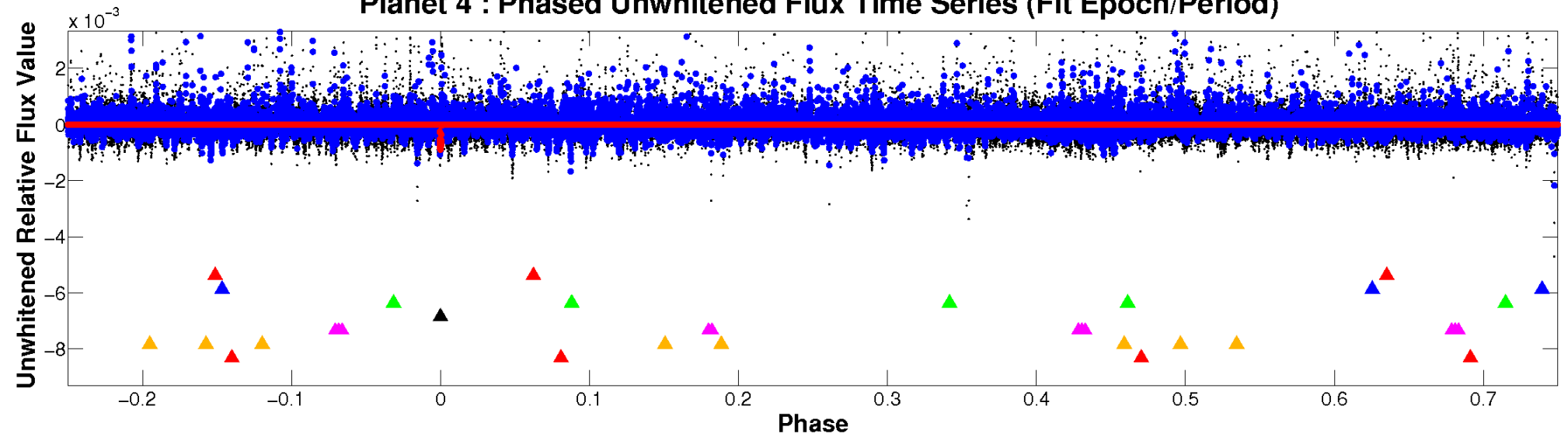
ALT Odd/Even

TCE 009649447-04

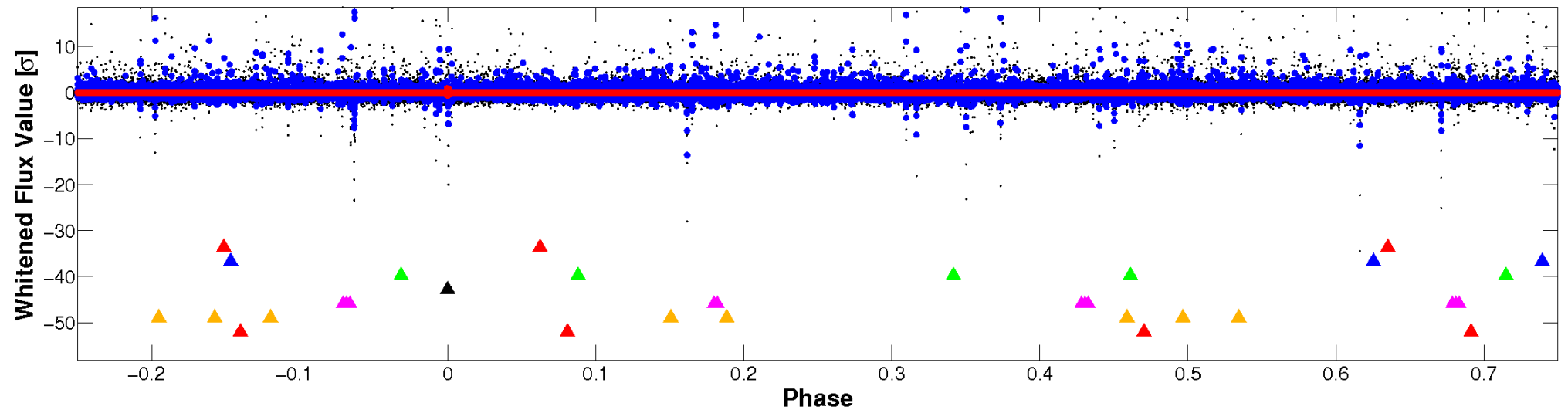


Non-Whitened Vs. Whitened Light Curve

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

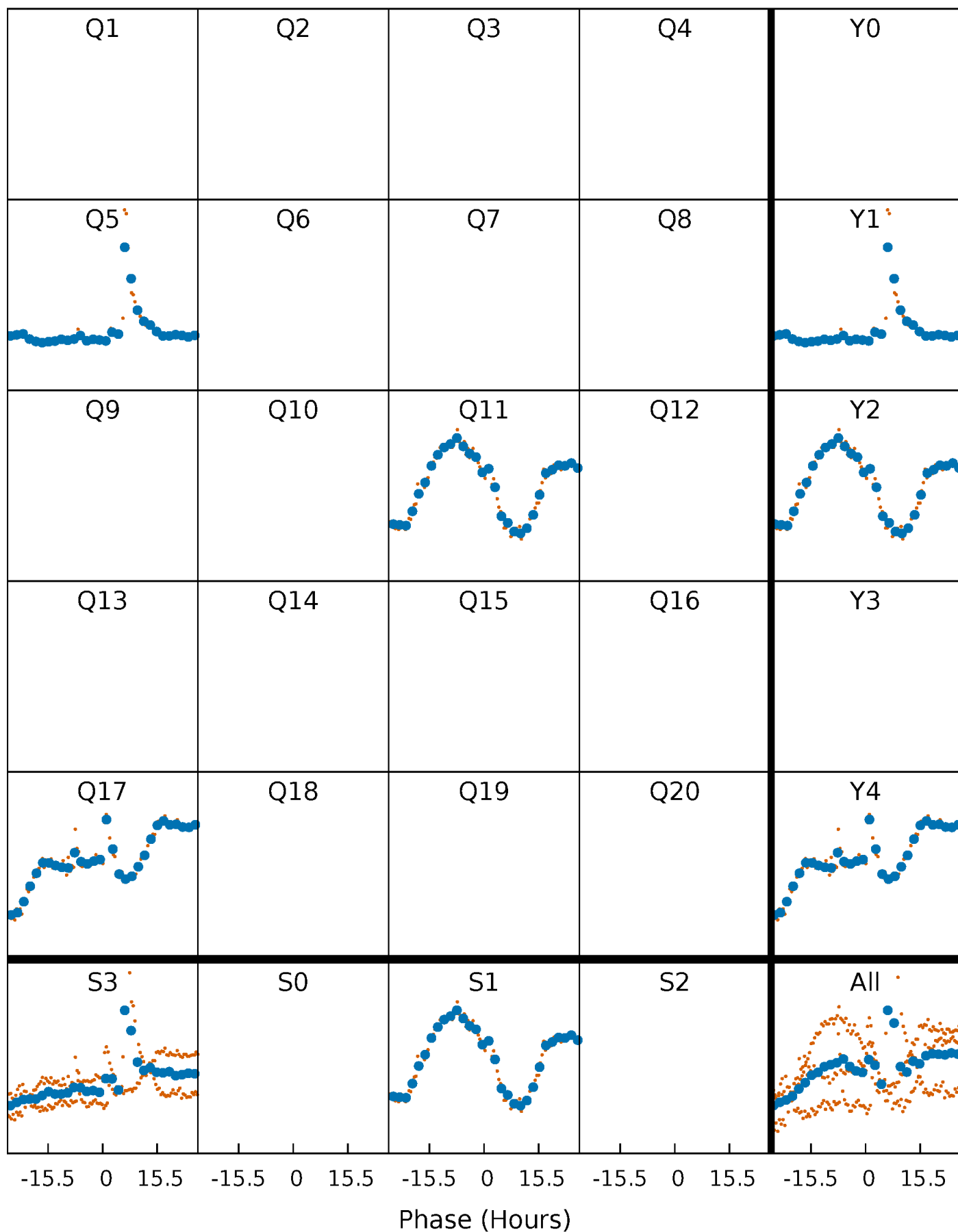


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



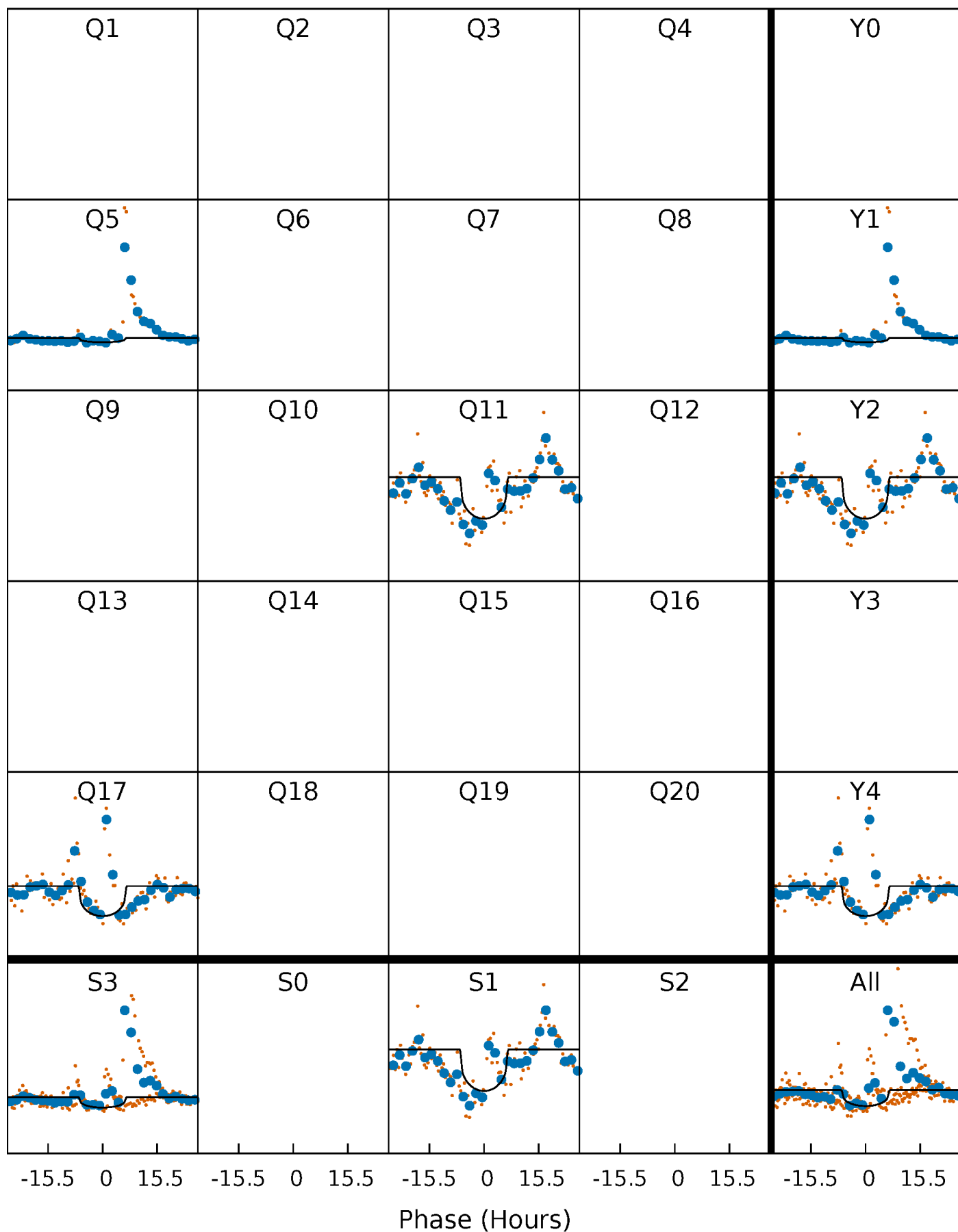
PDC Quarter-Phased Transit Curves

TCE 009649447-04 $P=540.617182$ Days $T_0=483.402646$ (BKJD)



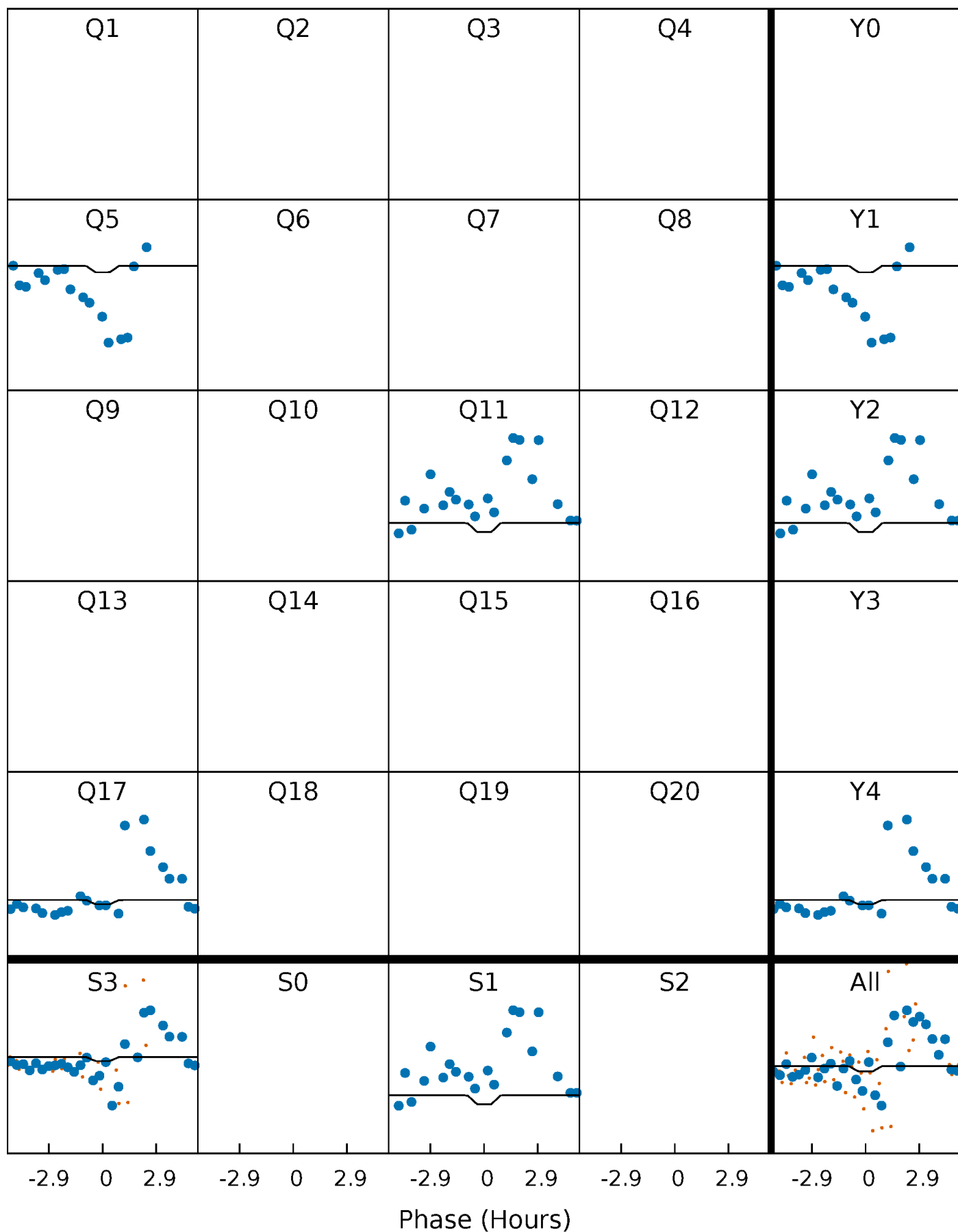
DV Quarter-Phased Transit Curves

TCE 009649447-04 $P=540.617182$ Days $T_0=483.402646$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

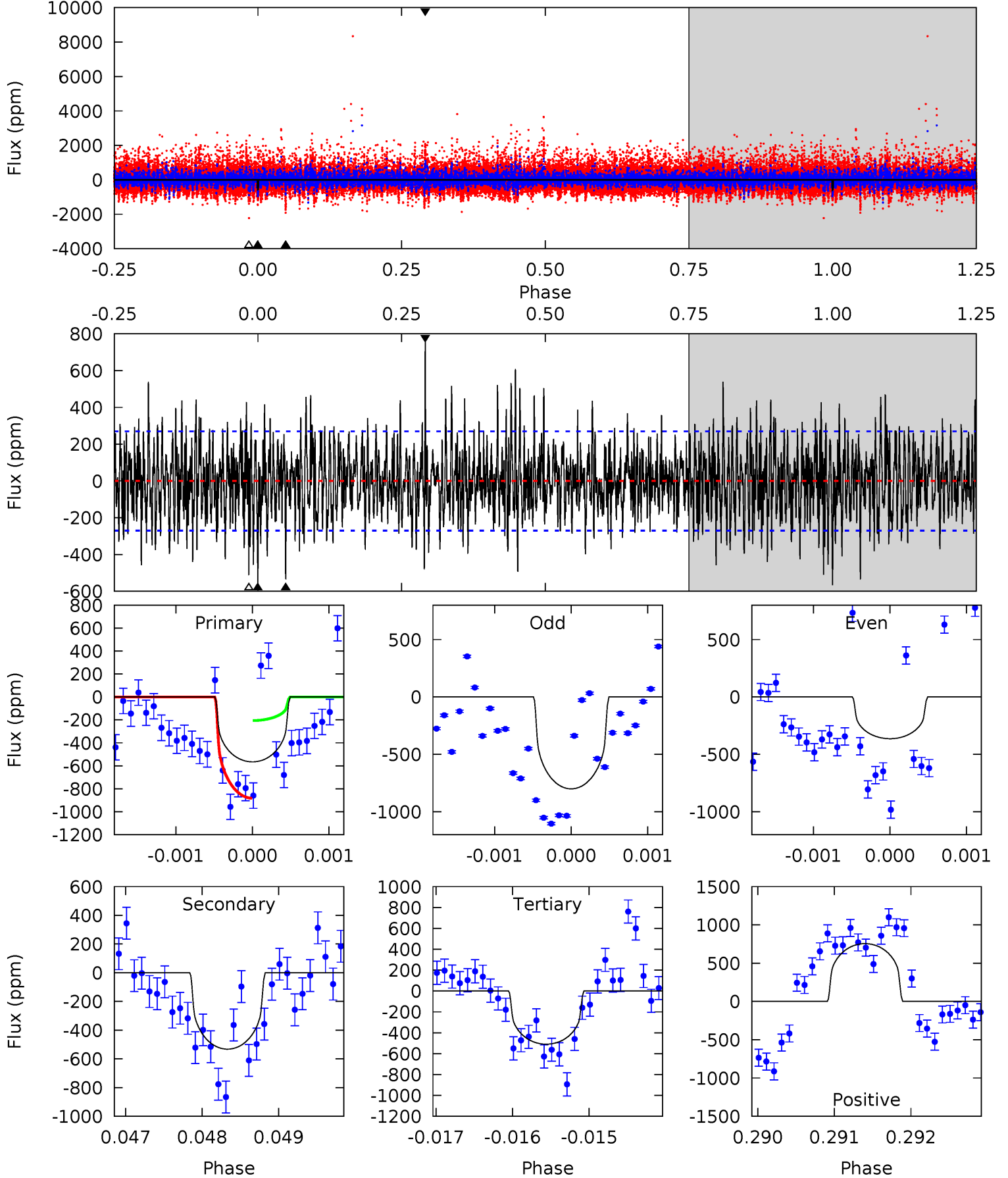
TCE 009649447-04 P=540.603886 Days $T_0=483.402538$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-04, P = 540.617182 Days, E = 483.402646 Days

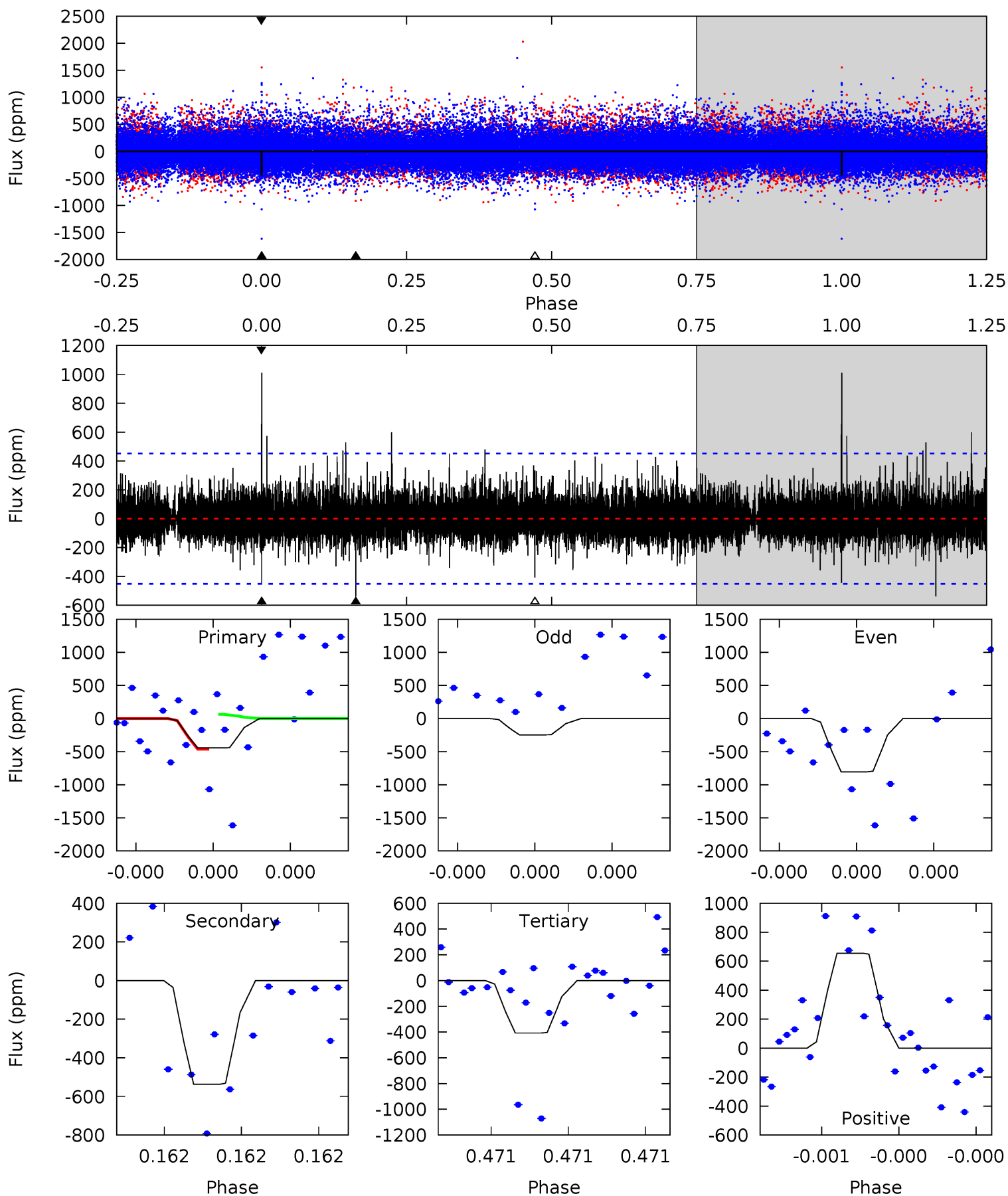
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	10.7	10.3	15.2	5.44	3.27	3.15	1.13	-3.83	0.46	-4.50	3.30	1.20	0.57	6.79



Alt Model-Shift Uniqueness Test

009649447-04, P = 540.603886 Days, E = 483.402538 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.70	6.89	5.22	8.41	5.79	3.81	1.12	0.48	-2.70	1.67	-1.52	3.41	2.00	0.65	2.42



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-532 ± 50	$1.95^{+1.23}_{-1.03}$	196^{+7}_{-6}	3951^{+1444}_{-577}	$96209^{+341003}_{-58894}$
Alt.	-537 ± 78	$1.21^{+1.03}_{-0.83}$	197^{+7}_{-6}	4742^{+3874}_{-966}	$257760^{+2234617}_{-181106}$

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

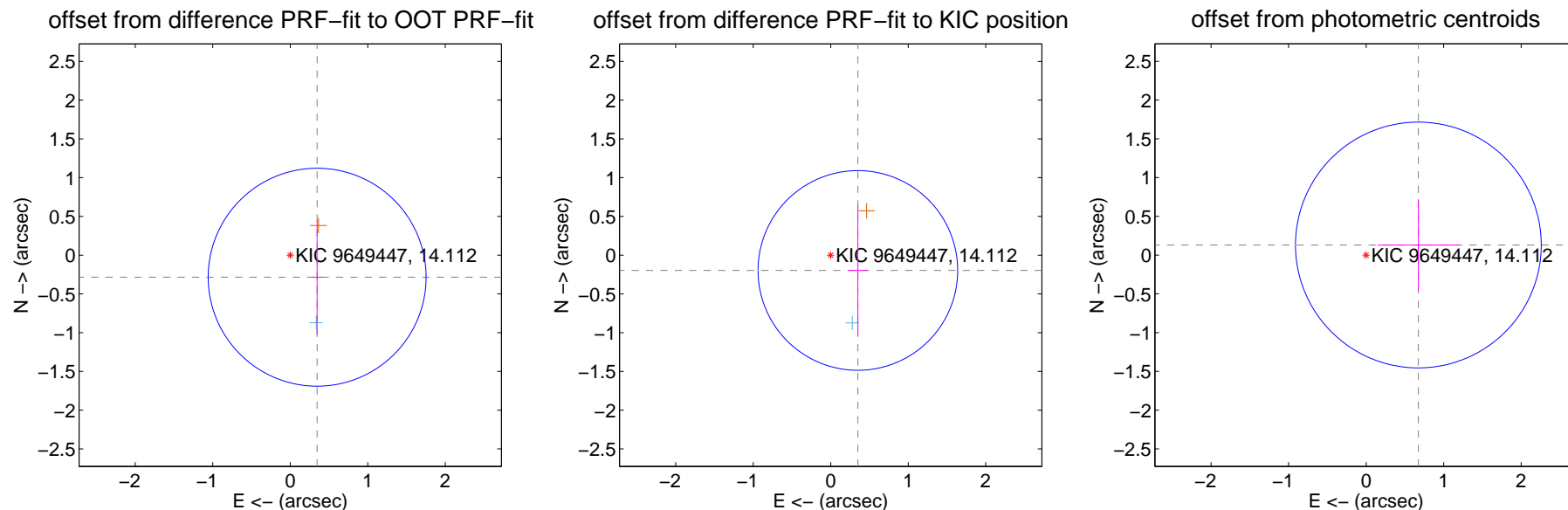
DV Centroid Data

Supplemental centroid analysis for 009649447-04. Kepler magnitude: 14.11. Transit SNR 5.91

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.449 ± 0.469	0.96	-0.347 ± 0.069	-0.285 ± 0.734
PRF-fit source offset from KIC position	0.402 ± 0.429	0.94	-0.350 ± 0.125	-0.197 ± 0.846
photometric centroid source offset	0.69 ± 0.53	1.30	-0.67 ± 0.53	0.13 ± 0.59

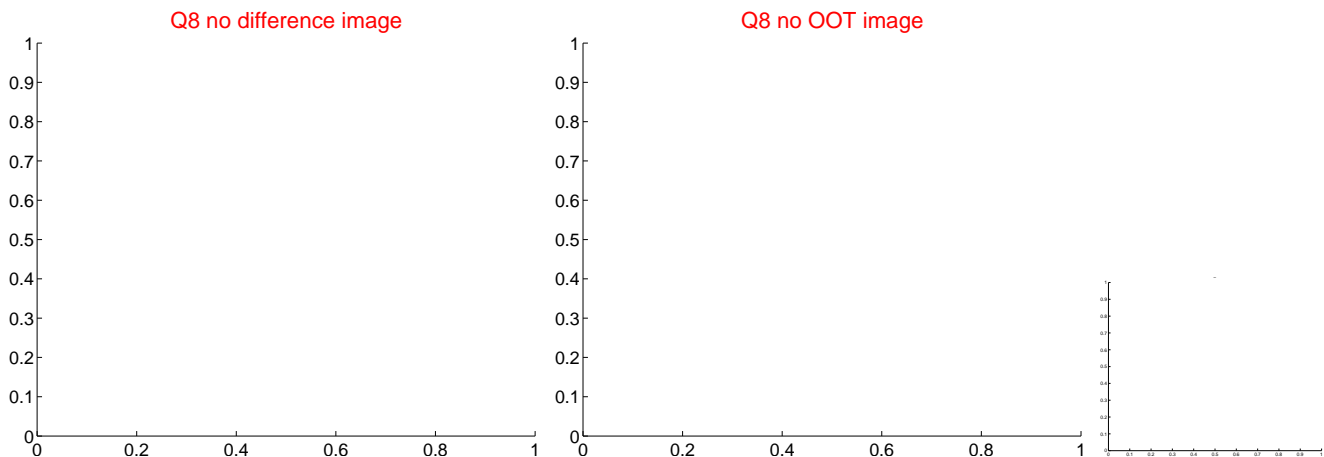
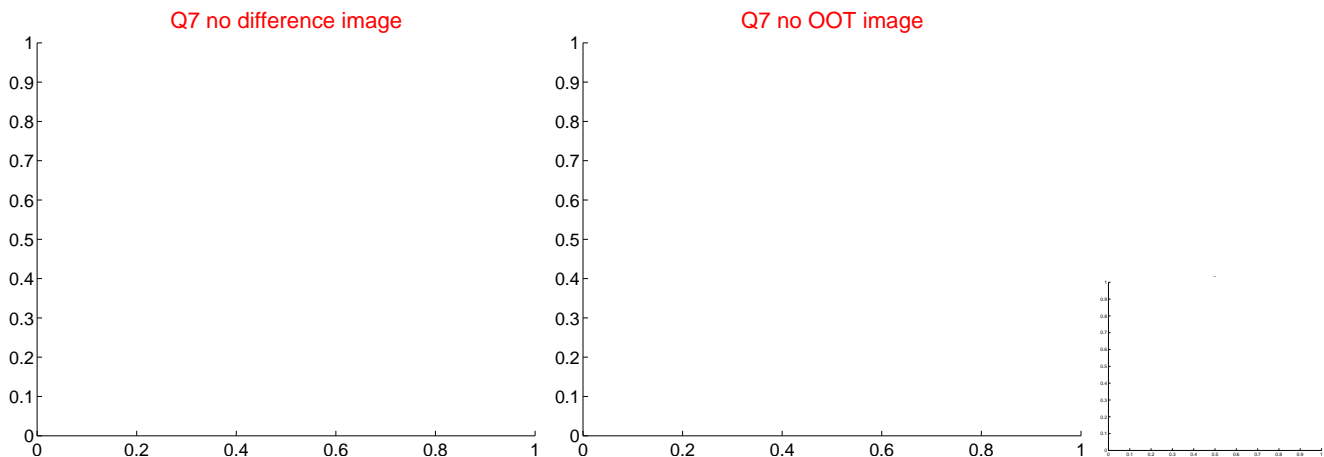
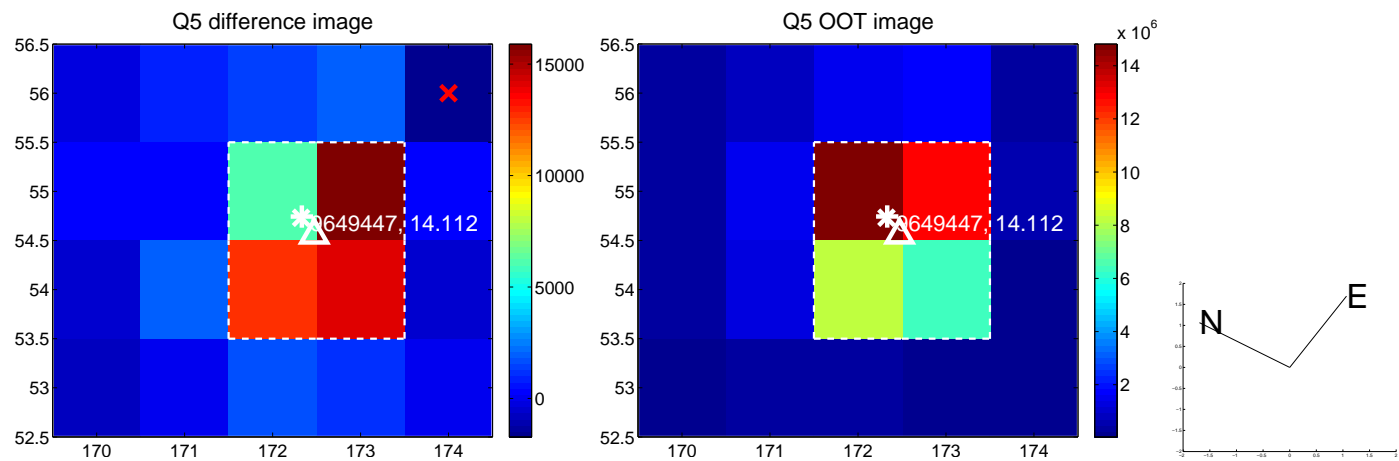


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

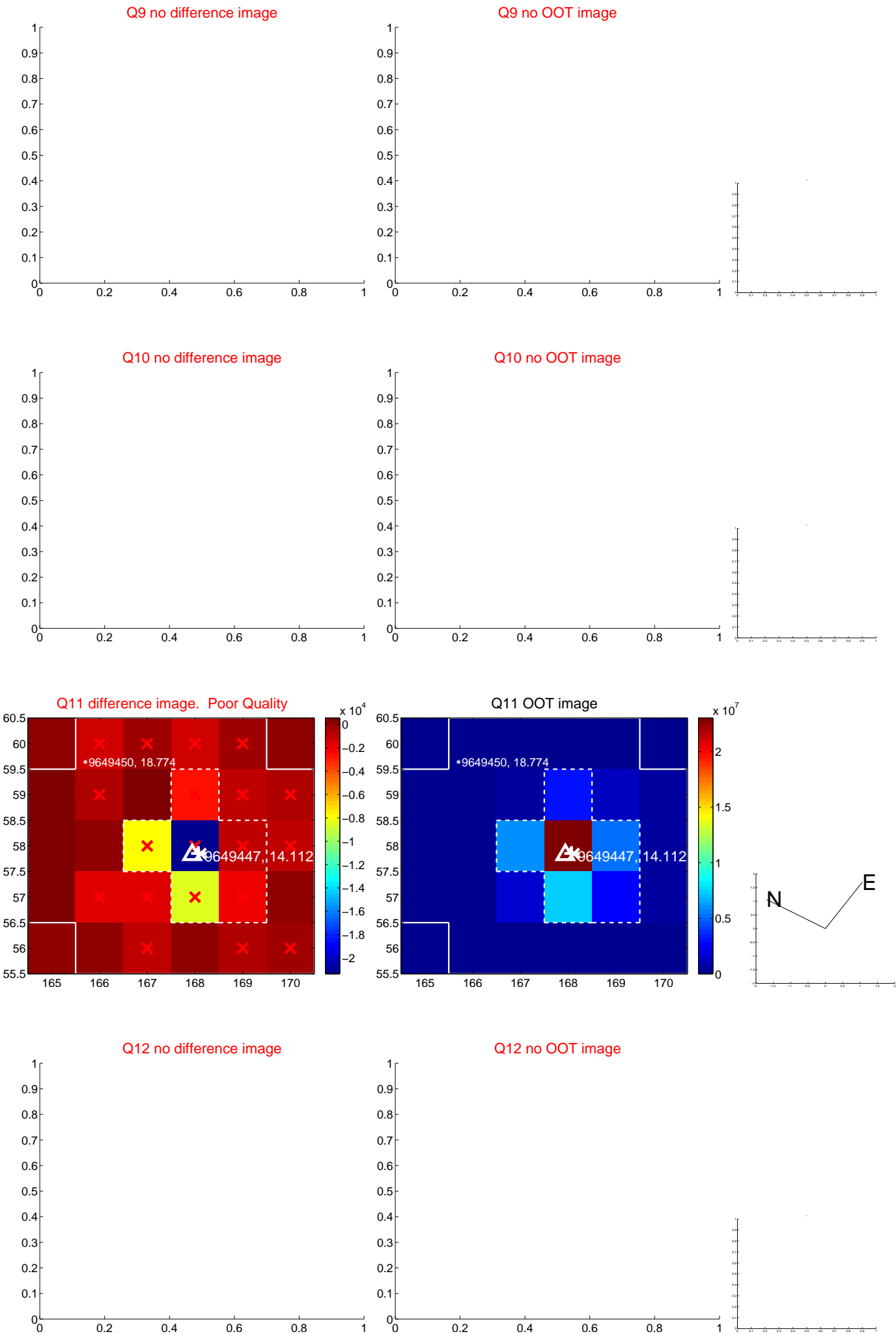
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



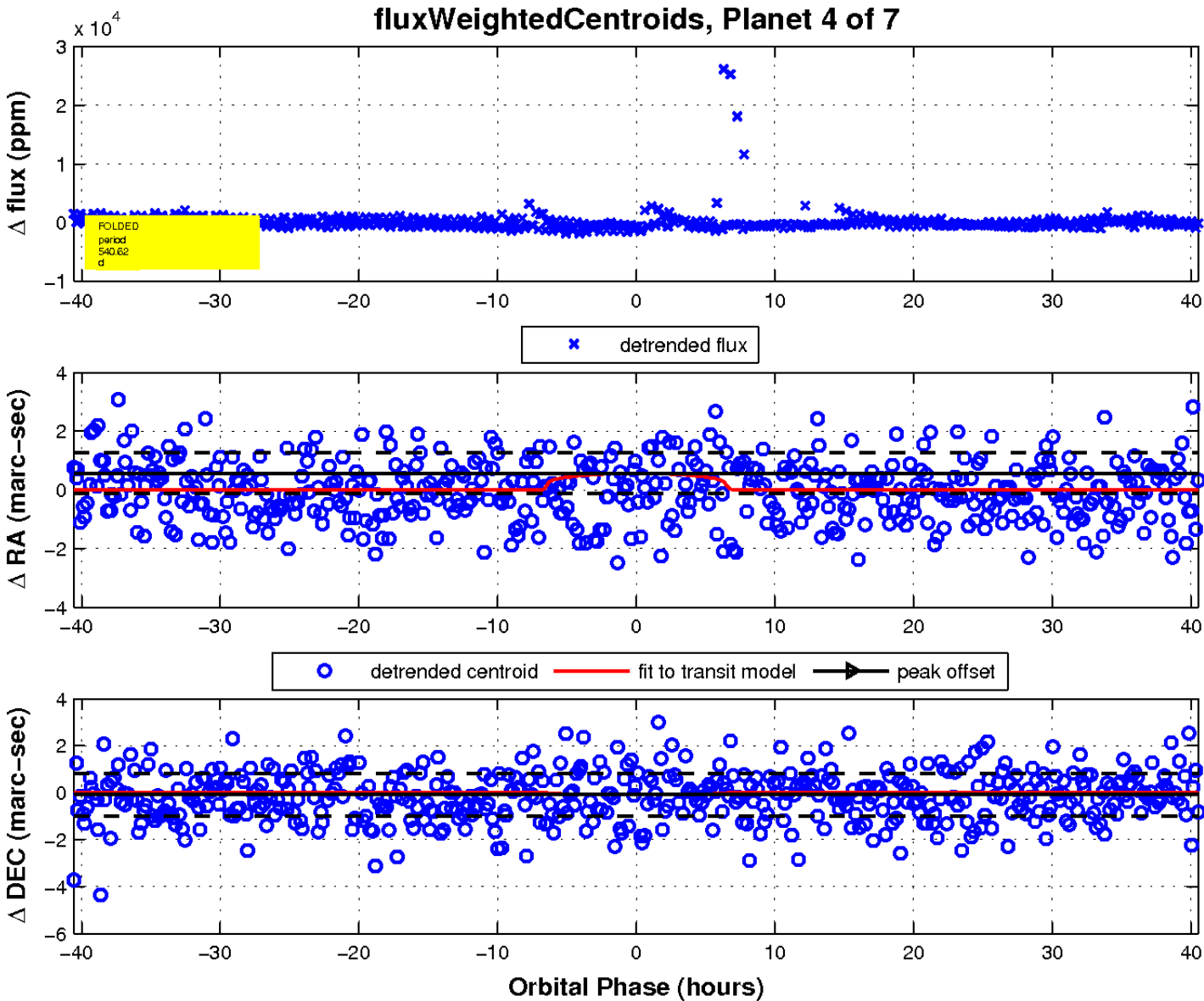
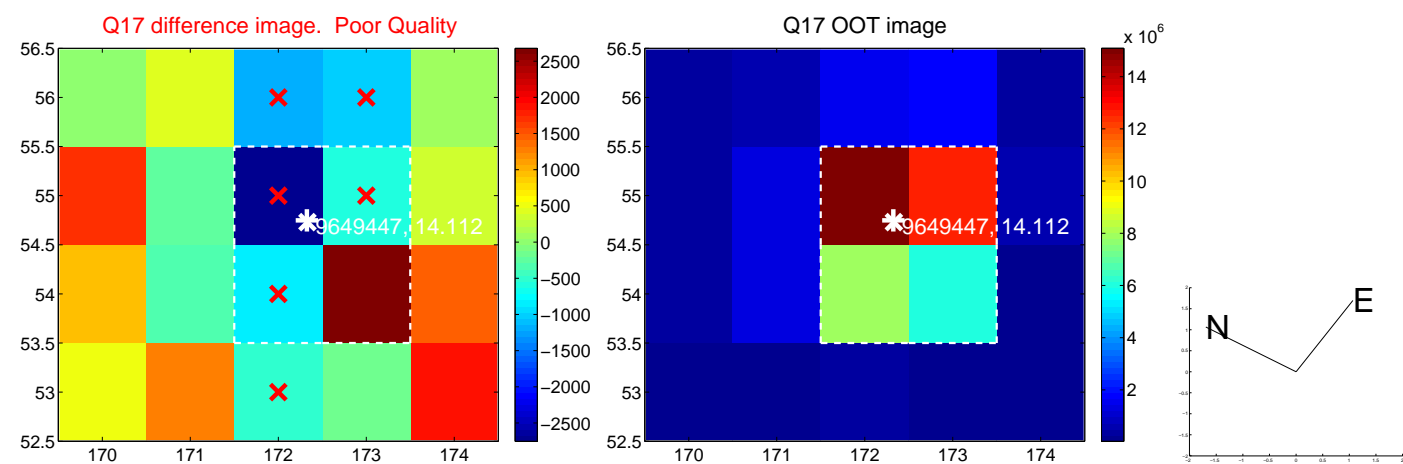
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

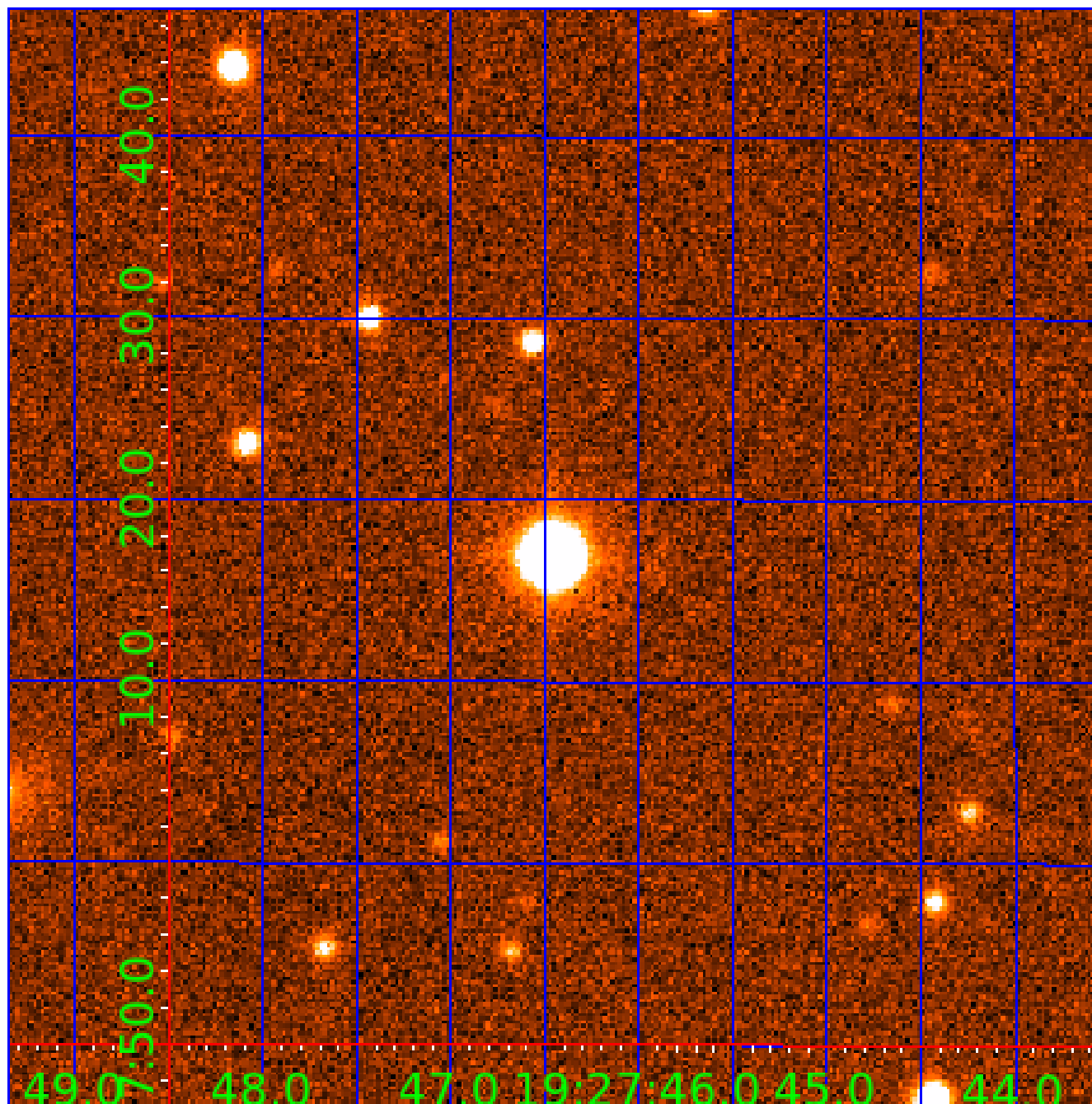


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

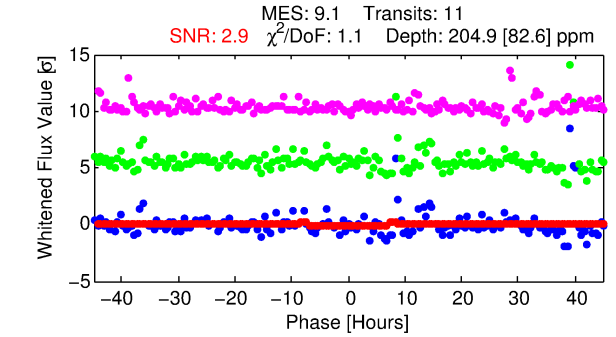
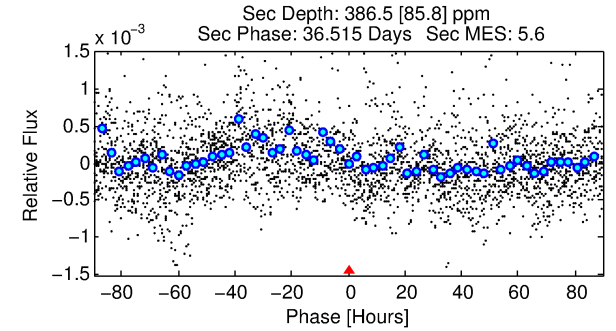
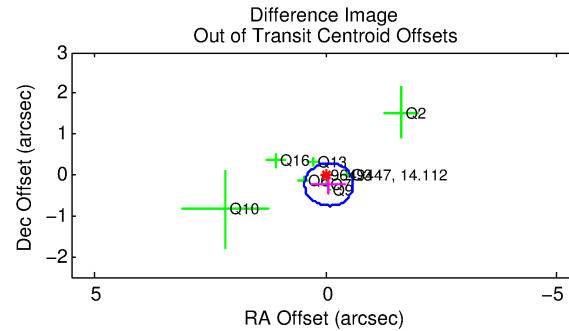
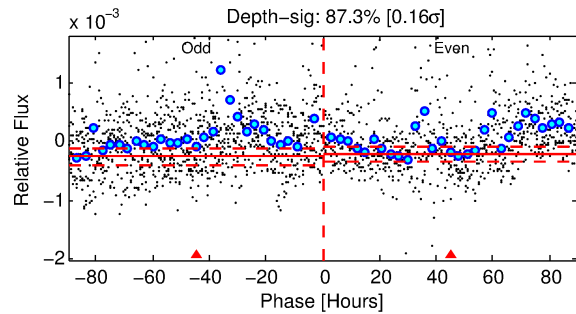
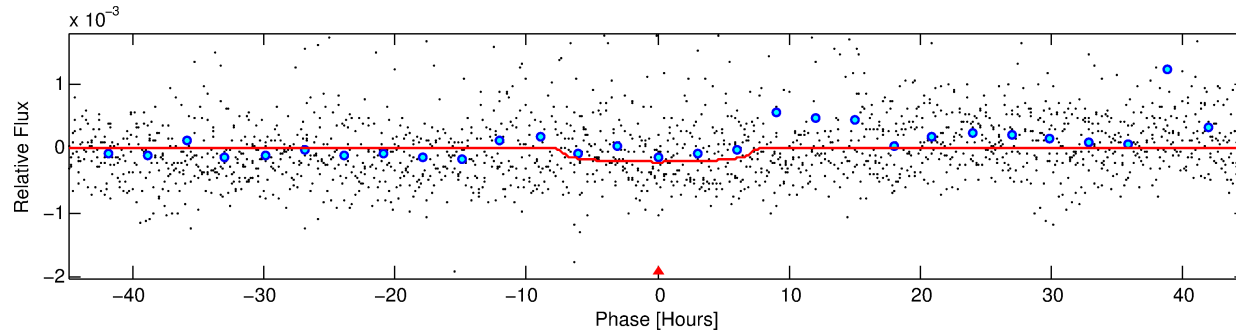
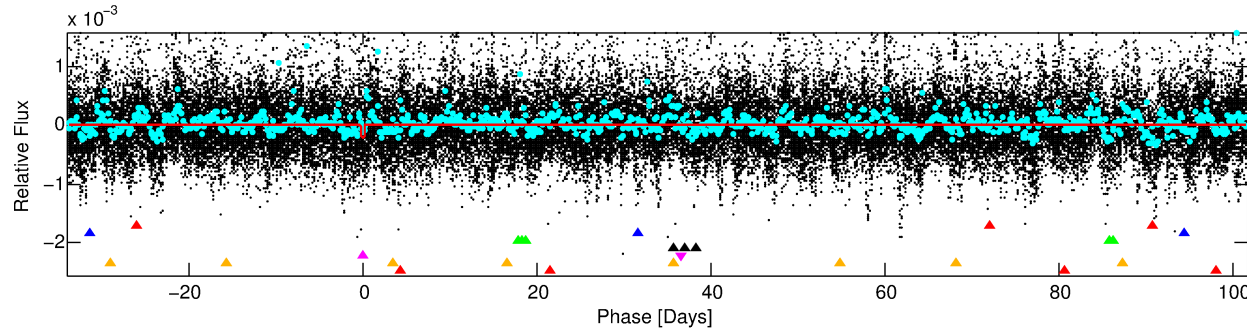
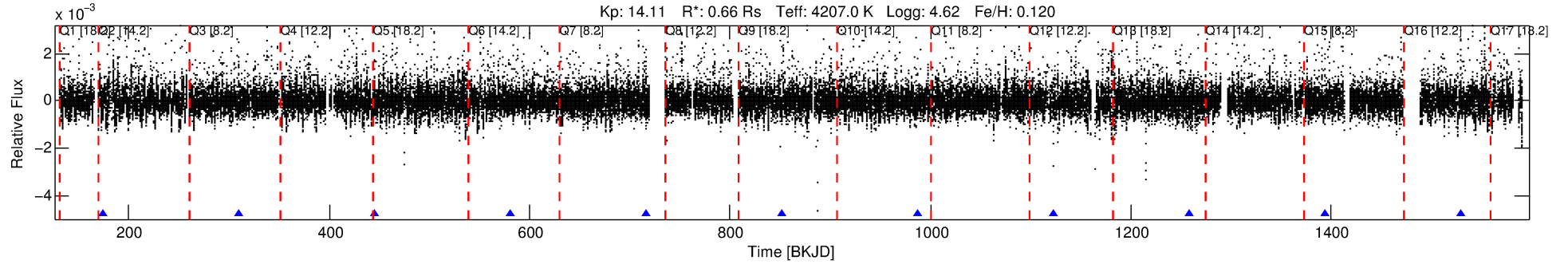
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-05

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 5 of 7 Period: 135.469 d



DV Fit Results:

Period = 135.46865 [0.00533] d
Epoch = 174.2577 [0.0306] BKJD
Rp/R* = 0.0144 [0.0092]
a/R* = 46.41 [93.05]
b = 0.76 [1.13]
Seff = 0.61 [0.09]
Teq = 225 [9] K
Rp = 1.03 [0.67] Re
a = 0.4473 [0.0301] AU
Ag = 39880.03 [52026.96] [0.77 σ]
Teffp = 4914 [1606] K [2.92 σ]

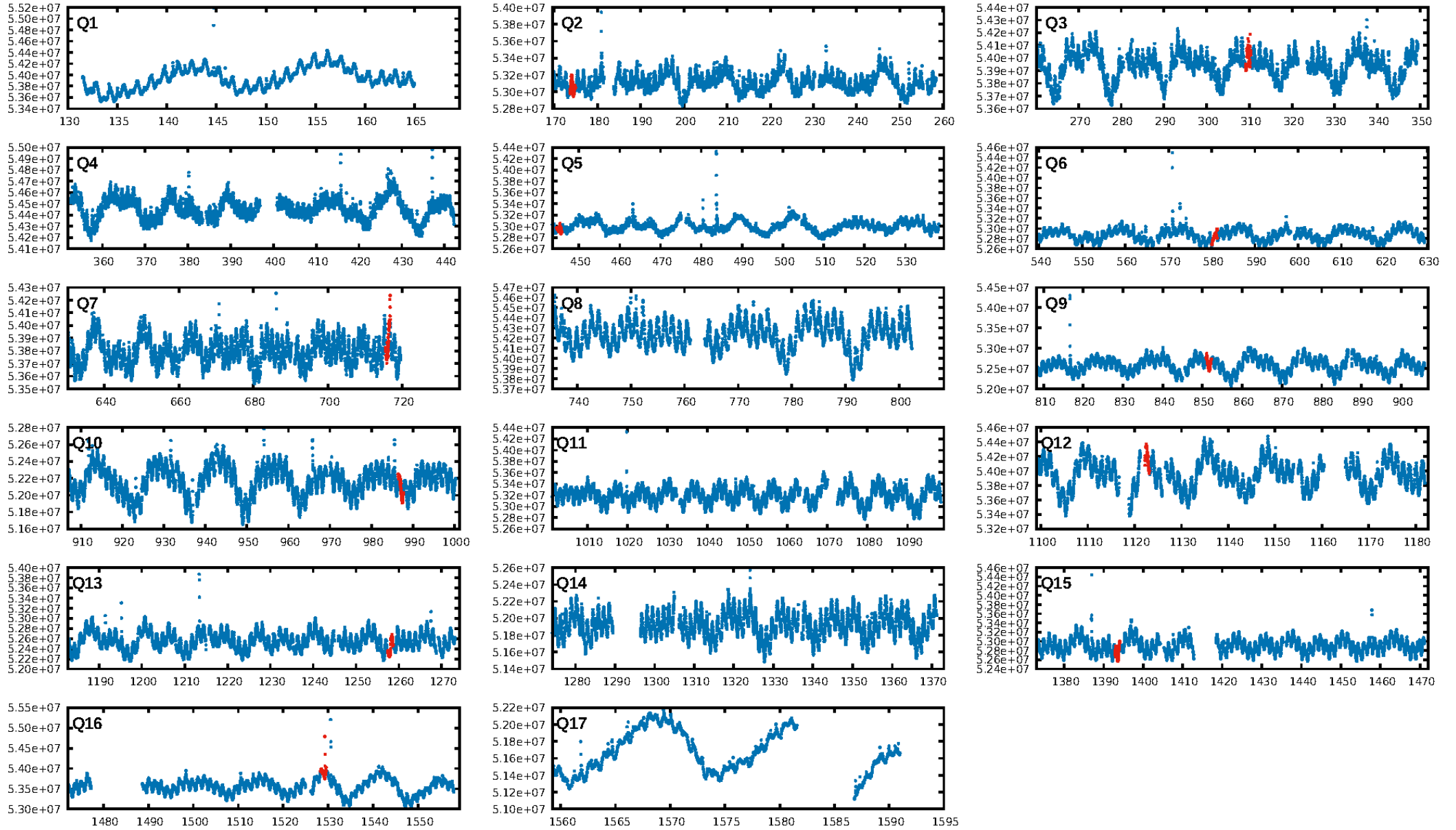
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [81.49 σ]
ModelChiSquare2-sig: 20.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.29e-10
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 7.203
Centroid-sig: 68.3%
Centroid-so: 0.695 arcsec [0.62 σ]
OotOffset-rm: 0.244 arcsec [1.39 σ]
OotOffset-st: 3/2/1/2 [8]
KicOffset-rm: 0.074 arcsec [0.22 σ]
KicOffset-st: 3/2/1/2 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 1.00 [8/8]

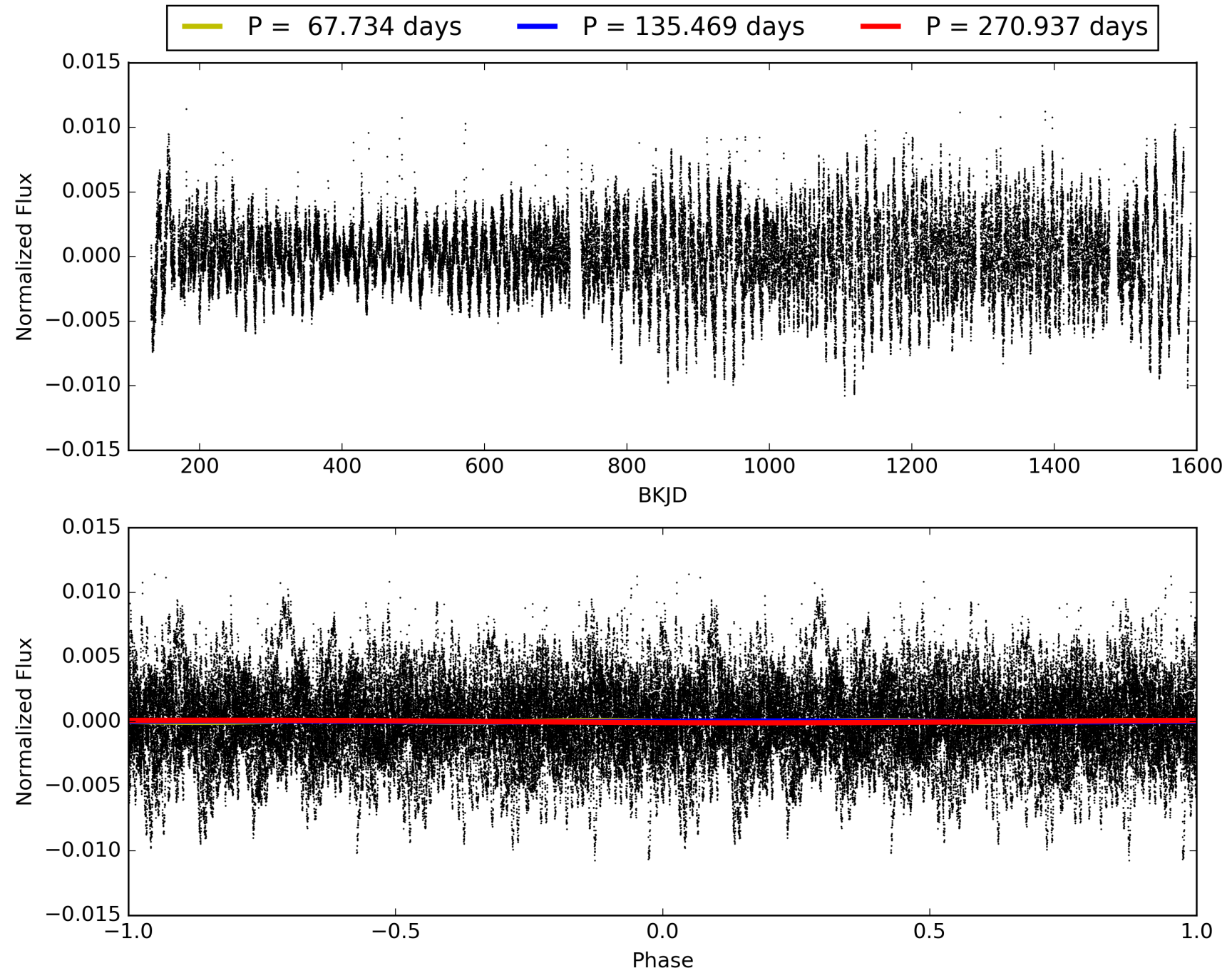
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:54:05 Z

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

TCE 009649447-05, PDC Light Curves

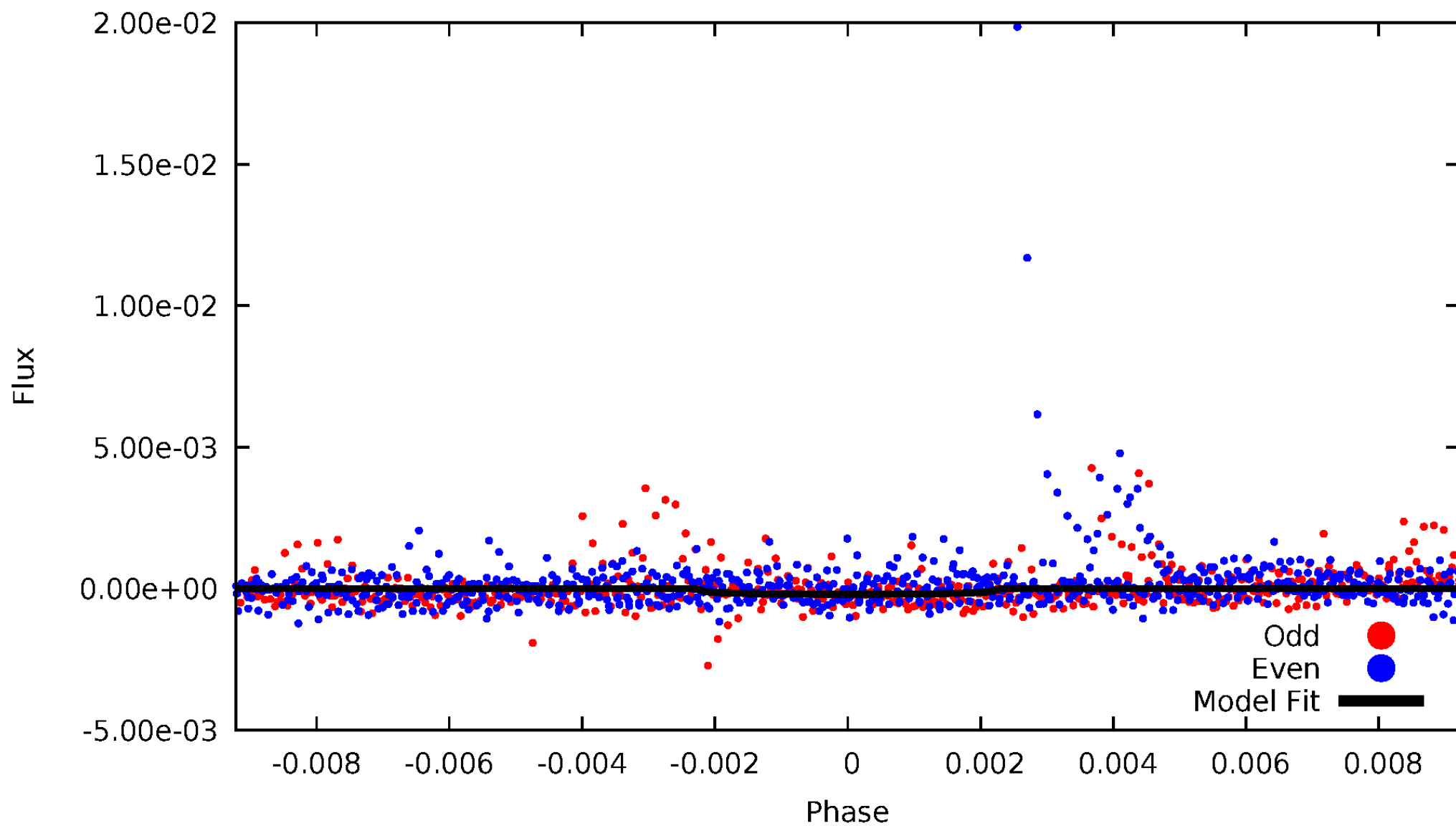


TCE 009649447-05



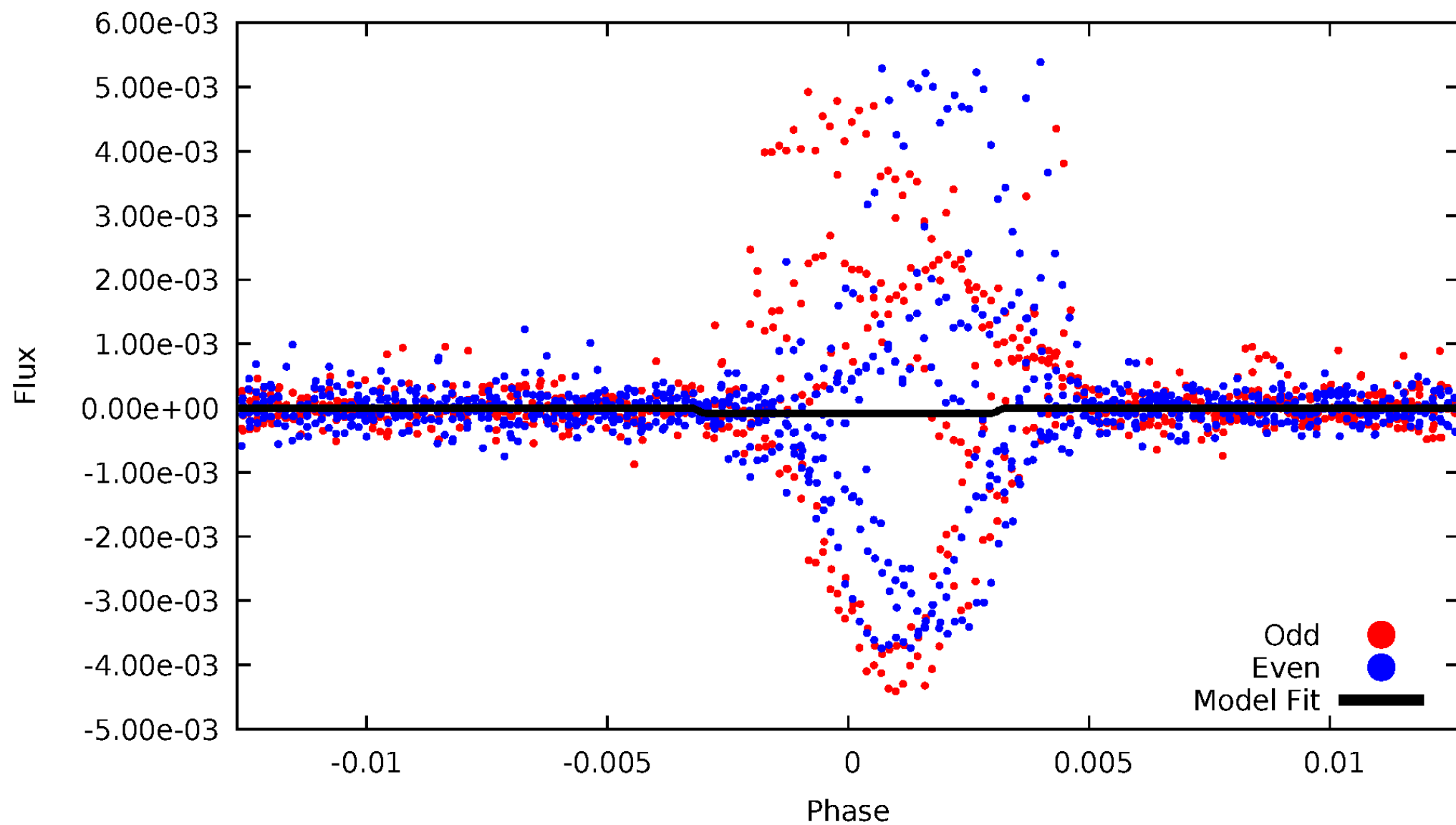
DV Odd/Even

TCE 009649447-05



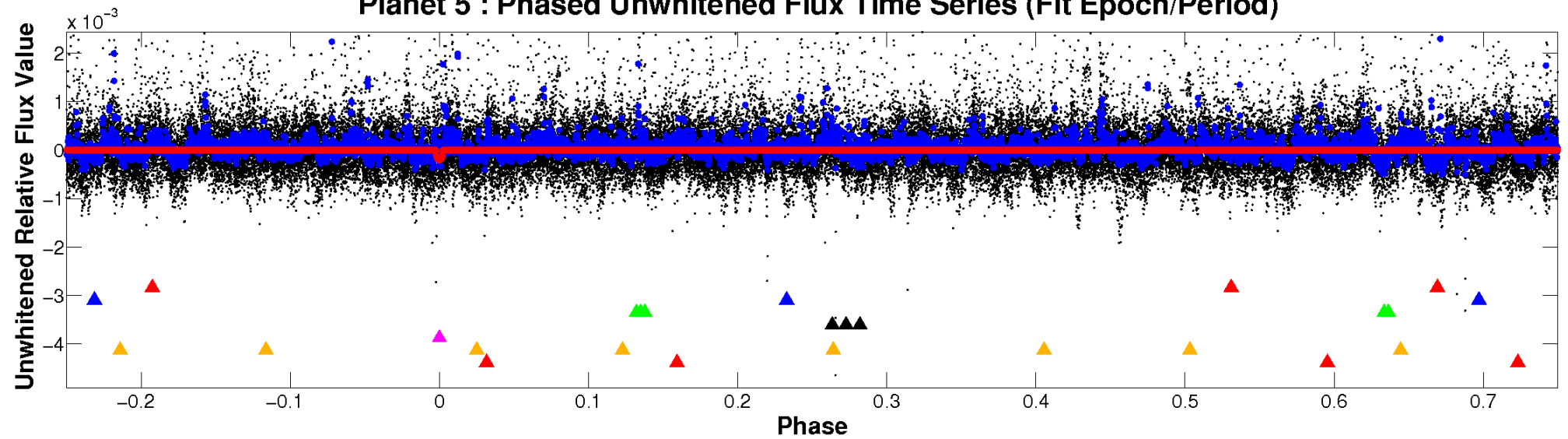
ALT Odd/Even

TCE 009649447-05

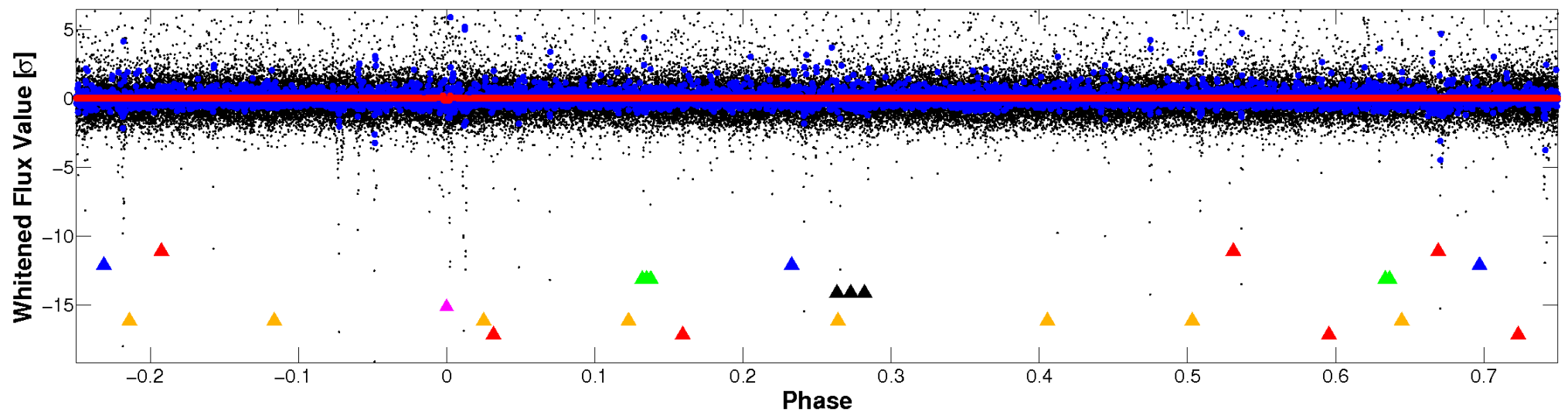


Non-Whitened Vs. Whitened Light Curve

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

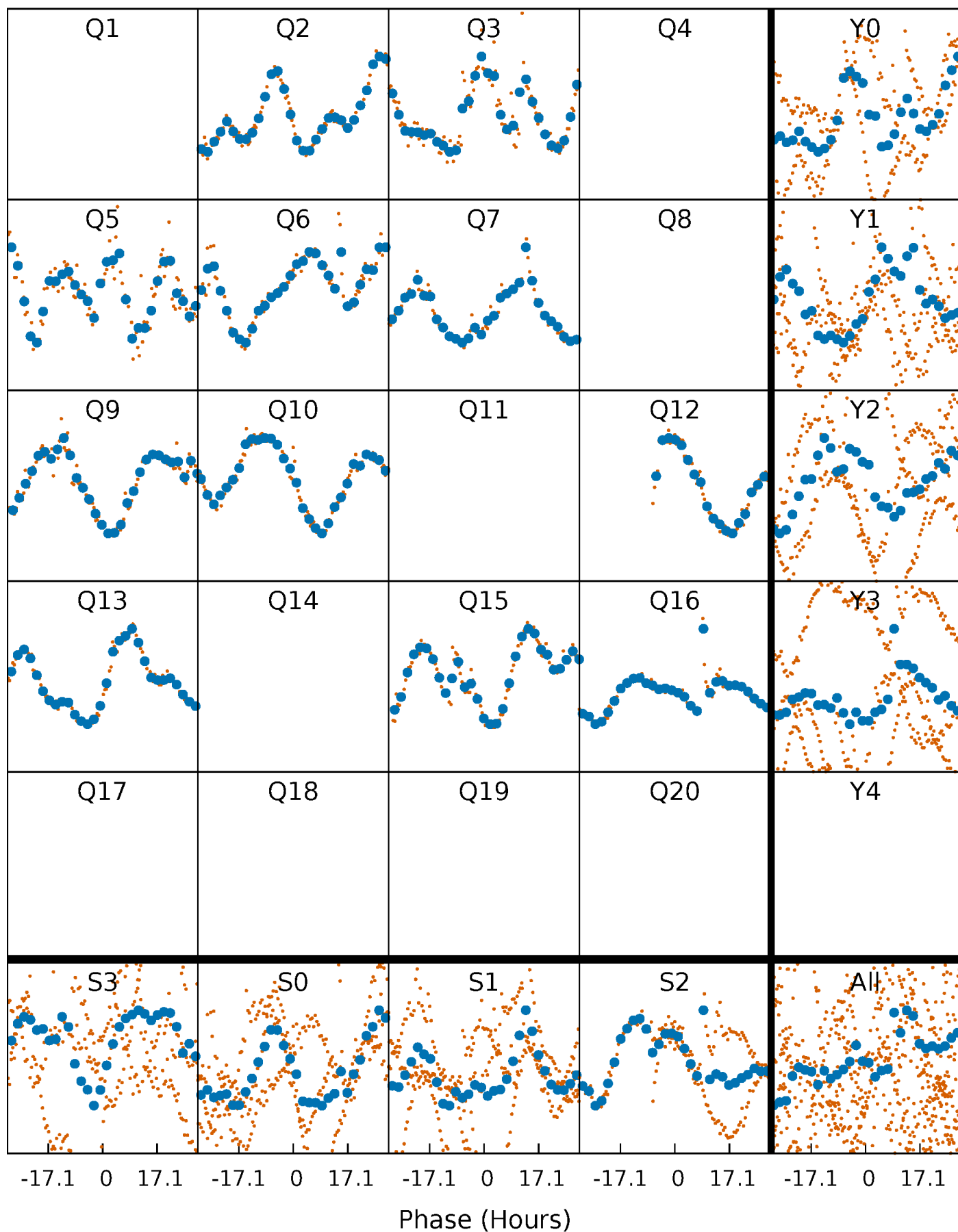


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 009649447-05 $P=135.468648$ Days $T_0=174.257734$ (BKJD)



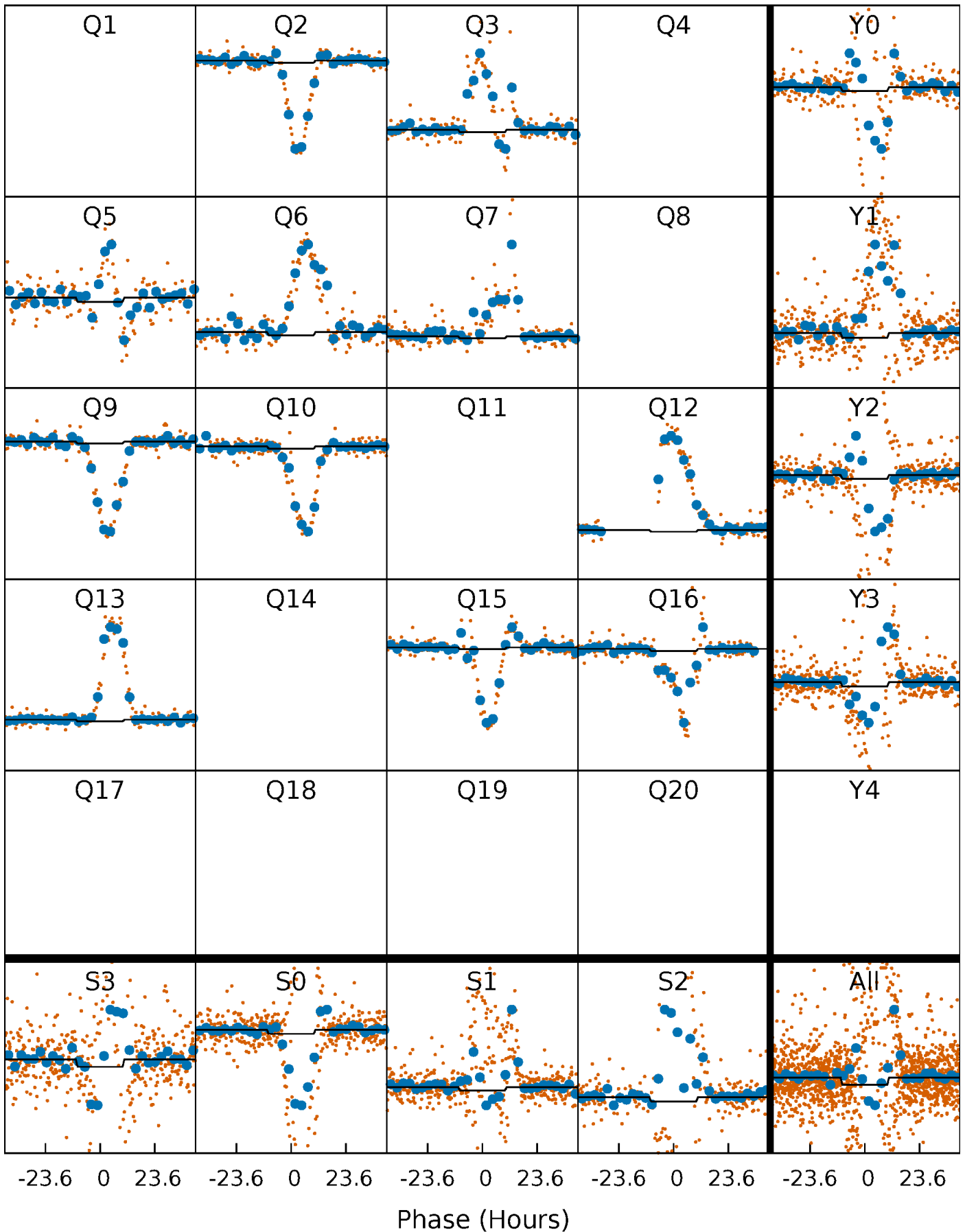
DV Quarter-Phased Transit Curves

TCE 009649447-05 $P=135.468648$ Days $T_0=174.257734$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

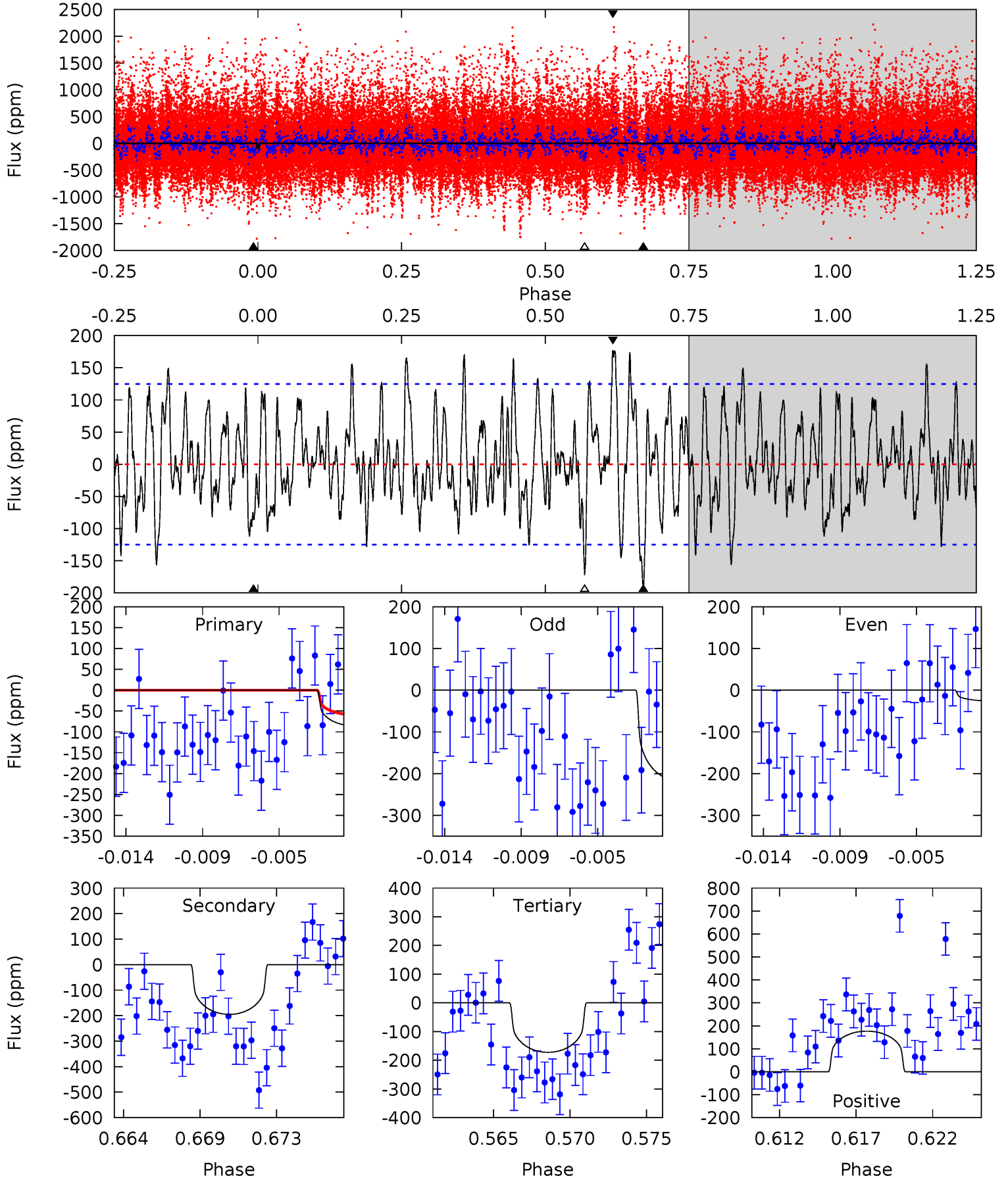
TCE 009649447-05 $P=135.474503$ Days $T_0=174.248971$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-05, $P = 135.468648$ Days, $E = 38.789086$ Days

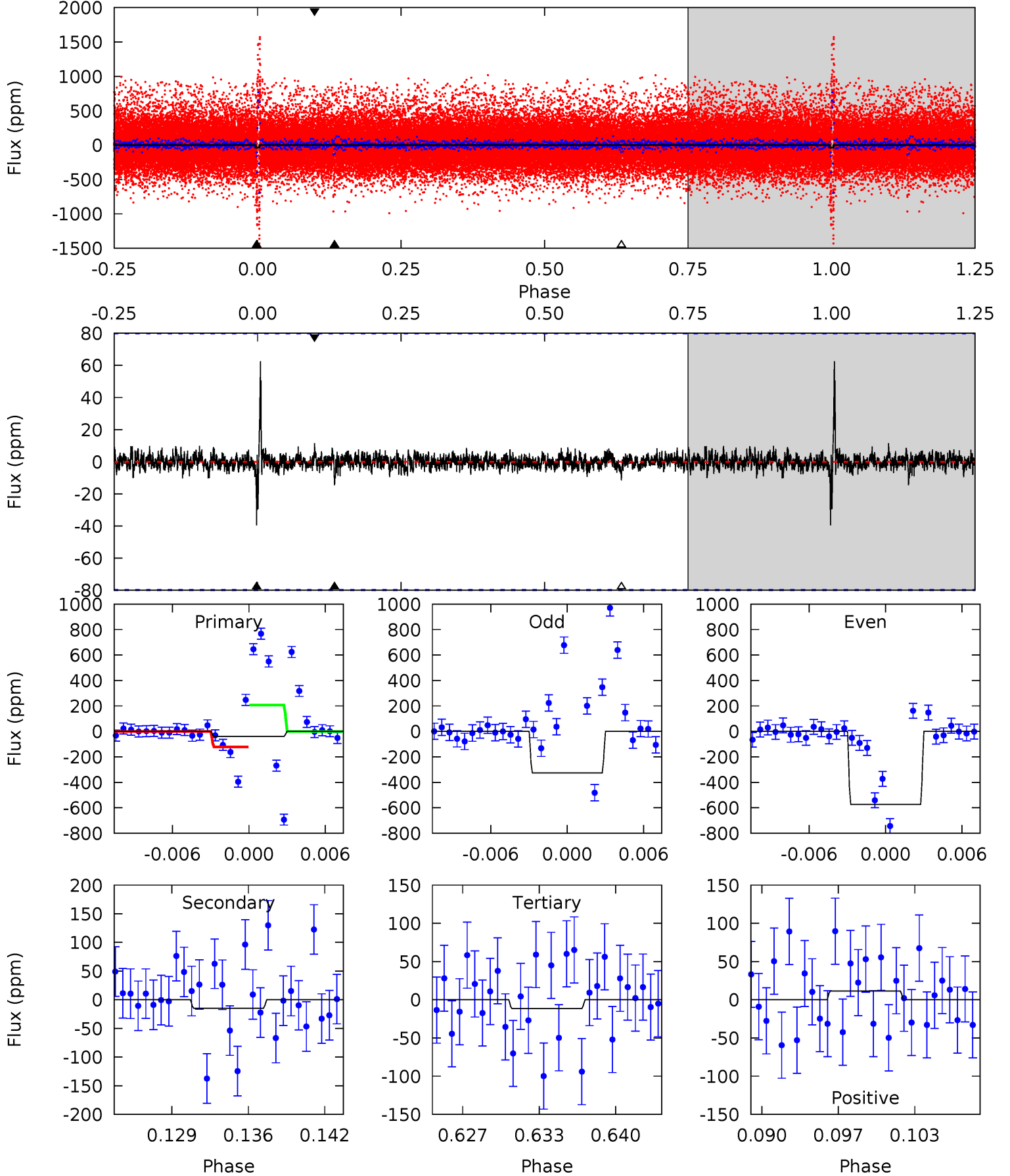
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.56	8.08	7.14	7.33	5.17	2.83	2.61	-3.58	-3.77	0.94	0.76	3.87	0.57	0.48	0



Alt Model-Shift Uniqueness Test

009649447-05, P = 135.474503 Days, E = 38.774468 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.53	0.94	0.74	0.73	5.11	2.72	0.22	1.79	1.80	0.20	0.20	7.99	0.04	0.61	2.44



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-195 ± 24	$1.10^{+0.58}_{-0.59}$	312^{+10}_{-11}	4085^{+1366}_{-608}	18446^{+62845}_{-10822}
Alt.	-15 ± 16	$0.75^{+0.58}_{-0.44}$	312^{+10}_{-11}	2910^{+1088}_{-5079}	2185^{+13897}_{-2399}

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

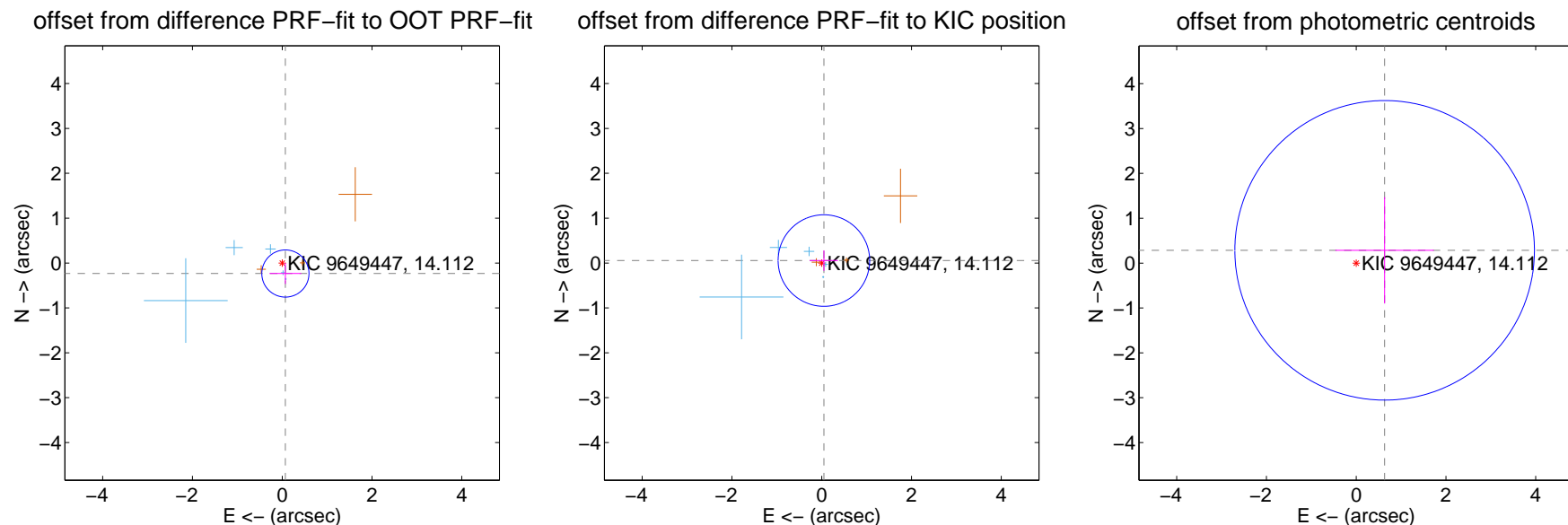
DV Centroid Data

Supplemental centroid analysis for 009649447-05. Kepler magnitude: 14.11. Transit SNR 2.91

There are 5 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.244 ± 0.175	1.39	-0.071 ± 0.354	-0.234 ± 0.234
PRF-fit source offset from KIC position	0.074 ± 0.340	0.22	-0.049 ± 0.315	0.056 ± 0.228
photometric centroid source offset	0.69 ± 1.11	0.62	-0.63 ± 1.10	0.28 ± 1.19



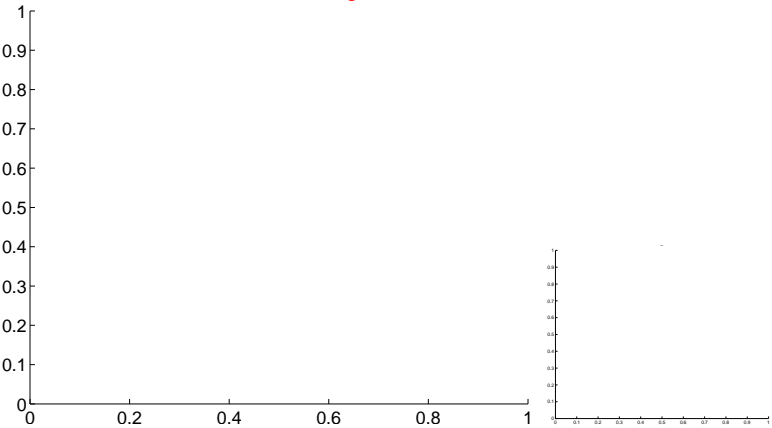
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

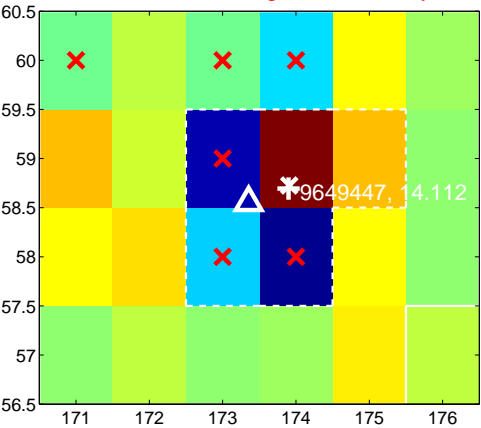
Q1 no difference image



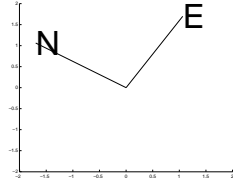
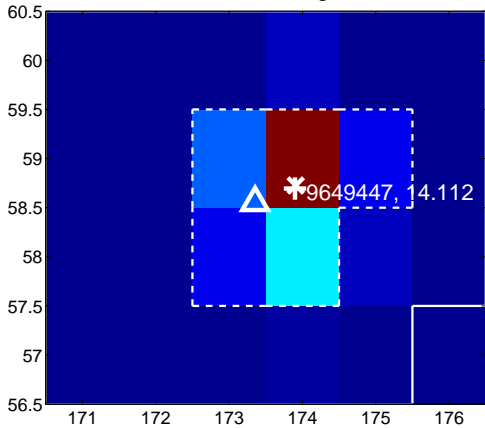
Q1 no OOT image



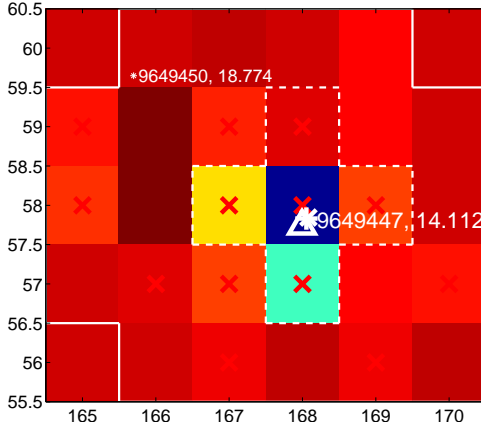
Q2 difference image. Poor Quality



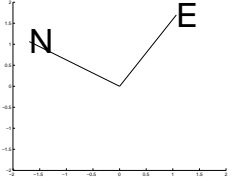
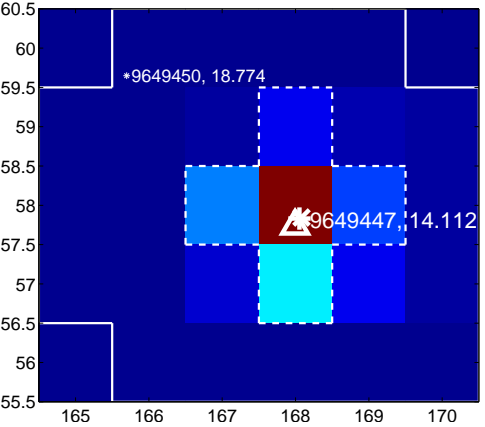
Q2 OOT image



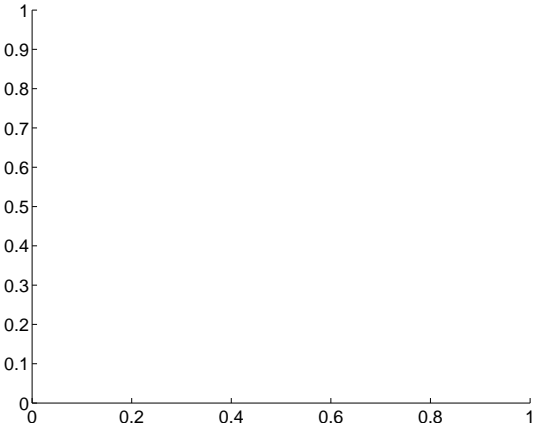
Q3 difference image. Poor Quality



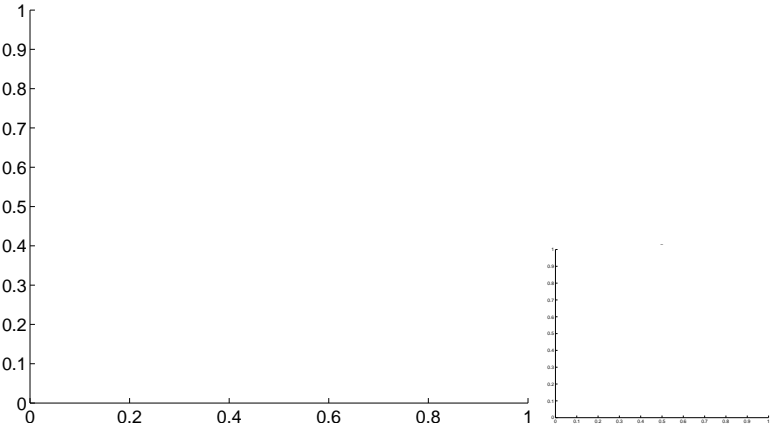
Q3 OOT image



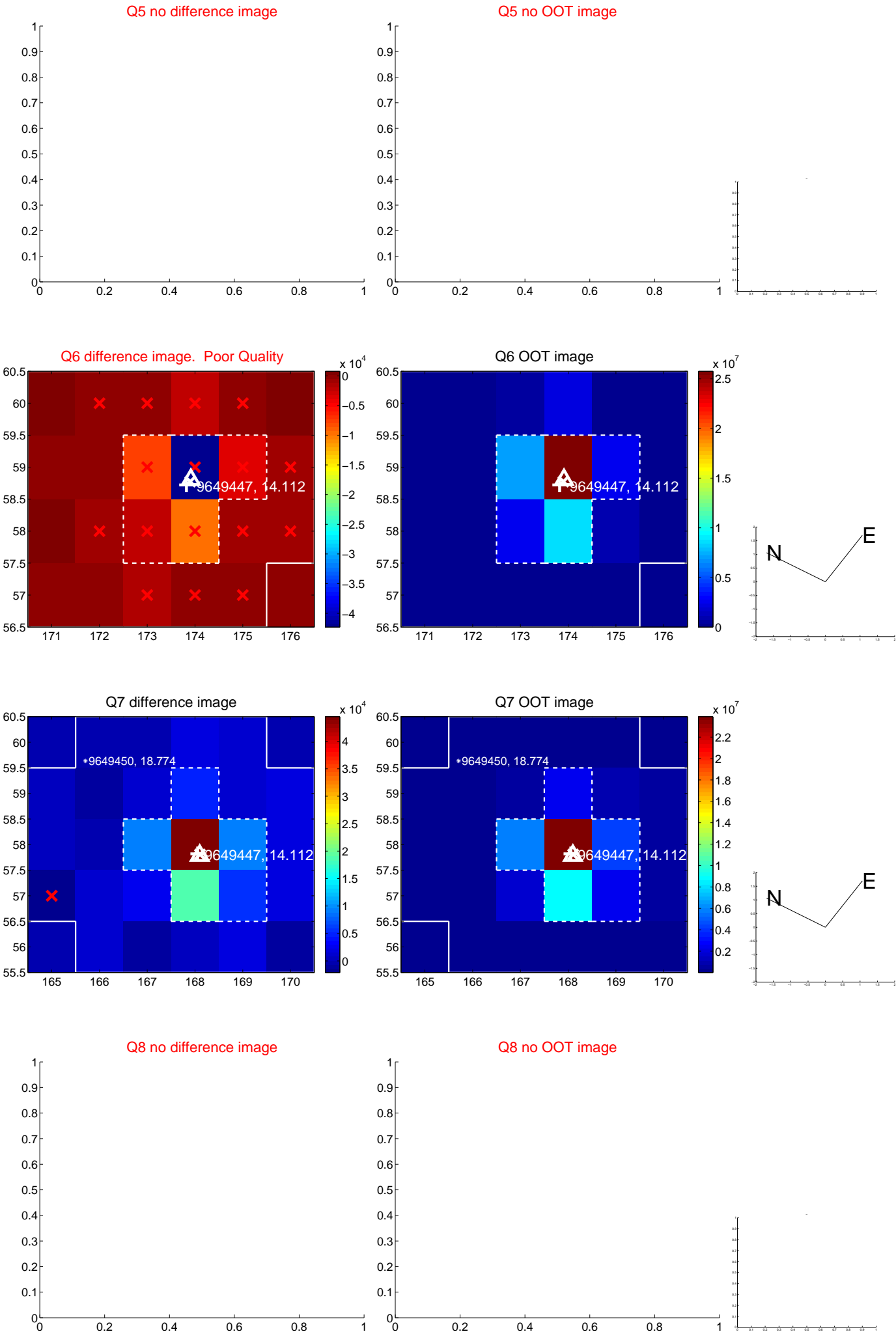
Q4 no difference image



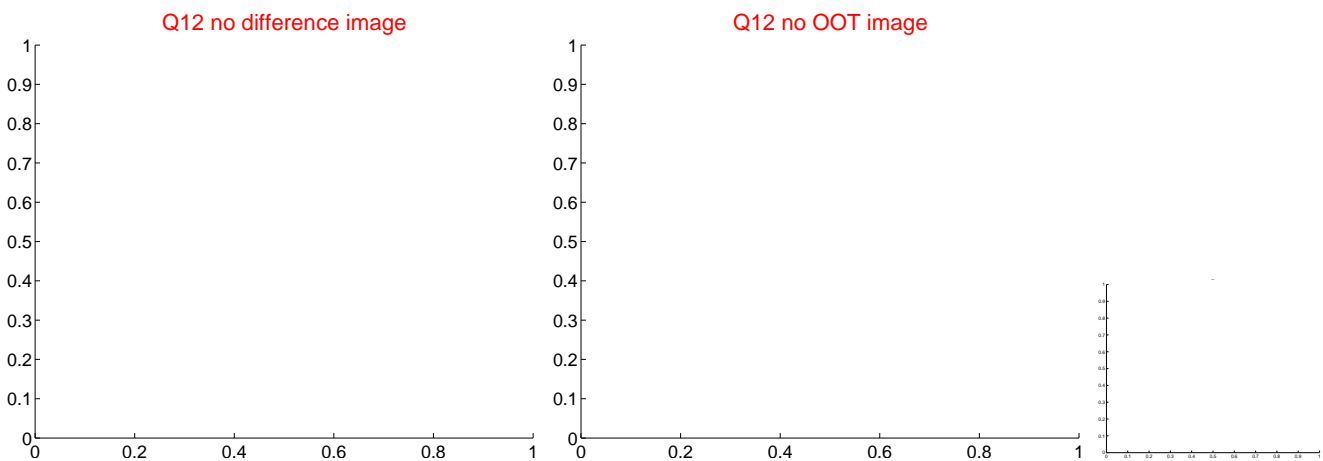
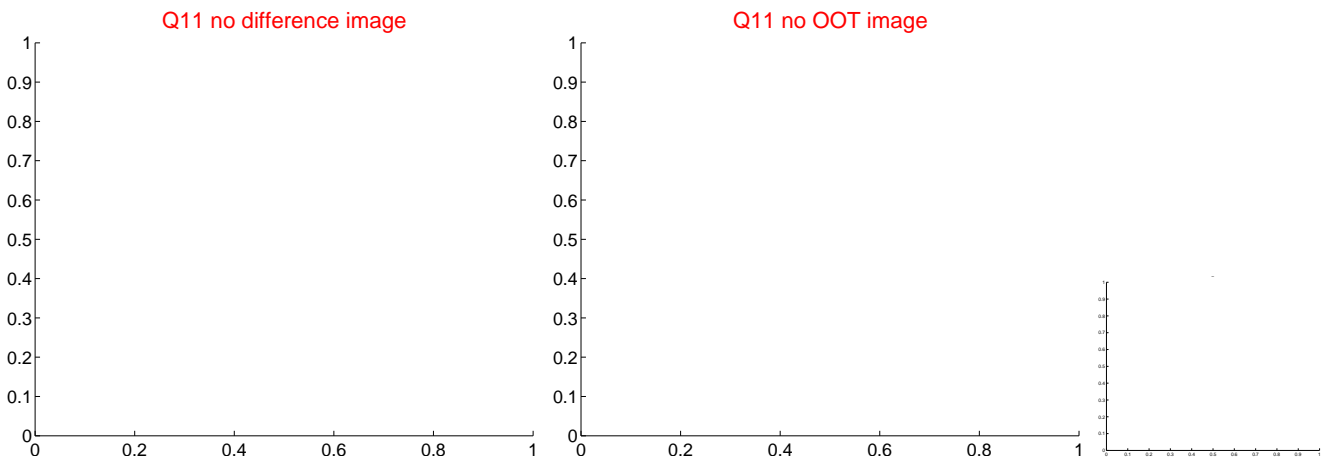
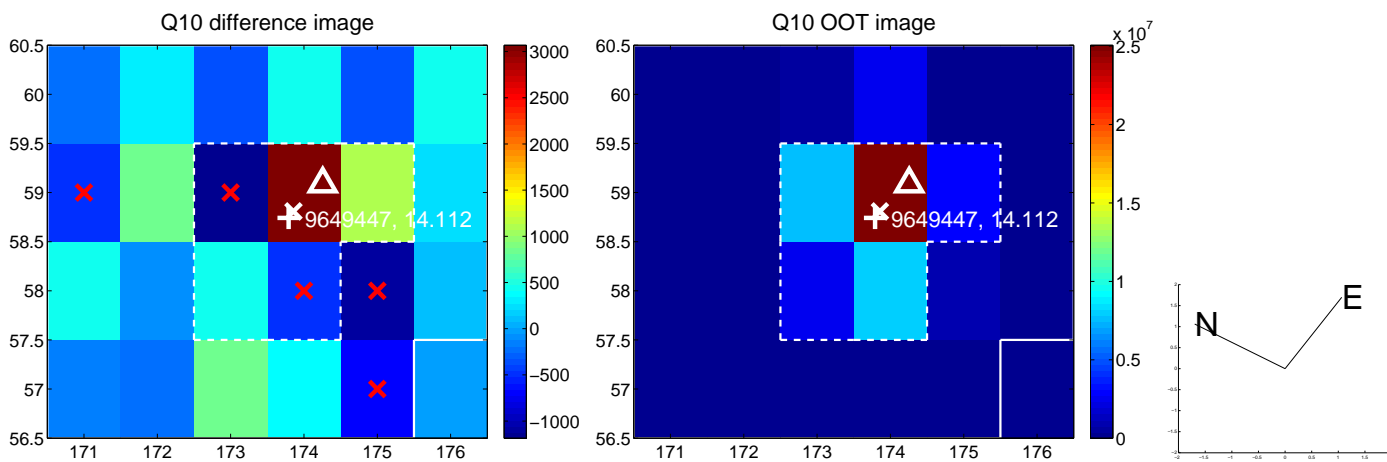
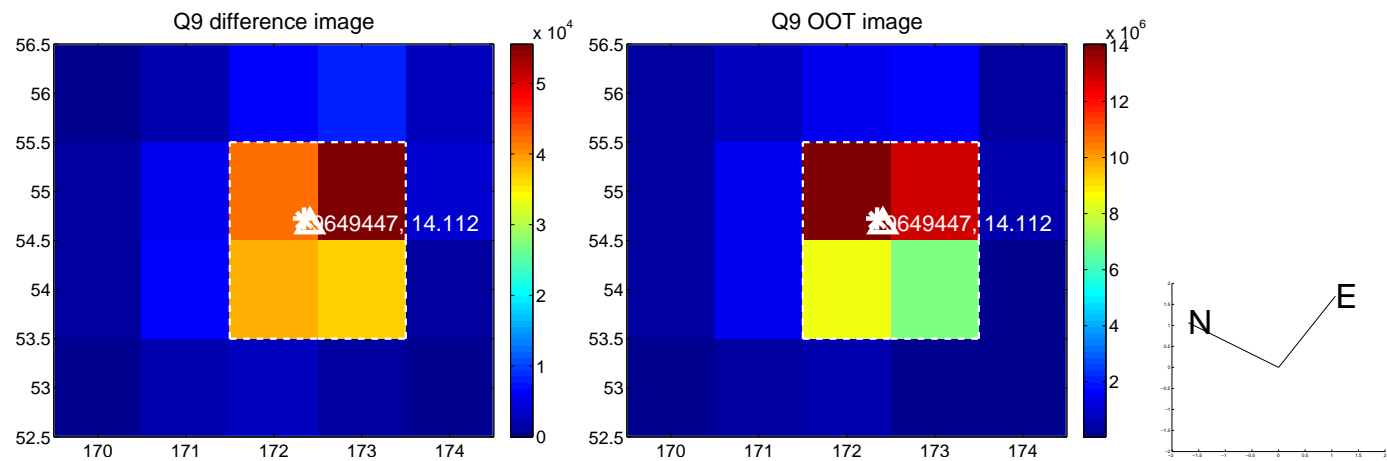
Q4 no OOT image



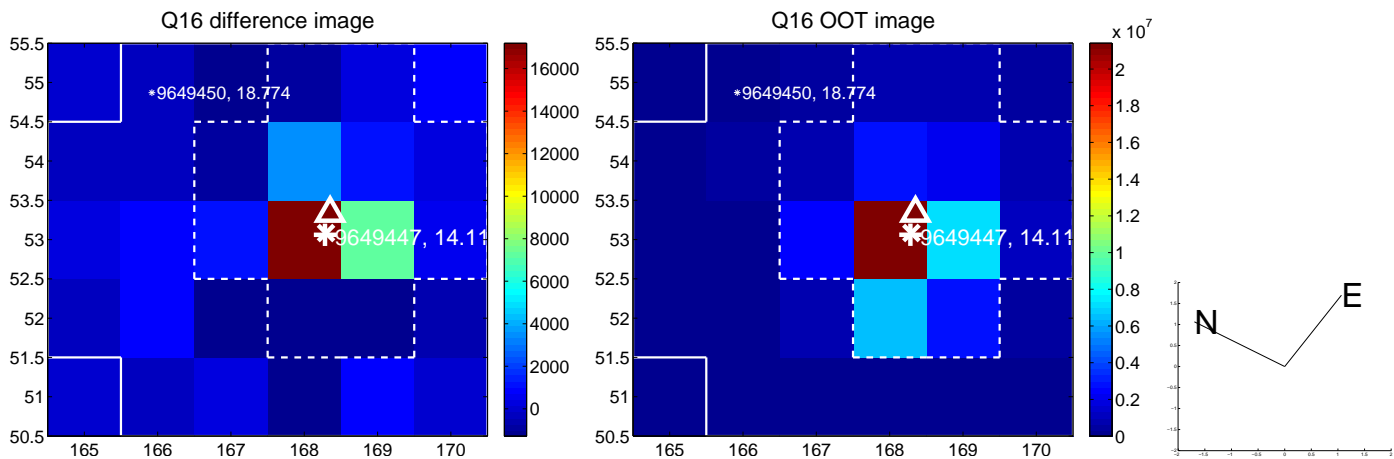
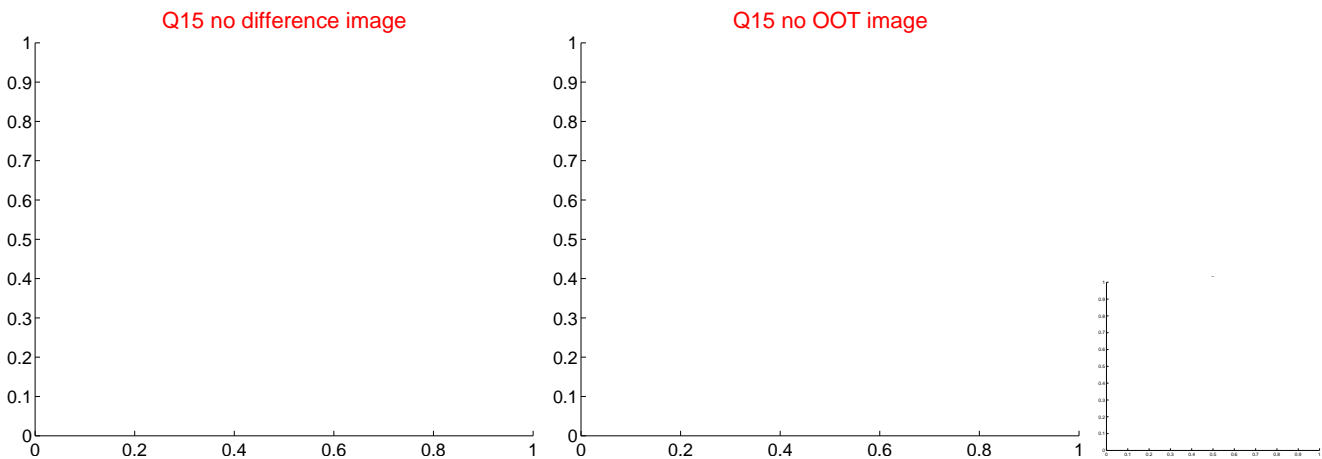
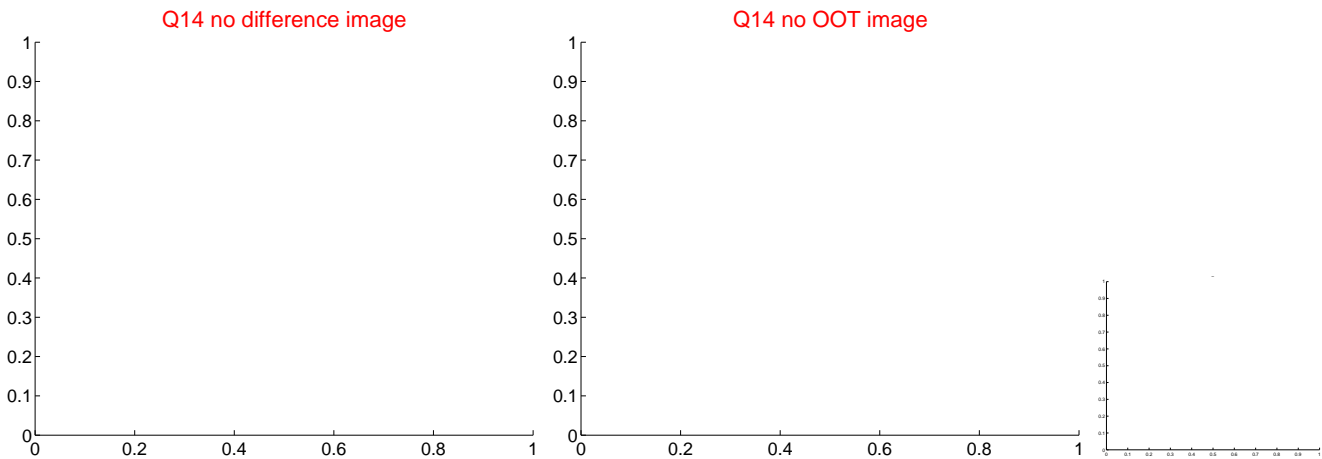
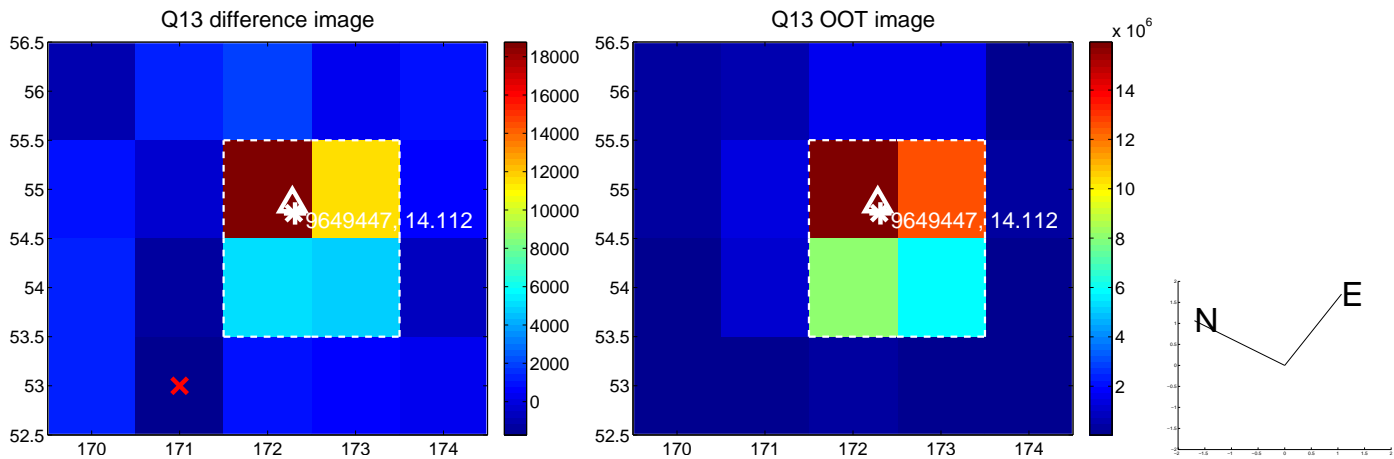
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



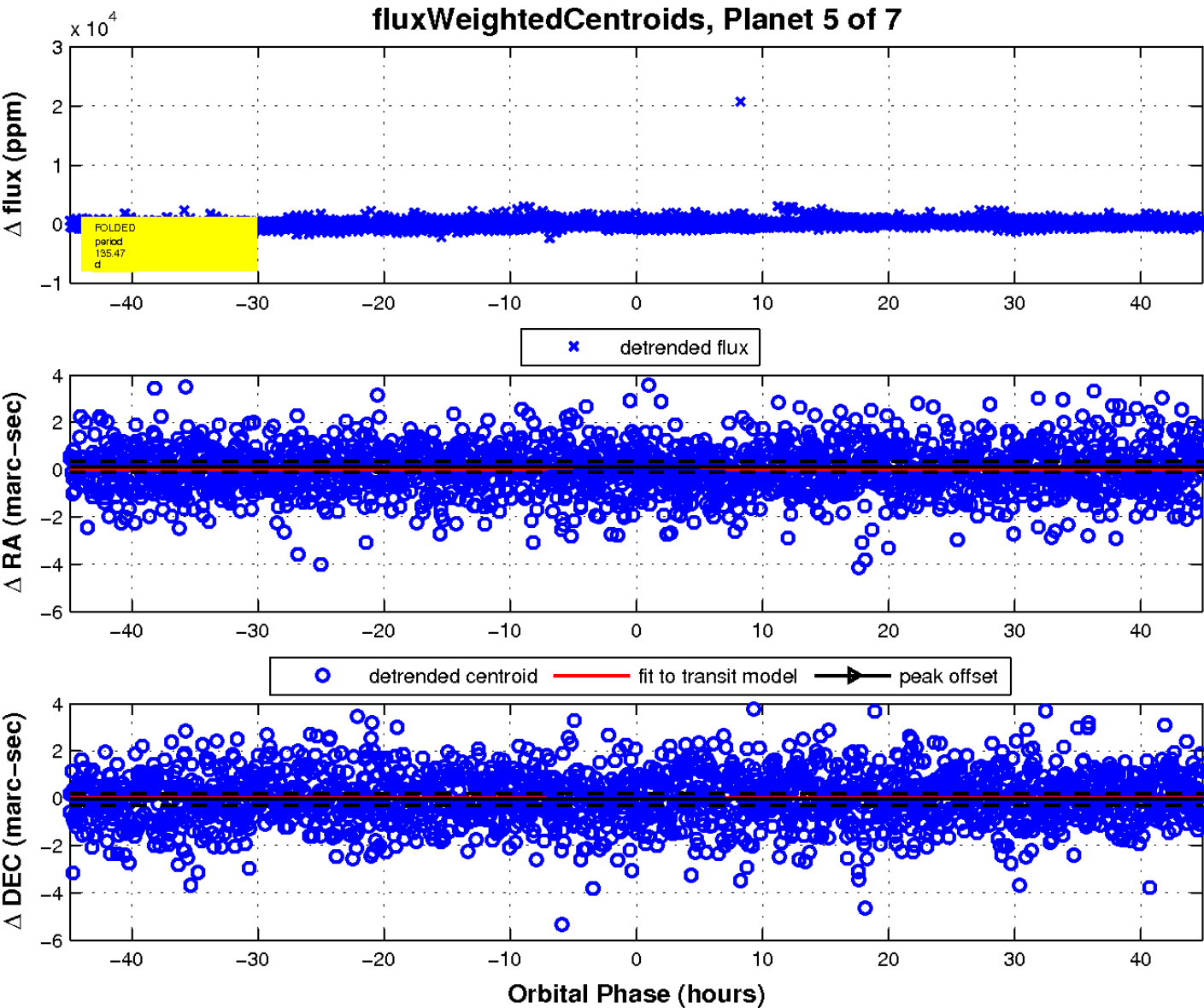
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

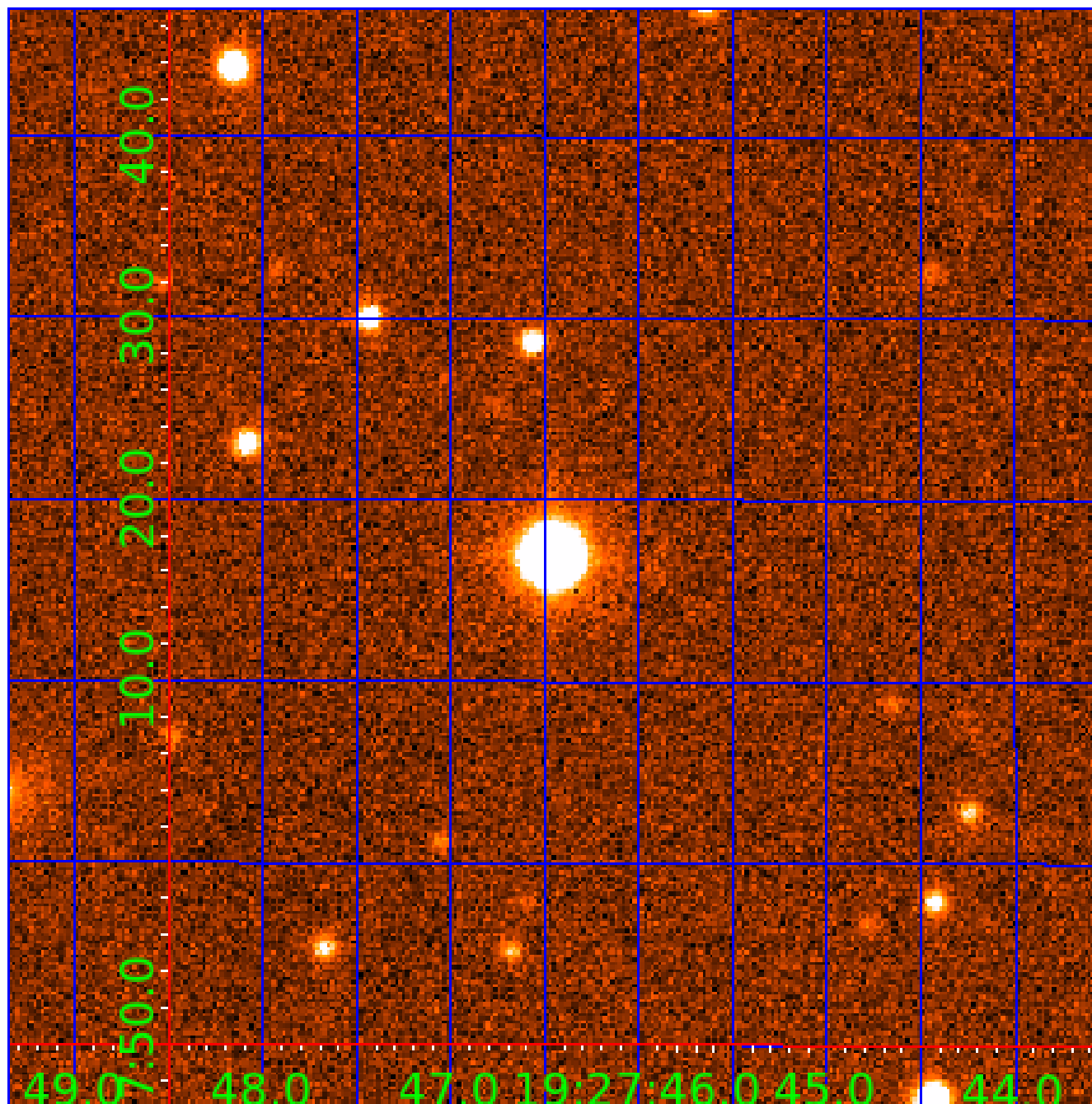


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

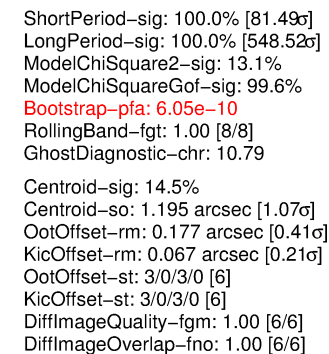
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 009649447-06

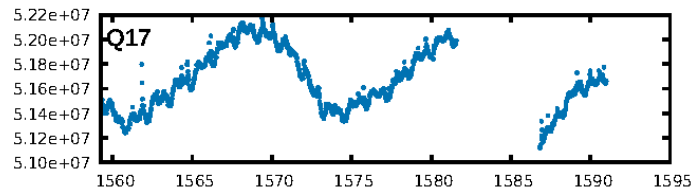
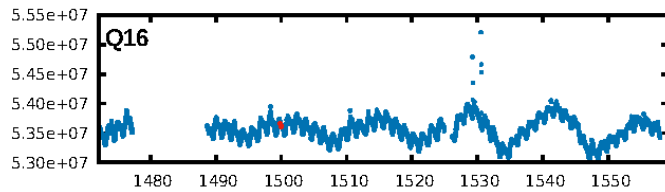
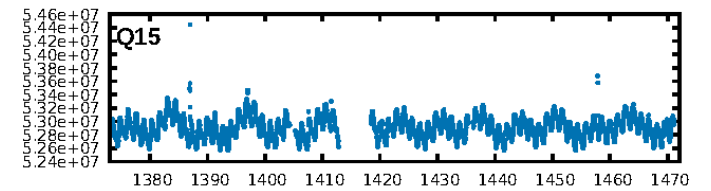
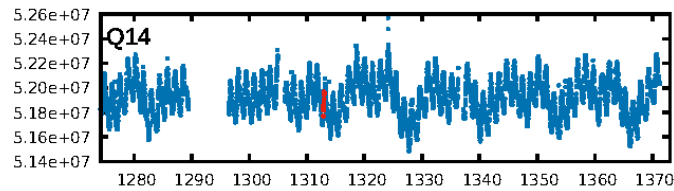
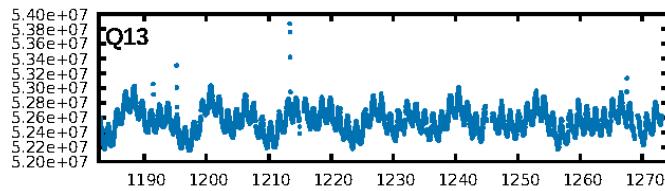
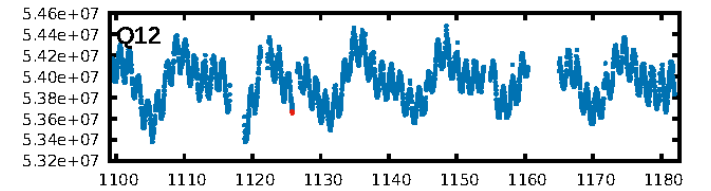
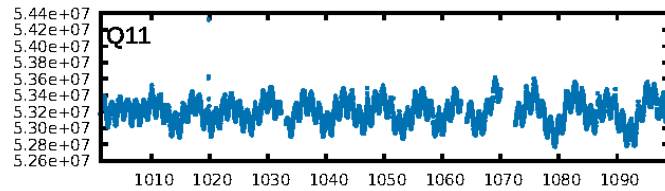
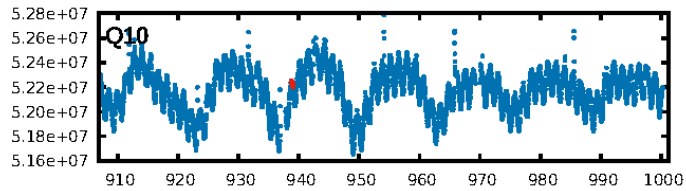
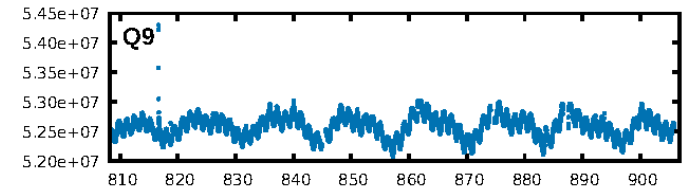
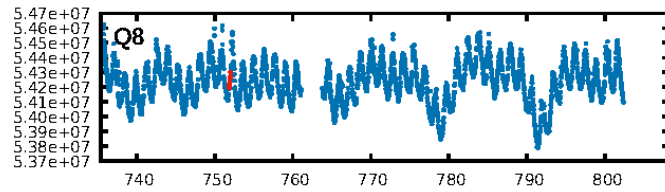
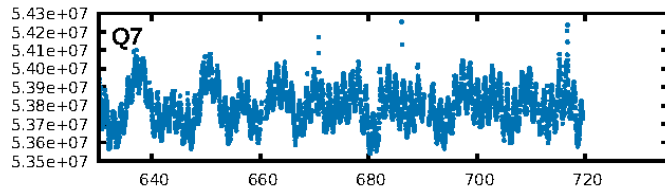
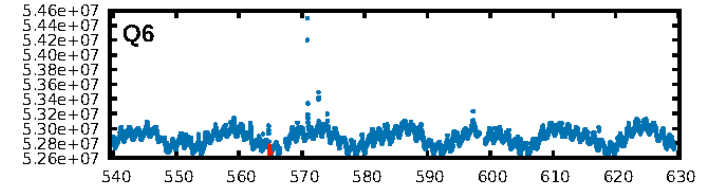
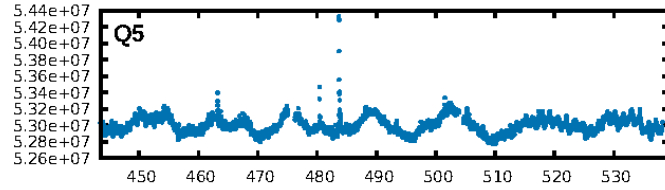
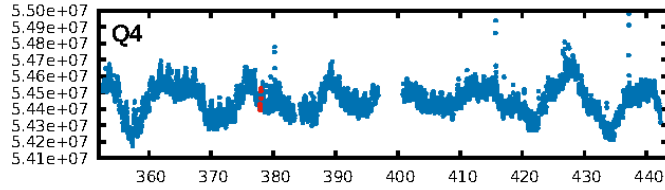
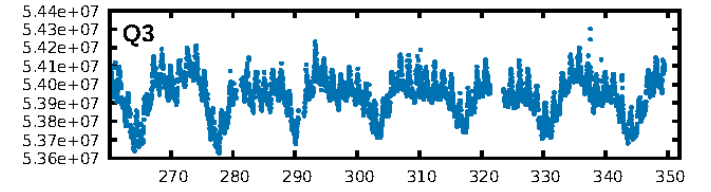
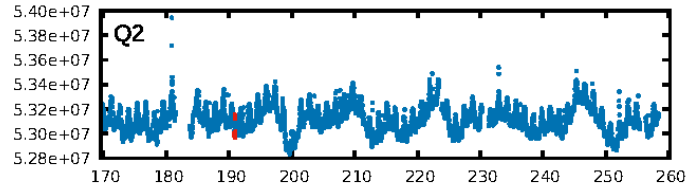
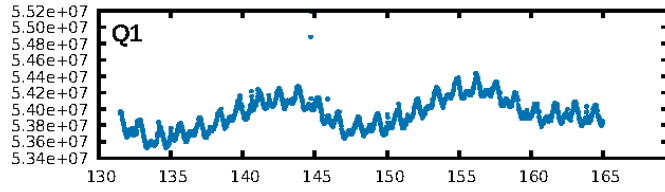
No Significant Match Found

KIC: 9649447 Candidate: 6 of 7 Period: 187.007 d

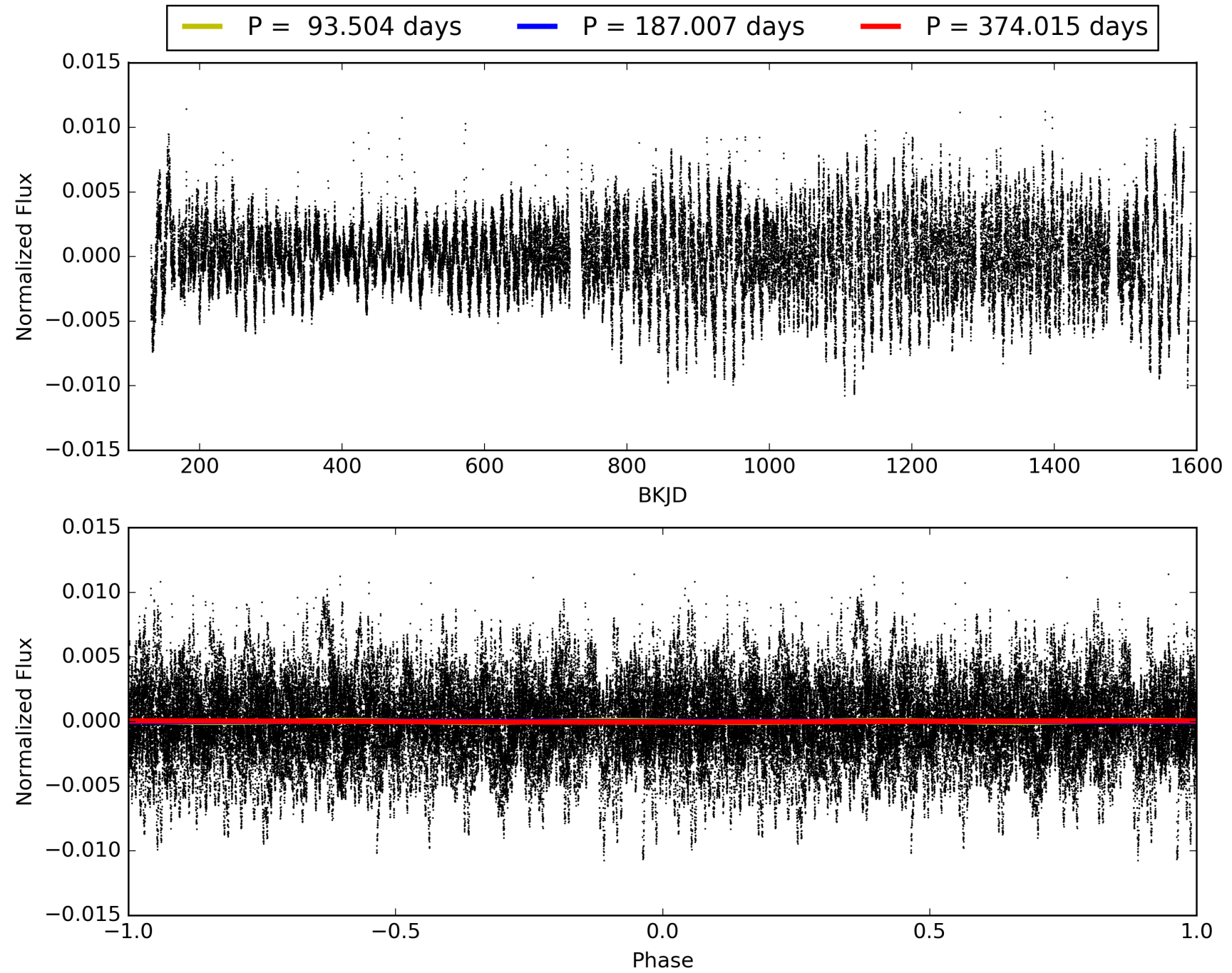


This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009649447-06, PDC Light Curves

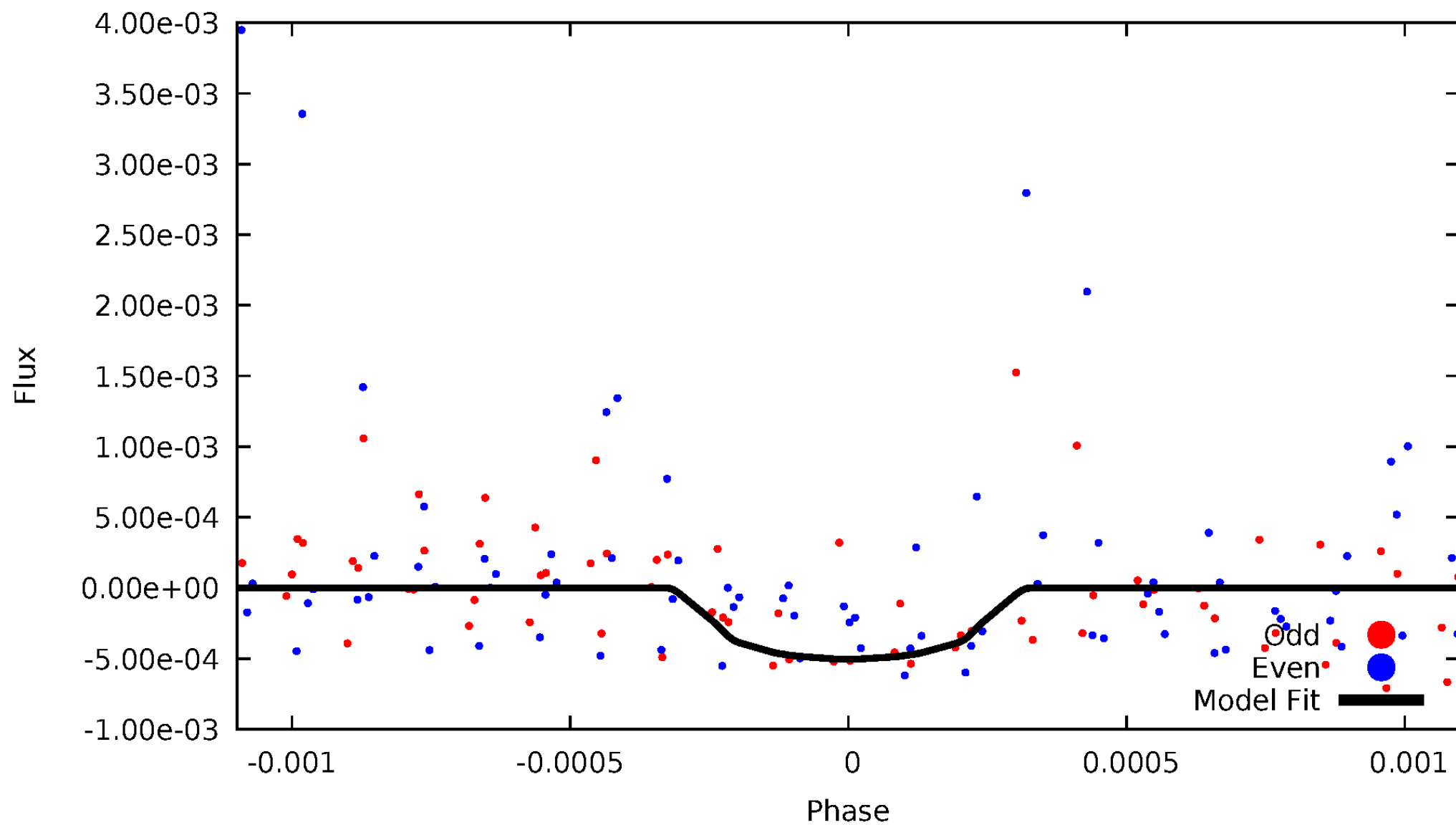


TCE 009649447-06



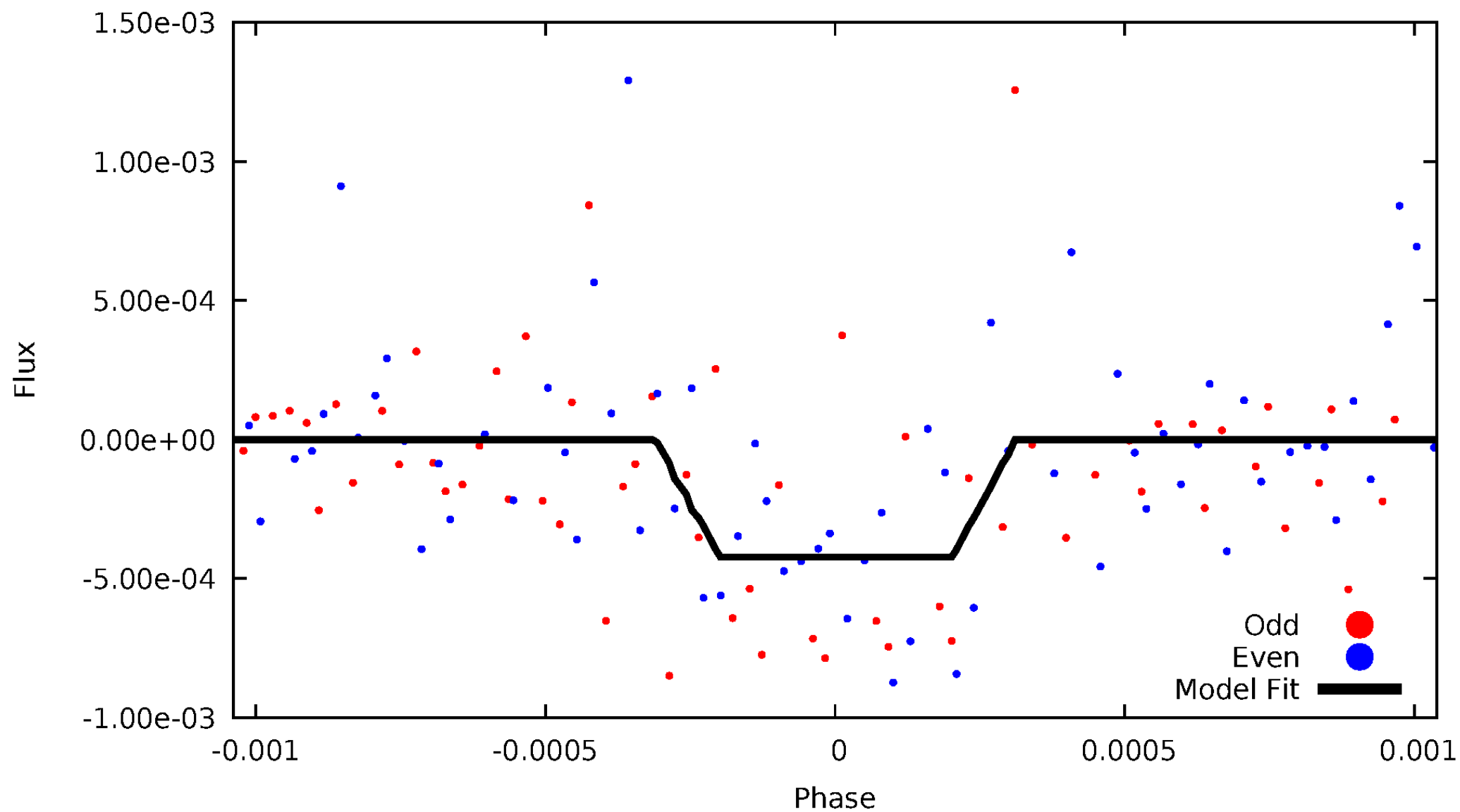
DV Odd/Even

TCE 009649447-06



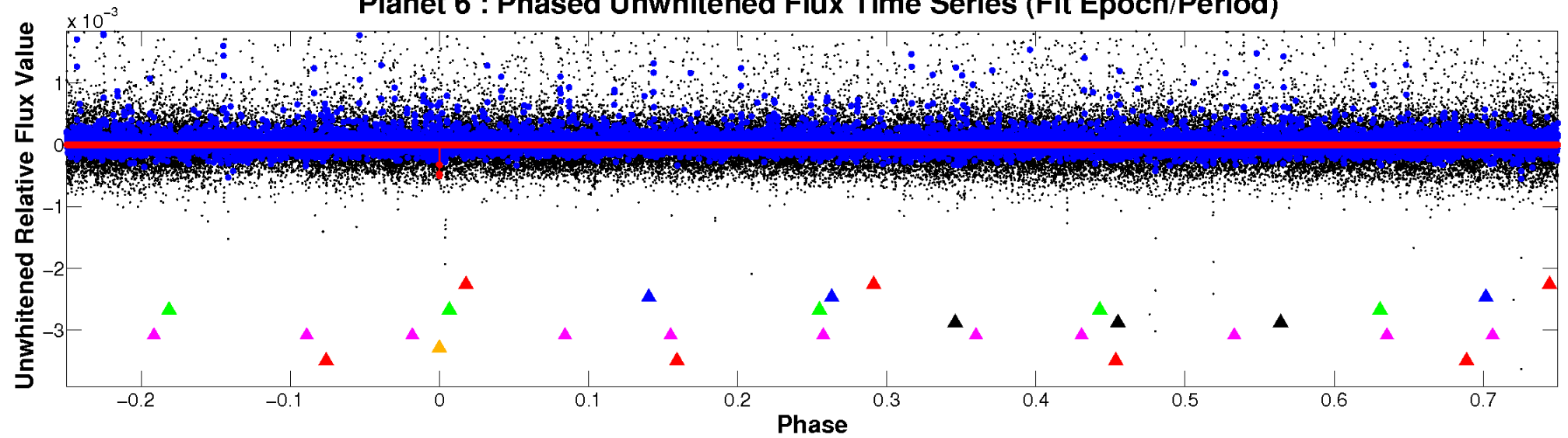
ALT Odd/Even

TCE 009649447-06

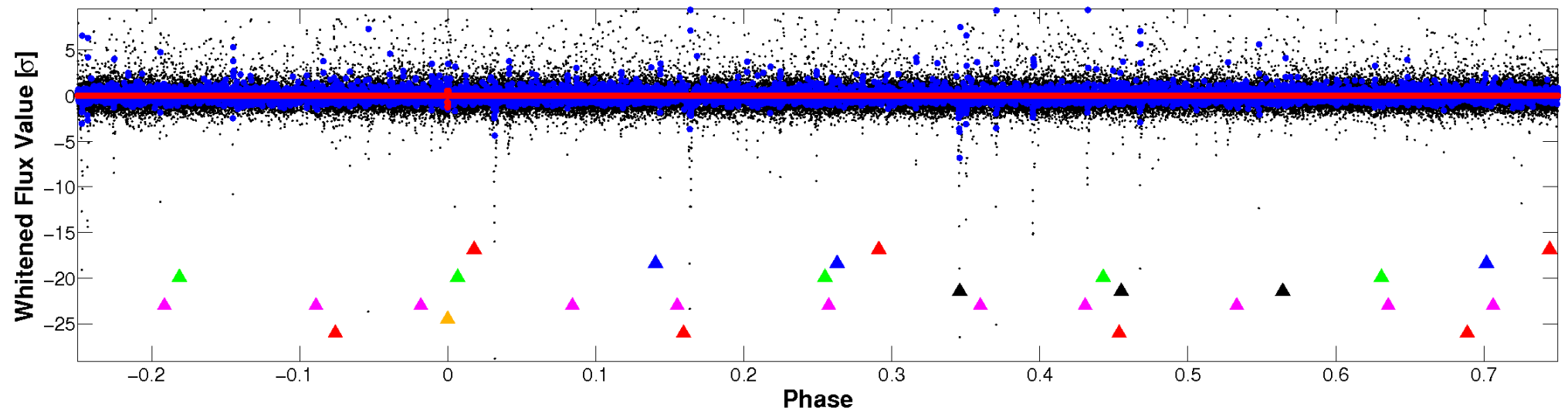


Non-Whitened Vs. Whitened Light Curve

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

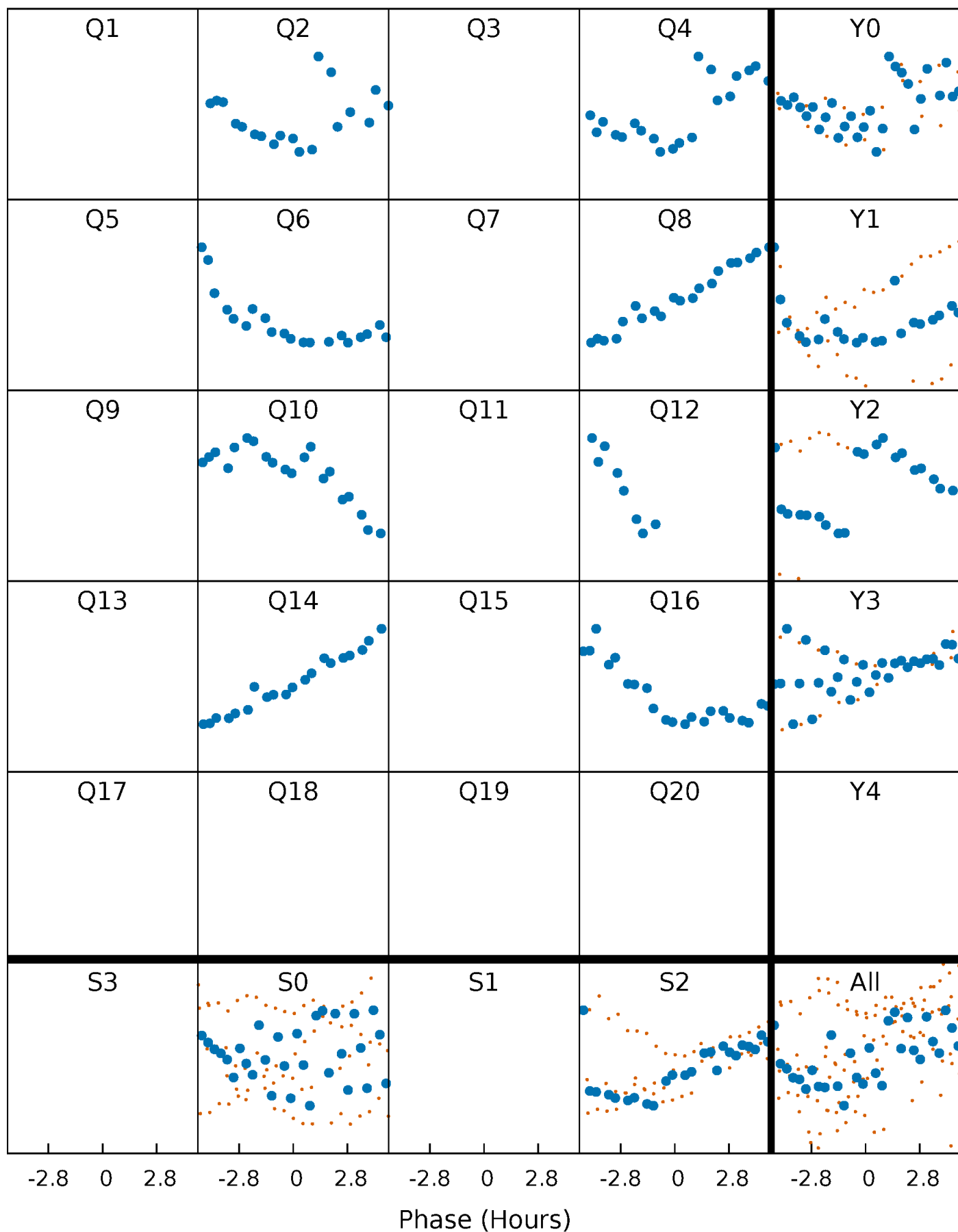


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



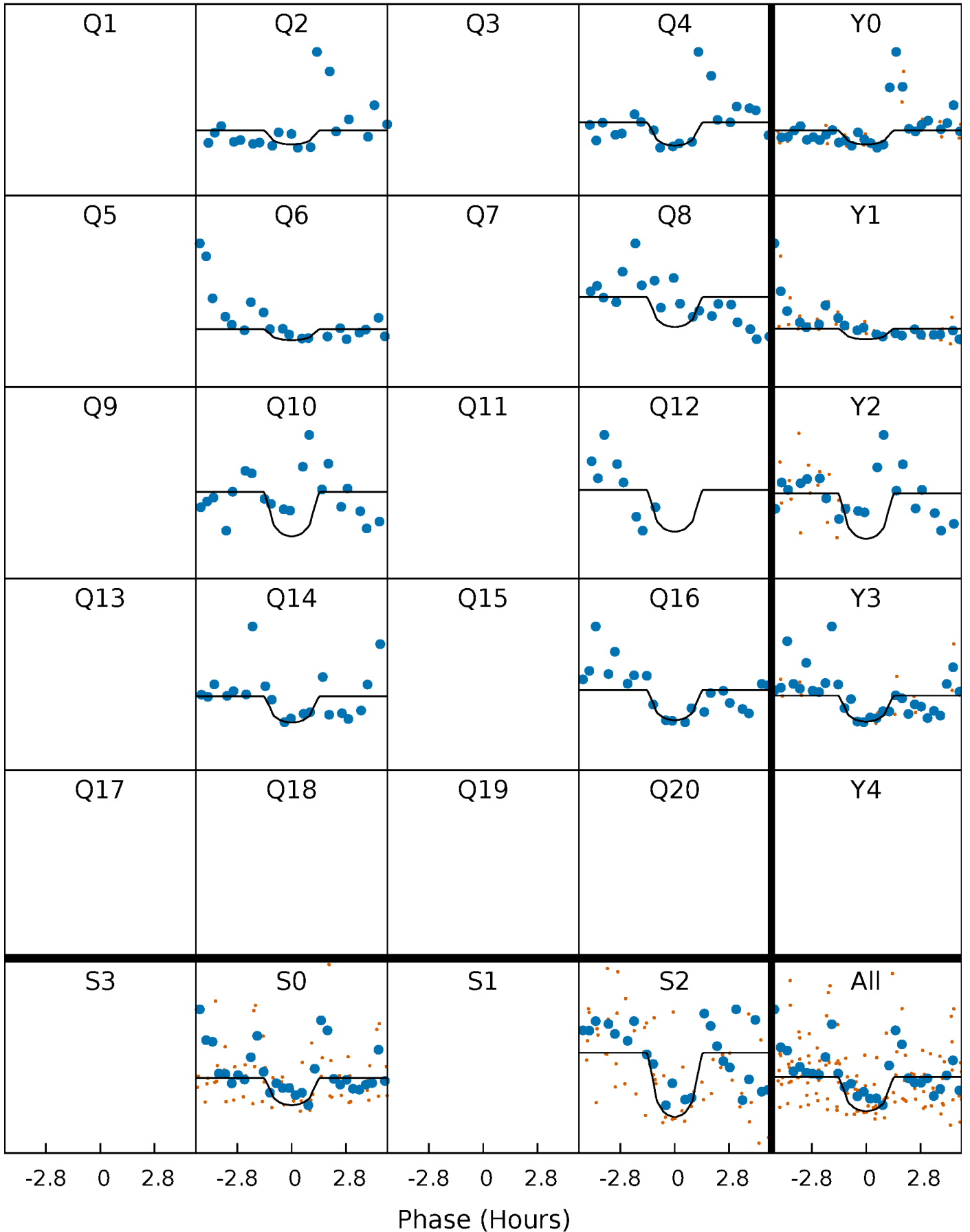
PDC Quarter-Phased Transit Curves

TCE 009649447-06 P=187.007369 Days $T_0=190.895444$ (BKJD)



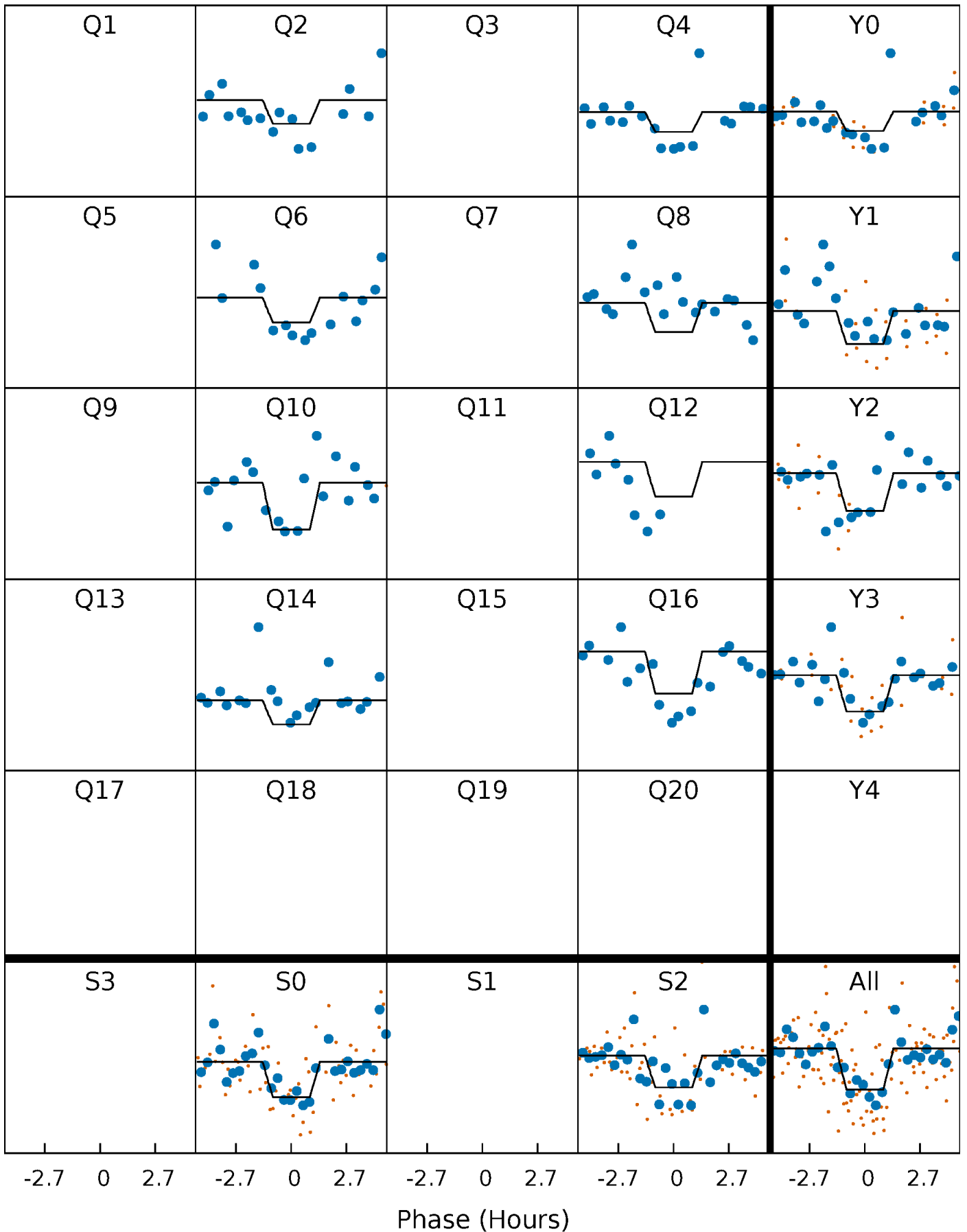
DV Quarter-Phased Transit Curves

TCE 009649447-06 P=187.007369 Days $T_0=190.895444$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

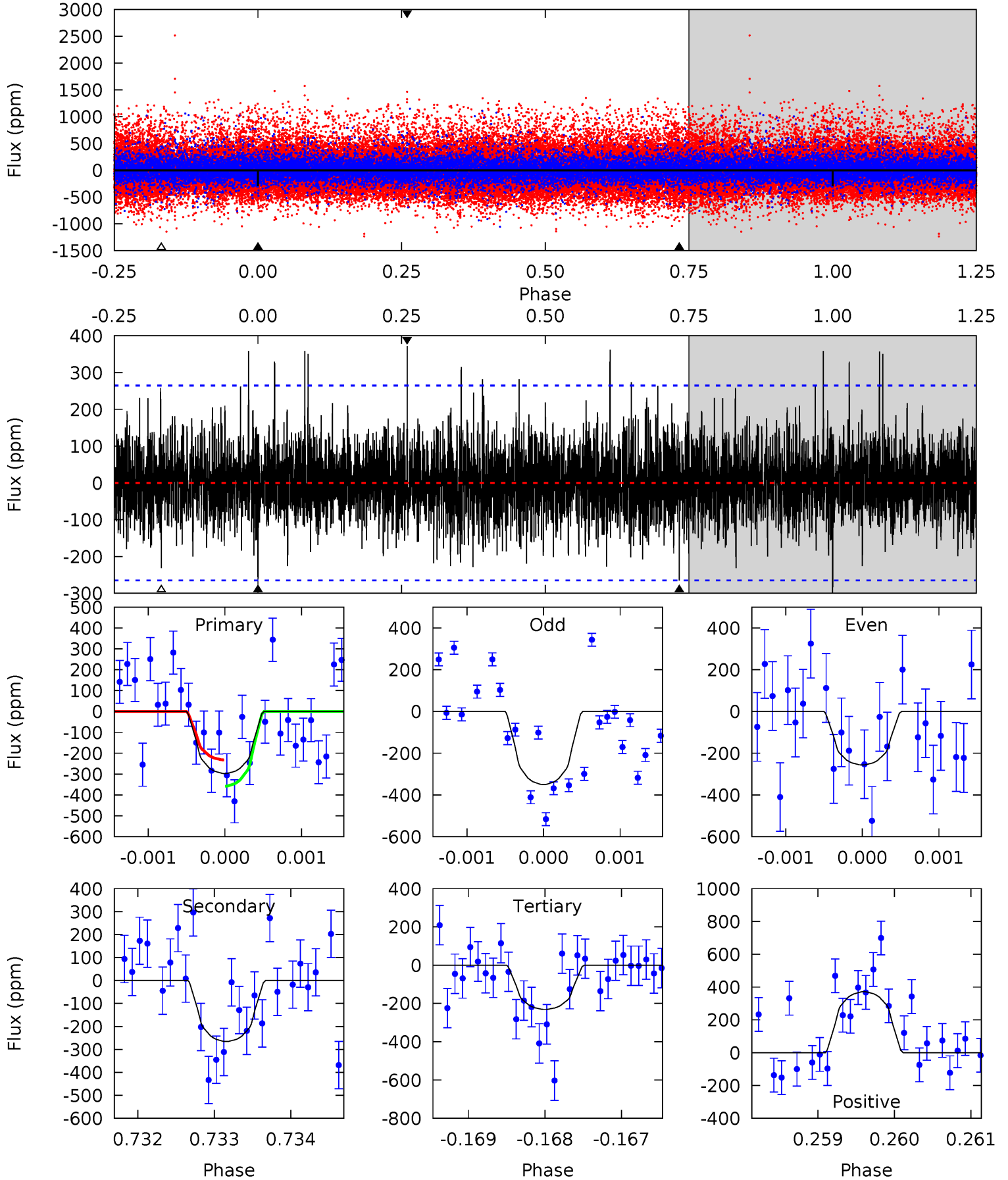
TCE 009649447-06 P=187.005530 Days $T_0=190.895598$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-06, P = 187.007369 Days, E = 3.888075 Days

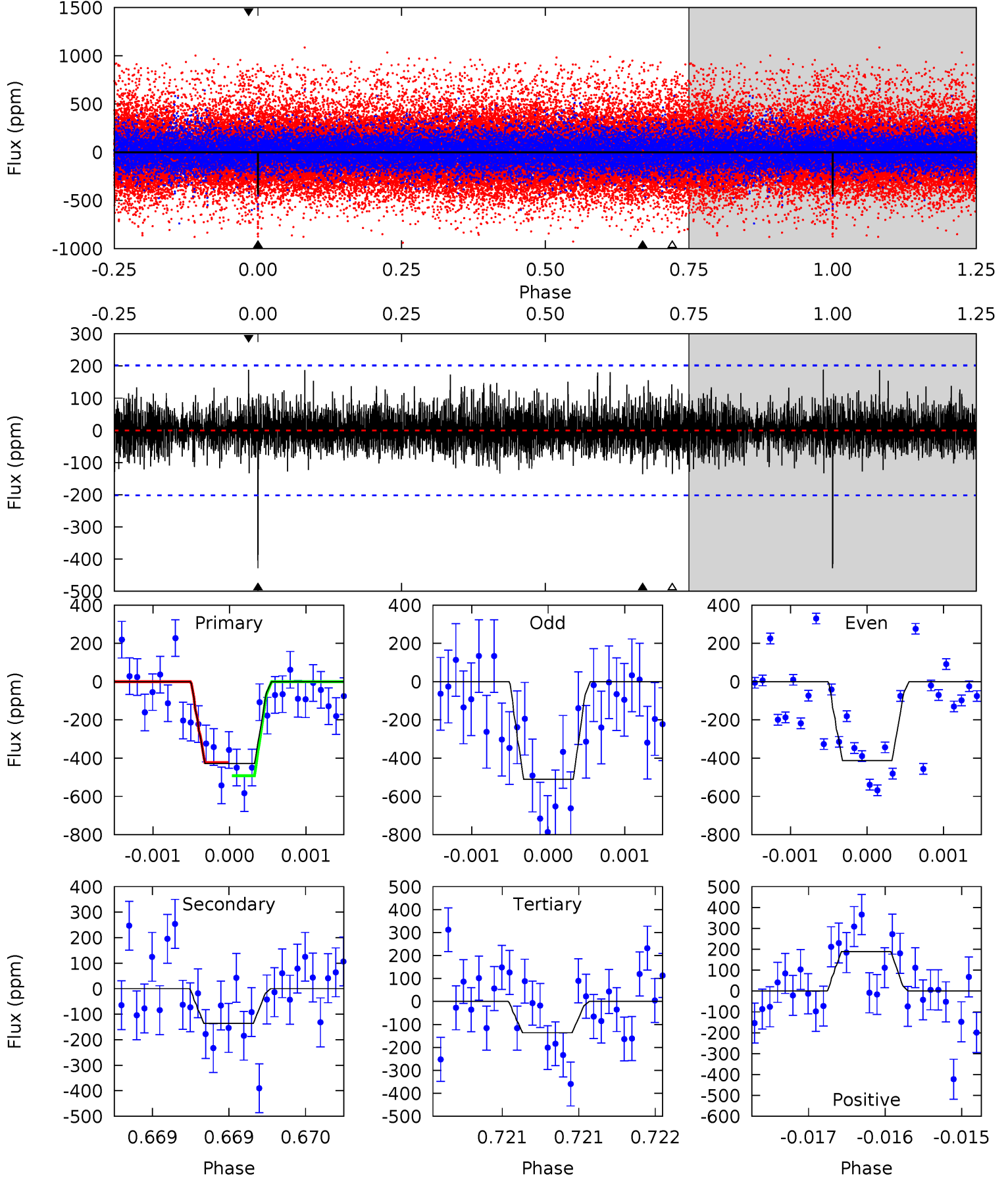
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.21	5.54	4.83	7.75	5.53	3.41	1.57	1.38	-1.55	0.72	-2.21	0.96	0.74	0.56	1.32



Alt Model-Shift Uniqueness Test

009649447-06, P = 187.005530 Days, E = 3.890068 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	3.73	3.73	5.17	5.54	3.42	1.18	8.02	6.59	0.00	-1.44	1.33	0.76	0.31	0.94



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-266 ± 48	$2.78^{+2.54}_{-1.98}$	280^{+10}_{-10}	3154^{+1762}_{-508}	5841^{+68960}_{-4257}
Alt.	-136 ± 36	$2.86^{+2.60}_{-1.95}$	281^{+9}_{-9}	2846^{+1268}_{-446}	2750^{+25397}_{-2028}

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 $A_{obs} \gg 1.0$

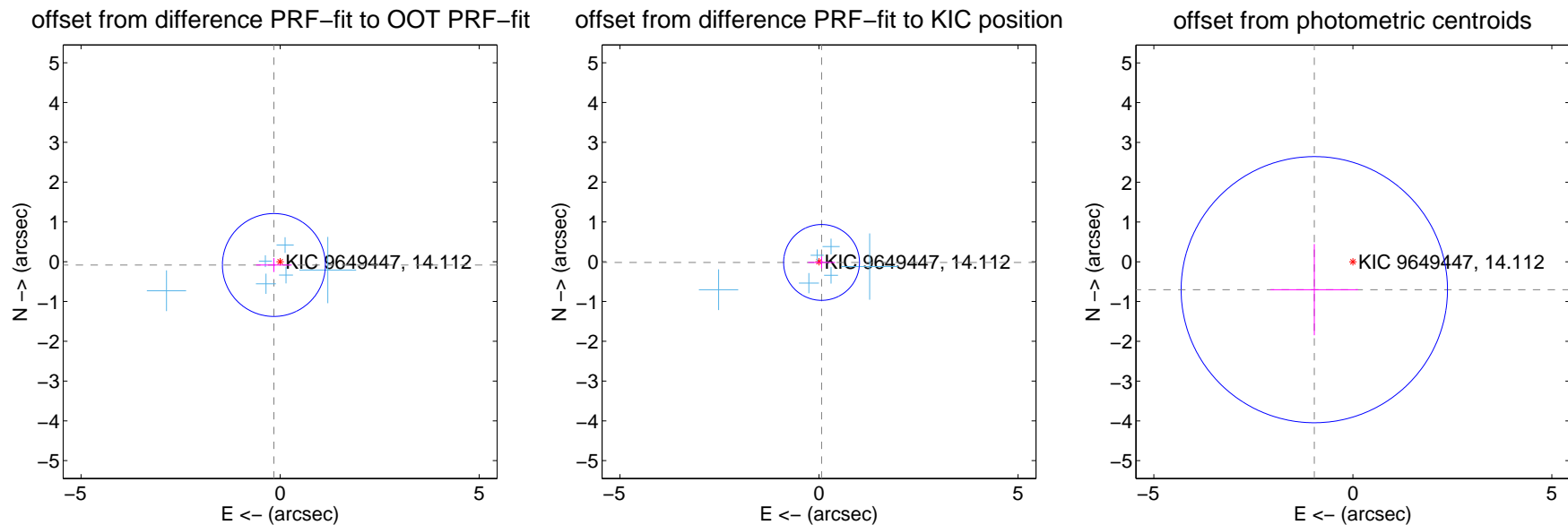
DV Centroid Data

Supplemental centroid analysis for 009649447-06. Kepler magnitude: 14.11. Transit SNR 6.81

There are 6 quarters with good PRF difference image offsets

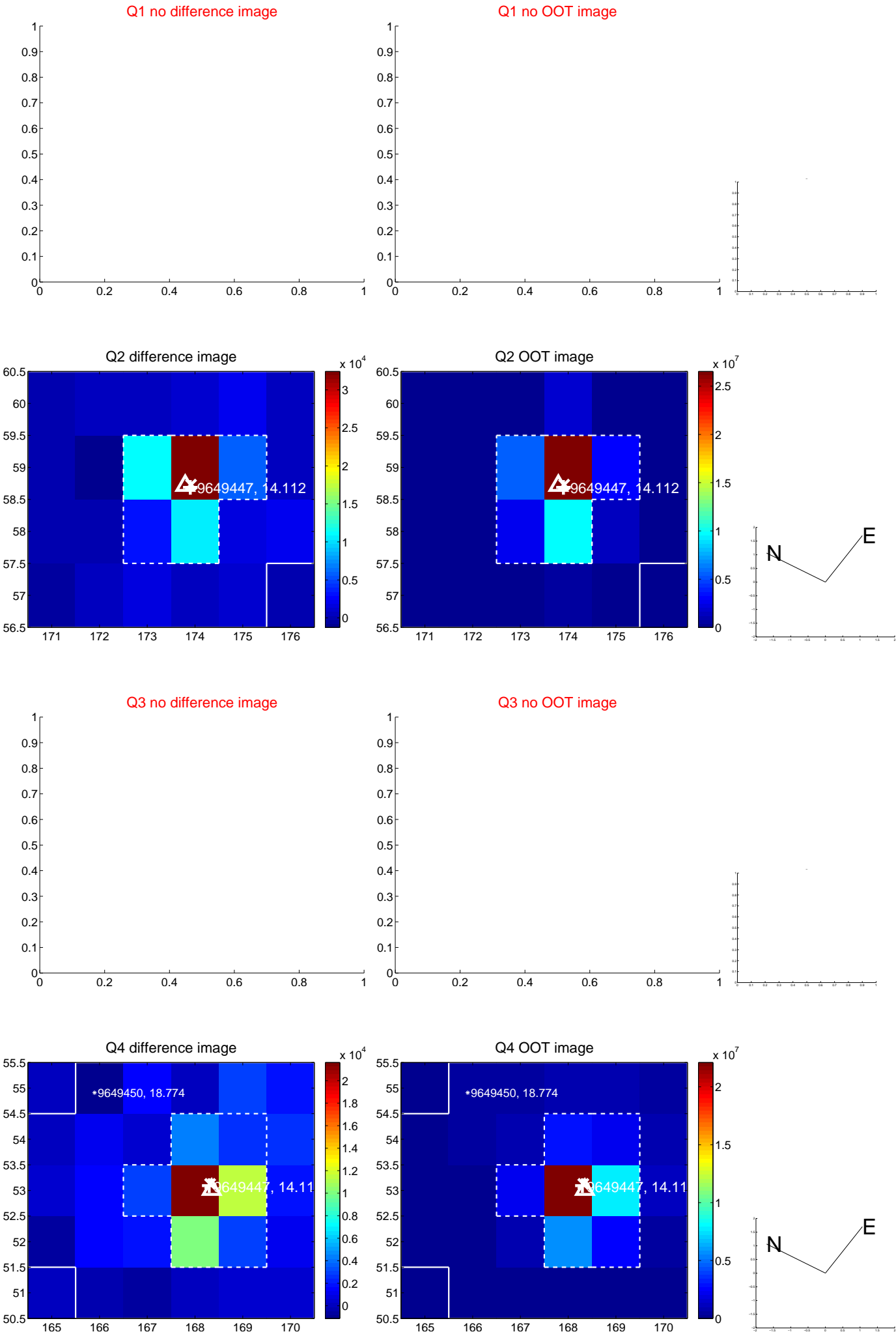
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.177 ± 0.431	0.41	0.156 ± 0.445	-0.083 ± 0.174
PRF-fit source offset from KIC position	0.067 ± 0.318	0.21	-0.065 ± 0.341	-0.019 ± 0.147
photometric centroid source offset	1.20 ± 1.12	1.07	0.97 ± 1.10	-0.70 ± 1.15



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

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



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

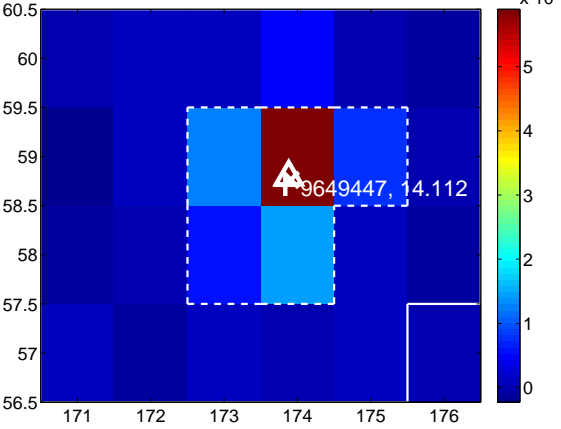
Q5 no difference image



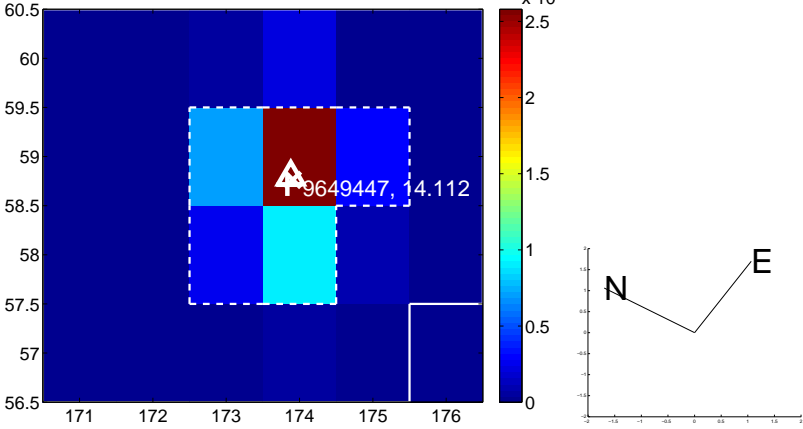
Q5 no OOT image



Q6 difference image



Q6 OOT image



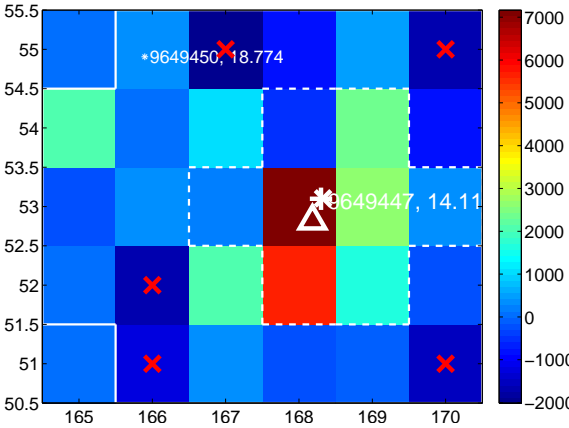
Q7 no difference image



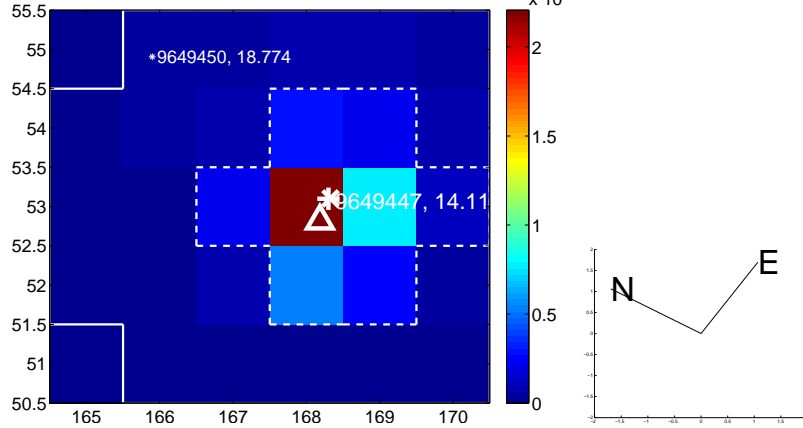
Q7 no OOT image



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.

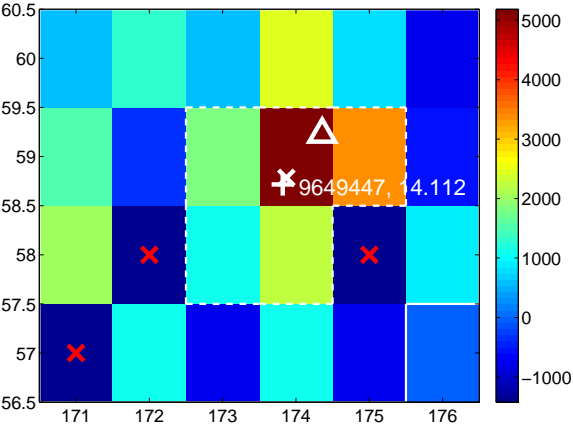
Q13 no difference image



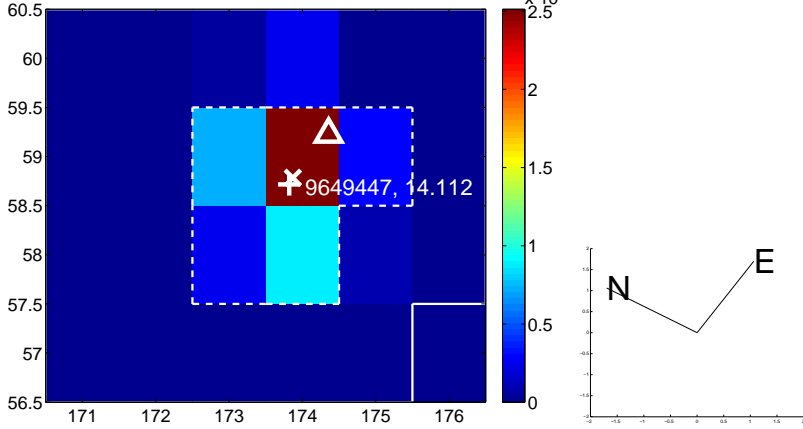
Q13 no OOT image



Q14 difference image



Q14 OOT image



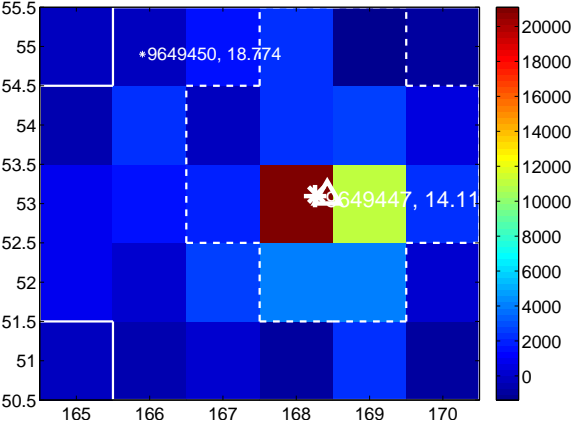
Q15 no difference image



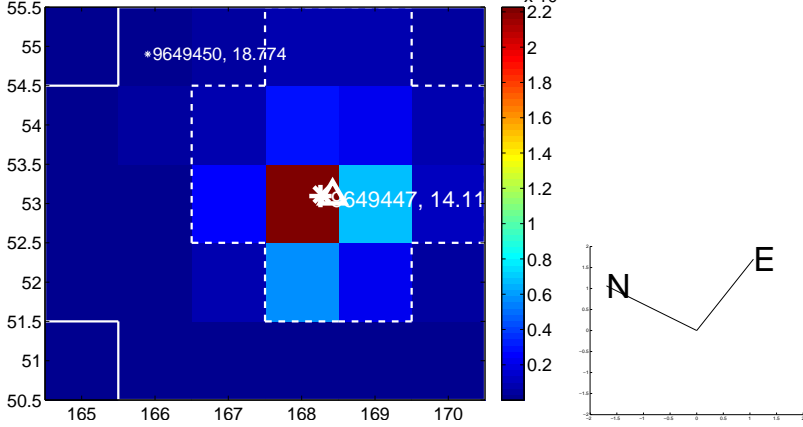
Q15 no OOT image



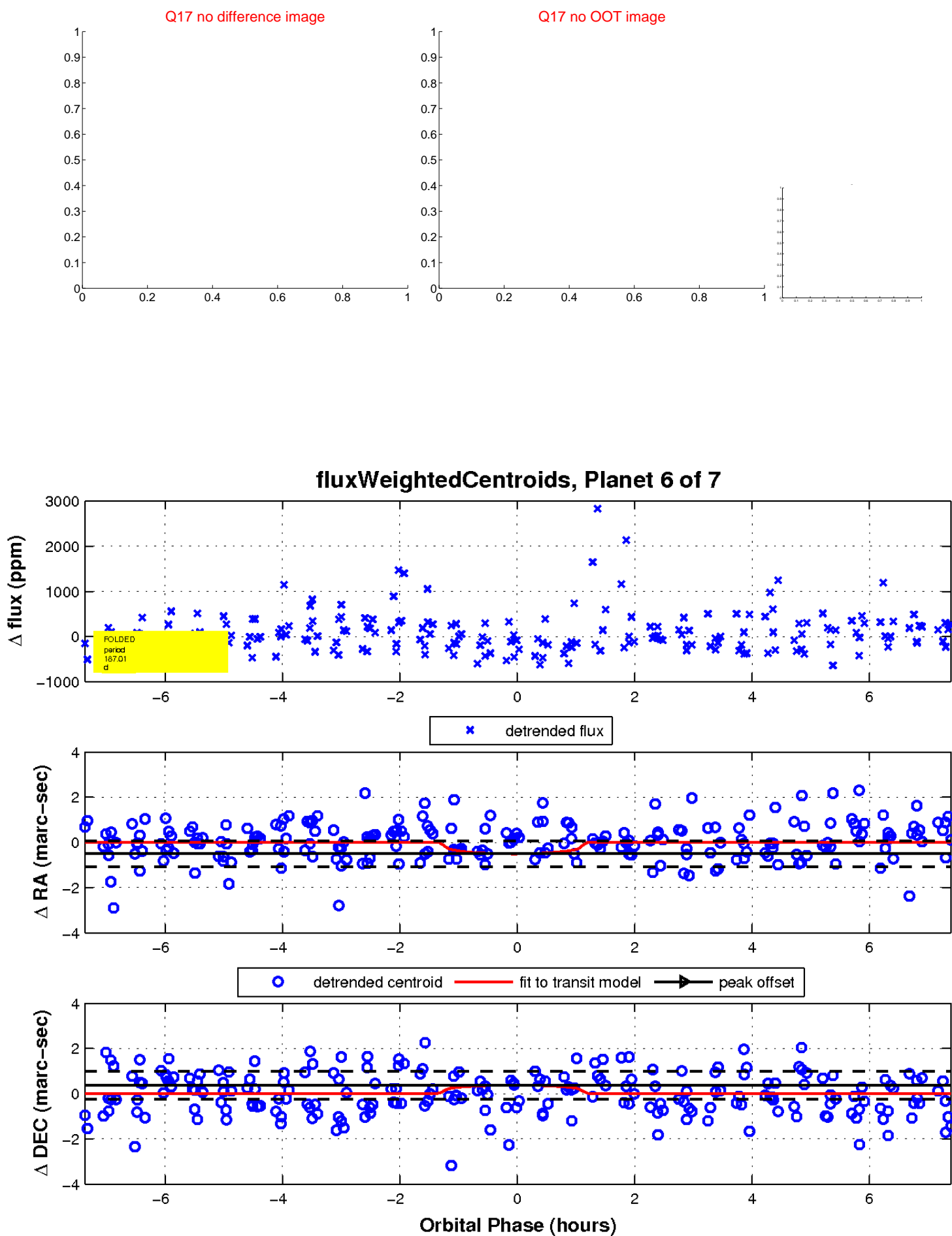
Q16 difference image



Q16 OOT image

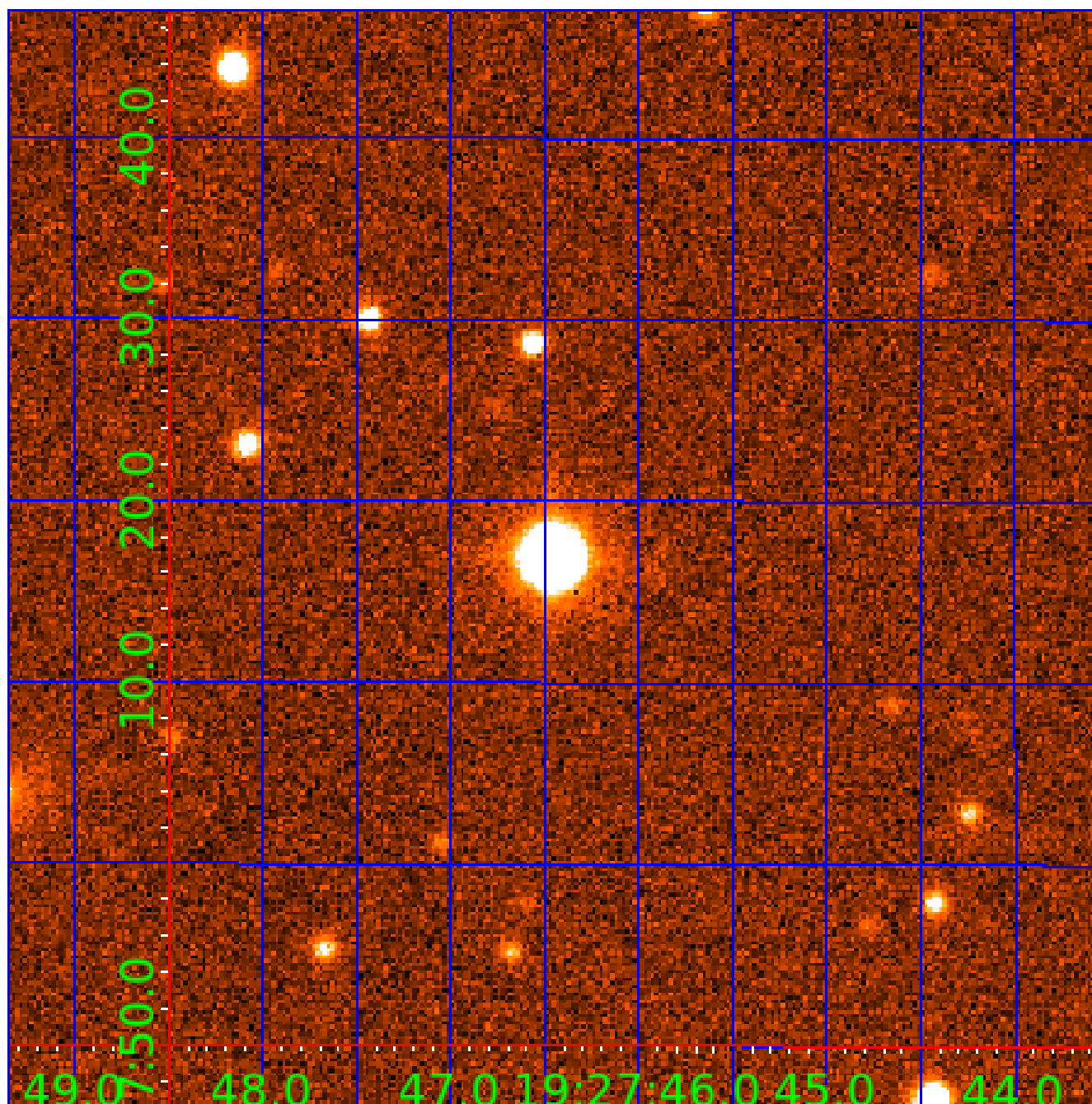


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009649447

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})
009649447-01	OBS	No	425.139616	517.125624	1018.6	8.441	14.1	7.0	0.66	4207	2.17	0.13
009649447-02	OBS	No	478.989018	404.166215	999.2	20.224	9.0	6.6	0.66	4207	2.69	0.11
009649447-03	OBS	No	338.864967	192.154613	670.3	3.753	12.4	6.7	0.66	4207	1.76	0.18
009649447-04	OBS	No	540.617182	483.402646	893.0	13.537	10.7	5.9	0.66	4207	1.98	0.10
009649447-05	OBS	No	135.468648	174.257734	204.9	14.977	9.1	2.9	0.66	4207	1.03	0.60
009649447-06	OBS	No	187.007369	190.895444	504.3	2.464	9.4	6.8	0.66	4207	1.50	0.39
009649447-07	OBS	No	330.020743	407.700153	649.4	5.752	10.8	6.7	0.66	4207	1.75	0.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009649447-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
009649447-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009649447-05	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
009649447-06	OBS	FP	0.01	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV
009649447-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

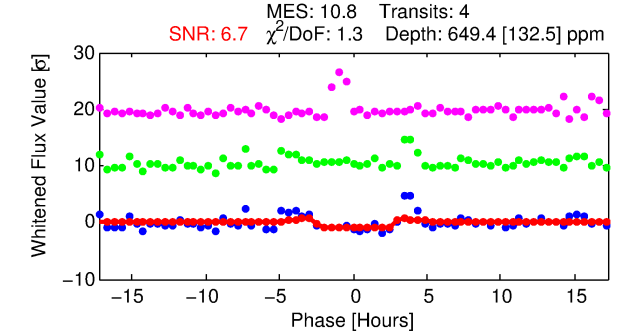
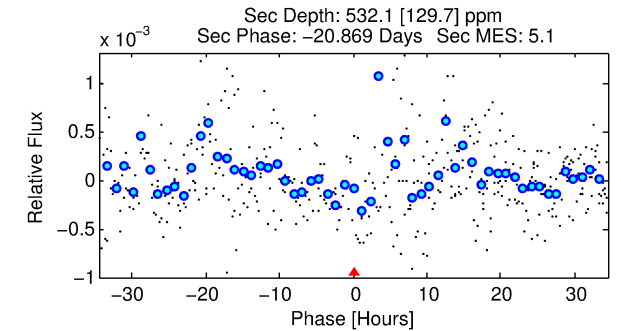
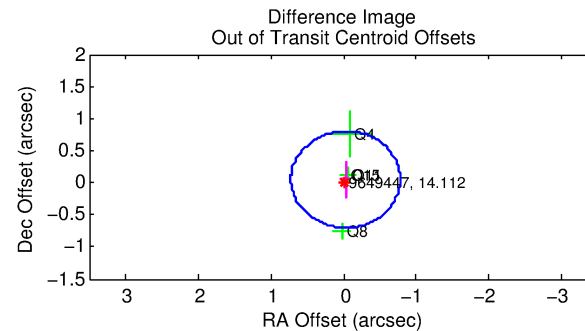
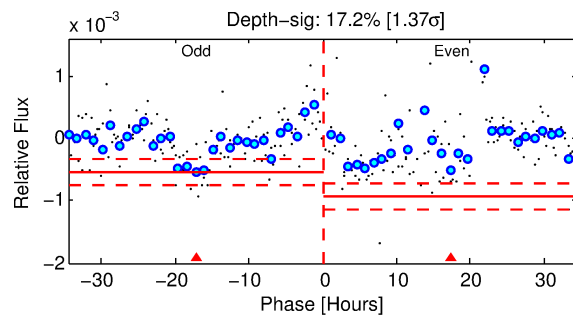
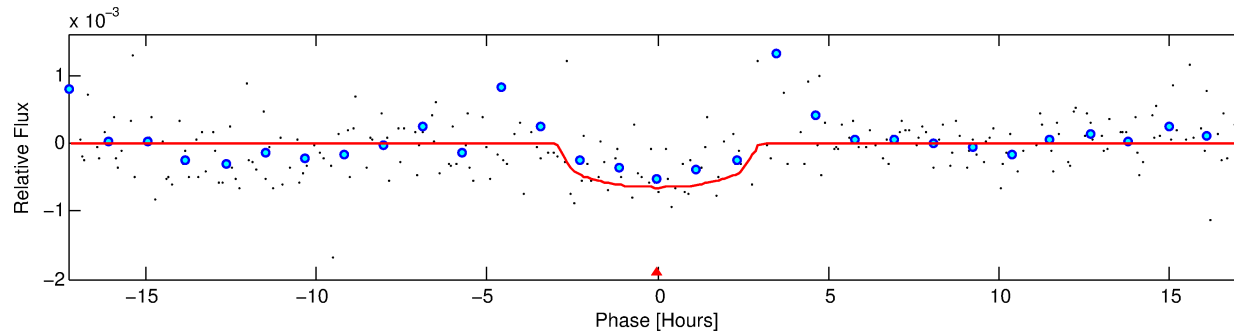
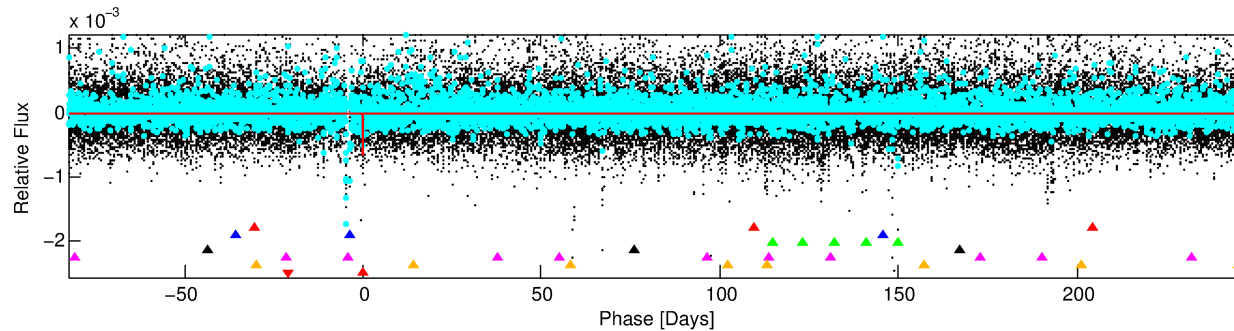
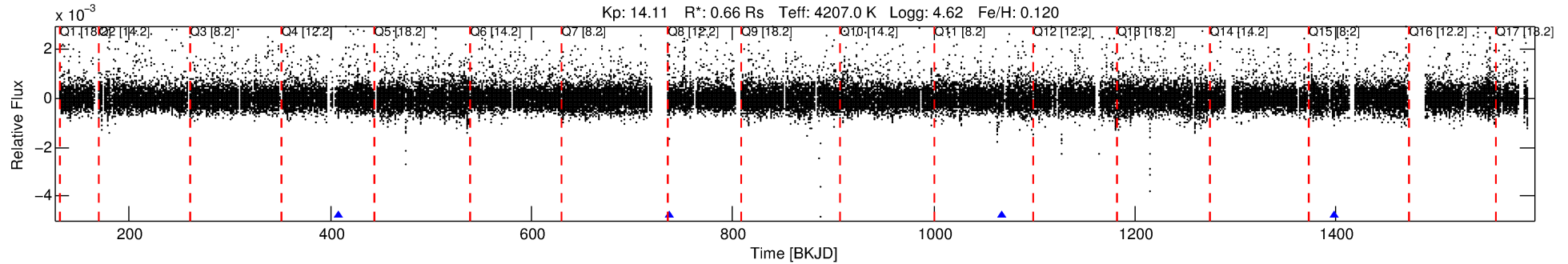
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009649447-07

No Significant Match Found

DV One-Page Summary

KIC: 9649447 Candidate: 7 of 7 Period: 330.021 d



DV Fit Results:

Period = 330.02074 [0.00635] d
Epoch = 407.7002 [0.0107] BKJD
Rp/R* = 0.0244 [0.0275]
a/R* = 348.70 [1229.16]
b = 0.65 [3.27]
Seff = 0.18 [0.03]
Teq = 167 [7] K
Rp = 1.75 [1.98] Re
a = 0.8099 [0.0545] AU
Ag = 62803.84 [142471.16] [0.44 σ]
Teffp = 4091 [2322] K [1.69 σ]

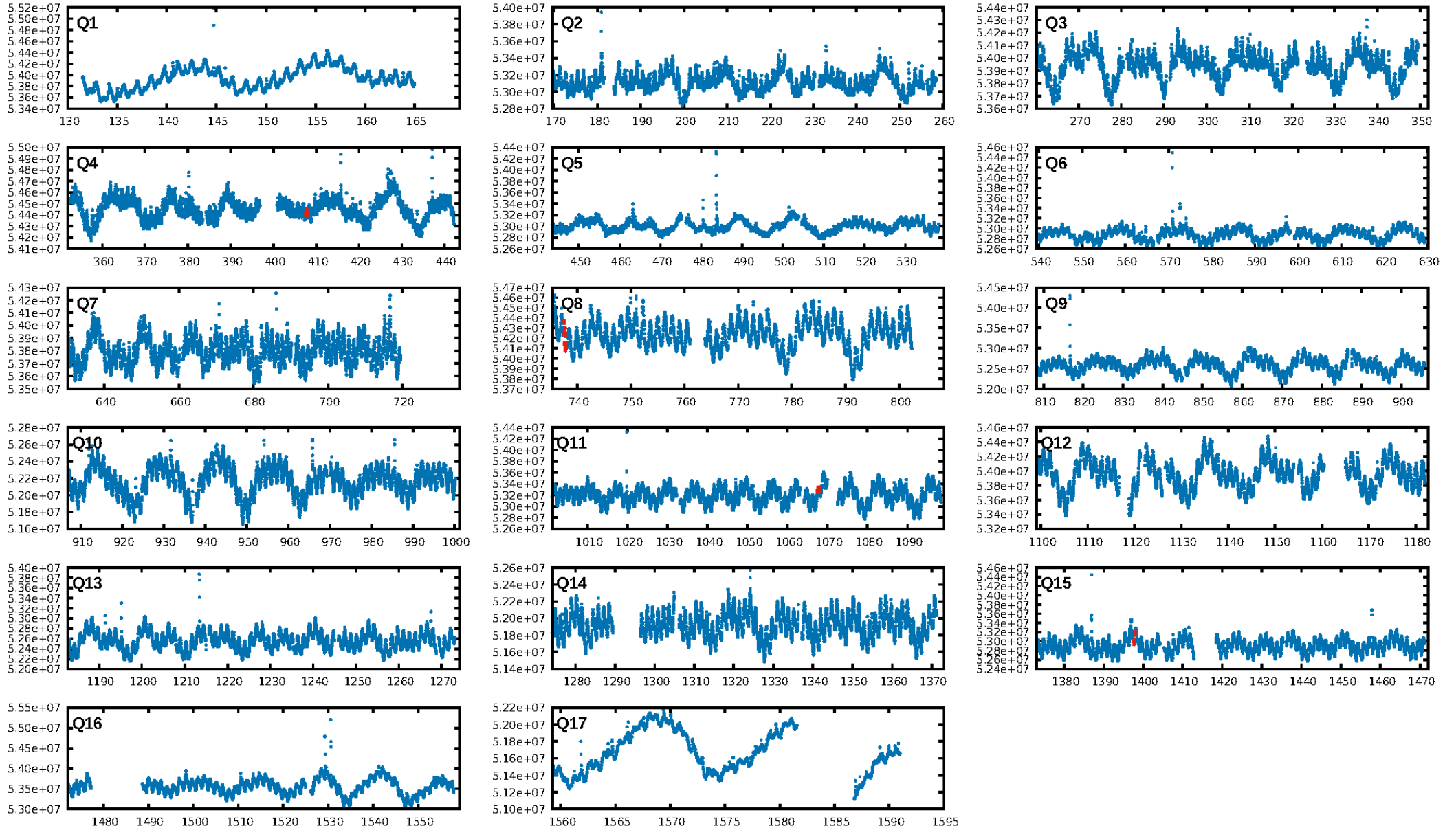
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [548.52 σ]
LongPeriod-sig: 100.0% [30.91 σ]
ModelChiSquare2-sig: 19.9%
ModelChiSquareGof-sig: 70.1%
Bootstrap-pfa: 1.53e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.192
Centroid-sig: 98.1%
Centroid-so: 0.155 arcsec [0.16 σ]
OotOffset-rm: 0.058 arcsec [0.23 σ]
KicOffset-rm: 0.334 arcsec [1.27 σ]
OotOffset-st: 0/2/2/0 [4]
KicOffset-st: 0/2/2/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

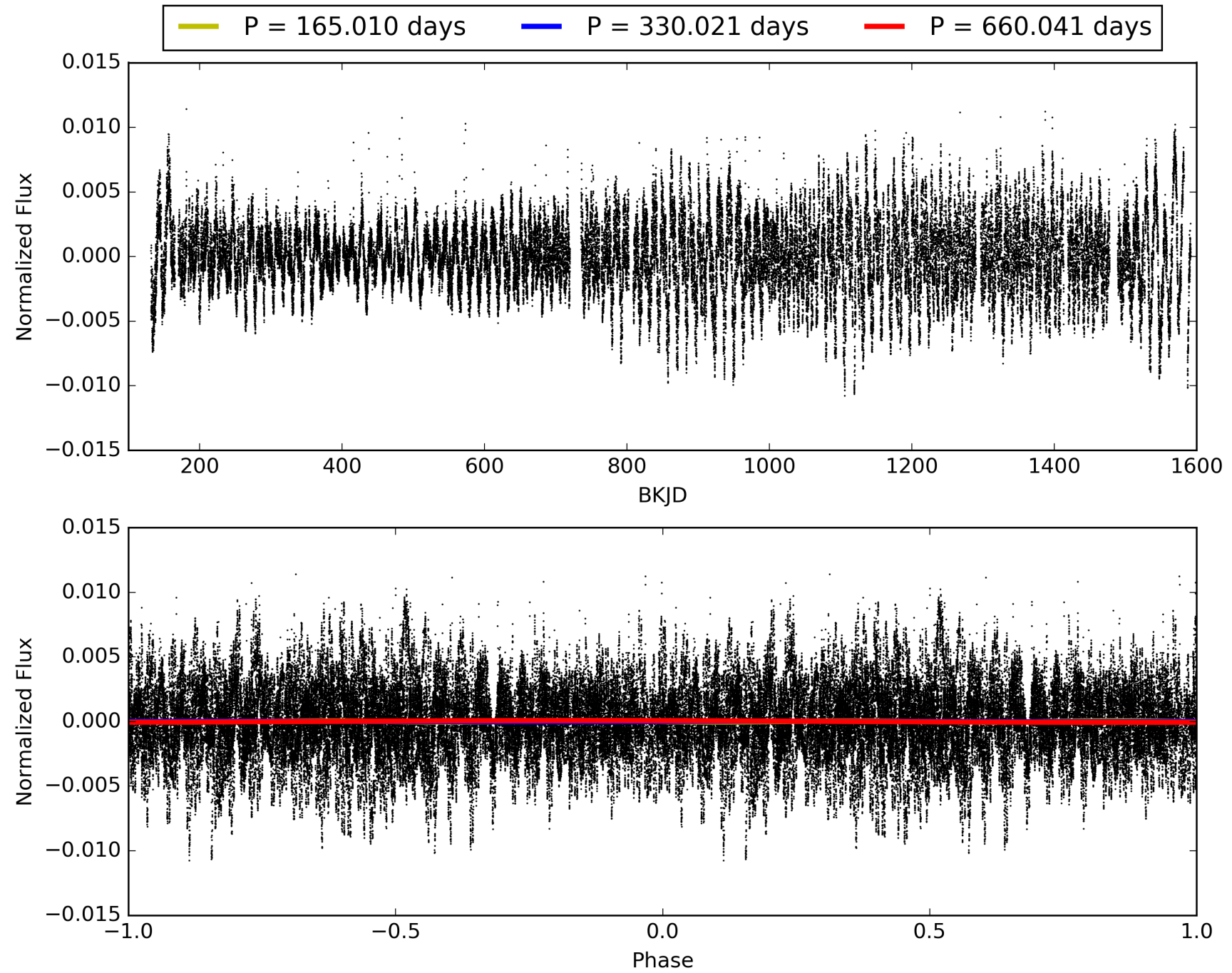
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:54:29 Z

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

TCE 009649447-07, PDC Light Curves

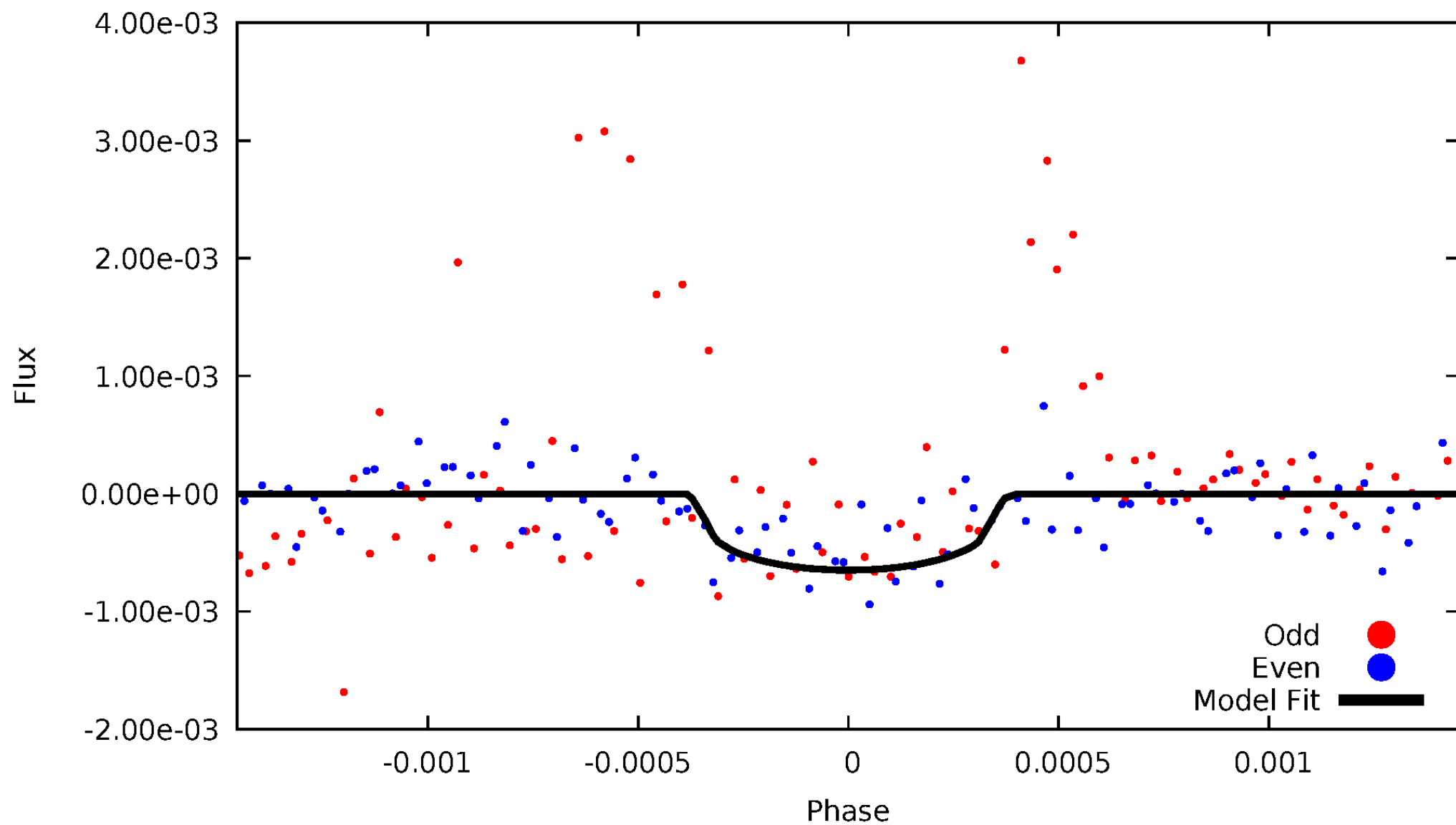


TCE 009649447-07



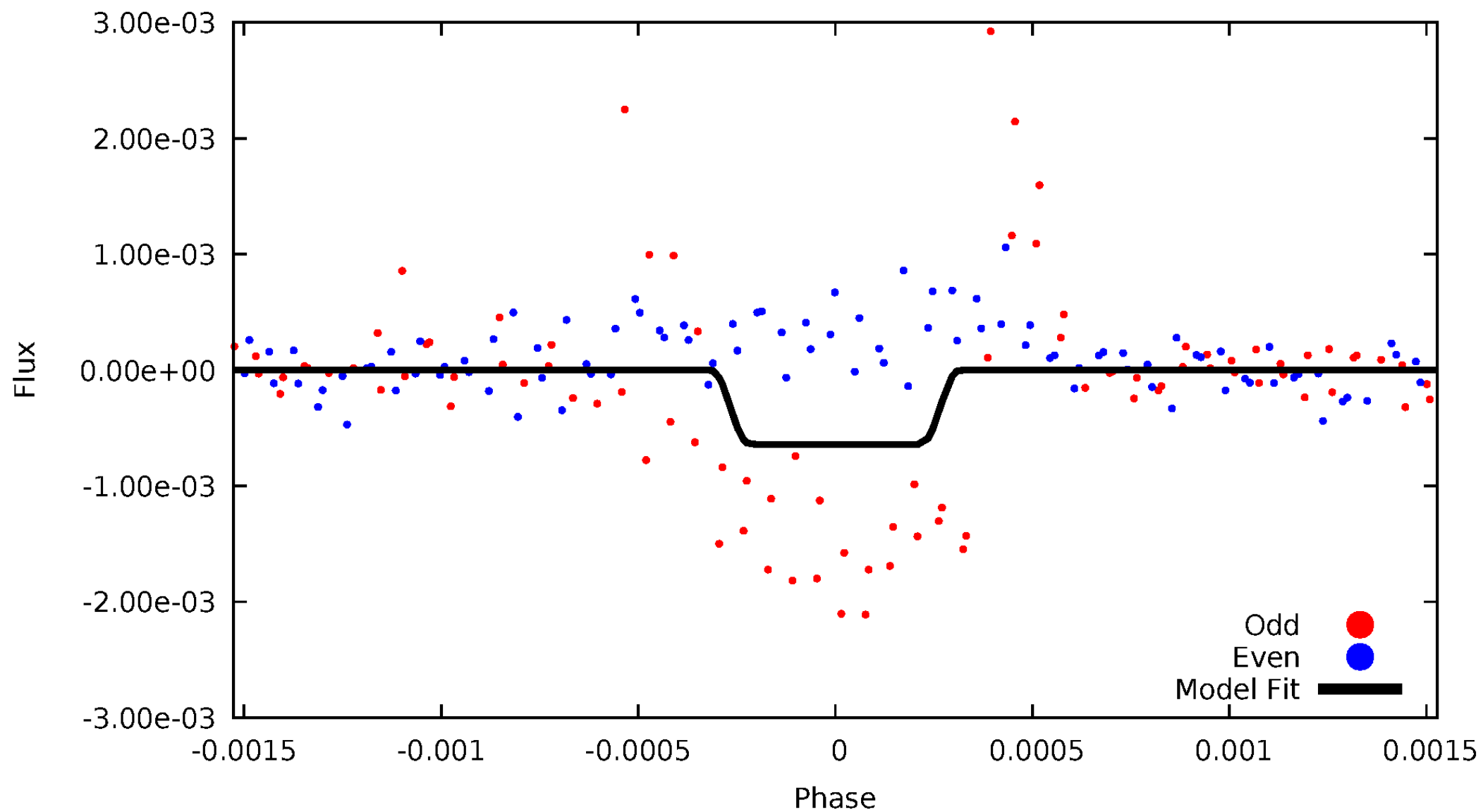
DV Odd/Even

TCE 009649447-07



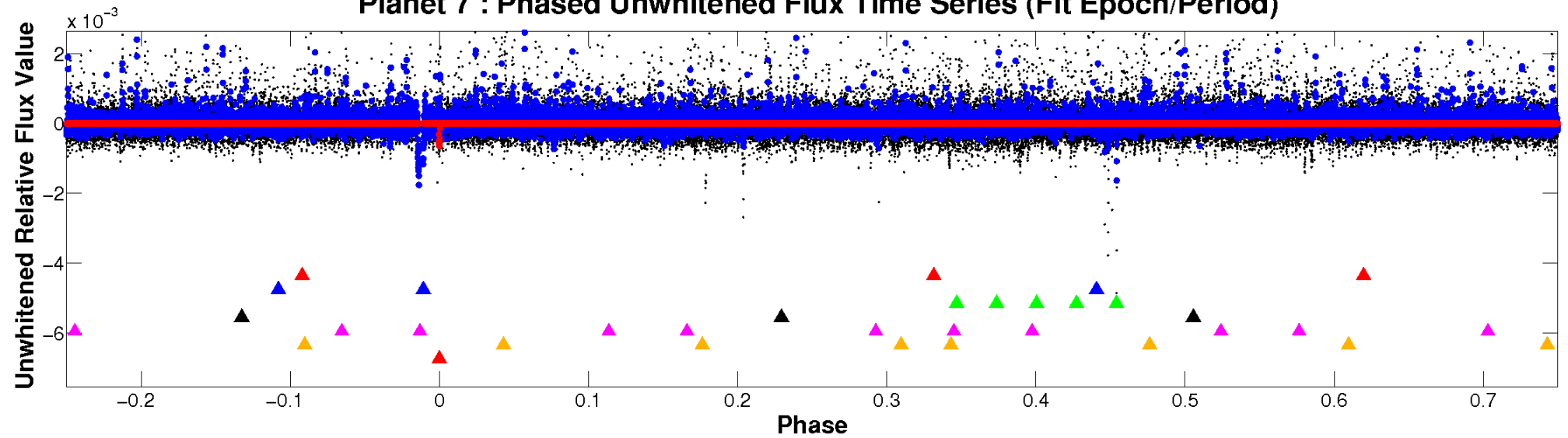
ALT Odd/Even

TCE 009649447-07

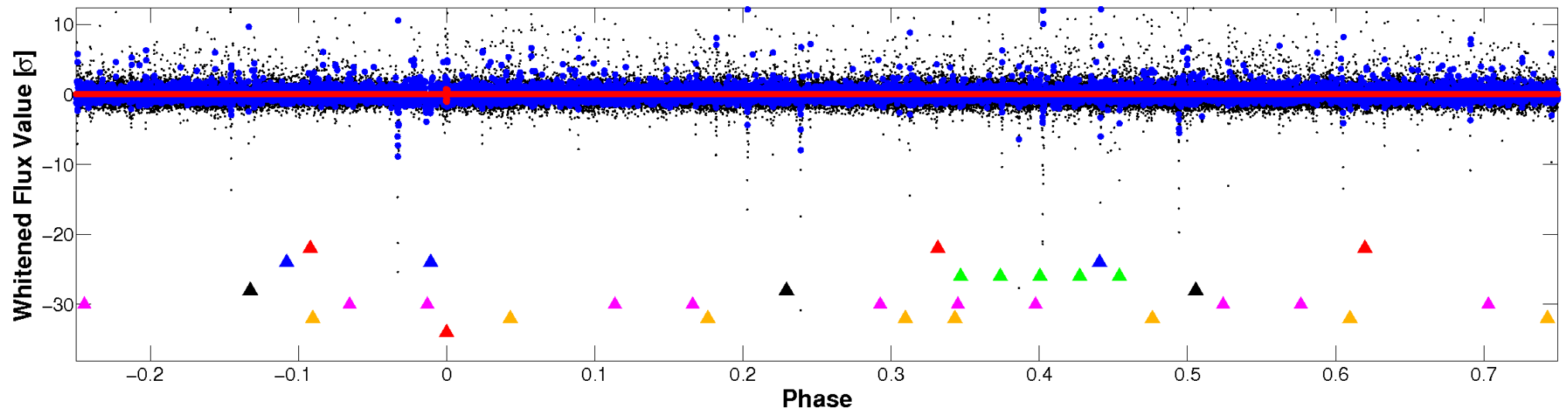


Non-Whitened Vs. Whitened Light Curve

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

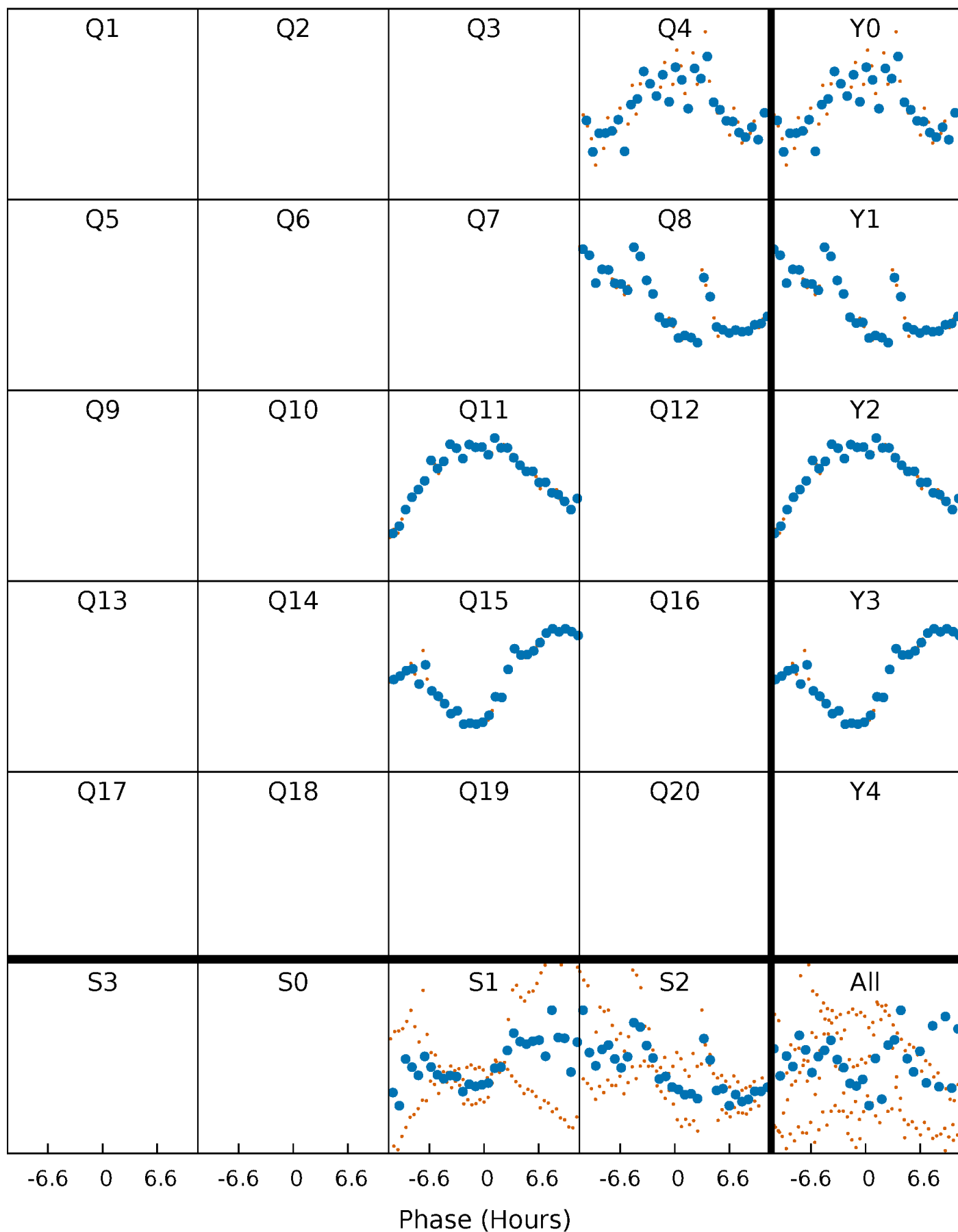


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



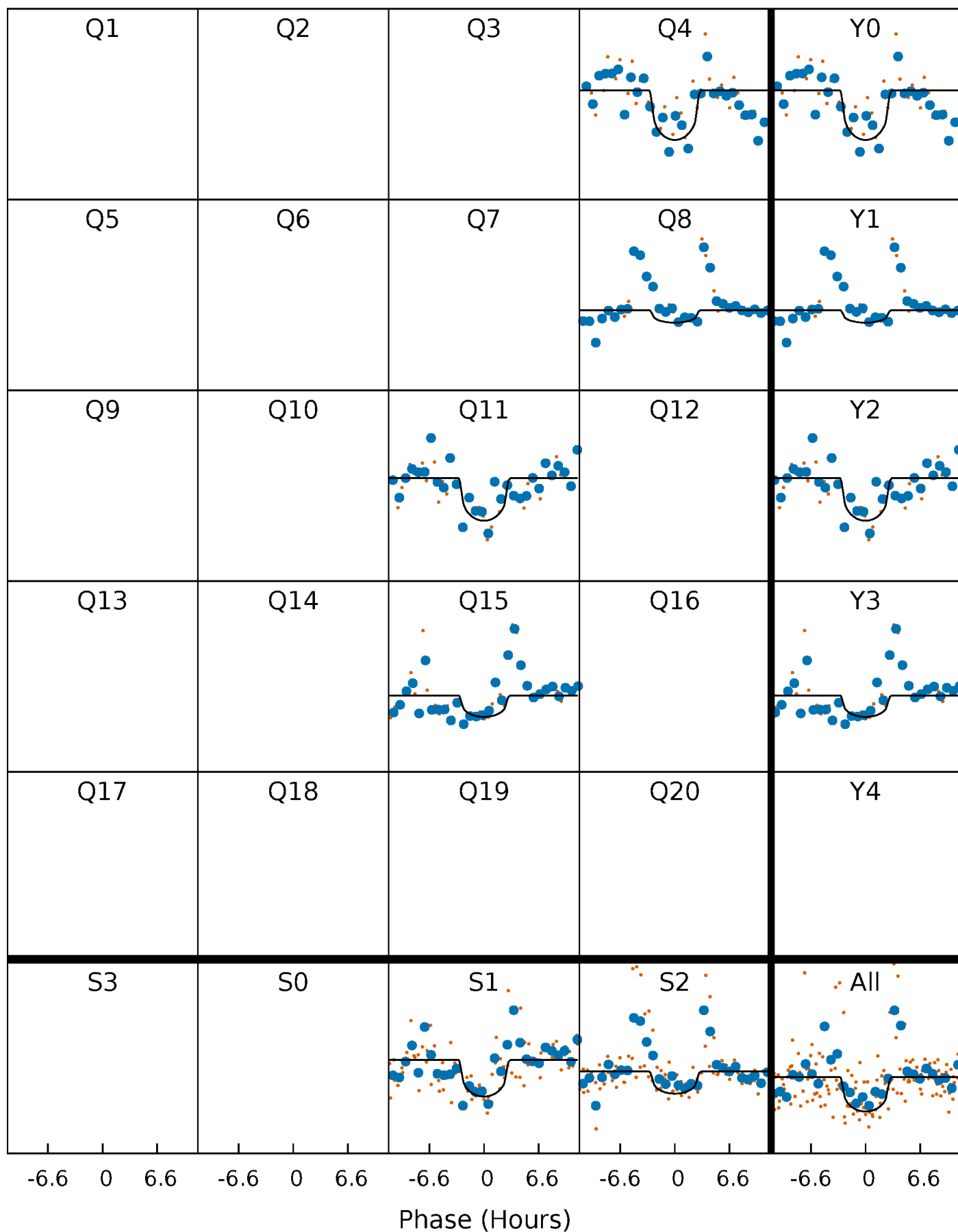
PDC Quarter-Phased Transit Curves

TCE 009649447-07 $P=330.020743$ Days $T_0=407.700153$ (BKJD)



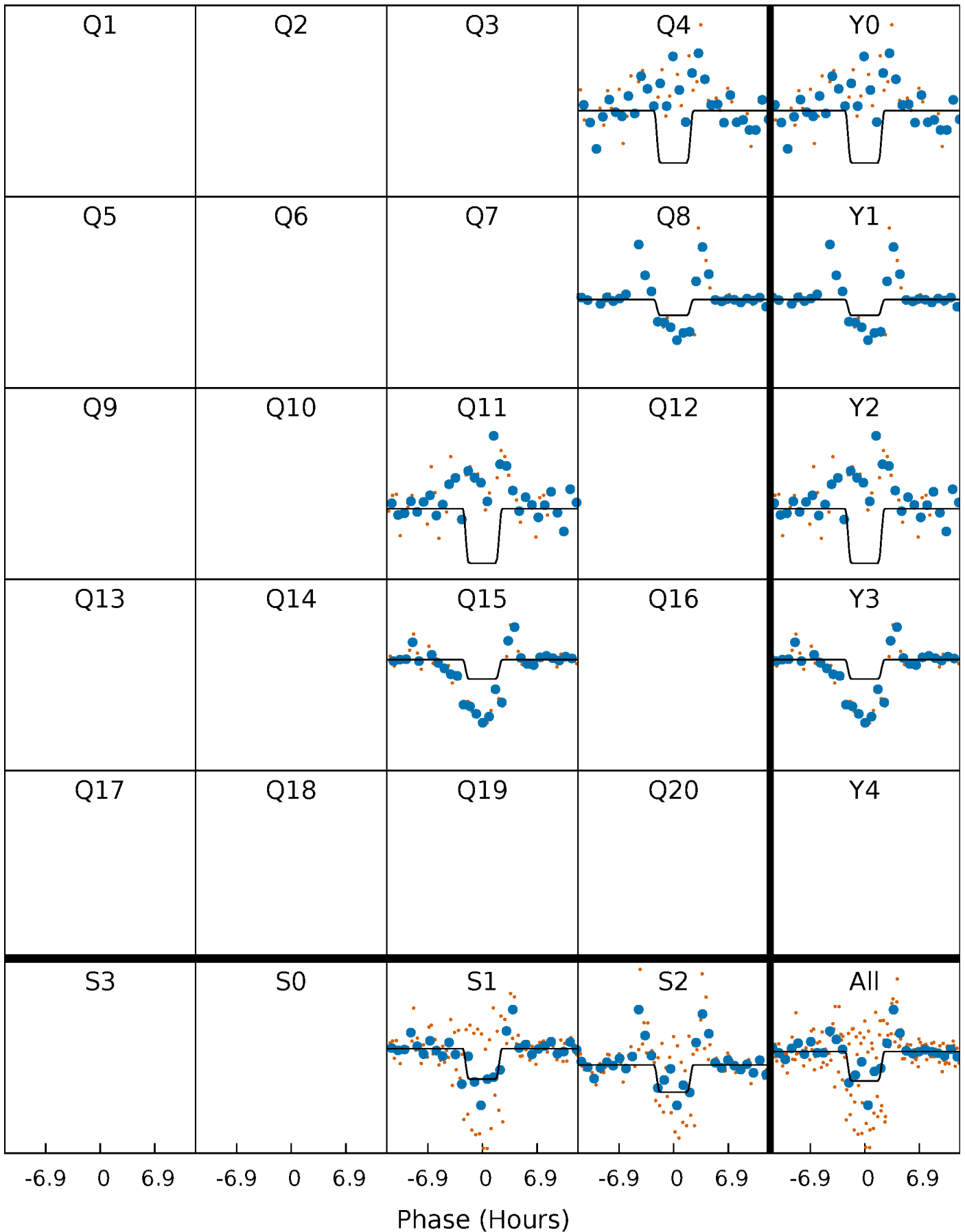
DV Quarter-Phased Transit Curves

TCE 009649447-07 $P=330.020743$ Days $T_0=407.700153$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

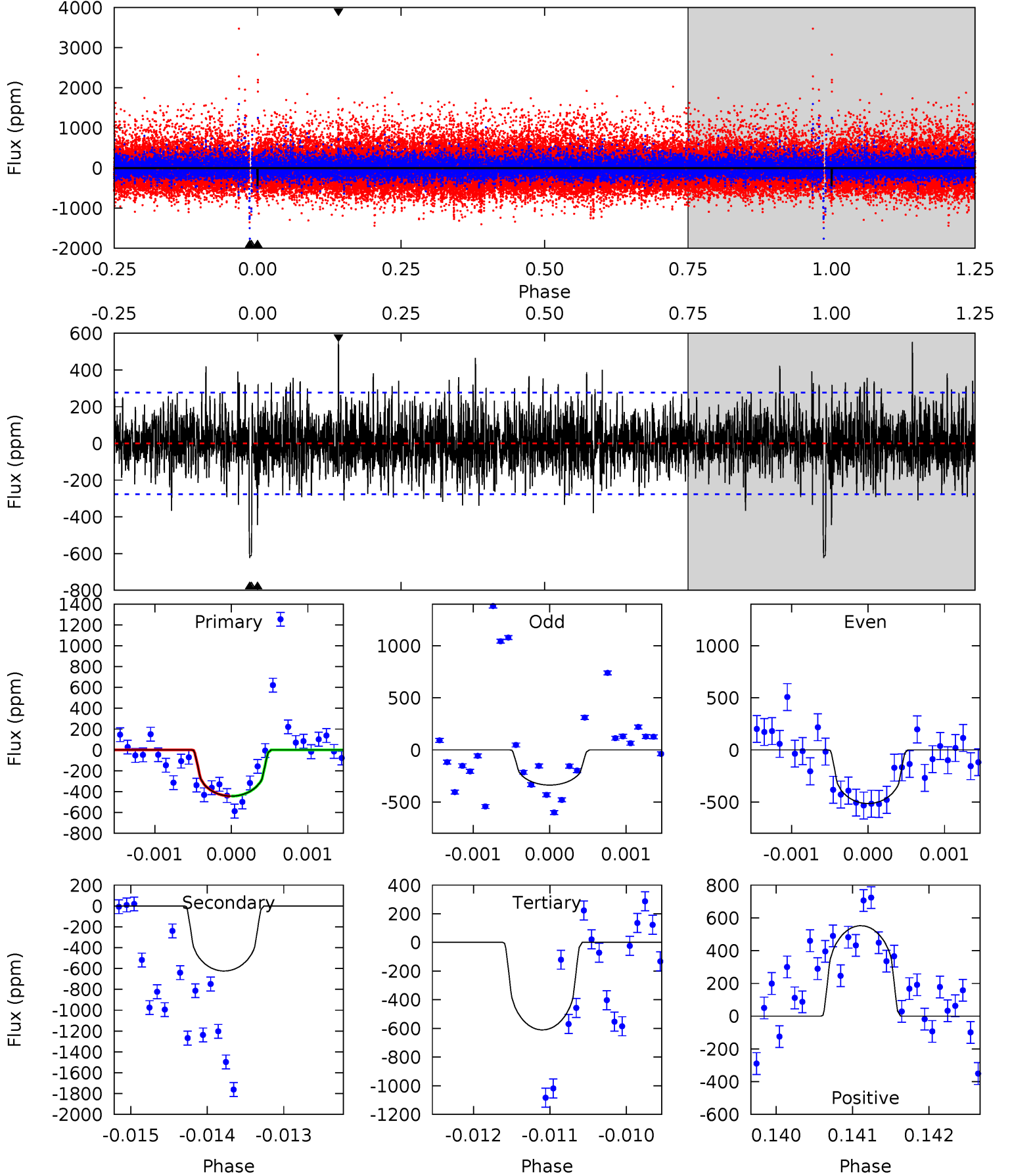
TCE 009649447-07 $P=330.015616$ Days $T_0=407.710690$ (BKJD)



DV Model-Shift Uniqueness Test

009649447-07, P = 330.020743 Days, E = 77.679410 Days

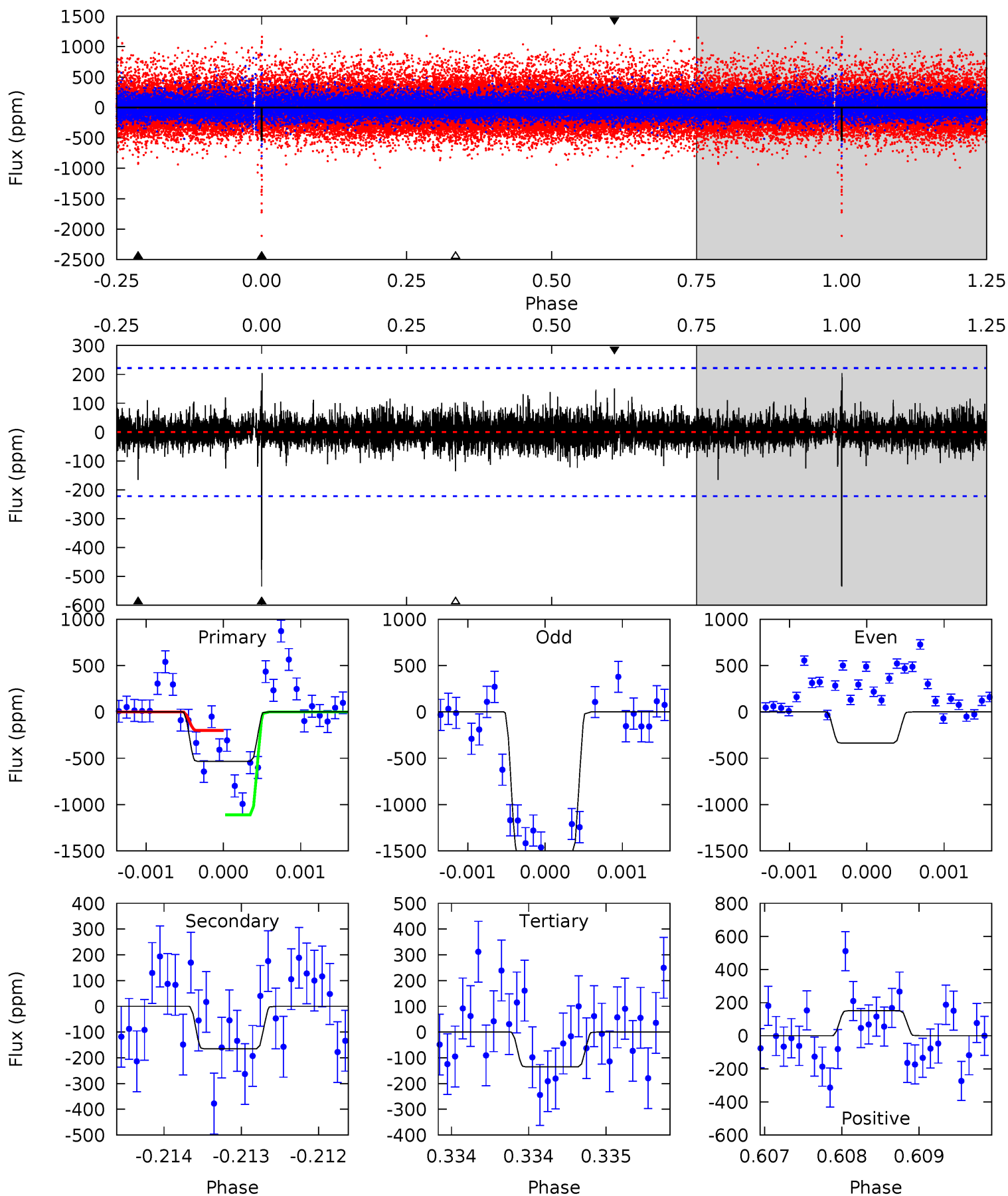
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.81	12.4	12.1	11.0	5.50	3.36	2.21	-3.31	-2.15	0.27	1.43	1.61	0.88	0.47	0.00



Alt Model-Shift Uniqueness Test

009649447-07, $P = 330.015616$ Days, $E = 77.695074$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	4.13	3.38	3.77	5.54	3.43	0.80	9.97	9.59	0.75	0.36	16.1	1.17	0.28	11.1



Stellar Parameters For KIC 009649447

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4207^{+131}_{-131}	$4.616^{+0.049}_{-0.018}$	$0.120^{+0.250}_{-0.300}$	$0.657^{+0.031}_{-0.055}$	$0.651^{+0.051}_{-0.051}$	$3.231^{+0.691}_{-0.232}$
	+3%/-3%	+1%/-0%	+208%/-250%	+5%/-8%	+8%/-8%	+21%/-7%
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 009649447-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-624 ± 50	$2.17^{+1.86}_{-1.37}$	232^{+7}_{-8}	3921^{+1939}_{-720}	$48011^{+315282}_{-34293}$
Alt.	-165 ± 40	$2.30^{+1.77}_{-1.44}$	232^{+9}_{-8}	3114^{+1160}_{-476}	11297^{+71847}_{-7783}

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

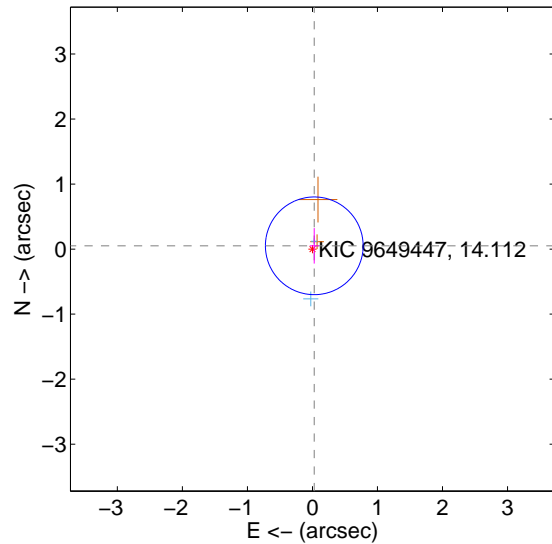
Supplemental centroid analysis for 009649447-07. Kepler magnitude: 14.11. Transit SNR 6.69

There are 2 quarters with good PRF difference image offsets

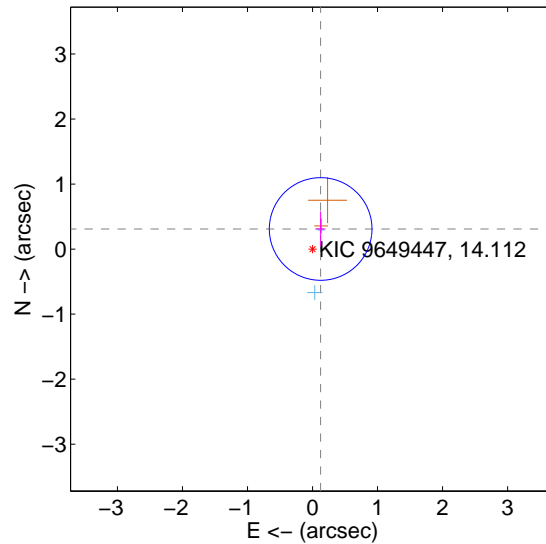
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.058 ± 0.250	0.23	-0.028 ± 0.070	0.051 ± 0.273
PRF-fit source offset from KIC position	0.334 ± 0.263	1.27	-0.125 ± 0.076	0.309 ± 0.269
photometric centroid source offset	0.15 ± 0.98	0.16	-0.09 ± 0.91	0.13 ± 1.01

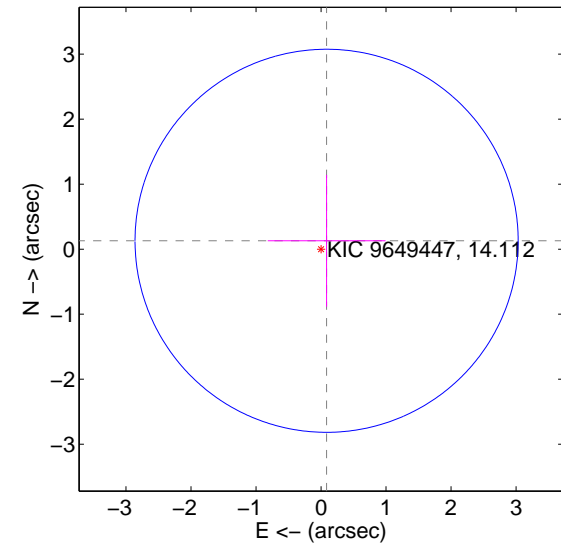
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

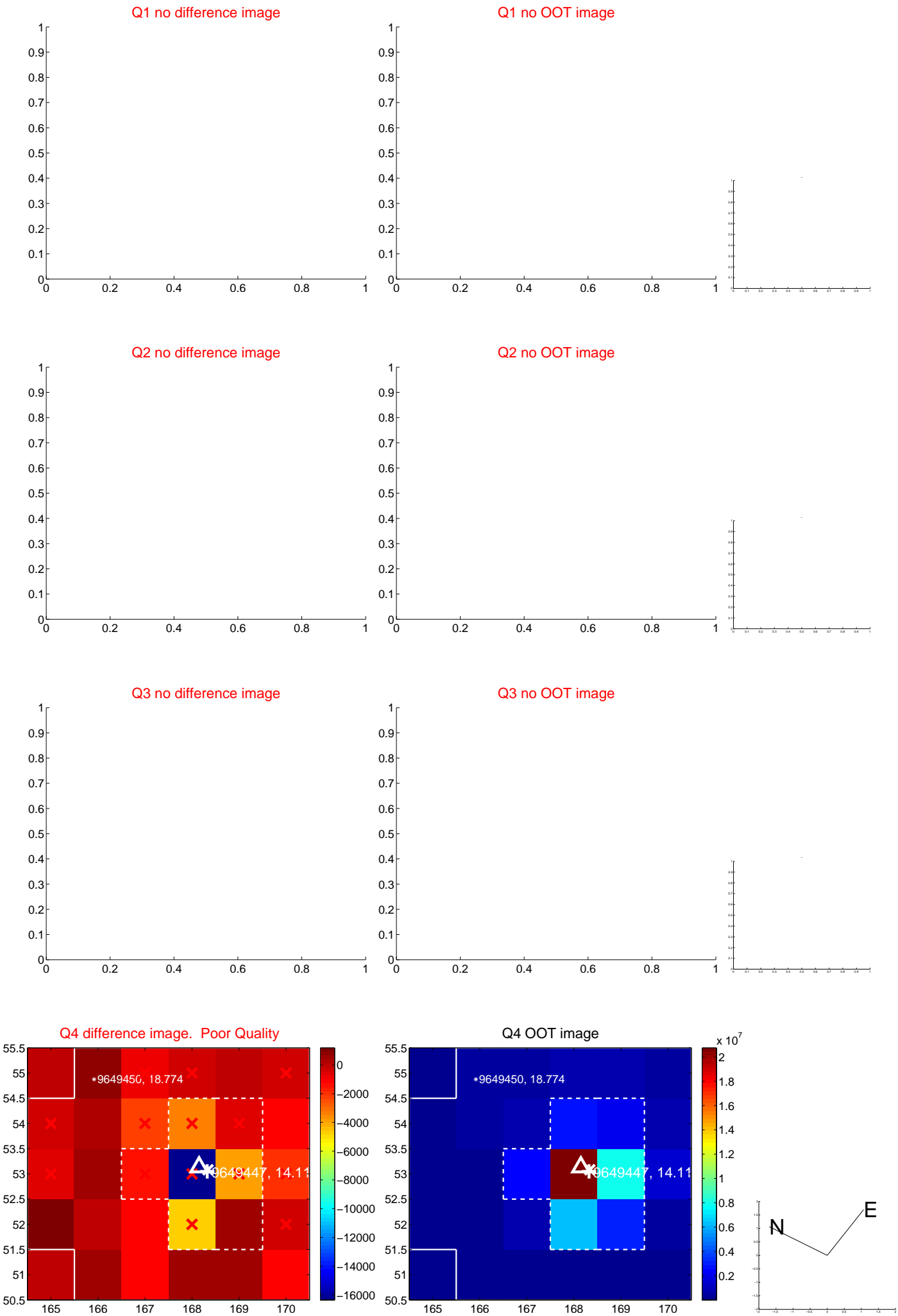


offset from photometric centroids

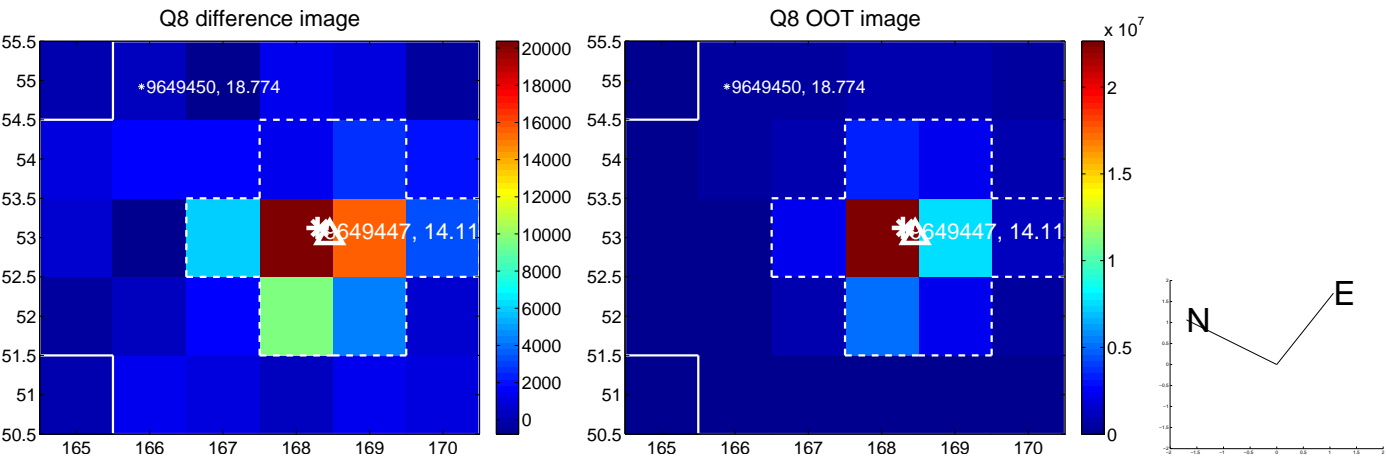


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

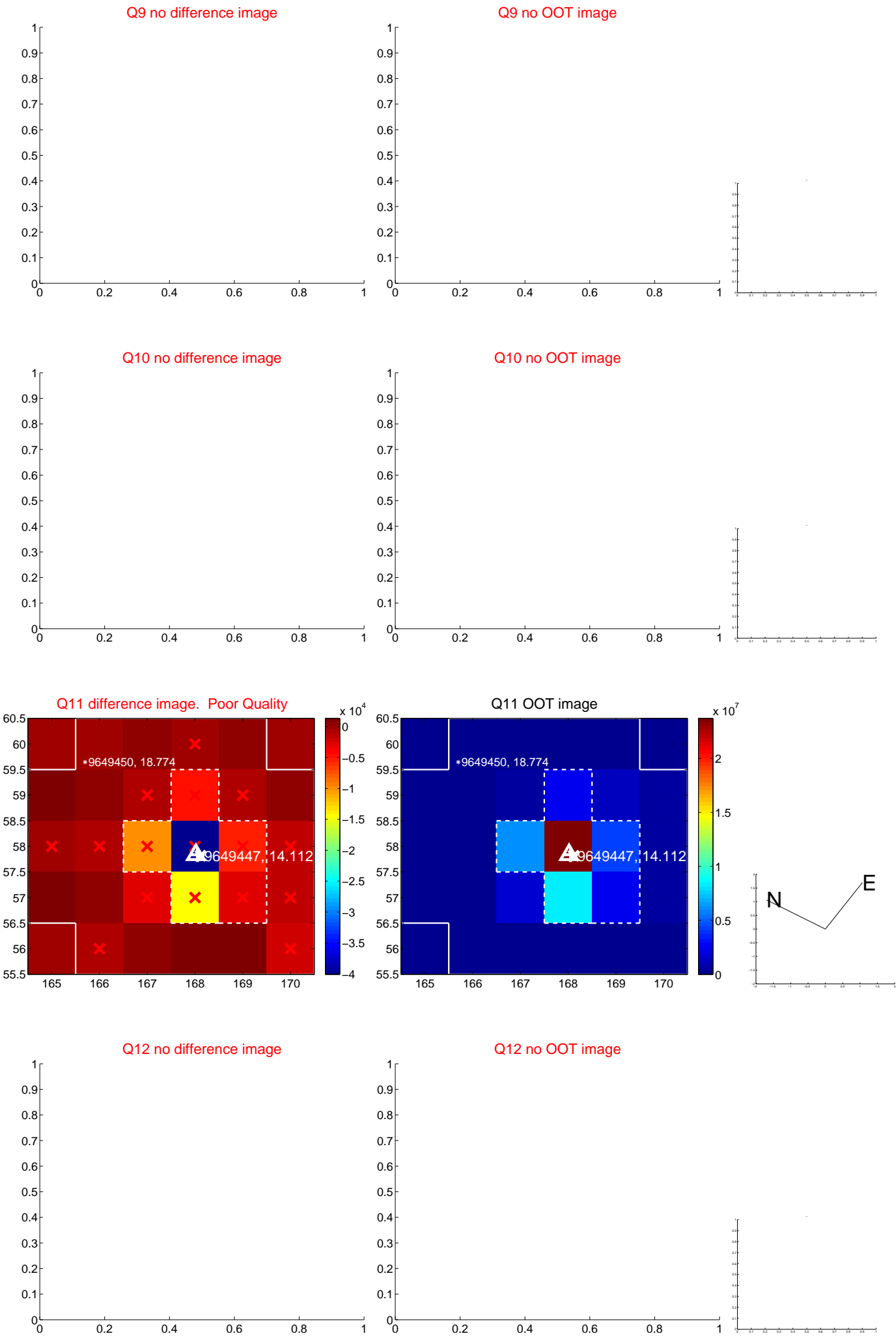
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



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

Q13 no difference image



Q13 no OOT image



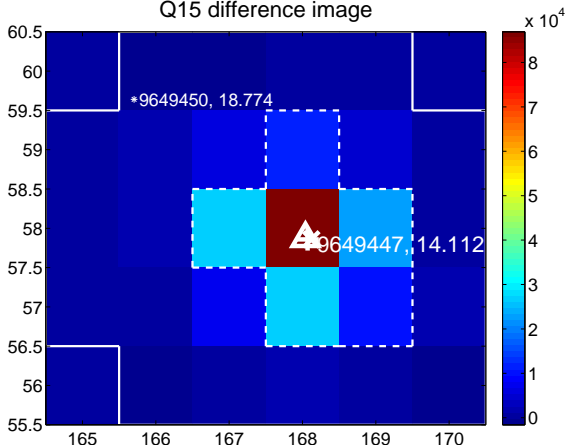
Q14 no difference image



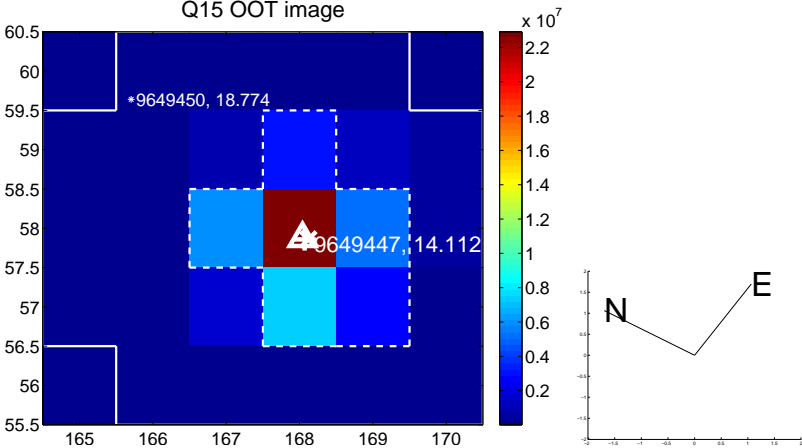
Q14 no OOT image



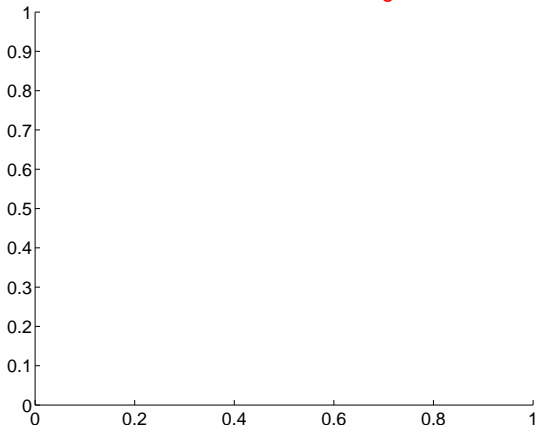
Q15 difference image



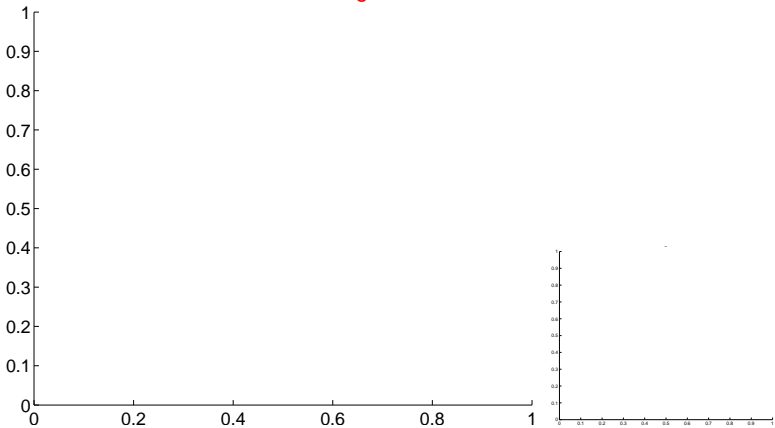
Q15 OOT image



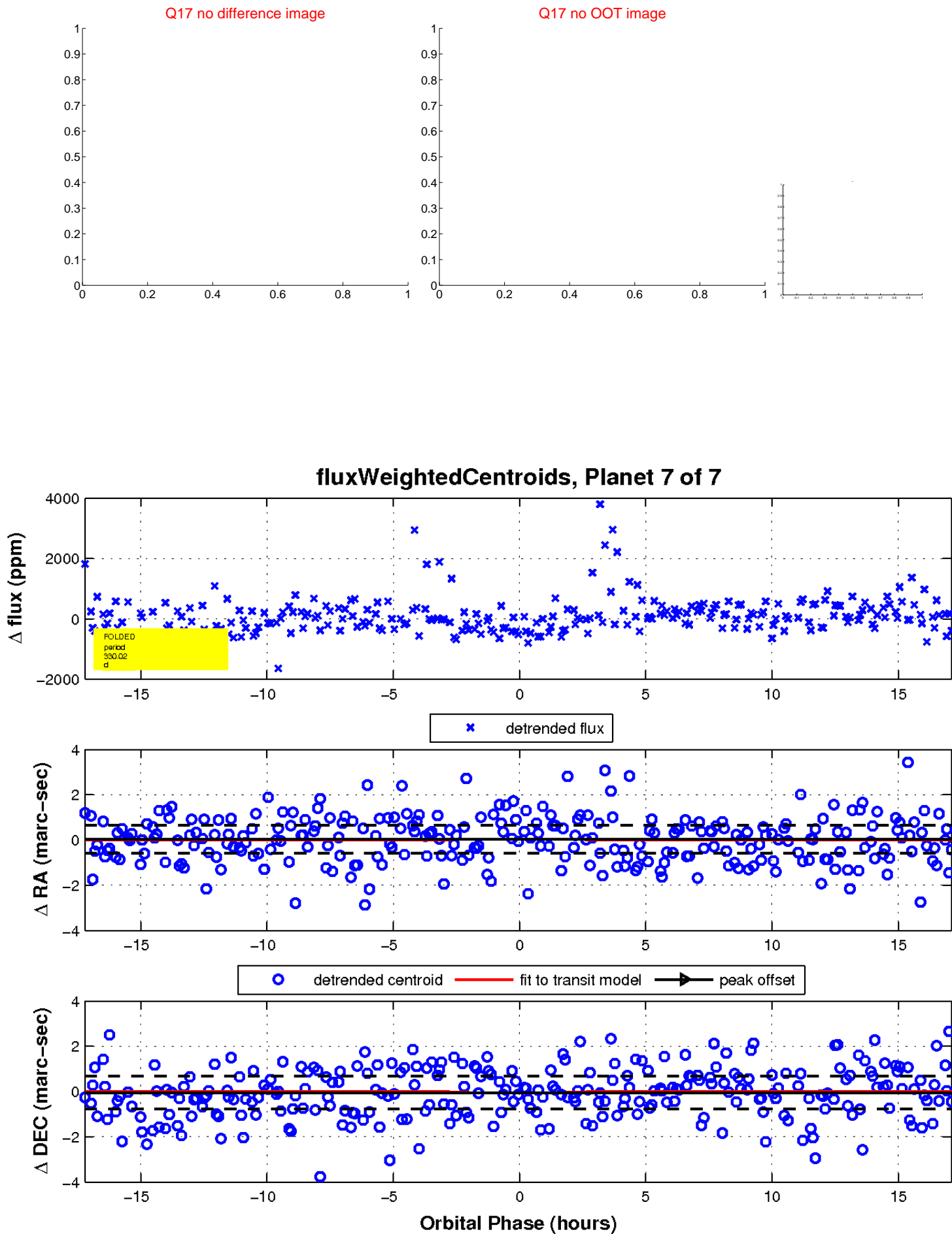
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

